

UNDERGROUND UTILITIES

<u>NUMBER</u>	<u>TITLE</u>
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REV. DATE: 09/19 | DETAIL: U-00.0

APPROVED:

09/23/19
CITY ENGINEER

PUBLIC WORKS DIRECTOR

EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY GENERAL NOTES FOR STREET RESTORATION

1. No planned work shall be executed in any part of the public right-of-way for the installation, repair, or removal of any facility, or for any other purpose, without first obtaining a written permit in accordance with the City of Santa Barbara Street permit ordinances (Municipal Code Chapter 22.60 Street and Sidewalks).
2. All work shall be done in accordance with the latest edition of the "Standard Specifications for Public Works Construction" (Greenbook), City of Santa Barbara Standard Details, Special Provisions, utility franchise agreement (if applicable), and the City of Santa Barbara Municipal Code Chapter 22.60.
3. The City has the authority to approve or reject the placement and alignment of utility lines in the public right-of-way to avoid other utilities or otherwise manage the public right of way, the scope of street restoration, and the location of above grade infrastructure.
4. The contractor shall take necessary precautions to prevent avoidable damage to improvements in public right-of-way. If the contractor damages the public right-of-way outside the planned limits of construction, the City will mark the required limits of removal and replacement.
5. Diagonal trenching on Asphalt Concrete is discouraged and not permitted on any Portland Cement Concrete. The Public Works Inspector may allow exceptions in asphalt concrete based on the specific circumstances observed in the field but will require more extensive/larger asphalt restoration to square the area in the direction of travel (i.e. drive lane overlay).
6. The contractor shall perform work in cooperation with other utilities, including but not limited to consideration of joint trenching.
7. In open cut and/or pit and bore construction, all existing underground utilities, including service laterals within two (2) feet of the excavation work, shall be marked, potholed, and exposed to determine type, alignment, offset distance, and depth.
8. The contractor shall protect in place all utilities that are impacted and shall submit for review and approval to the Public Works inspector the method of protecting the utilities. Hand digging is required when crossing existing utilities.
9. Boring is the preferred method when excavation will pass through a cross gutter, driveway approach, alley approach, or bus lanes and bus pads. If boring is not possible, the Public Works Inspector will determine how the area is to be restored.
10. Where possible, underground crossing of streets will be installed by boring. Some utilities due to their standards will have alternate methods of installation.
11. Except in an emergency, Sewer Lateral Inspection Program (SLIP), or in the case of new service connections to a newly constructed or substantially remodeled building, there shall be no excavation in streets overlaid or reconstructed by the City within the preceding four (4) years. Where excavation is necessary or approved to occur in a newly paved street, the restoration after the trench paving shall be as detailed in note 13.
12. Except in an emergency, Sewer Lateral Inspection Program (SLIP), or in the case of new service connections to a newly constructed or substantially remodeled building, there shall be no excavation in streets slurry sealed by the City within the preceding two (2) years. Where excavation is necessary or approved to occur in a newly slurry sealed street, the restoration after the trench paving shall include slurry sealing twenty feet beyond the limits of all trenching or construction damage, as detailed in Note 13. Please note: this may not be the only condition upon which the City may require slurry seal to properly restore the street.



EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY GENERAL NOTES FOR STREET RESTORATION 1 of 4

REV. DATE: 09/19 | DETAIL: U-01.0

APPROVED:

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CITY ENGINEER

Kenneth Bjit
PUBLIC WORKS DIRECTOR

13. Public right-of-way restoration:

Asphalt Streets and Alleys				
	Trench Perpendicular to the path of travel	Trench Parallel to the path of travel*	Pothole or Other Individual Cut	Multiple Cuts
Arterial/Collector Street	T-cut trench 12" either side of cut and overlay with asphalt per U-03.0 to U-03.2.	Cold plane 10' centered on trench/drive lane and 10' before and after trench.** Overlay with matching asphalt.***	T-cut 12" on all sides of pothole and overlay with asphalt, per U-03.0 to U-03.2.	Per the direction of the Public works inspector. E.g. excessive bore pits may result in cold plane 10' requirement or slurry seal
Local Street/Alley	T-cut trench 12" either side of cut and overlay with asphalt per U-03.0 to U-03.2.	Cold plane 5' centered on trench and 5' before and after trench.** Overlay with matching asphalt.***	T-cut 12" on all sides of pothole and overlay with asphalt, per U-03.0 to U-03.2	Per the direction of the public works inspector.
Newly Paved Street or Alley (within 4 years of last overlay)****	Cold plane 10' centered on trench 10' before and after trench.** Overlay with matching asphalt.***	Cold plane the full lane width for all impacted lanes with end transitions.** Overlay with matching asphalt.***	Cold plane the full lane width for all impacted lanes with end transitions.** Overlay with matching asphalt.***	Per the direction of the public works inspector. E.g. excessive bore pits may result in cold plane 10' requirement
New Slurry Sealed Street or Alley (within 2 years of last slurry seal)	Crack and slurry seal a minimum of 20 feet beyond the limits of all trenching or construction damage.	Crack and slurry seal the full lane width for all impacted lanes or as required for restriping lines and markings.	Crack and slurry seal the full lane width for all impacted lanes or as required for restriping lines and markings.	Crack and slurry seal the full lane width for all impacted lanes or as required for restriping lines and markings.

*Per U-03.0 to U-03.2 all trenches must be T-cut 12" either side of the trench, to include Parking Lane.

**Total distance of the transitions will be determined by the public works inspector.

*** Overlay asphalt thickness shall be a minimum of three times the nominal aggregate size.

****Excavations required for the Sewer Lateral Inspection Program (SLIP) are exempt from the newly paved/slurry sealed street requirements but shall comply with trench and pothole requirements for respective street type.

Please note that this table is part of the City of Santa Barbara, Public Works Construction Standard Details. The City may require additional public right-of-way restoration as part of a condition of approval associated with a discretionary land use approval.



EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY
GENERAL NOTES FOR STREET RESTORATION 2 of 4

REV. DATE: 09/19 | DETAIL: U-01.1

APPROVED: *Bill De...*
CITY ENGINEER
Rebecca J. Bill
PUBLIC WORKS DIRECTOR

14. Concrete streets and alleys: Remove and replace concrete slab to the nearest score lines outside the excavation area. See also Trench Paving Requirements Details U-03.0. In the case of Public Works Permits (not contracts), the permittee may appeal to the City Engineer if the existing concrete street is in poor condition due to previous trenching or other failures and request repair per Detail U-03.0 Concrete Trench Paving. This appeal will not be supported for arterial/collector streets or State Street.
15. When asphalt streets and alleys are cut within three feet of a curb, gutter, or pavement cold joint, the contractor shall remove the full thickness of the remaining pavement sliver or grind and overlay this area. When cuts are in concrete pavement, cuts and removals must be made to the nearest score lines or as directed by the Public Works Inspector.
16. When asphalt streets are cut within striped bicycle lanes, the entire bicycle lane width shall be restored without any joints in the lane.
17. The contractor shall be responsible for replacement of any damaged traffic signal loops, traffic striping, and street markings at no expense to the City.
18. Survey monuments, surveyor nails and tags, benchmarks, and the like that are damaged, removed, or disturbed shall be replaced at the same location with a similar marker by a licensed land surveyor under contract to the permittee and at no expense to the City. Copies of the reset documents (called "Corner Record") will be presented to the Public Works Inspector as part of the final inspection and must be filed with the County of Santa Barbara Surveyor.

COLD PLANE & OVERLAY LIMITS

Within 30 calendar days after backfilling, Asphalt Concrete shall be Cold Planed and Overlaid/Resurfaced as follows:

19. Existing Asphalt Concrete shall be ground down 2 inches, or one half the existing pavement thickness whichever is less, to the limits specified: Detail U-01.1
20. Where possible, Cold Plane & Overlay shall be from U-01.3 EXAMPLES OF COLD PLANE & OVERLAY LIMITS.
21. Cold Plane & Overlay limits shall extend at least 2 feet beyond the trench "T-Cut" limits. Minimum dimensions shall be 5 feet x 5 feet.
22. "T-Cut" and corresponding Overlay (as applicable) is required for all excavations with a surface area of 2 square feet or greater.
23. Impacted BIKE LANES - Cold Plane and Overlay limits shall fully encompass any bike lane impacted by the trench, and shall have a length that extends at least 2 feet beyond the asphalt removal limits in the direction of bike traffic.



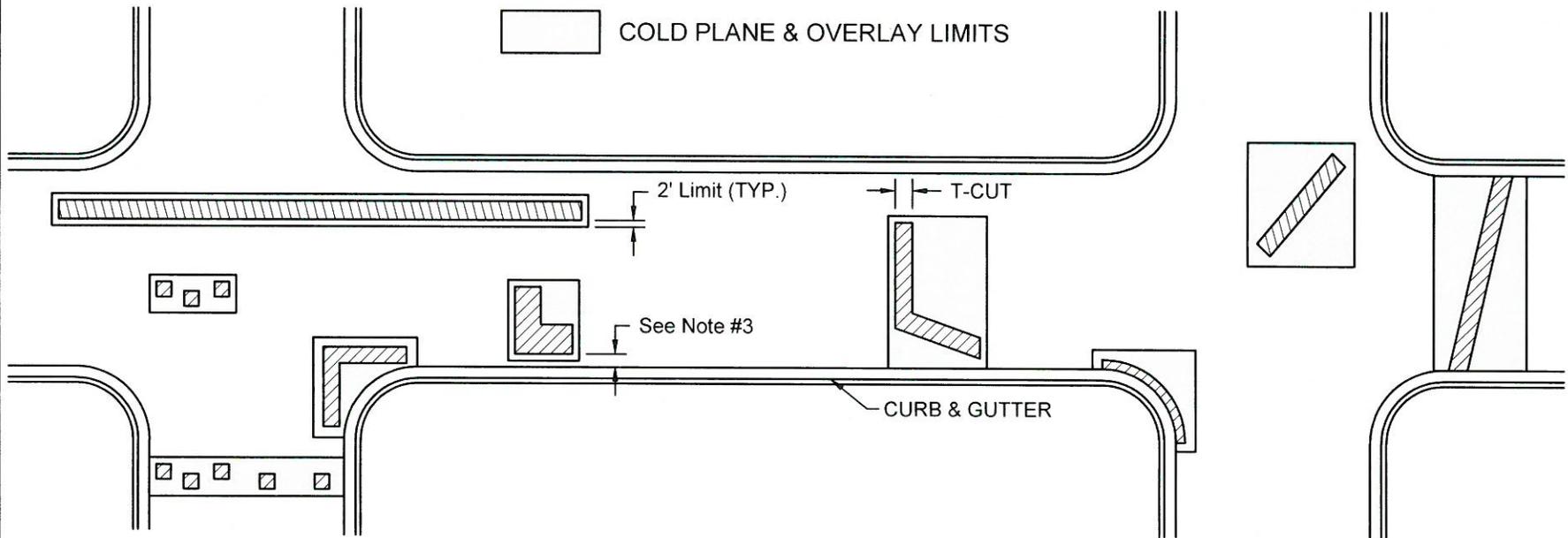
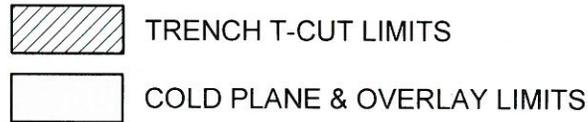
EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY
 GENERAL NOTES FOR STREET RESTORATION 3 of 4

REV. DATE: 09/19 | DETAIL: U-01.2

APPROVED: *Bi Dan*
 CITY ENGINEER
Rebecca Bjell
 PUBLIC WORKS DIRECTOR

EXAMPLES OF COLD PLANE & OVERLAY LIMITS

LEGEND



NOTES:

1. Width and angle of the trench "T" can vary due to site conditions; exact width shall be determined by the Engineer or City inspector.
2. Cold Plane & Overlay limits shall be square to the curb face and roadway and extend a minimum of 2 feet beyond the "T-Cut" limits.
3. Reference Detail U-01.2, Line 15 when cutting within 3' of a curb, gutter, or pavement cold joint.
4. No joints will be located within the wheel path of vehicular traffic.



EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY GENERAL NOTES FOR STREET RESTORATION 4 of 4

REV. DATE: 09/19 DETAIL: U-01.3

APPROVED: *B. D. ...*
 CITY ENGINEER
Keber...
 PUBLIC WORKS DIRECTOR

TRENCH BEDDING AND BACKFILL NOTES:

1. Improvements constructed under this Standard Detail shall conform to applicable provisions of the Standard Specifications for Public Works Construction, current edition.
2. Trench width shall be as shown, unless otherwise specified on plans.
3. Pipe zone bedding material shall be sand with a sand equivalent greater than 50.
4. Trench zone shall have a maximum of 8-inch lifts and meet the requirements of one of the following:
 - a. Crushed Aggregate Base;
 - b. Crushed Miscellaneous Base;
5. The Engineer shall approve all backfill material prior to backfilling trench. Contractor must submit sand equivalent tests, per ASTM D2419, for all backfill and bedding, both native and imported, and identify the source of the material.
6. Bedding and backfill shall be compacted mechanically. Compaction by flooding, ponding, or jetting shall not be permitted.
7. Compaction Test, per ASTM D1557, current revision, will be required by the Engineer at various depths in the trench, at intervals not to exceed 250 feet. All tests shall be paid for by the Contractor, and performed by a laboratory approved by the City, unless otherwise specified. Franchise utilities may propose other backfill compaction test and documentation procedures for Engineer approval. This may include utilities own testing facility.
8. A continuous length of 3-inch wide detectable tape, Terratape or approved equal, shall be placed in a direct line over all pipe, as shown. Tape color shall be blue for water, green for sewer, red for electrical, and purple for recycled water.
9. The roadway structural section shall be of the same material and thickness as existing, but shall meet minimum pavement depth requirements of Standard Detail U-03.0.
10. New concrete shall be doweled into existing concrete streets according to the following:
 - New #4 reinf. bar @ 32" on center (O.C.) along longitudinal joints
 - New #4 reinf. bar @ 12" O.C. along transverse joints
 - First dowel shall be placed 6" from edge of new concrete panel
 - Dowels shall be placed at $\frac{1}{2}$ of the concrete pavement depth and centered between two connecting panels
 - When doweling into existing concrete street along longitudinal joints, drill $\frac{5}{8}$ " diameter by 9" long hole in existing cement concrete. Use pre-coated epoxy dowels, follow manufacturer's specifications for hole size and installation.
 - When doweling into existing concrete street along transverse joints, drill $\frac{5}{8}$ " diameter by 6" long hole in existing cement concrete. Use pre-coated epoxy dowels, follow manufacturer's specifications for hole size and installation.
 - All reinforcing bar installed shall be green epoxy coated.
 - Use chemical adhesive to bond reinforcing bar to existing concrete pavement.
11. Asphalt concrete shall be laid in courses not exceeding 4 inches in thickness. Asphalt concrete shall be Class C2 Grade PG 64-10 for finish courses and Class B Grade PG 64-10 for base course.



TRENCH BEDDING AND BACKFILL NOTES

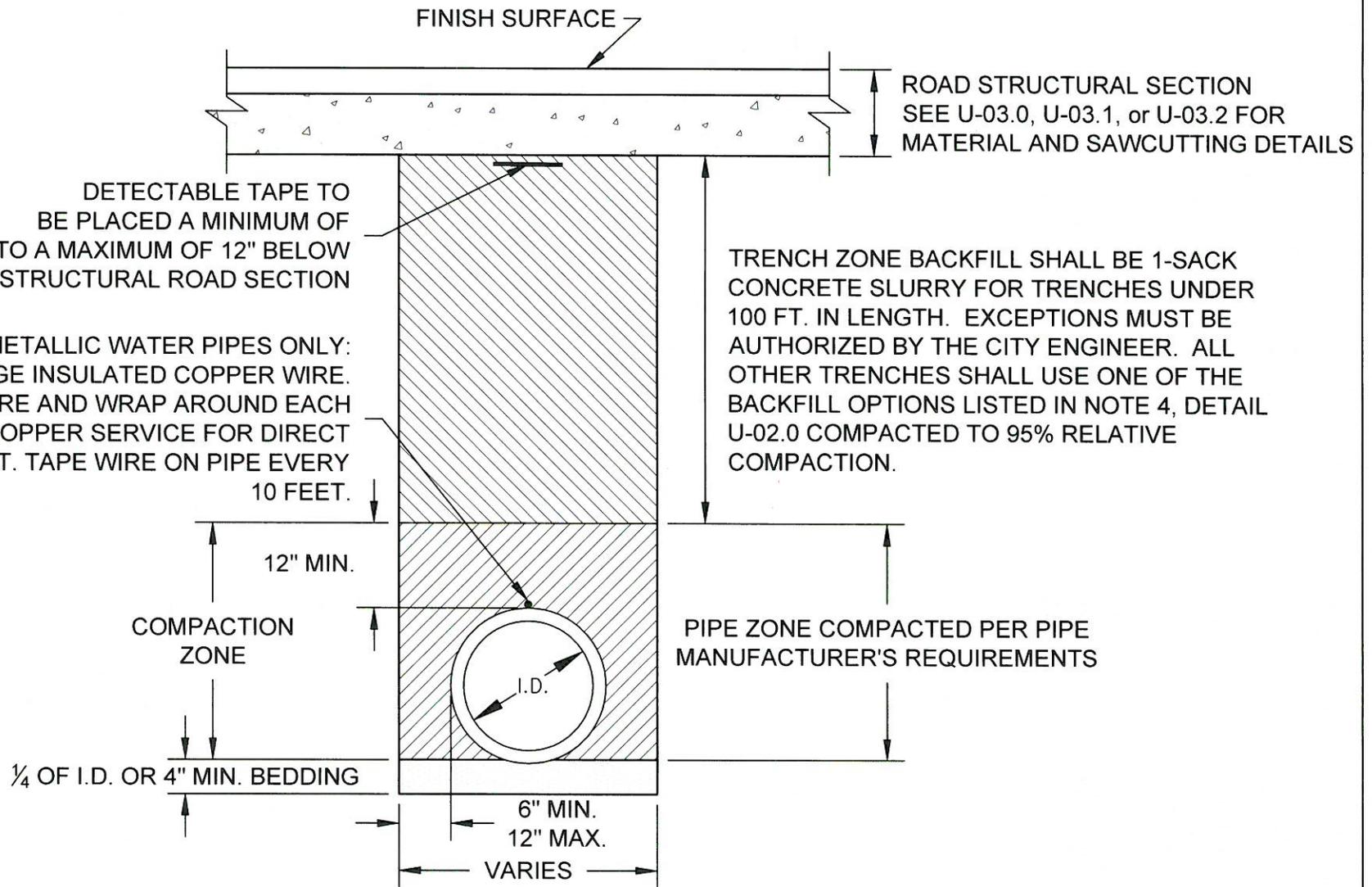
REV. DATE: 09/19 | DETAIL: U-02.0

APPROVED:

07/23/19
CITY ENGINEER

PUBLIC WORKS DIRECTOR

TYPICAL SECTION



TRENCH BEDDING AND BACKFILL TYPICAL SECTION

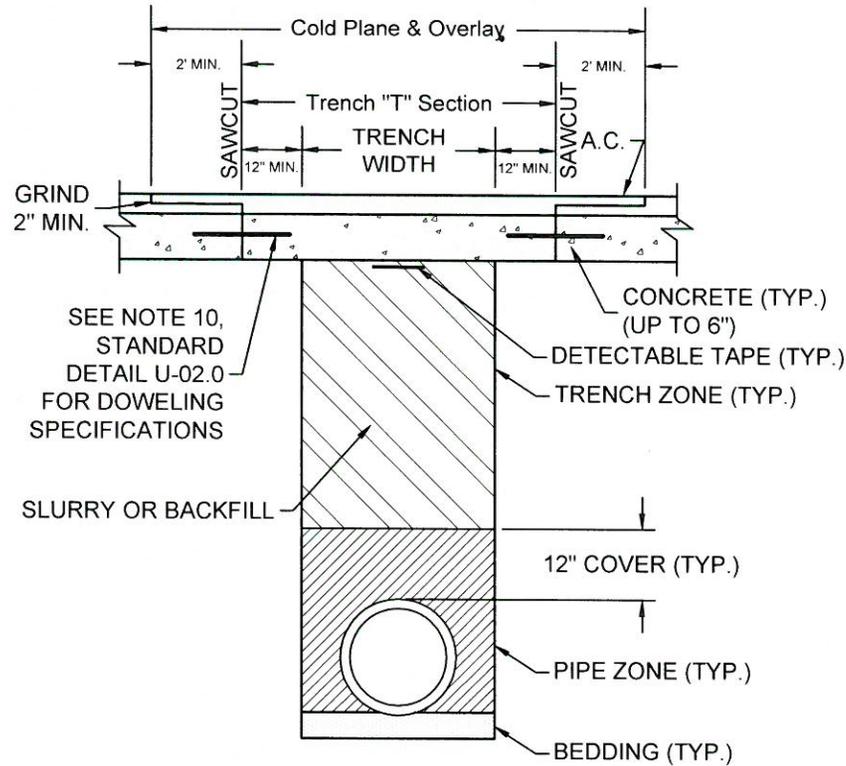
REV. DATE: 09/19 | DETAIL: U-02.1

APPROVED:

B. J. Deen
CITY ENGINEER

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PUBLIC WORKS DIRECTOR

A.C. OVER CONCRETE



NOTES:

1. Full tack coat on all vertical and horizontal surfaces.
2. Width of the trench "T" varies due to site conditions; exact width shall be determined by the engineer or City inspector.



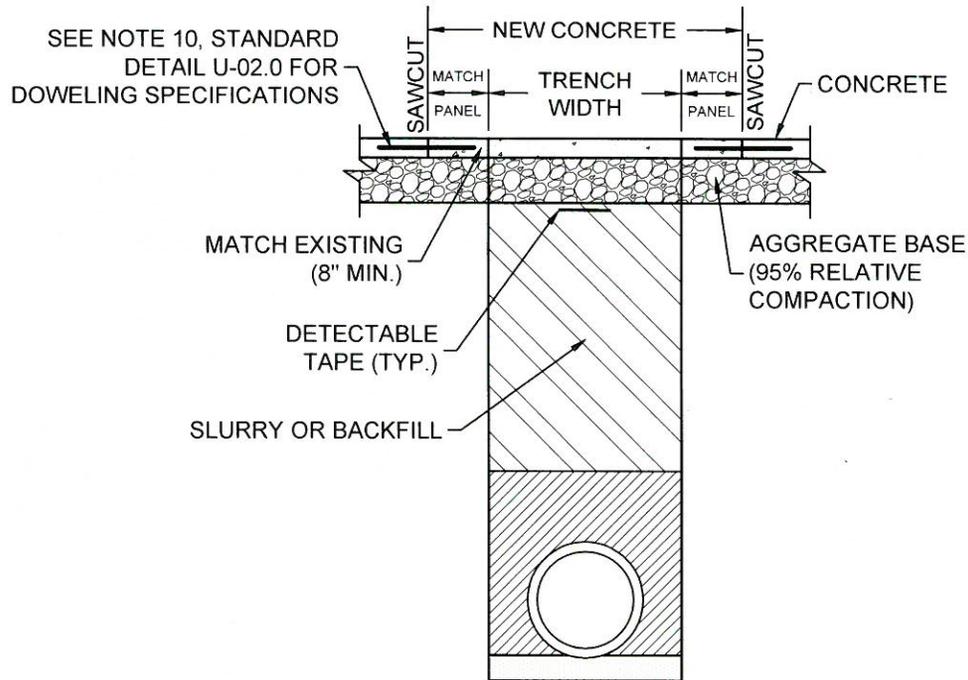
TRENCH PAVING REQUIREMENTS
1 OF 3

REV. DATE: 09/19 | DETAIL: U-03.0

APPROVED:
[Signature]
 CITY ENGINEER
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 PUBLIC WORKS DIRECTOR

CONCRETE OVER AGGREGATE BASE

TO INCLUDE: CURB & GUTTER, SIDEWALK, DRIVEWAY,
RAMP, CROSSGUTTER, SPANDRAL.



ADDITIONAL NOTES:

- RESTORATION OF ALL CONCRETE IMPROVEMENTS, TO INCLUDE SEWER TAPS, WILL BE TO NEAREST SCORE LINE, PANEL, OR JOINT WITHIN 3 FEET OF TRENCH WIDTH OR EXCAVATED AREA DEPENDENT ON CONDITION OF EXISTING CONCRETE.
- REMOVED CONCRETE OR PANELS WILL BE REPLACED TO A MINIMAL SIZE OF 6' X 12' EACH, OR AS DETERMINED BY THE ENGINEER OR CITY INSPECTOR.
- NO DIAGONAL TRENCHING PERMITTED ON CONCRETE.
- NO NEW ADDITIONAL JOINTS CONSTRUCTED WITHIN 3' OF EXISTING JOINTS.

NOTES:

1. Width of the trench "T" varies due to site conditions; exact width shall be determined by the engineer or City inspector.
2. See Additional Notes specific to Concrete Over Aggregate Base.



TRENCH PAVING REQUIREMENTS

2 OF 3

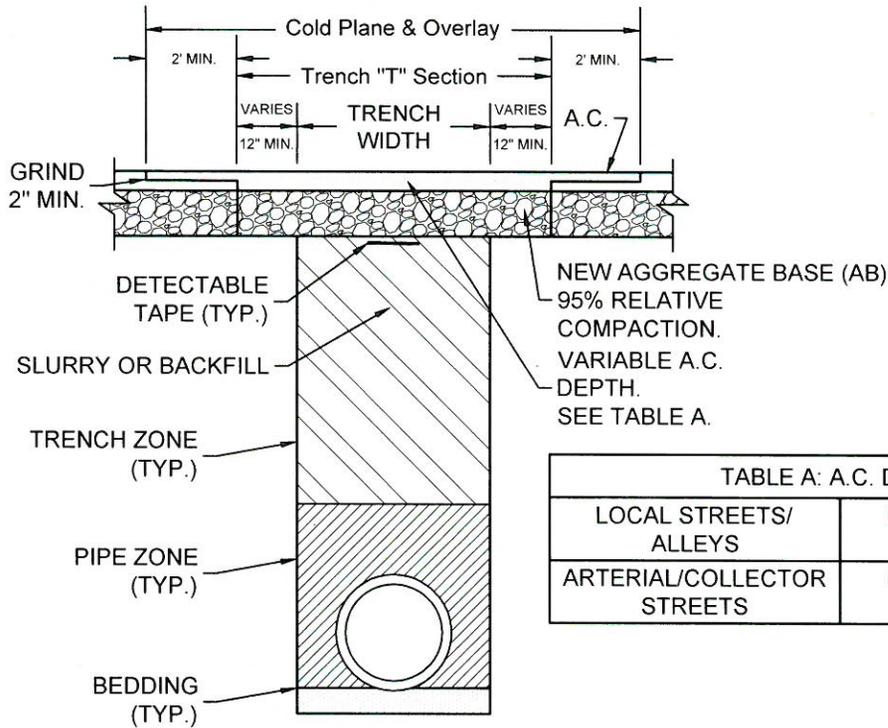
REV. DATE: 09/19 | DETAIL: U-03.1

APPROVED:

09/23/19 *Brida*
CITY ENGINEER

Shirley
PUBLIC WORKS DIRECTOR

**A.C. OVER AGGREGATE BASE
OPTION 1**



**A.C. OVER AGGREGATE BASE
OPTION 2 (LARGE REPAIR)**

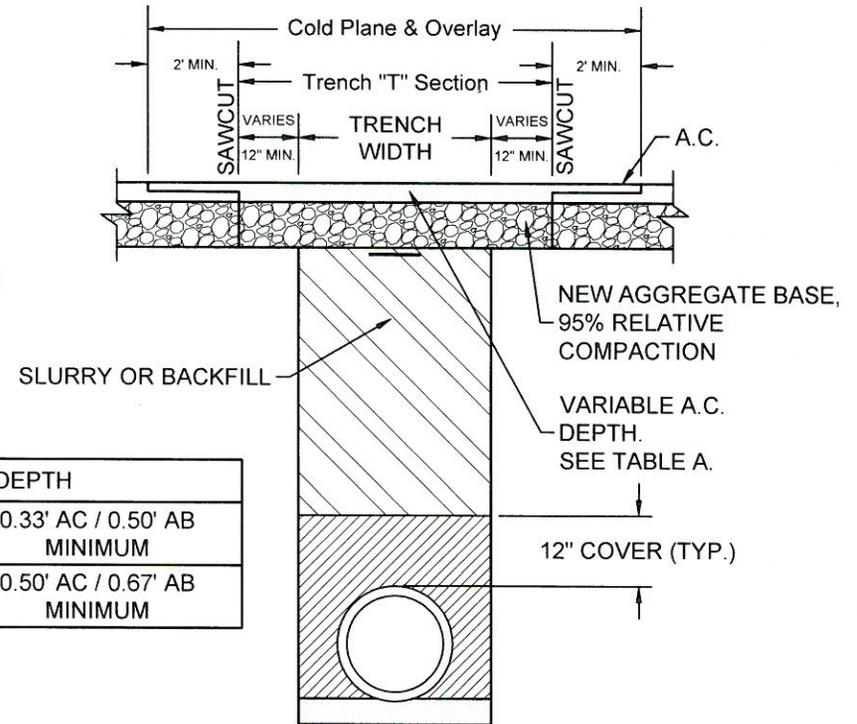


TABLE A: A.C. DEPTH	
LOCAL STREETS/ ALLEYS	0.33' AC / 0.50' AB MINIMUM
ARTERIAL/COLLECTOR STREETS	0.50' AC / 0.67' AB MINIMUM

NOTES:

1. Full tack coat on all vertical and horizontal surfaces. Use SS1-h Emulsion.
2. Option 1 and Option 2 are both acceptable for existing conditions of A.C. over aggregate base (A.B.)
3. Width of trench "T" varies due to site conditions; exact width shall be determined by the engineer or City inspector.
4. To determine functional classification, see CA Road System Maps located at http://dot.ca.gov/hq/tsip/hseb/crs_maps/



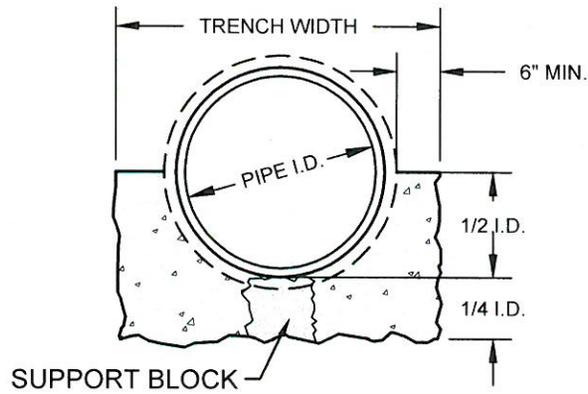
**TRENCH PAVING REQUIREMENTS
3 OF 3**

REV. DATE: 09/19 DETAIL: U-03.2

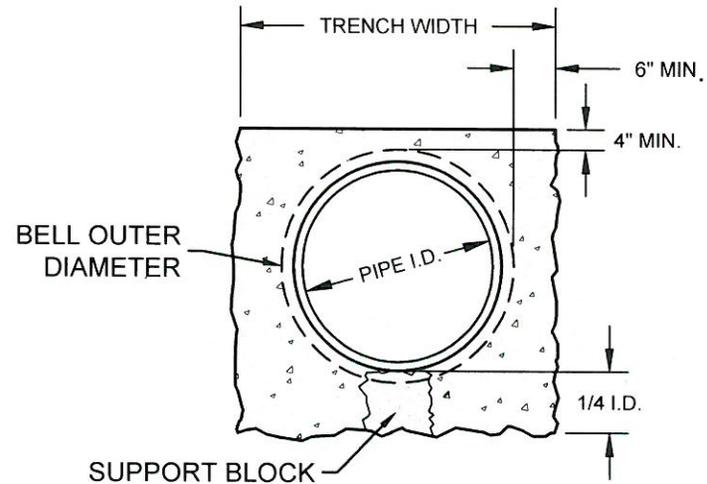
APPROVED:
09/23/19 *Brida*
CITY ENGINEER

PUBLIC WORKS DIRECTOR

CONCRETE CRADLE



CONCRETE ENCASEMENT



NOTES:

1. Concrete shall be Class 450-C-2000 per Standard Specifications for Public Works Construction unless otherwise specified.
2. Support blocks may be of concrete block or brick.
3. Cradle and encasement to be placed on native undisturbed soil, or as directed by the City Engineer or his/her designee.



PIPE REINFORCEMENT

REV. DATE: 09/19 | DETAIL: U-04.0

APPROVED:

09/23/19 *Bridget*
CITY ENGINEER

Kenneth J. Byrd
PUBLIC WORKS DIRECTOR

NOTES:

1. The California Regulations Related to Drinking Water sets forth the minimum separation requirements for water mains and sewer lines. The most current adopted standards contained in Title 17 & 22 of the California Code of Regulations, shall apply.
 - a. Parallel Construction: The horizontal distance between pressure water mains and sewer lines shall be at least 10 feet.
 - b. Perpendicular Construction (Crossing): Pressure water mains shall be at least 12-inches above sanitary sewer lines where these lines must cross.
 - c. Separation distances specified above shall be measured from the nearest edges of the facilities.
 - d. Water mains and sewer lines shall be installed in different trenches with appropriate separation.
2. These Standards are applicable under normal conditions for sewage collection lines and water distribution mains. More stringent requirements may be specified by the engineer if conditions such as high groundwater exist.
3. When local conditions, such as available space, limited slope, existing structures, etc., create a situation where there is no alternative but to install water mains or sewer lines at a distance less than that required by these Standards, Details U-05.1 and U-05.2 shall be followed.
4. Sewer lines shall not be installed within 25 feet horizontally of a low head (5 psi or less pressure) water main.
5. New water mains and sewers shall be pressure tested where the conduits are located ten feet apart or less.
6. In the installation of water mains or sewer lines, measures should be taken to prevent or minimize disturbances of the existing line. Disturbance of the supporting base of this line could eventually result in failure of this existing pipeline.
7. Special consideration shall be given to the selection of pipe materials if corrosive conditions are likely to exist. These conditions may be due to soil type and/or the nature of the fluid conveyed in the pipe, such as a septic sewage which produces corrosive hydrogen sulfide.
8. Sewer Force Mains:
 - a. Sewer force mains shall not be installed within ten feet (horizontally) of a water main.
 - b. When a sewer force main must cross a water line, the crossing should be as close as practical to the perpendicular. The sewer force main should be at least one foot below the water line.
 - c. When a new sewer force main crosses under a existing water main, all portions of sewer force main within ten feet (horizontally) of the water main shall be enclosed in a continuous sleeve.
 - d. When a new water main crosses over a existing sewer force main, the water main shall be constructed of pipe materials with a minimum rated working pressure of 200 psi or equivalent pressure rating.



WATER-SEWER SEPARATION REQUIREMENTS

NOTES

REV. DATE: 09/19 | DETAIL: U-05.0

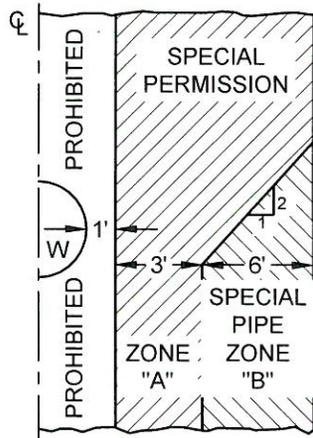
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CITY ENGINEER

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PUBLIC WORKS DIRECTOR

SEWER MAIN CONSTRUCTION

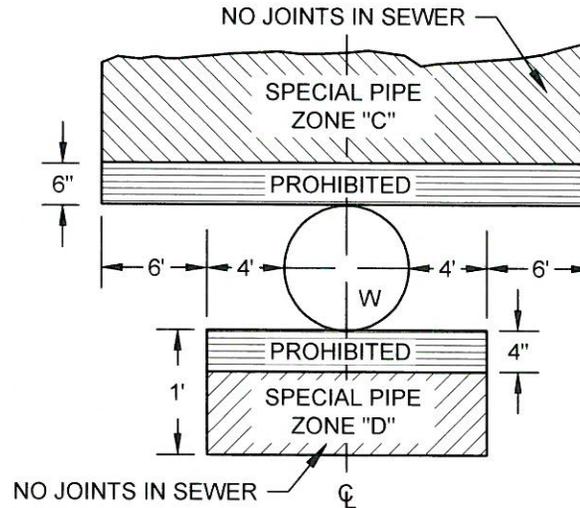
PARALLEL CONSTRUCTION



PARALLEL CONSTRUCTION

If a sanitary sewer is to be located within 10 feet of a water main or service lateral within any of the indicated zones, sewer construction will be required as shown.

PERPENDICULAR CONSTRUCTION (CROSSINGS)



PERPENDICULAR CONSTRUCTION

If sanitary sewer or house sewer lateral crosses a water main or service lateral within any of the indicated zones, sewer construction will be required as shown.

ZONE SPECIAL CONSTRUCTION REQUIRED FOR SEWER

- A** Sewer lines parallel to water mains shall not be permitted in Zone A without approval from the City of Santa Barbara's Public Works Director or delegate.
- B** A sewer line placed parallel to a water line in Zone B shall be constructed of:
1. PVC sewer pipe with rubber ring joints (per ASTM D3034) or equivalent.
- C/D** A sewer line crossing a water main Zone C or D shall be constructed of:
1. A continuous 20 foot section of Class 200 (DR 14 per AWWA C900) PVC pipe or equivalent, centered over the pipe being crossed.
 2. PVC or HDPE sewer pipe within a continuous sleeve.

NOTE: Construction per this detail must first be approved by the State Water Resources Control Board.



WATER-SEWER SEPARATION REQUIREMENTS

SEWER MAIN CONSTRUCTION

REV. DATE: 09/19 | DETAIL: U-05.1

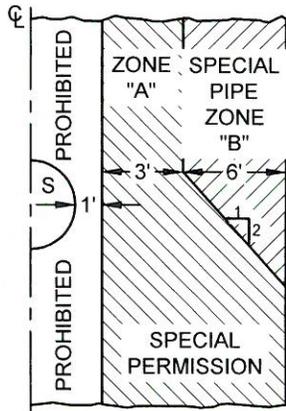
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CITY ENGINEER

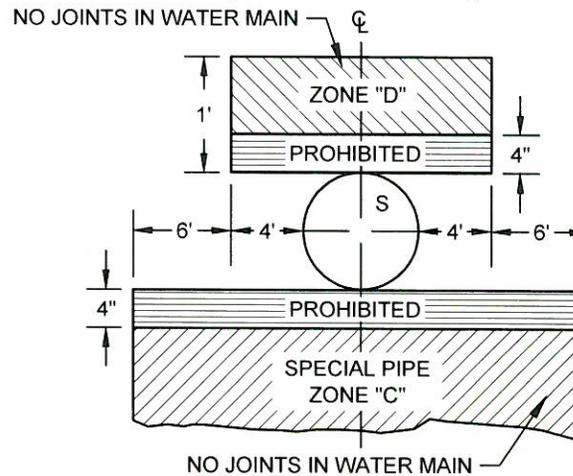
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PUBLIC WORKS DIRECTOR

WATER MAIN CONSTRUCTION

PARALLEL CONSTRUCTION



PERPENDICULAR CONSTRUCTION (CROSSINGS)



ZONE SPECIAL CONSTRUCTION REQUIRED FOR WATER

A No water main parallel to sewers shall be constructed in Zone A without approval from the City of Santa Barbara's Public Works Director or delegate.

B/C/D If the sewer paralleling the water main does not meet the Zone B, C, or D requirements, the water main shall be constructed of one of the following:

1. Ductile iron pipe with hot dip bituminous coating
2. Class 200 pressure rated PVC water pipe (DR 14 per AWWA C900) or equivalent.
3. Class 200 HDPE

NOTES:

1. Construction per this detail must first be approved by the State Water Resources Control Board.
2. This detail applies to private sewer laterals that cross above a pressure water main but not to those private sewer laterals that cross below a pressure main.



WATER-SEWER SEPARATION REQUIREMENTS

WATER MAIN CONSTRUCTION

REV. DATE: 09/19 | DETAIL: U-05.2

APPROVED:

09/23/19 [Signature]
CITY ENGINEER

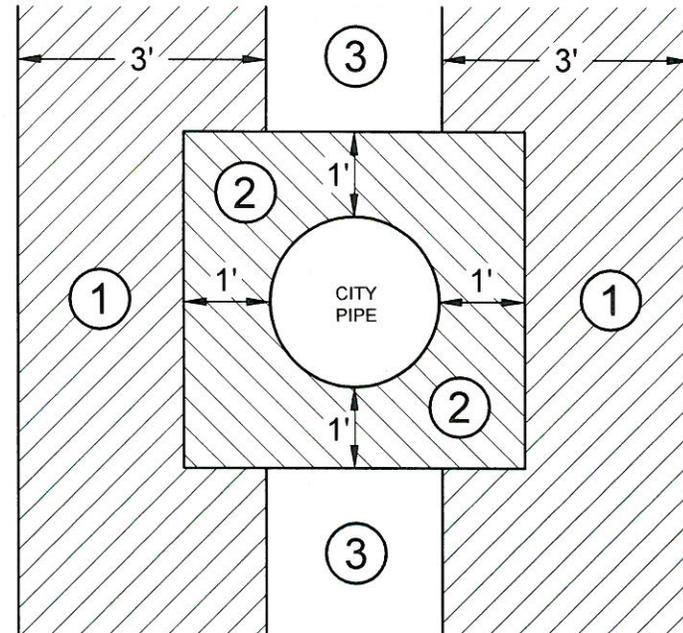
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PUBLIC WORKS DIRECTOR

SEPARATION ZONES

ZONES:

1. Utilities shall be installed with a minimum distance of 3' from city piping unless approved by the City of Santa Barbara's Public Works Director or delegate.
2. No utility crossings shall be installed within 1' of city piping. No exceptions shall be approved.
3. Except for crossing, no utilities shall be installed above or below city piping. No exceptions shall be approved.

NOTE: It is the obligation of the contractor to protect at all times the integrity of city piping and trenches, at any proximity.



UTILITY SEPARATION FROM CITY WATER, SEWER, RECLAIMED PIPELINES, AND STORM DRAIN

REV. DATE: 09/19 | DETAIL: U-06.0

APPROVED:

B. J. Dan
CITY ENGINEER

Robert Bjil
PUBLIC WORKS DIRECTOR