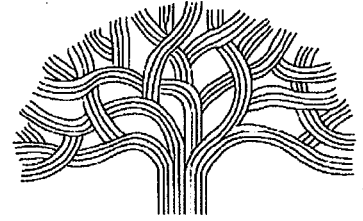


City of Oakland



Office of PUBLIC WORKS • 250 FRANK H. OGAWA
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Public Works Standards

STREET EXCAVATION RULES

Engineering Design & Right of Way Management

Revised: August 2021

EXCAVATION WORK

Pursuant to Chapter 12 of the Oakland Municipal Code (OMC), Public Works has adopted the following regulations pertaining to work by excavators in the right of way.

Article 1 DEFINITION

Section 1 Definition:

“Public Works Agency” or “Public Works” shall mean the same as the Public Works Department. “Agency” shall mean the Public Works Department.

“Drawdown Account” shall mean a pre-paid sum of money to cover the cost of inspections for prolonged work beyond that which a single permit fee may cover. A drawdown account may be established for any entity, private or public. Statement of account will be furnished to the entity on monthly basis or as requested.

“Utility Company” shall mean any public utility company or entity authorize to work in the public right of way under franchise agreement.

“Engineer” shall mean authorized Public Works staff assigned to review and approve permit applications and plans or inspect the work.

“Days” shall mean calendar days.

“OMC” shall mean Oakland Municipal Code.

“Excavator” is a utility owner or a designated contractor causing an excavation.

“Permittee” is a utility owner or a designated contractor holding a permit.

“Moratorium Street” paved or resurfaced roadways within 5-years after completion.

“Emergency Work” shall mean work maintaining facilities in public street, alley or public place for the preservation of life or property.

Article 2 PUBLIC CONVENIENCE AND SAFETY

Section 1 It is unlawful for any person to make or cause excavation to be made in or under the surface of any public street without first obtaining from Public Works Department a written permit to perform excavations (OMC Chapter 12.12.010). No work is allowed in any moratorium (recently improved) street without prior written approval from PWA.

Section 2 Permit and preconstruction notifications. At least two working days before the work starts, Permittee shall give written notice of the time of

commencement of the work to the Director of Public Works (for Utility Company, this notification may be reduced to twenty-four (24) hours. Similar written notice shall be given to Police Department and/or Fire Department, if requested on permit or a proposed temporary street closure. Permittee shall provide written notices to each property owner or business affected by the Permittee's work as follows:

72-hr prior notice for work 5 days in duration or less in all districts except for business or commercial; or

5-day prior notice for work 5 days or less in duration in business/commercial districts; or

10-day prior notice for work 6 days or more in duration in all districts.

In addition to the notifications stated above, the Permittee shall post and maintain proper work signage 72 hours prior to starting work and during work to indicate type of work, hours of work, dates of start and finish, contractor's name, contact information, and a 24/7 phone number. If parking is affected by the construction, City issued No Parking signs shall be required. The signage shall be posted at least every 100 feet along any block or as directed.

For emergency excavation, Permittee shall post and maintain notice at the site of the excavation during the construction period. The notice shall include the name, telephone number, and address of the owner, Permittee, applicant, and its agent, a description of the excavation to be performed, and the duration of the excavation. Utility Company with marked-vehicle and a foreman present at the site are exempt from posting notifications during emergencies. Permittee shall keep a copy of the permit to excavate at the work site while work is in progress and shall, on demand, exhibit the same to the Engineer.

For new utilities, Permittee shall provide advance written notices and follow the OMC section OMC 12.12.105 for public outreach and notification if required.

Section 3 Trenching/excavation restrictions-moratorium streets. No trenching or excavation shall be permitted in any street that has been constructed or resurfaced within five years after completion without express permission of the Director of Public Works. Emergency work is exempt. Replacement of trench paving shall match or exceed the most recent resurfacing pavement section depth and material or as directed by the Engineer, including but not limited to curb to curb 2" grind and overlay. Paving moratorium streets shall receive 13' 2" grind and overlay curb to curb as a minimum restoration including the T-cut for single trenches.

After approved by the Director of Public works, work in moratorium streets may include:

- (i) Relocation of utilities mandated by the State, County, or Federal agencies;
- (ii) Services for buildings or parcels where no other reasonable means of providing service exists. In such case, Permittee or the applicant shall demonstrate the reasons for causing excavation in a moratorium street to Director of Public Works for consideration.

Section 4 Trenching/excavation in Holiday Restricted Streets. No trenching or excavation shall be permitted in any Holiday Restricted Street without express permission of the Director of Public Works. Emergency work is exempt.

Section 5 Emergency work. Nothing in this title relative to excavations shall be construed to prevent emergency work maintaining facilities in public street, alley or public place for the preservation of life or property. The applicant for emergency permit shall submit a written statement describing basis for the emergency action and describe the excavation performed and any work remaining to be performed on the next business day.

Section 6 Annual Permit. Public utilities may submit requests to the Director of Public Works for an annual permit to perform minor repairs. If issued, such permit will carry with it all the conditions and responsibilities which would apply if individual permits were issued (OMC section 12.12.020). Annual Permit may be prepared for each Utility Company for work specific to its operation which may require minimal to no excavation or for short duration maintenance work not exceeding 24 hours. Utility Company shall notify the City at least 24-hours in advance of any scheduled work or activity described in the Annual Permit. City shall invoice the Utility Company on monthly basis for the hours of inspections for all work covered under the Annual Permit and in accordance with the Master Fee Schedule.

Section 7 Limited operations areas & limit of work. Excavation work performed by the Permittee in a LIMITED OPERATIONS AREA if indicated on the Permit to Excavate, shall comply with section 12.12.110 and 12.12.120 of the Oakland Municipal Code:

No work that will interfere with traffic shall be performed in any public street or roadway during the hours of 7am to 9am and 4pm to 6pm (except Sundays and Holidays) and no equipment, construction materials or excavated material may interfere with traffic flow. Permittee and its agent shall cover open excavations with steel plates ramped to the elevation of the street, pavement, or other public right-of-way, or otherwise protected. Sections of work shall be completed or temporarily paved and open to traffic in no more than five (5) days after commencing work unless otherwise permitted in writing by the Director of Public Works. Nothing herein specified shall prohibit emergency work and/or repair necessary to insure public health and safety.

Section 8 Limit of trenching. Trench excavations shall not exceed three hundred (300) feet contiguously or one City block, whichever is less without written approval. Excavated material shall be properly removed from the work site and shall not be stored in any public street or thoroughfares (OMC 12.12.112).

Section 9 Responsibilities for accidents. Permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street excavation or restoration and shall agree to, defend, indemnify, save and hold harmless the city, its officers and employees (OMC 12.12.200).

Section 10 Right of access. Safe right of access to the public shall be top priority. Full attention must be given to emergency vehicles and personnel, hydrant access and fire prevention devices, pedestrian zones, vehicles and bus access, transportation stations, driveways, mailboxes, manholes and utility structures, and all public service structures.

Permittee excavating or otherwise obstructing public sidewalk shall maintain a minimum five (5) foot wide walkway with required railing as approved by the Engineer to accommodate all sidewalk users including those with disabilities. Upon completion of the work, Permittee shall immediately remove all temporary signs and warning devices and deliver the area in a safe and neat condition. Refer to the Americans with Disabilities Act in Work Zones

Section 11 Traffic and safety plan. For lane closures or parking space occupation, Permittee shall secure the approval of the Engineer with a submittal (three sets of drawings) at least twenty one (21) days prior to the closure or occupation. Unless otherwise authorized, work shall be performed in one vehicle lane at a time with the remainder of the roadway open and unobstructed. If additional parking spaces or lane closers are needed, plans shall be re-submitted for the Engineer's review and approval. Permittee shall properly maintain existing traffic signs and shall not remove them without prior Engineer's approval. Temporary signs, lights, and related traffic control devices shall comply with the current edition of the "Manual on Uniform Traffic Control Devices California (MUTCD)", or as modified by the Engineer.

Section 12 Protection of existing facilities. Public and private structures such as, but not limited to street signs, mail boxes, bus benches, trash cans, etc. shall not be removed or relocated by Permittee without a written approval of the agency in-charge of their maintenance. Stop signs, directional signs, parking meters, and other facilities are not to be removed or relocated by the Permittee without prior written approval. Temporary or permanent relocation of any existing sign or facility is prohibited without a formal submittal and the approval of the agency in-charge.

Section 13 Coordination of work. The Permittee shall cooperate with agencies involved in providing service to the public, such as delivery of mail, collection and removal of trash, and other public service providers. Excavation work shall be coordinated with agencies working in the area for minimum interference.

Section 14 Storm water provisions. All gutters, drains, conduits, culverts, catch basins, and storm water facilities shall be kept open and clean so as to permit free and unobstructed flow of storm water. Adequate storm water protection shall be in place to prevent sediment, construction materials, potable water, and other materials or fluids from reaching the storm drain system in accordance with the City of Oakland's Creek Protection Ordinance and the latest federal and state

agency regulation prohibiting storm water pollution from construction sites. City's storm drain system discharging directly into creeks and the San Francisco Bay without treatment.

Section 15 Survey monuments. The Permittee shall not disturb or remove monuments of concrete, steel, or other lasting material established with precise reference point for the purpose of locating or preserving the public right-of-way without first obtaining permission to do so in writing from the Engineer. The Permittee shall further comply with section 12.12.110 (b) of the Oakland Municipal Code whenever his operations endanger any such monument.

Section 16 Pavement marking. Restoration of permanent paving striping and markings shall conform to the following:

Existing Materials	Replacement Materials
Traffic paint	Traffic paint, extruded thermoplastic, or preformed thermoplastic
Thermoplastic	Extruded or preformed thermoplastic
Colorized pavement markings (including traffic paint, epoxy, thermoplastic, or methyl methacrylate) for pedestrian safety areas, bike lanes, etc.	Replace in kind
Raised ceramic or reflective pavement markers, delineators, or other traffic control devices	Replace in kind

Graffiti. Permittee shall remove and maintain at all times a site and equipment free of graffiti. Any and all graffiti markings at the sites, on equipments, and barricades and facilities shall be removed immediately by the Permittee or its contractor. Permittee shall visually record or video the construction site for any pre-existing condition.

Article 3 EXCAVATION

Section 1 Notification and traffic safety. Forty-eight (48) hours in advance of any cutting or excavation, Permittee shall call the Underground Service Alert (USA North, 811) to have subsurface facilities marked.

Section 2 Sheeting and shoring. In accordance with the order of the Division of Industrial Safety (Cal/OSHA) and prior to commencing excavation of trenches five (5) feet or deeper, Permittee shall first obtain a permit from the Engineer with a complete submittal prepared by a state of California registered and experienced professional engineer in ground support system. If at the end of the workday backfilling operations have not been completed, steel bridging shall be placed over trenches so as to make the entire roadway accessible to vehicular traffic. Steel plating shall be ramped for vehicle traffic and secured against the movement in all directions. Ramps shall be constructed of asphalt cutback and shall have a maximum slope of 1:12.

Steel plates in the roadway, must have the name and 24-hour emergency telephone number of the contractor responsible for maintaining the plates stenciled on the roadway adjacent to the plates in white lettering. Steel plate width and thickness shall meet Caltrans requirements TR -0157 as follows:

Plates minimum thickness shall be as follows:

Trench width	10"	1'-11"	2'-7"	3'-5"	5'-3"
Minimum thickness	½"	¾"	7/8"	1"	1 ¼"

Whenever steel plates are used to cover an excavation where the related work is to take place for longer than 2 weeks, the steel plates must be inlaid or recessed into the existing pavement. Steel plates used for bridging shall extend a minimum of 12" beyond the edges of the trench.

Whenever steel plates are used to cover an excavation for less than 2 weeks, they may be placed on top of the asphalt with transitional ramps. Ramping must be 12 to 1 providing a smooth gradual transition. Steel plates must be anchored to the roadway surface with pins or spikes on the 4 outermost corners.

Steel plates must be welded together (when necessary) to prevent shifting/bouncing. Trench walls and adjacent soils must be sufficiently stabilized prior to the use of steel plates for bridging.

For conditions that require a support structure, the system must be designed by a registered professional engineer and submitted to the Agency for approval before use.

In sidewalk areas, 1-1/8 inches plywood with a skid-resistant surface and a static coefficient of friction of 0.50 per ASTM C 1028 may be substituted for steel plating where the excavation is less than 2 feet wide. Ramping must be 12 to 1 providing a smooth, gradual transition. OMC 12.12.110

Section 3 Methods of excavation. Excavation for conduit shall be performed by open trench operation. Tunneling, moling, directional boring, or jacking of conduit will not be permitted unless specifically authorized by the Engineer. Rockwheel concrete cutter method of trench excavation will not be permitted unless specifically authorized by the Engineer in writing.

Section 4 **Depth of installation.** Unless otherwise authorized by the Engineer, minimum cover for underground pipes and conduits shall be thirty-six (36) inches in public street and twenty-four inches in public sidewalk.

Section 5 **Water in Excavation.** No water in an excavation can be discharged into sanitary sewer or storm drain without a permit. OMC 13.16.070

- A. Discharge into City sanitary sewer requires a water quality assessment report and a permit from EBMUD.
- B. Discharge into City storm drain requires a water quality assessment and permit from the Water Board.
- C. City of Oakland permit is required for any discharge into storm or sanitary sewer. Contact the Public Works sewer asset manager for discharge into sanitary sewer. Contact the Public Works storm water asset manager for discharge into the storm drainage system.
- D. In the absence of the above permits, trench water shall be pumped into storage tanks for analysis and discharge later.

Section 6 **Saw cutting.** Prior to the start of excavation, pavement shall be cut with power driven saw to a depth of six (6) inches in asphalt or concrete pavement. Saw cutting of existing pavement shall be performed in neat and straight lines. The Permittee shall not allow silt-water to reach into public storm drainage system or be deposited onto public right-of-way. Use of a mobile power driven pavement breaker will not be permitted. Utilities marked shallow shall be hand dug prior to saw cutting can start.

Section 7 **Pavement removal.** When trench excavations fall within three (3) feet of a construction joint, cold joint, or expansion joint, Permittee shall remove and replace this paving section (full depth) to the nearest joint. If the entire width of the concrete sidewalks and driveways are less than six (6) feet, the entire sidewalk or driveway shall be removed and replaced.

Section 8 **Protection of trees.** Permit to excavate does not authorize tree trimming or tree removal. Permittee shall request and schedule a site visit with the City arborist if tree trimming or tree removal is expected to be necessary. Street tree roots two (2) inches in diameter or greater shall not be cut by the Permittee and excavated material shall be removed from root system so to avoid damage thereto. Roots shall be protected with burlap wrapping if exposed.

Article 4 BEDDING AND BACKFILL

- Section 1 **Bedding and backfill.** Bedding and backfill shall be imported and compacted to ninety percent (90%) minimum relative compaction between the bottom of excavation up to three feet below surface of pavement. Compaction requirement for the upper three feet of trench backfill shall be ninety five percent (95%) minimum relative compaction for roadways and ninety percent (90%) for sidewalk. Use of any native material is prohibited unless specifically authorized by the Engineer. Imported material shall have a sand equivalent of not less than 20 and conform to gradation acceptable by the Engineer with a submittal. Low strength slurry bedding and backfill material for narrow trenches may be allowed with prior approval. Permittee shall submit the slurry mix design to the Engineer for review and approval.
- Section 2 **Mechanical compaction.** Unless otherwise authorized by the Engineer, backfill shall be mechanically compacted as specified in Subsection 306-1.3.2 of the Standard Specifications for Public Works Construction and the City of Oakland Modifications thereto.
- Section 3 **Water Densification.** Water-densification is not permitted unless approved by the Engineer and only in areas authorized by the Engineer. Backfill material compacted by water densification method shall conform to Subsection 3061.3.3 of the Standard Specifications for Public Works Construction and the City of Oakland Modifications thereto. If approved, backfill material shall have a sand equivalent of not less than 30, 95 to 100 percent passing No. 4 sieve, and 1 to 8 percent passing No. 200 sieve.
- Section 4 **Provisions for undermined trenches.** Trench areas under pavement sections that are undermined by Permittee's operations shall be removed and compacted to allow adequate compaction of the material to the satisfaction of the Engineer.
- Section 5 **Roadway base material.** Unless specifically authorized by the Engineer, the depth of crushed aggregates base shall be nine inches.
- Section 6 **Compaction test.** Relative compaction shall be determined by California Test Number 216 (Nuclear Gage) or approved equal. Test for relative compaction shall be performed by the contractor's certified testing laboratory, as requested by the director of public works.

Section 7 Quality assurance compaction tests:

On a random basis, or upon the request by the Director of Public Works, contractor's certified testing laboratory will spot-test the compaction efforts by the Permittee. If the compaction of backfill or bedding material failed, Permittee shall re-compact the material to the satisfaction of the Engineer and retest.

If the compaction of the material failed the retest, Permittee or its agent shall be subject to penalties under the OMC section 12.12.296 for willful noncompliance and shall not apply for nor be issued a permit to excavate in the public right-of-way unless the Director, by written authorization, grants a waiver to this prohibition. Willful noncompliance shall include, without limitation, deliberate acts that result in failure to: (a) satisfy any terms and conditions of this Article, orders, regulations, standard plans and specifications or (b) pay any outstanding assessments, fees, and penalties that have been finally determined by the City or a court of competent jurisdiction.

Section 8 Temporary paving. Permittee may install temporary pavement in lieu of trench plates over trenches by installing bituminous surfacing over compacted backfill material. Unless otherwise noted, minimum section of temporary pavement is two (2) inches in travel lanes and one (1) inch in sidewalk. Bituminous surfacing shall be mechanically compacted in-place to a uniform, even surface, and shall be true to grade and cross section. Bituminous mixture used for temporary resurfacing shall conform to Subsection 306-1.5.1 of the Standard Specifications for Public Works Construction and the City of Oakland Modifications thereto. The Permittee shall regularly inspect and maintain temporary bituminous surfacing and maintain level and true grade. Controlled low density fill material, if approved by the Engineer for trench backfill for narrow trenches, may be accepted as temporary pavement if it exceeds the stability of the temporary pavement.

Article 5 PAVING OPERATIONS

Section 1 General requirements. The extent of pavement restoration shall be determined by the Engineer at the site as shown in Pavement Restoration Requirements and described herein as:

- i. Continuous and contiguous resurfacing a constant width equal to the widest part of the excavation but not narrower than the width of the affected lane (approximately 13 feet wide); and

- ii. Continuous and contiguous resurfacing of lane(s) over scattered excavations may be limited to 50 feet in length along the affected lane if the excavations are no more than 50 feet apart. But shall include the entire block if scattered excavations are longer than 50 feet apart and if the total number of isolated excavations are eight or more; and
- iii. Continuous and contiguous resurfacing of a lane one-half of the block if the total longitudinal length of excavation along a lane is shorter than 50% of the length of that block; and
- iv. Continuous and contiguous resurfacing of the entire lane along the block if the total longitudinal length of excavation exceeds 50% of the length of that block; and
- v. Continuous and contiguous resurfacing of the intersections on a lane by lane basis and any affected quadrant over which a trench crosses the intersection.

As an alternate to sections 1 through 4 above, pavement restoration may consist of the structural pavement section for the roadway's level of service as determined by the City. If the required pavement section was less than the physical match-existing pavement required by the standard details, City may accept permittee's proposal to apply the additional effort for match-existing to be utilized for a two to four inch mill and overlay of the entire road

At all cases, trench restoration shall consist of the structural trench T-cut along the perimeter per City standard details. OMC 12.12.112

Section 2 **Timeline to install permanent pavement (72 hours).** Unless specifically Each excavation shall be backfilled and compacted within 72 hours from the start of work. Placement of pavement base material shall be completed within 72 hours after the excavation has been backfilled. Unless otherwise approved by the Director of Public Works, the final trench paving shall be completed no later than 10 working days after the installation of the pavement base material. Upon written request from the permittee, the Director may grant written approval for modifications to the requirements. OMC 12.12.112

Section 3 **Pavement restoration (asphalt).** Asphalt concrete pavement shall match existing asphalt pavement thickness but no less than six (6) inches in depth as specified in Subsection 302-5 of the Standard Specifications for Public Works Construction and the City of Oakland Modifications thereto. Placement of pavement courses shall not exceed two (2) inches unless otherwise authorized by the Engineer. Placement of final course shall be performed when preceding course has cooled to the extent that it does not displace under the Permittee's equipment.

Section 4 Pavement restoration (concrete). Replacement of Portland cement concrete pavement requires an approved submittal to assure continuity and lateral support where the new pavement meets existing. Concrete pavement in roadways shall match existing but no less than twelve (12) inches deep and early high strength conforming to Subsection 201-1 of the Standard Specifications of Public Works Construction and the City of Oakland Modifications (compressive strength of 3250 when open to traffic). Admixtures for early strength may be used as approved by the Engineer. Portland cement concrete pavement shall be placed as specified in Subsection 302-6 of the Standard Specification of Public Works Construction. Unless specifically authorized by the Engineer concrete base shall be allowed to cure a minimum of twenty-four (24) hours before placement of asphalt concrete pavement section. Restoration of concrete pavements would require replacement of the entire panel when saw cut line is closer than three feet from a joint.

Section 5 Compensating for loss of pavement longevity (PCI index). Grind and overlay or slurry seal of asphalt pavement are required to compensate for the reduced life of pavement. Loss of pavement longevity is the result of cutting and trenching in pavement sections.

Restoration of asphalt roadway surfaces depends on the existing Pavement Condition Index (PCI). When PCI is sixty five (65) or less, as determined by the Engineer, the affected lane(s) shall receive mill and overlay no less than two (2) inches deep.

If in the opinion of the Engineer the PCI index is higher than 65, the affected lanes shall receive slurry seal encompassing at least five (5) feet of sealer beyond the cut lines and over the entire width of the affected lane.

Section 6 Textured or colored pavement. Pavement constructed of a special material or color shall be replaced in kind. Prior to placing special materials or colors the Permittee shall provide a finished four (4) square foot sample of the material and/or color intended to be replaced for approval by the Engineer.

Section 7 Access ramps, ADA accessibility. When any portion of the curb at a legal pedestrian crosswalk or any portion of the sidewalk that is in contact with curb is removed by the Permittee's operations, the Permittee shall construct, as a part of his replacement operations, handicap access ramps shown in the latest edition of the State of California Department of Transportation (Caltrans) Standard Details. Structural sidewalks over basements are excluded from this regulation.

Section 8 Pavement markings. Upon completion of paving operations, Permittee shall immediately replace all pavement markings and traffic striping damaged or removed by his operations. Temporary striping may be required by TCP.

Section 9 **Damage to property.** Any private or public improvement damaged by the Permittee's operations shall be replaced to the satisfaction of the Engineer as authorized under Section 12.12.190 of the Oakland Municipal Code. Damage occurring to street lighting, traffic signal installations, fire alarm conduits, and traffic signal loops shall be reported immediately to the Electrical Maintenance Superintendent at (510) 615-5430. Restoration of affected services shall be performed by City forces and will be limited to temporary repairs only. Permanent repairs or replacement of damaged portions of street lighting and/or traffic signal installations, resulting from the Permittee's operations, shall be the Permittee's responsibility. The Permittee shall not perform any repairs to the City Electrical facilities, damaged by his operations, except in the presence of a representative of the Electrical Maintenance Supervisor.

Article 6 VIOLATION & PENALTIES

Section 1 **Violations, administrative penalties, and costs.** Oakland municipal code prescribes penalties for violations including but not limited to work without permit, Notices to Repair that were not complied with, permit not on site, violation of traffic control requirements, street closures without permit, improper pavement and sidewalk restoration, trip hazards, work outside of designated permit hours, backfill without compactions tests, non-emergency work in moratorium streets (recently improved), and other related violations. Penalties are shown in the latest edition of City's Master Fee Schedule (OMC 12.12.290). Permittee shall also be charged for the work performed by the City for failure to comply. City shall have the right, upon due notice to Permittee and whenever possible, to perform emergency measures to insure public health and safety authorized by section 12.12.150 of the Oakland Municipal Code.

Accessibility Reference material:

Note: Permittee shall use the References below as a guide to enhance barricades and site accessibility to help manage a safe and accessible project site.

Permittee shall follow the directions of qualified and responsible field personnel during implementation.

http://mutcd.fhwa.dot.gov/htm/2009/part6/part6_toc.htm
Temporary Traffic Control

<http://mutcd.fhwa.dot.gov/htm/2009/part6/part6h.htm#figure6H28> Typical applications for a variety of situations commonly encountered

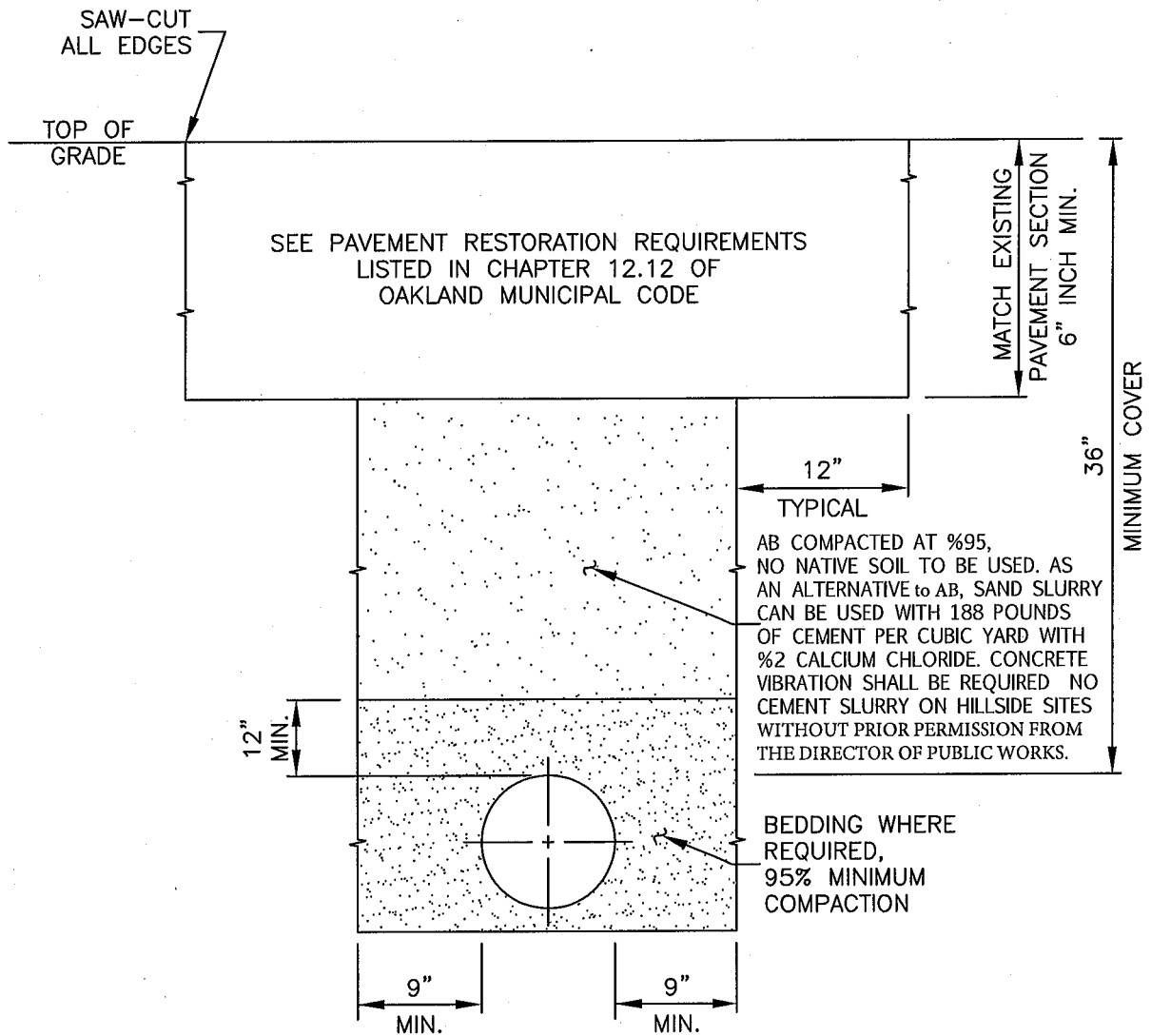
<http://www.dot.ca.gov/hq/traffops/engineering/mutcd/pdf/camutcd2012/CAMUTCD2012.pdf>
California Manual on Uniform Traffic Control Devices (MUTCD)

http://www.workzonesafety.org/fhwa_wz_grant/atssa/atssa_ADA_requirements:
Introduction, pedestrian accessibility, meeting the engineering challenge

http://www.youtube.com/watch?feature=player_embedded&v=GkA7h0zz3Vs
<http://www.oxfordplastics.com/products/safekerb-ramp> Curb Ramp that adapts to curbs 3" to 6" high

http://www.youtube.com/watch?feature=player_embedded&v=6k_NJVMnjTU
http://www.plasticade.com/traffic_safety/strongwall/strongwall_ada_pedestrian_barricade/
Modular ADA compliant barricades with multiple uses

Standard Details



GENERAL REQUIREMENTS:

1. DELIVERY TAGS FOR ASPHALT CONCRETE AND BACKFILL MATERIAL SHALL BE SUBMITTED TO THE ENGINEER ON DEMAND. ASPHALT CONCRETE DELIVERY TAGS SHALL INDICATE THE MATERIAL SPECIFIED.
2. FINAL ASPHALT CONCRETE COURSE TO BE ROLLED WITH CERTIFIED EIGHT TON TANDEM ROLLER.
3. THE FOLLOWING PG ASPHALT MIXES SHALL BE USED UNLESS OTHERWISE SPECIFIED.
 - (a) UPPER COURSE (TOP 2" OF AC) OR AC OVERLAY: 1/2" AGGREGATE, TYPE C2 MIX FROM TABLE 203-6.4.3 OF THE GREENBOOK, PAVEMENT MIXTURE PG 64-10 WITH 15% RECLAIMED ASPHALT CONCRETE (RAP).
 - (b) BOTTOM COURSES: 3/4" AGGREGATE, TYPE C2 MIX, TABLE 203-6.4.3 OF THE GREENBOOK, PAVEMENT MIXTURE PG 64-10 WITH 15% RECLAIMED ASPHALT PAVEMENT (RAP).

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

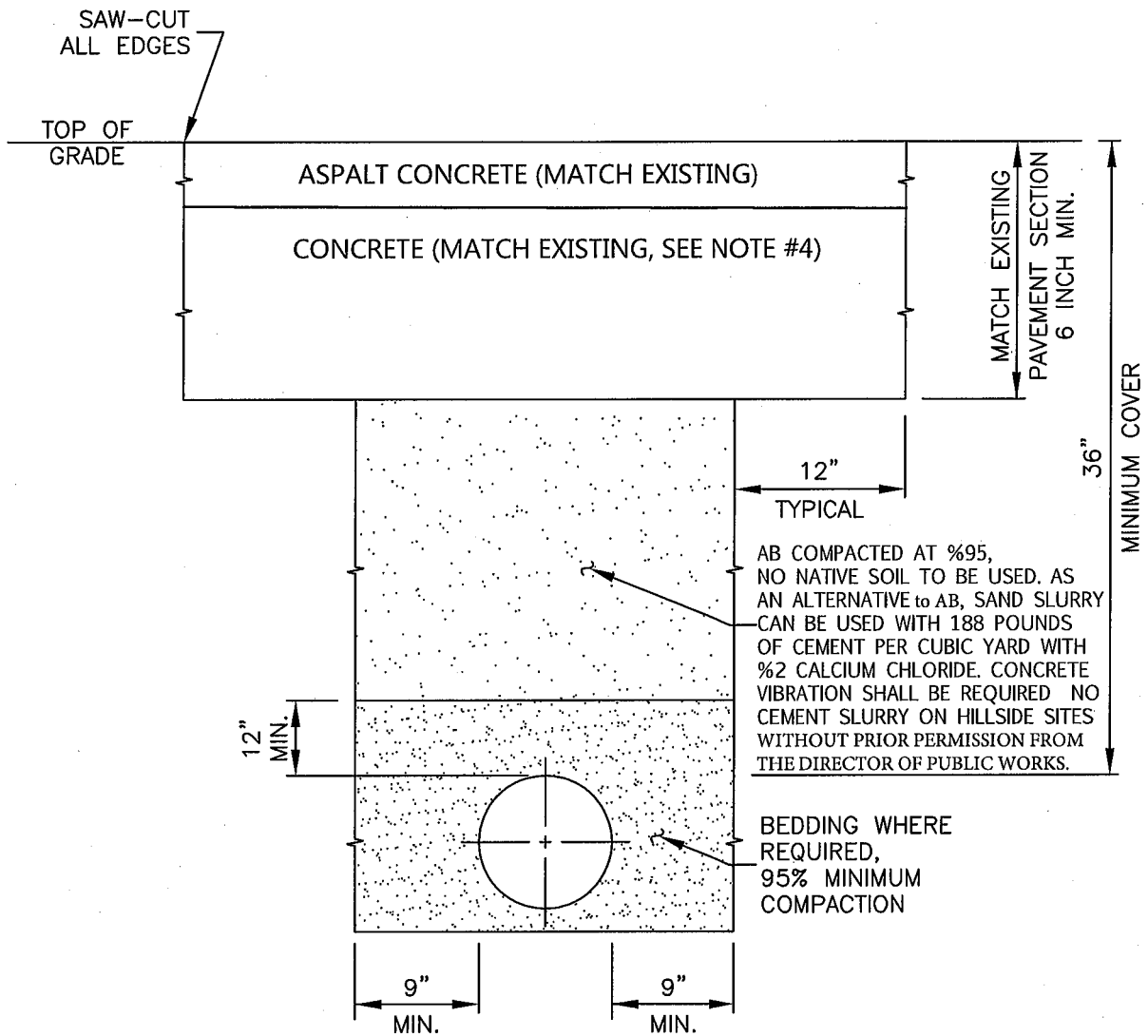


**TRENCH PAVING
DETAIL FOR UTILITY WORK
ASPHALT CONCRETE STREET**

[Signature]
ENGINEERING DESIGN MANAGER

DATE: FEBRUARY 2002
REV. DATE: AUG 2021

DWG.
D-30



GENERAL REQUIREMENTS:

1. DELIVERY TAGS FOR ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE AND BACKFILL MATERIAL SHALL BE SUBMITTED TO THE ENGINEER ON DEMAND. DELIVERY TAGS SHALL INDICATE THE MATERIAL SPECIFIED.
2. CONCRETE PAVEMENT IN ROADWAYS SHALL BE EARLY HIGH STRENGTH CONFORMING TO SUBSECTION 201-1 OF THE GREENBOOK WITH MINIMUM COMPRESSIVE STRENGTH OF 3250 PSI AND PLACED IN ACCORDANCE WITH SECTION SECTION 302-6 OF THE GREENBOOK.
3. FINAL ASPHALT CONCRETE SURFACE COURSE SHALL BE ROLLED WITH CERTIFIED EIGHT-TON TANDEM ROLLER. USE 1/2" AGGREGATE TYPE C-2 MIX FOR TOP 2" ASPHALT COURSE.
4. INSTALL 12" DOWELS (#4 BAR) AT 18" OC HORIZONTALLY @ CENTER OF VERTICAL FACE OF EX. PCC SECTION. EMBED 6" INTO EX. PCC W/ EPOXY GROUT - STAGGER DOWELS.

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT



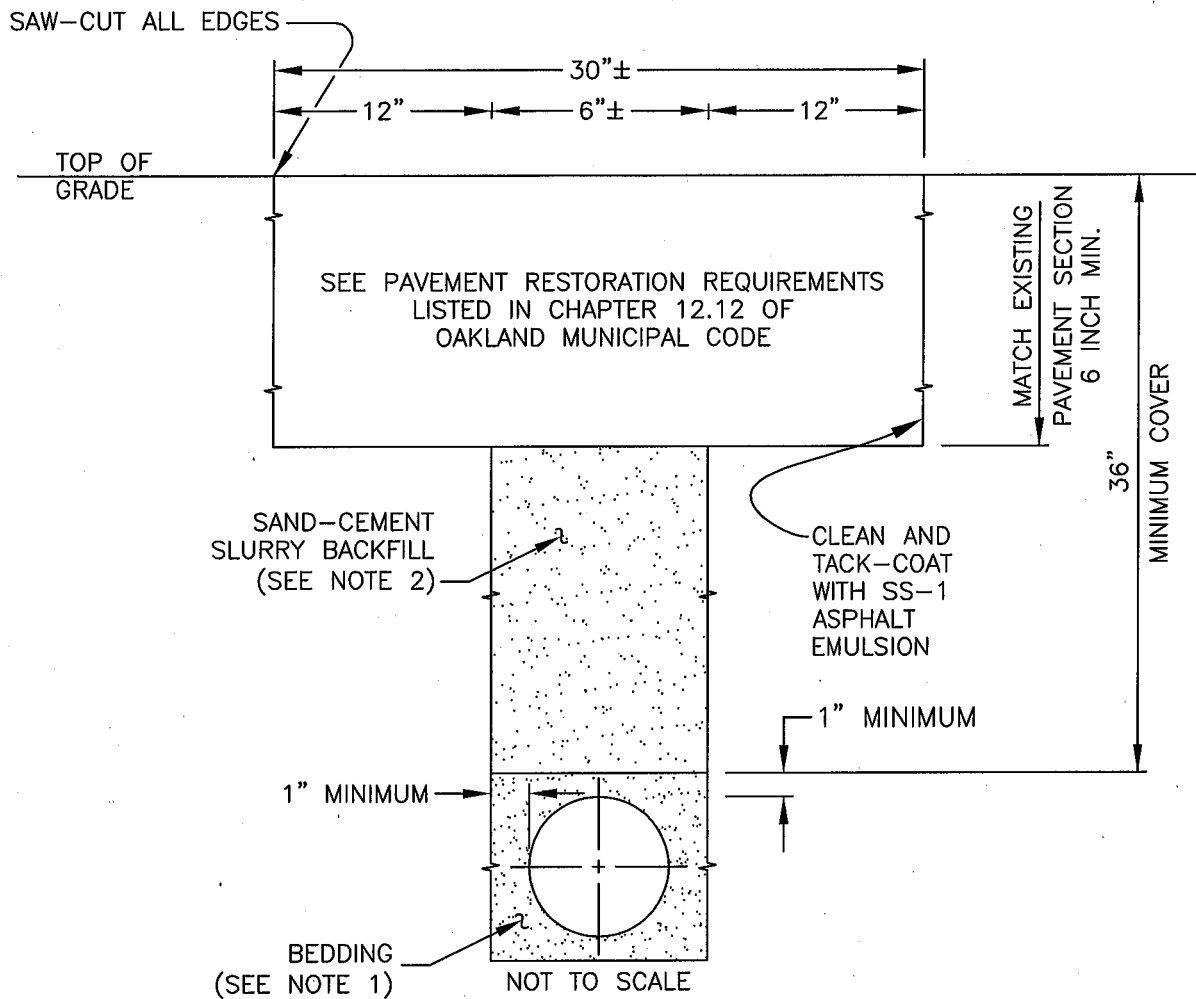
**TRENCH PAVING DETAIL
FOR UTILITY WORK**

CONCRETE STREET WITH ASPHALT OVERLAY

[Signature]
ENGINEERING DESIGN MANAGER

DATE : FEBRUARY 2002 DWG.
REV. DATE : AUG 2021

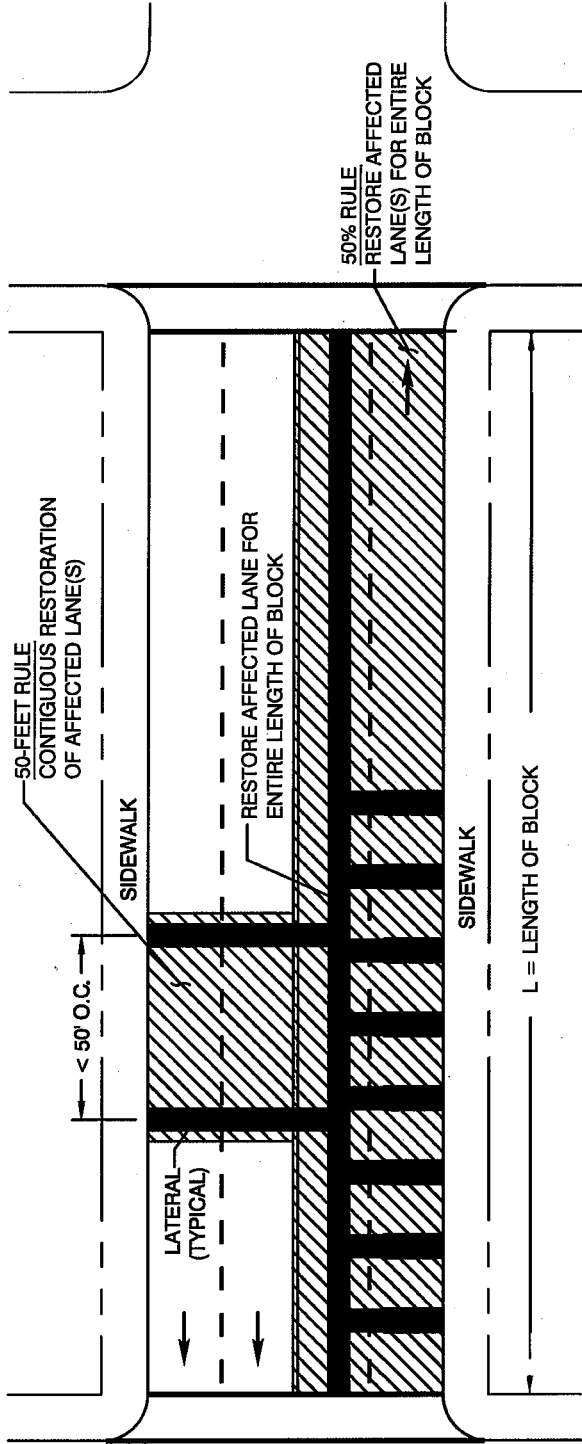
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NOTES:

1. BEDDING FOR CONDUIT SHALL BE SAND CONFORMING TO THE GRADATION FOR MORTAR AS SPECIFIED UNDER SECTION 200-1.5 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION. PERMITTEE MAY ELECT TO ELIMINATE SAND BEDDING AND ENCASE CONDUIT IN SLURRY-CONCRETE BACKFILL.
2. BACKFILL MATERIAL SHALL BE CLASS 280-E-200 SAND SLURRY CONCRETE CONFORMING TO SECTION 201-1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION.
3. THIS TRENCH DETAIL CAN BE UTILIZED ONLY FOR ELECTRICAL UTILITIES AND RELATED FACILITIES AFTER OBTAINING A SPECIAL PERMISSION FROM THE PUBLIC WORKS DIRECTOR.
4. THE FOLLOWING ASPHALT MIXES SHALL BE USED UNLESS OTHERWISE SPECIFIED.
 - (a) UPPER COURSE (TOP 2" OF AC) OR AC OVERLAY: 1/2" AGGREGATE, TYPE C2 MIX FROM TABLE 203-6.4.3 OF THE GREENBOOK, PAVEMENT MIXTURE PG 64-10 WITH 15% RECLAIMED ASPHALT CONCRETE (RAP).
 - (b) BOTTOM COURSES: 3/4" AGGREGATE, TYPE C2 MIX, TABLE 203-6.4.3 OF THE GREENBOOK, PAVEMENT MIXTURE PG 64-10 WITH 15% RECLAIMED ASPHALT PAVEMENT (RAP).

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	<h2 style="margin: 0;">TRENCH DETAIL FOR UTILITY WORK</h2>
	<p style="margin: 0;">FOR ROCKSAW TRENCH</p>
	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="font-size: small;"> DATE : FEBRUARY 2002 REV. DATE : AUG 2021 </div> <div style="font-size: small;"> ENGINEERING DESIGN MANAGER </div> <div style="font-size: small;"> DWG. D-35 </div> </div>

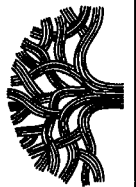


50-FEET RULE: PAVEMENT RESTORATION SHALL BE CONTIGUOUS FOR ALL AFFECTED LANES WHEN LATERALS ARE LESS THAN 50 FEET APART.

50% RULE: PAVEMENT RESTORATION SHALL BE ALL AFFECTED LANES FOR THE ENTIRE LENGTH OF BLOCK WHENEVER THERE ARE AT LEAST 8 LATERALS AND 50% OR MORE OF THE SERVICES ARE EXCAVATED.

PCI INDEX OF 65 AND LESS, MILL AND OVERLAY.
 PCI MORE THAN 65, SLURRY SEAL.
 NO WORK IS ALLOWED IN MORATORIUM STREETS.

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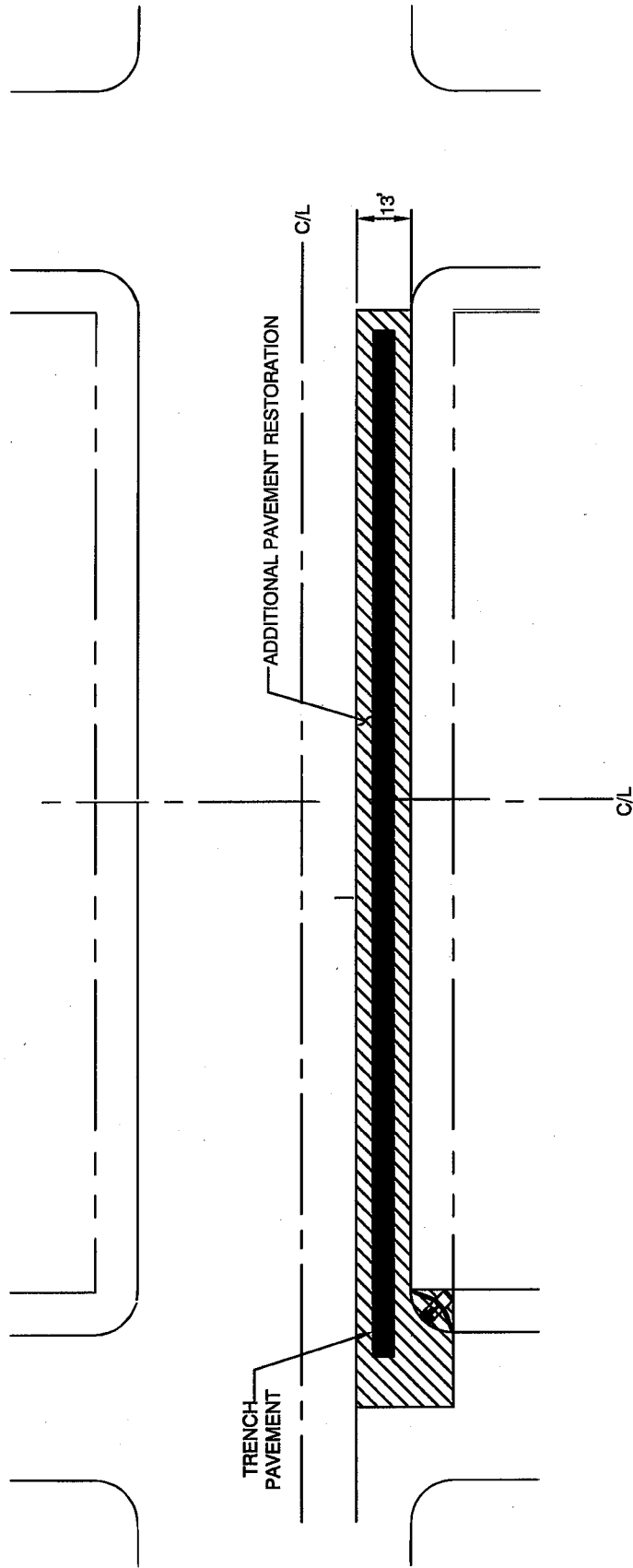
PAVEMENT RESTORATION REQUIREMENTS

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DATE: OCTOBER 2002
 REV. DATE: AUG 2021

DWG.

38-2



13-FOOT RULE: WHEN AN EXCAVATION IS LESS THAN 13 FEET FROM OUTSIDE CURB, RESTORATION IS LIMITED TO 13 FEET.

PCI INDEX OF 65 AND LESS, MILL AND OVERLAY.
 PCI MORE THAN 65, SLURRY SEAL.
 NO WORK IS ALLOWED IN MORATORIUM STREETS.

CITY OF OAKLAND



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PAVEMENT RESTORATION REQUIREMENTS

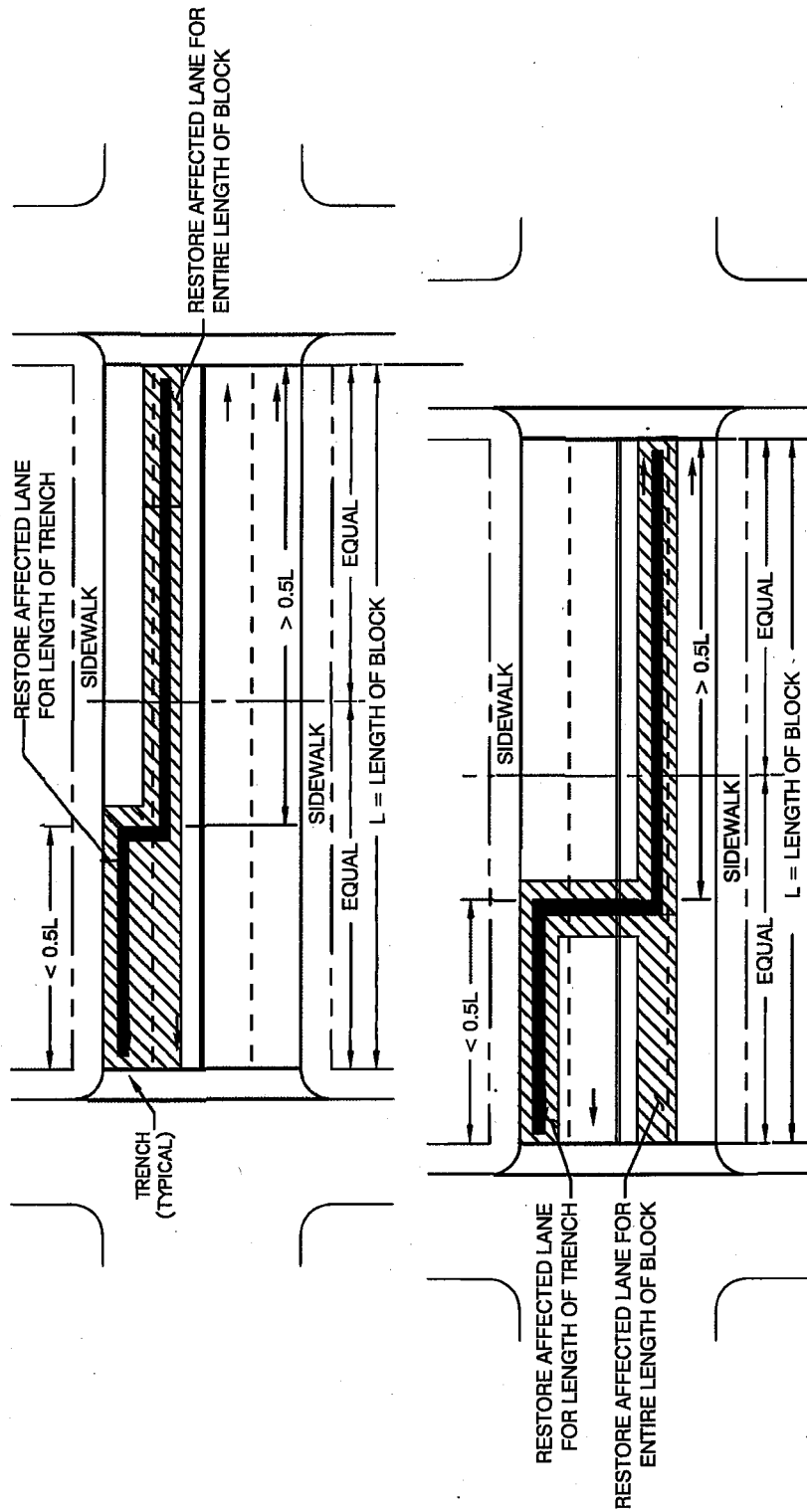
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38-3

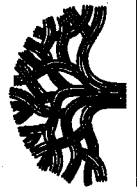


NOTE:

1. WHEN THE ALIGNMENT MOVES FROM ONE LANE TO ANOTHER LANE, ONLY THE EXCAVATED LANE SHALL BE RESTORED.
UNLESS
2. IF OVER 50% OF THE LENGTH OF THE LANE IS EXCAVATED, THE LANE FOR THE ENTIRE BLOCK SHALL BE RESTORED.

PCI INDEX OF 65 AND LESS, MILL AND OVERLAY.
 PCI MORE THAN 65, SLURRY SEAL.
 NO WORK IS ALLOWED IN MORATORIUM STREETS.

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PAVEMENT RESTORATION REQUIREMENTS

ENGINEERING DESIGN MANAGER

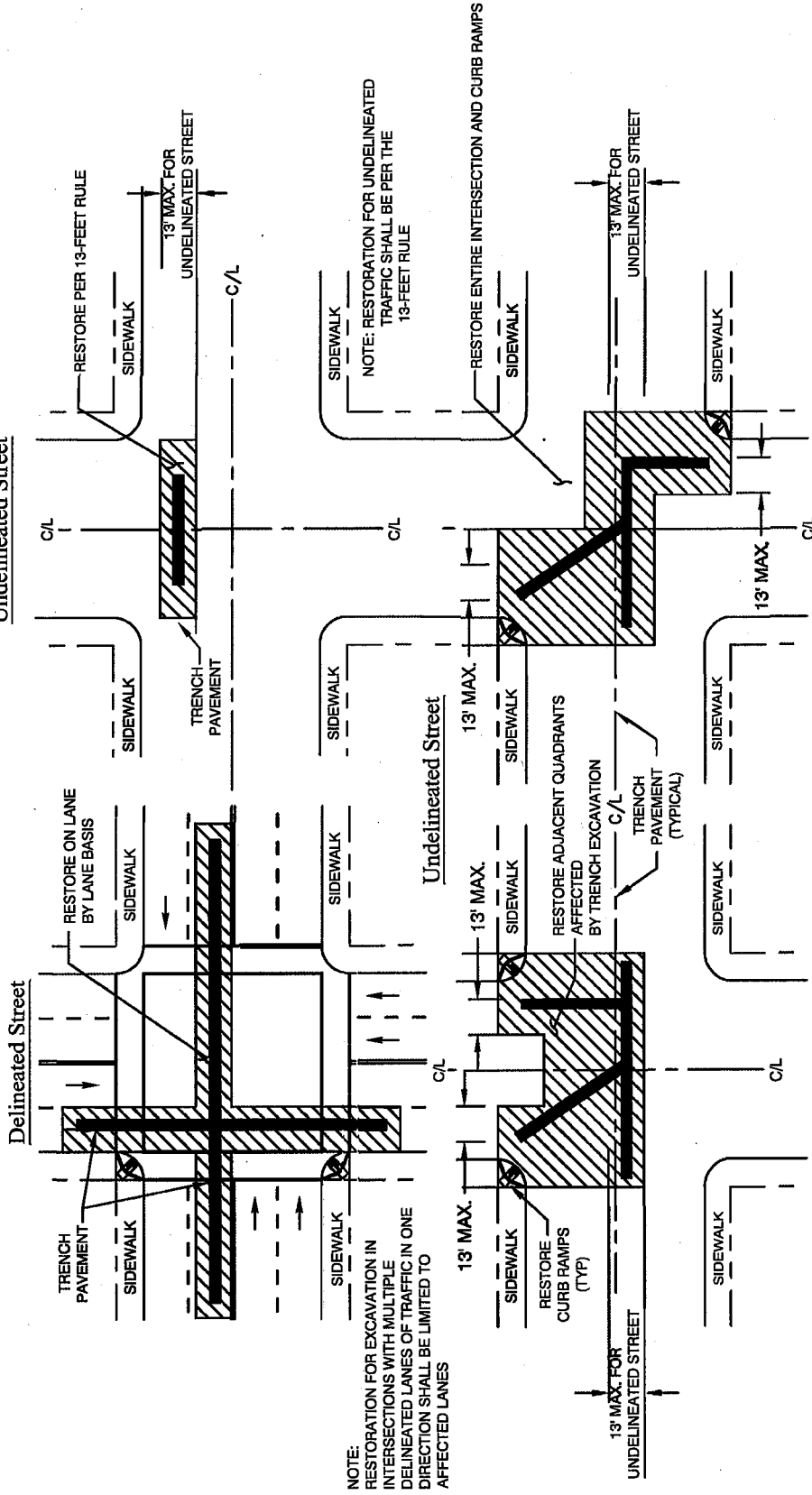
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38-4

Figure 5: Intersections



PCI INDEX OF 65 AND LESS, MILL AND OVERLAY.
 PCI MORE THAN 65, SLURRY SEAL.
 NO WORK IS ALLOWED IN MORATORIUM STREETS.
 CURB RAMP RESTORATION PER CALTRANS
 LATEST STANDARDS TO THE SATISFACTION OF
 THE ENGINEER.

CITY OF OAKLAND



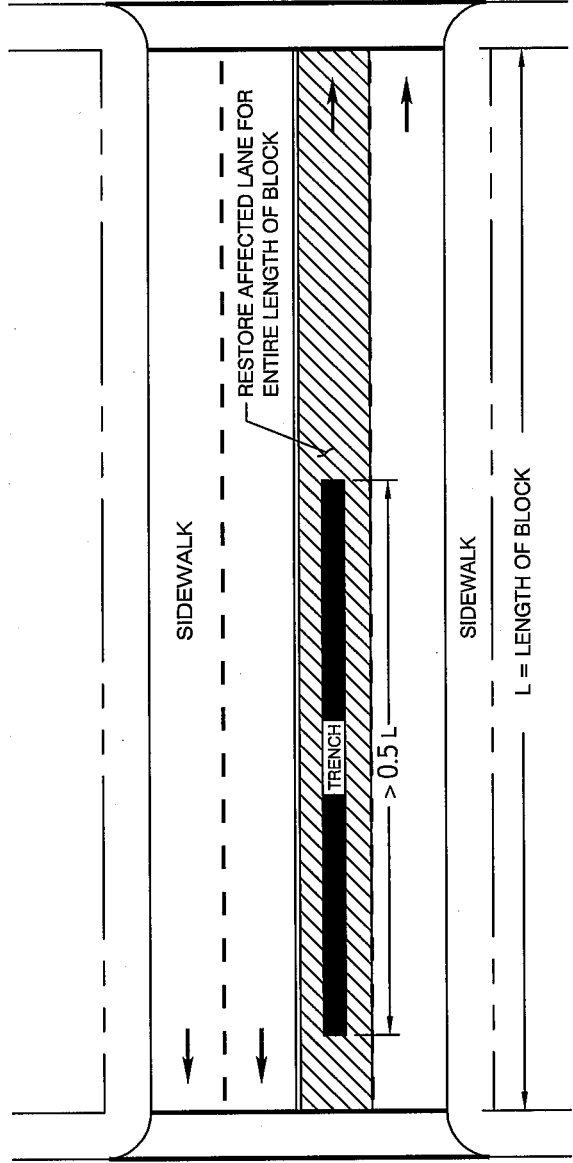
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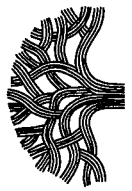
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NOTE: FOR ANY TRENCH LENGTH THAT EXCEEDS 50% OF THE LENGTH OF BLOCK, RESTORATION OF ALL AFFECTED LANES SHALL BE FOR THE ENTIRE LENGTH OF THE BLOCK

PCI INDEX OF 65 AND LESS, MILL AND OVERLAY.
 PCI MORE THAN 65, SLURRY SEAL.
 NO WORK IS ALLOWED IN MORATORIUM STREETS.

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