

CITY OF OAKLAND



250 FRANK H. OGAWA PLAZA OAKLAND, CALIFORNIA 94612-2033

Oakland Public Works Department
Bureau of Design & Construction
Capital Contracts

(510) 238-7270
FAX (510) 238-2346
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ON-CALL CONTRACTOR BID REQUEST

Project No. 1004984
DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS

Date Issued: August 18, 2023

Scope of Work: The Downtown Oakland Senior Center Improvements project is a partial renovation of the ground floor of the Oakland Veterans' Memorial Building at 200 Grand Avenue. The project includes new flooring, painting and led lighting retrofits throughout primary area of work, approximately 9,690 SF of the ground floor of the building. The spaces within the area of work include canteen, dining, classroom, and restrooms. This project refreshes worn-out finishes that have not been upgraded since the 1980's. A new gender-neutral restroom will be provided within the existing building footprint, accessible parking spaces at the existing east parking lot will be repaved, striped, and signed to improve access. Other minor exterior updates include new handrails and improvements at the main entry. The City has paid for Building Department and Planning permit fees; the Contractor is responsible to apply for and pay for all other trades, creek protection and encroachment permits, permit extensions and to complete the City's Waste Reduction & Recycling Plan for the building permit.

- **Pre-Bid Meeting and/or Site Visit:**
MANDATORY - 10:30 AM, September 12, 2023 at 200 Grand Avenue.
- **Questions Due:** **2:00 AM, September 22, 2023**, by email only, to the Project Manager. It is the Contractor's responsibility to ensure that the email is received by the Project Manager. Any addendum that materially changes the bid invitation shall be issued no less than 72 hours before the bid opening unless the bid opening is extended by said addendum.
- **Bids Due:** **2:00 PM, October 13, 2023**, by email to Capital Contracts contact provided in Contact information section. Bids received after the deadline will not be considered.

- **Documents Due with Bid:**
 - ☐ Contractor's Bid form
 - ☐ Schedule R – Subcontractor, Supplier, Trucking Listing. Bidders must submit a completed Schedule R that reflects the team members for this on-call bid. Submit Schedule R even if there will be no subcontractors, suppliers or truckers.
- **Documents Due from Awarded Contractor (informational):**
 - ☐ Payment & Performance Bonds, if over \$25K
 - ☐ Anticipated Project Workforce & Core Employee Utilization Report
 - ☐ For contracts over \$50K, online submittal is required of Waste Reduction & Recycling Plan (WRRP) at www.greenhalosystems.com. (Enter City Project # for Green Halo "Project Tracking Number") Paper submittals are subject to \$250 fee.

Anticipated Start Date: December 4, 2023

Engineer's Estimate: Lump Sum Base Bid - \$1,834,515.00

License Required: A, B

Contract Days: 120 working days for Construction

Liquidated Damages: \$500 per calendar day

Bonds: 100% Payment and Performance Bonds. Bid Security not required.

Oakland-certified Local Business Requirement: 50% minimum L/SLBE (excluding Specialty Items, if any) requirement must be met and will be reviewed and approved by DWES for each task order. Certified SLBE or VSLBE prime contractors are exempt from this LBE/SLBE requirement. Please see the DWES Local Business requirements by going to the web address as provided below.

https://cao-94612.s3.amazonaws.com/documents/LSLBE-Program-Guidelines_Revised.5.4.21.pdf

DWES Certified L/SLBE Trucking Program Requirement: YES. 50% local trucking requirement is applicable. It is important to note that failure to comply with the 50% local trucking requirement will result in a non-responsive bid. Please see the DWES Certified Local Business Trucking requirements by going to the web address as provided below.

https://cao-94612.s3.amazonaws.com/documents/LSLBE-Program-Guidelines_Revised.5.4.21.pdf

Self-Performance: The Contractor shall perform, with its own organization, Task Order work amounting to at least 30 percent of the Task Order Price.

Contact Information:

OPW Project Manager: Alan Chan at achan@oaklandca.gov –

Capital Contracts: CapitalContracts@oaklandca.gov

Department of Industrial Relations (DIR):

1. No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the DIR pursuant to Labor Code Section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code Section 1771.1(a)].
2. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the DIR pursuant to Labor Code section 1725.5.
3. This project is subject to compliance monitoring and enforcement by the DIR.
4. The prime contractor must post job site notices prescribed by regulation.
5. Assembly Bill 219 requires companies hauling or delivering ready-mix concrete to register with the DIR as a public works contractor.

Bid Documents: The bid documents included with this Bid Request are listed below.

1. Special Provisions
2. Technical Specifications
3. Drawings dated March 8, 2023, prepared by ELS Architecture and Urban Design
4. The following list of anticipated permits required is for information purposes only and may not be all inclusive. It is the Contractor's responsibility to confirm the permits required and BMPs for construction:

Permit Type	Issuing Agency	Payment by:	Status/Notes
Planning	City of Oakland	City	Approval Completed.
Building	City of Oakland	City	Plan check completed; Contractor to complete Waste Reduction & Recycling Plan to pick up job card.
Building Permit Extension	City of Oakland	Contractor	Permit extension fees shall be paid by the Contractor
Trade Permits	City of Oakland	Contractor	(Mechanical, Electrical, Plumbing)
Fire Permit	City of Oakland	Contractor	Contractor is responsible for design-build, plan reviews from Fire Prevent Bureau, permits and inspections
Creek Protection Permit	City of Oakland	City	Submitted, In progress.
Excavation, Obstruction and Sewer Lateral Permits	City of Oakland	Contractor	Contractor is responsible to obtain permits before construction



ON-CALL CONTRACTOR BID FORM

Project No. 1004984
DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS

CONTRACTOR'S BUSINESS NAME _____

BUSINESS ADDRESS _____

(Provide full street address even if P.O. Box used)

TELEPHONE NO: _____ FAX NO: _____

CONTRACTOR'S EMAIL ADDRESS: _____

CONTRACTOR'S STATE LICENSE NO: _____

CLASSIFICATION: _____ EXPIRATION: _____

OAKLAND BUSINESS LICENSE NO: _____ DIR REGISTRATION NO.: _____

All bids shall include the contractor's state license number, classification, and DIR registration number¹, as well as each subcontractor's license number. The work for which this bid is submitted is for construction in conformance with the Project Plans, Bid Book, including, but not limited to, the Special Provisions, Standard Specifications for Public Works Construction, 2015 Edition, City of Oakland Standard Detail for Public Works Construction 2002 Edition, including any addenda thereto, the contract annexed hereto, and the Labor Surcharge and Equipment Rental Rates in effect on the date the work is accomplished.

In accordance with Section 2-1.10 of the Special Provisions, if this bid shall be accepted and the undersigned shall fail to enter into the contract and furnish the two (2) bonds in the sums required by the State Contract Act, with surety satisfactory to the City, the City may, at its

¹ Per SB 854: Only DIR-registered contractors or subcontractors may be listed on a bid proposal for a public works project.

option, determine that the bidder has abandoned the contract, and thereupon this bid and the acceptance thereof shall be null and void.

The undersigned, as bidder, declares that the only persons or parties interested in this bid as principals are those named herein; that this bid is made without collusion with any other person, firm, or corporation; that the bidder has carefully examined the location of the proposed work, the annexed proposed form of contract, the plans and specifications therein referred to, including all Addenda; and the bidder proposes and agrees if this bid is accepted, that the bidder will contract with the City, in the form of the copy of the contract annexed hereto, and the bidder proposes and agrees if this BID is accepted, that the bidder will execute and fully perform the contract for which bids are called; that the bidder will provide all necessary labor, storage, transportation, machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that the bidder will take in full payment therefor, including all applicable taxes, the unit prices set forth in the attached bid schedule.

BID SCHEDULES

The low bidder will be determined by the method indicated in the Bid Request. If no methodology is identified, the default method shall be the lowest base bid price, without consideration of any alternates. The Base Bid Total shall include all work shown on the drawings, described in the specifications and include any allowances, except that it shall not include any item listed as a bid alternate (if applicable).

Base Bid:

LUMP SUM BASE BID: \$

ADDENDA ACKNOWLEDGEMENT

All bids shall include acknowledgement of all Addenda. This BID is submitted with respect to the changes to the contract included in addendum number(s) _____ through _____.

(FILL IN ADDENDA NUMBERS IF ADDENDA HAVE BEEN RECEIVED AND INSERT, IN THIS BID, ANY ENGINEER'S ESTIMATE SHEETS THAT WERE RECEIVED AS PART OF THE ADDENDA.)

By my signature on this BID, I certify, under penalty of perjury, that all representations made on this BID are true and correct. The City of Oakland reserves the right to accept or reject any and all bids.

Sign



Here

Signature and Title of Bidder

Date _____

Schedule R

SUBCONTRACTOR, SUPPLIER, TRUCKING LISTING

By request, the Department of Workplace & Employment Standards DWES) can email an electronic copy of Schedule R to your firm or go to

<https://cao-94612.s3.amazonaws.com/documents/OAK023389.pdf>

Date _____

Note:

The contractor herewith must list all subcontractors and suppliers with values in excess of one-half of 1 percent of the prime contractor's total bid or **ten thousand dollars (\$10,000) whichever is greater regardless of tier and all trucking and dollar amount regardless of tier** to be used on the project. The contractor agrees that no changes will be made in this list without the approval of the City of Oakland Provide the address, type of work, dollar amount and check all boxes that apply. Bidders that do not list all subcontractors and suppliers with values greater than one half of one percent and all truckers regardless of tier and dollar amount shall be deemed non-responsive.

Prime Contractor: _____

Project Name _____

Project Number _____

Signature _____

Contractor's License #	Type of Work	Company Name	Address and City	Phone Number	Dollar Amount	Supplier	Trucking	LBE	LPG/LBE	SBA-LBE	SLBE	VSLBE	* Ethnicity	** Gender	*** Alternate

Attach additional page(s) if necessary.

(SBA/LBE -Small Business Administration – Local Business Enterprise) (VSLBE – Very Small Local Business Enterprise)

(LBE - Local Business Enterprise) (SLBE - Small Local Business Enterprise) (VSLBE - Very Small Local Business Enterprise) (LPG/LBE - Locally Produced Goods) Contractors are required to identify the ethnicity and gender of all listed firms majority owner. This information will be used for tracking purposes only.

* Ethnicity - (AA=African American) (AI=Asian Indian) (AP=Asian Pacific) (C=Caucasian) (H=Hispanic) (NA=Native American) (O=Other) (NL=Not Listed)

** Gender - (M = Male) (F = Female)

*** Alternate (if applicable) - Please indicate in alternate box either 1, 2 or 3 and so on for alternate line items.

(Revised as of 12/21/2021) JC

**CITY OF OAKLAND
STANDARD SPECIFICATIONS
FOR
PUBLIC WORKS CONSTRUCTION**

AKA

“SPECIAL PROVISIONS”

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The work to be performed under the contract includes the work described in the Notice to Bidders, all items listed in the Bid Schedule, and work shown on the plans or included in the project specifications. The work shall be performed in accordance with:

1. The “Standard Specifications for the Public Works Construction, 2015 Edition” adopted by City Council Ordinance No. 13455 C.M.S. on October 3, 2017 (aka Greenbook and hereinafter referred to as the “**Standard Specifications**”); and
2. These **Special Provisions** that modify said Standard Specifications; and
3. The “City of Oakland Standard Details for Public Works Construction 2002 Edition” (hereinafter referred to as the “**Standard Details**”); and
4. The latest State of California, Department of Transportation, “Standard Specifications and Standard Plans”, shall apply for certain applicable State Standard drawings that are specified herein.
5. California Codes
6. City of Oakland Municipal Codes

The section numbers used herein (e.g., “1-2 DEFINITIONS”) correspond to the section numbers of the Standard Specifications that are modified by the Special Provisions.

Copies of said Standard Specifications (GREEN BOOK) may be purchased through <http://www.bnibooks.com>. A digital version of the Standard Details is available online at <https://www.oaklandca.gov/resources/standard-details-for-public-works-construction>

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PART 1 - GENERAL PROVISIONS

Part 1 of the Special Provisions shall conform to Part 1 of the Standard Specifications except as modified herein.

SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS

1-2 DEFINITIONS.

CHANGE THE DEFINITIONS OF THE FOLLOWING WORDS OF SUBSECTION 1-2:

Addendum: A change or changes made in one or more of the contract documents after bids are invited and before bids are received.

Agency: The City of Oakland, California, a municipal corporation.

Board: The Council of the City of Oakland.

Contract: The written agreement covering performance of the work including, but not limited to, the executed formal contract, Notice to Bidders, proposal, bonds, plans, specifications, addenda and any executed change orders.

Engineer: The City Engineer of the City of Oakland, acting either directly or through authorized agents, such agents acting within the scope of the particular duties entrusted to them.

ADD THE FOLLOWING NEW DEFINITIONS TO SUBSECTION 1-2:

Acceptance: The Engineer's formal written acceptance of an entire contract that has been completed in all respects in accordance with the plans and specifications and any modifications thereof previously approved.

Architect: Same as "Engineer."

Building Sewer: The 4-inch, 5-inch, 6-inch, or 8-inch sewer pipe, also known as "private sewer lateral", within both the public right-of way and the private property connecting the building or house to, and including, the connection at the public sewer in the right-of-way or easement. Includes both the "house sewer" and the "house connection sewer."

Building Sewer Connection: (House Connection) The connection at the public sewer in the public right-of-way or easement, to the 4-inch, 5-inch, 6-inch, or 8-inch building sewer.

City: Same as "Agency."

City Clerk: The City Clerk of the City of Oakland.

Council: Same as "Board."

City Administrator: City Administrator of the City of Oakland.

City Treasury: City Treasury of the City of Oakland.

Contract Services: The Contract Services Division of the Department of Public Works. This division is responsible for advertising, bidding and executing the contracting process.

Contract Compliance: The Contracts and Compliance Division of the City Administrator's Office.

Contract Compliance Officer: A subordinate of the Contracts and Compliance Division who is responsible for enforcement of the labor, subcontractor, and supplier provisions of the contract.

Electrolier Standard: The shaft or pole used to support the luminaire arm, luminaire, etc.

Inspector: Same as "Engineer."

Hearing Officer: The Engineer or his/her designee. The Hearing Officer shall be at least one administrative level above the Inspector or Resident Engineer assigned to the project.

Laboratory: The official materials testing laboratory of the City of Oakland or other laboratories authorized by the Engineer to provide quality assurance. The records and reports of tests may be examined if they are available at the job site.

Landscape Architect: Same as "Engineer."

Local Public Agency: The City of Oakland.

Lower Lateral: (House Connection Sewer) That portion of the building sewer existing from the building sewer connection to the Two-Way cleanout.

Owner: The City of Oakland.

Payment Bond: Material and Labor Bond.

Performance Bond: Faithful Performance Bond.

Public Body: The City of Oakland.

Specifications: The term used herein refers to both the Standard Specifications and Special Provisions.

Two-way Cleanout: (Also known as House Connection Cleanout or 2-Way Cleanout.) A 4-inch or 6-inch two-way fitting, no hub, cast iron cleanout installed on the building sewer within the public right-of-way.

Upper Lateral: (House Sewer) That portion of the building sewer existing from the Two-Way Cleanout to the building connection.

1-3 ABBREVIATIONS.

ADD THE FOLLOWING NEW ABBREVIATIONS TO SUBSECTION 1-3:

ABAG: Association of Bay Area Governments

ADA: Americans with Disability Act

CAL-OSHA: California Occupational Safety and Health Administration

CALTRANS: California Department of Transportation

EBMUD: East Bay Municipal Utility District

HR: Hour

OMC: Oakland Municipal Code

OPW: Oakland Public Works Department of the City of Oakland

ISA: International Society of Arboriculture

PAV: Pressure Aging Vessel

RTFO: Rolling Thin Film Oven

PG: Performance Graded

SFRWQCB: San Francisco Regional Water Quality Control Board

SECTION 2 - SCOPE AND CONTROL OF WORK

CHANGE SUBSECTION 2-1 TO READ:

2-1 AWARD AND EXECUTION OF THE CONTRACT.

2-1.1 City Ordinance. The bidder shall conform to provisions of Ordinance No. 7937 CMS of the City of Oakland, as amended, that may be applicable to its bid or to the contract awarded it.

2-1.2 Approximate Estimate. Unless otherwise specified in the Special Provisions or bid documents as being lump sum items, any quantities given in the specifications, proposal and contract forms are approximate only, being given as a basis for comparing bids. The City of Oakland, does not, expressly or by implication, agree that the actual work amount will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work or to omit portions of the work, as may be deemed necessary or advisable by the Engineer.

2-1.3 Examination of Plans, Specifications, and Site of Work. The bidder shall examine carefully the contemplated work site and the proposal, plans, specifications and contract forms. It will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished, and as to the requirements of these specifications and the contract. It is mutually agreed that submission of a proposal shall be considered prima facie evidence that the bidder has made such examination.

2-1.4 Proposal Form. All proposals must be made upon forms contained in the proposal section of the bound project documents.

Bids are required for the entire work. The bid amount, for comparison purposes, will be the total of all items. The total of unit basis items will be determined by extension of the item price bid on the basis of the estimated quantity set forth for the item.

The bidder shall set forth for each item of work, in clearly legible figures, an item price and a total price for the item in the respective spaces provided for this purpose. In the case of unit basis items, the amount set forth under the "Total" column shall be the extension of the item price bid on the basis of the estimated quantity.

In case of a discrepancy between the item price and the total set forth for the item, the item price shall prevail. However, if the amount set forth as an item price is ambiguous, unintelligible, or uncertain for any cause, or if omitted, or in the case of unit basis items, is the same amount as the entry on the "Total" column, then the amount set forth in the "Total" column for the items shall prevail in accordance with the following:

- 1) As to lump sum items, the amount set forth in the "Total" column shall be the item price.

2) As to unit basis items, the amount set forth in the "Total" column shall be divided by the estimated quantity for the item and the price thus obtained shall be the item price. All bids shall be clearly and distinctly written. The bidder, who shall fill in all blanks in the proposal forms as therein required, shall sign the proposal.

3) As to add or subtract alternate bids, any discrepancy between the proposal form and changes made by the bidder, the amount shown will be for the alternate as shown on the proposal form.

2-1.5 Bid Security. Each bidder shall submit with the bid security either cash, certified check or cashier's check of or on some responsible United States Bank, in favor of and payable at sight to the City of Oakland, in an amount not less than ten percent (10%) of the base bid amount. The Contractor must use only the City of Oakland bid security form included with the project documents; bid security forms originating from other institutions will not be accepted. Any contractors not complying with this requirement may be determined to be non-responsive/non-responsible bidders.

To be valid, the original copy must be delivered to the City Clerk's Office within 24 hours of the time and date of the bid opening. If the bidder to which the contract is awarded shall, for 20 calendar days after receipt of such contract, fail or neglect to enter into the contract and file the required bonds, the bid security shall be forfeited as liquidated damages. The City Administrator shall draw the money due on such bid security and pay the same or any cash deposited into the City Treasury, and under no circumstances shall it be returned to the defaulting bidder. In lieu of the foregoing, any bid may be accompanied by a surety bond on a forfeiture form supplied by the City of Oakland in said amount furnished by a corporate surety authorized to do a surety business in the State of California, guaranteeing to the City that said bidder will enter into the contract and file the required bonds within said period.

The bidder's failure to enter into the contract after award will result in damages to the City. Such damages are, and will continue to be, impracticable and extremely difficult to determine.

All bid securities and bid bonds will be returned to the unsuccessful bidders after contract award to the successful bidder. The bid security and bid bond of the successful bidder shall be returned after execution of the contract and deposit of the necessary bonds.

If all the bids are rejected, all bids and bid bonds will be returned to the bidders.

2-1.6 Submission and Opening of Bids. All bids shall be sealed, identified as bids on the envelope, and submitted to the City Clerk at the place and time specified in the public Notice to Bidders. The City Administrator or his/her designated representative will open the bids, in public, at the time and place designated in the Notice to Bidders. Bids received after the specified time shall not be accepted, and shall be returned to the bidder unopened.

2-1.7. Rejection of Proposals. Proposals may be rejected if they contain erasures, interlineations, or irregularities of any kind. The Council reserves the right to reject any and all bids. The Council may reject the bid of any party who has been delinquent or unfaithful in any former contract with the City, and shall reject all bids other than the lowest responsible regular bid.

More than one proposal from an individual, firm, partnership, corporation or combination thereof under the same or different name will not be considered.

Reasonable grounds for believing that any individual, firm, partnership, corporation or combination thereof has a financial interest in more than one proposal for the work contemplated may cause the rejection of all proposals in which such individual, firm, partnership, corporation or combination thereof is interested. If there is reason for believing that collusion exists among bidders, any or all proposals may be rejected. Proposals in which the prices obviously are unbalanced may be rejected. If all bids are rejected, the Agency may again invite sealed proposals as in the first instance.

2-1.8 Complaints. Any bidder or other interested party desiring to enter a complaint against any part or provision of these specifications or the requirements in bidding must file the same in writing in the Office of the City Clerk not later than five working days preceding the date set for submission of the bids.

2-1.8.1 Protests. Any bidder or other interested party desiring to protest against any party bid must file a written statement with the Office of the City Clerk not later than five (5) working days after the bid opening date.

2-1.8.2 Release From Bid. A bidder shall not be relieved of the bid unless by consent of the City, nor shall any change be made in the bid because of a mistake. A bidder may be relieved of its bid if: a mistake is made; he or she gave the Contracts and Compliance Unit and the City Clerk notice within five working days after the bid opening of the mistake, specifying in the notice in detail how the mistake occurred; the mistake made the bid materially different than he or she intended it to be; and, the mistake was made in filling out the bid and not due to error in judgment or to carelessness in inspecting the work site, or in reading the plans and specifications.

2-1.9 Award of Contract. The contract award, if made, will be by the Council and will be to the lowest responsible bidder whose proposal complies with all the requirements of the Specifications and Ordinance No. 7937 CMS as amended. If the contract award is made within 90 days from opening of the bids, the Contractor will be required to hold the bid price. If the contract award is made more than 90 days, the contractor has the option to notify the City in writing to withdraw their bid within 5 working days from the contract award date. Otherwise, the contractor must hold the bid price. All bids will be compared on the basis of the Engineer's estimate of quantities of work to be done and/or lump sum bid items. The Council reserves the right to waive any informality or minor irregularity in the bids.

2-1.10 Contract Execution. The contract shall be signed by the successful bidder and returned together with the contract bonds, appropriate insurance documents and a copy of Form DE6 (Quarterly Wage Report) for the prime and subcontractors listed in the bid proposal, within **20** days after the receipt of such contract. 20 days is typical, revise as appropriate for urgent projects. If the bidder fails or refuses to enter into the contract to do the work, or fails to provide the contract bonds, appropriate insurance documents and the prime and subcontractor's Form DE6 (Quarterly Wage Report) as required, then the certified check or bid bond accompanying this bid and the amount herein mentioned shall be forfeited, and/or a fine of \$1,000 per day, shall be collected by the City of Oakland and paid into the City Treasury.

2-1.11 Return of Guaranty of the Successful Bidder. The check, or bid bond accompanying the accepted bid will be held by the City Clerk until the contract has been entered into, and the bonds accompanying the same are approved and filed, whereupon the certified check or bid bond will be returned to the successful bidder.

2-3 SUBCONTRACTS.

2-3.2 Self Performance.

REPLACE SUB-SECTION 2.3.2 WITH THE FOLLOWING:

The Contractor shall perform, with its own organization, Contract work amounting to at least 30 percent of the Contract Price except that any designated "Specialty Items" may be performed by subcontract and the amount of any such "Specialty Items" so performed will be deducted from the Contract Price before computing the amount required to be performed by the Contractor with its own organization. "Specialty Items" will be identified by the Agency in the Bid or in the Special Provisions. Where an entire item is subcontracted, the value of work subcontracted will be based on the Contract Unit Price. When a portion of an item is subcontracted, the value of work subcontracted will be based on the estimated percentage of the Contract Unit Price. This will be determined from information submitted by the Contractor, and subject to approval by the Engineer.

ADD NEW SUBSECTION 2-3.4:

2-3.4 Miscellaneous. The Contractor may utilize the service of specialty Subcontractors on those parts of the work that, under normal contracting practices, is performed by specialty Subcontractors.

The Contractor shall not award any work to any Subcontractor without prior written approval of the City. Approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the Subcontractor, which statement shall contain such information as the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of persons directly employed by him.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the Contractor by the terms of the General Provisions and other contract documents insofar as applicable to the work of Subcontractors and to give the Contractor the same power as regards terminating any subcontract that the City may exercise over the Contractor under any provisions of the contract documents.

Nothing contained in this contract shall create any contractual relation between any Subcontractor and the City.

2-4 CONTRACT BONDS.

REPLACE THE SECOND AND THIRD SENTENCES OF THE FIRST PARAGRAPH WITH THE FOLLOWING:
All surety bonds, including bid, performance and payment bonds, must be furnished by a corporate surety admitted in the State of California or Lloyds of London, except as follows:

- If the contract award is \$5,000,000 or less, the surety bond may be furnished by a United States non-admitted corporate surety which appears on the Treasury List subject to the bonding limits which the Treasury List imposes on such surety; or,
- If the contract award is \$1,000,000 or less, the surety bond may be furnished by a United States non-admitted corporate surety which has an A.M. Best rating of A+; or,
- If the contract award is \$500,000 or less, the surety bond may be furnished by a United States non-admitted corporate surety that has an A.M. Best rating of A-.

ADD THE FOLLOWING AFTER THE SECOND SENTENCE OF THE THIRD PARAGRAPH:

The percentage of the Payment Bond shall be as listed in the Notice to Bidders. The Payment Bond shall guarantee payment of all claims for labor and material unfurnished, for amounts due under the Unemployment Insurance Act with respect to such work or labor, or any amounts required to be deducted, withheld and paid over to the Franchise Tax Board from the wages of employees pursuant to Section 18806 of Revenue and Taxation Code with respect to such work and labor as required by the California Civil Code Section 3247, et. seq.

REPLACE THE FOURTH PARAGRAPH WITH THE FOLLOWING:

The percentage of the Performance Bond shall be as listed in the Notice to Bidders. The Performance Bond shall guarantee faithful performance of all work, within the time prescribed, in a manner satisfactory to the Agency, and that all materials and workmanship will be free from original or developed defects. The Performance Bond must remain in effect until the end of all warranty periods set forth in the Contract.

2-5 PLANS AND SPECIFICATIONS.

2-5.1 General.

ADD THE FOLLOWING TO THE END OF SUBSECTION 2-5.1:

All work shall be performed in compliance with all applicable (most recent editions) federal, state and local codes, code amendments, and ordinances such as, but not limited to, the following:

- California Manual of Uniform Traffic Control Devices (MUTCD);
- California Building Code 2022
- California Plumbing Code 2022
- California Mechanical Code 2022
- California Fire Code 2022
- California Electrical Code 2022
- "Work Area Traffic Control Handbook."

Unless otherwise noted in the contract documents, the Uniform Building Code shall apply to the construction, alteration or repair of all City facilities including bridges, pedestrian walkways, and pumping stations.

2-5.3 Submittals.

2-5.3.1 General.

ADD NEW PARAGRAPHS AT END OF SUBSECTION 2-5.3.1.1 TO READ:

2-5.3.1.1 Electronic Submittals. The Contractor shall provide submittals in electronic format when possible and as directed by the City. The Contractor shall establish electronic submittal transfer application or sharable portals as necessary to transmit electronic submittal files too large to be submitted via email.

ADD NEW PARAGRAPHS AT END OF SUBSECTION 2-5.3.3 TO READ:

Attachment 1, the project submittal list, at the end of the Special Provisions details project submittal requirements. This list is intended to be comprehensive, but no claim for completeness is implied, and submittal of each and every item on the lists shall not relieve the Contractor of supplying all information needed, or of complying with any of the other requirements of the specifications. Revised lists may be issued and items may be added to the list supplied.

The Contractor shall use **Attachment 2**, the submittal transmittal form at the end of the Special Provisions, to certify that the proposed submittal meets the requirements of the project Special Provisions and the Standard Specifications. This form indicates what party (i.e. Contractor = CONTR; Subcontractor = SUB) shall sign the transmittal form.

The Contractor is responsible for providing all required submittals. The City may request additional itemized lists of materials, equipment and fixtures furnished and installed by the Contractor. These requests for itemized lists shall be made in writing specifying the items and details required. The Contractor shall provide these itemized lists within ten working days of the receipt of the written request. The Contractor's failure to provide said lists will delay payment to the Contractor until such lists are received. In the event that material, equipment and fixture lists are requested and not timely received at the conclusion of field construction, the Engineer may withhold the retention payment until requested lists are received and approved by the Engineer.

The Contractor shall provide submittals showing the locking or theft-deterrent mechanisms to be installed on all City streetscape furniture such as trash receptacles, benches, tree grates, bollards, newspaper racks, etc. Such mechanisms shall be as recommended by the product manufacturer. Such theft-deterrent devices shall not pose a tripping hazard to pedestrians. The Contractor shall not order these items until the Engineer has approved the locking procedure detailed in the submittal.

ADD NEW SUBSECTION 2-5.3.7 TO READ:

2-5.3.7 Submittal Schedule. The Contractor shall, within fifteen (15) calendar days after receipt from the City of the Notice to Proceed on this Contract, or another period of time as determined by the City, prepare and submit to the City, for Review and Concurrence, a comprehensive submittal schedule. This schedule shall identify all submittal items required by the Contract, or as otherwise requested by the City.

The submittal schedule shall include the date by which the item will be submitted to the City, whether the submittal is for approval or for record, the date by which approval is required, and the date by which the material or equipment must be on site in order not to delay the progress of the Work.

In preparing the submittal schedule, the Contractor shall consider the nature and complexity of each submittal item and shall allow adequate time for review, revision or correction, resubmittal, and approval sufficiently in advance of the construction requirements in order not to delay the progress of the Work. The submittal schedule shall allow adequate time for review of each submittal item prior to submittal to the City.

Review and Concurrence of the submittal schedule is a precondition to the City making the first progress payment under the payment provisions of this contract.

2-6 WORK TO BE DONE.

ADD NEW PARAGRAPH TO THE END OF SUBSECTION 2-6 TO READ:

Any work done beyond lines and grades established by the Engineer pursuant to the plans or any extra work done without written authority of the Engineer, shall be considered as unauthorized work and no compensation will be allowed therefor. The Engineer shall have the authority to have such work removed and the area restored, and to deduct the cost thereof from money due the Contractor.

REPLACE SUBSECTION 2-8 WITH THE FOLLOWING:

2-8 RIGHT-OF-WAY. The Contractor shall perform work within the public right-of-way or easements shown on the plans. The right to enter onto private property outside the public right-of-way or easement shall be obtained in writing from the property owner by the Contractor at the Contractor's expense. Mobilization and staging areas outside the City right-of-way shall be obtained at the Contractor's expense.

The Contractor shall be solely responsible for damages to persons or property occurring during or as a result of the Contractor's entry onto private property outside the right-of-way or easement area.

The Contractor shall defend and hold the City harmless from any and all claims, causes of action, demands or judgments resulting from the Contractor's entry onto private property outside the right-of-way or easement area.

2-9 SURVEYING.

DELETE SUBSECTION 2-9 AND REFER TO DIVISION 1 OF THE SPECIFICATIONS FOR SURVEYING REQUIREMENTS.

2-10 AUTHORITY OF BOARD AND ENGINEER.

ADD THE FOLLOWING THREE PARAGRAPHS TO SUBSECTION 2-10:

No member of or Delegate of Congress, or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise there from, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

No official of the City who is authorized in such capacity and on behalf of the City to negotiate, make, accept or approve, or to take part in negotiating, making, accepting or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part hereof. No officer, employee, architect, attorney, engineer or inspector of or for the City who is authorized in such capacity and on behalf of the City to exercise any legislative, executive, supervisory, or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract or any other contract pertaining to the project.

Prior federal approval may be required on changes in the work and final acceptance.

ADD NEW SUBSECTION 2-13 TO READ:

2-13 RE-INSPECTION AT THE END OF THE WARRANTY PERIOD. The Contractor shall include in the bid the cost for re-inspection of completed work just prior to the expiration period of the warranty. The Contractor and Engineer shall meet together on the project site to re-inspect all of the work just prior to the expiration of the warranty period. If any warranty items are discovered then corrective work shall be completed within 60 calendar days.

ADD NEW SUBSECTION 2-14 TO READ:

2-14 GPS COORDINATES AND VERTICAL DATUM. GPS coordinates shall be based on one of these two systems:

1. NAD_1983_StatePlane_California_III_FIPS_0403_Feet [NAD83]
or in
2. WGS 84

The vertical datum shall be NAVD88.

SECTION 3 - CHANGES IN WORK

3-1 CHANGES REQUESTED BY THE CONTRACTOR.

REPLACE SUBSECTION 3-1.1 WITH THE FOLLOWING:

3-1.1 General. The General Contractor shall submit to the Engineer, in writing, requests for changes in products, materials, equipment, and construction methods required by the contract documents. These requests for changes will be received and considered by the Engineer when the Contractor has demonstrated and/or indicated in writing that:

- the request does not require extensive revision to the contract documents;
- that the proposed changes are in keeping with the general intent of the contract documents; and
- the request is timely, fully documented and properly submitted.

In addition, the requests for changes will only be considered if they do not impair, in any manner, essential project functions or characteristics, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, or design and safety standards. These requests for changes shall be submitted only during the substitution period stipulated in the contract documents, or within 15 calendar days of the Notice to Proceed date if no substitution period is stipulated. All requests received more than 15 calendar days after the Notice to Proceed date or after the stipulated substitution period will be rejected.

It is not the intent of these Specifications to exclude the use of any meritorious product of equal value, however the burden of proof of equality lies with the Contractor. Proposed substitutions that increase the cost of Work or Contract Time will not be accepted.

Substitution requests shall meet the following requirements:

- a) The Contractor shall present each substitution request individually. If the proposed substitute is found to be not acceptable, then the specified item shall be supplied.
- b) For any substitution request to be considered, it must be submitted in six copies, the first page of each shall be a completed **Attachment 3, "MATERIAL OR PRODUCT OR METHOD SUBSTITUTION REQUEST"**. Attachment 3 (located in the Attachments section at the end of the Special Provisions) must be filled out within its entirety. The Contractor's failure to do so will result in immediate return of the request to the Contractor without the City's review.

- c) If the City deems the proposed substitute to be acceptable, authorization for its inclusion in the Work will be issued as a Change Order with appropriate action.
- d) The Contractor's failure to order materials and/or equipment in a timely manner will not constitute justification for substitution.
- e) A substitution request constitutes a representation that the Contractor:
 - (1) has investigated the proposed product/method of rehabilitation and determined that it meets or exceeds the quality level of the specified item;
 - (2) will provide the same warranty for the substitution as for the specified item;
 - (3) will coordinate installation and make changes to other work which may be required for the work to be completed with no additional cost to the City;
 - (4) waives claims for additional cost or time extension which may subsequently become apparent;
 - (5) waives claims and assume responsibilities at no cost to the City to resolve any conflict as a result of the substitution; and
 - (6) will reimburse the City for review or redesign services associated with re-evaluation process.
- f) Substitutions will not be considered without separate written request when they are indicated or implied on shop drawing or product data submittals. Substitutions will also not be considered when acceptance will require untimely revisions to the Contract Documents.
- g) No substitutions shall be incorporated in the project without the Engineer's written approval. The Engineer will render his/her written decision not later than 35 calendar days after receipt of any proposed substitutions.
- h) The City may require the Contractor to furnish a written warranty, with adequate safeguards to the City, assuring satisfactory performance of a proposed substitute item or system for a stated minimum period of time, usually one year.
- i) The Contractor's failure to submit a proposed substitution for approval in the manner described above, and within ample time before scheduled installation, shall be deemed sufficient cause for the Engineer's disapproval of any substitution otherwise proposed.
- j) Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

Changes in the Plans and Specifications, requested in writing by the Contractor, which do not materially affect the Work and which are not detrimental to the Work or to the interests of the City, may be granted by the Engineer to facilitate the Work, when approved in writing by the Engineer.

3-2 CHANGES INITIATED BY THE AGENCY.

REVISE SUBSECTION 3-2.1 TO READ:

3-2.1 General. The Agency may change the plans, specifications, character of the work, or work quantity, provided the total arithmetic dollar value of all such changes, does not exceed 25 percent of the contract price.

The Agency delegates to the City Administrator or his/her designee the authority to approve such changes. Should it become necessary to exceed this limitation, the change shall be by written change order between the Contractor and the agency, and shall be approved by the City Council.

A contract change order, approved by the Engineer, may be issued to the Contractor at any time prior to contract completion. Upon receipt of the approved contract change order, the Contractor shall proceed with the ordered work. If ordered in writing by the Engineer, the Contractor shall proceed with the work so ordered prior to actual receipt of an approved contract change order therefore. In such cases, the Engineer will, as soon as practical, issue an approved contract change order for such work. The provisions in 3-5 "Disputed Work" shall be fully applicable to such subsequently issued contract change order.

A contract change order, approved by the Engineer and executed by the Contractor, is an executed contract change order.

3-2.4 Agreed Prices.

ADD THE FOLLOWING TO THE END OF SUBSECTION 3-2.4:

Proposals for extra work submitted by the Contractor for increases or decreases to the contract price shall include a detailed cost estimate in the format and for the items described in Section 3-3.

3-3 EXTRA WORK.

3-3.2 Payment.

3-3.2.2 Basis for Establishing Costs.

REPLACE THE FIRST PARAGRAPH WITH THE FOLLOWING:

3-3.2.2.1 Labor. The Contractor will be paid the cost of labor for workers used in the actual and direct performance of the work. The labor cost will be the sum of the following:

- 1) **Actual Wages.** The actual wages paid shall include, but not limited to, base wages plus any employer payments to or on behalf of the workers for health and safety, pension, welfare, vacation, holiday, sick leave, union training and similar purposes.
- 2) **Labor Surcharge.** To the actual wages paid as defined in 1) above, will be added a labor surcharge set forth in the CALTRAN's publication entitled "Labor Surcharge and Equipment Rental Rates", which is in effect on the date upon which the work is performed. This document is available on the web at http://www.dot.ca.gov/hq/construc/eqrr/Book_2015.pdf. The labor surcharge shall constitute full compensation for payments imposed by State and Federal laws for Workers' Compensation, Social Security, Medicare, Federal Unemployment, State Unemployment, and State Training taxes.

CHANGE THE LAST PARAGRAPH OF SUBSECTION 3-3.2.2.1 TO READ:

Indirect labor costs including, but not limited to, superintendence, office personnel, timekeepers, and maintenance mechanics shall be considered part of the markup of 3-3.2.3.1. All labor classifications used in the performance of extra work shall be subject to the Engineer's approval.

3-3.2.2.3 Tool and Equipment Rental.

REPLACE THE SECOND PARAGRAPH OF SUBSECTION 3-3.2.2.3 WITH THE FOLLOWING THREE PARAGRAPHS:

The Contractor will be paid for the use of contractor-owned equipment at the current rental rates in effect on the work date as listed for such equipment in the State of California, Department of Transportation publication entitled, "Equipment Rental Rate and General Prevailing Wage Rates." The Engineer will establish a suitable rental rate if equipment other than that listed in the above publication is used for the work performance.

Equipment rented and not owned by the Contractor will be paid for at the actual rental rates from rental invoices provided by the Contractor. The rental time to be paid for equipment on extra work shall be the time the equipment is in operation on the extra work being performed and twice the time required to move the equipment to the location of the extra work. However, moving time will not be paid for if the equipment is used at the site of the extra work on other than such extra work. The rental time paid per day will be in accordance with the following:

<u>Hours Equipment is in Operation</u>	<u>Hours to be Paid</u>
0-2	2
2-4	4
4-6	6
6-8	8

Equipment at the work site idled due to unforeseen events not caused by the Contractor may be compensated for, as approved, by the Engineer. Compensation will be computed using the delay factor, overtime factor and rental rates listed for equipment in the most recently published State of California Department of Transportation publication entitled "Equipment Rental Rate and General Prevailing Wages."

CHANGE SUBSECTION 3-3.2.3 TO READ:

3-3.2.3 Markup.

3-3.2.3.1 Work by the Contractor. The following percentages shall be added to the Contractor's direct costs and shall constitute the full markup for all overhead and profits. Direct labor cost is defined as actual wages plus labor surcharge.

Direct Labor Cost	33%
Materials	15%
Equipment Rental	15%
Other Items and Expenditures	15%

This markup shall fully compensate the Contractor for all personnel not included in Section 3-3.2.2(a) hereinabove, indirect labor costs, bond and insurance premium, temporary construction facilities, field engineering, schedule updating, As-Built drawings, home office cost, estimating cost, and any other indirect cost incidental to the performance of the change in Work.

3-3.2.3.2 Work by a Subcontractor. When all or any part of the extra work is actually performed by a first tier Subcontractor, the markup established in 3-3.2.3.1 shall be applied to the first tier Subcontractor's actual cost of such work calculated under Section 3-3.2.2.1 hereinabove. The Contractor may add a markup of fifteen

percent (15%) on the first \$5,000 of the total subcontracted portion of the extra work and a markup of seven and one-half percent (7-1/2%) on work added in excess of \$5,000 of the subcontracted portion of the extra work.

When the extra work is actually performed by a second or lower tier subcontractor, the total markup of the Contractor and the upper tier subcontractors shall not exceed eighteen percent (18%) on the first \$5,000 of the total subcontracted portion of the extra work, and ten percent (10%) on work added in excess of \$5,000 of the subcontracted portion of the extra work.

Markups on work performed by Subcontractors shall be considered full payment for estimating, handling, office processing and field superintendence of extra work.

3-5 DISPUTED WORK.

ADD THE FOLLOWING TWO PARAGRAPHS TO THE END OF SUBSECTION 3-5.

Should the Contractor disagree with any terms or conditions set forth in an approved contract change order that it has not executed, it shall submit a written protest to the Engineer within two weeks after the receipt of such approved contract change order, and proceed with the work. If a written protest is not submitted, payment will be made as set forth in the approved contract change order and such payment shall constitute full compensation for all work included therein or required thereby. Such unprotested approved contract change orders will be considered as executed contractor change orders.

The procedures in Section 3-5 through Section 3-8 are established for disputes and claims related to the construction aspect of the work. For other disputes and claims, such as compliance with the City's Small Local Business Enterprise Program, the Local Employment Program, prevailing wages, stop notices, etc., these procedures are not applicable.

ADD NEW SUBSECTION 3-6:

3-6 PROCEDURE FOR PROTEST BY THE CONTRACTOR. If in disagreement with some aspect of the Work, the Contractor shall:

1. File a written Notice of Potential Claim with the Resident Engineer within five calendar days after the event creating the disagreement.
2. Supplement the written protest, within ten calendar days of its filing, with a written statement that:
 - a. Cites contract provisions that support the protest,
 - b. Estimates the dollar cost, if any, of the protested work, and
 - c. Estimates the amount of added time incurred, if any, and
3. Provide the Resident Engineer with a written statement of actual adjustment requested with supporting documentation as soon as possible.

Throughout any protested work, the Contractor shall keep records of costs and time incurred. The Contractor shall furnish copies and permit the Resident Engineer access to these and any other records needed in order to evaluate the protest.

The Resident Engineer will evaluate all protests and potential claims and provide a written answer to the Contractor within ten (10) calendar days of receipt of the supporting information described in (2) and (3) above. If a protest is valid, the Engineer will adjust contract time or payment by an equitable amount. No adjustment will be made for an invalid protest.

If the Contractor does not agree with the ruling of the project Resident Engineer, the Contractor may pursue the protest further by filing a formal claim as outlined in Section 3-7.

By failing to follow the procedures of this subsection, the Contractor waives any claims for protested, claimed or disputed work.

ADD NEW SUBSECTION 3-7:

3-7 CLAIMS PROCEDURES. For claims of \$375,000 or less, the Contractor shall use the accelerated claims procedures outlined in Subsections 3-7 and 3-8 of these Special Provisions.

If the Contractor claims that additional payment or time is due and the Contractor has pursued and exhausted all the means provided in Sections 3-6 and 6-6 to resolve a dispute (protest or potential claim), the Contractor may file a claim as provided in this subsection.

A Claims Resolution Hearing will be held within thirty (30) calendar days of a properly filed claim. The claim shall be addressed to the Supervising Civil Engineer or Construction Supervisor who will act as Hearing Officer. The Hearing Officer will render a written decision within ten calendar days of the close of the Claims Resolution Hearing.

If the written notifications provided in Sections 3-6 and 6-6 were not provided or if the Engineer is not

afforded reasonable access to the Contractor's records of actual cost and additional time incurred, or if a claim is not filed as provided in this subsection, then the Contractor agrees to waive any claim for additional payment or time. The fact that the Contractor has provided proper notification, provided a properly filed claim, or provided the Resident Engineer access to records of actual cost, shall not be construed as proving or substantiating the claim's validity.

If the Hearing Officer determines that the claim has merit, the Resident Engineer will make an equitable adjustment either in the amount of costs to be paid or in the time required for the work, or both. If the Hearing Officer determines that the claim does not have merit, no adjustment will be made.

All claims filed by the Contractor shall be in writing and in sufficient detail to enable the Hearing Officer to ascertain the basis and amount of the claim. The City may request, in writing, any copies of any additional documentation supporting the claim or relating to defense to the claim the City may have against the contractor. At a minimum, the following information must accompany each claim submitted.

1. A statement indicating that the Contractor is filing the claim under Section 3-7 of the Special Provisions.
2. A detailed, factual statement of the claim for additional compensation and/or time, providing all necessary dates, locations, and items of work affected by the claim.
3. The name of each individual, official, or employee involved in or knowledgeable about the claim.
4. The specific provisions of the Contract that support the claim and a statement of the reasons such provisions support the claim.
5. Any documents and the written communications that support the claim, including but not limited to, daily reports, cancelled checks, original bid estimates and worksheets, payroll records, contracts with subcontractors, correspondences between contractor and subcontractors, etc.
6. If a time extension is sought:
 - a. The specific days and dates for which it is sought;
 - b. The specific reasons the Contractor believes a time extension should be granted;
 - c. An As-Built critical path schedule that identifies all events causing delays to the project's critical path.
7. If additional compensation is sought, the exact amount sought and a breakdown of that amount into the following categories (refer to Section 3-3):
 - a. Direct labor,
 - b. Direct materials.
 - c. Direct equipment. The rates claimed for each piece of equipment shall not exceed actual costs. In the absence of actual equipment costs, the equipment rates, when in use, shall not exceed the rates established by the current CALTRANS Equipment Rental Rate Manual. For each piece of equipment for which the claim is made the equipment cost shall be broken down to identify the following:
 - (1) Detailed description (e.g., Motor Grader Diesel Powered Caterpillar 12"G", etc.)
 - (2) The hours of use or standby
 - (3) The specific day and dates of use or standby.
 - d. Job site overhead.
 - e. Unabsorbed Home Office Overhead (general and administrative).
 - f. Subcontractor's claims (same level of detail as specified herein for contractor's claims).
8. The Contractor's claim certificate (Attachment 4 at the end of these Special Provisions) shall be submitted to the Agency. Failure to submit the notarized certificate will be sufficient cause for denying the claim.

ADD NEW SUBSECTION 3-8:

3-8 CLAIM APPEALS. If the claim is denied, the Contractor may appeal to the Division Manager. The Contractor shall make such appeal in writing within ten calendar days of receiving the Hearing Officer's written notice denying the claim. The Division Manager will hold a hearing within fifteen calendar days of the appeal filing to determine the merits of the claim. The Division Manager shall render a written decision within ten calendar days of the close of the Appeals Hearing. If the Division Manager concurs with the Claims Hearing Officer, no adjustment will be made.

SECTION 4 - CONTROL OF MATERIALS

4-1 MATERIALS AND WORKMANSHIP.

4-1.1 General.

REPLACE THE SECOND SENTENCE OF THE SECOND PARAGRAPH WITH THE FOLLOWING:

Materials and workmanship not conforming to the requirements of the bid construction documents shall be considered defective and will be subject to rejection.

ADD NEW SUBSECTION 4-1.1.1 TO READ:

4-1.1.1 Material Furnished by the Agency. Certain material to be installed by the Contractor may be furnished by the Agency at no cost to the Contractor. Any material to be furnished by the Agency will be listed in the plans and/or specifications. All other material to complete the contract shall be furnished by the Contractor. The Contractor shall be responsible for all materials furnished until the work the City accepts the Contractor work. The Contractor shall replace any City-furnished materials lost or damaged from any cause whatsoever at the Contractor's expense. The Contractor shall be liable to the City for the cost of replacing City-furnished material, and such cost may be deducted from any monies due or to become due the Contractor. The City will furnish manhole frames and covers; lamphole frames and covers; and cleanout frames and covers (except for house connection or two-way cleanouts).

The Contractor shall make arrangements with the Engineer at least seven calendar days in advance of picking up Agency-furnished material.

Payment for all labor, equipment, tools, and incidentals, for picking up, transporting, and installing Agency-furnished material shall be included in the price bid for related items of work.

ADD NEW SUBSECTION 4-1.1.2 TO READ:

4-1.1.2 Required Recycled-Content Material Report. It is the City's policy that contractors and suppliers use recycled-content materials to the greatest extent feasible (unless specified otherwise). At the end of all projects \$50,000 and greater, the Contractor shall submit a Recycled Materials Report. In this report the Contractor shall detail those products made with recycled materials that were used on the project by type of material, quantity, and cost.

ADD NEW SUBSECTION 4-1.1.3 TO READ:

4-1.1.3 Required Construction and Demolition Waste Reduction and Recycling. This contract is subject to Oakland's Construction and Demolition Debris Waste Reduction and Recycling Ordinance (C&D Ordinance), OMC 15.34. The ordinance requires salvage or recycling of 100% of asphalt and concrete products and 65% of all other construction and or demolition debris, and submittal of plans and reports that document compliance with this requirement. Additional details are available at <http://www2.oaklandnet.com/Government/o/PWA/o/FE/s/GAR/OAK024770>.

For projects of \$50,000 or greater, the Contractor must submit a Waste Reduction and Recycling Plan (WRRP) prior to the start of construction or issuance of applicable building permits. This plan shall state how construction and demolition debris generated by type and quantity from the project will be diverted from landfills to meet the standards noted above. The Contractor may submit the WRRP online at www.greenhalosystems.com, using an access code provided by the City, or on paper, subject to additional processing fees. The WRRP is available for download at <http://www2.oaklandnet.com/oakca1/groups/pwa/documents/agenda/oak026388.pdf>.

At the end of all construction, for projects of \$50,000 or greater, the Contractor shall submit a completed Construction & Demolition Summary Report (CDSR) in the same format selected for the WRRP, online or paper. The CDSR form is available online at <http://www2.oaklandnet.com/oakca1/groups/pwa/documents/agenda/oak026389.pdf>. The Contractor shall document in the CDSR all salvage, recycling and disposal activities associated with the project. Contractors who choose not to use www.greenhalosystems.com for submittals, will be subject to fees listed in the City's Master Fee Schedule.

4-1.3 Inspection Requirements.

ADD NEW SUBSECTION 4-1.3.4 TO READ:

4-1.3.4 Reinspection and Retesting. In the event work or materials are rejected and reinspection and/or retesting is necessary, or in the event portions of the work scheduled by the Contractor for inspection or testing are not ready at the time designated by the Contractor, then the Contractor shall be subject to the costs incurred by the Agency for such reinspection, retesting, or delays.

Said costs shall include, but not limited to, direct labor costs (including fringe benefits, labor overhead charges as established by current agency finance procedures), equipment, and related overhead costs.

It shall be the Contractor's responsibility to notify the Engineer when work is ready for inspection and/or testing.

REPLACE SUBSECTION 4-1.5 TO READ.

4-1.5 Certificate of Compliance. A Certificate of Compliance shall be furnished prior to the use of any materials for which these specifications or the special provisions require that a certificate be furnished. In addition, when so authorized in these specifications or in the special provisions, the Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance. The certificate shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state that the materials involved comply in all respects with the requirements of the specifications. A Certificate of Compliance shall be furnished with each lot of material delivered to the work and the lot so certified shall be clearly identified in the certificate.

Materials test data may be required by the Engineer to be included with the submittal of the Certificate of Compliance.

Materials used on the basis of a Certificate of Compliance may be sampled and tested at any time. The fact that material is used on the basis of a Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating material in the work which conforms to the requirements of the plans and specifications, and any material not conforming to the requirements will be subject to rejection whether in place or not.

The City reserves the right to refuse to permit the use of material on the basis of a Certificate of Compliance.

The form of the Certificate of Compliance and its disposition shall be as directed by the Engineer.

4-1.6 Trade Names or Equals.

ADD THE FOLLOWING TO THE END OF SUBSECTION 4-1.6:

If the Contractor is authorized to substitute an equivalent item or material, it shall be with the understanding that there will be no increase in contract price due to the substitution. If a substitution is approved by the Engineer and is subsequently found not to be equal to the specified item or material, the Contractor shall remove and dispose of the substitute at the Contractor's expense. The Contractor shall then furnish and install the specified item or material at no additional cost to the owner.

SECTION 5 - UTILITIES

5-1 LOCATION.

REPLACE THE THIRD PARAGRAPH OF SUBSECTION 5-1 WITH THE FOLLOWING PARAGRAPHS:

As provided in Section 4216 of the California Government Code, at least two working days prior to commencing any excavation, if the excavation will be conducted in an area that is known, or reasonably should be known, to contain subsurface installations, the Contractor shall contact Underground Service Alert (USA) of Northern California and obtain an inquiry identification number. Notification numbers must be updated two working days before the twenty-eight day period expires, or as required by State law.

White Markings in Paved Areas: The Contractor shall avoid excessive or oversized marking, especially if marking outside the excavation area. Limit length, height, and interval of marks per USA guidelines. Letters and numbers shall not exceed 3" to 6" in height. On concrete surfaces the Contractor shall use spray chalk paints, water-based paints or equivalent less permanent type marking.

White Markings in Non-Paved Areas: When paint is not used, use appropriate colored stakes, lath, pennants or chalk lines. Select marker types that are most compatible to the purpose and marking surface. Adhere to paved area marking suggestions to the extent practical.

Each utility that is not a member of the Regional Notification Center (RNC) must be notified individually. The City of Oakland Electrical Division (street lights, traffic signals, call boxes) is not a member of a RNC. The

City of Oakland is not required to mark gravity-fed lines such as storm and sanitary sewers.

CHANGE THE FIFTH PARAGRAPH OF SUBSECTION 5-1 TO READ:

The Contractor shall be responsible for locating all the service laterals including, but not limited to, private building sewer, storm drainage, water, electrical, telephone and cable, prior to excavation in areas where service laterals could reasonably be expected to exist. Any service laterals damaged by the Contractor shall be promptly repaired with the approval of the Engineer, at no cost to the City. If no pay item is provided in the Contract for this work, full compensation for such work shall be considered as included in the prices bid for other items of work.

5-2 PROTECTION.

REPLACE THE FIRST SENTENCE OF THE SECOND PARAGRAPH WITH THE FOLLOWING:

Where protection is required to ensure support of utilities located substantially (i.e. within 3 feet) as shown on the Plans or in accordance with 5-1, the Contractor shall, unless otherwise provided, furnish and place the necessary protection at the Contractor's expense.

ADD THE FOLLOWING TO THE END OF SUBSECTION 5-2:

The Contractor shall provide temporary and permanent supports under all existing concrete, asbestos concrete, clay, telephone, and power conduits. Cost for such supports shall be absorbed in the Contractor's bid item for the pipeline construction.

The Contractor shall not tunnel under conduits unless approved by the Engineer. All voids within the tunnel limits shall be filled with one-sack cement/sand slurry.

5-5 DELAYS.

ADD THE FOLLOWING TO THE END OF SUBSECTION 5-5.

No payment will be made for the first two hours of each occurrence of delay related to identification and removal of an abandoned or unmarked utility.

5-6 COOPERATION.

ADD NEW SUBSECTION 5-6.1 TO READ:

5-6.1 Utility Work. The Contractor shall be advised that the relocation of overhead and underground utilities may be underway by other forces within or adjacent to the limits of Work. The Contractor shall cooperate and coordinate with all such other forces to avoid delays or hindrances to their work.

ADD NEW SUBSECTION 5-7 TO READ:

5-7 UTILITY EXCAVATION BACKFILL. The Contractor will not be entitled to damages, additional payment, or a time extension for impacts or delays attributable to utility excavation backfill material type or density if such utility is substantially located (i.e. within 3 feet) according to Subsection 5-1.

ADD NEW SUBSECTION 5-8 TO READ:

5-8 SPECIAL POTHOLE INVESTIGATION

Contractor shall pothole unknown and field discovered underground utilities that are not shown on plans or without USA markings with the approval of the Engineer. Where directed by the Resident Engineer to pothole to verify the depths of the underground utility crossings, the Contractor shall excavate and expose said underground utility crossings per plan's general notes 3 and 4 and provide the depth, clearance, separation information, and photos with sectional profiles as necessary to show utility crossing conflicts to the Resident Engineer for review before continuing the rehab work.

The bid item shall be paid at the unit bid price for each location and it shall include full compensation for all labor, materials, equipment, signage, traffic control, excavation, trench shoring, protecting and supporting of utilities, providing and compacting backfill, disposal of excavated materials and all debris, providing temporary and permanent resurfacing, coordinating with utilities companies, and incidentals to complete work. In accordance with 3-2.2.1, no change in unit bid price for this bid item shall be allowed for any increase or decrease in the quantity of work thereof.

SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK.

6-1.1 Construction Schedule.

ADD THE FOLLOWING SENTENCE TO THE END OF THE FIRST PARAGRAPH:

A schedule utilizing the critical path method is required on all projects with a bid price of \$250,000 or greater.

ADD THE FOLLOWING AFTER THE FIRST PARAGRAPH:

On a monthly basis, along with the monthly payment request, the Contractor shall revise the schedule, indicating actual progress, and resubmit to the City for review and concurrence. If in the opinion of the City, the Contractor falls behind the accepted schedule, the Contractor shall take the necessary steps to improve progress and adhere to the original schedule.

6-1.2 Commencement of the Work

ADD THE FOLLOWING AT THE END OF SUBSECTION 6-1.2:

The contract time specified is the City's best estimate of the required time to complete the Work. If the Contractor elects to submit an early completion schedule for the Project, the Contractor does so at its own risk. Such a submission does not change the contract time specified in the contract documents and the contractor must show the remaining time as "float time" on the schedule. Moreover, the City shall not be responsible for, nor be held liable for, any damages allegedly caused by the Contractor's failure to complete the Project within the proposed early completion schedule.

The Contractor's failure to comply with the requirements of Subsection 6-1 shall be grounds for the City to determine that the Contractor is not prosecuting the Work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the City may withhold approval of progress payments until the Contractor complies with the requirements of Subsection 6-1.

The Contractor's failure to comply with the requirements of Subsection 6-1 shall be grounds for the City to determine that the Contractor is not prosecuting the Work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the City may withhold approval of progress payments until the Contractor complies with the requirements of Subsection 6-1.

ORDER OF WORK: The project order of work shall be as follows:

- All concrete work and related items shall be completed on a particular street before AC pavement demolition or other AC work may commence.

ADD NEW SUBSECTION 6-1.3 TO READ:

6-1.3 Mandatory Pre-Construction Meeting.

A pre-construction meeting will be scheduled for within ten days of the contract award for all projects with a contract bid price of greater than \$50,000. At this meeting the Contractor will meet representatives of the City's Contract Compliance, Construction and Design divisions.

The project Resident Engineer will chair the meeting. This meeting's purpose is to establish procedures for field coordination, resolve anticipated construction problems, and discuss the process for submittals, request for information, disputes, and progress payments. The Resident Engineer will also discuss the construction schedule, traffic control plans, housekeeping, storm water protection, recycling, utility coordination, notification to property owners, project sign location, office trailer location, working hours, noise control, dust control, general public relations, and other related issues.

The Contract Compliance Officer will discuss enforcement of the City's various employment and prevailing wage requirements specified by the Contract.

6-3 SUSPENSION OF THE WORK.

CHANGE SUBSECTION 6-3.1 TO READ:

6-3.1 General. The Engineer shall have the authority to suspend the work wholly or in part for such period as deemed necessary, due to unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as it may deem necessary due to the Contractor's failure to carry out orders given or to perform any work provisions. The Contractor shall immediately obey the

Engineer's suspension orders and shall not resume work until so ordered in writing by the Engineer.

If the Engineer orders a work suspension due to the Contractor's failure to carry out provided orders or to perform any contract provision, the days on which the suspension order is in effect shall be considered contract working days if such days are working days within the meaning of the definition set forth in these specifications.

If work is suspended through no fault of the Agency, all expenses and losses incurred by the Contractor during such suspension shall be borne by the Contractor. If the Contractor fails to properly provide for public safety, traffic, and protection of the work during suspension periods, the Agency may elect to do so, and deduct the cost thereof from monies due the Contractor. Such action will not relieve the Contractor from liability.

The Contractor's responsibilities as defined in Section 7 of the Standard Specifications and Special Provisions shall continue in full force and effect during such suspension period.

ADD NEW SUBSECTION 6-3.3 TO READ:

6-3.3 Hazardous Material and Waste Encountered during Operations. If the Contractor encounters a substance during operations that the Contractor has reason to believe may be a hazardous material as defined by Section 25501 of the California Health and Safety Code or a hazardous waste as defined by Section 25117 of the California Health and Safety Code, and if such substance was not previously accounted for in the Scope of Work, the Contractor shall immediately so notify the Engineer in writing. Work in the immediate area of the suspected hazardous material or waste shall be suspended until the Engineer authorizes the work to resume. If such suspension delays the current controlling operation, the Contractor shall be granted a time extension as provided in Section 6-6.

If such work suspension delays the current controlling operation by more than two working days, the delay shall be considered a right of way delay and the Contractor shall be compensated for such delay as provided in Section 8-1.09 of the most recent Caltrans Standard Specifications.

The City reserves the right to use other forces for exploratory work to identify and determine the extent of such hazardous material or waste in the construction area.

6-6 DELAYS AND EXTENSIONS OF TIME.

6-6.1 General.

DELETE THE WORD "labor disputes" and "labor or equipment" FROM THE SECOND SENTENCE OF THE FIRST PARAGRAPH OF SUBSECTION 6-6.1.

REPLACE THE SECOND PARAGRAPH OF SUBSECTION 6-6.1 TO READ:

An extension of time will not be granted for a delay caused by the Contractor's inability to obtain materials and equipment, unless the Contractor furnishes to the Engineer documented proof that the Contractor has made every effort to obtain such materials and equipment from every known source within reasonable reach of the Work. The Contractor shall also submit proof that the inability to obtain such materials when originally planned did, in fact, cause delay in final completion of the Work that could not be compensated for by revising the sequence of operations. Only the physical shortage of material and equipment will be considered under these provisions as a cause for extension of time.

CHANGE THE THIRD PARAGRAPH OF SUBSECTION 6-6.1 TO READ:

In the event of work delays beyond the control of the Contractor, the Contractor shall so notify the Engineer in writing. Such notice shall give the reason for the delay, and provide such documentary evidence as may be necessary to substantiate the reasons for the delay plus an estimate of the additional time required to complete the contract. Such a delay notice shall be filed with the Engineer within five working days after the beginning of said delay. The Contractor's failure to file a timely notice shall act as a bar against an acceleration claim. The Agency's decision will be issued within five working days. The Contractor shall not accelerate the work unless authorized in writing by the Engineer.

6-6.3 Payment for Delays to Contractor.

CHANGE THE FIRST SENTENCE OF SUBSECTION 6-6.3 TO READ:

The Contractor may be compensated for damages incurred due to delays for which the Agency is responsible, except for delays caused by the issuance of extra work as stated in 3-2.1 of these Special Provisions.

6-7.2 Working Day.

DELETE THE WORD "field" FROM THE FIRST SENTENCE OF SUBSECTION 6-7.2.

CHANGE 6-7.2 ITEM 3 TO READ:

The following designated holidays:

January 1st (New Years Day - Observed)	September 9 th (Admissions Day)
3rd Monday in January (ML King Jr. Day)	November 12 th (Veterans Day)
February 12 th (Lincoln's birthday)	4 th Thursday in November (Thanksgiving)
3 rd Monday in February (President's Day)	The Friday after Thanksgiving
Last Monday in May (Memorial Day)	December 25 th (Christmas Day)
July 4 th (Independence Day)	
1 st Monday in September (Labor Day)	

6-7.2 Working Day.

ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 6-7.2:

The Contractor's working hours shall be from 7:00 AM TO 5:00 PM, Monday through Friday. The Table "Operation Hours" (see Attachment 6 "Operation Hours" at the end of these Special Provisions) details the permissible work hours on public streets. The Contractor may be allowed to work after 5:00 PM on weekdays and work on Saturday and Sundays only with the Engineer's written permission. The Engineer may shorten the hours of this subsection to prevent traffic congestion or to prevent unreasonable disturbance in residential areas.

ADD NEW SUBSECTION TO READ:

6-7.4 Contract Working Days. The work that the Contractor is required to perform under this contract commences at the time stipulated by the Engineer in the "Notice to Proceed" to the Contractor shall be completed within the number of working or calendar days from the date of the Notice to Proceed specified in the Notice to Bidders. Each month the Engineer will furnish the Contractor a statement of working days remaining on the contract as part of the monthly progress estimate.

6-8 COMPLETION, ACCEPTANCE, AND WARRANTY.

6.8.1 Completion

6.8.2 Acceptance

REPLACE 6-8.2 WITH THE FOLLOWING:

If the Engineer determines that the project work has been completed in accordance with the plans and specifications, he or she will so certify and accept the completed work. The Engineer will, in his/her acceptance, give the date when the work was completed. This Notice of Completion date is when the Contractor is relieved from responsibility to protect the work, and is also the date to which liquidated damages will be computed.

The Contractor shall maintain a set of As-Built plans of all contract work daily. All changes to the original contract documents shall be legibly incorporated in red ink with reference to the date and name of appropriate written document(s), such as Change Order, RFI, email, field order, record of conversation, and etc. Each page of final drawings shall be identified as As-Built Plans. The City shall retain a five-percent retention to ensure that the as-built plans are submitted to the City. The Contractor shall supply two copies of the As-Built plans plus a copy of the signed, completed As-Built Plans Submittal Form (**Attachment 5** at the end of the Special Provisions) to the Engineer for approval.

When required, the Contractor's Guarantee Form (**Attachment 1** at the end of these Special Provisions) shall be used for this purpose.

6.8.3 Warranty

REPLACE 6.8.3 WITH THE FOLLOWING:

All work involving underground construction (such as pipe laying, electrical or liquid-carrying conduit installation, sewer repair, replacement or installation, trenching, backfilling, and paving, etc.), shall be warranted by the Contractor against defective workmanship and materials for a period of 2 years from the date the Work was completed. All other work shall be warranted by the Contractor against defective workmanship and materials for a period of 1 year from the date the Work was completed, unless specified otherwise in the plans or contract documents.

6-9 LIQUIDATED DAMAGES.

REPLACE THE FIRST PARAGRAPH OF SUBSECTION 6-9 WITH THE FOLLOWING:

The Contractor's failure to complete the Work within the time allowed will result in damages being sustained by the Agency. Such damages are, and will continue to be, impracticable and difficult to determine. Liquidated damages shall be assessed in a tiered fashion, as follows:

- a. For each consecutive calendar day in excess of the time specified for the completion of Work, as adjusted in accordance with 6-6, until the date of Substantial Completion, the Contractor shall pay to the Agency or the Agency may deduct from monies due the Contractor, the daily liquidated damages amount specified in the Notice to Bidders, unless otherwise provided in the contract documents.
- b. For each consecutive calendar day from the day immediately after the date of Substantial Completion until the date of the Notice of Completion, the Contractor shall pay to the Agency or the Agency may deduct from monies due the Contractor, the the daily liquidated damages amount specified in the Notice to Bidders, unless otherwise provided in the contract documents.

Contract execution shall constitute agreement by the Agency and Contractor that the above sums are the minimum value of the costs and actual damage caused by the Contractor's failure to complete the Work within the allotted time. Such sums are liquidated damages and shall not be construed as a penalty, and may be deducted from payments due the Contractor if such delay occurs.

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

7-1 CONTRACTOR'S EQUIPMENT AND FACILITIES.

ADD THE FOLLOWING TO THE END OF SUBSECTION 7-1.1:

7-1.1 General.

The Contractor shall render all machinery and equipment inoperable at all times except during actual construction. The Contractor shall be responsible for construction means, controls, techniques, sequences, procedures and construction safety.

ADD THE FOLLOWING SUBSECTION 7-1.4:

7-1.4 Powered Industrial Trucks, Forklifts, Heavy Equipment and Other Vehicles.

Contractor employees who drive or operate any such equipment or vehicles on City property or project sites, must first provide proof of a current driver's license and the Contractor must verify training in accordance with any applicable Cal/OSHA standards, Department of Transportation, and Department of Motor Vehicles codes and standards. The Contractor shall be responsible for providing and keeping current all required licenses, certifications and insurance for such equipment and vehicles. The Contractor further agrees to ensure that all such equipment and vehicles are equipped with required lights, brakes, operating controls, backup alarms and other safety equipment and that all such devices are properly inspected, serviced, maintained in good working order and free of damage and defects. The Contractor agrees to immediately remove from service any equipment or vehicle with identified damage or defects that affect the safe operation of the equipment or vehicle.

The Contractor shall render all machinery and equipment inoperable at all times except during actual construction. The Contractor shall be responsible for construction means, controls, techniques, sequences, procedures and construction safety.

7-2 LABOR.

7-2.2 Prevailing Wages.

ADD THE FOLLOWING THREE PARAGRAPHS TO THE END OF SUBSECTION 7-2.2:

The City Council of the City of Oakland has ascertained the general prevailing rate of wages for City public works projects by Resolution Number 57103. C.M.S.

For public works projects over \$1,000.00, the State's Labor Code requires Contractors to pay their employees in accordance with the general prevailing wages.

The Contractor is required to submit weekly payroll records showing payment of these wages to his/her employees.

The Prime Contractor and all Subcontractors will have to comply with Sections 1770-1781 of the State of California Labor Code.

ADD NEW SUBSECTION 7-2.2.1 TO READ:

7-2.2.1 Electronic Payroll Submission. The Contractor shall register for and use the City's selected electronic certified payroll tracking system— LCPtracker, a Labor Compliance software program. This software is a web-based system provided by an independent company. Their website address www.lcptracker.net may be accessed for general information and an introductory product tour.

The Contractor and all subcontractors must submit all certified payrolls via the LCPtracker system. The Contractor and each subcontractor will be given a **special Log-On identification number** and a **password** to access the City's reporting system. The Contractor shall contract with LCPtracker for the entire duration of project construction.

Effective July 1, 2020, the monthly charge to Contractors is \$196.00 for all contracts valued at or below five million dollars. Contractors will be charged \$356.00 monthly for contracts above that amount. This monthly charge will be assessed until the City files a project notice of completion. The Contractor's first payment is due within 30 days of the Notice to Proceed date. Subsequent payments are due every thirty days or the 20th of the month, whichever comes first. Remittances should be made payable to the City of Oakland (reference project number and the month for which the payment is being made) and sent to the City of Oakland, City Administrator's Office, Contracts and Compliance Unit, Social Equity Division 250 Frank H. Ogawa Plaza, Suite 3341, Oakland, Ca 94612. *Subcontractors will not be charged for this service.*

The advantages to this required service are:

- elimination of inaccurate certified payroll submittals;
- elimination of the need to submit hard copies of certified payrolls,
- identification of prevailing wage irregularities;
- at-a-glance assessment of compliance with the Local Employment Program (LEP) and the 15% Apprenticeship Program; and
- the elimination of potential delays in progress payments resulting from rejected certified payroll(s).

To assist contractors and subcontractors in this process, on-line training is available via the LCPtracker website. Also, a City computer with online capability to access LCPtracker is available, as needed, Monday through Friday between the hours of 10:00 am and 4:30 pm. To arrange additional training on the use of LCPtracker or to use the City's computer, the Contractor's payroll resource (staff or business service) may contact the City Administrator's Office, Contracts and Compliance Unit, Contract Compliance Office at 250 Frank Ogawa Plaza, 3rd Floor, Suite 3341, telephone (510) 238-2970.

While the submission of hard copies of certified payrolls is no longer necessary with the implementation of this program, contractors and subcontractors will continue to be required to submit a signed, original affidavit made under penalty of perjury that states that the information contained in each submitted LCPtracker payroll record is true and correct.

Electronic submittal of weekly payroll information is consistent with California Department of Industrial Relation Public Works payroll reporting requirements.

Payment: The Contractor shall absorb in the bid all costs incurred from these electronic payroll submission requirements.

ADD NEW SUBSECTION 7-2.2.2 TO READ:

7-2.2.2 Electrical Workers Safety Requirement. Enhanced Electrical Safety Requirements are required for all worksite electrical labor. For all capital improvement contracts where the electrical scope of work is \$100,000 or more, the project must comply with the following requirements for electrical safety enhancement:

- 70% of all "Journey-level Electricians" must be graduates of a State of California approved Electrical Apprenticeship Program.
- 20% of the jobsite electrical workers must be OSHA 10-hour Construction Industry Safety and Health Certified.

- At least one jobsite electrical worker must be OSHA 30-hour Construction Industry Safety and Health Certified.

The above workforce ratios are determined by verifying the workforce composition on a daily basis. The Contractor will be required to certify their compliance by completing and submitting information via forms provided by the Resident Engineer.

ADD NEW SUBSECTION 7-2.2.3 TO READ:

7-2.2.3 Federal Wage Rates. The payment of predetermined minimum wages on Federal-aid contracts is derived from the Davis-Bacon Act of 1931 and is prescribed by 23 USC 113.

Federal wage rates are not required to be physically included in the contract advertising package provided they are referenced to an Internet web site address where they can be found. However, these wage rates must be physically inserted in the final contract package signed by the City and the contractor on all Federal-aid highway construction projects exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempted.

The federal minimum wage rates are available directly from the Department of Labor Home Page under www.gpo.gov/davisbacon. Click on "Browse all determination by State" then click on "California." For conformance with the federal "10-day rule," the City shall access the federal wage rates within ten days prior to bid opening to see if updated rates have been posted. If the updated wage rates have been posted, the City shall to issue an addendum. Addenda are issued only to official plan holders of the Bid book (those who have directly obtained the bid book from iSupplier or CIPList.com).

REPLACE SUBSECTION 7-3 WITH THE FOLLOWING:

7-3 INSURANCE

7-3.1 City of Oakland Insurance Requirements.

The Contractor shall procure, prior to commencement of service, and keep in force for the term of this contract, at Contractor's own cost and expense, the following policies of insurance or certificates or binders as necessary to represent that coverage as specified below is in place with companies doing business in California and acceptable to the City. The insurance shall at a minimum include as per Schedule Q in Appendix B.

7-3.2 General Liability Insurance.

DELETE SUBSECTION 7-3.2. INSTEAD REFER TO SUBSECTION 7-3.1.

7-3.3 Workers' Compensation Insurance.

DELETE SUBSECTION 7-3.3. INSTEAD REFER TO SUBSECTION 7-3.1.

7-3.4 Auto Liability Insurance.

DELETE SUBSECTION 7-3.4. INSTEAD REFER TO SUBSECTION 7-3.1.

ADD NEW SUBSECTION 7-3.5 TO READ:

7-3.5 Responsibility for Damage. The City and/or its Council, and/or its employees, shall not be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof; or to any material or equipment used in performing the work; or for injury or damage to any person or persons, either employers, workmen, or the public; or for damage to property or loss or use thereof from any cause whatsoever during the progress of the work or at any time before final acceptance.

To the extent not otherwise prohibited by Section 2782 of the Civil Code of the State of California, the Contractor shall indemnify and save harmless the City of Oakland, its Council, officers and employees, from any suits, claims or actions brought by any person or persons, or corporations, or other entities for or on account of any bodily injuries or disease or illness, or damages of any nature, however caused, and regardless of responsibility for negligence, sustained as a result of or arising within the work. The City Council may retain as much of the money due to Contractor as shall be considered necessary until disposition has been made of such suits or claims for damages as aforesaid.

Neither the City Administrator, Council, the City Engineer, the OPW Director, nor any other officer or authorized assistant or agent of the City shall be personally responsible for any liability arising under the contract.

The City shall not be held responsible for the care or protection of any material or parts of the work prior to final acceptance, except as expressly provided in these specifications.

CHANGE SUBSECTION 7-5 TO READ:

7-5 PERMITS AND LICENSES. The Contractor shall procure all permits and licenses, pay all related charges and fees for any required permit or license, and give all notices necessary and incidental for the due and lawful prosecution of the work. All charges and fees for any required permit or license shall be included in the base bid for the project.

7-6 THE CONTRACTOR'S REPRESENTATIVE.

ADD THE FOLLOWING TWO PARAGRAPHS TO THE END OF SUBSECTION 7-6:

The Contractor's representative shall be an employee of the Contractor and shall be present at the work site at all times while work is in progress. The Contractor's representative shall personally supervise the work of all subcontractors. At a minimum, the Contractor's representative must be onsite at the beginning and end of each workday to coordinate the Contractor's workforce and receive instructions from the Agency. The Contractor may be fined \$500 per day for every day in violation of this Subsection. In addition, the Contractor's failure to provide a representative with authority to direct all facets of the work shall be grounds for suspending the work. Contract time shall continue to run if the Agency suspends the work for violation of this Subsection. When work is not in progress and during periods of work suspension, arrangements acceptable to the Agency shall be made for performance of emergency work when required.

7-7 COOPERATION AND COLLATERAL.

ADD THE FOLLOWING TWO PARAGRAPHS TO THE END OF SUBSECTION 7-7:

The Contractor shall notify the City of Oakland Sewer Maintenance Section at (510) 615-5566 when a building sewer / lateral is connected so that a sewer maintenance representative can inspect it.

The Agency and each utility company reserves the right to enter upon any street or easement for the purpose of making changes, new installations, repairs, or performing maintenance work.

7-8 WORK SITE MAINTENANCE.

7-8.1 General.

ADD THE FOLLOWING TO THE END OF SUBSECTION 7-8.1:

The Contractor's failure to comply with the Engineer's cleanup orders may result in the City having the cleanup work done by others. The Contractor shall bear all costs incurred by the City in having the work done.

The Contractor shall take all necessary measures to ensure that materials from the job site identified in the project Waste Reduction and Recycling Plan (WRRP) are recycled.

The Contractor shall provide daily reports. The daily reports will require the Contractor to provide status of labor, equipment, traffic control, maintenance efforts of BMPs and SWPPPs, and work plan ahead. The Contractor shall drive the work site daily for the reports. Failure to complete this on a daily basis will result in a fine of \$250 per day.

7-8.2 Air Pollution Control.

ADD THE FOLLOWING TO THE END OF SUBSECTION 7-8.2:

The use of water resulting in mud on public or private paved surfaces will not be permitted as a substitute for sweeping or other methods. The Contractor shall sweep the streets within the project area with a power pickup sweeper at least once daily, or as directed by the Engineer, for the duration of the project. A Wet/Dry vacuum shall be used to vacuum sawcut slurry.

7-8.4.1 General.

ADD THE FOLLOWING TO THE END OF THE SECOND PARAGRAPH:

Excess excavated material from trenches, structures, general excavation and manholes and similar structures shall be removed from the site immediately.

ADD THE FOLLOWING TO THE END OF SUBSECTION 7-8.4.1:

The Contractor shall take all necessary measures to ensure that materials from the job site identified in the project Job Site Recycling and Waste Reduction Plan are recycled.

ADD SUBSECTIONS Section 7-8.5.3

Section 7-8.5.3 Overflow Emergency Response Plan

Constructor shall submit an Overflow Emergency Response Plan (OERP) to the City for review and approval.

Contractor shall refer to the City of Oakland Overflow Emergency Response Plan for information and requirements.

The reference of the OERP on the City's website is at

<https://www.oaklandca.gov/documents/2019-asset-management-implementation-plan-and-sewer-system-management-plan>.

2019 Asset Management Implementation Plan and Sewer System Management Plan, Appendix C (page 144) – City of Oakland Overflow Emergency Response Plan (OERP).

Contractor shall complete attachment 17 and submit to the City for review per each sewer overflow occurrence.

REPLACE SUBSECTION 7-8.6 WITH THE FOLLOWING:

7-8.6 Water Pollution Control.

7-8.6.1 General. The intent of these requirements is to enforce federal, state, and other local agency regulation prohibiting storm water pollution from construction sites. The storm drain system discharges directly to creeks and the San Francisco Bay without treatment. Therefore, pollutant discharge into the storm drain system is strictly prohibited. Here pollutant discharge means any substance, material, or waste, and discharges NOT permitted under the National Pollutant Discharge Elimination System regulated by the State of California Regional Water Quality Control Board or the United States Environmental Protection Agency other than uncontaminated stormwater.

The Contractor shall conform to all applicable local, state and Federal regulations and laws pertaining to water pollution control including the City of Oakland's Creek Protection, Stormwater Management and Discharge Control Ordinance. As applicable, the Contractor shall obtain water pollution control permits including, but not limited to, the State Water Resources Control Board Construction General Permit (Construction General Permit), and the City of Oakland Creek Protection Permit and Temporary Storm Water Discharge Permit, and shall file all relevant and required documents including, but not limited to, the Construction General Permit Stormwater Pollution Prevention Plan, Rain Event Action Plans, Inspection, Monitoring and Annual Reports, and the City of Oakland Creek Protection Plan and Hydrology Report. The Contractor shall conduct and schedule operations and follow and implement Best Management Practices (BMPs) in such a manner as to prevent water pollution. The Contractor shall also conform to the following requirements:

- 1) Sediments shall not be discharged to a storm drain system or receiving waters. In this subsection, the term "storm drain system" shall include storm water conduits, storm drain inlets and other storm drain structures, street gutters and paved surfaces. In this subsection "receiving waters" shall include channels, watercourses, creeks, lakes, the Oakland Estuary, and the San Francisco Bay.
- 2) Sediments generated on the Work site shall be contained on the Work site using appropriate BMPs. Avoid using BMPs made with plastic netting or fixed aperture netting, especially when placing final site stabilization BMPs. Wildlife-friendly products made from made of biodegradable natural materials are widely available.
- 3) No construction-related materials, waste, spill or residue shall be discharged from the Work site to streets, drainage facilities, receiving waters or adjacent property by wind or runoff.
- 4) Non-storm water runoff from equipment, vehicle washing or any other activity shall be contained within the Work site using appropriate BMPs.
- 5) Erosion shall be prevented. Erosion-susceptible slopes shall be covered, planted or otherwise protected in a way that prevents discharge from the Work site.

7-8.6.2 Best Management Practices (BMPs). For the purpose of eliminating stormwater pollution, the Contractor shall implement effective control measures known as Best Management Practices (BMPs). BMPs include schedules of activities, prohibition of practices, general good housekeeping practices, operational practices, pollution prevention practices, maintenance procedures, and other management procedures to prevent pollutant discharge directly or directly into the storm drain system. BMPs also include the construction of some facilities that may be required to prevent, control, and abate stormwater pollution.

The Contractor shall implement and maintain such BMPs as are relevant to the work, and as are specifically required by the Construction General Permit, Plans, or Special Provisions. The Contractor shall be

responsible throughout the Contract duration for installing, constructing, inspecting, maintaining, removing and disposing of BMPs for wind erosion control, tracking control, erosion and sediment control, non-storm water control, and waste management and materials pollution control. Unless otherwise directed by the Engineer, the Contractor shall be responsible for BMP implementation and maintenance throughout any temporary suspension of the Work. Guidance for appropriate implementation of BMPs can be found in the Reference Publications listed in 7-8.6.5.

7-8.6.3 Storm Water Pollution Prevention Plan (SWPPP). When so specified in the Special Provisions, or if so required by the Construction General Permit or by a City of Oakland permit, the Contractor shall prepare and submit per 2-5.3 a Storm Water Pollution Prevention Plan. The SWPPP shall conform to the requirements specified in the Special Provisions and those of the jurisdictional regulatory agency. The Construction General Permit Notice of Intent will be filed by the City.

7-8.6.4 Dewatering. Dewatering shall be performed by the Contractor when specifically required by the Plans or Specifications, and as necessary for construction of the Work. Dewatering shall be performed in conformance with all applicable local, state and Federal laws and permits issued by jurisdictional regulatory agencies. Permits necessary for treatment and disposal of accumulated water shall be obtained by the Contractor or the Agency as specified in the Special Provisions. Accumulated water shall be treated prior to disposal if so specified in the Special Provisions or required by a permit. The contractor shall submit a working drawing and related supporting information per 2-5.3 detailing its proposed plan and methodology and treatment and disposal of accumulated water. To the maximum extent practical, the Contractor shall reuse non-toxic, de-silted water for other onsite needs, such as dust control and irrigation.

The plan shall identify the location, type and size of dewatering devices and related equipment, the size and type of materials composing the collection system, the size and type of equipment to be used to retain and, if required, treat accumulated water, and the proposed disposal locations. If the proposed disposal location is a sanitary sewer, the Contractor shall submit to the Engineer written evidence of permission from the owner. If the proposed disposal location is a storm drain system or receiving body of water, the Contractor shall submit written evidence of permission from the owner of the storm drain system and, if not obtained by the Agency, original signed permits from jurisdictional regulatory agencies or written evidence that such permits are not required.

7-8.6.5 Reference Publications.

Reference publications are as follows:

1. California State Water Resources Control Board (SWRCB) Construction General Permit Order 2009-009-DWQ (As amended by 2010-0014-DWQ and 2012-006-DWQ). Available at: http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml
2. Construction BMP Online Handbook. California Stormwater Quality Association (January 2015). Available at: <https://www.casqa.org/resources/bmp-handbooks/construction> (subscription required)
3. City of Oakland Creek Protection, Stormwater Management, and Discharge Control Ordinance and Guide to Oakland's Creek Protection Ordinance. Available at: <http://www2.oaklandnet.com/government/o/PWA/o/FE/s/ID/OAK024740>
6. Manual of Standards for Erosion and Sediment Control Measures. Association of Bay Area Governments (ABAG) Available at: <https://store.abag.ca.gov/environment.asp#ec1>
7. Stormwater Quality Handbooks. California Department of Transportation. Available at: <http://www.dot.ca.gov/hq/construc/stormwater/manuals>
8. Start at the Source. Bays Area Stormwater Management Association. Available at: <http://www.scvurppp-w2k.com/pdfs/0910/StartAtTheSource.pdf>

7-8.6.6 Material Storage. Storage and exposure of raw materials, by-products, finished products, and containers shall be controlled as described below:

All construction materials shall be stored at least ten feet away from inlets, catch basins, and curb returns. The Contractor shall not allow any material to enter the storm drain system. Measures shall be taken to maintain a neat and protected pile. At the end of each working day, the Contractor shall collect and dispose of all scrap, debris, and waste material excluding materials set aside for recycling and salvage. Materials set aside for recycling and salvage shall be delivered to the recycling station within five days.

Materials that can contaminate rainwater or be transported by storm water or other runoff to the storm

drain system require special storage. During wet weather or when rain is forecast, the Contractor shall store such materials inside a building or cover them with a tarp or other waterproof material secured with weighted tires or sandbags to prevent contact with rain (i.e., cover and berm).

The Contractor is reminded that storage and disposal of all hazardous materials such as paints, thinners, solvents, and fuels; and all hazardous wastes such as waste oil, must meet all federal, state and local standards and requirements.

7-8.6.7 Pavement Saw Cutting Operations. The Contractor shall prevent any saw cutting debris from entering the storm drain system. The Contractor shall preferably use dry cutting techniques and sweep up residue. If wet methods are used, the Contractor shall vacuum slurry as cutting proceeds or collect all wastewater by constructing a sandbag sediment barrier. The bermed area shall be of adequate size to collect all wastewater and solids. The Contractor shall allow collected water to evaporate, as approved by the Engineer, if the wastewater volume is minimal and if maintaining the ponding area does not interfere with public use of the street area, create a safety hazard, or does not create standing water that remains longer than 72 hours. If the Engineer approves, the Contractor may direct or pump saw cutting wastewater to a dirt area for infiltration. This dirt area shall be adequate to contain all the wastewater. After wastewater has infiltrated, all remaining saw cutting residue must be removed and disposed of properly.

With the approval of East Bay Municipal Utility District (EBMUD) and the Engineer, de-silted water may be pumped to the sanitary sewer to assist in the evaporation or infiltration process. Remaining silt and debris from the ponding or bermed area shall be removed or vacuumed and disposed of properly. If a suitable dirt area is not available or discharge to the sanitary sewer is not feasible, with the Engineer's approval the Contractor shall filter the saw-cutting wastewater through filtering materials and methods meeting the water quality standards in the Construction General Permit.

7-8.6.8 Pavement Operations. The Contractor shall prevent the discharge of pollutants from paving operations by using measures to prevent run-on and runoff pollution, properly disposing of wastes, and by implementing the following Best Management Practices:

- a. No paving during wet weather.
- b. Store materials as required by 7-8.6.6.
- c. Cover inlets and manholes when applying asphalt, seal coat, tack coat, slurry seal, fog seal, etc.
- d. Place drip pans or absorbent materials under paving equipment when not in use. During wet weather store contaminated paving equipment indoors or cover with tarp or other waterproof covering.
- e. Sweep work site daily to prevent sand, gravel or excess asphalt from entering, or being transported by rain, into the storm drain system. The contractor shall use water and sweeper trucks on a daily basis including weekends to maintain the site. Failure to maintain site cleanliness will result in a fine of \$500 per location per day.
- f. Keep ample supplies of drip pans or absorbent materials on-site.
- g. If paving involves portland cement concrete, refer to 7.8.6.6.

7-8.6.9 Concrete Operations. The Contractor shall prevent pollutant discharge from concrete operations by using measures to prevent run-on and runoff pollution, by properly disposing of wastes, and by implementing the following BMPs:

- a. Store all materials in waterproof containers or under cover away from drain inlets or drainage areas.
- b. Avoid mixing excess amounts of portland cement materials.
- c. Do not wash out concrete trucks into storm drains, open ditches, streets, streams etc. Whenever possible, perform washout of concrete trucks off site where discharge is controlled and not permitted to discharge to the storm drain system. For on-site washout:
 - i. Locate washout area at least 50 feet from storm drains, open ditches or other water bodies, preferably in a dirt area. Prevent runoff from this area by constructing a temporary pit or bermed area large enough to store the liquid and solid waste.
 - ii. Wash out concrete wastes into the temporary pit where the concrete can set, be broken up and then disposed of properly. If the water volume greater than what will allow concrete to set, allow the wash water to infiltrate and/or evaporate, if possible. Otherwise, allow wash water to settle, then filter and pump it to the sanitary sewer with approval from EBMUD and the Engineer. Remove or vacuum the remaining silt and debris from the ponding or bermed area and dispose of it properly.
- d. Dispose of wastewater from exposed aggregate washing to a dirt area adequate to contain all the

wastewater. Once the wastewater has infiltrated, remove any remaining residue. If a suitable dirt area is not available, filter the wash water through straw bales or other filtering materials meeting the water quality standards in the Construction General Permit.

- e. Collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in a trash container.

7-8.6.10 Grading and Excavation Operations. The Contractor shall implement sedimentation and erosion control measures to prevent sediments or excavated material from entering the storm drain system in accordance with the water quality standards in the Construction General Permit.

At a minimum, the Contractor shall install filter materials (such as sandbags, filter fabric, etc.) at storm drain inlet(s) located in and downstream of the project site. These materials must be in place between October 15 and April 15 and also when rain is forecast within 24 hours. The Contractor shall install filter materials or seal all surface inlet openings during the dry season or if there is potential for sediment or excavated material to be discharged to the storm drain system during the construction operation (e.g. sediments and debris tracked by construction vehicles, wind blown, or transported by runoff). The storm drain inlets shall be sealed such that they can be opened in an emergency and unblocked at the end of each working day, so that no property is damaged as a result of accidents or overflows.

Sedimentation and erosion control/filter materials shall be placed in a manner to restrain any debris or sediment from flowing into the storm drain system. Said materials or control devices shall also be maintained and/or replaced as necessary to ensure effective sediment control and to prevent flooding.

7-8.6.11 Spill Prevention and Control. The Contractor shall take all precautions to prevent accidental spills during construction. However, in the event of a spill, the Contractor shall immediately contain any leaks/spills to prevent them from entering the storm drain system. The Contractor shall properly clean up and dispose of spilled wastes and resulting clean-up materials. If the spilled waste is hazardous, the Contractor shall comply with all federal, state and local hazardous waste requirements.

- a. The Contractor shall not wash any spilled material into the streets, gutters, storm drains, or creeks.
- b. The Contractor shall report any hazardous materials spill immediately to the Oakland Fire Department, the Alameda County Hazardous Materials Division and other state and local agencies as required by state and local regulations.

7-8.6.12 Vehicle/Equipment Cleaning. The use of soaps, solvents, de-greasers, steam cleaning equipment or equivalent methods for vehicle or equipment cleaning on-site or in the street is not permitted. Vehicle or equipment may be cleaned only with water in a designated, bermed area of adequate size. Rinse water may not runoff site or into the storm drain system. The rinse-water shall be permitted to infiltrate in dirt area or shall be discharged to the sanitary sewer with the approval of EBMUD and the Engineer.

The Contractor shall dispose of wash water from the cleaning of water-base paint equipment and tools to the sanitary sewer.

When using oil-based paint the Contractor shall, to the maximum extent practicable, filter the paint thinner and solvents for reuse. Any waste thinner, solvent, and sludge from the cleaning of equipment and tools shall be disposed as hazardous waste.

7-8.6.13 Contractor Training And Awareness. The Contractor shall train all employees on the water pollution prevention requirements contained in these specifications. The Contractor shall inform all subcontractors of the water pollution prevention contract requirements and include appropriate subcontract provisions to ensure that these requirements are met.

The Contractor shall mark all new catch basins constructed as part of the project with stainless steel storm drain markers with the logo "No Dumping: Drains to the Bay". Storm drain markers are available from the Engineer.

7-8.6.14 Good Housekeeping Practices. The Contractor shall implement the following applicable good housekeeping practices.

- a. Store all materials that have the potential to be transported to the storm drain system by storm runoff or by a spill under cover in a contained area or in sealed waterproof containers.
- b. Use ground tarps to collect fallen debris or splatters that could contribute to storm water pollution.
- c. Secure opened bags of cement, and other light materials or powders that can be transported by wind.

- d. Pick up litter, construction debris and other wastes daily from outside areas including the sidewalk area, gutter, street pavement and storm drains impacted by the project. Store all wastes in covered containers or dispose of immediately. Arrange for appropriate collection of those materials separated for recycling.
- e. Dispose of wash water to the sanitary sewer with the approval of EBMUD and the Engineer or recycle wash water. Refer to 7-8.6.9.
- f. Inspect vehicles and equipment arriving on-site for leaking fluids and promptly repair leaking vehicles and equipment. Use drip pans to catch leaks until repairs are made.
- g. Avoid spills by handling materials carefully. Keep a stockpile of spill materials, such as rags or absorbents, readily accessible on-site. Clean up all spills immediately to prevent any material from being discharged to the storm drain system. Refer to 7-8.6.11.
- h. Train employees regularly on good housekeeping practices and BMPs. Assign specific employees responsibility for BMPs, good housekeeping practices, and actions to take in the event of a spill. Refer to 7-8.6.13.
- i. Maintain and replace all sediment and water pollution control devices as necessary to ensure that said controls are working effectively (e.g. inspect all sediment ponds or sandbag sedimentation/filtering systems after each rain. Remove accumulated sediment and debris and replace or repair damaged sandbags immediately.)

7-8.6.15 Payment. Unless otherwise specified in the Special Provisions, payment for implementation and maintenance of BMPs, implementing SWPPP measures and other work of this section (except dewatering) shall be deemed included in the price paid for associated contract bid items, and no additional payment shall be made therefor. Payment for dewatering shall be as specified in the Special Provisions.

7-8.6.16 Enforcement. Various sections of the Oakland Municipal Code enforce subsection 7-8.6. City enforcement may include, but is not limited to: citations, abatement orders, bills for City cleanup costs and administration, civil suits, and criminal charges. City enforcement actions do not void or suspend any enforcement actions by other agencies. At a minimum, the Contractor shall implement the storm water Clean Water Program BMPs listed in 7-8.6.2 General, or implement equally effective alternatives approved by the Engineer on all projects within the City of Oakland.

ADD NEW SUBSECTION 7-8.7 TO READ:

7-8.7 Removal of Graffiti. The contractor shall maintain a worksite free of graffiti. All new improvement under the subject contract and all on-site equipment and materials including but not limited to trailer, barricade, k-rails, excavator, loader, truck, storage bin, signage, etc. free of graffiti. Contractor shall remove all graffiti on such equipment and improvements within 24 hours of occurrence. Unless otherwise specified in the Bid Schedule, the costs for all labor, tools and equipment, and for implementation of all work involved in the removal of graffiti shall be considered as included in the payment made for other items of work, and no separate payment shall be made therefor. Should the Contractor fail to keep the new improvement under the subject contract and equipment and materials free of graffiti, the Engineer may suspend the Work per 6-3 until the graffiti is removed or abated.

In addition, the contractor shall maintain all existing improvement in the public right-of-way in the vicinity of the job site free of graffiti. If directed by the Engineer in writing, the Contractor shall remove all graffiti within 24 hours of occurrence. The costs associated with the implementation of all work involved in the removal of graffiti shall be considered as extra work subject to the Engineer's written approval. Should the Contractor fail to keep the existing improvement in the public right-of-way free of graffiti, the Engineer may suspend the Work per 6-3 until the graffiti is removed or abated.

ADD NEW SUBSECTION 7-8.8 TO READ:

7-8.8 Contractor's Identification. At all times the Contractor shall, at its expense, provide for the proper identification of its work to the public. This identification shall include the Contractor's name and telephone number and shall be printed on barricades used on the job. The contractor shall provide 72 hours advance notice before entering private property to perform contract work.

CHANGE SUBSECTION 7-9 TO READ:

7-9 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS. The Contractor shall be

responsible for the protection of public and private property adjacent to and along the line of work. The Contractor shall exercise due caution to avoid damage to such property. Before submitting a bid the Contractor shall verify and document the condition of existing improvements that may be damaged or removed by construction operations.

The Contractor shall repair or replace all existing improvements within the right-of-way (e.g. curbs, sidewalks, driveways, fences, walls, signs, utility installations, pavements, structures, pavement markings and traffic striping, etc.) that are damaged or removed as a result of its operations. Repairs and replacements shall be at least equal to existing improvements, and shall match them in finish and dimension. The Engineer may require replacements to be installed at locations other than the location where the existing improvements were removed.

The Contractor shall immediately notify the Engineer and the Electrical Division at (510) 615-5430 of any damage to any traffic signal, street light equipment or City electrical facilities. City Electrical Division forces shall temporarily repair damage to traffic signal equipment or facilities caused by the Contractor's operations. The Contractor shall coordinate with the Electrical Division to make permanent repairs to traffic signal or street lighting facilities within five (5) days of damage. All repair work will be inspected and shall conform to Electrical Division requirements and details of the Standard Plans. If the Contractor does not proceed with or complete repairs within the allotted time, the Engineer may order the work completed by City forces or by another licensed electrical contractor. Should this occur, the Contractor will be billed for any necessary repair work by others, including administrative costs. Repair costs may be deducted from Contractor's progress payment if not paid within thirty days of billing date.

Trees, lawns, and shrubbery that are not to be removed shall be protected from damage or injury. If damaged or removed because of the Contractor's operations, they shall be restored or replaced in as nearly the original condition and location as is reasonably possible. Lawns shall be replaced with sod, unless otherwise approved by the Engineer.

Unless shown on the plans, no trees shall be removed. Trees, limbs, and roots within the project area that interfere with the Contractor's operations may be trimmed, with authorization from the Engineer. Only a qualified arborist or tree surgeon shall perform tree trimming. Prior to any trimming being performed, the Contractor shall submit to the Engineer, for review, the qualifications of the proposed arborist or tree surgeon. Any tree roots one inch or greater in diameter which have to be removed or are damaged during construction operations shall be saw-cut evenly and shall be treated with a heavy coat of commercially available water base asphalt emulsion sealing compound.

The Contractor shall give reasonable notice to occupants or property owners to permit them to salvage or relocate plants, trees, sprinklers and other improvements within the right-of-way that will be destroyed because of the construction work.

The Contractor shall absorb in the bid all costs for protecting, removing, and restoring existing improvements and other work of this subsection.

7-10 SAFETY.

ADD THE FOLLOWING TO SECTION 7-10:

Unless a separate lump sum bid item is included for traffic control, the Contractor shall absorb in the bid all costs incurred from the requirements of Section 7-10.

CHANGE SUBSECTION 7-10.2 TO READ:

7-10.2 Storage of Equipment and Materials in Public Streets. Construction materials may not be stored in streets, roads, or highways for more than five days after unloading. All materials or equipment not installed or used in the construction within five days after unloading shall be stored elsewhere by the Contractor at its expense unless the Engineer authorizes additional storage time.

Construction equipment shall not be stored at the work site before its actual use, nor for more than five days after it is no longer needed on the work. The Engineer may authorize additional storage time when necessary for repair or assembly of equipment.

Excavated material, except that to be used as backfill in the adjacent trench, shall not be stored in private properties, public streets, roads, or highways for any period of time and shall be removed and disposed of immediately from the site. Only Engineer-approved excavated backfill material shall be allowed to be stored. Such material storage at the work site or elsewhere shall only be allowed for a period not exceeding five calendar days after excavation. The storage site shall be subject to the Engineer's approval. After the backfill is placed, all excess material shall be removed from the site and disposed of immediately.

The Contractor shall maintain the flow of any surface runoff waters obstructed by the storage and/or

materials stored in public streets in accordance with the above provisions and 7-8.6.

7-10.4 Safety.

7-10.4.1-2 Safety Orders.

ADD THE FOLLOWING SENTENCE AT THE END OF THE FIRST PARAGRAPH:

The Contractor shall have a Competent Person, as described by CAL/OSHA regulations, present at the worksite at all times during construction.

REPLACE THE SECOND PARAGRAPH WITH THE FOLLOWING:

Before excavating any trench 5 feet or more in depth, the Contractor shall submit a detailed plan to the Engineer showing the design of shoring, bracing, sloping, or other provisions to be made for the workers' protection from the hazard of caving ground during the excavation of such trench. The Contractor shall submit the shoring plan in advance of any excavation. If such plan varies from the shoring system standards established by the Construction Safety Orders for the Division of Industrial Safety of the State of California, the plan shall be prepared by a registered civil or structural engineer licensed to practice in California. The Contractor is responsible for site safety. Nothing in this requirement shall be deemed to allow the use of shoring, sloping, or protective system less effective than that required by the Construction Safety Orders. Nothing in this requirement shall be construed to impose tort liability on the City of Oakland or any of its employees.

ADD THE FOLLOWING NEW PARAGRAPH AFTER THE SECOND PARAGRAPH:

The Contractor shall provide positive ventilation during work in existing sewerage facilities or while making connections to existing sewerage facilities. The Contractor's employees working in said facilities shall be provided with safety lines, harnesses, gas detectors, and other protective equipment as required by OSHA and CAL/OSHA.

7-10.4.4 Special Hazardous Substances and Processes.

ADD THE FOLLOWING TWO PARAGRAPHS TO THE END OF SUBSECTION 7-10.4.4:

Hazard Communication and Material Safety Data Sheets. The Contractor shall provide copies of current Material Safety Data Sheets (MSDS) to the Engineer for all chemical products used, handled, stored or transported to City property or project sites. The Contractor shall provide updated copies of such MSDS to the Engineer within 15 days of the Contractor's receipt of such updated copies.

Asbestos and Lead-Based Paint. The contract documents indicate the locations of any known or presumed asbestos-containing materials and lead-based paint in proposed work areas. Only those Contractors with the required Cal/OSHA training, certification and permits for asbestos abatement and removal and/or lead abatement and removal will be allowed to handle these materials.

7-10.4.5 Confined Spaces.

ADD NEW SUBSECTION 7-10.4.5 TO READ:

7-10.4.5.4 Additional City of Oakland Requirements: The following are considered confined spaces for the purposes of 7-10.4: all manholes, lift stations, tanks, vaults, pipelines, some trenches and excavations, or other enclosed or partially enclosed spaces. Contractors are prohibited from entering such confined spaces for any reason and at any time, unless specifically authorized to do so in written contractual agreements. The Contractor is responsible for compliance with Cal/OSHA standards and regulations pertaining to confined space entries. The Contractor shall provide any required air monitoring equipment, safety equipment and emergency rescue devices for confined space entry. Contractors shall ensure that emergency rescue services are provided for their employees who may be involved in confined space entry and that such emergency services comply with applicable Cal/OSHA requirements.

ADD NEW SUBSECTION 7-10.4.6 TO READ:

7-10.4.6 Compliance with Laws. The Contractor will perform the Work and any other obligations under this Agreement in strict compliance with all applicable local, state and Federal laws, codes, standards and regulations.

7-10.4.6 a. Security. The Contractor shall maintain a daily log of all employees and Subcontractors present on-site. This log shall be used in an emergency to identify missing personnel. Contractor employees and Subcontractors must be logged in and out of the site each day.

A visitor is defined as any person not covered by contractual agreements with the City, excluding

regulatory inspectors and compliance officers. Visitors may include vendors, tour groups or guests of the City of Oakland or the Contractor. All visitors to City facilities or properties must have prior written authorization from the Engineer. Visitors must be escorted by a Contractor supervisor or manager, or by City of Oakland personnel, at all times while on-site. Visitors are prohibited from contact with hazardous substances or materials on-site and are also prohibited from entering any area of the work site that requires personal protective equipment (PPE), respirators, or specialized safety equipment, medical monitoring or safety training.

Contractors shall immediately notify the Engineer of any other party who requests entry to City facilities or property. This includes requests from county, state or Federal government agencies.

7-10.4.6 b. Supervision. The Contractor will at all times be solely responsible for all means, methods, techniques, sequences and procedures of the Work, and the acts and omissions of all employees, Subcontractors and agents, and all other persons performing any of the Work.

7-10.4.6 c. Employee Training and Qualifications. The Contractor will provide only properly trained and qualified personnel to perform work under this Contractor Agreement. The Contractor will provide only employees who are trained in both general safe work practices and all applicable specific hazards of the Work.

7-10.4.6 d. Environmental, Health and Safety Requirements. The Contractor agrees that Contractor has been retained by the City of Oakland for reasons that include, but are not limited to, the Contractor's expertise with regard to safety and health hazards associated with the work to be performed by Contractor. The Contractor agrees that it has, and will have, sole responsibility for the health, safety, and welfare of its employees, Subcontractors, and agents performing Work under this Agreement. The Contractor has the authority and responsibility to control, and/or correct all hazards associated with the work to be performed by Contractor. If the Contractor becomes aware of a hazard that the Contractor contends was created or caused by the City, the Contractor must notify the City immediately in the case of an imminent hazard, and no later than five working days in all other cases. If the Contractor fails to do so, the Contractor agrees to assume all responsibility to control and/or correct the hazard as if the Contractor were the creator or the cause of the hazard.

1. **Safety Equipment.** Contractors must provide their own first aid supplies and emergency response equipment. The Contractor must certify that at least one employee on each work shift has current training in emergency first aid and cardiopulmonary resuscitation (CPR). The City does not supply air monitoring or sampling equipment, respiratory protection, personal protective equipment (PPE), fall protection equipment or other safety equipment to persons who are not City of Oakland employees. Contractors are required to provide their own tools and equipment and maintain their own PPE, respiratory protection, breathing air supplies, breathing air distributions systems, fall protection and other safety equipment and supplies.
2. **Lockout/Tagout and Control of Hazardous Energy.** At the pre-construction meeting the Contractor shall provide the Engineer with copies of its lockout and tagout procedures for control of hazardous energy related to City equipment and utilities involved in the Contractor's scope of work. The Contractor shall obtain permission and authorization from the Engineer before placing any lockout or tagout on City of Oakland equipment. Contractor employees must have their own individual locks and tags assigned to each employee for use in locking out and tagging out equipment required for their assigned work tasks, regardless of whether the City of Oakland also applies its own lockouts and tagouts. The Contractors shall ensure that lockout and tagout activities and control of hazardous energy comply with Cal/OSHA standards pertaining to these activities.
3. **Equipment and Utilities.** Contractors are prohibited from starting, stopping, or otherwise accessing or operating City of Oakland owned or leased equipment and utilities, unless specifically authorized to do so in written, contractual documents.

The City of Oakland will provide the Contractor with information, if any is in the City's possession, regarding the location of underground or above ground mechanical, electrical, gas, telephone, sewers, storm drains, water lines and other utilities that may be impacted by the nature of the Work; provided, however, that the City makes no warranty regarding the sufficiency or accuracy of such information. The Contractor will promptly inform the City in writing if the Contractor believes any information provided by the City is inaccurate in any material respect, or if the Contractor encounters unexpected or previously unknown site conditions. The Contractor will become thoroughly familiar with the tolerances, dimensions and location of all such utilities. If necessary, the Contractor will contact representatives of utility companies and public agencies, and review plans and information, if any, provided by such representatives and agencies about the work site.

The Contractor will be solely responsible for any damage done by Contractor to such utilities

during the Work. No repair of such damage will be included in the cost of the Work unless the Contractor could not have located such utilities prior to such damage by conducting the investigation required by this Agreement. In such event, the repair of such damage may be included in the cost of the Work by Change Order, as set forth in this Agreement.

4. **Welding and Other Hot Work.** Contractors are prohibited from welding, burning, cutting, or performing other "hot work" unless specifically authorized to do so in written contractual agreements. All hot work must comply with Cal/OSHA standards for these work activities, including those standards pertaining to hot work permits and safe handling of compressed gases.
5. **Injury and Illness Prevention Plan.** The Contractor shall develop and implement a written Injury and Illness Prevention Plan (IIPP) and Code of Safe Practices that specifically apply to the Contractor's scope of work and anticipated work activities. The IIPP and Code of Safe Practices must comply with Cal/OSHA standards, as applicable. Copies of the IIPP and Code of Safe practices must be provided at the pre-construction meeting..

7-10.4.6 e. Prohibited Acts. Contractor employees and Subcontractors are prohibited from bringing firearms, knives and weapons of any kind into City of Oakland facilities or onto City property, unless specifically authorized to do so in written contractual documents. The Contractor shall remove any person found in unauthorized possession of such devices on City facilities and property.

Threats and acts of violence or vandalism in the workplace are strictly prohibited. This includes, but is not limited to, threats to City personnel or vandalism/property damage to City of Oakland facilities, equipment, supplies or properties.

Contractor and Subcontractors are prohibited from scavenging or otherwise salvaging or removing any City of Oakland equipment, tools, waste materials or other property unless specifically authorized to do so in written contractual agreements.

7-10.4.6 f. Work Site, Material Storage and Disposal. The Contractor will perform the Work without interfering with City of Oakland employees or operations in areas around the work site. The Contractor shall secure and store all materials and supplies in a safe manner in accordance with local, state and Federal laws, standards and regulations. Contractors will on a daily basis, at their own expense, keep the work site and areas immediately adjacent thereto in an orderly and neat condition, clean and free from accumulation of waste materials and rubbish. Upon completion or termination of the Work, the Contractor will remove all waste materials, rubbish, temporary structures, tools, equipment and surplus materials from the work site.

Contractors are prohibited from using or accessing City of Oakland waste disposal systems unless specifically authorized to do so in written contractual documents. Contractors shall provide their own waste storage and disposal containers, store and dispose of all waste materials in a timely manner and in accordance with local, state and Federal environmental, health and safety laws, standards and regulations.

7-10.4.6 g. Incident Reporting. The Contractor shall immediately notify the Engineer of any occupational injury or illness, employee exposure to hazardous substances, vehicle accidents, property damage, or environmental spills or releases regardless of the severity of such incidents. The Contractor shall provide a written incident report to the Engineer within 24 hours of any such occurrence. The City of Oakland reserves the right to review Contractor incident investigations and/or perform the City's own investigation(s), for the sole purpose of verifying facts and protecting City of Oakland personnel and property.

REPLACE SUBSECTION 7-11 WITH THE FOLLOWING:

7-11 PATENT FEES OR ROYALTIES. The Contractor shall absorb in the Bid all patent fees or royalties on any patented article or process that may be furnished or used in the work.

The Contractor agrees to hold the City harmless from and to indemnify the City against any and all costs, attorneys' fees, and damages arising out of or connected with any claim, demand, action, lawsuit, judicial determination or judgment concerning infringement upon the rights of others, including patent rights, by the use of any article or process which may be furnished or used in the work. In the event of any such infringement claim, the Contractor shall notify the City within ten days of such claim, and keep the City advised of all developments. The Contractor shall comply with all reasonable requests by the City for information and data in defense of such suit. The Contractor shall agree to defend any and all such claims, demands, actions and suits.

In the event that any equipment or process furnished or used in the work is determined by the City or by a Court to infringe upon the rights of a third party, the City shall in addition have the option of:

1. Replacing the equipment with non-infringing equipment;
2. Modifying the equipment or process to the extent required to avoid such infringement;
3. Continuing to use the equipment or process;

4. Receiving as partial compensation the refund of all monies paid to the Contractor.

In the event of replacement or modification, the amounts spent on such replacement or modification shall be charged against and be recoverable from the Contractor. Final payment to the Contractor by the City will not be made while any suit or claim remains unsettled.

The City may itself defend any such claim, demand, action or suit, and settle or take any other action it deems necessary or advisable in connection with any such claim, demand, action or suit.

7-12 ADVERTISING.

ADD NEW SUBSECTION 7-12.1 TO SUBSECTION 7-12:

7-12.1 Contract Information Signs. The Contractor shall supply, erect, and maintain **ONE** Construction Information Signs and unlimited Barricade Signs as directed by the Engineer. **Attachment 9** and **Attachment 9A** at the end of these Special Provisions shows the requirements for these signs. Signs not conforming to these requirements will be rejected. These project signs shall be erected at locations as directed and approved by the Engineer prior to beginning construction. These signs shall be relocated, if necessary, as construction proceeds according to the Engineer's direction.

Payment: The unit price bid for each Construction Information Sign with unlimited Barricade Signs shall include full payment for all construction information signs, including material, labor, and incidentals and for relocation and any changes to the signs due to project time extension(s) and printing error. If no unit price is included, payment of Contract Information Signs and unlimited Barricade Signs shall be included as part of other items in the project.

7-13 LAWS TO BE OBSERVED.

ADD THE FOLLOWING TO THE END OF SUBSECTION 7-13:

Before submitting bids, all Contractors shall be licensed in accordance with the provisions of Chapter 8 of Division III of the Business and Professions Code of the State of California. The Contractor must be properly licensed as a contractor from contract award through Contract acceptance (Public Contract Code § 10164.)

ADD NEW SUBSECTION 7-15:

7-15 Violations and Fines. Contractor shall be subject to fines for any violations and/or breach of contract provisions such as, but not limited to, improper traffic control, unapproved working hours, violations of BMP's for erosion control and storm drain protection, failure to maintain site cleanliness and dust control, construction safety and environmental health issues, improper construction staging and material storage, etc. Fines shall range from \$250 to \$2,500 per violation per day and will be determined at the sole discretion of the Resident Engineer. All assessed fines shall be deducted from the Contractor's Progress Payments.

All other provisions of the contract plans and specifications are independent of this subsection and remain applicable.

SECTION 9 - MEASUREMENT AND PAYMENT

9-1 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORK.

9-1.1 General.

DELETE THE WORD "pipe" FROM THE 2nd SENTENCE OF THE FIRST PARAGRAPH OF SUBSECTION 9-1.1.

9-3 PAYMENT.

REPLACE SUBSECTION 9-3.2 WITH THE FOLLOWING:

9-3.2 Partial and Final Payment. The Engineer will, after award of contract, establish a monthly closure date for the purpose of making monthly progress payments. The Contractor may request in writing that such monthly closure date be changed. The Engineer may approve this request if it is compatible with the Agency's payment procedures.

Each month, the Contractor shall submit a draft invoice along with approximate measurements of the work performed up to the closure date and Attachment 13 (when required). Upon receipt of the draft invoice, the Engineer will review the draft invoice and estimate completed work based on the contract unit prices or as provided for in Section 9.2 within 5 business days. No such monthly estimate or payment shall be required to be made when, in the Engineer's judgment, the work is not proceeding in accordance with the contract provisions, or when the total value of the work done by the Contractor since the last monthly

estimate amounts to less than Five Thousand Dollars (\$5,000).

When the work has been satisfactorily completed, the Engineer will determine the quantity of work performed and prepare the final estimate.

From each progress estimate, five percent (5%) will be deducted and retained by the Agency, and the remainder less the amount of all previous payment will be paid to the Contractor.

As provided for in Section 4590 of the California Government Code and Section 10263 of the California Public Contract Code, the Contractor may substitute securities for any monies withheld by the City to ensure contract performance. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the City, or with a State or federally chartered bank as the escrow agent, who shall pay such moneys to the Contractor upon satisfactory contract completion. Securities eligible for investment under this subsection shall include those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.

The Contractor shall be the beneficial owner of any securities substituted for moneys by the City. These securities shall contain, as a minimum, the following provisions:

1. The securities amount to be deposited;
2. The terms and conditions of conversion to cash in case of the Contractor's default; and
3. Escrow termination upon contract completion.

The City shall value any Contractor-deposited securities. The City's decision on the securities value shall be final.

No progress payment made to the Contractor or its sureties will constitute a waiver of the liquidated damages under 6-9.

9-3.2.1 Subcontractor Release of Retention. A Local Business Enterprise (LBE) Subcontractor may request full release of their portion of the General Contractor's retention held by the City of Oakland upon completion and tentative approval of all the LBE Subcontractor's work on the project. This provision shall be contingent upon the following conditions:

1. Payment and Performance Bonds remain in full force until completion and acceptance of the project as defined by the Standard Specifications for Public Works Construction and Special Provisions.
2. The LBE Subcontractor's work must be complete and conditionally approved by the Engineer. The LBE Subcontractor's work is deemed complete and approved if:
 - a. The General Contractor was allowed to advance the project beyond the LBE Subcontractor's work. For example, advancing from grading to paving or from asbestos abatement to painting and;
 - b. The LBE Subcontractor has complied with all provisions in the City of Oakland and Redevelopment Agency Small Local Business Enterprise Program, and the City of Oakland and Redevelopment Agency Local Employment Program for Public Works Contracts.
 - c. All work, including punch list work, is in full compliance with all applicable codes, contract plans and contract specifications.
3. Completion and conditional approval for purposes of this provision shall not signify acceptance of the work by the City of Oakland. The LBE Subcontractor's work shall continue to be subject to contract provisions covering warranty, and incomplete or defective work.
4. Release of any portion of the General Contractor's retention shall not constitute a release of any contract provisions governing the work.

To initiate the release of their retention, the LBE Subcontractor shall apply by letter to the General Contractor. The letter must include:

- A statement certifying that the LBE Subcontractor's work is complete and complies with all applicable codes, contract plans and contract specifications.
- The dollar value and the scope of work of the LBE Subcontractor's contract with the General Contractor.
- The dollar value of the LBE Subcontractor's retention held by the General Contractor.
- A payment summary indicating that full payment, except the City's retained amount, has been made to each of the LBE Subcontractor's subcontractors and suppliers. After the General Contractor verifies and certifies the above items, the General Contractor shall make a request to the City of Oakland to release a portion of the General Contractor's retention, as stated in 9-3.2 of the Standard Specifications for Public Works Construction, equal to the dollar value of the LBE Subcontractor's

retained amount. Upon the City of Oakland's approval of this request, the retention will be released in the next scheduled progress payment. The General Contractor shall have three (3) business days after receipt to forward these funds to the LBE Subcontractor.

9-3.2.2 Subcontractor/Subconsultant/Supplier Payment Certification. The Contractor shall certify in writing that all subcontractors/ subconsultants/ suppliers have been paid for work and materials from previous progress payments received (less any retention) by the Contractor prior to receipt of any further progress payments. In the event the Contractor is unable to pay a subcontractor/sub-consultant/supplier until they receive a progress payment from the City, the Contractor shall pay all subcontractors/ subconsultants/ suppliers funds due from said progress payments within forty-eight hours of receipt of payment from the City. During and upon completion of the contract, the City may request monthly documentation to certify payment to subcontractors/ subconsultant/ suppliers. The City reserves the right to issue joint checks payable to both the Contractor and the subcontractor/ subconsultant/ supplier to insure proper payment. This provision in no way creates any contractual relationship between any subcontractor/ subconsultant/ supplier and the City or any liability on the City for the Contractor's failure to make timely payment to the subcontractor/ subconsultant/supplier.

In order for the City of Oakland to verify that all subcontractors, equipment owners and suppliers have been paid for work and materials from previous progress payments received, it will be necessary for the Contractor to fill out the monthly progress payment for Subcontractors, Equipment Owner Operators & Suppliers Form. This form must be attached to the Contractor's monthly request for payment invoice. Failure to do so will delay the progress payment to the Contractor. One copy of the form must also be sent to the City Administrator's Office, Contracts and Compliance Unit, Contract Compliance Division, Oakland, CA 94612. Telephone (510) 238-2970. These forms are available at the Contract Compliance Office.

The Engineer is authorized to withhold an amount from progress and final payments from Contractors who do not submit certified payroll reports for themselves or their subcontractors or are in non-compliance with the City of Oakland and Redevelopment Agency's Local Construction Employment Program and Resolution No. 57103 C.M.S. governing the payment of prevailing wages. The Contract Compliance Officer shall determine the withholding amounts.

9-3.2.3 Submittal of Certified Payrolls. It is required that contractors and their subcontractors submit weekly certified electronic payroll reports for all crafts covered under the contract provisions within five working days of the end of the payroll period. For tracking purposes the certified payroll records shall show the ethnic and gender breakdown of the workforce. The Contractor's failure to submit the required information may result in a monetary penalty in an amount not to exceed \$1,000 or one percent (1%) of the amount of the contract, whichever is less, for each working day of non-compliance, regardless of the number of separate acts of non-compliance by the contractor or subcontractor existing on a particular day.

As a condition to receiving progress payments, final payment and payment of retention on any and all projects on which the payment of prevailing wages is required, the contractor shall have provided to the City, along with its request for payment, all applicable and necessary certified payrolls and other required documents for the time period covering such payment request. The City shall withhold any portion of a payment, including the entire payment amount, until certified payroll forms and other required LCP documents are properly submitted. In the event that certified payroll forms do not comply with the requirements of Labor Code Section 1720 et seq., or wage violations are identified by the City, the City will continue to hold sufficient funds to cover estimated wages and penalties under the contract.

9-3.2.4 Required Job Site Waste Reduction and Recycling Summary Report Form. The Contractor shall submit the proper form referenced in Subsection 4-1.1.3 Required Construction and Demolition Waste Reduction and Recycling. Failure to provide this report will result in withholding up to 5% of the contract amount to the Contractor.

9-3.2.5 Prompt Payment Transmittal Form. The Contractor shall provide a completed Prompt Payment Transmittal form with each payment request. A copy of this form is included in the Department of Contracting and Purchasing website under the heading "Forms and Schedules" <http://www2.oaklandnet.com/Government/o/CityAdministration/d/CP/s/FormsSchedules/index.htm>.

REPLACE SUBSECTION 9-3.3 WITH THE FOLLOWING:

9-3.3 Delivered Materials. In determining the amounts of a progress payment, the City may consider the invoiced value of acceptable materials delivered on the site or furnished and stored off the site, if such storage is within a 25-mile radius of the Oakland City Hall, Oakland, California, except for plant (nursery) material, for which said radius shall be 40 miles. In either case, the Contractor shall furnish evidence satisfactory to the City: (1) of the value of such materials; and (2) that such materials are under the

exclusive control of the Contractor and have been paid for. Only materials to be incorporated in the project will be considered for purposes of partial payment. Partial payment shall not be construed as acceptance of such materials, nor relieve the Contractor from sole responsibility for the care and protection of such materials, nor relieve the Contractor from risk of loss to such materials from any cause including, but not limited to, theft, casualty, act of God, vandalism or levy by creditors, nor as a waiver of the right of the City to require fulfillment of all terms of the contract.

The Contractor shall submit, upon demand, invoices, bills of lading and other documentary evidence regarding material involved in progress payments, indicating thereon that such material is specifically assigned to this work, and shall submit documentary evidence of acceptable fire and extended coverage insurance for such material or acceptable certification that material is in storage in a bonded warehouse or at the approved site.

Payment will not be made for materials wasted or disposed of in a manner not called for under the Contract. This includes all rejected material either unloaded, or not unloaded, from vehicles. No compensation will be allowed for disposing of rejected or excess material.

All material covered by partial payment made shall thereupon become the sole property of the City, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the proper storage, transportation, care, maintenance and protection of materials upon which payments have been made or the restoration of any damaged material, or as a waiver of the City's right to require the fulfillment of all contract terms.

9-3.4 MOBILIZATION.

ADD THE FOLLOWING PARAGRAPH TO SUBSECTION 9-3.4:

The cost of mobilization work, if not shown in the bid schedule as a separate item, shall be included in the payment made for other work items, and no separate payment shall be made therefor. When mobilization is included as a bid line item, the bid amount shall not exceed 5% of the total contract amount.

ADD THE FOLLOWING SUBSECTION:

9-4 AS-BUILT DRAWINGS. The Contractor shall provide and keep up-to-date a complete "As-Built" record set of paper prints that shall be corrected daily and shall show every change from the original contract Drawings and Specifications. The "As-Built" shall show exact locations, types, and sizes of material and equipment installed. This set of prints shall be kept on the job site and shall be used only as a record set.

Final As-Built Drawings: On completion of the work, the Contractor shall provide the final, complete set of as-built drawings to the Resident Engineer.

The City will inspect "As-Built" Drawings at the time of the monthly payment review. If it is determined that "as-built" Drawings are not properly maintained, the City may withhold 5% of the contract price from the Contractor, in addition to any other withheld amounts.

ADD THE FOLLOWING SUBSECTION:

9-5 SUBSTANTIAL COMPLETION AND OCCUPANCY. When Contractor considers the entire work ready for its intended use, Contractor shall (in writing to City) request an inspection to certify that the entire work is substantially complete and request City issue a Certificate of Substantial Completion as of that date. The City will make an inspection of the work with the Contractor to determine the status of completion. If City does not consider the work substantially complete, City will notify the Contractor of the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. The Engineer's failure to include any items on such list does not alter the Contractor's responsibility to complete all work in accordance with the contract documents.

The value of remaining work to be completed or corrected, established by the Contractor and approved by City, will be withheld until work is completed or corrected to the satisfaction of City. Final payment will not be made until completion of withheld items.

PART 2 - CONSTRUCTION MATERIALS

Part 2 of the Special Provisions shall conform to Part 2 of the Standard Specifications except as modified herein.

Building materials containing asbestos are prohibited. Any specialized materials where asbestos is necessary shall be submitted to the City along with the Material Request Form for approval.

SECTION 200 -- ROCK MATERIALS

200-2 UNTREATED BASE MATERIALS.

200-2.2 Crushed Aggregate Base.

ADD THREE NEW PARAGRAPHS TO END OF SUBSECTION 200-2.2:

Aggregate may include or consist of material processed from reclaimed asphalt concrete, portland cement concrete, lean concrete base, cement treated base or a combination of any of these materials.

Untreated reclaimed asphalt concrete and portland cement concrete will not be considered to be treated with lime, cement or other chemical material for the purposes of performing the Durability Index test.

Payment: Full compensation for labor material, equipment and incidentals to deliver and compact the aggregate base to the limit specified in the plans and special provisions for Class 2 aggregate base shall be paid for other bid items of work involved, and no additional compensation will be allowed therefor.

200-2.4 Crushed Miscellaneous Base.

REVISE SUBSECTION 200-2.4.2 TO READ:

200-2.4.2 Grading. The material shall be uniformly graded and shall conform to the gradation of crushed aggregate base in 200-2.2.

200-2.4.3 Quality Requirements.

REVISE THE 1ST AND 2ND LINES OF TABLE 200-2.4.3 (A) TO READ:

<u>TEST</u>	<u>TEST METHOD</u>	<u>REQUIREMENTS</u>
R-Value ¹	California 301	78 min.
Sand Equivalent	California 217	26 min.

200-2.5 Processed Miscellaneous Base.

ADD THE FOLLOWING SENTENCE TO SUBSECTION 200-2.5 TO READ:

Processed Miscellaneous Base shall have an aggregate grading of 3/4" maximum, coarse.

200-2.5.3 Quality Requirements.

REVISE THE 1ST AND 2ND LINES OF TABLE 200-2.5.3 (A) TO READ:

<u>TEST</u>	<u>TEST METHOD</u>	<u>REQUIREMENTS</u>
R-Value ¹	California 301	55 min.
Sand Equivalent	California 217	25 min.

200-2.6 Select Subbase.

200-2.6.3 Quality Requirements.

REVISE TABLE 200-2.6.3 (A) TO READ:

<u>TEST</u>	<u>TEST METHOD</u>	<u>REQUIREMENTS</u>
R-Value ¹	California 301	40 min.
Sand Equivalent	California 217	15 min.

SECTION 201 -- CONCRETE, MORTAR AND RELATED MATERIALS

201-1 PORTLAND CEMENT CONCRETE.

201-1.1.4 Concrete Specified by Compressive Strength.

ADD THE FOLLOWING BETWEEN THE 5TH AND 6TH PARAGRAPHS OF SUBSECTION 201-1.1.4:

When directed by the Engineer in lieu of field-testing, a testing laboratory selected by the Engineer shall evaluate mix designs. Laboratory batch samples shall be made in accordance with ASTM C 192. The Contractor shall supply and deliver adequate samples of all material proposed for use at no cost to the Engineer. Mix designs shall be submitted to the Engineer at 35 days in advance of proposed use when laboratory evaluation is performed. At least six test cylinders shall be molded from laboratory trial batches. Cylinder testing shall be performed as follows:

one at 7 days	one at 14 days	two at 28 days
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The remaining two cylinders shall be tested at the Engineer's direction.

Concrete used for sidewalks, driveways, curbs, gutters and curb ramp construction shall be 2,500 psi mix in accordance with subsection 201-1. Concrete shall contain lampblack in the amount of one pound per cubic yard.

Payment: Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and doing all work involved for concrete tests of all concrete construction as shown on the plans, as required by the Standard Specifications and these Special Provisions, or as directed by the Engineer, shall be considered as included in the price bid for the other bid items, and no additional compensation shall be allowed therefor.

201-1.4 Mixing.

201-1.4.3 Transit Mixers.

ADD NEW ITEM TO LIST IN 7TH PARAGRAPH OF SUBSECTION 201-1.4.3:

- h) Time and date of batching and Revolution counter reading at time of batching and at time of discharge.

201-2 STEEL REINFORCEMENT FOR CONCRETE.

201-2.2.3 Welded Wire Reinforcement.

ADD THE FOLLOWING PARAGRAPH TO SUBSECTION 201-2.2.3:

Wire mesh used as reinforcement shall only be a flat sheet. Rolled mesh shall be permitted only when authorized by the Engineer.

201-6 CONTROLLED LOW STRENGTH MATERIAL (CLSM).

REPLACE SECTION 201-6 WITH THE FOLLOWING:

201-6.1 General and Quality Assurance.

201-6.1.1 Cementitious Material. CLSM shall be composed of a cementitious material, water and suitable native or imported soils as described in this section.

The cementitious materials shall be Portland cement. Fly ash may be substituted for cement provided the requirements of this section are met.

201-6.1.2 Mix Proportions. The appropriate CLSM mix proportions shall be determined by preparing test batches and testing trial cylinders in accordance with 201-6.2.

201-6.1 Strength and Density. CLSM shall have an unconfined compressive 28 day strength from 50 psi to a maximum of 150 psi and a density of 110 to 130 pounds per cubic foot.

201-6.1.4 Mixture. The mixture shall have a consistency such that the CLSM completely fills the space between the pipe and the excavated trench walls without bleeding or segregation of soil materials.

The CLSM mixture shall contain no particles larger than 3 inches.

201-6.1.5 Native and Imported Soils:

The soil shall be free of organic impurities.

The amount of material passing a #200 sieve shall not exceed 30 percent.

The plasticity index of the soil shall not exceed 3. The sand equivalent of the soil shall be at least 15. For native material with a sand equivalent between 10 and 15, approval shall be dependent on production and successful testing of a sample batch of CLSM.

During full-scale CLSM placement, the Engineer will take samples and perform tests to determine compliance with the specified unconfined compressive strength requirements.

201-6.2 Mix Design. The design of the CLSM mix shall be the responsibility of the Contractor, and shall be subject to review and approval by the Engineer before a full-scale field mix is used. Mix shall result in a final product that meets the requirements of this section.

201-6.2.1 Submittals - Mix Design and Testing. CLSM mix shall be designed, in accordance with ASTM D4832-02 Standard Test Method for Preparation and Testing of Controlled Low Strength Material Test Cylinders. The CLSM used in test cylinders shall be prepared using the same equipment proposed for full-scale batching and mixing.

The testing laboratory shall submit certified copies of all laboratory trial mix reports to the Engineer.

CLSM shall not be used prior to the Engineer's review of test reports and approval of the mix design.

The minimum cement content for the mix design shall be 3 percent by dry mass of the soil.

Cementitious fly ash (Class C or F) may be used in the mix provided the strength and consistency requirements in 201-6.1 are met.

Air entraining admixtures may be used in the mix provided the strength and consistency requirements in 201-6.1 are met.

The CLSM shall be sampled according to ASTM D5971.

The following tests shall be conducted on the native soils proposed for use in preparing CLSM: ASTM D422 and ASTM D4318.

The following tests shall be conducted for each CLSM trial batch: ASTM D4832, ASTM D6023, ASTM D6024.

The Contractor shall submit the results of the laboratory testing program and the selected design mix for full-scale field production for review and approval by the Engineer. After acceptance, the batch and mix process or native soil source material shall not be changed without submitting new test information.

The Contractor shall provide a submittal showing the proposed methods to support the pipe during CLSM placement.

The Contractor shall provide a submittal showing the proposed methods to prevent pipe flotation during CLSM placement.

The Contractor shall provide a submittal detailing the proposed batching and mixing process including the following:

The proposed equipment and methods to process native soils into source material in compliance with 201-6.1.

The proposed staging and batch plant mixing areas relative to the work areas where the CLSM will be placed.

The proposed means of transport for mixed CLSM material from the batching and mixing area to the work where the CLSM will be placed.

201-6.3 Materials.

Cement shall conform to ASTM C150, Type II.

Cementitious fly ash (Class F or C) may be used in the mix provided that the strength and consistency requirements in 201-6.1 are met. The fly ash shall conform to ASTM C618 and shall not contain more than 3% carbon (low).

Air entraining admixtures may be used in the mix provided that the strength and consistency requirements in 201-6.1 are met.

Native soils used in the CLSM mix shall be predominantly granular and meet the requirements of 201-6.1.

Water shall be free from oil, salts and other impurities that would have an adverse effect on the quality of the CLSM.

201-6.4 Execution - Batching and Mixing, and Installation.

201-6.4.1 Batching and Mixing: Batch and mix the CLSM in the field with the processed native soils similar to that used in the trial mix program.

201-6.4.2 Installation:

Use sufficient shores or other supports to prevent soil from caving onto pipe. Remove soil fallen into trench before placing CLSM.

CLSM shall be placed on one side of the pipe and allowed to flow under until it is seen on the other side.

The CLSM shall be brought uniformly to the elevation as shown on the drawings.

Place CLSM between the trench bottom and 0.15 D above the bottom of the pipe as part of a single lift, where D is the diameter of the pipe.

The CLSM shall be placed so there is complete contact between the pipe and excavated pipe trench walls.

Prevent CLSM from entering bell holes before joint coating and testing are complete.

If CLSM is placed near a joint before application and testing of joint coating, place a blanket or cover over joint to prevent CLSM spatter onto joint area.

The support materials used to haunch the pipe and contain the CLSM during placement shall not exceed the compressive strength of the CLSM.

The Contractor shall take the necessary measures to prevent flotation of the pipe during CLSM placement.

CLSM shall not be placed when the air temperature is below 4°C (40°F). Allow CLSM to set before placing backfill above CLSM.

No equipment or traffic shall be allowed on the CLSM until the surface of the CLSM will withstand the weight of the equipment or traffic without displacement or damage. Suitability for load applications shall be determined by ASTM D6024.

If necessary to prevent displacement or damage, provide steel trench plates that span the trench or other means that prevent equipment or traffic contact with CLSM.

ADD NEW SUBSECTION 201-10 TO READ AS FOLLOWS:

201-10 MANHOLES, CLEANOUTS AND APPURTENANT MATERIALS.

Material quality, the manufacture process, and the finished sections shall be subject to the Engineer's inspection and approval. Such inspection may be made at the manufacture place and/or on the job site after delivery. The materials shall be subject to rejection at any time for failure to meet any of the Specification requirements even though samples may have been accepted as satisfactory at the manufacture place. Materials rejected after delivery to the job site shall be marked for identification and shall be removed at once from the job site. All materials damaged after delivery and prior to project acceptance by City shall be rejected, even if installed. The Engineer's judgment on the materials shall be final. The Contractor may attempt to make acceptable repairs on installed material(s), if the Engineer so agrees. However, the Engineer's judgment on the repairs' acceptability will be final. Unsatisfactory material shall be removed and replaced with satisfactory material entirely at the Contractor's expense. The Engineer may accept a certification indicating compliance with the specifications in lieu of inspection.

201-10.1 Materials.

201-10.1.1 Rock Base. Rock base shall conform to the requirements of 200-1.2 and shall be the $\frac{3}{4}$ " inch mix according to Table 200-1.2 (A).

201-10.1.2 Cement Mortar. Cement mortar shall conform to the requirements of 201-5.

201-10.2 Manholes

201-10.2.1 Cast-In-Place Concrete Manholes. Materials used in cast-in-place concrete manholes shall be as shown on the plans and in accordance with the applicable requirements of 201.

201-10.2.2 Pre-cast Manhole Sections. Pre-cast manhole sections, where not otherwise modified in the Plans, shall conform to ASTM C478 and meet the following requirements:

- a. The wall thickness shall not be less than 5 inches.
- b. All sections shall be fully cured and shall not be shipped nor subjected to loading until the design compressive strength has been reached.
- c. Pre-cast base sections shall have the base slab integral with the sidewalls. Pre-cast base sections may only be used if the invert plan and base alignment of the sewer connections exactly match the field-measured angles between the connecting sewers.

201-10.2.3 Manhole Bases. Materials used in cast-in-place concrete manhole bases shall be in accordance with the applicable requirements of Section 201. At the Contractor's option and with the Engineer's approval, pre-cast base sections with integral floor conforming to ASTM C478 may be used.

201-10.2.4 Pipe Connections. Pipe connections to manholes shall have a rubber waterstop tightly banded to the pipe and cast into the manhole base. Banding materials shall be 316 stainless steel or other approved corrosion resistant materials secured with Type 316 stainless steel nuts and bolts. See Section 500-1.6.7, Sealing Connections at Manholes, for HDPE pipe.

201-10.2.5 Manhole Extensions. Concrete grade rings for extensions shall be a maximum of six inches thick. In general, manhole extensions will be used on all manholes in roads, streets or other locations where a subsequent change in existing grade may be likely. Extensions will be limited to a maximum height of 12 inches.

201-10.2.6 Jointing Manhole Sections. Male and female joints of manhole sections shall be sealed with a round rubber "O" ring gasket or a preformed flexible joint sealant. The "O" ring shall conform to ASTM C443. The preformed flexible joint sealant shall conform to Federal Specifications SS-S00210, and shall be Kent Seal No. 2 as manufactured by Hamilton-Kent; Ram-Nek as manufactured by K. T. Snyder Company; or equal. The size of the preformed joint sealant shall be as recommended by the manufacturer of the pre-cast manhole sections.

201-10.3 Cleanouts. Cleanouts shall be as shown on the Plans or the Standard Details and shall be the same material type as approved for use in main or building sewer construction.

201-10.4 Lampholes. Lampholes shall be as shown on the Plans or the Standard Details and

shall be the same material type as approved for use in main sewer or building connection sewer construction.

201-10.5 Appurtenant Materials.

201-10.5.1 Pipe and Fittings. Pipefittings, including material for drop connections at the manhole, shall be the type and dimensions as shown on the Plans or Agency Standard Details, as applicable, or as specified in these specification amendments.

201-10.5.2 Pipe Stubouts for Future Sewer Connections. Pipe stubouts shall be the same type as approved for use in lateral, main, or trunk sewer construction. Strength classifications shall be same class as in adjacent trenches. Where there are two different pipe classes at a manhole, the higher strength pipe will govern strength classification. Rubber-gasketed watertight plugs shall be furnished with each stub-out and shall be adequately braced against all hydrostatic or air pressures.

201-10.6.1 Sealing Manhole Walls. Manhole walls shall be sealed where shown or specified, or as directed by the Engineer. Sealing manhole walls shall include cracks, joints, gaps, and channel. Sealing of the manhole walls shall be accomplished by any of the methods specified below:

201-10.6.1.a Cement-Epoxy Mixtures. Openings, cracks, and deteriorated joints in manhole walls shall be repaired and sealed by utilizing cement-epoxy mixtures manufactured for this purpose, such as those manufactured and/or supplied by Standard Dry Wall Products; Water-Wastewater Products & Systems, Inc.; IPA Systems, Inc.; Stonehard, Inc.; or approved equal.

201-10.6.1.b Chemical Grout. Openings, cracks, and deteriorated joints in manhole walls shall be repaired and sealed using chemical grout and applicable procedures specified for sewer system rehabilitation.

201-10.6.1.c Polyurethane Coatings. Sprayable polyurethane coating shall be used to seal manhole walls. The coating shall be a high-build polyurethane specifically formulated for use in a sewer system environment. The minimum thickness of the dry coating shall be 125 mils.

201-10.6.1.d Modified Polyester/Polymorphic Coatings. Spray-applied modified polyester/polymorphic resin shall be used to seal manhole walls. The coating shall be a two-component, 100% solids system. Prior to applying the prime coat, the manhole surface shall be sandblasted or hydroblasted and properly dried.

201-10.6.1.e Epoxy Coating. Sprayable or brushable epoxy coatings may be used to seal manhole walls. The coating shall be a high-build epoxy, Mainstay DS-5 or approved equal, specifically formulated for use in the sewer system and applied in accordance with manufacturer's recommendations and guidelines and at 50-125 mils thickness in one or two coats. Prior to coating, the manhole walls shall be thoroughly sandblasted or hydroblasted and cleaned as recommended by the manufacturer to ensure complete coverage and bonding. Openings and cracks larger than 1/8 inch in the manhole walls shall be filled with mortar, Mainstay ML-72 or ML-72F, or approved equal, at one-half to one inch thickness, prior to trimming and applying the epoxy coating.

201-10.6.1.f Fiberglass Liners. Existing manhole walls shall be thoroughly sandblasted and cleaned or primed as recommended by the materials manufacturer to ensure complete coverage and bonding. Openings and cracks larger than 1/8 inch in the manhole walls shall be filled with mortar prior to priming and applying the fiberglass.

i) **Factory-Manufactured Fiberglass Liners.** Manhole liners shall be made of fiberglass reinforced plastic (FRP), having an inside diameter of not less than 42 inches. Manhole liners shall meet the requirements of ASTM D3753. The liner shall be installed in accordance with manufacturer's recommendations including removal of the existing cone, grouting of the annular space between the liners and existing manhole walls, rebuilding or replacing the cones, backfilling, installing steps, and installing cast iron frames and covers.

ii) **Field-Fabricated Fiberglass Liners.** Manhole liners shall be field-fabricated by applying glass fibers and resin to the manhole walls. The completed lining thickness shall be

not less than 1/4 inch at any location.

201-10.6.1.g HDPE Liners. Lining manufacturer shall be GSE "Studliner", GU-International AGRU "Suregrip" or equal. Polymer mortar shall consist of a primer if recommended by the manufacturer and a liquid binder and a dry aggregate mixed together to make a mortar of consistency as required for the application. The mortar shall be designed for application to vertical or overhead surfaces and must be accepted by the lining manufacturer. The liquid binder shall be chemical and oil resistant, stress relieved, low modulus, moisture insensitive, two- component epoxy-resin compound. The consistency shall be similar to lightweight oil for proper mixing with aggregate. Material shall conform to ASTM C881, type 3, Grade 1, Sika Corporation Sikadur 22 Lo-Mod Series or equal.

i) HDPE lining, joint strips and angle strips (hereinafter collectively referred to as "lining") shall be made from minimum 97 percent virgin high density polyethylene (HDPE). Color shall be gray.

ii) Lining shall be impermeable to sewage gases and liquids and shall be nonconductive to bacterial or fungal growth. All linings shall be factory checked to ensure freedom from porosity.

iii) Lining shall have good impact resistance, shall be flexible, and shall have elongation sufficient to bridge up to 1/4 inch settling crack.

iv) Once cast into the concrete of the manhole wall, lining shall be permanently and physically attached to the concrete by the lining studs and shall not rely on an adhesive bond unless otherwise specified at a specific location.

v) Locking studs shall be made of the same material as the lining and integrally extruded with the sheet. Stud spacing shall be on approximately 1.25-inch centers, such that there are approximately 110 studs per square foot.

vi) Plasticizer shall not be added to the resin formation.

vii) Lining shall be free of holes, pinholes, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.

viii) Adhesive to bond HDPE lining to metal shall be in accordance with the recommendations of the HDPE lining manufacturer.

ix) All work shall be in strict conformity with all applicable specifications, instructions, and recommendations of the lining manufacturer.

x) Prior to shipping lined precast manhole sections and then again after field welding is complete, the lining shall be spark tested in the presence of the Engineer. The spark test shall be done with an approved electrical holiday detector (Turnhert Rasor, model AP-W with power pack or equal) with the instrument set at a minimum of 20,000 volts. Any imperfection shall be repaired in accordance with the manufacturer's recommendations and with the approval of the Engineer.

201-10.6.1.h Cementitious Crystalline

Waterproofing. Waterproofing manufacturer shall be Xypex Chemical Corporation, Xypex Concentrate, Modified, Patch'n Plug or equal. Application shall be in accordance with Xypex recommended specifications.

i) For use in new manholes, the Xypex materials Admix C-500, Admix C-1000, Admix C-2000 or equal shall be used.

ADD NEW SUB-SECTION 201-10.7 TO READ AS FOLLOWS:

201-10.7 CATCH BASIN CONNECTOR PIPE SCREEN

Inlets shall be fitted with connector pipe screens (CPS) and both the product type and manufacturer need to be certified by the State Water Resources Control Board as meeting requirements for full trash capture. The product must be manufactured from S-304 perforated stainless steel with 5mm diameter holes, have a solid top deflector, and have a quick disconnect feature to facilitate easy removal of the screen for cleaning.

201-10.7.1 CATCH BASIN AUTO-RETRACTABLE SCREENS

All inlets fitted with CPS devices (see 201-10.7) shall be installed in combination with spring-

activated auto retractable screens (ARS). These ARS shall be manufactured from S-304 stainless steel with 3/4 inch holes and are individually fitted to the catch basin opening.

SECTION 207 – GRAVITY PIPE

ADD THE FOLLOWING TO THE SECTION HEADING:

The Contractor shall have the option to use alternative pipe materials for the construction or replacement of sanitary sewer work according to the table shown below unless specifically stated otherwise on the plans. Except for irrigation water line, pipes and fittings made with Polyvinyl Chloride (PVC) are not allowed. If specific pipe materials are shown in the plans, Contractor shall not have the option of using other pipe materials.

The Contractor shall state the pipe type planned for use and supply any certification required by the specifications no later than the project pre-construction meeting. Only one pipe type shall be used on a reach between sewer structures.

PIPE COVER AND MATERIAL REQUIREMENTS

PIPE DIAMETER (inches)	LESS THAN 3 FEET	3 TO 15 FEET	15 FEET PLUS
8 TO 15	DIP VCP w/ concrete encasement*	VCP	VCP w/concrete bedding* RCP Class IV
18 TO 36	VCP w/ concrete encasement* RCP Class V	VCP RCP Class III	VCP w/concrete bedding* RCP Class IV

DIP Ductile Iron Pipe, Class II/52 as per AWWA A H3-65

VCP Extra Strength Vitrified Clay Pipe as per ASTM C-700

RCP Reinforced Concrete Pipe with rubber gasket joint

* Concrete encasement or bedding shall be included in the unit price of VCP installed.

- The following table shall be used for establishing pipe strengths for reinforced concrete pipe:

Pipe Class	I	II	III	IV	V
Minimum Ultimate D-Load lbs/ft of diameter/lf	1,200	1,500	2,000	3,000	3,750

- Where Ductile Iron Pipe (DIP) is specified in the plans for sanitary sewer pipe, the Contractor shall use Protecto 401 (or approved equal) Ceramic Epoxy-Lined DIP Class II/52 with a minimum of 40 mils thickness lining. DIP shall have mechanical joints.
- Existing six-inch sewer mains shall be replaced with eight-inch sewer pipe, except as shown on the Plans or when directed by the Engineer.
- Lining an existing six-inch sewer main is not permitted unless shown on the plans.
- Where pipe rehabilitation type 1, 2, 3 and 4 are specified in the plans, the following methods shall be used:
 - Type <1>:** Rehabilitate existing sanitary sewer pipe by installing CIPP liner in accordance with Subsection 500-1.4.
 - Type <2>:** Rehabilitate existing sanitary sewer pipe with SDR 17 HDPE pipe by pipe-expanding in accordance with Subsection 500-1.6.
 - Type <3>:** Replace existing sanitary sewer by Open-Trench Excavation in accordance with Section 306-1.
 - Type <4>:** Construct new sanitary sewer by Open-Trench Excavation in accordance with Section 306-1.

207-1 NONREINFORCED CONCRETE PIPE.

DELETE THE SUBSECTION.

207-16 ABS OR PVC COMPOSITE PIPE.

DELETE ALL REFERENCES TO PVC PIPE OR FITTINGS.

207-17 PVC GRAVITY PIPE.

DELETE THE SUBSECTION.

207-19 POLYETHYLENE (PE) SOLID WALL GRAVITY PIPE.

207-19.1 General.

ADD THE FOLLOWING TWO SENTENCE TO THE END OF THE SUBSECTION:

HDPE pipe used for direct burial shall be SDR 11. HDPE pipe used for the pipe-expanding method of Subsection 500-1.6 shall be SDR 17.

REPLACE SUBSECTION 207-19.3 WITH THE FOLLOWING:

207-19.3 Pipe Acceptance. When manufactured, each lot of pipe, liner, and fittings shall be inspected for defects and tested in accordance with ASTM D3350. The liner or pipe shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters or deleterious faults.

The Contractor shall supply written certification by the manufacturer that materials used in the manufacture of the pipe and the pipefittings conform to these specification requirements. The Contractor shall also supply written certification that all resins/pellets used are from a single producer. Failure to meet this requirement will result in rejection of the pipe or liner during shop drawing review. For testing purposes, a production lot shall consist of all pipe or liner having the same marking number. It shall include any and all items produced during any given work shift and must be so identified as opposed to previous or ensuing production.

ADD NEW SUBSECTION 207-25 TO READ AS FOLLOWS:

207-25 POLYETHYLENE (PE) LARGE DIAMETER (36 INCH DIAMETER OR GREATER) PROFILE WALL PIPE.

207-25.1 General. Polyethylene (PE) profile wall pipe and fittings for use in gravity flow sanitary sewers and storm drains, and for use as liners for sanitary sewers shall comply with ASTM F894.

207-25.2 Material Composition. Pipe fittings shall be made from a plastic compound meeting the requirements of type III, class C, category 5, grade P 34 as defined in ASTM D 1248 and with established hydrostatic design basis (HDB) of not less than 1250 psi for water at 73.4 degrees F determined in accordance with method ASTM D2837. Materials meeting the requirements of cell classification PE 334433 C or higher cell classification in accordance with ASTM D 3350 are also suitable.

Materials other than those specified above may be used as part of the profile construction (for example, as a core tube to support the shape of the profile during the processing, provided that these materials are compatible with the PE material, are completely encapsulated in the finished product, and in no way compromise the performance of the PE pipe product in the intended use.

Materials shall meet the chemical resistance tests of 210-2.3.3.

207-25.3 Test Requirements. Pipefittings shall meet the requirements of the section titled "Requirements" of ASTM F 894. The Engineer will require certification by the manufacturer that the test results comply with specifications requirements. Sampling and inspection shall meet the requirements of the section titled "Sampling, Inspection, and Retest" of ASTM F 894.

207-25.4 Marking. Each standard and random length of pipe shall be clearly marked with the following information: the nominal pipe size (in inches); the legend "PE sewer and drain pipe"; the RSC classification; the material designation: P-34 grade or cell classification; the manufacturer's name; the production code and plant location; and manufacture date.

207-25.5 Dimensions. Pipe dimensions shall comply with dimensions given in Table I of ASTM F 894. Pipe shall have a RSC as shown on the Plans. RSC is defined in ASTM F 894.

SECTION 209 – PRESSURE PIPE

209-1 IRON PIPE AND FITTINGS.

209-1.1 Ductile Iron Pipe (DIP).

209-1.1.1 General.

ADD THE FOLLOWING TO THE END OF SUBSECTION 209-1.1.1 TO READ:

Where Ductile Iron Pipe (DIP) is specified in the plans for sanitary sewer pipe, the Contractor shall use Protecto 401 (or approved equal) Ceramic Epoxy Lined DIP Class II/52 with a minimum of 40 mils thickness lining. The DIP shall have mechanical joints. The inside and outside surfaces of cast iron and ductile iron pipe and fittings for general use shall be coated with a bituminous coating 1 mil (0.0254mm) thick in accordance with ANSI A21.51.

SECTION 210 -- PAINT AND PROTECTIVE COATINGS

210-1 PAINT.

210-2 PLASTIC LINER.

DELETE ALL SUBSECTIONS OF SECTION 210-2 EXCEPT FOR SUBSECTION 210-2.33 Chemical Resistance Test (Pickle Jar Test).

210-5 POLYVINYL CHLORIDE (PVC) COATINGS.

DELETE THE SUBSECTION.

SECTION 211 - MATERIAL TESTS

REPLACE SUBSECTION 211-1.1 TO READ:

211-1.1 Laboratory Maximum Density. Laboratory maximum density shall be determined by California Test Method No. 216, Part II.

REPLACE SUBSECTION 211-1.2 TO READ:

211-1.2 Field Density. Field density shall be determined by California Test Method 231.

ADD NEW SUBSECTION 211-7 TO READ:

211-7 IMPORT FILL MATERIAL.

The following subsection shall be used for all City projects where fill material is imported for any purpose.

211-7.1 Definitions.

- (1) **Import Material:** Any fill identified for import to the project site from an offsite location, including but not limited to: soil, gravel, crushed rock, rock dust, crushed concrete, sand, compost and biosolids (organic matter recycled from sewage).
- (2) **Source Area:** The location from which the Import Material originated.
- (3) **Chemical of Concern:** Any chemical identified for analysis per 211-7.2.2.
- (4) **Pathogen of Concern:** Any pathogen identified for analysis per 211-7.2.2.

211-7.2 General.

1. **Import Material Certification.** The Contractor shall submit an original, signed copy of the Import Material Certification Form (**Attachment 12** at the end of these Special Provisions) to the Engineer at least 15 working days prior to delivering Import Material to the construction site. A separate form shall be submitted for each separate Import Material and Source Area. The Contractor shall attach the following documentation to the Import Material Certification Form:

- c. Chemical and Pathogen of Concern analysis results for the Import Material, including laboratory data sheets, chain-of-custody documentation, description of sample collection methods, and any additional information pertinent to assessing the potential for the Import Material to be contaminated by Chemicals or Pathogens of Concern;
 - d. Class A (pathogen reduction), Exceptional Quality (low heavy metals concentrations) documentation if the Import Material is biosolids.
2. **Sampling and Analysis of Import Material.** Unless otherwise agreed to in writing by the Engineer, the Contractor shall comply with the sampling, handling and analytical protocol outlined below.
- a. The Contractor shall collect samples per the frequency outlined in Table 211-7.2(A).

Table 211-7.2(A). Sampling Frequency for Import Material Characterization¹

Volume of Import Material	Sampling Frequency
< 1,000 cubic yards	1 sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 samples for first 1,000 cubic yards + 1 sample for each additional 500 cubic yards
>5,000 cubic yards	12 samples for first 5,000 cubic yards + 1 sample for each additional 1,000 cubic yards

¹Source: Department of Toxic Substances Control, "Information Advisory: Clean Imported Fill Material", October 2001.

All samples shall be representative of Import Material conditions at the time of import. Composite samples shall be considered acceptable unless analysis for volatile organic compounds (VOCs) is required, in which case individual discrete samples shall be submitted for analysis. Composite samples shall consist of no more than four discrete samples. All compositing of samples must be performed by a California State-certified laboratory. The sampling, handling, and preservation shall be completed in accordance with the procedures outlined in EPA Document SW-846.

- b. All analyses of chemicals and pathogens shall be performed by a California State-certified laboratory.
Table 211-4.2(B) outlines, by Source Area land use history, the Chemicals of Concern and prescribed analytical methods to be followed for characterization of Import Material that is soil or aggregate (not recycled).

Table 211-7.2(B). Required Analyses by Source Area Land Use History – Soil and Aggregate (Not Recycled)

Source History	Chemicals of Concern + Analytical Methods
Virgin, undeveloped property	heavy metals (EPA methods 6010B and 7471A); asbestos (OSHA method ID-191)
History of residential use	heavy metals (EPA methods 6010B and 7471A); asbestos (OSHA method ID-191); TPH (modified EPA method 8015)
History of agricultural activity	heavy metals (EPA methods 6010B and 7471A); asbestos (OSHA method ID-191); TPH (modified EPA method 8015); organo-chlorine pesticides (EPA method 8081A or 8080A); organo-phosphorus pesticides (PEA method 8141A); chlorinated herbicides (EPA method 8151A)

History of commercial / industrial activity	heavy metals (EPA methods 6010B and 7471A); asbestos (OSHA method ID-191); TPH (modified EPA method 8015); VOCs (EPA method 8021 or 8260B, as appropriate, and combined with collection by EPA method 5035); semi-VOCs (EPA method 8270C); PCBs (EPA method 8082 or 8080A) ¹
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¹For railroad properties, the Contractor must also analyze Import Material for chlorinated herbicides per EPA method 8151A.

If the Contractor is unable to determine a complete land use history of the Source Area to the satisfaction of the Engineer, the Contractor shall be obliged to undertake all the analyses listed in Table 211-7.2(B).

Table 211-7.2(C) prescribes the analytical methods to be followed for characterization of Import Material that consists of the following recycled products: aggregate (e.g., crushed concrete, asphalt, etc.); compost; and biosolids.

Table 211-7.2(C). Required Analyses – Recycled Material

Import Material	Chemicals/Pathogens of Concern + Analytical Methods
Recycled aggregate	heavy metals (EPA methods 6010B and 7471A); asbestos (OSHA method ID-191); TPH (modified EPA method 8015); PCBs (EPA method 8082 or 8080A)
Compost	heavy metals (EPA methods 6010B and 7471A); organo-chlorine pesticides (EPA method 8081A or 8080A); organo-phosphorus pesticides (PEA method 8141A); chlorinated herbicides (EPA method 8151A); fecal coliform (EPA method 1680); salmonella (EPA method 1682) ¹
Biosolids ²	heavy metals (EPA methods 6010B and 7471A); semi-VOCs (EPA method 8270C); PCBs (EPA method 8082 or 8080A)

¹List of required analyses based on *Compost Quality Standards and Testing Protocol*, Alameda County Waste Management Authority (2006)

²Biosolids must also have been designated Class A for pathogen reduction.

In addition to meeting the screening criteria outlined in 211-7.3 for the chemicals of concern listed in Table 211-7.2(C) above, all biosolids must:

- (1) be designated Class A per *40 CFR 503.8* (i.e., no detectible concentrations of the following pathogens: enteric viruses, fecal coliform, helminth ova, and salmonella); and
- (2) be designated Exceptional Quality (i.e., low heavy metals concentrations per Table 3 of *40 CFR 503.13*).

The Contractor may use sewage plant data to confirm the Class A designation. For Chemicals of Concern, the Contractor must provide data from analyses run on stockpile samples of the actual material to be imported (i.e., general sewage plant data for the Chemicals of Concern listed in Table 211-7.2(C) above are insufficient).

3. **Verification by City:** The City may, at its option and at any time, collect samples of Import Material to verify that it meets the specifications outlined in 211-7. The Contractor shall fully cooperate in the collection of the samples.

If the resulting chemical or pathogen analyses indicate that the material does not meet the specifications outlined in 211-7, the Contractor shall be responsible for providing, to the satisfaction of the Engineer, subsequent sampling and analyses at the Contractor's sole expense to determine the extent of out-of-specification material delivered to the construction site.

If the Contractor uses Import Material that is, or is found to be, not in accordance with the specifications of 211-7, the Contractor shall promptly remove all out-of-specification Import Material. The Contractor shall verify, to the satisfaction of the Engineer, that all out-of-specification Import Material has been removed and any effects from its placement at the site have been mitigated sufficiently. The subsequent disposal of the out-of-specification Import Material shall be the sole responsibility and at the sole expense of the Contractor. The City shall not be liable for, nor will it pay, any additional costs incurred by the Contractor for the characterization, removal, disposal, or replacement of the out-of-specification Import Material.

211-7.3 Screening Levels for Import Material.

1. **All Chemicals of Concern, Except Lead.** No Import Material with one or more Chemicals of Concern at a concentration greater than the current San Francisco Bay Region Water Quality Control Board Environmental Screening Level (ESL) available at www.waterboards.ca.gov/sanfranciscobay/esl.htm shall be accepted ("Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater", Table A).
2. **Lead.** No Import Material with total lead concentrations at or greater than ten times the Soluble Threshold Limit Concentration (STLC) published in Title 22 of the California Code of Regulations shall be accepted. (As of January 1, 2008, the acceptable total lead concentration is <50 mg/kg.)
3. **Pathogens of Concern.** No Import Material with one or more Pathogens of Concern at detectable levels shall be accepted.

SECTION 213-ENGINEERING GEOSYNTHETICS

213-1 GENERAL.

NO PAVEMENT FABRIC SHALL BE USED, DELETE SUBSECTION

SECTION 214-TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

214-5 THERMOPLASTIC MATERIAL FOR TRAFFIC STRIPING AND MARKINGS.

214-5.1 General.

REPLACE THE LAST PARAGRAPH OF SUBSECTION 214-5.1 WITH THE FOLLOWING TWO PARAGRAPHS:

Thermoplastic traffic striping shall be reflectorized material applied to the road surface in a molten state by extrusion method or as approved by the Engineer. It shall have surface application of glass beads, which upon cooling to normal pavement temperature shall produce an adherent reflectorized stripe of the specified thickness and width, and shall be resistant to deformation by traffic. Thermoplastic material shall conform to State Specification PTH-02ALKYD (Alkyd Binder). Glass beads to be applied to the surface of the molten thermoplastic material shall conform to the requirements of State Specification 8010-004.

Thermoplastic striping application shall conform to Section 84.2.04 of State Specifications and the requirements included herein. Thermoplastic material shall be applied at a thickness of 0.125 to 0.188 inch. Glass beads shall be applied immediately to the surface of the molten thermoplastic material by an automatic bead dispenser closely behind the striped line. The glass bead dispenser shall be equipped with an automatic cut-off control that shall be synchronized with the cut-off of the thermoplastic material. Beads shall be applied at the rate of not less than 10 pounds per 100 square feet.

SECTION 215 – NOT USED

SECTION 216 – PRECAST REINFORCED CONCRETE BOX

SECTION 217 – BEDDING AND BACKFILL MATERIALS

217-2 TRENCH BACKFILL.

217-2.1 General.

REPLACE SUBSECTION 217-2.1 WITH THE FOLLOWING:

Trench backfill material shall consist of either crushed aggregate base conforming to 200-2 or broken/crushed portland cement concrete conforming to the requirements of Section 26 of the State of California Standard Specification for 3/4 inch, Class 2, aggregate base. Trench backfill material shall be free from organic material, trash, debris, rubbish, and other deleterious substances such as brick, glass, metal, etc. The maximum asphalt content shall not exceed two percent (2%) by weight of the material. Whenever practical, the contractor is required to use trench-excavated material for trench backfill, provided that such excavated material meets the above requirements. For restriction on storage of excavated material refer to 7-10.3.

217-2.3 Imported Backfill.

CHANGE THE FIRST PARAGRAPH OF SUBSECTION 306-1.3.5 TO READ:

306-1.3.7 Imported Backfill. The Contractor will use imported backfill materials at those locations and limits where the Engineer determines the use of native excavated material would not be to the best interest of the City. Imported backfill material shall consist of material conforming to 217-2.1.

ADD NEW SUBSECTION 217-5 TO READ:

217-5 Special Backfill. Special backfill shall be in those areas as shown on the plans, as directed by the Engineer, or as specified herein, and shall be imported backfill in accordance with the provisions of 217-2.3. Where the construction areas of pipe conduit are in reserves on the downhill side of an existing building foundation, or where such pipe conduit construction is 10 feet (3.05m) or closer to an existing building foundation, the Contractor shall use the following special backfill procedure:

- a. Trench excavation, pipe conduit laying, and backfill compaction to the original ground surface shall be completed in the same working day;
- b. Backfill material shall be placed in uniform layers not to exceed four inches (101mm) before compaction;
- c. Sufficient water shall be applied to compact the 4-inch (101mm) layer readily with mechanical compaction equipment approved by the Engineer;
- d. Ponding or jetting of the backfill material in areas of special backfill will not be allowed;

The City shall take at least one compaction test in each area of special backfill. All special backfill herein described shall be compacted to not less than ninety-five percent (95%) relative compaction as determined by California Test Method No. 216 or California Test Method No. 231.

Measurement and Payment. Measurement of pipe conduit with special backfill shall be by the linear foot and measured in accordance with the provisions of 306-1.6 for pipe and conduit. Payment for pipe and conduit with special backfill shall be made at the unit price bid per linear foot of pipe or conduit with special backfill. Such payment shall include full compensation for all material, labor, tools, equipment, and doing all the work necessary to construct the pipe or conduit with special backfill complete in place as specified herein.

PART 3 - CONSTRUCTION METHODS

Part 3 of the Special Provisions shall conform to Part 3 of the Standard Specifications except as modified herein.

SECTION 300-EARTHWORK

300-1 CLEARING AND GRUBBING.

300-1.3 Removal and Disposal of Materials.

ADD THE FOLLOWING PARAGRAPH TO THE BEGINNING OF SUBSECTION 300-1.3:

Sawcuts through bituminous pavement shall be six inches. Sawcuts through concrete pavement shall be full depth. No stomping of concrete pavement will be allowed. Where bituminous pavement overlies concrete pavement, the sawcut depth shall be to the bottom edge of the concrete.

300-1.3.2 (a) Bituminous Pavement.

DELETE THE SECOND SENTENCE OF THE SUBSECTION.

300-1.3.2 (b) Concrete Pavement.

DELETE THE SECOND SENTENCE OF THE SUBSECTION.

300-1.3.2. (c) Concrete Curb, Walk, Gutters, Cross Gutters, Driveways, and Alley Intersections.

REPLACE THE FIRST SENTENCE OF THE PARAGRAPH WITH THE FOLLOWING:

Concrete shall be removed to neatly sawed edges.

REPLACE THE LAST SENTENCE OF THE PARAGRAPH WITH THE FOLLOWING:

Curb and gutter shall be sawed on a neat line at right angles to the curb.

ADD THE FOLLOWING SENTENCE TO THE END OF THE SUBSECTION:

Sawcutting for curb ramps shall be to the exterior dimensions of the proposed ramp only. ***No demolition work for sidewalks or curb ramps may be performed on a Friday.***

ADD NEW SUBSECTION TO READ:

300-1.3.3 Removal of Traffic Striping and Pavement Markings.

Traffic striping and pavement markings shall be removed before any change is made in the traffic pattern. Traffic Striping and pavement markings shall be removed to the fullest extent possible from the pavement by abrasive methods.

Any "shadows" left after the removal of pavement arrows, STOP legends or YIELD legends shall form a rectangle perpendicular to the street's center line. This rectangle shall be of sufficient size to encompass the totality of the pavement arrows and legends removed. Sand or other material deposited on the pavement shall be removed as the work progresses. Accumulations that might interfere with drainage or constitute a hazard to traffic will not be permitted.

Removal of traffic striping will be measured and paid for by the liner foot. Double or triple traffic stripes will be measured as two or three traffic stripes, respectively. Each square foot pavement markings removed will be considered as three liner feet of traffic stripe. In measuring traffic striping, a deduction will be made for gaps in broken stripings. All paint evident in these gaps shall be removed to the fullest extent possible as part of the traffic striping removal.

If no item is shown in the Proposal, the Engineer shall establish payment for required traffic striping and pavement markings removal in accordance with 3-2.

SECTION 301 – SUBGRADE PREPARATION, TREATED MATERIALS, AND PLACEMENT OF BASE MATERIALS

301-1 SUBGRADE PREPARATION.

ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 301-1:

On paving jobs, the Contractor shall lower all structures (e.g. manholes, water valves, etc.) to the grading depth if it is expected that the surface will be graded and remain unpaved for more than five working days.

301-1.6 Adjustment of Manhole Frame and Cover Sets to Grade.

ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 301-1.6:

Concrete grade rings for extensions shall be a maximum of six inches thick. Extensions will be limited to a maximum height of 18 inches. All structures shall be clearly marked or referenced, covered with building paper, and paved over. Adjustment of manholes shall be made after overlay resurfacing has been completed.

301-2 UNTREATED BASE.

301-2.4 Measurement and Payment.

ADD THE FOLLOWING TO THE END OF THE SUBSECTION TO READ:

Crushed Aggregate Base Payment: Full compensation for labor material, equipment and incidentals to deliver and compact the crushed aggregate base to the limit specified in the plans and special provisions for crushed aggregate base shall be paid for other bid items of work involved, and no additional compensation will be allowed therefor.

Processed Miscellaneous Base Payment: Full compensation for labor material, equipment and incidentals to deliver and compact the processed miscellaneous base to the limit specified in the plans and special provisions for processed miscellaneous base shall be paid for other bid items of work involved, and no additional compensation will be allowed therefor.

SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS.

ADD THE FOLLOWING TO SECTION 303-5:

Concrete for sidewalks, curb and gutters, access ramp, curb ramps, and driveways shall conform to 201-1, "Portland Cement Concrete." Sawcutting for curb ramps shall be to the exterior dimensions of the curb ramp.

Expansion joints, 1/4 inch wide, shall be installed in curb, gutter, and sidewalks at each side of a structure (e.g. curb ramps) and at the ends of curb returns. Weakened plane joints 1-inch deep shall be placed in the curb, gutter and sidewalks at 10-foot intervals.

303-5.1 Requirements.

303-5.1.1 General.

ADD THE FOLLOWING PARAGRAPHS TO THE END OF SUBSECTION 303-5.1.1:

If the sidewalk curb return area is disturbed by the Contractor's operations, a curb ramp in accordance with the latest State of California, Department of Transportation, Standard Specifications and Standard Plans shall be constructed with the Engineer's approval. It shall be the Contractor's responsibility to coordinate the relocation or readjustment of interfering utility boxes.

Installation of underground facilities, such as building sewer, water and gas services, utility boxes, etc., shall be completed in the sidewalk area before constructing sidewalks, driveways or curb ramps.

At locations where sidewalk and driveways are to be constructed having unsatisfactory subbase material as determined by the Engineer, said material shall be removed to a depth of four inches (4") minimum and replaced with ATSM C 131 Test Grading B crushed miscellaneous base conforming to the Standard Specifications and no separate payment shall be made. Crushed miscellaneous base shall be compacted in accordance with the Standard Specifications. The Contractor shall remove unsuitable subbase material as part of demolition operations and no separate payment shall be made.

Sidewalk, curb and gutter construction or repairs may be required at locations adjacent to project curb ramps. All repairs will be performed within City's right-of-way, unless directed otherwise by the Engineer.

The Contractor shall construct or repair concrete sidewalk, curb, and gutter at various locations as directed by the Engineer. Unless directed otherwise by the Engineer, the Contractor shall remove defective concrete by saw cutting along existing score lines, and as marked in white paint by the Engineer. Concrete shall be cut full depth with a power driven concrete saw acceptable to the

Engineer as hereinafter specified and removed so as to have a vertical joint between the existing and new concrete. Demolition, removal and disposal of material required to complete the work is included in the price bid for the various bid items of work and no additional compensation shall be allowed therefore. Existing concrete, not scheduled for removal but damaged by the contractor's operations shall be replaced in accordance with these Specifications and no separate payment shall be made.

Areas next to new sidewalk, back of curb and driveway where forms have been removed shall be back filled with Class "A" imported topsoil as specified in Section 212-1 and 308-2 of the Standard Specifications and these Special Provisions and mechanically compacted to ninety percent (90%) relative compaction to the level of existing sidewalk, driveway and curb. Class "A" imported topsoil shall be included as part of concrete curb and gutter work and no separate payment shall be made.

Expansion joints shall be constructed in the concrete curb and gutter at each side of driveways, returns and structures. Expansion joint material shall be the same as for sidewalk expansion joint filler material. Weakened plane joints 3/4" deep and 1/4" wide shall be constructed at regular intervals not to exceed ten (10) linear feet. The exposed surfaces of the curb and gutter shall be troweled to a smooth surface and shall be scored transversely and broom finished to the Engineer's satisfaction.

Number 4 steel rebars shall be doweled into existing curb and gutter at saw-cut locations and no separate payment shall be made.

ADD NEW SUBSECTION 303-5.1.1.1 TO READ:

303-5.1.1.1 Curb Ramp Requirement for Contractor-Damaged Curb Return Areas. If the sidewalk curb return area is disturbed by the Contractor's operations for trenching or other work not related to sidewalk repair or curb ramp installation, a curb ramp in accordance with City Standards shall be constructed under the Engineer's direction. It shall be the Contractor's responsibility to coordinate the relocation or readjustment of interfering utility boxes. The cost of this curb ramp shall be included in the price paid for the related work, and no additional payment shall be made.

ADD NEW SUBSECTION 303-5.1.1.2 TO READ:

303-5.1.1.2 Detectable Warnings. The detectable warning shall provide sound attenuation different than the adjacent paving and be federal yellow in color. The material used to provide color shall be an integral part of the walking surface. Detectable dome warning tiles or strips shall be made of polymer plastic or approved equal. The closest corner of the bottom left and bottom right truncated dome tile shall be set 6" from flowline.

ADD NEW SUBSECTION 303-5.1.1.3 TO READ:

303-5.1.1.3 Replacement of Damaged Utility Boxes for Curb Ramp Work. The Contractor is responsible for coordinating with the various utilities for relocation or readjustment of the various utility boxes within the new curb ramp locations. Should the Contractor choose to readjust existing utility boxes within the plane of the new curb ramp, the Contractor shall protect the existing improvements as required by 7-9.

The "Request for Replacement Utility Box for Curb Ramp Work" form (**Attachment 10** at the end of these Special Provisions) lists utility companies that have agreed to provide free replacement utility boxes for those previously damaged or unavoidably broken during construction of curb ramps. Existing utility boxes damaged as a result of the Contractor's negligent construction activities will **not** be replaced free of charge. The Contractor shall complete and sign this form, and provide it (and a photocopy) to the Engineer for signature for each requested utility box replacement. The Contractor is then responsible for transmitting this form to the respective utility. This form provides written certification to the utility companies that a free replacement box is requested because either the existing utility box was broken, or the Contractor exercised due diligence when excavating for the new curb ramp and the existing box was unavoidably damaged.

In certain cases the replacement boxes may be delivered to the curb ramp site. In that case the Contractor must coordinate with the utility company in order to be present when the box is delivered. In other cases the Contractor may be able to pick up replacement boxes from the utility yard. Because it may take up to one or two days for the Contractor to receive replacement boxes, the Contractor shall properly barricade the excavated curb ramp in accordance with 7-10.

Payment: Full compensation for providing the labor and materials for the replacement of damaged utility boxes shall be considered as included in the price paid for the bid items of work involved, and no additional compensation will be allowed therefor.

ADD NEW SUBSECTION 303-5.1.1.4 TO READ:

303-5.1.1.4 Extra Wide Ramps to Accommodate City Utility Boxes within Curb Ramp Areas.

Many City utility boxes are located within the curb return area at intersection corners. To facilitate curb ramp construction, it is intended that as many City utility boxes as possible remain in the curb ramp area and be incorporated into the new curb ramps. In order to accomplish this objective, existing City utility boxes may remain if their lids can be reset in the plane of the new ramps. Similarly, the central ramp portions of curb ramps may be constructed wider than the required four feet in order that existing City utility boxes may remain in place with their lids reset in the plane of the new ramps. (In this case, the width of the detectable warning dome paver area shall equal the width of the revised ramp.) With the Engineer's approval, vertical obstructions may remain in the two "wings" of the type E ramp, provided there is a four-foot path of travel behind the curb ramp. (See also 307-2.4.1 for relocation of City utility boxes in curb ramp areas.)

Payment: The unit price for each curb ramp includes up to 125 square feet of concrete pavement as described in Subsection 303-5.9g. The Contractor shall be compensated for the additional cost of constructing curb ramps with more than 125 square feet of concrete ramp area. The unit prices for sidewalk, curb gutter and detectable warning dome pavers shall be used for additional quantities of these items because of the larger ramp areas needed to accommodate City utility boxes within curb return areas.

ADD NEW SUBSECTION 303-5.1.1.5 TO READ:

303-5.1.1.5 Ancillary Work for Concrete Sidewalk, Driveway, and Curb and Gutter Construction.

All repairs will be performed within City's right-of-way, unless directed otherwise by the Engineer.

The Contractor shall repair or construct concrete sidewalk, curb, and gutter at various locations as directed by the Engineer. Unless directed otherwise by the Engineer the Contractor shall remove defective concrete by saw cutting along existing score lines, and as marked in white paint by the Engineer. Concrete shall be cut full depth with a power driven concrete saw acceptable to the Engineer as hereinafter specified and removed so as to have a vertical joint between the existing and new concrete. Demolition, removal and disposal of material required to complete the work is included in the price bid for the various bid items of work and no additional compensation shall be allowed therefore. Existing concrete, not scheduled for removal but damaged by the contractor's operations shall be replaced in accordance with these Specifications and no separate payment shall be made.

- a. **Concrete Saw Cutting:** Defective sidewalk, driveway, curb and gutter marked for removal shall be first cut with a power driven concrete saw acceptable to the Engineer. The concrete shall be saw cut in a straight line along existing score lines to the full depth of the existing concrete section. Sawcutting shall be full depth. No stomping shall be allowed.

Cutting of concrete with picks or pneumatic pavement breakers will not be permitted. If for any reason the concrete does not break on the line marked out by the Engineer, the Contractor shall saw out the broken portion and new concrete shall be placed in this area without payment. The Contractor shall not allow silt-laden water, generated from his saw cutting operations to flow into the public storm system or be deposited into the public right-of-way. The Contractor shall be responsible for removing silt material from the job site.

- b. **1'-Wide Asphalt Concrete Plug:** Removal of one foot of adjacent AC pavement will be necessary in order to construct the forms for concrete curb ramps and gutters. After the concrete forms have been removed, the Contractor must provide a 1'-wide AC plug between the new concrete gutter and/or curb ramp construction and the existing asphalt concrete roadway. The contractor may elect to provide a temporary AC Plug with cutback and provide permanent plugs for many locations at a subsequent date. The Asphalt concrete plug pavement shall be a minimum of six inches in thickness. The asphalt concrete mix for permanent AC plugs shall be ½" Maximum Aggregate, Medium Type A Bituminous Pavement Mixture PG64-10 with 15% reclaimed asphalt pavement (RAP). The Contractor shall furnish originals of certified weigh

master certificates indicating the actual net weight of asphalt concrete placed on the job site at the end of each workday.

- c. **Asphalt Concrete Pavement Regrading More than Three Feet from Flowline:** Where directed by the Engineer, AC pavement adjacent to curb ramps shall be regraded so as to provide a maximum grade of five percent (5%) within the four feet next to the flowline of the curb ramp. This work may entail grinding of the existing AC pavement to meet the ADA required grades should the work quality be acceptable to the Engineer. Alternatively, this work may entail sawcutting and excavating to remove AC pavement and regrading with sufficient AC to meet the required ADA grade. The permanent asphalt concrete mix for this AC regrading shall be ½" Maximum Aggregate, Medium Type A Bituminous Pavement Mixture PG64-10 with 15% reclaimed asphalt pavement (RAP). The Contractor shall furnish originals of certified weigh master certificates indicating the actual net weight of asphalt concrete placed on the job site at the end of each workday.

In some areas the adjacent AC pavement may be underlain with portland cement concrete (PCC) pavement. In most cases it will be sufficient to remove the overlying AC pavement layers to permit regrading with new AC pavement overlay to the required ADA slopes. Should it be required to remove PCC pavement to provide the required ADA slopes, payment for the PCC removal shall be paid for with a negotiated change order.

- d. **Remove Concrete Gutter:** Concrete gutter shall be removed where directed by the Engineer. Removal, off-hauling and disposal of existing concrete gutter shall occur at locations where concrete curb has been overlain by asphalt concrete pavement. Concrete gutter shall not be reconstructed where it has been overlain.
- e. **Unclassified Excavation for Concrete Work:** Material that is unsuitable beyond a depth of four inches (4") for sidewalk, driveway, curb and gutter repairs shall be excavated and disposed of as directed by the Engineer. The Engineer shall determine the limits and depth of excavation in the field.
- f. **Processed Miscellaneous Base for Concrete Work:** Where directed by the Engineer or at locations where unsuitable material was excavated, the Contractor shall place processed miscellaneous base. Processed miscellaneous base material shall conform to Section 200-2.5 of the Standard Specifications. Processed miscellaneous base shall be compacted in accordance with Sections 301-1.3 and 306-1.3.2 of the Standard Specifications.
- g. **Tree Stump Removal:** Where directed by the Engineer, the Contractor shall remove street tree stumps. Stump removals shall be performed by a Vermeer 665-A stump cutter or approved equal. Stump diameter shall be measured at breast height, four and a half feet (4.5') above grade. Stump removal includes: removing up to four (4) vertical feet of trunk above grade; grinding stump and root crown to a depth of twenty-four inches (24") below finished top of curb grade; grinding any root crown/buttress roots within three feet (3') horizontally of the side of the trunk (measured at thirty-six inches (36)" above grade if possible) to a depth of twenty-four (24") below finished top of curb grade. Any and all roots must be removed from the planting strip and opened sidewalk, driveway, curb, gutter and street paved area.

All debris generated by stump/root removal shall be removed from the job site by the Contractor as part of his stumping operation and no separate payment shall be made. The area beneath the sidewalk, curb, gutter and street pavement section voided by removal of debris generated by stump/root removal shall be replaced with crushed miscellaneous base. Placement of crushed miscellaneous base shall be considered as part of stump removal work and no separate payment shall be made.

The planter strip area, located between the sidewalk and back of curb, voided by removal of debris generated by stump/root removals shall be back-filled with Class "A" Imported Topsoil, as specified in Section 212-1 and 308-2 of the Standard Specifications and these Special Provisions and compacted to ninety percent (90%) relative compaction, and level with the sidewalk. Class

"A" imported topsoil shall be included as part of stump removal work and no separate payment shall be made.

All organic material generated by street tree stump/root removal shall be cleaned from the street and sidewalk and left in a neat pile at curb side and the area made safe until it can be removed by the contractor.

The Contractor must move all debris, soil, etc., if needed, for City staff to inspect stump grinding locations or any other necessary inspections.

- h. **Tree Root Pruning:** The Contractor shall demolish and remove all defective sidewalk, driveway, curb, gutter and street pavement damaged by street tree roots as directed by the Engineer. The tree root pruning area shall consist of the entire area where sidewalk is removed, or as directed by the Engineer. Where directed by the City Arboricultural inspector, the Contractor shall prune street tree surface roots with approved hand tools or a Rayco model RG 1635A root grinder, or approved equal. Root pruning shall involve grinding the entire soil area exposed by the demolition, except where directed by the City Arboricultural inspector to use hand tools, to a depth of twelve inches (12") below finished sidewalk grade in demolished side walk areas and to a depth of twenty-four (24) inches below finished sidewalk grade in demolished curb, gutter, or street pavement areas. All debris generated by root pruning shall be removed from the job site by the Contractor as part of his root pruning operation and no separate payment shall be made. The Contractor must move grindings, soil, etc., if needed, for staff to evaluate trees during stress testing, or any other necessary inspections.

The area beneath the sidewalk, curb, gutter and street pavement section voided by removal of debris generated by root pruning shall be replaced with crushed miscellaneous base. Placement of crushed miscellaneous base shall be considered as part of root pruning work and no separate payment shall be made.

The planter strip area, located between the sidewalk and back of curb, voided by removal of debris generated by street tree root pruning shall be back-filled with Class "A" Imported Topsoil, as specified in Section 212-1 and 308-2 of the Standard Specifications and these Special Provisions and compacted to ninety percent (90%) relative compaction, and to the level of the sidewalk. Class "A" imported topsoil shall be included as part of root pruning work and no separate payment shall be made.

The City of Oakland shall provide staff to, (a) define the size of the new tree well that will be created when the sidewalk is repaired, (b) ensure that mechanical equipment does not damage trees or protected root zones, (c) stress test trees for stability once root cutting is done, and (d) ensure tree wells and planting strips are filled to grade and not left as tripping hazards.

THE CONTRACTOR MUST PROVIDE STAFF TO ASSIST CITY STAFF WITH TREE STABILITY TESTING. The Contractor's staff must be on site and readily available each day.

- i. **Asphalt Concrete Pavement:** Where directed by the Engineer, asphalt concrete paving shall be placed between new concrete curb and/or gutter construction and the existing asphalt concrete roadway. Asphalt concrete paving shall be six (6) inches in thickness and mechanically compacted with a Wacker, BS 60Y vibratory rammer with an eleven (11") inch by thirteen (13") inch shoe or approved equal. The Contractor shall furnish originals of certified weigh master certificates indicating the actual net weight of asphalt concrete placed on the job site at the end of each workday.
- j. **Repair & Replace Water Service:** Where directed by the Engineer, the Contractor shall replace domestic water service installations damaged by normal construction operations resulting from, but not limited to, encasement of service lines in concrete sidewalk, deteriorated water service but functional due to pressure of concrete walk, and damage caused by intrusion of street tree roots. The Contractor shall replace damaged water services from the meter connections to the property line. Damaged water services shall be immediately shut off at the meter location and replaced with 3/4" galvanized or copper conduit with approved couplings. The occupants of properties affected shall be notified by the Contractor before the discontinuance of water service. If occupant or property owner is not home the Contractor shall leave a note, acceptable to the Engineer, securely fastened to the front door, notifying the resident of the water service shut off

and the repair work made. The replacement/repair of domestic water services shall conform to the latest edition of the Uniform Plumbing Code.

Damage to domestic water services caused by the Contractor's negligence will be repaired at the Contractor's expense and no separate payment shall be made.

- k. **Repair & Replace Underdrain:** Drains shall be constructed beneath the sidewalk to connect building drains to curb outlets and to serve low areas on adjacent property as shown on City Standard Detail D-13 or as directed by the Engineer.

The drain shall be a 3-inch diameter pipe for a 6-inch curb face, and a 4-inch diameter pipe for an 8-inch curb face or greater. The invert of the drain shall be located ½-inch above the gutter flow line. The drainpipe shall have a minimum 2-inch clearance from top of curb and be laid on a straight grade with a minimum slope of 1/8 inch per foot and terminate 1 inch back of the curb face.

The curb drain may be constructed using pipe materials specified in City Standard Detail D-13 or other pipe materials approved by the Engineer. The pipe shall be suitably joined in accordance with the manufacturer's standard jointing system.

- l. **Remove Hazard by Grinding:** At locations selected by the Engineer, raised concrete sidewalk hazards shall be removed by grinding. Before grinding commences, the Engineer will clearly mark the approved limits of removal for the Contractor. No more than one and one half inches (1-1/2 inches) in thickness shall be removed from a sidewalk slab by grinding. Contiguous areas removed by grinding shall be no larger than ten square feet (10 SF).

The Contractor shall not allow the dispersal of rock or dust during the grinding process. Gutters and inlets shall be protected and cleaned of silt resulting from the Contractor's grinding operation.

- m. **Pedestrian Barricades:** At locations selected by the Engineer, the Contractor shall install pedestrian barricades in accordance with City Standard Detail M-1.

- n. **Bituminous Repairs:** Where directed by the Engineer, preliminary repair shall consist of:

- The removal and disposal of broken sidewalk, driveway, curb and gutter, then patching of defective and hazardous conditions.
- Ramping and/or patching of defective and hazardous conditions.

Temporary bituminous repair shall be mechanically compacted in place on a surface free of water, foreign material and dust. Upon completion, the bituminous repair shall be true to grade and free of surface irregularities. Where ramping is effected, the finished grade slope shall be not less than 1:12 (rise: run ratio).

The bituminous mixture used for temporary repair shall conform to Type III, Class 'D' Asphalt Concrete as specified in Subsection 400-4.3, and of bitumen conforming to Grade AR-4000 as specified in Subsection 203-1.2 of the Standard Specifications. A tack coat of either AR-1000 paving asphalt, applied at an approximate rate of 0.05 gallon per square yard or Type SS-1 emulsified asphalt applied at an approximate rate 0.05 to 0.10 gallon per square yard shall be applied to the defective surface prior to placement of the temporary bituminous surfacing.

303-5.4 Joints.

303-5.4.2 Expansion Joints.

ADD NEW PARAGRAPH TO THE END OF SUBSECTION 303-5.4.2:

One-quarter inch (6.4mm) expansion joints shall be placed in the curb and gutter at each side of structures, driveways and curb returns. Expansion joints shall also be placed in the sidewalks on each side of driveways. If slipform equipment is used in curb and gutter construction, weakened plane joints 1-inch deep at 10-foot intervals may be substituted for expansion joints, if approved by the Engineer.

303-5.5 Finishing.

303-5.5.2 Curb.

ADD THE FOLLOWING TO THE END OF SUBSECTION 303-5.5.2:

Concrete curb shall be constructed or repaired where directed by the Engineer. Unless otherwise directed by the Engineer, the defective concrete shall be sawed with a concrete saw as hereinafter specified and removed in sections so as to have a vertical joint between the old and the new concrete.

At locations where sidewalk and driveways are to be constructed having unsatisfactory subbase material as determined by the Engineer, said material shall be removed to a depth of four inches (4") minimum and replaced with ATSM C 131 Test Grading B crushed miscellaneous base conforming to the Standard Specifications and no separate payment shall be made. Crushed miscellaneous base shall be compacted in accordance with the Standard Specifications. The Contractor shall remove unsuitable subbase material as part of demolition operations and no separate payment shall be made.

Areas next to new sidewalk, back of curb and driveway where forms have been removed shall be back filled with Class "A" imported topsoil as specified in Section 212-1 and 308-2 of the Standard Specifications and these Special Provisions and mechanically compacted to ninety percent (90%) relative compaction to the level of existing sidewalk, driveway and curb. Class "A" imported topsoil shall be included as part of concrete curb and gutter work and no separate payment shall be made.

Expansion joints shall be constructed in the concrete curb and gutter at each side of driveways, returns and structures. Expansion joint material shall be the same as for sidewalk expansion joint filler material. Weakened plane joints 3/4" deep and 1/4" wide shall be constructed at regular intervals not to exceed ten (10) linear feet. The exposed surfaces of the curb and gutter shall be troweled to a smooth surface and shall be scored transversely and broom finished to the Engineer's satisfaction.

No. 4 steel rebars shall be doweled into existing curb and gutter at saw-cut locations and no separate payment shall be made.

If replaced curbs featured color painted curbs, the Contractor shall paint new curbs to match previous paint color.

303-5.5.3 Walk.

ADD THE FOLLOWING TO THE END OF SUBSECTION 303-5.5.3:

Where integrated new concrete sidewalk and concrete driveway is constructed, the transverse slope of the sidewalk shall be downward toward the curb at the rate of 1/4 inch per foot, except at street intersections where the intersecting streets have different sidewalk widths or different curb grades at the curb returns, in which case, the slope shall be varied as directed by the Engineer. In all cases, the transverse slope shall be such that if continued to the curb, the walk will meet the grade at the top of the curb. Where a portion of the existing concrete sidewalk and concrete driveway is to remain in place, the areas to be removed will be marked out by the Engineer. The new sidewalk shall be constructed between the existing concrete sidewalk and the new curb as directed by the Engineer.

The sidewalk surface shall be scored as directed by the Engineer so that the area within scored sections does not exceed 15 square feet (1.39 square meter) and fine-hair broom finished to the Engineer's satisfaction. Score lines and surface treatments constructed in concrete sidewalks and/or driveways shall match existing score lines and surface treatments contiguous to the new and/or replacement work.

Concrete sidewalk may be constructed monolithically with curb or with curb and gutter only if indicated on the plans or in the Special Provisions or upon written approval of the Engineer. The concrete mix for the entire monolithic construction shall contain lampblack in the amount of one pound (0.45kg.) per cubic yard (.765 cubic meter). A score line parallel to the curb face shall be made at normal locations such as the back of curb. Templates acceptable to the Engineer shall be used to set curb face forms and to check grading. The Contractor shall provide templates for the Engineer' for use, if so requested. If in the opinion of the Engineer, unsatisfactory results are obtained, monolithic construction shall be discontinued and the remaining sidewalk shall be constructed separately from the curb and gutter using lampblack in the concrete for sidewalk, curb and gutter.

Expansion joint material 1/4" thick conforming to the Standard Specifications shall be placed at each side of driveways, returns and structures. Expansion Joint filler materials shall be fiber matrix, saturated with bitumen previously cut to proper dimensions and contours. Weakened plane joints 3/4" deep and 1/4" wide shall be constructed at regular intervals not to exceed ten (10) linear feet.

Installation of underground facilities, such as building sewers, water and gas services, etc., shall be completed in the sidewalk area before constructing concrete sidewalk, concrete driveways and curb ramps.

The Contractor shall protect all completed work from acts of vandalism, damage and, in particular, guard against damage to the pavement edge of recently constructed concrete gutter. Vandalized and/or damaged work shall be replaced by the Contractor at no cost to the City.

303-5.5.4 Gutter.

ADD THE FOLLOWING TO THE END OF SUBSECTION 303-5.5.4:

Concrete gutter shall be constructed or repaired where directed by the Engineer. Unless otherwise directed by the Engineer, the defective concrete shall be sawed with a concrete saw as hereinafter specified and removed in sections so as to have a vertical joint between the old and the new concrete.

At locations where sidewalk and driveways are to be constructed having unsatisfactory subbase material as determined by the Engineer, said material shall be removed to a depth of four inches (4") minimum and replaced with ATSM C 131 Test Grading B crushed miscellaneous base conforming to the Standard Specifications and no separate payment shall be made. Crushed miscellaneous base shall be compacted in accordance with the Standard Specifications. The Contractor shall remove unsuitable subbase material as part of demolition operations and no separate payment shall be made.

Areas next to new sidewalk, back of curb and driveway where forms have been removed shall be back filled with Class "A" imported topsoil as specified in Section 212-1 and 308-2 of the Standard Specifications and these Special Provisions and mechanically compacted to ninety percent (90%) relative compaction to the level of existing sidewalk, driveway and curb. Class "A" imported topsoil shall be included as part of concrete curb and gutter work and no separate payment shall be made.

Expansion joints shall be constructed in the concrete curb and gutter at each side of driveways, returns and structures. Expansion joint material shall be the same as for sidewalk expansion joint filler material. Weakened plane joints 3/4" deep and 1/4" wide shall be constructed at regular intervals not to exceed ten (10) linear feet. The exposed surfaces of the curb and gutter shall be troweled to a smooth surface and shall be scored transversely and broom finished to the Engineer's satisfaction.

No. 4 steel rebars shall be doweled into existing curb and gutter at saw-cut locations and no separate payment shall be made.

303-5.9 Measurement and Payment.

CHANGE SUBSECTION 303-5.9 TO READ:

303-5.9 Measurement and Payment.

- a. Measurement for concrete sidewalk, driveways, curbs, gutters and curb ramps shall be made in horizontal planes.
- b. These payment sections include two payment methods for curbs and gutters. Item **Concrete Curb and Gutter** below pays for curb and gutter together by the linear foot. In contrast, Item **Concrete Curb** is for curbs (measured by the linear foot) and Item **Concrete Gutter** is for gutters (measured by the square foot.)
- c. Unless a separate item is included in the bid sheet for concrete saw cutting, the payment for **Concrete Saw Cutting** shall be included in the price paid for related concrete items, and no additional payment will be made.
- c. **Unclassified Excavation for Concrete Work** shall occur only at locations shown on the plans or where the Engineer determines the sub-base material to be unsuitable. Unclassified Excavation shall be measured for payment by the cubic yard. The price paid per cubic yard for unclassified excavation to remove unsuitable material, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in excavation operation, and including, loading and off-hauling of excavated material, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.
- d. **Processed Miscellaneous Base for Concrete Work** shall occur only at locations shown on the plans or where the Engineer determines the sub-base material to be unsuitable. Processed miscellaneous base shall be measured for payment by the cubic yard. The price paid per cubic

yard for processed miscellaneous base shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved, and compaction, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.

- e. **1'- Wide Asphalt Concrete Plug**, both temporary and permanent, shall be performed in accordance with the Standard Specifications and these Special Provisions at locations shown on the plans or approved and marked in the field by the Engineer. Asphalt concrete plugs, temporary and permanent, within one foot of the flow line shall be included in the price paid for related concrete items (e.g., concrete gutter, curb ramps etc.) and no additional payment shall be made.
- f. **Asphalt Concrete Pavement Regrading More than Three Feet from Flowline** shall be performed in accordance with the Standard Specifications and these Special Provisions at locations shown on the plans or approved and marked in the field by the Engineer. Asphalt concrete pavement regrading more than one foot distant from the flowline shall be measured and paid for by the square foot. The price paid per square foot for Asphalt Concrete Pavement Regrading More than Three Feet from Flowline shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved including removing AC pavement by grinding or sawcutting/excavating, removal and disposal of spoils, compacting underlying surface and placing AC pavement, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer. The removal of PCC pavement, if necessary to accomplish this work, shall be paid for by a negotiated change order.
- g. **Concrete Curb Ramps, All Types** shall be constructed as shown on the latest State of California, Department of Transportation, Standard Specifications and Standard Plans.

Where curb ramps are to be constructed within new concrete curb and gutter and concrete sidewalk areas that require replacement due to the Contractor's trenching or other operations, full compensation shall be considered as included in the unit prices paid for the various items of work involved and no additional compensation will be allowed therefor.

New or replacement curb ramps not constructed as a result of the Contractor's trenching or other operations shall be paid for by the unit price paid per each curb ramp. The price bid shall be considered to include full payment for all materials, labor, equipment and incidentals required to construct the curb ramps in accordance with the latest State of California, Department of Transportation, Standard Specifications and Standard Plans. Such compensation shall include Extra-wide curb ramps constructed to allow existing City utility boxes to remain in the new curb ramp shall also be paid for by the unit price for each curb ramp with no additional compensation allowed. (See Subsection 303-5.5.3.2.)

Concrete curb ramp include details shown in the State of California, Department of Transportation Revised Standard Plan A88A and Specifications, either as directed by the engineer or shown in plans. In addition the price also includes the 1'-wide AC plug and existing gutter width. If gutter width does not exist, construct a new 2' wide gutter.

Sawcutting for curb ramps shall be to the nearest score lines outside the curb ramp. Concrete sidewalk replacement within these score lines shall be included in the 250 square feet of concrete paid for each curb ramp. Replacement of damaged sidewalk outside the score lines mentioned in this paragraph shall be paid for by the square foot of concrete sidewalk.

The contract price paid per each concrete curb ramp shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved in constructing concrete curb ramps (including demolition work, off-hauling of concrete, formwork, 160 square feet of concrete work, drainage pipe if required, stripping of formwork, utility box realignment or replacement, relocating signs, removal and disposal of existing asphalt, concrete and dirt, preparation of subgrade, and placement of Class II aggregate base compacted to 90%, and temporary 12" AC plug). These concrete curb ramps shall be constructed as designed on the project plans, complete in place, as specified in the Standard Specifications and these Special provisions, or as directed by the Engineer.

Some curb ramp installations will require additional concrete work in excess of the 160 square feet included in the curb ramp pay item. In these cases the Contractor shall be paid for additional sidewalk, curb and gutter in accordance with their respective unit prices.

Refer to Subsection 303-5.1.1.1 for curb ramps installed to mitigate the effects of the Contractor's trenching or other operations in the curb return area.

- h. Construct new or remove and replace **Concrete Sidewalk** only at locations shown on the plans or approved and marked in the field by the Engineer. Concrete sidewalk shall be measured for payment by the square foot. The price paid per square foot for remove and replace or construct new concrete sidewalk, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in removing and replacing concrete sidewalk, and including all demolition work, off-hauling of concrete, and formwork, utility box realignment or replacement, concrete placement, stripping of formwork, and backfilling behind forms, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.
- i. Construct new or remove and replace **Concrete Driveway** only at locations shown on the plans or approved and marked in the field by the Engineer. Concrete driveway shall be measured for payment by the square foot. The price paid per square foot for concrete driveway, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in removing and replacing concrete driveway, and including all demolition work, off-hauling of concrete, and formwork, utility box realignment or replacement, concrete placement, stripping of formwork, and backfilling behind forms, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.
- j. Construct new or remove and replace **Concrete Alley Sections** only at locations shown on the plans or approved and marked in the field by the Engineer. Concrete alley sections shall be measured for payment by the square foot. The price paid per square foot for concrete alley sections, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in removing and replacing or constructing new concrete alley sections, and including all demolition work, off-hauling of concrete, and formwork, utility box realignment or replacement, concrete placement, stripping of formwork, and backfilling behind forms, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.
- k. Construct new or remove and replace **Concrete Curb and Gutter** shall occur only at locations shown on the plans or approved and marked in the field by the Engineer. Concrete curb and Gutter shall be specified on the plans as to type per City Standard Detail S-1 and shall be measured for payment by the linear foot. Concrete curb and gutter (transition sections at returns and inlets included) shall be combined as a unit as shown on bid items and will be measured for payment by the linear foot along the curb line. When the gutter transitions from one width to another around a curb return, the measurement for each width will be made to the center of the curb return unless noted otherwise on the plans.

The price paid per linear foot for concrete curb and gutter, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in removing and replacing concrete curb and gutter, and including all demolition work, off-hauling and disposal of concrete, formwork, utility box realignment or replacement, concrete placement, stripping of formwork, backfilling behind forms and painting curbs to match color of previous curbs, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer. The removal and replacement of concrete curb and gutter adjacent to new curb ramps shall be included as part of construction of concrete curb ramps, and no separate payment shall be made.
- l. Construct new or remove and replace **Concrete Curb** shall occur only at locations shown on the plans or approved and marked in the field by the Engineer. Concrete curb shall be measured for

payment by the linear foot. The price paid per linear foot for concrete curb, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in removing and replacing concrete curb, and including all demolition work, off-hauling and disposal of concrete, formwork, utility box realignment or replacement, concrete placement, stripping of formwork, backfilling behind forms and painting curbs to match color of previous curbs, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer. The removal and replacement of concrete curb adjacent to new curb ramps shall be included as part of construction of concrete curb ramps, and no separate payment shall be made.

- m. Construct new or remove and replace **Concrete Gutter** shall occur only at locations shown on the plans or approved and marked in the field by the Engineer. Concrete gutter shall be measured for payment by the square foot. The price paid per square foot for concrete gutter, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in removing and replacing concrete gutter, and including all demolition work, off-hauling of concrete, formwork, concrete placement, stripping of formwork, and backfilling behind forms, including temporary AC plug, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer. The removal and replacement of concrete gutter adjacent to new curb ramps shall be included as part of construction of concrete curb ramp, and no separate payment shall be made. However, the unit cost for curb ramps does not include payment for concrete gutters wider than two feet; the additional square feet of gutters wider than 2' next to the curb ramp shall be paid for at the square foot unit price bid for concrete gutters.
- n. **Retrofit Detectable Warning Dome Pavers** shall occur only at locations shown on the plans or approved and marked in the field by the Engineer. Existing ramps without dome pavers may require retrofitting with Detectable Warning Dome Pavers. Median cuts shall be measured for payment by each. The price paid by each to provide retrofit detectable warning dome pavers at existing curb ramps shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in installing retrofit warning dome pavers, complete in place, as specified in the Standard Specifications, these Special Provisions and the Project Plans, or as directed by the Engineer.
- o. **Tree Root Pruning** shall be performed in accordance with the Standard Specifications and these Special Provisions at locations shown on the plans or approved and marked in the field by the Engineer. Root pruning shall be measured for payment by the square foot. The price paid per square foot for root pruning, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in root pruning, and including all root removal in sidewalk, driveway, curb and gutter, and street paved area, root pruning debris removal, and backfilling void areas with crushed miscellaneous base or imported topsoil, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer. Liquidated damages may be assessed in accordance with subsection 6-9.1 for delays in placement of topsoil.
- p. **Tree Stump Removal** shall occur only at locations shown on the plans or approved and marked in the field by the Engineer. Stump removal shall be measured for payment by diameter inches. The price paid per diameter inches for stump removal, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in stump removal, and including all root removal in sidewalk, driveway, curb and gutter, and street paved area, debris removal, and backfilling void areas with crushed miscellaneous base or imported topsoil, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.
- q. **Remove Hazard by Grinding** shall be performed in accordance with the Standard Specifications and these Special Provisions at locations shown on the plans or approved and marked in the field by the Engineer. Remove hazard by grinding shall be measured for payment per each location.

The price paid per each location for remove hazard by grinding, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in remove hazard by grinding, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.

- r. **Repair and Replace Water Service** shall be performed in accordance with the Standard Specifications and these Special Provisions. Repair and replace water service shall be measured for payment per each location. The price paid per linear foot for repair and replace of water service, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in repair and replacement of water service, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.
- s. **Repair and Replace Sidewalk Underdrain** shall be performed in accordance with the Standard Specifications and these Special Provisions. Repair and replace underdrain shall be measured for payment per linear foot. The price paid for each repair and/or replacement of sidewalk underdrain, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in repair/replacement of cast iron drain (including placement within a new curb), complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.
- t. **Bituminous Repair** shall be performed in accordance with the Standard Specifications and these Special Provisions at locations shown on the plans or approved and marked in the field by the Engineer. Bituminous repair shall be measured for payment per square foot. The price paid per square foot for bituminous repair, shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all work involved in bituminous repair, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, or as directed by the Engineer.

ADD NEW SUBSECTION 303-9 TO READ AS FOLLOWS:

303-9 INSTALLATION OF MANHOLES, CLEANOUTS AND APPURTENANCES.

303-9.1 General.

303-9.1.a Structure Excavation and Backfill. Structure excavation and backfill shall conform to the applicable requirements of 300-3 and 306-1.

303-9.1.b Rock Base. Prior to placing the concrete manhole base, a minimum of eight inches of rock base or crushed rock approved by the Engineer shall be placed upon the earth subgrade and compacted to 90 percent (90%) relative compaction by mechanical means.

303-9.1.c Concrete Manhole Base. Concrete manhole base shall be constructed as shown on the Plans and Standard Details and shall conform to the applicable requirements of Section 303. The concrete shall be vibrated to density and screened so that the first precast manhole section will be placed on a level uniform bearing surface for the full circumference. An approved metal forming ring shall be used to form a level joint groove in the fresh concrete of the manhole base to receive the first precast manhole section. Sufficient mortar or Rammed shall be deposited on the base to assure a watertight seal between base and manhole wall or the first precast manhole section shall be placed on the concrete base before the concrete has set. The first section shall be properly located and plumbed.

303-9.1.d Placing Precast Manhole Sections. Precast manhole sections shall be carefully inspected prior to installation. Sections with chips or cracks in the tongue shall not be used. The ends of precast manhole sections shall be cleared of foreign materials.

The precast sections shall be installed in a manner that will result in a watertight joint. Rubber "O" Ring gaskets or preformed flexible joint sealant shall be installed in strict conformance with the manufacturer's recommendations. Only pipe primer furnished by the gasket manufacturer will be approved. If leaks appear in the manholes, the inside joint shall be caulked with non-shrink epoxy mortar to the satisfaction of the Engineer.

303-9.1.e Manhole Channels. Manhole channels shall be constructed as shown on the Plans and Standard Details and with smooth transitions to ensure unobstructed flow through the manhole. All sharp edges or rough sections that tend to obstruct flow shall be removed. Where a full section of pipe is laid through a manhole, a neatly cut half pipe shall be laid to form the channel. The exposed edge of the pipe shall be completely covered with mortar. All mortar surfaces shall be troweled smooth. Breaking out the top half section of pipe after installation is not acceptable.

303-9.1.f Drop Connection/Drop Connection Manhole. Drop connection and drop connection manhole shall be constructed at all locations per city specifications and per plans or as directed by the Engineer. The drop assembly shall be connected to the sewer pipe with an approved adapter. The lower elbow shall be supported by concrete poured monolithically with the manhole base. It shall be an outside drop connection unless it is specified on plans as an inside drop connection.

303-9.1.g Flexible Joints. Flexible joints shall be provided not more than 1-1/2 feet from manhole walls. Pipes entering manholes shall be laid out on firmly compacted base rock or crushed rock approved by Engineer.

303-9.1.h Pipe Stubouts For Future Sewer Connections. Manhole stubouts for future sewer connections shall be installed as shown or required by the Engineer. Maximum and minimum length outside the manhole wall shall be shown on the Standard Details. Pipes in precast walls or manhole base shall be constructed in accordance with details shown on the Plans. Compacted base rock or crushed rock approved by Engineer as specified herein before shall be placed upon the earth under all stubouts.

Semi-permanent plugs shall be installed in the stubout ends with gasket joints similar to the sewer pipe being used. Plugs shall be capable of withstanding all internal or external pressures without leakage. All plugs shall be adequately braced to prevent blowoffs.

303-9.1.i Permanent Plugs. Interior contact surfaces of all pipes to be cut off or abandoned shall be cleaned. Concrete plugs shall be constructed in the end of all pipe 18 inches or less in diameter. Minimum length of concrete plugs shall be 8 inches. For pipe 21 inches and larger, the plugs may be constructed of common brick or concrete block. The exposed face of block or brick shall be plastered with mortar. All plugs shall be watertight and capable of withstanding all internal and external pressures without leakage.

303-9.1.j Manhole Extensions. Extensions shall be installed in conformance with the details shown on the Plans and to a height to match finished grade. Grade rings shall be lined in mortar with the sides plumb and tops level. Joints shall be sealed as specified for manhole sections. Extensions shall be watertight.

303-9.1.k Manhole Frames and Covers. Frames and covers shall be installed on top of manholes to prevent all infiltration of surface water or groundwater into manholes. Frames shall be set in a bed of mortar with mortar carried over the flange of the ring as shown on the Plans. Frames shall be set so cover tops are flush with surface of adjoining pavement or ground surface, unless otherwise shown or directed. Concrete manhole collars shall be provided and installed as shown on the Standard Details. Manhole covers and frames for manholes identified as ones likely to be periodically submerged in wet weather events shall be prevented from blowing off during sewer surcharging by installation of manhole frames with bolted lids, and bearing surfaces shall be sealed with a neoprene gasket, if shown on plans.

303-9.1.l Manhole Over Existing Sewers. Manholes shall be constructed over existing operating sewerlines at locations indicated. Excavation shall be as specified. Flow through existing sewerlines shall be maintained at all times. New concrete and mortar work shall be protected for a period of seven days after concrete has been placed. The Contractor shall advise Engineer of plans for diverting sewage flow and obtain the Engineer's approval before starting. The Engineer's approval shall not relieve the Contractor of the responsibility for maintaining adequate flow capacity at all times and adequately protecting new and existing work.

The new manhole base shall be constructed under and around the existing sewer as specified herein. The top half of the existing pipe shall be neatly removed within the new manhole, the edges covered with mortar, and troweled smooth.

303-9.1.m Connection to Existing Manholes. Sewers shall be connected to existing manholes at locations indicated. The Contractor shall provide all diversion facilities and perform all work necessary to maintain sewage flow in existing sewers during connection to the manholes. The Contractor shall break out existing manhole bases or grouting as necessary and regrout to provide smooth flow into and through existing manholes.

303-9.1.n Special Manholes. Special manholes shall be constructed in conformance with the applicable requirements of Section 303 and as shown on the Plans.

303-9.1.o Sewer Cleanouts. Cleanout construction shall be as shown on the Plans and Standard Details. The cleanout shall be the same material as the main line sewer unless approved otherwise by the Engineer.

303-9.1.p Manhole Steps. Manhole steps if specified on plans shall be installed as shown on the Standard Details.

303-9.2 Structure Testing.

303-9.2.a Vacuum Testing. All project manholes shall be vacuum tested. The Contractor shall furnish all materials, equipment and labor for making a vacuum test. Vacuum test procedures and requirements shall be as follows:

1. After completion of the manhole barrels but prior to backfilling and grade ring installation, all manhole openings shall be sealed with plugs and a rubber ring "donut" type plug inserted inside the cone opening.
2. A small vacuum pump shall be attached to a hose connected to the plug and 4 psi of vacuum shall be applied.
3. The vacuum shall be permitted to stabilize at 3.5 psi for one minute; then the test shall begin.
4. The manhole must maintain vacuum such that no greater than 0.5-psi of vacuum shall be lost during the specified test period.
5. The specified test period is as follows:

<u>Manhole Depth (Ft.)</u>	<u>Test Period (Min.)</u>
0-5	4.5
5-10	5.5
10-15	6.0
Greater than 15	6.5

6. Manholes failing the test shall be patched as required and re-tested.
7. A vacuum regulator shall be provided on the vacuum pump such that no pressure greater than 10 psi can be applied to the manhole during the test. All manholes not meeting the leakage test or are unsatisfactory from a visual inspection shall be repaired to the Engineer's satisfaction.

303-9.2.b Hydrostatic Testing. At the Contractor's option and with the Engineer's approval, hydrostatic testing may be substituted for vacuum testing. The test shall consist of plugging all inlets and outlets and filling the manhole with water to a height determined by the Engineer. Leakage in each manhole shall not exceed 0.1 gallon per hour per foot of head above the invert. All manholes that do not meet the leakage test or are unsatisfactory from a visual inspection shall be repaired to the Engineer's satisfaction. Contractor is responsible for supplying water for testing.

303-9.3 Payment. The unit prices in the Bid shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all work, including any rework, involved in, or appurtenant to each item as shown on the Plans or in the Specifications.

Manholes, including new manholes or replacement of existing manholes, regardless of depth, will be paid for at the unit price bid for each or per linear foot depth (measured from sewer pipe flowline to manhole rim) of manhole complete in place. Such payment shall include excavation; removal of existing manholes; replacing or installing a new manhole with drop connections if required; the disposal of excavated material and debris; the removal and disposal of contaminated material not paid by separate item; supplying and placement of backfill material or special backfill material; constructing inverts; furnishing and installing castings; HDPE manufactured or in-placed lining whenever specified in the plans; trench shoring; providing sewer by-pass flow; saw-cutting; reconnection work to existing or new pipe or conduit; restoration of the street surface, including

permanent and temporary resurfacing; traffic striping not paid by separate item and all other work necessary to complete the work.

Special manholes constructed, complete in place, will be paid for at the respective unit prices bid for each. Appurtenances shown or specified will be considered part of the manhole and no direct or additional payment will be made therefor.

Drop connections for manholes, regardless of size and depth, constructed complete, in place, if specified in a separate bid item in the bid schedule, will be paid for at the unit price bid for each.

Sewer cleanouts or lampholes, regardless of size and depth, constructed complete, in place will be paid for at the unit price bid for each.

SECTION 306 – OPEN TRENCH CONDUIT CONSTRUCTION

306-1 GENERAL.

306-2.9 Pipe Laying.

ADD NEW SUBSECTION 306-2.9 TO READ:

Pipe will be inspected in the field before and after laying. If any cause for rejection is discovered in a pipe after it has been laid, it shall be subjected to rejection. Any corrective work shall be approved by the Engineer and shall be at no cost to the Agency.

When connections are to be made to any existing pipe, conduit, or other appurtenances, the actual elevation or position of which cannot be determined without excavation, the Contractor shall excavate for, and expose, the existing improvement before laying any pipe or conduit. The Engineer shall be given the opportunity to inspect the existing pipe or conduit before connection is made. Any adjustments in line or grade that may be necessary to accomplish the intent of the plans will be made.

306-3 TRENCH EXCAVATION.

306-3.1 General

ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 306-1:

Where directed to pothole to verify the depths of underground utility crossings, the Contractor shall excavate to locate said underground utility crossings and relay this depth information to the Resident Engineer. Unless there is a bid schedule shown for this work, payment for this work shall be considered included in sewer pipe rehabilitation work. No additional payment shall be made.

The work for pothole shall include full compensation for signage, traffic control, excavation, backfill with standard compaction, temporary and permanent resurfacing, etc., and providing all labor, equipment and materials incidental to this work.

306-3.2 Removal of Surface Improvements.

ADD THE FOLLOWING THREE PARAGRAPHS TO THE END OF THE SUBSECTION 306-3.2:

The existing pavement (i.e. asphalt concrete, and/or concrete) within the area of a sanitary sewer trench may be greater in thickness or of different materials than the trench resurfacing section specified in 306-1.5. No extra payment will be made for removal of asphalt concrete that differs in thickness by 2" (plus or minus) from the approximate existing pavement thickness shown on the plans.

Bituminous pavement, concrete pavement, curbs, gutters, sidewalks or driveways shall be sawcut prior to trenching and excavation for point repairs, sewer rehabilitation, sewer replacement and relief sewer installation. Sawcutting shall be 6" deep for bituminous pavement and full depth for concrete. Stomping of concrete pavement will not be allowed.

Where approved by the Engineer to extend a point repair excavation, the Contractor may precut the pavement edge for the excavation with a jackhammer. Prior to replacement of surface improvements, the pavement edges shall be neatly trimmed by saw cutting.

306-3.3 Removal and Abandonment of Existing Conduits and Structures.

ADD THE FOLLOWING PARAGRAPH TO THE END OF THE SECTION:

Payment for Removal of Existing Structures. The plugging, abandonment and removal of conduit and structures, unless paid by a separate bid item, shall be considered part of the pipeline construction or rehabilitation work or part of other work and no additional payment shall be made.

ADD NEW SUBSECTION 306-3.3.1 TO READ:

306-3.3.1 Removal and Replacement of Building Sewers.

Building sewers conflicting in grade with the construction of pipe conduits shall be re-laid to clear the pipe conduit in accordance with applicable provisions of the Standard Specifications or the Special Provisions or as directed by the Engineer. Payment shall be made at the unit price bid per linear foot of building sewer.

REPLACE SUBSECTION 306-3.4 WITH THE FOLLOWING:

306-3.4 Minimum and Maximum Pipe Zone Trench Width.

a) **Rigid Pipe.** For rigid pipe, the minimum and maximum width of trench permitted shall be as indicated on the Plans or Standard Details.

Additional payments or deductions from the Contract Unit Price for trench excavation for conduits will be based upon a calculated volume. The width used in calculating the excavation volume for prefabricated conduit will be the maximum width of trench shown on the Plan and measured at the top of pipe. In the case of sewers or storm drains formed and cast in place, such excavation volume will be based upon the outside width of the structure being constructed plus three feet (0.9m).

Additional payment or deductions from Contract Price for trench resurfacing will be based upon an area determined by the maximum trench width as specified herein.

If the maximum trench width is exceeded, the Contractor shall provide additional bedding, another bedding type, or higher pipe strength, as shown on Plans or approved by the Engineer, at no additional cost to the Agency.

b) **Flexible Thermoplastic Pipe.** For flexible thermoplastic pipe, trench width shall be in accordance with ASTM D 2321 or as indicated on the Plans.

REPLACE SUBSECTION 306-3.5 WITH THE FOLLOWING:

306-3.5 Maximum Length of Open Trench. Except with the Engineer's written permission, the maximum length of open trench at any one time shall be 300 feet (91 meters).

ADD NEW SUBSECTION 306-3.7 TO READ:

306-3.7 Payment for Contaminated Material Disposal.

a. **Class I Material Disposal:**

b. A contract change order shall be used to handle all work including handling, transporting and disposing of Class I materials as specified in the Special Provisions. The unit bid price provided in the Bid Schedule for Class I material disposal work shall be considered full compensation for all labor, materials, tools, environmental monitoring, dust control measures, site health and safety control, site security, equipment, and incidentals necessary to handle, transport and dispose of Class I material as specified herein, including but not limited to, all supervision, fees, permits and licenses, insurance, preparing and implementing a health and safety plan, staging, preparing and implementing a work plan, temporary storage of material work plan, safety equipment, preparing and submitting necessary documentation to the transporter and the disposal facility in accordance with local, state, and federal regulations. The Contractor shall submit invoices, landfill weight tickets, waste manifests, and other documentary evidences of offsite hauling and disposal of excavated Class I materials.

c. **Class II Material Disposal:** The unit bid price provided in the Bid Schedule for handling, transporting and disposing of Class II material shall be considered full compensation for labor, materials, tools, environmental monitoring, dust control measures, site health and safety control, site security, equipment, and incidentals necessary to handle, transport and dispose of Class II material as specified herein, including but not limited to, all supervision, fees, permits and licenses, insurance, preparing and implementing a health and safety plan, staging, preparing and implementing a work plan, temporary storage of material work plan, safety equipment, preparing and submitting necessary documentation to the transporter and the disposal facility in accordance with local, state, and federal regulations. The Contractor shall submit invoices, landfill weight

tickets, waste manifests, and other documentary evidences of offsite hauling and disposal of excavated Class II materials.

- d. **Class III Material Disposal:** The unit price provided in the Bid Schedule for handling, transporting and disposing of Class III materials shall be considered full compensation for all labor, materials, tools, environmental monitoring, dust control measures, site health and safety control, site security, equipment, and incidentals necessary to handle, transport and dispose of Class III material as specified herein, including but not limited to, all supervision, fees, permits and licenses, insurance, preparing and implementing a health and safety plan, staging, preparing and implementing a work plan, temporary storage of material work plan, safety equipment, preparing and submitting necessary documentation to the transporter and the disposal facility in accordance with local, state, and federal regulations. The Contractor shall submit invoices, landfill weight tickets, waste manifests, and other documentary evidences of offsite hauling and disposal of excavated Class III materials.

306-6 BEDDING

306-6.1 General.

REPLACE THE THIRD PARAGRAPH OF SUBSECTION 306-6.1 WITH THE FOLLOWING:

Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe to a minimum of two-fifths times the outside diameter of the barrel. If the pipe is to be laid in a rock cut, at least four inches (100mm) of bedding shall be provided below the pipe before the remainder of the bedding is placed. Bedding shall be compacted by hand or mechanical tampers prior to backfilling per 306-12. Unless the sheeting or shoring is to be cut off and left in the place, densification of pipe bedding shall be accomplished after the sheeting or shoring has been removed from the bedding zone. The material in the compaction zone shall be placed and densified by mechanical compaction. Jetting will not be permitted.

REPLACE THE FIFTH PARAGRAPH OF SUBSECTION 306-6.1 WITH THE FOLLOWING:

- Except where otherwise specified, bedding material shall be crushed rock in accordance with Section 200-1.2, Crushed Rock and Rock Dust, Table 200-1.2 (A), 3/4" Sieve Size. Except where otherwise specified, bedding material shall be crushed rock in accordance with 200-1.2 or broken/crushed portland cement concrete. Bedding material shall be free from organic matter and other deleterious substances such as brick, glass, metal, etc and shall conform to the quality requirements of Table 200-1.2 (B).
- The maximum size for bedding material shall be as follows:
 - a. 3/8-inch or 3/4-inch for HDPE or coated pipe.
 - b. 3/4-inch maximum for other pipe with the following gradation:

<u>Sieve Size</u>	<u>% Passing Sieve 3/4"</u>
1 1/2"	---
1"	100
3/4"	80-100
1/2"	20-60
3/8"	0-20
No. 4	0-5
No. 8	---

- The maximum asphalt content shall not exceed two percent (2%) by weight of the material.
- For bedding for metallic or concrete pipe, the water-soluble chloride content shall not exceed 300 ppm and the water-soluble sulfate content shall not exceed 1,000 ppm. Resistivity shall be greater than 3,000 ohm-cm and the pH shall be greater than 6.0. Testing shall be done in accordance with the following:
 - a. Water-Soluble Chloride: Caltrans Method 532/EPA 300.0
 - b. Water-Soluble Sulfate: Caltrans Method 532/EPA 300.0
 - c. Resistivity: ASTM 657/Caltrans Method 532
 - d. pH: SW 9045.
- Bedding concrete shall be Class 450-B-2500 as specified in 201-1.

306-7 PREFABRICATED GRAVITY PIPE.

306-7.4 Vitrified Clay Pipe (VCP).

ADD NEW SUBSECTION 306-7.4.4 TO READ:

306-7.4.4 Special Joints. Type "D" joints shall be used to join sections of pipe of dissimilar material.

306-1.2.3 Field Jointing of Clay Pipe.

ADD NEW SUBSECTION 306-1.2.3 (d) TO READ:

(d) Special Joints. Type "D" joints shall be used to join sections of pipe of dissimilar material.

306-1.2.6 Field Jointing of Iron Pipe.

DELETE THE ENTIRE PARAGRAPH 306-1.2.6 (b) Cement Joints.

306-1.2.9 Field Jointing of Solvent-Welded ABS and PVC Pipe.

DELETE ALL REFERENCES TO PVC PIPE.

306-1.2.10 Field Jointing of Gasket-Type ABS and PVC Pipe.

DELETE ALL REFERENCES TO PVC PIPE.

306-1.2.11 Field Jointing of Injection-Sealed PVC Pipe.

DELETE THE SUBSECTION.

306-1.2.12 Field Inspection for Plastic Pipe and Fittings.

DELETE ALL REFERENCES TO PVC PIPE.

ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 306-1.2.12:

Proof rings for verification of mandrel diameters shall be available at all times during mandrel tests. These rings shall be a standard product of the mandrel manufacturer. The Contractor shall correct all mandrel obstructions at no cost to the Agency. The Contractor's method to correct obstructions shall be subject to the Engineer's approval prior to implementation. The use of a re-rounder to force pipe into round is prohibited. Any pipe that has been re-rounded shall be removed and replaced.

306-1.2.13 Installation of Plastic Pipe and Fittings.

DELETE ALL REFERENCES TO PVC PIPE AND FITTINGS.

306-7.8.2 Pressure Testing and Leakage Inspection.

REPLACE SUBSECTION 306-7.8.2.1 WITH THE FOLLOWING:

306-7.8.2.1 General. All project pipelines shall be tested for leakage as specified herein. Before any pipelines are tested, they shall be cleaned in accordance with 306-1.4.7 All leakage tests shall be completed and approved prior to placing of permanent resurfacing.

For pipelines with building sewer connection(s), where lower lateral replacement is not required, leakage testing shall also encompass stub-outs and connection tees, wyes, taps, saddles, etc. A tee connector may be installed to facilitate testing. All connections made by the Contractor shall be considered temporary until all leakage testing has been completed and approved. Leakage tests shall be completed and approved prior to backfilling the building sewer connections.

When leakage or infiltration exceeds the amount allowed by the specifications, the Contractor at its expense shall locate the leaks and make the necessary repairs or replacements in accordance with the Specifications to reduce the leakage or infiltration to the specified limits. Any individually detectable leaks shall be repaired, regardless of the test results.

306-7.8.2.1(e) Pressure Testing and Leakage Inspection.

ADD THE FOLLOWING TO THE END OF SUBSECTION 303-7.8.2.1(e)

Pipeline cleaning shall be performed prior to CCTV inspection in accordance with 500-1.1.4.

306-7.8.2.4 Air Pressure Test.

REPLACE THE 5TH THROUGH 7TH PARAGRAPHS WITH THE FOLLOWING:

1. Sewer flow control, as required, shall be provided in accordance with 500-1.1.4.c.
2. The pressure exerted on the pipe by the average adjacent groundwater shall be

determined as specified in 500-6.2. Air shall be introduced into the pipeline until 4.0-psi (27kPa) gage pressure has been reached or if groundwater is present, 4.0 psi (27kPa) above the computed pressure exerted by the average adjacent groundwater. Reduce the flow of air and maintain the air pressure within plus or minus 0.5 psi (3kPa) for at least two minutes to allow the internal air pressure to reach equilibrium.

3. The pipeline pressure shall be constantly monitored by a gage and hose arrangement separate from the hose used to introduce air into the line. A blow-off valve shall be provided on the test apparatus to prevent over pressurizing the pipeline.
4. After the temperature has stabilized and no air leaks at the plugs have been found, the air pressure shall be permitted to drop until the internal pressure has reached 3.5 psi (24kPa) gage pressure or when groundwater is present, 3.5 psi (24kPa) above the computed pressure exerted by the average adjacent groundwater. A stopwatch or sweep-second-hand watch shall be used to determine the time lapse required for the air pressure to decrease an additional 1.0-psi (7kPa).
5. If the time (T) in seconds required for the air pressure to decrease the additional 1.0-psi (7kPa) exceeds that shown in Table 306-1.4.4 (A), the pipe shall be presumed to be within acceptance limits for leakage. (Reference to pipe diameter in the table is to the inside diameter. For pipe or liner diameters not shown in this table, the time requirement for the next larger diameter pipe listed in the table shall be met.)
6. If the time lapse is less than that shown in the table, the Contractor shall make necessary corrections to reduce the leakage to acceptance limits without additional compensation.

ADD NEW SUBSECTION 306-7.8.2.6 TO READ:

306-7.8.2.6 Sewer Line Cleaning. After all backfilling is complete and structure frames and covers have been set, and prior to the performance of leakage tests, closed circuit television inspection, and acceptance of the work, the Contractor shall, in the presence of the Engineer and in a manner approved by the Engineer, clean and flush all pipe sewers.

A temporary sand trap of a design approved by the Engineer shall be securely placed within the outlet pipe of the next lower manhole of the pipe sewer section to be flushed and cleaned. The sand trap shall catch all debris flushed and cleaned. The sand trap shall catch all debris flushed downstream and prevent it from being carried into the pipe sewer below. The Contractor shall carefully remove all debris collected by the sand trap from the manhole.

The Contractor shall not remove any sand trap installation without first receiving the Engineer's approval. Where sewers have been flushed without a sand trap, the City will inspect and clean existing downstream public sewers to an extent necessary to remove material and debris at the Contractor's expense.

Cleaning and flushing shall be done either by a rubber ball or by means of a high-pressure jet of water fed through the entire length of the line. The rubber ball manufactured for this purpose shall be inflated to fit snugly into the pipe, and propelled through the line only by flush water introduced into the structure in back of the ball.

The Contractor shall conduct a closed circuit television (CCTV) inspection of all storm and sanitary sewer pipe installation, replacement and pipe rehabilitation projects in accordance with 500-1.1.5. Such DVD(s) shall clearly show the post-construction condition of project pipelines and sewer structures. Manholes shall show the manhole walls plus the sewer inflow and outflow pipe-to-manhole connections. Pipeline cleaning shall be performed prior to CCTV inspection in accordance with 500-1.1.4. The original DVD(s) and accompanying video log reports of the CCTV inspection shall be submitted to the Engineer. The project shall not be deemed complete and acceptance granted until the video and log reports have been reviewed and their contents approved by the Engineer.

306-12.3 Mechanically Compacted Backfill.

306-12.3.1 General.

DELETE THE LAST SENTENCE OF THE FIRST PARAGRAPH OF SUBSECTION 306-1.3.2.

REPLACE SUBSECTION 306-12.3.2 WITH THE FOLLOWING:

306-12.3.2 Compaction Requirements. Except as specified otherwise, trench backfill material shall be densified to the following minimum relative compaction:

90 Percent Relative Compaction:

- a. From the pipe bedding zone upwards to the finish grade within native material or unimproved areas.
- b. From the pipe-bedding zone upwards to three feet below the pavement surface (or finish grade where there is no pavement), within the existing or future traveled way, shoulders, sidewalks, and other paved areas (or areas to receive pavement).
- c. Within engineered embankments.
- d. Where lateral support is required for existing or proposed structures.

95 Percent Relative Compaction for three feet below the pavement surface (or finish grade where there is no pavement), within the existing or future traveled way, shoulders, sidewalks, and other paved areas (or areas to receive pavement).

306-12.4 Jetted Trench Backfill.

306-12.4.1 General.

ADD THE FOLLOWING PARAGRAPH TO THE BEGINNING OF SUBSECTION 306-12.4.1:

Flooding or jetting of backfill shall be allowed only when indicated on the drawings or specifically provided for in the Special Provisions. Resurfacing of a jetted or flooded trench shall not be done until the day after water densification, unless otherwise approved by the Engineer.

306-13 TRENCH RESURFACING.

306-13.1 Temporary Resurfacing.

REPLACE THE SECOND PARAGRAPH OF SUBSECTION 306-13.1 TO READ:

Temporary resurfacing shall conform as to materials, mixing and testing with applicable provisions of 400-4, Asphalt Concrete for Type III, Class F, Grade SC 800, except the asphalt percent shall be 6.0% to 7.0% of the dry aggregate weight.

Temporary pavement or surface shall be maintained regularly ensuring its surface is smooth and conform with adjacent paving. Unless otherwise specified or approved by the Engineer, in no instances shall the temporary pavement or temporary surface be remained for more than 21 days prior to replacing it with permanent resurfacing as being referred to in Section 306-1.5.2.

306-13.2 Permanent Resurfacing.

ADD THE FOLLOWING THREE PARAGRAPHS TO THE END OF SUBSECTION 306-13.2

All existing pavement markings, traffic striping, and pavement markers removed or damaged as a result of construction operations shall be replaced in accordance with 310-5.6.

Permanent resurfacing materials, mixing and testing shall conform to 400-4 and shall be : 3/4" Maximum Aggregate, Medium 15% recycled Asphalt, Type A, PG64-10 asphalt concrete with a finish surface lift of one-inch (2.5cm) maximum conforming to 1/2" Maximum Aggregate, Medium 15% recycled Asphalt, Type A, PG64-10.

Permanent resurfacing type shall be as shown on plans.

REPLACE SUBSECTION 306-15 WITH THE FOLLOWING:

306-15 Basis of Payment for Open Trench Installations.

306-15.1 Measurement.

306-15.1.a Pipe sewers shall be measured in horizontal planes from structure center to structure center. Payment shall be made on horizontal measurement. At manholes for sewers 36 to 75 inch diameter, pay lengths will be measured to a point two feet (0.61m) from the manhole center. (For payment purposes, the cover center shall be considered as the structure center.)

306-15.1.b Building sewers shall be measured in horizontal planes from the wall of the main trench penetrated by the building sewers to the reconnection point to the existing building sewer or to the two-way cleanout.

306-15.2 Payment.

306-15.2.a Payment for Pipe and Conduit.

- 1) The price per linear foot for pipe and conduit in place shall be considered full compensation for the pipe or conduit material, labor, all wyes, tees, bends, and special details shown on the

plans; the closing or removing of abandoned conduit structures; the sawcutting of bituminous pavement, concrete pavement, curbs, gutters, sidewalks, and driveways; the excavations of the trench; trench shoring, the removal of interfering portions of existing sewers, storm drains, and improvements; the disposal of the excavated material; the removal and disposal of contaminated material not paid by separate item; the control and discharge of ground and surface waters not paid by separate item; the control and bypass of the existing pipe sewer and/or conduit flows, water pollution control work as specified in 7-8.6 unless paid by a separate bid item; the preparation of subgrade; placing and joining pipe, supplying and placement of bedding material; supplying and placement of imported backfill material or special backfill material; reconstruction of existing structure channels with new pipe sewer; removing and replacing storm drain pipes including all necessary work to adjust the inlets to make the storm drain pipes flow properly; permanent and temporary resurfacing; removal and replacement of pavement markings, traffic striping, and pavement markers not paid by separate bid item; replacement of curbs, gutters, sidewalks, traffic island/median and driveways; landscape restoration; protecting and restoring all improvement as specified in section 7-9; fence replacement; removal of debris and materials; pipeline cleaning; **performing leakage testing**; removal and replacement streetlights and traffic signals loops; removing and replacing street and traffic signs; CCTV acceptance inspection of the completed pipeline; and all work necessary to install the pipe or conduit, complete in place.

Performing pre and post construction CCTV inspection and furnishing CCTV logs and DVDs in **PACP format** for all pipes included in the contract shall be done as Incidental Work to this bid item and no additional payment will be made. The original DVDs and accompanying video log reports of the pre and post CCTV inspection shall be submitted to the Engineer. The post construction DVDs and reports shall be in **PACP format** and shall show all newly constructed mains plus all sewer structures. CCTV inspection shall show the condition of each project manhole, including sewer inflow and outflow connections plus inside manhole walls. **When requesting payment for a completed section of newly constructed pipes and sewer structures, the Contractor shall submit post CCTV inspection videos and lateral tables per 306-16.1.1. No partial payment shall be processed without submitting post construction CCTV video and report.**

The project shall not be deemed complete and acceptance granted until all video and log reports have been reviewed and their contents approved by the engineer.

- 2) The price for each building sewer connection or reconnection to a new or rehabilitated sewer main shall be considered full compensation for all labor, materials, and equipment to reconnect or connect the existing building sewer to the new or rehabilitated sewer main, including new building sewer pipe from the sewer main and beyond the trench walls as necessary. Such work shall include wyes, tees, bends, and special details shown on the plans; the closing or removing of abandoned conduit structures; the saw-cutting of bituminous pavement, concrete pavement, curbs, gutters, sidewalks, and driveways; the excavations of the trench; trench shoring, the removal of interfering portions of existing sewers, storm drains, and improvements; the disposal of the excavated material; the removal and disposal of contaminated material not paid by separate item; the control of ground and surface waters and the control of the existing pipe sewer and/or conduit flows, water pollution control work as specified in 7-8.6 unless paid by a separate bid item; the preparation of subgrade; placing and joining pipe, supplying and placement of bedding material; supplying and placement of imported backfill material; reconstruction of existing structure channels with new pipe sewer; permanent and temporary resurfacing not paid by separate bid item; traffic control, removal and replacement of pavement markings, traffic striping, and pavement markers; replacement of curbs, gutters, sidewalks, traffic island/median, and driveways; landscape restoration, fence replacement, removal of debris and materials, pipeline cleaning; leakage testing; removal and replacement streetlights and traffic signals loops; removing and replacing street and traffic signs; CCTV acceptance inspection of the completed pipeline; and all work

necessary to connect or reconnect the building sewer to the new or rehabilitated sewer main, complete in place.

- 3) Payment for pipe sewers shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for the design, installation and removal of the trench shoring, bracing, and sheeting system.

306-15.2.b Payment for Sawcut Pavement. Payment for all sawcutting shall be considered included in pipe rehabilitation or other work and no additional payment shall be made.

306-15.2.c Payment for Type 2 Concrete Bedding. Payment for concrete bedding shall be considered included in pipe rehabilitation or other work and no additional payment shall be made. Payment for sawcutting shall include full compensation for supplying, installing and compacting of Type 2 Concrete Bedding at locations shown in the plans/specifications or as directed by the Engineer.

306-15.2.d Payment for Concrete Low-Strength Material (CLSM). Payment for CLSM be considered included in pipe rehabilitation or other work and no additional payment shall be made. CLSM installation shall include full compensation for supplying, installing and compacting of CLSM at locations shown in the plans/specifications or as directed by the Engineer.

306-15.2.e Payment for Import Backfill. Payment for imported backfill shall be considered included in pipe rehabilitation or other work and no additional payment shall be made. Full compensation includes supplying, installing and compacting of import backfill at locations shown in the plans/specifications or as directed by the Engineer.

ADD NEW SUBSECTION 306-17 TO READ:

306-17 PIPE SEWER AND/OR STORM DRAIN STRUCTURES.

306-17-1. General. Pipe sewer and/or storm drain structures (such as manholes, lampholes, and inlets) shall be constructed at the locations shown on the plans or where directed by the Engineer in accordance with the Standard Details, as specified herein, or as directed by the Engineer.

306-17-2. Existing Manholes to Remain. Where designated on the plans "Existing Manhole to Remain," the Contractor shall form a new channel in the manhole by removing the existing channel and laying new pipe sewer and/or storm drain through the manhole and imbedding the new pipe in Class "C" mortar made with Type V cement. All work shall be done as directed by the Engineer and in accordance with 303-9.

306-17-3. Lines Terminating in Cleanout. Where designated on the plans to "Construct Cleanout" at the termination of a pipe sewer, the line may be lengthened or shortened to provide for the reconnection of all existing building sewers to the new pipe sewer.

306-17-4. Payment. Payment for pipe sewer and/or storm drain structures (such as manholes, lampholes and inlets) shall be made at the price bid for each structure and shall be full payment for each structure complete in place, including excavating, backfilling, constructing inverts, furnishing frames and covers and/or grates (unless otherwise provided in the Special Provisions), installing frames and covers and/or grates, restoring the street surface and all other work, Including temporary resurfacing, necessary to complete the work.

PART 4 -- ROCK PRODUCTS

SECTION 400 – ALTERNATE ROCK PRODUCTS, ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE AND UNTREATED BASE MATERIAL

400-4 ASPHALT CONCRETE.

ADD SUBSECTION 400-4.1 TO READ:

400-4.1 General. Asphalt concrete shall be mixture of mineral aggregate and paving or liquid asphalt mixed at a central mixing plant.

This material will be designated by the type of asphalt concrete, class and grade i.e., "III-B2-PG 64-10. Unless otherwise other wise specified on the plans or in the Special Provisions, III-B3-PG64-10 shall be used.

PART 5 – PIPELINE SYSTEM REHABILITATION NO CHANGES

PART 5 – PIPELINE SYSTEM REHABILITATION

Part 5 of the Special Provisions shall conform to Part 5 of the Standard Specifications except as modified herein.

SECTION 500 - PIPELINE SYSTEM REHABILITATION

500-1 PIPELINE REHABILITATION.

500-1.1 Requirements.

ADD THE FOLLOWING PARAGRAPH TO THE END OF THE SUBSECTION.

Refer to 7-11 for requirements regarding patent fees or royalties.

REPLACE SUBSECTION 500-1.1.2 TO READ:

500-1.1.2 Submittals. Ten days prior to the start of construction, the Contractor shall provide the following submittals in accordance with the requirements of 2-5.3. The Contractor shall prepare and submit for the Engineer's approval a detailed description of the pipe rehabilitation method, including, but not limited to, materials and equipment, lateral reconnection procedure and materials, operation plan, work schedule, contingencies for conflicting utilities, etc. The shop drawings shall include the location, rehabilitation method, and, when applicable, any bypass locations with sufficient detail to assure that the work can be accomplished without sewage spill. All submittals required by these specifications shall meet the requirements as shown on the Plans and in the Specifications.

The submittals shall contain:

1. Detailed description of the system and procedures including, but not limited to, pipe and fittings, lateral reconnection, sewage bypass system, trench dewatering system, protection of utilities, and any other work of temporary nature not a part of the permanent work or improvement.
2. Manufacturer's literature describing in detail the rehabilitation method procedures to be followed.-
3. Shop drawings, catalog data, and manufacture's technical data showing complete information on, but not limited to, pipe and fitting, materials composition, physical properties, launch and exit pits locations, and manufacturer's recommendation for handling, storage, and repair of rehabilitation materials and fittings if damaged.
4. Documentation summarizing the experience, qualifications, and references including the project superintendent, foreman, and machine operator.

500-1.1.4 Cleaning and Preliminary Inspection.

ADD NEW SUBSECTIONS 500-1.1.4.1, 500-1.1.4.2 AND 500-1.1.4.3 TO READ:

500-1.1.4.1 Root removal. Roots shall be removed where shown on the Plans or revealed by the Contractor's television inspection. Special attention shall be used during the cleaning operation to assure root removal from pipe joints. The Contractor shall **not** use chemical root treatment.

500-1.1.4.2 Material Removal and Disposal. All sludge, dirt, sand, rocks, grease and other solid or semisolid material resulting from the cleaning operation shall be removed from the downstream manhole of the pipeline section being cleaned. Passing material from manhole section to manhole section shall not be permitted as such actions could cause line stoppages, sand accumulation in wet wells, or damage to pumping equipment.

All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of at a suitable sanitary landfill site as defined by Titles 22 and 23 of the California Administrative Code. All materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond a single workday, except in totally enclosed containers and as approved by the Engineer.

500-1.1.4.3 Sewer Flow Control.

500-1.1.4.3.1 General.

- The Contractor shall provide sewer flow control when

- a. sewage flow depth in the pipe upstream of the manhole section being worked is above the maximum allowable for television inspection, or
- b. when it is necessary to accomplish the specified sewer line work.
- Such sewer flows shall be reduced to the required level by plugging or blocking of the flow, and by pumping the flow around the section being worked.
- The flow depth sizes as measured in the manhole shall not exceed that shown below for the respective pipe sizes when performing CCTV television inspection, joint testing and/or sealing.

Pipe Dia	Max. Flow Depth	Pipe Dia	Max. Flow Depth
6 in	1.20 in	21 in	5.25 in
8 in	1.60 in	24 in	6.00 in
10 in	2.00 in	27 in	8.10 in
12 in	3.00 in	30 in	9.00 in
15 in	3.75 in	33 in	30% of
18 in	4.50 in	& up	Pipe Dia

- The Contractor shall submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to carry the work. This bypass plan will be reviewed by the Engineer and shall be acknowledged as acceptable before any construction commences.

500-1.1.4.3.2 Plugging, Blocking and Pumping. When sewer flow control is required, the Contractor shall furnish, install and operate pumps, plugs, conduits and other equipment to divert the sewage flow. The plug shall be so designed that all or any portion of the sewage can be released. This plug shall be provided with a tag line.

The pumping system shall be of sufficient capacity to handle the existing sewage flow plus additional flow, which may result because of a rainstorm. If pumping is required on a 24-hour basis, the pump engines shall be equipped in a manner to keep noise to a minimum. Standby pumps shall be provided as required. The Contractor shall provide bypass pumping in such a manner as to not damage public or private property nor create a nuisance or health menace. The pumped sewage shall be enclosed in a hose or pipe and shall be reinserted into the sanitary sewer system. Sewage shall not be allowed to free flow in gutters, streets or over sidewalks, etc. No sewage shall flow into storm inlets or conduits. After the construction work has been completed, the sewage flow shall be restored to normal.

500-1.1.4.3.3 Payment. Payment for sewerline cleaning, debris removal and sewer flow control shall be included in the price paid for other pipeline work.

500-1.1.5 Television Inspection.

ADD THE FOLLOWING AFTER THE FIRST PARAGRAPH OF SUBSECTION 500-1.1.5:

Previously Televised Project Sewers: City crews have previously televised most project sewers prior to the project design phase. The Contractor shall perform and provide CCTV inspection before and after pipeline rehabilitation for these reaches to the City for review. Payment for the cleaning, debris removal, pre- and post-rehabilitation television inspection and incidentals of such reaches will be included in the price paid for pipeline rehabilitation work if there is no separate bid item for clean and televise pipelines in the bid schedule.

Project Sewers without Prior Television: For pipelines that city crews were unable to televise certain reaches during the project design phase. Such reaches are identified on the Plans as "NOT VIDEO INSPECTED", "NOT TELEVISED", "NTV", or "NOT COMPLETELY VIDEO-INSPECTED." The Contractor will be required to clean, remove and dispose of all debris, grease and roots prior to CCTV of the sanitary sewers. This work shall be done during the first 15 days of contract time. No construction work shall be started on a particular sewer until the Engineer has had five working days to review the inspection tape/documentation for that sewer. The rehabilitation method for each sewer reach will be re-evaluated by the Engineer on the basis of the Contractor's television inspection information; the rehabilitation method will be changed if it is determined necessary or advisable. Such changes in the rehabilitation method shall not be considered substantial changes in the character of

the work. Payment for all work including cleaning, removal and disposal of all debris, silt, slime, rocks, grease and roots, the pre-rehabilitation and the post-rehabilitation television inspection of previously televised and un-televised lines of such reaches will be considered included in the price paid for pipeline rehabilitation work or other work **if there is no separate bid item for clean and televise pipelines in the bid schedule** and no additional payment shall be made.

REPLACE THE THIRD PARAGRAPH OF SUBSECTION 500-1.1.5 WITH THE FOLLOWING:

CCTV inspection shall be performed utilizing a rotary head camera capable of a 3-axis view so that service connections and pipe defects can be properly inspected. The camera shall stop and inspect every lateral, joint and defect.

REPLACE THE LAST PARAGRAPH OF SUBSECTION 500-1.1.5 WITH THE FOLLOWING:

Documentation shall consist of electronic file in Pipeline Assessment & Certification Program (PACP) coded CCTV inspections, log sheets, and written report detailing the pre and post rehabilitation or installation condition of the pipeline and lateral connections/openings. The report shall note the time and date of video inspection, street name, pipe ID referenced in the plans, pipe section length, pipe size, pipe material, lateral connections, counter number, and detailed logging of defects encountered. Any rejected work shall be repaired, then re-televised. If the quality of the video is deemed to be unacceptable by the Engineer, the pipeline shall be re-televised at no additional cost to the City. **All CCTV video inspections shall show a clear view of the existing inside condition of the structures and the pipelines.** Additional City requirements for performing CCTV inspection will be noted on the Plans or in the Specifications.

ADD THE FOLLOWING AT THE END OF SUBSECTION 500-1.1.5:

The following abbreviations defect coding listed are used for design only, the Contractor shall use PACP code when doing CCTV inspection.

Table 500-1.1.5 CCTV Inspection Report Abbreviations

Structural	Joints	Laterals	Roots / Other	Infiltration	Alignment
S-1 Closed Radial Crack	J-1 Minor Offset	L-1 Minor Protruding	R-1 Minor Roots	I-1 At Joint, Minor	A-1 Minor Sag in Line
S-2 Closed Longitudinal Crack	J-2 Severe Offset	L-2 Severe Protruding Lateral	R-2 Severe/Heavy Roots	I-2 At Joint, Severe	A-2 Severe Sag in Line
S-3 Open Radial Crack	J-3 Open Joint	L-3 Defect/Damage at Connection	R-3 Heavy Debris/Trash	I-3 At Lateral Connection	A-3 Horizontal Misalignment
S-4 Open Longitudinal Crack		L-4 Dead Wye	R-4 Mineral Deposit/Rocks/Concrete	I-4 Clear Water Discharge	A-4 Angled/Turned Pipe
S-5 Minor Crack/Defect		L-5 Broken Lateral	R-5 Heavy Grease		
S-6 Crack/Defect Severe		L-6 Heavy Roots in Lateral	R-6 Inundated with Water		
S-7 Broken/ Collapsed/Egg Shape Pipe		Y Wye Conn. P Tap Conn. T Tee Conn.			

ADD THE FOLLOWING TO THE END OF THE SUBSECTION:

All inspections shall be documented with written reports that include a NASSCO Pipeline Assessment Certification Program (PACP) coding of all defects, or the Agency's standard

coding of defects if different than NASSCO. The PACP coding shall be accomplished by an operator or worker who holds current PACP certification.

500-1.1.6 Sampling, Testing and Installation.

ADD THE FOLLOWING THREE PARAGRAPHS TO THE END OF THE SUBSECTION:

Prior to beginning work, Contractor shall clean sewer pipe of any obstruction and debris including roots in accordance with 500-1.1.4. The Contractor shall provide pre-rehabilitation CCTV inspection in accordance with section 500-1.1.5. Point Repairs, if required, shall be performed as specified in 500-1.2.

All insertion processes shall be carried out in compliance with all applicable Cal-OSHA requirements. The installation Contractor shall have the necessary Cal-OSHA licenses before the work commences. Special attention shall be paid to the safety requirements involving work in confined spaces and work with steam.

The Contractor shall remove all protruding laterals that may prevent proper liner insertion. The removal method for protruding laterals shall be submitted with the shop drawings for approval. The cost of removing protruding laterals shall be included in the cost of the pipeline rehabilitation.

500-1.1.7 Miscellaneous.

500-1.1.7 a) Service Connections.

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-1.1.7a).

External Service Reconnections. The Contractor shall expose the house connection sewer and make arrangements with the resident to access all the plumbing fixtures in each house and perform dye tests to determine if the exposed house connection sewer is active. If the resident denies access to the house fixtures, the exposed house connection sewer shall be assumed active unless otherwise directed by the Engineer and shall be reconnected in accordance with these specifications.

If the service connection is to be re-established with an external reconnection, the existing service connections shall be excavated and disconnected at the joint. The existing sewer (now the host or carrier pipe for the liner) shall be carefully broken/removed to expose the liner to the extent necessary without damaging the liner. The liner pipe shall be allowed to normalize to ambient temperature and to cool down before a hole is drilled out. This (and any other) "coupon" shall be retrieved and handed over to the Engineer for inspection of liner integrity, if requested by the Engineer. A pre-fabricated polyethylene saddle equipped with a neoprene gasket and a protruding stub-out shall be installed onto the exposed liner with an epoxy-bonding agent over the cut out. The saddle's attached stub-out must protrude into the liner a distance equal to the liner's wall thickness. The strap-on saddle shall then be tightened with two Type 301 stainless steel or higher-grade bands, one on each side. The nuts and bolts shall be Type 305 stainless steel. The new stub-out, or lateral, shall be connected to the existing service line with a flexible-coupling. The stubout attached to the saddle shall not be smaller than the nominal size of the service line to which it is to be attached. All exposed liner shall be encased in concrete. The entire connection structure, including the main, saddle, stub-out, and exposed house connection sewer shall be backfilled as specified in 500-1.3.6.3.

For service reconnection locations in the street, all CIPP lined sewers shall have service connections reconnected externally. The contractor may elect to temporary reconnect the lateral by internal method, but final payment for reconnection shall be considered paid per bid item for externally reconnect active house connection sewer to rehabilitated/replaced main and no additional payment shall be made.

Internal Service Reconnections. For service reconnections locations in the sidewalks and in easements where CIPP lined sewers are installed, Internal service reconnections shall be allowed and paid for per bid item for internal reconnection. Internal service reconnections use a remote-control cutting device operating within small diameter pipe or directly for man-entry pipe. A color, pivot head CCTV camera shall be attached to the cutting device for precise location of service connections and inspection of the liner pipe. The CCTV inspection shall be performed in the same direction as the CCTV inspection performed before liner insertion.

The Contractor shall have a fully operation backup device for the remote-control cutting device. If the Contractor is unable for any reason to re-establish remotely the service connections, the Contractor shall re-establish each service connection by open excavation at no additional cost.

The remote-control cutting device must provide nearly full-diameter holes, free from burrs or projections, each hole providing a minimum of 95% and a maximum of 100% of the original service connection diameter and area. The new hole edges shall be smooth and crack free with no loose material. The service connection invert shall match the bottom of the reinstated service opening.

REPLACE SUBSECTION 500-1.1.7 c) WITH THE FOLLOWING:

500-1.1.7 c) Access / Insertion Pits.

- If house connection sewers are not re-established internally, the liner shall be installed through insertion. All pipe expanding pits shall be adequately shored, braced, and dewatered to ensure safe work areas.
- Excavation of launch and reception pits for pipe expanding shall be situated to provide minimum inconvenience to residents, businesses, or traffic. Launch excavation will be situated to give maximum possible advantage to the insertion operation, but more importantly to result in minimum inconvenience to traffic and pedestrian users.
- Pipe expanding pit dimensions will vary with depth of cover and size of pipe and also pipe wall thickness. These latter parameters, together with ambient temperature, control the pipe bend radius and the pipe manufacturer's recommendations must be used to obtain the slit trench length.
- A sump hole in the excavation base shall be provided to pump water from the excavation. The layout of a temporary by-pass pumping system to isolate the working area should take into account the location of pumps and pipes, possible pump failure contingency and avoidance of blocking entrances to homes, drives, bus stops, etc. Equipment used should be selected to give minimum noise levels and emission of fumes.
- Upon completion of the rehabilitation process, and/or as directed by the Engineer, the access/insertion pit areas shall be backfilled as specified in 500-1.3.6.3 and restored to the original condition.
- **Insertion Points.** An insertion pit shall be excavated at each location where HDPE liner pipe is to be inserted into the existing sewer pipe. The size and slopes of insertion pits shall be as recommended by the liner manufacturer. The pits for HDPE liner pipe shall be sloped in accordance with ASTM F 585 and the manufacturer's recommendations to facilitate liner entry without damage. This slope shall be 2.5:1 or flatter and shall be shaped to permit as long a radius in the liner pipe as feasible, both where it enters the excavation and where it enters the existing sewer. This radius shall not be less than 35 times the outside diameter of the HDPE liner.
- **Service Connection Pits.** Unless the Engineer approves remote tapping equipment and procedures, access pits will be required at the connection points of the rehabilitated sewer main with existing house connection sewers. Individual service connections shall be at least three liner pipe diameters apart unless otherwise permitted by the Engineer. Service connections shall be made to the liner in accordance with the provisions of 500-1.1.7.

REPLACE SUBSECTION 500-1.1.7 d) WITH THE FOLLOWING:

500-1.1.7d) Protection of Public and Private Improvements. During the rehabilitation process, the Contractor shall protect sewer structures, pipelines, private and public property, and all other existing improvements as specified in Section 7-9. The Contractor shall bolster the manholes to withstand the forces generated by equipment, water and air pressures used while completing the rehabilitation process. The Contractor shall provide sewage flow control as necessary to accomplish the work in accordance with 500-1.1.4.3.

ADD NEW SUBSECTION 500-1.1.7 e) TO READ:

500-1.1.7 e) Post-Rehabilitation Testing. The rehabilitated pipe and house connection sewers shall be tested for leakage in accordance with 500-5. If laterals are to be internally reinstated without lateral rehabilitation, leakage testing will only be performed on the mains and will be performed prior to lateral reinstatement. Cost for the rehabilitated pipe testing shall be included in the cost per linear feet of pipeline rehabilitation.

REPLACE SUBSECTION 500-1.1.9 WITH THE FOLLOWING:

500-1.1.9 Pipeline Rehabilitation Measurement and Payment. Payment for pre-rehabilitation pipeline cleaning and inspection, including CCTV inspection, will be considered paid as part of pipe rehabilitation or other work and no additional payment shall be made. Work entails for furnishing all labor, materials, tools, equipment, apparatus, and incidentals for doing all the work required, including cleaning; rooting; debris removal; CCTV inspection; and the preparation of CCTV inspection logs and DVDs.

Pipeline rehabilitation shall be measured in horizontal planes from structure center to structure center, as shown on the Plans, and shall include the inside dimensions of structures. The price per linear foot or lump sum for pipeline rehabilitation shall be considered full compensation for furnishing and installing all fittings, connections, seals, and special work shown on the Plans and in the Specifications. Additionally, the unit price shall include all labor, trench shoring materials and equipment required for: pre-rehabilitation cleaning and CCTV inspection including those with no prior CCTV inspection; removal of interfering portions of existing sewers, storm drains, and other improvements; internal reinstatement of manhole drop connections for pipes rehabilitated with CIPP, HDPE, or HDPE deformed/reformed rehabilitation methods; closing or removing of abandoned pipelines and structures, if required; excavation of the trench and/or access/insertion pits; control of ground and surface waters; bypass pumping; preparation of the subgrade; placing and joining of pipe, including any necessary annular space grouting; backfilling of the trench and/or access/insertion pits; post-rehabilitation pipeline testing and CCTV inspection; temporary and/or permanent resurfacing; surface restoration including removing and replacing sidewalks/ driveways and any surface improvements; and all other work necessary for pipeline rehabilitation, complete in place.

All property disturbed in the performance of the actual construction work shall be restored by the Contractor to its original condition, or better at the Contractor's expense.

The original DVDs and accompanying video log reports of the CCTV inspection shall be submitted to the Engineer. The post-construction DVDs and reports shall show all new or rehabilitated mains plus all sewer structures. CCTV inspection shall show the condition of each project manhole, including sewer inflow and outflow connections plus inside manhole walls. **When requesting payment for a completed section of rehabilitated pipes, the Contractor shall submit post CCTV inspection reports of the section and lateral tables. No partial payment shall be processed without submitting post CCTV video and report in PACP format.**

The project shall not be deemed complete and acceptance granted until all video and log reports have been reviewed and their contents approved by the Engineer.

500-1.2 Pipeline Point Repair/Replacement.

REPLACE SUBSECTION 500-1.2.1 WITH THE FOLLOWING:

500-1.2.1 General. Point repairs (spot repairs) are work required to repair defective sections of existing sewer lines. Surface excavation is required to accomplish these necessary repairs. Generally, the work entails pipe repair at joints and service connections, sagging locations or any obstruction during pipe rehabilitation work that can be done by removal / replacement of short sections of damaged pipe.

All point repairs shown on the Plans, discovered through subsequent investigations, and/or directed by the Engineer, shall be completed prior to any pipe rehabilitation. Point repair locations indicated on the Plans are based upon previously conducted CCTV inspections. The Engineer will determine the exact location of the point repairs after the pipe is exposed. The location of the point repair specified or shown shall be considered accurate if it is within five feet of the actual location determined by the Engineer. All work to expose and correct the defects, and the materials and methods used shall conform to the applicable specifications, including excavation; locating all interfering utilities; temporary flow bypassing; trench dewatering; pipe repairs or replacement; placing / compacting bedding and backfill; and surface restoration.

All point repairs shall be visually inspected and measured by the Engineer prior to backfilling.

REPLACE SUBSECTION 500-1.2.5 WITH THE FOLLOWING:

500-1.2.5 Notification of Work. The Contractor shall notify the Engineer not less than 48 hours in advance of the time he/she plans to begin repair work at a particular project location. The Engineer will provide the Contractor with the available information (i.e. DVD(s) and logs of the existing sewer) to locate the point repair(s). The City does not guarantee the accuracy of the television information supplied, nor does the furnishing of this information preclude the Contractor from making an independent investigation, including television inspection. This CCTV information is given to the Contractor to assist in determining the nature and location of point repairs. It shall be the Contractor's responsibility to interpret the information and to use it, as applicable.

After the point repair is located and exposed, the Engineer will inspect the damaged pipe and confirm the required repair and methods proposed by the Contractor.

REPLACE SUBSECTION 500-1.2.6 WITH THE FOLLOWING:

500-1.2.6 Installation and Field Inspection. The installation of the replacement pipe and/or repair work shall conform to Section 306. One or a combination of the following three point repair methods shall be used. The selected method shall be subject to the Engineer's approval prior to implementation.

- a) **Repair Clamp.** Install full circle repair clamps as recommended by the manufacturer and approved by the Engineer. All full circle repair clamps shall be of Type 316 stainless steel fastened with Type 305 stainless steel nuts and bolts.
- b) **Heat-Shrink Sleeve.** Install in accordance with manufacturer's recommendations.
- c) **Remove and Replace Pipe or Fittings.** Remove defective pipe or fittings to the nearest joint or by cutting perpendicular to the pipe axis to leave a plain end. Prepare a replacement section of like pipe material (or as otherwise approved by the Engineer or shown on the drawings). Make connections using standard joints, repair clamps, couplings, or heat-shrink sleeves.

ADD NEW SECTION 500-1.2.7 TO READ:

500-1.2.7 Measurement and Payment for Point Repairs.

500-1.2.7.a Excavation and Backfill for Point Repairs. This item will be measured and paid for at the unit price per for each Excavation and Backfill for Point Repair listed in the Bid Schedule. Measurement will be made at the pipe and will be the same length (i.e. 8 feet or less) as the point repair. Payment for excavation and backfill will be independent of the pipe size upon which point repairs are to be made. Payment will include full compensation for all work and materials required to sawcut, excavate, trench shoring, removal of any obstruction object; provide and compact bedding and backfill, bypass sewage and dewater trench, install temporary and permanent resurfacing, including locating all interfering utilities, restoration of ground surface features, traffic control, temporary fencing if required, and all incidental work for one point repair eight feet or less in length regardless the depth of the excavation, complete in place.

500-1.2.7.b Additional Excavation and Backfill for Point Repairs. This item will be measured and paid at the unit price per linear foot listed in the Bid Schedule. The purpose of this item is to pay the Contractor to expose pipe upon which contiguous point repairs may be made in addition to that required for the basic eight-foot point repair. Measurement will be made at the pipe and will be paid only at the Engineer's order. Payment will provide completed compensation for the additional excavation and backfill including all of the related and incidental work named in 500-1.2.7.a, complete in place.

500-1.2.7.c Point Repairs on Sewer Pipe. This work, of whatever nature, will be measured and paid for at the unit price per each point repair for the pipe size listed in the Bid Schedule. Measurement will be made and the price paid will be based on the pipe length repaired. The Contractor will be paid for one point repair for each eight (8) feet or less in length. Payment will provide complete compensation for furnishing all materials, labor, and incidentals including pipe, repair clamps, couplings, and adapters, heat-shrink sleeves, wyes or tees, sewer flow control, trench shoring, and other work necessary to repair the pipe, complete in place.

500-1.2.7.d Additional Point Repair on Sewer Pipe. This item will be measured and paid at the unit price per linear foot for the pipe size listed in the Bid Schedule. The purpose of this item is to pay the Contractor for point repairs contiguous with, and in addition to, the basic eight-foot repair. Payment will provide complete compensation for the additional point repair including all of the related and incidental work named in 500-1.2.7.c, complete in place.

500-1.2.7.e Contiguous Point Repairs. Point repairs immediately adjacent to each other shall be paid for as a simple point repair plus additional excavation and backfill and pipe repair up to a cost where the payment of a separate additional point repair becomes beneficial to the City based on actual contract prices for point repairs and additional excavation and backfill and pipe repairs.

500-1.3 High Density Polyethylene (HDPE) Solid Wall Liner.

REPLACE SUBSECTION 500-1.3.1 TO READ:

500-1.3.1 General. HDPE solid-wall liner pipe shall comply with ASTM D 3350 and ASTM F714. Fittings shall comply with ASTM D 2683 or ASTM D 3261. Fittings fabricated by mitered, butt fusions are also permitted. Unless otherwise specified or approved, the outside diameter of the line shall not be less than 90 percent of the inside diameter of existing pipes, and the standard dimension ratio (SDR) of the liner for sliplining shall be equal to 26.

REPLACE SUBSECTION 500-1.3.6 TO READ:

500-1.3.6 Installation and Field Inspection.

- The HDPE liner shall conform to 500-1.1.4 for the cleaning and inspection of the host pipeline; preparation of entry points as needed; and the storage and handling of liner pipe.
- The Contractor shall remove all protruding laterals that may prevent proper liner insertion. The removal method for protruding laterals shall be submitted with the shop drawings for approval. The cost of removing protruding laterals shall be included in the cost of the liner installation.
- Prior to insertion of the liner, a sizing pig shall be pulled through the existing sewer to ensure there are no obstructions. The sizing pig shall be comprised of a pulling head made of steel, attached to a piece of pipe of the same size and material as the liner. The minimum length of this pipe section shall be three joint lengths of the existing sewer. If the sizing pig encounters an obstruction, other than a protruding lateral, which cannot be removed by conventional sewer cleaning equipment, a point repair excavation shall be made to uncover and remove or repair the obstruction following the procedures outlined in 500-1.2. If the sizing pig is scored to a depth equal to or greater than 10 percent of the liner thickness, the protrusion or irregularity that is the cause shall be removed prior to liner insertion. In such cases, the Contractor shall replace the pipe portion of the sizing pig with a new portion. Liner insertion shall not be permitted unless scoring of the sizing pig is less than ten percent of the liner thickness.
- Prior to removal of the pipe crown, the top of the existing main shall be exposed below the spring-line for the full length of the insertion pit. All sharp edges shall be removed from the exposed host pipe opening and/or the host pipe edges shall be rounded with mortar to prevent scratching or gouging of liner during the insertion process.
- A power winch shall be connected to the end of the liner pipe by a cable and a hard pulling head (or other proven and acceptable arrangement) to enable the liner to be pulled into the existing sewer. The allowable tensile load (ATL) of the pipe cannot be exceeded. Table 500-1.3.6A indicates the Allowable Tensile Loads (ATL) for HDPE IPS Pipe Sizes based upon a nominal tensile yield strength of 3,200 psi:

Table 500-1.3.6A

Allowable Tensile Loads (ATL) for HDPE Pipe at 73°F with a Pull Duration of One Hour or Less

HDPE Pipe OD	SDR 26 ATL (lb)	SDR 17 ATL (lb)	SDR 13.5 ATL (lb)
3.5	1,822	1,822	3,379
4.5	3,011	4,508	5,585
5.563	4,602	6,890	8,535

6.625	6,527	9,771	12,105
7.125	7,550	11,302	14,001
8.625	11,063	16,562	20,517
10.75	17,186	25,728	31,873
12.75	24,175	36,191	44,836
14	29,148	43,635	54,058
16	38,071	56,993	70,606
18	48,183	72,132	89,361
20	59,486	89,052	110,322
21.5	68,743	102,910	127,491

*Note: For pull duration between 1 and 12 hours multiply table value by 0.95.
For pull duration between 12 and 24 hours multiply table value by 0.91.*

- The liner pipe length to be pulled and the pulling speed shall be in accordance with the manufacturer's recommendations to ensure that the liner is not excessively stretched. Said pulling speed shall not exceed one foot per second. Butt fused joints shall not be pulled until the set time recommended by the manufacturer has elapsed
- The project plans may designate certain lampholes, cleanouts, and manholes to be abandoned. In these cases, the pipe liner shall be carried through these structures so that the lining forms a continuous conduit.

500-1.3.6.1 Joining Systems.

a) **Butt Fusion.** Liner sections shall be joined into continuous lengths on the job site at ground level above the trench. Joining shall be accomplished by butt fusion performed in accordance with the liner manufacturer's recommendations and pertinent sections of ASTM D 2657. To assure proper fusion, a thermal crayon shall be used to provide a fail-safe mechanism for the thermometer. The internal fusion beads shall be removed and the joints between pipe sections shall be smooth.

The Engineer may require the Contractor to test two joints, selected at random by the Engineer, from the first 1,000 linear feet (305m) of liner in accordance with ASTM D 638. If requested by the Engineer, the Contractor shall furnish a compliance verification to assure that the tensile strength of the joints equals or exceeds that of the materials joined. The test specimens shall be obtained by cutting the liner pipe at least twelve inches on each side of the field-made joint. The ends may then be re-joined so that work may proceed. One additional test shall be made for each additional 1,000 linear feet (305m) or portion thereof.

b) **Mechanical Joints.** In certain cases the HDPE liner may need to be joined in the trench at a point between manholes. For such situations the polyethylene pipe shall be joined together with a stainless steel full-encirclement clamp. Clamps shall be 316 stainless steel or other approved steel with a rubber sleeve fastened with Type 305 stainless steel nuts and bolts. Clamps shall be of adequate length to protect against pullout. Minimum clamp lengths are listed in the following table:

Approx. Outside Dia. of Liner Pipe (in)	Min.Clamp Length (in)	Approx. Outside Dia. of Liner Pipe (in)	Min.Clamp Length (in)
3.5	7.5	18.0	30
4.5	10	18.5	30
5.5	10	22.0	30
6.5	15	24.0	30
7.0	15	28.0	30
8.5	15	32.0	48
10.5	20	36.0	60
12.5	20	40.0	60
13.5	20	42.0	60
16.0	30	48.0	60

The exposed liner and clamp shall be encased in three sack concrete not less than twelve inches thick over and on each side of the clamp.

500-1.3.6.2 Stress and Strain Relief of Polyethylene Liner Pipe After Pulling Operations. The Contractor shall allow the liner to return to its original length and shape in the unstressed state and then trim the excess liner in the manholes. The liner pipe manufacturer's recommendations shall be followed regarding the relief and normalization of stress and strain due to temporary stretching or elongation after pulling operations are completed. The time allowed for stress and strain relief shall not be less than 24 hours. Other work on the liner, except house connection work, such as encasing and backfilling of exposed liner at insertion pit and house service connections shall not take place until after the stress and stress relief period has passed. For house connections, the Contractor shall maintain sewer services at all times without any interruption and not allow any sewage to flow into trench.

The Contractor shall either

- 1) provide sewage bypass for each lateral; or
- 2) reconnect all laterals before the end of each working day. After the required strain relief period has passed, the Contractor shall re-inspect all connections and clear/reconnect any dislocated laterals before placing concrete encasement and backfill in the lateral pits.

Annular sealing procedures shall not be completed until liner normalization has taken place.

500-1.3.6.3 Bedding. At all locations where polyethylene liner pipe is exposed (except in manholes) cement-stabilized backfill or concrete shall be placed to a minimum of six inches (152mm) from all exposed areas.

Cement-stabilized backfill shall consist of a dry mixture of Class "E" mortar using Type V cement. The dry mixture shall be placed and suitably compacted as directed by the Engineer.

500-1.3.7 Annular Space Grouting.

REPLACE THE FIRST PARAGRAPH OF SUBSECTION 500-1.3.7 WITH THE FOLLOWING:

When the radial annular space between the host pipe and the Polyethylene Liner Pipe is one inch or greater, the entire annular space shall be grouted with reference to 500-3. The maximum safe annular grouting pressure in psig for single-stage or multi-stage grouting shall not exceed the values shown in Table 500-1.3.7 (A).

ADD NEW SUBSECTION 500-1.3.7.1 TO READ:

500-1.3.7.1 Annular Space Sealing: When the radial annular space between the host pipe and the Polyethylene Liner Pipe is less than one inch, the annular space shall be sealed at house connection sewers, terminal ends, and all exposed liner locations (i.e., insertion pits and point repair excavations). Sealing shall be done by first caulking the annular space with an approved activated oakum. Treated activated oakum shall be placed a minimum of six inches (15cm) from the opening in the host pipe and shall then be activated in accordance with the manufacturer's recommendations. The remaining annular space between the opening and the caulking shall then be filled with non-shrink grout made with type V cement.

If the host pipe is damaged or removed at the manhole entry point, the manhole wall around the pipe shall be first chipped out. A rubber strip shall then be placed around the liner and clamped with a type 316 stainless steel band fastened with Type 305 stainless steel nuts and bolts. The chipped-out portion of the manhole shall then be repaired with non-shrink grout made with type V cement.

Excess liner shall be cut within manholes. The invert of the existing channel shall be roughened to provide bond; an epoxy mortar material shall be applied to provide a smooth and uniform flowline from inlet to outlet. The thickness of epoxy mortar applied shall be in accordance with the manufacturer's recommendations but not less than 1/2-inch. Where necessary, the entire existing channel shall be reconstructed so as to provide a smooth and uniform transition in width and depth from the inlet to the outlet. Inlets and outlets shall be sealed as specified herein.

500-1.4 Cured-In-Place Pipe Liner (CIPP) Liner.

REPLACE THE WORDS "epoxy or epoxy vinyl-ester resin" WITH "polyester, epoxy, or epoxy vinyl-ester resin" WHEREVER THEY APPEAR IN SUBSECTION 500-1.4.

500-1.4.1 General.

REPLACE SUBSECTION 500-1.4.1 WITH THE FOLLOWING:

500-1.4.1 General.

- CIPP liner for pipeline rehabilitation shall be either of two types:
Type A – inversion process in compliance with ASTM F 1216 or
Type B – pull-in-place process in compliance with ASTM F 1743.
- The CIPP liner shall use an approved polyester, epoxy, or epoxy vinyl-ester resin-impregnated flexible fabric tube.
- **The minimum liner thickness shall be .24 inch (6.0 mm).**
- Prior to commencing work, the Contractor shall provide submittals on all lining materials and resins and shall furnish manufacturer certification that the liner material complies with the requirements stated herein. The submittals shall include information about all component materials. In accordance with 2-5.3, the Contractor shall submit shop drawings of construction details, including complete manufacturer's recommendations for storage procedures, temperature control, removing roots and protruding laterals, liner handling and insertion, curing details, re-establishing service connections, trimming and finishing. The shop drawings shall include placement location(s) and method(s) and bypass location(s) with sufficient detail to assure that the work can be accomplished without sewage spill. The Contractor shall also provide manufacturer's certification, field measurements and pipe-sizing calculations that demonstrate that the liner has been properly sized to avoid the creation of wrinkles or folds and to avoid gaps between the liner and the host pipe. Only manufacturer-licensed and certified contractors shall install CIPP liner.

500-1.4.2 Material Composition and Testing.

REPLACE THE WORDS "epoxy or epoxy vinyl-ester resin" WITH "polyester, epoxy, or epoxy vinyl-ester resin" WHEREVER THEY APPEAR IN SUBSECTION 500-1.4.2.

ADD THE FOLLOWING TO THE END OF THE SECOND PARAGRAPH OF SUBSECTION 500-1.4.2:

The certified test results shall be from liner samples that have undergone the same curing process, formulation, size and thickness as that proposed to be installed. All material testing shall be performed at the Contractor's expense by a registered, independent, third party laboratory approved by the Engineer. A certificate of compliance and certified test results from an independent third-party laboratory shall also be provided for long-term flexural modulus.

REPLACE TABLE 500-1.4.2 (A) TO READ:

TABLE 500-1.4.2 (A)

CIPP Liner Minimum Flexural Requirements for Polyester Resin			
Type of Polyester Resin ¹	Flexural Modulus (E) (Initial ² , psi)	Flexural Modulus (E _L) (Long Term ³ , psi)	Flexural Strength (psi)
Enhanced	400,000	200,000	4,000
Standard	300,000	150,000	4,500

¹ Only one type of resin shall be used for this project.

² The initial flexural modulus is defined in ASTM D 790.

³ The long-term flexural modulus is defined as fifty years and is determined by ASTM D 2990 Test Method.

The Engineer may, at any time prior to installation, direct the Contractor to obtain cured samples and test them in accordance with the appropriate ASTM standards.

REPLACE SUBSECTION 500-1.4.4 WITH THE FOLLOWING:

500-1.4.4 Chemical Resistance.

The CIPP liner furnished shall meet the chemical resistance requirements of ASTM D 5813. The CIPP liner shall also meet the chemical resistance requirements of ASTM F 1216 or ASTM F 1743, depending upon the installation method. The Contractor shall submit to the Engineer verification that the CIPP liner complies with the ASTM testing requirements. This verification of compliance shall be in written form of a finalized, signed, and dated independent laboratory report. The date on this report shall constitute the compliance date.

REPLACE SUBSECTION 500-1.4.5 WITH THE FOLLOWING:

500-1.4.5 Installation

- The outer diameter of the tube shall be properly sized to allow for expansion to ensure that the CIPP can fit snugly against the host pipe. The installed CIPP liner shall tightly fit the internal circumference and length of the original pipe. The gap between the existing pipe ID (inside diameter), and the OD (outside diameter) of the installed liner pipe shall not exceed 0.25 inches at any point along the pipeline. The pipe shall be rejected if shrinkage exceeds this amount.
- The CIPP shall be installed in accordance with the manufacturer's recommendations as approved by the Engineer and ASTM F 1216 or ASTM F 1743. Immediately prior to installation, the CIPP liner tube shall be saturated with resin (on or off the job site) and stored / transported at a cool temperature as recommended by the resin manufacturer.
- Before tube installation, the manufacturer shall provide data on the tube's maximum allowable stresses and elongation. The exterior of the manufactured tube shall be marked along its length at regular intervals not exceeding five feet. These marks shall be used as a gauge to measure elongation during installation. Any tube length experiencing overall elongation greater than five percent shall be rejected and replaced at the Contractor's expense.
- If the cured pipe does not fit tightly against the host pipe at its termination point(s), the void shall be sealed by filling with a resin mixture compatible with the CIPP Liner.
- Wrinkles in the finished liner pipe that cause a backwater, reduce the pipe's hydraulic capacity or structural stability, or create voids between the liner and pipe wall are unacceptable and shall be removed and repaired at the Contractor's expense.
- Measurements to confirm that the liner's outside diameter is within the acceptable tolerance shall be made at the lateral connections, manholes and terminal ends after liner stabilization has occurred and prior to re-establishing the service connections.
- Laterals shall be reconnected the same day of the liner installation.

REPLACE SUBSECTION 500-1.4.8 WITH THE FOLLOWING:

500-1.4.8 Repair and Rejection. The Contractor agrees to replace the pipeline in any reaches that the liner samples fail to meet the standard specifications.

ADD NEW SUBSECTION 500-1.4.9 TO READ:

500-1.4.9 Material Testing. The Contractor shall provide certified test results of the short term structural properties of the cured lining material from the actual installed liner at a minimum of one location per each liner insertion setup as part of the acceptance requirements. All material testing shall be performed by a registered, independent, third party laboratory approved by the Engineer at the Contractor's expense.

The cured liner shall be sampled and tested for flexural strength and flexural modulus (short term) in accordance with the requirements of ASTM 1216 or ASTM F1743 and ASTM D790. The liner shall be in conformance with the structural properties specified in 500-1.4.2.

In addition, the Contractor shall furnish all liner ends for each installation to the Engineer for inspection and thickness verification. These samples shall be used to confirm the liner's thickness meets the specified requirement.

The Contractor shall replace the pipeline in any reach that the liner samples fail to meet the project specifications.

ADD NEW SUBSECTION 500-1.4.10 TO READ:

500-1.4.10 Spill Prevention in Curing Process. In addition to the Spill Prevention and Control in section 7-8.6.8, the Contractor is required to submit plan to contain any water leak/spill during curing

process. No water from the boiler is allowed to spill into street, gutters, storm drains or creek. At the minimum a typical plan to prevent water from spill and in the event of spill shall be submitted and reviewed by the Engineer. The Engineer will inspect and approve the plan at each location during construction.

500-1.5 Polyvinyl Chloride (PVC) Pipe Lining Systems.

DELETE THE SUBSECTION.

500-1.6 REPLACE BLANK SUBSECTION 500-1.6 WITH THE FOLLOWING:

500-1.6 Pipe-Expanding Method.

500-1.6.1 General. The pipe expanding method is a type of trenchless construction in which a busting tool splits/fractures the existing pipe while simultaneously installing a new polyethylene pipe of the same size or larger using a static, hydraulic, or pneumatic pipe bursting technique. The Contractor shall furnish all labor, equipment, materials, tools, and appurtenances necessary or proper for the performance and completion of pipe bursting work. External lateral reconnections to the sewer main are subsequently required. Sewage bypass pumping is required during the pipe-expanding process to prevent overflows and to provide continual service.

The Contractor is responsible for proper and accurate installation of the new sewer pipe regardless of the method described in this section and the following subsections. The Contractor shall ensure that the new pipe's vertical and horizontal alignment are as indicated on the plans and in accordance with these specifications.

500-1.6.1.1 Preliminary Surface Inspection. The Contractor shall make a careful preliminary surface inspection of the site along which the operation is run. Special note shall be taken and a photographic record shall be kept of the following:

1. Signs of surface cracks in roadways, sidewalks, and other paved areas;
2. Evidence of cracks and misalignments in boundary walls and structure walls near the trench;
3. Evidence of recent road work;
4. Current work in progress by other contractors;
5. Signs of possible leakage from water or gas mains; and
6. Other relevant features present before operations commence.

The preliminary surface inspection work shall be considered part of the sewer installation work and no separate payment will be made.

500-1.6.2 Contractor Qualifications. The Pipe Bursting Contractor shall have experience and qualifications in the installation of pipe using pipe bursting as required by the Agency.

500-1.6.2.1 Field Supervisory Qualifications. Field supervisory personnel employed by the pipe bursting contractor shall have at least three (3) years of documented experience in the performance of the work and tasks as stated in contract documents.

500-1.6.3 Contractor Submittals.

500-1.6.3.1 Contractor Qualifications. The Contractor shall submit, with other bid documents, documentation of their project and personnel experience with other projects similar in size and nature to the project specified in the contract documents.

500-1.6.3.2 Drawings and Documents. Shop drawings, catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings shall be submitted prior to installation. A manufacturer's compliance certificate for these specifications shall be provided by the Contractor for all material furnished under this specification. Prior to beginning pipe installation the Contractor shall provide a certificate of conformance to the applicable ASTM specifications.

500-1-6-4 Materials.

500-1.6.4.1 High Density Polyethylene (HDPE) Pipe. Polyethylene pipe shall be high density

polyethylene pipe (HDPE) and meet applicable requirements of ASTM F714 and ASTM D3035. HDPE pipe and fittings shall be used in accordance with the material specifications. All additional appurtenances (manholes, tees, gaskets, etc.) shall meet the material specifications. **Pipe Joining.** All pipe installed by pipe bursting shall be joined by butt fusion, electro fusion (per ASTM F2620), or full circle clamp as detailed in 500-1.6.5, Pipe Joining.

Pipe Production. HDPE pipe shall be produced from resins meeting the requirements of ASTM D1248, designation PE3408, ASTM D3350 cell classification PE345444C, and will meet the requirements of AWWA C901 and C906. HDPE pipe shall meet the minimum stability requirements of ASTM D3350.

Pipe Markings. Pipe shall be legibly marked at intervals of no more than five (5) feet with the manufacturer's name, trademark, pipe size, HDPE cell classification, appropriate legend such as SDR 17, ASTM D3035, AWWA C901 or C906, date of manufacture and point of origin.

Pipe Material. All pipe shall be made of virgin material. No rework material except that obtained from the manufacturer's own production of the same formulation shall be used. The pipe shall be homogeneous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.

Pipe Color and Quality. For CCTV inspection purposes, the HDPE pipe shall have a light-colored interior achieved with a homogeneous, light-colored material throughout or with a fully-bonded light-colored interior meeting the above specifications.

Liner Pipe Dimensions. The minimum wall thickness shall conform to Standard Dimension Ratio (SDR) of 17 when measured in accordance with ASTM D2122. The minimum inside diameter (ID) of new pipe to be installed shall be as specified in the plans. Depending on the availability of pipe product, the nearest size to the specified pipe shall be required, upon the Engineer's approval.

Pipe - General. All HDPE pipe without an ultraviolet inhibitor shall not be stored uncovered outside. The Contractor shall exercise care during the unloading, handling, and storage of all polyethylene pipe to ensure that the pipe is not cut, gouged, scored, or otherwise damaged.

500-1.6.5 Pipe Joining for Sections of HDPE Pipe. The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak-proof joint, and in conformance with ASTM D2620. Insertion of pipe shall be in accordance with ASTM F585. Threaded or solvent-cement joints and connections are not permitted. All equipment and procedures used shall be in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.

Terminal Sections. Terminal sections may also be joined by Electrofuse Couplings, Friatec, or approved equal. Terminal sections may also be joined by full circle repair clamps by Smith Blair, JCM, or approved equal.

500-1.6.6 Service Connection Materials. The preferred method of sewer service connections to the HDPE sewer main shall be the use of electrofusion saddles by Central Plastics, Friatec, or equal as approved by the Engineer. Mechanical taps, Inserta Tees made by Fowler Manufacturing or approved equal, may also be used for sewer service connections if approved by the Engineer. Depending upon site conditions and if approved by the Engineer, sewer service connections to the HDPE main may be made by plastic saddles with stainless steel straps, by GPK, or approved equal, or rubber saddles with stainless steel straps by Fernco Company, DFW, or approved equal.

500-1.6.7 Sealing Connections at Manholes. The annular space at each manhole may also be sealed with a waterstop gasket by Fernco Company or approved equal, and finished with a quick setting grout. Pipe to manhole connections shall be made with ISCO HDPE thermal-fused pipe restraints or approved equal. Pipe shall be allowed to relax in accordance with 506-1.6.11.d.

500-1.6.8 Pipe Bursting Equipment. The pipe bursting unit shall be designed and manufactured to force its way through the existing line by fracturing the pipe and compressing the broken pieces into the surrounding soil as the equipment progresses. The bursting unit shall generate sufficient force to burst and compact the existing pipeline. In each case the pipe bursting unit shall pull the polyethylene pipe with it as it moves forward.

500-1.6.9 Execution of Work - General. Bypass pumping shall be accomplished when and where necessary. The Contractor shall provide flow diversion with pumps adequate in size and capacity to handle all flows generated during the pipe bursting process. All costs for bypass pumping shall be incidental unless specific pay items for this work are included in the bid and pay schedule. Excavation of insertion pits shall be at locations determined by the Contractor. Insertion pits shall be of sufficient length to allow the bursting head and new HDPE pipe to enter the host pipe at an angle that will maintain the grade of the existing sanitary sewer.

500-1.6.10 Preparation of Work. All sewer service connections shall be located prior to pipe bursting the main, by pre-CCTV inspection, and then exposed prior to pipe bursting. If the pre-inspection reveals obstructions or pipe materials that will prevent the existing pipe from being pipe burst properly and cannot be removed by conventional cleaning equipment, a point repair will be made by the Contractor, with approval from the Engineer. If the pre-CCTV inspection reveals a sag or hump, sag or hump removal shall be made by the Contractor, with approval from the Engineer.

500-1.6.10a Site Organization-

Launch and reception pit dimensions will vary with the depth of cover and pipe size and pipe wall thickness. These latter parameters, together with ambient temperature, control the pipe bend radius. The pipe manufacturer's recommendations must be used to obtain the slit trench length.

Where buried utilities are known to exist, surface marking should be carried out. Where necessary local excavations made to relieve the possibility of transferred loading. This is especially important in the case of gas mains that should be at least one foot away from the line of work. If nearer than this, special arrangements must be made with the local gas utility to comply with codes of practice.

500-1.6.10b Preliminary Site Work.

- Excavation of launch and reception areas, etc. shall be carried out according to the planned schedule submitted to the Engineer prior to commencement of work. All sewer laterals connection with the main sewer pipe shall be excavated and disconnected/detached prior to insertion operation.
- Installation of by-pass pumping equipment shall be complete and operational.
- All buried utilities adjacent to the line of operation shall be reviewed and where necessary excavated to relieve transient loading during the insertion operation.
- Removal of existing internal pipe obstructions and excavation at known pipe locations as determined by the Contractor shall be completed prior to the insertion of the new pipe. All excavations shall be restored in accordance with section 306-1 of the special provisions.
- Excavations for all active house connection laterals shall be completed before the insertion of the new pipe. Manhole positions along the line of insertion and lateral excavations will be used to check progress as the hammer passes these points.

500-1.6.10c Observations During Insertion.

- Contact by radio shall be maintained between key positions at all times so that slowing down, stopping and starting can be affected when necessary.
- The Contractor shall record the general progress, i.e. insertion rates in feet per minute, reasons for stoppages, signs of failure of equipment and road or other surface damage.
- Particular care shall be exercised when passing buried utilities or when near building foundations.
- At manholes or lateral excavations, the Contractor shall slow the rate of progress to examine the winch rope attachments on the hammer and the pipe-retaining assembly at the rear of the expander. Repairs and replacements in these positions are much easier than having to excavate to repair between existing positions.

500-1.6.10.1 Payment.

Payment for all work described under 500-1.6.10 Preliminary Site Work shall be deemed included in the price paid per linear foot of pipe expanding, and no extra payment shall be made.

500-1.6.11 Insertion of the HDPE Pipe.

500-1.6.11.a. The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak-proof joint. Threaded or solvent-cement joints and connections are not permitted. All equipment and procedures used shall be in compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of HDPE pipe and/or fusing equipment.

500-1.6.11.b. Insertion shall be in accordance with ASTM F585. The butt-fused joint shall be in true alignment and shall have uniform rollback beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All defective joints shall be cut out and replaced at the expense of the Contractor. The inside weld bead shall be removed by cutting the bead away without scoring the inside wall of the pipe, to the satisfaction of the Engineer.

500-1.6.11.c. Service connections to the HDPE pipe shall be made with materials submitted and approved in accordance with 500-1.6.6.

500-1.6.11.d. A relaxation period shall be allowed prior to making service connections and connections to manholes. The relaxation period shall be appropriate with and dependent upon site conditions, but not less than eighteen (18) hours unless otherwise determined by the Contractor.

500-1.6.11.e. If concrete encasements are encountered, a point repair shall be performed, with the approval of the Owner, to excavate and break out concrete prior to the pipe bursting operation to allow the steady and free passage of the pipe bursting head.

500-1.6.11.f. The new HDPE pipe shall be inserted immediately behind the pipe bursting head in accordance with the manufacturer's recommended procedures. The bursting tool shall be specifically designed and manufactured for the type of insertion process being used. It shall be utilized to guide and assist the bursting head during the operation. A pushing machine may be utilized to aid pipe insertion from the rear.

500-1.6.11.g. New HDPE pipe shall extend into each manhole, a maximum of two inches after pipe relaxation and prior to installation of any restraints. The annular space shall be sealed in accordance with 500-1.6.7.

500-1.6.12 Service Reconnections. Service connections to the HDPE pipe shall be made with materials submitted and approved in accordance with 500-1.6.6. After the new HDPE pipe has been installed and tested, the Contractor shall be responsible for reconnecting existing sewer services in accordance with 500-1.1.7.a.

500-1.6.13 Testing and Acceptance. After the new HDPE pipe is installed and all services are reconnected, the pipe shall be inspected by CCTV. Post-CCTV video shall be submitted to the Engineer for approval and acceptance of the new pipe. Leakage testing will also be performed and both this testing and CCTV inspection shall be in accordance with 500-5, Acceptance Testing.

500-1.7 Deformed/Reformed HDPE Pipe Liner.

ADD THE FOLLOWING TWO PARAGRAPHS TO SUBSECTION:

Only manufacturer-licensed and certified contractors shall install Deformed/Reformed HDPE Liner.

The HDPE liner minimum wall thickness shall conform to the Standard Dimension Ratio (SDR) of 26 when measured in accordance with ASTM D-2122.

500-1.9 External In-Place Wrap.

DELETE THE SUBSECTION.

500-1.10 Folded and Re-formed PVC Pipe Liner.

DELETE THE SUBSECTION.

500-1.12 Polyvinyl Chloride (PVC) Closed Profile Liner Pipe.

DELETE THE SUBSECTION.

500-1.13 Spiral Wound Polyvinyl Chloride (PVC) Pipe Liner.

DELETE THE SUBSECTION.

REPLACE SUBSECTION 500-2 WITH THE FOLLOWING:

500-2 MANHOLE AND STRUCTURE REHABILITATION.

500-2.1 General.

- The section covers repair and rehabilitation of existing manholes, lampholes, cleanouts, and appurtenances as required to eliminate leakage into the structure. Rehabilitation methods include locating manholes or sewer structures, sealing of walls, covers, pipes entering and leaving manholes; replacing cast iron frames and/or covers; replacing manhole steps; rebuilding manhole walls; removing and replacing the entire structure; and other related miscellaneous work. Sewer flow control, as necessary, shall be performed in accordance with 500-1.1.4c.
- All manhole rehabilitation materials shall be submitted to the Engineer for approval and are subject to the approval of the Engineer. The manufacturer shall provide certification that the materials proposed for use are compatible with one another. All materials that shall contact the sewer environment shall be specifically designed for chemical resistance to the sewer environment. The manufacturer shall certify that the materials are resistant to the sanitary sewer environment and to the following: 5% nitric acid, 5% sulfuric acid, 10% phosphoric acid, 100% ASTM fuel C, 100% vegetable oil, 0.1% detergent, 0.1% soap, 5% sodium hydroxide, and 1% ferric chloride.
- The rehabilitation and repair methods for cleanouts, lampholes, and manholes are specified on the Plans with a rehabilitation type from the following catalog of work types required:

<u>Rehab Type</u>	<u>Type of Work</u>
1	Replace cast-iron cover.
2	Replace and adjust cast-iron frame and cover.
3	Seal manhole walls, remove and replace manhole steps; remove, replace and/or install new drop connection; and make Rehab Type 2 repairs above (only if there is no separate bid item in the bid schedule)
4	Remove and replace entire structure in kind or as otherwise noted on plans
5	Construct new structure (additional, not a replacement).

- Work under Manhole Rehab Type 3 shall include removing all the steps in an existing manhole and replacing them with new steps, unless the Engineer directs otherwise.
- Payment for work under Rehab Types 1 through 4 is specified in 500-2.7. Payment for work of Rehab Type 5 is specified in 303-9.

500-2.2 Leakage at Frames and Covers. Leakage at cast iron frames and covers shall be eliminated by one of the following methods of this subsection, or as directed by the Engineer.

500-2.2.1 Replace Cover. When an existing frame is in good, sound condition but the cover is broken or otherwise determined to be unusable (for example because of vent holes which allow infiltration), it shall be removed and replaced as shown or specified. It shall be replaced with a new cast iron manhole cover of approximately the same thickness and weight conforming to 206-3.3.2. The seating surface shall be machined to permit it to rest tightly against the surface of the frame without "rocking" under vehicular traffic. The cover's configuration must be such as to mate closely with that of the frame. Old covers shall remain the property of the Agency and shall be delivered to Maintenance Staff in coordination with the Engineer.

500-2.2.2 Adjust Frame and Cover. Structure frames and covers shall be adjusted where shown or specified. This repair consists of removing and replacing the manhole frame and the grade rings. This shall be accomplished by excavating as necessary, lifting off the frame and grade rings as directed, thoroughly cleaning the frame's bottom bearing surface, coating it with asphalt paint similar to the original coating, removing the old mortar from the manhole cone and grade rings, and replacing the existing frame and rings to the new grade as specified for new manholes in 303-9.

500-2.2.3 Replace Frame and Cover. When shown or specified, or when the condition of the frame is satisfactory but a replacement cover meeting the requirements described above is not available, the Contractor shall remove and replace the entire assembly with a new frame and cover in accordance with 201-8 and 303-9.

500-2.3 Sealing Manhole Walls. Manhole walls shall be sealed where shown or specified, or as directed by the Engineer. Sealing of the manhole walls shall be accomplished by any of the methods specified below:

500-2.3 (a) Cement-Epoxy Mixtures. Openings, cracks, and deteriorated joints in manhole walls shall be repaired and sealed by utilizing cement-epoxy mixtures manufactured for this purpose, such as those manufactured and/or supplied by Standard Dry Wall Products; Water-Wastewater Products & Systems, Inc.; IPA Systems, Inc.; Stonehard, Inc.; or approved equal.

500-2.3 (b) Chemical Grout. Openings, cracks, and deteriorated joints in manhole walls shall be repaired and sealed using chemical grout and applicable procedures specified for sewer system rehabilitation.

500-2.3 (c) Polyurethane Coatings. Sprayable polyurethane coating shall be used to seal manhole walls. The coating shall be a high-build polyurethane specifically formulated for use in a sewer system environment. The minimum thickness of the dry coating shall be 125 mils.

500-2.3 (d) Modified Polyester/Polymorphic Coatings. Spray-applied modified polyester/polymorphic resin shall be used to seal manhole walls. The coating shall be a two-component, 100% solids system. Prior to applying the prime coat, the manhole surface shall be sandblasted or hydroblasted and properly dried.

500-2.3 (e) Epoxy Coating. Sprayable or brushable epoxy coatings may be used to seal manhole walls. The coating shall be a high-build epoxy specifically formulated for use in the sewer system and applied with a minimum dry film thickness of 125 mils. Prior to coating, the existing manhole walls shall be thoroughly sandblasted or hydroblasted and cleaned as recommended by the manufacturer to ensure complete coverage and bonding. Openings and cracks larger than 1/8 inch in the existing manhole walls shall be filled with mortar prior to trimming and applying the epoxy coating.

500-2.3 (f) Fiberglass Liners. Existing manhole walls shall be thoroughly sandblasted and cleaned or primed as recommended by the materials manufacturer to ensure complete coverage and bonding. Openings and cracks larger than 1/8 inch in the existing manhole walls shall be filled with mortar prior to priming and applying the fiberglass.

i) Factory-Manufactured Fiberglass Liners. Manhole liners shall be made of fiberglass reinforced plastic (FRP), having an inside diameter of not less than 42 inches. Manhole liners shall meet the requirements of ASTM D 3753. The liner shall be installed in accordance with manufacturer's recommendations including removal of the existing cone, grouting of the annular space between the liners and existing manhole walls, rebuilding or replacing the cones, backfilling, installing steps, and installing cast iron frames and covers.

ii) Field-Fabricated Fiberglass Liners. Manhole liners shall be field-fabricated by applying glass fibers and resin to the manhole walls. The completed lining thickness shall be not less than 1/4 inch at any location.

500-2.3 (g) HDPE Liners. Lining manufacturer shall be GSE "Studliner", GU-International AGRU "Suregrip" or equal. Polymer mortar shall consist of a primer if recommended by the manufacturer and a liquid binder and a dry aggregate mixed together to make a mortar of consistency as required for the application. The mortar shall be designed for application to vertical or overhead surfaces and must be accepted by the lining manufacturer. The liquid binder shall be chemical and oil resistant, stress relieved, low modulus, moisture insensitive, two-component epoxy-resin compound. The consistency shall be similar to lightweight oil for proper mixing with aggregate. Material shall conform to ASTM C881, type 3, Grade 1, Sika Corporation Sikadur 22 Lo-Mod Series or equal.

i) HDPE lining, joint strips and angle strips (hereinafter collectively referred to as "lining")

shall be made from minimum 97 percent virgin high density polyethylene (HDPE). Color shall be gray.

ii) Lining shall be impermeable to sewage gases and liquids and shall be nonconductive to bacterial or fungal growth. All linings shall be factory checked to ensure freedom from porosity.

iii) Lining shall have good impact resistance, shall be flexible, and shall have elongation sufficient to bridge up to ¼ inch settling crack.

iv) Once cast into the concrete of the manhole wall, lining shall be permanently and physically attached to the concrete by the lining studs and shall not rely on an adhesive bond unless otherwise specified at a specific location.

v) Locking studs shall be made of the same material as the lining and integrally extruded with the sheet. Stud spacing shall be on approximately 1.25-inch centers, such that there are approximately 110 studs per square foot.

vi) Plasticizer shall not be added to the resin formation.

vii) Lining shall be free of holes, pinholes, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.

viii) Adhesive to bond HDPE lining to metal shall be in accordance with the recommendations of the HDPE lining manufacturer.

ix) All work shall be in strict conformity with all applicable specifications, instructions, and recommendations of the lining manufacturer.

x) Prior to shipping lined precast manhole sections and then again after field welding is complete, the lining shall be spark tested in the presence of the Engineer. The spark test shall be done with an approved electrical holiday detector (Turnhart Rasor, model AP-W with power pack or equal) with the instrument set at a minimum of 20,000 volts. Any imperfection shall be repaired in accordance with the manufacturer's recommendations and with the approval of the Engineer.

500-2.3 (h) Cementitious Crystalline Waterproofing. Waterproofing manufacturer shall be Xypex Chemical Corporation, Xypex Concentrate, Modified, Patch'n Plug or equal. Application shall be in accordance with Xypex recommended specifications.

i) For use in new manholes, the Xypex materials Admix C-500, Admix C-1000, Admix C-2000 or equal shall be used.

500-2.4 Remove and Replace Existing Manhole Steps. Existing manhole steps shall be removed and replaced with new steps in conformance to ASTM C478, as shown on the Plans or Standard Details, or as directed by the Engineer

500-2.5 Remove and Replace Existing Sewer Structure. Where specified or shown, or directed by the Engineer, existing sewer structures shall be removed and new structures built in their place in conformance with the applicable specifications and details.

The Contractor shall salvage all castings and deliver them to the Agency. All other materials from the removed structures shall become the property of and be disposed of by the Contractor.

If a lamphole is not specified for removal on the plans but is removed from the end of a main sewer to facilitate the rehabilitation work for the Contractor's convenience, it shall be replaced with a cleanout. Under this circumstance, payment will not be made for removing the lamphole or replacing it with a cleanout.

500-2.5.a Cleanouts and Lampholes. Lampholes (if approved for use) and cleanouts shall be constructed in accordance with the Standard Details. Pipe and fittings for cleanouts and lampholes shall conform to applicable Specifications for the type of pipe used. Backfill around the structures shall conform to 201-8 and 303-9.

If the Contractor damages an otherwise functional cleanout or lamphole, the damaged structure shall be replaced at the Contractor's sole expense.

500-2.5.b Manholes. Manholes shall be constructed in accordance with 201-8 and 303-9 and the City of Oakland Standard Details.

500-2.6 Testing. After rehabilitation work at each manhole has been completed, the manhole shall be tested for leakage in accordance with 303-9.2. Manholes rehabilitated only from the cover to the top of the cone will not require testing. Replaced lampholes and cleanouts shall be tested for leakage as an integral part of the sewer pipe system.

500-2.7 Payment. Sewer structure rehabilitation shall be measured and paid as follows:

<u>Payment Items</u>	<u>Rehabilitation Type</u>
Per Subsection 500-2.7a	1
Per Subsection 500-2.7b and 500-2.7c	2
Per Subsections 500-2.7 (b)*, (c)*, (d), and (e)	3
Per Subsection 500-2.7f	4
Per Subsection 303-9.3 (New Structures)	5

*Subsection 500-2.7(b) and (c) work for MH Rehab Type 3 will be excluded if there is a separate bid item in the bid schedule.

500-2.7 (a) Replace Cast Iron Cover. This item will be measured and paid for at the unit price listed in the Bid Schedule, regardless of size. Payment will provide complete compensation for labor, materials, and all incidentals (including salvaging and transporting the existing cover to the City's maintenance yard) necessary to replace the cast iron cover, complete in place.

500-2.7 (b) Adjust Frame and Cover. This item will be measured and paid for at the unit price listed in the Bid Schedule. Payment will provide complete compensation for all labor, materials, and incidentals, including removing and restoring the adjacent surface, necessary to remove the existing frame and cover; remove, adjust, and set the grade rings; and set the frame and cover, complete in place.

500-2.7 (c) Replace Cast Iron Frame and Cover. This item will be measured and paid for at the unit price listed in the Bid Schedule, regardless of size. Payment will provide complete compensation for labor, materials, and all incidentals, including removing and salvaging existing frame and cover to be delivered to the City's maintenance yard and restoring the adjacent surface, necessary to replace the cast iron cover, complete in place.

500-2.7 (d) Seal Manhole. This item will be measured and paid for at the unit price listed in the Bid Schedule. Payment will provide complete compensation for labor, materials, and incidentals including cleaning, patching, sealing, and testing, necessary to seal the manhole, regardless of sealing method used, complete in place. In addition if the manhole cone is exposed above the ground surface, the work shall include sealing with plaster cement the wall outside the manhole cone up to the frame and cover.

500-2.7 (e) Remove and Replace Manhole Steps. This item will be measured and paid for at the unit price listed in the Bid Schedule. Payment will provide complete compensation for all labor, materials, and incidentals necessary to remove existing manhole steps, patch manhole walls, and install new steps in the manhole, complete in place.

500-2.7 (f) Remove and Replace Sewer Structure. This item will be measured and paid for at the unit price for the structure type listed in the Bid Schedule. Payment will provide complete compensation for labor, sawcutting, trench shoring, materials, and incidentals necessary to remove existing sewer structure and install a new manhole including drop connections if required, lamphole, or cleanout, complete in place. Drop connections replacement/installation cost shall be considered paid as part of the manhole installation work if there is no separate bid item in the bid schedule. In cases where one structure type is removed and replaced with another structure type, payment will be for removing and replacing the more expensive structure.

500-2.7 (g) Remove Existing Sewer Structure. If a separate bid item is not provided for in the bid schedule, payment for the removal and proper disposal of the existing structure shall be considered included in other work and no additional payment shall be made. The work entails for all labor, sawcutting, trench shoring, materials, and incidentals necessary for proper removal and disposal of existing sewer structure.

ADD NEW SUBSECTION 500-5 TO READ:

500-5 ACCEPTANCE TESTING.

500-5.1 General. The Contractor shall perform acceptance tests on all repaired, rehabilitated, or new facilities. Unless otherwise noted, no separate compensation will be paid for testing; the testing cost is to be included in the related pay items. If the work should fail to pass the tests, it is the Contractor's responsibility to correct the work and re-test with no additional compensation.

If, within the warranty period, any section of the sewer system is not acceptable due to subsequent excessive leakage or any other defects, although originally accepted, the Contractor shall repair or replace the affected portion at no cost to the Agency. It is understood that if the Contractor fails to do such work as required, the Surety shall be liable for said costs of repair or replacement.

500-5.2 Leakage Testing. All new sewers and those sewers rehabilitated by pipe expanding and cured-in-place lining methods shall be tested for leakage in accordance with 306-1.4. Sewer mains and house connection sewers in each reach shall be tested for leakage together, as an integral system, except as otherwise specified herein.

Groundwater levels in each sewer reach shall be measured prior to leakage testing. Groundwater measurements will be made at manholes and at other supplementary points as directed by the Engineer. The Engineer will calculate the groundwater hydrostatic pressure to be used in determining leakage test procedures.

Within the warranty period, infiltration of groundwater in excess of the specified maximum acceptable leakage rate shall be considered as evidence that the original leakage test was in error or that subsequent failure of the pipeline has occurred. The Contractor shall promptly correct such failures in a manner approved by the Engineer at no cost to the Agency.

500-5.3 Miscellaneous Testing. The Agency, at its discretion, may perform tests to check compliance with the specifications as they pertain to backfill compaction, concrete strength, and other such items where test performance is not specified as the Contractor's responsibility. The Contractor shall cooperate with the Agency by providing samples, making necessary excavations, and other related services necessary to carry out the testing, at no cost to the Agency. In the event of failed tests, the Contractor shall bear the correction and re-testing.

500-5.4 Acceptance. Prior to the Engineer's final acceptance of the sewer system, the Contractor shall flush and clean all system parts. The Contractor shall remove all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the sewer system at or near the closest downstream manhole. If necessary, the Contractor shall use mechanical rodding or bucketing equipment.

Following completion of the work, including cleaning and testing, the Contractor shall conduct a CCTV inspection of the sewers as specified in 500-1.1.5. The Contractor shall correct all defects discovered by this procedure before the work under the contract will be considered for final acceptance.

500-5.5 Payment. Acceptance testing is incidental to the rehabilitation work. Payment, therefore, is included in the price listed in the Bid Schedule for the work to be tested. Payment will be full compensation for furnishing all labor, materials, trench shoring, and equipment to complete the testing work, including services provided to aid the Agency in performing miscellaneous testing.

ADD NEW SUBSECTION 500-6 TO READ AS FOLLOWS:

500-6 BUILDING CONNECTION SEWERS.

500-6.1 General. This subsection covers the work to a) locate, reconnect and replace each private sewer lateral which consists of a house connection sewer (lower sewer lateral) from, and including the connection at, the public sewer main to the house connection cleanout (two-way cleanout) and to the building cleanout (upper sewer lateral); b) construct a two-way cleanout or tee connector (in easements where public sewer is replaced or rehabilitated by method other than CIPP); and c) submit "As Built" records showing information and data of work and condition of the active house connection sewer.

500-6.1.a Extent of Work. It shall be the Contractor's responsibility to locate and identify all private sewer laterals, determine their active status by performing the dye test as outlined in the following subsection, and verify that only active private sewer are reconnected to the sewer main. An active private sewer lateral is defined as one that is physically connected to the building plumbing system. All private sewer laterals that are not connected to building plumbing systems, as determined by the procedures specified herein, shall be abandoned. Refer to pipe abandonment requirement in the sub-sections below.

Unless otherwise directed by the Engineer, all active private sewer laterals connected to a public sewer within the street right of way shall be rehabilitated as shown on the plans or these specifications.

As part of the lateral reconnection work at a public sewer main located in an easement, a tee connector shall be installed and the Contractor shall utilize and access them for testing of a sewer main prior to complete backfilling the connections. All costs required for providing material, labor, and equipment to furnish and install such tee connector shall be considered included in the cost of the private sewer lateral work. No separate payment shall be made for installing the tee connector.

At the starting point of a sewer main that either starts with a cleanout, lamphole or manhole structure, the first two lateral connections downstream from it shall be a wye-type connection.

The specified private sewer lateral sizes shown in the plans may not reflect the actual lateral sizes found in the field condition. In the event that an existing private sewer lateral is found to be smaller than the size specified, the entire private sewer lateral shall be updated per plans. Unless specified in the plans or directed by the Engineer, each building sewer lateral shall be replaced in kind and meet the minimum inside diameter of four-inch. For commercial buildings, a six-inch private sewer lateral shall be installed unless specified otherwise or directed by the Engineer.

If a five-inch or greater building sewer is encountered, the Contractor shall comply with the following:

Category	Field Condition	Plans Specified Installation	Instructions
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Single family dwelling, duplex apartment	5"	4"	New 4" Clean-out and Pipe Reducer from 5" to 4"
Dwelling/apartment with 3 or more units, commercial building	5"	6"	New 6" Clean-out and Pipe Increaser from 5" to 6"
Easement	5"	6"	New 6" Tee Connection and Pipe Reducer from 6" to 5"
All Locations	>6"	If not specified	Obtain approval prior to proceeding with work.

500-6.1.b Locate and Determine Active/Inactive Private Sewer Laterals.

1. The Contractor shall mark in the field the location of the private sewer lateral from the available closed-circuit television logs furnished by the Engineer. The Engineer will arrange for viewing of the corresponding videotapes if requested by the Contractor. The Engineer does not guarantee the completeness or the accuracy of the video data supplied, nor does the furnishing of the information preclude the Contractor from making an independent investigation, including, but not necessarily limited to, additional television inspection. It shall be the Contractor's responsibility to interpret the information supplied, and to use it as applicable, to locate house connection sewers.
2. The Contractor shall expose the private sewer laterals. He/She shall, with the assistance of the Engineer, make arrangements with the resident to access all the plumbing fixtures in each house and perform dye tests to determine if the exposed private sewer lateral is active.
3. The Contractor shall install a house connection cleanout or tee connector per 500-6.3 on all active private sewer laterals. If an exposed private sewer lateral is determined to be inactive, the Contractor shall plug and abandon the house connection sewer in accordance with 500-6.5. The cost for locating and determining the active/inactive status of house connection sewers, including excavation, shall be included in the price bid for the plugging of abandoned, inactive house connection sewers or the reconnection of active house connection sewers., and no other payment shall be made.

500-6.1.c Records to be Kept. The Contractor shall maintain a list of the active/inactive building sewers showing:

1. Distance from upstream manhole on public sewer
2. Building sewer status: active or inactive
3. Address being served by active building sewer
4. General location of installed two-way cleanout or wye such as behind curb, sidewalk, at fence, etc. with dimension from sewer main.
5. Size of existing lower lateral and upper lateral
6. Depth of lateral, type of existing material
7. Whether a dye test was performed and test date, if performed
8. Size, material type and condition of the upper lateral at the connection point to the two-way cleanout or wye

The Contractor shall deliver to the Engineer two copies of the completed logs prior to acceptance of work.

500-6.2 House Connection Cleanout. A cast-iron house connection cleanout shall be installed on all active house connection sewers (except in the easements), as shown on the City of Oakland Standard Detail D24, on public right-of-way near the property line as shown on the plans, or within the shoulders adjacent to the edges of pavements when no curb exists or as directed by the Engineer. No payment will be made for installing a house connection cleanout on an inactive house connection sewer.

For six-inch house connection sewers, Contractor may install a cast iron one-way six-inch cleanout with four-inch riser instead of the two-way six-inch house connection cleanout as directed by the Engineer.

The Engineer may require pipeline leakage testing of the house connection sewer prior to the tee connector installation.

Field cuts of existing building sewer laterals shall be neat, providing a clean, square saw-cut end.

Any building sewer existing upstream from the two-way cleanout reconnection that is damaged or loosened by the Contractor's operation shall be replaced or repaired to the satisfaction of the Engineer at the Contractor's expense.

500-6.3 House Connection Sewer. The Contractor shall replace each house connection sewer (lower lateral) found to be active from the connection at the rehabilitated or replaced public sewer to the house connection cleanout (two-way cleanout). No lower laterals shall be replaced when the public sewer is in an easement, when the main line is underneath a public sidewalk, or when otherwise directed by the Engineer or the plans.

500-6.3.a Building Connection Sewer Rehabilitation.

For private sewer lateral rehabilitation the Contractor shall have the option of 1) using an open-cut replacement method or 2) installing liner pipe in existing house connection sewer using a trenchless insertion method (No-Dig technology) provided that the inside diameter of the inserted pipe meets the requirements of 500-4.1. No other house connection sewer rehabilitation method shall be allowed.

If a trenchless method is used, the Contractor shall supply submittals and receive the Engineer's approval prior to beginning work. These submittals shall detail material type and method of pipe insertion in house connection sewers, including the type and method of connection to sewer main.

The installation of Polyethylene (PE) solid wall sewer pipe liner using "pipe expanding" is an acceptable method for the rehabilitation of house connection sewers. The minimum wall thickness of PE pipe liner for use with "pipe expanding" method shall conform to the Standard Dimension Ratio (SDR) 17 when measured in accordance with ASTM D-2122. For additional PE liner pipe requirements, refer to 500-1.3.

Some of the existing house connection sewers may not run straight and/or perpendicular from the property line or from the service address to the main sewer and may include bends and offsets in the alignment. Where directed by the Engineer, house connection sewers shall be realigned perpendicular to the street frontage line. Existing bends and offsets shall be eliminated by using straight line and grade to minimize the total number of bends in the lower lateral.

500-6.3.b Line and Grade of the Lower Lateral. The lower lateral shall be installed at a uniform grade between the two-way cleanout and the reconnection point at the public sewer. The minimum slope shall be 1/4 inch per foot. A standard 24-inch builder's level shall be used for confirming the pipe slope.

The lower lateral shall have at least three feet of cover at the point it crosses the curb line.

500-6.3.c Laying and Joining of Pipe and Fittings. The maximum bend permissible with one fitting shall be 22 1/2 degrees and shall be accomplished with long-radius elbows. Cleanouts, elbows, etc. costs shall be as part of the per foot unit price of replace house connection sewer.

500-6.3.d Building Connection Sewers into Existing Manholes or Lampholes. Laterals over six inches in diameter shall connect to sewer structures. Currently some existing lower laterals six inches or less in diameter are connected directly to existing manholes or lampholes. For such lower laterals designated for reconstruction, the Contractor shall, unless otherwise noted or directed, route any such active house connection sewer to a convenient location downstream from the public sewer structure and make the connection/reconnection to the rehabilitated public sewer. Any manhole opening shall be plugged and sealed as approved by the Engineer to prevent water infiltration.

500-6.3.e Building Connection Sewers into Structures Being Replaced. House connection sewers located in easements and connected to a manhole or lamphole that is designated for replacement shall be reconnected to the public sewer downstream from the new sewer structure.

500-6.4 Field Jointing Lower and Upper Lateral. Type "D" joints with type 316 stainless steel tightening bands and Type 305 stainless steel nuts and bolts shall be used to make all connections between the stubout, the reconstructed lower lateral, upper lateral and two-way cleanouts.

500-6.4.a Connection to Polyethylene Liner. Connections to the polyethylene liner shall be in accordance with 500-1.3.8, or in accordance with the supplier's recommendations and as approved by the Engineer.

500-6.4.b Connection to CIPP Liner. Connections to the CIPP liner shall be in accordance with 500-1.4.7, or in accordance with the supplier's recommendations and as approved by the Engineer.

500-6.4.c Connection to Vitrified Clay Pipe Sewer. The private sewer lateral shall be connected to the vitrified clay pipe sewer with a standard wye or with an approved drilling and gasketed tap connection.

500-6.4.d Connection in Easement. House connections sewers, when connected to public sewers being replaced or rehabilitated by pipe expanding in easements, shall have a "tee connector" installed in the first pipe length of the lateral from the connection to the public sewer. No separate payment will be made for the tee connector installation.

500-6.5 Plugging of Abandoned Building Connection Sewer(s).

500-6.5.a Plugging of Abandoned Building Connection Sewer During Replacement of Public Sewer. Abandoned or inactive building connection sewers shall be cut back two feet from the main and plugged with Class C mortar, at least six inches into the abandoned/inactive house connection sewer. Such plugging costs shall be as part of the incidental costs for the replacement of the public sewer, and no separate payment shall be made.

500-6.5.b Plugging of Abandoned Building Connection Sewer During Rehabilitation of Public Main.

When the public sewer is rehabilitated by being sliplined or cured-in-place pipe lined, if the wye, tee or tap is connected to an abandoned or inactive house connection sewer, the fitting shall be disconnected from the house connection sewer and grout sealed. The abandoned or inactive house connection sewer shall be cut back two feet from the main and plugged with Class "C" Mortar, at least six inches into the abandoned/inactive house connection sewer.

500-6.6 Payment.

500-6.6.a Payment (Building Connection Sewer Work). Payment of all private sewer lateral work shall be according to the unit price listed in the Bid Schedule. Unit prices shall include all materials, labor, equipment, trench shoring, and incidentals necessary to complete in place required work. If no unit price is included, payment of all building connection sewer work shall be included as part of other items in the project. **No payment shall be made until the work has been tested and accepted as outlined in 500-5.**

500-6.6.b Payment (Cleanout). Payment per each installed House Connection (2-way) Cleanout shall be per unit bid price and shall include all materials, labor, and equipment including: sawcutting, trench shoring, supplying and placement of bedding and backfill, cutting existing sewer, installing cleanout, reconnection of the house connection sewer, riser, temporary and permanent resurfacing, restoration of improvements, prompt cleanup and removal of all debris and material, and incidentals necessary to install the house connection cleanout. If no unit price is included, payment of all cleanout work shall be included as part of other items in the project.

500-6.6.c Rehabilitate Building Connection Sewer. Payment shall be bid price per foot of building connection sewer rehabilitated as measured along the longitudinal axis from the trench wall (which is penetrated by the building sewer) from the reconnection point at the sewer main to the existing building cleanout. The payment shall include all labor, materials, trench shoring, and equipment to: sawcut, excavate, align/realign house connection sewer; construct sewer; connect/reconnect rehabilitated house connection sewer to saddle, wye or tee at the public main; connect/reconnect to the house connection cleanout; supply and install bedding and backfill, temporary resurfacing, permanent resurfacing; surface improvement restoration, traffic control, barricades; and all incidentals necessary to rehabilitate, complete in place, the house connection sewer. If no unit price is included, payment of all building connection sewer (private sewer lateral) rehabilitation shall be included as part of other items in the project.

500-6.6.d Reconnect Active House Connection Sewer to Replaced Main. Payment shall be bid price per unit of reconnect active house connection sewer and shall include full payment for all materials, equipment, trench shoring, and labor to reconnect the private sewer lateral to the public sewer main, and incidentals necessary for completion of reconnection of active building sewer. If no unit price is included, payment of each reconnection shall be included as part of other items in the project.

500-6.6.e Plugging of Abandoned House Connection Sewer to Rehabilitated Main. Payment for Plugging of Abandoned House Connection Sewer to Rehabilitated Main shall include all work including, sawcutting, trench shoring, supplying, placing and compacting bedding and backfill, temporary and permanent resurfacing, barricades, traffic control, and all subsurface and surface restoration. For CIPP lined sewers, the abandoned lateral shall not be reinstated and shall be considered deemed abandoned. No compensation will be given for the abandonment of house connection sewer for a CIPP lined rehabilitated main. For reinstated abandoned house connection sewers, the Contractor will be required to abandon the house connection sewer at his cost and no compensation or additional payment shall be made.

PART 6 – TEMPORARY TRAFFIC CONTROL

SECTION 600 – ACCESS

600-1 GENERAL.

CHANGE SUBSECTION 600-1 TO READ:

The Contractor's operations shall cause no unnecessary inconvenience. The public's access rights shall be considered at all times. Unless otherwise authorized, traffic shall be permitted to pass through the work, or an approved detour shall be provided. Construction and repair work within the public right-of-way that affects pedestrian circulation elements, spaces or facilities, shall comply with the following provisions.

Construction sites in or encroaching on the public right-of-way shall be protected with barriers in such a manner to warn and protect pedestrians or vehicles of potential hazards.

600-2 VEHICULAR ACCESS.

CHANGE SUBSECTION 600-2 TO READ:

When construction will block a coach stop or require relocation of a bus route, the Contractor shall notify the Engineer and the appropriate Transportation Representative of the affected public transit agency at least 72 hours prior to the blockage or relocation.

Vehicular access to residential driveways shall be maintained to the property line, except when necessary construction precludes such access for reasonable periods of time. If the backfill has been completed to such extent that safe access may be provided, and the street is opened to local traffic, the Contractor shall immediately clear the street and driveways and provide and maintain access.

The Contractor shall cooperate with the various parties involved in mail delivery and garbage collection/removal in order to maintain existing schedules for these services.

Grading operations, roadway excavation and fill construction shall be conducted by the Contractor in a manner to provide a reasonably satisfactory surface for traffic. When rough grading is completed, the roadbed surface shall be brought to a smooth, even condition satisfactory for traffic.

Unless otherwise authorized, work shall be performed in only one half of the roadway at one time. One half shall be kept open and unobstructed until the opposite side is ready for use. If one half a street only is being improved, the other half shall be conditioned and maintained as a detour.

All trench excavations performed in streets open to public traffic must be completely backfilled and paved with temporary or permanent paving at the end of each day's operation, unless otherwise approved by the Engineer. Temporary paving shall be maintained in a safe condition at all times.

Nothing specified herein shall prohibit emergency work and/or repair necessary to insure public health and safety.

600-3 PEDESTRIAN ACCESS.

CHANGE SUBSECTION 600-3 TO READ:

Safe and adequate pedestrian walkways shall be maintained at all times as required in the most recent edition of the Work Area Traffic Control Handbook (WATCH book), Part 11. Where a temporary alternative circulation path is provided, it shall comply with Title 24 access requirements for slope and width dimensions. Safe and adequate pedestrian zones and public transportation stops, as well as pedestrian crossings of the work at intervals not exceeding 300 feet shall be maintained unless otherwise directed by the Engineer.

If a particular side of a street has curb ramp access on one or both corners of a block face, wheelchair access to that block shall be maintained at all times unless directed otherwise by the Engineer.

SECTION 601 – WORK AREA TRAFFIC CONTROL

ADD NEW SUBSECTION 601-1.1 TO READ:

601-1.1 Restricted Hours of Operation and Streets. The Contractor shall restrict hours of operation according to local traffic patterns as specified by the Engineer and contained in, but not limited to, **Attachment 6 "OPERATION HOURS."** This provision does not preclude or supersede any other code or requirement established or in acted by the City of Oakland or other public agencies that apply and may restrict the hours of operation.

No work shall be undertaken on any street listed in **Attachment 7 "HOLIDAY RESTRICTED STREETS"** shown at the end of this subsection from October 31st to January 2 unless otherwise directed in writing by the Engineer.

A street designated by the Oakland City Council as a "LIMITED OPERATIONS AREA" (see **Attachment 8**) shall have the following additional restrictions, unless specifically waived by the Special Provisions:

- I No work that will interfere with traffic shall be performed in any public street or roadway during the hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. (except Sundays and Holidays).
- II No equipment, construction materials or excavated material that will interfere with traffic shall be stored on any public street or roadway during the hours noted above.
- III All trenches and excavations in any public street or roadway shall be backfilled and opened to traffic, or covered with suitable non-skid securely placed and opened to traffic, at all times except during actual construction operations, or where otherwise permitted in writing by the Engineer.
- IV Each work section of work shall be completed or temporarily paved and open to traffic in not more than five days after commencing work unless otherwise permitted in writing by the City Engineer.

In the event the Contractor cannot maintain the minimum number of unobstructed traffic lanes required or

the project impacts traffic beyond the limits of these Provisions, the Contractor shall submit for approval five sets of plans for each proposed detour to the Engineer at least seven calendar days prior to its implementation. This language does not relieve the Contractor of responsibility to maintain traffic as set forth in these specifications and/or the Provisions as directed by the Engineer.

ADD NEW SUBSECTION 601-1.2 TO READ:

601-1.2 Existing Traffic Signals, Street Signs, Regulatory Signs. The Contractor shall properly maintain all existing Agency signs within the work limits and shall not temporarily remove any signs without the Engineer's prior approval. Any signs removed by the Contractor shall be properly stored and reinstalled as directed by the Engineer prior to the completion of contract work.

All pavement markings removed or damaged by work shall be replaced before allowing any traffic back on the pavement area. If the markings cannot be immediately replaced, temporary markings may be used as directed by the Engineer.

The Contractor shall not proceed with any work requiring traffic signal modifications or shutdown without the Engineer's written approval at least seven calendar days prior to the desired shutdown date.

ADD NEW SUBSECTION 601-1.3 TO READ:

601-1.3 Vehicular Traffic. The Contractor shall conduct operations in such a manner as to provide public convenience and safety and according to the provisions in this subsection. The provisions shall not be modified or altered without written approval from the Engineer.

Standard traffic control devices shall be placed at the construction zone according to the latest edition of the Work Area Traffic Control Handbook or latest Caltrans Manual on Uniform Traffic Control Devices (MUTCD) or as directed by the Engineer.

All trenches and excavations in any public street or roadway shall be back filled and opened to traffic, or covered with suitable steel plates securely placed and opened to traffic at all times except during actual construction operations unless otherwise permitted by the Engineer.

Each section of work shall be completed or temporarily paved and open to traffic in not more than 5 days after commencing work unless otherwise permitted in writing by the Engineer.

Where construction encroaches into the sidewalk area, a minimum of 5 ½ feet of unobstructed sidewalk shall be maintained at all times for pedestrian use. Pedestrian barricades, shelter, and detour signs per Caltrans standards may be required.

The contractor shall conduct its operation in such a manner as to leave the following traffic lanes unobstructed and in a condition satisfactory for vehicular travel during the Obstruction Period. At all times traffic lanes will be restricted and reopened to travel. Emergency access shall be provided at all times.

ADD NEW SUBSECTION 601-1.5 TO READ:

601-1.5 Street Closures, Detours, Barricades. The Contractor shall comply with all applicable State, County and City requirements for street closures.

The Contractor shall provide barriers, guards, lights, signs, temporary bridges, flag persons and watch persons in order to advise the public of detours and construction hazards. The Contractor shall also be responsible for compliance with additional public safety requirements that may arise during construction. The Contractor shall furnish and install, and upon completion of the work, promptly remove all signs and warning devices.

All material and work related to pedestrian and vehicular traffic control including, but not limited to, the location and size of signs, lighting and lighted traffic control devices shall comply with the "Work Area Traffic Control Handbook, (WATCH book) latest edition, or the California Manual on Uniform Traffic Control Devices, Part 6 – Temporary Traffic Control, latest edition, except as modified by the Engineer.

Temporary construction traffic signs (such as DETOUR, ROAD CLOSED, LOCAL ACCESS ONLY, etc.) installed by the Contractor shall be of commercial quality on metal with reflective paint. The lettering shall be commercially printed, silk-screened or professionally hand-lettered. At the Engineer's request, the Contractor shall remove all temporary signage not meeting the above stated requirements from the site.

During night operations construction barricades, signs, etc. shall be properly illuminated and reflective of existing light or vehicular light.

The Contractor may place signs prohibiting parking and stopping at those locations approved by the Engineer. The Contractor shall maintain no-parking signs on a daily basis. Failure to maintain no-parking signs according to the construction schedule will result in a penalty of \$500 per day per location. Such signs shall be placed, moved and removed at the Engineer's discretion. The Contractor may obtain from the Engineer the required signs for the prohibition of parking and stopping at a cost established by the current Master Fee Schedule.

No work shall be started until necessary signs and barricades are at the job site. A partial or complete

street closure by the Contractor without proper detour signing complete in place shall be cause for suspending the work in accordance with 6-3.

The Contractor shall notify Police, Fire, Traffic Engineering departments of jurisdictional agencies involved, and local transit agencies, and comply with their requirements in advance of closing, or partially closing, or of reopening, any street, alley, or other public thoroughfare; and, according to the following:

Oakland Fire Services Agency	2 hours	(510) 238-3331
Oakland Police Services Agency	48 hours	(510) 238-3357
AC Transit	72 hours	http://www.actransit.org/customer/contact-us/detour-notification/

When necessary to detour traffic, the Contractor shall, at the direction of the Engineer, remove detour striping in accordance with 300-1.3.3 of these Special Provisions.

ADD NEW SUBSECTION 601-2.1 TO READ:

601-2.1 UNIFORM SAFETY STANDARDS. The purpose of these standards is to provide for safe work areas and to control pedestrian and vehicular traffic around construction sites after working hours. In each of the cases presented, specific site conditions dictate the amount and type of protective devices to be implemented. All work must comply with WATCH Handbook requirements. The Contractor shall provide detour signage per the WATCH book when applicable.

All provided ramping and detour routes must be constructed of non-slippery materials that provide a secure surface during or after wet weather.

The Contractor shall submit a traffic control plan for all construction 10 working days before construction begins. This plan shall show how the Contractor will keep the public out of the excavated area. This plan will also show how pedestrians and vehicles will be routed around the excavated area.

The Contractor can construct curb ramps and ancillary work in no more than two corner areas of one intersection at a time. These corners must be diagonal to each other across the intersection so that pedestrians can be safely routed through the intersection. Excavation work must also be in accordance with Oakland Municipal Code Section 12.12.110(a) GENERAL REGULATIONS IN THE PERFORMANCE OF EXCAVATION WORK [OMC Section 12.12.110(a)].

CASE 1: Short-Term Shallow Excavation in Sidewalk Area. Shallow is defined as six inches or less. Short term is defined as 48 hours or less.

1. Place Type I barricades at each end of excavated site. Place Type I barricades at face of curb fronting excavated area.
2. Maintain access to private/business property by ramping at finished grade level.

CASE 2: Long-Term Shallow Excavation in the Sidewalk Area. Long term is defined as greater than 48 hours. Shallow is defined as six inches or less in depth.

1. Span excavated area with plywood sub-flooring (not to exceed six linear feet). Place temporary surfacing (cutback) at point of contact with existing sidewalk and plywood to eliminate tripping hazard.
2. Construct 5' wide walkway in parking lane with barricades per the Watch Book to divert pedestrians around excavated area.
3. Maintain access to private/business property with ramping at finished grade level.

CASE 3: Short-Term Deep Excavation in the Sidewalk Area. Short term is defined as 48 hours or less. Deep is defined as greater than six inches in depth.

1. Span excavated area with plywood sub-flooring (not to exceed six linear feet). Place temporary surfacing (cutback) at point of contact with existing sidewalk and plywood to eliminate tripping hazard.
2. Construct 5' wide walkway in parking lane with barricades per the Watch Book to divert pedestrians around excavated area.

CASE 4: Long-Term Deep Excavation in the Sidewalk Area. Long term is defined as greater than 48 hours. Deep is defined as greater than six inches in depth.

1. Span excavated area with plywood sub-flooring (not to exceed six linear feet). Place temporary surfacing (cutback) at point of contact with existing sidewalk and plywood to eliminate tripping hazard.
2. Construct 5' wide walkway in parking lane with barricades per the Watch Book to divert pedestrians around excavated area. (OMC Section 12.12.110(a) Article 1, Section 14 of Excavation Regulations).

CASE 5: Shallow Excavation in Street Area. Shallow is three inches or less depth.

1. Close affected lane(s) of vehicular traffic in accordance with WATCH Handbook. Use Type III barricades.

2. Cover excavation with steel plating in accordance with (OMC Section 12.12.110(a) Article 2, Section 13 of Excavation Regulations).
- OR
3. Fill excavated area with temporary surfacing in accordance with (OMC Section 12.12.110(a) Article 3, Section 10 of Excavation Regulations).

CASE 6: Deep Excavation in Street Area. Deep is defined as greater than three inches.

1. Close affected lane(s) or vehicular traffic in accordance with WATCH Handbook. Use Type III barricades.
2. Place concrete K Rails around excavated site when excavation is greater than one foot deep, traffic flow is heavy, and excavation activity is continuous.
3. Place Type III barricades around perimeter of excavation in low traffic volume locations.
4. Install steel bridging over excavated area in accordance with OMC Section 12.12.110(a) Article 3, Section 10 of Excavation Regulations.

CASE 7: Special Circumstances such as Excavation in Central Business District or other High Commercial or High Volume Areas. Contractor shall give the inspector a specific proposal to make construction site safe during and after working hours. Contractor should consider using a combination of measures outlined in Cases 1 through 6.

ADD THE FOLLOWING TO SECTION 601-3

601-3 PAYMENT

The contract lump sum price paid for traffic control work includes full compensation for furnishing all labor, materials, tools, equipment, incidentals and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing and disposing of the components of the traffic control work; and doing all other work as specified in section 600. Traffic control work, satisfactorily performed, will be paid for at the lumpsum price bid therefor, prorated over the duration of field construction, **or** proportionally to the percentage of field construction completed to date. Unless a separate bid item is included in the bid schedule for traffic control, the Contractor shall absorb all costs incurred from the requirements of Section 600.

ATTACHMENTS

No.	Attachment Name	Ref. Section
1	Contractor's Guarantee	6-8
2	Material Submittal	2-5.3.3
3	Material or Product or Method Substitution Request	3-1.1
4	Contractor's Claim Submittal Form	3-7
5	As-Built Plans Certification Form	6-8
6	Operation Hours	601-1.1
7	Holiday Restricted Streets	601-1.1
8	Limited Operation Areas	601-1.1
9	Project Information Sign	7-12.1
9A	Barricade Sign	7-12.1
10	Request for Replacement Utility Box for Curb Ramp Work	303-5.1.1.a
11	Door Hangers	7-12.2
12	Imported Materials Certification Form	211-4
13	Monthly Asset Form	9-3.2
15	2010 Revised Standard Plan RSP A87A, A88A, A88B, A90A, A90B	General

Attachment 1 Contractor's Guarantee

Subsection 6-8

At the completion of work by the Contractor, and also when required by the Specifications, a guarantee shall be submitted in the form of the following guarantee *on the Contractor's own letterhead*:

Guarantee/Warranty for _____

(Project Number and Name, Site Name and Address)

We hereby warrant and the General Contractor guarantees that the contract work we have installed has been done in accordance with Drawings and Specifications and that the work as installed will fulfill requirements of the guarantee/warranty included in contract documents. We agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced by so doing that may prove to be defective in its workmanship or materials within a period of ____ years from the date of acceptance of above-named structure by the City (ordinary wear and tear and unusual abuse or neglect excepted).

In the event of our failure to comply with above-mentioned conditions within thirty (30) days after being notified in writing by the City of Oakland, we collectively or separately, do hereby authorize the City of Oakland to proceed to have said defects repaired and made good at our expense, and we will honor and pay the costs and charges therefore upon demand.

Signed: _____ **Date** _____
Contractor

Signed: _____ **Date** _____
Subcontractor, where applicable

Attachment 2 Material Submittal

Subsection 2-5.3.3

Supplier/Manufacturer: _____

Address: _____

Telephone: _____ Fax: _____

Item Description: _____ Spec. #: _____

Use of Item: _____

Note to the Supplier: The attached project special provisions modify the 2009 Standard Specifications for Public Works Construction (Green Book). These special provisions detail the requirements for the proposed material. Please review the special provisions, the Green Book and the text in the box below to ensure that the proposed material meets the project specifications. Include this signed form with all necessary documents for the material submittal.

I certify that the proposed material is in compliance with the contract specifications

- ☐ with no exceptions.
☐ with exceptions as noted.

Submittal Item Number _____
(Use numbering system from Attachment 1.)

Signature of Supplier's Representative: _____ Date: _____

Signature of Contractor's Representative: _____ Date: _____

Submittal Review

- ☐ No exceptions taken ☐ Exceptions taken as Noted ☐ Reviewed
☐ Rejected ☐ Revise and Resubmit
☐ Review Not Required ☐ Submit Specified Item
☐ _____

Review is only for the general conformance with the project design concept and general compliance with the information provided in the Contract Documents. The Contractor is responsible for conformance with all requirements of the Contract Documents, including, but not limited to, dimensions that shall be field verified, fabrication processes and construction techniques, coordination of work, and satisfactory performance of all work. Deviations from the Contract Documents are not reviewed unless specifically requested by the Contractor in writing. Review on resubmission will only cover designated changes on this submittal and other changes specifically identified by the Contractor.

CITY OF OAKLAND OPW, Bureau of Engineering and Construction

Comments:

Reviewer:

Date:

Attachment 3

MATERIAL OR PRODUCT OR METHOD SUBSTITUTION REQUEST

Subsection 3-1.1

NOTE: Provide six sets of this completed form and attachments for each separate substitution request.

To: **City of Oakland** Project Number: _____

Project Name: _____

A. We hereby submit for your consideration the following product instead of the specified item:

1. Section _____ Sub-article _____
2. Specified Item _____
3. Proposed Substitution (Mfr., Type, Model, Rehabilitation, etc.) _____

B. Complete all of the following:

1. We propose providing the City a cost credit (including costs for changes by other trades) of \$ _____. Does this substitution offer earlier delivery or less construction time? (Yes____) (No____) How much and why? _____ (hours/days/weeks) _____

2. How does this substitution affect any dimensions, layouts, profiles or details of other trades/methods as shown on the drawings? _____

3. Has this substitution been coordinated with the remainder (or other portions being affected) of the project? _____

4. What are the specific differences between this substitution and the specified item? _____

C. Attach the following items as applicable. Check box ☐ if item is attached to this substitution request.

<input type="checkbox"/> a. Manufacturer' technical data	<input type="checkbox"/> d. Drawings & description of changes required by other trades
<input type="checkbox"/> b. Laboratory test or performance results	<input type="checkbox"/> e. Samples
<input type="checkbox"/> c. Drawings & diagrams of the proposed product / method	<input type="checkbox"/> f. Manufacturer's guarantee & maintenance instructions

D. The undersigned agrees to pay for all design, testing, changes to the Contract Documents, and construction costs incurred as a result of the acceptance of this substitution, at no cost to the City.

E. Submitted by (Firm): _____

Signature: _____ Title: _____ Date: _____

**Attachment 4
Contractor's Claim Submittal Form**

Section 3-7

Under penalty of law for perjury or falsification and with specific reference to the California False Claims Act, Government Code Section 12650 et. Seq., the undersigned,

Name _____	Title _____	Company _____
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hereby certifies that the claim for additional compensation or time, if any, made herein for the work on this contract is a true statement of the actual costs incurred and time sought, and is fully documented and supported under the contract between the parties.

Dated _____

/s/ _____

Subscribed and sworn before me this _____ day of _____, 200__.

Notary Public
My Commission Expires _____

**Attachment 5
As-Built Plans Certification Form**

Section 6-8

Date: _____

To: OPW , Bureau of Engineering and Construction
Attn: _____
250 Frank H. Ogawa Plaza, Suite 4344
Oakland, Ca 94612

Re: Project No.: _____

Project Title: _____

The enclosed As-Built plans are submitted as required by Section 6-8 "Completion and Acceptance" of the contract specifications.

As the representative of _____, the General Contractor for the above referenced project, I hereby certify that all improvement work for said project has been completed in conformance with the original plans and specifications and changes noted on these As-Built plans.

Signed: _____

Title: _____

Contractor's License Number: _____

Attachment 6: OPERATION HOURS

Subsection 601-1.1

Street Name	Work Period	North Bound	South Bound	East Bound	West Bound

The Contractor shall also:

- a) Provide five copies of the traffic control plan to the Engineer for review 10 working days before construction.
- b) Restore and reopen all traffic lanes outside of the Work Period shown above.
- c) Provide emergency vehicle access at all times.
- d) Provide flagger control as required.

Attachment 7: HOLIDAY RESTRICTED STREETS

Subsection 601-1.1

Antioch St: All
Bancroft Ave: 57th to 75th Ave.
Broadway: All
Clay St: 7th St. to San Pablo
College Ave: All
Dimond Ave: Montana to MacArthur
Frank Ogawa Plaza: All
El Embarcadero: All
Foothill Blvd: Lakeshore to 73rd Ave.
Franklin St: 7th St. to Broadway
Fruitvale Ave: E 12th to E 22nd
& School St. to Lyman Rd.
Grand Ave: All
Harrison St: 5th St. to 27th St.
Havenscourt Blvd: Camden to MacArthur
Jack London Square: All
Lake Park Ave: All
Lakeside Dr: All
Lakeshore Dr: 12th St. to Prince
LaSalle Ave: N End to Moraga Ave.
MacArthur Blvd: Excelsior to High St.;
& Seminary to 76th Ave.
Medau Place: All
Montana St: MacArthur Blvd. to Fruitvale
Mountain Blvd: Moraga to Colton Blvd.
Park Blvd: E 18th St. to 5th Ave.
& Hampel to Glendora
Piedmont Ave: Broadway to Pleasant Valley
Pleasant Valley: All
Seminary Ave: Avenal to Monadnock
Telegraph Ave: All

Webster St: 6th St. to Broadway
West Grand: Broadway to Telegraph
West MacArthur: Harrison to Manila
Williams: MLK Jr. Way to Telegraph

5th St: Market to Broadway
7th St: Broadway to Madison
8th St: MLK Jr. Way to Madison
9th St: MLK Jr. Way to Madison
10th St: MLK Jr. Way to Madison
11th St: Brush to 12th St. Dam
12th St: Brush to 1st Ave.
13th St: Broadway to Harrison
14th St: Brush St. to 12th St. Dam
15th St: Broadway to Harrison
16th St: Clay to Telegraph
17th St: Brush to Lakeside Dr.
18th St: Brush to Telegraph
19th St: Castro to Lakeside Dr.
20th St: Castro to Harrison St.
21st St: MLK Jr. Way to Harrison
22nd St: MLK Jr. Way to Harrison
1st Ave: E 12th St. to Foothill
3rd Ave: E 18th St. to Park Blvd.
35th Ave: San Leandro St. to E 15th St.;
& Suter St. to Kansas St.
68th Ave: Foothill to MacArthur
73rd Ave: E 14th St. to MacArthur
East 14th St: 1st Ave. to San Leandro Limits
East 18th St: Lakeshore to 8th Ave.

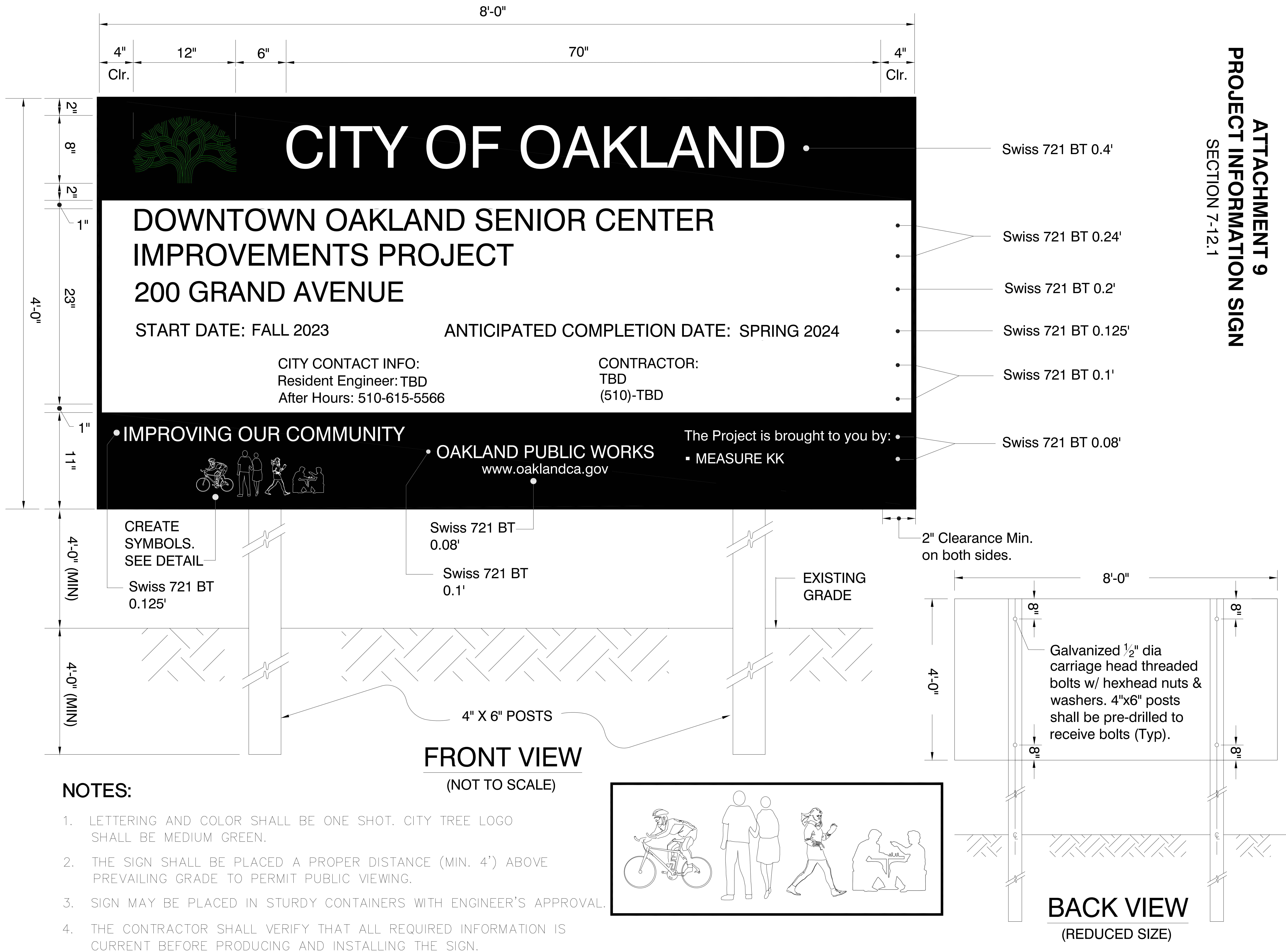
Attachment 8 LIMITED OPERATION AREAS

Subsection 601-1.1

Adeline St: 1st St. to 7th St.
Ardley Ave: E 31st St. to MacArthur
Bancroft: 42nd Ave. to San Leandro Limits
Bancroft Way: E14th St. to 47th Ave.
Bayo Vista Ave: Harrison to Oakland Ave.
Beaumont Ave: 14th Ave. to Park Blvd.
Bond St: 42nd Ave. to Bancroft Ave.
Broadway: All
Broadway Terrace: Broadway to Glenbrook Dr.
Brush St: 5th St. to W Grand
Camden St: Foothill to Seminary
Castro St: 5th St. to San Pablo Ave.
Chatham Rd: Beaumont Ave. to Park Blvd.
Chester St: 5th St. to 7th St.
Claremont Ave: All
College Ave: All
Coliseum Way: High St. to 50th Ave.
Doolittle Dr: All
Edes Ave: Hegenberger to 98th Ave.
Edwards Ave: All
El Embarcadero: All
Foothill Blvd: 1st Ave. to MacArthur
Franklin St: 7th St. to Broadway
Fruitvale Ave: Alameda Limits to Whittle
Grand Ave: Broadway to Mandana
International Blvd/14th Ave: All
Northgate Ave: All
Harold St: All
Harrison St: 5th St. to Bayo Vista Ave.
Havenscourt Blvd: All
Hawley St: 69th Ave. To 73rd Ave.
Hegenberger Rd: All
High St: All
International Blvd: All
Keith Ave: College to Broadway
Lakepark Ave: Grand to Wesley Ave.
Lakeshore Ave: 12th St. to Mandana
Lakeside Dr: Harrison St. to Oak St.
Lincoln Ave: All
MacArthur Blvd: Fairmount Ave. to Seminary
& 73rd Ave. to San Leandro City Limits
Madison St: 5th St. to Lakeside Dr.
Mandana Blvd: Grand to Lakeshore
Mandela Parkway: All
Market St: 5th St. to Aileen St.
Miles St: Forest St. to Patton St.
MLK Jr. Way: All
Montana St: MacArthur to Coolidge
Moraga Ave: All
Mountain Blvd: Thornhill to Park Blvd.
Oak St: Lakeside Dr. to 5th St.
Oakland Ave: All
Park Blvd: All
Peralta St: 5th St. to 8th St.

Piedmont Ave: All
Pleasant Valley Ave: All
Redwood Rd: 35th Ave. To Skyline
San Leandro St: All
San Pablo Ave: All
Snake Rd: Mountain Blvd. to Shepherd Canyon Rd.
Seminary Ave: San Leandro St. to MacArthur
Shattuck Ave: All
Telegraph Ave: All
Thornhill Dr: Moraga Ave. to Mountain Blvd.
Webster St: 7th St. to Broadway
W Grand Ave: All
W MacArthur Blvd: All
1st Ave: All
5th Ave: All
14th Ave: All
22nd Ave: Foothill Ave. to 23rd Ave.
23rd Ave: All
29th Ave: Estuary Bridge to International Blvd.
33rd Ave: E 12th St. to E 14th St./ Int'l Blvd.
34th Ave: E 12th St. to E 14th St.
35th Ave: San Leandro St. to Redwood Rd.
37th Ave: San Leandro St. to E 12th St.
42nd Ave: E 14th St./ International Blvd. to Foothill
46th Ave: E 12th St. to E 14th St./Int'l Blvd.
66th Ave: Oakport Rd. to E 14th St./Int'l Blvd.
69th Ave: San Leandro St. to Hawley St.
73rd Ave: All
81st Ave: San Leandro St. to E 14th St.
98th Ave: All
E 8th St: All
E 12th St: 1st Ave. to 46th Ave.
E 14th St. (International Blvd): All
E 15th St: 1st Ave. to 14th Ave.
E 18th St: Lakeshore Ave. to 14th Ave.
5th St: Oak to Market & Mandela to Peralta
6th St: Oak to Jackson & Broadway to Market
7th St: 7th Ave. To 7th St. Maritime Terminal
11th St: Market St. to Oak St.
12th St: Broadway to Fallon St.
12th St. Dam: All Roadway Facilities
14th St: Market St. to Oak St.
17th St: Harrison St. to Brush St.
18th St: Market St. to MLK Jr. Way
19th St: MLK Jr. Way to Harrison St.
20th St: San Pablo Ave. to Lakeside Dr.
27th St: San Pablo Ave. to Harrison St.
27th St: San Pablo Ave. to MLK Jr. Way
35th St: Market St. to MLK Jr. Way
36th St: Market St. to MLK Jr. Way
40th St: All
51st St: Telegraph to Broadway
52nd St: MLK Jr. Way to Telegraph

ATTACHMENT 9
PROJECT INFORMATION SIGN
SECTION 7-12.1



**Attachment 9A:
Barricade Sign**



**OAKLAND PUBLIC WORKS DEPARTMENT
BUREAU OF ENGINEERING AND CONSTRUCTION**

**PARDON OUR DIGGING
Work Description:**

CITY PROJECT NUMBER: 1004984

CONSTRUCTION INFORMATION:

CONTRACTOR NAME AND PHONE NUMBER:

NOTES:

1. SIGN SHALL BE 8.5" X 11".
2. SIGN SHALL BE WHITE EXCEPT FOR TREE ICON AND BORDER.
3. TREE ICON AND 0.1" THICK BORDER SHALL BE GREEN.
4. FONT STYLE SHALL BE ARIAL.
5. SIGN SHALL BE SECURED TO TYPE I BARRICADE.
6. SIGN SHALL BE LAMINATED ON CARD STOCK.
7. "CITY PROJECT NUMBER", "CONSTRUCTION INFORMATION", "CONTRACTOR NAME AND PHONE NUMBER" TEXT SHALL BE 0.2".

Attachment 10
Request for Replacement Utility Box for Curb Ramp Work

Subsection 303-5.1.1.a

TO:

- ☐ **AT&T:** Otis Thompson (510) 645-7007
- ☐ **EBMUD North Yard:** Everything North of Broadway to the Berkeley/Emeryville Border; Rick Pinguelo (510) 287-0831; fax (510) 758-6038
- ☐ **EBMUD South Yard:** Everything South of Broadway to San Leandro Border, John Hyden tel (510) 287-0837 / 287-0838 / 287-0839; fax (510) 276-5643
- ☐ **PG&E Electric:** Mark Augustin; tel (415) 716-7714; fax (510) 437-2289
- ☐ **PG&E Gas:** Mark Augustin; tel (415) 716-7714; fax (510) 437-2289

Intersection Location:

Corner (i.e. N, NE, etc.) _____

Utility Box Dimensions: _____

Contractor Name and Telephone #: _____ (____) _____

I certify that a free replacement utility box is needed because

- ☐ either the existing box was damaged (pre-existing condition), or
- ☐ the existing box was unavoidably damaged by my crew while exercising due diligence to protect the existing improvements.

Sketch or Comments:

Contractor's Representative

Date

Approved by
City of Oakland Resident Engineer

Date

**Attachment 11
Door Hangers**



CONSTRUCTION NOTICE

PROJECT NAME: Citywide Preventive Maintenance Resurfacing

PROJECT NO.: C427720

TYPE OF WORK: Roadway resurfacing and traffic striping along San Pablo Avenue, between 17th Street to 19th Street, and between 21st Street to MLK JR Way.

WHEN: June 8th, 2016 to June 20th, 2016 between 9:00AM and 4:00PM. Look for barricades for specific time of parking restrictions posted on your block.

DESCRIPTION: The improvements consist of roadway resurfacing along San Pablo Avenue, between 17th Street to 19th Street, and between 21st Street to MLK JR Way. Final traffic striping will be performed upon completion of resurfacing work.

IMPACTS: During roadway resurfacing work, segments of the street may be closed to traffic for short periods of time. A designated path with barricades and detour signs will be in place.

FOR MORE INFORMATION, CONTACT:

CONTRACTOR:

Company Name
Address
Address
Office: phone number
Questions: email address

OAKLAND PUBLIC WORKS

Name
Resident Engineer
City of Oakland
Phone number
Email address

THANK YOU IN ADVANCE FOR YOUR COOPERATION

Attachment 12 Imported Materials Certification Form

Subsection 211-7

PROJECT INFORMATION

Number: _____ Name: _____

Location or Street Address: _____

CONTRACTOR / SUBCONTRACTOR IMPORTING MATERIAL

Name: _____ Street Address: _____

City: _____ State: _____ Zip Code: _____ Phone No.: _____

Fax No. _____ Email: _____

SOURCE AREA OWNER

Name: _____ Street Address: _____

City: _____ State: _____ Zip Code: _____ Phone No.: _____

Fax No. _____ Email: _____

IMPORT MATERIAL TYPE (Select One)

- ☐ Soil
- ☐ Aggregate – Not Recycled *Specify Type:* _____
- ☐ Recycled Aggregate *Specify Type and Past Uses:* _____
- ☐ Biosolids
- ☐ Compost

SOURCE AREA LAND USE HISTORY (Check all current and past uses)

- ☐ Residential ☐ Agricultural ☐ Commercial / Industrial ☐ None (i.e., virgin undeveloped)

SPECIFICS

Quantity (in cubic yards): _____ Placement and Use: _____

I hereby certify that the Import Material identified above meets the City of Oakland specifications of Section 211-4 Import Fill Material. I further certify that if the Import Material is determined not to be in compliance with these specifications that I will immediately and diligently remove all out-of-specifications Import Material and dispose of it in accordance with all applicable laws and regulations, conduct necessary sampling to verify that all out-of-specification Import Material has been removed, and verify to the satisfaction of the City and appropriate regulatory agencies that any adverse impacts to surrounding soils, waters or other materials have been mitigated sufficiently. I agree to conduct these activities at my sole

expense with no cost to the City.

I declare under penalty of perjury that I am authorized to execute this certification and that the foregoing information is correct.

Signature: _____ Date: _____

Printed Name: _____ Title: _____

EXAMPLE
Attachment 13 – Monthly Asset Form (1 of 2)

PROJECT #: _____			PROJECT NAME: _____				Report Date: _____		
Contractor: _____			PM: _____				RE: _____		

SHT	PIPE ID#	LENGTH (F)	REHAB DIA (I)	REHAB MATERI	REHAB METHOD	LATERAL QT	REHAB DATE	TEST DATE	POST-CCTV DATE	INVOICE DATE	VERIFIED BY (RE
8	8713	447	18	HDPE SDR17	Pipe Expanding	9					
7	8715	208	20	HDPE SDR17	Pipe Expanding	3					
7	8716	206	8	HDPE SDR17	Pipe Expanding	7					
7	8898	19	20	HDPE SDR17	Open Trench	0					
7	8899	94	8	HDPE SDR17	Pipe Expanding	1					
8	10184	175	8	HDPE SDR17	Pipe Expanding	7					
8	10210	280	8	HDPE SDR17	Pipe Expanding	7					
9	10217	253	8	HDPE SDR17	Pipe Expanding	5					
8	10226	306	8	HDPE SDR17	Pipe Expanding	7					
8	10251	376	8	HDPE SDR17	Pipe Expanding	22					
9	10260	445	8	HDPE SDR17	Pipe Expanding	19					
9	10261	403	8	HDPE SDR17	Pipe Expanding	16					
9	10262	169	8	HDPE SDR17	Pipe Expanding	1					
9	10264	382	8	HDPE SDR17	Pipe Expanding	17					
7	11662	145	8	HDPE SDR17	Pipe Expanding	2					
7	11664	304	8	HDPE SDR17	Pipe Expanding	8					
11	11728	207	8	HDPE SDR17	Pipe Expanding	7					
10	11742	259	8	HDPE SDR17	Pipe Expanding	4					
10	11743	270	8	HDPE SDR17	Pipe Expanding	10					
10	11749	412	8	HDPE SDR17	Pipe Expanding	13					
10	11758	262	8	HDPE SDR17	Pipe Expanding	6					
10	11759	45	8	HDPE SDR17	Pipe Expanding	1					
11	11760	235	8	HDPE SDR17	Pipe Expanding	7					
11	11761	234	8	HDPE SDR17	Pipe Expanding	7					
10	11763	244	8	HDPE SDR17	Pipe Expanding	10					
9	11807	37	8	HDPE SDR17	Pipe Expanding	2					
9	11808	62	8	HDPE SDR17	Pipe Expanding	2					
11	11811	396	8	HDPE SDR17	Pipe Expanding	19					

Attachment 13 – Monthly Asset Form (2 of 2)

PROJECT #: _____		PROJECT NAME: _____				Report Date: _____	
Contractor: _____		PM: _____		RE: _____			

SHT #	STRUCTURE NUMBER	NODE TYPE	REHAB MATERIAL	REHAB METHOD	# OF INLETS (No Outlets)	INVERT ELEV 1	INVERT ELEV 2	REHAB DATE	TEST DATE	INVOICE DATE	VERIFIED BY (RE)
10	56-011-23	MH	UNK	MH3	1		-				
10	56-011-24	CO	UNK	Clean Out	0	-	-				
10	56-011-25	MH	UNK	MH3	1		-				
10	56-011-26	MH	EPOXY	MH3	1		-				
7	80-020-33	MH	EPOXY	MH4	2						
7	80-021-23	MH	EPOXY	MH3	1		-				
7	80-021-24	MH	EPOXY	MH3	1		-				
7	80-022-01	MH	EPOXY	MH3	1		-				
7	80-022-02	MH	EPOXY	MH3	1		-				
7	80-022-03	MH	EPOXY	MH3	1		-				
7	80-022-04	MH	EPOXY	MH3	1		-				
9	80-022-07	MH	EPOXY	MH3	1		-				
9	80-022-08	MH	EPOXY	MH3	1		-				
9	80-022-09	MH	UNK	MH3	1		-				
9	80-022-10	MH	UNK	MH3	1		-				
10	80-022-11	MH	EPOXY	MH3	1		-				
10	80-022-13	MH	UNK	MH3	1		-				
10	80-022-14	MH	EPOXY	MH3	1		-				
8	80-022-23	MH	UNK	MH4	2						
8	80-022-25	CO	EPOXY	Clean Out	0	-	-				
9	80-022-27	MH	EPOXY	MH3	1		-				
9	80-022-28	CO	EPOXY	Clean Out	0		-				
9	80-022-29	CO	EPOXY	Clean Out	0		-				
9	80-022-30	CO	EPOXY	Clean Out	0		-				
9	80-022-31	MH	EPOXY	MH3	1		-				
9	80-022-32	MH	EPOXY	MH4	2						
9	80-022-33	CO	UNK	Clean Out	0	-	-				
10	80-022-34	MH	EPOXY	MH4	2						
10	80-022-35	CO	EPOXY	Clean Out	0		-				
10	80-022-36	MH	UNK	MH3	1		-				
10	80-022-38	MH	EPOXY	MH3	1		-				
10	80-022-39	CO	UNK	Clean Out	0	-	-				
7	80-022-40	MH	EPOXY	MH3	1		-				
7	80-022-41	MH	EPOXY	MH3	1		-				
7	80-022-42	CO	EPOXY	Clean Out	0		-				
7	80-022-45	MH	EPOXY	MH3	1		-				
9	80-022-52	MH	EPOXY	MH3	1		-				
10	80-022-55	MH	EPOXY	MH3	1		-				
8	80-022-58	CO	UNK	Clean Out	0	-	-				
8	80-022-59	CO	UNK	Clean Out	0	-	-				
8	80-022-60	MH	UNK	MH3	1		-				

Attachment 15

2010 Revised Standard Plan RSP A87A, A88A, A88B, A90A, A90B

http://www.dot.ca.gov/hq/esc/oe/project_plans/highway_plans/stdplans_US-customary-units_10/viewable_pdf/rspa87a.pdf

http://www.dot.ca.gov/hq/esc/oe/project_plans/highway_plans/stdplans_US-customary-units_10/viewable_pdf/rspa88a.pdf

http://www.dot.ca.gov/hq/esc/oe/project_plans/highway_plans/stdplans_US-customary-units_10/viewable_pdf/rspa88b.pdf

http://www.dot.ca.gov/hq/esc/oe/project_plans/highway_plans/stdplans_US-customary-units_10/viewable_pdf/rspa90a.pdf

http://www.dot.ca.gov/hq/esc/oe/project_plans/highway_plans/stdplans_US-customary-units_10/viewable_pdf/rspa90b.pdf

ATTACHMENT 17 CONTRACTOR OVERFLOW EMERGENCY RESPONSE PLAN

Contractor Overflow Emergency Plan

Contractor who contracts with the City of Oakland to conduct sanitary rehabilitation work shall have an Overflow Emergency Response Plan (OERP). The OERP shall be submitted and approved by the City prior to begin work. In addition to the OERP submittal requirement, the Contractor may be required to take additional training, attends a mandatory preconstruction meeting and provide hands on demonstration to ensure it is in compliant with all required responsibilities handling an active Sanitary Sewer Overflow (SSO). Below are process parameters and guidance to be included in the Contractor's OERP.

The OERP shall include:

1. Contractor's representative: Name and telephone number of a competent person who can obtain resources and supervise the work in the event of a spill.
2. City of Oakland contacts for active spill:
Project Leads and Supervisors II's
 - a. **Supervisor II-** Johnny Nicks 510.615.5567 or Ameal McLaurin 510.615.5590
 - b. **Supervising Civil Engineer** – Wen Chen 510.238.6697
 - c. **Resident Engineer - TBD**
 - d. **Oakland Call-Center (Oak311)** – (510)-5566.
3. A process for containing, diverting and returning the spill back to the sewer system
4. A process for mitigating the Spill and proposed material and equipment to be used for this effort.
5. A process for containment and containment for work causes a backup into private property.
6. Protocol for SSO occurs during non-business hours the contractor shall contact the Oakland Call-Center (Oak311) immediately to report the active over-flow so that a Service Request (SR) can be generated. **(510)-615-5566**
 - a. Call the Listed Supervisor II and or Supervising Civil Engineer
 - b. Begin the containment protocol and mitigate the spill
 - i. Take photographs of the spill
 - ii. Photograph the clean-up/ mitigation efforts
 - iii. Photograph the area post clean up to illustrate the condition as a result of your clean-up efforts.
7. Note, the Contractor shall follow the same notification protocol informing the city for SSO caused by his own operation. The contract shall bear all expenses to abate and cleanup and at no cost to the City. Should additional assistance from the City is needed to mitigate such spill, expenses will be tracked and a bill will be issue to the contractor.
8. Mandatory Pre-construction Meeting: Prior to the start of any work related to the City of Oaklands Sewer Collection system, the contractor shall attend a pre-construction meeting to review the OERP. The City shall provide guidance and discuss the communication strategy in the event an SSO occurs. This meeting will cover the following so that contractors and city staff are properly trained, aware of SSO response protocol and, consistently follow the OERP.
 - i. Using appropriate tools and equipment to contain and/or mitigate an overflow;
 - ii. Using appropriate tools and equipment to clear a blockage in sewer pipes in varying sizes (6 inches – 24 inches in diameter);

- iii. Using appropriate tools and equipment to bypass a blockage in large-diameter sewer pipes (30 inches or greater);
- iv. Using appropriate tools, equipment, and procedures, to investigate and/or test for water quality contaminants in affected waterways;
- v. Properly documenting an overflow event;
- vi. Accurately completing SSO field reports, draft CIWQS SSO reports, and certified CIWQS SSO reports, in a timely manner;
- vii. Appropriately notifying regulatory agencies and affected municipalities and/or utilities, when an overflow has occurred, and advising/warning the public, when the overflow may cause a nuisance to (or otherwise affect) human health and safety.

The Provisions provided will act as a guide for your OERP development. More information is available at <https://www.oaklandca.gov/documents/2019-asset-management-implementation-plan-and-sewer-system-management-plan> (2019 Asset Management Implementation Plan and Sewer System Management Plan, Appendix C – City of Oakland Overflow Emergency Response Plan).

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS

Oakland, California

TECHNICAL SPECIFICATIONS

June 10, 2022

ELS Architecture and Urban Design
2040 Addison Street
Berkeley, CA 94704
Phone 510.549.2929
Fax 510.843.3304
www.elsarch.com

00 01 10

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SECTION 00 01 15 CERTIFICATIONS

Drawings and Specifications for the Architectural work of this Project have been prepared by or under the direction of the following registered Architect.

Diana Hayton
ELS Architecture and Urban Design
2040 Addison Street
Berkeley, CA 94704

License Stamp with Signature



Specifications for the Structural work of this Project have been prepared by or under the direction of the following registered professional engineer.

Jeff Taner
Spectrum Structural Engineering, Inc.
516 16th Street
Oakland, CA 94612

License Stamp with Signature



Drawings and Specifications for the Civil work of this Project have been prepared by or under the direction of the following registered professional engineer.

Christopher C. Mills
BKF Engineers
1646 N. California Blvd, Suite 400
Walnut Creek, CA 94596

License Stamp with Signature



Drawings and Specifications for the Plumbing and Mechanical work of this Project have been prepared by or under the direction of the following registered professional engineer.

James Dyer
EdesignC, Inc.
212 9th Street, Suite 203
Oakland, CA 94607

License Stamp with Signature



Drawings and Specifications for the Electrical work of this Project have been prepared by or under the direction of the following registered professional engineer.

Rosanna Lerma
EdesignC, Inc.
212 9th Street, Suite 203
Oakland, CA 94607

License Stamp with Signature



SECTION 01 11 00SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents and its specified programs and requirements apply to this Work

1.2 SUMMARY

- A. This section includes summary of work including:
 - 1. Work covered in Contract Documents
 - 2. Work under other contracts
 - 3. Work sequence
 - 4. Cooperation of contractor and coordination with other work
 - 5. Maintenance
 - 6. Occupancy requirements
 - 7. Reference Standards
 - 8. Products ordered in advance
 - 9. OWNER furnished products
- B. The Project Manual is the volume which includes the Bidding Requirements, sample forms, and certain of the Contract Documents such as the Conditions of the Contract and the Specifications. The Contract Documents shall include, in addition to the items listed, the Labor and Material Payment Bond, the Performance Bonds, Instructions to Bidders, Summary of the Work, Bid Forms, and the other documents enumerated in the General Conditions/ Provisions Between Owner and Contractor.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Downtown Oakland Senior Center Improvements project is a partial renovation of the ground floor of the Oakland Veterans' Memorial Building at 200 Grand Avenue. The project includes new flooring, painting and led lighting retrofits throughout primary area of work, approximately 9,690 SF of the ground floor of the building. The spaces within the area of work include canteen, dining, classroom, and restrooms. This project refreshes worn-out finishes that have not been upgraded since the 1980's. A new gender neutral restroom will be provided within the existing building footprint, accessible parking spaces at the existing east parking lot will be repaved, striped, and signed to improve access. Other minor exterior updates include new handrails and improvements at the main entry.
- B. Project Requirements: The Work under the Base Bid of the Contract shall include all work indicated or specified within the Contract Documents unless the work is specifically indicated as "Not in Contract" or future.
- C. The contractor must maintain access to the existing building at all times during all phases. Contractor is to provide secure fencing and/or barricades to keep the general public from

entering the work areas. Unless provided otherwise in the Contract Documents, work hours shall be from 7:00 AM. to 7:00 P.M. on weekdays and 9:00 AM. to 6:00 P.M. on weekends. No noise-generating work will be permitted before 8:00 AM on weekdays. If the contractor chooses to work more than 8 hours per day or 5 days per week, he shall be responsible for the overtime costs of the inspectors involved in that phase of the work.

- D. Unless provided otherwise in the Contract Documents, all risk of loss of Work covered by Contract Documents shall rest with Contractor until Final Completion and Acceptance of the Work.

1.4 WORK SEQUENCE

- A. Construct Work in stages and at times to accommodate OWNER operation requirements during the construction period; coordinate construction schedule and operations with Construction Manager.

1.5 COOPERATION OF CONTRACTOR AND COORDINATION WITH OTHER WORK.

- A. Should construction work, or work of any other nature, be underway by other forces or by other contractors within or adjacent to the limits of the Work at the time the Work was advertised for bids, the Contractor shall cooperate with all such other contractors or forces to the end that any delay or hindrance to their work will be avoided. The cost of such cooperation will be considered as included in the prices bid and no direct or additional payment will be made therefore. Contractor shall coordinate with such other contractors and forces as required by General Conditions.
- B. OWNER reserves the right to perform other or additional work, within or adjacent to the limits of the work specified, at any time by the use of other forces. Contractor shall coordinate with OWNER and any OWNER forces, or other forces, engaged by OWNER, as required by General Conditions. In the event that the performance of such other or additional work materially increases or decreases Contractor's costs, the work and the amount to be paid therefore will be appropriately adjusted as determined by the Construction Manager.
- C. Limit use of the Site for Work and for construction operations to allow for:
 - 1. OWNER operation
 - 2. Work by other contractors and tenants
- D. Coordinate use of the Site and access to site with other contractors, utilities, and OWNER forces, as required by General Conditions. Construction Manager has final authority over coordination, use of the Site, and access to site.
- E. Cooperate with OWNER and others who may occupy and begin work on site and inside building prior to completion of Work of this Contract.
- F. Cooperate with contractors for other area work, not included in Contract, but which may take place during construction period.

1.6 PROJECT MANUAL

- A. In the preparation of these Specifications, an effort has been made to segregate the various branches of the Work under headings, by trades. This is done only for

convenience and shall not relieve the Contractor of the responsibility of furnishing every item indicated or specified whether properly segregated or not.

- B. Specifications are arranged in accordance with the Construction Specifications Institute MasterFormat, 2004 Edition. The six digit Arabic Section Designation is in accordance with the above referenced document.
- C. No responsibility will be assumed by the Owner, Architect/Engineer or their representatives for omissions or duplications by the Contractor in the completion of the Contract due to any alleged error in the arrangement of the material in these Specifications nor shall any such segregation of Work and materials operate to make the Architect/Engineer or its representative an arbiter in defining limits to Agreements between the Contractor and his subcontractors or Suppliers.
- D. The misplacement, addition and omission of any letter, word, or punctuation mark, shall in no way damage the true spirit, intent or meaning of these Specifications.
- E. The word "shown," "indicated," "noted," "scheduled," or words of the like effect shall be understood to mean that reference is made to the Drawings accompanying these Specifications.
- F. Where reference herein is made to color or finishes "as selected," the reference is to selection(s) made by the Architect/Engineer.
- G. Reference to known standards within these Specifications shall and intend to be the latest edition or amendment published prior to the date of these Specifications, unless specifically specified otherwise, and to such portions of it that relate and apply directly to the material or installation called for on the project.
- H. All Contractor provided project forms, registers, reports, etc, shall be approved by the Construction Manager, and Architect/Engineer as they relate to format, structure and content presentation.
 - 1. These shall include, but are not limited to, the following:
 - a. Schedule of Submittals
 - b. Operation and Maintenance Manuals
 - c. Identification Register
 - d. Material Status Report
 - e. Progress Reports
 - f. Construction Status Report
 - g. Register of Bulletins and Change Orders
 - h. 3-Week Bar Chart Schedule
 - i. Critical Path Schedule
 - j. Miscellaneous Bar Chart Schedules
 - k. Request for Information and Register

1.7 DISPOSITION OF UTILITIES

- A. Contractor shall contact utility company to obtain all local restrictions and regulations prior to start of construction.

- B. Observe rules and regulations governing the respective utilities in executing all work under this heading.
- C. Adequately protect active utilities from damage, and remove or relocate only as indicated or specified.
- D. Remove, plug, or cap inactive and abandoned utilities encountered during the Work. If there are not specific requirements, plug or cap such utility lines at least 3 feet outside of new building walls or as required by local regulations.
- E. Contractor shall include in this Bid all costs associated with any and all locating services and metering costs.

1.8 ARCHITECTURAL AND ENGINEERING SERVICES

- A. It is understood that normal architectural and engineering liaison for the purpose of interpretation of the Contract Document is provided for by the Owner. Should any services of the A/E be required to assist in the correction of errors or omissions in construction by the Contractor, or services of the A/E be required because of the changes in structure or equipment where the Contractor has requested approval of substitute methods or materials, these services will be provided by the A/E at his standard hourly rates, and shall be paid for by the Contractor.

1.9 SAFETY REQUIREMENTS

- A. These Construction Documents and all phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of the federal laws, including but not limited to, the latest amendments of the following:
 - 1. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91- 596.
 - 2. Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations.
 - 3. Part 1518 - Safety and Health Regulations for Construction Chapter XIII of Title 29, Code of Federal Regulations.
 - 4. CAL OSHA Regulations.
- B. The Contractor shall submit for the Owner's records, a Safety Requirements Manual which outlines and describes in detail the procedures and policies to be followed for this project.

1.10 APPROVED APPLICATORS

- A. Where specific instructions in these specifications require that a particular product and/or material(s) be installed and/or applied by an approved applicator of the manufacturer, it shall be the Contractor's responsibility to ensure that any Subcontractor used for such Work be an approved applicator, and shall be so documented in writing.

1.11 WATERTIGHT-WEATHERTIGHT

- A. Anything in the Contract Documents notwithstanding, the Contractor accepts the responsibility of constructing a watertight, weather-tight project.

1.12 EXTRA WORK

- A. In accordance with the General Conditions and when authorized in writing by the Owner, extra Work may be ordered. Claims for additional compensation, for extra Work accomplished, will not be recognized unless such extra Work has been authorized in advance and in writing by the Owner, or an authorized representative.

1.13 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.14 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

- A. In general, notes on the drawings take precedence over provisions of the specifications; addenda or bulletins to specifications take precedence over original specifications or earlier addenda; dimensional figures take precedence over scaled measurements; large scale drawings and details take precedence over those of a smaller scale; drawings of the latest date take precedence over earlier ones. Work indicated or required (but not expressly noted, detailed, or specified) shall be made the same as similar or corresponding elements which are fully noted, detailed, or specified. The contractor shall comply with the true intent and meaning of the drawings and specifications taken as a whole. Standards of quality and performance indicated on the drawings or described in the specifications shall be understood to be minimum requirements only. When building codes or other legal authority demand higher standards, such legal requirements shall be met.
 - 1. Figures on the drawings indicate rough construction with no allowance for finish of any kind, except the dimensions of details of the finished work. The A/E will not be responsible for scaling the drawings.
 - 2. The drawings are generally diagrammatic and indicate nature of the installation. The specifications denote style and quality of material and workmanship. Where a conflict between the drawings and the specification arise, the Architect/Engineer shall be promptly notified. The Architect/Engineer will make the proper interpretation and his decision shall be final. Where a conflict exists between the General Provisions and the general conditions, the Architect/Engineer shall make the proper interpretation and his decision shall be final. When the term "or equal" or "approved equal" or "equivalent to" is used, it shall be construed to mean approval by the Architect/Engineer. Substitutions made without Architect/Engineer approval shall be removed and replaced without additional cost to the Owner.
- B. Where a conflict exists in the drawings or specification, the Contractor and/or Subcontractors shall prepare a "Request for Information (R.F.I.)" which identifies the

problem and proposes a solution for the Architect/Engineer to review. Do not proceed with that portion of the Work until the Architect/Engineer has issued or concurred with the resolution. All R.F.I's are to be submitted through the Construction Manager to the Architect/Engineer by the Contractor. The Contractor shall maintain a status register of all "Requests for Information." See specification Section 01 31 00.

1.15 OCCUPANCY PRIOR TO COMPLETION

- A. The Owner shall have the right to occupy portions of the site that are completed on or after the specified completion date (even though the Contractor may not have completed the entire Project). Such occupancy by the Owner will not release the Contractor or his bonding agency from liquidated damages, warranties, or guarantees and final completion of the Work in accordance with the Contract Documents.
- B. Whenever, in the opinion of Construction Manager, Work or any part thereof is in a condition suitable for use, and the best interest of OWNER requires such use, OWNER may take beneficial occupancy of and connect to, open for public use, or use the Work or such part thereof. In such case, OWNER will request Architect/Engineer to inspect the Work or part thereof, and issue a Certificate of Substantial Completion for that part of Work.
- C. Prior to date of Final Acceptance of the Work by OWNER, all necessary repairs or renewals in Work or part thereof so used, not due to ordinary wear and tear, but due to defective materials or workmanship or to operations of Contractor, shall be made at expense of Contractor, as required in General Conditions.
- D. Use by OWNER of Work or part thereof as contemplated by this section shall in no case be construed as constituting acceptance of Work or any part thereof. Such use shall neither relieve Contractor of any responsibilities under Contract, nor act as waiver by OWNER of any of the conditions thereof.
- E. OWNER may specify in the Contract Documents that portions of the Work, including electrical and mechanical systems or separate structures, shall be substantially completed on milestone dates prior to substantial completion of all of the Work. Contractor shall notify Architect/Engineer in writing when Contractor considers any such part of the Work ready for its intended use and substantially complete and request Architect/Engineer to issue a Certificate of Substantial Completion for that part of the Work.
- F. The date of completion and beginning of the warranty period shall be the date established by the Construction Manager in conjunction with the Architect-Engineer. This date will represent the completion date for all phases of the project, irrespective of early completion by some subcontractors of their work, or occupancy by the Owner prior to completion of some portions of the building. The Contractor will be notified by the Architect/Engineer, in writing, of this established date.

1.16 CONTRACTOR USE OF PREMISES

- A. The Contractor shall limit the storage of materials and equipment to areas indicated or designated by the Owner.

- B. At no time during the Work under the Contract shall the Contractor place, or cause to be placed, any material or equipment, etc, at any location that would impede or impair access to or from the present facilities without prior acknowledgment and written approval by the Owner.
- C. The Contractor shall cooperate with the Owner to the fullest extent in providing traffic control during the course of construction in order to provide a minimum of inconvenience to the Owner and public.
- D. The Contractor shall send proper notices, make all necessary arrangements, and perform all services required for the care and maintenance of all Owner and public utilities. The Contractor shall, during the construction period and until final acceptance of the Work as a whole by the Owner, assume all responsibility concerning the same for which the Owner may be liable.

1.17 MAINTENANCE

- A. Cost of maintenance of systems and equipment prior to Final Acceptance will be considered as included in prices bid and no direct or additional payment will be made therefore.

1.18 COORDINATION

- A. The Contractor will coordinate his work with the Owner's separate contractors at the site through the Construction Manager for the commencement of other scheduled work.

PART 2 - SPECIAL REQUIREMENTS

2.1 DESCRIPTION

- A. The Contractor and all subcontractors shall not discriminate against any employee or applicant for employment because of gender, age or non disqualifying handicap. Contractor shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, gender, national origin or age. Such action shall include, but not be limited to employment, upgrading, demotion or transfer, recruitment advertising; layoff or termination; rates of pay or other forms of compensation.
- B. The Contractor and all subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf; state that all qualified applicants will receive consideration for employment without regard to race, religion, color, gender, national origin, age or non disqualifying handicap.
- C. The Contractor will comply with all codes, Local, State, County, etc., and shall secure and pay all costs of all necessary permits and licenses, if any, and shall be responsible for the payment of all sales, excise, and other taxes levied on all items concerned with this Contract.
- D. The Contractor shall protect all his furnishings from damage and shall protect the Owner's Property from damage or loss arising in connection with this Contract. He shall make good any such damage, injury or loss caused by his operations, or those of his employees, to the satisfaction of the Owner. The Contractor shall confine his apparatus, storage of his materials, and the operations of his workmen to the limits indicated by the Construction Manager.

- E. The Contractor agrees that all Work shall be done by skilled and experienced mechanics and shall be done in a first-class workmanlike manner.

2.2 WORK UNDER THIS CONTRACT

- A. Work includes all material, labor, tools, expendable equipment, utility and transportation services, and all incidental items necessary to perform and complete in a workmanlike manner, the Work required for the Combined Construction, including General, Mechanical, and Electrical Work for:
 - 1. Construction of the seismic rehabilitation improvements, in addition to other elements as illustrated in the Drawings and as specified in this project manual.
 - 2. The Related Site Work.
 - 3. Any Awarded Alternates.
- B. Certain items of equipment and/or elements of the construction may be excluded from the Contract and, if so, are indicated on the Drawings and identified herein. Installation thereof may be performed while the Contractor's work progresses. The Contractor shall cooperate with the Owner to facilitate the expeditious installation of such items.
- C. Separate contracts awarded by the Owner are contemplated in the same area of work during the construction period established for this Agreement. All Contractors for this project shall have equal rights to use the roads, grounds, areas, etc. The separate Contractors will be responsible for their respective sales and use tax, bonds, insurance and permits in their bids. The General Contractor shall be responsible for the scheduling, supervision, and coordination of the separate contractors. Correspondence, shop drawings and other data received by the Owner from the separate contractors shall be transmitted to the General Contractor for coordination, scheduling and supervision. The General Contractor shall include any costs associated with the supervision, scheduling and coordination of the separate contractors in the preparation of his proposal.
- D. The Contractor, Prime Earthwork, Mechanical and Electrical Subcontractors shall provide responsible and competent supervision at the site during the course of construction.
 - 1. Full time General Contractor Superintendent, mechanical and electrical foremen, will be required as a minimum.
- E. Contractor's Payment Certificates shall be itemized. The site shall be complete for all associated work and costs.
- F. Project Construction Schedules shall clearly illustrate any proposed phasing by the Contractor.
- G. The Contractor shall visit the site for the project and shall fully acquaint himself with the conditions as they exist, so that he may fully understand the facility, difficulties, and restrictions attending the execution of the Work indicated in the Bid Documents.
- H. The Contractor shall be responsible for deferred submittals to the regulatory agencies as identified in the Project Manual and Drawings.

2.3 REFERENCE STANDARDS

- A. For products specified by association or trade standards, comply with requirements of standard, except where more rigid requirements are specified or are required by applicable codes.

2.4 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. The Contractor shall visit the site or the project and shall fully acquaint himself with the conditions as they exist, so that he may fully understand the facility, difficulties, and restrictions attending the execution of the Work.
- B. By submitting a proposal, the Contractor agrees that he has examined the site, the drawings, specifications, and Contract Documents and accepts without recourse, all visible site conditions and the proposed Contract Documents.

PART 3 - WORKING ON THE SITE**3.1 SECURITY**

- A. The Owner does not assume any responsibility, at any time, for the protection of the project or for loss of materials from the time that the Contract operations have commenced until the final acceptance of the Work by the Owner. If watchmen services are deemed necessary by the Contractor, such protection shall be provided by the Contractor at no additional expense to the Owner.

3.2 SITE UTILITIES

- A. Contractor shall provide and pay for temporary installations for all utilities required during the course of construction activities.

3.3 SITE ACCESS AND CONTRACTOR'S USE OF THE PREMISES

- A. Contractor access to the site, parking and staging area shall be as noted on the plans and/or as directed by the Construction Manager. Contractor shall field verify all existing conditions and account for the removal and replacement of obstacles in his bid.
- B. Certain facilities incorporate utility tunnels/ducts which can cross the access route to the construction site. The Contractor shall verify location and provide appropriate bridging or other protection to insure the integrity of the structure while construction traffic crosses or approaches the structure.
- C. The Contractor shall have complete use of the premises for execution of the Work within the limits indicated on the Drawings.
 - 1. Construction work shall never interrupt any service or utility to an occupied building. If a utility shut down is required it shall occur at a mutually agreed to time and day between contractor and Construction Manager of the effected building at least 72 hours prior to interruption.
 - 2. Scheduled utility interruptions will not occur during business hours. Contractor shall schedule all work not to disrupt normal business operations at no additional cost to the Owner.

- D. The Contractor shall at all times conduct operations as to insure the least inconvenience to the general public.
- E. Move stored products which interfere with operations, or pose security risks of users of adjacent properties or separate contractors.
- F. The Contractor shall maintain the highest degree of discipline and appropriate dress with staff on site and prevent conversations, outbursts, and gestures by anyone on the project. The Owner reserves the right to require the Contractor to expel individuals found to violate this directive from the site for the duration of the project. Drinking of alcoholic beverages, smoking, or use of chemicals, drugs, etc. will neither be allowed nor tolerated on the site.

PART 4 - GUARANTY-WARRANTY

- 4.1 The Contractor shall, and hereby does; warrant and guarantee that all Work performed under this contract will be free from defects of materials and workmanship for a period of twelve (12) months from the date of the final acceptance of this Work (Final Completion).
- 4.2 The Contractor agrees that he will, at his own expense, repair and replace all such defective work which becomes or is found to be defective during the term of this warranty. Should Contractor fail to repair or replace such defective material and/or workmanship within thirty (30) days after written notice from Owner, Owner may do the work necessary and Contractor hereby agrees to reimburse Owner for actual costs.
 - A. Contractor agrees to respond immediately for warranty issues of critical equipment, and or systems which are essential in the operation of the facility. Repair of such systems/ equipment shall be completed within 24 hours of service call.
- 4.3 The warranty period on any part of the work so repaired or replaced, shall be extended for a period of twelve (12) months from the date of such repair or replacement.
- 4.4 The guaranty will not apply to normal wear and tear or damage by acts beyond the Contractor's control.

PART 5 - MISCELLANEOUS PROVISIONS

- 5.1 ASBESTOS
 - A. By providing a Bid on this Project, all Contractors are certifying that all materials which they supplied for this Project are asbestos free, and in addition, that materials found to contain asbestos at a later date shall be removed and replaced with non asbestos containing materials at the sole expense of the responsible Contractor.
 - B. Contractor shall upon the completion of the project, complete an "Asbestos Affidavit" certifying that all materials which they supplied, or subcontracted for this Project are asbestos free to the best of their knowledge.
- 5.2 CONTRACTOR'S REPRESENTATIVES
 - A. The Contractor shall at all times be present at the Work in person or represented by a full time competent superintendent who shall supervise and direct the Work and shall be authorized by the Contractor to receive and fulfill instruction from the Architect/Engineer.

- B. The Contractor shall, at all times during working hours, be represented in all matters pertaining to his project by one fully competent and experienced general superintendent. Instructions and information given by the Architect/Engineer to the Contractors superintendent on the Work shall be considered as having been given to the Contractor. Contractor shall, within five (5) days of notification of intent to award a Contract for the Work, submit the assigned Superintendents Qualification Statement.
- C. The Contractors general superintendent shall have assistants with technical registration or equivalent construction engineering knowledge and experience in all technical disciplines affecting the Work or onsite operations for which the general superintendent lacks registration or equivalent experience and knowledge.
- D. The Contractors superintendent shall remain full time on the job until all of the Punch List items have been completed.
- E. In the event that the original Superintendent or Project Manager is terminated or leaves the firm, a full time replacement (40 hours per week) will be provided. Contractor to submit the replacement staff's resume and current workload to Owner and Architect/Engineer for review and approval prior to the proposed substitution staff commencing work. Owner and Architect/Engineer reserve the right to make final selection of replacement staff. Once selected a two week transition period will be allowed for the replacement personnel to re-assign other work to allow them to perform their new capacity on this project 40 hour per week.
- F. The District reserves the right to interview and approve the Contractor's Project Manager, Assistant Project Manager, General Construction Superintendents and Foreman and the right to reject them at any time at the District's sole discretion. The District also reserves the right to refuse replacement of the Contractor's Superintendent and Foreman if it believes the replacement will negatively affect the Contract.

5.3 ACCESSIBILITY OF VALVES, CONTROLS AND ELECTRICAL JUNCTION BOXES

- A. No equipment that has to be operated or maintained, such as valves, traps, controls, unions, motors, etc., shall be placed in any inaccessible location.
- B. Any dampers, controls, valves, expansion joints, electrical junction boxes, or other apparatus which must by necessity be located in walls, above ceilings etc., shall be provided with suitable access doors (fitted in a framed opening) which will permit proper operation and servicing and access as required by codes. All such access doors shall be included in the Contractors Bid.

END OF SECTION

SECTION 01 14 00

WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents and its specified programs and requirements apply to this Work.

1.2 SUMMARY

- A. Section includes Work restrictions applicable to the contract.

1.3 WORK RESTRICTIONS

- A. Any work done beyond lines and grades established by the Engineer pursuant to the plans or any extra work done without written authority of the Engineer, shall be considered as unauthorized work and no compensation will be allowed therefore. The Engineer shall have the authority to have such work removed and the area restored, and to deduct the cost thereof from money due the Contractor.
- B. Work in the Public Right of Way:
 - 1. The Contractor shall perform work within the public right-of-way or easements shown on the plans. The right to enter onto private property outside the public right-of-way or easement shall be obtained in writing from the property owner by the Contractor at the Contractor's expense. Mobilization and staging areas outside the City right-of-way shall be obtained at the Contractor's expense.
 - 2. The Contractor shall be solely responsible for damages to persons or property occurring during or as a result of the Contractor's entry onto private property outside the right-of-way or easement area.
 - 3. The Contractor shall defend and hold the City harmless from any and all claims, causes of action, demands or judgments resulting from the Contractor's entry onto private property outside the right-of-way or easement area.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 21 00**ALLOWANCES**

PART 1 - GENERAL**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer the necessity of selecting actual materials and equipment to a later date when direction will be provided to the Contractor.
- B. Allowance types include:
 - 1. Cash allowance(s).
 - 2. Quantity Allowance(s).
 - 3. Contingency allowance(s).

1.3 Inspecting and testing allowance(s).RELATED REQUIREMENTS

- A. Section 01 22 00 - Unit Price Measurement and Payment: Unit Price measurement and payment procedures.
- B. Section 01 29 00 - Payment Procedures: Additional payment procedures.
- C. Section 01 40 00 - Quality Requirements: for procedures governing the use of allowances for testing and inspecting.
- D. Pertinent Sections of other Divisions specifying work included in allowances, where applicable.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Allowance Authorization Form.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

- D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 ALLOWANCES – GENERAL

- A. Include each allowance as a separate line item in Schedule of Values.
See Section 01 29 00 for additional information.
- B. Contractor's related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
 - 1. Contractors Overhead and Profit are not part of this allowance and are part of the base scope of this project.
 - 2. All costs relating to installation of allowance items shall be deemed included in the bid.
 - 3. All portion of the allowance not used shall be returned to the City. The allowance shall be exceeded only by written Change Order with the written approval of the City.
- C. Draw on allowance(s) only as directed by Architect for Owner's purposes and only by an executed "Allowance Authorization Form" that indicate amounts to be charged to the allowance.

1.7 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site , less applicable taxes.
- B. Costs Not Included in Cash Allowances, Included in Contract Price: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing. These costs shall be included in the Contract Price.
- C. Architect Responsibilities:
 - 1. Consult with Contractor for consideration and selection of scope.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.
- D. Contractor Responsibilities:
 - 1. Assist Architect in selection of products, suppliers, and installers.
 - 2. Obtain proposals from suppliers and installers and offer recommendations.

3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- E. Funds will be drawn from the Cash Allowance only by written Allowance Authorization.
- F. At closeout of Contract, funds remaining in Cash Allowance will be credited to Owner by Change Order. Work exceeding the allowance funds will be credited to the Contractor by Change Order.
1. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds exceeding the allowance funds.

1.8 CONTINGENCY ALLOWANCE

- A. Costs Included in Allowance: Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site, less applicable taxes. Costs Not Included in Cash Allowances, Included in Contract Price: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing. These costs shall be included in the Contract Price.
- B. Funds will be drawn from the Contingency Allowance only by written Allowance Authorization.
- C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order. Work exceeding the contingency funds will be credited to the Contractor by Change Order.
1. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds exceeding this Contingency Allowance.

1.9 QUANTITY ALLOWANCE

- A. Costs Included in Allowance: Contractor's costs for products, installation, labor, insurance, payroll, taxes, bonding, equipment rental.
- B. Costs Included in Allowance: Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site, less applicable taxes.
- C. Costs Not Included in Allowance, Included in Contract Price: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; Contractor's Overhead and Profit. These costs shall be included in the Contract Price.
- D. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes,

- E. bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- F. Funds will be drawn from the Quantity Allowance only by written Allowance Authorization.
- G. At closeout of Contract, funds remaining in Quantity Allowance will be credited to Owner by Change Order. Authorized Work exceeding the Quantity Allowance will be credited to the Contractor by Change Order.
 - 1. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds exceeding this Quantity Allowance.

1.10 INSPECTING AND TESTING ALLOWANCES

- A. Costs Included in Inspecting and Testing Allowances: Cost of engaging an inspecting or testing agency; execution of inspecting and tests; and reporting results.
- B. Costs Not Included in the Inspecting and Testing Allowances, Included in Contract Price or Paid by Contractor:
 - a. All these costs shall be included in the Contract Price. Costs of incidental labor and facilities required to assist inspecting or testing agency.
 - b. Costs of testing services used by Contractor separate from Contract Document requirements.
- 2. All these costs shall be Paid by Contractor.
 - a. Costs of retesting upon failure of previous tests as determined by Architect.
- C. Payment Procedures:
 - 1. Submit one copy of the inspecting or testing firm's invoice with next application for payment.
 - 2. Pay invoice on approval by Architect.
- D. Differences in cost will be adjusted by Change Order, except cost of retesting upon failure which shall be borne by Contractor without compensation.

1.11 ALLOWANCE PROCEDURES

- A. Include the Allowance as an individual line item in the Schedule Of Values as specified in Section 01 29 00. Identify by Section Number of this Section 01 21 00 and name and number of the Allowance as scheduled in this section.
- B. Identify existing conditions requiring work. Request information or interpretation from Architect in accordance with Section 01 31 00.
- C. Perform work as directed subject to Force Account procedures specified in the General Conditions. All work shall be observed and tags signed daily by the Inspector Of Record.

- D. Following completion of given unit of work, submit request for Allowance Authorization in the form of a Change Order Request, as specified in Section 01 22 00.
- E. Following approval of pricing by Architect, Architect will prepare Allowance Authorization for the approved amount. Contractor and Inspector Of Record shall countersign each Allowance Authorization. Architect will distribute copies.
- F. Include the approved amount as a draw on the Contingency Allowance balance in the next Application For Payment and attach copy of approved Allowance Authorization(s).
- G. Do not include draws on the Contingency Allowance in Applications For Payment without approval of the Architect in the form of a written Allowance Authorization. Applications with unauthorized draws will be returned by the Architect as otherwise specified for improper submittals.
- H. Allowance Authorizations for draws on the Contingency Allowance are not Change Orders and do not affect the Contract Sum or Contract Time.

I. SELECTION AND PURCHASE

- 1. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- 2. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- 3. Purchase products and systems selected by Architect from the designated supplier.

1.12 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 - 3. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
 - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 - 2. No change to Contractor's indirect expense is permitted for selection of higher- or

- 3. lower-priced materials or systems of the same scope and nature as originally indicated.
- C. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 ALLOWANCES SCHEDULE

- A. Cash Allowance No. 1: Provide overall allowance of ten-thousand dollars (\$10,000.00) for 300 sf of concrete slab repair or replacement. Locations to be confirmed with city after floor covering removal. Worst cases are indicated in annex, see Drawings for more information.

END OF SECTION

SECTION 01 22 00

UNIT PRICE MEASUREMENT AND PAYMENTS

PART 1 - GENERAL**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 SUMMARY

- A. This section establishes procedures and submittal requirements for unit prices or lump sum items, applications for payment and change order processing.

1.3 UNIT PRICES

- A. In the event that work and/or materials or equipment are required to be furnished to a greater or lesser extent than is required by the Base Bid, such work and/or materials or equipment shall be furnished in greater or lesser quantities in accordance with the unit prices quoted in the Bid Schedule.
- B. For work governed by unit prices, as listed in the Bid Schedule, the City's Representative will compute all quantities of work performed by the Contractor, or of materials delivered to the site, for payment purposes.
- C. The contractor shall assist the City's Representative in the taking of measurements by providing all equipment, workers, and survey crews as required to measure quantities in accordance with the provisions for measurement specified herein.
- D. Full compensation for all expenses involved in conforming to the requirements for measuring materials shall be considered as included in the unit or lump sum prices paid for the materials being measured, and no additional compensation will be permitted therefor.
- E. Final payment for work governed by unit prices will be made for the actual number of units and quantities which are incorporated in or made necessary by the work included in this contract.

1.4 APPLICATIONS FOR PAYMENT

- A. Submittal Procedure:
 - 1. The required Cost Breakdown (Section 9-2 of the SSPWC) shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.
 - 2. Using the monthly Progress Payment Work Sheet (sample attached hereto), the Contractor shall fill in the "Current Quantity" and "Current Amount" columns,

including executed change orders, for each activity listed and submit the report to the City's Representative for his review. The sum total weighted percent- complete for both labor and material will represent the amount of payment, along with any executed change orders as listed on the Progress Payment Worksheet. The Contractor will include all support data as deemed necessary by the City.

3. After review and when agreement is reached, the Contractor will submit four (4) copies of the itemized applications typed on the Progress Payment Work Sheet.
4. The City retains the right to withhold the initial progress payment until the Contractor submits an acceptable Project Progress Schedule (see Section 01300, paragraph 1.02).

B. Stored Materials

1. Payment request may include value of acceptable equipment and materials not yet incorporated into the Work, provided that all of the following conditions are met:
 - a. Such acceptable equipment and materials are either furnished and delivered to the site or furnished and stored for use on the project.
 - b. Title to stockpiled material shall be vested in the City at time of delivery to the site or warehouse.
 - c. The Contractor shall obtain a negotiable warehouse receipt, endorsed over to the City, for material stored in an off-site warehouse. No payment will be made until endorsed receipts are delivered to the City's Representative.
 - d. Stockpiled material shall be available for inspection by the City's Representative.
 - e. After delivery of material, if any inherent or acquired defects are discovered, defective material shall be removed and replaced with suitable material at the Contractor's expense.
 - f. At his expense, the Contractor shall insure material against theft, fire, vandalism, and malicious mischief and shall deliver policy or certificate of such insurance to the City's Representative, naming the City as insured. Insurance shall not be cancelable for at least 45 days and cancellation shall not be effective until certificate thereof is given to the City.
 - g. Contractor shall submit bills of sale or invoices for all items on which he is requesting payment.
 - h. Nothing in the above seven (7) conditions shall relieve the Contractor of his responsibility for incorporating material into the work in conformance with the Contract Documents.
 - i. Maximum payment for stored products will be cost of item plus applicable taxes. The Contractor shall submit supplier's invoice and receipt as evidence of purchase and payment. Such payment shall in no case exceed bid price for item of work for which equipment or material is furnished.

C. Timing of Progress Payments

1. The closing date for each monthly pay period will be established by the City at the commencement of work.
2. Final payment shall be in accordance with the Supplementary General Provisions after all requirements of the Specification Section 01700 have been met.

1.5 CHANGE ORDERS

- A. Changes may be initiated by the City by a Proposal Request (PR). The PR will outline alterations, deviations, additions, or deletions to the work which may or may not entail increases or decreases in the cost or time of performance.
- B. Within 15 days from the date of the PR, the Contractor shall submit his cost proposal together with all supporting documentation for the change or extra work, including changes in time required to perform the proposed additional work.
- C. The Contractor shall not proceed with changes or extra work until after receipt of a formal Change Order or an Order to Proceed with Extra Work authorized by the City.
- D. In emergency situations and under certain other circumstances, the City's Representative may direct the Contractor, in writing, to perform changes or extra work via an "Order to Proceed with Extra Work" (OTPWEW) as provided for in the "General Conditions." The contractor shall promptly comply with such work demanded of him.
- E. OTPWEW forms submitted to Contractor shall be deemed to be authorizations to proceed in lieu of formal change orders.

PART 2 - PRODUCTS (NOT USED)**PART 3 - EXECUTION (NOT USED)****END OF SECTION**

SECTION 01 23 00 ALTERNATES

PART 1 - GENERAL**1.1 WORK INCLUDED**

- A. This Section identifies each Alternate and describes basic changes to the Work only when that Alternate is made a part of the Work by specific provision in the Agreement.
- B. The Lump Sum Base Bid and Alternates shall include the costs of all supporting elements required, so that the combination of the Lump Sum Base Bid and any Alternates shall be complete. The scope of Work for all Alternates shall be in accordance with applicable Drawings and Specifications.
- C. Except as otherwise specifically provided by Owner, the Work described in Alternates shall be completed with no increase in Contract Time.
- D. This Section includes only the non-technical descriptions of the Alternates. Refer to the referenced and applicable Sections of the Specifications for technical descriptions of the Alternates.
- E. Coordinate related Work and modify surrounding Work as required to properly and completely integrate the Alternates into the Work.
- F. The Lump Sum Base Bid shall include all work shown except work described as Alternates.
- G. The Alternates described below are intended to: allow the Owner to identify the cost of a portion of the work for funding purposes, and provide the Owner flexibility to adjust the project scope to suit funds available.
- H. The Owner reserves the right to award none, any one or more selected in any order, or all of the Alternates in combination with the work covered by the Lump Sum Base Bid. Alternates will not be awarded without awarding the Lump Sum Base Bid.
- I. The Owner reserves the right to determine the low bid as the Lump Sum Base Bid alone or the sum of the Lump Sum Base Bid and any combination of Alternates it chooses to award. The bid documents will identify the evaluation method to be used for choosing the alternates for purposes of identifying the low bid
- J. Each Alternate is intended to cover all of the work required for a complete finished job.
- K. All Alternates are either "additive" or "deductive" or "No Change" (as appropriate) to the Lump Sum Base Bid. The amounts shall be quoted in the appropriate spaces provided on the form for the Bid for Lump Sum Contracts.
- L. Failure to either quote an amount; select the "No Change" option or the insertion of the words "no bid," "none" or words of similar import, will be considered as not completing the Bid for Lump Sum Contract and may constitute disqualification of the entire bid at Owner's discretion
- M. The Base Bid and the Alternates are exclusive in their scope of work. There is no overlap between or among the Base Bid and Alternates. The cost of any item of work shall be included

only once, in the Base Bid or in the Alternates.

1.2 WORK INCLUDED

- A. Alternates shall be as scheduled on the Drawings. In case of discrepancy between the following and the schedule on the Drawings, Owner's Representative shall determine correct interpretation.
- B. Alternate 1: provide new ceiling fan to improve air circulation in the naturally ventilated computer room. See architectural reflected ceiling plan, mechanical, and electrical drawings for additional information.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 25 00 SUBSTITUTION**PROCEDURES**

PART 1 - GENERAL**1.3 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.4 SUMMARY

- A. This section establishes procedures for the consideration of proposed substitutions.
- B. It is not the intent of the Specifications to exclude the use of any meritorious product of equal value. To this purpose, the successful bidders may, within 35 calendar days after the Notice to Proceed, propose a substitution of a material or apparatus other than that specified.
- C. Proposal shall be in writing from the General Contractor on Attachment 3 of the Special Provisions. Provide all information required by the City's Representative to evaluate the proposed substitution. The burden of proof of equality lies with the Contractor.
- D. The City's Representative shall be sole judge as to the merits of the proposed substitute and reserves the right to accept or reject it based on price, quality, past performance or delivery, etc.
- E. Substitution proposals received after 35 days after Notice to Proceed will not be accepted. Proposed substitutions that increase the cost of Work or Contract Time will not be accepted.

1.5 RELATED SECTIONS

- A. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
- B. Section 01 81 13 "Sustainable Design Requirements" for specific product and material requirements specified by CAL-GREEN.
- C. Divisions 02 through 32 Sections for specific requirements and limitations for substitutions.

1.6 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.7 SUBMITTALS

- A. Substitution Requests: Present each substitution individually. Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 1. Substitution Request Form: Use facsimile of form provided in the Project Manual.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of Architect/Engineers and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES 2010 California Building Code (CBC).
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the

overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

- k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. City's Action: If necessary, City will request additional information or documentation for evaluation within **seven** days of receipt of a request for substitution. City will notify Contractor of acceptance or rejection of proposed substitution within **15** days of receipt of request, or **seven** days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if City does not issue a decision on use of a proposed substitution within time allocated.

1.8 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.9 PROCEDURES

- A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.
- B. Adjacent materials have been designed and detailed to accommodate the established standard manufacturer's products. If a material or product is approved as a substitution, the Contractor shall design and detail all changes in all adjacent materials necessary to accommodate the substituted products, shall submit such changes for review by the City's Representative, shall pay for all necessary changes to the Contract Documents to accommodate the selected products, and when accepted shall make such changes to the Work at no cost to the City.

PART 2 - PRODUCTS

2.1 LIMITATIONS ON SUBSTITUTIONS SUBMITTED PRIOR TO THE RECEIPT OF BIDS

- A. The Bid shall be based upon the standards of quality established by those items of equipment and/or materials which are indicated in the Contract Documents, including those products designated in the Notice Inviting Bids as "City Standards".
- B. City will consider requests for substitutions of specified equipment and/or materials only when requests are received by City within fourteen (14) days prior to the date established for the receipt of bids, in conformance with Public Contract Code Section 3400. Do not request substitutions for products designated in the Notice Inviting Bids as "City Standards".
- C. City will consider a substitution request only if request is made in strict conformance with provisions of this Section. Request shall be fully responsive to all product requirements of the specified product, including those requirements noted in the specification section in the article titled PRODUCTS.
- D. Burden of proof of merit of requested substitution is the responsibility of the proposer requesting the substitution.
- E. It is the sole responsibility of the proposer requesting the substitution to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.
- F. When substitution is not accepted, provide specified product.
- G. Substitute products shall not be included within the bid without written acceptance by Addendum.
- H. No material changes permitted after the bid opening date. All alternate manufacturers and/or materials shall be submitted and approved in writing by the City prior to bid due date, except as otherwise provided in this section. Failure to comply with this requirement is grounds for disqualification of substitution.

2.2 LIMITATIONS ON SUBSTITUTIONS SUBMITTED AFTER THE AWARD OF THE CONTRACT

- A. The Contract is based upon the standards of quality established by those items of equipment and/or materials which are indicated in the Contract Documents, including those products designated in the Notice Inviting Bids as "City Standards".
- B. City will consider substitution requests received after the established date of the receipt of bids or contract award only when one or more of the following conditions are met and documented:
 - 1. Specified item fails to comply with regulatory requirement.
 - 2. Specified item is no longer manufactured.
 - 3. Specified item, through no fault of the Contractor, unavailable in the time frame required to meet project schedule.
 - 4. Specified item, through subsequent information disclosure, will not perform properly or fit in designated space.

5. Manufacturer declares specified product to be unsuitable for use intended or refuses to warrant installation of product,
 6. Substitution would be, in the sole judgment of the City's Representative, a substantial benefit to the City in terms of cost, time, energy conservation, or other consideration of merit.
- C. Notwithstanding other provisions of this section and the above, the City may consider a request for substitution after the date of the receipt of bids or contract award, if in the sole discretion of the Architect, there appears to be just cause for such a request. The acceptance of such a late request does not waive any other specified requirement.
- D. Architect will consider a request for substitution after the date of the receipt of bids or contract award only if request is made in strict conformance with provisions of this section. Request shall be fully responsive to all product requirements of the specified product, including those requirements noted in this section in the article titled PRODUCTS.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
1. Review of shop drawings does not constitute acceptance of substitutions indicated or implied on shop drawings.
 2. Substitutions will not be considered when requested or submitted directly by subcontractor or supplier.
- F. Contractor's failure or inability to pursue the work promptly or coordinate activities properly shall not establish a cause for consideration of Substitutions.
- G. Burden of proof of merit of requested substitution is the responsibility of the Contractor.
1. It is the sole responsibility of the Contractor to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.
- H. When substitution is not accepted, provide specified product.
- I. Substitute products shall not be provided without written acceptance by Change Order.

2.3 SUBSTITUTIONS – CHANGES REQUESTED BY THE CONTRACTOR

- A. General. The General Contractor shall submit to the Engineer, in writing, requests for changes in products, materials, equipment, and construction methods required by the contract documents. These requests for changes will be received and considered by the Engineer when the Contractor has demonstrated and/or indicated in writing that:
1. The request does not require extensive revision to the contract documents;

2. That the proposed changes are in keeping with the general intent of the contract documents; and
 3. The request is timely, fully documented and properly submitted.
- B. In addition, the requests for changes will only be considered if they do not impair, in any manner, essential project functions or characteristics, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, or design and safety standards. These requests for changes shall be submitted only during the substitution period stipulated in the contract documents, or within 15 calendar days of the Notice to Proceed date if no substitution period is stipulated. All requests received more than 15 calendar days after the Notice to Proceed date or after the stipulated substitution period will be rejected.
- C. It is not the intent of these Specifications to exclude the use of any meritorious product of equal value, however the burden of proof of equality lies with the Contractor. Proposed substitutions that increase the cost of Work or Contract Time will not be accepted.
- D. Substitution requests shall meet the following requirements:
1. The Contractor shall present each substitution request individually. If the proposed substitute is found to be not acceptable, then the specified item shall be supplied.
 2. For any substitution request to be considered, it must be submitted in six copies, the first page of each shall be a completed Attachment 3, "MATERIAL OR PRODUCT OR METHOD SUBSTITUTION REQUEST. Attachment 3 (located in the Attachments section at the end of the Special Provisions) must be filled out within its entirety. The Contractor's failure to do so will result in immediate return of the request to the Contractor without the City's review.
 3. If the City deems the proposed substitute to be acceptable, authorization for its inclusion in the Work will be issued as a Change Order with appropriate action.
 4. The Contractor's failure to order materials and/or equipment in a timely manner will not constitute justification for substitution.
 5. A substitution request constitutes a representation that the Contractor:
 - a. Has investigated the proposed product/method and determined that it meets or exceeds the quality level of the specified item;
 - b. Will provide the same warranty for the substitution as for the specified item;
 - c. Will coordinate installation and make changes to other work which may be required for the work to be completed with no additional cost to the City;
 - d. Waives claims for additional cost or time extension which may subsequently become apparent;
 - e. Waives claims and assume responsibilities at no cost to the City to resolve any conflict as a result of the substitution; and

- f. Will reimburse the City for review or redesign services associated with re-evaluation process.
- 6. Substitutions will not be considered without separate written request when they are indicated or implied on shop drawing or product data submittals. Substitutions will also not be considered when acceptance will require untimely revisions to the Contract Documents.
- E. No substitutions shall be incorporated in the project without the Architect/Engineer's written approval. The Engineer will render his/her written decision not later than 35 calendar days after receipt of any proposed substitutions.
 - 1. The City may require the Contractor to furnish a written warranty, with adequate safeguards to the City, assuring satisfactory performance of a proposed substitute item or system for a stated minimum period of time, usually one year.
 - 2. The Contractor's failure to submit a proposed substitution for approval in the manner described above, and within ample time before scheduled installation, shall be deemed sufficient cause for the Engineer's disapproval of any substitution otherwise proposed.
 - 3. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
 - 4. Changes in the Plans and Specifications, requested in writing by the Contractor, which do not materially affect the Work and which are not detrimental to the Work or to the interests of the City, may be granted by the Architect/Engineer to facilitate the Work, when approved in writing by the Architect/Engineer.

2.4 CITY AND ARCHITECT/ENGINEER'S REVIEW OF SUBSTITUTIONS

- A. The City's Representative will accept or reject proposed substitutions within thirty-five (35) days of receipt of request.
- B. If a decision on a substitution cannot be made within the time allocated, the product specified shall be used.
- C. No extension of bid period or contract time will be made for substitution review.
- D. Final acceptance of a substitution submitted prior to the date established for the receipt of bids will be in the form of an Addendum.
- E. Final acceptance of a substitution submitted after the award of the contract will be in the form of a Change Order.
- F. City' Representative, in consultation with the Architect/Engineer shall be the judge of the acceptability of the proposed substitution. City's decision on substitution requests is final and does not require documentation or justification.
- G. Rejection Of Substitution Request: Any of the following reasons shall be cause for rejection, all as determined by the City' Representative;
 - 1. Vagueness or incompleteness of Substitution submittal,

2. Insufficient data, failure to meet specified requirements, (including warranty).
 3. Qualification of the requirements of the Substitution Form, including modification of any of the requirements.
- H. The Architect/Engineer will notify Contractor in writing of decision to accept, accept as noted, or not accept the request for substitution.
- I. Substitute products shall not be ordered or installed without written acceptance.
- J. City shall receive full benefit of any cost reduction as a result of any request for substitution.
- K. Provide submittals for accepted substitutions in accordance with specified requirements of the respective section and provisions of Section 01 33 00.
1. An accepted substitution is not acceptable as a submittal. Provide separate submittals for each review.

2.5 SUBSTITUTIONS

- A. City Standard systems, products, and/or materials are as follows:

1. LANDSCAPE/IRRIGATION SYSTEM:
2. LIFE SAFETY SYSTEMS:
3. NETWORK CABLING INFRASTRUCTURE:

NOTE: SPECIFIED SYSTEMS AND PRODUCTS NOT DEFINED AS CITY STANDARDS:

- B. Submit separate RFS for each product and support each request with:
1. Product identification
 2. Manufacturer's literature
 3. Samples, as applicable
 4. Name and address of similar projects on which product has been used, and date of installation
 5. Name, address and telephone number of manufacturer's representative or sales engineer
- C. Where required, itemize a comparison of the proposed substitution with product specified and list significant variations. If variation from product specified is not pointed out in submittal, variation will be rejected even though submittal was favorably reviewed.
- D. State whether the substitute will require a change in any of the Contract documents (or provisions of any other direct contract with City for work on the Project) to adapt the design of the proposed substitute, and whether or not incorporation or use of the

substitute in connection with Work is subject to payment of any license fee or royalty. Submit data relating to changes in construction schedule.

- E. All variations of the proposed substitute from that specified will be identified in the RFS and available maintenance, repair and replacement service will be indicated.
- F. Include accurate cost data comparing proposed substitution with product and amount of net change in Contract price, including but not limited to, an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors effected by the resulting change, all of which will be considered by City's Representative and Architect/Engineer in evaluating the proposed substitute. City's Representative and Architect/Engineer may require Contractor to furnish additional data about the proposed substitute.
- G. Substitutions will not be considered for acceptance when:
 - 1. They will result in delay meeting construction milestones or completion dates.
 - 2. They are indicated or implied on submittals without formal request from Contractor.
 - 3. They are requested directly by subcontractor or supplier.
 - 4. They are requested due to failure by the Contractor to order materials or equipment in a timely manner.
 - 5. Acceptance will require substantial revision of Contract Documents.
 - 6. They disrupt Contractor's job rhythm or ability to perform efficiently.
- H. Substitute products shall not be ordered without written acceptance of City's Representative and Architect/Engineer. No substitutions shall be incorporated in the project without written approval of the City's Representative.
- I. City's Representative and Architect/Engineer will determine acceptability of proposed substitutions and reserve right to reject proposals due to insufficient information.
- J. Accepted substitutions will be evidenced by a change order or Supplemental Instruction. All Contract requirements apply to Work involving substitutions.

2.6 CONTRACTOR'S REPRESENTATION AND WARRANTY

- A. Requests constitute a representation and warranty that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds, in all respects, specified product
 - 2. Will provide the same warranty for substitution as for specified product
 - 3. Will coordinate installation and make other changes, which may be required for Work to be complete in all respects

4. Waives claims for additional costs and delays, which may subsequently become apparent
5. Will compensate City for additional redesign costs associated with substitution
6. Will be responsible for Construction Schedule slippage due to substitution
7. Will be responsible for Construction Schedule delay due to late ordering of available specified products caused by requests for substitution, which are subsequently rejected by City's Representative.
8. Will compensate City for all costs; including extra costs of Contract, extra cost to other contractors, and any claims brought against City, caused by late requests for substitutions or late ordering of products.

2.7 CITY'S REPRESENTATIVE'S AND ARCHITECT/ENGINEER'S DUTIES

- A. Review Contractor's Request for Substitution (RFS) with reasonable promptness.
 1. Architect/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect/Engineer will notify Contractor of acceptance or rejection of proposed substitution within 35 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Substitution Request Form.
 - b. Use product specified if Architect/Engineer does not issue a decision on use of a proposed substitution within time allocated.
- B. Notify Contractor in writing of decision to accept or reject requested substitution.

2.8 COST OF REVIEW

- A. City's Representative and Engineer will record time required in evaluating substitutes proposed or submitted by Contractor. Whether or not City's Representative or Architect/Engineer accepts the substitute item so proposed or submitted by Contractor, Contractor shall reimburse OWNER for the charges of Architect/Engineer and Construction Manager for evaluating each such proposed substitute item.
- B. The City reserves the right to waive the requirement of paragraph A above.

PART 3 - EXECUTION

3.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 1. Conditions: Architect/Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not

satisfied, Architect/Engineer will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution meets applicable CAL-GREEN requirements.
 - b. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - c. Substitution request is fully documented and properly submitted.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - f. Requested substitution is compatible with other portions of the Work.
 - g. Requested substitution has been coordinated with other portions of the Work.
 - h. Requested substitution provides specified warranty.
 - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Substitutions submitted during the Bid Period will be required to include complete product data comparing and demonstrating equivalent performance, quality, warranty, and other salient characteristics of the specified products. Substitutions will be considered by the Owner after award of the Contract only if they result in sufficient cost or time savings to the Owner over the item specified, after the impact of additional cost and time to other elements of construction and the cost of redesign is taken into account.
1. Conditions: Architect/Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect/Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution meets applicable CAL-GREEN requirements.
 - b. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect/Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - c. Requested substitution does not require extensive revisions to the Contract Documents.

- d. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- e. Substitution request is fully documented and properly submitted.
- f. Requested substitution will not adversely affect Contractor's construction schedule.
- g. Requested substitution has received necessary approvals of authorities having jurisdiction.
- h. Requested substitution is compatible with other portions of the Work.
- i. Requested substitution has been coordinated with other portions of the Work.
- j. Requested substitution provides specified warranty.
- k. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.3 RELATED SECTIONS

- A. General Conditions and Special Provisions.
- B. Section 01 25 00 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after Contract award.

1.4 MINOR CHANGES IN THE WORK

- A. Architect/Engineer will issue through City's Representative supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on "Architect/Engineer's Supplemental Instructions."

1.5 GENERAL

- A. Any change in scope of work or deviation from Drawings or Specifications shall be accomplished only when authorized in writing by City's Representative.
- B. Changes in scope of Work or deviation from Drawings or Specifications may be initiated only by the Contractor or the City's Representative.
 - 1. Contractor may initiate changes by submitting Requests for Information (RFI), Requests for Substitution (RFS), Notice of Concealed or Unknown Conditions, or Notice of Hazardous Waste Conditions.
 - a. RFI's shall be submitted to seek clarification of Contract Documents.
 - b. RFS's shall be submitted in accordance with appropriate provisions of General Conditions to request substitution of materials or methods of execution.
 - c. Notices of Changes shall be submitted in accordance with appropriate provisions of General Conditions.

- d. Notices of Hazardous Waste Conditions shall be submitted in accordance with appropriate provisions of General Conditions.
2. Contractor shall be responsible for its costs to implement and administer RFI's and RFS's throughout the Contract duration. Regardless of the number of RFI's submitted, Contractor will not be entitled to additional compensation. Contractor shall be responsible for both CITY's and Architect/Engineer's administrative costs for answering its RFI's where the answer could reasonably be found by reviewing the Contract Documents, as determined by CITY; such costs will be deducted from progress payments.
3. Architect/Engineer may initiate changes by issuing a Supplemental Instruction (which shall require written approval of the City's Representative).
4. City's Representative may initiate changes by issuing Requests for Proposal (RFP) to Contractor. Such RFP's will detail all proposed changes in the Work and request a quotation of changes in Contract Sum and Contract Times from Contractor.

1.6 PROCEDURE

- A. Contractor shall submit RFI to City's Representative. Contractor shall reference each RFI to an activity on its Progress Schedule and note the time criticality of the RFI, indicating the time in which the response is required. Architect/Engineer shall respond by issuing a Clarification.
 1. If Contractor is satisfied with the Clarification and does not request change in Contract Sum or Contract Times, then the Clarification shall be executed without a change.
 2. If Contractor believes that the Clarification results in change in Contract Sum or Contract Times, Contractor shall notify City's Representative who may then deny request for change or issue RFP.
- B. Contractor shall submit RFS to City's Representative who may then deny request or issue RFP.
- C. Contractor shall submit Notices of Changes to resolve unanticipated conditions incurred in the execution of the Work. Procedures in Paragraph 9.6 of General Conditions shall be followed. If City's Representative determines that a change in Contract Sum or contract Times is justified, City's Representative shall issue RFP.
- D. Contractor shall submit Notices of Hazardous Waste Conditions to resolve problems regarding hazardous materials encountered in the execution of the Work. Procedures in Paragraph 4.17 of General Conditions shall be followed. If City's Representative determines that a change in Contract Sum or contract Times is justified, City's Representative shall issue RFP.
- E. Architect/Engineer shall issue Supplemental Instruction to the City's Representative who shall forward onto Contractor. Contractor shall not proceed with Supplemental Instruction until City's Representative approves it in writing.

1. If Contractor is satisfied with Supplemental Instruction and does not request change in Contract Sum or Contract Times, then Supplemental Instruction shall be executed without a Change Order.
 2. If Contractor believes that Supplemental Instruction results in change in Contract Sum or Contract Times, Contractor shall notify City's Representative. City's Representative may then deny request for change, cancel Clarification or issue RFP.
- F. Responses by recipients shall be within within fifteen (15) working days.
- G. Contractor shall respond to City's Representative's RFP within fifteen (15) working days by furnishing a complete breakdown of costs of both credits and extras; itemizing materials, labor, taxes, overhead and profit. Subcontract work shall be so indicated.
- H. Upon approval of RFP, City's Representative will issue a Change Order directing Contractor to proceed with extra work.
- I. Payment shall be made as follows:
1. Change Orders which increase Contract Sum or Contract Times shall be included in next Contract Modification Form, signed by City's Representative, accepted by Contractor.
 2. Payment shall be made for Change Order work along with other work in progress payment following completion of Change Order work. Partial completion of Change Order work shall be paid for that part completed during the period covered by the monthly payment request.

1.7 COST DETERMINATION

- A. Total cost of extra work shall be the sum of labor costs, material costs, equipment rental costs and specialist costs as defined herein plus overhead and profit as allowed herein. This limit applies in all cases of claims for extra work, whether calculating Change Orders, RFIs, or calculating claims of all types, and applies even in the event of fault, negligence, strict liability, or tort claims of all kinds, including misrepresentation, concealment, strict liability or negligence. No other costs arising out of or connected with the performance of extra work, of any nature, may be recovered by Contractor. No special, incidental or consequential damages may be claimed or recovered against CITY, its representatives or agents, whether arising from breach of contract, negligence or strict liability, unless specifically authorized in the Contract Documents.
- B. Overhead and Profit:
1. Overhead shall be as defined in General Conditions.
- C. Taxes:
1. Alameda County Sales Tax should be included.
 2. Federal and Excise Tax shall not be included.

- D. Owner Operated Equipment
- E. When Owner-operated equipment is used to perform extra work, Contractor will be paid for equipment and operator as follows:
 - 1. Payment for equipment will be made in accordance with General Conditions.
 - 2. Payment for cost of labor will be made at no more than rates of such labor established by collective bargaining agreements for type of worker and location of work, whether or not owner-operator is actually covered by such an agreement.

1.8 COST BREAKDOWN

- A. Labor - Contractor will be paid cost of labor for workers (including fore persons when authorized by City's Representative) used in actual and direct performance of extra work. Labor rate, whether employer is Contractor, subcontractor or other forces, will be sum of following:
 - 1. Actual Wages - Actual wages paid shall be limited to the applicable prevailing wage rate for the classification of labor actually and reasonably necessary to complete a Change. Prevailing wage rates shall be deemed to include all direct payment of wages to workers completing a Change and all employer burdens thereon, including without limitation all employer payments to or on behalf of workers for insurance (including without limitation, Commercial General Liability, Auto Liability and Workers Compensation) health and welfare, pension, vacation and other similar labor burdens.
 - 2. Labor surcharge - Payments imposed by CITY, County, State and Federal laws and ordinances, and other payments made to, or on behalf of, workers, other than actual wages as defined in subparagraph 1 above, such as taxes and insurances. Labor surcharge shall be as set forth in California Department of Transportation official labor surcharges schedule which is in effect on date upon which extra work is accomplished and which schedule is incorporated herein by reference as though fully set forth herein.
- B. Material - Only materials furnished by Contractor and necessarily used in performance of extra work will be paid for. Cost of such materials will be cost, including sales tax, to purchaser (Contractor, subcontractor or other forces) from supplier thereof, except, as the following are applicable:
 - 1. If cash or trade discount by actual supplier is offered or available to purchaser, it shall be credited to CITY notwithstanding fact that such discount may not have been taken.
 - 2. For materials salvaged upon completion of extra work, salvage value of materials shall be deducted from cost, less discount, of materials.
 - 3. If cost of a material is, in opinion of City's Representative, excessive, then cost of material shall be deemed to be lowest current wholesale price at which material is available in quantities concerned delivered to Site, less any discounts as provided in subparagraph 1 above.

- C. Equipment Rental: For Contractor or subcontractor-owned equipment, payment will be made at the lesser of actual rental rates or the rental rates listed for equipment in California Department of Transportation official equipment rental rate schedule which is in effect on date upon which extra work is accomplished and which schedule is incorporated herein by reference as though fully set forth herein. For rented equipment, payment will be made based on actual rental invoices. Equipment used on extra work shall be of proper size and type. If, however, equipment of unwarranted size or type and cost is used, cost of use of equipment shall be calculated at rental rate for equipment of proper size and type. Rental rates paid shall be deemed to cover cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Unless otherwise specified, manufacturer's ratings, and manufacturer- approved modifications, shall be used to classify equipment for determination of applicable rental rates. Individual pieces of equipment or tools not listed in said publication and having a replacement value of one hundred dollars (\$100) or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore as payment is included in payment for labor. Rental time will not be allowed while equipment is inoperative due to breakdowns.
1. For equipment on Site, rental time to be paid for equipment shall be the time equipment is in operation on extra work being performed or on standby as approved by City's Representative. The following shall be used in computing rental time of equipment:
 - a. When hourly rates are listed, less than thirty (30) minutes of operation shall be considered to be one-half (1/2) hour of operation.
 - b. When daily rates are listed, less than four (4) hours of operation shall be considered to be one-half (1/2) day of operation.
 2. For equipment, which must be brought to Site to be used exclusively on extra work, cost of transporting equipment to Site and its return to its original location shall be determined as follows:
 - a. CITY will pay for costs of loading and unloading equipment.
 - b. Cost of transporting equipment in low bed trailers shall not exceed hourly rates charged by established haulers.
 - c. Cost of transporting equipment shall not exceed applicable minimum established rates of California Public Utilities Commission.
 - d. Payment for transporting, and loading and unloading equipment as above provided will not be made if equipment is used on Work in any other way than upon extra work.
 3. Rental period shall begin at time equipment is unloaded at Site of extra work and terminate at end of day on which City's Representative directs Contractor to discontinue use of equipment. Excluding Saturdays, Sundays, and legal holidays, unless equipment is used to perform extra work on such days, rental time to be paid per day shall be four (4) hours for zero (0) hours of operation, six (6) hours for four (4) hours of operation and eight (8) hours for eight (8) hours of operation, time being prorated between these parameters. Hours to be paid for equipment, which is operated less than eight (8) hours due to breakdowns, shall

not exceed eight (8) less number of hours equipment is inoperative due to breakdowns.

- D. Work Performed by Special Forces or Other Special Services
- E. When City's Representative and Contractor, by agreement, determine that special service or item of extra work cannot be performed by forces of Contractor or those of any subcontractors, service or extra work item may be performed by specialist. Invoices for service or item of extra work on basis of current market price thereof may be accepted without complete itemization of labor, material, and equipment rental costs when it is impracticable and not in accordance with established practice of special service industry to provide complete itemization. In those instances wherein Contractor is required to perform extra work necessitating a fabrication or machining process in a fabrication or machine shop facility away from Site, charges for that portion of extra work performed in such facility may, by agreement, be accepted as a specialist billing. City's Representative must be notified in advance of all off-site work. To specialist invoice price, less credit to CITY for any cash or trade discount offered or available, whether or not such discount may have been taken, will be added 15 percent (15%) in lieu of overhead and profit, as specified in this Section.

1.9 FORCE-ACCOUNT

- A. If it is impracticable because of nature of work, or for any other reason, to fix an increase or decrease in price definitely in advance, Change Order may fix a maximum price which shall not under any circumstances be exceeded, and subject to such limitation, such alteration, modification or extra shall be paid for at actual necessary cost as determined by CITY Authority, which cost shall be determined pursuant to General Conditions, and shall be known as Force-Account work.
- B. Whenever any Force-Account work is in progress, definite price for which has not been agreed on in advance, Contractor shall report to City's Representative each day in writing in detail amount and cost of labor and material used, and any other expense incurred in Force-Account work on preceding work day, and no claim for compensation for Force-Account work will be allowed unless report shall have been made.
- C. Above described methods of determining payment for work and materials shall not apply to performance of work or furnishings of material, which, in judgment of City's Representative, may properly be classified under items for which prices are established in Contract.

1.10 CITY FURNISHED MATERIALS

- A. CITY reserves right to furnish materials, as it deems advisable, and Contractor shall have no claims for costs and overhead and profit on such materials.

1.11 OVERHEAD DEFINED

- A. The following constitutes charges that are included in overhead for all contract modifications, including Force-Account work:
 - 1. Drawings: field drawings, shop drawings, etc. including submissions of drawings
 - 2. Routine field inspection of work proposed

3. General Superintendence
4. General administration and preparation of change orders
5. Computer services
6. Reproduction services
7. Salaries of project engineer, superintendent, timekeeper, storekeeper and on- site staff, including secretaries Janitorial services and on-site project manager.
8. Temporary on-site facilities
 - a. Offices
 - b. Telephones
 - c. Plumbing
 - d. Electrical: Power, lighting
 - e. Platforms
 - f. Fencing, etc.
9. Home office expenses and salaries of home office personnel
10. Insurance and Bond premiums
11. Procurement and use of vehicles and fuel used coincidentally in base bid work
12. Surveying
13. Estimating
14. Protection of work
15. Final cleanup
16. Other incidental work

1.12 RECORDS AND CERTIFICATION

- A. Force-Account (cost reimbursement) charges shall be recorded daily upon Cost Breakdown for Contract Modification Form obtained from Inspector. Contractor or authorized representative shall complete and sign form. Inspector shall sign form for approval. Contract Modification Form shall provide names and classifications of workers and hours worked by each, itemize materials used, and also list size type and identification number of equipment, and hours operated, and shall indicate work done by specialists.
- B. No payment for Force-Account work shall be made until Contractor submits original invoices substantiating materials and specialist charges.

- C. CITY shall have the right to audit all records in possession of Contractor relating to activities covered by Contractor's claims for modification of Contract, including Force- Account work, as set forth in General Conditions.
- D. Further, CITY shall have right to audit, inspect, or copy all records maintained in connection with this Contract, including financial records, in possession of Contractor relating to any transaction or activity occurring or arising out of, or by virtue of, Contract. If Contractor is a joint venture, right of CITY shall apply collaterally to same extent to records of joint venture sponsor, and of each individual joint venture member.

1.13 PROPOSAL REQUESTS

- A. City-Initiated Proposal Requests: Architect/Engineer through the City's Representative will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by City's Representative are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within 20 days, unless specified on Proposal Request sooner after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.14 ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 4. City reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within 7 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. City will reject claims submitted later than 21 days after such authorization.
1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

1.15 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect/Engineer may issue a Construction Change Directive through the City's Representative on AIA Document G714 or similar form. Construction Change Directive instructs Contractor to proceed immediately with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 29 00**PAYMENT PROCEDURES**

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 Related Sections

- A. Section 01 26 00 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
- B. Section 01 32 00 "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.4 Schedule Of Values

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with Continuation Sheets.
 - b. Submittals Schedule.
 - c. Contractor's Construction Schedule.
 - 2. Submit the Schedule of Values to Architect through Construction Manager at earliest possible date but no later than fourteen (14) days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Schedule of Values shall appear similar to the following list, in addition to using the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:

- a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
- C. Schedule of Values shall be detailed as a minimum to that as shown below (where items apply) and portions shall not be more largely grouped so as to reduce its length unless appropriate to the scope of the Work. Work for site, different phases of construction, each floor level and different structures shall be separated on the Schedule of Values,
1. Mobilization/Start-up is limited to 1% on contracts greater than \$1,000,000 and 2-3% on contracts less than \$1,000,000.
 2. Schedule of Values shall as a minimum, include all item breakdown and requirements specified in this Section, include multiple line items for each specification Section in the Project Manual and include the following:
 3. NOTE: The following is only a rough example of how the Schedule of Values should be displayed. Contractor to expand on the list below. The following does not include all categories and breakdowns as required by this section, however is meant to provide a beginning for the Schedule of Values.

Mobilization/Start-up

Temporary Facilities
As Build Drawings/ Certified Site Survey
Scheduling

On-Site

Site Survey
Site Mock-Up (for each trade and milestone)
HazMat Removal
Selective Demolition
Hauling Exports
Import Earthwork
Rough Grading
Fire Sprinkler Piping & BFP
Site Concrete
Site Furniture
Concrete
Concrete Reinforcement
Masonry
Rough Framing
Misc. Lumber
Hollow Metal Doors & Frames
Wood Doors
Windows

Glazing
Storefront & Entrances
Water Proofing –Foundation/Site Insulation
Caulking and Sealants
Drywall
Paint/Wall Coverings
Finish Hardware
Fire Extinguishers
Signage
Plumbing – Rough In
Plumbing – Fixtures
Plumbing-Trim
Fire Sprinkler Stand Pipe
Fire Sprinkler Rough-In
Fire Sprinkler Trim
HVAC/Rough In
HVAC/Sheet Metal HVAC-
Equipment
HVAC-Trim
HVAC Controls (EMS) Testing
and Balancing Electrical Power
/Rough In Electrical Power –
Distribution Electrical Lighting
/Rough In Electrical Lighting
Fixtures Electrical Lighting Trim
Fire Alarm – Rough-In
Fire Alarm – Fixtures & Equipment
Fire Alarm – Trim Labor/Supervision
Cleanup
Record Documents
O&M Manuals
Owner Demonstration & Training

- D. Submit typed schedule on approved “Application and Certificate for Payment”, Continuation Sheet. Contractor’s standard form or electronic printout format may be considered, at Construction Manager/ Architect’s discretion.
1. Submit draft of AIA Document G703 Continuation Sheet.
 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.

- f. Change Orders (numbers) that affect value.
- g. Dollar value.
 - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
- 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum.
- 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- 5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
- 6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 - a. Itemize Applications for Payment:
 - 1) Heading completed in full.
 - 2) Original contract sum.
 - 3) Change order summary completed.
 - 4) Net charge by change order.
 - 5) Contract sum to date.
 - 6) Total completed and stored to date.
 - 7) Retainage section completed.
 - 8) Total earned, less retainage.
 - 9) Amount of previous payments.
 - 10) Current payment due.
 - 11) Balance to finish.
 - 12) Notarized section completed.
 - 13) Schedule of Values completed.

7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Use information indicated in the Contract Documents to determine allowance sums and specific usage.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum. Review modifications during Draft Review of the Application for Payment during an on-site Progress Meeting.
 - a. No change shall be made until contractor is in receipt of a fully executed Change Order.

1.5 Applications For Payment

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and Construction Manager and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Construction Manager will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit 4 signed and notarized original copies of each Application for Payment to Construction Manager by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

2. Prompt Payment Transmittal Form. The Contractor shall provide a completed Prompt Payment Transmittal form with each payment request. A copy of this form is included in the City of Oakland Requirements Section of these project documents. At the pre-bid meeting the City's Representative shall provide a sample form that shows the Resident Engineer's information that shall be provided on each transmittal form.
- F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products list.
 5. Schedule of unit prices.
 6. Submittals Schedule (preliminary if not final).
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
 9. Copies of building permits.
 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 11. Initial progress report.
 12. Report of preconstruction conference.
 13. Certificates of insurance and insurance policies.
 14. Performance and payment bonds.
 15. Data needed to acquire Owner's insurance.
 16. Initial settlement survey and damage report if required.
- G. Application for Payment for progress payments. Submittals that must be made with each application include the following:
1. Submit lien waivers covering the payment that was paid to Contractor for the previous calendar month.
 2. Submit updated monthly Schedule.
 3. Submit an updated Progress Report.
 4. Review as-built documents with Architect.

5. Updated Construction Status Report.
 6. Material Invoices for Stored Materials on-site, as requested.
 7. Consent of Surety to Supplemental Agreement for Stored Materials off-site, as requested.
- H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence satisfactory to the City's Representative documenting that all claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final, liquidated damages settlement statement.
- J. Retention Release For LBE Subcontractors:
1. To initiate the release of their retention, the LBE Subcontractor shall apply by letter to the General Contractor. The letter must include:
 2. A statement certifying that the LBE Subcontractor's work is complete and complies with all applicable codes, contract plans and contract specifications.
 3. The dollar value and the scope of work of the LBE Subcontractor's contract with the General Contractor.

4. The dollar value of the LBE Subcontractor's retention held by the General Contractor.
5. A payment summary indicating that full payment, except the City's retained amount, has been made to each of the LBE Subcontractor's subcontractors and suppliers. After the General Contractor verifies and certifies the above items, the General Contractor shall make a request to the City of Oakland to release a portion of the General Contractor's retention, as stated in 9-3.2 of the Standard Specifications for Public Works Construction, equal to the dollar value of the LBE Subcontractor's retained amount. Upon the City of Oakland's approval of this request, the retention will be released in the next scheduled progress payment. The General Contractor shall have three (3) business days after receipt to forward these funds to the LBE Subcontractor.

1.6 Subcontractor/Subconsultant/Supplier Payment Certification

- A. The Contractor shall certify in writing that all subcontractors/ subconsultants/ suppliers have been paid for work and materials from previous progress payments received (less any retention) by the Contractor prior to receipt of any further progress payments.
 1. In the event the Contractor is unable to pay a subcontractor/sub- consultant/supplier until they receive a progress payment from the City, the Contractor shall pay all subcontractors/ subconsultants/ suppliers funds due from said progress payments within forty-eight hours of receipt of payment from the City.
 2. During and upon completion of the contract, the City may request monthly documentation to certify payment to subcontractors/ subconsultant/ suppliers. The City reserves the right to issue joint checks payable to both the Contractor and the subcontractor/ subconsultant/ supplier to insure proper payment.
 3. This provision in no way creates any contractual relationship between any subcontractor/ subconsultant/ supplier and the City or any liability on the City for the Contractor's failure to make timely payment to the subcontractor/ subconsultant/supplier.
- B. In order for the City of Oakland to verify that all subcontractors, equipment owners and suppliers have been paid for work and materials from previous progress payments received, it will be necessary for the Contractor to fill out the monthly progress payment for Subcontractors, Equipment Owner Operators & Suppliers Form.
 1. This form must be attached to the Contractor's monthly request for payment invoice. Failure to do so will delay the progress payment to the Contractor. One copy of the form must also be sent to the Department of Contracting and Purchasing, Contract Compliance Division, Oakland, CA 94612. Telephone (510) 238-3970. These forms are available at the Contract Compliance Office.

1.7 Certified Payroll

- A. The City may withhold an amount from progress and final payments from Contractors who do not submit certified payroll reports for themselves or their subcontractors or are in non-compliance with the City of Oakland and

Redevelopment Agency's Local Construction Employment Program and Resolution No. 57103 C.M.S. governing the payment of prevailing wages. The Contract Compliance Officer shall determine the withholding amounts.

- B. Submittal of Certified Payrolls. It is required that contractors and their subcontractors submit weekly certified electronic payroll reports for all crafts covered under the contract provisions within five working days of the end of the payroll period. For tracking purposes the certified payroll records shall show the ethnic and gender breakdown of the workforce. The Contractor's failure to submit the required information may result in a monetary penalty in an amount not to exceed \$1,000 or one percent (1%) of the amount of the contract, whichever is less, for each working day of non-compliance, regardless of the number of separate acts of non-compliance by the contractor or subcontractor existing on a particular day.

PART 2 - PRODUCTS (NOT USED)**PART 3 - EXECUTION (NOT USED)**

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This section describes coordination of work under the Contract and coordination of the various parts of the work.
- B. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination Drawings.
 - 2. Administrative and supervisory personnel.
 - 3. Project coordination.
 - 4. Workmanship.
 - 5. Incidental costs.
 - 6. Correspondence and Notices.
 - 7. Miscellaneous provisions.
 - 8. Damage and restoration.
 - 9. Requests for Information/Interpretation (RFIs).

1.3 Definitions

- A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.
 - 1. A document submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as RFI.
 - 2. A properly prepared request for information / interpretation shall include a detailed written statement that indicates the specific Drawing(s) or Specification(s) in need of clarification and the nature of the clarification requested.

- a. Drawings shall be identified by Drawing number and location on the Drawing sheet.
 - b. Specifications shall be identified by Section number, page and paragraph.
 - c. Requests for Information: Request made by Contractor concerning information not indicated on Drawings nor contained in Project Manual that is required to properly perform the work.
 - d. Requests for Interpretation: Request made by Contractor in accordance with the Contract for construction.
- B. Improper RFI's:
- 1. RFI's that are not properly prepared.
 - 2. Improper RFI's will be rejected by the Construction Manager and/or the Architect/Engineer. The Contractor will be notified by the Construction Manager upon rejection of improper RFI's.
- C. Frivolous RFI's:
- 1. RFI's which request information that is clearly shown on the Contract Documents as determined by the Construction Manager.
 - 2. Contractor shall be warned if the RFI process is abused, it shall be the contractor's responsibility to review all coordination questions, or relay information within the documents to subcontractors, vendors, and/ or suppliers.
 - 3. The Contractor may be assessed \$100.00 for each frivolous RFI at closeout if this abuse would continue.
- D. Neither improper nor frivolous RFI's will be allowed as basis for Change Orders claiming additional costs and/or time extensions.

1.4 Coordination

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
- 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required

maintenance, service, and repair of all components, including mechanical and electrical.

- B. Coordination scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
 - 1. Contractor to submit coordination Drawings showing the installation of the utility systems in the Lab Furniture within 60 days from Notice to Proceed date.
- C. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements and installation of mechanical and electrical work, which are indicated diagrammatically on drawings. Follow route shown for pipes, ducts, and conduit, as closely as practicable: place runs parallel with line of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finished elements.
- F. Submit a copy of site drawing and certificate signed by the Civil Engineer that the elevations and locations of the Work of separate Sections in preparation for Substantial Completion.
- G. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion.
- H. After Owner occupancy of the Site, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- I. General - The Contractor will coordinate the project administration and contract control to ensure timely processing and approval of all documentation and coordination with the project schedule. The Contractor shall create and track at a minimum the following documents:
 - a. Submittals
 - b. RFI's
 - c. Transmittals
 - d. Meeting Minutes
 - e. Change Order Information (i.e., Change Order Requests)
- 2. Contractor is required to provide and maintain computer equipment, printing devices and an Internet provider service to conduct project administration and contract control responsibilities.

- J. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 Submittals

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
 - 1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
 - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - b. Indicate required installation sequences.
 - c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect/Engineer for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
 - 2. Sheet Size: At least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 24 by 36 inches.
 - 3. Submittal Copies:
 - a. Submit electronic copies of each submittal. Architect/Engineer, through CM.
 - b. Submit five copies where Coordination Drawings are required for operation and maintenance manuals. Architect/Engineer and Construction Manager will retain two copies; remainder will be returned. Mark up and retain one returned copy as a Project Record Drawing.
 - 4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.6 Administrative and Supervisory Personnel

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
 - 1. Include special personnel required for coordination of operations with other contractors.

1.7 Workmanship

- A. Work shall be performed by craftsmen skilled and competent in their particular trade.
- B. Workmanship shall be thorough, finished and complete in every detail for finest quality installations as intended under these specifications.

1.8 Incidental Costs

- A. In addition to GC 6.04 Liability of Contractor, 6.07 Protection of Contractor's Work and Property, and 6.11 Construction of All Provisions for Utilities:
 - 1. Utilities: Refer to Section 01 5000.
 - 2. Contractors and Subcontractors shall furnish at their own cost and expense all tools, consumable supplies, appliances, equipment, etc., necessary for execution of their work; and shall be responsible for care and guarding thereof.
 - 3. Contractors and Subcontractors shall be entirely responsible for professional, trade, business or other licenses required by state statute or local government.

1.9 Correspondence and Notices

- A. Clearly identify correspondence, notices and submittals with project name, subject and detailed references to drawings and specifications.
- B. Notify Inspector or a Construction Manager two (2) working days in advance of required inspection.

1.10 Miscellaneous Provisions

- A. Contractor shall immediately refer to the Construction Manager any requirement shown or specified which Contractor finds or believes:
 - 1. Is not equal to industry standards for achieving a first quality installation as intended;
 - 2. Is excessive in cost or effort to effect the intended results;
 - 3. Is below standard for proper enforcement of the guarantees required;
 - 4. Or, is at variance with governing laws, regulations, codes or standards.
- B. Work operations relative to any matter referred to Architect/Engineer for consideration shall not proceed until receipt of appropriate instructions from Architect/Engineer.

- C. Inspection of Work and Materials: Contractor shall immediately make a close and thorough inspection of all materials as delivered and all work in progress; shall promptly reject and return all defective materials and re-do; and shall check and verify adequate performance or satisfactory results of all tests and inspections before allowing sub-work to proceed.
- D. Warranty Period: During warranty periods, supervise investigation and correction of failures of deficiencies found or occurring in the work.
- E. Shop Fabricate and pre-assemble interrelated parts where possible.
- F. Closing up of walls, partitions or furred spaces, backfilling and other covering up operations shall not proceed until all enclosed or covered work and inspections have been completed. Verify before proceeding.
- G. Provide holes, slots, cutouts, blocking, screeds, nailers, chases and similar preparation as the work progresses, as required to receive or pass subsequent work without damage to previously completed work.
- H. Exterior Work shall be made tight against direct or indirect entry of water into the concealed or interior spaces of the building. Seal joints or penetrations below grade or behind exterior trim and other conditions where water might enter the structure, as for exposed exterior work.
- I. Structural Connections and Fasteners: Include as required for complete fabrication and installation of the work; of materials, types and sizes adequate for the purposes.
 - 1. Place in concealed or obscured locations where possible.
 - 2. Include suitable welding or brazing where required.
- J. Powder Activated Fasteners: Limited to uses particularly shown, specified or approved by Architect/Engineer. Operators shall be certified in accordance with California Industry Safety orders.
- K. Ferrous Work permanently exposed to exterior or below grade shall be galvanized; related accessory members and fastening non-ferrous, galvanized or made rustproof by approved methods.
- L. Galvanizing, prime painting and related touch-up and repair shall comply with requirements for metal fabricating and painting.
- M. Isolation: Provide between ferrous and non-ferrous or dissimilar metal components to protect the work against electrolysis, as follows:
 - 1. For architectural work, provide cork fillers, asphaltic coatings, neoprene gaskets or similar separation as necessary; and use stainless steel fastenings only where interconnecting dissimilar parts.
 - 2. For mechanical and electrical work, provide dielectric unions or similar separation. In particular, provide isolation as necessary between exterior underground systems and interior above-grade systems where they meet dissimilar metals.

- N. Prior to starting a particular type or kind of work, examine for relevant information, all contract documents and subsequent data issued to the project.

1.11 Damage And Restoration

- A. Damage to previously existing or newly placed facilities caused by movement of equipment or other operations, whether accidental or made necessary by reason of Contract requirements, shall be restored or replaced as specified or directed by Architect/Engineer.
- B. Restoration shall be equal to the structural qualities or performance capacities of the original work, and finishes shall match the appearance of, as nearly as possible, like existing adjacent work. Restorations shall be subject to approval by Architect/Engineer and shall be made as necessary at no added expense to Owner unless otherwise particularly provided for.
- C. Work not properly restored or where not capable of being restored as intended under these Specifications shall be removed and replaced as directed by Architect/Engineer at no added expense to Owner.

1.12 Requests for Information/Interpretation (RFI)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
 - 1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. RFI's shall be submitted electronically with PDF attachments.
 - 1. Contractor shall make provisions to create and send RFI's electronically on site, including the ability to scan and attached hand written sketches and other documents.
 - 2. Forms shall be completely filled out before submitting.
 - 3. RFI's shall be submitted in numerical order with no breaks in the consecutive numbering.
 - 4. Each page of attachments to RFI's shall bear the RFI number and shall be consecutively numbered in chronological order.
 - a. Addresses for E Mail will be distributed at the Pre Construction Conference.
- C. When the Contractor is unable to determine from the Contract Documents the material, process or system to be installed, the Architect/Engineer shall be requested to make a clarification of the indeterminate item.
 - 1. Wherever possible, such clarification shall be requested at the next appropriate project meeting, with the response entered into the meeting minutes. When

clarification at the meeting is not possible, either because of the urgency of the need, or the complexity of the item, Contractor shall prepare and submit an RFI to the Architect/Engineer and Construction Manager.

2. Contractor to use the form provided by the Construction Manager.
- D. Contractor shall endeavor to keep the number of RFI's to a minimum.
- E. RFI's shall be originated by the Contractor.
 1. RFI's from subcontractors or material suppliers shall be submitted through, reviewed by, and signed by the Contractor prior to submittal to the Architect/Engineer and Construction Manager.
 2. RFI's from subcontractors or material suppliers sent directly to the Construction Manager, Architect/Engineer or the Architect/Engineer's consultants shall not be accepted and will be returned unanswered.
- F. Contractor shall carefully study the Contract Documents to assure that the requested information is not available therein. RFI's that request information available in the Contract Documents will be deemed either "improper" or "frivolous" as noted above.
- G. In the cases where RFI's are issued to request clarification of coordination issues, for example, pipe and duct routing, clearances, specific locations of work shown diagrammatically, and similar items, the Contractor shall fully lay out a suggested solution using drawings or sketches drawn to scale, and submit same with the RFI.
- H. RFI's shall not be used for the following purposes:
 1. To request approval of submittals,
 2. To request approval of substitutions,
 3. To request changes which are known to entail additional cost or credit. (A Change Order Request form shall be used.)
 4. To request different methods of performing work than those drawn and specified.
- I. In the event the Contractor believes that a clarification by the Architect/Engineer results in additional cost or time, Contractor shall not proceed with the work indicated by the RFI until a Change Order (or Construction Change Directive, if applicable to project) is prepared and approved. RFI's shall not automatically justify a cost increase in the work or a change in the project schedule.
 1. Answered RFI's shall not be construed as approval to perform extra work.
 2. Rejected RFI's will be returned with a stamp or notation: Rejected.
- J. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
 1. Project name.
 2. Date.

3. Name of Contractor.
 4. Name of Architect/Engineer and Construction Manager.
 5. RFI number, numbered sequentially.
 6. Specification Section number and title and related paragraphs, as appropriate.
 7. Drawing number and detail references, as appropriate.
 8. Field dimensions and conditions, as appropriate.
 9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 10. Contractor's signature.
 11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
 - a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
- K. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- L. Architect/Engineer's and Construction Manager's Action: Architect/Engineer and Construction Manager will review each RFI, determine action required, and return it. Allow five working days for Architect/Engineer's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect/Engineer's actions on submittals.
 - f. Incomplete RFIs or RFIs with numerous errors.
 2. Architect/Engineer's action may include a request for additional information, in which case Architect/Engineer's time for response will start again.

3. Architect/Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect/Engineer and Construction Manager in writing within 10 days of receipt of the RFI response.
- M. On receipt of Architect/Engineer's and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect/Engineer and Construction Manager within seven days if Contractor disagrees with response.
- N. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit and review log weekly with Architect/Engineer and Construction Manager. Include the following:
 1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect/Engineer and Construction Manager.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect/Engineer's and Construction Manager's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (NOT USED)**PART 3 – EXECUTION****3.1 Project Coordination**

- A. Contractor shall undertake responsibility for coordination of all work called for herein.
- B. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later and City's occupancy during construction.
- C. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.

3.2 Mechanical and Electrical Coordination

- A. The Contractor's attention is directed to the existence of pipelines, conduits and other utilities which may be buried within the limits of the work or adjacent thereto, and

which may or may not be shown on the Drawings and which may or may not be "live." Every precaution shall be taken to preserve and protect any "live" improvements from injury or damage during construction operations.

- B. The Contractor shall be responsible for notifying utility companies prior to work so that the utility company may mark out existing facilities in the field. The Contractor shall also be responsible for arrangement and coordination of any relocation work that may be required.
- C. It shall be the sole responsibility of the Contractor to repair or replace, to the satisfaction of the utility company involved, any damage to the utilities caused by the Contractor's work, whether or not those utilities are indicated on the Drawings.
- D. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

3.3 Job Site Administration

A. City's Representative:

- 1. To represent the City during the period of construction, an authorized representative has been appointed. Wherever the term "City" is indicated in the Contract Documents, it shall also refer to the City's Representative, whose function will be outlined in the Contract Documents.
- 2. Provide the City's Representative with complete access to all parts of the project, and keep him informed of all job conditions, tests, and scheduling. Notify him 24 hours prior to all concrete pours and prior to each new trade arriving on the job.
- 3. Make all communications to the Architect in writing submitted through the City's Representative.

B. Project Representative:

- 1. Project Delivery Division will provide a Project Representative to make on-site observations and spot checks of the Work in progress as a basis for determining conformance to the design intent of the Work. The Project Representative will report any defective Work to the City's Representative.

C. Superintendent:

- 1. Contractor shall maintain on the job site, until said project is completed, a competent project superintendent and any assistant superintendents or foremen as may be required for the orderly and expeditious completion of said project. Such superintendent shall be the representative of the Contractor, and all directions given to the superintendent shall be as binding as if given directly to Contractor. Contractor shall not replace such project superintendent without

prior written consent of City unless such superintendent terminates his employment by Contractor for any reason. Upon delivery of written notice from City requesting removal, and stated reasons for the request, Contractor shall remove such project superintendent and immediately provide a replacement having the experience and competence to perform the duties required. City's right to require removal of a project superintendent shall not relieve Contractor of any obligations under the contract.

D. Record Keeping:

1. Contractor's project records shall be maintained in an organized manner such that items may be easily reviewed by persons other than the contractor's staff. City reserves the right to review the Contractor's records at any time.

END OF SECTION

SECTION 01 31 19**PROJECT MEETINGS**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This section establishes administrative and procedural requirements for meetings required for the Contractor's management of the Construction Contract.
- B. This section describes the required meetings for this work. These meetings include:
 - 1. Pre-construction Conference
 - 2. Scheduling Meetings
 - 3. Progress Meetings
 - 4. Special Meetings
- C. Related Sections
 - 1. Section 01 11 00: Summary of Work
 - 2. Section 01 32 00: Progress Schedules and Reports
 - 3. Section 01 33 00: Submittal Procedures

1.3 Preconstruction Conference

- A. City's Representative will call for and administer Pre-construction Conference at time and place to be announced. Conference will occur as soon after award as can be reasonably scheduled. The City's Representative will chair the meeting.
- B. Contractor, all subcontractors, and major suppliers shall attend Pre-construction Conference.
- C. Agenda will include, but not be limited to, the following items:
 - 1. Schedules
 - 2. Personnel
 - 3. Use of the Site

4. Location of Contractor's on-site facilities
 5. Project access
 6. Employee parking
 7. Security
 8. Housekeeping
 9. Submittals
 10. Inspection and testing procedures, on-site and off-site
 11. Utility shutdown procedures
 12. Control and reference point survey procedures
 13. Injury and Illness Prevention Program
 14. Contractor's Initial CPM Schedule
- D. The City's Contract Compliance Officer will discuss enforcement of the City's various employment and prevailing wage requirements specified by the Contract.
- E. City's Representative will distribute copies of minutes to attendees. Attendees shall have five (5) working days to submit comments or additions to minutes. Minutes will constitute final memorialization of results of the Pre-construction Conference.

1.4 Scheduling Meetings

- A. Meet with City's Representative on Start Date of Contract and conduct initial review of Contractor's draft Shop Drawing and Sample Submittal Schedule, and draft Schedule of Values ("Schedule Review Meeting").
- B. Authorized representative in Contractor's organization, designated in writing, who will be responsible for working and coordinating with City's Representative(s) relative to preparation and maintenance of Progress Schedule shall attend initial Schedule Review Meeting.
- C. Contractor shall, within thirty (30) days from the Notice to Proceed date, meet with City to review the Original CPM Schedule submittal.
1. Contractor shall have its manager, superintendent, scheduler, and key subcontractor representatives, as required by CITY, in attendance. The meeting will take place over a continuous one-day period.
 2. City's review of Schedule Submittals will be limited to conformance to Contract requirements, including, but not limited to, coordination requirements. However, review may also include:
 - a. Clarifications of Contract Requirements
 - b. Directions to include activities and information missing from submittal

- c. Requests to Contractor to clarify its schedule
 - 3. Within five (5) days of the initial Schedule Review Meeting, Contractor shall respond in writing to all questions and comments expressed by CITY at the meeting.
 - D. City's Representative will administer scheduling meetings and shall distribute minutes of scheduling meetings to attendees. Attendees shall have five (5) working days to submit comments or additions to minutes. Minutes will constitute final memorialization of results of the scheduling meetings.
- 1.5 Pre-Bid, Pre-Construction And Progress Meetings
- A. The City will schedule and administer a pre-bid meeting, a pre-construction meeting, periodic progress meetings, and specially called meetings throughout the progress of the Work as hereinafter specified.
 - B. The representative of the Contractor, Subcontractors, and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.
 - C. The City's Representative shall attend meetings to answer any inquiries regarding the Contract Documents and to ascertain that work is being prosecuted consistent with the Contract Documents and construction schedules.
 - D. The Pre-Bid Meeting is specified in the Notice Inviting Bids.
 - E. The Pre-Construction Meeting will be scheduled by the City within ten (10) days after the date of the Award of contract. Attendance of the following is expected: City's Representative(s); City's professional consultants; Contractor's Superintendent; major Subcontractors; major suppliers; and others as appropriate. The meeting will attempt to cover concerns of the City and the Contractor, and the project's peculiarities and special requirements.
- 1.6 Progress Meetings
- A. Progress Meetings: The City will schedule regular progress meetings to be held at the job site, in the City's field office, or other area designated by the City.
 - B. Progress meetings will be concerned with prosecution of the work within the completion dates established in the Construction Schedule, with expediting and accelerating the work when necessary, and with the various problems which may develop.
 - C. City's Representative will schedule and administer Progress Meetings throughout duration of Work. Progress meetings will be held weekly unless otherwise directed by City.
 - 1. Meetings shall be held at Contractor's on-site office unless otherwise directed by City.
 - 2. Architect/Engineer will prepare agenda and distribute to Contractor, Inspector and City's Representative 24 hours in advance of meeting.

3. City's Representative will preside at meeting.
 4. Architect/Engineer will record and distribute minutes to Contractor, Inspector, City's Representative, all other participants, and those affected by decisions made at meeting, within three (3) working days after meeting. Attendees shall have five (5) working days to submit comments or additions to minutes. Minutes will constitute final memorialization of results of progress meetings.
- D. Progress Meetings shall be attended by Contractor's job superintendent, major subcontractors and suppliers, City's Representative, Architect/Engineer, Engineer (as needed), Inspector and others as appropriate to agenda topics for each meeting.
- E. Agenda will contain the following items as appropriate:
1. Review of work progress
 2. Status of Construction Schedule, adjustments
 3. Submittals
 4. Delivery schedules
 5. Utility shutdowns, traffic disruptions, and interferences with public scheduled during the subsequent 2 weeks
 6. Quality control
 7. Pending changes
 8. Substitutions
 9. Review of Contractor's safety program activities and results, including report on all serious injury and/or damage accidents
 10. Other items affecting progress of work
- F. The last meeting of the month will be concerned with payment requirements as the main agenda item to review the schedule update submittal and progress payment application.
1. At this meeting, at a minimum, the following items will be reviewed:
 - a. percent complete of each activity
 - b. time impact evaluations for Change Orders and Time Extension Request
 - c. actual and anticipated activity sequence changes
 - d. actual and anticipated duration changes
 - e. actual and anticipated contractor delays
 2. These meetings are considered a critical component of overall monthly schedule update submittal and Contractor shall have appropriate personnel attend. At a

minimum, these meetings shall be attended by Contractor's General Superintendent and Scheduler.

3. Contractor shall plan on progress meetings taking no less than four (4) hours.

1.7 Special Meetings

- A. Special meetings may be called by the City by notifying all desired participants, Architect/Engineer, and Inspector four (4) working days in advance, giving reason for meeting. Special Meetings may be held without advance notice in emergency situations.
- B. At any time during the progress of the Work, City shall have authority to require Contractor to attend conference of any or all of the contractors engaged in the Work or in other work, and notice of such conference shall be duly observed and complied with by Contractor.
- C. Contractors shall schedule and conduct coordination meetings as necessary to discharge coordination responsibilities in the General Conditions. City's Representative shall be given five (5) days written notice of coordination meetings. Contractors shall maintain minutes of coordination meetings. Attendees shall have five (5) working days to submit comments or additions to minutes. Minutes will constitute final memorialization of results of the meetings.
- D. Pre-installation meetings of manufactures' warranty scope of work, i.e., roofing, water-proofing, curtain wall, etc.

1.8 Pre-Installation Conferences

- A. When required in individual specification Sections, the Contractor shall:
 1. Convene a pre-installation conference at work site prior to commencing work of the Section.
 2. Require attendance of parties directly affecting, or affected by, work of the specific Section.
 3. Notify City's Representative four (4) days in advance of meeting date.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 00 CONSTRUCTION**PROGRESS DOCUMENTATION**

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, JSR & WRP, GP and SGP apply to this Work.

1.2 Summary

- A. Scheduling of Work under this Contract shall be performed by Contractor in accordance with requirements of this Section.
 - 1. Development of schedule, cost and manpower loading of the schedule and schedule updates, monthly payment requests and project status reporting requirements of the Contract shall employ computerized Critical Path Method (CPM) scheduling.
 - 2. CPM Schedule shall be cost loaded based on Schedule of Values as approved by City.
 - 3. Submit schedules and reports as specified in General Conditions.
- B. Upon Award of Contract, Contractor shall immediately commence development of Initial and Original CPM Schedules to ensure compliance with CPM schedule submittal requirements.

1.3 Related Sections

- A. Section 01 11 00 "Summary of Work"
- B. Section 01 33 00 "Submittal Procedures"

1.4 Qualifications

- A. Contractor shall employ experienced scheduling personnel qualified to use the latest version of Primavera Project Planner or Sure Track Project Manager CPM scheduling software. Experience level required is set forth below. Contractor may employ such personnel directly or may employ a consultant for this purpose. After bid opening, the apparent successful low bidder shall provide City a written verification that Contractor has the required personnel under its employ or that Contractor will employ the required CPM scheduling consultant.
 - 1. The written statement shall identify individual who will perform CPM scheduling.
 - 2. Capability and experience shall be verified by description of construction projects on which individual has successfully applied computerized CPM.

3. Required level of experience shall include at least two projects of similar nature, scope and value not less than three-fourths the Total Bid Price of this Project. The written statement shall provide contact persons for referenced projects with current telephone and address information.
- B. City reserves right to approve Contractor's scheduler, or consultant, and right to reject them at any time. City also reserves right to refuse replacement of Contractor's scheduler or consultant, if it believes such replacement will negatively affect Contract.

1.5 General

- A. Progress Schedule shall be based on and incorporate milestones and completion dates specified in Contract Documents.
- B. Overall time of completion and time of completion for each milestone shown on Progress Schedule shall adhere to times as stated in Contract Agreement, unless an earlier (advanced) time of completion is requested by Contractor and agreed to by City. Any such agreement shall be formalized by a Change Order.
 1. City is not required to accept an earlier (advanced) schedule, i.e., one that shows early completion dates for the Contract Times.
 2. Contractor shall not be entitled to extra compensation in event agreement is reached on an earlier (advanced) schedule and Contractor completes its Work, for whatever reason (excepting approved changes with added time components) beyond completion date shown in earlier (advanced) schedule but within the Contract Times.
 3. A schedule showing the work completed in less than the Contract Times, which has been accepted by City, shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the work and Contract Substantial Completion. Project Float is a resource available to both City and the Contractor.
- C. Float Ownership: Neither City nor Contractor owns float. The Project owns the float. As such, liability for delay of the Substantial Completion Date rests with the party whose actions, last in time, actually cause delay to the Substantial Completion Date.
 1. For example, if Party A uses some, but not all of the float and Party B later uses remainder of the float as well as additional time beyond the float, Party B shall be liable for the time that represents a delay to the Substantial Completion Date.
 2. Party A would not be responsible for the time since it did not consume the entire float and additional float remained; therefore, the Substantial Completion Date was unaffected.
- D. Progress Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests associated with the changes. Responsibility for developing Contract CPM schedule and monitoring actual progress as compared to Progress Schedule rests with Contractor.
- E. Failure of Progress Schedule to include any element of the Work or any inaccuracy in Progress Schedule will not relieve Contractor from responsibility for accomplishing the Work in accordance with the Contract. City's acceptance of schedule shall be for

its use in monitoring and evaluating job progress, payment requests, and time extension requests, and shall not, in any manner, impose a duty of care upon City, or act to relieve Contractor of its responsibility for means and methods of construction.

- F. Use Primavera Project Planner for Windows version 3.0 or later. Such software shall be compatible with Windows operating system. Contractor shall transmit contract schedule files to City on CD-ROM or 3.5-inch high-density floppy disk at times requested by City.
- G. Transmit each item under form approved by City.
 - 1. Identify Project with City Contract number and name of Contractor and file by date, project, and update number.
 - 2. Provide space for Contractor's approval stamp and City's review stamps.
 - 3. Submittals received from sources other than Contractor will be returned to the Contractor without CITY's review.

1.6 Initial Critical Path Method (CPM) Schedule

- A. Initial CPM Schedule submitted for review at the pre-construction conference shall serve as Contractor's schedule for up to ninety (90) calendar days after the Notice to Proceed.
- B. Indicate detailed plan for the Work to be completed in first sixty (60) days of the Contract; details of planned mobilization of plant and equipment; sequence of early operations; and procurement of materials and equipment. Show Work beyond sixty (60) calendar days in summary form.
- C. Initial CPM Schedule shall be time-scaled.
- D. Initial CPM Schedule shall be cost and manpower loaded. Accepted cost and manpower-loaded schedule will be used as basis for monthly progress payments until acceptance of the Original CPM Schedule. Use of Initial CPM Schedule for progress payments shall not exceed sixty (60) calendar days.
- E. City and Contractor shall meet to review and discuss the Initial CPM Schedule within five (5) working days after it has been submitted to CITY.
 - 1. City's review and comment on the schedule shall be limited to Contract conformance (with sequencing, coordination, and milestone requirements) and accepted CPM principals.
 - 2. Contractor shall make corrections to schedule necessary to comply with Contract requirements and shall adjust schedule to incorporate any missing information requested by City. Contractor shall resubmit Initial CPM Schedule if requested by City.
- F. If, during the first sixty (60) days after Notice-to-Proceed, the Contractor is of the opinion that any of the Work included on its Initial CPM Schedule has been impacted, the Contractor shall submit to City a written Time Impact Evaluation (TIE) in accordance with Article 1.09 of this Section. The TIE shall be based on the most current update of the Initial CPM Schedule.

1.7 Original Critical Path Method (CPM) Schedule

- A. Submit a detailed proposed Original CPM Schedule presenting an orderly and realistic plan for completion of the Work, in conformance with requirements as specified herein.
- B. Progress Schedule shall include or comply with following requirements:
 - 1. Time scaled, cost and manpower loaded CPM schedule.
 - 2. No activity on schedule shall have duration longer than fifteen (15) workdays, with exception of submittal, approval, fabrication and procurement activities, unless otherwise approved by City.
 - a. Activity durations shall be total number of actual work days required to perform that activity.
 - b. Activity coding capabilities to sort by responsibility, location, phase and CSI division.
 - 3. The start and completion dates of all items of Work, their major components, and milestone completion dates, if any.
 - 4. City-furnished materials and equipment, if any, identified as separate activities.
 - 5. Dependencies (or relationships) between activities.
 - 6. Processing/approval of submittals and shop drawings for all Contract-required material and equipment. Activities that are dependent on submittal acceptance or material delivery shall not be scheduled to start earlier than expected acceptance or delivery dates.
 - a. Include time for submittals, resubmittals, and reviews by City. Coordinate with accepted schedule for submission of shop drawings, samples and other submittals.
 - b. Contractor shall be responsible for all impacts resulting from resubmittal of shop drawings and submittals.
 - 7. Procurement of all contract required material and equipment, identified as separate activity.
 - a. Include time for fabrication and delivery of manufactured products for the Work.
 - b. Show dependencies between procurement and construction.
 - 8. Complete activity description; what Work is to be accomplished and where.
 - 9. The total cost of performing each activity shall be total of labor, material, equipment, excluding overhead and profit of Contractor. Total overhead and profit of the General Contractor shall be shown on a separate activity in the schedule. Sum of cost for all activities shall equal total Contract value.

10. Resources required (labor) to perform each activity.
 11. Responsibility code for each activity corresponding to Contractor or Subcontractor responsible for performing the Work.
 12. Identify the activities, which constitute the controlling operations or critical path. No more than twenty-five (25%) of the activities shall be critical or near critical. Near critical is defined as float in the range of one (1) to (10) days.
 13. At least twenty (20) workdays for developing punch list(s), completion of punch list items, and final clean-up for the Work or any designated portion thereof. No other activities shall be scheduled during this period.
 14. At least ten (10) work days for normal adverse weather days per each winter season defined as October 1st through March 31st, inclusive.
 15. Interface with the work of other contractors, City, and agencies such, as but not limited to, utility companies.
 16. Show detailed Subcontractor Work activities. In addition, furnish copies of Subcontractor schedules upon which CPM was built.
 - a. Also furnish for each Subcontractor, as determined by City, submitted on Subcontractor letterhead a statement certifying that Subcontractor concurs with Contractor's Original CPM Schedule and that Subcontractor's related schedules have been incorporated, including activity duration, cost and resource loading.
 - b. Subcontractor schedules shall be independently derived and not a copy of Contractor's schedule.
 - c. In addition to Contractor's schedule and resource loading, obtain from electrical, mechanical and plumbing Subcontractors, and other subcontractors as required by City, productivity calculations common to their trades, such as units per person day, feet of pipe per day per person, feet of wiring per day per person, and similar information.
 - d. Furnish schedule for Contractor/Subcontractor CPM schedule meetings which shall be held prior to submission of Original CPM schedule to City. City's Representative shall be permitted to attend scheduled meetings as an observer.
 17. Activity durations shall be in Workdays.
 18. Submit with the schedule a list of anticipated non-Work days, such as weekends and holidays.
- C. Original CPM Schedule Review Meeting: Contractor shall, within thirty (30) days from the Notice to Proceed date, meet with City to review the Original CPM Schedule submittal.
1. Contractor shall have it's Project Superintendent, Project Scheduler, and key Subcontractor representatives, as required by City, in attendance. The meeting will take place over a continuous one-day period.

2. City's review will be limited to submittal's conformance to Contract requirements, including, but not limited to, coordination requirements. However, review may also include:
 - a. Accepted critical path method principles and tenets.
 - b. Clarifications of Contract Requirements.
 - c. Directions to include activities and information missing from submittal.
 - d. Requests to Contractor to clarify its schedule.
3. Within five (5) days of the Schedule Review Meeting, Contractor shall respond in writing to all questions and comments expressed by City at the Meeting.

1.8 Adjustments To Critical Path Method (Cpm) Schedule

- A. Adjustments to Original CPM Schedule: Contractor shall have adjusted the Original CPM Schedule submittal to address all review comments from original CPM Schedule review meeting and resubmit network diagrams and reports for City's review.
 1. City, within ten (10) days from date that Contractor submitted the revised schedule, will either:
 - a. accept schedule and cost and resource loaded activities as submitted, or
 - b. advise Contractor in writing to review any part or parts of schedule which either do not meet Contract requirements or are unsatisfactory for City to monitor Project's progress, resources and status or evaluate monthly payment request by Contractor.
 2. City may accept schedule with conditions that the first monthly CPM schedule update be revised to correct deficiencies identified.
 3. When schedule is accepted, it shall be considered as the "Original CPM Schedule" which will then be immediately updated to reflect the current status of the work.
 4. CITY reserves right to require Contractor to adjust, add to, or clarify any portion of schedule which may later be discovered to be insufficient for monitoring of Work or approval of partial payment requests. No additional compensation will be provided for such adjustments, additions, or clarifications.
- B. Acceptance of Contractor's schedule by City will be based upon schedule's compliance with Contract requirements and accepted CPM principles.
 1. By way of Contractor assigning activity durations and proposing sequence of Work, Contractor agrees to utilize sufficient and necessary management and other resources to perform work in accordance with the schedule.
 2. Upon submittal of schedule update, updated schedule shall be considered "current" CPM schedule.

3. Submission of Contractor's schedule to City shall not relieve Contractor of total responsibility for scheduling, sequencing, and pursuing Work to comply with requirements of Contract Documents, including adverse effects such as delays resulting from ill-timed work.
- C. Submittal of Original CPM Schedule, and subsequent schedule updates, shall be understood to be Contractor's representation that the Schedule meets requirements of Contract Documents and that Work shall be executed in sequence indicated on the schedule.
- D. Contractor shall distribute Original CPM Schedule to Subcontractors for review and written acceptance, which shall be noted on Subcontractors' letterheads to Contractor and transmitted to CITY for the record.

1.9 Monthly CPM Schedule Update Submittals

- A. Following acceptance of Contractor's Original CPM Schedule, Contractor shall monitor progress of Work and adjust schedule each month to reflect actual progress and any pre-approved changes to planned activities or logic.
 1. Each schedule update submitted shall be complete, including all information requested for the Original CPM Schedule submittal.
 2. Each update shall continue to show all work activities including those already completed. These completed activities shall accurately reflect "as built" information by indicating when activities were actually started and completed.
- B. A meeting will be held on approximately the twenty-fifth (25th) of each month to review the schedule update submittal and progress payment application.
 1. At this meeting, at a minimum, the following items will be reviewed: Percent complete of each activity; Time impact evaluations for Change Orders and Time Extension Request; anticipated activity sequence changes; anticipated duration changes; actual and anticipated contractor delays.
 2. These meetings are considered a critical component of overall monthly schedule update submittal and Contractor shall have appropriate personnel attend. At a minimum, these meetings shall be attended by Contractor's General Superintendent and Scheduler.
 3. Contractor shall plan on the meeting taking no less than four (4) hours.
- C. Within five (5) working days after monthly schedule update meeting, Contractor shall submit the updated CPM Schedule update.
- D. Within five (5) work days of receipt of above noted revised submittals, City will either accept or reject monthly schedule update submittal.
 1. If accepted, percent complete shown in monthly update will be basis for Application for Payment by the Contractor. The schedule update shall be submitted as part of the Contractor's Application for Payment.
 2. If rejected, update shall be corrected and resubmitted by Contractor before the Application for Payment is submitted.

- E. Updating, changing or revising of any report, curve, schedule or narrative submitted to City by Contractor under this Contract, nor City's review or acceptance of any such report, curve, schedule or narrative shall not have the effect of amending or modifying, in any way, the Contract Substantial Completion date or milestone dates or of modifying or limiting, in any way, Contractor's obligations under this Contract.

1.10 Schedule Revisions

- A. Updating the Schedule to reflect actual progress shall not be considered revisions to the Schedule. Since scheduling is a dynamic process, revisions to activity durations and sequences are expected on a monthly basis.
- B. To reflect revisions to the schedule, the Contractor shall provide City with a written narrative with a full description and reasons for each Work activity revised. For revisions affecting the sequence of work, the Contractor shall provide a schedule diagram which compares the original sequence to the revised sequence of work. The Contractor shall provide the written narrative and schedule diagram for revisions two (2) working days in advance of the monthly schedule update meeting.
- C. Schedule revisions shall not be incorporated into any schedule update until the revisions have been reviewed by City. City may request further information and justification for schedule revisions and Contractor shall, within three (3) days, provide City with a complete written narrative response to City's request.
- D. If the Contractor's revision is still not accepted by City, and the Contractor disagrees with City's position, the Contractor has seven (7) calendar days from receipt of City's letter rejecting the revision, to provide a written narrative providing full justification and explanation for the revision. The Contractor's failure to respond in writing within seven (7) calendar days of City's written rejection of a schedule revision shall be contractually interpreted as acceptance of City's position, and the Contractor waives its rights to subsequently dispute or file a claim regarding City's position.
- E. At City's discretion, the Contractor can be required to provide subcontractor certifications of performance regarding proposed schedule revisions affecting said subcontractors.

1.11 Recovery Schedule

- A. If the Schedule Update shows a substantial completion date fourteen (14) calendar days beyond the Contract Substantial Completion date, or individual milestone completion dates, the Contractor shall submit to City the proposed revisions to recover the lost time within seven (7) calendar days. As part of this submittal, the Contractor shall provide a written narrative for each revision made to recapture the lost time. If the revisions include sequence changes, the Contractor shall provide a schedule diagram comparing the original sequence to the revised sequence of work.
- B. The revisions shall not be incorporated into any schedule update until the revisions have been reviewed by City.
- C. If the Contractor's revisions are not accepted by City, City and the Contractor shall follow the procedures described in paragraphs above.
- D. At City's discretion, the Contractor can be required to provide subcontractor certifications for revisions affecting said subcontractors.

1.12 Time Impacts Evaluation (TIE) For Change Orders, and Other Delays

- A. Contractor is directed to proceed with changed work which the Contractor considers time-impacting, the Contractor shall prepare and submit, within fourteen (14) calendar days from the direction to proceed, a Time Impact Evaluation (TIE) which includes both a written narrative and a schedule diagram depicting how the changed work affects other schedule activities. The schedule diagram shall show how the Contractor proposes to incorporate the changed work in the schedule, and how it impacts the current schedule update critical path. The Contractor is also responsible for requesting time extensions based on the TIEs impact on the critical path. The diagram must be tied to the main sequence of schedule activities to enable CITY to evaluate the impact of changed work to the scheduled critical path.
- B. Contractor shall be required to comply with the requirements of Paragraph 1.09.A for all types of delays such as, but not limited to, Contractor/Subcontractor delays, adverse weather delays, strikes, procurement delays, fabrication delays, etc.
- C. Contractor shall be responsible for all costs associated with the preparation of Time Impact Evaluations, and the process of incorporating them into the current schedule update. The Contractor shall provide City Representative with 4 copies of each TIE.
- D. Once agreement has been reached on a TIE, the Contract Times will be adjusted accordingly. If agreement is not reached on a TIE, the Contract Times may be extended in an amount City allows, and the Contractor may submit a claim for additional time claimed by contractor.

1.13 Time Extensions

- A. The Contractor is responsible for requesting time extensions for time impacts that, in the opinion of the Contractor, impact the critical path of the current schedule update. Notice of time impacts shall be given in accord with Contract Document General Conditions.
- B. Where an event for which City is responsible impacts the projected Substantial Completion date, the Contractor shall provide a written mitigation plan, including a schedule diagram, which explains how (e.g., increase crew size, overtime, etc.) the impact can be mitigated. The Contractor shall also include a detailed cost breakdown of the labor; equipment and material the Contractor would expend to mitigate City caused time impact. The Contractor shall submit its mitigation plan to City within 14 calendar days from the date of discovery of said impact. The Contractor is responsible for the cost to prepare the mitigation plan.
- C. Failure to request time, provides TIE, or provides the required mitigation plan will result in Contractor waiving its right to a time extension and cost to mitigate the delay.
- D. No time will be granted under this Contract for cumulative effect of changes.
- E. City will not be obligated to consider any time extension request unless requirements of Contract Documents are complied with.
- F. Failure of the Contractor to perform in accordance with the current schedule update shall not be excused by submittal of time extension requests.

- G. If the Contractor does not submit a TIE within the required fourteen (14) calendar days for any issue, it is mutually agreed that the Contractor does not require a time extension for said issue.

1.14 Schedule Reports

- A. Submit four (4) copies of the following reports with the Initial CPM Schedule, the Original CPM Schedule, and each monthly update.
- B. Required Reports:
1. Two (2) activity-listing reports: one sorted by activity number and one by total float. These reports shall also include each activity's early/late and actual start and finish dates, original and remaining duration, float, responsibility code and the logic relationship of activities.
 2. Cost report sorted by activity number including each activity's associated cost, percentage of Work accomplished, earned value to-date, previous payments and amount earned for current update period.
 3. Schedule plots presenting time scaled network diagram showing activities and their relationships with the controlling operations or critical path clearly highlighted.
 4. Cash flow report calculated by early start, late start and indicating actual progress. Provide an exhibit depicting this information in graphic form.
- C. Furnish City with report files on CD ROM containing all schedule program files.

1.15 Project Status Reporting

- A. In addition to submittal requirements for CPM scheduling identified in this Section, Contractor shall provide a monthly project status report (i.e., written narrative report) to be submitted in conjunction with each CPM Schedule as specified herein. Status reporting shall be in form specified below.
- B. Contractor shall prepare monthly written narrative reports of status of Project for submission to City. Written status reports shall include:
1. Status of major Project components (percent complete, amount of time ahead or behind schedule) and an explanation of how Project will be brought back on schedule if delays have occurred.
 2. Progress made on critical activities indicated on CPM schedule.
 3. Explanations for any lack of work on critical path activities planned to be performed during last month.
 4. Explanations for any schedule changes, including changes to logic or to activity durations.
 5. List of critical activities scheduled to be performed next month.
 6. Status of major material and equipment procurement.

7. Any delays encountered during reporting period.
8. Contractor may include any other information pertinent to status of Project. Contractor shall include additional status information requested by City at no additional cost.
9. Status reports, and the information contained therein, shall not be construed by the Contractor as claims, notice of claims, notice of delay, or requests for changes or compensation.

1.16 Weekly Schedule Report

- A. At the Weekly Progress Meeting, the Contractor shall provide and present a time scaled four (4) week schedule one (1) week behind and three (3) week look ahead schedule that is based and correlated by activity number to the current schedule (i.e., Initial, Original CPM, or Schedule Update).

1.17 Daily Construction Reports

- A. On a daily basis, Contractor shall submit a daily activity report to City for each workday, including weekends and holidays, when worked. Contractor shall develop the daily construction reports on a computer generated data-base capable of sorting daily Work, manpower and man-hours by Contractor, Subcontractor, area, sub area, and change order work. Upon request of CITY, furnish computer disk of this database. Obtain City written approval of daily construction report data base format prior to implementation. Include in report:
 1. Project name and Project number.
 2. Contractor's name and address.
 3. Weather, temperature and any unusual site conditions.
 4. Brief description and location of the day's scheduled activities and any special problems and accidents, including Work of Subcontractors. Descriptions shall be referenced to CPM scheduled activities.
 5. Worker quantities for its own Work force and for Subcontractors of any tier.
 6. Equipment, other than hand tools, utilized by Contractor and Subcontractors.

PART 2 - PRODUCTS (NOT USED)**PART 3 – EXECUTION (NOT USED)**

END OF SECTION

SECTION 01 32 20**PHOTOGRAPHIC DOCUMENTATION**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final completion construction photographs.
- B. Related Requirements:
 - 1. Section 01 22 00 "Unit Price Measurement and Payment" for procedures for unit prices for extra photographs.
 - 2. Section 01 33 00 "Submittal Procedures" for submitting photographic documentation.
 - 3. Section 01 77 00 "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.
 - 4. Section 01 79 00 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
 - 5. Section 02 40 00 "Demolition" for photographic documentation before building demolition operations commence.
 - 6. Section 02 41 19.13 "Selective Building Demolition" for photographic documentation before selective demolition operations commence.
 - 7. Section 31 10 00 "Site Clearing" for photographic documentation before site clearing operations commence.

1.3 Unit Prices

- A. Basis for Bids: Base number of construction photographs on average of 20 photographs per week over the duration of Project.

1.4 Informational Submittals

- A. Qualification Data: For photographer.

- B. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- C. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Digital Camera: Minimum sensor resolution of 8 megapixels.
 - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect and Construction Manager.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.5 Quality Assurance

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.6 Usage Rights

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 – PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

PART 3 – EXECUTION

3.1 Construction Photographs

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- D. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take 20 photographs to show existing conditions.
 - 3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- E. Periodic Construction Photographs: Take 20 photographs monthly, coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- F. Architect-Directed Construction Photographs: From time to time, Architect will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.
- G. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
 - 1. Do not include date stamp.

- H. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the allowance for construction photographs.
1. Three days' notice will be given, where feasible.
 2. In emergency situations, take additional photographs within 24 hours of request.
 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. Owner's request for special publicity photographs.

END OF SECTION

SECTION 01 33 00**SUBMITTAL PROCEDURES**

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals including:
 - 1. Procedures
 - 2. Schedule of Shop Drawing and Sample Submittals
 - 3. Safety Plan
 - 4. Progress Schedule
 - 5. Product Data
 - 6. Shop Drawings
 - 7. Samples
 - 8. Quality Control Submittals
 - 9. Design Data
 - 10. Test Reports
 - 11. Certificates
 - 12. Manufacturers' Instructions
 - 13. Machine Inventory Sheets Operations and Maintenance Manuals Computer Programs
 - 14. Project Record Documents

1.3 Related Sections

- A. Section 01 11 00 "Summary of Work"
- B. Section 01 25 00 "Substitution Procedures".

- C. Section 01 26 00 "Contract Modification Procedures"
 - D. Section 01 29 00 "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - E. Section 01 31 00 "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - F. Section 01 32 00 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - G. Section 01 32 20 "Photographic Documentation" for submitting construction photographs.
 - H. Section 01 35 46 "Indoor Air Quality Procedures and Documentation"
 - I. Section 01 40 00 "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
 - J. Section 01 77 00 "Closeout Procedures" for submitting warranties.
 - K. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - L. Section 01 78 39 "As-Built Documents" for submitting as-built documents.
 - M. Section 01 79 00 "Demonstration and Training" for submitting video files of demonstration of equipment and training of City's personnel.
 - N. Divisions 2 through 33 Sections for specific requirements for submittals in those Sections.
- 1.4 Definitions
- A. Action Submittals: Written and graphic information that requires City's responsive action.
 - B. Informational Submittals: Written information that does not require City's responsive action. Submittals may be rejected for not complying with requirements.
- 1.5 Submittal Procedures
- A. General: Electronic copies of CAD Drawings of the Contract Drawings are always through City for Contractor's use in preparing submittals. Files are used as background use only.
 - B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. City reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on City's Representative's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 1. Initial Review: Allow 15 work days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. City's Representative will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Sequential Review: Where sequential review of submittals by City's consultants, City, or other parties is indicated, allow 21 days for initial review of each submittal.
- E. Submit at own expense, a minimum of two (2) printed sets or copies and one (1) electronic PDF set- Schedule of Shop Drawing and Sample Submittals, Safety Plans, Progress Schedule, Product Data, Shop Drawings, Samples, Quality Control Data, Machine Inventory Sheets, Operations and Maintenance Manuals, Computer Programs, and Project Record Documents required by the Contract Documents.
- F. Transmit each item with a standard letter of transmittal in form approved by City's Representative.
- G. Identify project, Contractor, subcontractor, major supplier, pertinent drawing sheet and detail number, and specification section number as appropriate. Provide space for Contractor, City's Representative and NE review stamps.
- H. Where manufacturer's standard drawings or data sheets are used, they shall be marked clearly to show those portions of the data, which are applicable to this project.
- I. Submit Shop Drawings, Samples and other submittals to City's Representative for review and approval by Architect/Engineer in accordance with accepted schedule of Shop Drawings and Samples submittals. If no such schedule is agreed upon, then all Shop Drawing, Samples and product data submittals shall be completed within ninety (90) days after receipt of Notice to Proceed from CITY.
- J. The data shown on the Shop Drawings shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to

show Architect/Engineer the materials and equipment Contractor proposes to provide and to enable Architect/Engineer to review the information for the limited purposes specified below. Samples shall be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which it is intended and otherwise as Architect/Engineer may require enabling Architect/Engineer to review the submittal.

The number of each Sample to be submitted will be as specified in the Specifications.

- K. At the time of each submission, Contractor shall give City's Representative, Architect/Engineer, and Inspector specific written notice of all variations, if any; that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, and the reasons therefore. This written notice shall be in a written communication separate from the submittal. In addition, Contractor shall cause a specific notation to be made on each Shop Drawing and Sample submitted to City's Representative for review and approval of each such variation by Architect/Engineer. The Architect/Engineer may make adjustments to submittals that may result in changes to the contract. The appropriate change order request should be prepared by the Contractor within ten (10) days of receipt of submittals.
- L. If CITY accepts deviation, CITY shall issue appropriate Contract Modification.
- M. Submittal coordination and verification is responsibility of Contractor; this responsibility shall not be delegated in whole or in part to subcontractors or suppliers. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:
 - 1. All field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto;
 - 2. All materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work; and
 - 3. All information relative to Contractor's sole responsibilities and of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.
- N. Contractor shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
- O. Contractor's submission to City's Representative of a Shop Drawing or Sample submittal will constitute Contractor's representation that it has satisfied its obligations under the Contract Documents, and as set forth immediately above, with respect to Contractor's review and approval of that submittal.
- P. Designation of work "by others", if shown in submittals, shall mean that work will be responsibility of Contractor rather than subcontractor or supplier who has prepared submittals.
- Q. After review by Architect/Engineer of each of Contractor's submittals, one electronic set will be returned to Contractor with actions defined as follows:
 - 1. NO ACTION TAKEN – Submittal is unreviewed.

2. NO EXCEPTIONS TAKEN - Accepted subject to its compatibility with future submittals and additional partial submittals for portions of the work not covered in this submittal. Does not constitute approval or deletion of specified or required items not shown on the submittal.
 3. MAKE CORRECTIONS NOTED (NO RESUBMISSIONS REQUIRED) - Same as 2. above, except that minor corrections as noted shall be made by Contractor.
 4. REVISE AND RESUBMIT - Rejected because of major inconsistencies or errors which shall be resolved or corrected by Contractor prior to subsequent review by Architect/Engineer.
 5. REJECTED (RESUBMIT) - Submitted material does not conform to Plans and Specifications in major respect, i.e.: wrong size, model, capacity, or material.
- R. It is considered reasonable that Contractor shall make a complete and acceptable submittal at least by second submission.
1. CITY reserves the right to deduct monies from payments due Contractor to cover additional costs of Architect's/Engineer's review beyond the second submission. Illegible submittals will be rejected and returned to Contractor for resubmission.
- S. Favorable review will not constitute acceptance by CITY or Architect/Engineer of any responsibility for the accuracy, coordination and completeness of the submittals. Accuracy, coordination, and completeness of Submittals shall be sole responsibility of Contractor, including responsibility to back check comments, corrections, and modifications from CITY's or Architect's/Engineer's review before fabrications. Submittals may be prepared by Contractor, subcontractors, or suppliers, but Contractor shall ascertain that submittals meet requirements of Contract Documents, while conforming to structural space and access conditions at point of installation. Architect/Engineer's review will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Favorable review of submittal, method of work, or information regarding materials and equipment Contractor proposes to furnish shall not relieve Contractor of responsibility for errors therein and shall not be regarded as assumption of risks or liability by Architect/Engineer or CITY, or any officer or employee thereof, and Contractor shall have no claim under Contract on account of failure or partial failure or inefficiency or insufficiency of any plan or method of work or material and equipment so accepted. Favorable review shall be considered to mean merely that Architect/Engineer or CITY has no objection to Contractor using, upon his own full responsibility, plan or method of work proposed, or furnishing materials and equipment proposed.
- T. Architect's/Engineer's review will not extend the means, methods, techniques, sequences or procedures of construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
- U. Submit complete initial submittal for those items where required by individual specification Sections. Complete submittal shall contain sufficient data to demonstrate that items comply with Specifications, shall meet minimum requirements for submissions cited in technical specifications, shall include motor data and seismic

anchorage certifications, where required, and shall include necessary revisions required for equipment other than first named. If Contractor submits incomplete initial submittal, when complete submittal is required, submittal may be returned to Contractor without review.

- V. It shall be Contractor's responsibility to copy, conform and distribute reviewed submittals in sufficient numbers for Contractor's files, subcontractors and vendors.
- W. After Architect/Engineer review of submittal, revise and resubmit as required. Identify changes made since previous submittal.
 - 1. Begin no fabrication or work, which require submittals until return of submittals not requiring resubmittal.
 - 2. Normally, submittals will be processed and returned to City's Representative within fifteen (15) working days of receipt by Architect. The processing time spent to review submittals by City's Representative shall be in addition to the fifteen (15) days.
 - 3. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

1.6 Schedule of Shop Drawing, and Sample Submittals

- A. Submit preliminary Schedule of Shop Drawing and Sample Submittals as required by General Conditions. Submit two (2) copies and one (1) electronic PDF of final and accepted schedule of submittals of shop drawings and samples as required by General Conditions, and in no event later than thirty (30) days following Notice of Award.
- B. Schedule of Shop Drawing and Sample Submittals will be used by Architect/Engineer to schedule their activities relating to review of submittals. Schedule of submittals shall indicate a spreading out of submittals and early submittals of long lead-time items and of items, which require extensive review.
- C. Schedule of Shop Drawing and Sample Submittals shall be reviewed by City's Representative and shall be revised and resubmitted until accepted by City's Representative.
- D. DSA Deferred Approval Submittals shall be prepared for review by the Architect/Engineer within 30 days of receipt of Notice to Proceed. Contractor shall promptly make corrections to documents for City to submit to DSA for approval. Contractor shall have the sole responsibility for obtaining DSA approval via the City's office for all deferred approval submittals in a timely manner. There will be no time extensions granted for delay in obtaining such approval.

1.7 Safety Plan

- A. Submit one (1) electronic PDF of Safety Plan specific to this Contract to City's Representative within fifteen (15) calendar days after Start Date of the Contract Times.
- B. No on-site work shall be started until Safety Plan has been reviewed and accepted by CITY. Acceptance of Safety Plan shall not affect Contractor's responsibility for

maintaining a safe working place and instituting safety programs in connection with project in full compliance with local, state and federal regulations.

1.8 Progress Schedule

- A. Schedule all items requiring City action for submission during first 25 percent of construction period.
- B. See Section 01 32 00 "Progress Schedules and Reports" for schedule and report requirements.
- C. Submit one (1) electronic PDF of schedule at each of the following items:
 - 1. Initial CPM Schedule at the Pre-construction Conference.
 - 2. Original CPM Schedule within thirty (30) days of Notice to Proceed (NTP).
 - 3. Adjustments to the CPM Schedule as required.
 - 4. CPM Schedule updates monthly, five (5) days prior to monthly progress meeting.
- D. Submit one (1) electronic PDF copy of the reports listed in Section 01 32 00 "Progress Schedules and Reports" with:
 - 1. Initial CPM Schedule
 - 2. Original CPM Schedule
 - 3. Each monthly Schedule update
- E. Progress Schedules and Reports shall be submitted electronically, in addition to hard copies as specified above.

1.9 Quality Control Submittals

- A. Design Data: Not applicable.
- B. Test Reports
 - 1. Indicate that material or product conforms to or exceeds specified requirements.
 - 2. Reports may be from recent or previous tests on material or product, but must be acceptable to City's Representative. Comply with requirements of each individual specification Section.
- C. Certificates
 - 1. Indicate that material or product conforms to or exceeds specified requirements.
 - 2. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 3. Certificates may be recent or from previous test results on material or product, but must be acceptable to City's Representative.
- D. Manufacturers' Instructions

1. Include manufacturer's printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing.
2. Identify conflicts between manufacturer's instructions and Contract Documents.

1.10 Computer Programs

- A. When any equipment requires operation by computer programs, submit copy of program on appropriate diskette plus all user manuals and guides for operating the programs and making changes in the programs for upgrading and expanding the databases. Provide required licenses to CITY at no additional cost.
 1. Include at least three (3) years prepaid software license renewals, which includes software upgrades and updates.

1.11 Project Record Documents

- A. Submit one copy of each of the Project Record Documents listed in Section 01 70 00 Contract Closeout.

1.12 Delay of Submittals

- A. Delay of submittals by Contractor is considered avoidable delay. Liquidated damages incurred because of late submittals will be assessed to the Contractor.

PART 2 – PRODUCTS**2.1 Submittals**

- A. Within fifteen (15) calendar days after Start Date of the Contract Times submit one (1) electronic PDF of complete list of substitutions of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. Contractor shall be responsible for and make all submissions.
 1. Submit items specified herein to Architect/Engineer and City's Representative.
 2. Transmit all items on the City's approved Transmittal Form, found at the end of this section.
 3. Identify each transmittal using the 5 or 6-digit specification number, i.e., metal handrails might be numbered 05 50 00, along with an individual submittal number for each section number. Submittal numbers shall be sequential. If returning submittal "12" for re-submission, second submission would be identified as "12A". Should submittal be rejected multiple times (12b, 12c, etc), the Contractor may be required to reimburse the City/Architect/Engineer for labor to review subsequent submissions.
 4. Develop, for maintenance by the City's Representative, a schedule of all submittals and their status. Refer to Paragraph 1.3 below. The schedule will be reviewed each week at the project meeting.
- C. Transmittals, shop drawings, or samples submitted to Architect/Engineer shall have the Contractor's stamp on it with his signature and be marked "approved."

Contractor's stamp on these items indicates that Contractor has performed the following:

1. Verified field dimensions and quantities.
 2. Verified field construction criteria, materials, catalog numbers and similar data.
 3. Reviewed and coordinated submittal data with requirements of the Work and the Contract Documents.
 4. ITEMS NOT STAMPED BY THE CONTRACTOR WILL BE RETURNED UNREVIEWED.
- D. Indicate any item, component, material or portion of Work, which deviates from Contract Documents. Unless such departures are accepted as indicated in paragraph "Review" below, such departures will not be permitted.
- E. Make submittals sufficiently in advance of data required to allow Architect/Engineer reasonable time for review and additional resubmission and review cycles if necessary.
1. Items submitted without Contractor's review stamp will be returned, without action, for resubmission.
 2. Items not submitted in accordance with provisions of this Section will be returned, without action, for resubmission.
 3. Submissions on items not approved for use by specifications or addenda will be rejected.
 4. Drawings transmitted by other than the Prime Contractor will be returned to the Prime Contractor without action of any kind. Drawings will not be returned to subcontractors.

2.2 Submittals – Product Data

- A. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- B. Tabulate products by specification section number.
- C. Supplemental Data:
1. Submit number of copies, which Contractor requires, plus two (2) copies, which will be retained by City's Representative.
 2. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to Project.
- D. Provide copies for Project Record Documents described in Section 01 70 00 Contract Closeout.

2.3 Submittals - Shop Drawings

- A. Identify drawings with manufacturer, item, use, type, project designation, specification section or drawing detail reference.
- B. Minimum Sheet Size: 8-1/2 inches by 11 inches. All others: Multiples of 8-1/2 inches by 11 inches, 34 inches by 44 inches maximum.
- C. For 8-1/2 inch by 11 inch and 11 inch by 17-inch sheets, submit one (1) electronic PDF copy.
- D. For 17 inch by 22 inch through 34 inch by 44-inch sheets, submit one [1] electronic copy. After review, distribute.
- E. Original sheet or reproducible transparency will be marked with Architect's/Engineer's review comments and returned to Contractor.
- F. Each sheet/copy must include project name and project number and bid number on all sheets.
- G. Mark each copy to identify applicable Products, models, options, and other data; supplement manufacturers' standard data to provide information unique to Work.
- H. Include manufacturers' installation instructions when required by specification section.
- I. Submit a copy of the Shop Drawing Transmittal Form with each submittal and resubmittal.

2.4 Submittals - Samples

- A. Identify samples with manufacturer's name, item, use, type, project designation, specification section or drawing detail reference, color, range, texture, finish and other pertinent data.
 - 1. Submit samples to illustrate functional and aesthetic characteristics of Product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.
- B. Submit full range of manufacturers' standard colors, textures, and patterns for City's Representative's selection.
- C. Submit a minimum of six (6) samples unless otherwise specified in the construction documents.
- D. Sizes: Unless otherwise specified, provide the following:
 - 1. Paint Chips: Manufacturers' standard
 - 2. Flat or Sheet Products: Minimum 6 inches square, maximum 12 inches square
 - 3. Linear Products: Minimum 6 inches, maximum 12 inches long
 - 4. Bulk Products: Minimum 1 pint, maximum 1 gallon
- E. Full size samples may be used in Work upon approval.

F. Mock-ups:

1. Erect field samples and mock-ups at Project site in accordance with requirements of Specification sections.
2. Modify or make additional field samples and mock-ups as required to provide appearance and finishes approved by City's Representative.
3. Approved field samples and mock-ups may be used in Work upon approval.

G. Architect/Engineer may, at his option, retain samples for comparison purposes until completion of Work.

1. Samples will be returned or may be used in the Work unless the technical section specifically indicates otherwise.
2. Remove samples when directed.
3. Pay all costs of furnishing or constructing, and removing samples.

H. Resubmit samples of rejected items.**I. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.**

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect/Engineer.

J. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 – EXECUTION**3.1 Contractor's Review**

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect/Engineer and City's Representative.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 Architect/Engineer Review

- A. General: Architect/Engineer and City's Representative will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect/Engineer and City's Representative will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect/Engineer and City's Representative will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.
- C. Reproduce and distribute submittals that the Architect/Engineer reviews and stamps as follows, to indicate the action taken:
 - 1. Reviewed: Where submittal is marked "Reviewed," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 - 2. Make Corrections Noted: When submittal is marked "Make Corrections Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 - 3. Submit Specified Item: When submittal is marked "Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
 - 4. Rejected: When submittal is marked "Rejected," information submitted is not in compliance with Contract Documents. Resubmit submittal as required by Contract Documents.
- D. Contractor shall retain 1 copy of each "Reviewed," "Reviewed Additional Information Required" or "Furnish as Corrected" submittal on file at the job site.
- E. Architect/Engineer shall retain 1 copy of each "Reviewed," "Reviewed Additional Information Required" or "Furnish as Corrected" submittal in the project file.
- F. Contractor shall resubmit items stamped "Revise and Resubmit" or "Rejected" by Architect/Engineer.
 - 1. Provide a print of previous drawing with resubmission for comparison.
 - 2. Add letter suffix to previous transmittal number, to indicate resubmission.
 - 3. It shall be the Contractor's responsibility to assure that previously approved documents are destroyed when they are superseded by a resubmittal.
- G. Architect/Engineer review is general and does not:
 - 1. Permit departure from Contract Documents.

2. Relieve Contractor from responsibility for errors in detail, in dimensions or related items.
 3. Approve departure from previous instructions or details.
 4. Relieve Contractor of the responsibility to provide all components, wiring, etc., required to make item operable or usable.
 5. Imply acceptance of items for which no data is submitted.
- H. For items constituting a departure from Contract Documents see Section 01 25 00.
- I. Reviewed samples submitted or constructed and approved by Architect/Engineer constitute criterion for judging completed work. Finish work or items not equal to samples will be rejected.
- J. Start of work which requires submittals, prior to return of submittals with Architect/Engineer or City's stamp indicating review and approval is at Contractor's risk.
- 3.3 Distribution
- A. Contractor shall copy and distribute all "Reviewed," "Reviewed Additional Information Required" or "Furnish as Corrected" submittals, including one copy to the City.

END OF SECTION

SECTION 01 35 26

OWNER'S SAFETY REQUIREMENTS FOR ELECTRICAL WORKERS

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This section specifies the requirements for enhanced electrical worker safety.

1.3 General Requirement

- A. Enhanced Electrical Safety Requirements are required for all worksite electrical labor. For all capital improvement contracts where the electrical scope of work is \$100,000 or more, the project must comply with the following requirements for electrical safety enhancement:
 - 1. 70% of all "Journey-level Electricians" must be graduates of a State of California approved Electrical Apprenticeship Program.
 - 2. 20% of the jobsite electrical workers must be OSHA 10-hour Construction Industry Safety and Health Certified.
 - 3. At least one jobsite electrical worker must be OSHA 30-hour Construction Industry Safety and Health Certified.
- B. The above workforce ratios are determined by verifying the workforce composition on a daily basis. The Contractor will be responsible to certify their compliance.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 26

OWNER'S SAFETY REQUIREMENTS FOR ELECTRICAL WORKERS

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This section specifies the requirements for enhanced electrical worker safety.

1.3 General Requirement

- A. Enhanced Electrical Safety Requirements are required for all worksite electrical labor. For all capital improvement contracts where the electrical scope of work is \$100,000 or more, the project must comply with the following requirements for electrical safety enhancement:
 - 1. 70% of all "Journey-level Electricians" must be graduates of a State of California approved Electrical Apprenticeship Program.
 - 2. 20% of the jobsite electrical workers must be OSHA 10-hour Construction Industry Safety and Health Certified.
 - 3. At least one jobsite electrical worker must be OSHA 30-hour Construction Industry Safety and Health Certified.
- B. The above workforce ratios are determined by verifying the workforce composition on a daily basis. The Contractor will be responsible to certify their compliance.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 46

INDOOR AIR QUALITY PROCEDURES

PART 1 - GENERAL

1.1 Related Documents

1. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.
- B. Ventilation: HVAC system has been designed to achieve the minimum requirements for ventilation specified in ASHRAE 62.1 with air change effectiveness of 0.9 or greater.
- C. Residential Units Air Isolation: Units have been designed with impermeable party walls and sealed openings in walls and floors.

1.2 Related Sections

- A. Section 01 33 00 "Submittal Procedures" for required submittal procedures.
- B. Section 01 50 00 "Temporary Facilities and Controls" requirements for installation, maintenance and removal of temporary utilities, controls, and facilities during construction.
- C. Section 01 60 00 "Product Requirements" procedures for storage of interior materials to prevent exposure to moisture and pollutants.
- D. Division 23 Section for duct cleaning procedures, testing, balancing and adjusting HVAC.

1.3 Definitions

- A. Adsorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.
- B. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.
- C. Particulates: Dust, dirt, and other airborne solid matter.
- D. Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

1.4 IAQ Management Summary

- A. The Owner has established that the contractor shall prevent indoor air quality problems resulting from the construction process, to sustain long term installer and occupant health and comfort.
- B. Protect the ventilation system components during construction and clean contaminated components after construction is complete.
- C. Control sources of potential IAQ pollutants by controlling selection of materials and processes used in project construction.

1.5 Submittals

- A. IAQ Management Plan for the construction and pre-occupancy phases of the project. describe in detail measures to be taken to promote adequate indoor air quality upon completion; use SMACNA IAQ Guidelines for Occupied Buildings Under Construction as a guide.
 - 1. Submit not less than 60 days before enclosure of building.
 - 2. Identify potential sources of odor and dust.
 - 3. Identify construction activities likely to produce odor or dust.
 - 4. Identify areas of project potentially affected, especially occupied areas.
 - 5. Evaluate potential problems by severity and describe methods of control.
 - 6. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
 - 7. Describe cleaning and dust control procedures.
 - 8. Describe coordination with commissioning procedures.
- B. Photographs documenting construction IAQ management measures implemented during construction such as duct protection measures and measures to protect on- site stored or installed absorptive materials from moisture.
- C. Cut sheets of filtration media used during construction with MERV values highlighted.

1.6 Construction Air Quality Management Plan

- A. Develop a Draft Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:
 - 1. During construction meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction 1995, Chapter 3,
 - 2. Protect stored on-site or installed absorptive materials from moisture damage.
- B. The SMACNA IAQ Guidelines for Occupied Buildings under Construction provides an overview of air pollution associated with construction, control measures, construction process management, quality control, communicating with occupants, and case studies. These guidelines can be accessed at www.smacna.org. Chapter 3 of the SMACNA Guidelines recommends Control Measures in five areas: HVAC protection, source control, pathway interruption, housekeeping, and scheduling. Review the applicability of each Control Measure and include those that apply in the Draft IAQ Management Plan.
 - 1. HVAC Protection: Shut down the return side of the HVAC system whenever possible during heavy construction. If the system must remain operational during construction include the following strategies that apply:
 - a. Fit all return air grilles with temporary filters with a Minimum Efficiency Reporting Value (MERV) of 8.
 - b. Isolate the return side of the HVAC system from the surrounding environment as

- much as possible (e.g., place all tiles for the ceiling plenum, repair all ducts and air handler leaks).
 - c. Damper off the return system in the heaviest work areas and seal the return system openings with plastic.
 - d. Upgrade the filter efficiency where major loading is expected to affect operating HVAC system.
 - e. Clean permanent return air ductwork per National Air Duct Cleaning Association standards upon completion of all construction and finish installation work.
 - f. Replace all filtration media prior to occupancy.
2. Source Control: Propose the substitution of non-toxic formulations of materials that are generally the responsibility of the contractor such as caulks, sealants, and cleaning products.
 3. Pathway Interruption: Prevent contamination of clean spaces. Include the following strategies that apply:
 - a. Use 100% outside air ventilation (when outside temperatures are between 55 degrees F and 85 degrees F and humidity is between 30% and 60%) with air exhausted directly to the outside during installation of finishes and other VOC emitting materials.
 - b. Erect some type of barrier between work areas or between the inside and outside of the building to prevent unwanted airflow from dirty to clean areas.
 4. Housekeeping: Reduce construction contamination in the building prior to occupancy through HVAC and regular space cleaning activities.
 - a. Store building materials in a weather tight, clean area prior to unpacking for installation.
 - b. Check for possible damage to building materials from high humidity.
 - c. Clean all coils, air filters, and fans before testing and balancing procedures are performed.
 5. Scheduling: Specify construction sequencing to reduce absorption of VOC's by materials that act as sinks or contaminant sources. Complete application of wet and odor-emitting materials such as paints, sealants, and coatings before installing sink materials such as ceiling tiles, carpets, insulation, gypsum products, and fabric-covered furnishings are installed.
 - a. Protect stored on-site or installed absorptive materials from exposure to moisture through precipitation, plumbing leaks, or condensation from the HVAC system to prevent microbial contamination.
- C. Draft IAQ Management Plan Review Meeting: Once the Owner and Architect have reviewed the Draft IAQ Management Plan and prior to construction at the site, schedule and conduct a meeting to review the Draft IAQ Management Plan and discuss procedures, schedules and specific requirements for IAQ during the construction and pre-construction phases of the building. Discuss coordination and interface between the Contractor and other construction

activities. Identify and resolve problems with compliance to the requirements. Record minutes of the meeting, identify all conclusions reached and matters requiring further resolution.

1. Attendees: The Contractor and related Contractor personnel associated with the work of this section, including personnel to be in charge of the IAQ management program, Architect, Owner and such additional personnel as the Architect or Owner deem appropriate.
- D. Final IAQ Management Plan: Make any revisions to the Draft IAQ Management Plan agreed upon during the meeting identified in item (C) above and incorporate resolutions agreed to be made subsequent to the meeting. Submit the revised plan to the Owner and Architect for approval within 10 calendar days of the meeting.

PART 2 – PRODUCTS

2.1 HVAC Air Filters

- A. Return Filters: Filtration media rated for minimum efficiency reporting value (MERV) when tested in accordance with ASHRAE 52.2 and compatible with equipment.
 1. Construction Return Filters: MERV of 8, minimum.
 2. Flush-Out Return Filters: MERV of 13, minimum.
 3. Permanent Filters: As specified in Division 23..
 4. Provide Filters: install and test. Report test results to City's Representative.

PART 3 – EXECUTION

3.1 Implementation of IAQ Management Plan

- A. Manager: The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and the IAQ Management Plan for the Project.
- B. Progress Meetings: Construction related IAQ procedures shall be included in the pre-construction and construction progress meeting agendas.
- C. Distribution: The Contractor shall distribute copies of the IAQ Management Plan to the Job Site Foreman, each Subcontractor, the Owner, and the Architect.
- D. Instruction: The Contractor shall provide on-site instruction of the IAQ procedures and ensure that all participants in the construction process understand the importance of the goals of the IAQ Management Plan.

3.2 Filter Installation and Replacement

- A. Install construction return filter at each return grille before operating permanent air handlers during construction.
- B. Replace filters after completing construction and before conducting building flush-out.
 1. Replace construction return filters with flush-out return filters.
 2. Replace supply filters.

3. Replace filters after [completing construction] [conducting building flush-out] and before occupancy.

3.3 Building Flush-Out

- A. Conduct building flush-out after construction ends and before occupancy.
 1. Operate HVAC air system to supply 14,000 c.f. total outdoor air volume while maintaining 60 degrees F minimum indoor temperature and 60 percent maximum indoor relative humidity.
 2. After occupancy, flush-out ventilate space with minimum 0.30 cfm outdoor air.
 3. Begin flush-out ventilation each day minimum three hours before occupancy and continue for occupancy duration.
 4. Maintain flush-out ventilation conditions until 14,000 cf total outdoor air volume is delivered to space.
- B. When tests indicate contaminants exceed maximum concentration limit, flush affected building area with outside air and retest.
- C. Repeat flushing and retesting until measured contaminate concentrations are less than specified maximum limits.
- D. Take air samples for retests at same location as initial tests.

3.4 Ventilation Effectiveness Testing

- A. Perform ventilation effectiveness testing before occupancy.
- B. Do not begin ventilation effectiveness testing until:
 1. HVAC testing, adjusting, and balancing has been satisfactorily completed.
 2. Building flush-out or air contaminant testing has been completed satisfactorily.
 3. New HVAC filtration media have been installed.
- C. Test each air handler zone in accordance with ASHRAE 129.
- D. If calculated air change effectiveness for a particular zone is less than 0.9 due to inadequate balancing of the system, adjust, and retest at no cost to Owner.

3.5 Construction Photographs

1. Photograph construction operations to show compliance with SMACNA IAQ and construction IAQ management plan. Take minimum six photographs on minimum three different occasions during construction to show consistent adherence with specified requirements.
2. Identify photographs and identify SMACNA IAQ approach illustrated in each photograph.

END OF SECTION

SECTION 01 40 00 QUALITY**REQUIREMENTS**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. Section Includes administrative and procedural requirements for quality assurance and quality control:
 - 1. Quality assurance and control of installation.
 - 2. References.
 - 3. Mock-Up.
 - 4. Manufacturer's field services.
 - 5. Inspection and Testing Laboratory services
 - 6. Contractor's quality control requirements.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect/Engineer, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 Related Sections

- A. Section 01 32 00 "Construction Progress Documentation" for developing a schedule of required tests and inspections.
- B. Divisions 2 through 32 Sections for specific test and inspection requirements and as indicated on the Drawings.

1.4 Definitions

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Construction Manager
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
- D. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- II Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- J. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.5 Conflicting Requirements

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels,

comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect/Engineer for a decision before proceeding.

- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect/Engineer for a decision before proceeding.

1.6 Submittals

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Identification of applicable standards.
 - 4. Identification of test and inspection methods.
 - 5. Number of tests and inspections required.
 - 6. Time schedule or time span for tests and inspections.
 - 7. Entity responsible for performing tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- C. Reports: Prepare and submit certified written reports that include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.

8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 Quality Assurance

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in- service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in- service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect/Engineer, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Construction Manager and/or Architect/Engineer.
 2. Notify Architect/Engineer and Construction Manager seven days in advance of dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Architect/Engineer's approval of mockups before starting work, fabrication, or construction.
 5. Allow seven days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed, unless otherwise indicated.
- K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 2 through 49.

1.8 Quality Control

- A. Monitor suppliers, manufacturers, products, services, site conditions, and installation to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. If manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 1. Owner's employment of Testing and Inspection agency shall not in any way relieve Contractor from obligation to perform Work in accord with the Contract Documents. Review, or inspection of the Work or materials by Testing Agency, or failure to do so, shall neither constitute acceptance on Owner's part nor waiver of Owner's right to future review or inspection.
 2. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
 7. Retain first subparagraph below where cost of quality-control services must be included in the Contract Sum and where Owner wants to retain control of these services over certain construction operations.
 8. Payment for these services will be made by Owner.

9. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- E. Purpose: Independent testing agency services are required to provide unbiased quality control information necessary to protect interests of Owner and to furnish such technical knowledge as is beneficial to the project.
- F. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."
- G. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- H. Testing Agency Responsibilities: Cooperate with Architect/Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 1. Notify Construction Manager and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- I. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.

6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
 - J. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
 - K. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for commencement of the Work
 1. Distribution: Distribute schedule to Owner, Construction Manager and Architect/Engineer and Geotechnical Engineer testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.
- 1.9 Special Tests and Inspections
- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notify Construction Manager and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Construction Manager with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected work.

PART 2 – PRODUCTS (NOT USED)**PART 3 – EXECUTION****3.1 Test and Inspection Log**

- A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect/Engineer.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Construction Manager's reference during normal working hours.

3.2 Repair And Protection

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution Requirements."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

3.3 Inspection And Testing Laboratory Services

- A. The City shall have the option to employ and pay for services of an independent laboratory or use its own laboratory facilities to perform inspection and testing.
- B. The laboratory will perform inspections, tests, and other services specified in individual specification sections and as required by the City.
- C. Cooperate with the laboratory by furnishing samples of materials, design mix, equipment, tools, storage and assistance as requested. Notify the City's Representative and laboratory 48 hours prior to expected time for operations requiring services.
- D. Retesting required because of non-conformance to specified requirements shall be performed by the same laboratory on instructions by the City. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum on the next scheduled payment.
- E. Should it be considered necessary or advisable by the City at any time before acceptance of the Work to make an examination of work already completed by removing or tearing out the same, the Contractor shall on request promptly furnish all necessary facilities, labor, and materials. If such work is found to be defective in any respect owing to fault of the Contractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and materials necessarily involved in the examination and replacement shall be reimbursable to the Contractor.

3.4 Contractor's Quality Control

- A. The Contractor is responsible for the quality of the work performed under this contract, as well as the quality of the material, equipment, and supplies furnished by him to be incorporated into the work.
- B. The Contractor shall designate a representative who will be on site at all times while the respective Contractor's work is in progress and will have the authority and responsibility to accept/install items of work, and to reject/remove defective items of work. The Contractor's Quality-Control Representative may delegate his duties, but the primary responsibility and authority shall rest in him.
- C. The Contractor's representative shall coordinate the submittal of all shop drawings, product data, and samples to the City's Representative. No work requiring submittal of a shop drawing, project data, or sample shall be commenced until the submittal has been reviewed and accepted by the City's Representative. The Contractor's Representative shall monitor the shop drawing submittals for items requiring early delivery of anchors and embedments in concrete, masonry and precast concrete for later installation of the item itself.
- D. The Contractor will cooperate with an approved material testing laboratory to perform testing of materials as required by the Contract Drawings and Specifications.
- E. The Contractor's Representative will review his drawings, procurement documents, and contracts to ensure that the technical information provided and all work performed is in accordance with the latest revisions of the Contract Drawings and Specifications.

3.5 Contractor's Financial Responsibilities for The Quality of the Work

- A. The contractor shall be financially responsible for the accuracy, correctness and quality of all work performed under this contract, including all materials, equipment and labor required by the Contract Documents.
- B. Should any material, equipment or labor not conform to the requirements of the Contract Documents, the City's Representative shall determine what remedial actions are required to effect such conformance. Should that determination require additional work by any member of the design team (consulting architect or engineers, City Architect or engineers, etc.) or the Construction inspection team, the Contractor shall pay for all those required additional services.
- C. The amount to be paid by the Contractor for the aforementioned additional design and/or inspection services shall be determined on a time-and-material basis by the City's Representative. Such amount, when finally determined, shall be deducted from the next regularly scheduled progress payment due to the Contractor.

END OF SECTION

SECTION 01 41 00**REGULATORY REQUIREMENTS**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This section specifies codes, laws, rules and regulations applicable to the project.
- B. Nothing in these Contract Documents shall be construed to permit work not conforming to the latest edition of the aforementioned codes, laws, rules and regulations.
- C. All work shall meet or exceed the applicable requirements of the latest editions of the following codes formally adopted by the City of Oakland, including all adopted amendments and supplements:
- D. Contractor shall furnish, without extra charge, any additional labor and/or materials when required by the compliance with the codes, laws, rules and regulations, though the work is not mentioned in these Specifications or shown on the Drawings.
- E. When Specifications or Drawings call for materials or construction of a higher quality or larger size than required by governing codes, laws, rules and regulations, the provisions of the Specifications or Drawings shall take precedence.

1.3 References to Regulatory Requirements

- A. Codes, laws, ordinances, rules and regulations referred to shall have full force and effect as though printed in full in these specifications.
- B. Conform to referenced codes, laws, ordinances, rules and regulations, which are in effect on date of receipt of bids.

1.4 Codes

- A. Codes, which apply to Contract, include, but are not limited to, the following:
 - 1. 2019 California Building Code (Part 2, Title 24, C.C.R.)
 - 2. 2019 California Electrical Code (Part 3, Title 24, C.C.R.)
 - 3. 2019 California Mechanical Code (Part 4, Title 24, C.C.R.)
 - 4. 2019 California Plumbing Code (Part 5, Title 24, C.C.R.),

5. 2019 California Energy Code (Part 6, Title 24, C.C.R.)
6. 2019 State Elevator Safety Regulations (Part 7, Title 24, C.C.R.)
7. 2019 California Fire Code (Part 9, Title 24, C.C.R.)
8. 2019 California Code of Regulations, (Part 11, Title 24 C.C.R.), California Green Building Standards Code, "CAL-Green".

1.5 Laws, Ordinances, Rules and Regulations

- A. prosecution of Work to be done under Contract, comply with applicable laws, ordinances, rules and regulations, including, but not limited to, the following:
- B. Federal
 1. 2010 ADA Standards for Accessible Design
 2. 29 CFR, Section 1910.1001, Asbestos
 3. 40 CFR, Subpart M, National Emission Standards for Asbestos
 4. Executive Order 11246
- C. State of California
 1. California Code of Regulations, Titles 5, 8, 19, 21, 24
 2. California Education Code
 3. California Public Contract Code
 4. California Health and Safety Code
 5. California Government Code
 6. California Labor Code
 7. California Civil Code
 8. California Code of Civil Procedure
 9. CPUC General Order 95, Rules for Overhead Electric Line Construction
 10. CPUC General Order 128, Rules for Construction of Underground Electric Supply and Communications Systems
- D. State of California Agencies
 1. Bay Area Air Quality Management District (BAAQMD / www.baaqmd.gov)
 2. State and Consumer Services Agency
 3. Department of General Services

4. Division of the State Architect, Office of the State Fire Marshal, Office of Public School Construction

E. Local Agencies:

1. City of Oakland, California.

F. Other:

1. All other applicable federal, state and local laws, and the rules and regulations of governing utility districts and the various other authorities have jurisdiction over the construction and completion of the project, including the latest rules and regulations of the State Fire Marshal, CAL/OSHA and the State Safety Orders, and the California Labor Code, shall apply to the contract throughout, and they shall be deemed to be included in the contract the same as though printed in these Specifications.

1.6 Compliance With Americans With Disabilities Act

- A. Contractor acknowledges that, pursuant to the Americans with Disabilities Act (ADA), programs, services and other activities provided by a public entity to the public, whether directly or through a contractor, must be accessible to the disabled public. Contractor shall provide the services specified in this Agreement in a manner that complies with the ADA and any and all other applicable federal, state and local disability rights legislation. Contractor agrees not to discriminate against disabled persons in the provision of services, benefits or activities provided under this Agreement and further agree that any violation of this prohibition on the part of Contractor, its employees, agents or assigns shall constitute a material breach of this Agreement.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 42 00**REFERENCES**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This section includes reference standards, abbreviations, symbols and definitions of codes, rules, regulations and standards used in the construction documents; and establishes complete titles for standards referenced elsewhere in the specifications.
- B. Reference Standards: Material and workmanship specified by reference to number, symbol, or title of specific standard such as state standard, commercial standard, federal specifications, technical society, or trade association standard, or other similar standard shall comply with requirements of standards except when more rigid requirements are specified or required by applicable codes.
- C. Standards referred to, except as modified herein, shall have full force and effect as though printed in the Contract Documents. Standards are not furnished to Contractor, since manufacturers and trades involved are assumed to be familiar with their requirements.
- D. References throughout these specifications to "he," "him," or any other such masculine term does not imply a particular gender.

1.3 Definitions

- A. General: Basic Contract definitions are included in the Conditions of the Contract.

ADDENDA: Written or graphic instruments issued prior to the opening of Bids, which clarify, correct or change the bidding requirements or the Contract Documents.
Addenda shall not include the minutes of the Pre-bid Conference and Site Visit.

ADDITIVE BID: The sum to be added to the Base Bid if the change in scope of work as described in Additive Bid is accepted by City Of Oakland.

AGREEMENT: Agreement is the basic contract document that binds the parties to construction Work. Agreement defines relationships and obligations between City Of Oakland and Contractor and by reference incorporates Conditions of Contract, Drawings, and Specifications and contains Addenda and all Modifications subsequent to execution of Contract.

ALTERNATE: Work added to or deducted from the Base Bid, if accepted by City Of Oakland.

"Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

APPROVED EQUAL: Approved in writing by City Of Oakland as being of equivalent quality, utility and appearance.

ARCHITECT or ARCHITECT/ENGINEER: The person holding a valid California State Architect's license, whose firm has been designated within the Contract Documents as the Architect to provide architectural services on the project. Refer to Section 341, Part 1, Title 24, C. C. R.

1. When the Architect is referred to within the Contract Documents and no Architect has in fact been designated, then the matter shall be referred to City Of Oakland. The term Architect shall be construed to include all its consultants retained for the project, as well as employees of the Architect. When the designated Architect is an employee of City Of Oakland, his authorized representations on the project within the district will be included under the term Architect.

BID: The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

BIDDER: One who submits a Bid.

CITY OF OAKLAND: Unless otherwise expressly indicated or required by the context of usage, the terms "City" and "Owner" as used in the Contract Documents shall be deemed references to City Of Oakland.

CITY-FURNISHED, CONTRACTOR-INSTALLED: Items furnished by City Of Oakland at its cost for installation by Contractor at its cost under this Contract.

CITY REPRESENTATIVE(S): The person or persons assigned by City Of Oakland to be City Of Oakland's representatives or, if so designated, agent(s) at the site.

BY CITY: Work that will be performed by City Of Oakland or its agents at the City Of Oakland's expense.

BY OTHERS: Work that is outside scope of Work to be performed by Contractor under this Contract, which will be performed by City Of Oakland, other contractors, or other means.

CHANGE ORDER: A written instrument prepared by City Of Oakland and signed by City Of Oakland and Contractor, stating their agreement upon all of the following:

1. a change in the Work,
2. the amount of the adjustment in the Contract Sum, if any, and
3. the amount of the adjustment in the Contract Time, if any.
4. As appropriate, change orders are subject to approval by the Division of the State Architect. Refer to section 4-338, Part 1, Title 24, California Code of Regulations.

CONCEALED: Work not exposed to view in the finished Work, including within or behind various construction elements.

CONTRACT CONDITIONS: Conditions of Contract define basic rights, responsibilities and relationships of Contractor and City Of Oakland and consists of two parts: General Conditions and Supplementary Conditions.

1. General Conditions are general clauses, which are common to the City Of Oakland Contracts.
2. Special Provisions or Supplementary conditions modify or supplement General Conditions to meet specific requirements for this Contract.

CITY: City of Oakland.

CITY'S REPRESENTATIVE: City Of Oakland's authorized representative, who shall represent City Of Oakland in all matters relative to this Contract.

1. City's Representative may authorize agents and representatives to act in carrying out City's Representative's duties, including a "Project Manager", to act under the authority of the City's Representative.
2. As City Of Oakland's agent, the City's Representative is the beneficiary of all contract obligations of Contractor to City Of Oakland, including without limitation, all releases and indemnities. City's Representative shall not have any personal liability arising from this Contract or any activity there under and Contractor releases City's Representative fully from all loss, cost, damage, expense or liability arising out of or connected with this Project, whether arising from contract, negligence or tort claims of all kinds.
3. Whenever appearing in the Contract Documents in context with responsibilities which affect the design or quality of the work, such as inspections, directions, approvals of methods or materials, or interpretations of intent, the words "City's Representative" shall be construed to mean "Resident Engineer," and/or "City Inspector," shall be interchangeable, and shall mean a duly authorized person representing the City of Oakland.

CONTRACT DOCUMENTS: Contract Documents shall consist of the documents identified as the Contract Documents in Contract Agreement, plus all changes, addenda and modifications thereto.

CONTRACT MODIFICATION: Either:

1. a written amendment to Contract signed by Contractor and City Of Oakland; or
2. a Change Order; or
3. a written directive for a minor change in the Work issued by City Of Oakland.

CONTRACT SUM: The sum stated in the Agreement and, including authorized adjustments, the total amount payable by City Of Oakland to Contractor for performance of the Work and the Contract Documents. (Also referred to as the **CONTRACT PRICE**.)

CONTRACT TIMES: The number or numbers of days or the dates stated in the Agreement (i) to achieve substantial completion of the Work or designated milestones and/or (ii) to complete the Work so that it is ready for final payment and is accepted.

CONTRACTOR: The person or entity identified as such in the Agreement and referred to throughout the Contract Documents as if singular in number and neuter in gender. The term "Contractor" means the Contractor or its authorized representative. It is the intent of these Specifications that the responsibility for the completion of the work in accordance with the Contract Documents is upon the General Contractor. All such terms as "the plumber," "the electrician," "other Contractors," "this Contractor," "work of others," and similar expressions shall be deemed to refer to the General Contractor.

CONTRACTOR'S EMPLOYEES: Persons engaged in execution of Work under Contract as direct employees of Contractor, as subcontractors, or as employees of subcontractors.

DATE OF SUBSTANTIAL COMPLETION: Date of Substantial Completion of Work or designated portion thereof is date certified by City's Representative when construction is sufficiently complete in accordance with Contract Documents for City Of Oakland to occupy Work or designated portion thereof for its use for which it is intended.

DAY: One calendar day, unless the word "day" is specifically modified to the contrary.

DEDUCTIVE BID: The sum to be subtracting to the Base Bid if the change in scope of work as described in Deductive Bid is accepted by City Of Oakland.

DEFECTIVE: An adjective which, when modifying the word "Work", refers to Work that is unsatisfactory or unsuited for the use intended, faulty, or deficient, that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents (including but not limited to approval of samples and "or equal" items), or has been damaged prior to final payment (unless responsibility for the protection thereof has been assumed by City Of Oakland). City's Representative is the judge of whether Work is defective.

"Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

DRAWINGS: The graphic and pictorial portions of Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

ENGINEER: Where referenced in General Conditions, the person holding a valid California State Structural Engineer's license, whose firm has been designated (if any designated) within the Contract Documents as the Engineer to provide engineering services on the project.

EQUAL: Equal in opinion of City's Representative. Burden of proof of equality is responsibility of Contractor.

EXPOSED: Work exposed to view in the finished Work, including behind louvers, grilles, registers and various other construction elements.

FINAL ACCEPTANCE or FINAL COMPLETION: All Work satisfactorily completed in accordance with Contract Documents. It includes, but is not limited to:

1. All Systems having been tested and accepted as having met requirements of Contract Documents.
2. All required instructions and training sessions having been given by Contractor.
3. All as-built drawings and operations and maintenance manuals and Machine Inventory Sheets having been submitted by Contractor, reviewed by Architect/Engineer and accepted by City Of Oakland.
4. All punch list work, as directed by City Of Oakland, having been completed by Contractor.
5. Generally all work, except Contractor maintenance after Final Acceptance, having been completed to satisfaction of City Of Oakland.

FORCE-ACCOUNT: Work directed to be performed without prior agreement as to lump sum or unit price cost thereof, and which is to be billed at cost for labor, materials, equipment, taxes, and other costs, plus a specified percentage for overhead and profit.

FURNISH: Supply only, do not install.

"Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

"Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

"Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

"Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

INSPECTOR: The person employed by City Of Oakland to inspect the workmanship, materials, or manner of construction of buildings or portions of buildings, to determine if such construction complies with the Contract Documents and applicable codes.

INSTALL: Install or apply only, do not furnish.

LATENT: Not apparent by reasonable inspection, including but not limited to, the inspections and research required as a condition to bidding under the General Conditions.

MATERIAL OR MATERIALS: These words shall be construed to embrace machinery, manufactured articles, materials of construction (fabricated or otherwise), and any other classes of material to be furnished in connection with Contract, except where a more limited meaning is indicated by context.

MILESTONE: A principal event specified in Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all Work.

MODIFICATION: Same as Contract Modification.

NOT IN CONTRACT: Work that is outside the scope of work to be performed by Contractor under this Contract.

NOTICE OF AWARD: A written notice given by City Of Oakland to lowest responsive, responsible bidder advising that Bidder's bid and other qualifying information is acceptable to City Of Oakland, requiring Bidder to fulfill the requirements of the General Conditions.

NOTICE TO PROCEED: A written notice given by City Of Oakland to Contractor fixing the date on which the Contract Time will commence to run and on which contractor shall start to perform Contractor's obligations under the Contract Documents.

OFF SITE: Outside geographical location of the Project.

OR EQUAL: shall mean "or equal in the opinion of the City's Representative." "Approved" shall mean "approved in writing by the City's Representative." "If (when, or as) directed (or required)" shall mean "if (when, or as) directed (or required) by the City's Representative."

OWNER: City Of Oakland, See "City's Representative".. OWNER'S

REPRESENTATIVE: See "City's Representative".

PROGRESS REPORT: a periodic report submitted by Contractor to City Of Oakland with progress payment invoices accompanying actual work accomplished to the Project Schedule.

PROJECT: Total construction of which Work performed under this Contract may be whole or part.

PROJECT MANUAL: Project Manual consists of Bidding Requirements, Agreement, Bonds, Certificates, Contract Conditions, and Specifications. The Project Manual is deemed to include and incorporate all matters noted in any Addenda issued by or on behalf of the District during the bidding for the Work.

"Provide": Furnish and install, complete and ready for the intended use.

"Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

REQUEST FOR INFORMATION (RFI): A document prepared by Contractor, City Of Oakland or Architect/Engineer requesting information from one of the parties

regarding the Project or Contract Documents. The RFI system is also a means for City Of Oakland and Architect to submit Contract Document clarifications or supplements to Contractor.

RFI-REPLY: A document consisting of supplementary details, instructions or information issued by the Architect/Engineer, which clarifies or supplements Contract Documents and with which Contractor shall comply. RFI-Replies do not constitute changes in Contract Sum or Contract Times except as otherwise agreed in writing by City Of Oakland. RFI-Replies will be issued through the RFI administrative system.

SAMPLES: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

SHOP DRAWINGS: All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the work.

SHOWN: As indicated on Drawings.

SITE: The particular geographical location of Work performed pursuant to Contract, including staging areas, work areas, storage and lay down areas, access and parking.

SPECIFICATIONS: The written portion of the Contract Documents consisting of requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services; and are contained in Divisions 1 through 16.

SPECIFIED: As written in Specifications.

SSPWC: The latest edition of the Standard Specifications for Public Works Construction and City of Oakland Modifications.

SUBCONTRACTOR: A person or entity who has a direct contract with Contractor to perform a portion of the Work at the site. The term "subcontractor" is referred to throughout the Contract Documents as if singular in number and neuter in gender and means a subcontractor or an authorized representative of the subcontractor. The term "subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

SUBSTANTIAL COMPLETION: The Work (or a specified part thereof) has progressed to the point where, in the opinion of the City's Representative and the Architect/Engineer as evidenced by a Certificate of Substantial Completion, it is sufficiently complete, in accordance with Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work is complete and ready for final payment is evidenced by written recommendation of the City's Representative and the Architect/Engineer for final payment. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

SUPPLEMENTAL INSTRUCTION: A written work change directive to Contractor from Architect/Engineer, approved by City's Representative, ordering alterations or

modifications which do not result in change in Contract Sum or Contract Times, and do not substantially change Drawings or Specifications.

UNDERGROUND FACILITIES: All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: Electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

WORK: The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all is required by the Contract Documents. Wherever the word "work" is used, rather than the word "Work", it shall be understood to have its ordinary and customary meaning.

1. Wherever words "as directed", "as required", "as permitted", or words of like effect are used, it shall be understood that direction, requirements, or permission of City Of Oakland or City's Representative is intended. Words "sufficient", "necessary", "proper", and the like shall mean sufficient, necessary or proper in judgment of City Of Oakland or City's Representative. Words "approved", "acceptable", "satisfactory", "favorably reviewed" or words of like import, shall mean approved by, or acceptable to, or satisfactory to, or favorably reviewed by City Of Oakland or City's Representative.
2. Wherever the word "may" is used, the action to which it refers is discretionary. Wherever the word "shall" is used, the action to which it refers is mandatory.

1.4 Reference Standards And Specifications Of Technical Societies; Reporting And Resolving Discrepancies:

- A. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or laws or regulations including all adopted amendments and supplements, in effect at the time of opening of Bids, except as limited to type, class or grade, or modification in such reference.
- B. If during the performance of the Work, Contractor discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such law or regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of any supplier, Contractor shall report it in writing at once to Inspector, with copies to City's Representative and Architect, and Contractor shall not proceed with the Work affected thereby until consent to do so is given by the City's Representative.
- C. Except as otherwise specifically stated in the Contract Documents or as may be provided by Change Order, or supplemental instruction, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the Contract Documents and:

1. The provisions of any such standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
 2. The provisions of any such laws or regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such law or regulation).
- D. No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of City Of Oakland, Contractor, City's Representative, or Architect/Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents, nor shall it be effective to assign to City Of Oakland, Architect/Engineer, City's Representative, or any of their consultants, agents or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

1.5 Reference Standards

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
- D. Contractor shall furnish, without extra charge, additional labor and/or materials required for compliance with specified reference standards, though the work is not mentioned in these Specifications nor shown on the Drawings.
- E. When Specifications or Drawings call for materials or construction of a higher quality or larger size than required by the standards, the provisions of the Specifications or Drawings shall take precedence.
- F. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.
 1. AAE Affirmative Action Employment
 2. ACI American Concrete Institute

- a. Standard 318, Building Code Requirements for Reinforced Concrete
- 3. AIA American Institute of Architects
- 4. AISI American Institute of Steel Construction
 - a. Specifications and Code of Standard Practice for Steel Buildings and Bridges
- 5. AISI American Iron and Steel Institute
- 6. AITC American Institute of Timber Construction
- 7. ANSI American National Standards Institute, formerly American Standards Association
 - a. Standard C2, NESC (National Electrical Safety Code)
- 8. APA American Plywood Association
- 9. ASHRAE American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.
- 10. ASME American Society of Mechanical Engineers
- 11. ASTM American Society for Testing and Materials
 - a. C31, Making and Curing Concrete Test Specimens in the Field
 - b. C42, Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - c. C143, Test Method for Slump of Portland Cement Concrete
- 12. AWPA American Wood Preservers Association
- 13. AWPI American Wood Preservers Institute
- 14. AWS American Welding Society
- 15. CAC-T8 Title 8, California Administrative Code, Building Standards
- 16. CAC-T24 Title 24, California Administrative Code, Building Standards
- 17. CRSI Concrete Reinforcing Steel Institute
- 18. CS U. S. Commercial Standard
- 19. FM Factory Mutual System
- 20. FS Federal Specification (also abbreviated Fed. Spec.)
- 21. GP General Provisions
- 22. IAPMO International Association of Plumbing and Mechanical Officials

- 23. ICC International Code Council
 - a. Refer to Section 01 4100 – Regulatory Requirements
- 24. MBE/WBE Minority Business Enterprise/Woman Business Enterprise
- 25. MIL U. S. Military Specifications
- 26. NBFU National Board of Fire Underwriters
- 27. NEC National Electrical Code
- 28. NEMA (National Electric Manufacturer's Association)
- 29. NFPA (National Fire Protection Association)
 - a. Pamphlet 1, Fire Prevention Code
 - b. Pamphlet 13, Sprinkler Systems, Installation
 - c. Pamphlet 24, Private Fire Service Mains
 - d. Pamphlet 70, NEC (National Electric Code)
 - e. Pamphlet 71, Signaling Systems, Central Station
 - f. Pamphlet 80, Fire Doors and Windows
 - g. Pamphlet 101, Life Safety Code
- 30. OMC Oakland Municipal Code
- 31. PDI Plumbing and Drainage Institute
- 32. PG&E Pacific Gas and Electric Company
- 33. PS U. S. Product Standard
- 34. RIS Redwood Inspection Service
- 35. SGP Supplementary General Provisions
- 36. SMACNA Sheet Metal and Air Conditioning Contractors National Association, Inc.
- 37. SSPC Steel Structures Painting Council
- 38. SSPWC Standard Specifications for Public Works Construction
- 39. TCA Tile Council of America, Inc.
- 40. UL Underwriters' Laboratories, Inc.
- 41. WCLA West Coast Lumbermen's Association

42.	WCLIB	West Coast Lumber Inspection Bureau	
43.	WCRSI	Western Concrete Reinforcing Steel Institute	
44.	WIC	Woodwork Institute of California	
ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080	
CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(888) 293-6498 (202) 512-1530	
CRD	Handbook for Concrete and Cement Available from Army Corps of Engineers Waterways Experiment Station www.wes.army.mil	(601) 634-2355	
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point www.dodssp.daps.mil	(215) 697-6257	
DSCC	Defense Supply Center Columbus (See FS)		
FED-STD	Federal Standard (See FS)		
FS	Federal Specification Available from Department of Defense Single Stock Point www.dodssp.daps.mil Available from General Services Administration www.fss.gsa.gov Available from National Institute of Building Sciences www.nibs.org	(215) 697-6257 (202) 501-1021 (202) 289-7800	
FTMS	Federal Test Method Standard (See FS)		
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543	
MIL	(See MILSPEC)		
MIL-STD	(See MILSPEC)		
MILSPEC	Military Specification and Standards Available from Department of Defense Single Stock Point www.dodssp.daps.mil	(215) 697-6257	

NES	(Formerly: National Evaluation Service) (See ICC-ES)	
UFAS	Uniform Federal Accessibility Standards Available from Access Board (202) 272-0080 www.access-board.gov	(800) 872-2253

1.6 Abbreviations And Acronyms

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	(202) 862-5100
AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333
AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists www.aatcc.org	(919) 549-8141
ABMA	American Bearing Manufacturers Association www.abma-dc.org	(202) 367-1155
ACI	ACI International (American Concrete Institute) www.aci-int.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AEIC	Association of Edison Illuminating Companies, Inc. (The) www.aeic.org	(205) 257-2530

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AF&PA	American Forest & Paper Association www.afandpa.org	(800) 878-8878 (202) 463-2700
AGA	American Gas Association www.aga.org	(202) 824-7000
AGC	Associated General Contractors of America (The) www.agc.org	(703) 548-3118
AHA	American Hardboard Association (Now part of CPA)	
AHAM	Association of Home Appliance Manufacturers www.aham.org	(202) 872-5955
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AIA	American Institute of Architects (The) www.aia.org	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction www.aitc-glulam.org	(303) 792-9559
ALCA	Associated Landscape Contractors of America www.alca.org	(800) 395-2522 (703) 736-9666
ALSC	American Lumber Standard Committee, Incorporated www.alsc.org	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
AOSA	Association of Official Seed Analysts www.aosaseed.com	(505) 522-1437
APA	APA - The Engineered Wood Association www.apawood.org	(253) 565-6600
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989

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API	American Petroleum Institute www.api.org	(202) 682-8000
ARI	Air-Conditioning & Refrigeration Institute www.ari.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association www.asphaltroofing.org	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers www.ashrae.org	(800) 527-4723 (404) 636-8400
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763 (212) 591-7722
ASSE	American Society of Sanitary Engineering www.asse-plumbing.org	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9585
AWCI	AWCI International (Association of the Wall and Ceiling Industries International) www.awci.org	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (Now WCSC)	
AWI	Architectural Woodwork Institute www.awinet.org	(800) 449-8811 (703) 733-0600
AWPA	American Wood-Preservers' Association www.awpa.com	(334) 874-9800
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association (The) www.bia.org	(703) 620-0010

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BICSI	BICSI www.bicsi.org	(813) 979-1991
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) www.bifma.com	(616) 285-3963
BISSC	Baking Industry Sanitation Standards Committee www.bissc.org	(773) 761-4100
Cast Stone Institute	www.caststone.org	(770) 972-3011
CCC	Carpet Cushion Council www.carpetcushion.org	(203) 637-1312
CDA	Copper Development Association Inc. www.copper.org	(800) 232-3282 (212) 251-7200
CEA	Canadian Electricity Association www.canelect.ca/connections_online/home.htm	(613) 230-9263
CFFA	Chemical Fabrics & Film Association, Inc. www.chemicalfabricsandfilm.com	(216) 241-7333
CGA	Compressed Gas Association www.cganet.com	(703) 788-2700
CGSB	Canadian General Standards Board www.pwgsc.gc.ca/cgsb	(800) 665-2472 (819) 956-0425
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org	(888) 881-2462 (937) 222-2462
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute www.cispi.org	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org	(301) 596-2583
CPA	Composite Panel Association www.pbmdf.com	(301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association www.cppa-info.org	(800) 510-2772 (202) 462-9607

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CRI	Carpet & Rug Institute (The) www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSA	CSA International (Formerly: IAS - International Approval Services) www.csa-international.org	(800) 463-6727 (416) 747-4000
CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
CSSB	Cedar Shake & Shingle Bureau www.cedarbureau.org	(604) 820-7700
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute) www.cti.org	(281) 583-4087
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
EIA	Electronic Industries Alliance www.eia.org	(703) 907-7500
EIMA	EIFS Industry Members Association www.eima.com	(800) 294-3462 (770) 968-7945
EJCDC	Engineers Joint Contract Documents Committee www.asce.org	(800) 548-2723 (703) 295-6300
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
ESD	ESD Association www.esda.org	(315) 339-6937
FCI	Fluid Controls Institute www.fluidcontrolsintstitute.org	(216) 241-7333
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation) www.fiba.com	41 22 545 00 00
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation) www.fivb.ch	41 21 345 35 35
FM	Factory Mutual System (Now FMG)	

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FMG	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com	(401) 275-3000
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc. www.floridarooft.com	(407) 671-3772
FSA	Fluid Sealing Association www.fluidsealing.com	(610) 971-4850
FSC	Forest Stewardship Council www.fsc.org	52 951 5146905
GA	Gypsum Association www.gypsum.org	(202) 289-5440
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
GRI	(Now GSI)	
GS	Green Seal www.greenseal.org	(202) 872-6400
GSI	Geosynthetic Institute www.geosynthetic-institute.org	(610) 522-8440
HI	Hydraulic Institute www.pumps.org	(888) 786-7744 (973) 267-9700
HI	Hydronics Institute www.gamanet.org	(908) 464-8200
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)	
HPVA	Hardwood Plywood & Veneer Association www.hpva.org	(703) 435-2900
HPW	H. P. White Laboratory, Inc._ www.hpwhite.com	(410) 838-6550
IAS	International Approval Services (Now CSA International)	
IBF	International Badminton Federation www.intbadfed.org	441-24 223-4904

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ICEA	Insulated Cable Engineers Association, Inc. www.icea.net	(770) 830-0369
ICRI	International Concrete Repair Institute, Inc. www.icri.org	(847) 827-0830
IEC	International Electrotechnical Commission www.iec.ch	41 22 919 02 11
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) www.ieee.org	(212) 419-7900
IESNA	Illuminating Engineering Society of North America www.iesna.org	(212) 248-5000
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 646-2234
IGMA	Insulating Glass Manufacturers Alliance (The) www.igmaonline.org	(613) 233-1510
ILI	Indiana Limestone Institute of America, Inc. www.iliai.com	(812) 275-4426
ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
ISSFA	International Solid Surface Fabricators Association www.issfa.net	(702) 567-8150
ITS	Intertek www.intertek.com	(800) 345-3851 (607) 753-6711
ITU	International Telecommunication Union www.itu.int/home	41 22 730 51 11
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LMA	Laminating Materials Association (Now part of CPA)	
LPI	Lightning Protection Institute www.lightning.org	(800) 488-6864 (847) 577-7200
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333

ELS ARCHITECTURE AND URBAN DESIGN**DOWNTOWN OAKLAND
SENIOR CENTER IMPROVEMENTS**

MFMA	Maple Flooring Manufacturers Association www.maplefloor.org	(847) 480-9138
MFMA	Metal Framing Manufacturers Association www.metalframingmfg.org	(312) 644-6610
MH	Material Handling (Now MHIA)	
MHIA	Material Handling Industry of America www.mhia.org	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America www.marble-institute.com	(440) 250-9222
MPI	Master Painters Institute www.paintinfo.com	(888) 674-8937
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc. www.mss-hq.com	(703) 281-6613
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(312) 332-0405
NACE	NACE International (National Association of Corrosion Engineers International) www.nace.org	(281) 228-6200
NADCA	National Air Duct Cleaners Association www.nadca.com	(202) 737-2926
NAGWS	National Association for Girls and Women in Sport (800) www.aahperd.org/nagws/	213-7193, ext. 453
NAIMA	North American Insulation Manufacturers Association www.naima.org	(703) 684-0084
NBGQA	National Building Granite Quarries Association, Inc. www.nbgqa.com	(800) 557-2848
NCAA	National Collegiate Athletic Association (The) www.ncaa.org	(317) 917-6222
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute www.ncpi.org	(262) 248-9094

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NCTA	National Cable & Telecommunications Association www.ncta.com	(202) 775-3550
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NeLMA	Northeastern Lumber Manufacturers' Association www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association www.netaworld.org	(303) 697-8441
NFHS	National Federation of State High School Associations www.nfhs.org	(317) 972-6900
NFPA	NFPA (National Fire Protection Association) www.nfpa.org	(800) 344-3555 (617) 770-3000
NFRC	National Fenestration Rating Council www.nfrc.org	(301) 589-1776
NGA	National Glass Association www.glass.org	(703) 442-4890
NHLA	National Hardwood Lumber Association www.natlhardwood.org	(800) 933-0318 (901) 377-1818
NLGA	National Lumber Grades Authority www.nlga.org	(604) 524-2393
NOFMA	National Oak Flooring Manufacturers Association www.nofma.org	(901) 526-5016
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(888) 846-7622 (301) 587-1400
NSF	NSF International (National Sanitation Foundation International) www.nsf.org	(800) 673-6275 (734) 769-8010

ELS ARCHITECTURE AND URBAN DESIGN**DOWNTOWN OAKLAND
SENIOR CENTER IMPROVEMENTS**

NSSGA	National Stone, Sand & Gravel Association www.nssga.org	(800) 342-1415 (703) 525-8788
NTMA	National Terrazzo & Mosaic Association, Inc. www.ntma.com	(800) 323-9736 (540) 751-0930
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)	
NWWDA	National Wood Window and Door Association (Now WDMA)	
OPL	Omega Point Laboratories, Inc. www.opl.com	(800) 966-5253 (210) 635-8100
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDCA	Painting & Decorating Contractors of America www.pdca.com	(800) 332-7322 (314) 514-7322
PDI	Plumbing & Drainage Institute www.pdionline.org	(800) 589-8956 (978) 557-0720
PGI	PVC Geomembrane Institute http://pgi-tp.ce.uiuc.edu	(217) 333-3929
PTI	Post-Tensioning Institute www.post-tensioning.org	(602) 870-7540
RCSC	Research Council on Structural Connections www.boltcouncil.org	(800) 644-2400 (312) 670-2400
RFCI	Resilient Floor Covering Institute www.rfci.com	(301) 340-8580
RIS	Redwood Inspection Service www.calredwood.org	(888) 225-7339 (415) 382-0662
RTI	(Formerly: NTRMA - National Tile Roofing Manufacturers Association) (Now TRI)	
SAE	SAE International www.sae.org	(724) 776-4841
SDI	Steel Deck Institute www.sdi.org	(847) 462-1930
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010

ELS ARCHITECTURE AND URBAN DESIGN**DOWNTOWN OAKLAND
SENIOR CENTER IMPROVEMENTS**

SEFA	Scientific Equipment and Furniture Association www.sefalabs.com	(516) 294-5424
SEI	Structural Engineering Institute www.seinstitute.com	(800) 548-2723 (703) 295-6195
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIA	Security Industry Association www.siaonline.org	(703) 683-2075
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)	
SJI	Steel Joist Institute www.steeljoist.org	(843) 626-1995
SMA	Screen Manufacturers Association www.smacentral.org	(561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	(703) 803-2980
SMPTE	Society of Motion Picture and Television Engineers www.smpte.org	(914) 761-1100
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division) www.sprayfoam.org	(800) 523-6154
SPIB	Southern Pine Inspection Bureau (The) www.spib.org	(850) 434-2611
SPI/SPFD	Society of the Plastics Industry, Inc. (The) Spray Polyurethane Foam Division (Now SPFA)	
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org	(781) 647-7026
SSINA	Specialty Steel Industry of North America www.ssina.com	(800) 982-0355 (202) 342-8630
SSPC	The Society for Protective Coatings www.sspc.org	(877) 281-7772 (412) 281-2331

ELS ARCHITECTURE AND URBAN DESIGN**DOWNTOWN OAKLAND
SENIOR CENTER IMPROVEMENTS**

STI	Steel Tank Institute www.steeltank.com	(847) 438-8265
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
SWRI	Sealant, Waterproofing, & Restoration Institute www.swrionline.org	(816) 472-7974
TCNA	Tile Council of North America, Inc. www.tileusa.com	(864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance www.tiaonline.org	(703) 907-7700
TMS	The Masonry Society www.masonrysociety.org	(303) 939-9700
TPI	Truss Plate Institute, Inc. www.tpinst.org	(608) 833-5900
TPI	Turfgrass Producers International www.turfgrasssod.org	(800) 405-8873 (847) 705-9898
TRI	Tile Roofing Institute (Formerly: RTI - Roof Tile Institute) www.tilerroofing.org	(312) 670-4177
UL	Underwriters Laboratories Inc www.ul.com	(800) 285-4476 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association www.uni-bell.org	(972) 243-3902
USAV	USA Volleyball www.usavolleyball.org	(888) 786-5539 (719) 228-6800
USGBC	U.S. Green Building Council www.usgbc.org	(202) 828-7422

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USITT	United States Institute for Theatre Technology, Inc. www.usitt.org	(800) 938-7488 (315) 463-6463
WASTEC	Waste Equipment Technology Association www.wastec.org	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651
WCMA	Window Covering Manufacturers Association (Now WCSC)	
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association) www.windowcoverings.org	(800) 506-4636 (212) 661-4261
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(800) 223-2301 (847) 299-5200
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California) www.wicnet.org	(916) 372-9943
WIC	Woodwork Institute of California (Now WI)	
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com	(800) 550-7889 (530) 661-9591
WSRCA	Western States Roofing Contractors Association www.wsrca.com	(800) 725-0333 (650) 548-0112
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

- 1.7 Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

BOCA	BOCA International, Inc. (See ICC)	
CABO	Council of American Building Officials (See ICC) International	
IAPMO	Association of Plumbing and Mechanical Officials www.iapmo.org	(909) 472-4100

ICBO	International Conference of Building Officials (See ICC)	
ICBO ES	ICBO Evaluation Service, Inc. (See ICC-ES)	(703) 931-4533
ICC	International Code Council (Formerly: CABO - Council of American Building Officials) www.iccsafe.org	
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543
NES	National Evaluation Service (See ICC-ES)	
SBCCI	Southern Building Code Congress International, Inc. (See ICC)	

1.8 Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers www.usace.army.mil	
CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-6816
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOD	Department of Defense www.dodssp.daps.mil	(215) 697-6257
DOE	Department of Energy www.eren.doe.gov	(202) 586-9220
EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FAA	Federal Aviation Administration www.faa.gov	(202) 366-4000
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	Food and Drug Administration www.fda.gov	(888) 463-6332
GSA	General Services Administration www.gsa.gov	(800) 488-3111 (202) 501-1888

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SENIOR CENTER IMPROVEMENTS**

HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NCHRP	National Cooperative Highway Research Program (See TRB)	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Building Service (See GSA)	
PHS	Office of Public Health and Science http://phs.os.dhhs.gov	(202) 690-7694
RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board www.nas.edu/trb	(202) 334-2934
USDA	Department of Agriculture www.usda.gov	(202) 720-2791
USPS	Postal Service www.usps.com	(202) 268-2000

- 1.9 State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CBHF	State of California, Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation www.dca.ca.gov/bhfti	(800) 952-5210 (916) 574-2041
CPUC	California Public Utilities Commission www.cpuc.ca.gov	(415) 703-2782

PART 2 – PRODUCTS (NOT USED)**PART 3 – EXECUTION (NOT USED)****END OF SECTION**

SECTION 01 50 00 TEMPORARY**FACILITIES AND CONTROLS**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 Related Sections

- A. Section 01 11 00 "Summary of Work" for limitations on utility interruptions and other work restrictions.
- B. Section 01 34 00 "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
- C. Section 01 73 00 "Execution Requirements" for progress cleaning requirements.
- D. Divisions 2 through 32 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.4 Definitions

- A. Permanent Enclosure: As determined by Architect/Engineer, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.5 Use Charges

- A. General: Use of existing utilities is not permitted.
- B. Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect/Engineer, occupants of Project, testing agencies, and authorities having jurisdiction.
- C. Sewer Service: Pay sewer service use charges for sewer usage by all entities for construction operations.
- D. Electric Power Service: Electric Power from Owner's existing power system is available for use with payment and must be arranged in advance of the Notice to

Proceed, as agreed upon by the Construction Manager. Provide connections and extensions of services as required for construction operations.

- E. Water Service: Domestic Water from Owner's existing water system is available for use with payment and must be arranged in advance of the Notice to Proceed, as agreed upon by the Construction Manager. Provide connections and extensions of services as required for construction operations.

1.6 Submittals

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.7 Quality Assurance

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.8 Project Conditions

- A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 – PRODUCTS

2.1 Materials

- A. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts of sufficient weight to prevent overturning.

- 1. Provide additional weighted bases as necessary to comply with local high wind conditions

- B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."
- C. Paint: Comply with requirements in Division 9 painting Sections.

2.2 Temporary Facilities

- A. Contractor shall obtain permits for, install and maintain in safe condition, whatever scaffolds, hoisting equipment, barricades, walkways, or other temporary structures, which may be required to accomplish the work on the Project. Contractor shall enclose and secure Project Site, including lay down area with a temporary chain link fence. Such structures shall be adequate for the intended use and capable of safely

accepting all loads that may be imposed upon them. They shall be installed and maintained in accordance with all applicable State and local codes and regulations.

- B. Contractor shall provide and maintain temporary heat from an approved source whenever in the course of the Work it may become necessary for curing and drying of materials or to warm spaces as may be required for the installation of materials or finishes.
- C. Contractor shall provide and maintain any and all facilities that may be required for dewatering in order that work may proceed on the Project. If it is necessary for dewatering to occur continually, Contractor shall have on hand whatever spare parts or equipment that may be required to prevent interruption of dewatering.
- D. Contractor shall provide and maintain all utility services necessary to perform the work under this Contract. These may include, but are not limited to, temporary electricity, water, gas, sewer and telephone, including charges and installation fees. Contractor shall furnish and maintain all means of distribution of utility services required within the site to properly complete the Project.
- E. Materials, tools, accessories, etc., shall be stored only where directed by OWNER. Storage area shall be kept neat and clean. Security of stored items shall be Contractor's responsibility.
- F. When flammable materials are stored on site, extra precautions, including clear identification, shall be the responsibility of Contractor.
- G. Contractor shall provide and maintain temporary toilets in quantities and locations as required by CAL/OSHA and other local codes and regulations. They shall be maintained and supplied in a usable and sanitary condition at all times.
- H. If water at construction site is determined to be non-potable by Inspector, Contractor shall provide and maintain adequate potable water stations at site until final completion of the Project.
- I. Contractor shall maintain an office at the Project site, which will be his headquarters for the Project. Any communications delivered to this office shall be considered as delivered to Contractor. Location and size of office shall be such that it will adequately serve the needs of Contractor's superintendent and assistants in the performance of their duties.
- J. Contractor shall also provide and maintain the following temporary facilities for the duration of the project. Contractor shall obtain approval of the plans and specifications for all the following temporary facilities from Construction Manager prior to delivery to job site. Construction Manager shall have the option to reject said facilities if they do not meet Construction Manager's needs.
- K. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- L. Common-Use Field Office: Of sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices as follows:

1. Field office, at least 10' x 10', for use by the Inspector, which may be a part of the Construction Manager's field office if of sufficient size and capable of establishing separate locked entrance to the inspector's portion of the office.
 - a. One (1) computer and monitor
 - b. One (1) laser printer
 - c. One (1) plain paper copier with the capacity to reproduce 8 W x 11" paper, 8 W, x 14" paper and ledger size paper at a rate of 65 pages per minute.
 - d. One (1) telephone with speakerphone and 3-way conference call capacity.
 - e. One (1) plain paper fax
 - f. One (1) desk, one (1) chair, one (1) conference table sufficient for seating at least four (4) people, minimum four (4) conference chairs.
 - g. One table suitable for review of full size drawings.
 - h. File cabinets and plan holders as necessary.
 - i. First aid kit.
 2. Services for Inspector Filed offices
 - a. Wifi/Hotspot connection for computers.
 - b. Electrical Service.
 - c. Maintenance and service of all equipment.
 - d. Trash removal and general janitorial services.
 3. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 4. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack board.
 5. Drinking water and private toilet.
 6. Coffee machine and supplies.
 7. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.
- M. Storage and Fabrication containers: Provide units sized, furnished, and equipped to accommodate materials and equipment for construction operations.
1. Store combustible materials apart from building.

- N. Contractor shall promptly remove all such Temporary Facilities when they are no longer needed for the work or for completion of the Project, mutually agreed upon by Contractor and OWNER.
- O. Contractor shall provide and maintain in the Temporary Facilities a copy of the California Code of Regulations Title 24 (latest edition) Parts I & II.

2.3 Equipment

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

2.4 Signs

- A. No signs may be displayed on or about OWNER's property (except those required by law) without OWNER's specific approval; the size, content, and location to be as specified by OWNER.

2.5 Use of Roadways and Walkways

- A. Contractor shall never block or interfere with use of any existing roadway, walkway or other facility for vehicular or pedestrian traffic, from any party entitled to use it. Wherever and whenever such interference becomes necessary for the proper and convenient performance of the Work, and no satisfactory detour route exists, Contractor shall, before beginning the interference, provide a satisfactory detour, including temporary bridge if necessary, or other proper facility for traffic to pass around or over the interference. Contractor shall maintain the detour in a safe and satisfactory condition as long as the interference continues, all without extra payment unless otherwise expressly stipulated in the Specifications.

PART 3 – EXECUTION

3.1 Installation, General

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 Temporary Utility Installation

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations. Provide meters, wiring and distribution to all locations of project where power is required for work.
 - 1. Install electric power service overhead, unless otherwise indicated.
 - 2. Connect temporary service to Owner's existing power source, as directed by Owner.
 - 3. Maintain temporary services until permanent systems are in place.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions. Minimum lighting level of 2 watts/sq. ft.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 - 2. Install lighting for Project identification sign.
- I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line(s) for each field office.
 - 1. Provide additional telephone lines for the following:
 - a. Provide a dedicated telephone line for each facsimile machine and computer in each field office.
 - 2. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.

- d. Architect/Engineer's office.
 - e. Engineers' offices.
 - f. Owner's office.
 - g. Principal subcontractors' field and home offices.
 - 3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.
 - J. Electronic Communication Service: Provide temporary electronic communication service, including electronic mail, in common-use facilities.
 - 1. Provide cable television/Internet in primary field office.
- 3.3 Support Facilities Installation
- A. General: Comply with the following:
 - 1. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines. Comply with NFPA 241.
 - 2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion.
 - a. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
 - B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.
 - 1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
 - 2. Do not let temporary roads or paved areas interfere with existing access roads to the site, particularly those which provide Fire Department vehicular access to existing buildings.
 - 3. On-site parking for the duration of the project may not be available for the Contractor and/or his Subcontractors. The City's Representative will be the sole authority on use or non-use of the construction site for off-street parking by the Contractor and his Subcontractors. Parking will be assigned at the Pre- Construction Conference.
 - C. Traffic Controls: Comply with requirements of authorities having jurisdiction. See Section 01 5526 for additional requirements.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.

- D. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities nor deposit sediments into water courses or drainage systems. Refer to Section 01 5713 for more information..
- F. Project Identification and Temporary Signs: Provide Project identification and other signs as indicated on Drawings. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
 - 1. Provide temporary, directional signs for construction personnel and visitors.
 - 2. Maintain and touchup signs so they are legible at all times.
- G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements. See Section 01 7400 "Cleaning and Waste Management" for additional requirements.
- H. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
 - 1. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
 - 2. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- I. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
- J. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas in same location as permanent roads and paved areas. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
 - 1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 - 2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 2 Section "Earthwork."

3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 2 Section "Hot- Mix Asphalt Paving."
- K. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- L. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- M. Existing Stair Usage: Use of Owner's existing stairs will be permitted, as long as stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.
- N. Temporary Use of Permanent Stairs: Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.
- 3.4 Security and Protection Facilities Installation
- A. Protection of Work and Property
1. Protect all existing buildings, paving, site improvements and utilities from damage as a result of or caused by construction operations.
 2. Secure all building materials and equipment against heavy winds and weather both during job hours and non-working hours.
 3. Protect concrete floor slabs from construction damage. Permit no equipment on the slabs until the concrete has obtained its designed strength. Perform no work on concrete floors that will detrimentally affect the finish or appearance of uncovered floors or the application of finish flooring where called for.
 4. Take special care to protect all surfaces from welding damage.
 5. Maintain extreme caution and care not to damage waterproof membranes, including roof.
 6. Protect installed Work and provide special protection where specified in individual specification Sections.
 7. Protect privately-owned vehicles, stored materials, site and structures from damage.

8. Contractor shall replace or restore, at his expense, to a condition satisfactory to the City or private owner, any of the City owned property or adjacent property that is damaged due to the actions of any of the Contractor's employees, agents or Subcontractors.
-
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 1. Comply with work restrictions specified in Division 1 Section "Summary."
 - C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
 - D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.
 - E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - a. Refer to Phasing Plan for various configurations as needed
 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner with one set of keys.
 - F. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
 1. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities, adjacent properties and the public from damage from construction operations and demolition.
 - G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
 - H. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241 and requirements of Factory Insurance Association (Industrial Risk Insurers) and the City of Oakland Fire Marshal.
 1. Prohibit smoking in construction areas.

2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

I. Tree and Plant Protection

1. Existing trees shall be managed in accordance with the City of Oakland's Tree Preservation Ordinance, Chapter 7, Article 6 of the OMC.
2. Trees designated for removal shall require tree removal permit. Approved permits and conditions of approval shall be available for review at the Tree Division of the Office of Parks and Recreation, 7101 Edgewater Drive, Oakland, CA.
3. Designation of Tree Reviewer shall be as defined in the City of Oakland's Tree Preservation Ordinance.
4. Prior to the start of work, Contractor shall tag and identify existing trees and plants to remain. Provide red tags on trees and plants to be removed. The City's Representative and Tree Reviewer shall review the tagged trees and plants for verification of compliance with the contract documents.
5. Provide protection of all trees and plants to remain. Protection shall conform with Section 7-6.06-A of the Tree Preservation Ordinance. Protection shall include, but not limited to construction fencing, irrigating, feeding, and spraying.
6. If any damage to an existing tree or plant should occur during or as a result of Contractor's work, such damage shall be assessed by the Tree Reviewer and the City's Representative. If, in their professional opinion, such tree or plant cannot be preserved in a healthy state, the tree or plant shall be removed and replaced with tree(s) or plant(s) on the same site of a size and species deemed adequate to compensate for the loss of that tree or plant that is removed.
7. Pruning of branches, limbs, and roots shall be performed by an arborist certified by the International Society of Arboriculture (I.S.A.) and in accordance with the Pruning Standards of the Western Chapter I.S.A. Executive Committee adopted May 18, 1988. Prior to the beginning of tree pruning work, proposed work shall be approved by the Tree Reviewer.
8. Fill and repair all depressions due to the settlement of irrigation trenches, and replace all necessary lawn, planting, and paving, for one (1) year following completion and acceptance. Plant replacement including lawn, shall be with species identical to that originally specified.

- J. Tree and Plant Protection: Comply with requirements specified in Division 1 Section "Tree Protection and Trimming."
- K. Temporary Protection and Covered Walkway: Erect structurally adequate, protective, covered walkway for passage of individuals along adjacent public street(s). Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction and requirements indicated on Drawings. Conform to all requirements in regard to operation, safety and fire hazard of federal, state, and local authorities having jurisdiction, and of Underwriters' Laboratories, Inc. The Contractor shall furnish and complete all items necessary for complete and lawful installations and for conformity with such requirements whether called for under the separate sections of these Specifications or not.
1. Construct covered walkways using scaffold or shoring framing.
 2. Provide wood-plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 3. Extend back wall beyond the structure to complete enclosure fence.
 4. Paint and maintain in a manner approved by Owner and Architect/Engineer.
- L. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- M. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
 2. Construct dustproof partitions with 2 layers of polyethylene sheet on each side. Cover floor with 2 layers of polyethylene sheet, extending sheets up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
 - a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water- dampened foot mats in vestibule.
 3. Insulate partitions to provide noise protection to occupied areas.
 4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
 5. Protect air-handling equipment.
 6. Weather strip openings.

7. Provide walk-off mats at each entrance through temporary partition.

N. Temporary Fire Exiting

1. At locations indicated on the Drawings, provide, assemble, maintain and remove temporary fire exiting at the completion of the Work. The exitways must be kept continuously accessible for the duration of the Project.
2. Plans denoting location, construction and method of use of the temporary exitways and a schedule showing times of their proposed use during construction must receive prior approval from the City Fire Marshal and the City's Representative.

3.5 Security and Safety

A. Safety Program

1. Within 15 days after Notice to Proceed, Contractor shall submit a safety program to the City for review. The Contractor shall be required to comply with the safety program and all federal, state, and local regulation codes, rules, laws, and ordinances.
2. Review of the safety program shall not relieve the Contractor of any responsibility for complying with all applicable safety regulations, nor, by reviewing the safety program, will the City assume any of the Contractor's responsibilities for compliance with said safety regulations.
3. The Contractor further agrees to indemnify and hold the City harmless from any loss, including, but not limited to fines, legal fees, penalties, and corrective measures the City may sustain by reason of the Contractor's failure to comply with said laws, rules, and regulations in connection with the performance of this Contract.
4. It is essential that the General Contractor and each of his Subcontractors implement an effective and vigorous safety and health program to cover all portions of the Work. It shall be understood that the full responsibility for providing a safe place to work with respect to this Work rests with the General Contractor.
5. The wearing of hard hats shall be as required by the approved Safety Program. The Contractor shall supply hard hats for all employees and visitors.
6. Safety Requirements
 - a. Standards: Maintain the Project in accordance with all applicable safety and insurance standards.

3.6 Operation, Termination, And Removal

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."
- E. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.

END OF SECTION

SECTION 01 58 00 PROJECT**IDENTIFICATION**

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Section Includes:

- A. The Contractor shall provide and maintain at the site one project sign.
- B. No other signs or advertisements will be allowed to be displayed on the premises.

1.3 Quality Assurance

- A. Design sign and structure to withstand 50 mph wind velocity.
- B. Sign Painter: Engaged as professional sign painter for not less than three years.
- C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

1.4 Project Identification And Signs

- A. Project Identification
 - 1. Provide 8'w x 4'h project sign of 3/4 inch thick exterior A-C grade plywood and wood frame construction, painted, with lettering by a professional sign painter. Design in accordance with Attachment 9 of the Special Provisions.
 - 2. Erect on site at location established by the City.
 - 3. No other signs are allowed without City permission, except those required by law.
- B. Provide signs for traffic direction and warnings such as "Construction Project" or "Keep Out", etc., to facilitate control of personal vehicles.
 - 1. Use only the minimum number necessary.
 - 2. Keep size to 2'x 4' maximum.
 - 3. Quality of sign materials and printed text shall be approved by the City's Representative.

- C. Erect signs securely on wood posts. Maintain in good condition throughout the construction period and remove upon completion.

PART 2 – PRODUCTS**2.1 Materials**

- A. Structure and Framing: New wood, 4' x 4' x 8' treated posts, structurally adequate.
- B. Sign Mounting Board: 4' x 8', exterior grade, GPX plywood with medium density overlay, minimum 3/4 inch thick.
- C. Rough Hardware: Galvanized, aluminum or brass.
- D. Paint and Primers: Exterior quality, two coats. Color as indicated.

PART 3 – EXECUTION**3.1 Construction**

- A. Install project identification sign within 30 days after Notice to Proceed.
- B. Erect at designated location as directed by City's Representative.
- C. Erect supports and framing with uprights 36 inches below surface, braced and framed to resist wind loadings.
- D. Install sign surface plumb and level, with butt joints. Anchor securely.
- E. Paint sight-exposed surfaces of sign, supports, and framing.

3.2 Maintenance

- A. Maintain signs and supports clean. Repair deterioration and damages.

3.3 Removal

- A. Remove signs, framing, supports, and foundations at completion of the Project, when directed by City's Representative and restore the area.

END OF SECTION

SECTION 01 60 00 PRODUCT**REQUIREMENTS**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 Related Sections

- A. Section 01 25 00 "Substitution Procedures" for requests for substitutions.
- B. Section 01 40 00 - Quality Requirements: Product Quality Monitoring.
- C. Section 01 77 00 "Closeout Procedures" for submitting warranties for Contract closeout.
- D. Pertinent Sections for specific requirements for warranties on products and installations specified to be warranted.

1.4 Definitions

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

- B. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.5 Submittals

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
 3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.
 4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 5. Architect/Engineer's Action: Architect/Engineer will respond in writing to Contractor within 15 days of receipt of completed product list. Architect/Engineer's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect/Engineer's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

- B. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Architect/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect/Engineer will notify Contractor through Construction Manager of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 1 Section "Submittal Procedures."
 - b. Use product specified if Architect/Engineer cannot make a decision on use of a comparable product request within time allocated.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.6 Quality Assurance

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
- B. For similar components; provide interchangeable components of the same manufacturer.

1.7 Product Delivery, Storage, And Handling

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Place materials and equipment on order and schedule delivery to minimize long- term storage at Project site and to prevent overcrowding of construction spaces, job delay or hindrance.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 5. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Protect sensitive products from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Provide off-site storage and protection when site does not permit on-site storage or protection.
8. Protect stored products from damage and liquids from freezing.

1.8 Product Warranties

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 – PRODUCTS**2.1 Product Selection Procedures**

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
1. Provide only new, unused materials and equipment unless specifically noted otherwise.
 2. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 3. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 4. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 5. Where products are accompanied by the term "as selected," Architect/Engineer will make selection.
 6. Where products are accompanied by the term "match sample," sample to be matched is Architect/Engineer's.
 7. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
 8. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
 2. For products indicated or specified only by reference standard: Select any product meeting that standard.
 3. For products indicated or specified by naming only one product and manufacturer, followed by the words "no substitution allowed", there is no option.
 4. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
 5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.

6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
8. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect/Engineer's sample. Architect/Engineer's decision will be final on whether a proposed product matches.
9. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect/Engineer will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect/Engineer will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 Comparable Products

- A. Conditions: Architect/Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect/Engineer will return requests without action, except to record noncompliance with these requirements:
- B. Contractor must clearly document the following:
 1. Evidence that the proposed product does not require extensive revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

2.3 Banned Substances

- A. See Section 01 6116 "VOC Restrictions" for additional information.
- B. Sealants and glazing compounds formulated with aromatic solvents, fibrous talc or asbestos, formaldehyde, halo-genated solvents, mercury, lead, cadmium, hexavalent chromium, or their components shall not be used.
- C. Adhesives used to apply laminates, whether shop-supplied or field-applied, shall contains no urea-formaldehyde.
- D. Interior field applied varnishes and lacquers are not permitted.
- E. Interior paints shall not contain antimicrobial additives (such as fungicides and biocides).
- F. Aromatic Compounds: Paints and coatings shall not contain more than 1% (by weight) total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
- G. Restricted Components: Paints and coatings shall not contain any of the following:
 1. Acrolein
 2. Acrylonitrile
 3. Analine dyes
 4. Antimony
 5. Benzene
 6. Butyl benzyl phthalate
 7. Cadmium
 8. Di (2-ethylhexyl) phthalate
 9. Di-n-butyl phthalate
 10. Di-n-octyl phthalate
 11. 1,2 dichlorobenzene
 12. Diethyl phthalate
 13. Dimethyl phthalate
 14. Ethylbenzene

15. Formaldehyde
16. Hexavalent chromium
17. Isophorone
18. Lead
19. Mercury
20. Methyl ethyl ketone
21. Methyl isobutyl ketone
22. Methylene chloride
23. Napthalene
24. Toluene (methylbenzene)

H. Brominated flame retardents in carpet cushion

I. Composite Wood and Agrifiber Binders: All composite wood, agrifiber products, and wood doors shall contain no added urea-formaldehyde resins.

PART 3 – EXECUTION

- 3.1 Materials and equipment not conforming to the requirements of these specifications will be considered as defective. Items which have been accepted or approved at one time and place, but which subsequently fail to conform to the requirements of these Specifications will also be considered defective. All such materials, whether in place or not, will be rejected. Remove such materials and equipment immediately from the site of the work, and replace with conforming materials and equipment.
- 3.2 Prior to ordering materials or starting work, verify all measurements at the site. No extra compensation will be allowed for differences between actual dimensions and the measurements shown on the drawings.
- 3.3 Except as specifically noted otherwise, follow the installation and/or maintenance directions provided by the manufacturer for all materials and equipment.
- 3.4 For each part of the work, furnish all materials and equipment of the same type by the same manufacturer.

END OF SECTION

SECTION 01 61 16

VOC RESTRICTIONS

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. VOC restrictions for product categories listed below under "DEFINITIONS."
 - 1. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
- B. All products of each category that are installed in the project must comply; applicable laws and ordinances do not allow for partial compliance.
- C. Listing of a product in these specifications shall not be construed as a solicitation or requirement to use any product or combination of products in violation of the requirements of South Coast Air Quality Management District Rule No.1168, as described in Rule 1168(g).
 - 1. If a listed product does not meet the requirements of this rule, request approval for use of an alternate product by the same or another manufacturer meeting the requirements of this rule.
 - 2. Do not use products which do not meet the requirements of this rule.

1.3 Related Sections

- A. Divisions 01 through 32 contain related requirements specific to the work of each of these Sections. Requirements may or may not include reference to this section.
- B. Section 01 81 13 "Sustainable Design Requirements".

1.4 Definitions

- A. VOC-Restricted Products: All products of each of the following categories when installed or applied on-site:
 - 1. Adhesives, sealants, and sealer coatings, regardless of specification section or division.
 - 2. Paints and coatings.
 - 3. Carpet and resilient flooring

- 4. Composite wood products; plywood, particleboard, wood fiberboard.
- B. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- C. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
- D. Interior of Building: Anywhere inside the exterior weather barrier.

1.5 Reference Standards

- A. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
- B. Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS); current edition at www.chps.net/.
- C. CRI (GLCC) - Green Label Testing Program - Approved Product Categories for Carpet Cushion; Carpet and Rug Institute; Current Edition.
- D. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; Current Edition.
- E. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute; current listings at www.greenguard.org.
- F. GreenSeal GS-36 - Commercial Adhesives; Green Seal, Inc.
- G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.
- H. SCS (CPD) - SCS Certified Products; Scientific Certification Systems; current listings at www.scscertified.com.

1.6 Submittals

- A. See Section 01 3300 - Submittals Procedures.
- B. Evidence of Compliance: Submit for each different product in each applicable category.
 - 1. Identify evidence submittals with the words "VOC Compliance Report".
- C. Product Data: For each VOC-restricted product used in the project, submit product data showing compliance, except when another type of evidence of compliance is required.
- D. Installer Certifications for Accessory Materials: Require each installer of any type of product, (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber

products have been used in the installation of his products, or 2) that such products used comply with these requirements.

1. Use the form following this section for installer certifications.

1.7 Quality Assurance

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 – PRODUCTS

2.1 Materials – Cal Green

- A. General: Provide only products having volatile organic compound (VOC) content not greater than required by South Coast Air Quality Management District Rule No.1168 and less where required by code.

1. These products may be specified in multiple sections throughout these specifications.

- B. Adhesives, including carpet: Comply with Title 24, Part 11, Table 5.504.4.1.

1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.

- C. Joint Sealants: Comply with Title 24, Part 11, Table 5.504.4.2.

1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.

- D. Aerosol Adhesives: Comply with Title 24, Part 11, Table 5.504.4.1. and California Code of Regulations Title 17, Section 94507.

1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Current GreenSeal Certification.
 - b. Report of laboratory testing performed in accordance with GreenSeal GS-36 requirements.
 - c. Published product data showing compliance with requirements.

- E. Paints and Coatings: Comply with Title 24, Part 11, Table 5.504.4.3; California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008.
1. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
 - a. Evidence of Compliance: Acceptable types of evidence are:
 - 1) Report of laboratory testing performed in accordance with requirements.
 - 2) Published product data showing compliance with requirements.
 - 3) Certification by manufacturer that product complies with requirements.
 2. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. South Coast Air Quality Management District Rule No.1168.
- F. Aerosol Paints and Coatings: Comply with Title 24, Part 11, 5.504.4.3.1 and, for projects in the jurisdiction of BAAQMD, comply with VOC by weight of product limits of Regulation 8, Rule 49.
- G. Carpet: Comply with Title 24, Part 11, 5.504.4.4; meet testing and product requirements of one of the following:
1. Carpet & Rug Institute "Green Label Plus".
 2. California Department of Public Health Standard Practice for testing of VOC's (Specification 01350).
 3. NSF/ANSI 140 at Gold Level.
 4. Scientific Certification Systems Sustainable Choice.
 5. All carpet cushion installed shall meet requirements of Carpet & Rug Institute "Green Label Program".
 6. All carpet cushion installed shall meet requirements of Title 24, Part 11, Table 5.504.4.1.
- H. Resilient Flooring Products: Comply with Title 24, Part 11, 5.504.4.6. Fifty percent of floor area receiving resilient flooring shall have flooring complying with VOC emission limits in CHPS 2009 criteria and listed on the Low Emitting Materials List or Product Registry or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program.

1. Provide documentation verifying that finish materials are certified to meet pollutant limits. Acceptable types of evidence are:
 - a. Published product data showing compliance with requirements.
 - b. Inclusion on one of the following lists:
 - 1) www.chps.net/dev/drupal/node/381
 - 2) www.rfci.com/int_FS-ProdCert.htm
 - 3) www.greenguard.org/default.aspx?tabid=135.
 - c. Other method acceptable to enforcing agency.
- I. Composite Wood Products: Comply with Title 24, Part 11, Table 5.504.4.5 formaldehyde limits for hardwood plywood, particleboard, and medium density fiberboard composite wood products.

**Title 24, Part 11, Table 5.504.4.5 Composite Wood Products
Maximum Formaldehyde Emissions in Parts per Million**

PRODUCT	CURRENT LIMIT (JULY 1, 2012)
Hardwood Plywood veneer core	0.05
Hardwood Plywood composite core	0.05
Particleboard	0.09
Medium Density Fiberboard	0.11
<u>Thin Medium Density Fiberboard</u>	<u>0.13</u>

1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Chain of custody certifications
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
 - d. Other method acceptable to enforcing agency.

PART 3 – EXECUTION

3.1 Field Quality Control

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

- B. All additional costs to restore indoor air quality, including fines by authorities, due to installation of non-compliant products will be borne by Contractor.

3.2 Restricted Components

A. Restricted Components:

1. Paints and coatings shall not contain any of the following:

- a. Acrolein.
- b. Acrylonitrile.
- c. Antimony.
- d. Benzene.
- e. Butyl benzyl phthalate.
- f. Cadmium.
- g. Di (2-ethylhexyl) phthalate.
- h. Di-n-butyl phthalate.
- i. Di-n-octyl phthalate.
- j. 1,2-dichlorobenzene.
- k. Diethyl phthalate.
- l. Dimethyl phthalate.
- m. Ethylbenzene.
- n. Formaldehyde.
- o. Hexavalent chromium.
- p. Isophorone.
- q. Lead.
- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).

- x. 1,1,1-trichloroethane.
 - y. Vinyl chloride.
2. Products shall comply with South Coast Air Quality Management District Rule No.1168 prohibitions on the use of certain toxic compounds, including chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene, except for aerosol products as otherwise required.
- B. Adhesives Sealants and Caulks: The following tables are taken from South Coast Air Quality Management District Rule No.1168. All products used shall comply with these limits, unless more stringent local and regional rules apply.

Table 5.504.4.1 ADHESIVE VOC LIMIT

Architectural Applications	Current VOC Limit
Indoor Carpet Adhesives	50
Carpet Pad Adhesives	50
Outdoor Carpet Adhesives	150
Wood Flooring Adhesive	100
Rubber Floor Adhesives	60
Subfloor Adhesives	50
Ceramic Tile Adhesives	65
VCT and Asphalt Tile Adhesives	50
Dry Wall and Panel Adhesives	50
Cove Base Adhesives	50
Multipurpose Construction Adhesives	70
Structural Glazing Adhesives	100
Single Ply Roof Membrane Adhesives	250

Table 5.504.4.1 Continued

Specialty Applications	VOC Limits and Effective Dates**			
	Current VOC Limit	1-1-05	7-1-05	1-1-07
PVC Welding	510			
CPVC Welding	490			
ABS Welding	400		325	
Plastic Cement Welding	350	250		
Adhesive Primer for Plastic	650		550	
Computer Diskette Manufacturing	350			
Contact Adhesive	80			
Special Purpose Contact Adhesive	250			
Tire Retread	100			
Adhesive Primer for Traffic Marking Tape	150			
Structural Wood Member Adhesive	140			

Sheet Applied Rubber Lining Operations	850			
Top and Trim	540			250
Adhesive				
** The specified limits remain in effect unless revised limits are listed in subsequent columns.				

Table 5.504.4.1 Continued

For adhesives, adhesive bonding primers, or any other primer not regulated by the above two tables and applied to the following substrates, the following limits shall apply:

Substrate Specific Applications	Current VOC Limit
Metal to Metal	30
Plastic Foams	50
Porous Material (except wood)	50
Wood	30
Fiberglass 80	

Table 5.504.4.2 SEALANT VOC LIMIT

If an adhesive is used to bond dissimilar substrates together the adhesive with the highest VOC content shall be allowed.

Sealant	Current VOC Limit
Architectural	250
Marine Deck	760
Nonmembrane Roof	300
Roadway	250
Single-Ply Roof Membrane	450
Other	420

Sealant Primers	Current VOC Limit
Architectural	
Non Porous	250
Porous	775
Modified Bituminous	500
Marine Deck	760
Other	750

For low-solid adhesives or sealants the VOC limit is expressed in grams per liter of material as determined in paragraph (b)(32); for all other adhesives and sealants, VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds as determined in paragraph (b)(31).

Table 5.504.4.3 VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS (See Notes 2 & 3 below)

Grams of VOC per Liter of Coating, less water and less exempt compounds

COATING CATEGORY	Current VOC Limit 1/1/2012
Flat Coatings	50
Nonflat Coatings	100
Nonflat High Gloss Coatings	150
Specialty Coatings	
Aluminum Roof Coatings	400

Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350
Bond Breakers	350
Concrete Curing Compounds	350
Concrete / Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Floor Coatings	100
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High-Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings (See Note 1 below)	120
Magnesite Cement Coatings	450
Mastic Texture Coatings	100
Metallic Pigmented Coatings	500
Multicolor Coatings	250
Pretreatment Wash Primers	420
Primers, Sealers and Undercoaters	100
Reactive Penetrating Sealers	350
Recycled Coatings	250
Roof Coatings	50
Rust Preventative Coatings	250
Shellacs:	
Clear	730
Opaque	550
Specialty Primers, Sealers and Undercoaters	100
Stains	250
Stone Consolidants	450
Swimming Pool Coatings	340
Traffic Marking Coatings	100
Waterproofing Membranes	250
Wood Coatings	275
Wood Preservatives	350
Zinc Rich Primers	340
Note 1: Grams of VOC per liter of coating including water and including exempt compounds	
Note 2: Not Applicable	
Note 3: Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available from the Air Resources Board.	

**END OF SECTION
(INSTALLER CERTIFICATION FORM FOLLOWS)**

ACCESSORY MATERIAL VOC CONTENT CERTIFICATION FORM

Identification:

1. Project Name: _____
2. Project No.: _____
3. Architect: _____

Use of This Form:

1. Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, there is a possibility that such accessory materials might contain VOC content in excess of that permitted, especially where such materials have not been explicitly specified.
2. Contractor is required to obtain and submit this form from each installer of work on this project.
3. For each product category listed, circle the correct words in brackets: either [HAS] or [HAS NOT].
4. If any of these accessory materials has been used, attach to this form product data and MSDS sheet for each such product.
5. VOC content restrictions are specified in Section 01-6116.

PRODUCT CERTIFICATION

I certify that the installation work of my firm on this project:

6. [HAS] [HAS NOT] required the use of any ADHESIVES.
7. [HAS] [HAS NOT] required the use of any JOINT SEALANTS.
8. [HAS] [HAS NOT] required the use of any PAINTS OR COATINGS.
9. [HAS] [HAS NOT] required the use of any COMPOSITE WOOD or AGRIFIBER PRODUCTS.

Product data and MSDS sheets are attached.

CERTIFIED BY: (INSTALLER/MANUFACTURER/SUPPLIER FIRM)

Firm Name: _____

Print Name: _____

Signature: _____

Title: _____ (officer of company)

Date: _____

SECTION 01 71 23**FIELD ENGINEERING**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This section specifies survey work and engineering responsibilities of the Contractor.

1.3 Submittals

- A. Qualification Data: For land surveyor.
- B. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.
- C. Certified Surveys: Submit two copies signed by land surveyor.
- D. Final Property Survey: Submit five copies showing the Work performed and record survey data.

1.4 Quality Assurance

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

1.5 Existing Site Conditions

- A. The various Site Plans are not intended as surveys of all existing conditions and only indicate in general certain conditions related to the work to be done.
- B. Information regarding existing conditions has been determined as reasonably as possible, but may not be shown in its entirety or exactly. Contractor shall familiarize himself with all existing conditions and report all discrepancies to the City prior to the start of work.
- C. The locations shown for existing utility mains, trees, etc., are approximate only. The accuracy or completeness of this information is not guaranteed. Verify location of all utility lines, conduits, surface or subsurface structures, etc., of any nature that may be affected by the Work.

- D. Existing active irrigation lines of unknown location may be encountered within the construction area. If such lines are damaged, effect emergency repairs only while notifying the City.
- E. Should any unidentified item or suspicion of contaminated soil be encountered during excavation, do not proceed with excavation until the City has been notified and direction has been given by the City.
- F. Should any of the above items (B through E) be disturbed, disconnected, or damaged during construction, bear all expenses of whatever nature arising from such disturbance or the replacement or repair thereof and replace or repair such items as required to maintain continuing service, including emergency repairs.
- G. If any traces of archeological resources (human remains, artifacts, concentrations of shell/bone/rock/ash) are encountered, immediately stop all construction operations within a 50-meter (164 ft.) radius until a City approved archeologist has been consulted and has recommended mitigation.

1.6 Survey and Layout

- A. Obtain and pay for all engineering services required to accurately and completely lay out the Work by a registered civil engineer who is qualified to perform surveying or a licensed land surveyor.
- B. The Contractor shall lay out the Work, setting grade elevations, location stakes, and other reference points and information necessary to complete the Work and shall be responsible for the accuracy thereof. Unless discrepancies between Drawings and actual conditions are brought to the attention of the City's Representative prior to the commencement of operations, the Contractor shall be held solely responsible for the proper installation of the Work. Adjustments in layout shall be made at the Contractor's expense.
- C. Stakes, boundary lines, corner markers, bench marks or survey markers which have been or may be established in any part of the site, shall be preserved and respected and shall be restored at Contractor's expense if lost or destroyed as a result of the Contractor's operations.
- D. Site data and building dimensions indicated on the Drawings are as exact as could be obtained, but their absolute accuracy cannot be guaranteed. Exact locations, distances, elevations, and similar data shall be governed finally by field conditions and the City's instructions.
- E. Contractor shall verify on site the location and depth (elevation) of all existing utilities and services before performing any excavation work.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 Field Engineering

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect/Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect/Engineer before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- D. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."
- E. Identification: Owner will identify existing benchmarks, control points, and property corners.

END OF SECTION

SECTION 01 73 00 EXECUTION**REQUIREMENTS**

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. General installation of products.
 - 3. Coordination of Owner-installed products.
 - 4. Starting and adjusting.
 - 5. Protection of installed construction.
 - 6. Correction of the Work.
 - 7. Cutting and Patching required to:
 - a. Make the several parts fit properly.
 - b. Uncover work to provide for installation, inspection, or both of ill-timed work.
 - c. Remove and replace work not conforming to requirements of the Contract Documents.
 - d. Remove and replace defective work.

1.3 Related Sections

- A. Section 01 31 00 "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
- B. Section 01 71 23 "Field Engineering" for submitting surveys and layout of work.
- C. Section 01 74 00 "Cleaning and Construction Waste Management" for progress and thorough final cleaning of the buildings and site prior to Substantial completion inspection.

- D. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.4 Submittals

A. Request for the Architect/Engineer's Consent:

1. Prior to cutting which affects structural safety, submit a written request to the Architect/Engineer for permission to proceed with cutting.
2. Should conditions of the work, or schedule, indicate a required change of materials or methods for cutting and patching, notify the Architect/Engineer and secure his written permission prior to proceeding.

B. Notices to the Architect/Engineer:

1. Submit written notice to the Architect/Engineer and Construction Manager designating the time the work will be uncovered, therefore providing a time for the Architect/Engineer's observation.

C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

1.5 Quality Assurance

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Mechanical systems piping and ducts.
 - f. Control systems.
 - g. Communication systems.
 - h. Fire-detection and -alarm systems.
 - i. Conveying systems.
 - j. Electrical wiring systems.
 - k. Operating systems of special construction.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. Noise- and vibration-control elements and systems.
 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades.

Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 – PRODUCTS

2.1 Materials

- A. General: Comply with requirements specified in other Sections.
 - 1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with requirements in Section 018113 "Sustainable Design Requirements."
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 Discrepancies

- A. If uncovered conditions are not as anticipated, immediately notify the Architect/Engineer and secure needed directions.
- B. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

3.3 Preparation

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect/Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on "Request for Information Form
- E. Provide all required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the work.

3.4 Construction Layout

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect/Engineer and Construction Manager promptly.

- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Architect/Engineer and Construction Manager when deviations from required lines and levels exceed allowable tolerances.
 - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect/Engineer and Construction Manager.

3.5 Installation

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 8 feet (2.4 m) in spaces without a suspended ceiling.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect/Engineer.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 Cutting And Patching

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 11 00 "Summary of Work."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to [minimize] [prevent] interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.

- b. Restore damaged pipe covering to its original condition.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
 - I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
- 3.7 Owner-Installed Products
- A. Site Access: Provide access to Project site for Owner's construction forces.
 - B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.
 - 1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
 - 2. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.
- 3.8 Starting And Adjusting
- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
 - C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.9 Protection of Installed Construction

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 Correction of the Work

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements for cutting in patching in Section 01 73 00 "Execution Requirements."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.
- F. Insert additional requirements to suit Project.

END OF SECTION

SECTION 01 74 00

CLEANING AND CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. Section includes:
 - 1. Progress (Daily) and Final Cleaning.
 - 2. Construction Waste Management Requirements based upon the City of Oakland Construction and Demolition Debris Waste Reduction and Recycling Ordinance #12253 and the Alameda County Waste Management Authority's direction.

1.3 Referenced Standards

- A. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".

1.4 Project Conditions

- A. Environmental Requirements: Conduct cleaning and waste-disposal operations in compliance with City of Oakland Construction and Demolition Debris Waste Reduction and Recycling Ordinance #12253. Contractor shall be responsible to meet all requirements of a Waste Reduction and Recycling Plan as completion to the City of Oakland building permit process.
- B. Comply fully with Federal and local environmental and antipollution regulations.
 - 1. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.
 - 2. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.

1.5 Definitions

- A. "Conversion Rate" means the rate set forth in the standardized Conversion Rate Table approved by the Alameda County Waste Management Authority for use in estimating the volume or weight of materials identified in the Waste Management Plan.

- B. "Divert" means to use material for any purpose other than disposal in a landfill or transformation facility.
- C. "Good Faith" shall be as defined by law.
- D. "Net Cost" means that the following have been subtracted from the cost of separating and recycling:
 - 1. Revenue from the sale of recycled or salvaged materials
 - 2. Landfill tipping fees saved due to diversion of materials from the landfill.

1.6 Submittals

- A. Provide all submittals in accordance with the General Conditions and Section 01 3300, Submittal Requirements.
- B. Submit and obtain approval of the specified Waste Management Plan prior to mobilization.
- C. Submit certification from any recycling services that are not listed in the Alameda County Waste Management Authority's "Builders' Guide to Reuse & Recycling, A Directory For Construction and Demolition Materials". For a copy of the guide and other recycling questions, call the Alameda County Recycling Hotline toll free 1-877- STOPWASTE.
- D. Submit with all pay applications, certification letter, waste management log and receipts from all recycled and waste off-haul. Certification letter to state that under the penalty of perjury all materials removed from site during the billing period are included within the attached receipts and provide summary. Project inspector to verify all loads prior to off-haul and initial receipts prior to submitting with pay application. Failure to submit with pay application shall prohibit processing of pay application.

1.7 Quality Assurance

- A. Regulatory requirements: Comply with the City of Oakland Construction and Demolition Recycling Ordinance.
- B. The project inspector will monitor removal of all demolition debris and construction debris to verify that all of the required material designated to be recycled are being properly sorted and removed from site to be delivered to approved recycling center. The Contractor must coordinate with the project inspector to have all loads, recycled and non-recycled, verified prior to off-haul, initial receipts.
- C. Recycling service company qualifications; any of the following:
 - 1. Listed in the Alameda County Waste Management Authority's "Builders' Guide to Reuse and Recycling, A Directory for Construction and Demolition Materials, latest edition.
 - 2. Any Recycling Services that will certify in writing that accepted waste will be diverted from landfill, not dumped illegally, or dumped at sea.

PART 2 – PRODUCTS

2.1 Performance Requirements

- A. Waste Diversion: Divert a minimum of 50 percent of construction (and demolition) waste from landfill. Following is a list of material that at a minimum must be reused or recycled:

1. Landfill clearing debris
2. Clean dimensional wood, palette wood
3. Plywood, OSB and medium density fiberboard (MDF).
4. Concrete
5. Concrete Masonry Units (CMU).
6. Asphaltic Concrete
7. Cardboard, paper, packaging
8. Metals (separate from gypsum board)
9. Paint. Paint containers shall be reused or recycled.
10. Rigid Foam
11. Carpet and pad
12. Glass and plastic beverage containers
13. Piping-plastic, copper and cast iron.
14. Gypsum Board
15. Glass

2.2 Cleaning Materials And Methods

- A. Use cleaning materials and methods which will not create hazards to health or property or cause damage to products and which are recommended by manufacturers of products to be cleaned.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

2.3 Construction Waste Management Plan Development

- A. Plan Development: Submit a plan for diverting a minimum of 50 percent of construction debris from landfill. Include in plan information to indicate how waste will be diverted from landfills.
1. Estimate of total project waste to be generated, name of the landfill(s) where Project waste would normally be disposed of, tipping fees, and estimated cost of disposing of project waste in landfill(s).
 2. Include in Plan on-site recycling of construction debris and also off-site diversion from landfill.
 3. Propose means and methods for collecting and separating each type of debris deemed recyclable.
 4. Identify the hauler or haulers of each particular debris item, who have agreed to accept and divert a designated item from landfill, in the proposed quantities anticipated. Schedule each item and list hauler company name, telephone number, address, and person contacted.
 5. Include a "good faith" estimate of each type of construction waste that would be generated if no diversion methods were implemented. Submit with calculations. Submit for all materials anticipated to be generated.
 6. Calculate quantities in accordance with the proposed Conversion Rate table.

PART 3 – EXECUTION**3.1 Cleaning - General**

- A. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
- C. Location of dump for trash and debris and length of haul is the Contractor's responsibility.

3.2 Progress Cleaning

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Progress Cleaning:
1. The Contractor shall at all times keep the premises free from accumulations of waste materials or rubbish caused by Contractor's employees or work, or the employees or work of any Subcontractor or Subcontractors, and at the completion of the Work shall remove rubbish from and about the site and all tools, including Subcontractor's tools, scaffolding and surplus materials, and shall leave the work "broom clean" or its equivalent.
- 3.3 Final Cleaning:

A. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

1. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
3. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
4. Remove tools, construction equipment, machinery, and surplus material from Project site.
5. Remove snow and ice to provide safe access to building.
6. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
7. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
8. Sweep concrete floors broom clean in unoccupied spaces.
9. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
10. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
11. Remove labels that are not permanent.
12. Wipe surfaces of mechanical and electrical equipment [, elevator equipment,] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
13. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
14. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
15. First subparagraph below describes a major work item that requires coordination with other closeout procedures.

16. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 17. Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
 18. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 19. Leave Project clean and ready for occupancy.
- B. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.
- C. Final Site Cleanup:
1. Prior to final inspection, thoroughly clean the site and put it into a neat, acceptable condition. Remove from the site all construction waste and unused materials, dunnage, loose rock and stones, excess earth, and debris of any description resulting from the work.
 2. Hose down and scrub clean where necessary all pavement and paved walks dirtied as a result of the Work.
 3. Remove mortar droppings from concrete slabs and pavements, where they occur. Hose down and scrub clean concrete flatwork and vertical surfaces of concrete and masonry.
 4. Rake clean exposed ground or earth surfaces.
- 3.4 Construction Waste Management Plan Implementation
- A. Plan Implementation
1. Maintain log of each load, of each category item diverted from landfill. Log in separately debris sent to a Class III landfill and materials sent to recycling facilities.
 - a. Include in log type of load, load volume, recycling/hauling service, date accepted by recycling service or by landfill.
 - b. Owner reserves the right to audit the log at any time, retain all weight tickets, and receive copies of receipts and invoices.
 - c. Units of measure: Use same units as stated in the approved plan "good faith" estimate of construction waste which would be generated if no remedial methods were implemented.
 2. Material Handling:
 - a. Materials to be recycled shall be protected from contamination, and shall be handled, stored and transported in a manner that meets the requirements set by the designated facilities for acceptance.

3. Separation Facilities:

- a. Designate a specific on-site area or areas to facilitate separation of materials for potential reuse, salvage, recycling, and return.
- b. Keep waste bin areas neat and clean. Clearly mark bins. Do not commingle non-recyclable waste with materials designated for reuse or recycling.

4. Training and coordination

- a. Furnish copies of the Waste Management Plan to all on-site supervisors, each subcontractor, the Owner, and the Architect.
- b. Instruction: provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all entities at the appropriate stages of the Project.
- c. Meetings: Include construction waste management on the agenda of regularly scheduled job-site meetings.

5. Transportation:

- a. A description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site) and destination of materials. Provide an estimate of how often bins will need to be emptied.

B. Hazardous Wastes:

1. Separate hazardous wastes from all other debris. Remove and handle all hazardous materials in accordance with State and local regulations and contract requirements under direct supervision of Owner's Hazardous Waste consultant. Coordinate with Owner's project manager.

3.5 Closeout Activities

- A. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period. Repair any damage from removal.
- B. Regulatory Compliance: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of lawfully.
 1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION

SECTION 01 77 00**CLOSEOUT PROCEDURES**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Removal of temporary construction facilities
 - 4. Material, equipment and finish data
 - 5. Project guarantee
 - 6. Warranties.
 - 7. Turn-in
 - 8. Release of claims
 - 9. Guaranty and Maintenance Bonds
- B. See General Conditions for additional information.

1.3 Related Sections

- A. Section 01 32 20 "Photographic Documentation" for submitting final completion construction photographic documentation.
- B. Section 01 71 23 "Field Engineering" for submitting surveys.
- C. Section 01 73 00 "Execution Requirements" for progress cleaning of Project site.
- D. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements, spare parts, tools and maintenance materials.
- E. Section 01 78 39 "As-Built Documents" for submitting as-built documents.

- F. Section 01 79 00 "Demonstration and Training" for requirements for instructing Owner's personnel.
- G. Divisions 2 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.4 References

- A. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
 - 1. Chapter 5- Non-Residential Mandatory Measures.

1.5 Removal of Temporary Construction Facilities

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion Inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities.
- C. Restore permanent facilities used during construction to specified condition.

1.6 Substantial Completion

- A. When the Contractor is of the opinion that the Project is Substantially Complete, in accordance with the General, and Supplementary Conditions, submit a certified written statement that the Work is complete and request a Substantial Completion inspection by the City. If the Architect/Engineer finds the Work not to be Substantially Complete, the City shall advise Contractor in writing as to the reasons for such determination.
- B. Within reasonable time, Construction Manager and Architect/Engineer will inspect to determine status of completion.
- C. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.

6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 8. Complete startup testing of systems.
 9. reports
 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- D. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, the City's Representative, will arrange with the Contractor for an inspection of the work. If the work appears to be substantially complete, the City's Representative will furnish the Contractor a certificate of Substantial Completion, or notify Contractor of unfulfilled requirements.
1. City's Representative will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect/Engineer, that must be completed or corrected before certificate will be issued.
 2. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 3. Results of completed inspection will form the basis of requirements for final completion.
 4. If, Work is insufficiently complete, and the City's Representative or its consultants must make additional inspections to determine completion, the City will deduct from the final retention payment all expenses due to its consultants for such additional inspections. See Supplemental General Provisions paragraph SP-9.5.
- E. Once the City Representative and the Architect/Engineer agrees that Substantial Completion has been achieved, the City Representative shall prepare a Certificate of Substantial Completion, for the approval and acceptance of the Contractor and Owner, attaching thereto a "punch list" of items to be completed and corrected. This list will be as complete as possible, based on the City Representative/Architect/Engineer observations, but shall not relieve or otherwise waive the Contractor's responsibility to complete or correct subsequently discovered items.
- 1.7 List of Incomplete Items (Punch List)
- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing

correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect/Engineer.
 - d. Name of Contractor.
 - e. Page number.
4. Submit list of incomplete items in the following formats:
 - a. PDF electronic file.
 - b. Four paper copies of product schedule or list, unless otherwise indicated. Architect/Engineer, through Construction Manager, will return two copies.

1.8 Final Completion

- A. When the Work is complete in every respect, the Contractor shall notify the City's Representative, in writing, that the Project will be ready for final inspection on a definite date, which shall be stated in such notice.
 1. The Contractor shall accompany the City's Representative, during final inspection together with responsible representatives of any principal Subcontractors the City may request to be present.
 2. If the work is found to be acceptable under the Contract Documents and the Contract fully performed, the City will accept the Work.
 3. If only minor corrective measures are required, the City will accept the Work as substantially complete, based upon the Contractor's written assurances that corrections (listed) will be completed within a minimum (stated) period of time.
 4. If the Work is not acceptable or complete within the limits stated above, or if any or extensive corrective measures are still required, the City will not accept the Work.
- B. Final Inspection and Field Acceptance: will not be accepted and processed until the City's Representative is satisfied that the Work is satisfactorily completed, including "punch list" items; and that all required documents, spare parts, photographs, training tapes, warranties/guarantees, as required by the contract documents, have been received and accepted by the City. The contractor will be notified of any

discrepancies within 10 days of their request for Final Inspection. Warranties/ Guarantees shall commence upon written completion/notification of the Final Inspection and Field Acceptance of the work.

- C. When City's Representative finds Work is acceptable and final submittal is complete, City will issue final change order reflecting approved adjustments to Contract Sum not previously made by Change Order.
- D. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
 - 1. Contractor has inspected Work for compliance with Contract Documents.
 - 2. Work is complete and ready for final inspection.
 - a. Submit certified copy of City's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by City's Representative. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Submit a final Application for Payment according to Division 01 Section "Payment Procedures", reflecting adjustments made by final change order.
 - 4. Work, except for Contractor maintenance after Final Acceptance, has been completed in accordance with Contract Documents and deficiencies listed with Certificate of Substantial Completion have been corrected.
 - 5. Contractor has achieved all requirements for Final Acceptance as that term is defined in related documents.
 - 6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 7. Submit pest-control final inspection report and warranty.
 - 8. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings.
 - 9. Complete final cleaning requirements, including touchup painting.
 - 10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

1.9 Notice of Completion

- A. Date of Final Completion shall be that date, designated by the City in written notice to the Contractor, on which the City accepts the Project as complete.

1.10 Testing and Adjusting

- A. CAL-Green Section 5.410.4. Testing and Adjusting: Provide as required by this code section and as specified in this Section and related sections.

1. Provide written plan and perform procedures for testing and adjusting of the following systems:
 - a. HVAC Systems and controls.
 - b. Indoor and outdoor lighting and controls.
 - c. Water Heating systems.
 - d. Renewable energy systems.
 - e. Landscape irrigation systems.
 - f. Water re-use systems.
 - B. Tests: For the purpose of trial acceptance, the Contractor shall arrange, pay and perform a demonstration and test of all mechanical and electrical equipment furnished hereunder for operating efficiency and for conformance to all requirements herein specified and to all applicable regulations of any governing agency. Equipment shall be tested under operating conditions; where possible, all safety devices shall be tested under simulated emergency conditions. All tests shall be scheduled through the Construction Manager. The Contractor shall notify the Architect/Engineer through the Construction Manager of any scheduled tests at least forty-eight (48) hours in advance so that the Owner may attend if desired. Where test results indicate a need for final adjustments, Contractor shall make such adjustments and retest until test results indicate compliance.
 - C. All tests shall be scheduled through the City and shall be witnessed by the City's Representative and Commissioning Agent for the project. Tests include (but are not necessarily limited to) the following:
 1. Sterilization of Potable Water Systems: Division 22.
 2. Overload Protection Certification: Division 26.
 3. Electrical Commissioning: Division 26.
 - D. Demonstration: As specified in Section 01 7900.
 - E. Certificate of Occupancy: All required certificates of inspection, tests, or approvals shall be secured by the Contractor from the governing authority. Contractor shall promptly deliver the Certificate of Occupancy to the Owner and copy the Architect/Engineer.
- 1.11 Operations and Maintenance Data
- A. See Section 01 78 23.
- 1.12 Project Record Documents
- A. See Section 01 78 39 "As-Built Documents"
- 1.13 Turn-In

- A. Contract will not be closed out and final payment will not be made until all personnel Identification Media, vehicle permits and keys issued to Contractor during prosecution of Work are turned in to OWNER.

1.14 Release of Claims

- A. Contract will not be closed out and final payment will not be made until Contract Agreement and Release of Any and All Claims, is completed and executed by Contractor and OWNER.

1.15 Fire Inspection Coordination

- A. Contractor shall coordinate fire inspection and secure sufficient notice to OWNER to permit convenient scheduling.

1.16 Project Guarantee

- A. Neither recordation of final acceptance nor final certificate for neither payment nor provision of the Contract nor partial or entire use or occupancy of the Site by OWNER shall constitute acceptance of Work not done in accordance with Contract Documents nor relieve Contractor of liability in respect to express warranties or responsibility for faulty materials or workmanship.
- B. Requirements for Contractor's guarantee of completed Work are included in General Conditions. Contractor shall guarantee Work done under Contract against failures, leaks or breaks or other unsatisfactory conditions due to defective equipment, materials or workmanship, and perform repair work or replacement required, at Contractor's sole expense, for period of 2 years from date of Final Acceptance, as required by of General Conditions.
- C. OWNER may make repairs to defective Work as set forth in General Conditions, if, within 5 working days after mailing of written notice of defective work to Contractor or authorized agent, Contractor shall neglect to make or undertake with due diligence repairs; provided, however, that in case of leak or emergency where, in opinion of OWNER, delay would cause hazard to health or serious loss or damage, repairs may be made without notice being sent to Contractor, and Contractor shall pay cost thereof.
- D. If, after installation, operation or use of materials or equipment to be furnished under Contract proves to be unsatisfactory to Construction Manager, OWNER shall have right to operate and use materials or equipment until it can, without damage to OWNER, be taken out of service for correction or replacement. Period of use of defective materials or equipment pending correction or replacement shall in no way decrease guarantee period required for acceptable corrected or replaced items of materials or equipment.
- E. Nothing in this Section shall be construed to limit, relieve or release Contractor's, subcontractors' and equipment suppliers' liability to OWNER for damages sustained as result of latent defects in equipment caused by negligence of suppliers' agents, employees or subcontractors. Stated in another manner, warranty contained in the Contract Documents shall not amount to, nor shall it be deemed to be, waiver by OWNER of any rights or remedies (or time limits in which to enforce such rights or remedies) it may have for defective workmanship or defective materials under laws of this State pertaining to acts of negligence.

- F. Warranty of Title: No material, supplies, or equipment for Work under Contract shall be purchased subject to any chattel mortgage, security agreement, or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all work to deliver the Site, together with improvements and appurtenances constructed or placed thereon by Contractor, to OWNER free from any claim, liens, security interest, or charges, and further agrees that neither Contractor nor any person, firm, or corporation furnishing any materials or labor for any Work covered by Contract shall have right to lien upon the Site or improvement or appurtenances thereon. Nothing contained in this Paragraph, however, shall defeat or impair right of persons furnishing materials or labor under bond given by Contractor for their protection or any rights under law permitting persons to look to funds due Contractor in hands of OWNER.

1.17 Post Construction Inspection

- A. Construction Manager and Architect/Engineer will make visual inspections of Project in company of Owner and Contractor to determine whether correction of Work is required in accordance with provisions of the General Conditions.
- B. The Construction Manager will promptly notify Contractor of any observed deficiencies.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

- 3.1 Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.
- 3.2 Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section 01 74 00 "Cleaning and Waste Management."

END OF SECTION

**SECTION 01 78 23 OPERATION &
MAINTENANCE DATA**

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals and provision of spare parts and materials, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Maintenance manuals for the care and maintenance of products, materials, finishes, systems and equipment.
 - 5. Warranties and Guarantees.
 - 6. Spare Parts, Tools and Maintenance Materials.

1.3 Related Sections

- A. Section 01 33 00 "Submittal Procedures."
- B. Section 01 77 00 "Closeout Procedures."
- C. Section 01 78 39 "As-Built Documents."
- D. Section 01 811 3 Sustainable Design Requirements – CAL-Green".
- E. Divisions 2 through 32 Sections for specific warranty, guarantee, operation and maintenance manual requirements for the Work in those Sections.

1.4 References

- A. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
 - 1. Chapter 5- Non-Residential Mandatory Measures.

1.5 Definitions

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.6 Submittals

- A. Initial Submittal: Submit two (2) draft copies of each manual at least fifteen (15) days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect/Engineer will return one (1) of draft and mark whether general scope and content of manual are acceptable.
 - 1. Correct or modify each manual to comply with Architect/Engineer's comments. Submit two (2) copies of each corrected manual within fifteen (15) days of receipt of Architect/Engineer's comments, including one digital copy of the manual in Adobe .pdf format.
- B. Schedule of all warranties, guarantees, bonds, or service contracts. Provide at least thirty (30) days prior to Final Completion.
- C. Submit for review copies of all warranties, guarantees, bonds or service contracts identified by specification section and equipment identification used in operating and maintenance data.

1.7 Coordination

- A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 – PRODUCTS**2.1 Building Maintenance and Operation Documentation - General**

- A. Section 5.410.2.5. Documentation and Training: Provide Systems Manual as required by this code section and as specified in this Section.
- B. CAL-GREEN Required Content: Include the following per 5.410.02.5.1:
 - 1. Site Information, including facility description, history and current requirements.
 - 2. Site Contact Information.
 - 3. Basic Operations and maintenance, including general site operations procedures, basic troubleshooting, recommended maintenance requirements and a site events log.
 - 4. Descriptions of major systems.
 - 5. Site equipment inventory and maintenance notes

6. Copies of all special inspection verifications required by the enforcing agency or the CAL-Green code.
7. Copy of the Commissioning Report(s) specified in 01 91 13 and related sections.

2.2 Manuals, General

- A. Submit three (3) hard copies and one (1) electronic copy of manufacturers' operations and maintenance manuals. If necessary, both copies will be marked with Architect/Engineer's/Engineer's review comments and returned to Contractor for correction until satisfactory information is provided. OWNER will retain satisfactorily corrected manuals for its own use.
 1. Submit final volumes revised, within ten (10) days after final inspection.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- C. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name, address, and telephone number of Contractor.
 6. Name and address of Architect/Engineer.
 7. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble

instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by- 280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross- referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 Operation and Maintenance Documentation and Directory

A. Organization: Include a section in the directory for each of the following:

1. Part 1: Directory, listing names, addresses, and telephone numbers of City's Consultant, Contractor, Subcontractors, and major equipment suppliers.
2. Part 2: Operating and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractor and suppliers. Identify the following:
 - a. Significant design criteria.

- b. List of equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
 - c. Parts lists showing all discrete components with part number, current prices and availability.
 - d. Operating instructions.
 - e. Manufacturers' service and maintenance technical manuals
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
- 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties and bonds.
- B. Operations and maintenance manuals shall include the following as appropriate:
 - 1. Cleaning instructions
 - 2. Safety precautions
 - 3. Trouble shooting procedures
 - 4. Theory of operation to discrete component level
 - 5. Schematic diagrams, flow diagrams, wiring diagrams, logic diagrams, etc. to discrete component level
 - 6. List of replaceable supplies; paper, ink, ribbon, etc. with part numbers, current prices and availability
 - 7. Recommended levels of spare parts and supplies to keep on hand
 - 8. Names, addresses and telephone numbers of service and repair firms for the equipment
- C. Manuals shall be the same as are used by manufacturers' authorized technicians to completely service and repair the equipment.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a

designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.4 Emergency Manuals

- A. Content: Organize manual into a separate section for each of the following:
 - 1. Type of emergency.
 - 2. Emergency instructions.
 - 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - 1. Fire.
 - 2. Flood.
 - 3. Gas leak.
 - 4. Water leak.
 - 5. Power failure.
 - 6. Water outage.
 - 7. System, subsystem, or equipment failure.
 - 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
 - 1. Instructions on stopping.
 - 2. Shutdown instructions for each type of emergency.
 - 3. Operating instructions for conditions outside normal operating limits.
 - 4. Required sequences for electric or electronic systems.
 - 5. Special operating instructions and procedures.

2.5 Operation Manuals

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.

8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.6 Product Maintenance Manual

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
 1. Product name and model number.
 2. Manufacturer's name, contact information including website.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 1. Include procedures to follow and required notifications for warranty claims.

2.7 Systems and Equipment Maintenance Manual

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard printed maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
 - 5. Manufacturer's name, contact information including website.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training videotape, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
 - 1. Provide contact information for spare part manufactures and local sources to include addresses, telephone numbers and website.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

2.8 Warranties and Bonds

- A. Contractor shall provide written warranties and bonds in favor of the Owner, as required by respective sections of these Specifications, and arrange to commence at the date of Notice of Final Completion of the entire project or date of installation of warranted item(s), whichever is later.
 - 1. Provide warranties, guarantees, bonds or service contracts for period(s) indicated.
 - 2. Provide manufacturer's warranties or guarantees for products.
 - 3. Where manufacturer's standard warranties or guarantees expire before expiration date required by Contract Documents, obtain and pay for warranty or guarantee extensions, at no additional cost to Owner.
- B. Provide all warranties, guarantees, bonds or service contracts prior to final acceptance. Owner's receipt and acceptance shall be a condition precedent to Final Payment.
 - 1. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Submit a schedule of all warranties, guarantees, bonds, or service contracts at least thirty (30) days prior to Final Completion.
- D. Submit all warranties, guarantees, bonds or service contracts identified by specification section and equipment identification used in operating and maintenance data.
 - 1. For equipment put into use with OWNER's permission during construction, submit within ten (10) working days after first operation.
 - 2. For items of Work delayed materially beyond Date of Substantial Completion, provide updated submittal within ten (10) working days after acceptance, listing date of acceptance as start of warranty period.
- E. Rejection of Warranties: OWNER reserves right to reject unsolicited and coincidental product warranties, which detract from or confuse requirements or interpretations of Contract Documents.

- F. Manufactured equipment and supplies shall carry a manufacturer's guarantee for the length of time specified by the manufacturer, but not less than one year.
- G. Provide Owner [Construction Manager] a copy of each warranty, guarantee, bond or service contract issued. Submit with each of the foregoing an information sheet for Owner's personnel which includes:
 - 1. Effective dates or period (beginning no sooner then the anticipated Notice of Final Completion Date).
 - 2. Proper procedures in the event of failure.
 - 3. Instances that might affect the validity of warranties, bonds or service contracts.
- H. Provisions of contract concerning Work provided or corrected after date of completion under provisions of General Conditions (or any other provisions of the Contract except maintenance requirements) and all affected work are extended for period equal to original period of corrective or otherwise provided Work. Time coverage extension provisions of the Paragraph are not applicable to items of Work or equipment when so stipulated in the particular Specification Section for that time.
- I. The Contractor shall be held responsible for and must make good any defects through faulty, improper workmanship or materials arising or discovered in any part of his work within one year after the completion and acceptance of the Work. The Contractor will also be held responsible for defective or faulty work discovered after one year in accordance with implied warranty statutes.
- J. During the period of any guarantee, the Contractor shall provide response and repair services within the following time requirements subsequent to a written request by the Owner. Service calls will be defined as either normal, or critical items. Critical items shall be defined as life safety items, or equipment and/ or systems that prevent the operations of Owner's facilities, including elevators and lifts. All other items will be classified as normal items.
 - 1. Critical Items: Response time to all critical items shall be within 4 hours of the service request. Repair/ replacement made within 24 hours following the service response.
 - 2. Normal Items: Response time to all normal items shall be within 48 hours of the service request. Repairs made within 24 hours following the service call.
 - a. The service shall be provided during normal working hours, unless otherwise specified herein.
 - 3. Services must be provided not to disrupt normal operations. Should the listed service agency fail to perform the critical service items within 3 working days, normal service items within 12 working days, the Contractor shall provide the service through any other agency that will comply, and pay the entire costs thereof. Work must be completed immediately, but no later than 24 hours for critical items, and 72 hours of normal items upon contracting with this other agency.

4. If the Contractor fails to perform as described above, the Owner reserves the right to have 3rd party source repair/ replace defective parts and/ or labor at the expense of the Contractor.
- K. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 1. Include procedures to follow and required notifications for warranty claims.
- L. Warranty Reinstatement: After correction of warranted Work, reinstate warranty for corrected Work to date of original warranty expiration or to a date not less than 365 days after corrected Work was done, whichever is later.
- M. Replacement Cost: Replace or restore failing warranted items without regard to anticipated useful service lives.
- N. Post Occupancy Review: Approximately ten months after the Date of Substantial Completion, but at least forty-five days prior to the expiration of each specific guarantee or warranty, the Contractor shall participate in a guarantee/warranty review of each installed item covered by such guarantee/warranty. This review shall be scheduled and conducted by the City's Representative, and shall be at no additional cost to the City. The Contractor shall repair and/or replace within 30 days any defective materials or equipment discovered as a result of this review.

PART 3 – EXECUTION

3.1 Manual Preparation

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more

than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
1. Do not use original Project Record Documents as part of operation and maintenance manuals.
 2. Comply with requirements of prepared as-built drawings in Division 1 Section 01 78 39, "As-Built Documents."
- G. Warranties and Guarantees: Include in binder with related information on product or system.
1. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers, and manufacturers.
 - a. Provide table of contents and assemble in 8-1/2 inches by 11 inches three- ring binder with durable plastic cover.
 - b. Assemble in Specification Section order.
- H. Comply with Division 1 Section 01 77 00, "Closeout Procedures" for schedule for submitting operation and maintenance documentation.
- 3.2 Spare Parts and Maintenance Materials
- A. Provide products, parts, tools, maintenance and extra materials in quantities specified in individual specification Sections.
 - B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.
 - C. The Contractor shall furnish all maintenance materials required herein prior to final acceptance.
 - D. Prior to final application for payment, turn over to City all keys to locked doors, panels, gates, etc., individually tagged and organized by function and location. Include typewritten key schedule.

END OF SECTION

SECTION 01 78 39 AS-BUILT**DOCUMENTS**

PART 1 - GENERAL**1.1 MAINTENANCE OF DOCUMENTS AND SAMPLES**

- A. Store Project as-built documents and Samples in Contractor's field office separate from documents used for construction.
- B. Maintain as-built documents in order and in a clean, dry, legible condition.
- C. Do not use as-built documents for construction.

1.2 AS-BUILT DOCUMENTS

- A. Owner's Representative will, at no cost, provide Contractor with a set of the Drawings of the original Contract Documents, which shall be used for recording the "As Built" condition of the Work.
- B. As-Built Drawings: Record the following kinds of information on the As-Built Drawings:
 - 1. Locations of Work buried under or outside the building, such as plumbing and electrical lines and conduits. Provide horizontal and vertical dimensions from fixed points.
 - 2. Actual numbering of each electrical circuit.
 - 3. Locations of all HVAC, plumbing and electrical Work concealed inside the building; and other work that is changed by Contractor from that shown on the Drawings.
 - 4. Locations of all items, not necessarily concealed, which vary from the locations shown on the Drawings.
- C. The following requirements for As-Built Drawings are in addition to those specified elsewhere:
 - 1. They shall be done carefully and neatly by a competent drafter, familiar with the Work involved, using methods acceptable to Owner's Representative.
 - 2. They shall be kept up to date during the entire progress of the Work and made available to Owner's Representative at any time.
 - 3. Additional Drawings shall be provided as required to accurately describe changes.
 - 4. Record all changes in size, location, and other features of installation shown on the Drawings.
 - 5. Record all locations of underground Work, points of connection, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
 - 6. Record sufficient information such that Work concealed in the building may be located with ease and accuracy. This may be accomplished by dimensioning or by stating the relationship to the spaces in the building near which the Work was installed. Owner's Representative's

decision on what constitutes sufficient information shall be final.

7. Provide electronic "As-Built" drawings using AutoCAD, in one combined PDF file including all Drawings, in addition to one full-size set of reproducible documents.
- D. Shop Drawings: Provide final Shop Drawings which have been updated to show actual conditions, for Work specified in the individual Sections.
- E. Specifications and Addenda:
 1. Record the following:
 - a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - b. Changes made by Addenda, Change Order, or Field Order, and clarifications and interpretations made by Letter of Instruction.
 - c. Provide electronic file in Microsoft Word format and one hard copy in 3-ring binder.

PART 2 - PRODUCTS (NOT USED)**PART 3 - EXECUTION (NOT USED)**

END OF SECTION

SECTION 01 79 00**DEMONSTRATION AND TRAINING**

PART 1 - GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration and operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training recording.
 - 4. Compliance with California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green" Chapter 5- Non-Residential Mandatory Measures.

1.3 Related Sections

- A. Section 01 31 00 "Project Management and Coordination" for requirements for pre-instruction conferences.
- B. Divisions 2 through 32 Sections for specific requirements for demonstration and training for products in those Sections.
- C. Allowances: Furnish demonstration and training instruction time under the Demonstration and Training Allowance as specified in Division 1 Section "Allowances."
- D. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up.

1.4 References

- A. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
 - 1. Chapter 5- Non-Residential Mandatory Measures.

1.5 Submittals

- A. Schedule of Demonstrations. Submit for approval at least four (4) weeks prior to first demonstration.
 - 1. Instruction Program: Submit three copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 2. At completion of training, submit two complete training manual(s) for Owner's use.
- B. List of instructors, resume, and instruction outline. Submit for approval at least two (2) weeks prior to first instruction period.
 - 1. Submit professional video production credentials.
 - 2. Qualification Data: For facilitator, class instructors and video photographer.
- C. Training Modules with course outline as specified within this section.
- D. Attendance Record: For each training module, submit list of participants and length of instruction time.
- E. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.
- F. Demonstration and Training videos: Submit two digital copies within seven days of end of each training module on USB drive (preferred) or DVD.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect/Engineer and Construction Manager].
 - d. Name of Contractor.
 - e. Date of digital recording.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction (On-Site, outside classroom).
 - 2. Transcript: Prepared on 8-1/2-by-11-inch (215-by-280-mm) paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding digital recording. Include name of Project and date of digital recording on each page.

1.6 Quality Assurance

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructors. Member(s) of installers' staff and authorized representative(s) of a component, assembly, or system manufacturer(s). See individual sections for additional requirements.
 - 1. A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Photographer Qualifications: A professional photographer who is experienced photographing construction projects.
 - 1. No recordings performed by Contractor, Subcontractor or vendor will be accepted. Architect/Engineer must approve the DVD-Videographer prior to instruction
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.7 Coordination

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect/Engineer.

PART 2 – PRODUCTS

2.1 Systems Operations Training - General

- A. CAL-Green Section 5.410.2.5.2. Systems Operations Training: Provide as required by this code section and as specified in this Section and related sections.
1. Document the training of the appropriate maintenance staff for each equipment type or system.
 2. Include this documentation in the Commissioning Report as part of the Operation & Maintenance Data submitted in Section 01 78 23.
 3. Training shall include the following points:
 - a. System overview (what it is, what it does, with what does it interface).
 - b. Review and demonstration of servicing and preventative maintenance.
 - c. Review of information in the Systems O&M Manual.
 - d. Review of the Record Drawings for the systems/equipment.

2.2 Photographic Media

- A. DVD Format: Provide high-quality color DVD. 8 copies submitted to Construction Manager Two (2) weeks after instruction.

2.3 Instruction Program

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
1. Motorized doors, including overhead coiling doors and automatic entrance doors.
 2. Fire-protection systems, including fire alarm fire pumps and fire-extinguishing systems.
 3. Refrigeration systems, including chillers cooling towers condensers pumps and distribution piping.
 4. HVAC systems, including air-handling equipment air distribution systems and terminal equipment and devices.
 5. HVAC instrumentation and EMS controls.
 6. Electrical service and distribution, including transformers switchboards panelboards uninterruptible power supplies and motor controls.
 7. Packaged engine generators, including transfer switches.
 8. Lighting equipment and controls.
 9. Heat generation, including boilers, pumps, and water distribution piping.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.

- b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Action List ("Do Not Do List"), whereas warranties would be voided.
 - b. Inspection procedures.
 - c. Types of cleaning agents to be used and methods of cleaning.
 - d. List of cleaning agents and methods of cleaning detrimental to product.
 - e. Procedures for routine cleaning
 - f. Procedures for preventive maintenance.
 - g. Procedures for routine maintenance.

- h. Instruction on use of special tools.
- 8. Repairs: Include the following:
 - a. Contact Information on Local Vendors/Subcontractor/Contractor for each system.
 - b. Diagnosis instructions.
 - c. Repair instructions.
 - d. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - e. Instructions for identifying parts and components.
 - f. Review of spare parts needed for operation and maintenance.

PART 3 – EXECUTION**3.1 Preparation**

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.
 - 1. Coordinate location on-site for use in instructing classroom. Contractor responsible for all teaching and A/V requirements.

3.2 Demonstration

- A. Inspect and operate satisfactorily, in presence of Construction Manager and other representatives, each system and item of equipment, including accessories.
- B. Replace defective work or material.
- C. Repeat inspection and demonstration until defects are eliminated.

3.3 Instruction

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Contractor will furnish appropriate vendor/ instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. Owner will furnish an Facility Spervisor to describe Owner's operational philosophy.

3. Owner will furnish Contractor with names and positions of participants, upon request of Contractor..
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 1. Schedule training with Owner, through Construction Manager, with at least seven days' advance notice.
 - D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral and demonstration performance- based test.
 1. Allow a minimum of 10 to 15 minutes per Module.
 - E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.
- 3.4 Demonstration And Training Dvd's
- A. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
 2. Training modules shall correspond with list of items (HVAC, Electrical System, Piping and Plumbing, Miscellaneous) at end of this Section.
 - B. Record instruction of Owner's personnel in the operation and maintenance of equipment and systems. Edit DVD-videotape to remove non-instructional conversation. Photographer shall select vantage points to best show equipment, systems, and procedures demonstrated. Minimum recording time for each of the 4 training modules shall be eight hours
- 3.5 Training Schedule
- A. The Contractor shall train Owner's designated representatives in the operation and maintenance of architectural, mechanical, electrical, and food service equipment. Coordination shall be maintained with systems designers for development of hours of instruction and scope of material to be covered. Training of Owner's designated representatives shall not commence until the Owner has received from the Contractor the final submittal copy of the operation and maintenance manual.
 1. Instruct Owner's personnel in operation and maintenance of all products, equipment and systems. Explain use of operating and maintenance manuals.
 2. Tour all building areas involved and identify maintenance points and access and control locations and equipment.
 3. Explain operating sequences. Identify location and show operation of switches, valves, etc., used to start stop and adjust systems. Explain use of flow diagrams, operating sequence diagrams, etc. Demonstrate cooperation through complete control cycle and full range of operation in all modes, including testing, calibration and adjustment relevant

to operation.

4. Explain use of control equipment, including temperature setting, switch modes, available adjustments, reading gauges, and functions that must be serviced only by authorized factory representative.
 5. Explain troubleshooting procedures. Demonstrate commonly occurring problems. Note procedures which must be performed by factory personnel.
 6. Explain maintenance procedures and requirements. Point out items requiring periodic maintenance. Demonstrate typical preventive maintenance procedures and recommend typical maintenance intervals. Demonstrate other commonly occurring maintenance procedures not part of preventive maintenance program. Identify maintenance materials to be used.
 7. Emphasize safety procedures to be observed in operating and maintaining products, equipment and systems.
 8. Furnish all tools and equipment required.
- B. Schedule Submittal: The proposed scope of training and materials and instruction schedule shall be submitted for review and approval approximately thirty (30) calendar days before the scheduled completion of the building. Mutually agreeable dates for training shall be arranged with the Owner, but the training must be completed prior to final acceptance of the facility.
- C. Scope of Training: Training shall include classroom and on-the-job instructions by qualified installation and maintenance personnel, having the necessary knowledge, experience and teaching skills. The use of factory personnel for training on major equipment items will be required. The qualifications of the training personnel shall be reviewed by the Project Inspector prior to the training session. Any training session which is not acceptable to the Owner shall be redone at the Contractor's expense.
1. Contractor must have sign-in sheets at each training session. Sign-in sheet shall have a start time and completion time to be signed by the Construction Manager.
- D. The General Contractor shall professionally DVD-video/audio complete instruction period as required. DVD's labeled and indexed shall be turned over to Owner after training has been completed. Contractor shall provide DVD's with audio all of the training programs and shall deliver completed DVD's to the Owner.
- E. Time Period of Training: The minimum specific hours of training time required for each category of major equipment and systems shall be as stated below. Where additional time is required to completely cover material, provide at no additional cost. Past experience indicates a workable ratio in the vicinity of approximately 25 percent classroom and 75 percent application, except that the ratio may be reversed for control systems. The Owner shall have the option of reversed for control systems.
- F. The Owner shall have the total time specified. Training will be presented on an 8 hour per day, 5 day per week schedule, with all reading assignments and review to

be within this period. Time not used in the initial training may be used at the Owners discretion within the warranty period at no additional expense to the Owner.

END OF SECTION

<u>ITEM</u>	<u>TIME (HRS)</u>
1. Electrical System: Covers all building electrical power distribution and lighting systems including switchgear, transformers, transfer switch, lighting controls, etc.	16
2. Miscellaneous: Includes, but not limited to, fire protection and alarm equipment, door operators, elevators, landscape irrigation and all other equipment not specifically covered above.	16

SECTION 01 81 13

SUSTAINABLE DESIGN REQUIREMENTS - CALGREEN

PART 1 – GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.

1.2 Summary

- A. Section includes general requirements and procedures for compliance with California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
 - 1. Chapter 5- Non-Residential Mandatory Measures.

1.3 Definitions

- A. CAL-Green Definitions: Certain terms are defined by CAL-Green in Chapter 5. Words and terms used in this section shall have the meanings shown therein.

1.4 Administrative Requirements

- A. Respond to questions and requests from Architect and the City regarding CAL-Green credits that are the responsibility of the Contractor, that depend on product selection or product qualities, or that depend on Contractor's procedures. Document responses as informational submittals.

1.5 Informational Submittals

- A. General: Submit CAL-GREEN submittals required by code and in other Specification Sections.
- B. CAL-GREEN submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated CAL-GREEN requirements.
- C. Acceptable verification submittals are specified in the related sections.

PART 2 – PRODUCTS

2.1 Requirements - General

- A. Provide products and procedures necessary to confirm CAL-GREEN compliance required in this Section. Although other Sections may specify some CAL-GREEN

requirements, the Contractor shall determine additional materials, techniques, means, methods and procedures necessary to comply with CAL-GREEN requirements.

2.2 Storm Water Pollution Prevention Plan

- A. Section 5.106.1: Comply with requirements of this code section, local ordinances, General Conditions and Special Provisions

2.3 Construction Waste Reduction

- A. Section 5.408 Construction Waste Management, Diversion and Recycling: Comply with requirements of this code section, local ordinances and Section 01 74 00.

2.4 Building Maintenance and Operation

- A. Section 5.410.2.3, 4. Commissioning and Functional Performance Testing: Participate in Commissioning and provide functional performance testing as required by these code sections and as specified in Section 01 91 13.
- B. Section 5.410.2.5. Documentation and Training: Provide Operations Training as required by these code sections and as specified in Section 01 7900.and Systems Manual as specified in Section 01 78 23.

2.5 POLLUTANT CONTROL

- A. Section 5.504.3 Indoor Air Quality: Comply with requirements of this code section, local ordinances and Section 01 35 46.
- B. Section 5.504.4 Finish Material Pollutant Control: All Finish materials shall comply with requirements of this code section, local ordinances and Section 01 61 16.

PART 3 – EXECUTION

3.1 General

- A. Comply with Section 01 74 00 "Cleaning and Construction Waste Management."
- B. Comply with Section 01 35 46 "Indoor Air Quality Procedures".
- C. Comply with execution requirements of related sections and applicable local codes and ordinances.

END OF SECTION

SECTION 01 91 13

GENERAL COMMISSIONING REQUIREMENTS

PART 1 – GENERAL**1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Bid Documents, L/SLBE Programs, OAWDPS, and JSR & WRP apply to this Work.
- C. OPR and BoD documentation are included by reference for information only.

1.2 Summary

- A. Section includes general requirements that apply to implementation of commissioning without regard to specific systems, assemblies, or components.

1.3 Definitions

- A. BoD: Basis of Design. A document that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- B. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- C. CxA: Commissioning Authority.
- D. OPR: Owner's Project Requirements. A document that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- E. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

1.4 Commissioning Team

- A. Members Appointed by Contractor(s): Individuals, each having the authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action. The commissioning team shall consist of, but not be limited to, representatives of [each] Contractor, including

Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.

B. Members Appointed by Owner:

1. CxA: The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Owner will engage the CxA under a separate contract.
2. Representatives of the facility user and operation and maintenance personnel.
3. Architect and engineering design professionals.

1.5 Owner's Responsibilities

- A. Provide the OPR documentation to the CxA and [each]Contractor for information and use.
- B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
- C. Provide the BoD documentation, prepared by Architect and approved by Owner, to the CxA and [each]Contractor for use in developing the commissioning plan, systems manual, and operation and maintenance training plan.

1.6 Contractor's Responsibilities

- A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
 1. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
 2. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
 3. Attend commissioning team meetings held on a monthly basis.
 4. Integrate and coordinate commissioning process activities with construction schedule.
 5. Review and accept construction checklists provided by the CxA.
 6. Complete electronic construction checklists as Work is completed and provide to the Commissioning Authority on a weekly basis.
 7. Review and accept commissioning process test procedures provided by the Commissioning Authority.
 8. Complete commissioning process test procedures.

1.7 CxA's Responsibilities

- A. Organize and lead the commissioning team.
- B. Provide commissioning plan.
- C. Convene commissioning team meetings.
- D. Provide Project-specific construction checklists and commissioning process test procedures.
- E. Verify the execution of commissioning process activities using random sampling. The sampling rate may vary from 1 to 100 percent. Verification will include, but is not limited to, equipment submittals, construction checklists, training, operating and maintenance data, tests, and test reports to verify compliance with the OPR. When a random sample does not meet the requirement, the CxA will report the failure in the Issues Log.
- F. Prepare and maintain the Issues Log.
- G. Prepare and maintain completed construction checklist log.
- H. Witness systems, assemblies, equipment, and component startup.
- I. Compile test data, inspection reports, and certificates; include them in the systems manual and commissioning process report.

PART 2 – PRODUCTS (NOT USED)**PART 3 – EXECUTION (NOT USED)**

END OF SECTION

SECTION 02 40 00**DEMOLITION****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Removing above-grade site improvements within limits indicated.
- B. Disposing, recycling, reusing, and/or salvaging of objectionable site material.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 RELATED SECTIONS

- A. Section 31 20 00 – Earth Moving

1.04 DEFINITIONS

- A. ANSI: American National Standards Institute.
- B. CAL-OSHA: California Occupational Safety and Health Administration.
- C. CA-CHPS: California Collaborative for High Performance Schools

1.05 PROJECT CONDITIONS

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose, recycle, reuse, and/or salvage the materials in a lawful manner. If possible, identify an organization within 1,000 miles that will purchase or accept the donation of construction waste for reuse. This organization must intend to reuse the waste as-is, or sell the material for the intent of re-use.
- B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner. Avoid damaging materials designated for salvage.
- C. Unidentified Materials: If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner. If necessary, the Owner will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 - PRODUCTS**2.01 SOIL MATERIALS**

- A. Backfill excavations resulting from demolition operations with approved on-site or import materials conforming to structural backfill defined in Section 31 20 00 Earth Moving.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Protect and maintain benchmarks and survey control points during construction.
- B. Protect existing site improvements to remain during construction.
- C. Clear the site of any existing pavements, vegetation, organic topsoil, debris, existing undocumented loose or soft fill, and other deleterious material within the proposed improvement areas. Removed fill soil may be evaluated by the Geotechnical Engineer for possible reuse and placement as engineered fill. Holes resulting from the removal of underground obstructions extending below the proposed finish grade should be cleared and backfilled with properly compacted engineered fill or other material approved by the Geotechnical Engineer. Backfilling operations for any excavations to remove deleterious material should be carried out under the observation of the Geotechnical Engineer.

3.02 RESTORATION

- A. Restore damaged improvements to their original condition, as acceptable to the Owner.

3.03 UTILITIES

- A. Existing Utilities: If encountered, do not interrupt utilities serving facilities occupied by Owner or others unless authorized in writing by the Owner, and then only after arranging to provide temporary utility services according to requirements indicated. Utility pipelines less than four inches in diameter to be abandoned may be left in place provided they will not be in close proximity to new foundation elements or interfere with new utilities. Said pipes should be plugged at the ends with concrete or sand-cement slurry. Larger utility pipelines or pipelines that underlie new foundations should be removed and replaced with engineered fill, or left in place and completely grouted with flowable sand-cement slurry or other approved Controlled Density Fill.
- B. Coordinate utility interruptions with utility company affected.
- C. Do not proceed with utility interruptions without the permission of the Owner and utility company affected. Notify Owner and utility company affected two working days prior to utility interruptions.
- D. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick.

3.04 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.
- C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
- D. Remove curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansion joint, score mark or edge, remove material to joint, mark or edge.

3.05 BACKFILL

- A. Place and compact material in excavations and depressions remaining after site clearing in conformance with Section 31 20 00 Earth Moving.

3.06 DISPOSING

- A. Remove surplus obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property. In addition to disposing the materials, consider recycling or donating/selling the materials to a reuse organization within 1000 miles.

END OF SECTION

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SECTION 02 41 19.13

SELECTIVE BUILDING DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Selective demolition of building elements.
 - 1. Protect items in place as indicated on the Drawings.
 - 2. Demolish/remove items as indicated on the Drawings.
 - 3. Remove/salvage and remove/reinstall items as indicated on the Drawings.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ANSI - American National Standards Institute
 - 1. A10.6 - Safety Requirements for Demolition Operations.
- B. City of Oakland Municipal Code 15.34
- C. EPA - Environmental Protection Agency
- D. NFPA - National Fire Protection Association
 - 1. 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.03 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the City's property.
- B. Remove and Salvage: Items indicated to be removed and salvaged remain the City's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to the City's designated storage area.
- C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in locations indicated.
- D. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.
- E. Materials Ownership: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the City's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.04 SUBMITTALS

- A. Procedures: In accordance with Division 01.
- B. Qualification Data: For demolition firm if not provided by Contractor.

- C. Pre-demolition Photographs and Details: Show existing conditions in areas where interior demolition work will be performed, including finish surfaces, items to be salvaged, and items to be re-installed, that might be misconstrued as damage caused by demolition operations. Submit before work begins.
- D. Inventory of Salvaged Items: After demolition is complete, submit a list of items that have been removed and salvaged.
 - 1. Include at least one digital photograph of each item, numbered and clearly labeled to correspond with inventory.
 - 2. Provide written Table of Contents for inventory.
 - 3. Indicate original location(s) of each item or type of item.
 - 4. Indicate whether or not the item is to be re-installed. If it will be re-installed, indicate repair or restorative work required and location of re-installation.
- E. Demolition, Salvage, and Re-Installation Plan as specified.
- F. Receipts for recycled materials that include name of licensed recycling company, dollar value, and date.

1.05 DEMOLITION, SALVAGE, AND RE-INSTALLATION PLAN

- A. Submit a complete Demolition, Salvage, and Re-Installation Plan detailing procedures and sequence for the following:
 - 1. Removal of existing construction and facilities including all features necessary to remove portions of the existing building for new work in a safe and controlled manner to ensure stability, weathertightness, and security of the existing building at any given time.
 - 2. Removal, salvage, transportation, storage, and re-installation of items to be re-installed.
 - 3. Submit detailed information on methods and sequencing for accomplishing this work. Employ a Structural Engineer registered in the State of California to develop such methods and demolition sequences.
- B. Thoroughly investigate the condition of the existing structures before proceeding with the Demolition, Salvage, and Re-Installation Plan.
- C. The Demolition, Salvage, and Re-Installation Plan shall consist of the following:
 - 1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity. Marked-up drawings can be provided as part of the Plan.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Details and locations of temporary and exterior protective measures to ensure that people, property, and improvements to remain will not be endangered or damaged.
 - 5. Access routes for hauling debris and salvaged items from building.
 - 6. Coordinate schedule of activity for hazardous materials removal and other work contracted directly by the City.
- D. In the event that modifications to the Demolition, Salvage, and Re-Installation Plan are required to be submitted for approval, the Contractor shall provide 14 calendar days for the review of substantial procedural and sequence modifications.
- E. Review by the Architect and the City of the Demolition, Salvage, and Re-Installation Plan, or field observations performed by the Architect, will in no way relieve the Contractor of full responsibility for the Demolition, Salvage, and Re-Installation Plan and procedure.

1.06 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: A firm with documented specialized experience in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-demolition Conference
 - 1. Conduct conference at Project site. Conference shall be attended by Contractor, the City, Architect, demolition sub-contractor if contracted for demolition work, and others whose work is affected by demolition operations.
 - 2. Pre-demolition photographs and details shall be complete and accepted by Architect before conference takes place.
 - 3. Notify participants a minimum of 48 hours prior to time of conference.
 - 4. Review methods and procedures related to demolition including, but not limited to, the following:
 - a. Pre-demolition photographs must be complete and acceptable to Architect and the City.
 - b. Inspect and discuss condition of construction to be demolished.
 - c. Review and finalize Demolition, Salvage, and Re-Installation Plan and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - d. Review and finalize protection requirements.
 - 5. Record discussions of conference and any conflict, incompatibility, or inadequacy. Furnish a copy of record to each participant.
- E. City Recycling Requirements: The City enforces the Oakland Municipal Code 15.34 including:
 - 1. Failure to recycle 100 percent of asphalt and concrete, failure to recycle 65 percent of material that does not include asphalt or concrete, each load transported by a hauler without a fully executed non-exclusive franchise agreement (<https://www.oaklandca.gov/resources/construction-and-demolition-recycling-service-providers>), and each load transported to an unauthorized facility.
 - 2. A violation occurs each time (aka incident) a load is taken to an unauthorized facility and/or for each load hauled by an unauthorized hauler. Penalties begin at \$100 for the first incident, \$200 for the second incident, and \$500 for third and subsequent incidents.
 - 3. For help with enforcing the above, send a message from www.Oakland.wastetracking.com or talk to staff during office hours at <https://tinyurl.com/CandDOpenOffice>). Office hours are available Tuesday through Thursday between the hours of 2 pm and 3 pm. No appointment is needed.

1.07 TRAFFIC

- A. Conduct demolition operations and the removal of debris to ensure minimum interference with streets, walks, and adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from the City, and, where applicable, from other authorities having jurisdiction.
- B. Existing pedestrian walks shall be kept open at all times unless otherwise approved by the City. Any closings or disruptions of existing site circulation, if required, shall be included in the Demolition Plan.

- C. Full compensation for temporary vehicular and pedestrian controls shall be considered as included in the Contract Lump Sum Price and no additional compensation will be allowed for this purpose.

1.08 PROJECT CONDITIONS

- A. Conditions existing at time of inspection for bidding purposes will be maintained by the City as far as practical.
- B. Coordinate the performance of work in this Section with related or adjacent work.
- C. Protection of items should be completed prior to commencement of new construction and demolition procedures. At the end of working day or during inclement weather, cover work exposed to weather with waterproof coverings, securely anchored.
- D. Asbestos and lead paint may be encountered in the Work. If any materials suspected of containing asbestos or lead paint are encountered, do not disturb the materials. Immediately notify the Architect and the City's Representative.

PART 2 - PRODUCTS

2.01 PROTECTION MATERIALS

- A. Polyethylene Sheets: 4 mil.
- B. Lumber: Species to be selected by the Contractor, with sizes to fit field conditions. Lumber shall be fire retardant treated.
- C. Plywood: 1/2-inch or 3/4-inch fire retardant treated.
- D. Soft Fiberboard
 - 1. 1/2-inch Homasote.
 - 2. 1/2-inch NCFR Homasote for exposed locations.
- E. Neoprene: 1/4-inch or 1/2-inch strips stock sizes.
- F. Polyurethane Foam Sheets: 4-inches thick.
- G. "Preservation" Tape: As manufactured by 3M, "Scotch Brand No. 4811"; American Biltrite Inc.; Surface Armor, or equal.
- H. Plastic Film Tape: As manufactured by 3M, "Scotch Brand No. 472"; American Biltrite Inc.; Surface Armor, or equal.
- I. Kraft Paper.
- J. Accessories: Provide necessary and related parts, fasteners, devices and anchors required for complete installation.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of demolition required.

- B. Inventory and record the condition of any items required to be removed and salvaged. Where appropriate, provide at least one digital photograph.
- C. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to Architect and the City.
- D. Perform an engineering survey of condition of existing buildings to determine whether removing any unanticipated element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
- E. Hazardous materials will be remediated by the City under separate contract. Coordinate with the City's separate contractor, to ensure that hazardous materials are removed or remediated before proceeding with demolition operations in the affected area.

3.02 PREPARATION

- A. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities to be removed or abandoned.
 - 1. Arrange to shut off indicated utilities with the City and utility companies when applicable.
 - 2. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.
- B. Temporary Shoring: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of existing construction.
 - 1. Strengthen or add new supports when required during progress of demolition.
 - 2. All work shall be designed by Contractor's Structural Engineer.
- C. Comply with the following:
 - 1. Clean salvaged items of dirt and demolition debris.
 - 2. Make a written inventory of all salvaged items as specified in Part 1, noting original location, condition, and any significant damage or deficiencies.
 - 3. Pack or crate items after cleaning. Identify contents of containers and number to correspond with inventory.
 - 4. Store items in a secure area until re-installation or until delivery to the City, as applicable.
 - 5. Transport items to the City or to new location in building as applicable.
 - 6. Protect items from damage during transport and storage.

3.03 POLLUTION CONTROLS

- A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.
- B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Clean adjacent site areas of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.04 INSTALLATION OF PROTECTION

- A. General
 - 1. Alternative methods to specified protection may be acceptable if equal or greater protection is provided. Submit alternative methods to the Architect for review as specified. Do not proceed with alternative methods until specified approvals are secured. Mockups may be required. If required, provide photographs of the mockup.
 - 2. Protection may be required to remain in place for the duration of the Project. As such, materials shall be installed to provide adequate protection throughout the full extent of construction activities. Repair or reinstall protection as required throughout the duration of construction. Changes to protection shall be proposed to the Architect for approval prior to making changes.
 - 3. All protection assemblies should be self-supporting and self bracing, and secured at the base, unless otherwise noted.
- B. Existing Facilities: Protect adjacent walkways, buildings, and other facilities during demolition operations.
- C. Temporary Protection: Comply with requirements in Division 01.

3.05 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.
 - 4. Maintain adequate ventilation when using cutting torches.
 - 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 6. Dispose of demolished items and materials promptly.
 - 7. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.
- B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.
 - 1. Use a pacometer to locate all existing rebar within any existing concrete to be demolished. Before drilling or cutting any rebar, obtain bar-by-bar permission in writing from the Architect.

3.06 SITE RESTORATION

- A. Rough grade below-grade areas, where slabs and sidewalks are removed, ready for further excavation or new construction.
- B. Completely fill voids resulting from building demolition operations that will not be required by new construction with satisfactory soil materials.

3.07 PATCHING AND REPAIRS

- A. Cutting and Patching: As specified in Division 01.
- B. All parts of the existing buildings indicated to remain and damaged by demolition operations shall be repaired and refinished or replaced to match existing.
- C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- D. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.08 DISPOSAL OF DEMOLISHED MATERIALS

- A. General
 - 1. Promptly dispose of demolished materials.
 - 2. Do not allow demolished materials to accumulate on-site.
 - 3. Refer to the City of Oakland Municipal Code 15.34 recycling requirements in clause 1.06 E.
- B. Burning: Do not burn demolished materials.
- C. Disposal
 - 1. Transport demolished materials off the City's property and legally dispose of them.
 - 2. When hauling is done over highways or city streets, loads shall be trimmed, and the vehicle shelf areas cleaned after each loading.
 - 3. Contractor shall pay all permit and disposal fees for off-hauled materials.

3.09 CLEANING

- A. Sweep the building broom clean on completion of selective demolition operation.
- B. All residue and debris from protection work shall be removed from existing construction leaving the premises clean and neat.

3.10 SELECTIVE DEMOLITION SCHEDULE

- A. Remove the Following: Demolished site construction materials as indicated on the Drawings.

END OF SECTION

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SECTION 03 54 15

PORTLAND CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Liquid-applied, high-strength, fast-setting, non-shrink cement underlayments for leveling floors to meet flatness and levelness requirements of the respective finish flooring materials.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 65 00 - Resilient Flooring: Provision of resilient flooring.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens).
 - 2. C191 - Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's literature describing materials and specifications for mixing, placing, curing, and protecting.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Ensure that storage facilities are weathertight and dry.
- B. Comply with additional requirements specified in Division 01.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: Silpro LLC; Ardex Inc.; Thoro System Products, or equal.

2.02 MATERIALS

- A. General
 - 1. Materials listed below are not necessarily all-inclusive, nor are all materials listed necessarily required to be used.
 - 2. Contractor shall develop systems for preparing substrate for finish materials using approved products from a single manufacturer.
- B. Trowelable Underlayment: Self-drying, trowelable concrete underlayment formulated with a special blend of portland cement, other hydraulic cements, and polymers.
 - 1. Initial Set (ASTM C191): Approximately 30 minutes.
 - 2. Final Set (ASTM C191): Approximately 90 minutes.
 - 3. Compressive Strength (C109): 4,200 psi at 28 days.
 - 4. Product: As manufactured by ARDEX Americas, "ARDEX SD-P", or equal.

- C. Self-Leveling Underlayment: Non-structural, premixed blend of cement, graded aggregate, polymers, and control additives capable of being installed to feather edge.
 - 1. Product: As manufactured by Silpro LLC, "Raeco SLU Superflow", or equal.
- D. Primer: Provide the following unless otherwise recommended by manufacturer for existing conditions.
 - 1. Product: As manufactured by Silpro LLC, "R-2000", or equal.
- E. Water: Clean and potable, free from impurities detrimental to underlayment.

2.03 MIXES

- A. Mix underlayment and patching compounds in accordance with manufacturer's instructions.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Examine substrate and verify that surfaces are free from debris, oil, grease, wax, curing compounds, and dust and are reasonably clean and dry and that conditions are otherwise suitable to receive underlayment.

3.02 PREPARATION

- A. Select and apply proper primer for condition of substrate and mix.

3.03 PLACING

- A. General
 - 1. Follow manufacturer's technical bulletins for application of each product.
 - 2. Surface texture of underlayment shall be as recommended by manufacturer for reception of specified finish materials where covered, and to match appearance of in-place concrete where to be left exposed.
- B. Apply troweled underlayment to those areas where it is necessary to bring substrate up to levelness and flatness tolerances acceptable to manufacturer for application of applied floor coverings.
 - 1. Do not exceed thickness recommended by manufacturer for an unreinforced and non-aggregated mix.
 - 2. Install in one pour from featheredge spreading and screeding to a smooth surface.
- C. Use self-leveling underlayment at large areas where use of a trowel-applied underlayment would be more labor intensive.

3.04 CURING

- A. Allow underlayment to cure as recommended by manufacturer.
- B. Do not allow traffic on underlayment during hardening period; minimum 2 hours or longer if special conditions exist.
- C. Do not load floors until reasonable strength has been achieved. Any loading on topping shall be distributed and not concentrated.

3.05 ADJUSTMENT

- A. Repair defects, evident after curing, that make underlayment an unacceptable substrate for finish flooring. Use materials recommended by underlayment manufacturer.
 - 1. Fill dimples and sand down protrusions smooth and flush with adjacent surface.
 - 2. Repair underlayment damaged prior to installation of scheduled floor finish.

END OF SECTION

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SECTION 05 45 00**METAL SUPPORT ASSEMBLIES****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes
 - 1. Metal studs and furring for support of gypsum board and other finishes.
 - 2. Backing for interior items to be attached to gypsum board and metal studs.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 07 92 00 - Joint Sealants: Provision of acoustical sealant.
 - 2. Section 10 11 00 - Visual Display Units: Provision of visual display units.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. A568 - Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
 - 2. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 3. C645 - Standard Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
 - 4. C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.
- B. CBC - California Building Code, 2019 Edition
- C. GA - Gypsum Association
 - 1. 203 - Installation of Screw-Type Steel Framing Members to Receive Gypsum Board.
- D. UL - Underwriters Laboratories Inc.
- E. United States Gypsum Company
 - 1. "Good Design Practices" systems folder SA-923, 1994 Edition.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements
 - 1. Plumb, true, straight, and rigid framing for support of attached materials.
 - 2. Design system to accommodate construction tolerances, deflection of building structural members, support of attached materials and clearances of intended openings in accordance with CBC.
 - 3. Use galvanized metal studs and channels at all shower and wet locations.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's data for steel framing members.
- B. Shop Drawings: Submit shop drawings indicating component details, framed openings, anchorage to structure and accessories or items required of other related work. Include shop drawings for backing plates for cabinets, grab bars and other wall mounted items.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with GA 203 and ASTM C754, governing laws, building code requirements, manufacturer's printed recommendations and United States Gypsum Company, "Good Design Practices" systems folder SA-923, 1994 Edition.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection
 - 1. Deliver materials to job site and store in ventilated dry locations. If materials are stored outdoors, stack materials off the ground, supported on a level platform, and fully protected from the weather.
 - 2. Handle materials carefully to prevent damage. Remove damaged items and provide new items.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers
 - 1. Steel Framing and Furring: Gold Bond Building Products Div., National Gypsum Co.; Clark Steel Framing; Dietrich Industries, Inc., or equal.
 - 2. Grid Suspension Assemblies: Chicago Metallic Corp.; USG Interiors, Inc.; National Rolling Mills Co., or equal.

2.02 STEEL FRAMING FOR PARTITIONS

- A. Studs: C-shaped, ASTM C645, G-90; non-load bearing rolled steel, channel shaped, punched for utility access.
 - 1. Width: As appropriate for spanning distance in accordance with ASTM C645.
 - 2. Thickness: Contractor shall verify size of metal studs and gauge based on allowable finish deflection criteria $l/240$ maximum.
 - 3. Tracks: Match stud grade.
 - 4. Spacing: 16 inches on center throughout.
- B. Deflection Tracks: Manufacturer's standard top runner designed to prevent cracking of gypsum board applied to interior partitions resulting from deflection of the structure above fabricated from steel sheet complying with ASTM A568 or ASTM A653. Thickness as indicated for studs and width to accommodate depth of studs and of the following configuration:
 - 1. Top Runner with Slotted Flanges: 2-1/2 inches deep flanges with slots 1 inch on center.
- C. Furring and Bracing Members: Same material and finish as studs, thickness to suit purpose.
- D. Steel Rigid Furring Channels: ASTM C645, hat shaped, depth of 7/8-inch, and minimum thickness of base (uncoated) metal as follows:
 - 1. Thickness: 0.0179-inch, unless otherwise indicated.
 - 2. Protective Coating: ASTM A653, G 40 hot-dip galvanized coating.
- E. Z-Furring Members: Manufacturer's standard Z-shaped furring members with slotted or nonslotted web, fabricated from steel sheet complying with ASTM A568 or ASTM A653; with a minimum base metal (uncoated) thickness of 0.0179-inch, face flange of 1-1/4 inches, wall-attachment flange of 7/8-inch, and of depth required to fit insulation thickness indicated.

- F. Resilient Channels: 7/8-inch, as manufactured by Unimast, "RC Deluxe"; Cemco, "RC-1"; Dale/Incor, "RFC-1", or equal.
- G. Fasteners: Galvanized, GA 203, self-drilling, self-tapping screws.
- H. Expansion Bolts: Hilti Fastening Systems, "Kwik Bolt TZ Concrete Anchors (ICC ESR-1917)"; Simplified Building; Tanner Bolt & Nut Corp., or equal.
- I. Metal Backing Plates
 - 1. Type 2 (Heavy Loads): As indicated on the Drawings.
 - 2. Type 3 (300 Pounds and Up): As indicated on the Drawings.
- J. Anchorage Devices: Provide drilled in anchors or powder driven fasteners, 0.118-inch diameter with 1-inch embed.
- K. Bracing: Provide cross diagonal straps, attached as indicated on the Drawings and per stud manufacturer's specifications for frame stability.

2.03 MISCELLANEOUS MATERIALS

- A. Acoustical Sealant: As specified in Section 07 92 00.
- B. Galvanized Finish Touch-Up Coating: Liquid zinc compound that bonds electrochemically to iron, steel, and aluminum, as manufactured by ZRC Chemical Products, "ZRC Cold Galvanizing Compound"; ZRC Worldwide; Rust-Oleum, or equal.

2.04 FINISHES

- A. Galvanized Surfaces: Where galvanizing is removed by welding or other assembly procedures, clean area of any foreign matter by wire brushing and metal conditioner recommended by galvanized finish touch-up manufacturer. Apply galvanized touch-up coating by brush or spray with minimum coverage of 1.4 mils, dry film.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive metal support framing systems and verify the following:
 - 1. Installation of building components located in walls is complete.
 - 2. Backing plates are properly located for support of wall hung items.
- B. Beginning of installation means installer accepts existing conditions.

3.02 INSTALLING STEEL FRAMING FOR PARTITIONS

- A. Stud Partitions - Typical
 - 1. Align and secure top and bottom tracks. Place 2 beads of acoustic sealant between tracks and substrate.
 - 2. Fit tracks under and above openings; secure intermediate studs at spacing of wall studs.
 - 3. Install studs vertically at spacing as indicated. Place 2 beads of acoustic sealant between studs and adjacent vertical surfaces.
 - 4. Connect studs to tracks using fastener method.
 - 5. Construct corners using minimum 3 studs.
 - 6. Double studs vertically at wall openings, door and window jambs and not more than 2 inches each side of openings, unless otherwise specified. Provide track and stud horizontally at wall, window head and sill openings.

7. Brace stud framing system and make rigid.
 8. Coordinate erection of studs with requirements of door and window frame supports and attachments.
 9. Align stud web openings.
 10. Coordinate installation of jamb anchors and metal backing plates with electrical and mechanical work to be placed in or behind stud framing.
 3. Coordinate placement of insulation in multiple stud spaces made inaccessible after stud framing erection.
- B. Backing in Stud Partitions or Furring
1. Verify that any pre-drilling of backing and attachment of spacers to prevent crushing of attached material is done prior to application of attached material.
 2. If it is determined by the Architect that backing was not provided for any items as required, the Contractor shall remove the finish materials; install backing and shall patch and refinish surface to match adjacent area and surface at no additional cost to the City.
- C. Installation Tolerances: Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8-inch from plane of faces of adjacent framing.

END OF SECTION

SECTION 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Custom decorative metal grille behind bar in canteen.
 - 2. Non-structural miscellaneous metal channels, angle imbeds, and other shapes as required.
 - 3. Rough hardware.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 90 00 - Painting and Coating: For finish painting of items not specified to have factory finish.

1.02 REFERENCES

- A. ANSI - American National Standards Institute
 - 1. B18.6.3 - Machine Screws and Machine Screw Nuts.
 - 2. B18.21.1 - Lock Washers (Inch Series).
 - 3. B18.22.1 - Plain Washers.
- B. ASTM - American Society for Testing and Materials
 - 1. A27 - Standard Specification for Steel Castings, Carbon, for General Application.
 - 2. A36 - Standard Specification for Carbon Structural Steel.
 - 3. A47 - Standard Specification for Ferritic Malleable Iron Castings.
 - 4. A48 - Standard Specification for Gray Iron Castings.
 - 5. A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 6. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 7. A283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
 - 8. A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - 9. A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - 10. A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
 - 11. A563 - Standard Specification for Carbon and Alloy Steel Nuts.
 - 12. A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
 - 13. A786 - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.
 - 14. B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
 - 15. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch Cube Specimens).
 - 16. C157 - Standard Test Method for Length Change of Hardened Hydraulic-Cement, Mortar, and Concrete.
 - 17. C191 - Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle.

- 18. D1187 - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
 - 19. E488 - Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.
 - 20. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
 - 21. F594 - Standard Specification for Stainless Steel Nuts.
- C. AWS - American Welding Society
- 1. D1.1 - Structural Welding Code - Steel.
 - 2. D1.3 - Structural Welding Code - Sheet Steel.
- D. CBC - California Building Construction Code, 2019 Edition
- E. NAAMM - National Association of Architectural Metal Manufacturers
- 1. MFM - Metal Finishes Manual for Architectural and Metal Products.
- F. SSPC - The Society for Protective Coatings
- 1. PA 1 - Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel.
 - 2. SP 2 - Surface Preparation Specification No. 2: Hand Tool Cleaning.
 - 3. SP 3 - Surface Preparation Specification No. 3: Power Tool Cleaning.
 - 4. SP 6 - Surface Preparation Specification No. 6: Commercial Blast Cleaning.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Calculations for metal fabrications engineered under work of this Section shall be prepared under direct supervision of State of California licensed Structural Engineer and shall be so wet stamped and wet signed.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for paint products and grout.
- B. Quality Control Submittals: Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.

1.05 QUALITY ASSURANCE

- A. Welding Standards: Comply with applicable provisions of AWS D1.1 and AWS D1.3.
- 1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- B. Steel and Iron
- 1. Steel Plates, Shapes, and Bars: ASTM A36.
 - 2. Rolled Steel Floor Plate: ASTM A786, rolled from plate complying with ASTM A36 or ASTM A283, Grade C or D.
 - 3. Cold-Formed Steel Tubing: ASTM A500.
 - 4. Hot-Formed Steel Tubing: ASTM A501.

5. Steel Pipe: ASTM A53, Type S, Grade B, Schedule 40, unless otherwise indicated, or another weight required by structural loads.
 - a. Black finish, unless otherwise indicated.
 - b. Prime with red oxide primer at locations detailed to receive paint.
 6. Gray-Iron Castings: ASTM A48, Class 30.
 7. Malleable-Iron Castings: ASTM A47, grade as recommended by fabricator for type of use indicated.
 8. Concrete Inserts: Anchors of type indicated below, fabricated from corrosion resistant materials capable of sustaining, without failure, the load imposed within a safety factor of 4, as determined by testing per ASTM E488, conducted by a qualified independent testing agency.
 - a. Threaded or wedge type; galvanized ferrous castings, either ASTM A47 malleable iron or ASTM A27 cast steel. Provide bolts, washers, and shims as required, hot-dip galvanized in accordance with ASTM A153.
 - b. Provide weld plate imbedded in concrete as detailed in the Drawings. Coordinate location with other imbedded materials.
- C. Fasteners: Provide plated fasteners complying with ASTM B633, Class Fe/Zn 25 for electrodeposited zinc coating. Select fasteners for the type, grade, and class required.
1. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A, with hex nuts, ASTM A563, and, where indicated, flat washers.
 2. Machine Screws: ANSI B18.6.3.
 3. Plain Washers: Round, carbon steel, ANSI B18.22.1.
 4. Lock Washers: Helical, spring type, carbon steel, ANSI B18.21.1.
 5. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E488 conducted by a qualified independent testing agency.
 - a. Material: Carbon steel components zinc-plated to comply with ASTM B633, Class Fe/Zn 5.
 - b. Material: Group 1 alloy 304 or 316 stainless steel bolts and nuts complying with ASTM F593 and ASTM F594.
 6. Epoxy Cement: As manufactured by Simpson Strong-Tie, "SET/ET/AT High Strength Anchoring Adhesives", or equal.
- D. Welding Materials: AWS D1.1 and AWS D1.3, type required for materials being welded.

2.02 STANDARD CATALOG PRODUCTS

- A. Non-Shrink Grout
1. Premixed; containing no metallic particles, requiring only addition of water.
 2. Shall have minimum working time of 15 minutes and initial set time of 30 to 45 minutes in accordance with ASTM C191.
 3. Product: As manufactured by Master Builders Technologies, "Masterflow 928"; Five Star Products, Inc., "Five Star Grout 100", or equal.
- B. Expansion Cement
1. Non-metallic, non-corrosive, pourable hydraulic type cement that is quick-setting, high strength, and non-shrinking, with the following properties
 - a. Compressive Strength: 58,400 psi at 7 days in accordance with ASTM C109.
 - b. Volume Change: Plus 0.31 at 7 days in accordance with ASTM C157.
 2. Water: Potable.
 3. Product: As manufactured by Custom Building Products, "Pour-Stone"; Minwax Construction Products, "Por-Rok Anchoring Cement", or equal.

- C. Coatings
 - 1. Coatings for Protection of Dissimilar Materials
 - a. Dissimilar Metals: Bituminous type materials in accordance with ASTM D1187.
 - b. Aluminum in Contact with Concrete, Metal, Wood, or other Absorptive Material.
 - 2. Shop Primer for Ferrous Metal: VOC compliant, fast-curing, lead and chromate free, universal modified alkyd primer with good resistance to corrosion, compatible with finish paint systems.
 - 3. Galvanizing Repair Paint: High zinc dust content paint, with dry film containing not less than 94 percent zinc dust by weight, as manufactured by Parker Amchem, "Galvaprep SG"; Sherwin Williams, "Zinc Clad I", or equal.
- D. Decorative Metal Grille: Steel, contemporary linear style pattern, RAL powder-coat finish, size and color as indicated on the Drawings.
 - 1. Product: As manufactured by Architectural Grille, "#201 Parquet Perforated Grille", or equal.

2.03 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on Construction Drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
- C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
 - 1. Temperature Change (Range): 100 degrees Fahrenheit.
- D. Shear and punch metals cleanly and accurately. Remove burrs.
- E. Ease exposed edges to a radius of approximately 1/32-inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- F. Remove sharp or rough areas on exposed traffic surfaces.
- G. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

- I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- K. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- L. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

2.04 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports for applications indicated that are not a part of structural steel framework as required to complete the Work.
- B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 - 1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
 - a. Except as otherwise indicated, space anchors 24 inches on center and provide minimum anchor units in the form of steel straps 1-1/4 inches wide by 1/4-inch thick by 8 inches long.

- C. Galvanize miscellaneous interior framing and supports.

2.05 FINISHES, GENERAL

- A. Comply with NAAMM's MFM for recommendations relative to applying and designing finishes. Finish metal fabrications after assembly.

2.06 STEEL AND IRON FINISHES

- A. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 - 1. Typical: SSPC SP 2, SSPC SP 3, as required.
 - 2. Architectural Exposed Steel Fabrications: SSPC SP 6.
- B. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC PA 1 for shop painting.
- C. Finish Painting: As specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include

threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required. Fasteners not installed but required after pour shall be submitted to the Architect for approval. Fastener shall not be installed until the Architect approval is received.

- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of units that have been galvanized after fabrication and are intended for bolted or screwed field connections.
- E. Field Welding
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.02 SETTING

- A. Set item shown or required to be installed in sleeves with quick-setting anchor cement unless otherwise noted.
- B. Use non-shrink grout mixed in accordance with manufacturer's directions for setting plates, bolts, and similar items.

3.03 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and prime and paint exposed areas with same material as used for shop painting to comply with SSPC PA 1 requirements for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a 2.0-mil minimum dry film thickness.
- B. For galvanized surfaces, clean welds, bolted connections, and abraded areas, and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION

SECTION 06 20 00**FINISH CARPENTRY****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Miscellaneous interior wood trim where indicated.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 90 00 - Painting and Coating: For field finish painting.

1.02 REFERENCES

- A. ANSI - American National Standards Institute
 - 1. A208.2 - Medium Density Fiberboard for Interior Use.
- B. ASTM - American Society for Testing and Materials
 - 1. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. D3498 - Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems.
- C. CALGreen - California Green Building Standards, 2019 Edition
- D. CFR - Code of Federal Regulations
 - 1. 40 CFR 59 - National Volatile Organic Compound Emission Standards for Consumer and Commercial Products.
- E. EPA - Environmental Protection Agency
 - 1. Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- F. FSC - Forest Stewardship Council
 - 1. STD-01-001 - FSC Principles and Criteria for Forest Stewardship.
- G. WI - Woodwork Institute

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. Composite wood used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Articles 5.504.4.5 and 5.504.4.5.3.
 - 2. Adhesives used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Article 5.504.4.1.

1.04 SUBMITTALS

- A. Product Data: Submit for all items.

- B. Shop Drawings
 - 1. Indicate dimensioned plans, sections, elevations, large scale details, location of each item, materials and wood species, component profiles, fastenings, jointing details, finishes, accessories, hardware location and schedule of finishes.
 - 2. Follow WI standards for shop drawings.
- C. Samples: Submit samples of wood items finished as specified.
 - 1. At least 1 sample of finished solid stock showing complete range of variations in grain, color, and other features, minimum 6 inches by 12 inches.
 - 2. Samples shall be resubmitted for acceptable stain and finish until approved by the Architect.
 - 3. Provide photographs of all samples.

1.05 QUALITY ASSURANCE

- A. Forest Certification: Provide wood products made with not less than 70 percent of wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship".

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Acceptance at Site: Do not deliver interior finish carpentry until environmental conditions meet requirements specified for installation areas. If finish carpentry must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.
- B. Storage and Protection: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack plywood. Provide for air circulation within and around stacks and under temporary coverings.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Lumber shall bear the grade and trademark of the association under whose rules it is produced and a mark of mill identification. Lumber shall be of sound stock, thoroughly seasoned, kiln-dried to a moisture content not exceeding 19 percent, and surfaced 4 sides, except as specifically designated for items hereinafter.
 - 1. Exterior Lumber: Western Red Cedar, Grade Select Tight Knot (STK), transparent finish as specified in Section 09 90 00.
 - 2. Interior Lumber Scheduled for Opaque Finish: Paint grade Poplar.
 - 3. Interior Lumber Scheduled for Transparent Finish: Match existing species, grain, color, and surface texture.
- B. Medium Density Fiberboard (MDF): ANSI A208.2, 3/4-inch thick, Grade 130, made with binder containing no urea formaldehyde.
- C. Fasteners
 - 1. Provide fasteners and anchorages with hot-dip galvanized coating complying with ASTM A153, length of fastener embedded into wood substrate to equal 1-1/2 times thickness of items fastened.
 - 2. Countersink nails and fill surface where nailing is unavoidable. Sand smooth and flush for clear finish.

- D. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.
 - 1. Use wood glue that has a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Multipurpose Construction Adhesive: Formulation complying with ASTM D3498 that is recommended for indicated use by adhesive manufacturer.
 - 1. Use adhesive that has a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- F. Putty: Linseed oil type, tinted to match surface finish color.
- G. Back Priming: As specified in Section 09 90 00.

2.02 FABRICATION

- A. Preparation
 - 1. Verify measurements at job site.
 - 2. Verify details and dimensions of fixtures integral with finish carpentry for proper fit and accurate alignment.
- B. General Fabrication Requirements
 - 1. Factory-fabricate and assemble work in complete units insofar as dimensions permit shipment and installation.
 - 2. Kerf backs of solid members more than 5 inches wide or more than 1 inch nominal thickness.
 - 3. Conceal nailing where possible and set nail heads for putty in exposed portions.
 - 4. Perform corrective measures necessitated by non-conformance with WI standards. The Architect's opinion shall govern discrepancies.
 - 5. Preprime wood and field prime end cuts.
- C. Interior Miscellaneous Wood Trim: As indicated on the Drawings.

2.03 FINISHES

- A. Shop Finishing: Provide items specified in this Section to be fabricated in accordance with WI standards, shop finished in accordance with the following requirements
 - 1. Back Priming: Back prime all concealed wood surfaces.
- B. Preparation For Site Finishing
 - 1. Touch-Up: Touch-up items specified to be shop finished in accordance with requirements of WI.
 - 2. Items Other Than Those Specified to Be Shop Finished
 - a. Set exposed fasteners. Apply putty in exposed fastener indentations. Sand work smooth and prime.
 - b. Finish paint in accordance with requirements of Section 09 90 00.
 - c. Finish MDF smooth with no visible wart or paint wicking at fasteners.
- C. Transparent and Opaque Finishes: As specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General
 - 1. Set work square, level, plumb with edges scribed, accurate, and secure in place with fastenings, clips, braces, brackets, anchors, shims, and blocks.

2. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary. Stagger joints in adjacent and related standing and running trim. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
 3. Conceal nailing and screwing where possible and set nail heads for putty in exposed portion and conceal screws as indicated.
 4. Miter inside and outside corners of running trim; bevel end joints together.
- B. Wood Surfaces
1. Thoroughly hand sand. Take care that cross sanding is removed by final sanding in direction of grain; ease "knife-edge" corners by sanding.
 2. Ensure free from dust, glue, stains, and other foreign matter and in proper condition to receive finish.

3.02 ADJUSTING

- A. Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

END OF SECTION

SECTION 06 41 10

CUSTOM CASEWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Plastic laminate faced casework for new cabinets and resurfacing of existing cabinets as indicated.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 09 90 00 - Painting and Coating: For back priming.
 - 2. Division 22 - Plumbing: For rough-in and connection of plumbing fixtures and fittings.
 - 3. Division 26 - Electrical: For rough-in and connection of electrical fixtures and fittings.

1.02 REFERENCES

- A. ALA - American Laminators Association
- B. ANSI - American National Standards Institute
 - 1. A208.2 - Medium Density Fiberboard (MDF) for Interior Applications.
 - 2. B18.6.1 - Screws, Wood (Slotted).
- C. CALGreen - California Green Building Standards, 2019 Edition
- D. EPA - Environmental Protection Agency
 - 1. Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- E. FS - Federal Specifications
 - 1. FF-N-105 - Nails, Brads, Staples and Spikes: Wire, Cut and Wrought.
- F. FSC - Forest Stewardship Council
 - 1. STD-01-001 - FSC Principles and Criteria for Forest Stewardship.
- G. NEMA - National Electric Manufacturers Association
 - 1. LD3 - High Pressure Decorative Laminates.
- H. WI - Woodwork Institute

1.03 DEFINITIONS

- A. Exposed Portions - All Grades: Surfaces visible when doors and drawers are closed; underside of bottoms of cabinets over 4 feet above finished floor; cabinet tops under 6 feet above finished floor; visible front edges of web frames, ends, divisions, tops, shelves, and hanging stiles; visible sloping tops of cabinets; visible portions of bottoms, tops, and ends in front of sliding doors.
- B. Semi-Exposed Portions: Shelves; divisions; interior face of ends, backs, and bottoms; drawer sides, subfronts, backs, and bottoms; underside of bottoms of cabinets between 2-1/2 and 4 feet above finished floor; interior faces of hinged doors; and all rooms designated as storage, janitor, closet, or utility.

- C. Concealed Portions: Toe space; sleepers, web frames, stretchers, and solid sub-tops; security panels; underside of bottoms of cabinets less than 2-1/2 feet above finished floor; flat tops of cabinets 6 feet or more above finished floor except if visible from upper building level; 3 non-visible edges of adjustable shelves; underside of countertops, knee spaces, and drawer aprons; faces of cabinet ends of adjoining units that butt together.

1.04 SYSTEM DESCRIPTION

- A. Composite wood used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Articles 5.504.4.5 and 5.504.4.5.2.

1.05 SUBMITTALS

- A. Product Data
 - 1. Submit manufacturer's product data for each type of product and process specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation, including hardware.
 - 2. Submit manufacturer's written installation instructions for pre-fabricated casework items.
- B. Shop Drawings: Submit shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, seismic anchorage, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of furring and blocking, including concealed backing and reinforcing specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, electrical devices, faucets, soap dispensers, grommets, and other items installed in casework.
- C. Samples
 - 1. Submit proposed finish panel.
 - 2. Resubmit panel sample with finishes adjusted as directed, until material and finish are accepted.
 - 3. Provide photographs of all samples.
- D. Quality Control Submittals: Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed Projects with Project names and addresses, names and addresses of architects and Cities, and other information specified.

1.06 QUALITY ASSURANCE

- A. Qualifications
 - 1. Fabricator: Firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.
 - 2. Installer: Arrange for interior architectural woodwork installation by a firm that can demonstrate successful experience in installing architectural woodwork items similar in type and quality to those required for this Project.
- B. Quality Standard: Except as otherwise indicated, comply with WI for grades of interior architectural woodwork, construction, finishes and other requirements.

- C. Forest Certification: Provide wood products made with not less than 70 percent of wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Acceptance at Site: Do not deliver casework until painting and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas.

1.08 PROJECT CONDITIONS

- A. Environmental Requirements: Do not deliver or install casework until building is enclosed, wet-work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where casework is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Verify locations of concealed framing, backing, reinforcements, and furring that support casework by accurate field measurements before being enclosed. Record measurements on final shop drawings.
 - 2. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating casework without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General
 - 1. Material Grade: Provide materials that comply with requirements of the WI quality standard for each type of woodwork and quality grade indicated, unless otherwise indicated.
 - 2. Lumber and Plywood: Kiln-dry to equilibrium moisture content suitable for fabrication in shop and use intended.
- B. Medium Density Fiberboard (MDF)
 - 1. ANSI A208.2, 3/4-inch thick, paint grade, with low VOC/ formaldehyde-free.
 - 2. Product: As manufactured by Medite Corporation, Inc., "Medite II"; SierraPine Ltd.; Louisiana-Pacific Corp., or equal.
- C. Plastic Laminate
 - 1. Typical: High-pressure general purpose grade, solid colors with textured surfaces.
 - a. Plastic Thickness and Grade: Meet requirements of NEMA LD3.
 - b. Adhesive: As recommended by plastic laminate manufacturer.
 - 2. Product: As manufactured by Formica Group; Wilsonart, LLC, or equal.
 - 3. Colors: As selected by the Architect from manufacturer's complete range.
- D. Melamine Laminate: Low pressure decorative, white, ALA approved.
- E. Cabinet Hardware: Provide hardware items as required for complete installation as indicated, but no less than the following types.
 - 1. Plug-In Pin Type Shelf Supports: Provide holes 1 inch on center.
 - 2. Cabinet Hinges: European concealed type, minimum 160 degree opening, with spring closer.

3. Cabinet Pulls: 6-3/4 inches long, 3/8-inch diameter, 1-13/32 inches projection, 5-7/16 inches on center, satin stainless steel finish, 1-inch mounting screws included, as manufactured by Doug Mockett & Company Inc., "DP57D Wire Pull", or equal.
4. Drawer Slides: Full extension, rail mounted type, minimum 100-pound capacity with ball bearing rollers, as manufactured by Accuride; Knappe & Vogt; Rockler Companies, Inc., or equal.
5. Cabinet Locks: Pin and tumbler slide bolt lock, with 2 keys each, as manufactured by Schlage Lock Co., "46-002 Cabinet Locks"; Best Access Systems, "5L Series"; CompX International, "Timberline Locks", or equal.

2.02 INSTALLATION MATERIALS

- A. Screws: Select material, type, size, and finish required for each use. Comply with ANSI B18.6.1 for applicable requirements.
- B. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.
- D. Adhesives, General: Do not use adhesives that contain urea formaldehyde.
- E. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 1. Wood Glues: 30 g/L.
 2. Contact Adhesive: 250 g/L.
- F. Adhesive for Bonding Plastic Laminate: Resorcinol.
 1. Adhesive for Bonding Edges: Hot melt adhesive.

2.03 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Provide custom grade interior casework complying with WI.
- B. Wood Moisture Content: Comply with requirements of WI for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.
 1. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - a. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4-Inch Thick or Less: 1/16-inch.
 - b. Edges of Rails and Similar Members More than 3/4-Inch Thick: 1/16-inch.
 2. Complete fabrication, including assembly and concealed hardware application, before shipment to Project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 3. Shop-cut openings, to maximum extent possible, to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges with a water-resistant coating.

2.04 PLASTIC COVERED CASEWORK

- A. Fabricate in accordance with WI, Custom Grade.
- B. Construction Type: Flush overlay.
- C. Core Material: Particleboard, medium density fiberboard, or close grain hardwood plywood.
- D. Provide plastic laminate at exposed surfaces.
- E. Provide polyester cabinet liner at concealed interior surfaces.

2.05 FINISHING

- A. Quality Standard: Comply with WI Section 5, unless otherwise indicated.
 - 1. Grade: Provide finishes of same grades as items to be finished.
- B. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 - 1. Backpriming: Apply 1 coat of sealer or primer compatible with finish coats to concealed surfaces of woodwork, including backs of cabinets and underside of countertops. Concealed surfaces of plastic laminate-clad woodwork do not require backpriming when surfaced with plastic laminate or thermoset decorative overlay.
- C. Backprime surfaces to be set against concrete or plaster, as specified in Section 09 90 00.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Condition casework to average prevailing humidity conditions in installation areas before installing.
- B. Before installing architectural casework, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

3.02 INSTALLATION

- A. Quality Standard: Install woodwork to comply with WI for the same grade specified in Part 2 of this Section for type of casework involved.
- B. Install casework plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8-inch in 96 inches for plumb and level (including tops).
- C. Scribe and cut casework to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- D. Anchor casework to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.

- E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8-inch in 96-inch sag, bow, or other variation from a straight line.
- F. Complete the finishing work specified in this Section to the extent not completed at shop or before installation of casework.

3.03 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust concealed hardware
- C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 06 64 00**PLASTIC PANELING****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Plastic wall panel covering.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Section
 - 1. Section 09 29 00 - Gypsum Board: Provision of gypsum board.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. CBC - California Building Code, 2019 Edition

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data describing products.
- B. Samples
 - 1. Submit 1 sample of each type, pattern, and color required.
 - 2. Provide photographs of all samples.
- C. Quality Control Submittals
 - 1. Certificates
 - a. Before installation of plastic paneling, submit certification attesting that the installation supervisor has the required experience.
 - b. Submit a list of previous jobs giving name, location, dollar value and date, setting forth his experience.
 - 2. Manufacturer's Instructions
 - a. Before installation, submit plastic paneling manufacturer's printed instructions for installation.
 - b. Provide complete procedures for an expert installation, including preparation of substrate and application of adhesives and plastic panels.
- D. Contract Closeout Submittals: Submit plastic paneling manufacturer's printed instructions for cleaning and maintenance.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Material shall conform to the following CBC requirements.
 - 1. Flame Spread (ASTM E84): 25 or less.
 - 2. Smoke Developed (ASTM E84): 450 or less.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements
 - 1. Minimum temperature of area to receive plastic paneling, before, during and after installation and requirements for conditioning adhesive and plastic paneling shall comply with plastic paneling manufacturer's printed instructions.
 - 2. However, in no case shall area temperature be less than 50 degrees Fahrenheit 72 hours before, during and 48 hours after installation.

1.06 MAINTENANCE

- A. Extra Materials
 - 1. Provide one 48-inch wide panel.
 - 2. Extra stock shall be of same manufacture, type, pattern, color, and lot number as installed plastic paneling.
 - 3. Provide sheet packed for storage and marked with content, pattern, and color.
 - 4. Leave extra stock at site in orderly manner as directed.

PART 2 - PRODUCTS**2.01 MANUFACTURER**

- A. Acceptable Manufacturer: Marlite, "Standard FRP", or equal.

2.02 PLASTIC PANELING

- A. Plastic: Smooth, semi-rigid high impact acrylic/polyvinyl chloride sheet, 0.060-inch thick, 48 inches wide sheets, with the following properties.
 - 1. Texture: Smooth finish.
 - 2. Color: S 100 S/2/S White.
- B. Adhesive: Mildew-resistant and non-staining to wearing surface; as supplied or recommended by reviewed plastic paneling manufacturer.
- C. Caulking: Silicone caulking with color to match plastic paneling as manufactured by DAP, or equal.
- D. Trim and Accessories: Provide anodized aluminum trim with satin finish where indicated on the Drawings.
 - 1. Joint Cover Strips: Manufacturer's standard.
 - 2. Inside Corners: Manufacturer's standard.
 - 3. Exposed Edges: Manufacturer's standard surface mounted edge cap.
 - 4. Division Bar: Manufacturer's standard.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Complete all other trade work that penetrates substrate before beginning plastic paneling installation.
- B. Inspect rooms and areas to be covered. Test walls for moisture content with an electric moisture meter and take corrective measures if reading is more than 5 percent.
- C. Beginning of application means acceptance of existing conditions.

3.02 PREPARATION

- A. Remove dirt, grease, crayon, ink, or other similar markings to prevent color staining or bleeding through the plastic paneling.
- B. Fill cracks, crevices and holes with compound recommended by the plastic paneling manufacturer. Sand rough spots smooth. Surfaces to be covered shall be thoroughly dry.
- C. Remove and seal surfaces to be covered in accordance with plastic paneling manufacturer's printed instructions to permit ultimate removal of plastic paneling without damaging wall surface.

3.03 APPLICATION

- A. Apply adhesive and plastic paneling in strict accordance with the manufacturer's printed instructions.
- B. Apply plastic paneling to assure that:
 - 1. Covering is applied without horizontal joints; internal and external angles are continuous.
 - 2. Vertical joints are lapped and double cut or factory trimmed and butted.
 - 3. Edges extend not less than 1/2-inch behind applied base and trim unless otherwise indicated.
 - 4. Seams and corners are securely applied so no moisture or water vapor can get behind plastic paneling.
 - 5. Panel edges, corners, butt joints, etc. are covered so that no panel edges are exposed.
 - 6. Plastic paneling extends behind edges of switch plates and other surface mounted equipment.
 - 7. Colors are uniform.
 - 8. Finished surfaces are free of air pockets, wrinkles, tears, and other defects.
- C. Plastic Paneling: Apply with contact cement for Class A fire rating with vertical joints of beveled lap joint with 1/16-inch gap over battens.

3.04 CLEANING

- A. Remove excess adhesive from each seam and wipe plastic paneling clean, removing adhesive, dirt, and soiling. There shall be no residual stain after cleaning.

END OF SECTION

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SECTION 07 21 01

BUILDING INSULATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Acoustical insulation.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 29 00 - Gypsum Board: Provision of gypsum board.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
- B. CALGreen - California Green Building Standards, 2019 Edition
- C. UL - Underwriters Laboratories Inc.

1.03 DEFINITIONS

- A. Thermal Resistivity: Where the thermal resistivity of insulation products are designated by "r-values", they represent the reciprocal of thermal conductivity (k-values). Thermal conductivity is the rate of heat flow through a homogenous material exactly 1 inch thick. Thermal resistivities are expressed by the temperature difference in degrees Fahrenheit between the 2 exposed faces required to cause 1 BTU to flow through 1 square foot per hour at mean temperatures indicated.

1.04 SYSTEM DESCRIPTION

- A. Insulation used on the Project shall comply with CALGreen Code Nonresidential Voluntary Measures Appendix A5, Division A5.5, Section A5.504, Articles A5.504.4.8 and A5.504.4.8.2.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for insulation products specified.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect fiberglass and acoustical materials from moisture during storage and installation.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Acoustical Insulation: Mineral wool acoustic and thermal batt insulation, made of inorganic fibers derived from basalt volcanic rock, width to fit stud space, thickness as indicated to completely fill stud cavity, and conforming to ASTM C665, Type I, non-combustible when tested in accordance with ASTM E136.
 - 1. Fire resistive requirements when tested in accordance with ASTM E84:
 - a. Flame Spread: 0.
 - b. Smoke Developed: 0.
 - 2. Product: As manufactured by Johns Manville, "Mineral Wool TempControl Batts", or equal.
- B. Accessories
 - 1. Insulation Support: Galvanized springwire as required.
 - 2. Undersink Pipe Insulation: Provide undersink supply and drain pipe insulation, as manufactured by Truebro, Inc., "Basin Guard"; IPS Corporation, or equal.

PART 3 - EXECUTION**3.01 INSTALLATION, GENERAL**

- A. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, use mechanical anchorage to provide permanent placement and support of units.
- B. Extend insulation full thickness as indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections that interfere with placement.
- C. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness. Avoid crinkling and bending so that final installation is flat and smooth.
- D. Install spindle fasteners at metal deck insulation in accordance with manufacturer's written instructions.

3.02 INSTALLATION OF ACOUSTICAL INSULATION

- A. Install batt insulation as indicated on the Drawings and as directed below.
- B. Install batt insulation above all suspended gypsum board ceilings.
- C. Install batt insulation to fill framing cavities and fasten to framing to prevent slipping at sound-rated construction.
- D. Install insulation batts around perimeter of piping and electrical boxes in sound-rated wall/ceiling cavities.
- E. At all exposed conditions in occupiable spaces, provide edge trim at edges of wall installations. Insulation shall not be visible at joints between adjacent panels.

3.03 PROTECTION

- A. General: Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where

insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

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SECTION 07 51 13

BUILT-UP ASPHALT ROOFING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Replacement of existing built-up asphalt roof system to match existing where indicated on the Drawings.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 2. D36 - Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus).
 - 3. D41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 - 4. D312 - Standard Specification for Asphalt Used in Roofing.
 - 5. D6221 - Standard Specification for Reinforced Bituminous Flashing Sheets for Roofing and Waterproofing.
 - 6. D1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
 - 7. D2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
 - 8. D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- B. CBC - California Building Code, 2019 Edition
- C. NRCA - National Roofing Contractors Association
- D. UL - Underwriters Laboratories Inc.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Roofing system shall arrest water migration from entering building through roof membrane, and will withstand wind loads, thermally induced movement, and exposure to weather without failure.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including technical product information, installation instructions, and recommendations for each type of roofing product required. Include data substantiating that materials comply with requirements.
 - 1. For asphalt bitumen, provide a label on each container or certification with each load of bulk bitumen, indicating flash point (FP), softening point (SP), and equiviscous temperature (EVT).
- B. Quality Control Submittals
 - 1. Field Test Reports: Submit daily softening-point test reports on samples of asphalt used on the Project, taken at beginning of each day's work and at 2-hour intervals during course of the work thereafter. Use Ring and Ball Test, ASTM D36, or similar

- recognized test method. Submit samples to independent laboratory for testing or perform tests in field at Contractor's option.
2. Certificates: Submit manufacturer's certification indicating that all bulk bituminous materials delivered to the Project comply with required standards. Include quantity and statistical and descriptive data for each product. Submit certificate with each load before it is used.
 - a. Include continuous log showing time and temperature for each load of bulk bitumen, indicating date obtained from manufacturer, where held, and how transported prior to final heating and application on roof.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer (roofer) to perform built-up asphalt roofing work who has specialized in installing built-up asphalt roofing systems similar to that required for this Project and who is acceptable to manufacturer of primary roofing materials.
 1. Installer Certification: Obtain written certification from manufacturer of built-up roofing system certifying that installer is approved by manufacturer to install specified roofing system. Provide copy of certification for the Architect prior to awarding roofing work.
 2. Installer's Field Supervision: Require installer to maintain a full-time supervisor or foreman who is on job site during times that built-up asphalt roofing work is in progress and who is experienced in installing and repair of roofing systems similar to type and scope required for this Project.
- B. Regulatory Requirements
 1. Conform to CBC for roof assembly fire hazard requirements.
 2. Fire Hazard Classification: UL Class A.
 3. Except as approved by the Architect, all asphalt roofing and built-up flashing materials shall be manufactured by or be acceptable to the roofing system manufacturer.

1.06 PROJECT CONDITIONS

- A. Weather Condition Limitations: Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed according to manufacturers' recommendations.
- B. Substrate shall be dry, and roofing shall be installed in accordance with roofing manufacturer's requirements. All voids shall be patched; soft spots braced or removed and replaced to roofing manufacturer's approval.
- C. Hazardous materials are not expected to be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately notify the Architect and the City.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Firestone Building Products, "BUR System Nailable Deck", or equal.

2.02 MATERIALS

- A. Membrane Roof Composition: Provide mineral capped surface roof system with asphalt bitumen, and minimum 3 plies glass-fiber felts for lay-up as follows.
 1. Base Ply: Single ply of asphalt, glass-fiber felt, complying with ASTM D2178, Type IV.

2. Ply Felts: Complying with ASTM D2178, Type VI; number of plies as indicated on the Drawings.
 3. Aggregate Surfacing: ASTM D1863, No. 6 or No. 67, clean, dry, opaque, water-worn gravel or crushed stone, free of sharp edges.
 4. Interply Bitumen: Roofing asphalt, complying with ASTM D312, Type II and III.
- B. Asphalt Primer: ASTM D41.
- C. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required by roofing manufacturer for application.
- D. Tapered Insulation: Rigid roof insulation board composed of closed cell polyisocyanurate foam core bonded to fiberglass reinforced facers; meets ASTM C1289 Type II, Class I, Grade 2.
1. R-Value: 6.0 per inch; minimum total requirement R-21.
 2. Product: As manufactured by Firestone Building Products, or equal.
- E. Wood Blocking, Curbs, Cants, and Nailers: Pressure-treated lumber, sizes as indicated.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Protect other work from spillage of built-up roofing materials and prevent liquid materials from entering or clogging drains and conductors. Replace/restore other work damaged when installing built-up roofing system work.
- B. Insurance/Code Compliance: Install and test, where required, built-up roofing system to comply with governing regulations and the following insurance requirements
1. UL Fire Classified and Class 90 uplift resistance.
- C. Coordinate installing roofing sheets, flashings, stripping, coatings, and surfacings so that felts are not exposed to precipitation or exposed overnight. Provide cutoffs at end of each day's work to cover exposed felts with a course of coated felt with joints and edges sealed with roofing cement. Remove cutoffs immediately before resuming work.
- D. Asphalt Bitumen Heating: Heat and apply bitumen according to EVT Method as recommended by NRCA. Do not raise temperature above minimum normal fluid-holding temperature necessary to attain EVT more than 1 hour prior to application. Discard bitumen that has been held at a temperature exceeding finished blowing temperature (FBT) for more than 3 hours. Determine flash point, FBT and EVT of bitumen, either by information from bitumen producer or by suitable tests. Determine maximum fire-safe handling temperature and do not exceed that temperature in heating bitumen. In no case heat bitumen to a temperature higher than 25 degrees Fahrenheit below flash point. Keep kettle lid closed except when adding bitumen.
- E. Bitumen Mopping Weights: For interply mopping, and for other moppings except as otherwise indicated, apply bitumen between plies at the nominal rate of 23 pounds per roof square (plus or minus 20 percent on a total-job average basis).
- F. Substrate Joint Penetrations: Do not allow bitumen to penetrate substrate joints and enter building or damage insulation, vapor retarders, or other construction. Where mopping is applied directly to a substrate, tape joints or, in the case of steep asphalt, hold mopping back 2 inches from both sides of each joint.
- G. All terminations shall occur on solid blocking in the framing.

- H. Cutoffs: At the end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets. Provide temporary covering of 2 plies of No. 15 roofing felt set in full moppings of hot bitumen; remove at beginning of the next day's work.

3.02 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roofing insulation.

3.03 BASE SHEET INSTALLATION

- A. Prime surface of wood deck with asphalt primer at a rate of 3/4-gal./100 sq. ft. and allow primer to dry.
- B. Install one lapped course of base sheet according to roofing system manufacturer's written instructions, extending sheet over and terminating beyond cants. Mechanically fasten base sheet to substrate.

3.04 ROOF MEMBRANE INSTALLATION

- A. Interply Sheet: Install the number and type of ply sheets (felts) indicated, lapped (shingled) amount specified to form a continuous, uniform membrane with continuous bitumen moppings between sheets so that ply sheet does not touch ply sheet. As ply-sheet membrane is laid up, glaze-coat top surface with a 20 pounds per square mopping of same bitumen.
- B. Aggregate Surfacing: Promptly after installing and testing roofing membrane, base flashing, and stripping, flood-coat roof surface with 60 lb/100 sq. ft. of hot roofing asphalt. While flood coat is hot and fluid, cast the following average weight of aggregate in a uniform course:
 - 1. Aggregate Weight: 400 lb/100 sq. ft.
 - 2. If aggregate surfacing is delayed, promptly apply glaze coat of hot roofing asphalt at a rate of 10 lb/100 sq. ft.

3.05 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows
 - 1. Backer Sheet Application: Mechanically fasten backer sheet to walls or parapets. Adhere backer sheet over roof membrane at cants in a solid mopping of hot roofing asphalt.
 - 2. Flashing Sheet Application: Adhere flashing sheet to substrate in a solid mopping of hot roofing asphalt. Apply hot roofing asphalt to back of flashing sheet if recommended by roofing system manufacturer.
- B. Extend base flashing up walls or parapets a minimum of 8 inches above roof membrane and 4 inches onto field of roof membrane.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - 1. Seal top termination of base flashing.

- D. Install stripping where metal flanges and edgings are set on built-up roofing according to roofing system manufacturer's written instructions.
 - 1. Built-up Stripping: Install stripping of not less than 2 plies of roof membrane felt, setting each ply in a continuous coating of asphalt roofing cement or in a solid mopping of hot roofing asphalt, extended onto roof membrane 4 inches and 6 inches, respectively.

3.06 PROTECTION AND CLEANING

- A. Protect built-up roofing membrane from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to the Architect and the City.
- B. Correct deficiencies in or remove built-up roofing that does not comply with requirements, repair substrates, reinstall roofing, and repair base flashings to a condition free of damage and deterioration at the time of Substantial Completion.

END OF SECTION

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SECTION 07 92 00**JOINT SEALANTS****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Joint sealants and backing systems for the following locations:
 - 1. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated.
 - 2. Interior joints in horizontal traffic surfaces as indicated.
 - 3. Acoustical sealant for concealed joints.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 05 45 00 - Metal Support Assemblies: Provision of metal support assemblies.
 - 2. Section 09 29 00 - Gypsum Board: Provision of gypsum board.
 - 3. Section 09 30 00 - Tiling: Provision of ceramic tile.
 - 4. Section 09 65 00 - Resilient Flooring: Provision of resilient flooring.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C834 - Standard Specification for Latex Sealants.
 - 2. C919 - Standard Practice for Use of Sealants in Acoustical Applications.
 - 3. C920 - Standard Specification for Elastomeric Joint Sealants.
 - 4. C1193 - Standard Guide for Use of Joint Sealants.
 - 5. D1056 - Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
- B. CALGreen - California Green Building Standards, 2019 Edition
- C. CFR - Code of Federal Regulations
 - 1. 40 CFR Part 763, Subpart F, Appendix A, Section 1 - Polarized Light Microscopy.
- D. EPA - Environmental Protection Agency
 - 1. Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. Provide joint sealers that have been manufactured to establish and maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
 - 2. Adhesives, sealants, and caulks used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Articles 5.504.4.1. and 5.504.4.2.

1.04 SUBMITTALS

- A. Product Data: Submit product data from manufacturers for each joint sealant product required.

- B. Samples: Provide “dot” samples for verification purposes of each type and color of joint sealant required.
 - 1. Submit samples of all standard colors of sealant which is not paintable.
 - 2. Provide photographs of all samples.

1.05 QUALITY ASSURANCE

- A. Work shall comply with ASTM C1193.
- B. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates as follows:
 - 1. Locate a mockup test joint. Provide photographs of the mockup.
 - 2. Conduct field tests for each type of elastomeric sealant and joint substrate indicated.
 - 3. Notify Architect 7 days in advance of dates and times when test joints will be erected.
 - 4. Arrange for tests to take place with the Owner’s Representative and joint sealant manufacturer’s technical representative, if available, present.
 - 5. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 unless other method included in Appendix of ASTM C1193 is more appropriate.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - 2) For sealants that fail adhesively, retesting shall be done until satisfactory adhesion is obtained.
 - 6. Contractor shall submit written report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Data on pull distance used to test each type of product and joint substrate shall be included in the report.
 - 7. Evaluation: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, shall be considered satisfactory.
 - 8. Sealants that fail to adhere to joint substrates during testing shall not be used.
 - 9. Joint profile shall shed water.
 - 10. Use primer prior to application of sealant.

1.06 WARRANTIES

- A. General: Joint sealants shall be repaired or replaced that fail to achieve airtight and watertight seal or otherwise fail to perform as intended because of leaking, crumbling, hardening, shrinkage, bleeding, sagging, staining, loss of adhesion or cohesion, or do not cure within the specified warranty periods.
 - 1. Contractor: 5 years.
 - 2. Manufacturer: 20 years.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General Requirements
 - 1. Provide joint sealers compatible with one another and with substrates.
 - 2. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Sealants: 250 g/L.
 - b. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Manufacturer’s standard color range shall permit matching sealants to color of contacting surfaces and future ability to paint.

- B. Sealants and Caulks
 - 1. Type A -One Part Neutral Cure Silicone Sealant
 - a. ASTM C920, non-sag, one-part, low modulus, elastomeric sealant.
 - b. Color: As selected by the Architect.
 - c. Product: As manufactured by Dow-Corning, "790"; Tremco Incorporated, "Spectrum 1", or equal.
 - 2. Type B - Acrylic Emulsion Sealant
 - a. ASTM C834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.
 - b. Color: As selected by the Architect.
 - c. Product: As manufactured by Pecora Corp., "AC-20"; Tremco Incorporated, "Tremco Acrylic Latex 834", or equal.
 - 3. Type C - Acoustical Sealant
 - a. Non-hardening, non-skinning, for use in conjunction with gypsum board.
 - b. Product: As manufactured by Owens Corning, "QuietZone"; USG, "Sheetrock Brand Acoustical Sealant"; Tremco Incorporated, "Tremco Acoustical Sealant"; Pecora Corp., "BA-98 Acoustical Sealant"; or equal.
 - 4. Type D - Foam Sealant
 - a. Polyurethane foam as required to bridge gaps larger than 1/2-inch; scrape back foam once it is hard and cover with minimum 1/2-inch acoustical sealant or fire putty.
 - b. Product: As manufactured by Dow-Corning, "Enerfoam", or equal.

2.02 ACCESSORIES

- A. Primer: Non-staining type recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ASTM D1056 round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width as recommended by manufacturer of sealant material.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.
- E. Putty Pad: Fire barrier, intumescent putty pad; use for backs of outlets, etc.; push into cracks and crevices concealed within walls and floor framing; as manufactured by Spec Seal, "SSP4S"; Grainger, "Putty, Moldable", or equal.

PART 3 - EXECUTION

3.01 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

- D. Installation of Sealant Joint Backings: Install sealant joint backings to comply with the following requirements:
1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints for 2 opposing side adhesion only.
- E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
1. Provide concave joint configuration per Figure 5A in ASTM C1193, unless otherwise indicated.
- G. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, and to comply with sealant manufacturer's directions for installation methods, materials, and tools that produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in conformance with sealant manufacturer's recommendations.

3.02 SCHEDULE

- A. Type A
1. Between metal and concrete or mortar.
 2. Interior perimeter joints between cast-in-place concrete and frames of doors and windows.
- B. Type B
1. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
 2. All other interior joints not indicated otherwise.
- C. Type C: Concealed acoustical conditions.
- D. Type D: Where required to bridge gaps larger than 1/2-inch.

END OF SECTION

SECTION 08 12 15**STEEL FRAMES****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Non-fire resistance rated steel door frames.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 08 14 16 - Flush Wood Doors: Provision of flush wood doors.
 - 2. Section 08 71 00 - Door Hardware: Provision of door hardware.
 - 3. Section 09 90 00 - Painting and Coating: For field painting of primed frames.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
 - 2. A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
- B. DHI - Door and Hardware Institute
 - 1. A115 Series - Steel Door Preparation Standards.
- C. SDI - Steel Door Institute
 - 1. 100 - Recommended Specifications for Standard Steel Doors and Frames.
 - 2. 105 - Recommended Erection Instructions for Steel Frames.
 - 3. 117 - Manufacturing Tolerances Standard Steel Doors and Frames.
 - 4. A250.8 - Recommended Specifications for Standard Steel Doors and Frames.

1.03 SUBMITTALS

- A. Product Data: Submit product data for each type of frame specified, including details of construction, materials, dimensions, hardware preparation, label compliance, sound ratings, profiles, and finishes.
- B. Shop Drawings: Submit shop drawings showing fabrication and installation of standard steel frames referenced to the Architect's door mark and hardware group. Include details of each frame type, conditions at openings, details of construction, location and installation requirements of frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of frames using same reference numbers for details and openings as those on the Drawings.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers: Overly Manufacturing Co.; Steelcraft Manufacturing Co; Stanley, or equal.

2.02 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A1011, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Supports and Anchors: Fabricate of not less than 18 gauge sheet steel; galvanized where used with galvanized frames.
- D. Inserts, Bolts, and Fasteners: Manufacturer's standard units.
- E. Shop Applied Paint: Apply after fabrication.
 - 1. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

2.03 MATERIALS

- A. Interior Frames: Fabricate full profile welded frames of minimum 18 gauge cold-rolled steel.
- B. Door Silencers: Except on weatherstripped and smoke gasketed frames, drill stops to receive 3 silencers on strike jambs of single door frames and 2 silencers on heads of double door frames.

2.04 FABRICATION

- A. Fabricate steel frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at Project site. Comply with SDI A250.8 requirements.
- B. Tolerances: Comply with SDI 117.
- C. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold-rolled or hot-rolled steel.
- D. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- E. Hardware Preparation: Prepare frames to receive mortised and concealed hardware in accordance with final Door Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of DHI A115 Series Specifications for frame preparation for hardware.
 - 1. For concealed overhead door closers, provide space, cutouts, reinforcing, and provisions for fastening in head of frames, as applicable.
- F. Reinforce frames to receive surface applied hardware. Drilling and tapping for surface applied hardware may be done at Project site.
- G. Locate hardware as indicated on final shop drawings or, if not indicated, in accordance with DHI.
- H. Shop Painting: Clean, treat, and paint exposed surfaces of steel frame units, including galvanized surfaces.
 - 1. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.

2. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.
- I. Finish Painting: As specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Install steel frames and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.
- B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated.
 1. Except for frames located at existing concrete, masonry, or drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

3.02 ADJUST AND CLEAN

- A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Final Adjustments: Check and readjust operating hardware items, leaving steel frames undamaged and in complete and proper operating condition.

END OF SECTION

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SECTION 08 14 16

FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Interior non-fire resistance rated flush wood doors for installation in new or existing hollow metal frames.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 08 12 15 - Steel Frames: Provision of steel door frames.
 - 2. Section 08 71 00 - Door Hardware: Provision of door hardware.
 - 3. Section 09 90 00 - Painting and Coating: For finish painting.

1.02 REFERENCES

- A. CALGreen - California Green Building Standards, 2019 Edition
- B. DHI - Door and Hardware Institute
 - 1. A115-W - Wood Door Preparation Standards, a set containing A115-W1 - A115-W9.
 - 2. WDHS-3 - Recommended Hardware Locations for Wood Flush Doors.
- C. SDI - Steel Door Institute
 - 1. 100 - Recommended Specifications for Standard Steel Doors and Frames.
- D. WDMA - Window and Door Manufacturers Association
 - 1. I.S.1-A - Architectural Wood Flush Doors.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. Composite wood used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Articles 5.504.4.5 and 5.504.4.5.3.
 - 2. Adhesives used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Article 5.504.4.1.

1.04 SUBMITTALS

- A. Product Data: Submit product data for each type of door, including details of core and edge construction, trim for openings and louvers, and factory-finishing specifications.
- B. Shop Drawings: Submit shop drawings indicating location and size of each door referenced to the Architect's door mark and hardware group, elevation of each kind of door, details of construction, location and extent of hardware blocking, requirements for factory finishing and other pertinent data.
 - 1. For factory-machined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.

1.05 QUALITY ASSURANCE

- A. Quality Standard: WDMA Quality Standard: I.S.1-A.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Identify each door with individual opening numbers as designated on shop drawings, using temporary, removable, or concealed markings. Use the Architect's door numbering system.
- B. Storage and Protection: Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's instructions.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.08 WARRANTY

- A. General Warranty: Door manufacturer's warranty specified in this Article shall not deprive the City of other rights the City may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup, or twist) more than 1/4-inch in a 42-inch by 84-inch section or that show telegraphing of core construction in face veneers exceeding 0.01-inch in a 3-inch span, or do not conform to tolerance limitations of referenced quality standards.
 - 1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.
 - 2. Warranty shall be in effect during the following period of time after date of Substantial Completion, Beneficial Occupancy or Notice of Completion, whichever is earlier.
 - a. Solid Core Interior Doors: Life of installation.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers: Algoma Hardwoods, Inc.; Eggers Industries, Architectural Door Division; Marshfield Door Systems; Liberty Valley Doors, Inc., or equal.

2.02 MATERIALS

- A. Interior Solid Core Doors Intended for Opaque Finish
 - 1. Thickness: 1-3/4 inches, unless otherwise indicated.
 - 2. Faces: Poplar.
 - 3. Grade: Paint grade.
 - 4. Construction: 7 plies.
 - 5. Core: Particle board core.
 - 6. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.
- B. Hardware: As specified in Section 08 71 00.

- C. Door Frames: Provide new metal frames for doors of types and styles as indicated on the Drawings and schedules and in accordance with SDI 100. Conceal fastenings, unless otherwise indicated. See Section 08 12 15.
 - 1. Interior: Fabricate fully welded frames of minimum 18 gauge cold-rolled steel.

2.03 FABRICATION

- A. Fabricate flush wood doors to comply with the following requirements:
 - 1. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI WDHS-3. Comply with final hardware schedules, door frame shop drawings, DHI A115-W series standards, and hardware templates.
 - a. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory machining.
- B. Finishing: Opaque painting of doors and frames, as specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine installed door frames prior to hanging door.
 - 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
 - 2. Reject doors with defects.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Hardware: See Section 08 71 00.
- B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.
- C. Job-Fit Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer. Seal cut surfaces after fitting.
 - 1. Fitting Clearances for Non-Fire Rated Doors: Provide 1/8-inch at jambs and heads; 1/16-inch per leaf at meeting stiles for pairs of doors, and 1/8-inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4-inch clearance from bottom of door to top of threshold.
 - 2. Bevel non-fire rated doors 1/8-inch in 2 inches at lock and hinge edges.
- D. Field-Finished Doors: See Section 09 90 00.

3.03 ADJUSTING AND PROTECTION

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Refinish or replace doors damaged during installation.
- C. Protect doors as recommended by door manufacturer to ensure that wood doors will be without damage or deterioration at the time of Substantial Completion.

END OF SECTION

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SECTION 08 16 13

FIBERGLASS DOORS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Fiberglass reinforced plastic (FRP) doors, including requirements for factory reinforcement for door hardware.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 08 71 00 - Door Hardware: Provision of finish hardware.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. ASTM - American Society for Testing and Materials
 - 1. D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
 - 2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 SUBMITTALS

- A. Product Data: Submit product data for each type of door, including details of core and edge construction, trim for openings, and factory-finishing specifications.
- B. Shop Drawings: Submit shop drawings indicating location and size of each door referenced to the Architect's door mark and hardware group, elevation of each kind of door, details of construction, location and extent of hardware blocking, requirements for factory finishing, and other pertinent data.
 - 1. For factory machined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light openings.
- C. Samples
 - 1. Provide manufacturer's standard color chips for verification.
 - 2. Provide photographs of all samples.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: All FRP component parts, including the gelcoat finish, shall have a flame spread classification of 25 or less per ASTM E84 and shall be self extinguishing per ASTM D635 unless operating conditions dictate otherwise.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Identify each door with individual opening numbers as designated on shop drawings, using temporary, removable, or concealed markings. Use the Architect's door numbering system.

- B. Storage and Protection: Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Special-Lite, Inc., "AF-200 Door with AF-150 Frame", or equal.

2.02 DOOR SYSTEM

- A. Fiberglass Door
 - 1. Type: Smooth composite.
 - 2. Door Opening Size: As indicated on the Drawings.
 - 3. Construction
 - a. Door Thickness: 1-3/4 inches.
 - b. Stiles and Rails: Pultruded fiberglass with integral channels for securing corner reinforcing clip.
 - c. Corners: Mitered, secured with pultruded fiberglass corner clip chemically welded to stiles and rails; mechanical fasteners to secure corner joints are not acceptable.
 - d. Core: As selected by the Architect.
 - e. Face Sheet
 - 1) Interior and Exterior: 0.090-inch thick, Class C, smooth texture, painted FRP sheet.
 - a) Color: As indicated on the Drawings.
 - 2) Attachment of Face Sheet
 - a) Face sheets shall be flame treated to promote durable, long-lasting bond.
 - b) Face sheets shall be adhered to stiles, rails, and core using hot melt adhesive evenly coated across all surfaces to produce strong bond and prevent moisture absorption.
 - f. Cutouts: Manufacture doors with cutouts as required.
 - g. Hardware
 - 1) Pre-machine doors in accordance with templates from specified hardware manufacturers.
 - 2) Surface mounted closures will be reinforced for but not prepped or installed at factory.
 - 3) Hardware: As specified in Section 08 71 00.
 - h. Reinforcements
 - 1) Solid high-density polyurethane shapes chemically welded to stiles, rails and/or core.
 - 2) No metallic reinforcements shall be allowed.
- B. Fiberglass Frame
 - 1. Jamb Depth: Adjustable, as indicated on the Drawings.
 - 2. Perimeter Frame Members: Factory-fabricated 1/4-inch thick pultruded fiberglass open throat with return; 2-inch face for frame headers.
 - 3. Integral Door Stops: 5/8-inch by 2-1/4 inches.
 - 4. Frame Assembly: Standard knock-down.
 - 5. Frame Member-to-Member Connections
 - a. Corners mitered with 4 inches by 4 inches by 3/8-inch pultruded FRP angle reinforcement with interlocking pultruded FRP brackets.
 - b. All member-to-member connections knocked down at factory.
 - c. Provide hairline butt joint appearance.

6. Reinforcement: 1/4-inch thick pultruded FRP chemically welded to frame at all hinge, strike, and closer locations.
7. Hardware
 - a. Pre-machine and reinforce frame members for hardware in accordance with manufacturer's standards and door hardware schedule.
 - b. Surface mounted closures will be reinforced for but not prepped or installed at factory.
 - c. Hardware: As specified in Section 08 71 00.
8. Drywall Anchors: Standard jamb anchor tuck condition or KD wrap condition.

2.03 FABRICATION

- A. Fabricate FRP door systems as indicated. Field measurements shall be taken as required for coordination with adjoining work.
- B. Form exposed surfaces free from warp, wave and buckle, with all corners square, unless otherwise indicated. Set each member in proper alignment and relationship to other members with all surfaces straight and in a true plane.
- C. Reinforce members and joints with plates, tubes or angles for rigidity and strength.
- D. Doors shall be mortised and reinforced for hardware in accordance with the hardware manufacturer's instructions and templates. The reinforcing shall be designed to receive hinges, locks, strikes, closures, etc.
- E. Provide clearance for doors of 1/8-inch at jambs and heads; 1/4-inch clearance above threshold.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Installer shall examine the substrate and conditions under which fiberglass reinforced plastic work is to be installed and notify the General Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.02 INSTALLATION

- A. General: Install FRP doors, frames, and accessories in accordance with final shop drawings and as herein specified. Installation to be similar to that of hollow metal doors and frames, and in accordance with FRP manufacturer's written instructions.
- B. Door Installation: Fit FRP doors accurately in frames, within clearances as specified above.

3.03 TOLERANCES

- A. Maximum Diagonal Distortion: 1/8-inch measured with a straight edge, corner to corner. Maximum measurable plane is 4 feet-0 inches by 7 feet-0 inches.

3.04 ADJUSTING

- A. At substantial completion, adjust all operable components to ensure proper installation and that they function smooth and freely.

3.05 CLEANING

- A. Remove dirt and excess sealant from exposed surfaces. Follow the manufacturer's recommended cleaning techniques and procedures for cleaning all surfaces. Use only cleaning products that will not scratch or damage the surfaces and are recommended by the manufacturer.
- B. Remove debris from Project site.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions of Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.
- B. This Section includes the following, but is not necessarily limited to:
 - 1. Door Hardware, including electric hardware.
 - 2. Thresholds, gasketing and weather-stripping.
 - 3. Door silencers or mutes.
- C. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.
 - 1. Section 08 12 15 - Steel Frames: Provision of steel door frames.
 - 2. Section 08 14 16 - Flush Wood Doors: Provision of flush wood doors.
 - 3. Section 08 16 13 - Fiberglass Doors: Provision of fiberglass doors.

1.03 REFERENCES

- A. 2019 California Building Code, CCR, Title 24.
- B. BHMA – Builders' Hardware Manufacturers Association
- C. CCR – California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.
- D. DHI – Door and Hardware Institute
- E. NFPA - National Fire Protection Association.
 - 1. NFPA 80 - Fire Doors and Other Opening Protectives
 - 2. NFPA 105 - Smoke and Draft Control Door Assemblies
- F. UL - Underwriters Laboratories.
 - 1. UL 10C - Fire Tests of Door Assemblies
 - 2. UL 305 - Panic Hardware
- G. WHI - Warnock Hersey Incorporated
- H. SDI - Steel Door Institute

1.04 SUBMITTALS & SUBSTITUTIONS

- A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.
- B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Submit schedule organized vertically into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:
1. Include a Cover Sheet with;
 - a. Job Name, location, telephone number.
 - b. Architects name, location and telephone number.
 - c. Contractors name, location, telephone number and job number.
 - d. Suppliers name, location, telephone number and job number.
 - e. Hardware consultant's name, location and telephone number.
 2. Job Index information included;
 - a. Numerical door number index including; door number, hardware heading number and page number.
 - b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
 - c. Manufacturers' names and abbreviations for all materials.
 - d. Explanation of abbreviations, symbols, and codes used in the schedule.
 - e. Mounting locations for hardware.
 - f. Clarification statements or questions.
 - g. Catalog cuts and manufacturer's technical data and instructions.
 3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number – HW -1)					
			(a) 1 Single Door #1 - Exterior from Corridor 101	(b) 90°	(c) RH
			(d) 3' 0"x7' 0" x 1-3/4" x (e) 20 Minute (f) WD x HM		
(g) 1	(h)	(i) ea	(j) Hinges - (k) 5BB1HW 4.5 x 4.5 NRP (l) ½ TMS	(m) 626	(n) IVE
2	6AA	1 ea	Lockset - ND50PD x RHO x RH x 10-025 x JTMS	626	SCH

(a) - Single or pair with opening number and location. (b) - Degree of opening (c) - Hand of door(s) (d) - Door and frame dimensions and door thickness. (e) - Label requirements if any. (f) - Door by frame material. (g) - (Optional) Hardware item line #. (h) - Keyset Symbol. (i) - Quantity. (j) - Product description. (k) - Product Number. (l) - Fastenings and other pertinent information. (m) - Hardware finish codes per ANSI A156.18. (n) - Manufacture abbreviation.

- D. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.

- E. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- F. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- G. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.
- H. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.

1.05 QUALITY ASSURANCE

- A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.
- B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
 - 1. Responsible for detailing, scheduling and ordering of finish hardware.
 - 2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing.
 - 3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.
- C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.
- D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.
 - 1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".
- E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.
- F. Product packaging to be labelled in compliance with CA Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.

- B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.
- C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.
- D. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.

1.07 WARRANTY

- A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:
 - 1. Locksets: Three (3) years.
 - 2. Closers: Twenty (20) years.
 - 3. All other hardware: Two (2) years.

1.08 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.09 PRE-INSTALLATION CONFERENCE

- A. Convene a pre-installation conference at least one week prior to beginning work of this section.
- B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key District Personnel, and Project Inspector.
- C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review District's keying standards.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

<u>Item</u>	<u>Manufacturer</u>	<u>Acceptable Substitutes</u>
Hinges	Ives	Hager, Stanley, McKinney
Locks, Latches & Cylinders	Schlage	Or Approved Equal
Closers	LCN	Or Approved Equal
Push, Pulls & Protection Plates	Ives	Trimco, BBW, DCI
Stops	Ives	Trimco, BBW, DCI
Overhead Stops	Glynn-Johnson	Or Approved Equal

Thresholds	Zero	Pemko, National Guard
Seals & Bottoms	Zero	Pemko, National Guard

2.02 MATERIALS

- A. Hinges: Exterior out-swinging door butts shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.
1. Hinges shall be sized in accordance with the following:
 - a. Height:
 - 1) Doors up to 42" wide: 4-1/2" inches.
 - 2) Doors 43" to 48" wide: 5 inches.
 - b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
 - c. Number of Hinges: Furnish 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.
 2. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.
- B. Schlage "L" Series as scheduled with "17" Style Lever and "A" Style Rose.
1. Locksets to comply with ANSI A156.13, Series 1000, Operational Grade 1 and Security Grade 1 with all standard trims. Locksets shall also comply with UL10C Positive Pressure requirements
 2. Lock case shall be manufactured with heavy 12 gauge steel with fully wrapped design. Lock cases with exposed edges are not acceptable. Lock case shall be multi-functional allowing transformation to a different function without opening lock case.
 3. Latchbolt shall have 3/4" throw and be non-handed, field reversible without opening the lock case. Solid latchbolts and / or plastic anti-friction devices are not acceptable.
 4. The deadbolt, when used, shall be 1" throw stainless steel with a 3/4" internal engagement when fully extended.
 5. All trim shall be through-bolted with the spring cages supporting the trim attached to the lock cases to prevent torqueing.
 6. Levers to have independent rotation in both directions. Exterior lever assembly to be one-piece design attached by threaded bushing. Interior lever assembly shall be attached by screwless shank
 7. Thru-bolt lever assemblies through the door for positive interlock. Locks using a through the door spindle for attachment are not acceptable. Spindles shall be independent, designed to "break-away" at a maximum of 75psi torque.
 8. Hand of lock chassis to be changeable by simply moving one screw from one side to the case to the other and pulling and reversing the latchbolt.
 9. Cylinders to be secured by a cast stainless steel, dual retainer. Locks utilizing screws and / or stamped retainers are not acceptable.
- C. Schlage "ALX" Series as scheduled with "Sparta" design.
1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 2, and UL Listed for 3-hour fire doors.
 2. Cylinders: Refer to "KEYING" article, herein.
 3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw. Provide 3/4" latch throw for UL listing at pairs.
 4. Provide locksets with anti-rotation thru-bolts, and no exposed screws.
 5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.

6. Provide a minimum of 5 points of lever engagement between the cassette spindle and lever shank to prevent lever sag.
7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.

D. Closers: LCN as scheduled. Place closers inside building, stairs, room, etc.

1. Door closer cylinders shall be of high strength cast iron construction with double heat treated pinion shaft to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.
2. All door closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16 inch and piston diameter of 1 inch to ensure longevity and durability under all closer applications.
3. All parallel arm closers shall incorporate one piece solid forged steel arms with bronze bushings. 1-9/16" steel stud shoulder bolts, shall be incorporated in regular arms, hold-open arms, arms with hold open and stop built in. All other closers to have forged steel main arms for strength, durability, and aesthetics for versatility of trim accommodation, high strength and long life.
4. All parallel arm closers so detailed shall provide advanced backcheck for doors subject to severe abuse or extreme wind conditions. This advanced backcheck shall be located to begin cushioning the opening swing of the door at approximately 45 degrees. The intensity of the backcheck shall be fully adjustable by tamper resistant non-critical screw valve.
5. Closers shall be installed to permit doors to swing 180 degrees.
6. All closers shall utilize a stable fluid withstanding temperature range of 120 degrees F. to -30 degrees F. without requiring seasonal adjustment of closer speed to properly close the door.
7. Provide the manufactures drop plates, brackets and spacers as required at narrow head rails and special frame conditions. NO wood plates or spacers will be allowed.
8. Maximum effort to operate closers shall not exceed 5 lbs., such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the closer may be increased but shall not exceed 15 lbs. when specifically approved by fire marshal. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. Per 11B-404.2.8.1, door shall take at least 5 seconds to move from an open position of 90 degrees to a position of 12 degrees from the latch jamb.

E. Door Stops:

1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (CBC Section 11B-307).
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

- F. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10" high and 2" LDW. Sizes of armor and mop plates shall be listed in the Hardware Schedule. Furnish with machine or wood screws of bronze or stainless to match other hardware.
- G. Thresholds: As Scheduled and per details.
 - 1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope.
 - 2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 "Thermal and Moisture Protection".
 - 3. Use 1/4" fasteners, red-head flat-head sleeve anchors (SS/FHSL).
 - 4. Thresholds shall comply with CBC Section 11B-404.2.5.
- H. Seals: Provide silicone gasket at all rated and exterior doors.
 - 1. Fire-rated Doors, Resilient Seals: UL10C Classified complies with NFPA 80 & NFPA 252. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements.
 - 2. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C Classified complies with NFPA 80 & NFPA 252. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.
 - 3. Smoke & Draft Control Doors, Provide UL10C Classified complies with NFPA 80 & NFPA 252 for use on "S" labeled Positive Pressure door assemblies.
- I. Door Shoes & Door Top Caps: Provide door shoes at all exterior wood doors and top caps at all exterior out-swing doors.
- J. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.03 KEYING

- A. Furnish a Proprietary Schlage masterkey system as directed by the owner or architect. Key system to be designated and combined by the Schlage Master Key Department even if pinned by the Authorized Key Center, Authorized Security Center or a local authorized commercial dealer.
- B. A detailed keying schedule is to be prepared by the owner and/or architect in consultation with a representative of Allegion or an Authorized Key Center or Authorized Security Center. Each keyed cylinder on every keyed lock is to be listed separately showing the door #, key group (in BHMA terminology), cylinder type, finish and location on the door.
- C. Extend the original Schlage masterkey system.
- D. Furnish all cylinders in the Schlage conventional style except the exit device and removable mullion cylinders which will be supplied in Schlage Full Size Interchangeable Core (FSIC). Pack change keys independently (PKI).
- E. Furnish construction keying for doors requiring locking during construction.
- F. Furnish all keys with visual key control.
 - 1. Stamp key "Do Not Duplicate".

2. Stamp (BHMA) key symbol on key.
- G. Furnish all cylinders with visual key control.
1. Stamp (BHMA) key symbol on side of cylinder (CKC).
- H. Furnish mechanical keys as follows:
1. Furnish 2 cut change keys for each different change key code.
 2. Furnish 1 uncut key blank for each change key code.
 3. Furnish 6 cut masterkeys for each different masterkey set.
 4. Furnish 3 uncut key blanks for each masterkey set.
 5. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
 6. Furnish 1 cut control key cut to each SKD combination.
- I. Furnish Schlage Padlocks and the cylinders to tie them into the masterkey system for gates, storage boxes, utility valve security, roof hatches and roll-up doors keyed as directed in the keying schedule.
1. Furnish KS43D2200 padlock for use with non-I/C Schlage cylinders. Furnish 47-413 (conventional) or 47-743-XP (PrimusXP) with above.
 2. Furnish KS43G3200 padlock for use with FSIC Schlage cylinders. Furnish 23-030 (Classic / Everest) or 20-740 (PrimusXP) with above.
 3. Furnish KS41D1200 padlock for use with SFIC Schlage cylinders. Furnish 80-037 (Everest-B) with above.
- J. Furnish one Schlage cabinet lock for each cabinet door or drawer so designated on the drawings or keying schedule to match the masterkey system.
1. Furnish CL100PB for use with non-I/C Schlage cylinders.
 2. Furnish CL77R for use with FSIC Schlage cylinders.
 3. Furnish CL721G for use with SFIC Schlage cylinders.

2.04 FINISHES

- A. Generally to be oil-rubbed bronze (613 on bronze and 640 on steel) unless otherwise noted.
- B. Furnish push plates, pull plates and kick or armor plates in oil-rubbed bronze (613) unless otherwise noted.
- C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.
- D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.05 FASTENERS

- A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.
- B. Screws for butt hinges shall be flathead, countersunk, full-thread type.
- C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.

- D. Provide expansion anchors for attaching hardware items to concrete or masonry.
- E. All exposed fasteners shall have a phillips head.
- F. Finish of exposed screws to match surface finish of hardware or other adjacent work.
- G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION**3.01 INSPECTION**

- A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing conditions.
- C. Fire-Rated Door Assembly Inspection: Upon completion of the installation, all fire door assemblies shall be inspected to confirm proper operation of the closing device and latching device and that only the manufacturer's furnished fasteners are used for installation and that it meets all criteria of a fire door assembly per NFPA 80 (Standard for Fire Doors and Other Opening Protectives) 2018 Edition. A written record shall be maintained and transmitted to the Owner to be made available to the Authority Having Jurisdiction (AHJ). The inspection of the swinging fire doors shall be performed by a certified FDAI (Fire Door Assembly Inspector) with knowledge and understanding of the operating components of the type of door being subjected to the inspection. The record shall list each fire door assembly throughout the project and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.
- B. Use the templates provided by hardware item manufacturer.
- C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 34" and 44" AFF.
- D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- F. Set thresholds for exterior doors in full bed of butyl-rubber sealant.
- G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

3.03 ADJUST AND CLEAN

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surface soiled by hardware installation.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.
- E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.04 HARDWARE LOCATIONS

- A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.05 FIELD QUALITY CONTROL

- A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.06 SCHEDULE

- A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.
- B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.
- C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

GLY	=	Glynn-Johnson Corporation	Overhead Door Stops
IVE	=	Ives	Hinges, Pivots, Bolts, Coordinators, Dust
Proof			Strikes, Push Pull & Kick Plates, Door Stops
&			Silencers
LCN	=	LCN	Door Closers
SCH	=	Schlage Lock Company	Locks, Latches & Cylinders
ZER	=	Zero International	Thresholds, Gasketing & Weather-stripping
PEM	=	Pemko	Thresholds, Seals, Transitions

HARDWARE GROUP NO. 01

3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	CLASSROOM LOCK	ALX70P6 SPA	613	SCH
1	EA	WALL STOP/HOLDER	WS449	626	IVE
1	SET	SEALS	S88D 17'	WHITE	PEM
1	EA	DOOR BOTTOM	434ARL 36"	AL	PEM

HARDWARE GROUP NO. 02

3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	PRIVACY W/INDICATOR	L9056P6 17A L583-363 L283-722	613	SCH
1	EA	OH STOP	90S	613	GLY
1	EA	SURFACE CLOSER	1461 DEL FC	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	613	IVE
1	EA	MOP PLATE	8400 4" X 2" LDW B-CS	613	IVE
1	SET	SEALS	S88D 17'	WHITE	PEM
1	EA	THRESHOLD	Indicated in Drawings		

HARDWARE GROUP NO. 03

3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	CLASSROOM LOCK	ALX70P6 SPA	613	SCH
1	EA	OH STOP	90S	613	GLY

HARDWARE GROUP NO. 04

3	EA	HINGE	5BB1HW 4.5 X 4.5	640	IVE
1	EA	CLASSROOM DEADBOLT	B663P6	613	SCH
1	EA	PUSH PLATE	8200 6" X 16"	613	IVE
1	EA	PULL PLATE	8302 10" 4" X 16"	613	IVE
1	EA	SURFACE CLOSER	1461 DEL FC	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	613	IVE
1	EA	MOP PLATE	8400 4" X 2" LDW B-CS	613	IVE
1	EA	WALL STOP	WS401/402CCV	613	IVE
1	SET	SEALS	S88D 17'	WHITE	PEM
1	EA	THRESHOLD	Indicated in Drawings		

HARDWARE GROUP NO. 05

1	EA	CLASSROOM LOCK	ALX70P6 SPA BALANCE OF HARDWARE EXISTING TO REMAIN	613	SCH
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END OF SECTION

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Gypsum board screw attached to metal or wood framing and furring members, joint treatment, and accessories.
 - 2. Installation of sound deadening insulation in walls and ceilings and including acoustical sealant, tape, and the like for work of this Section.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 06 64 00 - Plastic Paneling: Provision of FRP panels.
 - 2. Section 07 21 01 - Building Insulation: Provision of building insulation.
 - 3. Section 07 92 00 - Joint Sealants: Provision of caulking and sealants.
 - 4. Section 09 30 00 - Tiling: Provision of ceramic tile.
 - 5. Section 09 90 00 - Painting and Coating: For finish painting.
 - 6. Section 10 11 00 - Visual Display Units: Provision of visual display units.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - 2. C514 - Standard Specification for Nails for the Application of Gypsum Board.
 - 3. C840 - Standard Specification for Application and Finishing of Gypsum Board.
 - 4. C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - 5. C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - 6. C1178 - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
 - 7. C1396 - Standard Specification for Gypsum Board.
 - 8. E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- B. CBC - California Building Code, 2019 Edition
- C. CFR - Code of Federal Regulations
 - 1. 40 CFR 59 - National Volatile Organic Compound Emission Standards for Consumer and Commercial Products.
- D. EPA - Environmental Protection Agency
 - 1. Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- E. GA - Gypsum Association
 - 1. 201 - Using Gypsum Board for Walls and Ceilings.
 - 2. 214 - Recommended Levels of Gypsum Board Finish.
 - 3. 216 - Application and Finishing of Gypsum Panel Products.
 - 4. 600 - Fire Resistance Design Manual.

- F. UL - Underwriters Laboratories Inc.
 - 1. FRD - Fire Resistance Directory.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data. Include the following
 - 1. Fire Resistance Data: Include required fire test results for gypsum board systems on partitions and ceilings.
 - 2. Sound Transmission Data: Include certified evidence that installed gypsum board systems and materials meet required STC levels.

1.04 QUALITY ASSURANCE

- A. Fire Test Response Characteristics: Where fire resistance rated gypsum board assemblies are indicated, provide gypsum board assemblies that comply with the following requirements:
 - 1. Fire Resistance Ratings: As indicated by GA File Numbers in GA 600 or design designations in UL FRD or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 2. Gypsum board assemblies indicated are identical to assemblies tested for fire resistance according to ASTM E119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: United States Gypsum Co.; Gold Bond Building Products Div., National Gypsum Co.; Pacific Coast Building Products, Pabco Gypsum Division, or equal.

2.02 MATERIALS

- A. Gypsum Board Types: Where indicated on the Drawings.
 - 1. Type 1: Moisture-resistant board for exposed application in restrooms, ASTM C1396, tapered edges, 48 inches wide, 5/8-inch thick.
 - 2. Type 2: Regular gypsum board, ASTM C1396, tapered edges, 48 inches wide, 5/8-inch thick.
 - 3. Type 4: Glass-mat, water-resistant gypsum backing board, ASTM C1178, Type X, 5/8-inch thick, as manufactured by Georgia-Pacific Corp., "Dens-Shield Tile Backer"; United States Gypsum Co., or equal.
- B. Screws: ASTM C1002, machine thread for gypsum board to metal attachments.
- C. Nails: ASTM C514, wood thread for metal or gypsum board attachment to wood.
- D. Insulation: As specified in Section 07 21 01.
- E. Adhesives: Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- F. Accessories
 - 1. Corner Beads and Casing Beads: ASTM C1047, sheet steel zinc coated by hot-dip process. Use bullnose corner beads at typical wall and ceiling outside corners. Use square corner beads at windows.
 - 2. Resilient Channels: As manufactured by Unimast, "RC Deluxe"; Cemco, "RC-1"; Dale/Incor, "RFC-1", or equal.

3. Hat Channels: Hat-shaped, corrosion-resistant rigid furring channels, ASTM C645, 7/8-inch deep unless otherwise indicated, base metal thickness as required, as manufactured by Dietrich Metal Framing, Inc., "FC-Series"; Fry Reglet Corporation, or equal.
 4. "J" Molding: Extruded aluminum, alloy 6063 T5, depth as indicated, chemical conversion coating, clear anodized, as manufactured by Fry Reglet Corporation, "Fry Reglet "J" Molding"; Dietrich Metal Framing, Inc., or equal.
- G. Joint Treatment Materials: Products of one manufacturer conforming to ASTM C475, ASTM C840, and recommendations of manufacturer of both gypsum board and joint treatment materials for application indicated. Conform to GA 201 and GA 216 for reinforcing tape, joint compound, and water.
1. Joint Tape
 - a. Cross-laminated, tapered edge, reinforced paper, or fiber glass mesh tape as recommended by setting type joint compound manufacturer.
 - b. For silicone treated gypsum backer board, use 2 inch wide, 10-inch by 10-inch woven glass mesh tape.
 2. Setting Type Joint Compound: Factory prepackaged, job mixed, chemical hardening powder products formulated for uses indicated or factory premixed product. Use hot type at exterior gypsum soffits.
- H. Acoustical Sealant: As specified in Section 07 92 00.

2.03 FINISHES

- A. Levels of Gypsum Board Finish as Defined by GA 214. Levels are only examples and do not constitute a schedule of finish. See Drawings for levels of finish.
1. Level 0: No taping, finishing, or accessories required.
 2. Level 1: All joints and interior angles shall have tape set in joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
 3. Level 2: All joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Fastener heads and accessories shall be covered with a coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.
 4. Level 3: All joints and interior angles shall have tape embedded in joint compound and one additional coat of joint compound applied over all joints and interior angles. Fastener heads and accessories shall be covered with two separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of final finishes.
 5. Level 4: All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of final finishes.
 6. Level 5: All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. A thin skim coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer's recommendations, shall be applied to the entire surface. The surface shall be smooth and free of tool marks

and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of finish paint.

- B. Typical Finish: Match existing or, in rooms and areas without existing finishes, provide Level 4 finish.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Gypsum Board
 - 1. Install and finish gypsum board to comply with ASTM C840 or GA 216.
 - a. Single Layer: Install in accordance with ASTM C840, except as amended or required by specific fire resistive or sound isolation system detailed. In that instance, application shall conform to requirements of the manufacturer's tests as reviewed and accepted in the submittal.
 - b. Double Layer: Conform to applicable portions of ASTM C840, System Classification VIII for installations applied with screws. Conform to required fire resistance standards.
 - 2. Apply in horizontal direction with ends and edges falling on supports. Gypsum board shall be of maximum length possible to reach full wall or ceiling lengths with minimal number of joints.
 - 3. Position boards so that like edges abut, tapered edges against tapered edges and field cut ends against field cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
 - 4. Start installation of panels at exterior wall to position butt joints as far away from exterior wall as possible.
- B. Fire Resistant Assemblies: Wherever fire rated gypsum board construction is indicated, provide materials and installation methods, including types and spacing of fasteners, in accordance with CBC, GA Manual, or listed assembly indicated. Apply firestopping at top of wall and at penetrations through fire resistant assembly.
- C. Sound Retardant Installations: Follow manufacturer's directions and specifications for conditions of installation. Install where indicated in conformance with current Project acoustic report. Install from floor surface to bottom side of next floor surface.
 - 1. Double Layer Application
 - a. Joints: Stagger 24 inches between layers.
 - b. Sound-Rated Construction: Tape face layer.
 - 2. Sound-Rated Edge Condition: Stagger (i.e., ship-lap) gypsum board layers at vertical intersections. Provide a 1/4-inch nominal gap around the gypsum board face layer at floor and ceiling intersections. Fill the 1/4-inch gap with acoustical sealant to form an airtight seal.
 - 3. Wrap with insulation and Lowry Pads and seal electrical or other outlets in sound isolating partitions.
 - 4. Install sealant to completely fill void between gypsum board edges and adjacent surface.
- D. Penetrations Through Sound-Rated Construction: Cut-outs shall be regular and not fracture core or tear covering of gypsum board and meet the following requirements:
 - 1. Minimize penetrations of insulated wall and ceiling constructions. Penetrate only where necessary and fully seal airtight at the perimeter using acoustical sealant.
 - 2. Where ducts and piping greater than 3 inches diameter penetrate insulated wall or ceiling construction, provide a clearance of 1 inch plus or minus 1/4-inch at the perimeter of the penetration.

3. Where conduit piping 3 inches diameter and less (including mechanical, hydraulic, plumbing, etc.) pass through insulated wall or ceiling construction, provide a clearance of 1/4-inch plus or minus 1/8-inch between the conduit or piping and the structure, unless otherwise indicated.
 4. After the ductwork, conduit, or piping has been installed, repair the gypsum board perimeter clearance to the specified tolerance as required. Where the clearance exceeds 3/4-inch, provide a sheet metal sleeve within the partition packed with safin insulation batts and caulk both sides airtight with an acoustical sealant. Where the perimeter clearance exceeds 3/8-inch, use a flexible backing rod to caulk against.
 5. Where penetration clearances are 3/8-inch or less, caulk airtight with acoustical sealant at gypsum board.
 6. All gypsum board penetrations (including those resulting from wiring, cables, and electrical junction boxes) are to be sealed airtight with acoustical sealant.
 7. The back and sides of junction boxes in sound rated construction shall be sealed airtight with sheet caulking. Caulk perimeter face at gypsum board with acoustical sealant.
 8. Recessed panel boards, equipment, boxes, etc., with penetration area greater than 25 square inches at sound rated partitions shall be fully enclosed and sealed with 5/8-inch thick gypsum board or 2 psf sheet lead.
 9. Seal multiple conduit penetrations airtight with expanding fire foam sealant.
 10. Seal other sound rated conditions with spray-applied (40 pcf) cementitious sealant, as manufactured by Grace Construction Products, "Monokote Z-146", or equal.
- E. Wet Locations
1. At Walls and Ceilings: Conform to ASTM C840, System Classification X.
 2. Treat cut edges and holes in water resistant gypsum board with sealant.
- F. Fastenings: Attach gypsum board to framing with screws, lengths and sizes as recommended by manufacturer and in accordance with CBC.
- G. Accessories
1. Install corner beads at vertical and horizontal external corners; tape inside corners.
 2. Install casing beads whenever edge of gypsum board would otherwise be exposed or semi-exposed, or where abutting dissimilar materials.
 3. After accessories are installed, correct surface damage and defects.
 4. Install trims and expansion joints where required.
 5. Resilient Channel Attachment: Screw attach resilient channel through foot on 1 side of channel only to wood joists. Screw attach gypsum board through channel face only. At resilient channel assemblies, screw attached gypsum board shall not be in contact with joists, studs, or any rigid fastening.
- H. Allowable Tolerances
1. Offset Between Planes of Board Faces: 1/16-inch.
 2. Plane, Level, Warp and Bow: 1/8-inch in 8 feet.
 3. Shim panels as necessary to comply with tolerances.

3.02 FINISHING OF GYPSUM BOARD

- A. Apply joint treatment at gypsum board joints; flanges of corner bead, edge trim and penetrations, fastener heads and surface defects in accordance with ASTM C840 or GA 216. Number of coats of treatment shall be as specified above.
- B. Finish Painting: As specified in Section 09 90 00.

END OF SECTION

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SECTION 09 30 00**TILING****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes
 - 1. Interior porcelain ceramic floor and wall tile.
 - 2. Bond coats, installation beds, grout materials, and accessories.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 07 92 00 - Joint Sealants: Provision of sealants for expansion, contraction, control, and isolation joints in tile surfaces.
 - 2. Section 09 29 00 - Gypsum Board: Provision of tile backer board.

1.02 REFERENCES

- A. ANSI - American National Standards Institute
 - 1. A108.5 - Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.
 - 2. A108.6 - Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy.
 - 3. A108.10 - Specifications for Installation of Grout in Tilework.
 - 4. A108.11. - Interior Installation of Cementitious Backer Units.
 - 5. A118.3 - Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive.
 - 6. A118.4 - Specifications for Latex Portland Cement Mortar.
 - 7. A118.10 - Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation.
 - 8. B101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.
- B. CTIOA - Ceramic Tile Institute of America
- C. NFSI - National Floor Safety Institute
 - 1. B101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.
- D. TCNA - Tile Council of North America
 - 1. Handbook for Ceramic Tile Installation.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each type of product specified, including installation instructions for manufactured setting and grouting products.
- B. Shop Drawings: Indicate widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

- C. Samples: Submit samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.
 - 1. Once colors are selected, submit each type, size, and color of tile and grout selected, mounted and grouted on plywood not less than 16 inches square. Submit sets showing full range of variations expected.
 - 2. Provide photographs of all samples.
- D. Testing Results: Submit laboratory or field tests for wet and dry slip resistance specified prior to installation.
- E. Maintenance Data: Submit list of tile manufacturer's recommended cleaning products and procedures.

1.04 QUALITY ASSURANCE

- A. Single Source: Within any given tile setting system, use the products of a single manufacturer to ensure compatibility and single source responsibility.
- B. Slip Resistance: Prior to installation of tile, provide testing of tile for coefficient of friction in accordance with ANSI/NFSI B101.1 or other method endorsed by the CTIOA for new flooring.
- C. Wall Anchorage: Coordinate with other Sections to ensure that anchorage for toilet accessories and other wall mounted items are installed prior to installation of tile.

1.05 MAINTENANCE

- A. Extra Materials: Deliver extra materials to the City. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
- B. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers
 - 1. Ceramic Tile: Daltile, or equal.
 - 2. Tile Setting and Grouting Materials: Mapei Corporation; Custom Building Products; Daltile Corp.; Laticrete International, Inc., or equal.

2.02 MATERIALS

- A. Glazed Ceramic Wall Tile
 - 1. Type: Lattice weave 1x3 mosaic dot-mounted on sheet.
 - 2. Sheet Size: 12 inches by 12 inches.
 - 3. Finish: Semi-gloss.
 - 4. Color: Navy K189.
 - 5. Trim: 1/2-inch by 11-15/16 inches, "12-Inch Jolly, Number S-1/212J", as provided by tile manufacturer.
- B. Replacement Wall and Floor Tile to Match Existing: As indicated on the Drawings.

- C. Mortar Bed and Underlayment Materials
 - 1. Underlayment: As indicated on the Drawings.
 - 2. Latex Modified Portland-Cement Mortar Bed: ANSI A108.1b; portland-cement-based filler with synthetic latex additive.
 - a. Product: As manufactured by Laticrete International, Inc., "226 Thick Bed Mortar Mix" with "3701 Mortar Admix", Laticrete International, Inc., "209 Floor Mud" with "3701 Mortar Admix", or equal.
 - 3. Bond Coat for Mortar Bed: Portland cement paste on a plastic bed or latex portland cement on a cured bed, unless otherwise specified.
- D. Setting Materials
 - 1. Unmodified Portland Cement Mortar: Unmodified, premium, thin-set mortar, as manufactured by Laticrete International, Inc., "272 Premium Floor & Wall", or equal.
 - 2. Latex Portland Cement Mortar: ANSI A118.4; as manufactured by Laticrete International, Inc., "254 Platinum", or equal.
 - 3. Latex Portland Cement Mortar for Large Format Tile: ANSI A118.4; medium bed mortar; as manufactured by Laticrete International, Inc., "220 Marble & Granite", or equal.
- E. Grouting Materials
 - 1. Epoxy Grout, ANSI A118.3; as manufactured by Laticrete International, Inc., "SpectraLOCK PRO", or equal.
 - 2. Colors: As selected by the Architect from manufacturer's full range of colors.
- F. Accessories
 - 1. Sealant: As provided by the grout manufacturer; match color of grout in adjacent joints; provide sanded or non-sanded type as required to match type of grout.
 - 2. Metal Edge Protection, Transition Strips, and Corner Guards: Stainless steel unless otherwise specified; height or profile as required by tile installation; trim to closely match tile thickness; provide edge protection at all exposed edges, tops, side, and outside corners.
 - a. Tile to Floor Covering of Equal Height: As manufactured by Schlüter Systems, "Schlüter-SCHIENE", or equal.
 - b. Tile to Floor Covering of Lower Height: As manufactured by Schlüter Systems, "Schlüter-RENO-U", or equal.
 - c. Vertical Corners: As manufactured by Schlüter Systems, "Schlüter-QUADEC", or equal.
 - d. Transition at Top of Wainscot: Tile bullnose.
 - 3. Water: Clean and potable.
 - 4. Pre-Grout Treatment for Interior Floor Tile: Temporary, non-sealer coating applied before grouting to facilitate grout cleanup and removal.
 - a. Product: As manufactured by Aldon Corporation, "Grout Easy", or equal.
 - 5. Cleaners and Sealers for Interior Tile: As recommended by the tile manufacturer.

2.03 MIXING MORTAR AND GROUT

- A. Mix mortar and grout so as to comply with requirements of referenced standards and manufacturer's instructions in order to produce mortar and grout of uniform quality with optimum performance characteristics for application indicated.
- B. Prepare and proportion premixed setting beds and grout materials in accordance with manufacturer's recommendations.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.02 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.
- B. TCNA Installation Guidelines: TCNA, "Handbook for Ceramic Tile Installation"; comply with TCNA installation methods indicated.
- C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.
- E. Jointing Pattern: Lay tile in pattern as shown. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.
- F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
- G. Grout tile to comply with the requirements of the following installation standards:
 - 1. Comply with ANSI A108.10.
 - 2. Seal grout joints at time of completion.

3.03 FLOOR INSTALLATION

- A. Installation of Ceramic Tile Over Bond Coat Over Cement Backer Board or Fiber Cement Backer Board Over Dry-Set Mortar Over Plywood T&G Subfloor Over Sawn Lumber, Truss, or I-Joist: Install tile to comply with TCNA installation method F144.
 - 1. Tile: ANSI A108.5.
 - 2. Grout: ANSI A108.6 or A108.10.

3.04 WALL INSTALLATION

- A. Installation of Ceramic Tile Over Cementitious Bond Coat Over Coated Glass Mat Water-Resistant Gypsum Backer Board Over Metal or Wood Studs: Install tile to comply with TCNA installation method W245.

1. Tile: ANSI A108.5.
2. Grout: ANSI A108.6 or A108.10.
3. Backer Board: ANSI A108.11 or manufacturer's directions.

3.05 CLEANING AND PROTECTION

- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
1. Remove grout residue from tile as soon as possible.
 2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
 - a. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.
 3. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
 4. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
 - a. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
 - b. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.
 5. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

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SECTION 09 51 00

ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Replacement of damaged acoustic tiles to match existing.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
 - 2. D1779 - Standard Specification for Adhesive for Acoustical Materials.
 - 3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. CBC - California Building Code, 2019 Edition
- C. UL - Underwriters Laboratories Inc.
 - 1. FRD - Fire Resistance Directory.

1.03 SUBMITTALS

- C. Product Data: Submit manufacturer's product data completely describing products.
- B. Samples: Provide 1 sample of each type of acoustical ceiling specified.
 - 1. Provide photographs of all samples.
- C. Quality Control Submittals
 - 1. Manufacturer's Instructions: Submit manufacturer's installation instructions.
 - 2. Certification: Provide manufacturer's signed statement that mineral fiber board materials are asbestos free.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who is approved by the acoustical ceiling manufacturer for installing the type of acoustical ceiling indicated for this Project.
- B. Regulatory Requirements: Install fire rated ceiling systems in accordance with CBC and UL FRD listing and requirements of agency having jurisdiction.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Deliver and store packaged products in original containers with seals unbroken and labels intact until time of use.
- B. Storage and Protection
 - 1. Keep materials dry by storing off ground under watertight covers.
 - 2. Immediately before installation, panels shall be stored for sufficient time to stabilize temperature and humidity conditions ambient during installation and anticipated for occupancy.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Do not begin work until residual moisture has dissipated and comply with the following:
 - 1. Acoustical Ceilings: Maintain uniform temperature of minimum 60 degrees Fahrenheit and maximum of 90 degrees Fahrenheit and humidity of 20 to 40 percent but no more than 90 percent prior to, during and after installation.

1.07 MAINTENANCE

- A. Extra Materials: Provide 5 percent extra quantity of each type of acoustical surface installed. Provide in original unbroken containers plainly marked with type and quantity of contents.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Adhesively-Applied Replacement Acoustic Tiles Where Indicated
 - 1. Mineral fiber tile with 529 straight drilled holes in 23 rows both directions and with the following properties:
 - a. Size and Thickness: 12 inches by 12 inches; 1/2-inch thick.
 - b. Light Reflectance: Class LR-1, over 75 percent in accordance with ASTM C423.
 - c. NRC Range: 0.60 in accordance with ASTM C423.
 - d. Joint: Beveled butt.
 - e. Surface Burning Characteristics: Class A in accordance with ASTM E84, with flame spread 25 or less and smoke developed 10 or less.
 - f. Color: White.
 - g. Product: As manufactured by Armstrong World Industries, Inc., "Classic Acoustical - Straight Drilled", or equal.
 - 2. Tile Adhesive: Comply with ASTM D1779, type as recommended by the manufacturer of the tile, bearing the UL label for a Class 0-25 flame spread, VOC compliant.
 - 3. Accessories and Trim: White plastic trim as recommended by the acoustical ceiling manufacturer.
- B. Lay-In Replacement Acoustic Tiles Where Indicated
 - 1. Mineral fiber tile with factory-applied vinyl latex paint and with the following properties:
 - a. Size and Thickness: 24 inches by 48 inches; 5/8-inch thick.
 - b. Light Reflectance: 0.80 in accordance with ASTM C423.
 - c. NRC Range: 0.55.in accordance with ASTM C423.
 - d. Edge: Square.
 - e. Surface Burning Characteristics: Class A in accordance with ASTM E84.
 - f. Color: White.
 - g. Product: As manufactured by Armstrong World Industries, Inc., "Random Textured", or equal.
 - 2. Accessories and Trim: White plastic trim as recommended by the acoustical ceiling manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive acoustical treatment and verify that:
 - 1. Installation of building components located in ceiling plenum is complete.
 - 2. Spacing, direction and details of grid members and supports to accommodate installation of light fixtures, diffusers and other ceiling located items are correct.
 - 3. Areas are clean and free of materials or rubble that could damage acoustical surfaces.
- B. Do not start work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Adhesively-Applied Replacement Acoustic Tiles: Adhere acoustical tile by cementing to substrate, using the amount of adhesive, and the procedure, recommended by the tile and adhesive manufacturers. Maintain tight butt joints, aligned in both directions, and coordinated with ceiling fixtures.
 - 1. Scribe and cut tile to fit accurately at edges of ceiling and around penetrations of the ceiling.
 - 2. Provide secured edge molding as required for neat, finished and secure installations.
- B. Lay-In Replacement Acoustic Tiles: Where existing ceilings are indicated to remain, replace acoustic boards that are damaged or stained to match existing adjacent boards.

3.03 CLEANING AND ADJUSTING

- A. Remove damaged or soiled material and replace with new prior to the City's acceptance of Project.

3.04 PROTECTION

- A. Protect acoustical treatment installation from damage during remainder of construction.

END OF SECTION

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SECTION 09 65 00

RESILIENT FLOORING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Linoleum.
 - 2. Luxury resilient tile planks.
 - 3. Resilient wall base.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 03 54 15 - Portland Cement Underlayment: Provision of portland cement underlayment.
 - 2. Section 07 92 00 - Joint Sealants: Provision of sealants and caulks.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. ASTM - American Society for Testing and Materials
 - 1. E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - 2. E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
 - 3. F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
 - 4. F970 - Standard Test Method for Static Load Limit.
 - 5. F1516 - Standard Practice for Sealing Seams of Resilient Flooring Products by the Heat Weld Method (when Recommended).
 - 6. F1861 - Standard Specification for Resilient Wall Base.
- C. CALGreen - California Green Building Standards, 2019 Edition

1.03 SYSTEM DESCRIPTION

- A. Adhesives used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Article 5.504.4.1.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each type of product specified.
- B. Shop Drawings: For each type of floor covering; include floor covering layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- C. Samples for Verification: Submit samples in manufacturer's standard size, but not less than 6-inch by 9-inch sections of each different color and pattern of floor covering specified, showing full range of variations expected in these characteristics.
 - 1. Provide photographs of all samples.

- D. Quality Control Submittals
 - 1. Certificates: Submit certification by resilient flooring manufacturer that products supplied for installation comply with local regulations controlling use of volatile organic compounds (VOC's).
 - 2. Installer certificates signed by floor covering manufacturer certifying that installers comply with requirements specified under "Quality Assurance" article.
- E. Contract Closeout Submittals: Submit maintenance data for resilient floor coverings.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications
 - 1. Engage installer that is an established firm, experienced in the installation of the specified product and shall have access to all manufacturer's required technical, maintenance, specifications, and related documents.
 - 2. Installer shall have completed at least 3 Projects of similar magnitude, material, and complexity. Installer shall provide 3 reference Projects including contact names and telephone numbers.
 - 3. Installer shall employ workers for this Project who are trained and certified by floor covering manufacturer for installation techniques required.
 - 4. Installer shall have a factory trained mechanic on site to supervise the entire installation.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements
 - 1. Maintain a minimum temperature as stipulated by flooring and adhesive manufacturer in spaces to receive resilient flooring materials, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 degrees Fahrenheit.
 - 2. Do not install resilient flooring materials until they are at the same temperature as the space where they are to be installed.
 - 3. Close spaces to traffic during resilient flooring materials installation.

1.07 SEQUENCING AND SCHEDULING

- A. Install resilient flooring materials and accessories after other finishing operations, including painting, have been completed.
- B. Sequence installing products specified in this Section with other construction to minimize possibility of damage and soiling during remainder of construction period.
- C. Do not install resilient flooring materials over concrete slabs until the slabs have cured and are dry to bond with adhesive as determined by flooring manufacturer's recommended bond and moisture test. Contractor shall be responsible for achieving required moisture content in concrete slab in timely manner to allow floor materials to be installed without delaying completion of work.

1.08 MAINTENANCE

- A. Extra Materials
 - 1. Furnish 10 linear feet in roll form of each different composition, wearing surface, color and pattern of resilient flooring and wall base installed.
 - 2. Furnish 1 box of each class, wearing surface, color, pattern, and size of resilient floor tile installed.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers
 - 1. Linoleum: Forbo Flooring, Inc., "Marmoleum Fresco" or "Marmoleum Real" or Marmoleum Vivace" or Marmoleum Terra", or equal.
 - 2. Luxury Resilient Tile Planks: Mannington Commercial, "Cirro", or equal.
 - 3. Rubber Base: Roppe, "Pinnacle Type TS", or equal.

2.02 MATERIALS

- A. Linoleum: Floor covering shall consist of linseed oil, cork, wood flour resin binders, gum, and pigments calendered on to a natural jute backing, with the following properties:
 - 1. Thickness: 0.125-inch.
 - 2. Seaming Method: Heat welded.
 - 3. Static Load Limit: Exceeds 700 psi in accordance with ASTM F970.
 - 4. Slip Resistance: Meets or exceeds ADA recommendations of 0.6 for flat surfaces.
 - 5. Fire Resistance
 - a. Smoke Density: 450 or less in accordance with ASTM E662.
 - b. Critical Radiant Flux: Class 1 in accordance with ASTM E648.
 - 6. Color: As indicated on the Drawings.
- B. Luxury Resilient Tile Plank: PVC-free, very low VOC, high performance resilient flooring with the following properties:
 - 1. Thickness: 0.08-inch.
 - 2. Size: As indicated on the Drawings.
 - 3. Static Load Limit, ASTM F970: 2,000 psi.
 - 4. Fire Resistance
 - a. Smoke Density: 450 or less in accordance with ASTM E662.
 - b. Critical Radiant Flux: Class 1 in accordance with ASTM E648.
 - 5. Color and Pattern: As indicated on the Drawings.
- C. Resilient Base: Products complying with ASTM F1861; thermoset, PVC-free.
 - 1. Style: Cove with top-set toe.
 - 2. Minimum Nominal Thickness: 1/8-inch.
 - 3. Height: 6 inches.
 - 4. Lengths: Coils in lengths standard with manufacturer but not less than 100 feet.
 - 5. Interior and Exterior Corners and Ends: Field molded.
 - 6. Color and Pattern: As selected by the Architect from manufacturer's full range.

2.03 INSTALLATION ACCESSORIES

- A. Concrete Slab Primer: Nonstaining type as recommended by flooring manufacturer.
- B. Underlayment: As specified in Section 03 54 15.
- C. Adhesives (Cements): Waterproof type recommended by manufacturer to suit resilient floor products and substrate conditions indicated. Adhesive shall contain less than 50 g/L VOC content.
 - 1. Seam Adhesive: As recommended by the resilient flooring manufacturer.
- D. Caulking: Acrylic latex silicon caulk as specified in Section 07 92 00.
- E. Waterproof Adhesive: As manufactured by Master Builders, "Concresive Paste LPL", or equal.

- F. Transition Strip: As indicated on the Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting resilient flooring performance. Verify that substrates and conditions are satisfactory for resilient flooring installation and comply with requirements specified.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F710 and the following:
1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by the resilient flooring manufacturer.
 2. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
 3. Before installing resilient flooring, concrete slab shall be tested for moisture emission. The test shall be conducted around the perimeter of each room, at columns and where moisture may be evident. A diagram of the areas showing the locations and results of each calcium chloride test shall be submitted to the Architect. At each area where the moisture emission exceeds 3 pounds per 1,000 square feet per 24 hours, a sealant shall be applied as recommended by the flooring manufacturer.

3.02 PREPARATION

- A. General: Comply with manufacturers' installation specifications to prepare substrates indicated to receive resilient flooring accessories.
- B. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil or silicone, by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.
- C. Use trowelable leveling and patching compounds at 1st Floor existing concrete per manufacturer's directions to fill cracks, holes, and depressions in substrates.
- D. Broom or vacuum clean substrates to be covered by resilient flooring immediately before flooring installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.
- E. The General Contractor shall be responsible for acceptability of moisture emission of existing concrete.
- F. Apply concrete slab primer, if recommended by flooring manufacturer, prior to applying adhesive. Apply according to manufacturer's directions.

3.03 INSTALLATION

- A. General: Comply with manufacturers' installation directions and other requirements indicated that are applicable to each type of installation included in Project.
- B. Sheet Flooring Installation
1. Unroll floor covering and allow to stabilize before cutting and fitting.
 2. Layout floor covering to comply with the following requirements:
 - a. Terminate joints at centerline of doorways where adjacent flooring is dissimilar.
 - b. The Architect will approve all seaming patterns.

- c. Maintain uniformity of sheet floor covering direction.
 - d. Arrange for minimum number of seams and place them in inconspicuous and low-traffic areas and not less than 6 inches away from parallel joints in flooring substrates.
 - e. Match edges of floor coverings for color shading and pattern at seams according to manufacturer's written recommendations.
 - f. Avoid cross seams.
 - g. Scribe, cut and fit floor coverings to butt neatly and tightly to vertical surfaces and permanent fixtures, including cabinets, pipes, outlets, edgings, door frames and thresholds.
3. Adhere floor covering to substrates to comply with floor covering manufacturer's written instructions, including those for trowel notching, adhesive mixing and adhesive open and working times.
 4. Heat Welded Seams: Rout joints and heat weld with welding bead, permanently fusing sections into a seamless floor covering. Prepare, weld, and finish seams according to manufacturer's written instructions and ASTM F1516 to produce surfaces flush with adjoining floor covering surfaces.
 5. Hand roll floor covering in both directions from center out to embed floor coverings in adhesive and eliminate trapped air. At walls, door casings, and other locations where access by roller is impractical, press floor coverings firmly in place with flat-bladed instrument.
- C. Resilient Tile Installation
1. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths at perimeter that equal less than one-half of a tile. Install tiles square with room axis, unless otherwise indicated.
 2. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Cut tiles neatly around all fixtures. Discard broken, cracked, chipped, or deformed tiles.
 - a. Lay tiles in ashlar pattern with grain running in one direction, unless otherwise directed by the Architect.
 3. Scribe, cut, and fit tiles to butt tightly to vertical surfaces, permanent fixtures, built-in furniture including, pipes, outlets, edgings, thresholds, and nosings. Extend tiles into toe spaces, door reveals, closets, and similar openings.
 4. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent marking device.
 5. Adhere tiles to flooring substrates without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed tile installation.
 6. Use full spread of adhesive applied to substrate in compliance with tile manufacturer's directions including those for trowel notching, adhesive mixing, and adhesive open and working times.
 7. Hand roll tiles where required by tile manufacturer.
- D. Resilient Wall Base Installation
1. Apply resilient wall base to walls, casework and other permanent fixtures in rooms and areas where base is required. Install wall base in lengths as long as practicable. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 2. Place resilient accessories so they are butted to adjacent materials of type indicated and bond to substrates with adhesive. Install reducer strips at edges of flooring that otherwise would be exposed.

3.04 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing installation:
 - 1. Remove visible adhesive and other surface blemishes using cleaner recommended by manufacturers.
 - 2. Sweep or vacuum floor thoroughly.
 - 3. Do not wash floor until after time period recommended by manufacturer.
 - 4. Damp-mop resilient flooring to remove black marks and soil.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by flooring manufacturer.

END OF SECTION

SECTION 09 90 00

PAINTING AND COATING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Surface preparation, painting, and finishing of new and existing exposed interior items and surfaces.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 05 50 00 - Metal Fabrications: For shop priming and finish painting of miscellaneous metals.
 - 2. Section 06 20 00 - Finish Carpentry: For finish painting of finish carpentry.
 - 3. Section 06 41 10 - Custom Casework: For finish painting of custom casework.
 - 4. Section 08 12 15 - Steel Frames: For finish painting of steel door frames.
 - 5. Section 08 14 16 - Flush Wood Doors: For finish painting of flush wood doors.
 - 6. Section 09 29 00 - Gypsum Board: For finish painting of gypsum board.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
- B. CALGreen - California Green Building Standards, 2019 Edition
- C. CFR - Code of Federal Regulations
 - 1. 40 CFR 59 - National Volatile Organic Compound Emission Standards for Consumer and Commercial Products.
- D. EPA - Environmental Protection Agency
- E. FM - Factory Mutual
- F. SSPC - The Society for Protective Coatings
 - 1. SP 10 - Surface Preparation Specification No. 10: Near-White Blast Cleaning.
- G. UL - Underwriters Laboratories Inc.

1.03 DEFINITIONS

- A. "Paint": As used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate or finish coats.
- B. Standard coating terms defined in ASTM D16 apply to this Section.
 - 1. "Flat": Refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. "Eggshell": Refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.

3. "Semigloss": Refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
4. "Full Gloss": Refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.04 SYSTEM DESCRIPTION

- A. Performance Requirements
 1. Paint exposed surfaces whether or not colors are designated in the schedules, except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from standard colors or finishes available.
 2. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts and labels.
 3. Do not paint over UL, FM, or other code required labels or equipment name, identification, performance rating or nomenclature plates.
- B. Paints and coatings used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Article 5.504.4.3.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each paint system specified, including block fillers and primers.
 1. Provide manufacturer's technical information including label analysis and instructions for handling, storage and application of each material proposed for use.
 2. List each material and cross reference the specific coating, finish system and application. Identify each material by the manufacturer's catalog number and general classification.
- B. Samples
 1. Following the selection of colors and glosses by the Architect, submit samples for the Architect's review.
 - a. Provide 1 sample of each color and each gloss for each material on which the finish is specified to be applied.
 - b. Except as otherwise directed by the Architect, make samples approximately 8 inches by 10 inches in size.
 - c. Provide field mockups for final paint color and texture approval in the form of actual application of the materials on actual surfaces to be painted for approval by the Architect. Areas shall be 4 feet by 4 feet.
 2. Revise and resubmit each sample or field mockup as requested until the required gloss, color and texture are achieved. Such samples or field mockups, when approved, will become standards of color and finish for accepting or rejecting the work of this Section.
 3. Do not commence finish painting until approved samples are on file at the job site.
 4. Provide photographs of all samples and mockups.
- C. Quality Control Submittals: Provide certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

1.06 QUALITY ASSURANCE

- A. Provide primers and undercoat paint produced by the same manufacturer as finish coats.
 1. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrates.

2. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
 3. Provide barrier coats over non-compatible primers or remove the primer and re-prime as required.
 4. Notify the Architect in writing of anticipated problems in using the specified coating systems over prime coatings supplied under other Sections.
- B. Applicator Qualifications: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Mockups: Apply samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Allow for 3 field colors and 1 trim color.
 2. Allow for each color to be mocked-up twice.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Acceptance at Site: Deliver materials to the job site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
1. Product name or title of material.
 2. Product description (generic classification or binder type).
 3. Manufacturer's stock number and date of manufacture.
 4. Contents by volume for pigment and vehicle constituents.
 5. Thinning instructions.
 6. Application instructions.
 7. Color name and number.
- B. Storage and Protection
1. Store materials not in use in tightly covered containers in well ventilated area at minimum ambient temperature of 45 degrees Fahrenheit. Maintain containers used in storage in clean condition, free of foreign materials and residue.
 2. Protect from freezing. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.08 PROJECT CONDITIONS

- A. Environmental Requirements
1. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees and 90 degrees Fahrenheit, unless otherwise permitted by the manufacturers' printed instructions as approved by the Architect.
 2. Do not apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 45 degrees Fahrenheit, unless otherwise permitted by the manufacturers' printed instructions as approved by the Architect.
 3. Do not apply paint in rain, fog, or mist; or when the relative humidity exceeds 85 percent. Do not apply paint to damp or wet surfaces, unless otherwise permitted by the manufacturers' printed instructions as approved by the Architect.
 4. Applications may be continued during inclement weather only within the temperature limits specified by the paint manufacturer as being suitable for use during application and drying periods.

1.09 MAINTENANCE

- A. Upon completion of the work of this Section, deliver to the City's Project Manager an extra stock of 5 gallons of each color, type, and gloss of interior paint used in the Work, tightly sealing each container, and clearly labeling with contents and location where used.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers: Dunn Edwards; Sherwin Williams; Kelly-Moore; Benjamin Moore, or equal.

2.02 PAINT MATERIALS

- A. General
 - 1. Paint Materials, General: Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer, based on testing and field experience.
 - 2. Material Quality: Provide manufacturer's best quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.
 - 3. Chemical Components of Field-Applied Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions; these requirements do not apply to primers or finishes that are applied in a fabrication or finishing shop:
 - a. VOC Content of Interior Paints and Coatings: Not more than 5 g/L.
 - b. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 - c. Restricted Components: Paints and coatings shall not contain any of the following:
 - 1) Acrolein.
 - 2) Acrylonitrile.
 - 3) Antimony.
 - 4) Benzene.
 - 5) Butyl benzyl phthalate.
 - 6) Cadmium.
 - 7) Di (2-ethylhexyl) phthalate.
 - 8) Di-n-butyl phthalate.
 - 9) Di-n-octyl phthalate.
 - 10) 1,2-dichlorobenzene.
 - 11) Diethyl phthalate.
 - 12) Dimethyl phthalate.
 - 13) Ethylbenzene.
 - 14) Formaldehyde.
 - 15) Hexavalent chromium.
 - 16) Isophorone.
 - 17) Lead.
 - 18) Mercury.
 - 19) Methyl ethyl ketone.
 - 20) Methyl isobutyl ketone.
 - 21) Methylene chloride.
 - 22) Naphthalene.
 - 23) Toluene (methylbenzene).

- 24) 1,1,1-trichloroethane.
- 25) Vinyl chloride.
- 4. Colors: As selected by the Architect from manufacturer's full range.

2.03 APPLICATION EQUIPMENT

- A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and as approved by the Architect.
- B. Prior to use of application equipment, verify that the proposed equipment is compatible with the material to be applied, and that integrity of the finish will not be jeopardized by use of the proposed equipment.

2.04 OTHER MATERIALS

- A. Provide other materials not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.01 PREPARATION

- A. General: Mix and prepare paint materials in strict accordance with the manufacturers' recommendations as approved by the Architect.
- B. Surface Preparation
 - 1. General
 - a. Perform preparation and cleaning procedures in strict accordance with the paint manufacturers' recommendations as approved by the Architect.
 - b. Remove removable items which are in place and are not scheduled to receive paint finish; or provide surface applied protection prior to surface preparation and painting operations.
 - c. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
 - 2. Schedule the cleaning and painting so that dust and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.
- C. Preparation of Wood Surfaces
 - 1. Clean wood surfaces until free from dirt, oil, and other foreign substance.
 - 2. Smooth finished wood surfaces exposed to view, using the proper sandpaper. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
 - 3. Unless specifically approved by the Architect, do not proceed with painting of wood surfaces until the moisture content of the wood is 12 percent or less as measured by a moisture meter approved by the Architect.
- D. Preparation of Metal Surfaces
 - 1. Thoroughly clean surfaces until free from dirt, oil and grease.
 - 2. Allow to dry thoroughly before application of paint.
 - 3. Aluminum Substrates: Remove surface oxidation.

3.02 PAINT APPLICATION

- A. General
 - 1. Touch-up shop-applied prime coats which have been damaged, and touch-up bare areas prior to start of finish coats application.

2. Slightly vary the color of succeeding coats.
 3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of 5 feet.
 4. On removable panels and hinged panels, paint the back sides to match the exposed sides.
 5. When patch painting, paint to nearest breakpoint or entire plane if whole room; refer to Finish Schedule.
- B. Drying: Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suite adverse weather conditions.
- C. Brush Applications
1. Brush out and work the brush coats onto the surface in an even film.
 2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.
- D. Spray Application
1. Confine spray application to metal framework and similar surfaces where hand brush work would be inferior.
 2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
 3. Do not double back with spray equipment to build up film thickness of 2 coats in 1 pass.
- E. Miscellaneous Surfaces and Procedures
1. Exposed Mechanical Items
 - a. Provide powder coat finish at electric panels.
 - b. Finish access doors, conduits, pipes, ducts, grilles, registers, vents, and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.
 - c. Paint visible duct surfaces behind vents, registers, and grilles flat black.
 - d. Wash metal with solvent, prime and apply 2 coats of alkyd enamel.
 2. Exposed Pipe and Duct Insulation
 - a. Apply 1 coat of latex paint on insulation which has been sized or primed under other Sections; apply 2 coats on such surfaces when unprepared.
 - b. Match color of adjacent surfaces.
 - c. Remove band before painting and replace after painting.
 3. Hardware
 - a. Paint prime coated hardware to match adjacent surfaces.
 - b. Paint metal portions of head seals, jamb seals, and astragal seals to match the color of the door frame unless otherwise directed by the Architect.
 4. Wet Areas
 - a. For oil base paints, use 1 percent phencimercuric or 4 percent tetrachlorophenol.
 - b. For water emulsion and glue size surfaces, use 4 percent sodium tetrachlorophenate.
 5. Interior: Use "stipple" finish where enamel is specified.
 6. Exposed Vents: Apply 2 coats of heat resistant paint approved by the Architect.

3.03 INTERIOR PAINT SCHEDULE

- A. Note: Paint products below are basis of design; equivalent substitutes are acceptable.
- B. Gypsum Board and Existing Plaster
1. Eggshell Finish Where Indicated: Finish coat(s) to cover over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.0 mils dry.

- 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Primer, B28W2600 Series", or equal.
 - b. Finish Coat: Low luster eggshell, acrylic-latex based, interior enamel applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.7 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Eg-Shel, B20W2600 Series", or equal.
 2. Semigloss Finish Where Indicated: Finish coat(s) to cover over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.0 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Primer, B28W2600 Series", or equal.
 - b. Finish Coat: Semigloss, acrylic latex, interior enamel applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.5 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Semi-Gloss, B31W2600 Series", or equal.
- C. Opaque Finish for Wood
1. Semigloss Finish: Finish coat(s) to cover over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.4 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "Pro-Block Latex Primer, B51W600 Series", or equal.
 - b. Finish Coat: Semigloss, acrylic latex, interior enamel applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.5 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Semi-Gloss, B31W2600 Series", or equal.
- D. Transparent Finish for Wood (Refinish Top at Existing Bar)
1. Waterborne, Satin-Varnish Finish: 2 finish coats of a waterborne, clear-satin varnish over a sealer coat and a waterborne, interior wood stain. Wipe wood filler before applying stain.
 - a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.
 - b. Stain Coat: Waterborne, interior wood stain applied at spreading rate recommended by the manufacturer.
 - 1) Product: As manufactured by Sherwin Williams, "Minwax Water-Based Wood Finish Semi-transparent Stain", or equal.
 - c. First and Second Finish Coats: Waterborne, acrylic finish applied at spreading rate recommended by the manufacturer.
 - 1) Product: As manufactured by Sherwin Williams, "Minwax Water-Based Polycrylic Protective Satin Finish", or equal.
- E. Ferrous and Galvanized Metal
1. Flat Finish: Finish coat(s) to cover over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 5.0 to 10.0 mils wet and 2.0 to 4.0 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series", or equal.
 - b. Finish Coat: Flat, acrylic latex, interior enamel applied at spreading rate to achieve film thickness of 3.75 to 6.0 mils wet and 1.5 to 2.4 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "Pro Industrial Multi-Surface Acrylic Matte, B66-1571 Series", or equal.
 2. Semigloss, Acrylic Enamel Finish: 1 finish coat over enamel undercoat and a primer. Primer is not required on shop-primed items.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 5.0 to 10.0 mils wet and 3.0 to 4.0 mils dry.

- 1) Product: As manufactured by Sherwin Williams, "Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series", or equal.
- b. First and Second Finish Coats: Water-based alkyd urethane, interior enamel applied at spreading rate to achieve film thickness of 4.0 to 5.0 mils wet and 1.4 to 1.7 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "Pro Industrial Water-Based Alkyd Enamel Urethane, B53-1150 Series", or equal.

END OF SECTION

SECTION 10 11 00

VISUAL DISPLAY UNITS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Markerboards.
 - 2. Tackboards.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 05 45 00 - Metal Support Assemblies: Provision of backing plates.
 - 2. Section 09 29 00 - Gypsum Board: Provision of gypsum board surfaces.

1.02 SUBMITTALS

- A. Product Data: Provide manufacturer's product data for markerboards and tackboards. Confirm quantities, size, location, and method of installation for each.
- B. Samples: Provide the following samples of each product for initial selection of colors, patterns, and textures, as required, and for verification of compliance with requirements indicated.
 - 1. Markerboards: Manufacturer's color charts consisting of actual sections of glass finish showing the full range of colors available.
 - 2. Tackboards: Manufacturer's standard color samples.
 - 3. Provide photographs of all samples.
- C. Manufacturer's Installation Data: Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.03 QUALITY ASSURANCE

- A. The Drawings indicate size, profiles, and dimensional requirements of visual display boards and are based on the specific type and model indicated. Other visual display boards having equal performance characteristics by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept or intended performance as judged by the Architect. The burden of proof of equality is on the proposer.

1.04 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to fabrication to ensure proper fitting. Coordinate fabrication schedule with construction progress to avoid delay.
 - 1. Allow for trimming and fitting wherever taking field measurements before fabrication might delay the Work.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Markerboards: 1/4-inch thick tempered glass, magnetic and backpainted as indicated, frameless with polished edges.

1. Dimensions: As indicated on the Drawings.
 2. Color: As selected by the Architect.
 3. Product: As manufactured by Claridge Products and Equipment, Inc.; U.S. Markerboard, or equal.
- B. Tackboards: Panels shall be constructed of a compressed industrial insulation wood fiberboard; vinyl finish shall be applied directly to face and long edges of the panels and returned onto the back of the panels; mounted with adhesive recommended by the tackboard manufacturer.
1. Thickness: 1/2-inch.
 2. Dimensions: As indicated on the Drawings; standard tolerance plus or minus 1/16-inch width and height.
 3. Edge and Corner Profiles: Square.
 4. Vinyl Finish: As selected by the Architect from manufacturer's full range.
 5. Trim: Manufacturer's standard vinyl-covered J-mold (top and bottom), F-mold (outside corner), and Z-mold (inside corner).
 6. Product: As manufactured by Lamvin Inc., "Tackboard Wall Panels", or equal.

PART 3 - EXECUTION**3.01 INSTALLATION**

- A. Deliver factory-built visual display surfaces completely assembled in 1 piece without joints, wherever possible. Where dimensions exceed panel size, provide 2 or more pieces of equal length as acceptable to the Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site. Use splines at joints to maintain surface alignment.
- B. Install units in locations and at mounting heights indicated and in accordance with the manufacturer's instructions. Keep perimeter lines straight, plumb, and level. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for a complete installation.
- C. Coordinate job-site assembled units with grounds, trim, and accessories. Join parts with a neat, precision fit.
- D. Install visual display units in locations and at mounting heights indicated and in accordance with the manufacturer's instructions. Keep perimeter lines straight, plumb, and level. Join parts with a neat, precision fit.
- E. Visual display units shall be fastened to existing structure or to blocking provided by the Contractor as indicated on the Drawings.

3.02 ADJUST AND CLEAN

- A. Verify that accessories required for each unit have been properly installed and that operating units function properly.
- B. Clean units in accordance with the manufacturer's instructions. Break in visual display surfaces only as recommended by the manufacturer.

END OF SECTION

SECTION 10 14 00

SIGNAGE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Exterior signage as indicated on the Civil Drawings.
 - 2. Interior identification and accessible signage as required and as indicated.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. ASTM - American Society for Testing and Materials
 - 1. A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
- C. CBC - California Building Code, 2019 Edition

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Design all signs as required by ADA and CBC - Title 24.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements
 - 1. Comply with ADA and CBC requirements for signage, to include Braille.
 - 2. Provide signs at public toilet rooms with the following text: MEN, WOMEN.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's product data describing materials and signs.
- B. Shop Drawings
 - 1. Provide shop drawings showing construction details for approval before proceeding with fabrication. Include full size details of exposed edges, joints between materials, hanging, hinging, and locking systems and any other details which would affect sign appearance.
 - 2. Fasteners: Detail methods of fastenings and provide exact specifications for all fasteners noted on shop drawings.
 - 3. Artwork: Submit full size patterns or prints of typical copy layouts and/or graphic elements to be applied on signs. Using layouts on the Drawings as a guide, optically enlarge and hand correct images before submitting to the Architect for approval before fabrication.
 - 4. Sign Location: Provide Graphic Schedule and location plans to identify and locate all signs. Item numbers listed in the Graphic Schedule shall be found on location plans and shall identify locations of specific sign items.

- C. Samples
 - 1. On 6-inch by 6-inch pieces of actual sign materials, submit to the Architect for review and approval, 1 sample of painted and graphic finishes, in each material, color and finish, with texture to simulate actual conditions.
 - 2. Provide listing of the material and application for each coat of each finish sample.
 - 3. Be prepared to resubmit each sample as requested until required sheen, color and texture are approved.
 - 4. Acrylic: Submit color and finish samples of plastics for approval before proceeding with fabrication. No substitution in color, thickness, finish or plastics will be accepted without written approval of the Architect.
 - 5. Fasteners: Submit 1 sample of all fasteners and hardware for approval.
 - 6. Paint: Submit 1 color and finish sample of all paints and finishes for approval prior to fabrication.
 - 7. Provide photographs of all samples.
- D. Operation and Maintenance: Provide the City's Project Manager with proper cleaning instructions required for continued maintenance of signs.

1.06 QUALITY ASSURANCE

- A. Pre-Installation Conferences: Sign locations shown on the location plans are for general information only. Prior to installation and as required, arrange meetings with the Architect at the site for final location for all sign items. Cardboard mockup signs can be used to confirm location and placement.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: ASI Sign Systems, Inc.; Superior Sign Systems; Vomar Products, Inc., or equal.

2.02 MATERIALS

- A. Exterior Accessibility Signs: 18 gauge steel, stretcher leveled, ASTM A1008, Class I, reflectorized porcelain finish, galvanized; screen printed blue with white symbol in accordance with ADA.
- B. Plastic Signs: Matte finish acrylic plastic, minimum 1/8-inch thick, without frame, with corners radiused. Message and background color shall be sub-surface printed. Provide with raised room numbers and Braille.
- C. Mounting Tape: Double-sided vinyl foam tape; provide silicone adhesive for attachment to wall surface.
- D. Fasteners: Where fasteners are indicated or required, use exposed "torx type" or other type tamper-proof security screws.
- E. Coatings for Acrylic Plastic Sheet: Use colored coatings, including inks and paints for copy and background colors, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are non-fading for the application intended.

2.03 ACRYLIC SIGNS

- A. Acrylic Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

- B. Unframed Acrylic Signs: Fabricate signs with edges mechanically and smoothly finished to conform with the following requirements:
 - 1. Edge Condition: Square cut.
 - 2. Corner Condition: 1/2-inch radius.
 - 3. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16-inch measured diagonally.
- C. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.
- D. Message Inserts: Where sign type makes provision for changeable name slots, provide laser printed name strips with text as scheduled. Obtain message from the City's Project Manager before fabrication. Where no text is scheduled, insert blank message strip in slot for future text by the City's Project Manager.
- E. Photopolymer (Raised Copy): Machine-cut copy characters from matte finish opaque acrylic sheet and chemically weld onto the acrylic sheet forming sign panel face. Produce precisely formed characters with square cut edges free from burrs and cut marks.
 - 1. Panel Material: Matte-finished acrylic stock with opaque color coating surface applied; 2 colors, minimum 70 percent contrast between color 1 and color 2.
 - 2. Raised Copy Thickness: Not less than 1/32-inch.

2.04 FINISHES

- A. Colors: For exposed sign material that requires applied colors and other characteristics related to appearance, see Drawings.

2.05 BRAILLE SYMBOLS

- A. Braille Symbols: California Contracted Grade 2 Braille shall be used wherever Braille symbols are specifically required in other portions of these standards. Dots shall be 1/10-inch on centers in each cell with 2/10-inch space between cells. Dots shall be raised a minimum of 1/40-inch above the background.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the substrate and conditions in which the work is to be installed. Correct all unsatisfactory substrate and conditions prior to start of installation.

3.02 INSTALLATION

- A. General
 - 1. Install signage in neat and proper manner.
 - 2. Install sign items, including all components, in accordance with reviewed Graphic Schedule at locations shown.
 - 3. Install signs properly aligned, level and true to line and dimension.
- B. Install with reviewed manufacturer's adhesive or mechanical fasteners after application of finish painting at heights noted.

3.03 SCHEDULE

- A. Signage font, size, color, and background color as indicated on the Drawings.
- B. Signage shall be in compliance with CBC.

END OF SECTION

SECTION 10 21 13.20

PHENOLIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: New or modification of existing phenolic toilet partitions and urinal screens.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. CBC - California Building Code, 2019 Edition
- C. UL - Underwriters Laboratories Inc.
 - 1. FRD - Fire Resistance Directory.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for materials, fabrication, and installation including catalog cuts of anchors, hardware, fastenings, and accessories.
- B. Shop Drawings
 - 1. Dimensioned plans indicating layout of toilet compartments.
 - 2. Dimensioned elevations indicating heights of doors, pilasters, separation partitions, and other components; indicate locations and sizes of openings in compartment separation partitions for toilet and bath accessories to be installed in partitions; indicate floor and ceiling clearances.
 - 3. Details indicating anchoring components (bolt layouts) and methods for project conditions; indicate components required for installation, but not supplied by toilet compartment manufacturer.
- C. Samples for Initial Selection: Standard color options for each type of unit indicated for selection by the Architect.
 - 1. Provide photographs of all samples.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Install fire rated ceiling systems in accordance with CBC and UL FRD listing and requirements of agency having jurisdiction.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.
- B. Store products indoors in manufacturer's or fabricator's original containers and packaging, with labels clearly identifying product name and manufacturer. Protect from damage.

- C. Lay cartons flat, with adequate support to ensure flatness and to prevent damage to pre-finished surfaces.
- D. Do not store where ambient temperature exceeds 120 degrees Fahrenheit.

1.06 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not deliver materials or begin installation until building is enclosed, with complete protection from outside weather, and building temperature maintained at a minimum of 60 degrees Fahrenheit.
- C. Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication and indicate measurements on shop drawings.

1.07 WARRANTY

- A. Manufacturer's Standard Warranty: Provide warranty for phenolic material against delamination, breakage, or corrosion for 10 years, assuming proper maintenance according to manufacturer's recommendations.

1.08 COORDINATION

- A. Coordinate Work with placement of support framing and anchors in walls and ceilings.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturer: ASI Global Partitions, "Color-Thru Phenolic", or equal.

2.02 COMPARTMENTS AND SCREENS

- A. Toilet Compartments: Floor anchored/overhead braced.
 - 1. Compartment Depth and Width: As indicated on the Drawings.
 - 2. Door Width: 24 inches, minimum; at ADA accessible compartments 36 inches minimum. Door height shall match existing.
 - 3. Pilaster Height: Match existing.
 - 4. Finish: Match existing.
 - 5. Color: Match existing.
- B. Privacy and Urinal Screens: Wall-mounted, no pilaster, vandal-resistant.
 - 1. Thickness: 1/2-inch.
 - 2. Size: 18 inches wide by 42 inches high.
 - 3. Height Above Floor: As indicated on the Drawings.
 - a. Note: Mount at 6-feet high for privacy and to prohibit sight lines; bottom shall then be 18 inches above finished floor.
 - 4. Finish: Matte.
 - 5. Color: As indicated on the Drawings.

2.03 SOLID PHENOLIC

- A. Doors, Panels, Screens, and Pilasters: Decorative surface sheet with solid phenolic core of melamine resin impregnated kraft paper fused under high temperature and pressure; edges machine sanded with a filleted edge. Manufacturer's standard.
 - 1. Doors and Pilasters: 1/2-inch thick.
 - 2. Panels and Screens: 1/2-inch thick.
 - 3. Doors, Panels, and Pilasters: 78.7 inches high.
 - 4. Door and pilaster edges shall be routed and overlapped to block sight lines into the compartments.
 - 5. Edges: Black core.
- B. Finish: Solid phenolic, as selected from manufacturer's standard colors.
- C. Door Hardware
 - 1. Hinge: 3 surface-mounted barrel hinges formed from 304 stainless steel.
 - 2. Latch: Type 304 stainless steel with indicator of occupancy. Latch shall be mounted to the pilaster with integrated function as keeper for in-swinging doors. Latch will provide emergency access through an accessible slotted center pin in the external indicator.
 - 3. Coat Hook and Bumper: Type 304 stainless steel with black rubber tip for doorstop.
 - 4. Fastening Hardware: Manufacturer's standard, Type 304 stainless steel, No. 4 satin finish. Door hardware shall be attached to holes predrilled at the manufacturing facility.
- D. Mounting Brackets: Provide stainless steel continuous bracket Type 304 stainless steel, No. 4 satin finish, with stainless steel theft-resistant barrel nuts and machine screws of same material and finish.
- E. Headrail: Type 304 stainless steel, 1-1/4 inches diameter tube attached in clips to top of pilaster.
- F. Floor Anchored/Overhead Braced
 - 1. Compartment shall be supported by Type 304 Stainless steel pedestal placed under the panels approximately 12 inches behind pilaster on standard compartments. Manufacturer recommends placement of pedestal under large pilasters associated with accessible compartments.
 - 2. Pedestal shall be adjustable in height plus or minus 1 inch to compensate for uneven floors.
 - 3. Pedestal shall support panel 6 inches or 9 inches above finished floor.
 - 4. Pedestal shall be secured to floor with 2-1/2 inches corrosion resistant screws.

PART 3 - EXECUTION**3.01 EXAMINATION AND PREPARATION**

- A. Inspect and prepare substrates using the methods recommended by the manufacturer for achieving best result for the substrates under project conditions. Clean surfaces thoroughly prior to installation.
- B. Do not proceed with installation until substrates have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

- C. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
 - 1. Verify dimensions of areas to receive compartments.
 - 2. Verify locations of built-in framing, anchorage, bracing, and plumbing fixtures.

3.02 INSTALLATION

- A. Install in accordance with approved shop drawings and manufacturer's instructions.
- B. Fasten components to adjacent materials and to other components using purpose-designed fastening devices.
- C. Adjust pilaster anchors for substrate variations.
- D. Equip each compartment door with hinges and door latch.
- E. Equip each compartment door with one coat hook and bumper.
- F. Installation Tolerances
 - 1. Maximum Variations From Plumb or Level: 1/8-inch.
 - 2. Clearance Between Wall Surface and Panels or Pilasters: 1-1/2 inches maximum.

3.03 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors.
- B. Adjust adjacent components for consistency of line or plane.

3.04 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion.
- C. Remove factory protective coverings and clean finish surfaces in accordance with manufacturer's instructions before substantial completion.

END OF SECTION

SECTION 10 26 13**CORNER GUARDS****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Corner guards.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 2. D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - 3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. CBC - California Building Code, 2019 Edition

1.03 SUBMITTALS

- A. Product Data: Submit product data for each wall surface protection system component and installation accessory required, including installation methods for each type of substrate. Provide written data on each required component including physical characteristics, such as durability, resistance to fading, and flame resistance.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Provide wall surface protection system components that are identical to those tested in accordance with CBC and ASTM E84 for the fire performance characteristics indicated below. Identify wall surface protection system components with appropriate markings from the testing and inspection organization.
 - 1. Flame Spread: 25 or less.
 - 2. Smoke Developed: 450 or less.
- B. Impact Strength: Provide wall surface protection system components with a minimum impact resistance of 25.4 ft. x lb/sq. ft. when tested in accordance with ASTM D256 (Izod impact, ft. x lb/in.).

1.05 MAINTENANCE

- A. Maintenance Instructions: Provide the manufacturer's instructions for maintenance of installed work. Include recommended methods and frequency for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.
- B. Extra Materials: After completion of work, deliver not less than 2 percent of each type, color, and pattern of wall surface protection materials and components. Include accessory components as required. Replacement materials shall be from the same production run as materials installed. Package replacement materials with protective covering, identified with appropriate labels.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturer: Construction Specialties, Inc., "Acrovyn Series, Model SSM-20AN", or equal.

2.02 MATERIALS

- A. Rigid Plastic Material: Extruded, textured, chemical and stain-resistant, high-impact, acrylic modified vinyl plastic; PVC-free; , thickness as indicated. Comply with specified requirements of ASTM D256 for impact resistance and ASTM E84 for flame spread and smoke developed characteristics.
 - 1. Texture: Shadowgrain.
 - 2. Color: As indicated on the Drawings.
- B. Aluminum Extrusions: Provide alloy and temper recommended by the manufacturer for the type of use and finish indicated, but with not less than the strength and durability properties specified in ASTM B221 for 6063-T5.
- C. Fasteners: Provide concealed noncorrosive metal screws, bolts, and other fasteners compatible with aluminum components, hardware, anchors, and other items being fastened.

2.03 PLASTIC CORNER GUARDS

- A. Provide surface mounted, resilient plastic corner guard assembly consisting of a snap-on-type plastic cover installed over a continuous aluminum retainer, height as indicated.
 - 1. Cover shall be rigid, impact-resistant plastic, minimum 0.078-inch thick, in dimensions and profiles indicated.
 - a. Radius: 1/4-inch nose.
 - b. Wall Offset: 3/8-inch.
 - c. Leg: 2 inches.
 - 2. Retainer: Manufacturer's standard continuous, one-piece, extruded aluminum retainer, minimum 0.062-inch thick.
 - 3. Accessories: Provide prefabricated, injection-molded top cap and aluminum base with concealed splices, cushions, mounting hardware, and other accessories as required. No exposed fasteners.
 - a. Top caps shall match color of plastic covers and shall be field adjustable for close alignment with snap-on plastic covers.

2.04 FABRICATION

- A. General: Fabricate wall protection systems to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thicknesses of components.
- B. Preassemble components in the shop to the greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.
- C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of evidence of wrinkling, chipping, uneven coloration, dents, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.
- D. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors for interconnection of members to other construction.

- E. Fabricate anchoring devices to be capable of withstanding imposed loads. Coordinate anchoring devices with the supporting structure.

PART 3 - EXECUTION**3.01 INSTALLATION**

- A. General: Install wall surface protection units plumb, level, and true to line without distortions.
 - 1. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished work.
- B. Install aluminum retainers, mounting brackets, and other accessories in strict accordance with the manufacturer's instructions.
 - 1. Where splices occur in horizontal runs of over 20 feet, splice aluminum retainer and plastic cover at different locations along the run.

3.02 CLEANING

- A. General: Immediately upon completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent. Clean metal components in accordance with the manufacturer's recommendations.
- B. Remove excess adhesive using methods and materials recommended by manufacturer.

END OF SECTION

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SECTION 10 28 13

TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Toilet accessories, including backing plates for grab bars.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. AISI - American Iron and Steel Institute
- C. ASTM - American Society for Testing and Materials
 - 1. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 3. B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
 - 4. C1503 - Standard Specification for Silvered Flat Glass Mirror.
 - 5. F446 - Standard Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area.
- D. CBC - California Building Code, 2019 Edition

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gauges, profiles, mounting method, specified options, and finishes.
- B. Shop Drawings: Submit setting drawings where cutouts are required in other work, including templates, substrate preparation instructions, and directions for preparing cutouts and installing anchorage devices.
- C. Contract Closeout Submittals: Submit maintenance instructions including replaceable parts and service recommendations.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements
 - 1. Grab Bars and Fasteners: Strength of grab bars, fasteners and mounting devices shall comply with CBC and ADA requirements.
 - 2. Grab Bar Surfaces: Conform to CBC.
 - 3. Mounting Heights of Accessories: Comply with requirements of CBC.
 - 4. Operating Pressure for Soap Dispensers: Comply with ADA.
- B. Inserts and Anchorages: Furnish accessory manufacturers' standard concealed inserts and anchoring devices. Coordinate delivery with other work to avoid delay.

1.05 PROJECT CONDITIONS

- A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.06 WARRANTY

- A. Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.
- B. Warranty Period: 10 years from date of Substantial Completion.
- C. Warranty shall not deprive the City of other rights the City may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. General: Fabricate toilet accessory items from the following materials and according to requirements specified for individual accessory items.
 - 1. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gauge minimum thickness, unless otherwise indicated.
 - 2. Galvanized Steel Sheet: ASTM A653, G60.
 - 3. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B456, Type SC 2.
 - 4. Galvanized Steel Mounting Devices: ASTM A153, hot-dip galvanized after fabrication.
 - 5. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.
 - 6. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply. Provide a minimum of 6 keys to the City's Project Manager.
 - 7. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.02 ACCESSORIES

- A. Toilet Accessories
 - 1. Hat and Coat Hooks
 - a. Type A: Surface-mounted, 22 gauge stainless steel, satin finish, as manufactured by Bobrick Washroom Equipment, Inc., "B-6827", or equal.
 - b. Type B: Surface-mounted, solid cast aluminum with matte finish, hard rubber bumper secured with drive-screw, as manufactured by Bobrick Washroom Equipment, Inc., "B-212", or equal.
 - 2. Grab Bars: 1-1/2 inches diameter, 18 gauge stainless steel tubing, satin finish, lengths as indicated, as manufactured by Bobrick Washroom Equipment, Inc., "B6806 Series", or equal.
 - 3. Toilet Seat Cover Dispenser: Surface-mounted, 20 gauge stainless steel, satin finish, as manufactured by Bobrick Washroom Equipment, Inc., "ConturaSeries B-4221", or equal.
 - 4. Sanitary Napkin Disposal: Surface-mounted, 22 gauge stainless steel, satin finish, as manufactured by Bobrick Washroom Equipment, Inc., "ConturaSeries B-270", or equal.

5. Toilet Tissue Dispenser: Surface-mounted, single 9-inch jumbo roll, as manufactured by Tork, "66TR", or equal.
 6. Mirrors: Surface-mounted, glass mirror with stainless steel angle frame, satin finish, 24 inches wide by 36 inches high, as manufactured by Bobrick Washroom Equipment, Inc., "B-290 Series", or equal.
 7. Soap Dispenser: Wall-mounted, bulk liquid soap dispenser, ABS material, length as indicated, black color, as manufactured by Bobrick Washroom Equipment, Inc., "B-42", or equal.
 8. Mop and Broom Holder: Surface-mounted, 22 gauge stainless steel, satin finish, as manufactured by Bobrick Washroom Equipment, Inc., "B-223", or equal.
 9. Hand Dryer: 1-piece, heavy-duty, rib-reinforced, lightweight, unbreakable, rustproof die-cast zinc alloy, 1490 watts (heat on), 425 watts (heat off), 72 degrees Fahrenheit to 135 degrees Fahrenheit adjustable heat range, heat and air speed settings inside, noise reduction nozzle included, HEPA filtration system included, white epoxy painted, as manufactured by Excel Dryer, Inc., "XLERATOR XL-W-1.1N-H", or equal.
- B. Mounting Plates: Non-corrosive material. Provide as required.

2.03 FABRICATION

- A. General: Only a maximum 1-1/2 inches diameter, unobtrusive stamped manufacturer logo, as approved by the Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by either a printed, waterproof label or a stamped nameplate, indicating manufacturer's name and product model number.
- B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install toilet accessory units according to manufacturer's instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.
- C. Install grab bars to withstand a downward load of at least 250 lbf, complying with ASTM F446.

3.02 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION

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SECTION 21 13 13
WET-PIPE SPRINKLER SYSTEMS**PART 1 GENERAL****1.01 DESCRIPTION**

- A. The requirements of this section apply to the design and installation of fire protection piping, devices, specialties and equipment, including fire pumps, glazing protection, and fire alarm system interconnections, by a Design/Build licensed Fire Protection Engineer / Contractor.
- B. These specifications are part of the Project Manual as guidance for a required Deferred Submittal Fire Protection Design/Build project.
- C. The Fire Protection Design/Build subcontractor will be required to obtain all permits from Authority Having Jurisdiction

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 SUMMARY

- A. Section Includes:
 - 1. Pipes, fittings, and specialties.
 - 2. Cover system for sprinkler piping.
 - 3. Specialty valves.
 - 4. Sprinklers.
 - 5. Alarm devices.
 - 6. Manual control stations.
 - 7. Control panels.
 - 8. Pressure gages.

1.04 DEFINITIONS

- A. Standard-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure of 175-psig maximum.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For wet-pipe sprinkler systems.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include diagrams for power, signal, and control wiring.
- C. Delegated-Design Submittal: For wet-pipe sprinkler systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and professional engineer.
- B. Design Data:
 - 1. Approved Sprinkler System Drawings: Working plans, prepared per NFPA 13 and other sections as required by the 2019 CFC section 903.3 that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
 - 2. Showing all required protection types, locations and equipment.
 - a. Floor area coverage
 - b. Concealed space coverage
 - c. Glazing in Fire Separation Zones coverage as required by the Authority Having Jurisdiction.

- C. Welding certificates.
- D. Field Test Reports:
 - 1. Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."
 - 2. Fire-hydrant flow test report is provided to the design engineer by project management.
- E. Field quality-control reports.

1.07 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For wet-pipe sprinkler systems and specialties to include in emergency, operation, and maintenance manuals.

1.08 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Sprinkler Cabinets: Finished, wall-mounted, steel cabinet with hinged cover, and with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler used on Project.

1.09 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.
 - a. Engineering Responsibility: Preparation of working plans, calculations, and field test reports by a qualified professional engineer.
- B. Welding Qualifications: Qualify procedures and operators according to 2019 ASME Boiler and Pressure Vessel Code.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:
 - 1. NFPA 13 & NFPA 13R and other sections as required by the 2019 CFC section 90 3.3.
- B. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.
- C. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design wet-pipe sprinkler systems.
 - 1. See attached Fire flow report for available fire-hydrant flow test records indicate the following conditions.
 - 2. Sprinkler system design shall be approved by authorities having jurisdiction.
 - a. Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping, valves, and backflow preventers.
 - b. Sprinkler Occupancy Hazard Classifications:
 - 1) Building Service Areas: Ordinary Hazard, Group 1.
 - 2) General Storage Areas: Ordinary Hazard, Group 1.
 - 3) Mechanical Equipment Rooms: Ordinary Hazard, Group 1.
 - 4) Office and Public Areas: Light Hazard.
 - 5) Residential Areas: NFPA 13 or NFPA 13R
 - c. Minimum Density for Automatic-Sprinkler Piping Design:
 - 1) Residential Occupancy, if required: NFPA13R requirement.
 - 2) Light-Hazard Occupancy: 0.10 gpm over 1500-sq. ft. area.
 - 3) Ordinary-Hazard, Group 1 Occupancy: 0.15 gpm over 1500-sq. ft. area.
 - d. Maximum Protection Area per Sprinkler: According to UL listing.

- e. Maximum Protection Area per Sprinkler:
 - 1) Office Spaces: 225 sq. ft.
 - 2) Storage Areas: 130 sq. ft.
 - 3) Mechanical Equipment Rooms: 130 sq. ft.
 - 4) Electrical Equipment Rooms: 130 sq. ft.
 - 5) Other Areas: According to NFPA 13 recommendations unless otherwise indicated.
- D. Seismic Performance: Sprinkler piping shall withstand the effects of earthquake motions determined according to NFPA 13.

2.02 STEEL PIPE AND FITTINGS

- A. Standard-Weight, Black-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. Pipe ends may be factory or field formed to match joining method.
- B. Schedule 10, Black-Steel Pipe: ASTM A 135/A 135M or ASTM A 795/A 795M, Schedule 10 in NPS 5 and smaller; and NFPA 13-specified wall thickness in NPS 6 to NPS 10, plain end.
- C. Schedule 5 Steel Pipe: ASTM A 135/A 135M or ASTM A 795/A 795M lightwall with plain ends.
- D. Black-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.
- E. Uncoated-Steel Couplings: ASTM A 865/A 865M, threaded.
- F. Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- G. Malleable- or Ductile-Iron Unions: UL 860.
- H. Cast-Iron Flanges: ASME 16.1, Class 125.
- I. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.
 - 1. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick ASME B16.21, nonmetallic and asbestos free or EPDM rubber gasket.
 - a. Class 125 and Class 250, Cast-Iron, Flat-Face Flanges: Full-face gaskets.
 - b. Class 150 and Class 300, Ductile-Iron or -Steel, Raised-Face Flanges: Ring-type gaskets.
 - c. Metal, Pipe-Flange Bolts and Nuts: Carbon steel unless otherwise indicated.
- J. Steel Welding Fittings: ASTM A 234/A 234M and ASME B16.9.
 - 1. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- K. Grooved-Joint, Steel-Pipe Appurtenances:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Victaulic Company.
 - b. Pressure Rating: 175-psig minimum.
 - c. Painted Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting, with dimensions matching steel pipe.
 - d. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213 rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.
- L. Steel Pressure-Seal Fittings: UL 213, FM Global-approved, 175-psig pressure rating with steel housing, rubber O-rings, and pipe stop; for use with fitting manufacturers' pressure-seal tools.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Victaulic Company.

2.03 SPECIALTY VALVES TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER.

- A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."

- B. Pressure Rating:
 - 1. Standard-Pressure Piping Specialty Valves: 175-psig minimum.
- C. Body Material: Cast or ductile iron.
- D. Size: Same as connected piping.
- E. End Connections: Flanged or grooved.
- F. Alarm Valves:
- G. Deluge Valves:
 - 1. Standard: UL 260.
 - 2. Design: Hydraulically operated, differential-pressure type.
 - 3. Include trim sets for alarm-test bypass, drain, electrical water-flow alarm switch, pressure gages, drip cup assembly piped without valves and separate from main drain line, and fill-line attachment with strainer.
- H. Automatic (Ball Drip) Drain Valves:

2.04 SPRINKLER PIPING SPECIALTIES TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER.

- A. Branch Outlet Fittings:
- B. Flow Detection and Test Assemblies:
- C. Sprinkler Inspector's Test Fittings:
- D. Adjustable Drop Nipples:

2.05 SPRINKLERS TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER. SEE "SPRINKLER SCHEDULE" ARTICLE.

- A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
- B. Pressure Rating for Automatic Sprinklers: 175-psig minimum.
- C. Automatic Sprinklers with Heat-Responsive Element:
- D. Sprinkler Finishes: bronze.
- E. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.
 - 1. Ceiling Mounting: Chrome-plated steel, one piece, flat Chrome-plated steel, or two piece, with 1-inch vertical adjustment.
 - 2. Ceilings with acoustic tiles or wood finishes shall have concealed sprinkler heads.
 - 3. Sprinkler heads in residential units shall be wall mounted at edge of soffits where possible. Ceilings in dwelling units are skim-coated concrete.
- F. Sprinkler Heads in units should have a protective cage to prevent physical damage unless safely out of reach, see Sprinkler guard below. Show these cages on plans and require in specifications. Prefer semi-recessed heads. Avoid horizontal heads, especially at low heights within reach. Ensure no paint is sprayed on sprinkler heads during unit painting.
- G. Sprinkler Guards:
 - 1. Type: Wire cage with fastening device for attaching to sprinkler.

2.06 ALARM DEVICES TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER.

- A. Alarm-device types shall match piping and equipment connections.
- B. Electrically Operated Alarm Bell:
- C. Water-Flow Indicators:
- D. Pressure Switches:
- E. Valve Supervisory Switches:

2.07 MANUAL CONTROL STATIONS TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER

- A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide" for hydraulic operation, with union, NPS 1/2 pipe nipple, and bronze ball valve.
- B. Include metal enclosure labeled "MANUAL CONTROL STATION," with operating instructions and cover held closed by breakable strut to prevent accidental opening.

2.08 CONTROL PANELS

- A. Description: Single-area, two-area, or single-area cross-zoned control panel as indicated, including NEMA ICS 6, Type 1 enclosure, detector, alarm, and solenoid-valve circuitry for operation of deluge valves.
 - 1. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide" when used with thermal detectors and Class A detector circuit wiring.
 - 2. Electrical characteristics are 120-V ac, 60 Hz, with 24-V dc rechargeable batteries.
 - 3. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Manual Control Stations: Electric operation, metal enclosure, labeled "MANUAL CONTROL STATION," with operating instructions and cover held closed by breakable strut to prevent accidental opening.
- C. Manual Control Stations: Hydraulic operation, with union, NPS 1/2 pipe nipple, and bronze ball valve. Include metal enclosure labeled "MANUAL CONTROL STATION," with operating instructions and cover held closed by breakable strut to prevent accidental opening.
- D. Panels Components:
 - 1. Power supply.
 - 2. Battery charger.
 - 3. Standby batteries.
 - 4. Field-wiring terminal strip.
 - 5. Electrically supervised solenoid valves and polarized fire-alarm bell.
 - 6. Lamp test facility.
 - 7. Single-pole, double-throw auxiliary alarm contacts.
 - 8. Rectifier.

2.09 PRESSURE GAGES TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER**PART 3 EXECUTION****3.01 PREPARATION**

- A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations required in "Quality Assurance" Article.
- B. Report test results promptly and in writing.

3.02 WATER-SUPPLY CONNECTIONS

- A. Install shutoff valve, double detector check valve, pressure gage, drain, and other accessories indicated at connection to water-distribution piping.

3.03 PIPING INSTALLATION

- A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated on approved working plans.
 - 1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.
 - 2. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.
- B. Piping Standard: Comply with NFPA 13 requirements for installation of sprinkler piping.

- C. Install seismic restraints on piping. Comply with NFPA 13 requirements for seismic-restraint device materials and installation.
- D. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- E. Install unions adjacent to each valve in pipes NPS 2 and smaller.
- F. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.
- G. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.
- H. Install sprinkler piping with drains for complete system drainage.
- I. Install sprinkler control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.
- J. Install automatic (ball drip) drain valve at each check valve for fire-department connection, to drain piping between fire-department connection and check valve. Install drain piping to and spill over floor drain or to outside building.
- K. Install alarm devices in piping systems.
- L. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13. In seismic-rated areas, refer to Section 21 0548 "Vibration and Seismic Controls for Fire-Suppression Piping and Equipment."
- M. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft-metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal and install where they are not subject to freezing.
- N. Pressurize and check preaction sprinkler system piping and air-pressure maintenance devices.
- O. Fill sprinkler system piping with water.
- P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 21 0517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."
- Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 21 0517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."
- R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 21 0518 "Escutcheons for Fire-Suppression Piping."

3.04 VALVE AND SPECIALTIES INSTALLATION

- A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.
- B. Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.
- C. Install check valve in each water-supply connection.
- D. Specialty Valves:
 - 1. Install valves in vertical position for proper direction of flow, in main supply to system.
 - 2. Install alarm valves with bypass check valve and retarding chamber drain-line connection.

3.05 IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.
- B. Identify system components, wiring, cabling, and terminals.

3.06 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
 - 4. Energize circuits to electrical equipment and devices.
 - 5. Coordinate with fire-alarm tests. Operate as required.
 - 6. Coordinate with fire-pump tests. Operate as required.
 - 7. Verify that equipment hose threads are same as local fire department equipment.
- B. Sprinkler piping system will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.07 SPRINKLER SCHEDULE

- A. Use sprinkler types in subparagraphs below for the following applications:
 - 1. Rooms without Ceilings: Upright sprinklers.
 - 2. Rooms with Suspended Ceilings: Pendent, recessed, flush, and concealed sprinklers as indicated.
 - 3. Wall Mounting: Sidewall sprinklers.
 - 4. Deluge-Sprinkler Systems: Upright and pendent, open sprinklers.
 - 5. Special Applications: Extended-coverage, flow-control, and quick-response sprinklers where indicated Combustible concealed space sprinklers.
- B. Provide sprinkler types in subparagraphs below with finishes indicated.
 - 1. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.
 - 2. Flush Sprinklers: Bright chrome, with painted white escutcheon.
 - 3. Recessed Sprinklers: Bright chrome, with bright chrome escutcheon.
 - 4. Residential Sprinklers: Dull chrome.
 - 5. Upright Pendent and Sidewall Sprinklers: Chrome plated in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; wax coated where exposed to acids, chemicals, or other corrosive fumes.

3.08 CLEANING

- A. Clean dirt and debris from sprinklers.
- B. Only sprinklers with their original factory finish are acceptable. Remove and replace any sprinklers that are painted or have any other finish than their original factory finish.

END OF SECTION

SECTION 22 05 29**HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Support and attachment components for equipment, piping, and other plumbing work.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2018).
- E. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- H. MFMA-4 - Metal Framing Standards Publication; 2004.
- I. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- J. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

PART 2 PRODUCTS**2.01 SUPPORT AND ATTACHMENT COMPONENTS**

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Metal Channel (Strut) Framing Systems:
 - 1. Comply with MFMA-4.
- C. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
 - 1. Minimum Size, Unless Otherwise Indicated or Required:

- a. Piping up to 1 inch (27 mm) nominal: 1/4 inch diameter.
 - b. Piping larger than 1 inch (27 mm) nominal: 3/8 inch diameter.
- D. Thermal Insulated Pipe Supports:
 - 1. General Construction and Requirements:
 - a. Insulated pipe supports to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
 - b. Surface Burning Characteristics: Flame spread index/smoke developed index of 5/30, maximum, when tested in accordance with ASTM E84 or UL 723.
 - c. Pipe supports to be provided for nominally sized, 1/2 inch to 30 inch iron pipes.
 - d. Insulation inserts to consist of rigid phenolic foam insulation surrounded by a 360 degree, PVC jacketing.
 - 2. PVC Jacket:
 - a. Pipe insulation protection shields to be provided with a ball bearing hinge and locking seam.
 - b. Moisture Vapor Transmission: 0.0071 perm inch, when tested in accordance with ASTM E96/E96M.
 - c. Thickness: 60 mil.
- E. Pipe Supports:
 - 1. Liquid Temperatures Up To 122 degrees F:
 - a. Overhead Support: MSS SP-58 Types 1, 3 through 12.
 - b. Support From Below: MSS SP-58 Types 35 through 38.
- F. Pipe Hangers: For a given pipe run, use hangers of the same type and material.
 - 1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
 - 2. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.
- G. Pipe Shields for Insulated Piping:
 - 1. General Construction and Requirements:
 - a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
 - b. Shields Material: UV-resistant polypropylene with glass fill.
 - c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch.
 - d. Minimum Service Temperature: Minus 40 degrees F.
 - e. Maximum Service Temperature: 178 degrees F.
 - f. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
- H. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
 - 2. Concrete: Use expansion anchors.
 - 3. Powder-actuated fasteners are not permitted.
 - 4. Hammer-driven anchors and fasteners are not permitted.
- I. Pipe Installation Accessories:
 - 1. Thermal Insulated Pipe Supports:
 - a. Manufacturers:
 - 1) Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by a single manufacturer.
 - 2. Overhead Pipe Supports:
 - a. Manufacturers:
 - 1) Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by a single manufacturer.

2.02 RETROFIT PIPING COVER SYSTEM

- A. General Requirements:

1. Surface Burning Characteristics: Flame spread index/smoke developed index of 20/250, maximum, when tested in accordance with ASTM E84 or UL 723.
- B. Materials:
 1. Piping Cover System: Removal-resistant, modular, snap-fit cover units, clips, and anchors for use with CPVC, steel, and copper piping systems.
 2. Cover Units: L-shaped and U-shaped cross-section units of flame retardant resin material, paintable finish.
 3. Provide coupling fittings for joining units end to end and prefabricated inside and outside corner fittings and end caps as required.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- C. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- D. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- F. Provide thermal insulated pipe supports complete with hangers and accessories. Install thermal insulated pipe supports during the installation of the piping system.
- G. Secure fasteners according to manufacturer's recommended torque settings.
- H. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

- A. Inspect support and attachment components for damage and defects.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 22 05 53

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SUBMITTALS

- A. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- B. Product Data: Provide manufacturers catalog literature for each product required.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Piping: Tags.

2.02 PIPE MARKERS

- A. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install plastic pipe markers in accordance with manufacturer's instructions.

END OF SECTION

SECTION 22 07 19
PLUMBING PIPING INSULATION**PART 1 GENERAL****1.01 RELATED REQUIREMENTS**

- A. Section 07 84 00 - Firestopping.

1.02 REFERENCE STANDARDS

- A. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2017, with Editorial Revision (2018).
- B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2019.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- D. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

PART 2 PRODUCTS**2.01 REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 CELLULAR GLASS

- A. Insulation: ASTM C552, Type II, Grade 6.
 - 1. K Value: 0.35 at 100 degrees F.
 - 2. Service Temperature Range: From 250 degrees F to 800 degrees F.
 - 3. Water Vapor Permeability: 0.005 perm inch maximum per inch.
 - 4. Water Absorption: 0.5 percent by volume, maximum.

2.03 EXPANDED POLYSTYRENE

- A. Insulation: ASTM C578; rigid closed cell.
 - 1. K Value: 0.23 at 75 degrees F.
 - 2. Maximum Service Temperature: 165 degrees F.
 - 3. Maximum Water Vapor Permeance: 5.0 perms.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Exposed Piping: Locate insulation and cover seams in least visible locations.
- C. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- D. Inserts and Shields:
 - 1. Insert Location: Between support shield and piping and under the finish jacket.
 - 2. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
 - 3. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.

- E. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 84 00.

3.03 SCHEDULES

- A. Plumbing Systems:
 - 1. Domestic Hot Water Supply:
 - a. Cellular Glass Insulation:
 - b. Expanded Polystyrene Insulation:

END OF SECTION

**SECTION 22 10 05
PLUMBING PIPING****PART 1 GENERAL****1.01 SECTION INCLUDES****1.02 REFERENCE STANDARDS**

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- C. ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings - DWV; 2016.
- D. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV; 2017.
- E. ASME B31.9 - Building Services Piping; 2017.
- F. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- G. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2020.
- H. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.
- I. ASTM B306 - Standard Specification for Copper Drainage Tube (DWV); 2013.
- J. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
- K. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- L. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; 2017 (Revised 2018).
- M. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2012 (Revised 2018).
- N. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2015.
- O. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- P. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- Q. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

- A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
- B. Copper Tube: ASTM B306, DWV.
 - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.23, solvent.
 - 2. Joints: ASTM B32, alloy Sn50 solder.

2.03 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2. Joints: ASTM B32, alloy Sn95 solder.

2.04 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 - 4. Vertical Pipe Support: Steel riser clamp.
- B. Plumbing Piping - Drain, Waste, and Vent:
 - 1. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 - 2. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
- C. Plumbing Piping - Water:
 - 1. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 - 2. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
- D. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
 - 1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.

- F. Prepare exposed, unfinished pipe, fittings, supports, and accessories for finish painting.
- G. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- H. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 - 3. Place hangers within 12 inches of each horizontal elbow.
 - 4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 - 5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 6. Provide copper plated hangers and supports for copper piping.
 - 7. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.04 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed, and clean.
- B. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.
- D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

3.05 SCHEDULES

- A. Pipe Hanger Spacing:
 - 1. Metal Piping:
 - a. Pipe Size: 1/2 inches to 1-1/4 inches:
 - 1) Maximum Hanger Spacing: 6.5 ft.
 - 2) Hanger Rod Diameter: 3/8 inches.
 - b. Pipe Size: 1-1/2 inches to 2 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 3/8 inch.
 - c. Pipe Size: 2-1/2 inches to 3 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 1/2 inch.

END OF SECTION

SECTION 22 10 06
PLUMBING PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cleanouts.

1.02 SUBMITTALS

- A. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Specialties in Potable Water Supply Systems: Provide products that comply with NSF 61 and NSF 372 for maximum lead content.

2.02 CLEANOUTS

- A. Cleanouts at Interior Finished Floor Areas (CO-3):
 - 1. Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.
- B. Cleanouts at Interior Finished Wall Areas (CO-4):
 - 1. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.

END OF SECTION

**SECTION 22 40 00
PLUMBING FIXTURES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Water closets.
- B. Lavatories.
- C. Mop sinks.
- D. Under-lavatory pipe supply covers.

1.02 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).
- C. ASME A112.18.1 - Plumbing Supply Fittings; 2018, with Errata.
- D. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures; 2011 (Reaffirmed 2017).
- E. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- F. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- G. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

- A. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 FLUSH VALVE WATER CLOSETS - SEE PLUMBING FIXTURE SCHEDULE ON PLANS

- A. Flush Valves: ASME A112.18.1, diaphragm type, complete with vacuum breaker stops and accessories.
- B. Water Closet Carriers:
 - 1. ASME A112.6.1M; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.03 LAVATORIES - SEE PLUMBING FIXTURE SCHEDULE ON PLANS

- A. Accessories:
 - 1. Carrier:
 - a. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.

2.04 UNDER-LAVATORY PIPE SUPPLY COVERS

- A. General:
 - 1. Insulate exposed drainage piping including hot, cold and tempered water supplies under lavatories or sinks per ADA Standards.
 - 2. Construction: 1/8 inch PVC with antimicrobial, antifungal and UV resistant properties.

- a. Comply with ASME A112.18.9 for covers on accessible lavatory piping.
- b. Comply with ICC A117.1.

2.05 MOP SINKS - SEE PLUMBING FIXTURE SCHEDULE ON PLANS

- A. Accessories:
 - 1. 5 feet of 1/2 inch diameter plain end reinforced plastic hose.
 - 2. Hose clamp hanger.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.

3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.

3.04 CLEANING

- A. Clean plumbing fixtures and equipment.

3.05 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Do not permit use of fixtures by construction personnel.
- C. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 23 05 93**TESTING, ADJUSTING, AND BALANCING FOR HVAC****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Testing, adjustment, and balancing of air systems.

1.02 REFERENCE STANDARDS

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.
- B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008 (Reaffirmed 2017).
- C. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2002.

1.03 SUBMITTALS

- A. Installer Qualifications: Submit name of adjusting and balancing agency and TAB supervisor for approval within 30 days after award of Contract.
- B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
 - 1. Include at least the following in the plan:
 - a. List of all air flow measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
 - b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
 - c. Final test report forms to be used.
 - d. Detailed step-by-step procedures for TAB work for each system and issue, including:
 - 1) Terminal flow calibration (for each terminal type).
 - 2) Diffuser proportioning.
 - 3) Branch/submain proportioning.
 - 4) Total flow calculations.
 - 5) Rechecking.
 - 6) Diversity issues.
 - e. Procedures for formal deficiency reports, including scope, frequency and distribution.
- C. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
 - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
 - 3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
 - 4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
 - 5. Units of Measure: Report data in both I-P (inch-pound) and SI (metric) units.
 - 6. Include the following on the title page of each report:
 - a. Name of Testing, Adjusting, and Balancing Agency.
 - b. Address of Testing, Adjusting, and Balancing Agency.
 - c. Telephone number of Testing, Adjusting, and Balancing Agency.
 - d. Project name.
 - e. Project location.
 - f. Report date.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 GENERAL REQUIREMENTS**

- A. Perform total system balance in accordance with one of the following:
 - 1. AABC (NSTSB), AABC National Standards for Total System Balance.
 - 2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
 - 3. SMACNA (TAB).
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
 - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.

3.02 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
 - 1. Systems are started and operating in a safe and normal condition.
 - 2. Proper thermal overload protection is in place for electrical equipment.
 - 3. Duct systems are clean of debris.
 - 4. Fans are rotating correctly.
 - 5. Volume dampers are in place and open.
 - 6. Air inlets are installed and connected.
 - 7. Duct system leakage is minimized.
- B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.

3.03 PREPARATION**3.04 ADJUSTMENT TOLERANCES**

- A. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.05 RECORDING AND ADJUSTING

- A. Field Logs: Maintain written logs including:
 - 1. Running log of events and issues.
 - 2. Discrepancies, deficient or uncompleted work by others.
 - 3. Contract interpretation requests.
 - 4. Lists of completed tests.
- B. Ensure recorded data represents actual measured or observed conditions.
- C. Permanently mark settings of dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- E. Leave systems in proper working order.

3.06 AIR SYSTEM PROCEDURE

- A. Measure air quantities at air inlets.
- B. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

3.07 SCOPE

- A. Test, adjust, and balance the following:

1. Fans.
2. Air Inlets.

3.08 MINIMUM DATA TO BE REPORTED

- A. Electric Motors:
 1. Manufacturer.
 2. Model/Frame.
 3. HP/BHP.
 4. Phase, voltage, amperage; nameplate, actual, no load.
 5. RPM.
 6. Service factor.
 7. Starter size, rating, heater elements.
 8. Sheave Make/Size/Bore.
- B. Exhaust Fans:
 1. Location.
 2. Manufacturer.
 3. Model number.
 4. Serial number.
 5. Air flow, specified and actual.
 6. Total static pressure (total external), specified and actual.
 7. Inlet pressure.
 8. Discharge pressure.
 9. Sheave Make/Size/Bore.
 10. Number of Belts/Make/Size.
 11. Fan RPM.

END OF SECTION

**SECTION 23 31 00
HVAC DUCTS AND CASINGS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Metal ductwork.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
- C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

1.03 SUBMITTALS

- A. Product Data: Provide data for duct materials.

1.04 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

PART 2 PRODUCTS**2.01 DUCT ASSEMBLIES**

- A. Regulatory Requirements: Construct ductwork to comply with NFPA 90A standards.
- B. General Exhaust: 1/2 inch w.g. pressure class, galvanized steel.

2.02 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.

2.03 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- C. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

END OF SECTION

SECTION 23 33 00
AIR DUCT ACCESSORIES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Backdraft dampers - metal.
- B. Flexible duct connectors.
- C. Volume control dampers.

1.02 RELATED REQUIREMENTS

- A. Section 23 31 00 - HVAC Ducts and Casings.

1.03 REFERENCE STANDARDS

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
- B. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

1.04 SUBMITTALS

- A. Product Data: Provide for shop fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements.

PART 2 PRODUCTS**2.01 BACKDRAFT DAMPERS - METAL**

- A. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.

2.02 FLEXIBLE DUCT CONNECTORS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Flexible Duct Connections: Fabric crimped into metal edging strip.

2.03 VOLUME CONTROL DAMPERS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 by 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 31 00 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
- D. Provide balancing dampers at points on exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.

END OF SECTION

SECTION 23 34 23
HVAC POWER VENTILATORS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Roof exhausters.

1.02 SUBMITTALS

- A. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.

PART 2 PRODUCTS**2.01 POWER VENTILATORS - REFER TO EQUIPMENT SCHEDULE ON PLANS**

- A. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.
- B. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.
- C. Sound Ratings: AMCA 301, tested to AMCA 300 and bearing AMCA Certified Sound Rating Seal.
- D. Fabrication: Comply with AMCA 99.
- E. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.02 ROOF EXHAUSTERS - REFER TO EQUIPMENT SCHEDULE ON PLANS

- A. Backdraft Damper: Gravity actuated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings, blades linked, and line voltage motor drive, power open, spring return.
- B. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Secure roof exhausters with cadmium plated steel lag screws to roof curb.

END OF SECTION

SECTION 23 37 00
AIR OUTLETS AND INLETS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Registers/grilles:
 - 1. Wall-mounted, exhaust and return register/grilles.

1.02 SUBMITTALS

- A. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

PART 2 PRODUCTS**2.01 WALL EXHAUST REGISTERS/GRILLES**

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, vertical face.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting.
- C. Fabrication: Steel frames and blades, with factory baked enamel finish.
- D. Color: As indicated on the drawings.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Check location of inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.
- C. Install diffusers to ductwork with air tight connection.
- D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.

END OF SECTION

SECTION 26 05 00
ELECTRICAL BASIC MATERIALS AND METHODS

PART 1 GENERAL**1.01 SECTION INCLUDES:**

- A. Conduit, raceways and fittings.
- B. Wires and Cables for 600 Volts and less.
- C. Wire connections and devices.
- D. Outlet boxes.
- E. Pull and junction boxes.
- F. Disconnect Switches and Fuses
- G. Supporting Devices.
- H. Identifying Devices.
- I. Grounding and Bonding
- J. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Submit in accordance with the requirements of Division 1 the following items:
- B. A list of conduit types indicating where each type of conduit will be used. Indicate conduit manufacturers and fittings to be used.
- C. Wires and Cables.
- D. Wiring Devices and Plates
- E. Nameplates, including engraving schedules where engraved plates are specified.
- F. Fused disconnect switches.

1.03 DRAWINGS

- A. The drawings are diagrammatic and show the general extent and arrangement of the work required which shall be followed as closely as the actual construction site conditions and work of the other trades will permit.

1.04 QUALITY ASSURANCE

- A. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.
- B. Coordination of the work: Contractor shall become familiar with the conditions of the job site, and with the landscape drawings, drawings of other disciplines and specifications and plan the installation of the electrical work to conform with that shown and specified so as to provide the best possible assembly of the combined work of the trades.

1.05 REFERENCES

- A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
- B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
- C. ANSI C80.5 - Rigid Aluminum Conduit.
- D. NECA (INST) - Standard of Installation; National Electrical Contractors Association.
- E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- F. NFPA 70 - National Electrical Code - latest edition.

1.06 AS BUILTS

A. Provide as-built reproducible drawings showing all outlets with circuit numbers at each outlet and maintenance manuals for all new equipment.

1.07 WARRANTIES FOR LABOR AND MATERIALS

A. 1 year from the date of final acceptance of the work.

B. In addition to material and equipment specified, also provide all incidental materials required to effect complete installation. Such incidental materials include solders, tapes, caulking, mastics, gaskets, etc.

C. The contractor will be held responsible to have examined the site and premises and satisfied themselves as to existing conditions under which he will be obligated to operate in performing his part of the work or that which will in any manner affect the work under this contract.

D. Provide wiring tests upon completion of work and make adjustments as necessary for satisfactory operation of system.

1.08 ACTION SUBMITTALS

A. Product Data: For each type of product to be used in project.

B. Shop Drawings: List of Legends and description of materials and processes used for premarking wall plates.

1.09 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.10 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For all devices and equipment, to include all manufacturers' installation and warranty documents.

PART 2 PRODUCTS**2.01 MATERIALS AND EQUIPMENT – GENERAL**

A. Materials and equipment shall be new, current models of manufacturers, Bare complete identification by manufacturer and Bare UL labels where applicable. For an explanation of options and Contractor's product selection procedures, see Section 016000 "Product Requirements."

2.02 CONDUIT, RACEWAYS AND FITTINGS

A. Rigid Steel Conduit

1. Rigid steel conduit shall be full weight, pipe size, finished inside and out by hot-dip galvanizing after fabrication, and shall conform with ANSI C80.1 and UL.
2. Couplings shall be electroplated steel, compression type.
3. Insulating Bushings: Threaded polypropylene or thermo-setting phenolic rated 150°C minimum.
4. Insulated grounding Bushings: Threaded cast malleable iron body with insulated throat and steel "lay-in" ground lug with compression screw.
5. Insulated Metallic Bushings: Threaded cast malleable iron body with plastic insulated throat rated 150°C.
6. Running threads are not acceptable.

B. Electrical Metallic Tubing (EMT)

1. Electrical metallic tubing shall be galvanized steel or aluminum, and shall confirm with ANSI C80.1 and UL 797.
2. Couplings shall be electroplated steel, compression type.
3. Insulating Bushings: Threaded polypropylene or thermo-setting phenolic rated 150°C minimum.
4. Insulated grounding Bushings: Threaded cast malleable iron body with insulated throat and steel "lay-in" ground lug with compression screw.

5. Insulated Metallic Bushings: Threaded cast malleable iron body with plastic insulated throat rated 150°C.
 6. Running threads are not acceptable.
- C. Non-Metallic Conduit
1. Schedule 40 PVC underground is an acceptable conduit material.

2.03 COUPLING, CONNECTORS, AND FITTINGS

- A. Coupling and connectors shall be galvanized or cadmium plated; Allied Tube and Conduit, Triangle, or equal.
- B. Provide compression type conduit fittings for electrical metallic tubing.
- C. Electrical metallic tubing installed in wet locations shall be watertight compression type.
- D. Fittings for rigid galvanized steel or IMC shall be threaded.

2.04 CONDUCTORS

- A. Conductors for exterior shall be soft drawn, annealed copper wire 98% conductivity bearing UL label.
- B. Insulation: Provide the following (600 volt):
- C. Type THW, XHHW insulated wire for conductors #2 or larger
- D. Type THHN/THWN for all wire smaller than #2
- E. Manufacturers: Southwire, Anaconda, Rome, General Cable, Cerro Wire, or equal.

2.05 WIRE CONNECTION

- A. Wire Joints: Wires in sizes from #18 to #8 AWG, stranded conductor, with insulation rated 105 degrees C. or less shall be joined with electrical spring connectors of three part construction incorporating a non-restricted, zinc coated steel spring enclosed in a steel shell with an outer jacket of vinyl plastic with a flexible insulating skirt.
- B. Mechanical Compression Connectors and Taps: Stranded conductors from #6 AWG to 750 Kcmil shall be joined or tapped using bolted pressure connectors having cast bronze compression bolts. Fittings shall be wide range-taking and designed to facilitate the making of parallel taps, tees, crosses or end-to-end connections. Split-bolt connectors will not be acceptable.
- C. Fixture Connections: Splice fixture wire to circuit wiring with solderless connectors as specified above in paragraph A.
- D. Terminating Lugs: Conductors from size No. 6 AWG to 750 MCM, copper, shall be terminated using tin plated hydraulically operated crimping tools and dies as stipulated by the lug manufacturer. Lugs shall be 3M "Scotchlok" series 30014, Burndy Type Ya-L series, or equal.
- E. Splicing and Insulating Tape (600 volts and below): General purpose electrical tape shall be suitable for temperatures from minus 18 degrees C to 105 degrees C, shall be black, ultraviolet proof, self-extinguishing, 7 mil thick vinyl with a dielectric strength of 10,000 volts. Apply 4 layers half-lap with 2" over-lap on each conductor.
- F. Insulating Putty (600 volts and below): Pads or rolls of non-corrosive, self-fusing, one eight inch thick rubber putty with PVC backing sheet. Putty shall be suitable for temperatures from minus 17.8 degrees C to 37.8 degrees C and shall have a dielectric strength of 570 volts/mil minimum.
- G. Insulating Resin: Two Part liquid epoxy resin with resin and catalyst in pre measured, sealed mixing pouch. Resin shall have a set up time of approximately 30 minutes at 21.1 degrees C, and shall have thermal and dielectric properties equal to the insulation properties of the cables immersed in the resin.
- H. Terminal Strip Connectors: Terminate wire in locking tongue style, pressure type, solderless lug where applicable.

2.06 WIRE CONNECTORS:

- A. #6 AWG and larger: Thomas and Betts "Lock-Tite", Burndey, "Quicklug" or OZ Type PT/PTC.
- B. #8 AWG and smaller: Scotch spring steel with insulated cap, Thomas and Betts, "STA-KON Piggy" with insulator or ideal, wire nut or wing nut type.

2.07 OUTLET BOXES

- A. Standard outlet boxes: Galvanized, die formed or drawn steel, knock-out type of size and configuration best suited to the application indicated on the plans. Minimum box size, 4 inch square by 1-1/2 inch deep, indoor use. FS cast boxes are required for outdoor use.
- B. Cast Metal Outlet Boxes: FS cast boxes are required for outdoor use. Four-inch round, galvanized cast iron alloy with threaded hubs and mounting lugs as required. Boxes shall be furnished with cast cover plates of the same material as the box and neoprene cover gaskets. Thomas and Betts, Crouse-Hinds VXF series, Appleton JBX series or equal.
- C. Conduit Outlet Bodies: Cadmium plated, cast iron alloy. Obround conduit outlet bodies with threaded conduit hubs and neoprene gasketed, cast iron covers. Outlet bodies shall be used to facilitate pulling of conductors or to make changes in conduit direction only. Splices are not permitted in conduit outlet bodies. Thomas and Betts, Crouse Hinds Form 8 Condulets, Appleton form 35 Unilets, or equal.

2.08 WIRING DEVICES:

- A. Duplex Receptacles: 20A, 125V, 3 wire, grounded, NEMA 5-20R, tamper resistant, Pass & Seymour S885TRWCC14 decorator style or equal.
- B. GFI Receptacles: 20A, 125V, 3 wire, Nema 5-20R, tamper resistant, Pass & Seymour S1595NLTTRWCC8 or equal.
- C. Outdoor Receptacles: shall be 20A, 125V, 3-wire, Nema 5-20R, Pass & Seymour S1595TRWCC8 with while in use cover or equal.
- D. Switches: Lighting switches shall be 20A, 3 wire. Shall be Pass & Seymour 2601-W decorator style or equal. 3-way switch shall be Pass & Seymour 2603-W or equal.
- E. Dimmer Switches: Dimmer have full-on bypass mode. Shall be Pass & Seymour 91180-W decorator style or equal. 3-way dimmer switch shall be Pass & Seymour 91183-W or equal.

2.09 PULL AND JUNCTION

- A. Sheet Metal Boxes: Use standard outlet or concrete ring boxes wherever possible; otherwise use minimum 15 gauge galvanized metal, NEMA 1 boxes, sized to code requirements with covers secured by cadmium plated machine screws located 6 inches on centers. Circle AW Products, Hoffman Engineering Co., or equal.
- B. Cast Metal Boxes: Use standard cast malleable iron outlet or device boxes wherever possible; otherwise use cadmium plated, cast malleable iron junction boxes with bolt-on, interchangeable conduit hub plates with neoprene gaskets. Appleton RS series; Crouse Hinds RS series, or equal.

2.10 DISCONNECTS:

- A. Small Motors and Water Heaters: Provide 30A, 600V AC rated double-pole toggle switch for equipment disconnects. Switch shall be rated for 2HP motors at 120V and 5HP motors at 240V. Toggle switch shall be horsepower rated. Device shall have silver cadmium oxide contacts. Device shall be fully enclosed. Device shall have quick make, slow break design. Device shall be listed as a manual motor controller. Device shall be Bryant 30002B for interior installation and Bryant 30302B for exterior installations or equal.
- B. Large Motors: Provide switches rated from 30A to 60A. Switches shall have switch blades which are visible when the switch is OFF and the cover is open. The switch operating mechanism shall be quick-make, quick-break such that, during normal operation of the switch, the operation of the contacts shall not be capable of being restrained by the operating handle after the closing or opening action of the contacts has started. The operating handle shall be

an integral part of the box, not the cover. Switch enclosures shall be rated Nema 3R for exterior installations. Switches shall be Square D – Class 3130 or equal.

2.11 DISCONNECT SWITCHES

- A. All disconnect switches shall be heavy-duty type and have the number of poles, voltage rating, and horsepower rating as required by the motor or equipment. Disconnect switches shall be in enclosures to suit conditions, NEMA 3R for outdoor and NEMA 1 for indoor. Disconnect switches shall be fused unless otherwise noted on the drawings. As manufactured by: Square D - Class 3110, ITE Seimens, or equal.

2.12 FUSES

- A. Dual Element, Time Delay, UL Class RK5. Rejection type. Size and Voltage as indicated on equipment. Bussman, Little Fuse, or approved equal.

2.13 ELECTRICAL SUPPORTING DEVICES

- A. Concrete Fasteners: Phillips "Red-Head" or equal, self drilling expansion type concrete anchor.
- B. Conduit Straps: Hot-dip galvanized, cast malleable iron, two hole type strap with cast clamp-backs and spacers as required. OZ/Gedney No. 14-50G strap and #141G spacer; Efcor No. 231 strap, and No.131 spacer; or equal.
- C. Construction Channel: 1-1/2 inch by 1-1/2 inch 12 gauge galvanized steel channel with 17/32 inch diameter bolt holes, 1-1/2 inch on center, in the base of the channel. Kindorf 905 series, Unistrut P-1000-HS or equal.
- D. Cable Ties and Clamps: Thomas and Betts Co. "Ty-Raps" Panduit "Pan-Ty" or equal one piece, nylon, reusable type lashing ties.
- E. Fasteners (General) : Wood screws for fastening to wood. Machine screws for fastening to steel. Toggle bolts for fastening to hollow concrete block, gypsum board, or plaster walls. Expansion anchors for attachments to pre-poured concrete.

2.14 IDENTIFYING DEVICES

- A. Nameplates: Type NP: Engraved black bakelite, 1 inch by 3-1/2 inch, 1/8 inch high white letters, machine screw retained. For permanent identification of all switchboards, panelboards, circuit breakers in separate enclosures, motor starters, relays, time switches, disconnect switches and other cabinet-enclosed apparatus including terminal cabinets or match existing as closely as possible.
- B. Legend Plates: Type LP: Die-stamped metal legend plate with mounting hole and positioning key for attachment to panel mounted operators' devices. Engraved paint-filled characters as specified.
- C. Wire & Terminal Markers: Self-adhering, pre-printed vinyl with self-laminating wrap around strip. Markers shall be legible after termination. Brady B191 series, Thomas & Betts WSL series or equal.
- D. Conductor Phase Markers: Thomas & Betts WCPHAS series or similar in addition to colored marking as specified under this section of the specifications.

2.15 GROUNDING AND BONDING

- A. Ground Rods
- B. Manufacturer: Blackburn, Erico, or approved Equal
- C. Size: 3/4" x 10' Ground Rods
- D. Grounding Electrode Conductor, 2/0 for foundation foots, and per NEC.
- E. Grounding Well - Christy Box, Valve Box

PART 3 EXECUTION

3.01 GENERAL

- A. General: Exact locations of distances and devices shall be taken from field measurements and approved by the architect prior to rough in.

- B. Provide all wiring connections for equipment furnished under other sections of the contract documents.

3.02 CONDUIT AND RACEWAY APPLICATIONS

- A. Rigid Steel Conduit: For all exterior applications, all conduits larger than 2" trade diameter, indoor, below eight (8) feet, hazardous locations.
- B. Electrical Metallic Tubing (EMT): Interior only and above eight (8) feet or when entering a panel from above. Shall not be permitted in hazardous locations per NFPA 70.
- C. Liquid tight Flexible Metallic Conduit: In damp and wet locations for connections to motors, transformers, vibrating equipment and machinery. Connections to all pump motors, flow switches, and similar devices.
- D. Rigid Galvanized: Install for all underground and exterior runs. Minimum conduit size shall be 3/4".
- E. PVC: Install for underground electrical service and underground branch circuiting.

3.03 WIRE

- A. Wire Sizes: Provide no wire smaller than #12 for lighting, receptacles or other circuits. Provide stranded wire for wire larger than #10.
- B. Wires installed in exterior locations shall be THWN.
- D. THHN conductors shall be installed in interior locations and consistent with NEC Article 334.

3.04 CONDUIT INSTALLATION

- A. General
 - 1. All conduit runs shown on the plans are sized based on the use of rigid steel conduit and THWN copper conductors. If conductor type is changed the contractor shall be responsible for resizing conduits to meet code. In no case is conduit to be sized smaller than 3/4" trade diameter.
 - 2. Low voltage wiring shall be installed in conduit, minimum 3/4" trade diameter.
 - 3. Conduits shall be tightly covered and well protected during construction using metallic bushings and bushing "pennies" to seal open ends.
 - 4. In making joints in rigid steel conduit, ream conduit smooth after cutting and threading.
 - 5. Clean any conduit in which moisture or any foreign matter has collected before pulling in conductors. Paint all field threaded joints to prevent corrosion.
 - 6. In all empty conduits or ducts, install an 1100 pound tensile strength polyethylene pulling rope.
 - 7. Conduit systems shall be electrically continuous throughout. Install code size, uninsulated, copper grounding conductors in all conduit runs, grounding conductor shall be bonded to conduit, equipment frames and properly grounded.
- B. Layout:
 - 1. All new conduits shall be concealed. Any field conditions that does not allow concealment of conduits shall be reviewed with the Architect prior to rough-in.
 - 2. Locations of conduit runs shall be planned in advance of the installation and coordinated with concrete work, plumbing and framing.
 - 3. Where practical install conduits in groups in parallel vertical or horizontal runs and at elevations that avoid unnecessary off-sets.
 - 4. Low voltage conduit shall be grouped separately and labelled every 10 ft interval as to system (i.e. fire, control, etc)
 - 5. Exposed conduit shall be run parallel or at right angles to the centerlines of the columns and beams.
 - 6. Conduits shall not be placed closer than 12 inches from a parallel hot water or steam line or three inches from such lines crossing perpendicular to the runs.
 - 7. In long runs of conduit, provide sufficient pull boxes per NEC inside buildings to facilitate pulling wires and cables. Support pull boxes from structure independent of conduit supports. These pull boxes are not shown on the plans.

- C. Supports:
 - 1. All raceway systems shall be secured to building structures using specified fasteners, clamps and hangers spaced according to Code.
 - 2. Support single runs of conduit using two hole pipe straps. Where run horizontally on walls in damp or wet locations, install "clamp blocks" to space conduit off the surface.
 - 3. Multiple conduit runs shall be supported using "trapeze" hangers fabricated from 3/8 inch diameter, threaded steel rods secured to building structures. Fasten conduit to construction channel with standard two hole pipe clamps. Provide lateral seismic bracing for hangers.
- D. Installation
 - 1. Locate and install anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
 - 2. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
 - 3. Do not drill or cut structural members.
 - 4. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
 - 5. Install surface-mounted cabinets and panelboards with minimum of four anchors.
 - 6. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1 inch (25 mm) off wall.
 - 7. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- E. Terminations and Joints
 - 1. Raceways shall be joined using specified couplings or transition couplings where dissimilar raceway systems are joined.
 - 2. Rigid conduit connection to enclosures shall be made by Myers type grounding hubs only. EMT connections to enclosures shall be made with compression connector with grounding lock-nuts or bushings.
 - 3. Conduit terminations exposed at weatherproof enclosures and cast outlet boxes shall be made watertight using appropriate connectors and hubs. Install expansion couplings where any conduit crosses a building separation or expansion joint
 - 4. Install cable sealing bushings on all conduits originating outside the building walls and terminating in switchgear, cabinets or gutters inside the building. Install cable sealing bushings or caulk conduit terminations in all grade level or below grade exterior pull, junction or outlet boxes.
- F. Penetrations:
 - 1. Furnish and install metal sleeves for all exposed interior conduit runs passing through concrete floors or walls. Following conduit installation, seal all penetrations using non-iron bearing, chloride free, non-shrinking, dry-pack, grouting compound.
 - 2. Install specified watertight conduit entrance seals and membrane clamps at all below grade wall and floor penetrations. Conduits penetrating exterior building walls and building floor slab shall be insulated rigid steel.
 - 3. Conduits penetrating rated walls, floors, etc. shall be fireproofed.

3.05 CABLE AND WIRE INSTALLATION

- A. Examination
 - 1. Verify that interior of building has been protected from weather.
 - 2. Verify that mechanical work likely to damage wire and cable has been completed.
 - 3. Verify that raceway installation is complete and supported.
 - 4. Verify that field measurements are as indicated.
- B. Preparation
 - 1. In existing conduits that will be reused, pull out existing conductors.
 - 2. Completely and thoroughly swab raceway before installing wire.

3. Use 50/50 solution of Simple Green. Use CO2 to blow water and soap into conduit - let soak to break up dried out pulling compounds, then pull conductors. Pull one conductor at a time if will not pull all out together.
- C. General:
1. Conductors shall not be in conduit until all work of any nature that may cause injury is completed. Care should be taken in pulling conductors that insulation is not damaged. U.L. approved non-petroleum base and insulating type pulling compound shall be used as needed.
 2. All cables shall be installed and tested in accordance with manufacturer's requirements and warranty.
 3. Block and tackle, power driven winch or other mechanical means shall not be used in pulling conductors of size smaller than AWG # 1.
- D. Splicing and Terminating:
1. All aspects of splicing and terminating shall be in accordance with cable manufacturer's published procedures.
 2. Make up all splices in outlet boxes with connectors as specified herein with separate tails of correct color to be made up to splice. Provide at least six (6) inches of tails packed in box after splice is made up.
 3. All wire and cable in panels, control centers and equipment enclosures shall be bundled and clamped.
 4. Encapsulate splices in exterior outlet, junction and pull boxes using insulating resin kits. All splices for exterior equipment in pump rooms shall be made up watertight.
 5. Insulate mechanical compression taps AWG # 1/0 and larger using pre-molded, snap-on insulating boots or specified conformable insulating putty overwrapped with two half-lapped layers of insulating tape.
- E. Identification:
1. Securely tag all branch circuits, noting the purpose of each. Mark conductors with vinyl wrap-around markers. Where more than two conductors run through a single outlet, mark each circuit with the corresponding circuit number at the panelboard.
 2. Color code conductors size #6 and larger using specified phase color markers and identification tags.
 3. All terminal strips are to have each individual terminal identified with specified vinyl markers.
 4. All identification shall be legible and readable after completion of installation.

3.06 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquid tight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

3.07 INSTALLATION OF BOXES

- A. General:
 - 1. Leave no un-used openings in any box. Install close-up plugs as required to seal openings.
 - 2. Exposed outlet boxes and boxes in damp or wet locations shall be cast metal with gasketed cast metal cover plates.
- B. Box Layout:
 - 1. Outlet boxes shall be installed at the locations and elevations shown on the drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.
 - 2. Install junction or pullboxes where required to limit bends in conduit runs to not more than 360 degrees or where pulling tension achieved would exceed the maximum allowable for the cable to be installed. Consult wire and cable manufacturer.

3.08 INSTALLATION OF WIRING DEVICES

- A. General
 - 1. Install all devices flush mounted unless otherwise noted on the drawings. Comply with layout drawings for general locations. Consult Architect or Owner for locations that have conflict with other devices or manner not suitable for installation. Avoid place devices behind open doors.
 - 2. Align devices horizontally and vertically. Device plates shall be aligned vertically with tolerance of 1/16". All four edges of device plates shall be in contact with the wall surface.
 - 3. Mounting height as indicated on the drawings and according to ADA requirements.
 - 4. Install device plates on all outlet boxes. Provide blank plates for all empty, spare, and boxes for future use.
 - 5. Securely fasten devices into boxes and attach appropriate cover plates.
 - 6. Caulk around edges of outdoor device plates and boxes when rough wall surfaces prevent raintight seal. Use caulking materials approved by Architect/Engineer.
 - 7. Fireproof around opening of devices located or penetrating fire rated construction assemblies.
- B. Identification
 - 1. Label all outlets and switches. Mark each wiring device where circuits and panel supply is derived from.
 - 2. All identification shall be legible and readable after completion of installation.

3.09 INSTALLATION OF FUSES AND DISCONNECT SWITCHES

- A. Fuses shall be installed where noted on plans. Sizes are based on design data provided by air conditioning mfg. Listed or labeled equipment must be in accordance with instructions included in the listing or labeling. Be sure to observe maximum branch circuit fuse size labels.
- B. Disconnect switches shall be mounted on the units. Coordinate with mechanical contractor to ensure switches are not mounted on a removable access panel.
- C. Label each disconnect fuse with equipment tag as indicated in the single line diagram, or as directed.

3.10 ELECTRICAL EQUIPMENT GROUNDING

- A. Ground non-current carrying metal parts of electrical equipment enclosures, frames, conductor raceways or cable trays to provide a low impedance path for line-to-ground fault current and to bond all non-current carrying metal parts together. Install a ground conductor in each raceway system in addition to conductors shown. Equipment ground conductor shall be electrically and mechanically continuous from the electrical circuit source to the equipment to be grounded. Size ground conductors per NEC 250 unless larger conductors are shown on the drawings.
- B. Grounding conductors shall be identified with green insulation, except where a bare ground conductor is specified. Where green insulation is not available, on larger sizes, black insulation shall be used and suitably identified with green tape at each junction box or device enclosure.

- C. Install metal raceway couplings, fittings and terminations secure and tight to insure good ground continuity. Provide insulated grounding bushing and bonding jumper where metal raceway is not directly attached to equipment metal enclosure and at concentric knock-outs.
- D. Motors shall be connected to equipment ground conductors with a conduit grounding bushing and with a bolted solderless lug connection on the metal frame.
- E. Conduit terminating in concentric knockouts at panelboards, cabinets and gutters shall have insulated grounding bushings and bonding jumpers installed interconnecting all such conduits and the panelboard cabinet, gutter, etc.
- F. Performance: Measure ground resistance, 25 Ohms or less.

3.11 BONDING

- A. Bonding shall be provided to assure electrical continuity and the capacity to conduct safely any fault current likely to be imposed.
- B. Bonding shall be in accordance with NEC Article 250, Part V

3.12 WORKMANSHIP

- A. Preparation, handling, and installation shall be in accordance with manufacturer's written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified. Coordinate work and cooperate with others in furnishing and placing this work. Work to reviewed shop drawings for work done by others and to field measurements as necessary to properly fit the work.
- B. Conform to the National Electrical Contractor's Association "Standard of Installation" for general installation practice.

3.13 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

END OF SECTION

**SECTION 26 24 16
PANELBOARDS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Power distribution panelboards.
- B. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 00 Electrical Basic Materials and Methods

1.03 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e (Amended 2017).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- E. NEMA PB 1 - Panelboards; 2011.
- F. NEMA PB 1.1 – General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; 2013.
- G. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.
- H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 50E- Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- K. UL 67 - Panelboards; Current Edition, Including All Revisions.
- L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
 - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.

1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
 1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.
 2. Include wiring diagrams showing all factory and field connections.
 3. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
 4. Include documentation of listed series ratings upon request.
 5. Identify mounting conditions required for equipment seismic qualification.
- D. Manufacturer's equipment seismic qualification certification.
- E. Source Quality Control Test Reports: Include reports for tests designated in NEMA PB 1 as routine tests.
- F. Field Quality Control Test Reports.
- G. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- H. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.
- I. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.
- J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 01 6000 - Product Requirements, for additional provisions.
 2. Panelboard Keys: Two of each different key.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Maintain ambient temperature within the following limits during and after installation of panelboards:

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. ABB/GE: www.geindustrial.com/#sle.
- B. Eaton Corporation: www.eaton.com/#sle.
- C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
- D. Or approve equal.

2.02 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature:
- C. Short Circuit Current Rating:
 - 1. Provide panelboards with listed short circuit current rating 10K AIC. Match breakers on existing panels.
- D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - 3. Fronts:
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.03 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:

- a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - 1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
3. Conductor Terminations:
- a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
4. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 26 05 00.
- F. Install panelboards plumb.
- G. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.
- H. Provide minimum of six spare 1 inch (27 mm) trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.
- I. Provide grounding and bonding in accordance with Section 26 05 00.
- J. Install all field-installed branch devices, components, and accessories.
- K. Provide filler plates to cover unused spaces in panelboards.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 CLEANING

- A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION 26 24 16

SECTION 26 51 00
INTERIOR LIGHTING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Interior luminaires.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 00 Electrical Basic Materials and Methods

1.03 REFERENCE STANDARDS

- A. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; 2008.
- B. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; 2015, with Errata (2017).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- D. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; 2006.
- E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.
- I. UL 1598 - Luminaires; Current Edition, Including All Revisions.
- J. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
 - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
 - 3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
 - 4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
 - 2. Provide photometric calculations where luminaires are proposed for substitution upon request.

- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
- D. Field quality control reports.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide three year manufacturer warranty for LED luminaires, including drivers.

PART 2 PRODUCTS**2.01 LUMINAIRE TYPES**

- A. Furnish products as indicated in luminaire schedule included on the drawings.

2.02 LUMINAIRES

- A. Manufacturers:
 - 1. Lithonia Lighting;
 - 2. 3G Lighting;
 - 3. A-Light Lighting;
 - 4. Or approved equal.
- B. Provide products that comply with requirements of NFPA 70.
- C. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- D. Provide products listed, classified, and labeled as suitable for the purpose intended.
- E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
- I. Track Lighting Systems: Provide track compatible with specified track heads, with all connectors, power feed fittings, dead ends, hangers and canopies as necessary to complete installation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 05 00 as required for installation of luminaires provided under this section.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install products in accordance with manufacturer's instructions.
- D. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- E. Provide required support and attachment in accordance with Section 26 0529.
- F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- G. Suspended Ceiling Mounted Luminaires:
 - 1. Do not use ceiling tiles to bear weight of luminaires.
 - 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 - 3. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
 - 4. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- H. Recessed Luminaires:
 - 1. Install trims tight to mounting surface with no visible light leakage.

- I. Suspended Luminaires:
 - 1. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
- J. Install accessories furnished with each luminaire.
- K. Bond products and metal accessories to branch circuit equipment grounding conductor.
- N. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.
- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.
- B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.

3.06 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

END OF SECTION 26 51 00

SECTION 28 46 21.11
ADDRESSABLE FIRE-ALARM SYSTEMS**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- B. Section Includes:
 - 1. Notification Appliances.

1.03 DEFINITIONS

- A. EMT: Electrical Metallic Tubing.
- B. FACP: Fire Alarm Control Panel.
- C. HLI: High Level Interface.
- D. NICET: National Institute for Certification in Engineering Technologies.
- E. PC: Personal computer.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product, including furnished options and accessories.
 - 1. Include construction details, material descriptions, dimensions, profiles, and finishes.
 - 2. Include rated capacities, operating characteristics, and electrical characteristics.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Seismic Qualification Data: Certificates, for fire-alarm control unit, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
 - 4. Field quality-control reports.

1.06 SAMPLE WARRANTY: FOR SPECIAL WARRANTY.**1.07 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.
 - 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 - b. Provide "Fire Alarm and Emergency Communications System Record of Completion Documents" according to the "Completion Documents" Article in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
 - c. Complete wiring diagrams showing connections between all devices and equipment. Each conductor shall be numbered at every junction point with indication of origination and termination points.
 - d. Riser diagram.
 - e. Device addresses.

- f. Air-sampling system sample port locations and modeling program report showing layout meets performance criteria.
 - g. Record copy of site-specific software.
 - h. Provide "Inspection and Testing Form" according to the "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:
 - 1) Equipment tested.
 - 2) Frequency of testing of installed components.
 - 3) Frequency of inspection of installed components.
 - 4) Requirements and recommendations related to results of maintenance.
 - 5) Manufacturer's user training manuals.
 - i. Manufacturer's required maintenance related to system warranty requirements.
 - j. Abbreviated operating instructions for mounting at fire-alarm control unit and each annunciator unit.
- B. Software and Firmware Operational Documentation:
- 1. Software operating and upgrade manuals.
 - 2. Device address list.
 - 3. Printout of software application and graphic screens.

1.08 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- 1. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
 - 2. Smoke Detectors, Fire Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type.
 - 3. Detector Bases: Quantity equal to two percent of amount of each type installed, but no fewer than one unit of each type.
 - 4. Keys and Tools: One extra set for access to locked or tamper-proofed components.
 - 5. Audible and Visual Notification Appliances: 3 of each type installed.
 - 6. Fuses: Two of each type installed in the system. Provide in a box or cabinet with compartments marked with fuse types and sizes.

1.09 QUALITY ASSURANCE

- A. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level III technician.

1.10 PROJECT CONDITIONS

- A. Perform a full test of the existing system prior to starting work. Document any equipment or components not functioning as designed.
- B. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:
- 1. Notify Construction Manager and Owner no fewer than seven days in advance of proposed interruption of fire-alarm service.
 - 2. Do not proceed with interruption of fire-alarm service without Construction Manager's written permission.
- C. Use of Devices during Construction: Protect devices during construction unless devices are placed in service to protect the facility during construction.

1.11 SEQUENCING AND SCHEDULING

- A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service, and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

- B. Equipment Removal: After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

1.12 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. See contract drawings for device model numbers.
- B. Source Limitations for Fire-Alarm System and Components: Components shall be compatible with, and operate as an extension of, existing system. Provide system manufacturer's certification that all components provided have been tested as, and will operate as, a system.
- C. Noncoded, UL-certified addressable system, with multiplexed signal transmission and voice/strobe evacuation.
- D. All components provided shall be listed for use with the selected system.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. System Supervisory Signal Actions:
 - 1. Initiate notification appliances.
 - 2. Identify specific device initiating the event at fire-alarm control unit and remote annunciators.
 - 3. Record the event on system printer.
 - 4. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.
 - 5. Transmit system status to building management system.
 - 6. Display system status on graphic annunciator.

2.3 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

2.4 NOTIFICATION APPLIANCES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. System Sensor.
 - 2. Wheelock; a brand of Eaton.
- B. General Requirements for Notification Appliances: Individually addressed, connected to a signaling-line circuit, equipped for mounting as indicated, and with screw terminals for system connections.
- C. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.
 - 1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

- D. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.
- E. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch-high letters on the lens.
 - 1. Rated Light Output:
 - a. 15/30/75/110 cd, selectable in the field.
 - 2. Mounting: Wall mounted unless otherwise indicated.
 - 3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
 - 4. Flashing shall be in a temporal pattern, synchronized with other units.
 - 5. Strobe Leads: Factory connected to screw terminals.
 - 6. Mounting Faceplate: Factory finished, red.
- F. Exit Marking Audible Notification Appliance:
 - 1. Exit marking audible notification appliances shall meet the audibility requirements in NFPA 72.
 - 2. Provide exit marking audible notification appliances at the entrance to all building exits.
 - 3. Provide exit marking audible notification appliances at the entrance to areas of refuge with audible signals distinct from those used for building exit marking.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.
 - 1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.
- B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."
 - 1. Devices placed in service before all other trades have completed cleanup shall be replaced.
 - 2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.
- B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.
 - 1. Connect new equipment to existing control panel in existing part of the building.
 - 2. Connect new equipment to existing monitoring equipment at the supervising station.
 - 3. Expand, modify, and supplement existing control equipment as necessary to extend existing control functions to the new points. New components shall be capable of merging with existing configuration without degrading the performance of either system.
- C. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.

- D. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.
- E. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.
- F. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.
- G. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.3 PATHWAYS

- A. Pathways above recessed ceilings and in non-accessible locations may be routed exposed.
 - 1. Exposed pathways located less than 96 inches above the floor shall be installed in EMT.
- B. Pathways shall be installed in EMT.
- C. Exposed EMT shall be painted red enamel.

3.4 CONNECTIONS

- A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Section 087100 "Door Hardware." Connect hardware and devices to fire-alarm system.
 - 1. Verify that hardware and devices are listed for use with installed fire-alarm system before making connections.
- B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

3.5 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with manufacturer requirements for identification.
- B. Install framed instructions in a location visible from fire-alarm control unit.

3.6 GROUNDING

- A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.
- B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 - 1. Visual Inspection: Conduct visual inspection prior to testing.
 - a. Inspection shall be based on completed record Drawings and system documentation that is required by the "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
 - b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
 - 2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
 4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
 5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
 6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
- C. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- D. Fire-alarm system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.
- F. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.
- G. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.8 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 2. Perform tests in the "Test Methods" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 3. Perform tests per the "Testing Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3.9 SOFTWARE SERVICE AGREEMENT

- A. Comply with UL 864.
- B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.
- C. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.
1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.

3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Removal of existing vegetation
- B. Clearing vegetation, debris, trash and other materials within limits indicated
- C. Grubbing of vegetation within limits indicated
- D. Stripping of topsoil within limits indicated
- E. Removing above-grade site improvements within limits indicated
- F. Disposing of objectionable material

1.02 RELATED SECTIONS

- A. Section 31 20 00, Earth Moving
- B. Section 32 12 16, Asphalt Paving

1.03 DEFINITIONS

- A. ANSI: American National Standards Institute
- B. CAL-OSHA: California Occupational Safety and Health Administration
- C. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

1.04 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

1.05 PROJECT CONDITIONS

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose of in lawful manner.
- B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner's Representative. Avoid damaging materials designated for salvage.
- C. Unidentified Materials;

1. If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner's Representative.
2. If necessary, the Owner's Representative will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 - PRODUCTS**2.01 SOIL MATERIALS**

- A. Backfill excavations resulting from demolition operations with on-site or import materials conforming to engineered fill defined in Section 31 20 00, Earth Moving.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Protect and maintain benchmarks and survey control points during construction.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain during construction.

3.02 RESTORATION

- A. Restore damaged improvements to their original condition, as acceptable to the Owner's Representative.
- B. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, as directed by the Owner's Representative.
 1. Employ a qualified arborist, licensed in jurisdiction where the Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
 2. Replace trees that cannot be repaired and restored to full-growth status, as determined by the Owner's Representative.

3.03 UTILITIES

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner's Representative or others unless authorized in writing by the Owner's representative, and then only after arranging to provide temporary utility services according to requirements indicated.
- B. Coordinate utility interruptions with utility company affected.
- C. Do not proceed with utility interruptions without the permission of the Owner's Representative and utility company affected. Notify Owner's Representative and utility company affected two working days prior to utility interruptions.

3.04 CLEARING AND GRUBBING

- A. Areas to be graded shall be cleared of existing vegetation, rubbish, existing structures, and debris.
- B. Remove obstructions, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.

- C. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
- D. Use only hand methods for grubbing within drip line of remaining trees.

3.05 SITE STRIPPING

- A. Strippings and spoils shall be disposed at an off-site location, per geotechnical recommendations.
- B. Remove vegetation before stripping soil.
- C. Surface soils that contain organic matter should be stripped. In general, the depth of required stripping will be relatively shallow (i.e. less than 2 inches); deeper stripping and grubbing may be required to remove isolated concentrations of organic matter or roots.
- D. Remove trash, debris, weeds, roots, and other waste materials.
- E. Stockpile soil materials designated to remain on site at a location approved by the Owner's Representative at a location away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
- F. Do not stockpile soil within drip line of remaining trees.

3.06 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

3.07 BACKFILL

- A. Place and compact material in excavations and depressions remaining after site clearing in accordance with Section 31 20 00, Earth Moving.

3.08 DISPOSAL

- A. Remove surplus soil material, unsuitable soil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.

END OF SECTION 31 10 00

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SECTION 31 20 00

EARTH MOVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavation and/or embankment from existing ground to subgrade, including soil sterilant, for driveways, parking areas, walks, paths, and any other site improvements called for on the Plans.

1.02 RELATED DOCUMENTS

- A. ASTM
 - 1. D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. D1586, Method for Penetration Tests and Split-Barrel Sampling of Soils
 - 3. D2487, Classification of Soils for Engineering Purposes
 - 4. D3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - 5. D4318, Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils
 - 6. E329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
 - 7. E548, Guide for General Criteria Used for Evaluating Laboratory Competence
- B. California Building Code, California Code of Regulations, Title 24, Part 2, Chapter 18, Soils and Foundations, and Chapter 33, Safeguards During Construction
- C. Caltrans Standard Specifications, 2018
 - 1. Section 17, General
 - 2. Section 19, Earthwork
- D. CAL/OSHA, Title 8.

1.03 DEFINITIONS

- A. Borrow: Approved soil material imported from off-site for use as Structural Fill, Select Fill or Backfill.
- B. Excavation: Removal of material encountered above subgrade elevations.
 - 1. Authorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions as shown on plans or authorized by the Geotechnical Engineer or Owner's Representative.
 - 2. Unauthorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions without authorization by the Geotechnical Engineer or Owner's Representative. Unauthorized excavation shall be without additional compensation.
- C. Geotechnical Testing Agency: An independent testing agency qualified according to ASTM E329 to conduct soil materials and rock definition testing, as documented according to ASTM D3740 and ASTM E548.
- D. Structural Backfill: Soil materials approved by the Geotechnical Engineer or Owner's Representative and used to fill excavations resulting from removal of existing below grade facilities, including trees.

- E. Structural Fill: Soil materials approved by the Geotechnical Engineer or Owner's Representative and used to raise existing grades.
- F. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material $\frac{3}{4}$ cubic yards or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D1586, exceeds a standard penetration resistance of 100 blows/2 inches.
- G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
- H. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials.
- I. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.
- J. Unsuitable Material: Any soil material that is not suitable for a specific use on the Project. The Geotechnical Engineer or Owner's Representative will determine if a soil material is unsuitable.
- K. Relative Compaction: In-place dry density of soil expressed as percentage of maximum dry density of same materials, as determined by laboratory test procedure ASTM D1557.
- L. Utilities: onsite underground pipes, conduits, ducts and cables.

1.04 SUBMITTALS

- A. Samples:
 - 1. If required by the Geotechnical Engineer or Owner's Representative, provide 20 pound samples, sealed in airtight containers, tagged with source locations and suppliers of each proposed soil material from on-site or borrow sources, 72 hours prior to use. Do not import materials to the Project without written approval of the Geotechnical Engineer or Owner's Representative.
 - 2. Provide materials from same source throughout work. Change of source requires approval of the Geotechnical Engineer or Owner's Representative.
- B. Classification according to ASTM D2487 of each onsite or borrow soil material proposed for fill and backfill.
 - 1. Laboratory compaction curve in conformance with ASTM D1557 for each onsite or borrow soil material proposed for fill and backfill.

1.05 QUALITY ASSURANCE

- A. Conform all work in accordance with Caltrans Standard Specification Section 17, General and Section 19, Earthwork.
- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D1557.
- C. Upon completion of the construction work, certify that all compacted fills and foundations are in place at the correct locations, and have been constructed in accordance with sound

construction practice. In addition, certify that the materials used are of the types, quality and quantity required by these Technical Specifications and the Geotechnical Report. The Contractor shall be responsible for the stability of all fills and backfills constructed by his forces and shall replace portions that in the opinion of the Geotechnical Engineer or Owner's Representative have been displaced or are otherwise unsatisfactory due to the Contractor's operations.

- D. Finish subgrade tolerance at completion of grading:
 - 1. Paved areas: ± 0.05 feet
 - 2. Other areas: ± 0.10 feet

1.06 PROJECT CONDITIONS

- A. Promptly notify the Owner's Representative of surface or subsurface conditions differing from those disclosed in the Geotechnical Report. First notify the Owner's Representative verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents and disclosed in the Geotechnical Report will be allowed unless the Contractor has notified the Owner's Representative in writing of differing conditions prior to the Contractor starting work on affected items.
- B. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- C. Temporarily stock-pile fill material in an orderly and safe manner and in a location approved by the Owner's Representative.
- D. Environmental Requirements: When unfavorable weather conditions necessitate interrupting earthwork operation, areas shall be prepared by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion. After interruption, compaction specified in last layer shall be re-established before resuming work.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. General: On-site soils are suitable for use as general engineered fill provided they do not contain deleterious matter, organic material, or rock/cemented soil fragments material larger than 3 inches in maximum dimension. If undocumented on-site fill soils are encountered within the limits of the proposed building expansion and loose or debris-laden soils are encountered in other areas, these soils shall be completely removed and replaced by engineered compacted fill.
- B. Imported soil (or select fill) shall be well-graded, very low to non-expansive slightly cohesive silty sand or sandy silt. The material shall have an organic content of less than 3% by weight, containing no rocks or lumps larger than three inches in greatest dimension, have a maximum expansion index (per ASTM D4829) of 20, and have a maximum plasticity index of 15. The material shall have 100% passing on the 3-inch sieve, 75%-100% passing on the No. 4 sieve and 15%-40% passing on the No. 200 sieve. The grading contractor shall provide analytical test results or other suitable environmental documentation indicating imported fill is free of hazardous materials at least three business days before use at the site.

2.02 SOIL STERILANT

- A. Commercial chemical for weed control, registered by EPA. Provide granular, liquid or wettable powder form.

PART 3 - EXECUTION**3.01 GENERAL**

- A. Perform work in accordance with Caltrans Standard Specification Section 19, Earthwork, as modified by the Contract Documents.
- B. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.
- C. The use of explosives will not be permitted.
- D. Grading and earthwork operations shall be observed by a representative of the City for conformance with the project plans/specifications and the geotechnical recommendations. This work includes site preparation, selection of satisfactory materials, and placement and compaction of the subgrades and fills. Sufficient notification prior to commencement of earthwork is essential to make certain that the work will be properly observed.

3.02 CONTROL OF WATER AND DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the site and surrounding area. Provide dewatering equipment necessary to drain and keep excavations and site free from water.
- B. Dewater during backfilling operation so that groundwater is maintained a least 1 foot below level of compaction effort.
- C. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.
- D. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations.
- E. Maintain dewatering system in place until dewatering is no longer required.

3.03 WET WEATHER CONDITIONS

- A. Do not prepare subgrade, place or compact soil materials if subgrade or materials are above optimum moisture content.
- B. If the Geotechnical Engineer or Owner's Representative allows work to continue during wet weather conditions, conform to supplemental recommendations provided by the Geotechnical Engineer or Owner's Representative.

3.04 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.

- C. Be solely responsible for all bracing and shoring and, if requested by the Owner's Representative, submit details and calculations to the Contractor. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner's Representative.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.05 EXCAVATION

- A. Excavate earth and rock to lines and grades shown on plans and to the neat dimensions indicated on the plans, required herein or as required to satisfactorily compact backfill.
- B. Remove and dispose of large rocks, pieces of concrete and other obstructions encountered during excavation.
- C. Excavation through buried concrete and other unknown obstructions will require specialized techniques for demolition and removal.
- D. Where forming is required, excavate only as much material as necessary to permit placing and removing forms.
- E. Provide supports, shoring and sheet piles required to support the sides of excavations or for protection of adjacent existing improvements.

3.06 GRADING

- A. Uniformly grade the Project to the elevations shown on plans.
- B. Finish ditches, gutters and swales to the sections, lines and grades indicated and to permit proper surface drainage.
- C. Round tops and bottoms of slopes as indicated or to blend with existing contours.

3.07 SUBGRADE PREPARATION

- A. Subgrade Preparation: All subgrade soils shall be compacted and moisture-conditioned per the project specifications.
- B. Following excavation to the required grades, subgrades beneath new building mat slabs shall be scarified to a depth of at least eight inches, moisture-conditioned to at least two percent above optimum moisture content, and compacted to at least 90 percent relative compaction. Prior to placement of select fill, the soil subgrade shall be kept moist until it is covered by fill or improvements. The soil subgrade shall be kept moist until it is covered by fill. The City shall observe subgrade preparation and placement of select fill.
- C. Subgrades within eight inches of finished subgrade in areas to receive vehicular traffic shall be moisture-conditioned to above optimum moisture content and compacted to at least 95 percent relative compaction.
- D. Soil subgrades shall be kept moist during construction. To achieve satisfactory compaction of the subgrade and fill materials, it may be necessary to adjust the water content at the

time of construction. Subgrade that has been permitted to dry out and loosen or develop desiccation cracking shall be scarified, moisture conditioned, and re-compacted as recommended above. Fill material shall be evenly spread and compacted in lifts not exceeding eight inches in pre-compacted thickness.

- E. Over-excavate any remaining soft (pumping) areas down to firm soil and backfill the area.
- F. Subgrade shall be maintained in a moist, but not wet, condition by periodically sprinkling water prior to the placement of additional fill or installation of roads. Subgrade that has been permitted to dry out and loosen or develop desiccation cracking shall be scarified, moisture conditioned, and re-compacted as recommended above.
- G. Prepare subgrades under the structural section of paved areas, curbs, gutters, walks, structures, other surface facilities and areas to receive structural fill.
- H. Protect utilities from damage during compaction of subgrades and until placement of final pavements or other surface facilities.

3.08 FILL PLACEMENT AND COMPACTION

- A. Place fill in uniformly moisture conditioned and compacted lifts not exceeding 8 inches in loose thickness. Each lift shall be thoroughly moisture-conditioned and compacted to 90 percent before successive fill layers are placed. Fill consisting of onsite sandy clay/clayey sand shall be moisture-conditioned to at least two percent above optimum moisture.
- B. Fill placed within six inches of soil subgrade for pavement that will be subjected to vehicular traffic shall be compacted to at least 95 percent relative compaction and be non-yielding.
- C. In order to achieve satisfactory compaction in the subgrade and fill soils, it may be necessary to adjust the soil moisture content at the time of soil compaction per geotechnical recommendations. This may require that water be added and thoroughly mixed into any soils which are too dry or that scarification and aeration be performed in any soils which are too wet.
- D. Place structural fill on prepared subgrade.
- E. Do not drop fill on structures. Do not backfill around, against or upon concrete or masonry structures until structure has attained sufficient strength to withstand loads imposed and the horizontal structural system had been installed.
- F. Do not compact by ponding, flooding or jetting.
- G. Perform compaction using rollers, pneumatic or vibratory compactors.

3.09 SOIL STERILIZATION

- A. Apply soil sterilant to areas indicated, such as beneath asphalt concrete pavement, brick pavement, concrete pavement and at grade concrete slabs, including sidewalks, curbs and gutters. Also where indicated apply soil sterilant below expansion and control joints and at areas where pipes, ducts or other features penetrate slabs.
- B. Apply soil sterilant uniformly and at the rates recommended by the manufacturer.
- C. Apply soil sterilant to prepared subgrade, or after installation of aggregate base as recommended by the manufacturer.

3.10 DISPOSAL

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

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SECTION 32 11 00

PAVEMENT BASE COURSE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base

1.02 RELATED SECTIONS

- A. Section 31 20 00, Earth Moving

1.03 RELATED DOCUMENTS

- A. ASTM:
 - 1. D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. D3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
 - 3. E329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
 - 4. E548, Guide for General Criteria Used for Evaluating Laboratory Competence

- B. Caltrans Standard Specifications, 2018

- 1. Section 26, Aggregate Bases

1.04 DEFINITIONS

- A. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material $\frac{3}{4}$ cubic yards or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D1586, exceeds a standard penetration resistance of 100 blows/2 inches.
- B. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
- C. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base or topsoil materials. Perform work in accordance with Section 31 20 00, Earth Moving.

1.05 SUBMITTALS

- A. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

1.06 QUALITY ASSURANCE

- A. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D1557.

- B. Perform installation of base materials under the observation of the Owner. Notify the Owner at least 24 hours prior to commencement of base material installation and at least 48 hours prior to testing.
- C. Do not project the finish surface of aggregate base above the design subgrade.
- D. Finish grade tolerance at completion of base installation: +0.05 feet

1.07 PROJECT CONDITIONS

- A. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- B. Temporarily stockpile material in an orderly and safe manner and in a location approved by the Owner.

PART 2 - PRODUCTS**2.01 AGGREGATE BASE**

- A. Material: Class 2 in accordance with Caltrans Standard Specification Section 26, Aggregate Bases.

PART 3 - EXECUTION**3.01 GENERAL**

- A. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.

3.02 WET WEATHER CONDITIONS

- A. Do not place or compact subgrade if above optimum moisture content.

3.03 AGGREGATE BASE

- A. Watering, Spreading and Compacting: In accordance with Caltrans Standard Specification Section 26-1.03D, Spreading and 26-1.03E, Compacting.
- B. Aggregate base for pavement base course should be compacted to at least 95 percent relative compaction, moisture-conditioned and be non-yielding.

3.04 DISPOSAL

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

SECTION 32 12 16

ASPHALT PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Hot Mix Asphalt
- B. Tack coat
- C. Hot Mix Asphalt paving
- D. Pavement grinding

1.02 RELATED SECTIONS

- A. Section 31 20 00, Earth Moving
- B. Section 32 11 00, Pavement Base Course

1.03 RELATED DOCUMENTS

- A. ASTM
 - 1. D979: Standard Practice for Sampling Bituminous Paving Mixtures
 - 2. D1188: Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
 - 3. D2041: Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
 - 4. D2726: Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
 - 5. D2950: Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
 - 6. D3549: Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
- B. Caltrans Standard Specifications, 2018
 - 1. Section 20: Landscape
 - 2. Section 39: Asphalt Concrete
 - 3. Section 88: Engineering Fabrics
 - 4. Section 92: Asphalt Binder
 - 5. Section 94: Asphaltic Emulsions
 - 6. Section 96: Geosynthetics

1.04 DEFINITIONS

- A. ASTM: American Society for Testing Materials.
- B. Caltrans: State of California, Department of Transportation

1.05 QUALITY ASSURANCE

- A. Testing Agency: Contractor will engage a qualified independent testing agency to perform field inspections and tests and to prepare test reports.
 - 1. Testing agency will conduct and interpret tests and state in each report whether tested work complies with or deviates from specified requirements.

- B. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.
- C. Thickness of hot mix asphalt: In-place compacted thickness of asphalt courses will be determined according to ASTM D3549.
- D. Surface Smoothness: Finished surface of each asphalt course will be tested for compliance with smoothness tolerances.
- E. In-Place Density: Samples of uncompacted paving mixtures and compacted pavement will be secured by testing agency according to ASTM D979.
 - 1. Reference maximum theoretical density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D2041, and compacted according to job-mix specifications.
 - 2. In-place density of compacted pavement may be determined by testing core samples according to ASTM D1188 or ASTM D2726.
 - a. One core sample may be taken for every 1000 square yard or less of installed pavement, but in no case will fewer than 3 cores be taken.
 - b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D2950 and correlated with ASTM D1188 or ASTM D2726.

1.06 SUBMITTALS

- A. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.
- B. Job-Mix Designs: Certificates signed by manufacturers certifying that each hot mix asphalt mix complies with requirements.
- C. Material Certificates: Certificates signed by manufacturers certifying that each material complies with requirements.

1.07 PROJECT CONDITIONS

- A. Environmental Limitations:
 - 1. Tack Coat: Minimum surface temperature of 60 F at application.
 - 2. Asphalt Base Course: Minimum surface temperature of 40 F and rising at application.
 - 3. Asphalt Surface Course: Minimum surface temperature of 60 F at application.
 - 4. Reinforcing Fabric: Air temperature is 50 F and rising and pavement temperature is 40 F and rising.

PART 2 - PRODUCTS

2.01 HOT MIX ASPHALT

- A. Type A In accordance with Caltrans Standard Specifications Section 39-2, Hot Mix Asphalt.
- B. Hot Mix Asphalt Materials:
 - 1. Asphalt Binder: Grade PG 64-10 in accordance with Caltrans Standard Specification Section 92, Asphalt Binders.
 - 2. Tack Coat: Grade SS1 in accordance with Caltrans Standard Specification Section 94, Asphaltic Emulsions.

- C. Aggregates: 1/2-inch max gradation for virgin aggregate and recycled asphalt pavement (RAP) in accordance with to Caltrans Standard Specification Section 39-2.02, Type A Hot Mix Asphalt.
- D. Soil Sterilant: In accordance with Caltrans Standard Specifications Section 20-5.03, Inert Ground Covers and Mulches.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.
- B. Soil subgrade and aggregate base in pavement area should be proof rolled with a loaded water truck. The ground should be non-yielding under this loading prior to the placement of subsequent pavement section courses. If necessary, perform subgrade preparation or remediation in accordance with Section 31 20 00, Earth Moving.
- C. Notify City of Oakland in writing of any unsatisfactory conditions. Do not begin paving until these conditions have been satisfactorily corrected.

3.02 PAVEMENT GRINDING

- A. Clean existing paving surface of loose or deleterious material immediately before pavement grinding.
- B. Grind conforms as indicated.

3.03 SOIL STERILANT

- A. Furnish and apply to areas per manufacturer's specifications.

3.04 SURFACE PREPARATION FOR AGGREGATE BASE MATERIALS

- A. General: Immediately before placing asphalt materials remove loose and deleterious material from substrate surfaces and ensure that prepared subgrade is ready to receive paving in accordance with Caltrans Standard Specification Section 39-2.01C(3)(b) and in accordance with Section 32 11 00, Pavement Base Course.
- B. Tack Coat: Apply uniformly and at specified rates between HMA layers, to vertical surfaces of curbs, gutters and construction joints, and to existing pavement, including planed surfaces, in accordance with Caltrans Standard Specification Section 39-2.01C(3)(f).
 - 1. Allow tack coat to cure undisturbed before paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.05 HOT MIX ASPHALT SPREADING AND COMPACTING EQUIPMENT

- A. Provide spreading and compacting equipment in accordance with Caltrans Standard Specification Section 39-2.01C (2).

3.06 HOT MIX ASPHALT PLACEMENT

- A. Place, spread and compact hot mix asphalt to required grade, cross section, and thickness in accordance with Caltrans Standard Specification Sections 39-2.01C(2), 39-2.01C(3), and 39-2.01C(8).

- B. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.07 JOINTS

- A. Construct joints to ensure continuous bond between adjoining paving sections in accordance with Caltrans Standard Specification Sections 39-2.01C(4)
 - 1. Construct joints free of depressions with same texture and smoothness as other sections of asphalt course.
 - 2. Clean contact surfaces and apply tack coat.
 - 3. Offset longitudinal joints in successive courses a minimum of 6 inches.
 - 4. Offset transverse joints in successive courses a minimum of 24 inches.
 - 5. Compact joints as soon as hot mix asphalt will bear roller weight without excessive displacement.

3.08 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact in accordance with Caltrans Standard Specification Sections 39-2.01.C (2).
- B. Compaction Requirements: Soil subgrade beneath pavement areas should be compacted to a minimum of 92 percent of maximum dry density. Import aggregate base, conforming to Caltrans Class 2 aggregate base, should be compacted to at least 95 percent relative compaction based on the laboratory test procedure ASTM D1557-12.
- C. Finish Rolling: Finish roll paved surfaces to remove roller marks while asphalt is still warm.
- D. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while still hot, with back of rake or smooth iron. Compact thoroughly using tamper or other satisfactory method.
- E. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh asphalt. Compact by rolling to specified density and surface smoothness.
- F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.09 INSTALLATION TOLERANCES

- A. Hot Mix Asphalt Pavement:
 - 1. Course thickness and surface smoothness shall be in accordance with Caltrans Standard Specification Section 39-2.01A(4)(i)(iii)
 - 2. Total Thickness: Not less than indicated.
- B. Trench Patch:
 - 1. Compacted surface: Within 0.01 foot of adjacent pavement.
 - 2. Do not create ponding.
- C. Adjust Covers:
 - 1. Compacted surface: Up to 0.01 foot higher, and no lower, than adjacent pavement.
 - 2. Do not create ponding.

END OF SECTION

SECTION 32 13 18

CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Materials for portland cement concrete
- B. Aggregate and aggregate grading for portland cement concrete
- C. Water for portland cement concrete
- D. Admixtures for portland cement concrete
- E. Proportioning for portland cement concrete
- F. Mixing and transporting portland cement concrete
- G. Formwork for cast in place portland cement concrete
- H. Embedded materials for portland cement concrete
- I. Steel reinforcement for portland cement concrete
- J. Placing and finishing portland cement concrete
- K. Curing portland cement concrete
- L. Protecting portland cement concrete

1.02 RELATED SECTIONS

- A. Section 31 20 00, Earth Moving
- B. Section 32 12 16, Asphalt Paving

1.03 RELATED DOCUMENTS

- A. ASTM Standards
 - 1. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 2. A1064, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - 3. C94, Standard Specification for Ready-mixed Concrete
 - 4. C150, Standard Specification for Portland Cement
 - 5. C260, Standard Specification for Air-Entraining Admixtures for Concrete
 - 6. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 - 7. C494, Standard Specification for Chemical Admixtures for Concrete.
 - 8. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use in Portland Cement
 - 9. C1017, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete

10. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
11. D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

- B. Caltrans Standard Specifications, 2018
1. Section 73: Concrete Curbs and Sidewalks
 2. Section 90: Concrete

1.04 DEFINITIONS

- A. ASTM: American Society for Testing and Materials

1.05 SUBMITTALS

- A. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.
- B. Concrete Mix Design: Have all concrete mixes designed by a testing laboratory and approved by the Consulting Engineer. Conform all mixes to the applicable building code requirement, regardless of other minimum requirements listed herein or on the Plans. Submit mix designs for review before use. Show proportions and specific gravities of cement, fine and coarse aggregate, and water and gradation of combined aggregates.
- C. Reinforcing Steel Shop-Drawings

1.06 QUALITY ASSURANCE

- A. Concrete shall be subject to quality assurance in accordance with Section 90 of the Caltrans Standard Specifications.
1. Slump tests: Have available, at job site, equipment required to perform slump tests. Make one slump test for each cylinder sample, from same concrete batch. Allowable maximum slump shall be 4 inches for walls and 3 inches for slabs on grade and other work.
- B. Certifications:
1. Provide Contractor at the time of delivery with certificates of compliance signed by both Contractor and Supplier containing the following statements:
 - a. Materials contained comply with the requirements of the Contract Documents in all respects.
 - b. Proportions and mixing comply with the design mix approved by the Consulting Engineer. Design mix shall have been field tested in accordance with the herein requirements of the Caltrans Standard Specifications and produces the required compressive strength under like conditions.
 - c. Statement of type and amount of any admixtures.
 2. Provide Contractor, at time of delivery, with certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.

1.07 DESIGNATION

- A. General: Whenever the 28 day compressive strength is designated herein or on the Plans is 3,600 psi or greater, the concrete shall considered to be designated by compressive strength. The 28 day compressive strength shown herein or on the plans which are less than 3,600 psi are shown for design information only and are not considered a requirement for acceptance of the concrete. Whenever the concrete is designated by class or as minor

concrete herein or on the Plans, the concrete shall contain the cement per cubic yard shown in Section 90-2 of the Caltrans Standard Specifications.

- B. Unless specified otherwise herein or on the Plans, portland cement concrete for curbs, gutters, sidewalks and their appurtenances such as island paving, curb ramps and driveways, shall be minor concrete as specified in Section 90-2 of the Caltrans Standard Specifications.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

- A. General: Type II or Type V cement conforming to the requirements of ASTM C150. Contractor may substitute pozzolan for portland cement in amounts up to 15% of the required mix unless high early strength concrete is specified. Pozzolan shall consist of Class F Fly Ash meeting the requirements of ASTM C618.
- B. Color: Contractor shall match color of existing concrete and coordinate with owner prior to construction.

2.02 AGGREGATE AND AGGREGATE GRADATION

- A. General: Fine and coarse aggregates shall be ¾ inch maximum size; clean and crushed aggregate free of materials which may cause staining. Aggregates shall conform to the requirements of section 90-1.02C of the Caltrans Standard Specifications.
- B. Aggregate Size and Gradation: Conform to the requirements of section 90-1.02C(4)(d) of the Caltrans Standard Specifications for 1-inch maximum combined aggregate.

2.03 WATER

- A. General: Water shall be clean, free from injurious amounts of oil, alkali, organic matter, or other deleterious material, and not detrimental to concrete per ASTM C94. Water shall conform to the requirements of section 90-1.02D of the Caltrans Standard Specifications, for mixing and curing portland cement concrete and for washing aggregates.

2.04 CHEMICAL ADMIXTURES

- A. Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain no more than 0.1 percent water-soluble chloride ions by mass of cementitious material. Admixtures shall conform to the requirements of section 90-1.02E of the Caltrans Standard Specifications and as noted herein or on the Plans.
 - 1. Air-Entraining Admixture: ASTM C260/C260M
 - 2. Water-Reducing Admixture: ASTM C494/C494M, Type A
 - 3. Retarding Admixture: ASTM C494/C494M, Type B
 - 4. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D
 - 5. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F
 - 6. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G
 - 7. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II

2.05 CLASSIFICATION OF PORTLAND CEMENT CONCRETE

- A. Unless specified otherwise herein or on the Plans, portland cement concrete for the following items shall be designated as follows:
 - 1. Curbs, Gutters, and Sidewalks: Minor concrete.
 - 2. Cast in Place Concrete Pipe: The concrete shall consist of a minimum of 564 pounds of portland cement per cubic yard of concrete.

3. Thrust Blocks: The concrete shall have a minimum compressive strength of 3,000 psi.
4. Sign and Fence Footings: The concrete shall consist of a minimum of 376 pounds of portland cement per cubic yard of concrete.
5. Water, Storm, and Sanitary Structures: The concrete shall consist of a minimum of 564 pounds of portland cement per cubic yard of concrete.

2.06 EXPANSION JOINT MATERIAL

- A. Material for expansion joints in portland cement concrete improvements shall be premolded non-extruding neoprene sponge rubber expansion joint fillers conforming to the requirements of ASTM D1752 Type I, with removable polystyrene or polyvinyl chloride strip mechanically attached to the top edge. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site. Unless specified otherwise herein or on the Plans, expansion joint thickness shall be as follows:
 1. Concrete Slope Protection, Gutter Lining, Ditch Lining and Channel Lining: ½ inch
 2. Structures: As indicated

2.07 REINFORCEMENT AND DOWELS

- A. Bar reinforcement for concrete improvements shall be deformed steel bars of the size or sizes called for on the plans conforming to the requirements of ASTM A615 for Grade 60 bars. Size and shape for bar reinforcement shall conform to the details shown or called for on the Plans. Substitution of wire mesh reinforcement for reinforcing bars will not be allowed.
- B. Slip dowels, where noted or called for on the Plans or detail drawings shall be smooth billet-steel bars as designated and conforming to the requirements of ASTM A615 for Grade 60 bars. Ends of bars inserted in new work shall be covered with a cardboard tube sealed with cork; no grease or oil shall be used.
- C. Mesh for reinforcement for concrete improvements shall be cold drawn steel wire mesh of the size and spacing called for on the plans conforming to the requirements of ASTM A1064. Size and extent of mesh reinforcement shall conform to the details shown or called for on the plans.
- D. Tie wire for reinforcement shall be eighteen (18) gauge or heavier, black, annealed conforming to the requirements of ASTM A1064.
- E. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

2.08 CURING AND SEALING MATERIALS

- A. Curing Compounds:
 1. Concrete surface repellent-vertical and/or flatwork: Repello surface treatment, invisible chemical treatment barrier system.
 2. Curing and sealing-exterior: Colorcure concrete cureseal manufactured by L.M. Scofield Company or approved equal. Color-matched, water-based curing and sealing compound that complies with ASTM C309.
 3. Color Conditioned Decorative Portland Cement Concrete: LITHOCHROME colorwax manufactured by L.M. Scofield Company or approved equal. Color-matched, water-based curing and sealing compound that complies with ASTM C309.

2.09 FORMS

- A. Conform to the requirements of Section 73-1.03C and Section 90-1.03B(5) of the Caltrans Standard Specifications.
- B. Tolerance: Not to deviate more than ¼ inch in 10 feet in grade and alignment.

2.10 PRECAST CONCRETE STRUCTURES

- A. Conform to the following Sections of Caltrans Standard Specifications:
 - 1. 51-7, Minor Structures
 - 2. 70-5.02, Flared End Sections

PART 3 - EXECUTION**3.01 STRUCTURAL EXCAVATION**

- A. Structural excavation may be either by hand, or by machine and shall be neat to the line and dimension shown or called for on the plans. Excavation shall be sufficient width to provide adequate space for working therein, and comply with CAL-OSHA requirements.
- B. Where an excavation has been constructed below the design grade, refill the excavation to the bottom of the excavation grade with approved material and compact in place to 95% of the maximum dry density as determined by ASTM D1557.
- C. Remove surplus excavation material remaining upon completion of the work from the job site, or condition it to optimum moisture content and compact it as fill or backfill on the site.

3.02 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner's Representative, submit details and calculations to the Contractor. The Contractor may forward the submittal to the Consulting Engineer for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Contractor.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.03 PLACING CONCRETE FORMS

- A. Form concrete improvements with a smooth and true upper edge. Side of the form with a smooth finish shall be placed next to concrete. Construct forms rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.

- B. Thoroughly clean all forms prior to placement and coat forms with an approved form oil in sufficient quantity to prevent adherence of concrete prior to placing concrete.
- C. Carefully set forms to the alignment and grade established and conform to the required dimensions. Rigidly hold forms in place by stakes set at satisfactory intervals. Provide sufficient clamps, spreaders and braces to insure the rigidity of the forms.
- D. Provide forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs that are equal to the full depth of the concrete as shown, noted or called for on the Plans. On curves and curb returns provide composite forms made from benders or thin planks of sufficient ply to ensure rigidity of the form.

3.04 PLACING STEEL REINFORCEMENT

- A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond. All bending shall be done cold, to the shapes shown on the plans. The length of lapped splices shall be as follows:
 - 1. Reinforcing bars No. 8, or smaller, shall be lapped at least 45 bar diameters of the smaller bar joined, and reinforced bars Nos. 9, 10, and 11 shall be lapped at least 60 bar diameters of the smaller bars joined, except when otherwise shown on the plans.
 - 2. Splice locations shall be made as indicated on the plans.
- B. Accurately place reinforcement as shown on the plans and hold firmly and securely in position by wiring at intersections and splices, and by providing precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Provide supports and ties of such strength and density to permit walking on reinforcing without undue displacement.
- C. Place reinforcing to provide the following minimum concrete cover:
 - 1. Surfaces exposed to water: 4 inches.
 - 2. Surfaces poured against earth: 3 inches.
 - 3. Formed surfaces exposed to earth or weather: 2 inches.
 - 4. Slabs, walls, not exposed to weather or earth: 1 inch.
- D. Minimum spacing, center of parallel bars shall be two and one half (2 ½) times the diameter of the larger sized bar. Accurately tie reinforcing securely in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

3.05 MIXING AND TRANSPORTING PORTLAND CEMENT CONCRETE

- A. Transit mix concrete in accordance with the requirements of ASTM Designation C94. Transit mix for not less than ten (10) minutes total, not less than three (3) minutes of which shall be on the site just prior to pouring. Mix continuous with no interruptions from the time the truck is filled until the time it is emptied. Place concrete within one hour of the time water is first added.
- B. Do not hand mix concrete for use in concrete structures.

3.06 PLACING PORTLAND CEMENT CONCRETE

- A. Thoroughly wet subgrade when concrete is placed directly on soil. Remove all standing water prior to placing concrete.
- B. Do not place concrete until the subgrade and the forms have been approved.

- C. Convey concrete from mixer to final location as rapidly as possible by methods that prevent separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.
- D. Place and solidify concrete in forms without segregation by means of mechanical vibration or by other means as approved by the Owner's Representative. Continue vibration until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.
- E. Concrete in certain locations may be pumped into place upon prior approval by the Owner's Representative. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

3.07 PLACING ACCESSORY MATERIALS

- A. Place water stops and other items required to be embedded in of portland cement concrete structures at locations shown or required in accordance with Section 51-2.04 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans.
- B. Curing Compounds:
 - 1. Regular Portland Cement Concrete: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.08 FORM REMOVAL

- A. Remove forms without damage to the concrete. Remove all shores and braces below the ground surface, before backfilling.
- B. Do not backfill against concrete until the concrete has developed sufficient strength to prevent damage.
- C. Leave forms for cast-in-place walls in place at least 72 hours after pouring.
- D. Leave edge forms in place at least 24 hours after pouring.

3.09 FIELD QUALITY CONTROL

- A. Finish subgrade for concrete improvements shall be subject to approval prior to placement of forms.
- B. No concrete shall be placed prior to approval of forms.
- C. Concrete improvements constructed shall not contain "bird baths" or pond water and shall be smooth and ridge free.
- D. Conform the finish grade and cross section of concrete improvements to the design grades and cross sections.
- E. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances ACI 117 and as follows:
 - 1. Elevation: $\frac{1}{4}$ inch.
 - 2. Thickness: Plus $\frac{3}{8}$ inch, minus $\frac{1}{4}$ inch.

3. Surface: Gap below 10 foot long, unleveled straightedge not to exceed 1/4 inch.
4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge:
Length of dowel 1/4 inch per 12 inches.
8. Joint Spacing: See Plans.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.10 RESTORATION OF EXISTING IMPROVEMENTS

- A. Replace in kind all pavement or other improvements removed or damaged due to the installation of concrete improvements.
- B. Remove, landscaping or plantings damaged or disturbed due to the installation of concrete improvements. Replace in kind.

END OF SECTION

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS

200 Grand Ave, Oakland, CA 94610

CITY PROJECT #: 1004984

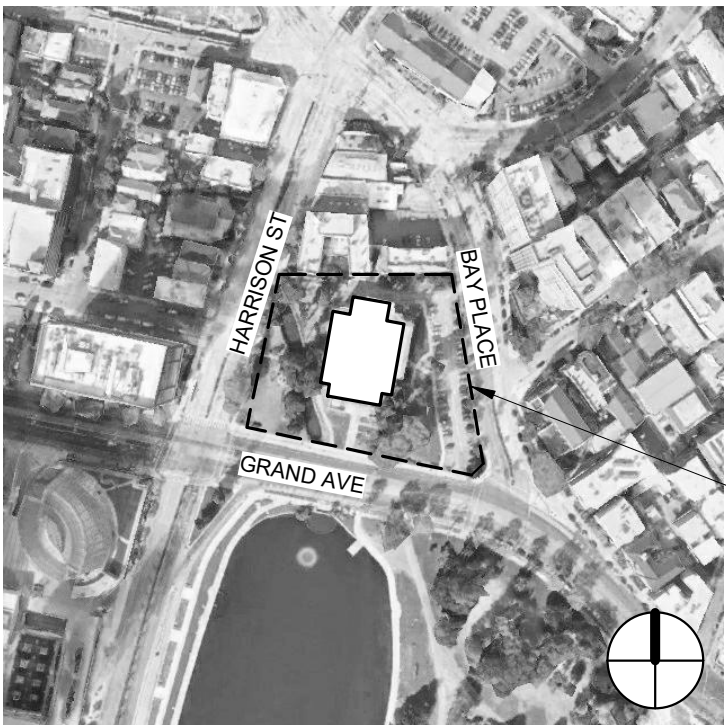


THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT
AND THE CITY PUBLIC WORKS AGENCY AT LEAST 48 HOURS
(2 WORKING DAYS) PRIOR TO BEGINNING ANY EXCAVATION
IN THE VICINITY OF UNDERGROUND FACILITIES.

SHEET INDEX

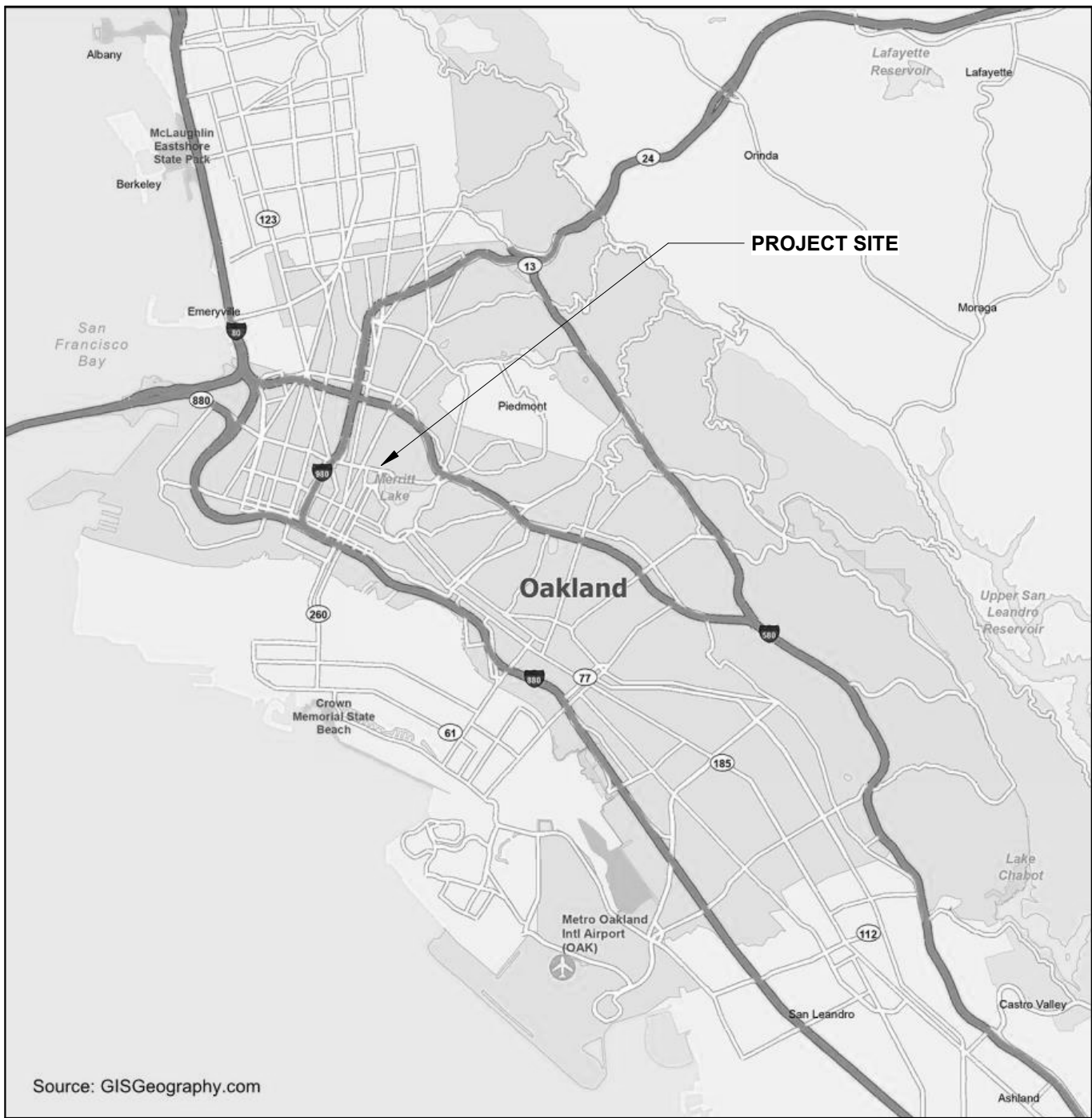
NOTE: PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS NOT INCLUDED IN PERMIT SUBMITTAL TO BUILDING DEPARTMENT

ADMINISTRATIVE		PLUMBING	
A000	COVER SHEET	P001	PLUMBING TITLE SHEET
A001	GENERAL NOTES, INDEX, AND SYMBOLS	P201	PLUMBING FLOOR PLANS
A002	ACCESSIBILITY AND PARKING SITE PLAN	MECHANICAL	
A003	ACCESSIBILITY, EXIT FLOOR PLAN, AND CODE SUMMARY	M001	MECHANICAL TITLE SHEET
A004	ACCESSIBILITY CHECKLIST	M201	MECHANICAL PLAN GROUND FLOOR
A005	CA GREEN BUILDING CODE REQ.'S 1 OF 3	ELECTRICAL	
A006	CA GREEN BUILDING CODE REQ.'S 2 OF 3	E001	ELECTRICAL TITLE SHEET
A007	CA GREEN BUILDING CODE REQ.'S 3 OF 3	E002	ELECTRICAL SCHEDULES
A008	POLLUTION PREVENTION	E003	T24 COMPLIANCE FORMS
A009	LIMITED SITE SURVEY (FOR REFERENCE ONLY)	E004	T24 COMPLIANCE FORMS
CIVIL		E101	ELECTRICAL DEMOLITION PLAN GROUND FLOOR
C100	EXISTING CONDITIONS AND DEMOLITION	E201	POWER PLAN GROUND FLOOR
C200	LAYOUT AND GRADING	E601	LIGHTING PLAN GROUND FLOOR
C210	SEWER REPAIR PLAN	E701	SINGLE LINE DIAGRAM
C300	CONSTRUCTION DETAILS	ARCHITECTURE - SITE	
C301	CONSTRUCTION DETAILS	ARCHITECTURE - SITE	
ARCHITECTURE - SITE		A101	SITE AND ROOF PLAN
ARCHITECTURE - SITE		A102	ENLARGED SITE PLAN AND EXTERIOR ELEV. RAMP
ARCHITECTURE - DEMOLITION		ARCHITECTURE - DEMOLITION	
ARCHITECTURE - DEMOLITION		A101D	GROUND FLOOR AND PARTIAL ROOF DEMOLITION PLAN
ARCHITECTURE - DEMOLITION		A601D	DEMOLITION REFLECTED CLG. PLAN GROUND FLOOR
ARCHITECTURE		ARCHITECTURE	
ARCHITECTURE		A201	GROUND FLOOR AND PARTIAL ROOF PLAN
ARCHITECTURE		A401	ENLARGED FLOOR PLANS AND INTERIOR ELEVS. RESTROOMS
ARCHITECTURE		A402	ENLARGED PLAN SECTION DETAILS BAR
ARCHITECTURE		A501	INTERIOR ELEVATIONS DINING & ANNEX
ARCHITECTURE		A502	INTERIOR ELEVATIONS CANTEEN
ARCHITECTURE		A503	INTERIOR ELEVATIONS CONSIGNMENT & COMPUTER
ARCHITECTURE		A504	INTERIOR ELEVATIONS CRAFTS ROOM & HALL 4
ARCHITECTURE		A505	INTERIOR ELEVATIONS HALL 5 & HEADSTART
ARCHITECTURE		A506	INTERIOR ELEVATIONS EAST AND WEST VESTIBULE
ARCHITECTURE		A507	INTERIOR ELEVATIONS EAST CORRIDOR & WEST VESTIBULE
ARCHITECTURE		A601	REFLECTED CLG. PLAN GROUND FLOOR
ARCHITECTURE		A701	FINISH FLOOR PLAN GROUND
ARCHITECTURE		A801	SCHEDULES AND CODE DETAILS
ARCHITECTURE		A811	EXTERIOR DETAILS
ARCHITECTURE		A905	PARTITION TYPES AND INTERIOR DETAILS
ARCHITECTURE		A906	INTERIOR DETAILS



LOCATION MAP

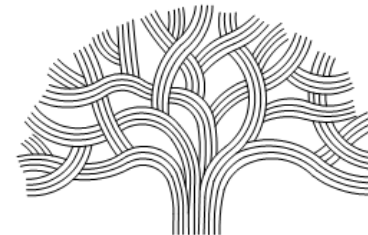
CITY OF OAKLAND MAP



Sieu-Chin Yeong (Jul 31, 2023 09:35 PDT)

SIEW-CHIN YEONG, P.E.

ASSISTANT DIRECTOR, OPW
BUREAU OF DESIGN AND CONSTRUCTION



CITY OF OAKLAND
BUREAU OF DESIGN AND
CONSTRUCTION
250 FRANK H. OGAWA PLAZA
SUITE 4314
OAKLAND, CA 94612
(510) 238-3546
FAX (510) 238-7227

PROJECT & GRANT
MANAGEMENT DIVISION

CIP COORDINATOR

PROJECT & GRANT
MANAGEMENT DIVISION

Ha Nguyen (Jul 11, 2023 08:41 PDT)
SUPERVISOR

CONSTRUCTION MANAGEMENT
DIVISION

Derin Minor (Jul 2, 2023 11:16 PDT)
PRINCIPAL CIVIL ENGINEER

CITY ADMINISTRATOR OFFICE

ADA PROGRAMS DIVISION MANAGER

HUMAN SERVICES DEPARTMENT

MANAGER

FACILITIES SERVICES DIVISION

Derin Minor (Jul 26, 2023 10:20 PDT)
MANAGER

BUREAU OF MAINTENANCE &
INTERNAL SYSTEMS

Richard Battersby (Jul 29, 2023 17:53 PDT)
ASSISTANT DIRECTOR



CHECKED BY

DESIGNED BY CL

DRAWN BY CL

No.	BY	DATE	REFERENCE
1	CL	12/3/21	ISSUE FOR PERMIT
2	CL	3/8/23	PLAN CHECK RESPONSE

PROJECT NO.

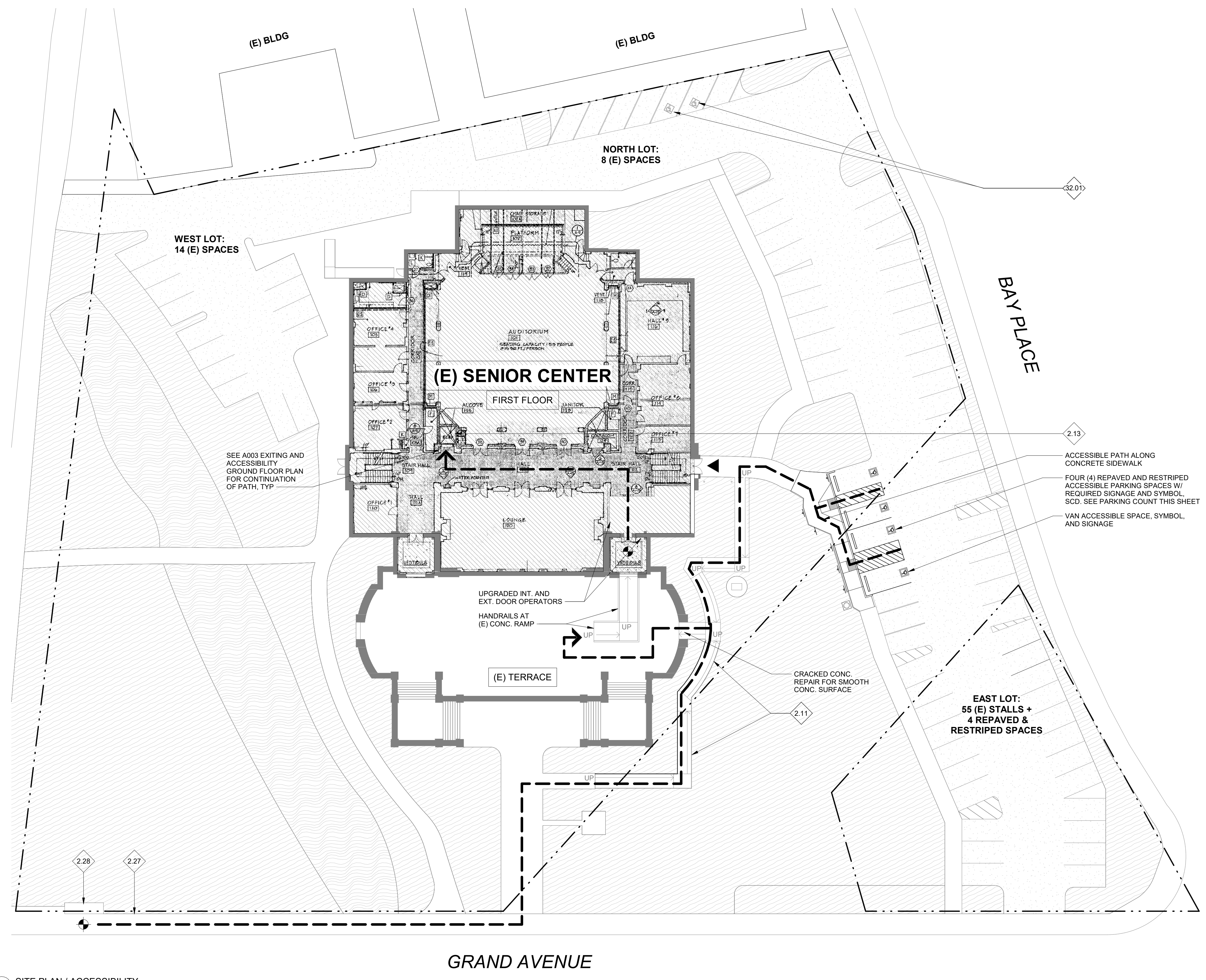
1004984

SCALE:
NTS

DATE:
12/3/21

SHEET NO.
A000

1 OF 47



SHEET NOTES

1. SEE A101 SITE PLAN AND SCD FOR WORK.

KEYNOTES

2.11	(E) RAMP, TYP.
2.13	(E) ELEVATOR, DOOR, CALL BUTTON, AND FLOOR SIGNAL, PROTECT IN PLACE
2.27	(E) CONC. SIDEWALK
2.28	(E) BUS STOP GRAND AVE. AT HARRISON ST.
32.01	REMOVE (E) ACCESSIBILITY SYMBOLS

PARKING COUNT

EAST LOT:	59 SPACES (4 ACCESSIBLE)
WEST LOT:	14 SPACES
NORTH LOT:	8 SPACES
TOTAL:	81 SPACES
ACCESSIBLE PARKING SPACES REQUIRED:	4 SPACES INCLUDING 1 VAN SPACE
ACCESSIBLE PARKING SPACES PROVIDED:	4 SPACES INCLUDING 1 VAN SPACE
TWO SPACES AT NORTH LOT INCLUDE ACCESSIBLE SYMBOLS. SYMBOLS TO BE REMOVED AS PART OF THIS PROJECT BECAUSE SPACES ARE NON-COMPLIANT	

LEGEND

---	PROPERTY LINE
---	(E) ITEM TO REMAIN
---	PROVIDE ITEM
●	(E) ACCESSIBLE POINT OF ORIGIN
→	(E) ACCESSIBLE PATH OF TRAVEL TO AREA OF WORK, SEE CITY OF OAKLAND ACCESSIBILITY CHECKLIST ON A004 FOR MORE INFORMATION ON EXISTING CONDITIONS AND COMPLIANCE
▲	NON-ACCESSIBLE MAIN ENTRY

1 SITE PLAN / ACCESSIBILITY
1" = 20'-0"

CODE SUMMARY

NO CHANGE IN USE, OCCUPANCY, HEIGHT AND AREA OF EXISTING BUILDING. SEE PROJECT DESCRIPTION ON COVER SHEET FOR SCOPE OF WORK.

APPLICABLE CODES FOR SCOPE OF WORK

2019 CALIFORNIA BUILDING CODE (CBC)
2019 CALIFORNIA ELECTRICAL CODE (CEC)
2019 CALIFORNIA MECHANICAL CODE (CMC)
2019 CALIFORNIA PLUMBING CODE (CPC)
2019 CALIFORNIA FIRE CODE
2019 CALIFORNIA ENERGY CODE
2019 CALIFORNIA GREEN BUILDINGS STANDARDS CODE
2019 CITY OF OAKLAND MUNICIPAL CODE
NFPA 13, AUTOMATIC SPRINKLER SYSTEM, 2019 EDITION
NFPA 72, NATIONAL FIRE ALARM CODE, 2019 EDITION

ACCESSIBILITY REQUIREMENTS GOVERNED BY

2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
2019 CALIFORNIA BUILDING CODE, PART 2, VOLUME 1, CHAPTER 11B

BUILDING NAME AND ADDRESS

OAKLAND VETERAN'S MEMORIAL BUILDING
200 GRAND AVE.
OAKLAND, CA 94610

ACCESSOR'S PARCEL NUMBER (APN)

10-768-4 AND 10-768-6-1

OCCUPANCY

BUSINESS, B
ASSEMBLY GROUP, A-3

CONSTRUCTION TYPE

CONSTRUCTION TYPE: IIIB
(E) BEARING WALLS, EXTERIOR: CONCRETE
(E) BEARING WALLS, INTERIOR: CONCRETE
(E) NON-BEARING WALLS AND PARTITIONS: WOOD/GYP. BD. AND METAL FRAME/PLASTER
(E) FLOOR CONSTRUCTION: CONC. COVERED STEEL AND CONCRETE BEAM AND SLAB

SEPARATION OF OCCUPANCIES

ALL USE GROUPS ARE PROPOSED TO COMPLY WITH THE MOST RESTRICTIVE APPLICABLE PROVISIONS OF GROUP A-3 USE DESIGNATION, THEREFORE NO SEPARATION IS REQUIRED

FIRE PROTECTION:

EXISTING FIRE SPRINKLER SYSTEM

STORIES AND HEIGHT

ACTUAL	ALLOWABLE
3 STORIES	3 STORIES
APPROX. 52-FEET ABOVE GRADE	75-FEET

BUILDING AREA:

GROUND (BASEMENT) FLOOR: 15,150 SF
FIRST FLOOR: 15,550 SF
SECOND FLOOR: 10,230 SF
AREA OF WORK: 9,960 SF

OCCUPANT LOAD

TOTAL GROUND FLOOR OCCUPANT LOAD: 436

MEANS OF EGRESS

SEE PLAN THIS SHEET FOR EXITS PROVIDED FROM EACH SPACE AND THE FLOOR
- ALL SPACES REQUIRE 1 EXIT EXCEPT THOSE NOTED BELOW
- CANTEN/BAR AND DINING/ANNEX SPACES REQUIRE AND PROVIDE 2 EXITS
- TOTAL EXITS PROVIDED FROM GROUND FLOOR: 4
- TOTAL EXITS REQUIRED FROM GROUND FLOOR: 2

EXIT ACCESS TRAVEL DISTANCE LIMITS

- ASSEMBLY, A-3: 250-FEET
- BUSINESS, B: 300-FEET

TWO EXITS OR EXIT ACCESS DOORWAYS SEPARATION DISTANCE WITH FIRE SPRINKLER SYSTEMS SHALL BE NOT LESS THAN ONE-THIRD OF THE LENGTH OF THE MAXIMUM OVERALL DIAGONAL DIMENSION OF THE AREA SERVED

COMMON PATH OF TRAVEL

- BUSINESS OCCUPANCY W/ ONE EXIT: 100 FEET MAX.

PLUMBING FIXTURE COUNT

OVERALL NUMBER OF PLUMBING FIXTURES ON THE GROUND FLOOR WILL NOT BE REDUCED. ONE WATER CLOSET (WC) IS REMOVED AND REPLACED WITH A WC AT THE NEW GENDER NEUTRAL RESTROOM. ONE LAVATORY IS ADDED IN THIS ROOM. MOP SINK TO BE REMOVED AND REPLACED

LEGEND

(E) ITEM TO REMAIN

PROVIDE ITEM

EGRESS PATH

(E) ACCESSIBLE PATH OF TRAVEL TO AREA OF WORK. SEE CITY OF OAKLAND ACCESSIBILITY CHECKLIST A004 FOR MORE INFORMATION ON EXISTING CONDITIONS AND COMPLIANCE

NON-ACCESSIBLE MAIN ENTRY

EXIT FROM ROOM OR BUILDING

BLDG. AREA OUTSIDE SCOPE OF WORK

ROOM NAME

ROOM NAME

G-101

ROOM NUMBER

AREA: 148 SF

AREA

TYPE: B

OCCUPANCY TYPE

OF: 150

OCCUPANT LOAD FACTOR

OCC: 1

OCCUPANT LOAD

EXIT #: 1

MIN. # OF REQ EXIT

1 ACCESSIBILITY PLAN GROUND FLOOR
1/8" = 1'-0"

CITY OF OAKLAND
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANK H. OGDEN PLAZA, SUITE 4314 • OAKLAND CA, 94612
(510) 238-3437 • FAX (510) 238-7227

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

RCE NO. C-26408 EXP. 5/23

CHECKED BY DM
DESIGNED BY CL
DRAWN BY CL

No.	DATE	BY	REFERENCE
1	12/3/21	CL	ISSUE FOR PERMIT
2	3/8/23	CL	PLAN CHECK RESPONSE

A003

ACCESSIBILITY, EXIT FLOOR
PLAN, AND CODE SUMMARY

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/21

SHEET NO.
4 OF 47



City of Oakland
PLANNING & BUILDING DEPARTMENT
250 FRANK H. OGAWA PLAZA, SECOND FLOOR, OAKLAND, CA. 94612

ACCESSIBILITY CHECKLIST

Project Address: 200 Grand Avenue, Oakland, CA 94610, Veterans' Memorial Building	
ALL forms that are required to be completed by this document are required to be reproduced on the plan set.	
1	Proposed Use of the Project Existing Senior Center (e.g. Retail, Office, Restaurant etc.)
2	Describe the area of remodel, including which floor Ground Floor
3	The construction cost of this project excluding disabled access upgrades to the path of travel is \$ 122,370 which is: <input type="checkbox"/> Less than the Accessibility Threshold amount of \$172,418.00 based on the "2021 ENR Construction Cost Index" <input checked="" type="checkbox"/> More than <input type="checkbox"/> Less than (The cost index & threshold are updated annually)
4	Is this a City project and/or does it receive any form of public funding? Check one <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Conditions below must be fully documented by accompanying drawings	
Read A through D below carefully and check the most applicable box. Check one box only:	
<input type="checkbox"/> A:	All existing conditions serving the area of remodel fully comply with access requirements. No further upgrades are required. Fill out page 2 of the Accessibility Checklist.
<input type="checkbox"/> B:	The project's adjusted cost of construction is greater than the current valuation threshold. Fill out page 2 of the Accessibility Checklist.
<input checked="" type="checkbox"/> C:	The project adjusted cost of construction is less than or equal to the current valuation threshold. List all items that will be upgraded on the Accessibility 20% Rule form and then fill out page 2 of the Accessibility Checklist. All items that will not be fully compliant should be checked on page 2 in the "Not required by code" column.
<input type="checkbox"/> D:	The proposed project consists entirely of Barrier removal: Fill out the Accessibility Work Type form
<input type="checkbox"/> E:	The proposed project is a minor revision to previously approved permit drawings only. (Note: this shall NOT be used for new or additional work)
Provide the previously approved permit application number here:	
Description of the revision:	

CBC chapter 2 section 202 Definitions:
Technically Infeasible: An alteration of a building or a facility, that has little likelihood of being accomplished because the existing structural conditions require the removal or alteration of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features that are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.
Unreasonable Hardship: When the enforcing agency finds that compliance with the building standard would make the specific work of the project affected by the building standard infeasible, based on an overall evaluation of the following factors:
1. The cost of providing access.
2. The cost of all construction contemplated.
3. The impact of proposed improvements on financial feasibility of the project.
4. The nature of the accessibility which would be gained or lost.
5. The nature of the use of the facility under construction and its availability to persons with disabilities
The details of any Technical Infeasibility or Unreasonable Hardship shall be recorded and entered into the files of the Department. All Unreasonable Hardships shall be ratified by the Access Appeals Commission (AAC).

Z:\COUNTER\FORMS(Current Forms-Details)\Accessibility Checklist January 2021 with Casp Notification (updated 2.10.2021).pdf

1



City of Oakland
PLANNING & BUILDING DEPARTMENT
250 FRANK H. OGAWA PLAZA, SECOND FLOOR, OAKLAND, CA. 94612

ACCESSIBILITY 20% RULE

This form is only required for projects equal to or under the valuation threshold when box "C" is checked off on the Accessibility Checklist and is for providing an itemized list of the estimated costs for the expenditures used for disabled access upgrades for this project. Reproduce this form along with the Accessibility Checklist and any required form(s) on the plans.			
Based on CBC Section 11B-202.4 Exception 8, only projects with a construction cost less than or equal to the valuation threshold (current ENR Construction Cost Index Amount) are eligible for the 20% rule. In choosing which accessible elements to provide, priority should be as listed on p. 2 of the Accessibility Checklist.			
In general, projects valued over the threshold are not eligible for the 20% rule (see CBC 11B-202.4 Exceptions 1 through 8 for other exceptions).			
CBC Section 11B-202.4, Exception 9 (abbreviated): In alteration projects involving buildings & facilities previously approved & built without elevators, areas above & below the ground floor are subject to the 20% disproportionality provisions described in Exception 8, even if the value of the project exceeds the valuation threshold in Exception 8. Refer to the Code for the types of buildings & facilities that qualify for these 20% disproportionality provisions when project valuation is over the threshold.			
	Contractor's Estimated Cost	Building Department Revised Cost	
A	Cost of Construction: \$ 122,370	\$	
(Excluding Alterations to the Path of Travel as required by 11B-202.4)			
B	20% of A \$ 24,474	\$	
List the Upgrade Expenditures and their respective construction cost below:			
1	Upgrades at entry door \$ 6,236	\$	
2	Handrails at ext. ramp \$ 15,125	\$	
3	Concrete ramp repair \$ 4,000	\$	
4	\$	\$	
5	\$	\$	
6	\$	\$	
7	\$	\$	
8	\$	\$	
9	\$	\$	
Total Upgrade Expenditures			
Should be approximately equal to, but not to exceed, Line B \$ 25,421		\$	

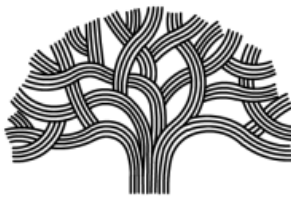
5

Project Address: 200 Grand Ave.							
Check all applicable boxes and specify where on the drawings the details are shown:							
Note: upgrades below are listed in priority based on CBC 11B-202.4, exception 8	Existing Fully Complying	Will be Upgraded to Full Compliance	Equivalent Facilitation will provide for persons	Compliance is Technically Infeasible	Approved in compliance with existing code, but not required by code	Not required by code (and/or none existing)	Non-compliant request. UHR. Must be ratified by AAC.
A. One accessible entrance including: approach walk, vertical access, platform (landings), door / gate and hardware for door/gate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B. An accessible route to the area of remodel including: Parking/access aisles and curb ramps	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Curb ramps and walks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corridors, hallways, floors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ramps elevators, lifts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. At least one accessible restroom for each sex or a single unisex restroom serving the area of remodel.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Accessible public pay phone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Accessible drinking fountains.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Additional accessible elements such as parking, stairways, storage, alarms and signage.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
See the requirements for additional forms listed below	1	2	3	4	5	6	7

1. No additional forms required
2. No additional forms required
3. Fill out the Accessibility Appeal Form, Equivalent Facilitation section for each item checked and attach to plan.
4. Fill out the Accessibility Appeal Form, Technical Infeasibility section for each item checked and attach to plans.
5. Provide details from a set of City approved reference drawings, provide its permit application number here: and list reference drawing number on plans.
6. No additional forms required
7. Fill out the Accessibility Appeal Form, Unreasonable Hardship section for each item checked and attach to plan. All UHR must be ratified by the Access Appeals Commission (see UHR form for details)

February 10, 2021

2



CITY OF OAKLAND
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANK H. OGAWA PLAZA, SUITE 4314 • OAKLAND, CA 94612
(510) 238-3437 • FAX (510) 238-7227

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT	No.	DATE	BY	REFERENCE
RCE NO. C-26408 EXP. 5/23	1	12/3/21	CL	ISSUE FOR PERMIT
	2	3/8/23	CL	PLAN CHECK RESPONSE
CHECKED BY	DM			
DESIGNED BY	CL			
DRAWN BY	CL			

A004
ACCESSIBILITY CHECKLIST

PROJECT NO.
1004984

SCALE:	SHEET NO.
HOR.	
VERT.	
DATE: 12/3/21	5 OF 47



AIA
California

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 1 OF 3 (January 2020, Includes August 2019 Supplement)

Y	NA	RESPON PARTY		Y	NA	RESPON PARTY		Y	NA	RESPON PARTY		Y	NA	RESPON PARTY																																																																										
			CHAPTER 3 GREEN BUILDING SECTION 301 GENERAL																																																																																					
			301.1 SCOPE. Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code. Voluntary green building measures are also included in the application checklists and may be included in the design and construction of structures covered by this code, but are not required unless adopted by a city, county, or city and county as specified in Section 101.7.																																																																																					
			301.3 NONRESIDENTIAL ADDITIONS AND ALTERATIONS. [BSC-CG] The provisions of individual sections of Chapter 5 apply to newly constructed buildings, building additions of 1,000 square feet or greater, and/or building alterations with a permit valuation of \$200,000 or above (for occupancies within the authority of California Building Standards Commission). Code sections relevant to additions and alterations shall only apply to the portions of the building being added or altered within the scope of the permitted work. A code section will be designated by a banner to indicate where the code section only applies to newly constructed buildings [N] or to additions and/or alterations [A]. When the code section applies to both, no banner will be used.																																																																																					
			301.3.1 Nonresidential additions and alterations that cause updates to plumbing fixtures only: Note: On and after January 1, 2014, certain commercial real property, as defined in Civil Code Section 1101.3, shall have its noncompliant plumbing fixtures replaced with appropriate water-conserving plumbing fixtures under specific circumstances. See Civil Code Section 1101.1 for any, for definitions, types of commercial real property affected, effective dates, circumstances necessitating replacement of noncompliant plumbing fixtures, and duties and responsibilities for ensuring compliance.																																																																																					
			301.3.2 Waste Diversion. The requirements of Section 5.408 shall be required for additions and alterations whenever a permit is required for work.																																																																																					
			301.4 PUBLIC SCHOOLS AND COMMUNITY COLLEGES. (see GBSG) 301.5 HEALTH FACILITIES. (see GBSG)																																																																																					
			SECTION 302 MIXED OCCUPANCY BUILDINGS																																																																																					
			302.1 MIXED OCCUPANCY BUILDINGS. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.																																																																																					
			SECTION 303 PHASED PROJECTS																																																																																					
			303.1 PHASED PROJECTS. For shell buildings and others constructed for future tenant improvements, only those code measures relevant to the building components and systems considered to be new construction (or newly constructed) shall apply.																																																																																					
			303.1.1 Initial Tenant Improvements. The provisions of this code shall apply only to the initial tenant improvements to a project. Subsequent tenant improvements shall comply with the scoping provisions in Section 301.3 nonresidential additions and alterations.																																																																																					
			ABBREVIATION DEFINITIONS: HCD Department of Housing and Community Development BSC California Building Standards Commission DSA-SS Division of the State Architect, Structural Safety OSHPD Office of Statewide Health Planning and Development LR Low Rise HR High Rise AA Additions and Alterations N New																																																																																					
			CHAPTER 5 NONRESIDENTIAL MANDATORY MEASURES																																																																																					
			DIVISION 5.1 PLANNING AND DESIGN																																																																																					
			SECTION 5.101 GENERAL																																																																																					
			5.101.1 SCOPE. The provisions of this chapter outline planning, design and development methods that include environmental responsible site selection, building design, building siting and development to protect, restore and enhance the environmental quality of the site and respect the integrity of adjacent properties.																																																																																					
			SECTION 5.102 DEFINITIONS																																																																																					
			5.102.1 DEFINITIONS. The following terms are defined in Chapter 2 (and are included here for reference):																																																																																					
			CUTOFF LUMINAIRES. Luminaires whose light distribution is such that the candela per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at an angle of 90 degrees above nadir, and 100 (10 percent) at a vertical angle of 80 degrees above nadir. This applies to all lateral angles around the luminaire.																																																																																					
			LOW-EMIITING AND FUEL EFFICIENT VEHICLES. Eligible vehicles are limited to the following: 1. Zero emission vehicle (ZEV), including neighborhood electric vehicles (NEV), partial zero emission vehicle (PZEV), advanced technology PZEV (AT PZEV) or CNG fueled (original equipment manufacturer only) regulated under Health and Safety Code section 43800 and CCR, Title 13, Sections 1961 and 1962. 2. High-efficiency vehicles, regulated by U.S. EPA, bearing High-Occupancy Vehicle (HOV) car pool lane stickers issued by the Department of Motor Vehicles.																																																																																					
			NEIGHBORHOOD ELECTRIC VEHICLE (NEV). A motor vehicle that meets the definition of "low-speed vehicle" either in Section 385.5 of the Vehicle Code or in 49CFR571.500 (as it existed on July 1, 2000), and is certified to zero-emission vehicle standards.																																																																																					
			TENANT-OCCUPANTS. Building occupants who inhabit a building during its normal hours of operation as permanent occupants, such as employees, as distinguished from customers and other transient visitors.																																																																																					
			VANPOOL VEHICLE. Eligible vehicles are limited to any motor vehicle, other than a motorcoach or truck tractor, designed for carrying more than 10 but not more than 15 persons including the driver, which is maintained and used primarily for the nonprofit work-related transportation of adults for the purpose of ride-sharing.																																																																																					
			Note: Source: Vehicle Code, Division 1, Section 668																																																																																					
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			5.106.1 STORM WATER POLLUTION PREVENTION FOR PROJECTS THAT DISTURB LESS THAN ONE ACRE OF LAND. Newly constructed projects and additions which disturb less than one acre of land, and are not part of a larger common plan of development or sale, shall prevent the pollution of storm water runoff from the construction activities through one or more of the following measures: 5.106.1.1 Local ordinance. Comply with a lawfully enacted storm water management and/or erosion control ordinance. 5.106.1.2 Best Management Practices (BMPs). Prevent the loss of soil through wind or water erosion by implementing an effective combination of erosion and sediment control and good housekeeping BMPs. 1. Soil loss BMPs that should be considered for implementation as appropriate for each project include, but are not limited to, the following: a. Scheduling construction activity during dry weather, when possible. b. Preservation of natural features, vegetation, soil, and buffers around surface waters. c. Drainage swales or lined ditches to control stormwater flow. d. Mulching or hydrosseeding to stabilize disturbed soils. e. Erosion control to protect slopes. f. Protection of storm drain inlets (gravel bags or catch basin inserts). g. Perimeter sediment control (perimeter silt fence, fiber rolls). h. Sediment trap or sediment basin to retain sediment on site. i. Stabilized construction exits. j. Wind erosion control. k. Other soil loss BMPs acceptable to the enforcing agency. 2. Good housekeeping BMPs to manage construction equipment, materials, non-stormwater discharges and wastes that should be considered for implementation as appropriate for each project include, but are not limited to, the following: a. Dewatering activities. b. Material handling and waste management. c. Building materials stockpile management. d. Management of washout areas (concrete, paints, stucco, etc.). e. Control of vehicle/equipment fueling to contractor's staging area. f. Vehicle and equipment cleaning performed off site. g. Spill prevention and control. h. Other housekeeping BMPs acceptable to the enforcing agency.																																																																																					
			5.106.2 STORMWATER POLLUTION PREVENTION FOR PROJECTS THAT DISTURB ONE OR MORE ACRES OF LAND. Comply with all lawfully enacted stormwater discharge regulations for projects that (1) disturb one acre or more of land, or (2) disturb less than one acre of land but are part of a larger common plan of development sale. Note: Projects that (1) disturb one acre or more of land, or (2) disturb less than one acre of land but are part of the larger common plan of development or sale must comply with the post-construction requirements detailed in the applicable National Pollutant Discharge System (NPDES) General permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board or the Lahontan Regional Water Quality Control Board (for projects in the Lake Tahoe Hydrologic Unit). The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff (pre-project hydrology) with the installation of postconstruction stormwater management measures. The NPDES permits emphasize runoff reduction through on-site stormwater use, interception, evapotranspiration, and infiltration through nonstructural controls, such as Low Impact Development (LID) practices, and conversational design measures. Stormwater volume that cannot be addressed using nonstructural practices is required to be captured in structural practices and be approved by the enforcing agency. Refer to the current applicable permits on the State Water Resources Control Board website at: www.waterboards.ca.gov/constructionstormwater. Consideration to the stormwater runoff management measures should be given during the initial design process for appropriate integration into site development.																																																																																					
			5.106.4 BICYCLE PARKING. [BSC-CG] Comply with Sections 5.106.4.1.1 and 5.106.4.1.2; or meet the applicable local ordinance, whichever is stricter. 5.106.4.1.1 Short-term bicycle parking. If the new project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack. Exception: Additions or alterations which add nine or less visitor vehicular parking spaces. 5.106.4.1.2 Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility. 5.106.4.1.3 For additions or alterations that add 10 or more tenant-occupant vehicular parking spaces, provide secure bicycle parking for 5 percent of the tenant vehicular parking spaces being added, with a minimum of one bicycle parking facility. 5.106.4.1.4 For new shell buildings in phased projects provide secure bicycle parking for 5 percent of the anticipated tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility. 5.106.4.1.5 Acceptable bicycle parking facility for Sections 5.106.4.1.2, 5.106.4.1.3, and 5.106.4.1.4 shall be convenient from the street and shall meet one of the following: 1. Covered, lockable enclosures with permanently anchored racks for bicycles; 2. Lockable bicycle rooms with permanently anchored racks; or 3. Lockable, permanently anchored bicycle lockers. Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.																																																																																					
			5.106.4.2 Bicycle parking. [DSA-SS] For public schools and community colleges, comply with Sections 5.106.4.2.1 and 5.106.4.2.2. 5.106.4.2.1 Student bicycle parking. Provide permanently anchored bicycle racks conveniently accessed with a minimum of four two-bike capacity racks per new building. 5.106.4.2.2 Staff bicycle parking. Provide permanent, secure bicycle parking conveniently accessed with a minimum of two staff bicycle parking spaces per new building. Acceptable bicycle parking facilities shall be convenient from the street or staff parking area and shall meet one of the following: 1. Covered, lockable enclosures with permanently anchored racks for bicycles; 2. Lockable bicycle rooms with permanently anchored racks; or 3. Lockable, permanently anchored bicycle lockers.																																																																																					
			5.106.5.2 DESIGNATED PARKING FOR CLEAN AIR VEHICLES. In new projects or additions or alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as follows: <table border="1"><thead><tr><th colspan="2">TABLE 5.106.5.2 - PARKING</th></tr><tr><th>TOTAL NUMBER OF PARKING SPACES</th><th>NUMBER OF REQUIRED SPACES</th></tr></thead><tbody><tr><td>0-9</td><td>0</td></tr><tr><td>10-25</td><td>1</td></tr><tr><td>26-50</td><td>2</td></tr><tr><td>51-75</td><td>3</td></tr><tr><td>76-100</td><td>4</td></tr><tr><td>101-150</td><td>5</td></tr><tr><td>151-200</td><td>6</td></tr><tr><td>201 AND OVER</td><td>AT LEAST 8% OF TOTAL</td></tr></tbody></table>	TABLE 5.106.5.2 - PARKING		TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES	0-9	0	10-25	1	26-50	2	51-75	3	76-100	4	101-150	5	151-200	6	201 AND OVER	AT LEAST 8% OF TOTAL																																																																	
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			5.106.5.2.1 - Parking stall marking. Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle: CLEAN AIR / EVAN POOL / EV Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces.																																																																																					
			5.106.5.3 Electric vehicle (EV) charging. [N] Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE). When EVSE(s) is/are installed, it shall be in accordance with the California Building Code, the California Electrical Code and as follows: 5.106.5.3.1 Single charging space requirements. [N] When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following: 1. The type and location of the EVSE. 2. A listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. 3. The raceway shall not be less than trade size 1". 4. The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and listed suitable cabinet, box, enclosure or equivalent. 5. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-ampere dedicated branch circuit for the future installation of the EVSE. 5.106.5.3.2 Multiple charging space requirements. [N] When multiple charging spaces are required per Table 5.106.5.3.3, a raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following: 1. The type and location of the EVSE. 2. The raceway(s) shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into listed suitable cabinet(s), box(es), enclosure(s) or equivalent. 3. Plan design shall be based upon 40-ampere minimum branch circuits. 4. Electrical calculations shall substantiate the design of the electrical system, to include the rating of equipment and any on-site distribution transformers and have sufficient capacity to simultaneously charge all required EVs at its full rated ampereage. 5. The service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE. 5.106.5.3.3 EV charging space calculations. [N] Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE. Exceptions: On a case-by-case basis where the local enforcing agency has determined EV charging and infrastructure is not feasible based upon one or more of the following conditions: 1. Where there is insufficient electrical supply. 2. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the Implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.																																																																																					
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			5.106.8 LIGHT POLLUTION REDUCTION. [NJ] Outdoor lighting systems shall be designed and installed to comply with the following: 1. The minimum requirements in the California Energy Code for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the California Administrative Code and 2. Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8); 3. Uplight and Glare ratings as defined in California Energy Code (shown in Tables 1302.2-A and 1302.2-B in Chapter 8) and 4. Allowable BUG ratings not exceeding those shown in Table 5.106.8. [N] or Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent. Exceptions: [N] 1. Luminaires that qualify as exceptions in Section 140.7 of the California Energy Code. 2. Emergency lighting. 3. Building facade meeting the requirements in Table 140.7-B of the California Energy Code, Part 6. 4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction. Note: [N] 1. See also California Building Code, Chapter 12, Section 1205.6 for college campus lighting requirements for parking facilities and walkways. 2. Refer to Chapter 8 (Compliance Forms, Worksheets and Reference Material) for IES TM-15-11 Table A-1, California Energy Code Tables 1302.2-A and 1302.2-B. 3. Refer to the California Building Code for requirements for additions and alterations.																																																																																					
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			5.106.10 GRADING AND PAVING. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following: 1. Swales. 2. Water collection and disposal systems. 3. French drains. 4. Water retention gardens. 5. Other water measures which keep surface water away from buildings and aid in groundwater recharge. Exceptions: Additions and alterations not altering the drainage path.																																																																																					
			5.106.12 SHADE TREES [DSA-SS]. Shade Trees shall be planted to comply with Sections 5.106.12.1, 5.106.12.2, and 5.106.12.3. Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section 5.304.6. 5.106.12.1 Surface parking areas. Shade tree plantings, minimum #10 container size or equal, shall be installed to provide shade over 50 percent of the parking area within 15 years. Exceptions: The surface parking area covered by solar photovoltaic shade structures, or shade structures, with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculations. 5.106.12.2 Landscape areas. Shade tree plantings, minimum #10 container size or equal shall be installed to provide shade of 20% of the landscape area within 15 years. Exceptions: Playfields for organized sport activity are not included in the total area calculation. 5.106.12.3 Hardscape areas. Shade tree plantings, minimum #10 container size or equal shall be installed to provide shade over 20 percent of the hardscape area within 15 years. Exceptions: Walks, hardscape areas covered by solar photovoltaic shade structures, and hardscape areas covered by shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculation.																																																																																					
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			5.201.1 Scope [BSC-CG]. California Energy Code [DSA-SS]. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.																																																																																					
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			5.301.1 Scope. The provisions of this chapter shall establish the means of conserving water use indoors, outdoors and in wastewater conveyance.																																																																																					
			SECTION 5.302 DEFINITIONS																																																																																					
			5.302.1 Definitions. The following terms are defined in Chapter 2 (and are included here for reference): EVAPOTRANSPIRATION ADJUSTMENT FACTOR (ETAF) [DSA-SS]. An adjustment factor when applied to reference evapotranspiration that adjusts for plant factors and irrigation efficiency, which as two major influences on the amount of water that needs to be applied to the landscape. FOOTPRINT AREA [DSA-SS]. The total area of the furthest exterior wall of the structure projected to natural grade, not including exterior areas such as stairs, covered walkways, patios and decks. METERING FAUCET. A self-closing faucet that dispenses a specific volume of water for each actuation cycle. The volume or cycle duration can be fixed or adjustable. GRAYWATER. Pursuant to Health and Safety Code Section 17922.12, "graywater" means untreated wastewater that has not been contaminated by infectious, contaminated, or unhealthy body wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines and laundry tubs, but does not include waste water from kitchen sinks or dishwashers. MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). The California ordinance regulating landscape design, installation and maintenance practices that will ensure commercial, multifamily and other developer installed landscapes greater than 2500 square feet meet an irrigation water budget developed based on landscaped area and climatological parameters. MODEL WATER EFFICIENT LANDSCAPE ORDINANCE [MWELO], [HCD] The California model ordinance (California Code of Regulations, Title 23, Division 2, Chapter 2.7), regulating landscape design, installation and maintenance practices. Local agencies are required to adopt the updated MWELO, or adopt a local ordinance at least as effective as the MWELO. POTABLE WATER. Water that is drinkable and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards. See definition in the California Plumbing Code, Part 5. POTABLE WATER. [HCD] Water that is satisfactory for drinking, culinary, and domestic purposes, and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards and the requirements of the Health Authority Having Jurisdiction. RECYCLED WATER. Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur [Water Code Section 13050 (n)]. Simply put, recycled water is water treated to remove waste matter attaining a quality that is suitable to use the water again. SUBMETER. A meter installed subordinate to a site meter. Usually used to measure water intended for one purpose, such as landscape irrigation. For the purposes of CALGreen, a dedicated meter may be considered a submeter. WATER BUDGET. Is the estimated total landscape irrigation water use which shall not exceed the maximum applied water allowance calculated in accordance with the Department of Water Resources Model Efficient Landscape Ordinance (MWELO). SECTION 5.303 INDOOR WATER USE																																																																																					
			5.303.1 METERS. Separate submeters or metering devices shall be installed for the uses described in Sections 5.303.1.1 and 5.303.1.2. 5.303.1.1 Buildings in excess of 50,000 square feet. Separate submeters shall be installed as follows: 1. For each individual leased, rented or other tenant space within the building projected to consume more than 100 gpd/day (380 L/day), including, but not limited to, spaces used for laundry or drycleaning, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop. 2. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems: a. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s). b. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s). c. Steam and hot water boilers with energy input more than 500,000 Btu/h (147 kW). 5.303.1.2 Excess consumption. A separate submeter or metering device shall be provided for any tenant within a new building or within an addition that is projected to consume more than 1,000 gpd/day. 5.303.3 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following: 5.303.3.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type Toilets. Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush. 5.303.3.2 Urinals. 5.303.3.2.1 Wall-mounted Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush. 5.303.3.2.2 Floor-mounted Urinals. The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush. NA 5.303.3.3 Showerheads. [BSC-CG] 5.303.3.3.1 Single showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads. 5.303.3.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time. Note: A hand-held shower shall be considered a showerhead.																																																																																					

DISCLAIMER: THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE 2016 CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.



CITY OF OAKLAND
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANK H. OGAWA PLAZA, SUITE 4314 • OAKLAND, CA 94612
(510) 238-3437 • FAX (510) 238-7227



Y	=	YES
N/A	=	NOT APPLICABLE
RESPON. PARTY	=	RESPONSIBLE PARTY (i.e. ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)



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ARCHITECT		No.	DATE	BY	REFERENCE
RCE NO. C-26408 EXP. 5/23		1	12/3/21	CL	ISSUE FOR PERMIT
		2	3/8/23	CL	PLAN CHECK RESPONSE
CHECKED BY	DM				
DESIGNED BY	CL				
DRAWN BY	CL				

SCALE:	SHEET NO.
HOR.	
VERT.	
DATE: 12/3/21	7 OF 47



ATA
California

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 3 OF 3

(January 2020, Includes August 2019 Supplement)

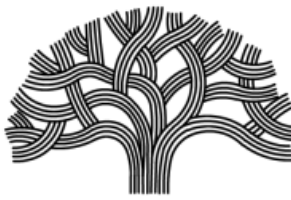
Y	NA	RESPON PARTY
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5.504.4 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.		
5.504.4.1 Adhesives, sealants and caulks. Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards: 1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAGQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and tetrachloroethylene), except for aerosol products as specified in subsection 2, below. 2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.		
TABLE 5.504.4.1 - ADHESIVE VOC LIMIT^{1,2} Less Water and Less Exempt Compounds in Grams per Liter		
ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT	
INDOOR CARPET ADHESIVES	50	
CARPET PAD ADHESIVES	50	
OUTDOOR CARPET ADHESIVES	150	
WOOD FLOORING ADHESIVES	100	
RUBBER FLOOR ADHESIVES	60	
SUBFLOOR ADHESIVES	50	
CERAMIC TILE ADHESIVES	65	
VCT & ASPHALT TILE ADHESIVES	50	
DRYWALL & PANEL ADHESIVES	50	
COVE BASE ADHESIVES	50	
MULTIPURPOSE CONSTRUCTION ADHESIVES	70	
STRUCTURAL GLAZING ADHESIVES	100	
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250	
OTHER ADHESIVES NOT SPECIFICALLY LISTED	50	
SPECIALTY APPLICATIONS		
PVC WELDING	510	
CPVC WELDING	490	
ABS WELDING	325	
PLASTIC CEMENT WELDING	250	
ADHESIVE PRIMER FOR PLASTIC	550	
CONTACT ADHESIVE	80	
SPECIAL PURPOSE CONTACT ADHESIVE	250	
STRUCTURAL WOOD MEMBER ADHESIVE	140	
TOP & TRIM ADHESIVE	250	
SUBSTRATE SPECIFIC APPLICATIONS		
METAL TO METAL	30	
PLASTIC FOAMS	50	
POROUS MATERIAL (EXCEPT WOOD)	50	
WOOD	30	
FIBERGLASS	80	
1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED. 2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168, www.arb.ca.gov/DREDBSC/CURH/TMLR1168.PDF		
TABLE 5.504.4.2 - SEALANT VOC LIMIT Less Water and Less Exempt Compounds in Grams per Liter		
SEALANTS	CURRENT VOC LIMIT	
ARCHITECTURAL	250	
MARINE DECK	760	
NONMEMBRANE ROOF	300	
ROADWAY	250	
SINGLE-PLY ROOF MEMBRANE	450	
OTHER	420	
SEALANT PRIMERS		
ARCHITECTURAL		
NONPOROUS	250	
POROUS	775	
MODIFIED BITUMINOUS	500	
MARINE DECK	760	
OTHER	750	
NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.		
5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.26 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.		
5.504.4.3.1 Aerosol paints and coatings. Aerosol paints and coatings shall meet the PVMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 9 Rule 49.		

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TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{1,2} GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS		
COATING CATEGORY	CURRENT VOC LIMIT	
FLAT COATINGS	50	
NONFLAT COATINGS	100	
NONFLAT HIGH GLOSS COATINGS	150	
SPECIALTY COATINGS		
ALUMINUM ROOF COATINGS	400	
BASEMENT SPECIALTY COATINGS	400	
BITUMINOUS ROOF COATINGS	50	
BITUMINOUS ROOF PRIMERS	350	
BOND BREAKERS	350	
CONCRETE CURING COMPOUNDS	350	
CONCRETE/MASONRY SEALERS	100	
DRIVEWAY SEALERS	50	
DRY FOG COATINGS	150	
FAUX FINISHING COATINGS	350	
FIRE RESISTIVE COATINGS	350	
FLOOR COATINGS	100	
FORM-RELEASE COMPOUNDS	250	
GRAPHIC ARTS COATINGS (SIGN PAINTS)	500	
HIGH-TEMPERATURE COATINGS	420	
INDUSTRIAL MAINTENANCE COATINGS	250	
LOW SOLIDS COATINGS	120	
MAGNESITE CEMENT COATINGS	450	
MASTIC TEXTURE COATINGS	100	
METALLIC PIGMENTED COATINGS	500	
MULTICOLOR COATINGS	250	
PRETREATMENT WASH PRIMERS	420	
PRIMERS, SEALERS, & UNDERCOATERS	100	
REACTIVE PENETRATING SEALERS	350	
RECYCLED COATINGS	250	
ROOF COATINGS	50	
RUST PREVENTATIVE COATINGS	250	
SHELLACS:		
CLEAR	730	
OPAQUE	550	
SPECIALTY PRIMERS, SEALERS & UNDERCOATERS	100	
STAINS	250	
STONE CONSOLIDANTS	450	
SWIMMING POOL COATINGS	340	
TRAFFIC MARKING COATINGS	100	
TUB & TILE REFINISH COATINGS	420	
WATERPROOFING MEMBRANES	250	
WOOD COATINGS	275	
WOOD PRESERVATIVES	350	
ZINC-RICH PRIMERS	340	
1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS 2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE. 3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.		
5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following: 1. Manufacturer's product specification 2. Field verification of on-site product containers		
5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements: 1. Carpet and Rug Institute's Green Label Plus Program. 2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 0150). 3. NSF-ANSI 140 at the Gold level or higher. 4. Scientific Certifications Systems Sustainable Choice; or 5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database.		
5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.		
5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.		
5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood 17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.		
5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following: 1. Product certifications and specifications. 2. Chain of custody certifications. 3. Product labeled and Invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.). 4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European EN 338 standards. 5. Other methods acceptable to the enforcing agency.		

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TABLE 5.504.4.5 - FORMALDEHYDE LIMITS: MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION		
PRODUCT	CURRENT LIMIT	
HARDWOOD PLYWOOD VENEER CORE	0.05	
HARDWOOD PLYWOOD COMPOSITE CORE	0.05	
PARTICLE BOARD	0.09	
MEDIUM DENSITY FIBERBOARD	0.11	
THIN MEDIUM DENSITY FIBERBOARD:	0.13	
1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM 1133. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12. 2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).		
5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following: 1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; 2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010; 3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or 4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).		
5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.		
5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.		
Exceptions: Existing mechanical equipment.		
5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SECTION 5.505 INDOOR MOISTURE CONTROL APPLIES TO NEW SPACES 5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCB, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.607.2 of this code.		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SECTION 5.506 INDOOR AIR QUALITY APPLIES TO NEW SPACES 5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the California Energy Code, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCB, Title 8.		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO ₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the California Energy Code, Section 120.6(c)(4).		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SECTION 5.507 ENVIRONMENTAL COMFORT APPLIES TO NEW WALLS 5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.		
Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.		
Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.		
5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations: 1. Within the 65 CNEL noise contour of an airport. Exceptions: 1. Lw or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICLUZ) plan. 2. Lw or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element. 3. 5.507.4.1.1. Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L _{eq} , 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).		
5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1hr) of 50 dBA in occupied areas during any hour of operation.		
5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.		
5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.		
5.507.4.3 Interior sound transmission. Wall and roof-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.		
Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.todbase.org/PDF/CaseStudies/stc_cc_ratings.pdf .		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SECTION 5.508 OUTDOOR AIR QUALITY 5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.		
5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.		
Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO ₂), and potentially other refrigerants.		

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5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.		
5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.		
5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.		
5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.		
5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.		
Exception: Single-flared tubing connections may be used with a multilayer seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.		
5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.		
5.508.2.2 Valves. Valves and fittings shall comply with the California Mechanical Code and as follows.		
5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.		
5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.		
5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.		
5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.		
5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.		
5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.		
Exception: Valves with seal caps that are not removed from the valve during stem operation.		
5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel, or be coated to prevent corrosion from these substances.		
5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.		
5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.		
5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.		
5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.		
5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.		
5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.		
5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.		
5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 50 microns), and hold for 30 minutes.		
5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.		
5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.		
CHAPTER 7 INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS		
702 QUALIFICATIONS 702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following: 1. State certified apprenticeship programs. 2. Public utility training programs. 3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations. 4. Programs sponsored by manufacturing organizations. 5. Other programs acceptable to the enforcing agency.		
702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a special inspector: 1. Certification by a national or regional green building program or standard publisher. 2. Certification by a statewide energy consulting or verification organization, such as HERS raters, building performance contractors, and home energy auditors. 3. Successful completion of a third party apprentice training program in the appropriate trade. 4. Other programs acceptable to the enforcing agency.		
Notes: 1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code. 2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).		
[BSC-C6] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.		
Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.		
703 VERIFICATIONS 703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, bulker or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.		

DISCLAIMER: THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE 2016 CALIFORNIA GREEN BUILDING STANDARDS (CAL GREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.



CITY OF OAKLAND
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANK H. OGAWA PLAZA, SUITE 4314 • OAKLAND CA, 94612
(510) 238-3437 • FAX (510) 238-7227

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

	No.	DATE	BY	REFERENCE
ARCHITECT	1	12/3/21	CL	ISSUE FOR PERMIT
	2	3/8/23	CL	PLAN CHECK RESPONSE
RCE NO. C-26408 EXP. 5/23				
CHECKED BY	DM			
DESIGNED BY	CL			
DRAWN BY	CL			

A007

CA GREEN BUILDING CODE
REQ.'S 3 OF 3

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/21

SHEET NO.
8 OF 47

POLLUTION PREVENTION - IT'S PART OF THE PLAN

MAKE SURE YOUR CREWS AND SUBS DO THE JOB RIGHT!

RUNOFF FROM STREETS AND OTHER PAVED AREAS IS A MAJOR SOURCE OF POLLUTION AND DAMAGE TO CREEKS AND THE SAN FRANCISCO BAY. CONSTRUCTION ACTIVITIES CAN DIRECTLY AFFECT THE HEALTH OF CREEKS AND THE BAY UNLESS CONTRACTORS AND CREWS PLAN AHEAD TO KEEP DIRT, DEBRIS, AND OTHER CONSTRUCTION WASTE AWAY FROM STORM DRAINS AND LOCAL CREEKS. FOLLOWING THESE GUIDELINES AND THE PROJECT SPECIFICATIONS WILL ENSURE YOUR COMPLIANCE WITH CITY OF OAKLAND REQUIREMENTS.

MATERIALS STORAGE & SPILL CLEANUP

NON-HAZARDOUS MATERIALS MANAGEMENT

1. SAND, DIRT, AND SIMILAR MATERIALS MUST BE STORED AT LEAST 10 FEET (3 METERS) FROM CATCH BASINS. ALL CONSTRUCTION MATERIAL MUST BE COVERED WITH A TARP AND CONTAINED WITH A PERIMETER CONTROL DURING WET WEATHER OR WHEN RAIN IS FORECASTED OR WHEN NOT ACTIVELY BEING USED WITHIN 14 DAYS.
2. USE (BUT DON'T OVERUSE) RECLAIMED WATER FOR DUST CONTROL AS NEEDED.
3. SWEEP OR VACUUM STREETS AND OTHER PAVED AREAS DAILY. DO NOT WASH DOWN STREETS OR WORK AREAS WITH WATER!
4. RECYCLE ALL ASPHALT, CONCRETE, AND AGGREGATE BASE MATERIAL FROM DEMOLITION ACTIVITIES. COMPLY WITH ALAMEDA COUNTY ORDINANCES FOR RECYCLING CONSTRUCTION MATERIALS, WOOD, GYP BOARD, PIPE, ETC.
5. CHECK DUMPSTERS REGULARLY FOR LEAKS AND TO MAKE SURE THEY ARE NOT OVERFILLED. REPAIR OR REPLACE LEAKING DUMPSTERS PROMPTLY.
6. COVER ALL DUMPSTERS WITH A TARP AT THE END OF EVERY WORK DAY OR DURING WET WEATHER.

HAZARDOUS MATERIALS MANAGEMENT

1. LABEL ALL HAZARDOUS MATERIALS AND HAZARDOUS WASTES (SUCH AS PESTICIDES, PAINTS, THINNERS, SOLVENTS, FUEL, OIL, AND ANTIFREEZE) IN ACCORDANCE WITH CITY, COUNTY, STATE, AND FEDERAL REGULATIONS.
2. STORE HAZARDOUS MATERIALS AND WASTES IN WATER TIGHT CONTAINERS, STORE IN APPROPRIATE SECONDARY CONTAINMENT, AND COVER THEM AT THE END OF EVERY WORK DAY OR DURING WET WEATHER OR WHEN RAIN IS FORECASTED.
3. FOLLOW MANUFACTURER'S APPLICATION INSTRUCTIONS FOR HAZARDOUS MATERIALS AND BE CAREFUL NOT TO USE MORE THAN NECESSARY. DO NOT APPLY CHEMICALS OUTDOORS WHEN RAIN IS FORECASTED WITHIN 24 HOURS.
4. BE SURE TO ARRANGE FOR APPROPRIATE DISPOSAL OF ALL HAZARDOUS WASTES.

SPILL PREVENTION AND CONTROL

1. KEEP A STOCKPILE OF SPILL CLEANUP MATERIALS (RAGS, ABSORBENTS, ETC.) AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES.
2. WHEN SPILLS OR LEAKS OCCUR, CONTAIN THEM IMMEDIATELY AND BE PARTICULARLY CAREFUL TO PREVENT LEAKS AND SPILLS FROM REACHING THE GUTTER, STREET, OR STORM DRAIN. NEVER WASH SPILLED MATERIAL INTO A GUTTER, STREET, STORM DRAIN, OR CREEK!
3. DISPOSE OF ALL CONTAINMENT AND CLEANUP MATERIALS PROPERLY.
4. REPORT ANY HAZARDOUS MATERIALS SPILLS IMMEDIATELY! DIAL 911 OR ALAMEDA COUNTY PUBLIC WORKS AGENCY DISPATCH AT (510) 670-5500

CONSTRUCTION ENTRANCES AND PERIMETER

1. ESTABLISH AND MAINTAIN EFFECTIVE PERIMETER CONTROLS AND STABILIZE ALL CONSTRUCTION ENTRANCES AND EXITS TO SUFFICIENTLY CONTROL EROSION AND SEDIMENT DISCHARGES FROM SITE AND TRACKING OFF SITE.
2. SWEEP OR VACUUM ANY STREET TRACKING IMMEDIATELY AND SECURE SEDIMENT SOURCE TO PREVENT FURTHER TRACKING.

VEHICLE AND EQUIPMENT MAINTENANCE & CLEANING

1. INSPECT VEHICLES AND EQUIPMENT FOR LEAKS FREQUENTLY. USE DRIP PANS TO CATCH LEAKS UNTIL REPAIRS ARE MADE; REPAIR LEAKS PROMPTLY.
2. FUEL AND MAINTAIN VEHICLES ON SITE ONLY IN A BERMED AREA OR OVER A DRIP PAN THAT IS BIG ENOUGH TO PREVENT RUNOFF.
3. IF YOU MUST CLEAN VEHICLES OR EQUIPMENT ON SITE, CLEAN WITH WATER ONLY IN A BERMED AREA THAT WILL NOT ALLOW RINSE WATER TO RUN INTO GUTTERS, STREETS, STORM DRAINS, OR CREEKS.
4. DO NOT CLEAN VEHICLES OR EQUIPMENT ON-SITE USING SOAPS, SOLVENTS, DEGREASERS, STEAM CLEANING EQUIPMENT, ETC.

EARTHWORK & CONTAMINATED SOILS

1. KEEP EXCAVATED SOIL ON THE SITE WHERE IT WILL NOT COLLECT IN THE STREET.
2. TRANSFER TO DUMP TRUCKS SHOULD TAKE PLACE ON THE SITE, NOT IN THE STREET.
3. USE FIBER ROLLS, SILT FENCES, OR OTHER CONTROL MEASURES TO MINIMIZE THE FLOW OF SILT OFF THE SITE.
4. EARTH MOVING ACTIVITIES ARE ONLY ALLOWED DURING DRY WEATHER BY PERMIT AND AS APPROVED BY THE COUNTY INSPECTOR IN THE FIELD.
5. MATURE VEGETATION IS THE BEST FORM OF EROSION CONTROL. MINIMIZE DISTURBANCE TO EXISTING VEGETATION WHENEVER POSSIBLE.
6. IF YOU DISTURB A SLOPE DURING CONSTRUCTION, PREVENT EROSION BY SECURING THE SOIL WITH EROSION CONTROL FABRIC, OR SEED WITH FAST- GROWING GRASSES AS SOON AS POSSIBLE.
7. IF YOU SUSPECT CONTAMINATION (FROM SITE HISTORY, DISCOLORATION, ODOR, TEXTURE, ABANDONED UNDERGROUND TANKS OR PIPES, OR BURIED DEBRIS), CALL THE ENGINEER FOR HELP IN DETERMINING WHAT SHOULD BE DONE, AND MANAGE DISPOSAL OF CONTAMINATED SOIL ACCORDING TO THEIR INSTRUCTIONS.

DEWATERING OPERATIONS

1. EFFECTIVELY MANAGE ALL RUN-ON, ALL RUNOFF WITHIN THE SITE, AND ALL RUNOFF THAT DISCHARGES FROM THE SITE. RUN-ON FROM OFF SITE SHALL BE DIRECTED AWAY FROM ALL DISTURBED AREAS OR SHALL COLLECTIVELY BE IN COMPLIANCE.
2. REUSE WATER FOR DUST CONTROL, IRRIGATION, OR ANOTHER ON-SITE PURPOSE TO THE GREATEST EXTENT POSSIBLE.
3. BE SURE TO NOTIFY AND OBTAIN APPROVAL FROM THE ENGINEER BEFORE DISCHARGING WATER TO A STREET, GUTTER, OR STORM DRAIN. FILTRATION OR DIVERSION THROUGH A BASIN, TANK, OR SEDIMENT TRAP MAY BE REQUIRED.
4. IN AREAS OF KNOWN CONTAMINATION, TESTING IS REQUIRED PRIOR TO REUSE OR DISCHARGE OF GROUNDWATER. CONSULT WITH THE ENGINEER TO DETERMINE WHAT TESTING IS REQUIRED AND HOW TO INTERPRET RESULTS. CONTAMINATED GROUNDWATER MUST BE TREATED OR HAULED OFF-SITE FOR PROPER DISPOSAL.

LANDSCAPE MATERIALS

1. CONTAIN, COVER, AND STORE ON PALLETS ALL STOCKPILED LANDSCAPE MATERIALS (MULCH, COMPOST, FERTILIZERS, ETC.) DURING WET WEATHER OR WHEN RAIN IS FORECASTED OR WHEN NOT ACTIVELY BEING USED WITHIN 14 DAYS.
2. DISCONTINUE THE APPLICATION OF ANY ERODIBLE LANDSCAPE MATERIAL WITHIN 2 DAYS OF FORECASTED RAIN AND DURING WET WEATHER.



SAW CUTTING

1. ALWAYS COMPLETELY COVER OR BARRICADE STORM DRAIN INLETS WHEN SAW CUTTING. USE FILTER FABRIC, CATCH BASIN INLET FILTERS, OR SAND/GRAVEL BAGS TO KEEP SLURRY OUT OF THE STORM DRAIN SYSTEM.
2. SHOVEL, ABSORB, OR VACUUM SAW-CUT SLURRY AND PICK UP ALL WASTE AS SOON AS YOU ARE FINISHED IN ONE LOCATION OR AT THE END OF EACH WORK DAY (WHICHEVER IS SOONER!).
3. IF SAW CUT SLURRY ENTERS A CATCH BASIN, CLEAN IT UP IMMEDIATELY.

PAVING/ASPHALT WORK

1. ALWAYS COVER STORM DRAIN INLETS AND MANHOLES WHEN PAVING OR APPLYING SEAL COAT, TACK COAT, SLURRY SEAL, OR FOG SEAL.
2. PROTECT GUTTERS, DITCHES, AND DRAINAGE COURSES WITH SAND/GRAVEL BAGS, OR EARTHEN BERMS.
3. DO NOT SWEEP OR WASH DOWN EXCESS SAND FROM SAND SEALING INTO GUTTERS, STORM DRAINS, OR CREEKS. COLLECT SAND AND RETURN IT TO THE STOCKPILE, OR DISPOSE OF IT AS TRASH.
4. DO NOT USE WATER TO WASH DOWN FRESH ASPHALT CONCRETE PAVEMENT.



CONCRETE, GROUT, AND MORTAR STORAGE & WASTE DISPOSAL

1. STORE CONCRETE, GROUT, AND MORTAR UNDER COVER, ON PALLETS, AND AWAY FROM DRAINAGE AREAS. THESE MATERIALS MUST NEVER REACH A STORM DRAIN.
2. WASH OUT CONCRETE EQUIPMENT/TRUCKS OFF-SITE OR INTO CONTAINED WASHOUT AREAS THAT WILL NOT ALLOW DISCHARGE OF WASH WATER ONTO THE UNDERLYING SOIL OR ONTO THE SURROUNDING AREAS.
3. COLLECT THE WASH WATER FROM WASHING EXPOSED AGGREGATE CONCRETE AND REMOVE IT FOR APPROPRIATE DISPOSAL OFF SITE.



PAINTING



1. NEVER RINSE PAINT BRUSHES OR MATERIALS IN A GUTTER OR STREET!
2. PAINT OUT EXCESS WATER-BASED PAINT BEFORE RINSING BRUSHES, ROLLERS, OR CONTAINERS IN A SINK.
3. PAINT OUT EXCESS OIL-BASED PAINT BEFORE CLEANING BRUSHES IN THINNER.
4. FILTER PAINT THINNERS AND SOLVENTS FOR REUSE WHENEVER POSSIBLE. DISPOSE OF OIL-BASED PAINT SLUDGE AND UNUSABLE THINNER AS HAZARDOUS WASTE.

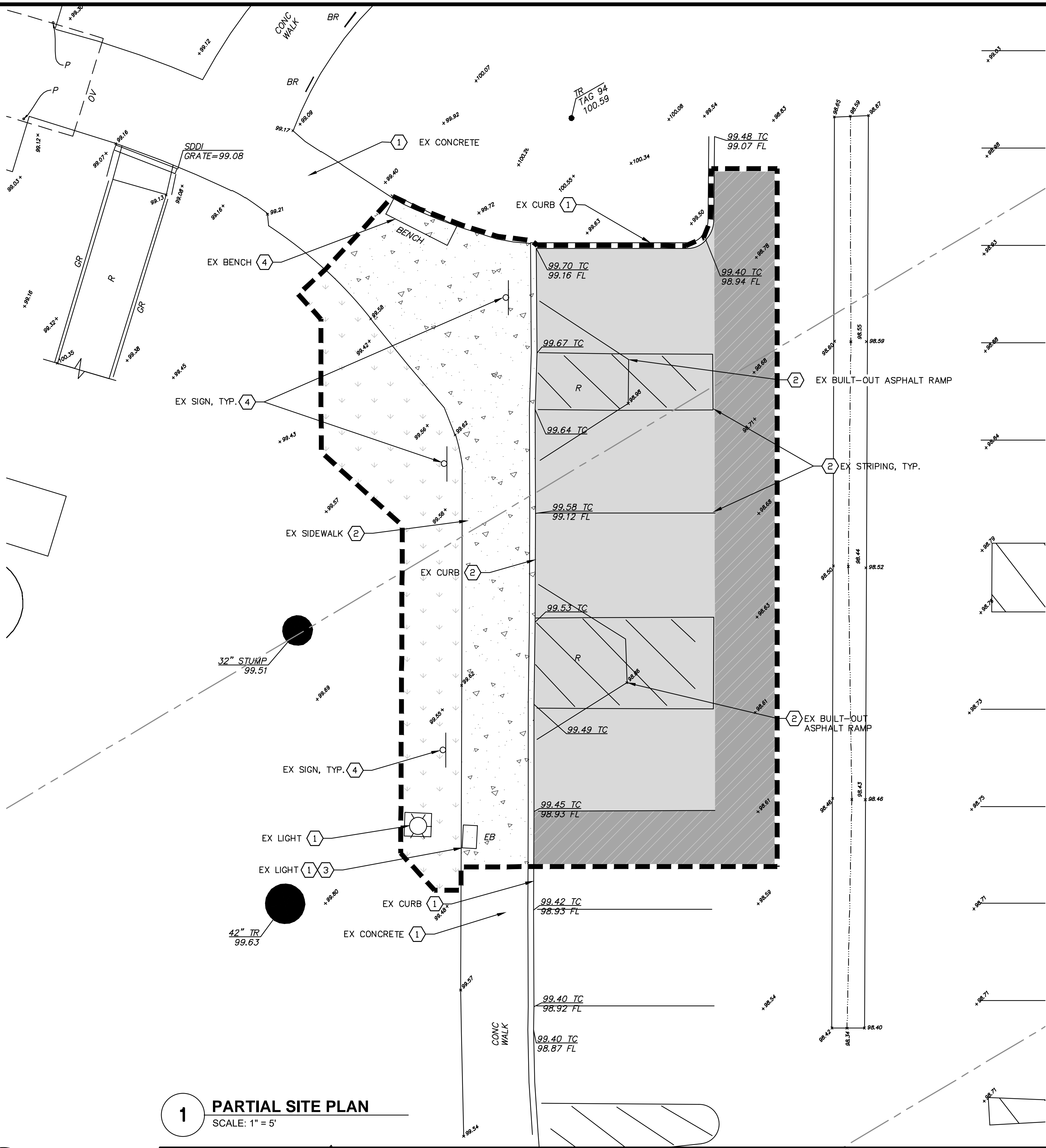


STORM DRAIN POLLUTERS MAY BE LIABLE FOR FINES OF \$10,000 OR MORE PER DAY!

CITY OF OAKLAND PUBLIC WORKS HOTLINE AT (510) 615-5566

FOR REFERENCES AND MORE DETAILED INFORMATION:
WWW.CLEANWATERPROGRAM.ORG
WWW.CABMPHANDBOOKS.COM

	 <div>CITY OF OAKLAND DESIGN AND CONSTRUCTION SERVICES DEPARTMENT <small>250 FRANK H. OGDEN PLAZA, SUITE 4314 • OAKLAND, CA 94612 (510) 238-3437 • FAX (510) 238-7227</small></div>	DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS CITY PROJECT NO. 1004984	ARCHITECT	<table><tr><th>No.</th><th>DATE</th><th>BY</th><th>REFERENCE</th></tr><tr><td>2</td><td>3/8/23</td><td>CL</td><td>PLAN CHECK RESPONSE</td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr></table>			No.	DATE	BY	REFERENCE	2	3/8/23	CL	PLAN CHECK RESPONSE													A008 POLLUTION PREVENTION	PROJECT NO. 1004984
			No.	DATE	BY	REFERENCE																						
			2	3/8/23	CL	PLAN CHECK RESPONSE																						
RCE NO. C-26408 EXP. 5/23	SCALE: HOR. VERT. DATE: 3/8/23	SHEET NO. 9 OF 47																										
CHECKED BY DM																												
DESIGNED BY CL																												
DRAWN BY CL																												



LEGEND

- FLOW LINE
- DEMOLITION LIMITS
- CLEAR AND GRUB
- DEMOLISH EXISTING CONCRETE CURB & GUTTER AND SIDEWALK TO PROPOSED SUBGRADE
- GRIND EXISTING ASPHALT 2" MINIMUM
- CONFORM GRIND TO EXISTING ASPHALT PAVING, SEE DETAIL 12 ON SHEET C300
- BR BIKE RACK
CLDR CENTERLINE OF DOOR
CONC CONCRETE
EB ELECTRICAL BOX
FF FINISHED FLOOR
FL FLOWLINE
GR GUARD RAIL
OV OVERHEAD
P POST
R RAMP
SDDI STORM DRAIN DROP INLET
TC TOP OF CURB
TR TREE
☆ AREA/YARD LIGHT
- SIGN

NOTES

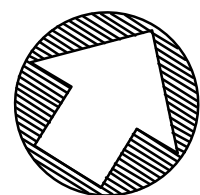
- EXISTING CONDITIONS OBTAINED FROM TOPOGRAPHIC SURVEYS PERFORMED BY BKF ENGINEERS, DATED SEPTEMBER 28, 2021.
- ALL DISTANCES AND DIMENSIONS ARE IN FEET AND DECIMALS THEREOF.
- ALL EXISTING UTILITY STRUCTURES TO REMAIN, UNLESS NOTED OTHERWISE. ADJUST RIM ELEVATIONS OF EXISTING UTILITY LIDS, BOX/VAULT COVERS, ETC. AS NECESSARY TO MATCH PROPOSED ELEVATIONS.
- PROTECT IN PLACE ALL EXISTING IMPROVEMENTS AND UTILITIES AND ALL OFFSITE FEATURES NOT EXPRESSLY NOTED FOR DEMOLITION OR IMPROVEMENT ON THIS PLAN.
- CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (USA) AT (800) 942-2444 AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, EXCAVATION, OR GRADING WORK.
- IF THE CONTRACTOR FAILS TO INVESTIGATE KNOWN AND UNKNOWN EXISTING SUBSURFACE IMPROVEMENTS PRIOR TO ANY CONSTRUCTION ACTIVITIES AND UNFORESEEN CONDITIONS ARISE, ALL COSTS AND SCHEDULE IMPACTS SHALL BE BORNE BY THE CONTRACTOR.
- CONTRACTOR SHALL POTHOLE OR INVESTIGATE EXISTING IRRIGATION SYSTEM AS NEEDED BEFORE DIGGING.
- EXISTING GRADES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR TO MATCH EXISTING GRADES AT LIMITS OF GRADING AND NOTIFY PROJECT ENGINEER OF ANY MAJOR DISCREPANCIES.
- CONTRACTOR SHALL SALVAGE ANY EXISTING ADA PARKING STALL SIGNAGE TO BE REMOVED AT DIRECTION OF THE OWNER.
- CONTRACTOR SHALL UTILIZE CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP'S) PER THE CASQA BMP HANDBOOK WHILE PERFORMING THE WORK, INCLUDING BUT NOT LIMITED TO PREVENTION AND/OR ALLEVIATION OF ANY DUST NUISANCE AND PREVENTING ANY DUST OR DEBRIS FROM BEING SPILLED OR TRACKED ONTO ADJACENT PUBLIC STREET AREAS.
- CONTRACTOR SHALL INSTALL FILTER FABRIC AND SAND BAGS AS NECESSARY TO PROTECT THE NEAREST DOWNSTREAM FIELD INLET(S) AND BIORETENTION AREA AGAINST THE INTRUSION OF CONSTRUCTION-RELATED MATERIALS, INCLUDING MUD.
- CONTRACTOR SHALL PERFORM PAVEMENT SWEEPING AS NECESSARY TO REMOVE GRAVEL AND MUD FROM PAVEMENT AREAS.
- REFER TO LAYOUT AND GRADING PLAN FOR PROPOSED IMPROVEMENTS AND ELEVATIONS.
- SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL STRIPING REMOVAL OUTSIDE OF LIMIT OF WORK.
- CONTRACTOR TO PICK UP PERMIT/JOB CARD AND PERMIT DRAWINGS FROM THE CITY BUILDING DEPARTMENT AND PAY FOR ANY REQUIRED PERMIT FEE AND/OR PERMIT RENEWAL FEE AS NEEDED.
- PROPERTY LINES SHOWN HEREON IS DIAGRAMMATIC AND WAS PROVIDED BY ELS ARCHITECTURE ON 01/31/2023.

KEYNOTES

- ① PROTECT IN PLACE
- ② DEMOLISH
- ③ ADJUST TO PROPOSED GRADE
- ④ REMOVE AND SALVAGE FOR RE-USE, NOTIFY OWNER IF UNABLE TO SALVAGE

1 PARTIAL SITE PLAN

SCALE: 1" = 5'



CITY OF OAKLAND

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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

CIVIL ENGINEER

CHECKED BY M.S.
DESIGNED BY A.Z.
DRAWN BY K.F.

No.	DATE	BY	REFERENCE
	3/8/2023	A.Z.	PLAN CHECK RESPONSE

C100

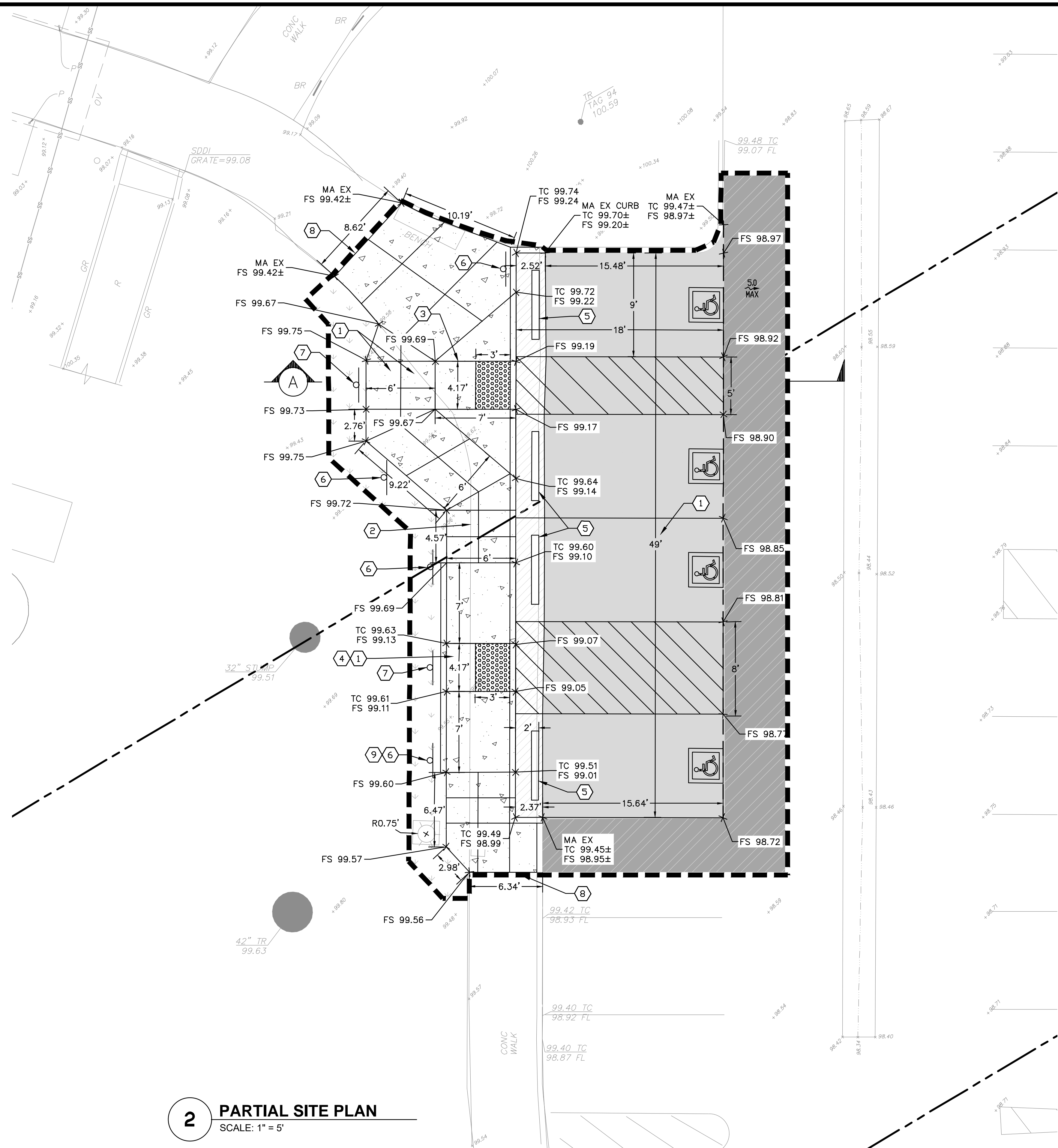
**EXISTING CONDITIONS
AND DEMOLITION**

**PROJECT NO.
20210413**

SCALE:
HOR.
VERT.
DATE:

SHEET NO.
11 OF 47





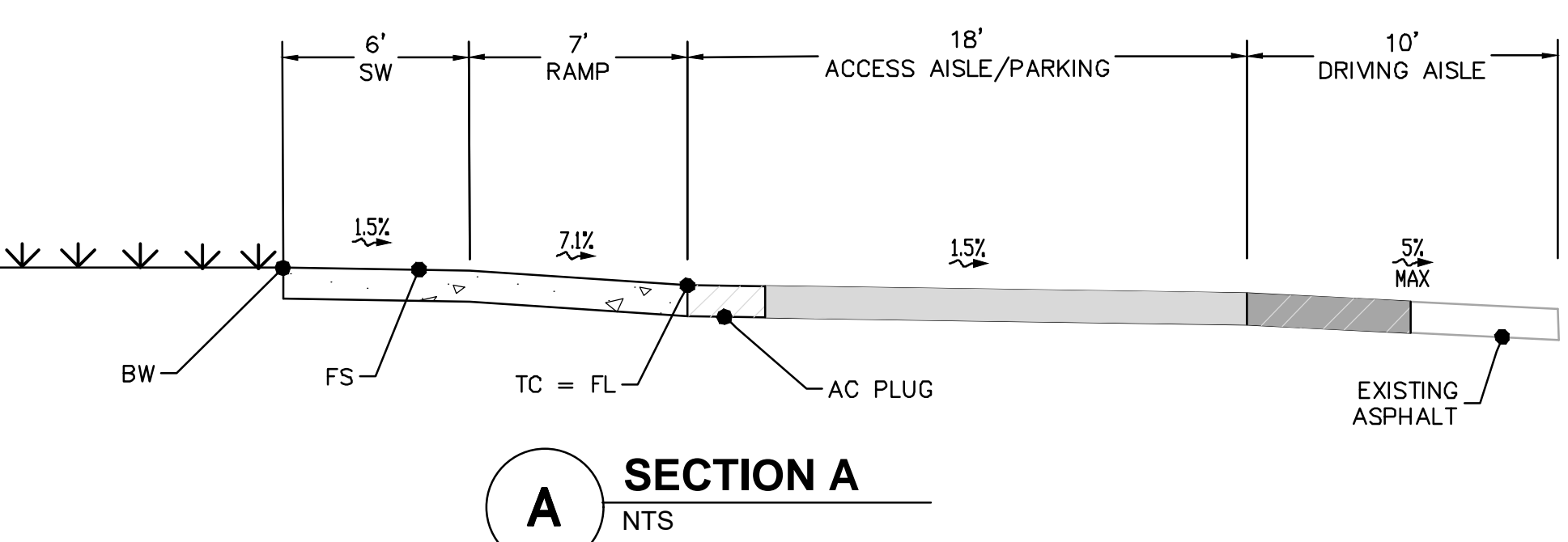
LEGEND

ABBREVIATIONS

NOTES

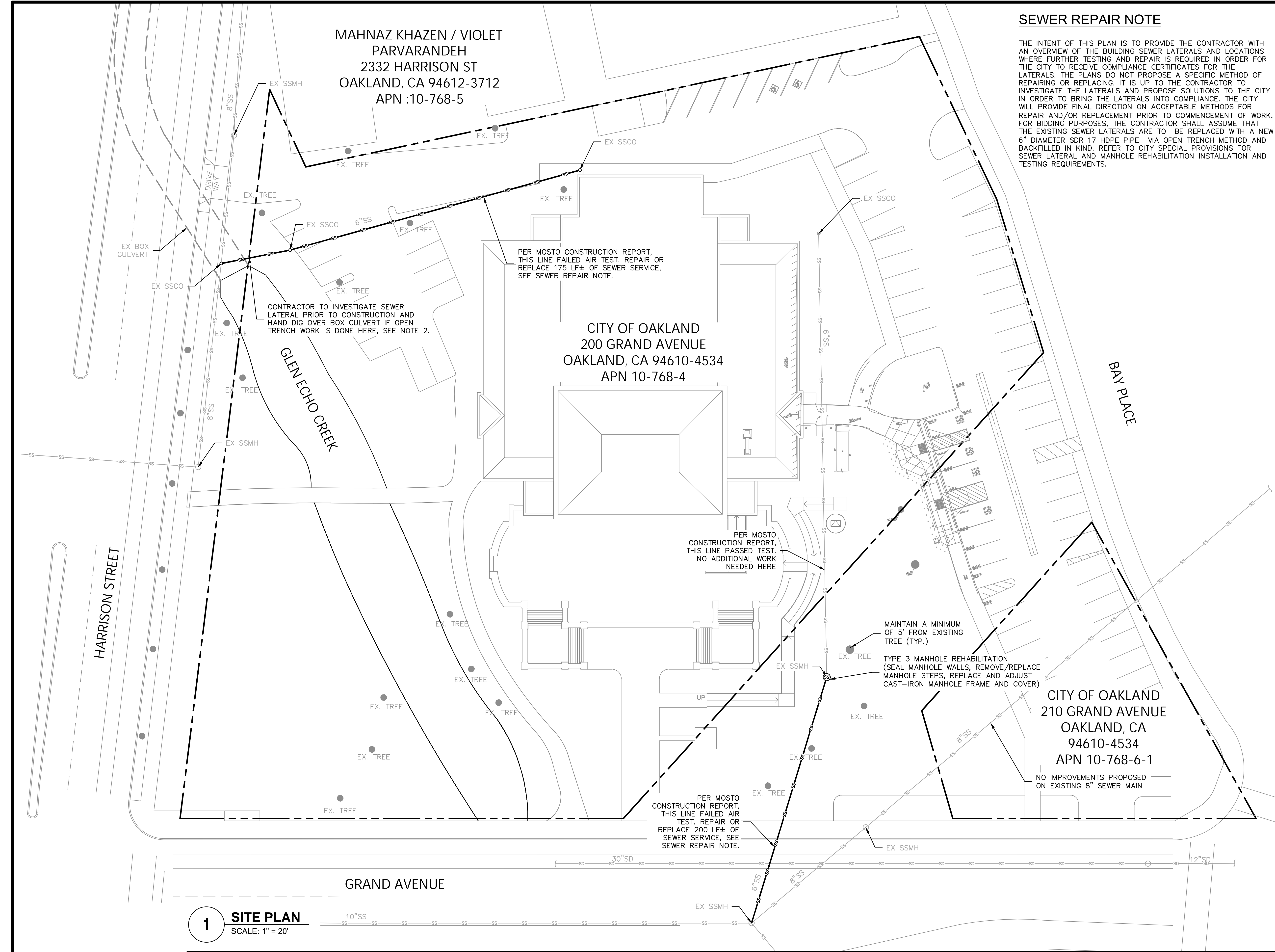
KEYNOTES

GRASS SEED NOTES

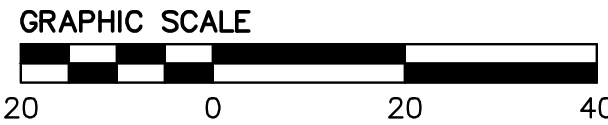
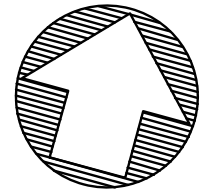


2 PARTIAL SITE PLAN
SCALE: 1" = 5'

A SECTION A
NTS



1 SITE PLAN
SCALE: 1" = 20'



CITY OF OAKLAND

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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS

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CHECKED BY M.S.
DESIGNED BY A.Z.
DRAWN BY K.F.

No.	DATE	BY	REFERENCE
	3/8/2023	A.Z.	PLAN CHECK RESPONSE

C210

SEWER REPAIR PLAN

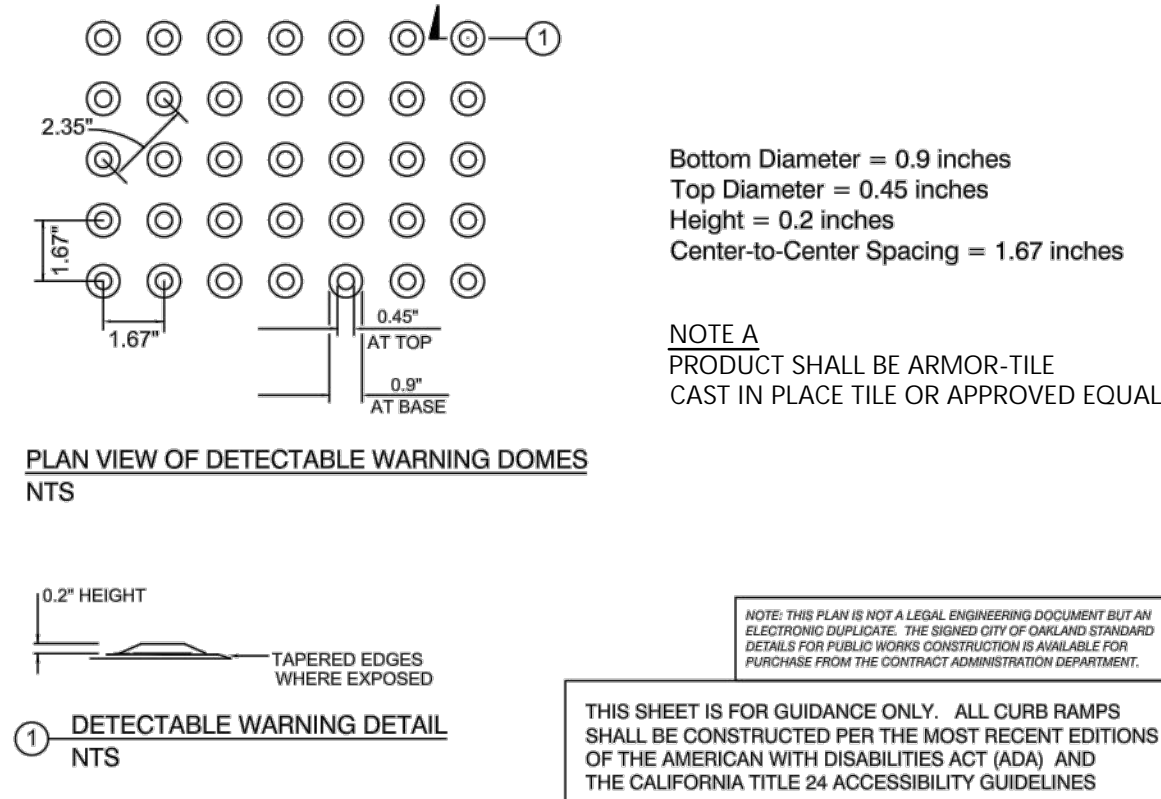
PROJECT NO.
20210413

SCALE:
HOR.
VERT.
DATE:

SHEET NO.
13 OF 47



70 SQ. IN. DARK BLUE REFLECTIVE PORCELAIN, ENAMEL STEEL SIGN WITH WHITE INTERNATIONAL SYMBOL OF ACCESSIBILITY MOUNTED 80" OFF F.G. ON 1 1/2" Ø STEEL POST. PROVIDE AN ADDITIONAL SIGN OR ADDITIONAL LANGUAGE BELOW THE SYMBOL OF ACCESSIBILITY WHICH READS "MINIMUM FINE \$250." VAN SPACE SHALL HAVE AN ADDITIONAL "VAN ACCESSIBLE" SIGN MOUNTED BELOW THE SYMBOL OF ACCESSIBILITY PER CBC SEC 11B-502.6.

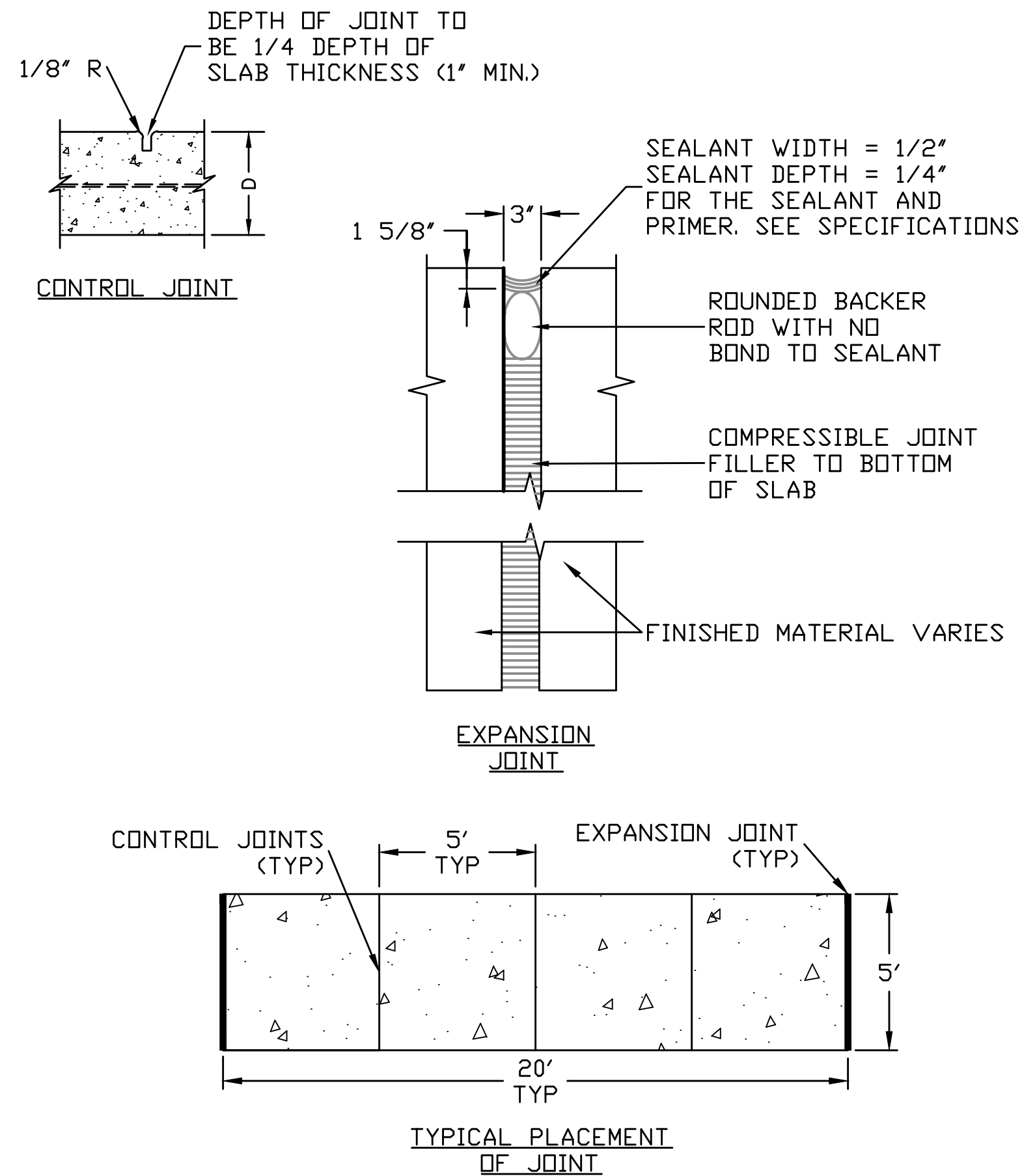


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CIVIL ENGINEER	No.	DATE	BY	REFERENCE
		3/8/2023	A.Z.	PLAN CHECK RESPONSE
CHECKED BY	M.S			
DESIGNED BY	A.Z			
DRAWN BY	K.F			

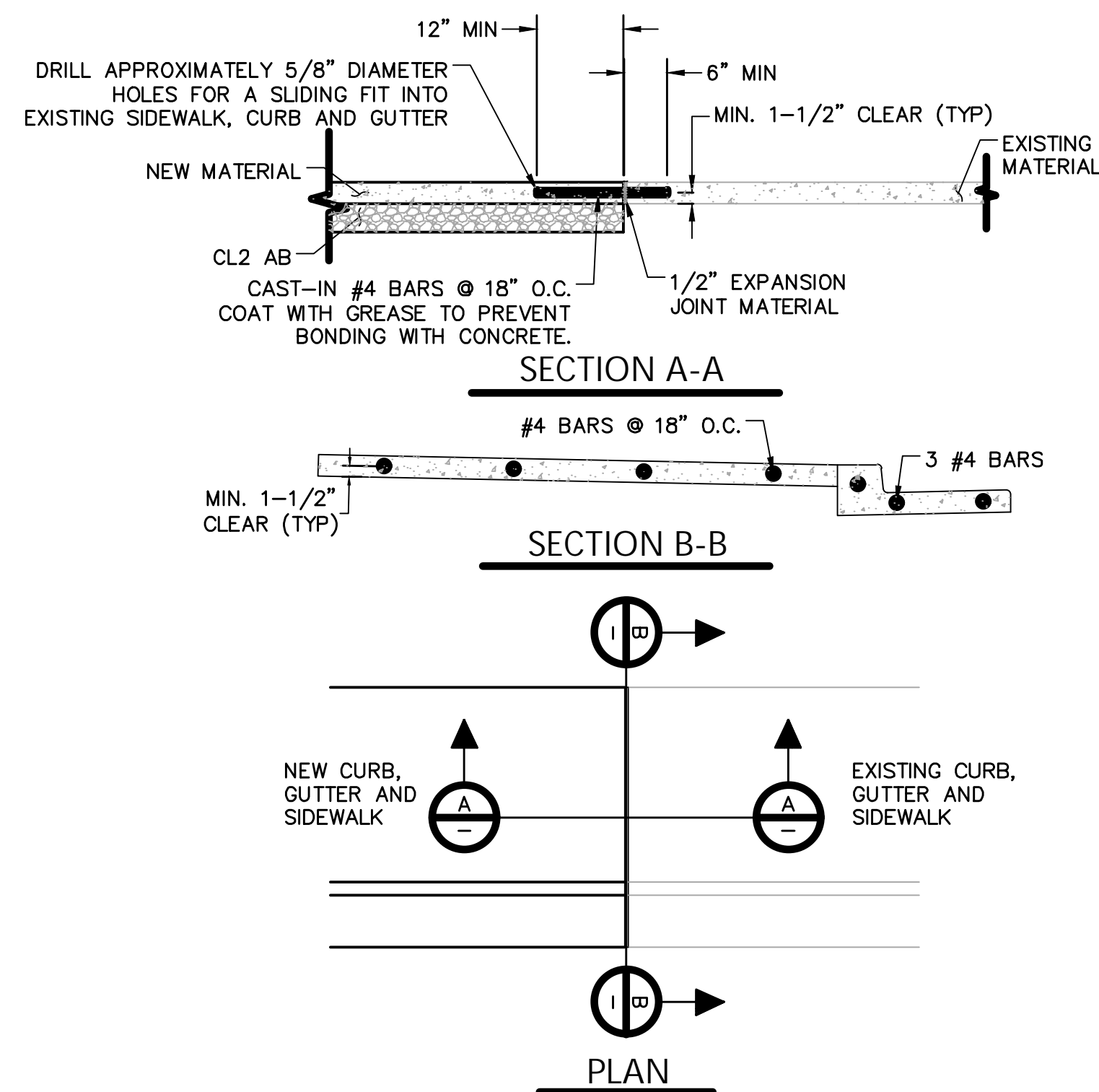
CONSTRUCTION DETAILS

SCALE:	SHEET NO.
HOR.	
VERT.	
DATE:	14 OF 47



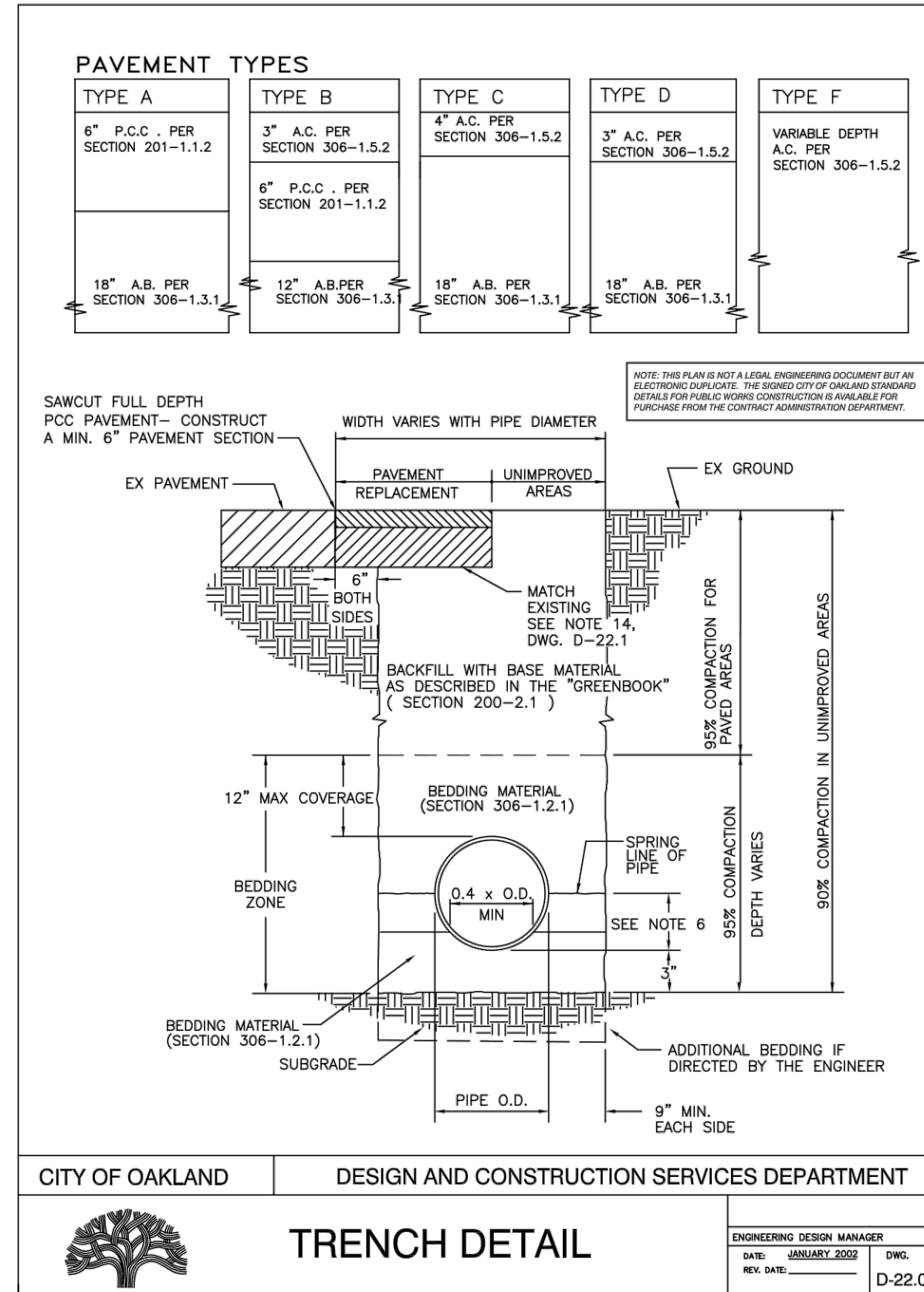
1 CONSTRUCTION JOINTS

NTS



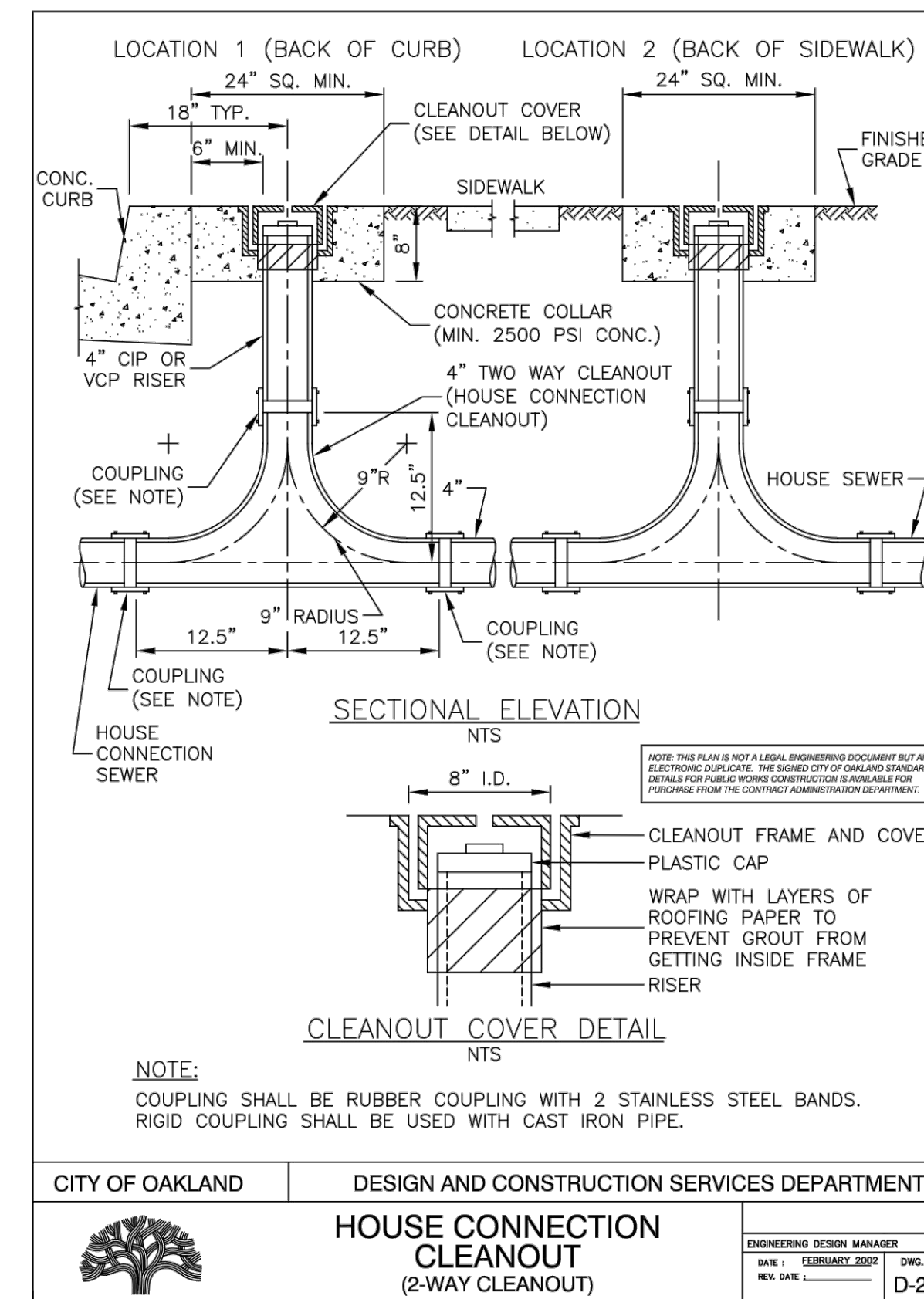
2 CONNECTION TO EXISTING SIDEWALK

NTS



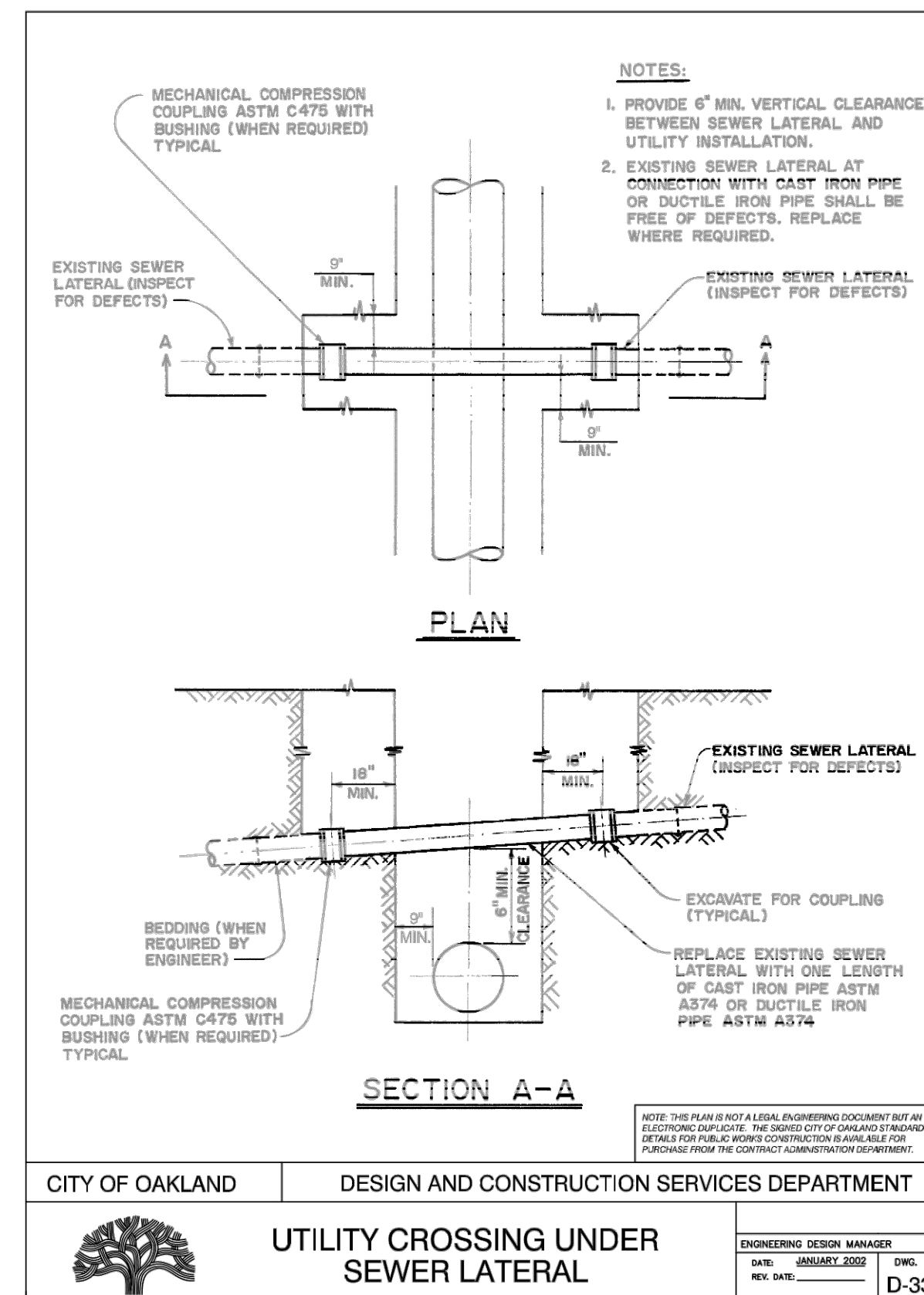
3 UTILITY TRENCH

NTS



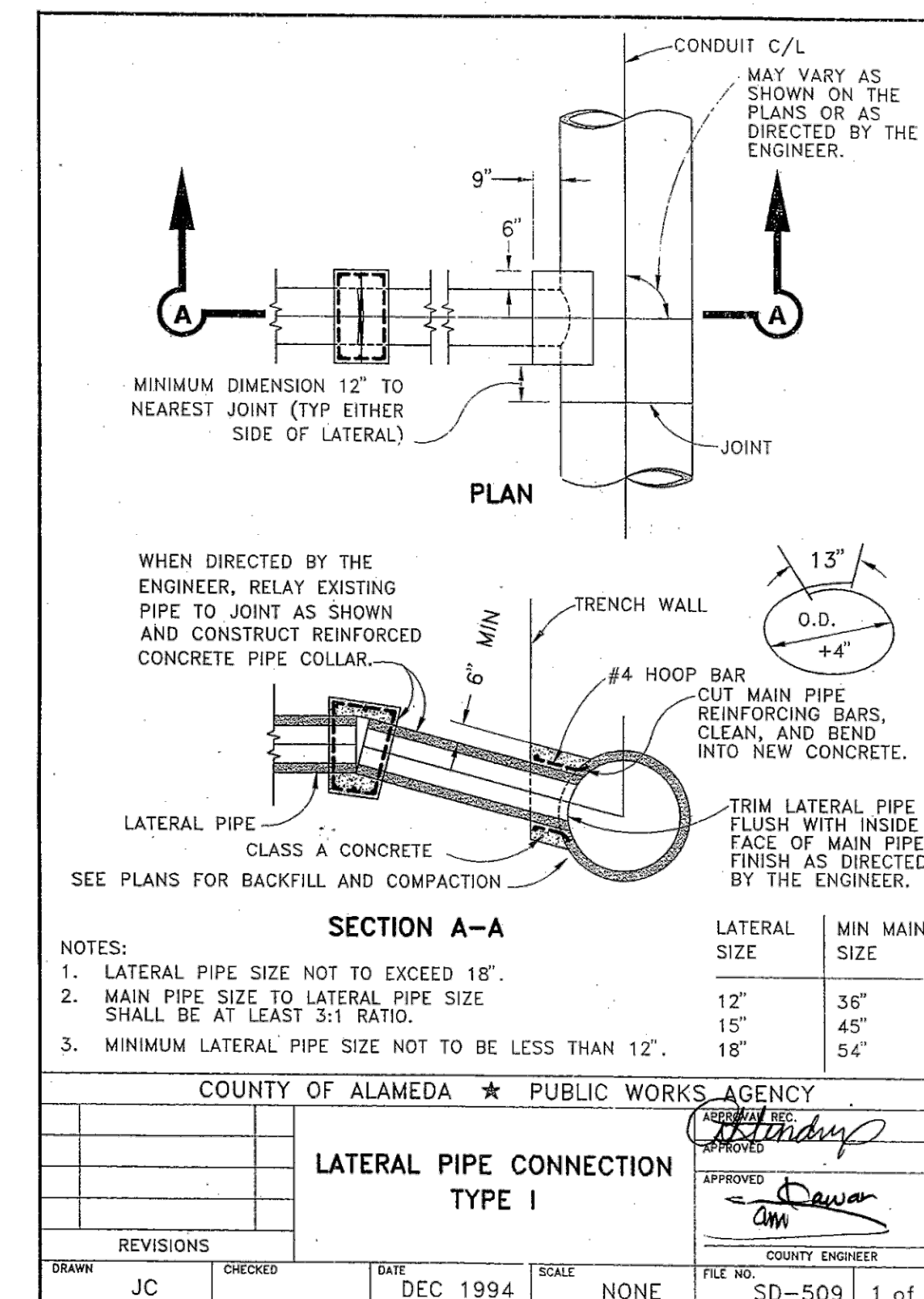
4 UTILITY CROSSING UNDER SS LATERAL

NTS



5 UTILITY CROSSING UNDER SS LATERAL

NTS



6 LATERAL WYE CONNECTION

NTS



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
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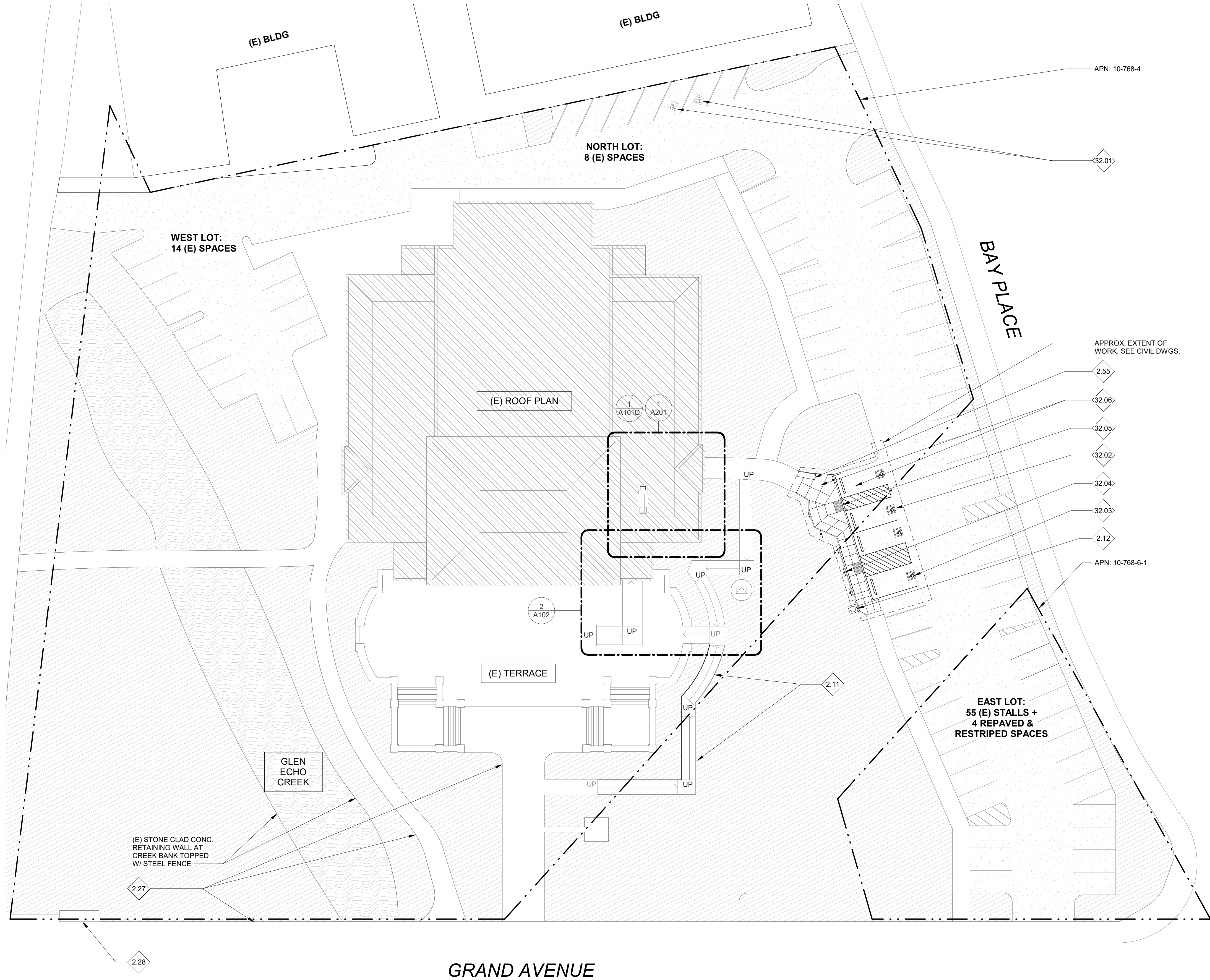
C301
CONSTRUCTION DETAILS

PROJECT NO.
20210413

SCALE:
HOR.
VERT.
DATE:

SHEET NO.
15 OF 47





1 SITE PLAN
1" = 20'-0"



SHEET NOTES

1. SCD FOR SITE WORK, TYP.
2. CONTRACTOR SHALL POTHOLE TO INVESTIGATE EXISTING IRRIGATION SYSTEM BEFORE DIGGING. IF SYSTEM CONFLICTS WITH EXCAVATION REQUIREMENTS CONTACT CITY REPRESENTATIVE TO COORDINATE.
3. CONFIRM ALL UNDERGROUND UTILITY LINES BEFORE DIGGING.
4. PROTECT ALL SITE COMPONENTS TO REMAIN IN THE AREA OF WORK INCLUDING BUT NOT LIMITED TO THE EXISTING LIGHT POLE ADJACENT TO THE SIDEWALK.
5. SCD FOR SEWER REPAIR WORK.

KEYNOTES

2.11	(E) RAMP, TYP.
2.12	(E) LIGHT POST TO REMAIN
2.27	(E) CONC. SIDEWALK
2.28	(E) BUS STOP GRAND AVE. AT HARRISON ST.
2.55	REMOVE AND REATTACH (E) BENCH TO (N) CONC
32.01	REMOVE (E) ACCESSIBILITY SYMBOLS
32.02	ACCESSIBLE PARKING SPACE, TYP. OF 3, SCD
32.03	VAN ACCESSIBLE PARKING SPACE, SCD
32.04	PARKING SIGNAGE, SCD
32.05	CURB RAMP, SCD
32.06	AC AND CONC., SCD

LEGEND

---	PROPERTY LINE
---	(E) ITEM TO REMAIN
---	PROVIDE ITEM



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

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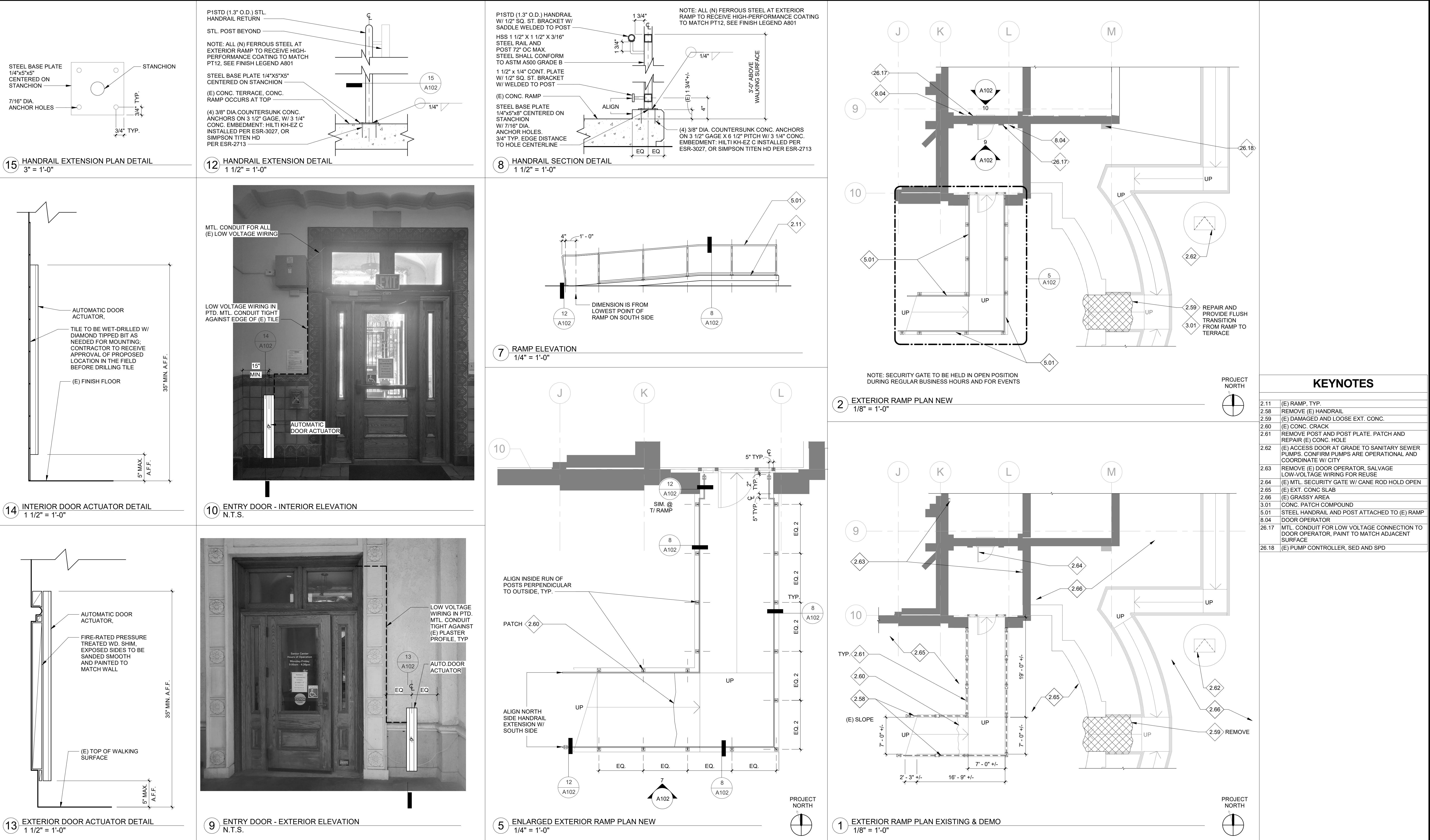
A101

SITE AND ROOF PLAN

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/21

SHEET NO.
16 OF 47



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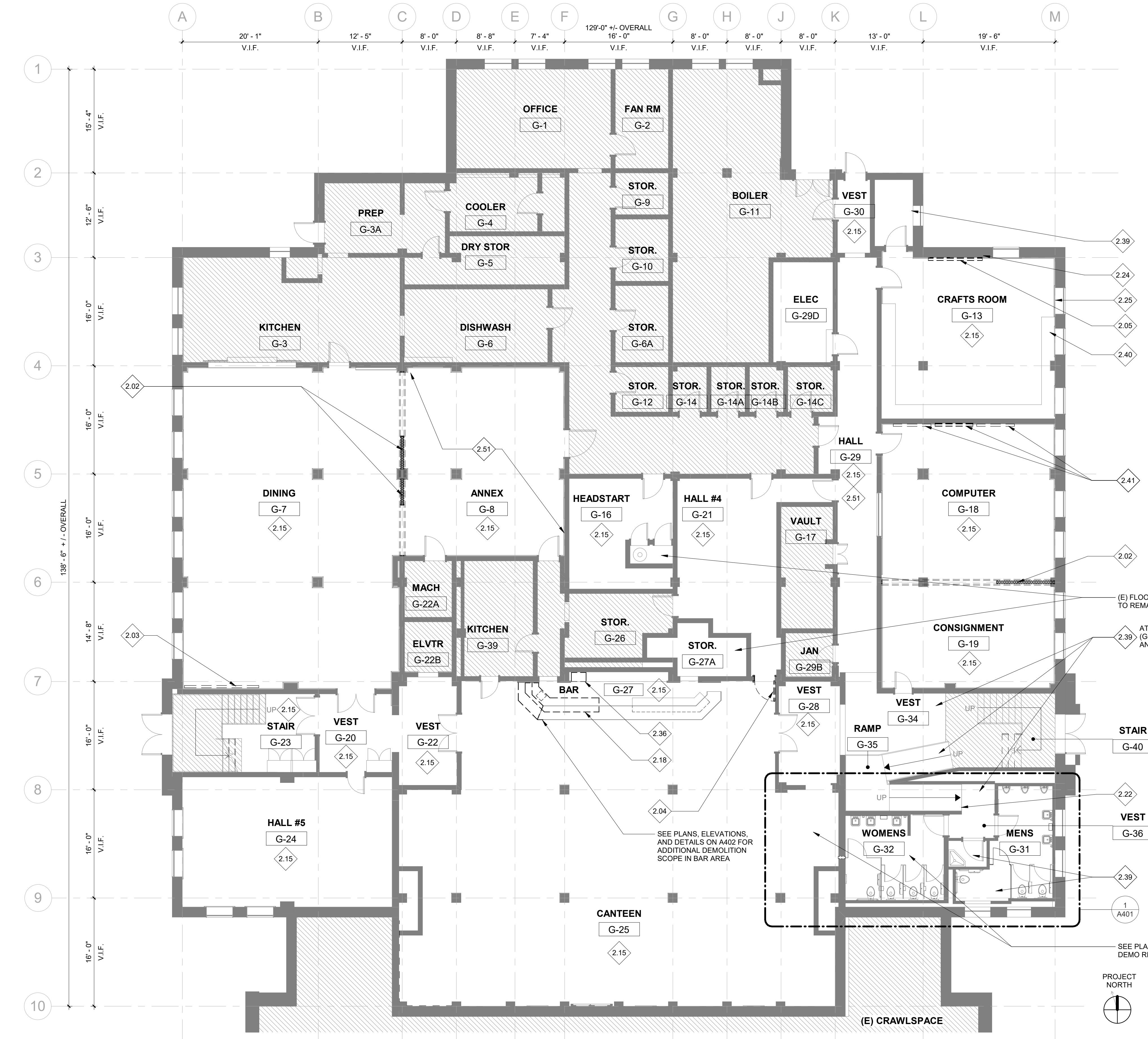
A102

ENLARGED SITE PLAN AND
EXTERIOR ELEV. RAMP

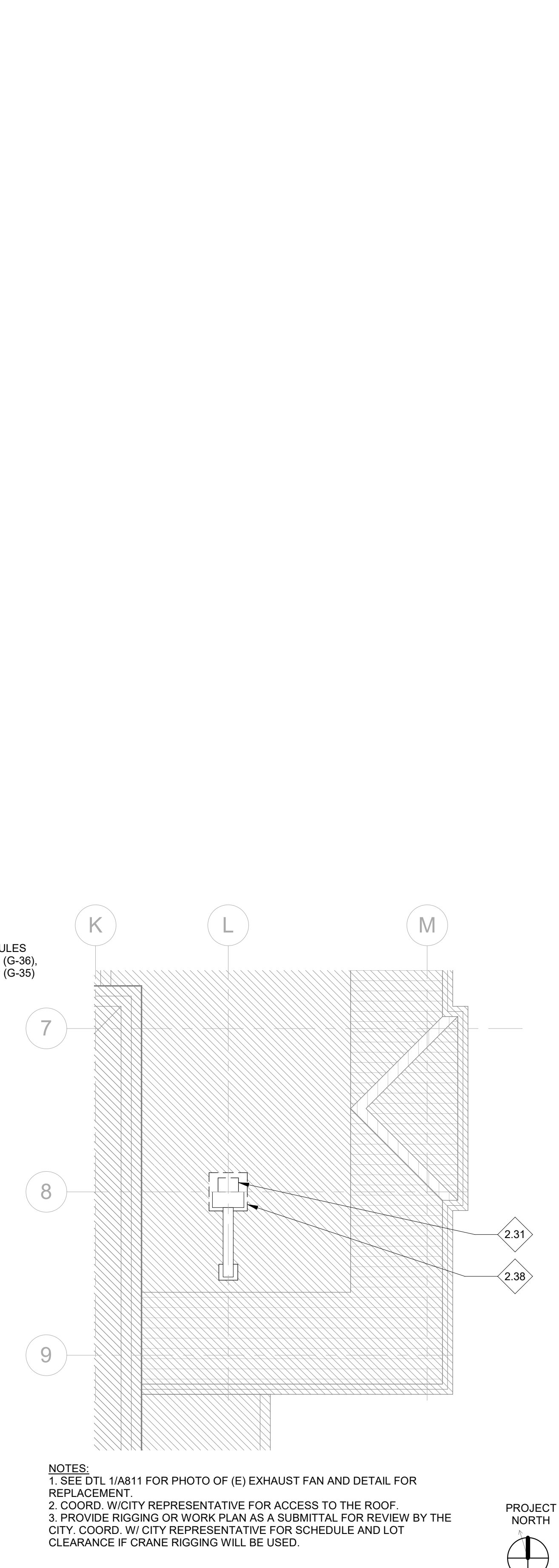
PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 3/8/23

SHEET NO.
17 OF 47



2 DEMOLITION FLOOR PLAN - GROUND FLOOR
1/8" = 1'-0"



1 PARTIAL DEMOLITION ROOF PLAN
1/8" = 1'-0"

SHEET NOTES

1. PROVIDE DEMOLITION AND PROTECTION PLAN TO CITY FOR REVIEW PRIOR TO DEMOLITION, SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. PROTECT ALL EXISTING FINISHES, BUILDING ELEMENTS AND EQUIPMENT TO REMAIN.
3. REMOVE ALL LIGHT FIXTURES WITHIN THE AREA OF WORK, S.E.D.
4. SEE DEFINITIONS SECTION ON A001 GENERAL NOTES, INDEX, AND SYMBOLS FOR DEFINITION OF TERMS SUCH AS REMOVE, DEMO, SALVAGE, ETC.
5. SEE PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ADDITIONAL SCOPE OF DEMOLITION WORK. SEE A601D EXISTING AND DEMOLITION REFLECTED CEILING PLAN FOR DEMO AT CEILING.
6. SEE EXISTING AND DEMO RESTROOM PLAN 1/A401 FOR ADDITIONAL DEMO WORK.
7. SEE FLOOR FINISH PLAN A701 FOR FLOORING. REMOVE (E) FLOORING DOWN TO SUBSTRATE UON AT NEW FLOOR FINISH LOCATIONS.
8. FIELD VERIFY EXTENT OF DEMOLITION SCOPE PRIOR TO START OF DEMOLITION ACTIVITIES.
9. IT WILL BE NECESSARY FOR CONTRACTOR TO DEMOLISH ADDITIONAL COMPONENTS BASED ON SCOPE OF WORK NOT SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL REVIEW WORK INDICATED IN DRAWINGS AND DESCRIBED IN SPECIFICATIONS AND CONFIRM BEFORE DEMOLITION PROCEEDS.
10. SEE PARTITION SCHEDULE AND ENLARGED PLANS FOR EXISTING AND PROPOSED WALL COMPOSITION, WALL MATERIALS NOT SHOWN ON LARGE SCALE PLANS.

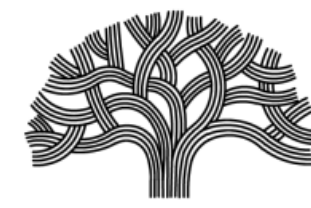
KEYNOTES

- | | |
|------|---|
| 2.02 | REMOVE (E) ACCORDIAN DOORS, STEEL FRAME, FRAMING, AND TRIM |
| 2.03 | REMOVE (E) PHOTO CANVAS, PATCH AND PREP FOR PAINT |
| 2.04 | REMOVE (E) DOOR, FRAME AND TRIM TO REMAIN |
| 2.05 | REMOVE (E) CHALK BOARD |
| 2.15 | REMOVE (E) FLOORING |
| 2.18 | SALVAGE (E) S.S. EQUIPMENT & RELATED DRAINAGE PIPING, COORD. W/ OWNER FOR STORAGE OR DISPOSAL |
| 2.22 | (E) RAMP TO RESTROOMS |
| 2.24 | REMOVE DAMAGED PLASTER AT LOWER PORTION OF WALL, SEE INT. ELEV. 8/A504 |
| 2.25 | REMOVE WD. AND ACRYLIC GLASS INFILL AT WINDOW |
| 2.31 | REMOVE (E) EXHAUST FAN, SMD |
| 2.36 | REMOVE (E) UNDER-COUNTER COOLER, CAP ELEC. POWER |
| 2.38 | REMOVE (E) EXHAUST FAN CURB CAP AND CURB FLASHING, PROTECT FROM WEATHER UNTIL NEW INSTALLED |
| 2.39 | (E) FLOOR TO REMAIN |
| 2.40 | REMOVE LOOSE AND FLAKING PAINT AT (E) RADIATOR UNDER CABINET, PREP AND PAINT |
| 2.41 | SALVAGE (E) MTL FRAME TACK & WHITE BOARDS, PROVIDE TO OWNER, SEE INT. ELEV. 1/A503 |
| 2.51 | REMOVE (E) WALLPAPER BORDER IN ROOM OR SPACE, TYP. |

LEGEND

- ITEM TO BE REMOVED
- (E) ITEM TO REMAIN
- PROVIDE ITEM
- REMOVE (E) DOOR, FRAME TO REMAIN
- AREA OF BUILDING NOT IN SCOPE OF WORK
- (E) CONCRETE WALL

NOTES:
1. SEE DTL 1/A811 FOR PHOTO OF (E) EXHAUST FAN AND DETAIL FOR REPLACEMENT.
2. COORD. W/CITY REPRESENTATIVE FOR ACCESS TO THE ROOF.
3. PROVIDE RIGGING OR WORK PLAN AS A SUBMITTAL FOR REVIEW BY THE CITY. COORD. W/ CITY REPRESENTATIVE FOR SCHEDULE AND LOT CLEARANCE IF CRANE RIGGING WILL BE USED.



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
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ARCHITECT
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A101D
GROUND FLOOR AND PARTIAL ROOF DEMOLITION PLAN

SCALE:	SHEET NO.
HOR.	18 OF 47
VERT.	
DATE: 12/3/21	

PROJECT NO.
1004984



1 REFLECTED CLG. PLAN - GROUND FLOOR EXIST AND DEMO
1/8" = 1'-0"

SHEET NOTES

1. PROTECT FINISHES AND OTHER ELEMENTS TO REMAIN, TYP.
2. DIMENSIONS INDICATED ARE APPROXIMATE, VERIFY CONDITIONS IN FIELD.
3. REMOVE (E) LIGHT FIXTURES, HANGERS, CONDUIT, AND WIRING BACK TO JUNCTION BOXES TYP. UON, SED.
4. SEE PLANS AND ELECT. DWGS. FOR (E) STEEL CHANNEL SYSTEM TO BE REUSED FOR MOUNTING LIGHT FIXTURES. STEEL CHANNEL UNUSED FOR MOUNTING EXISTING OR NEW EQUIPMENT TO BE REMOVED.
5. WINDOW COVERINGS SHALL BE SALVAGED. REINSTALL OR DISPOSE AS DIRECTED BY OWNER.
6. REMOVE DAMAGED, PARTIALLY MISSING, OR UNROLLED PIPE INSULATION NOT SUITABLE FOR REINSTALLATION NEAR CEILING AT CANTEN, BEHIND BAR, DINING, AND CRAFT ROOM.
7. WHEN REMOVING DAMAGED ADHERED ACOUSTIC CEILING TILES, SALVAGE QUARTER ROUND WD. TRIM FOR REINSTALLATION.
8. SEE PARTITION SCHEDULE AND ENLARGED PLANS FOR EXISTING AND PROPOSED WALL COMPOSITION. WALL MATERIALS NOT SHOWN ON LARGE SCALE PLANS.
9. LOOSE AND FLAKING PAINT SHALL BE REMOVED AND AREAS REPAIRED AND SANDED BEFORE PAINTING, TYP.

KEYNOTES

2.16	REMOVE (E) LIGHT FIXTURES, SED; SEE SHEET NOTE 3
2.42	REMOVE LOOSE AND DAMAGED (E) PLASTER AT WALL AND CLG.
2.43	REMOVE LOOSE AND FLAKING PAINT, PREP FOR PAINT, TYP.
2.44	REMOVE (E) RECESSED LIGHT FIXTURE TYP. OF 6; LIMIT DAMAGE TO OPENING
2.46	REMOVE (E) LIGHT FIXTURE UNDER BAR, CONDUIT TO REMAIN, TYP. OF 3
2.47	REMOVE DAMAGED OR PARTIALLY MISSING ADHERED ACOUSTIC CLG. TILE (ACT) TYP.
2.48	REMOVE DAMAGED, PARTIALLY MISSING, OR UNROLLED PIPE INSULATION THAT CANNOT BE SALVAGED, SEE KEYNOTE 6
2.72	(E) CONC. WALL
2.75	LOCATE REINF. BARS IN (E) CONCRETE WALL BY NON-DESTRUCTIVE METHOD; LOCATE PENETRATION BETWEEN REINF. BARS. CUTTING REINF. BARS IS PROHIBITED

LEGEND

	AREA OF BUILDING NOT IN SCOPE OF WORK
	(E) EXP. CONC. CLG. BEAM
	(E) ADHERED 12"x12" ACOUSTIC CLG. TILE (ACT)
	(E) SUSPENDED 2'x4' ACOUSTIC CLG. TILE (ACT)
	(E) HVAC SUPPLY AND RETURN REGISTERS TO REMAIN, TYP
	(E) PROJECTOR TO REMAIN
	(E) EMERGENCY LIGHT TO REMAIN
	(E) EMERGENCY LIGHT + EXIT SIGN TO REMAIN
	(E) EXIT SIGN TO REMAIN
	REMOVE (E) LIGHT FIXTURES, SED
	REMOVE DAMAGED ADHERED ACOUSTIC CLG. TILE. SEE SHEET NOTE 7; REMOVE ADHERED ACT AT (N) RESTROOM
	REMOVE LOOSE AND FLAKING PAINT (WORST CONDITIONS INDICATED)



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS CITY PROJECT NO. 1004984

ARCHITECT

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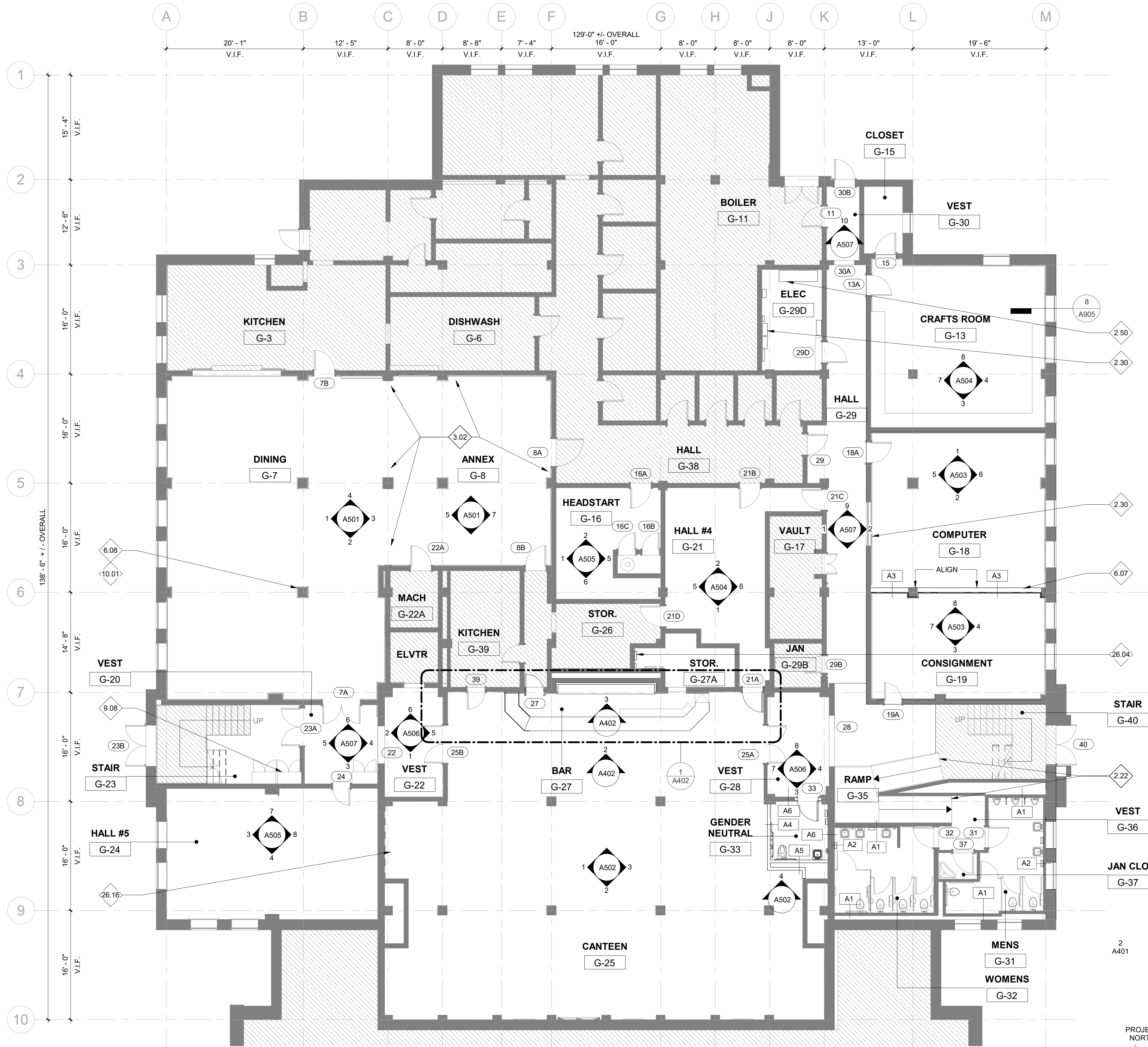
A601D

DEMOLITION REFLECTED
CLG. PLAN GROUND FLOOR

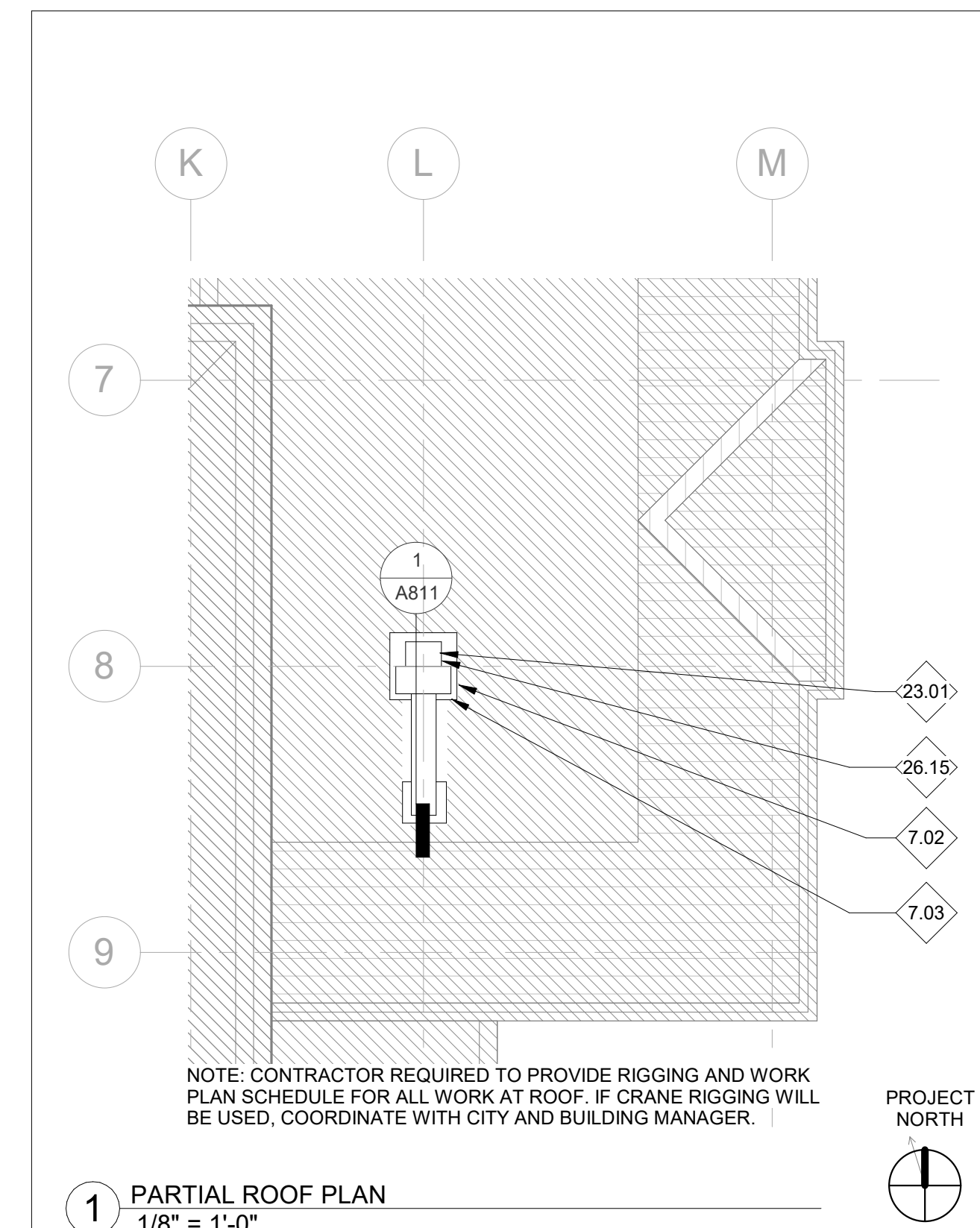
PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/21

SHEET NO.
19 OF 47



2 FLOOR PLAN - GROUND FLOOR
1/8" = 1'-0"



1 PARTIAL ROOF PLAN
1/8" = 1'-0"

SHEET NOTES

1. VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. BRING DISCREPANCIES TO THE ATTENTION OF THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.
2. CUT AND PATCH (E) FLOOR, WALL AND CEILING FINISHES AS REQUIRED TO INSTALL NEW ELECTRICAL SYSTEMS, SED
3. EXISTING DIMENSIONS ARE PROVIDED FOR CONVENIENCE ONLY, VERIFY ALL DIMENSIONS IN THE FIELD.
4. PROTECT ALL EXISTING FINISHES AND BUILDING COMPONENTS DURING CONSTRUCTION.
5. PAINT ALL EXPOSED BUILDING ELEMENTS AND FEATURES WITHIN THE AREA OF WORK, INCLUDING WALLS, DOORS, FRAMES, TRIM, FIXTURES, PIPING AND CONDUIT. SEE INTERIOR ELEVATIONS, REFLECTED CEILING PLAN AND FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
6. PROVIDE OVERALL ALLOWANCE FOR 300 SF OF CONC. SLAB REPAIR OR REPLACEMENT. LOCATIONS TO BE CONFIRMED WITH CITY AFTER FLOOR COVERING REMOVAL. WORST CASES ARE INDICATED IN ANNEX. SEE COVERSHEET FOR LIST OF REQUIRED ALLOWANCES.

KEYNOTES

- | | |
|-------|--|
| 2.22 | (E) RAMP TO RESTROOMS |
| 2.30 | (E) ELECT. PANEL, SED |
| 2.50 | (E) ELECT. SWITCHGEAR, SED |
| 3.02 | REPAIR SPALLING /CRUMBING CONC. SLAB SUB FLOOR AND PREP FOR NEW FLOORING. SEE DTL. 11/A906 (SEE KEYNOTE 8 FOR REQ'D ALLOWANCE) |
| 6.07 | 6" WD. STUD SOUND-RATED PARTITION, SEE DETAIL ON A905 |
| 6.08 | REPAIR AND/OR REPLACE ALL CRACKED PLASTER; PROVIDE PTD. WD. CHAIR RAIL AND CUSTOM BASE AT EA. COLUMN TO MATCH (E), TYP. OF 4. |
| 7.02 | GALV. SHEET MTL. CAP AT CURB, SMD |
| 7.03 | BUR ROOF FLASHING AT (E) CURB |
| 9.08 | PAINT (E) WOOD CASEWORK AND TRIM, TYP. |
| 10.01 | CORNER GUARDS UP TO CHAIR RAIL, TYP. AT 4 COLUMNS IN THIS SPACE |
| 23.01 | EXHAUST FAN AND MOUNTING ASSEMBLY, SMD |
| 26.04 | ELECT. PANEL, SED |
| 26.15 | RECONNECT FAN TO (E) ELECT. POWER |
| 26.16 | RACEWAY FOR FLAT SCREEN CABLES, WHITE OR PT. TO MATCH WALL |

LEGEND

- | | |
|--|---------------------------------------|
| | (E) ITEM TO REMAIN |
| | PROVIDE ITEM |
| | AREA OF BUILDING NOT IN SCOPE OF WORK |
| | PARTITION TYPES, SEE SHEET A905 |
| | (E) CONCRETE WALL |



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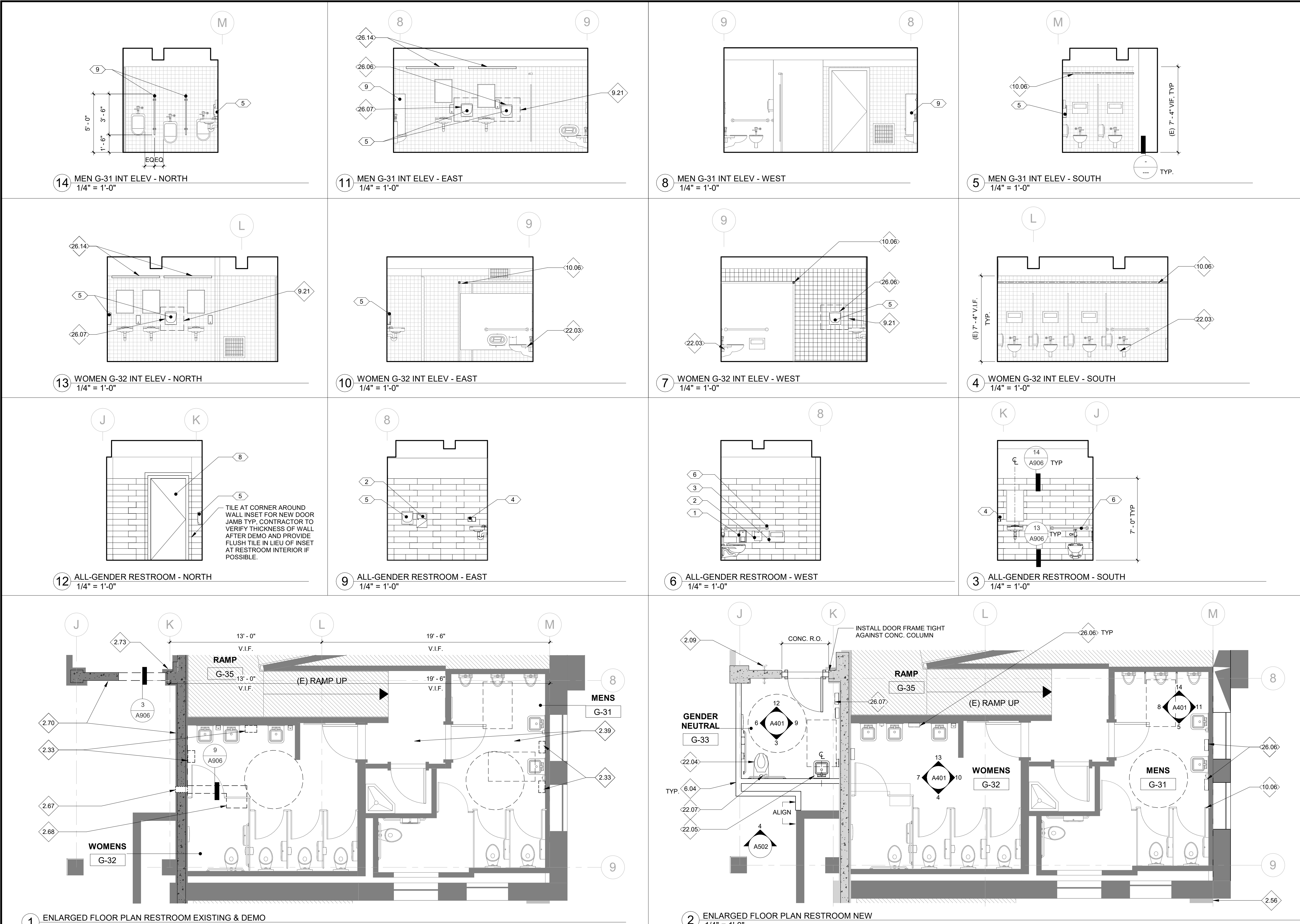
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A201

GROUND FLOOR AND PARTIAL ROOF PLAN

PROJECT NO.
1004984

SCALE:	SHEET NO.
HOR.	20 OF 47
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DATE: 12/3/21	



- SHEET NOTES**
- SEE A801 FOR FINISH SCHEDULE AND LEGEND.
 - SEE DTL 3/A801 FOR ACCESSORY MOUNTING HEIGHTS AND CODE CLEARANCES.
 - SEE A905 DOOR SCHEDULE FOR THRESHOLD AND TRANSITION DETAIL CALLOUTS, A906 FOR FLOORING DETAILS.
 - PROVIDE HEAT WELD SEAM BASED ON MFR. INSTRUCTIONS MATCHED TO DARKER FLOORING AT LOCATIONS WHERE(N) RESILIENT FLOORING ABUTS OTHER (N) RESILIENT FLOORING TYPICAL. SEE SPECIFICATIONS.
 - VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. BRING DISCREPANCIES TO THE ATTENTION OF THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.
 - PROTECT ALL EXISTING FINISHES AND BUILDING COMPONENTS DURING CONSTRUCTION.
 - PAINT ALL EXPOSED BUILDING ELEMENTS AND FEATURES WITHIN THE AREA OF WORK, INCLUDING WALLS, DOORS, FRAMES, TRIM, FIXTURES, PIPING AND CONDUIT. SEE INTERIOR ELEVATIONS, REFLECTED CEILING PLAN AND FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
 - SEE DETAIL 1 AND 2/A906 FOR GRAB BAR BACKING PLATE DETAILS.

RESTROOM ACCESSORY LEGEND

- TOILET TISSUE DISPENSER (WALL MTD.)
- NAPKIN DISPOSAL (WALL MTD.)
- SEAT COVER DISPENSER (WALL MTD.)
- SOAP DISPENSER (WALL MTD.)
- HAND DRYER
- GRAB BARS
- MIRROR
- COAT HOOK (A OR B TYPE, SEE 3/A801)
- URINAL PARTITION
- MOP HOLDER

KEYNOTES

- (E) FIRE HOSE AND/OR CABINET TO REMAIN, TYP.
- REMOVE (E) ELECTRICAL DRYERS, TYP
- (E) FLOOR TO REMAIN
- (E) BACKWATER VALVE BOX WITH CONCRETE COVER, S.P.D. FOR SCOPE OF WORK
- CORE (E) CONC. WALL FOR (N) SANITARY SEWER CONNECTION, SPD
- TRENCH (E) CONC. SLAB FOR (N) SANITARY SEWER CONNECTION TO (E), SPD
- SALVAGE (E) BASE AND CHAIR RAIL WD. TRIM AND STORE FOR REINSTALLATION
- LOCATE ROUGH OPENING JAMB FOR DOOR CLEAR OF EXISTING COLUMN. INJURY OF (E) COLUMN IS PROHIBITED
- FRAMING FOR (N) WALL, GYP. BD. AND PAINT
- TILE TO MATCH (E) WHERE REMOVED OR DAMAGED, TYP; SEE FLOOR AND WALL TILE IN SCHEDULE
- ADD OVERHEAD PARTITION BRACE AND HARDWARE, REATTACH (E) PARTITIONS W/ (N) HARDWARE & (N) BLOCKING, MATCH (E) PARTITION MFR. HARDWARE, TYP
- (E) WATER CLOSET, TIGHTEN BOLTS OR REPLACE IF NEEDED. APPLY SEALANT ALL-AROUND
- WALL-MOUNTED WATER CLOSET WITH TOILET ACCESSORIES
- WALL-MOUNTED SINK WITH ACCESSORIES
- (N) SANITARY SEWER LINE CONNECTS TO (E) NEAR CLEANOUT UNDER WOMENS' RESTROOM, SPD
- (N) ELECTRICAL HAND DRYERS AT PREVIOUS LOCATION. HARD-WIRE PREVIOUSLY PLUGGED-IN DRYERS; (E) GFCI DUPLEX RECEPTACLE TO REMAIN
- (N) ELECTRICAL HAND DRYER
- WALL-MTD. LINEAR LIGHT FIXTURE, SED, TYP

LEGEND

- (E) ITEM TO REMAIN
- PROVIDE ITEM
- AREA OF BUILDING NOT IN SCOPE OF WORK
- NEW WALL
- EXISTING WALL
- EXISTING CMU WALL
- 30" x 48" CLEAR FLOOR AREA
- WALL TILE (W5)
- EXISTING WALL TILE
- (E) CONCRETE WALL



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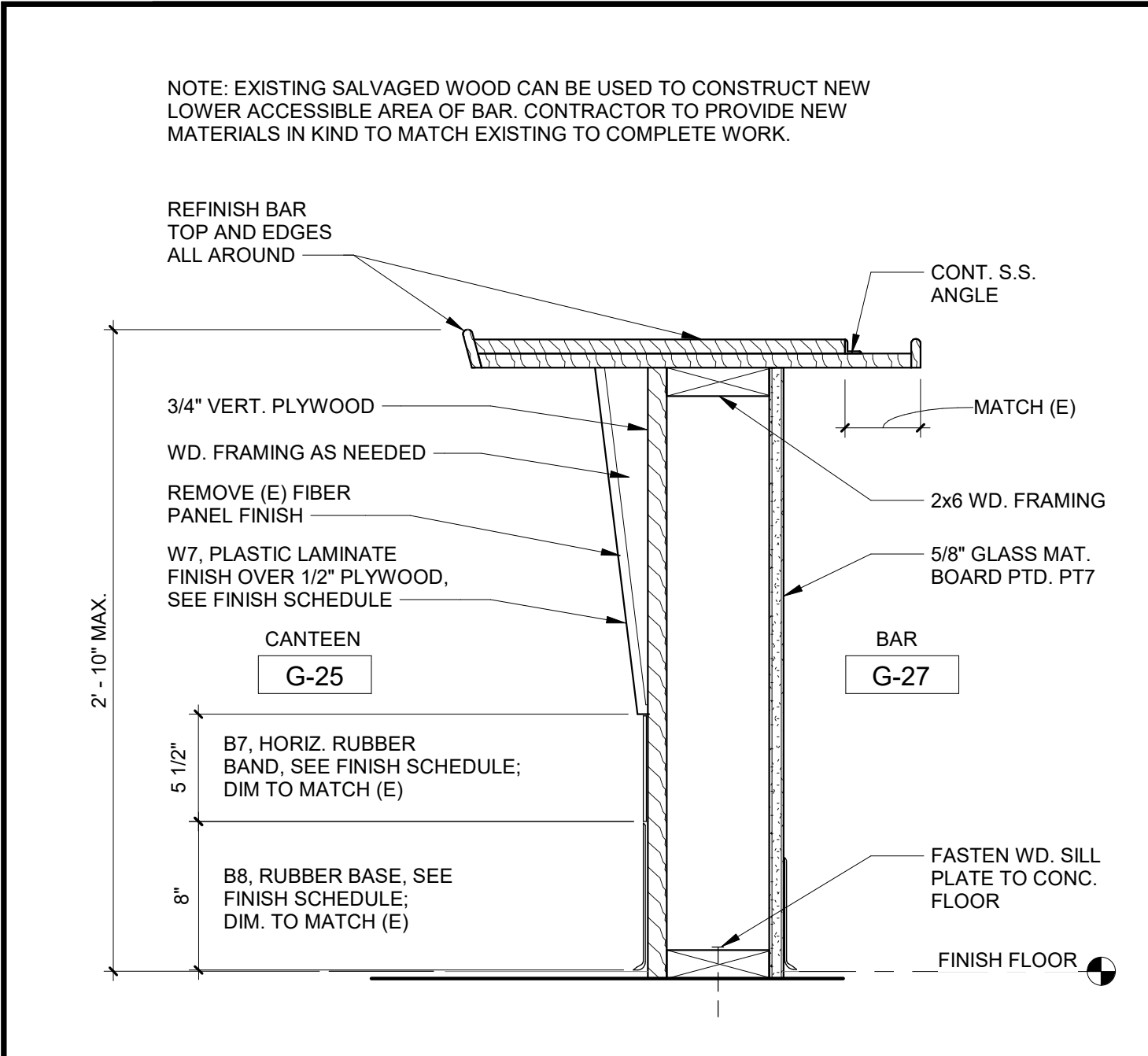
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A401
ENLARGED FLOOR PLANS AND INTERIOR ELEV. RESTROOMS

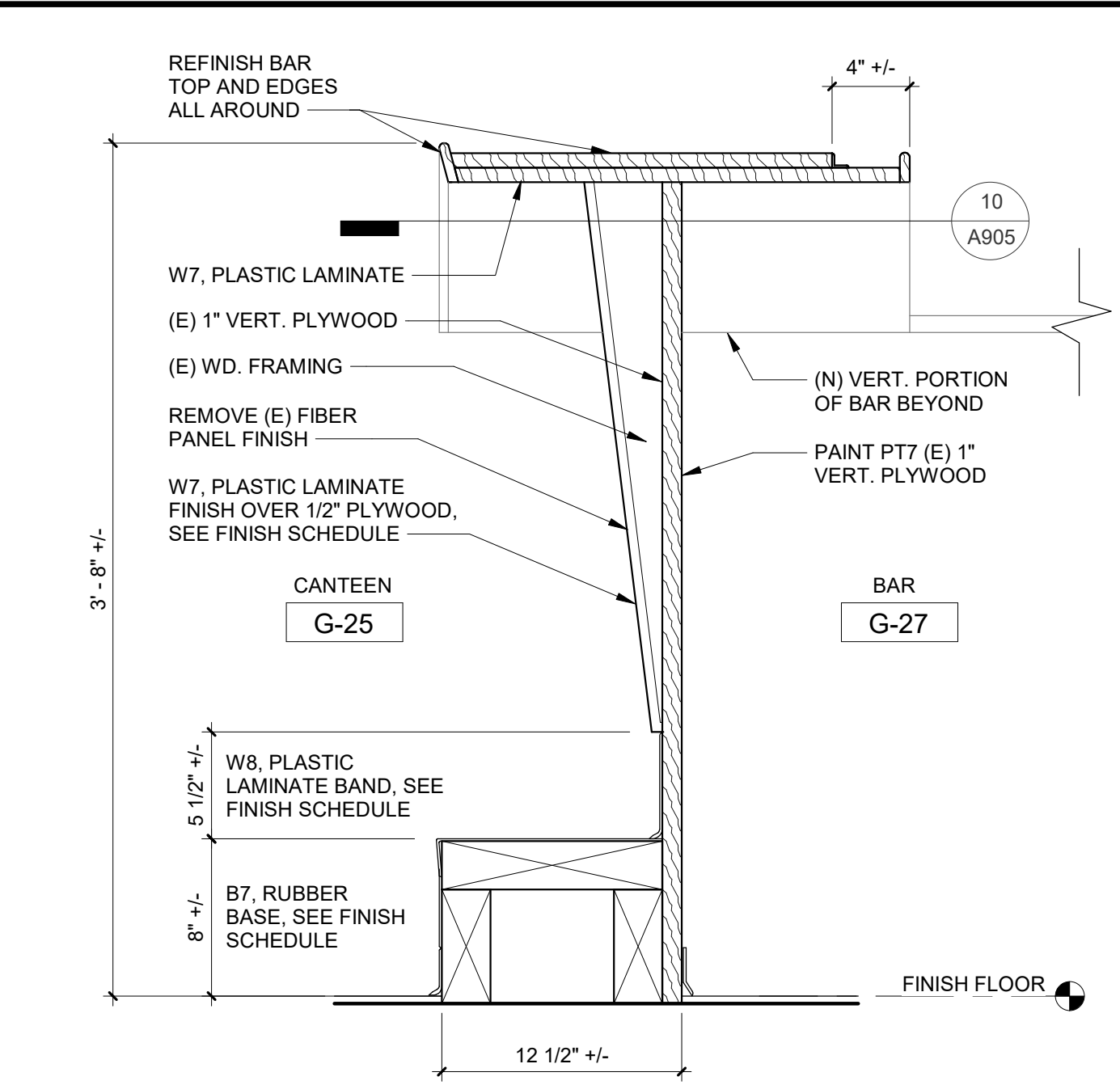
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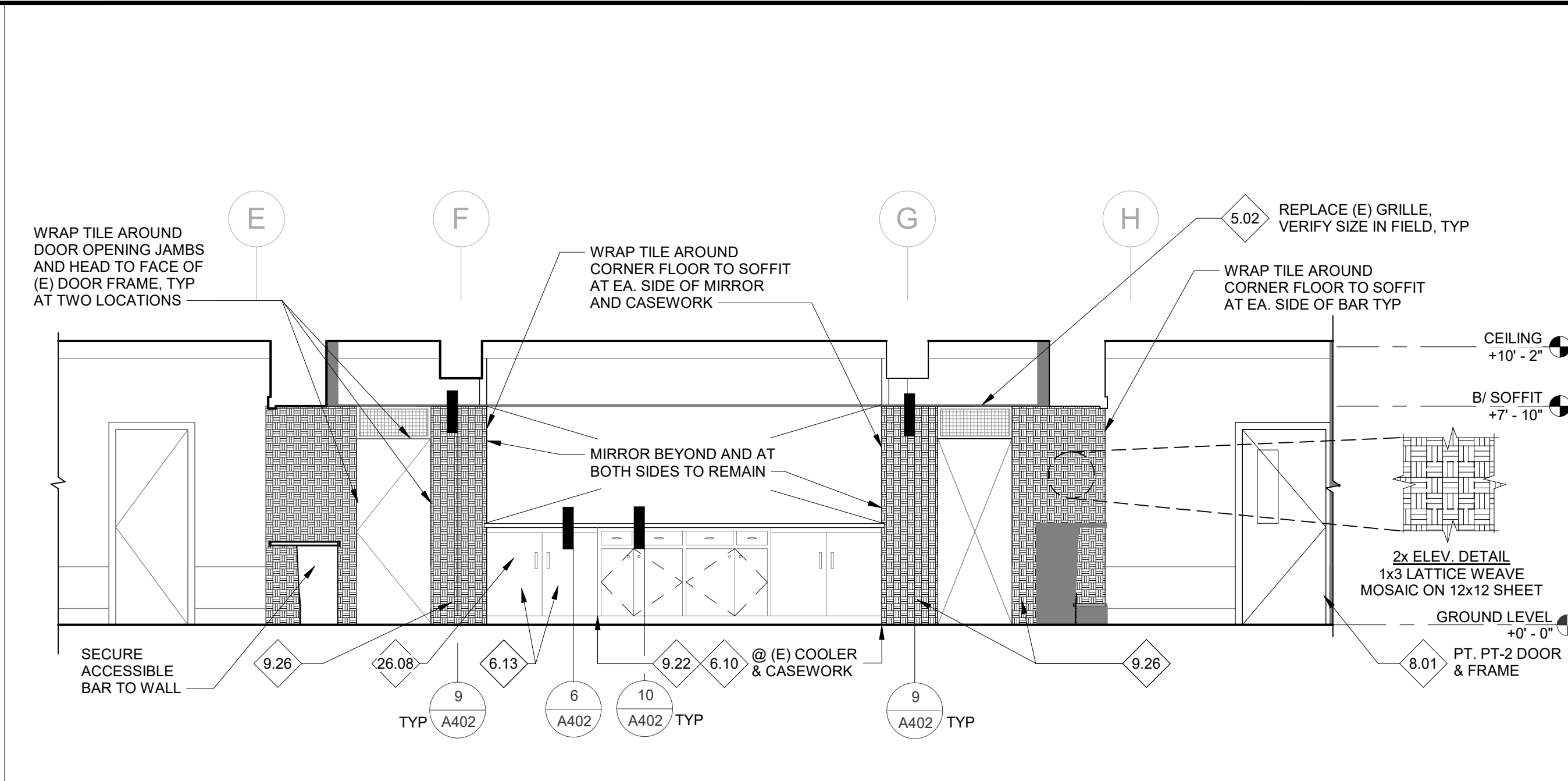
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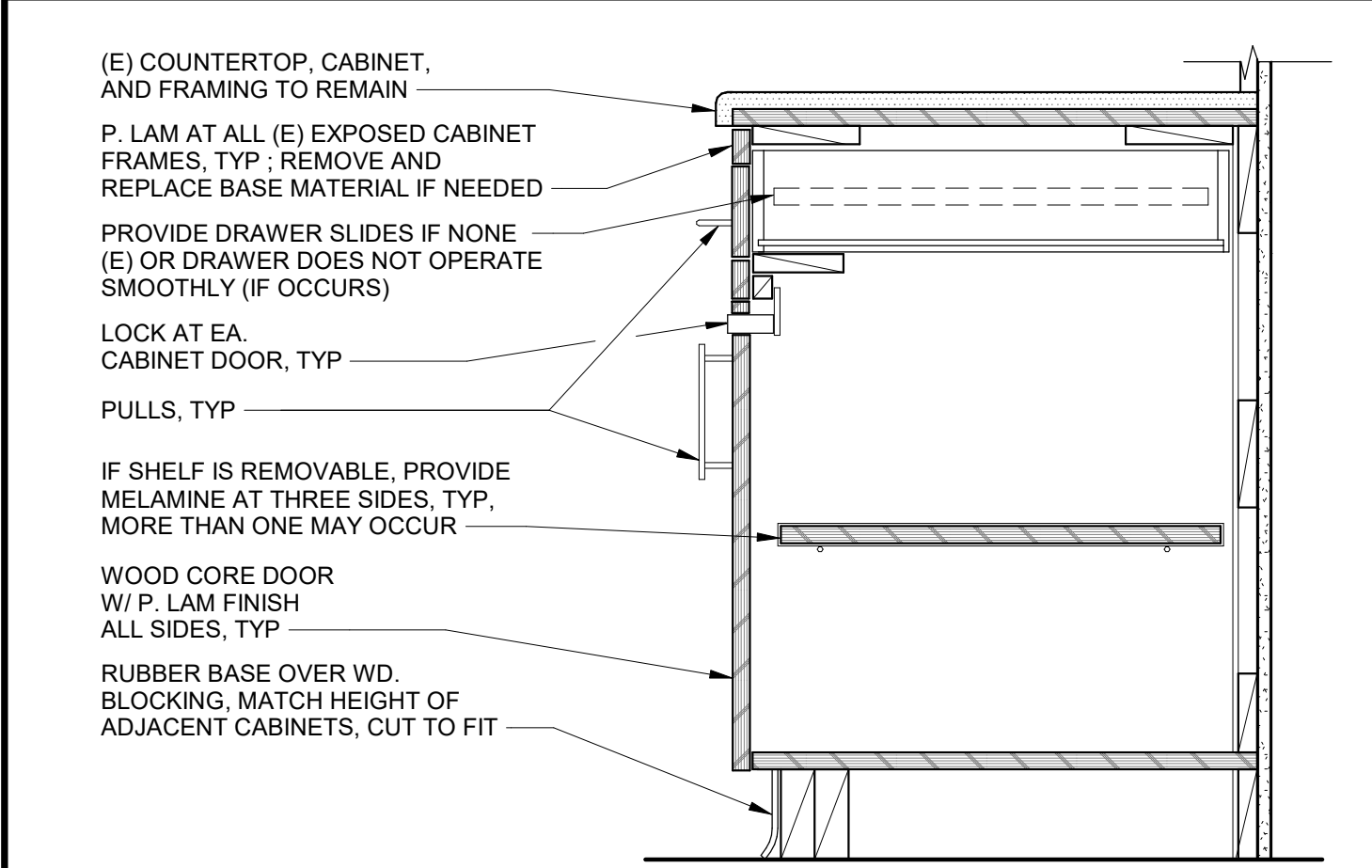
11 ACCESSIBLE BAR DETAIL
1 1/2" = 1'-0"



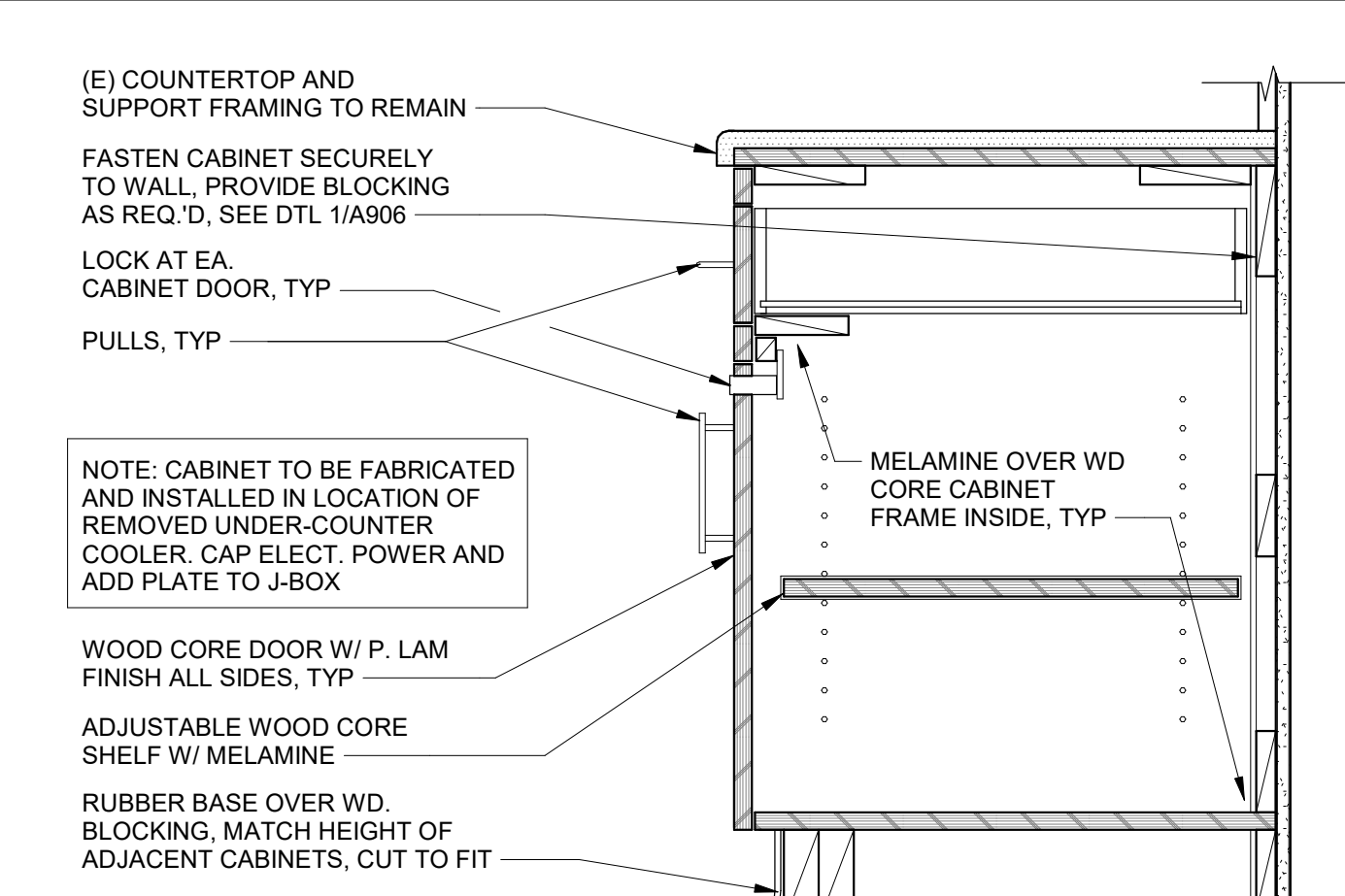
7 EXISTING BAR REFINISH DETAIL
1 1/2" = 1'-0"



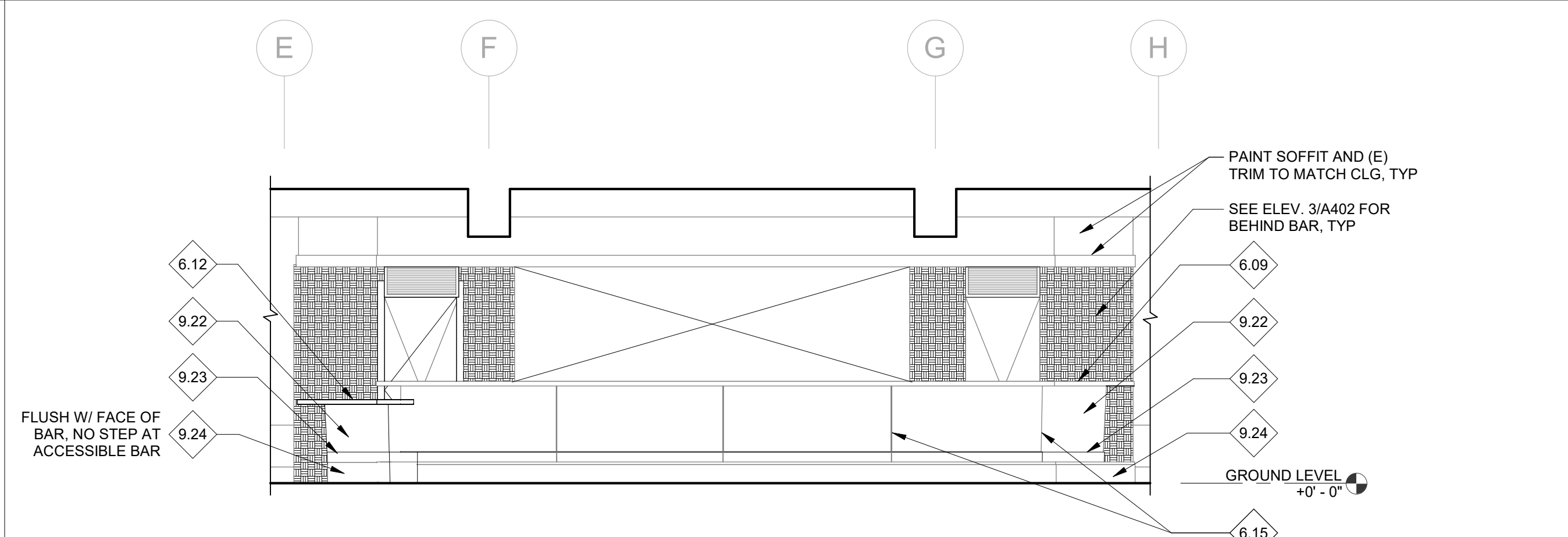
3 BEHIND BAR INT ELEV - NORTH
1/4" = 1'-0"



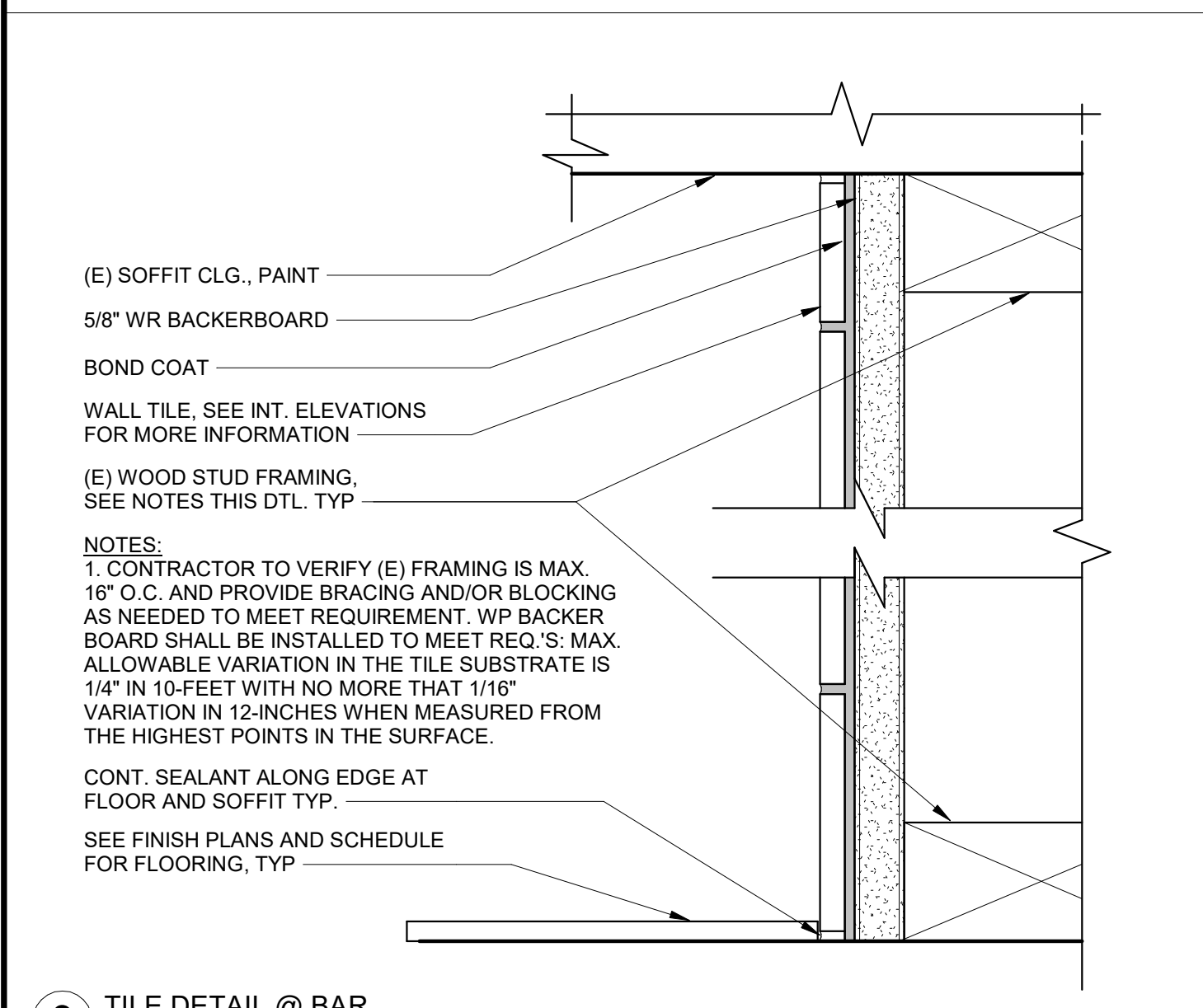
10 EXISTING CASEWORK DETAIL AT BAR
1 1/2" = 1'-0"



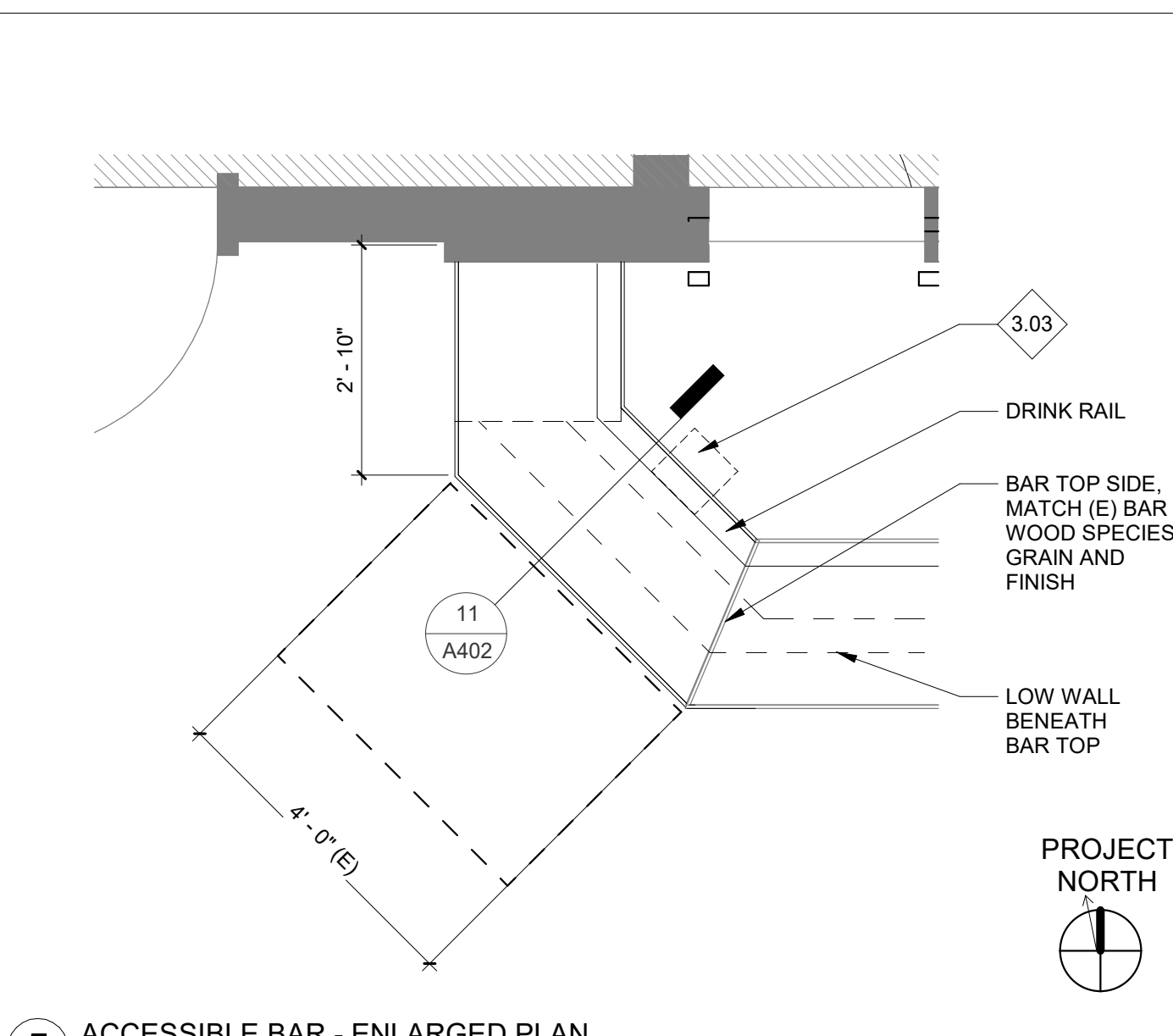
6 CASEWORK DETAIL AT BAR
1 1/2" = 1'-0"



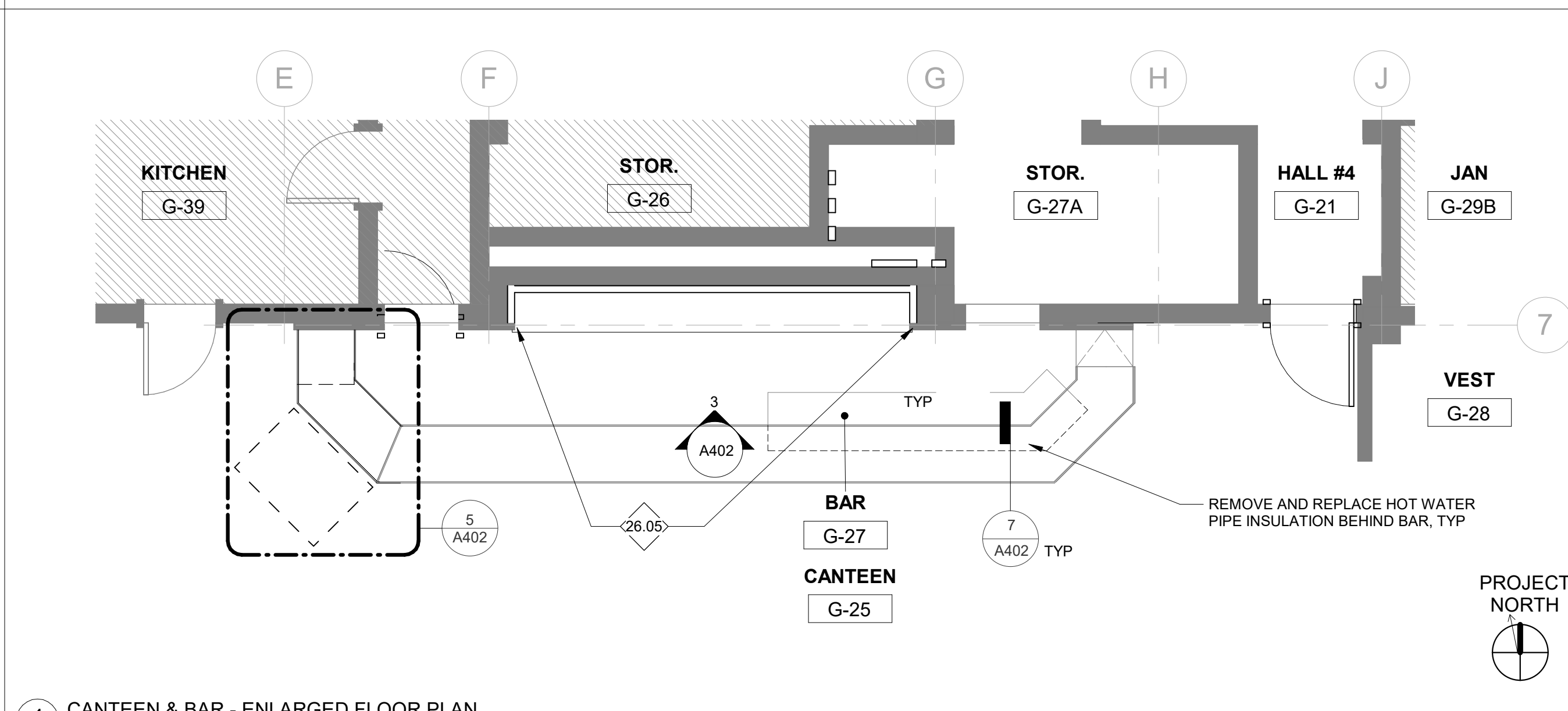
2 BAR G-27 INT ELEV - NORTH
1/4" = 1'-0"



9 TILE DETAIL @ BAR
6" = 1'-0"



5 ACCESSIBLE BAR - ENLARGED PLAN
1/2" = 1'-0"



1 CANTEEN & BAR - ENLARGED FLOOR PLAN
1/4" = 1'-0"

SHEET NOTES

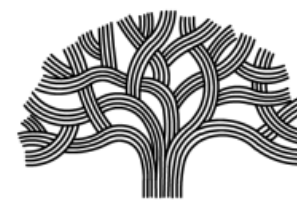
1. SEE A801 FOR FINISH SCHEDULE AND LEGEND.
2. SEE DTL 3/A801 FOR ACCESSORY MOUNTING HEIGHTS AND CODE CLEARANCES.
3. SEE A905 DOOR SCHEDULE FOR THRESHOLD AND TRANSITION DETAIL CALLOUTS, A906 FOR FLOORING DETAILS.
4. PROVIDE HEAT WELD SEAM BASED ON MFR. INSTRUCTIONS MATCHED TO DARKER FLOORING AT LOCATIONS WHERE(N) RESILIENT FLOORING ABUTS OTHER (N) RESILIENT FLOORING TYPICAL. SEE SPECIFICATIONS.
5. VERIFY ALL CONDITIONS IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. BRING DISCREPANCIES TO THE ATTENTION OF THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.
6. PROTECT ALL EXISTING FINISHES AND BUILDING COMPONENTS DURING CONSTRUCTION.
7. PAINT ALL EXPOSED BUILDING ELEMENTS AND FEATURES WITHIN THE AREA OF WORK, INCLUDING WALLS, DOORS, FRAMES, TRIM, FIXTURES, PIPING AND CONDUIT. SEE INTERIOR ELEVATIONS, REFLECTED CEILING PLAN AND FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
8. SEE DETAIL 1 AND 2/A906 FOR GRAB BAR BACKING PLATE DETAILS.

KEYNOTES

- | | |
|-------|--|
| 3.03 | CAP (E) DRAIN LINE WHERE FLOOR SINK WAS REMOVED AND FILL W/CONC. FLUSH W/ ADJACENT SURFACE |
| 5.02 | CUSTOM STEEL GRILLE, OIL-RUBBED BRONZE FINISH, TYP. OF TWO (2) |
| 6.09 | (E) WD BAR TOP, REPAIR AND REFINISH |
| 6.10 | PULLS AND LOCKS, TYP |
| 6.12 | WD. BAR TOP AT ACCESSIBLE HEIGHT, STAIN TO MATCH (E) |
| 6.13 | CUSTOM CASEWORK AT FORMER COOLER LOCATION |
| 6.15 | ALUM TEE EDGE AT P. LAM AT SEAMS AND CORNERS, TYP. AT BAR FRONT |
| 8.01 | DOOR IN (E) FRAME |
| 9.22 | W7, PLASTIC LAMINATE FINISH, SEE FINISH SCHEDULE |
| 9.23 | B7, HORIZ. RUBBER BAND AT BAR FRONT, SEE FINISH SCHEDULE |
| 9.24 | B8, RUBBER BASE AT BAR FRONT, SEE FINISH SCHEDULE |
| 9.26 | W4, TILE, SEE FINISH SCHEDULE |
| 26.05 | GFCI DUPLEX RECEPTACLES; ADD ELECT. CIRCUIT AT ONE SIDE OF BAR, SED |
| 26.08 | CAP (E) ELECT. POWER RECEPTACLE AT REMOVED COOLER |

LEGEND

- | |
|---------------------------------------|
| (E) ITEM TO REMAIN |
| PROVIDE ITEM |
| AREA OF BUILDING NOT IN SCOPE OF WORK |
| BAR MODIFIED TO ACCESSIBLE HEIGHT |



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

RCE NO. C-26408 EXP. 5/23

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DESIGNED BY CL

DRAWN BY CL

No.	DATE	BY	REFERENCE
1	12/3/21	CL	ISSUE FOR PERMIT
2	3/8/23	CL	PLAN CHECK RESPONSE

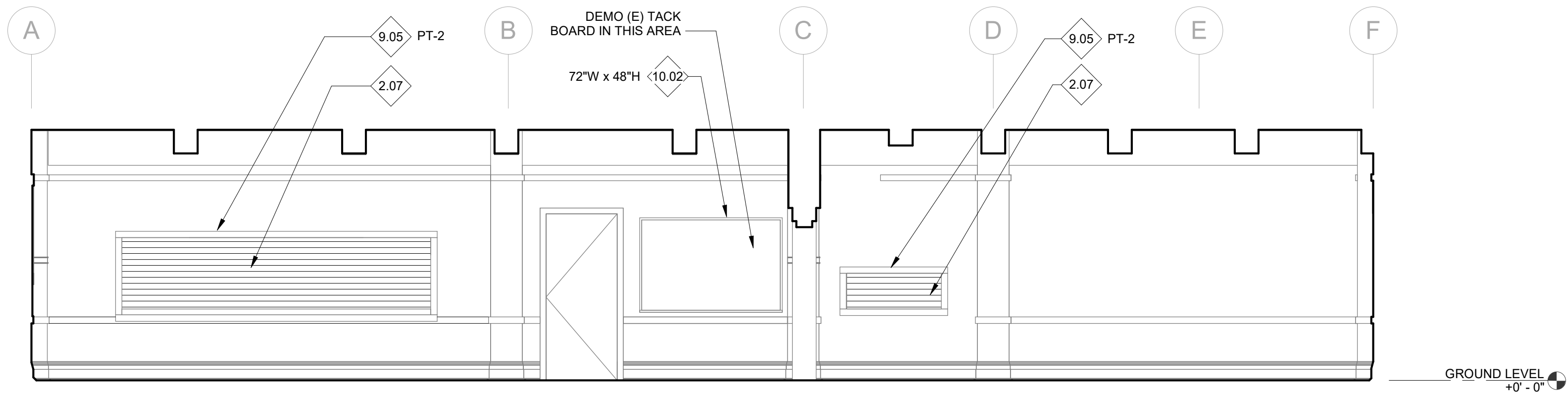
A402

**ENLARGED PLAN SECTION
DETAILS BAR**

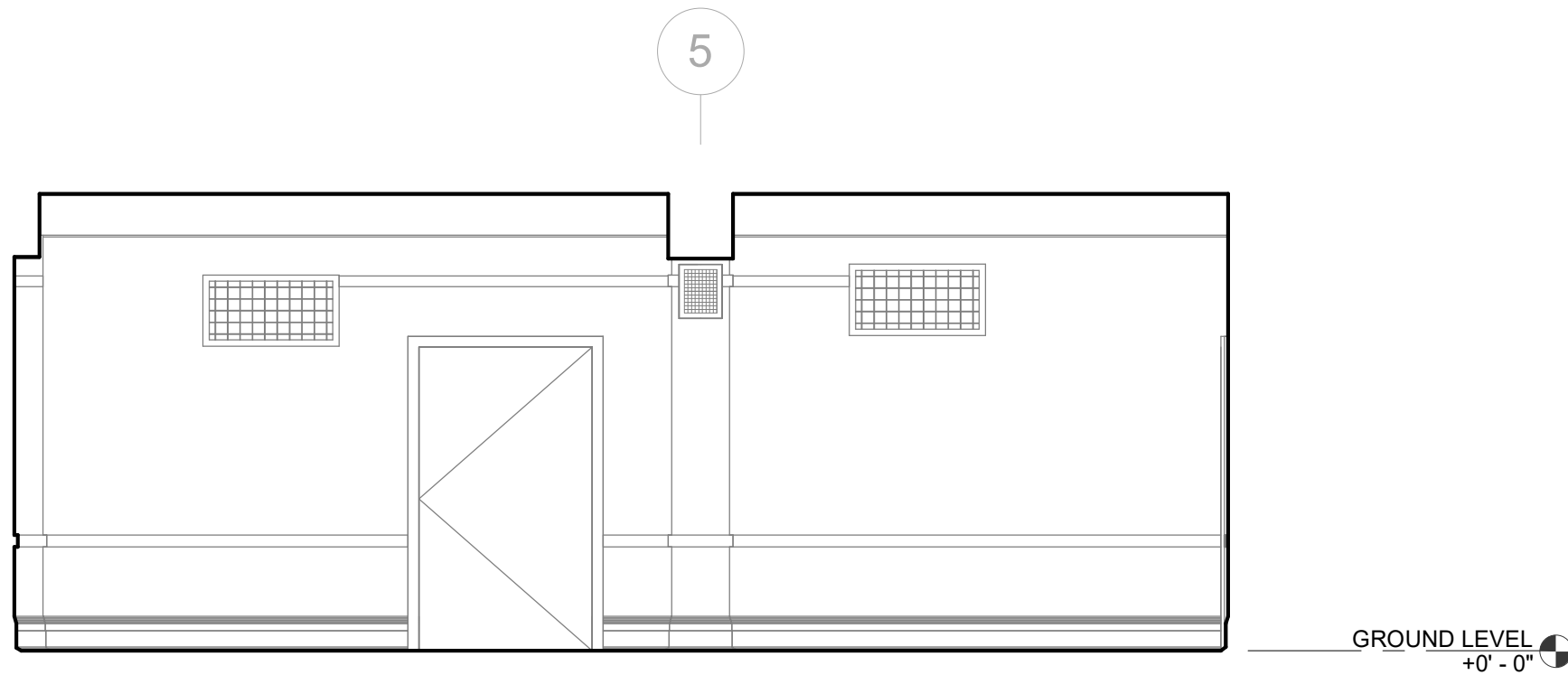
**PROJECT NO.
1004984**

SCALE:
HOR.
VERT.
DATE: 12/3/21

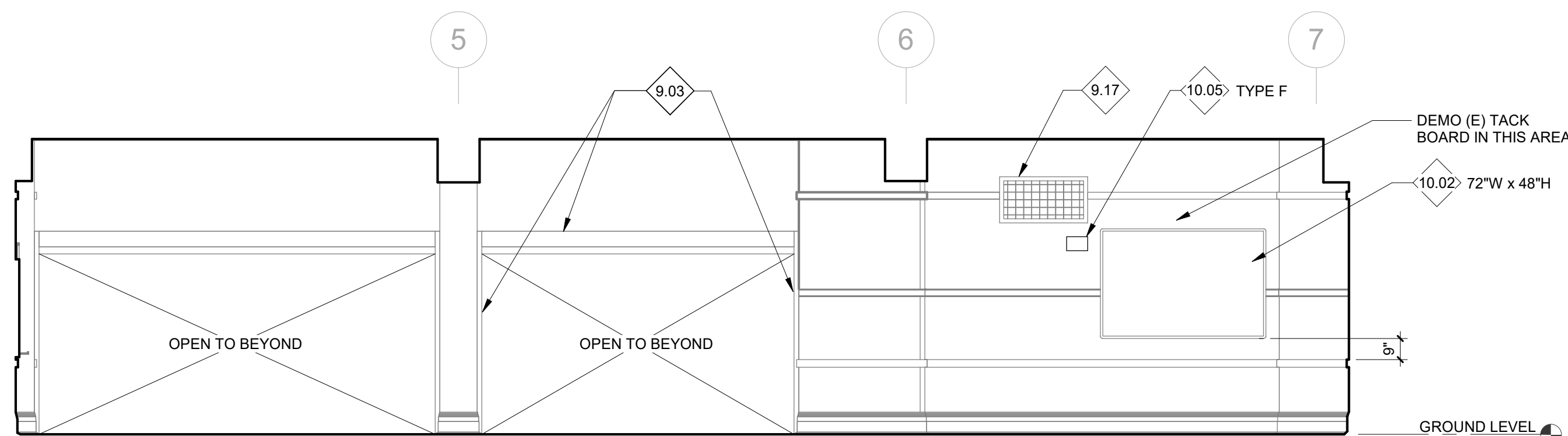
SHEET NO.
22 OF 47



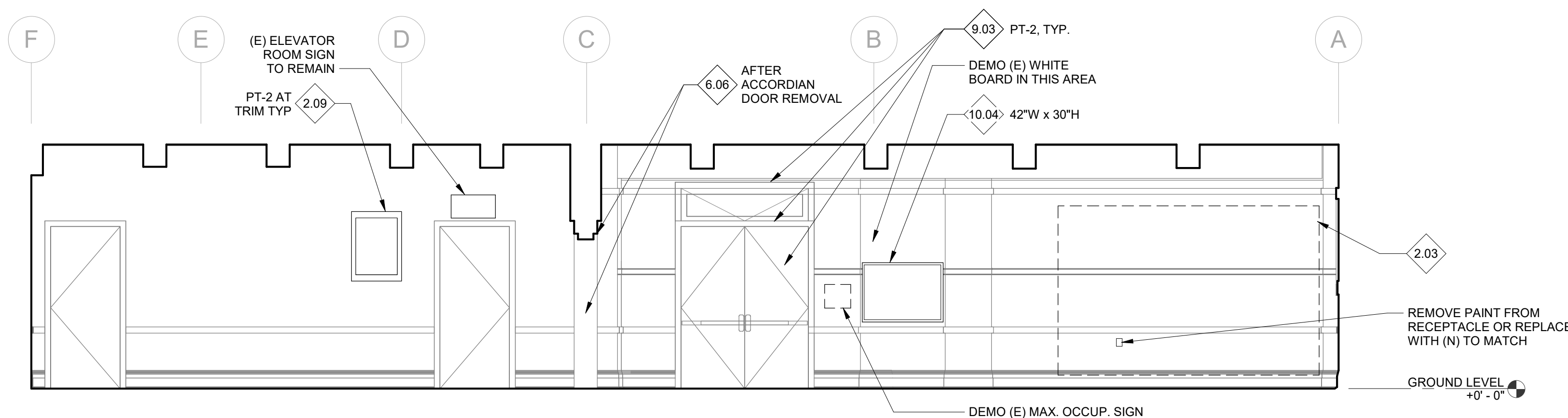
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1/4" = 1'-0"



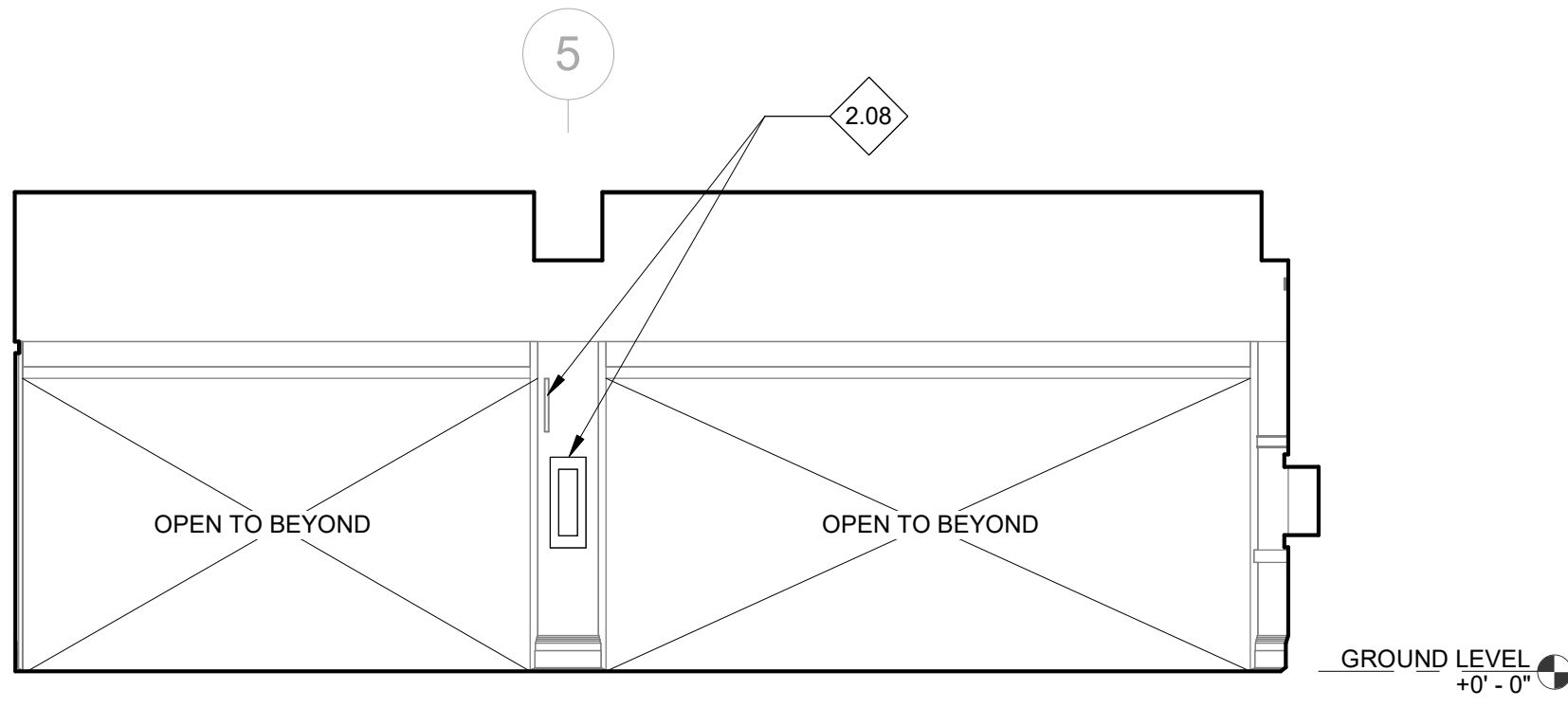
7 ANNEX G-8 INT ELEV - EAST
1/4" = 1'-0"



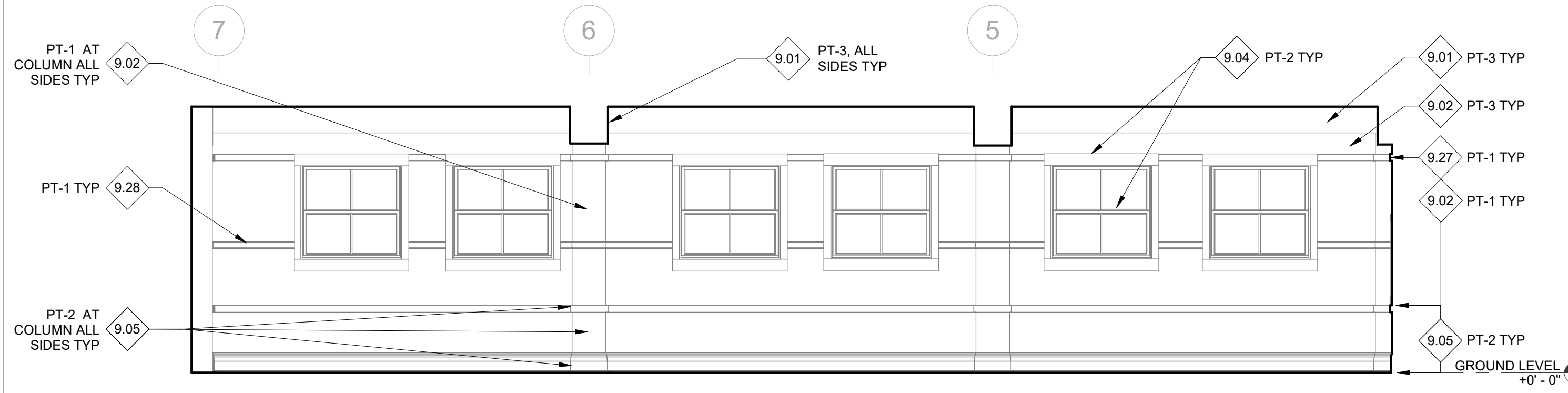
3 DINING G-7 INT ELEV - EAST
1/4" = 1'-0"



2 DINING G-7 / ANNEX G-8 INT ELEV - SOUTH
1/4" = 1'-0"



5 ANNEX G-8 INT ELEV - WEST
1/4" = 1'-0"



1 DINING G-7 INT ELEV - WEST
1/4" = 1'-0"

SHEET NOTES

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3. TYPICAL KEYNOTES AND NOTES ARE APPLIED TO ONLY ONE ELEVATION PER ROOM FOR CLARITY. SIMILAR SCOPE ON TAGGED INTERIOR ELEVATION SHALL APPLY TO OTHER SIMILAR SURFACES AND FEATURES IN ROOM. SEE FIRST OR TAGGED INTERIOR ELEVATION FOR WORK IN EACH ROOM TYPICAL.
4. COLUMNS SHALL BE PAINTED LIKE WALLS U.O.N.
5. (E) SURFACES, FIXTURES, AND ACCESSORIES TO REMAIN NOT RECEIVING PAINT SHALL BE CLEANED AND PROTECTED IN PLACE.
6. REMOVE ALL DECORATIVE WALL PAPER AND BORDER. PATCH AS NEEDED AND PREP FOR PAINT.
7. WALL SURFACES BEHIND (N) OR REINSTALLED WHITE BOARDS, FLAT SCREENS, AND OTHER WALL-HUNG ACCESSORIES SHALL BE PAINTED TO MATCH ADJACENT WALL BEFORE INSTALLATION OR REINSTALLATION.
8. CONTRACTOR SHALL PATCH ALL (E) DAMAGE AND HOLES AT (E) PLASTER AND GYP. BD. WALLS. HOLES LEFT FROM DEMOLISHED WALL ACCESSORIES SHALL BE REPAIRED, PATCHED, AND PREPPED BEFORE PAINT IS APPLIED.
9. SEE DTL 2/A906 FOR REQUIRED METAL BACKING.

KEYNOTES

2.03	REMOVE (E) PHOTO CANVAS, PATCH AND PREP FOR PAINT
2.07	(E) S.S. ROLLING DOOR AT OPENING TO REMAIN, TYP.
2.08	(E) FIRE EXTINGUISHER, CABINET, AND SIGNAGE TO REMAIN, TYP.
2.09	(E) FIRE HOSE AND/OR CABINET TO REMAIN, TYP.
6.06	PATCH AND REPAIR WD. TRIM, PAINT, TYP.
9.01	PAINT (E) CONC. BEAM, GIRDER, AND/OR SLAB, TYP.
9.02	PAINT (E) OR (N) GYP. BD. OR PLASTER WALL, PILASTER, OR COLUMN, TYP.
9.03	PAINT (E) DOOR, TRIM, FRAME, AND TRIM AT CASED OPENINGS, TYP.
9.04	PAINT (E) WD. WINDOW TRIM AND INTERIOR SIDE OF SASH, TYP.
9.05	PAINT (E) WD. BASE, CHAIR RAIL, AND WALL BETWEEN TYP.
9.17	PAINT (E) MECH. GRILLE TO MATCH ADJACENT WALL, TYP.
9.27	PAINT (E) WOOD PICTURE RAIL TO MATCH WALL BELOW, TYP.
9.28	PAINT (E) DECORATIVE TRIM TO MATCH ADJACENT WALL, TYP.
10.02	TACKBOARD
10.04	MAGNETIC WHITE BOARD
10.05	SIGN, SEE DTL 4/A801



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

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A501

INTERIOR ELEVATIONS
DINING & ANNEX

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/21

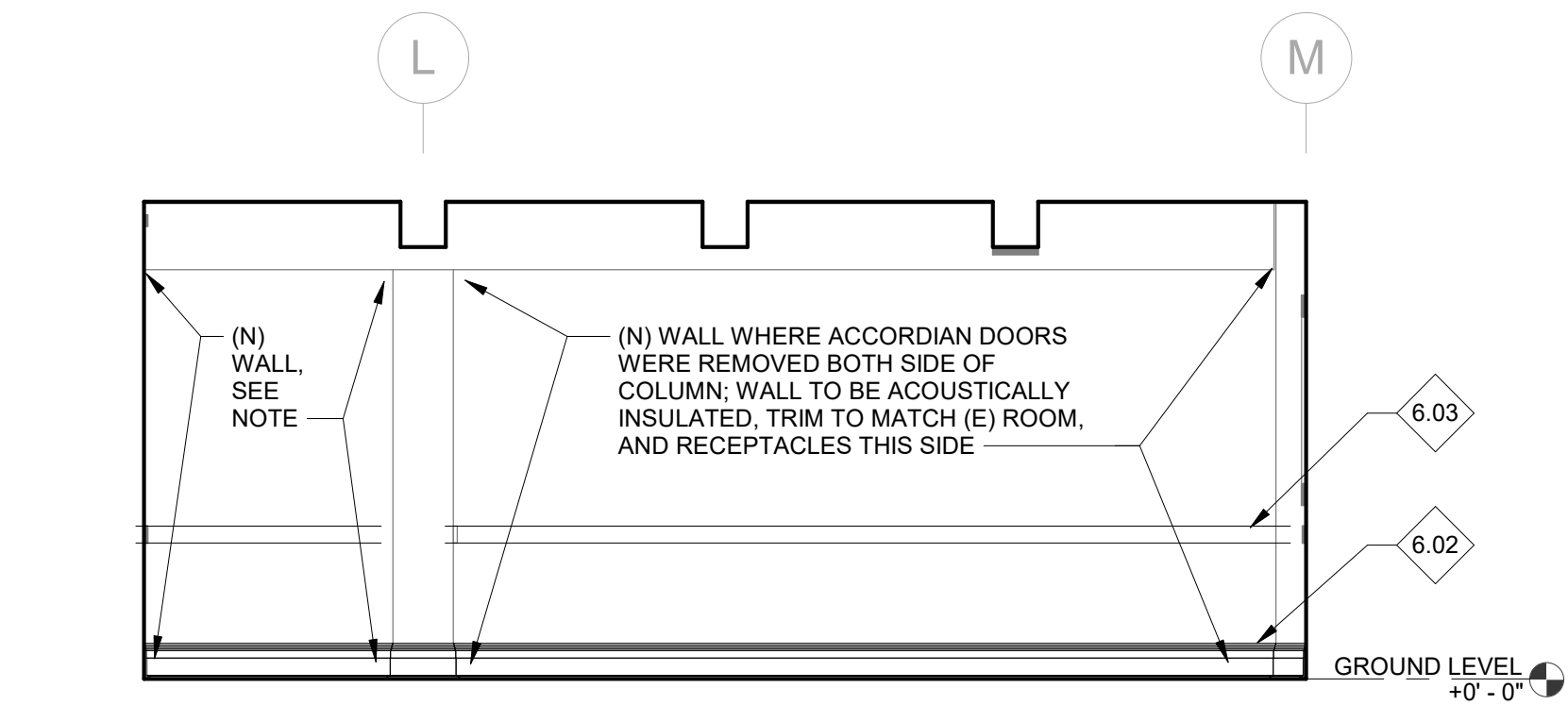
SHEET NO.
23 OF 47

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9. SEE DTL 2/A906 FOR REQUIRED METAL BACKING.

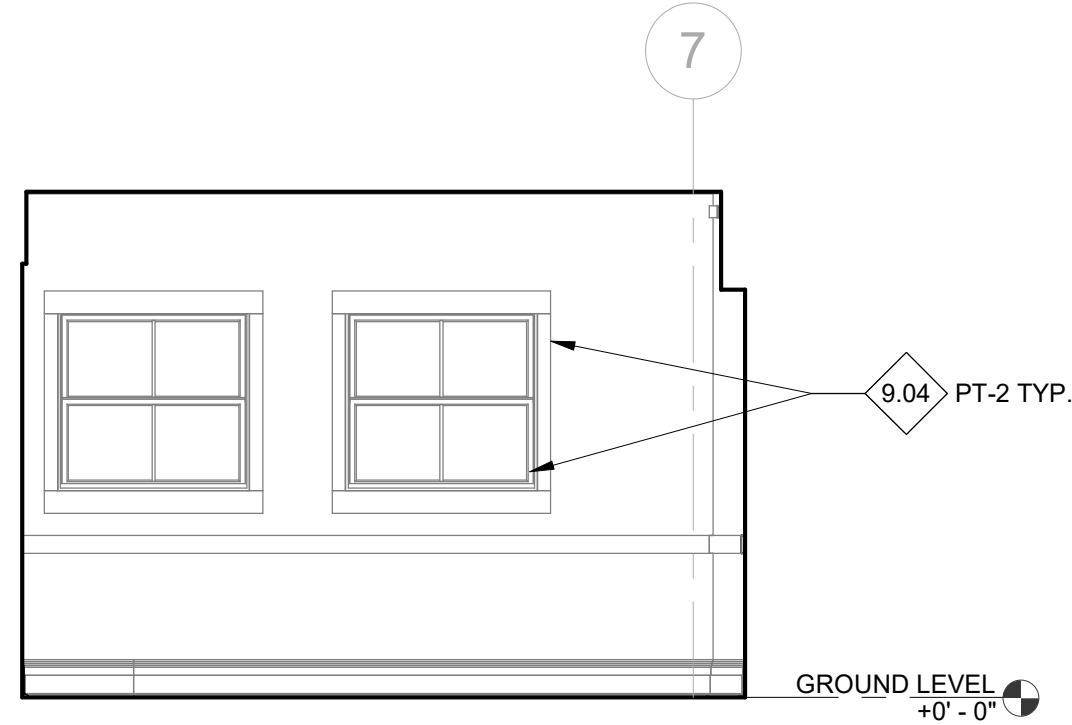
6.04	FRAMING FOR (N) WALL, GYP. BD. AND PAINT
9.01	PAINT (E) CONC. BEAM, GIRDER, AND/OR SLAB, TYP.
9.02	PAINT (E) OR (N) GYP. BD. OR PLASTER WALL, PLASTER, OR COLUMN, TYP.
9.03	PAINT (E) DOOR, TRIM, FRAME, AND TRIM AT CASED OPENINGS, TYP.
9.05	PAINT (E) WD. BASE, CHAIR RAIL, AND WALL BETWEEN TYP.
9.08	PAINT (E) WOOD CASEWORK AND TRIM, TYP.
9.17	PAINT (E) MECH. GRILLE TO MATCH ADJACENT WALL, TYP.



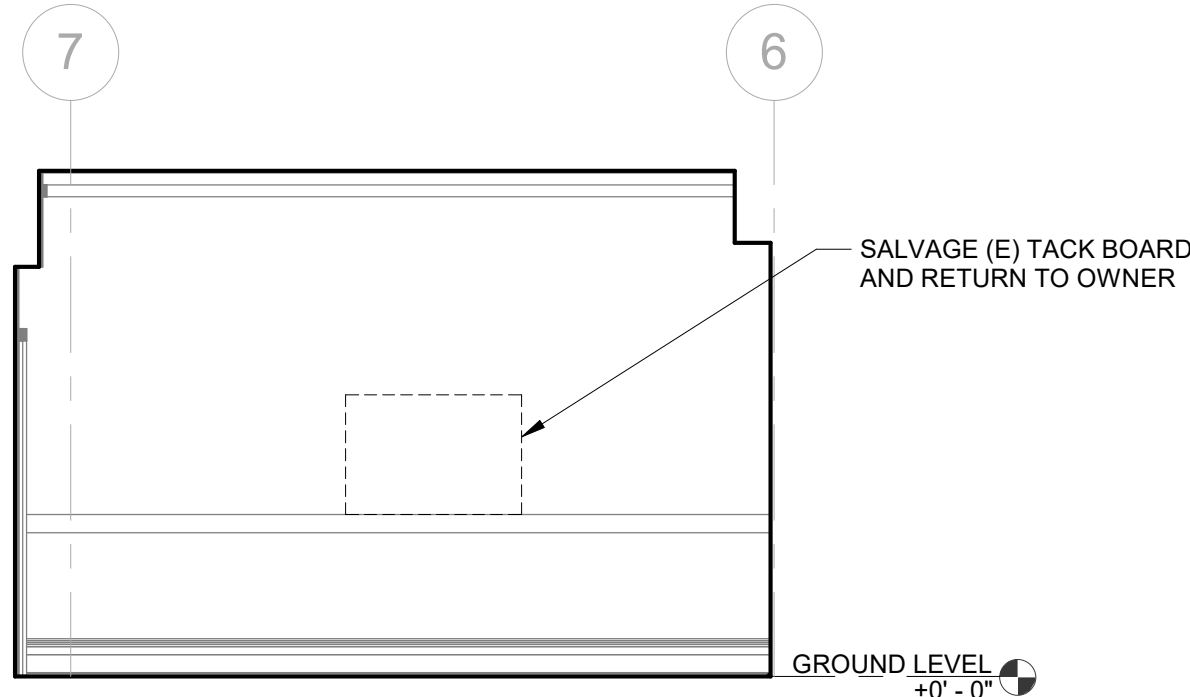
SCALE:	SHEET NO.
HOR.	
VERT.	
DATE: 12/3/21	24 OF 47



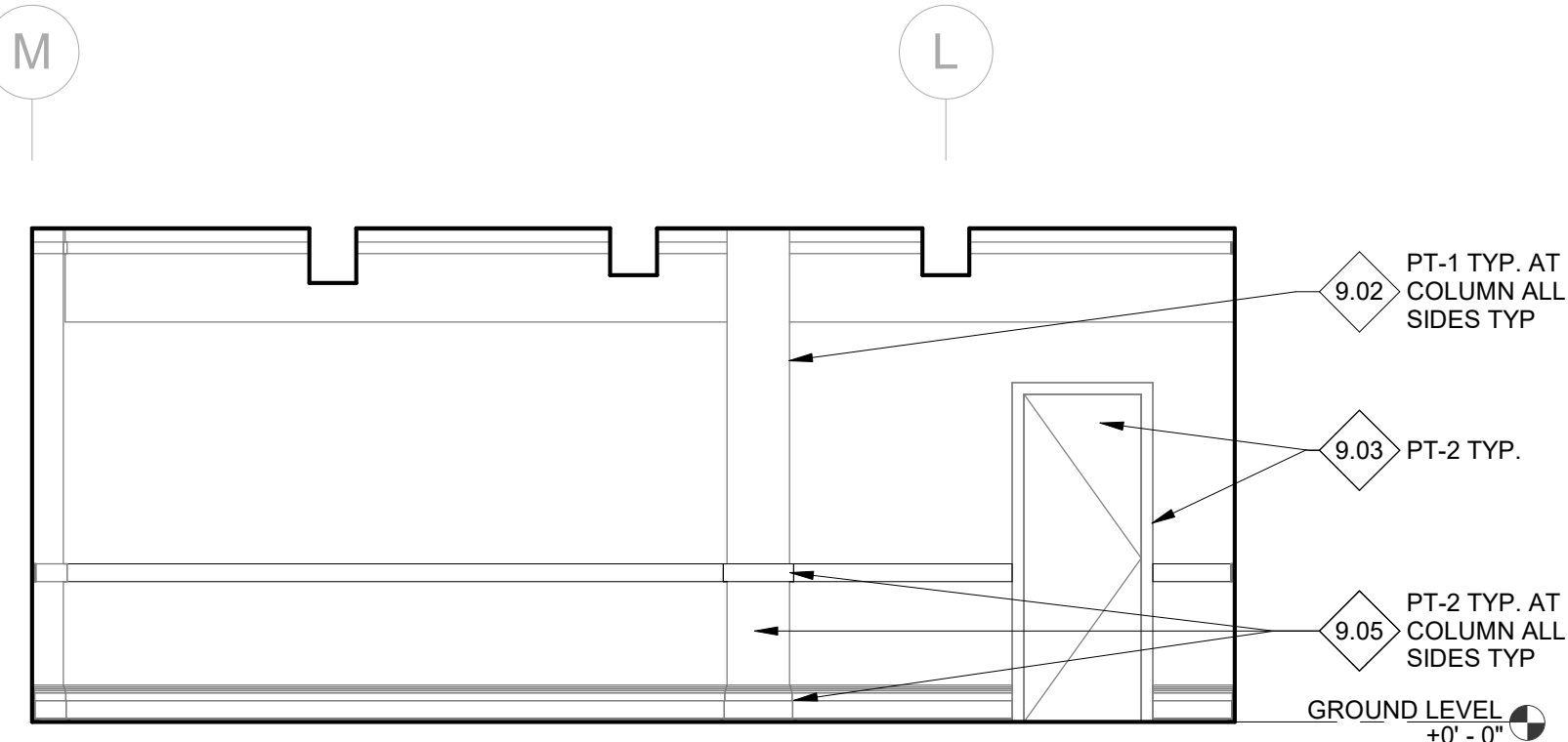
8 CONSIGNMENT G-18B INT ELEV - NORTH
1/4" = 1'-0"



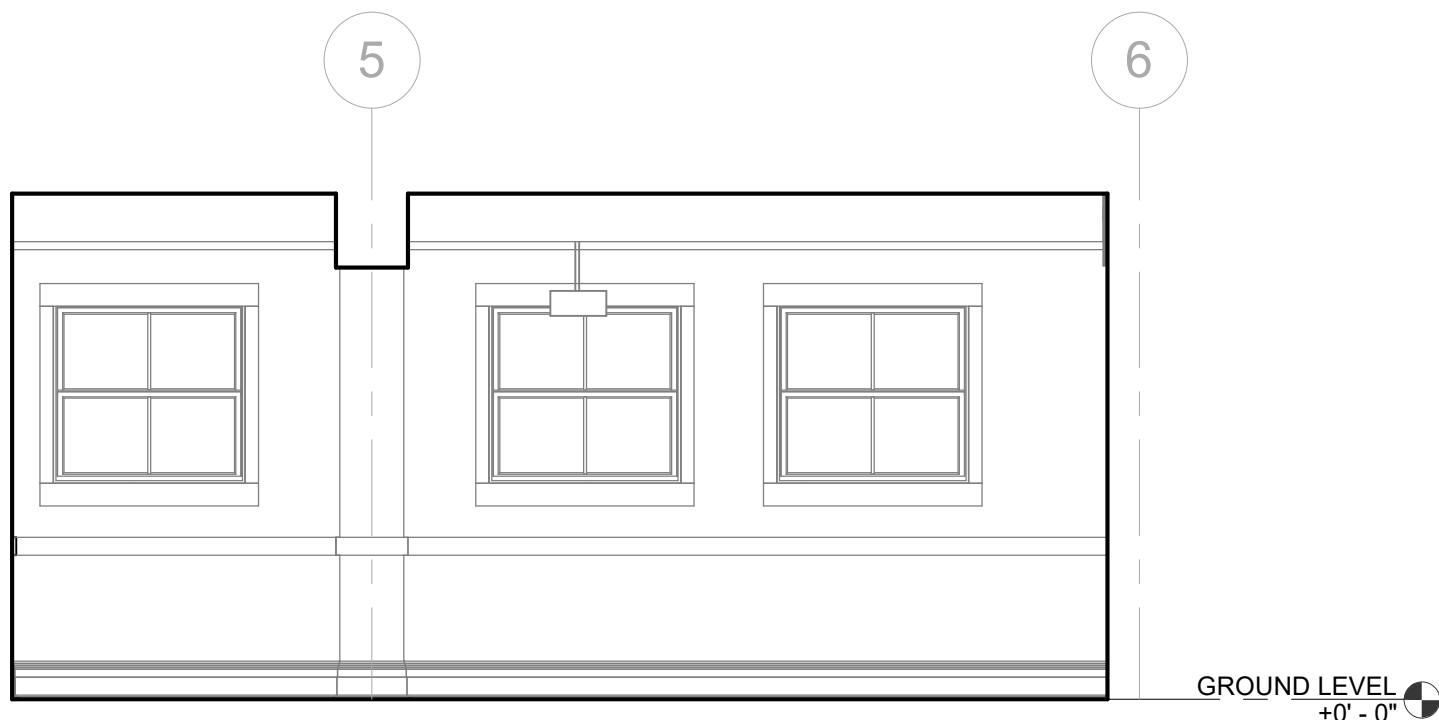
4 CONSIGNMENT G-18B INT ELEV - EAST
1/4" = 1'-0"



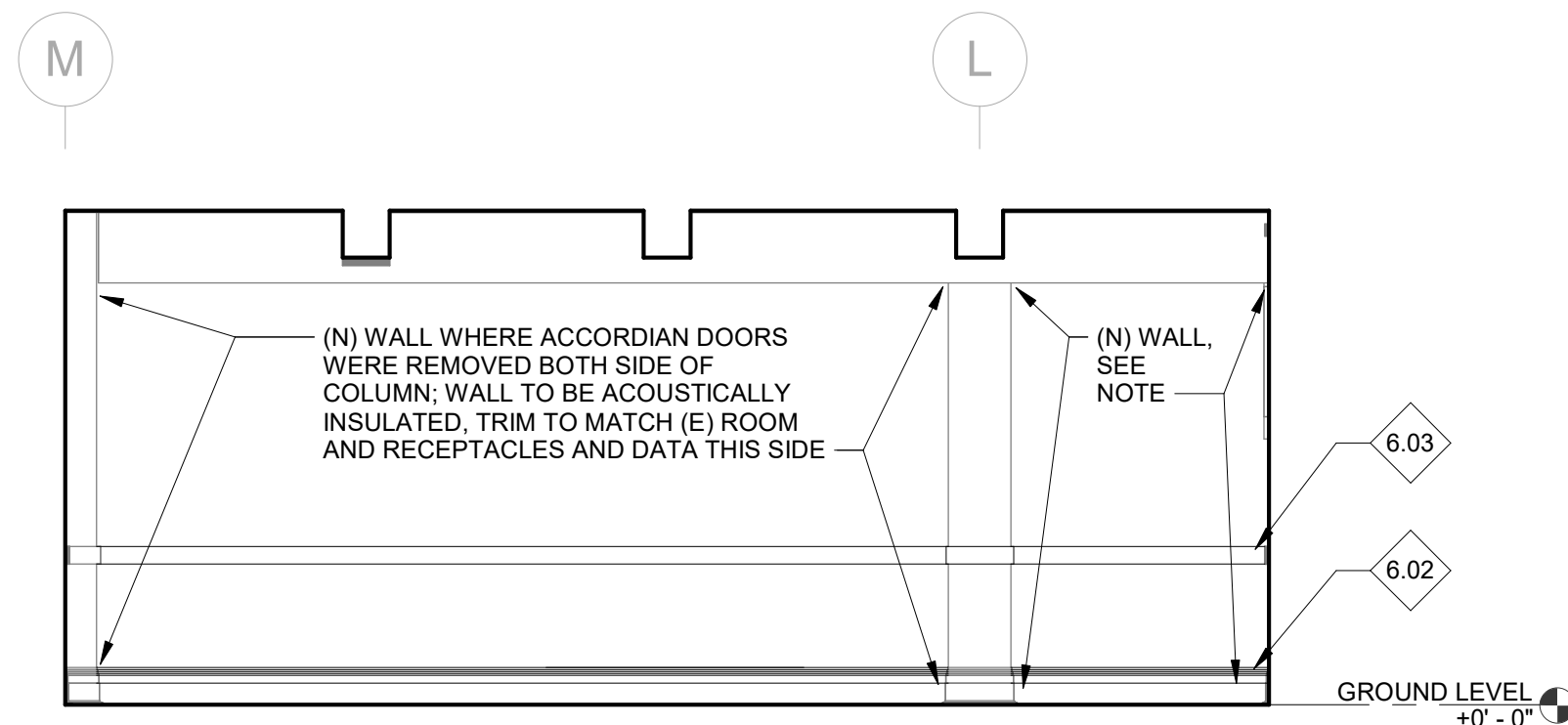
7 CONSIGNMENT G-18B INT ELEV - WEST
1/4" = 1'-0"



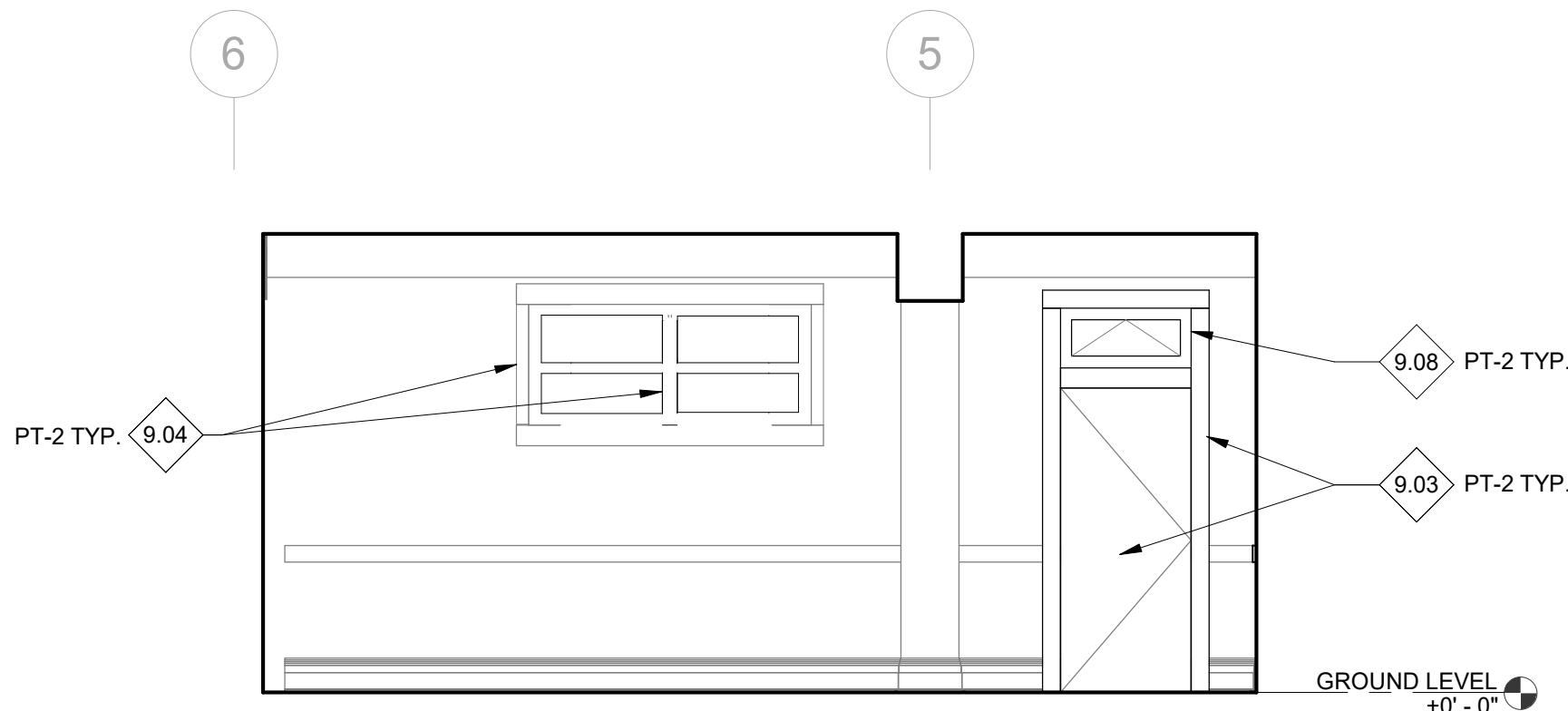
3 CONSIGNMENT G-18B INT ELEV - SOUTH
1/4" = 1'-0"



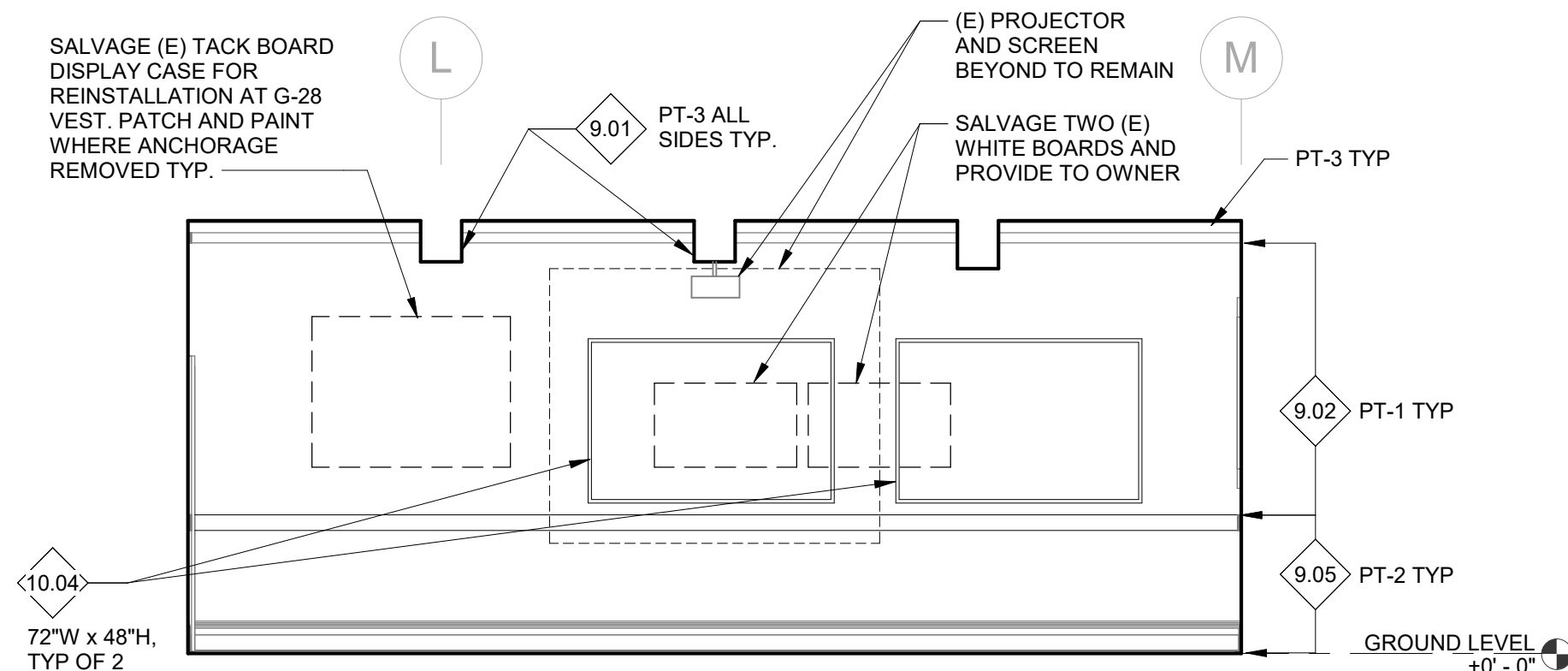
6 COMPUTER G-18A INT ELEV - EAST
1/4" = 1'-0"



2 COMPUTER G-18A INT ELEV - SOUTH
1/4" = 1'-0"



5 COMPUTER G-18A INT ELEV - WEST
1/4" = 1'-0"



1 COMPUTER G-18A INT ELEV - NORTH
1/4" = 1'-0"

SHEET NOTES

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- SEE DTL 2/A906 FOR REQUIRED METAL BACKING.

KEYNOTES

6.02	WD. BASE TO MATCH (E), PAINT
6.03	WD. TRIM TO MATCH (E), PAINT
9.01	PAINT (E) CONC. BEAM, GIRDER, AND/OR SLAB, TYP.
9.02	PAINT (E) OR (N) GYP. BD. OR PLASTER WALL, PILASTER, OR COLUMN, TYP.
9.03	PAINT (E) DOOR, TRIM, FRAME, AND TRIM AT CASED OPENINGS, TYP.
9.04	PAINT (E) WD. WINDOW TRIM AND INTERIOR SIDE OF SASH, TYP.
9.05	PAINT (E) WD. BASE, CHAIR RAIL, AND WALL BETWEEN TYP.
9.08	PAINT (E) WOOD CASEWORK AND TRIM, TYP.
10.04	MAGNETIC WHITE BOARD



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

RCE NO. C-26408 EXP. 5/23

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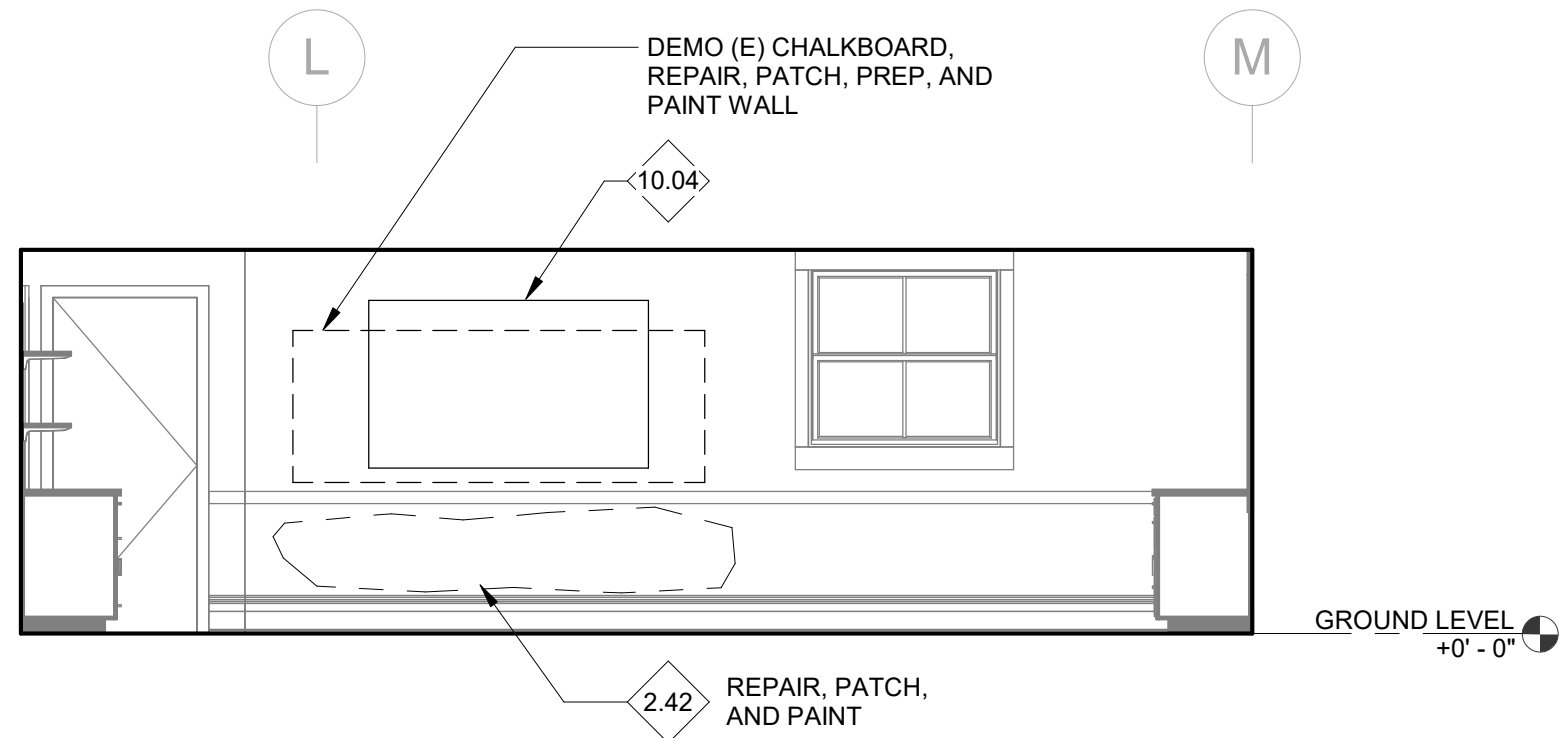
No.	DATE	BY	REFERENCE
1	12/3/21	CL	ISSUE FOR PERMIT
2	3/8/23	CL	PLAN CHECK RESPONSE

A503
INTERIOR ELEVATIONS
CONSIGNMENT &
COMPUTER

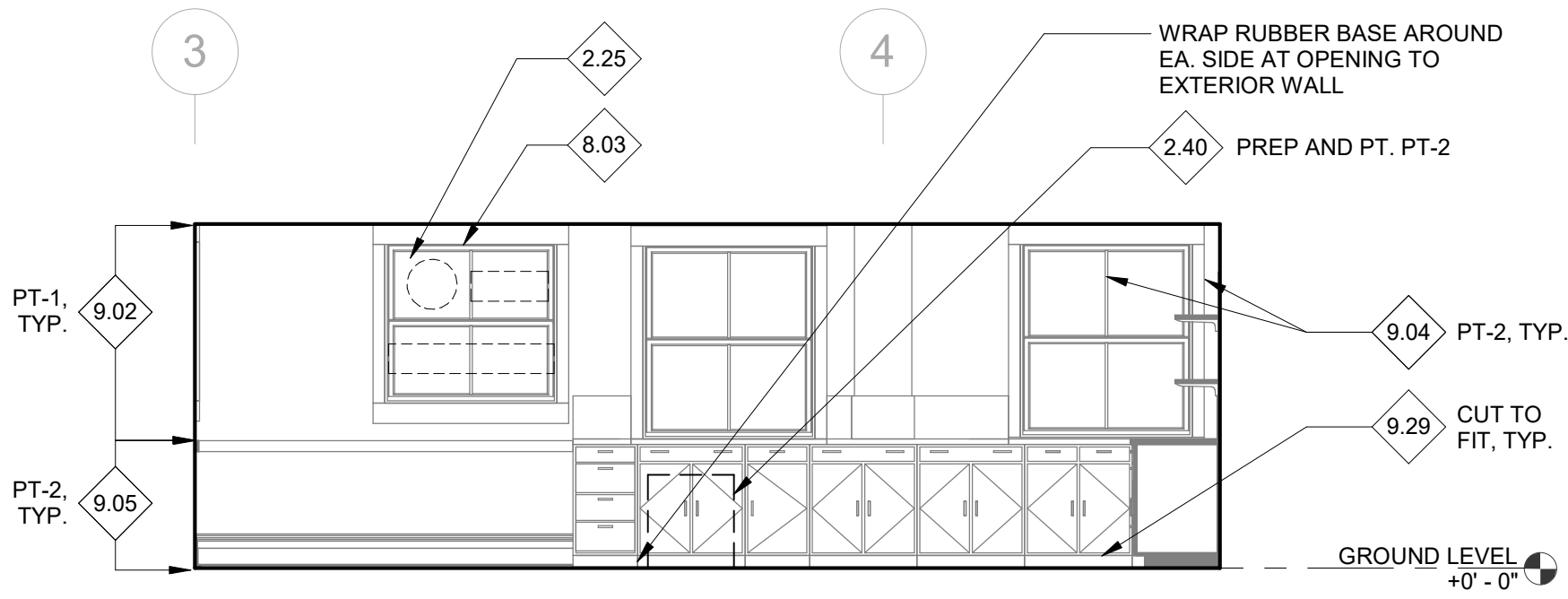
PROJECT NO.
1004984

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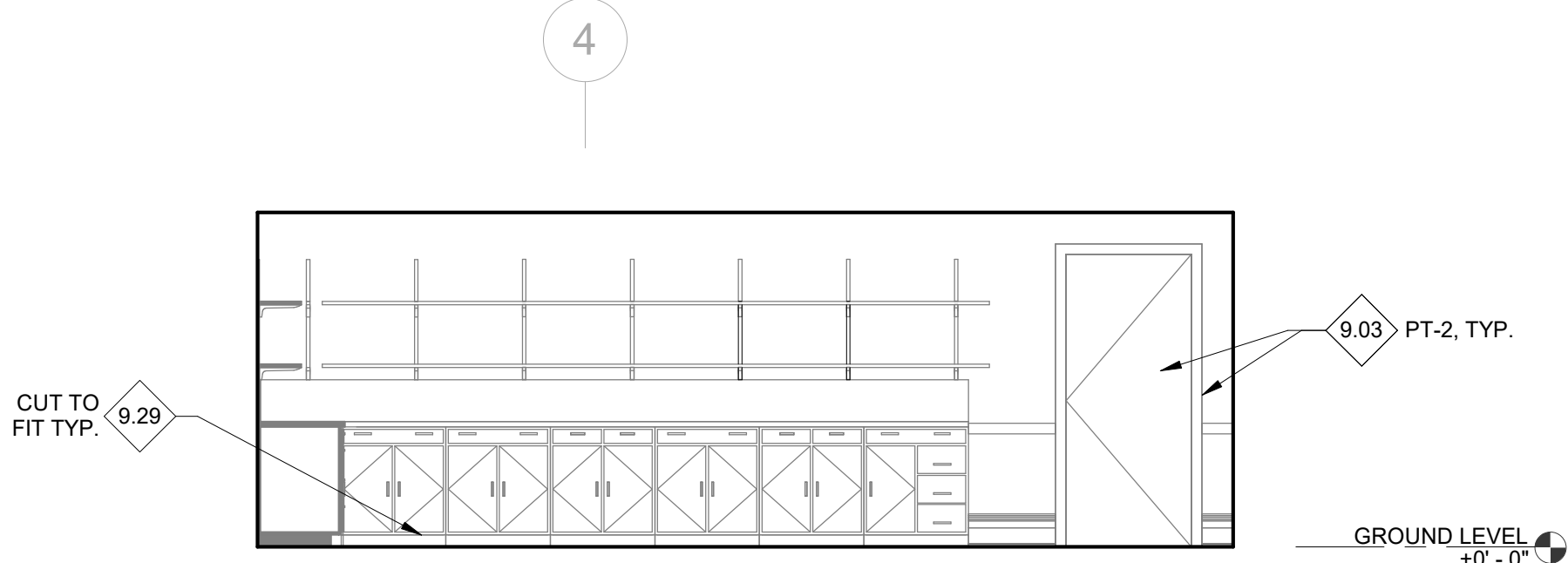
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25 OF 47



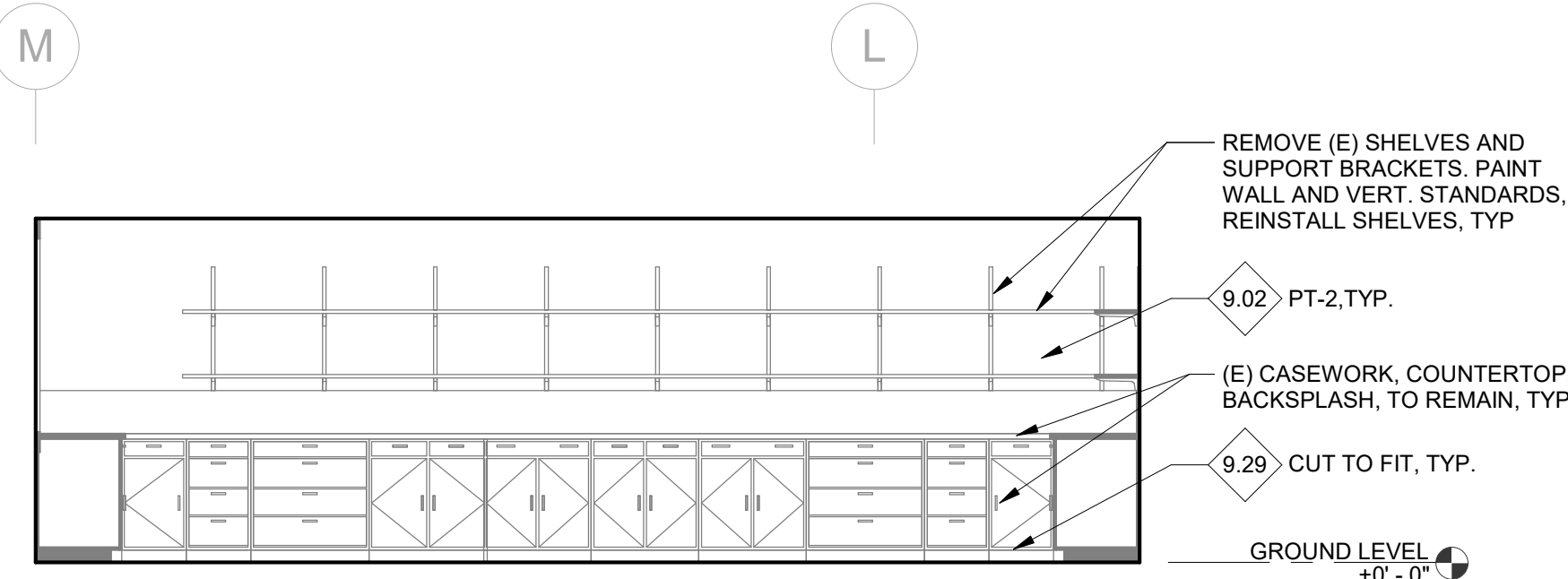
8 CRAFTS ROOM G-13 INT ELEV - NORTH
1/4" = 1'-0"



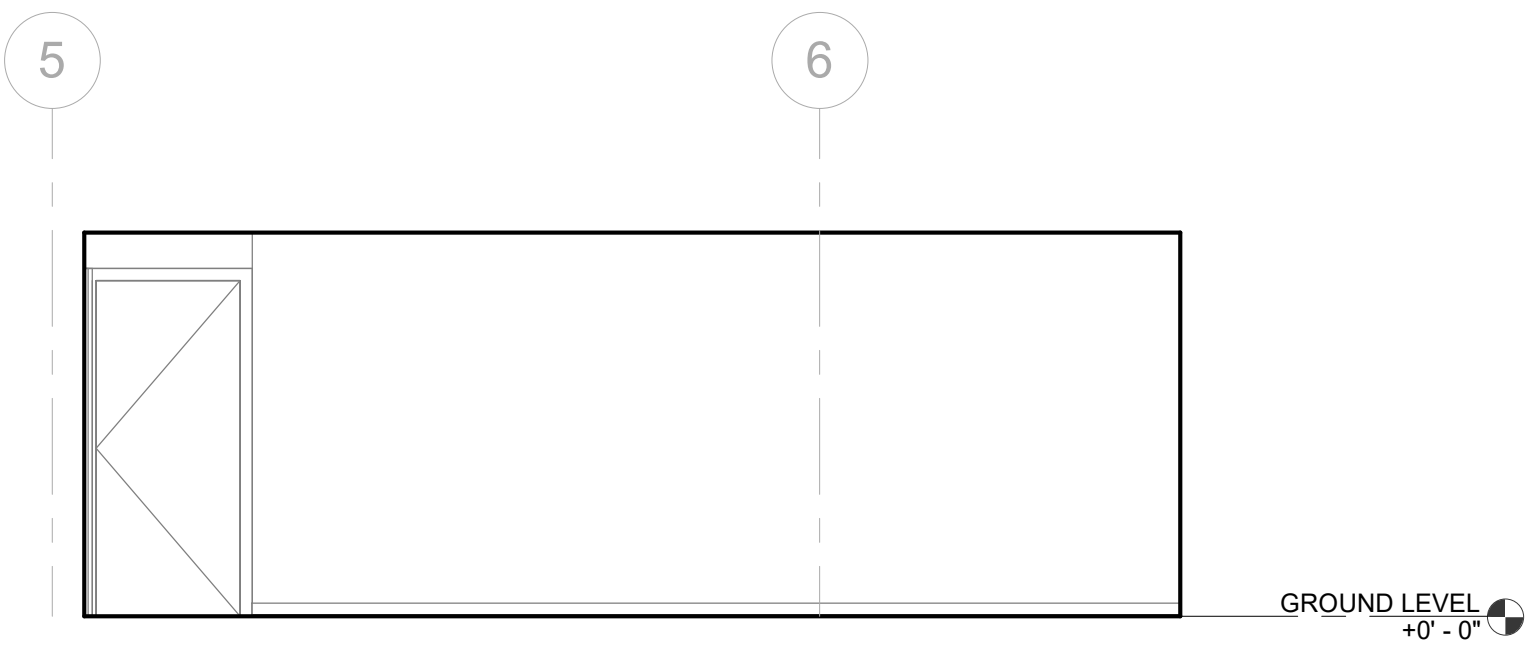
4 CRAFTS ROOM G-13 INT ELEV - EAST
1/4" = 1'-0"



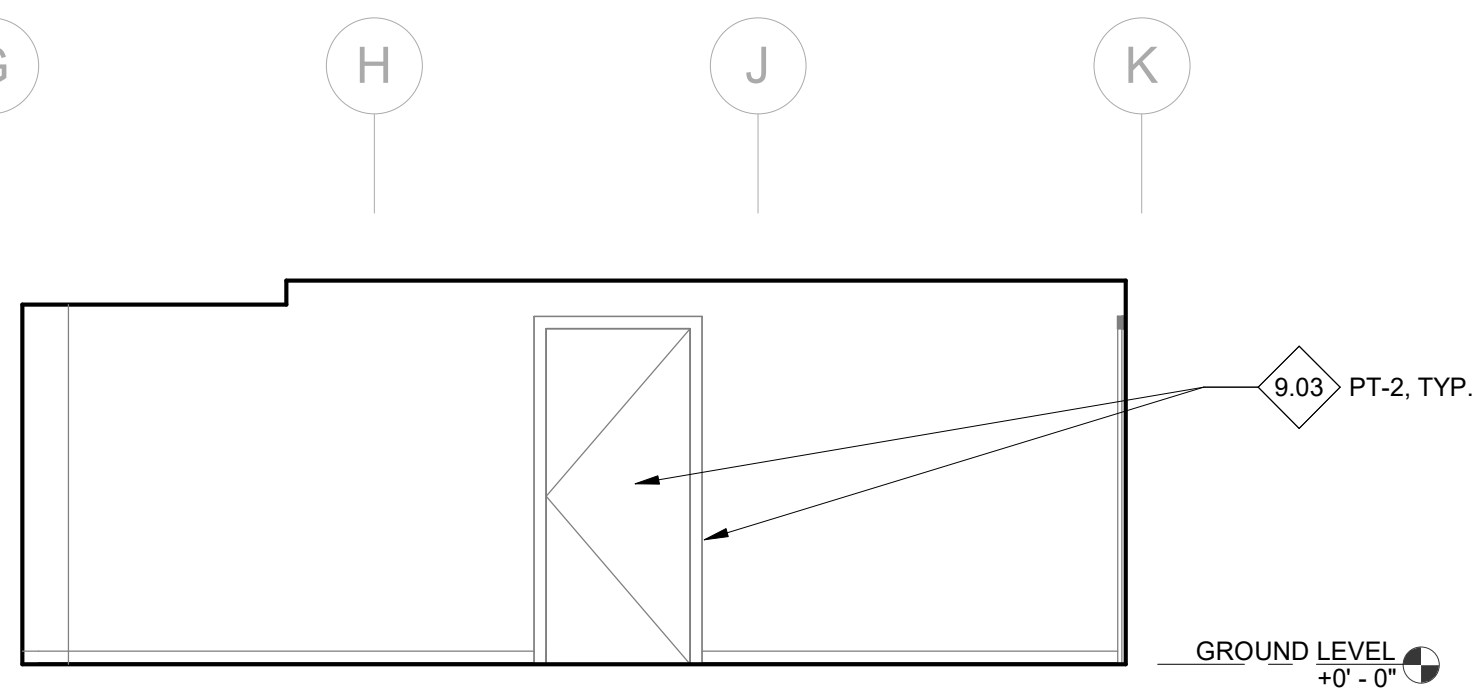
7 CRAFTS ROOM G-13 INT ELEV - WEST
1/4" = 1'-0"



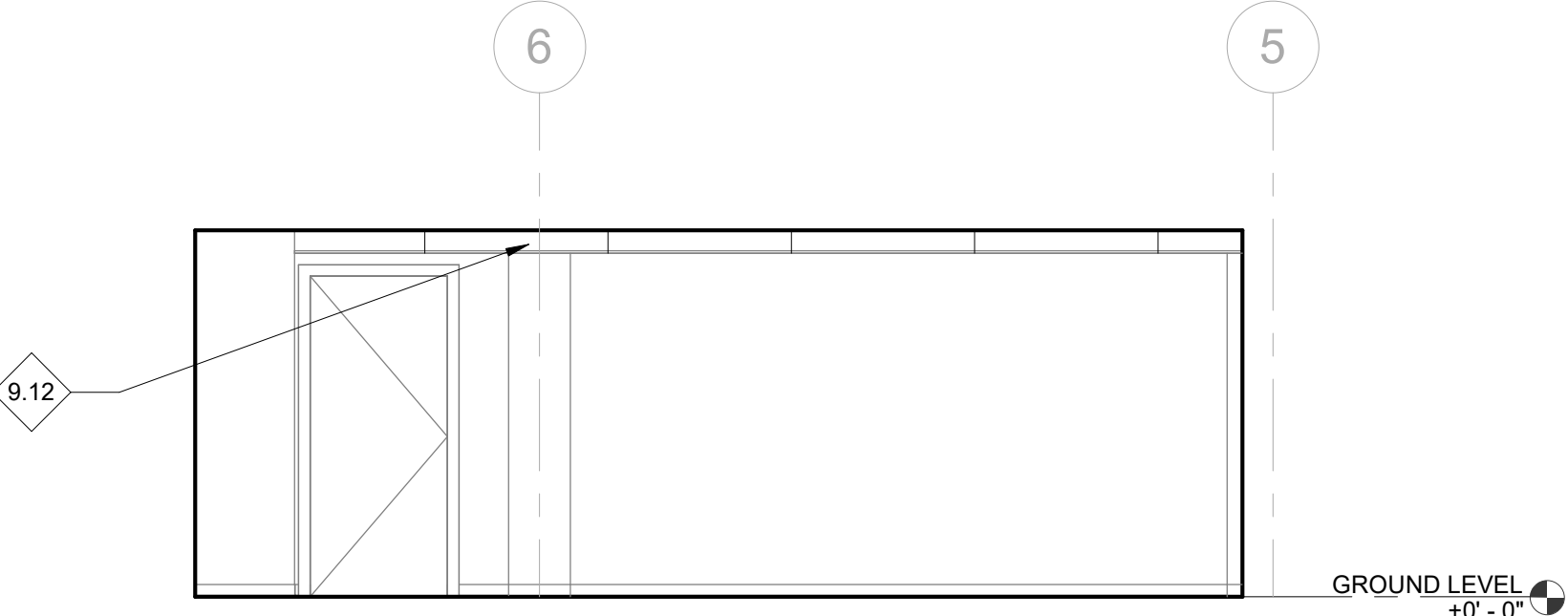
3 CRAFTS ROOM G-13 INT ELEV - SOUTH
1/4" = 1'-0"



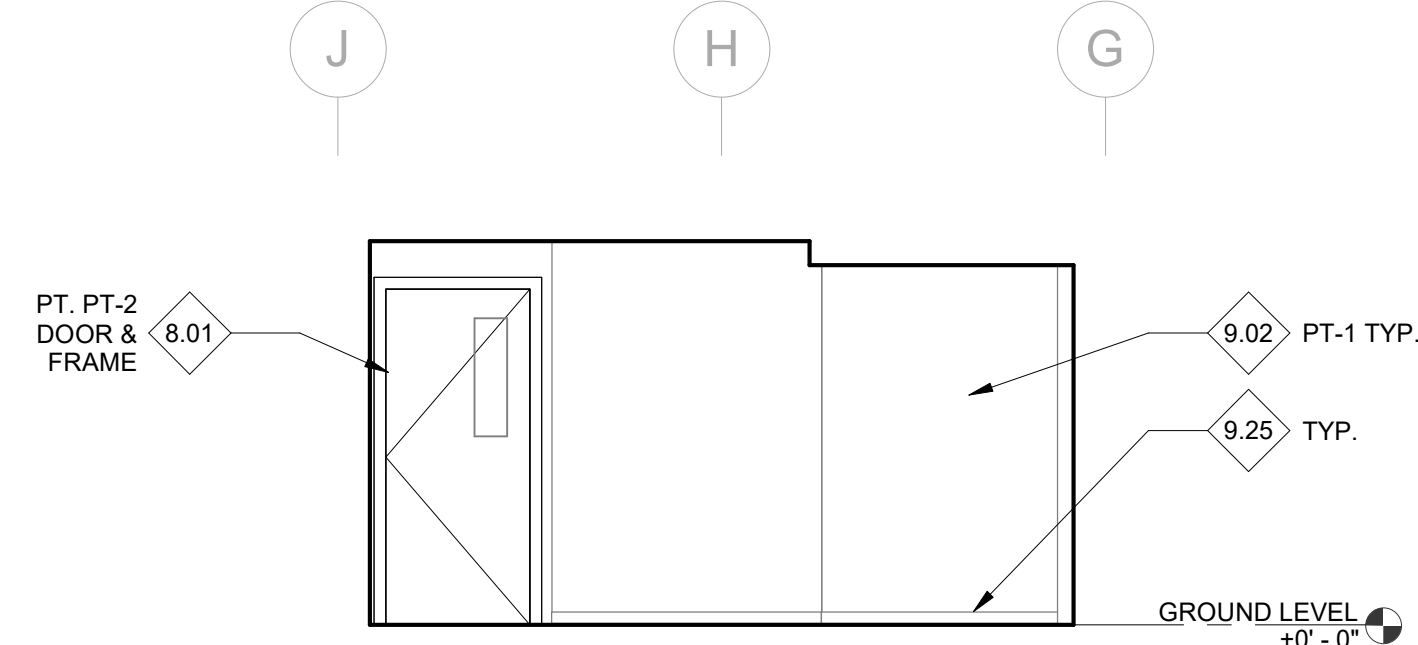
6 HALL #4 G-21 INT ELEV - EAST
1/4" = 1'-0"



2 HALL #4 G-21 INT ELEV - NORTH
1/4" = 1'-0"



5 HALL #4 G-21 INT ELEV - WEST
1/4" = 1'-0"



1 HALL #4 G-21 INT ELEV - SOUTH
1/4" = 1'-0"

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9. SEE DTL 2/A906 FOR REQUIRED METAL BACKING.

KEYNOTES

2.25	REMOVE WD. AND ACRYLIC GLASS INFILL AT WINDOW
2.40	REMOVE LOOSE AND FLAKING PAINT AT (E) RADIATOR UNDER CABINET, PREP AND PAINT
2.42	REMOVE LOOSE AND DAMAGED (E) PLASTER AT WALL AND CLG.
8.01	DOOR IN (E) FRAME
8.03	REBUILD (E) UPPER WD. WINDOW SASH, REPLACE GLASS, MAKE WINDOW OPERABLE, PAINT
9.02	PAINT (E) OR (N) GYP. BD. OR PLASTER WALL, PILASTER, OR COLUMN, TYP.
9.03	PAINT (E) DOOR, TRIM, FRAME, AND TRIM AT CASED OPENINGS, TYP.
9.04	PAINT (E) WD. WINDOW TRIM AND INTERIOR SIDE OF SASH, TYP.
9.05	PAINT (E) WD. BASE, CHAIR RAIL, AND WALL BETWEEN TYP.
9.12	SUSPENDED ACOUSTIC CEILING TILE TO MATCH (E)
9.25	B6, RUBBER BASE TYP., SEE FINISH SCHEDULE
9.29	B8, RUBBER BASE TYP., SEE FINISH SCHEDULE
10.04	MAGNETIC WHITE BOARD



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

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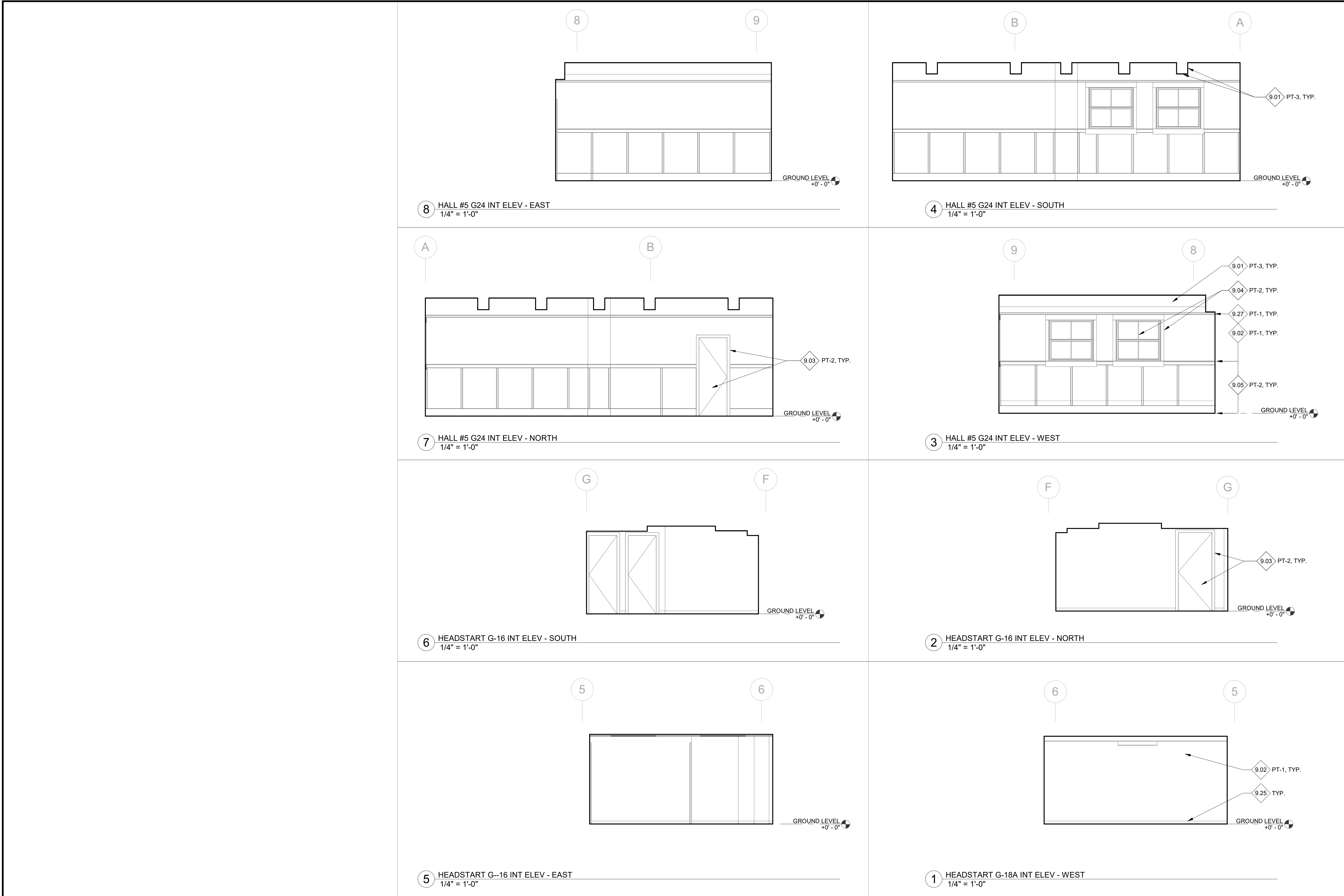
A504

INTERIOR ELEVATIONS
CRAFTS ROOM & HALL 4

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/21

SHEET NO.
26 OF 47

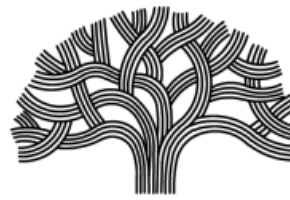


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KEYNOTES

9.01	PAINT (E) CONC. BEAM, GIRDER, AND/OR SLAB, TYP.
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9.03	PAINT (E) DOOR, TRIM, FRAME, AND TRIM AT CASSED OPENINGS, TYP.
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9.05	PAINT (E) WD. BASE, CHAIR RAIL, AND WALL BETWEEN TYP.
9.25	B6, RUBBER BASE TYP. SEE FINISH SCHEDULE
9.27	PAINT (E) WOOD PICTURE RAIL TO MATCH WALL BELOW, TYP.



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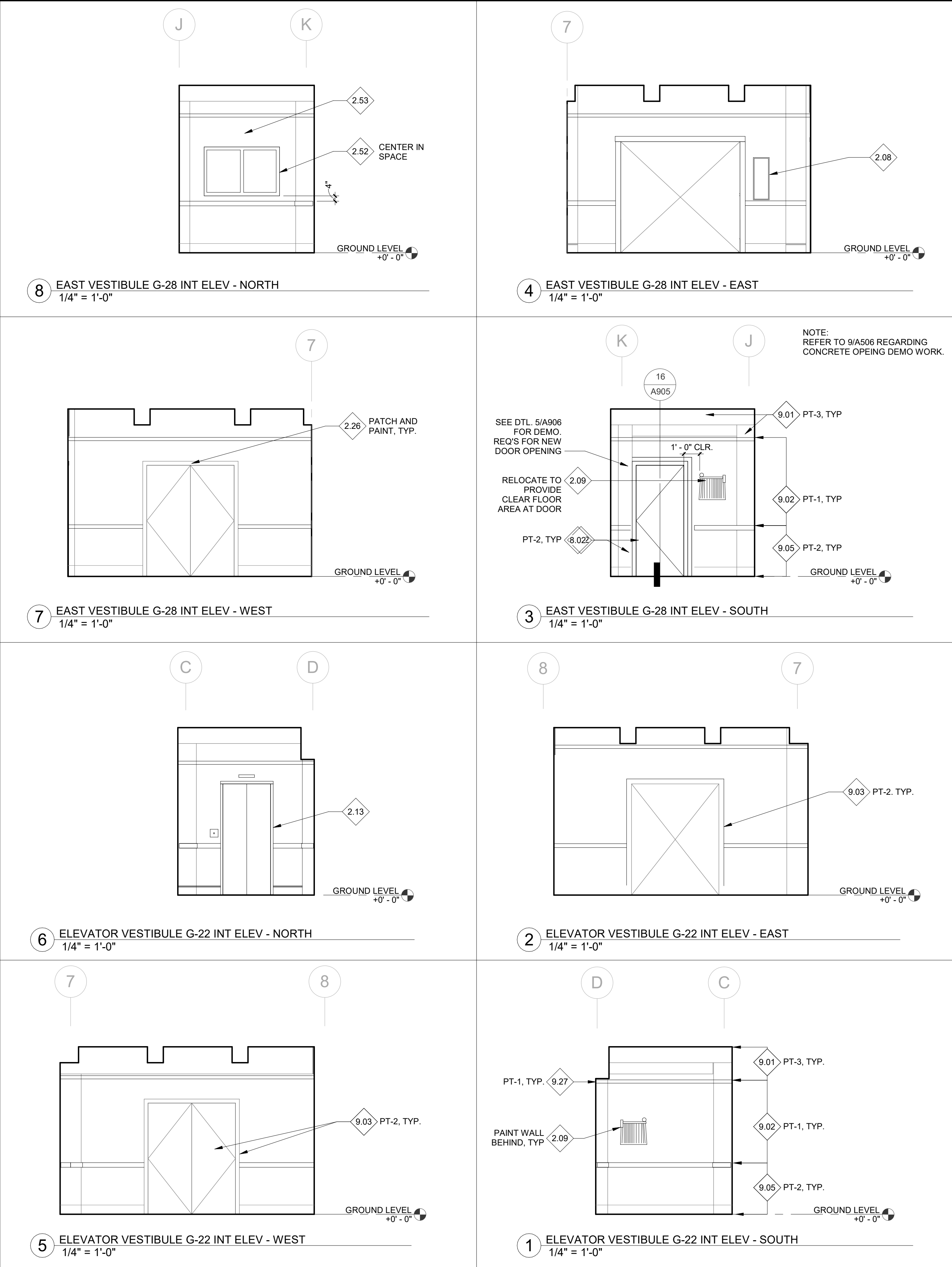
A505

INTERIOR ELEVATIONS HALL
5 & HEADSTART

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/21

SHEET NO.
27 OF 47

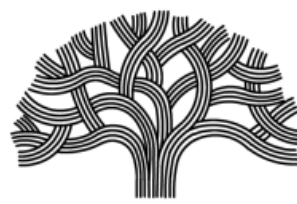


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KEYNOTES

- | | |
|------|--|
| 2.08 | (E) FIRE EXTINGUISHER, CABINET, AND SIGNAGE TO REMAIN. TYP. |
| 2.09 | (E) FIRE HOSE AND/OR CABINET TO REMAIN. TYP. |
| 2.13 | (E) ELEVATOR, DOOR, CALL BUTTON, AND FLOOR SIGNAL. PROTECT IN PLACE |
| 2.26 | REMOVE (E) SIGN |
| 2.52 | REINSTALL (E) TACK BOARD DISPLAY CASE SALVAGED FROM COMPUTER RM. |
| 2.53 | REMOVE (E) TACKBOARD |
| 8.02 | (N) DOOR AND (N) FRAME |
| 9.01 | PAINT (E) CONC. BEAM, GIRDER, AND/OR SLAB. TYP. |
| 9.02 | PAINT (E) OR (N) GYP. BD. OR PLASTER WALL, PILASTER, OR COLUMN. TYP. |
| 9.03 | PAINT (E) DOOR, TRIM, FRAME, AND TRIM AT CASED OPENINGS. TYP. |
| 9.05 | PAINT (E) WD. BASE, CHAIR RAIL, AND WALL BETWEEN TYP. |
| 9.27 | PAINT (E) WOOD PICTURE RAIL TO MATCH WALL BELOW. TYP. |



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DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

RCE NO. C-26408 EXP. 5/23

CHECKED BY DM
DESIGNED BY CL
DRAWN BY CL

No.	DATE	BY	REFERENCE
1	12/3/21	CL	ISSUE FOR PERMIT
2	3/8/23	CL	PLAN CHECK RESPONSE

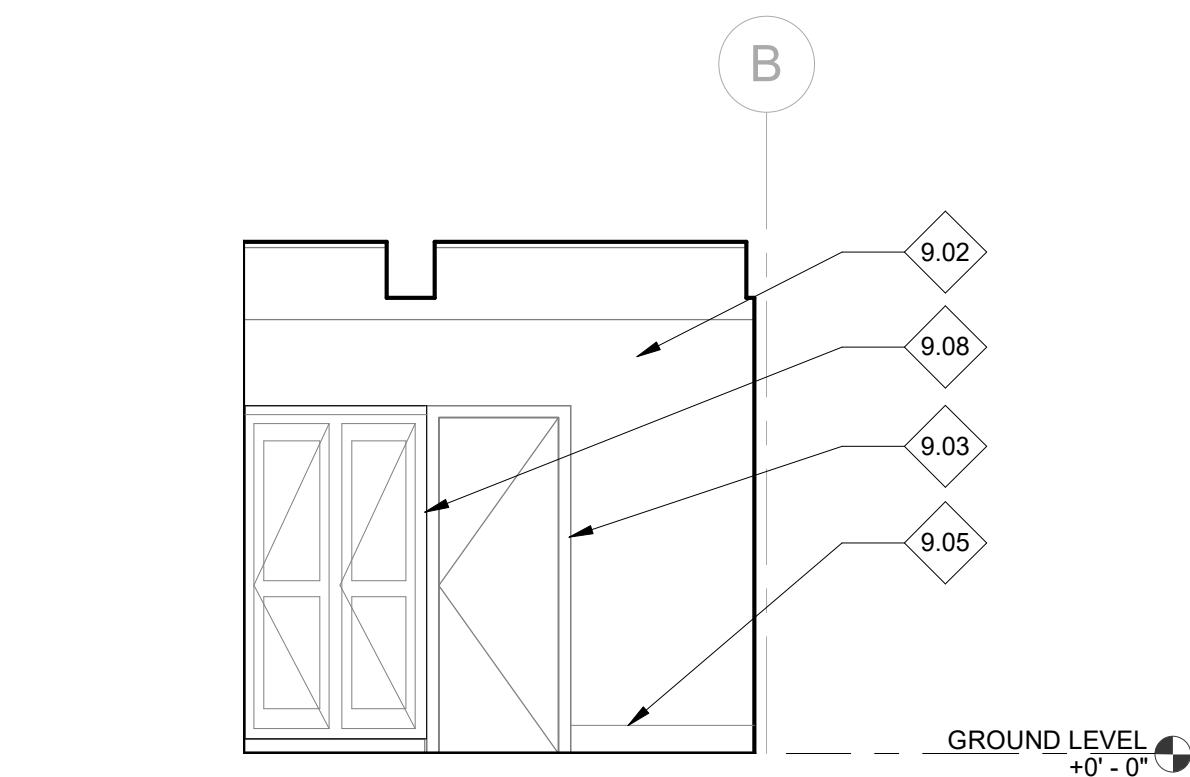
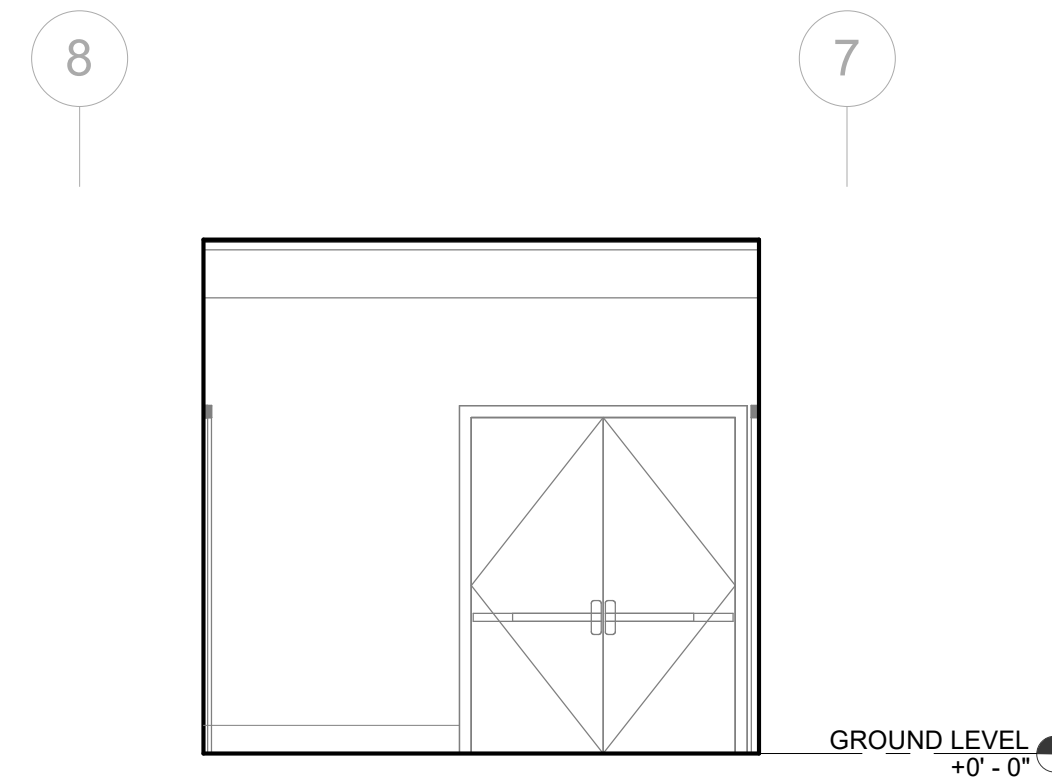
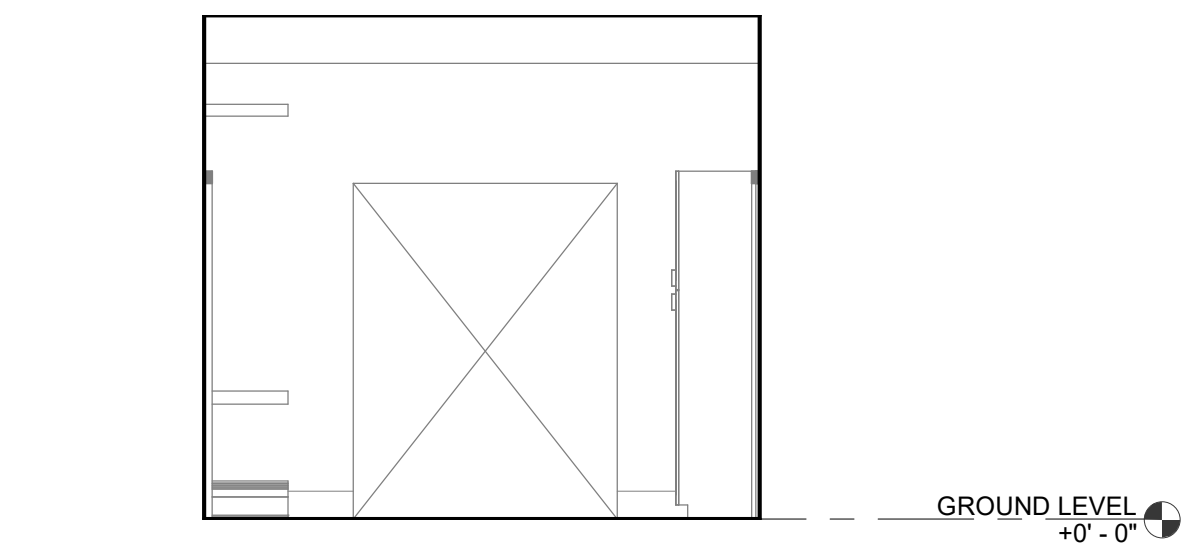
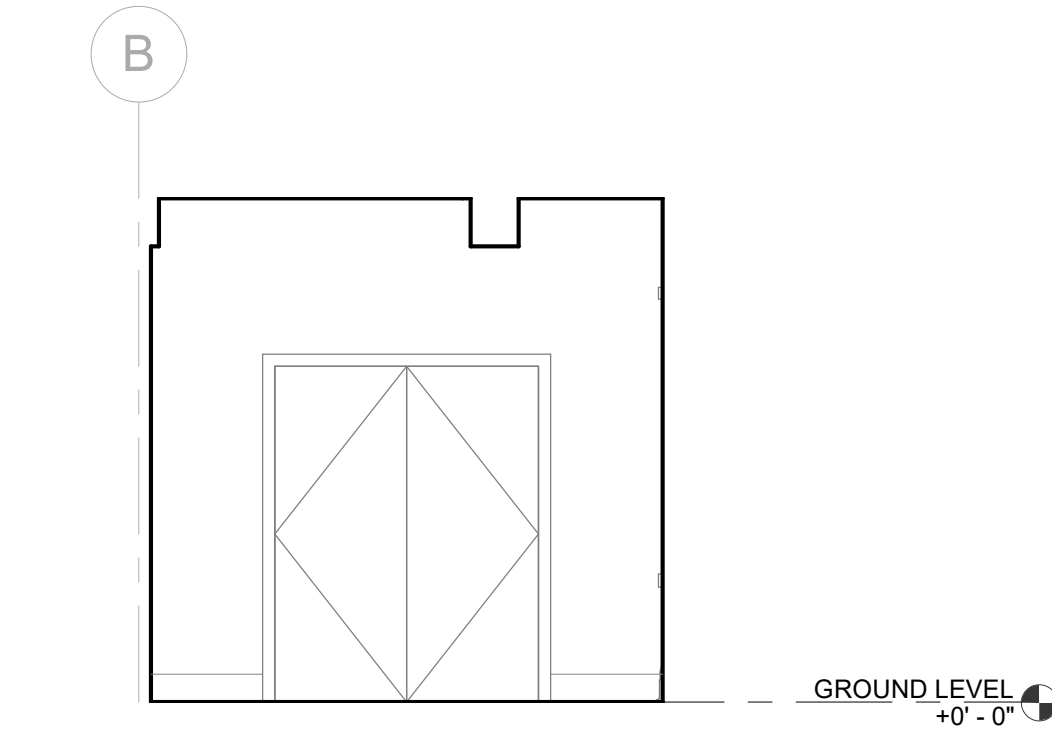
A506

INTERIOR ELEVATIONS
EAST AND WEST VESTIBULE

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/21

SHEET NO.
28 OF 47

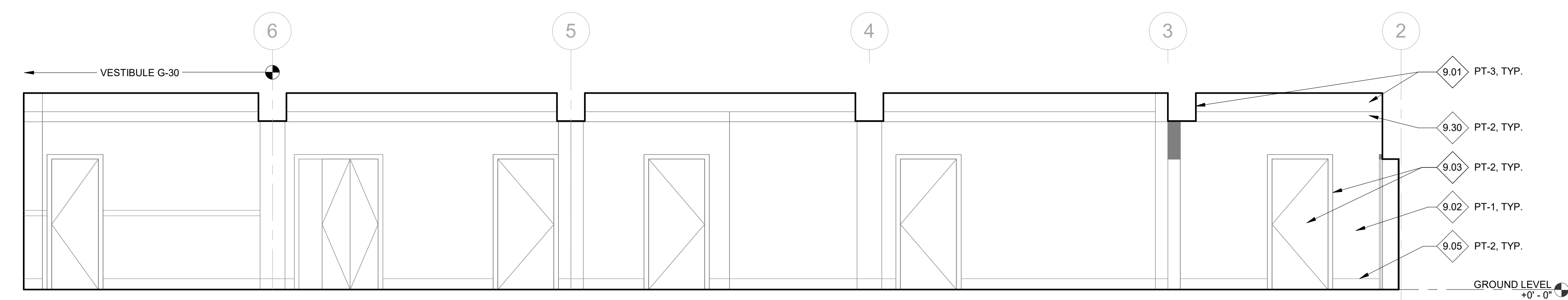
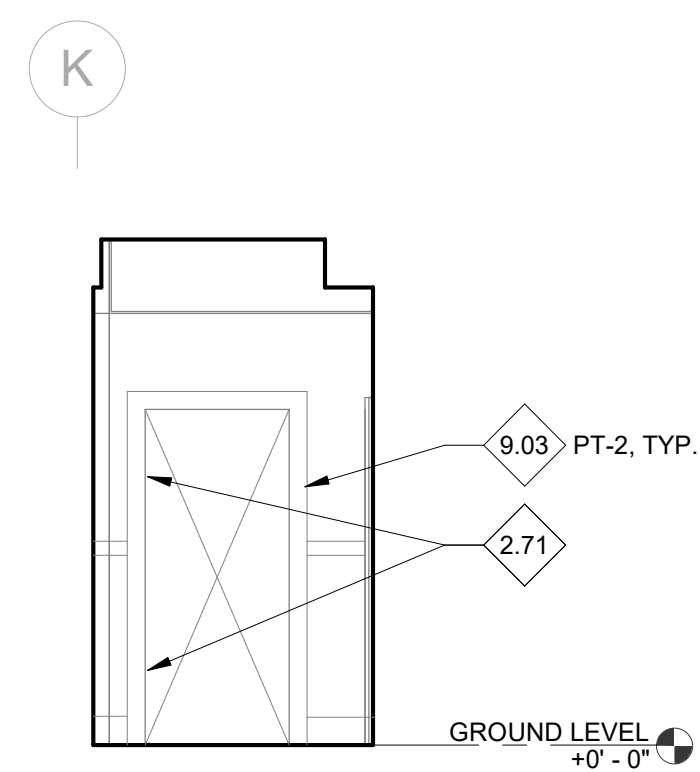
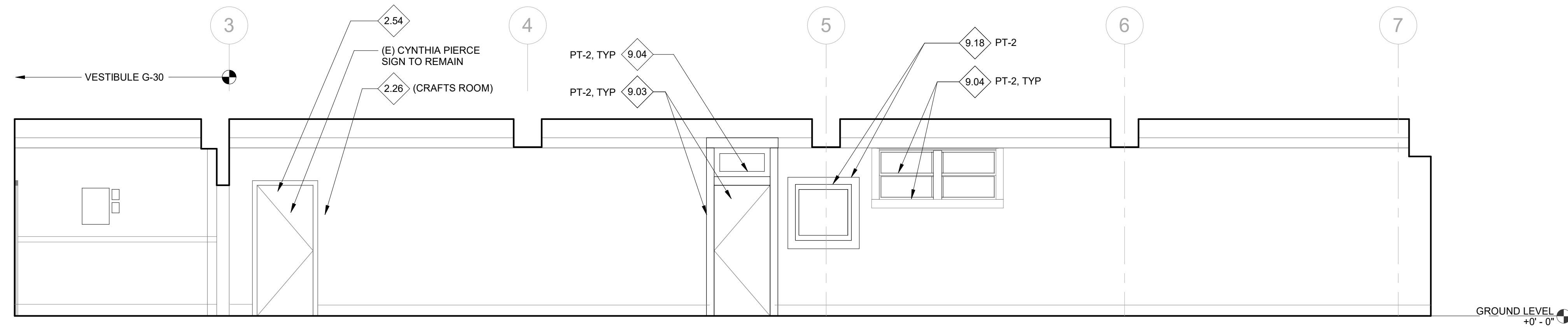
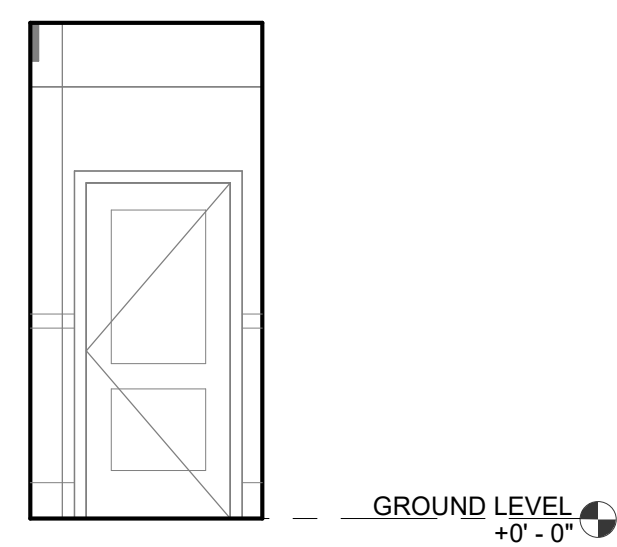


SHEET NOTES

1. SEE A801 FOR FINISH SCHEDULE AND LEGEND.
2. NOT ALL SPACES ARE FULLY DRAWN IN ELEVATION. PROVIDE SCHEDULED FINISH IN SIMILAR LAYOUT AS ADJACENT SURFACES.
3. TYPICAL KEYNOTES AND NOTES ARE APPLIED TO ONLY ONE ELEVATION PER ROOM FOR CLARITY. SIMILAR SCOPE ON TAGGED INTERIOR ELEVATION SHALL APPLY TO OTHER SIMILAR SURFACES AND FEATURES IN ROOM. - SEE FIRST OR TAGGED INTERIOR ELEVATION FOR WORK IN EACH ROOM TYPICAL.
4. COLUMNS SHALL BE PAINTED LIKE WALLS U.O.N.
5. (E) SURFACES, FIXTURES, AND ACCESSORIES TO REMAIN NOT RECEIVING PAINT SHALL BE CLEANED AND PROTECTED IN PLACE.
6. REMOVE ALL DECORATIVE WALL PAPER AND BORDER. PATCH AS NEEDED AND PREP FOR PAINT.
7. WALL SURFACES BEHIND (N) OR REINSTALLED WHITE BOARDS, FLAT SCREENS, AND OTHER WALL-HUNG ACCESSORIES SHALL BE PAINTED TO MATCH ADJACENT WALL BEFORE INSTALLATION OR REINSTALLATION.
8. CONTRACTOR SHALL PATCH ALL (E) DAMAGE AND HOLES AT (E) PLASTER AND GYP. BD. WALLS. HOLES LEFT FROM DEMOLISHED WALL ACCESSORIES SHALL BE REPAIRED, PATCHED, AND PREPPED BEFORE PAINT IS APPLIED.
9. SEE DTL 2/A906 FOR REQUIRED METAL BACKING.

KEYNOTES

2.26	REMOVE (E) SIGN
2.54	REMOVE (E) STICKERS, DO NOT DAMAGE GLASS
2.71	REMOVE (E) DOOR HINGES, FILT HOLES, AND PAINT
9.01	PAINT (E) CONC. BEAM, GIRDER, AND/OR SLAB, TYP.
9.02	PAINT (E) OR (N) GYP. BD. OR PLASTER WALL, PILASTER, OR COLUMN, TYP.
9.03	PAINT (E) DOOR, TRIM, FRAME, AND TRIM AT CASED OPENINGS, TYP.
9.04	PAINT (E) WD. WINDOW TRIM AND INTERIOR SIDE OF SASH, TYP.
9.05	PAINT (E) WD. BASE, CHAIR RAIL, AND WALL BETWEEN TYP.
9.08	PAINT (E) WOOD CASEWORK AND TRIM, TYP.
9.18	PAINT (E) TRIM SURROUND AND MTL. CASE AT (E) FIRE HOSE CAB
9.30	PAINT (E) WOOD PICTURE RAIL TO MATCH WD. TRIM, TYP.



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CITY PROJECT NO. 1004984

ARCHITECT

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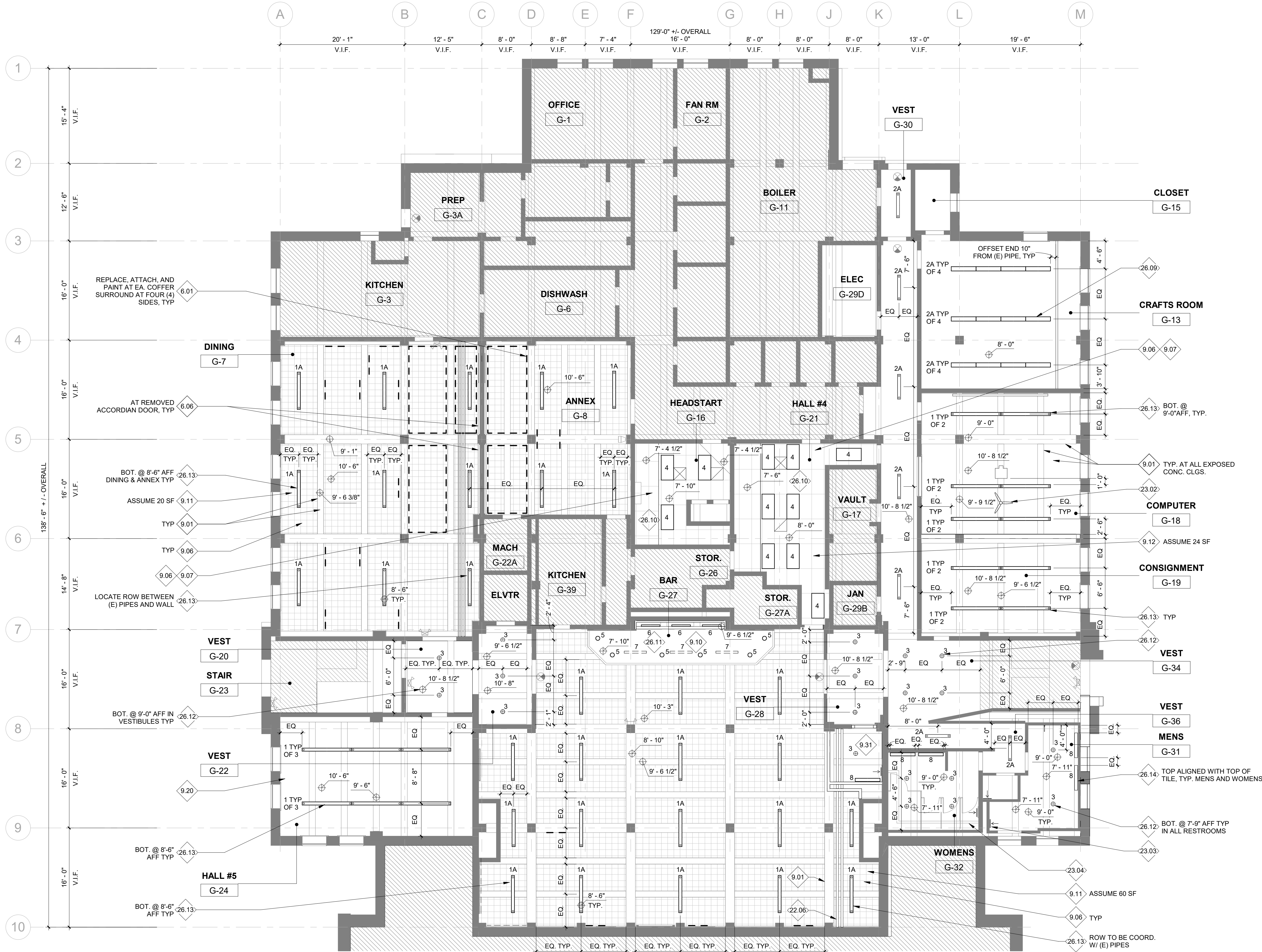
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1	12/3/21	CL	ISSUE FOR PERMIT
2	3/8/23	CL	PLAN CHECK RESPONSE
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A507

INTERIOR ELEVATIONS EAST CORRIDOR & WEST VESTIBULE

PROJECT NO.
1004984

SCALE:	SHEET NO.
HOR.	
VERT.	
DATE: 12/3/21	29 OF 47



1 REFLECTED CEILING PLAN - GROUND FLOOR
1/8" = 1'-0"

SHEET NOTES

- SEE A801 FOR FINISH SCHEDULE AND LEGEND.
- PAINT ALL EXPOSED SIDES OF CONC. SLAB, BEAMS, AND GIRDERS AT CEILING. PAINT ALL PIPING, CONDUIT, WIRING, JUNCTION BOXES AND OTHER EXPOSED ACCESSORIES AT CEILING. PAINT (E) ADHERED AND SUSPENDED ACOUSTIC CEILING TILES, SUSPENDED GRID, AND QUARTER ROUND TRIM IN AREA OF WORK.
- ALL LIGHT FIXTURES AND DEVICES SHALL BE CENTERED IN ROOM, HALL, AND ON CEILING TILES U.O.N. ALL FIXTURES AND DEVICES SHALL BE ALIGNED WITH EACH OTHER. SED FOR LIGHT FIXTURE TYPE AND A601 FOR LOCATION.
- WINDOW COVERINGS SHALL BE SALVAGED. REINSTALL AS DIRECTED BY OWNER. COVERINGS NOT REINSTALLED SHALL BE DISPOSED BY CONTRACTOR.
- PROVIDE LED LIGHT FIXTURES IN ALL IN SCOPE ROOMS IN THE PROJECT. (E) WIRING TO FIXTURES SHALL BE REUSED TO THE GREATEST EXTENT POSSIBLE.
- SED FOR LOCATION OF ADDITIONAL DEVICES INCLUDING BUT NOT LIMITED TO OCCUPANCY SENSORS, PHOTOCELLS, PANELS, CONTROLS, AND SWITCHES. DEVICE LOCATION TO BE FIELD VERIFIED AND PLACED IN ACCORDANCE WITH MFR.'S REQUIREMENTS. SEE ELEC. DWGS. FOR MORE INFO.
- INSTALL LIGHTS IN BAR COVE EQUIDISTANT.

KEYNOTES

- 6.01 WD. QUARTER ROUND TRIM, PAINT
6.06 PATCH AND REPAIR WD. TRIM, PAINT, TYP.
9.01 PAINT (E) CONC. BEAM, GIRDER, AND/OR SLAB, TYP.
9.06 PAINT (E) AND (N) ADHERED OR SUSPENDED ACOUSTIC CEILING TILE (ACT)
9.07 PAINT (E) SUSPENDED ACT SUPPORT GRID
9.10 PAINT (E) GYP. BD. CLG., TYP.
9.11 ADHERED ACOUSTIC CEILING TILE TO MATCH (E), SEE A102D FOR LOCATIONS
9.12 SUSPENDED ACOUSTIC CEILING TILE TO MATCH (E)
9.20 REPAIR, PATCH, AND PAINT PLASTER WALL AND CEILING; PROVIDE MTL. PLASTERING AND SECURE PIPING TO STRUCTURE
9.31 PATCH AND REPAIR (E) PLASTER AFTER ACT REMOVAL, PREP AND PAINT
22.06 REINSTALL (E) PIPE INSULATION AT HW PIPING, PROVIDE (N) WHERE MISSING OR DAMAGED; ALLOW FOR MIN. 100 L.F. REPLACEMENT INSULATION
23.02 CEILING FAN, SEE ALTERNATE 1 ON A001, SMD
23.03 HVAC DIFFUSER AT DUCT, TYP. SMD
23.04 EXHAUST DUCT TIGHT TO STRUCTURE, SMD
26.09 CLG. MTD. LINEAR LIGHT FIXTURE, SED, TYP
26.10 2x4 TROFFER LIGHT FIXTURE, SED, TYP
26.11 RECESSED LIGHT FIXTURE AT (E) SOFFIT, TYP. OF 6, SED
26.12 CYLINDER PENDANT LIGHT FIXTURE, SED, TYP
26.13 LINEAR PENDANT LIGHT FIXTURE, SED, TYP
26.14 WALL-MTD. LINEAR LIGHT FIXTURE, SED, TYP

LEGEND

- AREA OF BUILDING NOT IN SCOPE OF WORK
2x4 TROFFER LIGHT FIXTURES, SED
LINEAR PENDANT LIGHT FIXTURES, SED
LINEAR FLUSH-MOUNT LIGHT FIXTURES, SED
LINEAR UNDER-BAR LIGHT FIXTURES, SED
CYLINDER PENDANT LIGHT FIXTURES, SED
RECESSED IN CLG. LIGHT FIXTURES, SED
(E) EXP. CONC. CLG. BEAM
(E) ADHERED 12"x12" ACOUSTIC CLG. TILE (ACT)
(E) SUSPENDED 2'x4" ACOUSTIC CLG. TILE (ACT)
(E) HVAC SUPPLY AND RETURN DIFFUSERS TO REMAIN U.O.N.
HVAC WALL SUPPLY AND RETURN DIFFUSERS, SMD
(E) PROJECTOR TO REMAIN
(E) EMERGENCY LIGHT TO REMAIN
(E) EMERGENCY LIGHT + EXIT SIGN TO REMAIN
(E) EXIT SIGN TO REMAIN
REPLACE AND PAINT 1/4" ROUND WD. TRIM TO MATCH (E)
REATTACH AND PAINT (E) 1/4" ROUND WD. TRIM



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

RCE NO. C-26408 EXP. 5/23

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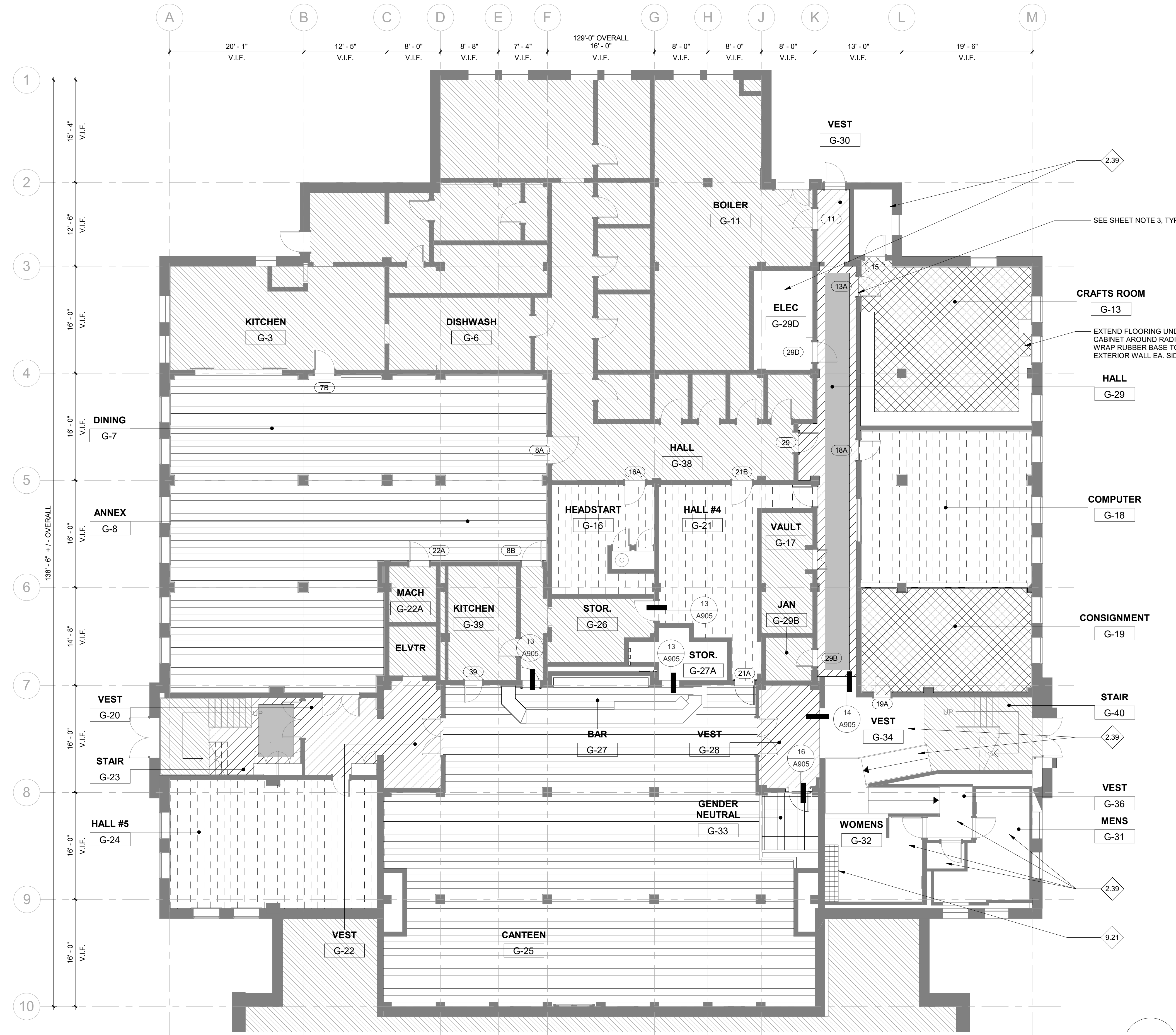
A601

**REFLECTED CLG. PLAN
GROUND FLOOR**

**PROJECT NO.
1004984**

SCALE:
HOR.
VERT.
DATE: 12/3/21

SHEET NO.
30 OF 47



1 FLOORING PLAN - GROUND FLOOR
1/8" = 1'-0"

SHEET NOTES

1. SEE A801 FOR FINISH SCHEDULE AND LEGEND.
2. SEE A801 DOOR SCHEDULE FOR THRESHOLD AND TRANSITION DETAIL. CALLOUTS, A906 FOR FLOORING DETAILS. DOOR NUMBERS PROVIDED ON THIS PLAN FOR REFERENCE.
3. PROVIDE HEAT WELD SEAM BASED ON MFR. INSTRUCTIONS MATCHED TO DARKER FLOORING AT LOCATIONS WHERE(N) RESILIENT FLOORING ABUTS OTHER (N) RESILIENT FLOORING TYPICAL. SEE SPECIFICATIONS.
4. SEE A101D FOR DEMOLITION WORK. (E) FLOORING TO BE REMOVED TO CONCRETE SUBSTRATE AT AREAS OF REPLACEMENT. (E) CONCRETE SLAB TO BE REPAIRED, PATCHED, AND LEVELED TO PREP FOR (N) FLOORING. SEE A201 SHEET NOTE AND COVER SHEET FOR REPAIR ALLOWANCE. SEE DETAIL 11/A906 FOR REPAIR.

KEYNOTES

2.39	(E) FLOOR TO REMAIN
9.21	TILE TO MATCH (E) WHERE REMOVED OR DAMAGED. TYP. SEE FLOOR AND WALL TILE IN SCHEDULE

LEGEND

	AREA OF BUILDING NOT IN SCOPE OF WORK
	EXISTING TO REMAIN
	F1 RESILIENT PLANK
	F2 LINOLEUM
	F3 LINOLEUM
	F4 LINOLEUM
	F5 LINOLEUM
	F6 CERAMIC TILE TO MATCH (E)
	F7 CERAMIC TILE



DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

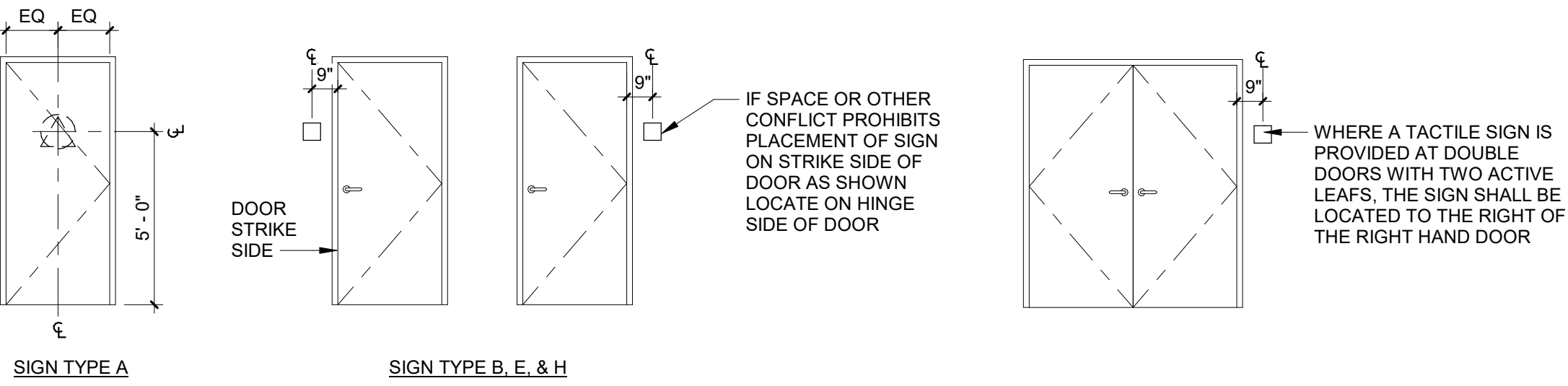
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A701
FINISH FLOOR PLAN
GROUND

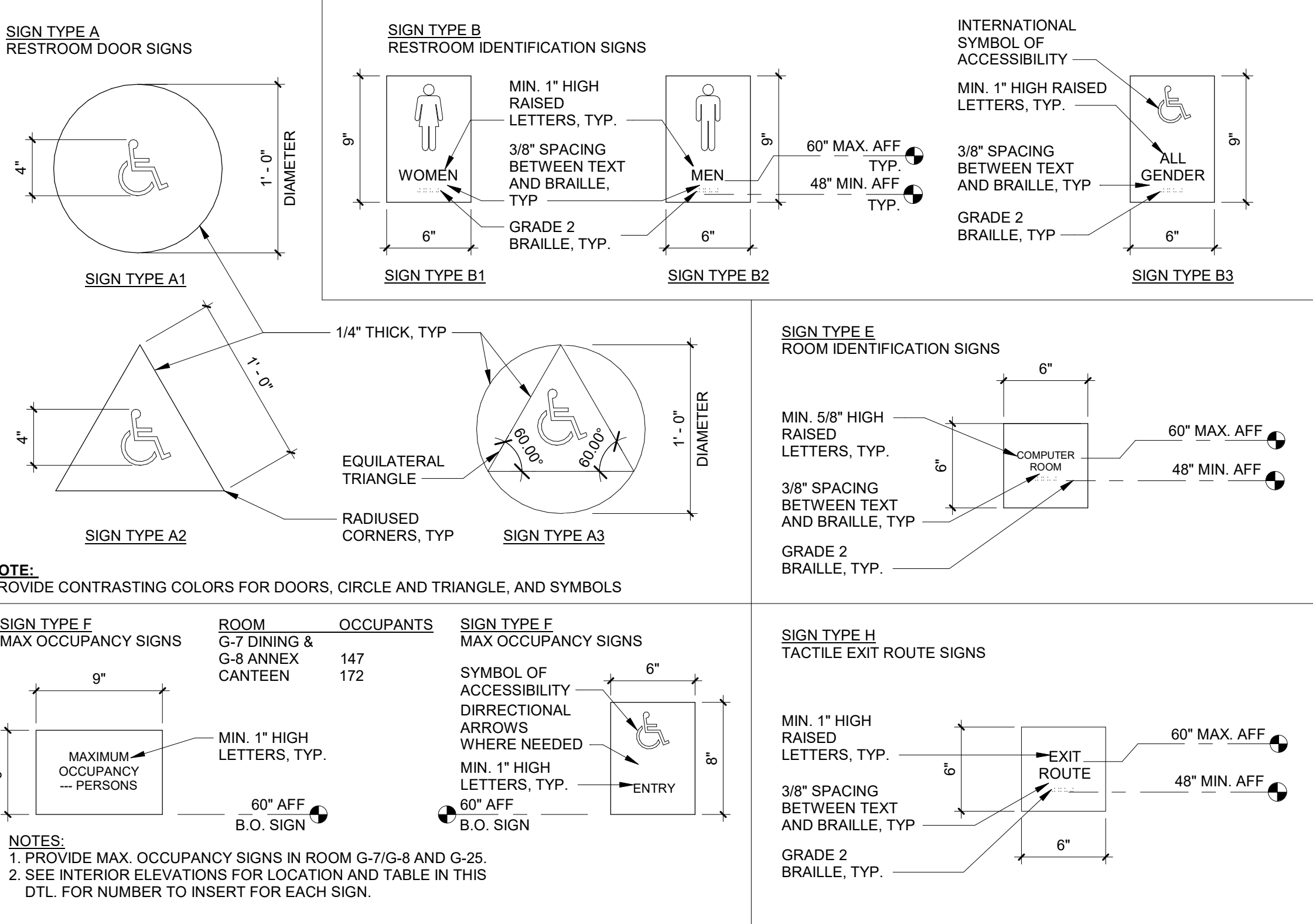
PROJECT NO. 1004984	
SCALE: HOR. VERT. DATE: 12/3/21	SHEET NO. 31 OF 47

SIGNAGE NOTES

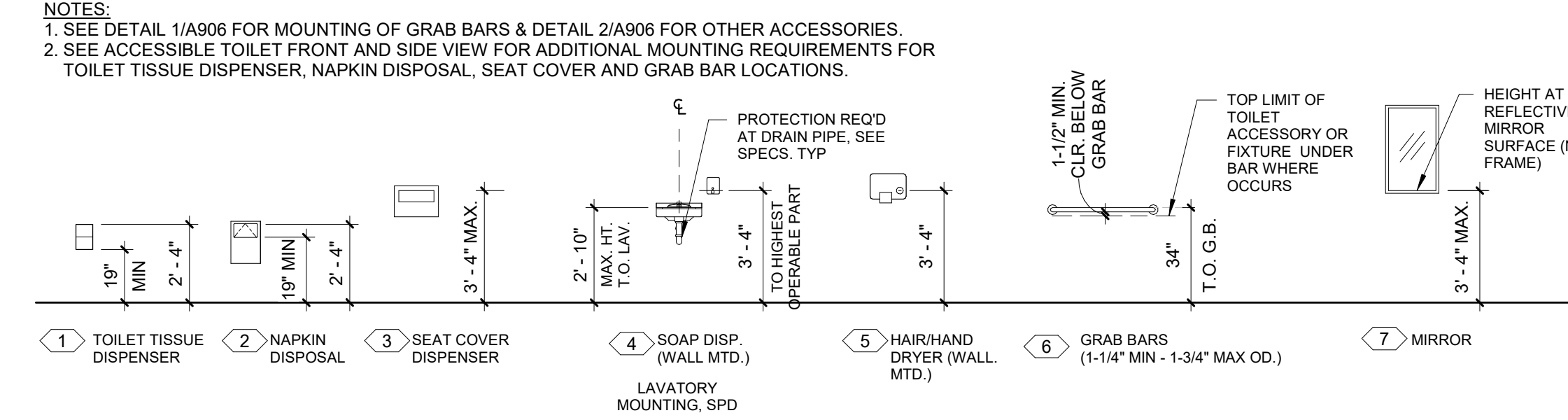
1. SEE DOOR SCHEDULE. THIS SHEET FOR REQUIRED SIGNS. SEE FLOOR PLAN FOR EXIT AND EXIT ROUTE. SIGN QUANTITY AND GENERAL LOCATIONS. NOT ALL LETTERS ARE USED IN TYPES.
2. SEE DETAIL 4/A801 FOR SIGN DETAILS AND DETAIL 3/A801 FOR MOUNTING HEIGHT AND LOCATIONS.
3. MOCK-UP SHOWING SIZE, COLOR, TEXTURE, AND MATERIAL FOR EACH TYPE SHALL BE PROVIDED FOR REVIEW BY ARCHITECT PRIOR TO FABRICATION.
4. CONTRACTOR TO PROVIDE COLOR SAMPLES FOR ARCHITECT TO SELECT FINAL COLORS.
5. ROOM NUMBERS AND/OR NAMES ON ROOM IDENTIFICATION SIGNAGE SHALL BE CONFIRMED BY CITY REPRESENTATIVE PRIOR TO FABRICATION
6. FONT FOR SIGNS TO BE HELVETICA NEUE OR AN ACCEPTABLE SUBSTITUTE APPROVED BY THE ARCHITECT. ALL SIGN TEXT TO BE CAPITALIZED UON.



5 SIGN MOUNTING AND NOTES
1/4" = 1'-0"



4 SIGN TYPES
1 1/2" = 1'-0"



3 MOUNTING HEIGHTS AND CLEARANCES
1/4" = 1'-0"

FINISH LEGEND

FLOORING			PAINTING AND COATING		
F1	RESILIENT PLANK: MANNINGTON CIRRO, SALTED OAK, DR6W8210, 4.5" x 36"		SYMBOL	COLOR	LOCATION
F2	LINOLEUM: MARMOLEUM 3254 CLAY		PT1	SW 6071 POPLAR GRAY	WALLS, TYP.
F3	LINOLEUM: MARMOLEUM 3866 ETERNITY (GREY)		PT2	SW 6073 PERFECT GREIGE	WOOD TRIM: BASE, DOORS, WINDOWS, & FRAMES; OCCURS AT WALLS BETWEEN BASE AND CHAIR RAIL
F4	LINOLEUM: MARMOLEUM 3583 CHOCOLATE BLUES		PT3	SW 7102 WHITE FLOUR	CEILING, EXPOSED BEAMS, & PIPING
F5	LINOLEUM: MARMOLEUM 3874 WALNUT		PT4	SW 6191 CONTENTED	ACCENT WALL
F6	PORCELAIN TILE TO MATCH (E); DALTILE KEYSTONES 2x2 UNGLAZED MOSAIC, THREE COLORS ALL UP TO AND INCLUDING GROUP 4, COLORS TO BE SELECTED BY ARCHITECT		PT5	SW 7601 DOCKSIDE BLUE	ACCENT WALL
			PT6	SW 6031 GLAMOUR	ACCENT WALL, TYP.
F7	PORCELAIN TILE: DALTILE FABRIC ART MODERN TEXTILE MIDNIGHT BLUE MT55, 12x24		PT7	TBD	INSIDE FACE OF BAR AT CANTEEN
			PT11	TBD	EXTERIOR TRIM AT DOOR OPERATOR
			PT12	MIDSUMMER NIGHT 2134-20	EXTERIOR HANDRAILS
BASE			WALL		
B1	(E) WD. BASE PTD.		W1	PATCHED AND PTD. PLASTER AND/OR GYP. BD.	
B2	WD. BASE TO MATCH (E) PTD.		W2	PTD. GYP. BD. FINISH	
B3	CERAMIC TILE COVE BASE TO MATCH (E)		W3	CERAMIC TILE TO MATCH (E), DALTILE 4x4 GLAZED SEMI-GLOSS OR ACCENT, 4x4 COVE, TWO COLORS ALL UP TO AND INCLUDING GROUP 3, COLORS TO BE SELECTED BY ARCHITECT	
B4	CERAMIC TILE COVE BASE TO MATCH (E)		W4	CERAMIC TILE: DALTILE LATTICE WEAVE MOSAIC 1x3 ON 12"x12" SHEET, NAVY K189, SEMI-GLOSS FINISH	
B5	PORCELAIN TILE: INFUSION CLOORBODY PORCELAIN COVE TILE, 6X12 WHITE FABRIC IF60		W5	PORCELAIN TILE: INFUSION COLORBODY PORCELAIN TILE, 6X24 WHITE WENGE IF60	
B6	RUBBER BASE AT HALL #4 & HEADSTART (COLOR TBD)		W6	PLASTIC LAMINATE, FIELD AT BAR AND CASEWORK AT BACK BAR, FORMICA EARTH 5342, MATTE (58) FINISH, GRADE 10	
B7	RUBBER BASE AT BAR (COLOR TBD)		W7	PLASTIC LAMINATE, HORIZONTAL BAND AT BAR, FORMICA DECOMETAL, PLEX UMBRA M5307	
B8	RUBBER BASE AT CRAFTS ROOM (COLOR TBD)		W8	ALUM. MOULDING EDGE STRIP, 1/2" SMOOTH FACE	

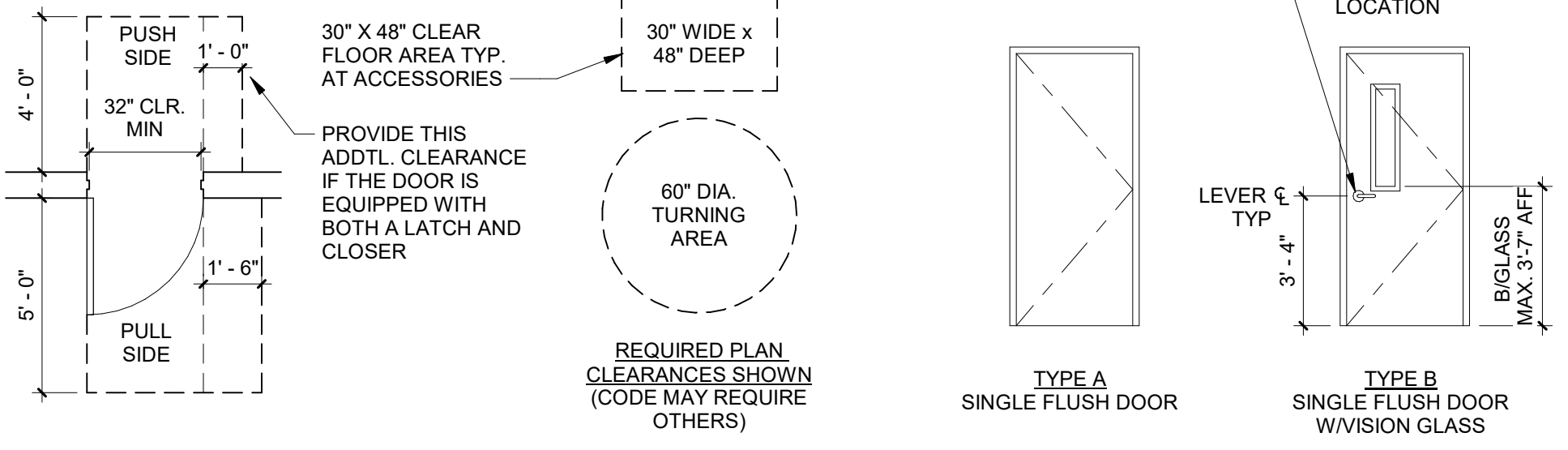
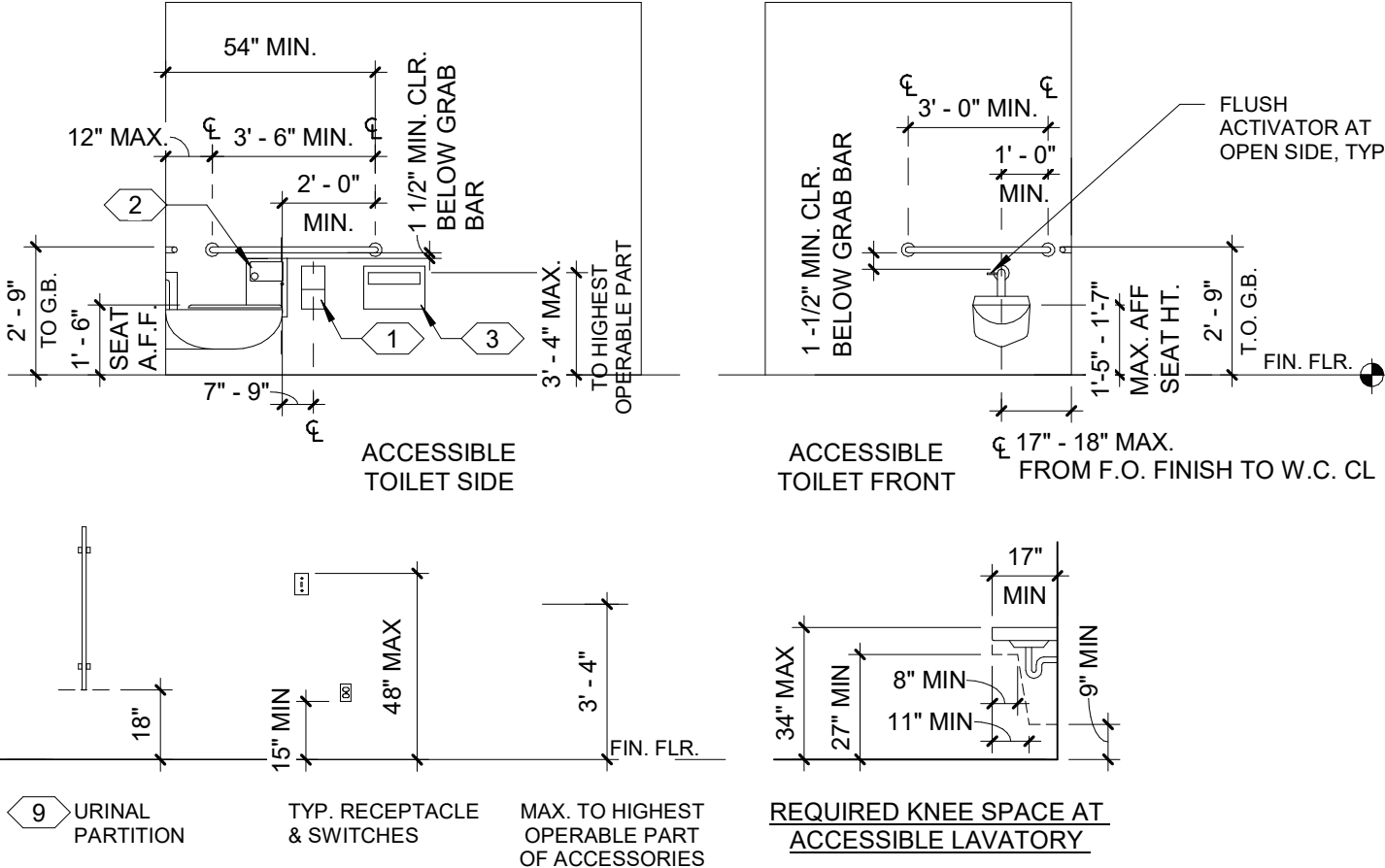
CEILING			DOOR		
C1	PATCHED AND PTD. (E) PLASTER AND/OR GYP. BD.		EXISTING OR NEW	FIN	EXISTING OR NEW
C2	SUSPENDED ACT CEILING TO MATCH (E); ARMSTRONG RANDOM TEXTURED 24" x 48" (OR CUT TO FIT)				
C3	ADHERED ACT CEILING TO MATCH (E), ARMSTRONG CLASSIC ACOUSTICAL 12" x 12"				

FINISH NOTES

1. ALL INTERIOR WALLS, CEILINGS, DOOR FRAMES, EQUIPMENT AND OTHER EXPOSED VISIBLE SURFACES ARE TO BE PAINTED, U.O.N
2. PAINT COLORS:
- ALLOW FOR MINIMUM OF (4) COLORS PER SPACE, DOORS/ WINDOWS/FRAMES/TRIM, CEILINGS, WALLS, AND ACCENT WALLS TO BE DIFFERENT COLORS)
 - CONTRACTOR TO PROVIDE BRUSH-OUTS PER SPECIFICATIONS AND ALLOW FOR REVISED COLOR SELECTION
 - CONTRACTOR TO SCHEDULE SPECIFIED MOCKUPS TO ALLOW FOR REVISED COLOR SELECTION
 - MANUFACTURER AND COLOR PROVIDED IN SCHEDULE IS FOR COLOR MATCH PURPOSES ONLY. SEE SPECS. FOR MFR. AND TYPE REQUIREMENTS.
3. ROOMS THAT HAVE TWO PAINT PT. COLORS LISTED FOR WALLS, SECOND COLOR IS ACCENT. ALL OTHER WALLS IN ROOM TO BE FIRST PT. COLOR LISTED U.O.N. SEE REMARKS COLUMN FOR ACCENT WALL LOCATION.
3. PAINT SHEEN:
- FLAT: (E) PIPES AND OTHER COMPONENTS (DO NOT PAINT PREFINISHED DEVICES)
 - EGGSHELL (OR SATIN): ALL UNLESS OTHERWISE NOTED
 - SEMI-GLOSS: TRIM, DOOR TRIM, DOORS, WINDOW TRIM, WINDOWS, AND EXTERIOR HANDRAILS
4. DO NOT PAINT WINDOW TRACKS AT DOUBLE-HUNG WINDOWS.
5. RUBBER BASE TO BE 6-INCHES TALL, STANDARD TOE, UNLESS BEING CUT TO FIT AT CASEWORK OR NOTED OTHERWISE.

DOOR SCHEDULE NOTES

1. ALL EXISTING DOORS WITHIN PROJECT SCOPE AND ALL EXIT DOORS FROM GROUND FLOOR SHALL BE VERIFIED TO BE IN OPERABLE CONDITION.
2. ALL DOORS AND FRAMES WITHIN PROJECT SCOPE TO BE PAINTED. SEE SCHEDULE FOR PAINT. DO NOT PAINT GLASS LITES ON DOORS.
3. SEE SPECIFICATIONS FOR DOOR HARDWARE SCHEDULE.



2 DOOR AND CLEAR FLOOR AREA REQ.'S
1/4" = 1'-0"

1 DOOR TYPES
1/4" = 1'-0"

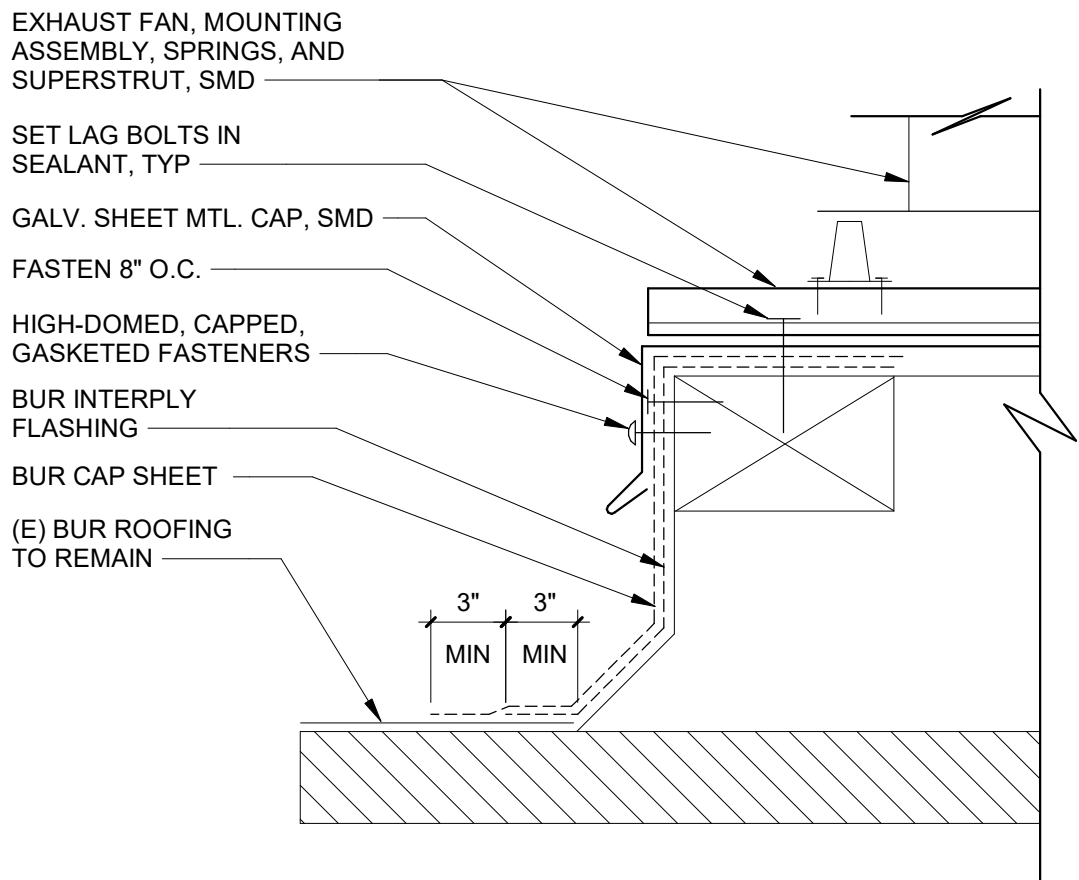


DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
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DESIGNED BY CL				
DRAWN BY CL				

A801
SCHEDULES AND CODE
DETAILS

PROJECT NO. 1004984	
SCALE: HOR. VERT. DATE: 12/3/21	SHEET NO. 32 OF 47



2 ROOF DETAIL AT EXHAUST FAN MECH. CURB
1 1/2" = 1'-0"

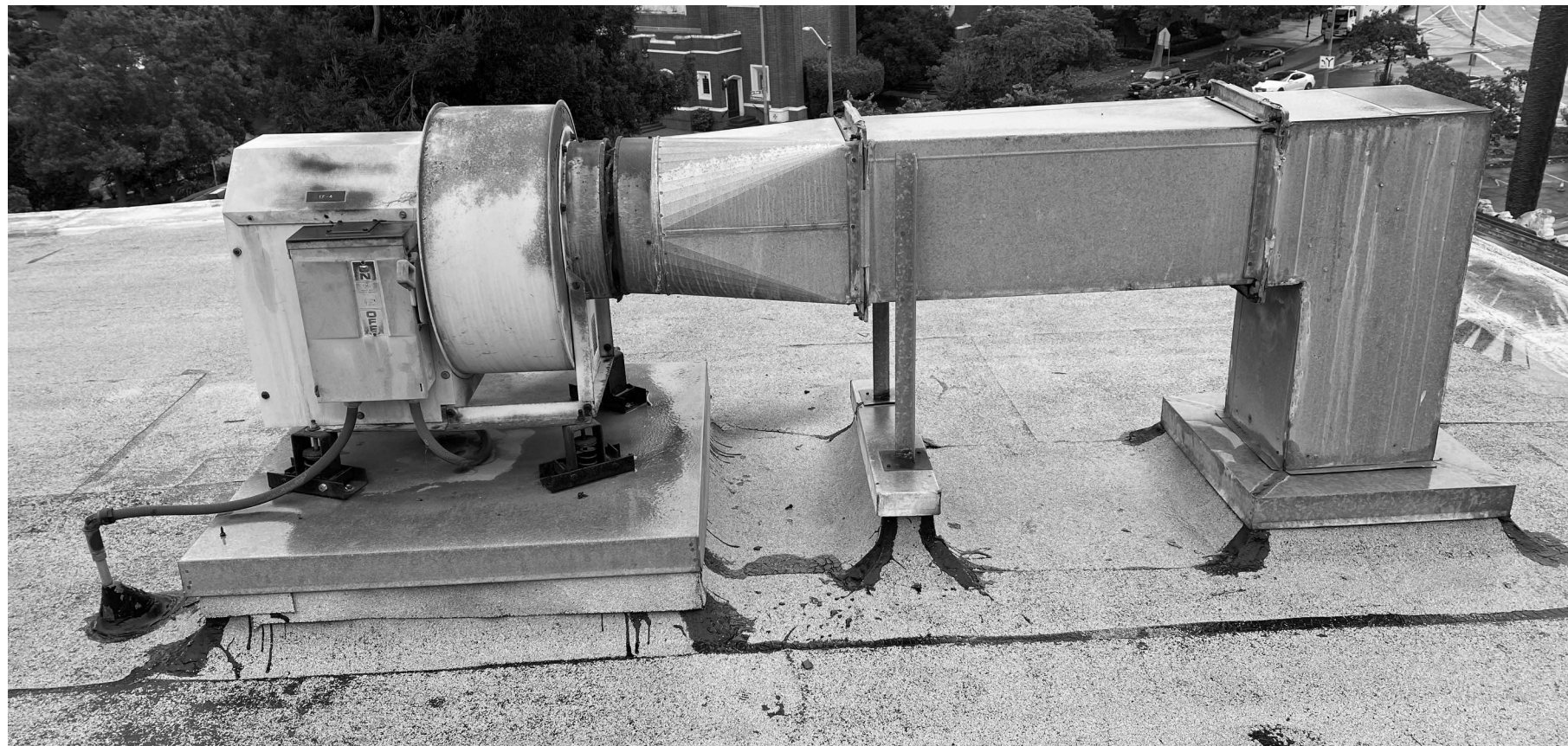
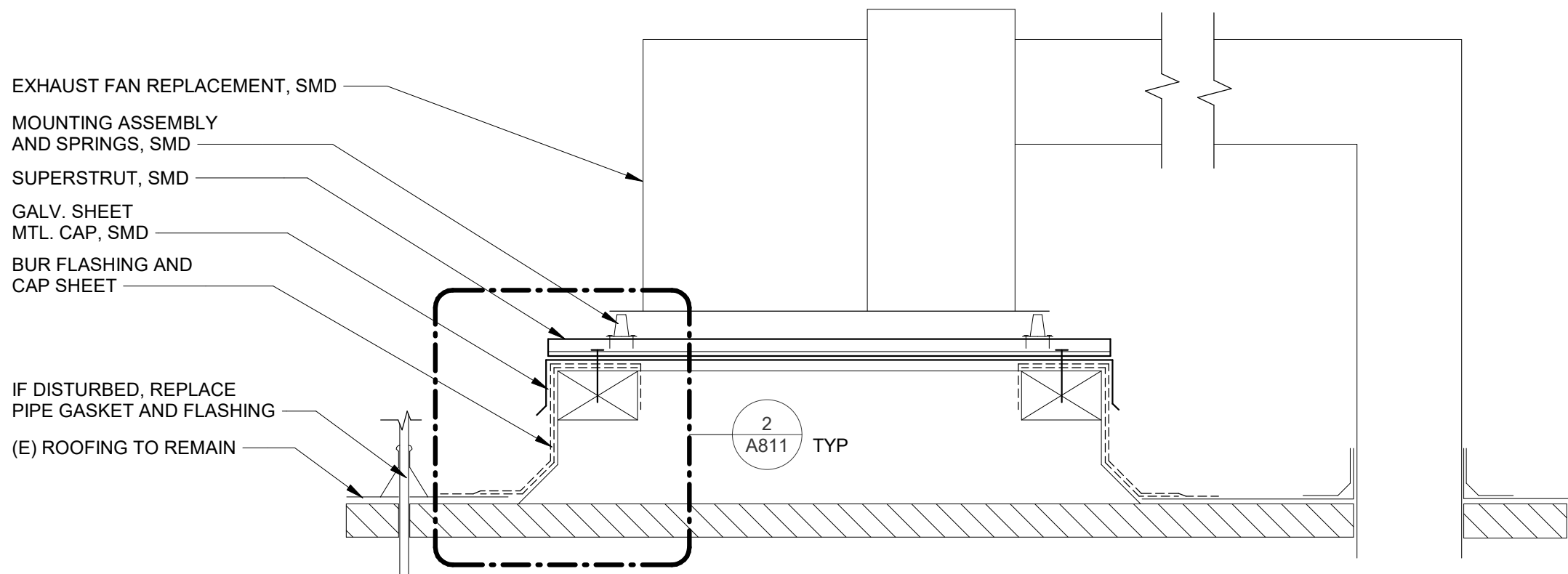


PHOTO OF EXISTING EXHAUST FAN #4 LOOKING EAST



1 ROOF SECTION AT EXHAUST FAN
3/4" = 1'-0"



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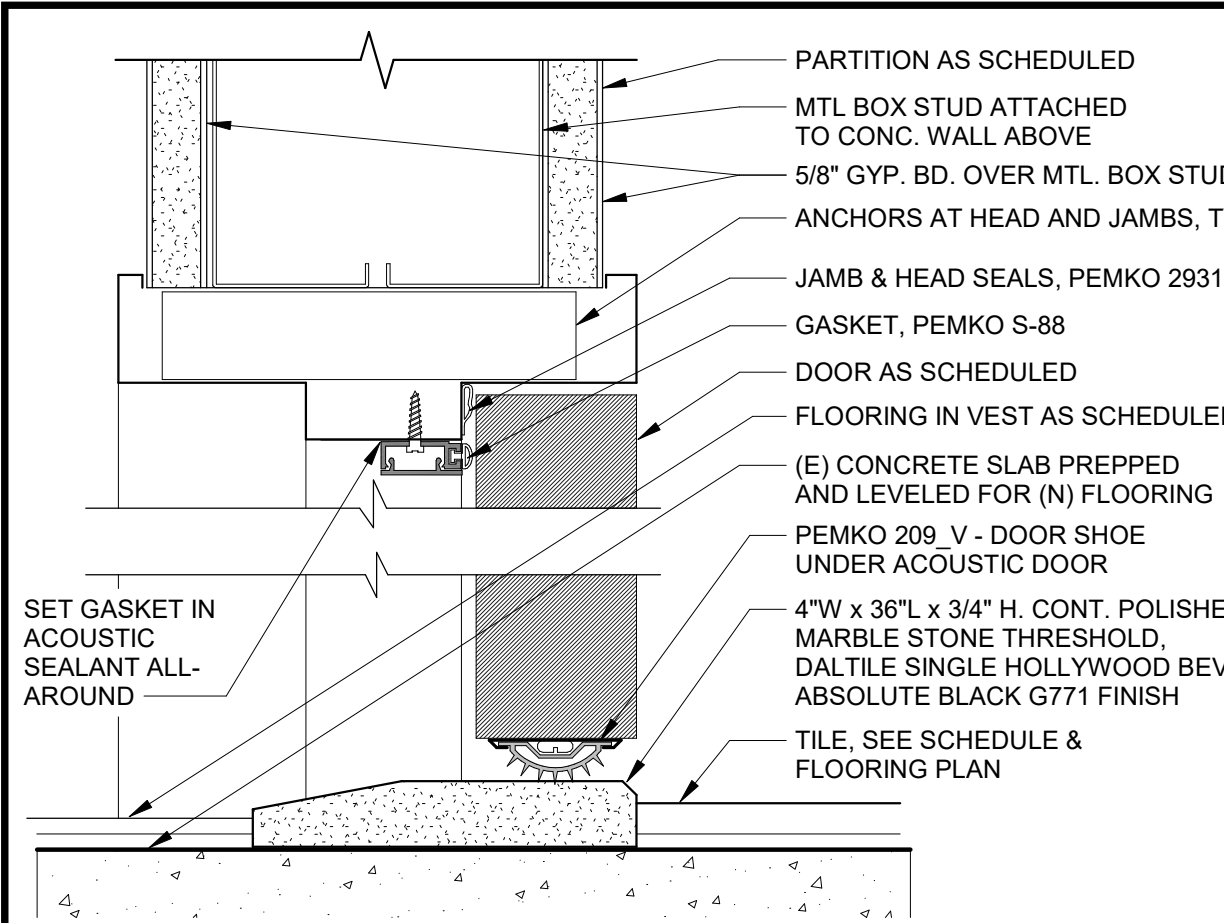
A811

EXTERIOR DETAILS

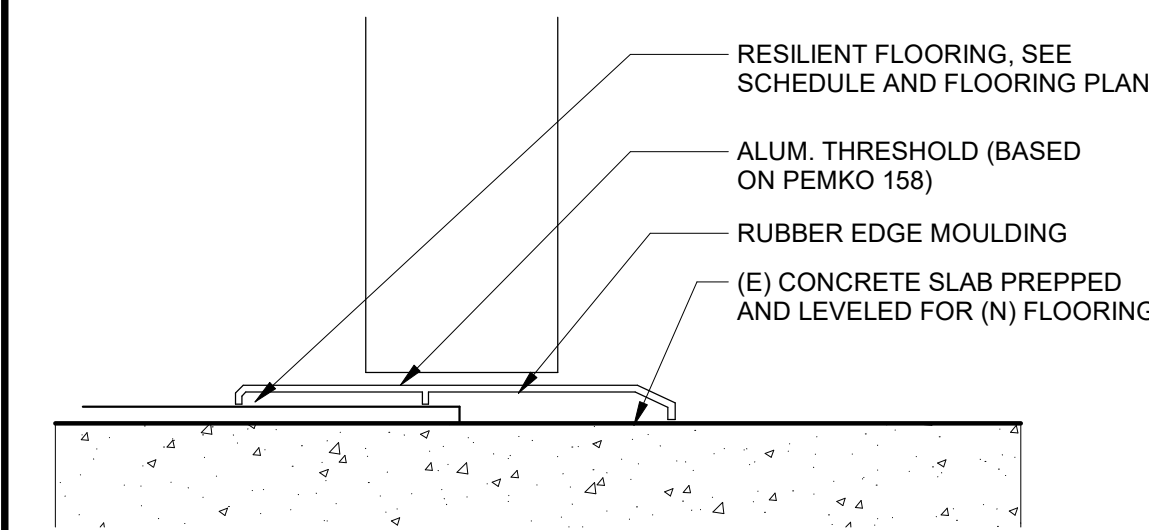
PROJECT NO.
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SCALE:
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VERT.
DATE: 3/8/23

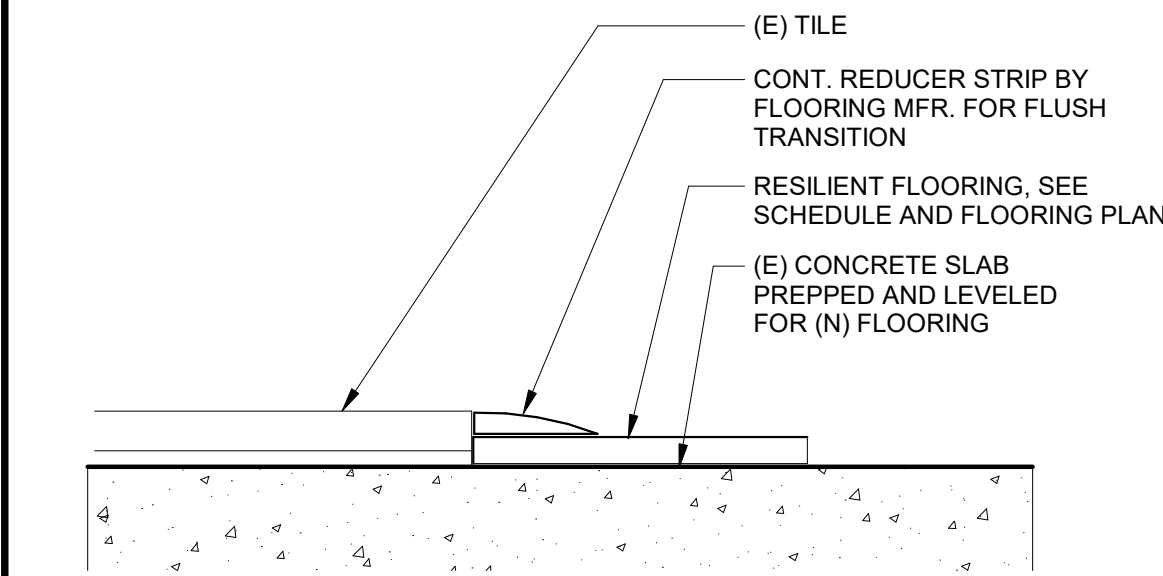
SHEET NO.
33 OF 47



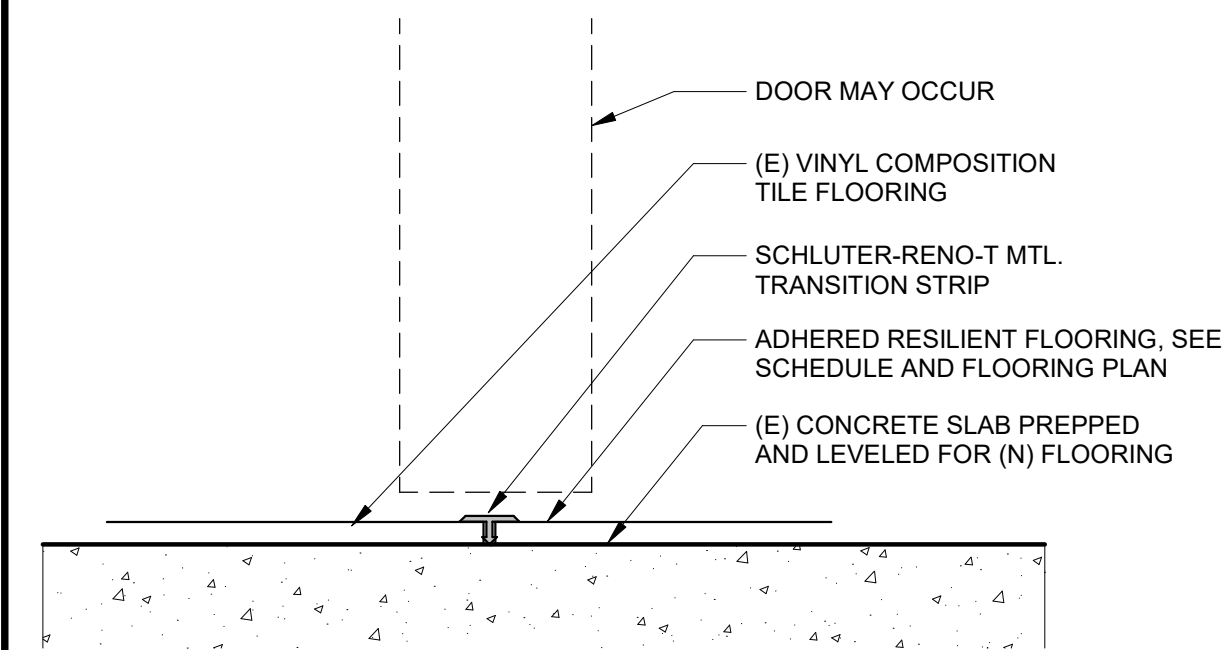
16 SILL AND HEAD AT (N) GENDER NEUTRAL RESTROOM
6" = 1'-0"



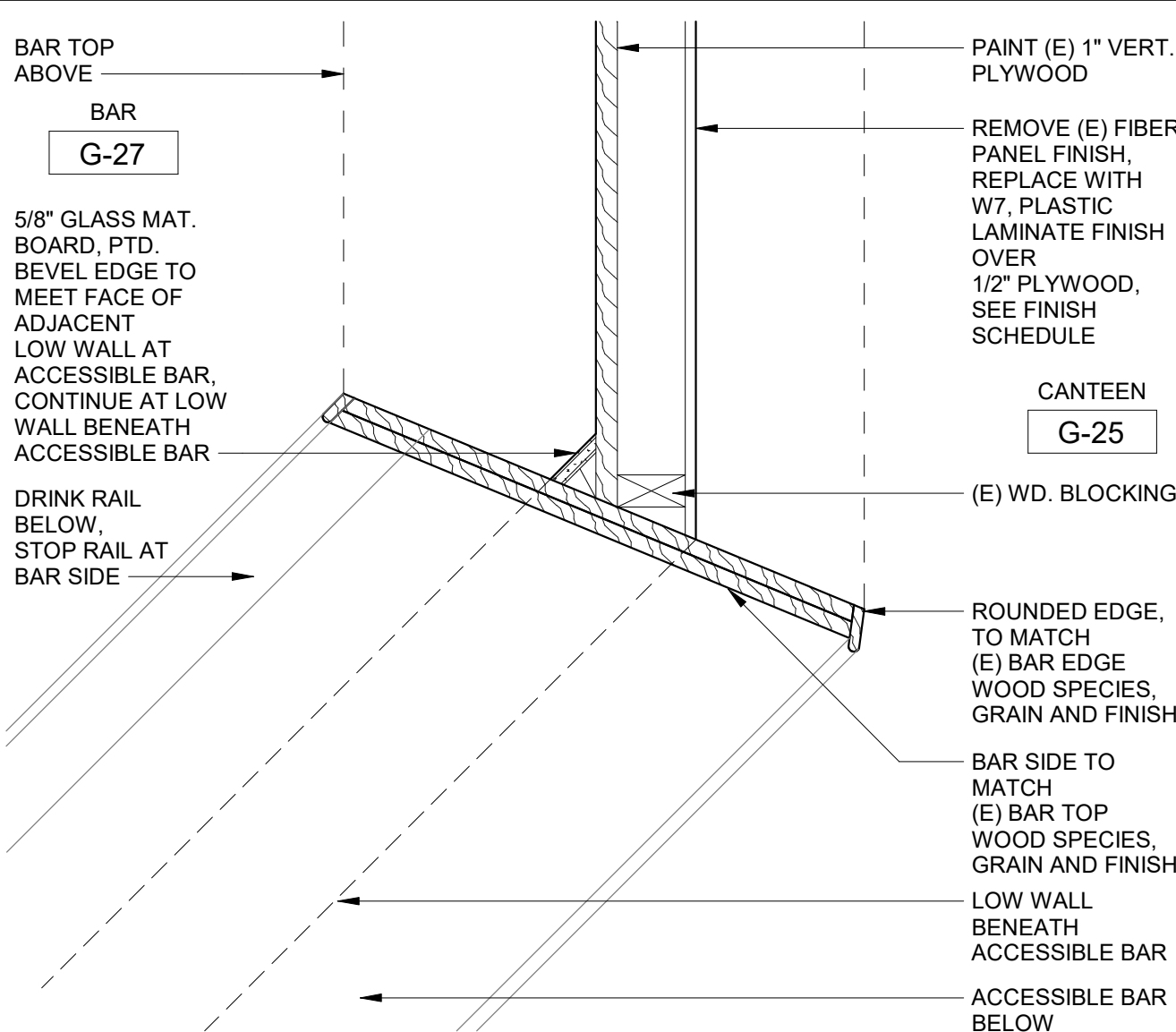
15 THRESHOLD DETAIL LINOLEUM TO (E) CONCRETE FLOOR
6" = 1'-0"



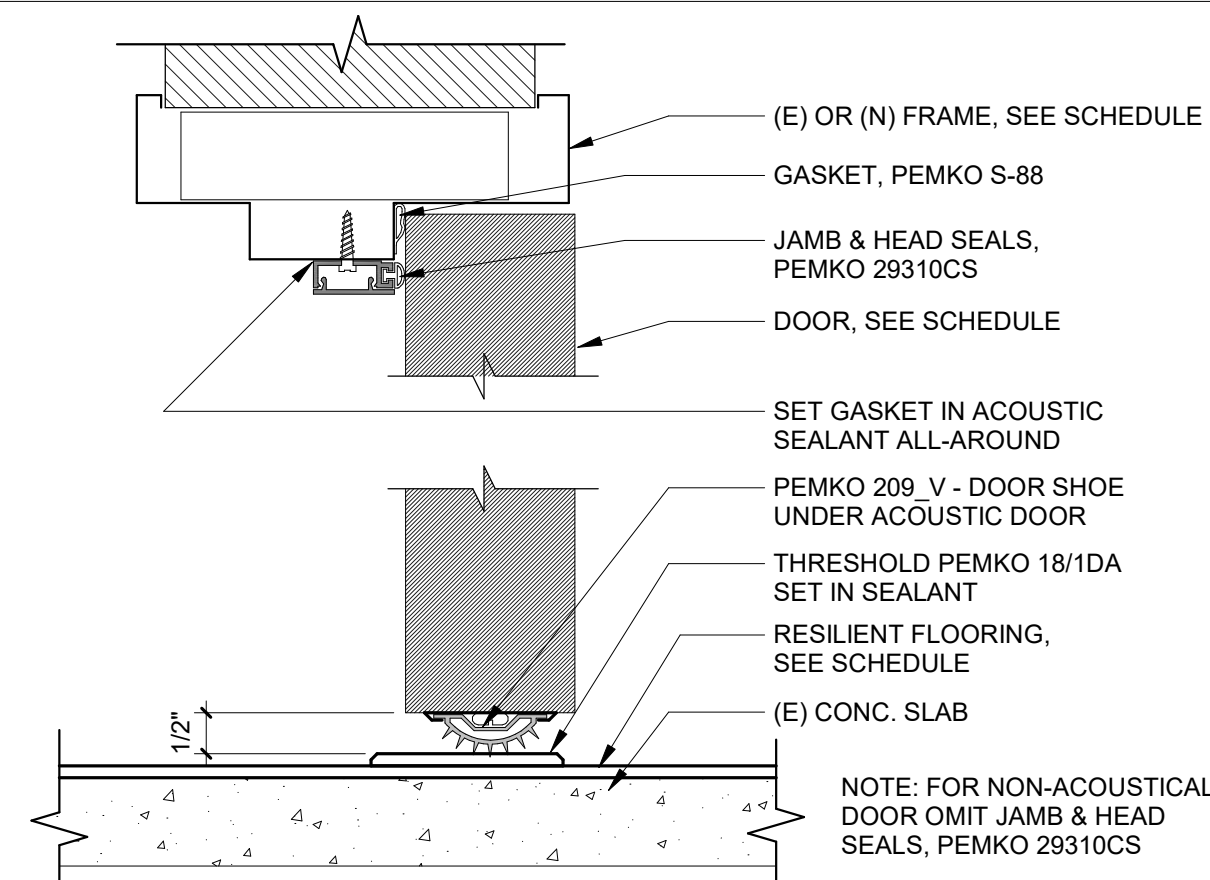
14 THRESHOLD DETAIL (N) RESILIENT AT (E) TILE
6" = 1'-0"



13 THRESHOLD DETAIL (N) RESILIENT TO (E) RESILIENT
6" = 1'-0"



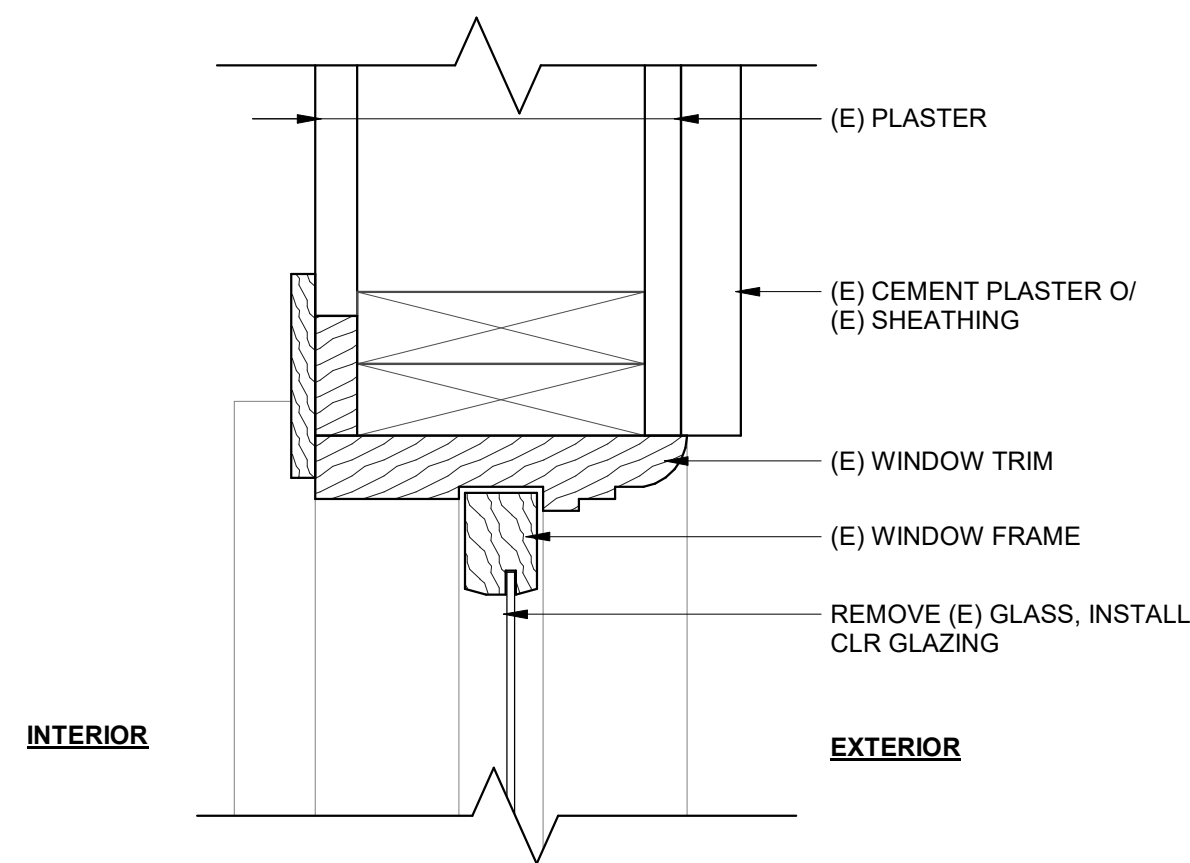
10 BAR SIDE DETAIL
1 1/2" = 1'-0"



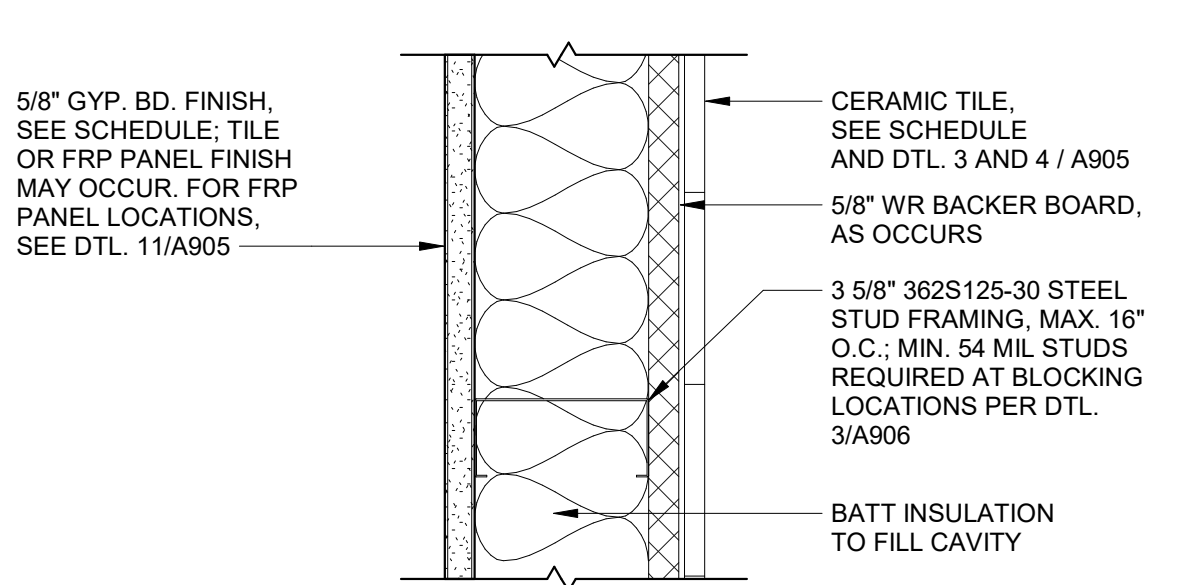
9 SILL AND HEAD DETAIL AT NEW DOOR AT HALL #4
6" = 1'-0"

PARTITION TYPE NOTES

- A. SEE ROOM FINISH SCHEDULE, FLOOR PLANS, AND INTERIOR ELEVATIONS FOR ADDITIONAL INTERIOR FINISHES NOT SHOWN ON PARTITION TYPES.
- B. AT PARTITIONS UTILIZING TYPE 'X' GYP BOARD, USE WATER RESISTANT ANTI-MICROBIAL TYPE 'X' GYP BOARD AT ALL TOILET ROOM PARTITIONS.
- C. UNLESS OTHERWISE NOTED, INTERIOR STUDS SHALL BE FULL HEIGHT FROM FLOOR TO UNDERSIDE OF STRUCTURE.
- D. USE GALVANIZED METAL STUDS AND CHANNELS AT TOILET ROOMS.
- E. PROVIDE 16 GAUGE OR HEAVIER METAL BLOCKING AND BACKING AT ALL WALL OR CEILING MOUNTED ITEMS INCLUDING BUT NOT LIMITED TO LIGHT FIXTURES, HANDRAILS, GRAB BARS, CABINETRY, TACK BOARDS, EQUIPMENT, SHELVING, SIGNAGE, ETC. FOR METAL BACKING MINIMUM CRITERIA SEE DETAIL 2/A906.
- F. CONTRACTOR SHALL DETERMINE REQUIREMENTS AND SHALL PROVIDE HORIZONTAL CHANNEL STUD REINFORCEMENT AND BRIDGING AT STUD WALLS AND PARTITIONS.
- G. METAL STUD SPACING SHALL BE 16" O.C.
- H. FOR LOCATIONS OF SOUND RATED PARTITIONS SEE PARTITION KEY ON PLANS.
- a. SEAL PARTITIONS PARTITIONS AIR TIGHT WITH ACOUSTICAL SEALANT INCLUDING DRYWALL INTERSECTIONS AT PARTITION HEAD, SILL AND AT ALL PENETRATIONS.
- b. FILL ALL PARTITION FRAMING CAVITIES WITH ACOUSTIC BATT INSULATION. SEE DETAIL 7/A906 FOR ADDITIONAL ACOUSTIC REQUIREMENTS.
- I. ANY PLYWOOD AND WOOD BLOCKING SHALL BE FIRE RETARDANT TREATED.
- J. UNLESS OTHERWISE NOTED ALIGN FINISH FACE OF PARTITIONS FLUSH WITH EACH OTHER WHERE DIFFERENT PARTITION TYPES MEET.
- K. CONTRACTOR SHALL LAY OUT FRAMING TO ACCOMMODATE THE INSTALLATION OF BATT INSULATION IN ALL STUD WALL CAVITIES.
- L. COORDINATE STUD SIZES WITH PLUMBING AT SOUND RATED PARTITIONS TO PROVIDE A MINIMUM 1-INCH CLEARANCE BETWEEN PIPING AND INSIDE FACE OF GYPSUM BOARD ON BOTH SIDES OF THE ASSEMBLY.

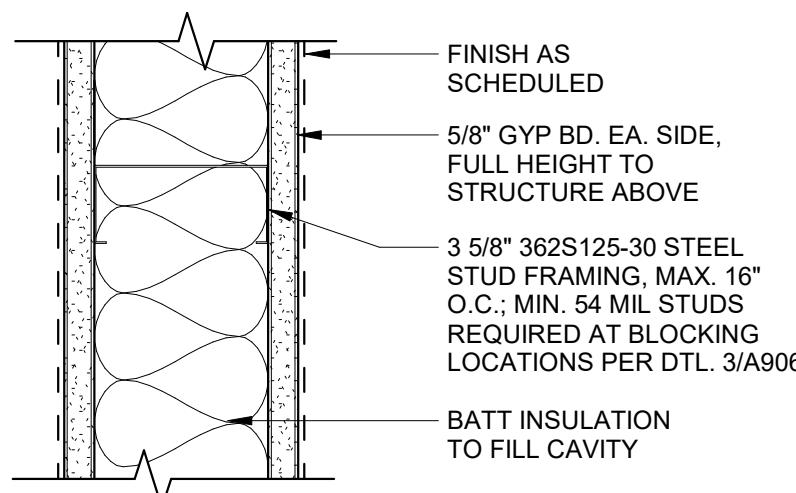


8 WINDOW JAMB DETAIL
3" = 1'-0"



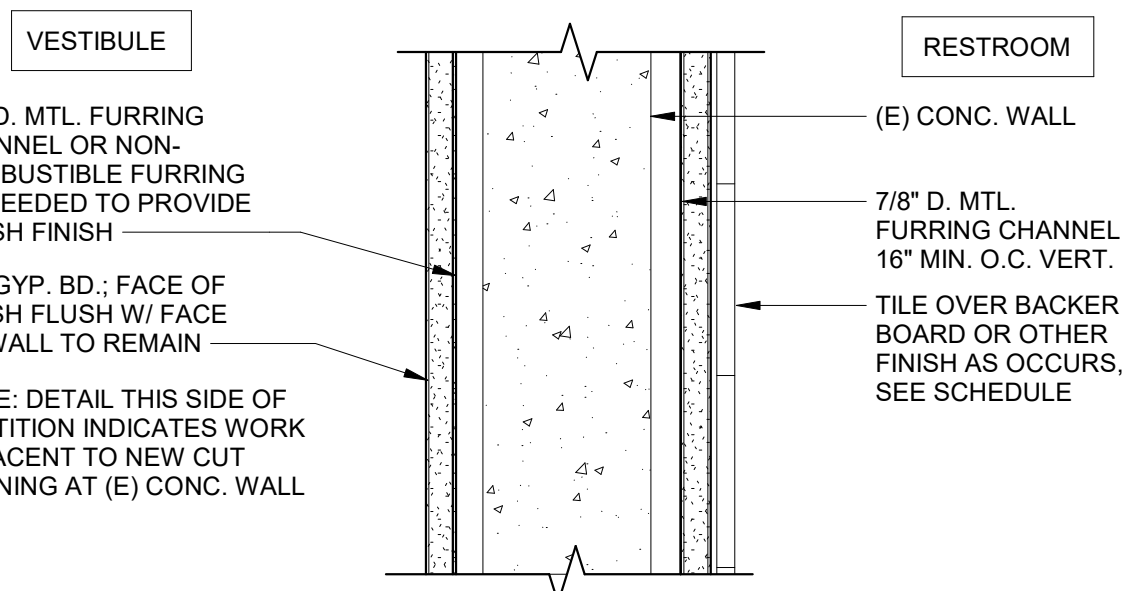
- NOTES:
1. PARTITION SHALL BE FULL HEIGHT TO STRUCTURE ABOVE. SILL AND HEAD TRACKS TO BE SECURED TO CONC. SLAB AND CONC. STRUCTURE ABOVE WITH 3/8" DIA. EXPANSION BOLT AT 32" O.C. W/3" EMBEDMENT.
2. SEE PARTITION TYPE NOTES THIS SHEET FOR ADDITIONAL REQUIREMENTS.

4 PARTITION TYPE A4 - SOUND-RATED RESTROOM PARTITION
3" = 1'-0"



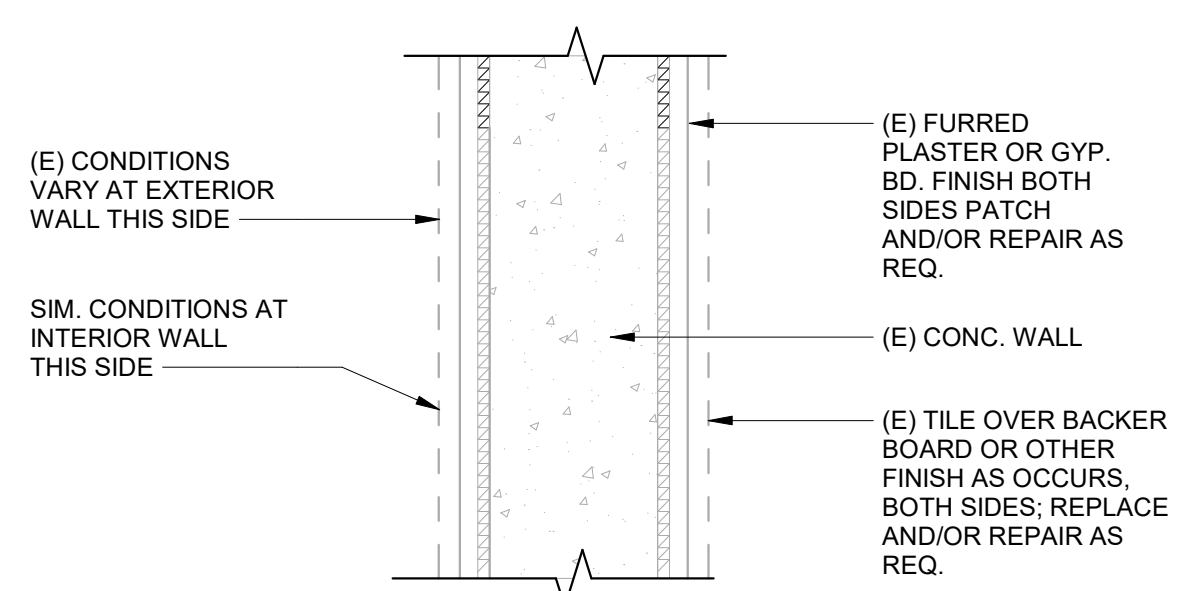
- NOTES:
1. PARTITION SHALL BE FULL HEIGHT TO STRUCTURE ABOVE. SILL AND HEAD TRACKS TO BE SECURED TO CONC. SLAB AND CONC. STRUCTURE ABOVE WITH 3/8" DIA. EXPANSION BOLT AT 32" O.C. W/3" EMBEDMENT.
2. SEE PARTITION TYPE NOTES THIS SHEET FOR ADDITIONAL REQUIREMENTS.

3 PARTITION TYPE A3 - SOUND-RATED PARTITION
3" = 1'-0"



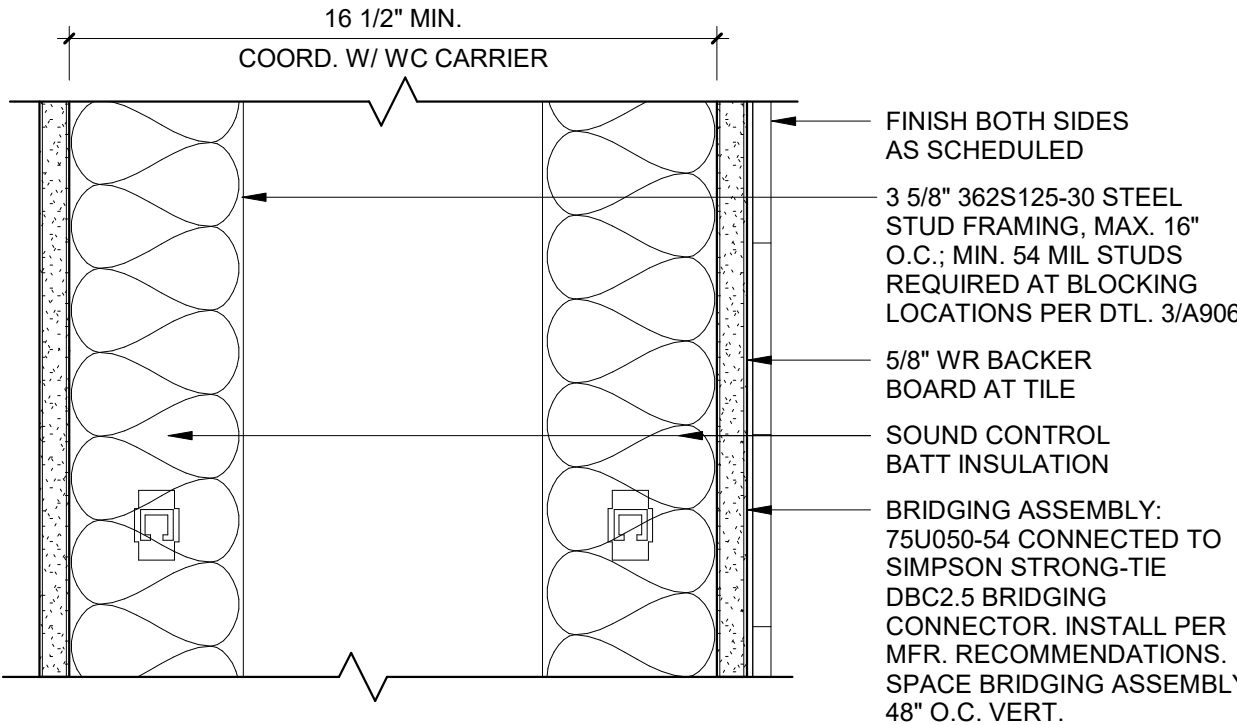
- NOTE:
- SEE PARTITION TYPE NOTES THIS SHEET FOR ADDITIONAL REQUIREMENTS.

6 PARTITION TYPE A6 - RESTROOM AT (E) CONC. WALL
3" = 1'-0"



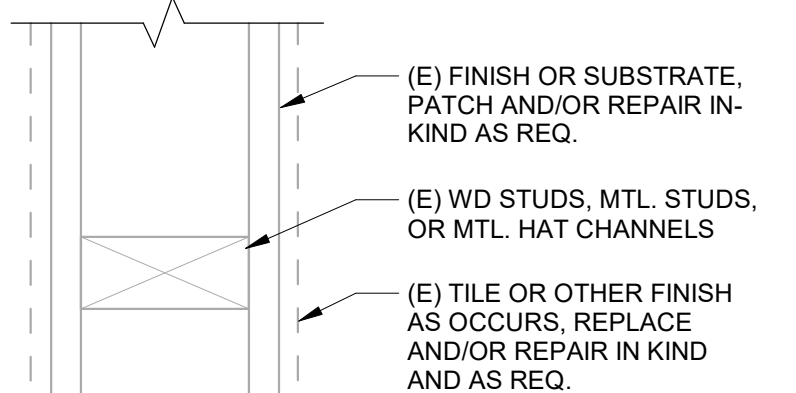
- NOTE:
- SEE PARTITION TYPE NOTES THIS SHEET FOR ADDITIONAL REQUIREMENTS.

2 PARTITION TYPE A2 - EXISTING WALL
3" = 1'-0"



- NOTES:
1. DETAIL SHOWN IN SECTION VIEW TO INDICATE BRIDGING REQUIREMENTS.
2. PARTITION SHALL BE FULL HEIGHT TO STRUCTURE ABOVE. SILL AND HEAD TRACKS TO BE SECURED TO CONC. SLAB AND CONC. STRUCTURE ABOVE WITH 3/8" DIA. EXPANSION BOLT AT 32" O.C. W/3" EMBEDMENT.
3. SEE PARTITION TYPE NOTES THIS SHEET FOR ADDITIONAL REQUIREMENTS.

5 PARTITION TYPE A5 - SOUND-RATED RESTROOM PARTITION
3" = 1'-0"



- NOTES:
1. SEE PARTITION TYPE NOTES THIS SHEET FOR ADDTL. REQUIREMENTS.
2. FINISHES BOTH SIDES SIMILAR, TYP.

1 PARTITION TYPE A1 - EXISTING WALL
3" = 1'-0"



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT

RCE NO. C-26408 EXP. 5/23

CHECKED BY DM

DESIGNED BY CL

DRAWN BY CL

No.	DATE	BY	REFERENCE
1	12/3/21	CL	ISSUE FOR PERMIT
2	3/8/23	CL	PLAN CHECK RESPONSE

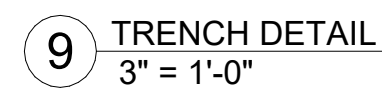
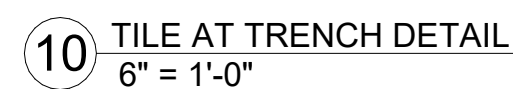
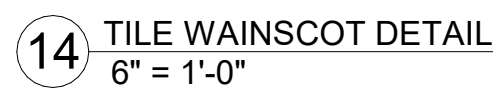
A905

PARTITION TYPES AND
INTERIOR DETAILS

PROJECT NO.
1004984

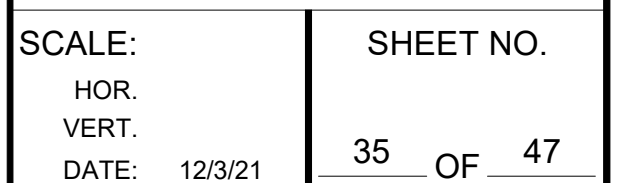
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VERT.
DATE: 12/3/21

SHEET NO.
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NOTES:

1. METAL BACKING PLATES REQUIRED AT (N) AND (E) MTL. FRAMED PARTITIONS.
2. AT (E) WOOD-FRAMED PARTITIONS, FIRE-RATED WOOD IS ACCEPTABLE FOR BLOCKING.
3. FOR (E) CONCRETE WALLS, CONCRETE FASTENERS REQUIRED. CONTRACTOR TO CONFIRM METHOD OF PROPOSED ATTACHMENT FOR ARCHITECT REVIEW AND APPROVAL.



FIRE PROTECTION SYSTEM MODIFICATION SCOPE OF WORK

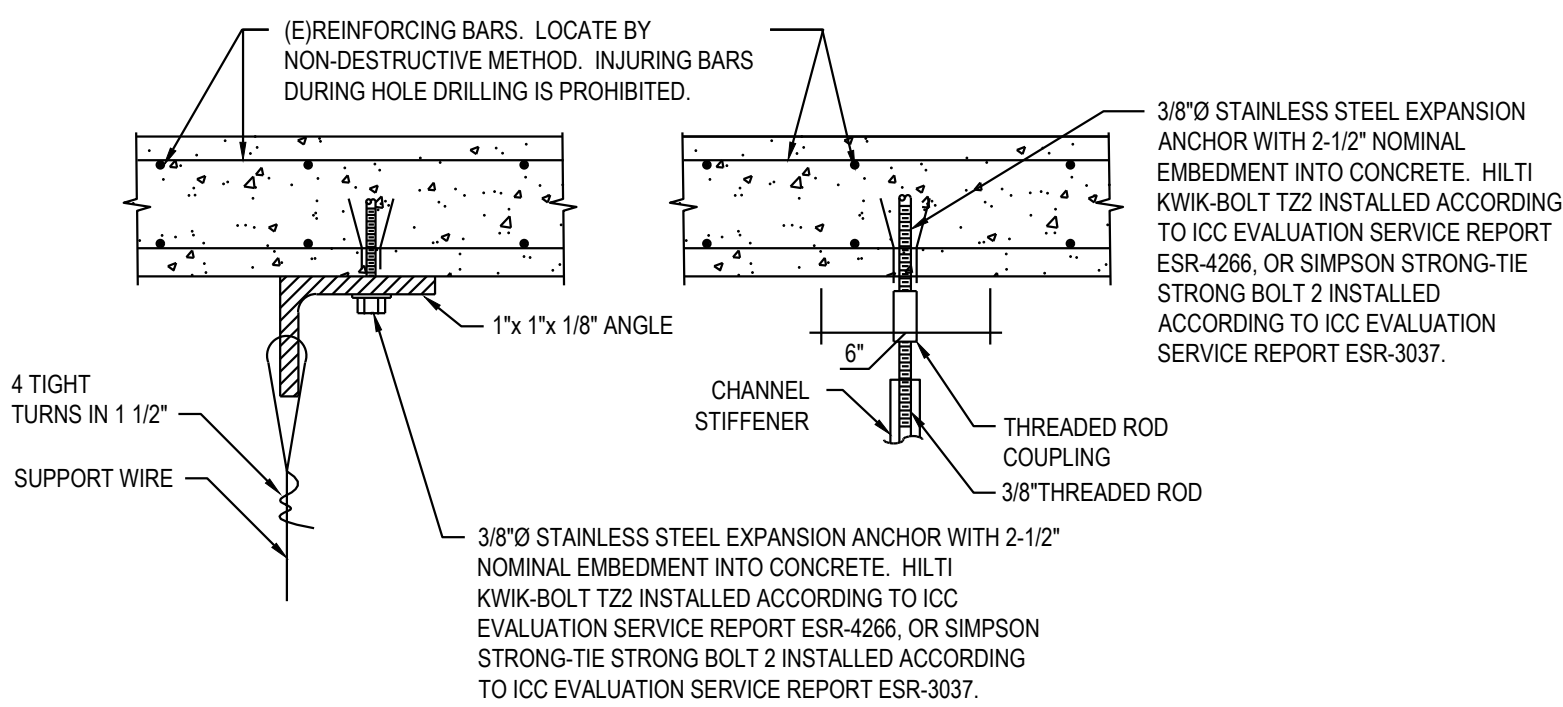
1. ALL FIRE PROTECTION MODIFICATION WORK FOR THE PROJECT WILL BE DEFERRED SUBMITTAL BY A QUALIFIED DESIGN/BUILD FIRE PROTECTION CONTRACTOR.
2. REFER TO SPECIFICATIONS FOR MATERIALS, METHODS OF CONSTRUCTION AND ADDITIONAL INFORMATION.
3. WORK INCLUDES DESIGN AND INSTALLATION OF MODIFICATIONS TO AN EXISTING FIRE SPRINKLER SYSTEM FOR THE FACILITY. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE FOR ALL WORK NECESSARY TO RESULT IN A FULLY FUNCTIONAL SYSTEM.
4. PERFORM ALL DESIGN AND INSTALLATION WORK IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF NFPA AND ALL GOVERNING BUILDING CODES, REGULATIONS, ORDINANCES AND AGENCIES DRAWINGS AND SPECIFICATIONS.
5. SPRINKLER OCCUPANCY HAZARD CLASSIFICATION, MINIMUM DENSITY FOR AUTOMATIC-SPRINKLER PIPING DESIGN AND MAXIMUM PROTECTION AREA PER SPRINKLER SHALL BE PROVIDED PER CURRENT ADOPTED VERSION OF NFPA 13, 45 AND THE CALIFORNIAL FIRE CODE.
6. REVIEW ALL PERMIT CONSTRUCTION DOCUMENTS TO ASSURE COORDINATION OF THE FIRE PROTECTION SCOPE OF WORK WITH ALL REQUIREMENTS AND OTHER DISCIPLINES.
7. SUBMIT COMPLETE FIRE PROTECTION SYSTEM AND FIRE AND LIFE SAFETY PLAN CHECK DOCUMENTS FOR REVIEW AND APPROVAL BY LOCAL FIRE MARSHAL OR AUTHORITY HAVING JURISDICTION PRIOR TO INSTALLATION. RESPOND TO AND INCORPORATE COMMENTS BY LOCAL FIRE MARSHAL OR AUTHORITY HAVING JURISDICTION.
8. PROVIDE CALIFORNIA LICENSED FIRE PROTECTION ENGINEER'S STAMP OR CONTRACTOR C-16 LICENSE ON FIRE PROTECTION PLANS FOR FIRE MARSHAL APPROVAL.
9. ALL COST FOR INSPECTION, TEST SERVICES, BUILDING PERMITS, LICENSES AND CERTIFICATES SHALL BE THE RESPONSIBILITY OF THE FIRE PROTECTION CONTRACTOR UNLESS NOTED OTHERWISE IN THE SPECIFICATIONS.
10. PROVIDE HANGARS AND SWAY BRACING AS REQUIRED PER THE LATEST ADOPTED EDITION OF NFPA 13, SPECIFICATIONS AND LOCAL CODES AND ORDINANCES.
11. ELEVATIONS OF PIPING AND POINTS OF CONNECTION ABOVE AND BELOW GROUND SHALL BE VERIFIED BY FIELD MEASUREMENT PRIOR TO THE START OF INSTALLATION.
12. COORDINATE THE LOCATION OF PIPING AND OTHER SPRINKLER SYSTEMS COMPONENTS WITH ARCHITECTURL, STRUCTURAL, MECHANICAL AND ELECTRICAL TRADES.
13. COORDINATE INSTALLATION OF ALL PIPING WITH OTHER TRADES PRIOR TO INSTALLATION. FIRE PROTECTION CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ACCESS PANELS AND SPRINKLER HEADS PRIOR TO INSTALLATION.
14. ALL PENETRATIONS OF WALLS, FLOORS AND CEILINGS TO BE SEALED ON BOTH SIDES WITH RATED FIRE STOPPING MATERIALS AND ACCOUTSCUL SEALANT IN ORDER TO MAINTAIN THE INTEGRITY OF THE WALL AND AVOID TRANSMISSION OF SOUND. REFER TO ACCOUSTIC CONSULTANT CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
15. FIRE PROTECTION SYSTEM PIPING SHALL BE SUPPORTED AND SEISMICALLY BRACED PER CBC, ASCE 7 AND NFPA REQUIREMENTS.

PLUMBING FIXTURE SCHEDULE

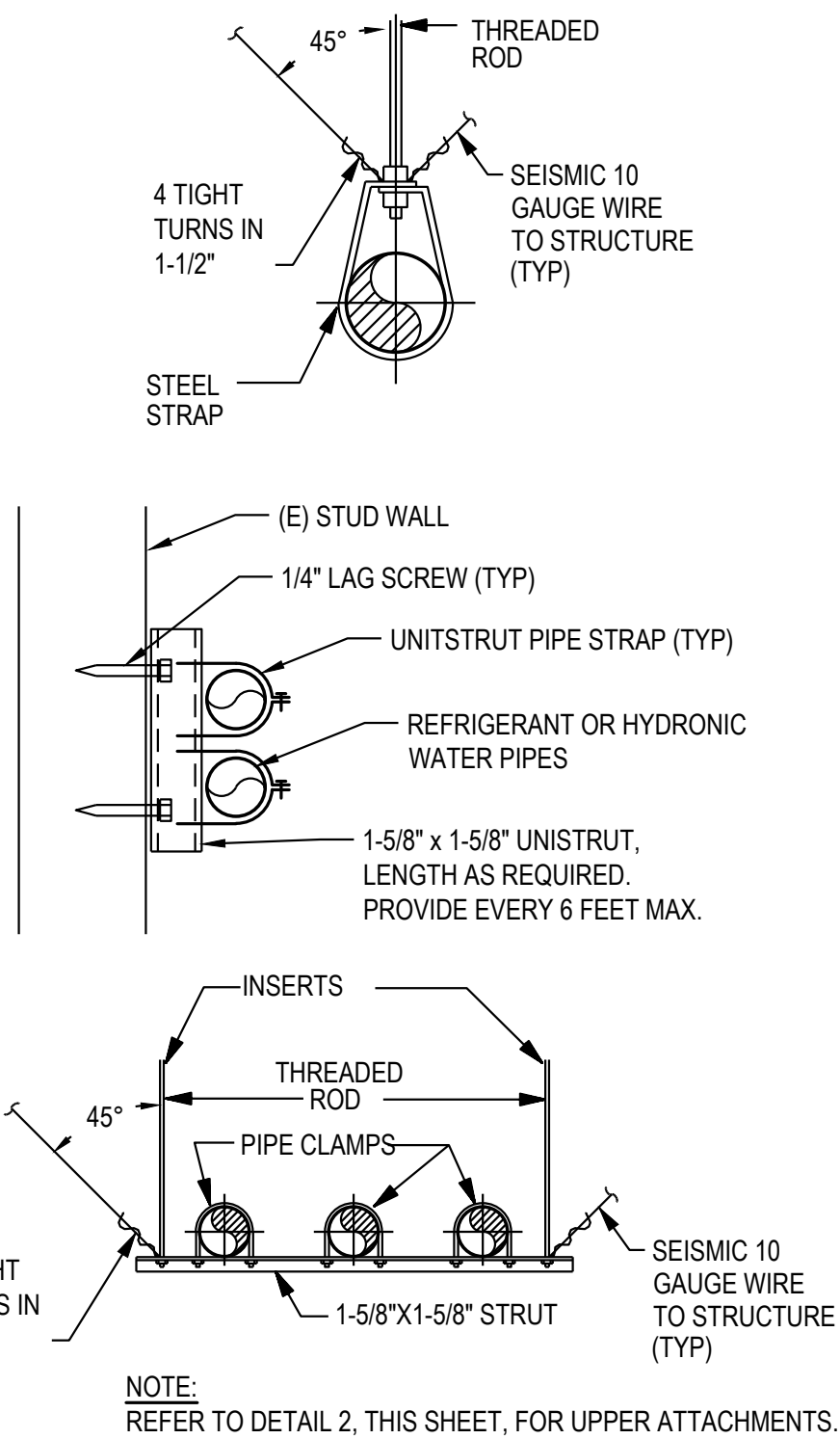
SYMBOL	TYPE	AREA SERVED	CONNECTIONS				DESCRIPTION
			CW	HW	SS	V	
WC-1	WATER CLOSET	RESTROOMS	1"	---	3"	2"	AMERICAN STANDARD AFWALL FLOWISE #2856 128 ELONGATED WALL MOUNTED TOILET. FLUSH VALVE TYPE. 1.28 GPF. WHITE VITREOUS CHINA. PROVIDE WITH SEAT AND SLOAN SOLIS 8111-1 28-OR SOLAR POWERED SENSOR FLUSH VALVE. 1.28 GPF. MINIMUM MAP SCORE 1000 GRAMS. PROVIDE WITH ZURN #Z1201-N_3 SIDE OUTLET CARRIER.
L-1	LAVATORY	RESTROOMS	1/2"	---	1-1/4"	1-1/4"	AMERICAN STANDARD MURRO 20-1/2"x21-1/4" WALL-HUNG WHITE LAVATORY (SINGLE HOLE) OR APPROVED EQUAL. PROVIDE SLOAN OPTIMA SOLAR POWERED SENSOR FAUCET, 0.5 GPM, CHROME FINISH.

TABLE 120.3-A
PIPE INSULATION THICKNESS

FLUID OPERATING TEMPERATURE RANGE (°F)	INSULATION CONDUCTIVITY			NOMINAL PIPE DIAMETER (in inches)				
	CONDUCTIVITY (in Btu-in/h-ft · °F)	MEAN RATING TEMPERATURE (°F)		< 1	1 to < 1.5	1.5 to < 4	4 to < 8	8 and larger
Space heating and Service Water Heating Systems (Steam, Steam Condensate, Refrigerant, Space Heating, Service Hot Water)				Minimum Pipe Insulation Required (Thickness in inches or R-value)				
105–140	0.22–0.28	100	Inches	1.0	1.5	1.5	1.5	1.5
			R-value	R-7.7	R-12.5	R-11	R-9	R-8



2 UPPER ATTACHMENT DETAIL
SCALE: NONE



1 PIPE SUPPORT DETAIL
SCALE: NONE

ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS APPLY

ABC	ABOVE CEILING	LAB	LABORATORY
AC	AIR CONDITIONING	LBS	POUNDS
AFF	ABOVE FINISHED FLOOR	LVL	LEVEL
AG	ABOVE GRADE	LWT	LEAVING WATER TEMPERATURE
AMP	AMPERES	MAX	MAXIMUM
ARCH	ARCHITECTURAL	MBH	THOUSAND BTU PER HOUR
BFF	BELOW FINISHED FLOOR	MIN	MINIMUM
BG	BELOW GRADE	MISC	MISCELLANEOUS
BHP	BRAKE HORSEPOWER	N/A	NOT APPLICABLE
BLDG	BUILDING	NIC	NOT IN CONTRACT
BOF	BOTTOM OF FOOTING	NO	NUMBER
BTU	BRITISH THERMAL UNIT	NTS	NOT TO SCALE
BTUH	BRITISH THERMAL UNIT PER HOUR	OC	ON CENTER
CFH	CUBIC FEET PER HOUR	OD	OUTSIDE DIAMETER
CLG	CEILING	OH	OVERHEAD
CONC	CONCRETE	PD	PRESSURE DROP
COTG	CLEAN OUT TO GRADE	POC	POINT OF CONNECTION
DIA	DIAMETER	POD	POINT OF DEMOLITION
(E)	EXISTING	PSI	POUNDS PER SQUARE INCH
EA	EACH	PSIG	POUNDS PER SQUARE INCH GAUGE
EFF	EFFICIENCY	RIO	ROUGH-IN ONLY
ELEC	ELECTRICAL	RPM	REVOLUTIONS PER MINUTE
EWT	ENTERING WATER TEMPERATURE	SAD	SEE ARCHITECTURAL DRAWINGS
FD	FLOOR DRAIN	SCD	SEE CIVIL DRAWINGS
FT	FOOT OR FEET	SED	SEE ELECTRICAL DRAWINGS
FU	FIXTURE UNIT	SMD	SEE MECHANICAL DRAWINGSSLOPE
GA	GAUGE	SP	STATIC PRESSURE
GAL	GALLON	SPECS	SPECIFICATIONS
GALV	GALVANIZED	STD	STANDARD
GPH	GALLONS PER HOUR	STRUCT	STRUCTURAL
GPM	GALLONS PER MINUTE	TDH	TOTAL DYNAMIC HEAD
H&CW	HOT AND COLD WATER	TEMP	TEMPERATURE
HD	HEAD	TYP	TYPICAL
HP	HORSEPOWER	UF	UNDERFLOOR
HVAC	HEATING, VENT & AIR CONDITIONING	UG	UNDERGROUND
ID	INSIDE DIAMETER	UON	UNLESS OTHERWISE NOTED
IE	INVERT ELEVATION	V	VENT OR VOLTS
IN	INCH	VTR	VENT THROUGH ROOF
KW	KILOWATTS	W	WATTS
		WT	WEIGHT

SYMBOLS

NOTE: NOT ALL SYMBOLS APPLY

SYMBOL	ABBR	DESCRIPTION
		DETAIL NUMBER DRAWING NUMBER
		SECTION NUMBER DRAWING NUMBER
		EQUIPMENT TYPE UNIT NUMBER
	SS	SANITARY SEWER (UNDERGROUND/UNDERSLAB)
		SANITARY SEWER (ABOVE FLOOR OR OVERHEAD)
	V	SANITARY VENT
	CD	CONDENSATE DRAIN
	IW	INDIRECT WASTE
	CW	COLD WATER SUPPLY
	HW	HOT WATER SUPPLY
	HWR	HOT WATER RECIRCULATING
	TW	TEMPERED WATER
	G	NATURAL GAS - LOW PRESSURE
	MG	NATURAL GAS - MEDIUM PRESSURE
	FCO, COTG	FLOOR CLEANOUT OR CLEANOUT TO GRADE
	WCO, CO	WALL CLEANOUT OR CLEANOUT
		PIPE BREAK
		PIPE RISER UP (ELBOW)
		PIPE RISER DOWN (ELBOW)
		PETE'S PLUG
		MAIN WATER SHUT FOR BUILDING
	UN	UNION
	CV	CHECK VALVE
	GV	GATE VALVE
	PRV	PRESSURE REDUCING VALVE
	BV	BALL VALVE
	GC	GAS COCK
	BFV	BUTTERFLY VALVE
	BLN	BALANCING VALVE
	CS	CIRCUIT SETTER
	HB	HOSE BIBB
	T-1	PLUMBING FIXTURE IDENTIFICATION
	1	PLUMBING SHEET NOTE

GENERAL PLUMBING NOTES

1. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF TITLE 24 OF THE CALIFORNIA CODE OF REGULATIONS (C.C.R.), 2019 CPC.
2. ALL SYSTEMS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE CITY, COUNTY, FEDERAL AND STATE CODES AND ORDINANCES, AND SHALL MEET ALL REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION.
3. DRAWINGS SHOWING THE LOCATIONS OF PLUMBING EQUIPMENT, PIPING, ETC. ARE DIAGRAMMATIC AND JOB CONDITIONS WILL NOT ALWAYS PERMIT THEIR INSTALLATION ON THE LOCATIONS SHOWN. THE PLUMBING DRAWINGS SHOW THE GENERAL ARRANGEMENTS OF FIXTURES, PIPING, ETC. AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHER TRADES WILL PERMIT. THE ARCHITECTURAL DRAWINGS SHALL BE PART OF THE WORK INSOFAR AS THESE DRAWINGS FURNISH THE CONTRACTOR WITH INFORMATION RELATING TO EXACT PLUMBING FIXTURE LOCATION, DESIGN AND CONSTRUCTION OF THE BUILDING.
4. FURNISH AND INSTALL ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED WHICH ARE NECESSARY TO PROVIDE A COMPLETE AND WORKABLE SYSTEM.
5. PRIOR TO SUBMISSION OF BID, REVIEW FULL SET OF NEW CONSTRUCTION DRAWINGS (INCLUDING ALL OTHER TRADES). INCLUDE ANY ADDITIONAL PIPE OFF-SETS THAT ARE NOT CURRENTLY SHOWN ON DRAWINGS BUT MAY BE REQUIRED TO CLEAR STRUCTURE, FINISHES OR WORK OF OTHER TRADES. NO EXTRA PAYMENT WILL BE ALLOWED FOR WORK RESULTING FROM LACK OF PROPER INITIAL APPRAISAL OF ENTIRE SCOPE OF WORK. SUBMIT REQUESTS FOR INFORMATION (RFIS) AS REQUIRED TO ANSWER ANY QUESTIONS THAT MAY ARISE DURING BIDDING PHASE. CLEARLY INDICATE SCOPE INCLUSION AND EXCLUSION IN BID.
6. FOR EXACT LOCATIONS OF PLUMBING FIXTURES, SEE ARCHITECTURAL DRAWINGS.
7. PROVIDE CLEANOUTS ON DRAINAGE LINES IN ACCORDANCE WITH THE CALIFORNIA PLUMBING CODE AND AS INDICATED ON THE DRAWINGS.
8. ALL SANITARY SEWER PIPING SHALL BE SLOPED AT 1/4" PER FOOT FOR PIPING LESS THAN 4" IN DIAMETER AND AT 1/8" PER FOOT FOR PIPES 4" OR GREATER UNLESS NOTED OTHERWISE.
9. WHERE MAIN PIPE SIZE IS NOT INDICATED BETWEEN BRANCH CONNECTIONS ON THE DRAWING, THE PIPE SIZE SHALL BE OF THE PRECEDING PIPE SIZE.
10. ALL VALVES AND ACCESSORIES SHALL BE FULL LINE SIZE. PROVIDE ALL NECESSARY UNIONS, REDUCERS AND STOPS AS REQUIRED WHEN CONNECTING TO EACH FIXTURE AND/OR EQUIPMENT.
11. KEEP ALL PLUMBING PIPING AS HIGH AS POSSIBLE TO THE STRUCTURE ABOVE AND OFFSET PIPING AS REQUIRED.
12. INSTALL ACCESS PANELS IN ALL NON-ACCESSIBLE CEILINGS AND WALLS FOR VALVES AND OTHER MAINTENANCE ITEMS. REFER TO ARCHITECTURAL PLANS FOR TYPES OF CEILINGS AND WALLS. INSTALL SECURITY ACCESS PANELS IN SECURITY CEILINGS AND WALLS. INSTALL FIRE RATED ACCESS PANELS IN FIRE RATED CEILINGS AND WALLS. SEE SPECIFICATIONS. ALL ACCESS PANEL/DOOR LOCATIONS SHALL BE APPROVED BY THE ARCHITECT. OFFSET PLUMBING PIPING AND ACCESSORIES AS REQUIRED.
13. CLOSELY COORDINATE WORK WITH ALL TRADES.
14. FOR ANY CONFLICT IN THE DRAWINGS AND/OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL APPLY. ANY SUCH CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR ENGINEER FOR RESOLUTION PRIOR TO THE CONSTRUCTION OF SUCH ITEMS.
15. CHANGES IN THE DIRECTION OF DRAINAGE FLOW SHALL BE PER CALIFORNIA PLUMBING CODE.
16. PROVIDE VALVES WHERE SHOWN ON FLOOR PLAN AND PIPING DIAGRAMS.
17. ALL PIPING PENETRATION THROUGH RATED WALLS AND FLOORS SHALL BE SEALED WITH UL-LISTED AND CALIFORNIA FIRE MARSHAL LISTED SEALANTS. SEE ARCHITECTURAL DRAWINGS FOR ALL LOCATIONS.
18. PROVIDE DIELECTRIC INSULATING CONNECTIONS BETWEEN ALL DISSIMILAR METALS.
19. PROVIDE INSULATION ON HW AND HWR PIPING AS REQUIRED BY CALIFORNIA ENERGY CODES.

SCOPE OF WORK

1. REMOVE EXISTING WATER CLOSET, BATHROOM LAVATORY AND MOP SINK AND LEAVE WATER, SEWER AND VENT CONNECTIONS FOR NEW FIXTURES.
2. PROVIDE NEW WATER CLOSET, BATHROOM LAVATORY AND MOP SINK. CONNECT TO EXISTING WATER, SEWER AND VENT CONNECTIONS.

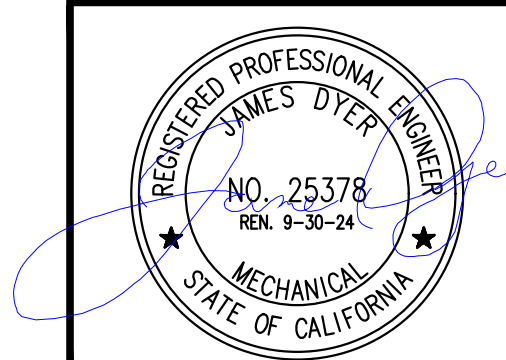
APPLICABLE CODES

1. 2019 BUILDING STANDARD ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.
2. 2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.;
3. 2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.;
4. 2019 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R.;
5. 2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.;
6. 2019 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 C.C.R.;
7. 2019 CALIFORNIA FIRE CODE (FCO), PART 9, TITLE 24, C.C.R.;
8. 2019 CALIFORNIA EXISTING BUILDING CODE, PART 10, TITLE 24 C.C.R.;
10. 2019 CALIFORNIA "GREEN" BUILDING REQUIREMENTS, PART 11, TITLE 24 C.C.R. (PENDING ADOPTION)
11. 2019 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24, C.C.R.
12. TITLE 19, CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

NFPA 13, AUTOMATIC SPRINKLER SYSTEM, 2016 EDITION
NFPA 24, PRIVATE FIRE SERVICE MAINS, 2016 EDITION
REFERENCE CODE SECTION FOR NFPA STANDARDS - CBC(SFM) 3504.1
TITLE 24 C.C.R. ACCESSIBILITY STANDARDS
AMERICAN WITH DISABILITIES ACT - 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

SHEET INDEX

P001	PLUMBING TITLE SHEET
P201	PLUMBING FLOOR PLANS



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DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

MECHANICAL_ENGINEER

RCE NO. M25378 EXP. 09/30/2024

CHECKED BY RL
DESIGNED BY JD/HC
DRAWN BY JD/HC

No.	DATE	BY	REFERENCE
1	2/15/2023	HC	ISSUED FOR BID

P001

PLUMBING
TITLE SHEET

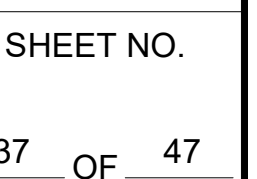
PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/2021

SHEET NO.
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- | | |
|----|--|
| A. | REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS OF NEW PLUMBING FIXTURES. |
| B. | REFER TO P001 FOR PLUMBING FIXTURE SCHEDULE, ABBREVIATIONS, SYMBOLS AND DETAILS. |
| C. | SAD FOR PENETRATIONS THROUGH (E) CONCRETE WALL ALONG COLUMN LINE K. |



EXHAUST FAN (UNIVERSAL SINGLE WIDTH UTILITY)															
SYMBOL	MANUFACTURER /MODEL	CONFIG	SERVING	FAN			ELECTRICAL					WEIGHT (LBS)	CONTROL	NOISE (SONES)	NOTES
				CFM	ESP	HP	VOLT	PHASE	FLA	MOCp	DRIVE				
EF-4	GREENHECK USF-08	ROOF MOUNT	PUBLIC RESTROOMS	600	1	1/4	120	1	---	15	DIRECT	100	LIGHT CONTROL	---	1
NOTES															
1. PROVIDE WITH BACKDRAFT DAMPER. COORDINATE WITH ELECTRICAL FOR POWER AND CONNECTION TO LIGHTING CONTROL.															

DIFFUSER, GRILLE AND REGISTER SCHEDULE						
SYMBOL	MANUFACTURER /MODEL	AREA SERVED	FACE SIZE	TYPE	MOUNTING	NOTES
A	TITUS 50F	VARIOUS	SEE PLANS	RETURN GRILLE	DUCT/WALL SURFACE	3/4" BLADE SPACING, 22.5 DEGREE ANGLE, SINGLE DEFLECTION, COLOR WHITE.

CEILING FAN						
SYMBOL	MANUFACTURER /MODEL	AREA SERVED	WEIGHT (LB)	MOUNTING	ELECTRICAL VAC/PH/A	NOTES
CF-1	BAS HAIKU L	COMPUTER ROOM	11.9	CEILING	120/1/0.44	44" DIAMETER MODEL SIZE. PROVIDE WITH HAIKU L WALL MOUNTED CONTROLLER. COLOR WHITE.

GENERAL MECHANICAL NOTES

- ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF TITLE 24 OF THE CALIFORNIA CODE OF REGULATIONS (C.C.R.), 2019 CM.
- ALL SYSTEMS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE CITY, COUNTY, FEDERAL AND STATE CODES AND ORDINANCES, AND SHALL MEET ALL REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION.
- SYSTEM LAYOUTS AS INDICATED ON DRAWINGS ARE GENERALLY DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION WILL PERMIT.
- PRIOR TO SUBMISSION OF BID, REVIEW FULL SET OF NEW CONSTRUCTION DRAWINGS (INCLUDING ALL OTHER TRADES). INCLUDE ANY ADDITIONAL PIPE OR DUCT OFF-SETS THAT ARE NOT CURRENTLY SHOWN ON DRAWINGS BUT MAY BE REQUIRED TO CLEAR STRUCTURE, FINISHES OR WORK OF OTHER TRADES. NO EXTRA PAYMENT WILL BE ALLOWED FOR WORK RESULTING FROM LACK OF PROPER INITIAL APPRAISAL OF ENTIRE SCOPE OF WORK. SUBMIT REQUESTS FOR INFORMATION (RFIs) AS REQUIRED TO ANSWER ANY QUESTIONS THAT MAY ARISE DURING BIDDING PHASE. CLEARLY INDICATE SCOPE INCLUSION AND EXCLUSION IN BID.
- FURNISH ALL LABOR, MATERIALS, TRANSPORTATION, AND PERFORM ALL REQUIRED OPERATIONS TO PROVIDE COMPLETE AND OPERABLE MECHANICAL SYSTEM, IN ACCORDANCE WITH THE FULL INTENT AND MEANING OF THE DRAWINGS AND SPECIFICATIONS AND PER STANDARD TRADE PRACTICES.
- WORKMANSHIP SHALL BE FIRST CLASS THROUGHOUT AND PERFORMED ONLY BY COMPETENT AND EXPERIENCED WORKMEN IN A MANNER SATISFACTORY TO THE OWNER AND ARCHITECT.
- ALL EQUIPMENT SHALL BE INSTALLED WITH SUFFICIENT ACCESS TO CONTROLS, FILTERS, ELECTRIC MOTORS, ETC. CONTRACTOR SHALL PROVIDE ACCESS PANELS WHERE REQUIRED.
- LIMITING TRANSMISSION OF NOISE AND VIBRATIONS IS EXTREMELY IMPORTANT. CONTRACTOR TO PAY PARTICULAR ATTENTION THAT EQUIPMENT, AND DUCTWORK ARE INSTALLED SO AS NOT TO CHATTER OR RUB AGAINST OTHER MATERIALS, EQUIPMENT OR BUILDING STRUCTURE.
- PROVIDE DIELECTRIC INSULATING CONNECTIONS BETWEEN ALL DISSIMILAR METALS.
- NOTIFY ARCHITECT AND GENERAL CONTRACTOR 48 HOURS IN ADVANCE BEFORE ANY TESTING.
- ALL EXHAUST FAN DISCHARGES SHALL BE MINIMUM 3'-0" FROM ANY OPERABLE WINDOW.
- ALL EXHAUST FAN DISCHARGES SHALL BE MINIMUM 10'-0" FROM A FORCED AIR INLET.
- COMPLY WITH CHAPTER 7 & 7A OF 2019 CBC.
- COORDINATE WITH ELECTRICAL DRAWINGS FOR POWER AND WIRING INFORMATION.

SYMBOLS

NOTE: NOT ALL SYMBOLS APPLY

SYMBOL	ABBR	DESCRIPTION
		DETAIL NUMBER DRAWING NUMBER
		SECTION NUMBER DRAWING NUMBER
		EQUIPMENT TYPE UNIT NUMBER
		AIR QUANTITY NECK SIZE (4-WAY UON)
		CEILING SUPPLY DIFFUSER/REGISTER
		CEILING RETURN GRILLE/REGISTER
		CEILING EXHAUST GRILLE/REGISTER
		CEILING TRANSFER DIFFUSER/GRILLE
		CEILING OUTSIDE AIR GRILLE/REGISTER
		SLOT DIFFUSER WITH AIR DUCT
		WALL SUPPLY GRILLE/REGISTER
		WALL RETURN OR EXHAUST GRILLE/REGISTER
		SUPPLY AIR DUCT RISER/DROP
		RETURN AIR DUCT RISER/DROP
		EXHAUST AIR DUCT RISER/DROP
		OUTSIDE AIR DUCT RISER/DROP
		SLOPED DUCT (RISE OR DROP)
	R or D	
	AL	ACOUSTICAL LINING (1" FIBERGLASS U.O.N.)
	TV	TURNING VANES
	FD	FIRE DAMPER
	FS	FIRE-SMOKE DAMPER
	VD	VOLUME DAMPER
	BOD	BACK DRAFT DAMPER
		FLEXIBLE DUCT
		SQUARE TO ROUND DUCT
		DUCT CONTINUATION
	T-STAT	THERMOSTAT (MOUNT AT 48" AFF)
		HUMIDISTAT (MOUNT AT 48" AFF)
		TEMPERATURE SENSOR (MOUNT AT 48" AFF)
		MECHANICAL SHEET NOTE

ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS APPLY

Ø	DIAMETER	MAX	MAXIMUM
AC	AIR CONDITIONING	MBH	THOUSAND BTU PER HOUR
AFF	ABOVE FINISHED FLOOR	MECH	MECHANICAL
AMP	AMPERE	MIN	MINIMUM
ARCH	ARCHITECTURAL	(N)	NEW
BDD	BACKDRAFT DAMPERS	N/A	NOT APPLICABLE
BHP	BRAKE HORSEPOWER	NC	NORMALLY CLOSED
BLDG	BUILDING	NO	NOT IN CONTRACT
BOD	BOTTOM OF DUCT	NO	NUMBER OR NORMALLY OPEN
BTU	BRITISH THERMAL UNIT	NTS	NOT TO SCALE
BTUH	BRITISH THERMAL UNIT PER HOUR	OAT	OUTSIDE AIR TEMPERATURE
CFM	CUBIC FEET PER MINUTE	OBD	OPPOSED BLADE DAMPER
CL	CENTER LINE	OC	ON CENTER
CLG	CEILING	OD	OUTSIDE DIMENSION
DBT	DRY BULB TEMPERATURE	OH	OVERHEAD
DN	DOWN	OSA	OUTSIDE AIR
DSD	DUCT MOUNTED SMOKE DETECTOR	PD	PRESSURE DROP
(E)	EXISTING	PH	PHASE
EA	EXHAUST AIR	PLBG	PLUMBING
EAT	ENTERING AIR TEMPERATURE	POC	POINT OF CONNECTION
EER	ENERGY EFFICIENCY RATIO	POD	POINT OF DEMOLITION
ELEC	ELECTRICAL	RA	RETURN AIR
ESP	EXTERNAL STATIC PRESSURE (IN WG)	REQD	REQUIRED
EWT	ENTERING WATER TEMPERATURE	REV	REVISION
F	FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FA	FACE AREA	SA	SUPPLY AIR
FLA	FULL LOAD AMPS	SAD	SEE ARCHITECTURAL DRAWINGS
FD	FIRE DAMPER	SCD	SEE CIVIL DRAWINGS
FFM	FEET PER MINUTE	SED	SEE ELECTRICAL DRAWINGS
FSD	FIRE/SMOKE DAMPER	SD	SMOKE DAMPER
FEET	FEET	SEER	SEASONAL ENERGY EFFICIENCY RATIO
GA	GAUGE	SPD	SEE PLUMBING DRAWINGS
GAL	GALLONS	SQ.FT.	SQUARE FEET
GALV	GALVENIZED	SSD	SEE STRUCTURAL DRAWINGS
GPM	GALLONS PER MINUTE	TA	TRANSFER AIR
HD	HEAD	TOP	TEMPERATURE CONTROL PANEL
HP	HORSEPOWER	TEMP	TEMPERATURE
HVAC	HEATING VENTILATING AND AC	TOD	TOP OF DUCT
HZ	HERTZ	TYP	TYPICAL
ID	INSIDE DIAMETER	UC	UNDERCUT
IN.	INCH	UG	UNDERGROUND
IN. W.G.	INCHES WATER GAGE (PRESSURE)	UON	UNLESS OTHERWISE NOTED
KW	KILOWATT	VAV	VARIABLE AIR VOLUME
LAT	LEAVING AIR TEMPERATURE	VEL	VELOCITY
LBS	POUNDS	VFD	VARIABLE FREQUENCY DRIVE
LF	LINEAR FEET	WG	WATER GAGE
LWT	LEAVING WATER TEMPERATURE	WT	WEIGHT
MA	MIXED AIR		

APPLICABLE CODES

- 2019 BUILDING STANDARD ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.
- 2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.
- 2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.
- 2019 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R.
- 2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.
- 2019 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 C.C.R.
- 2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R.
- 2019 CALIFORNIA "GREEN" BUILDING REQUIREMENTS, PART 11, TITLE 24 C.C.R.
- 2019 CALIFORNIA EXISTING BUILDING CODE, PART 10, TITLE 24 C.C.R.
- 2019 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 C.C.R.
- TITLE 19, CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

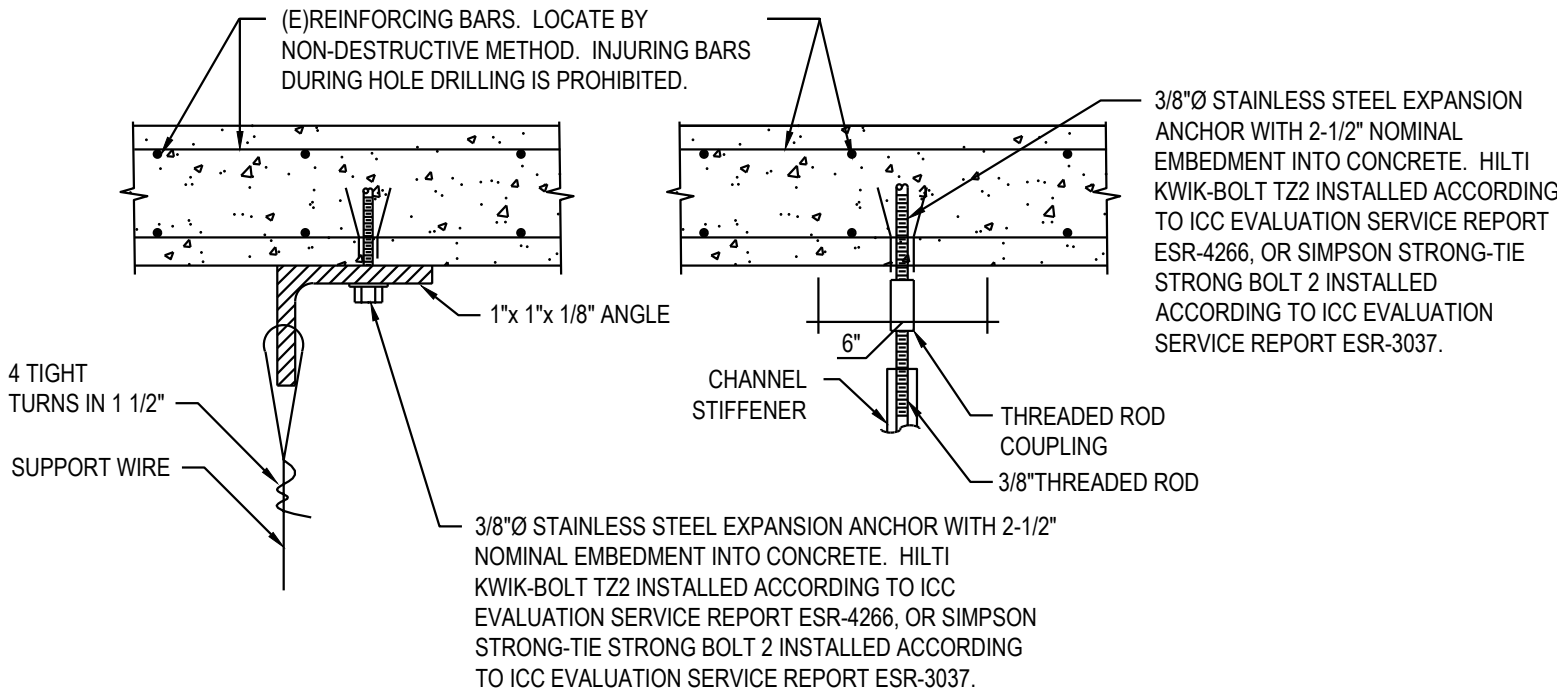
REFERENCE CODE SECTION FOR NFPA STANDARDS - CBC(SFM) 3504.1
TITLE 24 C.C.R. ACCESSIBILITY STANDARDS
AMERICAN WITH DISABILITIES ACT (A.D.A., ADAAG) FEDERAL ACCESSIBILITY STANDARDS

MECHANICAL SCOPE OF WORK

- REPLACE (E) ROOF MOUNTED EXHAUST FAN FOR RESTROOMS ON GROUND FLOOR. MODIFY DUCTWORK TO PROVIDE EXHAUST FOR THE ADDED SINGLE USE RESTROOM.

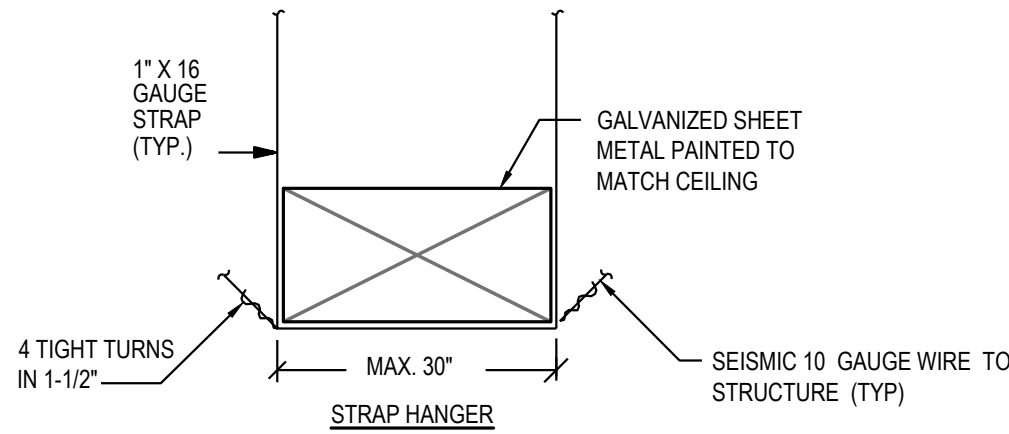
SHEET INDEX

M001	MECHANICAL TITLE SHEET
M201	MECHANICAL PLAN - GROUND FLOOR



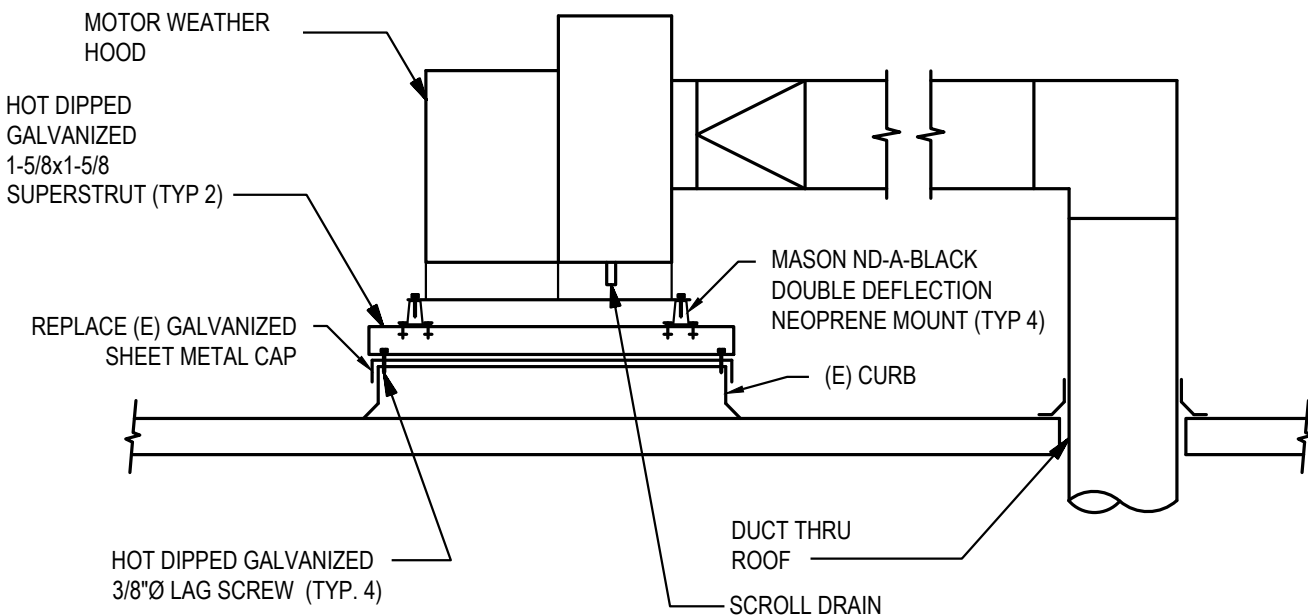
3 UPPER ATTACHMENT DETAIL

SCALE: NONE



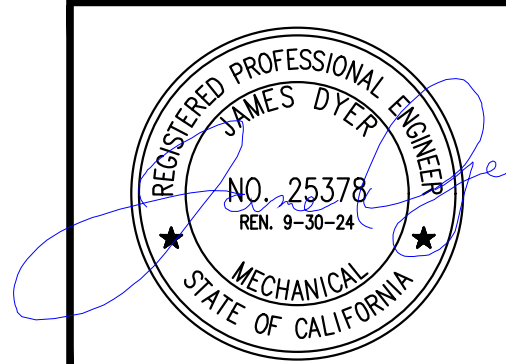
2 RECTANGULAR DUCT SUPPORT MOUNTING DETAIL

SCALE: NONE



1 ROOF MOUNTED UTILITY SET EXHAUST FAN MOUNTING DETAIL

SCALE: NONE



CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANK H. OGAWA PLAZA, SUITE 4314 • OAKLAND CA, 94612
(510) 238-3437 • FAX (510) 238-7227

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS

CITY PROJECT NO. 1004984

MECHANICAL_ENGINEER

RCE NO. M25378 EXP. 09/30/2024

CHECKED BY RL

DESIGNED BY JD/HC

DRAWN BY JD/HC

No.	DATE	BY	REFERENCE
1	2/15/2023	HC	ISSUED FOR BID

M001

MECHANICAL
TITLE SHEET

PROJECT NO.

1004984

SCALE:

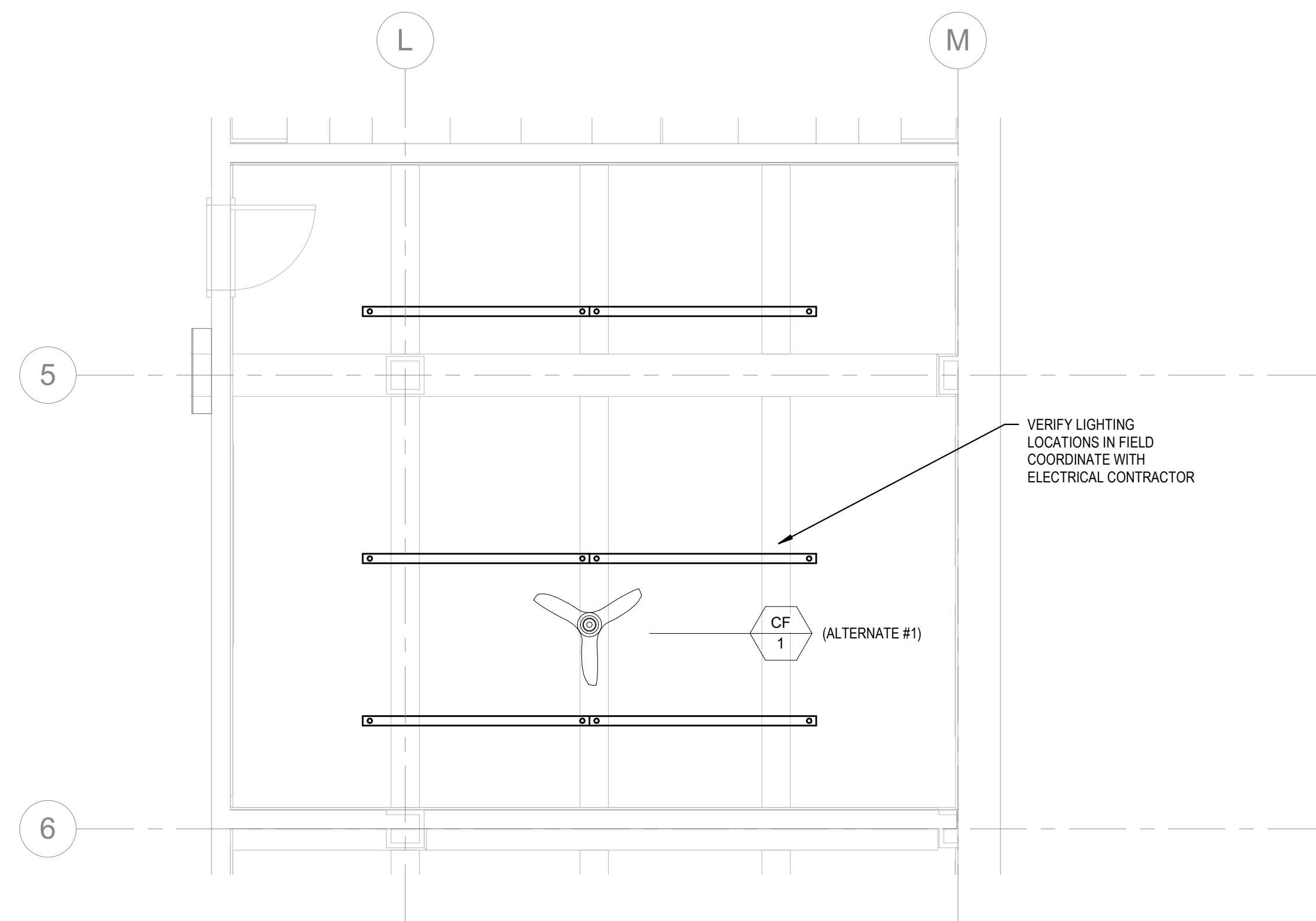
HOR.

VERT.

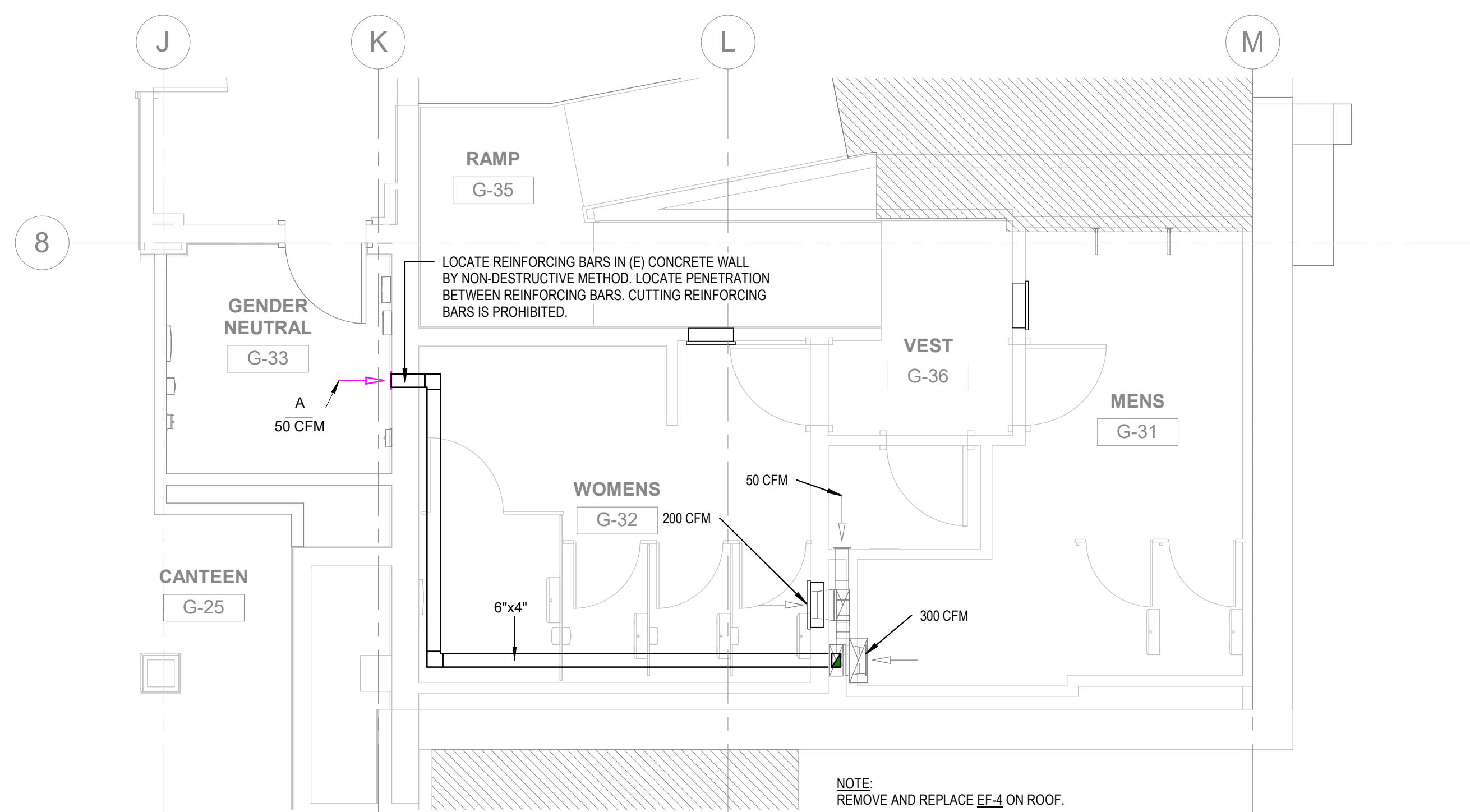
DATE: 12/3/2021

SHEET NO.

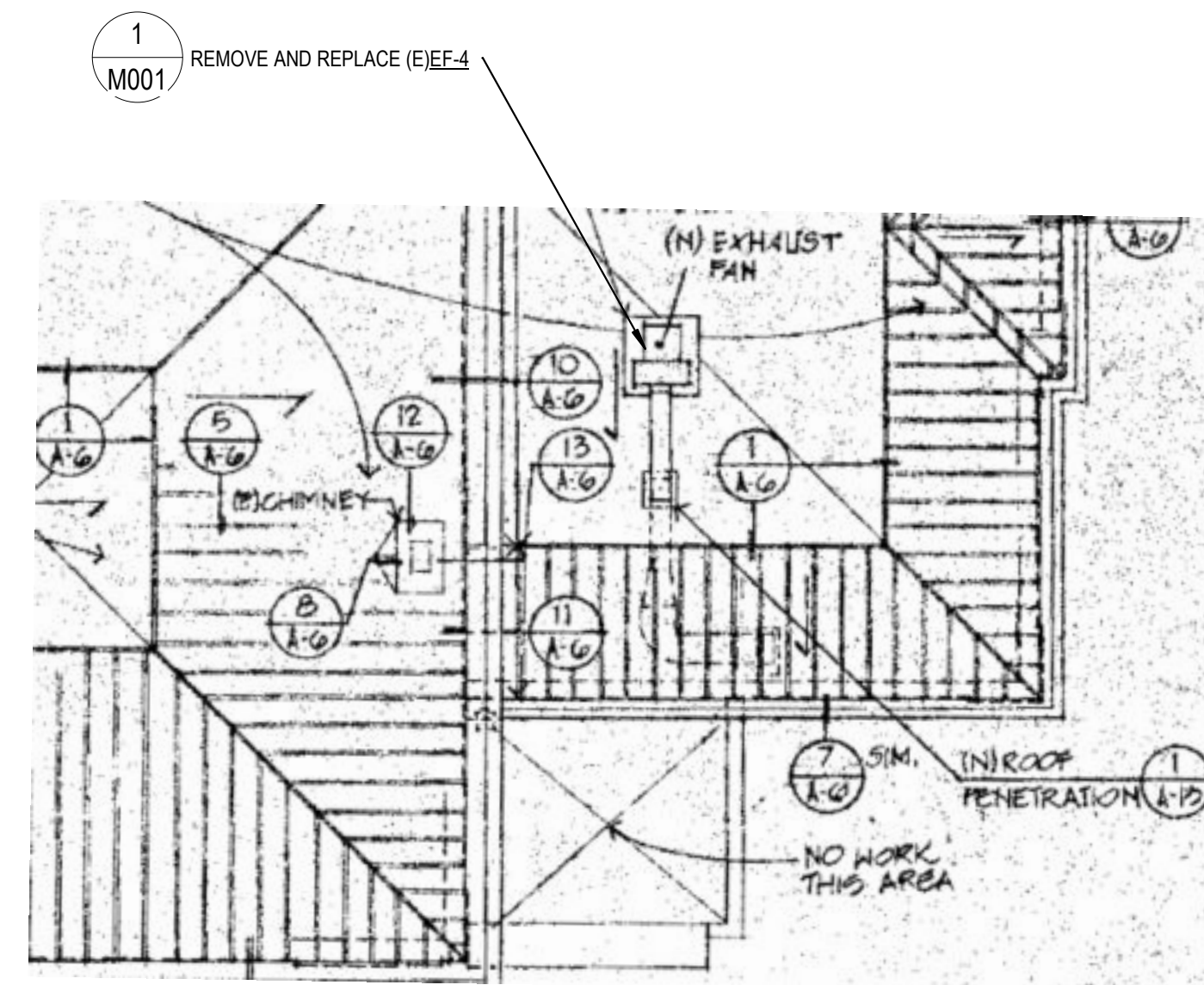
38 OF 47



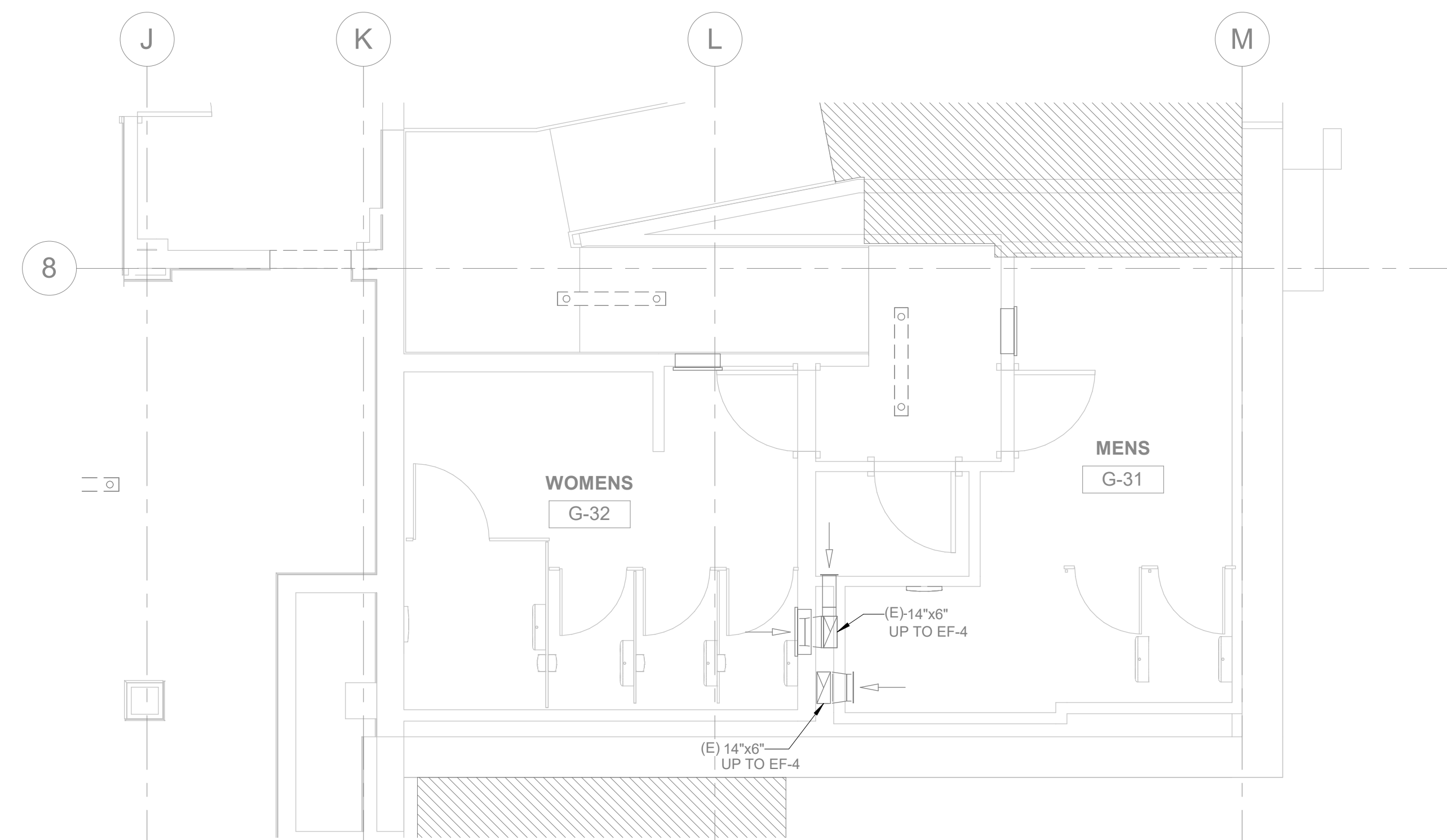
3 GROUND LEVEL COMPUTER RM MECHANICAL PLAN
1/4" = 1'-0"



2 GROUND LEVEL MECHANICAL PLAN
1/4" = 1'-0"



3 PARTIAL ROOF AS-BUILT PLAN
NOT TO SCALE



1 GROUND LEVEL MECHANICAL DEMOLITION
1/4" = 1'-0"



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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

MECHANICAL_ENGINEER

RCE NO. M25378 EXP. 09/30/2024

CHECKED BY RL
DESIGNED BY JD/HC
DRAWN BY JD/HC

No.	DATE	BY	REFERENCE
1	2/15/2023	HC	ISSUED FOR BID

M201

MECHANICAL PLAN -
GROUND FLOOR

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/2021

SHEET NO.
39 OF 47

PANEL NAME: (E) PANEL 'EM'					PHASE 3		VOLTAGE 120/208		MCB -----					
LOCATION: ELEC. RM. G-29D					WIRE 4		AIC VIF		MLO 100 AMPS					
CKT	NOTES	TYPE	T	P	DESCRIPTION	LOAD	A	LOAD	DESCRIPTION	T	P	TYPE	NOTES	CKT
1		C	20	1	(E) LTG RM. 108		A		(E) LTG RM. 204,208,210,214	20	1	C		2
3		C	20	1	(E) LTG RM. G23,G30,109,111,112		B		(E) LTG RM. BALLROOM EXITS	20	1	C		4
5			20	1	(E) SPARE		C		(E) TIMECLOCK, OUTSIDE LTG	20	1	C		6
7		D	20	3			A		(E) OUTSIDE LTG	20	1	C		8
9		D	----	----	(E) SEWAGE PUMP BOILER		B		(E) HEAT TRACE	30	2	D		10
11		D	----	----			C			----	----	D		12
13		C	20	1	(E) LTG RM. 118,119,BALLROOM		A		(E) LTG CORRIDOR 1 FLR NORTH	20	1	C		14
15		C	20	1	(E) OUTDOOR LTG WEST		B		(E) BOILER	20	2	D		16
17		D	20	1	(E) CIRCULATING PUMP		C			----	----	D		18
19		D	20	1	(E) SECURITY PANEL		A		(E) COMPUTER ROOM	20	1	G		20
21		G	20	1	(E) COMPUTER ROOM		B		(E) COMPUTER ROOM	20	1	G		22
23		G	20	1	(E) PHONE RECPT. ELEC. RM.		C		(E) COMPUTER ROOM	20	1	G		24
PHASE A					0	SUBTOTAL		DEMAND CALCULATION						
PHASE B					0	0		CONTINUOUS LOAD (C) 125%		0				
PHASE C					0	0		DEDICATED LOAD (D) 100%		0				
						0		GENERAL LOAD (G) 100 1ST 10KVA, 50% REST		0				
NOTES:						0		LARGEST MOTOR 25%		0				
1 -						0		MOTOR LOAD (M) 100%		0				
								TOTAL DEMAND		0				
								AMPS @ 120/208		0				
								(ADDITIONAL LOADS TO EXISTING)		0				

PANEL NAME: (N) PANEL 'B2'					PHASE 3		VOLTAGE 120/208		MCB -----					
LOCATION: STOR. G-27A					WIRE 4		AIC VIF		MLO 100 AMPS					
CKT	NOTES	TYPE	T	P	DESCRIPTION	LOAD		LOAD	DESCRIPTION	T	P	TYPE	NOTES	CKT
1		D	20	1	(N) COMPUTER RM. G-18A	1.5	A	1	(N) COMPUTER RM. G-18A	20	1	D		2
3		D	20	1	(N) COFFEE MACHINE	1.5	B	1.5	(N) COFFEE MACHINE	20	1	D		4
5		D	20	1	(N) COFFEE MACHINE	1.5	C	1.5	(N) COFFEE MACHINE	20	1	D		6
7							A							8
9							B							10
11							C							12
13							A							14
15							B							16
17							C							18
19							A							20
21							B							22
23							C							24
PHASE A					2.5	SUBTOTAL		DEMAND CALCULATION						
PHASE B					3	0	CONTINUOUS LOAD (C) 125%		0					
PHASE C					3	8.5	DEDICATED LOAD (D) 100%		8.5					
						0	GENERAL LOAD (G) 100 1ST 10KVA, 50% REST		0					
NOTES:							LARGEST MOTOR 25%		0					
1 -						0	MOTOR LOAD (M) 100%		0					
							TOTAL DEMAND		9					
							AMPS @ 120/208		24					
							(ADDITIONAL LOADS TO EXISTING)							

PANEL NAME: (E) PANEL 'B'					PHASE	3	VOLTAGE	120/208	MCB	-----					
LOCATION: STOR. G-27A					WIRE	4	AIC	VIF	MLO	225 AMPS					
CKT	NOTES	TYPE	T	P	DESCRIPTION	LOAD		LOAD	DESCRIPTION	T	P	TYPE	NOTES	CKT	
1		C	20	1	(E) LTG RM. G25	1.8	A	1.8	(E) LTG RM. G25	20	1	C		2	
3		C	20	1	(E) LTG RM. G25	1.8	B	1.8	(E) LTG RM. G25	20	1	C		4	
5		C	20	1	(E) LTG RM. G25	1.5	C	1	(E) LTG RM. G19,20,21,22A, ELEV.	20	1	C		6	
7			20	1	(E) SPARE		1	A	(E) BAR KIT VENT. CONTRL PNL	20	1	G		8	
9		G	20	1	(E) RECPT. G25	0.54	B	0.72	(E) RECPT. G25	20	1	G		10	
11		G	20	1	(E) RECPT. G25	0.36	C	0.9	(E) RECPT. G25	20	1	G		12	
13		G	20	1	(E) BALLROOM RECPT.	0.36	A	0.72	(E) RECPT. G24	20	1	G		14	
15		D	20	2		1.3	B	0.72	(E) RECPT. G24	20	1	G		16	
17		D	---	---	(E) ITEM 48		1.3	C	1.8	(E) ITEM 47	20	1	G		18
19		G	20	1	(E) ITEM 29	0.18	A	1.35	(E) ITEM 28	20	1	G		20	
21	1	D	20	1	GEN NEUTRAL RESTRM HAND DRYER	1.5	B	1.2	(E) ITEM 49,50	20	1	G		22	
23		G	20	1	(E) ITEM 51		1	C	SPARE	20	1			24	
25		G	20	1	(E) ITEM 31	1.5	A	1.5	(E) ITEM 31	20	1	G		26	
27		G	20	1	(E) ITEM 33,34	1.14	B	0.67	(E) ITEM 32	20	1	G		28	
29		G	20	1	(E) ITEM 53	0.67	C	0.18	GEN NEUTRAL RR RECEPT AND LIGHT	20	1	G	1	30	
31		G	20	1	(E) RECPT. G30A,G31,G32,G33	2.4	A	0.3	(E) ITEM 30, ICE MACHINE	20	2	D		32	
33		D	20	2		2.4	B	0.8		---	---	D		34	
35		D	---	---	(E) HAND DRYER MEN'S RM	2.4	C	0.54	(E) ABOVE BAR LTG	20	1	G		36	
37		G	20	1	(E) MEN'S RM	0.54	A	2.4	(E) HAND DRYER WOMEN'S	20	2	D		38	
39		C	20	1	(E) POOL TABLE LTG	0.54	B	2.4	RESTROOM	---	---	D		40	
41		G	20	1	(E) BALLROOM RECPT. WEST	1	C	0.54	(E) WOMEN'S RESTROOM	20	1	G		42	
PHASE A					15.05	SUBTOTAL		DEMAND CALCULATION							
PHASE B					17.53	10.24		CONTINUOUS LOAD (C) 125%		12.8					
PHASE C					13.19	14.8		DEDICATED LOAD (D) 100%		14.8					
						20.53		GENERAL LOAD (G) 100 1ST 10KVA, 50% REST		15.265					
NOTES:						0		LARGEST MOTOR 25%		0					
1- NEW CIRCUIT ON EXISTING BREAKER.						0		MOTOR LOAD (M) 100%		0					
								TOTAL DEMAND		43					
								AMPS @ 120/208		119					
								(ADDITIONAL LOADS TO EXISTING)							

PANEL NAME: (E) PANEL 'A'					PHASE 3	VOLTAGE 120/208	MCB -----						
LOCATION: ELEC. RM. G-29D					WIRE 4	AIC	MLO 100 AMPS						
CKT	NOTES	TYPE	T	P	DESCRIPTION	LOAD	LOAD	DESCRIPTION	T	P	TYPE	NOTES	CKT
1		C	20	1	(E) LTG G7		A	(E) LTG G13	20	1	C		2
3		C	20	1	(E) LTG G7		B	(E) LTG G18	20	1	C		4
5		C	20	1	(E) LTG G24		C	(E) LTG G18	20	1	C		6
7		C	20	1	(E) LTG G8		A	(E) LTG G1	20	1	C		8
9		D	20	1	(E) MECH CONTROL		B	(E) LTG G5,G6,G9,G10,G15	20	1	C		10
11		C	20	1	(E) LTG G17,G29,G31,G32		C	(E) RECPT. RM. G12,G14	20	1	G		12
13		G	20	1	(E) RECPT. RM. G1,G9,G10		A	(E) RECPT. BOILER, G11 LTG	20	1	G		14
15			20	1	(E) LOAD		B	(E) RECPT. G13	20	1	G		16
17		G	20	1	(E) RECPT.G18		C	(E) RECPT. G13	20	1	G		18
19		G	20	1	(E) RECPT.G18		A	(E) LOAD	20	1			20
21		D	20	1	(E) HEATER G18		B	(E) RECPT. G7	20	1	G		22
23			20	1	(E) LOAD		C	(E) RECPT. G8	20	1	G		24
25		D	20	3			A		20	3	D		26
27		D	----	----	(E) SEWAGE PUMP		B	(E) CONDENSATE PUMP (BOILER)	----	----	D		28
29		D	----	----			C		----	----	D		30
31		D	30	3			A		20	3	D		32
33		D	----	----	(E) SUMP PUMP		B	(E) BANQUET SUPPLY	----	----	D		34
35		D	----	----			C		----	----	D		36
37		D	20	3			A		20	3	D		38
39		D	----	----	(E) CANTEN SUPPLY		B	(E) CANTEN EXHAUST	----	----	D		40
41		D	----	----			C		----	----	D		42
PHASE A					0	SUBTOTAL		DEMAND CALCULATION					
PHASE B					0			CONTINUOUS LOAD (C) 125%		0			
PHASE C					0			DEDICATED LOAD (D) 100%		0			
					0			GENERAL LOAD (G) 100 1ST 10KVA, 50% REST		0			
								LARGEST MOTOR: 25%		0			
					0			MOTOR LOAD (M) 100%		0			
NOTES:								TOTAL DEMAND		0			
1 -								AMPS @ 120/208		0			
								(ADDITIONAL LOADS TO EXISTING)		0			

STATE OF CALIFORNIA
NRCC-LTI-E
Indoor Lighting
CALIFORNIA ENERGY COMMISSION
NRCC-LTI-E
CERTIFICATE OF COMPLIANCE
This document is used to demonstrate compliance with requirements in §110.9, §110.12(c), §130.0, §130.1, §140.6 and §141.0(b)2 for indoor lighting scopes using the prescriptive path.
Project Name: Downtown Oakland Senior Center Improvements
Project Address: 200 Grand Ave
Report Page: (Page 1 of 8)
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A. GENERAL INFORMATION

01 Project Location (city)	Oakland	04 Total Conditioned Floor Area (ft²)	8,957
02 Climate Zone	3	05 Total Unconditioned Floor Area (ft²)	0
03 Occupancy Types Within Project (select all that apply):		06 # of Stories (Habitable Above Grade)	1
<input type="checkbox"/> Office	<input type="checkbox"/> Retail	<input type="checkbox"/> Warehouse	<input type="checkbox"/> Hotel/Motel
<input type="checkbox"/> Parking Garage	<input type="checkbox"/> High-Rise Residential	<input type="checkbox"/> Relocatable	<input type="checkbox"/> Healthcare
			<input checked="" type="checkbox"/> School
			<input checked="" type="checkbox"/> Support Areas
			<input checked="" type="checkbox"/> Other (Write in)
			See Table I

B. PROJECT SCOPE
This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.6 or §141.0(b)2 for alterations.

Scope of Work	Conditioned Spaces	Unconditioned Spaces		
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
<input type="checkbox"/> New Lighting System				
<input type="checkbox"/> New Lighting System - Parking Garage				
<input checked="" type="checkbox"/> Altered Lighting System	Area Category Method	8957	Area Category Method	0
Total Area of Work (ft²)	8957		0	

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Registration Provider: Energysoft Schema Version: rev 20200601
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Indoor Lighting
CALIFORNIA ENERGY COMMISSION
NRCC-LTI-E
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C. COMPLIANCE RESULTS
If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per §140.6(b)1	Allowed Lighting Power per §140.6(b) (Watts)					Adjusted Lighting Power per §140.6(a) (Watts)	Compliance Results		
	01	02	03	04	05				
Complete Building §140.6(c)1	Area Category §140.6(c)2	Area Category Additional §140.6(c)2G (+)	Tailored §140.6(c)3 (+)	Total Allowed (Watts)	≥	Total Designed (Watts)	Adjustments PAF Lighting Control Credits §140.6(a)2 (-)	Total Adjusted (Watts) *Includes Adjustments	05 must be ≥ 08 §140.6
(See Table I)	(See Table J)	(See Table J)	(See Table K)			(See Table F)	(See Table P)		
Conditioned	7,056.2	0		7,056	≥	4,040	0	4040	COMPLIES
Unconditioned					≥				
Controls Compliance (See Table H for Details)									COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)									

D. EXCEPTIONAL CONDITIONS
This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS
This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. INDOOR LIGHTING FIXTURE SCHEDULE
This table includes all permanent designed lighting and all portable lighting in offices.
Designed Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10
Name or Item Tag	Complete Luminaire Description	Modular Aperture & (Track) Fixture	Small Aperture & Color Change¹	Watts per luminaire²	How is Wattage determined	Total Number of Luminaires	Excluded per §140.6(a)3	Design Watts	Field Inspector
1	Type 1	No	No	63	CEC Default	16	No	1,008	Pass
1A	Type 1A	No	No	47	CEC Default	31	No	1,457	Pass

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F. INDOOR LIGHTING FIXTURE SCHEDULE

2A	Type 2A	No	No	47	CEC Default	4	No	188		
2B	Type 2B	No	No	47	CEC Default	15	No	705		
3	Type 3	No	No	23	CEC Default	11	No	253		
4	Type 4	No	No	23	CEC Default	10	No	230		
5	Type 5	No	No	13	CEC Default	6	No	78		
7	Type 7	No	No	12	CEC Default	3	No	36		
8	Type 8	No	No	17	CEC Default	5	No	85		
Total Designed Watts: CONDITIONED SPACES									4,040	

¹FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per §140.6(a)4B is adjusted to be 75% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.
²Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c). Wattage used must be the maximum rated for the luminaire, not the lamp.

G. MODULAR LIGHTING SYSTEMS
This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)
*This table includes lighting controls for conditioned and unconditioned spaces. When a control having a * is shown, the notes section of this table provides more detail on how compliance is achieved. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.*
Building Level Controls

01	02	03
Mandatory Demand Response §110.12(c)	Shut-off controls §130.1(c)	Field Inspector
		Pass
Not Required <= 10,000 SF	See Area/Space Level Controls	Fail

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)
Area Level Controls

04	05	06	07	08	09	10	11	12
Area Description	Complete Building or Area Category Primary Function Area	Area Controls §130.1(a)	Multi-Level Controls §130.1(b)	Shut-Off Controls §130.1(c)	Primary/Sky lit Daylighting §130.1(d)	Secondary Daylighting §140.6(d)	Interlocked Systems §140.6(a)1	Field Inspector
								Pass
Hall G-24	Corridor Area	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Corridor	Corridor Area	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Men's Restroom	Restrooms	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Women's Restroom	Restrooms	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Gender Neutral Restroom	Restrooms	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Hall #4	Corridor Area	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Canteen G-25	Cafeteria/Fastfood	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Dining and Annex	Cafeteria/Fastfood	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Craft Room G-13	Office greater than 250 square feet	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Computer and Consignment	Office greater than 250 square feet	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	
Headstart	Office 250 square feet or less	Manual ON/OFF	Dimmer	Occupancy Sensor	Included	N/A	No	

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)

*NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.
EX: Conference 1: Primary/Skylight Daylighting: Exempt because less than 120 watts of general lighting; EXCEPTION 1 to §130.1(d)2

13
Plan Sheet Showing Daylit Zones:

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per §140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per §140.6(c) or adjustments per §140.6(a) are being used .

Conditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment Area Category	Adjustment PAF
Ground Floor - Common Areas	Corridor Area	0.6	2,229	1,337.4	No	No
Ground Floor - Multipurpose Rooms	Convention, Conference, Multipurpose and Meeting Center Areas	0.85	6,728	5,718.8	No	No
TOTALS:			8,957	7,056.2	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM
This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE
This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY
This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING
This section does not apply to this project.

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N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED ORNAMENTAL/SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE
This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))
This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ALTERATIONS
This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS
This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)
This section does not apply to this project.

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T. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E.
Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCL/

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
<input checked="" type="radio"/>	<input type="radio"/>	NRCI-LTI-01-E - Must be submitted for all buildings	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCI-LTI-02-E- Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room or a theater to be recognized for compliance.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCI-LTI-05-E- Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCI-LTI-06-E- Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	<input type="checkbox"/>	<input type="checkbox"/>

U. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selection have been changed by the permit applicant, an explanation should be included in Table E.
Additional Remarks. These documents must be provided to the building inspector during construction and any with "A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/atttcp/providers.html

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
<input checked="" type="radio"/>	<input type="radio"/>	NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	<input type="radio"/>	NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCA-LTI-05-A. - Must be submitted for institutional tuning power adjustment factor (PAF)	<input type="checkbox"/>	<input type="checkbox"/>

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CERTIFICATE OF COMPLIANCE
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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Chilot Malto
Company: EDesignC, Inc.
Address: 582 Market Street
City/State/Zip: San Francisco CA 94104
Documentation Author Signature: [Signature]
Signature Date: 2021-12-08
CEA/ HERS Certification Identification (if applicable):
Phone: (510) 433-0913

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Rosanna Lerma
Company: EDesignC, Inc.
Address: 582 Market Street
City/State/Zip: San Francisco CA 94104
Responsible Designer Signature: [Signature]
Date Signed: 2021-12-08
License: E15977
Phone: (415) 963-4303

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

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CITY OF OAKLAND
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANK H. OGAWA PLAZA, SUITE 4314 • OAKLAND, CA 94612
(510) 238-3437 • FAX (510) 238-7227

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ELECTRICAL_ENGINEER

RCE NO. E15977 EXP. 06/30/2023

CHECKED BY RL
DESIGNED BY JD/HC
DRAWN BY JD/HC

No.	DATE	BY	REFERENCE
1	2/15/2023	HC	ISSUED FOR BID

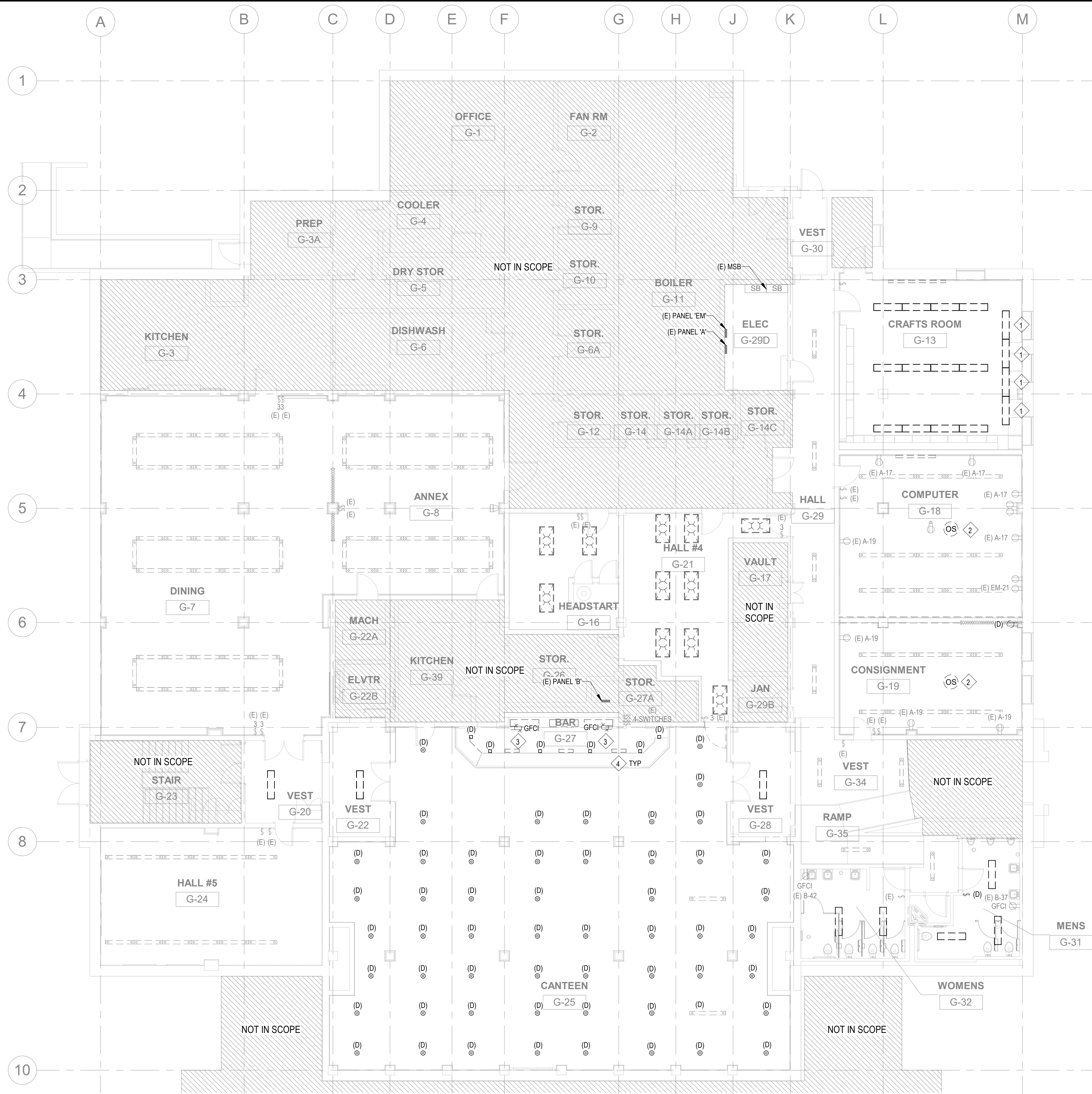
E004

TITLE 24
COMPLIANCE FORMS

PROJECT NO.
1004984

SCALE:
HOR.
VERT.
DATE: 12/3/2021

SHEET NO.
43 OF 47



- GENERAL NOTES**
- A. DEMOLISH EXISTING LIGHTING FIXTURES, HANGERS, AND RELATED COMPONENTS AS SHOWN. UON. EXISTING LIGHTING FIXTURE JUNCTION BOXES TO BE REUSED. UON. EXISTING LIGHT CONTROLS TO REMAIN. UON. CONTRACTOR SHALL VERIFY IN FIELD EXACT LIGHTING FIXTURES AND CONTROLS LOCATIONS.

B. UTILIZE (E) AREA CIRCUITS. DISCONNECT (E) LOADS AND EXTEND TO (N) MODIFIED LOAD LOCATIONS. UPDATE PANEL SCHEDULES WITH NEW ASSIGNED LOADS. COORDINATE EXACT NEW LOAD LOCATIONS WITH ARCHITECTURAL DRAWINGS.

C. S.A.D. FOR ADDITIONAL DEMOLITION SCOPE.
- SHEET NOTES**
1. DISCONNECT AND REMOVE EXISTING FIXTURES, HANGERS, AND RELATED COMPONENTS AT THIS LOCATION. EXISTING JUNCTION BOX TO REMAIN. F/I BLANK COVERS ON ALL CEILING JUNCTION BOXES AND PAINT WHITE.

2. DISCONNECT AND REMOVE EXISTING OCCUPANCY SENSOR AND RELATED COMPONENTS. SENSOR TO BE REPLACED WITH NEW OCCUPANCY SENSOR IN SAME LOCATION.

3. DISCONNECT AND REMOVE EXISTING GFCI RECEPTACLE AT BAR COUNTER. EXISTING JUNCTION BOX TO REMAIN. RECEPTACLE TO BE REPLACED WITH NEW GFCI RECEPTACLE IN SAME LOCATION.

4. DISCONNECT AND REMOVE EXISTING BAR LIGHTING FIXTURES AND RELATED COMPONENTS AT THIS LOCATION, TYP 3. CONTRACTOR TO VERIFY EXACT QTY AND LOCATION IN FIELD. (E) JUNCTION BOXES TO REMAIN. LIGHTING FIXTURE TO BE REPLACED WITH NEW IN SAME LOCATION.

1 GROUND LEVEL ELECTRICAL DEMOLITION
1/8" = 1'-0"

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DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
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ELECTRICAL_ENGINEER		No.	DATE	BY	REFERENCE
RCE NO. <u>E15977</u> EXP. <u>06/30/2023</u>		1	2/15/2023	HC	ISSUED FOR BID
CHECKED BY	RL				
DESIGNED BY	JD/HC				
DRAWN BY	JD/HC				

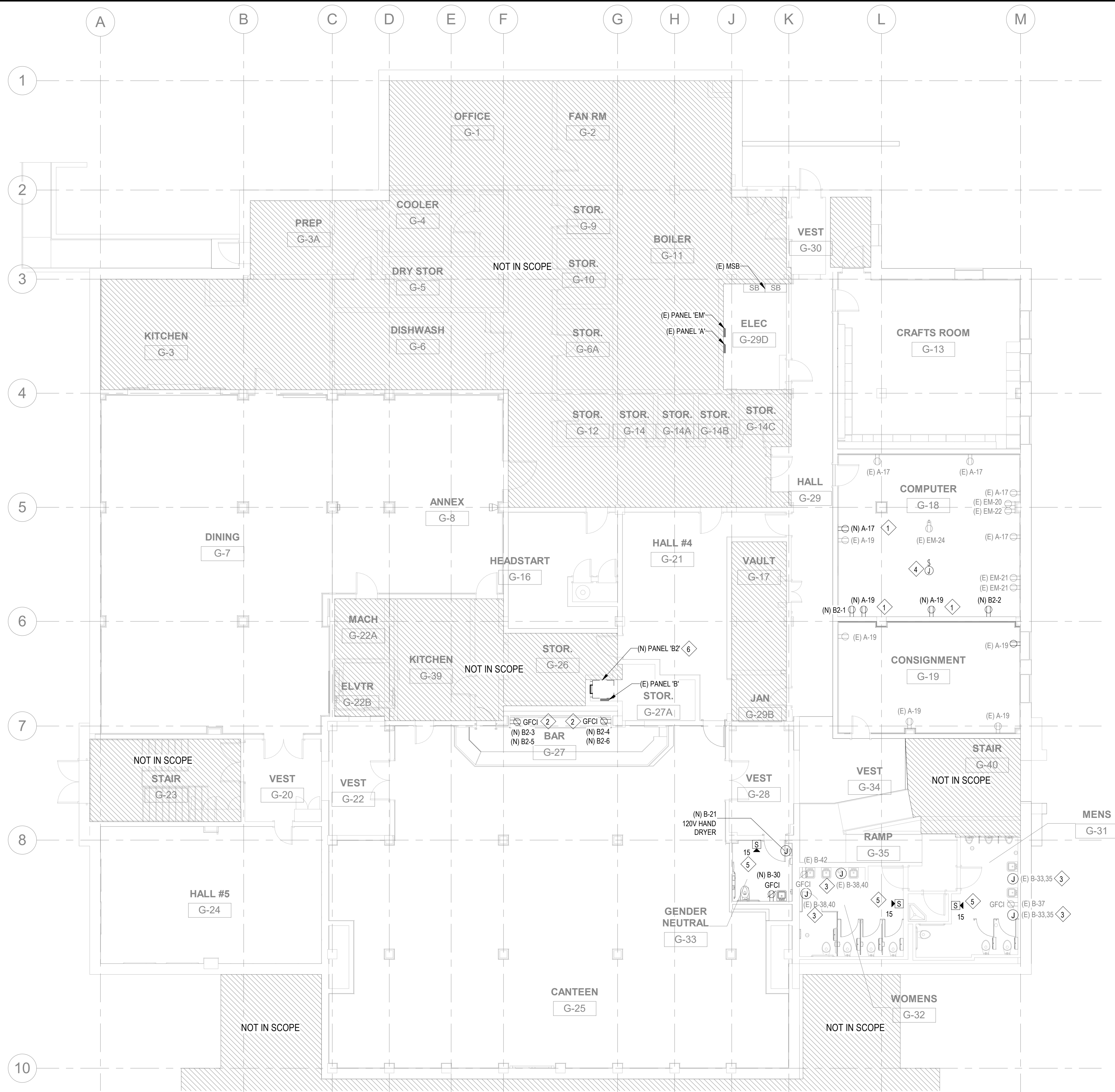
E101

ELECTRICAL DEMOLITION
PLAN - GROUND FLOOR

PROJECT NO.
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VERT.
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1 GROUND LEVEL POWER PLAN
1/8" = 1'-0"

GENERAL NOTES

- A. UTILIZE (E) AREA CIRCUITS. DISCONNECT (E) LOADS AND EXTEND TO (N) MODIFIED LOAD LOCATIONS. UPDATE PANEL SCHEDULES WITH NEW ASSIGNED LOADS. COORDINATE EXACT NEW LOAD LOCATIONS WITH ARCHITECTURAL DRAWINGS.
- B. S.A.D. FOR ADDITIONAL DEMOLITION SCOPE.

SHEET NOTES

1. F/I (N) DUPLEX RECEPTACLE. UTILIZE (E) AREA CIRCUITS. (E) FEEDER FROM DISCONNECTED (D) DUPLEX RECEPTACLE SHALL EXTEND TO THIS LOCATION.
2. F/I (N) GFCI RECEPTACLE IN EXISTING LOCATION. DEDICATED CIRCUIT FOR EACH OUTLET, TYP 4. UTILIZE (E) CONDUCTORS AND JUNCTION BOXES. (E) CIRCUITS SHALL BE DISCONNECTED AND EXTENDED TO (N) PANEL B2.
3. (N) 208V HAND DRYER TO REPLACE IN EXISTING LOCATION. UTILIZE (E) AREA CIRCUIT AND EXTEND TO (N) RECESSED WALL JUNCTION BOX. FEED WITH NEW WIRING INSIDE WALL. COORDINATE WITH ARCHITECT FOR INSTALLATION AND NEW TILE WORK.
4. (N) 120V POWER FOR CEILING FAN. COORDINATE MOUNTING LOCATION WITH ARCHITECT.
CEILING FAN SCOPE IS ALTERNATE 1. SEE ARCHITECTURAL COVER SHEET FOR ADDITIONAL INFORMATION.
5. F/I (N) FIRE ALARM STROBE AND CONNECT TO EXISTING SYSTEM. VERIFY STROBE COMPATIBILITY WITH EXISTING SYSTEM PRIOR TO WORK.
6. F/I (N) ELECTRICAL PANEL LOCATED BELOW THE MECHANICAL EQUIPMENT STARTERS.



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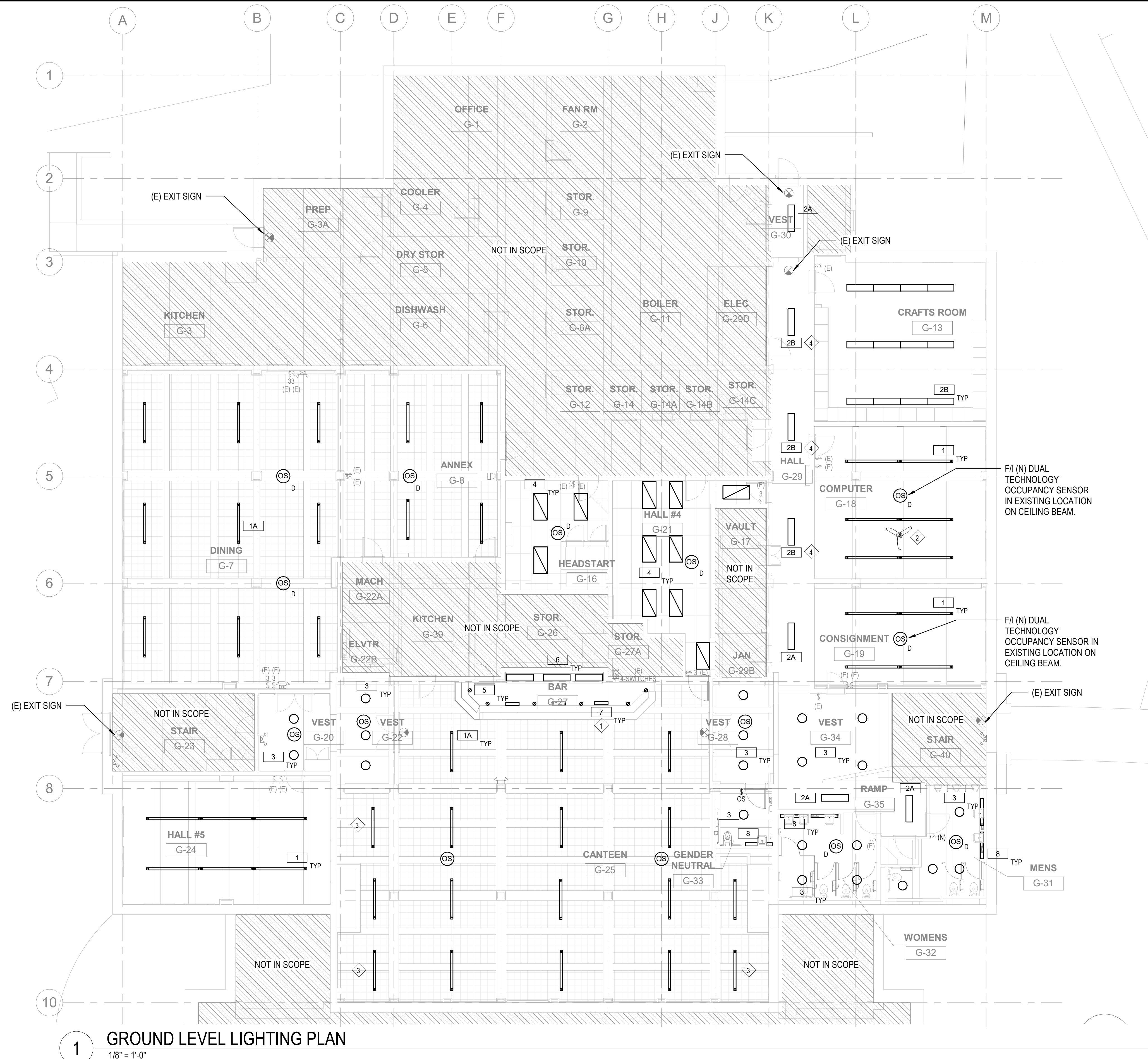
ELECTRICAL_ENGINEER	No.	DATE	BY	REFERENCE
	1	2/15/2023	HC	ISSUED FOR BID
RCE NO. E15977	EXP.	06/30/2023		
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DESIGNED BY	JD/HC			
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E201
POWER PLAN - GROUND FLOOR

PROJECT NO.
1004984

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HOR.
VERT.
DATE: 12/3/2021

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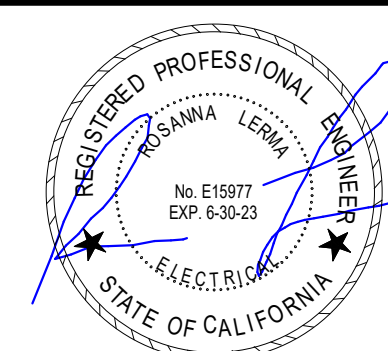
1 GROUND LEVEL LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTES

- F/I (N) LIGHTING FIXTURES AND CONTROLS IN EXISTING LOCATIONS AND NEW SPACES AS SHOWN. UON. FOR NEW LOCATIONS, COORDINATE WITH OTHER DISCIPLINES. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS.
- UTILIZE (E) AREA CIRCUITS. DISCONNECT (E) LOADS AND EXTEND TO (N) MODIFIED LOAD LOCATIONS AS NEEDED. COODINATE NEW LOAD EXACT LOCATIONS WITH ARCHITECTURAL DRAWINGS.
- FOR EMERGENCY LIGHTING, UTILIZE (E) EMERGENCY BATTERY BACKUPS ON EACH EXISTING LIGHT FIXTURE LOCATION. CONTRACTOR SHALL VERIFY IN FIELD, PROVIDE REQUIRED CONNECTION, AND TEST THE SYSTEM PRIOR TO WORK.

SHEET NOTES

- F/I NEW LIGHTING FIXTURES AT BAR COUNTER, TYP 3. CONTRACTOR TO VERIFY EXACT QTY AND LOCATION IN FIELD. UTILIZE (E) JUNCTION BOXES AND CIRCUITS. REFER TO LIGHTING SCHEDULE FOR POWER REQUIREMENTS, SEE DETAIL: 2
E002
- ALTERNATE 1: FOR POWER REQUIREMENTS, SEE DETAIL: 2
E201
- F/I (N) LIGHTING FIXTURES TO (N) LOCATION, TYP 4. COORDINATE EXACT LOCATION WITH ARCHITECTURAL DRAWINGS.
- (N) TYPE 2B FIXTURE AT THIS LOCATION SHALL REUSE THE (E) UNISTRUT AND RELATED FIXTURE ATTACHMENTS. COORDINATE INSTALLATION WITH ARCHITECT.



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ELECTRICAL_ENGINEER

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No.	DATE	BY	REFERENCE
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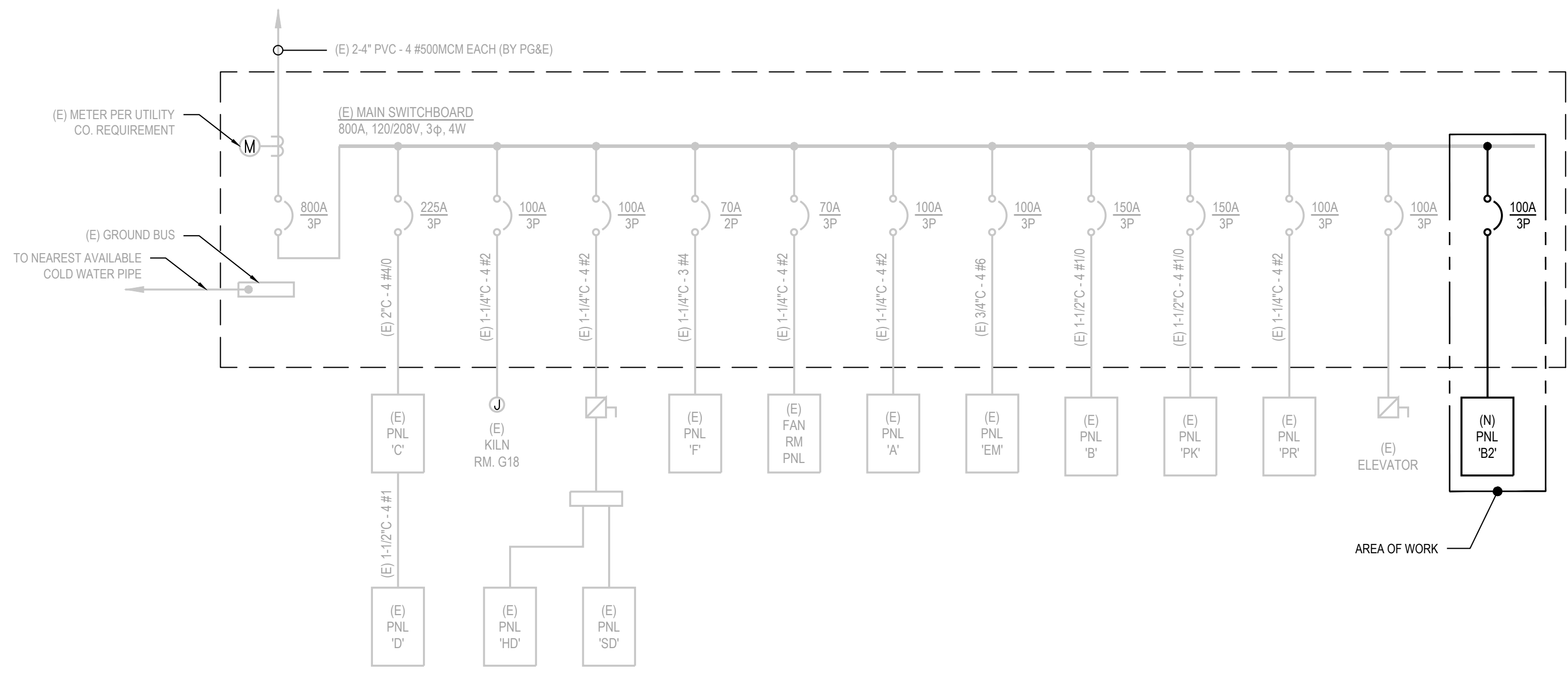
E601

LIGHTING PLAN - GROUND
FLOOR

PROJECT NO.
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VERT.
DATE: 12/3/2021

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1 SINGLE LINE DIAGRAM
SCALE: SCHEMATIC



Oakland Public Works Department
Bureau of Design & Construction
Capital Contracts

(510) 238-7270
FAX (510) 238-2346
TDD (510) 238-3254

ON-CALL CONTRACTOR BID REQUEST

Project No. 1004984
DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS

Date Issued: August 18, 2023

Scope of Work: The Downtown Oakland Senior Center Improvements project is a partial renovation of the ground floor of the Oakland Veterans' Memorial Building at 200 Grand Avenue. The project includes new flooring, painting and led lighting retrofits throughout primary area of work, approximately 9,690 SF of the ground floor of the building. The spaces within the area of work include canteen, dining, classroom, and restrooms. This project refreshes worn-out finishes that have not been upgraded since the 1980's. A new gender-neutral restroom will be provided within the existing building footprint, accessible parking spaces at the existing east parking lot will be repaved, striped, and signed to improve access. Other minor exterior updates include new handrails and improvements at the main entry. The City has paid for Building Department and Planning permit fees; the Contractor is responsible to apply for and pay for all other trades, creek protection and encroachment permits, permit extensions and to complete the City's Waste Reduction & Recycling Plan for the building permit.

➤ **Pre-Bid Meeting and/or Site Visit:**

MANDATORY VOLUNTARY - 10:30 AM, September 12, 2023 at 200 Grand Avenue.

SECOND VOLUNTARY SITE VISIT OPPORTUNITY- 10:30AM, October 4, 2023, at 200 Grand Avenue

- **Questions Due:** **2:00 PM, September 22**~~October 13, 2023~~, by email only, to the Project Manager. It is the Contractor's responsibility to ensure that the email is received by the Project Manager. Any addendum that materially changes the bid invitation shall be issued no less than 72 hours before the bid opening unless the bid opening is extended by said addendum.

- **Bids Due:** **2:00 PM, October 27**~~13, 2023~~, by email to Capital Contracts contact provided in Contact information section. Bids received after the deadline will not be considered.

➤ **Documents Due with Bid:**

- ☐ Contractor's Bid form
- ☐ Schedule R – Subcontractor, Supplier, Trucking Listing. Bidders must submit a completed Schedule R that reflects the team members for this on-call bid. Submit Schedule R even if there will be no subcontractors, suppliers or truckers.

➤ **Documents Due from Awarded Contractor (informational):**

- ☐ Payment & Performance Bonds, if over \$25K
- ☐ Anticipated Project Workforce & Core Employee Utilization Report
- ☐ For contracts over \$50K, online submittal is required of Waste Reduction & Recycling Plan (WRRP) at www.greenhalosystems.com. (Enter City Project # for Green Halo "Project Tracking Number") Paper submittals are subject to \$250 fee.

Anticipated Start Date: December 184, 2023

Engineer's Estimate: Lump Sum Base Bid - \$1,834,515.00

License Required: A, B

Contract Days: 120 working days for Construction

Liquidated Damages: \$500 per calendar day

Bonds: 100% Payment and Performance Bonds. Bid Security not required.

Oakland-certified Local Business Requirement: 50% LBE/SLBE participation requirement will be measured for the overall master contract, not on an individual task order basis. Certified SLBE or VSLBE prime contractors are exempt from this LBE/SLBE requirement. Please see the DWES Local Business requirements by going to the web address as provided below.

https://cao-94612.s3.amazonaws.com/documents/LSLBE-Program-Guidelines_Revised.5.4.21.pdf

DWES Certified L/SLBE Trucking Program Requirement: YES. 50% local trucking requirement is applicable. It is important to note that failure to comply with the 50% local trucking requirement will result in a non-responsive bid. Please see the DWES Certified Local Business Trucking requirements by going to the web address as provided below.

https://cao-94612.s3.amazonaws.com/documents/LSLBE-Program-Guidelines_Revised.5.4.21.pdf

Self-Performance: The Contractor shall perform, with its own organization, Task Order work amounting to at least 30 percent of the Task Order Price.

Contact Information:

OPW Project Manager: Alan Chan at achan@oaklandca.gov

Capital Contracts: CapitalContracts@oaklandca.gov

Department of Industrial Relations (DIR):

1. No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the DIR pursuant to Labor Code Section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code Section 1771.1(a)].
2. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the DIR pursuant to Labor Code section 1725.5.
3. This project is subject to compliance monitoring and enforcement by the DIR.
4. The prime contractor must post job site notices prescribed by regulation.
5. Assembly Bill 219 requires companies hauling or delivering ready-mix concrete to register with the DIR as a public works contractor.

Bid Documents: The bid documents included with this Bid Request are listed below.

1. Special Provisions
2. Technical Specifications
3. Drawings dated March 8, 2023, prepared by ELS Architecture and Urban Design
4. The following list of anticipated permits required is for information purposes only and may not be all inclusive. It is the Contractor's responsibility to confirm the permits required and BMPs for construction:

Permit Type	Issuing Agency	Payment by:	Status/Notes
Planning	City of Oakland	City	Approval Completed.
Building	City of Oakland	City Contractor	Plan check completed; Contractor to complete Waste Reduction & Recycling Plan, <u>pay for processing fees and</u> -to pick up job card.
Building Permit Extension	City of Oakland	Contractor	Permit extension fees shall be paid by the Contractor
Trade Permits	City of Oakland	Contractor	(Mechanical, Electrical, Plumbing)
Fire Permit	City of Oakland	Contractor	Contractor is responsible for design-build, plan reviews from Fire Prevent Bureau, permits and inspections
Creek Protection Permit	City of Oakland	City	Submitted, In progress.
Excavation, Obstruction and Sewer Lateral Permits	City of Oakland	Contractor	Contractor is responsible to obtain permits before construction



ADDENDUM 1
**QUESTIONS AND ANSWERS, UPDATED PROFESSIONAL SERVICES AGREEMENT,
AND CORRECTIONS TO SECTION IV, MANDATORY POLICIES AND PROGRAMS,**

September 22, 2023

**Subject: On-Call General Construction Contract Tier 1 Bid Proposal Request for 1004984 –
Downtown Oakland Senior Center Improvements**

To: All Prospective Bidders

The clarifications, additions and/or deletions contained in this **ADDENDUM** shall be made a part of the bid or proposal solicitation documents (plans, specifications, RFP, RFQ, etc.) for the above-referenced project, and shall be subject to all applicable requirements there-under, as if originally shown and/or specified. **IMPORTANT: You must acknowledge this Addendum in the Contractor's Bid form or your bid may be deemed non-responsive.** The documents are revised as follows:

1. Delete and Replace

i. “ON-CALL CONTRACTOR BID REQUEST”

Pre-Bid Meeting and/or Site Visit language is revised on Page 1:

“VOLUNTARY – 10:30am, September 12, 2023 at 200 Grand Avenue. “SECOND VOLUNTARY SITE VISIT OPPORTUNITY – 10:30AM, October 4, 2023 at 200 Grand Avenue”

ii. “ON-CALL CONTRACTOR BID REQUEST”

Questions Due language is revised on Page 1:

“2:00 PM, October 13, 2023, by email only, to the Project Manager. It is the Contractor’s responsibility to ensure that the email is received by the Project Manager. Any addendum that materially changes the bid invitation shall be issued no less than 72 hours before the bid opening unless the bid opening is extended by said addendum.”

iii. “ON-CALL CONTRACTOR BID REQUEST”

Bid Due language is revised on Page 1:

“2:00 PM, October 27, 2023,” by email to Capital Contracts contact provided in Contact information section. Bids received after the deadline will not be considered.”

iv. “ON-CALL CONTRACTOR BID REQUEST”

Anticipated Start Date language is revised on Page 2:

“Anticipated Start Date: December 18, 2023”

v. “ON-CALL CONTRACTOR BID REQUEST”

Permit Type Language is revised on page 3 in red:

Permit Type	Issuing Agency	Payment by:	Status/Notes
Planning	City of Oakland	City	Approval Completed.
Building	City of Oakland	Contractor	Plan check completed; Contractor to complete Waste Reduction & Recycling Plan, pay for processing fees and to pick up job card.
Building Permit Extension	City of Oakland	Contractor	Permit extension fees shall be paid by the Contractor
Trade Permits	City of Oakland	Contractor	(Mechanical, Electrical, Plumbing)
Fire Permit	City of Oakland	Contractor	Contractor is responsible for design-build, plan reviews from Fire Prevent Bureau, permits and inspections
Creek Protection Permit	City of Oakland	City	Submitted, In progress.
Excavation, Obstruction and Sewer Lateral Permits	City of Oakland	Contractor	Contractor is responsible to obtain permits before construction

Sincerely,

Alan Chan

Alan Chan, P.E., PMP, CCM, QSD

achan@oaklandca.gov

510-318-4684

BIDDER'S ACKNOWLEDGEMENT:

Name of Company: _____

Address, City, State, Zip: _____

Signature: _____

Title: _____

Print Name: _____

Date: _____

Attachments:

Revised Pages 1, 2 and 3



ADDENDUM 2

October 16, 2023

**Subject: On-Call General Construction Contract Tier 1 Bid Proposal Request for 1004984 –
Downtown Oakland Senior Center Improvements**

To: All Prospective Bidders

The clarifications, additions and/or deletions contained in this **ADDENDUM** shall be made a part of the bid or proposal solicitation documents (plans, specifications, RFP, RFQ, etc.) for the above-referenced project, and shall be subject to all applicable requirements there-under, as if originally shown and/or specified. **IMPORTANT: You must acknowledge this Addendum in the Contractor's Bid form or your bid may be deemed non-responsive.** The documents are revised as follows:

1. Delete and Replace

i. Downtown Oakland Senior Center Improvements Technical Specifications June 10, 2022

DELETE *Section 00 01 10 Table of Contents* from Page 136 to 142 of the June 10, 2022 PDF document in it's entirety and REPLACE it with the attached *Section 00 01 00 Table of Contents - Addendum 2, October 12, 2023*.

ii. Downtown Oakland Senior Center Improvements Technical Specifications June 10, 2022

DELETE *Section 00 01 15 Certifications* from Page 144 to 148 of the June 10, 2022 PDF document in it's entirety and REPLACE it with the attached *Section 00 01 15 Certifications - Addendum 2, October 12, 2023*.

iii. Downtown Oakland Senior Center Improvements Technical Specifications June 10, 2022

DELETE Technical Specifications Section from *Section 02 40 00 Demolition* to *Section 32 13 18 Cement and Concrete For Exterior Improvements* from Page 387 to 598 of the June 10, 2022 PDF document in it's entirety and REPLACE it with the attached 252 page PDF from *Section 02 40 00 Demolition* to *Section 32 17 26 Tactile Warning Surfaces - Addendum 2*,

October 12, 2023.

iv. Downtown Oakland Senior Center Improvements Drawings Dated March 8, 2023

Delete Sheet C100, C200, C210, C300, C301 dated March 8, 2023 in it's entirety and REPLACE it with Sheet C100, C200, C210, C300 and C301 dated October 12, 2023.

v. Downtown Oakland Senior Center Improvements Drawings Dated March 8, 2023

Delete Sheet A801 dated March 8, 2023 in it's entirety and REPLACE it with Sheet A801 dated October 12, 2023.

2. Add

i. Downtown Oakland Senior Center Improvements Drawings Dated March 8, 2023

ADD new Staging Plan dated October 4, 2023.

QUESTIONS AND ANSWERS:

1. **Question:** Can you please send a copy of the attendance roster?

Answer: The roster will be attached in addendum 2.

Sincerely,

Alan Chan

Alan Chan, P.E., PMP, CCM, QSD

achan@oaklandca.gov

510-318-4684

BIDDER'S ACKNOWLEDGEMENT:

Name of Company: _____

Address, City, State, Zip: _____

Signature: _____

Title: _____

Print Name: _____

Date: _____

Attachments:

Revised Sheets - **C100, C200, C210, C300, C301, A801**

Staging Plan

Revised Specifications - **Section 00 01 10 – Table of Contents dated 10/12/2023**

Revised Specifications - **Section 00 01 15 – Certifications dated 10/12/2023**

Revised Specifications - **Section 02 40 00 Demolition to Section 32 17 26 Tactile Warning Surfaces – (252 pages)**

Attendance Roster



SHEET NOTES

- THIS STAGING PLAN IS FOR REFERENCE ONLY. CONTRACTOR TO PROPOSE DETAILED STAGING BASED ON CONTRACTOR'S MEANS AND METHODS.
- NOT ALL SCOPE OF WORK CALLED OUT.
- WORK IS TO BE COMPLETED IN THE FOLLOWING ORDER:
 - ZONE 1
 - ZONE 2
 - ZONE 3WHILE WORK PROCEEDS IN EACH ZONE THE OTHER TWO ZONES SHALL REMAIN IN OPERATION AND USEABLE FOR BUILDING OCCUPANTS.
- CONTRACTOR SHALL TEMPORARILY MOVE AND RELOCATE FURNITURE AND EQUIPMENT IN THE LOWER LEVEL TO A PROTECTED CONTRACTOR FURNISHED TRAILER OR OFF SITE.
- CONTRACTOR TO PROVIDE APPROPRIATE DUST CONTROL ENCLOSURE MEASURES AND SEPARATE WORK FROM OTHER ZONES.
- PATHWAYS OR AISLES ACCOMODATING CONNECTION OF EACH ZONE TO STAIR AND/OR ELEVATOR SHALL BE COORDINATED WITH CITY.

LEGEND

- N.I.C. (NOT IN CONTRACT)
- ZONE 1
- ZONE 2
- ZONE 3

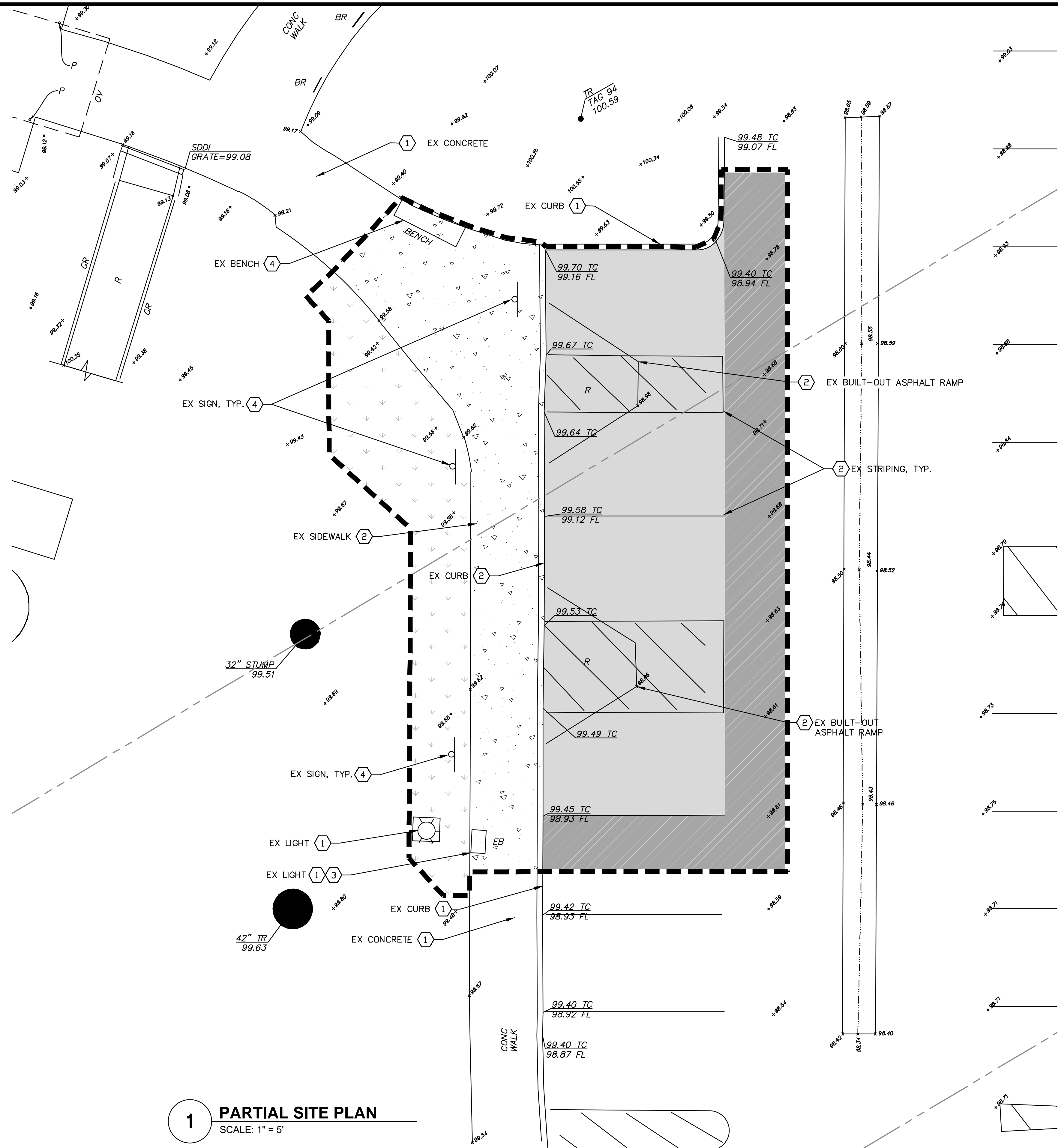


DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

ARCHITECT	No.	DATE	BY	REFERENCE
RCE NO. _____ EXP. _____	1	10/12/2023		ADDENDUM 2
CHECKED BY _____ DM				
DESIGNED BY _____ CL				
DRAWN BY _____ CL				

GROUND FLOOR
INTERIOR STAGING PLAN
DIAGRAM

PROJECT NO. 1004984	
SCALE: HOR. VERT. DATE: 10/4/23	SHEET NO. ____ OF ____



LEGEND

- FLOW LINE
- DEMOLITION LIMITS
- CLEAR AND GRUB
- DEMOLISH EXISTING CONCRETE CURB & GUTTER AND SIDEWALK TO PROPOSED SUBGRADE
- GRIND EXISTING ASPHALT 2" MINIMUM
- CONFORM GRIND TO EXISTING ASPHALT PAVING, SEE DETAIL 12 ON SHEET C300
- BR BIKE RACK
- CLDR CENTERLINE OF DOOR
- CONC CONCRETE
- EB ELECTRICAL BOX
- FF FINISHED FLOOR
- FL FLOWLINE
- GR GUARD RAIL
- OV OVERHEAD
- P POST
- R RAMP
- SDDI STORM DRAIN DROP INLET
- TC TOP OF CURB
- TR TREE
- ☆ AREA/YARD LIGHT
- SIGN

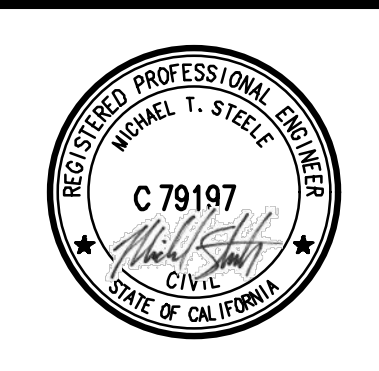
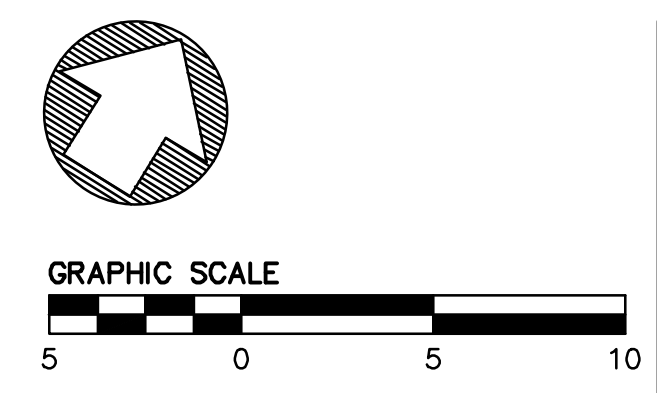
NOTES

- EXISTING CONDITIONS OBTAINED FROM TOPOGRAPHIC SURVEYS PERFORMED BY BKF ENGINEERS, DATED SEPTEMBER 28, 2021.
- ALL DISTANCES AND DIMENSIONS ARE IN FEET AND DECIMALS THEREOF.
- ALL EXISTING UTILITY STRUCTURES TO REMAIN, UNLESS NOTED OTHERWISE. ADJUST RIM ELEVATIONS OF EXISTING UTILITY LIDS, BOX/VAULT COVERS, ETC. AS NECESSARY TO MATCH PROPOSED ELEVATIONS.
- PROTECT IN PLACE ALL EXISTING IMPROVEMENTS AND UTILITIES AND ALL OFFSITE FEATURES NOT EXPRESSLY NOTED FOR DEMOLITION OR IMPROVEMENT ON THIS PLAN.
- CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (USA) AT (800) 942-2444 AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, EXCAVATION, OR GRADING WORK.
- IF THE CONTRACTOR FAILS TO INVESTIGATE KNOWN AND UNKNOWN EXISTING SUBSURFACE IMPROVEMENTS PRIOR TO ANY CONSTRUCTION ACTIVITIES AND UNFORESEEN CONDITIONS ARISE, ALL COSTS AND SCHEDULE IMPACTS SHALL BE BORNE BY THE CONTRACTOR.
- CONTRACTOR SHALL POTHOLE OR INVESTIGATE EXISTING IRRIGATION SYSTEM AS NEEDED BEFORE DIGGING.
- EXISTING GRADES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR TO MATCH EXISTING GRADES AT LIMITS OF GRADING AND NOTIFY PROJECT ENGINEER OF ANY MAJOR DISCREPANCIES.
- CONTRACTOR SHALL SALVAGE ANY EXISTING ADA PARKING STALL SIGNAGE TO BE REMOVED AT DIRECTION OF THE OWNER.
- CONTRACTOR SHALL UTILIZE CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP'S) PER THE CASQA BMP HANDBOOK WHILE PERFORMING THE WORK, INCLUDING BUT NOT LIMITED TO PREVENTION AND/OR ALLEVIATION OF ANY DUST NUISANCE AND PREVENTING ANY DUST OR DEBRIS FROM BEING SPILLED OR TRACKED ONTO ADJACENT PUBLIC STREET AREAS.
- CONTRACTOR SHALL INSTALL FILTER FABRIC AND SAND BAGS AS NECESSARY TO PROTECT THE NEAREST DOWNSTREAM FIELD INLET(S) AND BIORETENTION AREA AGAINST THE INTRUSION OF CONSTRUCTION-RELATED MATERIALS, INCLUDING MUD.
- CONTRACTOR SHALL PERFORM PAVEMENT SWEEPING AS NECESSARY TO REMOVE GRAVEL AND MUD FROM PAVEMENT AREAS.
- REFER TO LAYOUT AND GRADING PLAN FOR PROPOSED IMPROVEMENTS AND ELEVATIONS.
- SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL STRIPING REMOVAL OUTSIDE OF LIMIT OF WORK.
- CONTRACTOR TO PICK UP PERMIT/JOB CARD AND PERMIT DRAWINGS FROM THE CITY BUILDING DEPARTMENT AND PAY FOR ANY REQUIRED PERMIT FEE AND/OR PERMIT RENEWAL FEE AS NEEDED.
- PROPERTY LINES SHOWN HEREON IS DIAGRAMMATIC AND WAS PROVIDED BY ELS ARCHITECTURE ON 01/31/2023.

KEYNOTES

- 1 PROTECT IN PLACE
- 2 DEMOLISH
- 3 ADJUST TO PROPOSED GRADE
- 4 REMOVE AND SALVAGE FOR RE-USE, NOTIFY OWNER IF UNABLE TO SALVAGE

1 PARTIAL SITE PLAN
SCALE: 1" = 5'

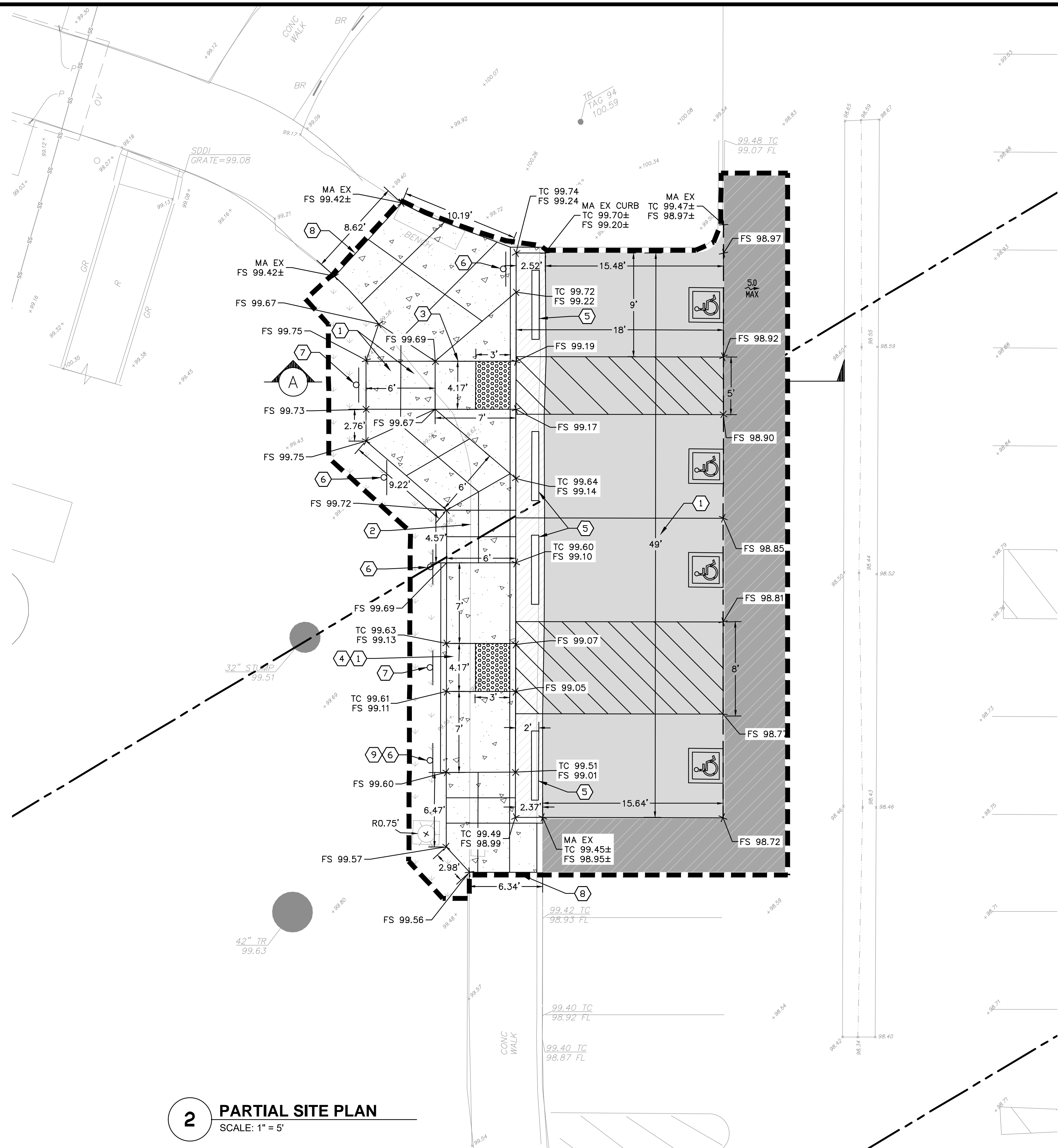


DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
	1	3/8/2023	A.Z.	PLAN CHECK RESPONSE
	2	10/12/2023		ADDENDUM 2
CHECKED BY			M.S.	
DESIGNED BY			A.Z.	
DRAWN BY			K.F.	

C100		PROJECT NO. 1004984	
EXISTING CONDITIONS AND DEMOLITION		SCALE: HOR. VERT. DATE:	SHEET NO. 11 OF 47





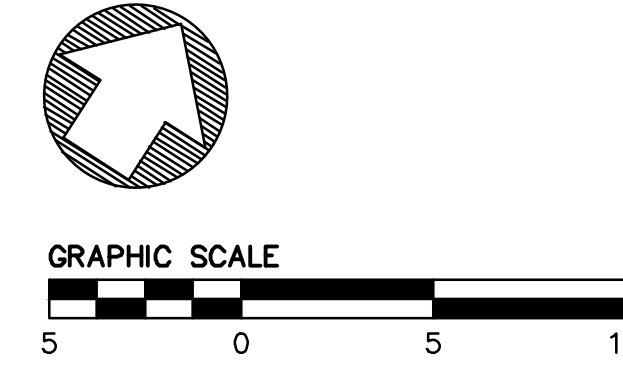
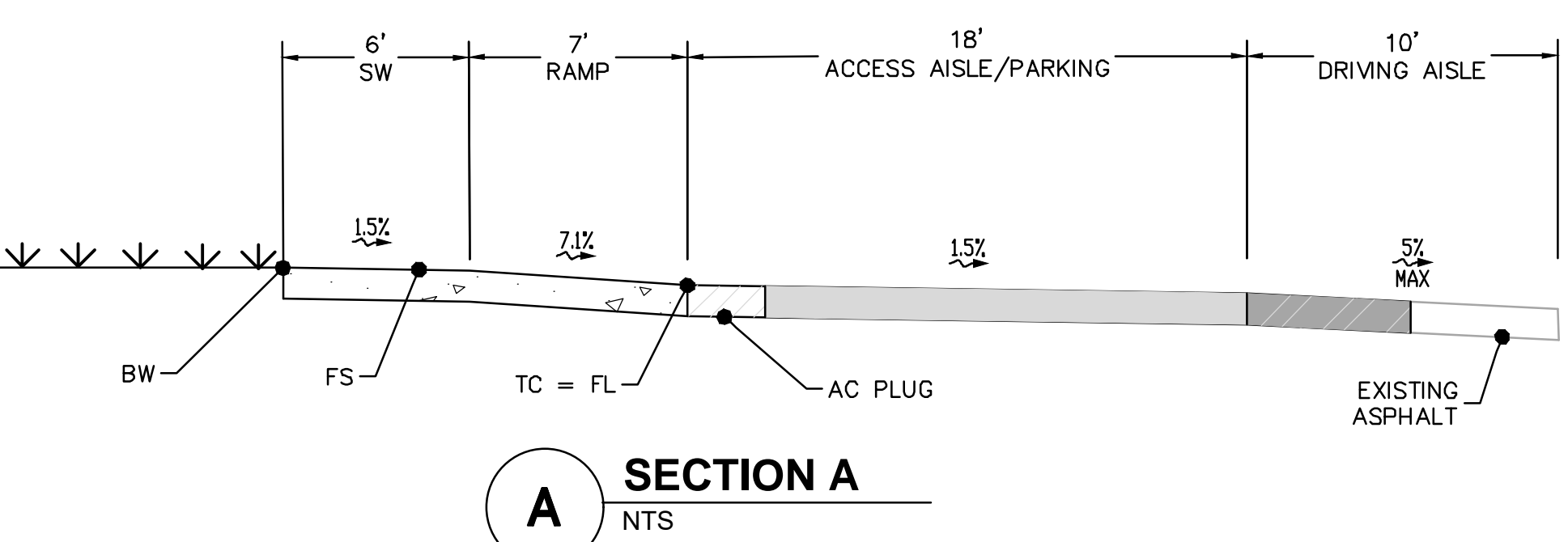
LEGEND

ABBREVIATIONS

NOTES

KEYNOTES

GRASS SEED NOTES



2 PARTIAL SITE PLAN
SCALE: 1" = 5'

CITY OF OAKLAND
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANKLIN SQUARE PLAZA, SUITE 4114 • OAKLAND, CA 94612
(510) 238-3437 • FAX (510) 238-7227

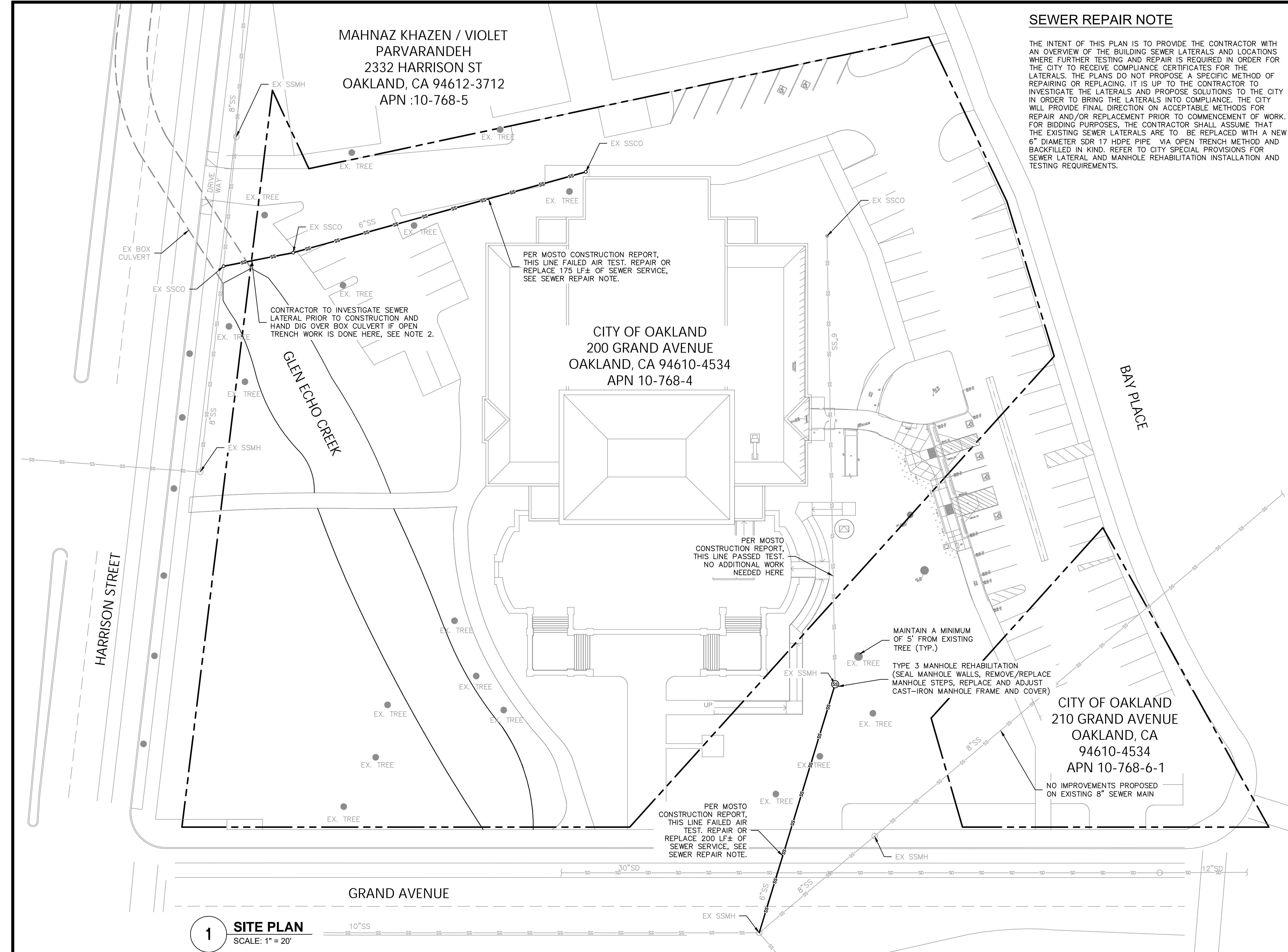
DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
	1	3/8/2023	A.Z.	PLAN CHECK RESPONSE
CHECKED BY	M.S.	2	10/12/2023	ADDENDUM 2
DESIGNED BY	A.Z.			
DRAWN BY	K.F.			

C200
LAYOUT AND GRADING

PROJECT NO.
1004984

SCALE: HOR. VERT. DATE:	SHEET NO. 12 OF 47
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SEWER REPAIR NOTE

THE INTENT OF THIS PLAN IS TO PROVIDE THE CONTRACTOR WITH AN OVERVIEW OF THE BUILDING SEWER LATERALS AND LOCATIONS WHERE FURTHER TESTING AND REPAIR IS REQUIRED IN ORDER FOR THE CITY TO RECEIVE COMPLIANCE CERTIFICATES FOR THE LATERALS. THE PLANS DO NOT PROPOSE A SPECIFIC METHOD OF REPAIRING OR REPLACING. IT IS UP TO THE CONTRACTOR TO INVESTIGATE THE LATERALS AND PROPOSE SOLUTIONS TO THE CITY IN ORDER TO BRING THE LATERALS INTO COMPLIANCE. THE CITY WILL PROVIDE FINAL DIRECTION ON ACCEPTABLE METHODS FOR REPAIR AND/OR REPLACEMENT PRIOR TO COMMENCEMENT OF WORK. FOR BIDDING PURPOSES, THE CONTRACTOR SHALL ASSUME THAT THE EXISTING SEWER LATERALS ARE TO BE REPLACED WITH A NEW 6" DIAMETER SDR 17 HDPE PIPE VIA OPEN TRENCH METHOD AND BACKFILLED IN KIND. REFER TO CITY SPECIAL PROVISIONS FOR SEWER LATERAL AND MANHOLE REHABILITATION INSTALLATION AND TESTING REQUIREMENTS.

NOTES

- TOPOGRAPHY AND PROPERTY LINES SHOWN HEREON IS DIAGRAMMATIC AND WAS PROVIDED BY ELS ARCHITECTURE ON 01/31/2023. BACKGROUND INFORMATION WAS SUPPLEMENTED WITH GOOGLE IMAGES.
- EXISTING UTILITIES ARE DIAGRAMMATIC AND ARE BASED ON CITY RECORD DRAWINGS, PUBLICLY AVAILABLE INFORMATION, AND FIELD OBSERVATIONS. THE TYPES, LOCATIONS, SIZES, AND DEPTHS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THESE PLANS MAY VARY AND ADDITIONAL FACILITIES MAY EXIST. ALL PROPOSED CONNECTIONS TO EXISTING UTILITIES SHOULD BE VERIFIED PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES.
- REFER TO THE ON-CALL CITY FACILITIES SANITARY SEWER LATERALS TESTING AND CCTV REPORT CONDUCTED BY MOSTO CONSTRUCTION FOR TESTING RESULTS.
- SHEET SHEET C301 FOR TYPICAL UTILITY TRENCH, SEWER SERVICE CONNECTION AND SEWER CROSSING DETAILS.
- THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS FROM THE CITY FOR ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY INCLUDING EXCAVATION, OBSTRUCTION AND SEWER LATERAL PERMITS.
- THE CONTRACTOR SHALL SCHEDULE EBMUD PSL INSPECTION AND PROVIDE CORRECTIONS AS REQUIRED TO OBTAIN COMPLIANCE CERTIFICATION FROM EBMUD.

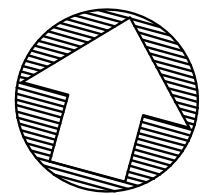
CREEK PROTECTION NOTES

- CONTRACTOR PERFORMING SEWER REHAB WORK WITHIN AND ADJACENT TO CREEK SHALL DO SO ONLY DURING THE NON-RAINY SEASON (I.E. APRIL 16 TO OCTOBER 15)
- DURING THE ENTIRE WORK PROCESS, CONTRACTOR SHALL COMPLY ALL THE RULES AND REGULATIONS SET BY DEPARTMENT OF FISH AND GAMES, CALIFORNIA REGIONAL QUALITY WATER CONTROL BOARD, ARMY CORP OF ENGINEERS AND CITY OF OAKLAND ENVIRONMENTAL SERVICES. CONTRACTOR SHALL ACCEPT ALL RESPONSIBILITY RESULTING FROM VIOLATION ISSUED BY ANY OF THE AGENCIES.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE STATE'S CLEAN WATER ACT AND SHALL SHOW EXTREME CAUTION WHEN WORKING IN THE CREEK AREAS.
- THE NATURE OF THIS PROJECT REQUIRES WORKING IN THE CREEK. FOR HIS OR HER SAFETY, THE CONTRACTOR SHALL AVOID WORKING IN THE STREAM WHILE THE FLOW IS RUNNING HIGH. THE CONTRACTOR SHALL SELECT A PERIOD OF TIME WHEN NO RAIN OR HIGH FLOW IS EXPECTED FOR SMOOTH AND CONTINUOUS OPERATION.
- TEMPORARY EROSION CONTROL DEVICES WHICH INTERFERE WITH THE WORK SHALL BE RELOCATED OR MODIFIED WHEN THE INSPECTOR SO DIRECTS AS THE WORK PROGRESSES.
- EXCEPT AS OTHERWISE DIRECTED BY THE INSPECTOR, ALL EROSION CONTROL DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY. ALL EROSION CONTROL FACILITIES MUST BE INSPECTED AND REPAIRED AT THE END OF EACH WORKING DAY.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE ASSOCIATION OF BAY AREA GOVERNMENTS (ABAG) "MANUAL OF STANDARDS FOR EROSION AND SEDIMENT CONTROL MEASURES" UNLESS OTHERWISE STATED WITHIN THESE GENERAL NOTES. CONTROL MEASURES ARE SUBJECT TO THE INSPECTION AND APPROVAL OF THE CITY INSPECTOR.
- ALL LOOSE SOIL AND DEBRIS SHALL BE REMOVED FROM THE STREET AND CREEK AREAS. UPON STARTING OPERATIONS AND PERIODICALLY THEREAFTER AS DIRECTED BY THE INSPECTOR, THE SITE SHALL BE MAINTAINED SO AS TO MINIMIZE SEDIMENT LADEN RUNOFF TO ANY STORM DRAIN SYSTEM.
- ANY MUD THAT IS TRACKED ONTO STREETS SHALL BE REMOVED THE SAME DAY.
- STAND-BY CREWS SHALL BE ALERTED BY THE PERMITTEE OR CONTRACTOR FOR EMERGENCY WORK DURING RAINSTORMS.
- AFTER OCTOBER 1, ALL EROSION CONTROL MEASURES WILL BE INSPECTED DAILY AND AFTER EACH STORM.
- BREACHES IN DIKES, SWALES AND/OR EROSION CONTROL MEASURES WILL BE REPAIRED AT THE CLOSE OF EACH DAY AND WHENEVER RAIN IS FORECAST.
- BORROW AREAS AND TEMPORARY STOCKPILES SHALL BE PROTECTED WITH APPROPRIATE EROSION CONTROL MEASURES TO THE SATISFACTION OF THE CITY RESIDENT ENGINEER AND/OR CITY FIELD INSPECTOR.
- SANDBAGS, SILT FENCES, STRAW WATTLES AND/OR STRAW BALES SHALL BE STOCKPILED ON SITE AND PLACED AT INTERVALS, WHEN THE RAIN FORECAST IS 50% OR GREATER, OR WHEN DIRECTED BY THE INSPECTOR.
- SANDBAGS REFERRED TO IN THE PRECEDING ITEMS MUST BE FULL. APPROVED SANDBAG FILL MATERIALS ARE DECOMPOSED GRANITE AND/OR GRAVEL, OR OTHER MATERIALS APPROVED BY THE INSPECTOR.
- ALL OPEN UTILITY TRENCHES SHALL BE BLOCKED AT THE PRESCRIBED INTERVALS FROM THE BOTTOM TO TOP WITH A DOUBLE ROW OF SANDBAGS PRIOR TO BACKFILL. SEWER TRENCHES SHALL BE BLOCKED AT THE PRESCRIBED INTERVALS WITH A DOUBLE ROW OF SANDBAGS EXTENDING DOWNWARD, TWO SANDBAGS FROM THE GRADED SURFACE OF THE STREET. SANDBAGS ARE TO BE PLACED WITH ALTERNATE HEADER AND STRETCHER COURSES. THE INTERVALS PRESCRIBED BETWEEN SANDBAG LOOKING SHALL DEPEND ON THE SLOPE OF THE GROUND SURFACE, BUT NOT EXCEED THE FOLLOWING:

GRADE OF THE STREET	INTERVAL
LESS THAN 2%	AS REQUIRED
2% TO 4%	100 FEET
4% TO 10%	50 FEET
OVER 10%	25 FEET
- AFTER SANITARY SEWER TRENCHES ARE BACKFILLED AND COMPACTED, THE SURFACES OVER SUCH TRENCHES SHALL BE MOUNDED SLIGHTLY (UNTIL PERMANENTLY STABILIZED) TO PREVENT CHANNELING OF WATER IN THE TRENCH AREA.
- MAINTAIN DEWATERING OPERATIONS TO ENSURE EROSION IS CONTROLLED, STABILITY OF EXCAVATIONS AND CONSTRUCTED SLOPES IS MAINTAINED, AND FLOODING AND DAMAGE TO STRUCTURES IS PREVENTED. ACCOMPLISH DEWATERING WITHOUT DAMAGING EXISTING CREEK BANKS AND IMPROVEMENTS ADJACENT TO EXCAVATION. SEE SPECIFICATIONS FOR ADDITIONAL DEWATERING INFORMATION AND SUBMITTAL REQUIREMENTS.
- A BYPASS SYSTEM AND SANITARY SEWER TRENCH ARE PROVIDED AS BMPS TO ENSURE EROSION IS CONTROLLED AT NO ADDITIONAL COST.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF 7-8.6 "WATER POLLUTION CONTROL".

1 SITE PLAN
SCALE: 1" = 20'

2



CITY OF OAKLAND
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANKLIN SQUARE PLAZA, SUITE 4314 • OAKLAND, CA 94612
(510) 238-3437 • FAX (510) 238-7227

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

CIVIL ENGINEER

CHECKED BY: M.S.
DESIGNED BY: A.Z.
DRAWN BY: K.F.

No.	DATE	BY	REFERENCE
1	3/8/2023	A.Z.	PLAN CHECK RESPONSE
2			

C210

SEWER REPAIR PLAN

PROJECT NO.
1004984

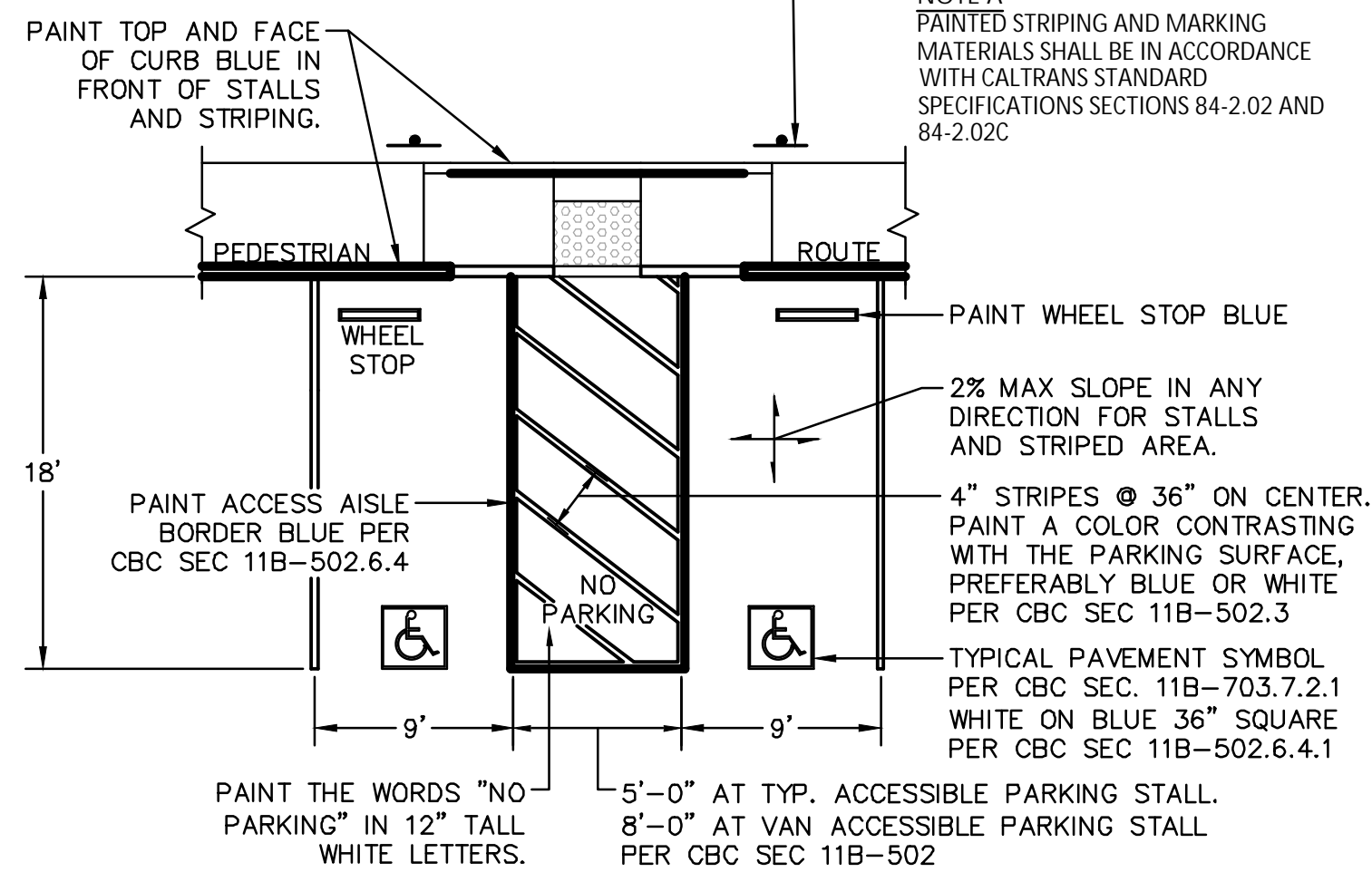
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HOR.
VERT.
DATE:

SHEET NO.
13 OF 47

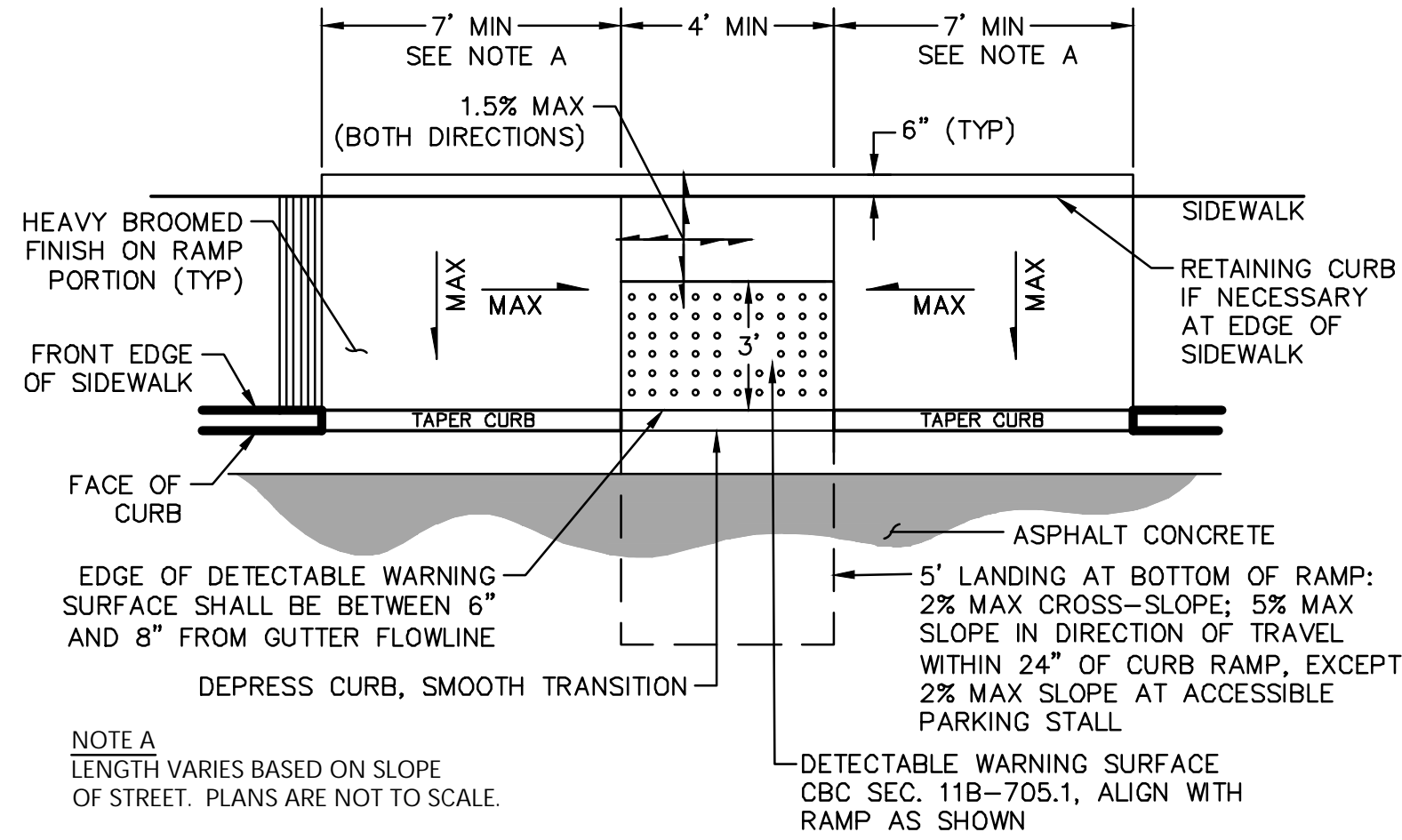


NOTES
INSTALL SIGN NO LESS THAN 17" WIDE BY 22" HIGH POSTED EITHER 1) IN A CONSPICUOUS PLACE AT EACH ENTRANCE TO AN OFF-STREET PARKING FACILITY OR 2) IMMEDIATELY ADJACENT TO ONSITE ACCESSIBLE PARKING AND VISIBLE FROM EACH PARKING SPACE WHICH READS "UNAUTHORIZED VEHICLES PARKED IN DESIGNATED ACCESSIBLE SPACES NOT DISPLAYING DISTINGUISHING PLACARDS OR SPECIAL LICENSE PLATES ISSUED FOR PERSONS WITH DISABILITIES WILL BE TOWED AWAY AT THE OWNERS EXPENSE. TOWED VEHICLES MAY BE RECLAIMED AT: _____ OR BY TELEPHONING _____" (BLANK SPACES SHALL BE FILLED IN WITH APPROPRIATE INFORMATION AS A PERMANENT PART OF THE SIGN.)

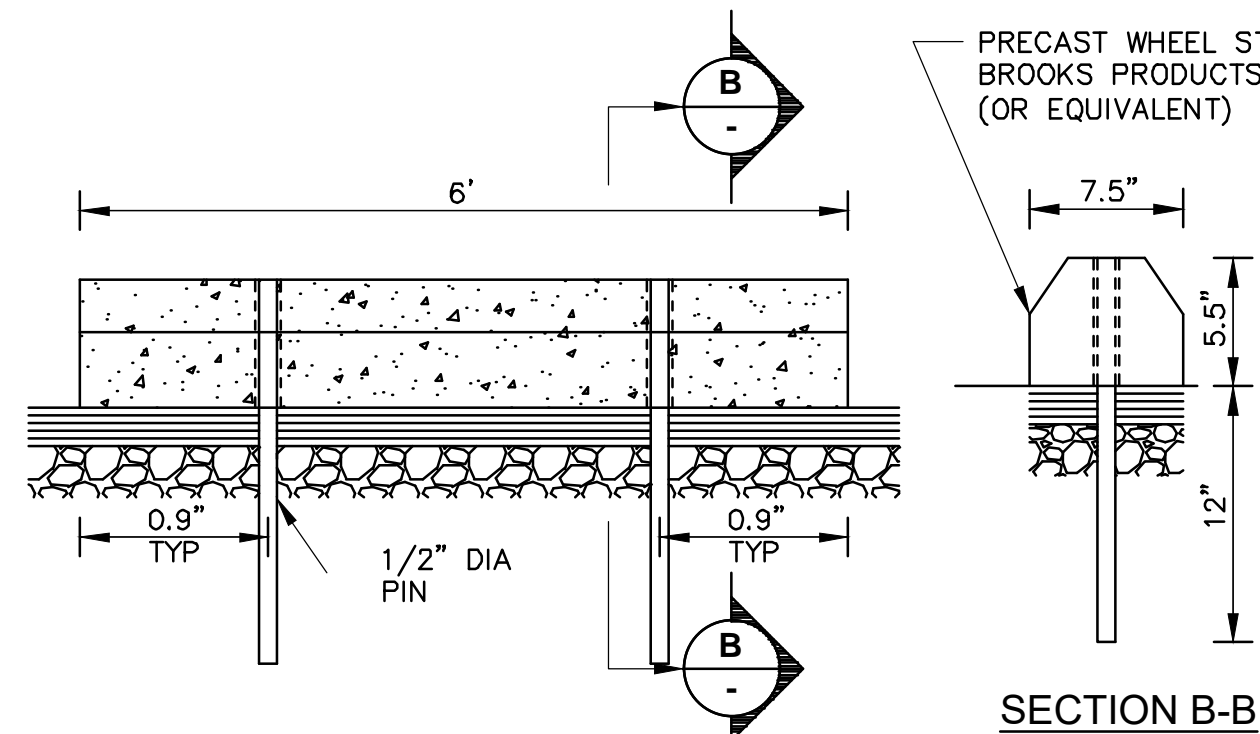
70 SQ. IN. DARK BLUE REFLECTIVE PORCELAIN, ENAMEL STEEL SIGN WITH WHITE INTERNATIONAL SYMBOL OF ACCESSIBILITY MOUNTED 80" OFF F.G. ON 1.5" Ø STEEL POST. PROVIDE AN ADDITIONAL SIGN OR ADDITIONAL LANGUAGE BELOW THE SYMBOL OF ACCESSIBILITY WHICH READS "MINIMUM FINE \$250." VAN SPACE SHALL HAVE AN ADDITIONAL "VAN ACCESSIBLE" SIGN MOUNTED BELOW THE SYMBOL OF ACCESSIBILITY PER CBC SEC. 11B-502.6.



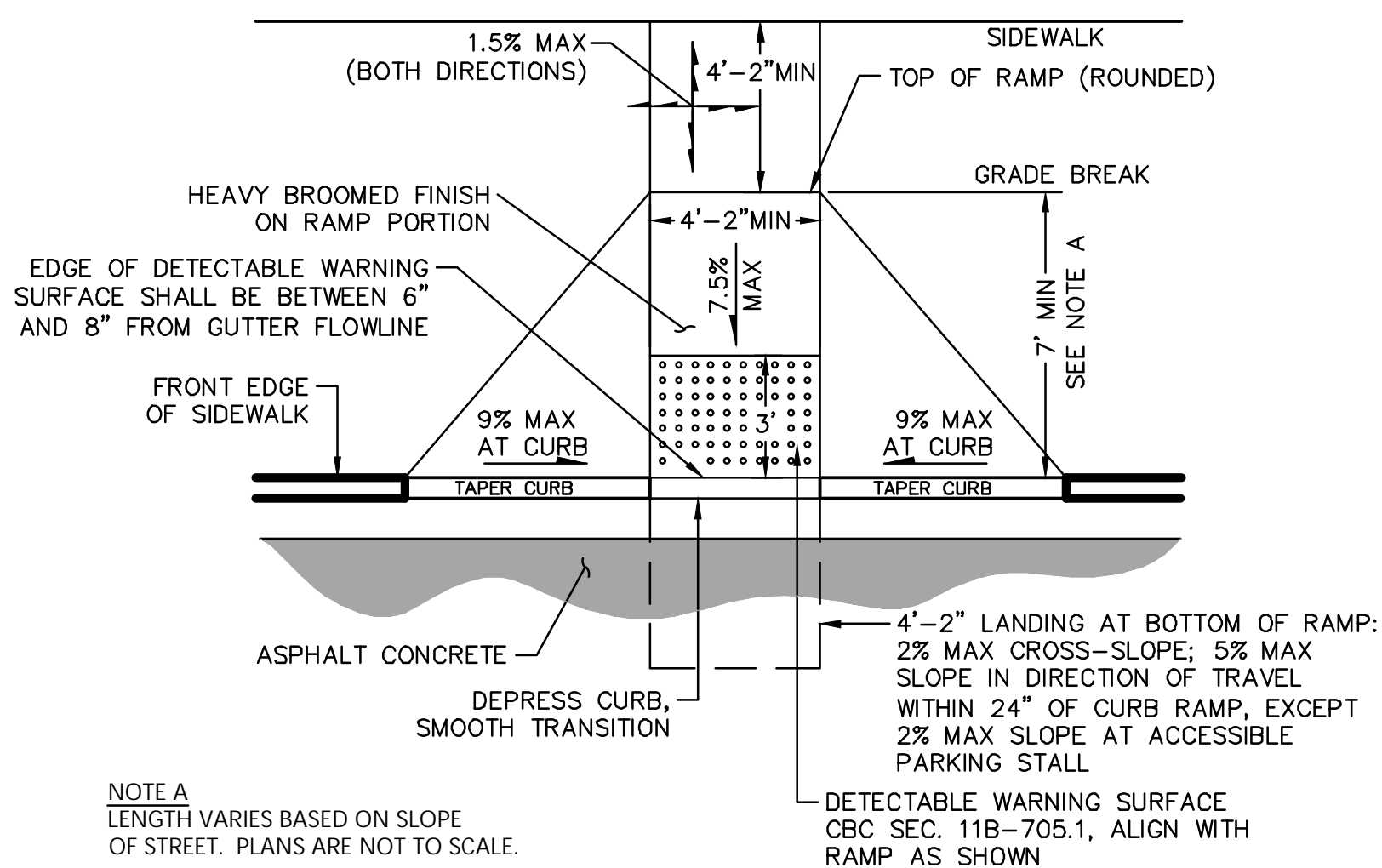
1 ACCESSIBLE PARKING STALL
NTS



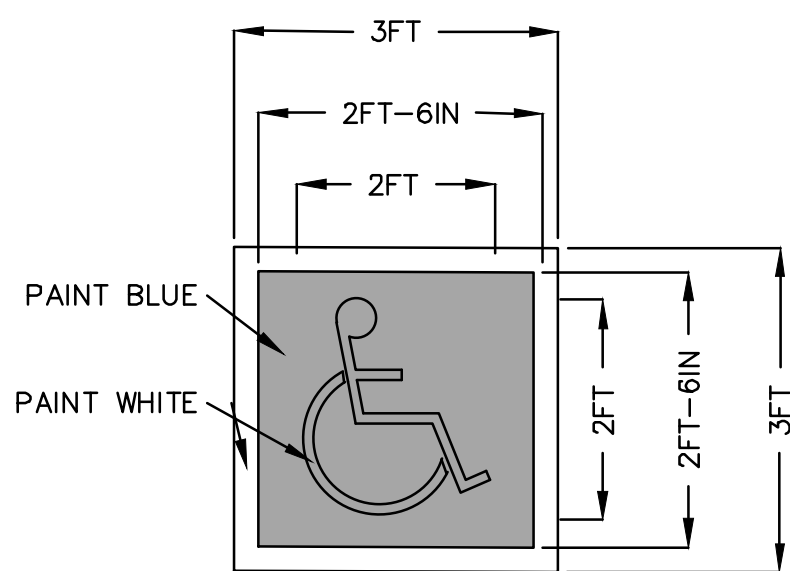
3 CASE "C" CURB RAMP
NTS



4 WHEEL STOP
NTS

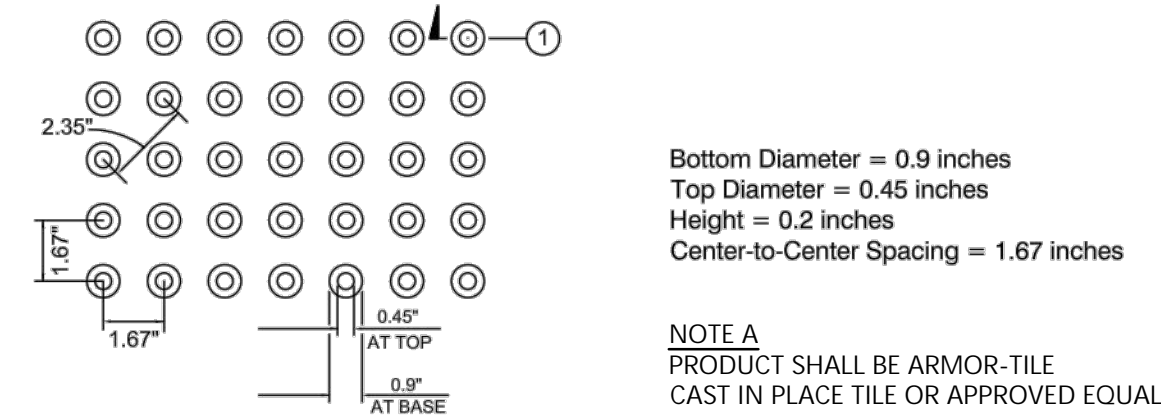


2 CASE "A" CURB RAMP
NTS

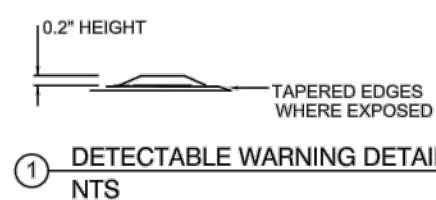


5 INTERNATIONAL SYMBOL OF ACCESSIBILITY STALL EMBLEM
NTS

1. Curb ramps shall have 4 ft min by 3 ft long detectable warning dome border placed square at the ramp bottom. The detectable warning dome border shall extend to the full dimension of the ramp width and shall exceed the 4 ft minimum width where required.
2. The detectable warning border dome shall be a vitrified polymer composite (VPC) and contrast visually with the adjoining surfaces. The color of the detectable warning domes shall be "Federal Yellow" or an approved equal.
3. Dome orientation shall conform to the latest ADA / Title 24 regulations.
4. The two lower corners of the detectable warning surface shall be less than or equal to 6" from the flowline of the gutter.
5. For new curb ramps, install VPC cast in place tiles with sound attenuation for the visually impaired. For retrofit ramps, install VPC surface mounted tiles with 1/4" x 1.5" stainless steel expansion anchors embedded into the existing concrete. Modular VPC tiles embedded into precast concrete are also acceptable for retrofit ramps. The retrofit ramps shall also have sound attenuating attributes. Submit shop drawings and product information to the Project Engineer for review and approval prior to installation.
6. Detectable warning dome tiles or strips made of materials other than VPC shall only be used with the written approval of the Director of Public Works.

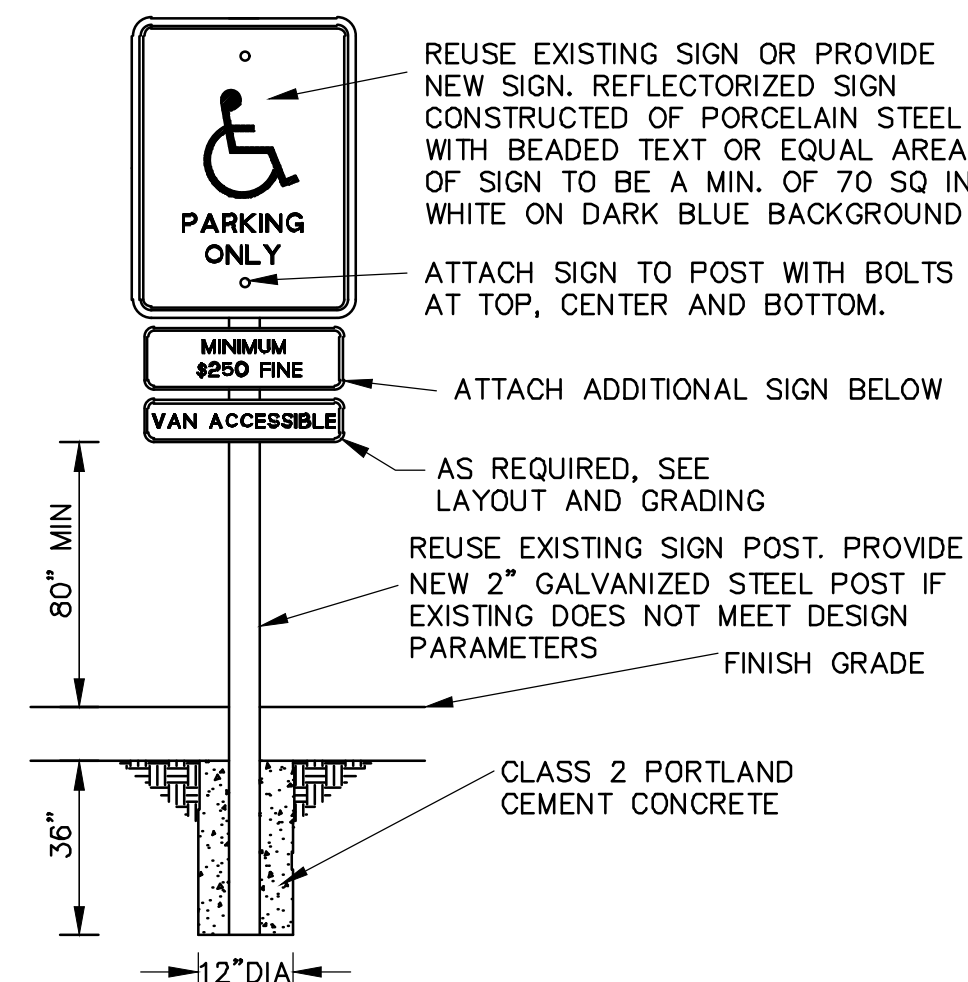


PLAN VIEW OF DETECTABLE WARNING DOMES
NTS

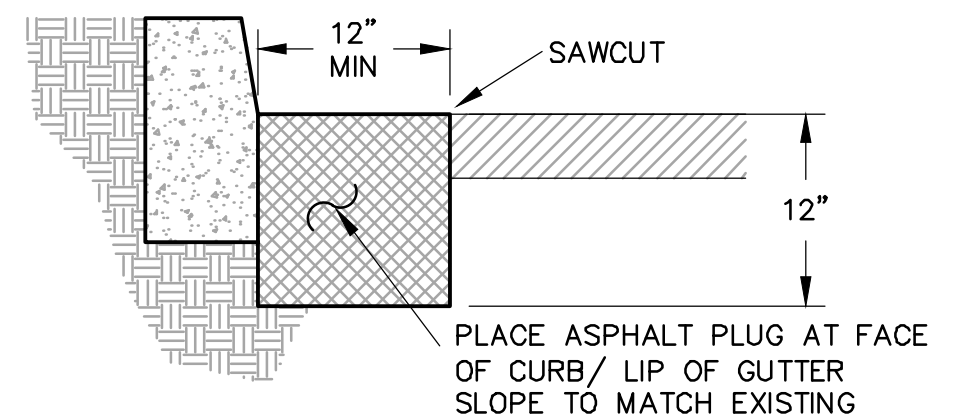


CITY OF OAKLAND	DESIGN AND CONSTRUCTION SERVICES
CURB RAMP DETAILS SHEET 5 OF 6 DETECTABLE WARNINGS	
ENGINEERING DESIGN MANAGER DATE: OCTOBER 2023 REV. DATE: MAY 2024	DWG. S-7

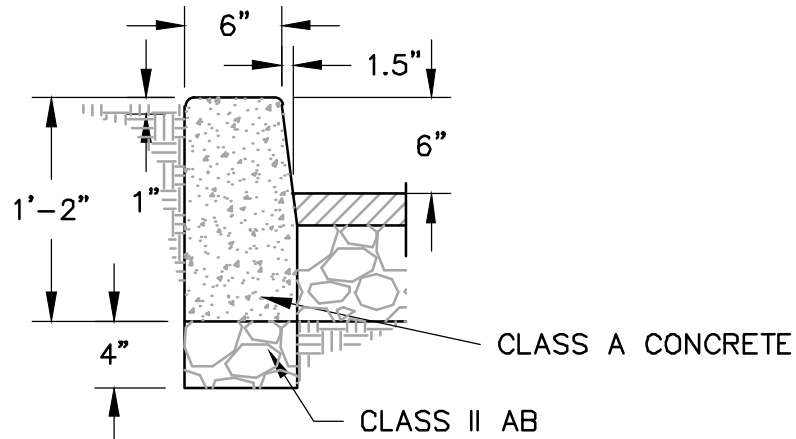
6 DETECTABLE WARNING SURFACE
NO SCALE



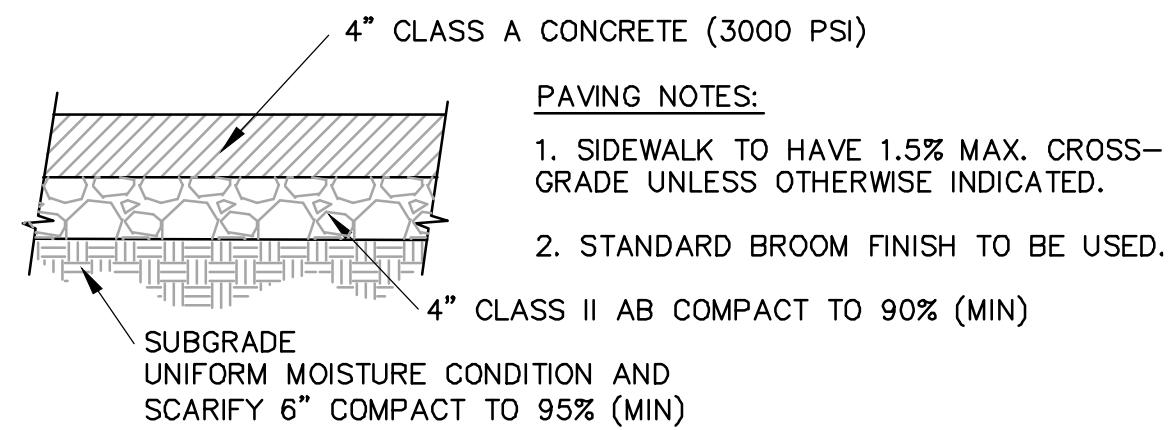
7 ACCESSIBLE PARKING SIGN
NTS



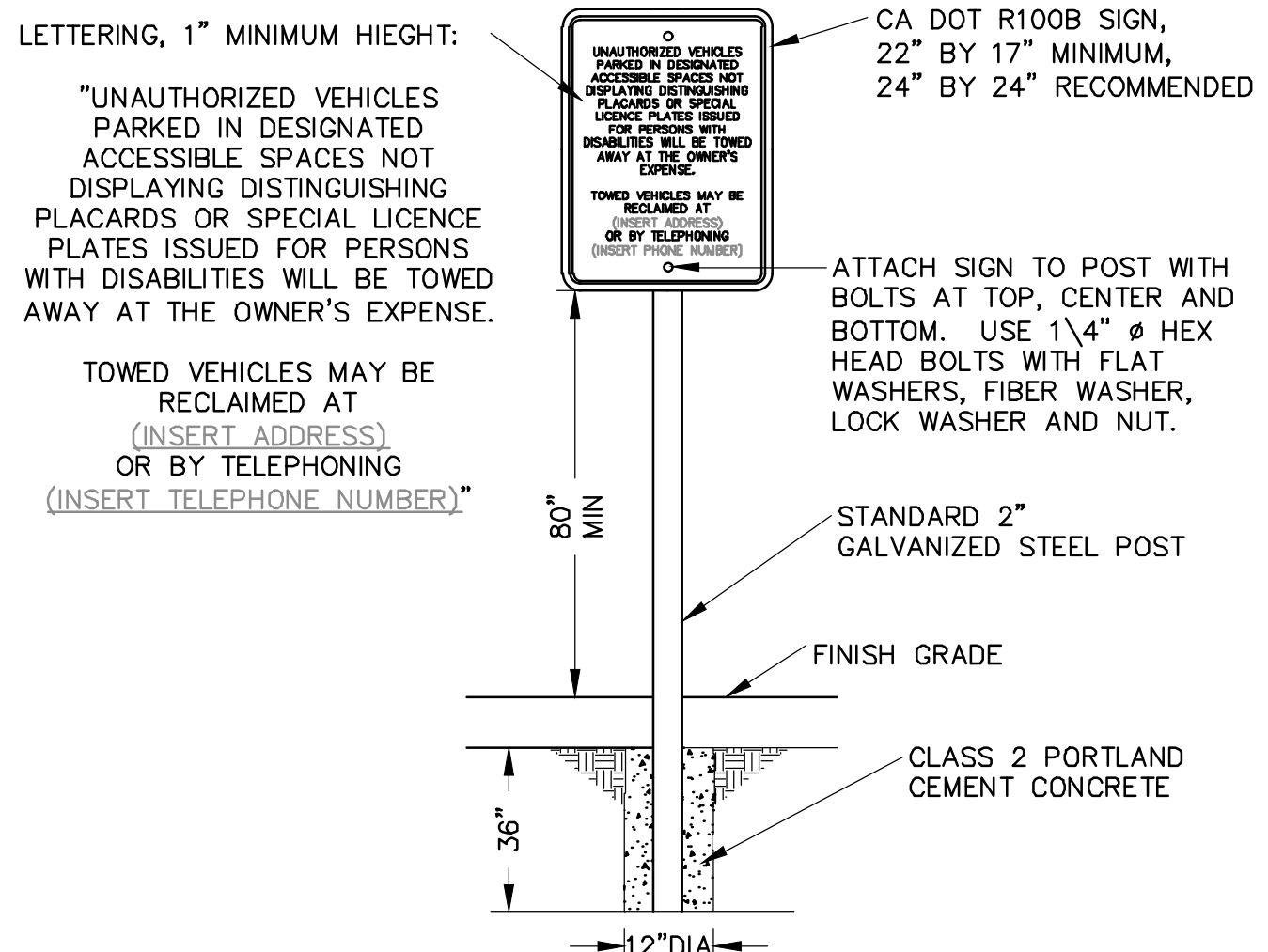
8 ASPHALT PLUG
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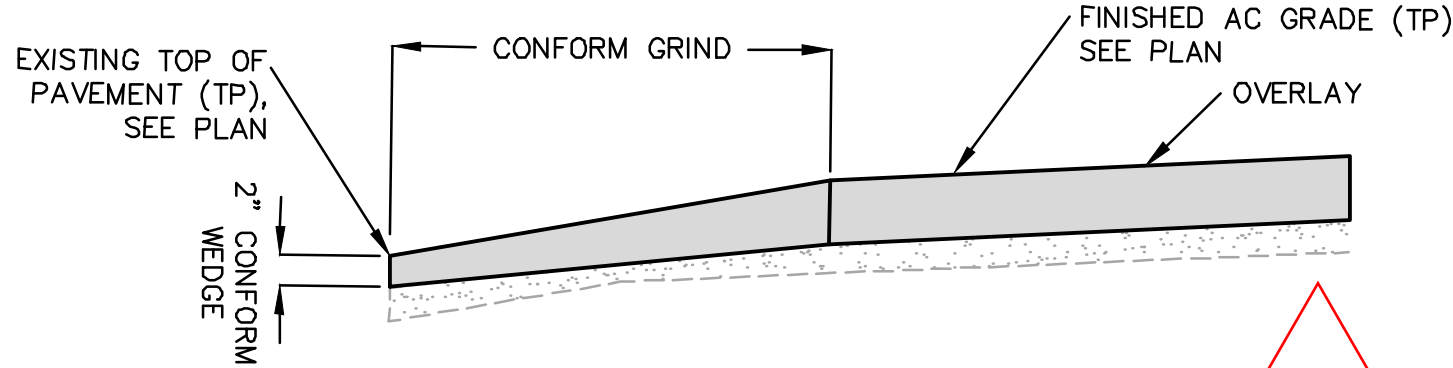
9 VERTICAL CURB
NTS



10 NEW CONCRETE SIDEWALK
NTS



11 ACCESSIBLE PARKING ENTRANCE SIGN
NTS



12 CONFORM GRIND
NTS



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DESIGN AND CONSTRUCTION SERVICES DEPARTMENT
250 FRANKLIN SQUARE PLAZA, SUITE 4314 • OAKLAND, CA 94612
(510) 238-3403 • FAX (510) 238-7227

DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS
CITY PROJECT NO. 1004984

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
	1	3/8/2023	A.Z.	PLAN CHECK RESPONSE
	2	10/12/2023		ADDENDUM 2
CHECKED BY	M.S.			
DESIGNED BY	A.Z.			
DRAWN BY	K.F.			

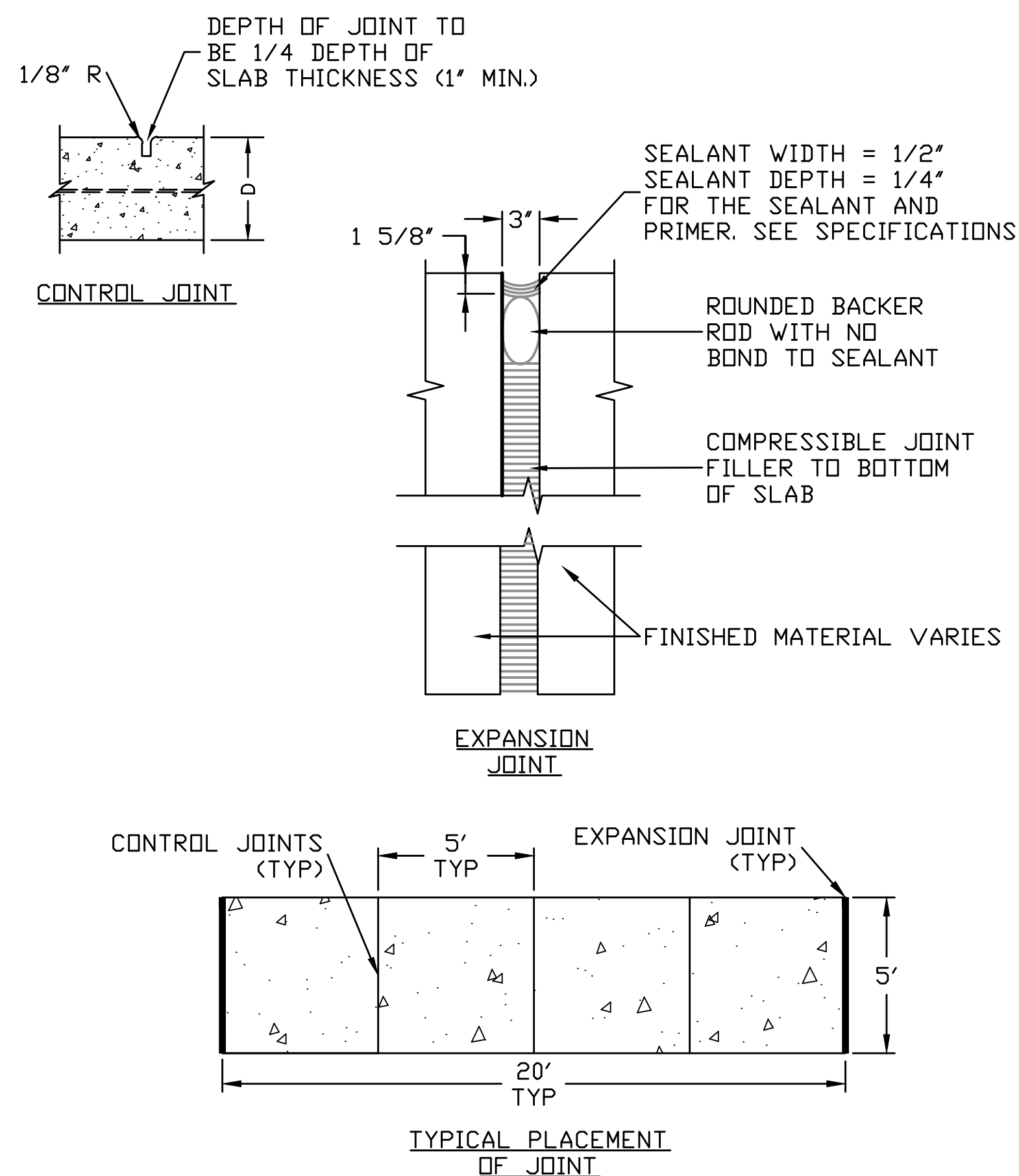
C300

**CONSTRUCTION
DETAILS**

PROJECT NO.
1004984

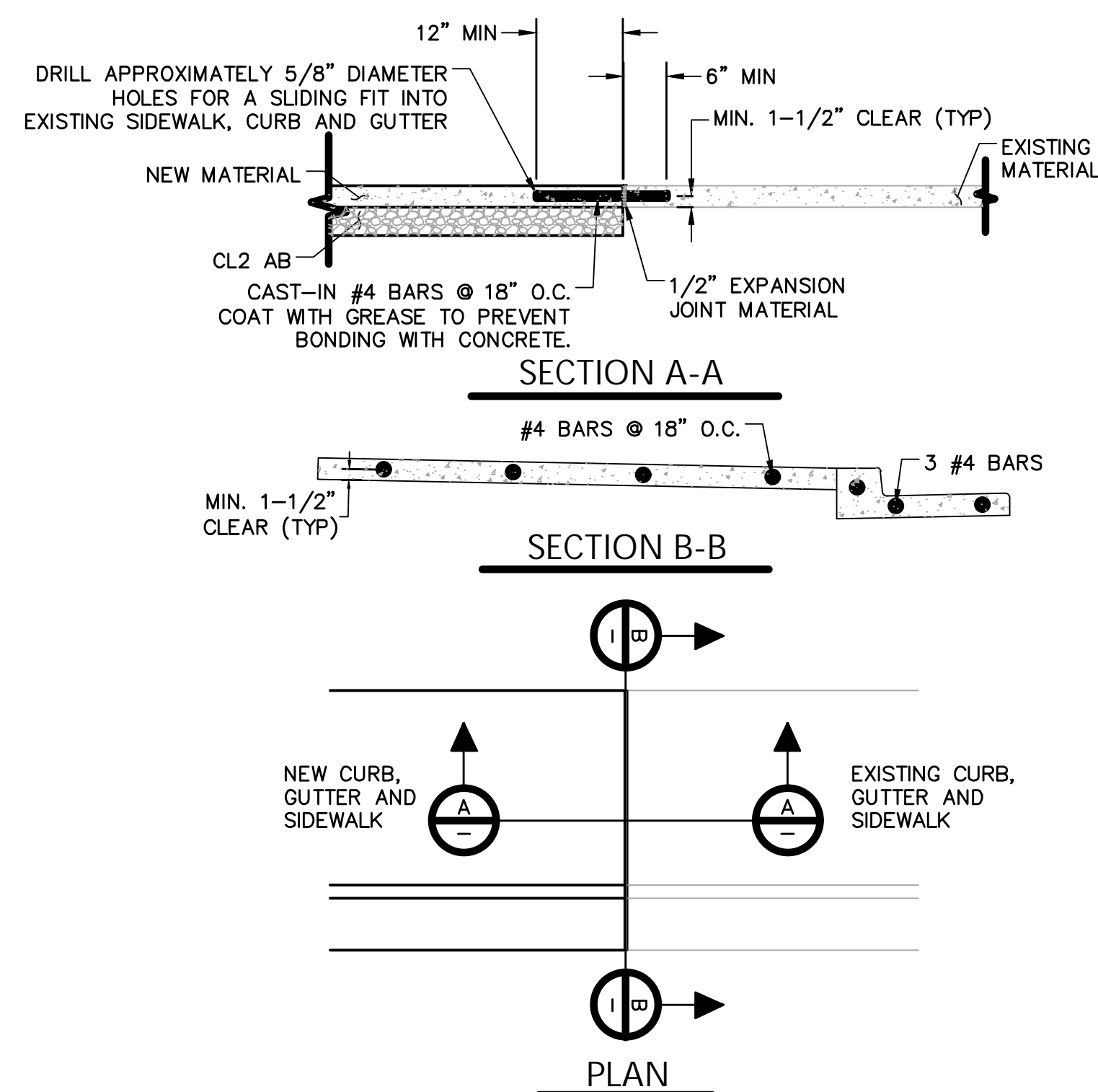
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VERT.
DATE:

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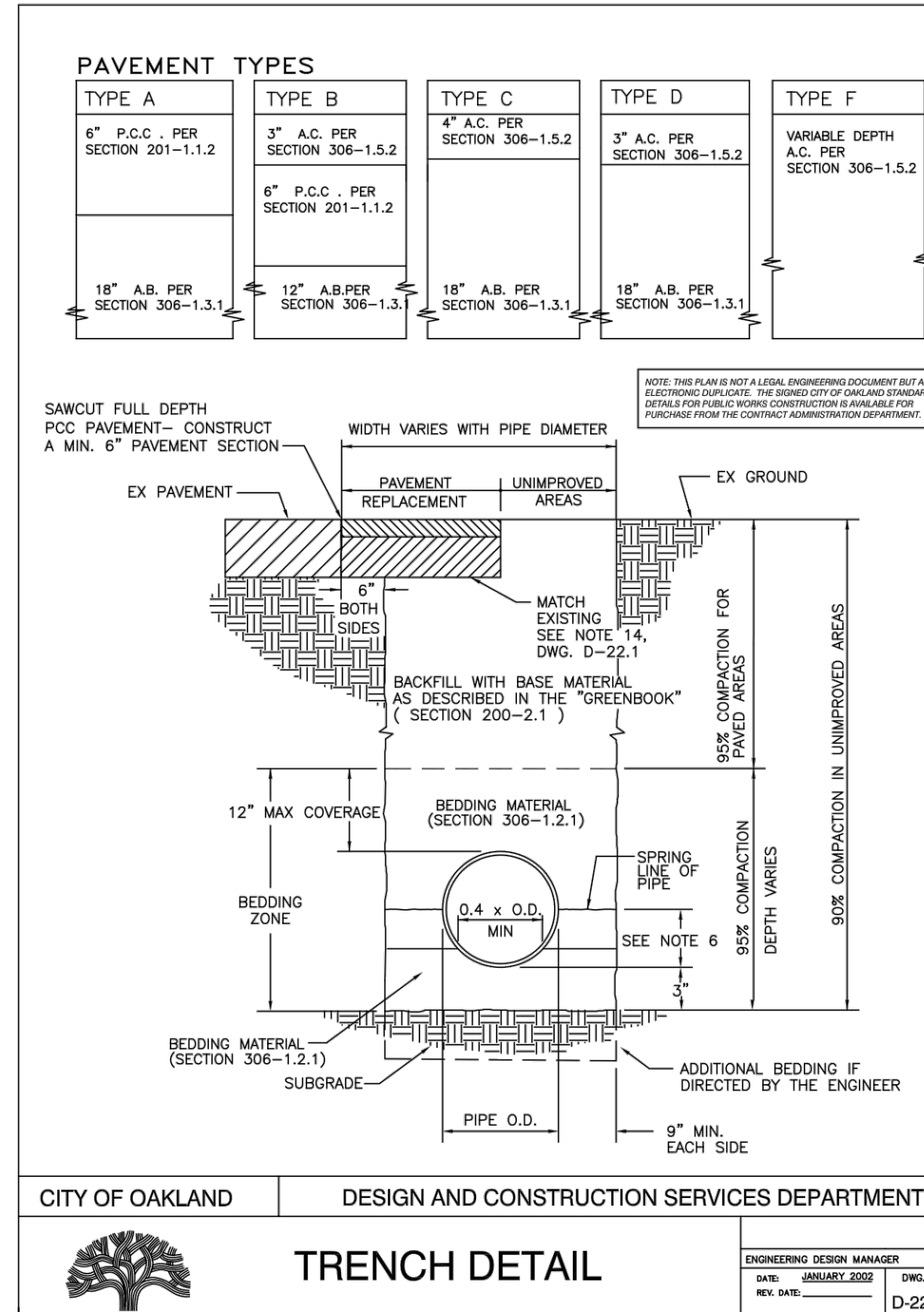
1 CONSTRUCTION JOINTS

NTS



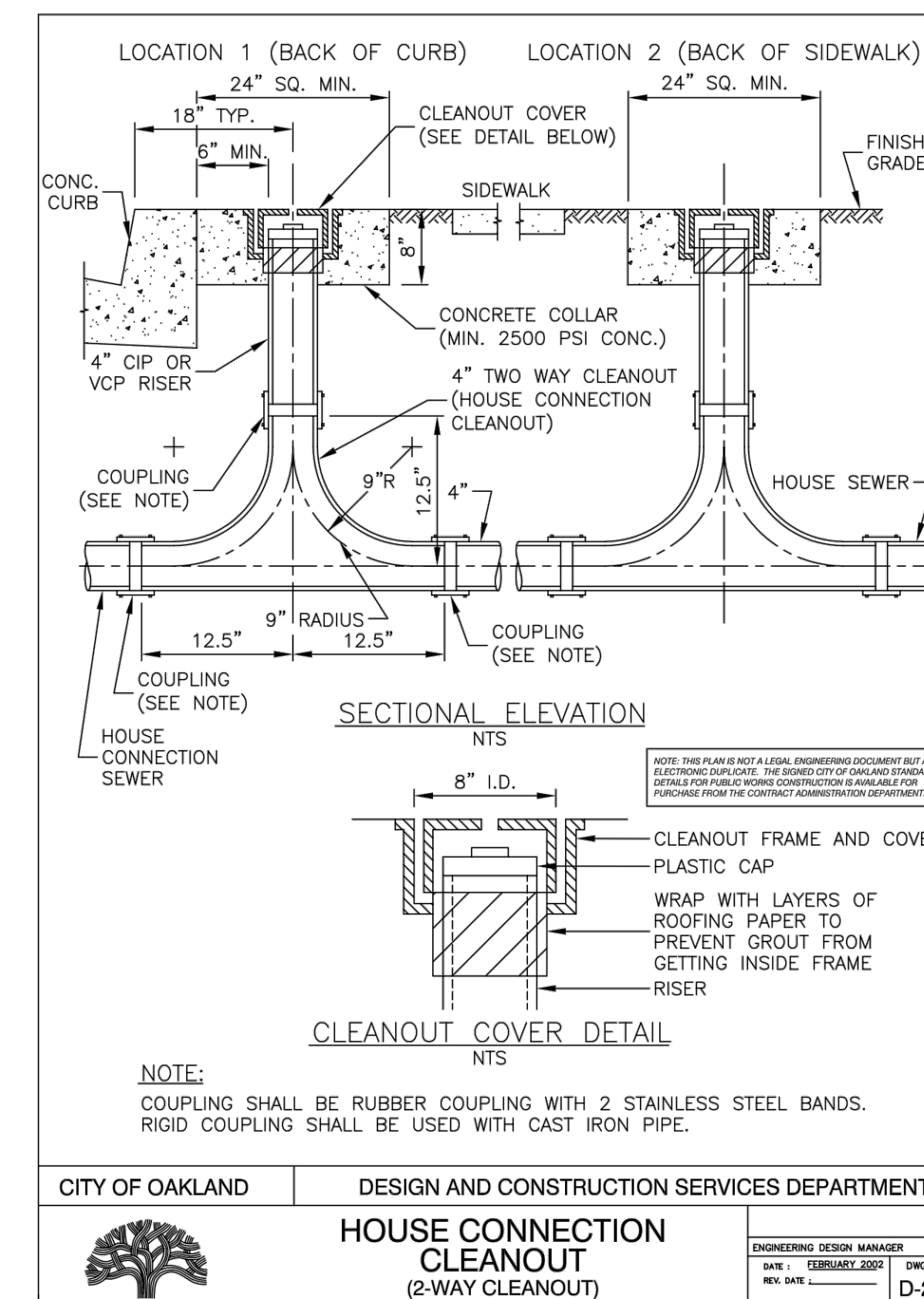
2 CONNECTION TO EXISTING SIDEWALK

NTS



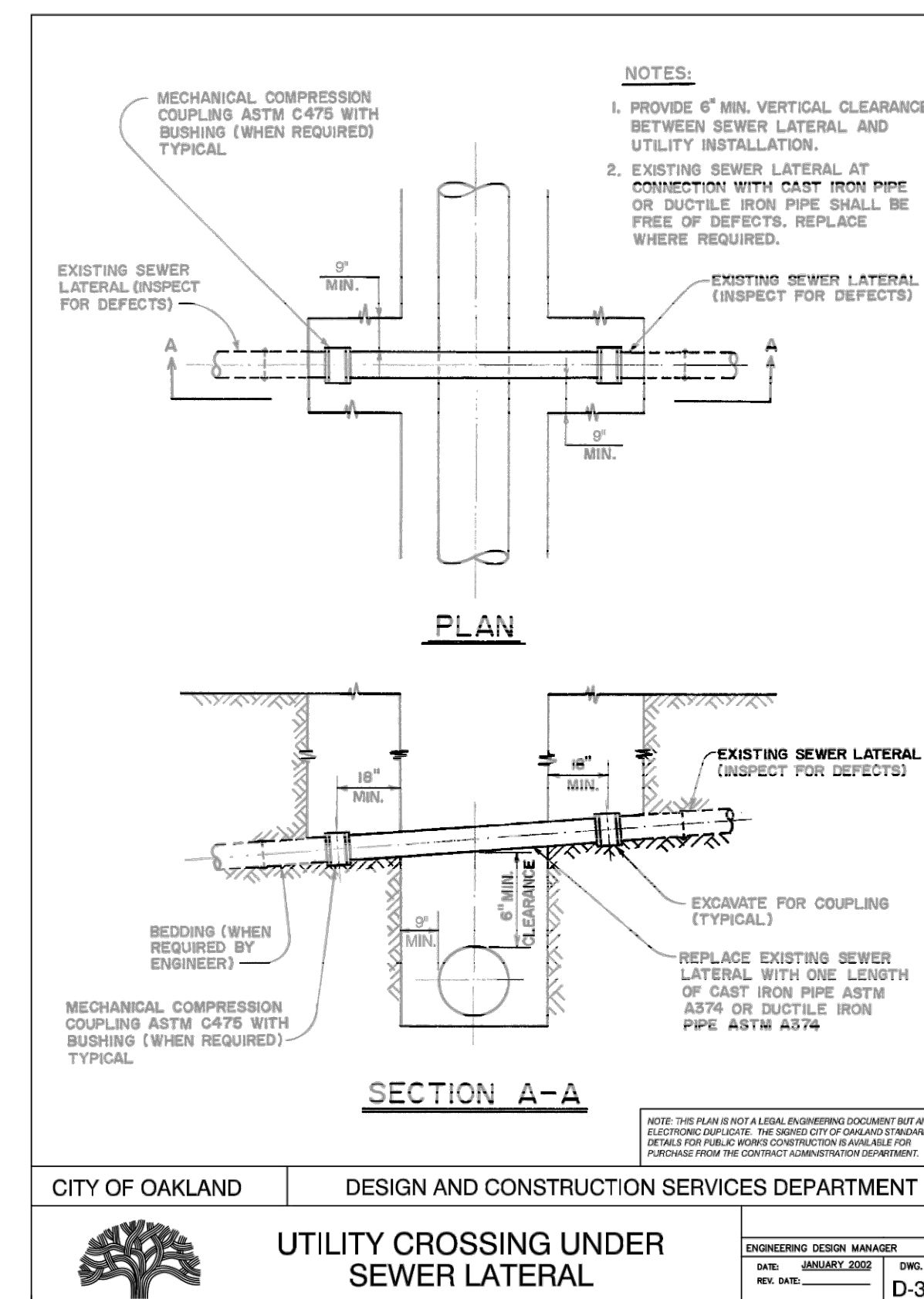
3 UTILITY TRENCH

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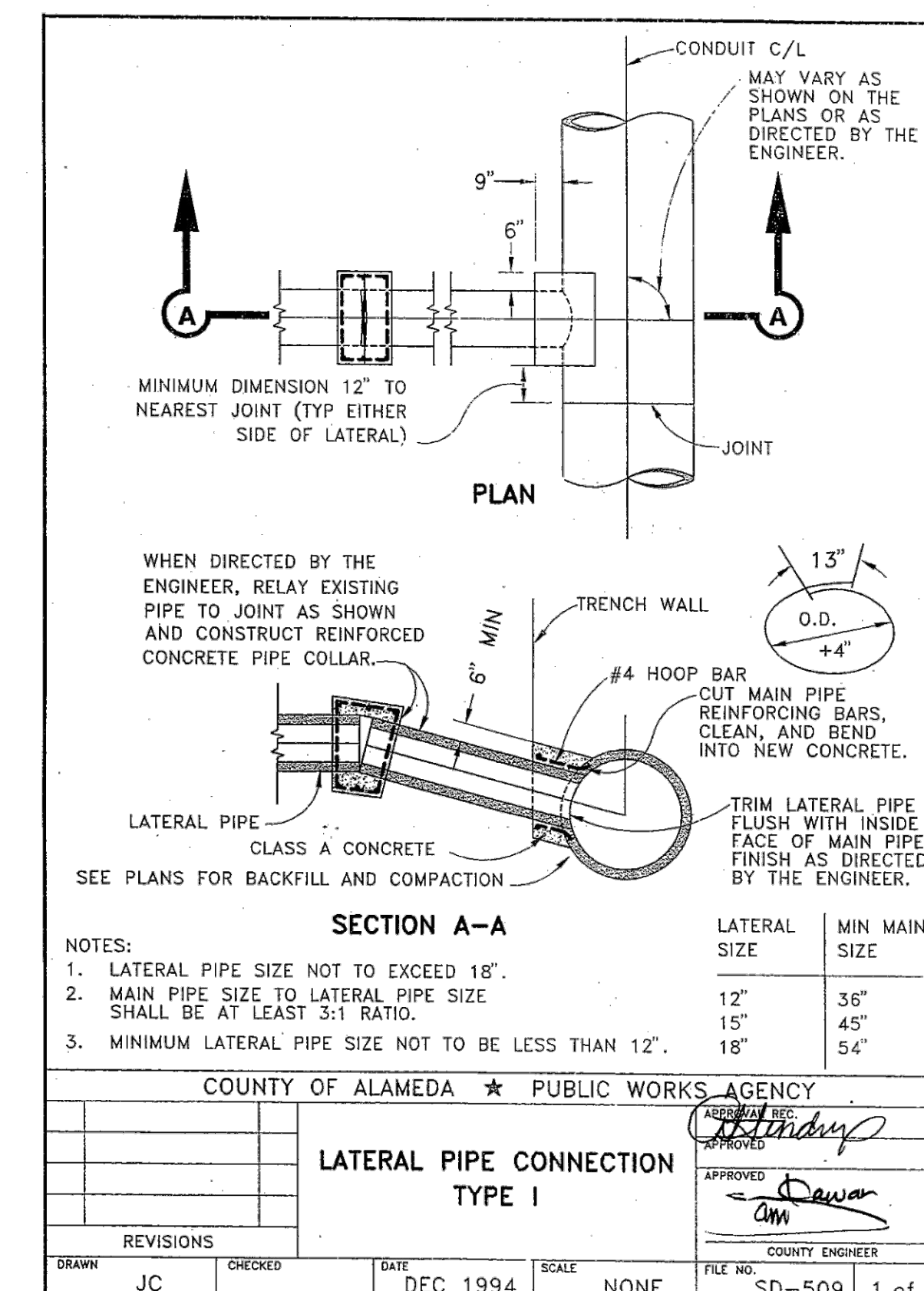
4 UTILITY CROSSING UNDER SS LATERAL

NTS



5 UTILITY CROSSING UNDER SS LATERAL

NTS



6 LATERAL WYE CONNECTION

NTS



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CITY PROJECT NO. 1004984

CIVIL ENGINEER	No.	DATE	BY	REFERENCE
CHECKED BY	1	3/8/2023	A.Z.	PLAN CHECK RESPONSE
	2	10/12/2023		ADDENDUM 2
DESIGNED BY				
DRAWN BY				

C301
CONSTRUCTION DETAILS

PROJECT NO.
1004984

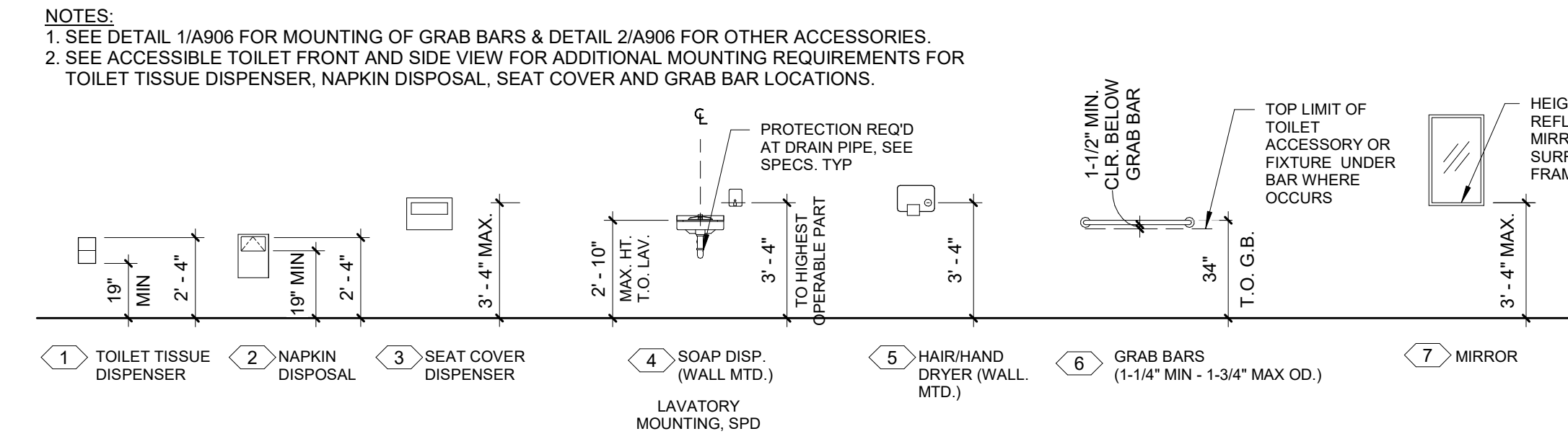
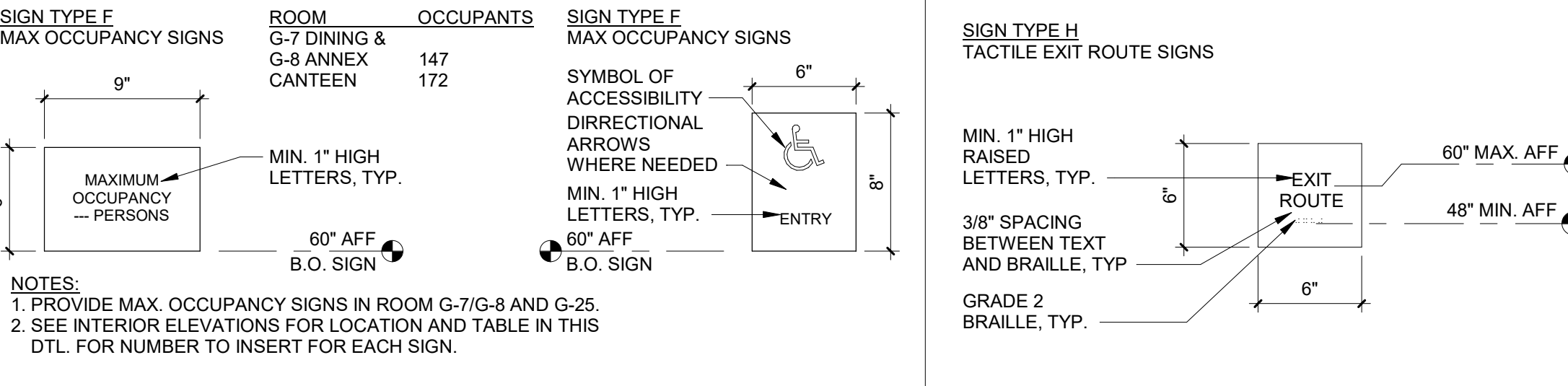
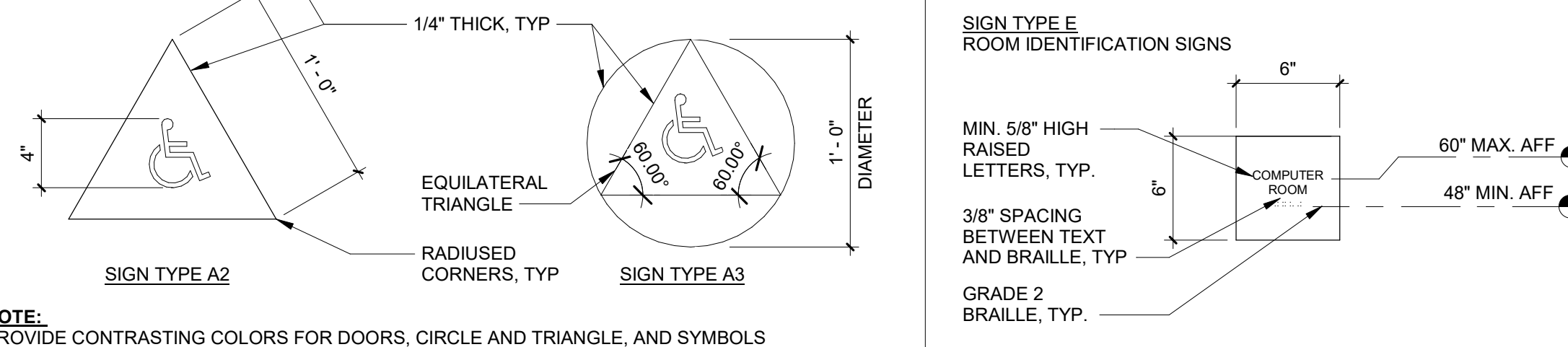
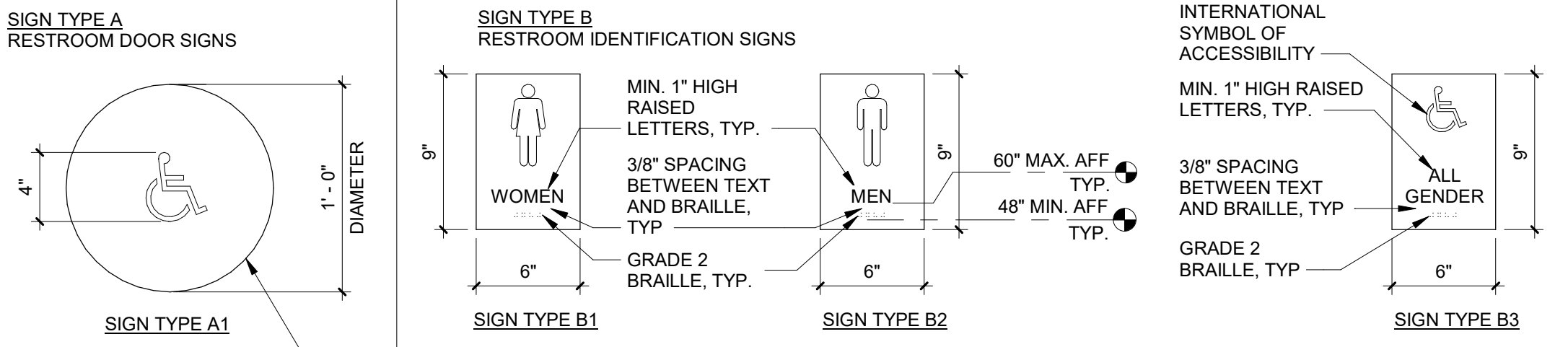
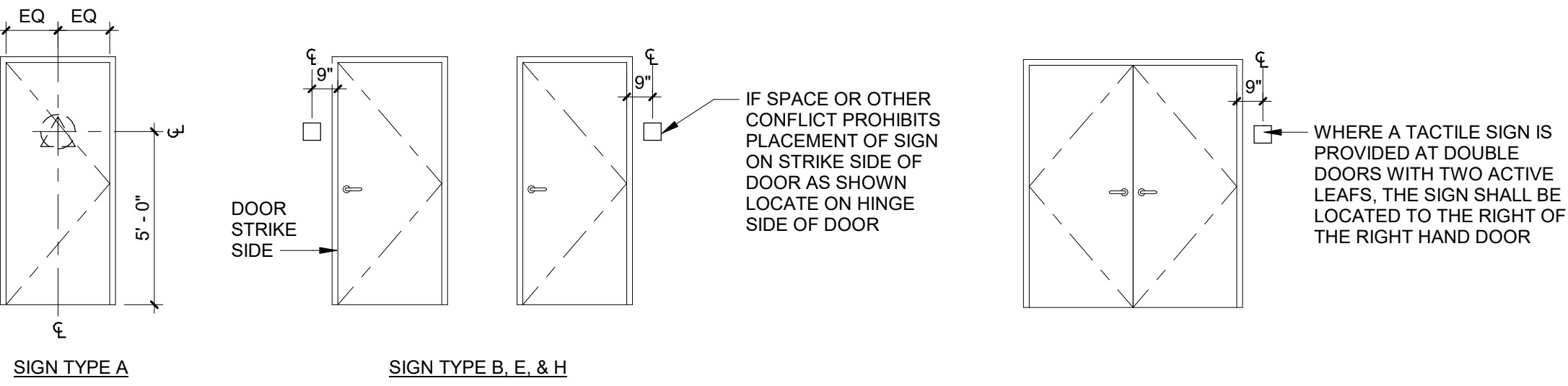
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HOR.
VERT.
DATE:

SHEET NO.
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SIGNAGE NOTES

1. SEE DOOR SCHEDULE. THIS SHEET FOR REQUIRED SIGNS. SEE FLOOR PLAN FOR EXIT AND EXIT ROUTE. SIGN QUANTITY AND GENERAL LOCATIONS. NOT ALL LETTERS ARE USED IN TYPES.
2. SEE DETAIL 4/A801 FOR SIGN DETAILS AND DETAIL 3/A801 FOR MOUNTING HEIGHT AND LOCATIONS.
3. MOCK-UP SHOWING SIZE, COLOR, TEXTURE, AND MATERIAL FOR EACH TYPE SHALL BE PROVIDED FOR REVIEW BY ARCHITECT PRIOR TO FABRICATION.
4. CONTRACTOR TO PROVIDE COLOR SAMPLES FOR ARCHITECT TO SELECT FINAL COLORS.
5. ROOM NUMBERS AND/OR NAMES ON ROOM IDENTIFICATION SIGNAGE SHALL BE CONFIRMED BY CITY REPRESENTATIVE PRIOR TO FABRICATION
6. FONT FOR SIGNS TO BE HELVETICA NEUE OR AN ACCEPTABLE SUBSTITUTE APPROVED BY THE ARCHITECT. ALL SIGN TEXT TO BE CAPITALIZED UON.



FINISH LEGEND

FLOORING			PAINTING AND COATING		
SYMBOL	COLOR	LOCATION	SYMBOL	COLOR	LOCATION
F1	RESILIENT PLANK: MANNINGTON CIRRO, SALTED OAK, DR6W8210, 4.5" x 36"		PT1	SW 6071 POPLAR GRAY	WALLS, TYP.
F2	LINOLEUM: MARMOLEUM 3254 CLAY		PT2	SW 6073 PERFECT GREIGE	WOOD TRIM: BASE, DOORS, WINDOWS, & FRAMES; OCCURS AT WALLS BETWEEN BASE AND CHAIR RAIL
F3	LINOLEUM: MARMOLEUM 3866 ETERNITY (GREY)		PT3	SW 7102 WHITE FLOUR	CEILING, EXPOSED BEAMS, & PIPING
F4	LINOLEUM: MARMOLEUM 3583 CHOCOLATE BLUES		PT4	SW 6191 CONTENTED	ACCENT WALL
F5	LINOLEUM: MARMOLEUM 3874 WALNUT		PT5	SW 7601 DOCKSIDE BLUE	ACCENT WALL
F6	PORCELAIN TILE TO MATCH (E); DALTILE KEYSTONES 2x2 UNGLAZED MOSAIC, THREE COLORS ALL UP TO AND INCLUDING GROUP 4, COLORS TO BE SELECTED BY ARCHITECT		PT6	SW 6031 GLAMOUR	ACCENT WALL, TYP.
F7	PORCELAIN TILE: DALTILE FABRIC ART MODERN TEXTILE MIDNIGHT BLUE MT55, 12x24		PT7	TBD	INSIDE FACE OF BAR AT CANTEEN
			PT11	TBD	EXTERIOR TRIM AT DOOR OPERATOR
			PT12	MIDSUMMER NIGHT 2134-20	EXTERIOR HANDRAILS

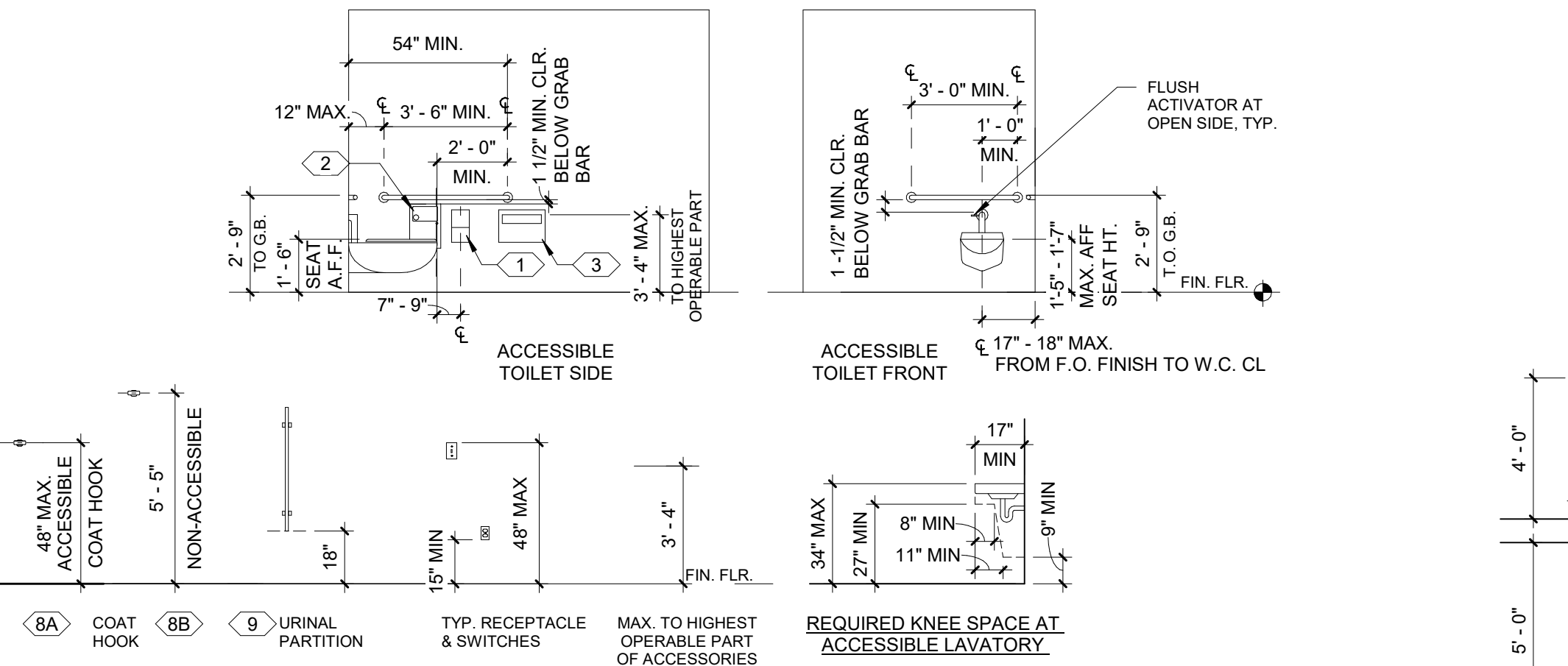
CEILING			WALL		
SYMBOL	COLOR	LOCATION	SYMBOL	COLOR	LOCATION
C1	PATCHED AND PTD. (E) PLASTER AND/OR GYP. BD.		W1	PATCHED AND PTD. PLASTER AND/OR GYP. BD.	
C2	SUSPENDED ACT CEILING TO MATCH (E); ARMSTRONG RANDOM TEXTURED 24" x 48" (OR CUT TO FIT)		W2	PTD. GYP. BD. FINISH	
C3	ADHERED ACT CEILING TO MATCH (E), ARMSTRONG CLASSIC ACOUSTICAL 12" x 12"		W3	CERAMIC TILE TO MATCH (E), DALTILE 4x4 GLAZED SEMI-GLOSS OR ACCENT, 4x4 COVE, TWO COLORS ALL UP TO AND INCLUDING GROUP 3, COLORS TO BE SELECTED BY ARCHITECT	
			W4	CERAMIC TILE: DALTILE LATTICE WEAVE MOSAIC 1x3 ON 12"x12" SHEET, NAVY K189, SEMI-GLOSS FINISH	
			W5	PORCELAIN TILE: INFUSION COLORBODY PORCELAIN TILE, 6X24 WHITE WENGE IF60	
			W6	PLASTIC LAMINATE, FIELD AT BAR AND CASEWORK AT BACK BAR, FORMICA EARTH 5342, MATTE (58) FINISH, GRADE 10	
			W7	PLASTIC LAMINATE, HORIZONTAL BAND AT BAR, FORMICA DECOMETAL, PLEX UMBRA M5307	
			W8	ALUM. MOULDING EDGE STRIP, 1/2" SMOOTH FACE	

FINISH NOTES

1. ALL INTERIOR WALLS, CEILINGS, DOOR FRAMES, EQUIPMENT AND OTHER EXPOSED VISIBLE SURFACES ARE TO BE PAINTED, U.O.N
2. PAINT COLORS:
- ALLOW FOR MINIMUM OF (4) COLORS PER SPACE, DOORS/ WINDOWS/FRAMES/TRIM, CEILINGS, WALLS, AND ACCENT WALLS TO BE DIFFERENT COLORS)
 - CONTRACTOR TO PROVIDE BRUSH-OUTS PER SPECIFICATIONS AND ALLOW FOR REVISED COLOR SELECTION
 - CONTRACTOR TO SCHEDULE SPECIFIED MOCKUPS TO ALLOW FOR REVISED COLOR SELECTION
 - MANUFACTURER AND COLOR PROVIDED IN SCHEDULE IS FOR COLOR MATCH PURPOSES ONLY. SEE SPECS. FOR MFR. AND TYPE REQUIREMENTS.
3. ROOMS THAT HAVE TWO PAINT PT. COLORS LISTED FOR WALLS, SECOND COLOR IS ACCENT. ALL OTHER WALLS IN ROOM TO BE FIRST PT. COLOR LISTED U.O.N. SEE REMARKS COLUMN FOR ACCENT WALL LOCATION.
3. PAINT SHEEN:
- FLAT: (E) PIPES AND OTHER COMPONENTS (DO NOT PAINT PREFINISHED DEVICES)
 - EGGSHELL (OR SATIN): ALL UNLESS OTHERWISE NOTED
 - SEMI-GLOSS: TRIM, DOOR TRIM, DOORS, WINDOW TRIM, WINDOWS, AND EXTERIOR HANDRAILS
4. DO NOT PAINT WINDOW TRACKS AT DOUBLE-HUNG WINDOWS.
5. RUBBER BASE TO BE 6-INCHES TALL, STANDARD TOE, UNLESS BEING CUT TO FIT AT CASEWORK OR NOTED OTHERWISE.

DOOR SCHEDULE NOTES

1. ALL EXISTING DOORS WITHIN PROJECT SCOPE AND ALL EXIT DOORS FROM GROUND FLOOR SHALL BE VERIFIED TO BE IN OPERABLE CONDITION.
2. ALL DOORS AND FRAMES WITHIN PROJECT SCOPE TO BE PAINTED. SEE SCHEDULE FOR PAINT. DO NOT PAINT GLASS LITES ON DOORS.
3. SEE SPECIFICATIONS FOR DOOR HARDWARE SCHEDULE.



FINISH SCHEDULE									
ROOM #	ROOM NAME	FLOOR	BASE	WALL	CEILING	REMARKS			
G-7	DINING	F1	B1	W1	C1 / C3				
G-8	ANNEX	F1	B1	W1	C1 / C3				
G-13	CRAFTS ROOM	F4	B1 / B8	W1	C1				
G-15	CLOSET	(E)	(E)	W1	C1	PREP AND PAINT WD. CASEWORK			
G-16	HEADSTART	F3	B6	W1	C2	TWO CLOSETS TO MATCH FINISH IN ROOM			
G-18	COMPUTER	F3	B1 / B2	W1 / W2	C1				
G-20	VEST	F5	B1	W1	C1	PREP AND PAINT WD. CASEWORK			
G-21	HALL #4	F3	B6	W1	C2				
G-22	VEST	F5	B1	W1	C1				
G-23	STAIR	F2 / F5	B1	(E)	C1	PREP AND PAINT WD. CASEWORK			
G-24	HALL #5	F3	B1	W1	C1	PREP AND PAINT WD. WAINSCOT			
G-25	CANTEEN	F1	B1	W1	C1 / C3				
G-27	BAR	F1	B5 / B6	W4	C1	BAR FRONT: W6 / W7 / W8 AT FACE AND B7 AT STEP			
G-28	VEST	F5	B1	W1	C1				
G-29	HALL	F2 / F5	B1	W1	C1				
G-30	VEST	F2 / F5	B1	W1	C1				
G-31	MENS	(E) / F7	(E) / B4	(E) / W3	C1				
G-32	WOMENS	(E) / F7	(E) / B4	(E) / W3	C1				
G-33	GENDER NEUTRAL	F8	B5	W2 / W5	C1				
G-34	VEST	(E) TILE	(E)	W1	C1				
G-35	RAMP	(E) TILE	(E) / B3	W1	C1				
G-36	VEST	(E) / F6	(E) / B3	W1 / W2	C1				
G-37	JAN CLO	(E) TILE	(E) / W1	C1					

DOOR SCHEDULE													
DOOR #	OPENING SIZE		DOOR				FRAME		HRDW GROUP	SIGN TYPE	SILL DTL	REMARKS	
	WIDTH	HEIGHT	TYPE	EXISTING OR NEW	MATL	FIN	EXISTING OR NEW	MATL					FIN
7A	5' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	(E) PANIC	E, H		
7B	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E, H	14/A905 4	
8A	4' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	13/A905 4	
8B	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	13/A905 4	
11	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	15/A905 4	
13A	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E		
15	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	14/A905	
16A	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	13/A905 4	
16B	2' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-			
16C	2' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-			
18A	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E		
19A	2' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	14/A905	
21A	3' - 0"	7' - 0"	B	NEW	SCWD	PAINT	EXISTING	HM	PAINT	1	E	9/A905 1	
21B	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	13/A905 4	
21C	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-			
22	5' - 6"	7' - 0"	-	N/A		PAINT	EXISTING		PAINT	-			
22A	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	15/A905 4	
23A	5' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	(E) PANIC	H		
23B	6' - 0"	7' - 0"	-	EXISTING		-	EXISTING		-	(E) PANIC			
24	2' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	4	E, H		
25A	5' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	(E) PANIC	H		
25B	5' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E, H		
27	2' - 7"	6' - 8"	-	EXISTING		PAINT	EXISTING		PAINT	4		13/A905 4	
28	7' - 6"	7' - 0"	-	N/A		PAINT	EXISTING		PAINT	-	E		
29	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-		15/A905 4	
29B	2' - 6"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	15/A905 4	
29D	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	15/A905 4	
30A	3' - 0"	7' - 0"	-	N/A		-	EXISTING		-		G		
30B	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	(E) PANIC		15/A905	
31	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	3	A2, B2		
32	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	3	A1, B1		
33	3' - 0"	7' - 0"	A	NEW	SOLWD	PAINT	NEW	HM	PAINT	2	A3, B3	16/A905 1	
37	3' - 0"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E		
39	2' - 7"	7' - 0"	-	EXISTING		PAINT	EXISTING		PAINT	-	E	14/A905 4	
40	6' - 0"	7' - 0"	-	EXISTING		-	EXISTING		-	(E) PANIC	G		

DOOR SCHEDULE REMARKS (SEE FINAL COLUMN IN DOOR SCHEDULE)

1. DOOR IS ACOUSTIC-RATED. SEE SILL DETAIL AND SPECIFICATIONS FOR SEALS AND HARDWARE REQUIRED.
2. SEE A701 FINISH FLOOR PLAN GROUND FOR ADDITIONAL THRESHOLDS. NOT ALL REQUIRED THRESHOLDS SHOWN IN SILL DTL. COLUMN ON THIS SCHEDULE.
3. EXPOSED SURFACES OF DOOR AND DOOR FRAME TO BE PAINTED ON THE SIDES FACING PROJECT WORK. FINISH ON EXPOSED SURFACES FACING ROOMS AND SPACES OUT OF SCOPE TO REMAIN AS IS.
4. EXPOSED SURFACES OF DOOR AND DOOR FRAME TO BE PAINTED ON THE SIDES FACING PROJECT WORK. FINISH ON EXPOSED SURFACES FACING ROOMS AND SPACES NOT TO BE PAINTED TO REMAIN AS IS.

ABBREVIATIONS

00 01 10

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Section 01 23 00	Alternates
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Section 01 26 00	Contract Modification Procedures
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SECTION 00 01 15 CERTIFICATIONS

Drawings and Specifications for the Architectural work of this Project have been prepared by or under the direction of the following registered Architect.

Gerald Navarro
ELS Architecture and Urban Design
2040 Addison Street
Berkeley, CA 94704

License Stamp with Signature



Specifications for the Structural work of this Project have been prepared by or under the direction of the following registered professional engineer.

Jeff Taner
Spectrum Structural Engineering, Inc.
516 16th Street
Oakland, CA 94612

License Stamp with Signature



Drawings and Specifications for the Civil work of this Project have been prepared by or under the direction of the following registered professional engineer.

Christopher C. Mills
BKF Engineers
1646 N. California Blvd, Suite 400
Walnut Creek, CA 94596

License Stamp with Signature



Drawings and Specifications for the Plumbing and Mechanical work of this Project have been prepared by or under the direction of the following registered professional engineer.

James Dyer
EdesignC, Inc.
212 9th Street, Suite 203
Oakland, CA 94607

License Stamp with Signature



Drawings and Specifications for the Electrical work of this Project have been prepared by or under the direction of the following registered professional engineer.

Rosanna Lerma
EdesignC, Inc.
212 9th Street, Suite 203
Oakland, CA 94607

License Stamp with Signature



SECTION 02 40 00**DEMOLITION****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Removing above-grade site improvements within limits indicated.
- B. Disposing, recycling, reusing, and/or salvaging of objectionable site material.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 RELATED SECTIONS

- A. Section 31 20 00 – Earth Moving

1.04 DEFINITIONS

- A. ANSI: American National Standards Institute.
- B. CAL-OSHA: California Occupational Safety and Health Administration.

1.05 PROJECT CONDITIONS

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose, recycle, reuse, and/or salvage the materials in a lawful manner. If possible, identify an organization within 1,000 miles that will purchase or accept the donation of construction waste for reuse. This organization must intend to reuse the waste as-is, or sell the material for the intent of re-use.
- B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner. Avoid damaging materials designated for salvage.
- C. Unidentified Materials: If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner. If necessary, the Owner will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 - PRODUCTS**2.01 SOIL MATERIALS**

- A. Backfill excavations resulting from demolition operations with approved on-site or import materials conforming to structural backfill defined in Section 31 20 00 Earth Moving.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Protect and maintain benchmarks and survey control points during construction.

- B. Protect existing site improvements to remain during construction.
- C. Clear the site of any existing pavements, vegetation, organic topsoil, debris, existing undocumented loose or soft fill, and other deleterious material within the proposed improvement areas.

3.02 RESTORATION

- A. Restore damaged improvements to their original condition, as acceptable to the Owner.

3.03 UTILITIES

- A. Existing Utilities: If encountered, do not interrupt utilities serving facilities occupied by Owner or others unless authorized in writing by the Owner, and then only after arranging to provide temporary utility services according to requirements indicated. Utility pipelines less than four inches in diameter to be abandoned may be left in place provided they will not be in close proximity to new foundation elements or interfere with new utilities. Said pipes should be plugged at the ends with concrete or sand-cement slurry. Larger utility pipelines or pipelines that underlie new foundations should be removed and replaced with engineered fill, or left in place and completely grouted with flowable sand-cement slurry or other approved Controlled Density Fill.
- B. Coordinate utility interruptions with utility company affected.
- C. Do not proceed with utility interruptions without the permission of the Owner and utility company affected. Notify Owner and utility company affected two working days prior to utility interruptions.
- D. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick.

3.04 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.
- C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
- D. Remove curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansion joint, score mark or edge, remove material to joint, mark or edge.

3.05 BACKFILL

- A. Place and compact material in excavations and depressions remaining after site clearing in conformance with Section 31 20 00 Earth Moving.

3.06 DISPOSING

- A. Remove surplus obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property. In addition to disposing

the materials, consider recycling or donating/selling the materials to a reuse organization within 1000 miles.

END OF SECTION

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SECTION 02 41 19.13

SELECTIVE BUILDING DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Selective demolition of building elements.
 - 1. Protect items in place as indicated on the Drawings.
 - 2. Demolish/remove items as indicated on the Drawings.
 - 3. Remove/salvage and remove/reinstall items as indicated on the Drawings.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ANSI - American National Standards Institute
 - 1. A10.6 - Safety Requirements for Demolition Operations.
- B. City of Oakland Municipal Code 15.34
- C. EPA - Environmental Protection Agency
- D. NFPA - National Fire Protection Association
 - 1. 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.03 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the City's property.
- B. Remove and Salvage: Items indicated to be removed and salvaged remain the City's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to the City's designated storage area.
- C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in locations indicated.
- D. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.
- E. Materials Ownership: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the City's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.04 SUBMITTALS

- A. Procedures: In accordance with Division 01.
- B. Qualification Data: For demolition firm if not provided by Contractor.

- C. Pre-demolition Photographs and Details: Show existing conditions in areas where interior demolition work will be performed, including finish surfaces, items to be salvaged, and items to be re-installed, that might be misconstrued as damage caused by demolition operations. Submit before work begins.
- D. Inventory of Salvaged Items: After demolition is complete, submit a list of items that have been removed and salvaged.
 - 1. Include at least one digital photograph of each item, numbered and clearly labeled to correspond with inventory.
 - 2. Provide written Table of Contents for inventory.
 - 3. Indicate original location(s) of each item or type of item.
 - 4. Indicate whether or not the item is to be re-installed. If it will be re-installed, indicate repair or restorative work required and location of re-installation.
- E. Demolition, Salvage, and Re-Installation Plan as specified.
- F. Receipts for recycled materials that include name of licensed recycling company, dollar value, and date.

1.05 DEMOLITION, SALVAGE, AND RE-INSTALLATION PLAN

- A. Submit a complete Demolition, Salvage, and Re-Installation Plan detailing procedures and sequence for the following:
 - 1. Removal of existing construction and facilities including all features necessary to remove portions of the existing building for new work in a safe and controlled manner to ensure stability, weathertightness, and security of the existing building at any given time.
 - 2. Removal, salvage, transportation, storage, and re-installation of items to be re-installed.
 - 3. Submit detailed information on methods and sequencing for accomplishing this work.
- B. Thoroughly investigate the condition of the existing structures before proceeding with the Demolition, Salvage, and Re-Installation Plan.
- C. The Demolition, Salvage, and Re-Installation Plan shall consist of the following:
 - 1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity. Marked-up drawings can be provided as part of the Plan.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Details and locations of temporary and exterior protective measures to ensure that people, property, and improvements to remain will not be endangered or damaged.
 - 5. Access routes for hauling debris and salvaged items from building.
 - 6. Coordinate schedule of activity for hazardous materials removal and other work contracted directly by the City.
- D. In the event that modifications to the Demolition, Salvage, and Re-Installation Plan are required to be submitted for approval, the Contractor shall provide 14 calendar days for the review of substantial procedural and sequence modifications.
- E. Review by the Architect and the City of the Demolition, Salvage, and Re-Installation Plan, or field observations performed by the Architect, will in no way relieve the Contractor of full responsibility for the Demolition, Salvage, and Re-Installation Plan and procedure.

1.06 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: A firm with documented specialized experience in demolition work similar in material and extent to that indicated for this Project.

- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-demolition Conference
 - 1. Conduct conference at Project site. Conference shall be attended by Contractor, the City, Architect, demolition sub-contractor if contracted for demolition work, and others whose work is affected by demolition operations.
 - 2. Pre-demolition photographs and details shall be complete and accepted by Architect before conference takes place.
 - 3. Notify participants a minimum of 48 hours prior to time of conference.
 - 4. Review methods and procedures related to demolition including, but not limited to, the following:
 - a. Pre-demolition photographs must be complete and acceptable to Architect and the City.
 - b. Inspect and discuss condition of construction to be demolished.
 - c. Review and finalize Demolition, Salvage, and Re-Installation Plan and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - d. Review and finalize protection requirements.
 - 5. Record discussions of conference and any conflict, incompatibility, or inadequacy. Furnish a copy of record to each participant.
- E. City Recycling Requirements: The City enforces the Oakland Municipal Code 15.34 including:
 - 1. Failure to recycle 100 percent of asphalt and concrete, failure to recycle 65 percent of material that does not include asphalt or concrete, each load transported by a hauler without a fully executed non-exclusive franchise agreement (<https://www.oaklandca.gov/resources/construction-and-demolition-recycling-service-providers>), and each load transported to an unauthorized facility.
 - 2. A violation occurs each time (aka incident) a load is taken to an unauthorized facility and/or for each load hauled by an unauthorized hauler. Penalties begin at \$100 for the first incident, \$200 for the second incident, and \$500 for third and subsequent incidents.
 - 3. For help with enforcing the above, send a message from www.Oakland.wastetracking.com or talk to staff during office hours at <https://tinyurl.com/CandDOpenOffice>). Office hours are available Tuesday through Thursday between the hours of 2 pm and 3 pm. No appointment is needed.

1.07 TRAFFIC

- A. Conduct demolition operations and the removal of debris to ensure minimum interference with streets, walks, and adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from the City, and, where applicable, from other authorities having jurisdiction.
- B. Existing pedestrian walks shall be kept open at all times unless otherwise approved by the City. Any closings or disruptions of existing site circulation, if required, shall be included in the Demolition Plan.
- C. Full compensation for temporary vehicular and pedestrian controls shall be considered as included in the Contract Lump Sum Price and no additional compensation will be allowed for this purpose.

1.08 PROJECT CONDITIONS

- A. Conditions existing at time of inspection for bidding purposes will be maintained by the City as far as practical.
- B. Coordinate the performance of work in this Section with related or adjacent work.
- C. Protection of items should be completed prior to commencement of new construction and demolition procedures. At the end of working day or during inclement weather, cover work exposed to weather with waterproof coverings, securely anchored.
- D. Asbestos and lead paint may be encountered in the Work. If any materials suspected of containing asbestos or lead paint are encountered, do not disturb the materials. Immediately notify the Architect and the City's Representative.

PART 2 - PRODUCTS**2.01 PROTECTION MATERIALS**

- A. Polyethylene Sheets: 4 mil.
- B. Lumber: Species to be selected by the Contractor, with sizes to fit field conditions. Lumber shall be fire retardant treated.
- C. Plywood: 1/2-inch or 3/4-inch fire retardant treated.
- D. Soft Fiberboard
 - 1. 1/2-inch Homasote.
 - 2. 1/2-inch NCFR Homasote for exposed locations.
- E. Neoprene: 1/4-inch or 1/2-inch strips stock sizes.
- F. Polyurethane Foam Sheets: 4-inches thick.
- G. "Preservation" Tape: As manufactured by 3M, "Scotch Brand No. 4811"; American Biltrite Inc.; Surface Armor, or equal.
- H. Plastic Film Tape: As manufactured by 3M, "Scotch Brand No. 472"; American Biltrite Inc.; Surface Armor, or equal.
- I. Kraft Paper.
- J. Accessories: Provide necessary and related parts, fasteners, devices and anchors required for complete installation.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Survey existing conditions and correlate with requirements indicated to determine extent of demolition required.
- B. Inventory and record the condition of any items required to be removed and salvaged. Where appropriate, provide at least one digital photograph.

- C. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to Architect and the City.
- D. Perform an engineering survey of condition of existing buildings to determine whether removing any unanticipated element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
- E. Hazardous materials will be remediated by the City under separate contract. Coordinate with the City's separate contractor, to ensure that hazardous materials are removed or remediated before proceeding with demolition operations in the affected area.

3.02 PREPARATION

- A. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities to be removed or abandoned.
 - 1. Arrange to shut off indicated utilities with the City and utility companies when applicable.
 - 2. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.
- B. Temporary Shoring: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of existing construction.
 - 1. Strengthen or add new supports when required during progress of demolition.
 - 2. All work shall be designed by Contractor's Structural Engineer.
- C. Comply with the following:
 - 1. Clean salvaged items of dirt and demolition debris.
 - 2. Make a written inventory of all salvaged items as specified in Part 1, noting original location, condition, and any significant damage or deficiencies.
 - 3. Pack or crate items after cleaning. Identify contents of containers and number to correspond with inventory.
 - 4. Store items in a secure area until re-installation or until delivery to the City, as applicable.
 - 5. Transport items to the City or to new location in building as applicable.
 - 6. Protect items from damage during transport and storage.

3.03 POLLUTION CONTROLS

- A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.
- B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Clean adjacent site areas of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.04 INSTALLATION OF PROTECTION

- A. General
 - 1. Alternative methods to specified protection may be acceptable if equal or greater protection is provided. Submit alternative methods to the Architect for review as specified. Do not proceed with alternative methods until specified approvals are secured. Mockups may be required. If required, provide photographs of the mockup.

2. Protection may be required to remain in place for the duration of the Project. As such, materials shall be installed to provide adequate protection throughout the full extent of construction activities. Repair or reinstall protection as required throughout the duration of construction. Changes to protection shall be proposed to the Architect for approval prior to making changes.
 3. All protection assemblies should be self-supporting and self bracing, and secured at the base, unless otherwise noted.
- B. Existing Facilities: Protect adjacent walkways, buildings, and other facilities during demolition operations.
- C. Temporary Protection: Comply with requirements in Division 01.

3.05 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:
1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.
 4. Maintain adequate ventilation when using cutting torches.
 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 6. Dispose of demolished items and materials promptly.
 7. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.
- B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.
1. Use a pacometer to locate all existing rebar within any existing concrete to be demolished. Before drilling or cutting any rebar, obtain bar-by-bar permission in writing from the Architect.

3.06 SITE RESTORATION

- A. Rough grade below-grade areas, where slabs and sidewalks are removed, ready for further excavation or new construction.
- B. Completely fill voids resulting from building demolition operations that will not be required by new construction with satisfactory soil materials.

3.07 PATCHING AND REPAIRS

- A. Cutting and Patching: As specified in Division 01.
- B. All parts of the existing buildings indicated to remain and damaged by demolition operations shall be repaired and refinished or replaced to match existing.

- C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- D. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.08 DISPOSAL OF DEMOLISHED MATERIALS

- A. General
 - 1. Promptly dispose of demolished materials.
 - 2. Do not allow demolished materials to accumulate on-site.
 - 3. Refer to the City of Oakland Municipal Code 15.34 recycling requirements in clause 1.06 E.
- B. Burning: Do not burn demolished materials.
- C. Disposal
 - 1. Transport demolished materials off the City's property and legally dispose of them.
 - 2. When hauling is done over highways or city streets, loads shall be trimmed, and the vehicle shelf areas cleaned after each loading.
 - 3. Contractor shall pay all permit and disposal fees for off-hauled materials.

3.09 CLEANING

- A. Sweep the building broom clean on completion of selective demolition operation.
- B. All residue and debris from protection work shall be removed from existing construction leaving the premises clean and neat.

3.10 SELECTIVE DEMOLITION SCHEDULE

- A. Remove the Following: Demolished site construction materials as indicated on the Drawings.

END OF SECTION

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SECTION 03 10 00

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1. SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.2. RELATED REQUIREMENTS

- A. Section 03 20 00 - Concrete Reinforcing.
- B. Section 03 30 00 - Cast-in-Place Concrete.
- C. Section 05 50 00 – Metal Fabrications: Placement of embedded steel anchors and plates in cast-in-place concrete.
- D. Section 31 23 33 – Trenching & Backfilling

1.3. REFERENCE STANDARDS

- A. California Code of Regulations, Title 24, Part II, 2022 Edition, also known as the California Building Code (CBC).
- B. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- C. ACI 301 - Specifications for Structural Concrete; 2016.
- D. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2016).
- E. ACI 347R - Guide to Formwork for Concrete; 2014.
- F. ASME A17.1 - Safety Code for Elevators and Escalators; 2013.
- G. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2016.
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- I. PS 1 - Structural Plywood; 2009.

1.4. SUBMITTALS

- A. See Division 1.

- B. Product Data: Provide data on void form materials and installation requirements.
- C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

1.5. QUALITY ASSURANCE

- A. Perform work of this section in accordance with California Building Code standards of the State of California.
- B. Designer Qualifications: Design formwork under direct supervision of a Professional Civil or Structural Engineer experienced in design of concrete formwork and licensed in California.
- C. Maintain one copy of each installation standard on site throughout the duration of concrete work.

1.6. DELIVERY, STORAGE, AND HANDLING

- A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.
- B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.
- C. Protect plastic foam products from damage and exposure to sunlight.

PART 2 - PRODUCTS

2.1 FORMWORK – GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in place concrete work.
- B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.
- C. Chamfer outside corners of beams, joists, columns, and walls.
- D. Comply with CBC with respect to design, fabrication, erection, and removal of formwork.
- E. Comply with relevant portions of ACI 347R, ACI 301, and ACI 318.
- F. Use the following form types:
 - 1. Concrete Walls Not Exposed To View: Site fabricated panel forms or board forms.
 - 2. Concrete Walls Exposed To View: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on Drawings.

2.2 WOOD FORM MATERIALS

- A. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I. Minimum 5/8-inch thick exterior grade plywood with sealed edges.

- B. Lumber: Douglas Fir Larch species; Standard grade; with grade stamp clearly visible.
- C. Board Form: Shiplap or tongue and groove lined with PS 1 grade Plyform Class I and II Exterior ½-inch or HDO Exterior ½-inch or 3/16-inch thick fiberboard conforming to FS LLL-B-810a(1), type I.

2.3 REMOVABLE PREFABRICATED FORMS

- A. Preformed Steel Forms: Minimum 16 gage, 0.0598 inch thick, matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- B. Preformed Plastic Forms: Thermoplastic polystyrene form liner, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- C. Pan Type: Glass fiber, of size and profile indicated.
- D. Void Forms: Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set; 2 inches thick.

2.4 PERMANENT PREFABRICATED FOAM PANEL FORMWORK

- A. Expanded Polystyrene (EPS) Insulation Board: ASTM C578, Type VIII.
 - 1. Density: 1.15 lb/cu ft.
 - 2. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.

2.5 FORMWORK ACCESSORIES

- A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 3/4 inch in concrete surface.
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
 - 1. Composition: Colorless reactive, mineral oil-based, soy-based, or vegetable-oil based compound.
 - 2. Do not use materials containing diesel oil or petroleum-based compounds.
 - 3. Products:
 - a. SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com/sle.
 - b. W. R. Meadows, Inc; Duogard: www.wrmeadows.com/sle.
- C. Filler Strips for Chamfered Corners: Rigid plastic type; 1/2 inch size; maximum possible lengths.
- D. Dovetail Anchor Slot: Galvanized steel, at least 22 gage, 0.0299 inch thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- E. Flashing Reglets: Galvanized steel, at least 22 gage, 0.0299 inch thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
- G. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 12 00.
- H. Waterstops: Rubber, minimum 1,750 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing. Submit product information to Architect for review and approval.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.
- B. Excavations are sufficient to permit placement, inspection and removal of forms.
- C. Excavations for earth forms have been neatly and accurately cut.
- D. Conditions are otherwise proper for formwork construction.

3.2 EARTH FORMS

- A. Construct wood edge strips at top sides of excavations.

- B. Provide forms for footings wherever concrete cannot be placed against solid earth excavation.
- C. Remove loose dirt and debris prior to concrete pours.
- D. Foundation concrete may be placed directly into neat excavations provided the foundation trench walls are stable, subject to the approval of Local Governing Agency. In such case, minimum formwork shown on the drawings is mandatory to ensure clean excavations immediately prior to and during the placing of concrete.
- E. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.3 WALL AND OTHER FORMED ELEMENTS

- A. Erect outside forms for exposed exterior walls first and obtain the Architect's approval before reinforcement is placed. Obtain Architect's approval of the reinforcement before interior form is erected.
- B. Carefully align inside and outside forms before tightening ties.
- C. Plywood Forms: Ensure vertical joints are plumb and horizontal joints are level; arrange joints and ties in geometrical pattern as approved by the Architect.
- D. Form inside corners at exposed conditions with mitered boards or plywood so that no concrete is placed against form ends.
- E. After erection, seal all cracks, holes, slits, gaps, and apertures in forms so that they will withstand the pressure and will remain completely watertight.
- F. Provide a means to seal the bottom of forms at construction joints such as foam tape or other gasket devices.
- G. Apply a coating of release agent prior to the erection of formwork. Follow approved manufacturer's recommendations.

3.4 CONSTRUCTION JOINTS

- A. Provide where shown on the drawings as directed by the Architect and per CBC.
- B. Provide key indentations at all joints.
- C. Provide pour strips on inside face of forms at horizontal joints, but remove strips and thoroughly clean out reglets before placing subsequent portions of wall.
- D. Prevent formations of shoulders and ledges.
- E. Provide means for drawing forms into firm contact with concrete before placing additional concrete over previous pours where shrinking and warping has separated concrete from forms.

3.5 ERECTION – FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Install permanent insulated foam panel formwork per manufacturer's recommendations.
- D. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- E. Align joints and make watertight. Keep form joints to a minimum.
- F. Obtain approval before framing openings in structural members that are not indicated on drawings.
- G. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- H. Coordinate this section with other sections of work that require attachment of components to formwork.
- I. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect before proceeding.

3.6 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.7 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- E. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement. Heat seal joints so they are watertight.
- F. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.8 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.

- B. Clean and protect permanent insulated concrete foam panel formwork per manufacturer's recommendations.
- C. Clean formed cavities of debris prior to placing concrete.
 - 1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.9 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.
- B. Construct permanent insulated foam panel formwork to maintain tolerances required by ACI301.
- C. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.

3.10 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Division 1.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.11 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
 - 1. Vertical surfaces of walls, columns, beams: 60% of f'_c and 7 days minimum.
 - 2. Beams and slabs: 75% of f'_c and 14 days minimum.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.2 RELATED REQUIREMENTS

- A. Section 03 10 00 - Concrete Forming and Accessories.
- B. Section 03 30 00 - Cast-in-Place Concrete.

1.3 REFERENCE STANDARDS

- A. California Code of Regulations, Title 24, Part II, 2022 Edition, also known as California Building Code (CBC).
- B. ACI 301 - Specifications for Structural Concrete; 2016.
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2016).
- D. ACI SP-66 - ACI Detailing Manual; 2004.
- E. ASTM A184/A184M - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement; 2006 (Reapproved 2011).
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- G. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2016.
- H. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- I. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.
- J. CRSI (DA4) - Manual of Standard Practice; 2009.
- K. CRSI (P1) - Placing Reinforcing Bars; 2011.

1.4 SUBMITTALS

- A. See Division 1.
- B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- D. Reports: Submit certified copies of mill test report of reinforcement materials analysis. Where reinforcing is to be welded, mill test reports shall verify the weldability of the steel.

1.5 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301.
 - 1. Maintain one copy of each document on project site.
- B. Welders' Certificates: Submit certifications for welders employed on the project, verifying AWS qualification within the previous 12 months.
- C. The Owner's Testing Agency will provide tests in accordance with CBC.
 - 1. Collect mill test reports for reinforcement.
 - 2. Take samples from bundles at fabricators.
 - a. When bundles are identified by heat number and accompanied by mill analysis, two specimens shall be taken from each ten (10) tons, or fraction thereof, of each size and grade.
 - b. When reinforcement is not positively identified by heat numbers or when random sampling is intended, two specimens shall be taken from each 2½ tons, or fraction thereof, of each size and grade.
 - 3. Test for tensile and bending strengths.
 - 4. Provide inspection of welding, including prior fit-up, welding equipment, weld quality and welder certification in accordance with AWS D1.4. Chemical analysis sufficient to determine carbon equivalent and minimum preheat temperature shall be performed when reinforcement does not conform to low-alloy steel requirements of CBC.

PART 2 – PRODUCTS

2.1. REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Plain billet-steel bars.
 - 2. Unfinished.
- B. Reinforcing Steel: ASTM A706/A706M, deformed low-alloy steel bars.
 - 1. Unfinished.
- C. Steel Welded Wire Reinforcement (WWR): Galvanized, deformed type; ASTM A1064/A1064M.
 - 1. WWR Style: As indicated on drawings.

D. Welded Deformed Bar Anchors: ASTM A-104, $f_y = 70,000$, flux filled deformed bar anchors. Same as Nelson D2L.

E. Reinforcement Accessories:

1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
3. Provide stainless steel components for placement within 1-1/2 inches of weathering surfaces.

2.2. RE-BAR SPLICING:

A. Coupler Systems: Mechanical devices for splicing reinforcing bars; capable of developing full steel reinforcing design strength in tension and compression.

1. Products:

a. Threaded coupler: Lenton Standard coupler by ERICO or equal product substituted per Division 1. Couplers may be Type 1 except where otherwise noted.

1) Type 1 Couplers shall develop 125-percent of specified yield strength reinforcement.

2) Type 2 Couplers shall develop 160-percent of the tensile strength or 200-percent of the yield strength of reinforcement.

2. Substitutions: See Division 1.

2.3. FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Welding of reinforcement is permitted only with the specific approval of Architect. Perform welding in accordance with AWS D1.4/D1.4M.

C. Locate reinforcing splices not indicated on drawings at point of minimum stress.

1. Review locations of splices with Architect.

PART 3 - EXECUTION

3.1. PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Maintain concrete cover around reinforcing as follows:
 - 1. Beams: 1 1/2 inch.
 - 2. Supported Slabs and Joists: 1 inch.
 - 3. Column Ties: 1 1/2 inch.
 - 4. Walls (exposed to weather or backfill): 2 inch.
 - 5. Footings and Concrete Formed Against Earth: 3 inch.
 - 6. Slabs on Fill: 1 inch.
- E. Conform to CBC code for concrete cover over reinforcement.

3.2. FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Division 1, will inspect installed reinforcement for conformance to contract documents before concrete placement.
- B. The Owner's testing Agency will inspect shop and field welding of reinforcing bars in accordance with CBC.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Concrete slabs-on-grade.
- B. Concrete patching.
- C. Concrete site work.
- D. Joint devices associated with concrete work.
- E. Concrete curing.

1.2 RELATED REQUIREMENTS

- A. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.
- B. Section 03 20 00 - Concrete Reinforcing.
- C. Section 03 35 11 - Concrete Floor Finishes: Densifiers, hardeners, applied coatings, and polishing.
- D. Section 07 92 00 - Joint Sealants: Products and installation for sealants for saw cut joints and isolation joints in slabs.

1.3 REFERENCE STANDARDS

- A. California Code of Regulations, Title 24, Part II, 2022 Edition also known as California Building Code (CBC).
- B. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- C. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- D. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; 1998 (Reapproved 2004).
- E. ACI 301 - Specifications for Structural Concrete; 2016.
- F. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
- G. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
- H. ACI 305R - Guide to Hot Weather Concreting; 2010.
- I. ACI 306R - Cold Weather Concreting; 2010.
- J. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).

- K. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2016).
- L. ACI 347R - Guide to Formwork for Concrete; 2014.
- M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016.
- N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2016b.
- O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2016a.
- P. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- Q. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.
- R. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.
- S. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2016.
- T. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
- U. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- V. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2011.
- W. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete; 2014.
- X. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2016.
- Y. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes; 2001 (Reapproved 2012).
- Z. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- AA. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.
- BB. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2016.
- CC. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- DD. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- EE. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.

- FF. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2015.
- GG. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete; 2011.
- HH. ASTM D994/D994M - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type); 2011 (Reapproved 2016).
- II. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2013).
- JJ. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a (Reapproved 2013).
- KK. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 2014.
- LL. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.
- MM. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.4 SUBMITTALS

- A. See Division 1 for procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 – Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 – Concrete Quality, Mixing and Placing.
 - 3. Certified copies of mix designs for each concrete class specified including compressive strength test reports that provide evidence the submitted mix has a history of attaining the minimum specified compressive strength.
 - 4. Mix designs shall be sealed and signed by a California Professional Civil Engineer retained by Contractor.
- D. Shop Drawings: Show construction, expansion and contraction joint locations. Submit to Architect for review.
- E. Samples for Pigment Color Selection: Submit manufacturer's complete sample chip set, including pigment number and required dosage rate for each color.

- F. Verification Samples: Submit sample chips of specified colors indicating pigment numbers and required dosage rates, for subsequent comparison to installed concrete.
- G. Samples: Submit samples of underslab vapor retarder to be used.
- H. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

1.5 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 – PRODUCTS

2.1. FORMWORK

- A. Comply with requirements of Section 03 10 00.

2.2. REINFORCEMENT

- A. Comply with requirements of Section 03 20 00.

2.3. CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type V - Moderate Portland type.
- B. Fine and Coarse Aggregates: ASTM C 33.
- C. Lightweight Aggregate: ASTM C330/C330M.
- D. Fly Ash: ASTM C618, Class F.
- E. Calcined Pozzolan: ASTM C618, Class N.
- F. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.
- G. Color Additives: Pure, concentrated mineral pigments specifically intended for mixing into concrete and complying with ASTM C979/C979M.
 - 1. Concentration: Base dosage rates on weight of Portland cement, fly ash, silica fume, and other cementitious materials but not aggregate or sand.
- H. Water: Clean and not detrimental to concrete.

2.4. ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.

1. Manufacturers:
 - a. W.R. Grace's "Daravair," Master Builders.
 - b. Master Builders' "Micro-Air."
 - c. Sika Corp.'s "Sika Aer."
 - d. Substitutions: See Division 1.
- C. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
 1. Manufacturers:
 - a. Euclid Chemical Company; PLASTOL 6420.
 - b. W.R. Grace's "Daracem 19."
 - c. Master Builders' "Rheobuild."
 - d. Sika Corp.'s "Sikament."
 - e. Substitutions: See Division 1.
- D. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
 1. Manufacturers:
 - a. Euclid Chemical Company; ACCELGUARD 80.
 - b. W.R. Grace's "Polarset."
 - c. Master Builder's "Pozzutec 20."
 - d. Substitutions: See Division 1.
- E. Water Reducing and Retarding Admixture: ASTM C494/C494M Type
 1. Manufacturers:
 - a. W.R. Grace's "Daratard-17."
 - b. Master Builders' "Pozzoliith R."
 - c. Sika's "Plastiment."
 - d. Substitutions: See Division 1.
- F. Water Reducing Admixture: ASTM C494/C494M Type A.
 1. Manufacturers:
 - a. Same as Grace Construction Materials' "WRDA with Hycol"; Master Builders "Pozzoliith 322N"; Sika Corp.'s "Plastocrete 161."
 - b. Substitutions: See Division 1.

- G. Waterproofing Admixture: Admixture formulated to reduce permeability to liquid water, with no adverse effect on concrete properties. For use at Elevator Pit Walls.
1. Admixture Composition: Crystalline, functioning by growth of crystals in capillary pores.
 2. Manufacturers:
 - a. Xypex Chemical Corporation; XYPEX Admix C-500.
 - b. Substitutions: See Division 1.

2.5. ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
1. Installation: Comply with ASTM E1643.
 2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
 3. Manufacturers:
 - a. Stego Industries, LLC; StegoWrap 15 mil.
 - b. Substitutions: See Division 1.
- B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
1. Grout: Comply with ASTM C1107/C1107M.
 2. Height Change, Plastic State; when tested according to ASTM C827/C827M:
 - a. Maximum: Plus 4 percent.
 - b. Minimum: Plus 1 percent.
 3. Minimum Compressive Strength at 48 Hours, ASTM C109/C109M: 2,000 pounds per square inch.
 4. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch.
 5. Flowable Products:
 - a. Euclid Chemical Company; NS GROUT.
 - b. Five Star Products, Inc; Five Star Fluid Grout 100.
 - c. Substitutions: See Division 1.
 6. Low-Slump, Dry Pack Products:

- a. Five Star Products, Inc; Five Star Grout.
- b. Substitutions: See Section Division 1.

2.6. BONDING AND JOINTING PRODUCTS

- A. Waterstops: Bentonite and butyl rubber, complying with NSF 61 and NSF 372.
 - 1. Configuration: As indicated on drawings.
 - 2. Size: As indicated on drawings.
 - 3. Manufacturers:
 - a. Concrete Sealants, Inc; Conseal CS-231; Colloid Environmental Technologies Company: Volclay Waterstop-RX; TCMiraDRI: Mirastop.
 - b. Substitutions: See Division 1.
- B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
 - 1. Material: ASTM D1751, cellulose fiber.
 - 2. Manufacturers:
 - a. W. R. Meadows, Inc; Fiber Expansion Joint Filler with Snap-Cap.
 - b. Substitutions: See Division 1.
- C. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.
 - 1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
 - 2. Height: To suit slab thickness.

2.7. CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
 - 1. Manufacturers:
 - a. Dayton Superior Corporation; AquaFilm Concentrate J74.
 - b. Euclid Chemical Company ; EUCOBAR.
 - c. W. R. Meadows, Inc; Evapre or Evapre-RTU.
 - d. Substitutions: See Division 1.
- B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.

1. Manufacturers:
 - a. Dayton Superior Corporation; Resin Cure with Dye J11WD.
 - b. Euclid Chemical Company; COLOR-CRETE CURE AND SEAL VOC.
 - c. W. R. Meadows, Inc; 1100-Clear.
 - d. Substitutions: See Division 1.

C. Moisture-Retaining Sheet: ASTM C171.

1. Curing paper, regular.
2. Polyethylene film, clear, minimum nominal thickness of 0.0040 inch.
3. White-burlap-polyethylene sheet, weighing not less than 10 ounces per linear yard, 40 inches wide.

D. Water: Potable, not detrimental to concrete.

2.8. CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Proportioning Structural Lightweight Concrete: Comply with ACI 211.2 recommendations.
- C. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- D. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- E. Normal Weight Concrete:
 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3000 psi minimum unless otherwise noted on Drawings.
 2. Fly Ash Content: Maximum 25 percent of cementitious materials by weight.
 3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
 4. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
 5. Water-Cement Ratio: Maximum 50 percent by weight.
 6. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
 7. Maximum Slump: 4 inches.
 8. Maximum Aggregate Size: 3/4 inch.
- F. Structural Lightweight Concrete:

1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3000 psi minimum unless otherwise noted on Drawings.
2. Water-Cement Ratio: Maximum 45 percent by weight.
3. Total Air Content: 3 percent, determined in accordance with ASTM C173/C173M.
4. Maximum Slump: 4 inches.
5. Maximum Aggregate Size: 3/4 inch.
6. Maximum dry unit weight: 115 lb per cubic foot.

2.9. MIXING

A. Batch Plant Conditions:

1. Batch plant shall be certified to comply with the requirements of the National Concrete Ready Mix Association.
2. Ensure equipment and plant will afford accurate weighing, minimize segregation and will efficiently handle all materials to satisfaction of the Architect and the Owner's Testing Agency.
3. Replace at no additional expense equipment the Architect and the Owner's Testing Agency deem inadequate or unsuitable.
4. Use approved moisture meter capable of determining moisture content of sand.

B. Transit Mixers: Comply with ASTM C94/C94M.

2.10. SOURCE QUALITY CONTROL

A. The Owner's Testing Agency will:

1. Review mix designs, certificates of compliance, and samples of materials the Contractor proposes to use.
2. Take samples as required from the Contractor's designated sources.

PART 3 – EXECUTION

3.1. EXAMINATION

- #### A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.2. PREPARATION

- #### A. Verify that forms are clean and free of rust before applying release agent.
- #### B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- #### C. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's

recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on the drawings. Do not use sand.

3.3. PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- G. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.4. SLAB JOINTING

- A. Locate joints as indicated on the drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D. Load Transfer Construction and Contraction Joints: Install load transfer devices as indicated; saw cut joint at surface as indicated for contraction joints.
- E. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
- F. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

3.5. SEPARATE FLOOR TOPPINGS

- A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.
- B. Place required dividers, edge strips, reinforcing, and other items to be cast in.
- C. Apply bonding agent to substrate in accordance with manufacturer's instructions.
- D. Place concrete floor toppings to required lines and levels.

1. Place topping in checkerboard panels not to exceed 20 feet in either direction.
- E. Screed toppings level, maintaining surface flatness of maximum 1:1000.

3.6. FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Division 1, will inspect finished slabs for conformance to specified tolerances.
- B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
 1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15, on-grade only.
 2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
 3. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
 4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.
- C. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155 (ASTME1155M), within 48 hours after slab installation; report both composite overall values and local values for each measured section.
- D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.
- E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.7. CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
 2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
 3. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.
- D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:

1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI 302.1R; thick floor coverings include quarry tile, ceramic tile, and Portland cement terrazzo with full bed setting system.
2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
3. Decorative Exposed Surfaces: Trowel as described in ACI 302.1R; use steel-reinforced plastic trowel blades instead of steel blades to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to receive liquid hardeners, surfaces to receive dry-shake hardeners, surfaces to be polished, and all other exposed slab surfaces.
4. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.8 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 1. Normal concrete: Not less than 7 days.
 2. High early strength concrete: Not less than 4 days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
 1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
 2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 4 days.
 - b. Spraying: Spray water over floor slab areas and maintain wet.
 - c. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
 3. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.

- b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.9 FIELD QUALITY CONTROL

- A. The Owner's Testing Agency will perform field quality control tests as specified below:
 - 1. Review concrete mix designs.
 - 2. Inspect concrete and grout placement continuously.
- B. Submit proposed mix design of each class of concrete to Owner's Special Inspection firm for review prior to commencement of concrete operations.
- C. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

3.10 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.11 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.
- B. Protect exposed corners of concrete from traffic or use which will damage them in any way.
- C. Make provisions to keep all exposed concrete free from laitance caused by spillage or leaking forms or other contaminants. Do not allow laitance to penetrate, stain, or harden on surfaces which have been textured.

END OF SECTION

SECTION 03 35 00**CONCRETE FINISHING****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Engineered concrete repair system.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens).
 - 2. C293 - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading).

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Engineered Concrete Repair System: Portland cement-based structural repair mortar; polymer-modified; integral corrosion inhibitor; trowel grade holds shape for ramping; mixes with water only; easy to apply; installs from 1/4-inch to 2 inches neat and up to 8 inches when extended with aggregate; freeze-thaw resistant; low shrinkage; resists delamination.
 - 1. Performance Characteristics
 - a. Compressive Strength, ASTM C109: 7,000 psi at 7 days; 8,200 psi at 28 days.
 - b. Flexural Strength, ASTM C293: 1,200 psi at 7 days; 1,500 psi at 28 days.
 - 2. Product: As manufactured by Ardex Americas, "ARDEX ERM Exterior Ramp Mortar", or equal.
- B. Primer: As recommended by the engineered concrete repair system manufacturer.
- C. Finishing Course: As recommended by the engineered concrete repair system manufacturer.

PART 3 - EXECUTION**3.01 CONCRETE SURFACE REPAIRS**

- A. Remove old flaked concrete where indicated.
- B. Patching Defective Areas: Repair and patch defective areas with exterior ramp mortar in accordance with engineered concrete repair system manufacturer's written instructions.

3.02 PROTECTION

- A. Protect exposed concrete during construction activities.

END OF SECTION

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SECTION 03 54 15

PORTLAND CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Liquid-applied, high-strength, fast-setting, non-shrink cement underlayments for leveling floors to meet flatness and levelness requirements of the respective finish flooring materials.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 65 00 - Resilient Flooring: Provision of resilient flooring.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens).
 - 2. C191 - Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's literature describing materials and specifications for mixing, placing, curing, and protecting.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Ensure that storage facilities are weathertight and dry.
- B. Comply with additional requirements specified in Division 01.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: Silpro LLC; Ardex Inc.; Thoro System Products, or equal.

2.02 MATERIALS

- A. General
 - 1. Materials listed below are not necessarily all-inclusive, nor are all materials listed necessarily required to be used.
 - 2. Contractor shall develop systems for preparing substrate for finish materials using approved products from a single manufacturer.
- B. Trowelable Underlayment: Self-drying, trowelable concrete underlayment formulated with a special blend of portland cement, other hydraulic cements, and polymers.
 - 1. Initial Set (ASTM C191): Approximately 30 minutes.
 - 2. Final Set (ASTM C191): Approximately 90 minutes.
 - 3. Compressive Strength (C109): 4,200 psi at 28 days.
 - 4. Product: As manufactured by ARDEX Americas, "ARDEX SD-P", or equal.

- C. Self-Leveling Underlayment: Non-structural, premixed blend of cement, graded aggregate, polymers, and control additives capable of being installed to feather edge.
 - 1. Product: As manufactured by Silpro LLC, "Raeco SLU Superflow", or equal.
- D. Primer: Provide the following unless otherwise recommended by manufacturer for existing conditions.
 - 1. Product: As manufactured by Silpro LLC, "R-2000", or equal.
- E. Water: Clean and potable, free from impurities detrimental to underlayment.

2.03 MIXES

- A. Mix underlayment and patching compounds in accordance with manufacturer's instructions.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrate and verify that surfaces are free from debris, oil, grease, wax, curing compounds, and dust and are reasonably clean and dry and that conditions are otherwise suitable to receive underlayment.

3.02 PREPARATION

- A. Select and apply proper primer for condition of substrate and mix.

3.03 PLACING

- A. General
 - 1. Follow manufacturer's technical bulletins for application of each product.
 - 2. Surface texture of underlayment shall be as recommended by manufacturer for reception of specified finish materials where covered, and to match appearance of in-place concrete where to be left exposed.
- B. Apply troweled underlayment to those areas where it is necessary to bring substrate up to levelness and flatness tolerances acceptable to manufacturer for application of applied floor coverings.
 - 1. Do not exceed thickness recommended by manufacturer for an unreinforced and non-aggregated mix.
 - 2. Install in one pour from featheredge spreading and screeding to a smooth surface.
- C. Use self-leveling underlayment at large areas where use of a trowel-applied underlayment would be more labor intensive.

3.04 CURING

- A. Allow underlayment to cure as recommended by manufacturer.
- B. Do not allow traffic on underlayment during hardening period; minimum 2 hours or longer if special conditions exist.
- C. Do not load floors until reasonable strength has been achieved. Any loading on topping shall be distributed and not concentrated.

3.05 ADJUSTMENT

- A. Repair defects, evident after curing, that make underlayment an unacceptable substrate for finish flooring. Use materials recommended by underlayment manufacturer.
 - 1. Fill dimples and sand down protrusions smooth and flush with adjacent surface.
 - 2. Repair underlayment damaged prior to installation of scheduled floor finish.

END OF SECTION

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SECTION 05 45 00

METAL SUPPORT ASSEMBLIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Metal studs and furring for support of gypsum board and other finishes.
 - 2. Backing for interior items to be attached to gypsum board and metal studs.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 07 92 00 - Joint Sealants: Provision of acoustical sealant.
 - 2. Section 10 11 00 - Visual Display Units: Provision of visual display units.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. A568 - Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
 - 2. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 3. C645 - Standard Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
 - 4. C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.
- B. CBC - California Building Code, 2019 Edition
- C. GA - Gypsum Association
 - 1. 203 - Installation of Screw-Type Steel Framing Members to Receive Gypsum Board.
- D. UL - Underwriters Laboratories Inc.
- E. United States Gypsum Company
 - 1. "Good Design Practices" systems folder SA-923, 1994 Edition.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements
 - 1. Plumb, true, straight, and rigid framing for support of attached materials.
 - 2. Design system to accommodate construction tolerances, deflection of building structural members, support of attached materials and clearances of intended openings in accordance with CBC.
 - 3. Use galvanized metal studs and channels at all shower and wet locations.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's data for steel framing members.
- B. Shop Drawings: Submit shop drawings indicating component details, framed openings, anchorage to structure and accessories or items required of other related work. Include shop drawings for backing plates for cabinets, grab bars and other wall mounted items.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with GA 203 and ASTM C754, governing laws, building code requirements, manufacturer's printed recommendations and United States Gypsum Company, "Good Design Practices" systems folder SA-923, 1994 Edition.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection
 - 1. Deliver materials to job site and store in ventilated dry locations. If materials are stored outdoors, stack materials off the ground, supported on a level platform, and fully protected from the weather.
 - 2. Handle materials carefully to prevent damage. Remove damaged items and provide new items.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers
 - 1. Steel Framing and Furring: Gold Bond Building Products Div., National Gypsum Co.; Clark Steel Framing; Dietrich Industries, Inc., or equal.
 - 2. Grid Suspension Assemblies: Chicago Metallic Corp.; USG Interiors, Inc.; National Rolling Mills Co., or equal.

2.02 STEEL FRAMING FOR PARTITIONS

- A. Studs: C-shaped, ASTM C645, G-90; non-load bearing rolled steel, channel shaped, punched for utility access.
 - 1. Width: As appropriate for spanning distance in accordance with ASTM C645.
 - 2. Thickness: Contractor shall verify size of metal studs and gauge based on allowable finish deflection criteria $l/240$ maximum.
 - 3. Tracks: Match stud grade.
 - 4. Spacing: 16 inches on center throughout.
- B. Deflection Tracks: Manufacturer's standard top runner designed to prevent cracking of gypsum board applied to interior partitions resulting from deflection of the structure above fabricated from steel sheet complying with ASTM A568 or ASTM A653. Thickness as indicated for studs and width to accommodate depth of studs and of the following configuration:
 - 1. Top Runner with Slotted Flanges: 2-1/2 inches deep flanges with slots 1 inch on center.
- C. Furring and Bracing Members: Same material and finish as studs, thickness to suit purpose.
- D. Steel Rigid Furring Channels: ASTM C645, hat shaped, depth of 7/8-inch, and minimum thickness of base (uncoated) metal as follows:
 - 1. Thickness: 0.0179-inch, unless otherwise indicated.
 - 2. Protective Coating: ASTM A653, G 40 hot-dip galvanized coating.
- E. Z-Furring Members: Manufacturer's standard Z-shaped furring members with slotted or nonslotted web, fabricated from steel sheet complying with ASTM A568 or ASTM A653; with a minimum base metal (uncoated) thickness of 0.0179-inch, face flange of 1-1/4 inches, wall-attachment flange of 7/8-inch, and of depth required to fit insulation thickness indicated.

- F. Resilient Channels: 7/8-inch, as manufactured by Unimast, "RC Deluxe"; Cemco, "RC-1"; Dale/Incor, "RFC-1", or equal.
- G. Fasteners: Galvanized, GA 203, self-drilling, self-tapping screws.
- H. Expansion Bolts: Hilti Fastening Systems, "Kwik Bolt TZ Concrete Anchors (ICC ESR-1917)"; Simplified Building; Tanner Bolt & Nut Corp., or equal.
- I. Metal Backing Plates
 - 1. Type 2 (Heavy Loads): As indicated on the Drawings.
 - 2. Type 3 (300 Pounds and Up): As indicated on the Drawings.
- J. Anchorage Devices: Provide drilled in anchors or powder driven fasteners, 0.118-inch diameter with 1-inch embed.
- K. Bracing: Provide cross diagonal straps, attached as indicated on the Drawings and per stud manufacturer's specifications for frame stability.

2.03 MISCELLANEOUS MATERIALS

- A. Acoustical Sealant: As specified in Section 07 92 00.
- B. Galvanized Finish Touch-Up Coating: Liquid zinc compound that bonds electrochemically to iron, steel, and aluminum, as manufactured by ZRC Chemical Products, "ZRC Cold Galvanizing Compound"; ZRC Worldwide; Rust-Oleum, or equal.

2.04 FINISHES

- A. Galvanized Surfaces: Where galvanizing is removed by welding or other assembly procedures, clean area of any foreign matter by wire brushing and metal conditioner recommended by galvanized finish touch-up manufacturer. Apply galvanized touch-up coating by brush or spray with minimum coverage of 1.4 mils, dry film.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive metal support framing systems and verify the following:
 - 1. Installation of building components located in walls is complete.
 - 2. Backing plates are properly located for support of wall hung items.
- B. Beginning of installation means installer accepts existing conditions.

3.02 INSTALLING STEEL FRAMING FOR PARTITIONS

- A. Stud Partitions - Typical
 - 1. Align and secure top and bottom tracks. Place 2 beads of acoustic sealant between tracks and substrate.
 - 2. Fit tracks under and above openings; secure intermediate studs at spacing of wall studs.
 - 3. Install studs vertically at spacing as indicated. Place 2 beads of acoustic sealant between studs and adjacent vertical surfaces.
 - 4. Connect studs to tracks using fastener method.
 - 5. Construct corners using minimum 3 studs.
 - 6. Double studs vertically at wall openings, door and window jambs and not more than 2 inches each side of openings, unless otherwise specified. Provide track and stud horizontally at wall, window head and sill openings.

7. Brace stud framing system and make rigid.
 8. Coordinate erection of studs with requirements of door and window frame supports and attachments.
 9. Align stud web openings.
 10. Coordinate installation of jamb anchors and metal backing plates with electrical and mechanical work to be placed in or behind stud framing.
 3. Coordinate placement of insulation in multiple stud spaces made inaccessible after stud framing erection.
- B. Backing in Stud Partitions or Furring
1. Verify that any pre-drilling of backing and attachment of spacers to prevent crushing of attached material is done prior to application of attached material.
 2. If it is determined by the Architect that backing was not provided for any items as required, the Contractor shall remove the finish materials; install backing and shall patch and refinish surface to match adjacent area and surface at no additional cost to the City.
- C. Installation Tolerances: Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8-inch from plane of faces of adjacent framing.

END OF SECTION

SECTION 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Painted steel pipe handrails.
 - 2. Custom decorative metal grille behind bar in canteen.
 - 3. Non-structural miscellaneous metal channels, angle imbeds, and other shapes as required.
 - 4. Rough hardware.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 90 00 - Painting and Coating: For finish painting of items not specified to have factory finish.

1.02 REFERENCES

- A. AISC - American Institute of Steel Construction Inc.
- B. ANSI - American National Standards Institute
 - 1. B18.6.3 - Machine Screws and Machine Screw Nuts.
 - 2. B18.21.1 - Lock Washers (Inch Series).
 - 3. B18.22.1 - Plain Washers.
- C. ASTM - American Society for Testing and Materials
 - 1. A27 - Standard Specification for Steel Castings, Carbon, for General Application.
 - 2. A36 - Standard Specification for Carbon Structural Steel.
 - 3. A47 - Standard Specification for Ferritic Malleable Iron Castings.
 - 4. A48 - Standard Specification for Gray Iron Castings.
 - 5. A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 6. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 7. A283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
 - 8. A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - 9. A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - 10. A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
 - 11. A563 - Standard Specification for Carbon and Alloy Steel Nuts.
 - 12. A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
 - 13. A786 - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.
 - 14. B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
 - 15. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch Cube Specimens).

16. C157 - Standard Test Method for Length Change of Hardened Hydraulic-Cement, Mortar, and Concrete.
 17. C191 - Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle.
 18. D1187 - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
 19. E488 - Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.
 20. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
 21. F594 - Standard Specification for Stainless Steel Nuts.
- D. AWS - American Welding Society
1. D1.1 - Structural Welding Code - Steel.
 2. D1.3 - Structural Welding Code - Sheet Steel.
- E. CBC - California Building Construction Code, 2019 Edition
- F. NAAMM - National Association of Architectural Metal Manufacturers
1. MFM - Metal Finishes Manual for Architectural and Metal Products.
- G. SSPC - The Society for Protective Coatings
1. PA 1 - Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel.
 2. SP 2 - Surface Preparation Specification No. 2: Hand Tool Cleaning.
 3. SP 3 - Surface Preparation Specification No. 3: Power Tool Cleaning.
 4. SP 6 - Surface Preparation Specification No. 6: Commercial Blast Cleaning.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements
1. Structural Performance of Guardrails, Handrails, and Railings: Provide guardrails, handrails, and railing systems that shall withstand structural loads without exceeding the allowable working stress of the materials involved, including anchors and connections. Apply each load to produce the maximum stress in each of the respective components of each metal fabrication in accordance with CBC.
 2. Design work to support normally imposed loads and in conformity with AISC requirements.
 3. Provide for expansion and contraction.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for paint products and grout.
- B. Quality Control Submittals: Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.

1.05 QUALITY ASSURANCE

- A. Welding Standards: Comply with applicable provisions of AWS D1.1 and AWS D1.3.
1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- B. Steel and Iron
 - 1. Steel Plates, Shapes, and Bars: ASTM A36.
 - 2. Rolled Steel Floor Plate: ASTM A786, rolled from plate complying with ASTM A36 or ASTM A283, Grade C or D.
 - 3. Cold-Formed Steel Tubing: ASTM A500.
 - 4. Hot-Formed Steel Tubing: ASTM A501.
 - 5. Steel Pipe: ASTM A53, Type S, Grade B, Schedule 40, unless otherwise indicated, or another weight required by structural loads.
 - a. Black finish, unless otherwise indicated.
 - b. Prime with red oxide primer at locations detailed to receive paint.
 - 6. Gray-Iron Castings: ASTM A48, Class 30.
 - 7. Malleable-Iron Castings: ASTM A47, grade as recommended by fabricator for type of use indicated.
 - 8. Concrete Inserts: Anchors of type indicated below, fabricated from corrosion resistant materials capable of sustaining, without failure, the load imposed within a safety factor of 4, as determined by testing per ASTM E488, conducted by a qualified independent testing agency.
 - a. Threaded or wedge type; galvanized ferrous castings, either ASTM A47 malleable iron or ASTM A27 cast steel. Provide bolts, washers, and shims as required, hot-dip galvanized in accordance with ASTM A153.
 - b. Provide weld plate imbedded in concrete as detailed in the Drawings. Coordinate location with other imbedded materials.
- C. Fasteners: Provide plated fasteners complying with ASTM B633, Class Fe/Zn 25 for electrodeposited zinc coating. Select fasteners for the type, grade, and class required.
 - 1. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A, with hex nuts, ASTM A563, and, where indicated, flat washers.
 - 2. Machine Screws: ANSI B18.6.3.
 - 3. Plain Washers: Round, carbon steel, ANSI B18.22.1.
 - 4. Lock Washers: Helical, spring type, carbon steel, ANSI B18.21.1.
 - 5. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E488 conducted by a qualified independent testing agency.
 - a. Material: Carbon steel components zinc-plated to comply with ASTM B633, Class Fe/Zn 5.
 - b. Material: Group 1 alloy 304 or 316 stainless steel bolts and nuts complying with ASTM F593 and ASTM F594.
 - 6. Epoxy Cement: As manufactured by Simpson Strong-Tie, "SET/ET/AT High Strength Anchoring Adhesives", or equal.
- D. Welding Materials: AWS D1.1 and AWS D1.3, type required for materials being welded.

2.02 STANDARD CATALOG PRODUCTS

- A. Non-Shrink Grout
 - 1. Premixed; containing no metallic particles, requiring only addition of water.
 - 2. Shall have minimum working time of 15 minutes and initial set time of 30 to 45 minutes in accordance with ASTM C191.
 - 3. Product: As manufactured by Master Builders Technologies, "Masterflow 928"; Five Star Products, Inc., "Five Star Grout 100", or equal.
- B. Expansion Cement
 - 1. Non-metallic, non-corrosive, pourable hydraulic type cement that is quick-setting, high strength, and non-shrinking, with the following properties
 - a. Compressive Strength: 58,400 psi at 7 days in accordance with ASTM C109.
 - b. Volume Change: Plus 0.31 at 7 days in accordance with ASTM C157.
 - 2. Water: Potable.
 - 3. Product: As manufactured by Custom Building Products, "Pour-Stone"; Minwax Construction Products, "Por-Rok Anchoring Cement", or equal.
- C. Coatings
 - 1. Coatings for Protection of Dissimilar Materials
 - a. Dissimilar Metals: Bituminous type materials in accordance with ASTM D1187.
 - b. Aluminum in Contact with Concrete, Metal, Wood, or other Absorptive Material.
 - 2. Shop Primer for Ferrous Metal: VOC compliant, fast-curing, lead and chromate free, universal modified alkyd primer with good resistance to corrosion, compatible with finish paint systems.
 - 3. Galvanizing Repair Paint: High zinc dust content paint, with dry film containing not less than 94 percent zinc dust by weight, as manufactured by Parker Amchem, "Galvaprep SG"; Sherwin Williams, "Zinc Clad I", or equal.
- D. Decorative Metal Grille: Steel, contemporary linear style pattern, RAL powder-coat finish, size and color as indicated on the Drawings.
 - 1. Product: As manufactured by Architectural Grille, "#201 Parquet Perforated Grille", or equal.

2.03 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on Construction Drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
- C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
 - 1. Temperature Change (Range): 100 degrees Fahrenheit.
- D. Shear and punch metals cleanly and accurately. Remove burrs.
- E. Ease exposed edges to a radius of approximately 1/32-inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

- F. Remove sharp or rough areas on exposed traffic surfaces.
- G. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- K. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- L. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

2.04 GUARDRAILS, HANDRAILS, AND RAILINGS

- A. Steel
 - 1. General: Fabricate steel guardrails, handrails, and railing systems to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube or pipe, post spacings, and anchorage, but not less than that required to support structural loads.
 - a. Tube Diameter: As indicated.
 - 2. Interconnect handrail and railing members by butt-welding or welding with internal connectors, at fabricator's option, unless otherwise indicated.
 - a. At tee and cross intersections, cope ends of intersecting members to fit contour of pipe to which end is joined, and weld all around.
 - 3. Form changes in direction of handrails and railings as detailed.
 - 4. Form simple and compound curves by bending tube or pipe in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of tube or pipe throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of pipe.
 - 5. Provide wall returns at ends of wall-mounted handrails as indicated.
 - 6. Close exposed ends of tube or pipe by welding 3/16-inch thick steel plate in place or with prefabricated fittings.
 - 7. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, post base flanges, miscellaneous fittings, and anchors for interconnections of pipe and attachment of handrails and railing systems to other work. Furnish inserts and other anchorage devices for connecting handrails and railing systems to concrete.

8. Fillers: Provide steel sheet or plate fillers of thickness and size indicated or required to support structural loads of handrails where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses. Size fillers to produce adequate bearing to prevent bracket rotation and overstressing of substrate.
9. For galvanized handrails and railing systems, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

2.05 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports for applications indicated that are not a part of structural steel framework as required to complete the Work.
- B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
 - a. Except as otherwise indicated, space anchors 24 inches on center and provide minimum anchor units in the form of steel straps 1-1/4 inches wide by 1/4-inch thick by 8 inches long.
- C. Galvanize miscellaneous interior framing and supports.

2.06 FINISHES, GENERAL

- A. Comply with NAAMM's MFM for recommendations relative to applying and designing finishes. Finish metal fabrications after assembly.

2.07 STEEL AND IRON FINISHES

- A. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 1. Typical: SSPC SP 2, SSPC SP 3, as required.
 2. Architectural Exposed Steel Fabrications: SSPC SP 6.
- B. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC PA 1 for shop painting.
- C. Finish Painting: As specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required. Fasteners not installed but required after pour shall be submitted to the Architect for approval. Fastener shall not be installed until the Architect approval is received.

- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of units that have been galvanized after fabrication and are intended for bolted or screwed field connections.
- E. Field Welding
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.02 SETTING

- A. Set item shown or required to be installed in sleeves with quick-setting anchor cement unless otherwise noted.
- B. Use non-shrink grout mixed in accordance with manufacturer's directions for setting plates, bolts, and similar items.

3.03 FIELD QUALITY CONTROL

- A. The City's Special Inspector will visually inspect fillet welds at bases of ramp rail posts according to CBC Chapter 17.

3.04 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and prime and paint exposed areas with same material as used for shop painting to comply with SSPC PA 1 requirements for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a 2.0-mil minimum dry film thickness.
- B. For galvanized surfaces, clean welds, bolted connections, and abraded areas, and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION

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SECTION 06 20 00

FINISH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Miscellaneous interior wood trim where indicated.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 90 00 - Painting and Coating: For field finish painting.

1.02 REFERENCES

- A. ANSI - American National Standards Institute
 - 1. A208.2 - Medium Density Fiberboard for Interior Use.
- B. ASTM - American Society for Testing and Materials
 - 1. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. D3498 - Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems.
- C. CALGreen - California Green Building Standards, 2019 Edition
- D. CFR - Code of Federal Regulations
 - 1. 40 CFR 59 - National Volatile Organic Compound Emission Standards for Consumer and Commercial Products.
- E. EPA - Environmental Protection Agency
 - 1. Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- F. FSC - Forest Stewardship Council
 - 1. STD-01-001 - FSC Principles and Criteria for Forest Stewardship.
- G. WI - Woodwork Institute

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. Composite wood used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Articles 5.504.4.5 and 5.504.4.5.3.
 - 2. Adhesives used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Article 5.504.4.1.

1.04 SUBMITTALS

- A. Product Data: Submit for all items.

- B. Shop Drawings
 - 1. Indicate dimensioned plans, sections, elevations, large scale details, location of each item, materials and wood species, component profiles, fastenings, jointing details, finishes, accessories, hardware location and schedule of finishes.
 - 2. Follow WI standards for shop drawings.
- C. Samples: Submit samples of wood items finished as specified.
 - 1. At least 1 sample of finished solid stock showing complete range of variations in grain, color, and other features, minimum 6 inches by 12 inches.
 - 2. Samples shall be resubmitted for acceptable stain and finish until approved by the Architect.
 - 3. Provide photographs of all samples.

1.05 QUALITY ASSURANCE

- A. Forest Certification: Provide wood products made with not less than 70 percent of wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship".

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Acceptance at Site: Do not deliver interior finish carpentry until environmental conditions meet requirements specified for installation areas. If finish carpentry must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.
- B. Storage and Protection: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack plywood. Provide for air circulation within and around stacks and under temporary coverings.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Lumber shall bear the grade and trademark of the association under whose rules it is produced and a mark of mill identification. Lumber shall be of sound stock, thoroughly seasoned, kiln-dried to a moisture content not exceeding 19 percent, and surfaced 4 sides, except as specifically designated for items hereinafter.
 - 1. Exterior Lumber: Western Red Cedar, Grade Select Tight Knot (STK), transparent finish as specified in Section 09 90 00.
 - 2. Interior Lumber Scheduled for Opaque Finish: Paint grade Poplar.
 - 3. Interior Lumber Scheduled for Transparent Finish: Match existing species, grain, color, and surface texture.
- B. Medium Density Fiberboard (MDF): ANSI A208.2, 3/4-inch thick, Grade 130, made with binder containing no urea formaldehyde.
- C. Fasteners
 - 1. Provide fasteners and anchorages with hot-dip galvanized coating complying with ASTM A153, length of fastener embedded into wood substrate to equal 1-1/2 times thickness of items fastened.
 - 2. Countersink nails and fill surface where nailing is unavoidable. Sand smooth and flush for clear finish.

- D. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.
 - 1. Use wood glue that has a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Multipurpose Construction Adhesive: Formulation complying with ASTM D3498 that is recommended for indicated use by adhesive manufacturer.
 - 1. Use adhesive that has a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- F. Putty: Linseed oil type, tinted to match surface finish color.
- G. Back Priming: As specified in Section 09 90 00.

2.02 FABRICATION

- A. Preparation
 - 1. Verify measurements at job site.
 - 2. Verify details and dimensions of fixtures integral with finish carpentry for proper fit and accurate alignment.
- B. General Fabrication Requirements
 - 1. Factory-fabricate and assemble work in complete units insofar as dimensions permit shipment and installation.
 - 2. Kerf backs of solid members more than 5 inches wide or more than 1 inch nominal thickness.
 - 3. Conceal nailing where possible and set nail heads for putty in exposed portions.
 - 4. Perform corrective measures necessitated by non-conformance with WI standards. The Architect's opinion shall govern discrepancies.
 - 5. Preprime wood and field prime end cuts.
- C. Interior Miscellaneous Wood Trim: As indicated on the Drawings.

2.03 FINISHES

- A. Shop Finishing: Provide items specified in this Section to be fabricated in accordance with WI standards, shop finished in accordance with the following requirements
 - 1. Back Priming: Back prime all concealed wood surfaces.
- B. Preparation For Site Finishing
 - 1. Touch-Up: Touch-up items specified to be shop finished in accordance with requirements of WI.
 - 2. Items Other Than Those Specified to Be Shop Finished
 - a. Set exposed fasteners. Apply putty in exposed fastener indentations. Sand work smooth and prime.
 - b. Finish paint in accordance with requirements of Section 09 90 00.
 - c. Finish MDF smooth with no visible wart or paint wicking at fasteners.
- C. Transparent and Opaque Finishes: As specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General
 - 1. Set work square, level, plumb with edges scribed, accurate, and secure in place with fastenings, clips, braces, brackets, anchors, shims, and blocks.

2. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary. Stagger joints in adjacent and related standing and running trim. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
 3. Conceal nailing and screwing where possible and set nail heads for putty in exposed portion and conceal screws as indicated.
 4. Miter inside and outside corners of running trim; bevel end joints together.
- B. Wood Surfaces
1. Thoroughly hand sand. Take care that cross sanding is removed by final sanding in direction of grain; ease "knife-edge" corners by sanding.
 2. Ensure free from dust, glue, stains, and other foreign matter and in proper condition to receive finish.

3.02 ADJUSTING

- A. Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

END OF SECTION

SECTION 06 41 10

CUSTOM CASEWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Plastic laminate faced casework for new cabinets and resurfacing of existing cabinets as indicated.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 09 90 00 - Painting and Coating: For back priming.
 - 2. Division 22 - Plumbing: For rough-in and connection of plumbing fixtures and fittings.
 - 3. Division 26 - Electrical: For rough-in and connection of electrical fixtures and fittings.

1.02 REFERENCES

- A. ALA - American Laminators Association
- B. ANSI - American National Standards Institute
 - 1. A208.2 - Medium Density Fiberboard (MDF) for Interior Applications.
 - 2. B18.6.1 - Screws, Wood (Slotted).
- C. CALGreen - California Green Building Standards, 2019 Edition
- D. EPA - Environmental Protection Agency
 - 1. Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- E. FS - Federal Specifications
 - 1. FF-N-105 - Nails, Brads, Staples and Spikes: Wire, Cut and Wrought.
- F. FSC - Forest Stewardship Council
 - 1. STD-01-001 - FSC Principles and Criteria for Forest Stewardship.
- G. NEMA - National Electric Manufacturers Association
 - 1. LD3 - High Pressure Decorative Laminates.
- H. WI - Woodwork Institute

1.03 DEFINITIONS

- A. Exposed Portions - All Grades: Surfaces visible when doors and drawers are closed; underside of bottoms of cabinets over 4 feet above finished floor; cabinet tops under 6 feet above finished floor; visible front edges of web frames, ends, divisions, tops, shelves, and hanging stiles; visible sloping tops of cabinets; visible portions of bottoms, tops, and ends in front of sliding doors.
- B. Semi-Exposed Portions: Shelves; divisions; interior face of ends, backs, and bottoms; drawer sides, subfronts, backs, and bottoms; underside of bottoms of cabinets between 2-1/2 and 4 feet above finished floor; interior faces of hinged doors; and all rooms designated as storage, janitor, closet, or utility.

- C. Concealed Portions: Toe space; sleepers, web frames, stretchers, and solid sub-tops; security panels; underside of bottoms of cabinets less than 2-1/2 feet above finished floor; flat tops of cabinets 6 feet or more above finished floor except if visible from upper building level; 3 non-visible edges of adjustable shelves; underside of countertops, knee spaces, and drawer aprons; faces of cabinet ends of adjoining units that butt together.

1.04 SYSTEM DESCRIPTION

- A. Composite wood used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Articles 5.504.4.5 and 5.504.4.5.2.

1.05 SUBMITTALS

- A. Product Data
 - 1. Submit manufacturer's product data for each type of product and process specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation, including hardware.
 - 2. Submit manufacturer's written installation instructions for pre-fabricated casework items.
- B. Shop Drawings: Submit shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, seismic anchorage, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of furring and blocking, including concealed backing and reinforcing specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, electrical devices, faucets, soap dispensers, grommets, and other items installed in casework.
- C. Samples
 - 1. Submit proposed finish panel.
 - 2. Resubmit panel sample with finishes adjusted as directed, until material and finish are accepted.
 - 3. Provide photographs of all samples.
- D. Quality Control Submittals: Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed Projects with Project names and addresses, names and addresses of architects and Cities, and other information specified.

1.06 QUALITY ASSURANCE

- A. Qualifications
 - 1. Fabricator: Firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.
 - 2. Installer: Arrange for interior architectural woodwork installation by a firm that can demonstrate successful experience in installing architectural woodwork items similar in type and quality to those required for this Project.
- B. Quality Standard: Except as otherwise indicated, comply with WI for grades of interior architectural woodwork, construction, finishes and other requirements.

- C. Forest Certification: Provide wood products made with not less than 70 percent of wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Acceptance at Site: Do not deliver casework until painting and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas.

1.08 PROJECT CONDITIONS

- A. Environmental Requirements: Do not deliver or install casework until building is enclosed, wet-work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where casework is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Verify locations of concealed framing, backing, reinforcements, and furring that support casework by accurate field measurements before being enclosed. Record measurements on final shop drawings.
 - 2. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating casework without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General
 - 1. Material Grade: Provide materials that comply with requirements of the WI quality standard for each type of woodwork and quality grade indicated, unless otherwise indicated.
 - 2. Lumber and Plywood: Kiln-dry to equilibrium moisture content suitable for fabrication in shop and use intended.
- B. Medium Density Fiberboard (MDF)
 - 1. ANSI A208.2, 3/4-inch thick, paint grade, with low VOC/ formaldehyde-free.
 - 2. Product: As manufactured by Medite Corporation, Inc., "Medite II"; SierraPine Ltd.; Louisiana-Pacific Corp., or equal.
- C. Plastic Laminate
 - 1. Typical: High-pressure general purpose grade, solid colors with textured surfaces.
 - a. Plastic Thickness and Grade: Meet requirements of NEMA LD3.
 - b. Adhesive: As recommended by plastic laminate manufacturer.
 - 2. Product: As manufactured by Formica Group; Wilsonart, LLC, or equal.
 - 3. Colors: As selected by the Architect from manufacturer's complete range; allow for different colors at casework and bar.
- D. Melamine Laminate: Low pressure decorative, white, ALA approved.
- E. Mouldings: Provide decorative metal edging at edges and between sheets of plastic laminate at bar; 1/2-inch smooth face, friction fit tee, clear satin finish (EA), comes in 12-foot lengths, as manufactured by Eagle Mouldings, "Aluminum Tee Edging", or equal.

- F. Cabinet Hardware: Provide hardware items as required for complete installation as indicated, but no less than the following types.
1. Plug-In Pin Type Shelf Supports: Provide holes 1 inch on center.
 2. Cabinet Hinges: European concealed type, minimum 160 degree opening, with spring closer.
 3. Cabinet Pulls: 6-3/4 inches long, 3/8-inch diameter, 1-13/32 inches projection, 5-7/16 inches on center, satin stainless steel finish, 1-inch mounting screws included, as manufactured by Doug Mockett & Company Inc., "DP57D Wire Pull", or equal.
 4. Drawer Slides: Full extension, rail mounted type, minimum 100-pound capacity with ball bearing rollers, as manufactured by Accuride; Knappe & Vogt; Rockler Companies, Inc., or equal.
 5. Cabinet Locks: Pin and tumbler slide bolt lock, with 2 keys each, as manufactured by Schlage Lock Co., "46-002 Cabinet Locks"; Best Access Systems, "5L Series"; CompX International, "Timberline Locks", or equal.

2.02 INSTALLATION MATERIALS

- A. Screws: Select material, type, size, and finish required for each use. Comply with ANSI B18.6.1 for applicable requirements.
- B. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.
- D. Adhesives, General: Do not use adhesives that contain urea formaldehyde.
- E. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
1. Wood Glues: 30 g/L.
 2. Contact Adhesive: 250 g/L.
- F. Adhesive for Bonding Plastic Laminate: Resorcinol.
1. Adhesive for Bonding Edges: Hot melt adhesive.

2.03 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Provide custom grade interior casework complying with WI.
- B. Wood Moisture Content: Comply with requirements of WI for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.
1. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - a. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4-Inch Thick or Less: 1/16-inch.
 - b. Edges of Rails and Similar Members More than 3/4-Inch Thick: 1/16-inch.
 2. Complete fabrication, including assembly and concealed hardware application, before shipment to Project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

3. Shop-cut openings, to maximum extent possible, to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges with a water-resistant coating.

2.04 PLASTIC COVERED CASEWORK

- A. Fabricate in accordance with WI, Custom Grade.
- B. Construction Type: Flush overlay.
- C. Core Material: Particleboard, medium density fiberboard, or close grain hardwood plywood.
- D. Provide plastic laminate at exposed surfaces.
- E. Provide polyester cabinet liner at concealed interior surfaces.

2.05 FINISHING

- A. Quality Standard: Comply with WI Section 5, unless otherwise indicated.
 1. Grade: Provide finishes of same grades as items to be finished.
- B. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 1. Backpriming: Apply 1 coat of sealer or primer compatible with finish coats to concealed surfaces of woodwork, including backs of cabinets and underside of countertops. Concealed surfaces of plastic laminate-clad woodwork do not require backpriming when surfaced with plastic laminate or thermoset decorative overlay.
- C. Backprime surfaces to be set against concrete or plaster, as specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Condition casework to average prevailing humidity conditions in installation areas before installing.
- B. Before installing architectural casework, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

3.02 INSTALLATION

- A. Quality Standard: Install woodwork to comply with WI for the same grade specified in Part 2 of this Section for type of casework involved.
- B. Install casework plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8-inch in 96 inches for plumb and level (including tops).
- C. Scribe and cut casework to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

- D. Anchor casework to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8-inch in 96-inch sag, bow, or other variation from a straight line.
- F. Complete the finishing work specified in this Section to the extent not completed at shop or before installation of casework.

3.03 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust concealed hardware
- C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 07 21 01

BUILDING INSULATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Acoustical insulation.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 29 00 - Gypsum Board: Provision of gypsum board.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
- B. CALGreen - California Green Building Standards, 2019 Edition
- C. UL - Underwriters Laboratories Inc.

1.03 DEFINITIONS

- A. Thermal Resistivity: Where the thermal resistivity of insulation products are designated by "r-values", they represent the reciprocal of thermal conductivity (k-values). Thermal conductivity is the rate of heat flow through a homogenous material exactly 1 inch thick. Thermal resistivities are expressed by the temperature difference in degrees Fahrenheit between the 2 exposed faces required to cause 1 BTU to flow through 1 square foot per hour at mean temperatures indicated.

1.04 SYSTEM DESCRIPTION

- A. Insulation used on the Project shall comply with CALGreen Code Nonresidential Voluntary Measures Appendix A5, Division A5.5, Section A5.504, Articles A5.504.4.8 and A5.504.4.8.2.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for insulation products specified.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect fiberglass and acoustical materials from moisture during storage and installation.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Acoustical Insulation: Mineral wool acoustic and thermal batt insulation, made of inorganic fibers derived from basalt volcanic rock, width to fit stud space, thickness as indicated to completely fill stud cavity, and conforming to ASTM C665, Type I, non-combustible when tested in accordance with ASTM E136.
 - 1. Fire resistive requirements when tested in accordance with ASTM E84:
 - a. Flame Spread: 0.
 - b. Smoke Developed: 0.
 - 2. Product: As manufactured by Johns Manville, "Mineral Wool TempControl Batts", or equal.
- B. Accessories
 - 1. Insulation Support: Galvanized springwire as required.
 - 2. Undersink Pipe Insulation: Provide undersink supply and drain pipe insulation, as manufactured by Truebro, Inc., "Basin Guard"; IPS Corporation, or equal.

PART 3 - EXECUTION**3.01 INSTALLATION, GENERAL**

- A. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, use mechanical anchorage to provide permanent placement and support of units.
- B. Extend insulation full thickness as indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections that interfere with placement.
- C. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness. Avoid crinkling and bending so that final installation is flat and smooth.
- D. Install spindle fasteners at metal deck insulation in accordance with manufacturer's written instructions.

3.02 INSTALLATION OF ACOUSTICAL INSULATION

- A. Install batt insulation as indicated on the Drawings and as directed below.
- B. Install batt insulation above all suspended gypsum board ceilings.
- C. Install batt insulation to fill framing cavities and fasten to framing to prevent slipping at sound-rated construction.
- D. Install insulation batts around perimeter of piping and electrical boxes in sound-rated wall/ceiling cavities.
- E. At all exposed conditions in occupiable spaces, provide edge trim at edges of wall installations. Insulation shall not be visible at joints between adjacent panels.

3.03 PROTECTION

- A. General: Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where

insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

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SECTION 07 51 13

BUILT-UP ASPHALT ROOFING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Replacement of existing built-up asphalt roof system to match existing where indicated on the Drawings.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 2. D36 - Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus).
 - 3. D41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 - 4. D312 - Standard Specification for Asphalt Used in Roofing.
 - 5. D6221 - Standard Specification for Reinforced Bituminous Flashing Sheets for Roofing and Waterproofing.
 - 6. D1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
 - 7. D2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
 - 8. D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- B. CBC - California Building Code, 2019 Edition
- C. NRCA - National Roofing Contractors Association
- D. UL - Underwriters Laboratories Inc.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Roofing system shall arrest water migration from entering building through roof membrane, and will withstand wind loads, thermally induced movement, and exposure to weather without failure.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including technical product information, installation instructions, and recommendations for each type of roofing product required. Include data substantiating that materials comply with requirements.
 - 1. For asphalt bitumen, provide a label on each container or certification with each load of bulk bitumen, indicating flash point (FP), softening point (SP), and equiviscous temperature (EVT).
- B. Quality Control Submittals
 - 1. Field Test Reports: Submit daily softening-point test reports on samples of asphalt used on the Project, taken at beginning of each day's work and at 2-hour intervals during course of the work thereafter. Use Ring and Ball Test, ASTM D36, or similar

recognized test method. Submit samples to independent laboratory for testing or perform tests in field at Contractor's option.

2. Certificates: Submit manufacturer's certification indicating that all bulk bituminous materials delivered to the Project comply with required standards. Include quantity and statistical and descriptive data for each product. Submit certificate with each load before it is used.
 - a. Include continuous log showing time and temperature for each load of bulk bitumen, indicating date obtained from manufacturer, where held, and how transported prior to final heating and application on roof.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer (roofer) to perform built-up asphalt roofing work who has specialized in installing built-up asphalt roofing systems similar to that required for this Project and who is acceptable to manufacturer of primary roofing materials.
 1. Installer Certification: Obtain written certification from manufacturer of built-up roofing system certifying that installer is approved by manufacturer to install specified roofing system. Provide copy of certification for the Architect prior to awarding roofing work.
 2. Installer's Field Supervision: Require installer to maintain a full-time supervisor or foreman who is on job site during times that built-up asphalt roofing work is in progress and who is experienced in installing and repair of roofing systems similar to type and scope required for this Project.
- B. Regulatory Requirements
 1. Conform to CBC for roof assembly fire hazard requirements.
 2. Fire Hazard Classification: UL Class A.
 3. Except as approved by the Architect, all asphalt roofing and built-up flashing materials shall be manufactured by or be acceptable to the roofing system manufacturer.

1.06 PROJECT CONDITIONS

- A. Weather Condition Limitations: Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed according to manufacturers' recommendations.
- B. Substrate shall be dry, and roofing shall be installed in accordance with roofing manufacturer's requirements. All voids shall be patched; soft spots braced or removed and replaced to roofing manufacturer's approval.
- C. Hazardous materials are not expected to be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately notify the Architect and the City.

1.07 WARRANTY

- A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Manufacturer's Warranty: Manufacturer's standard or customized form, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.

1. Manufacturer's warranty includes roofing membrane, base flashings, fasteners, roofing membrane accessories, and other components of roofing system specified in this Section.
 2. Warranty Period: 20 years from date of Substantia Completion.
- C. Installer's Warranty: Submit roofing installer's warranty, signed by installer, covering the Work of this Section, including all components of roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and walkway products, for the following warranty period:
1. Warranty Period: 5 years from date of Substantial Completion.
- D. Manufacturer Inspection and Preventive Maintenance Requirement: By manufacturer's technical representative, to report maintenance responsibilities to the City necessary for preservation of the City's warranty rights. The cost of manufacturer's annual inspections and preventive maintenance is included in the Contract Sum.
1. Inspections to occur in the following years subsequent to completion: 2, 5, 10, and 15.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturer: Firestone Building Products, "BUR System Nailable Deck", or equal.

2.02 MATERIALS

- A. Membrane Roof Composition: Provide mineral capped surface roof system with asphalt bitumen, and minimum 3 plies glass-fiber felts for lay-up as follows.
1. Base Ply: Single ply of asphalt, glass-fiber felt, complying with ASTM D2178, Type IV.
 2. Ply Felts: Complying with ASTM D2178, Type VI; number of plies as indicated on the Drawings.
 3. Aggregate Surfacing: ASTM D1863, No. 6 or No. 67, clean, dry, opaque, water-worn gravel or crushed stone, free of sharp edges.
 4. Interply Bitumen: Roofing asphalt, complying with ASTM D312, Type II and III.
- B. Asphalt Primer: ASTM D41.
- C. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required by roofing manufacturer for application.
- D. Tapered Insulation: Rigid roof insulation board composed of closed cell polyisocyanurate foam core bonded to fiberglass reinforced facers; meets ASTM C1289 Type II, Class I, Grade 2.
1. R-Value: 6.0 per inch; minimum total requirement R-21.
 2. Product: As manufactured by Firestone Building Products, or equal.
- E. Wood Blocking, Curbs, Cants, and Nailers: Pressure-treated lumber, sizes as indicated.

PART 3 - EXECUTION**3.01 GENERAL INSTALLATION REQUIREMENTS**

- A. Protect other work from spillage of built-up roofing materials and prevent liquid materials from entering or clogging drains and conductors. Replace/restore other work damaged when installing built-up roofing system work.

- B. Insurance/Code Compliance: Install and test, where required, built-up roofing system to comply with governing regulations and the following insurance requirements
 - 1. UL Fire Classified and Class 90 uplift resistance.
- C. Coordinate installing roofing sheets, flashings, stripping, coatings, and surfacings so that felts are not exposed to precipitation or exposed overnight. Provide cutoffs at end of each day's work to cover exposed felts with a course of coated felt with joints and edges sealed with roofing cement. Remove cutoffs immediately before resuming work.
- D. Asphalt Bitumen Heating: Heat and apply bitumen according to EVT Method as recommended by NRCA. Do not raise temperature above minimum normal fluid-holding temperature necessary to attain EVT more than 1 hour prior to application. Discard bitumen that has been held at a temperature exceeding finished blowing temperature (FBT) for more than 3 hours. Determine flash point, FBT and EVT of bitumen, either by information from bitumen producer or by suitable tests. Determine maximum fire-safe handling temperature and do not exceed that temperature in heating bitumen. In no case heat bitumen to a temperature higher than 25 degrees Fahrenheit below flash point. Keep kettle lid closed except when adding bitumen.
- E. Bitumen Mopping Weights: For interply mopping, and for other moppings except as otherwise indicated, apply bitumen between plies at the nominal rate of 23 pounds per roof square (plus or minus 20 percent on a total-job average basis).
- F. Substrate Joint Penetrations: Do not allow bitumen to penetrate substrate joints and enter building or damage insulation, vapor retarders, or other construction. Where mopping is applied directly to a substrate, tape joints or, in the case of steep asphalt, hold mopping back 2 inches from both sides of each joint.
- G. All terminations shall occur on solid blocking in the framing.
- H. Cutoffs: At the end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets. Provide temporary covering of 2 plies of No. 15 roofing felt set in full moppings of hot bitumen; remove at beginning of the next day's work.

3.02 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roofing insulation.

3.03 BASE SHEET INSTALLATION

- A. Prime surface of wood deck with asphalt primer at a rate of 3/4-gal./100 sq. ft. and allow primer to dry.
- B. Install one lapped course of base sheet according to roofing system manufacturer's written instructions, extending sheet over and terminating beyond cants. Mechanically fasten base sheet to substrate.

3.04 ROOF MEMBRANE INSTALLATION

- A. Interply Sheet: Install the number and type of ply sheets (felts) indicated, lapped (shingled) amount specified to form a continuous, uniform membrane with continuous bitumen moppings between sheets so that ply sheet does not touch ply sheet. As ply-sheet

membrane is laid up, glaze-coat top surface with a 20 pounds per square mopping of same bitumen.

- B. Aggregate Surfacing: Promptly after installing and testing roofing membrane, base flashing, and stripping, flood-coat roof surface with 60 lb/100 sq. ft. of hot roofing asphalt. While flood coat is hot and fluid, cast the following average weight of aggregate in a uniform course:
 - 1. Aggregate Weight: 400 lb/100 sq. ft.
 - 2. If aggregate surfacing is delayed, promptly apply glaze coat of hot roofing asphalt at a rate of 10 lb/100 sq. ft.

3.05 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows
 - 1. Backer Sheet Application: Mechanically fasten backer sheet to walls or parapets. Adhere backer sheet over roof membrane at cants in a solid mopping of hot roofing asphalt.
 - 2. Flashing Sheet Application: Adhere flashing sheet to substrate in a solid mopping of hot roofing asphalt. Apply hot roofing asphalt to back of flashing sheet if recommended by roofing system manufacturer.
- B. Extend base flashing up walls or parapets a minimum of 8 inches above roof membrane and 4 inches onto field of roof membrane.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - 1. Seal top termination of base flashing.
- D. Install stripping where metal flanges and edgings are set on built-up roofing according to roofing system manufacturer's written instructions.
 - 1. Built-up Stripping: Install stripping of not less than 2 plies of roof membrane felt, setting each ply in a continuous coating of asphalt roofing cement or in a solid mopping of hot roofing asphalt, extended onto roof membrane 4 inches and 6 inches, respectively.

3.06 PROTECTION AND CLEANING

- A. Protect built-up roofing membrane from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to the Architect and the City.
- B. Correct deficiencies in or remove built-up roofing that does not comply with requirements, repair substrates, reinstall roofing, and repair base flashings to a condition free of damage and deterioration at the time of Substantial Completion.

END OF SECTION

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SECTION 07 92 00**JOINT SEALANTS****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Joint sealants and backing systems for the following locations:
 - 1. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated.
 - 2. Interior joints in horizontal traffic surfaces as indicated.
 - 3. Acoustical sealant for concealed joints.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 05 45 00 - Metal Support Assemblies: Provision of metal support assemblies.
 - 2. Section 09 29 00 - Gypsum Board: Provision of gypsum board.
 - 3. Section 09 30 00 - Tiling: Provision of ceramic tile.
 - 4. Section 09 65 00 - Resilient Flooring: Provision of resilient flooring.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C834 - Standard Specification for Latex Sealants.
 - 2. C919 - Standard Practice for Use of Sealants in Acoustical Applications.
 - 3. C920 - Standard Specification for Elastomeric Joint Sealants.
 - 4. C1193 - Standard Guide for Use of Joint Sealants.
 - 5. D1056 - Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
- B. CALGreen - California Green Building Standards, 2019 Edition
- C. CFR - Code of Federal Regulations
 - 1. 40 CFR Part 763, Subpart F, Appendix A, Section 1 - Polarized Light Microscopy.
- D. EPA - Environmental Protection Agency
 - 1. Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. Provide joint sealers that have been manufactured to establish and maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
 - 2. Adhesives, sealants, and caulks used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Articles 5.504.4.1. and 5.504.4.2.

1.04 SUBMITTALS

- A. Product Data: Submit product data from manufacturers for each joint sealant product required.

- B. Samples: Provide “dot” samples for verification purposes of each type and color of joint sealant required.
 - 1. Submit samples of all standard colors of sealant which is not paintable.
 - 2. Provide photographs of all samples.

1.05 QUALITY ASSURANCE

- A. Work shall comply with ASTM C1193.
- B. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates as follows:
 - 1. Locate a mockup test joint. Provide photographs of the mockup.
 - 2. Conduct field tests for each type of elastomeric sealant and joint substrate indicated.
 - 3. Notify Architect 7 days in advance of dates and times when test joints will be erected.
 - 4. Arrange for tests to take place with the City’s Representative and joint sealant manufacturer’s technical representative, if available, present.
 - 5. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 unless other method included in Appendix of ASTM C1193 is more appropriate.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - 2) For sealants that fail adhesively, retesting shall be done until satisfactory adhesion is obtained.
 - 6. Contractor shall submit written report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Data on pull distance used to test each type of product and joint substrate shall be included in the report.
 - 7. Evaluation: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, shall be considered satisfactory.
 - 8. Sealants that fail to adhere to joint substrates during testing shall not be used.
 - 9. Joint profile shall shed water.
 - 10. Use primer prior to application of sealant.

1.06 WARRANTIES

- A. General: Joint sealants shall be repaired or replaced that fail to achieve airtight and watertight seal or otherwise fail to perform as intended because of leaking, crumbling, hardening, shrinkage, bleeding, sagging, staining, loss of adhesion or cohesion, or do not cure within the specified warranty periods.
 - 1. Contractor: 5 years.
 - 2. Manufacturer: 20 years.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General Requirements
 - 1. Provide joint sealers compatible with one another and with substrates.
 - 2. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Sealants: 250 g/L.
 - b. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Manufacturer’s standard color range shall permit matching sealants to color of contacting surfaces and future ability to paint.

- B. Sealants and Caulks
 - 1. Type A -One Part Neutral Cure Silicone Sealant
 - a. ASTM C920, non-sag, one-part, low modulus, elastomeric sealant.
 - b. Color: As selected by the Architect.
 - c. Product: As manufactured by Dow-Corning, "790"; Tremco Incorporated, "Spectrum 1", or equal.
 - 2. Type B - Acrylic Emulsion Sealant
 - a. ASTM C834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.
 - b. Color: As selected by the Architect.
 - c. Product: As manufactured by Pecora Corp., "AC-20"; Tremco Incorporated, "Tremco Acrylic Latex 834", or equal.
 - 3. Type C - Acoustical Sealant
 - a. Non-hardening, non-skinning, for use in conjunction with gypsum board.
 - b. Product: As manufactured by Owens Corning, "QuietZone"; USG, "Sheetrock Brand Acoustical Sealant"; Tremco Incorporated, "Tremco Acoustical Sealant"; Pecora Corp., "BA-98 Acoustical Sealant"; or equal.
 - 4. Type D - Foam Sealant
 - a. Polyurethane foam as required to bridge gaps larger than 1/2-inch; scrape back foam once it is hard and cover with minimum 1/2-inch acoustical sealant or fire putty.
 - b. Product: As manufactured by Dow-Corning, "Enerfoam", or equal.

2.02 ACCESSORIES

- A. Primer: Non-staining type recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ASTM D1056 round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width as recommended by manufacturer of sealant material.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.
- E. Putty Pad: Fire barrier, intumescent putty pad; use for backs of outlets, etc.; push into cracks and crevices concealed within walls and floor framing; as manufactured by Spec Seal, "SSP4S"; Grainger, "Putty, Moldable", or equal.

PART 3 - EXECUTION

3.01 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

- D. Installation of Sealant Joint Backings: Install sealant joint backings to comply with the following requirements:
1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints for 2 opposing side adhesion only.
- E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
1. Provide concave joint configuration per Figure 5A in ASTM C1193, unless otherwise indicated.
- G. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, and to comply with sealant manufacturer's directions for installation methods, materials, and tools that produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in conformance with sealant manufacturer's recommendations.

3.02 SCHEDULE

- A. Type A
1. Between metal and concrete or mortar.
 2. Interior perimeter joints between cast-in-place concrete and frames of doors and windows.
- B. Type B
1. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
 2. All other interior joints not indicated otherwise.
- C. Type C: Concealed acoustical conditions.
- D. Type D: Where required to bridge gaps larger than 1/2-inch.

END OF SECTION

SECTION 08 12 15**STEEL FRAMES****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Non-fire resistance rated steel door frames.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 08 14 16 - Flush Wood Doors: Provision of flush wood doors.
 - 2. Section 08 71 00 - Door Hardware: Provision of door hardware.
 - 3. Section 09 90 00 - Painting and Coating: For field painting of primed frames.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
 - 2. A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
- B. DHI - Door and Hardware Institute
 - 1. A115 Series - Steel Door Preparation Standards.
- C. SDI - Steel Door Institute
 - 1. 100 - Recommended Specifications for Standard Steel Doors and Frames.
 - 2. 105 - Recommended Erection Instructions for Steel Frames.
 - 3. 117 - Manufacturing Tolerances Standard Steel Doors and Frames.
 - 4. A250.8 - Recommended Specifications for Standard Steel Doors and Frames.

1.03 SUBMITTALS

- A. Product Data: Submit product data for each type of frame specified, including details of construction, materials, dimensions, hardware preparation, label compliance, sound ratings, profiles, and finishes.
- B. Shop Drawings: Submit shop drawings showing fabrication and installation of standard steel frames referenced to the Architect's door mark and hardware group. Include details of each frame type, conditions at openings, details of construction, location and installation requirements of frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of frames using same reference numbers for details and openings as those on the Drawings.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers: Overly Manufacturing Co.; Steelcraft Manufacturing Co; Stanley, or equal.

2.02 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A1011, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Supports and Anchors: Fabricate of not less than ~~18-gauge~~ ^{16-gauge} sheet steel; galvanized where used with galvanized frames.
- D. Inserts, Bolts, and Fasteners: Manufacturer's standard units.
- E. Shop Applied Paint: Apply after fabrication.
 - 1. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

2.03 MATERIALS

- A. Interior Frames: Fabricate full profile welded frames of minimum ~~18-gauge~~ ^{16-gauge} cold-rolled steel.
- B. Door Silencers: Except on weatherstripped and smoke gasketed frames, drill stops to receive 3 silencers on strike jambs of single door frames and 2 silencers on heads of double door frames.

2.04 FABRICATION

- A. Fabricate steel frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at Project site. Comply with SDI A250.8 requirements.
- B. Tolerances: Comply with SDI 117.
- C. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold-rolled or hot-rolled steel.
- D. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- E. Hardware Preparation: Prepare frames to receive mortised and concealed hardware in accordance with final Door Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of DHI A115 Series Specifications for frame preparation for hardware.
 - 1. For concealed overhead door closers, provide space, cutouts, reinforcing, and provisions for fastening in head of frames, as applicable.
- F. Reinforce frames to receive surface applied hardware. Drilling and tapping for surface applied hardware may be done at Project site.
- G. Locate hardware as indicated on final shop drawings or, if not indicated, in accordance with DHI.
- H. Shop Painting: Clean, treat, and paint exposed surfaces of steel frame units, including galvanized surfaces.
 - 1. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.

2. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.
- I. Finish Painting: As specified in Section 09 90 00.

PART 3 - EXECUTION**3.01 INSTALLATION**

- A. General: Install steel frames and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.
- B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated.
 1. Except for frames located at existing concrete, masonry, or drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

3.02 ADJUST AND CLEAN

- A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Final Adjustments: Check and readjust operating hardware items, leaving steel frames undamaged and in complete and proper operating condition.

END OF SECTION

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SECTION 08 14 16

FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Interior non-fire resistance rated flush wood doors for installation in new or existing hollow metal frames.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 08 71 00 - Door Hardware: Provision of door hardware.
 - 2. Section 09 90 00 - Painting and Coating: For finish painting.

1.02 REFERENCES

- A. CALGreen - California Green Building Standards, 2019 Edition
- B. DHI - Door and Hardware Institute
 - 1. A115-W - Wood Door Preparation Standards, a set containing A115-W1 - A115-W9.
 - 2. WDHS-3 - Recommended Hardware Locations for Wood Flush Doors.
- C. SDI - Steel Door Institute
 - 1. 100 - Recommended Specifications for Standard Steel Doors and Frames.
- D. WDMA - Window and Door Manufacturers Association
 - 1. I.S.1-A - Architectural Wood Flush Doors.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. Composite wood used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Articles 5.504.4.5 and 5.504.4.5.3.
 - 2. Adhesives used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Article 5.504.4.1.

1.04 SUBMITTALS

- A. Product Data: Submit product data for each type of door, including details of core and edge construction, trim for openings and louvers, and factory-finishing specifications.
- B. Shop Drawings: Submit shop drawings indicating location and size of each door referenced to the Architect's door mark and hardware group, elevation of each kind of door, details of construction, location and extent of hardware blocking, requirements for factory finishing and other pertinent data.
 - 1. For factory-machined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.

1.05 QUALITY ASSURANCE

- A. Quality Standard: WDMA Quality Standard: I.S.1-A.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Identify each door with individual opening numbers as designated on shop drawings, using temporary, removable, or concealed markings. Use the Architect's door numbering system.
- B. Storage and Protection: Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's instructions.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.08 WARRANTY

- A. General Warranty: Door manufacturer's warranty specified in this Article shall not deprive the City of other rights the City may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup, or twist) more than 1/4-inch in a 42-inch by 84-inch section or that show telegraphing of core construction in face veneers exceeding 0.01-inch in a 3-inch span, or do not conform to tolerance limitations of referenced quality standards.
 - 1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.
 - 2. Warranty shall be in effect during the following period of time after date of Substantial Completion, Beneficial Occupancy or Notice of Completion, whichever is earlier.
 - a. Solid Core Interior Doors: Life of installation.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers: Algoma Hardwoods, Inc.; Eggers Industries, Architectural Door Division; Marshfield Door Systems; Liberty Valley Doors, Inc., or equal.

2.02 MATERIALS

- A. Interior Solid Core Doors Intended for Opaque Finish
 - 1. Thickness: 1-3/4 inches, unless otherwise indicated.
 - 2. Faces: Poplar.
 - 3. Grade: Paint grade.
 - 4. Construction: 7 plies.
 - 5. Core: Particle board core.
 - 6. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.
- B. Hardware: As specified in Section 08 71 00.

- C. Door Frames
 - 1. Typical: Existing hollow metal.
 - 2. At Restroom: Provide new hollow metal frame for door of type and style as indicated on the Drawings and schedules and in accordance with SDI 100. Conceal fastenings, unless otherwise indicated.
 - a. Interior: Fabricate fully welded frames of minimum 18 gauge cold-rolled steel.
 - b. Product: As manufactured by Overly Manufacturing Co.; Steelcraft Manufacturing Co; Stanley, or equal.

2.03 FABRICATION

- A. Fabricate flush wood doors to comply with the following requirements:
 - 1. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI WDHS-3. Comply with final hardware schedules, door frame shop drawings, DHI A115-W series standards, and hardware templates.
 - a. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory machining.
- B. Finishing: Opaque painting of doors and frames, as specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine installed door frames prior to hanging door.
 - 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
 - 2. Reject doors with defects.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Hardware: See Section 08 71 00.
- B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.
- C. Job-Fit Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer. Seal cut surfaces after fitting.
 - 1. Fitting Clearances for Non-Fire Rated Doors: Provide 1/8-inch at jambs and heads; 1/16-inch per leaf at meeting stiles for pairs of doors, and 1/8-inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4-inch clearance from bottom of door to top of threshold.
 - 2. Bevel non-fire rated doors 1/8-inch in 2 inches at lock and hinge edges.
- D. Field-Finished Doors: See Section 09 90 00.

3.03 ADJUSTING AND PROTECTION

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Refinish or replace doors damaged during installation.

- C. Protect doors as recommended by door manufacturer to ensure that wood doors will be without damage or deterioration at the time of Substantial Completion.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions of Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.
- B. This Section includes the following, but is not necessarily limited to:
 - 1. Door Hardware, including electric hardware.
 - 2. Thresholds, gasketing and weather-stripping.
 - 3. Door silencers or mutes.
- C. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.
 - 1. Division 8: Section - Wood Doors.

1.03 REFERENCES (USE DATE OF STANDARD IN EFFECT AS OF BID DATE.)

- A. 2019 California Building Code, CCR, Title 24.
- B. BHMA – Builders' Hardware Manufacturers Association
- C. CCR – California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.
- D. DHI – Door and Hardware Institute
- E. NFPA - National Fire Protection Association.
 - 1. NFPA 80 - Fire Doors and Other Opening Protectives
 - 2. NFPA 105 - Smoke and Draft Control Door Assemblies
- F. UL - Underwriters Laboratories.
 - 1. UL 10C - Fire Tests of Door Assemblies
 - 2. UL 305 - Panic Hardware
- G. WHI - Warnock Hersey Incorporated
- H. SDI - Steel Door Institute

1.04 SUBMITTALS & SUBSTITUTIONS

- A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.
- B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Submit six (6) copies of schedule organized vertically into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:
1. Include a Cover Sheet with;
 - a. Job Name, location, telephone number.
 - b. Architects name, location and telephone number.
 - c. Contractors name, location, telephone number and job number.
 - d. Suppliers name, location, telephone number and job number.
 - e. Hardware consultant's name, location and telephone number.
 2. Job Index information included;
 - a. Numerical door number index including; door number, hardware heading number and page number.
 - b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
 - c. Manufacturers' names and abbreviations for all materials.
 - d. Explanation of abbreviations, symbols, and codes used in the schedule.
 - e. Mounting locations for hardware.
 - f. Clarification statements or questions.
 - g. Catalog cuts and manufacturer's technical data and instructions.
 3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number – HW -1)					
			(a) 1 Single Door #1 - Exterior from Corridor 101	(b) 90°	(c) RH
			(d) 3' 0"x7' 0" x 1-3/4" x (e) 20 Minute (f) WD x HM		
(g) 1	(h)	(i) ea	(j) Hinges - (k) 5BB1HW 4.5 x 4.5 NRP (l) ½ TMS	(m) 626	(n) IVE
2	6AA	1 ea	Lockset - ND50PD x RHO x RH x 10-025 x JTMS	626	SCH

(a) - Single or pair with opening number and location. (b) - Degree of opening (c) - Hand of door(s) (d) - Door and frame dimensions and door thickness. (e) - Label requirements if any. (f) - Door by frame material. (g) - (Optional) Hardware item line #. (h) - Keyset Symbol. (i) - Quantity. (j) - Product description. (k) - Product Number. (l) - Fastenings and other pertinent information. (m) - Hardware finish codes per ANSI A156.18. (n) - Manufacture abbreviation.

- D. Make substitution requests in accordance with Division 1. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.

- E. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- F. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- G. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.
- H. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.
- I. LEED Certification Points: Submit information and certifications necessary to achieve maximum points for LEED certification; coordinate and cooperate with Owner and Architect in providing information necessary for required LEED rating.

1.05 QUALITY ASSURANCE

- A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.
- B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
 - 1. Responsible for detailing, scheduling and ordering of finish hardware.
 - 2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing.
 - 3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.
- C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.
- D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.
 - 1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".
- E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.
- F. Product packaging to be labelled in compliance with CA Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.
- B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.
- C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.
- D. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.

1.07 WARRANTY

- A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:
 - 1. Locksets: Three (3) years.
 - 2. Closers: Twenty (20) years.
 - 3. All other hardware: Two (2) years.

1.08 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.09 PRE-INSTALLATION CONFERENCE

- A. Convene a pre-installation conference at least one week prior to beginning work of this section.
- B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key District Personnel, and Project Inspector.
- C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review District's keying standards.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

<u>Item</u>	<u>Manufacturer</u>	<u>Acceptable Substitutes</u>
Hinges	Ives	Hager, Stanley, McKinney
Locks, Latches & Cylinders	Schlage	Or Approved Equal
Closers	LCN	Or Approved Equal

Push, Pulls & Protection Plates	Ives	Trimco, BBW, DCI
Stops	Ives	Trimco, BBW, DCI
Overhead Stops	Glynn-Johnson	Or Approved Equal
Thresholds	Zero	Pemko, National Guard
Seals & Bottoms	Zero	Pemko, National Guard

2.02 MATERIALS

- A. Hinges: Exterior out-swinging door butts shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.
1. Hinges shall be sized in accordance with the following:
 - a. Height:
 - 1) Doors up to 42" wide: 4-1/2" inches.
 - 2) Doors 43" to 48" wide: 5 inches.
 - b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
 - c. Number of Hinges: Furnish 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.
 2. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.
- B. Schlage "L" Series as scheduled with "17" Style Lever and "A" Style Rose.
1. Locksets to comply with ANSI A156.13, Series 1000, Operational Grade 1 and Security Grade 1 with all standard trims. Locksets shall also comply with UL10C Positive Pressure requirements
 2. Lock case shall be manufactured with heavy 12 gauge steel with fully wrapped design. Lock cases with exposed edges are not acceptable. Lock case shall be multi-functional allowing transformation to a different function without opening lock case.
 3. Latchbolt shall have 3/4" throw and be non-handed, field reversible without opening the lock case. Solid latchbolts and / or plastic anti-friction devices are not acceptable.
 4. The deadbolt, when used, shall be 1" throw stainless steel with a 3/4" internal engagement when fully extended.
 5. All trim shall be through-bolted with the spring cages supporting the trim attached to the lock cases to prevent torqueing.
 6. Levers to have independent rotation in both directions. Exterior lever assembly to be one-piece design attached by threaded bushing. Interior lever assembly shall be attached by screwless shank
 7. Thru-bolt lever assemblies through the door for positive interlock. Locks using a through the door spindle for attachment are not acceptable. Spindles shall be independent, designed to "break-away" at a maximum of 75psi torque.
 8. Hand of lock chassis to be changeable by simply moving one screw from one side to the case to the other and pulling and reversing the latchbolt.
 9. Cylinders to be secured by a cast stainless steel, dual retainer. Locks utilizing screws and / or stamped retainers are not acceptable.
- C. Heavy Duty Cylindrical Locks and Latches: Schlage "ND" Series as scheduled with "Sparta" design, fastened with through-bolts and threaded chassis hubs. Furnish at fire rated pairs of doors and electrified locks.

1. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
 - a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access
 - b. Offset lever pull – minimum 1,600 foot pounds without gaining access
 - c. Vertical lever impact – minimum 100 impacts without gaining access
 2. Cycle life - tested to minimum 16 million cycles per ANSI/BHMA A156.2 Cycle Test with no visible lever sag or use of performance aids such as set screws or spacers
 3. UL 10C for 4'-0" x 10'-0" 3-hour fire door.
 4. Cylinders: Refer to "KEYING" article, herein.
 5. Provide solid steel anti-rotation through bolts and posts to control excessive rotation of lever.
 6. Provide lockset that allows lock function to be changed to over twenty other common functions by swapping easily accessible parts.
 7. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw capable of UL listing of 3 hours on a 4' x 10' opening. Provide proper latch throw for UL listing at pairs.
 8. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
 9. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
 10. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
 11. Provide wired electrified options as scheduled in the hardware sets.
 - a. 12 through 24 volt DC operating capability, auto-detecting
 - b. Selectable EL (fail safe)/EU (fail secure) operating mode via switch on chassis
 - c. 0.230A (230mA) maximum current draw
 - d. 0.010A (10mA) holding current
 - e. Modular / "plug in" request to exit switch
 12. Lever Trim: Solid cast levers without plastic inserts, and wrought roses on both sides.
- D. Closers: LCN as scheduled. Place closers inside building, stairs, room, etc.
1. Door closer cylinders shall be of high strength cast iron construction with double heat treated pinion shaft to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.
 2. All door closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16 inch and piston diameter of 1 inch to ensure longevity and durability under all closer applications.
 3. All parallel arm closers shall incorporate one piece solid forged steel arms with bronze bushings. 1-9/16" steel stud shoulder bolts, shall be incorporated in regular arms, hold-open arms, arms with hold open and stop built in. All other closers to have forged steel main arms for strength, durability, and aesthetics for versatility of trim accommodation, high strength and long life.
 4. All parallel arm closers so detailed shall provide advanced backcheck for doors subject to severe abuse or extreme wind conditions. This advanced backcheck shall be located to begin cushioning the opening swing of the door at approximately 45 degrees. The intensity of the backcheck shall be fully adjustable by tamper resistant non-critical screw valve.
 5. Closers shall be installed to permit doors to swing 180 degrees.
 6. All closers shall utilize a stable fluid withstanding temperature range of 120 degrees F. to -30 degrees F. without requiring seasonal adjustment of closer speed to properly close the door.

7. Provide the manufactures drop plates, brackets and spacers as required at narrow head rails and special frame conditions. NO wood plates or spacers will be allowed.
8. Maximum effort to operate closers shall not exceed 5 lbs., such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the closer may be increased but shall not exceed 15 lbs. when specifically approved by fire marshal. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. Per 11B-404.2.8.1, door shall take at least 5 seconds to move from an open position of 90 degrees to a position of 12 degrees from the latch jamb.

E. Door Stops:

1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (CBC Section 11B-307).
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

F. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10" high and 2" LDW. Sizes of armor and mop plates shall be listed in the Hardware Schedule. Furnish with machine or wood screws of bronze or stainless to match other hardware.

G. Thresholds: As Scheduled and per details.

1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope.
2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 "Thermal and Moisture Protection".
3. Use 1/4" fasteners, red-head flat-head sleeve anchors (SS/FHSL).
4. Thresholds shall comply with CBC Section 11B-404.2.5.

H. Seals: Provide silicone gasket at all rated and exterior doors.

1. Fire-rated Doors, Resilient Seals: UL10C Classified complies with NFPA 80 & NFPA 252. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements.
2. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C Classified complies with NFPA 80 & NFPA 252. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.
3. Smoke & Draft Control Doors, Provide UL10C Classified complies with NFPA 80 & NFPA 252 for use on "S" labeled Positive Pressure door assemblies.

I. Door Shoes & Door Top Caps: Provide door shoes at all exterior wood doors and top caps at all exterior out-swing doors.

J. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.03 KEYING

- A. Furnish a Proprietary Schlage masterkey system as directed by the owner or architect. Key system to be designated and combined by the Schlage Master Key Department even if pinned by the Authorized Key Center, Authorized Security Center or a local authorized commercial dealer.
- B. A detailed keying schedule is to be prepared by the owner and/or architect in consultation with a representative of Allegion or an Authorized Key Center or Authorized Security Center. Each keyed cylinder on every keyed lock is to be listed separately showing the door #, key group (in BHMA terminology), cylinder type, finish and location on the door.
- C. Extend the original Schlage masterkey system.
- D. Furnish all cylinders in the Schlage conventional style except the exit device and removable mullion cylinders which will be supplied in Schlage Full Size Interchangeable Core (FSIC). Pack change keys independently (PKI).
- E. Furnish construction keying for doors requiring locking during construction.
- F. Furnish all keys with visual key control.
 - 1. Stamp key "Do Not Duplicate".
 - 2. Stamp (BHMA) key symbol on key.
- G. Furnish all cylinders with visual key control.
 - 1. Stamp (BHMA) key symbol on side of cylinder (CKC).
- H. Furnish mechanical keys as follows:
 - 1. Furnish 2 cut change keys for each different change key code.
 - 2. Furnish 1 uncut key blank for each change key code.
 - 3. Furnish 6 cut masterkeys for each different masterkey set.
 - 4. Furnish 3 uncut key blanks for each masterkey set.
 - 5. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
 - 6. Furnish 1 cut control key cut to each SKD combination.
- I. Furnish Schlage Padlocks and the cylinders to tie them into the masterkey system for gates, storage boxes, utility valve security, roof hatches and roll-up doors keyed as directed in the keying schedule.
 - 1. Furnish KS43D2200 padlock for use with non-I/C Schlage cylinders. Furnish 47-413 (conventional) or 47-743-XP (PrimusXP) with above.
 - 2. Furnish KS43G3200 padlock for use with FSIC Schlage cylinders. Furnish 23-030 (Classic / Everest) or 20-740 (PrimusXP) with above.
 - 3. Furnish KS41D1200 padlock for use with SFIC Schlage cylinders. Furnish 80-037 (Everest-B) with above.
- J. Furnish one Schlage cabinet lock for each cabinet door or drawer so designated on the drawings or keying schedule to match the masterkey system.
 - 1. Furnish CL100PB for use with non-I/C Schlage cylinders.
 - 2. Furnish CL77R for use with FSIC Schlage cylinders.
 - 3. Furnish CL721G for use with SFIC Schlage cylinders.

2.04 FINISHES

- A. Generally to be oil-rubbed bronze (613 on bronze and 640 on steel) unless otherwise noted.
- B. Furnish push plates, pull plates and kick or armor plates in oil-rubbed bronze (613) unless otherwise noted.
- C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.
- D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.05 FASTENERS

- A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.
- B. Screws for butt hinges shall be flathead, countersunk, full-thread type.
- C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.
- D. Provide expansion anchors for attaching hardware items to concrete or masonry.
- E. All exposed fasteners shall have a phillips head.
- F. Finish of exposed screws to match surface finish of hardware or other adjacent work.
- G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing conditions.
- C. Fire-Rated Door Assembly Inspection: Upon completion of the installation, all fire door assemblies shall be inspected to confirm proper operation of the closing device and latching device and that only the manufacturer's furnished fasteners are used for installation and that it meets all criteria of a fire door assembly per NFPA 80 (Standard for Fire Doors and Other Opening Protectives) 2018 Edition. A written record shall be maintained and transmitted to the Owner to be made available to the Authority Having Jurisdiction (AHJ). The inspection of the swinging fire doors shall be performed by a certified FDAI (Fire Door Assembly Inspector) with knowledge and understanding of the operating components of the type of door being subjected to the inspection. The record shall list each fire door assembly throughout the project and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.
- B. Use the templates provided by hardware item manufacturer.

- C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 34" and 44" AFF.
- D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- F. Set thresholds for exterior doors in full bed of butyl-rubber sealant.
- G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

3.03 ADJUST AND CLEAN

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surface soiled by hardware installation.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.
- E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.04 HARDWARE LOCATIONS

- A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.05 FIELD QUALITY CONTROL

- A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.06 SCHEDULE

- A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.

C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

GLY	=	Glynn-Johnson Corporation	Overhead Door Stops
IVE	=	Ives	Hinges, Pivots, Bolts, Coordinators, Dust Proof Strikes, Push Pull & Kick Plates, Door Stops & Silencers
LCN	=	LCN	Door Closers
SCH	=	Schlage Lock Company	Locks, Latches & Cylinders
ZER	=	Zero International	Thresholds, Gasketing & Weather-stripping

HARDWARE GROUP NO. 01

3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	CLASSROOM LOCK	ND70P6 SPA	613	SCH
1	EA	FLOOR STOP	FS439	704	IVE
1	SET	SEALS	S88D 17'	WHITE	PEM
1	EA	DOOR BOTTOM	434ARL 36"	AL	PEM

HARDWARE GROUP NO. 02

3	EA	HINGE	5BB1 4.5 X 4.5	640	IVE
1	EA	PRIVACY W/INDICATOR	L9056P6 17A L583-363 L283-722	613	SCH
1	EA	OH STOP	90S	613	GLY
1	EA	SURFACE CLOSER	1461 DEL FC	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	613	IVE
1	EA	MOP PLATE	8400 4" X 2" LDW B-CS	613	IVE
1	SET	SEALS	S88D 17'	WHITE	PEM
1	EA	THRESHOLD	Indicated in Drawings		

HARDWARE GROUP NO. 03

3	EA	HINGE	5BB1HW 4.5 X 4.5	640	IVE
1	EA	CLASSROOM DEADBOLT	B663P6	613	SCH
1	EA	PUSH PLATE	8200 6" X 16"	613	IVE
1	EA	PULL PLATE	8302 10" 4" X 16"	613	IVE
1	EA	SURFACE CLOSER	1461 DEL FC	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	613	IVE
1	EA	MOP PLATE	8400 4" X 2" LDW B-CS	613	IVE
1	EA	WALL STOP	WS401/402CCV	613	IVE
1	SET	SEALS	S88D 17'	WHITE	PEM
1	EA	THRESHOLD	Indicated in Drawings		

HARDWARE GROUP NO. 04

1	EA	CLASSROOM LOCK	ND70P6 SPA	613	SCH
			BALANCE OF HARDWARE EXISTING TO REMAIN		

END OF SECTION

SECTION 08 71 13

AUTOMATIC DOOR OPERATORS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Operator and associated equipment at existing entrance door.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 08 71 00 - Door Hardware: Provision of finish hardware.
 - 2. Division 26 - Electrical: Provision of electrical connections.

1.02 REFERENCES

- A. NAAMM - National Association of Architectural Metal Manufacturers
 - 1. MFM - Metal Finishes Manual for Architectural and Metal Products.
- B. UL - Underwriters Laboratories Inc.
 - 1. 325 - Safety Standards.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirement: Provide operator that will open and close the door and maintain it in fully closed position when subjected to a 20-mph wind velocity or the equivalent inward differential pressure.

1.04 SUBMITTALS

- A. Product Data: Submit product data, including the manufacturer's standard details and fabrication methods and the following:
 - 1. Data on operators, hardware, and accessories.
 - 2. Roughing-in diagrams.
 - 3. Parts lists.
 - 4. Data on finishes and recommendations for maintenance and cleaning of exterior surfaces.
- B. Submit wiring diagrams detailing wiring for power operator, signal, and control systems differentiating clearly between manufacturer-installed wiring and field-installed wiring.
- C. Quality Control Submittals: Provide certified test reports from a qualified independent testing laboratory showing that automatic entrance door systems have been tested in accordance with specified test procedures and comply with performance characteristics indicated.
- D. Contract Closeout Submittals: Submit manufacturer's maintenance and service data for door operators and control system including the name, address, and telephone number of the nearest authorized service representative.

1.05 QUALITY ASSURANCE

- A. UL Standard: Provide powered door operators that comply with UL 325.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturer: SDC Security Door Controls, "480AA Series Push Panels", or equal.

2.02 DOOR OPERATOR

- A. General: Refer to Section 08 71 00 for requirements for hardware items other than those indicated to be provided by the entrance door operator manufacturer.
- B. Automatic Door Operator Characteristics
 1. Panel: 1/8-inch thick aluminum.
 2. Finish: 628 dull aluminum.
 3. Dimensions: 36 inches by 6 inches.
 4. Mounting Method: Surface wall-mounted.
 5. Sign Infill: Blue.
 6. Weight: 7 pounds.
 7. Operation: Single-pole (Model 482) or double-pole (Model 484) as needed.
 8. Rating: 15 amp @ 125/250 VAC resistive.
 9. Type: Momentary (MO).
 10. Depth: 1-1/2 inches.
 11. Accessories: As required for complete operation.

2.03 FABRICATION

- A. Prefabrication: Provide entrance door operator as prefabricated packaged unit.
- B. Dissimilar Metals: Separate dissimilar metals with bituminous paint, a suitable sealant, nonabsorptive plastic or elastomeric tape, or a gasket between the surfaces. Do not use coatings containing lead.
- C. Maintain continuity of line and accurate relation of planes and angles. Provide secure attachment and support at mechanical joints, with hairline fit of contacting members.
- D. Fasteners: Conceal fasteners wherever possible.
- E. Finishes: Comply with NAAMM's MFM for recommendations relative to application and designations of finishes.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Templates and Diagrams: Furnish templates, diagrams, and other data to fabricators and installers of related work, as necessary, for coordination of the automatic entrance door installation.

3.02 INSTALLATION

- A. Comply with manufacturer's specifications and recommendations.
- B. Install complete door operator system in accordance with manufacturer's instructions, including piping, controls, control wiring, and remote power units.

3.03 ADJUSTING

- A. After repeated operation of completed installation, equivalent to 3 days use by normal traffic (100 to 300 cycles), readjust door operators and controls for optimum operating condition and safety and for a weathertight closure. Lubricate hardware, operating equipment, and other moving parts.

3.04 PROTECTION

- A. Institute protective measures required throughout the remainder of the construction period to ensure that entrance door operator will be without damage or deterioration, other than normal weathering, at the time of acceptance.

END OF SECTION

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SECTION 09 26 13

GYPSUM VENEER PLASTERING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Patching and repair of existing gypsum veneer plaster where indicated.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Section
 - 1. Section 09 90 00 - Painting and Coating: For finish painting.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C587 - Standard Specification for Gypsum Veneer Plaster.
 - 2. C588 - Standard Specification for Gypsum Base for Veneer Plasters.
 - 3. C843 - Standard Specification for Application of Gypsum Veneer Plaster.
 - 4. C844 - Standard Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster.
 - 5. C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each type of product specified.
- B. Samples
 - 1. Each textured finish on rigid backing in manufacturer's standard size.
 - 2. Joint tape and each type of accessory in 12-inch lengths.

1.04 QUALITY ASSURANCE

- A. Mockups: Provide a full-thickness finish mockup for each type and finish of gypsum veneer plaster and substrate to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select representative surfaces and conditions for application of each type of gypsum veneer plaster and substrate.
 - 2. Provide mockups in sizes of at least 100 sq. ft.
 - 3. Apply gypsum veneer plaster, according to requirements for the completed Work, after permanent lighting and other environmental services have been activated.
 - 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements
 - 1. General: Establish and maintain environmental conditions for application of veneer plaster to comply with ASTM C843 and with veneer plaster manufacturer's recommendations.
 - 2. Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 degrees Fahrenheit. Distribute heat evenly; prevent concentrated or uneven heat on veneer plaster near heat source.

3. Ventilate building spaces to remove water not required for hydrating veneer plaster materials. Avoid conditions that result in veneer plaster drying too rapidly.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. 2-Component Regular Veneer Plaster
 1. Separate veneer plaster formulations complying with ASTM C587, one for basecoat and the other for finish coat for application over gypsum base where indicated.
 2. Finish Coat Aggregate: For sand-float finish, provide white silica sand passing a 30-mesh screen.
 3. Product: As manufactured by Gold Bond Bldg. Products Div., National Gypsum Company, "Base Coat: Kal-Kote Base Coat, Smooth Finish Coat: Kal-Kote Smooth Finish"; United States Gypsum Company Products, "Base Coat: IMPERIAL Base Coat, Smooth Finish Coat: DIAMOND Interior Finish", or equal.
- B. Gypsum Base for Veneer Plaster: ASTM C588, Type X, 5/8-inch, unless otherwise indicated, with square or tapered long edges as standard with manufacturer.
 1. Product: As manufactured by Gold Bond Building Products Div., National Gypsum Company, "Kal-Kore Fire-Shield"; United States Gypsum Company, "Imperial Firecode Gypsum Base", or equal.
- C. Accessories
 1. Corner Beads and Control Joints: Sheet steel zinc-coated by hot-dip process, complying with ASTM C1047.
 2. Joint Reinforcing: Provide joint reinforcing materials complying with joint strength requirements of ASTM C587 and the recommendations of veneer plaster manufacturer for application indicated.
 - a. Joint Tape: Open weave glass-fiber fabric as recommended by veneer plaster manufacturer.
 - b. Embedding Material for Gypsum Base Joint Tape: As recommended by veneer plaster manufacturer for use with joint tape material indicated.

2.02 VENEER PLASTER MIXES

- A. Mechanically mix veneer plaster materials to comply with referenced veneer plaster application standard and with recommendations of veneer plaster manufacturer.

2.03 FINISHES

- A. Finish Texture: Match existing.
- B. Painting: As specified in Section 09 90 00.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect adjoining surfaces and equipment from overspray, fallout, and dusting-off of sprayed plaster. Mask or cover surfaces that are not indicated to receive plaster.

3.02 APPLYING GYPSUM BASE, GENERAL

- A. Gypsum Base Application Standard: Comply with ASTM C844.

- B. Erection Tolerance: No more than 1/16-inch offsets between planes of gypsum base faces, and 1/8-inch in 8 feet for plumb, level, warp and bow.
- C. Install sound attenuation blankets as indicated, prior to gypsum base unless readily installed after base has been installed on one side.
- D. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of base.
- E. Install gypsum base with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16-inch open space between panels. Do not force into place.
- F. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.
- G. Attach gypsum base to studs so that leading edge or end of each panel is attached to open (unsupported) edge of stud flange first.
- H. Attach gypsum base to framing and blocking provided at openings and cutouts.
- I. Form control and seismic joints at locations indicated, with space between edges of adjoining gypsum base and at supporting framing behind gypsum on both sides of joints.
- J. Cover both faces of steel stud partition framing with gypsum base in concealed spaces (above ceilings, etc.), except in chase walls that are braced internally.
 - 1. Except where concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum base around ducts, pipes, and conduits.
- K. Isolate perimeter of non-load-bearing veneer plaster partitions at structural abutments, except floors, as detailed. Provide 1/4-inch to 1/2-inch space and trim edges of gypsum base with metal edge trim where they are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

3.03 GYPSUM BASE APPLICATION METHODS

- A. Single-Layer Application: On partitions/walls, apply gypsum base panels vertically (parallel to framing), unless otherwise indicated. Use panel lengths that will minimize end joints.
- B. Single-Layer Fastening Methods: Apply gypsum boards to supports with screws.

3.04 INSTALLING ACCESSORIES

- A. General: For accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum base. Otherwise, fasten accessories according to accessory manufacturer's directions for type, length and spacing of fasteners.
- B. Install corner beads at external corners.

- C. Install metal edge trim where edges of gypsum base would otherwise be exposed or semiexposed. Provide edge trim type with face flange formed to receive veneer plaster except where other types are indicated.
 - 1. Install LC-bead where gypsum base panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
 - 2. Install L-bead where edge trims can only be installed after gypsum base panels are installed.
 - 3. Install aluminum edge trim and other accessories where indicated.
- D. Install control joints at locations indicated, and where not indicated according to ASTM C844, and in locations approved by the Architect for visual effect.

3.05 INSTALLING JOINT REINFORCEMENT

- A. Reinforce interior angles and flat joints in gypsum base panels with joint tape and embedding material, with or without using staples, to comply with ASTM C843 and with veneer plaster manufacturer's recommendations. Do not use staples alone.

3.06 VENEER PLASTERING

- A. Gypsum Veneer Plaster Application Standard: Apply gypsum veneer plaster to comply with ASTM C843 and veneer plaster manufacturer's directions.
- B. Concealed Surfaces: Omit veneer plaster in the following areas where plaster will be concealed from view in completed Work, but do not omit veneer plaster behind cabinets, furniture, furnishings, and similar removable items:
 - 1. Behind or under wood paneling and under other permanently applied wall or ceiling finishes.
- C. Provide sand float finish, unless otherwise indicated.
- D. Finish Painting: As specified in Section 09 90 00.
- E. Abutment: Where veneer plaster abuts metal door frames, windows and other units in the veneer plaster, groove finish coat to eliminate spalling.

3.07 CLEANING AND PROTECTION

- A. Remove temporary coverings used to protect other work.
- B. Remove plaster spillage promptly from door frames, windows, and other adjoining work. Repair surfaces damaged by plastering work.
- C. After completing veneer plastering, provide protection and maintain conditions in a manner suitable to installer that ensures veneer plaster is without damage or deterioration at the time of Substantial Completion.

END OF SECTION

SECTION 09 29 00**GYPSUM BOARD****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes
 - 1. Gypsum board screw attached to metal or wood framing and furring members, joint treatment, and accessories.
 - 2. Installation of sound deadening insulation in walls and ceilings and including acoustical sealant, tape, and the like for work of this Section.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 07 21 01 - Building Insulation: Provision of building insulation.
 - 2. Section 07 92 00 - Joint Sealants: Provision of caulking and sealants.
 - 3. Section 09 30 00 - Tiling: Provision of ceramic tile.
 - 4. Section 09 90 00 - Painting and Coating: For finish painting.
 - 5. Section 10 11 00 - Visual Display Units: Provision of visual display units.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - 2. C514 - Standard Specification for Nails for the Application of Gypsum Board.
 - 3. C840 - Standard Specification for Application and Finishing of Gypsum Board.
 - 4. C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - 5. C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - 6. C1178 - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
 - 7. C1396 - Standard Specification for Gypsum Board.
 - 8. E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- B. CBC - California Building Code, 2019 Edition
- C. CFR - Code of Federal Regulations
 - 1. 40 CFR 59 - National Volatile Organic Compound Emission Standards for Consumer and Commercial Products.
- D. EPA - Environmental Protection Agency
 - 1. Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- E. GA - Gypsum Association
 - 1. 201 - Using Gypsum Board for Walls and Ceilings.
 - 2. 214 - Recommended Levels of Gypsum Board Finish.
 - 3. 216 - Application and Finishing of Gypsum Panel Products.
 - 4. 600 - Fire Resistance Design Manual.

- F. UL - Underwriters Laboratories Inc.
 - 1. FRD - Fire Resistance Directory.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data. Include the following
 - 1. Fire Resistance Data: Include required fire test results for gypsum board systems on partitions and ceilings.
 - 2. Sound Transmission Data: Include certified evidence that installed gypsum board systems and materials meet required STC levels.

1.04 QUALITY ASSURANCE

- A. Fire Test Response Characteristics: Where fire resistance rated gypsum board assemblies are indicated, provide gypsum board assemblies that comply with the following requirements:
 - 1. Fire Resistance Ratings: As indicated by GA File Numbers in GA 600 or design designations in UL FRD or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 2. Gypsum board assemblies indicated are identical to assemblies tested for fire resistance according to ASTM E119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: United States Gypsum Co.; Gold Bond Building Products Div., National Gypsum Co.; Pacific Coast Building Products, Pabco Gypsum Division, or equal.

2.02 MATERIALS

- A. Gypsum Board Types: Where indicated on the Drawings.
 - 1. Type 1: Moisture-resistant board for exposed application in restrooms, ASTM C1396, tapered edges, 48 inches wide, 5/8-inch thick.
 - 2. Type 2: Regular gypsum board, ASTM C1396, tapered edges, 48 inches wide, 5/8-inch thick.
 - 3. Type 4: Glass-mat, water-resistant gypsum backing board, ASTM C1178, Type X, 5/8-inch thick, as manufactured by Georgia-Pacific Corp., "Dens-Shield Tile Backer"; United States Gypsum Co., or equal.
- B. Screws: ASTM C1002, machine thread for gypsum board to metal attachments.
- C. Nails: ASTM C514, wood thread for metal or gypsum board attachment to wood.
- D. Insulation: As specified in Section 07 21 01.
- E. Adhesives: Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- F. Accessories
 - 1. Corner Beads and Casing Beads: ASTM C1047, sheet steel zinc coated by hot-dip process. Use bullnose corner beads at typical wall and ceiling outside corners. Use square corner beads at windows.
 - 2. Resilient Channels: As manufactured by Unimast, "RC Deluxe"; Cemco, "RC-1"; Dale/Incor, "RFC-1", or equal.

3. Hat Channels: Hat-shaped, corrosion-resistant rigid furring channels, ASTM C645, 7/8-inch deep unless otherwise indicated, base metal thickness as required, as manufactured by Dietrich Metal Framing, Inc., "FC-Series"; Fry Reglet Corporation, or equal.
 4. "J" Molding: Extruded aluminum, alloy 6063 T5, depth as indicated, chemical conversion coating, clear anodized, as manufactured by Fry Reglet Corporation, "Fry Reglet "J" Molding"; Dietrich Metal Framing, Inc., or equal.
- G. Joint Treatment Materials: Products of one manufacturer conforming to ASTM C475, ASTM C840, and recommendations of manufacturer of both gypsum board and joint treatment materials for application indicated. Conform to GA 201 and GA 216 for reinforcing tape, joint compound, and water.
1. Joint Tape
 - a. Cross-laminated, tapered edge, reinforced paper, or fiber glass mesh tape as recommended by setting type joint compound manufacturer.
 - b. For silicone treated gypsum backer board, use 2 inch wide, 10-inch by 10-inch woven glass mesh tape.
 2. Setting Type Joint Compound: Factory prepackaged, job mixed, chemical hardening powder products formulated for uses indicated or factory premixed product. Use hot type at exterior gypsum soffits.
- H. Acoustical Sealant: As specified in Section 07 92 00.

2.03 FINISHES

- A. Levels of Gypsum Board Finish as Defined by GA 214. Levels are only examples and do not constitute a schedule of finish. See Drawings for levels of finish.
1. Level 0: No taping, finishing, or accessories required.
 2. Level 1: All joints and interior angles shall have tape set in joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
 3. Level 2: All joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Fastener heads and accessories shall be covered with a coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.
 4. Level 3: All joints and interior angles shall have tape embedded in joint compound and one additional coat of joint compound applied over all joints and interior angles. Fastener heads and accessories shall be covered with two separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of final finishes.
 5. Level 4: All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of final finishes.
 6. Level 5: All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. A thin skim coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer's recommendations, shall be applied to the entire surface. The surface shall be smooth and free of tool marks

and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of finish paint.

- B. Typical Finish: Match existing or, in rooms and areas without existing finishes, provide Level 4 finish.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Gypsum Board
1. Install and finish gypsum board to comply with ASTM C840 or GA 216.
 - a. Single Layer: Install in accordance with ASTM C840, except as amended or required by specific fire resistive or sound isolation system detailed. In that instance, application shall conform to requirements of the manufacturer's tests as reviewed and accepted in the submittal.
 - b. Double Layer: Conform to applicable portions of ASTM C840, System Classification VIII for installations applied with screws. Conform to required fire resistance standards.
 2. Apply in horizontal direction with ends and edges falling on supports. Gypsum board shall be of maximum length possible to reach full wall or ceiling lengths with minimal number of joints.
 3. Position boards so that like edges abut, tapered edges against tapered edges and field cut ends against field cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
 4. Start installation of panels at exterior wall to position butt joints as far away from exterior wall as possible.
- B. Fire Resistant Assemblies: Wherever fire rated gypsum board construction is indicated, provide materials and installation methods, including types and spacing of fasteners, in accordance with CBC, GA Manual, or listed assembly indicated. Apply firestopping at top of wall and at penetrations through fire resistant assembly.
- C. Sound Retardant Installations: Follow manufacturer's directions and specifications for conditions of installation. Install where indicated in conformance with current Project acoustic report. Install from floor surface to bottom side of next floor surface.
1. Double Layer Application
 - a. Joints: Stagger 24 inches between layers.
 - b. Sound-Rated Construction: Tape face layer.
 2. Sound-Rated Edge Condition: Stagger (i.e., ship-lap) gypsum board layers at vertical intersections. Provide a 1/4-inch nominal gap around the gypsum board face layer at floor and ceiling intersections. Fill the 1/4-inch gap with acoustical sealant to form an airtight seal.
 3. Wrap with insulation and Lowry Pads and seal electrical or other outlets in sound isolating partitions.
 4. Install sealant to completely fill void between gypsum board edges and adjacent surface.
- D. Penetrations Through Sound-Rated Construction: Cut-outs shall be regular and not fracture core or tear covering of gypsum board and meet the following requirements:
1. Minimize penetrations of insulated wall and ceiling constructions. Penetrate only where necessary and fully seal airtight at the perimeter using acoustical sealant.
 2. Where ducts and piping greater than 3 inches diameter penetrate insulated wall or ceiling construction, provide a clearance of 1 inch plus or minus 1/4-inch at the perimeter of the penetration.

3. Where conduit piping 3 inches diameter and less (including mechanical, hydraulic, plumbing, etc.) pass through insulated wall or ceiling construction, provide a clearance of 1/4-inch plus or minus 1/8-inch between the conduit or piping and the structure, unless otherwise indicated.
 4. After the ductwork, conduit, or piping has been installed, repair the gypsum board perimeter clearance to the specified tolerance as required. Where the clearance exceeds 3/4-inch, provide a sheet metal sleeve within the partition packed with safin insulation batts and caulk both sides airtight with an acoustical sealant. Where the perimeter clearance exceeds 3/8-inch, use a flexible backing rod to caulk against.
 5. Where penetration clearances are 3/8-inch or less, caulk airtight with acoustical sealant at gypsum board.
 6. All gypsum board penetrations (including those resulting from wiring, cables, and electrical junction boxes) are to be sealed airtight with acoustical sealant.
 7. The back and sides of junction boxes in sound rated construction shall be sealed airtight with sheet caulking. Caulk perimeter face at gypsum board with acoustical sealant.
 8. Recessed panel boards, equipment, boxes, etc., with penetration area greater than 25 square inches at sound rated partitions shall be fully enclosed and sealed with 5/8-inch thick gypsum board or 2 psf sheet lead.
 9. Seal multiple conduit penetrations airtight with expanding fire foam sealant.
 10. Seal other sound rated conditions with spray-applied (40 pcf) cementitious sealant, as manufactured by Grace Construction Products, "Monokote Z-146", or equal.
- E. Wet Locations
1. At Walls and Ceilings: Conform to ASTM C840, System Classification X.
 2. Treat cut edges and holes in water resistant gypsum board with sealant.
- F. Fastenings: Attach gypsum board to framing with screws, lengths and sizes as recommended by manufacturer and in accordance with CBC.
- G. Accessories
1. Install corner beads at vertical and horizontal external corners; tape inside corners.
 2. Install casing beads whenever edge of gypsum board would otherwise be exposed or semi-exposed, or where abutting dissimilar materials.
 3. After accessories are installed, correct surface damage and defects.
 4. Install trims and expansion joints where required.
 5. Resilient Channel Attachment: Screw attach resilient channel through foot on 1 side of channel only to wood joists. Screw attach gypsum board through channel face only. At resilient channel assemblies, screw attached gypsum board shall not be in contact with joists, studs, or any rigid fastening.
- H. Allowable Tolerances
1. Offset Between Planes of Board Faces: 1/16-inch.
 2. Plane, Level, Warp and Bow: 1/8-inch in 8 feet.
 3. Shim panels as necessary to comply with tolerances.

3.02 FINISHING OF GYPSUM BOARD

- A. Apply joint treatment at gypsum board joints; flanges of corner bead, edge trim and penetrations, fastener heads and surface defects in accordance with ASTM C840 or GA 216. Number of coats of treatment shall be as specified above.
- B. Finish Painting: As specified in Section 09 90 00.

END OF SECTION

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SECTION 09 30 00

TILING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Interior porcelain ceramic floor and wall tile.
 - 2. Bond coats, installation beds, grout materials, and accessories.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 07 92 00 - Joint Sealants: Provision of sealants for expansion, contraction, control, and isolation joints in tile surfaces.
 - 2. Section 09 29 00 - Gypsum Board: Provision of tile backer board.

1.02 REFERENCES

- A. ANSI - American National Standards Institute
 - 1. A108.5 - Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.
 - 2. A108.6 - Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy.
 - 3. A108.10 - Specifications for Installation of Grout in Tilework.
 - 4. A108.11. - Interior Installation of Cementitious Backer Units.
 - 5. A118.3 - Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive.
 - 6. A118.4 - Specifications for Latex Portland Cement Mortar.
 - 7. A118.10 - Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation.
 - 8. B101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.
- B. CTIOA - Ceramic Tile Institute of America
- C. NFSI - National Floor Safety Institute
 - 1. B101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.
- D. TCNA - Tile Council of North America
 - 1. Handbook for Ceramic Tile Installation.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each type of product specified, including installation instructions for manufactured setting and grouting products.
- B. Shop Drawings: Indicate widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

- C. Samples: Submit samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories involving color selection.
 - 1. Once colors are selected, submit each type, size, and color of tile and grout selected, mounted and grouted on plywood not less than 16 inches square. Submit sets showing full range of variations expected.
 - 2. Provide photographs of all samples.
- D. Testing Results: Submit laboratory or field tests for wet and dry slip resistance specified prior to installation.
- E. Maintenance Data: Submit list of tile manufacturer's recommended cleaning products and procedures.

1.04 QUALITY ASSURANCE

- A. Single Source: Within any given tile setting system, use the products of a single manufacturer to ensure compatibility and single source responsibility.
- B. Slip Resistance: Prior to installation of tile, provide testing of tile for coefficient of friction in accordance with ANSI/NFSI B101.1 or other method endorsed by the CTIOA for new flooring.
- C. Wall Anchorage: Coordinate with other Sections to ensure that anchorage for toilet accessories and other wall mounted items are installed prior to installation of tile.

1.05 MAINTENANCE

- A. Extra Materials: Deliver extra materials to the City. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
- B. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers
 - 1. Ceramic Tile: Daltile, or equal.
 - 2. Tile Setting and Grouting Materials: Mapei Corporation; Custom Building Products; Daltile Corp.; Laticrete International, Inc., or equal.

2.02 MATERIALS

- A. Glazed Ceramic Wall Tile
 - 1. Type: Lattice weave 1x3 mosaic dot-mounted on sheet.
 - 2. Sheet Size: 12 inches by 12 inches.
 - 3. Finish: Semi-gloss.
 - 4. Color: Navy K189.
 - 5. Trim: 1/2-inch by 11-15/16 inches, "12-Inch Jolly, Number S-1/212J", as provided by tile manufacturer.
- B. Replacement Wall and Floor Tile to Match Existing: As indicated on the Drawings.

- C. Mortar Bed and Underlayment Materials
 - 1. Underlayment: As indicated on the Drawings.
 - 2. Latex Modified Portland-Cement Mortar Bed: ANSI A108.1b; portland-cement-based filler with synthetic latex additive.
 - a. Product: As manufactured by Laticrete International, Inc., "226 Thick Bed Mortar Mix" with "3701 Mortar Admix", Laticrete International, Inc., "209 Floor Mud" with "3701 Mortar Admix", or equal.
 - 3. Bond Coat for Mortar Bed: Portland cement paste on a plastic bed or latex portland cement on a cured bed, unless otherwise specified.
- D. Setting Materials
 - 1. Unmodified Portland Cement Mortar: Unmodified, premium, thin-set mortar, as manufactured by Laticrete International, Inc., "272 Premium Floor & Wall", or equal.
 - 2. Latex Portland Cement Mortar: ANSI A118.4; as manufactured by Laticrete International, Inc., "254 Platinum", or equal.
 - 3. Latex Portland Cement Mortar for Large Format Tile: ANSI A118.4; medium bed mortar; as manufactured by Laticrete International, Inc., "220 Marble & Granite", or equal.
- E. Grouting Materials
 - 1. Epoxy Grout, ANSI A118.3; as manufactured by Laticrete International, Inc., "SpectraLOCK PRO", or equal.
 - 2. Colors: As selected by the Architect from manufacturer's full range of colors.
- F. Accessories
 - 1. Sealant: As provided by the grout manufacturer; match color of grout in adjacent joints; provide sanded or non-sanded type as required to match type of grout.
 - 2. Metal Edge Protection, Transition Strips, and Corner Guards: Stainless steel unless otherwise specified; height or profile as required by tile installation; trim to closely match tile thickness; provide edge protection at all exposed edges, tops, side, and outside corners.
 - a. Tile to Floor Covering of Equal Height: As manufactured by Schlüter Systems, "Schlüter-SCHIENE", or equal.
 - b. Tile to Floor Covering of Lower Height: As manufactured by Schlüter Systems, "Schlüter-RENO-U", or equal.
 - c. Vertical Corners: As manufactured by Schlüter Systems, "Schlüter-QUADEC", or equal.
 - d. Transition at Top of Wainscot: Tile bullnose.
 - 3. Water: Clean and potable.
 - 4. Pre-Grout Treatment for Interior Floor Tile: Temporary, non-sealer coating applied before grouting to facilitate grout cleanup and removal.
 - a. Product: As manufactured by Aldon Corporation, "Grout Easy", or equal.
 - 5. Cleaners and Sealers for Interior Tile: As recommended by the tile manufacturer.

2.03 MIXING MORTAR AND GROUT

- A. Mix mortar and grout so as to comply with requirements of referenced standards and manufacturer's instructions in order to produce mortar and grout of uniform quality with optimum performance characteristics for application indicated.
- B. Prepare and proportion premixed setting beds and grout materials in accordance with manufacturer's recommendations.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.02 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.
- B. TCNA Installation Guidelines: TCNA, "Handbook for Ceramic Tile Installation"; comply with TCNA installation methods indicated.
- C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.
- E. Jointing Pattern: Lay tile in pattern as shown. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.
- F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
- G. Grout tile to comply with the requirements of the following installation standards:
 - 1. Comply with ANSI A108.10.
 - 2. Seal grout joints at time of completion.

3.03 FLOOR INSTALLATION

- A. Installation of Ceramic Tile Over Bond Coat Over Cement Backer Board or Fiber Cement Backer Board Over Dry-Set Mortar Over Plywood T&G Subfloor Over Sawn Lumber, Truss, or I-Joist: Install tile to comply with TCNA installation method F144.
 - 1. Tile: ANSI A108.5.
 - 2. Grout: ANSI A108.6 or A108.10.

3.04 WALL INSTALLATION

- A. Installation of Ceramic Tile Over Cementitious Bond Coat Over Coated Glass Mat Water-Resistant Gypsum Backer Board Over Metal or Wood Studs: Install tile to comply with TCNA installation method W245.

1. Tile: ANSI A108.5.
2. Grout: ANSI A108.6 or A108.10.
3. Backer Board: ANSI A108.11 or manufacturer's directions.

3.05 CLEANING AND PROTECTION

- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
1. Remove grout residue from tile as soon as possible.
 2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
 - a. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.
 3. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
 4. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
 - a. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
 - b. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.
 5. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

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SECTION 09 51 00

ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Replacement of damaged acoustic tiles to match existing.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
 - 2. D1779 - Standard Specification for Adhesive for Acoustical Materials.
 - 3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. CBC - California Building Code, 2019 Edition
- C. UL - Underwriters Laboratories Inc.
 - 1. FRD - Fire Resistance Directory.

1.03 SUBMITTALS

- C. Product Data: Submit manufacturer's product data completely describing products.
- B. Samples: Provide 1 sample of each type of acoustical ceiling specified.
 - 1. Provide photographs of all samples.
- C. Quality Control Submittals
 - 1. Manufacturer's Instructions: Submit manufacturer's installation instructions.
 - 2. Certification: Provide manufacturer's signed statement that mineral fiber board materials are asbestos free.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who is approved by the acoustical ceiling manufacturer for installing the type of acoustical ceiling indicated for this Project.
- B. Regulatory Requirements: Install fire rated ceiling systems in accordance with CBC and UL FRD listing and requirements of agency having jurisdiction.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Deliver and store packaged products in original containers with seals unbroken and labels intact until time of use.
- B. Storage and Protection
 - 1. Keep materials dry by storing off ground under watertight covers.
 - 2. Immediately before installation, panels shall be stored for sufficient time to stabilize temperature and humidity conditions ambient during installation and anticipated for occupancy.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Do not begin work until residual moisture has dissipated and comply with the following:
 - 1. Acoustical Ceilings: Maintain uniform temperature of minimum 60 degrees Fahrenheit and maximum of 90 degrees Fahrenheit and humidity of 20 to 40 percent but no more than 90 percent prior to, during and after installation.

1.07 MAINTENANCE

- A. Extra Materials: Provide 5 percent extra quantity of each type of acoustical surface installed. Provide in original unbroken containers plainly marked with type and quantity of contents.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Adhesively-Applied Replacement Acoustic Tiles Where Indicated
 - 1. Mineral fiber tile with 529 straight drilled holes in 23 rows both directions and with the following properties:
 - a. Size and Thickness: 12 inches by 12 inches; 1/2-inch thick.
 - b. Light Reflectance: Class LR-1, over 75 percent in accordance with ASTM C423.
 - c. NRC Range: 0.60 in accordance with ASTM C423.
 - d. Joint: Beveled butt.
 - e. Surface Burning Characteristics: Class A in accordance with ASTM E84, with flame spread 25 or less and smoke developed 10 or less.
 - f. Color: White.
 - g. Product: As manufactured by Armstrong World Industries, Inc., "Classic Acoustical - Straight Drilled", or equal.
 - 2. Tile Adhesive: Comply with ASTM D1779, type as recommended by the manufacturer of the tile, bearing the UL label for a Class 0-25 flame spread, VOC compliant.
 - 3. Accessories and Trim: White plastic trim as recommended by the acoustical ceiling manufacturer.
- B. Lay-In Replacement Acoustic Tiles Where Indicated
 - 1. Mineral fiber tile with factory-applied vinyl latex paint and with the following properties:
 - a. Size and Thickness: 24 inches by 48 inches; 5/8-inch thick.
 - b. Light Reflectance: 0.80 in accordance with ASTM C423.
 - c. NRC Range: 0.55.in accordance with ASTM C423.
 - d. Edge: Square.
 - e. Surface Burning Characteristics: Class A in accordance with ASTM E84.
 - f. Color: White.
 - g. Product: As manufactured by Armstrong World Industries, Inc., "Random Textured", or equal.
 - 2. Accessories and Trim: White plastic trim as recommended by the acoustical ceiling manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive acoustical treatment and verify that:
 - 1. Installation of building components located in ceiling plenum is complete.
 - 2. Spacing, direction and details of grid members and supports to accommodate installation of light fixtures, diffusers and other ceiling located items are correct.
 - 3. Areas are clean and free of materials or rubble that could damage acoustical surfaces.
- B. Do not start work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Adhesively-Applied Replacement Acoustic Tiles: Adhere acoustical tile by cementing to substrate, using the amount of adhesive, and the procedure, recommended by the tile and adhesive manufacturers. Maintain tight butt joints, aligned in both directions, and coordinated with ceiling fixtures.
 - 1. Scribe and cut tile to fit accurately at edges of ceiling and around penetrations of the ceiling.
 - 2. Provide secured edge molding as required for neat, finished and secure installations.
- B. Lay-In Replacement Acoustic Tiles: Where existing ceilings are indicated to remain, replace acoustic boards that are damaged or stained to match existing adjacent boards.

3.03 CLEANING AND ADJUSTING

- A. Remove damaged or soiled material and replace with new prior to the City's acceptance of Project.

3.04 PROTECTION

- A. Protect acoustical treatment installation from damage during remainder of construction.

END OF SECTION

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SECTION 09 65 00

RESILIENT FLOORING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Linoleum.
 - 2. Luxury resilient tile planks.
 - 3. Resilient wall base.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 03 54 15 - Portland Cement Underlayment: Provision of portland cement underlayment.
 - 2. Section 07 92 00 - Joint Sealants: Provision of sealants and caulks.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. ASTM - American Society for Testing and Materials
 - 1. E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - 2. E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
 - 3. F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
 - 4. F970 - Standard Test Method for Static Load Limit.
 - 5. F1516 - Standard Practice for Sealing Seams of Resilient Flooring Products by the Heat Weld Method (when Recommended).
 - 6. F1861 - Standard Specification for Resilient Wall Base.
- C. CALGreen - California Green Building Standards, 2019 Edition

1.03 SYSTEM DESCRIPTION

- A. Adhesives used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Article 5.504.4.1.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each type of product specified.
- B. Shop Drawings: For each type of floor covering; include floor covering layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- C. Samples for Verification: Submit samples in manufacturer's standard size, but not less than 6-inch by 9-inch sections of each different color and pattern of floor covering specified, showing full range of variations expected in these characteristics.
 - 1. Provide photographs of all samples.

- D. Quality Control Submittals
 - 1. Certificates: Submit certification by resilient flooring manufacturer that products supplied for installation comply with local regulations controlling use of volatile organic compounds (VOC's).
 - 2. Installer certificates signed by floor covering manufacturer certifying that installers comply with requirements specified under "Quality Assurance" article.
- E. Contract Closeout Submittals: Submit maintenance data for resilient floor coverings.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications
 - 1. Engage installer that is an established firm, experienced in the installation of the specified product and shall have access to all manufacturer's required technical, maintenance, specifications, and related documents.
 - 2. Installer shall have completed at least 3 Projects of similar magnitude, material, and complexity. Installer shall provide 3 reference Projects including contact names and telephone numbers.
 - 3. Installer shall employ workers for this Project who are trained and certified by floor covering manufacturer for installation techniques required.
 - 4. Installer shall have a factory trained mechanic on site to supervise the entire installation.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements
 - 1. Maintain a minimum temperature as stipulated by flooring and adhesive manufacturer in spaces to receive resilient flooring materials, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 degrees Fahrenheit.
 - 2. Do not install resilient flooring materials until they are at the same temperature as the space where they are to be installed.
 - 3. Close spaces to traffic during resilient flooring materials installation.

1.07 SEQUENCING AND SCHEDULING

- A. Install resilient flooring materials and accessories after other finishing operations, including painting, have been completed.
- B. Sequence installing products specified in this Section with other construction to minimize possibility of damage and soiling during remainder of construction period.
- C. Do not install resilient flooring materials over concrete slabs until the slabs have cured and are dry to bond with adhesive as determined by flooring manufacturer's recommended bond and moisture test. Contractor shall be responsible for achieving required moisture content in concrete slab in timely manner to allow floor materials to be installed without delaying completion of work.

1.08 MAINTENANCE

- A. Extra Materials
 - 1. Furnish 10 linear feet in roll form of each different composition, wearing surface, color and pattern of resilient flooring and wall base installed.
 - 2. Furnish 1 box of each class, wearing surface, color, pattern, and size of resilient floor tile installed.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers
 - 1. Linoleum: Forbo Flooring, Inc., "Marmoleum Fresco" or "Marmoleum Real" or Marmoleum Vivace" or Marmoleum Terra", or equal.
 - 2. Luxury Resilient Tile Planks: Mannington Commercial, "Cirro", or equal.
 - 3. Rubber Base: Roppe, "Pinnacle Type TS", or equal.

2.02 MATERIALS

- A. Linoleum: Floor covering shall consist of linseed oil, cork, wood flour resin binders, gum, and pigments calendered on to a natural jute backing, with the following properties:
 - 1. Thickness: 0.125-inch.
 - 2. Seaming Method: Heat welded.
 - 3. Static Load Limit: Exceeds 700 psi in accordance with ASTM F970.
 - 4. Slip Resistance: Meets or exceeds ADA recommendations of 0.6 for flat surfaces.
 - 5. Fire Resistance
 - a. Smoke Density: 450 or less in accordance with ASTM E662.
 - b. Critical Radiant Flux: Class 1 in accordance with ASTM E648.
 - 6. Color: As indicated on the Drawings.
- B. Luxury Resilient Tile Plank: PVC-free, vinyl-free, very low VOC, high performance resilient flooring with the following properties:
 - 1. Thickness: 0.08-inch.
 - 2. Size: As indicated on the Drawings.
 - 3. Static Load Limit, ASTM F970: 2,000 psi.
 - 4. Fire Resistance
 - a. Smoke Density: 450 or less in accordance with ASTM E662.
 - b. Critical Radiant Flux: Class 1 in accordance with ASTM E648.
 - 5. Color and Pattern: As indicated on the Drawings.
- C. Resilient Base: Products complying with ASTM F1861; thermoset, Type TS, PVC-free, vinyl-free.
 - 1. Style: Cove with top-set toe.
 - 2. Minimum Nominal Thickness: 1/8-inch.
 - 3. Height: 6 inches.
 - 4. Lengths: Coils in lengths standard with manufacturer but not less than 100 feet.
 - 5. Interior and Exterior Corners and Ends: Field molded.
 - 6. Color and Pattern: As selected by the Architect from manufacturer's full range.

2.03 INSTALLATION ACCESSORIES

- A. Concrete Slab Primer: Nonstaining type as recommended by flooring manufacturer.
- B. Underlayment: As specified in Section 03 54 15.
- C. Adhesives (Cements): Waterproof type recommended by manufacturer to suit resilient floor products and substrate conditions indicated. Adhesive shall contain less than 50 g/L VOC content.
 - 1. Seam Adhesive: As recommended by the resilient flooring manufacturer.
- D. Caulking: Acrylic latex silicon caulk as specified in Section 07 92 00.
- E. Waterproof Adhesive: As manufactured by Master Builders, "Concresive Paste LPL", or equal.

- F. Transition Strip: As indicated on the Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting resilient flooring performance. Verify that substrates and conditions are satisfactory for resilient flooring installation and comply with requirements specified.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F710 and the following:
1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by the resilient flooring manufacturer.
 2. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
 3. Before installing resilient flooring, concrete slab shall be tested for moisture emission. The test shall be conducted around the perimeter of each room, at columns and where moisture may be evident. A diagram of the areas showing the locations and results of each calcium chloride test shall be submitted to the Architect. At each area where the moisture emission exceeds 3 pounds per 1,000 square feet per 24 hours, a sealant shall be applied as recommended by the flooring manufacturer.

3.02 PREPARATION

- A. General: Comply with manufacturers' installation specifications to prepare substrates indicated to receive resilient flooring accessories.
- B. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil or silicone, by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.
- C. Use trowelable leveling and patching compounds at 1st Floor existing concrete per manufacturer's directions to fill cracks, holes, and depressions in substrates.
- D. Broom or vacuum clean substrates to be covered by resilient flooring immediately before flooring installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.
- E. The General Contractor shall be responsible for acceptability of moisture emission of existing concrete.
- F. Apply concrete slab primer, if recommended by flooring manufacturer, prior to applying adhesive. Apply according to manufacturer's directions.

3.03 INSTALLATION

- A. General: Comply with manufacturers' installation directions and other requirements indicated that are applicable to each type of installation included in Project.
- B. Sheet Flooring Installation
1. Unroll floor covering and allow to stabilize before cutting and fitting.
 2. Layout floor covering to comply with the following requirements:
 - a. Terminate joints at centerline of doorways where adjacent flooring is dissimilar.
 - b. The Architect will approve all seaming patterns.

- c. Maintain uniformity of sheet floor covering direction.
 - d. Arrange for minimum number of seams and place them in inconspicuous and low-traffic areas and not less than 6 inches away from parallel joints in flooring substrates.
 - e. Match edges of floor coverings for color shading and pattern at seams according to manufacturer's written recommendations.
 - f. Avoid cross seams.
 - g. Scribe, cut and fit floor coverings to butt neatly and tightly to vertical surfaces and permanent fixtures, including cabinets, pipes, outlets, edgings, door frames and thresholds.
3. Adhere floor covering to substrates to comply with floor covering manufacturer's written instructions, including those for trowel notching, adhesive mixing and adhesive open and working times.
 4. Heat Welded Seams: Rout joints and heat weld with welding bead, permanently fusing sections into a seamless floor covering. Prepare, weld, and finish seams according to manufacturer's written instructions and ASTM F1516 to produce surfaces flush with adjoining floor covering surfaces.
 5. Hand roll floor covering in both directions from center out to embed floor coverings in adhesive and eliminate trapped air. At walls, door casings, and other locations where access by roller is impractical, press floor coverings firmly in place with flat-bladed instrument.
- C. Resilient Tile Installation
1. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths at perimeter that equal less than one-half of a tile. Install tiles square with room axis, unless otherwise indicated.
 2. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Cut tiles neatly around all fixtures. Discard broken, cracked, chipped, or deformed tiles.
 - a. Lay tiles in ashlar pattern with grain running in one direction, unless otherwise directed by the Architect.
 3. Scribe, cut, and fit tiles to butt tightly to vertical surfaces, permanent fixtures, built-in furniture including, pipes, outlets, edgings, thresholds, and nosings. Extend tiles into toe spaces, door reveals, closets, and similar openings.
 4. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent marking device.
 5. Adhere tiles to flooring substrates without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed tile installation.
 6. Use full spread of adhesive applied to substrate in compliance with tile manufacturer's directions including those for trowel notching, adhesive mixing, and adhesive open and working times.
 7. Hand roll tiles where required by tile manufacturer.
- D. Resilient Wall Base Installation
1. Apply resilient wall base to walls, casework and other permanent fixtures in rooms and areas where base is required. Install wall base in lengths as long as practicable. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 2. Place resilient accessories so they are butted to adjacent materials of type indicated and bond to substrates with adhesive. Install reducer strips at edges of flooring that otherwise would be exposed.

3.04 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing installation:
 - 1. Remove visible adhesive and other surface blemishes using cleaner recommended by manufacturers.
 - 2. Sweep or vacuum floor thoroughly.
 - 3. Do not wash floor until after time period recommended by manufacturer.
 - 4. Damp-mop resilient flooring to remove black marks and soil.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by flooring manufacturer.

END OF SECTION

SECTION 09 90 00

PAINTING AND COATING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Surface preparation, painting, and finishing of new and existing exposed exterior and interior items and surfaces.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 05 50 00 - Metal Fabrications: For shop priming and finish painting of miscellaneous metals.
 - 2. Section 06 20 00 - Finish Carpentry: For finish painting of finish carpentry.
 - 3. Section 06 41 10 - Custom Casework: For finish painting of custom casework.
 - 4. Section 08 14 16 - Flush Wood Doors: For finish painting of flush wood doors.
 - 5. Section 09 26 13 - Gypsum Veneer Plastering: For finish painting of gypsum veneer plaster.
 - 6. Section 09 29 00 - Gypsum Board: For finish painting of gypsum board.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
- B. CALGreen - California Green Building Standards, 2019 Edition
- C. CFR - Code of Federal Regulations
 - 1. 40 CFR 59 - National Volatile Organic Compound Emission Standards for Consumer and Commercial Products.
- D. EPA - Environmental Protection Agency
- E. FM - Factory Mutual
- F. SSPC - The Society for Protective Coatings
 - 1. SP 10 - Surface Preparation Specification No. 10: Near-White Blast Cleaning.
- G. UL - Underwriters Laboratories Inc.

1.03 DEFINITIONS

- A. "Paint": As used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate or finish coats.
- B. Standard coating terms defined in ASTM D16 apply to this Section.
 - 1. "Flat": Refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. "Eggshell": Refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 - 3. "Semigloss": Refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.

4. "Full Gloss": Refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.04 SYSTEM DESCRIPTION

- A. Performance Requirements
 1. Paint exposed surfaces whether or not colors are designated in the schedules, except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from standard colors or finishes available.
 2. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts and labels.
 3. Do not paint over UL, FM, or other code required labels or equipment name, identification, performance rating or nomenclature plates.
- B. Paints and coatings used on the Project shall comply with CALGreen Code Nonresidential Mandatory Measures, Chapter 5, Division 5.5, Section 5.504, Article 5.504.4.3.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each paint system specified, including block fillers and primers.
 1. Provide manufacturer's technical information including label analysis and instructions for handling, storage and application of each material proposed for use.
 2. List each material and cross reference the specific coating, finish system and application. Identify each material by the manufacturer's catalog number and general classification.
- B. Samples
 1. Following the selection of colors and glosses by the Architect, submit samples for the Architect's review.
 - a. Provide 1 sample of each color and each gloss for each material on which the finish is specified to be applied.
 - b. Except as otherwise directed by the Architect, make samples approximately 8 inches by 10 inches in size.
 - c. Provide field mockups for final paint color and texture approval in the form of actual application of the materials on actual surfaces to be painted for approval by the Architect. Areas shall be 4 feet by 4 feet.
 2. Revise and resubmit each sample or field mockup as requested until the required gloss, color and texture are achieved. Such samples or field mockups, when approved, will become standards of color and finish for accepting or rejecting the work of this Section.
 3. Do not commence finish painting until approved samples are on file at the job site.
 4. Provide photographs of all samples and mockups.
- C. Quality Control Submittals: Provide certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

1.06 QUALITY ASSURANCE

- A. Provide primers and undercoat paint produced by the same manufacturer as finish coats.
 1. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrates.
 2. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.

3. Provide barrier coats over non-compatible primers or remove the primer and re-prime as required.
 4. Notify the Architect in writing of anticipated problems in using the specified coating systems over prime coatings supplied under other Sections.
- B. Applicator Qualifications: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Mockups: Apply samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Allow for 3 field colors and 1 trim color.
 2. Allow for each color to be mocked-up twice.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Acceptance at Site: Deliver materials to the job site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
1. Product name or title of material.
 2. Product description (generic classification or binder type).
 3. Manufacturer's stock number and date of manufacture.
 4. Contents by volume for pigment and vehicle constituents.
 5. Thinning instructions.
 6. Application instructions.
 7. Color name and number.
- B. Storage and Protection
1. Store materials not in use in tightly covered containers in well ventilated area at minimum ambient temperature of 45 degrees Fahrenheit. Maintain containers used in storage in clean condition, free of foreign materials and residue.
 2. Protect from freezing. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.08 PROJECT CONDITIONS

- A. Environmental Requirements
1. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees and 90 degrees Fahrenheit, unless otherwise permitted by the manufacturers' printed instructions as approved by the Architect.
 2. Do not apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 45 degrees Fahrenheit, unless otherwise permitted by the manufacturers' printed instructions as approved by the Architect.
 3. Do not apply paint in rain, fog, or mist; or when the relative humidity exceeds 85 percent. Do not apply paint to damp or wet surfaces, unless otherwise permitted by the manufacturers' printed instructions as approved by the Architect.
 4. Applications may be continued during inclement weather only within the temperature limits specified by the paint manufacturer as being suitable for use during application and drying periods.

1.09 MAINTENANCE

- A. Upon completion of the work of this Section, deliver to the City's Project Manager an extra stock of 5 gallons of each color, type, and gloss of interior paint used in the Work, tightly sealing each container, and clearly labeling with contents and location where used.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers: Kelly-Moore; Benjamin Moore, Sherwin Williams, Tnemec, or equal.

2.02 PAINT MATERIALS

- A. General
1. Paint Materials, General: Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer, based on testing and field experience.
 2. Material Quality: Provide manufacturer's best quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.
 3. Chemical Components of Field-Applied Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions; these requirements do not apply to primers or finishes that are applied in a fabrication or finishing shop:
 - a. VOC Content of Interior Paints and Coatings: Not more than 5 g/L.
 - b. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 - c. Restricted Components: Paints and coatings shall not contain any of the following:
 - 1) Acrolein.
 - 2) Acrylonitrile.
 - 3) Antimony.
 - 4) Benzene.
 - 5) Butyl benzyl phthalate.
 - 6) Cadmium.
 - 7) Di (2-ethylhexyl) phthalate.
 - 8) Di-n-butyl phthalate.
 - 9) Di-n-octyl phthalate.
 - 10) 1,2-dichlorobenzene.
 - 11) Diethyl phthalate.
 - 12) Dimethyl phthalate.
 - 13) Ethylbenzene.
 - 14) Formaldehyde.
 - 15) Hexavalent chromium.
 - 16) Isophorone.
 - 17) Lead.
 - 18) Mercury.
 - 19) Methyl ethyl ketone.
 - 20) Methyl isobutyl ketone.
 - 21) Methylene chloride.
 - 22) Naphthalene.
 - 23) Toluene (methylbenzene).

- 24) 1,1,1-trichloroethane.
- 25) Vinyl chloride.
- 4. Sheens: Confirm sheen for each paint product with Architect prior to application of paint finish.
- 5. Colors: As selected by the Architect from manufacturer's full range.

2.03 APPLICATION EQUIPMENT

- A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and as approved by the Architect.
- B. Prior to use of application equipment, verify that the proposed equipment is compatible with the material to be applied, and that integrity of the finish will not be jeopardized by use of the proposed equipment.

2.04 OTHER MATERIALS

- A. Provide other materials not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.01 PREPARATION

- A. General: Mix and prepare paint materials in strict accordance with the manufacturers' recommendations as approved by the Architect.
- B. Surface Preparation
 - 1. General
 - a. Perform preparation and cleaning procedures in strict accordance with the paint manufacturers' recommendations as approved by the Architect.
 - b. Remove removable items which are in place and are not scheduled to receive paint finish; or provide surface applied protection prior to surface preparation and painting operations.
 - c. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
 - 2. Schedule the cleaning and painting so that dust and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.
- C. Preparation of Wood Surfaces
 - 1. Clean wood surfaces until free from dirt, oil, and other foreign substance.
 - 2. Smooth finished wood surfaces exposed to view, using the proper sandpaper. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
 - 3. Unless specifically approved by the Architect, do not proceed with painting of wood surfaces until the moisture content of the wood is 12 percent or less as measured by a moisture meter approved by the Architect.
- D. Preparation of Metal Surfaces
 - 1. Thoroughly clean surfaces until free from dirt, oil, and grease.
 - 2. Allow to dry thoroughly before application of paint.
 - 3. Aluminum Substrates: Remove surface oxidation.

3.02 PAINT APPLICATION

- A. General
 - 1. Touch-up shop-applied prime coats which have been damaged, and touch-up bare areas prior to start of finish coats application.
 - 2. Slightly vary the color of succeeding coats.
 - 3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of 5 feet.
 - 4. On removable panels and hinged panels, paint the back sides to match the exposed sides.
 - 5. When patch painting, paint to nearest breakpoint or entire plane if whole room; refer to Finish Schedule.
- B. Drying: Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suite adverse weather conditions.
- C. Brush Applications
 - 1. Brush out and work the brush coats onto the surface in an even film.
 - 2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.
- D. Spray Application
 - 1. Confine spray application to metal framework and similar surfaces where hand brush work would be inferior.
 - 2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
 - 3. Do not double back with spray equipment to build up film thickness of 2 coats in 1 pass.
- E. Miscellaneous Surfaces and Procedures
 - 1. Exposed Mechanical Items
 - a. Provide powder coat finish at electric panels.
 - b. Finish access doors, conduits, pipes, ducts, grilles, registers, vents, and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.
 - c. Paint visible duct surfaces behind vents, registers, and grilles flat black.
 - d. Wash metal with solvent, prime and apply 2 coats of alkyd enamel.
 - 2. Exposed Pipe and Duct Insulation
 - a. Apply 1 coat of latex paint on insulation which has been sized or primed under other Sections; apply 2 coats on such surfaces when unprepared.
 - b. Match color of adjacent surfaces.
 - c. Remove band before painting and replace after painting.
 - 3. Hardware
 - a. Paint prime coated hardware to match adjacent surfaces.
 - b. Paint metal portions of head seals, jamb seals, and astragal seals to match the color of the door frame unless otherwise directed by the Architect.
 - 4. Wet Areas
 - a. For oil base paints, use 1 percent phencimercuric or 4 percent tetrachlorophenol.
 - b. For water emulsion and glue size surfaces, use 4 percent sodium tetrachlorophenate.
 - 5. Interior: Use "stipple" finish where enamel is specified.
 - 6. Exposed Vents: Apply 2 coats of heat resistant paint approved by the Architect.

3.03 EXTERIOR PAINT SCHEDULE

- A. Opaque Finish for Wood
 - 1. Flat Acrylic Finish: 2 finish coats over a primer.
 - a. Primer: Exterior, 100 percent acrylic primer applied at spreading rate required to achieve a total dry film thickness recommended by the manufacturer.
 - 1) Product: As manufactured by Sherwin Williams, or equal.
 - b. First and Second Coats: Flat, exterior, 100 percent acrylic paint applied at spreading rate required to achieve a total dry film thickness recommended by the manufacturer.
 - 1) Product: As manufactured by Sherwin Williams, or equal.
- B. Ferrous Metal: Provide the following finish system over exterior ferrous metal. Reprime all areas where primer has been scratched, scraped, or removed.
 - 1. Semigloss, Fluoropolymer Finish: Finish coat over intermediate coat over primer.
 - a. Primer: Reddish-gray, 2-component, moisture-cured, zinc-rich primer, applied at spreading rate required to achieve manufacturer's recommended total dry film thickness of 2.0 to 3.5 mils.
 - 1) Basis of Design Product: As manufactured by Tnemec, "Tneme-Zinc, Series 90-97", or equal.
 - b. Intermediate Coat: Satin, polyamidoamine epoxy, applied at spreading rate required to achieve a total dry film thickness recommended by the manufacturer.
 - 1) Basis of Design Product: As manufactured by Tnemec, "Hi-Build Epoxoline II, Series L69", or equal.
 - c. Finish Coat: Semigloss, high-solids fluoropolymer coating applied at spreading rate required to achieve a total dry film thickness recommended by the manufacturer.
 - 1) Basis of Design Product: As manufactured by Tnemec, "Fluoronar, Series 1071V", or equal.

3.04 INTERIOR PAINT SCHEDULE

- A. Note: Paint products below are basis of design; equivalent substitutes are acceptable.
- B. Gypsum Board and Existing Plaster
 - 1. Eggshell Finish Where Indicated: Finish coat(s) to cover over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.0 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Primer, B28W2600 Series", or equal.
 - b. Finish Coat: Low luster eggshell, acrylic-latex based, interior enamel applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.7 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Eg-Shel, B20W2600 Series", or equal.
 - 2. Semigloss Finish Where Indicated: Finish coat(s) to cover over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.0 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Primer, B28W2600 Series", or equal.
 - b. Finish Coat: Semigloss, acrylic latex, interior enamel applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.5 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Semi-Gloss, B31W2600 Series", or equal.

- C. Opaque Finish for Wood
 - 1. Semigloss Finish: Finish coat(s) to cover over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.4 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "Pro-Block Latex Primer, B51W600 Series", or equal.
 - b. Finish Coat: Semigloss, acrylic latex, interior enamel applied at spreading rate to achieve film thickness of 4.0 mils wet and 1.5 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "ProMar 200 Zero VOC Latex Semi-Gloss, B31W2600 Series", or equal.
- D. Transparent Finish for Wood (Refinish Top at Existing Bar)
 - 1. Waterborne, Satin-Varnish Finish: 2 finish coats of a waterborne, clear-satin varnish over a sealer coat and a waterborne, interior wood stain. Wipe wood filler before applying stain.
 - a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.
 - b. Stain Coat: Waterborne, interior wood stain applied at spreading rate recommended by the manufacturer.
 - 1) Product: As manufactured by Sherwin Williams, "Minwax Water-Based Wood Finish Semi-transparent Stain", or equal.
 - c. First and Second Finish Coats: Waterborne, acrylic finish applied at spreading rate recommended by the manufacturer.
 - 1) Product: As manufactured by Sherwin Williams, "Minwax Water-Based Polycrylic Protective Satin Finish", or equal.
- E. Metals
 - 1. Flat Finish: Finish coat(s) to cover over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate to achieve film thickness of 5.0 to 10.0 mils wet and 2.0 to 4.0 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series", or equal.
 - b. Finish Coat: Flat, acrylic latex, interior enamel applied at spreading rate to achieve film thickness of 3.75 to 6.0 mils wet and 1.5 to 2.4 mils dry.
 - 1) Product: As manufactured by Sherwin Williams, "Pro Industrial Multi-Surface Acrylic Matte, B66-1571 Series", or equal.

END OF SECTION

SECTION 10 11 00

VISUAL DISPLAY UNITS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Markerboards.
 - 2. Tackboards.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Sections
 - 1. Section 05 45 00 - Metal Support Assemblies: Provision of backing plates.
 - 2. Section 09 29 00 - Gypsum Board: Provision of gypsum board surfaces.

1.02 SUBMITTALS

- A. Product Data: Provide manufacturer's product data for markerboards and tackboards. Confirm quantities, size, location, and method of installation for each.
- B. Samples: Provide the following samples of each product for initial selection of colors, patterns, and textures, as required, and for verification of compliance with requirements indicated.
 - 1. Markerboards: Manufacturer's color charts consisting of actual sections of glass finish showing the full range of colors available.
 - 2. Tackboards: Manufacturer's standard color samples.
 - 3. Provide photographs of all samples.
- C. Manufacturer's Installation Data: Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.03 QUALITY ASSURANCE

- A. The Drawings indicate size, profiles, and dimensional requirements of visual display boards and are based on the specific type and model indicated. Other visual display boards having equal performance characteristics by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept or intended performance as judged by the Architect. The burden of proof of equality is on the proposer.

1.04 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to fabrication to ensure proper fitting. Coordinate fabrication schedule with construction progress to avoid delay.
 - 1. Allow for trimming and fitting wherever taking field measurements before fabrication might delay the Work.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Markerboards: 1/4-inch thick tempered glass, magnetic and backpainted as indicated, frameless with polished edges.

1. Dimensions: As indicated on the Drawings.
 2. Color: As selected by the Architect.
 3. Product: As manufactured by Claridge Products and Equipment, Inc.; U.S. Markerboard, or equal.
- B. Tackboards: Panels shall be constructed of a compressed industrial insulation wood fiberboard; finish shall be applied directly to face and long edges of the panels and returned onto the back of the panels; mounted with adhesive recommended by the tackboard manufacturer.
1. Thickness: 1/2-inch.
 2. Dimensions: As indicated on the Drawings; standard tolerance plus or minus 1/16-inch width and height.
 3. Edge and Corner Profiles: Square.
 4. Finish: As selected by the Architect from manufacturer's full range.
 5. Trim: Manufacturer's standard J-mold (top and bottom), F-mold (outside corner), and Z-mold (inside corner).
 6. Product: As manufactured by Lamvin Inc., "Tackboard Wall Panels", or equal.

PART 3 - EXECUTION**3.01 INSTALLATION**

- A. Deliver factory-built visual display surfaces completely assembled in 1 piece without joints, wherever possible. Where dimensions exceed panel size, provide 2 or more pieces of equal length as acceptable to the Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site. Use splines at joints to maintain surface alignment.
- B. Install units in locations and at mounting heights indicated and in accordance with the manufacturer's instructions. Keep perimeter lines straight, plumb, and level. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for a complete installation.
- C. Coordinate job-site assembled units with grounds, trim, and accessories. Join parts with a neat, precision fit.
- D. Install visual display units in locations and at mounting heights indicated and in accordance with the manufacturer's instructions. Keep perimeter lines straight, plumb, and level. Join parts with a neat, precision fit.
- E. Visual display units shall be fastened to existing structure or to blocking provided by the Contractor as indicated on the Drawings.

3.02 ADJUST AND CLEAN

- A. Verify that accessories required for each unit have been properly installed and that operating units function properly.
- B. Clean units in accordance with the manufacturer's instructions. Break in visual display surfaces only as recommended by the manufacturer.

END OF SECTION

SECTION 10 14 00

SIGNAGE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Exterior signage as indicated on the Civil Drawings.
 - 2. Interior identification and accessible signage as required and as indicated.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. ASTM - American Society for Testing and Materials
 - 1. A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
- C. CBC - California Building Code, 2019 Edition

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Design all signs as required by ADA and CBC - Title 24.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements
 - 1. Comply with ADA and CBC requirements for signage, to include Braille.
 - 2. Provide signs at public toilet rooms with the following text: MEN, WOMEN.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's product data describing materials and signs.
- B. Shop Drawings
 - 1. Provide shop drawings showing construction details for approval before proceeding with fabrication. Include full size details of exposed edges, joints between materials, hanging, hinging, and locking systems and any other details which would affect sign appearance.
 - 2. Fasteners: Detail methods of fastenings and provide exact specifications for all fasteners noted on shop drawings.
 - 3. Artwork: Submit full size patterns or prints of typical copy layouts and/or graphic elements to be applied on signs. Using layouts on the Drawings as a guide, optically enlarge and hand correct images before submitting to the Architect for approval before fabrication.
 - 4. Sign Location: Provide Graphic Schedule and location plans to identify and locate all signs. Item numbers listed in the Graphic Schedule shall be found on location plans and shall identify locations of specific sign items.

- C. Samples
 - 1. On 6-inch by 6-inch pieces of actual sign materials, submit to the Architect for review and approval, 1 sample of painted and graphic finishes, in each material, color and finish, with texture to simulate actual conditions.
 - 2. Provide listing of the material and application for each coat of each finish sample.
 - 3. Be prepared to resubmit each sample as requested until required sheen, color and texture are approved.
 - 4. Acrylic: Submit color and finish samples of plastics for approval before proceeding with fabrication. No substitution in color, thickness, finish or plastics will be accepted without written approval of the Architect.
 - 5. Fasteners: Submit 1 sample of all fasteners and hardware for approval.
 - 6. Paint: Submit 1 color and finish sample of all paints and finishes for approval prior to fabrication.
 - 7. Provide photographs of all samples.
- D. Operation and Maintenance: Provide the City's Project Manager with proper cleaning instructions required for continued maintenance of signs.

1.06 QUALITY ASSURANCE

- A. Pre-Installation Conferences: Sign locations shown on the location plans are for general information only. Prior to installation and as required, arrange meetings with the Architect at the site for final location for all sign items. Cardboard mockup signs can be used to confirm location and placement.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: ASI Sign Systems, Inc.; Superior Sign Systems; Vomar Products, Inc., or equal.

2.02 MATERIALS

- A. Exterior Accessibility Signs: 18 gauge steel, stretcher leveled, ASTM A1008, Class I, reflectorized porcelain finish, galvanized; screen printed blue with white symbol in accordance with ADA.
- B. Plastic Signs: Matte finish acrylic plastic, minimum 1/8-inch thick, without frame, with corners radiused. Message and background color shall be sub-surface printed. Provide with raised room numbers and Braille.
- C. Mounting Tape: Double-sided vinyl foam tape; provide silicone adhesive for attachment to wall surface.
- D. Fasteners: Where fasteners are indicated or required, use exposed "torx type" or other type tamper-proof security screws.
- E. Coatings for Acrylic Plastic Sheet: Use colored coatings, including inks and paints for copy and background colors, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are non-fading for the application intended.

2.03 ACRYLIC SIGNS

- A. Acrylic Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

- B. Unframed Acrylic Signs: Fabricate signs with edges mechanically and smoothly finished to conform with the following requirements:
 - 1. Edge Condition: Square cut.
 - 2. Corner Condition: 1/2-inch radius.
 - 3. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16-inch measured diagonally.
- C. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.
- D. Message Inserts: Where sign type makes provision for changeable name slots, provide laser printed name strips with text as scheduled. Obtain message from the City's Project Manager before fabrication. Where no text is scheduled, insert blank message strip in slot for future text by the City's Project Manager.
- E. Photopolymer (Raised Copy): Machine-cut copy characters from matte finish opaque acrylic sheet and chemically weld onto the acrylic sheet forming sign panel face. Produce precisely formed characters with square cut edges free from burrs and cut marks.
 - 1. Panel Material: Matte-finished acrylic stock with opaque color coating surface applied; 2 colors, minimum 70 percent contrast between color 1 and color 2.
 - 2. Raised Copy Thickness: Not less than 1/32-inch.

2.04 FINISHES

- A. Colors: For exposed sign material that requires applied colors and other characteristics related to appearance, see Drawings.

2.05 BRAILLE SYMBOLS

- A. Braille Symbols: California Contracted Grade 2 Braille shall be used wherever Braille symbols are specifically required in other portions of these standards. Dots shall be 1/10-inch on centers in each cell with 2/10-inch space between cells. Dots shall be raised a minimum of 1/40-inch above the background.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the substrate and conditions in which the work is to be installed. Correct all unsatisfactory substrate and conditions prior to start of installation.

3.02 INSTALLATION

- A. General
 - 1. Install signage in neat and proper manner.
 - 2. Install sign items, including all components, in accordance with reviewed Graphic Schedule at locations shown.
 - 3. Install signs properly aligned, level and true to line and dimension.
- B. Install with reviewed manufacturer's adhesive or mechanical fasteners after application of finish painting at heights noted.

3.03 SCHEDULE

- A. Signage font, size, color, and background color as indicated on the Drawings.
- B. Signage shall be in compliance with CBC.

END OF SECTION

SECTION 10 21 13.20

PHENOLIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Modification of existing phenolic toilet partitions and urinal screens.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. CBC - California Building Code, 2019 Edition
- C. UL - Underwriters Laboratories Inc.
 - 1. FRD - Fire Resistance Directory.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for materials, fabrication, and installation including catalog cuts of anchors, hardware, fastenings, and accessories.
- B. Shop Drawings
 - 1. Dimensioned plans indicating layout of toilet compartments.
 - 2. Dimensioned elevations indicating heights of doors, pilasters, separation partitions, and other components; indicate locations and sizes of openings in compartment separation partitions for toilet and bath accessories to be installed in partitions; indicate floor and ceiling clearances.
 - 3. Details indicating anchoring components (bolt layouts) and methods for project conditions; indicate components required for installation, but not supplied by toilet compartment manufacturer.
- C. Samples for Initial Selection: Standard color options for each type of unit indicated for selection by the Architect.
 - 1. Provide photographs of all samples.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Install fire rated ceiling systems in accordance with CBC and UL FRD listing and requirements of agency having jurisdiction.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.
- B. Store products indoors in manufacturer's or fabricator's original containers and packaging, with labels clearly identifying product name and manufacturer. Protect from damage.

- C. Lay cartons flat, with adequate support to ensure flatness and to prevent damage to pre-finished surfaces.
- D. Do not store where ambient temperature exceeds 120 degrees Fahrenheit.

1.06 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not deliver materials or begin installation until building is enclosed, with complete protection from outside weather, and building temperature maintained at a minimum of 60 degrees Fahrenheit.
- C. Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication and indicate measurements on shop drawings.

1.07 WARRANTY

- A. Manufacturer's Standard Warranty: Provide warranty for phenolic material against delamination, breakage, or corrosion for 10 years, assuming proper maintenance according to manufacturer's recommendations.

1.08 COORDINATION

- A. Coordinate Work with placement of support framing and anchors in walls and ceilings.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturer: ASI Global Partitions, "Color-Thru Phenolic", or equal.

2.02 COMPARTMENTS AND SCREENS

- A. Toilet Compartments: Floor anchored/overhead braced.
 - 1. Compartment Depth and Width: As indicated on the Drawings.
 - 2. Door Width: 24 inches, minimum; at ADA accessible compartments 36 inches minimum. Door height shall match existing.
 - 3. Pilaster Height: Match existing.
 - 4. Finish: Match existing.
 - 5. Color: Match existing.
- B. Privacy and Urinal Screens: Wall-mounted, no pilaster, vandal-resistant.
 - 1. Thickness: 1/2-inch.
 - 2. Size: 18 inches wide by 42 inches high.
 - 3. Height Above Floor: As indicated on the Drawings.
 - a. Note: Mount at 6-feet high for privacy and to prohibit sight lines; bottom shall then be 18 inches above finished floor.
 - 4. Finish: Matte.
 - 5. Color: As indicated on the Drawings.

2.03 SOLID PHENOLIC

- A. Doors, Panels, Screens, and Pilasters: Decorative surface sheet with solid phenolic core of melamine resin impregnated kraft paper fused under high temperature and pressure; edges machine sanded with a filleted edge. Manufacturer's standard.
 - 1. Doors and Pilasters: 1/2-inch thick.
 - 2. Panels and Screens: 1/2-inch thick.
 - 3. Doors, Panels, and Pilasters: 78.7 inches high.
 - 4. Door and pilaster edges shall be routed and overlapped to block sight lines into the compartments.
 - 5. Edges: Black core.
- B. Finish: Solid phenolic, as selected from manufacturer's standard colors.
- C. Door Hardware
 - 1. Hinge: 3 surface-mounted barrel hinges formed from 304 stainless steel.
 - 2. Latch: Type 304 stainless steel with indicator of occupancy. Latch shall be mounted to the pilaster with integrated function as keeper for in-swinging doors. Latch will provide emergency access through an accessible slotted center pin in the external indicator.
 - 3. Coat Hook and Bumper: Type 304 stainless steel with black rubber tip for doorstop.
 - 4. Fastening Hardware: Manufacturer's standard, Type 304 stainless steel, No. 4 satin finish. Door hardware shall be attached to holes predrilled at the manufacturing facility.
- D. Mounting Brackets: Provide stainless steel continuous bracket Type 304 stainless steel, No. 4 satin finish, with stainless steel theft-resistant barrel nuts and machine screws of same material and finish.
- E. Headrail: Type 304 stainless steel, 1-1/4 inches diameter tube attached in clips to top of pilaster.
- F. Floor Anchored/Overhead Braced
 - 1. Compartment shall be supported by Type 304 Stainless steel pedestal placed under the panels approximately 12 inches behind pilaster on standard compartments. Manufacturer recommends placement of pedestal under large pilasters associated with accessible compartments.
 - 2. Pedestal shall be adjustable in height plus or minus 1 inch to compensate for uneven floors.
 - 3. Pedestal shall support panel 6 inches or 9 inches above finished floor.
 - 4. Pedestal shall be secured to floor with 2-1/2 inches corrosion resistant screws.

PART 3 - EXECUTION**3.01 EXAMINATION AND PREPARATION**

- A. Inspect and prepare substrates using the methods recommended by the manufacturer for achieving best result for the substrates under project conditions. Clean surfaces thoroughly prior to installation.
- B. Do not proceed with installation until substrates have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

- C. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
 - 1. Verify dimensions of areas to receive compartments.
 - 2. Verify locations of built-in framing, anchorage, bracing, and plumbing fixtures.

3.02 INSTALLATION

- A. Install in accordance with approved shop drawings and manufacturer's instructions.
- B. Fasten components to adjacent materials and to other components using purpose-designed fastening devices.
- C. Adjust pilaster anchors for substrate variations.
- D. Equip each compartment door with hinges and door latch.
- E. Equip each compartment door with one coat hook and bumper.
- F. Installation Tolerances
 - 1. Maximum Variations From Plumb or Level: 1/8-inch.
 - 2. Clearance Between Wall Surface and Panels or Pilasters: 1-1/2 inches maximum.

3.03 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors.
- B. Adjust adjacent components for consistency of line or plane.

3.04 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion.
- C. Remove factory protective coverings and clean finish surfaces in accordance with manufacturer's instructions before substantial completion.

END OF SECTIO

SECTION 10 26 13**CORNER GUARDS****PART 1 - GENERAL****1.01 SUMMARY**

- A. Section Includes: Corner guards.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ASTM - American Society for Testing and Materials
 - 1. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 2. D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - 3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. CBC - California Building Code, 2019 Edition

1.03 SUBMITTALS

- A. Product Data: Submit product data for each wall surface protection system component and installation accessory required, including installation methods for each type of substrate. Provide written data on each required component including physical characteristics, such as durability, resistance to fading, and flame resistance.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Provide wall surface protection system components that are identical to those tested in accordance with CBC and ASTM E84 for the fire performance characteristics indicated below. Identify wall surface protection system components with appropriate markings from the testing and inspection organization.
 - 1. Flame Spread: 25 or less.
 - 2. Smoke Developed: 450 or less.
- B. Impact Strength: Provide wall surface protection system components with a minimum impact resistance of 25.4 ft. x lb/sq. ft. when tested in accordance with ASTM D256 (Izod impact, ft. x lb/in.).

1.05 MAINTENANCE

- A. Maintenance Instructions: Provide the manufacturer's instructions for maintenance of installed work. Include recommended methods and frequency for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.
- B. Extra Materials: After completion of work, deliver not less than 2 percent of each type, color, and pattern of wall surface protection materials and components. Include accessory components as required. Replacement materials shall be from the same production run as materials installed. Package replacement materials with protective covering, identified with appropriate labels.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturer: Construction Specialties, Inc., "Acrovyn Series, Model SSM-20AN", or equal.

2.02 MATERIALS

- A. Rigid Plastic Material: Extruded, textured, chemical and stain-resistant, high-impact, acrylic modified vinyl plastic; PVC-free; , thickness as indicated. Comply with specified requirements of ASTM D256 for impact resistance and ASTM E84 for flame spread and smoke developed characteristics.
 - 1. Texture: Shadowgrain.
 - 2. Color: As indicated on the Drawings.
- B. Aluminum Extrusions: Provide alloy and temper recommended by the manufacturer for the type of use and finish indicated, but with not less than the strength and durability properties specified in ASTM B221 for 6063-T5.
- C. Fasteners: Provide concealed noncorrosive metal screws, bolts, and other fasteners compatible with aluminum components, hardware, anchors, and other items being fastened.

2.03 PLASTIC CORNER GUARDS

- A. Provide surface mounted, resilient plastic corner guard assembly consisting of a snap-on-type plastic cover installed over a continuous aluminum retainer, height as indicated.
 - 1. Cover shall be rigid, impact-resistant plastic, minimum 0.078-inch thick, in dimensions and profiles indicated.
 - a. Radius: 1/4-inch nose.
 - b. Wall Offset: 3/8-inch.
 - c. Leg: 2 inches.
 - 2. Retainer: Manufacturer's standard continuous, one-piece, extruded aluminum retainer, minimum 0.062-inch thick.
 - 3. Accessories: Provide prefabricated, injection-molded top cap and aluminum base with concealed splices, cushions, mounting hardware, and other accessories as required. No exposed fasteners.
 - a. Top caps shall match color of plastic covers and shall be field adjustable for close alignment with snap-on plastic covers.

2.04 FABRICATION

- A. General: Fabricate wall protection systems to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thicknesses of components.
- B. Preassemble components in the shop to the greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.
- C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of evidence of wrinkling, chipping, uneven coloration, dents, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.
- D. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors for interconnection of members to other construction.

- E. Fabricate anchoring devices to be capable of withstanding imposed loads. Coordinate anchoring devices with the supporting structure.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Install wall surface protection units plumb, level, and true to line without distortions.
 - 1. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished work.
- B. Install aluminum retainers, mounting brackets, and other accessories in strict accordance with the manufacturer's instructions.
 - 1. Where splices occur in horizontal runs of over 20 feet, splice aluminum retainer and plastic cover at different locations along the run.

3.02 CLEANING

- A. General: Immediately upon completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent. Clean metal components in accordance with the manufacturer's recommendations.
- B. Remove excess adhesive using methods and materials recommended by manufacturer.

END OF SECTION

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SECTION 10 28 13

TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Toilet accessories, including backing plates for grab bars.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 REFERENCES

- A. ADA - Americans with Disabilities Act
- B. AISI - American Iron and Steel Institute
- C. ASTM - American Society for Testing and Materials
 - 1. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 3. B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
 - 4. C1503 - Standard Specification for Silvered Flat Glass Mirror.
 - 5. F446 - Standard Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area.
- D. CBC - California Building Code, 2019 Edition

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gauges, profiles, mounting method, specified options, and finishes.
- B. Shop Drawings: Submit setting drawings where cutouts are required in other work, including templates, substrate preparation instructions, and directions for preparing cutouts and installing anchorage devices.
- C. Contract Closeout Submittals: Submit maintenance instructions including replaceable parts and service recommendations.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements
 - 1. Grab Bars and Fasteners: Strength of grab bars, fasteners and mounting devices shall comply with CBC and ADA requirements.
 - 2. Grab Bar Surfaces: Conform to CBC.
 - 3. Mounting Heights of Accessories: Comply with requirements of CBC.
 - 4. Operating Pressure for Soap Dispensers: Comply with ADA.
- B. Inserts and Anchorages: Furnish accessory manufacturers' standard concealed inserts and anchoring devices. Coordinate delivery with other work to avoid delay.

1.05 PROJECT CONDITIONS

- A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.06 WARRANTY

- A. Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.
- B. Warranty Period: 10 years from date of Substantial Completion.
- C. Warranty shall not deprive the City of other rights the City may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. General: Fabricate toilet accessory items from the following materials and according to requirements specified for individual accessory items.
 - 1. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gauge minimum thickness, unless otherwise indicated.
 - 2. Galvanized Steel Sheet: ASTM A653, G60.
 - 3. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B456, Type SC 2.
 - 4. Galvanized Steel Mounting Devices: ASTM A153, hot-dip galvanized after fabrication.
 - 5. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.
 - 6. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply. Provide a minimum of 6 keys to the City's Project Manager.
 - 7. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.02 ACCESSORIES

- A. Toilet Accessories
 - 1. Hat and Coat Hooks
 - a. Type A: Surface-mounted, 22 gauge stainless steel, satin finish, as manufactured by Bobrick Washroom Equipment, Inc., "B-6827", or equal.
 - b. Type B: Surface-mounted, solid cast aluminum with matte finish, hard rubber bumper secured with drive-screw, as manufactured by Bobrick Washroom Equipment, Inc., "B-212", or equal.
 - 2. Grab Bars: 1-1/2 inches diameter, 18 gauge stainless steel tubing, satin finish, lengths as indicated, as manufactured by Bobrick Washroom Equipment, Inc., "B6806 Series", or equal.
 - 3. Toilet Seat Cover Dispenser: Surface-mounted, 20 gauge stainless steel, satin finish, as manufactured by Bobrick Washroom Equipment, Inc., "ConturaSeries B-4221", or equal.
 - 4. Sanitary Napkin Disposal: Surface-mounted, 22 gauge stainless steel, satin finish, as manufactured by Bobrick Washroom Equipment, Inc., "ConturaSeries B-270", or equal.

5. Toilet Tissue Dispenser: Surface-mounted, single 9-inch jumbo roll, as manufactured by Tork, "66TR", or equal.
 6. Mirrors: Surface-mounted, glass mirror with stainless steel angle frame, satin finish, 24 inches wide by 36 inches high, as manufactured by Bobrick Washroom Equipment, Inc., "B-290 Series", or equal.
 7. Soap Dispenser: Wall-mounted, bulk liquid soap dispenser, ABS material, length as indicated, black color, as manufactured by Bobrick Washroom Equipment, Inc., "B-42", or equal.
 8. Mop and Broom Holder: Surface-mounted, 22 gauge stainless steel, satin finish, as manufactured by Bobrick Washroom Equipment, Inc., "B-223", or equal.
 9. Hand Dryer: 1-piece, heavy-duty, rib-reinforced, lightweight, unbreakable, rustproof die-cast zinc alloy, 1490 watts (heat on), 425 watts (heat off), 72 degrees Fahrenheit to 135 degrees Fahrenheit adjustable heat range, heat and air speed settings inside, noise reduction nozzle included, HEPA filtration system included, white epoxy painted, as manufactured by Excel Dryer, Inc., "XLERATOR XL-W-1.1N-H", or equal.
- B. Mounting Plates: Non-corrosive material. Provide as required.

2.03 FABRICATION

- A. General: Only a maximum 1-1/2 inches diameter, unobtrusive stamped manufacturer logo, as approved by the Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by either a printed, waterproof label or a stamped nameplate, indicating manufacturer's name and product model number.
- B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install toilet accessory units according to manufacturer's instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.
- C. Install grab bars to withstand a downward load of at least 250 lbf, complying with ASTM F446.

3.02 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION

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SECTION 21 13 13
WET-PIPE SPRINKLER SYSTEMS**PART 1 GENERAL****1.01 DESCRIPTION**

- A. The requirements of this section apply to the design and installation of fire protection piping, devices, specialties and equipment, including fire pumps, glazing protection, and fire alarm system interconnections, by a Design/Build licensed Fire Protection Engineer / Contractor.
- B. These specifications are part of the Project Manual as guidance for a required Deferred Submittal Fire Protection Design/Build project.
- C. The Fire Protection Design/Build subcontractor will be required to obtain all permits from Authority Having Jurisdiction

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 SUMMARY

- A. Section Includes:
 - 1. Pipes, fittings, and specialties.
 - 2. Cover system for sprinkler piping.
 - 3. Specialty valves.
 - 4. Sprinklers.
 - 5. Alarm devices.
 - 6. Manual control stations.
 - 7. Control panels.
 - 8. Pressure gages.

1.04 DEFINITIONS

- A. Standard-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure of 175-psig maximum.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For wet-pipe sprinkler systems.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include diagrams for power, signal, and control wiring.
- C. Delegated-Design Submittal: For wet-pipe sprinkler systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and professional engineer.
- B. Design Data:
 - 1. Approved Sprinkler System Drawings: Working plans, prepared per NFPA 13 and other sections as required by the 2019 CFC section 903.3 that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
 - 2. Showing all required protection types, locations and equipment.
 - a. Floor area coverage
 - b. Concealed space coverage
 - c. Glazing in Fire Separation Zones coverage as required by the Authority Having Jurisdiction.

- C. Welding certificates.
- D. Field Test Reports:
 - 1. Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."
 - 2. Fire-hydrant flow test report is provided to the design engineer by project management.
- E. Field quality-control reports.

1.07 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For wet-pipe sprinkler systems and specialties to include in emergency, operation, and maintenance manuals.

1.08 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Sprinkler Cabinets: Finished, wall-mounted, steel cabinet with hinged cover, and with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler used on Project.

1.09 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.
 - a. Engineering Responsibility: Preparation of working plans, calculations, and field test reports by a qualified professional engineer.
- B. Welding Qualifications: Qualify procedures and operators according to 2019 ASME Boiler and Pressure Vessel Code.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:
 - 1. NFPA 13 & NFPA 13R and other sections as required by the 2019 CFC section 90 3.3.
- B. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.
- C. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design wet-pipe sprinkler systems.
 - 1. See attached Fire flow report for available fire-hydrant flow test records indicate the following conditions.
 - 2. Sprinkler system design shall be approved by authorities having jurisdiction.
 - a. Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping, valves, and backflow preventers.
 - b. Sprinkler Occupancy Hazard Classifications:
 - 1) Building Service Areas: Ordinary Hazard, Group 1.
 - 2) General Storage Areas: Ordinary Hazard, Group 1.
 - 3) Mechanical Equipment Rooms: Ordinary Hazard, Group 1.
 - 4) Office and Public Areas: Light Hazard.
 - 5) Residential Areas: NFPA 13 or NFPA 13R
 - c. Minimum Density for Automatic-Sprinkler Piping Design:
 - 1) Residential Occupancy, if required: NFPA13R requirement.
 - 2) Light-Hazard Occupancy: 0.10 gpm over 1500-sq. ft. area.
 - 3) Ordinary-Hazard, Group 1 Occupancy: 0.15 gpm over 1500-sq. ft. area.
 - d. Maximum Protection Area per Sprinkler: According to UL listing.

- e. Maximum Protection Area per Sprinkler:
 - 1) Office Spaces: 225 sq. ft.
 - 2) Storage Areas: 130 sq. ft.
 - 3) Mechanical Equipment Rooms: 130 sq. ft.
 - 4) Electrical Equipment Rooms: 130 sq. ft.
 - 5) Other Areas: According to NFPA 13 recommendations unless otherwise indicated.
- D. Seismic Performance: Sprinkler piping shall withstand the effects of earthquake motions determined according to NFPA 13.

2.02 STEEL PIPE AND FITTINGS

- A. Standard-Weight, Black-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. Pipe ends may be factory or field formed to match joining method.
- B. Schedule 10, Black-Steel Pipe: ASTM A 135/A 135M or ASTM A 795/A 795M, Schedule 10 in NPS 5 and smaller; and NFPA 13-specified wall thickness in NPS 6 to NPS 10, plain end.
- C. Schedule 5 Steel Pipe: ASTM A 135/A 135M or ASTM A 795/A 795M lightwall with plain ends.
- D. Black-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.
- E. Uncoated-Steel Couplings: ASTM A 865/A 865M, threaded.
- F. Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- G. Malleable- or Ductile-Iron Unions: UL 860.
- H. Cast-Iron Flanges: ASME 16.1, Class 125.
- I. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.
 - 1. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick ASME B16.21, nonmetallic and asbestos free or EPDM rubber gasket.
 - a. Class 125 and Class 250, Cast-Iron, Flat-Face Flanges: Full-face gaskets.
 - b. Class 150 and Class 300, Ductile-Iron or -Steel, Raised-Face Flanges: Ring-type gaskets.
 - c. Metal, Pipe-Flange Bolts and Nuts: Carbon steel unless otherwise indicated.
- J. Steel Welding Fittings: ASTM A 234/A 234M and ASME B16.9.
 - 1. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- K. Grooved-Joint, Steel-Pipe Appurtenances:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Victaulic Company.
 - b. Pressure Rating: 175-psig minimum.
 - c. Painted Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting, with dimensions matching steel pipe.
 - d. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213 rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.
- L. Steel Pressure-Seal Fittings: UL 213, FM Global-approved, 175-psig pressure rating with steel housing, rubber O-rings, and pipe stop; for use with fitting manufacturers' pressure-seal tools.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Victaulic Company.

2.03 SPECIALTY VALVES TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER.

- A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."

- B. Pressure Rating:
 - 1. Standard-Pressure Piping Specialty Valves: 175-psig minimum.
- C. Body Material: Cast or ductile iron.
- D. Size: Same as connected piping.
- E. End Connections: Flanged or grooved.
- F. Alarm Valves:
- G. Deluge Valves:
 - 1. Standard: UL 260.
 - 2. Design: Hydraulically operated, differential-pressure type.
 - 3. Include trim sets for alarm-test bypass, drain, electrical water-flow alarm switch, pressure gages, drip cup assembly piped without valves and separate from main drain line, and fill-line attachment with strainer.
- H. Automatic (Ball Drip) Drain Valves:

2.04 SPRINKLER PIPING SPECIALTIES TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER.

- A. Branch Outlet Fittings:
- B. Flow Detection and Test Assemblies:
- C. Sprinkler Inspector's Test Fittings:
- D. Adjustable Drop Nipples:

2.05 SPRINKLERS TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER. SEE "SPRINKLER SCHEDULE" ARTICLE.

- A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
- B. Pressure Rating for Automatic Sprinklers: 175-psig minimum.
- C. Automatic Sprinklers with Heat-Responsive Element:
- D. Sprinkler Finishes: bronze.
- E. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.
 - 1. Ceiling Mounting: Chrome-plated steel, one piece, flat Chrome-plated steel, or two piece, with 1-inch vertical adjustment.
 - 2. Ceilings with acoustic tiles or wood finishes shall have concealed sprinkler heads.
 - 3. Sprinkler heads in residential units shall be wall mounted at edge of soffits where possible. Ceilings in dwelling units are skim-coated concrete.
- F. Sprinkler Heads in units should have a protective cage to prevent physical damage unless safely out of reach, see Sprinkler guard below. Show these cages on plans and require in specifications. Prefer semi-recessed heads. Avoid horizontal heads, especially at low heights within reach. Ensure no paint is sprayed on sprinkler heads during unit painting.
- G. Sprinkler Guards:
 - 1. Type: Wire cage with fastening device for attaching to sprinkler.

2.06 ALARM DEVICES TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER.

- A. Alarm-device types shall match piping and equipment connections.
- B. Electrically Operated Alarm Bell:
- C. Water-Flow Indicators:
- D. Pressure Switches:
- E. Valve Supervisory Switches:

2.07 MANUAL CONTROL STATIONS TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER

- A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide" for hydraulic operation, with union, NPS 1/2 pipe nipple, and bronze ball valve.
- B. Include metal enclosure labeled "MANUAL CONTROL STATION," with operating instructions and cover held closed by breakable strut to prevent accidental opening.

2.08 CONTROL PANELS

- A. Description: Single-area, two-area, or single-area cross-zoned control panel as indicated, including NEMA ICS 6, Type 1 enclosure, detector, alarm, and solenoid-valve circuitry for operation of deluge valves.
 - 1. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide" when used with thermal detectors and Class A detector circuit wiring.
 - 2. Electrical characteristics are 120-V ac, 60 Hz, with 24-V dc rechargeable batteries.
 - 3. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Manual Control Stations: Electric operation, metal enclosure, labeled "MANUAL CONTROL STATION," with operating instructions and cover held closed by breakable strut to prevent accidental opening.
- C. Manual Control Stations: Hydraulic operation, with union, NPS 1/2 pipe nipple, and bronze ball valve. Include metal enclosure labeled "MANUAL CONTROL STATION," with operating instructions and cover held closed by breakable strut to prevent accidental opening.
- D. Panels Components:
 - 1. Power supply.
 - 2. Battery charger.
 - 3. Standby batteries.
 - 4. Field-wiring terminal strip.
 - 5. Electrically supervised solenoid valves and polarized fire-alarm bell.
 - 6. Lamp test facility.
 - 7. Single-pole, double-throw auxiliary alarm contacts.
 - 8. Rectifier.

2.09 PRESSURE GAGES TO BE SPECIFIED BY FIRE PROTECTION DESIGN ENGINEER**PART 3 EXECUTION****3.01 PREPARATION**

- A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations required in "Quality Assurance" Article.
- B. Report test results promptly and in writing.

3.02 WATER-SUPPLY CONNECTIONS

- A. Install shutoff valve, double detector check valve, pressure gage, drain, and other accessories indicated at connection to water-distribution piping.

3.03 PIPING INSTALLATION

- A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated on approved working plans.
 - 1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.
 - 2. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.
- B. Piping Standard: Comply with NFPA 13 requirements for installation of sprinkler piping.

- C. Install seismic restraints on piping. Comply with NFPA 13 requirements for seismic-restraint device materials and installation.
- D. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- E. Install unions adjacent to each valve in pipes NPS 2 and smaller.
- F. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.
- G. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.
- H. Install sprinkler piping with drains for complete system drainage.
- I. Install sprinkler control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.
- J. Install automatic (ball drip) drain valve at each check valve for fire-department connection, to drain piping between fire-department connection and check valve. Install drain piping to and spill over floor drain or to outside building.
- K. Install alarm devices in piping systems.
- L. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13. In seismic-rated areas, refer to Section 21 0548 "Vibration and Seismic Controls for Fire-Suppression Piping and Equipment."
- M. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft-metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal and install where they are not subject to freezing.
- N. Pressurize and check preaction sprinkler system piping and air-pressure maintenance devices.
- O. Fill sprinkler system piping with water.
- P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 21 0517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."
- Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 21 0517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."
- R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 21 0518 "Escutcheons for Fire-Suppression Piping."

3.04 VALVE AND SPECIALTIES INSTALLATION

- A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.
- B. Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.
- C. Install check valve in each water-supply connection.
- D. Specialty Valves:
 - 1. Install valves in vertical position for proper direction of flow, in main supply to system.
 - 2. Install alarm valves with bypass check valve and retarding chamber drain-line connection.

3.05 IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.
- B. Identify system components, wiring, cabling, and terminals.

3.06 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
 - 4. Energize circuits to electrical equipment and devices.
 - 5. Coordinate with fire-alarm tests. Operate as required.
 - 6. Coordinate with fire-pump tests. Operate as required.
 - 7. Verify that equipment hose threads are same as local fire department equipment.
- B. Sprinkler piping system will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.07 SPRINKLER SCHEDULE

- A. Use sprinkler types in subparagraphs below for the following applications:
 - 1. Rooms without Ceilings: Upright sprinklers.
 - 2. Rooms with Suspended Ceilings: Pendent, recessed, flush, and concealed sprinklers as indicated.
 - 3. Wall Mounting: Sidewall sprinklers.
 - 4. Deluge-Sprinkler Systems: Upright and pendent, open sprinklers.
 - 5. Special Applications: Extended-coverage, flow-control, and quick-response sprinklers where indicated Combustible concealed space sprinklers.
- B. Provide sprinkler types in subparagraphs below with finishes indicated.
 - 1. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.
 - 2. Flush Sprinklers: Bright chrome, with painted white escutcheon.
 - 3. Recessed Sprinklers: Bright chrome, with bright chrome escutcheon.
 - 4. Residential Sprinklers: Dull chrome.
 - 5. Upright Pendent and Sidewall Sprinklers: Chrome plated in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; wax coated where exposed to acids, chemicals, or other corrosive fumes.

3.08 CLEANING

- A. Clean dirt and debris from sprinklers.
- B. Only sprinklers with their original factory finish are acceptable. Remove and replace any sprinklers that are painted or have any other finish than their original factory finish.

END OF SECTION

SECTION 22 05 29**HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Support and attachment components for equipment, piping, and other plumbing work.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2018).
- E. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- H. MFMA-4 - Metal Framing Standards Publication; 2004.
- I. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- J. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

PART 2 PRODUCTS**2.01 SUPPORT AND ATTACHMENT COMPONENTS**

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Metal Channel (Strut) Framing Systems:
 - 1. Comply with MFMA-4.
- C. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
 - 1. Minimum Size, Unless Otherwise Indicated or Required:

- a. Piping up to 1 inch (27 mm) nominal: 1/4 inch diameter.
 - b. Piping larger than 1 inch (27 mm) nominal: 3/8 inch diameter.
- D. Thermal Insulated Pipe Supports:
 - 1. General Construction and Requirements:
 - a. Insulated pipe supports to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
 - b. Surface Burning Characteristics: Flame spread index/smoke developed index of 5/30, maximum, when tested in accordance with ASTM E84 or UL 723.
 - c. Pipe supports to be provided for nominally sized, 1/2 inch to 30 inch iron pipes.
 - d. Insulation inserts to consist of rigid phenolic foam insulation surrounded by a 360 degree, PVC jacketing.
 - 2. PVC Jacket:
 - a. Pipe insulation protection shields to be provided with a ball bearing hinge and locking seam.
 - b. Moisture Vapor Transmission: 0.0071 perm inch, when tested in accordance with ASTM E96/E96M.
 - c. Thickness: 60 mil.
- E. Pipe Supports:
 - 1. Liquid Temperatures Up To 122 degrees F:
 - a. Overhead Support: MSS SP-58 Types 1, 3 through 12.
 - b. Support From Below: MSS SP-58 Types 35 through 38.
- F. Pipe Hangers: For a given pipe run, use hangers of the same type and material.
 - 1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
 - 2. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.
- G. Pipe Shields for Insulated Piping:
 - 1. General Construction and Requirements:
 - a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
 - b. Shields Material: UV-resistant polypropylene with glass fill.
 - c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch.
 - d. Minimum Service Temperature: Minus 40 degrees F.
 - e. Maximum Service Temperature: 178 degrees F.
 - f. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
- H. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
 - 2. Concrete: Use expansion anchors.
 - 3. Powder-actuated fasteners are not permitted.
 - 4. Hammer-driven anchors and fasteners are not permitted.
- I. Pipe Installation Accessories:
 - 1. Thermal Insulated Pipe Supports:
 - a. Manufacturers:
 - 1) Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by a single manufacturer.
 - 2. Overhead Pipe Supports:
 - a. Manufacturers:
 - 1) Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by a single manufacturer.

2.02 RETROFIT PIPING COVER SYSTEM

- A. General Requirements:

1. Surface Burning Characteristics: Flame spread index/smoke developed index of 20/250, maximum, when tested in accordance with ASTM E84 or UL 723.
- B. Materials:
 1. Piping Cover System: Removal-resistant, modular, snap-fit cover units, clips, and anchors for use with CPVC, steel, and copper piping systems.
 2. Cover Units: L-shaped and U-shaped cross-section units of flame retardant resin material, paintable finish.
 3. Provide coupling fittings for joining units end to end and prefabricated inside and outside corner fittings and end caps as required.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- C. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- D. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- F. Provide thermal insulated pipe supports complete with hangers and accessories. Install thermal insulated pipe supports during the installation of the piping system.
- G. Secure fasteners according to manufacturer's recommended torque settings.
- H. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

- A. Inspect support and attachment components for damage and defects.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 22 05 53

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SUBMITTALS

- A. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- B. Product Data: Provide manufacturers catalog literature for each product required.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Piping: Tags.

2.02 PIPE MARKERS

- A. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install plastic pipe markers in accordance with manufacturer's instructions.

END OF SECTION

SECTION 22 07 19
PLUMBING PIPING INSULATION**PART 1 GENERAL****1.01 RELATED REQUIREMENTS**

- A. Section 07 84 00 - Firestopping.

1.02 REFERENCE STANDARDS

- A. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2017, with Editorial Revision (2018).
- B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2019.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- D. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

PART 2 PRODUCTS**2.01 REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 CELLULAR GLASS

- A. Insulation: ASTM C552, Type II, Grade 6.
 - 1. K Value: 0.35 at 100 degrees F.
 - 2. Service Temperature Range: From 250 degrees F to 800 degrees F.
 - 3. Water Vapor Permeability: 0.005 perm inch maximum per inch.
 - 4. Water Absorption: 0.5 percent by volume, maximum.

2.03 EXPANDED POLYSTYRENE

- A. Insulation: ASTM C578; rigid closed cell.
 - 1. K Value: 0.23 at 75 degrees F.
 - 2. Maximum Service Temperature: 165 degrees F.
 - 3. Maximum Water Vapor Permeance: 5.0 perms.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Exposed Piping: Locate insulation and cover seams in least visible locations.
- C. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- D. Inserts and Shields:
 - 1. Insert Location: Between support shield and piping and under the finish jacket.
 - 2. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
 - 3. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.

- E. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 84 00.

3.03 SCHEDULES

- A. Plumbing Systems:
 - 1. Domestic Hot Water Supply:
 - a. Cellular Glass Insulation:
 - b. Expanded Polystyrene Insulation:

END OF SECTION

**SECTION 22 10 05
PLUMBING PIPING****PART 1 GENERAL****1.01 SECTION INCLUDES****1.02 REFERENCE STANDARDS**

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- C. ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings - DWV; 2016.
- D. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV; 2017.
- E. ASME B31.9 - Building Services Piping; 2017.
- F. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- G. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2020.
- H. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.
- I. ASTM B306 - Standard Specification for Copper Drainage Tube (DWV); 2013.
- J. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
- K. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- L. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; 2017 (Revised 2018).
- M. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2012 (Revised 2018).
- N. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2015.
- O. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- P. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- Q. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

- A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Cast Iron Pipe: CISPI 301, hubless.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.

2.03 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
- B. Copper Tube: ASTM B306, DWV.
 - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.23, sovent.
 - 2. Joints: ASTM B32, alloy Sn50 solder.

2.04 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2. Joints: ASTM B32, alloy Sn95 solder.

2.05 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 - 4. Vertical Pipe Support: Steel riser clamp.
- B. Plumbing Piping - Drain, Waste, and Vent:
 - 1. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 - 2. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
- C. Plumbing Piping - Water:
 - 1. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 - 2. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
- D. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
 - 1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Prepare exposed, unfinished pipe, fittings, supports, and accessories for finish painting.
- G. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- H. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 - 3. Place hangers within 12 inches of each horizontal elbow.
 - 4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 - 5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 6. Provide copper plated hangers and supports for copper piping.
 - 7. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.04 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed, and clean.
- B. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.
- D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

3.05 SCHEDULES

- A. Pipe Hanger Spacing:
 - 1. Metal Piping:
 - a. Pipe Size: 1/2 inches to 1-1/4 inches:
 - 1) Maximum Hanger Spacing: 6.5 ft.
 - 2) Hanger Rod Diameter: 3/8 inches.
 - b. Pipe Size: 1-1/2 inches to 2 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 3/8 inch.
 - c. Pipe Size: 2-1/2 inches to 3 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 1/2 inch.
 - d. Pipe Size: 4 inches to 6 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 5/8 inch.

END OF SECTION 22 10 05

SECTION 22 10 06
PLUMBING PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cleanouts.

1.02 SUBMITTALS

- A. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Specialties in Potable Water Supply Systems: Provide products that comply with NSF 61 and NSF 372 for maximum lead content.

2.02 CLEANOUTS

- A. Cleanouts at Interior Finished Floor Areas (CO-3):
 - 1. Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.
- B. Cleanouts at Interior Finished Wall Areas (CO-4):
 - 1. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.

END OF SECTION

**SECTION 22 40 00
PLUMBING FIXTURES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Water closets.
- B. Lavatories.
- C. Mop sinks.
- D. Under-lavatory pipe supply covers.

1.02 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).
- C. ASME A112.18.1 - Plumbing Supply Fittings; 2018, with Errata.
- D. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures; 2011 (Reaffirmed 2017).
- E. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- F. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- G. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

- A. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 FLUSH VALVE WATER CLOSETS - SEE PLUMBING FIXTURE SCHEDULE ON PLANS

- A. Flush Valves: ASME A112.18.1, diaphragm type, complete with vacuum breaker stops and accessories.
- B. Water Closet Carriers:
 - 1. ASME A112.6.1M; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.03 LAVATORIES - SEE PLUMBING FIXTURE SCHEDULE ON PLANS

- A. Accessories:
 - 1. Carrier:
 - a. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.

2.04 UNDER-LAVATORY PIPE SUPPLY COVERS

- A. General:
 - 1. Insulate exposed drainage piping including hot, cold and tempered water supplies under lavatories or sinks per ADA Standards.
 - 2. Construction: 1/8 inch PVC with antimicrobial, antifungal and UV resistant properties.

- a. Comply with ASME A112.18.9 for covers on accessible lavatory piping.
- b. Comply with ICC A117.1.

~~**2.05 MOP SINKS - SEE PLUMBING FIXTURE SCHEDULE ON PLANS**~~

~~**A. Accessories:**~~

- ~~1. 5 feet of 1/2 inch diameter plain end reinforced plastic hose.~~
- ~~2. Hose clamp hanger.~~

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.

3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.

3.04 CLEANING

- A. Clean plumbing fixtures and equipment.

3.05 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Do not permit use of fixtures by construction personnel.
- C. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 23 05 93**TESTING, ADJUSTING, AND BALANCING FOR HVAC****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Testing, adjustment, and balancing of air systems.

1.02 REFERENCE STANDARDS

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.
- B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008 (Reaffirmed 2017).
- C. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2002.

1.03 SUBMITTALS

- A. Installer Qualifications: Submit name of adjusting and balancing agency and TAB supervisor for approval within 30 days after award of Contract.
- B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
 - 1. Include at least the following in the plan:
 - a. List of all air flow measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
 - b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
 - c. Final test report forms to be used.
 - d. Detailed step-by-step procedures for TAB work for each system and issue, including:
 - 1) Terminal flow calibration (for each terminal type).
 - 2) Diffuser proportioning.
 - 3) Branch/submain proportioning.
 - 4) Total flow calculations.
 - 5) Rechecking.
 - 6) Diversity issues.
 - e. Procedures for formal deficiency reports, including scope, frequency and distribution.
- C. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
 - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
 - 3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
 - 4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
 - 5. Units of Measure: Report data in both I-P (inch-pound) and SI (metric) units.
 - 6. Include the following on the title page of each report:
 - a. Name of Testing, Adjusting, and Balancing Agency.
 - b. Address of Testing, Adjusting, and Balancing Agency.
 - c. Telephone number of Testing, Adjusting, and Balancing Agency.
 - d. Project name.
 - e. Project location.
 - f. Report date.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 GENERAL REQUIREMENTS**

- A. Perform total system balance in accordance with one of the following:
 - 1. AABC (NSTSB), AABC National Standards for Total System Balance.
 - 2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
 - 3. SMACNA (TAB).
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
 - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.

3.02 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
 - 1. Systems are started and operating in a safe and normal condition.
 - 2. Proper thermal overload protection is in place for electrical equipment.
 - 3. Duct systems are clean of debris.
 - 4. Fans are rotating correctly.
 - 5. Volume dampers are in place and open.
 - 6. Air inlets are installed and connected.
 - 7. Duct system leakage is minimized.
- B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.

3.03 PREPARATION**3.04 ADJUSTMENT TOLERANCES**

- A. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.05 RECORDING AND ADJUSTING

- A. Field Logs: Maintain written logs including:
 - 1. Running log of events and issues.
 - 2. Discrepancies, deficient or uncompleted work by others.
 - 3. Contract interpretation requests.
 - 4. Lists of completed tests.
- B. Ensure recorded data represents actual measured or observed conditions.
- C. Permanently mark settings of dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- E. Leave systems in proper working order.

3.06 AIR SYSTEM PROCEDURE

- A. Measure air quantities at air inlets.
- B. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

3.07 SCOPE

- A. Test, adjust, and balance the following:

1. Fans.
2. Air Inlets.

3.08 MINIMUM DATA TO BE REPORTED

- A. Electric Motors:
 1. Manufacturer.
 2. Model/Frame.
 3. HP/BHP.
 4. Phase, voltage, amperage; nameplate, actual, no load.
 5. RPM.
 6. Service factor.
 7. Starter size, rating, heater elements.
 8. Sheave Make/Size/Bore.
- B. Exhaust Fans:
 1. Location.
 2. Manufacturer.
 3. Model number.
 4. Serial number.
 5. Air flow, specified and actual.
 6. Total static pressure (total external), specified and actual.
 7. Inlet pressure.
 8. Discharge pressure.
 9. Sheave Make/Size/Bore.
 10. Number of Belts/Make/Size.
 11. Fan RPM.

END OF SECTION

**SECTION 23 31 00
HVAC DUCTS AND CASINGS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Metal ductwork.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
- C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

1.03 SUBMITTALS

- A. Product Data: Provide data for duct materials.

1.04 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

PART 2 PRODUCTS**2.01 DUCT ASSEMBLIES**

- A. Regulatory Requirements: Construct ductwork to comply with NFPA 90A standards.
- B. General Exhaust: 1/2 inch w.g. pressure class, galvanized steel.

2.02 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.

2.03 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- C. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

END OF SECTION

SECTION 23 33 00
AIR DUCT ACCESSORIES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Backdraft dampers - metal.
- B. Flexible duct connectors.
- C. Volume control dampers.

1.02 RELATED REQUIREMENTS

- A. Section 23 31 00 - HVAC Ducts and Casings.

1.03 REFERENCE STANDARDS

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
- B. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

1.04 SUBMITTALS

- A. Product Data: Provide for shop fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements.

PART 2 PRODUCTS**2.01 BACKDRAFT DAMPERS - METAL**

- A. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.

2.02 FLEXIBLE DUCT CONNECTORS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Flexible Duct Connections: Fabric crimped into metal edging strip.

2.03 VOLUME CONTROL DAMPERS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 by 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 31 00 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
- D. Provide balancing dampers at points on exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.

END OF SECTION

SECTION 23 34 23
HVAC POWER VENTILATORS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Roof exhausters.

1.02 SUBMITTALS

- A. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.

PART 2 PRODUCTS**2.01 POWER VENTILATORS - REFER TO EQUIPMENT SCHEDULE ON PLANS**

- A. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.
- B. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.
- C. Sound Ratings: AMCA 301, tested to AMCA 300 and bearing AMCA Certified Sound Rating Seal.
- D. Fabrication: Comply with AMCA 99.
- E. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.02 ROOF EXHAUSTERS - REFER TO EQUIPMENT SCHEDULE ON PLANS

- A. Backdraft Damper: Gravity actuated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings, blades linked, and line voltage motor drive, power open, spring return.
- B. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Secure roof exhausters with cadmium plated steel lag screws to roof curb.

END OF SECTION

SECTION 23 37 00
AIR OUTLETS AND INLETS**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Registers/grilles:
 - 1. Wall-mounted, exhaust and return register/grilles.

1.02 SUBMITTALS

- A. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

PART 2 PRODUCTS**2.01 WALL EXHAUST REGISTERS/GRILLES**

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, vertical face.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting.
- C. Fabrication: Steel frames and blades, with factory baked enamel finish.
- D. Color: As indicated on the drawings.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Check location of inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.
- C. Install diffusers to ductwork with air tight connection.
- D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.

END OF SECTION

SECTION 26 05 00
ELECTRICAL BASIC MATERIALS AND METHODS**PART 1 GENERAL****1.01 SECTION INCLUDES:**

- A. Conduit, raceways and fittings.
- B. Wires and Cables for 600 Volts and less.
- C. Wire connections and devices.
- D. Outlet boxes.
- E. Pull and junction boxes.
- F. Disconnect Switches and Fuses
- G. Supporting Devices.
- H. Identifying Devices.
- I. Grounding and Bonding
- J. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Submit in accordance with the requirements of Division 1 the following items:
- B. A list of conduit types indicating where each type of conduit will be used. Indicate conduit manufacturers and fittings to be used.
- C. Wires and Cables.
- D. Wiring Devices and Plates
- E. Nameplates, including engraving schedules where engraved plates are specified.
- F. Fused disconnect switches.

1.03 DRAWINGS

- A. The drawings are diagrammatic and show the general extent and arrangement of the work required which shall be followed as closely as the actual construction site conditions and work of the other trades will permit.

1.04 QUALITY ASSURANCE

- A. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.
- B. Coordination of the work: Contractor shall become familiar with the conditions of the job site, and with the landscape drawings, drawings of other disciplines and specifications and plan the installation of the electrical work to conform with that shown and specified so as to provide the best possible assembly of the combined work of the trades.

1.05 REFERENCES

- A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
- B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
- C. ANSI C80.5 - Rigid Aluminum Conduit.
- D. NECA (INST) - Standard of Installation; National Electrical Contractors Association.
- E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- F. NFPA 70 - National Electrical Code - latest edition.

1.06 AS BUILTS

A. Provide as-built reproducible drawings showing all outlets with circuit numbers at each outlet and maintenance manuals for all new equipment.

1.07 WARRANTIES FOR LABOR AND MATERIALS

A. 1 year from the date of final acceptance of the work.

B. In addition to material and equipment specified, also provide all incidental materials required to effect complete installation. Such incidental materials include solders, tapes, caulking, mastics, gaskets, etc.

C. The contractor will be held responsible to have examined the site and premises and satisfied themselves as to existing conditions under which he will be obligated to operate in performing his part of the work or that which will in any manner affect the work under this contract.

D. Provide wiring tests upon completion of work and make adjustments as necessary for satisfactory operation of system.

1.08 ACTION SUBMITTALS

A. Product Data: For each type of product to be used in project.

B. Shop Drawings: List of Legends and description of materials and processes used for premarking wall plates.

1.09 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.10 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For all devices and equipment, to include all manufacturers' installation and warranty documents.

PART 2 PRODUCTS**2.01 MATERIALS AND EQUIPMENT – GENERAL**

A. Materials and equipment shall be new, current models of manufacturers, Bare complete identification by manufacturer and Bare UL labels where applicable. For an explanation of options and Contractor's product selection procedures, see Section 016000 "Product Requirements."

2.02 CONDUIT, RACEWAYS AND FITTINGS

A. Rigid Steel Conduit

1. Rigid steel conduit shall be full weight, pipe size, finished inside and out by hot-dip galvanizing after fabrication, and shall conform with ANSI C80.1 and UL.
2. Couplings shall be electroplated steel, compression type.
3. Insulating Bushings: Threaded polypropylene or thermo-setting phenolic rated 150°C minimum.
4. Insulated grounding Bushings: Threaded cast malleable iron body with insulated throat and steel "lay-in" ground lug with compression screw.
5. Insulated Metallic Bushings: Threaded cast malleable iron body with plastic insulated throat rated 150°C.
6. Running threads are not acceptable.

B. Electrical Metallic Tubing (EMT)

1. Electrical metallic tubing shall be galvanized steel or aluminum, and shall confirm with ANSI C80.1 and UL 797.
2. Couplings shall be electroplated steel, compression type.
3. Insulating Bushings: Threaded polypropylene or thermo-setting phenolic rated 150°C minimum.
4. Insulated grounding Bushings: Threaded cast malleable iron body with insulated throat and steel "lay-in" ground lug with compression screw.

5. Insulated Metallic Bushings: Threaded cast malleable iron body with plastic insulated throat rated 150°C.
 6. Running threads are not acceptable.
- C. Non-Metallic Conduit
1. Schedule 40 PVC underground is an acceptable conduit material.

2.03 COUPLING, CONNECTORS, AND FITTINGS

- A. Coupling and connectors shall be galvanized or cadmium plated; Allied Tube and Conduit, Triangle, or equal.
- B. Provide compression type conduit fittings for electrical metallic tubing.
- C. Electrical metallic tubing installed in wet locations shall be watertight compression type.
- D. Fittings for rigid galvanized steel or IMC shall be threaded.

2.04 CONDUCTORS

- A. Conductors for exterior shall be soft drawn, annealed copper wire 98% conductivity bearing UL label.
- B. Insulation: Provide the following (600 volt):
- C. Type THW, XHHW insulated wire for conductors #2 or larger
- D. Type THHN/THWN for all wire smaller than #2
- E. Manufacturers: Southwire, Anaconda, Rome, General Cable, Cerro Wire, or equal.

2.05 WIRE CONNECTION

- A. Wire Joints: Wires in sizes from #18 to #8 AWG, stranded conductor, with insulation rated 105 degrees C. or less shall be joined with electrical spring connectors of three part construction incorporating a non-restricted, zinc coated steel spring enclosed in a steel shell with an outer jacket of vinyl plastic with a flexible insulating skirt.
- B. Mechanical Compression Connectors and Taps: Stranded conductors from #6 AWG to 750 Kcmil shall be joined or tapped using bolted pressure connectors having cast bronze compression bolts. Fittings shall be wide range-taking and designed to facilitate the making of parallel taps, tees, crosses or end-to-end connections. Split-bolt connectors will not be acceptable.
- C. Fixture Connections: Splice fixture wire to circuit wiring with solderless connectors as specified above in paragraph A.
- D. Terminating Lugs: Conductors from size No. 6 AWG to 750 MCM, copper, shall be terminated using tin plated hydraulically operated crimping tools and dies as stipulated by the lug manufacturer. Lugs shall be 3M "Scotchlok" series 30014, Burndy Type Ya-L series, or equal.
- E. Splicing and Insulating Tape (600 volts and below): General purpose electrical tape shall be suitable for temperatures from minus 18 degrees C to 105 degrees C, shall be black, ultraviolet proof, self-extinguishing, 7 mil thick vinyl with a dielectric strength of 10,000 volts. Apply 4 layers half-lap with 2" over-lap on each conductor.
- F. Insulating Putty (600 volts and below): Pads or rolls of non-corrosive, self-fusing, one eight inch thick rubber putty with PVC backing sheet. Putty shall be suitable for temperatures from minus 17.8 degrees C to 37.8 degrees C and shall have a dielectric strength of 570 volts/mil minimum.
- G. Insulating Resin: Two Part liquid epoxy resin with resin and catalyst in pre measured, sealed mixing pouch. Resin shall have a set up time of approximately 30 minutes at 21.1 degrees C, and shall have thermal and dielectric properties equal to the insulation properties of the cables immersed in the resin.
- H. Terminal Strip Connectors: Terminate wire in locking tongue style, pressure type, solderless lug where applicable.

2.06 WIRE CONNECTORS:

- A. #6 AWG and larger: Thomas and Betts "Lock-Tite", Burndey, "Quicklug" or OZ Type PT/PTC.
- B. #8 AWG and smaller: Scotch spring steel with insulated cap, Thomas and Betts, "STA-KON Piggy" with insulator or ideal, wire nut or wing nut type.

2.07 OUTLET BOXES

- A. Standard outlet boxes: Galvanized, die formed or drawn steel, knock-out type of size and configuration best suited to the application indicated on the plans. Minimum box size, 4 inch square by 1-1/2 inch deep, indoor use. FS cast boxes are required for outdoor use.
- B. Cast Metal Outlet Boxes: FS cast boxes are required for outdoor use. Four-inch round, galvanized cast iron alloy with threaded hubs and mounting lugs as required. Boxes shall be furnished with cast cover plates of the same material as the box and neoprene cover gaskets. Thomas and Betts, Crouse-Hinds VXF series, Appleton JBX series or equal.
- C. Conduit Outlet Bodies: Cadmium plated, cast iron alloy. Obround conduit outlet bodies with threaded conduit hubs and neoprene gasketed, cast iron covers. Outlet bodies shall be used to facilitate pulling of conductors or to make changes in conduit direction only. Splices are not permitted in conduit outlet bodies. Thomas and Betts, Crouse Hinds Form 8 Condulets, Appleton form 35 Unilets, or equal.

2.08 WIRING DEVICES:

- A. Duplex Receptacles: 20A, 125V, 3 wire, grounded, NEMA 5-20R, tamper resistant, Pass & Seymour S885TRWCC14 decorator style or equal.
- B. GFI Receptacles: 20A, 125V, 3 wire, Nema 5-20R, tamper resistant, Pass & Seymour S1595NLTTRWCC8 or equal.
- C. Outdoor Receptacles: shall be 20A, 125V, 3-wire, Nema 5-20R, Pass & Seymour S1595TRWCC8 with while in use cover or equal.
- D. Switches: Lighting switches shall be 20A, 3 wire. Shall be Pass & Seymour 2601-W decorator style or equal. 3-way switch shall be Pass & Seymour 2603-W or equal.
- E. Dimmer Switches: Dimmer have full-on bypass mode. Shall be Pass & Seymour 91180-W decorator style or equal. 3-way dimmer switch shall be Pass & Seymour 91183-W or equal.

2.09 PULL AND JUNCTION

- A. Sheet Metal Boxes: Use standard outlet or concrete ring boxes wherever possible; otherwise use minimum 15 gauge galvanized metal, NEMA 1 boxes, sized to code requirements with covers secured by cadmium plated machine screws located 6 inches on centers. Circle AW Products, Hoffman Engineering Co., or equal.
- B. Cast Metal Boxes: Use standard cast malleable iron outlet or device boxes wherever possible; otherwise use cadmium plated, cast malleable iron junction boxes with bolt-on, interchangeable conduit hub plates with neoprene gaskets. Appleton RS series; Crouse Hinds RS series, or equal.

2.10 DISCONNECTS:

- A. Small Motors and Water Heaters: Provide 30A, 600V AC rated double-pole toggle switch for equipment disconnects. Switch shall be rated for 2HP motors at 120V and 5HP motors at 240V. Toggle switch shall be horsepower rated. Device shall have silver cadmium oxide contacts. Device shall be fully enclosed. Device shall have quick make, slow break design. Device shall be listed as a manual motor controller. Device shall be Bryant 30002B for interior installation and Bryant 30302B for exterior installations or equal.
- B. Large Motors: Provide switches rated from 30A to 60A. Switches shall have switch blades which are visible when the switch is OFF and the cover is open. The switch operating mechanism shall be quick-make, quick-break such that, during normal operation of the switch, the operation of the contacts shall not be capable of being restrained by the operating handle after the closing or opening action of the contacts has started. The operating handle shall be

an integral part of the box, not the cover. Switch enclosures shall be rated Nema 3R for exterior installations. Switches shall be Square D – Class 3130 or equal.

2.11 DISCONNECT SWITCHES

- A. All disconnect switches shall be heavy-duty type and have the number of poles, voltage rating, and horsepower rating as required by the motor or equipment. Disconnect switches shall be in enclosures to suit conditions, NEMA 3R for outdoor and NEMA 1 for indoor. Disconnect switches shall be fused unless otherwise noted on the drawings. As manufactured by: Square D - Class 3110, ITE Seimens, or equal.

2.12 FUSES

- A. Dual Element, Time Delay, UL Class RK5. Rejection type. Size and Voltage as indicated on equipment. Bussman, Little Fuse, or approved equal.

2.13 ELECTRICAL SUPPORTING DEVICES

- A. Concrete Fasteners: Phillips "Red-Head" or equal, self drilling expansion type concrete anchor.
- B. Conduit Straps: Hot-dip galvanized, cast malleable iron, two hole type strap with cast clamp-backs and spacers as required. OZ/Gedney No. 14-50G strap and #141G spacer; Efcor No. 231 strap, and No.131 spacer; or equal.
- C. Construction Channel: 1-1/2 inch by 1-1/2 inch 12 gauge galvanized steel channel with 17/32 inch diameter bolt holes, 1-1/2 inch on center, in the base of the channel. Kindorf 905 series, Unistrut P-1000-HS or equal.
- D. Cable Ties and Clamps: Thomas and Betts Co. "Ty-Raps" Panduit "Pan-Ty" or equal one piece, nylon, reusable type lashing ties.
- E. Fasteners (General) : Wood screws for fastening to wood. Machine screws for fastening to steel. Toggle bolts for fastening to hollow concrete block, gypsum board, or plaster walls. Expansion anchors for attachments to pre-poured concrete.

2.14 IDENTIFYING DEVICES

- A. Nameplates: Type NP: Engraved black bakelite, 1 inch by 3-1/2 inch, 1/8 inch high white letters, machine screw retained. For permanent identification of all switchboards, panelboards, circuit breakers in separate enclosures, motor starters, relays, time switches, disconnect switches and other cabinet-enclosed apparatus including terminal cabinets or match existing as closely as possible.
- B. Legend Plates: Type LP: Die-stamped metal legend plate with mounting hole and positioning key for attachment to panel mounted operators' devices. Engraved paint-filled characters as specified.
- C. Wire & Terminal Markers: Self-adhering, pre-printed vinyl with self-laminating wrap around strip. Markers shall be legible after termination. Brady B191 series, Thomas & Betts WSL series or equal.
- D. Conductor Phase Markers: Thomas & Betts WCPHAS series or similar in addition to colored marking as specified under this section of the specifications.

2.15 GROUNDING AND BONDING

- A. Ground Rods
- B. Manufacturer: Blackburn, Erico, or approved Equal
- C. Size: 3/4" x 10' Ground Rods
- D. Grounding Electrode Conductor, 2/0 for foundation foots, and per NEC.
- E. Grounding Well - Christy Box, Valve Box

PART 3 EXECUTION

3.01 GENERAL

- A. General: Exact locations of distances and devices shall be taken from field measurements and approved by the architect prior to rough in.

- B. Provide all wiring connections for equipment furnished under other sections of the contract documents.

3.02 CONDUIT AND RACEWAY APPLICATIONS

- A. Rigid Steel Conduit: For all exterior applications, all conduits larger than 2" trade diameter, indoor, below eight (8) feet, hazardous locations.
- B. Electrical Metallic Tubing (EMT): Interior only and above eight (8) feet or when entering a panel from above. Shall not be permitted in hazardous locations per NFPA 70.
- C. Liquid tight Flexible Metallic Conduit: In damp and wet locations for connections to motors, transformers, vibrating equipment and machinery. Connections to all pump motors, flow switches, and similar devices.
- D. Rigid Galvanized: Install for all underground and exterior runs. Minimum conduit size shall be 3/4".
- E. PVC: Install for underground electrical service and underground branch circuiting.

3.03 WIRE

- A. Wire Sizes: Provide no wire smaller than #12 for lighting, receptacles or other circuits. Provide stranded wire for wire larger than #10.
- B. Wires installed in exterior locations shall be THWN.
- D. THHN conductors shall be installed in interior locations and consistent with NEC Article 334.

3.04 CONDUIT INSTALLATION

- A. General
 - 1. All conduit runs shown on the plans are sized based on the use of rigid steel conduit and THWN copper conductors. If conductor type is changed the contractor shall be responsible for resizing conduits to meet code. In no case is conduit to be sized smaller than 3/4" trade diameter.
 - 2. Low voltage wiring shall be installed in conduit, minimum 3/4" trade diameter.
 - 3. Conduits shall be tightly covered and well protected during construction using metallic bushings and bushing "pennies" to seal open ends.
 - 4. In making joints in rigid steel conduit, ream conduit smooth after cutting and threading.
 - 5. Clean any conduit in which moisture or any foreign matter has collected before pulling in conductors. Paint all field threaded joints to prevent corrosion.
 - 6. In all empty conduits or ducts, install an 1100 pound tensile strength polyethylene pulling rope.
 - 7. Conduit systems shall be electrically continuous throughout. Install code size, uninsulated, copper grounding conductors in all conduit runs, grounding conductor shall be bonded to conduit, equipment frames and properly grounded.
- B. Layout:
 - 1. All new conduits shall be concealed. Any field conditions that does not allow concealment of conduits shall be reviewed with the Architect prior to rough-in.
 - 2. Locations of conduit runs shall be planned in advance of the installation and coordinated with concrete work, plumbing and framing.
 - 3. Where practical install conduits in groups in parallel vertical or horizontal runs and at elevations that avoid unnecessary off-sets.
 - 4. Low voltage conduit shall be grouped separately and labelled every 10 ft interval as to system (i.e. fire, control, etc)
 - 5. Exposed conduit shall be run parallel or at right angles to the centerlines of the columns and beams.
 - 6. Conduits shall not be placed closer than 12 inches from a parallel hot water or steam line or three inches from such lines crossing perpendicular to the runs.
 - 7. In long runs of conduit, provide sufficient pull boxes per NEC inside buildings to facilitate pulling wires and cables. Support pull boxes from structure independent of conduit supports. These pull boxes are not shown on the plans.

- C. Supports:
 - 1. All raceway systems shall be secured to building structures using specified fasteners, clamps and hangers spaced according to Code.
 - 2. Support single runs of conduit using two hole pipe straps. Where run horizontally on walls in damp or wet locations, install "clamp blocks" to space conduit off the surface.
 - 3. Multiple conduit runs shall be supported using "trapeze" hangers fabricated from 3/8 inch diameter, threaded steel rods secured to building structures. Fasten conduit to construction channel with standard two hole pipe clamps. Provide lateral seismic bracing for hangers.
- D. Installation
 - 1. Locate and install anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
 - 2. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
 - 3. Do not drill or cut structural members.
 - 4. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
 - 5. Install surface-mounted cabinets and panelboards with minimum of four anchors.
 - 6. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1 inch (25 mm) off wall.
 - 7. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- E. Terminations and Joints
 - 1. Raceways shall be joined using specified couplings or transition couplings where dissimilar raceway systems are joined.
 - 2. Rigid conduit connection to enclosures shall be made by Myers type grounding hubs only. EMT connections to enclosures shall be made with compression connector with grounding lock-nuts or bushings.
 - 3. Conduit terminations exposed at weatherproof enclosures and cast outlet boxes shall be made watertight using appropriate connectors and hubs. Install expansion couplings where any conduit crosses a building separation or expansion joint
 - 4. Install cable sealing bushings on all conduits originating outside the building walls and terminating in switchgear, cabinets or gutters inside the building. Install cable sealing bushings or caulk conduit terminations in all grade level or below grade exterior pull, junction or outlet boxes.
- F. Penetrations:
 - 1. Furnish and install metal sleeves for all exposed interior conduit runs passing through concrete floors or walls. Following conduit installation, seal all penetrations using non-iron bearing, chloride free, non-shrinking, dry-pack, grouting compound.
 - 2. Install specified watertight conduit entrance seals and membrane clamps at all below grade wall and floor penetrations. Conduits penetrating exterior building walls and building floor slab shall be insulated rigid steel.
 - 3. Conduits penetrating rated walls, floors, etc. shall be fireproofed.

3.05 CABLE AND WIRE INSTALLATION

- A. Examination
 - 1. Verify that interior of building has been protected from weather.
 - 2. Verify that mechanical work likely to damage wire and cable has been completed.
 - 3. Verify that raceway installation is complete and supported.
 - 4. Verify that field measurements are as indicated.
- B. Preparation
 - 1. In existing conduits that will be reused, pull out existing conductors.
 - 2. Completely and thoroughly swab raceway before installing wire.

3. Use 50/50 solution of Simple Green. Use CO2 to blow water and soap into conduit - let soak to break up dried out pulling compounds, then pull conductors. Pull one conductor at a time if will not pull all out together.
- C. General:
1. Conductors shall not be in conduit until all work of any nature that may cause injury is completed. Care should be taken in pulling conductors that insulation is not damaged. U.L. approved non-petroleum base and insulating type pulling compound shall be used as needed.
 2. All cables shall be installed and tested in accordance with manufacturer's requirements and warranty.
 3. Block and tackle, power driven winch or other mechanical means shall not be used in pulling conductors of size smaller than AWG # 1.
- D. Splicing and Terminating:
1. All aspects of splicing and terminating shall be in accordance with cable manufacturer's published procedures.
 2. Make up all splices in outlet boxes with connectors as specified herein with separate tails of correct color to be made up to splice. Provide at least six (6) inches of tails packed in box after splice is made up.
 3. All wire and cable in panels, control centers and equipment enclosures shall be bundled and clamped.
 4. Encapsulate splices in exterior outlet, junction and pull boxes using insulating resin kits. All splices for exterior equipment in pump rooms shall be made up watertight.
 5. Insulate mechanical compression taps AWG # 1/0 and larger using pre-molded, snap-on insulating boots or specified conformable insulating putty overwrapped with two half-lapped layers of insulating tape.
- E. Identification:
1. Securely tag all branch circuits, noting the purpose of each. Mark conductors with vinyl wrap-around markers. Where more than two conductors run through a single outlet, mark each circuit with the corresponding circuit number at the panelboard.
 2. Color code conductors size #6 and larger using specified phase color markers and identification tags.
 3. All terminal strips are to have each individual terminal identified with specified vinyl markers.
 4. All identification shall be legible and readable after completion of installation.

3.06 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquid tight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

3.07 INSTALLATION OF BOXES

- A. General:
 - 1. Leave no un-used openings in any box. Install close-up plugs as required to seal openings.
 - 2. Exposed outlet boxes and boxes in damp or wet locations shall be cast metal with gasketed cast metal cover plates.
- B. Box Layout:
 - 1. Outlet boxes shall be installed at the locations and elevations shown on the drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.
 - 2. Install junction or pullboxes where required to limit bends in conduit runs to not more than 360 degrees or where pulling tension achieved would exceed the maximum allowable for the cable to be installed. Consult wire and cable manufacturer.

3.08 INSTALLATION OF WIRING DEVICES

- A. General
 - 1. Install all devices flush mounted unless otherwise noted on the drawings. Comply with layout drawings for general locations. Consult Architect or Owner for locations that have conflict with other devices or manner not suitable for installation. Avoid place devices behind open doors.
 - 2. Align devices horizontally and vertically. Device plates shall be aligned vertically with tolerance of 1/16". All four edges of device plates shall be in contact with the wall surface.
 - 3. Mounting height as indicated on the drawings and according to ADA requirements.
 - 4. Install device plates on all outlet boxes. Provide blank plates for all empty, spare, and boxes for future use.
 - 5. Securely fasten devices into boxes and attach appropriate cover plates.
 - 6. Caulk around edges of outdoor device plates and boxes when rough wall surfaces prevent raintight seal. Use caulking materials approved by Architect/Engineer.
 - 7. Fireproof around opening of devices located or penetrating fire rated construction assemblies.
- B. Identification
 - 1. Label all outlets and switches. Mark each wiring device where circuits and panel supply is derived from.
 - 2. All identification shall be legible and readable after completion of installation.

3.09 INSTALLATION OF FUSES AND DISCONNECT SWITCHES

- A. Fuses shall be installed where noted on plans. Sizes are based on design data provided by air conditioning mfg. Listed or labeled equipment must be in accordance with instructions included in the listing or labeling. Be sure to observe maximum branch circuit fuse size labels.
- B. Disconnect switches shall be mounted on the units. Coordinate with mechanical contractor to ensure switches are not mounted on a removable access panel.
- C. Label each disconnect fuse with equipment tag as indicated in the single line diagram, or as directed.

3.10 ELECTRICAL EQUIPMENT GROUNDING

- A. Ground non-current carrying metal parts of electrical equipment enclosures, frames, conductor raceways or cable trays to provide a low impedance path for line-to-ground fault current and to bond all non-current carrying metal parts together. Install a ground conductor in each raceway system in addition to conductors shown. Equipment ground conductor shall be electrically and mechanically continuous from the electrical circuit source to the equipment to be grounded. Size ground conductors per NEC 250 unless larger conductors are shown on the drawings.
- B. Grounding conductors shall be identified with green insulation, except where a bare ground conductor is specified. Where green insulation is not available, on larger sizes, black insulation shall be used and suitably identified with green tape at each junction box or device enclosure.

- C. Install metal raceway couplings, fittings and terminations secure and tight to insure good ground continuity. Provide insulated grounding bushing and bonding jumper where metal raceway is not directly attached to equipment metal enclosure and at concentric knock-outs.
- D. Motors shall be connected to equipment ground conductors with a conduit grounding bushing and with a bolted solderless lug connection on the metal frame.
- E. Conduit terminating in concentric knockouts at panelboards, cabinets and gutters shall have insulated grounding bushings and bonding jumpers installed interconnecting all such conduits and the panelboard cabinet, gutter, etc.
- F. Performance: Measure ground resistance, 25 Ohms or less.

3.11 BONDING

- A. Bonding shall be provided to assure electrical continuity and the capacity to conduct safely any fault current likely to be imposed.
- B. Bonding shall be in accordance with NEC Article 250, Part V

3.12 WORKMANSHIP

- A. Preparation, handling, and installation shall be in accordance with manufacturer's written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified. Coordinate work and cooperate with others in furnishing and placing this work. Work to reviewed shop drawings for work done by others and to field measurements as necessary to properly fit the work.
- B. Conform to the National Electrical Contractor's Association "Standard of Installation" for general installation practice.

3.13 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

END OF SECTION

**SECTION 26 24 16
PANELBOARDS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Power distribution panelboards.
- B. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 00 Electrical Basic Materials and Methods

1.03 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e (Amended 2017).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- E. NEMA PB 1 - Panelboards; 2011.
- F. NEMA PB 1.1 – General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; 2013.
- G. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.
- H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 50E- Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- K. UL 67 - Panelboards; Current Edition, Including All Revisions.
- L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
 - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.

1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
 1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.
 2. Include wiring diagrams showing all factory and field connections.
 3. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
 4. Include documentation of listed series ratings upon request.
 5. Identify mounting conditions required for equipment seismic qualification.
- D. Manufacturer's equipment seismic qualification certification.
- E. Source Quality Control Test Reports: Include reports for tests designated in NEMA PB 1 as routine tests.
- F. Field Quality Control Test Reports.
- G. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- H. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.
- I. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.
- J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 01 6000 - Product Requirements, for additional provisions.
 2. Panelboard Keys: Two of each different key.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Maintain ambient temperature within the following limits during and after installation of panelboards:

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. ABB/GE: www.geindustrial.com/#sle.
- B. Eaton Corporation: www.eaton.com/#sle.
- C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
- D. Or approve equal.

2.02 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature:
- C. Short Circuit Current Rating:
 - 1. Provide panelboards with listed short circuit current rating 10K AIC. Match breakers on existing panels.
- D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - 3. Fronts:
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.03 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:

- a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - 1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
3. Conductor Terminations:
- a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
4. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 26 05 00.
- F. Install panelboards plumb.
- G. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.
- H. Provide minimum of six spare 1 inch (27 mm) trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.
- I. Provide grounding and bonding in accordance with Section 26 05 00.
- J. Install all field-installed branch devices, components, and accessories.
- K. Provide filler plates to cover unused spaces in panelboards.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 CLEANING

- A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION 26 24 16

SECTION 26 51 00
INTERIOR LIGHTING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Interior luminaires.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 00 Electrical Basic Materials and Methods

1.03 REFERENCE STANDARDS

- A. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; 2008.
- B. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; 2015, with Errata (2017).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- D. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; 2006.
- E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.
- I. UL 1598 - Luminaires; Current Edition, Including All Revisions.
- J. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
 - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
 - 3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
 - 4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
 - 2. Provide photometric calculations where luminaires are proposed for substitution upon request.

- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
- D. Field quality control reports.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide three year manufacturer warranty for LED luminaires, including drivers.

PART 2 PRODUCTS**2.01 LUMINAIRE TYPES**

- A. Furnish products as indicated in luminaire schedule included on the drawings.

2.02 LUMINAIRES

- A. Manufacturers:
 - 1. Lithonia Lighting;
 - 2. 3G Lighting;
 - 3. A-Light Lighting;
 - 4. Or approved equal.
- B. Provide products that comply with requirements of NFPA 70.
- C. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- D. Provide products listed, classified, and labeled as suitable for the purpose intended.
- E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
- I. Track Lighting Systems: Provide track compatible with specified track heads, with all connectors, power feed fittings, dead ends, hangers and canopies as necessary to complete installation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 05 00 as required for installation of luminaires provided under this section.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install products in accordance with manufacturer's instructions.
- D. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- E. Provide required support and attachment in accordance with Section 26 0529.
- F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- G. Suspended Ceiling Mounted Luminaires:
 - 1. Do not use ceiling tiles to bear weight of luminaires.
 - 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 - 3. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
 - 4. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- H. Recessed Luminaires:
 - 1. Install trims tight to mounting surface with no visible light leakage.

- I. Suspended Luminaires:
 - 1. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
- J. Install accessories furnished with each luminaire.
- K. Bond products and metal accessories to branch circuit equipment grounding conductor.
- N. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.
- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.
- B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.

3.06 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

END OF SECTION 26 51 00

SECTION 28 46 21.11
ADDRESSABLE FIRE-ALARM SYSTEMS**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- B. Section Includes:
 - 1. Notification Appliances.

1.03 DEFINITIONS

- A. EMT: Electrical Metallic Tubing.
- B. FACP: Fire Alarm Control Panel.
- C. HLI: High Level Interface.
- D. NICET: National Institute for Certification in Engineering Technologies.
- E. PC: Personal computer.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product, including furnished options and accessories.
 - 1. Include construction details, material descriptions, dimensions, profiles, and finishes.
 - 2. Include rated capacities, operating characteristics, and electrical characteristics.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Seismic Qualification Data: Certificates, for fire-alarm control unit, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
 - 4. Field quality-control reports.

1.06 SAMPLE WARRANTY: FOR SPECIAL WARRANTY.**1.07 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.
 - 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 - b. Provide "Fire Alarm and Emergency Communications System Record of Completion Documents" according to the "Completion Documents" Article in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
 - c. Complete wiring diagrams showing connections between all devices and equipment. Each conductor shall be numbered at every junction point with indication of origination and termination points.
 - d. Riser diagram.
 - e. Device addresses.

- f. Air-sampling system sample port locations and modeling program report showing layout meets performance criteria.
 - g. Record copy of site-specific software.
 - h. Provide "Inspection and Testing Form" according to the "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:
 - 1) Equipment tested.
 - 2) Frequency of testing of installed components.
 - 3) Frequency of inspection of installed components.
 - 4) Requirements and recommendations related to results of maintenance.
 - 5) Manufacturer's user training manuals.
 - i. Manufacturer's required maintenance related to system warranty requirements.
 - j. Abbreviated operating instructions for mounting at fire-alarm control unit and each annunciator unit.
- B. Software and Firmware Operational Documentation:
- 1. Software operating and upgrade manuals.
 - 2. Device address list.
 - 3. Printout of software application and graphic screens.

1.08 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- 1. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
 - 2. Smoke Detectors, Fire Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type.
 - 3. Detector Bases: Quantity equal to two percent of amount of each type installed, but no fewer than one unit of each type.
 - 4. Keys and Tools: One extra set for access to locked or tamper-proofed components.
 - 5. Audible and Visual Notification Appliances: 3 of each type installed.
 - 6. Fuses: Two of each type installed in the system. Provide in a box or cabinet with compartments marked with fuse types and sizes.

1.09 QUALITY ASSURANCE

- A. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level III technician.

1.10 PROJECT CONDITIONS

- A. Perform a full test of the existing system prior to starting work. Document any equipment or components not functioning as designed.
- B. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:
- 1. Notify Construction Manager and Owner no fewer than seven days in advance of proposed interruption of fire-alarm service.
 - 2. Do not proceed with interruption of fire-alarm service without Construction Manager's written permission.
- C. Use of Devices during Construction: Protect devices during construction unless devices are placed in service to protect the facility during construction.

1.11 SEQUENCING AND SCHEDULING

- A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service, and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

- B. Equipment Removal: After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

1.12 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. See contract drawings for device model numbers.
- B. Source Limitations for Fire-Alarm System and Components: Components shall be compatible with, and operate as an extension of, existing system. Provide system manufacturer's certification that all components provided have been tested as, and will operate as, a system.
- C. Noncoded, UL-certified addressable system, with multiplexed signal transmission and voice/strobe evacuation.
- D. All components provided shall be listed for use with the selected system.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. System Supervisory Signal Actions:
 - 1. Initiate notification appliances.
 - 2. Identify specific device initiating the event at fire-alarm control unit and remote annunciators.
 - 3. Record the event on system printer.
 - 4. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.
 - 5. Transmit system status to building management system.
 - 6. Display system status on graphic annunciator.

2.3 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

2.4 NOTIFICATION APPLIANCES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. System Sensor.
 - 2. Wheelock; a brand of Eaton.
- B. General Requirements for Notification Appliances: Individually addressed, connected to a signaling-line circuit, equipped for mounting as indicated, and with screw terminals for system connections.
- C. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.
 - 1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

- D. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.
- E. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch-high letters on the lens.
 - 1. Rated Light Output:
 - a. 15/30/75/110 cd, selectable in the field.
 - 2. Mounting: Wall mounted unless otherwise indicated.
 - 3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
 - 4. Flashing shall be in a temporal pattern, synchronized with other units.
 - 5. Strobe Leads: Factory connected to screw terminals.
 - 6. Mounting Faceplate: Factory finished, red.
- F. Exit Marking Audible Notification Appliance:
 - 1. Exit marking audible notification appliances shall meet the audibility requirements in NFPA 72.
 - 2. Provide exit marking audible notification appliances at the entrance to all building exits.
 - 3. Provide exit marking audible notification appliances at the entrance to areas of refuge with audible signals distinct from those used for building exit marking.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.
 - 1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.
- B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."
 - 1. Devices placed in service before all other trades have completed cleanup shall be replaced.
 - 2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.
- B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.
 - 1. Connect new equipment to existing control panel in existing part of the building.
 - 2. Connect new equipment to existing monitoring equipment at the supervising station.
 - 3. Expand, modify, and supplement existing control equipment as necessary to extend existing control functions to the new points. New components shall be capable of merging with existing configuration without degrading the performance of either system.
- C. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.

- D. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.
- E. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.
- F. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.
- G. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.3 PATHWAYS

- A. Pathways above recessed ceilings and in non-accessible locations may be routed exposed.
 - 1. Exposed pathways located less than 96 inches above the floor shall be installed in EMT.
- B. Pathways shall be installed in EMT.
- C. Exposed EMT shall be painted red enamel.

3.4 CONNECTIONS

- A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Section 087100 "Door Hardware." Connect hardware and devices to fire-alarm system.
 - 1. Verify that hardware and devices are listed for use with installed fire-alarm system before making connections.
- B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

3.5 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with manufacturer requirements for identification.
- B. Install framed instructions in a location visible from fire-alarm control unit.

3.6 GROUNDING

- A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.
- B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 - 1. Visual Inspection: Conduct visual inspection prior to testing.
 - a. Inspection shall be based on completed record Drawings and system documentation that is required by the "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
 - b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
 - 2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
 4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
 5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
 6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
- C. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- D. Fire-alarm system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.
- F. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.
- G. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.8 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 2. Perform tests in the "Test Methods" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 3. Perform tests per the "Testing Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3.9 SOFTWARE SERVICE AGREEMENT

- A. Comply with UL 864.
- B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.
- C. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.
1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.

3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Removal of existing vegetation
- B. Clearing vegetation, debris, trash and other materials within limits indicated
- C. Grubbing of vegetation within limits indicated
- D. Stripping of topsoil within limits indicated
- E. Removing above-grade site improvements within limits indicated
- F. Disposing of objectionable material

1.02 RELATED SECTIONS

- A. Section 31 20 00, Earth Moving
- B. Section 32 12 16, Asphalt Paving

1.03 DEFINITIONS

- A. ANSI: American National Standards Institute
- B. CAL-OSHA: California Occupational Safety and Health Administration
- C. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

1.04 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

1.05 PROJECT CONDITIONS

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose of in lawful manner.
- B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner's Representative. Avoid damaging materials designated for salvage.
- C. Unidentified Materials;

1. If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner's Representative.
2. If necessary, the Owner's Representative will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 - PRODUCTS**2.01 SOIL MATERIALS**

- A. Backfill excavations resulting from demolition operations with on-site or import materials conforming to engineered fill defined in Section 31 20 00, Earth Moving.

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Protect and maintain benchmarks and survey control points during construction.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain during construction.

3.02 RESTORATION

- A. Restore damaged improvements to their original condition, as acceptable to the Owner's Representative.
- B. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, as directed by the Owner's Representative.
 1. Employ a qualified arborist, licensed in jurisdiction where the Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
 2. Replace trees that cannot be repaired and restored to full-growth status, as determined by the Owner's Representative.

3.03 UTILITIES

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner's Representative or others unless authorized in writing by the Owner's representative, and then only after arranging to provide temporary utility services according to requirements indicated.
- B. Coordinate utility interruptions with utility company affected.
- C. Do not proceed with utility interruptions without the permission of the Owner's Representative and utility company affected. Notify Owner's Representative and utility company affected two working days prior to utility interruptions.

3.04 CLEARING AND GRUBBING

- A. Areas to be graded shall be cleared of existing vegetation, rubbish, existing structures, and debris.
- B. Remove obstructions, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.

- C. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
- D. Use only hand methods for grubbing within drip line of remaining trees.

3.05 SITE STRIPPING

- A. Strippings and spoils shall be disposed at an off-site location, per geotechnical recommendations.
- B. Remove vegetation before stripping soil.
- C. Surface soils that contain organic matter should be stripped. In general, the depth of required stripping will be relatively shallow (i.e. less than 2 inches); deeper stripping and grubbing may be required to remove isolated concentrations of organic matter or roots.
- D. Remove trash, debris, weeds, roots, and other waste materials.
- E. Stockpile soil materials designated to remain on site at a location approved by the Owner's Representative at a location away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
- F. Do not stockpile soil within drip line of remaining trees.

3.06 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

3.07 BACKFILL

- A. Place and compact material in excavations and depressions remaining after site clearing in accordance with Section 31 20 00, Earth Moving.

3.08 DISPOSAL

- A. Remove surplus soil material, unsuitable soil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.

END OF SECTION 31 10 00

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SECTION 31 20 00

EARTH MOVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavation and/or embankment from existing ground to subgrade, including soil sterilant, for driveways, parking areas, walks, paths, and any other site improvements called for on the Plans.

1.02 RELATED DOCUMENTS

- A. ASTM
 - 1. D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. D1586, Method for Penetration Tests and Split-Barrel Sampling of Soils
 - 3. D2487, Classification of Soils for Engineering Purposes
 - 4. D3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - 5. D4318, Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils
 - 6. E329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
 - 7. E548, Guide for General Criteria Used for Evaluating Laboratory Competence
- B. California Building Code, California Code of Regulations, Title 24, Part 2, Chapter 18, Soils and Foundations, and Chapter 33, Safeguards During Construction
- C. Caltrans Standard Specifications, 2018
 - 1. Section 17, General
 - 2. Section 19, Earthwork
- D. CAL/OSHA, Title 8.

1.03 DEFINITIONS

- A. Borrow: Approved soil material imported from off-site for use as Structural Fill, Select Fill or Backfill.
- B. Excavation: Removal of material encountered above subgrade elevations.
 - 1. Authorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions as shown on plans or authorized by the Geotechnical Engineer or Owner's Representative.
 - 2. Unauthorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions without authorization by the Geotechnical Engineer or Owner's Representative. Unauthorized excavation shall be without additional compensation.
- C. Geotechnical Testing Agency: An independent testing agency qualified according to ASTM E329 to conduct soil materials and rock definition testing, as documented according to ASTM D3740 and ASTM E548.
- D. Structural Backfill: Soil materials approved by the Geotechnical Engineer or Owner's Representative and used to fill excavations resulting from removal of existing below grade facilities, including trees.

- E. Structural Fill: Soil materials approved by the Geotechnical Engineer or Owner's Representative and used to raise existing grades.
- F. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material $\frac{3}{4}$ cubic yards or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D1586, exceeds a standard penetration resistance of 100 blows/2 inches.
- G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
- H. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials.
- I. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.
- J. Unsuitable Material: Any soil material that is not suitable for a specific use on the Project. The Geotechnical Engineer or Owner's Representative will determine if a soil material is unsuitable.
- K. Relative Compaction: In-place dry density of soil expressed as percentage of maximum dry density of same materials, as determined by laboratory test procedure ASTM D1557.
- L. Utilities: onsite underground pipes, conduits, ducts and cables.

1.04 SUBMITTALS

- A. Samples:
 - 1. If required by the Geotechnical Engineer or Owner's Representative, provide 20 pound samples, sealed in airtight containers, tagged with source locations and suppliers of each proposed soil material from on-site or borrow sources, 72 hours prior to use. Do not import materials to the Project without written approval of the Geotechnical Engineer or Owner's Representative.
 - 2. Provide materials from same source throughout work. Change of source requires approval of the Geotechnical Engineer or Owner's Representative.
- B. Classification according to ASTM D2487 of each onsite or borrow soil material proposed for fill and backfill.
 - 1. Laboratory compaction curve in conformance with ASTM D1557 for each onsite or borrow soil material proposed for fill and backfill.

1.05 QUALITY ASSURANCE

- A. Conform all work in accordance with Caltrans Standard Specification Section 17, General and Section 19, Earthwork.
- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D1557.
- C. Upon completion of the construction work, certify that all compacted fills and foundations are in place at the correct locations, and have been constructed in accordance with sound

construction practice. In addition, certify that the materials used are of the types, quality and quantity required by these Technical Specifications and the Geotechnical Report. The Contractor shall be responsible for the stability of all fills and backfills constructed by his forces and shall replace portions that in the opinion of the Geotechnical Engineer or Owner's Representative have been displaced or are otherwise unsatisfactory due to the Contractor's operations.

- D. Finish subgrade tolerance at completion of grading:
 - 1. Paved areas: ± 0.05 feet
 - 2. Other areas: ± 0.10 feet

1.06 PROJECT CONDITIONS

- A. Promptly notify the Owner's Representative of surface or subsurface conditions differing from those disclosed in the Geotechnical Report. First notify the Owner's Representative verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents and disclosed in the Geotechnical Report will be allowed unless the Contractor has notified the Owner's Representative in writing of differing conditions prior to the Contractor starting work on affected items.
- B. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- C. Temporarily stock-pile fill material in an orderly and safe manner and in a location approved by the Owner's Representative.
- D. Environmental Requirements: When unfavorable weather conditions necessitate interrupting earthwork operation, areas shall be prepared by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion. After interruption, compaction specified in last layer shall be re-established before resuming work.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. General: On-site soils are suitable for use as general engineered fill provided they do not contain deleterious matter, organic material, or rock/cemented soil fragments material larger than 3 inches in maximum dimension. If undocumented on-site fill soils are encountered within the limits of the proposed building expansion and loose or debris-laden soils are encountered in other areas, these soils shall be completely removed and replaced by engineered compacted fill.
- B. Imported soil (or select fill) shall be well-graded, very low to non-expansive slightly cohesive silty sand or sandy silt. The material shall have an organic content of less than 3% by weight, containing no rocks or lumps larger than three inches in greatest dimension, have a maximum expansion index (per ASTM D4829) of 20, and have a maximum plasticity index of 15. The material shall have 100% passing on the 3-inch sieve, 75%-100% passing on the No. 4 sieve and 15%-40% passing on the No. 200 sieve. The grading contractor shall provide analytical test results or other suitable environmental documentation indicating imported fill is free of hazardous materials at least three business days before use at the site.

2.02 SOIL STERILANT

- A. Commercial chemical for weed control, registered by EPA. Provide granular, liquid or wettable powder form.

PART 3 - EXECUTION**3.01 GENERAL**

- A. Perform work in accordance with Caltrans Standard Specification Section 19, Earthwork, as modified by the Contract Documents.
- B. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.
- C. The use of explosives will not be permitted.
- D. Grading and earthwork operations shall be observed by a representative of the City for conformance with the project plans/specifications and the geotechnical recommendations. This work includes site preparation, selection of satisfactory materials, and placement and compaction of the subgrades and fills. Sufficient notification prior to commencement of earthwork is essential to make certain that the work will be properly observed.

3.02 CONTROL OF WATER AND DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the site and surrounding area. Provide dewatering equipment necessary to drain and keep excavations and site free from water.
- B. Dewater during backfilling operation so that groundwater is maintained a least 1 foot below level of compaction effort.
- C. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.
- D. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations.
- E. Maintain dewatering system in place until dewatering is no longer required.

3.03 WET WEATHER CONDITIONS

- A. Do not prepare subgrade, place or compact soil materials if subgrade or materials are above optimum moisture content.
- B. If the Geotechnical Engineer or Owner's Representative allows work to continue during wet weather conditions, conform to supplemental recommendations provided by the Geotechnical Engineer or Owner's Representative.

3.04 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.

- C. Be solely responsible for all bracing and shoring and, if requested by the Owner's Representative, submit details and calculations to the Contractor. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner's Representative.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.05 EXCAVATION

- A. Excavate earth and rock to lines and grades shown on plans and to the neat dimensions indicated on the plans, required herein or as required to satisfactorily compact backfill.
- B. Remove and dispose of large rocks, pieces of concrete and other obstructions encountered during excavation.
- C. Excavation through buried concrete and other unknown obstructions will require specialized techniques for demolition and removal.
- D. Where forming is required, excavate only as much material as necessary to permit placing and removing forms.
- E. Provide supports, shoring and sheet piles required to support the sides of excavations or for protection of adjacent existing improvements.

3.06 GRADING

- A. Uniformly grade the Project to the elevations shown on plans.
- B. Finish ditches, gutters and swales to the sections, lines and grades indicated and to permit proper surface drainage.
- C. Round tops and bottoms of slopes as indicated or to blend with existing contours.

3.07 SUBGRADE PREPARATION

- A. Subgrade Preparation: All subgrade soils shall be compacted and moisture-conditioned per the project specifications.
- B. Following excavation to the required grades, subgrades beneath new building mat slabs shall be scarified to a depth of at least eight inches, moisture-conditioned to at least two percent above optimum moisture content, and compacted to at least 90 percent relative compaction. Prior to placement of select fill, the soil subgrade shall be kept moist until it is covered by fill or improvements. The soil subgrade shall be kept moist until it is covered by fill. The City shall observe subgrade preparation and placement of select fill.
- C. Subgrades within eight inches of finished subgrade in areas to receive vehicular traffic shall be moisture-conditioned to above optimum moisture content and compacted to at least 95 percent relative compaction.
- D. Soil subgrades shall be kept moist during construction. To achieve satisfactory compaction of the subgrade and fill materials, it may be necessary to adjust the water content at the

time of construction. Subgrade that has been permitted to dry out and loosen or develop desiccation cracking shall be scarified, moisture conditioned, and re-compacted as recommended above. Fill material shall be evenly spread and compacted in lifts not exceeding eight inches in pre-compacted thickness.

- E. Over-excavate any remaining soft (pumping) areas down to firm soil and backfill the area.
- F. Subgrade shall be maintained in a moist, but not wet, condition by periodically sprinkling water prior to the placement of additional fill or installation of roads. Subgrade that has been permitted to dry out and loosen or develop desiccation cracking shall be scarified, moisture conditioned, and re-compacted as recommended above.
- G. Prepare subgrades under the structural section of paved areas, curbs, gutters, walks, structures, other surface facilities and areas to receive structural fill.
- H. Protect utilities from damage during compaction of subgrades and until placement of final pavements or other surface facilities.

3.08 FILL PLACEMENT AND COMPACTION

- A. Place fill in uniformly moisture conditioned and compacted lifts not exceeding 8 inches in loose thickness. Each lift shall be thoroughly moisture-conditioned and compacted to 90 percent before successive fill layers are placed. Fill consisting of onsite sandy clay/clayey sand shall be moisture-conditioned to at least two percent above optimum moisture.
- B. Fill placed within six inches of soil subgrade for pavement that will be subjected to vehicular traffic shall be compacted to at least 95 percent relative compaction and be non-yielding.
- C. In order to achieve satisfactory compaction in the subgrade and fill soils, it may be necessary to adjust the soil moisture content at the time of soil compaction per geotechnical recommendations. This may require that water be added and thoroughly mixed into any soils which are too dry or that scarification and aeration be performed in any soils which are too wet.
- D. Place structural fill on prepared subgrade.
- E. Do not drop fill on structures. Do not backfill around, against or upon concrete or masonry structures until structure has attained sufficient strength to withstand loads imposed and the horizontal structural system had been installed.
- F. Do not compact by ponding, flooding or jetting.
- G. Perform compaction using rollers, pneumatic or vibratory compactors.

3.09 SOIL STERILIZATION

- A. Apply soil sterilant to areas indicated, such as beneath asphalt concrete pavement, brick pavement, concrete pavement and at grade concrete slabs, including sidewalks, curbs and gutters. Also where indicated apply soil sterilant below expansion and control joints and at areas where pipes, ducts or other features penetrate slabs.
- B. Apply soil sterilant uniformly and at the rates recommended by the manufacturer.
- C. Apply soil sterilant to prepared subgrade, or after installation of aggregate base as recommended by the manufacturer.

3.10 DISPOSAL

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

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SECTION 32 11 00

PAVEMENT BASE COURSE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base

1.02 RELATED SECTIONS

- A. Section 31 20 00, Earth Moving

1.03 RELATED DOCUMENTS

- A. ASTM:
 - 1. D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 2. D3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
 - 3. E329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
 - 4. E548, Guide for General Criteria Used for Evaluating Laboratory Competence
- B. Caltrans Standard Specifications, 2018
 - 1. Section 26, Aggregate Bases

1.04 DEFINITIONS

- A. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material $\frac{3}{4}$ cubic yards or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D1586, exceeds a standard penetration resistance of 100 blows/2 inches.
- B. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
- C. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base or topsoil materials. Perform work in accordance with Section 31 20 00, Earth Moving.

1.05 SUBMITTALS

- A. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

1.06 QUALITY ASSURANCE

- A. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D1557.

- B. Perform installation of base materials under the observation of the Owner. Notify the Owner at least 24 hours prior to commencement of base material installation and at least 48 hours prior to testing.
- C. Do not project the finish surface of aggregate base above the design subgrade.
- D. Finish grade tolerance at completion of base installation: +0.05 feet

1.07 PROJECT CONDITIONS

- A. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- B. Temporarily stockpile material in an orderly and safe manner and in a location approved by the Owner.

PART 2 - PRODUCTS**2.01 AGGREGATE BASE**

- A. Material: Class 2 in accordance with Caltrans Standard Specification Section 26, Aggregate Bases.

PART 3 - EXECUTION**3.01 GENERAL**

- A. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.

3.02 WET WEATHER CONDITIONS

- A. Do not place or compact subgrade if above optimum moisture content.

3.03 AGGREGATE BASE

- A. Watering, Spreading and Compacting: In accordance with Caltrans Standard Specification Section 26-1.03D, Spreading and 26-1.03E, Compacting.
- B. Aggregate base for pavement base course should be compacted to at least 95 percent relative compaction, moisture-conditioned and be non-yielding.

3.04 DISPOSAL

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

SECTION 32 12 16

ASPHALT PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Hot Mix Asphalt
- B. Tack coat
- C. Hot Mix Asphalt paving
- D. Pavement grinding

1.02 RELATED SECTIONS

- A. Section 31 20 00, Earth Moving
- B. Section 32 11 00, Pavement Base Course

1.03 RELATED DOCUMENTS

- A. ASTM
 - 1. D979: Standard Practice for Sampling Bituminous Paving Mixtures
 - 2. D1188: Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
 - 3. D2041: Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
 - 4. D2726: Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
 - 5. D2950: Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
 - 6. D3549: Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
- B. Caltrans Standard Specifications, 2018
 - 1. Section 20: Landscape
 - 2. Section 39: Asphalt Concrete
 - 3. Section 88: Engineering Fabrics
 - 4. Section 92: Asphalt Binder
 - 5. Section 94: Asphaltic Emulsions
 - 6. Section 96: Geosynthetics

1.04 DEFINITIONS

- A. ASTM: American Society for Testing Materials.
- B. Caltrans: State of California, Department of Transportation

1.05 QUALITY ASSURANCE

- A. Testing Agency: Contractor will engage a qualified independent testing agency to perform field inspections and tests and to prepare test reports.
 - 1. Testing agency will conduct and interpret tests and state in each report whether tested work complies with or deviates from specified requirements.

- B. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.
- C. Thickness of hot mix asphalt: In-place compacted thickness of asphalt courses will be determined according to ASTM D3549.
- D. Surface Smoothness: Finished surface of each asphalt course will be tested for compliance with smoothness tolerances.
- E. In-Place Density: Samples of uncompacted paving mixtures and compacted pavement will be secured by testing agency according to ASTM D979.
 - 1. Reference maximum theoretical density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D2041, and compacted according to job-mix specifications.
 - 2. In-place density of compacted pavement may be determined by testing core samples according to ASTM D1188 or ASTM D2726.
 - a. One core sample may be taken for every 1000 square yard or less of installed pavement, but in no case will fewer than 3 cores be taken.
 - b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D2950 and correlated with ASTM D1188 or ASTM D2726.

1.06 SUBMITTALS

- A. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.
- B. Job-Mix Designs: Certificates signed by manufacturers certifying that each hot mix asphalt mix complies with requirements.
- C. Material Certificates: Certificates signed by manufacturers certifying that each material complies with requirements.

1.07 PROJECT CONDITIONS

- A. Environmental Limitations:
 - 1. Tack Coat: Minimum surface temperature of 60 F at application.
 - 2. Asphalt Base Course: Minimum surface temperature of 40 F and rising at application.
 - 3. Asphalt Surface Course: Minimum surface temperature of 60 F at application.
 - 4. Reinforcing Fabric: Air temperature is 50 F and rising and pavement temperature is 40 F and rising.

PART 2 - PRODUCTS

2.01 HOT MIX ASPHALT

- A. Type A In accordance with Caltrans Standard Specifications Section 39-2, Hot Mix Asphalt.
- B. Hot Mix Asphalt Materials:
 - 1. Asphalt Binder: Grade PG 64-10 in accordance with Caltrans Standard Specification Section 92, Asphalt Binders.
 - 2. Tack Coat: Grade SS1 in accordance with Caltrans Standard Specification Section 94, Asphaltic Emulsions.

- C. Aggregates: 1/2-inch max gradation for virgin aggregate and recycled asphalt pavement (RAP) in accordance with to Caltrans Standard Specification Section 39-2.02, Type A Hot Mix Asphalt.
- D. Soil Sterilant: In accordance with Caltrans Standard Specifications Section 20-5.03, Inert Ground Covers and Mulches.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.
- B. Soil subgrade and aggregate base in pavement area should be proof rolled with a loaded water truck. The ground should be non-yielding under this loading prior to the placement of subsequent pavement section courses. If necessary, perform subgrade preparation or remediation in accordance with Section 31 20 00, Earth Moving.
- C. Notify City of Oakland in writing of any unsatisfactory conditions. Do not begin paving until these conditions have been satisfactorily corrected.

3.02 PAVEMENT GRINDING

- A. Clean existing paving surface of loose or deleterious material immediately before pavement grinding.
- B. Grind conforms as indicated.

3.03 SOIL STERILANT

- A. Furnish and apply to areas per manufacturer's specifications.

3.04 SURFACE PREPARATION FOR AGGREGATE BASE MATERIALS

- A. General: Immediately before placing asphalt materials remove loose and deleterious material from substrate surfaces and ensure that prepared subgrade is ready to receive paving in accordance with Caltrans Standard Specification Section 39-2.01C(3)(b) and in accordance with Section 32 11 00, Pavement Base Course.
- B. Tack Coat: Apply uniformly and at specified rates between HMA layers, to vertical surfaces of curbs, gutters and construction joints, and to existing pavement, including planed surfaces, in accordance with Caltrans Standard Specification Section 39-2.01C(3)(f).
 - 1. Allow tack coat to cure undisturbed before paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.05 HOT MIX ASPHALT SPREADING AND COMPACTING EQUIPMENT

- A. Provide spreading and compacting equipment in accordance with Caltrans Standard Specification Section 39-2.01C (2).

3.06 HOT MIX ASPHALT PLACEMENT

- A. Place, spread and compact hot mix asphalt to required grade, cross section, and thickness in accordance with Caltrans Standard Specification Sections 39-2.01C(2), 39-2.01C(3), and 39-2.01C(8).

- B. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.07 JOINTS

- A. Construct joints to ensure continuous bond between adjoining paving sections in accordance with Caltrans Standard Specification Sections 39-2.01C(4)
 - 1. Construct joints free of depressions with same texture and smoothness as other sections of asphalt course.
 - 2. Clean contact surfaces and apply tack coat.
 - 3. Offset longitudinal joints in successive courses a minimum of 6 inches.
 - 4. Offset transverse joints in successive courses a minimum of 24 inches.
 - 5. Compact joints as soon as hot mix asphalt will bear roller weight without excessive displacement.

3.08 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact in accordance with Caltrans Standard Specification Sections 39-2.01.C (2).
- B. Compaction Requirements: Soil subgrade beneath pavement areas should be compacted to a minimum of 92 percent of maximum dry density. Import aggregate base, conforming to Caltrans Class 2 aggregate base, should be compacted to at least 95 percent relative compaction based on the laboratory test procedure ASTM D1557-12.
- C. Finish Rolling: Finish roll paved surfaces to remove roller marks while asphalt is still warm.
- D. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while still hot, with back of rake or smooth iron. Compact thoroughly using tamper or other satisfactory method.
- E. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh asphalt. Compact by rolling to specified density and surface smoothness.
- F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.09 INSTALLATION TOLERANCES

- A. Hot Mix Asphalt Pavement:
 - 1. Course thickness and surface smoothness shall be in accordance with Caltrans Standard Specification Section 39-2.01A(4)(i)(iii)
 - 2. Total Thickness: Not less than indicated.
- B. Trench Patch:
 - 1. Compacted surface: Within 0.01 foot of adjacent pavement.
 - 2. Do not create ponding.
- C. Adjust Covers:
 - 1. Compacted surface: Up to 0.01 foot higher, and no lower, than adjacent pavement.
 - 2. Do not create ponding.

END OF SECTION

SECTION 32 13 18

CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Materials for portland cement concrete
- B. Aggregate and aggregate grading for portland cement concrete
- C. Water for portland cement concrete
- D. Admixtures for portland cement concrete
- E. Proportioning for portland cement concrete
- F. Mixing and transporting portland cement concrete
- G. Formwork for cast in place portland cement concrete
- H. Embedded materials for portland cement concrete
- I. Steel reinforcement for portland cement concrete
- J. Placing and finishing portland cement concrete
- K. Curing portland cement concrete
- L. Protecting portland cement concrete

1.02 RELATED SECTIONS

- A. Section 31 20 00, Earth Moving
- B. Section 32 12 16, Asphalt Paving

1.03 RELATED DOCUMENTS

- A. ASTM Standards
 - 1. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 2. A1064, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - 3. C94, Standard Specification for Ready-mixed Concrete
 - 4. C150, Standard Specification for Portland Cement
 - 5. C260, Standard Specification for Air-Entraining Admixtures for Concrete
 - 6. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 - 7. C494, Standard Specification for Chemical Admixtures for Concrete.
 - 8. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use in Portland Cement
 - 9. C1017, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete

10. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
11. D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

- B. Caltrans Standard Specifications, 2018
1. Section 73: Concrete Curbs and Sidewalks
 2. Section 90: Concrete

1.04 DEFINITIONS

- A. ASTM: American Society for Testing and Materials

1.05 SUBMITTALS

- A. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.
- B. Concrete Mix Design: Have all concrete mixes designed by a testing laboratory and approved by the Consulting Engineer. Conform all mixes to the applicable building code requirement, regardless of other minimum requirements listed herein or on the Plans. Submit mix designs for review before use. Show proportions and specific gravities of cement, fine and coarse aggregate, and water and gradation of combined aggregates.
- C. Reinforcing Steel Shop-Drawings

1.06 QUALITY ASSURANCE

- A. Concrete shall be subject to quality assurance in accordance with Section 90 of the Caltrans Standard Specifications.
1. Slump tests: Have available, at job site, equipment required to perform slump tests. Make one slump test for each cylinder sample, from same concrete batch. Allowable maximum slump shall be 4 inches for walls and 3 inches for slabs on grade and other work.
- B. Certifications:
1. Provide Contractor at the time of delivery with certificates of compliance signed by both Contractor and Supplier containing the following statements:
 - a. Materials contained comply with the requirements of the Contract Documents in all respects.
 - b. Proportions and mixing comply with the design mix approved by the Consulting Engineer. Design mix shall have been field tested in accordance with the herein requirements of the Caltrans Standard Specifications and produces the required compressive strength under like conditions.
 - c. Statement of type and amount of any admixtures.
 2. Provide Contractor, at time of delivery, with certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.

1.07 DESIGNATION

- A. General: Whenever the 28 day compressive strength is designated herein or on the Plans is 3,600 psi or greater, the concrete shall considered to be designated by compressive strength. The 28 day compressive strength shown herein or on the plans which are less than 3,600 psi are shown for design information only and are not considered a requirement for acceptance of the concrete. Whenever the concrete is designated by class or as minor

concrete herein or on the Plans, the concrete shall contain the cement per cubic yard shown in Section 90-2 of the Caltrans Standard Specifications.

- B. Unless specified otherwise herein or on the Plans, portland cement concrete for curbs, gutters, sidewalks and their appurtenances such as island paving, curb ramps and driveways, shall be minor concrete as specified in Section 90-2 of the Caltrans Standard Specifications.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

- A. General: Type II or Type V cement conforming to the requirements of ASTM C150. Contractor may substitute pozzolan for portland cement in amounts up to 15% of the required mix unless high early strength concrete is specified. Pozzolan shall consist of Class F Fly Ash meeting the requirements of ASTM C618.
- B. Color: Contractor shall match color of existing concrete and coordinate with owner prior to construction.

2.02 AGGREGATE AND AGGREGATE GRADATION

- A. General: Fine and coarse aggregates shall be $\frac{3}{4}$ inch maximum size; clean and crushed aggregate free of materials which may cause staining. Aggregates shall conform to the requirements of section 90-1.02C of the Caltrans Standard Specifications.
- B. Aggregate Size and Gradation: Conform to the requirements of section 90-1.02C(4)(d) of the Caltrans Standard Specifications for 1-inch maximum combined aggregate.

2.03 WATER

- A. General: Water shall be clean, free from injurious amounts of oil, alkali, organic matter, or other deleterious material, and not detrimental to concrete per ASTM C94. Water shall conform to the requirements of section 90-1.02D of the Caltrans Standard Specifications, for mixing and curing portland cement concrete and for washing aggregates.

2.04 CHEMICAL ADMIXTURES

- A. Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain no more than 0.1 percent water-soluble chloride ions by mass of cementitious material. Admixtures shall conform to the requirements of section 90-1.02E of the Caltrans Standard Specifications and as noted herein or on the Plans.
 - 1. Air-Entraining Admixture: ASTM C260/C260M
 - 2. Water-Reducing Admixture: ASTM C494/C494M, Type A
 - 3. Retarding Admixture: ASTM C494/C494M, Type B
 - 4. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D
 - 5. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F
 - 6. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G
 - 7. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II

2.05 CLASSIFICATION OF PORTLAND CEMENT CONCRETE

- A. Unless specified otherwise herein or on the Plans, portland cement concrete for the following items shall be designated as follows:
 - 1. Curbs, Gutters, and Sidewalks: Minor concrete.
 - 2. Cast in Place Concrete Pipe: The concrete shall consist of a minimum of 564 pounds of portland cement per cubic yard of concrete.

3. Thrust Blocks: The concrete shall have a minimum compressive strength of 3,000 psi.
4. Sign and Fence Footings: The concrete shall consist of a minimum of 376 pounds of portland cement per cubic yard of concrete.
5. Water, Storm, and Sanitary Structures: The concrete shall consist of a minimum of 564 pounds of portland cement per cubic yard of concrete.

2.06 EXPANSION JOINT MATERIAL

- A. Material for expansion joints in portland cement concrete improvements shall be premolded non-extruding neoprene sponge rubber expansion joint fillers conforming to the requirements of ASTM D1752 Type I, with removable polystyrene or polyvinyl chloride strip mechanically attached to the top edge. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site. Unless specified otherwise herein or on the Plans, expansion joint thickness shall be as follows:
 1. Concrete Slope Protection, Gutter Lining, Ditch Lining and Channel Lining: ½ inch
 2. Structures: As indicated

2.07 REINFORCEMENT AND DOWELS

- A. Bar reinforcement for concrete improvements shall be deformed steel bars of the size or sizes called for on the plans conforming to the requirements of ASTM A615 for Grade 60 bars. Size and shape for bar reinforcement shall conform to the details shown or called for on the Plans. Substitution of wire mesh reinforcement for reinforcing bars will not be allowed.
- B. Slip dowels, where noted or called for on the Plans or detail drawings shall be smooth billet-steel bars as designated and conforming to the requirements of ASTM A615 for Grade 60 bars. Ends of bars inserted in new work shall be covered with a cardboard tube sealed with cork; no grease or oil shall be used.
- C. Mesh for reinforcement for concrete improvements shall be cold drawn steel wire mesh of the size and spacing called for on the plans conforming to the requirements of ASTM A1064. Size and extent of mesh reinforcement shall conform to the details shown or called for on the plans.
- D. Tie wire for reinforcement shall be eighteen (18) gauge or heavier, black, annealed conforming to the requirements of ASTM A1064.
- E. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

2.08 CURING AND SEALING MATERIALS

- A. Curing Compounds:
 1. Concrete surface repellent-vertical and/or flatwork: Repello surface treatment, invisible chemical treatment barrier system.
 2. Curing and sealing-exterior: Colorcure concrete cureseal manufactured by L.M. Scofield Company or approved equal. Color-matched, water-based curing and sealing compound that complies with ASTM C309.
 3. Color Conditioned Decorative Portland Cement Concrete: LITHOCHROME colorwax manufactured by L.M. Scofield Company or approved equal. Color-matched, water-based curing and sealing compound that complies with ASTM C309.

2.09 FORMS

- A. Conform to the requirements of Section 73-1.03C and Section 90-1.03B(5) of the Caltrans Standard Specifications.
- B. Tolerance: Not to deviate more than ¼ inch in 10 feet in grade and alignment.

2.10 PRECAST CONCRETE STRUCTURES

- A. Conform to the following Sections of Caltrans Standard Specifications:
 - 1. 51-7, Minor Structures
 - 2. 70-5.02, Flared End Sections

PART 3 - EXECUTION**3.01 STRUCTURAL EXCAVATION**

- A. Structural excavation may be either by hand, or by machine and shall be neat to the line and dimension shown or called for on the plans. Excavation shall be sufficient width to provide adequate space for working therein, and comply with CAL-OSHA requirements.
- B. Where an excavation has been constructed below the design grade, refill the excavation to the bottom of the excavation grade with approved material and compact in place to 95% of the maximum dry density as determined by ASTM D1557.
- C. Remove surplus excavation material remaining upon completion of the work from the job site, or condition it to optimum moisture content and compact it as fill or backfill on the site.

3.02 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner's Representative, submit details and calculations to the Contractor. The Contractor may forward the submittal to the Consulting Engineer for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Contractor.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.03 PLACING CONCRETE FORMS

- A. Form concrete improvements with a smooth and true upper edge. Side of the form with a smooth finish shall be placed next to concrete. Construct forms rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.

- B. Thoroughly clean all forms prior to placement and coat forms with an approved form oil in sufficient quantity to prevent adherence of concrete prior to placing concrete.
- C. Carefully set forms to the alignment and grade established and conform to the required dimensions. Rigidly hold forms in place by stakes set at satisfactory intervals. Provide sufficient clamps, spreaders and braces to insure the rigidity of the forms.
- D. Provide forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs that are equal to the full depth of the concrete as shown, noted or called for on the Plans. On curves and curb returns provide composite forms made from benders or thin planks of sufficient ply to ensure rigidity of the form.

3.04 PLACING STEEL REINFORCEMENT

- A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond. All bending shall be done cold, to the shapes shown on the plans. The length of lapped splices shall be as follows:
 - 1. Reinforcing bars No. 8, or smaller, shall be lapped at least 45 bar diameters of the smaller bar joined, and reinforced bars Nos. 9, 10, and 11 shall be lapped at least 60 bar diameters of the smaller bars joined, except when otherwise shown on the plans.
 - 2. Splice locations shall be made as indicated on the plans.
- B. Accurately place reinforcement as shown on the plans and hold firmly and securely in position by wiring at intersections and splices, and by providing precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Provide supports and ties of such strength and density to permit walking on reinforcing without undue displacement.
- C. Place reinforcing to provide the following minimum concrete cover:
 - 1. Surfaces exposed to water: 4 inches.
 - 2. Surfaces poured against earth: 3 inches.
 - 3. Formed surfaces exposed to earth or weather: 2 inches.
 - 4. Slabs, walls, not exposed to weather or earth: 1 inch.
- D. Minimum spacing, center of parallel bars shall be two and one half (2 ½) times the diameter of the larger sized bar. Accurately tie reinforcing securely in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

3.05 MIXING AND TRANSPORTING PORTLAND CEMENT CONCRETE

- A. Transit mix concrete in accordance with the requirements of ASTM Designation C94. Transit mix for not less than ten (10) minutes total, not less than three (3) minutes of which shall be on the site just prior to pouring. Mix continuous with no interruptions from the time the truck is filled until the time it is emptied. Place concrete within one hour of the time water is first added.
- B. Do not hand mix concrete for use in concrete structures.

3.06 PLACING PORTLAND CEMENT CONCRETE

- A. Thoroughly wet subgrade when concrete is placed directly on soil. Remove all standing water prior to placing concrete.
- B. Do not place concrete until the subgrade and the forms have been approved.

- C. Convey concrete from mixer to final location as rapidly as possible by methods that prevent separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.
- D. Place and solidify concrete in forms without segregation by means of mechanical vibration or by other means as approved by the Owner's Representative. Continue vibration until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.
- E. Concrete in certain locations may be pumped into place upon prior approval by the Owner's Representative. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

3.07 PLACING ACCESSORY MATERIALS

- A. Place water stops and other items required to be embedded in of portland cement concrete structures at locations shown or required in accordance with Section 51-2.04 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans.
- B. Curing Compounds:
 - 1. Regular Portland Cement Concrete: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.08 FORM REMOVAL

- A. Remove forms without damage to the concrete. Remove all shores and braces below the ground surface, before backfilling.
- B. Do not backfill against concrete until the concrete has developed sufficient strength to prevent damage.
- C. Leave forms for cast-in-place walls in place at least 72 hours after pouring.
- D. Leave edge forms in place at least 24 hours after pouring.

3.09 FIELD QUALITY CONTROL

- A. Finish subgrade for concrete improvements shall be subject to approval prior to placement of forms.
- B. No concrete shall be placed prior to approval of forms.
- C. Concrete improvements constructed shall not contain "bird baths" or pond water and shall be smooth and ridge free.
- D. Conform the finish grade and cross section of concrete improvements to the design grades and cross sections.
- E. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances ACI 117 and as follows:
 - 1. Elevation: $\frac{1}{4}$ inch.
 - 2. Thickness: Plus $\frac{3}{8}$ inch, minus $\frac{1}{4}$ inch.

3. Surface: Gap below 10 foot long, unleveled straightedge not to exceed 1/4 inch.
4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge:
Length of dowel 1/4 inch per 12 inches.
8. Joint Spacing: See Plans.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.10 RESTORATION OF EXISTING IMPROVEMENTS

- A. Replace in kind all pavement or other improvements removed or damaged due to the installation of concrete improvements.
- B. Remove, landscaping or plantings damaged or disturbed due to the installation of concrete improvements. Replace in kind.

END OF SECTION

SECTION 32 17 26

TACTILE WARNING SURFACES

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. City of Oakland Curb Ramp Details S-7 and S-8.

1.02 SECTION INCLUDES

- A. Cast In Place Detectable/Tactile Warning Surface Tiles.
- B. Surface Applied Detectable/Tactile Warning Surface Tiles.

1.03 RELATED SECTIONS

- A. Section 32 13 18 "Cement and Concrete for Exterior Improvements" for concrete walkways and finishes, aprons, curbs and gutters.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's literature describing products, installation procedures and routine maintenance.
- B. Samples for Verification Purposes: Submit two tile samples minimum 6" x 6" for each kind indicated.
- C. Shop drawings are required for products specified showing fabrication details, composite structural system, tile surface profile, sound on cane contact amplification feature, plans of tile placement including joints, and material to be used as well as outlining installation materials and procedure.
- D. Material Test Reports: Submit complete test reports from qualified accredited independent testing laboratories to qualify that materials proposed for use are in compliance with requirements and meet or exceed the properties indicated on the specifications. All tests shall be conducted on a Cast In Place Detectable/Tactile Warning Surface Tile system as certified by a qualified independent testing laboratory and be current within a 24 month period.
- E. Maintenance Instructions: Submit copies of manufacturer's specified installation and maintenance practices for each type of Detectable Warning Surface Tile and accessory as required.

1.05 QUALITY ASSURANCE

- A. Provide Detectable/Tactile Warning Surface Tiles and accessories as produced, engineered and field-tested products by a single manufacturer with a minimum of three (3) years experience in the manufacturing of Cast in Place Detectable/Tactile Warning Surface

Tiles.

- B. Installer's Qualifications: Engage an experienced Installer certified in writing by Detectable/Tactile Warning Surface Tile manufacturer as qualified for installation, who has successfully completed installations similar in material, design, and extent to that indicated for Project.
- C. California Code of Regulations (CCR): Provide only approved DSAAC detectable warning products as provided in the California Code of Regulations (CCR) Title 24, Part 2, Section 205 definition of "Detectable Warning". Section 1117A.4 and 1127B.5 for "Curb Ramps" and Section 1133B.8.5 for "Detectable Warnings at Hazardous Vehicular Areas".
- D. Americans with Disabilities Act (ADA): Provide Detectable/Tactile Warning Surface Tiles which comply with the detectable warnings on walking surfaces section of the Americans with Disabilities Act (Title III Regulations, 28 CFR Part 36 ADA Standards For Accessible Design, Appendix A, Section 4.29.2 Detectable Warnings On Walking Surfaces).

1.06 DELIVERY, STORAGE AND HANDLING

- A. Detectable/Tactile Warning Surface Tiles shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy plastic wrappings to protect tile from concrete residue during installation and tile type shall be identified by part number.
- B. Detectable/Tactile Warning Surface Tiles shall be delivered to location at building site for storage prior to installation.

1.07 SITE CONDITIONS

- A. Environmental Conditions and Protection: Maintain minimum temperature of 40°F in spaces to receive Detectable/Tactile Warning Surface Tiles for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.
- B. The use of water for work, cleaning or dust control, etc. shall be contained and controlled and shall not be allowed to come into contact with the general public. Provide barricades or screens to protect the general public.

1.08 WARRANTY

- A. Cast In Place Detectable/Tactile Warning Surface Tiles shall be guaranteed in writing for a period of five (5) years from date of final completion. The guarantee includes defective work, breakage, deformation, fading and loosening of tiles.
- B. Surface Applied Detectable/Tactile Warning Surface Tiles shall be guaranteed in writing for a period of five (5) years from date of final completion. The guarantee includes defective work, breakage, deformation, fading and loosening of tiles.

PART 2 - PRODUCTS

2.01 TACTILE WARNING SURFACING, GENERAL

- A. Accessibility Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for tactile warning surfaces.

1. For tactile warning surfaces composed of multiple units, provide units that when installed provide consistent side-to-side and end-to-end dome spacing that complies with requirements.
- B. Source Limitations: Obtain each type of tactile warning surfacing, joint material, setting material, anchor, and fastener from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.02 DETECTABLE WARNING TILES

- A. Vitrified Polymer Composite (VPC) Cast in Place Detectable/Tactile Warning Surface Tiles shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. The tile shall incorporate an in-line pattern of truncated domes measuring nominal 0.2" height, 0.9" base diameter, and 0.45" top diameter, spaced center-to-center 2.35" as measured on a diagonal and 1.67" as measured side by side. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.045" high, per square inch.
 1. Dimensions: Cast In Place Detectable/Tactile Warning Surface Tiles shall be held within the following dimensions and tolerances:
 2. Specifiers Note: Edit section below by selecting desired length and width. Delete non-relevant dimensions.
 3. Length and Width: [12x12] [24x24] [24x36] [24x48] [24x60] [36x48] [36x60] nominal, unless otherwise indicated.
 4. Depth:
 - a. Cast-In-Place - 1.375 (1-3/8") (+/-) 5% max.
 - b. Surface Applied – 0.1875(+/-) 5% max.
 5. Face Thickness: 0.1875 (1-3/8") (+/-) 5% max.
 6. Warpage of Edge: 0.5% max.
 7. Embedment Flange Spacing: shall be no greater than 3.1" center to center (for Cast-In-Place).
 8. Color: Federal Color Number 33538. Color shall be homogeneous throughout the tile.
 9. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.
 10. Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Coefficients of Friction not to be less than 0.80 on top of domes and field area.
 11. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 psi.
 12. Tensile Strength of Tile when tested by ASTM D 638-03 not to be less than 19,000 psi.

13. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 psi.
14. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.
15. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM D 2486-00 with reciprocating linear motion of $37 \pm$ cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top surface of the dome representing the average of three measurement locations per sample.
16. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.
17. Fire Resistance of Tile when tested to ASTM E 84-05 flame spread shall be less than 15.
18. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. lbf/in. A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.
19. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result – $\Delta E < 4.5$, as well as no deterioration, fading or chalking of surface of tile color No 33538
20. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1037-99 shall show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles or other detrimental defects.
21. Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.
22. AASHTO HB-17 single wheel HS20-44 loading "Standard Specifications for Highways and Bridges". The Cast In Place Tile shall be mounted on a concrete platform with a $\frac{1}{2}$ " airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs. (for Cast-In-Place).

2.03 ACCESSORIES

- A. Fasteners: Color matched, corrosion resistant, flat head drive anchor: 1/4-inch diameter x 1 1/2-inch long as supplied by.
- B. Adhesive: Adhesive as supplied by manufacture.
- C. Sealant: Sealant as supplied by manufacture.

PART 3 - EXECUTION**3.01 EXAMINATION & PREPARATION**

- A. During Cast in Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
- B. Prior to placement of the Cast in Place Detectable/Tactile Warning Surface Tile system, review manufacturer and contract drawings with the Contractor prior to the construction and refer any and all discrepancies to the Engineer.

3.02 CAST-IN-PLACE INSTALLATION

- A. The installation of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Not recommended for asphalt applications.
- B. The physical characteristics of the concrete shall be consistent with the contract specifications while maintaining a slump range of 4 to 7 permitting solid placement of the Cast In Place Detectable/Tactile Warning Surface Tile system. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 lb) shall be placed on each tile.
- C. The concrete pouring and finishing operations require typical mason's tools, however, a 4' long level with electronic slope readout, 25 lb. weights, and a large non-marring rubber mallet are specific to the installation of the Cast in Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism such as that manufactured by Vibco can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 1-foot square.
- D. The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.
- E. When preparing to set the tile, it is important that no concrete be removed in the area to accept the tile. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile. This will lock the tile solidly into the cured concrete.
- F. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved. The tile shall be placed true and square to the curb edge in accordance with the contract drawings. The Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface. The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent

surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.

- G. In cold weather climates it is recommended that the Cast In Place Detectable/Tactile Warning Surface Tiles be set deeper such that the top of domes are level to the adjacent concrete on the top and sides of ramp and that the base of domes to allow water drainage.
- H. Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevation and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates. Ensure that the field surface of the tile is flush with the surrounding concrete and back of curb so that no ponding is possible on the tile at the back side of curb.
- I. While concrete is workable, a 3/8-inch radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile's perimeter, flush to the field level of the tile.
- J. During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external forces placed on the tile that may rock the tile causing a void between the underside of tile and concrete.
- K. Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two suitable weights of 25 lb each may be required to be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.
- L. Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.
- M. If desired, individual tiles can be bolted together using 1/4-inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.
- N. Tiles can be cut to custom sizes, or to make a radius, using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.
- O. Any sound-amplifying plates on the underside of the tile, which are dislodged during handling or cutting, should be replaced and secured with construction adhesive. The air gap created between these plates and the bottom of the tile is important in preserving the sound on cane audible properties of the tile system as required.

3.03 SURFACE APPLIED INSTALLATION

- A. During all surface preparation and Surface Applied Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
- B. The application of all tiles, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers. Not recommended for asphalt applications.
- C. Coordinate with the Contractor or Engineer to ensure that the surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review manufacturer and contract drawings with the Contractor prior to the construction and refer any and all discrepancies to the Engineer.
- D. Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface. A thin permanent marker works well. Remove tile when done marking its location.
- E. The surface to receive the Surface Applied Detectable/Tactile Warning Surface Tile is to be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include at least 4 inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Those same areas should then be cleaned with a clean rag soaked in Acetone.
- F. Immediately prior to installing the Surface Applied Detectable/Tactile Warning Surface Tile, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for a minimum of 30 days.
- G. Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.
- H. Apply Armor-Bond adhesive to the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2" width of the adhesive locator and shall be applied to within 1/4" continuously around the perimeter edge of the tile. The entire tube of adhesive shall be applied to the back of each tile, sizes 24" x 36" and greater.
- I. Set the tile true and square to the curb ramp area as detailed in the design drawings.
- J. Working from the center of the tile outwards, proceed to drill and install all fasteners in the tile's molded recesses.

- K. Standing with both feet applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3 1/2" using a 1/4" masonry drill bit. Drill through the tile without hammer option (on the drill) until the tile has been successfully penetrated, then with hammer option (on the drill) to drill into the concrete. Maintaining foot pressure on both sides of the hole while drilling prevents concrete dust from accumulating between the tile and concrete which can affect the tile being installed flush and may compromise installation integrity.
- L. Immediately after drilling each hole, before moving on to the next, and while still applying foot pressure, mechanically fasten tiles to the concrete substrate using a leather bound or hard plastic mallet to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome. Drive the pin of the fastener with the mallet, taking care to avoid any inadvertent blows to the truncated dome or tile surface.
- M. Following the installation of the fasteners, the concrete dust should be vacuumed, brushed or blown away from the tile's surface and adjacent concrete. Using Acetone on a rag, wipe the concrete around the tile's perimeter to ensure a clean, dry surface to receive perimeter sealant.
- N. Armor-Seal perimeter caulking sealant should be applied following the sealant manufacturer's recommendations. Tape all perimeter edges of the tile back 1/16" from the tile's perimeter edge and tape the adjacent concrete back 1/2" from the tile's perimeter edge to maintain a straight and even caulking line. Apply sealant around tile perimeter using care to work sealant into any void between the tile and concrete interface. Tool the perimeter caulking with a rounded plastic applicator or spatula to create a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.
- O. Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking. Curing time is weather dependent (average cure time at 75° F is 30 minutes). Adhesive or caulking on the surface of the Armor-Tile can be removed with Acetone.
- P. If installing adjacent tiles, note the orientation of each tile. Careful attention will reveal that one of the long edges of the tile is different than the other in regard to the tiny dotted texture. You may also note a larger perimeter margin before the tiny dotted texture pattern begins. Consistent orientation of each Armor-Tile is required in order that the truncated domes on adjacent tiles line up with each other.
- Q. In order to maintain proper spacing between truncated domes on adjacent tiles, the tapered edge should be trimmed off using a continuous rim diamond blade in a circular saw or mini-grinder. The use of a straightedge to guide the cut is required. All cuts should be made prior to installation of the tiles. If installing adjacent tiles, care should be taken to leave a 1/8-inch gap between each tile to allow for expansion and contraction.
- R. If tiles are custom cut to size, if pre-molded recesses (to receive fasteners) are removed by the cut, or to maintain a tight installation to the substrate then any truncated dome can be

center-drilled with a 1/4-inch masonry drill bit to create a through hole, and the through hole must be countersunk with a suitable carbide countersink bit to receive mechanical fasteners. Care should be taken to not countersink too widely or deeply. Fasteners should be flush with the top of the truncated dome when countersunk properly.

3.04 **CLEANING, PROTECTING AND MAINTENANCE**

- A. Protect tiles against damage during construction period to comply with Tactile Tile manufacturer's specification.
- B. Protect tiles against damage from rolling loads following installation by covering with plywood or hardwood.
- C. Clean Tactile Tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean Tactile Tile by method specified by Tactile Tile manufacturer.
- D. Comply with manufacturers maintenance manual for cleaning and maintaining tile surface and it is recommended to perform annual inspections for safety and tile integrity.

END OF SECTION

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Oakland Public Works Department
Bureau of Design & Construction
Capital Contracts

(510) 238-7270
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ON-CALL CONTRACTOR BID REQUEST

Project No. 1004984
DOWNTOWN OAKLAND SENIOR CENTER IMPROVEMENTS

Date Issued: August 18, 2023

Scope of Work: The Downtown Oakland Senior Center Improvements project is a partial renovation of the ground floor of the Oakland Veterans' Memorial Building at 200 Grand Avenue. The project includes new flooring, painting and led lighting retrofits throughout primary area of work, approximately 9,690 SF of the ground floor of the building. The spaces within the area of work include canteen, dining, classroom, and restrooms. This project refreshes worn-out finishes that have not been upgraded since the 1980's. A new gender-neutral restroom will be provided within the existing building footprint, accessible parking spaces at the existing east parking lot will be repaved, striped, and signed to improve access. Other minor exterior updates include new handrails and improvements at the main entry. The City has paid for Building Department and Planning permit fees; the Contractor is responsible to apply for and pay for all other trades, creek protection and encroachment permits, permit extensions and to complete the City's Waste Reduction & Recycling Plan for the building permit.

➤ **Pre-Bid Meeting and/or Site Visit:**

VOLUNTARY - 10:30 AM, September 12, 2023 at 200 Grand Avenue.

SECOND VOLUNTARY SITE VISIT OPPORTUNITY— 10:30AM, October 4, 2023, at 200 Grand Avenue

- **Questions Due:** **2:00 PM, October 13, 2023**, by email only, to the Project Manager. It is the Contractor's responsibility to ensure that the email is received by the Project Manager. Any addendum that materially changes the bid invitation shall be issued no less than 72 hours before the bid opening unless the bid opening is extended by said addendum.

- **Bids Due:** **2:00 PM, ~~October-November 927, 2023~~**, by email to Capital Contracts, contact provided in Contact information section. Bids received after the deadline will not be considered.

CITY OF OAKLAND



DALZIEL BUILDING • 250 FRANK H. OGAWA PLAZA, SUITE 4314 • OAKLAND, CALIFORNIA 94612
Oakland Public Works Department (510) 238-7270
Contract Services FAX (510) 238-2346
TDD (510) 238-3254

ADDENDUM 3

October 25, 2023

**Subject: On-Call General Construction Contract Tier 1 Bid Proposal Request for 1004984 –
Downtown Oakland Senior Center Improvements**

To: All Prospective Bidders

The clarifications, additions and/or deletions contained in this **ADDENDUM** shall be made a part of the bid or proposal solicitation documents (plans, specifications, RFP, RFQ, etc.) for the above-referenced project, and shall be subject to all applicable requirements there-under, as if originally shown and/or specified. **IMPORTANT: You must acknowledge this Addendum in the Contractor's Bid form or your bid may be deemed non-responsive.** The documents are revised as follows:

1. Delete and Replace

i. “ON-CALL CONTRACTOR BID REQUEST”

Bid Due language is revised on Page 1:

“2:00 PM, November 9, 2023, by email to Capital Contracts contact provided in Contact information section. Bids received after the deadline will not be considered.”

Sincerely,

Alan Chan

Alan Chan, P.E., PMP, CCM, QSD
achan@oaklandca.gov
510-318-4684

BIDDER'S ACKNOWLEDGEMENT:

Name of Company:_____

Address, City, State, Zip:_____

Signature:_____

Title:_____

Print Name:_____

Date:_____

Attachment:

Revised Page 1

CITY OF OAKLAND



250 FRANK H. OGAWA PLAZA • SUITE 4344 • OAKLAND, CALIFORNIA 94612-2033

Public Works Department
Bureau of Design and Construction
Project & Grant Management Division(510) 238-3051
FAX (510) 238-6633
TDD (510) 238-3254

ATTENDANCE ROSTER

September 12, 2023 - 10:30 am

200 Grand Avenue

Downtown Oakland Senior Center Improvements

PROJECT NO. 1004984

	Name	Agency	Telephone	Email
1.	Alan Chan	Public Works	(510) 238-6604	achan@oaklandca.gov
2.	Chris Lutjen	ELS		chlutjen@elsand.com
3.	Suzie Yang	ELS		
4.	OSCAR BARRAGAN	OBR ELECTRIC	(510) 516-8106	OSCAR@OBR ELECTRIC.COM
5.	Pawan Bagul	Martan Builders	510 798 1879	Pawan@martancompany.com Paul@martancompany.com
6.	Jessi Cutter	HSD - DOSC	510 238 3284	jcutter@oakland.gov
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