## CITY OF SANTA BARBARA

### CONSTRUCTION STANDARD DETAILS

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**REV. DATE:** 11/12  
**DETAIL:** G-01.0

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**APPROVED:**

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**CITY ENGINEER:**

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**PUBLIC WORKS DIRECTOR:**

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### OLD DETAIL - NEW DETAIL CONVERSION INDEX

#### 1. HARDSCAPES (STREETS)

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NOTE: THE HARDSCAPE AND UNDERGROUND UTILITIES SECTIONS OF THE STANDARD DETAILS HAVE BEEN UPDATED AS OF SEPTEMBER 2019

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TRANS OPS: 
FACILITIES: 
CITY ENGINEER: 
WATER RESOURCES: 
PUBLIC WORKS DIRECTOR:

APPROVED:

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APPROVED:

CITY ENGINEER
PUBLIC WORKS DIRECTOR
GENERAL CONCRETE NOTES:


2. Concrete shall be minimum of 520-C-2500 or greater where specified, per Standard Specifications for Public Works Construction (Greenbook).

3. Concrete shall have a light broom finish, except as noted. Broom direction shall be perpendicular to path of travel. All exposed edges shall be tool finished with a ½ inch radius.

4. Compact native soil 8 inches deep to 90% relative compaction. Under all concrete improvements except sidewalk, place crushed aggregate base 6 inches compacted to 95% relative compaction before placing concrete. Under sidewalk place minimum of 4" crushed aggregate base compacted to 95% relative compaction. At City Engineer or designee's discretion, 2” of sand may be allowed under sidewalk in place of crushed aggregate base. Crushed miscellaneous base may be substituted for crushed aggregate base at City Engineer or designee’s discretion.

5. Clear drying fugitive dye curing compound shall be applied to all exposed concrete surfaces immediately after finishing.

6. Calcium chloride shall not be added to concrete unless approved by the City Engineer or designee.

7. Sawcut and remove a 24” minimum width or more of existing asphalt concrete pavement adjacent to all new concrete as directed by the City Engineer or designee. After constructing new concrete, replace pavement with asphalt concrete and aggregate base to match existing, but not less than 3 inch asphalt concrete over 8 inch aggregate base. Where concrete section exists, replace to match existing, overlaid with 2 inch minimum asphalt concrete. Tack coat all vertical surfaces with SS-1h emulsion where asphalt is to be placed.

8. All concrete shall be placed within forms except where it is poured directly against existing sawcut concrete.

9. Survey monuments within the limits of work shall be referenced, tied out, and have a corner record filed prior to construction by a licensed land surveyor. Monuments lost or disturbed shall be replaced and have a corner record filed by a licensed land surveyor or civil engineer in accordance with the State of California Professional Land Surveyors' Act, Section 8771.

10. 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, Class D1 Grade PG 64-10 for leveling courses, and Class B Grade PG 64-10 for base courses.

11. State Street brick paver sidewalks from Cabrillo Blvd. to Victoria Street shall be a Pacific Clay Bear Path Red Flashed paver. Contact the City Engineer or designee for details.
CURB WITH 24 INCH GUTTER

1. All curbs and gutters shall be placed monolithically.
2. Premolded 0.25 inch thick expansion joints shall be placed at the ends of curb returns. Provide 1.5 inch deep contraction joints in all curb and gutter at approximately 10 foot intervals to match score marks in existing sidewalk.
3. The top edge of curb, the gutter flow line and the gutter edge shall have 0.5 inch radius, unless otherwise noted.
4. Minimum 6 inch crushed aggregate base under curb and gutter to 95% relative compaction.
5. Compact native soil to a depth of 8 inches beneath aggregate base below curb and gutter, to 90% relative compaction.
6. Standard curb and gutter shall be used for all new construction unless other types are approved by the City Engineer.
7. Cuts in existing curbs and gutters shall be made at right angles to the face of curb.
8. Where existing curb height varies, match existing or adjacent curb for short reaches.
9. Extruded or slip-formed curb and gutter is not permitted.
10. Where a curb comes to an end, taper the curb down to the gutter at a 1:1 slope.

CURB ONLY

MATCH EXISTING ASPHALT CONCRETE THICKNESS, 3" MIN.

4% STEEL TROWEL FINISH

BATTER 1/12:12

4% SLOPE

MATCH EXISTING ASPHALT CONCRETE THICKNESS, 3" MIN.

CRUSHED AGGREGATE BASE

COMPACTED NATIVE SOIL

CURB AND GUTTER
STANDARD & FAUX SANDSTONE

FAUX SANDSTONE CONCRETE CURB & GUTTER NOTES:
1. Mix sifted yellow sand into concrete for faux sandstone curb and gutter as needed to match existing sandstone or faux sandstone curbs.
2. Use textured matte finish to achieve faux sandstone finished look on top of curb and curb face portion only. Gutter shall be broom finished with the exception of a 4" steel trowel finish along the gutter flow line.
3. Geometry shall match that of the Standard curb and gutter.

REV. DATE: 09/19  DETAIL: H-02.0
APPROVED:
CITY ENGINEER
PUBLIC WORKS DIRECTOR
30" ROLLED CURB AND GUTTER

MATCH EXISTING ASPHALT CONCRETE THICKNESS, 3" MIN.

CRUSHED AGGREGATE BASE

COMPACTED NATIVE SOIL

36" ROLLED CURB AND GUTTER

MATCH EXISTING ASPHALT CONCRETE THICKNESS, 3" MIN.

CRUSHED AGGREGATE BASE

COMPACTED NATIVE SOIL

CURB WITH VARIABLE GUTTER

MATCH EXISTING ASPHALT CONCRETE THICKNESS, 3" MIN.

CRUSHED AGGREGATE BASE

COMPACTED NATIVE SOIL

NOTES:

1. Non-Standard curb and gutter should only be used to replace existing non-standard curb and gutter in-kind.

2. For standard curb and gutter notes, see Standard Detail H-02.0.
SANDSTONE CURB & CONCRETE GUTTER

NOTES:

1. Sandstone curb shall be as dimensioned and shall be of a uniform minimum segment length of 3 feet. Sandstone shall be of a quality, hardness and denseness matching "Montecito Sandstone". Curb edge shall be squared off and joints shall be grouted with a maximum thickness of 3/4 inch.

2. All gutters shall be constructed in accordance with Standard Detail H-02.0.

3. Premolded 0.25 inch thick expansion joints shall be placed in gutter at 30 foot intervals and at curb returns. 1.5 inch deep contraction joints shall be provided in gutter at approximately 10 foot intervals at joints in the stone curb.

4. Cuts in existing curbs and gutters shall be sawcut and made at right angles to the face of curb.

5. Scarify and compact native soil to 90% relative compaction to a depth of 8 inches beneath aggregate base.
NOTES:

1. Use 9'L x ¾" thick varied width steel plate. Bevel edge as directed and weld #4 bars to plate using a full penetration weld. Galvanize after fabrication per Greenbook Standard Specifications.

2. Mount plate flush with top of curb and curb face.

3. Steel plate width shall be sufficient to extend 0.2' minimum below the flowline.

4. There shall be a minimum of 1.5" concrete cover over all rebar.

5. Match existing curb face and gutter.

STEEL CURB

REV. DATE: 09/19  DETAIL: H-02.3

APPROVED:

EDITING: [Signature]
CITY ENGINEER: [Signature]
PUBLIC WORKS DIRECTOR: [Signature]
NOTES:

1. This driveway is to be used in residential areas, when plans showing such use are approved by the City Engineer, or designee, and for replacement of driveway only.

2. Driveway width (W) shall be 10 feet minimum and 16 feet maximum. Any driveway or combination of driveways which exceed the maximum width must be approved by the City Engineer, or designee.

3. Where multifamily driveway width exceeds 12 feet, provide a 1.5 inch deep contraction joint in center.

4. The driveway slab shall be 6 inches thick. The sidewalk within the driveway width shall be 6 inches thick (see note 5 for exceptions).

5. Driveway with 8 inch slab thickness shall be used when serving three or more residences, or when plans showing such use are approved by the City Engineer or designee.

6. Gutter width shall match adjacent gutter.

7. Flare width (X) shall be 1 foot for each 2 inches of curb height.

8. Where existing gutter has been overlaid, and a new driveway is being installed, the new gutter shall be installed to match existing gutter. Asphalt concrete shall be placed over the new gutter to the grade of the existing pavement.

9. Driveway approach consists of gutter, ramp, flares, and sidewalk portions, placed monolithically.

10. See detail H-06.1 for sidewalk.

11. Where existing gutter exceed 3 feet, and concrete is in good condition, an 18" cut into existing gutter may be made if approved by City inspector.

12. Provide a minimum 5' wide sidewalk across driveway, or as approved by City Engineer, at 2% slope.

RESIDENTIAL DRIVEWAY
NOTES:

1. Driveway width (W) shall be 12 feet minimum and 30 feet maximum.

2. Driveway shall be 8 inches thick. Slab within sidewalk area shall be 8 inches and placed monolithically with driveway.

3. Where driveway width exceeds 16 feet, provide a 2 inch deep contraction joint in center.

4. Gutter width shall match adjacent gutter.

5. Flare width (X) shall be 1 foot for every 2 inches of curb height.

6. Where existing gutter has been overlaid, the new driveway gutter shall be installed to match the existing gutter, and asphalt placed over new gutter to grade of existing pavement.

7. Driveway flares, slabs, sidewalks, and gutters shall be placed monolithically.

8. Provide minimum 5 feet of sidewalk width across driveway, at 2% slope, or as approved by City Engineer or designee.

9. Use 560-C-3250 for all commercial driveways.

10. Driveway should generally rise to sidewalk level as opposed to depressing sidewalk to driveway level.

11. See Detail H-06.1 for sidewalk.

12. Where existing gutter exceeds 3 feet, and concrete is in good condition, an 18" cut into existing gutter may be made if approved by City Inspector.
NOTES:

1. Concrete slab shall be in line with the back of sidewalk and shall conform to alley V-section.

2. Curb returns, slab, sidewalk, and gutters shall be placed monolithically.

3. Slab, gutter, and curb returns shall be broom finished and flow lines shall be steel trowel finished.

4. Alley approach slope shall not exceed 8.33%. Depress sidewalk to meet maximum alley approach slope. Sidewalk depression shall not exceed 8.33% maximum slope.

5. Use 560-C-3250 concrete.

6. At discretion of City Engineer or designee, alleys may be reconstructed as Commercial Style Driveways, per Detail H-03.1. Generally the alley entrance is not appropriate for Commercial or Residential Driveways.
NOTES:

1. Curb return radius shall be as shown on the plans.
2. Gutter and spandrels shall be 8 inches thick.
3. Curb return and spandrel shall be placed monolithically.
4. Concrete shall be 560-C-3250
5. Finish shall be steel float, lightly broomed on gutter and spandrels, brush on curb returns and steel trowel at flow lines.
6. Asphalt concrete taper from crown section to cross gutter shall be a minimum of 20 feet.
7. Deep score joints shall be a minimum of 2 inches deep.
NOTES:

1. Type "A" sidewalk shall be used in residential areas.

2. Type "B" sidewalk may be used during reconstruction as an alternate to Type "A" in residential areas, when approved by the City Engineer or designee.

3. Type "C" sidewalk shall be used in commercial areas.

4. Sidewalk width shall be as shown, unless otherwise specified on the plans.

5. Provide 1.5 inch deep score joints @ 10 feet (30 feet if trees present), and 0.25 inch score marks at 5 foot spacing, and isolation joints at all adjacent structures, or match existing score pattern.

6. Exposed edges, joints and score marks shall be round-finish with an approved tool.

7. All survey monuments shall be identified, protected, and reset by a licensed land surveyor. (See General Note 9 on Standard Detail H-01.0).

8. Where necessary to replace existing sidewalk, cold joint shall be made at existing joint, or min. 1.5 inch sawcut at nearest score mark. Score pattern to match existing pattern unless directed by City Staff.

9. In special districts of the City, sidewalk shall match scoring and color of existing decorative sidewalk. (i.e., State Street, Carrillo Street, Chapala Street).

10. All utility boxes shall be placed at the back of curb.

11. Minimum of 4 feet clear space shall be provided around all tree wells, utility boxes/poles, benches, and other obstructions (5 feet preferred).

*R/W = Right of Way

**PMP = Pedestrian Master Plan, www.santabarbararaca.gov/pmp
NOTES:

GENERAL
1. All access ramps shall be constructed in accordance with Title 24 of the Americans with Disabilities Act (ADA), the California Building Standards Code (CBC), and these Standard Details.
2. Ramp thickness shall be 4 inches in residential areas and 6 inches in commercial areas.
3. Transitions from ramps to sidewalks, gutters, or streets shall be flush and free of abrupt changes. Maximum slopes of adjoining gutters and road surface immediately adjacent to the curb ramp shall not exceed 1:20.
4. The minimum width of a diagonal curb ramp shall be 60 inches, exclusive of flared sides, unless approved by City Engineer, or designee. The minimum width of a directional curb ramp shall be 60 inches, exclusive of flared sides.
5. Thirty working days prior to commencing demolition activities the Contractor shall contact a licensed Land Surveyor to tie out any survey monuments and other recorded survey markers.
6. Existing survey monuments located adjacent to and outside of construction areas shall be adequately protected from any damage that may result from the Contractor's operations.
7. Existing street name stamps located in concrete to be demolished, or carefully removed, preserved, and relocated into the adjacent parkway area, as directed by City Engineer or designee.
8. Existing curb paint shall be repainted to existing condition on all new or retrofit curbs.
9. Use 560-C-3250 concrete for all access ramps.

RAMP STYLE
1. In general, dual directional or blended transition ramps are preferred. In higher volume areas or where physical constraints dictate, diagonal ramps may be used. Consult the City Engineer or designee for preferred ramp style.
2. When constructing one new ramp at an intersection, the selected ramp standard should be most compatible with existing ramps, or per City Engineer, or designee.

DETECTABLE WARNINGS
1. Dome height and size shall be minimum specified by the CBC, dome spacing shall be maximum specified by the CBC.
2. Detectable warning surfaces shall extend 36 inches minimum in the direction of travel and the full width of the curb ramp.
3. For new construction, detectable warnings shall be Tekway Dome-Tiles or an equivalent approved by the City Engineer.
4. For retrofit installations, detectable warnings shall be SafetyStepTD or an equivalent approved by the City Engineer.
5. Color shall be Federal Yellow per the current California Building Code.
PLAN VIEW

TAPER TO GRADE. VARIABLE HEIGHT RETAINING CURB TO BE BUILT ONLY IF DEEMED NECESSARY BY CITY INSPECTOR.

4" x 4" MINIMUM LANDING

MATCH CURB HEIGHT AND EXISTING GUTTER WIDTH, TYP.

CONCRETE PARKWAY (USE FLARED WING)

MATCH EXISTING SIDEWALK

SECTION B-B

RETAINING CURB SHALL BE BUILT AS FAR AS NECESSARY TO MAINTAIN POSITIVE PARKWAY SLOPE. SEE SIDEWALK STANDARD DETAIL FOR SIDEWALK SECTIONS.

CURB HEIGHT AT LANDING SHALL BE MINIMUM 2" AND MAXIMUM 4".

SECTION C-C

INSTALL NON-GROUTED ACKERSTONE BUFF PACIFIC CLAY BEAR PATH OR APPROVED EQUIVALENT PAVERS. MINIMUM AREA OF PAVERS SHALL BE 10 SQUARE FEET. WHEN APPROPRIATE, CURB RADIUS MAY BE ADJUSTED TO MEET THIS REQUIREMENT.

PACIFIC CLAY BEAR PATH PAVERS PER DETAIL H-01.0.

RECOMPACT EXISTING AGGREGATE BASE OR EXISTING SOIL TO 95% RELATIVE COMPACTION FOR A MINIMUM OF 12".

SECTION A-A

TAPER TO GRADE. VARIABLE HEIGHT RETAINING CURB TO BE BUILT ONLY IF DEEMED NECESSARY BY CITY INSPECTOR.

MATCH EXISTING SIDEWALK

*5% OR LESS DESIRED, 7.5% MAX. BUT IN NO CASE REMOVE MORE THAN 12" OF EXISTING SIDEWALK TO MEET GRADE REQUIREMENTS UNLESS DIRECTED BY CITY ENGINEER OR DESIGNEE.

ACCESS RAMP DETAILS

DUAL DIRECTIONAL

Directional curb ramps shall match the width and alignment of adjoining sidewalk.
PLAN VIEW

TAPER TO GRADE. VARIABLE HEIGHT RETAINING CURB TO BE BUILT ONLY IF DEEMED NECESSARY BY CITY INSPECTOR.

EXISTING SIDEWALK

PLANTED PARKWAY

RETAINING CURB SHALL BE BUILT AS FAR AS NECESSARY TO MAINTAIN POSITIVE PARKWAY SLOPE. SEE SIDEWALK STANDARD DETAIL FOR SIDEWALK SECTIONS.

MATCH CURB HEIGHT AND EXISTING GUTTER WIDTH, TYP.

R=3

R=1

3'

NOTE:

USE FLARED WING FOR CONCRETE PARKWAY, SEE STANDARD DETAIL H-07.1.

SECTION A-A

4'-2" MINIMUM LANDING

VARIABLE

RETAINING CURB, 6" AT EDGE OF GUTTER, CURB SHALL BE BUILT AS FAR AS NECESSARY TO MAINTAIN POSITIVE PARKWAY SLOPE. SEE SIDEWALK STANDARD DETAIL FOR SIDEWALK SECTIONS.

2% MAX

7.5%

Directional curb ramps shall match the width and alignment of adjoining sidewalk.

ACCESS RAMP DETAILS
ONE-WAY DIRECTIONAL

REV. DATE: 09/19  DETAIL:  H-07.2

APPROVED:
CITY ENGINEER
PUBLIC WORKS DIRECTOR
PLAN VIEW - STANDARD DIAGONAL ACCESS RAMP*
ONLY TO BE USED WITH APPROVAL BY CITY ENGINEER OR DESIGNEE

TAPER TO GRADE. VARIABLE HEIGHT RETAINING CURB TO BE BUILT ONLY IF DEEMED NECESSARY BY CITY INSPECTOR.

SECTION A-A

MATCH GRADE

EXIST. SIDEWALK

CONCRETE PARKWAY

5 MIN. FLARE WIDTH

4 MIN. RAMP WIDTH

SECTION B-B

TAPER TO GRADE. VARIABLE HEIGHT RETAINING CURB TO BE BUILT ONLY IF DEEMED NECESSARY BY CITY INSPECTOR.

MATCH EXISTING SIDEWALK

5%* OR LESS DESIRED, 7.5% MAX. BUT IN NO CASE REMOVE MORE THAN 12 FT. OF EXISTING SIDEWALK TO MEET GRADE REQUIREMENTS UNLESS DIRECTED BY CITY ENGINEER OR DESIGNEE.

SECTION A-A REQUIRED FOR DEPRESSED LANDING ONLY

MATCH CURB HEIGHT AND EXISTING GUTTER WIDTH, TYP.

PLAN VIEW - MODIFIED DIAGONAL ACCESS RAMP
FOR CURB FACE SIDEWALK

MATCH CURB HEIGHT AND EXISTING GUTTER WIDTH, TYP.

SECTION C-C

TAPER TO GRADE. VARIABLE HEIGHT RETAINING CURB TO BE BUILT ONLY IF DEEMED NECESSARY BY CITY INSPECTOR.

MATCH CURB HEIGHT AND EXISTING GUTTER WIDTH, TYP.

3" DETECTABLE WARNING SURFACE

4'-2" MINIMUM LANDING

2% MAX.

ACCESS RAMP DETAILS
DIAGONAL

REV. DATE: 09/19 DETAIL: H-07.3

APPROVED:

CITY ENGINEER

PUBLIC WORKS DIRECTOR
A Blended Transitional Ramp (BTR) must be approved by City Engineer or designee, and be accompanied with a full survey of the impacted area.
NOTES:

1. Concrete shall be Class 560-C-3250 per Standard Specifications for Public Works Construction (Green Book).

2. Bus pocket slab, curb and gutter shall be poured monolithically. Optional 3 foot gutter may be placed first for control of flowline however, dowels will be required for second pour.

3. Bus pocket slab shall be 8 inches thick.

4. Pre-molded 0.25 inch thick steel expansion joints shall be placed at beginning and end of bus pocket. 1.5 inch deep contraction joints shall be placed at 30' intervals.

5. All concrete edges shall have 0.5 inch radius unless otherwise noted.

6. Clear drying fugitive dye curing compound shall be applied to all exposed surfaces immediately after finishing.

7. Height of the curb face to be 6-inch standard unless otherwise noted.

8. Joints and sawcuts in existing curbs shall be at right angles.
CONCRETE BUS POCKET
REVERSE TAPER - GEOMETRICS

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<td>PIPE HEADWALL</td>
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</tbody>
</table>
DROP INLET NOTES:
1. All concrete shall be Class 560-C-3250 per Standard Specifications for Public Works Construction. (GREEN BOOK)
2. The curb opening shall be as shown on plan, but not less than 4 feet for Type 1, 10 feet for Type 2.
3. Install step when required, per Standard Detail D-02.0 and D-02.1.
4. Connector pipe shall be placed on the back or side wall as shown in plans, to be clear of future drop inlet filter baskets.
5. Provide 3 inch radius rounded edge at pipe inlet.
6. The width of gutter depression shall be 4 feet unless otherwise shown on plans.
7. Manhole frame and cover shall be Alhambra Foundry A-1530B lettered with the words "City of Santa Barbara Storm Drain" unless otherwise specified in plans.
8. Top slab surface shall be a light broom finish.
10. Gutter depression shall be Type A, Standard Detail D-03.0 unless otherwise specified on plans.
11. Reinforcing steel in the top slab shall be #4 @12 inches on center.
12. Wall thickness (T) and reinforcing requirements shall be per Table A, Standard Details D-01.1 and D-01.2.
13. Clear drying fugitive dye curing compound shall be applied to all exposed surfaces immediately after finishing.
14. Aggregate base shall be placed 6 inches deep and compacted to 95% minimum relative compaction on undisturbed native soil before placing concrete.
15. Manhole shall be set 6 inches from inside wall of inlet.
16. All interior walls, floor, and top shall be sacked and patched upon completion.
17. Extend top slab rebar 4" into walls of drop inlet and 12" into adjacent curbs.
18. Install "Drains to Ocean" medallion on top slab per Standard Details D-01.1 and D-01.2.
19. Where required, an American Storm Water "Surf Gate" catch basin debris screen shall be installed.
DROP INLET
TYPE 1

TABLE A

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<tr>
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*OPTIONAL

REV. DATE: 11/12  DETAIL: D-01.1

APPROVED:

PUBLIC WORKS DIRECTOR
SECTION A-A

SECTION B-B

DROP INLET

TYPE 2

TABLE A

<table>
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<tr>
<th>H RANGE</th>
<th>T (TYP.)</th>
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<tr>
<td><strong>&quot;5' - 8'&quot;</strong></td>
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*REQUIRES SPECIAL APPROVAL BY ENGINEER OR DESIGNEE
**OPTIONAL

REV. DATE: 11/12  DETAIL: D-01.2

APPROVED: [Signature]

CITY ENGINEER

PUBLIC WORKS DIRECTOR
DROP INLET DETAIL NOTES:

1. Face plate shall be Alhambra Foundry A-3912 or approved equal, embedded 3 inches into side walls.
2. Support bolts shall be installed, when curb opening exceeds 7 feet and shall be spaced evenly not more than 7 feet and not less than 5 feet on center.
3. 3/4 inch diameter longitudinal protection bar assembly shall be installed when inlet curb face is more than 9 inches. The protection bar shall be fitted to each support bolt.
4. Steps are not required when H is 3.5 feet or less (see Standard Details D-01.1 and D-01.2). Install one step 16 inches above the floor when H is greater than 3.5 feet but less than 5 feet. Install steps at 12 inch intervals when H exceeds 5 feet. Steps shall be non-slip polypropylene plastic coated reinforcing steel complying with all current ASTM standards. Any exposed metal parts shall be galvanized after fabrication.
5. Inlet opening shall be equal to the existing curb height plus 3 inches.
19. Where required, an American Storm Water "Surf Gate" catch basin debris screen shall be installed.
NOTE: FIRST RUNG SHALL BE MOUNTED NO GREATER THAN 12 INCHES BELOW THE TOP EXTERIOR OF THE DROP INLET
NOTES:

1. Gutter depression, curb transition and structure's top slab shall be poured monolithic.

2. Surface finish of gutter depression shall be light broom finish.

3. Concrete strength and curing compound per Standard Detail D-01.0.

4. Gutter depression shall be 3 inches.

5. Deep joint shall be 2 inches deep.
NOTES:

1. Gutter depression, curb transition and structure's top slab shall be poured monolithic.

2. Surface finish of gutter depression shall be light broom finish.

3. Concrete strength and curing compound per Standard Detail D-01.0.

4. Gutter depression shall be 3 inches.

5. Deep joint shall be 2 inches deep.
NOTES:
1. Gutter depression, curb transition and structure's top slab shall be poured monolithic.
2. Surface finish of gutter depression shall be light broom finish.
3. The width of the depressed gutter shall match street gutter width.
4. Concrete strength and curing compound per Standard Detail D-01.0.
5. Gutter depression shall be 3 inches.
6. Deep joint shall be 2 inches deep.
NOTES:
1. Gutter depression, curb transition and structure's top slab shall be poured monolithic.
2. Surface finish of gutter depression shall be light broom finish.
3. The width of the depressed gutter shall match street gutter width.
4. Concrete strength and curing compound per Standard Detail D-01.0.
5. Gutter depression shall be 3 inches.
6. Deep joint shall be 2 inches deep.
NOTES:

1. Drain shall be schedule 40 P.V.C.
2. Replace sidewalk per Standard Details H-06.0 and H-06.1.
3. Replace curb and gutter per Standard Detail H-02.
4. A maximum 3 inch diameter pipe shall be used in a 6 inch curb, 4 inch pipe in an 8 inch curb.
5. Pipe(s) shall have a minimum 0.5%, maximum 2% positive slope.
6. The number of pipes at any location shall not exceed four. There shall be a 3 inch minimum clearance between all pipes.
7. In commercial areas, sawcut and remove sidewalk, curb, and gutter per plan above.
8. In residential areas, remove a minimum of one panel length of sidewalk, curb, and gutter. Dowel into gutter.
9. Pipe opening may be core-drilled in existing curb in lieu of curb removal.
10. Property owners are responsible for curb drain maintenance.
11. Curb drain shall be placed a minimum of 5 feet (10 feet preferred) from any driveway, City tree, or intersection curb return.

CURB OUTLET DRAIN
TYPE A
NOTES:

1. Drain shall be Alhambra Foundry A-470 Rectangular Cast Iron Pipe.
2. Where curb height is less than 8 inches, sidewalk may be raised such that the curb height reaches 8 inches at the drain outlet if approved by City inspector.
3. Where curb height is less than 8 inches and sidewalk modification is not possible, a Type A (D-5.0) or Type C (D-05.2) drain shall be used.
4. Replace sidewalk per Standard Details H-06.0 and H-06.1.
5. Replace curb and gutter per Standard Detail H-02.0.
6. Pipe(s) shall have a minimum 0.5%, maximum 2% positive slope.
7. In commercial areas, sawcut and remove sidewalk, curb, and gutter per plan above.
8. In residential areas, remove a minimum of one panel length of sidewalk, curb, and gutter. Dowel into gutter.
9. Property owners are responsible for curb drain maintenance.
10. Curb drain shall be placed a minimum of 5 feet (10 feet preferred) from any driveway, City tree, or intersection curb return.

CURB OUTLET DRAIN
TYPE B
NOTES:
1. L - Length of sidewalk drain as shown on Plans.
2. W - Width of sidewalk drain as shown on Plans, 2' maximum. Widths exceeding 2' shall be approved by City Engineer.
3. Concrete - Class 560-C-3250 per Standard Specifications for Public Works Construction.
4. 3/8" X 3/8" steel strip - tack welded to angle at 12".
5. All exposed steel to be galvanized after fabrication.
6. For use only when Type A or B curb outlet drain cannot feasibly be installed.
7. Drain shall be a minimum of 10 feet from any driveway or alley entrance.
**NOTES:**

1. Concrete - Class 560-C-3250 per Standard Specifications for Public Works Construction (Green Book).

2. Reinforced steel - all horizontal and vertical bars shall be #4 at maximum 18-inch spacing.

3. 3-inch radius around edge at pipe inlet.

4. Double inlet wall - same as single D/2 or 2-foot minimum spacing between pipe inside diameters.

**PIPE HEADWALL**
## LIGHTING

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<td>L-02.0</td>
<td>POLE STANDARD - TYPE B</td>
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<td>LUMINAIRE STANDARD - TYPE A-08 AND B-08</td>
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**LIGHTING**

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<td>WATER RESOURCES:</td>
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REV. DATE: 11/12  DETAIL: L-00.0

CITY ENGINEER
PUBLIC WORKS DIRECTOR
NOTES:

1. Improvements constructed under this Standard shall conform to applicable portions of the Standard Specifications for Public Works Construction, latest Edition.
2. Luminaire shall be LED type, G.E. M-250A2 Power/Door luminaire, Cobra Head Roadway Lighting, 120 volt NPF reactor or lag ballast, with luminaire-mounted photoelectric cell. Lens shall be polycarbonate prismatic refractor, "Dome" style, producing I.E.S. medium type III semi-cutoff distribution. Filter shall be fiber gasket type. Equals must be approved by the City Engineer. Where LED bulbs may not be used, HPS bulbs may be substituted with Engineer's approval. A sticker indicating lamp wattage shall be placed on the underside of the arm nearest the pole. For HPS lamps, the sticker shall be yellow with a black number. Wattages shall be 40, 65, 90, or 135 for LED lamps (70, 100, 150, or 250 for high pressure sodium (HPS) lamps). ANY AND ALL OTHER WATTAGES OR BULB TYPES SHALL BE APPROVED BY THE CITY ENGINEER IN WRITING PRIOR TO INSTALLATION.
3. See L-05.0 for pole type and luminaire selection in residential and commercial areas.
4. Light standards shall be manufactured by a centrifugal spinning process using aggregate consisting of black and white pieces, graded from 3/8 inch to a No. 150 sieve, and Type III portland cement conforming to ASTM Designation C150. Reinforcing steel shall consist of deformed steel bars conforming to ASTM Designation 615, and 7-strand uncoated stress-relieved prestressing cable having a minimum ultimate strength of 250,000 PSI. All reinforcing shall be spirally wrapped with cold-drawn wire. The concrete shall develop a minimum compressive strength of 3,500 PSI before removal from the mold. The exterior shall be sandblasted to develop a "marbelite" finish.
5. Underground electrical conduit shall be 1-1/2 inch minimum Schedule 40 P.V.C. electrical conduit, laid with 18 inch minimum cover behind curb within one foot of the curb face, unless shown otherwise on plans. Conduit shall be bundled tightly in the center of the footing. Conduits shall terminate in footings on the same side as the conduit run. A pull box is required within 5 feet of the street light. Conduit shall be "stubbed" not less than 3 inches and not more than 4 inches above the inside surface of street light or pull box.
6. In unmetered lights, install Tron HEB-A8, HEB A-A 30-Amp 600 Volt waterproof in-line fuse and receptacle in each standard base, with a minimum of 12 inches and a maximum of 18 inches in wiring to permit fuse receptacle to be serviced outside the standard. Metered lights and lighting circuits that have circuit breakers installed shall not have in-line fuses installed as well.
7. In addition, all conductor lengths shall be a minimum of 12 inches and a maximum of 18 inches inside hand holes and pull boxes. Contractor shall contact Southern California Edison Company for requirements of service installation, and shall install such service components as Edison requires to energize the system.
8. Power control point shall be the photoelectric cell (PE) located on cobra head pedestal cabinet. Single light has photocell on top of cobra head. Multiple light has photocell on meter pedestal with a bypass switch.
10. All exposed steel parts shall be galvanized, stainless, or painted.
11. All power access doors shall be stainless steel and cast aluminum or equivalent. The 1/4 inch screws in the access cover shall be s.s. phillips panhead.
13. All lights shall be tested in the presence of the Public Works Inspector prior to acceptance.
14. If 3 or more lights are to be installed, a CP3B, Milbank 16 x 17 x 48" (TYPE B) commercial pedestal meter, in Malaga Green color matching the RAL Classic System color RAL6005 shall be installed, with the following: Meter socket with test bypass facility, 100 amps, 120/240 V, #3 wire, 1 main circuit breaker, 14 KAIC, 12 circuit load center with load test switch.

LIGHT STANDARD: TYPES A-08 AND B-08
NOTES
NOTES:
1) Install ground rod in pull box.
2) Maximum 2 conductors per fixture. 3 conduits require adjacent pull box.
3) Dissimilar metals separated electrically.
4) All bolts, nuts, washers, and hardware shall be galvanized steel.

POLE STANDARD
TYPE A-08

VICTORIAN FLUTED POLE (wt. 1200LBS)

POLE ORIENTATIONS

NOTE - Infield borings in pole may only be in 90° increments in relation to hand hole.

POLE SECTION

OPTION 1
FOUNDERING 31/2" FOUNDATION: 3 1/2" DEPTH: 3

OPTION 2
FOUNDERING 31/2" FOUNDATION: 3 1/2" DEPTH: 3

POLE TOP DIA. 5 1/4"

TAPERED FLUTED SECTION

NOTE:
4. Baseplate is included.
5. (4) 1"x30"x36" galvanized steel bolts & hardware included.
6. Pole Top designed for max 12LMA w/2.1sq.ft. luminaires.
POLE STANDARD
TYPE B-08

NOTES:
1) Install ground rod in pull box.
2) Maximum 2 conduits per fixture. 3 conduits require adjacent pull box.
3) Dissimilar metals separated dielectrically.
4) All bolts, nuts, washers, and hardware shall be galvanized steel.

NOTE - Infield burials in pole may only be in 90° increments in relation to hand hole.

RECOMMENDED MOUNTING SETUP DETAIL

CONCRETE FOUNDATION: CLASS 540-O-2325

OPTION 1
FOUNDATION 3' X 3'
DEPTH: 6'

OPTION 2
FOUNDATION 2' X 6'
DEPTH: 6'

POLE SECTION

POLE TOP DETAIL

PULLBOX

HANDHOLE

POLE ORIENTATIONS

VIEW A

POLE TOP DETAIL

VICTORIAN FLUTED POLE (wt. 800LBS)

NOTES:
4. Baseplate is included.
5. (4) 3"x24"x4" galvanized steel bolts & hardware included.
**Description of Components:**

**Lamp:** As specified by Contract requirements. Default shall be LED type.  
**Optical System:** (TH3F), I.E.S. type III hyper-extensive (asymmetrical).  
Horizontal lamp position in a 15 degree angle.  **Weather tightness IP66 rating.**  
This assembly is toolfree removable from the technical ring.  
**Ballast:** Matching Ballast included with lamp. Connected to 120 volts.  
Assembled on a unitized removable tray with quick disconnect plug.  
**Access-Mechanism:** A die cast 360 aluminum technical ring with latch and hinge complete with a cast-in reflector. The mechanism shall offer toolfree access to the inside of the luminaire. An embedded memory-retentive gasket shall ensure weatherproofing.  
**Central Tubing:** Made of aluminum tubing, 4½" outside diameter, slip fits over a 4" diameter by 9" long pole tenon, mechanically fastened by two levels of 3/8-16 UNC set-screws & a 3/8" Locking Bolt.  
**Photo Cell:** Twist lock type photocell, 120 volts, complete with an orientable cover. (Optional)  
**Hardware:** All exposed screws will be in stainless steel. All seals and sealing devices are made and/or lined with EPDM and/or silicone.  
**Finish:** Lumec custom color **PS311G128 Malaga Green** (SC1TX) or matching RAL Classic System color RAL6005.  

**NOTES:**  
2. Order: Luminaire as specified by contract (default shall be LED type), and request arm length as specified by contract. Mid Pole Bracket, if required by contract, is pole specific and includes arm.  
3. Post Top, Arm, Mid Pole Bracket and installation hardware, including 3/8" locking bolt, to be provided by manufacturer.  
4. 3/8" hole to be drilled in Post Top by Contractor.  
5. 3/8" bore thru pole tenon for locking bolt to be drilled by Contractor.  
6. Post Top & Arm, and Mid Pole Bracket alignment typically perpendicular to curb face, must be prior approved by Project Engineer.  
7. Mid Pole Bracket location height on pole is set approximately at 14'. Contractor will bore electrical access hole in pole.  
8. Optical system to be aligned in field per Manufacturers Streetside direction label identified in fixture.  
9. A sticker indicating lamp wattage shall be placed on the underside of the arm nearest the pole. For HPS lamps, the sticker shall be yellow with a black number.

---

**LUMINAIRE STANDARD**  
**TYPE A-08 AND TYPE B-08**

---

**PREPARED BY:**

**APPROVED:**

**PUBLIC WORKS DIRECTOR**
POLE STANDARD
TYPE C-08

NOTES:
1) Install ground rod in pull box.
2) Maximum 2 conduits per fixture. 3 conduits require adjacent pull box.
3) Dissimilar metals separated dielectrically.
4) All bolts, nuts, washers, and hardware shall be galvanized steel.

NOTE - Infield borings in pole may only be in 90° increments in relation to hand hole.

VICTORIAN FLUTED POLE (vtr. 500lbs)

POLE ORIENTATIONS

POLE TOP DETAIL

POLE SECTION

RECOMMENDED MOUNTING SETUP DETAIL

POLE TOP DETAIL

POLE ORIENTATIONS

NOTES:
1. Contact: Pacific Lighting Sales Inc. 2366 Birchler Drive, Suite 100 Lake Forest, CA 92630, (949) 597-6133.
   http://www.pls-inc.com
2. Order Pole VBF04.75PL. Victorian Fluted Pole, Pole Mix (2P3S) Santa Barbara Black & White exposed aggregate finish, with flat water sealer coating - ASTM C-160 Type III gray cement.
4. Baseplate is included.
5. (4) 5/8 x 24 galvanized steel bolts & hardware included.
6. MOD-BM: Plug down pole length to 14'-3" OAL.
Description of Components:

Lamp: As specified by Contract Requirements. Default shall be LED type.

Optical System: (SG2), I.E.S. type II (asymmetrical). Reflector composed of a chemically brightened multi-faceted anodized aluminum, mounted on a white frame. This assembly allows for a full rotation of the optical system in 90 degree increments.

Ballast: Matching Ballast included with Lamp. Connected to 120 volts. Assembled on a unitized removable tray with quick disconnect plug.

Access-Mechanism: A die cast A380 aluminum technical ring with a cast-in decorative skirt. An integrated hinge and a captive knurled thumb screw offer a tool free access to the inside of the luminaire and to the lamp. An embedded memory-retainive gasket shall ensure weatherproofing.

Central Tubing: Made of aluminum tubing, 4½" outside diameter, slip fits over a 4" diameter by 9" long pole tenon, mechanically fastened by two levels of 3/8-16 UNC sets-screws.

Photo Cell: Twist lock type photocell, 120 volts, complete with an orientable cover.

Hardware: All exposed screws will be in stainless steel. All seals and sealing devices are made and/or lined with EPDM and/or silicone.

Finish: Lumeck custom color PS311G128 Malaga Green (SC1TX) or matching RAL Classic System color RAL6005.

NOTES:
2. Order: Luminaire as specified by contract (default shall be LED type), and request arm length as specified by contract. Mid Pole Bracket, if required by contract, is pole specific and includes arm.
3. Post Top, Arm, Mid Pole Bracket and installation hardware, including ½" locking bolt, to be provided by manufacturer.
4. ¾" hole to be drilled in Post Top by Contractor.
5. ¾" bore hole thru pole tenon for locking bolt to be drilled by Contractor.
6. Post Top & Arm, and Mid Pole Bracket alignment typically perpendicular to curbface, must be prior approved by Project Engineer.
7. Mid Pole Bracket location height on pole is set approximately at 14'. Contractor will bore electrical access hole in pole.
8. Optical system to be aligned in field per Manufacturers Streetside direction label identified in fixture.
9. A sticker indicating lamp wattage shall be placed on the underside of the arm nearest the pole. For HPS lamps, the sticker shall be yellow with a black number.

LUMINAIRE STANDARD
TYPE C-08
NOTES:

1. Pull box shall be Christy N9 pull box with N9T skid resistant Fibrelite lid with bolt downs unless otherwise specified.

2. Bottom of pull box shall rest firmly on a 12 inch thick bed of 1 inch crushed rock extending 6 inches beyond the outside walls of the box.
NOTES:
1. All ornamental street lighting cable systems shall be underground, rather than overhead.
2. Location of street light standards to be approved by City Building Maintenance (805) 564-5415, prior to installation.
3. Residential light standards shall be spaced on lot lines not more than two hundred-fifty (250) feet apart approximately.
4. Where commercial or industrial lot frontages are involved, light standards shall be spaced one hundred (100) feet apart.
5. All other features of street lighting systems shall meet the requirements of the Public Works Department which shall be established to achieve safety, maximum life, low maintenance cost, adequate illumination and structural soundness.
6. All pull boxes shall be set at the back of the curb. Roadway pull boxes are for replacement purposes only.
7. All pull boxes shall be set in accordance with N.E.C. and CALTRANS Standards.
8. When the distance between street lights is greater than 100 feet, a pull box must be set every 100 feet for pulling wire.
9. Recommended Pole Type and Luminaire for Commercial or Residential Use:

**Commercial**

<table>
<thead>
<tr>
<th>Location</th>
<th>Pole Type</th>
<th>Watt - Output</th>
<th>Order Part #: HPS/LED**</th>
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</thead>
<tbody>
<tr>
<td>Intersection**</td>
<td>A</td>
<td>250</td>
<td>HPS: DMS55-250HPS-TH3F-QTA/120-1A-SC1TX</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LED: DMS55-136W80LED4K-ES-LE3F-120-(B-LCP-031)-1A-SCZT311G151TX</td>
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<tr>
<td>Mid-Block</td>
<td>A</td>
<td>250</td>
<td>HPS: DMS55-250HPS-TH3F-QTA/120-1A-SC1TX</td>
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<td>LED: DMS55-136W80LED4K-ES-LE3F-120-(B-LCP-031)-1A-SCZT311G151TX</td>
</tr>
<tr>
<td>Sidewalk</td>
<td>C</td>
<td>70</td>
<td>HPS: DOS-70HPS-SG2-120-LMS-1A-SC1TX</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LED: DOS-40W30LED4K-ES-LE2F-120-(B-LCP-030)-1A-SCZT311G151TX</td>
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</tbody>
</table>

**Residential**

<table>
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<tr>
<th>Location</th>
<th>Pole Type</th>
<th>Watt - Output</th>
<th>Order Part #: HPS/LED**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection**</td>
<td>B</td>
<td>150*</td>
<td>HPS: DMS55-150HPS-TH3F-QTA/120-1A-SC1TX</td>
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<tr>
<td></td>
<td></td>
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<td>LED: DMS55-90W80LED4K-ES-LE3F-120-(B-LCP-031)-1A-SCZT311G151TX</td>
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<tr>
<td>Mid-Block</td>
<td>B</td>
<td>70</td>
<td>HPS: DMS55-70HPS-TH3F-GL-QTA/120-1A-SC1TX</td>
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<td>Sidewalk</td>
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<td>HPS: DOS-70HPS-SG2-120-LMS-1A-SC1TX</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>LED: DOS-40W30LED4K-ES-LE2F-120-(B-LCP-030)-1A-SCZT311G151TX</td>
</tr>
</tbody>
</table>

*Alternate Output: 100

**Listed LED Part#’s are HPS Wattage Output equivalents

***In residential and commercial areas where there are two lights diagonal from each other across an intersection, 65 watt LED (or 100 watt HPS) bulbs may be used.
# STATE STREET ORNAMENTAL PARTS LIST

FOR PROPRIETARY CITY LIGHTING WITH CITY OWNED MOULDS.
CONTACT FACILITIES MAINTENANCE FOR VENDOR IDENTIFICATION.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>PART NAME</th>
<th># OF PIECES PER STD.</th>
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<tbody>
<tr>
<td>27-90723</td>
<td>TOP RING</td>
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<tr>
<td>23-64831</td>
<td>CENTER RING</td>
<td>1</td>
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<tr>
<td>23-64820</td>
<td>BOTTOM RING</td>
<td>1</td>
</tr>
<tr>
<td>23-79760</td>
<td>SHORT STAVE</td>
<td>6</td>
</tr>
<tr>
<td>23-70903</td>
<td>LONG STAVE</td>
<td>6</td>
</tr>
<tr>
<td>23-90700</td>
<td>TOP COVER</td>
<td>1</td>
</tr>
<tr>
<td>23-90720</td>
<td>TOP ORNAMENT</td>
<td>1</td>
</tr>
<tr>
<td>P-28-82-01</td>
<td>BASE CASTING</td>
<td>1</td>
</tr>
<tr>
<td>P-28-82-02</td>
<td>LOWER RISER TUBE 6&quot;</td>
<td>1</td>
</tr>
<tr>
<td>P-28-82-03</td>
<td>CENTER CASTING</td>
<td>1</td>
</tr>
<tr>
<td>P-28-82-04</td>
<td>UPPER RISER TUBE</td>
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</tr>
<tr>
<td>P-28-82-05</td>
<td>TOP CASTING</td>
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</tr>
<tr>
<td>P-28-82-06</td>
<td>TOP PLATE LAMP MOUNT</td>
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<tr>
<td>P-28-82-07</td>
<td>ORNAMENTAL “S”</td>
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<tr>
<td>P-28-82-08</td>
<td>LADDER SUPPORT ARMS</td>
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</tr>
<tr>
<td>N/A</td>
<td>GLASS REFRACTOR W/MOUNT (CITY SUPPLIED)</td>
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</tr>
<tr>
<td>N/A</td>
<td>SMALL LEXAN LENS</td>
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</tr>
<tr>
<td>N/A</td>
<td>LARGE LEXAN LENS</td>
<td>6</td>
</tr>
</tbody>
</table>

NOTES:
1. FOR FOOTING, SEE CITY STANDARD L-02.0 RECOMMENDED MOUNTING SETUP DETAIL (TYPE B)
2. CONTACT CITY BUILDING MAINTENANCE AT (805) 564-5415 FOR LIGHT STANDARD INFORMATION.

STATE STREET
DECORATIVE LIGHT STANDARD

STREETS: [Signature]
REV. DATE: 11/12 DETAIL: L-06.0
TRANS OPS: [Signature]
APPROVED: [Signature]
FACILITIES: [Signature]
WATER RESOURCES: [Signature]
PUBLIC WORKS DIRECTOR: [Signature]
LIGHT STANDARD SPECIFICATIONS

FOOTING: See Standard Detail L-02.0
STYLE: Lansing Residential Standard
HEIGHT: 11'-9"
BASE: 21'-5/8"
BOLT CIRCLE: 13" DIAMETER
ANCHOR BOLTS: (4) 3/4" X 24" H.D. GALVANIZED STEEL
MATERIAL: 60-45-10 CAST DUCTILE IRON WITH CASTING CERTIFIED ANALYSIS
ACCESS DOOR: 2-3/8" X 8-3/8" X 11"
DETAILS: 3-1/4" DIAMETER X 3" HEIGHT, CAST-IN TO BE EXACT IN SHAPE AND DIMENSIONS TO THE ORIGINAL KING 0-61 FRENCH DESIGN STANDARD
FINISH: PAINT "MALAGA GREEN" POWDER COAT MATCHING RAL CLASSIC SYSTEM COLOR RAL6005

ORNAMENTAL LUMINAIRES. INSTALL REFRCTOR SYSTEMS, BALLAST KIT, AND LAMPS AS DIRECTED BY ENGINEER. (TYP.)

CHAPALA STREET
DECORATIVE LIGHT STANDARD
HANGING LIGHT FIXTURE
NOT TO SCALE

WELSBACK LIGHTING FIXTURE
NO. T7PH39D3/SB. PAINT "MALAGA GREEN" COLOR MATCHING THE RAL CLASSIC SYSTEM COLOR "RAL6005"

26" 42-1/2"

O.D. = 12-1/8 / 14-1/2"

O.D. = 14-5/8 / 16-3/4"

O.D. = 14" / 16"

INSTALL CASTING PLUMB SO THAT VERTICAL AXIS OF CASTING IS COINCIDENT WITH AXIS OF POLE.

O.D. = 23-1/2" / 27"

SET BASE IN MORTAR BED. TRIM MORTAR FLUSH WITH OUTSIDE OF BASE. MORTAR SHALL MATCH SIDEWALK.

CAST BASE DETAIL
NOT TO SCALE

CAST ALUMINUM BRACKET. PAINT "MALAGA GREEN" COLOR MATCHING THE RAL CLASSIC SYSTEM COLOR "RAL6005"

DECORATIVE BRACKET
NOT TO SCALE

NOTES:
1. Pole is the standard Caltrans type, painted "Malaga Green" color matching the RAL Classic System color "RAL6005"
2. Light standard is 30 feet tall from the sidewalk to the base of the finial.
3. For foundation, see Standard Detail L-01.1 Recommended Mounting Setup Detail.

CARRILLO STREET
DECORATIVE LIGHT STANDARD

REV. DATE: 11/12 DETAIL: L-08.0

APPROVED:

CITY ENGINEER
PUBLIC WORKS DIRECTOR
METER PEDESTAL

NOTES:
1. Control cabinet shall be U.L. listed "Industrial Control Panel" per UL 508.
2. Construction shall be NEMA 3R.
3. Voltage ratings of service equipment shall conform to the service voltages indicated on the plans.
4. Service equipment enclosure and metering equipment shall meet the requirements of the serving utility. When the serving utility provides both metered and unmetered circuits, a separate bus shall be provided for each circuit. The meter area shall have a sealable, lockable, raintight cover that can be removed without the use of tools.
5. Service equipment shall be factory wired and conform to NEMA standards.
6. The exterior door shall have provisions for padlocking. The padlock hole shall be a minimum diameter of 11mm.
7. All terminals for incoming service conductors shall be compatible with either copper or aluminum conductors sized to suit the conductors shown on the plan. Terminal lugs shall be copper or tin-plated aluminum. Solid neutral terminal strip shall be rated 125A unless otherwise specified and for use with copper or aluminum conductors. The terminal should include but not limited to:
   A. incoming terminals (landing lugs)
   B. Neutral lugs
   C. Solid neutral terminal strip
   D. Terminal strips for conductors within the enclosure
8. At least 6 standard single pole circuit breaker spaces (20 mm nominal) shall be provided for branch circuits. Circuit breaker interiors shall be copper. Interiors shall accept plug-in or cable-in/cable-out circuit breakers.
9. Plug-in circuit breakers may be mounted in the vertical or horizontal position. Cable-in/cable-out circuit breakers shall be mounted in the vertical position.
10. Fasteners on the exterior of the enclosure shall be vandal resistant and shall not be removable from the exterior. All nuts, bolts, screws, washers, and hinges shall be stainless steel.
11. Phenolic name plates shall be provided as required.
12. A plastic covered wiring diagram shall be attached to the inside of the front door.
13. Foundation shall be 24"x24"x12" and extend 3" (76mm) beyond edges of enclosure.
14. There shall be at least 36" (914mm) clearance at front and back of meter pedestal as required per N.E.C. 110-16.
15. Front of meter shall face the street. Directional placement shall be at discretion of inspector.
16. Exterior color of meter pedestal shall be "Malaga Green" matching the RAL Classic System color "RAL 6005".

GROUND ROOD WITH GROUND CLAMP
1/2" x 120" (19mm x 3000mm)
CITY OF SANTA BARBARA SANITARY SEWER STANDARD DETAILS. TO BE USED WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION 2018 EDITION (STANDARD SPECIFICATION). ALL WORK WHICH REQUIRES PAVEMENT RESTORATION SHALL COMPLY WITH CITY STANDARD DETAILS - UNDERGROUND UTILITIES SECTIONS U-01.1 THROUGH U-03.2. REFER TO APPROVED STANDARD MATERIALS LIST FOR WATER/WASTEWATER FOR MATERIALS SPECIFIED IN THESE STANDARD DETAILS WITHOUT THE ALLOWANCE FOR "OR EQUAL".

MANHOLE DETAILS
S-MH1 48" STANDARD PRECAST MANHOLE
S-MH2 60" STANDARD PRECAST MANHOLE
S-MH3 24" DIAMETER PRE-CAST ACCESS STRUCTURE
S-MH4 24" DIAMETER PVC/HDPE ACCESS STRUCTURE
S-MH5 SEWER CLEANOUT
S-MH6 MANHOLE COLLAR AND ADJUSTMENT
S-MH7 MANHOLE FRAMES AND COVERS
S-MH8 LOCKING MANHOLE FRAME AND COVER
S-MH9 CONNECTION TO EXISTING MANHOLE
S-MH10 CAST-IN-PLACE MANHOLE BASE
S-MH11 MANHOLE ABANDONMENT
S-MH12 ABANDONMENT OF SEWER PIPE
S-MH13 OUTSIDE DROP INLET CONNECTION
S-MH14 INSIDE DROP INLET CONNECTION
S-MH15 MANHOLE COATING AND LINING SYSTEMS

PIPELINE DETAILS
S-SP 1 SEWER PIPE BEDDING, HAUNCH SUPPORT AND BACKFILL
S-SP 2 CONCRETE CRADLE AND ENCASEMENT
S-SP 3 STANDARD POINT REPAIR

LATERAL DETAILS
S-SL1 STANDARD LATERAL DETAIL AND NOTES
S-SL2 LATERAL CONNECTION MATRIX
S-SL3 TYPICAL VCP LATERAL CONNECTION
S-SL4 NEW LATERALS TO PVC MAIN
S-SL5 LATERAL CONNECTION TO HDPE MAIN
S-SL6 LATERAL CONNECTION TO REHABILITATEDMAIN
S-SL7 CHIMNEY AND SLOPING LATERAL CONNECTION

MISCELLANEOUS SEWER DETAILS
MISC-FOG GREASE CONTROL DEVICE (GCD)
NOTES:
1. MANHOLE SHALL BE 48" IN DIAMETER IF SEWER MAIN DIAMETER IS SMALLER THAN OR EQUAL TO 15" OR RECEIVES DISCHARGE DIRECTLY FROM A FORCE MAIN (TRANSITION MANHOLE).

MATERIALS:
2. KEY JOINTS SHALL BE TONGUE AND GROOVE PER DETAIL, SET WITH ELASTOMERIC SEALANT. INSIDE OF JOINTS SHALL BE GROUTED WITH NON-SHRINK GROUT.
3. GAPS AND HOLES BETWEEN MANHOLE BASE AND PIPE CONNECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.
4. PRE-CAST BASE SHALL BE BEDDED ON A MINIMUM OF 6" OF WELL GRADED, ¾" ANGULAR CRUSHED ROCK OVER NATIVE MATERIAL THAT IS EITHER UNDISTURBED OR COMPACTED PER GREENBOOK STANDARDS, WITH A RELATIVE COMPACTION ≥ 95%.

CONSTRUCTION:
5. RISERS, CONE, CENTER SECTIONS, AND BASE SHALL CONFORM TO ASTM C-478.
6. CONE SHALL BE CONCENTRIC IF SEWER DEPTH IS LESS THAN 60", ECCENTRIC IF DEPTH IS GREATER THAN 60".
7. MANHOLE SECTIONS SHALL BE PRECAST CONCRETE AND SHALL HAVE 6" MINIMUM WALL THICKNESS WITH MINIMAL REINFORCEMENTS. TYPICAL SECTIONS SHALL BE 12", 16", 24", 32", 36" OR 48" IN HEIGHT.
8. MANHOLE BASE SHALL BE PRE-CAST CONSTRUCTED USING CLASS 560-C-3250 CONCRETE WITH EXTENDED BASE OR POLYMER CONCRETE WITH SIMILAR PROPERTIES. ALL PIPE CONNECTIONS' SIZE, ANGLE, DEPTH AND QUANTITY SHALL BE FIELD VERIFIED AND MEASURED PRIOR TO ORDERING PRECAST BASE. ALL PIPE CONNECTIONS SHALL BE CORED TO FIT FLEXIBLE PIPE-TO-MANHOLE CONNECTORS (KOR-N-SEAL OR EQUAL) EITHER BY MANUFACTURER OR CONTRACTOR USING APPROVED EQUIPMENT.
9. FOR PRE-CAST BASE WITHOUT CHANNEL, BENCH & CHANNEL SHALL BE COMPLETED IN A SINGLE POUR USING CLASS 560-C-3250 CONCRETE WITH STEEL TROWEL FINISH.
10. ANY CHANGE IN DIRECTION SHALL BE A FIXED RADIUS CURVE EXTENDING FROM THE INLET WALL TO THE OUTLET WALL.
11. INSIDE SURFACE OF INVERT AND AREA BETWEEN PIPE CONNECTION AND CHANNEL SHALL BE FREE FROM GAPS, HOLES AND SHARP EDGES.
12. ALL INLETS SHALL BE DESIGNED AND INSTALLED SUCH THAT THE TOP OF PIPE ELEVATIONS MATCH AS MUCH AS POSSIBLE.

REFERENCE:
13. COLLAR ADJUSTMENT TO GRADE SHALL BE PER DETAIL S-MH6.
60" MANHOLE

NOTES:
1. MANHOLE SHALL BE 60" IN DIAMETER IF SEWER MAIN DIAMETER IS LARGER THAN 15" OR RECEIVES DISCHARGE DIRECTLY FROM A FORCE MAIN (TRANSITION MANHOLE).

MATERIALS:
2. KEY JOINTS SHALL BE TONGUE AND GROOVE PER DETAIL, SET WITH ELASTOMERIC SEALANT. INSIDE OF JOINTS SHALL BE GROUTED WITH NON-SHRINK GROUT.
3. GAPS AND HOLES BETWEEN MANHOLE BASE AND PIPE CONNECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.
4. PRE-CAST BASE SHALL BE BEDDED ON A MINIMUM OF 6" OF WELL GRADED, ¾" ANGULAR CRUSHED ROCK OVER NATIVE MATERIAL THAT IS EITHER UNDISTURBED OR COMPACTED PER GREENBOOK STANDARDS, WITH A RELATIVE COMPACTION \( \geq 95\% \).

CONSTRUCTION:
5. RISERS, CONE, CENTER SECTIONS, AND BASE SHALL CONFORM TO ASTM C-478.
6. CONE SHALL BE CONCENTRIC IF DEPTH IS LESS THAN 60" (AS SHOWN ON S-MH1), ECCENTRIC IF DEPTH IS GREATER THAN 60".
7. MANHOLE SECTIONS SHALL BE PRECAST CONCRETE AND SHALL HAVE 6" MINIMUM WALL THICKNESS WITH MINIMAL REINFORCEMENTS. TYPICAL SECTIONS SHALL BE 12", 16", 24", 32", 36" OR 48" IN HEIGHT.
8. MANHOLE BASE SHALL BE PRE-CAST CONSTRUCTED USING CLASS 560-C-3250 CONCRETE WITH EXTENDED BASE OR POLYMER CONCRETE WITH SIMILAR PROPERTIES. ALL PIPE CONNECTIONS' SIZE, ANGLE, DEPTH AND QUANTITY SHALL BE FIELD VERIFIED AND MEASURED PRIOR TO ORDERING PRECAST BASE. ALL PIPE CONNECTIONS SHALL BE CORED TO FIT FLEXIBLE PIPE-TO-MANHOLE CONNECTORS (KOR-N-SEAL OR EQUAL) EITHER BY MANUFACTURER OR CONTRACTOR USING APPROVED EQUIPMENT.
9. FOR PRE-CAST BASE WITHOUT CHANNEL, BENCH AND CHANNEL SHALL BE COMPLETED IN A SINGLE POUR USING CLASS 560-C-3250 CONCRETE WITH STEEL TROWEL FINISH.
10. ANY CHANGE IN DIRECTION SHALL BE A FIXED RADIUS CURVE EXTENDING FROM THE INLET WALL TO THE OUTLET WALL.
11. INSIDE SURFACE OF INVERT AND AREA BETWEEN PIPE CONNECTION AND CHANNEL SHALL BE FREE FROM GAPS, HOLES AND SHARP EDGES.
12. ALL INLETS SHALL BE DESIGNED AND INSTALLED SUCH THAT THE TOP OF PIPE ELEVATIONS MATCH AS MUCH AS POSSIBLE.

REFERENCE:
13. COLLAR ADJUSTMENT TO GRADE PER DETAIL S-MH6.
NOTES:
1. FOR DEPTH GREATER THAN 48", CONSULT ENGINEER. THIS SHALLOW ACCESS DETAIL TO BE USED IN DRIVABLE AREAS.

MATERIALS:
2. JOINTS SHALL BE TONGUE AND GROOVE KEY JOINTS, SET WITH ELASTOMERIC SEALANT, PER DETAIL. INSIDE OF JOINTS SHALL BE GROUTED WITH NON-SHRINK GROUT.
3. GAPS AND HOLES BETWEEN BASE AND PIPE CONNECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.
4. THE PRE-CAST BASE SHALL BE BEDDED ON A MINIMUM OF 6" OF WELL GRADED, ¾" ANGULAR CRUSHED ROCK OVER NATIVE MATERIAL THAT IS EITHER UNDISTURBED OR COMPACTED PER GREENBOOK STANDARDS, WITH A RELATIVE COMPACTION ≥ 95%.

CONSTRUCTION:
5. RISERS AND BASE SHALL CONFORM TO ASTM C-478.
6. RISER SECTIONS SHALL BE PRE-CAST CONCRETE AND SHALL HAVE 6" MINIMUM WALL THICKNESS WITH MINIMAL REINFORCEMENTS.
7. TYPICAL RISERS SHALL BE 3", 6", 9", OR 12" IN HEIGHT.
8. BASE SHALL BE PRE-CAST CLASS 560-C-3250 CONCRETE WITH EXTENDED BASE. ALL PIPE CONNECTIONS' SIZE, ANGLE, DEPTH AND QUANTITY SHALL BE FIELD VERIFIED AND MEASURED PRIOR TO ORDERING PRECAST BASE. ALL PIPE CONNECTIONS SHALL BE CORED TO FIT FLEXIBLE PIPE-TO-STRUCTURE CONNECTORS (KOR-N-SEAL OR EQUAL) EITHER BY MANUFACTURER OR CONTRACTOR USING APPROVED EQUIPMENT.
9. FOR PRECAST BASE WITHOUT CHANNEL, BENCH & CHANNEL SHALL BE COMPLETED IN A SINGLE POUR USING CLASS 560-C-3250 CONCRETE WITH STEEL TROWEL FINISH.
10. ANY CHANGE IN DIRECTION SHALL BE A FIXED RADIUS CURVE EXTENDING FROM THE INLET WALL TO THE OUTLET WALL.
11. INSIDE SURFACE OF INVERT AND AREA BETWEEN PIPE CONNECTION AND CHANNEL SHALL BE FREE FROM GAPS, HOLES AND SHARP EDGES.
12. ALL INLETS SHALL BE DESIGNED AND INSTALLED SUCH THAT THE TOP OF PIPE ELEVATIONS MATCH AS MUCH AS POSSIBLE.

REFERENCE:
13. COLLAR ADJUSTMENT TO GRADE PER DETAIL S-MH6.
NOTES:
1. FOR DEPTH GREATER THAN 48\textquoteleft, CONSULT WITH ENGINEER.
2. FOR SEWER MAIN DIAMETER GREATER THAN 8\textquoteleft, CONSULT WITH ENGINEER. THIS DETAIL NOT TO BE USED IN DRIVABLE AREA OR VEHICULAR PATH.

MATERIALS:
3. GAPS AND HOLES BETWEEN BASE AND PIPE CONNECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.
4. THE BASE SHALL BE BEDDED ON A MINIMUM OF 6\textquoteleft OF WELL GRADED, \frac{3}{4}\textquoteleft\textsuperscript{\circ} ANGULAR CRUSHED ROCK OVER NATIVE MATERIAL THAT IS EITHER UNDISTURBED, COMPACTED PER GREENBOOK STANDARDS, OR 95%.
5. LOCKING FRAME AND COVER SHALL BE USED IN BOTH PAVED NON DRIVABLE PATH AND UNPAVED AREAS.

CONSTRUCTION:
6. ELEVATION DIFFERENCE BETWEEN FRAME AND EXISTING GRADE SHALL NOT EXCEED \frac{1}{4}\textquoteleft FOR PAVED/NON DRIVEABLE AREAS.
7. BASE SHALL CONFORM TO ASTM C-478.
8. BASE SHALL BE CLASS 560-C-3250 CONCRETE WITH EXTENDED BASE. ALL PIPE CONNECTIONS' SIZE, ANGLE, DEPTH AND QUANTITY SHALL BE FIELD VERIFIED AND MEASURED PRIOR TO ORDERING PRECAST BASE. ALL PIPE CONNECTIONS SHALL BE CORED TO FIT FLEXIBLE PIPE-TO-STRUCTURE CONNECTORS (KOR-N-SEAL OR EQUAL) EITHER BY MANUFACTURER OR CONTRACTOR USING APPROVED EQUIPMENT.
9. ANY CHANGE IN DIRECTION SHALL BE A FIXED RADIUS CURVE EXTENDING FROM THE INLET WALL TO THE OUTLET WALL.
10. INSIDE SURFACE OF THE BENCH AND CHANNEL AND AREA BETWEEN THE PIPE CONNECTION AND CHANNEL SHALL BE FREE FROM GAPS, HOLES AND SHARP EDGES.
11. ALL INLETS SHALL BE DESIGNED AND INSTALLED SUCH THAT THE TOP OF PIPE ELEVATIONS MATCH AS MUCH AS POSSIBLE.

REFERENCE:
12. COLLAR ADJUSTMENT TO GRADE PER DETAIL S-MH6.
NOTES:
1. APPLIES TO CLEANOUT REPLACEMENT AND ADJUSTMENT TO GRADE.
2. CLEANOUT LARGER THAN 8" DIAMETER SHALL BE SUBJECT TO APPROVAL.
MATERIALS
3. FRAME AND COVER IN PAVED AREA OR EASEMENTS SHALL BE SOUTHBAY FOUNDRY SBF-1240 OR EQUAL APPROVED BY THE ENGINEER.
4. ALL PIPE AND FITTINGS SHALL BE PVC SDR-35 PER ASTM 3034.
5. CONCRETE SHALL BE CLASS 520-C-3250.
6. STANDARD PLUG SHALL BE WING NUT STYLE (CHERNE ORIGINAL GRIPPER, OR APPROVED EQUAL).
CONSTRUCTION
7. SET FRAME AND COVER FLUSH WITH PAVEMENT GRADE, NOT TO EXCEED 1/4" DIFFERENCE.
REFERENCE:
8. PAVEMENT RESTORATION SHALL MEET REQUIREMENTS IN CITY STANDARD DETAILS U-01.0 - U-3.2.
NOTES:
1. GRADE RINGS SHALL NOT EXCEED A TOTAL MAXIMUM HEIGHT OF 12" FOR STANDARD MANHOLE INSTALLATIONS.

MATERIALS:
2. ALL CONCRETE SHALL BE 560-C-3250.
3. ALL MORTAR SHALL BE CLASS "D" PER SECTION 201.5.1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
4. SPACER BLOCKS SHALL MATCH MANHOLE’S CONSTRUCTION MATERIALS.
5. A THERMOPLASTIC MANHOLE RISER FORM MAY BE USED IN LIEU OF SPACER BLOCKS AND GRADE RINGS.

CONSTRUCTION:
6. PRIOR TO ANY WORK ON EXISTING SEWER MANHOLES, THE CONTRACTOR SHALL PLACE A TEMPORARY FALSE BOTTOM INSIDE OF THE MANHOLE. IF ONE CANNOT BE INSTALLED, THE CONTRACTOR SHALL NOTIFY THE CITY PRIOR TO COMMENCING WORK.
7. WHEN SPECIFIED, RUNGS SHALL BE REMOVED TO A DEPTH OF 2" BEYOND THE INSIDE FACE OF THE MANHOLE. EXISTING VOIDS LEFT BY THE REMOVAL OF THESE RUNGS SHALL BE FILLED WITH MORTAR OR A PATCHING CEMENT SUCH AS "WATER PLUG", OR EQUAL APPROVED BY THE ENGINEER.
8. FRAME SHALL BE INSTALLED LEVEL OR MATCH SURROUNDING GRADE AND BE SUPPORTED DURING CONCRETE CURING PROCESS.
9. TO RAISE AN EXISTING FRAME AND COVER ON A PRE-CAST CONCRETE SEWER MANHOLE, USE CONCRETE GRADE RINGS, COMPOSITE GRADE RINGS (PRO-RING BY CRETEX OR APPROVED EQUAL), OR A THERMOPLASTIC MANHOLE RISER FORM (MANUFACTURED BY WHIRLYGIG OR APPROVED EQUAL).
10. TO LOWER AN EXISTING FRAME AND COVER ON A PRE-CAST CONCRETE SEWER MANHOLE, REMOVE GRADE RINGS AND/OR RISER SHAFT UNITS. REPLACE THE EXISTING CONE WITH A PRECAST CONCRETE ECCENTRIC CONE UNIT IF THE EXISTING CONE IS EITHER CONCENTRIC, DETERIORATED, OR AS DIRECTED BY THE ENGINEER.
11. TO RAISE AN EXISTING FRAME AND COVER ON AN EXISTING BRICK SEWER MANHOLE, SEE NOTE 4 OR INSTALL A NEW MANHOLE AS DIRECTED BY THE ENGINEER.
12. LOWERING EXISTING BRICK SEWER MANHOLES: TO LOWER AN EXISTING FRAME AND COVER ON A BRICK SEWER MANHOLE, RESET THE FRAME AND COVER ON EXISTING BRICKS WITH MORTAR, REMOVE A SUFFICIENT AMOUNT OF BRICKS TO INSTALL A PRE-CAST CONCRETE ECCENTRIC CONE UNIT, OR INSTALL A NEW SEWER MANHOLE AS DIRECTED BY THE ENGINEER. DIAMETER OF CONE APERTURE SHALL MATCH THE DIAMETER OF THE FRAME AND COVER.
13. WHENEVER PRE-CAST CONCRETE COMPONENTS ARE TO BE PLACED ON ANY PART OF AN EXISTING BRICK MANHOLE, THESE COMPONENTS SHALL BE PLACED AND SECURED BY APPLYING MORTAR. THE DEPTH, WIDTH, AND THICKNESS OF THE MORTAR SHALL BE OF SUFFICIENT DIMENSIONS TO PROPERLY AND ADEQUATELY JOIN AND SECURE THE COMPONENTS.

REFERENCE:
14. STANDARD MANHOLE FRAME AND COVER SHALL BE INSTALLED PER DETAIL S-MH7 UNLESS OTHERWISE DIRECTED.
15. PAVEMENT RESTORATION SHALL MEET REQUIREMENTS IN CITY STANDARD DETAILS U-01.0 - U-3.2.
NOTES:
1. SINGLE 26.5" FRAME AND COVER SHALL BE USED ON 48" DIAMETER MANHOLES.
2. DUAL 36" / 22" FRAME AND COVER SHALL BE USED ON 60" DIAMETER MANHOLES.
3. WHEN ON DRIVABLE SURFACES MINIMUM LOADING SHALL FOLLOW AASHTO H20 STANDARDS. ENGINEER TO DETERMINE IF GREATER LOAD CAPACITY IS NEEDED.

MATERIALS:
4. DUAL MANHOLE FRAME AND COVER SHALL BE MANUFACTURED BY SOUTH BAY FOUNDRY (MODEL # SBF 1325 / 1310) OR APPROVED EQUAL.
5. WHEN RIM TO GRADE EXCEEDS 6", A LOCKING COMPOSITE MANHOLE FRAME AND COVER PER S-MH8 IS REQUIRED.
6. SINGLE FRAME AND COVER SHALL BE MANUFACTURED BY SOUTHBAY FOUNDRY (MODEL # SBF 1254A).

CONSTRUCTION:
7. MANHOLE COVERS TO BE DESIGNATED "CITY OF SANTA BARBARA SEWER" IN CASTING.

REFERENCE:
8. FOR STANDARD MANHOLE STRUCTURES, SEE S-MH1 AND S-MH2.
LOCKING MANHOLE FRAME AND COVER

NOTES:
1. TO BE USED ON 24" DIAMETER ACCESS STRUCTURE (S-MH4) OR MANHOLES IN EASEMENT.
2. WHEN ON DRIVABLE SURFACES MINIMUM LOADING SHALL FOLLOW AASHTO H20 STANDARDS. ENGINEER TO DETERMINE IF GREATER LOAD CAPACITY IS NEEDED.
3. COMPOSITE FRAME AND COVER SET SHALL BE USED WHEN RIM ELEVATION IS ABOVE GRADE.

MATERIALS:
4. CAST IRON LOCKING MANHOLE FRAME AND COVER SHALL BE PAMREX MODEL #CDPA60EHSSE 24" WITH 316 STAINLESS STEEL LOCKING KIT OR APPROVED EQUAL.
5. COMPOSITE LOCKING MANHOLE FRAME AND COVERS SHALL BE TRUMBULL MODEL 367-5705/367-5703 WITH 316 STAINLESS STEEL LOCKING KIT IS REQUIRED.

CONSTRUCTION:
6. HINGE TO BE LOCATED ON SIDE OF ONCOMING TRAFFIC. OPENS TO 130 DEGREES, BLOCKS AT 90 DEGREES WHEN CLOSING.
7. LOCKING KIT TO BE ACTIVATED BY AN ASYMMETRIC FIVE-SIDED BOLT HEAD.
8. MANHOLE COVERS TO BE DESIGNATED "CITY OF SANTA BARBARA SEWER" IN CASTING.

REFERENCE:
NOTES:
1. IF BRICK MANHOLE, BREAK OUT BRICKS REQUIRED TO OPEN CONNECTION.
2. INVERT ELEVATION OF NEW CONNECTION AT THE INSIDE FACE OF MANHOLE TO BE AT LEAST 0.10 FEET HIGHER THAN EXISTING OUTLET INVERT ELEVATION.
3. IF PRE-CAST MANHOLE, MAKE CORE CUT WITH EQUIPMENT SPECIALLY DESIGNED TO CUT A SMOOTH HOLE WITHOUT DAMAGE TO THE REINFORCING STEEL OR STRUCTURE.

MATERIALS:
4. KOR-N-SEAL BOOTS OR APPROVED EQUAL TO BE INSTALLED AROUND PIPE.
5. ALL PIPE AND FITTINGS SHALL BE PVC SDR-35 PER ASTM 3034.

CONSTRUCTION:
6. PIPE STUBS SHALL BE 12" MINIMUM LENGTH FROM OUTSIDE OF MANHOLE WALL, UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.

REFERENCE:
7. FOR INTERNAL/EXTERNAL DROPS SEE S-MH13 OR S-MH14
NOTES:
1. BASE B APPLIES WHEN END OF LINE MANHOLE OR SINGLE INLET/SINGLE OUTLET CONDITION, OTHERWISE BASE A APPLIES.
2. CAMERA CHANNEL REQUIRED FOR ALL 6", 8", AND 10" COLLECTORS FOR OFF-SETS BETWEEN 80 AND 100 DEGREES.

MATERIALS:
3. BASE SHALL BE BEDDED ON A MINIMUM OF 6" OF WELL GRADED, 3/4" ANGULAR CRUSHED ROCK OVER NATIVE MATERIAL THAT IS EITHER UNDISTURBED OR COMPACTED PER GREENBOOK STANDARDS, WITH A RELATIVE COMPACTION ≥ 95%

CONSTRUCTION:
4. BENCH AND CHANNEL SHALL BE COMPLETED IN A SINGLE POUR USING CLASS 560-C-3250 CONCRETE WITH STEEL TROWEL FINISH.
5. ANY CHANGE IN DIRECTION SHALL BE A FIXED RADIUS CURVE EXTENDING FROM THE INLET WALL TO THE OUTLET WALL.
6. INSIDE SURFACE OF INVERT AND AREA BETWEEN PIPE CONNECTION AND CHANNEL SHALL BE FREE FROM GAPS, HOLES AND SHARP EDGES.
7. ALL INLETS SHALL BE DESIGNED AND INSTALLED SUCH THAT THE TOP OF PIPE ELEVATIONS AND INVERTS MATCH AS MUCH AS POSSIBLE.

REFERENCE:
N/A
NOTES:
1. N/A
2. CONCRETE PLUG SHALL BE CLASS 520-C-3250.
3. REMOVE MANHOLE TO MIN. 24" BELOW FINISHED GRADE. SALVAGE FRAME, COVER AND CONCRETE GRADE RINGS AND DELIVER TO THE CITY YARD.
4. FOR SEWERS 18" AND LARGER, PROVIDE MASONRY BULKHEAD IN LIEU OF CONCRETE PLUG.
5. PLUG WITH SUITABLE MATERIAL TO HOLD CONCRETE OR GRAVEL.
6. INSTALL THREE, EQUALLY SPACED, 2" DIAMETER DRAINAGE IN THE CONCRETE BASE WHEN ABANDONING MANHOLE IN UNPAVED AREAS.
7. SEE S-MH12 FOR PIPE ABANDONMENT.
8. PAVEMENT RESTORATION SHALL MEET REQUIREMENTS IN CITY STANDARD DETAILS U-01.0 - U-3.2.

MATERIALS:
CONSTRUCTION:
REFERENCE:

REV. DATE: 06/2020
DETAIL: S-MH11

APPROVED:
CITY ENGINEER
PUBLIC WORKS DIRECTOR

MANHOLE ABANDONMENT

REINFORCEMENT DETAIL
ABANDONMENT OF SEWER PIPE

NOTES:
1. FOR SEWERS LESS THAN OR EQUAL TO 15" DIAMETER, ABANDON SEWER AS SHOWN.
2. FOR SEWERS GREATER THAN 15" DIAMETER, CONSULT WITH THE ENGINEER.
3. ENCLOSED OR PARTIALLY ENCLOSED SPACES SHALL BE CITY ENFORCED AND CONSIDERED PERMIT-REQUIRED CONFINED SPACES UNTIL THE PRE-ENTRY PROCEDURES DEMONSTRATE OTHERWISE.

MATERIALS:
4. CONCRETE PLUG SHALL BE CLASS 520-C-2500.

CONSTRUCTION:
5. RESHAPE AND FILL EXISTING CHANNEL TO PROVIDE SMOOTH CONTOUR BETWEEN INCOMING AND OUTGOING PIPES.

REFERENCE:
6. SEE S-MH11 FOR MANHOLE ABANDONMENT.
OUTSIDE DROP INLET CONNECTION

NOTES:
1. OUTSIDE DROP SEWER CONNECTION TO BE USED AS DETERMINED BY THE ENGINEER.
2. SLURRY TO FINISH FLUSH TO STRUCTURE WALL.
MATERIALS:
3. ALL PIPE AND FITTINGS SHALL BE PVC SDR-35 PER ASTM 3034.
CONSTRUCTION:
4. CONNECTOR PIPE SHALL BE OF SAME DIAMETER AS SEWER PIPE.
5. TO FIT AS CLOSE AS POSSIBLE TO MANHOLE WALL.
6. SEAL DROP PENETRATION WITH NON-SHRINK GROUT OR WATERSTOP.
REFERENCE:
7. EXCEPT AS MODIFIED BY THIS DETAIL, MANHOLE TO CONFORM TO DETAIL S-MH1 OR S-MH2.
NOTES:
1. TO BE USED ON NEW CONSTRUCTION OR WHEN EXTERNAL DROP IS TO BE ABANDONED.
2. NOT RECOMMENDED FOR USE IN AREAS WITH HIGH HYDROGEN SULFIDE OR HIGH FLOW / VELOCITY.

MATERIALS:
3. CONNECTOR PIPE SHALL BE OF SAME DIAMETER AS SEWER PIPE.
4. ALL PIPE AND FITTINGS SHALL BE PVC SDR-35 PER ASTM 3034.
5. DROP BOWL SHALL BE TYPE "A" OR "B" TO MATCH SEWER PIPE SIZE AND CLAMPING BRACKET SYSTEM AS MANUFACTURED BY RELINER-DURAN, INC. OR APPROVED EQUAL. ALL MECHANICAL COMPONENTS SHALL BE 316 SS.
6. CONSTRUCTION:
7. STANDARD BRACKET SIZES TO FIT 6" AND 8" PVC SEWER PIPE SDR-35 AND SPACED EVERY 4 FEET.

REFERENCE:
8. SEE S-MH1 AND S-MH2 FOR MANHOLE CONSTRUCTION DETAILS.
MANHOLE COATING AND LINING SYSTEMS

NOTES:
1. FOR CALCULATION PURPOSES, ASSUME GROUNDWATER IS AT ROAD/GROUND SURFACE.
2. WHEN SPECIFIED, EPOXY MAY BE REQUIRED IN ADDITION TO CEMENTITIOUS LINING.

MATERIALS:
3. EPOXY LINING MATERIAL PROPERTIES SHALL MEET OR EXCEED 6,000 PSI TENSILE STRENGTH, 10,000 PSI COMPRESSIVE STRENGTH, AND 11,000 PSI FLEXURAL STRENGTH AND SHALL BE WARREN ENVIRONMENTAL OR APPROVED EQUAL.
4. CEMENTITIOUS LINING SHALL BE "ECOCAST" MANUFACTURED BY IPR OR APPROVED EQUAL.

CONSTRUCTION:
5. APPROVED LINING METHOD SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATION AND BY A CERTIFIED INSTALLER.
6. ANY EXISTING LADDER RUNGS SHALL BE GROUND BACK TO 2" PAST FACE OF MANHOLE WALL.
7. REPAIR ANY DAMAGE TO CONCRETE PRIOR TO APPLYING COATING.
8. DURING PREPARATION OF THE STRUCTURE, ANY ACTIVE INFILTRATION SHALL BE PLUGGED USING AN ACRYLIC OR POLYURETHANE GROUT.
9. MANHOLE SHALL BE CLEAN OF ROOTS, GREASE, DEBRIS, PRESSURE WASHED, AND DRY PRIOR TO EPOXY LINING FOR MAXIMUM ADHERENCE TO MANHOLE WALL.
10. IF INTERNAL DROP IS PRESENT IN MANHOLE, REMOVE PRIOR TO LINING AND REINSTALL AFTER LINING IS COMPLETE.
11. EPOXY LINING SHALL BE SPARK AND PULL TESTED PER ASTM D4541 AND REPAIRED 2" PAST EDGE OF SCORE AND RESULTS OF TESTING SHALL BE SUBMITTED TO PUBLIC WORKS INSPECTOR FOR REVIEW.
12. OVERLAP MINIMUM 2" INTO FRAME AND COVER, EXISTING PIPE PENETRATIONS UNLESS OTHERWISE DIRECTED BY ENGINEER.

REFERENCE:
13. MANHOLE SHALL BE CONSTRUCTED PER DETAIL S-MH1, S-MH2, OR S-MH3.
SEWER PIPE BEDDING, HAUNCH SUPPORT AND BACKFILL

NOTES:
1. IN AREAS WHERE NORMAL GROUNDWATER LEVELS ARE ABOVE CROWN OF PIPE, ENCASE INITIAL BACKFILL WITH GEOTEXTILE FABRIC MIN. 18" OVERLAP.

MATERIALS:
2. BEDDING FOR RIGID PIPES SHALL CONFORM TO ASTM C12-81 OR APPROVED EQUAL. BEDDING FOR FLEXIBLE PIPES SHALL CONFORM TO ASTM D2321-74 OR APPROVED EQUAL.
3. HAUNCHING FOR BOTH RIGID AND FLEXIBLE PIPE MUST BE COMPACTED TO A RELATIVE DENSITY > 70% OF SELECT MATERIAL. HEIGHT OF THE COMPACTED SOIL SHALL BE 0.37 O.D. FOR RIGID PIPE OR 0.7 O.D. FOR FLEXIBLE PIPE.
4. MOST SOILS MAY BE USED UNDER THE BEDDING EXCEPT FOR THOSE WITH ROCK PARTICLES GREATER THAN 18", AND SOILS WITH PEAT OR OTHER ORGANIC MATERIALS.
5. FOR NEW INSTALLATION OF NON-METALIC ONLY SEWER PIPES: A 12 GAUGE INSULATED COPPER TRACER WIRE. WRAP AROUND EACH SERVICE FOR DIRECT CONTACT. SECURE WIRE ON PIPE BY TAPING AROUND PIPE EVERY 10 FEET.

CONSTRUCTION:
6. PROVIDE SUITABLE FOUNDATION AS REQUIRED BY THE ENGINEER IN AREAS OF UNSTABLE TRENCH BOTTOM, WET CONDITIONS, OVER-EXCAVATION, ROCKY TRENCH BOTTOM ELSEWHERE AS DIRECTED BY THE ENGINEER.
7. TRENCH WALL SUPPORT SHALL CONFORM TO CURRENT OSHA REQUIREMENTS.
8. BACKFILL SHALL BE CAREFULLY PLACED TO ENSURE ALL EXCAVATED VOIDS AND HAUNCH AREAS ARE FILLED AND PROVIDE UNIFORM SUPPORT. COMPACT TO 95% RELATIVE COMPACTION.
9. PIPE ZONE COMPACTED TO 95% RELATIVE COMPACTION PER ASTM D1557.
10. DETECTABLE TAPE TO BE PLACED A MINIMUM OF 6' TO A MAXIMUM OF 12" BELOW THE STRUCTURAL ROAD SECTION.

REFERENCE:
11. SAWCUTTING DETAILS AND TRENCH PAVING SHALL MEET REQUIREMENTS IN CITY STANDARD DETAIL U-3.0 THROUGH 3.2
NOTES
1. PIPE SHALL BE ENCASED WITH 2-SACK SLURRY WHEN LESS THAN 36" COVER. CRADLE DETAIL SHALL BE USED AS DIRECTED BY THE ENGINEER WHEN THE TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE EXCEEDS THE MAX WIDTH SPECIFIED BY PIPE MANUFACTURER.

MATERIALS:
2. FLEXIBLE PIPE MATERIALS SUCH AS HDPE MAY REQUIRE ENCASEMENT, AS DIRECTED BY THE ENGINEER.
3. SUPPORT BLOCKS MAY BE CONCRETE BLOCK OR BRICK.

CONSTRUCTION:
4. CRADLE AND ENCASEMENT TO BE PLACED ON 3/4" CRUSHED ROCK, OR AS DIRECTED BY THE ENGINEER.

REFERENCE:
5. REFER TO S-SP1, U-01.0 AND U-01.1 FOR SPECIFICATIONS OF TRENCHING, BACKFILLING AND COMPACTING OF PIPELINE TRENCHES.
EXISTING SEWER PIPE, NON-REHABILITATED. IF LINED, CONFIRM METHOD WITH THE ENGINEER

RESTORE FINISH GRADE TO MATCH EXISTING CONDITIONS +/- 1/4".

OPEN TRENCH

FINISH GRADE LENGTH VARIES

POINT REPAIR LENGTH

12" MIN.

EXISTING SEWER PIPE

EXISTING SEWER PIPE

EXISTING LATERAL

EXISTING VCP OR PVC

NEW WYE OR TEE TO MATCH SEWER MAIN SIZE MATERIAL

NEW PVC SEWER PIPE DIAMETER TO MATCH EXISTING

NEW WYE OR TEE TO MATCH SEWER MAIN SIZE MATERIAL

FLOW

TRENCH PROFILE

PIECE TO EXISTING LATERAL

CALDER COUPLING, SEE NOTE 2

1/2 CRUSHED ROCK FOR DIAMETER <12"

3/4" CRUSHED ROCK FOR DIAMETER >12"

PIPE ID + 12" FOR PIPES UP TO 8" AND PIPE ID + 24" FOR PIPES 10" AND GREATER

EXISTING VCP OR PVC

NEW OR REPLACED CONNECTION (WYE OR TEE) DETAIL 1

BEDDING AND BACKFILL DETAIL 2

NOTES
1. ALL LATERAL CONNECTION INSTALLATIONS/REPLACEMENTS REQUIRE A PUBLIC WORKS PERMIT AND MUST BE COMPLETED BY CITY CONTRACTOR. THE STANDARD POINT REPAIR DETAIL SHALL BE USED FOR LATERAL CONNECTION ABANDONMENTS WHEN DIRECTED.

MATERIALS:
2. 316 STAINLESS STEEL COMPRESSION BANDS AND SHEAR RINGS AS MANUFACTURED BY MISSION PRODUCTS, FERNCO JOINTS INC., OR APPROVED EQUAL (TYP. EACH END OF POINT REPAIR). COUPLING TO BE A MINIMUM OF 6" WIDE.
3. ALL PIPE AND FITTINGS SHALL BE PVC SDR-35 PER ASTM 3034.
4. NEW SEWER PIPE TO MATCH EXISTING SEWER PIPE MATERIAL AND DIAMETER.

CONSTRUCTION:
5. CONTRACTOR SHALL EXCAVATE TRENCH SO THAT MIN. 12" ON EITHER SIDE OF REPAIR IS EXPOSED. IF REPAIR INVOLVES A WYE, CONTRACTOR SHALL EXPOSE MIN. 24" ON EITHER SIDE OF WYE.
6. PLACE AND WORK BY HAND OR OTHER APPROVED METHOD TO ENSURE ALL EXCAVATED Voids AND HAUNCH AREAS ARE FILLED AND PROVIDE UNIFORM SUPPORT. COMPACT CRUSHED ROCK ALL AROUND EXPOSED PIPE.
7. CONTRACTOR TO INSPECT NEARBY EXISTING SEWER PIPE FOR DEFECTS. IF ANY EXIST, NOTIFY THE CITY IMMEDIATELY.

REFERENCE:
9. SAWCUTTING DETAILS AND TRENCH PAVING SHALL MEET REQUIREMENTS IN CITY STANDARD DETAIL U-3.0 THROUGH 3.2
NOTES

1. PER THE MUNICIPAL SECTION 14.44.160, THE PRIVATE SEWER LATERAL, PRIVATE SEWAGE DISPOSAL SYSTEM OR INDUSTRIAL LIQUID WASTE PRE-TREATMENT FACILITY IS THE RESPONSIBILITY OF EACH PROPERTY OWNER WHOSE PROPERTY IS CONNECTED TO THE CITY SEWER SYSTEM.

2. FACTORY-FABRICATED CONNECTION FITTINGS (WYES OR TEES) ARE REQUIRED FOR ALL STANDARD SEWER LATERALS. LATERALS WILL ONLY BE PERMITTED TO TIE INTO MANHOLES WITH PRE-APPROVAL BY WASTEWATER.

3. LATERALS SHALL BE CONNECTED TO THE SEWER MAIN DOWNSTREAM OF AN EXISTING MANHOLE.

4. CONTACT THE PUBLIC WORKS PERMIT COUNTER AT 630 GARDEN STREET OR (805) 564-5388 TO OBTAIN PERMITS FOR ALL SEWER LATERAL CONNECTION ("TAP") INSTALLATIONS.

5. ALL SEWER LATERAL IMPROVEMENTS IN THE PUBLIC RIGHT OF WAY AND CONNECTION INSTALLATIONS REGARDLESS OF LOCATION SHALL REQUIRE A PERMIT FROM THE CITY PUBLIC WORKS DEPARTMENT.

MATERIALS:

6. SEWER LATERAL PIPE AND FITTINGS SHALL BE BELL AND SPIGOT SDR-35 PVC, HDPE DR-17 OR AN APPROVED EQUAL BY THE ENGINEER. NON-JOINTED MATERIALS ARE FAVORABLE TO REDUCE THE POTENTIAL FOR INFILTRATION.

7. ALL CAULDER COUPLINGS SHALL BE "STRONG BACKS," A BAND SEAL TYPE COUPLING WITH AN OUTSIDE STAINLESS STEEL SHEAR RING.

8. SEWER LATERAL PIPE SHALL HAVE A MINIMUM DIAMETER OF 4", AND A MINIMUM SLOPE OF 2%. GRADE SHALL BE UNIFORM FROM MAIN TO PROPERTY LINE.

9. FACTORY FABRICATED WYES, TEES OR SADDLES ARE REQUIRED AND SHALL HAVE A MIN. DISTANCE OF 24" BETWEEN SERVICE CONNECTIONS.

10. BEDDING AND BACKFILL FOR LATERALS SHALL MEET THE SAME REQUIREMENTS FOR SEWER MAINS. SEE TRENCH BEDDING AND BACKFILLS STANDARD DETAILS S-01.0 AND S-01.1. NEW WYES SHALL BE SUPPORTED BY 2" CRUSHED ROCK, 4" MIN.

11. FOR PATHWAYS WHERE FOOT TRAFFIC IS LIKELY, LATERAL CLEANOUTS SHALL BE JAY R. SMITH MFG. CO 4810-06PB OR EQUAL.

CONSTRUCTION:

12. ONLY CITY DESIGNATED CONTRACTOR IS PERMITTED TO INSTALL NEW OR REPLACE CONNECTIONS ON EXISTING SEWER MAINS.

13. WYES SHALL POINT DOWNSTREAM AND ENTER MAIN BETWEEN THE 10:00 - 11:00 POSITION OR 1:00 - 2:00 POSITION.

14. WHEN CHANGES IN GRADE ARE NECESSARY, CHANGES IN GRADE OF LATERAL SHALL BE MADE USING LONG-RADIUS BENDS.

15. THE DEPTH OF THE LATERAL AT THE PROPERTY LINE SHALL BE A MINIMUM OF 4 FEET, WITHOUT SPECIAL APPROVAL BY THE ENGINEER.


17. FOR NEW INSTALLATIONS, DETECTABLE TAPE OR TRACER WIRE SHALL BE INSTALLED FOR LOCATING SEWER LATERALS. TERMINATE TRACER WIRE INSIDE CLEANOUT. FOR CHIMNEY OR SLOPED LATERAL, SEE S-SL7.

18. IF LATERAL IS REPLACED BY TRENCHING, DETECTABLE TAPE SHALL BE INSTALLED PER S-SP1. IF TRENCHLESS REPLACEMENT, TRACER WIRE WITH AT LEAST ONE END OF TRACER WIRE EXPOSED SHALL BE SECURED TO THE NEW PIPE AS IT IS INSTALLED.

REFERENCE:

19. SEWER LATERAL TO SEWER MAIN CONNECTIONS SHALL BE PER DETAILS S-SL2 THROUGH S-SL8.

20. FOR WATER-SEWER SEPARATION REQUIREMENTS SEE STANDARD DETAIL U-05.0 THROUGH U-05.2 AND U-06.0.

21. SAWCUTTING DETAILS AND TRENCH PAVING SHALL MEET REQUIREMENTS IN CITY STANDARD DETAIL U-03.0 THROUGH U-03.2
I. CONNECTIONS FOR NEW/REPLACE LATERALS TO EXISTING MAINS:

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<tr>
<th>TYPE OF CONNECTION</th>
<th>STANDARD CONNECTION METHOD</th>
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<td>VCP WYE</td>
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<tr>
<td>LATERAL TO EXISTING PVC MAIN</td>
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<tr>
<td>LATERAL TO EXISTING HDPE MAIN</td>
<td>ELECTROFUSION SADDLE</td>
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<td>LATERAL TO SPIRAL WOUND MAIN</td>
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<td>LATERAL TO CIPP MAIN</td>
<td>STRAPPED RUBBER SADDLE/INSERTA TEE</td>
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II. CONNECTIONS FOR EXISTING / NEW LATERALS TO NEW MAINS:

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<tr>
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<td>HDPE LATERAL TO NEW HDPE MAIN</td>
<td>ELECTROFUSION SADDLE</td>
<td>S-SL4</td>
</tr>
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DEFINITIONS
ID - INSIDE DIAMETER
OD - OUTSIDE DIAMETER
VCP - VITRIFIED CLAY PIPE
PVC - POLYVINYL CHLORIDE PIPE
HDPE - HIGH DENSITY POLYETHYLENE
ROW - RIGHT OF WAY
NEATLY CUT OUT AND REMOVE NECESSARY LENGTH OF EXISTING PIPE

EXISTING VCP MAIN LINE SEWER WITHIN DEDICATED ROW OR EASEMENT (MIN 6" Ø)

IF LESS THAN 6", REMOVE BELL AND SECURE TO NEXT PIPE SEGMENT

NEW OR EXISTING PRIVATE SEWER LATERAL

VCP WYE

CALDER COUPLING, SEE NOTE 2

VCP LATERAL CONNECTION PROFILE

NOTES
1. DETAIL FOR VITRIFIED CLAY PIPE ONLY.
2. ALL LATERAL CONNECTION INSTALLATIONS/REPLACEMENTS REQUIRE A PUBLIC WORKS PERMIT AND MUST BE COMPLETED BY CITY CONTRACTOR.

MATERIALS:
3. SECURE ENDS WITH CALDER COUPLING WITH 316 STAINLESS STEEL COMPRESSION BANDS AND SHEER RINGS AS MANUFACTURED BY MISSION PRODUCTS, FERNCO JOINTS INC, OR APPROVED EQUAL. COUPLING TO BE MIN 6" WIDE.
4. VCP WYES SHALL BE MISSION CLAY OR APPROVED EQUAL

CONSTRUCTION:
5. WHEN INSTALLING A NEW WYE ASSEMBLY TO AN EXISTING CLAY SEWER MAIN, THE MAIN SHALL BE INSPECTED BEFORE AND AFTER INSTALLATION AS DIRECTED BY CITY ENGINEER.

REFERENCE:
N/A
NEW LATERAL INTO EXISTING PVC MAIN
PROFILE

SADDLE ENCASEMENT
SECTION A-A

SADDLE CONNECTION
DETAIL

NOTES
1. ALL LATERAL CONNECTION INSTALLATIONS/REPLACEMENTS REQUIRE A PUBLIC WORKS PERMIT AND MUST BE COMPLETED BY CITY CONTRACTOR.

MATERIALS:
2. FLEXIBLE SADDLE (FERNCO OR APPROVED EQUAL) IN WYE OR TEE CONFIGURATION.
3. SLIP LOCK BANDS SHALL BE USED ALONG WITH LIQUID NAILS OR OTHER ADHESIVE TO SECURE FLEXIBLE SADDLE TO PVC.
4. CONCRETE FOR SADDLE ENCASEMENT SHALL BE CLASS 520-C-3250 PER STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

CONSTRUCTION:
5. CORE HOLE SAME DIAMETER AS ID OF LATERAL + 1/4" INCH. IF EXISTING, CLEAN OUT HOLE, MAKE 3/4" INCH GREATER THAN ID.

REFERENCE:
N/A
EXISTING PVC/HDPE SEWER LATERAL

RUBBER COUPLING

SDR 26 PVC OR DR 17 HDPE

TRANSITION COUPLING IF REQUIRED

ELECTROFUSION SADDLE

NEW OR EXISTING HDPE SEWER MAIN

HDPE TO HDPE MAIN CONNECTION PROFILE

NOTES
1. ALL LATERAL CONNECTION INSTALLATIONS/REPLACEMENTS REQUIRE A PUBLIC WORKS PERMIT AND MUST BE COMPLETED BY CITY CONTRACTOR.

MATERIALS:
2. RUBBER COUPLINGS SHALL BE NON-SHEAR TYPE. AND SEALED WITH AN ELASTOMERIC VULCANIZING SEALANT.
3. CHANGES IN PIPE TYPE AND CONNECTIONS ARE NOTED ON THE DRAWINGS.

CONSTRUCTION:
4. IF ADDITIONAL COUPLINGS ARE NEEDED TO MAKE A CONNECTION, THE CONTRACTOR SHALL USE ELECTROFUSION COUPLINGS.

REFERENCE:
N/A
CAREFULLY CHISEL AND REMOVE ONE EXISTING VCP PIPE SEGMENT

EXISTING MAIN LINE SEWER WITHIN DEDICATED ROW OR EASEMENT (MIN. 6")

CUT OR CORE CLEAN OPENING FOR NEW LATERAL. SEE NOTES

CORE AN OPENING FOR THE LATERAL MEASURING ID OF LATERAL +1/4"

PRIVATE SEWER LATERAL

INSERTA TEE

SPIRAL WOUND

CIPP/PVC FOLD FORMED

PRIVATE SEWER LATERAL

TAP SADDLE

INSTRUCTION FOR LINED LATERAL CONNECTION PROFILE

NOTES
1. ALL LATERAL CONNECTION INSTALLATIONS/REPLACEMENTS REQUIRE A PUBLIC WORKS PERMIT AND MUST BE COMPLETED BY CITY CONTRACTOR.

MATERIALS:
2. TYPE OF CONCRETE FOR ENCASEMENT SHALL BE 520-C-3250.
3. INSERTA TEE FITTING OR APPROVED EQUAL SHALL BE USED TO REPLACE OR INSTALL NEW CONNECTION ON SPIRALWOUND SEWER MAINS.
4. TAP SADDLES (TEE OR WYE) SHALL BE FERNCO OR APPROVED EQUAL.

CONSTRUCTION:
5. IF NEW WYE, CORE HOLE SAME DIAMETER AS ID OF LATERAL + 1/4 INCH. IF EXISTING, CLEAN OUT HOLE, MAKE 1/4 INCH GREATER THAN ID.
6. APPLY EPOXY BASED ADHESIVE BETWEEN RUBBER SADDLE CIPP/PVC FOLD-FORMED LINER PRIOR TO SECURING STAINLESS STEEL BANDS.

REFERENCE:
N/A

LATERAL CONNECTION TO REHABILITATED MAIN

REV. DATE: 06/2020 DETAIL: S-SL6
APPROVED:
CITY ENGINEER
PUBLIC WORKS DIRECTOR
NOTES
1. CHIMNEY SHALL BE USED WHEN LATERAL SLOPE EXCEEDS 45 DEGREE OR DEPTH OF MAIN SEWER IS 12 FEET OR MORE.
2. CONCRETE CRADLE REQUIRED WHEN LATERAL SLOPE IS BETWEEN 30 AND 45 DEGREES.
3. ALL LATERAL CONNECTION INSTALLATIONS/REPLACEMENTS REQUIRE A PUBLIC WORKS PERMIT AND MUST BE COMPLETED BY CITY CONTRACTOR.

MATERIALS:
4. BEDDING AND BACKFILL FOR LATERALS SHALL BE THE SAME AS FOR SEWER MAINS.
5. CONCRETE FOR CHIMNEY ENCASEMENT OR CRADLE SHALL BE CLASS 520-C-3250 PER STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
6. CHIMNEY SHALL MATCH LATERAL SIZE.
7. UP TO 4 BUILDING DRAINS FOR ONE PARCEL MAY BE CONNECTED PER EACH CHIMNEY AND WYE.

CONSTRUCTION:
8. CHIMNEY MATERIAL SHALL MATCH HOUSE CONNECTION ON MATERIAL.

REFERENCE:
NOTES:

1. GREASE CONTROL DEVICES (GCD) ARE NOT INTENDED FOR DOMESTIC SEWAGE. LOCATION AND TRIBUTARY DISCHARGE SOURCES SHALL BE APPROVED BY BUILDING & SAFETY PRIOR TO INSTALLATION AND CONNECTION TO CITY SEWER. CONNECTIONS TO GCD SHALL NOT ALLOW INTRODUCTION OF EMULSIFIERS OR CHEMICALS CAUSING PASS THROUGH.

2. EACH GCD SHALL BE INSTALLED ON PRIVATE PROPERTY AND CONNECTED SO THAT IT SHALL BE EASILY ACCESSIBLE FOR INSPECTION, CLEANING AND REMOVAL OF THE INTERCEPTED GREASE.

3. EACH GCD SHALL BE SIZED TO MEET EXPECTED SOLIDS LOADING TO COMPLY WITH CITY FATS, OILS AND GREASE PROGRAM AND COMPLY WITH HYDRAULIC CAPACITY PER CALIFORNIA PLUMBING CODE SECTION 1014.2.1.

4. ALL INTERNAL PIPING SHALL BE 4" OR 6" TO MATCH LATERAL DIAMETER. INTERNAL PIPING MATERIAL SHALL BE HDPE OR PVC. NO METALLIC PIPE WILL BE ALLOWED TO BE USED FOR INTERNAL PIPING FOR THE GCD. CONTRACTOR TO CONNECT LATERAL PIPING TO GCD WITH ALL NECESSARY FITTINGS.

5. INTERCEPTOR LOCATED IN AN AREA SUBJECT TO TRAFFIC MUST BE HS-20 TRAFFIC RATED.

6. FOR NON TRAFFIC LOCATIONS, NON-PRECAST INTERCEPTORS MADE OF POLYPROPELENE(ENDURA XL OR APPROVED EQUAL) IS ACCEPTABLE.

7. ALL PRE-CAST CONCRETE GCDS SHALL BE EPOXY LINED PRIOR TO ENTERING SERVICE USING WARREN ENVIRONMENTAL EPOXY COATING (OR APPROVED EQUAL). MINIMUM LINING THICKNESS SHALL BE 125 MILS.

TESTING:

8. EPOXY LINING SHALL BE PULL TESTED PER ASTM-D4541 AND SECTION 500-2.4.4 IN GREENBOOK. ALL TEST LOCATIONS SHALL BE REPAIRED 2" PAST EDGE OF SCORE. RESULTS SHALL BE SUBMITTED TO WASTEWATER COMPLIANCE SPECIALIST FOR APPROVAL.

BEDDING:

9. INTERCEPTOR SHALL BE PLACED ON A MINIMUM OF 6" TYPE I BEDDING MATERIAL, COMPACTED TO 95% RELATIVE COMPACTION.
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<td>CONTROLLER SERVICE INSTALLATION</td>
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NOTES:

1. All Standard Specifications shall comply with latest Caltrans Specification.
2. All intersection approaches shall have Iteris RZ4 or better video detection cameras and EdgeConnect card, plus 60' stop bar in pavement loop detection. Loop detectors shall be CalTrans Type "E", with a leading Type "D" in each lane. Caltrans Standard Plan ES-5A and ES-5B shall be followed when installing.
3. Each roadway crossing shall have two (2) 3" conduits.
4. Traffic signal heads and indications shall be per latest City of Santa Barbara specification.
5. A battery back up system is required at all new intersections. System shall be Clary SP Series Model PD with 52 amp batteries, and McCain battery back up cabinet.
6. Signal cable shall be used for any new or replacement of traffic signal wiring.
7. Communication shall be Ethernet over single mode fiber optic cable (preferred, where connectivity available), Ethernet over wireless, or 6 twisted pair 600 Ohm 19 gauge as determined by the City Supervising Transportation Engineer. Interconnect conduit required to nearest traffic signal where feasible. Ethernet switch shall be Ruggedcom RS900.
8. Push buttons shall be Polara Navigator accessible buttons, with a green finish.
9. 332 traffic signal cabinets in "Malaga Green" color matching RAL Classic System color "RAL6005" shall be used.
11. Traffic signal controllers shall be McCain Coldfire 750.
12. GTT infrared based emergency preemption system required for all approaches. Phase selector card shall be capable of both infrared and GPS based inputs.
TYPE 111-BF SERVICE EQUIPMENT ENCLOSURE WITH PROVISIONS FOR ONE 100 A METER

TYPE 111-BF SERVICE EQUIPMENT ENCLOSURE WITH PROVISIONS FOR TWO 100 A METERS

TYPE 111-BR SERVICE EQUIPMENT ENCLOSURE

TYPE 111-B SERVICE EQUIPMENT ENCLOSURE FOUNDATION DETAILS
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<td>W-13.2</td>
<td>BACKFLOW PREVENTION ASSEMBLY - TYPE 2</td>
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<td>2-INCH SERVICE CONNECTION MANIFOLD</td>
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**GENERAL LEGEND:**

- C.I.P. = CAST IRON PIPE
- D.I.P. = DUCTILE IRON PIPE
- C.R. = CURB RETURN
- F.L.G. = FLANGE JOINT
- M.J. = MECHANICAL JOINT
- L.R.G. = LOCKING RETAINER GLAND
- P.E. = PLAIN END

**WATER**

**TABLE OF CONTENTS**

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**REV. DATE:** 11/12 **DETAIL:** W-00.0

**APPROVED:**

[Signature]

**PUBLIC WORKS DIRECTOR:**

[Signature]
1. Fire hydrant for residential installation shall be J. Jones No. 3700 with plastic hose cap J-669.
2. Fire hydrant for commercial installation shall be J. Jones No. J-3765 with 6 hole pattern. Use commercial installation at apartments and condominiums, motels, commercial and manufacturing developed or zoned areas.
3. Fire hydrant assembly breakaway spool shall be used to adjust lower fire hydrant stem within required distance from finish grade. Cadmium plated breakaway bolts shall be installed on fire hydrant and extension. Bolts to be installed heads up. Only one gasketed flange shall be allowed below the surface. Bury, control valve, tee and breakaway spool shall be lined with epoxy, Scotchkote 206N or 134.
4. Fire hydrants shall not be epoxy lined. Before installation, Bronze fire hydrant exterior shall be washed thoroughly with XIM cleaner, and painted with one coat of white XIM primer-sealer 400 and two coats of AERO-PLATE #462 gloss bright yellow (safety yellow). Fire hydrants to be purchased with factory paint.
5. Outlets shall be positioned perpendicular to curb line or center line of roadway, facing into the roadway.
6. All buried bolts shall be coated with an approved corrosion control coating and wrapped with a 8 mil. thick polyethylene sheet and taped, as specified in A.W.W.A. C-105/A21.5-99-PRINTED.
7. Concrete thrust blocks shall be constructed in conformance with Standard Detail W-012.0.
8. The installation of fire hydrants in concrete sidewalk area shall be per Standard Detail W-02.0.
9. Fire hydrant valve shall be Pratt Groundhog butterfly valve or approved resilient wedge gate valve (preferred) except the butterfly valve shall not be used where the operating water pressure exceeds 200 psi. The gate valve shall be installed so that the bonnet and operating nut do not encroach into any part of the street structural section.
10. All pipe shall be ductile iron with mechanical joints and Megalug retainer glands or approved equal.
11. Fire hydrant spacing shall be according to Fire Department requirements.
12. All ductile iron pipe, including valves and fittings shall be encased with an 8 mil. thick black polyethylene sheet and taped as specified in A.W.W.A. C-105/A21.5-99-PRINTED.
13. Any deviation from this Standard Detail shall be approved by the Water Resources Division of Public Works Department.
14. Hot tapping saddle installation shall be pre-approved by the Water Resources Division of Public Works Department.
NOTES:

1. Fire hydrant installation shall be in accordance with Std. Details W-01.0 and W-01.1.

2. Concrete sidewalk construction shall conform to Std. Details H-06.0 and H-06.1.

3. Any variance to the sidewalk modification to conform to conditions other than shown requires approval of the Engineer.

*P.R.C. - Point of Reverse Curve

BACK OF SIDEWALK OFFSET AT ONE-FOOT INTERVALS

SIDEWALK MODIFICATION AT FIRE HYDRANT
NOTES:

1. Guard posts shall be installed plumb. Concrete for setting guard posts shall be Class 520-C-2500.

2. Concrete shall be placed against firm undisturbed native soil and shall be thoroughly consolidated.

3. Any variance to the guard post layout to conform to conditions other than shown must be approved by the Engineer.
ADJUSTMENT TO GRADE

NOTES:

1. Nut shaft extension, fitted with self-centering device and adaptor by Pratt, or approved equal, shall be provided when cover over valve nut exceeds 2.5 feet.

2. If existing valve box is not a standard box, a box will be provided by the City and installed by the Contractor.

3. At no time shall the valve box rest directly on the valve body.

TYPICAL NEW INSTALLATION

VALVE BOX
SERVICE CONNECTION NOTES:

1. Contractor shall furnish all material, except meter.
2. James Jones Co. designations are used to identify fittings.
3. Install J-969 saddle with gaskets & Corporation Stop (CC) thread when connecting services to all P.V.C. pipe. Use J-979 when connecting services to D.I.P. pipe.
4. Tap all steel pipe through saddle, welded coupling or approved equal.
5. Minimum distance between services shall be one foot. Multiple taps shall be spaced one foot apart at 10 o'clock or 2 o'clock angle.
6. Services shall be installed perpendicular to the main unless approved by the Engineer.
7. Meter boxes shall not be permitted in driveways. All meter box lids shall be skid resistant.
8. Contractor shall leave an appropriate "meter space" for meter installation by the City (see City Standard Detail W-05.1).
9. All new service installations and all services to be replaced shall be of 1-inch or 2-inch Type "K" copper tubing, using the material specified.
10. Private fire service/private water main distinction:
   A. Private Fire Service: A privately owned and maintained connection from the City distribution system that serves only private fire hydrant(s), fire sprinkler system(s), or other fire protection systems, and does not serve any City water service connections.
   B. Private Water Main: A privately owned and maintained connection from the City distribution system that serves one or more City water service connections, and which may also serve private fire hydrants, fire sprinkler systems, or other fire protection systems.
MATERIAL & DIMENSIONS

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<th>CORP STOP</th>
<th>BALL VALVE</th>
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* ELONGATED HOLES TO ACCEPT 1-1/2" METER.

OPTIONAL:
WHEN TYPING OVER 3/4-INCH COPPER SERVICE, USE A MUELLER BRASS REDUCER, H-15480, CORPORATION STOP THREAD BY FLARE COPPER PIPE WITH COPPER RING OR WROUGHT COPPER COUPLING WITH 15% SILVER SOLDER FOR 3/4-INCH AND 1-1/2-INCH.

SERVICE CONNECTION

STREETS:  TRANS OPS:  REV. DATE: 11/12  APPROVED:
FACILITIES:  CITY ENGINEER  DETAIL: W-05.1
WATER RESOURCES:  PUBLIC WORKS DIRECTOR
NOTES:
1. Maximum of eight (8) 5/8-inch meters per manifold. Maximum of two (2) 1-inch meters per manifold. All meter boxes per City Standard Details W-06.0 and W-06.1.
2. All piping to be type "K" copper tubing.
3. All brass service connection fittings to be flared type.
4. Contractors shall meet with Water Resources Distribution personnel prior to installation of property service line to confirm that proposed connections will be sequenced in a manner approved by Water Resources Division and in conformance with approved addresses assigned to the property by the City.
5. Meter boxes shall be placed a minimum of 3" apart.
6. All meter box lids shall be skid resistant.
NOTES:

2. Install backflow device as close to property line as possible.
3. Double check detector assembly (with bypass meter and bypass backflow) may be replaced by a reduced pressure principal assembly with meter depending on degree of hazard and approval by the City's Cross-Connection Specialist. See Standard Details W-12 and W-13 as applicable.
4. Line is privately owned from the valve to the building.
5. Inspection and approval by the City's Cross-Connection Specialist is required.
6. Install J-1529 bronze coupling or wrought copper coupling with 15% silver solder when necessary to splice tubing.
7. OPTIONAL: When tying over 3/4" copper service, use a Mueller brass reducer, H-15480, corp. stop thread by flare copper pipe with copper ring or wrought copper coupling with 15% silver solder for 3/4" and 1-1/2" services.

2-INCH FIRELINE
NOTES:
1. All pipe in the street right-of-way shall be D.I.P. with mechanical joints and "MEGALUG" retainer glands or approved equal.
2. All ductile iron pipe, including valves and fittings shall be encased with a 6-mil. thick black polyethylene sheet and taped as specified in A.W.W.A. C-105/A21.5-99-PRINTED.
3. All City fittings shall be epoxy lined.
4. Fireline beyond the valve to the building is the responsibility of the property owner.
6. Install backflow device as close to property line as possible.
7. Double check valve assembly may be replaced by a reduced pressure principle assembly with meter depending on degree of hazard and approval by the City's Cross-Connection Specialist. See Standard Details W-12 and W-13 as applicable.
8. Inspection and approval of the fireline by a City Public Works Inspector is required.

4-INCH AND LARGER FIRELINE

STREETS:  
TRANS OPS:  
FACILITIES:  
WATER RESOURCES:  

REV. DATE: 11/12  
DETAIL: W-05.4  
APPROVED:  
CITY ENGINEER:  
PUBLIC WORKS DIRECTOR:  

24" MIN.  
6" MIN.  
4" MIN.  
18" MIN. CLEARANCE  
36" MAX. CLEARANCE  
12"  
9"  
6" MIN.
13 = COMMERCIAL
13D = FIRELINE FOR DOMESTIC DUPLEX - 1/2 FAMILY RESIDENTIAL
13R = HOTEL/MOTEL/3 OR MORE UNITS IN A SINGLE BUILDING
DCDA = DOUBLE CHECK DETECTOR ASSEMBLY

APPROVED METHODS FOR CONNECTING PRIVATE FIRELINES
NOTES:

1. Water meter shall be approved by the Water Resources Division of Public Works Department.
2. All piping shall be of the same size as the meter.
3. All pipe in the street right-of-way shall be D.I.P. with mechanical joints and "MEGALUG" retainer glands or approved equal.
4. All ductile iron pipe, including valves and fittings shall be encased with a 8-mil. thick black polyethylene sheet and taped as specified in A.W.W.A. C-105/A21.5-99-PRINTED.
5. All fittings shall be epoxy lined.
6. Service line beyond the valve to the building is the responsibility of the property owner.
7. Install backflow device as close to property line as possible.
8. Inspection and approval by the City's Cross-Connection Specialist is required.
NOTES:

1. Meter box shall be non skid Polymer Concrete as Manufactured by:
   Armorcast Products Company,
   13230 Saticoy Street,
   North Hollywood, CA 91605,
   (818) 982-3600

2. Bottom of meter box shall rest firmly on a 12 inch thick bed of 1 inch crushed rock extending 6 inches beyond the outside walls of the meter box.

PLAN VIEW

SIDES VIEW

SECTION A-A

END VIEW

SECTION B-B

METER BOX

5/8-INCH AND 1-INCH METERS

STREETS:

REV. DATE: 11/12

TRANS OPS:

DETAIL: W-06.0

FACILITIES:

APPROVED:

WATER RESOURCES:

PUBLIC WORKS-DIRECTOR
NOTES:

1. Meter box shall be non skid Polymer Concrete as Manufactured by: Armorcast Products Company, 13230 Saticoy Street, North Hollywood, CA 91605, (818) 982-3600

2. Bottom of meter box shall rest firmly on a 12 inch thick bed of 1 inch crushed rock extending 6 inches beyond the outside walls of the meter box.
NOTES:

1. Water meter shall be approved by the Water Resources Division of Public Works Department.
2. All piping shall be of the same size as the meter.
3. All pipe in the street right-of-way shall be D.I.P. with mechanical joints and "MEGALUG" retainer glands or approved equal.
4. All ductile iron pipe, including valves and fittings shall be encased with a 8-mil. thick black polyethylene sheet and taped as specified in A.W.W.A. C-105/A21.5-99-PRINTED.
5. All fittings shall be epoxy lined.
6. Service line beyond the valve to the building is the responsibility of the property owner.
ARMORCAST COVER IN MALAGA GREEN OR SANDSTONE AT DISCRETION OF CITY INSPECTOR.
FOR 1": ARMORCAST P6002003 (36" x 12"Ø)
FOR 2": ARMORCAST P6002002 (36" x 20"Ø)

(2) 2" STREET ELLS AND FITTINGS AS REQUIRED TO CLEAR AIR VALVE. INSTALL SCREENED OUTLET.

MULTIPLEX CRIPSEN UNIVERSAL AIR VALVE, OR COMBINATION AIR VALVE AND VAC 1" AND 2" THREADED, EPOXY LINED.

BRASS NIPPLE
J-1900
SLOPE TO DRAIN
J-1930-2" OR J-1531-1"

COPPER TUBING, TYPE "K", SAME SIZE AS AIR VALVE. 2' MIN. COVER. PROVIDE PROTECTIVE TAPE.

J-969 SADDLE (FOR PVC)
J-979 SADDLE (FOR D.I.), C.C. THREAD FOR 1" AND 2" AIR VALVE

J-1900 (FOR 1")
J-1930 (FOR 2") LOCATE ON TOP OF PIPE.

FITTINGS AS REQUIRED.
1" TUBING MAY BE BENT,

3/8"-16 UNC CARRIAGE BOLT
3/8"-16 UNC NUT
3/8"-16 UNC BOLT
1-1/2"
3/4"
1-1/2"
3" x 3" x 1/2" x 2" ANGLE

CLASS 520-C-2500 CONCRETE FOUNDATION PLACED ON NATIVE SOIL COMPACTED TO 90% MIN.
RELATIVE DENSITY WITH (2) #3 BARS EACH WAY 18" LONG AT MID DEPTH.
FOR 1": 24"x24"x4"
FOR 2": 36"x36"x4"

3/8" Ø HOLE, TYP.

3" MIN. TYP.

3" x 3" x 1/2" x 2" ANGLE.
SEE BOLTDOWN DETAIL.
NOTES:
1. Meter box per Standard Detail W-06.1 without bottom. Meter box lid shall be skid resistant.
2. Use silver solder for all sweat joints.
<table>
<thead>
<tr>
<th>MAIN SIZE</th>
<th>PRESSURE (PSI)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; OR LESS</td>
<td>0-300</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>12&quot;</td>
</tr>
<tr>
<td>10&quot;</td>
<td>0-150</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>12&quot;</td>
</tr>
<tr>
<td>10&quot;</td>
<td>150-300</td>
<td>6&quot;</td>
<td>8&quot;</td>
<td>15&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>0-150</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>12&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>150-300</td>
<td>6&quot;</td>
<td>10&quot;</td>
<td>18&quot;</td>
</tr>
</tbody>
</table>

*NOTE: THRUST COLLAR NOT TO BE INSTALLED ON P.V.C.*

**NOTES:**

1. Concrete thrust collar shall be placed solidly against firm undisturbed native soil with a soil bearing pressure not less than 1500 psf.

2. Concrete mix shall be CLASS 520-C-2500.

3. All reinforcing bars shall be No. 4.

4. Thrust collars in non-native soil shall be approved by the City Engineer before installation.

---

**CONCRETE THRUST COLLAR**

STREETS:  
TRANS OPS: APPROVED:  
FACILITIES:  
WATER RESOURCES:  
PUBLIC WORKS DIRECTOR:

REV. DATE: 11/12  
DETAIL: W-10.0  
CITY ENGINEER:  
PUBLIC WORKS DIRECTOR:  

SPLIT MEGALUG, FOR D.I. AND C.I. - 1100 SD SERIES

REEBAR (TYP.)

3" CLR. (TYP.)

3" CLR. (TYP.)

3" CLR. (TYP.)

3 DIG. SPACES (4" MIN.)
CONCRETE THRUST BLOCK NOTES:
1. Concrete mix shall be Class 520-C-2500.
2. Concrete placed against the pipe fitting shall not extend beyond the joints.
3. Concrete thrust blocks shall be installed to the dimensions and configurations as shown. Thrust Block Requirements table is designed for water pressure of 150psi and a soil bearing pressure of 2000 psf with a safety factor of 1.5. Thrust blocks for all other values for water pressure and soil bearing must use multiplier tables accordingly, see example below.
4. Concrete thrust blocks shall be placed solidly against firm undisturbed native soil. Soil bearing pressure of undisturbed native soil must be considered in design, see multiplier table below.
5. For configurations with multiple thrust blocks, required bearing area square footage values represent the cumulative total of all thrust block bearing areas.
6. The ratio of thrust block height (H) to length (L) shall be at minimum 1:2 and at maximum 1:1 (square), with preference toward 1:1.
7. All thrust blocks shall extend a minimum of 24" outward from the pipe. Exceptions for small sized thrust blocks may be made at Engineer's discretion.
8. In locations where the water table is higher than the thrust block, special design is required.

THRUST BLOCK REQUIREMENTS (at 150psi water pressure and 2000psf soil bearing capacity):

<table>
<thead>
<tr>
<th>Pipe inner diameter (in.)</th>
<th>Tees, crosses, &amp; plugs</th>
<th>90°</th>
<th>45°</th>
<th>22.5°</th>
<th>11.25°</th>
<th>45°</th>
<th>22.5°</th>
<th>11.25°</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>7.2</td>
<td>10.2</td>
<td>5.5</td>
<td>2.8</td>
<td>1.4</td>
<td>2.9</td>
<td>1.5</td>
<td>0.8</td>
</tr>
<tr>
<td>10</td>
<td>10.9</td>
<td>15.4</td>
<td>8.3</td>
<td>4.2</td>
<td>2.1</td>
<td>4.4</td>
<td>2.2</td>
<td>1.1</td>
</tr>
<tr>
<td>12</td>
<td>15.4</td>
<td>21.8</td>
<td>11.8</td>
<td>6.0</td>
<td>3.0</td>
<td>6.2</td>
<td>3.2</td>
<td>1.6</td>
</tr>
<tr>
<td>14</td>
<td>20.7</td>
<td>29.3</td>
<td>15.8</td>
<td>8.1</td>
<td>4.1</td>
<td>8.4</td>
<td>4.3</td>
<td>2.1</td>
</tr>
<tr>
<td>16</td>
<td>26.8</td>
<td>37.8</td>
<td>20.5</td>
<td>10.4</td>
<td>5.2</td>
<td>10.8</td>
<td>5.5</td>
<td>2.8</td>
</tr>
</tbody>
</table>

SOIL MULTIPLIERS: WATER MULTIPLIERS:

<table>
<thead>
<tr>
<th>Actual Soil Bearing (psf)</th>
<th>Multiplier</th>
<th>Actual Test Water Pressure (psf)</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>2.00</td>
<td>100</td>
<td>0.67</td>
</tr>
<tr>
<td>1500</td>
<td>1.33</td>
<td>150</td>
<td>1.00</td>
</tr>
<tr>
<td>2000</td>
<td>1.00</td>
<td>200</td>
<td>1.33</td>
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<tr>
<td>2500</td>
<td>0.80</td>
<td>250</td>
<td>1.67</td>
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<tr>
<td>3000</td>
<td>0.67</td>
<td>300</td>
<td>2.00</td>
</tr>
<tr>
<td>3500</td>
<td>0.57</td>
<td>350</td>
<td>2.33</td>
</tr>
</tbody>
</table>

EXAMPLE:
10" pipe, 90° bend, 250psi test water pressure, 1500psf soil bearing capacity:

From Thrust Block Requirements table, 10" pipe on a 90° bend requires 15.4 S.F. bearing area.

Adjust values using multiplier tables:
Required S.F. = (Table value) x Multiplier = (15.4 S.F.) x (1.33) = 20.6 S.F.

STREETS: REV. DATE: 11/12 DETAIL: W-11.0
TRANS OPS: APPROVED: E. Kell
FACILITIES: CITY ENGINEER
WATER RESOURCES: PUBLIC WORKS DIRECTOR
NOTES:

Proper installation of the assembly is essential to the protection of the water supply. The following are important characteristics of a proper installation.

1. The assembly shall be installed in a horizontal position with a minimum clearance of 18 inches and maximum of 36 inches between the relief valve discharge port and floor or grade, and a minimum of 18 inches of horizontal clearance around the unit for access and ease of testing and maintenance of the relief valve.
2. A Reduced Pressure Assembly shall not be installed in a pit. Flooding of the pit can result in cross connection contamination.
3. Placement of the assembly should be planned where water discharged from the relief port will not be objectionable.
4. The assembly must be purchased and installed with resilient seat valves as approved by the University of California Foundation for Cross-Connection Control and Hydraulic Research (USC).
   CAUTION: Open and close resilient seated shut-offs slowly to prevent water hammer damage to the system and assembly.
5. Since the reduced pressure assembly is designed to be serviced while in line, the unit need not be removed from the line during servicing. Union connections between the shut-off valves are recommended for ease of removal for damaged units 2 inch and smaller.
6. Ensure the supply water pressure does not exceed the manufacturer’s maximum water pressure rating of the assembly to avoid damage to the system or the assembly caused by system pressure. In addition, protection must be provided against thermal water expansion, extreme backpressure and/or water hammer.
7. Most field problems occur because dirt or debris present in the system at the time of installation becomes trapped in the first check seating area, resulting in continuous discharge from the relief valve in a static or backflow condition. THE SYSTEM SHOULD BE FLUSHED BEFORE THE ASSEMBLY IS INSTALLED. If debris is in the water system continues to cause fouling, a strainer can be installed upstream of the assembly.
8. Backflow assembly shall be lead free.
INDOOR INSTALLATION
TOP VIEW

INDOOR/OUTDOOR INSTALLATION WITH DETECTOR
TOP VIEW

OUTDOOR INSTALLATION
TOP VIEW

INDOOR/OUTDOOR INSTALLATION WITH DETECTOR
SIDE VIEW

FLOW

AIR GAP DRAIN SHALL BE A MINIMUM OF 2 TIMES THE PIPE DIAMETER (1" MIN.)
MAINTAIN APPROVED AIR GAP DISTANCE

12" MIN.
24" MAX.
SUPPORT 3" AND LARGER

FLOW

12" MIN.
24" MAX.
SUPPORT 3" AND LARGER

AIR GAP DRAIN SHALL BE A MINIMUM OF 2 TIMES THE PIPE DIAMETER (1" MIN.)
MAINTAIN APPROVED AIR GAP DISTANCE

REDUCED PRESSURE PRINCIPLE ASSEMBLY
BACKFLOW PREVENTION ASSEMBLY (TYPE 1)
NOTES:

1. The Double Check Valve Assembly must be installed where it is accessible for periodic testing and maintenance.
2. PRIOR TO INSTALLING IN LINE, FLUSH SUPPLY LINE OF ALL FOREIGN MATERIAL. Failure to flush the lines completely may cause the checks to become fouled and require disassembly and cleaning.
3. The device shall only be installed per manufacturer's specifications.
4. When threading the device in line, place wrench only on ball valve hex ends. Keep pipe dope off interior surfaces of valve. On 2-1/2-inch and larger devices, DO NOT LIFT THE DEVICE WITH GATE VALVE HANDWHEELS OR STEMS. ALSO DO NOT SUPPORT DEVICE FROM ONLY ONE END.
5. After installation, fill device and bleed air from unit. Test to ensure proper operation. If either check fails to hold 1.0 PSI, it is most likely due to fouling. The cap must be removed and the seat and/or seat disc cleaned.
6. The device must be protected from freezing. Thermal water expansion and/or water hammer downstream of the backflow preventer can cause excessive pressure increases. Excessive pressure situations should be eliminated to avoid possible damage to the system and device.
7. All potable dedicated fire lines will be required to have double check detector check.
8. Any backflow prevention assembly installed overhead (5' or more) must have a permanent platform built for accessibility.
9. Refer to Uniform Plumbing Code (UPC) chapter 6, sections 603.00 thru 603.4.20 for more information.
NOTES:
1. Assembly and installation shall conform to Standard Detail W-13.0.
2. Double check detector required on all potable dedicated firelines.
3. Side clearance shall be 12" minimum from back of backflow device to any wall or other obstruction.
4. Clearance from detector side of backflow assembly shall be a minimum of 24" from all obstructions.
5. Assembly must be installed as a unit.
6. Distance from grade to centerline of the #2 shut off valve shall be a maximum of 5 feet.
7. Minimum of 18" from grade to first flange of #1 shut off valve.
8. Assembly must be an approved assembly from USC list or equivalent.
NOTES:
1. Any variation from that shown must be approved by the City Public Works Inspector.
2. Sewer laterals shall maintain original slope.
3. PVC pipe shall be Class 200 P.V.C. pipe per AWWA C900.
4. Backfill shall be Class I as defined in Standard Detail 7-001.0 and shall be placed in accordance with ASTM D 2321.
5. Mechanical compression coupling shall be a band seal type repair with an outside stainless steel shear ring, "strong back" or approved equal by the Engineer.

MODIFICATION OF SEWER LATERAL OVER WATER MAIN

STREETS:    REV. DATE: 11/12    DETAIL: W-14.0
TRANS OPS:   APPROVED: 
FACILITIES:   CITY ENGINEER
WATER RESOURCES:   PUBLIC WORKS DIRECTOR
SECTION

BACKFILL UNDER BOX WITH PEA GRAVEL

PLAN

RECLAIMED WATER FILL STATION

STREETS: [Signature]
TRANS OPS: [Signature]
FACILITIES: [Signature]
WATER RESOURCES: [Signature]
NOTES:

1. Downstream side of pressure type vacuum breaker may be maintained under pressure by a valve, but any backpressure by pump or other means is strictly prohibited.
2. PVB's (Pressure Vacuum Breakers) and SVB's (Spill-Resistant Vacuum Breakers) are designed to protect against back siphonage only; not backpressure.
3. PVB's and SVB's shall be installed where occasional water discharge caused by pressure fluctuations is acceptable.
4. PVB's and SVB's shall be installed a minimum of 12 inches above the highest downstream piping and/or outlets.
5. PVB's and SVB's shall always be installed above the 100 year flood level unless otherwise approved by Engineer or designee.
6. Provide minimum clearances for testing and repair.
NOTES:
1. Downstream side of atmospheric type vacuum breaker (AVB) shall not contain any means of shut off.
2. AVB's shall not be subject to any backpressure.
3. AVB's are for intermittent use only and shall not be pressurized for more than 12 hours in any 24 hour period.
4. AVB's shall not be installed where occasional dusty or corrosive conditions occur.
5. AVB's shall be installed a minimum of 6 inches above the highest downstream piping and/or outlets.
6. AVB's shall always be installed above the 100 year flood level unless otherwise approved by Engineer or designee.
AIR GAP SEPARATION

POTABLE WATER SUPPLY

FLOAT CONTROL VALVE

SCREENED OUTLET DIAMETER = "D"

AIR GAP SHALL BE A MINIMUM OF 2 TIMES THE PIPE DIAMETER (1" MIN.)

OVERFLOW RIM

FLOAT

TO NON-POTABLE WATER SYSTEM

PUMP AND MOTOR

STREETS:

REV. DATE: 11/12

DETAIL: W-18.0

TRANS OPS:

APPROVED:

FACILITIES:

CITY ENGINEER

WATER RESOURCES:

PUBLIC WORKS DIRECTOR
<table>
<thead>
<tr>
<th>NUMBER</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-01.0</td>
<td>EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY GENERAL NOTES FOR STREET RESTORATION (1 OF 4)</td>
</tr>
<tr>
<td>U-01.1</td>
<td>EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY GENERAL NOTES FOR STREET RESTORATION (2 OF 4)</td>
</tr>
<tr>
<td>U-01.2</td>
<td>EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY GENERAL NOTES FOR STREET RESTORATION (3 OF 4)</td>
</tr>
<tr>
<td>U-01.3</td>
<td>EXCAVATION WORK IN PUBLIC RIGHT-OF-WAY GENERAL NOTES FOR STREET RESTORATION (4 OF 4)</td>
</tr>
<tr>
<td>U-02.0</td>
<td>TRENCH BEDDING AND BACKFILL - NOTES</td>
</tr>
<tr>
<td>U-02.1</td>
<td>TRENCH BEDDING AND BACKFILL - TYPICAL SECTION</td>
</tr>
<tr>
<td>U-03.0</td>
<td>TRENCH PAVING REQUIREMENTS (1 OF 3)</td>
</tr>
<tr>
<td>U-03.1</td>
<td>TRENCH PAVING REQUIREMENTS (2 OF 3)</td>
</tr>
<tr>
<td>U-03.2</td>
<td>TRENCH PAVING REQUIREMENTS (3 OF 3)</td>
</tr>
<tr>
<td>U-04.0</td>
<td>PIPE REINFORCEMENT</td>
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<tr>
<td>U-05.0</td>
<td>WATER-SEWER SEPARATION REQUIREMENTS - NOTES</td>
</tr>
<tr>
<td>U-05.1</td>
<td>WATER-SEWER SEPARATION REQUIREMENTS - SEWER MAIN CONSTRUCTION</td>
</tr>
<tr>
<td>U-05.2</td>
<td>WATER-SEWER SEPARATION REQUIREMENTS - WATER MAIN CONSTRUCTION</td>
</tr>
<tr>
<td>U-06.0</td>
<td>UTILITY SEPARATION FROM CITY WATER, SEWER, RECLAIMED PIPELINES, AND STORM DRAINS</td>
</tr>
</tbody>
</table>
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.
13. Public right-of-way restoration:

<table>
<thead>
<tr>
<th>Arterial/Collector Street</th>
<th>Trench Perpendicular to the path of travel</th>
<th>Trench Parallel to the path of travel*</th>
<th>Pothole or Other Individual Cut</th>
<th>Multiple Cuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-cut trench 12&quot; either side of cut and overlay with asphalt per U-03.0 to U-03.2.</td>
<td>Cold plane 10' centered on trench/drive lane and 10' before and after trench.** Overlay with matching asphalt.***</td>
<td>T-cut 12&quot; on all sides of pothole and overlay with asphalt, per U-03.0 to U-03.2.</td>
<td>Per the direction of the Public works inspector. E.g. excessive bore pits may result in cold plane 10' requirement or slurry seal.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Local Street/Alley</th>
<th>Trench Perpendicular to the path of travel</th>
<th>Trench Parallel to the path of travel*</th>
<th>Pothole or Other Individual Cut</th>
<th>Multiple Cuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-cut trench 12&quot; either side of cut and overlay with asphalt per U-03.0 to U-03.2.</td>
<td>Cold plane 5' centered on trench and 5' before and after trench.** Overlay with matching asphalt.***</td>
<td>T-cut 12&quot; on all sides of pothole and overlay with asphalt, per U-03.0 to U-03.2.</td>
<td>Per the direction of the public works inspector.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Newly Paved Street or Alley (within 4 years of last overlay)****</th>
<th>Trench Perpendicular to the path of travel</th>
<th>Trench Parallel to the path of travel*</th>
<th>Pothole or Other Individual Cut</th>
<th>Multiple Cuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold plane 10' centered on trench 10' before and after trench.** Overlay with matching asphalt.***</td>
<td>Cold plane the full lane width for all impacted lanes with end transitions.** Overlay with matching asphalt.***</td>
<td>Cold plane the full lane width for all impacted lanes with end transitions.** Overlay with matching asphalt.***</td>
<td>Per the direction of the public works inspector. E.g. excessive bore pits may result in cold plane 10' requirement.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New Slurry Sealed Street or Alley (within 2 years of last slurry seal)</th>
<th>Trench Perpendicular to the path of travel</th>
<th>Trench Parallel to the path of travel*</th>
<th>Pothole or Other Individual Cut</th>
<th>Multiple Cuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crack and slurry seal a minimum of 20 feet beyond the limits of all trenching or construction damage.</td>
<td>Crack and slurry seal the full lane width for all impacted lanes or as required for restriping lines and markings.</td>
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<td></td>
</tr>
</tbody>
</table>

*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.
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.
EXAMPLES OF COLD PLANE & OVERLAY LIMITS

LEGEND

TRENCH T-CUT LIMITS

COLD PLANE & OVERLAY LIMITS

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
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 ½ of the concrete pavement depth and centered between two connecting panels
    - When doweling into existing concrete street along longitudinal joints, drill ½" 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 ½" 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.
TYPICAL SECTION

FINISH SURFACE

ROAD STRUCTURAL SECTION
SEE U-03.0, U-03.1, OR U-03.2 FOR
MATERIAL AND SAWCUTTING DETAILS

DETECTABLE TAPE TO
BE PLACED A MINIMUM OF
6" TO A MAXIMUM OF 12" BELOW
THE STRUCTURAL ROAD SECTION

NON-METALLIC WATER PIPES ONLY:
12 GAUGE INSULATED COPPER WIRE.
STRIP WIRE AND WRAP AROUND EACH
COPPER SERVICE FOR DIRECT
CONTACT. TAPE WIRE ON PIPE EVERY
10 FEET.

12" MIN.

COMPACTION
ZONE

6" MIN.
12" MAX.
VARIES

PIPE ZONE COMPACTED PER PIPE
MANUFACTURER’S REQUIREMENTS

TRENCH ZONE BACKFILL SHALL BE 1-SACK
CONCRETE SLURRY FOR TRENCHES UNDER
100 FT. IN LENGTH. EXCEPTIONS MUST BE
AUTHORIZED BY THE CITY ENGINEER. ALL
OTHER TRENCHES SHALL USE ONE OF THE
BACKFILL OPTIONS LISTED IN NOTE 4, DETAIL
U-02.0 COMPACTED TO 95% RELATIVE
COMPACTION.

1/4 OF I.D. OR 4" MIN. BEDDING

TRENCH BEDDING AND BACKFILL
TYPICAL SECTION

REV. DATE: 09/19 DETAIL: U-02.1
APPROVED:
CITY ENGINEER
PUBLIC WORKS DIRECTOR
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.
CONCRETE OVER AGGREGATE BASE
TO INCLUDE: CURB & GUTTER, SIDEWALK, DRIVEWAY, RAMP, CROSSGUTTER, SPANDRAL.

SEE NOTE 10. STANDARD DETAIL U-02.0 FOR DOWELING SPECIFICATIONS

MATCH EXISTING (8" MIN.)

DETECTABLE TAPE (TYP.)

SLURRY OR BACKFILL

AGGREGATE BASE (95% RELATIVE COMPACTION)

NEW CONCRETE

MATCH PANEL

TRENCH WIDTH

MATCH PANEL

S AVM C U T

ADDITIONAL NOTES:

- RESTORATION OF ALL CONCRETE IMPROVEMENTS, TO INCLUDE SEWER TAPS, WILL BE TO NEAREST SCORELINE, 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
A.C. OVER AGGREGATE BASE
OPTION 1

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/

TABLE A: A.C. DEPTH

<table>
<thead>
<tr>
<th>LOCAL STREETS/ALLEYS</th>
<th>0.33' AC / 0.50' AB MINIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTERIAL/COLLECTOR STREETS</td>
<td>0.50' AC / 0.67' AB MINIMUM</td>
</tr>
</tbody>
</table>

TRENCH PAVING REQUIREMENTS
3 OF 3
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.

PIECE REINFORCEMENT

REV. DATE: C9/19 DETAIL: U-04.0
APPROVED:

CITY ENGINEER
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.
SEWER MAIN 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.

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

APPROVED:

CITY ENGINEER

PUBLIC WORKS DIRECTOR
PARALLEL CONSTRUCTION

PERPENDICULAR CONSTRUCTION (CROSSINGS)

ZONE "A" SPECIAL PIPE ZONE "B"

SPECIAL PERMISSION

NO JOINTS IN WATER MAIN

1' ZONE "D"

PROHIBITED

4'

PROHIBITED

SPECIAL PIPE ZONE "C"

NO JOINTS IN WATER MAIN

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.
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.