

ENGINEERING STANDARDS

JANUARY 2016

APPROVED BY THE CITY ENGINEER:



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CITY ENGINEER
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ADOPTED BY THE CITY COUNCIL OF SAN LUIS OBISPO
BY RESOLUTION NO. 10680 (2015 SERIES)

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January 2016 Edition

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CITY ENGINEERING STANDARDS

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UNIFORM DESIGN CRITERIA

Refer to the Community Design Standards and Fire Development Guide for additional information and guidance.

A. STREETS

The design of a subdivision street system should result from an evaluation of topographical conditions, the traffic likely to be generated by the types and numbers of planned uses, and the purpose of each street. The street system must allow an acceptable pattern of lots (see Sections 17.36.150 through 17.36.230 of the City's Municipal Code).

Street systems should be built to naturally encourage walking, community, safety and environmental stewardship. The City supports concepts such as Complete Streets, Green Streets, and Living Streets. Special approvals by the City Engineer will be needed for alternative street widths and elements.

Wet utilities should be placed within the roadway prism for maximum accessibility.

Geometrics:

All regional highways and arterial streets shall have cross sections generally conforming with adopted Specific Plans and the Circulation Element, as modified by City direction specific to the area, and circumstances of development.

Minimum clear and passable street widths will be as required by the Fire Department.

All streets shall intersect other streets at right angles, and shall have at least 50 feet of centerline tangent, as measured from the prolongation of the cross-street property line to the angle point or beginning of curve. Roundabouts should be considered in lieu of traditional intersections where level of service thresholds can be accomplished.

Block lengths for local and collector streets should be a minimum of 150 feet and a maximum of 600 feet. Block lengths for arterial streets should be a minimum of 600 feet. Street systems should be networked to improve connectivity and reduce travel distances for alternative transportation.

The minimum outside corner radius is 10' for local residential streets, with larger radii for commercial or industrial areas where large vehicle use is frequent. Frequently used areas shall provide radii that allow for a large vehicle to turn at an intersection without crossing the centerline into oncoming traffic. Inside corners, such as on a street with a ninety degree turn, shall have a minimum radius of 20' to allow for sweeping.

Streets with a regular cross section and no special provision for turn-around shall be provided at the edges of a subdivision when the City determines they may be extended in the future.

Space for turning vehicles shall be provided at the ends of access streets with no outlet. A cul-de-sac may include landscaping or parking within a central island so long as space for turning and

REVISIONS	BY	APP	DATE
<i>Revised Lot Stake Rebar Size</i>	<i>MH</i>	<i>BL</i>	<i>5-14</i>
<i>Revised Sections A,B,E,G,H,J</i>	<i>MH</i>	<i>BL</i>	<i>2-14</i>
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backing from driveways is provided. Design of terminus streets, such as cul-de-sacs, shall be to the satisfaction of the City Fire Department and City Engineer.

Alleys may be required in industrial, commercial and residential subdivisions where necessary to provide alternative, controlled access to arterial and thoroughfare streets. Alley right-of-way and pavement width shall be a minimum of twenty feet. Where two alleys intersect, a paved area free of obstructions shall be provided for safe visibility and turning.

Parkway areas which include trees shall be a minimum of 5 feet wide. Parkways created in existing integral sidewalk areas will be handled on a case-by-case basis.

Grades and Cross Slope:

Street grades on other than arterials and thoroughfares, shall not exceed fifteen percent. Grades on arterial streets and thoroughfares shall not exceed ten percent, unless the City Engineer approves a steeper grade, which shall not exceed fifteen percent. The grade on switchbacks or curbs of less than fifty-foot centerline radius shall not exceed five percent.

The minimum street grade shall be one percent, except that where topographical conditions do not allow any feasible alternative, and with the approval of the City Engineer, grades not less than 0.3 percent may be allowed.

Design of street grades at intersections shall follow the principles indicated in the most current edition of AASHTO manual "A Policy on Geometric Design of Highways and Streets."

In sloping terrain, separate one-way travel lanes may be used in order to reduce cut and fill. Such one-way lanes shall have a minimum unobstructed width of twenty feet, a minimum paved width of fourteen feet, and a maximum length of five hundred feet.

Where excavation or fill slopes extend beyond the street right-of-way, easements for the slopes may be required by the City.

Cross slope shall be considered during street construction and rehabilitation design. Cross slope is typically 2 percent but may range from 1.5 percent to 3 percent to accommodate terrain.

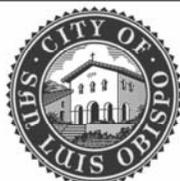
For streets where roadway pavement edges are at different heights, a quarter crown point is typical.

The grade break at the gutter should not exceed 20 percent at a driveway to prevent vehicles from dragging on the ground or sidewalk.

Streets designed with super elevation shall be designed in accordance with current California Department of Transportation Highway Design Manual guidelines.

Slopes for crossings and access points shall meet accessibility requirements.

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**UNIFORM DESIGN
CRITERIA**

Pavement:

Pavement design shall follow the California Department of Transportation Highway Design Manual, be based on a 20-year design life and the "R-value" of the subgrade material. New local streets shall be designed for a 50-year life.

Pavement thickness shall be based on Traffic Indices shown in City Engineering Standard 7110.

Variations of the design standards and pavement materials may be approved by the City Engineer to meet individual circumstances.

See also Section B and Engineering Standard 7110 for other requirements affecting street design.

Sidewalks and Bicycle Lanes:

Sidewalks are required on both sides and shall be designed and constructed per Engineering Standards. Alternative surface materials may be approved on a case-by-case basis by the City Engineer to facilitate infiltration; however, ADA access requirements must be met. Sidewalks must slope to drainage facilities, either planting areas or gutters.

Standard minimum sidewalk width is 5 feet detached, 6 feet integral. Sidewalk widths for commercial development may be required up to 7 feet detached, 12 feet integral, depending on the location of the commercial development and anticipated pedestrian traffic. In areas where these widths cannot be maintained, sidewalk shall have a minimum of 5 feet clear width.

Integral curb, gutter and sidewalk shall be constructed without a cold joint between the curb and the sidewalk.

Curb returns shall be designed to minimize overly steep grades of curbs through the returns, to the satisfaction of the City Engineer. Generally, the grades of curb returns should not exceed the grades of the adjacent streets, and include accessible curb ramps. Additional landing area may be needed at corners, outside the planned right-of-way, to accommodate ramps.

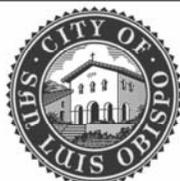
Curb extensions may be required to restrict parking at intersections for visibility and to reduce pedestrian crossing distances.

Provisions for bike facilities shall be in accordance with the adopted Bicycle Transportation Plan.

The City may approve alternatives to sidewalks or bicycle lanes incorporated into the roadway section. Such alternate routes shall be within a public right-of-way or public easement and shall provide a level of access and pedestrian/cyclist safety equivalent to or better than provided by conventional locations. Where alternative pedestrian paths or bicycle paths are provided to the satisfaction of the City, the conventional sidewalks or bicycle lanes may be eliminated. Where curbside parking is provided, there must be safe pedestrian access to it.

The alternative pedestrian path or bicycle paths shall be logically related to conventional sidewalks or bike lanes in order to safely divert pedestrian/bicycle travel from roadway sections lacking roadside walks or bike lanes.

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The City may require improved walkways, in addition to sidewalks, through blocks more than nine hundred feet long to provide access to parks or public facilities.

Any existing feature in the sidewalk that is of a special, unique, unusual, or historic nature, as determined by the City, shall not be replaced, removed, or altered without specific approval of the City Engineer.

Curb Ramps:

Curb ramps shall be installed at all intersections where sidewalks are to be built.

Curb ramps should be located in the most logical place to accommodate pedestrian crossings.

Curb ramps shall comply with the provisions and standards required by the City, State, and Federal Government. Any deviation from standards requires a signed design exception, approved by the City Engineer.

Street Trees:

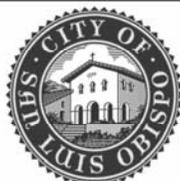
Install one street tree per 35 feet of street frontage. Street trees may be grouped if necessary to avoid conflict with other improvements.

Mission Style Sidewalk District:

The following requirements apply to construction in the Mission Style Sidewalk District, which is defined in Resolution No. 9114 (2000 Series). See map in appendix.

- a. Mission Style Sidewalk, curb and gutter shall be constructed per City Engineering Standard 4220.
- b. All driveways, curb ramps, tree wells and catch basins shall conform to Mission Style Sidewalk requirements.
- c. All sign posts and parking meter posts shall be relocated behind the tile row and be installed per City Engineering Standards.
- d. All new utility vaults, water meter boxes, and sewer cleanouts shall be located behind the tile row or future tile row and shall conform to City Standards. Wells, boxes, lids and covers shall be stained or coated to match surrounding sidewalk. Stains and coatings shall be submitted to the City for approval prior to application. Lids and covers may be cast iron or dark galvanized slip-resistant diamond-plate. Lids and covers in traffic areas shall be traffic rated.
- e. All new installations of Mission Style Sidewalk shall include Mission Style Curb and Gutter.
- f. Any existing feature in the sidewalk that is of a special, unique, unusual, or historic nature, as determined by the City, shall not be replaced, removed, or altered without specific approval of the City Engineer.

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**UNIFORM DESIGN
CRITERIA**

Street Parking:

Parking is not allowed on regional highways and arterial streets. Parking on one or both sides is allowed on all other street types. Where the proposed design allows parking in only certain areas, parking pockets, extended gutter construction, or other methods of clearly defining legal parking, are required.

Parking areas may be used for infiltration of stormwater where suited to the site conditions. Design shall be such as to prevent damage to adjacent roadway sections from infiltration, to the satisfaction of the City Engineer.

The City may approve alternatives to the provision of curbside parking. Alternate parking may be allowed where the City determines the resulting street design is adequate for the type and extent of planned uses. Curbside parking reductions are encouraged in hillside developments to reduce grading and in all other areas to reduce run-off volumes and pavement maintenance costs.

If curbside parking is not provided, alternate parking on-site may be required depending on the development type and anticipated parking demand.

Access Restrictions:

Reserve strips of land to control access from adjoining property to public streets may be required by the City. Such reserve strips shall be at least one foot wide and shall be deeded in fee to the City. They shall be shown and clearly labeled on the final map. Access restrictions may also be incorporated by note on the map.

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**UNIFORM DESIGN
CRITERIA**

Street Types and Requirements:

The following is a chart of street types and the requirements for each type of street.

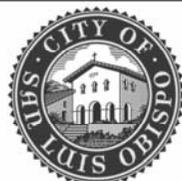
Notes

- (A) Right-of-way shall extend a minimum of 2' beyond edge of roadway, back of curb, or back of sidewalk, as the case may be.
- (B) Additional right-of-way may be required for noise-attenuation, drainage features, shoulders, and curb ramps.
- (C) In determining function, maximum development allowed by zoning will be used.
- (D) See Bicycle Transportation Plan for details

STREET REQUIREMENTS

Street Type	Function (C)	Total R/W Width (A & B)	
Cul-De-Sac (access court)	Low speed access to 8 or fewer dwellings	26' to 42'	Min. centerline curve radius 75'; maximum length 300'; those serving 4 or fewer dwellings may exceed 300' but not 600' Must have turning space as required by the Fire Department Design vehicle P20
Hillside Cul-de-Sac	Low-speed access to 10 or fewer dwellings where the prevailing land slope is more than 15%	26' to 34'	Min. centerline curve radius 75'; maximum length 300'; those serving 6 or fewer dwellings may exceed 300' but not 600' Must have turning space as required by the Fire Department Design vehicle P20
Residential Local	Low-speed access to about 50 dwellings	40' to 56'	Min. centerline curve radius 150' Design vehicle P20
Hillside Residential Local	Low-speed access to about 50 dwellings where the prevailing land slope exceeds 15%	36' to 52'	Min. centerline curve radius 100' Design vehicle P20
Residential Collector	Moderate-speed circulation within a neighborhood of 300 to 500 dwellings	44' to 60' (D)	Min. centerline curve radius 250' Design vehicle SU 30
Commercial/ Industrial Collector	Access and circulation within commercial and industrial areas	44' to 68' (D)	Min. centerline curve radius 300' Cul-de-sacs shall provide 40' minimum radius Design vehicle SU 40
Arterial	Convenient, moderate-speed circulation between neighborhoods and between different land use areas	86' to 94' (D)	Min. centerline curve radius 500' Median and dedicated left-turn lanes, 12' wide Limited driveway access Designed for safe stopping speed of 45 mph Design vehicle WB 50
Regional Highway	Unencumbered, moderate to high-speed travel between communities	84' to 104' (D)	Min. centerline curve radius 500' Median and dedicated left-turn lane 14' wide No driveway access Access from streets, particularly minors and collectors, may be limited Safe stopping speed of 55 mph

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UNIFORM DESIGN CRITERIA

B. DRAINAGE AND EROSION CONTROL

General:

All new development or redevelopment shall comply with the criteria and standards set forth in the Waterways Management Plan – Drainage Design Manual, applicable area specific plans, and the Post-Construction Stormwater Management Requirements for Development Projects in the Central Coast Region, adopted by the Central Coast Regional Water Quality Control Board, and included in their appendices. Where requirements conflict, the stricter shall apply.

Stormwater Control Plan, and Operation and Maintenance Plan are required prior to final approvals.

Streets:

Cross gutters are only allowed at intersections. Cross gutters are not allowed to cross highway/regional routes or arterial streets.

Stormwater management facilities may be built into the right-of-way, including medians, traffic circles, and parkways, subject to approval by the City Engineer. Where stormwater management features are built into the right-of-way, water must be managed to prevent damage to the roadway structural integrity.

Subsurface Groundwater Drainage:

Underground dewatering improvements (such as retaining wall sub-drains or groundwater collection system) shall not deposit collected groundwater or spring water to the gutter or other surface drainage facility. Such systems shall be designed to retain the water on-site or deposit the collected water to an approved collection system.

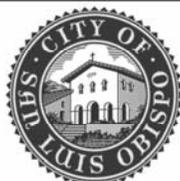
Source Control:

(per 2013 State General Stormwater Permit Section E.12.d)

Projects with pollution generating activities and sources must be designed to implement operation or source control measures consistent with recommendations from the California Stormwater Quality Association Handbook for New Development and Redevelopment or equivalent, including:

- a) Accidental spills or leaks
- b) Interior floor drains
- c) Parking / storage areas and maintenance
- d) Indoor and structural pest control
- e) Landscape / outdoor pesticide use
- f) Pools, spas, ponds, decorative fountains and other water features
- g) Restaurants, grocery stores, and other food service operations
- h) Refuse areas
- i) Industrial processes
- j) Outdoor storage of equipment or materials
- k) Vehicle and equipment cleaning, repair, and maintenance
- l) Fuel dispensing areas

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UNIFORM DESIGN CRITERIA

- m) Loading docks
- n) Fire sprinkler test water
- o) Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources
- p) Unauthorized non-stormwater discharges
- q) Building and grounds maintenance

Design should prevent water from contacting work areas, prevent pollutants from coming in contact with surfaces used by stormwater runoff, or where contact is unavoidable, treat stormwater to remove pollutants.

Operations and maintenance activities required to achieve Source Control are to be included in the Operation and Maintenance Plan submitted for approvals and recorded with the property as required by ordinance.

C. WATERLINES

Main Size:

Minimum water main size shall be 8 inches except:

- a. A 6-inch main may be used in normal gridded street patterns where two 8-inch looped mains in adjacent streets are to be connected if the length is less than 350 feet and it will not have to support a fire hydrant.
- b. Dead-end mains require special approval of both Fire Dept. and Utilities Dept. For dead-end mains the minimum size shall be:
 - 4-inch main if less than 150 feet long and serving less than 10 dwelling units.
 - 6-inch main if over 150 feet but less than 350 feet long and serving less than 25 dwelling units.
 - 8-inch main if over 350 feet but less than 700 feet long and serving less than 50 R-1 dwelling units (with triple valve at intersection)
 - 10-inch main if over 700 feet but less than 1500 feet long and serving less than 75 R-1 dwelling units (with triple valve at intersection and 250-foot maximum fire hydrant spacing).
- c. Recycled water mains shall be sized in accordance with the Recycled Water Master Plan, or as determined by the Utilities Department.
- d. Recycled water mains design pressure may be reduced, if a lesser pressure class can be justified. Pressure does vary in the recycled water system. Designers must contact the Utilities Department to obtain operating pressures, in order to properly design any extensions to the system.

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Location:

Water mains shall be located per Engineering Standards 6010, 6110 and 6140.

Minimum clearance between mains and street surface shall be 3 feet.

Minimum clearance between recycled water mains and street surface shall be 5 feet.

Clearance between waterlines and other fluid pipelines must comply with California Code of Regulations Title 22, Division 4, Chapter 16, Article 4, section 64572; Installations in existing developed areas must comply with current State guidance memorandums on separation.

Services:

Water service shall include all facilities necessary for the transmission of water from the nearest point of adequate supply to a meter vault at the front of each lot. For condominium projects, a separate meter vault shall be provided for each condominium unit at the street frontage or as approved by the City Engineer. Pumping and storage equipment to provide sufficient volume and duration of flow of water shall be provided. The design and location of the water system serving the proposed subdivision shall be provided to the satisfaction of the City Engineer and Utilities Director. Water lines need not be provided to lots which will be in perpetual open space and which will not require irrigation or fire suppression.

All new services shall be 1, 2 or 4 inches or larger. All new services greater than 2 inches shall have a bypass per Engineering Standard 6250.

Size of water services shall be based on California Plumbing Code (CPC), and adequate for maximum density allowable on each specific lot. Meters shall not be larger than service line.

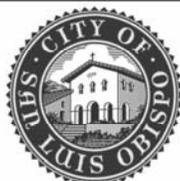
New water services shall be installed perpendicular to water main, and must have a minimum of 18" between service points.

Fire Protection:

Fire hydrants shall be installed according to the City Fire Code and to the satisfaction of the Fire Marshal and City Engineer. Fire hydrant location and service sizing shall meet the requirements of the Fire Department Developer's Guide.

On mains of 12 inches and larger, fire hydrant location and spacing shall allow, whenever possible, for the placement of a fire hydrant instead of a blow-off assembly at low points and at the ends of water mains, as appropriate.

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D. SEWER

Design:

Sewer main size shall be determined by designing for flowing half-full, considering the flow generated by the development, the ultimate upstream development, and infiltration.

Minimum sewer main size shall be 8 inches; except a 6 inch minimum size main may be allowed for the last run which ends in a manhole and cannot be later extended to serve other properties. Laterals shall be sized to be adequate (4 inch minimum) for maximum allowable density on each specific lot.

Sewer main slope shall be sufficient to provide 3 feet per second minimum velocity flowing half-full. Grades shall be designed from manhole outlets to inlets.

Sewer main depth shall accommodate all lateral connections and allow a 12 inch minimum vertical clearance between laterals and other utility conduits.

Design flow criteria are summarized as follows (for newly constructed mains only – the Utilities Department will provide data for older mains):

Domestic Sewage (Gallons / Person / Day)	
Average dry-weather flow (ADWF)	84
Peak dry-weather flow (PDWF)	210 x peak reduction factor

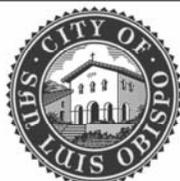
Reductions in peak flows occur because of storage in the system and diversification of development. The estimated factors which should be applied to obtain peak dry-weather flows are summarized as follows:

Population Range	Peak Reduction Factor
0 - 1,800	1.00
1,800 - 2,600	0.96
2,600 - 3,500	0.92
3,500 - 5,000	0.88
5,000 - 7,000	0.84
7,000 - 9,800	0.80
9,800 - 15,000	0.76
15,000 - 35,000	0.72
35,000 - 50,000	0.68

Where two or more lines enter a manhole, sufficient elevation difference shall be provided in the trough elevations, whenever possible, to prevent the smaller of the lines from being surcharged by the larger line(s) under normal operating conditions. Top of smaller pipe shall be no lower than top of larger pipe(s).

Sewer mains and laterals shall be designed so as to be usable by each lot without the need for an ejector pump. Exceptions may be granted on a case-by-case basis by the City Engineer.

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Curves may be permitted provided that pipe deflection is limited to manufacturer's recommendations, with a minimum radius of 100 feet, and the curves are only in one plane (either horizontal or vertical) between adjacent manholes. Sewer mains and laterals shall be located as shown in Engineering Standards 6010, 6110, 6140 and 6810.

All sewers shall be located within a dedicated city street or alley or within a recorded easement. Sewer main and manholes not within a street or paved drive must be within an all-weather dust free access road at least 12 feet wide and must provide access to all manholes for maintenance with truck-mounted equipment. The access road grade shall not exceed 20 percent, and a truck turn-around may be required.

Clearance between waterlines and other fluid pipelines must comply with California Code of Regulations Title 22, Division 4, Chapter 16, Article 4, section 64572, Installations in existing developed areas must comply with current State guidance memorandums on separation.

Manholes:

Manholes shall be spaced no further than 400 feet apart. Upstream ends of sewer mains shall terminate at manholes. Coatings will be required for drop manholes and other locations where gases are expected to accumulate.

All inlets shall be designed and installed such that the top of pipe elevations match, as much as possible.

All manholes shall be constructed with precast bases as shown in Engineering Standards 6610 and 6620. Manholes shall be 4 feet in diameter unless the size and/or number of inlet(s) and outlet(s) warrant the use of a 5-foot diameter manhole. Brick or block manholes will not be allowed. Cast-in-place manholes may be allowed under special circumstances where it is not feasible to construct pre-cast manholes.

Concentric cones shall be used. Eccentric cones may be used only in special cases, and only with approval of the City Utilities Department. Steps will not be allowed in manholes. Manholes shall be watertight and pass vacuum test requirements.

Manholes shall not be located at the centerline of intersections.

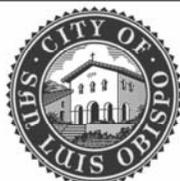
Pipe:

Pipe material shall be fused HDPE unless otherwise required for special conditions such as bridge crossings.

Laterals:

Sanitary sewer laterals shall be stubbed to the front property line of each lot. All facilities for the transmission of sewage from each of the lots to the nearest adequate point of connection to the City's sewer system shall be installed as acceptable to the City Engineer. Sewer lines need not be

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provided to lots which will be in perpetual open space use. The requirement for a sewer lateral may be waived upon a finding by the City that an alternative waste disposal system, which will provide a level of protection for public health and natural resources at least equivalent to public sewer, will be installed and maintained.

Sewer laterals shall have backwater valves installed whenever the flood level rim of the lowest fixture in the building (including basements) is less than adjacent upper or lower manhole, whichever controls, as determined by the City Engineer. See municipal code section 13.08.200.

E. SURVEY

Street Monuments:

Street monuments shall be set to reference street centerlines at all intersections, angle points, beginning and ending of curves, radius point of cul-de-sacs, and at tract boundary as required by the City Engineer.

Monuments shall be set no further apart than 500 feet along centerlines, and shall be shown on the final subdivision map.

Monuments shall be constructed and set per Engineering Standard 9020.

Tract Boundary Monuments:

Tract boundary monuments shall be set to reference tract boundary lines at all angle points, beginning and ending of curves, and intersections with street right-of-way lines.

Tract boundary monuments shall be set no further apart than 500 feet along boundary lines, and shall be shown on the final subdivision map.

Tract boundary monuments shall be constructed of iron pipe, no smaller than 1.5 inches in diameter, no shorter than 30 inches in length, capped and stamped with either the land surveyor's or registered engineer's number, and indicated by a marker stake extending above the ground surface.

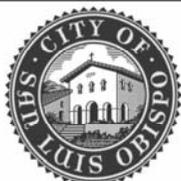
Lot Stakes:

Lot stakes shall be set to reference lot lines at all angle points, and beginning and ending of curves, except where said point is to be set with a tract boundary monument.

Lot stakes shall be constructed of 3/4 inch plugged galvanized pipe at least 18 inches in length, or a #5 rebar with plastic cap. If a lot corner falls on concrete or rock, the corner shall be set with a lead plug. All corners shall be tagged or marked with either the land surveyor's or registered engineer's number.

All lot stakes shall be set at ground surface, with white marker stakes located immediately adjacent. Offset staking or alternative staking will not be allowed without prior approval of the City Engineer.

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Vertical Control (Benchmarks):

Points of known elevation shall be set at approximately every 1000 to 1200 feet horizontally in new street systems, minimum of one point.

Points are to be set in curbs or other concrete facilities near street corners or ends of cul-de-sacs, where they can be easily located by description. A nail and tag or copper disc, or brass cap labeled "Benchmark" with the surveyor's license number, is to be set in the concrete.

Provide record showing the location, elevation, and elevation basis to the City Engineer for inclusion in the City's published Benchmarks.

F. PROJECT PLANS

All improvement plans shall be prepared and signed by a registered Civil Engineer. The public improvement plans shall use the standards set forth in Engineering Standard 9910. Each utility company whose facilities are involved shall sign the original plans indicating they have reviewed and approved the plans. Construction may not begin until the plans are signed by the City, and submittals required by the Standard provided to the City at no charge.

G. STREET LIGHTING & TRAFFIC SIGNALS

Street Lighting

All significant projects (ex: major remodels, street widenings, multi-unit developments, high density residential) are subject to providing lighting per the requirements of this standard.

All major remodels, re-developments, or significant sidewalk replacement projects in the downtown pedestrian lighting master plan area, shall provide new pedestrian level lighting.

See section 86-6.01 of the Standard Specifications for Luminaire information.

See Engineering Standard 7520 for lighting circuit requirements.

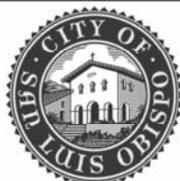
See Engineering Standard 7910 for pole requirements.

Street Light Pole

Foundation mounted steel poles are only allowed for replacement of an existing foundation mounted pole on the existing foundation or as approved by the City Engineer. Embedded steel poles are preferred and must be used for all other conditions.

Street Lights installed in certain areas, such as the Downtown, may be required to be a specialized pole, as determined by the City.

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Double arm poles (Type 15D) shall be used only in parking lots or areas where a maintenance vehicle can readily access the pole without traffic control. Otherwise use of double arm poles will only be allowed upon approval of the City Engineer and will only be authorized when no other option exists.

Street Light Pole Placement Guidelines

Residential Street Light Poles are to be placed on lot lines whenever possible. Street Lights Poles and trees should have a 20-foot minimum horizontal separation. Street Light Poles and shrubs should have a 5-foot minimum horizontal separation.

Street / Intersection Width (1)	Street Light Pole Spacing	Pole Type and Location(3)	Pole Arm Length (2)(3)	Luminaire (4)
Less than or equal to 40 feet	Every 200 to 250 feet. Only one side of street. One light per intersection.	Embedded Pole 18 inches behind curb face	8 feet	Type 1
Greater than 40 feet	Every 200 to 250 feet. Alternating sides of street. Two lights (min.) per intersection.	Embedded Pole 18 inches behind curb face	8 feet	Type 2

- (1) Curb to Curb distance
- (2) Not including luminaire
- (3) Intersection lighting shall be placed to minimize the likelihood of the pole being struck by turning traffic and may be set back from the curb face if needed and a longer arm installed to meet light placement requirements.
- (4) Refer to Section 86-6.01 "LED LUMINAIRES" of the Standard Specifications for Luminaire information.

Street Light Service

Service point shall be obtained from PG&E. When the lighting has been installed in conformance with the City's requirements, the City will authorize PG&E to energize those lights installed as part of public improvements for ownership and maintenance by the City. Lights to be maintained and paid for by a private party must be authorized by that party.

When service points are used for more than one light in series, an electrical design for the lighting circuit shall be submitted to the City for approval. Voltage drop between the point of service and the end of each lighting circuit shall not exceed 5 percent. All street lighting shall be 120VAC.

Traffic Signals

Traffic Signals must comply with current design standards in the Manual on Uniform Traffic Control Design.

Conduit fill must not exceed 25%.

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H. LANDSCAPING & IRRIGATION

Landscaping and Irrigation shall conform to the provisions in Section 13.20 of the City Municipal Code and Engineering Standards.

The provisions of the Engineering Standards apply to the following landscape projects:

- New residential, commercial, institutional and multi-family development projects with an aggregate landscape area equal to or greater than 500 square feet subject to a building permit or development review.
- Rehabilitated landscapes for residential, institutional, commercial and multi-family development projects with a landscape area equal to or greater than 2,500 square feet which are otherwise subject to a building permit or development review.

Submittals

Development Review. For projects that require development review (tentative parcel map, tentative tract, development plan or conditional use permit), project applicants shall submit the following documentation:

1. A completed Maximum Applied Water Allowance for the conceptual landscape design.
2. A conceptual landscape design plan which demonstrates that the landscape will meet the landscape design specifications of the City Engineering Standards Uniform Design Criteria for Landscaping and Irrigation.
3. A conceptual irrigation design plan which notes the irrigation methods and design actions that will be employed to meet the irrigation specifications of the City Engineering Standards Uniform Design Criteria for Landscaping and Irrigation.
4. A grading plan which demonstrates the landscape will meet the specifications of the City Engineering Standards Uniform Design Criteria for Landscaping and Irrigation.

Building Application. Prior to the issuance of a building permit, project applicants shall submit the following:

1. A completed Maximum Applied Water Allowance form based on the final landscape design plan.
www.slocity.org/government/department-directory/utilities-department/documents-and-files
2. A final landscape design plan that includes all the criteria required in the City Engineering Standards Uniform Design Criteria for Landscaping and Irrigation.
3. A final irrigation plan that includes all the criteria required in the City Engineering Standards Uniform Design Criteria for Landscaping and Irrigation.
4. A soils management report that includes at a minimum the criteria required in the City Engineering Standards Uniform Design Criteria for Landscaping and Irrigation.
5. A final grading plan that includes all the criteria required in the City Engineering Standards Uniform Design Criteria for Landscaping and Irrigation.
6. A hydrozone table
www.slocity.org/government/department-directory/utilities-department/documents-and-files
7. Plans must comply with City Engineering Drafting Guidelines included in appendix.

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Project Completion. Upon completion of the installation of the landscape and irrigation system and prior to the issuance of the Certificate of Occupancy, the project applicant shall submit the following:

1. A Certification of Completion signed by the professional of record for the landscape and irrigation design certifying that the project was installed per the City approved landscape design, irrigation and grading plans and meets or exceeds an average landscape irrigation efficiency of 0.75. The City reserves the right to inspect and audit any irrigation system which has received an approval through the provisions of this chapter.
www.slocity.org/government/department-directory/utilities-department/documents-and-files
2. A project applicant shall develop and provide to the owner or owner representative and the City an irrigation schedule that assists in the water management of the project and utilizes the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the criteria in the City Engineering Standards Uniform Design Criteria for Landscaping and Irrigation.
3. A regular maintenance schedule shall be submitted by the project applicant with the Certificate of Completion that includes: routine inspections, adjustment and repairs to the irrigation system, aerating and dethatching turf areas, replenishing mulch, fertilizing, pruning and weeding. The maintenance schedule will be provided to the owner or owner representative.

Landscaping Plan. For the efficient use of water, a landscape shall be designed and planned for the intended function of the project. For each landscape project, applicants shall submit a landscape design plan in accordance with the following:

- Any combination of plant materials that do not exceed the Maximum Applied Water Allowance (MAWA). The method to calculate the Maximum Applied Water Allowance and Estimated Total Water Use shall be in accordance with the MAWA calculator.
www.slocity.org/government/department-directory/utilities-department/documents-and-files
- Plant factors used to calculate the MAWA shall be derived from the most recent edition of the Department of Water Resources “Water Use Classification of Landscape Species (WUCOLS)”.
- Each hydrozone shall have plant materials with similar water requirements and be identified as low, moderate or high water use on the plans.
- Plants shall be selected and planted appropriately based upon their adaptability to the climatic, soil, and topographical conditions of the project site, and water attributes.
- Turf is not allowed on slopes greater than 25% (1 foot rise for every 4 feet of horizontal distance) where the toe of the slope is adjacent to an impermeable hardscape.
- Turf shall not be used in areas less than 8 feet by 8 feet in size, irregularly shaped areas, street medians, traffic islands, planter strips, bulbouts of any size or raised beds for maximum water efficiency and ease of maintenance.
- Low and moderate water-use plants can be mixed, but the entire hydrozone will be classified as moderate water use for MAWA calculations.
- High water-use plants shall not be mixed in the same hydrozone with low or moderate water-use plants.
- Invasive plants as listed by the Cal-IPC are prohibited.
- High use plants, characterized by a plant factor of 0.7 to 1.0, are prohibited in street medians.
- Recirculating water systems shall be used for water features.
- The surface area of water features, including swimming pools, will be included in a high water-use hydrozone.

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- A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4219 (a) and (b). Avoid fire-prone plant materials and highly flammable mulches.

Irrigation Plan. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. Project applicants shall submit an irrigation design plan that is designed and installed to meet irrigation efficiency criteria:

- Landscape water meters shall be installed for all non-residential irrigated landscapes of 1,000 square feet or more.
- Soil types and infiltration rates shall be considered when designing irrigation systems. All irrigation systems shall be designed to avoid runoff, low-head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures.
- Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates, to minimize or eliminate runoff.
- Overhead irrigation spray (using manufacturer specified throw distances) shall not be permitted within 24 inches of any non-pervious surface, so as to prevent runoff and overspray. Allowable irrigation within the setback from non-pervious surfaces may include drip, drip line, or other low flow or non-spray technology. These restrictions may be modified if the adjacent non-pervious surfaces are designed and constructed to drain entirely to landscaping.
- Irrigation systems shall be designed, maintained, and managed using such techniques as low-precipitation heads, drip irrigation, moisture sensors, check valves, matched precipitation rates of sprinkler heads and other emission devices, and other water-conserving techniques where appropriate.
- Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use. A single valve shall not irrigate hydrozones that mix high water-use plants with moderate or low water-use plants.
- Irrigation systems shall be designed, maintained, and managed to meet or exceed an average landscape irrigation efficiency of 0.75 where irrigation efficiency means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices.
- Rain sensors, either integral or auxiliary, that suspend or alter irrigation operation during rainy weather conditions shall be required on all irrigation systems.
- Head-to-head coverage is required unless otherwise directed by the manufacturer's specifications.
- Low volume irrigation is required where plant height at maturity will affect the uniformity of an overhead system.
- The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
- Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.

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- Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in irrigation systems for applicable projects in section 17.87.020 (A) (1) of the Municipal Code.
- If the project is within the *Water Reuse Master Plan* area, the irrigation system shall be designed and operated consistent with recycled water standards described in the City's *Procedures for Recycled Water Use*, including the requirement that sites utilizing recycled water include backflow protection on all potable service connections.
- For City facilities, if the project is within the *Water Reuse Master Plan* area, drip irrigation and small pop-up sprayers may not be used in the irrigation system unless authorized by the Parks Maintenance Supervisor.
- For City facilities, pull box spacing shall not exceed 200', and conduit fill shall not exceed 26%.
- For City facilities, irrigation boxes shall be placed in landscaped areas whenever possible. If irrigation boxes are set in hardscape areas, they shall be concrete boxes. The boxes shall be traffic rated if the area is open to public traffic or used by maintenance vehicles. Irrigation boxes in playing fields shall be buried 4 inches below grade.
- All irrigation emission devices must meet the requirements set in the American National Standards Institute (ANSI) standards, American society of Agricultural and biological Engineers/International code Council's (ASABE/ICC) 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard. All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or high using the protocol devfied in ASABE/ICC 802-2014.

Soils Management Report. In order to reduce runoff and encourage healthy plant growth, soil amendment, mulching and soil conditioning recommendations shall be prepared by a licensed landscape architect, licensed landscape contractor, licensed civil engineer or licensed architect. Prior to planting of any materials, compacted soils shall be transformed to a friable condition.

- If the characteristics of the project's soil are known, the minimum requirements of the report shall include the following:
 - a. A minimum of 6 inches of non-mechanically compacted soil shall be available for water absorption and root growth in the planted areas.
 - b. For landscape installations, compost at a rate of minimum of cubic yards per 1,000 square feet of permeable area shall be incorporated to the depth of six inches into the soil. Soils with greater than 6% organic matter in the top six inches of soil are exempt from this requirement.
 - c. A minimum of 3 inches of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers or direct seeding applications. Plant mulch shall be shredded redwood bark unless otherwise approved by the City Engineer.
- If the characteristics of the project's soil are unknown, the project applicant shall submit soil samples to a laboratory for analysis and recommendations.
 - a. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
 - b. The soil analysis may include: soil texture; infiltration rate determined by laboratory test or soil texture infiltration rate table; pH; total soluble salts; sodium; percent organic matter; and recommendations.

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- The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.
- The project applicant shall submit documentation verifying implementation of soil analysis report recommendations to the City with Certificate of Completion.

Grading Plan. For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste.

- The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
 - a. Height of graded slopes;
 - b. Drainage patterns;
 - c. Pad elevations;
 - d. Finish grade; and
 - e. Stormwater retention improvements, if applicable.
- To prevent excessive erosion and runoff, grading shall comply with the following to the maximum extent practicable:
 - a. Grade so that all irrigation and normal rainfall remains within property lines and does not drain onto non-permeable hardscapes;
 - b. Avoid disruption of natural drainage patterns and *undisturbed soil*;
 - c. Avoid soil compaction in landscape areas; and
 - d. Preserve natural drainage channels.

Miscellaneous City Facility Provisions:

Irrigation System Operational Requirements

Design shall ensure areas of turf are not under watered, relative to the rest of the turf, resulting in brown patches. The designer may review the irrigation installation and make recommendations for corrective action on the part of the installer; however, if the system cannot, in spite of proper installation and adjustment of the irrigation, be operated to provide proper coverage, the designer shall redesign and direct revised installation at his/her cost until the system can be shown to operate properly via an audit and empirical data.

Hardscape

Walkways and pads for appurtenances in parks shall be concrete or pervious concrete built in accordance with City Standards for sidewalk construction and graded to prevent water from ponding on the walkway or pad. Unless variances are justified and approved by the City Engineer, walkways must meet current ADA accessibility requirements.

Pads in sod areas, such as picnic table pads, shall be round, oval or have rounded edges to allow mowing without damage to mow blades and pads.

Median islands

Median island noses shall have a 5-foot section of standard sidewalk concrete at intersections as a pedestrian refuge. Island noses should not extend into intersection crosswalk areas. Island areas 4 feet or less shall be hardscaped. All hardscaped surfaces within median islands, except for pedestrian areas, shall be decorative.

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Median island irrigation systems shall be sized to planned street island build-out (multi-island plans), including mainline sizing, water and control connections, and control systems configuration and capacity.

Median islands, including traffic circles, and center cul-de-sac landscaping may be used for infiltration of stormwater where suited to the site conditions. Design shall be such as to prevent damage to adjacent roadway sections from infiltration, to the satisfaction of the City Engineer.

Playgrounds and Miscellaneous areas

An engineered wood surfacing, meeting accessibility requirements, shall be used under play equipment. Alternative surfaces shall be submitted to the City Engineer for review and approval.

Benches and picnic tables shall be of a low maintenance material such as rubber coated steel. No wood is allowed. Alternative materials shall be submitted to the City Engineer for review and approval.

System Pressure

Where an existing meter or irrigation system is present, the designer shall obtain the current line pressure to use in design. Where no existing system exists, the City of San Luis Obispo Utilities Department shall be contacted to determine approximate existing system pressures.

For systems that will be temporarily connected to the potable water system and eventually connected to the recycled water system, or for areas that may be set up to use both systems, the designer shall consider the pressure in both systems and design the irrigation system so that it will work with either pressure.

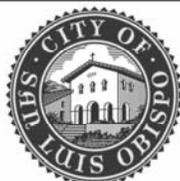
The designer shall contact the responsible maintenance division for the landscaped area (City of San Luis Obispo Public Works for City projects or areas to be dedicated) to determine the watering window to be used for the area. The designer shall use that window in determining the number of valves turned on at any given time and the resulting load on the system. Calculations of system capacities and any assumptions made about the system shall be submitted for review and approval. Calculations submitted shall clearly show an accounting for system losses and concurrent loading to prevent undersizing of the system. Where systems do not operate as needed to provide even distribution of water, including problems resulting from an undersized service, the designer will be responsible to provide any needed redesign and to pay for necessary field corrections.

The irrigation design shall include a pressure reducer or booster pump to be installed, if needed, based on the actual pressure in the new irrigation system. System shall be designed for maximum efficiency.

Controller

Irrigation designers must contact the Parks Maintenance Supervisor to determine what, if any, telemetry control equipment will be required. Systems are to be designed to current City Standards for Controller equipment where an irrigated area is City owned or to be dedicated. If control is to be via phone line, the designer must coordinate with the City's telephone system representative or City project manager to arrange for hook up.

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UNIFORM DESIGN CRITERIA

I. BRIDGES AND CULVERTS

Design Criteria:

Design shall conform to the requirements of current California Department of Transportation and AASHTO guidelines and standards. Any variation from standards must be approved in writing by the City Engineer. Bridges shall be clear spans.

All bridge designs require approval by the City's Architectural Review Commission.

Bridge design must account for impacts of future development considering areas within the City's adopted urban reserve line.

Submittals must include the full construction plans for the bridge including details, a copy of the geotechnical report, scour calculations, and design calculations. A hard copy and an electronic PDF format copy for archiving shall be submitted for documents. The design loads, hydraulic information, and a log of test borings must be included in the plans.

Scour calculations must show adequate structure depth to prevent scour damage or undermining for the life of the structure. Geotechnical investigations shall include corrosivity testing of the soil for consideration in pile design and testing for the presence of naturally occurring asbestos, where rock types indicate a potential.

Structures with a required span between 19 feet and 20 feet shall be constructed with a minimum span of 20 feet. Clear span bridges shall be constructed in lieu of closed culverts whenever possible and a natural channel maintained. Closed culverts will be allowed where site constraints prevent a bridge from being constructed with enough clearance to allow for required storm passage with 12 inches of freeboard. Authorization to build culverts in lieu of clear span bridges must be approved by the City Engineer and regulatory agencies. Closed culverts shall be upsized to increase the depth of the culvert to allow the placement of 12 inches of natural gravels in the bottom of the culvert.

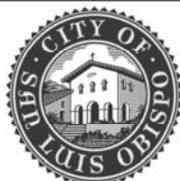
Materials:

Vehicle bridges shall be constructed of a material which requires no maintenance for the first 30 years of its life. Concrete is the preferred material for construction; however, alternative materials may be approved by application in writing to the City Engineer with sufficient documentation to support an alternative including information showing the alternative is a superior material, or that concrete will not provide the desired life or freedom from maintenance in the given conditions. Vehicle bridges may use a pre-approved prefabricated structure.

Pedestrian and bicycle bridges may be furnished as prefabricated structures, including "rusted" steel. The material must be approved prior to the submittal for the structure itself.

New bridge decks will not be overlaid with asphalt unless authorized by the City Engineer. Where the City approves an overlay on the deck, an approved waterproof membrane shall be installed between the deck surface and the overlay. Waterproof / sealing membranes such as methacrylate seals may be required prior to acceptance where cracking of the deck is observed.

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Barrier Rails:

Barrier rails for vehicle crossings must meet current AASHTO guidelines for crash ratings. Barrier rails for pedestrians on private property adjacent to the Right of Way shall comply with the most current California Building Code.

Bicycle and Pedestrian Facilities:

Vehicle bridges must be of adequate width to accommodate, at a minimum, a 5-foot bike lane and 5-foot sidewalk on both sides or match the width of the abutting bicycle and sidewalk facilities, whichever is greater. Bike lanes and sidewalks shall be constructed regardless of the presence of those facilities on the abutting roadway.

Design Life:

All structures shall be designed for a minimum 50-year service life.

J. SUBDIVISION DESIGN CRITERIA AND IMPROVEMENT STANDARDS

General requirement.

The design criteria for subdivisions and the required physical improvements for them shall be in compliance with the City’s grading ordinance, zoning regulations, subdivision standards, City Standard Specifications and Engineering Standards and other applicable regulations.

Improvements.

Improvement work, including grading, shall not commence until plans for all such work have been approved and permitted by the City, including required stormwater related plans and submittals.

Improvements to be installed by the subdivider, in accordance with these standards, include the following:

A. The full width of each street shall be improved by grading, base preparation, and paving. If a street constitutes a boundary of the subdivision or connects the subdivision with the rest of the City’s street system, even though it is not within the area to be subdivided, the full width of the roadway shall be improved. The City may, depending on individual circumstances, require full right-of-way improvements, including curb, gutter, and sidewalk, on the side opposite the subdivision.

B. Streets shall include any required curb, gutter, sidewalk, driveway ramps, curb ramps and associated landscaping (street trees, parkway, and medians) along both sides. Alternative pedestrian walkways and bikeways shall be concrete or other accessible surface material approved by the City.

C. The subdivider shall complete any railroad crossing necessary for the subdivision, including application to the California Public Utilities Commission.

D. Separate paths or bicycle / pedestrian areas may be required.

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E. Bus stops and benches shall be provided where the subdivision abuts existing or planned City bus routes and a stop is required for the use of the neighborhood.

F. Durable boundary monuments shall be installed and shown on the final map.

G. Street trees shall be provided as required by the tree regulations, as set forth in Chapter 12.24 of the City's Municipal Code.

H. Street name signs and traffic control and warning signs shall be installed. Traffic signals and traffic signal control conduits may be required by the City Engineer.

I. Utilities to be installed by the subdivider shall include those listed in this standard. The development of these facilities may require financial contribution for previous improvements to the systems, as provided in Chapter 13.04 of the City's Municipal Code, in the most recent council resolution on utility connection charges, or in any agreement affecting a particular portion of a system.

All new utility distribution facilities shall be placed underground, except accessory facilities such as terminal boxes, meter cabinets, and transformers may be installed aboveground. The subdivider shall make all necessary arrangements with the utility companies for these facilities.

- a) A water system for domestic service and fire protection provided to each lot of the proposed subdivision or, for condominium projects, to each condominium unit
- b) Where identified as a recycled water service area in the Recycled Water Master Plan, recycled water lines installed to serve those areas
- c) A sewer system for domestic use provided to each lot of the proposed subdivision
- d) Stormwater management and drainage, water quality, erosion and flood control facilities
- e) Street lights and signals
- f) Electric power, gas, cable, and telephone services stubbed to each lot or, for condominium projects, to each condominium unit; and all facilities to distribute such services provided according to the requirements of the responsible utility companies

J. All new utility distribution facilities shall be placed underground, except accessory facilities such as terminal boxes, meter cabinets, and transformers may be installed aboveground. The subdivider shall make all necessary arrangements with the utility companies for these facilities.

K. The subdivider shall carry out protective measures as required by the City to assure the proper functioning and maintenance of other required improvements and properties adjacent to the subdivision. Temporary protective improvements may be required prior to or concurrent with the construction of permanent improvements.

Multiple frontages.

Single-family residential lots with frontage on more than one street are discouraged, except for corner lots or where topography makes a single frontage impractical. The City may require the release of access rights on one frontage which shall be noted on the subdivision map.

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Lot lines.

A. Lot lines should be at the top of slope banks.

B. Side lot lines should be perpendicular to the street on straight streets, or radial to the street on curved streets, unless another angle would provide better building orientation as documented in the submittal.

C. On corner lots, the lot lines adjacent to streets shall be rounded with a radius adequate to provide for street improvements.

Flag lots (deep lot subdivision).

Flag lots may be approved for subdividing deep lots where development would not be feasible with the installation of a standard street, either alone or in conjunction with neighboring properties, or where justified by topographical conditions. Such subdivision shall conform to Subdivision Regulations, Section 16.18.060 of the Municipal Code.

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**UNIFORM DESIGN
CRITERIA**

PARKING AND DRIVEWAY STANDARDS

A. General

Driveways, driveway ramps, parking stalls, and aisles, including pavement, drainage, landscaping, screen fencing, and lighting, shall conform to these standards and all requirements of the Municipal Code. All spaces and driveways must be designed to function properly. City inspection is required at appropriate times to insure that all specifications are met.

B. Permits

If the parking lot is not a part of a larger project, the builder shall obtain a parking lot permit from the Community Development Department prior to constructing a new or modifying an existing parking lot. To obtain a permit, a plan for the project must be submitted to the Community Development Department.

Any restriping or improvements, other than for maintenance purposes, to a parking lot also requires approval of a parking lot permit by the Community Development Department.

C. Plans

Plans for the parking lots shall conform to city standards and shall show design for grading, paving, striping, signing, curbing, lighting, landscaping, and trash enclosures.

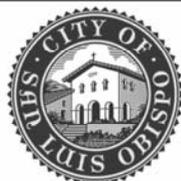
D. Pavement

1. Parking lots and driveways shall be paved with an all-weather surface, such as asphaltic concrete (AC) or Portland cement concrete (PCC). The minimum thickness of pavement shall be as specified in these standards. Base material shall be compacted to a minimum of 95 percent. Compaction test reports shall be submitted to the Community Development Department for verification of proper compaction. All motorcycle spaces within parking lots shall be PCC pads. Porous pavement surface methods approved by the City Arborist shall be provided within the drip line of existing trees in or near parking lots. All spaces shall be marked, with disabled spaces having special pavement marking in each space. Directional entrances and exits and aisles shall be signed and marked on the pavement.

2. Alternative Permanent Paving:

The Community Development Director may approve alternatives to AC or PCC paving on private property. Alternative paving materials, when installed according to manufacturer's specifications, shall provide a suitable, all-weather, load-bearing surface to support passenger cars and light-duty trucks. Alternative paving surfaces

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for driveways or parking lots serving large commercial vehicles or fire trucks must be designed to accommodate a maximum vehicle weight of 45,000 lbs. Alternative paving materials over City utility easements will not be repaired or maintained by the City.

The Director may approve such alternative paving to achieve aesthetic and environmental objectives, such as improved appearance, increased water percolation, reduced erosion and runoff, increased aeration and water for tree roots, reduced glare, and increased area available for landscaping, upon finding that the alternative paving will provide public aesthetic or environmental benefits, and is equal to or better than AC or PCC paving in terms of public safety, performance, strength, quality and durability. Examples of permanent alternative paving surfaces include, but are not limited to: interlocking pavers, eco-block, porous AC paving, cobblestone, or other material judged by the Community Development Director to be of equivalent performance, strength, quality and durability.

3. Temporary parking lots and driveways shall have an all-weather, dust-free surface with sufficient compacted base material or undisturbed grade to safely accommodate the intended use.

Examples of temporary paving surfaces include, but are not limited to: compacted "redrock" or decomposed granite; compacted road base over compacted natural grade; or other temporary surface which the Director determines to provide an all-weather load-bearing surface equivalent to the above materials in terms of safety, maintenance, and appearance. Gravel or similar materials shall not be used where average cross-slopes exceeds 5 percent. (See Paragraph O.)

E. Geometrics.

1. Turning Radii:

The minimum allowable inside vehicle turning radius in parking and driveway areas shall be 20 feet unless Fire Apparatus access is necessary, in which case the minimum inside radius shall be 30.5 feet and the outside radius shall be 46 feet or as required by the Fire Department. (Turning radii are not necessarily the radii of curbs around islands and other improvements.) Additional details are as shown on the standard drawing.

2. Spaces Which Back Onto Street:

Except as noted in No. 3, parking spaces which back directly onto the public street shall be set back a minimum of 20 feet from the back of the sidewalk, regardless of the zoning of the property.

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Except as noted in No. 3, no portion of any parking space or aisle, except driveways for ingress or egress, shall be permitted in a required street yard setback area.

3. Tandem Parking:

Residential uses may have required spaces arranged in tandem subject to the approval of the Community Development Director. Single dwellings where tandem parking is approved may have one unenclosed parking space within the street yard (refer to Section 17.16.020 - Yards in the city's Zoning Regulations).

4. Walls/Walkways/Entrances:

A parking space facing a wall containing entrances and abutting a walkway to those entrances must be at least 4 feet clear of such a wall.

5. Wheel Stops:

Wheel stops are required if the space is headed into a wall, fence, landscaped area, building, walkway, or side of another auto. Additional wheel stops may be required by the Community Development Department. Concrete curbing may be substituted for wheel stops with the approval of the Community Development Director.

6. Overhangs/Encroachments:

Dimensions shown on the standards must be clear of overhangs or other encroachments which might interfere with vehicular access. Circulation areas shall be provided at the ends of aisles.

7. Maneuvering:

Parking lots with more than six spaces shall be designed so that automobiles will exit onto a public street in a forward direction and with no more than two maneuvers. A maneuver is defined as each motion in either a forward or backward direction. No space may be allowed that requires a vehicle to be maneuvered on the public sidewalk in order to exit. All spaces must be designed to be entered in one maneuver. A turnaround may be required if it's considered unsafe for a vehicle to back into the street by the Community Development Department and/or Public Works Director.

8. Stall Sizes:

All parking stalls shall comply with the parking bay dimension standards for average sized cars as provided in the engineering standard details. Upon approval of an exception by the Community Development Director or Architectural Review Commission, a limited number of compact parking spaces may be allowed if justified by unusual circumstances such as

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saving a tree or using otherwise unusable space. Compact stalls, if used, shall be designed and constructed in accordance with the engineering standard details. Accessible spaces shall be designed and constructed in accordance with state and local requirements.

9. Motorcycle Spaces:

All motorcycle spaces shall be designed and constructed in compliance with the engineering standards for motorcycle spaces.

10. Bicycle Parking Standards:

Bicycle parking shall be provided in accordance with city zoning requirements. Bicycle parking may include racks and/or lockers to the approval of the Community Development Department.

11. Truck Access:

Commercial and industrial parking lots serving loading zones shall be designed to accommodate access and circulation movement for on-site truck circulation. The Community Development Director or Public Works Director may require wider driveways and aisles as determined warranted.

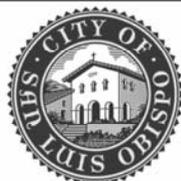
F. Slope

Parking spaces shall slope no more than 5 percent in any direction and no less than 0.5 percent in the direction of drainage. A maximum of 10 percent slope in aisle and turn-around areas may be allowed. Swales of less than 1 percent slope shall be concrete. Variations of these standards may be allowed by the Community Development Director for hardship situations providing safety and convenience concerns have been met.

G. Loading Zones

Off-street loading zones shall be a minimum of 12 feet wide and 25 feet long. Loading zones shall be designed so that trucks parking in them will not encroach onto the public right-of-way or into required parking spaces or driveways. Loading spaces designed for large trucks shall have appropriately larger access to allow maneuvering without encroaching into landscape areas. Loading zones or areas may not encroach into fire lanes. Loading zones (spaces) shall be provided in accordance with the city's zoning regulations (refer to sections 17.46.020 and 17.48.010). Additional loading zones may be required by the Community Development Department or Fire Department.

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H. Screening

1. In Large Parking Lots:

Any parking lot with more than six parking spaces adjoining a street shall have the street frontage screened with a 3-foot (minimum) high wall, fence, and hedge consisting of 5-gallon or larger plants, or landscaped berm. The area between such screen and the street shall be landscaped.

2. Near Residential Development:

A parking lot on a site adjacent to a residential development or next to a residential zone shall be screened by a solid 6-foot-high wall, fence, or an existing mature hedge.

I. Landscaping

1. Planting Area Placement:

In all parking lots planting areas shall generally be provided after each six parking spaces in any row and at the ends of each row of parking spaces in order to encourage the use of trees in parking areas. Landscape areas shall have a minimum dimension of 4 feet; except, those areas with trees shall have a minimum dimension of 8 feet. Landscape areas shall be defined by concrete curbs or bands designed to minimize damage to pavement caused by irrigation of landscaping. Landscape areas defining ends of rows shall extend to the minimum inside turn radius, shall not conflict with an aisle or back-up area, nor be less than 4 feet in width. (Exceptions to this provision may be granted by the Community Development Department or the Architectural Review Commission.)

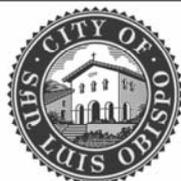
2. Planting Arrangement:

In order to prevent large expanses of pavement, parking lots shall have at least 5 percent of their surface devoted to landscaping (exclusive of setbacks) arranged in an appropriate and effective manner. Additional landscape area may be required by the Community Development Department or the Architectural Review Commission.

3. Maintenance:

In all zones, required street yard areas shall be landscaped and perpetually maintained. All landscape planting shall be maintained and dead plants shall be replaced as necessary. Drought tolerant planting must be used in accordance with the city's landscape standards for water conservation.

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4. Irrigation:

Landscape areas shall have a permanent underground irrigation system.

Irrigation shall provide uniform precipitation for overhead areas and adequate water to maintain healthy plants. Check valves are required at the toe of all slopes to prevent low head drainage. Overspray must be minimized to prevent runoff,

5. Landscape Preservation:

Planting areas which may be hit by automobiles or where drainage control is necessary shall be defined by a 6 inch curb or berm of reinforced concrete, brick, or block. A header-board protected by parking bumpers or other suitable permanent material may be approved by the Community Development Department. Header boards, walls or berms must also be provided between the back of a City sidewalk and a planting area to prevent soil from washing onto the sidewalk. Porous pavement surface methods approved by the City Arborist shall be provided within the drip line of existing trees in or near parking lots.

J. Accessible Parking

All accessible parking spaces shall be constructed and signed in accordance with state and local laws, and shall be located conveniently for use by disabled persons, as approved by the Community Development Department.

K. Driveways and Driveway Ramps

1. Driveway Widths:

Driveways shall be the same width as the curb opening (not including the transitions). They must be within the width limitations noted on Engineering Standard 2120. Exceptions may be granted in special circumstances by the Public Works Director or Community Development Director. Unless authorized by the Public Works Director, property owner, adjacent property owner, and the Community Development Director, the driveway ramp and transition must lie entirely in front of the property served. The Fire Department may require greater driveway widths to allow for proper emergency vehicle access.

2. Number of Driveways Permitted:

Only one driveway is allowed per street frontage for residential property unless the frontage exceeds 70 feet; then a maximum of 30 percent of the frontage may be in driveways. The total width of all driveways to commercial or industrial property shall not exceed 50 percent of the frontage of the property. Additional restrictions may be placed on driveways entering arterial streets in order to minimize the disruption to traffic.

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3. Abandoned Driveways:

As a condition of issuance of any driveway permit, all abandoned driveways and driveway ramps on the same property shall be removed, landscaped and the curb, gutter, and sidewalk properly restored.

L. Turnarounds

1. Deep Driveways:

Driveways which are over 100 feet long shall have a turnaround at the end allowing cars to safely exit in a forward direction. In some instances the Community Development Director may require turnarounds for shorter driveways.

2. Single-Family House Driveways:

Single family residential developments generally do not need to conform with this requirement unless there are extreme grade, fire hazard and/or alignment problems determined by the Community Development Director or Fire Marshall.

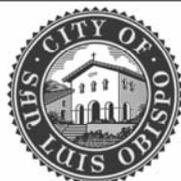
M. Signing

Except for R-1 zoned and R-2 zoned property, entrances and exits that are one-way shall be marked with an approved sign and pavement marking. Accessible, compact car, and loading spaces shall be signed with pavement marking or markings on wheel stops in accordance with state code and local laws. All pavement markings, striping, and signs shall be approved by the Community Development Department.

N. Parking Lot Maintenance

It shall be the duty of the property owner to maintain and repair the parking lot and related improvements in accordance with the above standards and any other conditions imposed at the time of approval. If the Community Development Department finds that the lot is in need of maintenance or repair, to ensure public safety and welfare, the City may pursue enforcement under the authorities of the Municipal Code.

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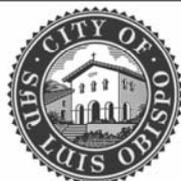
O. Temporary Parking Lots

Parking lots and driveways which will be used for one year or less may be developed with Community Development Director approval. The Director may require a recorded agreement and/or cash surety to guarantee removal of the temporary parking, site restoration, and clean-up and/or repair of City streets. Such temporary facilities need not provide landscaping, striping and wheel stops as would otherwise be required for permanent facilities, but they shall meet all other parking and driveway design standards (parking space and driveway dimensions, aisle widths, and so on).

P. Common-Access Driveways

1. Where permitted: Common access driveways may be permitted in either of the following cases:
 - a. On lots of record (existing before the effective date of this section) if the Community Development Director approves an administrative use permit; or
 - b. In new subdivisions where a common driveway is proposed as part of subdivision approval.
2. Basic criteria: A common-access driveway must meet all of the following criteria:
 - a. The driveway must not be inappropriately located (for example, too close to a dwelling, play area or sloped bank).
 - b. It must be determined that there is no significant potential for conflict between the parties sharing the driveway because of its location, length, grade, usage, or other characteristics.
3. For residential uses: The following provisions apply to common-access driveways to serve premises zoned or used for residential purposes:
 - a. Before granting any permit authorizing construction of a common-access driveway or structures to be served by said driveway, the City shall require an easement and covenant to be filed with the County Recorder setting forth driveway usage rights and responsibilities for each parcel served. At minimum, the required easement or covenant shall include the following statements:
 - 1) All affected property owners will be jointly responsible for the improvement and maintenance of all parts of the common-access driveway.
 - 2) All parking on the commonly used portions of the driveway is prohibited.

REVISIONS	BY	APP	DATE
Drafting edits	JDL	BL	2-14
"City Engr." approval to "PW Dir."	JDL	WAP	2-99
"Handicapped" to "Disabled"	JDL	WAP	2-99
STANDARD CURRENT AS OF: January 2016			



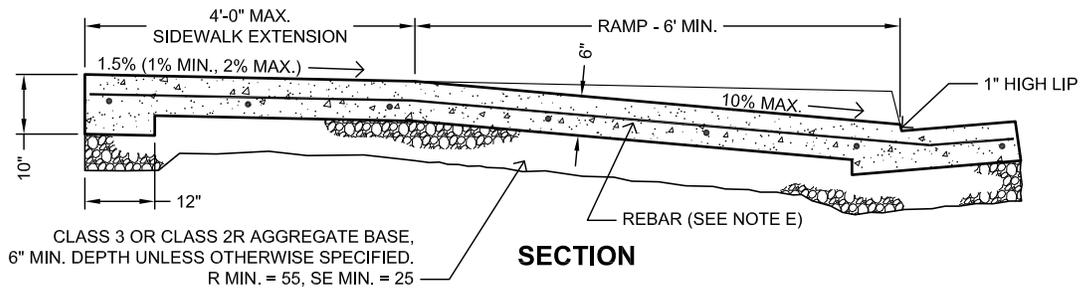
PARKING AND DRIVEWAY STANDARDS

- 3) Any affected property owner may avail himself of the vehicle-removing authority granted private property owners in Section 22658 of the California Vehicle Code when any vehicle is parked in the common-access driveway so as to interfere with entry or access to a parcel it serves.
 - 4) Property owners agree to hold the City harmless from all claims of damages or liability arising from any action to tow away vehicles pursuant to subsection (3) immediately above.
 - 5) If the easement or covenant is abandoned or dissolved, each lot previously served by the common-access driveway shall be provided with standard access as required by these regulations.
- b. The driveway shall serve no more than four residential units unless special circumstances warrant the grant of an exception by the Community Development Director.
 - c. The Director or Planning Commission may add other requirements or conditions deemed necessary or appropriate.
4. For commercial and industrial uses: Before granting any permit authorizing the construction of any common-access driveway to serve premises zoned or used for commercial or industrial purposes, the City may impose the requirements listed above for residential uses as well as any additional requirements or conditions it deems necessary or appropriate.

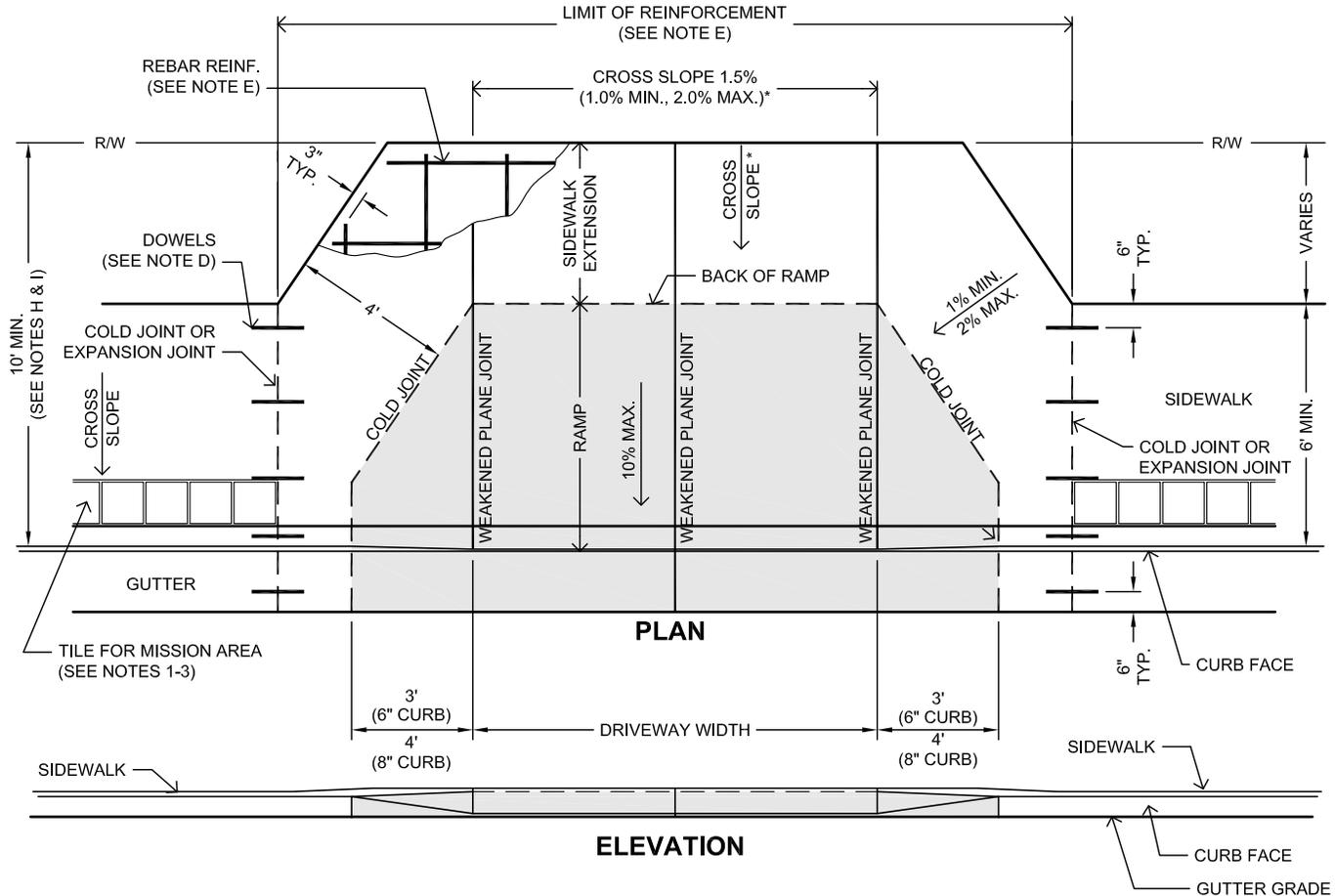
REVISIONS	BY	APP	DATE
Drafting edits	JDL	BL	2-14
"City Engr." approval to "PW Dir."	JDL	WAP	2-99
"Handicapped" to "Disabled"	JDL	WAP	2-99
STANDARD CURRENT AS OF:		January 2016	



PARKING AND DRIVEWAY STANDARDS



SECTION



PLAN

ELEVATION

GENERAL NOTES:

- A. A depression in a new curb and gutter for a driveway will not be permitted unless the ramp and sidewalk extension are constructed also.
- B. Slope of ramp is a straight grade from the top of the back of ramp to the top of the lip at the gutter.
- C. Concrete shall be Class 3.
- D. Dowels at expansion or cold joint with new construction shall be 1/2" smooth bars, 15" long at 24" O.C., one end shall be sleeved or greased.
- E. All ramps and sidewalk shall be reinforced with rebar, #4 @ 24" O.C., continuous both ways. Rebar shall run continuous through cold or expansion joints.
- F. Commercial and industrial driveways ramps serving more than six (6) parking spaces shall be 10' deep (long) unless otherwise approved by the City Engineer.
- G. See Engineering Standard 4110 for notes regarding required pavement removal and repair.
- H. If design will not fit within right-of-way, use Engineering Standard 2111, with approval of City Engineer.
- I. If right-of-way is more than 10' from curb face, back of sidewalk extension shall not extend beyond 10' from curb face.

ADD'L NOTES FOR MISSION STYLE AREA*:

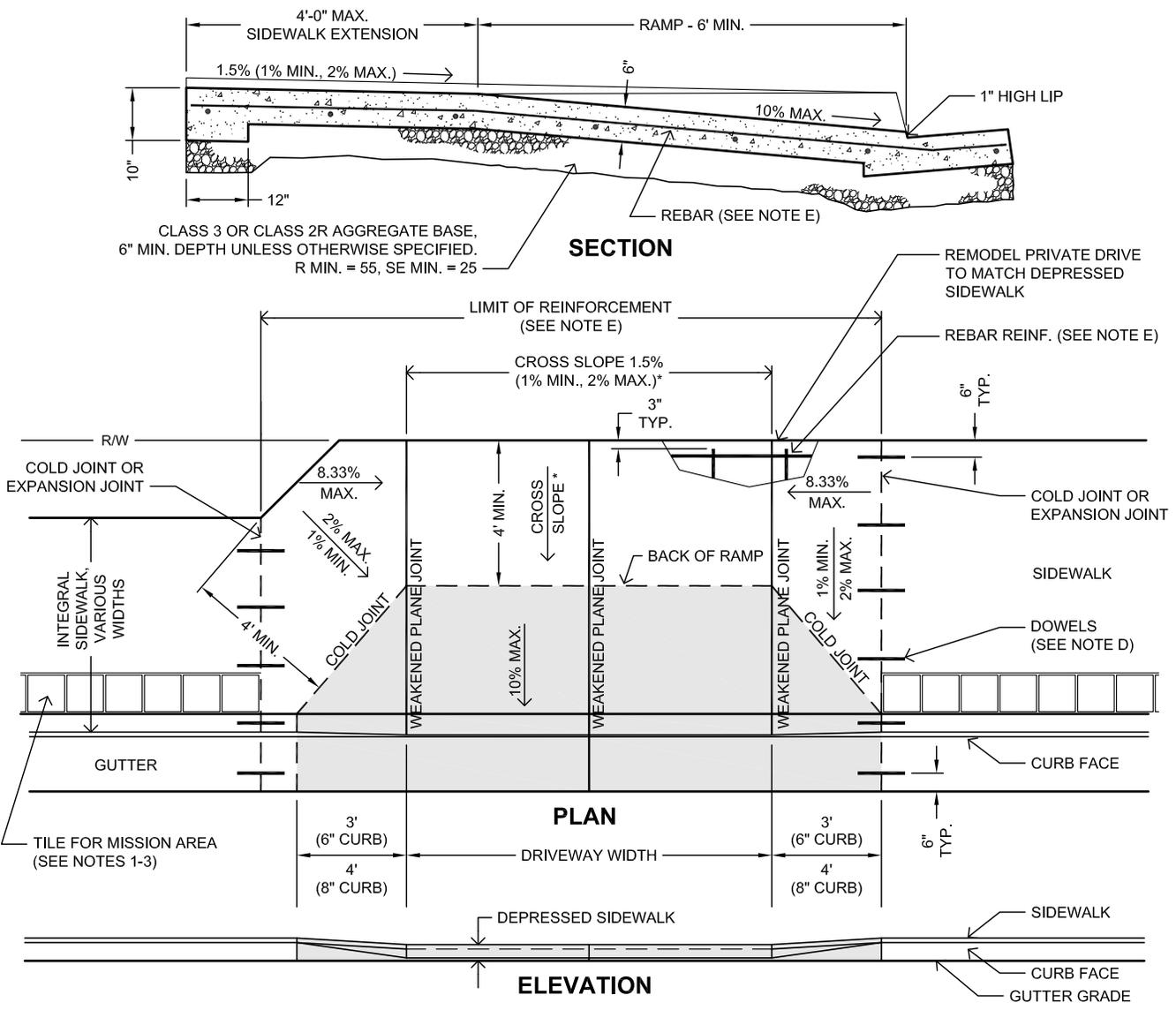
- 1. Comply with Section 73-4 of Standard Specification colored concrete.
- 2. No tile shall be set in mortar prior to approval of tile by City Engineer.
- 3. Tile band shall terminate as shown on either side of driveway.

* Additional notes for Mission Style shall apply in those areas designated as Mission Style Sidewalk area per City Council Resolution.

REVISIONS	BY	APP	DATE
Notes revised	SR	BL	1-14
Drafting edits	JDL	MH	10-12
Revise Cross Slope percentages	JDL	MH	2-13
STANDARD CURRENT AS OF:		January 2016	



**DRIVEWAY RAMP
STANDARD**



GENERAL NOTES:

- A. A depression in a new curb and gutter for a driveway will not be permitted unless the ramp and sidewalk extension are constructed also.
- B. Slope of ramp is a straight grade from the top of the back of ramp to the top of the lip at the gutter.
- C. Concrete shall be Class 3.
- D. Dowels at expansion or cold joint with new construction shall be 1/2" smooth bars, 15" long at 24" O.C., one end shall be sleeved or greased.
- E. All ramps and sidewalk shall be reinforced with rebar, #4 @ 24" O.C., continuous both ways. Rebar shall run continuous through cold or expansion joints.
- F. Commercial and industrial driveways ramps serving more than six (6) parking spaces shall be 10' deep (long) unless otherwise approved by the City Engineer.
- G. See Engineering Standard 4110 for notes regarding required pavement removal and repair.
- H. This design must be approved for use by Engineer.

ADD'L NOTES FOR MISSION STYLE AREA*:

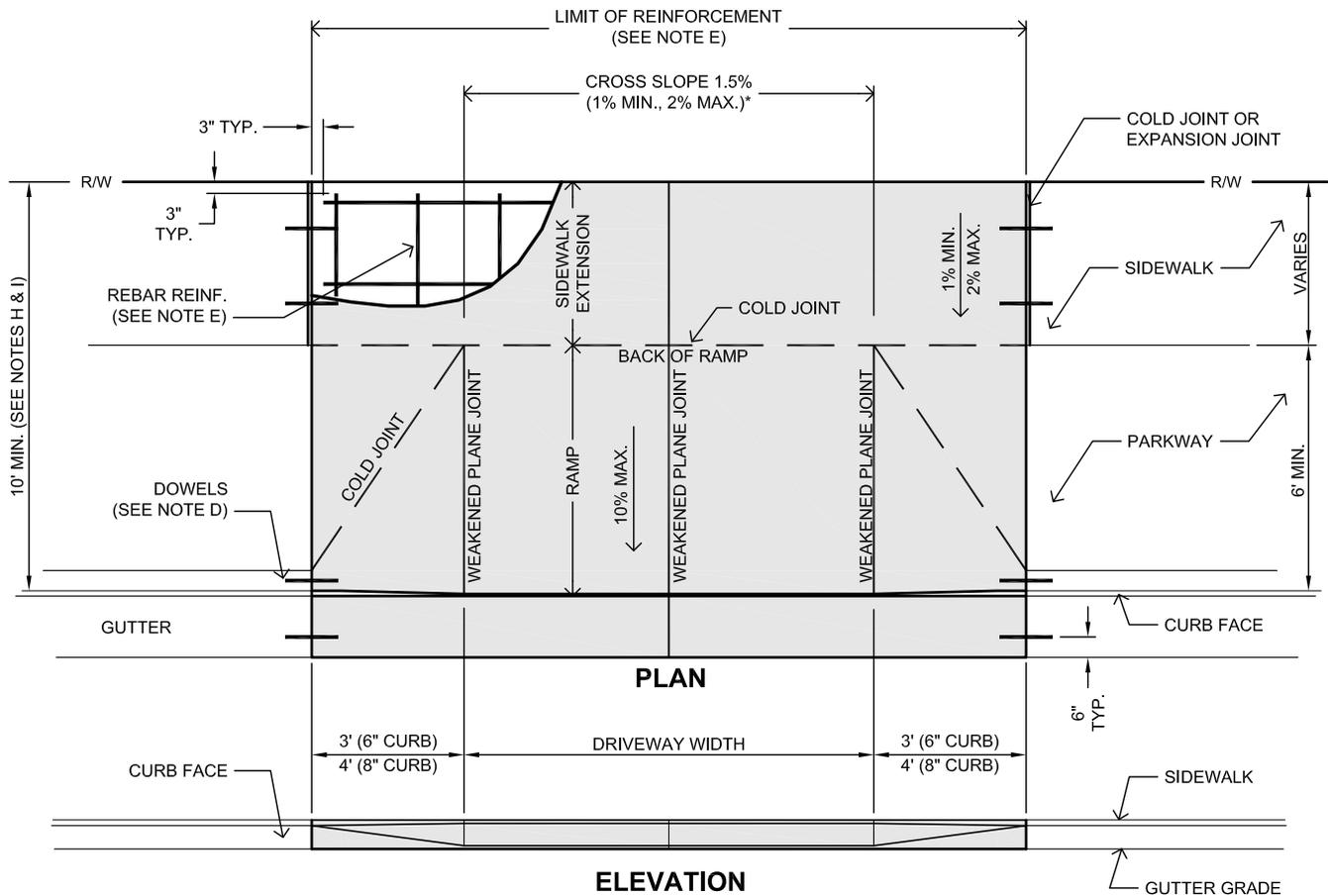
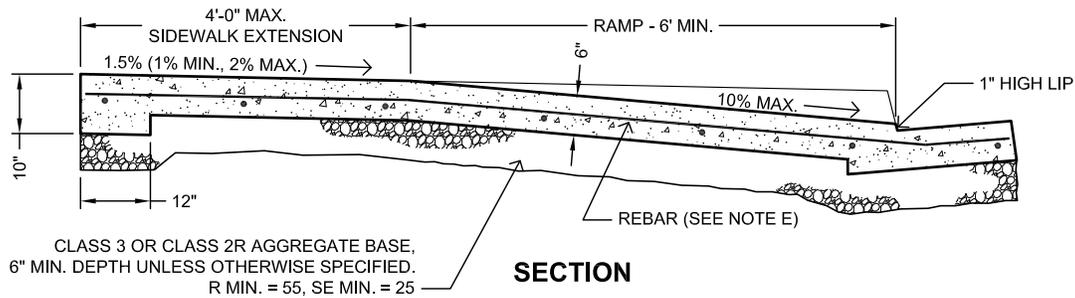
- 1. Comply with Section 73-4 of Standard Specification colored concrete.
- 2. No tile shall be set in mortar prior to approval of tile by City Engineer.
- 3. Tile band shall terminate as shown on either side of driveway.

* Additional notes for Mission Style shall apply in those areas designated as Mission Style Sidewalk area per City Council Resolution.

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	10-12
Update Cross Slope percentages	JDL	MH	2-13
Notes revised	SR	BL	1-14
STANDARD CURRENT AS OF:		January 2016	



**DRIVEWAY RAMP
RIGHT-OF-WAYS
LESS THAN 10'**



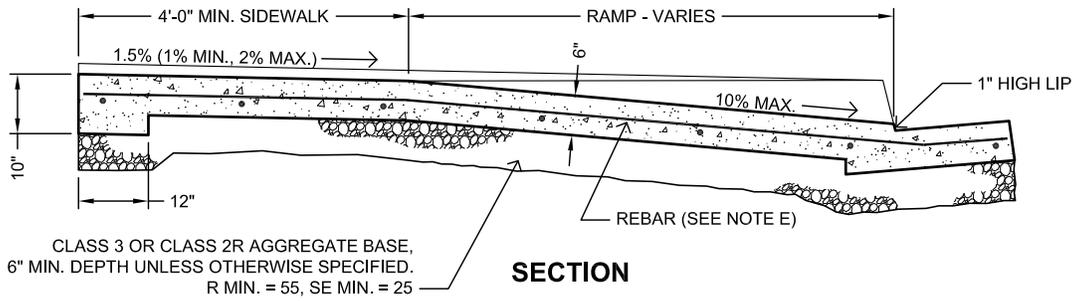
GENERAL NOTES:

- A. A depression in a new curb and gutter for a driveway will not be permitted unless the ramp and sidewalk extension are constructed also.
- B. Slope of ramp is a straight grade from the top of the back of ramp to the top of the lip at the gutter.
- C. Concrete shall be Class 3; and comply with Section 90 of the Standard Specification.
- D. Dowels at expansion or cold joint with new construction shall be 1/2" smooth bars, 15" long at 24" O.C., one end shall be sleeved or greased.
- E. All ramps and sidewalk shall be reinforced with rebar, #4 @ 24" O.C., continuous both ways. Rebar shall run continuous through cold or expansion joints.
- F. Commercial and industrial driveways ramps serving more than six (6) parking spaces shall be 10' deep (long) unless otherwise approved by the City Engineer.
- G. See Engineering Standard 4110 for notes regarding required pavement removal and repair.
- H. If design will not fit within right-of-way, use Engineering Standard 2116, if applicable, with approval of City Engineer.
- I. If right-of-way is more than 10' from curb face, back of sidewalk extension shall not extend beyond 10' from curb face.

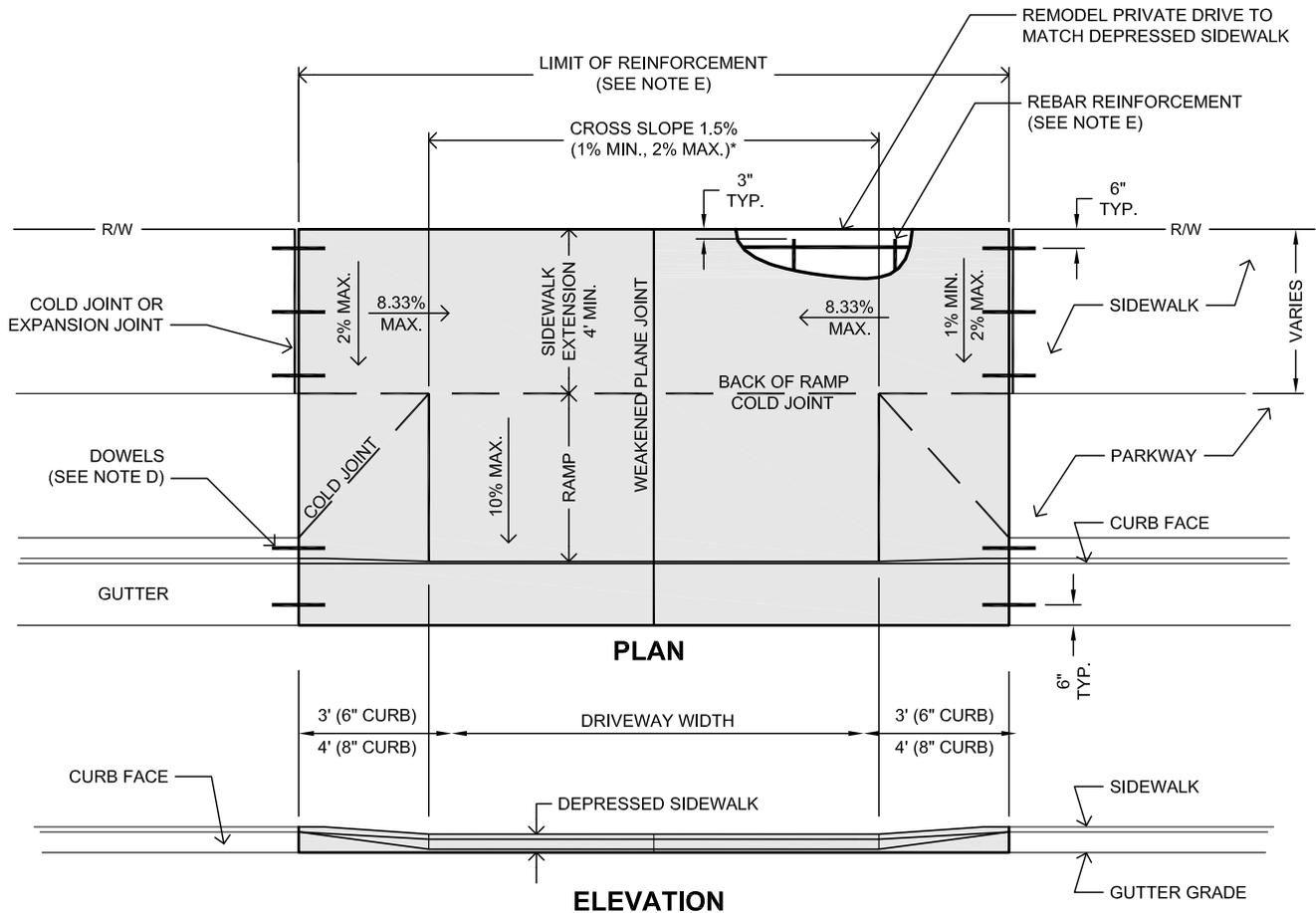
REVISIONS	BY	APP	DATE
New Standard	JDL	JDW	1-03
Update Cross Slope percentages	JDL	MH	2-13
Revised Note C	SR	MH	1-14
STANDARD CURRENT AS OF:		January 2016	



**DRIVEWAY RAMP
DETACHED SIDEWALK
STANDARD**



SECTION



PLAN

ELEVATION

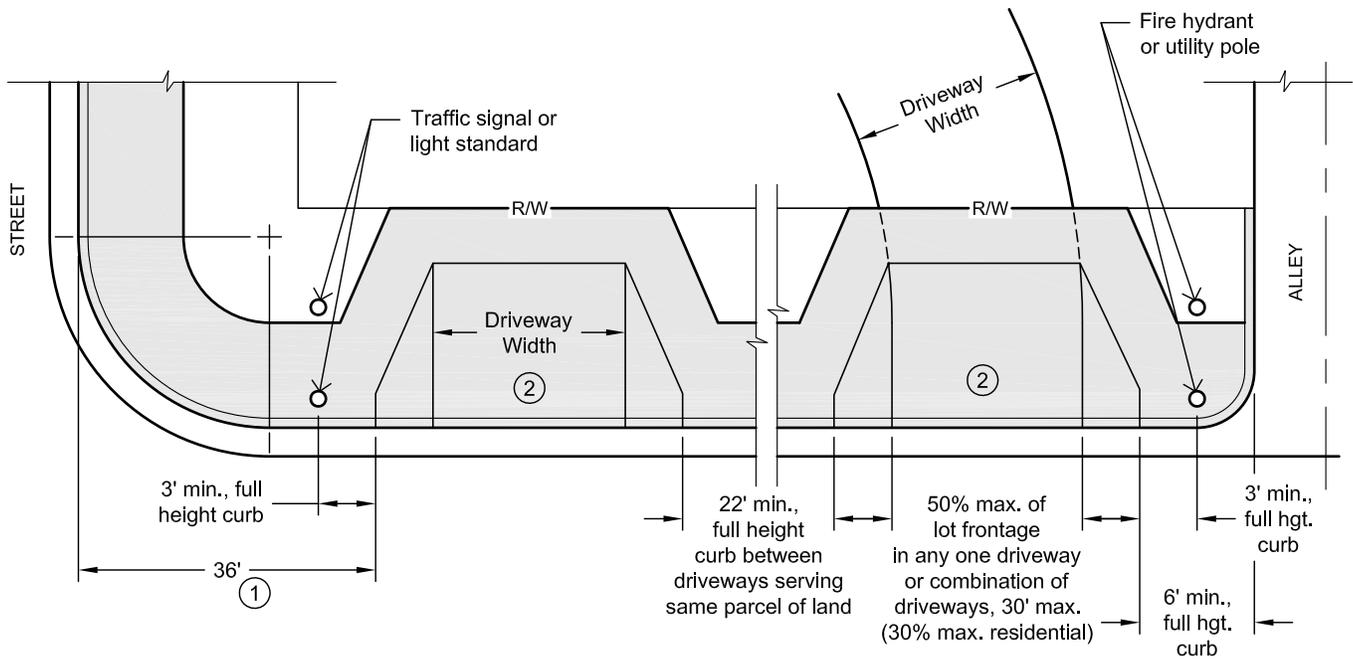
GENERAL NOTES:

- A. A depression in a new curb and gutter for a driveway will not be permitted unless the ramp and sidewalk extension are constructed also.
- B. Slope of ramp is a straight grade from the top of the back of ramp to the top of the lip at the gutter.
- C. Concrete shall be Class 3; and comply with Section 90 of the Standard Specifications.
- D. Dowels at expansion or cold joint with new construction shall be 1/2" smooth bars, 15" long at 24" O.C., one end shall be sleeved or greased.
- E. All ramps and sidewalk shall be reinforced with rebar, #4 @ 24" O.C., continuous both ways. Rebar shall run continuous through cold or expansion joints.
- F. Commercial and industrial driveways ramps serving more than six (6) parking spaces shall be 10' deep (long) unless otherwise approved by the City Engineer.
- G. See Engineering Standard 4110 for notes regarding required pavement removal and repair.
- H. This design must be approved for use by City Engineer.

REVISIONS	BY	APP	DATE
New Standard	JDL	JDW	1-03
Update Cross Slope percentages	JDL	MH	2-13
Revised Note C	SR	MH	1-14
STANDARD CURRENT AS OF:		January 2016	



**DRIVEWAY RAMP
DETACHED SIDEWALK
ROWS LESS THAN 10'**

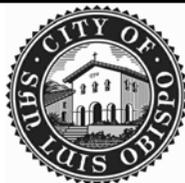


NOTES:

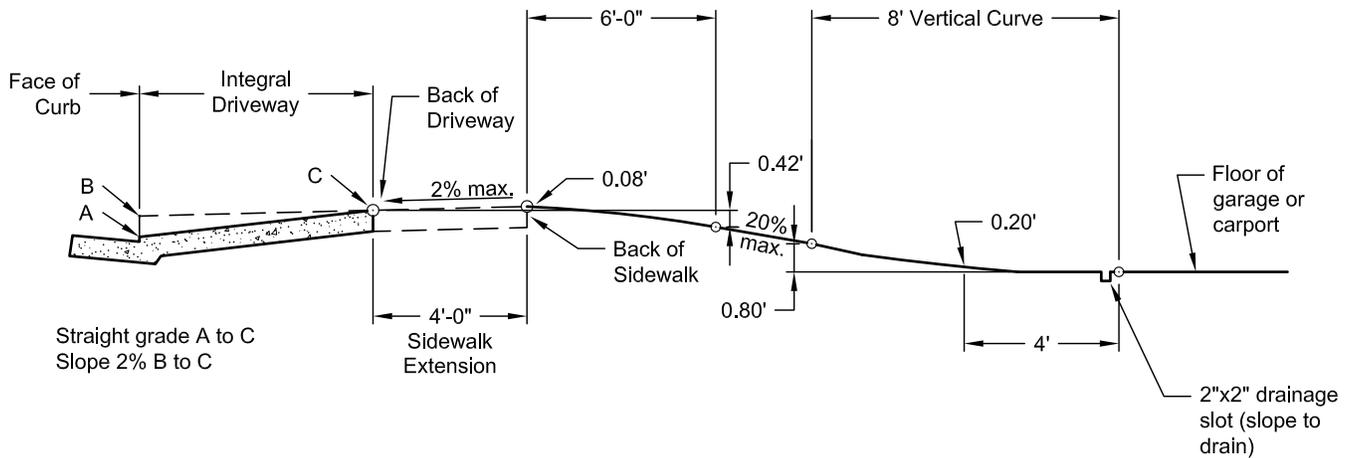
- ① Setback from corner may be shortened with approval of the City Engineer. Minimum distance: Curb return radius + 5'
- ② Construct per Driveway Ramp Standards.

APPLICATION	MIN. WIDTH	MAX. WIDTH
Lots with six (6) or fewer spaces serving residential uses, existing structures converted to office use, and newly constructed offices.	10'	16'
Lots with six (6) or fewer spaces serving commercial and industrial uses and where any building to be served is more than 148' from the street right-of-way.	12'	16'
Lots with more than six (6) spaces but fewer than twenty (20) spaces and with separate entrances and exits (one-way driveways).	12'	30'
Lots with more than six (6) spaces but fewer than twenty (20) spaces and with only one point of entrance and exit (two-way driveways) and lots with twenty (20) or more spaces serving office and residential uses.	16'	30'
Lots with twenty (20) or more spaces serving commercial and industrial uses.	20'	30'
Lots where any type of use requires fire truck access by driveway.	20'	30'

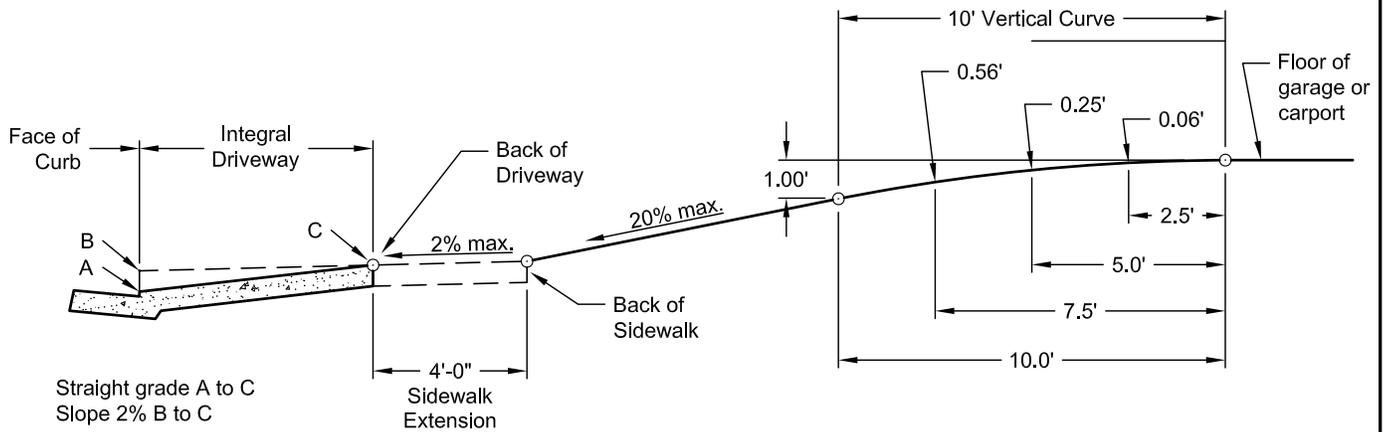
REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	10-12
Revise Note 2	RMH	WAP	1-95
Revise sidewalk location	DVB	BL	10-06
STANDARD CURRENT AS OF: January 2016			



**DRIVEWAY RAMP
SIZE & LOCATION**



DOWNWARD DRIVEWAY



UPWARD DRIVEWAY

GENERAL NOTES:

- A. Twenty percent (20%) maximum slope for residential uses. Ten percent (10%) maximum slope for commercial and industrial uses. Five percent (5%) deviation allowed with special construction techniques if approved by the City Engineer. Where Fire Department access is required, the maximum slope shall not exceed fifteen percent (15%).
- B. Maximum rise and descent, and the run, shall be measured for the WORST condition between the back of the sidewalk extension and the finished floor at the garage or carport entrance.
- C. Sidewalk extension cross-slope may not exceed two percent (2%) and must slope toward the street.

REVISIONS	BY	APP	DATE
<i>New Border</i>	JDL	WAP	9-97
<i>Sidewalk Extension</i>	RMH	WAP	7-95
<i>Drafting edits</i>	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



STANDARD DRIVEWAY UPWARD & DOWNWARD

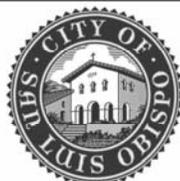
MAXIMUM RISE & DESCENT PERMITTED ON STANDARD DRIVEWAYS

UPWARD DRIVEWAY MAXIMUM RISE				DOWNWARD DRIVEWAY MAXIMUM DESCENT			
Maximum		Maximum		Maximum		Maximum	
Run	Rise	Run	Rise	Run	Descent	Run	Descent
10'	1.0'	39'	6.8'	6'	0.4'	35'	5.4'
11'	1.2'	40'	7.0'	7'	0.5'	36'	5.6'
12'	1.4'	41'	7.2'	8'	0.6'	37'	5.8'
13'	1.6'	42'	7.4'	9'	0.7'	38'	6.0'
14'	1.8'	43'	7.6'	10'	0.8'	39'	6.2'
15'	2.0'	44'	7.8'	11'	0.9'	40'	6.4'
16'	2.2'	45'	8.0'	12'	1.0'	41'	6.6'
17'	2.4'	46'	8.2'	13'	1.2'	42'	6.8'
18'	2.6'	47'	8.4'	14'	1.3'	43'	7.0'
19'	2.8'	48'	8.6'	15'	1.4'	44'	7.2'
20'	3.0'	49'	8.8'	16'	1.6'	45'	7.4'
21'	3.2'	50'	9.0'	17'	1.8'	46'	7.6'
22'	3.4'	51'	9.2'	18'	2.0'	47'	7.8'
23'	3.6'	52'	9.4'	19'	2.2'	48'	8.0'
24'	3.8'	53'	9.6'	20'	2.4'	49'	8.2'
25'	4.0'	54'	9.8'	21'	2.6'	50'	8.4'
26'	4.2'	55'	10.0'	22'	2.8'	51'	8.6'
27'	4.4'	56'	10.2'	23'	3.0'	52'	8.8'
28'	4.6'	57'	10.4'	24'	3.2'	53'	9.0'
29'	4.8'	58'	10.6'	25'	3.4'	54'	9.2'
30'	5.0'	59'	10.8'	26'	3.6'	55'	9.4'
31'	5.2'	60'	11.0'	27'	3.8'	56'	9.6'
32'	5.4'	61'	11.2'	28'	4.0'	57'	9.8'
33'	5.6'	62'	11.4'	29'	4.2'	58'	10.0'
34'	5.8'	63'	11.6'	30'	4.4'	59'	10.2'
35'	6.0'	64'	11.8'	31'	4.6'	60'	10.4'
36'	6.2'	65'	12.0'	32'	4.8'	65'	11.4'
37'	6.4'	70'	13.0'	33'	5.0'	70'	12.4'
38'	6.6'	80'	15.0'	34'	5.2'	80'	14.4'

GENERAL NOTES:

- A. All values shown in feet unless otherwise noted.
- B. Maximum rise and descent and run shall be measured for the WORST condition between the back of the sidewalk extension and the finished floor grade at the garage entrance.

REVISIONS	BY	APP	DATE
<i>Revise General Notes</i>	<i>DVB</i>	<i>BL</i>	<i>11-06</i>
<i>New border</i>	<i>BL</i>	<i>MH</i>	<i>1-14</i>
STANDARD CURRENT AS OF: January 2016			



**UPWARD & DOWNWARD
DRIVEWAYS**
MAXIMUM RISE & DESCENT
(RESIDENTIAL)

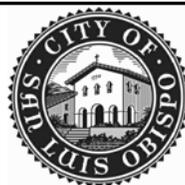
PAVEMENT THICKNESS (in) (Asphalt concrete with no base)				SUBGRADE QUALITY
6"	5"	4"	4"	GOOD TO EXCELLENT Unaffected by moisture or retains a substantial amount of support capacity when wet. Included are well or poorly-graded gravels or sand gravels, silty gravels, and well-graded sands. Minimum Sand Equivalent = 30
7"	5 1/2"	4 1/2"	4"	FAIR TO GOOD Retains a moderate degree of firmness under adverse moisture conditions. Included are poorly-graded sands or gravelly sands with little or no fines, and silty sands. Minimum Sand Equivalent = 25
8"	6"	5"	4"	POOR TO FAIR Some softness and plasticity appears when wet. Included are clayey sands, inorganic silts, very fine sands, inorganic clays of low, medium or high plasticity, and gravelly to silty clays.
9"	8"	6"	4 1/2"	POOR Becomes extremely soft and plastic when wet. Included are organic silts or silt-clays of low plasticity, inorganic silts, and organic clays of medium to high plasticity.

TRAFFIC TYPE	
	LIGHT PARKING General parking areas for autos and light trucks.
	MEDIUM PARKING Access roads and drives, store frontage traffic and service stations. Shopping center roads serving only autos and light trucks.
	HEAVY PARKING Warehouse approaches, warehouse parking areas, ramps, all heavy-duty truck loadings, or parking areas. Up to 20 heavy truck and trailer units per day. (To be used in areas where garbage trucks will park to load dumpsters.) Shopping center roads serving truck access to loading areas.
	EXTRA HEAVY PARKING Heavy industrial types of pavement loadings. Areas for use by 20-400 heavy truck and trailer units per day.

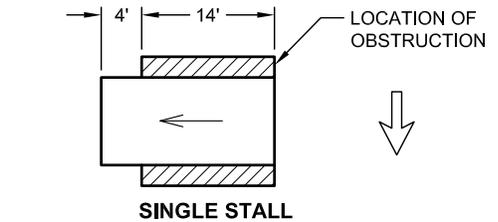
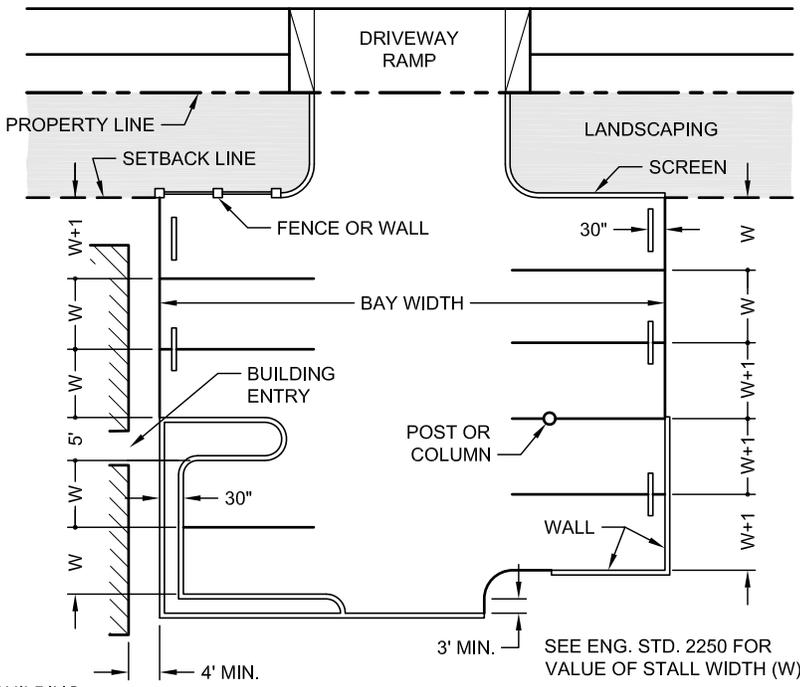
NOTE:
 Each 1" of asphalt may be substituted with 2" of Class 2 base. 2" minimum AC.

REF: Pamphlet No. PCD-3, distributed by
 THE ASPHALT INSTITUTE

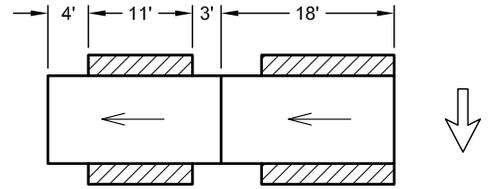
REVISIONS	BY	APP	DATE
New border	JDL	WAP	1-98
Change Class "III" to "2"	JDL	JDW	9-02
Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF: January 2016			



PAVEMENT DESIGN



SINGLE STALL

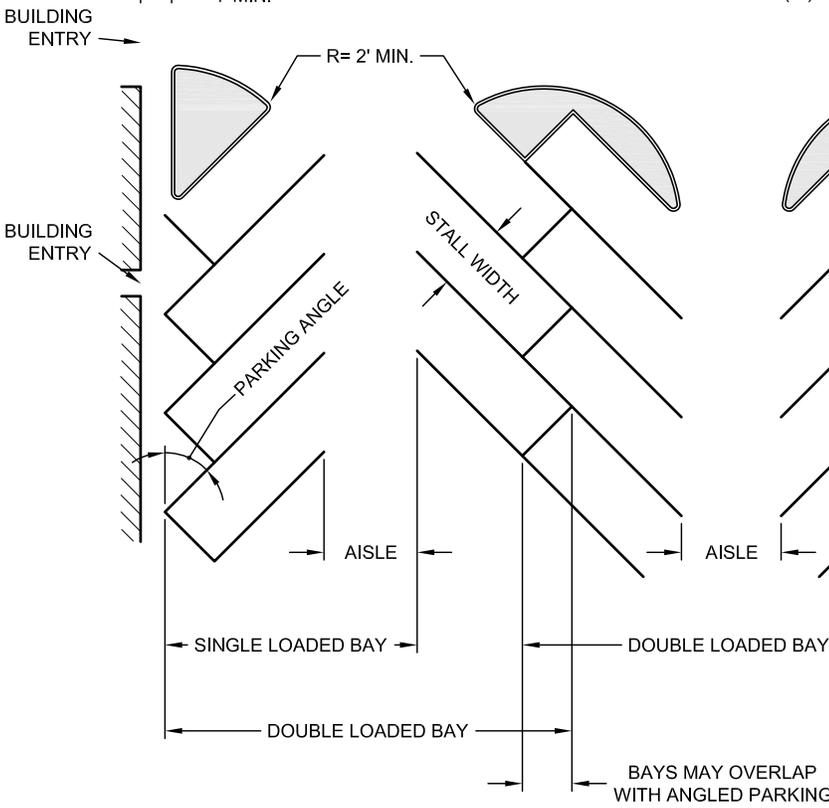


TANDEM STALLS

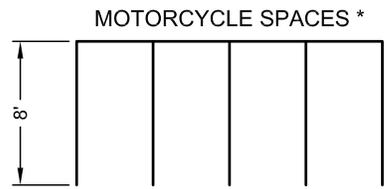
(WITH APPROVAL OF COMMUNITY DEVELOPMENT DIRECTOR AND AS ALLOWED IN E-3 OF ENG. STD. 2010.)

INCREASE STALL WIDTH BY:
 12" IF ON ONE SIDE
 24" IF ON BOTH SIDES

OBSTRUCTIONS



WHEELSTOPS SHALL BE LOCATED ON SIDE OF STALL CLOSEST TO BAY WIDTH LIMIT LINE, AS SHOWN.



MOTORCYCLE SPACES *

* SET ON 3/2" PCC AND CLASS 3 BASE

GENERAL NOTES:

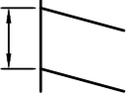
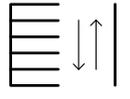
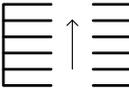
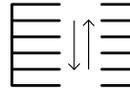
- A. Curbing may be substituted for wheel stops.
- B. Handicap spaces shall meet State of California requirements.
- C. See Engineering Standards 2230 and 2240 for bay widths.

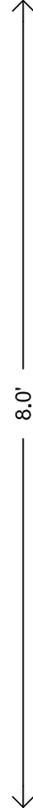
REVISIONS	BY	APP	DATE
New border	JDL	WAP	1-98
Tandem Stall reference correction	JDL	MH	10-12
Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



OFF-STREET PARKING STANDARDS

COMPACT CARS

PARKING ANGLE	WIDTH AT CURB	SINGLE LOADED AISLES		DOUBLE LOADED AISLES	
		ONE-WAY TRAFFIC	TWO-WAY TRAFFIC	ONE-WAY TRAFFIC	TWO-WAY TRAFFIC
					
BAY WIDTH * (feet)					
30°	16.01	26.0	34.0	40.0	48.2
32.5°	14.90	26.5	34.4	40.9	49.1
35°	13.95	26.8	34.7	41.8	49.8
37.5°	13.15	27.3	35.2	42.6	50.5
40°	12.45	27.6	35.5	43.2	50.9
42.5°	11.85	27.8	35.8	43.6	51.5
45°	11.32	28.2	36.3	44.3	52.1
47.5°	10.85	29.0	36.5	45.4	52.6
50°	10.45	29.8	36.8	46.4	52.9
52.5°	10.09	30.5	37.2	47.2	53.3
55°	9.77	31.3	37.3	48.0	53.6
57.5°	9.49	31.9	37.7	48.6	53.8
60°	9.24	32.7	37.9	49.3	54.1
62.5°	9.02	33.3	38.2	50.0	54.3
65°	8.83	33.9	38.4	50.8	54.5
67.5°	8.66	34.6	38.8	51.3	54.7
70°	8.52	35.2	38.9	51.8	54.8
72.5°	8.39	35.8	39.2	52.3	54.8
75°	8.28	36.5	39.3	52.8	54.9
77.5°	8.20	37.2	39.6	53.3	55.1
80°	8.12	37.8	39.8	53.9	55.2
82.5°	8.07	38.3	39.9	54.3	55.3
85°	8.03	39.0	40.1	54.7	55.3
87.5°	8.01	39.7	40.2	55.0	55.3
90°	8.00	40.3	40.3	55.3	55.3



8.0' STALL WIDTH

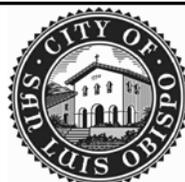
Use of Compact Spaces requires approval of an exception by the Community Development Director or the Architectural Review commission. Compact spaces are allowed only if justified by unusual circumstances such as saving a tree or using otherwise unusable space.

Bay widths are based on 16' stall lengths. A maximum of 40% of the stalls in a parking lot may be compact. (In residential apartment projects involving ten or more units, 50% of spaces may be compact.)

Compact parking spaces shall be clustered.

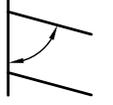
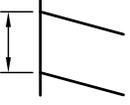
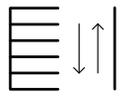
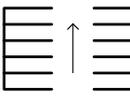
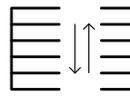
* See Engineering Standard 2220 for clarification of "BAY WIDTH"

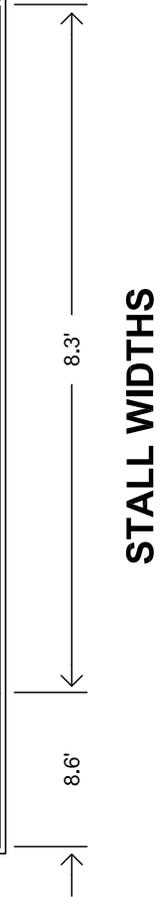
REVISIONS	BY	APP	DATE
Rearrange	RMH	WAP	1-95
New border	JDL	WAP	1-98
Drafting Edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



PARKING BAY DIMENSIONS COMPACT CAR

AVERAGE CARS

PARKING ANGLE	WIDTH AT CURB	SINGLE LOADED AISLES		DOUBLE LOADED AISLES	
		ONE-WAY TRAFFIC	TWO-WAY TRAFFIC	ONE-WAY TRAFFIC	TWO-WAY TRAFFIC
					
BAY WIDTH * (feet)					
30°	16.61	26.9	34.9	41.9	50.0
32.5°	15.45	27.5	35.4	42.9	51.0
35°	14.48	27.9	35.8	43.9	51.9
37.5°	13.64	28.4	36.3	44.8	52.7
40°	12.92	28.7	36.7	45.5	53.3
42.5°	12.29	29.4	37.1	46.4	53.9
45°	11.74	30.2	37.6	47.6	54.6
47.5°	11.26	31.1	38.0	48.8	55.2
50°	10.84	32.0	38.3	49.9	55.8
52.5°	10.47	32.7	38.7	50.9	56.3
55°	10.14	33.6	39.0	51.7	56.7
57.5°	9.84	34.3	39.4	52.4	57.1
60°	9.59	35.1	39.7	53.3	57.5
62.5°	9.36	35.8	40.1	54.1	57.8
65°	9.16	36.5	40.4	54.9	58.2
67.5°	8.99	37.2	40.8	55.5	58.5
70°	8.83	37.9	41.1	56.1	58.8
72.5°	8.70	38.5	41.4	56.7	59.0
75°	8.59	39.2	41.7	57.3	59.2
77.5°	8.50	40.0	42.0	57.9	59.5
80°	8.43	40.6	42.3	58.5	59.7
82.5°	8.67	41.3	42.6	58.9	59.8
85°	8.63	42.0	42.9	59.4	59.9
87.5°	8.61	42.6	43.1	59.7	60.0
90°	8.60	43.3	43.3	60.1	60.1



Bay widths are based on 18.4' stall lengths. Stall widths as noted.

Alternate stall widths may only be used for 82.5° - 90° parking angles and must have special approval of the Community Development Director.

9'-0" width - Subtract 2 feet from bay width

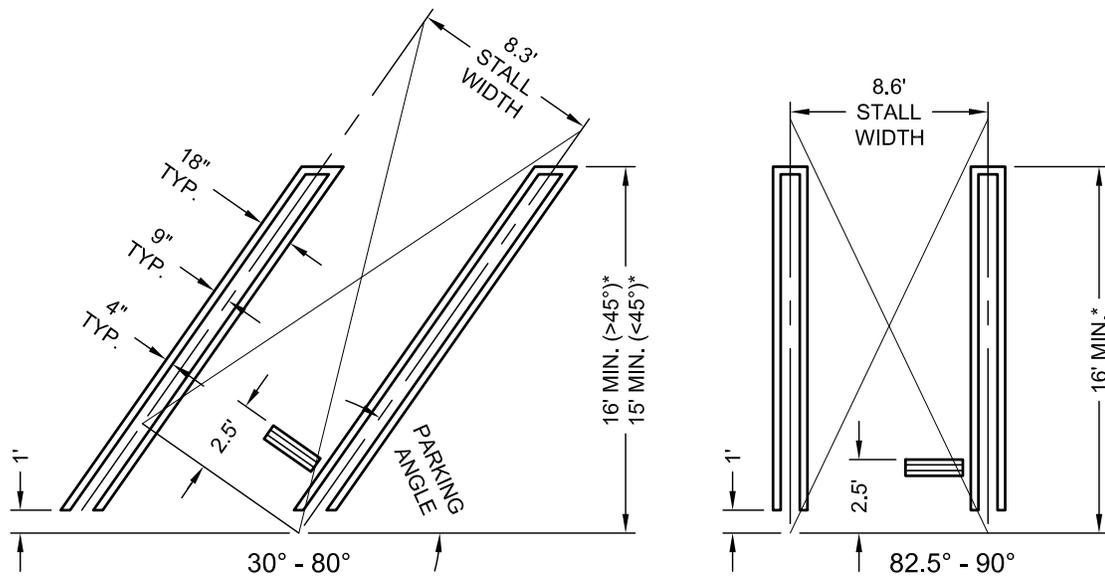
9'-6" width - Subtract 4 feet from bay width

* See Engineering Standard 2220 for clarification of "BAY WIDTH"

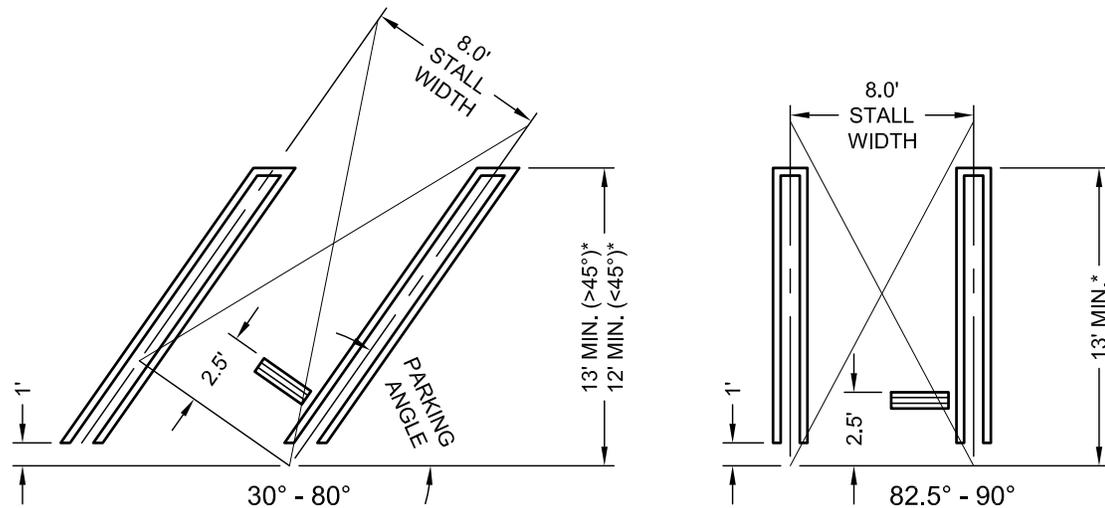
REVISIONS	BY	APP	DATE
Rearrange	RMH	WAP	1-95
New border	JDL	WAP	1-98
Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



PARKING BAY DIMENSIONS AVERAGE CARS



STRIPING FOR AVERAGE PARKING STALLS



STRIPING FOR COMPACT PARKING STALLS

GENERAL NOTES:

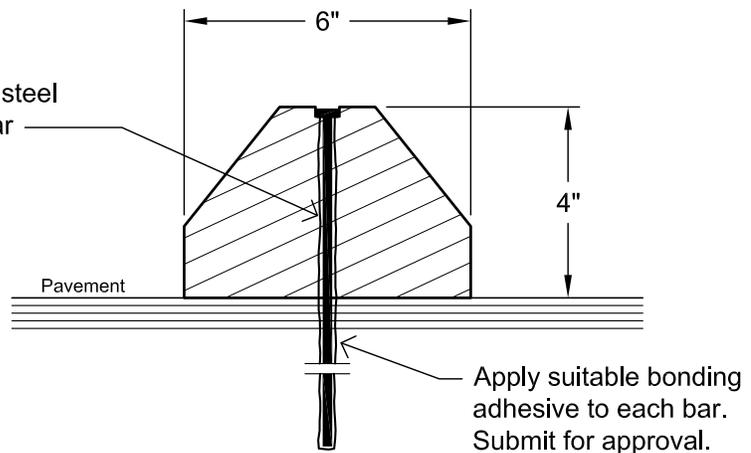
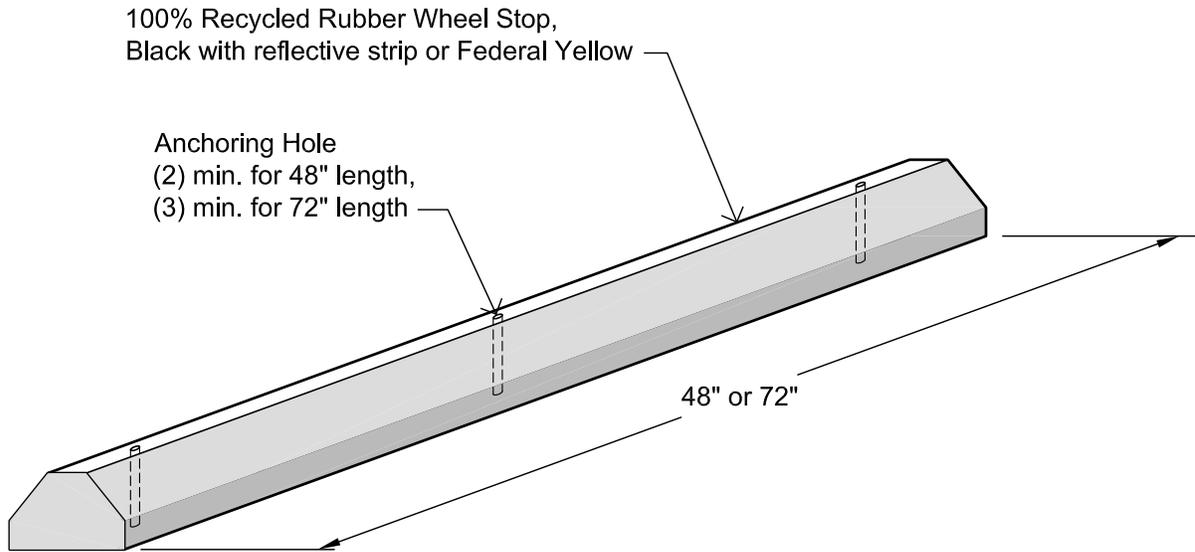
- A. Each compact space must be labeled as such on the pavement or wheelstop.
- B. Single-line marking is approved alternate.
- C. Wheelstop shall be located as shown, if required.

* THESE DIMENSIONS ARE TO BE USED ONLY FOR STRIPING AND NOT FOR PARKING LOT LAYOUT.

REVISIONS	BY	APP	DATE
General Note B	MH	BL	2-14
Drafting edits	JDL	MH	10-12
Modified Stall Width	MH	BL	10-09
STANDARD CURRENT AS OF:		January 2016	



PARKING LOT STRIPING



SECTION VIEW

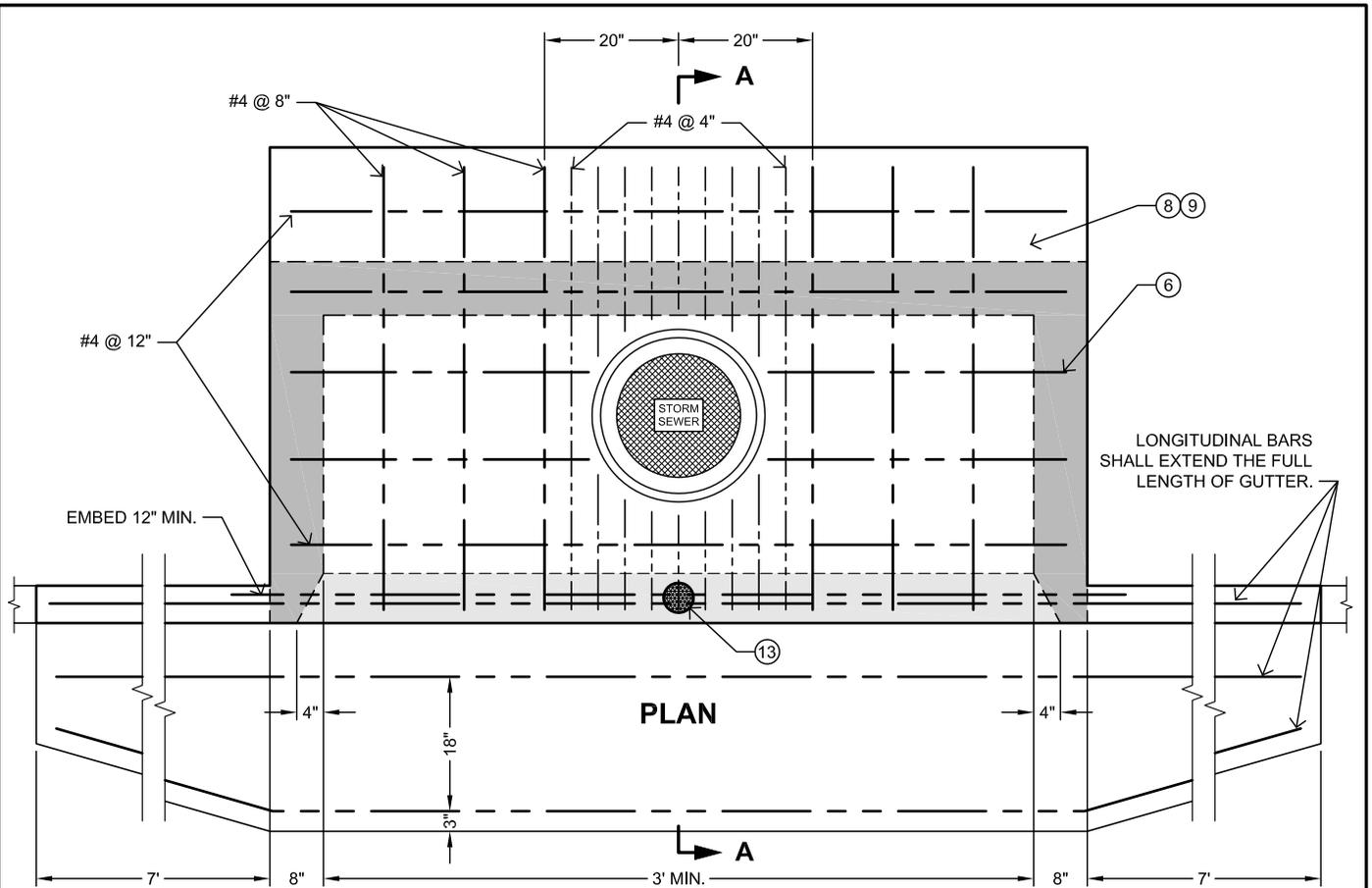
GENERAL NOTES:

- A. Wheel stop shall be installed at location where wheeled vehicles may roll into pedestrian, structures, or hazardous area. Wheel stop location shall not create a barrier for pedestrians.
- B. Wheel stop shall be securely attached onto at-grade concrete and at-grade asphalt pavement with #4 deformed steel reinforcing bars embedded in holes cast into wheel stops. At concrete pavement, drill holes in pavement for dowels. At parking structure slabs, epoxy to slab.

REVISIONS	BY	APP	DATE
<i>New Standard</i>	<i>JDL</i>	<i>BL</i>	<i>4-13</i>
<i>Revision Note A</i>	<i>SR</i>	<i>BL</i>	<i>1-14</i>
STANDARD CURRENT AS OF:	January 2016		



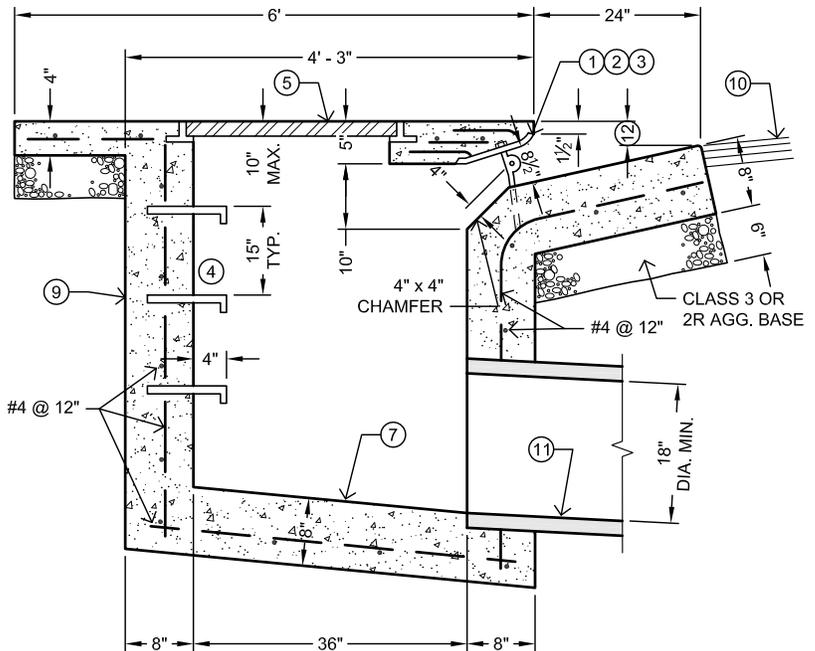
WHEEL STOP



INSTALLATION NOTES:

Items 1 through 3 shall be galvanized Alhambra, South Bay Foundry or equal.

- ① Formed steel face plate: A-3911, with factory installed anchors. Face plate shall be 6" longer on each side of the opening at the face of the curb.
- ② Protection bar: A-1565; bar and anchors, A-1577
- ③ Protection bar support bolt(s): A-1574, spaced 20 7/8" apart.
- ④ Steps are required when depth exceeds 4' and shall be steel reinforced polypropylene, M-A Industries PS2-PFS or equal.
- ⑤ Manhole frame and cover, South Bay Foundry 1530, Alhambra A-1530 or approved equal, placed adjacent to the back wall in the center of the basin. Where the horizontal dimension of the basin equals or exceeds 8', a second lid shall be installed. One lid over the outlet and a second lid centered in the remaining area or as directed by the Engineer.
- ⑥ Reinforcing steel shall be covered by no less than 1 1/2" of concrete in the top and no less than 2" in the rest of the structure.
- ⑦ Floor of the basin (including extended opening for Engineering Standard 3360) shall be smooth and shall slope 8.3% toward the outlet.
- ⑧ Top of catch basin shall slope 2% toward curb.
- ⑨ Concrete shall be Class 3.
- ⑩ See Engineering Standard 4110 for notes regarding required pavement removal and repair.
- ⑪ Inlet and outlet pipe(s) may be placed in any wall.
- ⑫ Height equals 4" for a 6" curb and 6" for an 8" curb.
- ⑬ Install Catch Basin Placard per Section 77-4 of the Standard Specifications.

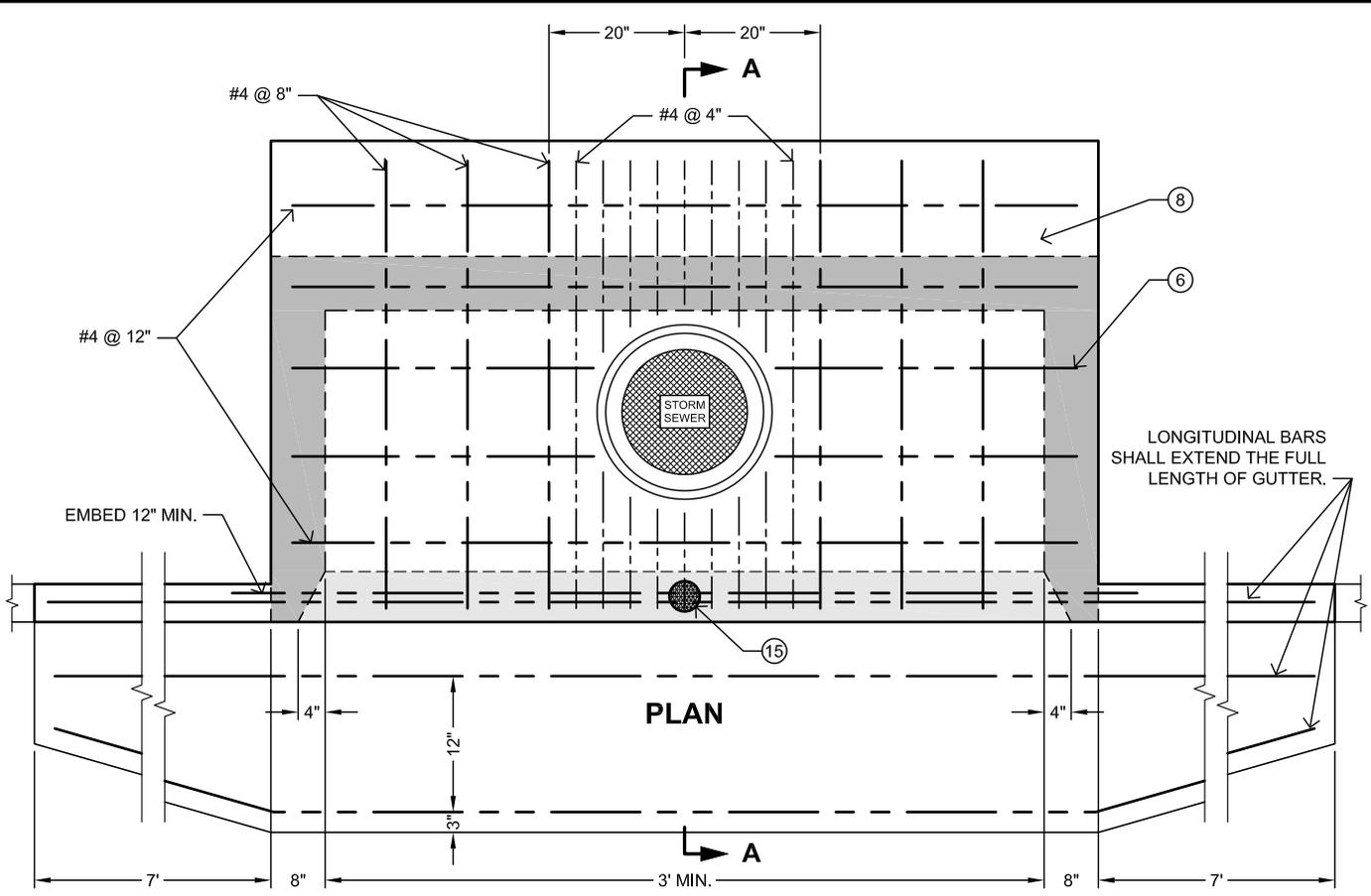


SECTION A-A

REVISIONS	BY	APP	DATE
Revised Note 5	MH	BL	12-09
Drafting edits	JDL	MH	8-12
Revised Note 13	SR	MH	1-14
STANDARD CURRENT AS OF:		January 2016	



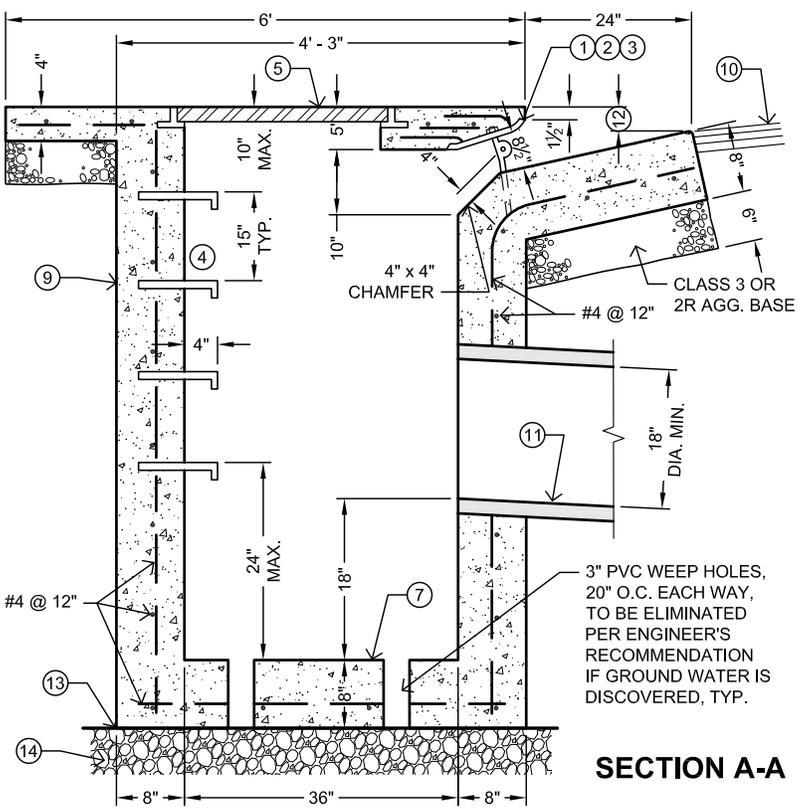
**CATCH BASIN
SIDE OPENING**



INSTALLATION NOTES:

Items 1 through 3 shall be galvanized Alhambra, South Bay Foundry or equal.

- ① Formed steel face plate: A-3911, with factory installed anchors. Face plate shall be 6" longer on each side of the opening at the face of the curb.
- ② Protection bar: A-1565; bar and anchors, A-1577
- ③ Protection bar support bolt(s): A-1574, spaced 20 7/8" apart.
- ④ Steps are required when depth exceeds 4' and shall be steel reinforced polypropylene, M-A Industries PS2-PFS or equal.
- ⑤ Manhole frame and cover, South Bay Foundry 1530, Alhambra A-1530 or approved equal, placed adjacent to the back wall in the center of the basin. Where the horizontal dimension of the basin equals or exceeds 8', a second lid shall be installed. One lid over the outlet and a second lid centered in the remaining area or as directed by the Engineer.
- ⑥ Reinforcing steel shall be covered by no less than 1 1/2" of concrete in the top and no less than 2" in the rest of the structure.
- ⑦ Floor of the basin (including extended opening for Engineering Standard 3360) shall be smooth and shall slope 8.3% toward the outlet.
- ⑧ Top of catch basin shall slope 2% toward curb.
- ⑨ Concrete shall be Class 3.
- ⑩ See Engineering Standard 4110 for notes regarding required pavement removal and repair.
- ⑪ Inlet and outlet pipe(s) may be placed in any wall.
- ⑫ Height equals 4" for a 6" curb and 6" for an 8" curb.
- ⑬ Filter fabric shall be placed between concrete and gravel. Overlap sheet of fabric 6". Filter fabric shall conform to the requirements in Section 88 of the Standard Specifications and shall be permeable and non-woven. Filter fabric shall be MIRAFL 140 or equal.
- ⑭ 6" of 1/2" diameter gravel.
- ⑮ Install Catch Basin Placard per Section 77-4 of the Standard Specifications.



SECTION A-A

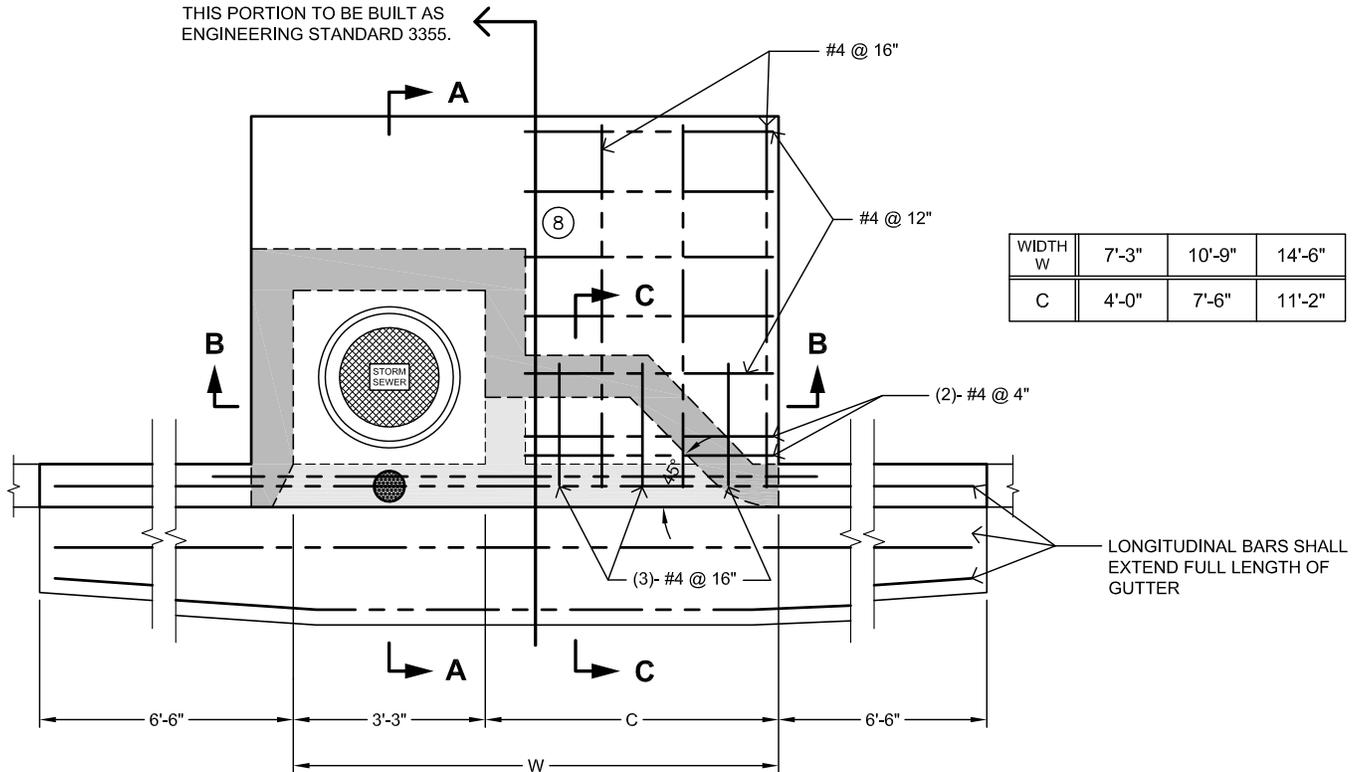
REVISIONS	BY	APP	DATE
Revised Note 15	SR	BL	1-14
Revised Note 13; Weep hole depth	JDL	MH	8-12
Rebar dim. at gutter; Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



CATCH BASIN
SIDE OPENING WITH SUMP

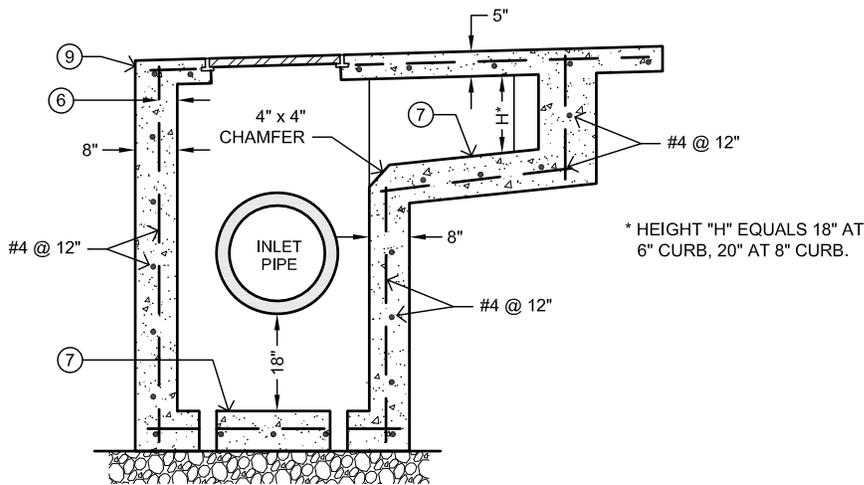
3355

THIS PORTION TO BE BUILT AS
ENGINEERING STANDARD 3355.

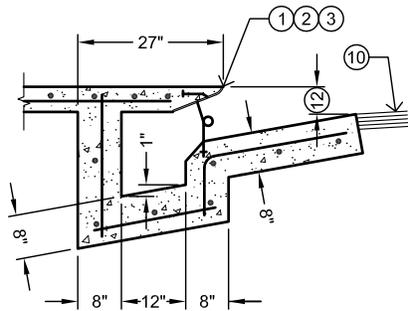


WIDTH W	7'-3"	10'-9"	14'-6"
C	4'-0"	7'-6"	11'-2"

PLAN



SECTION B-B



SECTION C-C

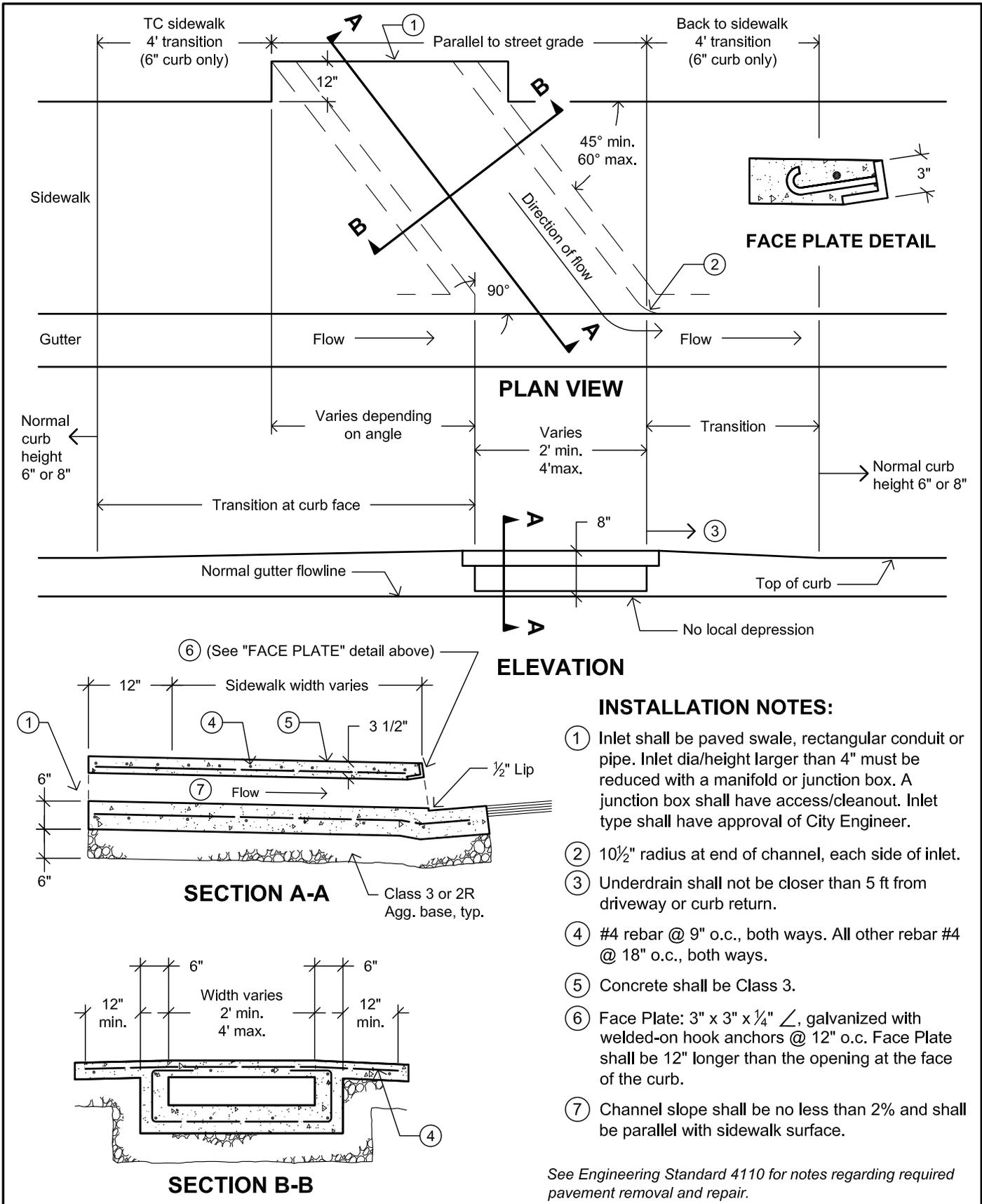
GENERAL NOTES:

- A. See Engineering Standards 3350 and 3355 for Notes and Section A-A.
- B. Install Catch Basin Placard per Section 77-4 of the Standard Specifications.

REVISIONS	BY	APP	DATE
Remove "D" at plan; Drafting edits	JDL	MH	10-12
"H" Dimension at Section B-B	JDL	MH	7-14
Revised Note B	SR	BL	1-14
STANDARD CURRENT AS OF:		January 2016	



**CATCH BASIN
EXTENDED SIDE OPENING**



INSTALLATION NOTES:

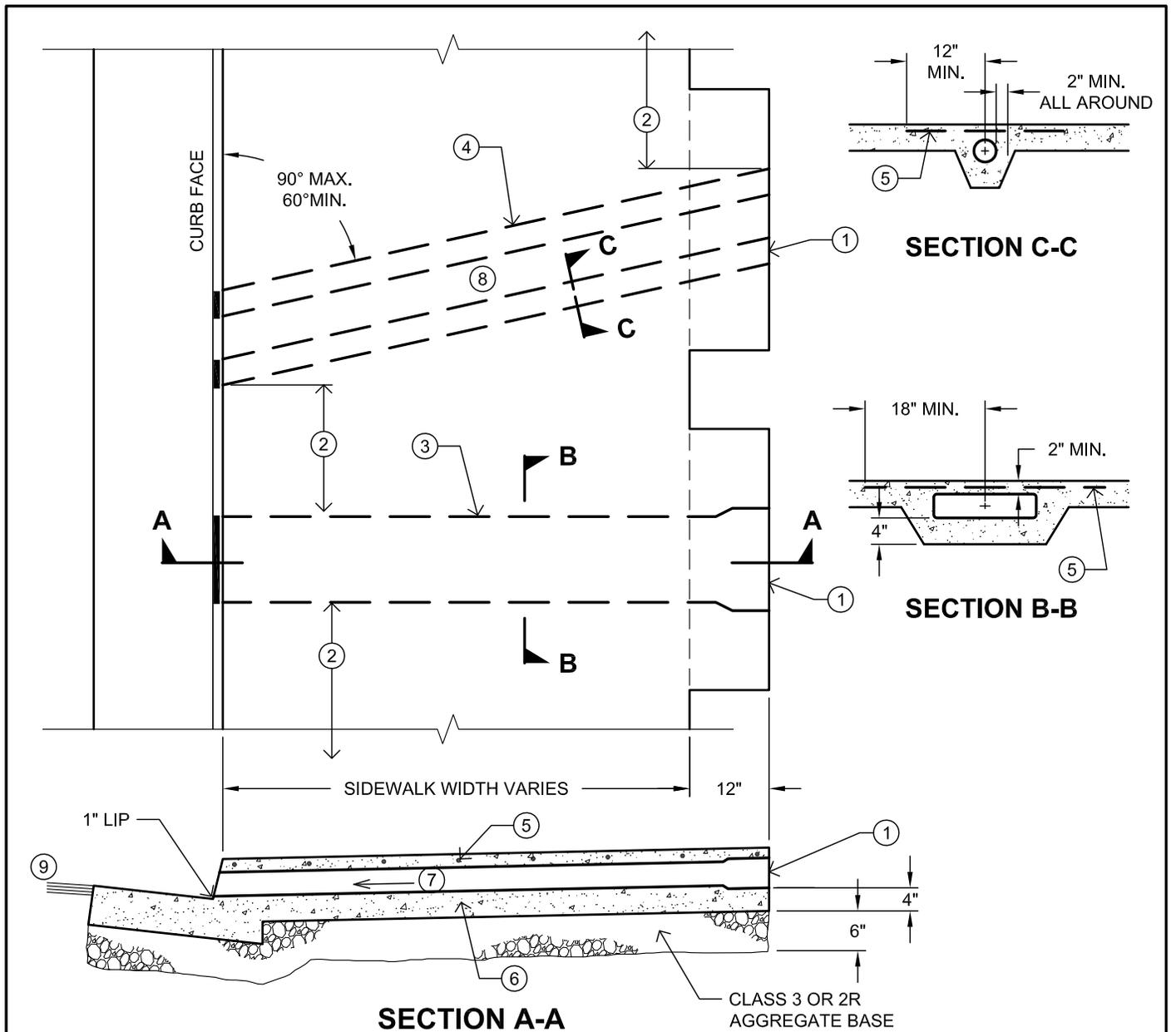
- ① Inlet shall be paved swale, rectangular conduit or pipe. Inlet dia/height larger than 4" must be reduced with a manifold or junction box. A junction box shall have access/cleanout. Inlet type shall have approval of City Engineer.
- ② 10½" radius at end of channel, each side of inlet.
- ③ Underdrain shall not be closer than 5 ft from driveway or curb return.
- ④ #4 rebar @ 9" o.c., both ways. All other rebar #4 @ 18" o.c., both ways.
- ⑤ Concrete shall be Class 3.
- ⑥ Face Plate: 3" x 3" x ¼" ∠, galvanized with welded-on hook anchors @ 12" o.c. Face Plate shall be 12" longer than the opening at the face of the curb.
- ⑦ Channel slope shall be no less than 2% and shall be parallel with sidewalk surface.

See Engineering Standard 4110 for notes regarding required pavement removal and repair.

REVISIONS	BY	APP	DATE
Allow Class 2R Base	DVB	BL	11-08
Revised Note 6; Metric conv.	JDL	MH	9-12
Revise Note 6	DVB	BL	10-06
STANDARD CURRENT AS OF:		January 2016	



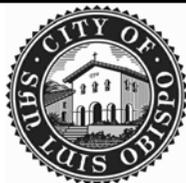
**SIDEWALK UNDERDRAIN
CONCRETE**



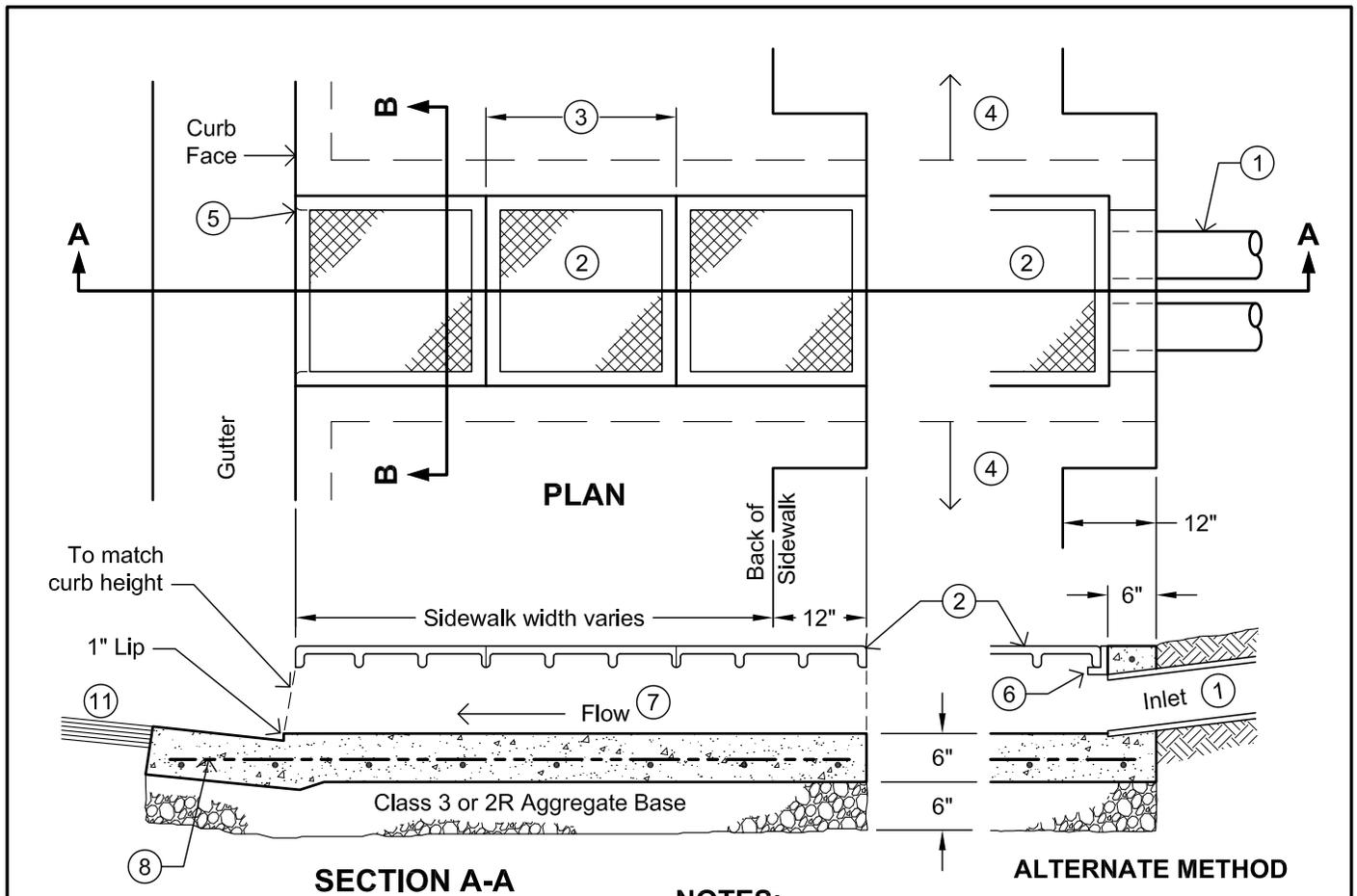
NOTES:

- ① Inlet shall be paved swale, rectangular conduit or pipe(s). Maximum inlet diameter/height shall be curb height minus 2". Inlet conduits larger than 4" diameter/height must be reduced with a manifold or junction box. A junction box shall have access/cleanout. Inlet shall be approved by the City Engineer.
- ② Underdrain shall not be installed in driveway wings or curb return.
- ③ Rectangular cast iron pipe: Alhambra A-470, South Bay Foundry A9000 or approved equal.
- ④ Cast iron pipe: 3" max. diameter (6" curb) or 4" max. diameter (8" curb).
- ⑤ #4 Rebar @ 12" O.C.
- ⑥ Concrete shall be Class 3.
- ⑦ Channel slope shall be no less than 2% and shall be parallel with sidewalk surface.
- ⑧ Multiple drains shall have 3" minimum to 6" maximum clearance with maximum of 3 drains per 10' of sidewalk. Drains shall not extend beyond curb face into gutter.
- ⑨ See Engineering Standard 4110 for notes regarding required pavement removal and repair.

REVISIONS	BY	APP	DATE
Revised Note 2	MH	BL	11-09
Revised Note 3	MH	BL	12-09
Misc. drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



**SIDEWALK UNDERDRAIN
WITH PIPES**

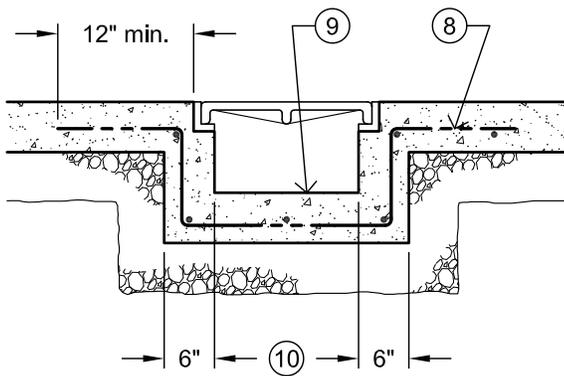


SECTION A-A

ALTERNATE METHOD

NOTES:

- ① Inlet shall be paved swale, rectangular conduit, or pipe(s). Maximum inlet diameter/height shall be curb height minus 2". A junction box shall have access/cleanout. Inlet type shall have approval of City Engineer.
- ② Frame and Covers: NEENAH R-4990, type D, solid top with PERMA-GRIP surface, or approved equal. There shall be a 1/8" space between the frame and the lid. When underdrain is located in Mission Style sidewalk, covers shall be coated with epoxy paint colored to match sidewalk color.
- ③ Cover length shall maintain a cover weight of at least 100 lbs each.
- ④ Underdrain shall not be closer than 5' from driveway or curb return.
- ⑤ 1" radius at end of channel, each side of outlet.
- ⑥ Frame end piece, required for alternate method.
- ⑦ Channel slope shall be no less than 2% and shall be parallel with sidewalk surface.
- ⑧ #4 Rebar @ 12" O.C., both ways.
- ⑨ Concrete shall be Class 3.
- ⑩ Channel width varies: 18" min. to 3' max.
- ⑪ See Engineering Standard 4110 for notes regarding pavement removal and repair.

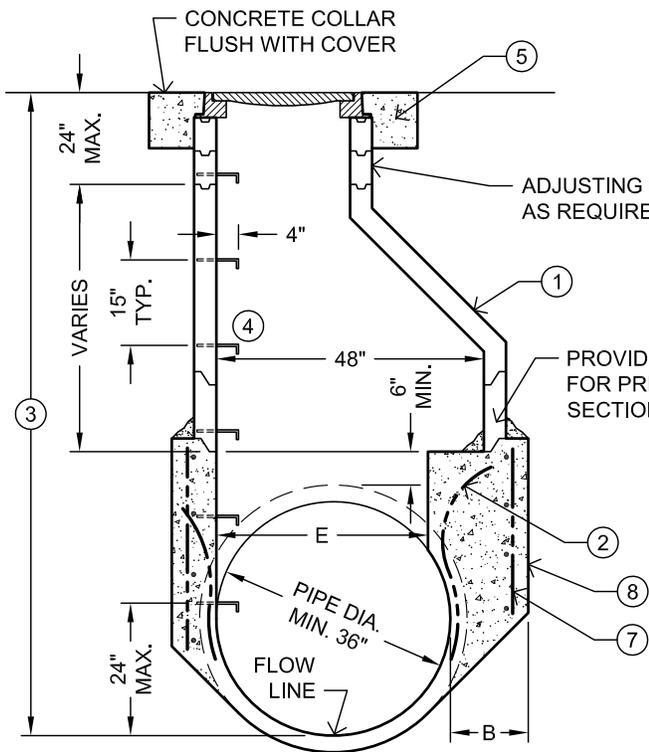


SECTION B-B

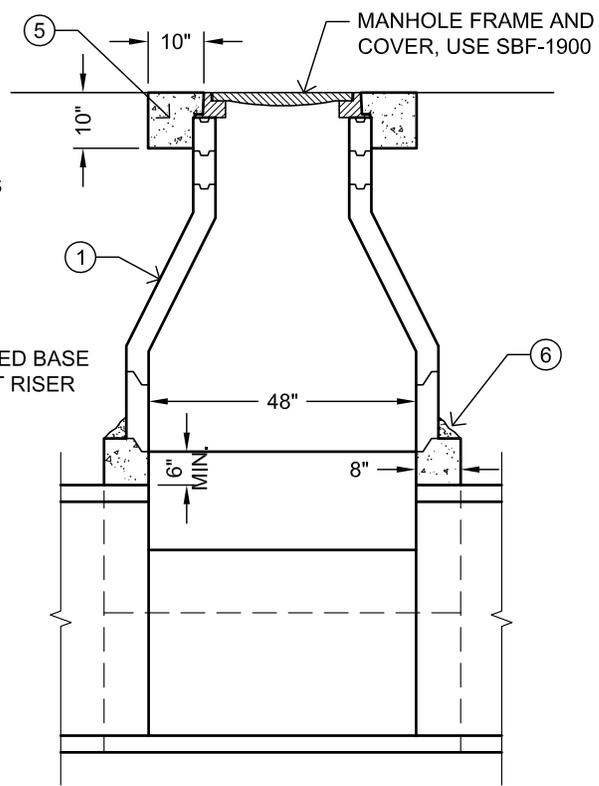
REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	10-12
Revise rebar specs	JDL	WAP	11-98
Revise Note 2; Class 2R Base	DVB	BL	11-08
STANDARD CURRENT AS OF:		January 2016	



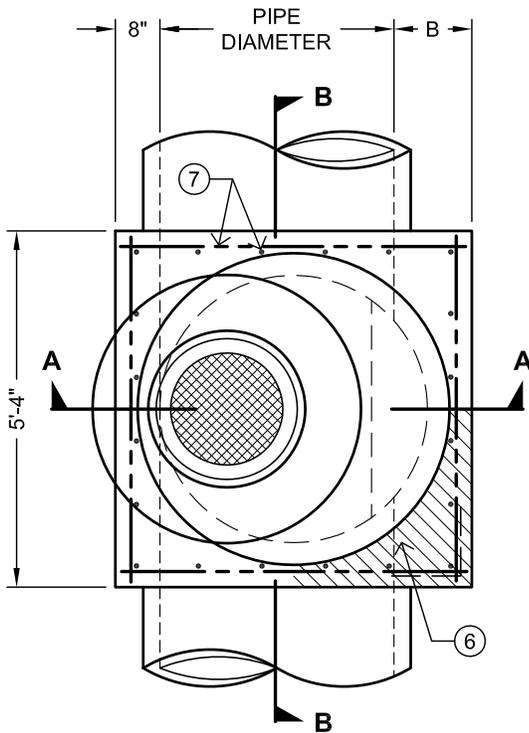
**SIDEWALK UNDERDRAIN
WITH COVER PLATES**



SECTION A - A



SECTION B - B



PLAN

DIMENSIONS (in)				
Pipe Dia.	36	42	48	54 and greater
B	20	14	8	Equals pipe wall thickness
E	32	38	44	48

INSTALLATION NOTES:

- ① Precast pipe, adjusting rings, and tapered sections shall be constructed as per ASTM C-478 using Type II cement.
- ② For RCP, cut and bend rebar into cast-in-place concrete.
- ③ Steps shall be included if manhole depth exceeds 4'. Steps shall be steel-reinforced polypropylene M-A Industries PS2-PFS or equal.
- ④ In manholes with lateral connections the steps shall be placed in the wall with no laterals or the wall with the least diameter lateral such that a continuous vertical alignment of steps may be achieved.
- ⑤ Collar shall be constructed per City Engineering Standard 6040.
- ⑥ Provide PCC fillets as needed to support manhole shaft, 4 each.
- ⑦ #4 bar @ 12" O.C. each way, 3" clear, typical.
- ⑧ Construct Class 3 PCC base to dimensions shown above. It shall rest on undisturbed material and bottom shaft shall be wet-set or set in formed groove.

GENERAL NOTES:

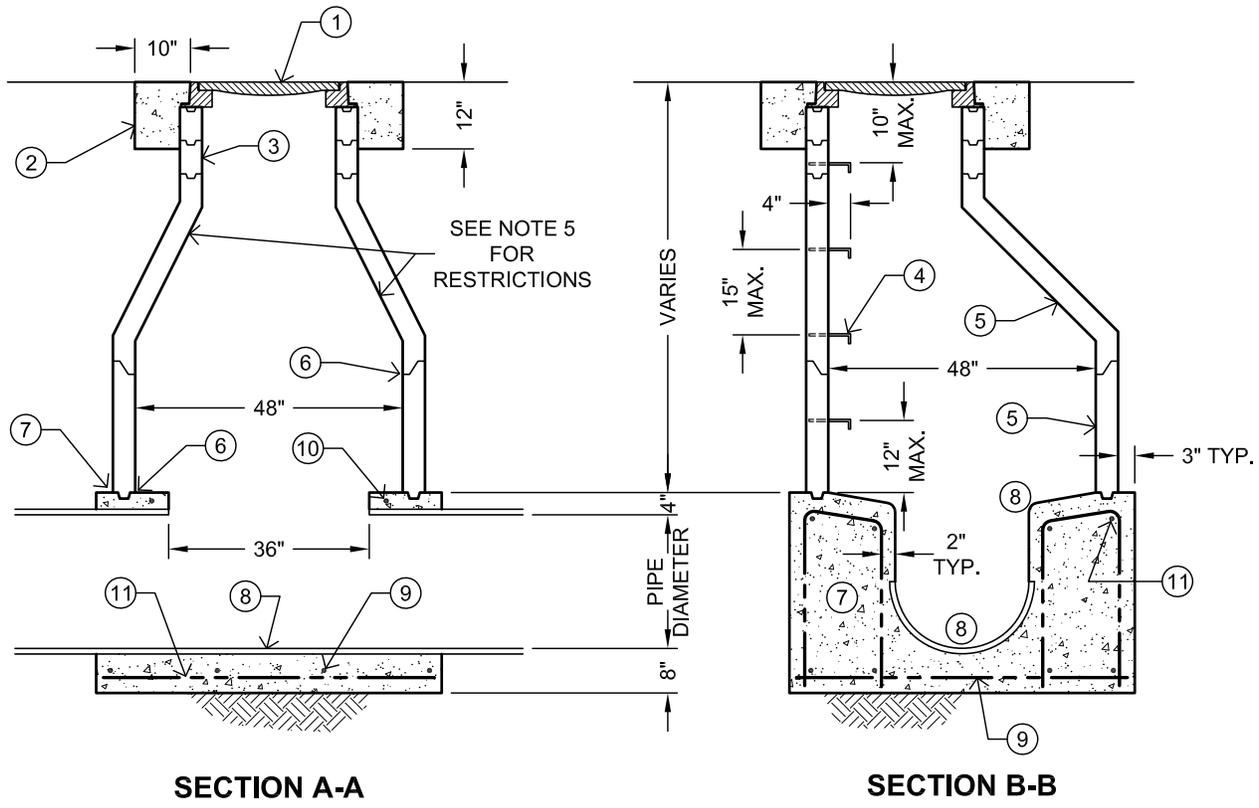
- A. All joints between precast sections shall be mortared.
- B. Manhole interiors shall have a smooth trowelled surface.

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	10-12
Add Note 10	JDL	WAP	7-00
Class 3 Concrete	JDL	MH	2-13

STANDARD CURRENT AS OF: January 2016

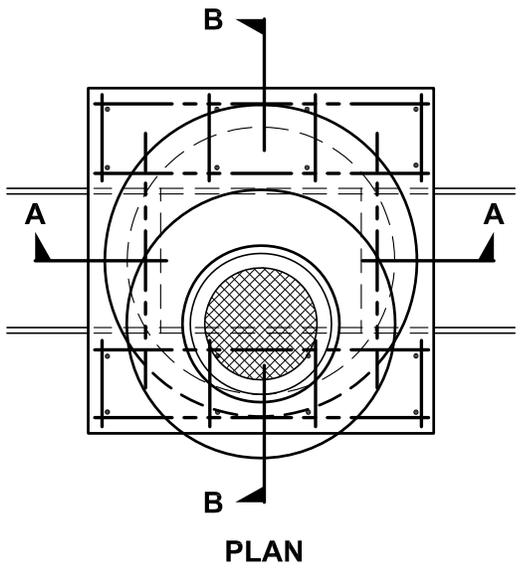


STORM DRAIN MANHOLE
36" PIPE & LARGER



SECTION A-A

SECTION B-B



PLAN

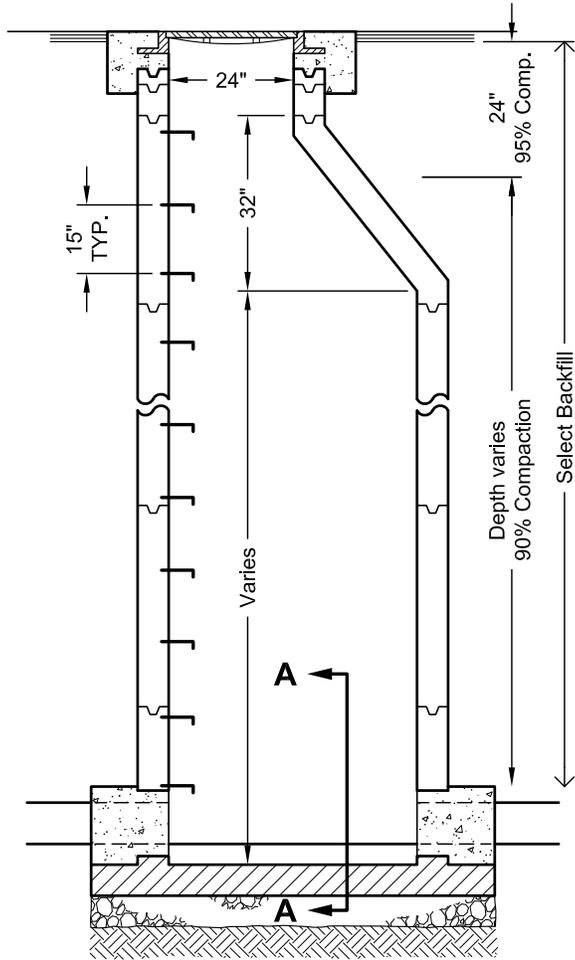
INSTALLATION NOTES:

- ① Manhole cover and frame shall be Phoenix P-1090, S.B. Foundries 1900, or equal, lettered "Storm Sewer".
- ② Collar shall be constructed per Engineering Standard 6040.
- ③ Adjusting rings as needed, grouted on the inside.
- ④ Steps are required when depth exceeds 4' and shall be steel-reinforced polypropylene per ASTM C-478, MA Industries PS-2-PFS, or equal.
- ⑤ Precast shaft(s) and eccentric cone per ASTM C-478. Straight side of cone shall be positioned over shelf. *Concentric cone may be used only with written approval of City Engineer.*
- ⑥ Joints shall be set with butyl rubber sealant - (RUB'R-NEK).
- ⑦ Manhole base shall be Class 2 PCC and rest on undisturbed material. Bottom shaft shall be wet-set or set in formed groove.
- ⑧ Pipe shall be laid through manhole and top portion shall be removed after base is poured. Trough shall have steel-trowel finish, vertical sides, and rounded corners. Top surface shall have 8.33% slope toward trough.
- ⑨ #4 @ 18" O.C.
- ⑩ #4 x 4' (2 total)
- ⑪ #4 x 5' (8 total)

REVISIONS	BY	APP	DATE
Class 3 Concrete	JDL	MH	2-13
Revised Note 7	SR	BL	1-14
Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



STORM DRAIN MANHOLE
18" to 36" PIPE



COVER:

Manhole frame and cover shall have a 24" clear opening and a sealed blind pickhole (SBF-1900 or approved equal). The cover shall be lettered "STORM SEWER". The inside of the frame shall be grouted with non-shrink grout.

ADJUSTMENT TO GRADE:

Adjust to grade per Engineering Standard 6040.

COLLAR:

Collar shall be constructed per Engineering Standard 6040.

CONE:

Cone shall be eccentric and conform to the requirements for risers.

MANHOLE RISERS:

Manhole risers shall be precast concrete conforming to ASTM C-478 and shall have a 6" minimum wall thickness with minimal reinforcements. Manholes shall be 4' in diameter unless the size and/or number of inlet(s) and outlet(s) warrants the use of a 5' diameter manhole.

JOINTS:

Joints shall be set with butyl rubber sealant (RUB'R-NEK). Inside of joints shall be grouted with non-shrink grout.

BASE:

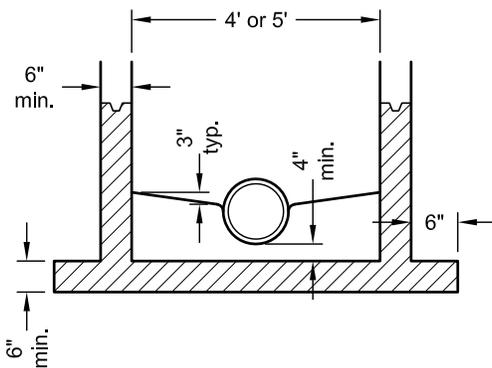
Manhole base shall be precast reinforced Class 2 concrete with extended base and shall conform to the requirements for manhole risers. Base may be square or round with key for risers. All pipe connections shall be cored by the manufacturer to fit the O.D. of the pipe plus 2". The precast base shall be bedded on a minimum of 6" of well graded crushed rock (see Standard Specifications) over native material that is either undisturbed or compacted to 95%. Pipe is to be centered in the core and concrete collars poured around pipe. Concrete shall be worked into the voids around the pipe and smoothed on the interior.

STEPS:

Steps shall be included if manhole depth exceeds 4'. Steps shall be steel reinforced polypropylene. Steps shall be placed in the wall with no laterals, or the wall with the smallest lateral such that a continuous vertical alignment of steps may be achieved. The cone shall also align to this end.

INVERT:

Invert shall be completed in a single pour using Class 3 concrete with steel trowel finish. Any change in direction shall be a fixed radius curve extending from the inlet wall to the outlet wall. Inside surface of invert and area between pipe connection and channel shall be free from gaps, holes and sharp edges. All inlets shall be designed and installed such that the top of pipe elevations match as much as possible.



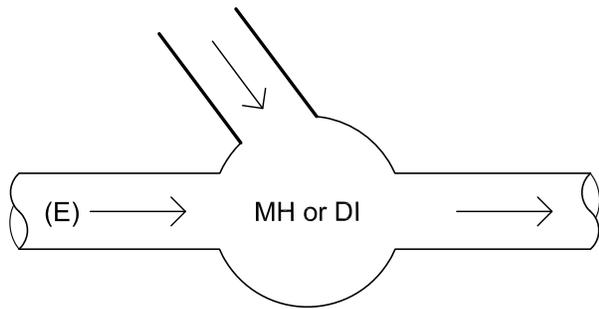
SECTION A-A

REVISIONS	BY	APP	DATE
Revised Base Note	SR	BL	1-14
Drafting edits	JDL	MH	10-12
Class 3 Concrete	JDL	MH	2-13
STANDARD CURRENT AS OF:		January 2016	

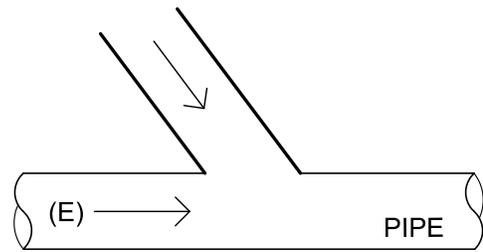


**PRECAST
STORM DRAIN MANHOLE
UP TO 3' O.D. PIPE SIZE**

3530



CASE A



CASE B

CASE A:

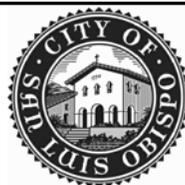
- A1. Chip a hole between 1" and 2" larger than the pipe OD. Salvage the reinforcing from the manhole / catch basin. Steel shall be bent outward from the manhole.
- A2. Concrete the pipe in place using a Class 3, $\frac{3}{8}$ " concrete mix, incorporating reinforcing steel. Concrete shall completely fill the void between the pipe and the manhole and form a collar around the pipe behind the manhole of sufficient length and thickness to cover the reinforcing steel with 2" of concrete. Concrete shall be flush with interior of existing facility. Any voids that appear in the seal between the manhole and the pipe after setting shall be patched with a non-shrink grout.
- A3. Pipe shall be flush cut with the manhole inside wall.
- A4. Whenever possible, the new pipe should enter the manhole at an angle, pointing the flow downstream.
- A5. The manhole shall be replaced and enlarged when the penetration from the new line will result in an inadequate section of the manhole remaining between the new penetration and existing penetrations to properly support the structure.

CASE B:

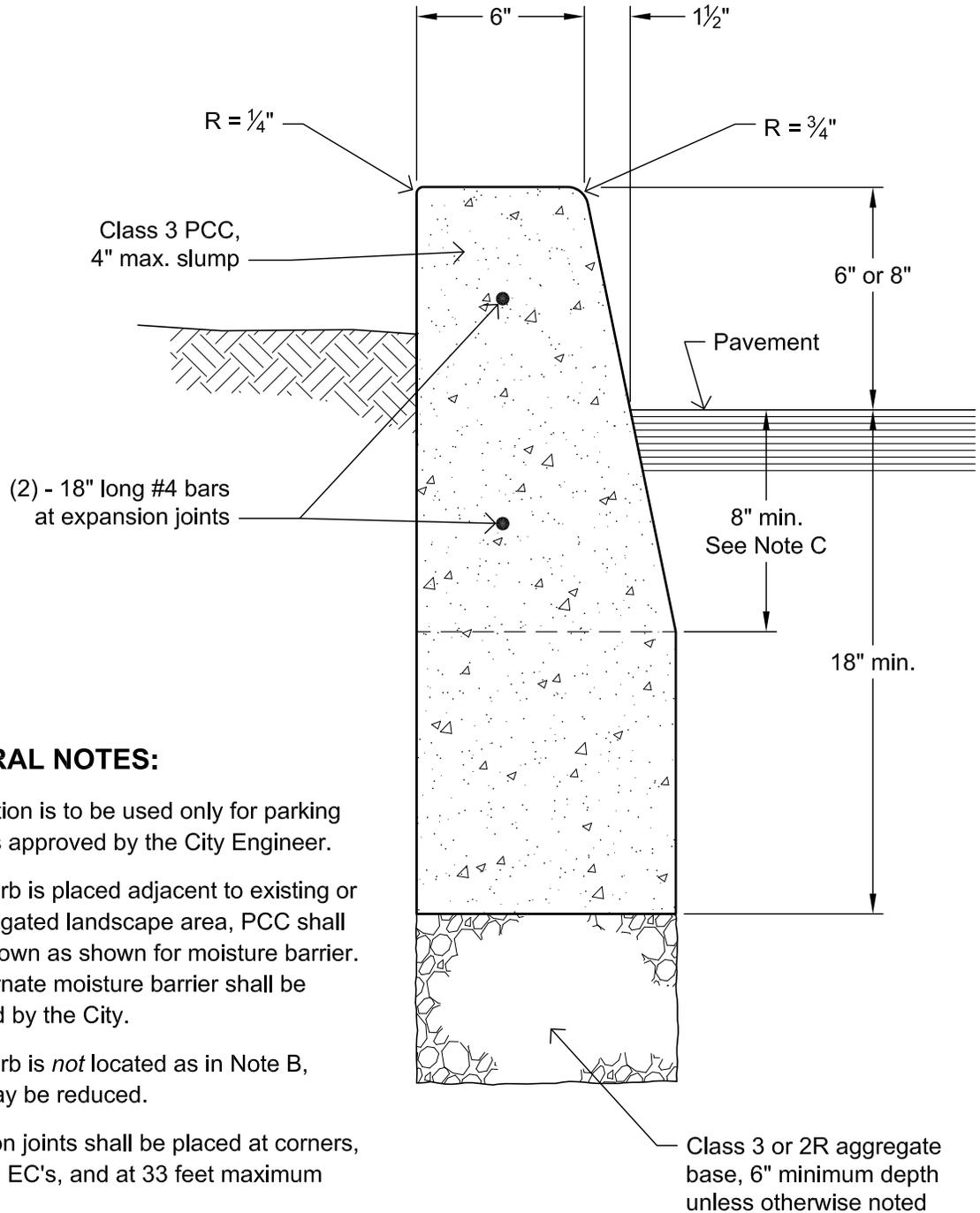
- B1. Where a catch basin or manhole exist within 30' of the proposed connection, or the new pipe is less than 12" in size and serves a private property, the connection may be made without the installation of a manhole at the junction point. In either case, the new pipe must be at least one size smaller than the existing pipe. In all other cases a manhole shall be installed.
- B2. Connection to an existing HDPE line shall be made using a manufactured wye connection cut into the existing line with connection of the wye to the line made in accordance with the manufacturer's recommendation.
- B3. Connection to an existing RCP line shall be made in the manner described above for connection to an existing manhole. New penetrations must be made a minimum of 3 feet from any existing penetrations.
- B4. Connection to an existing CMP line shall be done by replacing the portion of the CMP at the junction point with a City approved pipe material and completing the connection as specified above and constructing a collar to connect the new section to the existing CMP.

In all cases connections shall not be made to the City's storm drain system until calculations have been received and approved by the City showing the existing system is capable of handling the additional water for the required design storm per the City's Waterway Management Plan and Drainage Design Manual, and for private systems, that an encroachment permit has been obtained.

REVISIONS	BY	APP	DATE
Note revision B1 & Last	SR	BL	1-14
Drafting edits	JDL	MH	10-12
Class 3 Concrete	JDL	MH	2-13
STANDARD CURRENT AS OF:		January 2016	



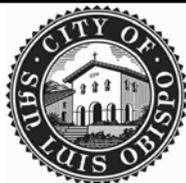
STORM DRAIN CONNECTIONS



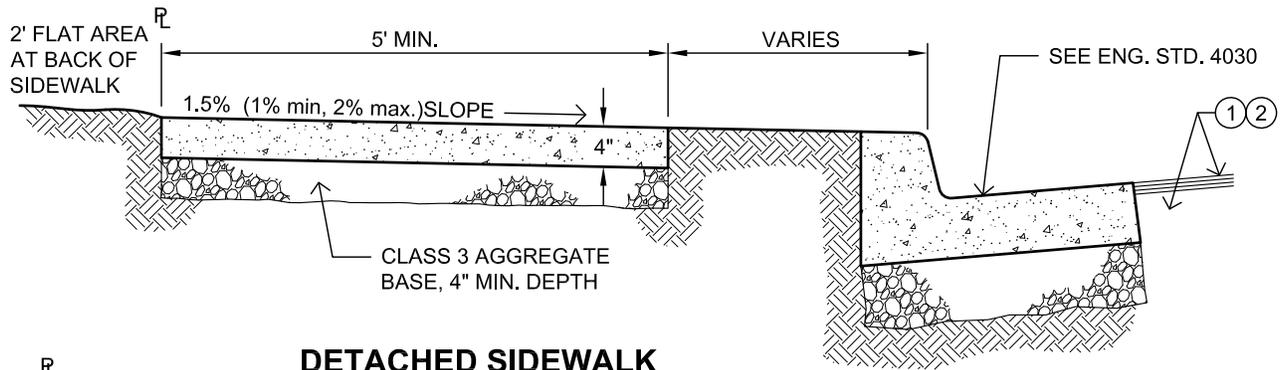
GENERAL NOTES:

- A. This section is to be used only for parking lots or as approved by the City Engineer.
- B. When curb is placed adjacent to existing or future irrigated landscape area, PCC shall extend down as shown for moisture barrier. Any alternate moisture barrier shall be approved by the City.
- C. When curb is *not* located as in Note B, depth may be reduced.
- D. Expansion joints shall be placed at corners, BC's and EC's, and at 33 feet maximum spacing.
- E. See Engineering Standard 4110 for notes regarding required pavement removal and repair.

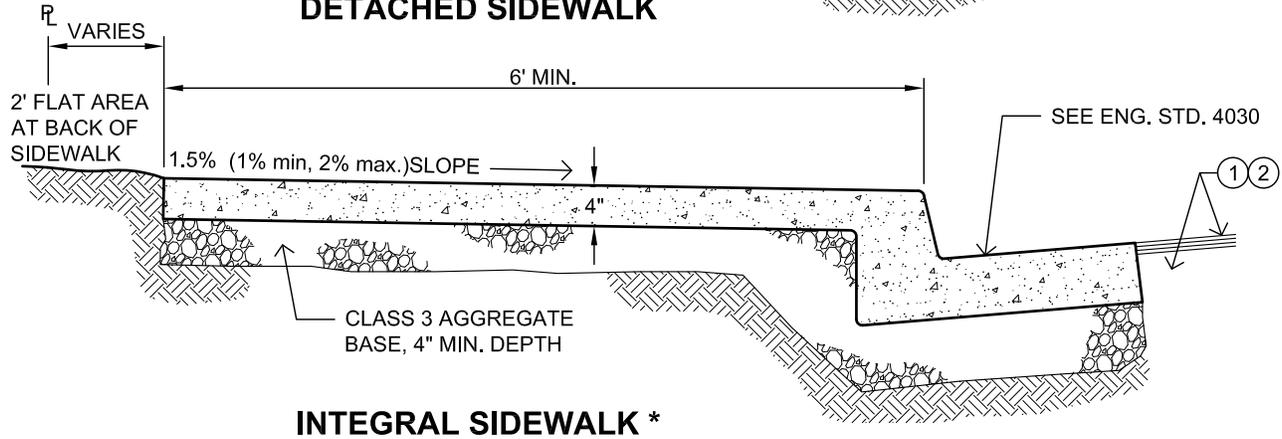
REVISIONS	BY	APP	DATE
Allow Class 2R Base	DVB	BL	11-08
Revise rebar specs	JDL	WAP	11-98
Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



CURB



DETACHED SIDEWALK



INTEGRAL SIDEWALK *

GENERAL NOTES:

* Detached sidewalk is the City standard. Integral sidewalk shall not be used without approval of City Engineer.

- A. CONCRETE: Class 3.
- B. FINISH: PCC sidewalk shall be given a broom finish.
- C. SEAL and CURE: Apply curing compound in compliance with section 73-1.03F of the Standard Specifications.
- D. DOWELS: 1/2" smooth bar dowels, 18" long at 24" O.C. at expansion joints and cold joints, to be greased or sleeved at one end.
- E. EXPANSION JOINTS: 1/4" expansion material shall be placed at driveways, BCRs, and at 100' intervals.
- F. WEAKENED PLANE JOINTS: Plastic pulltop quickjoint strips, or approved equal, shall be at 20' O.C. and 1 1/2" deep.
- G. SCORE MARKS: Sidewalks shall be scored at least 1/4" deep, perpendicular to the curb face at 5' intervals. Sidewalks with a width of 8' or more shall have one score mark parallel to the curb face evenly spaced in the concrete surface.
- H. AT COLD JOINTS BETWEEN SIDEWALK AND CURB: #3 x 6" dowels shall be drilled in back of curb at 24" O.C.
- I. REBAR: When a utility box is located within the sidewalk area, the concrete surrounding the box shall be reinforced with continuous #4 rebar.
- J. JOINTS: Expansion joints and weakened plane joints shall extend through sidewalk into curb and gutter.
- K. CUTTING: See Engineering Standard 4910.

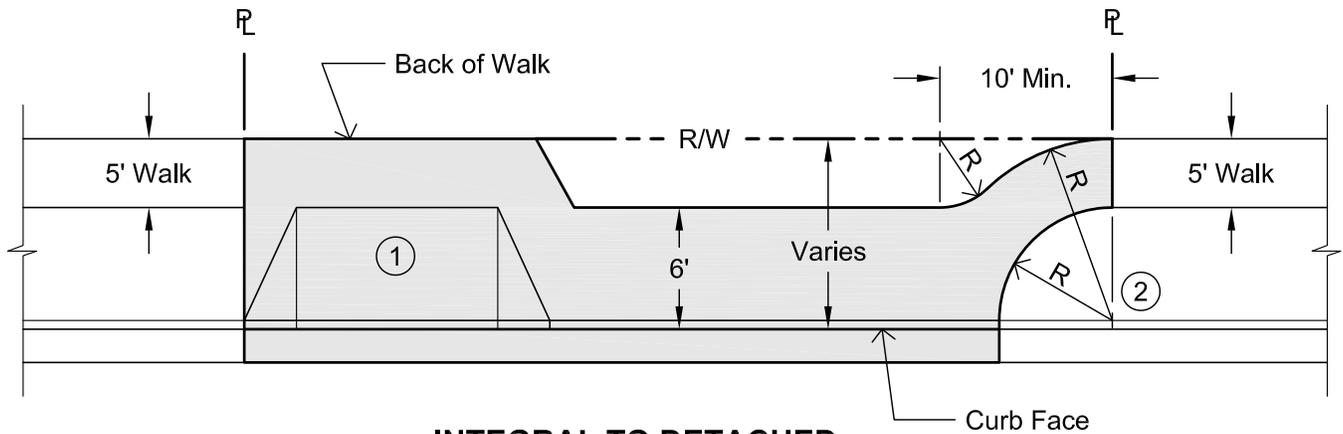
INSTALLATION NOTES:

- ① PAVEMENT REMOVAL and REPAIR: Sawcut, remove and replace AC paving 18" minimum from gutter, 6" thick (local) or 10" minimum thick (collector and arterial). If pavement is PCC, sawcut existing PCC paving at gutter lip do not dowel. If existing PCC pavement has an AC cap, sawcut and remove AC cap 18" minimum (except as required in Note 2) from gutter lip and 3' up and downstream and replace AC to provide a smooth, uniform surface to match existing surfaces. New gutter lip to be at finished A.C. elevation.
- ② BIKE LANES: No longitudinal joints or seams are allowed in bike lanes. If a longitudinal joint results due to the contractor's work or the above requirements in Note 1, the contractor shall remove a minimum of 2" of asphalt from the pavement across the entire bike lane using a method approved by the City and resurface the bike lane to the satisfaction of the City.

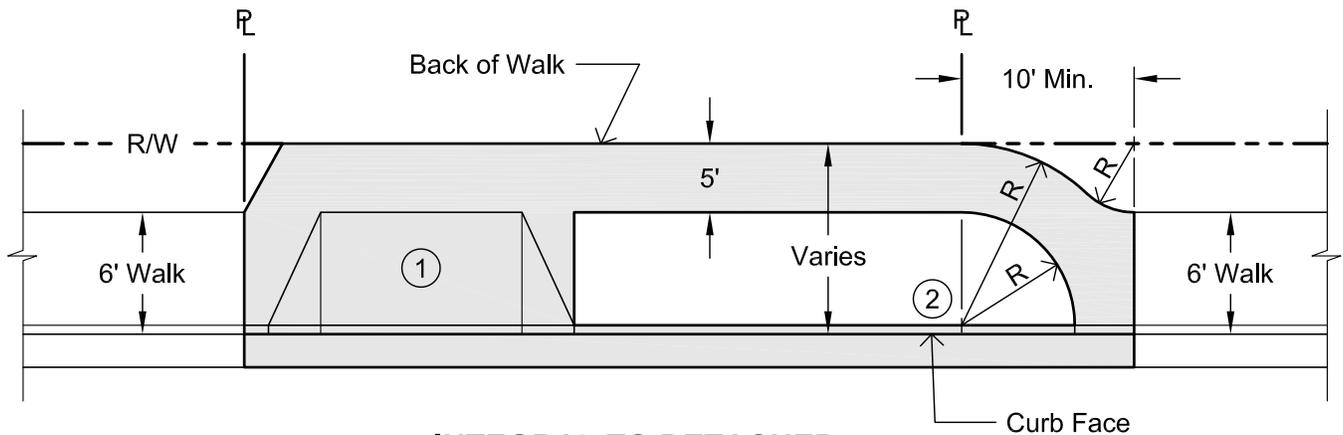
REVISIONS	BY	APP	DATE
Added General Note K	JDL	DA	10-15
Metric conversion; Drafting edits	JDL	MH	10-12
Revised Notes A, C & 1	SR	BL	1-14
STANDARD CURRENT AS OF:		January 2016	



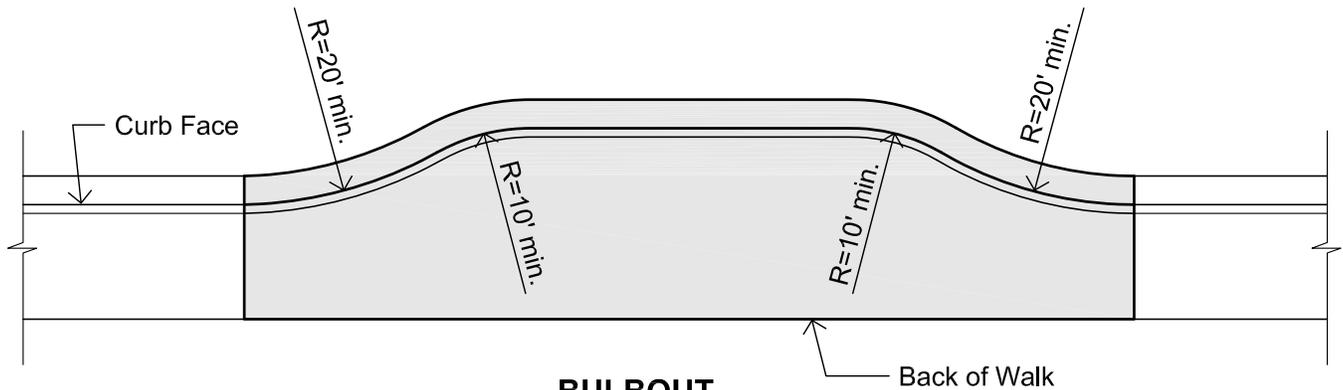
**SIDEWALK
INTEGRAL & DETACHED**



INTEGRAL TO DETACHED



INTEGRAL TO DETACHED



BULBOUT

(SAME FOR INTERSECTIONS AND MID-BLOCK SECTIONS)

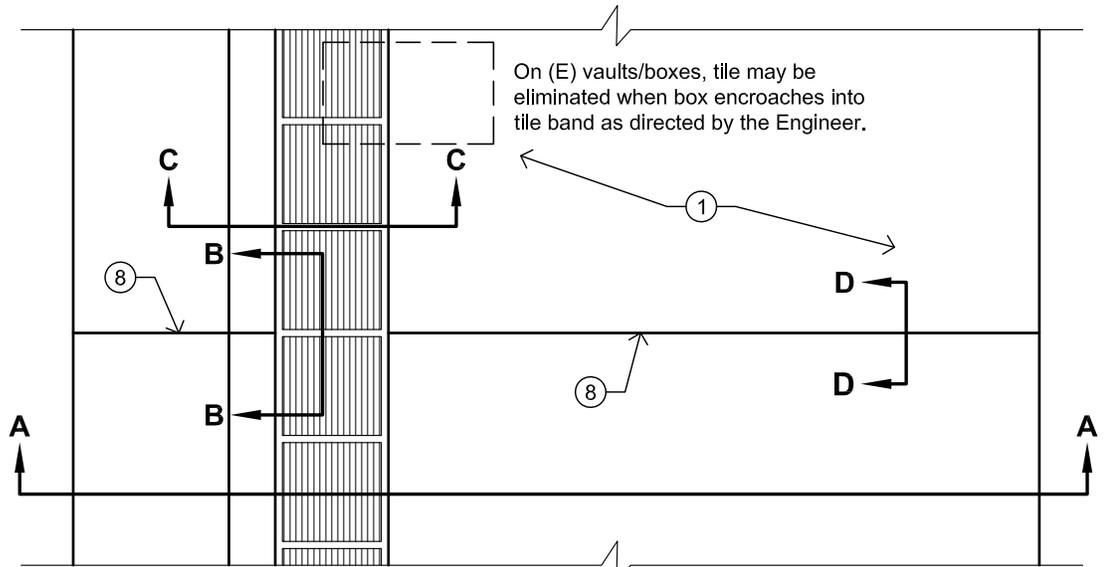
INSTALLATION NOTES:

- ① Driveway location may vary. See Engineering Standards 2110 thru 2116 for construction notes as appropriate for conditions.
- ② Radius point is the intersection of the prolongation of the property line with the back of curb. "R" varies with sidewalk width and parkway width.

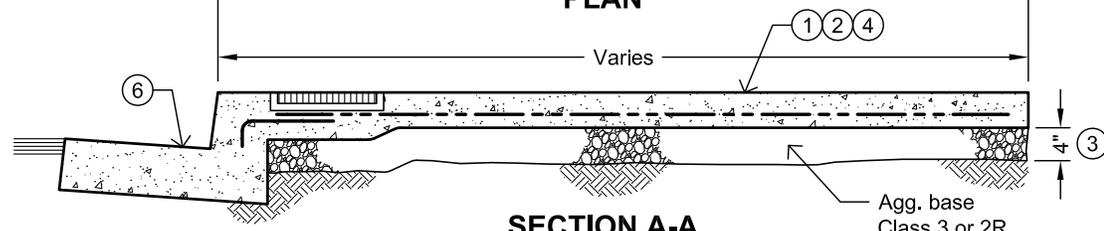
REVISIONS	BY	APP	DATE
Add Bulbout; Rename Standard	JDL	BL	5-13
Revise sidewalk width	DVB	BL	11-08
Added Notes; Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



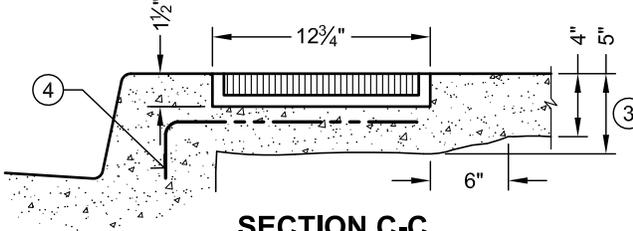
SIDEWALK TRANSITIONS



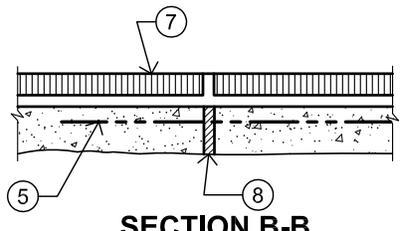
PLAN



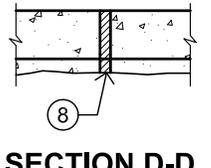
SECTION A-A



SECTION C-C



SECTION B-B



SECTION D-D

INSTALLATION NOTES:

- ① PCC shall be Class 3, colored concrete with salt finish. Salt shall be course water softener salt spread at a rate of 1/2 lb per 100 square feet. Salt finish shall be applied to sidewalk area only. Salt finish shall not be applied to curbs, gutters, or ramps.
- ② Surface of sidewalk to slope 1.5% (1% min., 2% max.) toward curb.
- ③ For driveways, increase aggregate base thickness to 6" and concrete thickness to 6" minimum, exclude tile.
- ④ Rebar: #4 @ 24" O.C., full width of sidewalk, curb end bent 4" x 90°.
- ⑤ Smooth steel dowels 1/2" @ 24" O.C., 18" long, to be sleeved or greased.
- ⑥ For curb and gutter, see Engineering Standard 4030.
- ⑦ No tile shall be set in mortar prior to approval of tile by City Engineer.
- ⑧ Expansion joints and weakened plane joints shall be per Engineering Standard 4110.

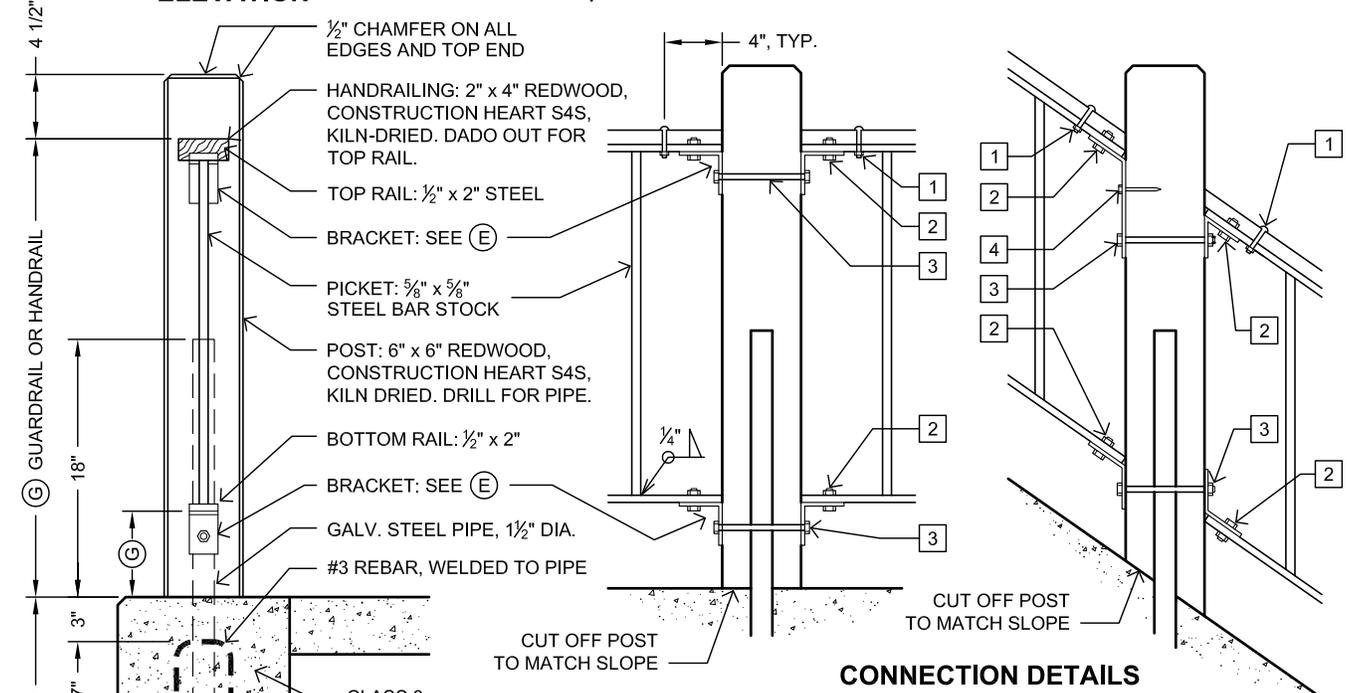
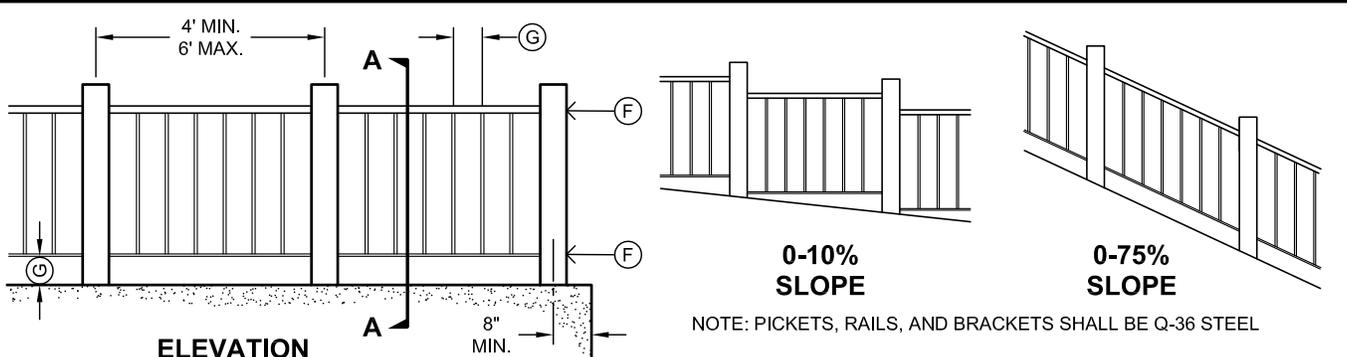
GENERAL NOTES:

- A. Mission Style Sidewalk may only be installed in the Mission Style Sidewalk District unless specifically authorized by the City Engineer.
- B. All new installations shall include curb and gutter.
- C. Tiles shall be trimmed or arranged to allow mortar joints to coincide with expansion joints, tree wells, etc. Tiles adjacent to curb ramps shall come up to, but terminate, at the grooved curb ramp border. Flush ramps without grooves, tile shall terminate at truncated domes.
- D. All sign posts, parking meter posts, and new utility vaults shall be located behind the tile row and shall be installed per City Engineering Standards.
- E. All new and existing wells, boxes, lids and covers shall be stained or coated to match surrounding sidewalk. Stains and coatings shall be submitted to the Engineer for approval prior to application. Lids and covers may be cast iron or dark galvanized slip-resistant diamond-plate. Lids and covers in traffic areas shall be traffic rated.
- F. Pavement removal and repair shall be per Engineering Standard 4110.
- G. See Standard Specifications 73-1, 73-4 and 90.

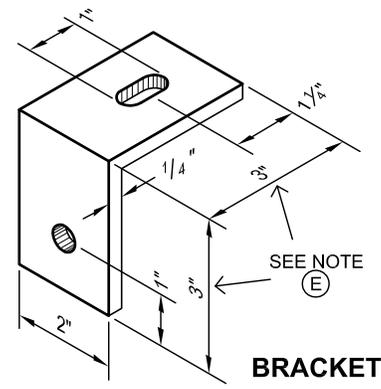
REVISIONS	BY	APP	DATE
Revised G, deleted 2-3, renumbered	SR	MH	1-14
Revised Notes 11 - 18	MH	BL	10-09
Reorganize Notes; Drafting edits	JDL	MH	11-12
STANDARD CURRENT AS OF:		January 2016	



**MISSION STYLE
SIDEWALK**



- HARDWARE NOTES:**
- 1 MACHINE SCREW: 3/8" X 4" ROUNDED HEAD WITH SLOT
 - 2 BOLT: 1/2" X 1 1/8"
 - 3 BOLT: 1/2" X 7/8"
 - 4 LAG SCREW: 3/8" X 3 3/8" (PRE-DRILL)

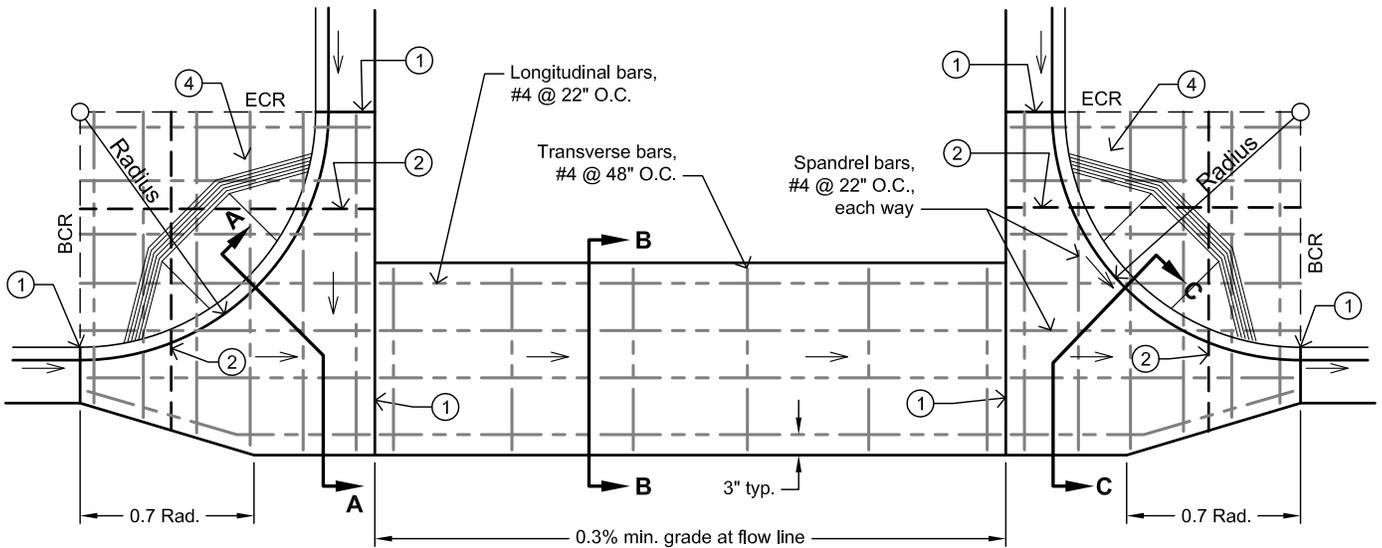


- NOTES:**
- (A) Redwood posts and handrailing shall be free of splits and splinters, sanded smooth, and stained with two (2) coats of Benjamin Moore acrylic deck stain 4 base or approved equal. Color: OY-2X25, BK-4X23, OG-1X22
 - (B) Railing may be stepped on slopes of 10% or less but must be parallel to steeper slopes.
 - (C) All welds shall be free of slag and wire brushed. All edges and corners of pickets, rails, and brackets shall be ground smooth, and assembly shall be sand blasted and primed with a shop-applied primer (such as rustoleum damp-proof primer) and then shall be given two (2) coats of shop-applied semi-gloss black enamel.
 - (D) Each through connection shall have a bolt/machine screw, nut, and lock washer. All fasteners shall have a black finish and meet ASTM A307 standards.
 - (E) Brackets shall be fabricated as shown and have an oblong hole on one arm for field adjustment. Bracket arm length and angles may vary depending on slope. Brackets shall be arranged to minimize use of long bolts, and top rail brackets shall only point down. Lag screws shall be used if bracket arm length exceeds 5 3/8".
 - (F) At ends and corners use large washer and nut, countersink, plug, and finish to match.
 - (G) Height and spacing shall conform to current CBC requirements.

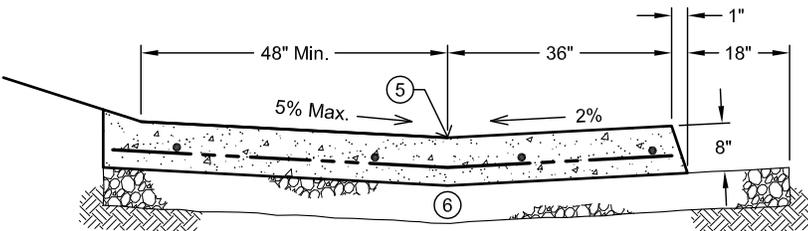
REVISIONS	BY	APP	DATE
Revised Lumber Grade	MH	BL	2-14
Revise Note G (CBC)	JDL	MH	9-12
Kiln-dried Handrail; Welding	JDL	DA	10-15
STANDARD CURRENT AS OF:	January 2016		



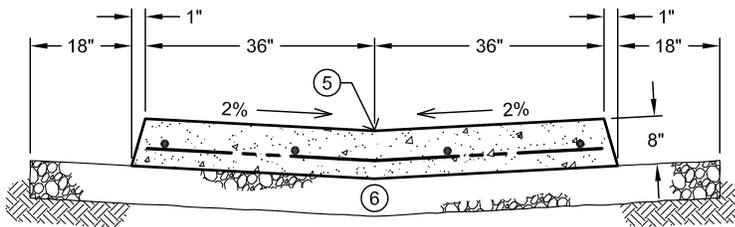
MISSION STYLE RAILING HANDRAIL & GUARDRAIL



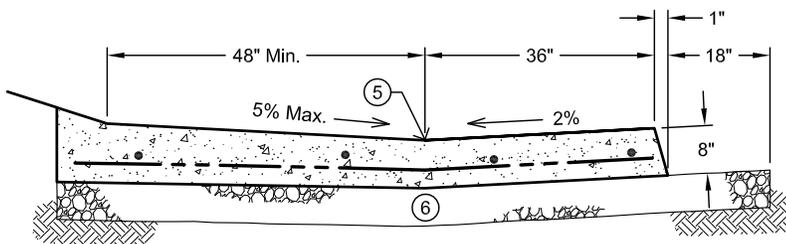
PLAN



SECTION A-A
(UPHILL SIDE)



SECTION B-B



SECTION C-C
(DOWNHILL SIDE)

INSTALLATION NOTES:

- ① Standard expansion joint, see Note ③.
- ② If curb return radius is 20' or larger, spandrels shall have extra expansion joints at locations to be determined by the City Engineer. Rebar shall be cut and dowels installed per Note ③.
- ③ All expansion joints shall have 1/2" x 18" smooth dowels @ 22" O.C., wrapped or greased.
- ④ See Engineering Standard 4440 for note regarding required curb ramps.
- ⑤ All flowlines shall have an 8" wide steel-trowel finish.
- ⑥ 6" Class 2 aggregate base.

GENERAL NOTES:

- A. All PCC shall be Class 2, including curb.
- B. See Engineering Standard 4110 for notes regarding required pavement removal and repair.
- C. Curb ramps shall be install with cross gutter for monolithic pour, no joints will be allowed.

REVISIONS	BY	APP	DATE
Revised section A&C ramp	SR	BL	1-14
Modified for ADA requirements	MG	MH	1-13
Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



CROSS GUTTER

GENERAL NOTES:

Curb ramps shall be constructed per Engineering Standard 4440 in conjunction with current California Department of Transportation Standard Plans RSP A88A and RSP A88B with the following exceptions (a copy of the standard current at the time of this printing is included in the appendices):

1. Dimension "T" for the thickness of the concrete shall be 4" in the curb ramp area and 6" in the curb and gutter area in accordance with Engineering Standards 4030 and 4110. Concrete shall be Class 3.
2. Curb ramps shall include 4" of Class 3 aggregate base under the sidewalk area of the curb ramp and 6" of Class 3 aggregate base under the curb and gutter area of the curb ramp.
3. Curb ramp shall be reinforced (#3 @ 18" O.C. or #4 @ 24" O.C.) both ways the full width and depth of the curb ramp. For corner curb ramps reinforcement shall be installed throughout the curb ramp beginning at the BCR and end at the ECR. For mid-block curb ramps reinforcement shall be installed throughout ramp, flare and end at grooving.
4. Grooving shall be tooled, not cut.
5. ½" X 18" smooth bar dowels shall be provided at expansion joints at 24" O.C.
6. Street surface within 4' of curb ramp bottom may not slope greater than 5% in any direction.
7. Curb ramp gutter dimensions to match adjacent gutters.
8. See Engineering Standard 4110 for notes regarding pavement removal and repair.

TRUNCATED DOMES:

Truncated domes / Tactile Detectable Warning System shall conform to the following:

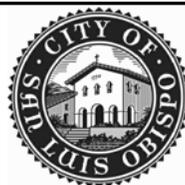
System Type:	Flexible mat with wear-resistant coating.
Material:	Polymer-modified concrete with fiberglass reinforcement.
Coating:	Field-applied system consisting of pigmented acrylic sealer and clear acrylic sealer.
Installation:	Bonded to concrete substrate on 100% of area by flexible acrylic resins.
Fitting:	Mats can be abutted with visually seamless result.
Field Cutting:	Can be trimmed to size and shape with razor-knife.
Water Absorption:	ASTM D570 Water Absorptions of Plastics: 6.5%
Water Vapor Transmission:	ASTM E69 Test Methods for Water Vapor Transmission of Materials: PERM = 0.958
Non-Slip Surface:	Bonded application of #30 or #20 silver silica sand of entire field and domes.
Slip Resistance:	In addition to dome, system incorporates medium (#20 mesh) or fine (#30 mesh) graded silver silica sand into top coating.
Compressive Strength:	ASTM C109 compressive Strength of Hydraulic Cement Mortars: 5690 PSI
Tensile Strength:	ASTM C190-85 Tensile Strength of Hydraulic Cement Mortars: 855 PSI
ADA Compliance:	Conformance with Department of General Services, Division of State Architect.
Flexural Strength:	1835 PSI
Warranty:	5 years
Color:	Yellow conforming to Federal Standard 595B, color No. 33538.

1. Truncated domes / Tactile Detectable Warning Systems shall be SafetyStep TD Traditional or approved equal and installed in accordance with manufactures recommendations.
2. The finished surface of the detectable warning mat shall be free from blemishes.
3. Dome pattern shall be aligned with the path of travel.
4. When installing Detectable Warning Material on an existing curb ramp all cracks with elevation differences shall be ground smooth. Cracks with width or depth greater than ¼" shall be patched with a non-shrink grout to a surface even with existing sidewalk prior to installation. Any elevation differences shall be ground smooth prior to installing domes.
5. Detectable warning material at all curb ramp locations shall be installed to a depth of 3' and to a width equal to that of the ramp width.

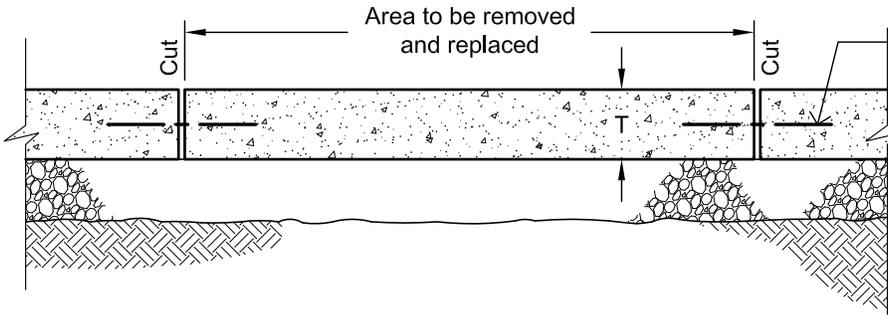
ADDITIONAL NOTES FOR MISSION STYLE AREA:

1. Additional notes for Mission Style Sidewalk Areas shall apply to those areas designated as Mission Style Sidewalk Areas per City Council Resolution (Mission Style Sidewalk District Map included in the appendices).
2. Ramp and adjoining sidewalks shall be constructed in accordance with Engineering Standard 4220 for color, finish and tile placement.

REVISIONS	BY	APP	DATE
<i>Revised Notes 12 and 14</i>	<i>MH</i>	<i>BL</i>	<i>10-09</i>
<i>Revised Notes 11 and 14</i>	<i>DVB</i>	<i>BL</i>	<i>12-08</i>
<i>Truncated Domes</i>	<i>JDL</i>	<i>BL</i>	<i>06-12</i>
STANDARD CURRENT AS OF:	January 2016		

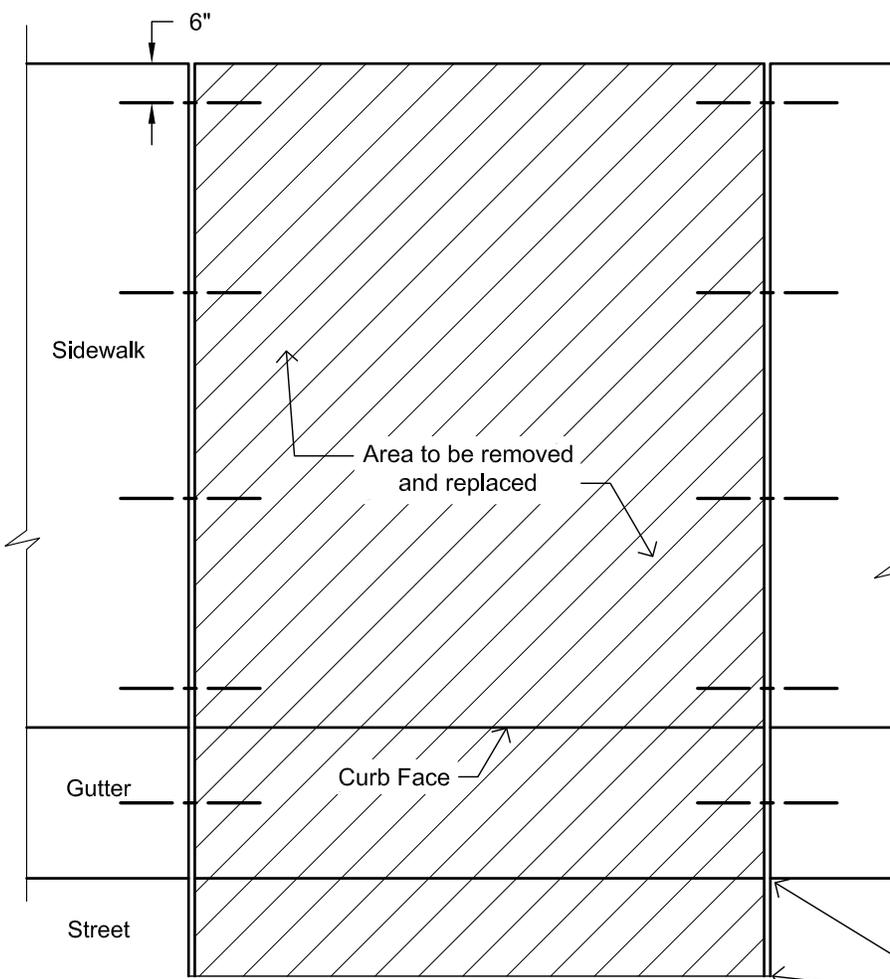


**CURB RAMP
CORNERS & MID-BLOCK**



1/2" x 18" smooth bars @ 24" O.C. in sidewalk, one each in curb and gutter, one end to be sleeved or greased.

SIDEWALK SECTION



NOTE: Remove complete sections of curb, gutter and sidewalk in compliance with section 73-1.03 of the standard specifications.

See Engineering Standard 4110 for notes regarding required pavement removal and repair.

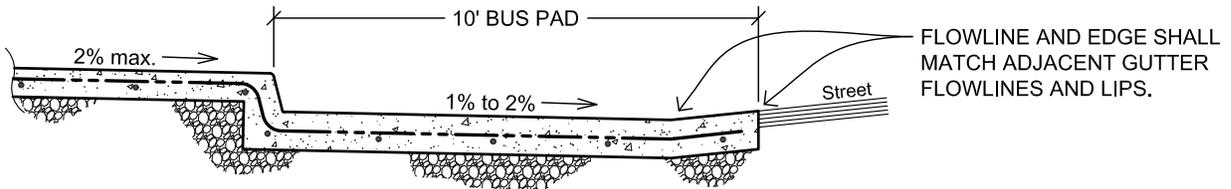
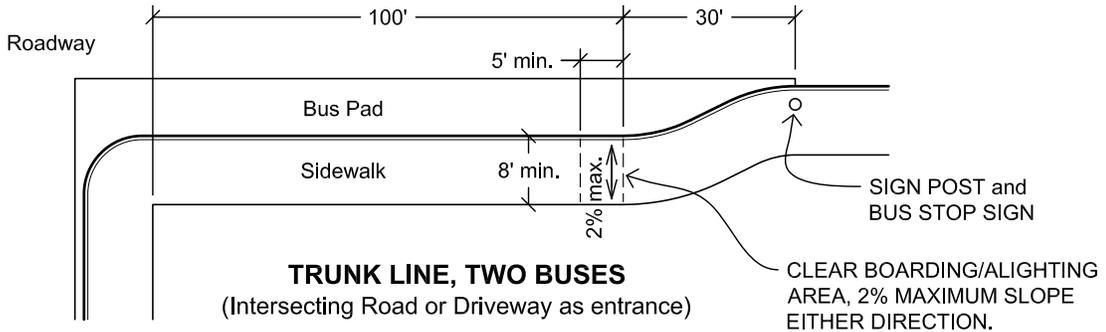
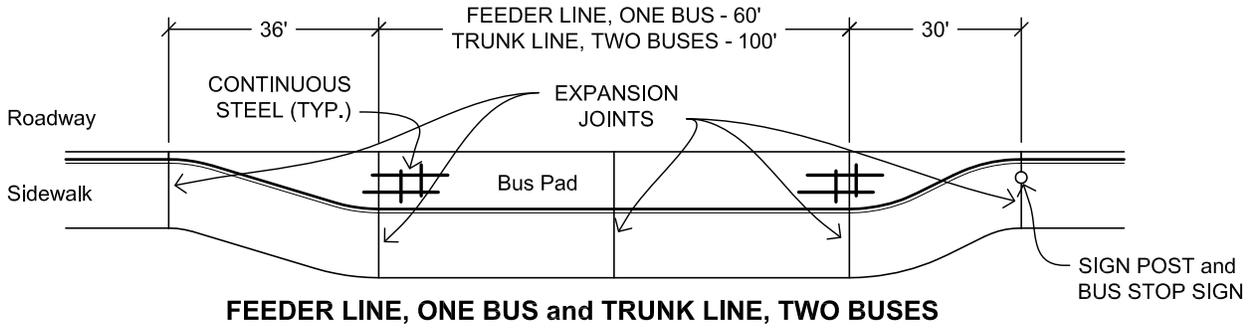
PLAN OF CURB, GUTTER & SIDEWALK

REVISIONS	BY	APP	DATE
<i>Revised General Note</i>	<i>MH</i>	<i>BL</i>	<i>2-14</i>
<i>Removal Cut Detail; Revised Note</i>	<i>SR</i>	<i>BL</i>	<i>1-14</i>
<i>Drafting edits</i>	<i>JDL</i>	<i>MH</i>	<i>11-12</i>
STANDARD CURRENT AS OF:		January 2016	



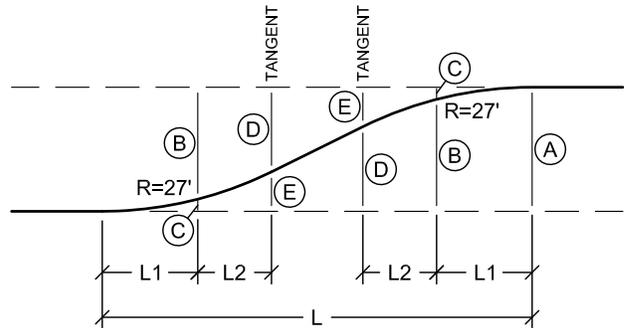
CUTTING CONCRETE

BUS TURNOUT DIMENSIONS FOR BUSES 8'6" WIDE AND THIRTY-SIX (36') TO FORTY (40') LONG



MONOLITHIC POUR NOTES:

1. Reinforce 10' wide bus pad and sidewalk within turnout. 8" Class 2 concrete with #4 @ 24" o.c. both ways reinforcing over 6" Class 2 Aggregate Base.
2. Curb height 8" maximum
3. See Engineering Standards 4030 and 4110 for Curb, Gutter and Sidewalk.
4. See Engineering Standard 4910 for sawcutting existing PCC.
5. See Engineering Standard 7210 for Sign Post.
6. Score at 10' intervals.



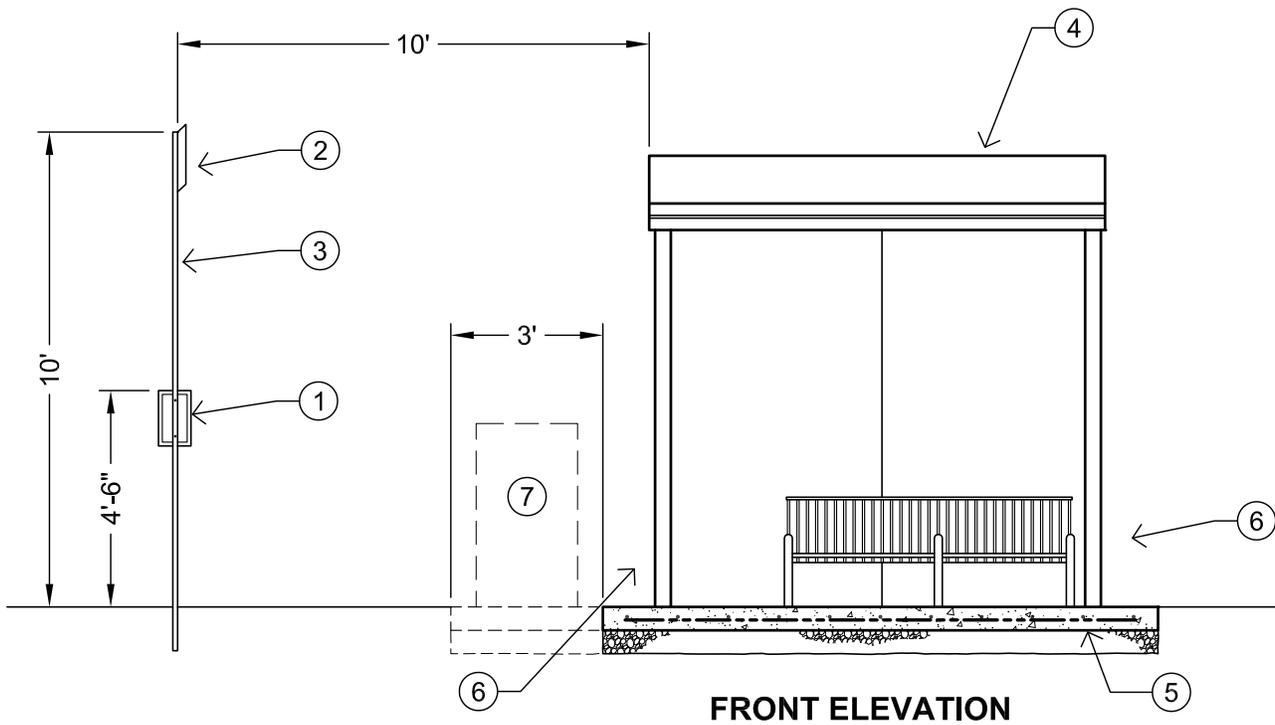
L	L1	L2	A	B	C	D	E
36	4.25	4.00	8.50	8.20	0.30	7.30	1.20
30	6.33	5.87	8.50	7.80	0.70	5.65	2.85

REVERSE TAPER - GEOMETRICS

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	12-12
Add boarding/alighting area	JDL	DA	10-15
Revise rebar specs	JDL	WAP	11-98
STANDARD CURRENT AS OF:		January 2016	



CONCRETE BUS TURNOUT



FRONT ELEVATION

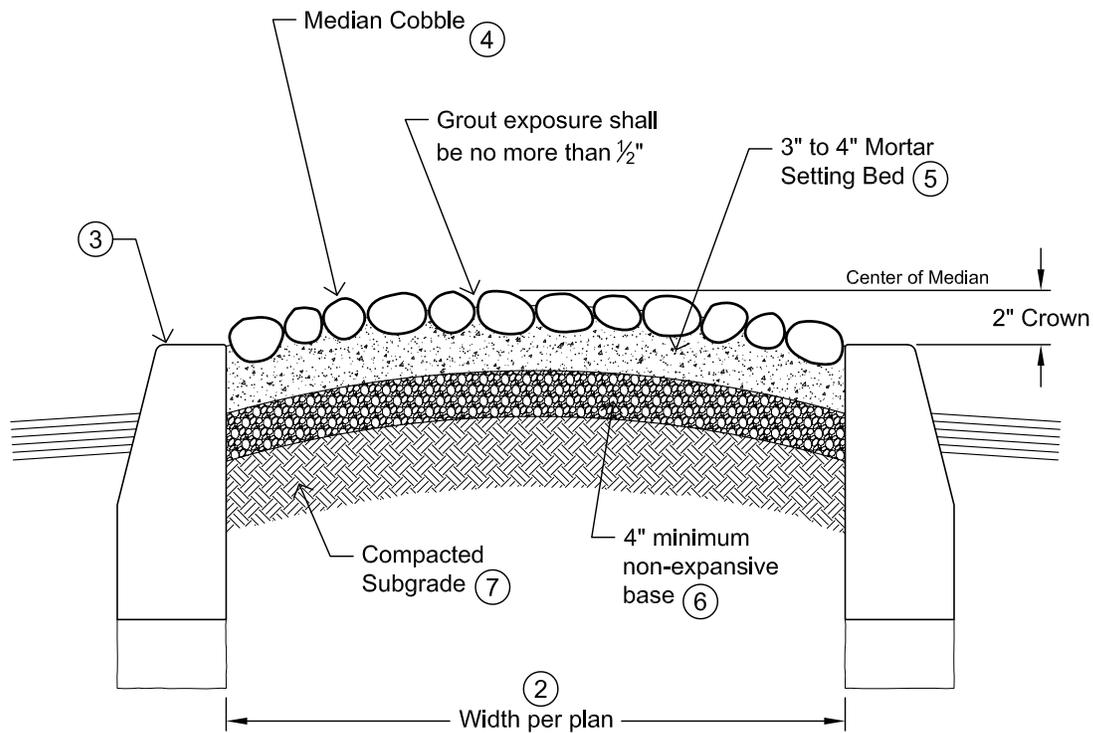
INSTALLATION NOTES:

- ① "AT-STOP" schedule holder. Model RCH-14, color RAL 5010 or approved equal. Install per manufacturer's recommendations.
- ② 12" x 18" Side-bracket mounted Route Sign with Route Block silk-screened route sticker. These are available from the City at pre-purchased cost.
- ③ See Engineering Standard 7210 for Metal Sign Post.
- ④ 9' Dome-Roof Shelter. Tolar Model #9NALD-PM or approved equal. NEC 690 Compliant Solar Lighting. 5' bench with back and one anti-vagrant bar. Color: RAL 5022. Shelter and bench to be bolted to concrete slab per manufacturer's recommendations. Available from Tolar Shelters (800) 339-6165 or approved equal. City may waive the requirement for the bus shelter if it is determined that the average number of boardings will be less than 8 riders per day.
- ⑤ Shelter to be installed on a 4" thick reinforced Class 3 concrete slab over 4" Class 3 base. Width of slab shall extend beyond the edges of the shelter a minimum of 12". Reinforce with #4 rebar @ 12" O.C. each way. Shelter to be centered on slab, exclusive of trash container area, unless adjustment required to meet Note 6 or other site circumstance.
- ⑥ Maintain a minimum sidewalk clearance of 4' from the face of curb to the front edge of the shelter and bench.
- ⑦ Where trash container is required, provide and mount trash can container per Engineering Standard 9060.

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	11-12
Add Trash Can note; Revise #5	JDL	MH	5-13
Reduce bench size	DVB	BL	11-08
STANDARD CURRENT AS OF:		January 2016	



BUS STOP



SECTION ①

INSTALLATION NOTES:

- ① Cobble median work shall conform to to the provisions in Section 73, of the Standard Specifications.
- ② Contractor shall install cobble median in non-pedestrian locations of curb islands as indicated on plans.
- ③ Concrete Curbs shall be installed per Engineering Standard 4020.
- ④ Median Cobble shall be 2" to 6" Sound River Worn Granite cobbles, or approved equal, and shall not be of uniform diameter.
- ⑤ Mortar shall comply with SECTION 51-1.02F "Mortar" of the Standard Specifications.
- ⑥ Cobble base material shall be Class II aggregate base compacted to a relative compaction of 95%.
- ⑦ Subgrade material shall be compacted to 90% relative compaction.

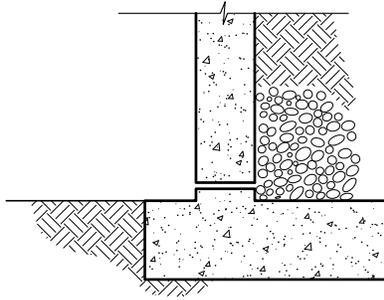
REVISIONS	BY	APP	DATE
<i>New Standard</i>	<i>JDL</i>	<i>MH</i>	<i>5-13</i>
<i>Revised Note 1</i>	<i>SR</i>	<i>BL</i>	<i>1-14</i>
STANDARD CURRENT AS OF:	January 2016		



RAISED COBBLESTONE MEDIAN

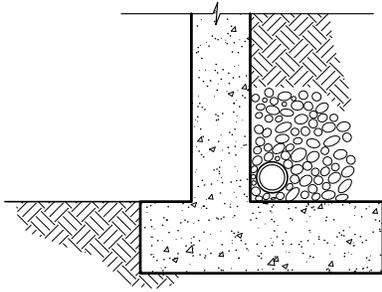
4940

WALL DRAINAGE:



Place a 12" layer of coarse gravel against the back of the wall and provide a $\frac{3}{4}$ " weep hole (or omit the mortar from the vertical joint in block walls) just above the ground level at 32" o.c. No weep holes are to drain across a public sidewalk.

OR



Place a 3" diameter perforated pipe along the back of the wall with a 12" layer of gravel around it, set to drain at intermittent collection points. When a wall is constructed at back of a sidewalk, drainage must be directed underground to a new or existing conveyance system. Drainage can not outlet through curb face.

REVISIONS	BY	APP	DATE
Redrawn to CAD	RMH	WAP	1-95
New border	JDL	WAP	9-97
Rem. General Notes; Drafting edits	JDL	MH	4-13
STANDARD CURRENT AS OF:		January 2016	



**RETAINING WALL
DRAINAGE**

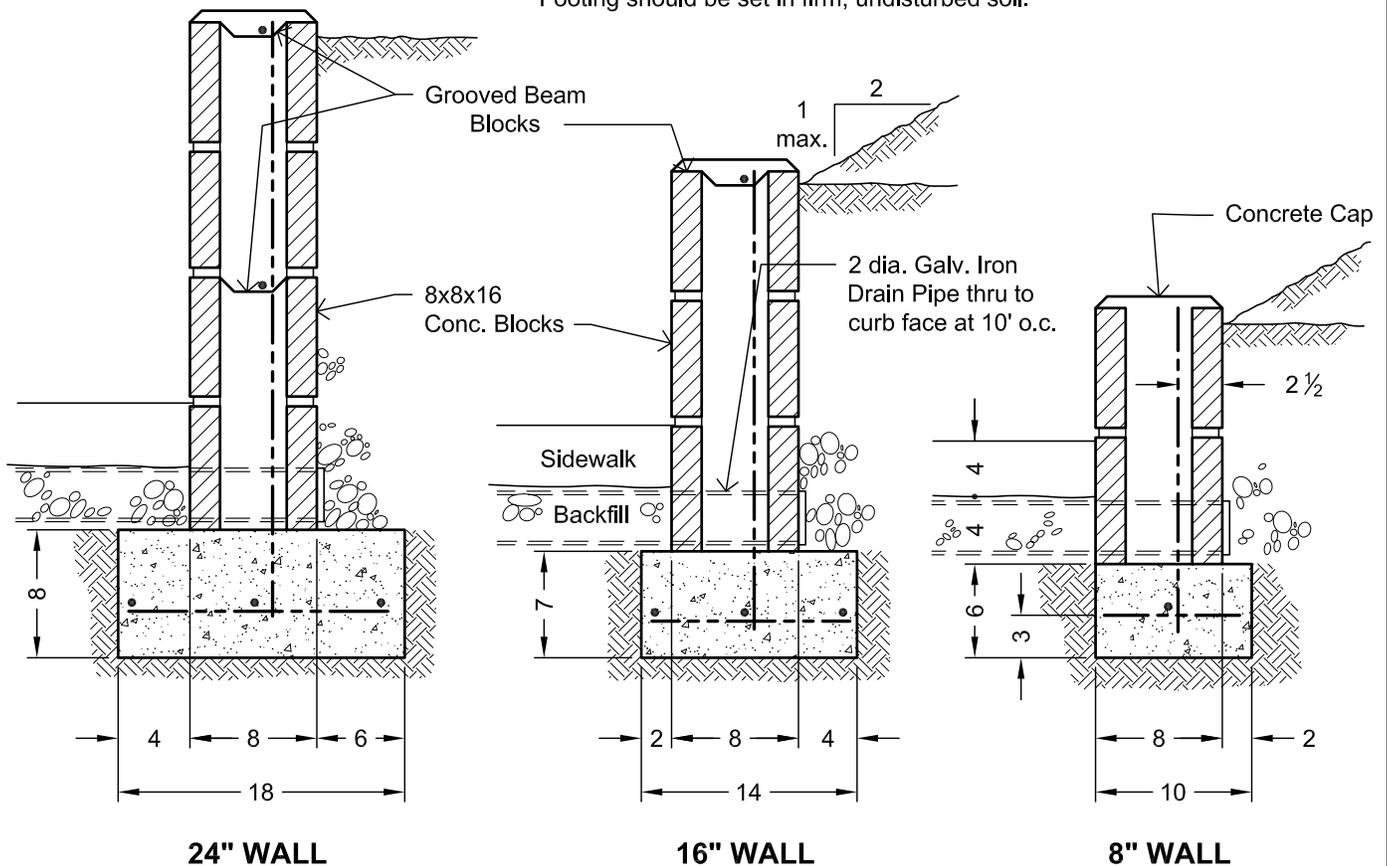
Steel:

Vertical and Transverse - #3 @ 32" o.c.
 Longitudinal - #3 as shown

Minimum Soil Bearing: 2000 psi (firm, dry soil of any type)

Minimum Concrete Strength: Class 3

Footing should be set in firm, undisturbed soil.

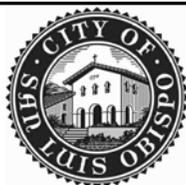


All dimensions in inches unless noted otherwise.

GENERAL NOTES:

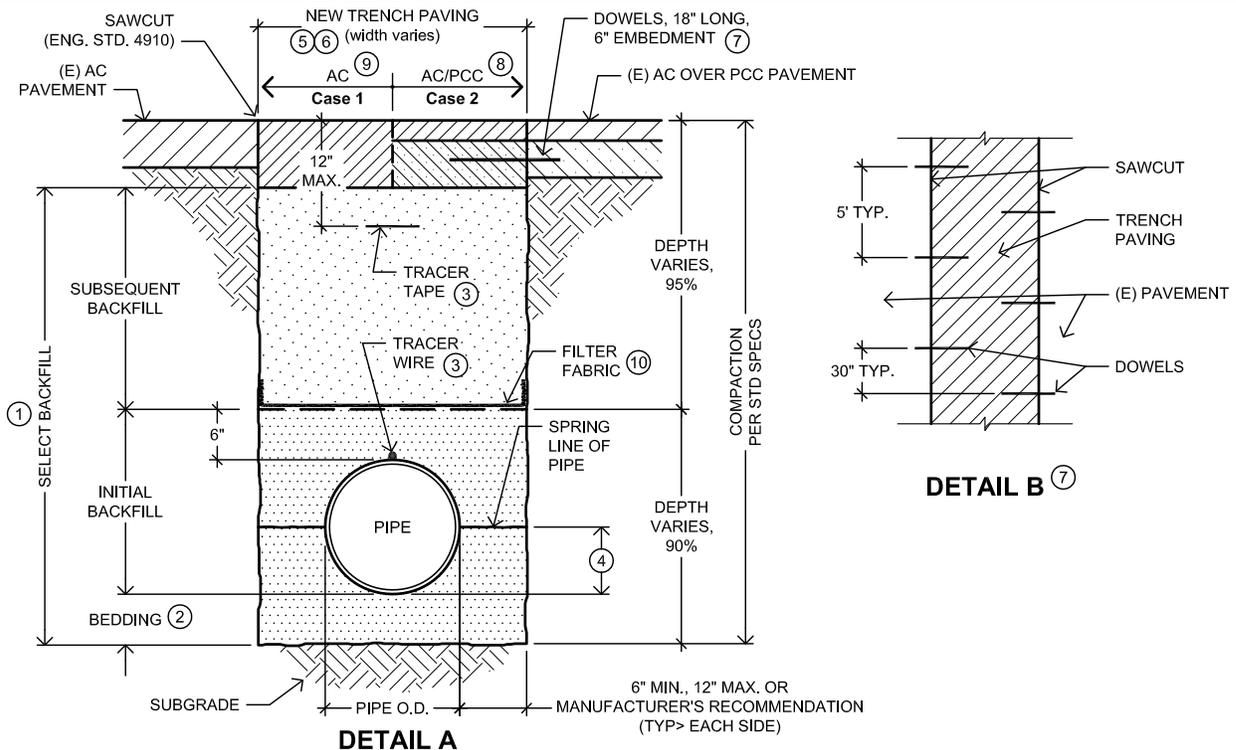
- A. Height of wall is vertical difference between finished grades.
- B. All cells must be filled with grout.
- C. First block may be embedded in footing.
- D. Place a layer of coarse gravel against the back of the wall and at least 1 ft³ of gravel around each drain.
- E. These walls are designed to be used at the back of sidewalks but may be used elsewhere if the bottom of footing is at least 12" below finish grade.
- F. These walls may be made of Reinforced Concrete with a wall thickness of 6".
- G. Omit mortar from the vertical joints in first course above the ground at 32" on center for weep holes, except walls adjacent to back of public sidewalk where drain pipes must be installed as shown above. (See Engineering Standard 5020).
- H. For walls higher than 24", construction shall conform to the Department of Transportation Standard Plans for retaining walls for either concrete or masonry construction.

REVISIONS	BY	APP	DATE
Revise title block; Concrete strength	SR	BL	1-14
New border	JDL	WAP	9-97
Drafting edits	JDL	MH	12-12
STANDARD CURRENT AS OF:		January 2016	



**SHORT
RETAINING WALLS**

5030



INSTALLATION NOTES:

- ① See City Standard Specifications, Section 26-1 & 77-1, for backfill material and bedding requirements.
- ② Bedding shall be 4" thick except as otherwise noted in the Standard Specifications.
- ③ All waterlines and sewer force mains shall be installed with tracer tape and a magnetic tracer wire as shown above. Gravity Pipes shall be installed with underground tracer tape only. Tracer wire shall be 14-gauge insulated solid copper with white or other approved light color insulator. Tracer wire shall be secured to the center of the top of the pipe with tape at 6 foot intervals. Adjacent to each manhole and lift station, a G-5 utility well shall be installed per Engineering Standard 6040 for access to tracer wire. Tracer wire shall be continuous and shall be tested for continuity. Wire to services, fire lines, etc. shall be joined to wire on main. Tracer wire joints shall be soldered and wrapped with electrical tape.
- ④ When flexible pipe (PVC, HDPE, etc.) is used, pipe shall be backfilled to the spring line, compacted and backfill tested prior to completing initial backfill.
- ⑤ The streets of San Luis Obispo are generally paved with either AC, PCC, or a combination of the two. Unless clearly indicated on the plans, it is the contractor's responsibility to determine the nature of the paving material. (Case 1 - AC only, Case 2 - AC over PCC)
- ⑥ Replacement pavement shall be "in kind." Concrete streets which contain a reinforcement fabric or grid shall be "tee cut" with the width of the AC cut extending one foot beyond each side of the trench. A new layer of pavement reinforcing fabric shall be installed above the new PCC and beneath the new AC.
- ⑦ All concrete street sections require 1/2" smooth steel dowels per Detail B above.
- ⑧ New PCC shall not be brought above existing PCC, shall be Class 2, and shall be 8" thick.
- ⑨ When only AC is used, new AC shall be 6" thick on local streets, and 10" thick on collector or arterial streets.
- ⑩ Filter fabric shall be required when initial backfill is float rock. Filter fabric shall be placed between initial and subsequent backfill and wrapped up trench sides 6". Filter fabric shall conform to the requirements in Section 88 and shall be permeable and non-woven. Filter fabric shall be Mirafi 140 NC or equal.

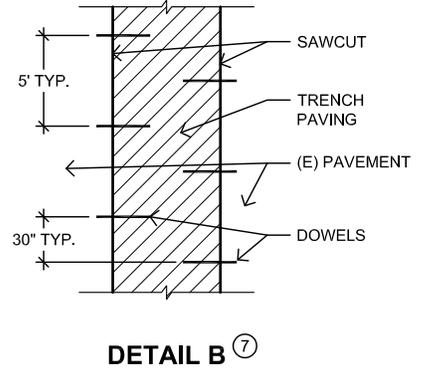
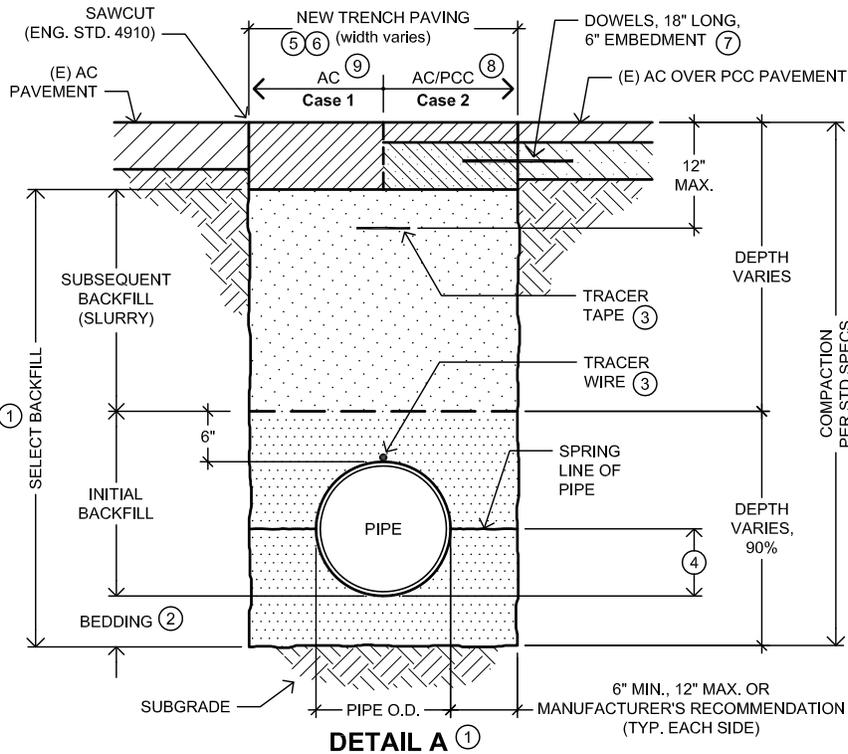
GENERAL NOTES:

- A. Backfill testing is required and results are subject to approval by the City Engineer.
- B. No longitudinal joints or seams are allowed in bike lanes. If a longitudinal joint may result due to the contractor's work, or this requirement, the contractor shall remove a minimum of 2" of asphalt from the pavement across the entire bike lane using a method approved by the City and resurface the bike lane to the satisfaction of the City.
- C. During backfill operations, the trench shall be backfilled and compacted and tested to the spring line of any utilities crossing the trench before proceeding with further backfill.
- D. Float rock may be substituted for initial backfill when ground water is present as approved by the Engineer.
- E. Concrete plug maybe required by the Engineer where groundwater is anticipated. Location and frequency shall be determined by the Engineer.

REVISIONS	BY	APP	DATE
Revise Note 3, drafting edits	MH	BL	6-12
Revise Note 1 & 8	SR	BL	1-14
Revise Note 3	JDL	DA	10-15
STANDARD CURRENT AS OF:		January 2016	



TRENCH DETAIL #1
PAVED OR UNPAVED STREETS



INSTALLATION NOTES:

- ① See Standard Specifications, Section 26-1 & 77-1, for backfill material and bedding requirements. The remainder (subsequent backfill) shall be a plant-mixed slurry, vibrated with 1" minimum stinger. (Slurry to contain 94 lbs. cement per cubic yard.)
- ② Bedding shall be 4" thick except as otherwise noted in the Standard Specifications.
- ③ All waterlines and sewer force mains shall be installed with tracer tape and a magnetic tracer wire as shown above. Gravity Pipes shall be installed with underground tracer tape only. Tracer wire shall be 14-gauge insulated solid copper with white or other approved light color insulator. Tracer wire shall be secured to the center of the top of the pipe with tape at 6 foot intervals. Adjacent to each manhole and lift station, a G-5 utility well shall be installed per Engineering Standard 6040 for access to tracer wire. Tracer wire shall be continuous and shall be tested for continuity. Wire to services, fire lines, etc. shall be joined to wire on main. Tracer wire joints shall be soldered and wrapped with electrical tape.
- ④ When flexible pipe (PVC, HDPE, etc.) is used, pipe shall be backfilled to the spring line, compacted and backfill tested prior to completing initial backfill.
- ⑤ The streets of San Luis Obispo are generally paved with either AC, PCC, or a combination of the two. Unless clearly indicated on the plans, it is the contractor's responsibility to determine the nature of the paving material. (Case 1 - AC only, Case 2 - AC over PCC)
- ⑥ Replacement pavement shall be "in kind." Concrete streets which contain a reinforcement fabric or grid shall be "tee cut" with the width of the AC cut extending one foot beyond each side of the trench. A new layer of pavement reinforcing fabric shall be installed above the new PCC and beneath the new AC.
- ⑦ All concrete street sections require 1/2" smooth steel dowels per Detail B above.
- ⑧ New PCC shall not be brought above existing PCC, shall be Class 2, and shall be 8" thick.
- ⑨ When only AC is used, new AC shall be 6" thick on local streets, and 10" thick on collector or arterial streets.

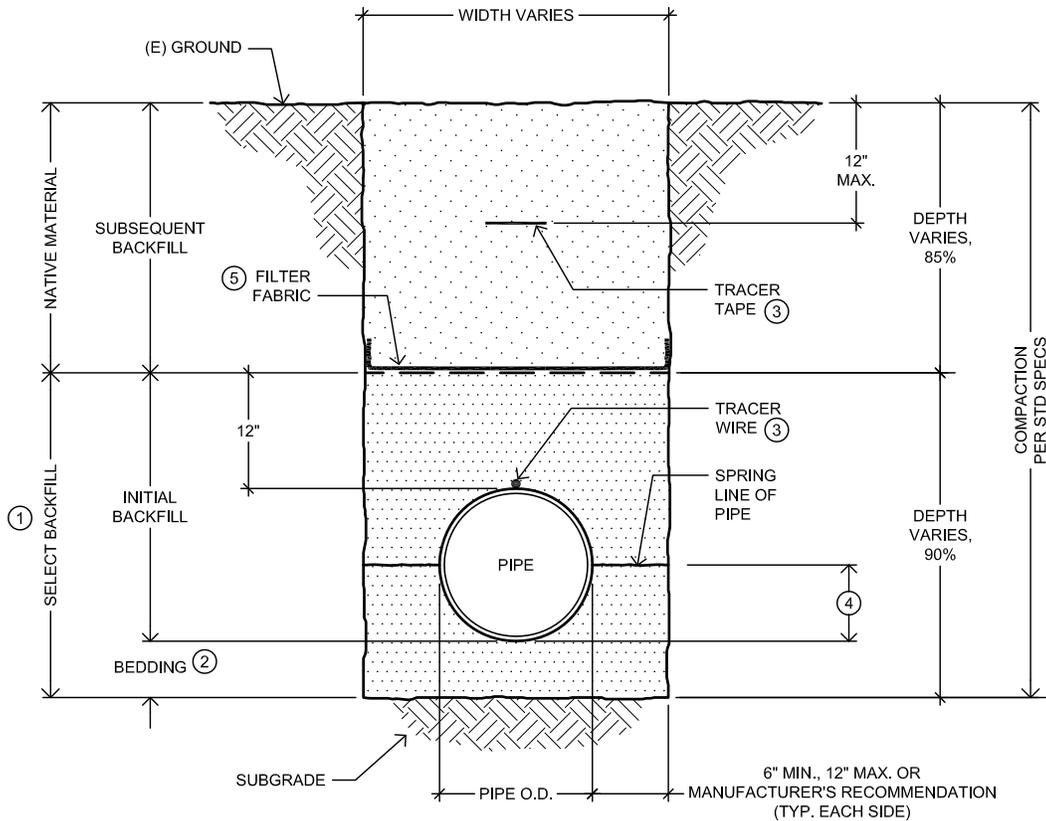
GENERAL NOTES:

A. No longitudinal joints or seams are allowed in bike lanes. If a longitudinal joint may result due to the contractor's work, or this requirement, the contractor shall remove a minimum of 2" of asphalt from the pavement across the entire bike lane using a method approved by the City and resurface the bike lane to the satisfaction of the City.

REVISIONS	BY	APP	DATE
Revise Note 3	MH	MH	6-12
Revise Note 3	JDL	DA	10-15
Revise Note 1 & 8	SR	BL	1-14
STANDARD CURRENT AS OF:		January 2016	



TRENCH DETAIL #2
PAVED OR UNPAVED STREETS



DETAIL

NOTES:

- ① See City Standard Specifications, Section 26-1 & 77-1, for backfill material and bedding requirements.
- ② Bedding shall be 4" thick except as otherwise noted in the Standard Specifications.
- ③ All waterlines and sewer force mains shall be installed with tracer tape and a magnetic tracer wire as shown above. Gravity Pipes shall be installed with underground tracer tape only. Tracer wire shall be 14-gauge insulated solid copper with white or other approved light color insulator. Tracer wire shall be secured to the center of the top of the pipe with tape at 6 foot intervals. Adjacent to each manhole and lift station, a G-5 utility well shall be installed per Engineering Standard 6040 for access to tracer wire. Tracer wire shall be continuous and shall be tested for continuity. Wire to services, fire lines, etc. shall be joined to wire on main. Tracer wire joints shall be soldered and wrapped with electrical tape.
- ④ When flexible pipe (PVC, HDPE, etc.) is used, pipe shall be backfilled to the spring line, compacted and backfill tested prior to completing initial backfill.
- ⑤ Filter fabric shall be required when initial backfill is float rock. Filter fabric shall be placed between initial and subsequent backfill and wrapped up trench sides 6". Filter fabric shall conform to the requirements in Section 88 and shall be permeable and non-woven. Filter fabric shall be Mirafi 140 NC or equal.

GENERAL NOTES:

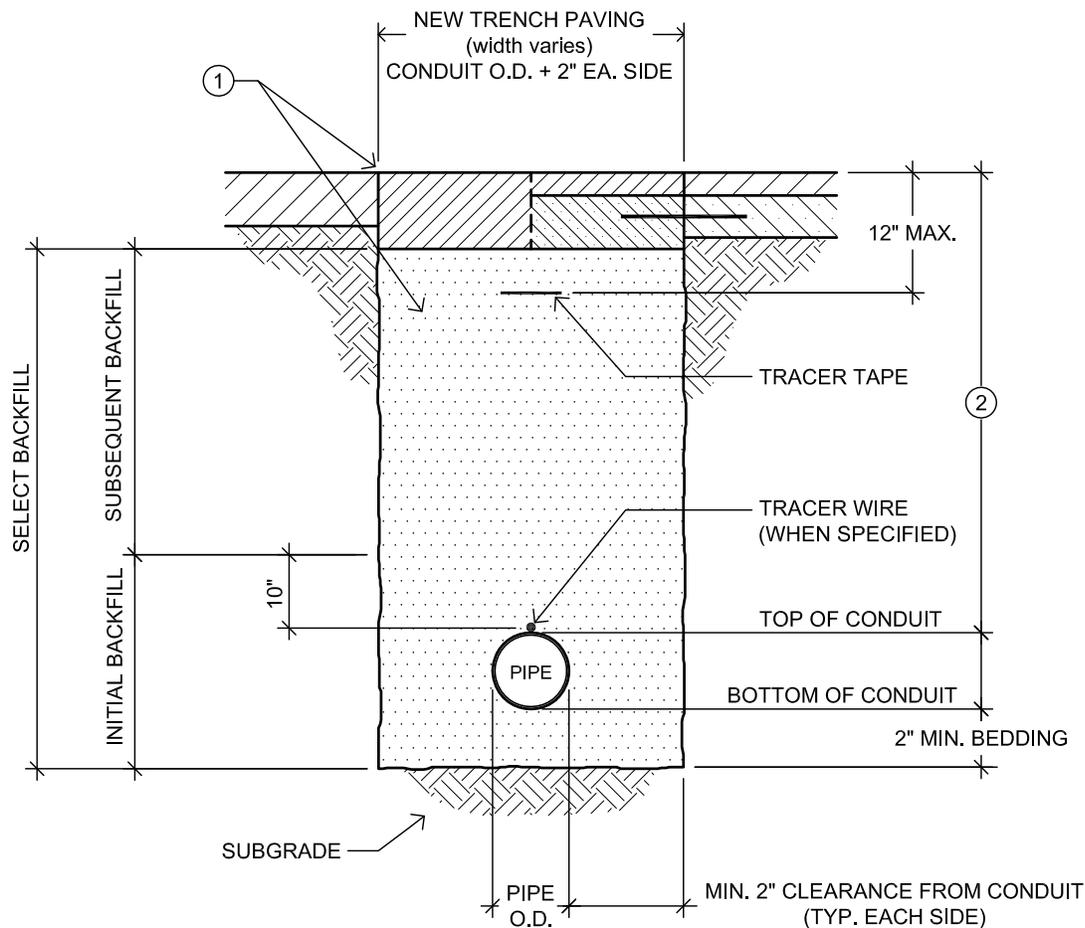
- A. During backfill operations, the the trench shall be backfilled and compacted and tested to the spring line of any utilities crossing the trench before proceeding with further backfill.
- B. Float rock may be substituted for initial backfill when ground water is present as approved by the Engineer.
- C. Concrete plug maybe required by the Engineer where groundwater is anticipated. Location and frequency shall be determined by the Engineer.

THIS STANDARD APPLIES ONLY TO AREAS THAT ARE NON-TRAFFIC, NOT IN STREETS OR PARKING LOTS.

REVISIONS	BY	APP	DATE
Revise Note 3	MH	BL	6-12
Revise Note 1	MH	SR	1-14
Revise Note 3	JDL	DA	10-16
STANDARD CURRENT AS OF:		January 2016	



TRENCH DETAIL #3
UNPAVED NON-TRAFFIC AREAS



INSTALLATION NOTES:

- ① See Engineering Standards 6020, 6025, and 6030, and Section 26-1 & 77-1, of the Standard Specifications for requirements regarding trench backfill and restoration of surface improvements.
- ② Depth of Conduit shall conform to the following:
 - Min. 18" for Traffic Signal wire
 - Min. 24" for Electrical service and Fiber-optic wire
 - Min. 30" for all other wire types

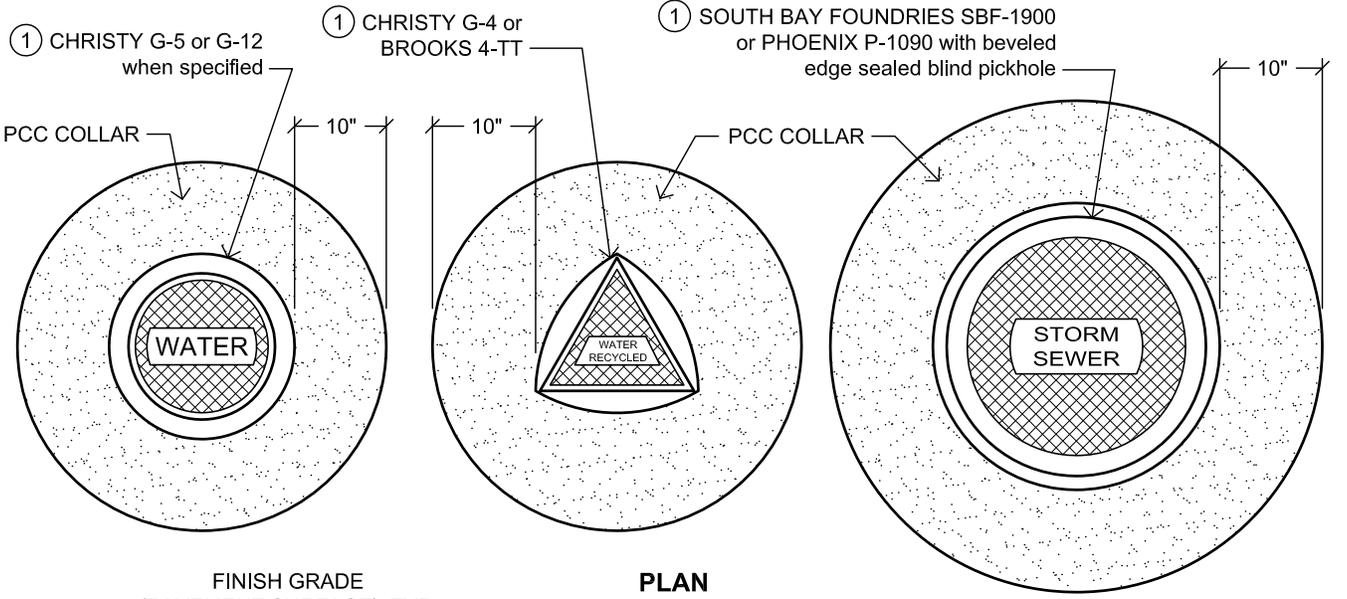
GENERAL NOTE:

- A. See Standard Specification 86-2.05 for information regarding conduit materials, use and installation.

REVISIONS	BY	APP	DATE
"Tracer wire when specified"	JDL	DA	10-15
Revise conduit note, title	JDL	MH	9-12
Revise drawing & Note 1; delete 3	SR	BL	1-14
STANDARD CURRENT AS OF:		January 2016	

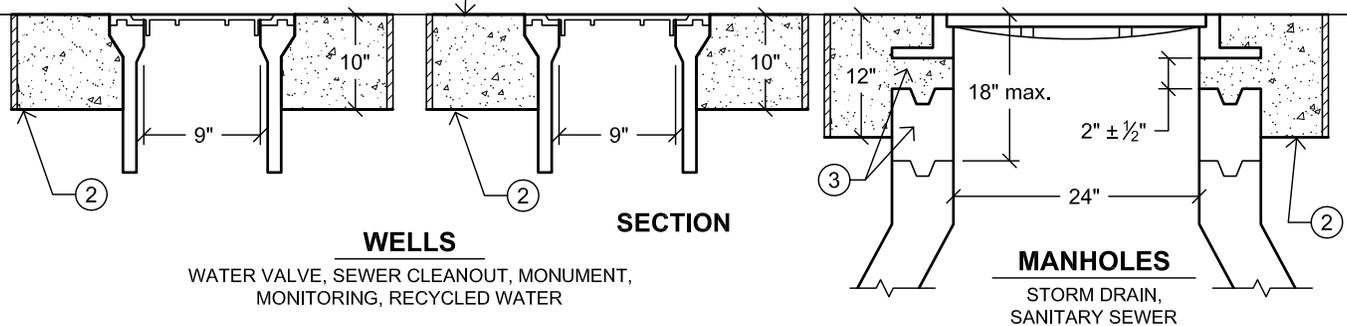


TRENCH DETAIL #4
 CONDUIT TRENCH FOR TRAFFIC SIGNALS, STREET LIGHTS, AND CITY COMMUNICATIONS 6035



FINISH GRADE
(PAVEMENT SURFACE), TYP.

PLAN



WELLS

SECTION

MANHOLES

WATER VALVE, SEWER CLEANOUT, MONUMENT,
MONITORING, RECYCLED WATER

STORM DRAIN,
SANITARY SEWER

INSTALLATION NOTES:

- ① All utility covers to be raised shall be replaced as needed to conform to covers specified above. Covers shall be imprinted with the appropriate utility name.
- ② Collars constructed in P.C.C. streets shall be circular in shape and shall be separated from the adjacent P.C.C. street by either a cold joint or a tin form.
- ③ **MANHOLES:** Rings shall be 3" or 6". Top of cone to top of frame shall not exceed 18". Grade rings and manhole frame shall be sealed at every joint with butyl rubber (CONSEAL CS-102 or equal). When proper grade cannot be achieved with standard grade rings, the manhole frame shall be suspended in position over the last grade ring, the inside of the frame and shaft shall be formed with tube or monoform system, and the concrete collar shall be poured to provide the joint between the manhole frame and the grade ring stack. Inside of rings shall be grouted with non-shrink grout to obtain a smooth surface free from gaps, holes and sharp edges. 2" clearance applies to the low side of the frame. Clearance may be greater on the high side as dictated by the street grades and as directed by the City Engineer. Use 6" concrete reducing rings in cases where existing manhole opening must be reduced to accommodate the new frame and cover.

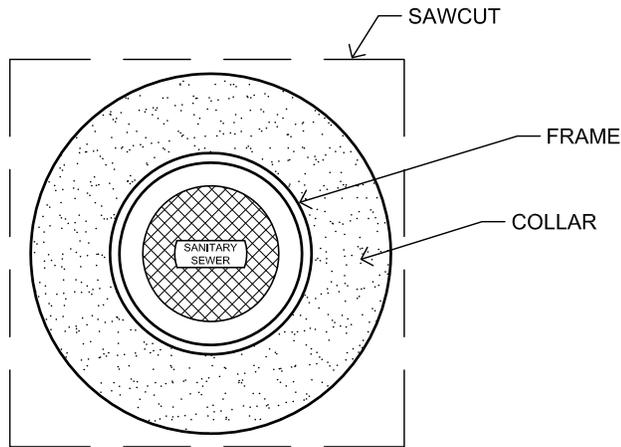
GENERAL NOTES:

- A. Completely remove existing concrete collar prior to pouring new concrete collar. The diameter of the new collar shall be equal to the existing collar or the minimum diameter specified in the above detail, whichever is larger.
- B. Concrete shall be Class 2 concrete, troweled to street grade, and allowed to cure for 24 hours prior to any traffic use. Class 1 concrete with 2% non-corrosive polar set may be required to allow expedited traffic use following 4 hour cure time.
- C. Depth and radius dimensions shown apply to similar covers that are not shown.
- D. When a roadway is overlaid with asphalt concrete, the contractor may use extension rings to adjust utility covers to the new surface elevation. When extension rings are used to adjust grade, a preformed thermoplastic ring shall be applied around the perimeter of the concrete. Extension ring shall be compatible with the existing cover. Thermoplastic ring width shall be a minimum of 6 inches.
- E. Utility frame and cover shall be installed so that cover does not rock or rattle and is flush with adjacent surface.

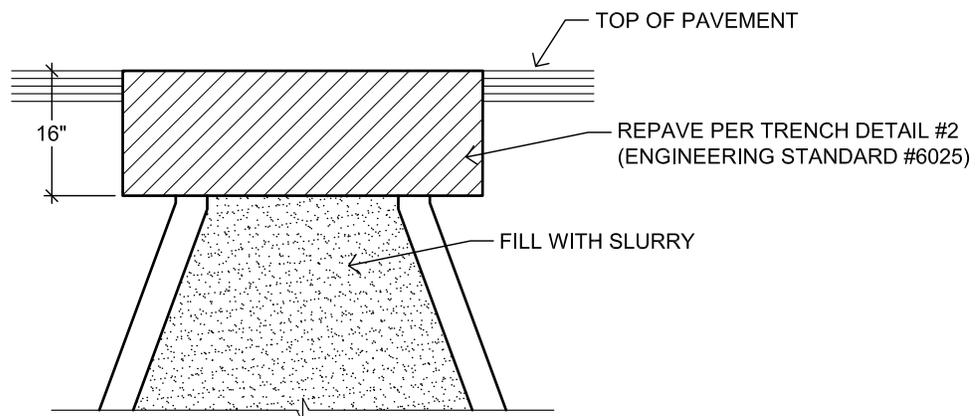
REVISIONS	BY	APP	DATE
Update Note 2	WH	BL	8-11
Add Note 7	DVB	BL	11-08
Reorganize Notes; Add Note E	JDL	BL	6-12
STANDARD CURRENT AS OF:		January 2016	



**UTILITY COVER
GRADE ADJUSTMENT
& P.C.C. COLLAR**



STRUCTURES, WELLS & COLLARS



STRUCTURES

GENERAL NOTES:

- A. All storm drains, waterlines and sewerlines that are taken out of service shall be abandoned by disconnecting the pipeline from the active system, plugging all openings, and removing all related surface features, such as: Blow-offs, Air Release Valves, Valve Wells, Vaults, Boxes, Frames, Covers and Collars, Manholes, and Cleanout Wells. All openings shall be capped with approved fittings, such as: Expandable plugs for sewerlines, Caps, Blind Flanges, Dresser Couplings with Plug, and Valves.
- B. All water services from abandoned mains shall be pinched off, capped or plugged with approved fittings, or closed with the corp stops. If the water services are being abandoned and the main is to remain live, services shall be shut off at the corp stop and capped or plugged with a threaded brass fitting.
- C. Water valves that are determined by the Utilities Department to be redundant or otherwise unnecessary shall be removed.
- D. Valve well and cleanout risers shall be removed, backfilled with sand, and compacted to 95%. The tops of all manholes and other structures to be abandoned shall be removed by sawcutting using square cuts in accordance with Engineering Standard 4910. The structure shall be removed to a depth of 16" below street grade and filled with slurry backfill to the top of the remaining structure see section 77-1.02B of the Standard Specifications. Pavement replacement shall be per Trench Detail #2 (Engineering Standard 6025).
- E. All sewer laterals from the abandoned sewer main shall be capped or plugged with approved fittings. If the sewer laterals are being abandoned and the main is to remain live, the laterals shall be excavated at the main by the contractor and the actual abandonment will be performed by the City. A 48-hour notice shall be given to the City to schedule these abandonments.

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	2-13
Revise Note D	SR	BL	1-14
Revised Note "C"	MH	BL	10-09
STANDARD CURRENT AS OF:		January 2016	



**UTILITY PIPELINE
ABANDONMENT**

CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS

NEW FACILITIES SEPARATION STANDARDS

New water mains and sewer lines must comply with most recent version of the California Code of Regulations Section 64572 Title 22 Chapter 16.

1. Parallel Construction: The horizontal distance between pressure water mains and sewer must be at least 10 feet.
2. Perpendicular Construction (Crossing): Pressure water main must be at least 12 inches above sanitary sewer lines where these lines cross.
3. Separation distance is measured from the nearest edge of the facilities.
4. Water mains and sewer lines must not be installed in the same trench.

EXCEPTIONS TO BASIC SEPARATION STANDARDS

When local conditions or existing facilities create a situation where there is no alternative but to install water mains or sewer lines at a distance less than that required by the new facilities separation standards. In such cases, alternative construction criteria must be followed as allowed in the Department of Health Services Memorandum for Guidance Criteria for separation of water mains and non-potable pipelines.

ALTERNATIVE CRITERIA FOR CONSTRUCTION

The construction criteria for sewer lines or water mains where the Basic Separation Standards cannot be attained are shown in Figures 1 and 2, Engineering Standard 6140. There are two situations encountered:

Case 1 -- New sewer line -- new or existing water main.

Case 2 -- New water main -- existing sewer line.

For Case 1, the alternate construction criteria apply to the sewer line.

For Case 2, the alternate construction criteria may apply to either or both the water main and sewer line.

The construction criteria apply to the house laterals that cross above a pressure water main. House laterals crossing below water main must have 4 inches of separation between water main and lateral.

CONSIDERATION OF RECYCLED WATER

Recycled water mains must be treated as sewer mains when considering their separation from potable water.

Recycled water mains must be treated as potable water mains when considering their separation from sewers.

REVISIONS	BY	APP	DATE
Revise notes: B.c2, B.e Add F note	SR	BL	3-06
Revised all Notes	MH	BL	1-14
Consolidate 6110, 6120 & 6130	JDL	JDW	6-02
STANDARD CURRENT AS OF:		January 2016	



WATER – SEWER SEPARATION CRITERIA TEXT

CASE 1
NEW SEWER MAIN BEING INSTALLED
(See Figure 1, Engineering Standard 6140)

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR SEWER
A	Sewer lines parallel to water mains shall not be permitted in this zone without approval from the responsible health agency and water supplier.
B	A sewer line placed <u>parallel</u> to a water line shall be constructed of: 1. Use HDPE pipe with fused joints.
C	A sewer line <u>crossing</u> a water main shall be constructed of: 1. Use HDPE pipe with fused joints.
D	A sewer line <u>crossing</u> a water main shall be constructed of: 1. User HDPE pipe with fused joints.

CASE 2
NEW WATER MAIN BEING INSTALLED
(See Figure 2, Engineering Standard 6140)

ZONE	SPECIAL CONSTRUCTION REQUIRED FOR WATER
A	No water mains parallel to sewers shall be constructed without approval from the health agency.
B	If the sewer <u>paralleling</u> the water main does not meet the Case 1, Zone B requirements, the water main shall be constructed of: 1. Ductile iron pipe 2. Class 200 PVC Pipe
C	If the sewer <u>crossing</u> the water main does not meet the Case 1, Zone C requirements, the water main shall have no joints in Zone C and be constructed of: 1. Ductile iron pipe 2. Class 200 PVC Pipe
D	If the sewer <u>crossing</u> the water main does not meet the Case 1, Zone D requirements, the water main shall have no joints within 4 feet from either side of the sewer and shall be constructed of: 1. Ductile iron pipe 2. Class 200 PVC Pipe

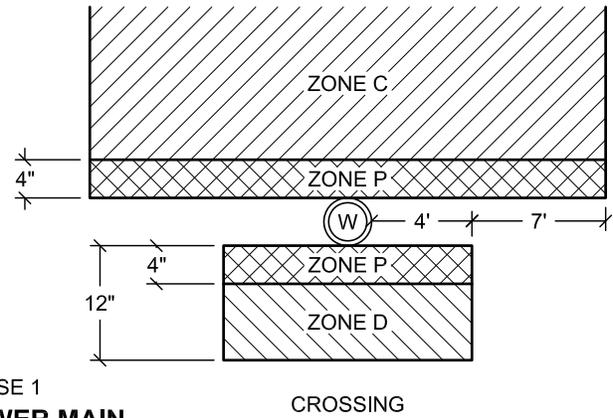
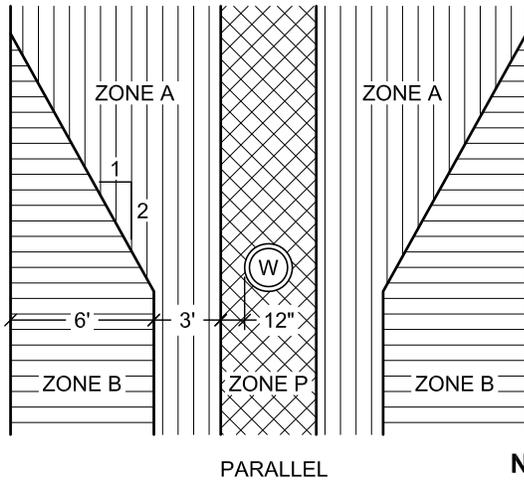
REVISIONS	BY	APP	DATE
Revise notes: B.c2, B.e Add F note	SR	BL	3-06
Revised all Notes	MH	BL	1-14
Consolidate 6110, 6120 & 6130	JDL	JDW	6-02
STANDARD CURRENT AS OF:		January 2016	



WATER – SEWER
SEPARATION CRITERIA
TEXT

CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS

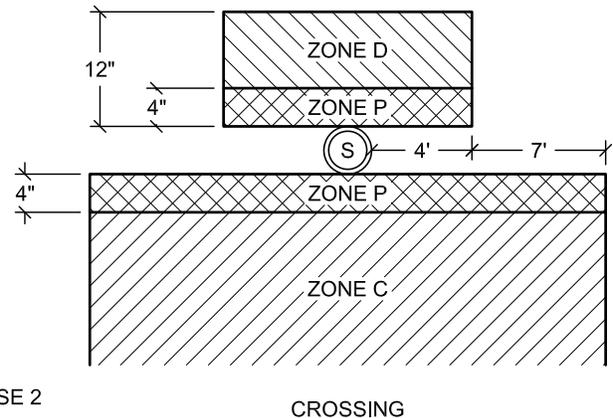
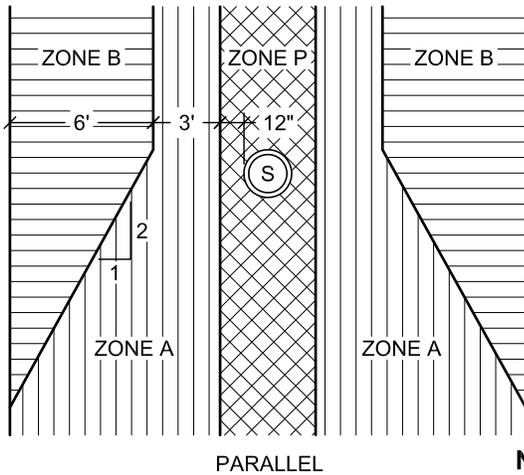
Refer to Engineering Standard 6110 for Separation Criteria Text



CASE 1
NEW SEWER MAIN

Figure 1

ZONE P is a prohibited zone



CASE 2
NEW WATER MAIN

Figure 2

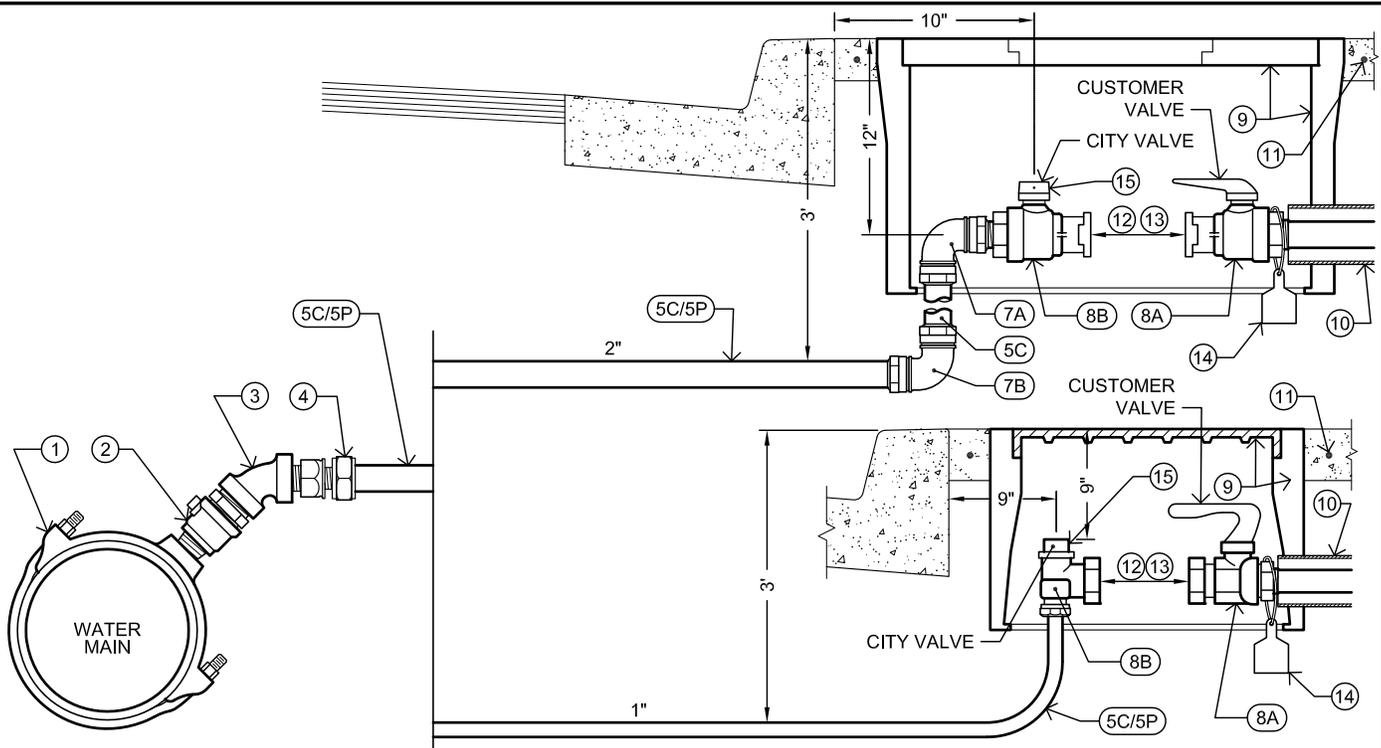
NOTES AND DEFINITIONS

- DIMENSIONS are from the outside of water main to outside of sewer line or manhole.
- FUSED JOINT: The joining of sections of pipe using thermal or chemical bonding processes.
- HEALTH AGENCY: The State Department of Health Services. For those water systems supplying less than 200 service connections, the local health officer shall act for the Department of Health Services.
- HOUSE LATERAL: A sewer pipe connecting the building drain and the main sewer line.
- WATER SUPPLIER: Any person who owns or operates a public water system.

REVISIONS	BY	APP	DATE
<i>Drafting edits</i>	<i>JDL</i>	<i>MH</i>	<i>2-13</i>
<i>Reference to Std. #6110</i>	<i>JDL</i>	<i>JDW</i>	<i>1-03</i>
<i>Revised Separation Note</i>	<i>MH</i>	<i>BL</i>	<i>8-07</i>
STANDARD CURRENT AS OF:		January 2016	



WATER - SEWER SEPARATION CRITERIA DETAILS



GENERAL NOTES:

- A. If service line is lead, galvanized steel or polybutylene, the entire service shall be replaced from the main.
- B. Households shall be notified at least one hour prior to water shut-off to make a connection.
- C. A 14 gauge (min.) insulated copper tracer wire shall be soldered and taped to locator wire on main line, looped around corp stop and run up to the meter box. The wire shall be taped to the service line at 7' intervals and 3' of wire shall be coiled in the meter box. Tracer wire color shall be light.
- D. All mains shall use a service saddle. CI and DI mains may be direct tap only with the written permission of the City Utilities Department.
- E. New/Replacement 1" water service shall be copper or iron pipe size (IPS). New/Replacement 2" water service shall be copper or copper tubing size (CTS) polyethylene.
- F. All new services or service replacements shall be 1" or 2". Any 3/4" or 1/2" services shall be upgraded to the next size (1" or 2") and an adaptor installed at the meter.
- G. If service replacement includes the tap at the main, the new connection shall be made 12" from the old connection. The old corp stop shall be closed and a threaded brass plug or cap installed.
- H. Any boxes which do not meet the current standards listed below shall be upgraded to those standards.
- I. Contractor shall ensure tubing is "bottomed out" in all Super Grip (SG) fittings while tightening.
- J. When recycled water is used on any parcel, a backflow preventer shall be installed on the potable water service line.
- K. When replacing an existing service line, the customer valve is not required to be replaced.
- L. Open trench water service replacements shall be installed perpendicular to the existing water main, when as measured along the main, the existing water service offset 5' or more from perpendicular.

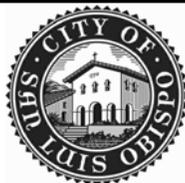
INSTALLATION NOTES:

- ① Service saddle, double strap, CC threads: Installed per manufacturer's recommendations.
AC, CI and DIP main: Ford F202B Series
PVC Main: Ford F202BS Series
- ② Corporation Stop, ball type, CCxMIP:
1" - Ford FB400-4-NL
2" - Ford FB400-7-NL
- ③ 45° Bend, brass, FIPxFIP
- ④ Adaptor with sleeve:
1" for CTS tubing - Ford C84-44-Q-NL and 52 Insert
1" for IPS tubing - Ford C84-44-Q-NL and 5272 Insert
2" - Ford C84-77-Q-NL and 55 Insert

- ⑤ Service Tubing:
5C - Copper, type K, soft
5P - Polyethylene, 200 psi, AWWA C901 Centennial, Driscopipe or approved equal.
Service tubing for recycled water shall be purple or have a purple stripe or be wrapped in purple polyethylene sleeve conforming to AWWA A21.5 and shall be clearly labeled as non-potable.
- ⑥ Coupling 2": Ford C44-77-Q-NL, compression x compression, tube size.
- ⑦ 7A - 2" 90° bend, brass 2" MIP x Comp 90, Ford L84-77-Q-NL, tube size
7B - 90° bend, 2" Comp x Comp 90, Ford L44-77-Q-NL, tube size
- ⑧ Meter Box Valves:
8A (Customer side):
3/4" service - Ford B13-332-HT34-NL
1" service - Ford B13-444-HT34-NL
1 1/2" service - Ford B13-666-HT67S-NL
2" service - Ford B13-777-HT67S-NL
8B (City side):
1" service - Compression meter stop: CTS tubing - Ford KV43-444W-Q-NL; IPS tubing - Ford KV43-444W-NL and C86-44-Q-NL adaptor
2" Curb stop, ball valve: Ford BF13-777W-NL, inlet FIP x outlet Meter Flange
- ⑨ Meter box and lid:
5/8", 3/4" and 1" water meter use Brooks 37 T Series for traffic areas, Armorcast #A6000485 for non-traffic areas, and Christy B12 for Mission Style areas. 1 1/2" and 2" water meter use Armorcast #A6001419, Armorcast cover (A6001420TDEB) with drop-in read lid (A6000481T-EB), 20K traffic rating, and Christy B36 for Mission Area. IN MISSION STYLE SIDEWALK AREA as defined by City Council Resolution 4183, concrete boxes shall be per Engineering Standard 1010, Section A. WHEN USED FOR RECYCLED WATER, all lids shall be integrally cast with the words "Recycled Water" or "Reclaimed Water".
- ⑩ Install PVC sleeve to 12" behind back of sidewalk. 5/8", 3/4", or 1" water meter use 2" sleeve. 1 1/2" or 2" water meter use 3" sleeve.
- ⑪ #4 rebar all around the meter box
- ⑫ Meter adaptor (as needed): 1" City valve to 3/4" Customer valve use Jones J-128H or Ford A24. 2" City valve to 3/4" Customer valve use Ford A67.
- ⑬ When meter box is to be installed in landscaped area, a 4" thick concrete apron shall be placed for a minimum of 12" around the box.
- ⑭ Install Recycled Water warning tags per Engineering Standard 8810 when used for recycled water.
- ⑮ Water services serving corner lots or services serving units behind other units shall be designated to an address and/or unit by attaching a 1 1/2" brass tag with 3/4" minimum letters/numbers to the curb stop with a non-ferrous wire.

APPROVED EQUAL ACCEPTED FOR ALL FITTINGS

REVISIONS	BY	APP	DATE
Modify parts manufacturer	JDL	MH	3-13
New Note 17; Revised Note 8	SR	BL	6-12
Drafting edits; Renumber Notes	JDL	MH	11-12
STANDARD CURRENT AS OF:		January 2016	



**WATER SERVICES
NEW & REPLACEMENTS**

GENERAL NOTES:

- A. If service line is lead, galvanized steel, or polybutylene, the entire service shall be replaced from the main to the meter per Engineering Standard 6210.
- B. Any meter boxes which do not meet current standards per Engineering Standard 6210 shall be upgraded to those standards.
- C. Households shall be notified at least one hour prior to water being shut off to make a connection.
- D. A 14 gauge insulated copper tracer wire shall be tied to the corp stop and taped to the service line at 7' intervals. The wire shall be soldered to the existing tracer wire or existing copper service.

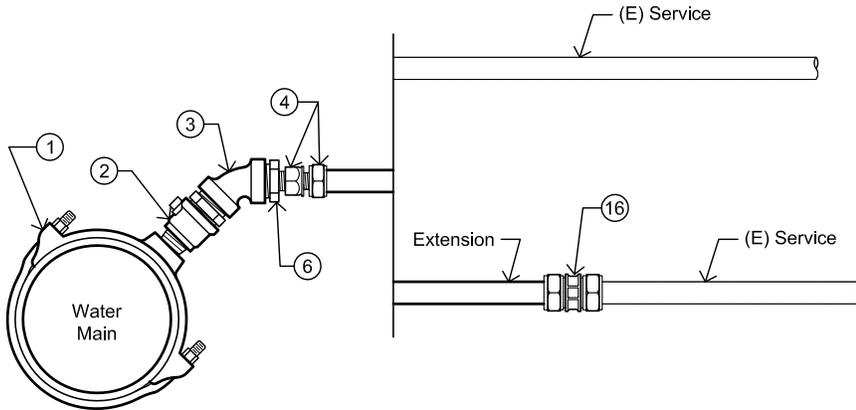
INSTALLATION NOTES:

- ① through ④ - See Engineering Standard 6210.
- ⑥ Add bell reducer and close nipple for existing 3/4" and 1 1/2" service lines.
- ⑩ Compression to compression coupling, J-2609SG

Type 1 - New main is closer to curb than existing main.

Type 2 - New main is further from curb than existing main.

(PE = Polyethylene)



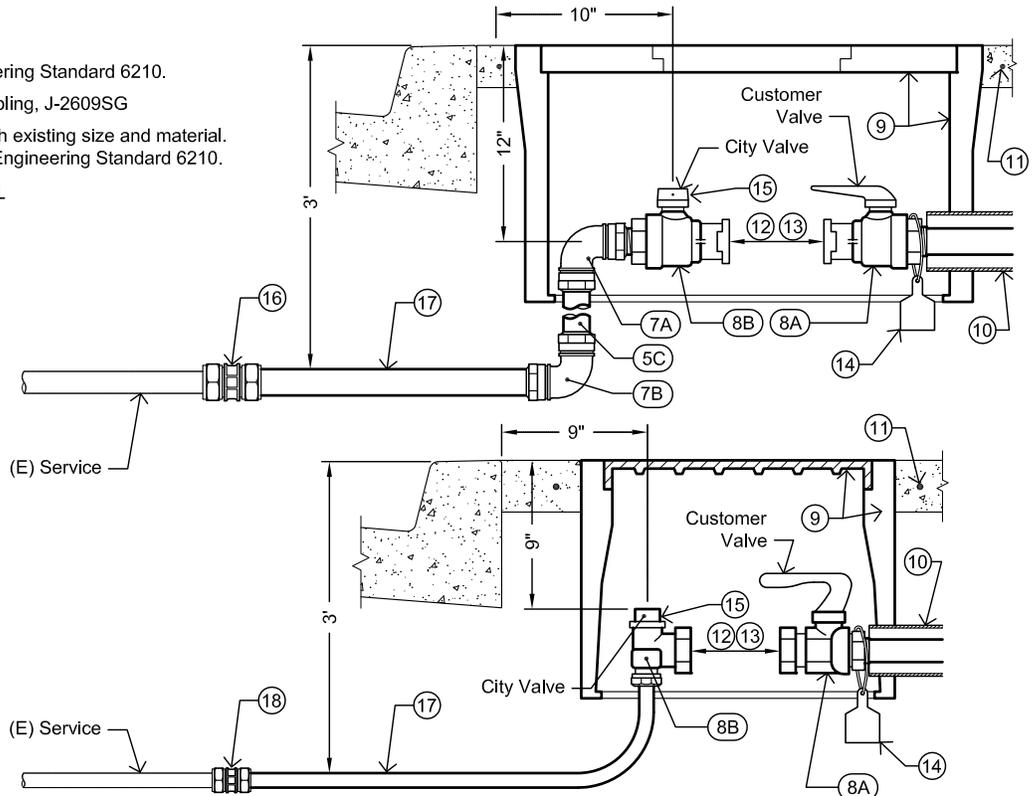
Type	(E) Service	Main
1	PE	Any
1	Copper	Non-metal

Type	Extension	(E)Service	Main
2	Copper/PE	PE	Any
2	Copper/PE	Copper	Non-metal
2	PE	Copper	Any

WATER SERVICE CONNECTION TO NEW MAIN

INSTALLATION NOTES:

- ⑤ and ⑦ through ⑮ - See Engineering Standard 6210.
- ⑯ Compression to compression coupling, J-2609SG
- ⑰ Extensions on services shall match existing size and material. service material shall conform to Engineering Standard 6210.
- ⑱ 3/4" CTS tubing: Ford C44-33-Q-NL
1" CTS tubing: Ford C44-44-Q-NL
3/4" IPS tubing: Ford C66-33-Q-NL
1" IPS tubing: Ford C66-44-Q-NL



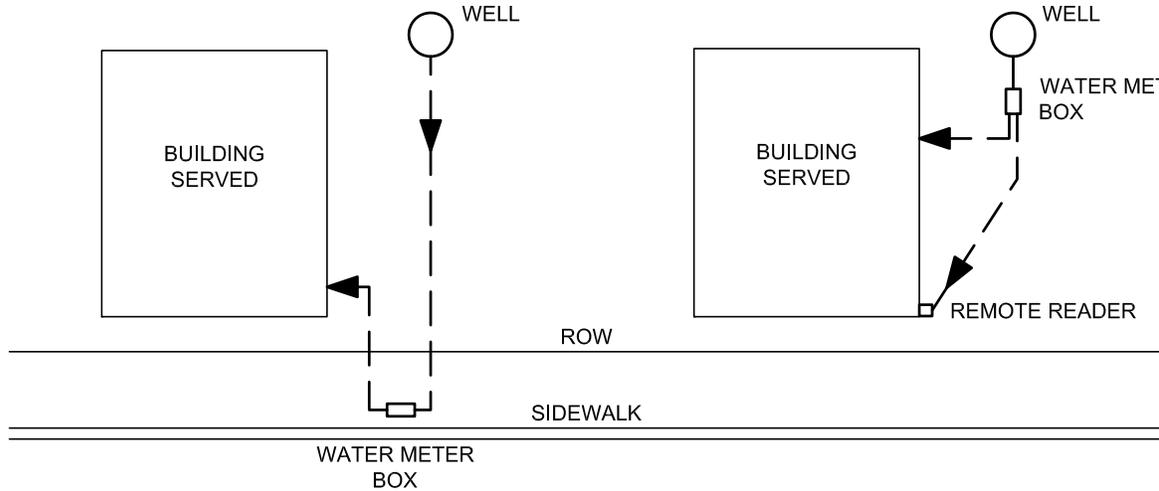
WATER SERVICE METER BOX RELOCATION

REVISIONS	BY	APP	DATE
Renumber Notes	SR	BL	3-06
Renumber Notes; Drafting edits	JDL	MH	12-12
Revised part numbers	JDL	MH	3-13
STANDARD CURRENT AS OF:		January 2016	

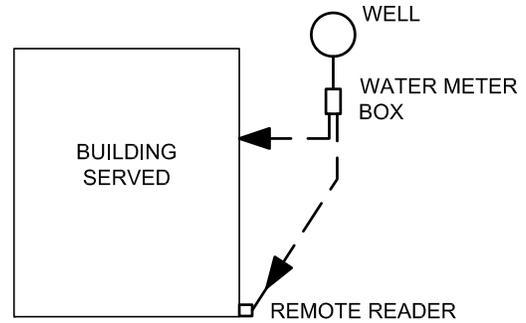


WATER SERVICE CONNECTIONS

STANDARD CONFIGURATION



ALTERNATE CONFIGURATION
(must be approved by the Utilities Department)

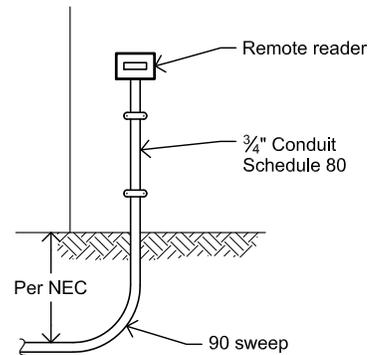
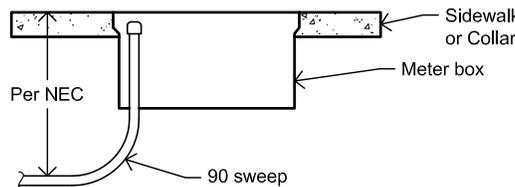
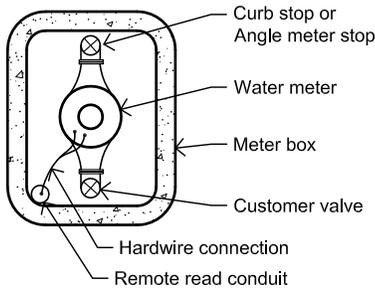


GENERAL NOTES:

- A. All commercial buildings served by public sewer and private well shall have the well metered for the purpose of assessing sewer charges.
- B. The well meter shall consist of a conventional meter set in the public right of way in accordance with City Engineering Standards. With prior written approval of the Utilities Department, a meter set near the well with a remote reader mounted to the building or other permanent structure will be allowed.
- C. The property owner shall pay all fees established for these purposes.
- D. The property owner shall execute a Private Well Metering Agreement with the City for ongoing operation, maintenance, inspection, calibration, and repair or replacement of the well meter and related City facilities.
- E. If a property receives water from both the public system and a private well, the customer will pay a sewer charge based on usage from both meters and a water charge based on usage from the public system meter.
- F. The City shall own, operate and maintain the meter, remote reader and associated wiring. All other facilities shall be the responsibility of the property owner.

CONSTRUCTION NOTES:

- 1. For properties receiving water from both a private well and the public system, an approved backflow prevention device shall be installed on the service connection to the public system.
- 2. The proposed location of the water meter and remote reader shall be approved by the City Utilities Department prior to installation.
- 3. The meter and related facilities shall be installed in accordance with applicable City Standards. The meter box shall be set with the long dimension parallel to the curb to differentiate them from other meters.
- 4. A conduit and pull rope shall be installed in accordance with the NEC and City Specifications and Standards. The conduit shall enter the water meter box in such a manner as to not interfere with the installation, removal, and inspection of the meter. The conduit shall be stubbed up at the building and secured to the building at no less than two locations. Both ends of the conduit shall be capped with a slip cap, not welded or glued.
- 5. A space shall be provided to allow the remote reader to be securely mounted at 5' above grade.
- 6. All work shall be performed by an appropriately licensed contractor with the exception of the meter set, pulling of remote read wires, and installation of a remote read unit which will be completed by City crews with a 48 hour notice.



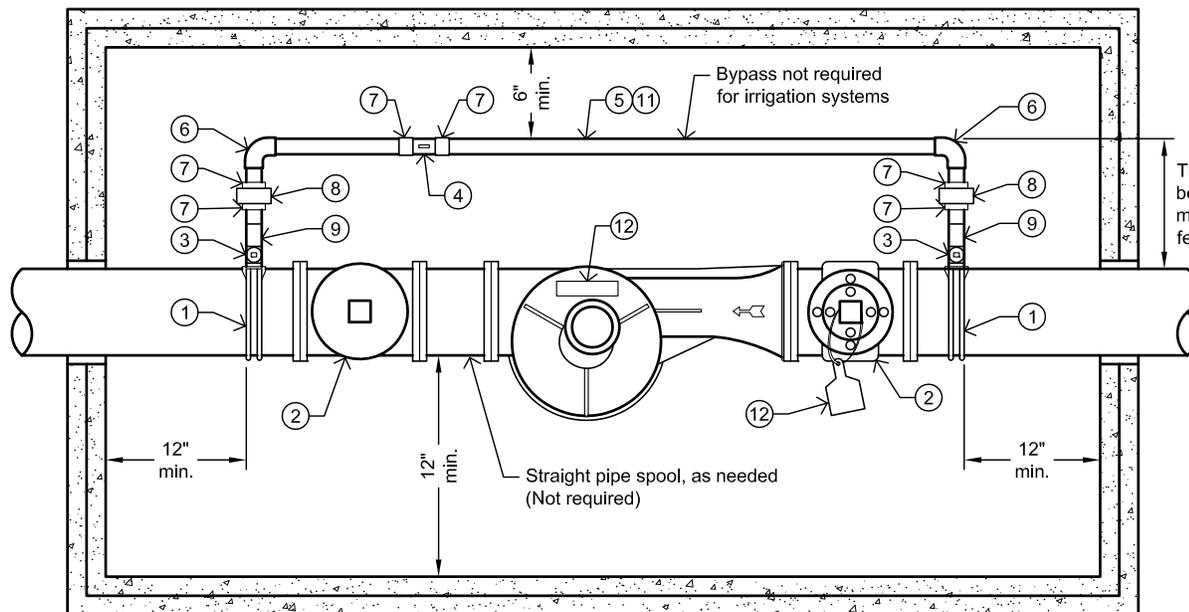
SEE ENGINEERING STANDARD 6210 FOR DETAILS

REVISIONS	BY	APP	DATE
New Standard	BL	WAP	4-97
New Border	JDL	WAP	9-97
Drafting edits	JDL	MH	12-12

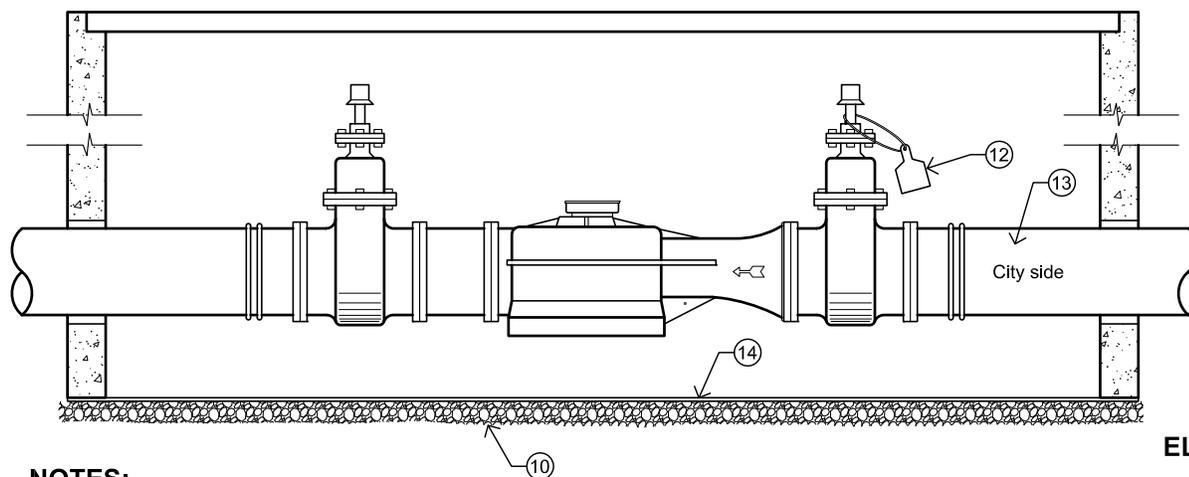
STANDARD CURRENT AS OF: January 2016



WELL METERING



PLAN



ELEVATION

NOTES:

- ① Service Saddle: Ford 202B
- ② Isolation Valve: Gate valve, resilient seated with fully encapsulated gate, FL x MJ
- ③ Corp Stop: 2", Ford FB400-7-NL
- ④ Ball Valve: 2", Ford B11-777-NL
- ⑤ Copper Tubing: 2", Type K, soft, supported at 12" intervals
- ⑥ ¼ Bend: Sweat x Sweat
- ⑦ MIP x Sweat
- ⑧ Union
- ⑨ FIP x Sweat
- ⑩ 6" of ¾" loose aggregate
- ⑪ Unmetered bypass may be omitted when meter serves only irrigation uses.
- ⑫ Attach Recycled Water Warning tag and adhesive warning decal per Engineering Standard 8810 when used for recycled water.
- ⑬ All pipe joints from the water main to the city isolation valve in the meter vault shall be restrained.
- ⑭ Vault base bottom

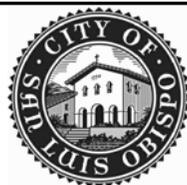
METERS:

Meters shall be centered in vault and supported per manufacturer's recommendations. Meter model and manufacturer to be approved by the City.

VAULTS:

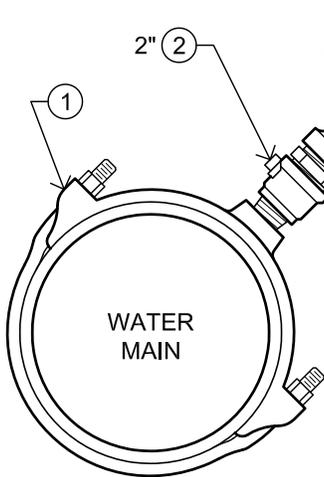
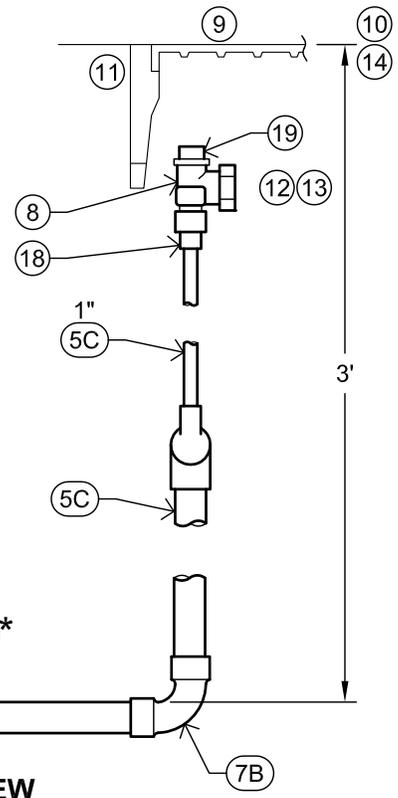
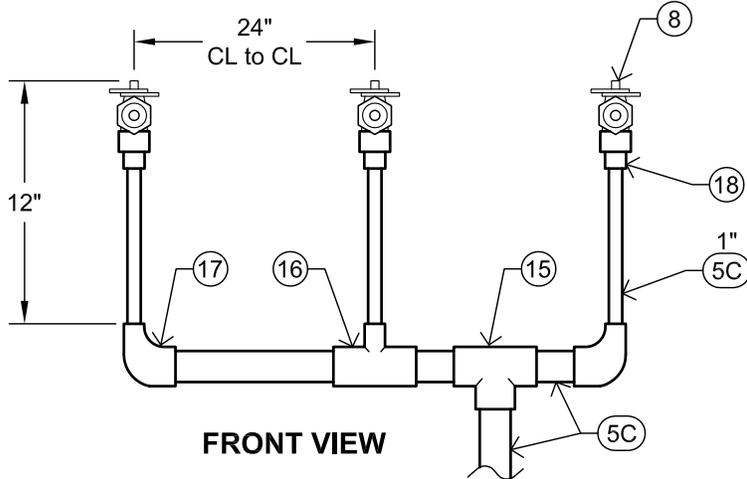
Vaults shall be Armorcast #A6004872TA48SLO. Vault in the Mission Style Sidewalk District shall be of a type to accommodate an iron-diamond plate or cast-iron lid. Vaults proposed for use in the District must be approved by the City Engineer prior to installation. Vault may be required to be placed 90 degrees to the service to fit the sidewalk width. Vault shall be placed a minimum of 12" behind the curb face, or in Mission Style sidewalk, behind the tile row. Spring-assisted vault cover lids shall bolt down. Multiple lids shall not be bolted down.

REVISIONS	BY	APP	DATE
Add Note 13	SR	BL	8-11
Revised part numbers	JDL	MH	3-13
Revised Vault Note; Drafting edits	JDL	MH	12-12
STANDARD CURRENT AS OF:		January 2016	



**WATER METER
WITH UNMETERED BYPASS
2" & LARGER**

* 2" copper shall extend beyond the gutter before transition to polyethylene.
Transition may be omitted if service is all copper.



FRONT VIEW

END VIEW

GENERAL NOTES:

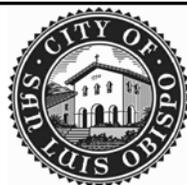
- A. through H.: See Engineering Standard 6210.
- I. Each 2" service line shall serve no more than four (4) 1" meters or six (6) 3/4" meters. Meters larger than 1" shall be served by separate 2" service lateral unless an alternative configuration is approved by the City Engineer. If installing more than four (4) meters on a single manifold, angle meter stops shall be 1" x 3/4" outlet to prevent future up-sizing of meters.
- J. Extra tracer wire shall be coiled in the meter box closest to the service line.
- K. When replacing an existing manifold, the customer side, including valves and laterals, shall be reconstructed as needed to transition to existing lateral. Customer valve shall be replaced with a new valve in these cases.
- L. Open trench water service replacements shall be installed perpendicular to the existing water main, when as measured along the main, the existing water service is offset 5' or more from perpendicular.

INSTALLATION NOTES:

- ① through ⑦ and ⑨ through ⑭: See Engineering Standard 6210.
- ⑧ 1" angle meter stop: FORD KV13-444W-NL
- ⑮ Copper tee, all sweat: 2" x 2", Service line shall be at or near center of manifold.
- ⑯ Copper tee, all sweat: 2" x 1"
- ⑰ Copper reducing ell, sweat x sweat: 2" x 1"
- ⑱ Adaptor, sweat x MIP
- ⑲ Each service shall be designated to an address and/or unit by attaching a 1/2" brass tag with 1/4" minimum letters/numbers to the curb stop with a non-ferrous wire. Meter boxes shall be in alphabetical or numerical order with respect to address, reading left to right when facing the structure.

APPROVED EQUAL ACCEPTED FOR ALL FITTINGS

REVISIONS	BY	APP	DATE
Renumber Notes	SR	BL	3-06
Drafting edits; Renumber Notes	JDL	MH	12-12
Add Note K	DVB	BL	11-07
STANDARD CURRENT AS OF:		January 2016	



MANIFOLD
MULTIPLE WATER SERVICES

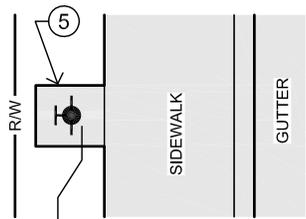


FIG. A

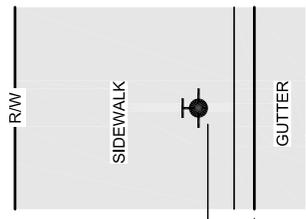


FIG. B

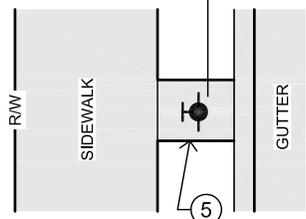
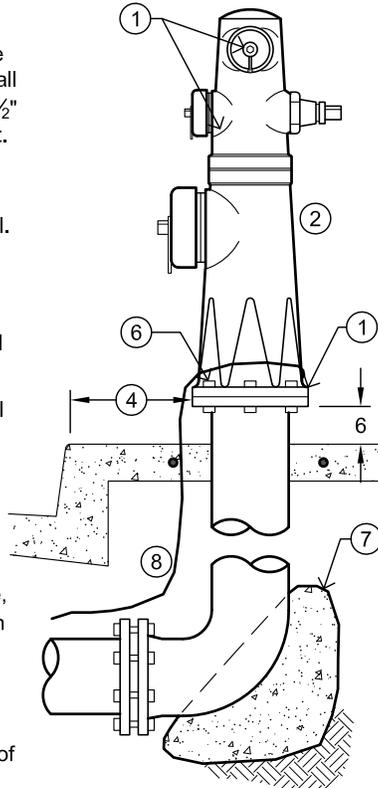


FIG. C

INSTALLATION NOTES:

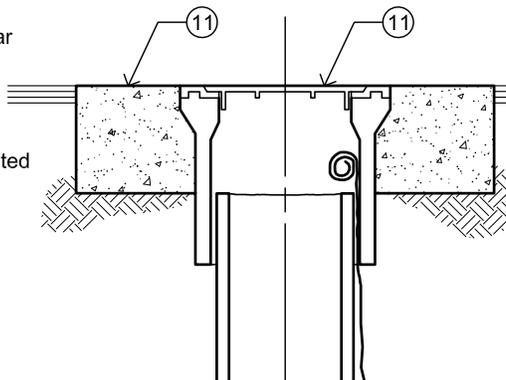
- ① Hydrant shall have 6-hole flange, all bronze body and bronze caps: Jones 3760, Clow 2060 or approved equal. Outlets shall be manufacturer's 2½" National Standard hose thread and 4½" National Standard thread. 4½" outlet shall point toward street. Hydrant shall be bagged until it is available for use.
- ② Hydrant shall be painted with Sherwin Williams ALLY 237 Industrial Enamel - Safety Yellow Base or an approved equal.
- ③ Hydrant shall be located behind sidewalk if sufficient right-of-way exists (Fig. A), or behind curb (Figs. B and C). If located behind sidewalk, 12" minimum clearance shall be provided between back of sidewalk and outlet cap nut. Install hydrant reflector(s) per Engineering Standard 7920.
- ④ Standard setback from curb face is 18" to 21". Sidewalk shall have a minimum of 42" of clearance.
- ⑤ When located in unpaved area, hydrant installation shall include 4' x 4' x 6" minimum PCC pad doweled into curb and sidewalk with #4 @ 18" o.c and one #4 rebar hoop.
- ⑥ Hydrant shall be installed to provide 3" min. to 4" max. clearance between underside of flange and sidewalk surface, and shall have ⅝" x 3" drilled break-away bolts installed, with nuts on top of flange and bolts filled with silicone or butyl caulk.
- ⑦ Thrust block, Class 3 PCC, shielded from flanges and bolts.
- ⑧ Tracer wire shall be brought to the surface with a minimum of 18" above finished grade. See Engineering Standard 6340 and Trench Details.



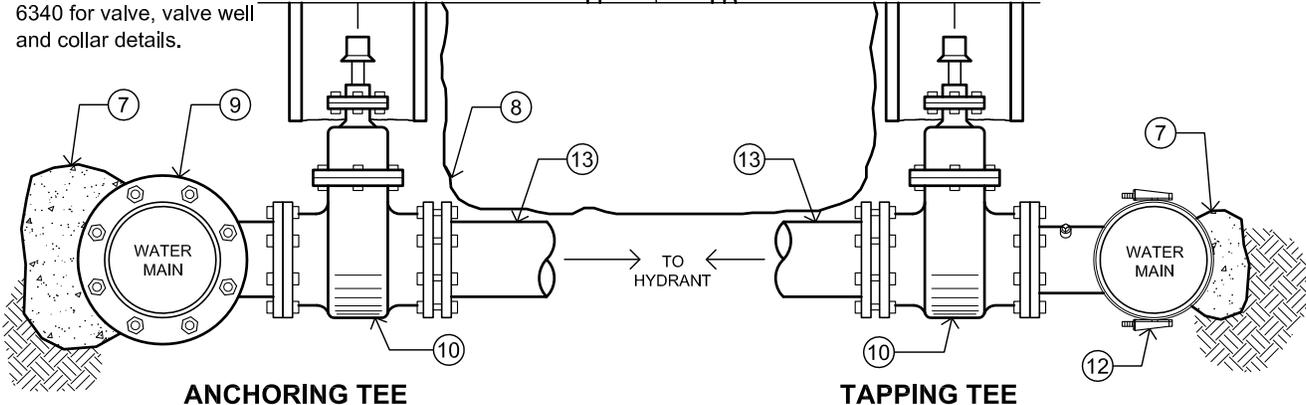
FIRE HYDRANT

NOTES (cont'd):

- ⑨ Cut-in tee, MJ x MJ x Flange. If regular line run tee is used, a swivel x solid adapter (pup) shall be used. See Engineering Standard 6320.
- ⑩ Gate valve, Flange x MJ, resilient seated with fully-encapsulated gate, epoxy-coated inside and outside, full-size waterway, open to the left, non-rising stem with O-ring seals, AVK, CLOW F-6100, or approved equal, and shall conform to AWWA Standard C-509.
- ⑪ See Engineering Standard 6340 for valve, valve well and collar details.



- ⑫ Tapping sleeve, ROMAC SST - stainless steel, or approved equal.
- ⑬ Laterals shall be Class 200 PVC or ductile iron, 6" min. diameter.



ANCHORING TEE

TAPPING TEE

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	2-13
Revised Notes 2 & 5	DVB	BL	10-06
Revised Note 8	MH	BL	11-09
STANDARD CURRENT AS OF:		January 2016	



FIRE HYDRANT ASSEMBLY

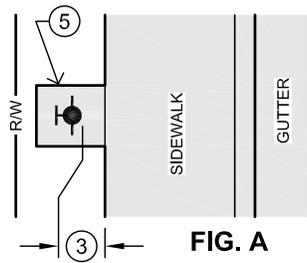


FIG. A

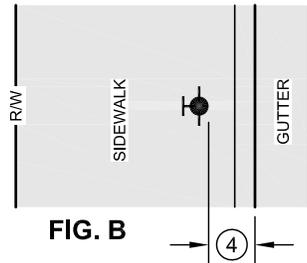


FIG. B

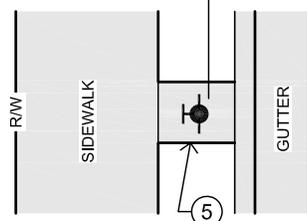
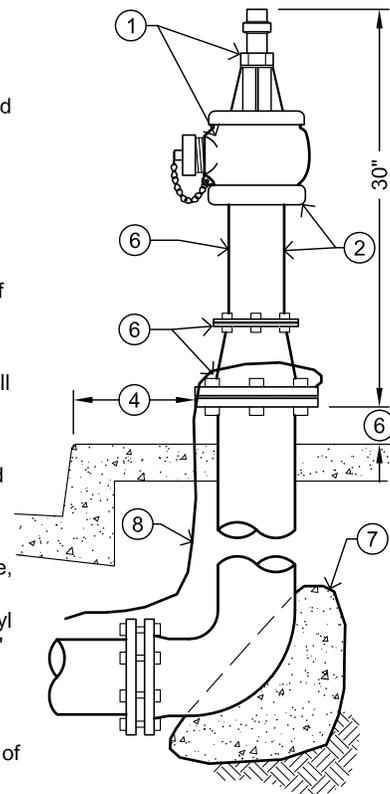


FIG. C

INSTALLATION NOTES:

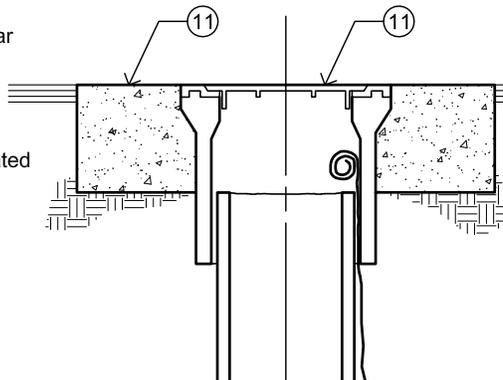
- ① Hydrant shall have 4" inlet, tapered IPT female with one 2½" NSHT male outlet, cap and chain with pentagon stem nut: Jones H.P. or approved equal. Outlet shall be pointed toward street. Hydrant shall be rated for 200 psi design pressure.
- ② Hydrant shall be primed for paint with Sherwin Williams B54-Y38 011 base or an approved equal. Hydrant shall be painted with Sherwin-Williams Verve Violet (SW 6979).
- ③ Hydrant shall be located behind sidewalk if sufficient right-of-way exists (Fig. A), or behind curb (Figs. B and C). If located behind sidewalk, 12" minimum clearance shall be provided between back of sidewalk and outlet cap nut.
- ④ Standard setback from curb face is 18" to 21". Sidewalk shall have a minimum of 42" of clearspace.
- ⑤ When located in unpaved area, hydrant installation shall include 4' x 4' x 6" minimum PCC pad doweled into curb and sidewalk with #4 @ 18" o.c.
- ⑥ Hydrant shall be installed to provide 3" min. to 4" max. clearance between underside of flange and sidewalk surface, and shall have ⅝" x 3½" drilled break-away bolts installed, with nuts on top of flange and bolts filled with silicone or butyl caulk. Hydrant assembly shall include 6" x 4" reducer and 4" DIP spool FLG x 4" IPT male.
- ⑦ Thrust block, Class 3 PCC, shielded from flanges and bolts.
- ⑧ Tracer wire shall be brought to the surface with a minimum of 18" above finished grade. See Engineering Standard 6340 and Trench Details.



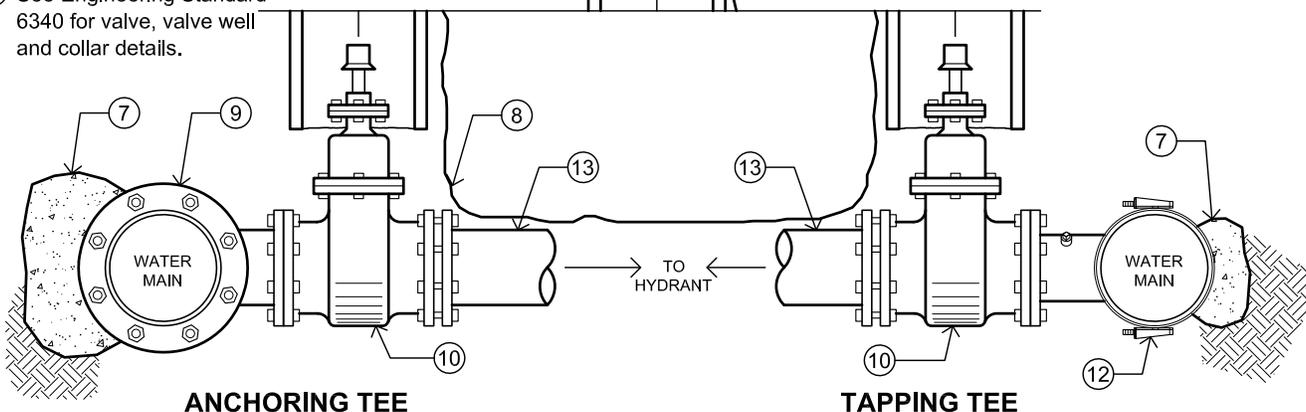
FIRE HYDRANT

NOTES (cont'd):

- ⑨ Cut-in tee, MJ x MJ x Flange. If regular line run tee is used, a swivel x solid adapter (pup) shall be used. See Engineering Standard 6320.
- ⑩ Gate valve, Flange x MJ, resilient seated with fully-encapsulated gate, epoxy-coated inside and outside, full-size waterway, open to the left, non-rising stem with O-ring seals, AVK, CLOW F-6100, or approved equal, and shall conform to AWWA Standard C-509.
- ⑪ See Engineering Standard 6340 for valve, valve well and collar details.



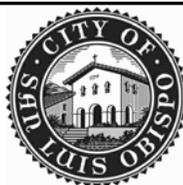
- ⑫ Tapping sleeve, ROMAC SST - stainless steel, or approved equal.
- ⑬ Laterals shall be ductile iron pipe, 6" dia., Class 52, sleeved with purple polyethylene warning encasement (Christy's Polywrap or equal).
- ⑭ Plastic warning tape, 3" min. width, with black printing on a purple field having the words "CAUTION: RECYCLED WATER - DO NOT DRINK", installed in trench backfill per Engineering Standards 6020, 6025 and 6030.



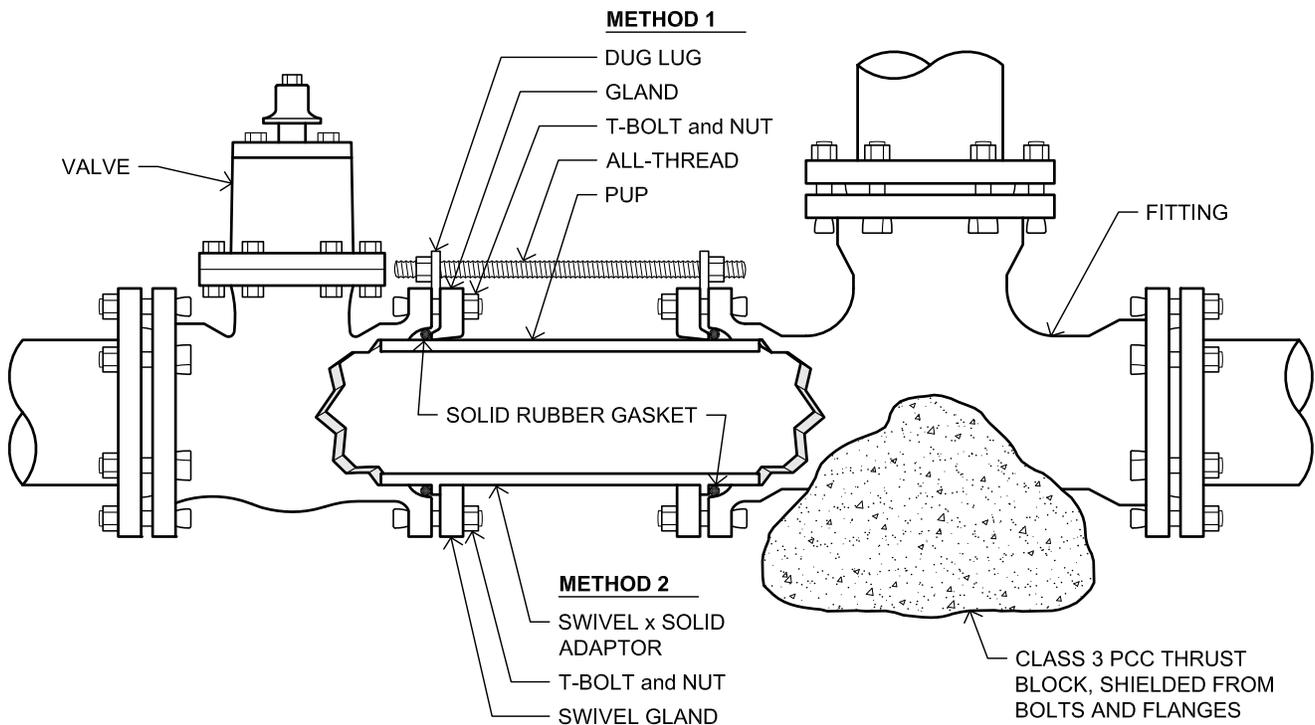
ANCHORING TEE

TAPPING TEE

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	2-13
Revised Note 8	MH	BL	11-09
Revised Note 2 (color)	JDL	MH	9-12
STANDARD CURRENT AS OF:		January 2016	

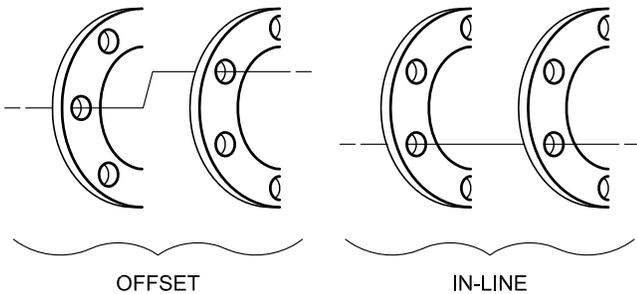


**RECYCLED WATER
HYDRANT ASSEMBLY**



VALVES ADJACENT TO FITTINGS SHALL BE RESTRAINED IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS LISTED BELOW:

- METHOD 1** - May be used only with in-line bolt alignment of valve and fitting. See chart below for number of all-threads. All-threads and nuts shall be stainless steel and shall be coated with Henry's #204 roof cement, or equal. this method may be used only with approval of the City Utilities Department.
- METHOD 2** - May be used with either offset or in-line bolt alignment.
- METHOD 3** - Flange-to-flange bolted connection may be used.
- METHOD 4** - Retainer glands may be used with ductile iron pipe only, subject to City approval. Retainer glands may NOT be used on fire hydrant laterals.
- METHOD 5** - Swivel gland and integral retaining lip connections may be used.



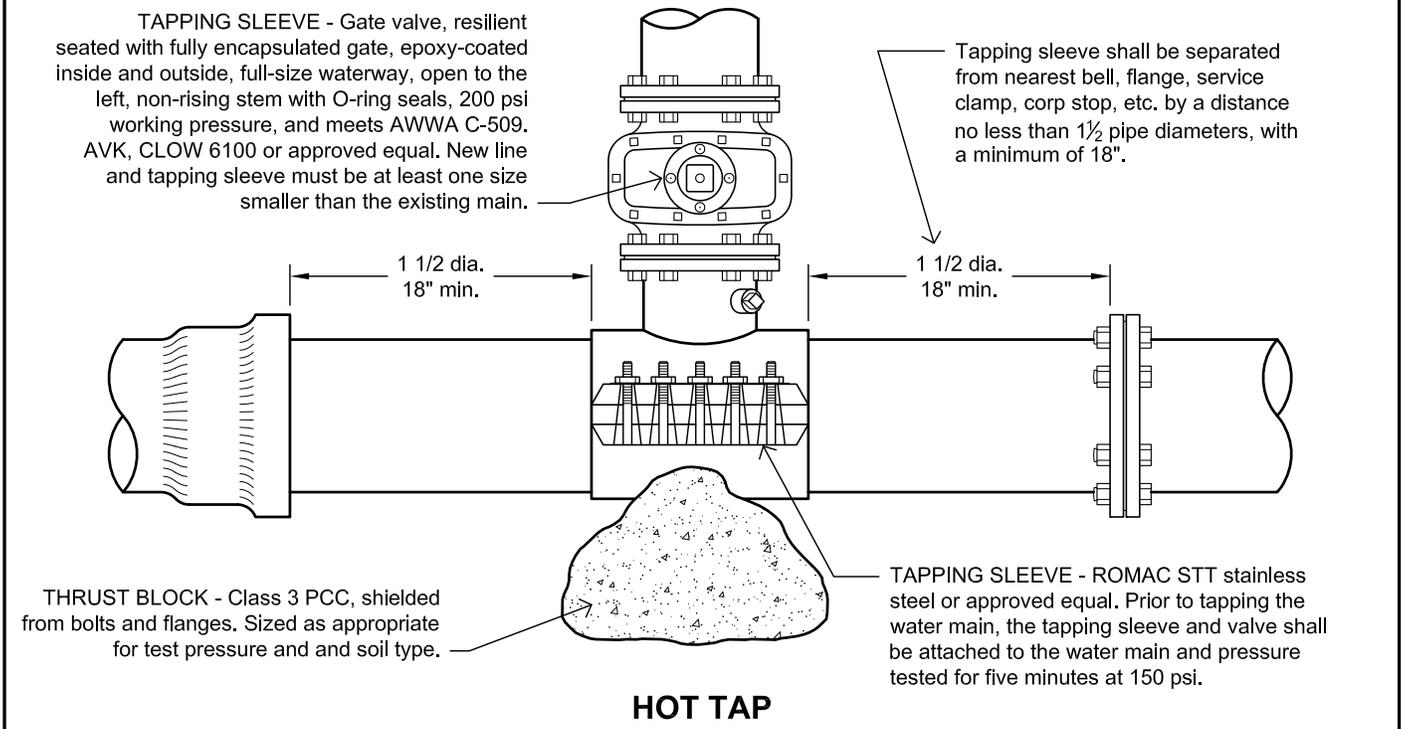
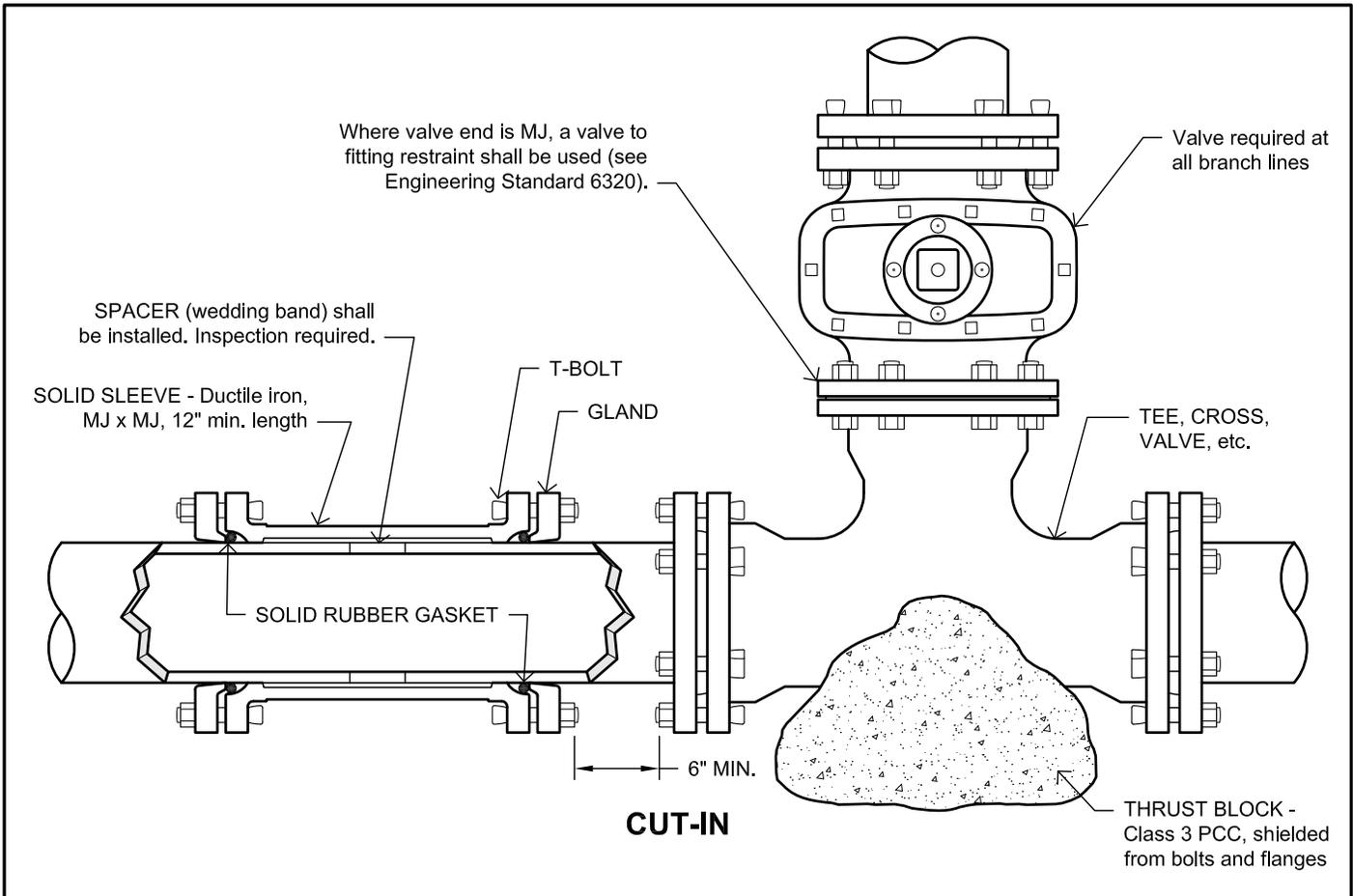
BOLT HOLE ALIGNMENT

METHOD 1	
PIPE SIZE (inches)	No. of ALL-THREADS (min.)
4	2
6, 8, 10	4
12, 14	6
over 14	TO BE DETERMINED IN FIELD

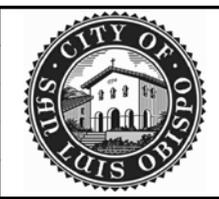
REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	2-13
Method 1, thrust block	MDW	WAP	10-93
Revised Note in Method #1	DVB	BL	11-06
STANDARD CURRENT AS OF:		January 2016	



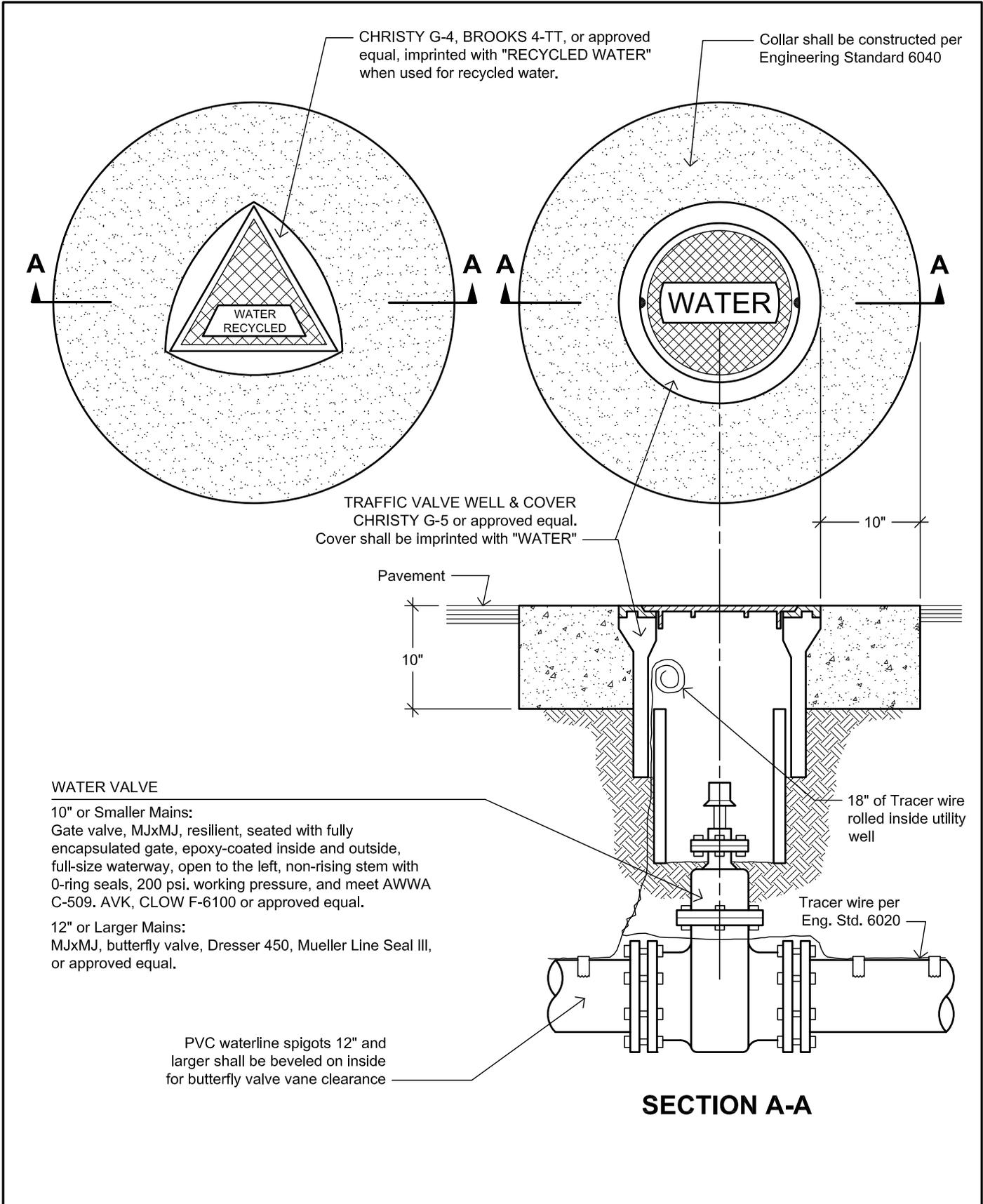
VALVE to FITTING RESTRAINT



REVISIONS	BY	APP	DATE
Rev. Tapping Sleeve Romac Note	SR	BL	1-14
Change Cast iron to Ductile iron	JDL	MH	2-14
Drafting edits	JDL	MH	2-13
STANDARD CURRENT AS OF:		January 2016	



WATERLINE TIE-IN



WATER VALVE

10" or Smaller Mains:
 Gate valve, MJxMJ, resilient, seated with fully encapsulated gate, epoxy-coated inside and outside, full-size waterway, open to the left, non-rising stem with O-ring seals, 200 psi. working pressure, and meet AWWA C-509. AVK, CLOW F-6100 or approved equal.

12" or Larger Mains:
 MJxMJ, butterfly valve, Dresser 450, Mueller Line Seal III, or approved equal.

PVC waterline spigots 12" and larger shall be beveled on inside for butterfly valve vane clearance

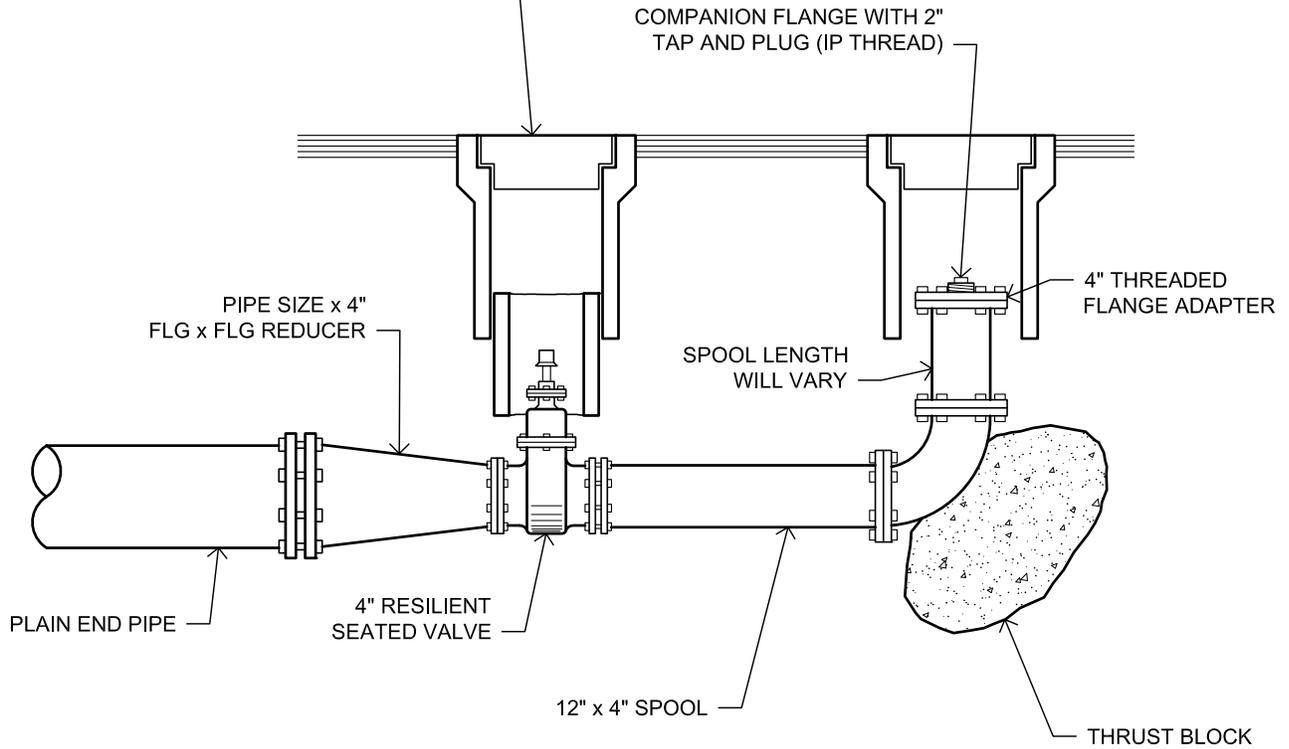
SECTION A-A

REVISIONS	BY	APP	DATE
Add recycled water cover	SR	BL	3-06
Drafting edits	JDL	MH	2-13
Fabric type	JDL	MH	9-12
STANDARD CURRENT AS OF:		January 2016	



WATER VALVE & WELL

SEE ENGINEERING STANDARD 6340
FOR WATER WELL INFORMATION, TYP.



GENERAL NOTE:

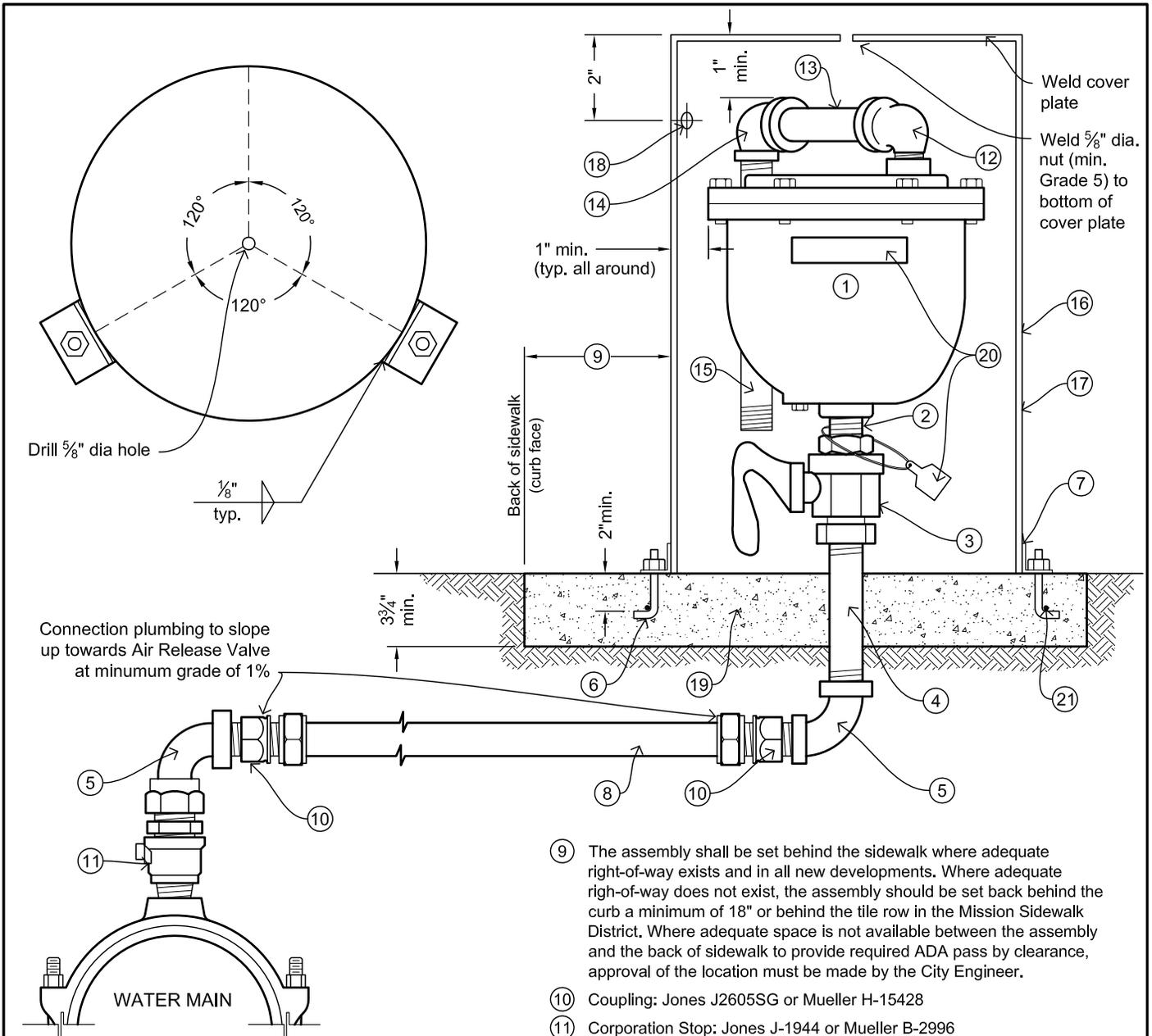
Protect all fittings with plastic and pour thrust block at end of street main, shape and location to be determined in field.

REVISIONS	BY	APP	DATE
<i>New Border</i>	JDL	WAP	9-97
<i>Revised Reducer Detail</i>	MH	BL	10-05
<i>Drafting edits</i>	JDL	MH	2-13

STANDARD CURRENT AS OF: January 2016



BLOW-OFF ASSEMBLY



Drill $\frac{5}{8}$ " dia hole

$\frac{1}{8}$ "
typ.

Connection plumbing to slope up towards Air Release Valve at minimum grade of 1%

INSTALLATION NOTES :

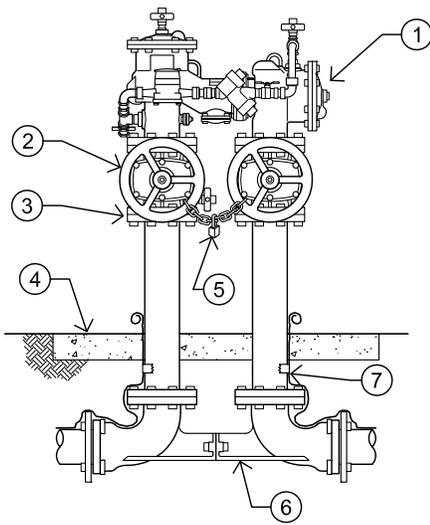
- ① Crispin Universal Air Release Valve: Model UL10.1 (1"), UL20.1 (2"), UL30.1 (3"), UL40.1 (4") or approved equal.
- ② Nipple: Brass, short
- ③ Ball Valve: Jones J-1905
- ④ Nipple: Brass, 10". Protect from contact with two layers of 3-mil tape
- ⑤ Elbow: Brass, 90°
- ⑥ Cadmium plated bent bolts $\frac{1}{2}$ " dia. (typ. 3 places) with nuts
- ⑦ Angle: Galvanized steel $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{4}$ ", 2" long (typ. 3 places)
- ⑧ Copper Tubing: Type K, soft. Encase in purple recycled water polyethylene warning sleeve when used for recycled water.

- ⑨ The assembly shall be set behind the sidewalk where adequate right-of-way exists and in all new developments. Where adequate right-of-way does not exist, the assembly should be set back behind the curb a minimum of 18" or behind the tile row in the Mission Sidewalk District. Where adequate space is not available between the assembly and the back of sidewalk to provide required ADA pass by clearance, approval of the location must be made by the City Engineer.
- ⑩ Coupling: Jones J2605SG or Mueller H-15428
- ⑪ Corporation Stop: Jones J-1944 or Mueller B-2996
- ⑫ Street Elbow: Galvanized
- ⑬ Nipple: 10" galvanized
- ⑭ Elbow: Galvanized
- ⑮ Nipple: 10" galvanized
- ⑯ 10 ga. steel, minimum wall thickness of tubing
- ⑰ Paint with zinc-oxide primer and 2 coats of Sherwin Williams Emerald Ice (SW 4069). Use Sherwin Williams Verve Violet (SW 6979) for recycled water.
- ⑱ Drill minimum of six (6) $\frac{1}{2}$ " diameter holes on circumference evenly spaced.
- ⑲ PCC Slab: 30" x 30" x 4" thick on a 4" Class 3 base
- ⑳ Attach Recycled Water Warning Tag and adhesive decal per Engineering Standard 8810 when used for recycled water.
- ㉑ One (1) #4 rebar hoop

REVISIONS	BY	APP	DATE
Update Note 1	SR	BL	8-11
Drafting edits	JDL	MH	2-13
Revise Note 17	JDL	MH	9-12
STANDARD CURRENT AS OF:		January 2016	

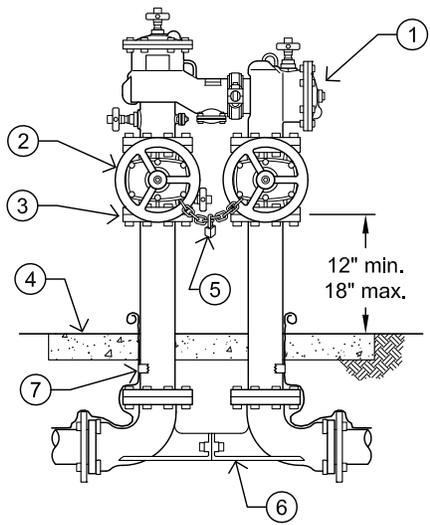


AIR/VAC RELEASE VALVE ASSEMBLY
1" & 2"



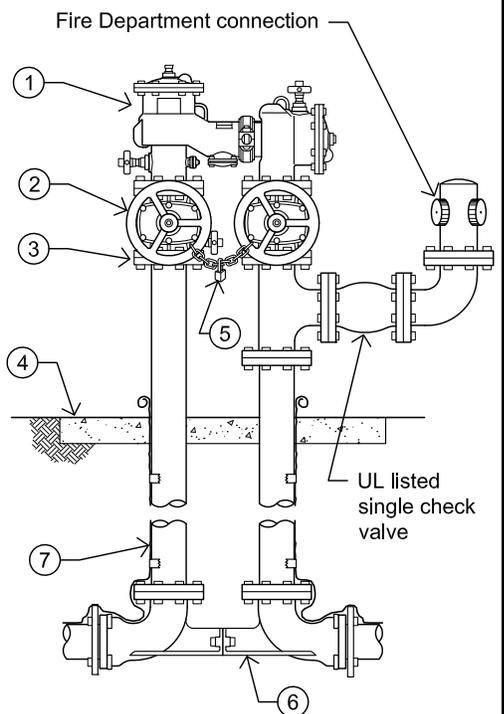
DOUBLE CHECK DETECTOR

Use when on-site system includes fire hydrants (4" - 10" only)



DOUBLE CHECK

No on-site hydrants (2" - 10")



DOUBLE CHECK W/ FDC

When requested by Fire Department (4" - 10" only)

GENERAL NOTES:

- A. All fittings and risers smaller than 3" diameter shall be copper or brass. Fittings and risers larger than 3" shall be ductile iron pipe internally cement lined for fire service and wrapped with two layers of UPC listed plastic tape minimum 1½" or coated with Henry's #204 plastic roof cement or an approved equal.
- B. Materials shall be UL listed for fire service.
- C. Materials shall be inspected by Fire Department prior to installation.
- D. Fire line shall be tested in accordance with Section 76, "Waterlines" of the City Standard Specifications. No connections may be made until water samples have been tested and approved.
- E. Location of double check and FDC shall be approved by Fire Department prior to placement.
- F. Wrap bolts with ¼" plastic sheathing prior to placement of thrust blocks.
- G. Provide clearances around device per manufacturer's recommendations and adequate access for testing.
- H. When adequate space does not exist between the public right-of-way and the building face, the USC approved backflow prevention device may be installed inside the building on the fire sprinkler riser (refer to Engineering Standard 6590 for underground portion.) The backflow preventer shall be located no further than 20' from the street side property line. Other USC-approved devices may appear different than those shown. Exterior installations shall have OS&Y valves. Devices installed inside buildings may have indicating butterfly valves.
- I. Double Check Detector meters shall be supplied with registers that measure in "units" (100 cu.ft.)

INSTALLATION NOTES:

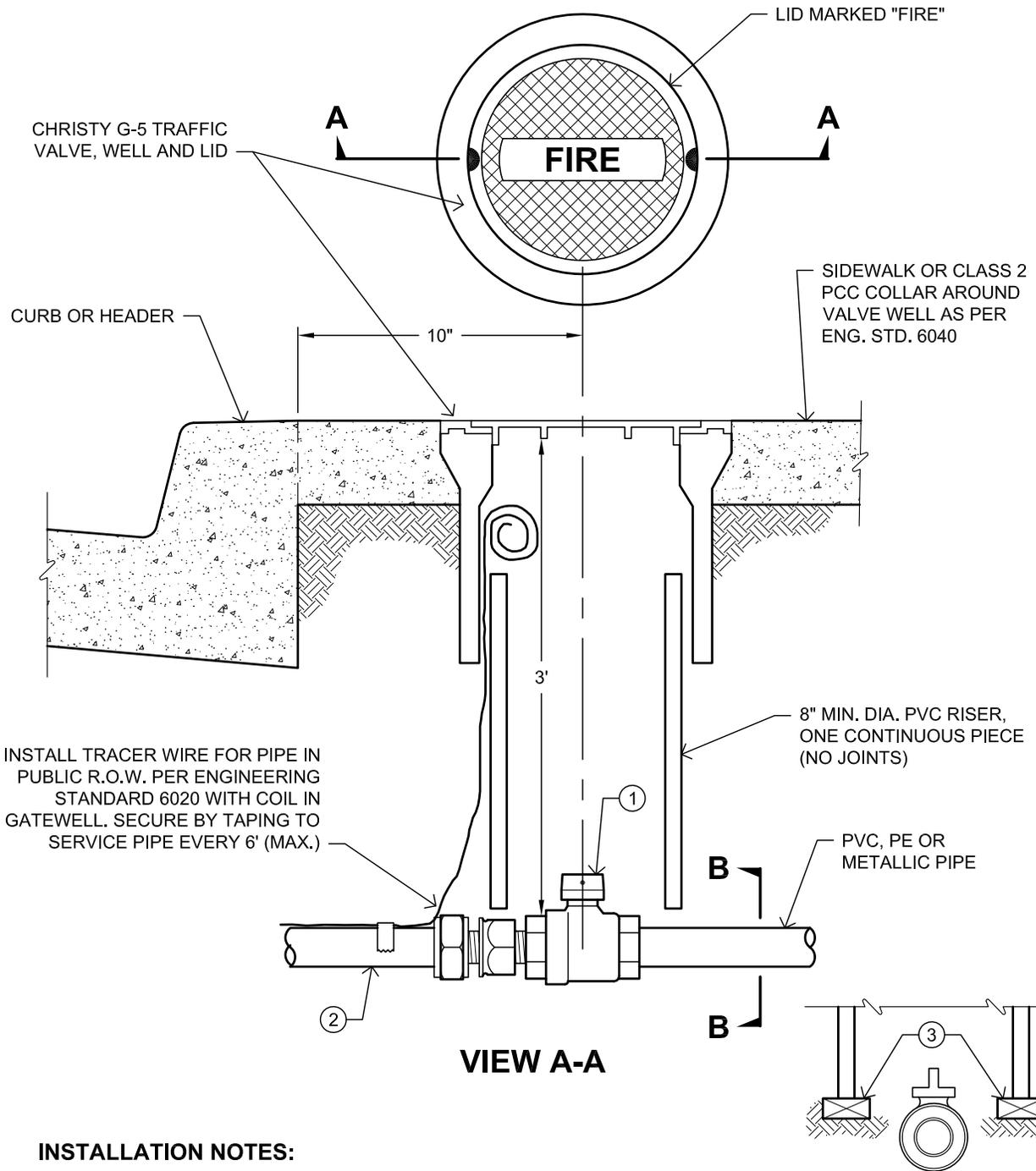
- ① Backflow preventer shall be approved by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research for the proposed application.
- ② Backflow preventer shall include OS&Y valves. Backflow preventers that are USC-approved with butterfly valves may be used with prior written approval of the Fire Marshall when installed inside a building. Each valve shall include a tamper device for electronic monitoring. Junction boxes shall have tamper-proof screws.
- ③ All risers and above ground mainline fittings shall be flange type, epoxy coated inside or cement mortar lined.
- ④ Class 3 PCC pad, 4" thick, 12" minimum around risers, on 4" Class 3 base.
- ⑤ Break-away padlock and chain between OS&Y valves, locked in open position.
- ⑥ Valve setter or PCC thrust blocks, Class 3, size as required for type of soil.
- ⑦ Tracer wire from street valve or double check assembly to hydrant and/or building sprinkler riser per Engineering Standard 6020.

ANY MODIFICATION TO FIRE DEPARTMENT REQUIREMENTS MUST HAVE WRITTEN APPROVAL FROM THE FIRE DEPARTMENT.

REVISIONS	BY	APP	DATE
Add Note 8	DVB	BL	10-07
Drafting edits	JDL	MH	2-13
Revised Note H and 1	DVB	BL	11-06
STANDARD CURRENT AS OF:		January 2016	



DOUBLE CHECK BACKFLOW PREVENTER
2" to 10"



INSTALLATION NOTES:

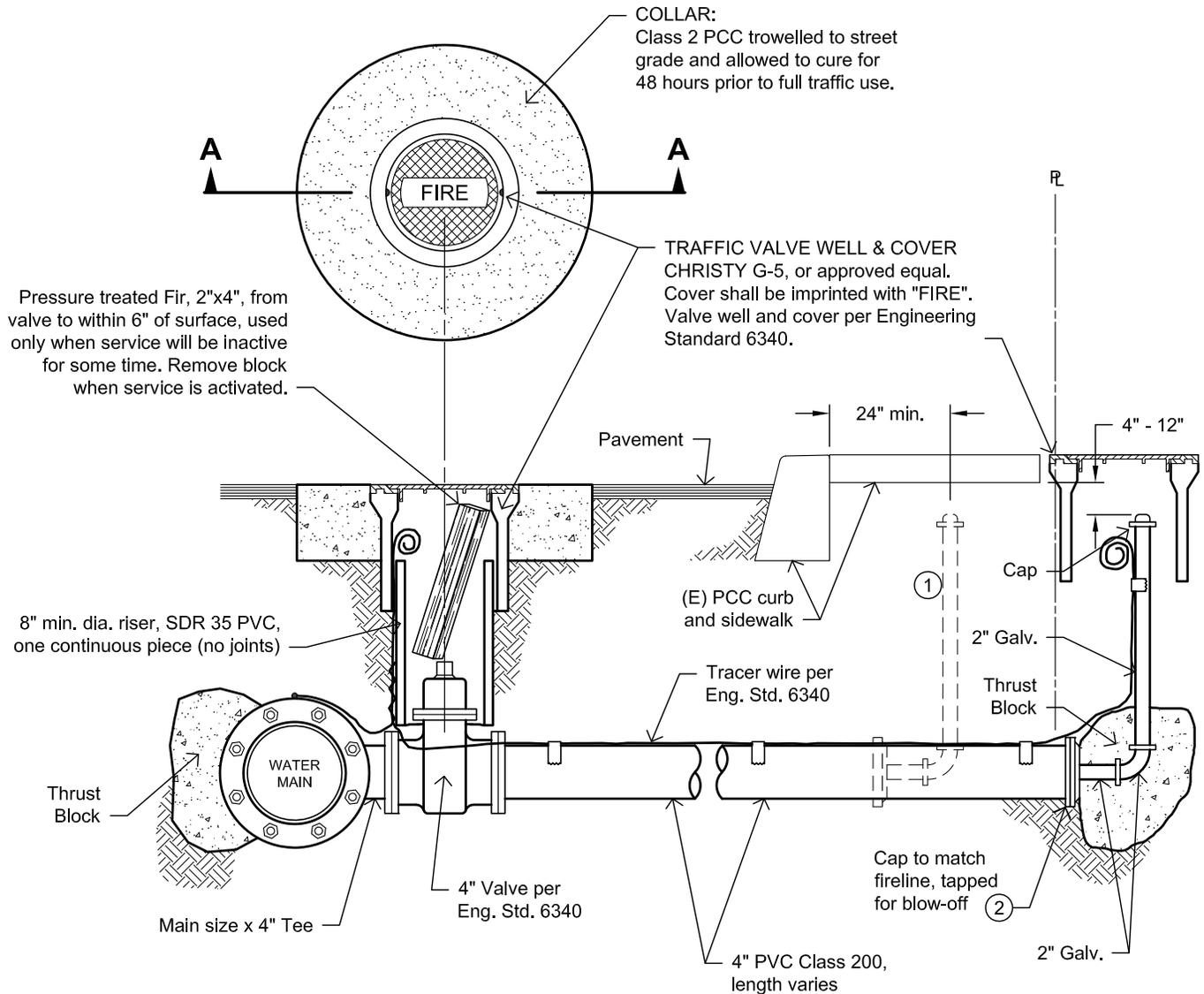
- ① 2" BALL VALVE, JONES J-1921 SG OR FORD B41-777G, OR APPROVED EQUAL WITH MINIMUM 300 PSI WORKING PRESSURE RATING.
- ② POLYETHYLENE TUBING, SDR-9, 200 PSI WESFLEX OR EQUAL.
- ③ 2 EACH, 2" x 4" x 12" REDWOOD RISER SUPPORTS.

THIS STANDARD TO BE USED ONLY WHERE FIRE DEPARTMENT APPROVED "TELEPHONE LEASE LINE ALARM SYSTEM" IS INSTALLED. OTHERWISE, A DETECTOR CHECK ASSEMBLY IS REQUIRED.

REVISIONS	BY	APP	DATE
Tracing Wire note	MH	BL	11-09
Note 1; Drafting edits	JDL	MH	2-13
Compression fitting	SR	JDW	10-03
STANDARD CURRENT AS OF:		January 2016	



**FIRE SPRINKLER
VALVE AND WELL
2"**



SECTION A-A

GENERAL NOTES:

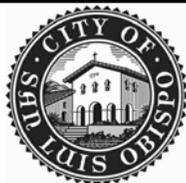
- A. All work, including trenching, backfill, compaction, and testing of materials shall be performed per Project Specifications and as shown on this detail.
- B. After completion of testing, valve shall be closed, temporary blow-off capped and the area resurfaced.
- C. G-5 box in/behind sidewalk shall be removed at time of fire line connection to building.

INSTALLATION NOTES:

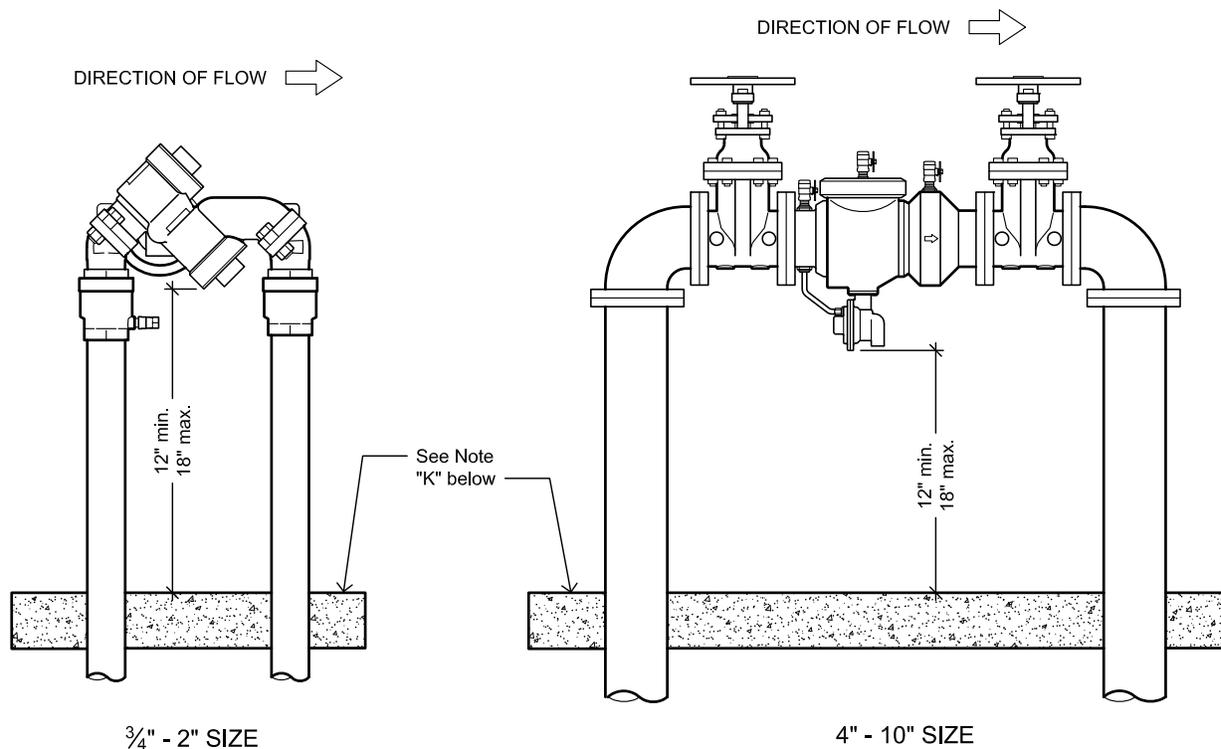
- ① Alternate location where building abuts sidewalk allowed only with written approval of Utilities Department.
- ② Temporary cap shall be removed at the time the service is connected to the fire sprinkler system. USC approved backflow prevention device shall be installed per Engineering Standard 6420.

THIS DETAIL APPLIES TO NEW FIRE SERVICE ON NEW OR EXISTING WATER MAIN.

REVISIONS	BY	APP	DATE
Temp G-5 box to BOW	JDL	JDW	1-03
Larger riser	MH	BL	12-08
Drafting edits	JDL	MH	2-13
STANDARD CURRENT AS OF:		January 2016	



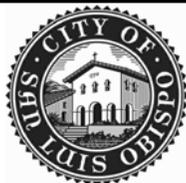
NEW FIRE SERVICE
4"



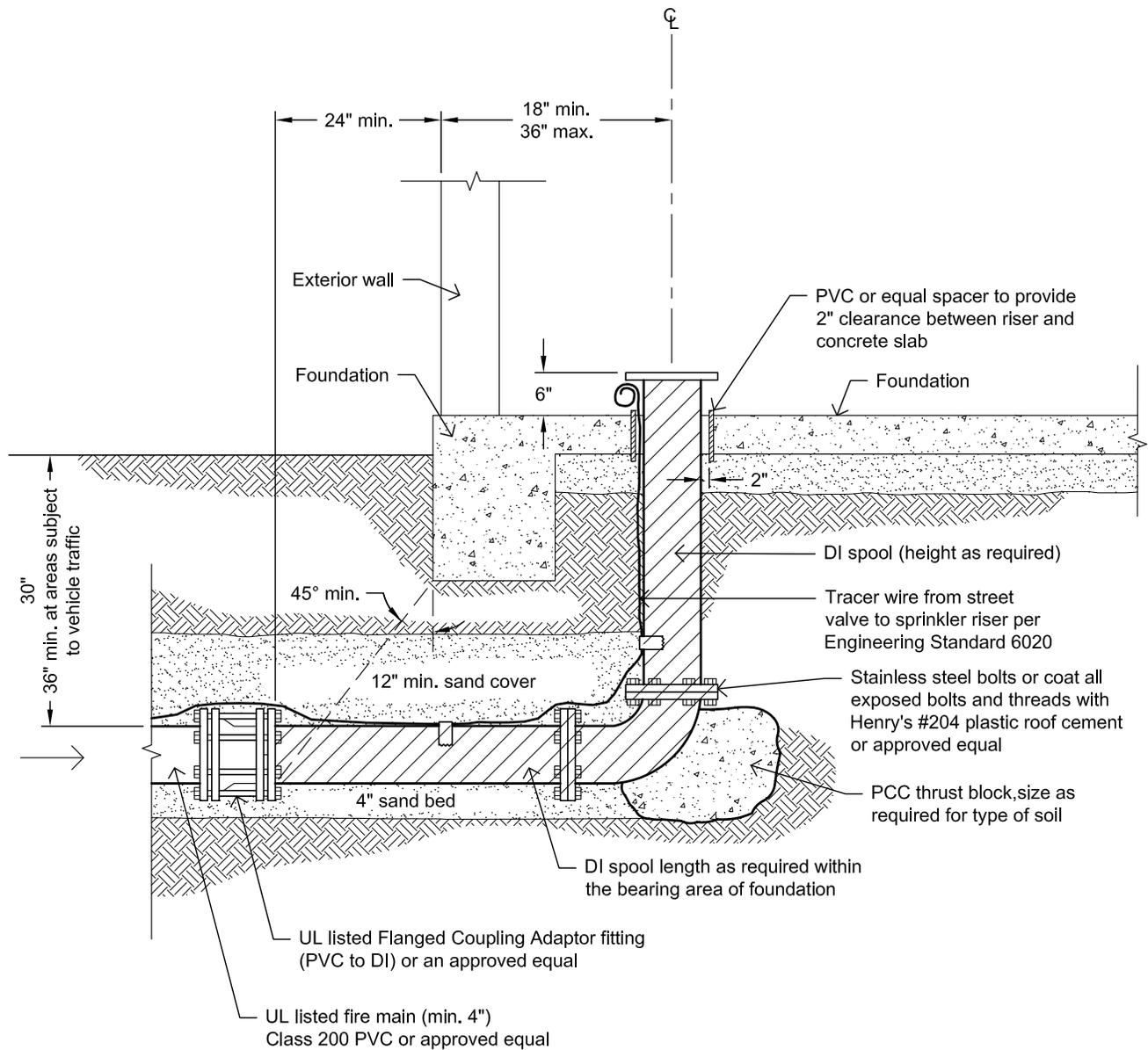
GENERAL NOTES:

- A. Pipe and fittings shall be brass or copper when diameter is between 3/4" and 3" and DI for pipe larger than 3". DI pipe shall be wrapped with two layers of UPC listed plastic tape minimum 40 mil or coated with Henry's #204 plastic roof cement or approved equal. Resilient seated shut off valves and test cocks are required.
- B. For 3/4" through 2" lines, the customer valve in the water meter box shall be eliminated.
- C. The mechanical backflow prevention assembly shall be installed subject to the approval of the County of San Luis Obispo Cross-Connection Inspector. Any deviation from this standard must receive approval prior to installation.
- D. All mechanical backflow prevention assemblies approved by the County Cross-Connection Inspector for installation at the service connection have been evaluated and approved by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California. These assemblies are only approved for the horizontal orientation, unless specifically evaluated and approved by the local Health Department for other orientations. Check with the local Health Department.
- E. Choice of type of backflow prevention assembly, i.e. reduced pressure principle or double check valve assembly, will be based on the degree of hazard as evaluated by the County Cross-Connection Inspector.
- F. Backflow preventer shall be located within 10' of water meter and no connections or tees are allowed between the meter and the assembly.
- G. No wye strainers are allowed before the No. 2 shut off valve.
- H. See Engineering Standard 6210 for meter and service details up to 2".
- I. Riser pipes shall include unions for sizes 3/4" through 2".
- J. 3/4" - 2" RPB shall be FEBCO 825YA or approved equal. 4" - 10" RPB shall be Wilkins model 375 or approved equal.
- K. Class 3 PCC pad, 4" thick, 12" minimum surrounding backflow preventer, on 4" class 3 base.
- L. Backflow preventer shall have 24" of separation from other devices perpendicular to the flow direction.

REVISIONS	BY	APP	DATE
Rev Note "F"; Drafting	DVB	BL	11-06
Added Note K	MH	BL	11-09
Drafting edits	JDL	BL	6-12
STANDARD CURRENT AS OF:		January 2016	



**R.P. BACKFLOW
PREVENTER**
3/4" to 10"



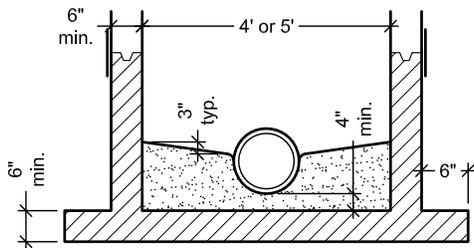
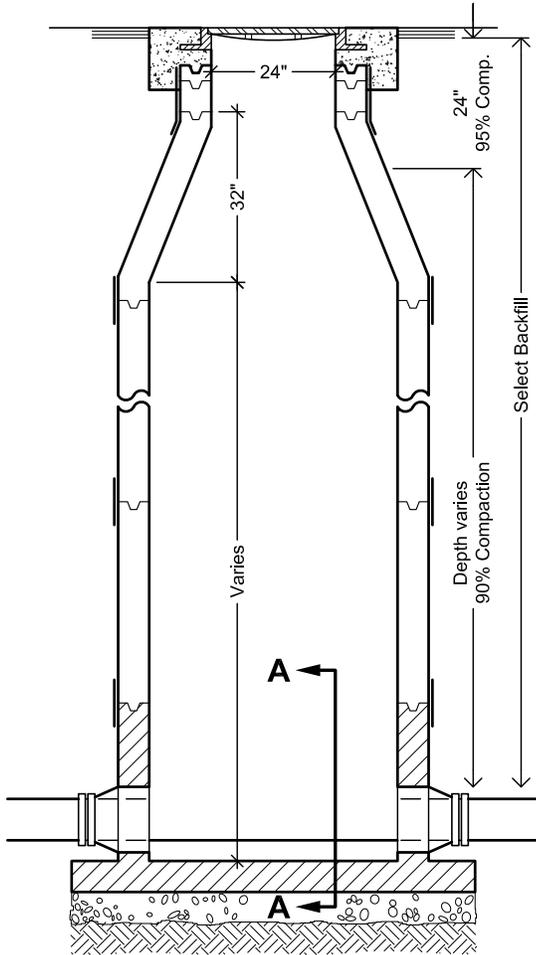
GENERAL NOTES:

- A. Fire line shall be tested in accordance with Section 76, "WATERLINES" of the City Standard Specifications. NO CONNECTION MAY BE MADE UNTIL WATER SAMPLES HAVE BEEN TESTED AND APPROVED.
- B. Location of fire sprinkler riser shall be approved by the Fire Department.
- C. Materials shall be UL listed for fire service.
- D. Wrap bolts with 6 mil plastic sheathing prior to placement of thrust block(s).
- E. All fittings and risers shall be ductile iron, internally cement lined for fire service, and wrapped with two layers of UPC listed plastic tape (minimum 40 mil) or coated with Henry's #204 plastic roof cement or an approved equal.

REVISIONS	BY	APP	DATE
Use of tracer wire	JDL	WAP	1-00
Drafting edits	JDL	MH	2-13
Note revisions per Fire Department	JDL	WAP	9-97
STANDARD CURRENT AS OF:		January 2016	



**FIRE MAIN
BUILDING CONNECTION**



SECTION A-A

COVER:

Manhole frame and cover shall have a 24" clear opening and a sealed blind pick hole and no side pick hole. (Phoenix Iron works P-1090 or approved equal). Frame and cover shall be a 10.5% machined matched fit. The cover shall be lettered "SANITARY SEWER". The inside of the frame shall be grouted with non-shrink grout.

ADJUSTMENT TO GRADE:

Adjust to grade per Engineering Standard 6040.

COLLAR:

Collar shall be constructed per Engineering Standard 6040.

CONE:

Cone shall be concentric and conform to the requirements for risers. Eccentric cone may be used only in special cases with the prior written approval of the Utilities Department.

MANHOLE RISERS:

Manhole risers shall be precast concrete conforming to ASTM C-478 and shall have a 6" minimum wall thickness with minimal reinforcements. Manholes shall be 4' in diameter unless the size and/or number of inlet(s) and outlet(s) warrants the use of a 5' diameter manhole.

JOINTS:

Joints shall be set with butyl rubber sealant (RUB-R-NEK). Inside of joints shall be grouted with non-shrink grout. Manhole shall be sealed with an external rubber sleeve (9" Infi-Shield Gator Wrap or approved equal). The application shall form a continuous seal that applies inward pressure on the protected joint for the life of the application.

BASE:

Manhole base shall be precast reinforced Class 3 concrete with extended base and conform to the requirements for manhole risers. 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 connectors (KOR-N-SEAL or equal) either by manufacturer or contractor using approved equipment. Gaps and holes between manhole base and pipe connections shall be filled with non-shrink grout. The precast base shall be bedded on a minimum of 6" of well graded crushed rock over native material that is either undisturbed or compacted to 95%. (See Standard Specification Section 26-1.02F for crush rock requirements).

INVERT:

Invert shall be completed in a single pour using Class 3 concrete with steel trowel finish. Any change in direction shall be a fixed radius curve extending from the inlet wall to the outlet wall. Inside surface of invert and area between pipe connection and channel shall be free from gaps, holes and sharp edges. All inlets shall be designed and installed such that the top of pipe elevations match as much as possible.

TESTING:

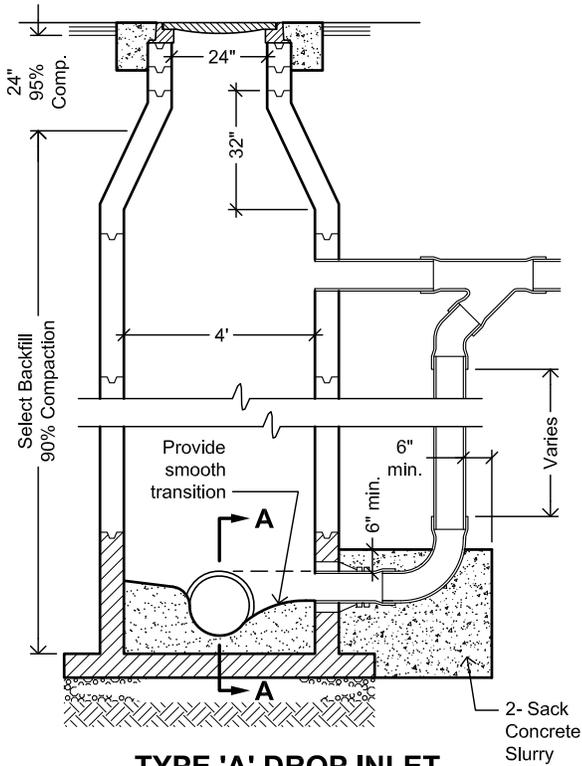
See Standard Specifications Section 77-3.03G for Vacuum Test Requirements.

REVISIONS	BY	APP	DATE
Manhole Cover and Joint Sealant	JDL	DA	10-15
Revise Testing, delete tables	SR	MH	1-14
Revised BASE Note	JDL	BL	6-12

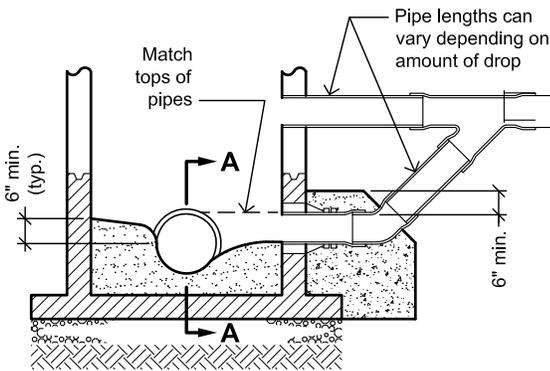
STANDARD CURRENT AS OF: January 2016



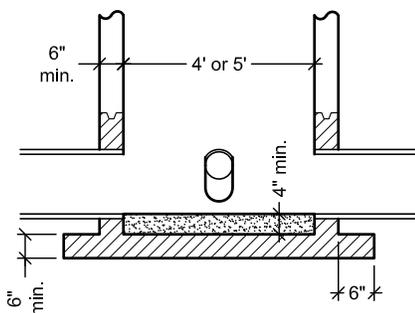
SEWER MANHOLE



TYPE 'A' DROP INLET



TYPE 'B' DROP INLET



SECTION A-A

TYPE "B" SHALL BE USED ONLY WHEN AMOUNT OF DROP IS TOO LITTLE FOR TYPE "A"

COVER:

Manhole frame and cover shall have a 24" clear opening and a sealed blind pickhole (SBF-1900 or approved equal). The cover shall be lettered "SANITARY SEWER". The inside of the frame shall be grouted with non-shrink grout.

ADJUSTMENT TO GRADE:

Adjust to grade per Engineering Standard 6040.

COLLAR:

Collar shall be constructed per Engineering Standard 6040.

CONE:

Cone shall be concentric and conform to the requirements for risers. Eccentric cone may be used only in special cases with the prior written approval of the Utilities Department.

MANHOLE RISERS:

Manhole risers shall be precast concrete conforming to ASTM C-478 and shall have a 6" minimum wall thickness with minimal reinforcements. Manholes shall be 4' in diameter unless the size and/or number of inlet(s) and outlet(s) warrants the use of a 5' diameter manhole.

JOINTS:

Joints shall be set with butyl rubber sealant (RUB-R-NEK). Inside of joints shall be grouted with non-shrink grout.

BASE:

Manhole base shall be precast reinforced Class 3 concrete with extended base and conform to the requirements for manhole risers. 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 connectors (KOR-N-SEAL or equal) either by manufacturer or contractor using approved equipment. Gaps and holes between manhole base and pipe connections shall be filled with non-shrink grout. The precast base shall be bedded on a minimum of 6" of well graded crushed rock over native material that is either undisturbed or compacted to 95%. See Section 26-1.02 for crush rock requirements.

INVERT:

Invert shall be completed in a single pour using Class 3 concrete with steel trowel finish. Any change in direction shall be a fixed radius curve extending from the inlet wall to the outlet wall. Inside surface of invert and area between pipe connection and channel shall be free from gaps, holes and sharp edges. All inlets shall be designed and installed such that the top of pipe elevations match as much as possible.

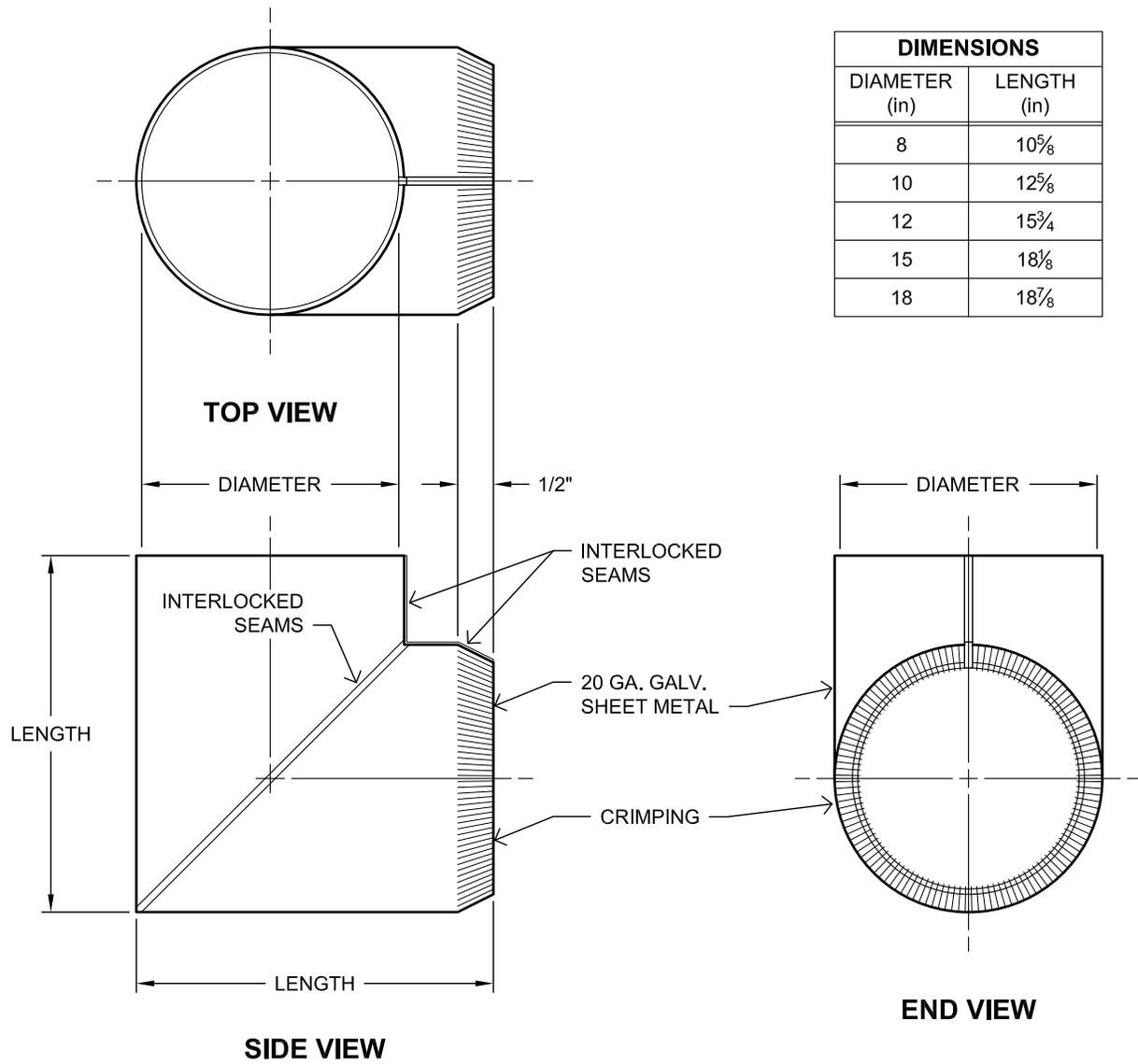
TESTING:

See Section 77-3.03G for Vacuum Test Requirements.

REVISIONS	BY	APP	DATE
Drafting updates	JDL	BL	6-12
Revised BASE Note	JDL	BL	6-12
Revise Base, Testing; Delete tables	SR	BL	1-14
STANDARD CURRENT AS OF:		January 2016	

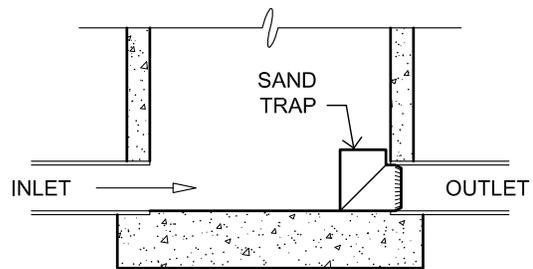


SEWER DROP MANHOLE



GENERAL NOTES:

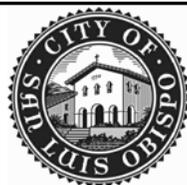
- A. Sand traps shall be used in all manholes where manhole tops are adjusted due to street grade changes or paving operations and where sewerline is being constructed.
- B. Sand traps shall be in place throughout construction and shall be removed only after sand and all non-sewage debris have been removed from affected sewerline(s), subject to inspection of Utilities Department.
- C. Use of any other type of san trap shall have prior approval of the Utilities Department.



MANHOLE INSTALLATION

Sand trap to be inserted into outlet pipe of designated manhole(s), or the nearest manhole downstream from construction.

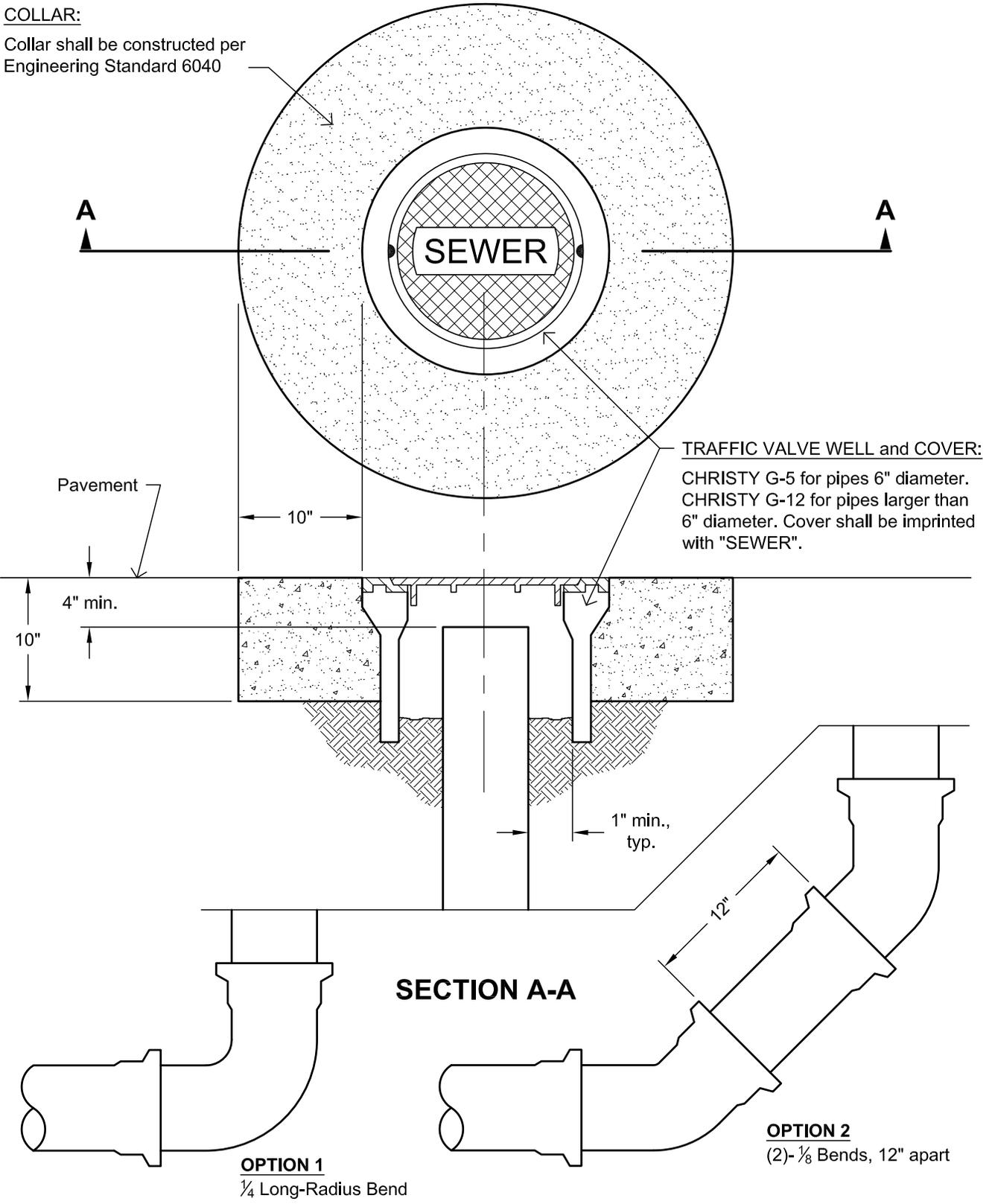
REVISIONS	BY	APP	DATE
New Border	JDL	WAP	9-97
Redrawn to CAD	JDL	WAP	12-93
Drafting edits	JDL	MH	2-13
STANDARD CURRENT AS OF:		January 2016	



SEWER MANHOLE SAND TRAP

COLLAR:

Collar shall be constructed per Engineering Standard 6040



TRAFFIC VALVE WELL and COVER:
 CHRISTY G-5 for pipes 6" diameter.
 CHRISTY G-12 for pipes larger than 6" diameter. Cover shall be imprinted with "SEWER".

SECTION A-A

OPTION 1
 1/4 Long-Radius Bend

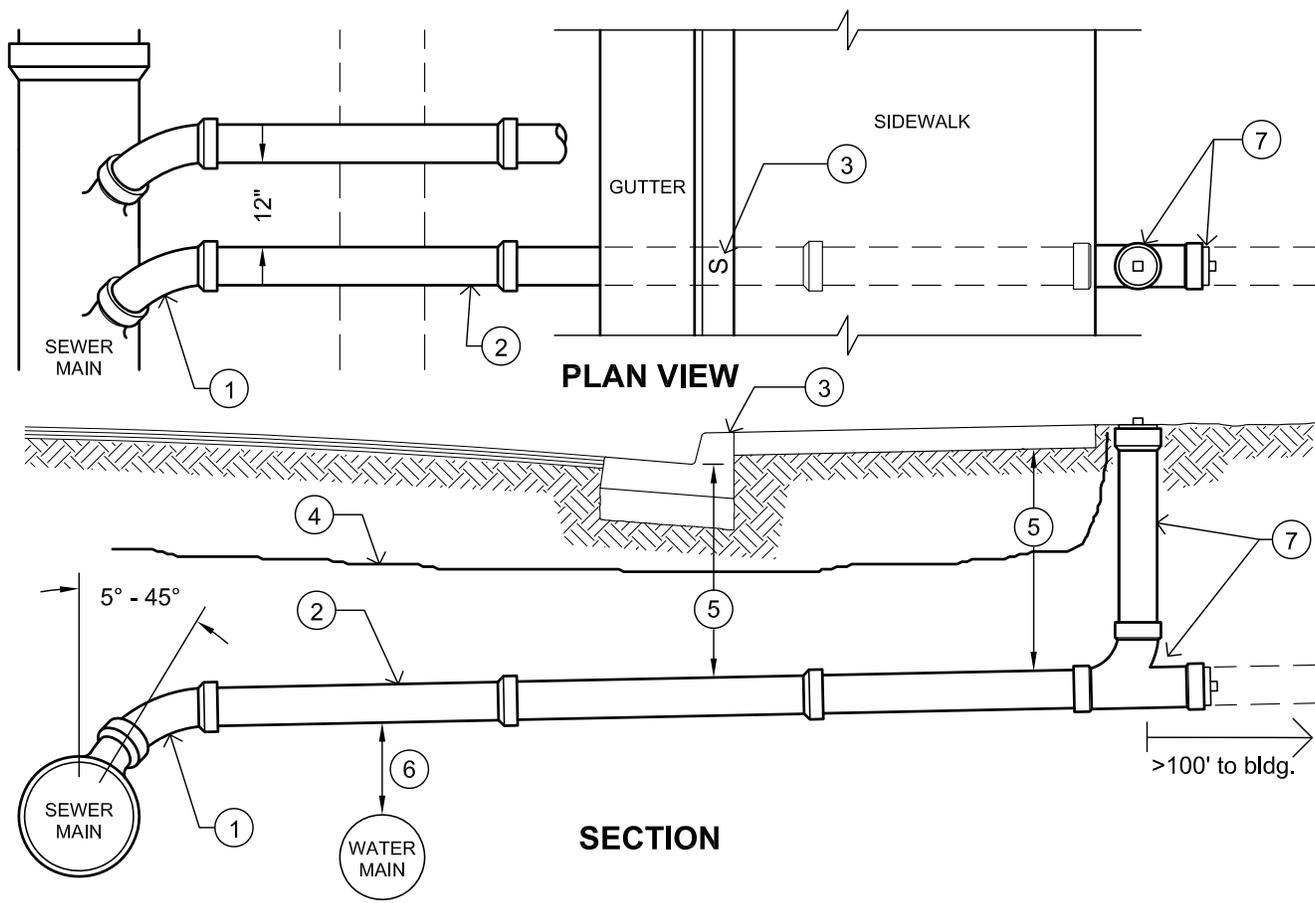
OPTION 2
 (2)- 1/8 Bends, 12" apart

CLEANOUTS ARE NOT ALLOWED ON NEW MAIN CONSTRUCTION.

REVISIONS	BY	APP	DATE
Plug removed	JDL	DA	10-15
Revise bottom Note	SR	BL	1-14
Drafting edits	JDL	MH	2-13
STANDARD CURRENT AS OF:		January 2016	



SEWER CLEANOUT & WELL



GENERAL NOTES:

- A. City Utilities Department will install all new wyes on existing sewer mainlines.
- B. Sewer lateral repair must comply with section 77-3.03F(3) of the Standard Specifications.
- C. Install backwater trap or backwater valve in compliance with municipal code section 13.08.200.

INSTALLATION NOTES:

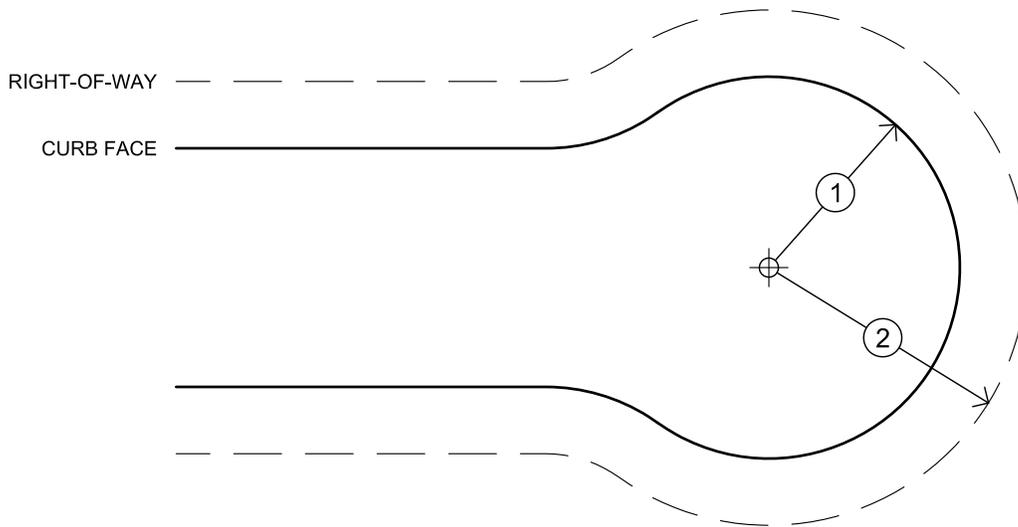
- ① Factory-fabricated wye in sewer main, with 1/8 bend. Bend shall point downstream and enter main at a vertical angle of not less than 5° or more than 45°.
- ② Sewer lateral pipe and fittings must comply with sections 77-3.02A(5) and 77-3.02B(5) of the Standard Specifications.
- ③ Top of curb shall be marked with an "S" directly over lateral. The "S" shall be stamped in new concrete or chiseled into existing concrete and shall not be less than 3" long, 2" wide and 3/16" deep.
- ④ When non-metallic pipe is used, magnetic tracer tape must be placed in trench over lateral from sewer main to cleanout at a depth of 12".
- ⑤ Depth of lateral must not be less than 3' or greater than 5' deep from top of pipe to finished surface unless alternate stronger pipe material is used.
- ⑥ Refer to Engineering Standards 6110 and 6140 for separation requirements with waterlines.
- ⑦ A cleanout shall be installed if called for on the plans or for new laterals where the distance between the right-of-way and the building is greater than 100' or where no cleanout exists at the building. The cleanout shall consist of one-way cleanout wye, riser, and cleanout fitting with plug. Tee shall be plugged at night during construction and left plugged when backfilled if not tied to user.

THIS STANDARD APPLIES TO NEW AND MODIFIED LATERALS. THE ABOVE REQUIREMENTS MAY BE MODIFIED OR WAIVED ONLY WITH THE APPROVAL OF THE CITY UTILITIES DEPARTMENT.

REVISIONS	BY	APP	DATE
Revise all notes	MH	BL	1-14
Rev Note 2, Plan View	SR	MH	3-12
Tracer tape depth	JDL	MH	9-12
STANDARD CURRENT AS OF: January 2016			



SEWER LATERAL



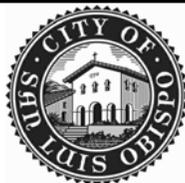
CUL-DE-SAC

INSTALLATION NOTES:

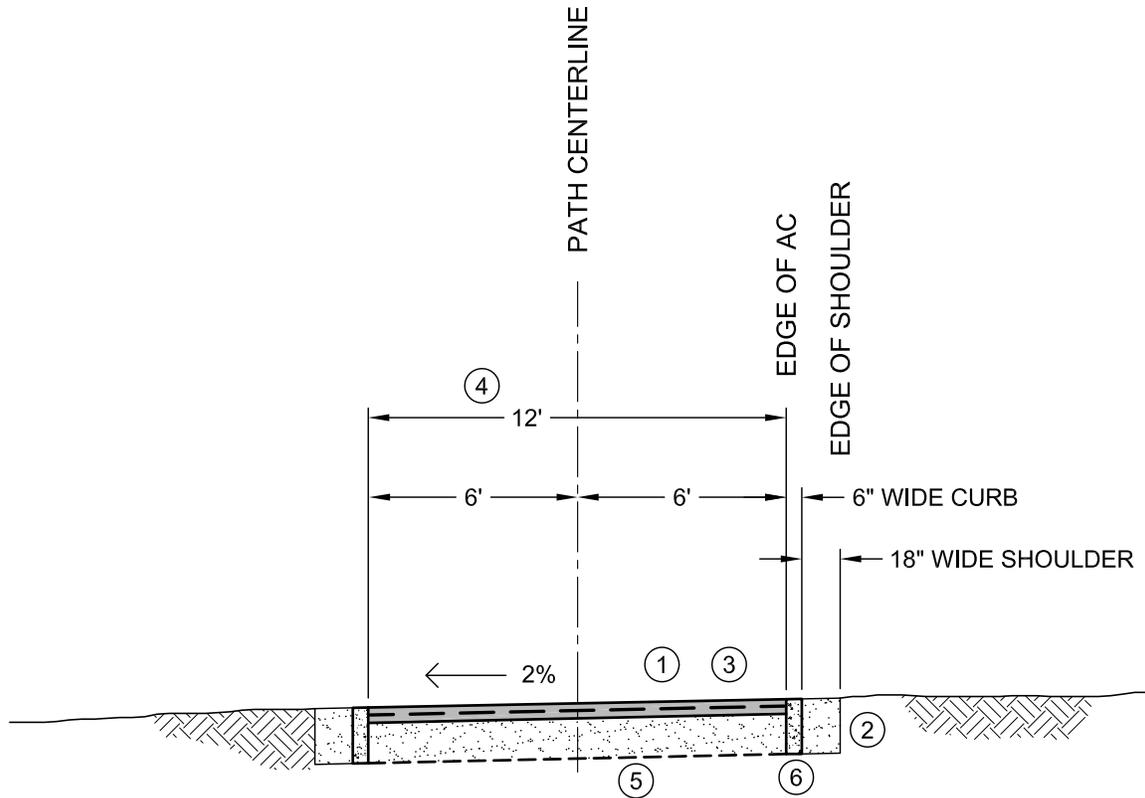
- ① Radius to curb face: Residential Areas = 40'; Commercial Areas = 45'
- ② Radius to right-of-way shall conform to the ROW requirements in Engineering Standard 1010.
- ③ Cul-de-sac lengths shall be as restricted by Engineering Standard 1010.

**DEVIATIONS FROM THESE STANDARDS MUST BE APPROVED BY THE CITY.*

REVISIONS	BY	APP	DATE
<i>New Standard</i>	<i>JDL</i>	<i>JDW</i>	<i>1-05</i>
<i>Modify Curb Radius</i>	<i>DVB</i>	<i>BL</i>	<i>10-06</i>
<i>Drafting edits</i>	<i>JDL</i>	<i>MH</i>	<i>2-13</i>
STANDARD CURRENT AS OF:		January 2016	



**NEW CUL-DE-SAC
REQUIREMENTS***



INSTALLATION NOTES:

- ① Bicycle path shall be constructed with 4" AC over 12" Class 2 base. AC aggregate to be ½" maximum, medium gradation installed in two 2" lifts. Pavement reinforcing grid (Glasgrid 8502, STARgrid G-PS 200-100, or approved equal) to be installed full width of pathway between lifts. Pathway to contain a uniform cross slope of 2%.
- ② Thickness of shoulder to match bottom of Class 2 base under pathway.
- ③ Pathway to contain a 4" dashed yellow centerline stripe and two 4" solid white stripes centered 6" from each edge of the pathway.
- ④ 12' paved width is typical. See the City of San Luis Obispo Bicycle Transportation Plan for additional design standards.
- ⑤ 13' wide triaxial geogrid (Tensar TX 140, or approved equal) shall be installed at the bottom of the Class 2 base and the concrete flush curb.
- ⑥ 6" wide x 16" deep reinforced concrete flush curb. See Engineering Standard 4020 for items not shown or noted.

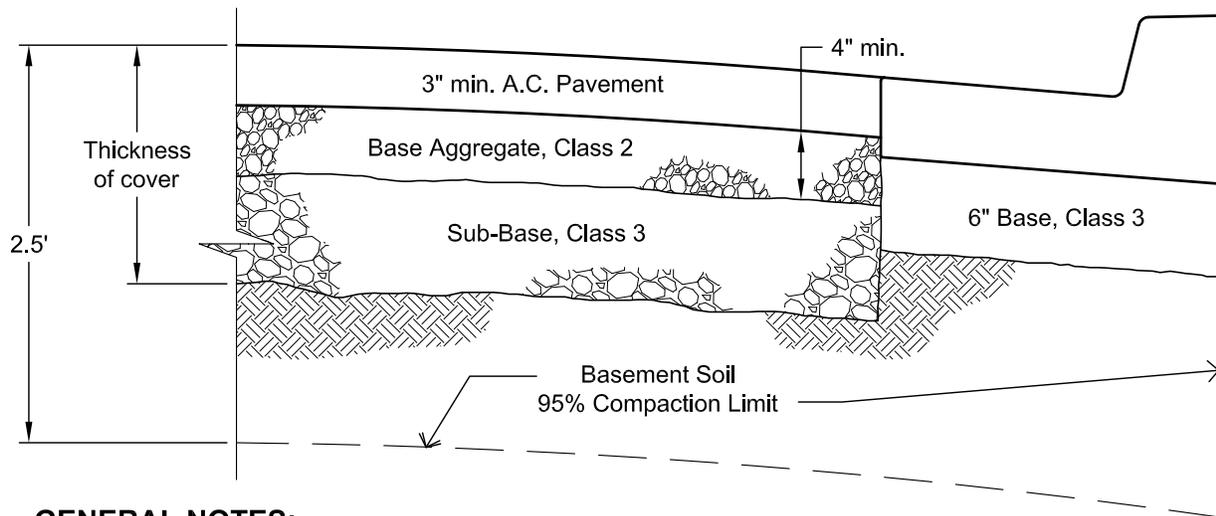
GENERAL NOTES:

- A. For items not shown or noted, refer to Chapter 1000 of the Caltrans Highway Design Manual, the California MUTCD, and the City of San Luis Obispo 2013 Bicycle Transportation Plan.

REVISIONS	BY	APP	DATE
Modify Section & Add Paving Grid	DVB	BL	1-14
Add Note 5	DVB	MH	11-08
Drafting edits	JDL	MH	2-13
STANDARD CURRENT AS OF:		January 2016	



**CLASS I BIKEWAY
(PATH)**



GENERAL NOTES:

- A. Total thickness of cover depends on R-value of basement soil as well as the Traffic Index assigned to the street. All street sections shall be designed according to the Cal Trans method which is outlined in Chapter 600 of the Cal Trans Highway Design Manual.
- B. Pavement design shall be based on the traffic indexes shown below, which are based on a 20-year design life for reconstruction or resurfaced streets, and a 50-year design life for new streets.
- C. For paving in new subdivisions that is placed prior to construction of buildings, the pavement will be subjected to traffic and wear associated with the on-site construction. In order to accommodate this additional usage, the A.C. thickness shall be increased from that which is derived from Cal Trans method by either:
 - a. 1/2" if total section is placed prior to building construction (unphased).
 - b. 1" if pavement construction is phased.

THE FOLLOWING IS AN EXAMPLE USING AN R-VALUE OF 5:

STREET CLASSIFICATION	T.I.*	STREET SECTION THICKNESS IN INCHES									
		EXISTING BUILDINGS			UNPHASED CONST.			PHASED CONSTRUCTION			
		AC	BASE	SUBBASE	AC	BASE	SUBBASE	FINISH	AC	BASE	SUBBASE
NEW LOCAL	6.5	3 1/2"	7"	9"	4"	7"	9"	1 1/2"	3"	7"	9"
RECONSTRUCTED LOCAL	5.5	3"	5"	8"	3 1/2"	5"	8"	1 1/2"	2 1/2"	5"	8"
LOCAL W/ BUS ROUTES	7.0	4"	7"	10"	4 1/2"	7"	10"	1 1/2"	3 1/2"	7"	10"
NEW COLLECTOR/ ARTERIAL	9.5	6"	11"	12"	6 1/2"	11"	12"	1 1/2"	5 1/2"	11"	12"
RECONSTRUCTED COLLECTOR/ARTERIAL	8.5	5"	10"	11"	5 1/2"	10"	11"	1 1/2"	4 1/2"	10"	11"

The pavement section for street widening shall be based on the T.I. of a reconstructed street, and the thickness of the new A.C. shall at a minimum match the thickness of the existing A.C.

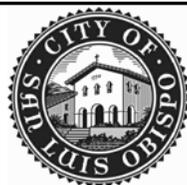
New streets and road widening where asphalt surface is increased 10 feet or more shall be fog sealed no more than 60 days prior to request for final acceptance by the City. New streets shall be fog sealed the entire length and width of asphalt surface. Road widening shall be fog sealed to the centerline of the widened roadway for the entire widened length, at a minimum.

Variation of these design standards may be approved by the City Engineer to meet individual circumstances.

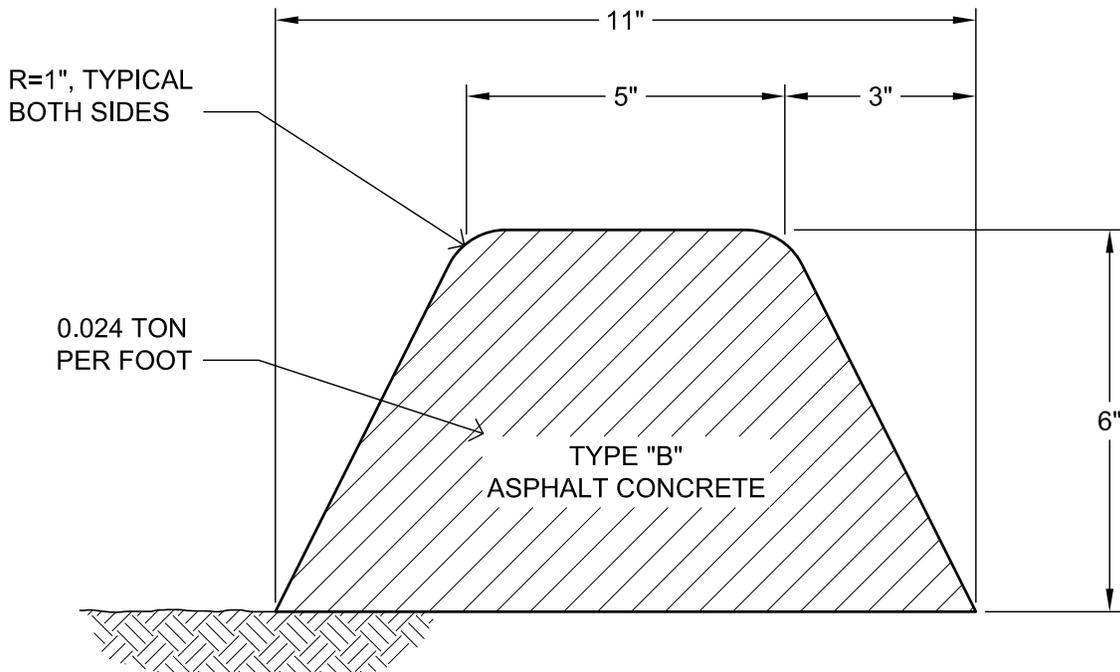
A street shall be designed as a new street when existing utilities have been constructed within the past 5 years.

*Adopted by Resolution No. 9006

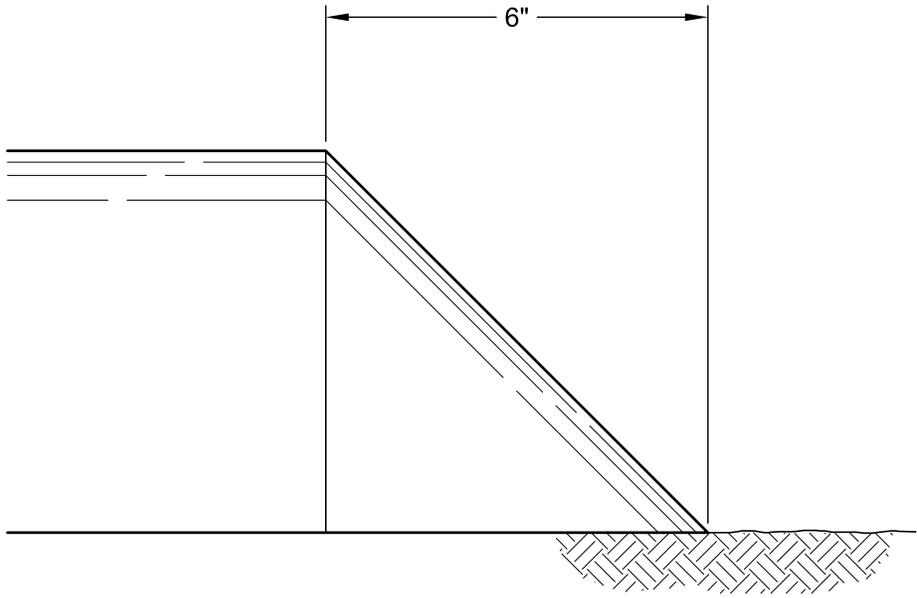
REVISIONS	BY	APP	DATE
Prime coat/fog seal revision	JDL	MH	12-12
Revise 95% compaction depth	DVB	BL	10-06
Revised text	MH	JDW	10-04
STANDARD CURRENT AS OF: January 2016			



FLEXIBLE PAVEMENT ELEMENTS



SECTION

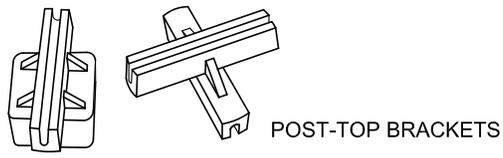
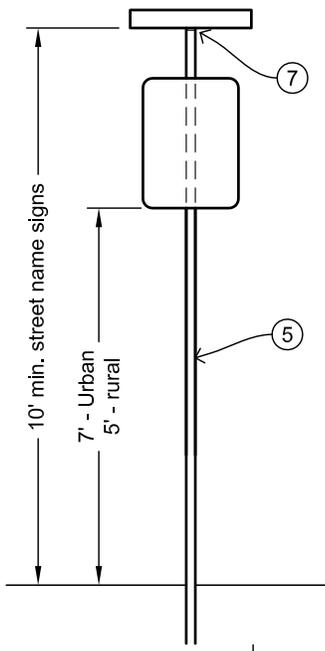


SIDE VIEW OF END

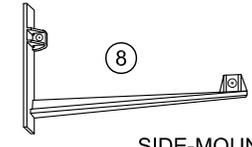
REVISIONS	BY	APP	DATE
<i>New Border</i>	JDL	WAP	9-97
<i>Drafting edits</i>	JDL	MH	2-13
<i>Type "3" to Type "B"</i>	JDL	WAP	7-98
STANDARD CURRENT AS OF:		January 2016	



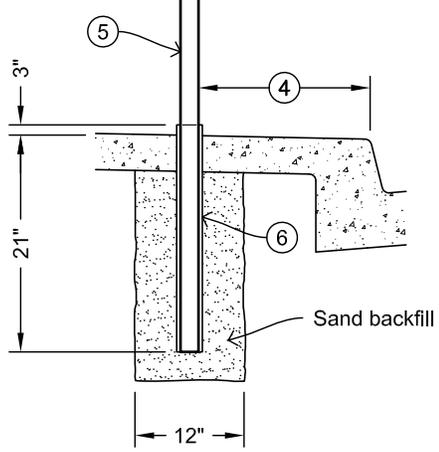
ASPHALT BERM
6"



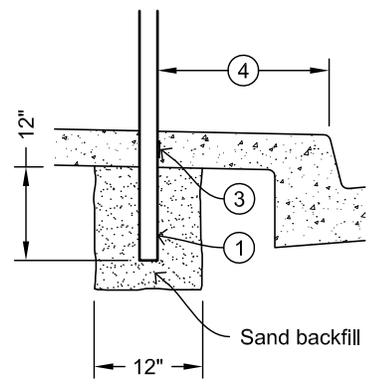
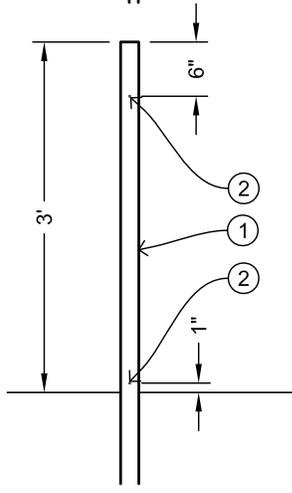
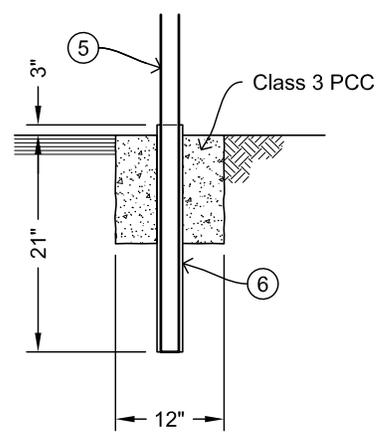
POST-TOP BRACKETS



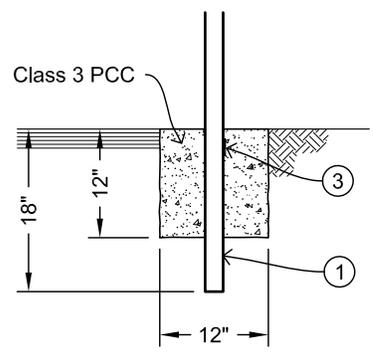
SIDE-MOUNT BRACKET



METAL SIGN POST



PARKING METER POST



INSTALLATION NOTES:

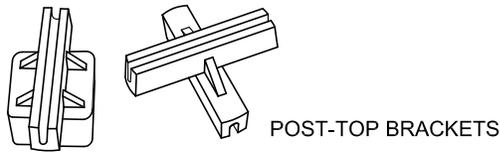
- ① 2" O.D. galvanized steel pipe
- ② Drain hole, 1/4" diameter, on one side only
- ③ #4 rebar, 2" long, welded to pipe 10" from bottom
- ④ 15" standard setback, 22" if sign is more than 15" wide or if post is in Mission Tile sidewalk
- ⑤ 2" galvanized metal post, FHWA (Breakaway) approved such as 14g, Qwik-Punch or equal. Posts shall be industrial powder-coated only under the following conditions:
 - Downtown, no street name sign located at post: Forest Green RAL 6009 or equal
 - Downtown, street name sign located at post: Brown RAL 8024 or equal
 - Railroad District: Red-Brown RAL 8016 or equal
- ⑥ Heavy duty galvanized steel sleeve such as Pacific Products or approved equal
 - Steel: ASTM A500 Grade B; Galvanizing: ASTM 123
 - 2 1/2" x 2 1/2" x 24" one-piece anchor with pointed end, 3/16" minimum wall thickness
 - 7/16" holes, all 4 sides at 1" below top. No holes are allowed in the underground portion of sleeve
 - Attach sign post to sleeve with a 3/8" drive rivet with a 1" washer, or approved equal
- ⑦ Brackets: 2" square, 12" length, post top mounted sign bracket, bolted to post and sign with vandal proof bolts. Safeway Sign style 812 or approved equal
- ⑧ Side mounting bracket: Standoff bracket Safeway Sign style 1010 or approved equal

When sign or parking meter is to be located in sidewalk, see Engineering Standard 7410 for "clear zone" restrictions.

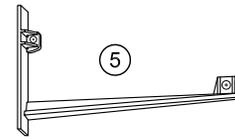
REVISIONS	BY	APP	DATE
Galvanized Sleeve Specs.	SR	JDW	10-03
Sleeve depth; Drafting edits	JDL	MH	9-12
Revise Note 6	DVB	BL	11-08
STANDARD CURRENT AS OF:		January 2016	



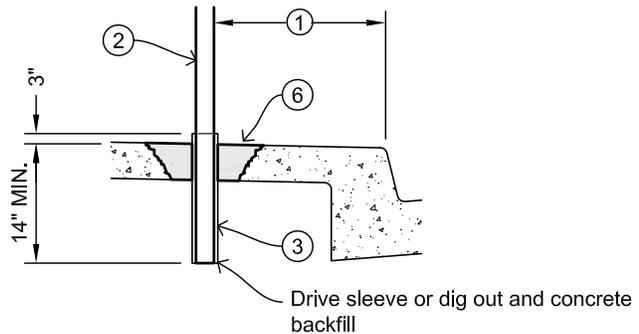
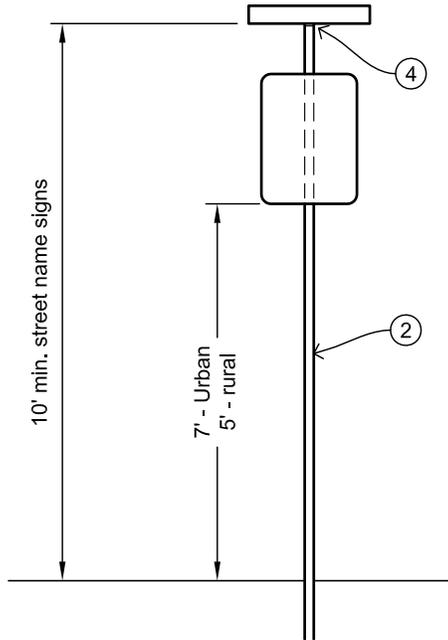
METAL SIGN & PARKING METER POSTS



POST-TOP BRACKETS



SIDE-MOUNT BRACKET



METAL SIGN POST ON EXISTING SIDEWALK

INSTALLATION NOTES:

- ① 15" standard setback, 22" if sign is more than 15" wide or if post is in Mission Style sidewalk.
- ② 2" galvanized metal post, FHWA (Breakaway) approved such as 14g, Qwik-Punch or equal. Posts shall be industrial powder-coated only under the following conditions:
 - Downtown, no street name sign located at post: Forest Green RAL 6009 or equal.
 - Downtown, street name sign located at post: Brown RAL 8024 or equal.
 - Railroad District: Red-Brown RAL 8016 or equal.
- ③ Heavy duty galvanized steel sleeve such as Pacific Products or approved equal.
 - Steel: ASTM A500 Grade B; Galvanizing: ASTM 123
 - 2½" x 2½" x 24" one-piece anchor with pointed end, 3/16" minimum wall thickness
 - 7/16" holes, all 4 sides at 1" below top. No holes are allowed in the underground portion of sleeve.
 - Attach sign post to sleeve with a 3/8" drive rivet with a 1" washer, or approved equal.
- ④ Brackets: 2" square, 12" length, post top mounted sign bracket, bolted to post and sign with vandal proof bolts. Safeway Sign style 812 or approved equal.
- ⑤ Side mounting bracket: Standoff bracket Safeway Sign style 1010 or approved equal.
- ⑥ Cored or chipped hole. Minimize size to install sleeve. Finish - Smooth, paste worked into joint to blend. Mission - Colored and lightly salted.

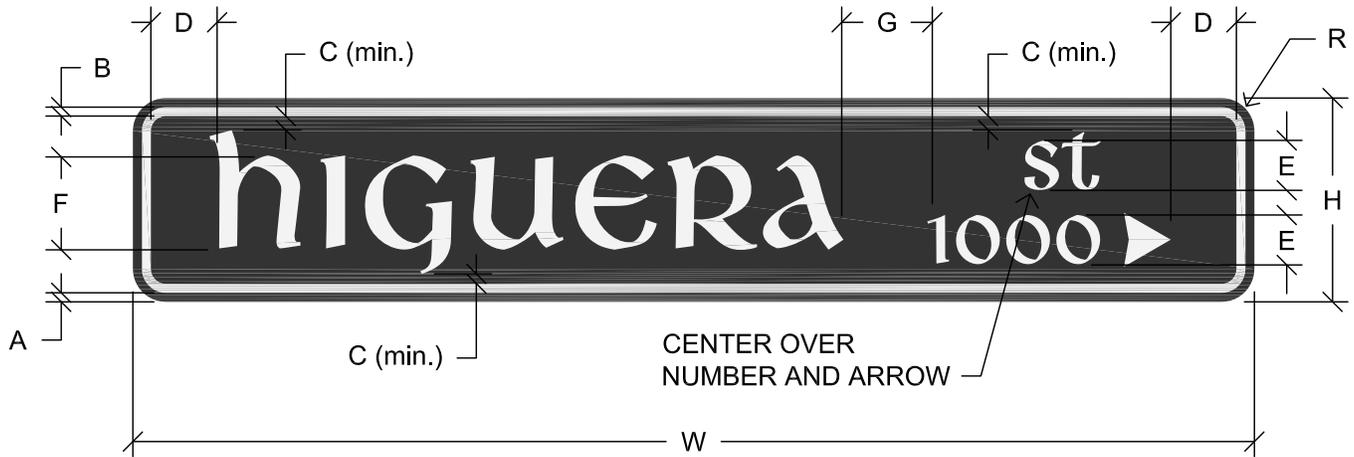
Standard may be used where City Engineer authorizes retrofit, in lieu of full panel removal & restoration per Eng. Std. 7210.

When sign or parking meter is to be located in sidewalk, see Engineering Standard 7410 for "clear zone" restrictions.

REVISIONS	BY	APP	DATE
New Standard	SR	BL	5-14
STANDARD CURRENT AS OF: January 2016			



METAL SIGN & PARKING METER POSTS
(IN EXISTING SIDEWALK)

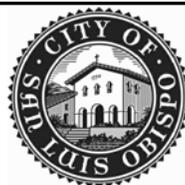


DIMENSIONS	SIGNALIZED WITH MAST ARM MOUNTS	POLE MOUNTS
A	1/2"	None
B	1/2"	3/8"
C	Center name in frame	3/8"
D	3"	2" - 3"
E	NA	2"
F	8"	4"
H	18"	8"
W	30" - 100" max.	30" - 100" max.
R	2"	1"
G	NA	3"

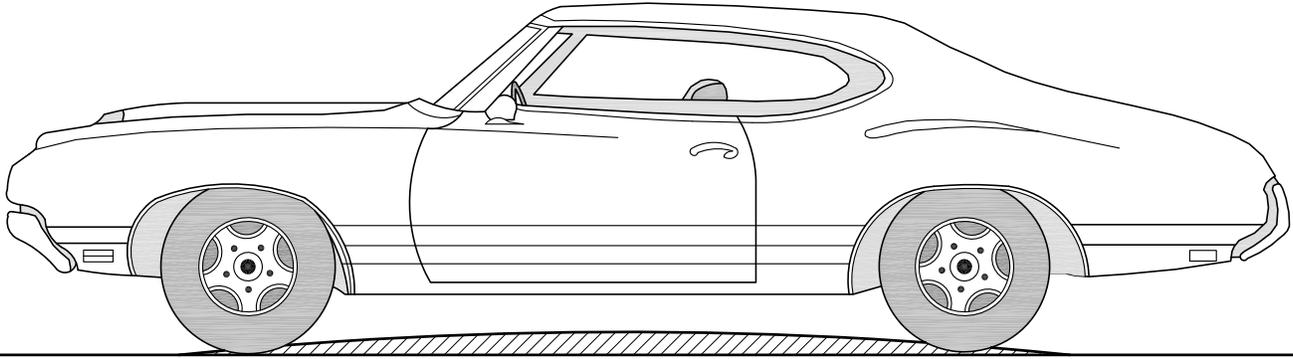
NOTES:

1. Signs are single blade aluminum - 5052 H38 0.125 double-faced.
2. Mast Arm signs display street name only, one sign per travel direction.
3. Color: 3M-887I Brown background, reflective white letters and arrow. All non-internally illuminated signs to be prepared with reverse screening. Reflective white lettering shall be 700-candle power, "VIP" sheeting. All pole mounted signs shall have anti-graffiti clear coating. (Avery AL 1000 or approved equal). Street name signs for private roadways shall reverse colors, white background and brown lettering.
4. Font: Libra (letter height = tall letters / short letters)
5. Arrow on pole mount signs points in the direction that addresses increase.
6. Mounting: See Engineering Standard 7210 for mounting on poles. See Caltrans Standards ES 70 and ES 7D for mast arm mounting.
7. Sign width "W" to be 30" min. and increased as required in 6" increments to 100" max.
8. "C" is measured to top and/or bottom of tall letters.
9. Mast arm signs are additive to pole mount signs at signalized locations.
10. One set of pole mounts per intersection except two in central business district when no signal present.
11. "st", block number and arrow are deleted for mast arm mounted signs.

REVISIONS	BY	APP	DATE
Modified Table	MH	BL	1-09
Revised Notes	MH	BL	10-09
Added Note 11	MH	JDW	10-04
STANDARD CURRENT AS OF:		January 2016	

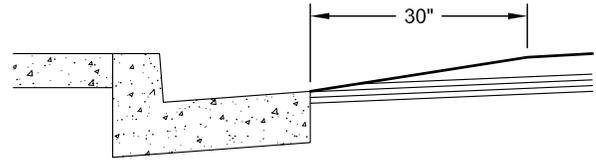


STREET NAME SIGN

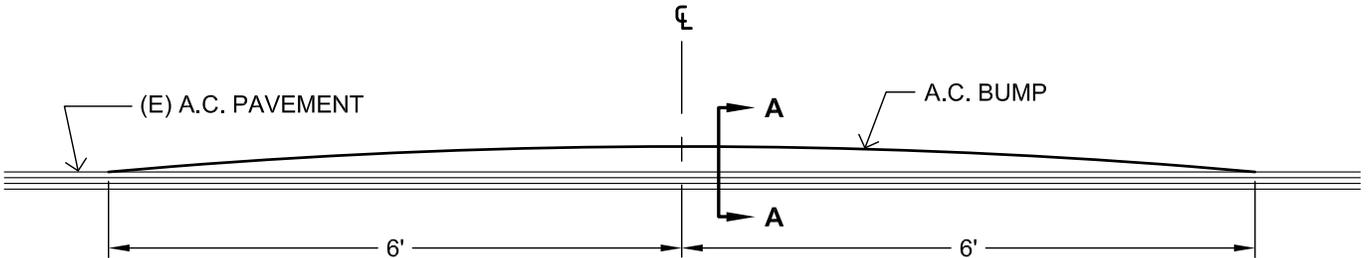


GENERAL NOTES:

- A. Bumps shall be placed on good, sound asphalt surface. Structural section shall be repaired or replaced, as needed, prior to placing bump.
- B. A tack coat shall be applied prior to placing the bump paving.
- C. Bump shall be constructed of asphalt concrete, Type "B", with 3/8" maximum aggregate.
- D. For location, striping, and signs, see Engineering Standard 7321.
- E. Bump type shall be determined by the City Engineer.



GUTTER SECTION A-A



PROFILE

DEPTH OF A.C. BUMP (TYPE 1)

Distance from Edge (ft)	0	2	4	6	4	2	0
Depth of A.C. (in)	0	1 3/4	2 1/2	3	2 1/2	1 3/4	0

DEPTH OF A.C. BUMP (TYPE 2)

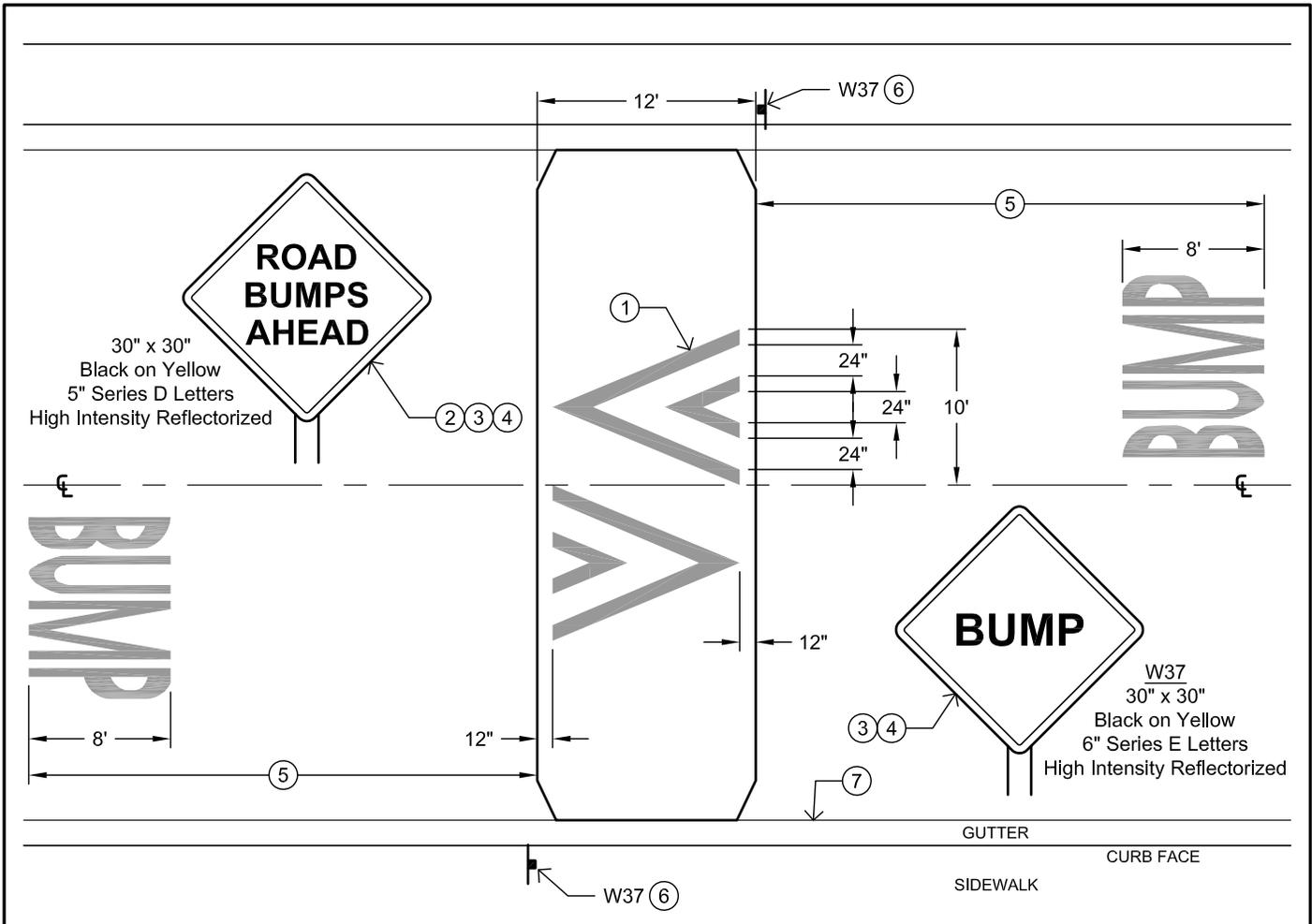
Distance from Edge (ft)	0	2	4	6	4	2	0
Depth of A.C. (in)	0	1 3/8	2 3/8	2 1/2	2 3/8	1 3/8	0

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	4-13
Metric conversion	SR	WAP	12-96
Add Type 2	SR	WAP	12-96



**ROAD BUMP
CONSTRUCTION DETAILS**

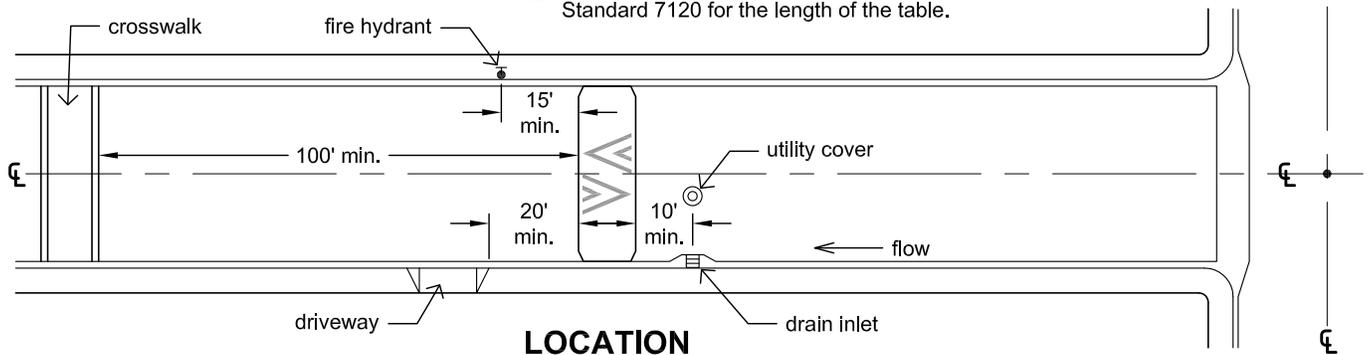
STANDARD CURRENT AS OF: January 2016



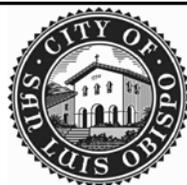
STRIPING & SIGNS

INSTALLATION NOTES:

- ① 12" wide reflective white thermoplastic pavement markings.
- ② "ROAD BUMPS AHEAD" signs shall be located only as directed by the City Engineer.
- ③ For sign post details, see Engineering Standard 7210.
- ④ Signs shall conform to State Specifications.
- ⑤ To be determined in field. One sign shall be installed in advance of a series of bumps.
- ⑥ Sign to be posted at the road bump but may be posted up to 50' in advance as directed by the City Engineer.
- ⑦ Where no curb and gutter exist, add AC berm per Engineering Standard 7120 for the length of the table.

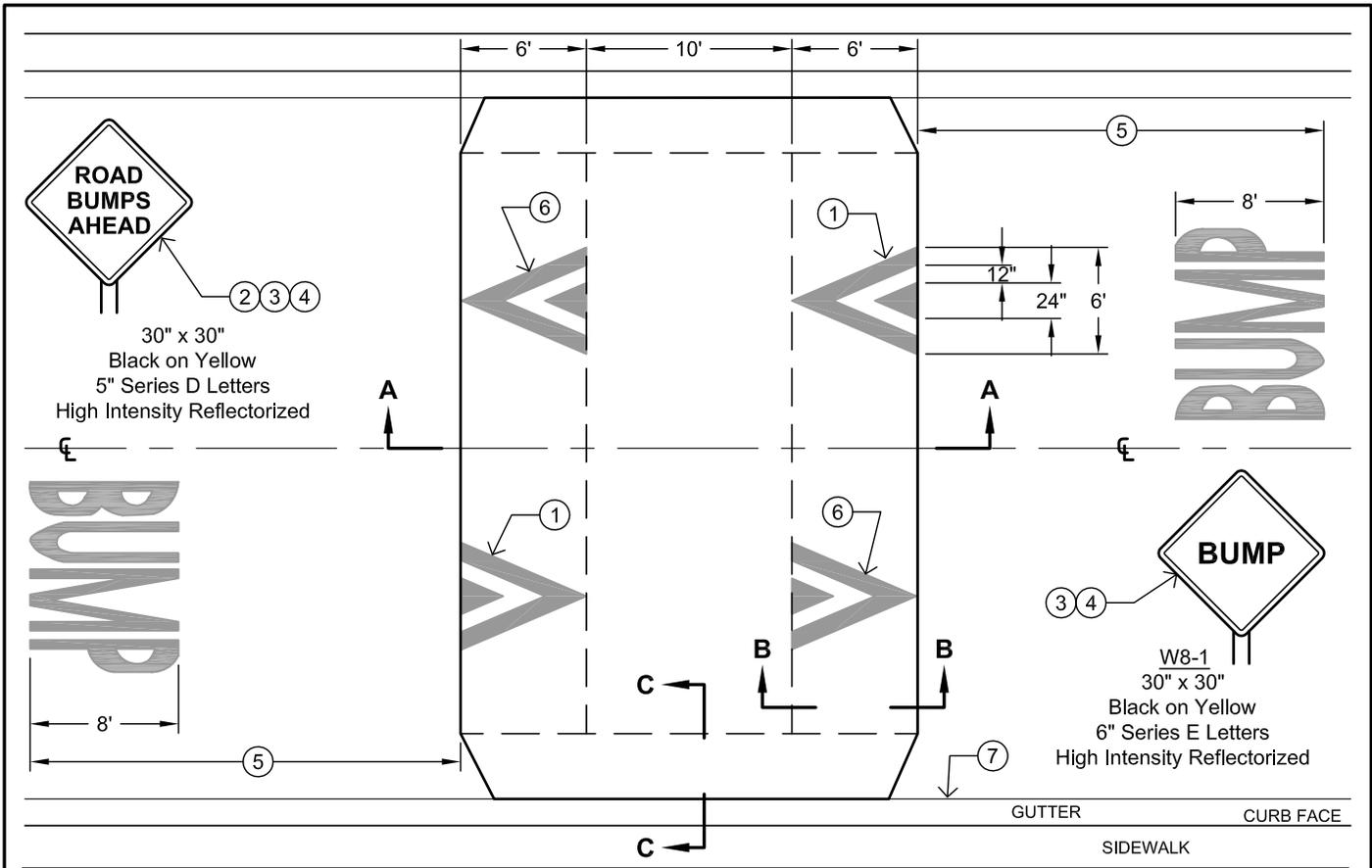


REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	4-13
Revised Note 3, added Note 7	DVB	BL	11-06
Striping revision	SR	WAP	12-96



**ROAD BUMP
LOCATION, STRIPING & SIGNS**

STANDARD CURRENT AS OF: January 2016

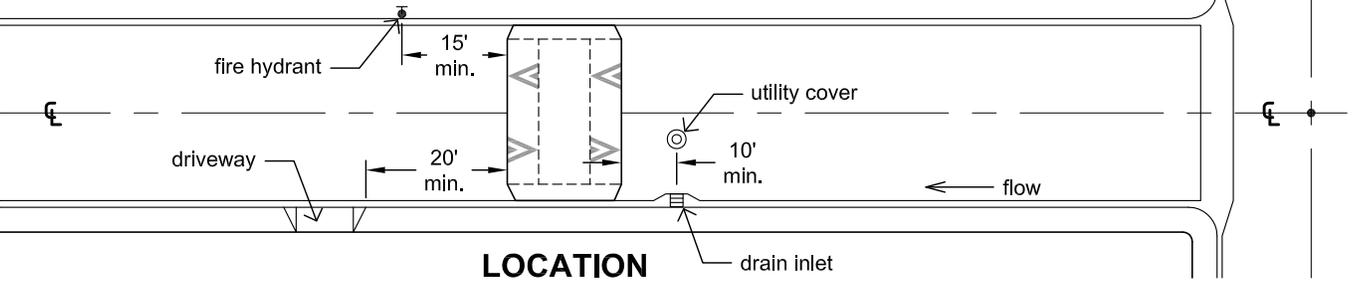
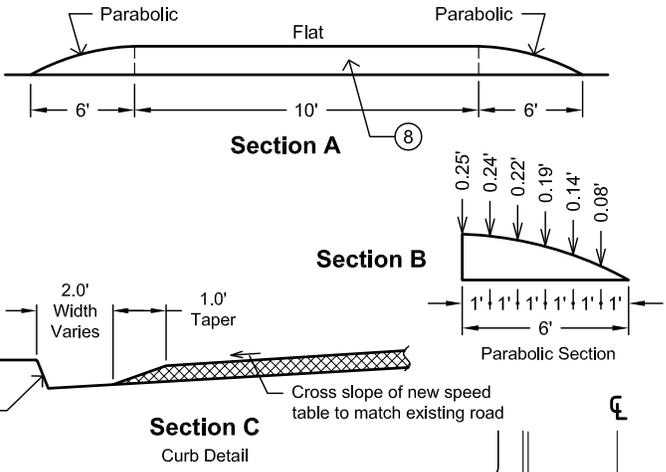


STRIPING & SIGNS

INSTALLATION NOTES:

For General Construction Notes, see Engineering Standard 7320.

- ① 12" wide reflective white thermoplastic pavement markings.
- ② "ROAD BUMPS AHEAD" signs shall be located only as directed by the City Engineer.
- ③ For sign post details, see Engineering Standard 7210.
- ④ Signs shall conform to State Specifications or as approved by the City Traffic Engineer.
- ⑤ To be determined in field. One sign shall be installed in advance of a series of bumps.
- ⑥ Additional 12" wide reflective thermoplastic pavement markings may be installed as directed by the City Traffic Engineer.
- ⑦ Where no curb and gutter exist, add AC berm per Engineering Standard 7120 for the length of the table.
- ⑧ Exceptions may be approved by the City Traffic Engineer.

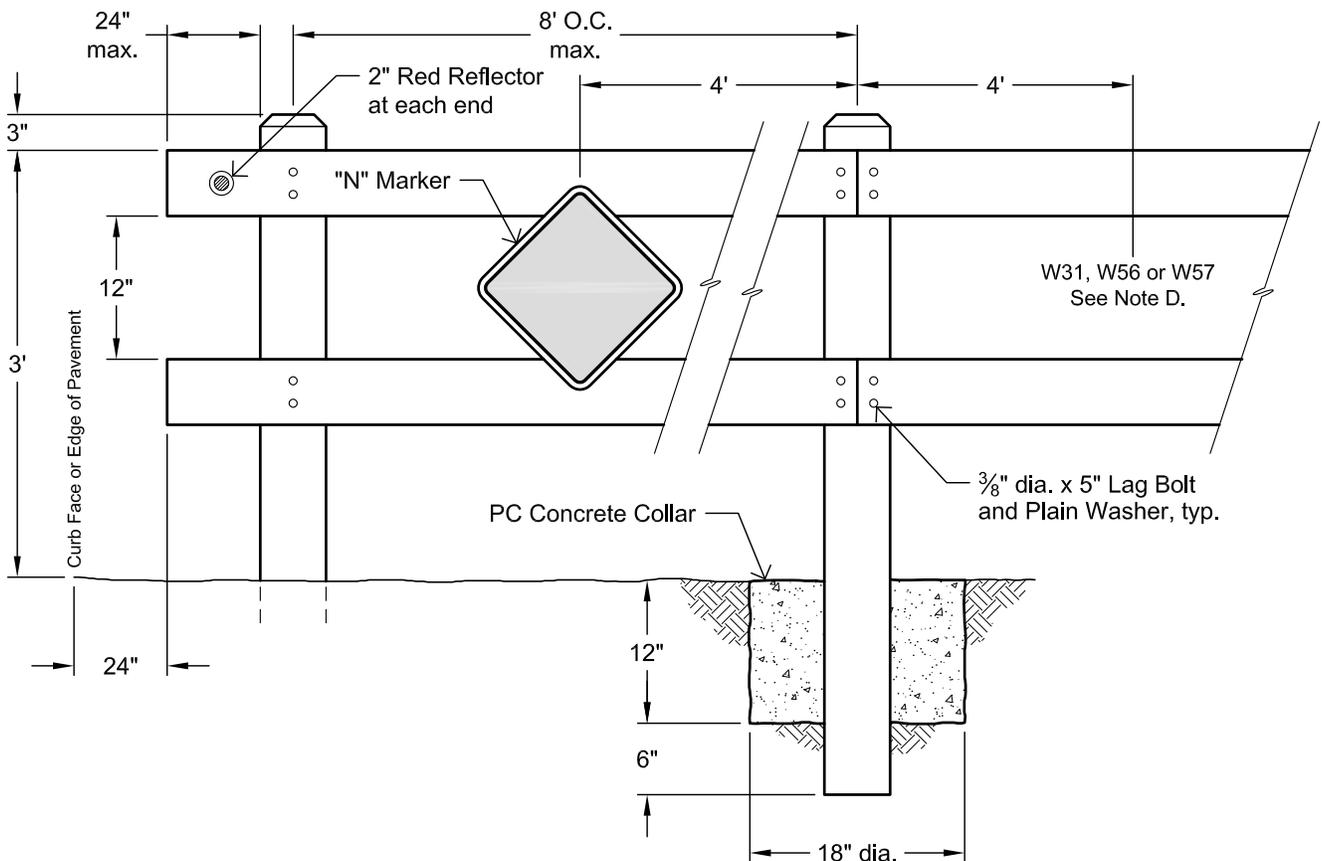


LOCATION

REVISIONS	BY	APP	DATE
New Standard	CO	TB	10-06
Note 9; DW clearance	DVB	BL	11-06
Drafting edits	JDL	MH	5-13
STANDARD CURRENT AS OF:		January 2016	

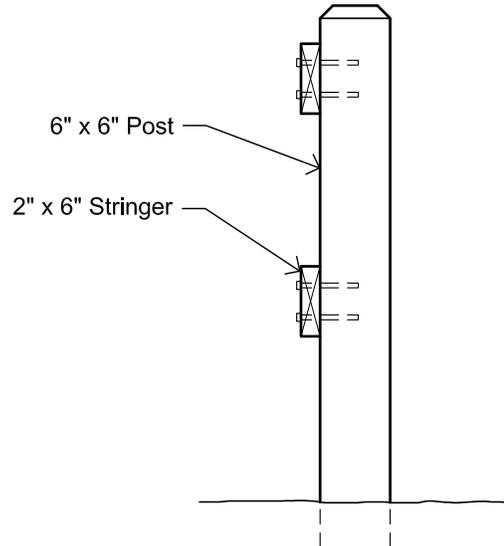


**SPEED TABLE
LOCATION, STRIPING & SIGNS**



GENERAL NOTES:

- A. All lumber shall be Douglas Fir, surfaced four sides (DFS4S).
- B. All lumber shall be painted white as per Caltrans specifications.
- C. Treat portion of post below ground as per Caltrans specifications.
- D. YELLOW 'N' marker is used to warn of an abrupt turn. Background shall be high intensity yellow retro-reflective sheeting. Alternate 'N' marker with W56 (double head arrow) or W57 (single head arrow), one per section.
- E. RED 'N' marker is used to mark the end of a street. Background shall be high intensity red retro-reflective sheeting. Alternate 'N' marker with W31, one per section.
- F. Total length required varies dependent upon street width.



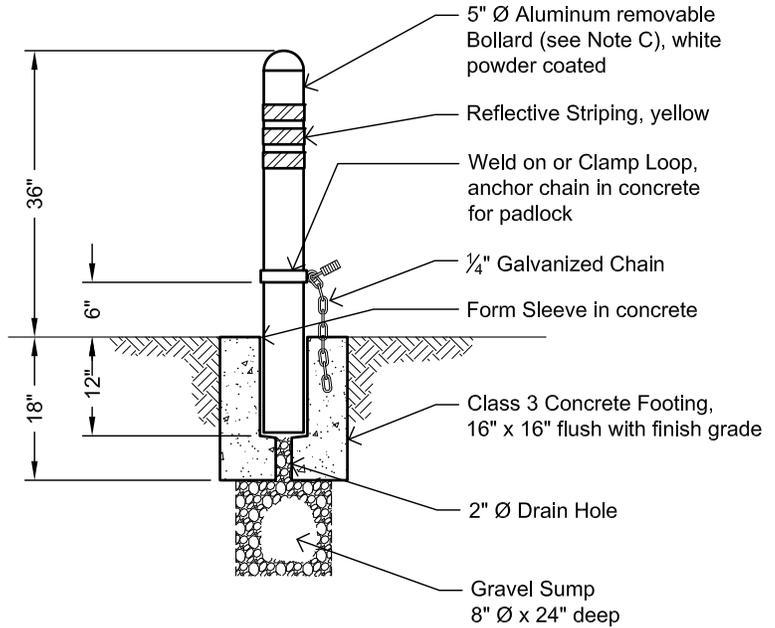
REVISIONS	BY	APP	DATE
New Border	JDL	WAP	1-98
Drafting edits	JDL	MH	5-13
Revised Notes	MH	JDW	10-04
STANDARD CURRENT AS OF:		January 2016	



STREET BARRICADE

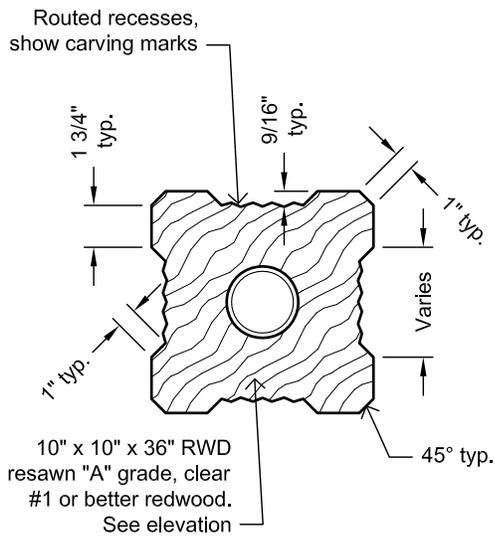
GENERAL NOTES:

- A. Provide Knox-box padlocks per City Fire Department.
- B. Provide 5' clear spacing between bollards (5'-3" O.C.) for bicycling facilities. For all other installations, provide 4' clear spacing between bollards (4'-3" O.C.)
- C. Use play booster by Landscape Structures Inc. distributed by Rec West (818) 735-3838, South Bay Foundry DFB-RA5 or approved equal.
- D. Engineers and architects are encouraged to submit alternate designs that are consistent with these design features, and the projects where the bollards are to be used.
- E. Yellow reflective tape shall be placed on each face of bollard as directed by Engineer.
- F. For bicycling facilities, provide pathway striping that conforms to CA MUTCD.

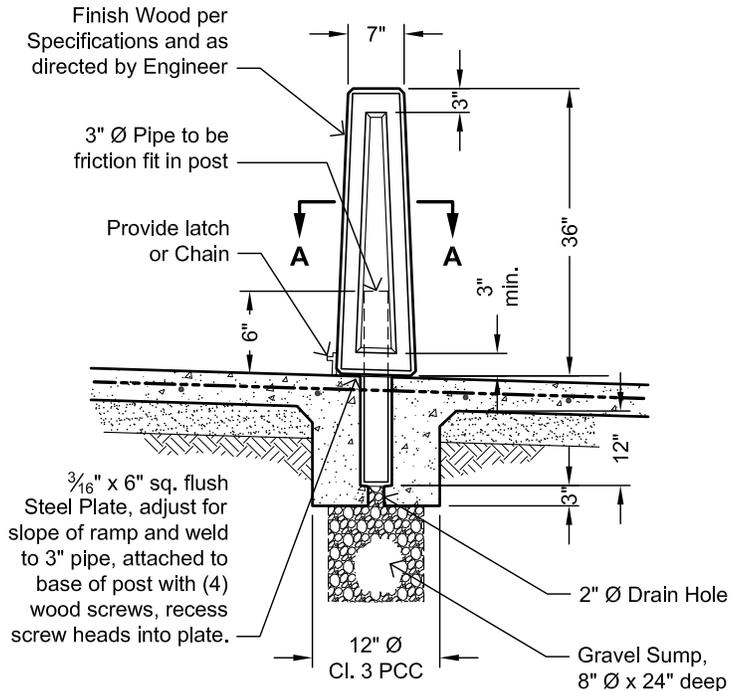


ALTERNATE NO. 1

NOTE: All steel to be double coated galvanized.



SECTION A-A

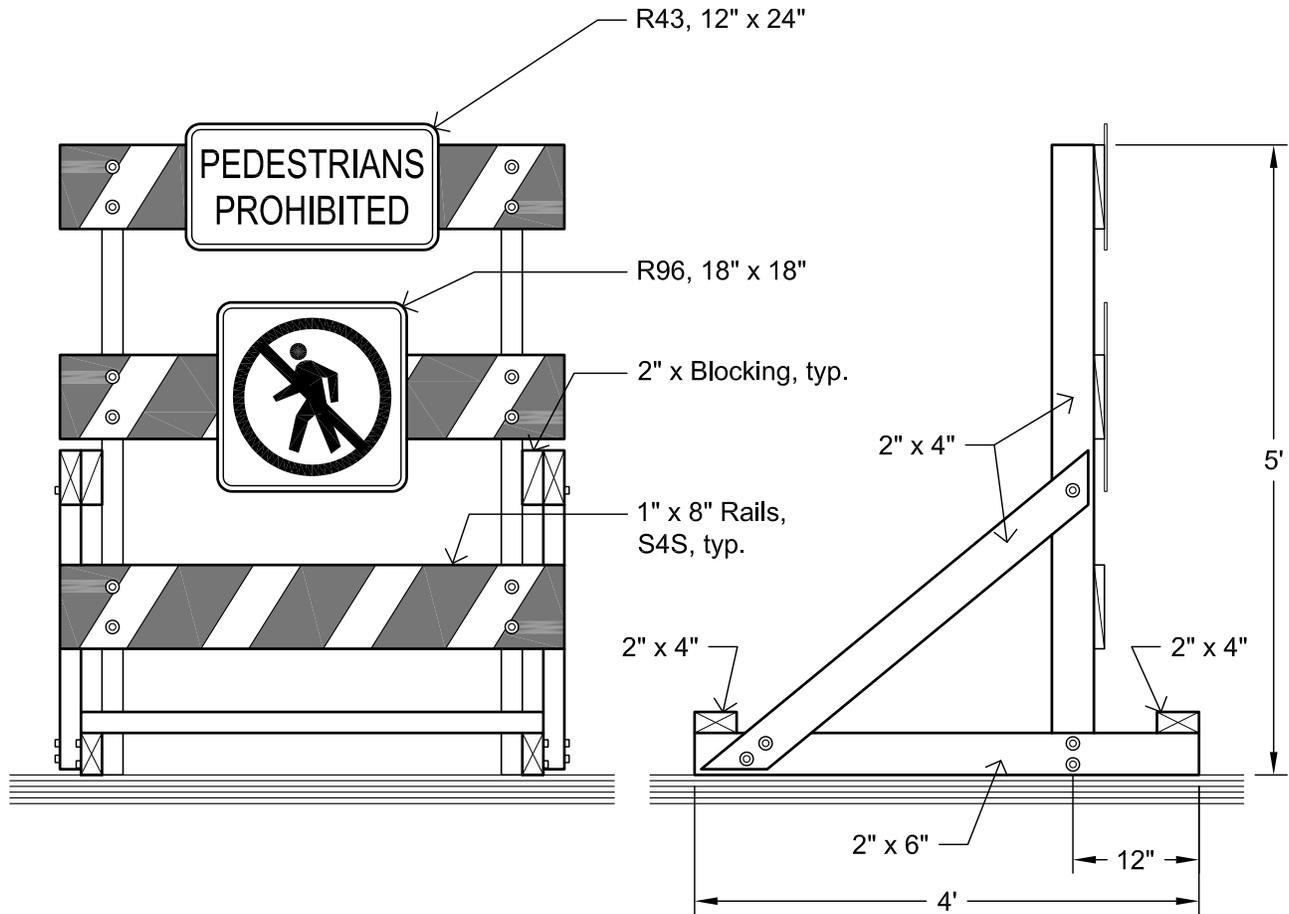


ALTERNATE NO. 2

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	5-13
Revised Note 3 Alternate 1	MH	BL	12-09
Revised Notes 2 & 6	MH	BL	11-09
STANDARD CURRENT AS OF:		January 2016	



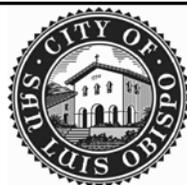
REMOVABLE BOLLARD



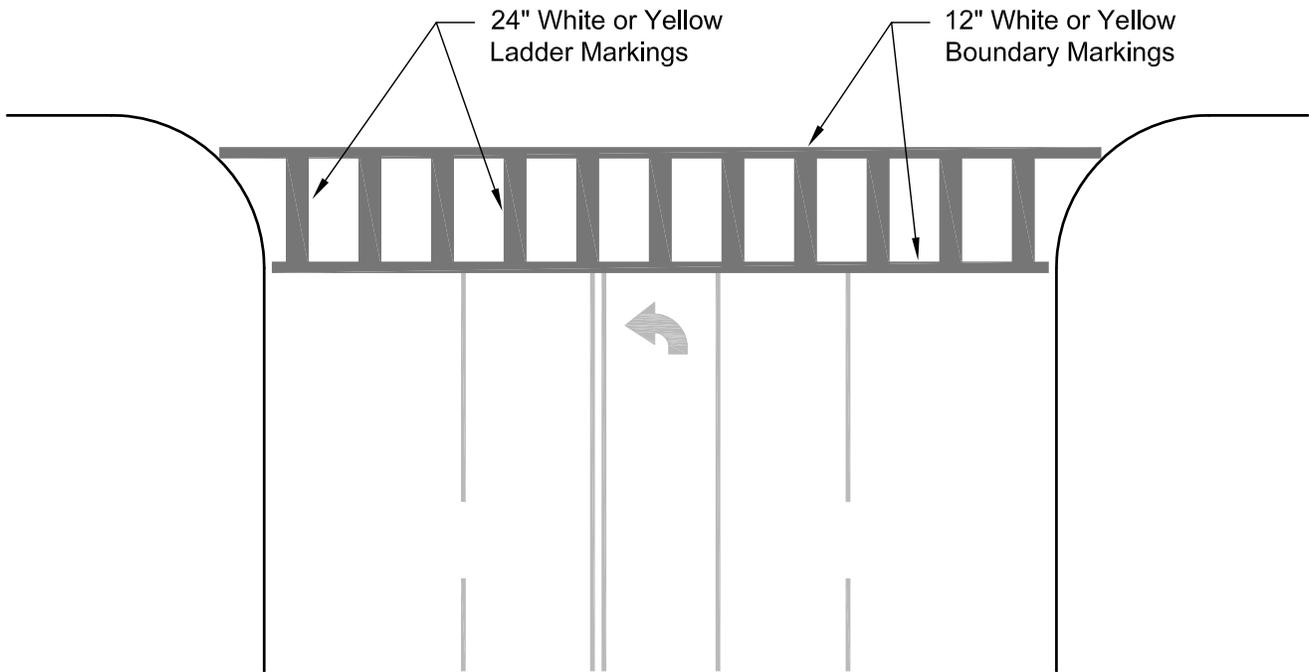
GENERAL NOTES:

- A. Barricade construction shall be per CALTRANS STANDARD PLAN A-73C, "Type III Barricade", except as herein modified.
- B. Caltrans Type III Barricade may be used unmodified (except for addition of signs) with special approval of the City Engineer.
- C. Barricade(s) shall be placed at each end of sidewalk closure and at all other pedestrian access points. If one barricade is not wide enough to block access, additional barricades shall be used to the satisfaction of the City Engineer.
- D. Signs shall conform to the requirements of the California Traffic Control Devices Committee and shall be fastened to rails with bolts, nuts and washers.
- E. Rails shall be fastened to vertical posts with lag bolts and washers as shown.
- F. Additional or alternate signage may be required depending on situation.
- G. Entire barricade shall be painted with two coats of exterior white latex paint prior to installation of reflective bands.

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	5-13
Add lumber size notes	JDL	JDW	5-02
Add Note G	JDL	JDW	5-02
STANDARD CURRENT AS OF:		January 2016	



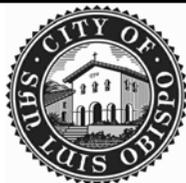
**BARRICADE
SIDEWALK CLOSURE**



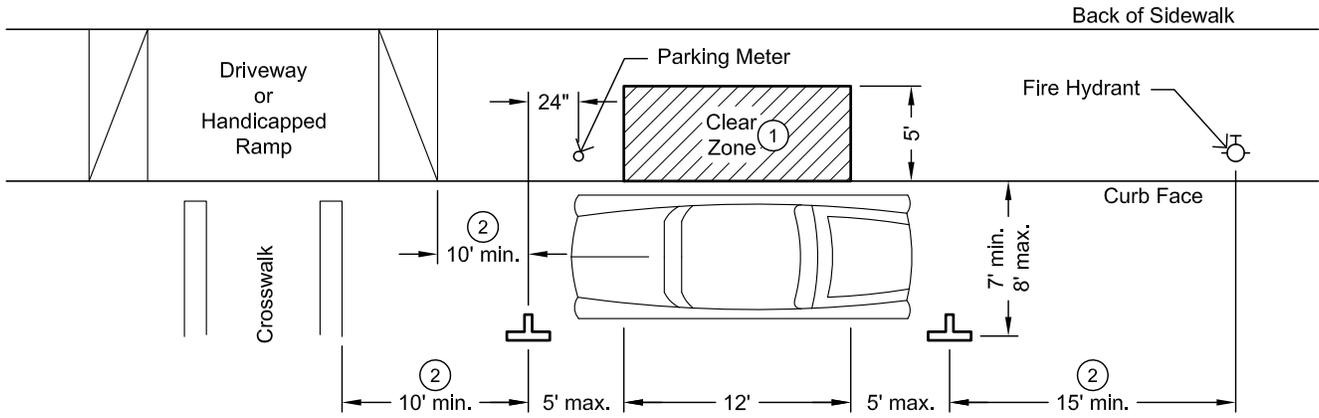
GENERAL NOTES:

- A. Hi-Vis Crosswalks shall include two 12" wide white or yellow boundary markings and 24" wide ladder markings equally spaced on and between vehicular travel lanes. Ladder markings shall be installed parallel to the direction of vehicular traffic. Where Hi-Vis Crosswalks are placed on local roads or streets that contain no traffic control striping, the ladder markings shall be equally spaced at 5' on center across the width of the traveled way.
- B. Where new installations are made, signs as required in the City's Crosswalk Policy shall also be installed.

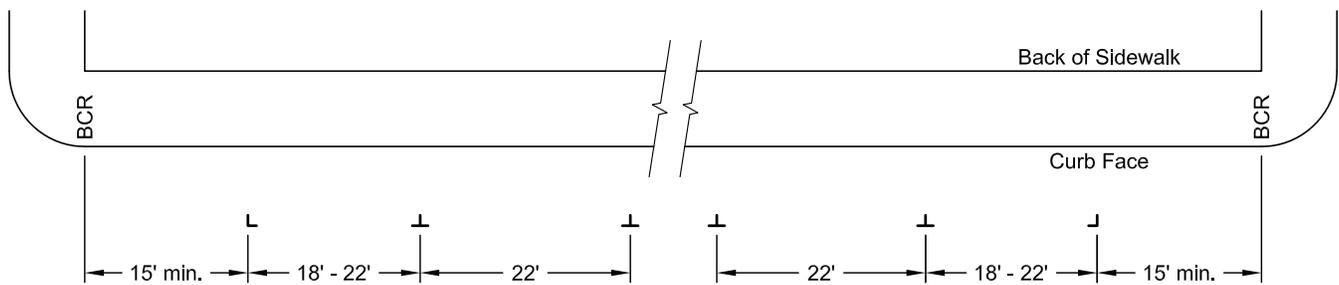
REVISIONS	BY	APP	DATE
<i>New Standard</i>	<i>MH</i>	<i>BL</i>	<i>11-05</i>
<i>Rev. Ladder width to 24"</i>	<i>DVB</i>	<i>BL</i>	<i>10-06</i>
<i>Ladder Marking note</i>	<i>JDL</i>	<i>MH</i>	<i>9-12</i>
STANDARD CURRENT AS OF:		January 2016	



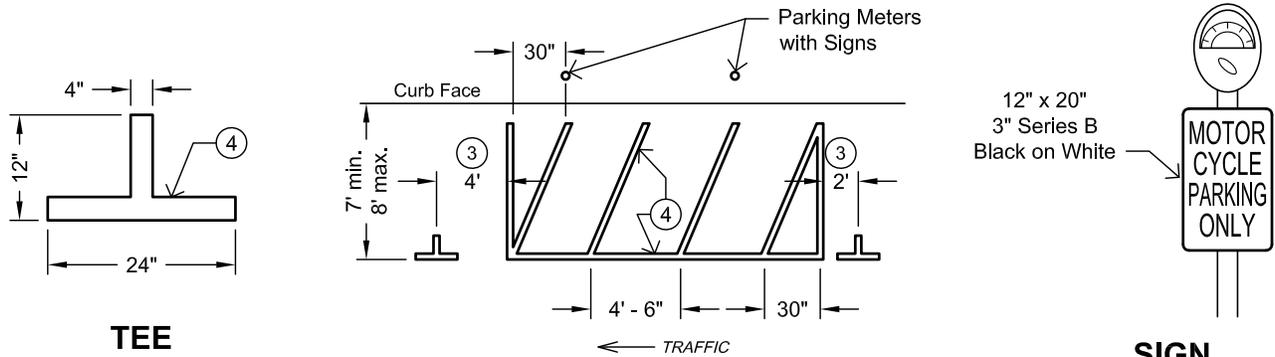
HI-VIS CROSSWALKS



CLEARANCES



SPACE LENGTH



TEE

MOTORCYCLE SPACES (5)

SIGN

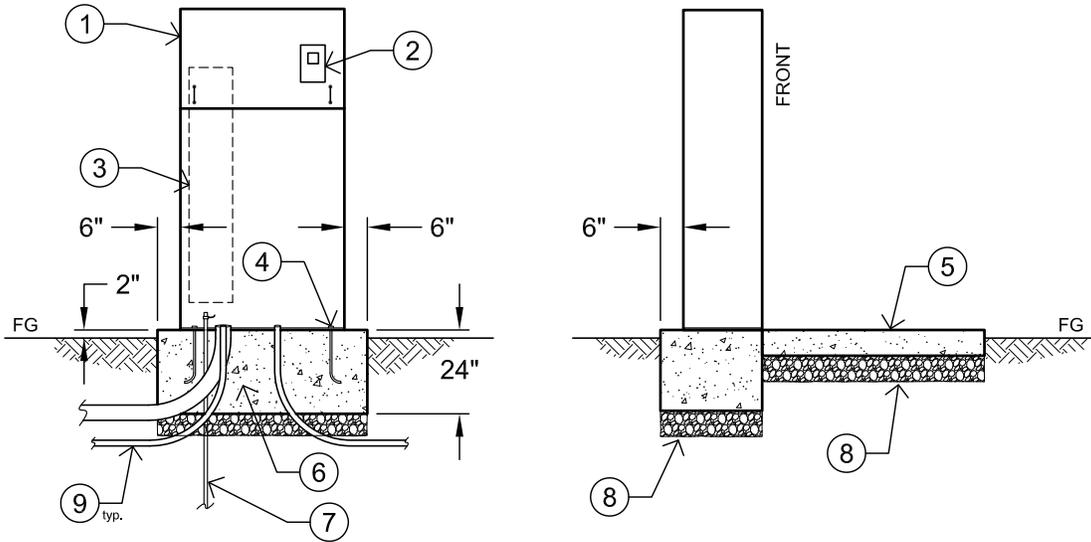
INSTALLATION NOTES:

- ① CLEAR ZONE: Area which shall not contain tree well, sign, bike rack, trash receptacle, mail box, street light, or other obstruction to automobile doors or driver/passenger access.
- ② These clearances apply at both ends of space.
- ③ All other clearance requirements shall be the same as for automobiles.
- ④ 4" White Traffic Paint
- ⑤ Minimum of two spaces, maximum of six spaces.

REVISIONS	BY	APP	DATE
New Border	JDL	WAP	1-98
Metric Conversion	SR	WAP	12-96
Drafting edits	JDL	MH	5-13
STANDARD CURRENT AS OF:		January 2016	



STREET PARKING



GENERAL NOTES:

UPS Unit shall be current and generation MYERS POWERBACK 2000 system with single meter, (MEUG35-PB-SL and PBM-2000), or approved equal with one (1) Photoelectric cell window as follows:

- Breakers on Metered Side
 Single Pole 50 amp - Signals
 Single Pole 20 amp - ILSNS
 Single Pole 15 amp - Controls
 1 x 20 amp - Spare
 1 x 20 amp - Video Equipment

- Features in addition to Standard Features
 2000VA Output Power
 4 x 65Ah Batteries
 12 Gauge Stainless Steel Cabinet
 PE Cell Test Switch, Lighting Relay
 1500 Watts total power required
 Generator Kit

- Breakers on Unmetered Side
 2 Pole 30 amp - Street Lights

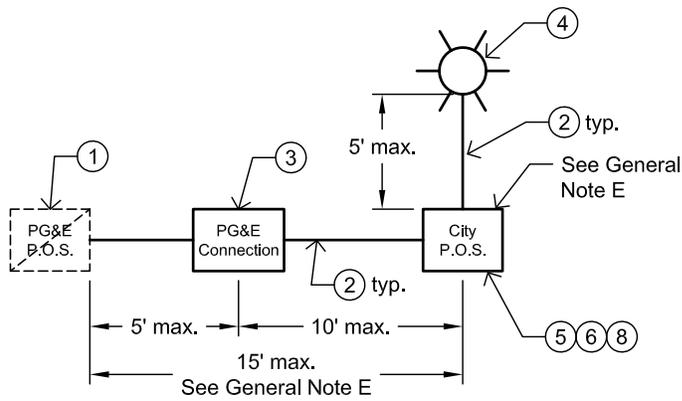
INSTALLATION NOTES:

- ① Stainless Steel UPS / Service
- ② Meter Panel
- ③ Batteries
- ④ (4) - 18" x 5/8" Ø Galvanized Anchor Bolts with 4" 90° Bend
- ⑤ (E) Sidewalk or (N) 4" thick Class 3 PCC Pad, 3' x 3' at the front of the enclosure
- ⑥ Class 3 Concrete Footing
- ⑦ Ground Rod
- ⑧ 4" Class 2 Aggregate Base
- ⑨ Service, Lighting and Controller Conduits

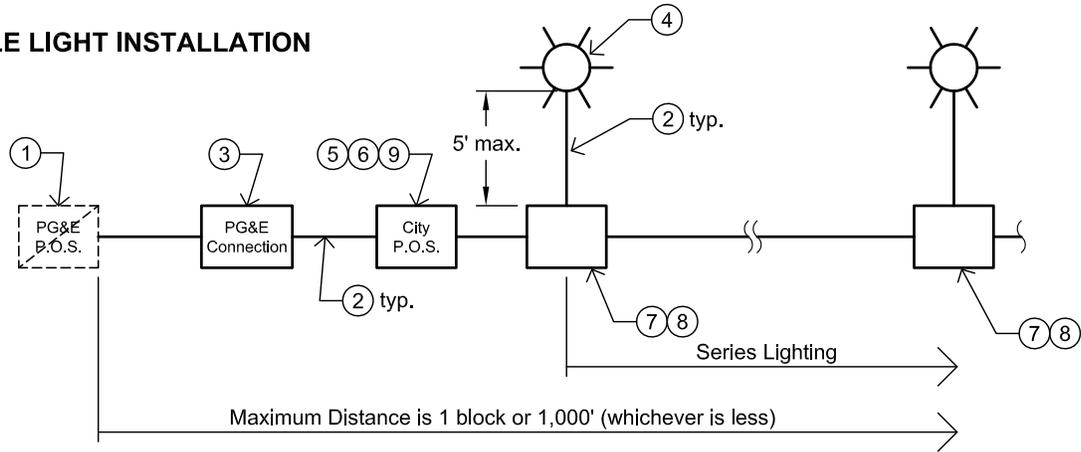
REVISIONS	BY	APP	DATE
Revise General Notes	SR	BL	1-14
Revise General Note A	DVB	BL	12-07
Drafting edits	JDL	MH	5-13
STANDARD CURRENT AS OF:		January 2016	



**SERVICE and UPS
 COMBINED ENCLOSURE**



SINGLE LIGHT INSTALLATION



SERIES LIGHTING INSTALLATION

INSTALLATION NOTES:

- ① PG&E point of service
- ② 2-inch conduit with bell end
- ③ PG&E Connection Box: PG&E #2 box (17" x 30" x 26") marked "PG&E"
- ④ Light: See Engineering Standards 7905, 7910 and 7915. Attach ground conductor to pole grounding lug with a 3/16" or larger brass bolt.
- ⑤ City point of service: #3½ concrete pull box marked "STREET LIGHT"
- ⑥ Ground rod and clamp
- ⑦ #3½ concrete luminaire pull box marked "STREET LIGHT"
- ⑧ 2-amp fuse in advance of light
- ⑨ 10-amp fuse in advance of lights (4 lights max. per 30-amp fuse)

GENERAL NOTES:

- A. Fuses shall be Bussmann HEB-LW-RLA or approved equal with insulating boots. Fuse holder must be installed correctly to match field wiring for line side and load side.
- B. Ground rods shall be Dottie GR5808, Calpico #CP588, Eritech #615880 or approved equal.
- C. Ground rod clamp shall be a brass acorn type clamp, Dottie GR58, Blackburn #JAB 1/2 H, Joslyn #J8591H or approved equal.
- D. Pull boxes shall be placed in sidewalk areas unless otherwise approved by the Engineer in writing.
- E. Where the light location is more than 15' from the PG&E point of service, an additional #3½ pull box will be required at a location identified by the Engineer. An additional fuse is not required in this additional box.
- F. Use 10 gauge solid copper conductors with THWN solid black and solid white insulation color.

REVISIONS	BY	APP	DATE
Revise Notes	BL	MH	1-14
Revise Notes	MH	BL	11-09
Various Note revisions; Draft. edits	JDL	MH	4-13
STANDARD CURRENT AS OF:		January 2016	



LIGHTING CIRCUIT

MANUFACTURER & MODEL NO:

LUMINAIRE: LUMINIS SR135-L21W48-LD2-120/277-BKT-APA

POLE: LUMINIS PAA518-BKT (Confirm with City the latest luminaire and pole model no. before ordering)

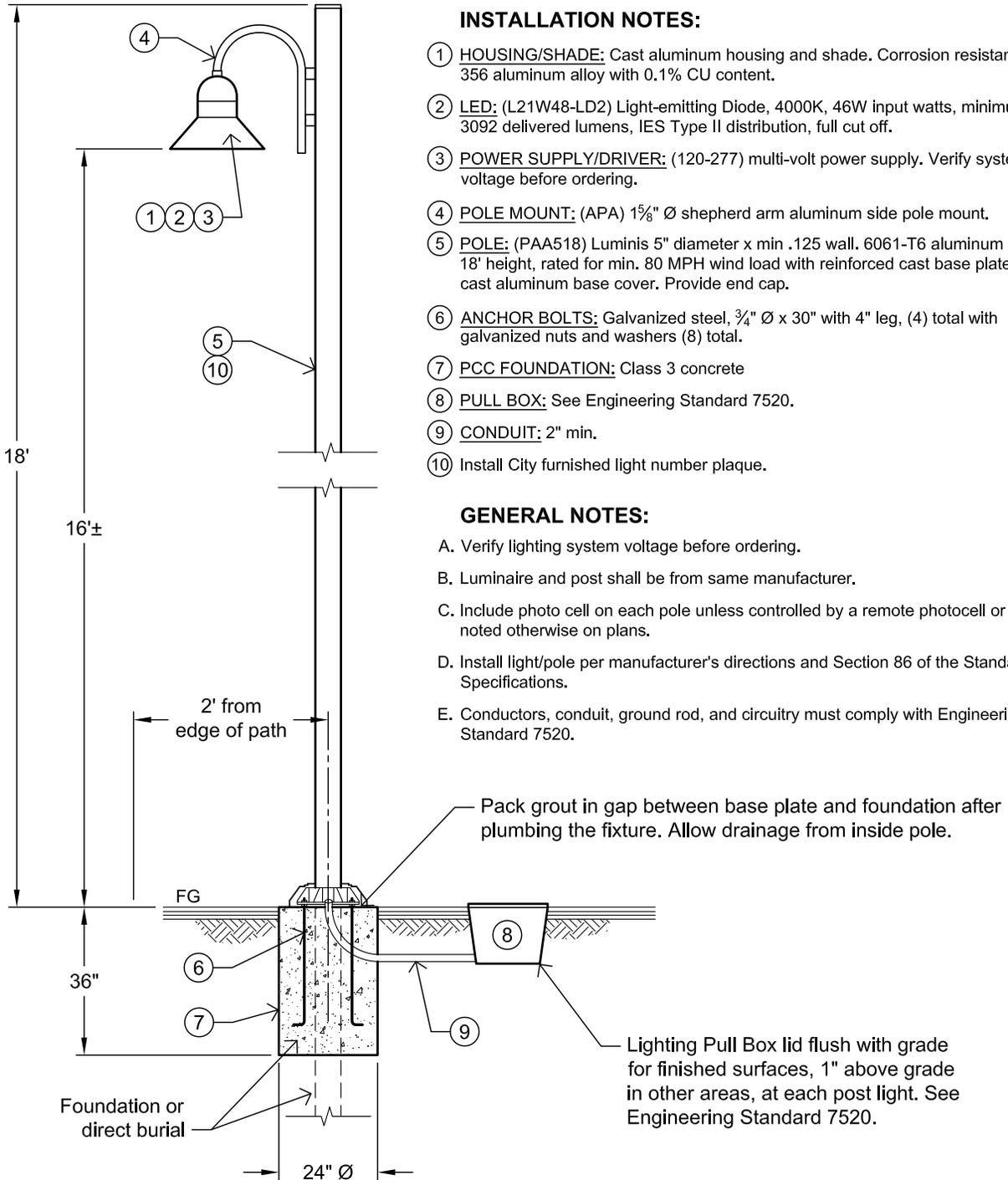
COLOR: Jet Black Marine grade powder coat (BKT).

INSTALLATION NOTES:

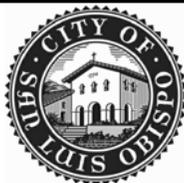
- ① HOUSING/SHADE: Cast aluminum housing and shade. Corrosion resistant 356 aluminum alloy with 0.1% CU content.
- ② LED: (L21W48-LD2) Light-emitting Diode, 4000K, 46W input watts, minimum 3092 delivered lumens, IES Type II distribution, full cut off.
- ③ POWER SUPPLY/DRIVER: (120-277) multi-volt power supply. Verify system voltage before ordering.
- ④ POLE MOUNT: (APA) 1½" Ø shepherd arm aluminum side pole mount.
- ⑤ POLE: (PAA518) Luminis 5" diameter x min .125 wall. 6061-T6 aluminum alloy, 18' height, rated for min. 80 MPH wind load with reinforced cast base plate and cast aluminum base cover. Provide end cap.
- ⑥ ANCHOR BOLTS: Galvanized steel, ¾" Ø x 30" with 4" leg, (4) total with galvanized nuts and washers (8) total.
- ⑦ PCC FOUNDATION: Class 3 concrete
- ⑧ PULL BOX: See Engineering Standard 7520.
- ⑨ CONDUIT: 2" min.
- ⑩ Install City furnished light number plaque.

GENERAL NOTES:

- A. Verify lighting system voltage before ordering.
- B. Luminaire and post shall be from same manufacturer.
- C. Include photo cell on each pole unless controlled by a remote photocell or as noted otherwise on plans.
- D. Install light/pole per manufacturer's directions and Section 86 of the Standard Specifications.
- E. Conductors, conduit, ground rod, and circuitry must comply with Engineering Standard 7520.



REVISIONS	BY	APP	DATE
Design / text	SR	BL	1-14
Fixture Model; Drafting edits	JDL	MH	5-13
Drafting edits	JDL	MH	2-14
STANDARD CURRENT AS OF:		January 2016	



PATH LIGHTING

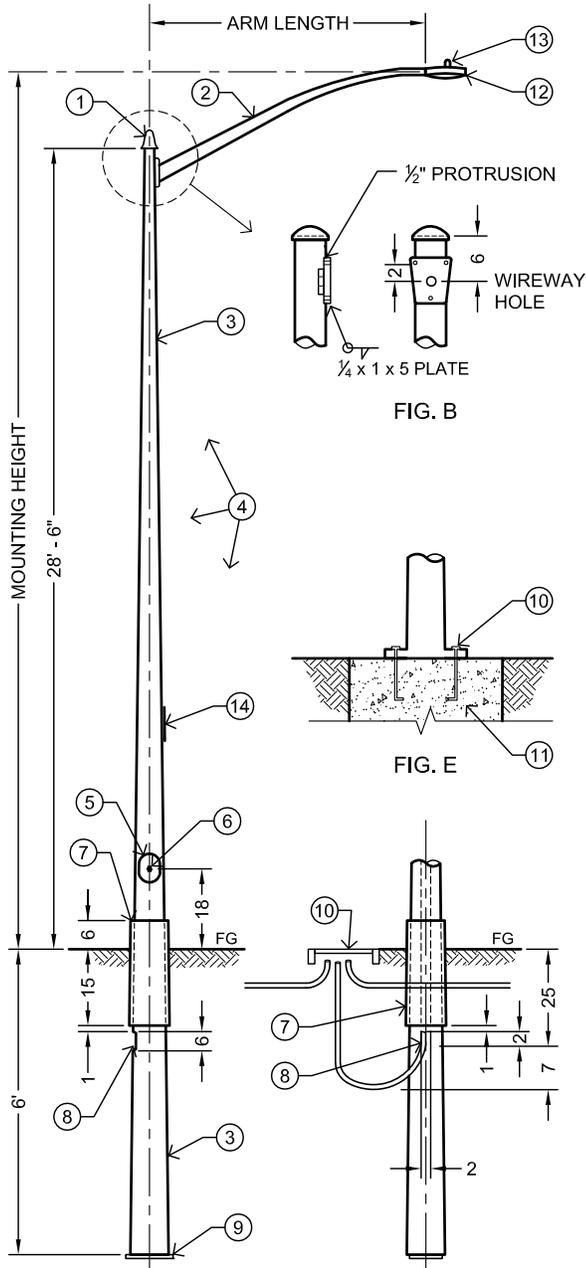


FIG. A

FIG. C

FIG. D

EMBEDDED STEEL POLE

(units in inches unless otherwise noted)

INSTALLATION NOTES:

- ① **CAP:** Steel, attached with set screws.
- ② **ARM:** Formed tapered cylindrical arm of 11 ga. steel, 55 ksi yield strength, with a $\frac{3}{4}$ " x $\frac{6}{8}$ " x $\frac{7}{4}$ " steel mounting plate welded to arm. Hole to be made in pole shaft for $\frac{1}{2}$ " protrusion of attachment plate. Plate to be bolted to pole, with (3) $\frac{5}{8}$ " x 2" HHMB (all thread).
- ③ **POLE:** Formed tapered cylindrical pole of 11 ga. steel, 55 ksi yield strength, 9" x 4". Pole shall comply with applicable requirements of EEI-NEMA standards for street lighting poles.
- ④ **ALL PARTS:** Shall be coated: Arm(s) shall be galvanized per ASTM A123 after formed and welded, all removable parts shall be galvanized per ASTM A153. Pole shall be galvanized per ASTM A123 after the holes are cut and items ⑤, ⑥, ⑦, ⑧, ⑨, and arm fixture(s) have been welded on.
- ⑤ **HANDHOLE:** An oblong hole, 4" x $6\frac{1}{2}$ ", with a welded-on reinforcing frame, minimum A-36 steel cover, and mounting hardware.
- ⑥ **WELDNUT:** A $\frac{1}{2}$ " square grounding nut, or nut holder, welded to inside of pole just opposite of handhole.
- ⑦ **GROUND LINE SLEEVE (Embedded Pole):** Cylindrical steel sleeve, 7 ga, continuously seal-welded (both ends) to the pole.
- ⑧ **CABLE ENTRANCE (Embedded Pole):** Oval slot, 2" x 6", 180° from luminaire.
- ⑨ **BEARING PLATE (Embedded Pole):** Plate, or angle steel, $\frac{1}{4}$ " thick, 12" long and 4" - 6" wide, continuously seal-welded (both edges) at bottom of pole.
- ⑩ **FOUNDATION MOUNTED POLE (Fig. E):** Foundation mounted pole must comply with State Standards type 15 (ES-6A) or type 15D (ES-6D) for double heads.
- ⑪ **FOUNDATION (Foundation Mounted Pole):** Construct a State Type 15 foundation, matching bolt placement to base plate configuration.
- ⑫ **LUMINAIRE:** LED Luminaire per Standard Specifications.
- ⑬ **PEU:** Photoelectric unit on luminaire photocell receptacle shall be positioned such that the photoelectric unit faces north.
- ⑭ Install City furnished street number plaque, 8' from ground level.

GENERAL NOTES:

- A. Street lighting construction and wiring must comply with Engineering Standard 1010 and 7520, State Standards and the provisions in Section 86 of the Standard Specifications.
- B. When using embedded steel pole, bottom of pole hole shall be well tamped before installing pole. Judgement based on experience and local soil conditions should be used to determine if "keying" and "rocking-in" of the pole are required.
- C. Protective Tubes: Sonoco No. EL-18 x 48 (PGE & Code: 12-8077), $\frac{1}{4}$ " thick resin-impregnated paper tubes 18" D x 48" H with entrance hole at mid height are to be used where future embedded street light poles are to be installed. Place the tube in the ground at the proposed pole location, set it to approximately finished grade and fill with native backfill. Auger down through it when setting the pole and abandon tube in place. The street light conductor should be installed on the outside of the tube and on the same side as the entrance hole that is located 24" below the top edge.

REVISIONS	BY	APP	DATE
Revised Foundation Detail/Pole	SR	BL	1-14
Clarify Notes	DVB	BL	11-07
Drafting edits	JDL	MH	5-13
STANDARD CURRENT AS OF:		January 2016	



STREET LIGHTING
EMBEDDED & FOUNDATION MOUNTED

MANUFACTURER & MODEL NO:

LUMINAIRE: LUMEC [L50-003]-40W42LED4K-PC-CPD-RLE3-UNIV-SF3-FN1-[PH7-001]-SCZT311G105TX

POLE: LUMEC -RTA50F-12-3/4X20-G-12 1/2-DEC-SCZT311G105TX

(Confirm with City the latest model numbers for luminaire and pole before ordering)

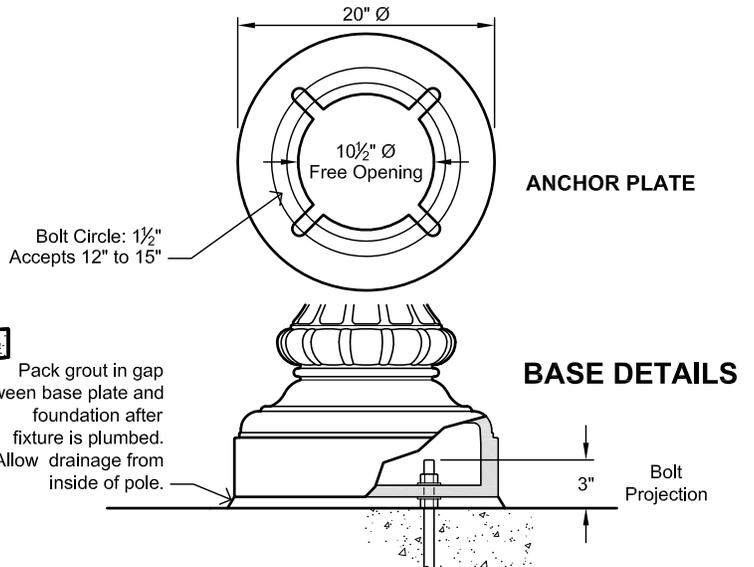
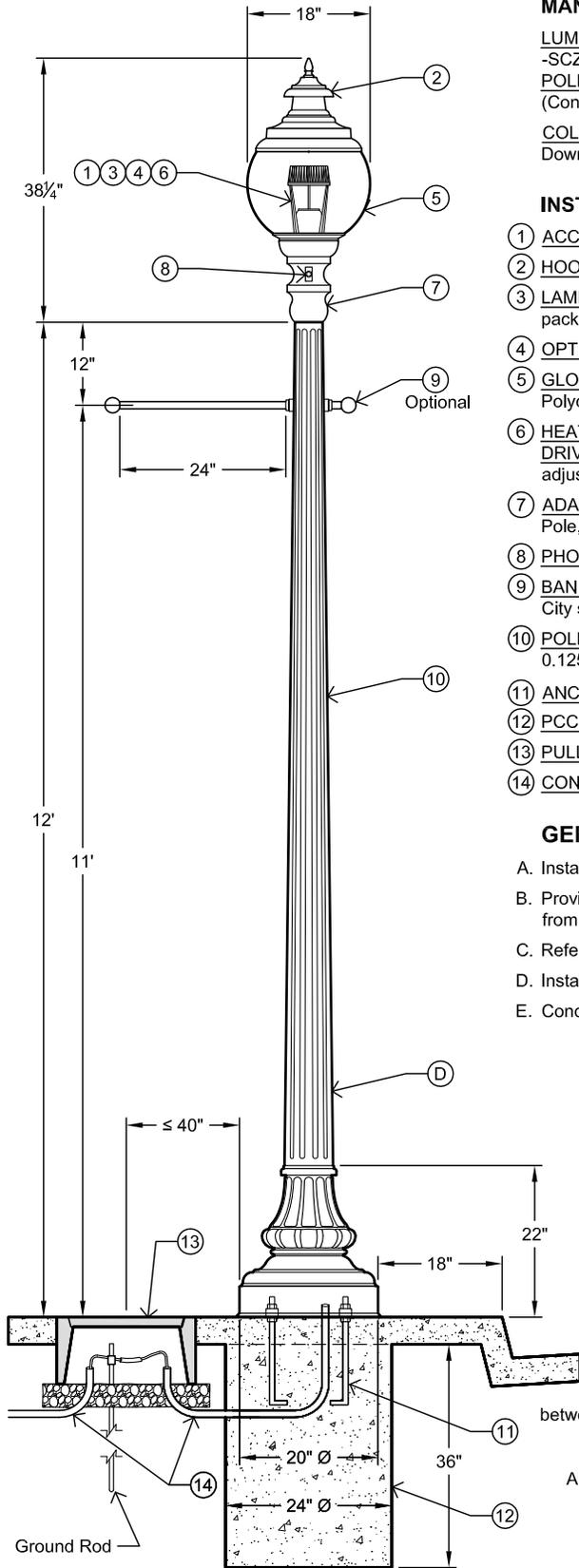
COLOR: Special order Powder Coat color with textured finish to comply with adopted Downtown color scheme (Dark Forest Green) RAL6009

INSTALLATION NOTES:

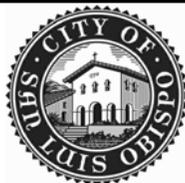
- ① **ACCESS:** Must have tool free access to inside of Luminaire.
- ② **HOOD:** Spun Aluminum Hood and Cupola with a Cast Aluminum Finial (FN1)
- ③ **LAMP:** Light-emitting Diodes (LED), Lumen output available through IES file, 42 LED package, 400K, CRI 70,
- ④ **OPTICAL SYSTEM:** (RLE3) IES Type III asymmetrical rated as semi-cutoff or better
- ⑤ **GLOBE:** (LL18-PC-CPD) 18" Spherical, clear, partially obscured, non-diffusing (Pond) Polycarbonate Globe
- ⑥ **HEAT SINK:** Cast aluminum with no moving parts
DRIVER: High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto adjusting to a voltage between 120 and 277 volt AC.
- ⑦ **ADAPTOR / FITTER:** (SF3) Top Adaptor Slip Filter (L23B/L29 type) for 4" or 4"x4" Round Pole, High Tenon
- ⑧ **PHOTOCELL:** (UNIV/PH7-001) Universal Photoelectric Cell, button type, 120v-227v
- ⑨ **BANNER ARM / PLANT HANGER:** Pole may require an optional banner arm or plant hanger, City shall determine.
- ⑩ **POLE:** (RTA50F-12) 12' high, round tapered fluted mandrel-formed aluminum shaft with 0.125" wall thickness and welded to cast aluminum base with integral cast-in anchor plate
- ⑪ **ANCHOR BOLTS:** Galvanized steel, 3/4"Ø x 17" with 3" hook at bottom of bar, (4) total
- ⑫ **PCC FOUNDATION:** Class 3 Concrete
- ⑬ **PULL BOX:** See Engineering Standard 7520
- ⑭ **CONDUIT:** 2" Min.

GENERAL NOTES:

- A. Installation shall conform to the provisions in Section 86 of the Standard Specifications.
- B. Provide photocell on each pole unless controlled by a remote photocell. Orient photocell away from headlights and other lights.
- C. Refer to the Uniform Design Criteria.
- D. Install City furnished light number plaque on base of pole.
- E. Conductors, conduit, ground rods and circuitry must comply with Engineering Standard 7520.

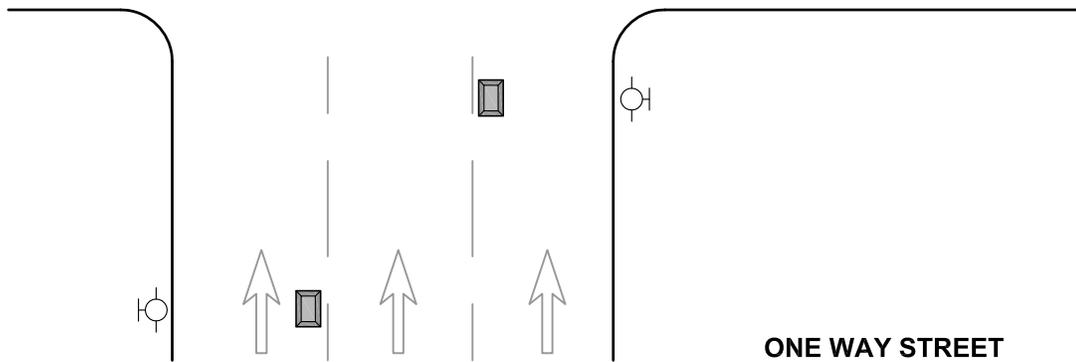
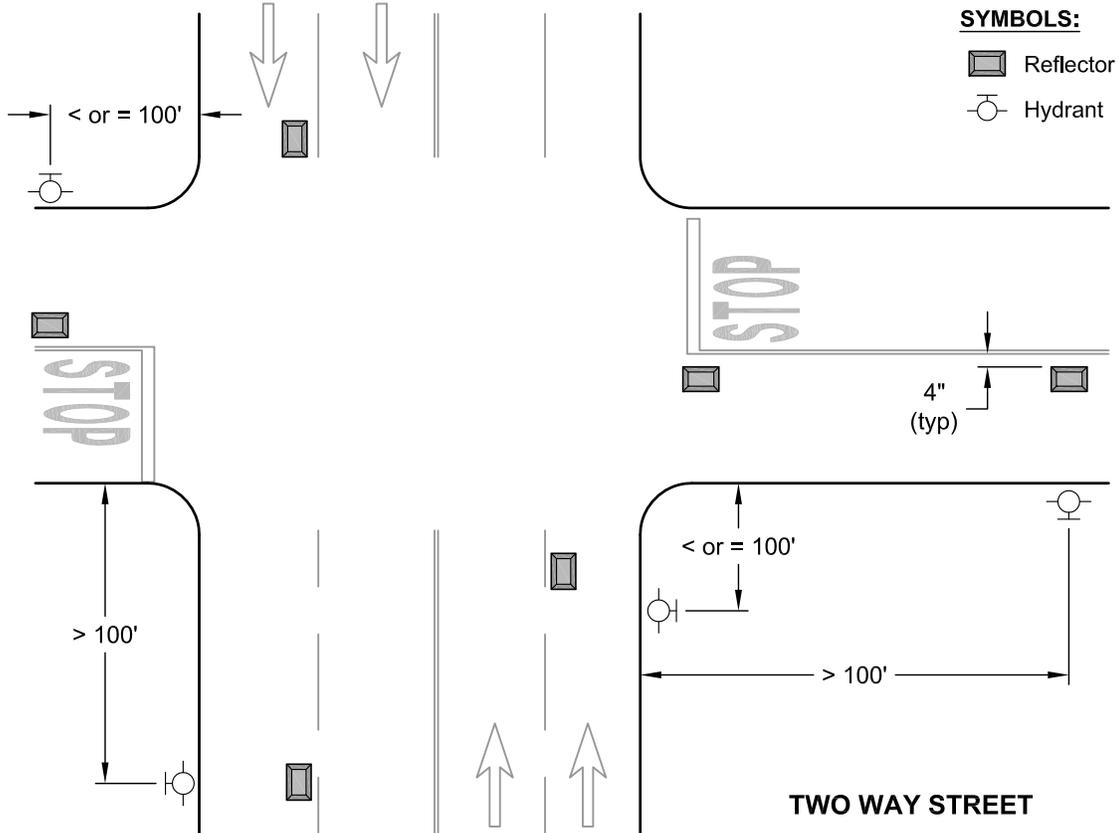


REVISIONS	BY	APP	DATE
LED Conversions; Drafting edits	JDL	MH	6-13
Revise E, 5 add Access & 13, F	SR	BL	1-14
Revised Note 11	MH	BL	11-09
STANDARD CURRENT AS OF:		January 2016	



**DOWNTOWN
PEDESTRIAN LIGHTING**

7915



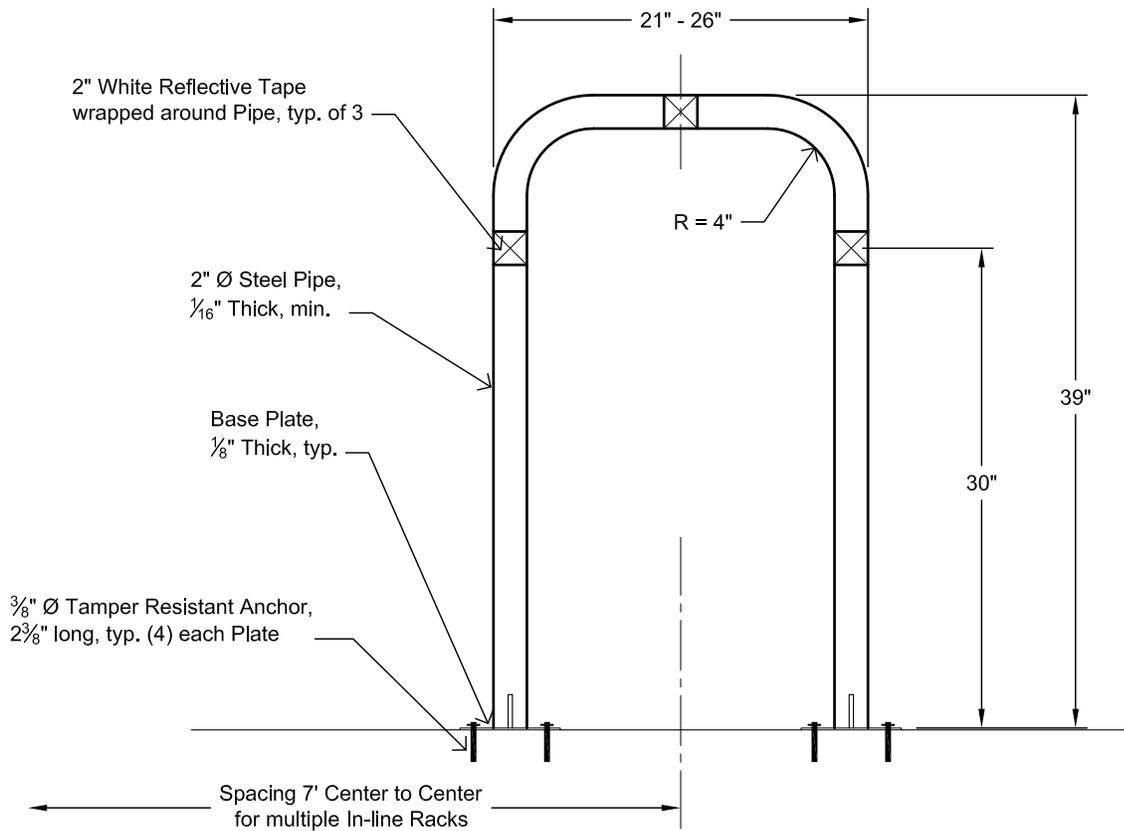
GENERAL NOTES:

- A. Reflectors shall be 2-way blue reflective markers and shall conform to the standards set forth for reflective markers by the State of California Department of Transportation.
- B. Reflectors shall be set on the hydrant side of the adjacent traffic stripe. Where no stripes exist, reflector should be placed in the center of the pavement.
- C. When hydrants are within 100' of an intersection, a marker shall be placed on the cross street as well.
- D. Reflectors shall be set behind the pedestrian crossing area at an intersection.
- E. Reflectors shall be cemented to the pavement in accordance with the requirements of Section 85, "PAVEMENT MARKERS" of the State of California Department of Transportation Standard Specifications.

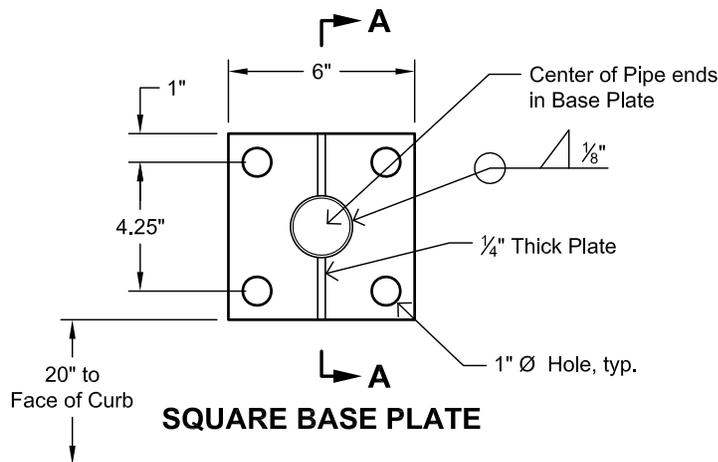
REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	5-13
Reflector locations	MH	JDW	10-04
Revise Note C	MH	JDW	10-04
STANDARD CURRENT AS OF:		January 2016	



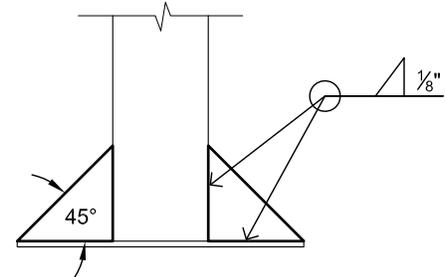
HYDRANT REFLECTOR



PROFILE



SQUARE BASE PLATE



SECTION A-A

GENERAL NOTES:

- A. Entire rack and base plate assembly shall be industrial high gloss powder-coated. Color: Dark Forest Green in Downtown area (match City Standard), black elsewhere.
- B. Manufactured unit may be used in lieu of fabricated rack, Viper 100 or South Bay Foundry DBL300-2239.
- C. Alternate rack style may be approved by the City Engineer. Peak Racks are an approved rack style (see Community Design Guidelines for further information.)
- D. Side by side racks shall have a minimum spacing of 3' between racks. Refer to the Community Design Guidelines for additional information regarding placement and spacing.
- E. When inverted "U" racks are orientated parallel to a wall, there shall be a 24" minimum clearance to the wall. When orientated perpendicular to a wall, there shall be a minimum of 36" between the wall face and the center of rack.

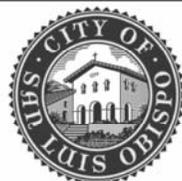
REVISIONS	BY	APP	DATE
Spacing, Tamper-resistant anchors	JDL	MH	4-13
Modified Note C	MH	BL	12-09
Added Notes D and E	DVB	BL	11-08
STANDARD CURRENT AS OF: January 2016			



BICYCLE RACK

ALLOWABLE ZONES		CHARACTERISTICS							
1 - In parkway or tree well		C = Fall Color				D = Deciduous			
2 - 3 to 7.5 feet from curb (or sidewalk if present)		F = Flowering				G = Suggested trees for Commemorative Grove			
3 - 7.5 to 10 feet from the curb (or sidewalk if present)		E = Evergreen							
BOTANICAL NAME	COMMON NAME	CHARACTERISTICS				HEIGHT	WIDTH	ZONE	
Ilex-opaca	American Holly		E			50	40	2-3	
Brachychiton acerifolius	Australian Flame tree		E		F	60	30	3	
Geijera parviflora	Australian Willow		E			30	20	1-3	
Pyrus calleryana	Aristocrat Flowering Pear	D			C F	40	20	1-3	
Tristaniopsis laurina	Water Gum		E		F	45	25	2-3	
Eriobotrya deflexa	Bronze loquat		E		F	15	10	1-3	
Melaleuca quinquenervia	Cajeput tree		E		F	40	25	2-3	
Platanus racemosa	California Sycamore	D				G	80	50	3
Cinnamomum camphora	Camphor Tree		E			50	60	3	
Pinus canariensis	Canary Island Pine		E			80	35	3	
Calodendrum capense	Cape Chestnut	D			F	40	40	3	
Lyonothamnus floribundus	Catalina Ironwood		E			35	15	1-3	
Ulmus parvifolia	Chinese Evergreen Elm		E			60	60	2-3	
Chionanthus-retusus	Chinese Fringe	D			C F	20	20	1-3	
Pistacia chinensis	Chinese Pistache	D			C	G	60	40	2-3
Koelreuteria bipinnata	Chinese Flame Tree		E		C F	30	30	2	
Quercus agrifolia	Coast Live Oak		E			G	70	70	3
Eucalyptus-torquata	Coral Gum		E		F	36	30	1-3	
Quercus suber	Cork Oak		E			G	60	60	3
Metasequoia glyptostroboides	Dawn Redwood	D				90	20	3	
Cedrus deodara	Deodar Cedar		E			G	80	40	3
Cercis-canadensis	Eastern Redbud	D			C F	35	35	1	
Fagus sylvatica	European Beech	D				70	40	3	
Stenocarpus sinuatus	Firewheel Tree		E		F	30	15	1-3	
Melaleuca linariifolia	Flaxleaf Paperbark		E		F	30	25	2-3	
Ceiba speciosa	Floss Silk Tree		Semi-E		F	50	40	2-3	
Cassia leptophylla	Gold Medallion Tree		Semi-E		F	30	20	1-2	
Koelreuteria paniculata	Goldenrain Tree	D			F G	35	40	2-3	
Brahea edulis	Guadalupe Island Palm		E		F	30	10	1	
Quercus ilex	Holly Oak		E			60	60	3	
Gleditsia triacanthos inermis	Honey Locust	D			C	70	35	1-3	
Ficus microcarpa	Indian Laurel Fig		E			60	70	3	
Jacaranda mimosifolia	Jacaranda	D			F	40	30	2-3	
Lagerstroemia faurei	Japanese Crape Myrtle	D			C F	30	30	1-3	
Harpephyllum caffrum	Kaffir Plum (Wild Plum)		E			25	15	1-2	
Magnolia grandiflora	Little Gem Magnolia		E		F	25	15	1-3	
Platanus acerifolia	London Plane Tree	D				80	40	2-3	
Arbutus-marina	Marina Madrone		E		F G	40	40	1-3	
Ginkgo biloba	Maidenhair Tree	D			C	50	30	1-3	
Maytenus boaria	Mayten Tree		E			50	20	1-3	
Metrosideros excelsus	New Zealand Christmas Tree		E		F	30	30	1-3	

REVISIONS	BY	APP	DATE
Revised List	JDL	MH	6-13
List update	BL	BL	11-06
List update	BL	JDW	1-12
STANDARD CURRENT AS OF: January 2016			

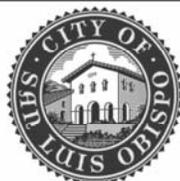


STREET TREES MASTER LIST

Agonis flexouosa	Peppermint Willow		E		F		40	30	1-2
Melaleuca styphelioides	Prickly-leaved Paperbark		E		F		70	40	3
Lagunaria patersonia	Primrose Tree		E	C	F		50	30	2-3
Bauhinia variegata	Purple Orchid Tree	D			F		35	35	2-3
Corymbia ficifolia	Red Flowering Gum		E		F		40	40	2-3
Aesculus x carnea	Red Horse Chestnut	D			F		40	30	2-3
Acer rubrum	Red Maple	D		C			60	40	1-3
Betula nigra	River Birch	D					90	60	3
Zelkova serrata	Sawleaf Elm	D		C			60	60	2-3
Acacia stenophylla	Shoestring Acacia		E		F		30	20	1
Albizia julibrissin	Silk tree	D			F		40	40	2-3
Magnolia grandiflora	Southern Magnolia		E		F		80	60	3
Michelia doltsopa	Sweet Michelia		E		F		30	25	1-2
Hymenosporum flavum	Sweetshade		E		F		40	20	1-2
Tipuana tipu	Tipu Tree	D		C	F		40	50	2-3
Heteromeles-arbutifolia	Toyon		E		F		25	25	1-3
Liriodendron tulipifera	Tulip Tree	D		C	F		70	40	3
Quercus lobata	Valley Oak	D		C			70	70	3
Pittosporum undulatum	Victorian Box		E		F		40	40	2-3
Crataegus phaenopyrum	Washington Hawthorn	D		C	F		25	20	1-3
Tristaniopsis laurina	Water Gum (Kanooka)		E		F		30	20	1-2
Callistemon viminalis	Weeping Bottlebrush		E		F		30	20	1-2
Cercis occidentalis	Western Redbud	D		C	F		18	18	1-3

Trees not included on this list may be used only with prior approval by the City Arborist.

REVISIONS	BY	APP	DATE
<i>Revised List</i>	<i>JDL</i>	<i>MH</i>	<i>6-13</i>
<i>List update</i>	<i>BL</i>	<i>BL</i>	<i>11-06</i>
<i>List update</i>	<i>BL</i>	<i>JDW</i>	<i>1-12</i>
STANDARD CURRENT AS OF:		January 2016	



STREET TREES MASTER LIST

Note: Percentages refer to mixture of tree types in project area

<u>DOWNTOWN DISTRICT</u>	%
Ficus microcarpa	40
Quercus agrifolia	20
Platanus acerifolia 'Bloodgood'	30
Olea europaea – grafted fruitless	10

Downtown Accent Trees

Jacaranda mimosifolia	
Robinia ambigua "Purple Robe"	
Magnolia grandiflora 'Saint Mary's'	
Eucalyptus ficifolia	
Pyrus calleryana 'Aristocrat'	
Calodendrum capense	

<u>BROAD STREET</u>	%
<u>Monterey St. to Pacific St.</u>	
Tristanopsis laurina	60
Pyrus calleryana "Aristocrat"	40

Pacific St. to High St.

Platanus acerifolia	40
Pistacia chinensis	40
Ginkgo biloba	20

High St. to City Limits

Platanus acerifolia	30
Quercus palustris	20
Pistacia chinensis*	20
"Red oak"	15
Tristanopsis laurina	15
*Substitute south of Orcutt:	
"Monterey cypress"	20

At creek crossings

Platanus racemosa	100
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<u>CALIFORNIA BLVD.</u>	%
<u>Cal Poly to Mill St.</u>	
Liquidambar styraciflua	25
Red oak	25
Camphor	30
Agonis flexuosa	20
<u>Mill St. to San Luis Dr.</u>	
Pyrus calleryana "Aristocrat"	40
Agonis flexuosa	30
Metrosideros excelsus	30
<u>San Luis Dr. to Johnson Ave.</u>	
Quercus agrifolia	60
Agonis flexuosa	40
<u>At creek crossings</u>	
Platanus racemosa	100

<u>FOOTHILL BLVD.</u>	%
Magnolia "Majestic Beauty"	60
Pyrus calleryana "Aristocrat"	10
Platanus acerifolia	30
<u>At creek crossings</u>	
Platanus racemosa	100

<u>GRAND AVENUE</u>	%
Magnolia "Majestic Beauty"	50
Platanus acerifolia	50

<u>HIGUERA STREET</u>	%
<u>California Blvd. to Downtown District</u>	
Ficus microcarpa	100

Downtown District to Madonna Rd.

Use Downtown District

Madonna Rd. to City Limit

Pinus canariensis	30
"Monterey cypress"	30
Hymenosporum flavum	20
Red Oak	20

<u>JOHNSON AVENUE</u>	%
<u>Hwy. 101 to SPRR underpass</u>	
Magnolia "Majestic Beauty"	20
Pyrus calleryana "Aristocrat"	20
Pistacia chinensis	20
Pin oak	20
Hymenosporum flavum	20

SPRR underpass to Laurel Lane

Quercus agrifolia	20
Pistacia chinensis	20
Chinese Elm	20
Hymenosporum flavum	20
Red Oak	20

Laurel Lane to Orcutt Rd.

Maytenus boaria	20
Red oak	20
Chinese Elm	20
Jacaranda	20
Hymenosporum flavum	20

<u>LAUREL LANE</u>	%
Platanus acerifolia	50
Quercus suber	20
Jacaranda	15
Ginkgo biloba	15

<u>LOS OSOS VALLEY ROAD</u>	%
Tristanopsis laurina	20
Monterey cypress	20
European beech	20
Quercus agrifolia	20
Pinus canariensis	20

<u>MADONNA ROAD</u>	%
Pinus canariensis	25
Pistacia chinensis	25
Quercus agrifolia	25
Red Oak	25

<u>MARSH STREET</u>	%
Use Downtown District	

<u>MARGARITA AVENUE</u>	%
Platanus acerifolia	33
Sweetshade	33
Pin oak	34

<u>MONTEREY STREET</u>	%
Use Downtown District	

<u>ORCUTT ROAD</u>	%
Pistacia chinensis	60
Crataegus phaenopyrum	20
Quercus agrifolia	20

At creek crossings

Platanus racemosa	100
-------------------	-----

<u>PRADO ROAD</u>	%
Platanus acerifolia	34
Pinus canariensis	33
Pin oak	33

<u>SANTA ROSA STREET</u>	%
<u>Highland St. to Murray St.</u>	
Quercus agrifolia	80
Pistacia chinensis	20

Murray St. to Marsh St.

Pistacia shinensis	20
Pyrus calleryana "Aristocrat"	20
Ficus microcarpa	20
Tristanopsis laurina	10
Pistacia chinensis	20
Jacaranda mimosa	10

At Creek intersections

Platanus racemosa	100
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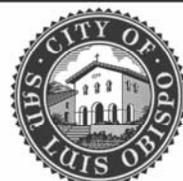
<u>SOUTH STREET</u>	%
Tristanopsis laurina	20
Jacaranda mimosifolia	20
Ginkgo biloba	20
Platanus acerifolia	20
Pin oak	20

<u>TANK FARM ROAD</u>	%
<u>East of Broad St.</u>	
Platanus acerifolia	50
Tristanopsis laurina	20
Eucalyptus torquata	30

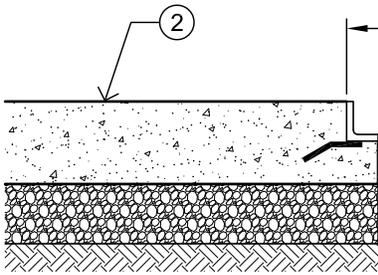
West of Broad St.

Platanus acerifolia	25
Cinnamomum camphora	25
Quercus agrifolia	25
Red oak	25

REVISIONS	BY	APP	DATE
	RMH	WAP	4-95
Revise List	BL	BL	11-06
New Border	JDL	WAP	1-98
STANDARD CURRENT AS OF:		January 2016	



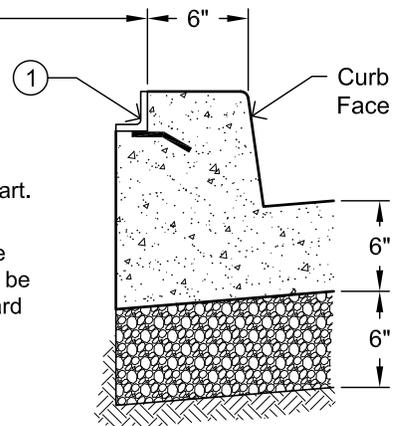
STREET TREES MAJOR STREETS



SECTION A-A

INSTALLATION NOTES:

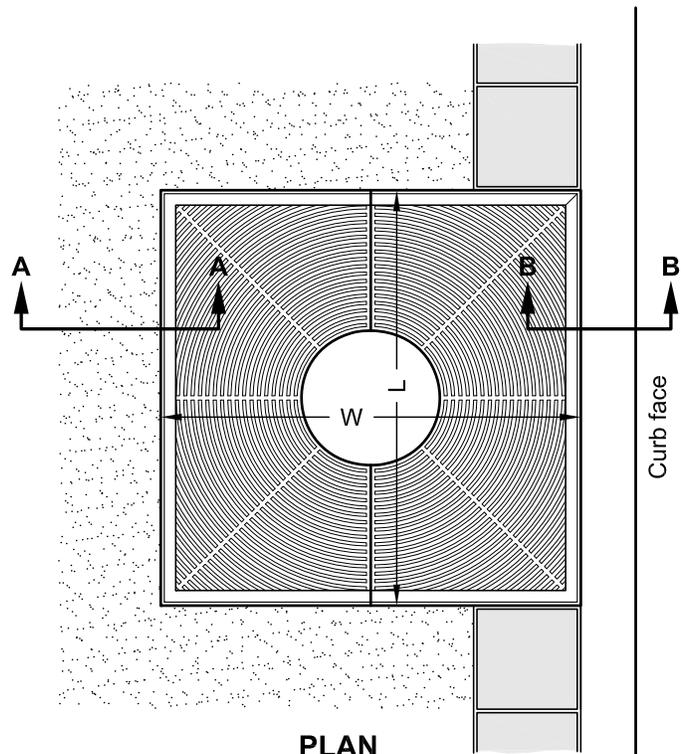
- ① See Tree Grate and Frame Size Chart.
- ② Construct sidewalk per Engineering Standard 4110. Sidewalks within the Mission Style Sidewalk District shall be constructed per Engineering Standard 4220.



SECTION B-B

GENERAL NOTES:

- A. Concrete shall be Class 3 and shall be monolithic with curb, gutter and sidewalk.
- B. Tree well shall have the same slope as the surrounding sidewalk.
- C. Frame shall be pre-manufactured and furnished with the cover by the same manufacturer.
- D. Inspection of tree wells is required. Prior notice of 48 hours shall be given to the City Engineer when requesting inspection.
- E. When constructing tree well around existing tree, tree shall be centered with respect to the "L" dimension.
- F. Tree well shall be square (sides parallel and corners 90°).
- G. Tree grate shall have a radial pattern with openings expandable to accommodate increasing trunk diameter.
- H. Tree grate shall be ductile cast iron and two pieces and set so that the joint is parallel to the curb.
- I. Openings in the tree grate shall be ADA compliant.
- J. See Engineering Standard 8210 for Street Tree Planting Requirements.
- K. Tree guard vertical strips shall remain vertical, not angled at the top, so as to not protrude into the walkway.
- L. Tree guard shall be bolted down to tree grate per manufacturer's recommendation.
- M. Finishes:
 Grate - Bare
 Frame - Clear Powder Coat
 Guard - Black Powder Coat



PLAN
(shown as Mission Style)

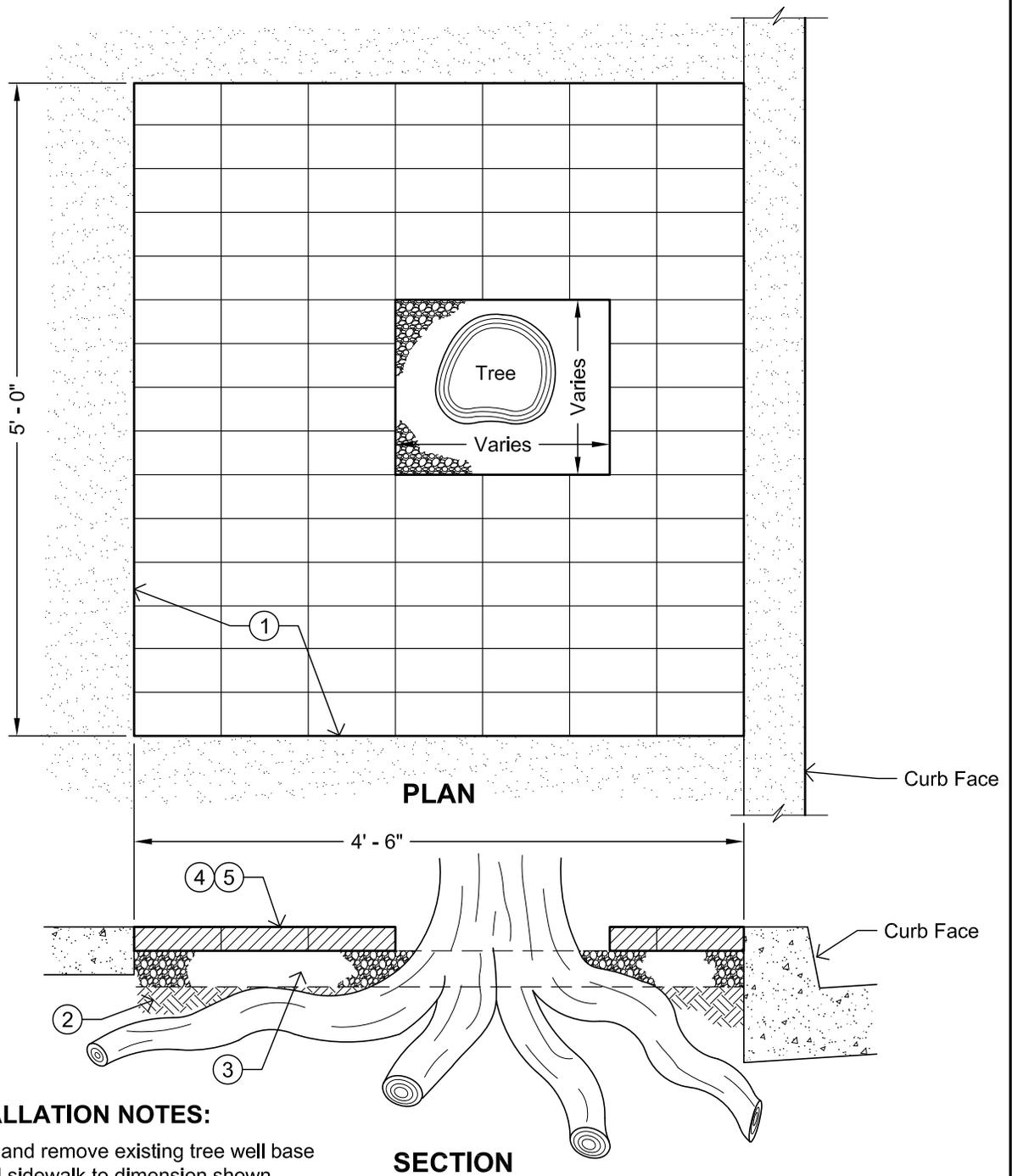
TREE GRATE AND FRAME SIZE CHART

Sidewalk Width	Frame Size	Frame Type	Cover Type	Tree Guard
10' or wider	5' x 5'	Olympic Foundry 82-3000, South Bay Foundry DTF6060, or equivalent	Olympic Foundry SP60 80-3190, South Bay Foundry SP Style D0060SQ, or equivalent	Olympic Foundry GDA 84-5020, South Bay Foundry DTG-A style or equivalent
Less than 10'	4' x 4'	Olympic Foundry 82-2000, South Bay Foundry DTF4848, or equivalent	Olympic Foundry SP48 80-2180, South Bay Foundry SP Style D0048SQ, or equivalent	

REVISIONS	BY	APP	DATE
Revised Sidewalk notes	MH	BL	11-09
Revised Grate and Frame	MH	BL	11-09
Note H; Drafting edits	JDL	MH	10-12
STANDARD CURRENT AS OF:		January 2016	



TREE WELL



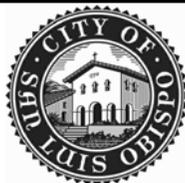
INSTALLATION NOTES:

- ① Sawcut and remove existing tree well base ring and sidewalk to dimension shown.
- ② Backfill well with native material to within 5" to 6" of sidewalk surface.
- ③ Place 3" to 4" of granite chips (or ¼" - ½" aggregate rock).
- ④ Cover with red brick.
- ⑤ Final surface to be level and flush with sidewalk.

**This method to be used only when the root growth of an existing tree will not allow the use of a standard grate and sidewalk does not need repair. Must be approved by the City Engineer.*

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	5-13
Revised * Note	MH	BL	11-09
Revised Note 4	DVB	BL	11-06

STANDARD CURRENT AS OF: January 2016



**TREE WELL COVER
ALTERNATE METHOD***

STREET TREE PLANTING INSTRUCTIONS AND REQUIREMENTS

A. INSPECTION:

Inspection of tree planting by the City Engineering Inspector or Building Inspector is required.

1. Engineering Inspector or Building Inspector shall approve the hole dimensions prior to planting.
2. City Arborist shall perform inspection of tree quality prior to planting and the final inspection when the tree planting is complete.

Appointments for inspection(s) may be made by calling (805) 781-7220 at least 48 hours in advance of the inspection.

B. {DELETED}

C. BACKFILL MATERIAL:

The backfill material shall be composed of:

- 75% Native Soil (the soil removed from the planting hole)
- 15% Compost Material
- 10% Sand (see Note)

Note: The sand component of the backfill may be deleted if the Arborist determines that the existing native soil will provide adequate aeration for the root system.

D. PLANTING:

Partially fill the excavated hole with backfill material, while tamping and watering, to an elevation equal to the bottom of the root ball. Root crown (top of root ball) shall extend one (1) inch above finish grade when planting is completed. Place the tree to be planted in the center of the hole on tamped backfill. Continue adding backfill while tamping and watering.

Continue adding backfill around root ball to finish grade, while tamping tightly, and add additional water to thoroughly wet root ball and backfill material.

For Street Tree Well installations, finish grade shall be 4" below the sidewalk grade.

E. TREE SIZE and TYPE:

Standard tree size shall be #15. A larger sized 24", 36" or 48" box may be required for some installations. New trees planted in the downtown (within the boundary of the Downtown Association) shall be a minimum of a 24" box.

Tree type shall be from the Master Street Tree list and (if applicable) be in accordance with the selections for major streets.

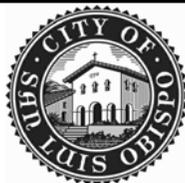
F. STAKING:

All newly planted street trees shall be staked.

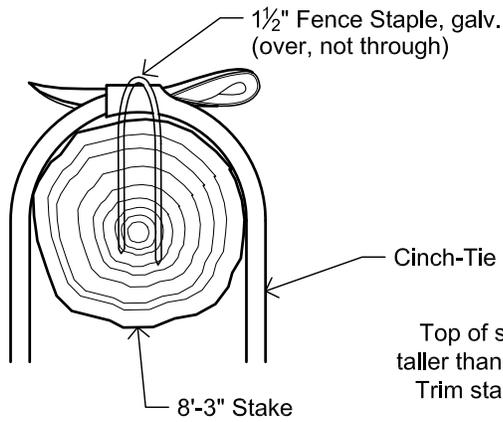
G. GUARDS:

Trees planted within the Mission Style Sidewalk District shall include installation of a tree guard of the same manufacturer as the tree grate, see Engineering Standard 8130.

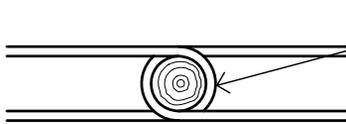
REVISIONS	BY	APP	DATE
<i>Revised Notes A, D, & G</i>	<i>MH</i>	<i>BL</i>	<i>11-09</i>
<i>Modified A & G; Deleted B</i>	<i>DVB</i>	<i>BL</i>	<i>10-08</i>
<i>Drafting edits</i>	<i>JDL</i>	<i>MH</i>	<i>5-13</i>
STANDARD CURRENT AS OF:		January 2016	



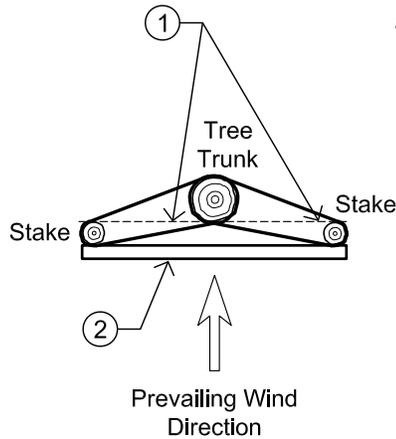
STREET TREE PLANTING NOTES



Top of stake shall not be taller than lowest tree limb. Trim stake as necessary.



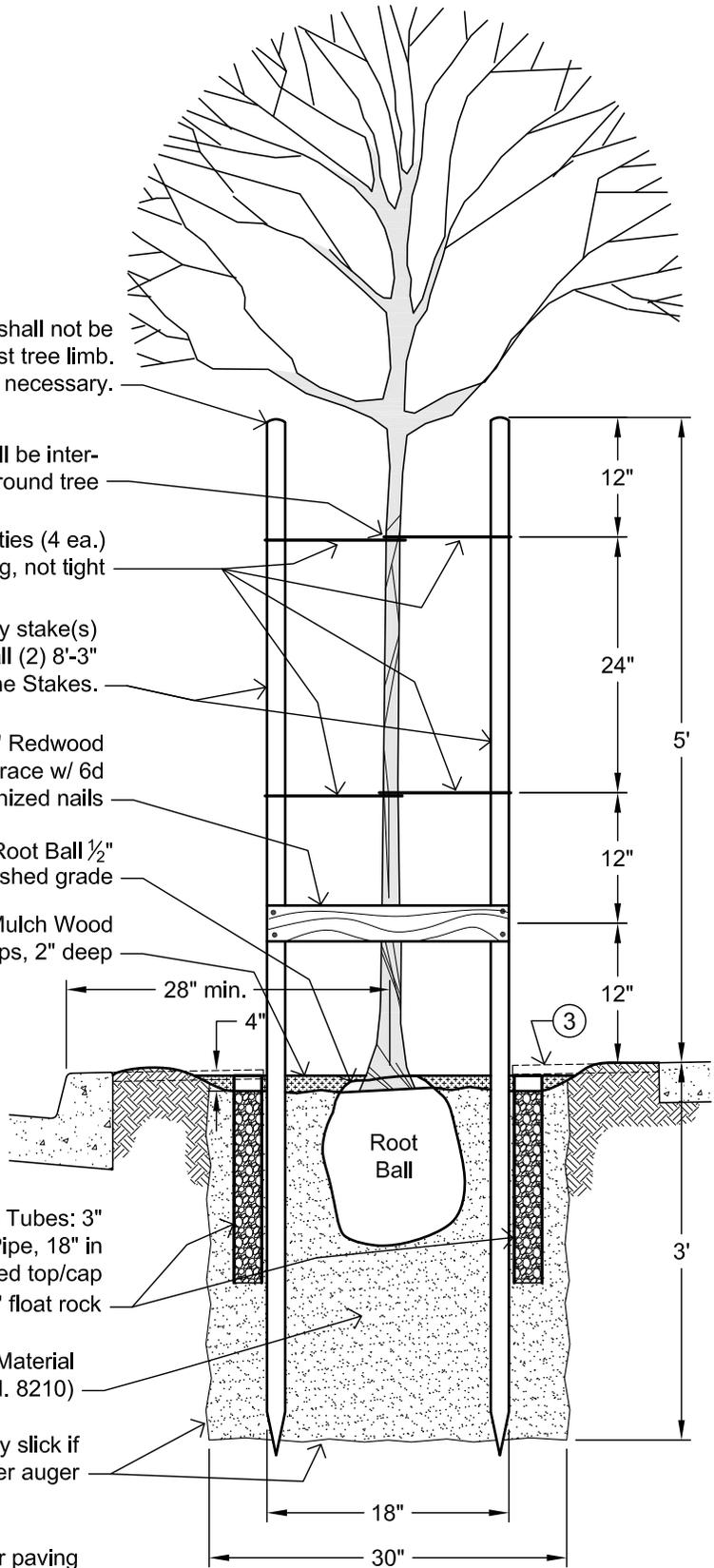
Remove nursery stake(s) after planting. Install (2) 8'-3" Lodgepole Pine Stakes.



INSTALLATION NOTES:

- ① Align face of tree trunk with face of stake.
- ② Cross brace shall be installed for all trees with a trunk diameter of 1" or less at 12" above ground.
- ③ At Zone 1, tree grate shall be installed per Engineering Standard 8130, 4" clear from top of grate to top of backfill material, mulch not required.

ZONE 1: Trees planted in tree wells or parkway
ZONE 2: Trees planted within 7'-6" of curb, sidewalk, or paving
ZONE 3: Trees planted more than 7'-6" of curb, sidewalk, or paving

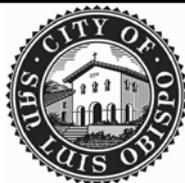


(2) Watering Tubes: 3" Perforated Pipe, 18" in length w/ slotted top/cap filled with 1/2" - 3/4" float rock

Backfill Material (See Eng. Std. 8210)

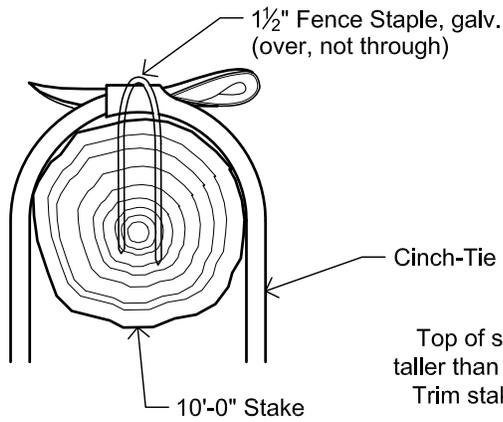
Remove clay slick if dug by power auger

REVISIONS	BY	APP	DATE
Combined Stds 8830 and 8840	JDL	MH	6-13
Drafting edits	JDL	MH	6-13
Rev'd Notes; Watering Tubes, etc.	DVB	BL	11-09
STANDARD CURRENT AS OF:		January 2016	

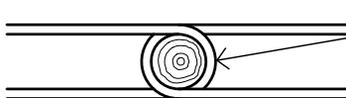


**TREE PLANTING
and STAKING**
ZONES 1, 2 and 3
15 Gallon Size

8220

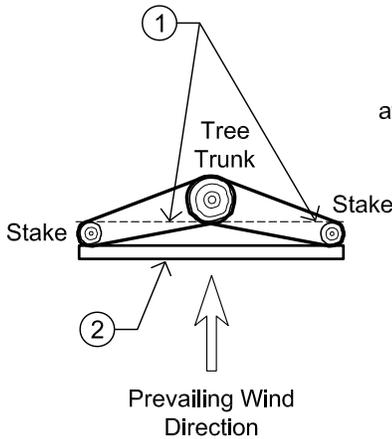


Top of stake shall not be taller than lowest tree limb. Trim stake as necessary.

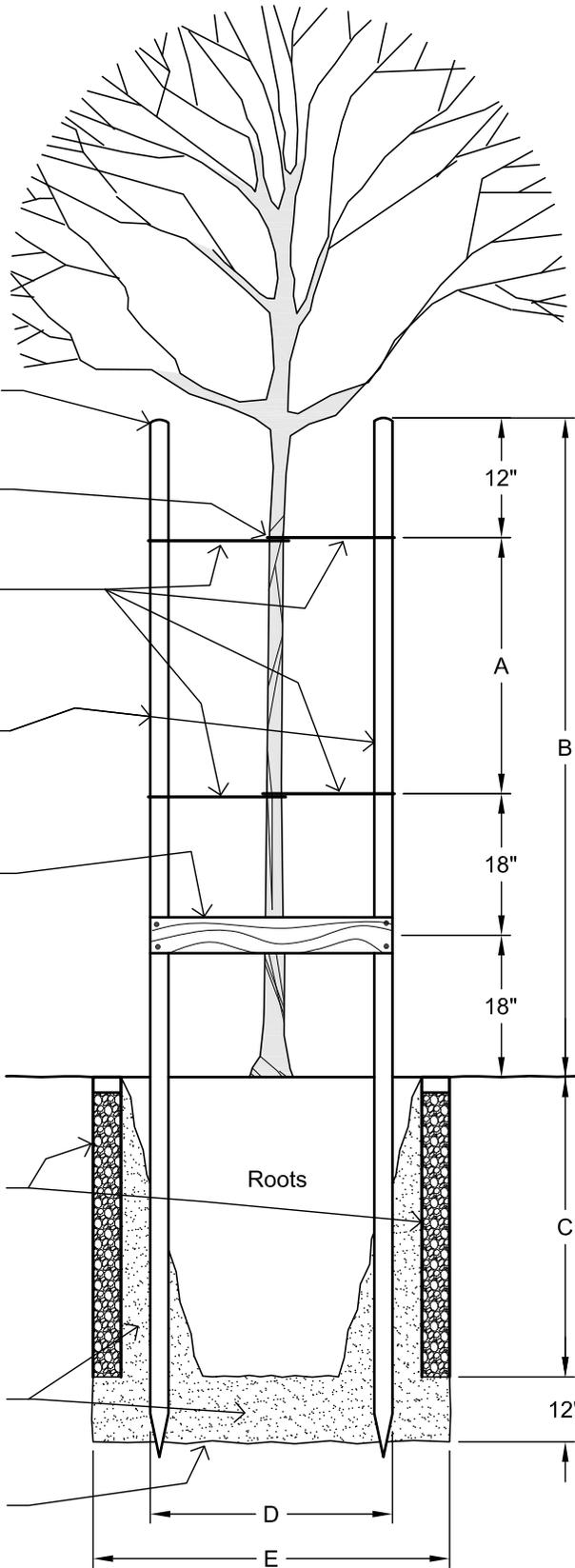


24" Cinch-ties (4 ea.) shall be snug, not tight

Remove nursery stake(s) after planting. Install (2) 10'-0" Lodgepole Pine Stakes.



1" x 4" x 18" Redwood Cross-brace w/ 6d galvanized nails



TREE BOX SIZE (in)	DIMENSIONS (in)				
	A	B	C	D	E
24	36	84	24	18	40
36	24	72	36	24	48
48	18	66	42	30	60

INSTALLATION NOTES:

- ① Align face of tree trunk with face of stake.
- ② Cross brace shall be installed for all trees with a trunk diameter of 2" or less at 12" above ground.

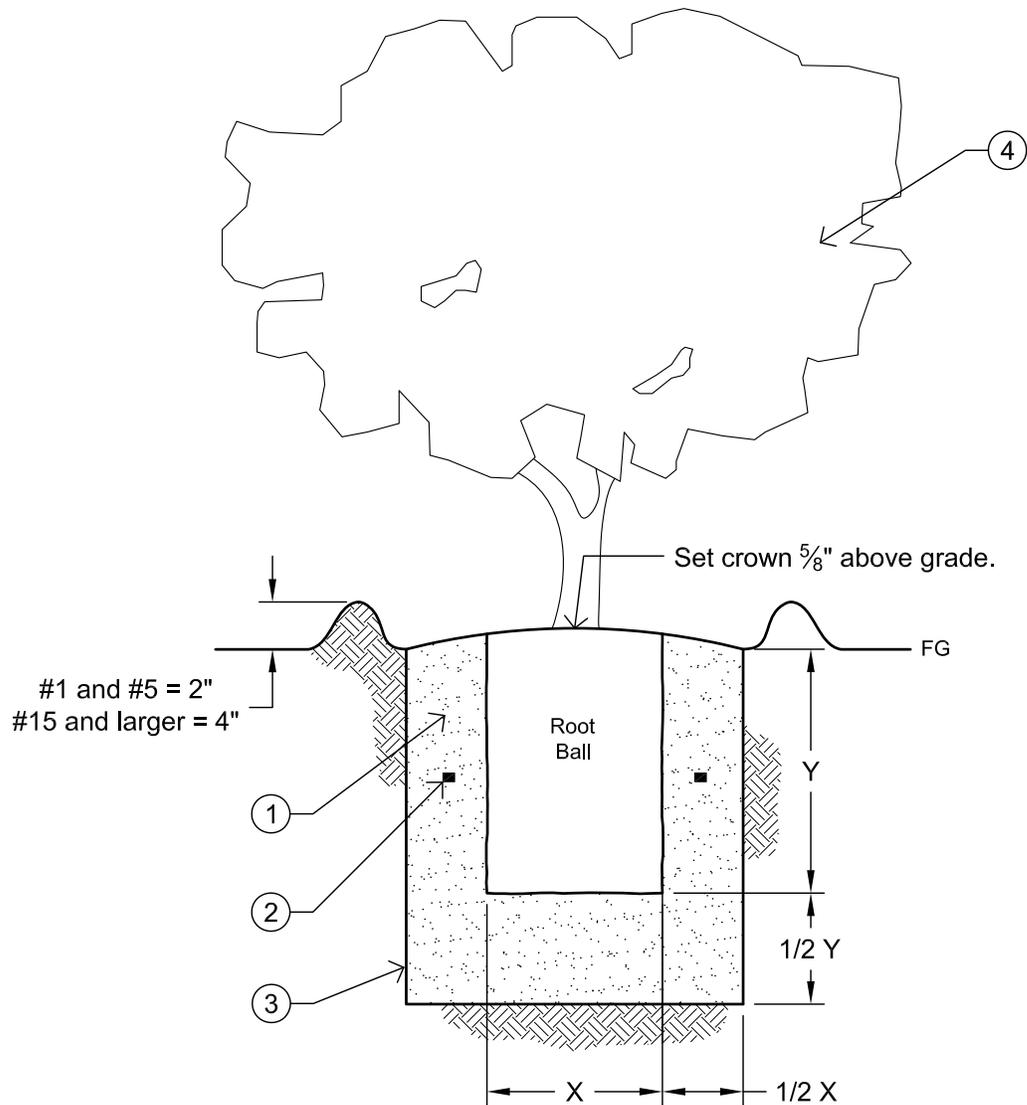
ZONE 1: Trees planted in tree wells or parkway
 ZONE 2: Trees planted within 7'-6" of curb, sidewalk, or paving

REVISIONS	BY	APP	DATE
Added Notes	MH	BL	11-09
Revised Tube Length	MH	BL	11-09
Drafting edits	JDL	MH	6-13

STANDARD CURRENT AS OF: January 2016



TREE PLANTING and STAKING
 ZONES 1 and 2
 24" Box and Larger



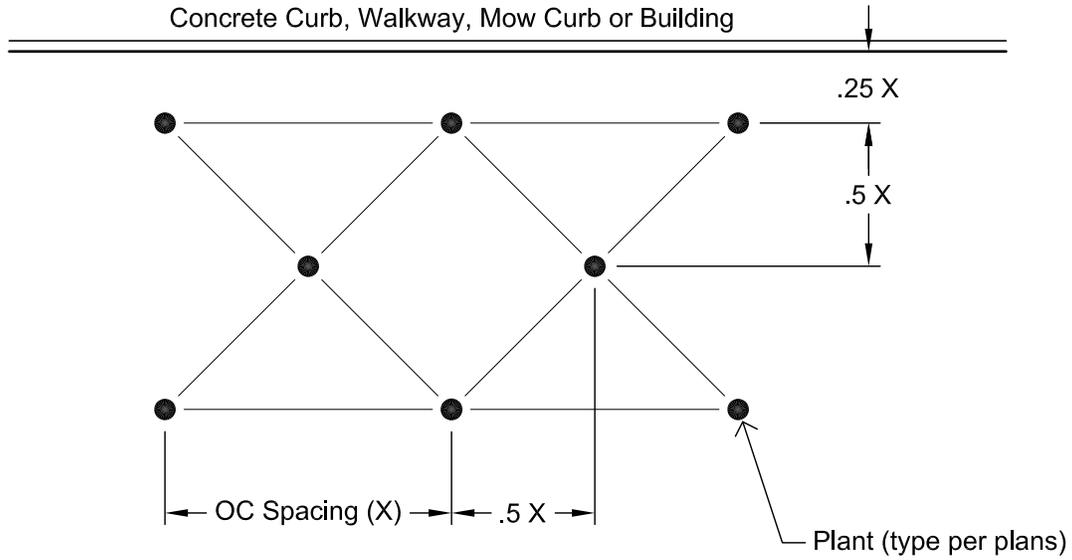
NOTES:

- ① Backfill per Standard Specifications.
- ② Fertilizer tablets per Standard Specifications. Place tablet halfway up root ball and approximately 1 inch from root tips, equally spaced around the root ball.
- ③ Plant pit to have vertical sides. Pit shall be twice the width of root ball or container and one and a half times the height of the root ball or container. Sides and bottom of plant pit are to be scarified to remove shined surfaces.
- ④ Place plant in pit so that it is plumb and straight with best side facing the most viewed angle.

REVISIONS	BY	APP	DATE
New Standard	BL	JDW	1-04
Revise Note 2; Add Notes 3 and 4	JDL	BL	5-12
Drafting edits	JDL	MH	5-13
STANDARD CURRENT AS OF:		January 2016	



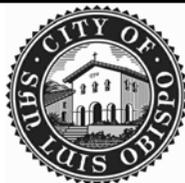
SHRUB PLANTING



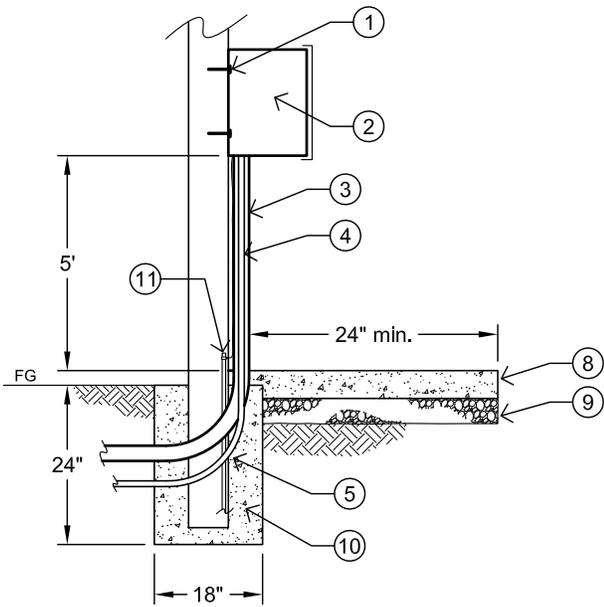
GENERAL NOTE:

- A. Ground cover on center (OC) spacing shall be per plans or Special Provisions by plant type. If not specified, OC spacing shall be 24".

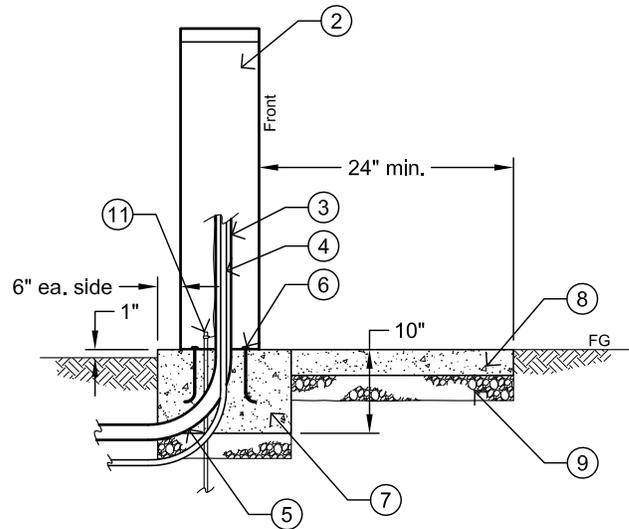
REVISIONS	BY	APP	DATE
<i>New Standard</i>	<i>BL</i>	<i>JDW</i>	<i>1-04</i>
<i>Remove chart; Drafting edits</i>	<i>JDL</i>	<i>MH</i>	<i>6-13</i>
STANDARD CURRENT AS OF:		January 2016	



**GROUND COVER
PLANTING PATTERN**



**CONTROLLER
PEDESTAL MOUNT**



**CONTROLLER
GROUND MOUNT**

GENERAL NOTES:

- A. All exposed conduit shall be Schedule 80.
- B. Install Controller and Telemetry equipment required for the site as specified by the City Parks Maintenance Division.
- C. Attach Recycled Water adhesive warning decal per Engineering Standard 8810 to inside and outside of cabinet door when used to control recycled water.

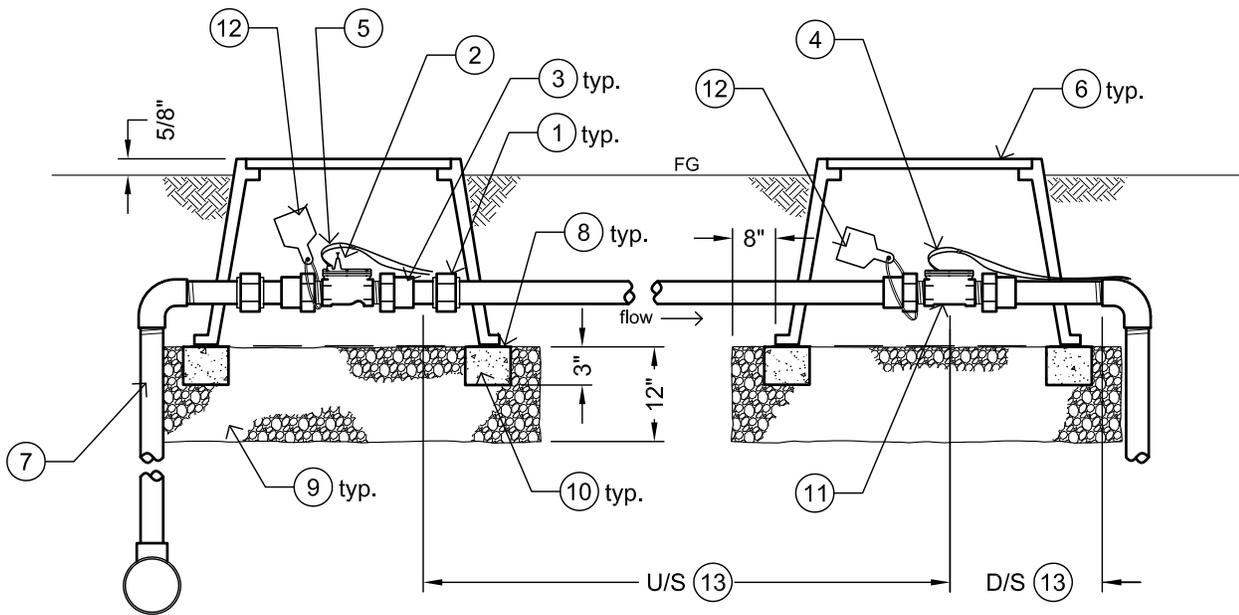
NOTES:

- ① 3/8" Ø x 4" Lag Bolts. Connect to building wall or, where wall is not available, mount to 4" x 6" Pressure Treated Douglas Fir post.
- ② Controller / Stainless Steel Enclosure
- ③ 2" Ø PVC Conduit w/ Irrigation Control Wires
- ④ 3/4" Ø PVC Conduit w/ 120 volt Power Source
- ⑤ PVC Sweep Ells for Conduit
- ⑥ 5/32" - 1/4" Ø Anchor Bolts
- ⑦ Class 3 PCC Footing
- ⑧ 4" Class 3 PCC Pad
- ⑨ 4" Class 2 Aggregate Base
- ⑩ Class 3 PCC Post Footing when Post Mount is used
- ⑪ Ground Rod

REVISIONS	BY	APP	DATE
Drafting edits	JDL	MH	6-13
Add Note 12	SR	BL	3-06
Delete Note 12	DVB	BL	11-06
STANDARD CURRENT AS OF:		January 2016	



**IRRIGATION
CONTROLLER**



GENERAL NOTES:

- A. Locate valves in shrub areas whenever possible.
- B. Valve boxes shall be a maximum of 12" from walkways or curbs.
- C. Valve boxes shall be set parallel to walkways or curbs.
- D. Flow meter size and pipe size must be equal.
- E. No splices are allowed in wiring except at connectors shown (in box.)

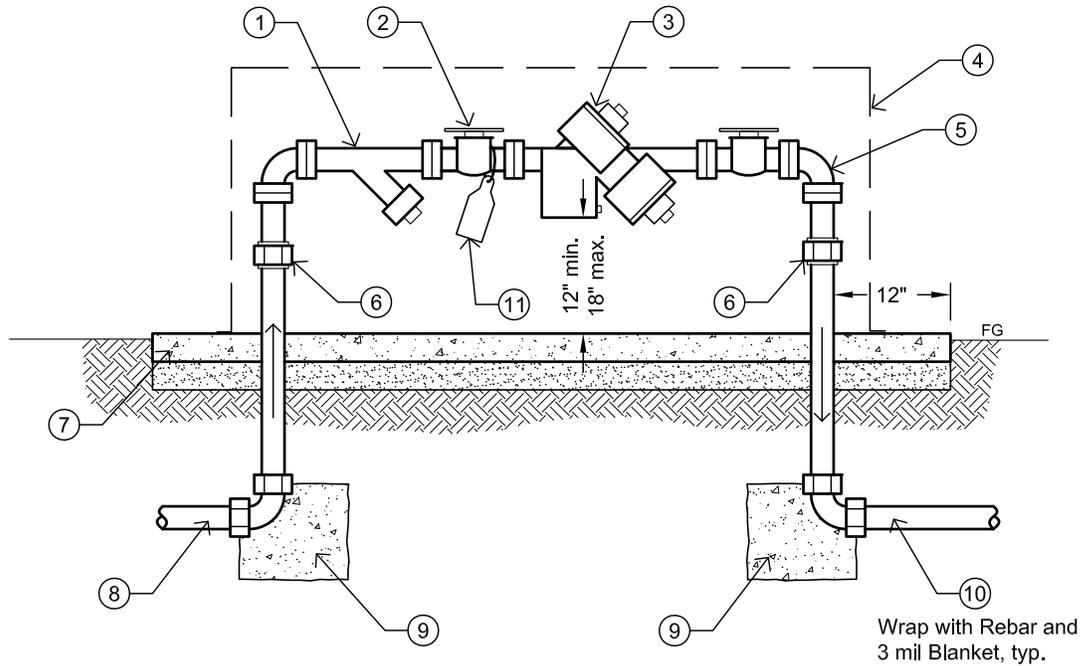
INSTALLATION NOTES:

- ① PVC Union
- ② Master Valve - normally open
- ③ PVC Male Adapter
- ④ Flow Sensor Specialized Shielded Cable (EV-CAB-SEN) (1-Flow Meter, 1-Common)
- Maximum distance between meter and controller is 2000' -
- ⑤ 14 gauge Master Valve Controller Wires (1-Valve, 1-Common)
- ⑥ Plastic Valve Box with bolt down lid. Bolts to be stainless steel.
Carson Industries 1419-3B (Purple) for Recycled Water Valves up to 2"
Carson Industries 1324-3B (Purple) for Recycled Water Valve 2½" and larger
- ⑦ Irrigation Pressure Mainline
- ⑧ Galvanized Cloth set under box - ½" Grid
- ⑨ Gravel - ¾" to 1½" in size
- ⑩ Cement Blocks or Brick continuous for box support
- ⑪ Flow Sensor - RainMaster
- ⑫ Attach Recycled Water Warning Tab per Engineering Standard 8810 when used in recycled water system.
- ⑬ U/S distance equals ten (10) times the Flow Meter size.
D/S distance equals five (5) times the Flow Meter size.

REVISIONS	BY	APP	DATE
Edit Note 11, add PVC Union	JDL	BL	6-12
Revise Notes 2 and 11	MH	BL	11-09
Update Note s 4 and 5	SR	BL	8-11
STANDARD CURRENT AS OF:		January 2016	



MASTER VALVE & FLOW SENSOR



GENERAL NOTES:

- A. All pipe shall be schedule copper or brass unless otherwise specified.
- B. Dissimilar metals shall be separated by an approved dielectric coupling.
- C. Service assembly shall be installed as the first assembly after the meter.
- D. Device shall be located within 10' of water meter and no connection or tees are allowed between the meter and the assembly.

INSTALLATION NOTES:

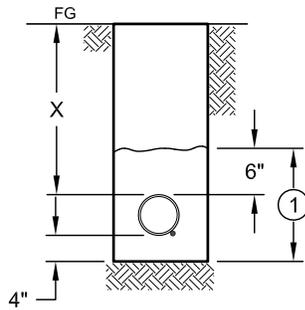
- ① WYE STRAINER: Barrel position 45° from horizontal for below ground installations
- ② BALL VALVE: Brass
- ③ FOR POTABLE SERVICE: Backflow Assembly (reduced pressure type), FEBCO/WILKINS
FOR RECYCLED SERVICE: Pressure Regulator. Where there is no backflow assembly, place wye strainer and regulator in paired boxes installed per Engineering Standard 8550.
- ④ LOCKING ENCLOSURE: Secure to pad per manufacturer's direction. Enclosure shall not be field-painted. All coatings shall be completed by manufacturer. Model: Strongbox #SBBC Series, expanded metal, dark green powder-coated, low profile, smooth touch, vandal resistant
- ⑤ ELBOW
- ⑥ UNION: Brass
- ⑦ CONCRETE PAD: Class 3, 60" x 24" x 4" on 14" Class 3 Base, with 2% cross-slope for drainage
- ⑧ SUPPLY LINE
- ⑨ THRUST BLOCK
- ⑩ IRRIGATION PRESSURE LINE
- ⑪ RECYCLED WATER WARNING TAG: Attach per Engineering Standard 8810 when used for recycled water.

****BACKFLOW DEVICES SHALL BE INSPECTED BY THE LOCAL DEPARTMENT OF HEALTH SERVICES AND THE CITY OF SAN LUIS OBISPO UTILITIES DEPARTMENT****

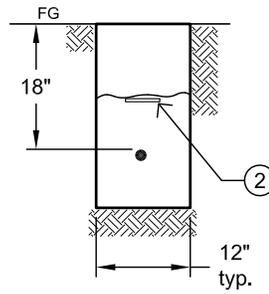
REVISIONS	BY	APP	DATE
Revised Note 1	MH	BL	11-09
Revised title; Drafting edits	JDL	MH	10-12
Revised Notes 3, 4 & 5	DVB	BL	10-07
STANDARD CURRENT AS OF:		January 2016	



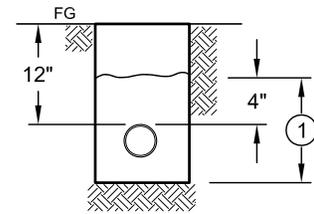
IRRIGATION SERVICE ASSEMBLY



PRESSURE LINE & CONTROL WIRES



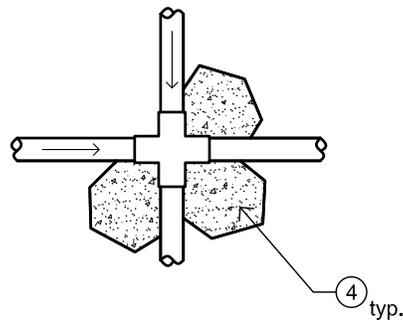
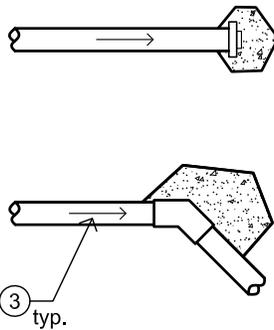
CONTROL WIRES & COMPUTER CONTROL CABLE



LATERAL LINE

- X = 18" for sizes 2" and smaller in planter areas
- X = 24" for sizes over 2" and conduit under pavement
- X = 24" for conduit for high voltage wiring

TRENCH DETAILS



THRUST BLOCKS

GENERAL NOTES:

- A. Pressure lines shall be per the Standard Specifications unless otherwise noted.
- B. Lateral lines shall be Class 200 unless otherwise noted.
- C. Control wires shall be taped together at 5' intervals. Where control wires share a trench with pressure lines, they shall be placed below the 4 o'clock and 8 o'clock position under the pressure line.
- D. Thrust blocks shall be installed at mainline turns, elbows, tees, caps, plugs, changes in direction, at terminal points of all rubber gasket piping and at any other additional points shown on the plans.

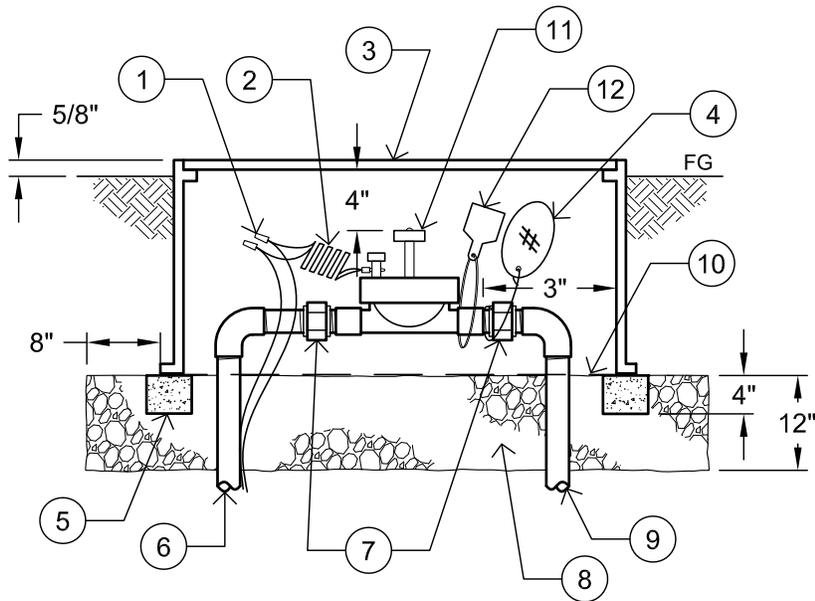
INSTALLATION NOTES:

- ① Select backfill compacted to 90%, with native above to grade compacted to 85%. Native material to be fine earth material free from clods, rocks, and other large matter. If existing soil is not acceptable, the Contractor shall import soil as backfill.
- ② 3" Detectable Marker Tape marked "WATER" or "NON-POTABLE WATER" depending on the irrigation supply source. Thor Enterprises (distributed by T. Christy Enterprises)
- ③ Direction of flow
- ④ Class 3 PCC Thrust Block, sized as needed for pressure.

REVISIONS	BY	APP	DATE
<i>New Standard</i>	<i>BL</i>	<i>JDW</i>	<i>1-04</i>
<i>Revise Lateral Line detail</i>	<i>DVB</i>	<i>BL</i>	<i>11-08</i>
<i>Revise Installation Note 1</i>	<i>JDL</i>	<i>BL</i>	<i>5-12</i>
STANDARD CURRENT AS OF:		January 2016	



TRENCH DETAIL & THRUST BLOCKS



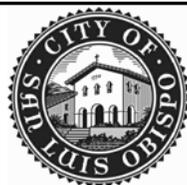
GENERAL NOTES:

- A. Locate valves in shrub areas whenever possible.
- B. Valve boxes shall be a maximum of 12" from walkways or curbs.
- C. Valve boxes shall be set parallel to walkways or curbs.
- D. One valve per box.

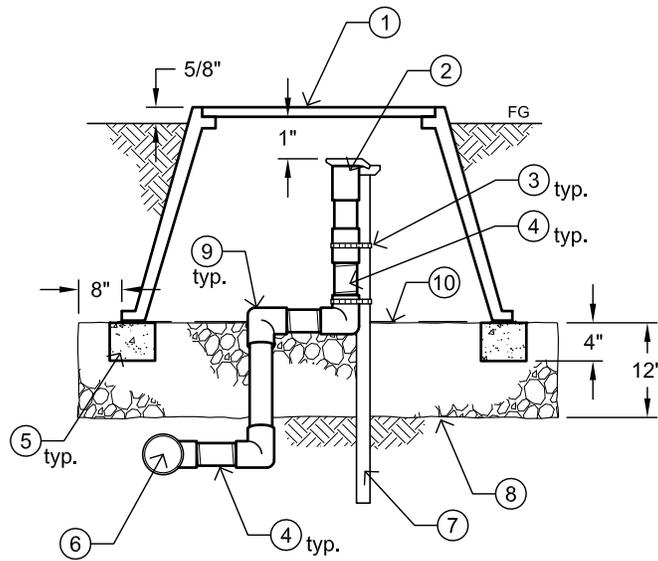
INSTALLATION NOTES:

- ① Connector:
King One Step Model 70-566 30 Volt
Rain Bird Snaptime with sealer #ST-03 Grey PT-S5
- ② 14 gauge Direct Burial Wire with 12" expansion coil (1- valve, 1- common)
- ③ Plastic Valve Box with bolt-down lid, bolts to be stainless steel:
Carson Industries 1419-3B (purple) for Recycled Water Valves up to 2"
Carson Industries 1324-3B (purple) for Recycled Water Valves 2½" and larger
- ④ 2" diameter aluminum or plastic Valve Tag, attach with non-ferrous wire, engrave with valve station number.
- ⑤ Cement Block (4 total) under each box corner
- ⑥ Irrigation Lateral Line
- ⑦ PVC Union
- ⑧ Gravel - ¾" to 1½" in size
- ⑨ Irrigation Pressure Line
- ⑩ Galvanized Cloth set under box - ½" grid
- ⑪ Control Valve: Irritrol 100 Series
- ⑫ Attach Recycled Water Warning Tag per Engineering Standard 8810 when used for recycled water.

REVISIONS	BY	APP	DATE
Edit Note 11, add PVC Union	JDL	BL	6-12
Revise Note 3, Add 12	SR	BL	3-06
Revise Note 2	SR	BL	8-11
STANDARD CURRENT AS OF:		January 2016	



**ELECTRIC CONTROL
VALVE & BOX**



GENERAL NOTES:

- A. Locate valves in shrub areas whenever possible.
- B. Valve boxes shall be a maximum of 12" from walkways or curbs.
- C. Valve boxes shall be set parallel to walkways or curbs.
- D. One valve per box.
- E. Areas where recycled water may be used shall have purple box covers.
- F. Pipe shall be Schedule 40 PVC unless otherwise noted.

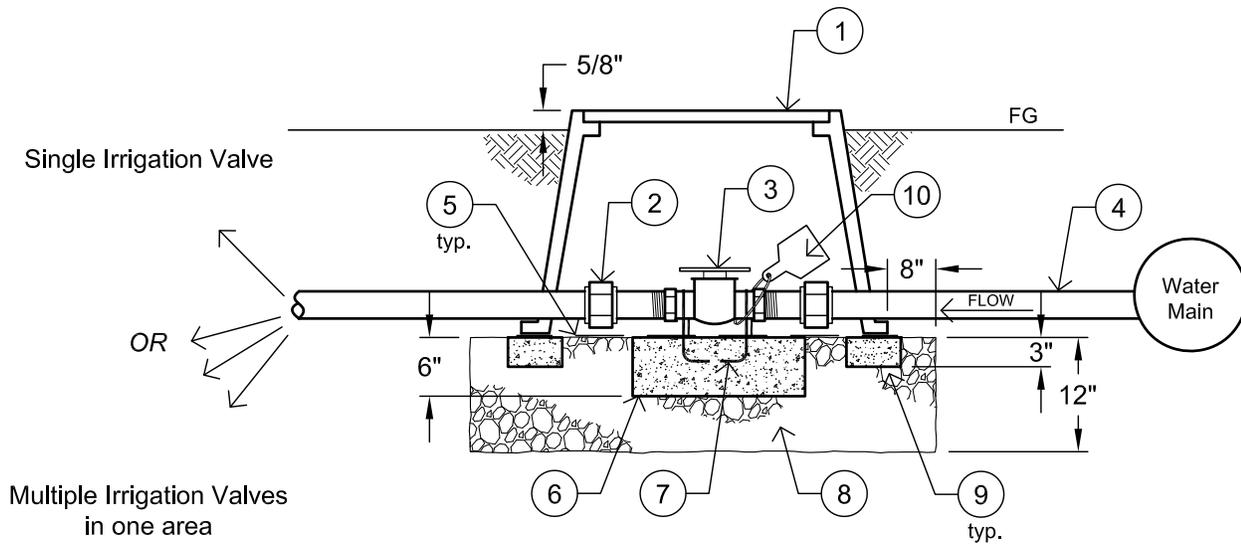
INSTALLATION NOTES:

- ① Round Plastic Valve Box: Carson #910-12B
- ② Quick Coupler Valve: Rain Bird #44, use #44NP for Recycled Water
- ③ Stainless Steel Clamp
- ④ Schedule 80 Nipple
- ⑤ Cement Block (4 total) under each box corner when box is located in turf area
- ⑥ Tee connected to irrigation pressure line
- ⑦ 1/4" x 1" x 30" Angle Iron
- ⑧ Gravel: 3/4" to 1 1/2" in size
- ⑨ Schedule 80 EII
- ⑩ Galvanized Cloth set under box, 1/2" grid

REVISIONS	BY	APP	DATE
New Standard	BL	JDW	1-04
Revise Notes E and 2	SR	BL	3-06
Drafting edits	JDL	MH	6-13
STANDARD CURRENT AS OF:		January 2016	



**QUICK COUPLER
VALVE and BOX**



GENERAL NOTES:

- A. Isolation valves shall be installed for all irrigation valves.
- B. Locate valves in shrub areas whenever possible.
- C. Valve boxes shall be a maximum of 12" from walkways or curbs.
- D. Valve boxes shall be set parallel to walkways or curbs.
- E. Valve size and pipe size must be equal.

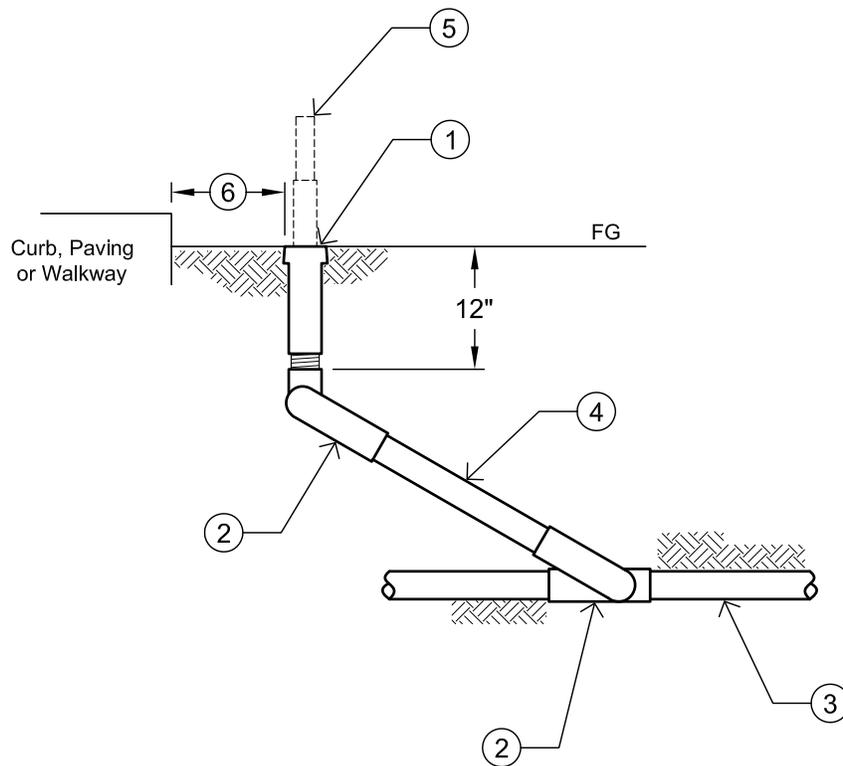
INSTALLATION NOTES:

- ① Plastic Valve Box with bolt-down lid. Bolts to be stainless steel:
Carson Industries 1419-3B (purple) for Recycled Water Valves up to 2"
Carson Industries 1324-3B (purple) for Recycled Water Valves 2½" and larger
- ② PVC Union
- ③ Brass Ball Valve
- ④ Schedule 40 Pressure Line
- ⑤ Galvanized Cloth set under box: ½" grid
- ⑥ Concrete block below valve, extending 6" beyond outside dimensions of valve
- ⑦ #10 Reinforcing Bar looped over valve - Only for valves 2½" and larger
- ⑧ Gravel: ¾" to 1½" in size
- ⑨ Cement Blocks or Brick continuous for box support
- ⑩ Attach Recycled Water Warning Tag per Engineering Standard 8610 when used for recycled water.

REVISIONS	BY	APP	DATE
Add PVC Union; drafting edits	JDL	BL	6-12
Revised Notes and Detail	MH	BL	10-05
Revise Note 1; Add Note 10	SR	BL	3-06
STANDARD CURRENT AS OF:		January 2016	



ISOLATION VALVE



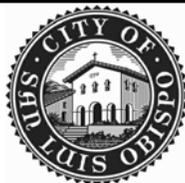
GENERAL NOTES:

- A. Where system is or has the potential to hook up to non-potable water, rotor head shall have a Reclaimed Water cover.
- B. Pipe material shall be Class 200 PVC unless otherwise noted.

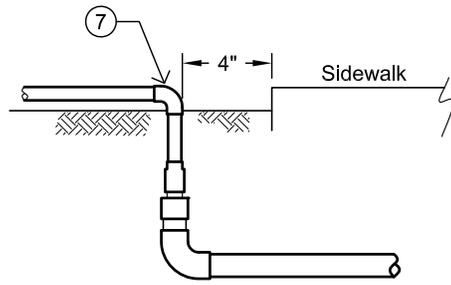
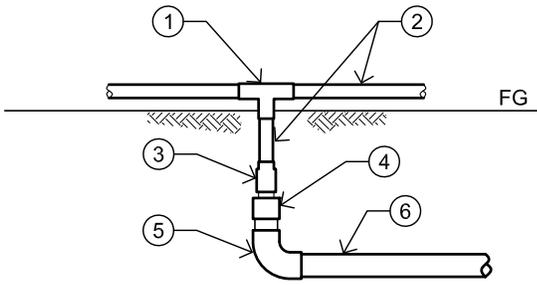
INSTALLATION NOTES:

- ① Rotor or Spray Pop-up or Hi-pop Body, set even with finished grade.
- ② Triple Swing Joint, Marlex (3)
- ③ Irrigation Lateral Line
- ④ Schedule 80 Nipple
- ⑤ Pop-up height to be above matured plant material height.
- ⑥ Distance must be 2 feet but may be reduced to 2 inches where overspray to adjacent impervious surface runs off to vegetated area.

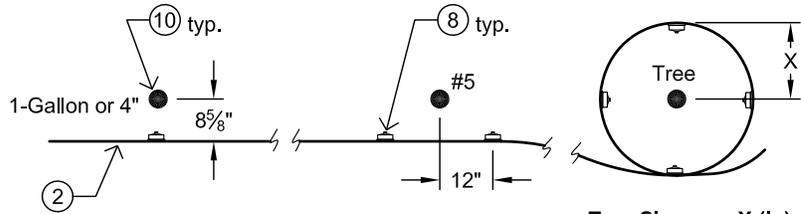
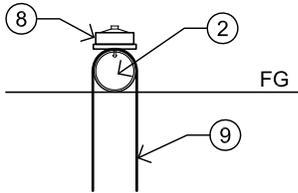
REVISIONS	BY	APP	DATE
Added note 6	MH	BL	1-14
Revise offset from curb	DVB	BL	11-07
Pop-up height (Note 5)	JDL	BL	6-12
STANDARD CURRENT AS OF:		January 2016	



POP-UP HEAD

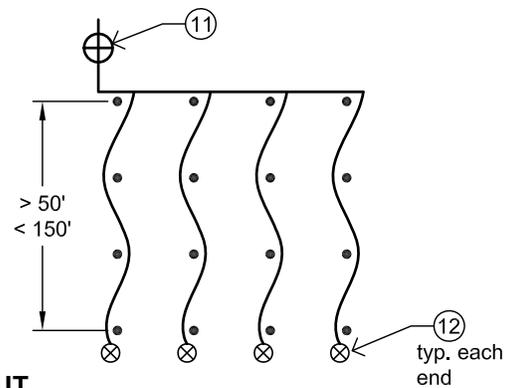
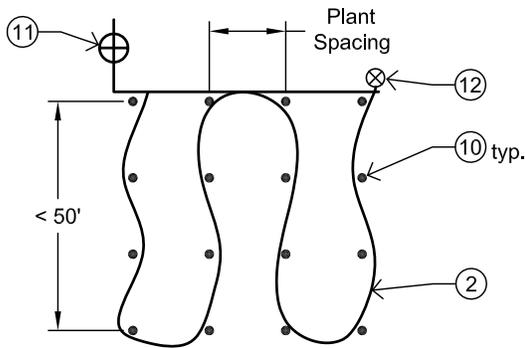


RISER DETAILS



Tree Size	X (in)
15-Gallon	18
24" Box	24
40" Box	40

EMITTERS



DRIP LAYOUT

GENERAL NOTES:

- A. Lateral lines shall be class 200 unless otherwise noted.
- B. All drip irrigation lines and emitters shall be installed below mulch layer.
- C. Total length of drip tubing not to exceed 150'.
- D. Ends of drip tube shall be no more than 3' from edge of hardscape in valve box as shown.
- E. In areas where recycled water will or could be used, all tubing shall be purple for use with recycled water.

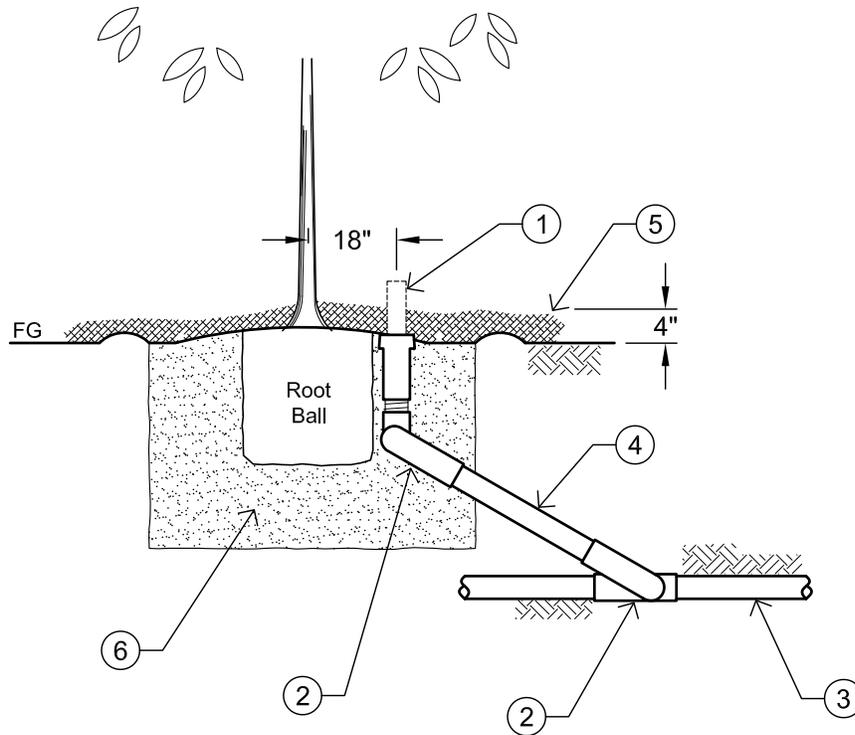
INSTALLATION NOTES:

- | | | |
|------------------------------|--|-------------------------------------|
| ① Drip Tee | ⑤ PVC Eil | ⑨ 12" Staple @ 5' O.C. - Soil Saver |
| ② Drip Tubing - 5/8" | ⑥ PVC Irrigation Lateral Line - 3/4" | ⑩ Center of Plant |
| ③ Drip Thread / Slip Adapter | ⑦ Drip Eil | ⑪ Pressure Line Valve |
| ④ PVC Slip / Thread Adapter | ⑧ Emitter - Pressure compensating, Self-flushing | ⑫ Manual Flush Valve |

REVISIONS	BY	APP	DATE
New Standard	BL	JDW	1-04
Added Note E	SR	BL	3-06
Drafting edits	JDL	MH	6-13
STANDARD CURRENT AS OF:		January 2016	



DRIP IRRIGATION



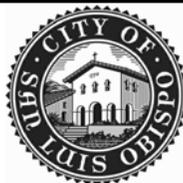
GENERAL NOTES:

- A. Where system is or has the potential to hook up to non-potable water, rotor head shall have a Reclaimed Water cover.
- B. Pipe material shall be Class 200 PCV.
- C. See Engineering Standards for tree planting.
- D. Minimum of one (1) bubbler per tree or as specified on the plans.

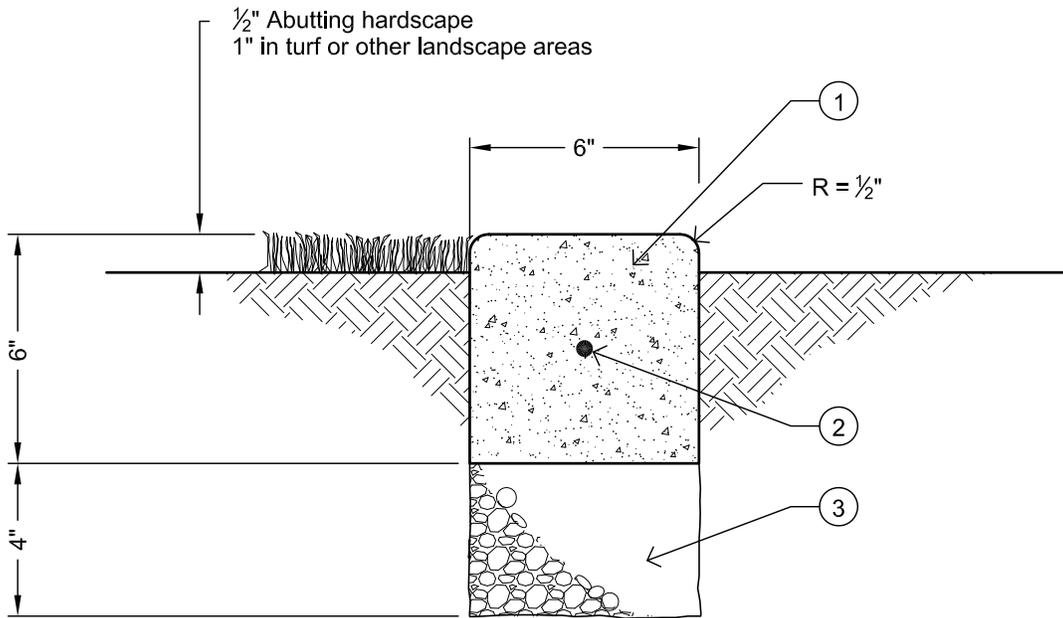
INSTALLATION NOTES:

- ① Bubbler Pop-up, set even with finished grade: Rain Bird
- ② Triple Swing Joint: Marlex (3)
- ③ Irrigation Lateral Line
- ④ Schedule 80 PVC Nipple
- ⑤ 4" deep Mulch
 - 5 gallon tree: 36" diameter around tree
 - 15 gallon tree: 48" diameter around tree
 - 24" box: 72" diameter around tree
- ⑥ Backfill per Standard Specifications

REVISIONS	BY	APP	DATE
New Standard	BL	JDW	1-04
Drafting edits	JDL	MH	6-13
Delete Note 7	SR	BL	
STANDARD CURRENT AS OF:		January 2016	



TREE BUBBLER



SECTION

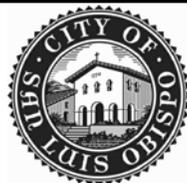
GENERAL NOTES:

- A. 1/4" Felt expansion joints at 20' intervals, at change in direction, at beginnings/ends of curves, and where mow strip abuts other structures.

INSTALLATION NOTES:

- ① Class 3 Concrete, light broom finish. No color unless specified in contract documents.
- ② #3 Reinforcing bar continuous at center. 18" overlap at splice.
- ③ Class 3 base. No recycled AC base allowed.

REVISIONS	BY	APP	DATE
New Standard	BL	BL	5-12
Drafting edits	JDL	MH	10-12



CONCRETE EDGING

STANDARD CURRENT AS OF: January 2016



Front

Back

RECYCLED WATER WARNING TAGS

RECYCLED WATER WARNING TAGS:

- Shall be high durability polyurethane.
- The tag shall be 3" x 4" in size with attachment neck and reinforced attachment hole.
- All lettering shall be hot stamped in black on a purple tag.
- Tags shall be attached with non-ferrous wire.
- Christy's ID-MAX-P2-RC-009 or approved equal, attached as shown in Engineering Standards.



PLASTIC WARNING PLATE

PLASTIC WARNING PLATES:

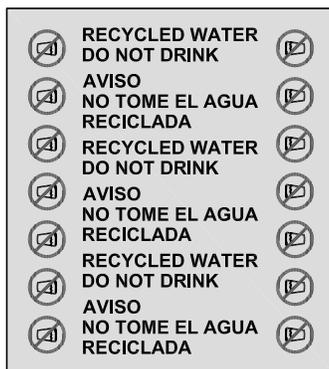
- Shall be Christy's #3800 or equal.
- Warning Plates shall be made of purple UV resistant co-polymer plastic, and installed with tamper-proof rivets.



ADHESIVE WARNING DECAL

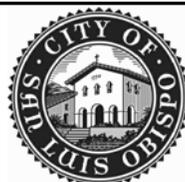
ADHESIVE DECALS:

- Warning Decals shall be Christy's #ID-4200 or equal.
- Warning Decals shall be made on a 3.5 mil flexible vinyl base, with permanent acrylic adhesive backing on a 90# stay-flat liner.
- Riser Decals shall be Christy's #5100 or equal.
- Riser Decals shall be approximately 2½" x 3" and capable of being wrapped around and attached to a sprinkler riser.
- Background shall be printed with a purple UV cured vinyl ink. Legend printing shall be in black with a UV cured vinyl ink.
- The entire decal shall be clear flood over-printed for superior weathering and UV protection.



ADHESIVE RISER DECAL

REVISIONS	BY	APP	DATE
New Standard	SR	BL	3-06
Drafting edits	JDL	MH	6-13
STANDARD CURRENT AS OF: January 2016			

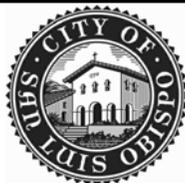


**RECYCLED WATER
WARNING TAGS,
LABELS and DECALS**

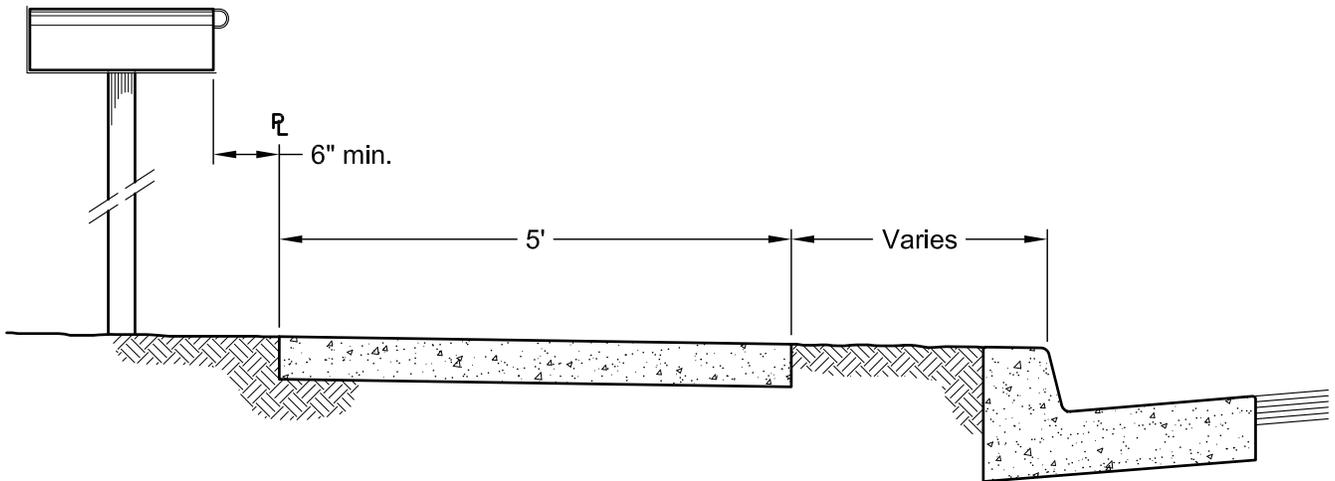
GENERAL NOTES:

- A. All signs shall be sign grade aluminum, .080" thick, with white letters on a purple background. Signs shall include language stating that "Recycled Water" is used for irrigation, shall contain the the warning "DO NOT DRINK", and shall include the industry standard symbol: 
- B. The small signs shall be a minimum of 8" wide and 10" high.
- C. Small signs shall be mounted to U-channel, 2 lbs. hot rolled high tensile rail or billet steel with galvanized finish per ASTM A-123. Sign post shall extend 4'3" below grade.
- D. Large signs shall be a minimum of 18" high and 24" wide.
- E. Large signs shall be mounted to chain link fence in accordance with manufacturer's recommendations.
- F. All mounting hardware shall be stainless steel.
- G. Height of signs will depend on location and surrounding landscape plant types (min. height shall be 3'). In all cases, sign shall be visible to the public.
- H. Sign letters shall be reflective material.
- I. Signs shall be located as shown on the plans. As a minimum, signs shall be placed at each entrance to the area where recycled water will be used. Signs must be placed where they can be easily seen, and no further than 1000' apart unless approved by the Water Reuse Coordinator. For unfenced areas, signs shall be placed at sidewalks and crosswalks, driveway entrances, corners, outdoor eating areas, and as otherwise required. For medians, a sign shall be placed at the beginning and end of the median. Longer medians may require an additional sign be placed near the middle, equidistant from the ends of the median. For fenced areas, signs must be placed at each fence opening.
- J. Post shall be installed per Engineering Standard 7210 mounting height.

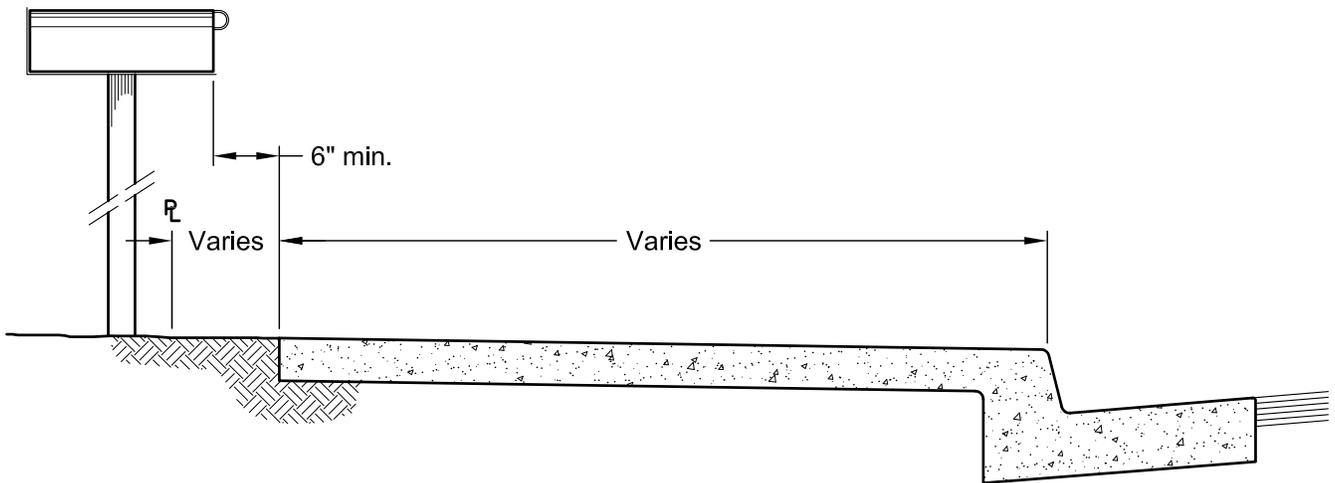
REVISIONS	BY	APP	DATE
<i>New Standard</i>	<i>SR</i>	<i>BL</i>	<i>3-06</i>
<i>Revise Notes for standard signs</i>	<i>DVB</i>	<i>BL</i>	<i>10-07</i>
<i>Drafting edits</i>	<i>JDL</i>	<i>MH</i>	<i>6-13</i>
STANDARD CURRENT AS OF:		January 2016	



**RECYCLED WATER
WARNING SIGNS**



DETACHED SIDEWALK



INTEGRAL SIDEWALK

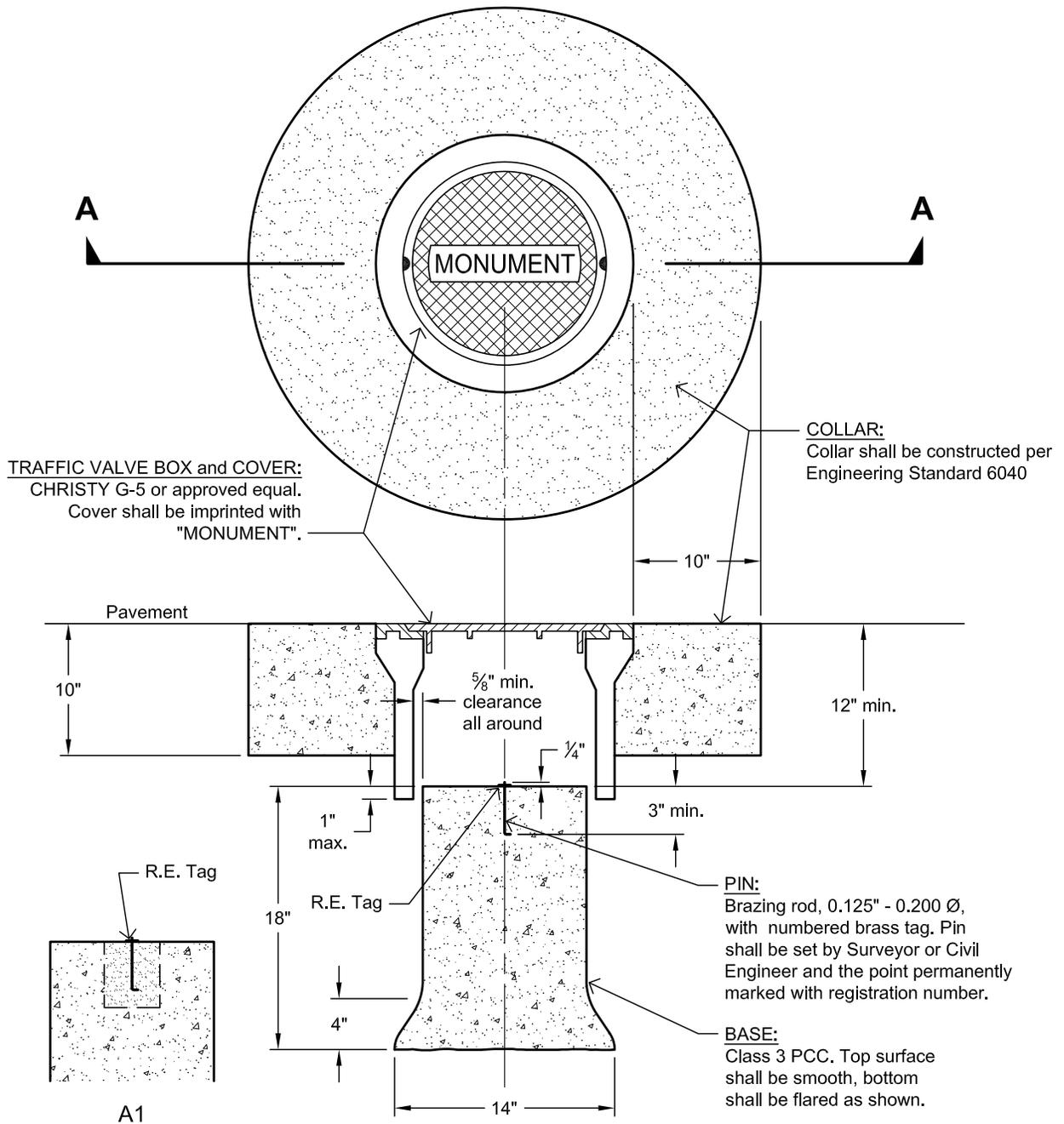
Municipal Code Section 12.40.040

(a) In a residential zone, it is unlawful for any person to install or maintain or to direct, authorize or permit the installation or maintenance of a mail box, a receptacle for newspaper delivery, or any other container to be used for delivery purposed in, upon or over an portion of the space or area between a street curb and the back edge of an improved sidewalk.

REVISIONS	BY	APP	DATE
<i>New border</i>	JDL	WAP	1-98
<i>Revise Code Section</i>	JDL	WAP	10-93
<i>Drafting edits</i>	JDL	MH	6-13
STANDARD CURRENT AS OF:		January 2016	



MAIL BOX LOCATION



SECTION A - A

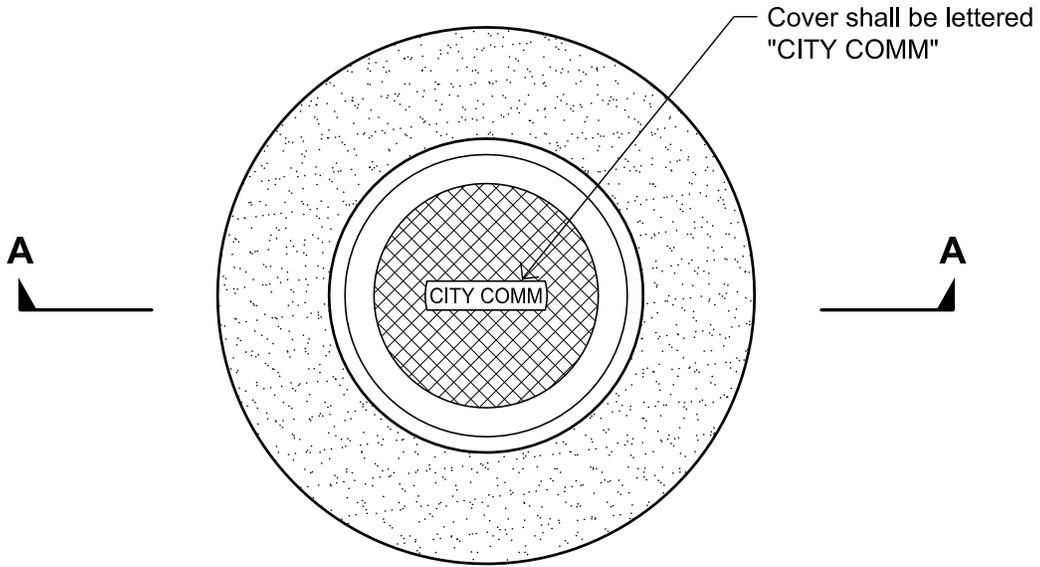
ALTERNATE METHODS

- A1 - Base may be cast with a cylindrical recess which shall later be filled with expansive grout (min. 2500 psi) when pin is set.
- A2 - A brass cap may be set with the base pour so that center of cap is within 5/8" of the monument point. Point shall be marked with a cross, etched a minimum of 1/16" deep into the brass. The cap shall be marked with the License information or a tag with the information shall be attached.

REVISIONS	BY	APP	DATE
New border	JDL	WAP	1-98
Added Alternate A2	BL	JDW	4-02
Drafting edits	JDL	MH	6-13
STANDARD CURRENT AS OF:		January 2016	

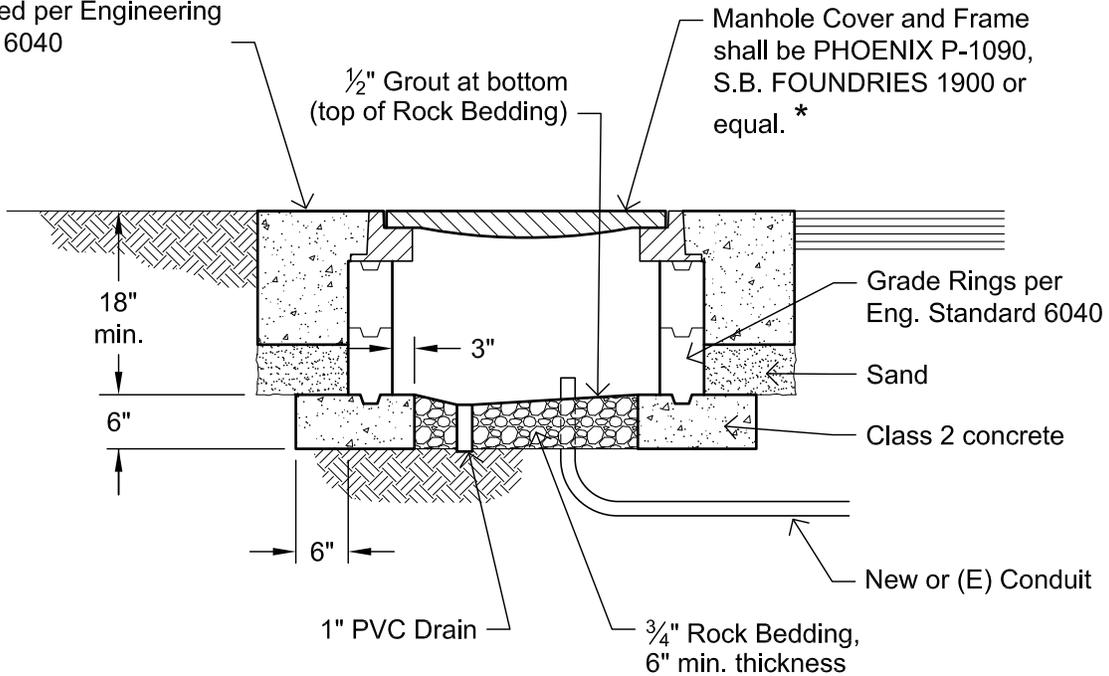


MONUMENT and WELL



PLAN

Manhole Collar shall be constructed per Engineering Standard 6040



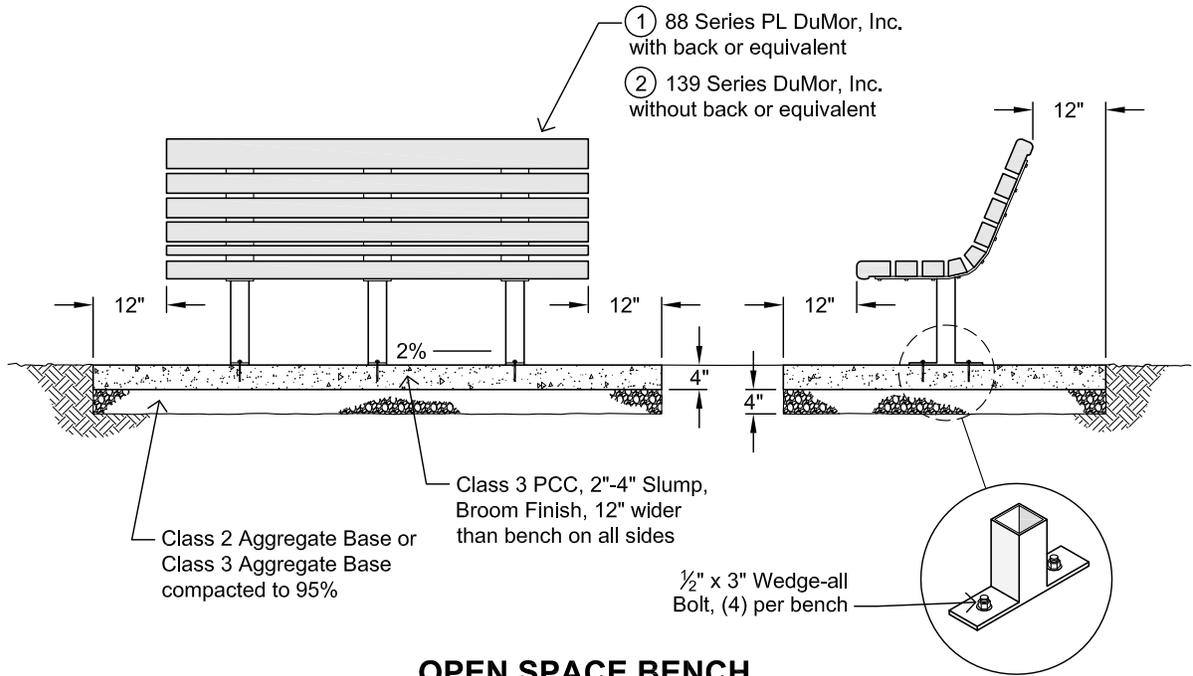
SECTION A - A

* In sidewalk applications, install ring and cover per Engineering Standard 3350.

REVISIONS	BY	APP	DATE
New Standard	JDL	WAP	8-99
Drafting edits	JDL	MH	6-13
Revise Class 2 Note	SR	BL	1-14
STANDARD CURRENT AS OF:		January 2016	



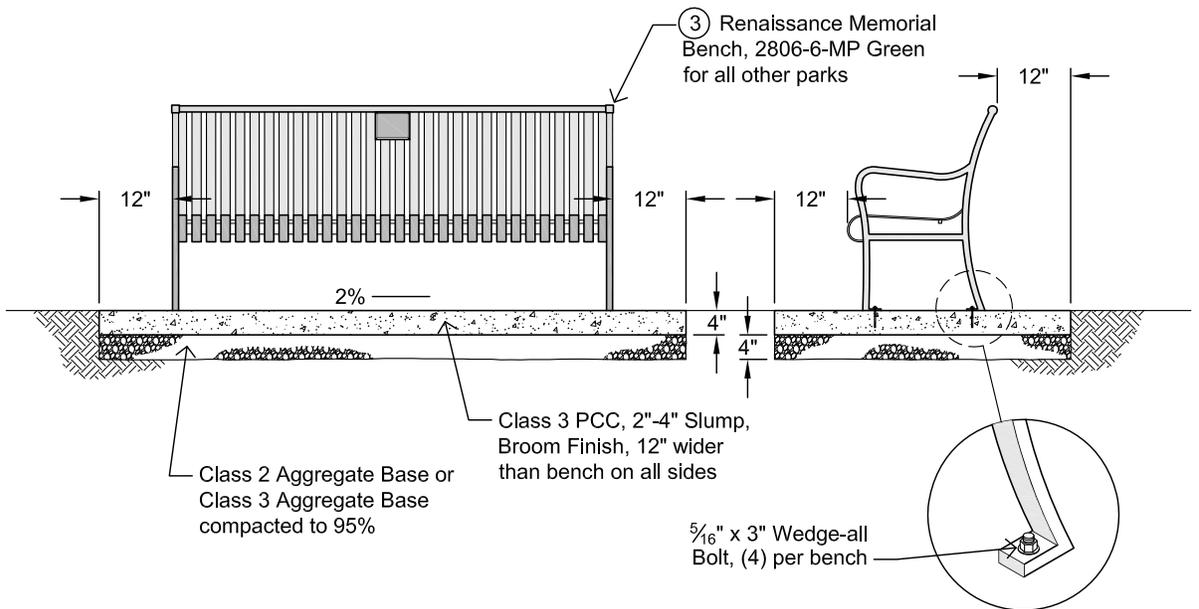
**MANHOLE COVER
& ACCESS BOX**
CITY COMMUNICATIONS



OPEN SPACE BENCH

NOTES:

- ① Style for Damon-Garcia and Laguna Lake Parks
- ② Style for Open Space
- ③ Style for all other parks



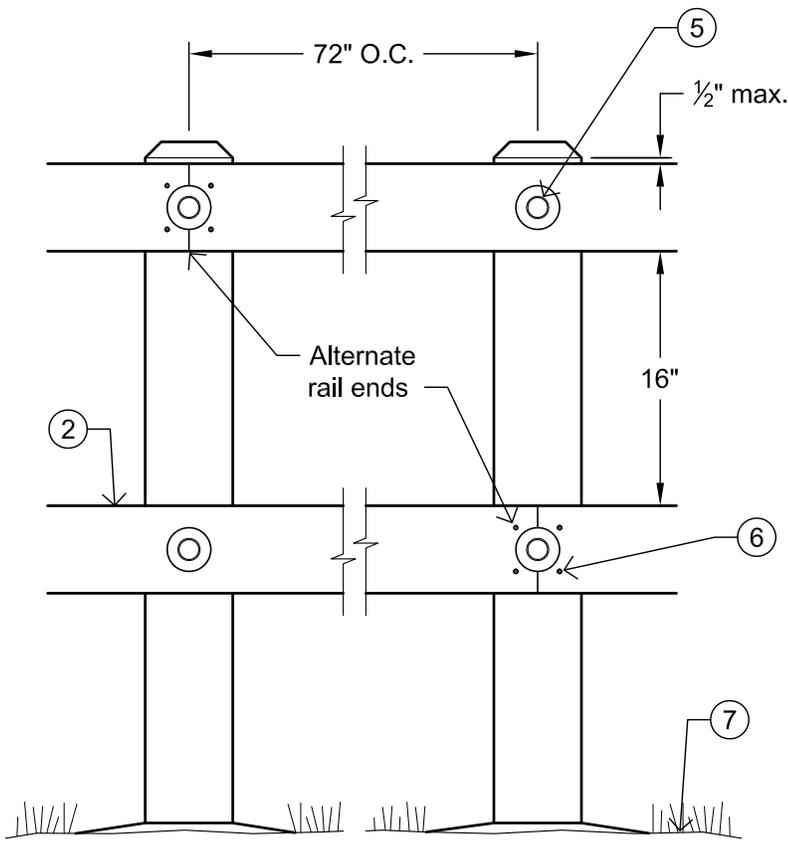
PARKS and PUBLIC RIGHT OF WAY BENCH

REVISIONS	BY	APP	DATE
New Standard	SR	BL	11-08
Drafting edits	JDL	MH	6-13

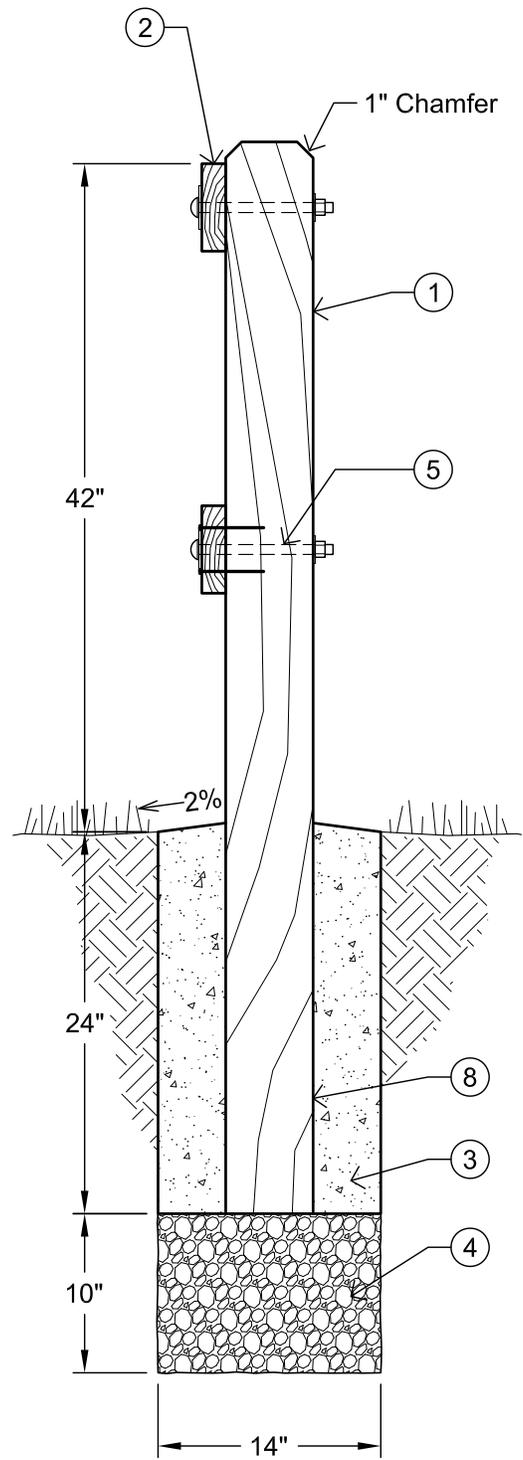


CITY BENCH

STANDARD CURRENT AS OF: January 2016



ELEVATION

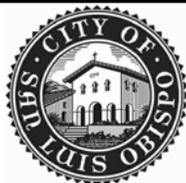


SECTION

INSTALLATION NOTES:

- ① 6" x 6" Pressure Treated Douglas Fir Post, re-treat all cuts
- ② 2" x 6" (12 ft length) Pressure Treated Douglas Fir, re-treat all cuts
- ③ Class 3 PCC Footing, slope top 2% in all directions
- ④ 1½" Ø Round Rock
- ⑤ 5/8" Carriage Bolt w/ 3" Torque Washer at front and 2" Timber Washer at rear
- ⑥ Nail board ends with (2)- 4" Galvanized Nails.
- ⑦ Finish Grade
- ⑧ Wrap post, within limits of concrete, with 15 lb Felt Paper.

REVISIONS	BY	APP	DATE
New Standard	JDL	BL	1-10
Drafting edits	JDL	MH	6-13



STANDARD CURRENT AS OF: January 2016

RAIL FENCE

GENERAL NOTES:

Trash containers shall be TimberForm® Renaissance™ series Model No. 2816-ST-M "SLO Litter Container", manufactured by Columbia Cascade Company, or approved equal.

A. MATERIALS and DESIGN

Frame shall be fabricated from 1 inch ID Schedule 40 mild steel seamless pipe. Side slats shall be 0.188 inch thick x 1-1/2 inch wide formed mild steel. Container shall have a side-opening door that locks in place with a thumb latch locking mechanism.

Litter container shall include a separate matching sorting top for recycling bottles and cans and a 32-gallon recycled plastic liner with two hand holds for easy removal and emptying. Sorting top shall be fabricated from 11 gauge steel plate and shall have two side openings for trash, top opening for recyclable materials and a stainless steel sliding trap door.

Top at opposite sides shall have applied clear adhesive graphics with white lettering designating separate openings for bottles/cans and trash and a large recycling logo.

Sorting top shall remain locked in place until released by opening of the side-opening latch locking mechanism that utilizes a removable handle or Allen wrench for unlocking.

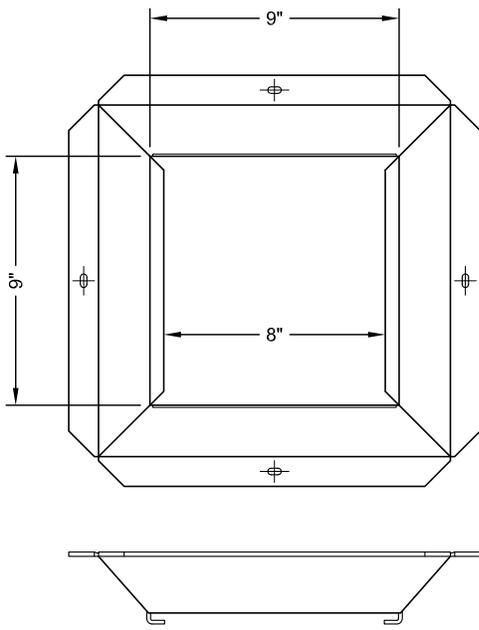
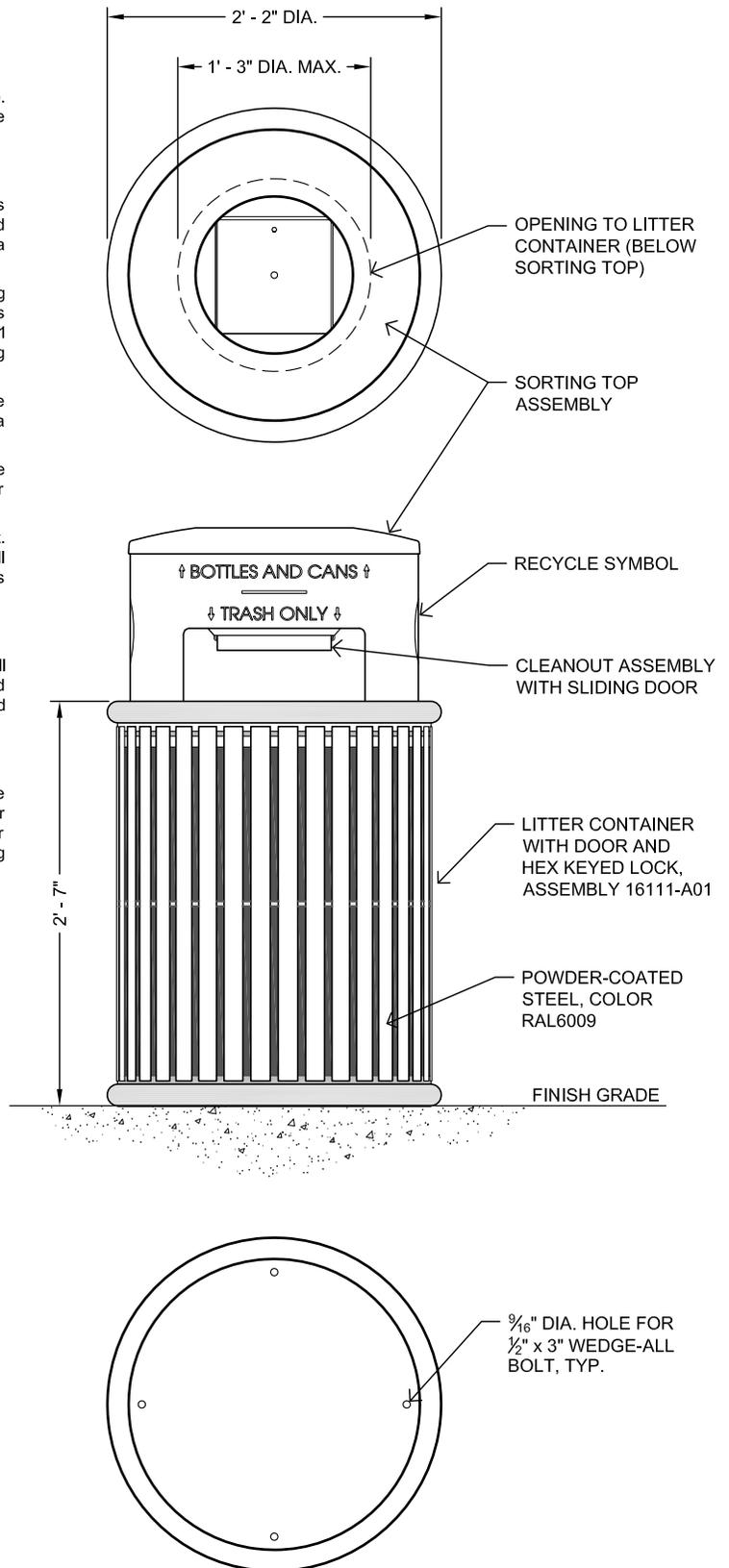
Overall dimensions shall be approximately 26" diameter and 45" in height. Container shall be surface mounted flush with the sidewalk surface and will have built in leveling capability in accordance with manufactures recommendations.

B. CONSTRUCTION

Entire litter container body, except for separate liner, and sorting top shall be assembled and welded into single units. Welds shall be smooth and continuous with no gaps or pin holes. Final product shall be free of weld spatters and burrs.

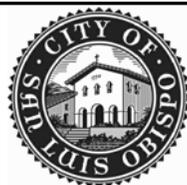
C. FINISH

Steel and cast iron parts shall be coated with UV resistant exterior grade polyester powder coating applied to a minimum thickness of 6 mils. Color shall be Dark Forest Green (RAL6009) to match City standard colors for downtown and black in all other locations. Liquid, epoxy or lead-containing powder coatings are not acceptable.



CLEAN OUT ASSEMBLY

REVISIONS	BY	APP	DATE
Opening to litter container	JDL	DA	10-15
Drafting edits	JDL	MH	3-13
Revise Note C	SR	BL	1-14
STANDARD CURRENT AS OF:		January 2016	



TRASH CONTAINER STANDARD

APPENDICES

- A. STATE STANDARD CURB RAMP DETAILS
- B. MISSION STYLE SIDEWALK DISTRICT
- C. RAILROAD DISTRICT PLAN
- D. LIST OF ARTERIAL AND COLLECTOR STREETS
- E. SAMPLE NOTICE OF STREET MAINTENANCE (DOOR HANGER)
- F. PLAN DEVELOPMENT STANDARDS
- G. GUIDELINES FOR CONSTRUCTION ZONES
- H. SLO COUNTY APCD: PERMIT TO OPERATE NO. 1850-2

POST MILES	SHEET TOTALS
ROUTE	TOTAL PROJECT
COUNTY	NO. SHEETS

H. Paul Cohen
REGISTERED CIVIL ENGINEER

JULY 19, 2013

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA BY HIS OFFICERS
THE ACCURACY OF THESE PLANS IS THE RESPONSIBILITY OF THE ENGINEER

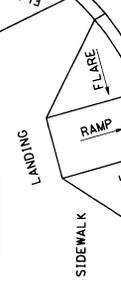
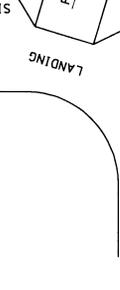
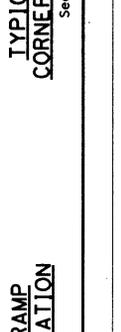
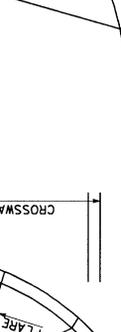
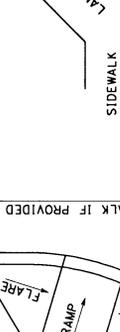
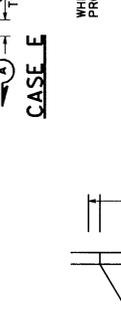
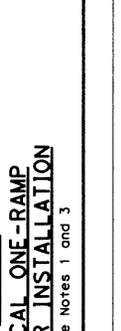
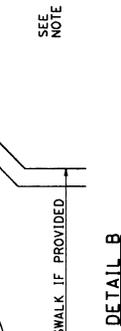
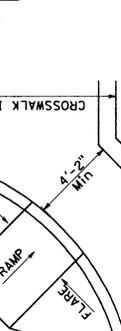
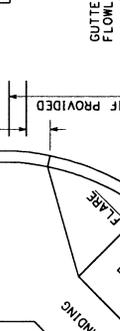
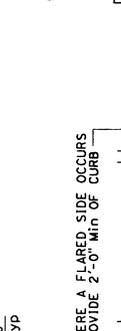
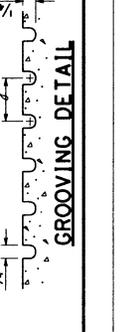
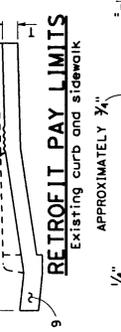
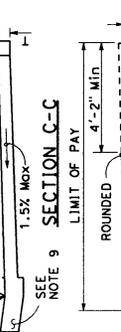
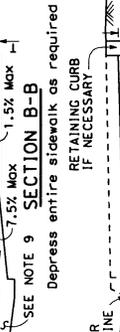
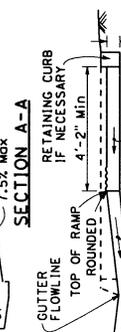
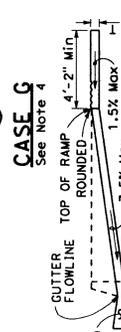
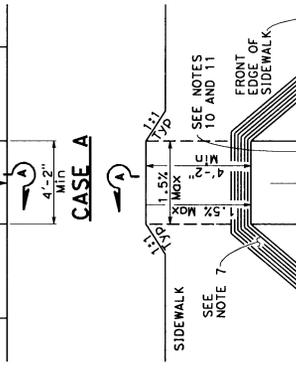
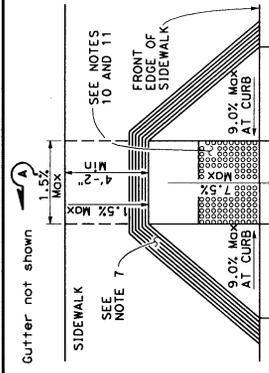
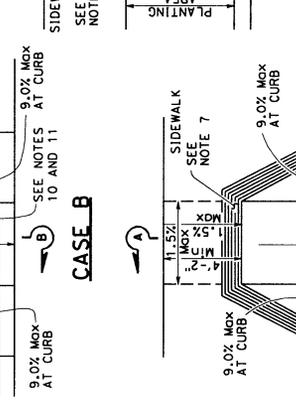
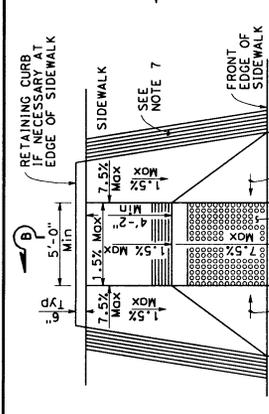
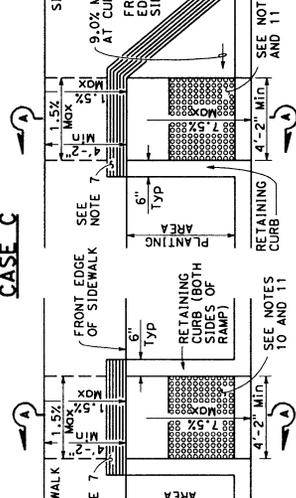
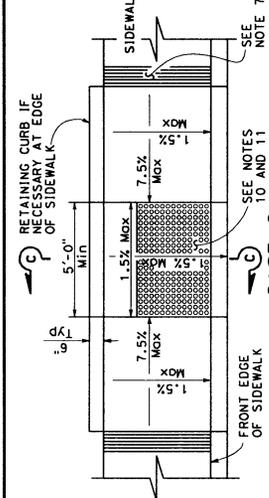
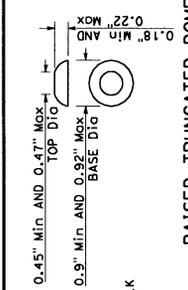
REGISTERED PROFESSIONAL ENGINEER
No. 31,714
CIVIL
EXPIRES 12/31/14

TO ACCOMPANY PLANS DATED _____

RAISED TRUNCATED DOME

NOTES:

- As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
- If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landings) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
- When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
- As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
- If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-2".
- Slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
- The curb ramp shall be outlined, as shown, with a 1'-0" wide border with 1/4" grooves approximately 3/4" on center. See grooving detail.
- Transitions from ramps and landings to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
- Counter slopes of adjoining gutters and road surfaces immediately adjacent to any curb shall be 2% minimum. Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
- Curb ramps shall have a detectable warning surface that extends the full width of the curb ramp. The detectable warning surface shall conform to the details on this plan and the requirements in the Standard Specifications.
- The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter finishing.
- Sidewalk and ramp thickness, "T", shall be 3 1/2" minimum.
- Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
- Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.



RAISED TRUNCATED DOME PATTERN (IN-LINE)

See Note 10



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP DETAILS

NO SCALE

RSP A88A DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A88A
DATED MAY 20, 2011 - PAGE 121 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A88A

Dist#	COUNTY	ROUTE	POST MILEAGE	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER
H. David Conner
 No. C41957
 Exp. 3-31-14

REGISTERED PROFESSIONAL ENGINEER
 David Conner
 No. C41957
 Exp. 3-31-14

JULY 19, 2013

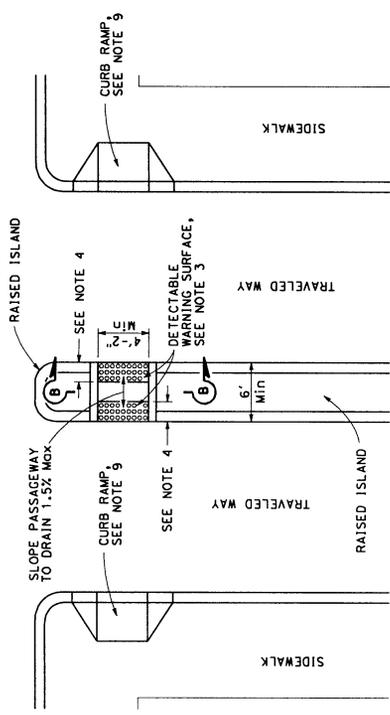
DESIGNED BY DATE
 DRAWN BY DATE
 CHECKED BY DATE
 IN CHARGE DATE

THIS DRAWING IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED ON THIS PLAN SHEET. ANY REVISIONS SHALL BE RESPONSIBLE FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED ON THIS PLAN SHEET.

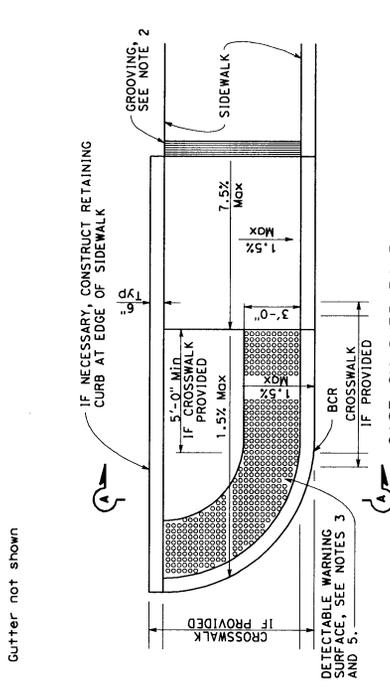
NOTES:

1. Sidewalk, ramp and passageway thickness, "T", shall be 3/2" minimum.
2. For details of grooving used with Case CM curb ramp, see Revised Standard Plan RSP A88A.
3. For details of detectable warning surfaces, see Revised Standard Plan RSP A88A.
4. Where an island passageway length is greater than or equal to 6'-0", but less than 8'-0", each detectable warning surface shall extend the full width and 2'-0" depth of the island. Where an island passageway length is greater than or equal to 8'-0", each detectable warning surface shall extend the full width and 3'-0" depth of the passageway length.
5. For Case CM curb ramp, the edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
6. Transitions from ramps to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
7. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
8. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.
9. For additional curb ramp details, see Revised Standard Plan RSP A88A.

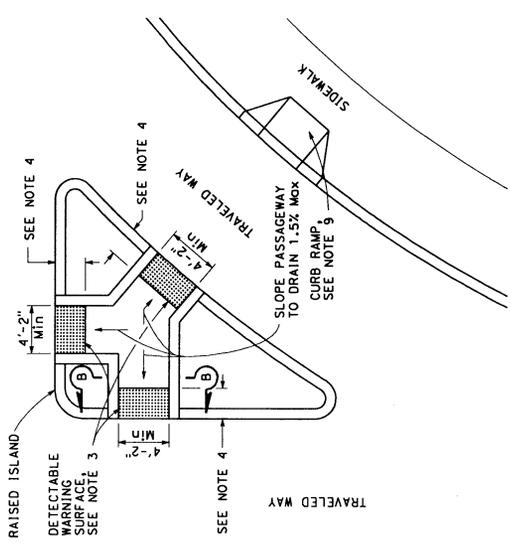
TO ACCOMPANY PLANS DATED _____



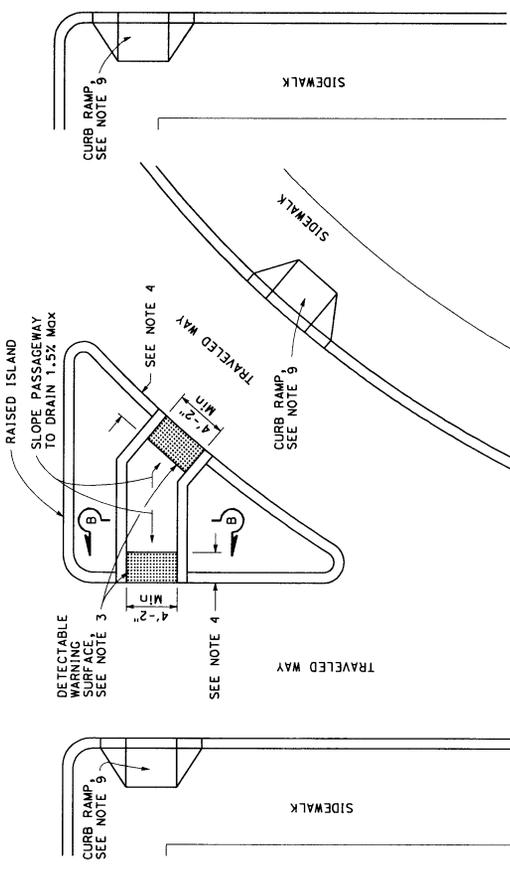
TYPE A PASSAGEWAY



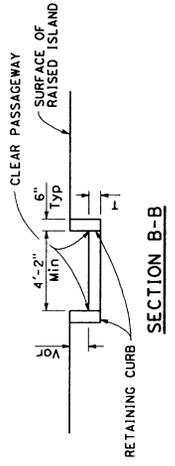
CASE CM CURB RAMP



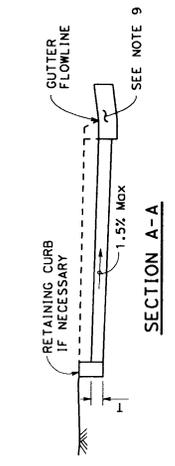
TYPE B PASSAGEWAY



TYPE C PASSAGEWAY



SECTION B-B



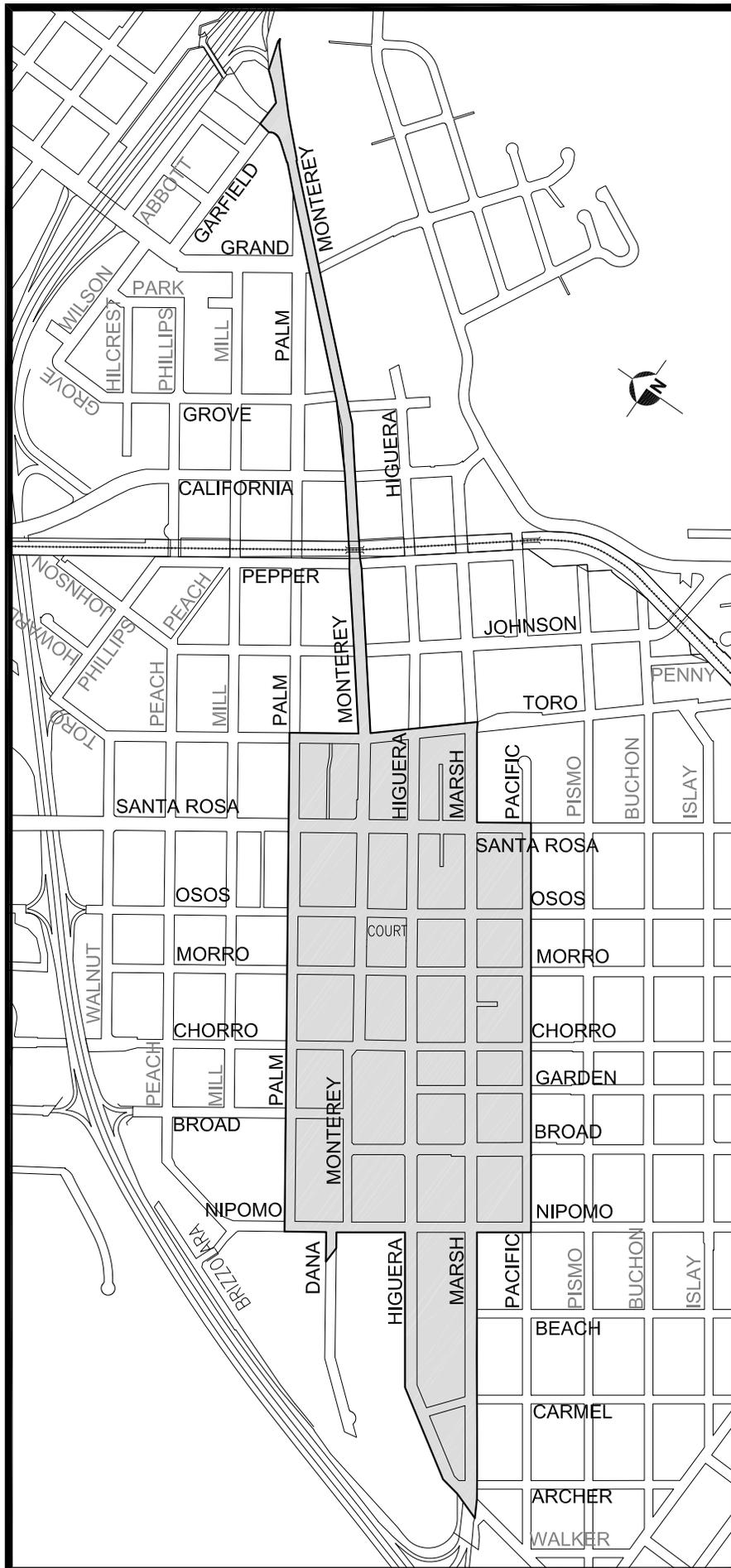
SECTION A-A

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CURB RAMP AND ISLAND PASSAGEWAY DETAILS
 NO SCALE

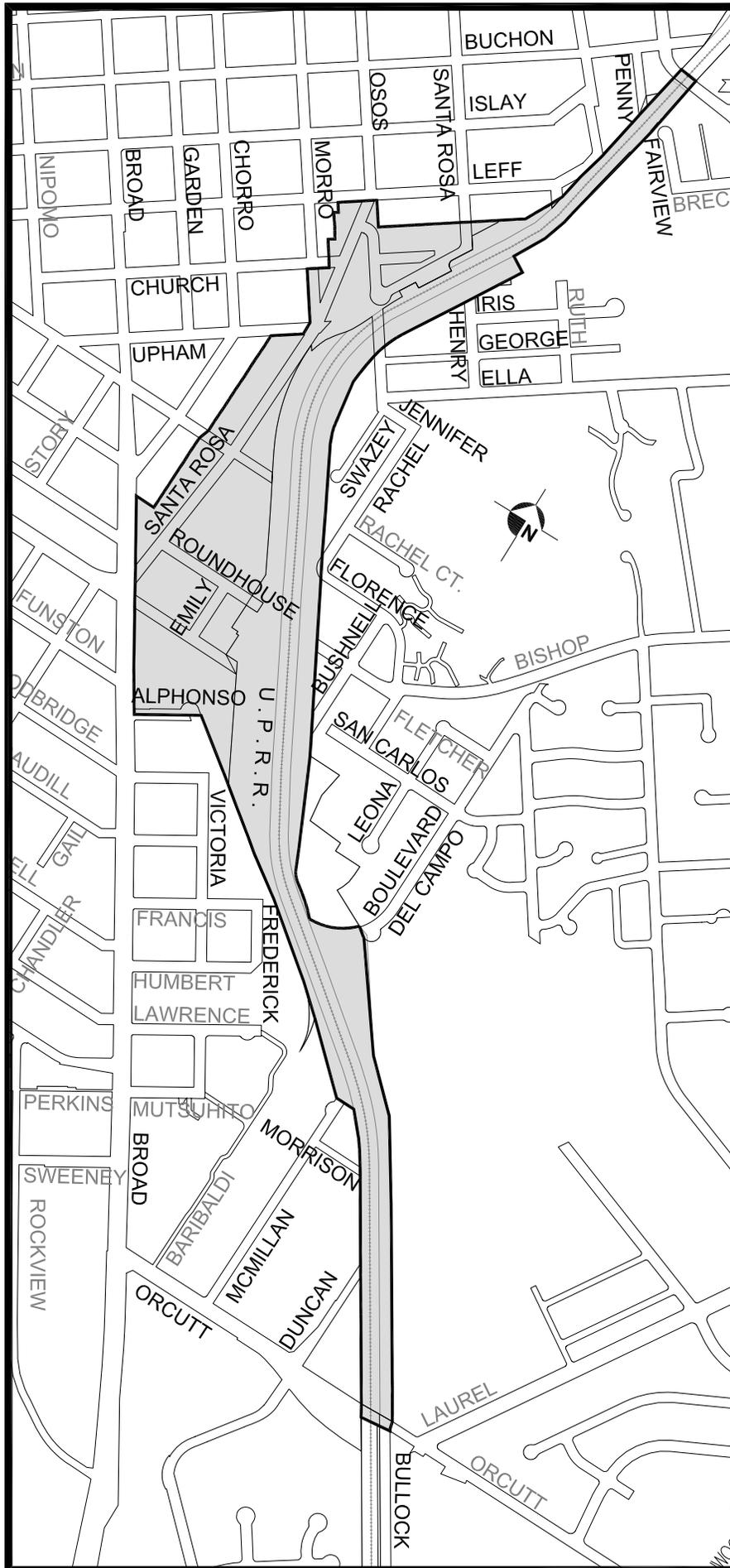
RSP A88B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A88B DATED MAY 20, 2011 - PAGE 122 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A88B

MISSION STYLE SIDEWALK DISTRICT - RESOLUTION 9114 (2000 SERIES)



RAILROAD DISTRICT PLAN - RESOLUTION 8817 (1998) SERIES)



List of Arterial and Collector Streets
For Pavement Restoration Purposes Only

Arterial Streets (for pavement restoration purposes):		
Street	From	To
Broad Street	Higuera Street	south city limit
California Blvd	(all)	
Chorro Street	Lincoln	Pismo Street
Dalidio Drive	(all)	
Foothill Blvd	west city limit	California Blvd
Grand Avenue	Slack Street	Monterey Street
Highland Drive	Chorro	Santa Rosa Street
Higuera Street	south city limit	Johnson Avenue
Johnson Avenue	Monterey	Orcutt Road
Laurel Lane	Johnson Avenue	Orcutt Road
Los Osos Valley Road	(all)	
Madonna Road	Los Osos Valley Road	Higuera Street
Marsh Street	101 freeway	California
Monterey Street	Chorro Street	101 freeway
Nipomo Street	Marsh	Higuera
Orcutt Road	(all)	
Osos Street	Higuera Street	Santa Barbara
Prado Road	(all)	
San Luis Drive	California Blvd	Johnson Avenue
Santa Barbara Avenue	Broad	Osos
Santa Rosa Street	north city limit	Pismo Street
South Street	Higuera	Broad Street
Tank Farm Road	(all)	

Collector Streets (for pavement restoration purposes):		
Street	From	To
Augusta Street	Bishop Street	Laurel Lane
Auto Park Way	Los Osos Valley Road	east end
Bishop Street	Bushnell Street	Johnson Avenue
Broad Street	Foothill Blvd	101 freeway
Buchon Street	High Street	Johnson Avenue
Bullock Lane	(all)	
Casa		Murray
Calle Joaquin	(all)	
Capitolio	Broad	Sacramento
Chorro Street	Highland Drive	Lincoln
Chorro Street	Broad	Pismo
Cross Street	Short Street	Long Street
Cuesta	Foothill	Highland
Del Rio	Descanso	Prefumo Canyon Road
Descanso	Los Osos Valley Road	Del Rio
El Mercado	Madonna Road	south end
Elks Lane	Higuera	Prado
Fredericks Street	Hathway Avenue	Grand Avenue
High Street	Higuera Street	Broad Street
Highland Drive	Patricia Drive	Chorro Street
Industrial Way	Broad Street	Sacramento
Johnson Avenue	Phillips Lane	Mill Street
La Entrada	Foothill	Ramona
Lincoln Avenue	Broad Street	Chorro Street
Long Street	Tank Farm Road	Cross Street
Margarita Avenue	(all)	
Mill Street	Chorro Street	Grand Avenue
Murray	Santa Rosa	Casa

List of Arterial and Collector Streets
For Pavement Restoration Purposes Only

Collector Streets (for pavement restoration purposes):		
Street	From	To
Nipomo	Marsh	Pismo
Oceanaire Drive	(all)	
Osos Street	Peach Street	Monterey Street
Osos Street	Santa Barbara	railroad station parking lot
Palm Street	Chorro Street	Johnson
Patricia Drive	Highland Drive	Foothill Blvd
Peach Street	Osos Street	Santa Rosa
Pepper Street	Phillips Lane	Mill Street
Phillips Lane	Johnson Avenue	Pepper Street
Pismo Street	Higuera Street	Johnson Avenue
Prefumo Canyon Road	west city limit	Los Osos Valley Road
Ramona Drive	La Entrada	Broad Street
Sacramento	Industrial Way	Orcutt
Santa Fe	(all)	
Santa Rosa	Pismo	Railroad
Short Street	Cross Street	Suburban Road
Southwood Drive	Laurel Lane	Johnson Avenue
Suburban Road	South Higuera Street	Short Street
Tassajara Drive	Foothill Blvd	Ramona Drive

Sample Notice of Street Maintenance (Door Hanger)

**CITY OF SAN LUIS OBISPO
NOTICE OF STREET MAINTENANCE
TO AREA BUSINESSES AND RESIDENCES**

Please be advised that, on the dates listed below,
_____, ACTING AS CONTRACTOR FOR THE
City of San Luis Obispo, will be Slurry Sealing your street. Other streets
in your neighborhood may be scheduled for other dates.

The general order of work will be as follows:

1. Positioning of "No Parking" Signs 72 hours in advance of the work.
2. Partial or full closure of the roadway.
3. Placement of slurry seal and four-hour cure time.
4. Reopen the road to public traffic.
5. Replacement of traffic striping and markings will occur at a later date.

The work on your street will be performed on the following dates:

Monday _____
 Tuesday _____
 Wednesday _____
 Thursday _____
 Friday _____

Prior to 8:00 am on the day of work, please park your vehicle on a nearby street that is not posted with parking restrictions. Driving on a slurry seal prior to completion of the cure time may cause damage to the slurry seal and your vehicle.

DELIVERIES AND APPOINTMENTS

In an effort to expedite the slurry process and avoid drive-thru's which would require closing the street again, please schedule any kind of delivery or appointment the day before or the day after the street is to be slurry sealed.

Unfavorable weather conditions may cause delays to the work without additional notice. If you should have any questions please contact the following:

Contractor's name _____ Telephone number _____

PLAN DEVELOPMENT STANDARDS

REQUIRED USE OF STANDARD

Use of this standard is required for use on:

- All projects, including mapping, that are City funded
- All projects which will be turned over to the City for adoption or maintenance
- All Final (Tract) and Parcel Maps (this standard supplements provisions of the Subdivision Map Act)

DATUM

Drawings and maps shall be set into real world coordinates and elevations using the City's horizontal and vertical control networks. The Datum used shall be referenced on the cover sheet.

Plans based on information furnished by the City, from old plans or survey data, shall include references to the City Plan number, file number, field book number, etc.

Any new bench marks and monuments should be shown on the plans with the associated coordinates and / or elevation.

Horizontal Control

The City has established a horizontal control network relative to the California Coordinate System Zone Five, which is defined in Section 8801 through 8819 of the California Public Resources Code. For all projects and maps, two different exterior points or corners shall be tied to at least two different points of the City's horizontal control network for direct import into the Geographic Information System (GIS) database and AutoCAD.

The Horizontal Control Network is available from the Public Works Department.

Vertical Control

The City has established a vertical control network. All projects shall be tied to the nearest bench mark elevation.

The Bench Mark System is available from the Public Works Department.

Grading Plans

Finish and existing grades shall be shown by use of contours on grading plans. Where grades are too flat for contours to be meaningful, grades shall be called out showing existing and final elevations for a number of points reasonable to represent critical grades and drainage. All contours and elevations shall reflect current City Datum.

UNITS OF MEASUREMENT

All project plans and maps shall be prepared in English units unless written permission has been obtained from the Director of Public Works

DRAWINGS

Software

Drawings are to be produced using AutoCAD or Civil 3D compatible with the current version in use by the City. Other programs which produce an AutoCAD drawing may be acceptable; however, if there are incompatibility problems, the project will be rejected until compatible files are produced.

Drawing Sheets

Drawing sheet borders shall be fully contained on a 22" x 34" sheet. The border should reduce 50% to fit completely on an 11" x 17" sheet. Drawings shall be plotted on sheets no larger than 24" x 36". The City recommends use of the electronic files available from the City. These files have already been sized for ease of reduction, contain blocks, typical layers, line types and color assignments.

In lieu of the profile sheet, grids generated by design software may be substituted.

Improvement Plans submitted to the City shall have the standard title block shown in the plan and cover sheets available electronically from the City for privately funded projects.

Map Sheets

Map sheet shall be 18" x 26" with a border 1 inch inside the edge of the sheet in accordance with the Map Act.

Naming Conventions

The following naming convention shall be used to identify the drawings:

For projects developed in ACAD 2000 or higher version:

Complete the drawing in model space and use the layout tabs for sheet layout in paper space:

City Specification No. (Tract No., MS No., Parcel Map No.)_01.dwg Cover Sheet Drawing

City Specification No. (Tract No., MS No., Parcel Map No.)_00.dwg Model and Layout Drawing

Ex: Tract 452_01.dwg

If desired, the cover sheet may be incorporated in the main drawing using the _00 extension for the entire project.

For projects developed in earlier versions (without layout tabs):

City Specification No. (Tract No., MS No., Parcel Map No.)_00.dwg for model space drawing

City Specification No. (Tract No., MS No., Parcel Map No.)_01.dwg for Cover Sheet

City Specification No. (Tract No., MS No., Parcel Map No.)_02.dwg for Sheet 2

(XXXX_00.dwg is to be bound to the sheet drawing.)

Continue numbering (xxxx_xx.dwg) for required number of sheets

If drawing sheets are modified **during construction** and new sheets are printed, they shall use the sheet number and a letter following to designate the change. Ex. Tract

400_05A.dwg

The preferred practice is for page numbers to be sequential for the entire plan set. Where the project contains multiple disciplines, landscaping, electrical, etc., the City will accept multiple drawings named as shown above.

Ex: Tract 452_E00 for the electrical drawing
Tract 452_M00 for the mechanical drawing
Tract 452_L00 for the landscape plan, etc.

Model Space and Paper Space

Drawings are to be generated in model space and then plotted with borders in paper space. Refer to the software manual for additional information.

Drawings shall be done in full scale (one drawing unit = 1 foot,) actual dimensions in model space. All borders and titles shall be done in paper space. Scaling of model space drawing to fit paper size shall be done using viewports and model view scaling.

General Drawing Content

Drawings shall contain the following minimum elements:

Title Block	North Arrow	Creek & Street Names
Vicinity Map	Bar Scale	Centerline Monuments
Dimensions	Date	Lot lines & numbers
Stationing	Legends	Tract Name & number
Bench Marks	Easements	Bearings, radii, etc.
Topography	Elevations	Existing Utilites
Datum Reference	Trees & Driplines	
Engineering Standard with numbers referenced		

Tree diameter shall be accurately represented. Drip lines shall be shown for any tree not permitted for removal.

Grading, utility and landscape plans shall not be combined on the same sheet. Curves shall show radius, delta, curve length and control for BC and EC to allow construction.

External References (xrefs)

Xrefs shall be bound to or inserted in the drawing in which they are needed for printing. Xrefs used during design, but not displayed for printing shall be detached.

User Coordinate System (UCS)

When rotation is necessary for plotting, a UCS shall be used in lieu of rotating the drawing out of the original orientation.

Stationing

Stationing shall be north to south or west to east running left to right on the paper. Beginning stationing shall be tied to an existing centerline intersection. Coordinates for the beginning station and ending station shall be shown on the plans. Alignments and stationing should be on a street centerline when work will occur within a street. Profiles can be generated either on the centerline or offset, as long as their location is clearly defined on the profile.

On City funded projects (Capital Improvement Program) stationing for different streets in the same project shall not have duplicate stationing numbers.

Ex: A Street Waterline – Sta 1+00 to Sta 3+58, B Street Paving – Sta 4+00 to Sta 6+97

North Arrows and Bar Scales

North arrows and bar scales shall be inserted in model space such that a north arrow and bar scale appear in each plan view when plotted. Blocks shall not be so ornate as to obscure their content.

Scales

Plotting scale shall be appropriate to the type of project allowing adequate detail clarity. Bar scales shall be inserted in model space such that a bar scale appears in each plan view when plotted. Scale should appear in the lower right hand corner whenever possible. For sheets containing both plan and profile information, a ratio of the Horizontal to the Vertical scale shall be shown in the title block.

Example of typical scales:

Utility, Grading and Street Improvements Plan	1" = 20'
Paving and Traffic Control Plan	1" = 100'
Signal Plan	1" = 10' or 1" = 20'

Blocks

Blocks shall be created on layer 0 at scale 1:1 with line type and color by layer.

Layering

Drawings shall provide separate layers for the various items shown in the drawings using appropriate layer prefixes to group related layers. See Appendix B for additional information. Where allowed by the program, layer "state" or settings for printing shall be saved and named *print_sheet#*.

Civil 3D defaults may be used for layer naming. Alignment names should be selected to mimic the layering conventions set forth in the appendix to the degree possible, and layer names shall be generated using the alignment prefix option such that all layers related to the alignment begin with the alignment name.

Color and Line Types

All colors and line types shall be **By Layer**. Layer colors and line pen designations shall be those shown in the City prototype drawings. See Appendix C for additional information.

Pen weights shall be those designated in the plot file for those colors associated with standard layers. Polylines shall not have an assigned width, but rather be given weight through pen designation.

Generally, abandoned and existing facilities are shown with a fine line weight or at half tone, with abandoned facilities using hidden or dashed line types, in lieu of the standard

continuous line type. New facilities are shown in bolder line types. Line scale shall be set so that line types, other than continuous, repeat frequently enough to be clearly differentiated.

Dimensions

Dimensions shall have characteristics by layer. The dimensions shall appear on the text layer or a new layer specifically for dimensions. Dimensioning text shall be per this standard.

Text

Accepted fonts are limited to those native to the Windows operating system or furnished with AutoCAD or Civil 3D. Where new text styles are created, they should have the same name as the font used for that style. The use of AutoCAD's predefined "Standard" text style, which defaults to the txt font type, is not encouraged.

Text shall always be on a separate layer. Line labels shall be above the line and not cut into the line.

Plotting

Whenever possible, use the plot file furnished by the City. If this is not possible, save a plot file for the project and submit it with the drawing files. Plot file shall be named using the same naming convention as for drawings, with the default file name extension.

RECORD DRAWINGS

When construction is complete, a record drawing of the project shall be completed as set forth below. Record drawing layers may be added as need to provide proper printing for each sheet. Save the file using the naming convention as for drawings followed by R.

Ex: Tract 452_E00R Record drawing for electrical sheets

- Create a new layer and name it *Record_Drawing*
- Set color to 200 and line type to continuous. Colors 201 & 202 may also be used as needed to address different line weights.
- Record all record drawing information on the Record Drawing layer
- Each sheet is to be "stamped" to note record drawings have been completed for that sheet. If no changes were made, a note to that effect is to be included adjacent to the stamp.
- Each sheet is to be numbered with an "R" after the sheet number. Ex. 2R of 13
- Set all pen colors but pen 200, 201, and 202 to color 253 or use the City standard plot file for record drawings.
- Complete plotting of record drawing set

SUBMITTALS

Drawing files must be completely compatible with the current City AutoCAD standard program. Bond used for submittals shall be a minimum of 20lb.

City funded projects

All electronic files shall be submitted to the City. For projects developed using design software, the entire project folder shall be submitted, including all the sub folders with

drawings and supporting data. The electronic folder shall be submitted in the configuration generated by the software. Drawing file shall be purged of all unused layers, text, etc.

Written specifications shall also be submitted in electronic format.

Submit one original, stamped and signed, ink on bond, set of plans and one original stamped and signed set of specifications along with the electronic files prior to the start of construction. Submittal shall also include a complete *Acrobat Adobe* file bid package (Specifications and Plans.)

Record drawings are to be submitted within 4 weeks of completion of construction and shall include a signed scan (.tif) or adobe file in addition to the drawing files.

Files shall be submitted to the designated Project Manager for Capital Improvement projects.

Privately funded projects

Submit the electronic drawing files (.dwg) and any associated plot files along with one original, stamped and signed, ink on bond, set of plans prior to the start of construction or Map recording.

Record drawings are to be submitted within 4 weeks of completion of construction and prior to City acceptance of the public improvements. Record drawing submittal shall include a hard copy original, stamped and signed, ink on bond; an electronic image copy (.tif or .pdf) of the original approved plans and record drawings interlaced, i.t. page 1, 1R, 2, 2R etc.; and the drawing file (.dwg).

Submit this data either via email (for small projects) or on a CD containing the required data. Files shall be submitted to the Development Review Division Engineer.

CITY DOCUMENTS ON LINE

The following files are available from the City web site slocity.org:

- Standard Cover Sheet for City funded projects
- Standard Cover Sheet for private funded projects
- Standard Plan Sheet for City funded projects
- Standard Plan Sheet for private funded projects
- Standard Profile Sheet for private funded projects
- Standard plot file for draft construction plans –17” x 11”
- Standard plot file for original construction plans –34” x 22”
- Standard plot file for Record Drawings
- Horizontal Control Network
- Bench Mark System

LAYER COLOR AND LINE TYPE CONVENTIONS

Layer Prefixes:

- F** Layers showing future facilities.
- X** Layers showing existing information and facilities.
- XABD** Layers showing abandoned facilities such as water lines, sewer lines, etc.
- N** Layers showing new or proposed information and facilities.
- 0** (zero) Layers that are in Paper Space, such as borders and border titles.

- ADRS** Layers showing site addresses
- BLDG** Layers showing buildings and other structures
- CCOM** Layers showing City owned communication facilities
- CL** Layers showing centerline information
- CTL** Layers showing monuments, bench marks or other control points
- CLM** Layers showing City Limit lines
- EASE** Layers showing easements or other rights of entry
- ELEC** Layers showing electric facilities and joint electric and phone/cable poles
- EP** Layers showing edge of pavement
- GAS** Layers showing gas facilities
- HATCH** Layers showing hatching
- LTG** Layers showing lighting
- OIL** Layers showing oil facilities
- PL** Layers showing property lines / parcel lines
- PNT** Layers showing survey points and associated data
- ROW** Layers showing right of way lines
- S** Layers showing sanitary sewer facilities
- SD** Layers showing storm drain systems including large culverts and bridges.
- SW** Layers showing sidewalks, curbs and gutter
- TEL** Layers showing telephone & telecommunication facilities
- TC** Layers showing traffic control, including signs and striping
- TS** Layers showing traffic signal facilities
- TV** Layers showing television / cable facilities
- TXT** Layers showing text
- VEG** Layers showing vegetation
- W** Layers showing potable water facilities
- 3W** Layers showing non-potable water facilities including tertiary treated water

Layer prefixes should be combined as appropriate and additional description added as needed.

- Ex: XABD-W-TXT A layer showing abandoned water facilities text
X-SD-County A layer showing existing storm drain facilities under County jurisdiction
N-S A layer showing new sewer facilities

LAYER COLOR AND LINE TYPE CONVENTIONS

<i>Facility Type</i>	<i>Color</i>	<i>Line Type</i>
Model Space		
Abandoned & Future		
All facilities	210	Hidden2
Text	210	Continuous
Existing		
Addressing	12	Continuous
Buildings / Structures	100	Continuous
Cable TV	30	Continuous
City Limits	21	Continuous
Centerlines	1	Center2
City Communication Conduits	20	Dashdot2
Contours – Major	38	Dashed
Contours – Minor	33	Dashed
Curb, gutter & sidewalks	8	Continuous
Easement	44	Continuous
Edge of Pavement	8	Continuous
Electric	11	Phantom
Gas	50	Continuous
Hatch	253	Continuous
Lighting	52	Continuous
Miscellaneous	4	Continuous
Oil	51	Continuous
Parcel lines	30	Continuous
Points for Control – monuments & benchmarks	1	Continuous
Points – other	Any	Continuous
Right of Way	2	Continuous
Railroad	41	Continuous
Sanitary Sewer	3	Continuous
Storm drains	74	Continuous
Telephone & Other Communication Lines	23	Phantom2
Television	30	Continuous
Text	5	Continuous
Traffic Control	10	Continuous
Traffic signals	10	Divide2
Vegetation	72	Continuous
Water	5	Continuous
Water – Reclaimed	212	Continuous

<i>Facility Type</i>	<i>Color</i>	<i>Line Type</i>
<i>Model Space</i>		
<i>New</i>		
All facilities – main plan - heavier line weight	7	Continuous
All facilities – details- lesser line weight	14	Continuous
Text	6	Continuous
Dimensions	105	Continuous
Grid lines – Major	38	Continuous
Grid lines – Minor	33	Continuous
Contours – Major	16	Dashed
Contours – Minor	13	Dashed
Hatch	15	Continuous
North arrow & scale	170	Continuous
<i>Record Drawings</i>		
Record Drawing – heavy line weight	200	Continuous
Record Drawing – medium line weight	203	Continuous
Record Drawing – light line weight	201	Continuous
<i>Paper Space</i>		
Border	174	Continuous
Border Titles & Engineering Stamp	170	Continuous
Viewports	255	Continuous

SORT BY COLOR NUMBER

Facility	Color	Line Type
Centerlines, Points for Control	1	Center2, Continuous
Right of Way, Railroad	2	Continuous
Sanitary Sewer	3	Continuous
Miscellaneous	4	Continuous
Text, Water	5	Continuous
(N) Text	6	Continuous
(N) All facilities – main plan - heavier line weight	7	Continuous
Curb, gutter & sidewalks, Edge of Pavement	8	Continuous
Traffic Control, Traffic signals	10	Continuous, Divide2
Electric	11	Phantom
Addressing	12	Continuous
(N) Contours - minor	13	Dashed
(N) All facilities – details- lesser line weight	14	Continuous
(N) Hatch	15	Continuous
(N) Contours major	16	Dashed
City Communication Conduits	20	Dashdot2
City Limits	21	Continuous
Telephone & Other Communication Lines	23	Phantom2
Cable TV, Parcel lines,	30	Continuous
(N) Grid lines – Minor, (E) Contours – Minor	35	Continuous
(N) Grid lines – Major, (E) Contours – Major	38	Continuous
Easement	44	Continuous
Gas	50	Continuous
Oil	51	Continuous
Lighting	52	Continuous
Vegetation	72	Continuous
Storm drains	74	Continuous
Buildings / Structures	100	Continuous
(N) Dimensions	105	Continuous
Variable Layers & Line Weights *	110-169	
Border Titles & Engineering Stamp	170	Continuous
North arrow & scale, Border	174	Continuous
Variable Layers & Line Weights *	180-199	
Record Drawing – heavy line weight	200	Continuous
Record Drawing – light line weight	201	Continuous
Record Drawing – medium line weight	203	Continuous
Future, (XA) All facilities, (XA) text	210	Hidden2, Continuous
Water – Reclaimed	212	Continuous
Variable Layers & Line Weights *	220-249	
Hatch	253	Continuous
Viewports	255	Continuous

* see next page for line weights

Line Weight (mm)	Unassigned Colors				
0.00	110	111	164	165	
0.05	112	113	166	167	
0.09	114	115	168	169	
0.10	116	117	180	181	250 - 255
0.13	118	119	182	183	
0.15	120	121	184	185	
0.18	122	123	186	187	
0.20	124	125	188	189	
0.25	126	127	190	191	
0.30	128	129	192	193	
0.35	130	131	194	195	
0.40	132	133	196	197	
0.45	134	135	198	199	
0.50	136	137	220	221	
0.53	138	139	222	223	
0.60	140	141	224	225	248 (color250)
0.65	142	143	226	227	
0.70	144	145	228	229	
0.80	146	147	230	231	
0.90	148	149	232	233	
1.00	150	151	234	235	
1.06	152	153	236	237	
1.20	154	155	238	239	249 (color 250)
1.40	156	157	240	241	
1.58	158	159	242	243	
2.00	160	161	244	245	
2.11	162	163	246	247	

GUIDELINES FOR CONSTRUCTION ZONES

Engineering Standards – Appendix G

APPROVED BY:



**PUBLIC WORKS DEPARTMENT
TRAFFIC ENGINEERING DIVISION**

919 Palm Street
San Luis Obispo, CA 93401
(805) 781-7200

GENERAL NOTES:

- A. These distances are guidelines only. Actual distances will be determined on an individual basis by the City. Before any work may be started in the street area:
 - 1. A traffic control plan shall be submitted to, and then approved by the City Engineer.
 - 2. Signs and delineation shall be in place, inspected and approved by a Public Works Inspector.
- B. During construction:
 - 1. A copy of the approved traffic control plan shall be kept on the job site at all times.
 - 2. All workers in the street area shall wear ANSI Class III safety apparel.
 - 3. Flaggers shall be used as required.
 - 4. All traffic control and devices shall comply with the Caltrans Traffic Manual / MUTCD.

FIGURE NOTES:

- 1. All signs and traffic control devices shall conform to the MUTCD and CALTRANS Standards.
- 2. All cones shall be 18" or higher. Cones used for night work shall be 28" or higher and reflectorized by a 6" band located 3" to 4" from the top of the cone and an additional 4" band located 2" below the 6" band.
- 3. Speeds on advisory plate to be determined by the City Engineer.
- 4. Temporary parking sign(s) must be placed a minimum of 30 hours in advance of work when parking removal is required to maintain a 10' minimum travel lane. Contact City of San Luis Obispo Police Department at 781-7312 for verification.
- 5. Use flashing arrow sign on roadways with three lanes or more in speed zones of 35 MPH or greater, or when required in approved Traffic Control Plan. Use high level warning device in speed zones of less than 35 MPH. A single flashing arrow sign (for each direction of travel) may be used in place of flashing beacons.
- 6. Flashing arrow sign (FAS) shall be Type I per Sec. 12-3.03 of the current Caltrans Standard Specifications. Operate FAS in Sequential arrow mode.
- 7. A G20-2 (C14) "END ROAD WORK" sign, as appropriate, shall be placed at the end of the work zone.
- 8. All warning signs for night lane closure shall be illuminated or reflectorized. All advance warning signs shall be supplemented with flashing beacons during night lane closures.
- 9. Provide access for all driveways.
- 10. Where signalized intersections are affected, provide notice to City Traffic Signal Maintenance Technician.
- 11. When construction signage is placed in a open bike lane, a 4' minimum lane for bicycle usage shall be maintained. If 4' minimum is unobtainable, signage shall be pole mounted.

FIGURE LEGEND

(PAGES 2-17)

- Traffic Cone or Delineator
- ⊣ Sign (shown facing left)
- ⚡ Flashing Arrow Sign
- Y High Level Warning Device (Flag Tree)
- * Portable Flashing Beacon (Night Work)
- ← Direction of Travel (Not a Pavement Marking)
- MH O Manhole
- ☑ Maintenance Vehicle w/ Flashing Lights
- ⚑ Flagger
- ▨ Type II Barricade
- ▩ Type III Barricade
- ▤ Longitudinal Channelizing Device

CHART A (All Figures)

MINIMUM DELINEATOR AND SIGN PLACEMENT

TRAFFIC SPEED	TAPER LENGTH (L)	DELINEATOR SPACING		SIGN SPACING (S) (Advance of Taper)	BUFFER SPACE (B)
		(Taper)*	(Tangent)		
25 MPH	125'	26'	53'	100'	155'
30 MPH	190'	33'	66'	100'	200'
35 MPH	276'	39'	79'	100'	250'
40 MPH	328'	43'	85'	100'	305'
45 MPH	525'	46'	92'	328'	360'
50 MPH	600'	53'	105'	328'	425'
55 MPH	663'	59'	118'	328'	495'

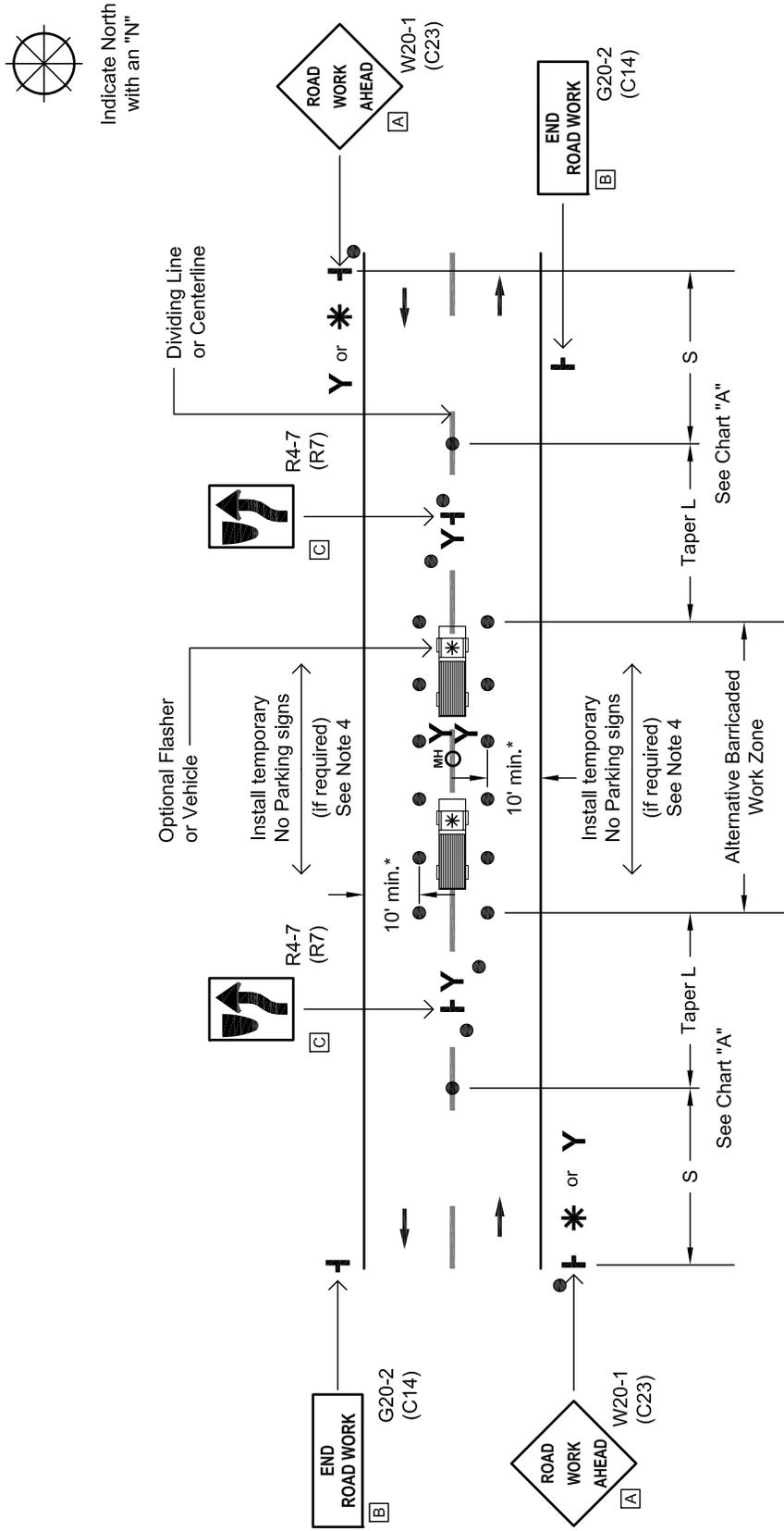
*12' STANDARD LANE WIDTH FOR CALCULATION PURPOSES. WIDER LANES REQUIRE ADDITIONAL LENGTH

REVISIONS	BY	APP	DATE
Figure Notes and Legend; Drafting	JDL	MH	4-13
Added Note 13	MH	BL	11-09

GUIDELINES FOR CONSTRUCTION ZONES

Engineering Standards - Appendix G

FIGURE A TWO-LANE WORK IN CENTER OF ROADWAY

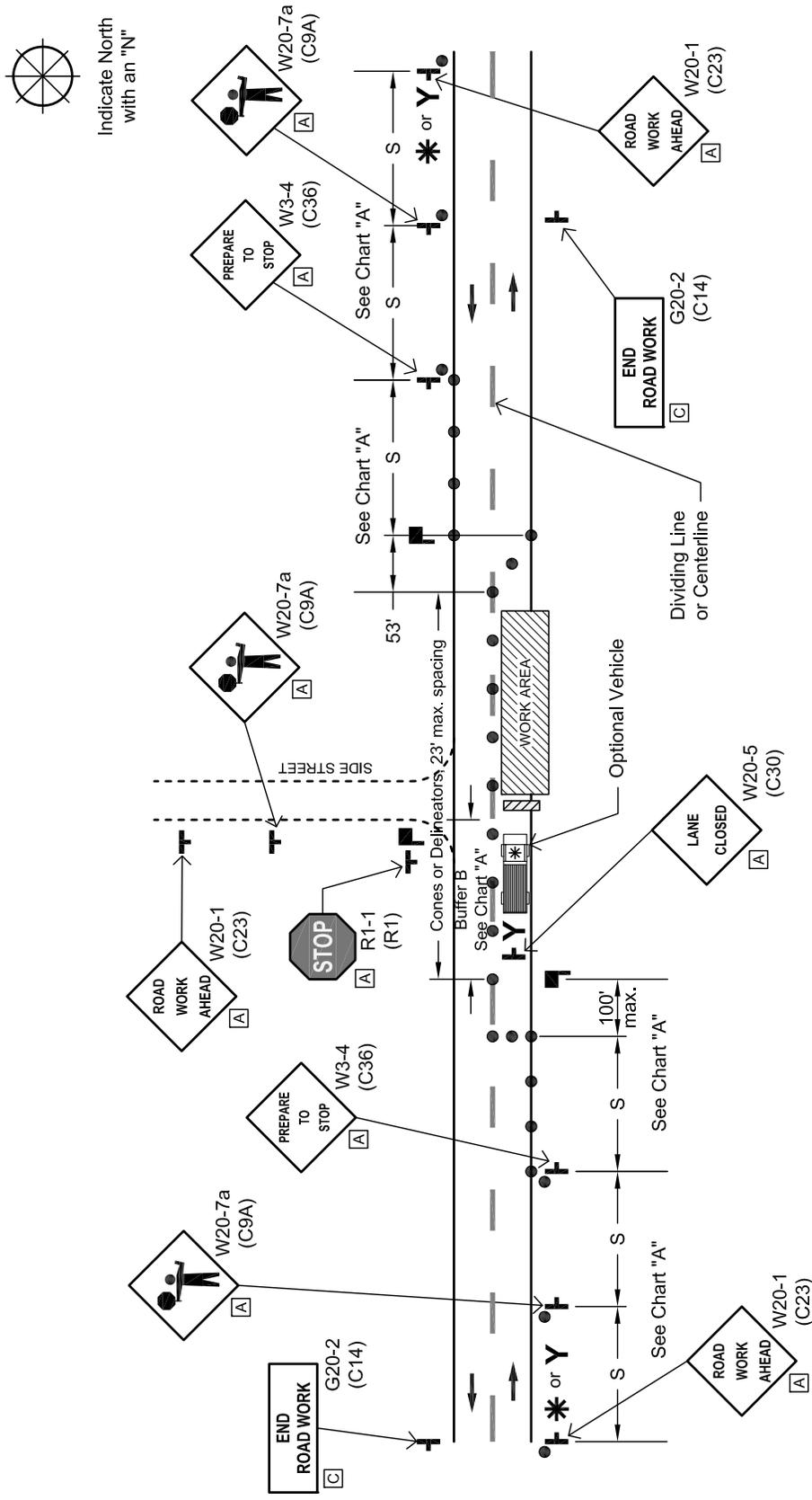


SIGN PANEL SIZE (min.)	
A	36" x 36"
B	36" x 18"
C	24" x 18"

* SEE PAGE 1 THIS APPENDIX FOR LEGEND, NOTES AND SPACING REQUIREMENTS.

REVISIONS	BY	APP	DATE
New Figure	MH	JDW	11-04
Drafting edits	JDL	MH	4-13

FIGURE B TWO-LANE ONE WAY CLOSURE WITH FLAGGERS



SIGN PANEL SIZE (min.)	
A	36" X 36"
B	30" X 30"
C	36" X 18"

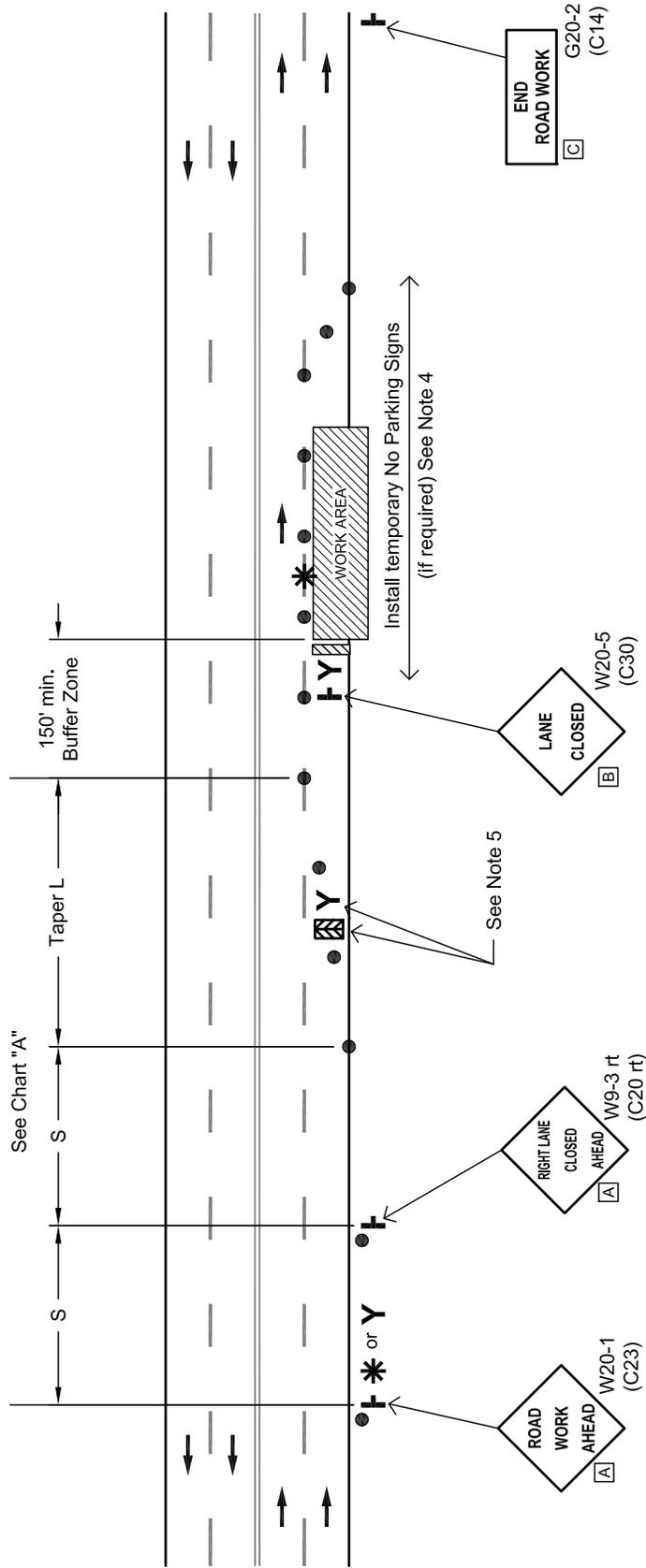
* SEE PAGE 1 THIS APPENDIX FOR LEGEND, NOTES AND SPACING REQUIREMENTS.

REVISIONS	BY	APP	DATE
New Figure	MH	JDW	11-04
Add Type III Barricade; Taper dist.	JDL	MH	4-13

FIGURE E MULTI-LANE OUTSIDE LANE CLOSURE



Indicate North
with an "N"



SIGN PANEL SIZE (min.)	
A	36" x 36"
B	30" x 30"
C	36" x 18"

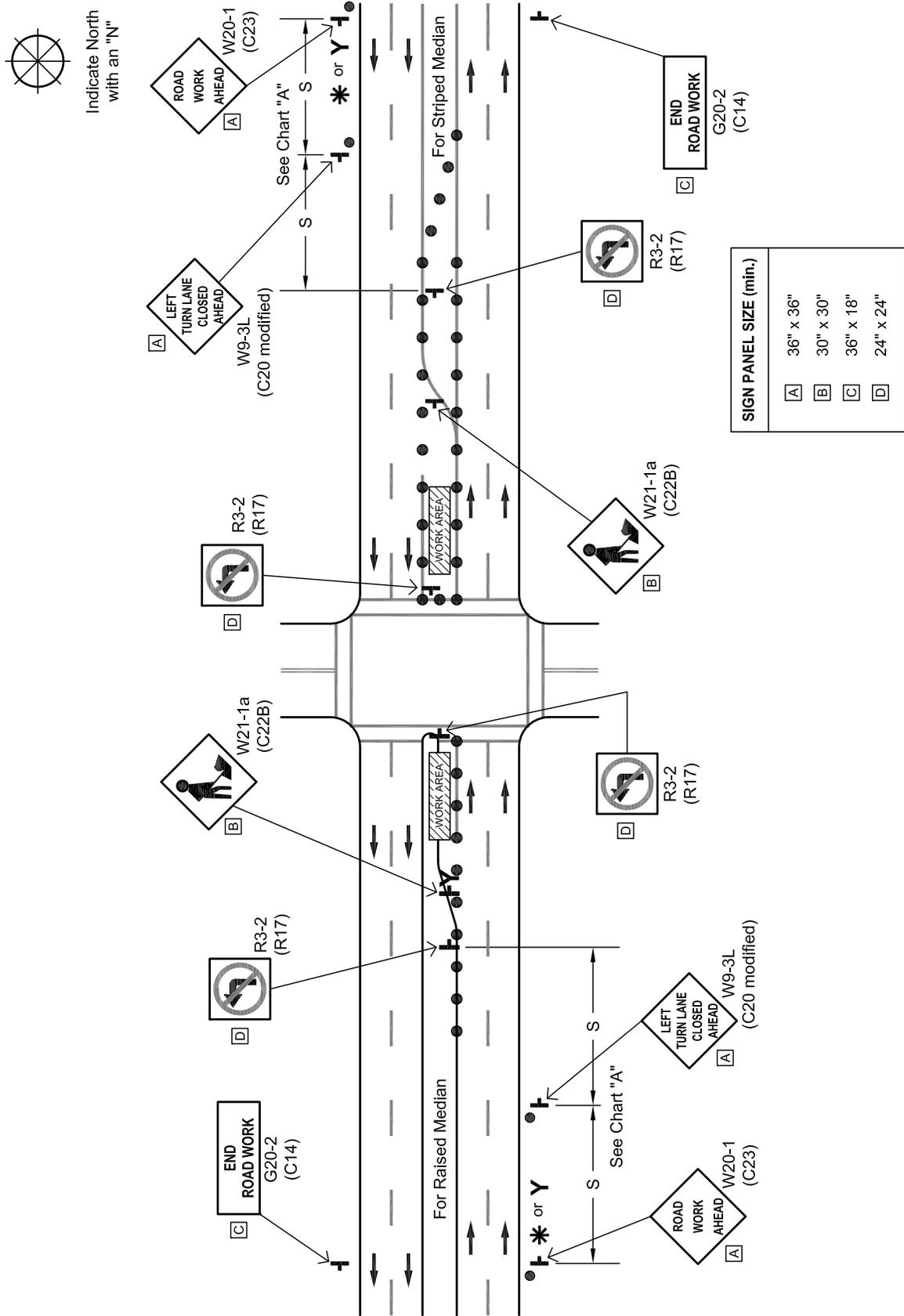
REVISIONS	BY	APP	DATE
New Figure	MH	JDW	11-04
Drafting edits	JDL	MH	2-13

GUIDELINES FOR CONSTRUCTION ZONES

Engineering Standards - Appendix G

* SEE PAGE 1 THIS APPENDIX FOR LEGEND, NOTES AND SPACING REQUIREMENTS.

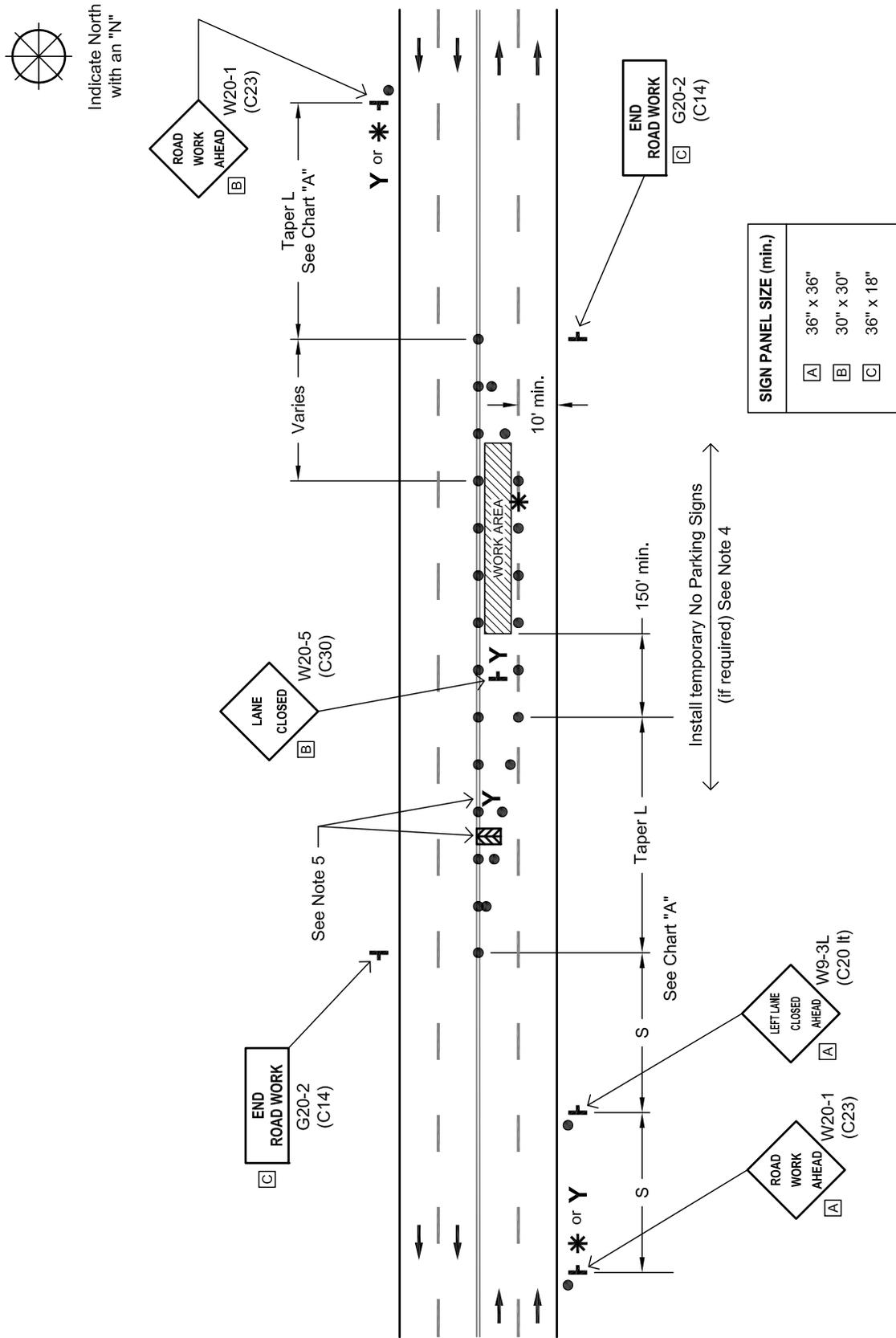
FIGURE F MULTI-LANE LEFT LANE CLOSURE BEYOND INTERSECTION



* SEE PAGE 1 THIS APPENDIX FOR LEGEND, NOTES AND SPACING REQUIREMENTS.

REVISIONS	BY	APP	DATE
New Figure	MH	JDW	11-04
Drafting edits	JDL	MH	2-13

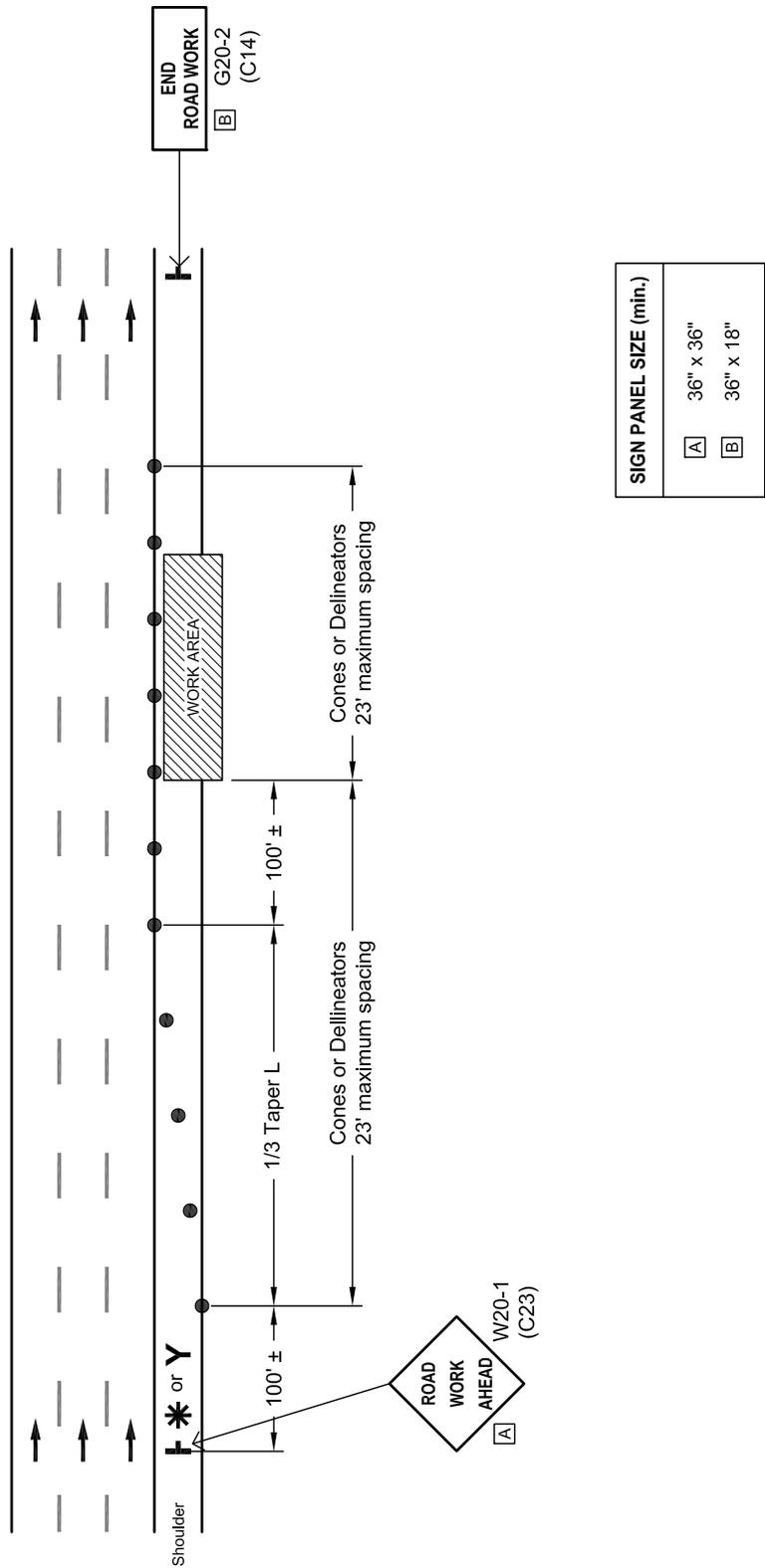
FIGURE G MULTI-LANE INSIDE LANE CLOSURE



* SEE PAGE 1 THIS APPENDIX FOR LEGEND, NOTES AND SPACING REQUIREMENTS.

REVISIONS	BY	APP	DATE
New Figure	MH	JDW	11-04
10' minimum lane; Drafting edits	JDL	MH	4-13

FIGURE H MULTI-LANE WORK WITHIN SHOULDER

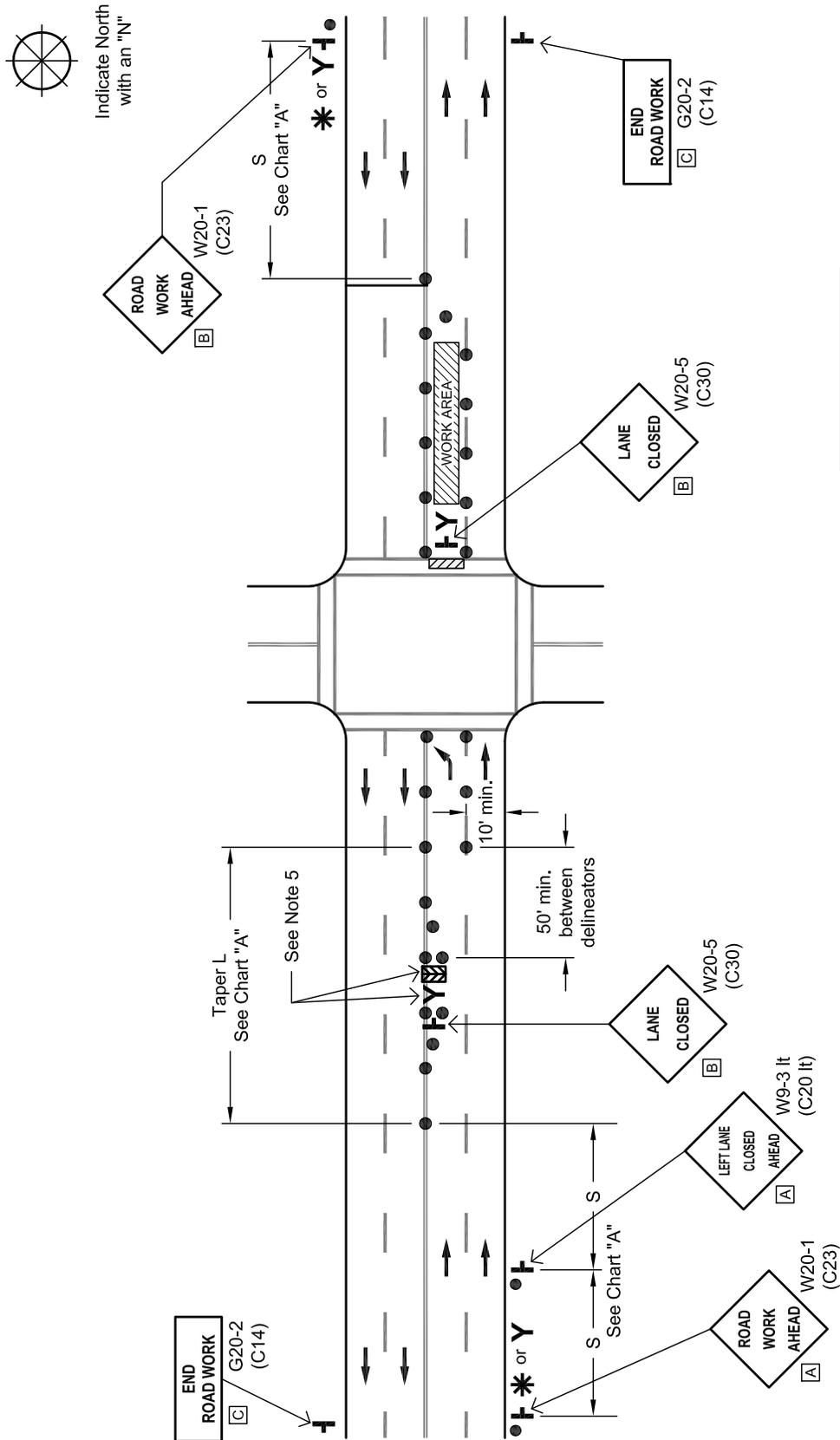


SIGN PANEL SIZE (min.)	
A	36" x 36"
B	36" x 18"

* SEE PAGE 1 THIS APPENDIX FOR LEGEND, NOTES AND SPACING REQUIREMENTS.

REVISIONS	BY	APP	DATE
New Figure	MH	JDW	11-04
Drafting edits	JDL	MH	3-13

FIGURE I MULTI-LANE INSIDE LANE CLOSURE BEYOND INTERSECTION



SIGN PANEL SIZE (min.)	
A	36" x 36"
B	30" x 30"
C	36" x 18"

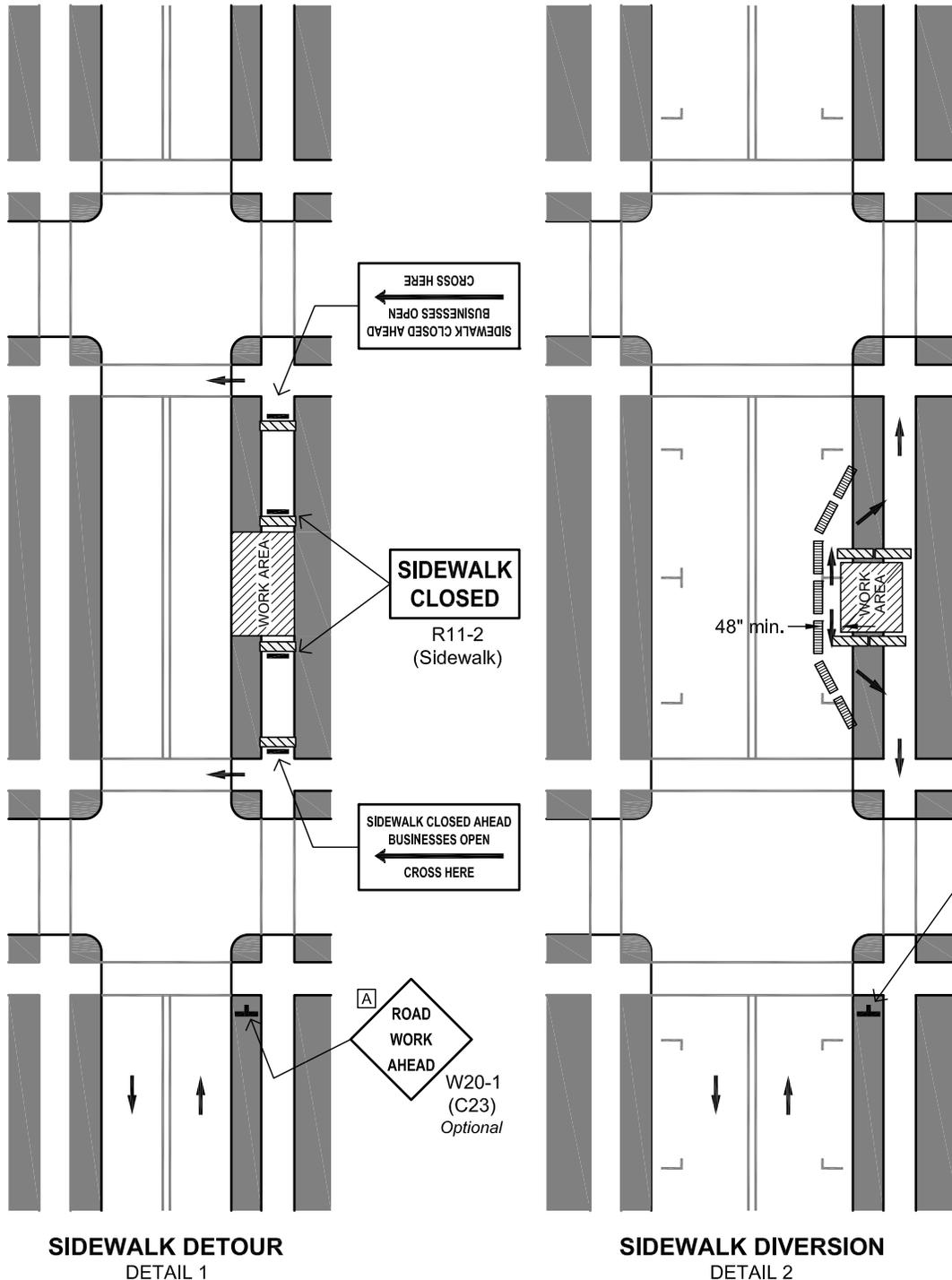
* SEE PAGE 1 THIS APPENDIX FOR LEGEND, NOTES AND SPACING REQUIREMENTS.

REVISIONS	BY	APP	DATE
New Figure	MH	JDW	11-04
Add Type III Barricade; drafting	JDL	MH	4-13

FIGURE P SIDEWALK CLOSURE



Indicate North with an "N"



SIGN PANEL SIZE (min.)	
A	36" X 36"
B	30" X 30"
C	36" X 18"
D	10" X 24"

NOTE: TEMPORARY PEDESTRIAN ACCESS PATHWAYS SHALL COMPLY WITH ADA AND SHALL INCLUDE RAMPS AND HANDRAILS AS PER THE CALIFORNIA UNIFORM BUILDING CODE REQUIREMENT.

California MUTCD

REVISIONS	BY	APP	DATE
Add Detail Note	MH	BL	11-09
Drafting edits	JDL	MH	4-13



Air Pollution Control District
San Luis Obispo County

July 11, 2013

Matt Horn, Project Engineer
City of San Luis Obispo
919 Palm Street
San Luis Obispo, CA 93401

SUBJECT: Issuance of a Revised Air Pollution Control District Permit to Operate for Excavation of Contaminated Soils at Various Locations within the City of San Luis Obispo

Dear Mr. Horn:

The California Health and Safety Code Section 42301(e) requires the District permit system to include a review of permits during renewal to determine that permit conditions are adequate to ensure compliance with and the enforceability of District Rules and Regulations applicable to the equipment for which the permit was issued.

During the annual renewal it was noted that the equipment location description on Permit to Operate Number 1850-1 dated July 20, 2012, should now reference various locations with the City of San Luis Obispo. Enclosed you will find a revised Air Pollution Control District Permit to Operate 1850-2 which better serves the City by having a permit condition set pre-approved. This copy replaces the previous version which may now be recycled. Future renewals are scheduled every year during the month of July to determine if the equipment continues to comply with District Rules and Regulations. Also enclosed is Invoice Number 15484 for the annual renewal fees for Permit Number 1850-2.

You will note that conditions have been placed upon your Permit to Operate. The described equipment must comply with all District Rules and the stated conditions to be deemed in compliance. Appeals to District actions on permits must be made in writing to the Hearing Board within thirty (30) days of receipt of the permit, per District Rule 208.

If you have any questions, please contact Tim Fuhs at (805) 781-5912.

Very truly yours,

LARRY R. ALLEN
Air Pollution Control Officer

 A handwritten signature in black ink, appearing to read "Gary E. Willey", is written over the typed name and title.

GARY E. WILLEY
Manager, Engineering Division

GEW/TJF/lmg

Enclosure

H:\PERMITS\PO\LETTERS\5949POLTJF.docx

t 805.781.5912 f 805.781.1002 w slocleanair.org

3433 Roberto Court, San Luis Obispo, CA 93401



Air Pollution Control District
San Luis Obispo County

PERMIT TO OPERATE

Number 1850-2

EQUIPMENT OWNER-OPERATOR:

City of San Luis Obispo
919 Palm Street
San Luis Obispo, CA 93401

EQUIPMENT LOCATION:

Various Locations within the City of San Luis Obispo

EQUIPMENT DESCRIPTION:

This permit authorizes soil excavation in accordance with an approved San Luis Obispo City Dust Control Plan and excavation of contaminated soil only after:

- a. The contamination has been characterized,
- b. The District has been given notice of the project in accordance with Condition 1 of this permit,
- c. Required Naturally Occurring Asbestos and NESHAP requirements have been met, and
- d. Monitoring, recordkeeping, and District notification procedures are in place for the specific project as described in the project notice.

CONDITIONS:

1. At least two (2) weeks prior to starting any planned excavation project, the permit holder shall submit notice and obtain approval for the project from the Air Pollution Control Officer (APCO) except for emergency repairs lasting less than 48 hours and other exceptions allowed by the APCO. Emergency repairs shall be reported to the APCO within 24 hours of initiation and include the volume of soil excavated and any known contamination levels.

At a minimum, the notice shall include:

- a. An assessment of the soil contamination levels and volumes or a statement that the project work zone contains no known contamination.
- b. Where contamination is present, a project description including:
 1. Specific work zone boundary where public access is restricted during the project,
 2. Estimated volume to be excavated,
 3. Location of nearest residence, business, and schools,
 4. A project specific Site Health and Safety Plan,
 5. Starting date, projected finishing date, and operating hours,

6. A project specific Monitoring, Recordkeeping, and Reporting Plan, and
 7. A screening risk assessment for toxic air contaminants or proof of insignificant emissions.
2. The City of San Luis Obispo, or their contractors, shall notify the District immediately if any soil is discovered that contains contamination previously unidentified including but not limited to: asbestos, hydrocarbons, or metals or if the size or contamination levels of the project described in the initial notice changes. District phone number: (805) 781-5912, fax number (805) 781-1002
 3. Any excavation work, including emergency repairs, shall be done in accordance with:
 - a. The APCO approved San Luis Obispo City Dust Control Plan,
 - b. A Site Health and Safety Plan,
 - c. Information presented in the project notice, if applicable,
 - d. Best operating practices for minimizing odors, dust, and soil track out, and
 - e. An APCO approved project specific Monitoring, Recordkeeping, and Reporting Plan.
 4. All site workers shall receive training and notification of the potential for discovery of naturally occurring asbestos and man-made asbestos material prior to initial site disturbance. Training shall include visual examples of naturally occurring asbestos and man-made asbestos material and proper procedures for reporting to a supervisor of any discovery.
 5. If after project approval the City of San Luis Obispo or their contractors subsequently discover any man-made asbestos materials in the project zone, then:
 - a. All work shall cease in the immediate project area where the discovery was made.
 - b. The District shall be immediately notified.
 - c. Sampling of suspect Regulated Asbestos Containing Materials (RACM) by a Certified Asbestos Contractor (CAC) shall immediately occur, with results submitted to the District.
 - d. The discovery area shall be wetted and covered immediately.
 - e. The material shall be analyzed by Polarized Light Microscopy (PLM) by bulk EPA Method 600/R-93-116, Visual Area Estimation.
 - f. Confirmed quantities of RACM equal to or greater than 35 cubic feet will require the submission of an asbestos notification to the District, and handling and disposal pursuant to 40CFR61.145 and 61.150.
 - g. All RACM shall be handled and disposed of according to Local, State, and Federal regulations.
 6. All projects shall comply with Federal and State regulations including the:
 - a. Asbestos Airborne Toxic Control Measure For Construction, Grading, Quarrying, And Surface Mining Operations, Title 17 California Code of Regulations, Section 93105 (17CCR93105) shall be demonstrated to the APCO prior to initial site disturbance.
 - b. National Emission Standard for Asbestos, Title 40, Code of Federal Regulations, Part 61, Subpart M (40CFR61.145, Asbestos NESHAP) shall be demonstrated to the APCO for all aspects of the project.

7. Expiration of the Geologic Exemption:
If City of San Luis Obispo, or their contractors subsequently discover any naturally occurring asbestos, serpentine, or ultramafic rock in the area to be disturbed, then:
 - a. City of San Luis Obispo or their contractors must comply with the requirements of 17CCR93105;
 - b. City of San Luis Obispo, or their contractors must report the discovery of the naturally-occurring asbestos, serpentine, or ultramafic rock to the APCO no later than the next business day; and
 - c. The exemption under 17CCR93105 Subsection (c)(1) shall expire and cease to be effective.

8. Monitoring shall include the following unless otherwise allowed by the APCO:
 - a. During excavation activities, the work zone shall be observed for dust, odors, hydrocarbon and H₂S concentrations by a properly trained technician following the methods in the APCO approved project specific Monitoring, Recordkeeping, and Reporting Plan.
 - b. VOC monitoring shall use a Flame Ionization Detector (FID) instrument maintained at the site at all times during excavation and handling. The FID shall be calibrated appropriate to the range being monitored with certified hexane gas or an alternative gas approved by the APCO in either the range of one hundred (100) parts per million by volume (ppmv) or ten-thousand (10,000) ppmv. The FID shall be in good working order and calibrated using certified calibration gas at the beginning and end of each work day using the procedures specified by the manufacturer
 - c. An instrument capable of measuring hydrogen sulfide gas at 1 ppmv shall be on-site at all times during excavation and handling.
 - d. Air monitoring of stock piled contaminated shall be conducted at a distance of no more than three (3) inches above the soil surface or edge of the covering monitored.
 - e. All air monitoring of the active work zone shall be conducted in the breathing zone, at the work zone downwind boundary.
 - f. Monitoring of the stock piles and work zone boundary shall occur at (1) hour intervals during excavation and soil handling activities unless otherwise allowed by the APCO.

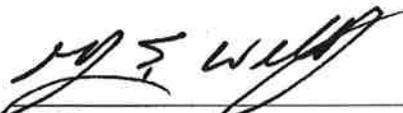
9. Recordkeeping and Reporting shall include the following unless otherwise allowed by the APCO:
 - a. Hourly observations of wind speed and direction,
 - b. Records of the quantity contaminated soil excavated shall be maintained on a daily basis when activities under this permit are underway and shall include the date and the volume transferred.
 - c. A daily calibration log shall be maintained for each monitor device described in the APCO approved project specific Monitoring, Recordkeeping, and Reporting Plan.
 - d. All monitoring and recordkeeping results shall be recorded at the within fifteen (15) minutes of the observation.
 - e. A record of all complaints and follow-up procedures shall be made during the day of the complaint and include: date and time, location of odor, name and phone # of the person reporting the odor, if available, facility responders name, odor type and strength, and remedial actions taken.

- f. All records shall be maintained on-site and made available to the APCO upon request.
- 10. The City of San Luis Obispo Public Works Department may be charged on an hourly basis to determine a project's compliance with these conditions.
- 11. If the APCO determines that this operation is causing a public nuisance by virtue of odor, dust, or health risk, the City of San Luis Obispo and its contractors shall take immediate action and eliminate the nuisance.
- 12. Nuisance odors or dust complaints shall be directed to the on-site representative of City of San Luis Obispo. All complaints and breakdowns shall be reported to the APCO within four (4) hours of receipt or event. Equipment or process breakdowns and upsets shall be reported according to the criteria required under District Rule 107.
- 13. No visible dust shall leave the work zone boundary.
- 14. Hydrocarbon concentrations at the edge of the covered stock piled soils, and at the boundary of the active work zone shall not to exceed 100 ppmv as hexane.
- 15. Contaminated soil stock piles shall be completely covered with an impermeable covering that has a minimum thickness of 10 mils or another APCO-approved barrier. Contaminated soil stock piles shall be completely covered whenever soil is not actively being added or removed.
- 16. Containment or coverage of contaminated soil in the wall of the excavation shall occur as soon as feasible. All excavation sites with contamination shall be covered daily, unless otherwise allowed by the APCO. Contaminated soil, as defined for this permit, shall be soil that must be removed according to plans approved by the San Luis Obispo Certified Unified Program Agency.
- 17. All haul trucks shall be completely covered with tarps or other suitable materials prior to leaving the site.
- 18. All information needed to estimate air pollution emissions shall be provided to the District upon request.
- 19. A copy of this permit shall be in the possession of the on-site representative of the City of San Luis Obispo.

July 11, 2013 (Revised)
ISSUANCE DATE

July (Annually)
ANNIVERSARY

LARRY R. ALLEN
Air Pollution Control Officer



GARY E. WILLEY
Manager, Engineering Division

Application Number: 5949

TO: BARBARA LYNCH
CITY OF SAN LUIS OBISPO
919 PALM STREET
SAN LUIS OBISPO CA 93401

The Air Pollution Control District has received payment of your permit renewal fees. Attached below is your permit renewal. Please detach the bottom portion of this page and affix to your Permit to Operate.



Air Pollution Control District
San Luis Obispo County

PERMIT RENEWAL

DATE: August 4, 2015

Permit Number: 1850-2

A permit renewal inspection was recently conducted at your facility and it has been determined from the inspection that the subject equipment is operated in compliance with the rules and regulations of the Air Pollution Control District. This is a renewal of the permit operating license until **July 2016**.

Please also consider this a receipt for your fees in the amount of **\$824.00**.

Equipment Location: **Various Locations within the City of San Luis Obispo**

San Luis Obispo County Air Pollution Control District

Please affix this note to your Permit to Operate.