

DESIGN CRITERIA
&
STANDARD DRAWINGS
FOR
PUBLIC WORKS
CONSTRUCTION



2021 EDITION

CITY OF NEWPORT BEACH PUBLIC WORKS DEPARTMENT

- DESIGN CRITERIA FOR PUBLIC WORKS CONSTRUCTION
- STANDARD DRAWINGS
- HARBOR DESIGN CRITERIA

CITY OF NEWPORT BEACH PUBLIC WORKS DEPARTMENT

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DESIGN CRITERIA

I GENERAL

A. Improvement Plans

The City of Newport Beach Design Criteria provides consultants with the City's requirements pertaining to the production of construction drawings, project deliverables, related quality assurance, and submitting final hard copies and digital plans. These requirements apply to all engineering disciplines.

Consultants shall adhere to these requirements when preparing plans and specifications for all projects done within the City. The guidelines in this Design Criteria shall be enforced during both the project design and construction phases.

This Manual is not intended to replace codes or accepted industry standards and practices.

1. Hard Copy Submittals

- a. All submitters shall contact the project engineer to obtain a project number. The project number shall be reflected on the bottom right corner of all drawing sheets. E.g. W-3567-S, TRM_15634, T_5678_S, etc.
- b. Drawings shall exactly 24"x36" cut sheets. Drawing border should be only 1" on the left side of the sheet and ½" on other three sides.
- c. All sheets shall be issued a sequential numeric sheet number. Alphanumeric numbers shall not be assigned in lieu of numeric numbers. Duplicate numbering such as sheet 6 and 6A shall not be used. In the case of revisions and additions of additional sheets, all sheets may be required to be re-numbered, so they remain sequential or added to the end of the set.
- d. The Title Sheet shall have an index and/or key map clearly indicating the sheet numbers. Provide a vicinity map, a legend of abbreviations, symbols and line types used.
- e. Scales for profiles shall not be smaller than 1" = 40' horizontal and 1" = 10' vertical. The vertical scale should be changed to appropriate scale when grades are steep or very flat. Scales for plan views shall not be smaller than 1" = 40'. For complex detailed designs at specific locations, the scale shall be 1" = 10' or as approved by City's Project Engineer.
- f. Profiles shall be shown at the top of the sheets. Street profiles shall reflect the locations of all utilities, including Sewer, Storm, water, and other facilities.

- g. Large tracts shall have separate small-scale maps showing the overall layout of water, sewer, storm drain, and street lighting systems.
- h. Typical cross sections of streets shall show locations of all utilities, including oil, petroleum, gas, water, sewer, telephone, cable TV, street lighting, traffic signal, electrical and other facilities.
- i. A typical section for each street shall be included.
- j. General layout of streets shall be oriented on the plan in such a manner as to cause the north arrow to point up or to the left.
- k. Benchmark(s) shall be listed on the Title Sheet, based on the North American Vertical Datum of 1988, (NAVD 88), with complete reference to benchmark designation, elevation, type and etc.
- l. Street drawings shall show the basis of bearing on the Title Sheet and tie to the California Coordinate System North American Datum of 1983 (NAD83) in at least one location or as many as mutually agreed by the surveyor or engineer with the City project engineer.
- m. Each sheet shall include the relevant construction notes, standard and detailed drawings needed for that sheet or clearly reference the related sheets or standard drawings.

2. Electronic Submittal

To facilitate the transfer of information to the City's Geographic Information System and digital storage of plans, a digital file (in addition to a hard copy) shall be submitted per the following requirements:

- a. The entire project shall be prepared in AutoCAD model space in full size (1 to 1), using State Plane Coordinate System, California zone 6, SPCS 83 FIPS zone 0406, in accordance with County of Orange Ordinance 3809 and digital submission of Cadastral Surveys Information and Specifications.
- b. Survey maps, parcel maps and lot line adjustment maps shall be prepared per Orange County Ordinance No. 3809/Digital Map Submission of 1991 (or latest version).
- c. AutoCAD Computer Aided Drafting CAD (dwg) file should include paper space layout for each individual sheet and overall uncut site plan on model space, which encompasses the design of the entire project in state plane coordinate.
- d. Paper space shall be designed so that final plotted plan is a sheet exactly

24"x36". All text size shall be a minimum of 0.1 multiplied by the scale of the drawing.

- e. All drawings shall be in compliance with Newport Beach standard sheets, line types, standard layers and naming drawing files. Only AutoCAD standard fonts shall be used.
- f. Electronic submittals shall include both AutoCAD and Adobe PDF formats.

3. Approval Signatures

- a. Each plan sheet shall be signed by the Civil Engineer responsible for that design, except that a sheet of complex grading, structural, mechanical or electrical plans shall be signed by the Professional Engineer licensed in that discipline who is responsible for that design.
- b. All Civil and Professional Engineers shall be registered by the State of California.
- c. Plan revisions subsequent to the Engineer's approval shall be re-signed prior to re-submittal for the City's approval.
- d. Traffic Control Plans, when required, shall be signed by a registered Traffic Engineer.

4. Standard Layers for AutoCAD Drawings

The following table is the City of Newport Beach standard layering format. This format shall be incorporated into all drawing files submitted to the City.

- a. The CAD operator needs to use his/her discretion on choosing line weight and line type scale based on the need of their project drawing. The designated line is the minimum. The scale may have to be adjusted for all suggested line types according to the scale of the drawings.
- b. The structure of the layering naming convention shall generally be X or P
Category – Descriptor – Modifier
- c. All Layers begin with X (existing) or P (Proposed)
- d. For example: X-S-MH for existing sewer manholes or P-SD-STRUCT-ANNO for Annotation text on a proposed storm drain structure.
- e. Layer "0" for block creation only; there shall be no linework in Layer "0".
- f. Layers should be descriptive without being too narrowly defined.

The following Layers are typical to Plans. The list is not meant to be exhaustive and it's the responsibility of each user to generate layers appropriate for their drawings.

* Line weight or type not defined

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
<u>SURVEY LAYERS</u>				
X-SURV-POINT	Survey Point	*	*	*
X-SURV-TEXT	Survey Text	Continuous	*	*
X-SURV-CONTOUR-MIN	Minor Survey Contour	Dashed	0.01	76
X-SURV-CONTOUR-MAJ	Major Survey Contour	Dashed	0.015	78
X-SURV-CL	Existing Center Lines	Centerline	0.01	7
X-SURV-BM	Exist. Benchmark	*	*	*
X-PL	Exist. Property Line	Divide	0.01	90
X-RW	Exist Right Of Way	Right of Way	0.01	90
P-RW	Proposed Right of Way	Right of Way	0.028	212
X-EMT	Easement	Phantom	0.01	90
P-EMT	Proposed Easement	Phantom	.028	212
<u>STORM DRAIN</u>				
X-SD-LINE	Exist Storm Drain Line	Storm Drain	0.012	146
P-SD-Line	Proposed Storm Drain Line	Storm Drain	0.024	211
X-SD-ANNO	Exist. Storm Drain Annotations / Dimensions	Continuous	*	*
X-SD-MH	Exist. Storm Drain Manhole	Dashed	0.012	146

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
X-SD-DETAIL	Exist. Storm Drain Details	Dashed	0.012	146
P-SD-DETAIL	Proposed Strom Drain Details	Continuous	0.024	211
X-SD-CB	Exist. Storm Drain Catch Basin	Dashed	0.012	146
X-SD-STRUCT	Exist. Storm Drain Structure	Dashed	0.012	146
X-SD-STRUCT- CDS	Exist. Storm Drain Structure, CDS Unit	Dashed	0.012	146
X-SD-STRUCT- JUNCT	Exist Storm Drain Junction Structure	Dashed	0.012	146
<u>SEWER</u>				
X-S-LINE	Exist. Sewer Line	Sewer	0.015	216
X-S-LINE- FMAIN	Exist. Sewer Force Main	Sewer	0.015	216
P-S-LINE	Proposed Sewer Line	Sewer	0.024	71
X-S-LATERAL	Exist. Sewer Lateral	Sewer	0.015	216
X-S-CO	Exist. Sewer Cleanout	Sewer	0.015	216
X-S-MH	Exist. Sewer Manhole	Dashed	0.015	216
X-S-DETAIL	Exist. Sewer Detail	Dashed	0.015	216
P-S-DETAIL	Proposed Sewer Detail	Continuous	0.024	71
X-S-ANNO	Exist. Sewer Annotation / Dimensions	Continuous	*	*
X-S-STRUCT	Exist. Sewer Structure	Dashed	0.015	216
X-S-STRUCT- PUMP	Exist. Sewer Pump Station	Dashed	0.015	216
<u>STREETLIGHT</u>				
X-SL	Exist. Streetlight	*	0.012	8

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
P-SL	Proposed Street Light	*	0.020	6
X-SL-COND	Exist. Street Light Conduit	Elec	0.012	8
P-SL-COND	Proposed Street Light Conduit	Elec	0.020	6
X-SL-COND-PB	Exist. Streetlight Pull Box	Dashed	0.012	8
X-SL-METER	Exist. Street Light Meter	Dashed	0.012	8
X-SL-ANNO	Annotation Dimensions	Continuous	*	*
X-SL-DETAIL	Street Light Detail	Dashed	0.012	8
<u>ROADWAY</u>				
X-R-TC	Exist. Road Top of Curb	Dashed	0.01	20
P-R-TC	Proposed Top of Curb	Continuous	0.015	217
X-R-GUTTER	Exist. Road Gutter	Dashed	0.01	120
P-R-GUTTER	Proposed Road Gutter	Continuous	0.02	148
X-R-FL	Exist. Flow Line	Dashed	0.01	180
P-R-FL	Proposed Flow Line	Continuous	0.02	5
X-R-SW	Exist. Sidewalk	Dashed	0.01	40
P-R-SW	Proposed Sidewalk	Continuous	0.02	148
S-R-SW-RAMP	Exist. Curb Ramp	Dashed	0.01	40
X-R-XGUTTER	Exist. Cross Gutter	Dashed	0.01	120
X-R-ANNO	Annotation and Dimensions	Continuous	*	*
X-R-DETAIL	Existing Road Detail	Dashed	0.01	20
P-R-DETAIL	Proposed Road Detail	Continuous	0.02	148
<u>TRAFFIC</u>				
X-T-SIGN	Exist. Traffic Sign	*	0.01	40
X-T-LOOP	Exist. Traffic Loop	Continuous	0.01	40

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
X-T-CABINET	Exist. Traffic Cabinet	*	0.01	40
X-T-STRIPING	Existing Striping	Continuous	0.01	*
P-T-STRIPING	Proposed Striping	Continuous	0.01	*
X-T-SIGNAL	Existing Signal	*	0.01	*
X-T-DETAIL	Traffic Detail	Dashed	0.01	40
X-T-ANNO	Traffic Annotation and Dimensions	Continuous	*	*
<u>WATER</u>				
X-W-LINE	Exist. Water Lines	Water	0.012	4
X-W-HYDRANT	Exist. Fire Hydrant	Water	0.012	4
P-W-LINE	Proposed Line	Water	0.024	141
X-W-LINE-VAC	Exist Air Release Valve	*	0.012	4
X-W-LINE-BF	Exist Back Flow Device	*	0.012	4
X-W-VALVE	Exist. Water Valve	*	0.012	4
X-W-STRUCT	Exist Water Vault	Dashed	0.012	4
X-W-STRUCT-PUMP	Exist Pump Station	Dashed	0.012	4
X-W-DETAIL	Exist Water Detail	Dashed	0.012	4
X-W-ANNO	Annotation and Dimensions	Continuous	*	*
<u>BUILDING</u>				
X-BLD-FOUND	Exist Building Foundation	Dashed	0.01	110
P-BLD-FOUND	Proposed Building Foundation	Continuous	0.024	211
X-BLD-INTERIOR	Exist Building Interior	Dashed	0.01	110
X-BLD-WINDOW	Exist Building Window / Door	Dashed	0.01	110

Layer	Description	Line Type	Line Weight (in)	AutoCAD Standard Pen
X-BLD-DETAIL	Building Detail	Dashed	0.01	110
X-BLD-ANNO	Annotations and Dimensions	Continuous	*	*
<u>UTILITIES</u>				
X-UTIL-GAS	Exist Gas	Gas	0.01	30
X-UTIL-ELEC	Exist Electrical	Elect	0.01	200
X-UTIL-TELE	Exist Telephone	Tel	0.01	170
X-UTIL-CABLE	Exist Cable	CTV	0.01	120
X-UTIL-TELE-PB	Exist Telephone Pull Box	Dashed	0.01	170
X-UTIL-CABLE- PB	Exist Cable Pull Box	Dashed	0.01	120
X-UTIL-ELEC- POLE	Exist Electrical Pole	*	0.01	200
<u>LANDSCAPE</u>				
X-LS-TREE	Existing Tree	*	0.01	*
X-LS- IRRIGATION	Existing Irrigation Line	Dashed	0.01	130
<u>Miscellaneous</u>				
HATCH	Hatch or Pattern	*	*	*
PROFILE	Profile	*	*	*
PROFILE-TEXT	Profile Text	*	*	*
PS-BORDER	Paperspace Border	*	*	*
PS-BORDER- TEXT	Paperspace Title block, legends, logo, etc.	*	*	*
MS-TEXT	Model Space Text	*	*	*
IMAGE	Images	*	*	*
VIEWPORT	Viewports	Continuous	*	*
CONST LINE	Construction Line (not printed)	*	*	*

B. Survey Monuments

1. Boundary Corners

Permanent iron pipe monuments of a type approved by the City Engineer shall be set at each boundary corner of the subdivision, along exterior boundaries at intervals of not over 500 feet, at the beginning and end of property line, curves and at any other points as may be required by the City Engineer.

2. Street Centerline Intersections

Concrete monuments with cast iron ring and cover of a type approved by the City Engineer shall be set at intersections of street centerline tangents and where such intersect on private property, at the beginning and end of the centerline curve unless otherwise approved by the engineer.

3. Benchmarks

Permanent elevation benchmarks of a type approved by the City Engineer and referred to the City datum shall be set at locations approved by the City Engineer.

4. GPS Survey Control (State Plane Coordinates)

The legal description for all subdivisions (tract maps & parcel maps), easements and public improvement projects shall:

- a. Use as basis of bearing, a line of record established by first order, class II (or better) survey control monumentation.
- b. Tie to the California State Plane Coordinate System, California zone 6, SPCS 83 FIPS zone 0406 California Coordinate System, (CCS83) Zone 6 FIPS 0406, North American Datum of 1983 (NAD83, 1991.35 EPOCH GPS Adjustment). In accordance with County of Orange Ordinance 3809 and digital submission of Cadastral Surveys Information and Specifications.
- c. Use a monument listed on the County Surveyor's active list of control points and monuments and satisfy the requirements of "4a" & "4b", above.

C. Miscellaneous

- a. Improvements shall be designed in accordance with the City's Standard drawings, these Design Criteria, and the "Standard Specifications for Public Works Construction", including all supplements.
- b. Utilities in easements parallel to side lot lines shall be laid out so that the easement is all on one lot. Minimum width for water, sewer &

drainage easements shall be ten (10) feet. Such easements shall be exclusively for utility purposes and shall preclude any building, structure, foundation, wall footing or tree. Furthermore, the utility shall not be located within a 1:1 sphere of influence projected downward from a building, structure, etc. Means of maintaining access to the easement must be provided.

- (1.) Easements for more than one City-owned utility shall be wider as determined appropriate by the Engineer.
 - (2.) Easements shall be exclusively for City-owned utilities unless otherwise approved by the City and the other public utility agency(ies).
- c. Water, sewer, drainage, structural and street lighting design calculations shall accompany plan submittal unless the Engineer specifically waives this requirement.
 - d. A letter of transmittal addressed to the Project Engineer shall accompany plan submittal.
 - e. Plans shall be checked for consistency, accuracy, drafting and conformance with Standard Drawings, Standard Specifications for Public Works Construction, design calculations, geotechnical recommendations, and these Design Criteria prior to the Engineer's approval. If plans have obviously not been checked, they will be returned unapproved by the Engineer.
 - f. Check prints shall accompany revised plans, which are resubmitted for approval. Resubmitted plans shall be accompanied by a letter of transmittal addressed to the Project Engineer.

II. STREETS

A. Widths

1. Minimum street widths shall be in accordance with STD-100. Additional width may be required for bikeways, bus turnouts, and/or for special intersection design.
2. Alley widths shall be a minimum of 20 feet in residential areas and a minimum of 30 feet in commercial and industrial areas.
3. Intersections of arterial roadways may require special design. The use of left turn pockets, double left turn pockets, free right turn lanes, right turn islands, raised medians, etc., shall be investigated and approved by the city.
4. Streets improved to half or less than planned width shall be provided with paved shoulders or ditches. The unimproved portion of the street shall drain away from the paved section.

B. Grades

1. Minimum street grade shall be 0.5% and maximum shall be 7.0% unless the requirements are specifically waived by the Engineer.
2. Vertical curves are required when grade breaks exceed 0.5% for every 25 feet.
3. Normal cross fall of street pavement shall be 1.7%.

C. Horizontal Alignment

1. Streets shall normally be at least 50 feet on tangent adjacent to the intersection measured from the end of the curb return (ECR). An angle of intersection more than 10° from a right angle requires special approval and design.
2. Cul-de-sacs shall not exceed 500 feet in length and shall conform to STD-102.
3. Minimum centerline radii shall be as follows:

a. Local streets	R = 250 feet
b. Secondary streets	R = 800 feet
c. Primary streets	R = 1200 feet or greater
d. Major street	Special Design (55 mph)
e. Hill streets	Special Design
4. Minimum length of tangent between reversing curves shall be 100 feet.

D. Pavement Structural Section

1. Design shall be in accord with California Department of Transportation's Highway Design Manual (Caltran's Design Manual), latest edition.
2. Unless otherwise specified the minimum structural sections shall be as follows:

a. Alleys	8" P.C.C.
b. Local streets	5" A.C./6" C.A.B.
c. Arterial streets	8" A.C./12" C.A.B.
d. Bike trails	5" A.C./6" C.A.B.
e. Parking lot	4" A.C./6" C.A.B.
3. Minimum section shall be designed as required by results of soils tests before plan preparation. Subgrade "R" value shall be verified after rough grading.

4. Minimum design traffic indices for streets shall be as follows:

a. Arterials	Special Design
b. Local streets	5.5
c. Parking lots	4.0

E. Curbs

1. Height of curb face for local streets and parking islands shall be 6 inches.
2. Height of curb face for arterial streets shall be 8 inches.
3. Height of median curb faces shall be 8 inches. Subsequent pavement overlays shall not reduce median curb heights to less than 4 inches.

F. Sidewalks

1. Minimum widths shall be in accordance with STD-100.
2. Sidewalks are required on Designated Significant Link Sidewalks per City Council Resolution No. 88-88 and subsequent additions/revisions.

G. Sight Distance

1. Sight distances shall be in accord with the Caltran's Design Manual, latest edition.
2. Sight distance requirements for driveways and intersections for major, primary, secondary, and local streets shall be per STD-105.

H. Frontage Roads

1. Frontage roads shall enter arterial streets through "Bulb-Type Intersection" capable of storing at least four (4) cars between the frontage road and the major street.

I. Streetlights

1. All streetlight circuits shall be 240-volt, single phase powered circuits.
2. Streetlights shall be one of the following types with appropriate pole spacing for the corresponding street type:

Street Type	Pole * Type	Mounting Height	Bracket Arm	Recommended HPSV Lumens	Recommended Lamp Watts	Recommended Spacing **	Recommended Luminaire
Residential	I	20'-9"	4'	N/A	50-70	200' one side or staggered	G.E.'s M250 A2 POWR/Door cut off or see STD202-L-E approved equal.
	-						
	III	12'-3"	NONE	"	"	180' one side	
	III	14'-6"	"	"	"	or staggered	
	III	15'-6"	"	"	"	"	
	V - VIII	Varies	NONE	N/A	50-70	"	
Collector	I	26'-3"	4'	5,800	70	180' one side	G.E.'s M250 A2 approved
	I	27'-9"	6'	"	"	or staggered POWR/Door cut off or "150' one side equal"	
Secondary	II	29'-9"	8'	9,500	100		
	II	34'-9"	"	"	"		
Primary & Major	II	34'-9"	"	16,000	150	or staggered	
	IV	35'-0"	"	"	" "		

*See Standard Drawings

**Where possible, poles and spacing shall conform with existing poles and spacing in adjoining areas.

3. Residential lighting shall be considered non - safety lighting for the convenience of the community. Lighting levels and lamp wattage shall be based on specific community needs. The City Engineer may require special safety lighting with specified illumination requirements at specific locations to address special conditions that may exist. Residential lighting shall consider impacts to adjacent residents, views, and environmentally sensitive areas.
4. Designs for illumination and spacing of lights on arterial streets shall be submitted for review by the Engineer.
 - a. Additional lights shall be provided where calculations indicate the need for additional poles or wattages are greater than those indicated in these standards.
5. A field check of existing overhead wire is required whenever poles over 30 feet in height are to be specified or wherever else overhead power lines are to coexist with streetlights.
6. LED luminaires shall be specified and used.

7. Plans to show the street lighting system shall ordinarily be shown on separate sheets.
8. Streetlights shall normally be staggered and placed on opposite sides of the street.
 - a. In a terraced lot subdivision, streetlights shall be placed on the downhill terraced side of the street.
9. Circuit details shall be in accord with STD-205.
 - a. Each circuit shall be provided with an approved two (2) pole circuit breaker installed in an approved all stainless-steel component box.
 - b. All components of the service meter pedestal cabinet shall be fabricated from stainless steel.
 - c. Breaker capacity shall be sized to accommodate the load on the circuit from connected lights.
10. Light standards shall not be set closer than 5 feet from a curb opening, fire hydrant, manhole, water main or sewer main.
11. At intersections:
 - a. The light shall be placed on the far-right corner of the major street.
 - b. Larger intersections may require more than one light.
 - c. Where the intersection is a T-intersection the light shall be placed across the street at the end of the street which dead-ends at the "T".
12. Above ground service cabinets shall be placed to minimize interference with pedestrians on sidewalks. For full width sidewalk, place service cabinet at back of walk or on easement behind walk.
13. Junction boxes shall be provided:
 - a. At every branch conduit junction.
 - b. At every splice point.
 - c. Every 150 feet of conduit run.
 - d. At every streetlight location in accordance with the corresponding Standard Drawing.

- e. At every place where there have been more than 4 conduit sweeps placed since the last junction box
14. Conductors shall be color coded and labeled Per STD 205.

J. Bikeways

1. Bikeways shall be provided on all arterial streets and where the Master Plan of Bikeways shows bike routes.
2. Bikeway facilities shall be designed in accord with the "Planning and Design Criteria for Bikeways in California", latest edition, prepared by the State of California Business and Transportation Agency (Caltrans).

III. WATER SYSTEM

A. General

1. Substantiating engineering calculations for demand, pressure and structural design of pipe shall accompany all plan submittals to the City.
2. Unless otherwise specified, water pipe material shall be polyvinyl chloride or steel (by special permission).
3. All water pipe shall have a minimum working pressure rating of 150 psi for normal operation and shall be capable of withstanding test pressures of 225 psi (1.5 times the working pressure rating) or greater. Higher pressure ratings may be dictated in certain locations within the distribution system. Consult the Utilities Department for further details.
4. Special design and approval is required for pipe fabricated from non-standard pipe materials.

B. Demand Design

1. Water consumption and demand design shall be incorporated into all water system designs where water mains, regulators, fire hydrants and/or pump stations will be added or considered.
 - a. System pressure and demand design shall be as per the table(s) and data listed herein below, except where modified by the Engineer.
 - b. System fire flow delivery shall be provided via design of pipes, pumps and reservoirs sized in accord with the table(s) and data listed herein below, except where modified by the Engineer.

2. Domestic Water Demands - System Demands:

- a. Design flows for determining pipe size, system impacts, and fire flow availability shall be in accord with the table(s) herein below. Utilize the average daily, maximum day and peak hour flows and factors for system pressure design for the appropriate water pressure gradient(s).
 - (1.) Where the water facilities under design are proposed to be in a new pressure gradient or where more than one pressure gradient is involved; consult with the Engineer for more detailed additional requirements.
 - (2.) Refer to the Public Works or Utilities Department for a determination as to the correct water pressure gradient(s) applicable to the design.
- b. The demand table below has been established based on actual water consumption data from water billing, consumption and production records over a period of years.

This table will from time to time be revised to reflect current water consumption trends.
- c. "Maximum Day" and "Peak Hour Demands" shall be determined from the appropriate factor multiplied by the demand value in the "Domestic Water Demands Table".
 - (1.) These factors were determined based upon general water consumption trends in all pressure zones using the available data and trend analysis.
 - (2.) These factors will from time to time be revised to reflect current water consumption trends.

3. Domestic Water Demands Table:

Pressure Gradient		3 yr. Average	Maximum Month	Maximum Month
(Name)	(Number)	Average Daily Flow	Max. Mo. Factor	Average Day Flow
		(GPCD)	(Avg. Day:Max Mo)	GCPD
Coastal Newport	1	420	1.55	651
Big Canyon Reservoir	2	510	1.98	1012
San Joaquin Reservoir	3	508	3.85	1956
Spyglass – Harbor Ridge	4	1072	1.48	1585
Spyglass – Harbor Ridge Booster	5	1080	1.33	1433
Alta Vista Regulated	6	766	1.29	985
Ocean Birch Regulated	7	680	1.26	857
Harbor View Regulated	8	591	1.45	859
Newport Center Regulated	9	3379	2.13	7192
Big Canyon Regulated	10	938	2.36	2214
North Ford Regulated	11	393	1.21	475
Balboa Island	12	324	1.26	409
Lido Island	13	420	1.15	482
Granville Regulated	14	344	1.39	478
Bren Tract Regulated	15	636	1.23	782
Dover Shores Regulated	16	685	1.26	860

- a. "Maximum Day Demand Factor" shall be 1.31.
- b. To determine the "Maximum Day Demand" value, multiply "Maximum Month Average Daily Flow" value by the "Maximum Day Demand Factor".
 - (1.) "Maximum Day Demand" = (1.31) x (Maximum Month; Average Daily Flow Value)
 - (2.) E.g., For "Balboa Island" gradient;

$$\text{"Maximum Day Demand"} = (1.31) \times (409 \text{ gpcd}) = 536 \text{ gpcd}.$$
- c. "Peak Hour Demand Factor" shall be 1.85.
- d. To determine the "Peak Hour Demand" value, multiply the "Maximum Day Demand" value obtained via the procedure above, in subparagraph "b", subsection (1)., by the "Peak Hour Demand Factor".
 - (1.) "Peak Hour Demand" = (1.85) x (Maximum Daily Demand Value)
 - (2.) E.g., For "Balboa Island" gradient;

$$\text{"Peak Hour Demand"} = (1.85) \times (536 \text{ gpcd}) = 992 \text{ gpcd}.$$
 - (3.) "Peak Hour Demand" = (1.85) x (536 gpcd) = 992 gpcd.

4. Fire Flow Requirements:

- a. Design for determining pipe, reservoir and pump sizes for a given fire flow shall be in accord with the "Fire Flow Requirements" table herein below.
 - (1.) Except where the Fire Department has determined that a higher flow requirement is warranted.
 - (2.) In no case shall the public water system installations be sized to provide less than the fire flows stated in the "Fire Flow Requirements" table below. On site requirements may be reduced by the Fire Department where special fire-resistant construction is provided or where a fire sprinkler system is installed, but public system fire flows shall not be reduced below the required flows given below.
- b. Fire flows, reservoirs and pumps shall be designed to meet the appropriate requirements under a "Maximum Day Demand" scenario.

5. Fire Flow Requirements Table:

Use Category Fire Flow Demand (gallons per minute)	Duration (hours)	Number of Hydrants (each)
Single Family 1,000	2	1
Community Facilities 1,500	2	1
Multiple Family & Closely Built Residential (one & two stories) 2,000	2	2
Multiple Family & Closely Built (three stories or more) 2,500	3	2
Multiple Family Attached Residential 13,000	3	2
Commercial (up to two stories) 3,000	3	3
Commercial (over two stories) 5,000	5	4
High-Rise Residential 15,000	5	4
Business Park / Industrial Park 5,000	6	4
Regional Shopping Center 6,000	6	4

- a. This table compiled from ISO and California Public Utilities Commission requirements for public fire flow.

C. System Pressure Design

1. Minimum residual pressures shall be 20 psi on the Maximum Day for all Fire Flow demand designs.
 - a. Maximum static pressure for the purposes of building and fire sprinkler system designs shall be 80 psi.
2. Minimum residual system pressure shall be 40 psi at Peak Hour on the Maximum Day.
3. Maximum static pressure shall be 140 psi, design shall attempt to achieve a maximum pressure of 110 psi, wherever practical.
4. Wherever possible, the water system shall be designed to have normal system pressures between 60 psi and 80 psi respectively at the upper and lower ends of a given pressure gradient.
5. If static pressure exceeds 100 psi, pressure regulators are required on the water mains at specified locations to create a separate system pressure gradient.
 - a. Creation of a new system pressure gradient requires approval of the Engineer and the Utilities Department. Design must be in accord with the City's Water Master Plan and/or must be compatible with existing surrounding pressure gradients and their operation.
6. When the area requiring pressure, reduction has less than 25 residential lots, individual pressure regulators shall be installed and maintained by property owners.
 - a. They shall be installed by the developer and shall become the property and responsibility of the property owner.
 - b. Individual pressure regulators shall be set to maintain 80 psi on the downstream side. Individual pressure regulators shall be as manufactured by ClaVal Company of Costa Mesa, California.

D. Structural Design

1. Pipe shall be designed and specified per ASTM and AWWA standards, current accepted engineering practice and the pipe manufacturer's recommendations, provided that:
 - a. Flexible pipe backfill load shall be the weight of the column of soil directly over the pipe (prism load),

- b. Flexible pipe design deflection shall be a maximum of 3% (DL=1.0).
 - c. Minimum test pressure shall be 225 psi and minimum hydrostatic proof pressure for pipe shall be 300 psi, normal pressure test shall be the pressure rating or class of pipe plus 50 psi.
 - d. Gasketed bell & spigot, mechanical or flanged pipe-to-pipe and pipe-to-fitting joints shall be specified,
 - (1.) Mechanical joints shall be used on all pipe bends on DIP and PVC mains and shall specify retainer glands.
 - (2.) Where flanged joints are specified, bolts, nuts and washers shall be type 316 stainless steel.
 - e. Standard Dimensional Ratio (SDR) or Dimension Ratio (DR) shall be determined and specified considering working pressures, external loads, 100° F operational temperatures, 100-year service life and maximum design deflection of 3% (DL = 1.0), except that:
 - (1.) Minimum thickness for PVC pipe closure pieces shall conform to the requirements of AWWA Standard C-900.
 - (2.) Use of any steel pipe requires special permission of the City Engineer.
 - f. If approved for use, the thickness class of ductile iron shall be determined and specified considering working pressures, external loads, diameter to thickness ratios for $E' = 500$ PSI, service and casting allowances specified in ANSI A21.50, provided that the following minimum thickness criteria is followed:
 - (1.) Minimum thickness for ductile iron pipe shall be class 52 for bell & spigot pipe, class 53 for flanged pipe and class 54 for groove-end pipe.
 - (2.) Pressure thickness classes of pipe outlined in the latest version of AWWA specifications are not recognized and are not approved by the City of Newport Beach.
2. Valve vaults and covers shall be designed and specified per these criteria, Standard Drawings and the manufacturer's recommendations, provided that:
- a. They shall be designed to support HS-20-44 loads, plus impact and earth pressures when situated in an existing or future roadway;
 - b. They shall be designed to support 300 psf plus earth pressure for the non-roadway installations, and;
 - c. Metal parts shall be provided in stainless steel, brass or aluminum materials.

- (1.) Stainless steel covers and materials shall be required for all traffic loading designs.
- (2.) Aluminum or stainless-steel covers may be utilized for parkway or non-traffic designs.

E. Water Mains

1. Mains shall be sized to conform to the City's Water Master Plan. Where fire flow and hydraulic design dictate, the mains shall be increased in size over that specified in the Master Plan but shall not be sized less than that which is specified in the Master Plan.
2. Minimum diameter shall be 6 inches except that dead-end lines serving 6 or less dwelling units not providing fire protection service may be 4 inches. In industrial areas, the minimum diameter shall be 8 inches. Water mains shall not be sized at 10, 14 or 20 inches in diameter as these are non-standard sizes. The next larger, readily available, standard pipe size shall be specified.
3. Locations shall be in accord with STD-101.
 - a. Mains shall not be placed in parkway or median areas without special permission from the Engineer.
4. If future extension is possible, temporary dead ends shall be capped and extended beyond street improvements.
5. Mains shall be looped wherever possible.
6. Depth of cover from finished sub-grade to top of pipe shall be as follows:
 - a. 36 inches for 12-inch diameter and smaller mains. Special permission required If mains are to be less than 36-Inches to avoid other utility conflicts.
 - b. Mains 12 inches in diameter and larger in arterial streets require special design.
 - c. PVC and other flexible pipe materials require special design and special permission from both the Utilities Department and the Engineer for approval.
7. Design flows shall ordinarily be based on Maximum Day plus Fire Flow or Peak Hour, whichever is greater.
 - a. For transmission mains 12 inches or larger, design head loss shall not exceed 5 feet per 1,000 linear feet.
 - b. For distribution mains 10 inches or smaller, design velocity shall not exceed 8

ft./sec.

- c. Fire flow velocity in mains shall be at least 10 fps but less than 10 ft./sec.
- d. Fire flow velocity in fire service connection pipes shall be at least 25 fps but less than 25 ft./sec.
- 8. Thrust blocks shall be installed in accord with STD-516(A-B). If applicable, special design is required.
- 9. All mains 12 inches and larger shall have a profile shown on the improvement plans. Other plans for mains may require profiles at the request of the Engineer.
 - a. Determinate factors will include the complexity of the installation proposed, the number and proximity of adjacent utility conduits the need for greater detail on the construction plans for clarity and ease of contractor installation.
- 10. All high points shall be equipped with air and vacuum release valve assemblies in accord with STD-517(A-B).
- 11. Maximum deflection allowable on curved alignments for pipe shall be in accord with the pipe manufacturer's recommendations.
- 12. Pipe deflections for short radius curves and angle points shall normally be accomplished by means of standard fittings, the location and type of which shall be detailed on the plans.
- 13. All ductile iron pipe and fittings shall be encased with a loose 8 mil thick polyethylene wrap. All pipe shall be sand bedded before pipe is laid in trench. Refer to City STD-323.

F. Water Valves

- 1. Maximum valve spacing shall be:
 - a. Residential800'
 - b. Commercial500'
 - c. Transmission Mains1300'
 - d. Valves shall be located at every junction of pipe in the distribution system network. As a rule of thumb, there should be no fewer than the number of pipes joined less one. (e.g., at a cross intersection of pipes, there are 4 pipes, therefore, a minimum of 3 valves should be installed.)

2. Valve location requirements:
 - a. On the prolongation of a property line, preferably at BCR's or ECR's.
 - b. Flanged to main at cul-de-sac, private drive, easement, or alley intersections at other locations.
3. Butterfly valves shall be used on all mains with a diameter of 12 inches or greater. Valves shall be epoxy lined. Lining shall be factory applied to sandblasted SSPC-10 "near white" surface via electrostatic application and shall be thermal fusion bonded to the surface. Minimum dry film thickness of lining shall be 5 mils. Brush on epoxy coating systems for valves shall not be considered an acceptable alternate coating.
4. Resilient wedge gate pattern valves may be used in lieu of butterfly valves on water mains and pipelines less than 12 inches in diameter.
 - a. Tapping valves shall be resilient wedge pattern. The make, model and manufacturer of the valves must be on the Utilities Department's approved list.
 - b. Resilient wedge valves may be used on valves larger than 12" with prior approval from Utilities Department.
 - c. Resilient wedge valves shall have valve discs fully encapsulated, shall be epoxy lined and coated, shall have type 316 stainless steel stem and bolted parts.
5. Butterfly valves and gate valves shall not be used on mains where operating pressures exceed 150 psi.
6. Pressures in excess of 150 psi require the use of lubricated plug valves. Such valves shall be approved in advance by the Engineer.
8. A valve anchor shall be installed in accord with STD-516(C-E). If not applicable, special design is required.
9. Except those installed in vaults, all valves installed with greater than 4H feet of cover (from street surface to top of operating nut) shall have a valve operator nut extension installed in accord with City specifications.
10. Buried valves which are normally closed shall have 4" x 4" redwood posts inserted in the valve operator riser can.
 - a. Redwood post shall be painted white and shall be cut to a length such that it will rest on the operator nut of the valve and extend to within 4 inches of the bottom of the valve riser box without bearing against any part of it.

- b. Inscribed onto a brass tag nailed or screwed onto the end of the post shall be the message, "*normally closed valve - do not open*".

G. Valve Vaults

1. Vaults shall be reinforced concrete and equipped with the following:
 - a. Spring-open-assist hinged access opening with minimum 30" x 36" dimension and OSHA dimensioned ladder.
 - b. Removable manhole covers at least 30 inches in diameter centered over the valve or regulator, larger if necessary. The valve must fit thru the clear opening of the manhole over it.
 - c. Air vents high (1 ft. from the vault ceiling) and low (1 ft. from the vault floor) through the vault walls, duct shall be PVC schedule 40 duct pipe, fittings, and riser assemblies.
 - d. Floor drainage consisting of a round, recessed sump of 12-inch minimum diameter. Sump shall be located at the low point of the vault floor which shall be near the access opening and shall have a cast iron grate cover.
 - e. Victaulic and flexible couplings with banded restraint opposite sides of each valve or regulator. Couplings shall have stainless steel connecting hardware and bolts.
2. Vaults to receive thrust or heavy traffic loading require special design and special permission. Piping shall be designed to prevent thrust against vault walls wherever possible.
3. Additional requirements and more detailed specifications are applicable. Contact the Utilities Department for these requirements.
 - a. Refer to the written specifications, "*Valve Vault Specifications*", dated, July 1994.

H. Fire Hydrants

1. Fire hydrant spacing shall be as follows:
 - a. Desired spacing is 300 feet, with 500 feet maximum for low density residential.
 - b. Desired spacing is 300 feet, with 400 feet maximum for commercial, multiple, or closely built residential and industrial.
2. Location of hydrants shall be as follows:
 - a. Within 3 feet of the prolongation of the BC or EC radial or property line on the

tangent curb.

- b. On the same side of the street as the main.
 - c. Off the largest main at the intersection of mains where the larger main is not a transmission main.
3. Hydrants shall be installed in accord with STD-501. If not applicable, special design is required.
 4. If a cul-de-sac is over 350 feet long, a fire hydrant shall be installed approximately 100 feet from the closed end of the street.
 5. Hydrants shall not be connected to mains larger than 12 inches in diameter without prior approval of the Utilities Department.
 6. Fire Marshall may require commercial type or double steamer outlet fire hydrants in non-residential or high-density locations.

I. Domestic Water Services

1. One separate service shall be installed for each lot or condominium unit.
 - a. New developments of duplex, triplex and four-plex structures require individual water service connections, unless otherwise approved by the Public Works Department.
 - b. New apartment developments require separate water service connections for each apartment unit, unless otherwise approved by the Public Works and Utilities Departments.
2. Minimum size service shall be 1-inch diameter. Copper services shall be installed in accord with the applicable City standards.
3. Services shall be installed in accord with STD-502 or 503, and for multiple services use STD-504. If not applicable, a special design is required and must be approved by the Public Works Department and the Utilities Department.
4. Where solder joints are specified, low lead-content, silver solder material shall be used.
5. Copper flared joints may not be used on service pipe or fittings 1H inches diameter or larger. These larger sizes require solder or threaded connections only.
6. Compression type couplings, fittings and connectors are expressly prohibited for all sizes of water service piping.

J. Fire Service or Fire Sprinkler Connections

1. Fire service connections shall be constructed per the applicable City Standard Drawings.
2. Exclusive water facility easements shall be provided for all sprinkler and fire service connection piping and backflow devices. Refer to the applicable Standard Drawing for minimum dimensions.
3. Siamese pumper connections and any other required appurtenant piping or controls shall be installed downstream of the backflow device.
 - a. Downstream of the City-owned portion of the backflow assembly and the below-grade 90° bend on the private side of the backflow device.
4. Calculations for fire sprinkler designs shall be submitted to the Building and Fire Departments for review.
5. The level of backflow protection shall be determined by the City Public Works and Utilities Departments.
 - a. The minimum level of backflow prevention for a fire service or fire sprinkler connection shall be a double-check device.
 - b. A higher level of backflow protection may be required. Refer to the Public Works Department for more detailed information about the City's *Backflow and Cross Connection Control Program*.
6. Reduced Pressure Principal (RPP-type) backflow prevention devices shall be required wherever:
 - a. There is a private booster pumping system on the site being served.
 - b. There are more than one fire service connection to the same parcel or site.
 - c. The building being serviced by the connection is 3-stories in height or greater.
 - d. There are hazardous chemicals or materials either stored or used on the site being served by the connection.
 - e. There is a private storage or fire protection reservoir on the site being served by the connection.
 - f. The connection serves a marina or boat dock slip.

K. Pressure Booster Pump Stations (Private Domestic & Private Fire)

1. Pressure boosting stations shall be permitted only as a temporary installation by special permission from the Public Works Department.
 - a. Where such installations are allowed, they shall be served by metered service connections having both RPP type backflow prevention assembly and pressure sustaining valve equipment.
 - (1.) These installations require special design and review by the Utilities and the Public Works Departments.
 - b. Backflow device shall be reduced pressure principle (RPP) type in accord with the applicable City standards.

IV. SEWER SYSTEM

A. Mains

1. General
 - a. Substantiating engineering calculations for sizing pipe and structural designs shall accompany all plan submittals.
 - b. Minimum size shall be 8 inches inside diameter.
 - c. Design flow shall not exceed half of full depth.
 - d. Pipe joints shall be elastomeric compression type unless otherwise specified.
 - e. Pipe material shall be SDR-35 PVC or standard strength VCP.
 - f. HDPE, ductile iron, RPM or filament bonded PVC flexible pipe materials can only be used upon special approval by the Utilities Department.
 - g. Structural design shall be per water system requirements listed in Section III D. "Structural Pipe Design", except that:
 - (1.) Minimum test pressure shall be per the *Standard Specifications*.
 - (2.) Minimum factor of safety for VCP shall be 1.5.
 - h. PVC fittings shall be prefabricated (molded) full-body fittings.
 - i. Backfill shall be in conformance with the *Standard Specifications* Section 306-1.3, except that relative compaction shall be 90% minimum.

j. Pipe Bedding

- (1.) VCP shall be bedded in conformance with section 306-1.2.1 of the *Standard Specifications*. PVC shall be bedded in 3/4-inch crushed rock.
- (2.) Pipe bedding and backfill shall be done in accord with the applicable portions of City STD-323.

2. Locations

- a. Alleys - Mains shall be offset 3.0 feet minimum from centerline to clear gutter. The offset shall be to the opposite side of the alley from any existing or proposed water main.
 - (1.) Clearance between sewer and water mains shall be in strict accord with the California DOHS requirements for "water and sewer separation."
 - (a.) Horizontal clearance shall be at least 10 ft. wall to wall.
 - (b.) Horizontal clearances less than 10 ft., but greater than 4 ft. may be allowed with special material construction. Utilities Department and State DOHS written permission is mandatory.
 - (2.) Clearance between sewer and utility conduits other than water shall be at least 2 ft. horizontal and 1 ft. vertical.
- b. Streets - Main locations shall be in accord with STD-101.
- c. Sewers in streets with more than 84 feet of right-of-way width require special design.
- d. Extend and cap all dead ends beyond pavement limits. Refer to STD-410.

3. Minimum Gravity Sewer Slopes expressed in units of feet per foot:

Pipe Size (in.)	Minimum Slope (ft./ft.)	Preferred Slope (ft./ft.)
8"	0.0032	0.0040
10"	0.0026	0.0032
12"	0.0020	0.0032

4. Gravity Sewer Hydraulic Criteria

- a. Hydraulic analysis shall be performed using Manning's Equation in the US

Customary Unit System. Long-hand, manual calculations may be requested for City review on all sewer designs.

- (1.) Manning's Roughness coefficient shall not be less than 0.013 for any sewer main. ($n \geq 0.013$)
- (2.) Flows shall be first analyzed as "steady, uniform, non-turbulent" flow.

b. Velocity Criteria

- (1.) Minimum design velocity shall be 2.0 ft./sec.
- (2.) Maximum velocity shall be 6.0 ft./sec. Analysis shall be performed to determine whether flow regime is "sub-critical" or "super-critical".
 - (a.) Initial critical flow analysis shall be via Froude Number (f).
 - (b.) Depth of flow limit requirement shall be for "sub-critical" flow depth.
- (3.) Froude Number (f) shall be determined from the following equation:

$$f = \frac{v}{\sqrt{gd}} \quad \text{where the variables in the equation are:}$$

fis the Froude Number

vis the velocity of the waste stream

gis the gravitational constant (32.2 ft/sec²)

dis the depth of flow (subcritical depth)

5. Sewer Hydraulic Loading Design

- a. Wastewater hydraulic calculations shall be performed utilizing the quantities of wastewater from the table below, (these should be considered design minimums: they are based on actual field flow monitoring tests):

Development Size (dwelling units)	Average Flow (gallons per day)	Peaking Factor (dimensionless)	Peak Flow (gallons per day)
0 to 75	315	3.80	1,200
76 to 150	285	3.65	1,040
151 to 250	265	3.40	900
250 & up	245	3.15	770

- b. Certain developments with special circumstances may require design to consider flows higher than those in the table above. In no case shall the design flows be less than the amounts determined by the table above.

B. Manholes

Manholes shall be designed in accord with City of Newport Beach Standards, Standard Drawings and these Design Criteria. Manholes are required:

1. At all changes in slope.
2. At all changes in direction.
 - a. Horizontal curves for radii in excess of 150 feet may be used in areas without services only by the special approval of both the Utilities Department and the Public Works Department and only where straight sewer main runs are infeasible because of interference with other underground utilities.
3. At all intersections of mains. Match crown lines. Use 0.20-foot drop through manhole per City STD-400.
4. At all intersections between mains and laterals sized 8 inches and larger.
5. Minimum spacing is 300 feet; maximum spacing is 400 feet.
6. At the ends of dead-end mains greater than 200 feet in length.
7. To have a special lining (either fiberglass or T-Lock) installed wherever:
 - a. Any sewer main connecting to the manhole has a slope greater than 7%.
 - b. Any change in slope of 5% or greater occurs between the upstream and the downstream manhole.

C. Terminal Cleanouts

1. Are required at ends of all mains where it is impractical or impossible to construct a sewer manhole.
2. May be used at other locations only by special permission of the Public Works Department.

D. Laterals

Each residential dwelling unit, residence, condominium, or rental unit (for buildings with four or less units) shall have an individual lateral, unless otherwise approved by the Public Works Department.

1. Size

- a. Single family, apartment or condominium units shall be 4 inches minimum diameter per City STD-406 unless slope is less than 1/4 inch per foot. (In which case the lateral shall be upsized to 6 inches diameter.)
- b. All other laterals shall be a minimum of 6 inches in diameter.

2. Location

- a. At right angles or radial to street right-of-way.
 - b. Center of lot frontage or 5 feet toward the center of the lot from the downstream lot line. All lateral locations shall be shown and dimensioned or stationed on the construction plans.
 - c. In commercial developments, laterals shall connect the main line at manholes wherever possible.
 - d. All lateral connections 8 inches and larger shall connect to the sewer main at manholes.
 - e. All connections to existing manholes shall be mechanically saw cored and the joints made shall be sealed closed around the installed pipe using a non-shrink concrete grout or epoxy material.
3. Minimum depth of lateral pipe cover shall be 4 feet below finished grade at property line for level lots or lots sloping toward street. Special design is required for lots sloping away from street.
4. Cleanout shall be provided at property line in accord with STD-406 on all lateral connections 6 inches in diameter and smaller. 8-inch diameter laterals and larger require manholes as cleanouts at or near the property line.

E. Wastewater Pump Stations

1. Special Design Required

- a. In all cases where a wastewater lift station is required, special design and review by City is required.

2. General Design Requirements

- a. Pumping stations shall be of the "dry-pit/wet-well" type constructed of highly reinforced concrete.
- b. Stations shall be equipped with a double compartment wet well.

- c. Stations shall have an approved high water and power failure alarm system with telemetering compatible with existing City telemetry system.
- d. Station design shall include painted dry-pit room interior, painted, lined and coated machinery, piping and fittings. Properly lined interior wet-well surface . Waterproofed exterior station coating. Detailed specifications shall be prepared and approved by City for all required painting, coating, lining and related coating surface preparations.
- e. City shall be provided with complete manufacturer's brochures, technical data, operational data and maintenance manuals for all equipment and controls.
- f. An emergency bypass connection shall be provided to allow connection of the City's portable pumping equipment to a suction point and pump to the downstream side of the lift station.
- g. Station shall be a multiple pump unit station. Four (4) pump units is the desired number. Two (2) units shall be sized to run at peak flow conditions independent of the other. Two (2) smaller pump units shall be sized to operate under average flow conditions.

3. Structural

- a. Structures shall be highly reinforced concrete. Reinforcing steel shall be epoxy coated.
- b. In residential areas, structures shall be primarily below ground.
- c. Cast-in-place steps to access the lower portions of the station shall be poured integrally with the station.
- d. Spring open-assist access hatches with all metallic parts provided in type 316 stainless steel material.
- e. Provide a roof hatch or manhole suitable for removal and replacement of major equipment components. Each pumping unit shall have an opening centered over it. (With the exception of the submersible sump pump.)
- f. Provide equipment-lifting eyes in roof of the station.
- g. All structures shall have ample working room around machinery. Minimum clearance from pumping units to wall shall be 48 inches or greater as needed for adequate maintenance.
- h. Design of structures shall include waterproofing and a subdrain system.

- i. Interior station metallic components shall be type 316 stainless steel wherever possible. Other components shall be hot dipped galvanized after fabrication.

3. Pumps

- a. Pumping units shall be close coupled, vertically mounted, high solids capacity, vortex type pumps. Motors shall be mounted vertical and shall be of the open drip proof type.
 - (1.) Pumps shall be capable of passing a 3-inch diameter solid sphere.
 - (2.) Pump impellers shall be fabricated from stainless steel. Cast iron or bronze impellers shall not be used.
 - (3.) Pump frame and bowl casing may be manufactured from cast or ductile iron materials.
- b. Minimum desirable pump suction diameter is 4 inches
- c. Maximum suction velocity is 4 ft./sec.
- d. Maximum discharge velocity is 8 ft./sec. Minimum discharge velocity shall be 2 ft./sec.
 - (1.) Special permission may be granted for lower discharge velocity provided the station's force main is properly sized for minimum velocity.

4. Mechanical and Piping

- a. All design shall satisfy the minimum requirements of the State Health Code and OSHA safety regulations.
- b. All dry-pit room piping shall be ductile iron pipe and fittings swedge-lined with polypropylene. Refer to project detailed specifications of Polypropylene lined pipe and fittings in accord with the Dow Chemical Company™, swedge-lining process.
- c. All pipe and fittings, except where otherwise noted on the plans shall be flanged. Flange pattern shall be ANSI 150 lbs. pattern as per AWWA water pipe specifications.
 - (1.) Flange joints shall be connected with type 316 stainless steel hex-head nuts and bolts.
 - (2.) Flange gaskets, where required, shall be full faced, nylon fiber impregnated rubber gasket material.

- (3.) Flanged, thrust bearing, pipe-to-wall sleeves shall be provided for connection from wet-well to dry-pit for each pumping unit.
- (4.) Suction and discharge of each pumping unit shall have a restrained flexible pipe connection which allows for easy assembly and disassembly of the pumping unit and connecting piping.
 - (a.) Locate a flexible coupling between the suction valve and pumping unit. Coupling shall be epoxy lined and have stainless steel hardware. Install it with sufficient space to slide it away from pipe joint to allow for easy disassembly. Provide approved harness restraint assembly, i.e., eye bolts thru adjacent pipe flanges with stainless steel all thread rod.
 - (b.) Locate a Victaulic grooved pipe coupling on the discharge side of the pumping unit between the pump and the check valve. Coupling shall have stainless steel connecting hardware.
- (5.) Pump station bypass piping connection is required. A quick-connect design shall be designed. Submit drawings for Engineer approval.
- (6.) All discharge piping and other conduit connections from the station thru the walls shall be water-tight and shall be made utilizing wall sleeve with "weep-ring" and Link-seal™ type mechanical elastomeric annular discharge pipe seal.
- (7.) All equipment mounts (floor, ceiling & wall) shall be fabricated from approved type 316 stainless steel hardware.
 - (a.) Pipe supports shall be in accord with the City's STD-521.
- d. Provide an automatic actuating submersible type electric sump pump (slope floor to sump recess) with a check valve and an isolation valve in its discharge pipe to the station wet well.
 - (1.) Sump pump discharge piping shall be schedule 80 glue-joint PVC. Isolation valve shall be PVC ball valve.
- e. Pump design capacity shall be based on average daily flow for the "stripper" pump and average day peak hour flow for the main pump units. Each pump shall have a second, identically designed unit as an alternate duty pump.
 - (1.) Pumps shall be sized utilizing the sewer loading table in Section IV, A, 5, a., of these "Design Criteria".
 - (2.) Pumps should cycle no more than four (4) times per hour under normal

design conditions and no more than six (6) times per hour under more extreme conditions.

- f. All isolation valves shall be plug valves with wrench or worm gear hand wheel operator.
 - (1.) Valves shall be flanged end.
 - (2.) Valve seats and discs shall be type 316 stainless steel.
 - (3.) Special linings and coatings are required. Specifications for lining and coating may vary by application and location. Refer to the Engineer for details on applicable specifications.
 - (4.) Examples of acceptable valve include:
 - (a.) DeZuric eccentric plug valve
 - (b.) Rockwell-Nordstrom lubricated plug valve
 - (c.) Homestead "175 Ballcentric" valve
- g. All stations shall have a 1-inch diameter metered fresh water service adjacent to the station. Refer to STD-502.
 - (1.) RPP type backflow prevention device is required on all domestic water services and connections near the station. Refer to STD-519-A.
- h. Make provision for standby emergency power connection for use during power outages.
 - (1.) An electrical transfer switch mechanism of 60-amp capacity (higher where appropriate) shall be wired and mounted in the stations electrical control panel per City electrical standards.
- i. Sump pumps and air blowers shall be provided and shall be easily removable and accessible for maintenance.
 - (1.) Blower shall be wall mounted California Turbo™ brand model of a size appropriate to evacuate the air in the dry-pit at least one time every six (6) minutes.
 - (2.) Blowers shall be designed for continuous operation.
 - (3.) Ventilation design shall provide for a maximum indoor space temperature of 105° F.
- j. Metallic hardware, pumping units or other structures and supports shall not be mounted directly on the station floor; provide high strength epoxy concrete

pedestals of 2-inch minimum height.

- k. Provide a 1-inch PVC schedule 40, stuffing box drain line from each pump to the station sump drain. All conduit clips and mounts shall be type 316 stainless steel.
- l. Piping layout shall provide for easy access to pumps for maintenance. Minimum clearance between pump centerlines shall be 5 feet.
- m. Provide removable safety guards for all rotating parts of station equipment.
- n. Provide flanged check valves on all pumping unit discharge lines. Discharge check valve shall be equipped with external arm & outside spring operated. Valve should be oriented on a horizontal run of piping where feasible.
 - (1.) Valve shaft, seat ring and all other internal metallic parts shall be type 316 stainless steel.
 - (2.) Valve shall be internally lined with thermal fusion bonded epoxy coating. Minimum dry film thickness shall be 6 mils.

5. Pump Actuation & Station Telemetry

- a. Provide manual selector switch to alternate lead lag pump for both the "stripper" and main pumping units.
- b. Provide a "hand-off-automatic" selector switch for each pumping unit.
- c. Provide an automatic alternating unit selector switch with a manual override switch for each pumping unit. Each unit shall have a totalizing, digital reading, panel mounted, watt hour meter.
 - (1.) Provide a defeat feature to override the automatic selector function. This allows one unit to be taken out of service for periodic maintenance without creating an alarm condition.
- d. The control mechanism shall be of the air bubbler control type. Detailed specifications are available from the City Utilities Department.
- e. Provide a mercury float switch pump actuation assembly as a back-up system to the bubbler control system.
 - (1.) Mount the switch assembly in the wet well above the normal high water level. Special design of the mounting bracket is required. Bracket shall be entirely type 316, stainless steel.

6. Electrical

- a. All electrical installations shall comply with the National Electrical Code and Division of Industrial Safety requirements.
- b. Use enclosed prefabricated stainless-steel electrical panels concrete slab pedestal mounted above ground level outside the pump station.
- c. Provide elapsed time watt-hour meters for all pumping units.
 - (1.) Reset type, shall be specified.
- d. Provide explosion-proof electrical appurtenances below ground and an approved type disconnect with time delay.
- e. Provide blower and heater system within main electrical panels.
- f. Provide manual switch adjacent to each motor to override the control panel. Switch shall be mounted at motor height within 3 feet of the unit's motor.
- h. Adequate lighting and electrical outlets shall be provided. Outlets shall be mounted at motor height. Light enclosures shall be rated NEMA "explosion-proof".
- i. General control panel wiring requirements.
 - (1.) All wiring shall be color coded. Coding shall be in accord with the color chart below:

(a.) Coding chart:

color	function	Phase	voltage
purple	telemetry	single	12 volt
red	hot	single	120 volt
white	neutral	single	120 volt
red	hot	single	240 volt
black	hot	single	240 volt
black	leg one	three	240 volt
blue	leg two	three	240 volt
red	leg three	three	240 volt
white	neutral	three	240 volt
green	ground	three	240 volt

- (2.) Wiring shall be stranded, THWN type, insulated wire.

- (3.) All wiring shall be bundled where appropriate and harnessed together with plastic tie wraps at regular intervals.
- (4.) Length runs or bulky bundles of wiring shall be run in plastic raceways inside control panel enclosures from one component to another.
- (5.) Wire shall be labeled with ID tags at both ends of the wire.
- (6.) All three-phase wiring and all high voltage (over 120 volts) shall be specially labeled as such.

7. Painting

a. General

- (1.) All painting shall consist of the multi-coat paint systems, approved or specified by the Engineer, applied in a manner to provide a uniform thickness and smooth appearance. Minimum dry film thickness shall be as specified below.
- (2.) Surface preparation shall be as per the specifications of the "Steel Structures Painting Council", hereinafter SSPC.
- (3.) Paint shall be abrasion, sulfide and mildew resistant.

b. Surface preparation

- (1.) All surfaces to receive paint shall be properly cleaned and washed of all loose material and dirt.
- (2.) Surfaces with oily or greasy substances on the surface shall be solvent washed.
- (3.) New concrete shall be "brush-off" sandblasted (SSPC-5), acid etched, cleaned and dried.
- (4.) Existing (older than 6 weeks) unpainted concrete or previously painted concrete shall be "commercial grade" sandblasted (SSPC-6), acid etched, cleaned and dried.

c. Approved painting & coating systems

- (1.) Interior walls and ceilings shall be painted with High Gloss White, Rustoleum color # 2766.
- (2.) Exterior walls, below grade shall receive three (3) coats of hot-mop applied asphalt coal-tar enamel. Minimum total dry film thickness shall be 15 mils.

- (3.) Exterior walls, above grade, shall receive two (2) coats of Weather Clad Sage, Sherwin Williams color # B42G116. Minimum total dry film thickness shall be 4 mils.
- (4.) All equipment, piping, valves, fittings, motor cases, conduits, cabinets, machinery, etc., shall be painted with two (2) coats of Federal Safety Green, Rustoleum color # 933. Minimum total dry-film thickness shall be 4 mils.

V. DRAINAGE

A. General

1. All drainage design shall be in accord with the "*latest County of Orange Public Facilities and Resources Department (PFRD) Criteria*".
2. Hydrologic and hydraulic design calculations and flow maps for all tributary areas shall be submitted with plans.
3. The use of underground storm drain systems shall be required:
 - a. When flooding or street overflow will cause serious damage.
 - b. When future upstream development will cause drainage problems.
 - c. When existing drainage facilities are adjacent to proposed development.
 - d. At all intersections and at mid-block on arterial streets when the width of storm flow in the street exceeds one travel lane (based on a 10-year storm).
4. The use of underground storm drain systems shall be investigated:
 - a. When the storm water level in the street at the design storm flow is within 0.20 feet of the top of curb.
 - b. When the storm water velocity exceeds 8 ft./sec.
 - c. When the storm water travels over 1000 feet overland.
5. Open drainage ditches shall not be permitted in public right-of-way.
6. The type of drainage facility and right-of-way shall be provided from the development to a satisfactory point of disposal.
7. Permanent drainage facilities and right-of-way shall be provided from the development to a satisfactory point of disposal.

8. The usage of cross gutters on arterials and collector streets will not be allowed.
9. The minimum velocity in a pipe flowing full shall be 2 ft./sec.
10. Drainage and grading shall consider water quality and shall be in conformance with City Council policies L-18 & L-22.
11. All private drain systems that discharge to a public right of way, storm drain, or body of water shall utilize water quality devices and BMPs as approved by the Public Works and Building Departments.

B. Design

1. The rational method outlined in the Hydrology Manual by the Orange County PFRD shall be used when applicable.
2. Collectors within a small area (100 acres or less) shall be designed to a 10-year storm provided no serious damage or danger will result from occasional flooding.
3. Collectors within a larger area (greater than 100 acres) shall be designed to a 25-year storm provided no serious damage or danger will result from occasional flooding.
4. Main channels serving major drainage areas shall be designed for a 50-year storm.
5. Special consideration shall be given to drainage of all sump areas. Use a minimum of a 25-year storm for design.
6. Water should be intercepted at sufficient intervals to maintain the following favorable conditions for vehicles and pedestrians.
 - a. 10-year storm Maintain one unflooded traffic lane.
 - b. 25-year storm Maintain one half of one unflooded traffic lane.
 - c. 50-year storm Prevent water from ponding beyond property line.
 - d. 25-year storm or less Keep depth velocity product (expressed in feet and feet per second) from exceeding six. Values in excess of six create a hazardous condition for pedestrian traffic.
7. Storm drains shall be designed for open channel flow.

C. Curb Inlets and Connectors

1. All curb inlets shall be designed in accord with the City's Standard Drawings.
2. Curb inlets shall be located to eliminate, whenever possible, open concrete cross gutters.
3. Minimum connector pipe inside diameter shall be 18 inches. Median drains shall have a minimum inside diameter of 12 inches.
4. Inlet sizing shall be based on City of Los Angeles, or similar approved design charts.

D. Storm Drainpipe

1. Location shall be in accord with STD-101.
2. Minimum size of inside diameter of pipe shall be 18 inches.
3. The material for storm drains shall be reinforced concrete pipe.
4. Reinforced concrete pipe shall be designed per the Orange County Flood Control District Manual and shall have a load factor of 1.5 (do not use OCFCD D-Load tables), and the minimum safety factor shall be 1.25.
 - a. RCP for use in sandy soils shall contain rubber gasketed type joints.
5. Manhole spacing

Conduit Diameter	Spacing
30" or less.....	300'
30" - 45"	400'
45" or greater.....	500'

6. Extra bar cover is required where design velocity is greater than 20 ft./sec.

END

CITY OF NEWPORT BEACH PUBLIC WORKS DEPARTMENT

STANDARD DRAWINGS
FOR USE IN CONJUNCTION WITH THE
STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

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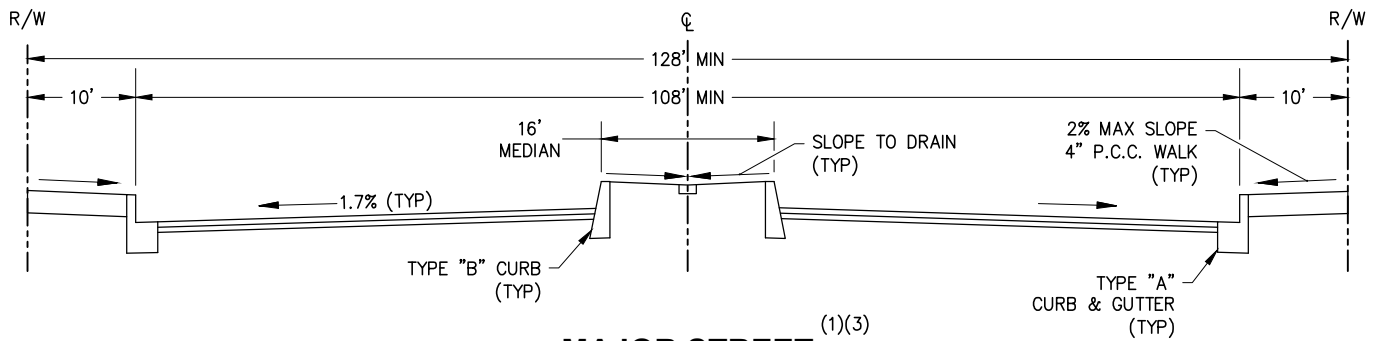
Parking Lot Standards

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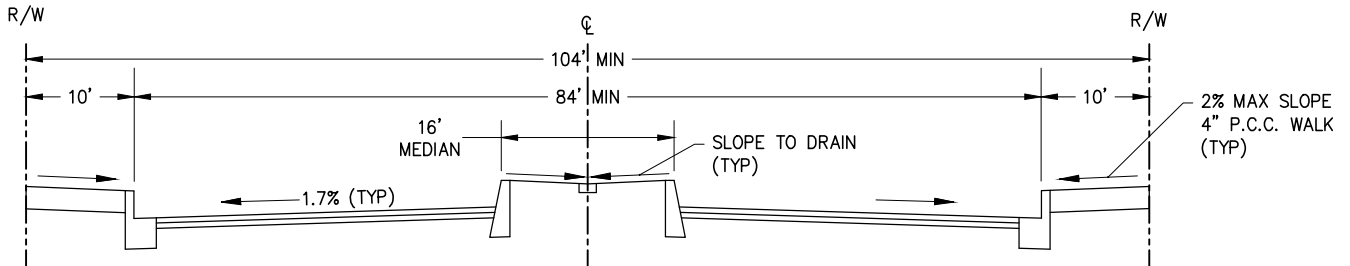
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Traffic Standards

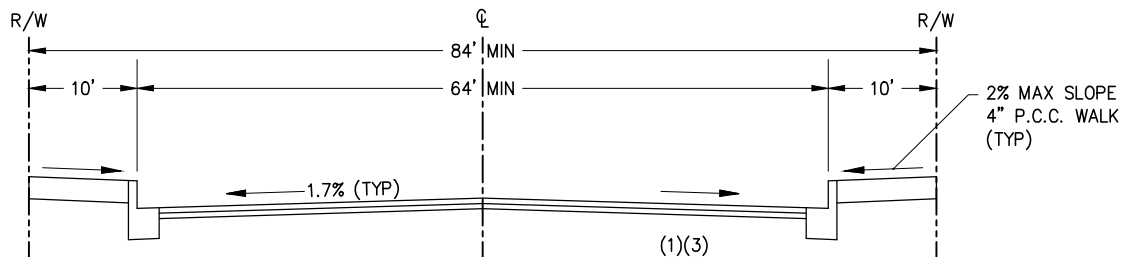
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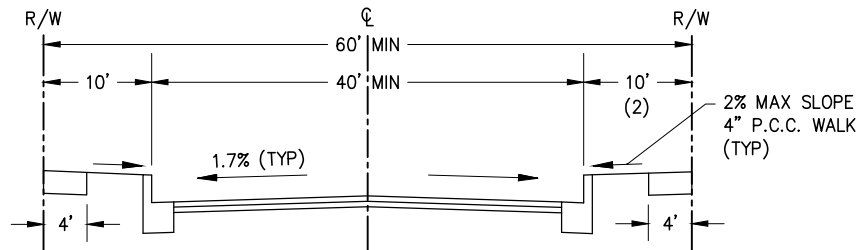
MAJOR STREET



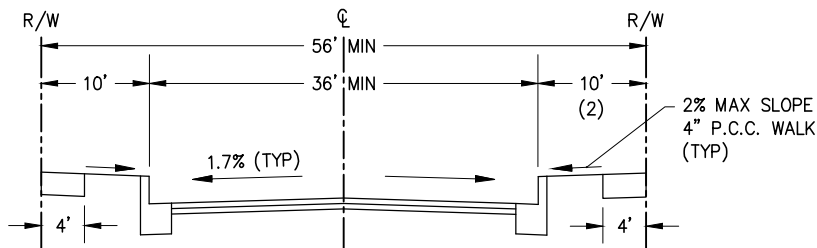
PRIMARY STREET



SECONDARY STREET



COMMUTER STREET



CUL-DE-SAC, SINGLE FRONTAGE OR LOOP STREET

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 100-L

NOTES:

- STREETS MAY REQUIRE SPECIAL DESIGN.
- MAY BE REDUCED TO 6-FT IF NO SIDEWALK IS REQUIRED.
- WHERE BICYCLE TRAIL DESIGNATED, SIDEWALK SHALL BE ADJUSTED AS SHOWN ON STD 120.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

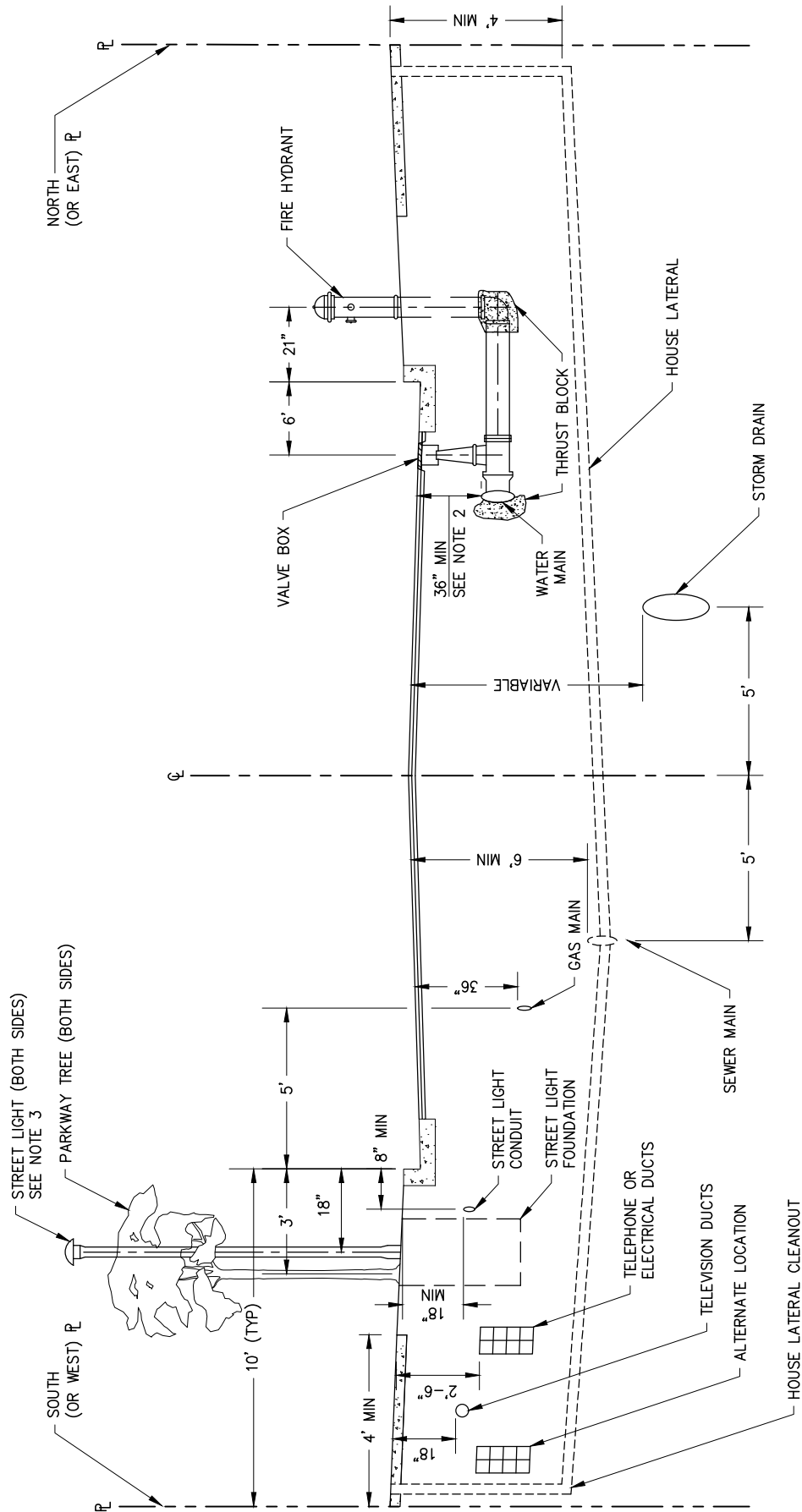
DATE: 11/3/2020

STANDARD STREET WIDTHS

STANDARD DRAWING NO.

100

SHEET 1 OF 1



NOTES:

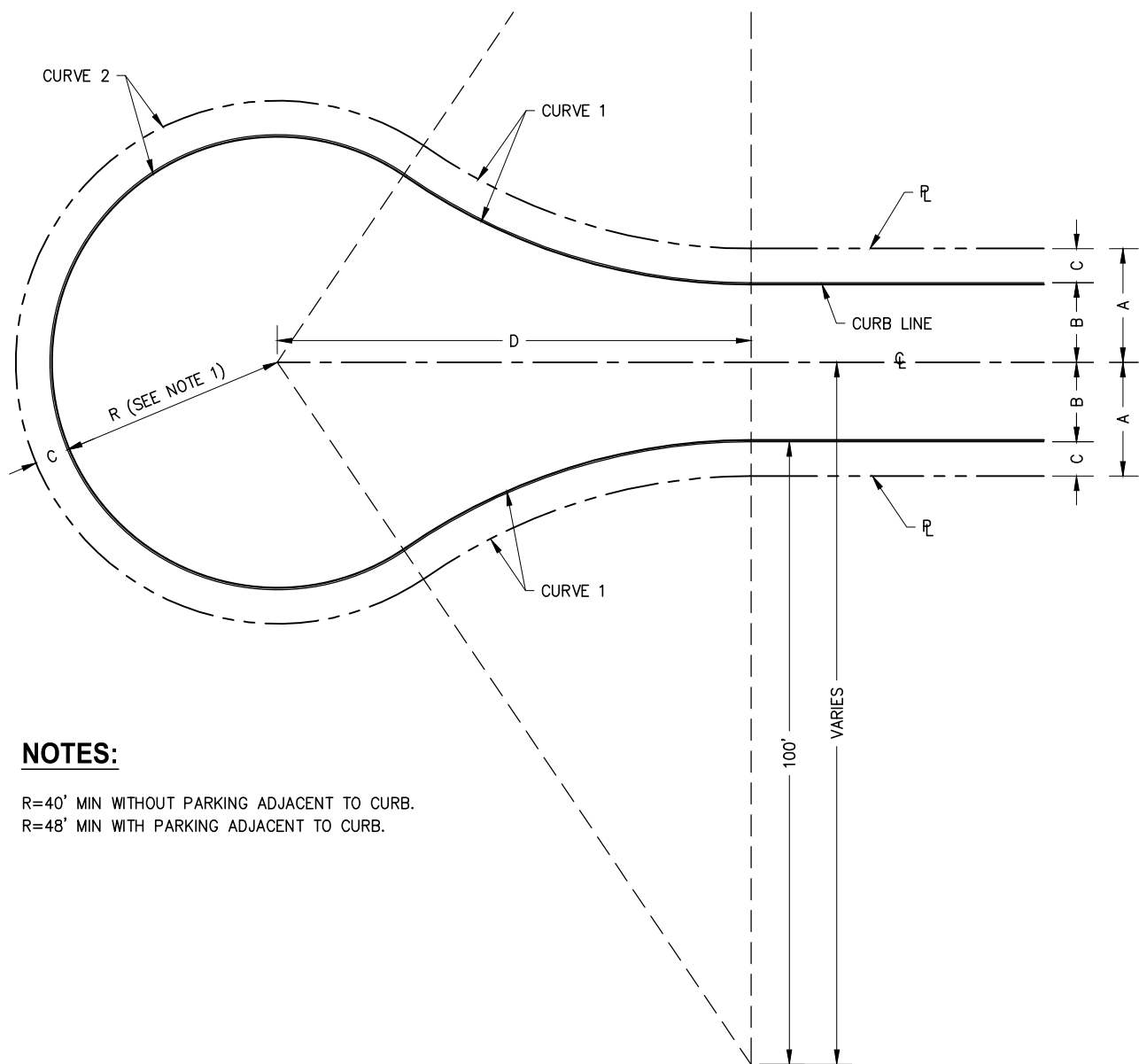
1. LOCATION OF WATER MAIN WILL GOVERN THE LOCATION OF UTILITIES. NORMALLY THE WATER MAIN WILL BE LOCATED ON THE NORTH OR EAST SIDE OF THE STREET.
2. PROVIDE 36" MIN OF COVER FROM FINISHED GRADE FOR 12" AND SMALLER MAINS. MAINS LARGER THAN 12", MAINS IN ARTERIAL STREETS, P.V.C., H.D.P.E. AND OTHER FLEXIBLE PIPE REQUIRE SPECIAL DESIGN.
3. STREET LIGHTS MAY BE LOCATED AT BACK OF WALK WHEN SIDEWALK IS ADJACENT TO THE CURB, UPON APPROVAL OF THE PUBLIC WORKS DEPARTMENT.
4. UTILITY VENT PIPES, METER SERVICE POINTS AND ANY OTHER ABOVE-GROUND FACILITIES SHALL BE INSTALLED IN THE UNPAVED PARKWAY OR AT THE BACK OF SIDEWALK.

APP. *James M. Hinkle* 51568 11/24/2020
 CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI	STANDARD LOCATIONS OF UNDERGROUND UTILITIES	101	STANDARD DRAWING NO. SHEET 1 OF 1
DATE: 11/3/2020			



NOTES:

1. R=40' MIN WITHOUT PARKING ADJACENT TO CURB.
R=48' MIN WITH PARKING ADJACENT TO CURB.

CURVE 1

CASE	A	B	C	D	Δ	CURB LINE			PROPERTY LINE		
						R	L	T	R	L	T
I	20'	14'	6'	81.26'	35°28'59"	100'	61.93'	31.99'	94'	58.21'	30.07'
II	25'	18'	7'	75.34'	32°33'25"	100'	56.82'	29.20'	93'	52.84'	27.16'
III	30'	18'	12'	75.34'	32°33'25"	100'	56.82'	29.20'	88'	50.00'	25.70'
IV	30'	20'	10'	72.11'	31°00'10"	100'	56.82'	27.74'	90'	48.70'	24.96'

CURVE 2

CASE	A	B	C	D	Δ	CURB LINE		PROPERTY LINE	
						R	L	R	L
I	20'	14'	6'	81.26'	245°57'58"	40' OR 48'	175.21'	46' OR 54'	201.49'
II	25'	18'	7'	75.34'	245°06'50"	40' OR 48'	171.12'	47' OR 55'	201.07'
III	30'	18'	12'	75.34'	245°06'50"	40' OR 48'	171.12'	52' OR 60'	222.46'
IV	30'	20'	10'	72.11'	242°00'20"	40' OR 48'	168.95'	50' OR 58'	211.19'

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 102-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

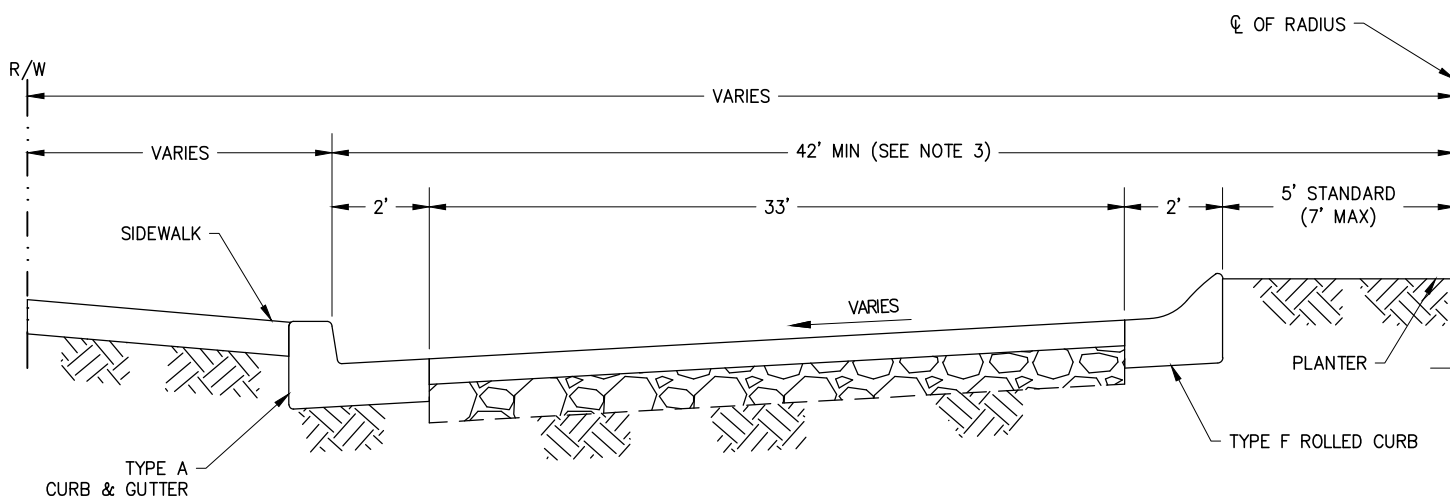
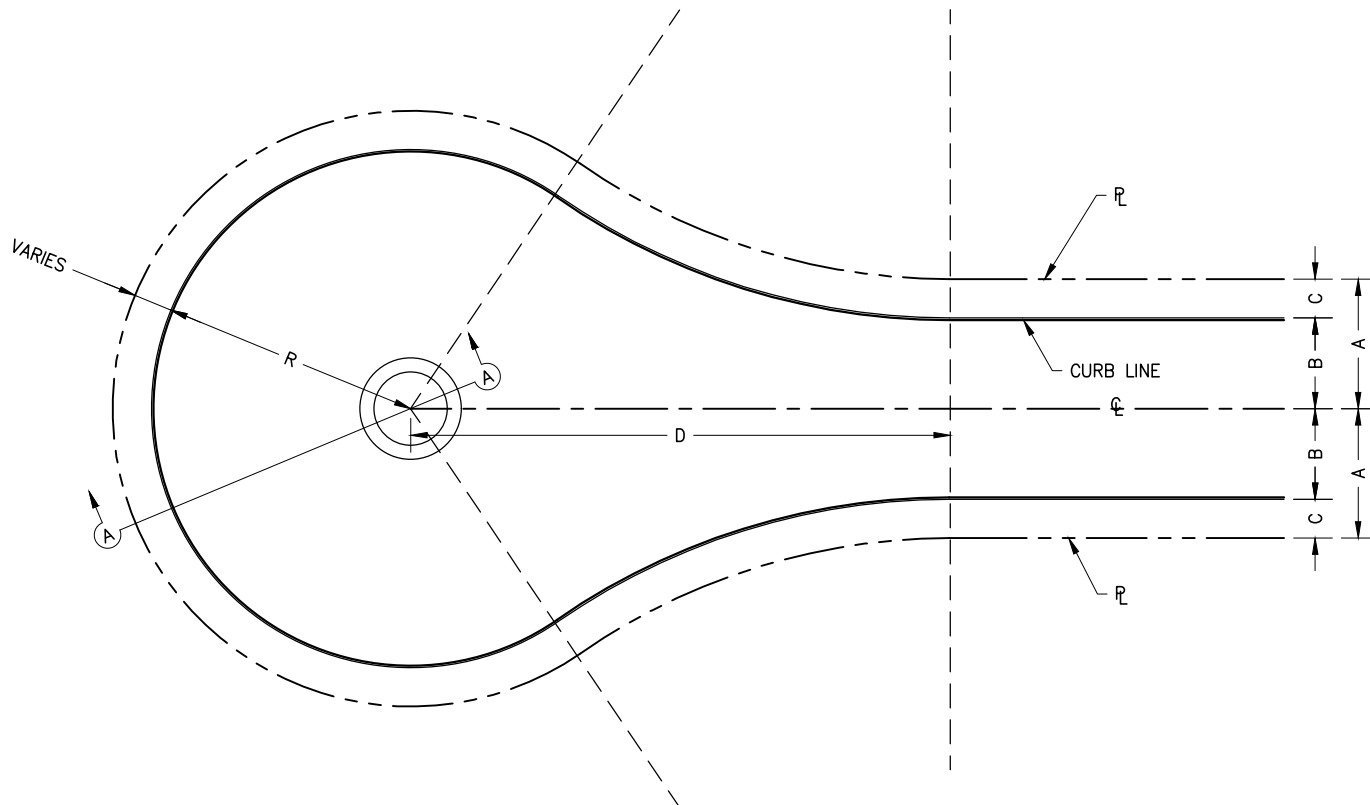
DATE: 11/3/2020

STANDARD CUL-DE-SAC

STANDARD DRAWING NO.

102

SHEET 1 OF 1



SECTION A-A

NOTES:

1. FOR A, B, C, AND D, REFER TO STD 102.
2. TOP OF ROLLED CURB PLANTER SHALL BE 0.30' ABOVE THE HIGHEST EXTERIOR CURB ELEVATION.
3. R=42' MIN WITHOUT PARKING ADJACENT TO CURB. R=50' MIN WITH PARKING ADJACENT TO CURB.
4. NO PARKING ADJACENT TO PLANTER.
5. REFER TO STD 182 & STD 183 FOR TYPE A AND F CURBS.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 103-L

APP.

James M. Hinkle
CITY ENGINEER

51568

RCE

11/24/2020

DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

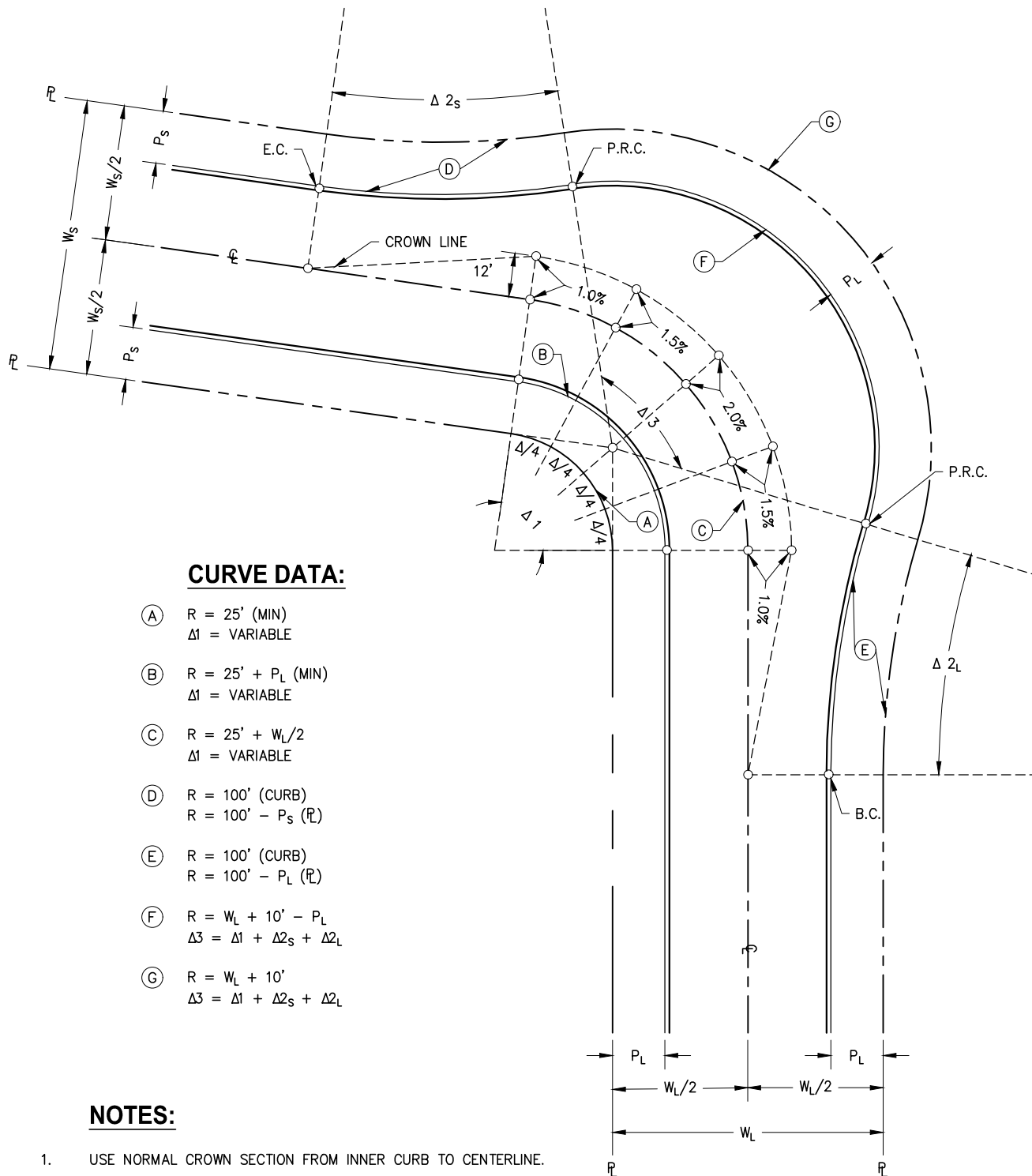
DATE: 11/3/2020

CUL-DE-SAC WITH PLANTER

STANDARD DRAWING NO.

103

SHEET 1 OF 1



NOTES:

1. USE NORMAL CROWN SECTION FROM INNER CURB TO CENTERLINE.
2. FROM CROWN LINE TO OUTSIDE GUTTER, MAX=3% AND MIN=1%.
3. SUBSCRIPTS "S" AND "L" DENOTE SMALLER AND LARGER STREETS, RESPECTIVELY.
4. SUPERELEVATION PERCENTAGES SHOWN ARE STRAIGHT GRADE FROM CENTERLINE TO CROWN LINE.
5. ELEVATIONS ARE REQUIRED WHERE CIRCLED O.
6. WHEN STREETS HAVE TILT-TYPE SECTION, THE CROWN LINE WILL NOT NECESSARILY TERMINATE ON CENTERLINE AT BC OR EC OF INNER CURB.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 104-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

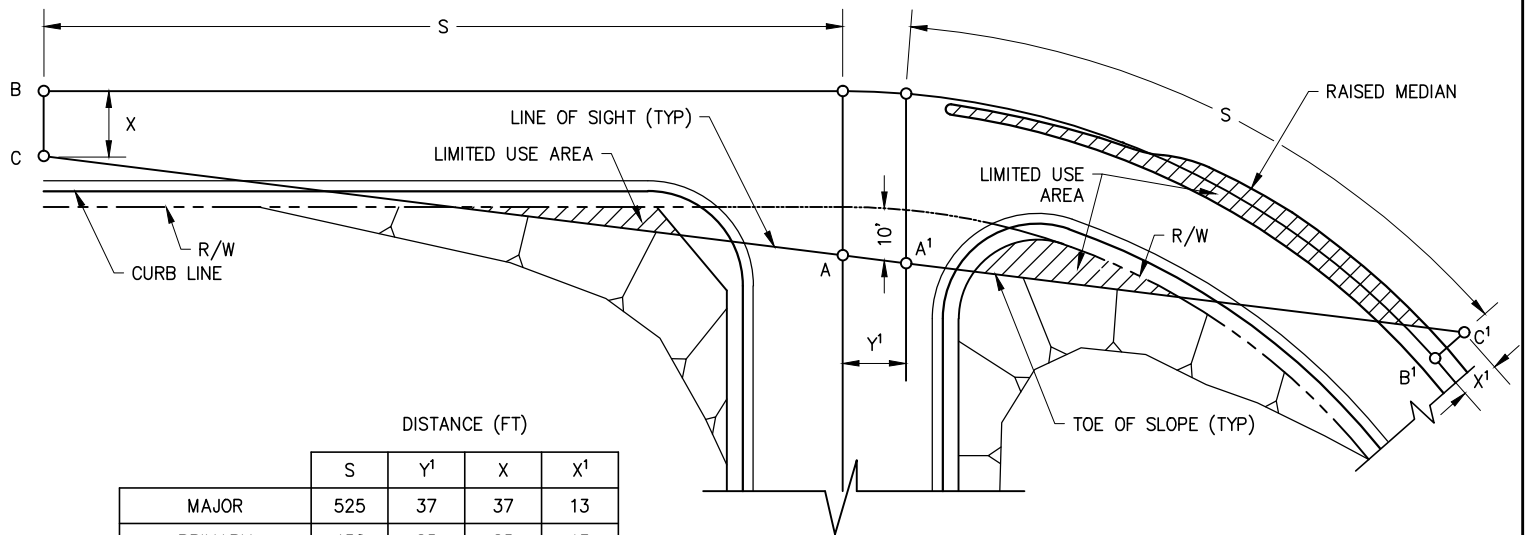
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STANDARD KNUCKLE

STANDARD DRAWING NO.

104

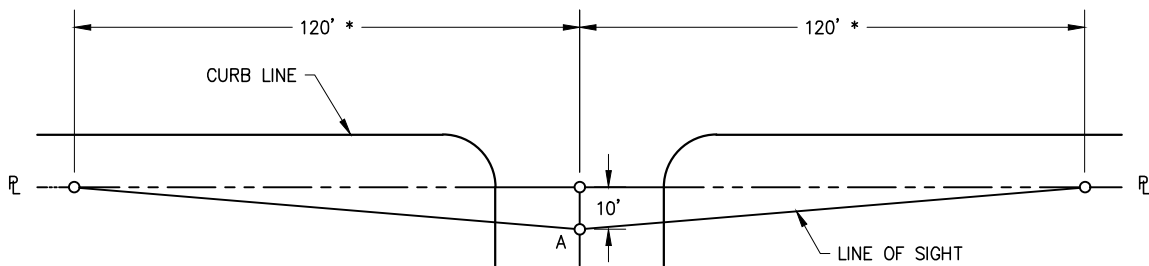
SHEET 1 OF 1



	DISTANCE (FT)			
	S	Y ¹	X	X ¹
MAJOR	525	37	37	13
PRIMARY	450	25	25	13
SECONDARY	350	18	18	6
COMMUTER	200	0	0	0

NOTES:

1. THE "LIMITED USE AREA" IS DETERMINED BY THE GRAPHICAL METHOD USING THE APPROPRIATE DISTANCES GIVEN IN THE ABOVE TABLE. IT SHALL BE USED FOR THE PURPOSE OF PROHIBITING OR CLEARING OBSTRUCTIONS IN ORDER TO MAINTAIN ADEQUATE SIGHT DISTANCE AT INTERSECTIONS.
2. THE "LINE OF SIGHT" LINE SHALL BE SHOWN AT INTERSECTIONS ON ALL LANDSCAPING PLANS, GRADING PLANS, AND TENTATIVE TRACT PLANS WHERE SIGHT DISTANCE IS QUESTIONABLE. IN CASES WHERE AN INTERSECTION IS LOCATED ON A VERTICAL CURVE, A PROFILE OF THE SIGHT LINE MAY BE REQUIRED.
3. WALLS OR ANY OBSTRUCTIONS THAT COULD RESTRICT THE VIEW WITHIN THE "LIMITED USE AREA" SHALL NOT BE PERMITTED.
4. THE TOE OF THE SLOPE SHALL NOT ENCR OACH INTO THE "LIMITED USE AREA".
5. THE "LIMITED USE AREA" SHALL BE AS NEAR LEVEL AS POSSIBLE YET MAINTAIN PROPER DRAINAGE.
6. PLANTS AND SHRUBS SHALL BE OF THE TYPE THAT WILL GROW NO HIGHER THAN 24 INCHES ABOVE THE GROUND WITHIN THE "LIMITED USE AREAS".
7. POINTS "A" AND "A'" ARE THE LOCATIONS OF A DRIVER'S LINE OF SIGHT WHILE IN A VEHICLE AT AN INTERSECTION 10 FEET BACK FROM THE PROJECTION OF THE PROPERTY LINE. THIS DISTANCE MAY BE REDUCED BY THE PUBLIC WORKS DIRECTOR WHEN THE EDGE OF THE CLOSEST TRAVEL LANE IS 12 FEET OR MORE FROM THE CURB. THE DISTANCE "Y" IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE ROAD TO FAR RIGHT THROUGH TRAFFIC LANE. THE DISTANCE "Y'" IS EQUAL TO ZERO FOR T-INTERSECTIONS.
8. THE DISTANCE "S" REPRESENTS THE STOPPING SIGHT DISTANCE MEASURED ALONG THE CENTERLINE OF THE ROAD.
9. POINTS "C" AND "C'" ARE THE LOCATIONS (CENTERLINE OF THE TRAVEL LANES) WHERE THE DRIVER OF A VEHICLE, TRAVELING AT A GIVEN SPEED, HAS THE MINIMUM STOPPING SIGHT DISTANCE REQUIRED TO BRING THEIR VEHICLE TO A STOP.



* REQUIRES DESIGN STUDY FOR GRADES IN EXCESS OF 4%

SIGHT DISTANCE FOR BICYCLE PATHS

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 110-L

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

INTERSECTION LINE OF SIGHT REQUIREMENTS

STANDARD DRAWING NO.

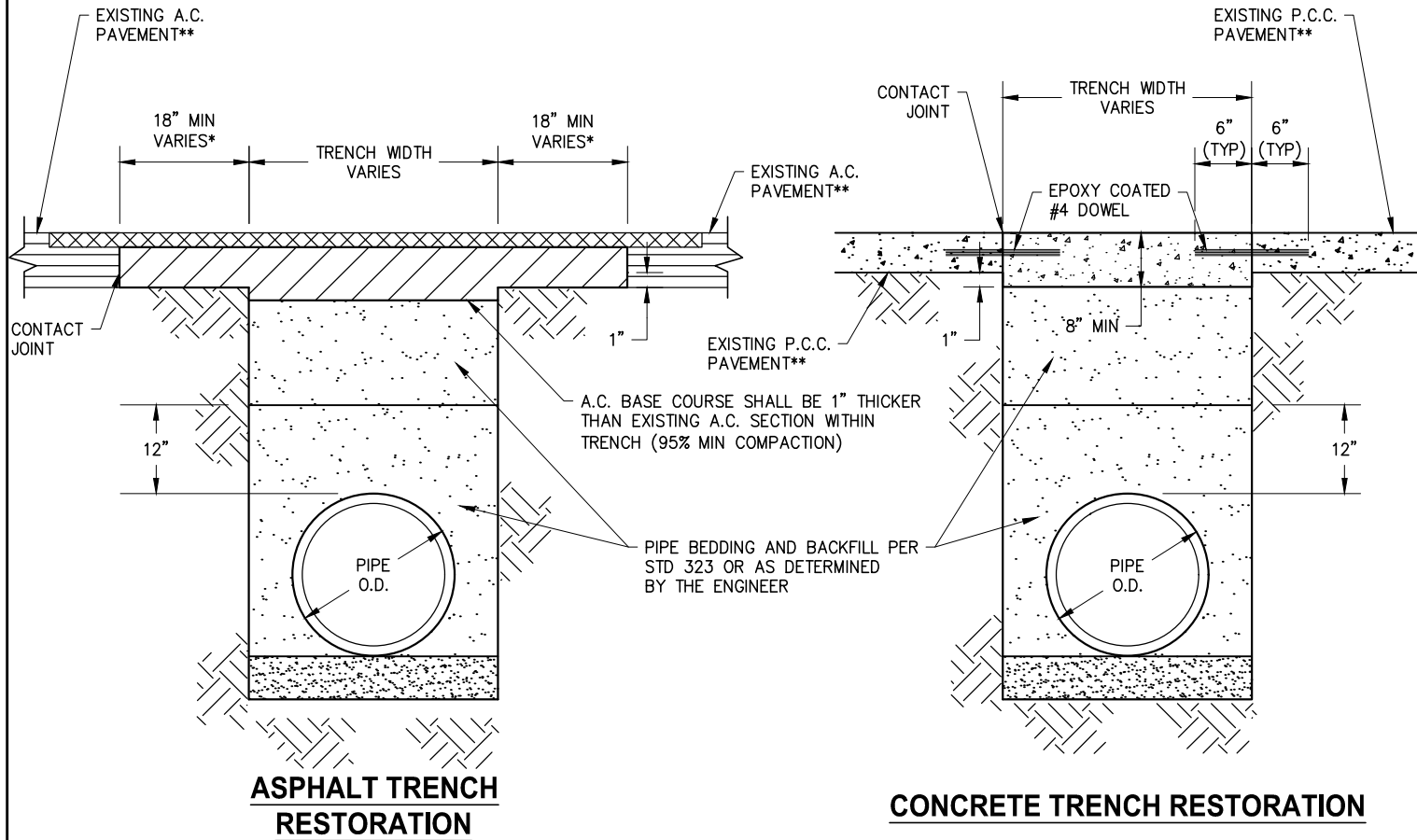
105

SHEET 1 OF 1

TYPES OF PAVEMENT REPLACEMENT

1. TRENCH RESURFACING IN PORTLAND CEMENT CONCRETE PAVEMENT SHALL BE PER STANDARD SPECIFICATIONS SECTION 306-13, EXCEPT THAT CONCRETE SHALL BE 8" THICK MINIMUM CLASS 560-C-3250 AND #4 DOWEL, 18" O.C. WITH EPOXY COATING.
2. TRENCH RESURFACING IN ASPHALT CONCRETE PAVEMENT SHALL BE PER STANDARD SPECIFICATIONS SECTION 306-13, EXCEPT THAT:
- A. ASPHALT CONCRETE SHALL BE PLACED IN LIFTS NOT TO EXCEED 4" THICK.
 - B. APPLY TACK COAT AND FEATHER NEW PAVEMENT AS NECESSARY TO SEAL THE CONTACT JOINT AND ELIMINATE PAVEMENT DEPRESSIONS WITHIN 1' OF THE CONTACT JOINT.
 - *C. COLD PLANE EXISTING PAVEMENT (1" BELOW EXISTING A.C. SECTION). EXACT WIDTH TO BE DETERMINED BY THE FIELD ENGINEER.

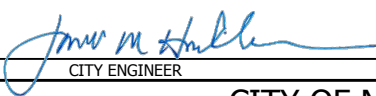
** NO PIECES LESS THAN 5' WIDE BETWEEN PATCH AND NEAREST JOINT OR CURB AND GUTTER, REFER TO STD 106-B.



NOTE:

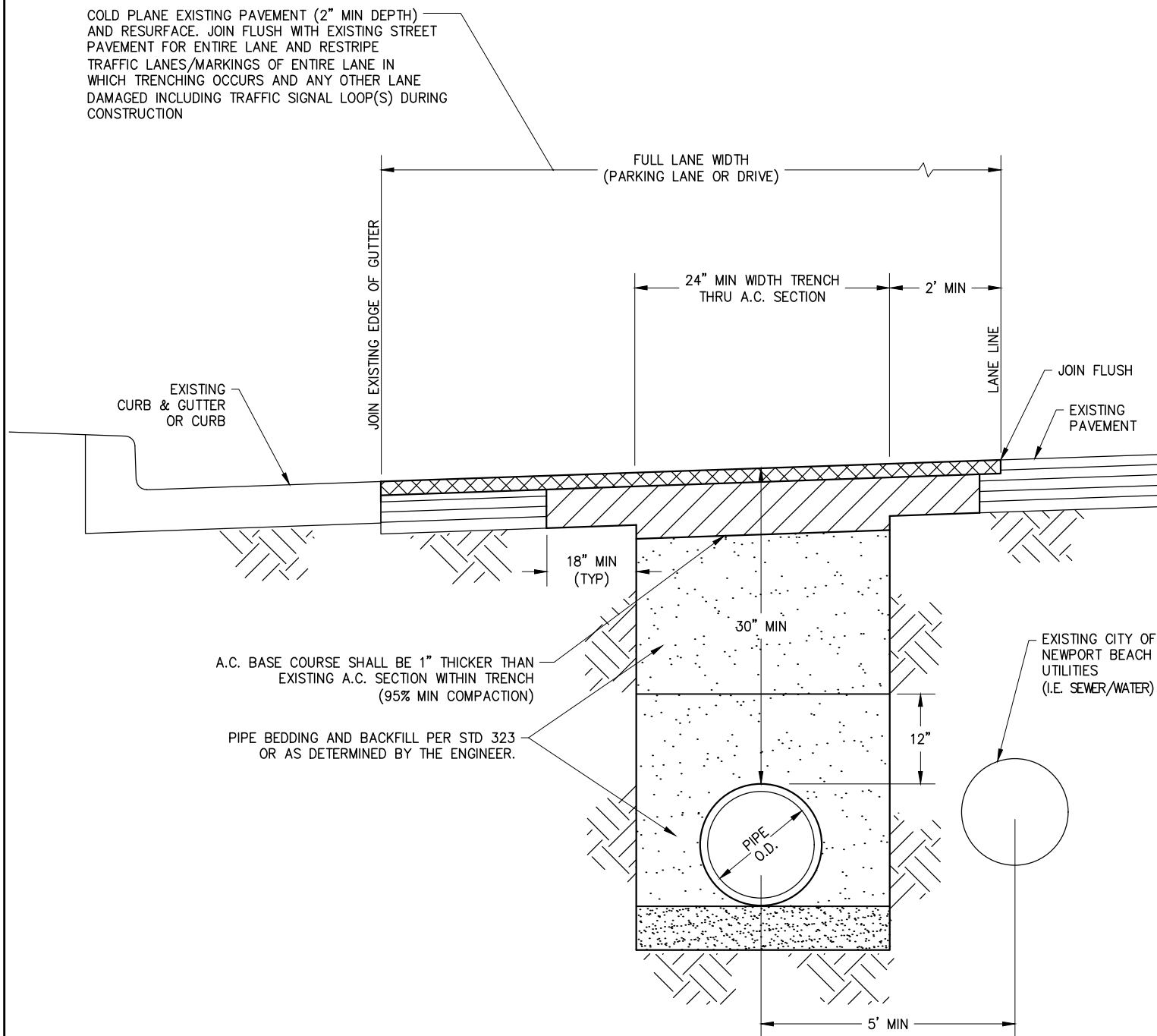
STREETS/ALLEYS RECENTLY SLURRY SEALED, OVERLAID, OR RECONSTRUCTED SHALL REQUIRE EXTENSIVE PAVEMENT RESTORATION PER STD 106-D.

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DRAWN: P. KHARAZMI		TRENCH RESURFACING			STANDARD DRAWING NO. 106-A SHEET 1 OF 1
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NOTE:

- NEW CONDUITS AND UNDERGROUND FACILITIES IN THE ROADWAY SHALL BE INSTALLED ADJACENT OR AS CLOSE AS POSSIBLE TO THE EXISTING EDGE OF GUTTER OR CURB. IF THE PROPOSED CONDUIT TRENCH IS IN A TRAFFIC LANE ADJACENT TO THE EXISTING EDGE OF GUTTER OR CURB, COLD PLANING AND PAVEMENT RESURFACING WILL BE REQUIRED FROM THE NEAREST LANE LINE OF THE PROPOSED TRENCH TO THE EXISTING EDGE OF GUTTER OR CURB. IF THE TRENCH WORK IS IN A TRAFFIC LANE BETWEEN TRAFFIC LANES, THE CONTRACTOR WILL BE REQUIRED TO COLD PLANE AND RESURFACE THE ENTIRE TRAFFIC LANE. THE TRENCH OPENING SHALL BE A MINIMUM OF 2' FROM THE ENTIRE TRAFFIC LANE. IN ADDITION, IF THE TRENCH WORK EXTENDS INTO OR DAMAGES ANY PORTION OF AN ADJACENT TRAFFIC LANE AS A RESULT OF THE CONTRACTOR'S WORK OR IS LESS THAN 5' FROM AN EXISTING UTILITY TRENCH, THE CONTRACTOR WILL BE REQUIRED TO COLD PLANE AND RESURFACE THE ENTIRE TRAFFIC LANE.
- STREETS/ALLEYS RECENTLY SLURRY SEALED, OVERLAID, OR RECONSTRUCTED SHALL REQUIRE EXTENSIVE PAVEMENT RESTORATION PER STD 106-D.



FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 105-L-C

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ROADWAY UTILITY TRENCH DETAIL

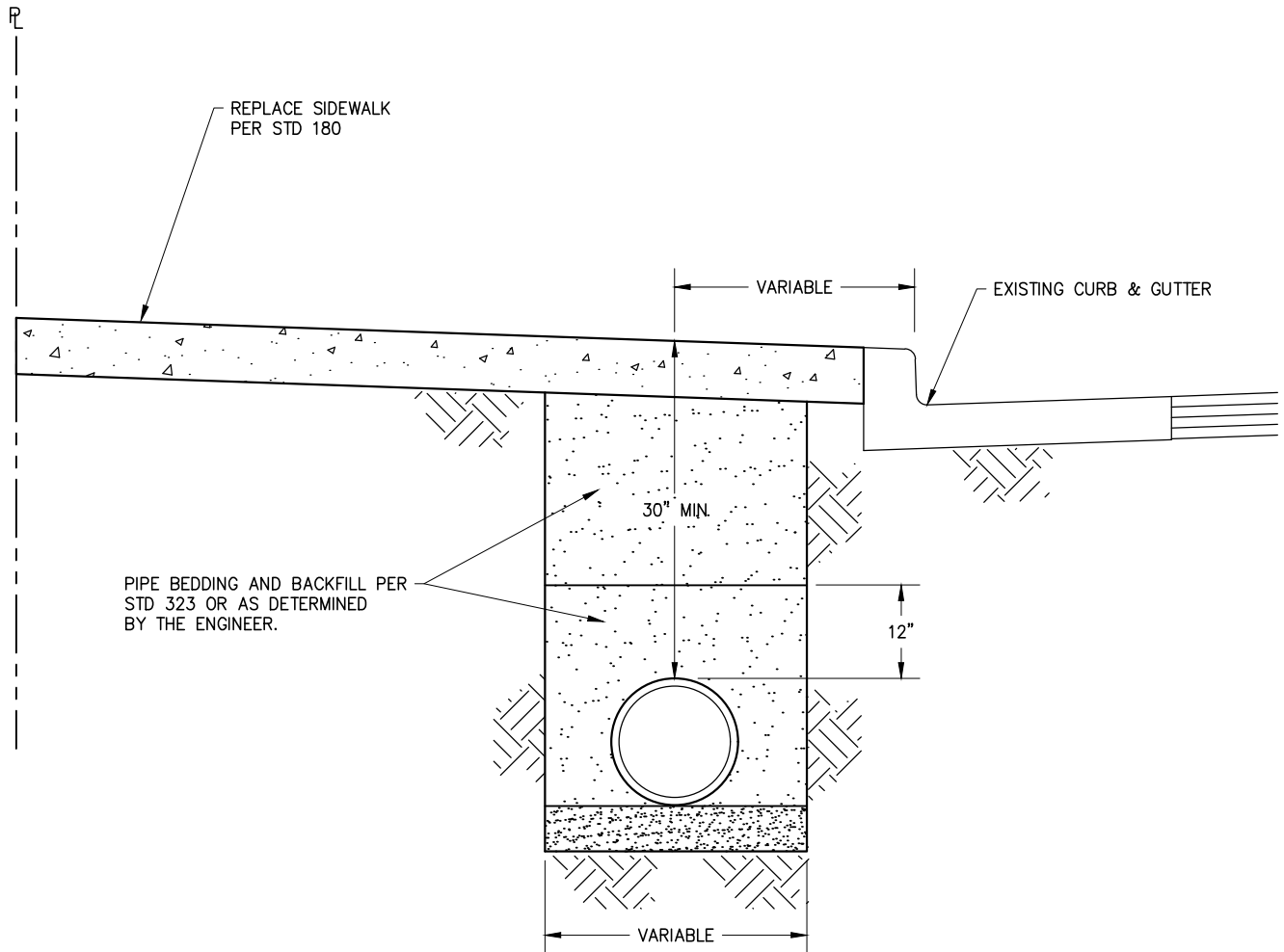
STANDARD DRAWING NO.

106-B

SHEET 1 OF 1

NOTES:

1. ANY SIDEWALK REMOVALS SHALL BE REPLACED IN FULL PANELS. IN ADDITION, ANY EXISTING CITY/PRIVATE IMPROVEMENTS/FACILITIES DAMAGED DURING THE CONSTRUCTION SHALL BE REPLACED/REPAIRED AT THE CONTRACTOR'S EXPENSE.
2. SIDEWALK SHALL BE RESTORED WITHIN ONE WEEK OF UTILITY INSTALLATION.



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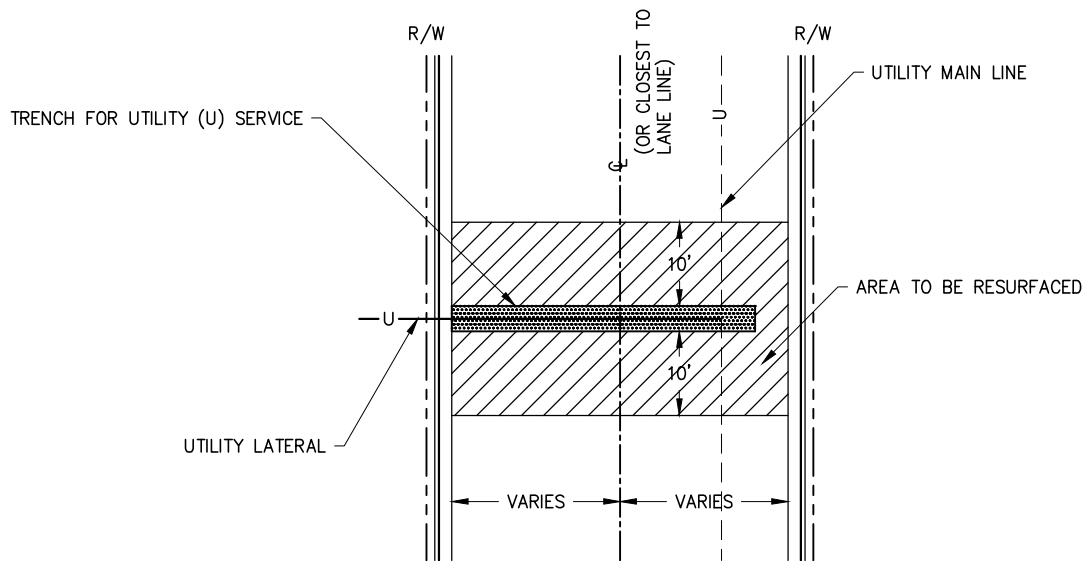
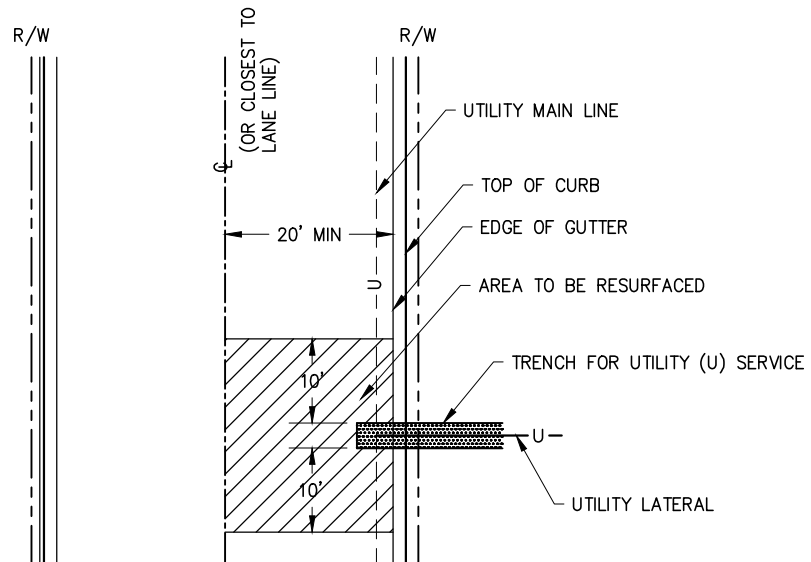
DATE: 11/3/2020

PARKWAY UTILITY TRENCH DETAIL

STANDARD DRAWING NO.

106-C


SHEET 1 OF 1



NOTE:

1. FOR CONCRETE PAVEMENT, FULL PANEL REPLACEMENT SHALL BE REQUIRED.

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MORATORIUM ROADWAY TRENCH RESURFACING

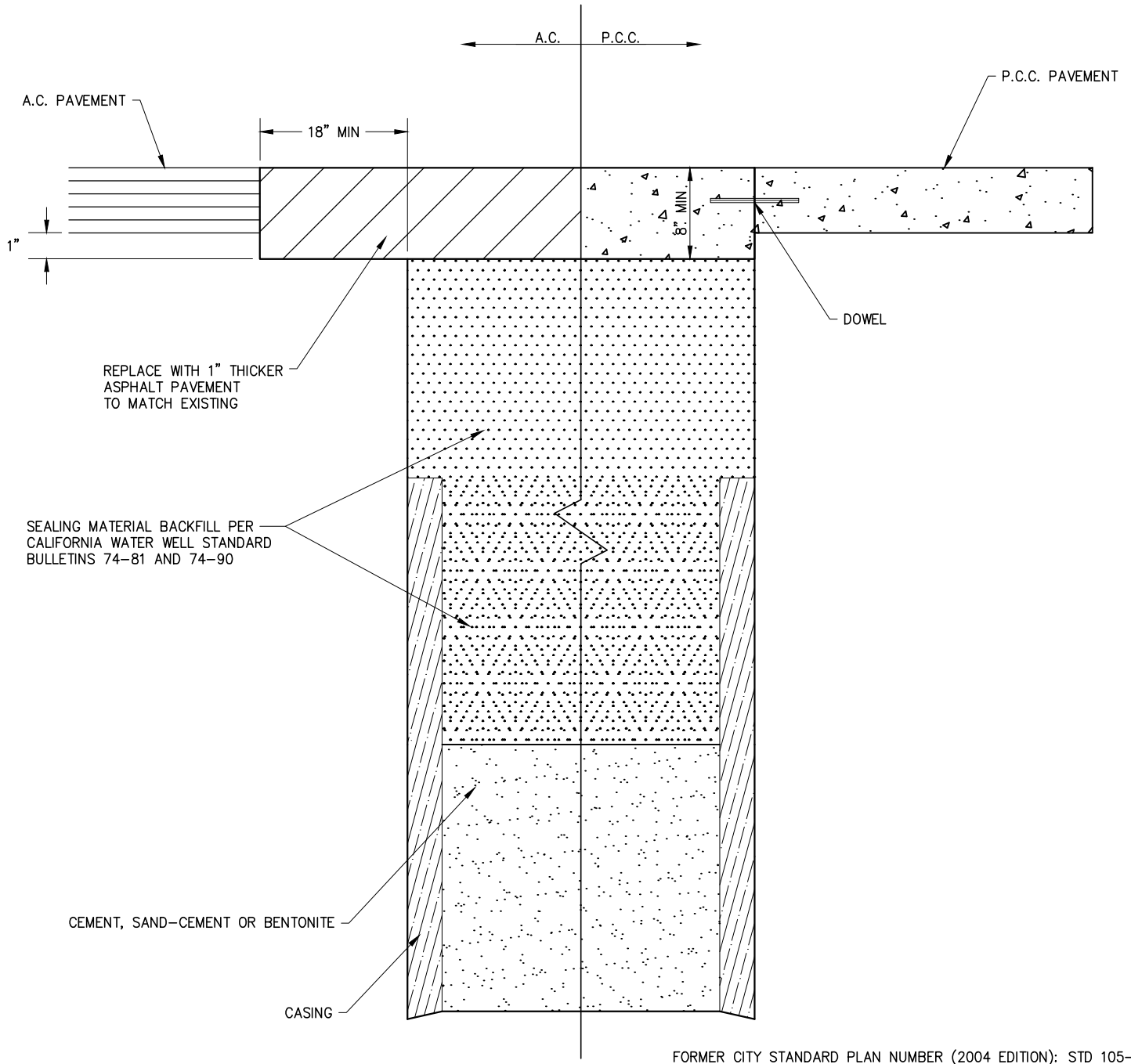
STANDARD DRAWING NO.

106-D

SHEET 1 OF 1

NOTES:

1. ADDITIONAL COLD PLANING MAY BE REQUIRED AS DETERMINED BY THE ENGINEER.
2. COLD PLANING AND PAVING SHALL BE REQUIRED WHEN CONSTRUCTION JOINTS OR EXISTING TRENCH LINES ARE WITHIN 5' OF PROPOSED CONSTRUCTION JOINS.
3. RESTRIPE TRAFFIC LANES/MARKINGS WITHIN REMOVAL AREA AND ANY OTHER TRAFFIC STRIPING DAMAGED DURING CONSTRUCTION.
4. CONCRETE PAVEMENT RESTORATION SHALL BE DOWELED PER STD 106-A. 8" THICK MINIMUM CLASS 560-C-3250 WITH EPOXY COATED #4 DOWELS, 18" O.C.
5. SEE STATE OF CALIFORNIA DEPARTMENT OF WATER RESOURCES WATER WELL STANDARDS BULLETIN 74-81 AND 74-90 FOR WELL DESTRUCTION AND SEALING MATERIALS STANDARDS.



FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 105-L-G

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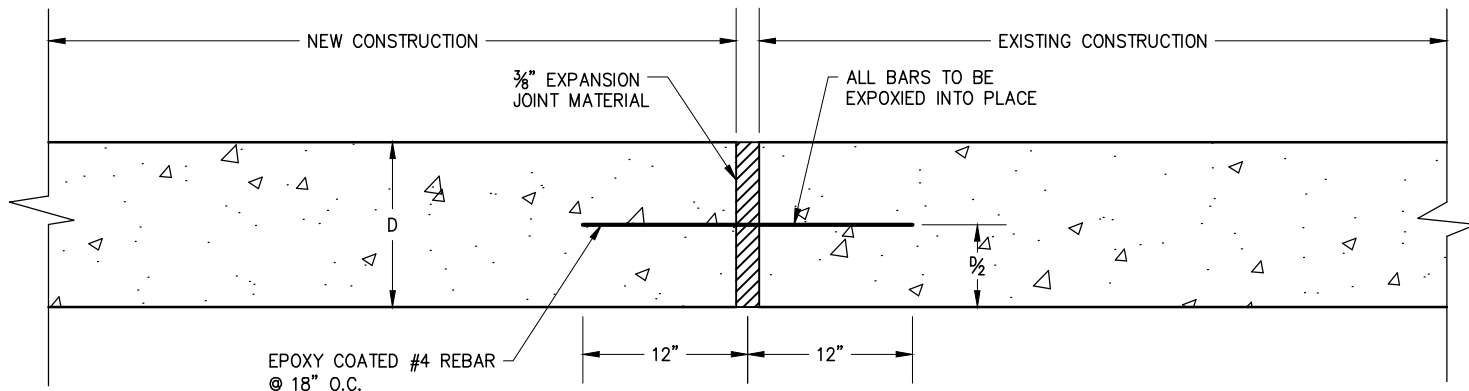
DATE: 11/3/2020

MONITORING WELLS CAPPING DETAIL

STANDARD DRAWING NO.

106-E

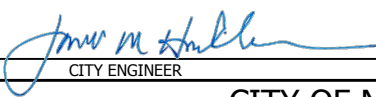
SHEET 1 OF 1



NOTE:

1. "D" IS THE DESIGN THICKNESS OF P.C.C. PAVEMENT.

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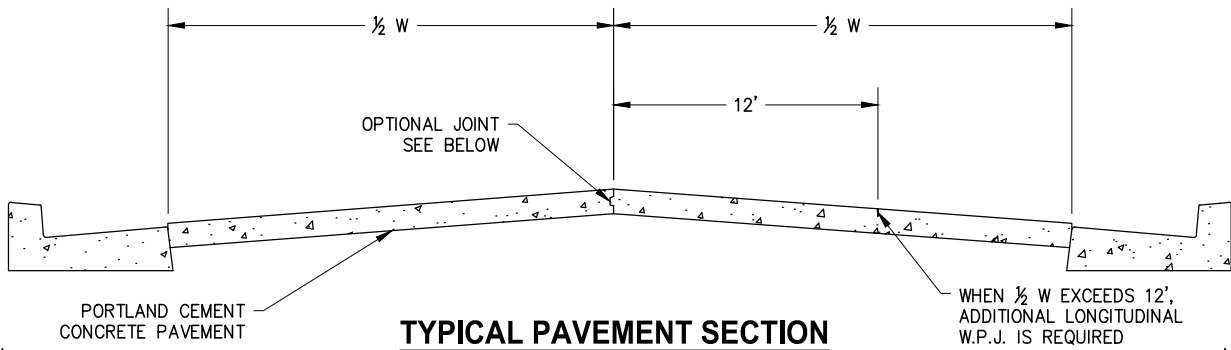
DATE: 11/3/2020

P.C.C. PAVEMENT CONTACT JOINTS

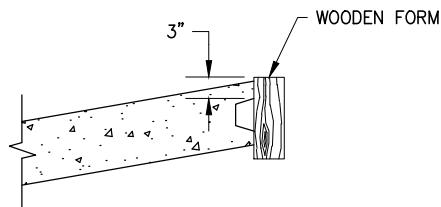
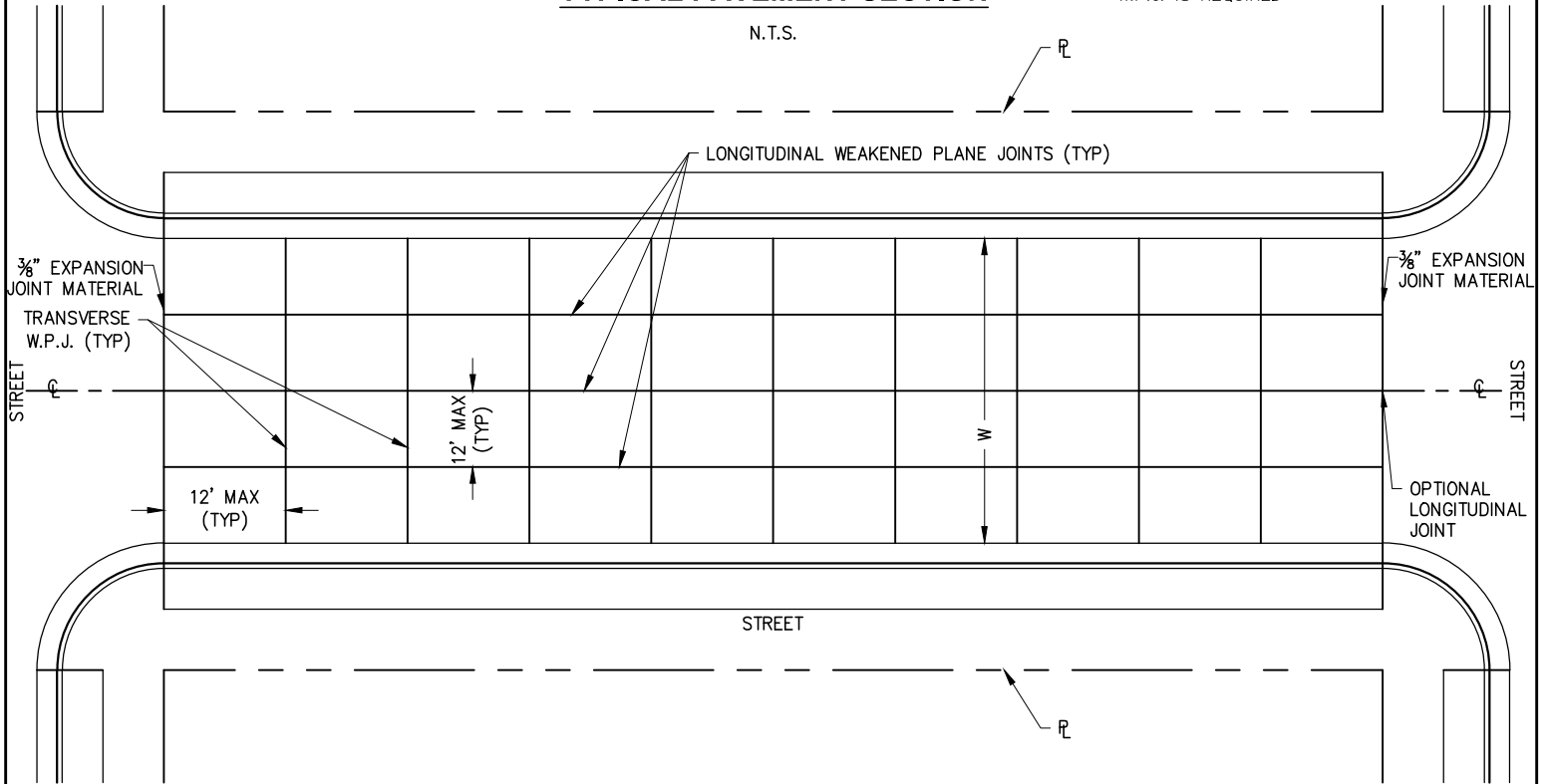
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108

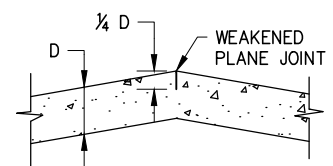
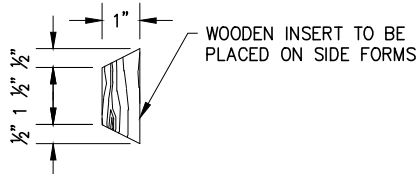
SHEET 1 OF 1



N.T.S.



LONG. CONTACT JOINT WITH KEYWAY



LONG. WEAKENED PLANE JOINTS

OPTIONAL LONGITUDINAL JOINTS

N.T.S.

NOTES:

1. WEAKENED PLANE JOINTS SHALL BE POLYETHYLENE PLASTIC JOINT MATERIAL (QUICK-JOINT), SAWCUT OR EQUAL.
2. TRANSVERSE WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT INTERVALS OF 12 FEET MAX AND SHALL BE AT LEAST 5 FEET FROM ANY TRANSVERSE CONTACT JOINT.
2. TRANSVERSE W.P.J. SHALL BE SAWCUT. TOOLED JOINTS ARE NOT PERMITTED.

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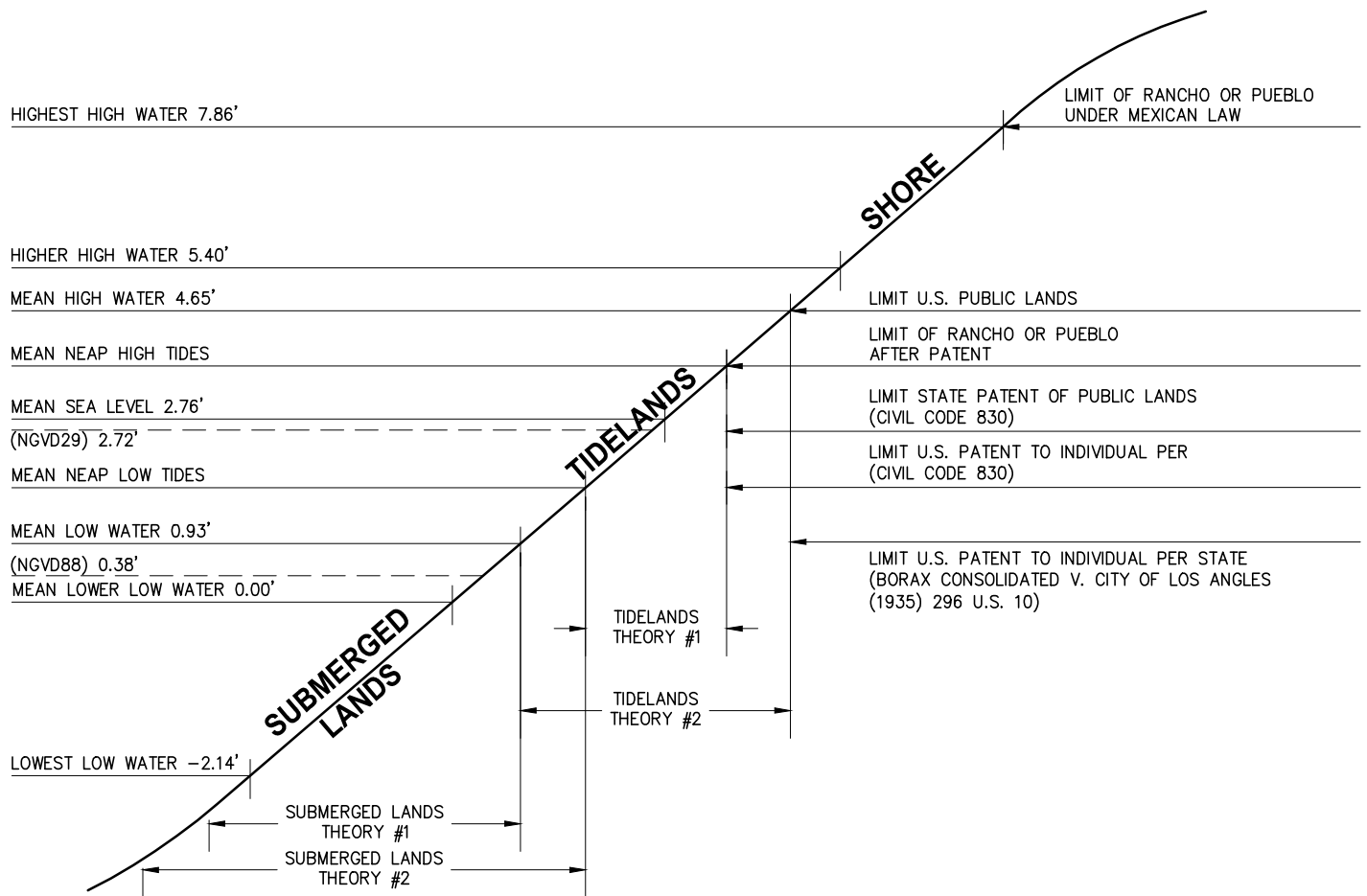
DATE: 11/3/2020

PLACEMENT OF JOINTS IN P.C.C. STREET PAVEMENT

STANDARD DRAWING NO.

109

SHEET 1 OF 1



NOTES:

THEORY #1 – TIDELANDS LIE BETWEEN MEAN HIGH AND MEAN OF LOW NEAP TIDES.

THEORY #2 – TIDELANDS LIE BETWEEN MEAN OF ALL HIGH AND MEAN OF ALL LOW TIDES.

INFORMATION WAS TAKEN FROM NATIONAL OCEAN SERVICE (NOS), OFFICE OF OCEAN AND EARTH SCIENCE (OES),
TIDAL DATUM SHEET – PUBLICATION DATE 07/17/89.

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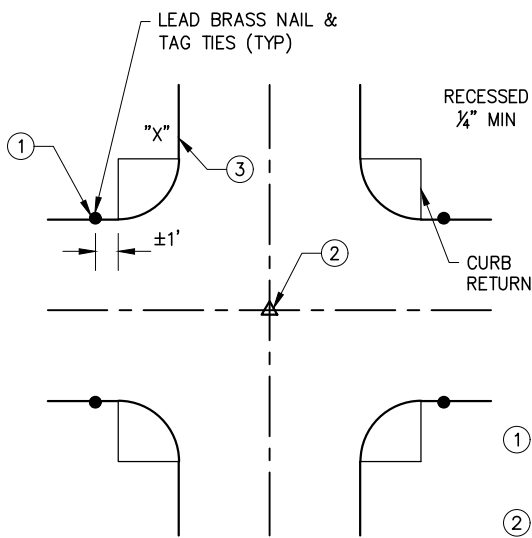
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DATUM PLANES

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115

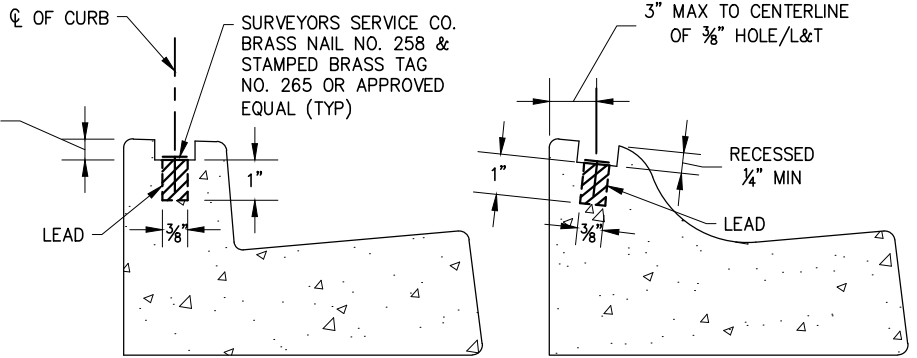
SHEET 1 OF 1



LOCATION OF TIES

NOTE:

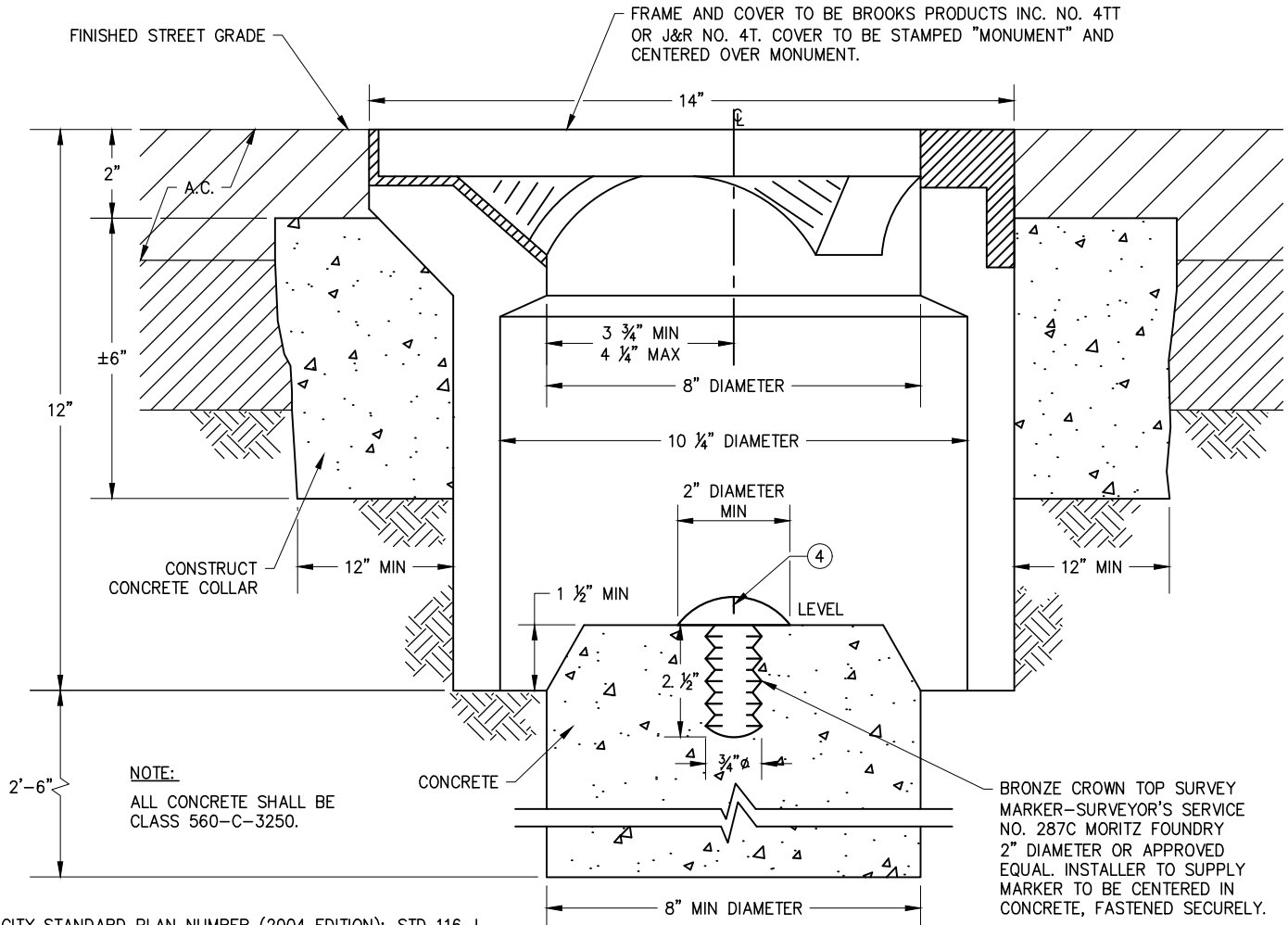
TRANSIT TIES WHERE POSSIBLE.



STANDARD CURB

ROLLED CURB

- ① LEAD BRASS NAIL & TAG SET IN TOP OF CURB. TIES TO BE PROVIDED FOR ALL B.C.'S, E.C.'S, RADIUS PTS., P.I.'S AND/OR SURVEY MONUMENTS. ALL LEAD, BRASS NAIL & TAGS TO BE RECESSED IN TOP OF CURB, 1/4" MIN.
- ② WHERE STANDARD MONUMENT NOT REQUIRED, A LARGE MONUMENT SPIKE WITH WASHER SHALL BE USED. MINIMUM REQUIREMENT: GALVANIZED 3/8" SQUARE SHANK X 6" LONG SURVEYOR'S SERVICE NO. 261 OR APPROVED EQUAL.
- ③ CHISELED CROSS, "X", NOT ACCEPTABLE FOR ANY TIE OR REFERENCE POINT.
- ④ ALL "PUNCH MARKS/STAMPINGS" TO BE CLEARLY DEFINED. PUNCH MARK TO BE WITHIN 3/4" DIA. FROM CENTERLINE OF BRASS CAP.



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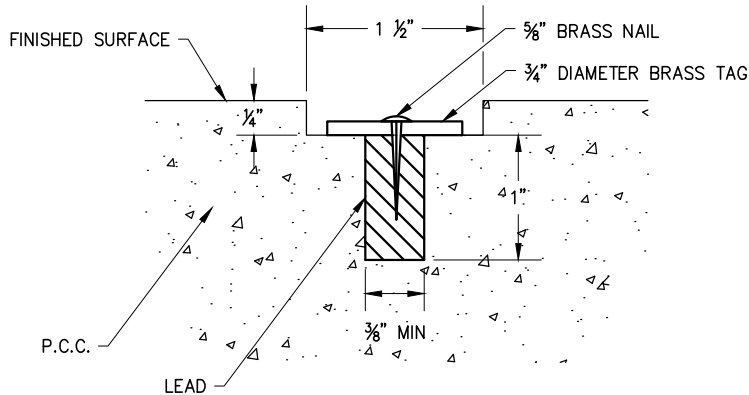
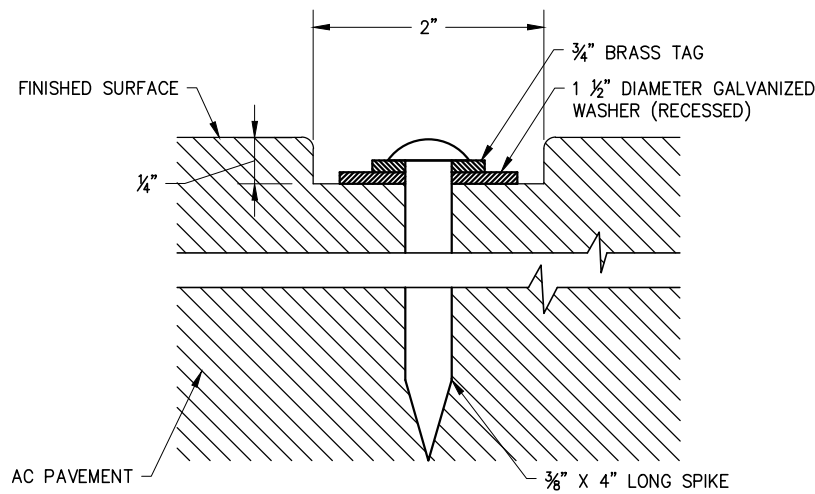
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STANDARD SURVEYOR'S MONUMENT

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116

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SURVEY MONUMENT PLACEMENT

N.T.S.

NOTE:

2" GALVANIZED IRON PIPE MONUMENTS SHALL BE SET AT EACH BOUNDARY CORNER OF A SUBDIVISION, ALONG EXTERIOR BOUNDARIES AT INTERVALS NOT OVER 500 FEET, AT THE BEGINNING AND END OF EXTERIOR PROPERTY LINE CURVES. 1" GALVANIZED IRON PIPE MONUMENTS SHALL BE SET AT INTERIOR LOT/PARCEL CORNERS AND PROPERTY LINE CURVES.

DESCRIPTION	MINIMUM SIZE	MINIMUM LENGTH	RELATIONSHIP TO SURFACE
GALVANIZED IRON PIPE WITH 5/8" LONG BRASS NAIL AND 3/4" DIAMETER BRASS TAG	2" - EXTERNAL BDY 1" - INTERNAL BDY	36" 24"	PIPE SHALL BE FLUSH NAIL AND TAG AND BE RECESSED 1/4" MIN BELOW TOP OF IRON PIPE
GALVANIZED SPIKE WITH 3/4" GALVANIZED WASHER AND 1 1/2" BRASS TAG	3/8" SPIKE	0'-4"	TOP OF SPIKE TO BE FLUSH OR RECESSED SLIGHTLY BELOW TOP OF FINISHED SURFACE
LEAD WITH 5/8" LONG BRASS NAIL AND 3/4" DIAMETER BRASS TAG			NAIL AND TAG SHALL BE RECESSED 1/4" BELOW TOP OF EXISTING SURFACE
3/4" DIAMETER BRASS TAG IN EPOXY			TAG SHALL BE RECESSED 1/4" BELOW TOP OF EXISTING SURFACE

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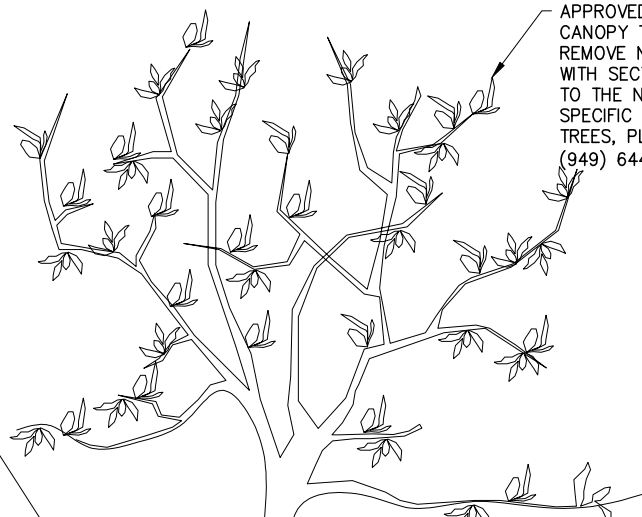
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SUBDIVISION AND LOT CORNER MONUMENTS

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APPROVED STREET TREE 24" BOX MIN. THIN CANOPY TO REDUCE WIND RESISTANCE, AS NEEDED. REMOVE NURSERY STAKE IF ANY, ORIENT THE TREE WITH SECTION OF TRUNK SHADED BY NURSERY STAKE TO THE NORTH. FOR LIST OF DESIGNATED TREES FOR SPECIFIC STREETS AND LIST OF DROUGHT TOLERANT TREES, PLEASE CALL MUNICIPAL OPERATIONS DIVISION (949) 644-3055.

24" BOX - TWO 8-FOOT HIGH LODGE POLES (2" DIAMETER)

36" BOX - TWO 10-FOOT HIGH LODGE POLES (2" DIAMETER)

TWO CINCH TIES PER LODGE POLE

PROVIDE TREE TRUNK GUARD (ARBORGUARD OR APPROVED EQUIVALENT)

DIMENSIONS OF THE ORIGINAL CONTAINER

2" LAYER MULCH. HOLD AWAY FROM TRUNK.

30" MIN DIAMETER BERM CAPABLE OF HOLDING 20 GALLON WATER

GRASS/GROUND COVER CURB AND GUTTER

IMMEDIATELY PRIOR TO BACKFILL, REMOVE TREE FROM CONTAINER AND CAREFULLY PLACE IT INTO PLANTING PIT. PRUNE KINKED ROOTS. DO NOT BREAK OR OTHERWISE DISTURB ROOTBALL.

SUITABLE NATIVE BACKFILL SOIL. EXCAVATE A "SOIL FLARE" ADJACENT TO AND LOWER THAN THE ELEVATION OF THE CONTAINER.

FINISHED GRADE/SIDEWALK

UNDISTURBED SOIL

ROOT BARRIER. USE "CENTURY" ROOT BARRIER CP 18-2 OR APPROVED EQUAL.

SOIL AMENDMENTS AND FERTILIZER TABLETS, PER AGRONOMIST REPORT.

MOUND NATIVE SOIL BENEATH TREE. ASSURE THE ROOTBALL IS 2" ABOVE FINISHED GROUND.

2X CONTAINER WIDTH MIN

NOTES:

1. TREES MUST BE OF QUALITY NURSERY STOCK, FREE FROM PESTS, DISEASE AND STRUCTURAL DEFECT.
2. COMPLETE BACKFILL OF PIT WITH NATIVE SOIL, TAMPING IN SOIL WITH FEET OR SHOVEL HANDLE TO ENSURE THERE ARE NO AIR POCKETS.
3. FILL WATER BASIN AND LET SEEP TWICE. IF DRAINAGE IS OF CONCERN, THE PERIMETER OF THE PIT CAN BE DUG DEEPER TO DIVERT EXCESS WATER AWAY FROM THE ROOT BALL.
4. CENTER TREE BETWEEN THE SIDEWALK AND THE CURB, UNLESS OTHERWISE NOTED AND APPROVED.
5. SPACE TREES 35' MIN TO 50' MAX.
6. PLANT 50' MIN FROM BCR ON THE APPROACH TO AN INTERSECTION AND 15' FROM THE ECR ON THE EXIT SIDE.
7. PLANT 10' MIN FROM EDGE OF DRIVEWAY APPROACH.
8. PROVIDE 10' CLEARANCE FROM UTILITY AND SEWER LINES.
9. PLANT 20' MIN FROM STREET LIGHT AND POWER POLES.
10. PLANT TREE 3' FROM CURB.

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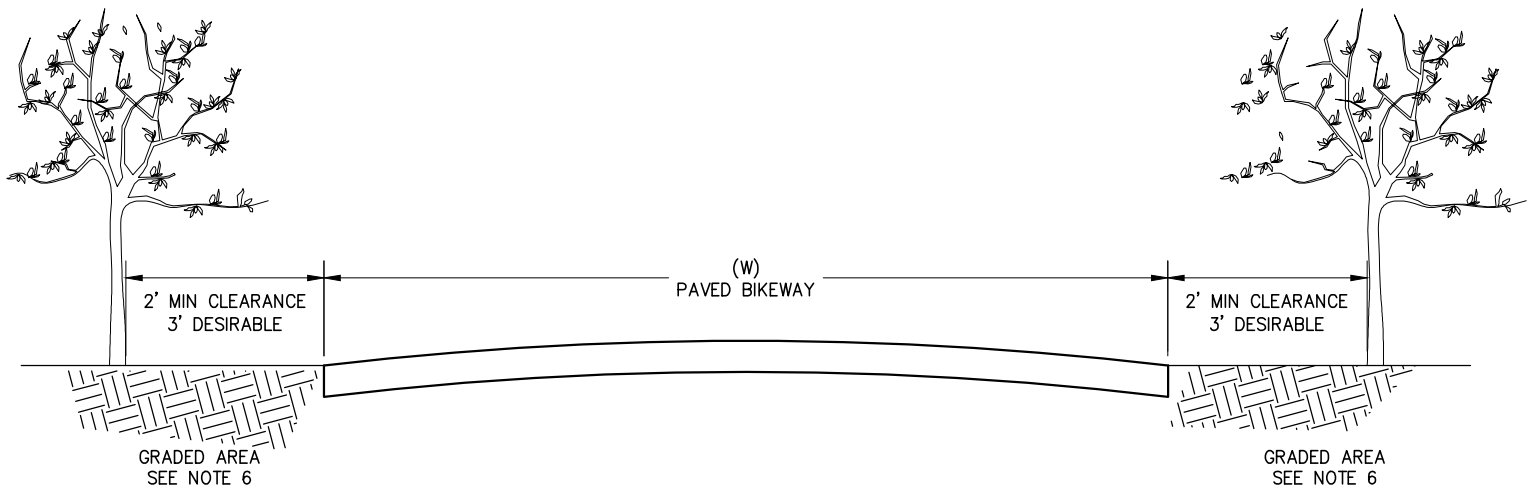
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BOX TREE PLANTING DETAIL

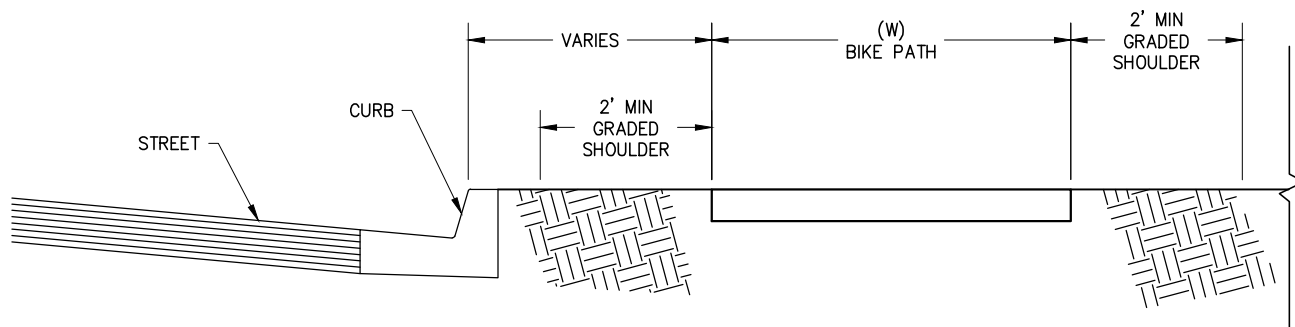
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**TYPICAL BIKE PATH ON SEPARATE R/W
(TYPE "A")**




**TYPICAL BIKE PATH ALONG ROADWAY
(TYPE "B")**

NOTES:

1. CLASS I BIKEWAYS ARE TO BE USED PRIMARILY FOR BICYCLE TRAFFIC BUT MAY HAVE LIMITED PEDESTRIAN TRAFFIC.
2. (W) = 8' FOR TWO-WAY BICYCLE TRAFFIC WITH MINIMAL OR NO PEDESTRIANS.
(W) = 12' FOR HEAVY BICYCLE TRAFFIC AND/OR SIGNIFICANT PEDESTRIAN TRAFFIC.
3. 2' MINIMUM CLEAR DISTANCE IN THE GRADED AREA MAY BE REDUCED ACCORDINGLY WHEN (W) IS WIDER THAN REQUIRED.
4. ADDITIONAL REQUIREMENTS FOR CLASS I BIKEWAYS SHALL CONFORM TO THE CURRENT CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) HIGHWAY DESIGN MANUAL, CHAPTER 1000-BICYCLE TRANSPORTATION DESIGN.
5. MINIMUM PAVEMENT SECTION SHALL BE 4" AC OVER 4" AB.
6. GRADED SHOULDER AREA SHALL BE CAPABLE OF SUPPORTING BICYCLE WHEEL LOADING FOR EMERGENCY MANEUVERS.

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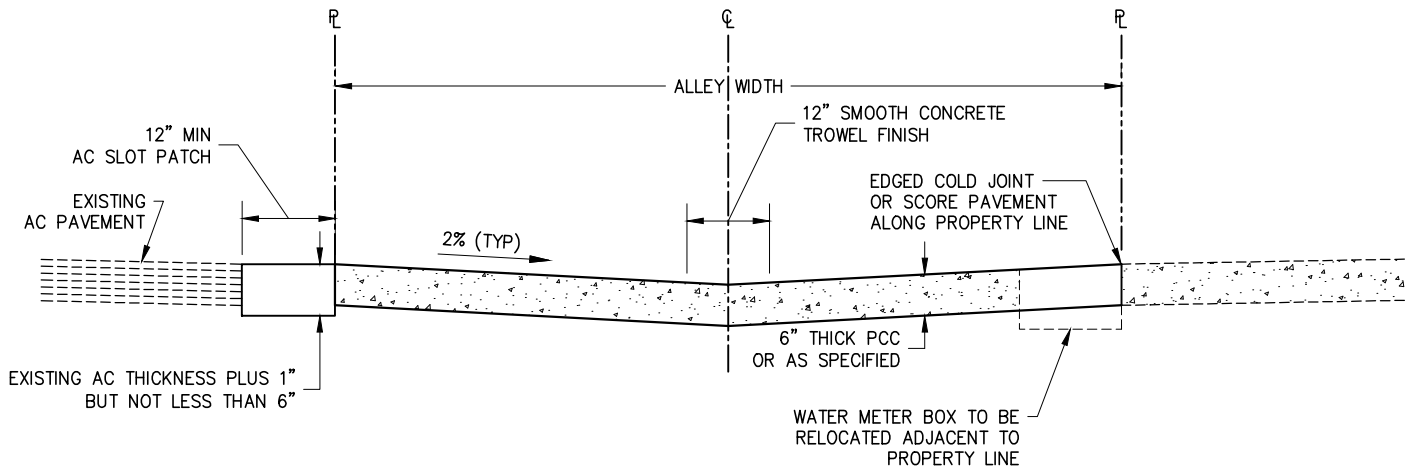
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TYPICAL CLASS I BIKEWAYS (BIKE PATHS)

STANDARD DRAWING NO.

120

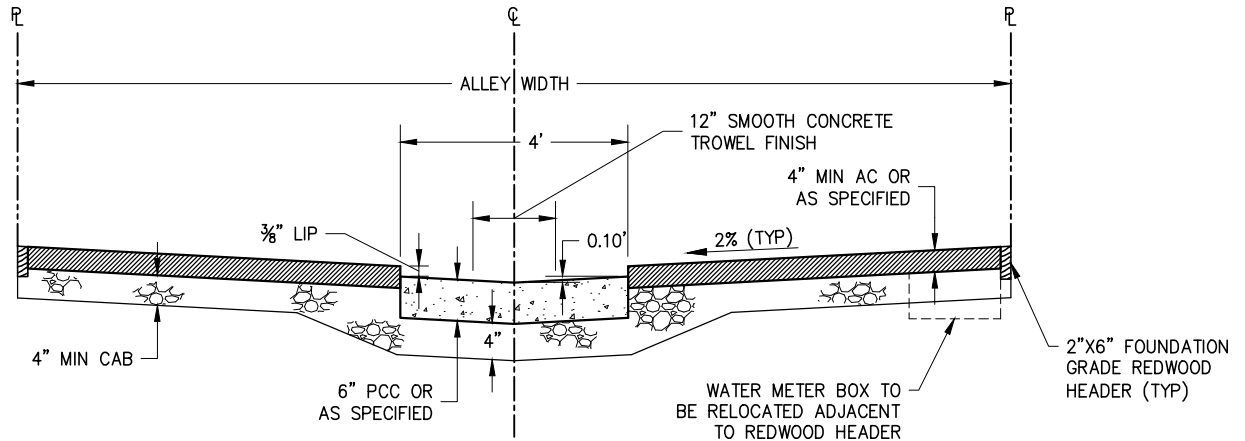
SHEET 1 OF 1



PORTLAND CEMENT CONCRETE ALLEY

NOTES:

1. CONCRETE SHALL BE 560-C-3250 UNLESS OTHERWISE SPECIFIED.
2. ALLEYS EXCEEDING 16 FEET IN WIDTH SHALL BE CONSTRUCTED WITH 4-FOOT WIDE, 6-INCH THICK PCC STRIP GUTTERS WITH KEYWAY ALONG EACH SIDE.
3. ALLEY SHALL BE FINISHED FROM EDGE TO CENTER ALONG EACH SIDE, NOT FROM EDGE TO EDGE. A CONSISTENT, WELL-DEFINED VEE SHALL BE MAINTAINED.
4. WRAP ALL POWER POLES WITH $\frac{3}{8}$ " PREMOLDED JOINT FILLER.
5. WEAKENED PLANE JOINTS AND PREMOLDED JOINT FILLER SHALL BE PER STD 141.
6. CENTERLINE AND BOTH PROPERTY LINE GRADES SHALL BE SHOWN ON IMPROVEMENT PLANS.



ASPHALT CONCRETE ALLEY WITH PCC GUTTER

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 140-L

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

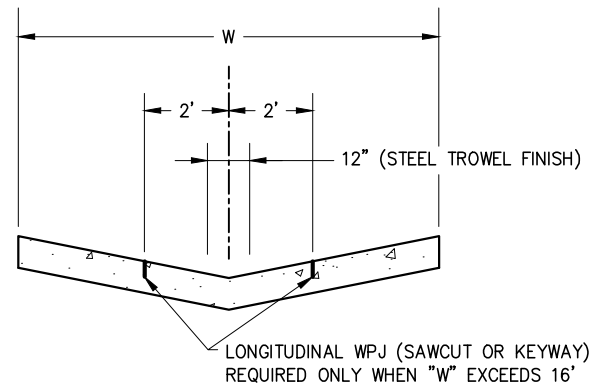
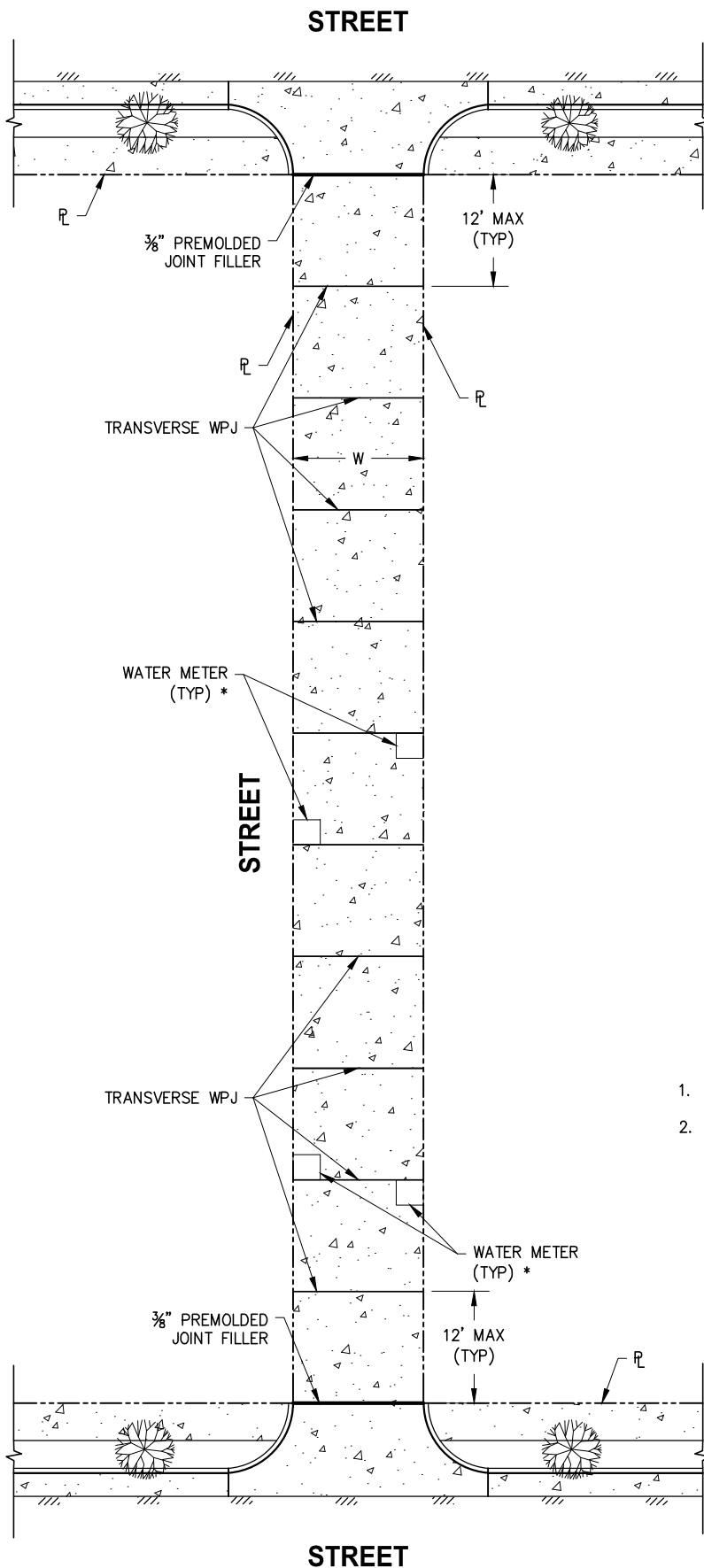
DATE: 11/3/2020

TYPICAL ALLEY SECTIONS

STANDARD DRAWING NO.

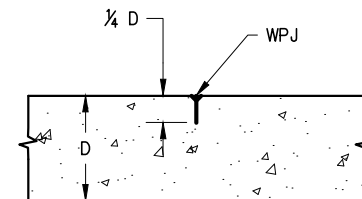
140

SHEET 1 OF 1



TYPICAL PAVEMENT SECTION

NOT TO SCALE



TYPICAL WPJ SECTION

NOT TO SCALE

NOTES:

1. CONCRETE SHALL BE 560-C-3250 UNLESS OTHERWISE SPECIFIED.
2. W - ALLEY WIDTH
D - DESIGN THICKNESS OF PCC PAVEMENT (6" MIN)
WPJ - WEAKENED PLANE JOINT
SHALL BE POLYETHYLENE JOINT MATERIAL (QUICK-JOINT), SAWCUT, OR EQUAL.

* WEAKENED PLANE JOINT SPACING SHALL BE AT WATER METER BOXES WITH A MIN SPACING OF 4' AND MAX SPACING OF 12'.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 141-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

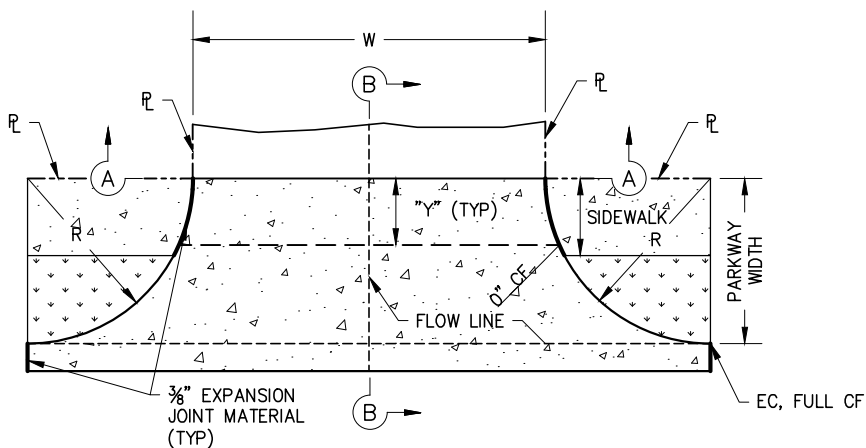
DATE: 11/3/2020

PLACEMENT OF JOINTS IN PCC ALLEY PAVEMENT

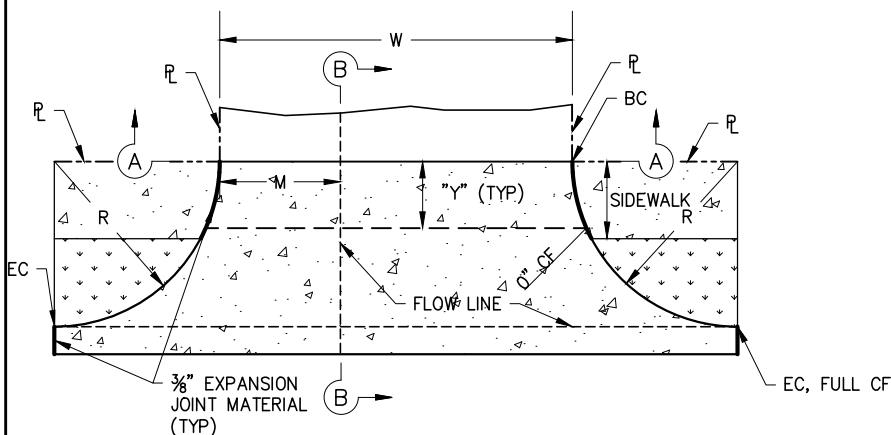
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141

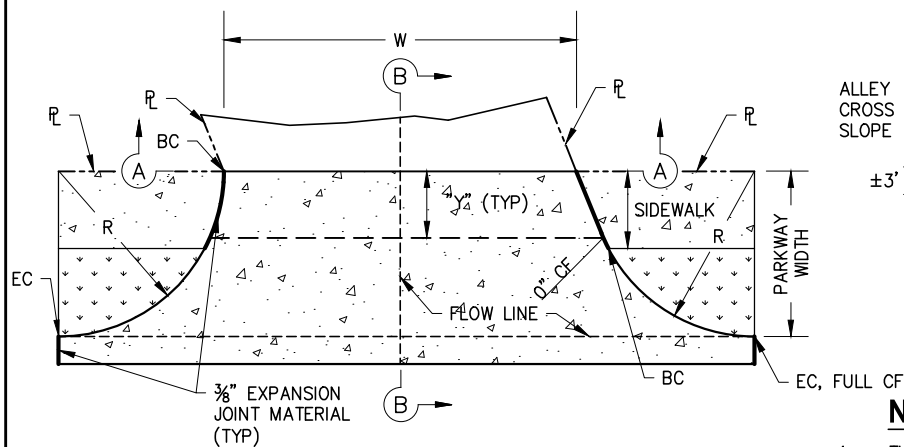
SHEET 1 OF 1



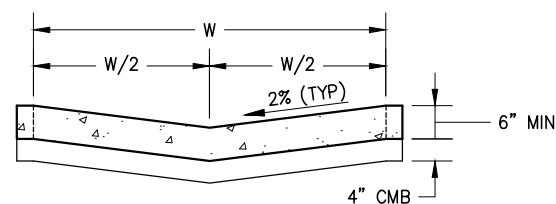
**PLAN
TYPE A**



**PLAN
TYPE B**

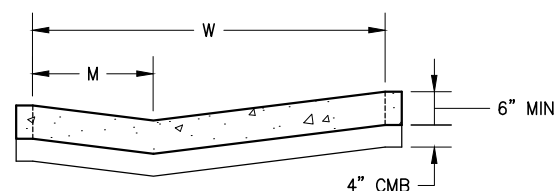


**PLAN
TYPE C**



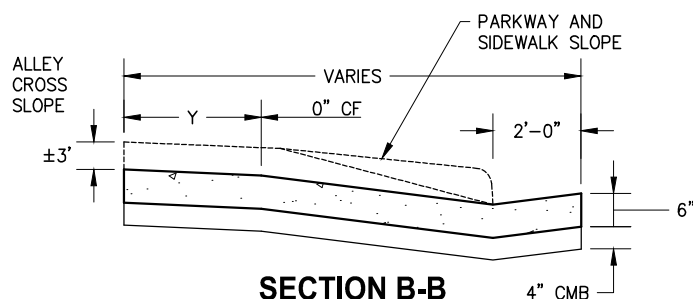
SECTION A-A

TYPES A & C



SECTION A-A

TYPE B



SECTION B-B

TYPES A, B, & C

NOTES:

1. THE RADIUS OF THE CURB RETURN SHALL NOT BE GREATER THAN 10 FEET.
2. CONCRETE SURFACE 6" ON EACH SIDE OF A FLOW LINE SHALL HAVE A STEEL TROWEL FINISH EXCEPT BETWEEN THE PROPERTY LINE AND THE GUTTER.
3. "M" SHALL BE EQUAL TO W/5, BUT NOT LESS THAN 2 FEET.
4. "Y" SHALL BE A MINIMUM OF 4 FEET.
5. CONCRETE SHALL BE 560-C-3250 UNLESS OTHERWISE SPECIFIED.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 142-L

APP.

James M. Hinkle

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CITY ENGINEER

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

ALLEY APPROACHES TYPES A, B, AND C

STANDARD DRAWING NO.

142

SHEET 1 OF 1

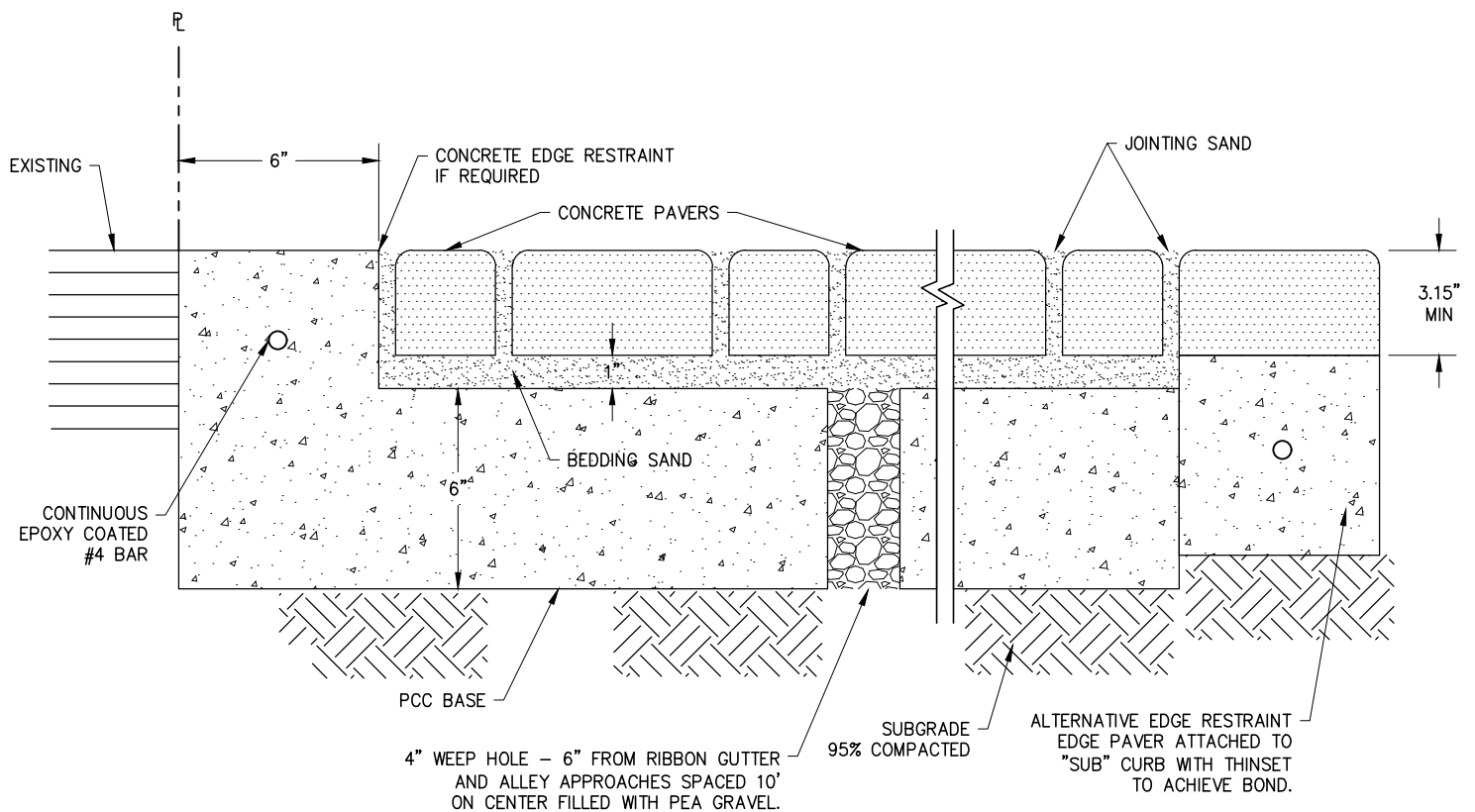


TABLE 1
GRADATION FOR BEDDING SAND (ASTM C 33)

SIEVE SIZE	PERCENT PASSING, BY WEIGHT
9.5 MM ($\frac{3}{8}$ -IN)	100
4.75 MM (NO. 4)	95 TO 100
2.36 MM (NO. 8)	80 TO 100
1.18 MM (NO. 16)	50 TO 85
0.60 MM (NO. 30)	25 TO 60
0.30 MM (NO. 50)	5 TO 30
0.15 MM (NO. 100)	0 TO 10
0.075 MM (NO. 200)	LESS THAN 3

TABLE 2
GRADATION FOR JOINTING SAND (ASTM C 144)

SIEVE SIZE	PERCENT PASSING, BY WEIGHT	
	NATURAL SAND	MANUFACTURED SAND
4.75 MM (NO. 4)	100	100
2.36 MM (NO. 8)	95 TO 100	95 TO 100
1.18 MM (NO. 16)	70 TO 100	70 TO 100
0.60 MM (NO. 30)	40 TO 75	40 TO 75
0.30 MM (NO. 50)	10 TO 35	20 TO 40
0.15 MM (NO. 100)	2 TO 15	10 TO 25
0.075 MM (NO. 200)	0 TO 5	0 TO 10

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 144-L (SHEET 1 OF 2)

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
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DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

ALLEY INTERLOCKING CONCRETE
PAVEMENT SECTION

STANDARD DRAWING NO.

144


SHEET 1 OF 2

NOTES:

1. SUB GRADE SHALL BE COMPACTED NATIVE MATERIALS TO AT LEAST 90% PER ASTM D 1557. THE EFFECTIVE DEPTH OF COMPACTION SHALL BE AT LEAST THE TOP 12 INCHES.
2. CONCRETE BASE SHALL BE CLASS 560-C-3250 P.C.C.
3. PAVERS SHALL ABUT A STRAIGHT EDGE OF EXISTING P.C.C. OR A.C.; OTHERWISE P.C.C. EDGE RESTRAINTS ARE REQUIRED ALONG THE PERIMETER OF THE PAVERS. CONCRETE EDGE REINFORCED WITH A CONTINUOUS EPOXY COATED #4 BAR AS SHOWN IN THE STANDARD DRAWING. THE INSIDE FACE OF THE EDGE RESTRAINT SHALL BE VERTICAL. EDGE RESTRAINTS SHALL HAVE $\frac{1}{4}$ -INCH RADII AT THE TOP CORNERS.
4. PAVERS SHALL BE CONSTRUCTED WITH CONCRETE AND SHALL CONFORM TO ASTM C 1272 SPECIFICATION FOR HEAVY VEHICULAR PAVING BRICK.
5. THE MINIMUM PAVER THICKNESS, EXCLUSIVE OF ANY CHAMFERS, SHALL BE 3.15 INCHES (80 MM). THE RATIO OF MAXIMUM PAVER LENGTH TO THICKNESS SHALL BE LESS THAN 3 TO 1. THE MAXIMUM ALLOWABLE CHAMFER SHALL BE $\frac{3}{16}$ -INCH.
6. PAVER COLOR AND LAYOUT PATTERN SHALL BE APPROVED BY THE PUBLIC WORKS DEPARTMENT.
7. PAVER PIECE CUT SMALLER THAN 2-INCH X 2-INCH WILL NOT BE ACCEPTED.
8. TOP OF PAVERS SHALL CONFORM TO FINAL DESIGN ELEVATIONS TO THE TOLERANCE SPECIFIED BY THE ENGINEER.
9. IF THE LONGITUDINAL FLOWLINE GRADE IN THE ALLEY IS LESS THAN 0.5 PERCENT, THEN A 2-FOOT WIDE (MINIMUM) GUTTER, 8-INCHES THICK, SHALL BE CONSTRUCTED.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 144-L (SHEET 2 OF 2)

APP.

 51568
CITY ENGINEER RCE

11/24/2020

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DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

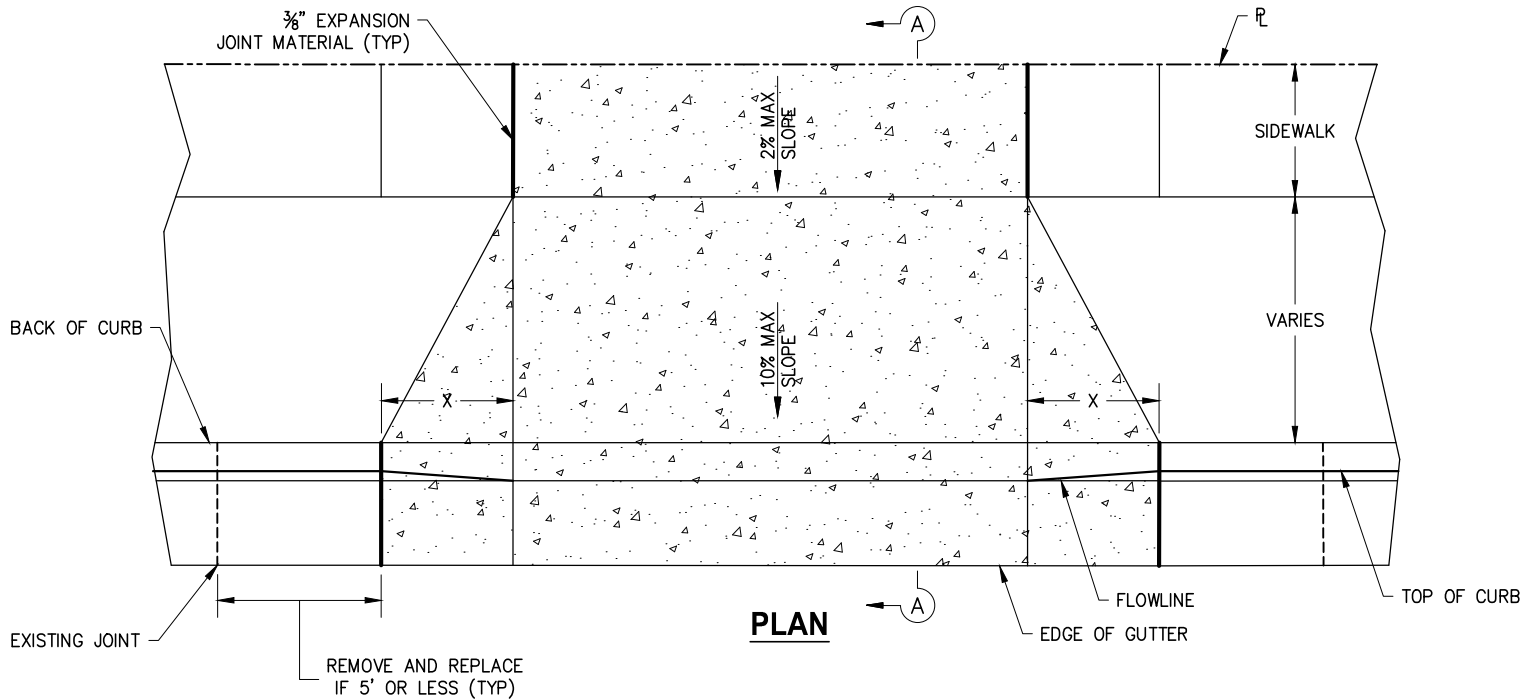
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ALLEY INTERLOCKING CONCRETE PAVEMENT SECTION

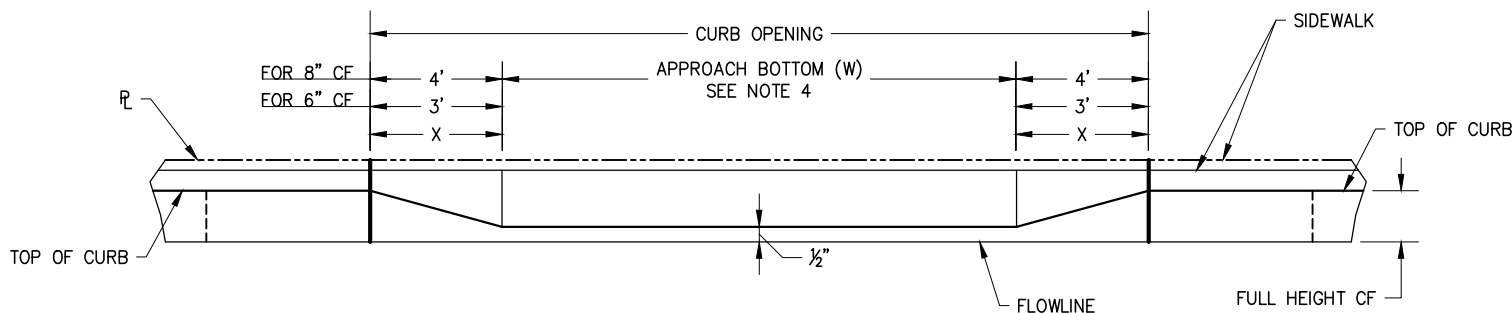
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144

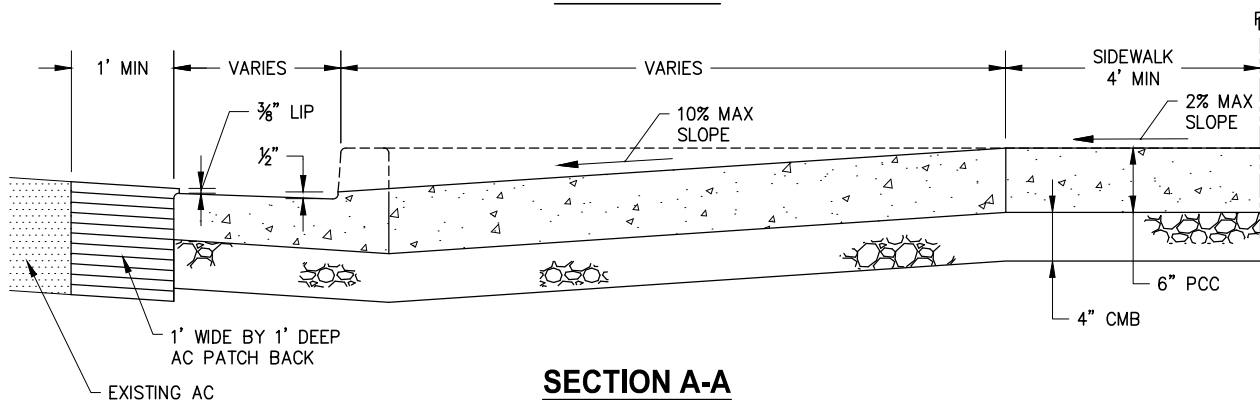
SHEET 2 OF 2



PLAN



ELEVATION



SECTION A-A

NOTES:

1. WHEN REMOVING EXISTING SIDEWALK AND CURB AND GUTTER, SAWCUT AND REMOVE TO NEAREST EXISTING JOINT WITHIN 5 FEET BEYOND CURB OPENING.
2. SLOPED "X" AREAS AND SLOPE DRIVEWAYS SHALL HAVE A COARSE BROOM FINISH.
3. CONCRETE SHALL BE 560-C-3250.
4. "W" SHALL BE MINIMUM OF 24 FEET AND A MAXIMUM OF 35 FEET.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 160-L-A

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

COMMERCIAL DRIVEWAY APPROACH TYPE I

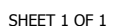
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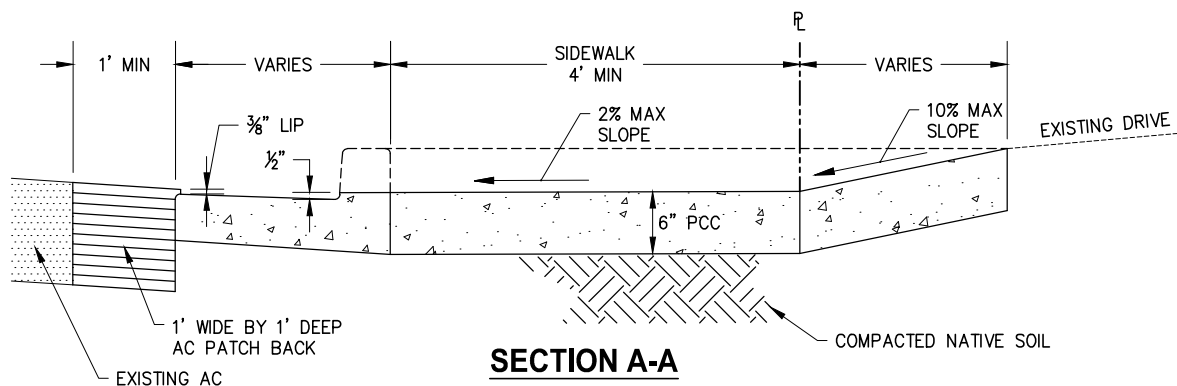
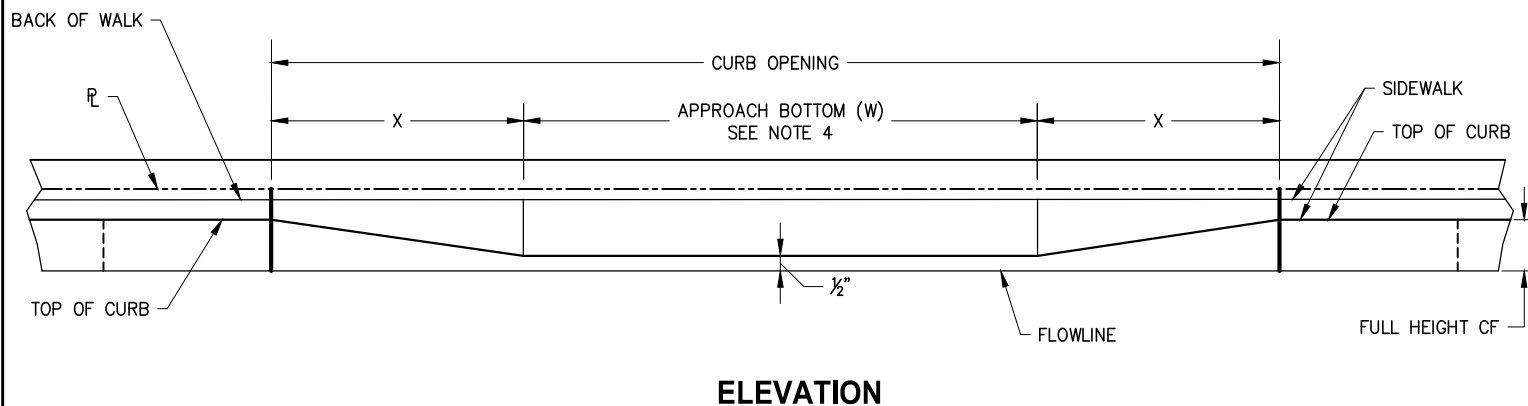
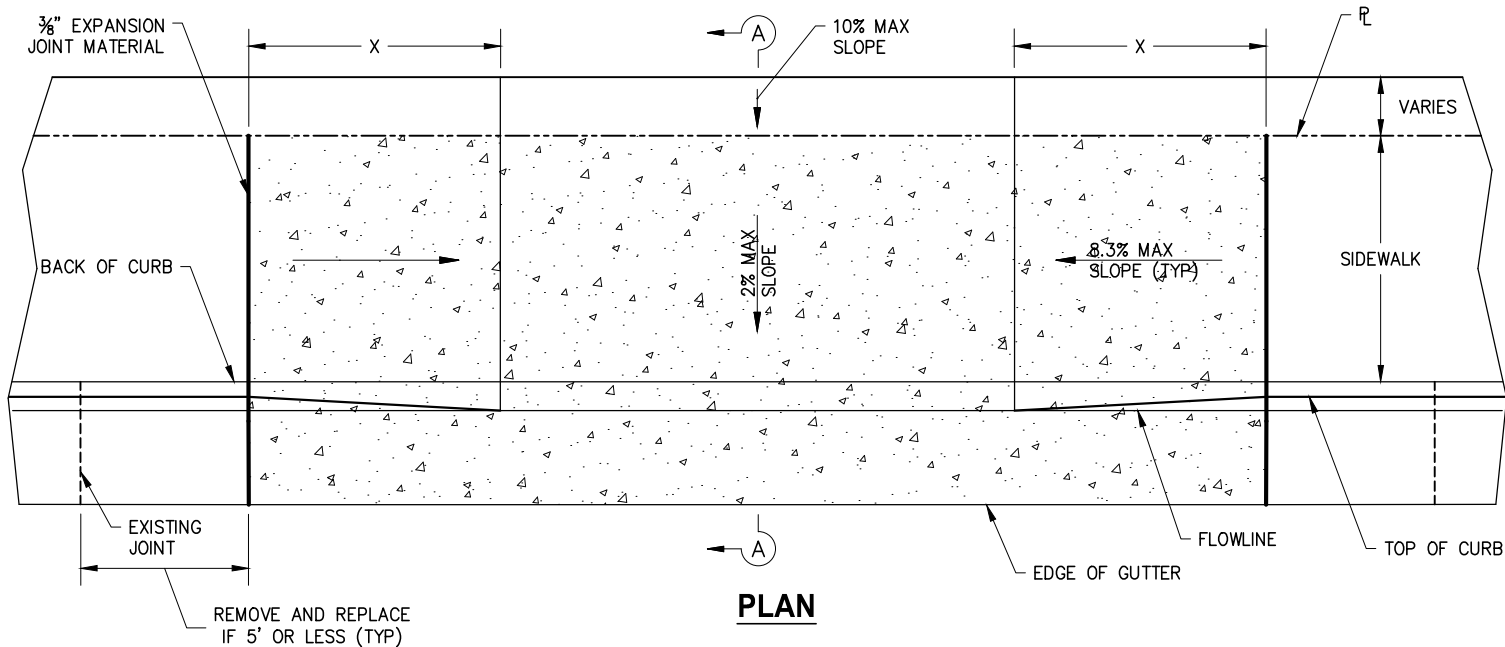
160

SHEET 1 OF 1



SHEET 1 OF 1





NOTES:

1. WHEN REMOVING EXISTING SIDEWALK AND CURB AND GUTTER, SAWCUT AND REMOVE TO NEAREST EXISTING JOINT WITHIN 5 FEET BEYOND CURB OPENING.
2. CONCRETE SHALL BE 560-C-3250.
3. "W" SHALL BE MINIMUM OF 10 FEET AND A MAXIMUM OF 20 FEET EXCEPT IN THE CASE OF THREE CAR GARAGE WHERE "W" MAY EQUAL 25 FEET OR 32 FEET FOR A 4 CAR GARAGE.
4. "W" SHALL BE CENTERED WITH GARAGE OPENING.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 163-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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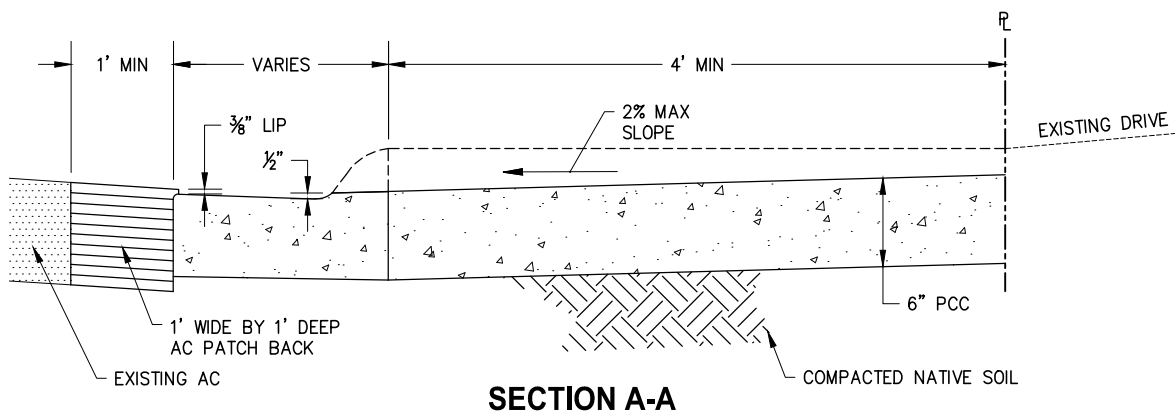
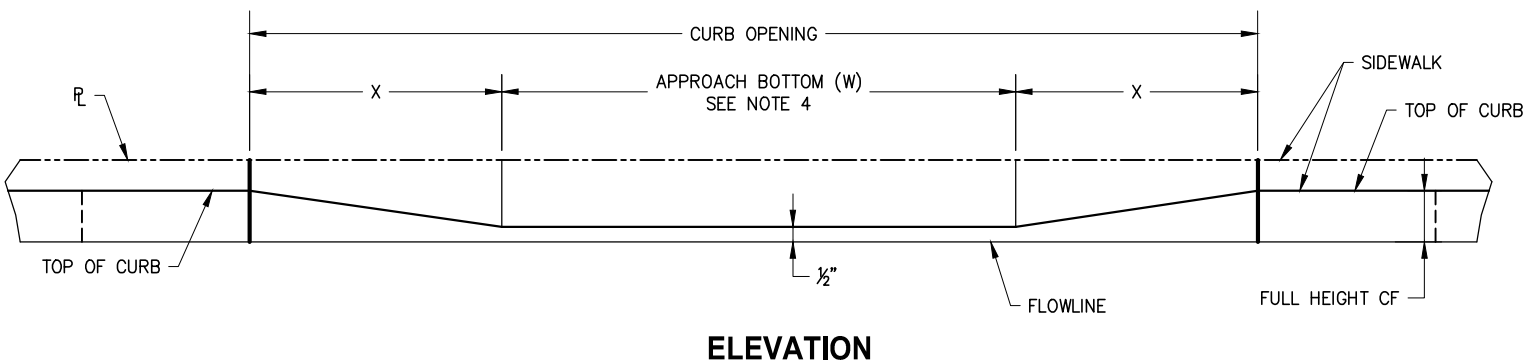
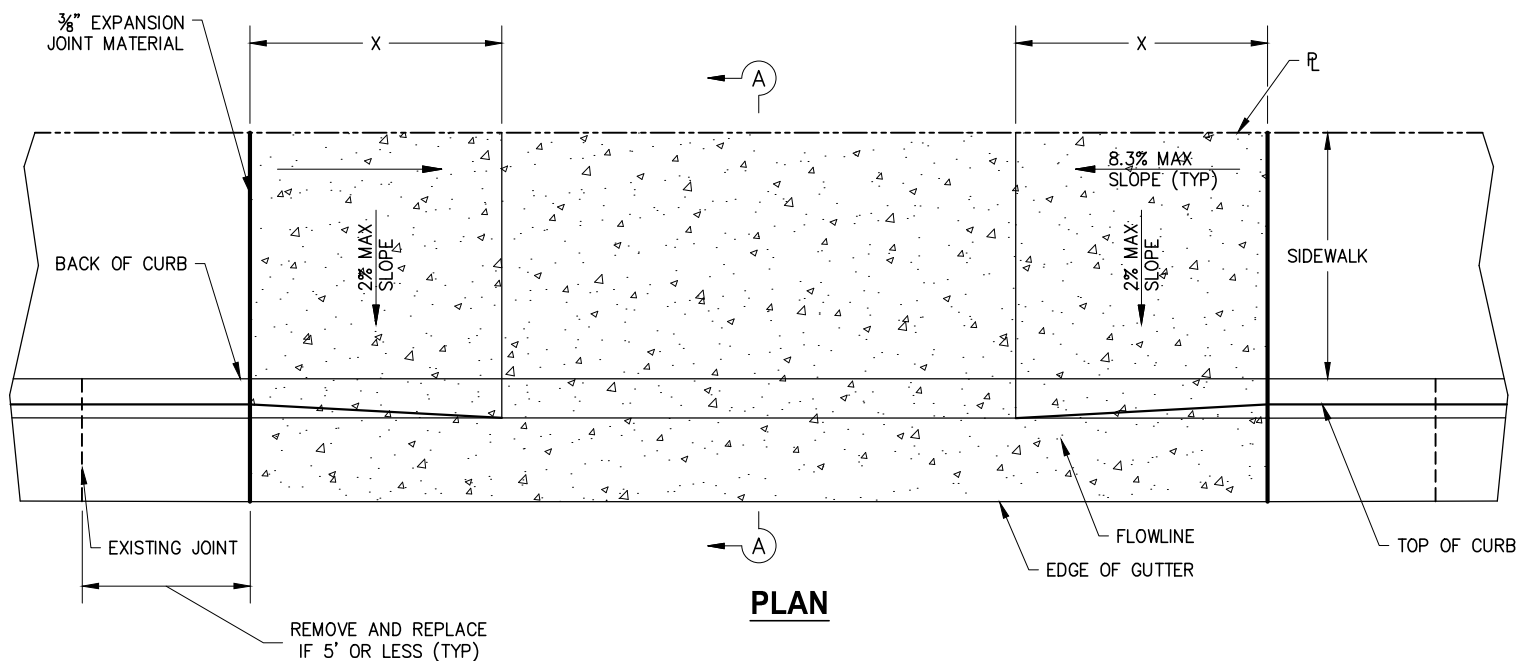
DATE: 11/3/2020

RESIDENTIAL DRIVEWAY APPROACH TYPE II

STANDARD DRAWING NO.

163

SHEET 1 OF 1



NOTES:

1. WHEN REMOVING EXISTING SIDEWALK AND CURB AND GUTTER, SAWCUT AND REMOVE TO NEAREST EXISTING JOINT WITHIN 5 FEET BEYOND CURB OPENING.
2. CONCRETE SHALL BE 560-C-3250.
3. "W" SHALL BE MINIMUM OF 10 FEET AND A MAXIMUM OF 20 FEET EXCEPT IN THE CASE OF THREE CAR GARAGE WHERE "W" MAY EQUAL 25 FEET OR 32 FEET FOR A 4 CAR GARAGE.
4. "W" SHALL BE CENTERED WITH GARAGE OPENING.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 164-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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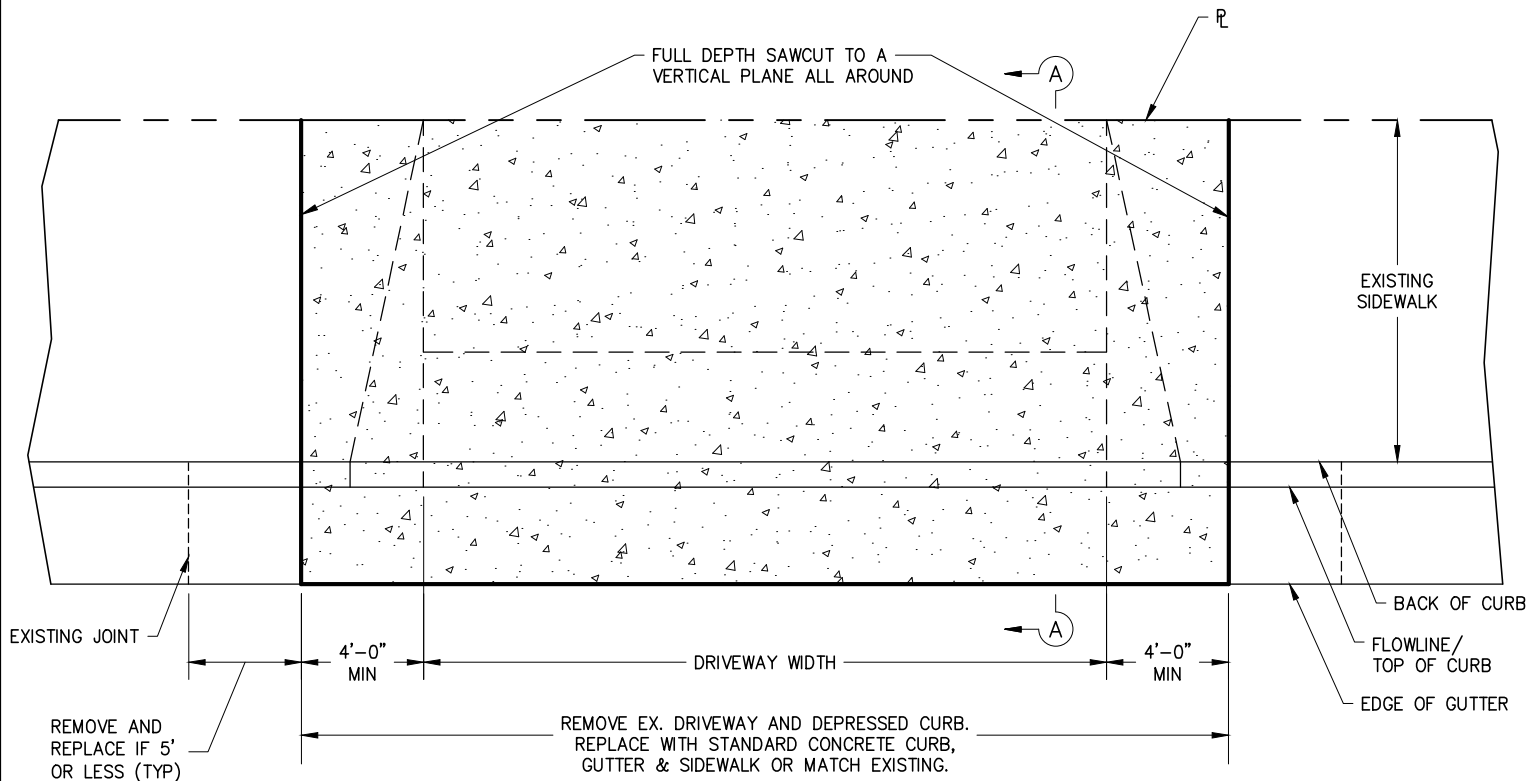
DATE: 11/3/2020

RESIDENTIAL DRIVEWAY APPROACH TYPE III

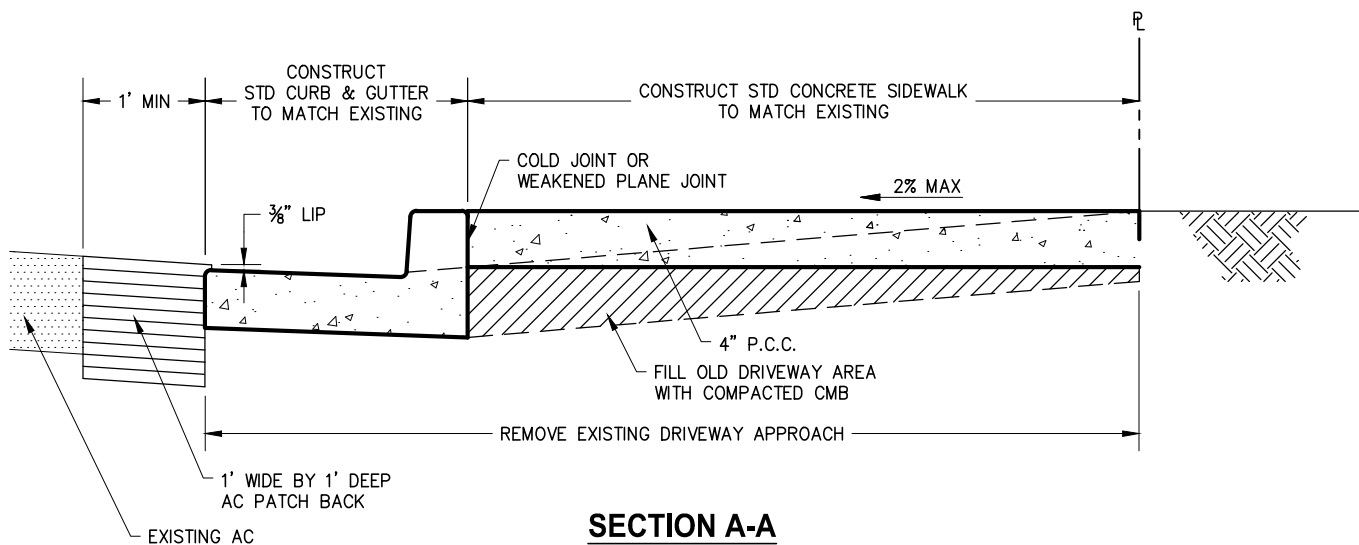
STANDARD DRAWING NO.

164

SHEET 1 OF 1



PLAN



SECTION A-A

NOTE:

1. CONCRETE SHALL BE 560-C-3250.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 165-L

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

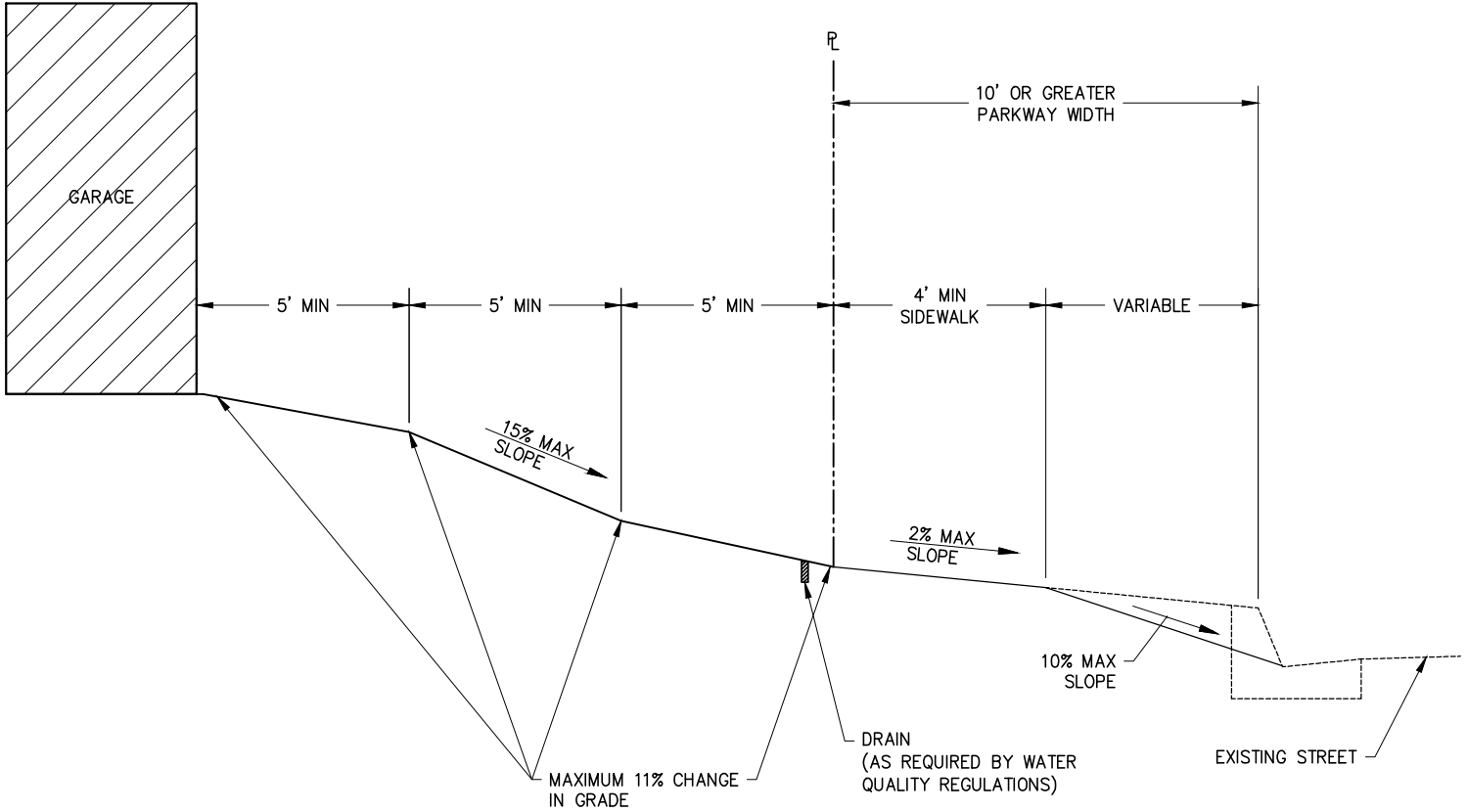
DATE: 11/3/2020

PLUG FOR ABANDONED DRIVEWAY

STANDARD DRAWING NO.

165

SHEET 1 OF 1



TYPE "A"

GARAGE FINISHED FLOOR ELEVATION ABOVE TOP OF CURB

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 160-L-B

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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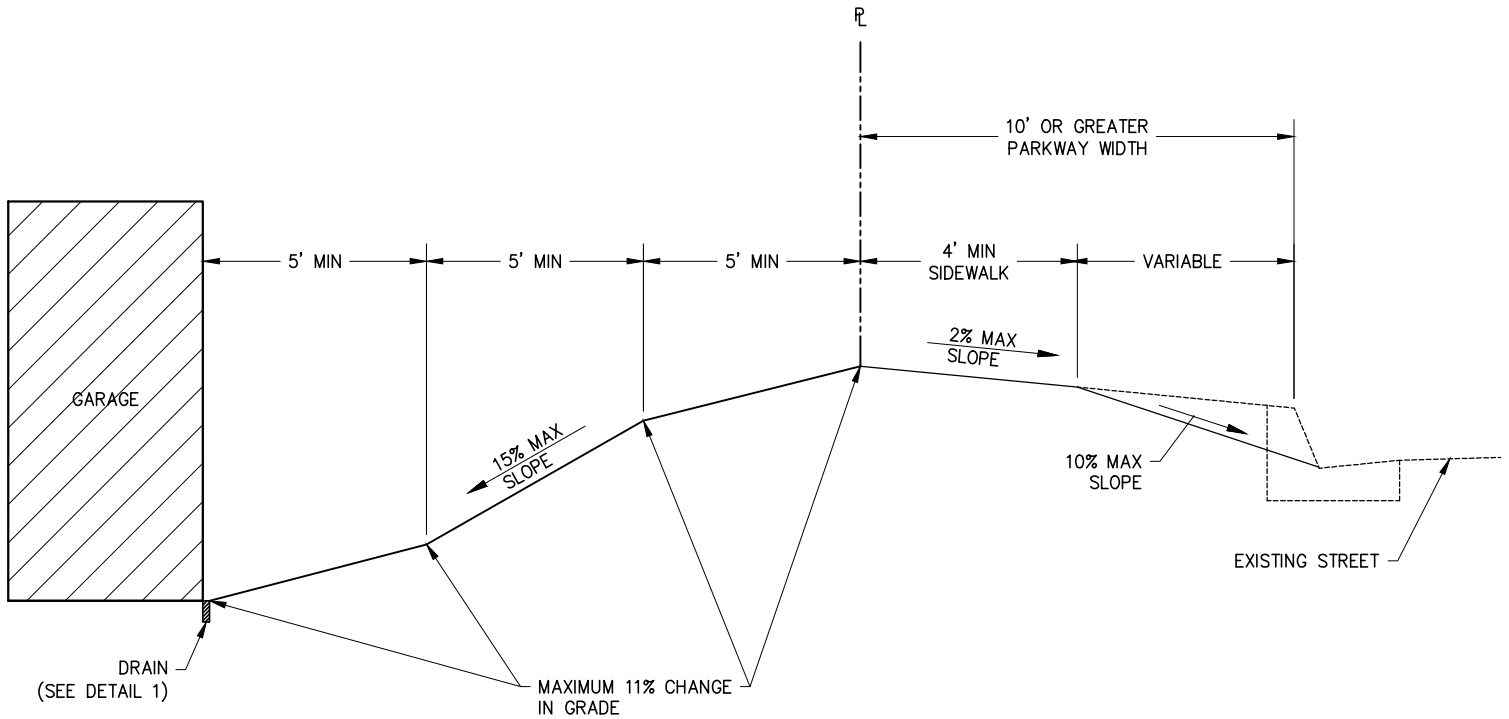
DATE: 11/3/2020

SAMPLE DRIVEWAY PROFILE - TYPE A

STANDARD DRAWING NO.

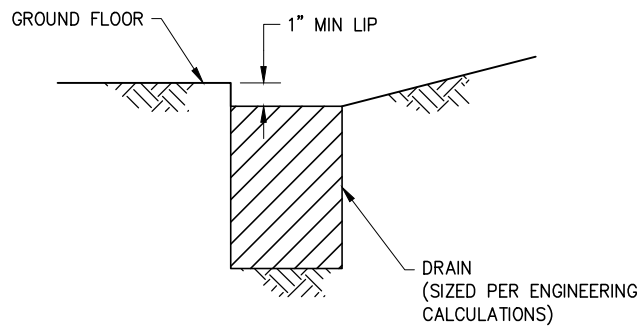
167-A

SHEET 1 OF 1




TYPE "B"

GARAGE FINISHED FLOOR ELEVATION BELOW/EQUAL TOP OF CURB



DETAIL 1

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 160-L-C

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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SAMPLE DRIVEWAY PROFILE - TYPE B

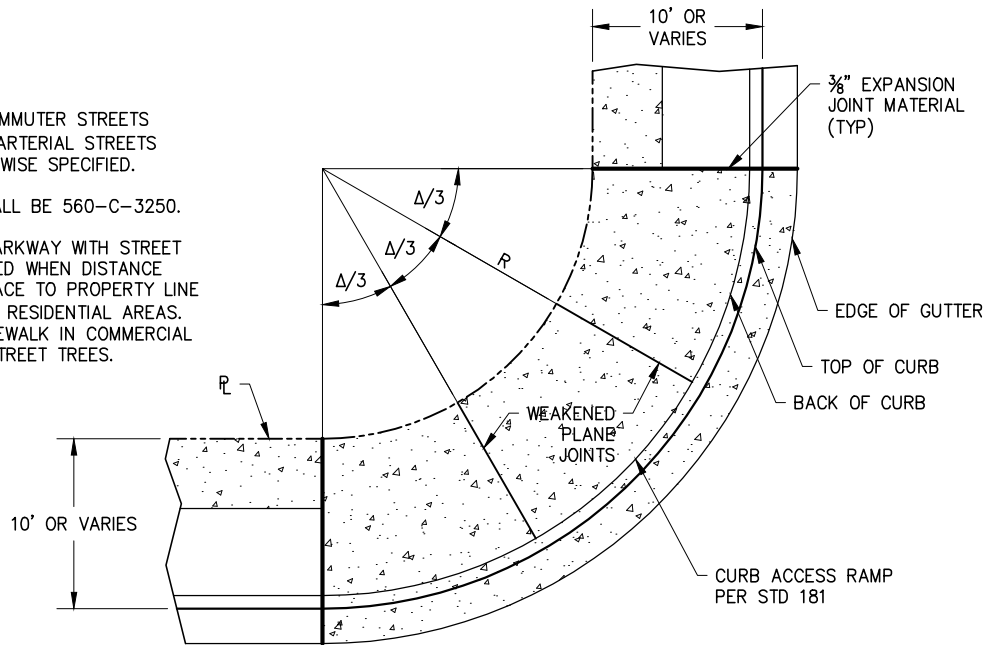
STANDARD DRAWING NO.

167-B

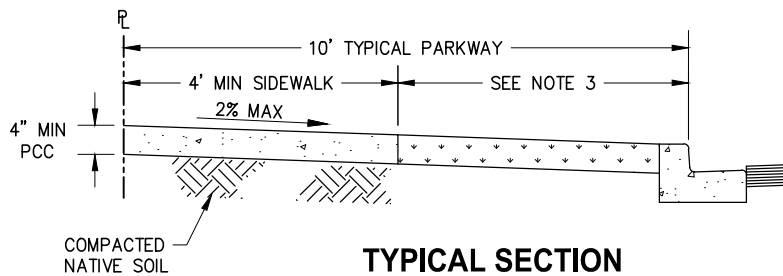
SHEET 1 OF 1

NOTES:

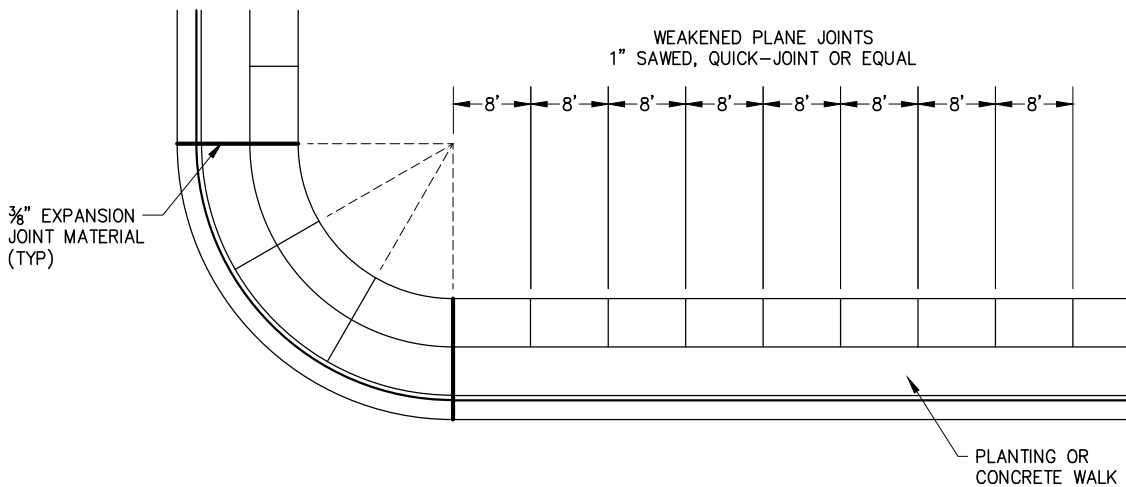
1. R=25' FOR COMMUTER STREETS
AND 35' FOR ARTERIAL STREETS
UNLESS OTHERWISE SPECIFIED.
2. CONCRETE SHALL BE 560-C-3250.
3. LANDSCAPE PARKWAY WITH STREET
TREES REQUIRED WHEN DISTANCE
FROM CURB FACE TO PROPERTY LINE
EXCEEDS 6' IN RESIDENTIAL AREAS.
CONCRETE SIDEWALK IN COMMERCIAL
AREAS WITH STREET TREES.



CURB RETURN AREA



TYPICAL SECTION



WEAKENED PLANE JOINTS & EXPANSION JOINTS

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 180-L

APP. *James M. Hinkle* 51568 11/24/2020
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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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SIDEWALK DETAIL

STANDARD DRAWING NO.

180

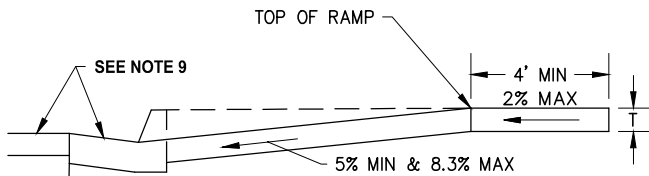
SHEET 1 OF 1



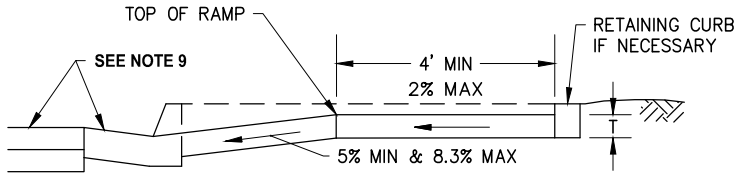
CASE "D"



SHEET 1 OF 3

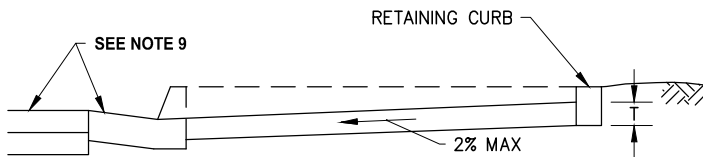


SECTION A-A

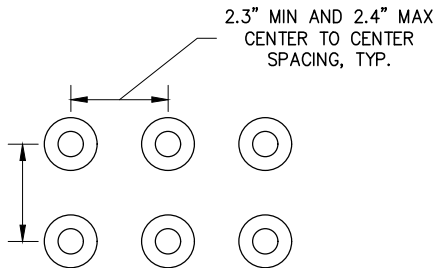


SECTION B-B

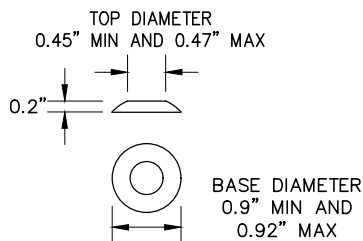
DEPRESS ENTIRE SIDEWALK AS REQUIRED



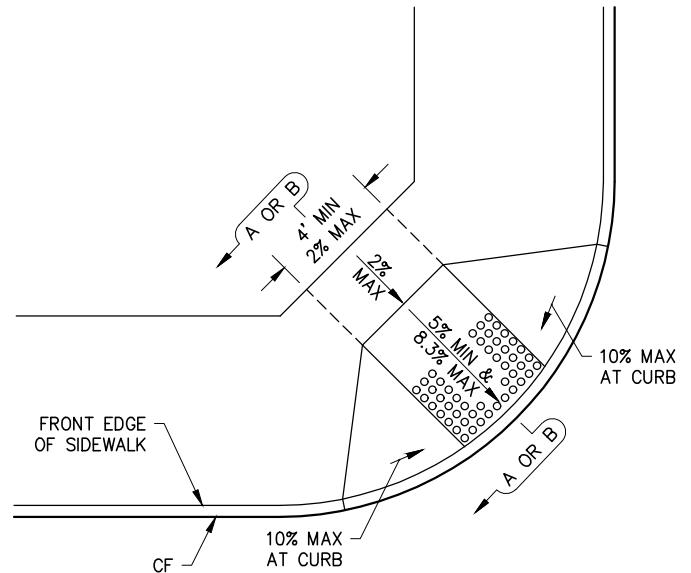
SECTION C-C



**RAISED TRUNCATED
DOME PATTERN
(IN-LINE)**



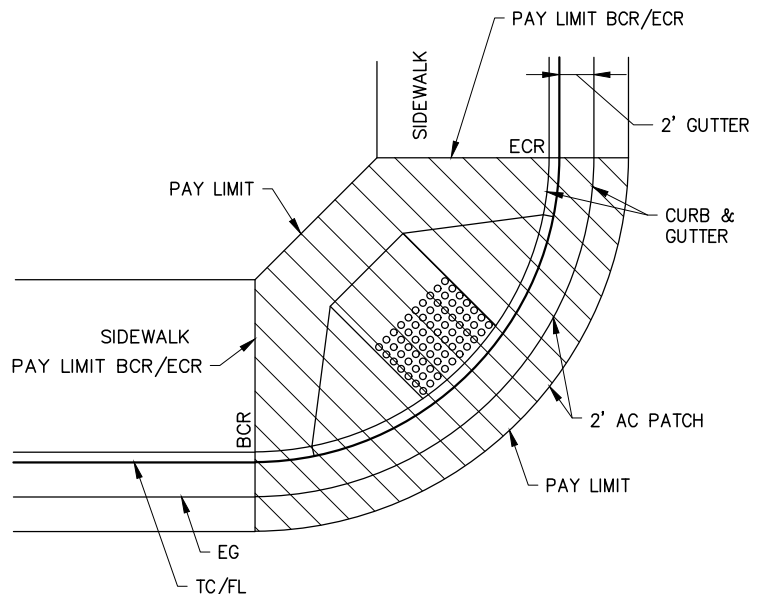
RAISED TRUNCATED DOME



CASE "H"


NOTES:

1. CURB AND GUTTER WILL BE POURED FIRST AND RAMP THE FOLLOWING DAY TO CREATE COLD JOINT.
2. LOCATIONS WITH CROSS GUTTER SHALL HAVE SPANDREL REPLACED.
3. PARKWAY LANDSCAPE AND IRRIGATION SHALL BE MODIFIED IN KIND.



**DETAIL A
CURB RAMP PAY LIMIT**

FORMER CITY STANDARD PLAN NUMBERS (2004 EDITION): STD 181-L-A, STD 181-L-B AND STD 181-L-D

APP. 	51568	11/24/2020			
CITY ENGINEER	RCE	DATE	NO.	DATE	DESCRIPTION OF REVISIONS

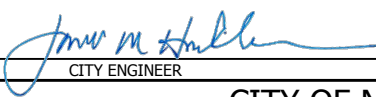
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI		STANDARD DRAWING NO.
DATE: 11/3/2020	CURB ACCESS RAMP	181
		SHEET 2 OF 3

NOTES

1. IF DISTANCE FROM CURB TO BACK OF SIDEWALK IS TOO SHORT TO ACCOMMODATE RAMP AND 4' MIN PLATFORM (LANDING) AS IN CASE A, THE SIDEWALK MAY BE DEPRESSED LONGITUDINALLY OR MAY BE WIDENED AS IN CASE D.
2. IF SIDEWALK IS LESS THAN 6' WIDE, THE FULL WIDTH OF THE SIDEWALK SHALL BE DEPRESSED AS SHOWN IN CASE C.
3. (NOT USED)
4. (NOT USED)
5. THE PAY LIMITS FOR CURB ACCESS RAMPS SHALL BE AS SHOWN IN DETAIL A.
6. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
7. SIDEWALK AND RAMP THICKNESS, "T", SHALL BE 4" MIN.
8. UTILITY PULL BOXES, MANHOLES, VAULTS AND ALL OTHER UTILITY FACILITIES WITHIN THE BOUNDARIES OF THE CURB RAMP SHALL BE RELOCATED OR ADJUSTED TO GRADE.
9. COUNTERSLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO AND WITHIN 48" OF THE CURB FLOWLINE SHALL NOT BE STEEPER THAN 1V:20H (5.0%).
10. RAISED TRUNCATED DOMES SHALL BE DARK GRAY IN COLOR AND SHALL BE ADA PAVERS AS MANUFACTURED BY WAUSAU TILE, INC OF WISCONSIN, ADA-2 COLOR A-90 OR APPROVED EQUAL.
11. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 48" WIDE PERPENDICULAR TO THE DIRECTION OF TRAVEL AND EXTEND 36" MINIMUM IN THE DIRECTION OF TRAVEL.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 181-L-C

APP.  51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

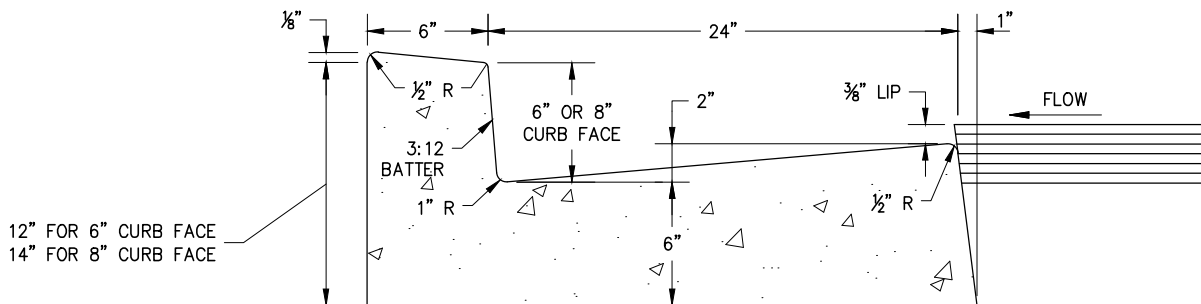
DATE: 11/3/2020

CURB ACCESS RAMP

STANDARD DRAWING NO.

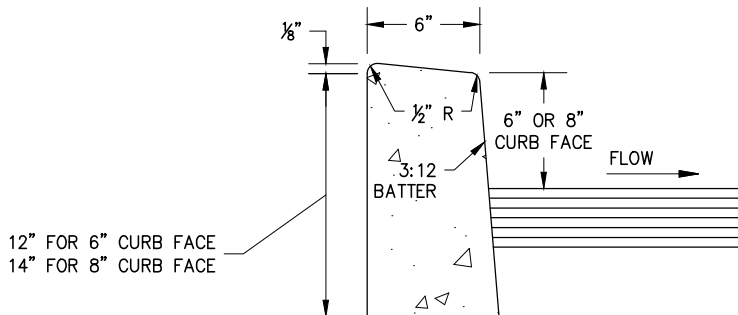
181

SHEET 3 OF 3



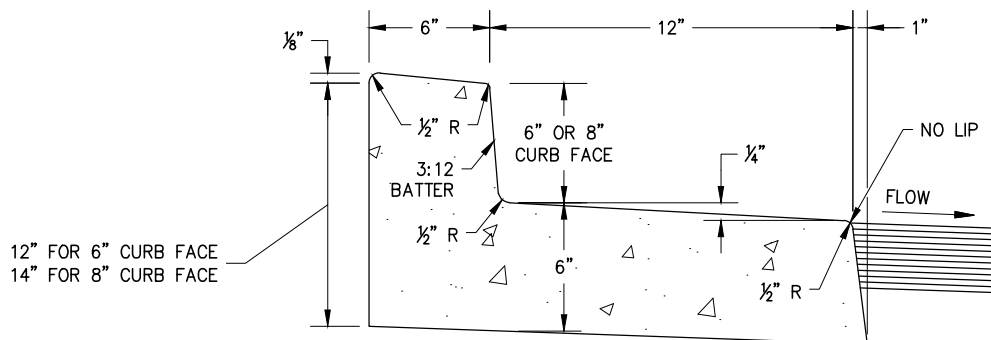
TYPE A PCC CURB AND GUTTER

(CURB FACE SHALL BE 8" UNLESS OTHERWISE NOTED)



TYPE B PCC CURB

(CURB FACE SHALL BE 6" UNLESS OTHERWISE NOTED)



TYPE C PCC CURB AND GUTTER

NOTES:

1. GUTTER SURFACE WITHIN 4" OF FLOW LINE SHALL BE GIVEN A STEEL TROWEL. (APPLIES TO TYPE "A" CURB AND GUTTER).
2. PREFORMED $\frac{3}{8}$ " THICK EXPANSION FILLER SHALL BE INSTALLED IN ALL TYPES OF CURB AT THE BC AND EC OF RETURNS, AT INTERVALS OF 60' BETWEEN RETURNS AND AT THE ENDS OF DRIVEWAYS. SIMILAR EXPANSION JOINTS SHALL BE INSTALLED IN ALL GUTTERS ADJOINING CURB. WEAKENED PLANE JOINTS SHALL BE FORMED AT INTERVALS OF 20' BETWEEN RETURNS. (APPLIES TO TYPES "A", "B", "C", AND "F" CURBS AND GUTTERS).
3. IN SUPER ELEVATED SECTIONS THE GUTTER SLOPE SHALL FOLLOW THE CROSS SLOPE OF THE STREET PAVEMENT. (APPLIES TO TYPE "C" CURB AND GUTTER).
4. CONCRETE SHALL BE 560-C-3250.

FORMER CITY STANDARD PLAN NUMBERS (2004 EDITION): STD 182-L AND STD 183-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

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DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

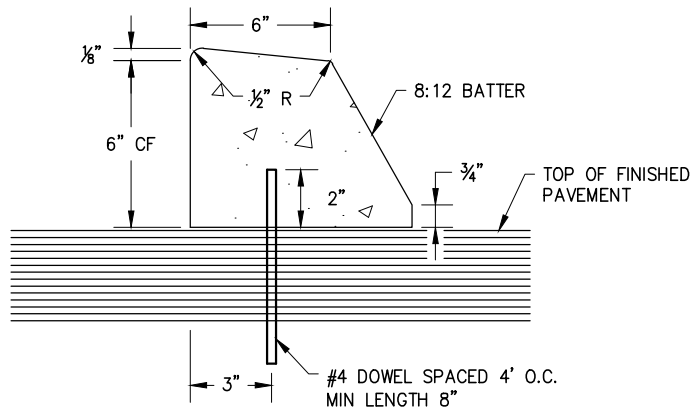
DATE: 11/3/2020

STANDARD CURB SECTIONS TYPE A, B, & C

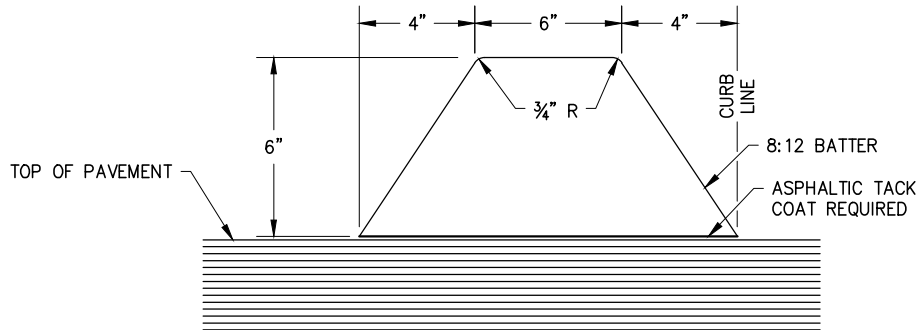
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182

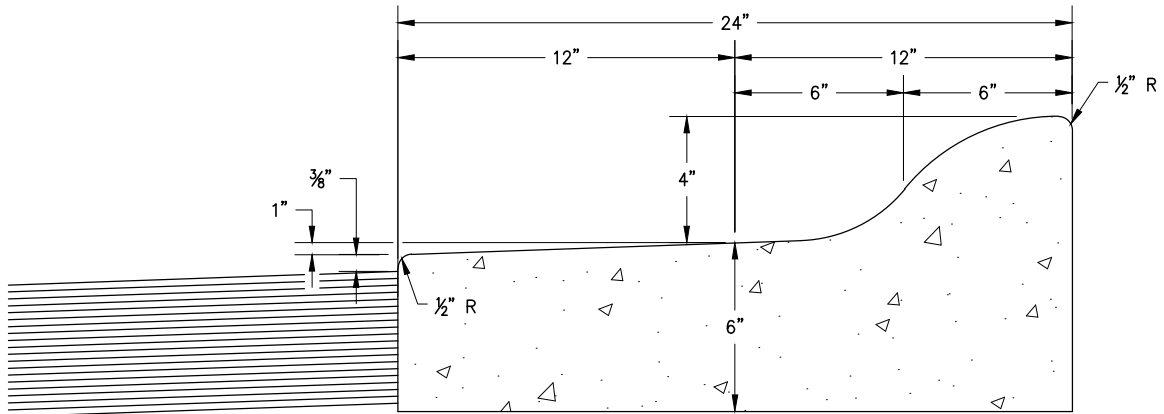
SHEET 1 OF 1



TYPE D PCC CURB



TYPE E ASPHALT CONCRETE CURB



TYPE F PCC ROLLED CURB

NOTES:

- DOWELS MAY BE DELETED AND CURB UNREINFORCED WHEN EXTRUDED CONCRETE IS BONDED TO PAVEMENT SURFACE WITH APPROVED EPOXY ADHESIVE CONFORMING TO STATE OF CALIFORNIA SPECIFICATION 95-1.02E AND USED IN STRICT ACCORD WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS. (APPLIES TO TYPE "D" CURB).
- CONCRETE SHALL BE 560-C-3250.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 183-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

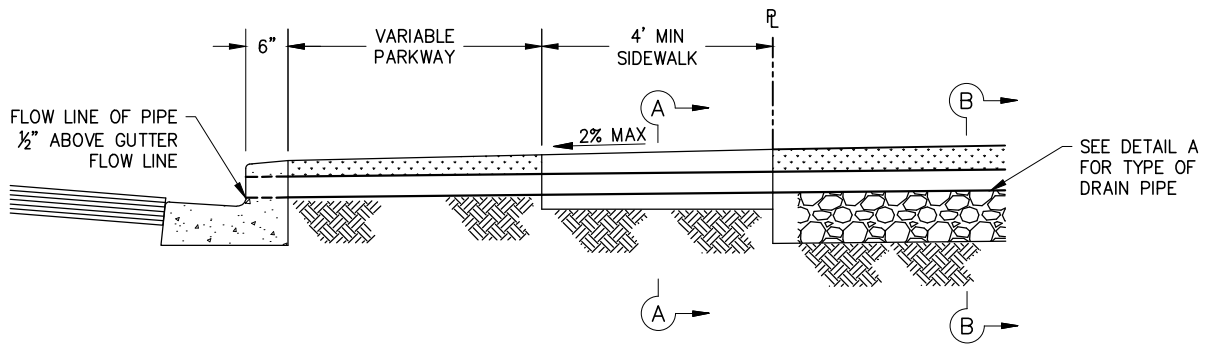
DATE: 11/3/2020

STANDARD CURB SECTIONS TYPE D, E, & F

STANDARD DRAWING NO.

183

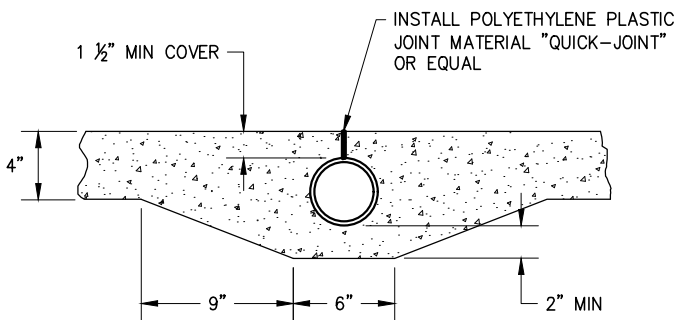
SHEET 1 OF 1



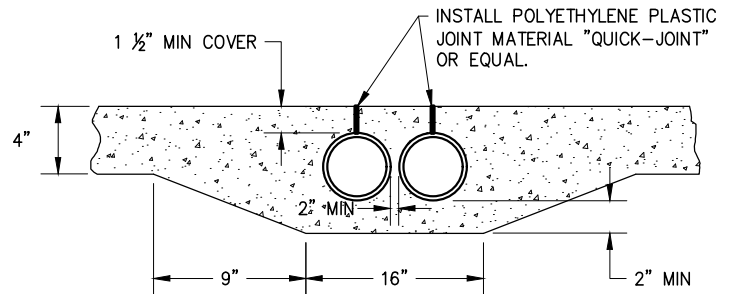
ELEVATION

NOTES:

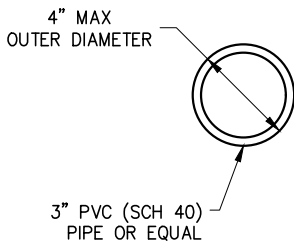
1. DRAINS WITH SLOPE GREATER THAN 10% MAY REQUIRE AN ENERGY REDUCER.
2. ALL DRAINS MUST BE INSTALLED 90° TO THE CURB FACE UNLESS APPROVED BY THE CONSTRUCTION ENGINEER.
3. IF CURB AND GUTTER OR SIDEWALK IS REMOVED, JOIN TO THE NEAREST JOINT.



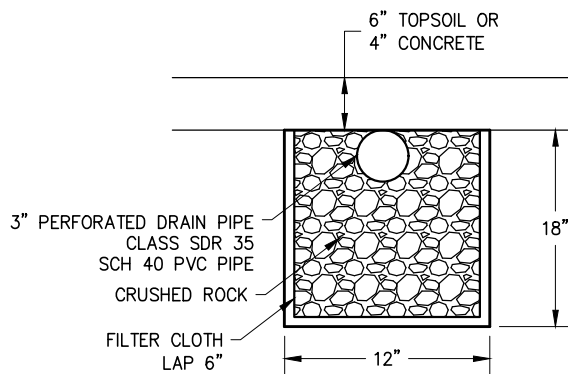
SECTION A-A RESIDENTIAL



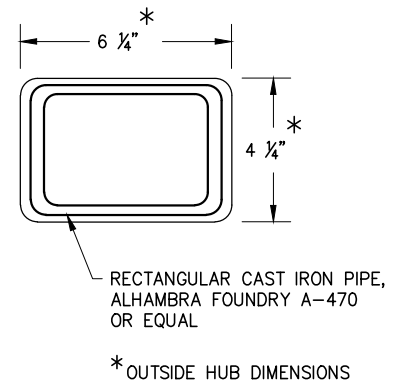
SECTION A-A COMMERCIAL



DETAIL A



SECTION B-B



ALTERNATE TO DETAIL A

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 184-L

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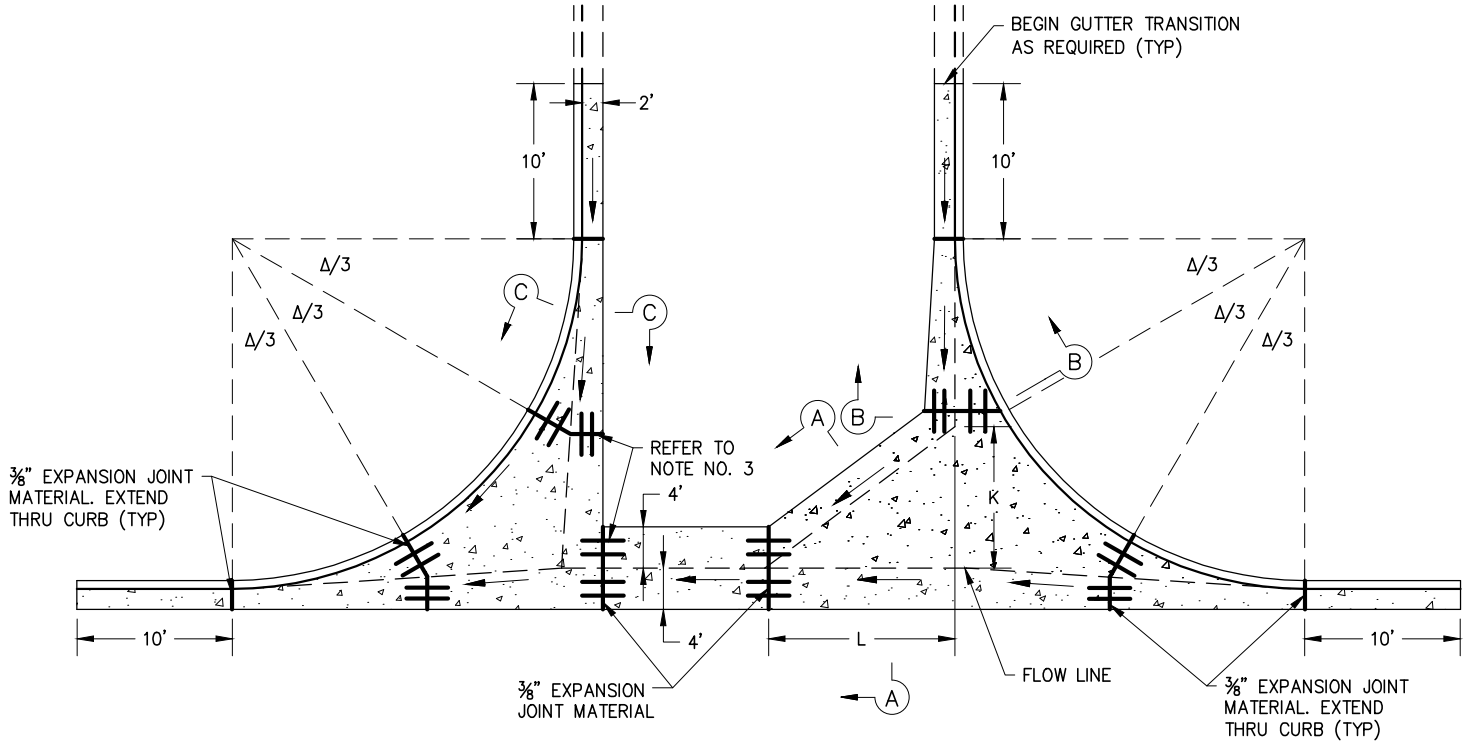
DATE: 11/3/2020

PRIVATE DRAINS THROUGH CURB

STANDARD DRAWING NO.

184

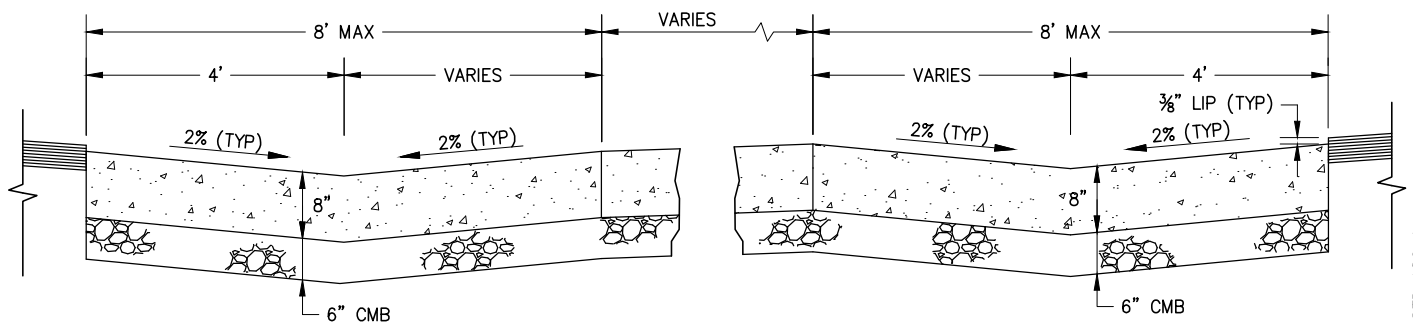
SHEET 1 OF 1



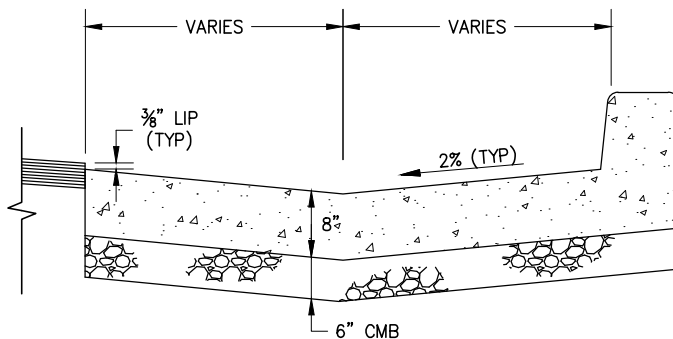
NOTES:

1. SMOOTH TROWEL 8" WIDE ALONG FLOWLINE IN CROSS GUTTERS AND APRONS.
2. CONCRETE SHALL BE 560-C-3250.
3. 4-#4 SMOOTH GALVANIZED BARS (4' LONG) @ 18" O.C., 3" FROM BOTTOM (TYP). ALL LOCATIONS SHOWN.
4. TO ESTABLISH "K" AND "L" DISTANCES, SEE SHEET 2.

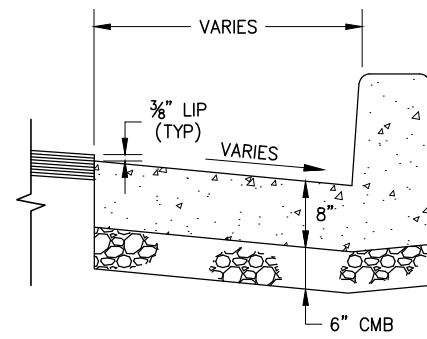
PLAN VIEW



SECTION A-A



SECTION B-B



SECTION C-C

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

SPECIAL CROSS GUTTER STEEP GRADES

STANDARD DRAWING NO.

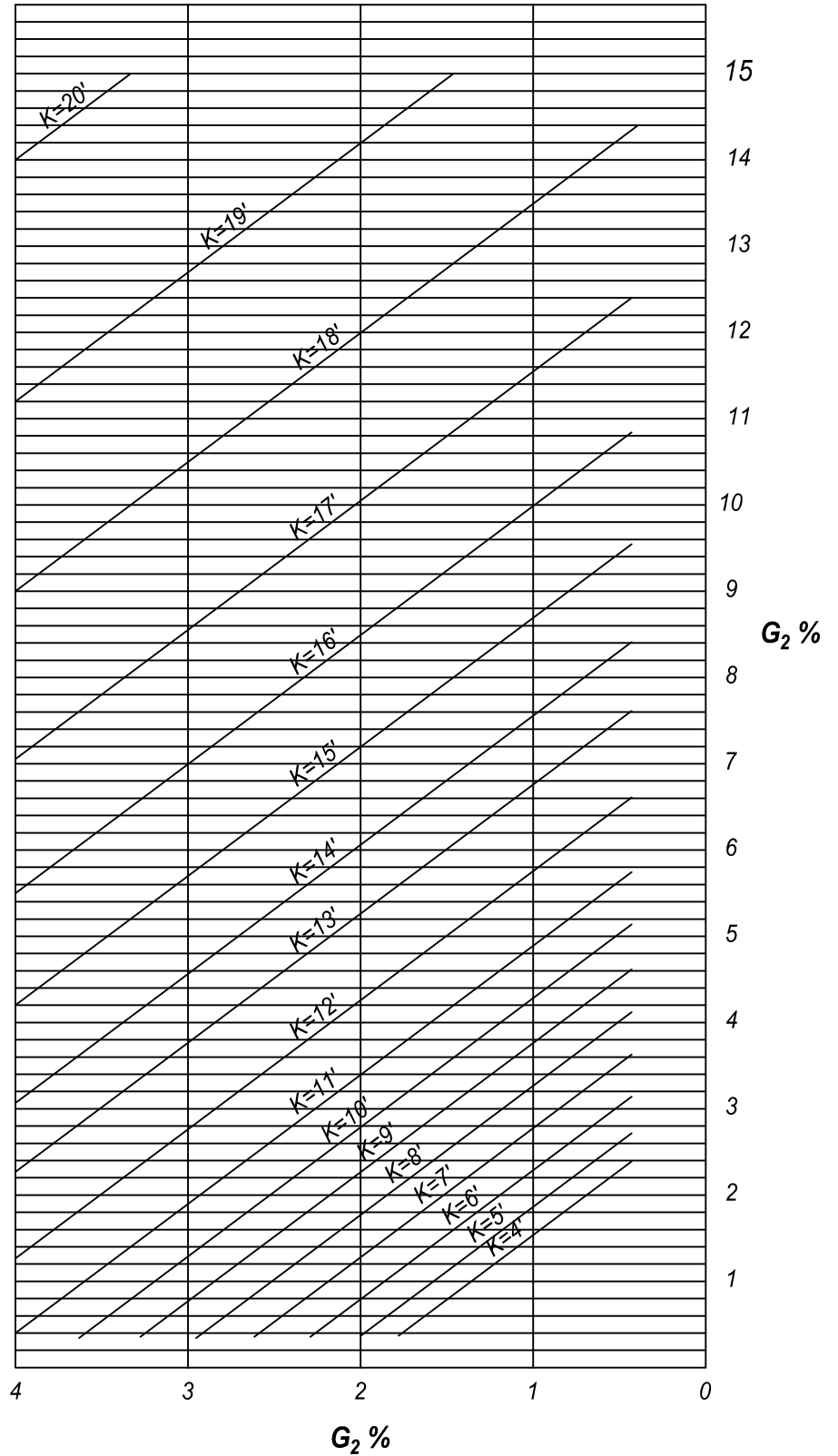
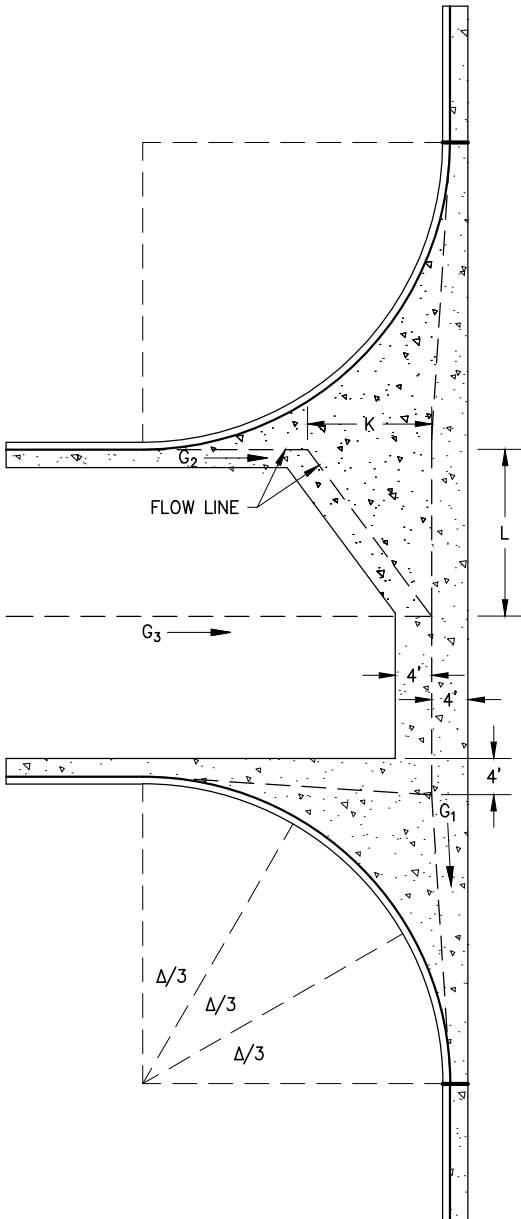
186

SHEET 1 OF 2

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 186-L

FORMULA FOR:

$$L = KG_1 / G_3$$



FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 187-L

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

SPECIAL CROSS GUTTER STEEP GRADES

STANDARD DRAWING NO.

186

SHEET 2 OF 2

120-240 VAC LED, LUMINAIRE LEOTEK OR EQUAL WITH 7-PIN PHOTOELECTRIC CELL AND RECEPTACLE. COLOR TEMPERATURE, DISTRIBUTION, FINISH, DRIVE CURRENT, AND WATTAGE WILL BE DETERMINED BY THE CITY ON A CASE-BY-CASE BASIS.

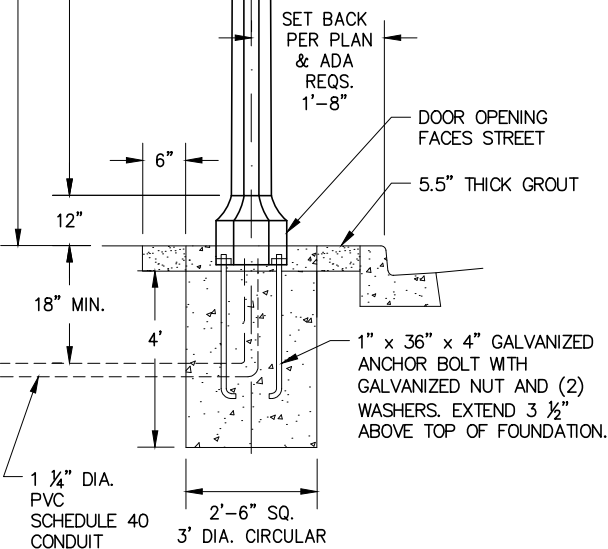
BRACKET ARM
ALUMINUM CAP
AMERON CONCRETE POLE MIX 37 OR APPROVED EQUAL

AMERON CAT. NO.	BRACKET ARM ALUMINUM	MOUNTING HEIGHT	POLE HEIGHT	BOLT DISTANCE X	BOLT CIRCLE Y
4B1-19-F4	4'	20'-9"	19'-2"	12"	17"
4B1-24-F4	4'	26'-3"	24'-8"	12"	17"
4B1-24-F8	8'	27'-9"	24'-8"	12"	17"

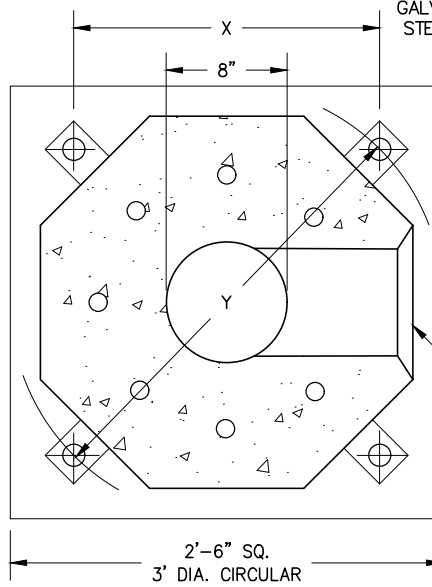
GENERAL NOTES

- BRACKET ARM, MOUNTING AND POLE HEIGHTS TO BE SHOWN ON PLANS.
- 3'-0" DIA. CIRCULAR FOUNDATION MAY BE USED IN PLACE OF 2'-6" SQ. FOUNDATION.
- ALL BASES SHALL BE POURED TO 4.5" BELOW SIDEWALK GRADE, TO ALLOW FOR 4.5" THICK GROUT.
- THE AREA AROUND ALL STANDARDS SHALL BE FORMED AND POURED WITH GROUT TO EXTEND 6" BEYOND EDGE OF FOUNDATION, ON EACH SIDE OF STANDARD FROM BACK OF CURB TO FRONT OF STANDARD. GROUT SHALL BE POURED FROM TOP OF BASE TO SIDEWALK GRADE. GROUT SHALL CONSIST OF 2 PARTS SAND AND 1 PART CEMENT.
- EACH POLE SHALL HAVE A PULL BOX, SEE STD 204.
- FUSE HOLDER SHALL BE LOCATED IN ADJACENT PULL BOX, SEE STD 205.
- ALL THREADED CONNECTIONS SHALL HAVE PRE-APPROVED ANTI-SEIZE COMPOUND.
- SEE POLE LEVELING DETAIL TO THE RIGHT.
- FOR POLE WIRING, SEE STD 205.
- POLE NUMBERING SHALL BE 1" BLACK VINYL SELF-ADHESIVE NUMBERS ON 1" x 6" REFLECTIVE BACKING INSTALLED IN A VERTICAL ORIENTATION.
- WIRING FROM ADJACENT PULL BOX TO LUMINAIRE SHALL BE #10 AWG INSULATED STRANDED COPPER (NON-GROUNDED CONDUCTORS) AND #12 AWG SOLID COPPER GROUND. MATCH COLOR CODE OF CIRCUIT.
- POLE DOOR HAND HOLE FASTENERS TO BE TAMPER RESISTANT, STAINLESS STEEL.

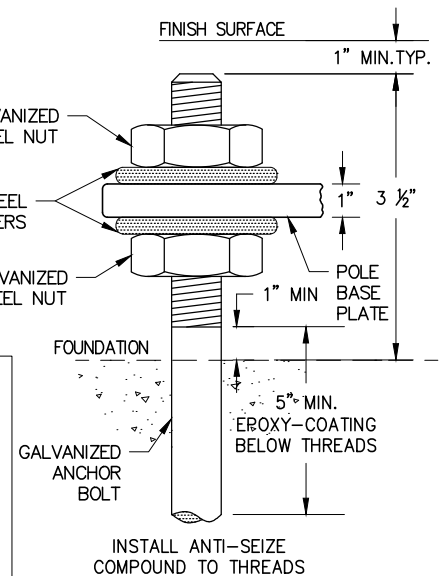
MOUNTING HEIGHT
POLE HEIGHT



ELEVATION



BASE DETAIL



LEVELING DETAIL

DOOR OPENING FACES STREET

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 200-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

DATE: 11/3/2020

LIGHT STANDARD TYPE 1

STANDARD DRAWING NO.

200-A

SHEET 1 OF 1

BRACKET ARM

120-240 VAC LED, LUMINAIRE LEOTEK OR EQUAL WITH 7-PIN PHOTOELECTRIC CELL AND RECEPTACLE. COLOR TEMPERATURE, DISTRIBUTION, FINISH, DRIVE CURRENT, AND WATTAGE WILL BE DETERMINED BY THE CITY ON A CASE-BY-CASE BASIS.

ALUMINUM CAP

AMERON CONCRETE POLE MIX 37 OR APPROVED EQUAL

AMERON CAT. NO.	BRACKET ARM ALUMINUM	MOUNTING HEIGHT	POLE HEIGHT	BOLT DISTANCE X	BOLT CIRCLE Y
6B1-26-F8	8'	29'-9"	26'-7"	14'-7/8"	21"
6B1-31-F8	8'	34'-9"	31'-7"	14'-7/8"	21'

GENERAL NOTES

- BRACKET ARM, MOUNTING AND POLE HEIGHTS TO BE SHOWN ON PLANS.
- 3'-0" DIA. CIRCULAR FOUNDATION MAY BE USED IN PLACE OF 2'-6" SQ. FOUNDATION.
- ALL BASES SHALL BE POURED TO 4.5" BELOW SIDEWALK GRADE, TO ALLOW FOR 4.5" THICK GROUT.
- THE AREA AROUND ALL STANDARDS SHALL BE FORMED AND POURED WITH GROUT TO EXTEND 6" BEYOND EDGE OF FOUNDATION, ON EACH SIDE OF STANDARD FROM BACK OF CURB TO FRONT OF STANDARD. GROUT SHALL BE POURED FROM TOP OF BASE TO SIDEWALK GRADE. GROUT SHALL CONSIST OF 2 PARTS SAND AND 1 PART CEMENT.
- EACH POLE SHALL HAVE A PULL BOX, SEE STD 204.
- FUSE HOLDER SHALL BE LOCATED IN ADJACENT PULL BOX, SEE STD 205.
- ALL THREADED CONNECTIONS SHALL HAVE PRE-APPROVED ANTI-SEIZE COMPOUND.
- SEE POLE LEVELING DETAIL TO THE RIGHT.
- FOR POLE WIRING, SEE STD 205.
- POLE NUMBERING SHALL BE 1" BLACK VINYL SELF-ADHESIVE NUMBERS ON 1" x 6" REFLECTIVE BACKING INSTALLED IN A VERTICAL ORIENTATION.
- WIRING FROM ADJACENT PULL BOX TO LUMINAIRE SHALL BE #10 AWG INSULATED STRANDED COPPER (NON-GROUNDED CONDUCTORS) AND #12 AWG SOLID COPPER GROUND. MATCH COLOR CODE OF CIRCUIT.
- POLE DOOR HAND HOLE FASTENERS TO BE TAMPER RESISTANT, STAINLESS STEEL.

MOUNTING HEIGHT

POLE HEIGHT

SET BACK PER PLAN & ADA REQS. 1'-8"

DOOR OPENING FACES STREET

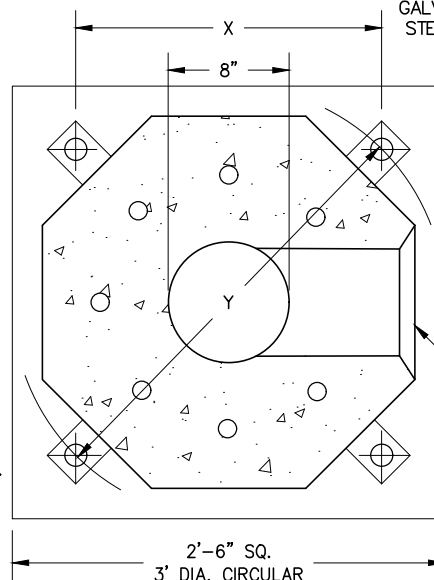
5.5" THICK GROUT

1" x 36" x 4" GALVANIZED ANCHOR BOLT WITH GALVANIZED NUT AND (2) WASHERS. EXTEND 3 1/2" ABOVE TOP OF FOUNDATION.

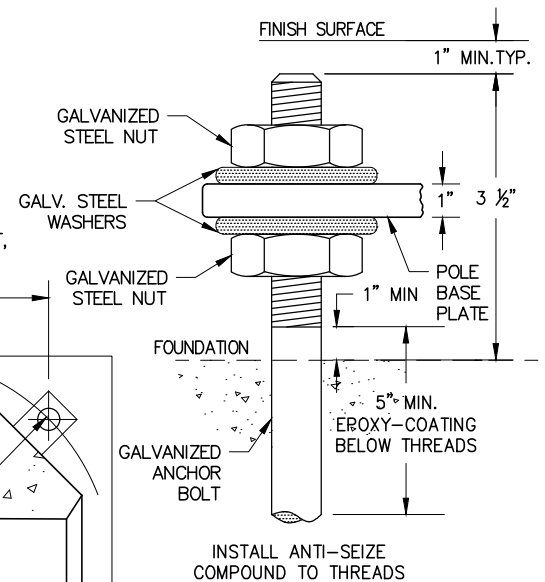
1 1/4" DIA. PVC SCHEDULE 40 CONDUIT

2'-6" SQ. 3' DIA. CIRCULAR

ELEVATION



BASE DETAIL



LEVELING DETAIL

DOOR OPENING FACES STREET

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 201-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

DATE: 11/3/2020

LIGHT STANDARD TYPE 2

STANDARD DRAWING NO.

200-B

SHEET 1 OF 1

120-240 VAC LED FIXTURE, TYPE, COLOR TEMPERATURE, DISTRIBUTION, FINISH, DRIVE CURRENT, AND WATTAGE WILL BE DETERMINED BY THE CITY ON A CASE-BY-CASE BASIS.

AMERON CONCRETE POLE MIX 37 OR APPROVED EQUAL.

AMERON CAT. NO.	POLE HEIGHT	BOLT DISTANCE X	BOLT CIRCLE Y
7B2-12SPL	12'-3"	10 1/4"	14 1/2"
7B2-14SPL	14'-6"	10 1/4"	14 1/2"
7B2-15SPL	15'-6"	11 5/16"	16"

GENERAL NOTES

- POLE HEIGHT AND WATTAGES TO BE SHOWN ON PLANS.
- 2'-6" DIA. CIRCULAR FOUNDATION MAY BE USED IN PLACE OF 2' SQ. FOUNDATION.
- ALL BASES SHALL BE POURED TO 4.5" BELOW SIDEWALK GRADE, TO ALLOW FOR 4.5" THICK GROUT.
- THE AREA AROUND ALL STANDARDS SHALL BE FORMED AND POURED WITH GROUT TO EXTEND 6" BEYOND EDGE OF FOUNDATION ON EACH SIDE OF STANDARD FROM BACK OF CURB TO FRONT OF STANDARD. GROUT SHALL BE POURED FROM TOP OF BASE TO SIDEWALK GRADE. GROUT SHALL CONSIST OF 2 PARTS SAND AND 1 PART CEMENT.
- EACH POLE SHALL HAVE A PULL BOX, SEE STD 204.
- FUSE HOLDER IN ADJACENT PULL BOX, SEE STD 205.
- ALL THREADED CONNECTIONS SHALL HAVE ANTI-SEIZE COMPOUND.
- SEE POLE LEVELING DETAIL ABOVE.
- FOR POLE WIRING, SEE STD 205.
- POLE NUMBERING SHALL BE 1" BLACK VINYL SELF-ADHESIVE NUMBERS ON 1"x6" REFLECTIVE BACKING INSTALLED IN A VERTICAL ORIENTATION.
- WIRING FROM ADJACENT PULL BOX TO LUMINAIRE SHALL BE #12 AWG INSULATED STRANDED COPPER (NON-GROUNDED CONDUCTORS) AND #12 AWG SOLID COPPER GROUND. MATCH COLOR CODE OF CIRCUIT.
- HEAD TYPE TO BE DETERMINED BY CITY PER PROJECT SPECIFICATION.
- POLE DOOR HAND HOLE FASTENERS TO BE TEMPER RESISTANT, STAINLESS STEEL.

MOUNTING HEIGHT
POLE HEIGHT

SET BACK PER PLAN & ADA REQS. 1'-8"

DOOR OPENING
FACES STREET

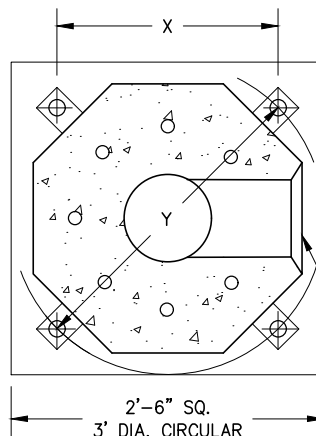
5.5" THICK GROUT

1" x 36" x 4" GALVANIZED ANCHOR BOLT WITH GALVANIZED NUT AND (2) WASHERS. EXTEND 3 1/2" ABOVE TOP OF FOUNDATION.

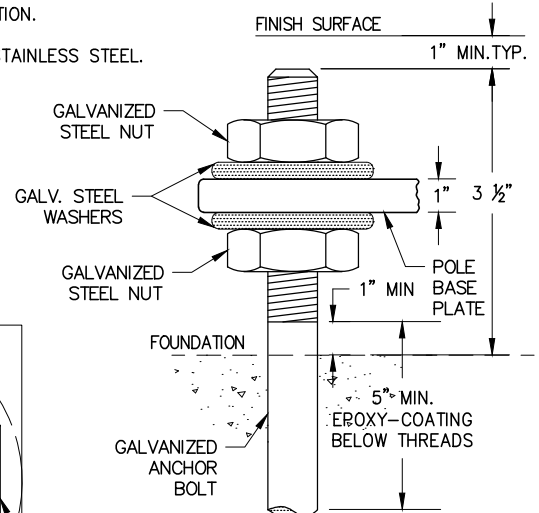
1 1/4" DIA. PVC SCHEDULE 40 CONDUIT

2' SQ. 2'-6" DIA. CIRCULAR

ELEVATION



BASE DETAIL



INSTALL ANTI-SEIZE COMPOUND TO THREADS

LEVELING DETAIL

DOOR OPENING
FACES STREET

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 202-L-B

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James M. Hinkle
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51568
RCE

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DATE

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DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

DATE: 11/3/2020

LIGHT STANDARD TYPE 3

STANDARD DRAWING NO.

201

SHEET 1 OF 1

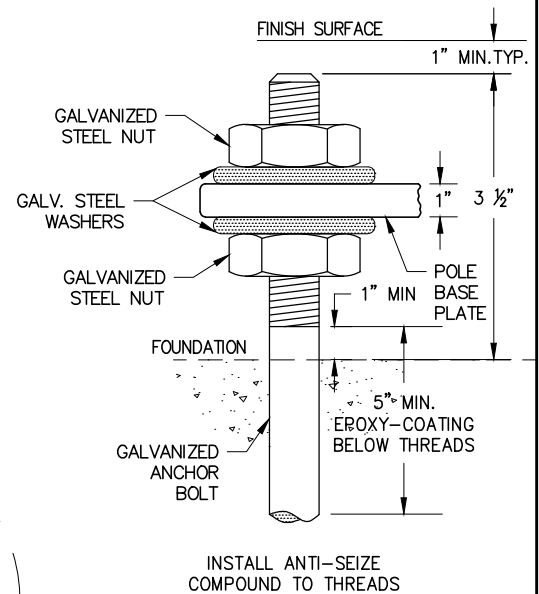
120-240 VAC LED, LUMINAIRE LEOTEK OR EQUAL WITH 7-PIN PHOTOELECTRIC CELL AND RECEPTACLE. COLOR TEMPERATURE, DISTRIBUTION, FINISH, DRIVE CURRENT, AND WATTAGE WILL BE DETERMINED BY THE CITY ON A CASE-BY-CASE BASIS.

AMERON CAT. NO.	BRACKET		MOUNTING HEIGHT	POLE HEIGHT	R	BOLT DISTANCE X	BOLT CIRCLE Y
	ARM	TILT					
1J223	6'	5°	29'-6"	23'-2"	36"	8 ½"	12 ½"
1J328	8'	5°	35'-0"	28'-1"	69"	10 ¾"	15 ¼"

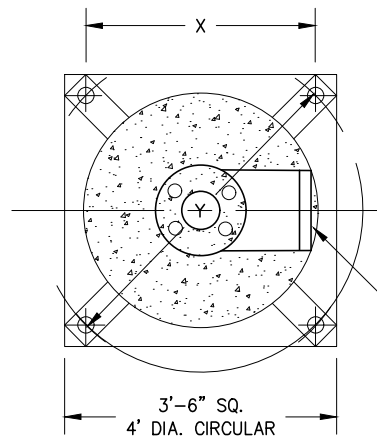
AMERON CONCRETE POLE MIX 37 OR APPROVED EQUAL.

GENERAL NOTES

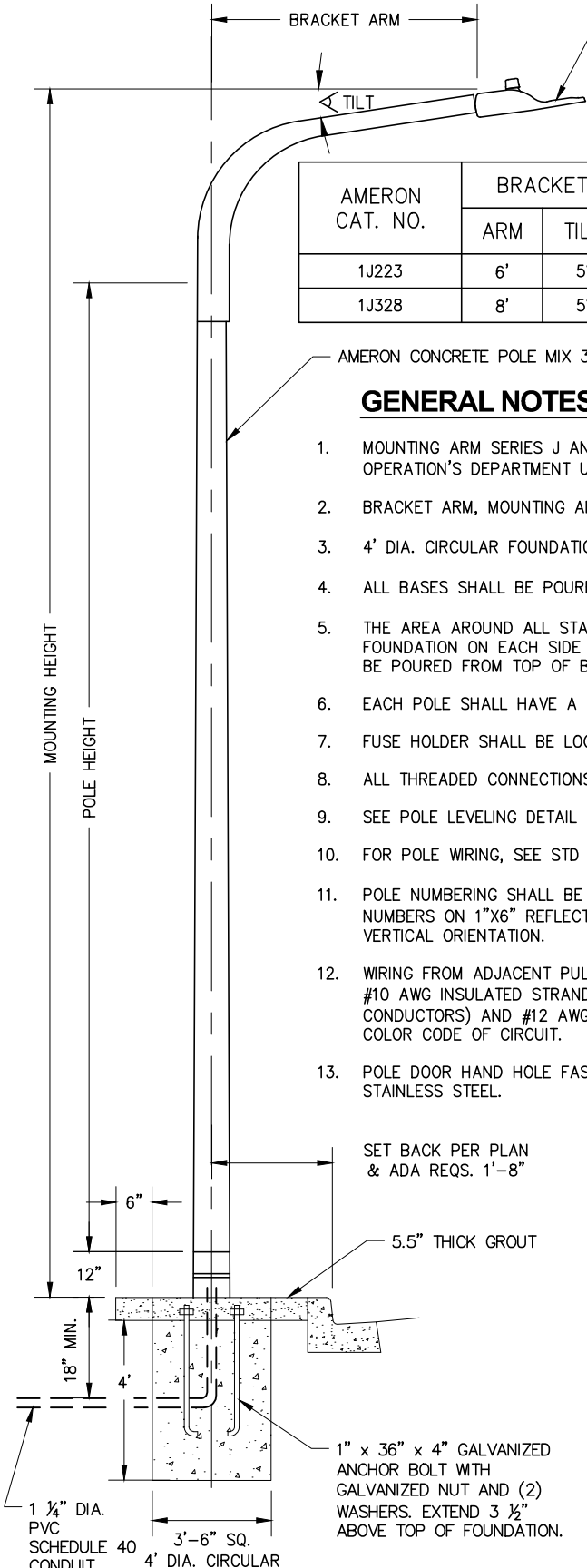
1. MOUNTING ARM SERIES J AND JS SHALL ONLY BE USED UNDER SPECIAL CIRCUMSTANCE WITH APPROVE BY MUNICIPAL OPERATION'S DEPARTMENT UTILITIES DIVISION.
2. BRACKET ARM, MOUNTING AND POLE HEIGHTS TILT ANGLE AND LAMP SIZE TO BE SHOWN ON PLANS.
3. 4' DIA. CIRCULAR FOUNDATION MAY BE USED IN PLACE OF 3'-6" SQ. FOUNDATION.
4. ALL BASES SHALL BE POURED TO 4.5" BELOW SIDEWALK GRADE, TO ALLOW FOR 4.5" THICK GROUT.
5. THE AREA AROUND ALL STANDARDS SHALL BE FORMED AND POURED WITH GROUT TO EXTEND 6" BEYOND EDGE OF FOUNDATION ON EACH SIDE AND BACK OF STANDARD AND FROM BACK OF CURB TO FRONT OF STANDARD. GROUT SHALL BE POURED FROM TOP OF BASE TO SIDEWALK GRADE. GROUT SHALL CONSIST OF 2 PARTS SAND AND 1 PART CEMENT.
6. EACH POLE SHALL HAVE A PULL BOX, SEE STD 204.
7. FUSE HOLDER SHALL BE LOCATED IN ADJACENT PULL BOX, SEE STD 205.
8. ALL THREADED CONNECTIONS SHALL HAVE PRE-APPROVED ANTI-SEIZE COMPOUND.
9. SEE POLE LEVELING DETAIL ABOVE.
10. FOR POLE WIRING, SEE STD 205.
11. POLE NUMBERING SHALL BE 1" BLACK VINYL SELF-ADHESIVE NUMBERS ON 1"x6" REFLECTIVE BACKING INSTALLED IN A VERTICAL ORIENTATION.
12. WIRING FROM ADJACENT PULL BOX TO LUMINAIRE SHALL BE #10 AWG INSULATED STRANDED COPPER (NON-GROUNDED CONDUCTORS) AND #12 AWG SOLID COPPER GROUND. MATCH COLOR CODE OF CIRCUIT.
13. POLE DOOR HAND HOLE FASTENERS TO BE TAMPER RESISTANT, STAINLESS STEEL.



LEVELING DETAIL



BASE DETAIL



ELEVATION

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 203-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

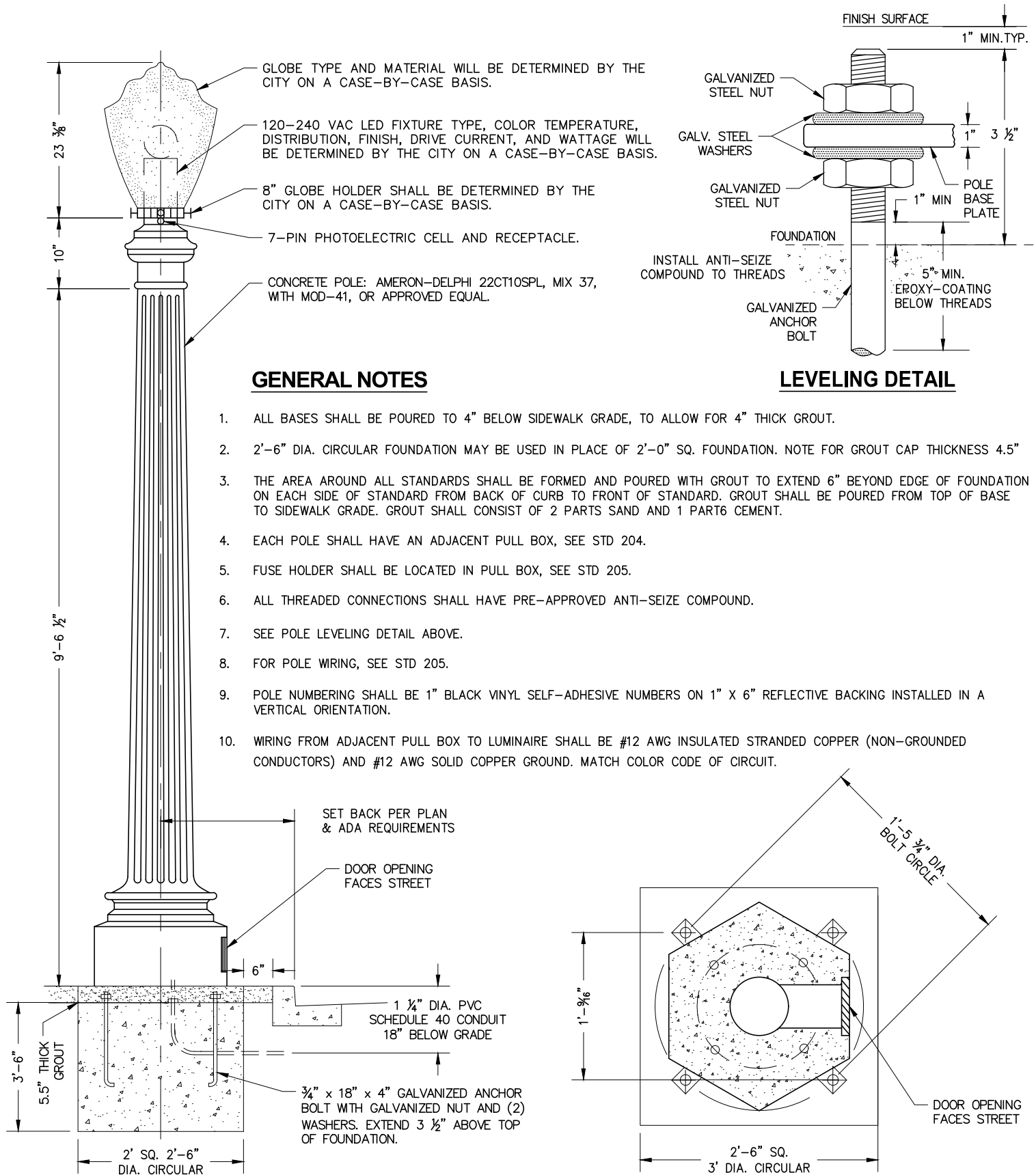
DATE: 11/3/2020

LIGHT STANDARD TYPE 4

STANDARD DRAWING NO.

202

SHEET 1 OF 1



GENERAL NOTES

1. ALL BASES SHALL BE POURED TO 4" BELOW SIDEWALK GRADE, TO ALLOW FOR 4" THICK GROUT.
2. 2'-6" DIA. CIRCULAR FOUNDATION MAY BE USED IN PLACE OF 2'-0" SQ. FOUNDATION. NOTE FOR GROUT CAP THICKNESS 4.5"
3. THE AREA AROUND ALL STANDARDS SHALL BE FORMED AND POURED WITH GROUT TO EXTEND 6" BEYOND EDGE OF FOUNDATION ON EACH SIDE OF STANDARD FROM BACK OF CURB TO FRONT OF STANDARD. GROUT SHALL BE POURED FROM TOP OF BASE TO SIDEWALK GRADE. GROUT SHALL CONSIST OF 2 PARTS SAND AND 1 PART 6 CEMENT.
4. EACH POLE SHALL HAVE AN ADJACENT PULL BOX, SEE STD 204.
5. FUSE HOLDER SHALL BE LOCATED IN PULL BOX, SEE STD 205.
6. ALL THREADED CONNECTIONS SHALL HAVE PRE-APPROVED ANTI-SEIZE COMPOUND.
7. SEE POLE LEVELING DETAIL ABOVE.
8. FOR POLE WIRING, SEE STD 205.
9. POLE NUMBERING SHALL BE 1" BLACK VINYL SELF-ADHESIVE NUMBERS ON 1" X 6" REFLECTIVE BACKING INSTALLED IN A VERTICAL ORIENTATION.
10. WIRING FROM ADJACENT PULL BOX TO LUMINAIRE SHALL BE #12 AWG INSULATED STRANDED COPPER (NON-GROUNDED CONDUCTORS) AND #12 AWG SOLID COPPER GROUND. MATCH COLOR CODE OF CIRCUIT.

BASE DETAIL

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 202-L-A

APP.

James M. Hinkle

CITY ENGINEER

51568

RCE

11/24/2020

DATE

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DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

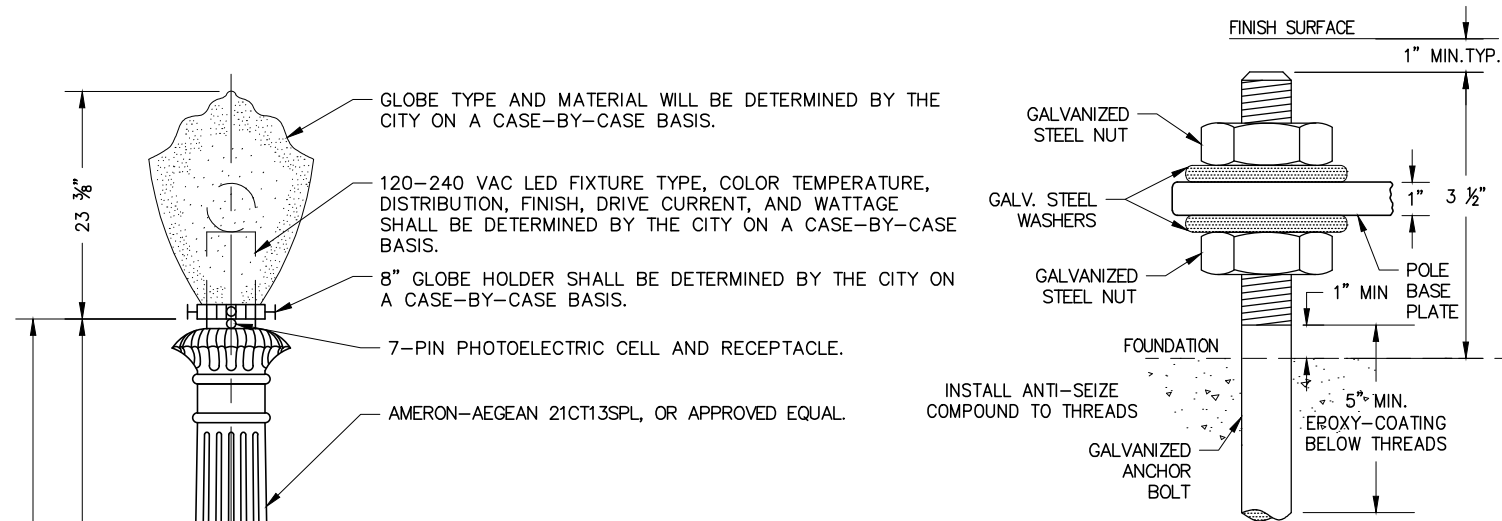
DATE: 11/3/2020

LIGHT STANDARD TYPE 5

STANDARD DRAWING NO.

203-A

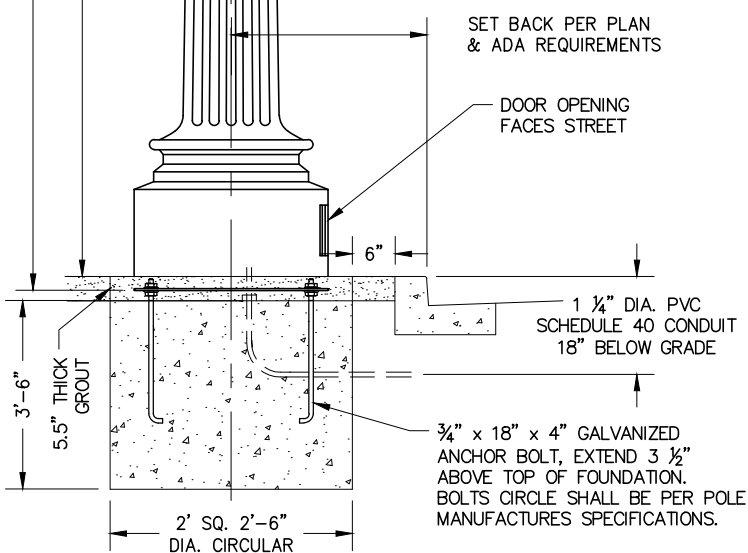
SHEET 1 OF 1



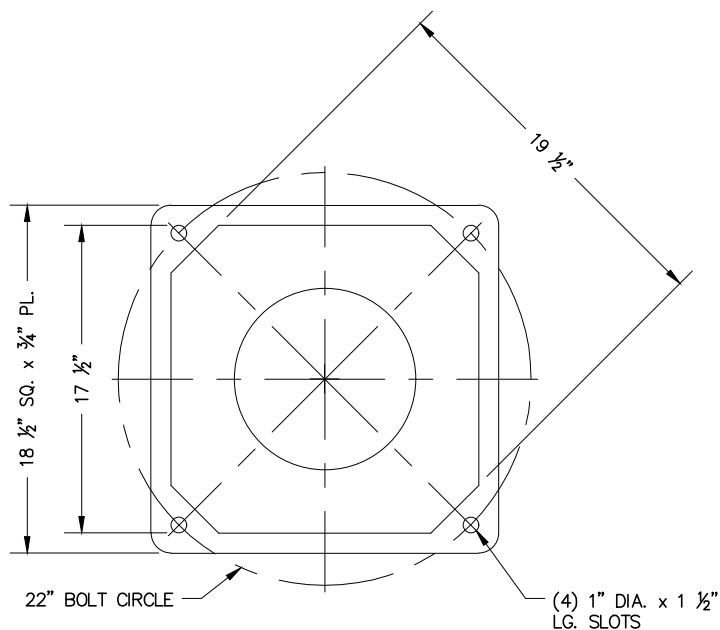
GENERAL NOTES

- ALL BASES SHALL BE POURED TO 4" BELOW SIDEWALK GRADE TO ALLOW FOR 4" THICK GROUT.
- THE AREA AROUND ALL STANDARDS SHALL BE FORMED AND POURED WITH GROUT TO EXTEND 6" BEYOND EDGE OF FOUNDATION ON EACH SIDE OF STANDARD FROM BACK OF CURB TO FRONT OF STANDARD. GROUT SHALL BE POURED FROM TOP OF BASE TO SIDEWALK GRADE. GROUT SHALL CONSIST OF 2 PARTS SAND AND 1 PART CEMENT.
- EACH POLE SHALL HAVE A PULL BOX PER STD 204.
- FUSE HOLDER SHALL BE LOCATED IN PULL BOX, SEE STD 205.
- ALL THREADED CONNECTIONS SHALL HAVE APPROVED ANTI-SEIZE COMPOUND.
- WIRING FROM ADJACENT PULL BOX TO LUMINAIRE SHALL BE #12 AWG INSULATED STRANDED COPPER (NON-GROUNDED CONDUCTORS) AND #12 AWG SOLID COPPER GROUND. MATCH COLOR CODE OF CIRCUIT.
- POLE NUMBERING SHALL BE 1" BLACK VINYL SELF-ADHESIVE NUMBERS ON 1"x6" REFLECTIVE BACKING INSTALLED IN A VERTICAL ORIENTATION.
- SEE POLE LEVELING DETAIL ABOVE.
- FOR POLE WIRING, SEE STD 205.
- POLE DOOR HAND HOLE FASTENERS TO BE TAMPER RESISTANT, STAINLESS STEEL.

LEVELING DETAIL



ELEVATION



BASE PLATE DETAIL

APP.

James M. Hinkle
CITY ENGINEER

51568
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DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

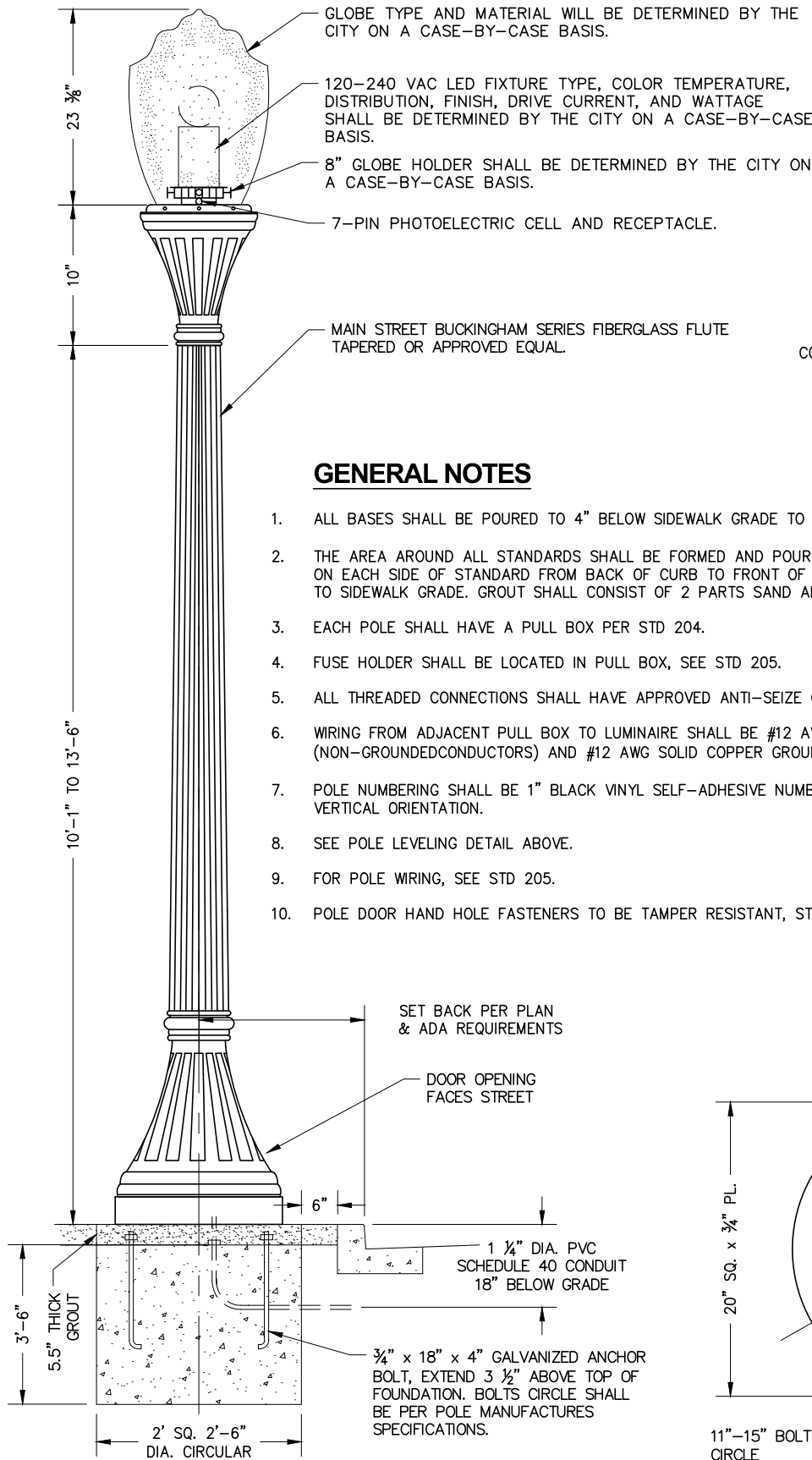
DATE: 11/3/2020

LIGHT STANDARD TYPE 6

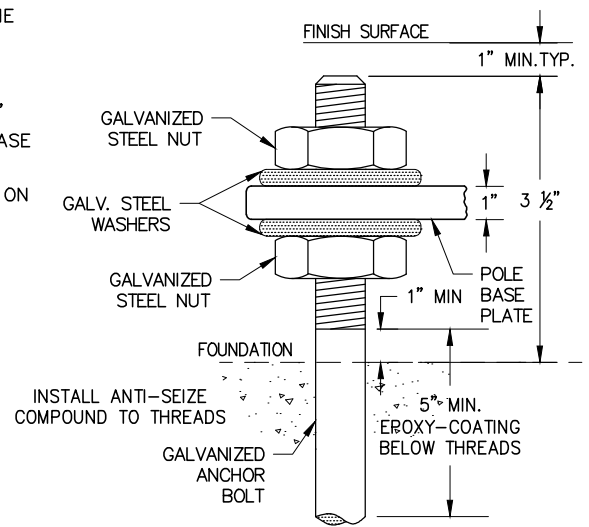
STANDARD DRAWING NO.

203-B

SHEET 1 OF 1



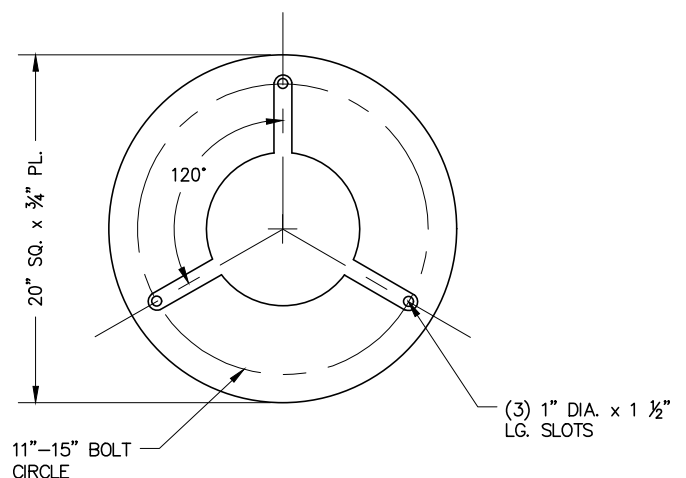
ELEVATION



LEVELING DETAIL

GENERAL NOTES

1. ALL BASES SHALL BE POURED TO 4" BELOW SIDEWALK GRADE TO ALLOW FOR 4" THICK GROUT.
2. THE AREA AROUND ALL STANDARDS SHALL BE FORMED AND POURED WITH GROUT TO EXTEND 6" BEYOND EDGE OF FOUNDATION ON EACH SIDE OF STANDARD FROM BACK OF CURB TO FRONT OF STANDARD. GROUT SHALL BE POURED FROM TOP OF BASE TO SIDEWALK GRADE. GROUT SHALL CONSIST OF 2 PARTS SAND AND 1 PART CEMENT.
3. EACH POLE SHALL HAVE A PULL BOX PER STD 204.
4. FUSE HOLDER SHALL BE LOCATED IN PULL BOX, SEE STD 205.
5. ALL THREADED CONNECTIONS SHALL HAVE APPROVED ANTI-SEIZE COMPOUND.
6. WIRING FROM ADJACENT PULL BOX TO LUMINAIRE SHALL BE #12 AWG INSULATED STRANDED COPPER (NON-GROUNDED CONDUCTORS) AND #12 AWG SOLID COPPER GROUND. MATCH COLOR CODE OF CIRCUIT.
7. POLE NUMBERING SHALL BE 1" BLACK VINYL SELF-ADHESIVE NUMBERS ON 1"x6" REFLECTIVE BACKING INSTALLED IN A VERTICAL ORIENTATION.
8. SEE POLE LEVELING DETAIL ABOVE.
9. FOR POLE WIRING, SEE STD 205.
10. POLE DOOR HAND HOLE FASTENERS TO BE TAMPER RESISTANT, STAINLESS STEEL.



BASE PLATE DETAIL

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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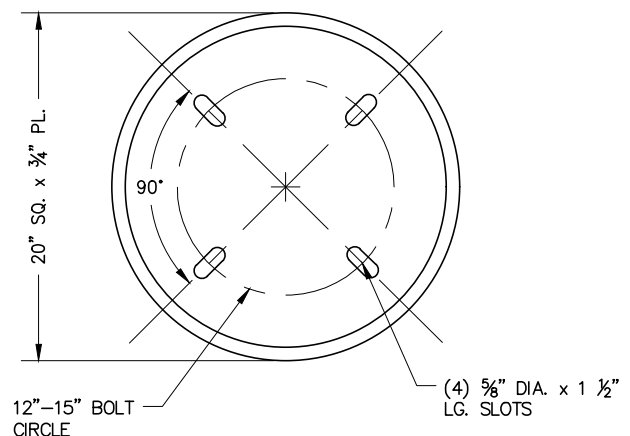
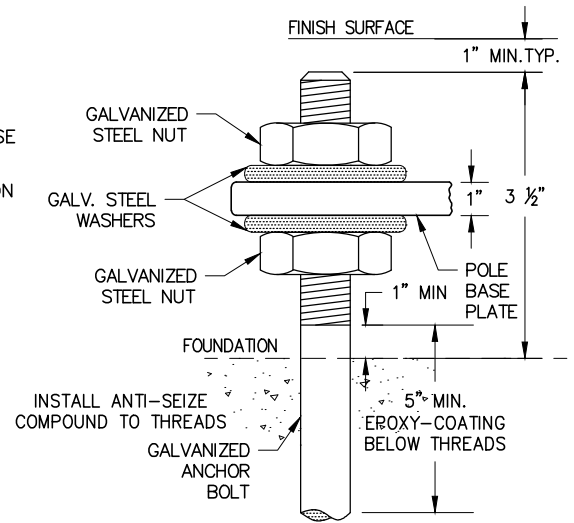
DATE: 11/3/2020

LIGHT STANDARD TYPE 7

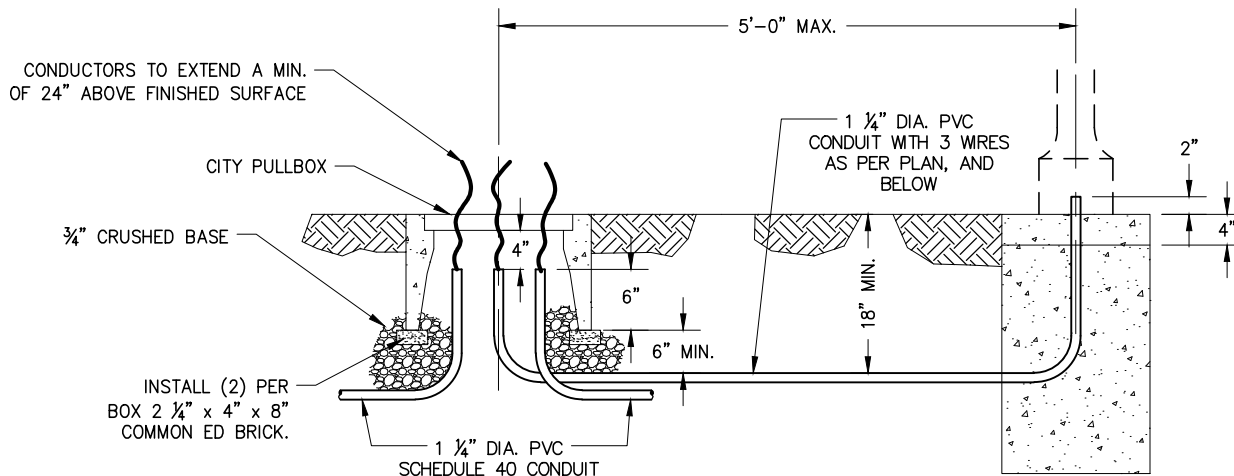
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203-C

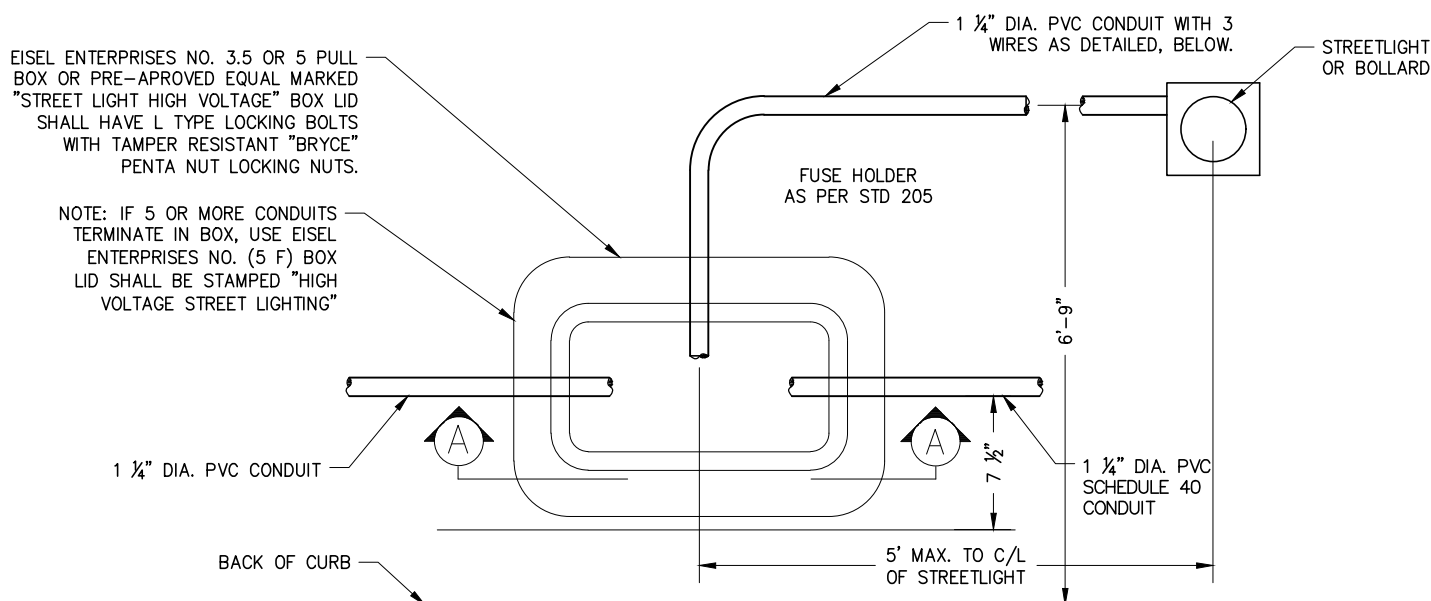
SHEET 1 OF 1



SHEET 1 OF 1



SECTION A-A



TYPICAL PULL BOX REQUIRED AT EACH LIGHT STANDARD

GENERAL NOTES

- ALL CONDUIT SHALL BE 1 1/4" DIA. P.V.C., SCHEDULE 40, UNLESS SPECIFIED OTHERWISE, PER PLAN.
- SEE STD 205 FOR FUSE HOLDER & WIRING DETAILS.
- AFTER CONDUCTORS ARE INSTALLED, ALL CONDUIT ENDS SHALL BE SEALED WITH DUCT SEAL OR PRE-APPROVED EQUAL.
- NO CONDUIT RUN SHALL BE GREATER THAN 180' BETWEEN PULL BOXES, UNLESS OTHERWISE APPROVED BY THE CITY.
- NO MORE THAN TWO (2) 90° BENDS BETWEEN PULL BOXES, UNLESS OTHERWISE APPROVED BY THE CITY.
- PULL BOXES SHALL NOT BE INSTALLED IN DRIVEWAYS, RAMPS OR BETWEEN THE B.C.R. & E.C.R.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 204-L

APP. *James M. Hinkle* 51568 11/24/2020
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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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DATE: 11/3/2020

PULL BOX DETAILS

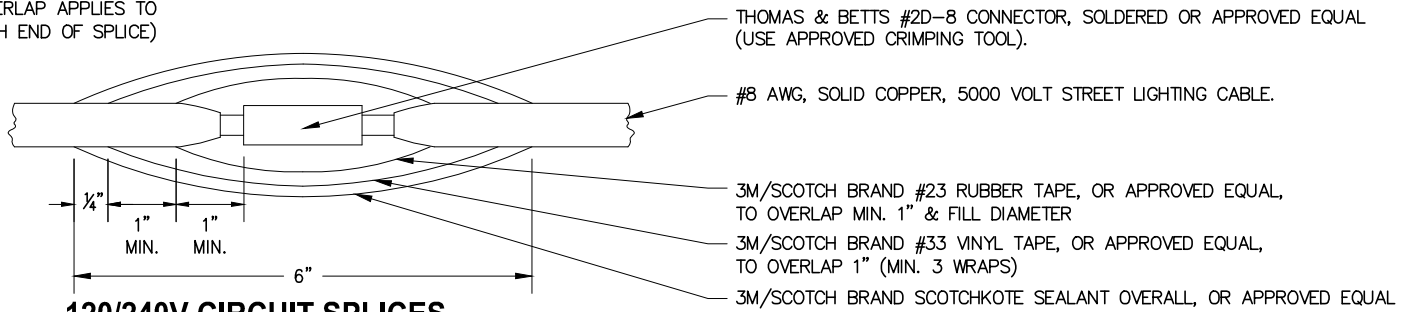
STANDARD DRAWING NO.

204

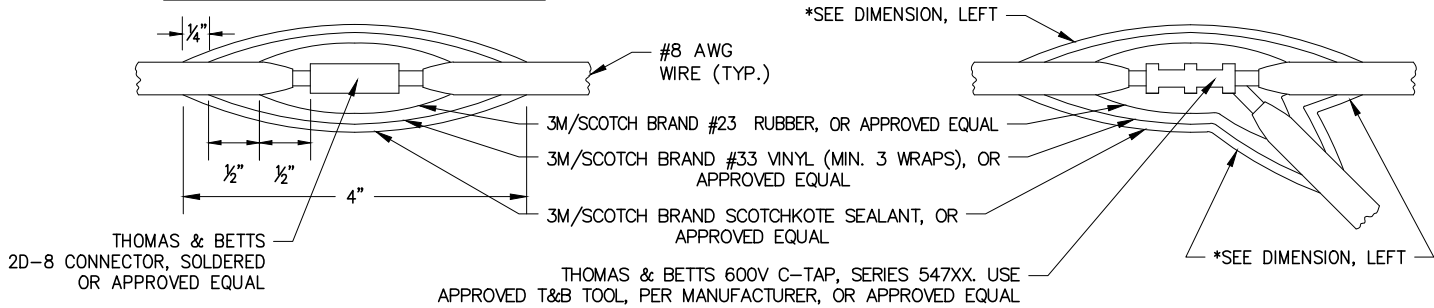
SHEET 1 OF 1

CIRCUIT SPLICES SERIES (5KV)

(OVERLAP APPLIES TO EACH END OF SPLICE)

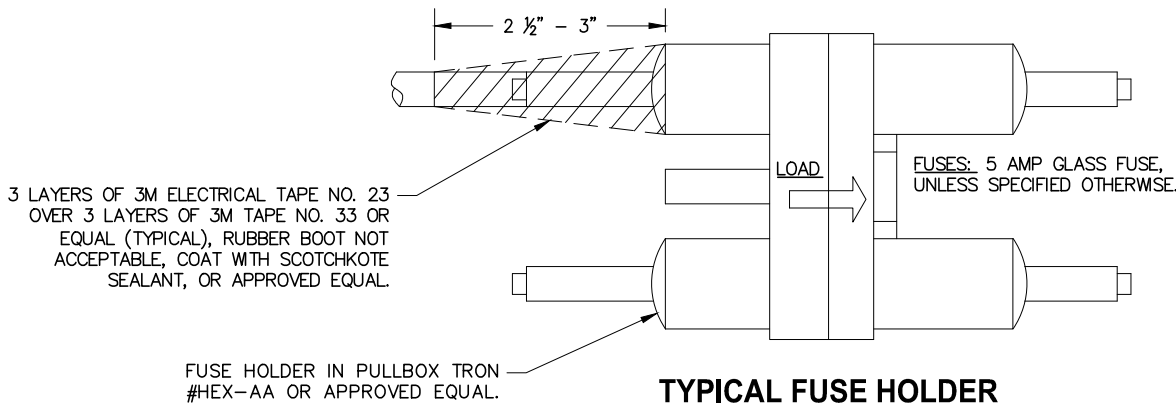


120/240V CIRCUIT SPLICES



GENERAL NOTES

1. ALL PHASE CONDUCTORS SHALL BE STRANDED COPPER, THWN, IDENTIFIED BY A CONTINUOUS, DISTINCT, COLOR-CODED INSULATION.
2. CIRCUIT PAIRS FOR 240 VAC CONDUCTORS SHALL BE OF TWO DISTINCT COLORS, CONTINUOUSLY TRACEABLE FROM LUMINAIRE TO CIRCUIT BREAKER.
3. WITH THE EXCEPTION OF THE FIRST, 2" DIAMETER CONDUIT FROM THE SERVICE CABINET TO THE FIRST ADJACENT PULLBOX, NO CONDUCTOR INSULATION COLOR SHALL BE DUPLICATED IN ANY CONDUIT RUN. WIRES OF DIFFERENT AWG SIZES MAY REPEAT COLORS IN THE SAME CONDUIT RUN.
4. CIRCUIT GROUNDS SHALL BE #8 AWG BARE, SOLID COPPER, SPliced USING THOMAS & BETTS 'C-TAP'S AS SHOWN, OR APPROVED EQUAL, ABOVE. GROUND CONDUCTORS TO LUMINAIRES MAY BE REDUCED AS PER SPECIFICATION ON STD 205, BELOW. SPLICES SHALL BE SOLDERED AND TAPED PER VOLTAGE REQUIREMENTS.
5. GRAY (277V), WHITE, OR WHITE WITH COLOR-STRIPED INSULATION SHALL BE USED ONLY FOR THE NEUTRAL, OR GROUNDED-CONDUCTOR.



TYPICAL FUSE HOLDER

*LUMINAIRE & LOAD-SIDE OF FUSE HOLDER COPPER CONDUCTOR SIZING

STANDARD	LOAD SIDE PHASE CONDUCTOR	GROUND CONDUCTOR
STD 200-A	#10 THWN STRANDED	#10 STRANDED
STD 200-B	#10 THWN STRANDED	#10 STRANDED
STD 201	#10 THWN STRANDED	#10 STRANDED
STD 202	#10 THWN STRANDED	#10 STRANDED
STD 203-A	#10 THWN STRANDED	#10 STRANDED
STD 203-B	#10 THWN STRANDED	#10 STRANDED
STD 203-C	#10 THWN STRANDED	#10 STRANDED
STD 203-D	#10 THWN STRANDED	#10 STRANDED

* NOTE

TERMINATE GROUND CONDUCTOR IN FIXTURE USING APPROPRIATE THOMAS & BETTS 'STA-KON' BRAND, SERIES 'C10', OR APPROVED EQUAL, NON-INSULATED FORK TERMINAL.

APP. *James M. Hinkle* 51568 11/24/2020
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DATE: 11/3/2020

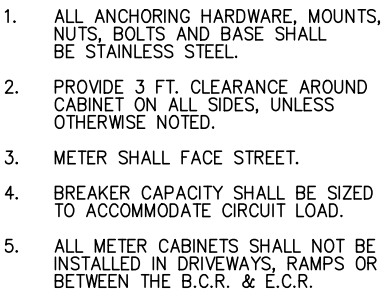
CIRCUIT SPLICING, FUSE HOLDER & WIRING DETAIL

STANDARD DRAWING NO.

205

SHEET 1 OF 1

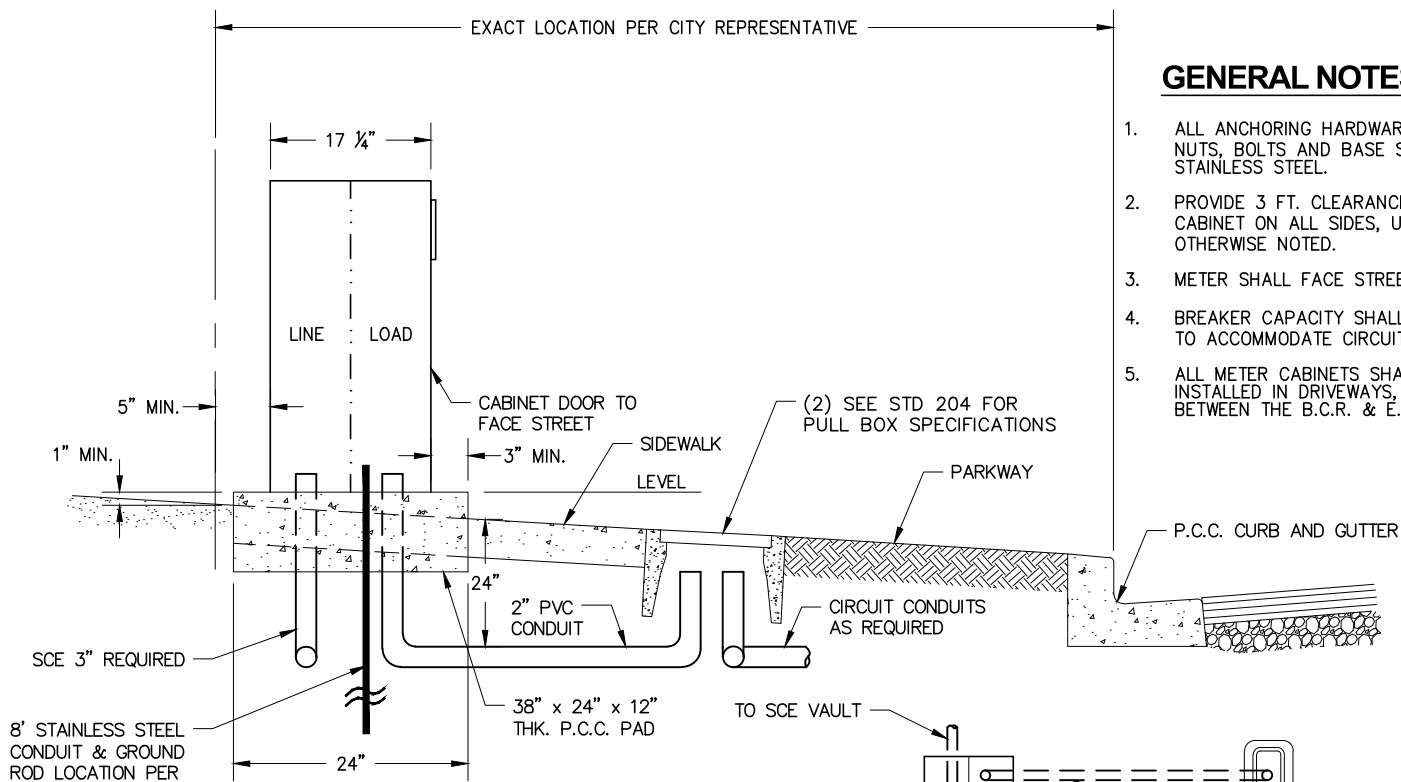
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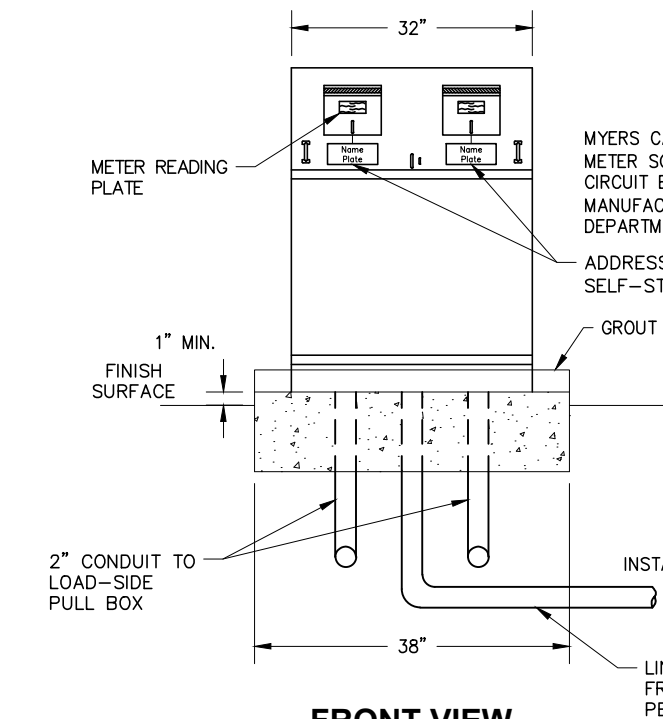
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 206-L

NO.	DATE	DESCRIPTION OF REVISIONS

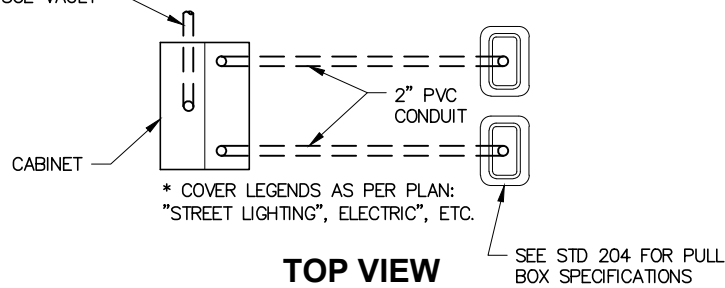
DRAWN: M. ELIAS	<div> <div>SINGLE - METER CABINET</div> <div>MOUNTING DETAIL</div> </div>	STANDARD DRAWING NO.
DATE: 11/3/2020		<div>206</div> <div>SHEET 1 OF 1</div>



SIDE VIEW



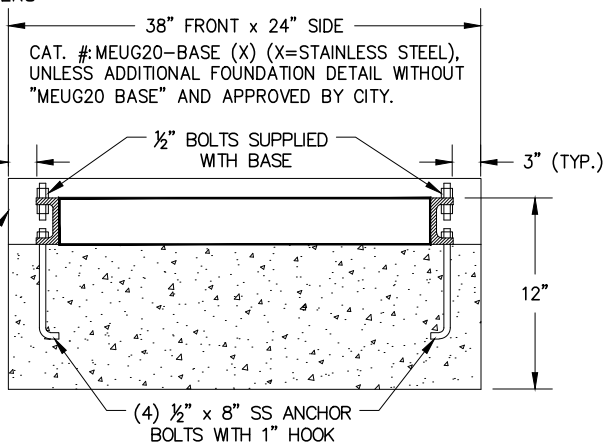
FRONT VIEW



TOP VIEW

MYERS CABINET MODEL NO. MEUG20X-316-M100-SCE-120/240-1PH/3W WITH WINDOW AND METER SOCKET (316 STAINLESS STEEL) 1 PHASE 3 WIRE 120-240 VOLT 100 AMP MAIN CIRCUIT BREAKER AND SPACE FOR MINIMUM SIX 2 POLE CIRCUIT BREAKERS INSTALLED PER MANUFACTURER'S SPECIFICATIONS. INTERNAL COMPONENTS TO BE DETERMINED BY UTILITIES DEPARTMENT.

ADDRESS: 2" HIGH, BLACK VINYL SELF-STICK NUMBERS/LETTERS



BASE DETAIL

GENERAL NOTES

1. ALL ANCHORING HARDWARE, MOUNTS, NUTS, BOLTS AND BASE SHALL BE STAINLESS STEEL.
2. PROVIDE 3 FT. CLEARANCE AROUND CABINET ON ALL SIDES, UNLESS OTHERWISE NOTED.
3. METER SHALL FACE STREET.
4. BREAKER CAPACITY SHALL BE SIZED TO ACCOMMODATE CIRCUIT LOAD.
5. ALL METER CABINETS SHALL NOT BE INSTALLED IN DRIVEWAYS, RAMPS OR BETWEEN THE B.C.R. & E.C.R.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 207-L

APP. *James M. Hinkle* 51568 11/24/2020
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NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

**DOUBLE - METER CABINET
MOUNTING DETAIL**

DRAWN: M. ELIAS

DATE: 11/3/2020

STANDARD DRAWING NO.

207

SHEET 1 OF 1

SPECIFICATIONS:

STRESSCRETE GROUP

CATALOGUE NO.: MOD. KLCS-OAAF-V-36(SSL)3500
 -XPE-BE4 P2 - 4-1/2" BCD MOUNTING
 OPTICAL SYSTEM: LOUVRE ACRYLIC CLEAR
 IES CLASS: TYPE V
 WATTAGE: 12W
 LIGHT SOURCE: LED
 LINE VOLTAGE: 240V (MULTI-TAP)
 FINISH: ETCHED
 PAINT LOUVRES: BLACK
 TOP SIZE: 8" Ø
 APPROX. WGT.: 133 LBS.

OPTIONS:QUICK DISCONNECT: ☒

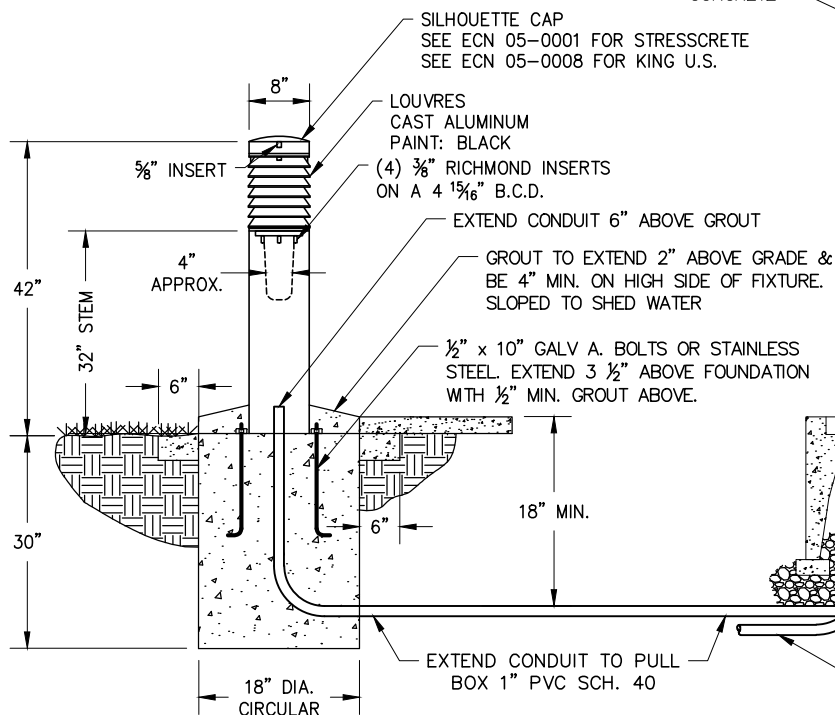
FOR WIRING DIAGRAM SEE
 STRESSCRETE GROUP DRAWING 209B0305

PULL BOX
PER STD 204

SCORE LINE

CONCRETE

SIDEWALK

**SIDE VIEW****TOP VIEW**

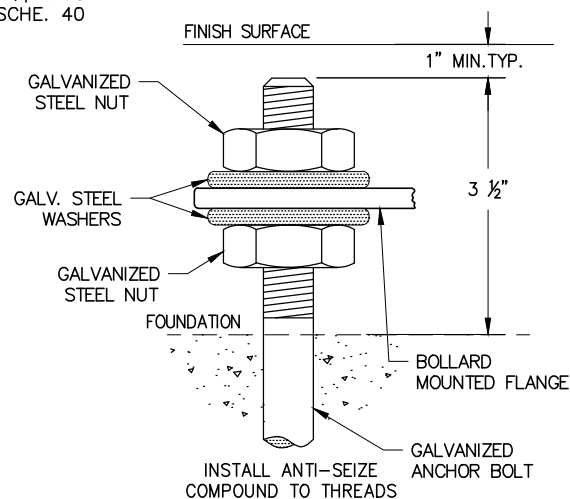
SYMBOL



LED BOLLARD TYPE, COLOR TEMPERATURE, DISTRIBUTION, FINISH, DRIVE CURRENT, AND WATTAGE WILL BE DETERMINED BY THE CITY ON A CASE-BY-CASE BASIS.

GENERAL NOTES

1. THE AREA AROUND ALL BOLLARDS SHALL BE FORMED AND POURED WITH GROUT TO EXTEND 6" ON EACH SIDE AND BACK GROUT CONSISTS OF 2 PARTS SAND 1 PART CEMENT.
2. EACH BOLLARD SHALL HAVE AN ADJACENT PULL BOX SEE STD 204.
3. FUSE HOLDER SHALL BE LOCATED IN PULL BOX SEE STD 205.
4. ALL THREADED CONNECTIONS SHALL HAVE PRE-APPROVED ANTI-SEIZE COMPOUND.
5. SEE POLE LEVELING DETAIL.
6. FOR POLE WIRING SEE STD 205.
7. BOLLARDS SHALL HAVE ONE CENTRAL PHOTO CELL WITH LOCATION APPROVED BY UTILITIES DEPARTMENT.
8. POLE NUMBERING SHALL BE 1" BLACK VINYL SELF-ADHESIVE NUMBERS ON 1" x 6" REFLECTIVE BACKING INSTALLED IN A VERTICAL ORIENTATION.

**LEVELING DETAIL**

APP.

James M. Hinkle
 CITY ENGINEER

51568
RCE11/24/2020
DATE

NO.

DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

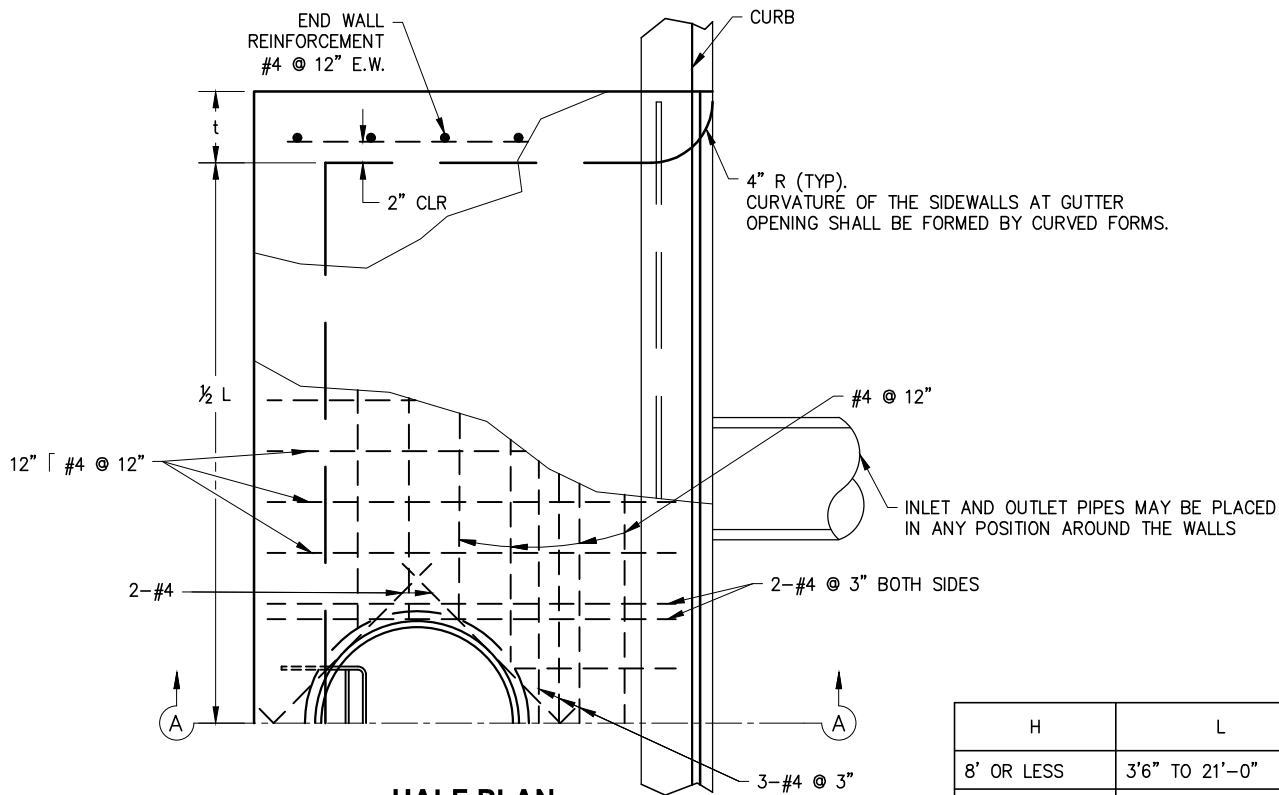
DATE: 11/3/2020

BOLLARD LIGHTING STANDARD

STANDARD DRAWING NO.

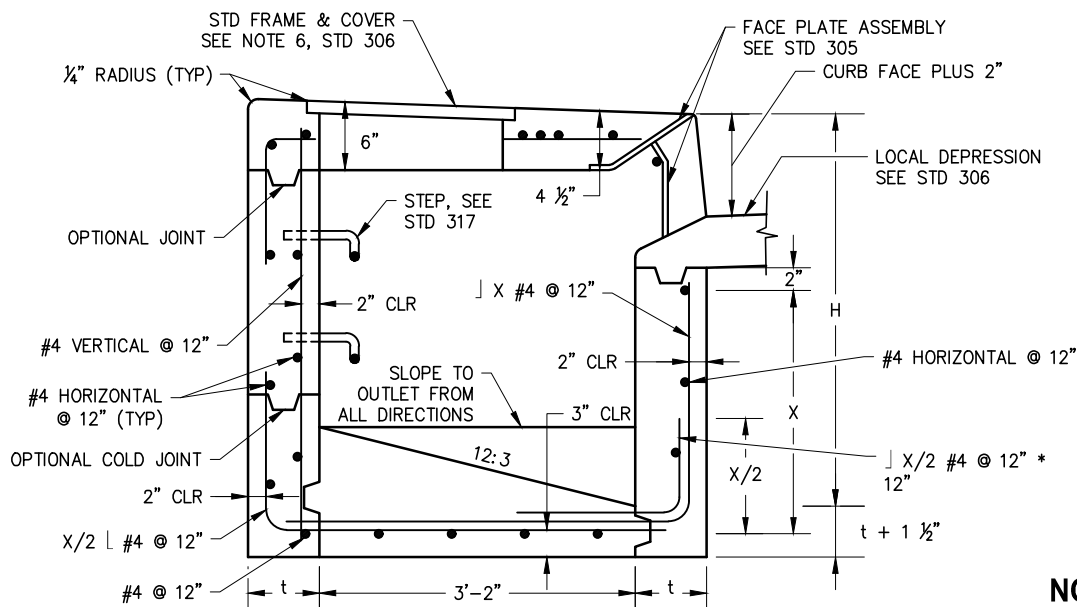
208

SHEET 1 OF 1

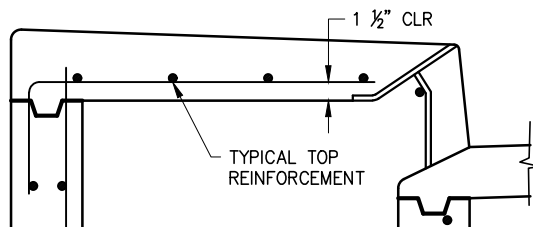


**HALF PLAN
SYMMETRICAL ABOUT A-A**

H	L	t
8' OR LESS	3'6" TO 21'-0"	8"
8'-1" TO 12'	3'-6" TO 21'-0"	10"
8' OR LESS	21'-1" OR GREATER	10"



SECTION A-A



NOTES:

1. FOR GENERAL NOTES AND LOCAL DEPRESSION SEE STD 306.
 2. FOR "H" GREATER THAN 8' AND "L" GREATER THAN 21'-1", SPECIAL DESIGN REQUIRED.
 3. *DELETE WHEN "H" IS LESS THAN 8'.
 4. ALL REBAR SHALL BE EPOXY-COATED.
- REFERENCE STDs 305, 306 AND 317.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 305-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

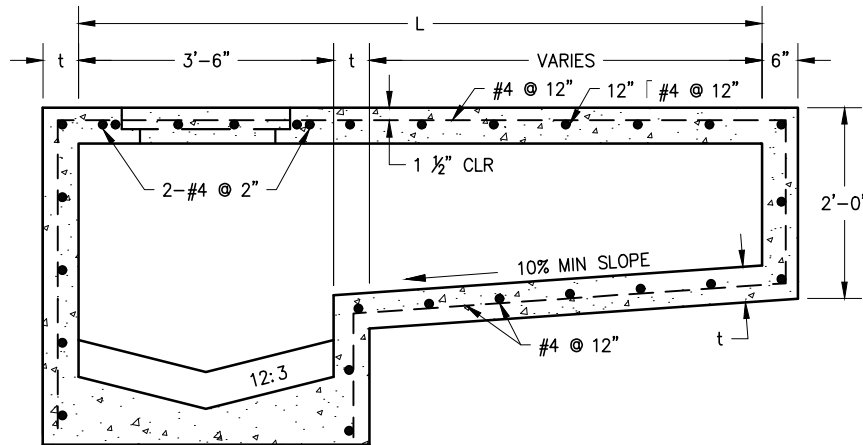
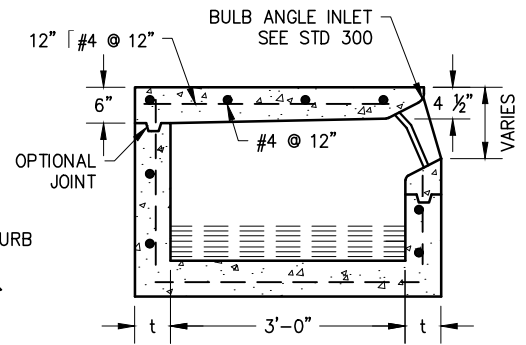
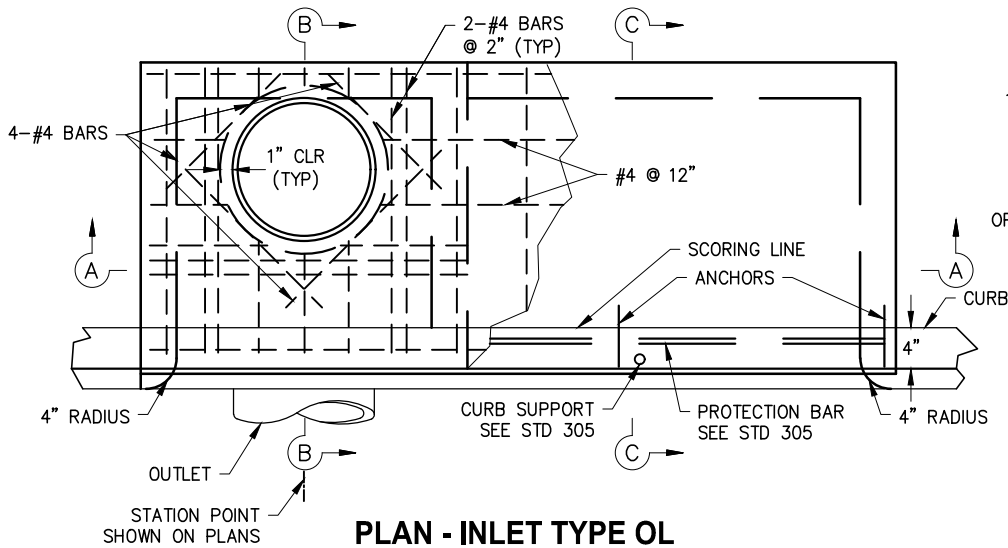
DATE: 11/3/2020

CURB INLET TYPE OL-A

STANDARD DRAWING NO.

300

SHEET 1 OF 1

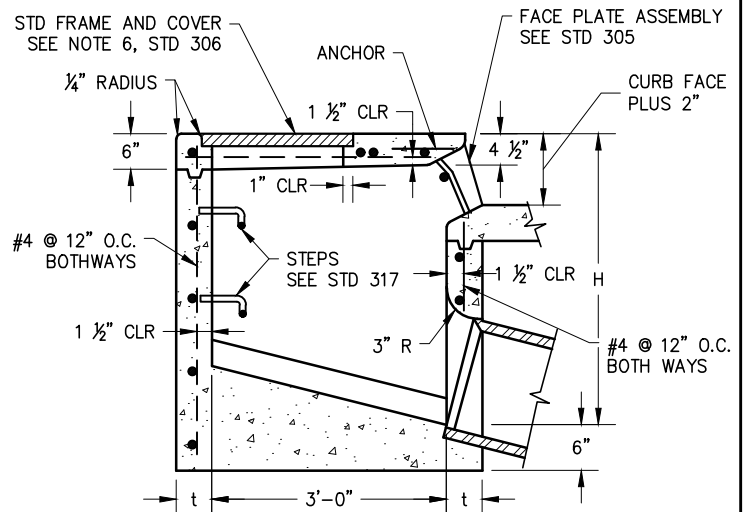
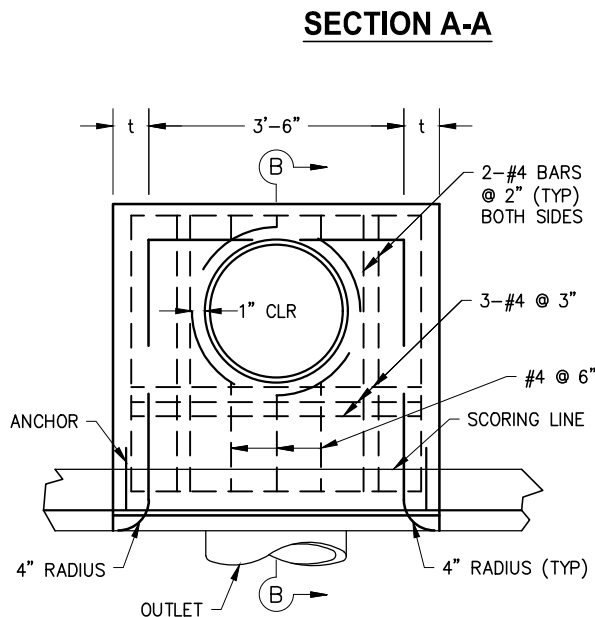


H	t
8' OR LESS	6"
8'-1" TO 20'	8"

NOTES:

- FOR GENERAL NOTES AND LOCAL DEPRESSION SEE STD 306.
- STANDARD OPENING LENGTHS FOR "L" ARE: 7', 10', 14', AND 21' (OTHER LENGTHS MAY BE USED).

REFERENCES STDS 305; 306; AND 317.



PLAN - INLET TYPE OS

SECTION B-B

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 306-L

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DATE: 11/3/2020

CURB INLET TYPE OL, CURB INLET TYPE OS

STANDARD DRAWING NO.

301

SHEET 1 OF 1

DOWEL (TYP.)

#4

#4@12"

6"

A

SCORING LINE

CURB

FLOW LINE

STEP

12 3/4"

PLAN

FACE PLATE ASSEMBLY

1 1/2" CL

4 1/2"

24"

1 1/2" CL

OPTIONAL
ROUGHENED
CONSTRUCTION
JOINT(TYP)

OPTIONAL
SUBGRADE

SECTION A-A

STREET, GUTTER OR
LOCAL DEPRESSION SURFACE

25 1/2"

DOWEL

C.F.+H

1/4" R

4" MIN.
12" MAX.

CENTER SUPPORT FOR
MULTIPLE GRATES

FRAME AND
GRATING

3" R

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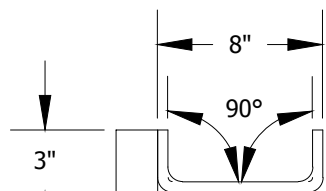
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CONNECTOR PIPE OR MONOLITHIC
CATCH BASIN CONNECTION

NOTE: GRATE SHALL BE LONG BEACH IRON WORKS
LB24-10C WITH GALVANIZED FINISH OR APPROVED
EQUIVALENT.



DOWEL DETAIL

CENTER SUPPORT FOR
MULTIPLE GRATES

STRUCTURAL DATA

WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS

NO. OF GRATES	MAX. V	I	REINFORCEMENT FOR WALLS AND SLABS
1-2	4'	6"	NOT REQUIRED
1-2	8'	8"	
1-2	10'	10"	
1-2	12'	10"	REQUIRED
3-4	4'	6"	NOT REQUIRED
3-4	7'	8"	
3-4	8'	8"	
3-4	12'	10"	REQUIRED
5-6	4'	6"	NOT REQUIRED
5-6	6'	8"	
5-6	8'	8"	
5-6	12'	10"	REQUIRED
>6	4'	6"	
>6	8'	8"	
>6	12'	10"	

ADOPTED FROM APWA STANDARD PLAN 302-0

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 321-L-A

APP.

James M. Hinkle

51568
RCE

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DATE

CITY ENGINEER

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

DATE: 11/3/2020

CURB OPENING CATCH BASIN WITH GRATING(S)

STANDARD DRAWING NO.

302


SHEET 1 OF 2

NOTES:

1. WHERE THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF EXISTING OR PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH SIDEWALK, THE TOP SLAB OF THE BASIN MAY BE POURED EITHER MONOLITHIC WITH SIDEWALK OR SEPARATELY, USING THE SAME CLASS OF CONCRETE AS IN THE BASIN WHEN POURED MONOLITHICALLY. THE SIDEWALK SHALL BE PROVIDED WITH A WEAKENED PLANE OR A 1-INCH DEEP SAWCUT CONTINUOUSLY AROUND THE EXTERNAL PERIMETER OF THE CATCH BASIN WALLS, INCLUDING ACROSS THE FULL WIDTH OF THE SIDEWALK. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.
2. ALL CURVED CONCRETE SURFACE SHALL BE FORMED BY CURVED FORMS. AND SHALL NOT BE SHAPED BY PLASTERING.
3. ONE GRATING IS REQUIRED UNLESS OTHERWISE SHOWN ON THE PROJECT PLAN.
4. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1:12 MINIMUM AND 1:3 MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT, IN WHICH CASE THE LONGITUDINAL SLOPE OF FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
5. DIMENSIONS:
 V = THE DIFFERENCE IN ELEVATION FROM THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET = 4.5 FEET.
 V_U = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT THE UP-STREAM END OF THE BASIN, AND SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 4. BUT SHALL NOT BE LESS THAN CURB PLUS 12 INCHES.
 V_1 = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET. NOTED ON THE PROJECT PLANS.
 H = NOTED ON THE PROJECT PLANS.
 W = 2 FEET 11-3/8 INCHES FOR ONE GRATING; ADD 3 FEET 5-3/8 INCHES FOR EACH ADDITIONAL GRATING.
 A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.
6. PLACE CONNECTOR PIPES AS INDICATED ON THE PROJECT PLANS, UNLESS OTHERWISE SPECIFIED. THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECESSARY TO INSURE MINIMUM 3-INCH PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL AND 3-INCH RADIUS OF ROUNDING OF STRUCTURE CONCRETE. ALL AROUND, ADJACENT TO PIPE ENDS, A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70 DEGREES OR GREATER THAN 110 DEGREES OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.
7. STEPS SHALL BE LOCATED AS SHOWN, AND AS PER STD 317. IF THE CONNECTOR PIPE INTERFERES WITH THE STEPS, THEY SHALL BE LOCATED ON THE FRONT WALL AT THE CENTERLINE OF THE DOWNSTREAM GRATING.
8. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7 FEET ON CENTER (MAXIMUM) ALONG THE BACKWALL.
9. FOR GENERAL NOTES AND LOCAL DEPRESSION SEE STD 306.

ADOPTED FROM APWA STANDARD PLAN 302-0
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 321-L-B

APP.

 51568
CITY ENGINEER RCE

11/24/2020
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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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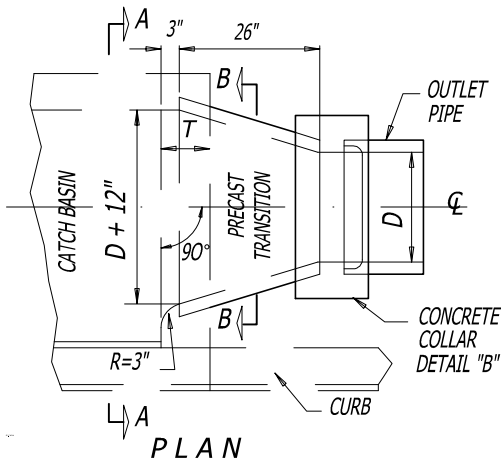
DATE: 11/3/2020

CURB OPENING CATCH BASIN WITH GRATING(S)

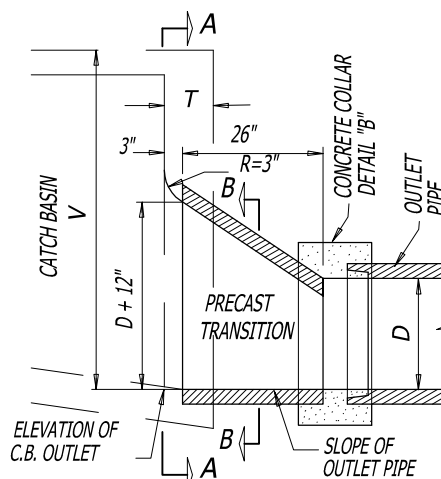
STANDARD DRAWING NO.

302

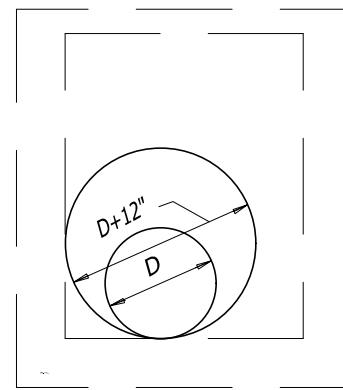
SHEET 2 OF 2



PLAN

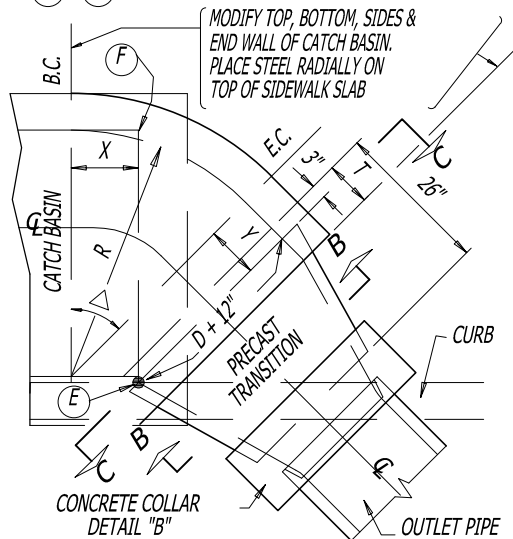


ELEVATION

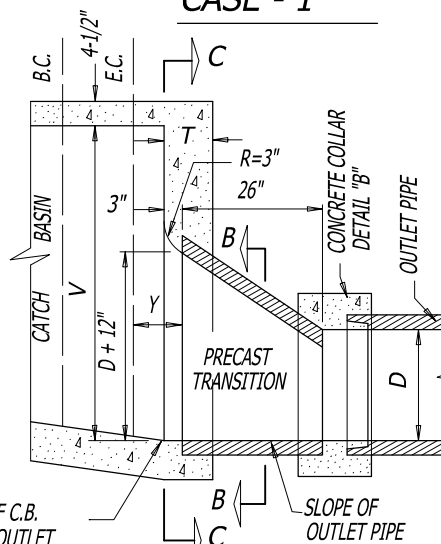


SECTION A-A

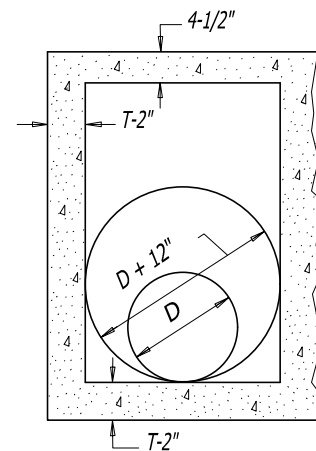
(E) & (F) - POINTS OF ROTATION



PLAN



ELEVATION



SECTION C-C

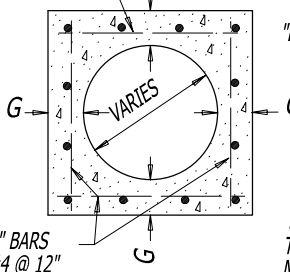
TABLE - A

D	△	R	X	Y
18"	30°	38"	16"	13-7/8"
18"	45°	38"	11-3/8"	8"
21"	30°	38"	10"	8-5/8"
21"	45°	38"	7-1/8"	5"
24"	30°	38"	4"	3-1/2"
24"	45°	38"	2-7/8"	2"
27" OR MORE	30°	D+12"	0"	0"
	45°	D+12"	0"	0"

TABLE - B

D	18"	21"	24"	27"	30"
G	7"	7"	7-1/2"	8"	8"

"A" BARS
#4 @ 6"



SECTION D-D

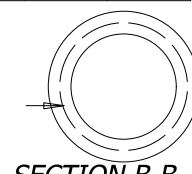
PRECAST TRANSITION
SHALL BE REINFORCED FOR
(1250-D) FOR D+12 R.C.P.

"L" SHALL NOT EXCEED 24"

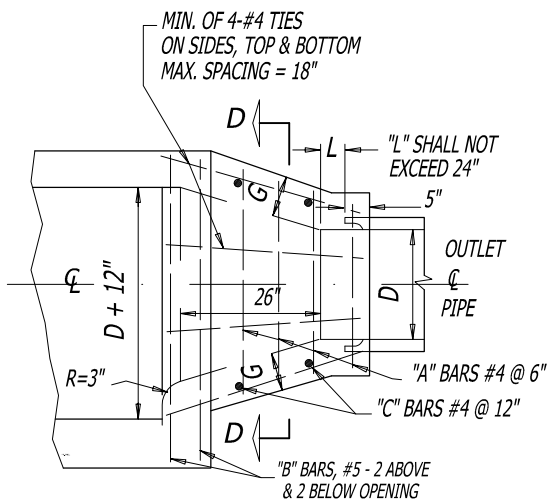
MIN. 3-#4 "A"
BARS. MAX.
SPACING 6"

PRECAST
TRANSITION
MIN. 4-#4 TIES
TOP, SIDES & BOTTOM
MAX. SPACING 18"

MIN. 2-#4 "D" BARS
MAX. SPACING=12"



SECTION B-B



PLAN

STEEL REINFORCING

DETAIL A

MONOLITHIC TRANSITION

ADOPTED FROM CITY OF LOS ANGELES STD. PLAN B-3649

DETAIL B

SQUARE CONCRETE COLLAR

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

DATE: 11/3/2020

CURB INLET BASIN OUTLET TRANSITION STRUCTURE

STANDARD DRAWING NO.

303

SHEET 1 OF 2

REV. 9/93


FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 302-L-A

NOTES FOR CATCH BASIN OUTLET TRANSITION STRUCTURE

- 1 - TRANSITION MAY BE EITHER PRECAST OR MONOLITHIC AT INSPECTOR'S OPTION.
- 2 - PRECAST TRANSITION SHALL BE REINFORCED FOR 1250-D FOR D+12 INCH CONCRETE PIPE.
- 3 - CONCRETE COLLAR (DETAIL "B") SHALL BE USED ONLY TO JOIN THE PRECAST TRANSITION WITH THE OUTLET PIPE.
- 4 - CONCRETE SHALL BE OF THE SAME CLASS AS THE STRUCTURE WITH WHICH IT IS POURED.
- 5 - CURVATURE OF THE ROUNDED EDGE OF THE OUTLET AND SIDEWALLS SHALL BE FORMED BY CURVED FORMS AND SHALL NOT BE MADE BY PLASTERING.
- 6 - INTERIOR SURFACE OF STRUCTURE SHALL BE SMOOTH AND CLEAN, AND FREE FROM POCKETS OR PROTUBANCES.
- 7 - SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.
- 8 - DIMENSIONS "T", "V", AND STEEL REINFORCEMENT DETAILS ARE SHOWN EITHER ON STANDARD PLAN OR ON THE IMPROVEMENT PLAN FOR THE CATCH BASIN.
- 9 - OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE CONCRETE IS POURED.
- 10 - REINFORCING STEEL SHALL BE 1½" CLEAR FROM FACE OF CONCRETE UNLESS OTHERWISE SHOWN.
- 11 - TRANSITION STRUCTURE (CASE 2) MAY BE CONSTRUCTED IN ANY DIRECTION WITHIN THE LIMITS OF TABLE "A" AS SPECIFIED ON THE IMPROVEMENT PLAN, BY ROTATING IT ABOUT EITHER POINTS "E" OR "F".

ADOPTED FROM CITY OF LOS ANGELES STD. PLAN B-3649

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 302-L-B

APP.  51568 11/24/2020
CITY ENGINEER RCE DATE

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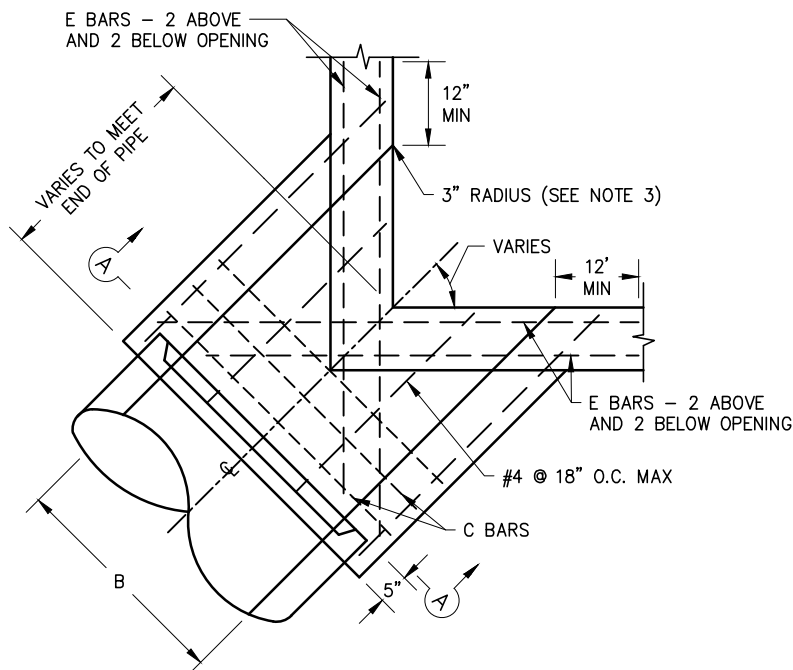
DATE: 11/3/2020

CURB INLET BASIN OUTLET TRANSITION STRUCTURE

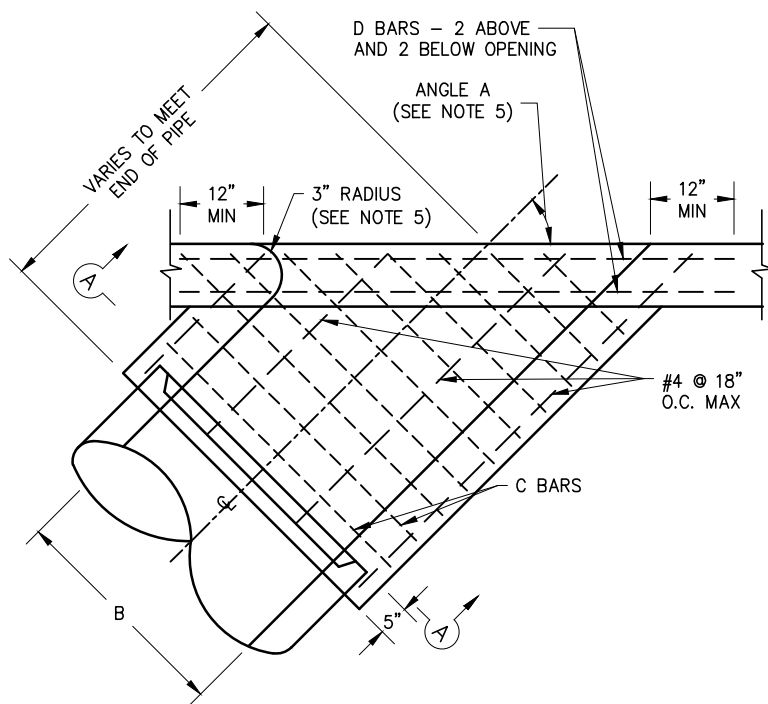
STANDARD DRAWING NO.

303

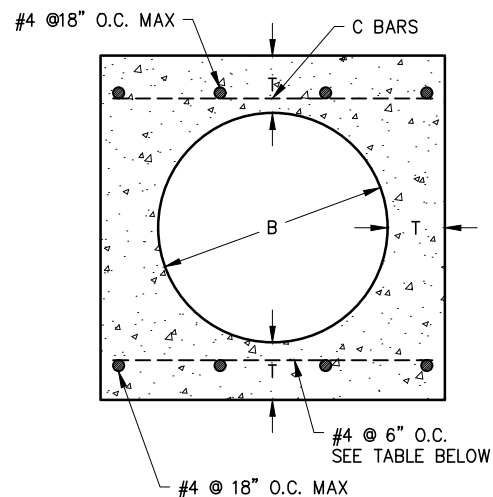
SHEET 2 OF 2



PLAN - CORNER CONNECTION



PLAN - SIDE CONNECTION



SECTION A-A

NOTES:

1. REINFORCING STEEL SHALL BE 1 1/2" CLEAR FROM FACE OF CONCRETE UNLESS OTHERWISE SHOWN.
2. REINFORCING STEEL FOR INSIDE FACE OF CURB INLET BASIN SHALL BE CUT AT CENTER OF OPENING AND BENT INTO WALLS OF MONOLITHIC CONNECTION. REINFORCING STEEL FOR OUTSIDE FACE OF CATCH BASIN WALL SHALL BE CUT 2" CLEAR OF OPENING.
3. CONNECTION SHALL BE POURED MONOLITHIC WITH CURB INLET. THE ROUNDED EDGE OF OUTLET SHALL BE CONSTRUCTED BY POURING CONCRETE AGAINST A CURVED FORM WITH A RADIUS OF 3".
4. FLOOR OF STRUCTURE SHALL BE STEEL-TROWELED TO SPRING LINE.
5. CONNECTIONS SHALL BE CONSTRUCTED WHEN:
 - A. PIPES, 12" THRU 72" IN DIAMETER, INLET OR OUTLET THRU CORNER OF CURB INLET.
 - B. ANGLE A, FOR PIPES 24" THRU 30" IN DIAMETER, IS 70 OR LESS.
 - C. PIPES, 33" THRU 72" IN DIAMETER, INLET OR OUTLET THRU THE SIDE WALL OF CURB INLET.

B	T	C BARS	D & E BARS	B	T	C BARS	D & E BARS
12"	4"	#4 @ 6" O.C.	#5	42"	7 1/2"	#5 @ 6" O.C.	#6
15"	4 1/4"			45"	7 3/4"		
18"	4 1/2"			48"	8"		
21"	5"			51"	8 1/2"		
24"	5 1/4"			54"	9"		
27"	5 1/2"			57"	9 1/4"		
30"	6"			60"	9 1/2"		
33"	6 1/4"			63"	10"		
36"	6 1/2"			66"	10 1/4"		
39"	7"			69"	10 3/4"		
				72"	11"		

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 303-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

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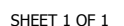
CONNECTION TO CURB INLET FOR PIPES 12" THRU 72"

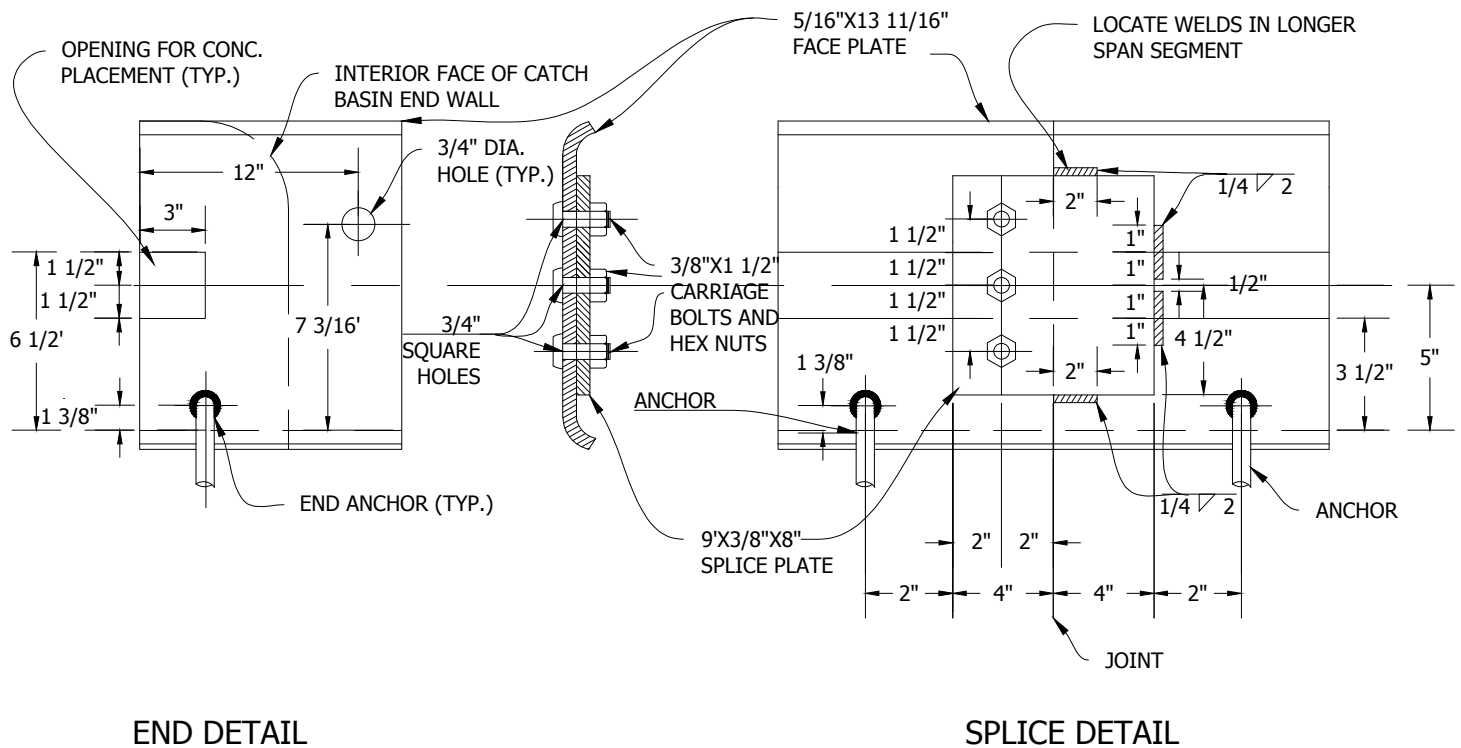
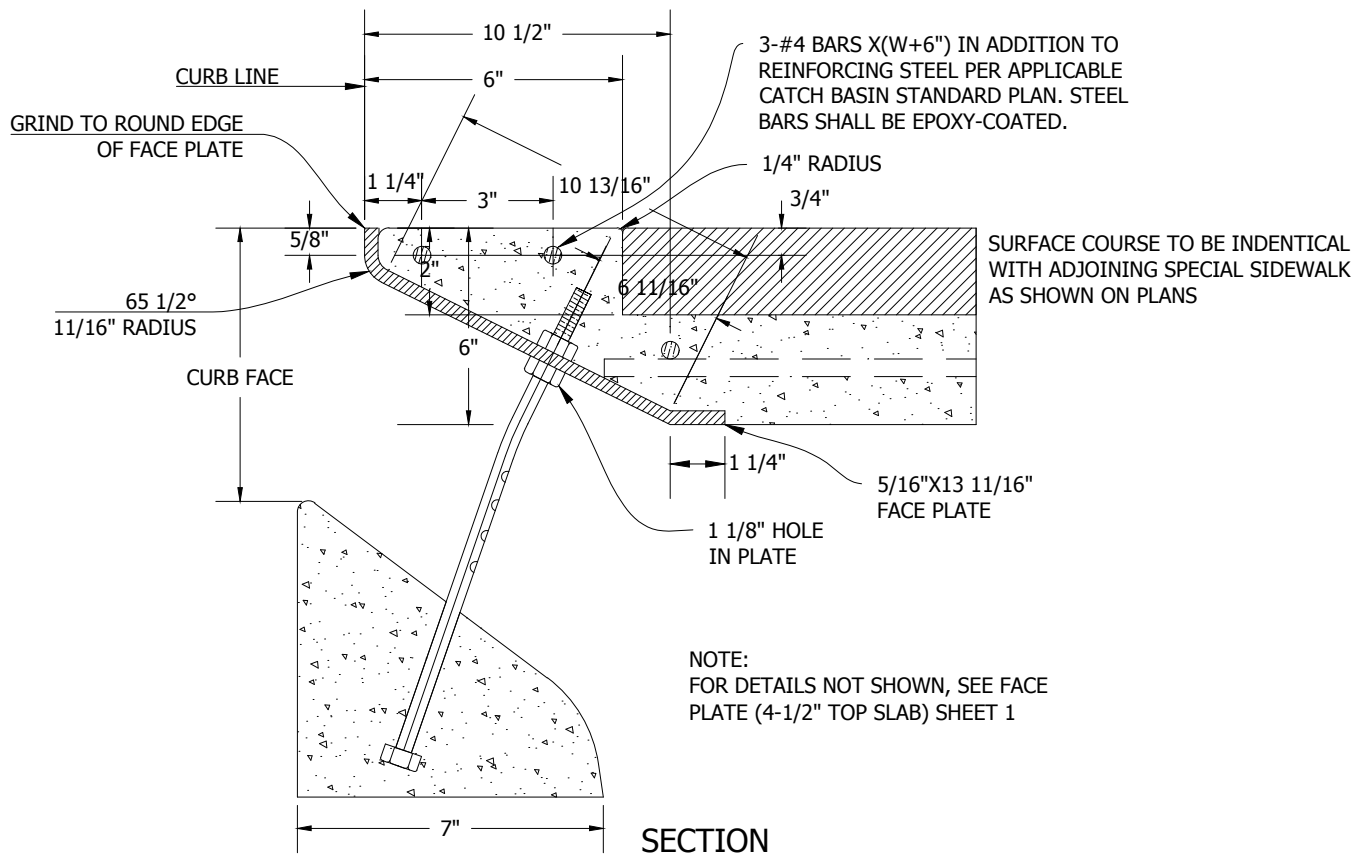
STANDARD DRAWING NO.

304

SHEET 1 OF 1

$\angle A = 18^\circ$ FOR CURB BATTER LESS THAN 2:12
 $\angle A = 9^\circ$ FOR CURB BATTER 2:12 THRU 4:12
 $\angle A =$ AS SHOWN ON PLANS FOR ALL OTHER
 CURB BATTER.





ADOPTED FROM APWA STANDARD PLAN STD 310-2
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 316-L-B

APP.

James M. Hinkle
CITY ENGINEER

51568

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11/24/2020

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

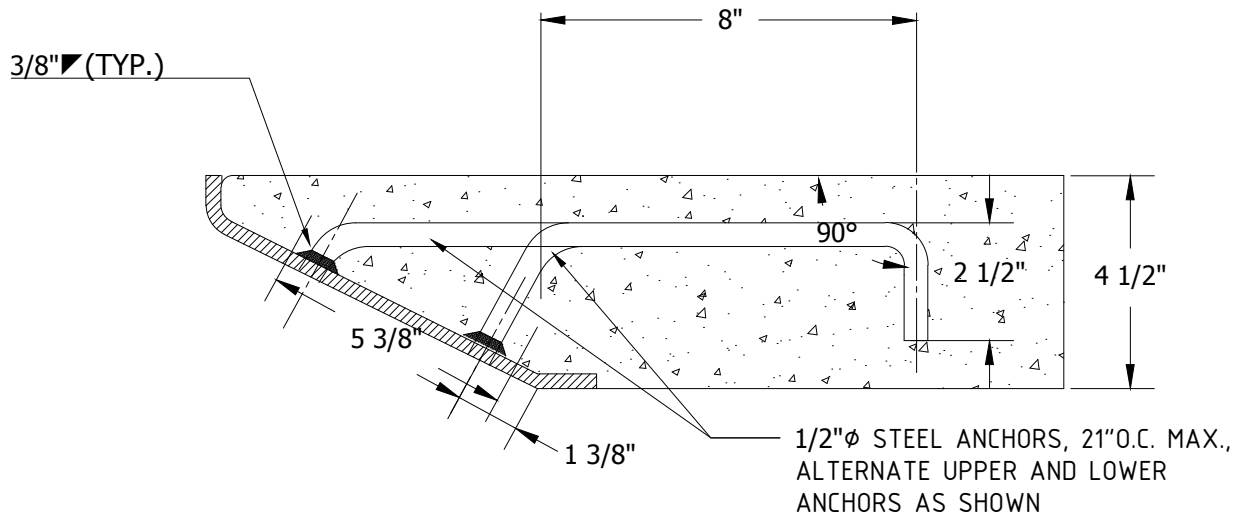
DATE: 11/3/2020

CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR FOR 6" TOP SLAB

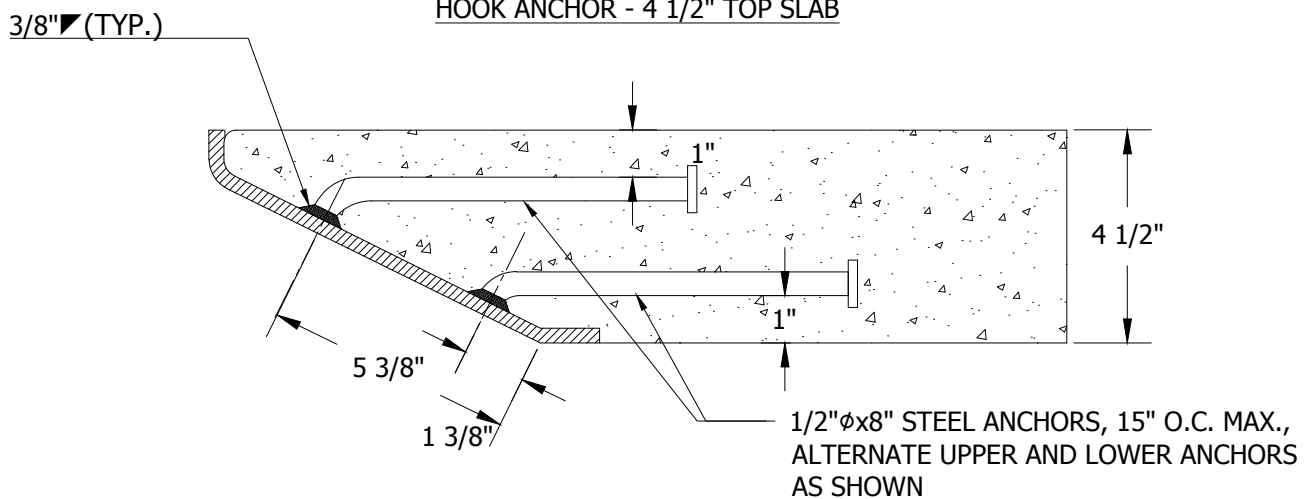
STANDARD DRAWING NO.

305-B

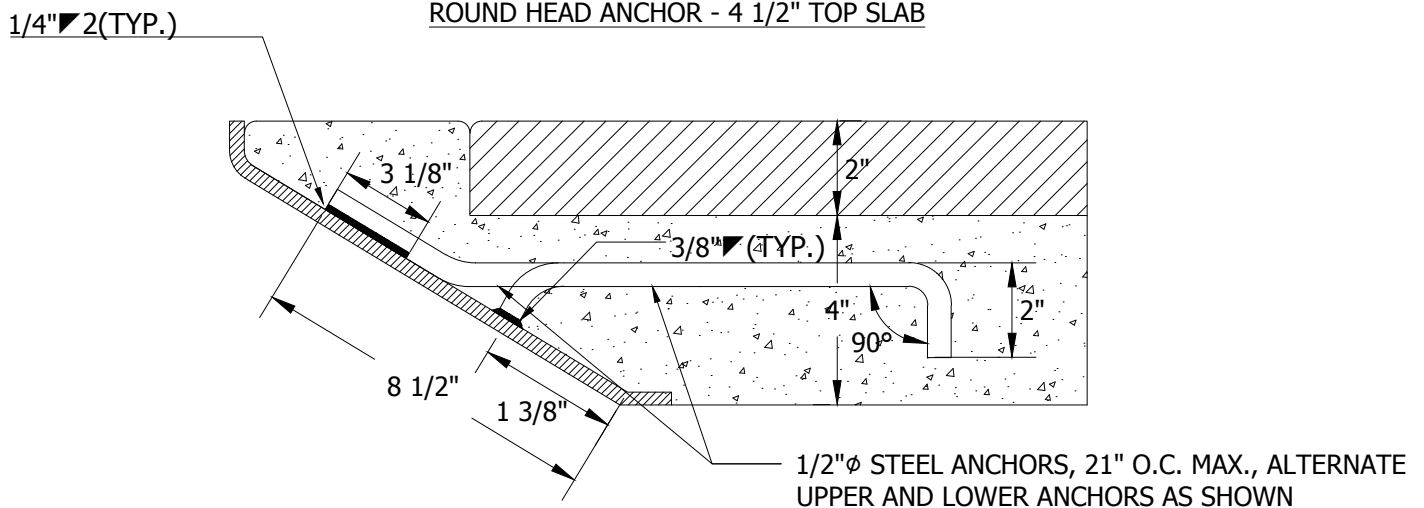
SHEET 1 OF 1



HOOK ANCHOR - 4 1/2" TOP SLAB



ROUND HEAD ANCHOR - 4 1/2" TOP SLAB



HOOK ANCHOR - 6" TOP SLAB

ADOPTED FROM APWA STANDARD PLAN 310-2
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 316-L-C

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James M. Hinkle

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DRAWN: M. ELIAS

DATE: 11/3/2020

CATCH BASIN FACE PLATE ANCHORS

STANDARD DRAWING NO.

305-C

SHEET 1 OF 1

Diagram illustrating the ELEVATION view of the end anchor assembly for the downstream end of the basin. The assembly includes a DOWNSTREAM END OF BASIN, END ANCHOR WITH COUPLING AND SET SCREW, FACE PLATE, 3/4" ϕ PROTECTION BAR, END ANCHOR, and SUPPORT BOLT WITH ADJUSTABLE STIRRUP (TYP.). The width of the assembly is labeled as W.

FLATTEN ANCHOR END TO PREVENT TURNING

DRILL 1/2" HOLE 1/4" DEEP

45°

5"

5'

2"

2"

5"

5"

45°

CURB FACE

STD. 3/4" STEEL COUPLING TO FIT SNUG OVER ENTIRE LENGTH (3/4" NPS THREAD)

PROTECTION BAR

DRILL AND TAP HOLE AND INSTALL 3/8"-NCx1/2" SOCKET SET SCREW WITH 3/16" RECESSED HEX HOLE

A technical diagram illustrating a repair method for a curb and gutter. The diagram shows a cross-section of a concrete curb and gutter assembly. A vertical dimension line on the left is labeled "CURB FACE". A diagonal dimension line is labeled "CURB BATTER". A horizontal dimension line is labeled "S". A "SUPPORT BOLT" is shown passing through the curb and gutter, secured with a nut and washer. An "ADJUSTABLE STIRRUP" is attached to the support bolt. A "PROTECTION BAR" is shown extending from the adjustable stirrup. The diagram also shows a "DRILL" and a "3/8\"-N" (likely 3/8-inch nominal) hole being drilled into the curb. The gutter is shown with a "WITH" (likely with a certain material or finish).

Technical drawing of a mechanical part, showing front and side views with dimensions.


Front View (Top):

- Overall width: $1\frac{1}{16}"$
- Overall height: $1\frac{15}{16}"$
- Top flange thickness: $\frac{1}{4}"$
- Internal hole diameter: $15/16" \varnothing$
- Internal hole offset from left face: $1\frac{1}{4}"$
- Internal hole offset from right face: $\frac{1}{8}"$ RAD.(TYP.)
- Internal hole diameter: $\frac{1}{2}" \varnothing$

Side View (Bottom):

- Overall width: $1\frac{1}{2}"$
- Overall height: $1\frac{9}{16}"$
- Top flange thickness: $\frac{3}{8}"$
- Internal hole diameter: $1\frac{1}{2}" \varnothing$
- Internal hole offset from left face: $1\frac{1}{2}"$
- Internal hole offset from right face: $\frac{3}{8}"$
- Internal hole diameter: $\frac{1}{2}" \varnothing$

STIRRUP DETAIL

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CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

SHEET 1 OF 1

3/4" ϕ PROTECTION BAR
(2 SECTIONS Min.)
THREADED EACH END (1/2" NPT)

FACE PLATE

1/2" PIPE CAP (NPT)

EYE BOLT

SUPPORT BOLT AND FIXED STIRRUP (TYP.)

EYE BOLT

1/2" PIPE CAP (NPT)

1/2" PIPE COUPLING (NPT)

6"

1"

6" MIN.

1"

6"

W/2 \pm

W

SHEET 1 OF 1

NOTES

1. ALL PARTS SHALL BE STEEL EXCEPT SET SCREWS, WHICH SHALL BE STAINLESS STEEL OR BRASS.
2. EXCLUDING -SET SCREWS, ALL EXPOSED -METAL PARTS SHALL BE GALVANIZED AFTER FABRICATION.
3. CURB FACE SHALL BE AS NOTED ON THE PROJECT PLANS.
4. CURB BATTER SHALL BE 3:12 UNLESS OTHERWISE SPECIFIED.

FACE PLATE

5. FACE PLATE LENGTHS SHALL BE CATCH BASIN "W" PLUS 12" EXCEPT AS MODIFIED FOR A CURB OPENING CATCH BASIN AT DRIVEWAY.

6. WHEN THE LENGTH OF THE FACE PLATE IS BETWEEN 22 FEET AND 43 FEET. 2 SECTIONS MAY BE USED. WHEN THE LENGTH EXCEEDS 43 FEET, 3 SECTIONS MAY BE USED. SECTIONS SHALL BE SPLICED ACCORDING TO THE APPLICABLE SPLICE DETAIL. SPLICE SHALL BE PLACED ONE FOOT FROM A SUPPORT BOLT.

7. WHERE CATCH BASINS ARE TO BE CONSTRUCTED ON CURVES, THE MAXIMUM CHORD LENGTH FOR THE FACE PLATE SHALL BE SUCH THAT THE MAXIMUM PERPENDICULAR DISTANCE TO THE TRUE CURVE SHALL NOT EXCEED ONE INCH. WHERE MORE THAN ONE CHORD IS REQUIRED, CHORD LENGTHS SHALL BE EQUAL. CHORD SECTIONS SHALL BE SPLICED ACCORDING TO THE APPLICABLE SPLICE DETAIL (MODIFIED TO FIT THE CHORD DEFLECTION) AND A SUPPORT BOLT SHALL BE PLACED ONE FOOT FROM THE SPLICE.

8. ROUND HEAD ANCHORS FOR THE FACE PLATE SHALL BE NELSON H-4F SHEAR CONNECTOR, KSW WELDING SYSTEMS DIVISION SHEAR CONNECTOR OR EQUAL.

SUPPORT BOLT

9. SUPPORT BOLTS ARE REQUIRED WHEN THE LENGTH OF THE CATCH BASIN OPENING IS 6 FEET OR GREATER, AND SHALL BE EVENLY SPACED ACROSS THE OPENING. SPACING SHALL NOT BE LESS THAN 3 FEET.

STIRRUP

10. FOR TYPE A, THE MATERIAL SHALL BE CAST STEEL.

PROTECTION PLAN

11. TYPE A SHALL BE USED UNLESS OTHERWISE SPECIFIED.

12. FOR TYPE A, THE BAR SHALL BE CUT TO FIT IN THE FIELD. WHEN "W" IS OVER 21 FEET, THE PROTECTION BAR SHALL CONSIST OF 2 OR MORE SECTIONS. A SPECIAL CONNECTOR BETWEEN THE PROTECTION BAR PIECES SHALL CONSIST OF A 5-INCH LENGTH OF STANDARD 3/4-INCH PIPE WITH

STANDARD COUPLINGS FULLY THREADED ONTO EACH END DRILLED AND TAPPED FOR A SOCKET SET SCREW AS DETAILED FOR THE DOWNSTREAM END ANCHOR.

13. FOR TYPE B, THE BAR SHALL BE TWO PIECES. TWO EYE BOLTS AND A WELDED STIRRUP ON EACH SUPPORT BOLT ARE REQUIRED.


14. NUMBER OF PROTECTION BARS AND LOCATION (S) ARE AS FOLLOWS:

MAXIMUM CURB FACE															
CURB BATTER		0"-6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	S DIMENSION
	0:12	0	0	3-5"	3-5"	3-5"	4-5"	4-5"	5-5"	3-5"	3-5"	4-5"	4-5"	4-5"	
	1:12	0	0	3-5"	3-5"	3-5"	4-5"	4-5"	5-5"	3-5"	3-5"	4-5"	4-5"	5-5'	
	2:12	0	0	3-5"	3-5"	4-5"	4-5"	5-5"	3-5"	3-5"	4-5"	4-5"	5-5"	5-5"	
	3:12	0	0	3-5"	3-5"	4-5"	4-5"	5-5"	3-5"	4-5"	4-5"	5-5"	5-5"	4-5"	
	4:12	0	3-5"	3-5"	4-5"	4-5"	5-5"	3-5"	3-5"	4-5"	4-5"	5-5"	5-5"	4-5"	
		0	1					2*					3*		
NUMBER OF PROTECTION BARS															

ADOPTED FROM APWA STANDARD PLAN 310-2

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 316-L-F

APP.

 51568
CITY ENGINEER RCE

11/24/2020
DATE

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DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

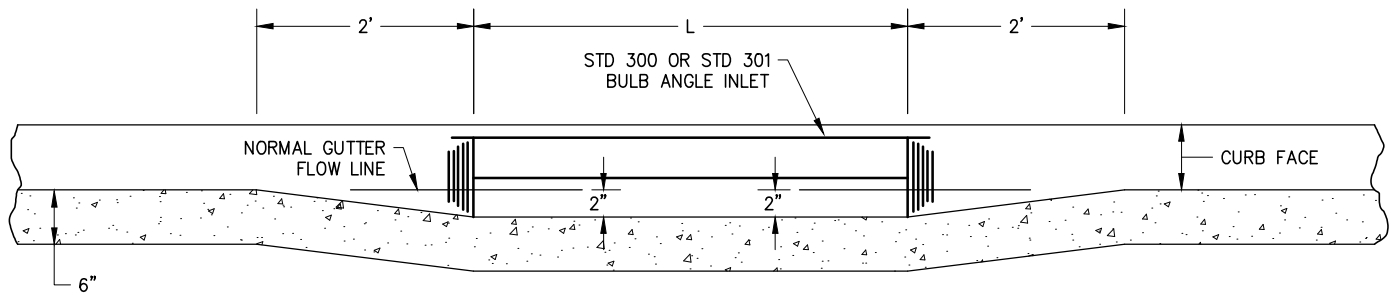
CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR

DATE: 11/3/2020

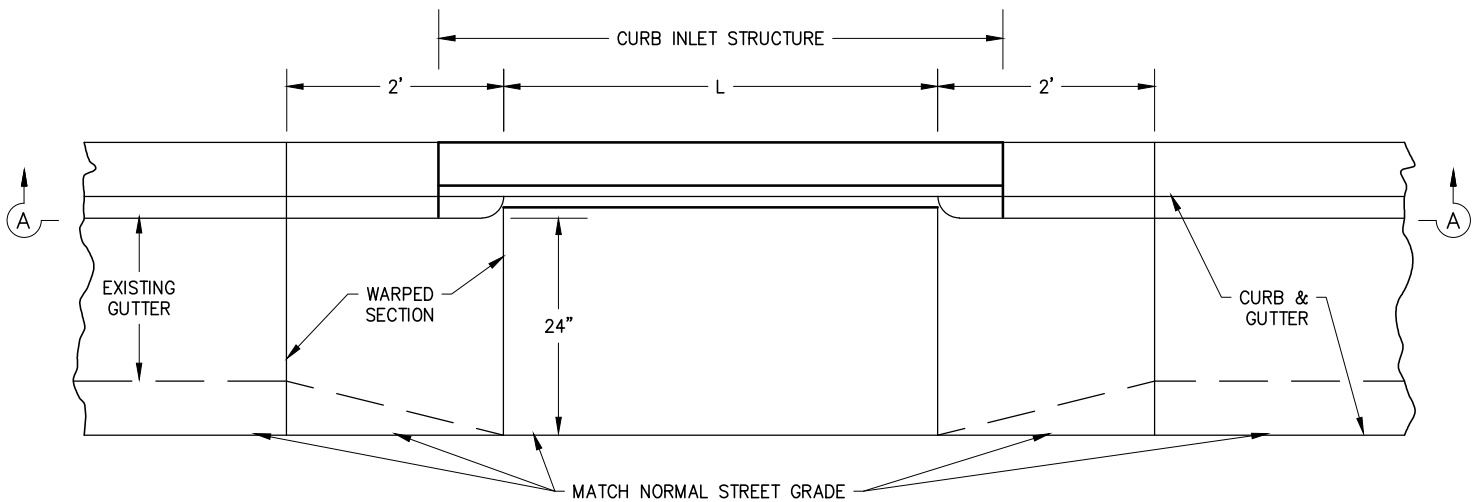
STANDARD DRAWING NO.

305-F

SHEET 1 OF 1



SECTION A-A



**PLAN
LOCAL DEPRESSION**

INLET GENERAL NOTES:

1. "H" DEPTH FOR ALL BOXES IS 3'-6" UNLESS OTHERWISE SPECIFIED.
2. FOR "t" WALL THICKNESS, SEE TABLE OF INLET PLAN.
3. HEIGHT OF CURB OPENING WILL VARY WITH THE TYPE OF CURB AND SHALL BE 2" GREATER THAN THE CURB FACE. USE FACE PLATE SHOWN ON STD 305.
4. REINFORCING STEEL SHALL BE #4 BARS @ 18" CENTERS PLACED $\pm 1 \frac{1}{2}$ " CLEAR TO INSIDE OF BOX UNLESS OTHERWISE SHOWN.
5. STEPS: NONE REQUIRED WHERE "H" IS 3'-6" OR LESS. INSTALL ONE STEP 16" ABOVE FLOOR WHEN "H" IS MORE THAN 3'-6" AND LESS THAN 5'-0". WHERE "H" IS MORE THAN 5'-0", STEPS SHALL BE EVENLY SPACED AT 12" INTERVALS FROM 16" ABOVE FLOOR TO WITHIN 12" OF THE TOP OF THE BOX. PLACE STEPS IN WALL WITHOUT PIPE OPENINGS. SEE STD 317.
6. MANHOLE SHALL BE PLACED ALONG BACKWALL. MANHOLE FRAME AND COVER SHALL BE ALHAMBRA FOUNDRY #A-1530 OR EQUAL WITH LOCKING DEVICE AND LETTER "D" ON NAME PLATE.
7. CURB SECTION SHALL MATCH ADJACENT CURB. SURFACE OF ALL CONCRETE SHALL CONFORM IN SHAPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.
8. EXCEPT FOR INLETS USED AS JUNCTION BOXES, BASIN FLOORS SHALL HAVE A MINIMUM SLOPE OF 12:3 FROM ALL DIRECTIONS TOWARD OUTLET PIPE.
9. GALVANIZING: ALL EXPOSED METAL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
10. OUTLET PIPE SHALL BE TRIMMED TO THE FINAL SHAPE BEFORE CONCRETE IS POURED.
11. PIPE(S) CAN BE PLACED IN ANY WALL.
12. THE FLOOR OF ALL INLETS SHALL BE GIVEN A STEEL-TROWEL FINISH.
13. STANDARD OPENING LENGTHS (L) ARE 3'-6", 7, 10, 14, AND 21 FEET.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 304-L

APP.

James M. Hinkle
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51568
RCE

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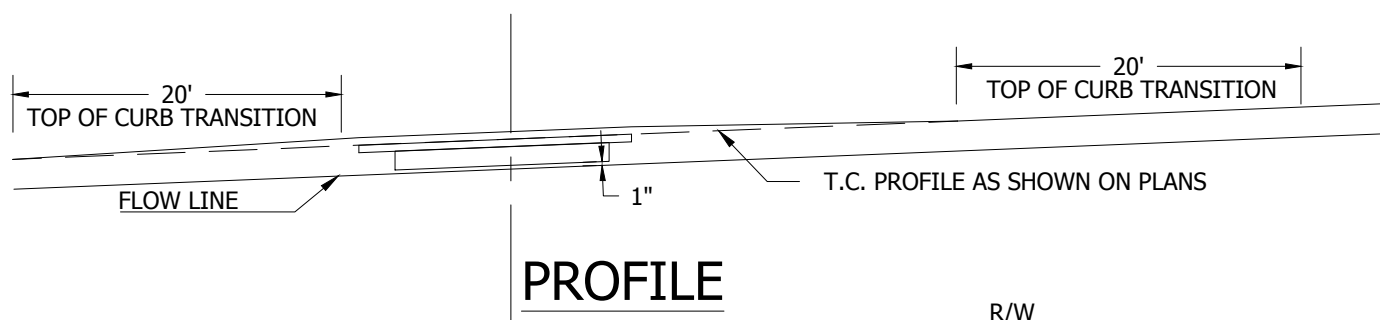
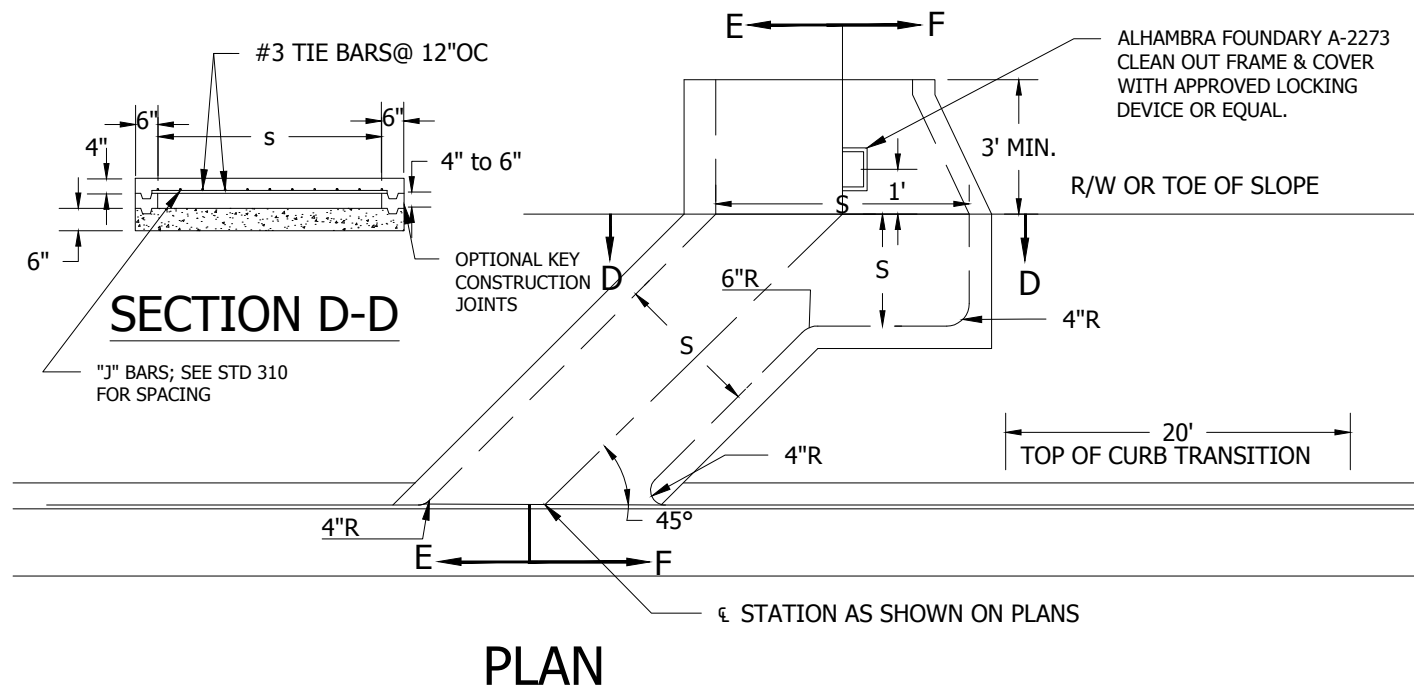
DATE: 11/3/2020

LOCAL DEPRESSION DETAIL AND INLET GENERAL NOTES

STANDARD DRAWING NO.

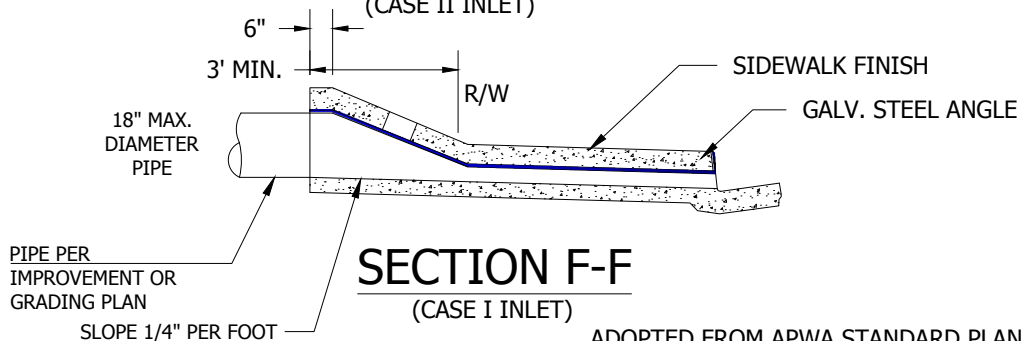
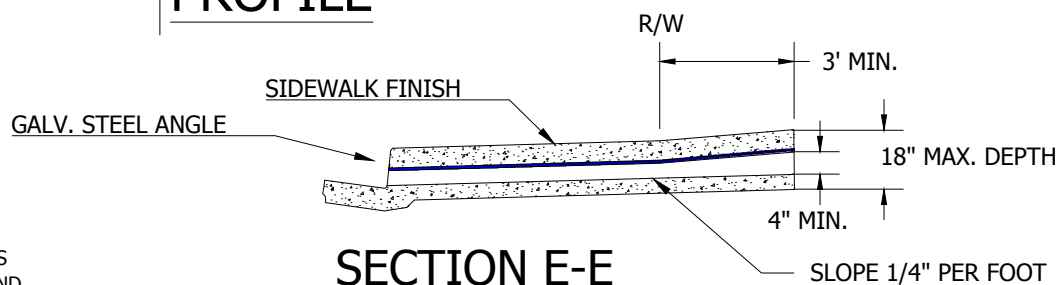
306

SHEET 1 OF 1



NOTES

1. USE PARKWAY CULVERT - TYPE "A" WHEN INLET VELOCITIES WILL BE 10 f.p.s. OR GREATER.
2. SEE STD 310 FOR DETAILS AND NOTES
3. SPAN "S" AND HEIGHT OF OPENING AND CURB FACE AT CULVERT SHALL BE NOTED ON PLANS.
4. SEE STD 310 FOR STEEL LIST.



ADOPTED FROM APWA STANDARD PLAN 310-2

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 317-L

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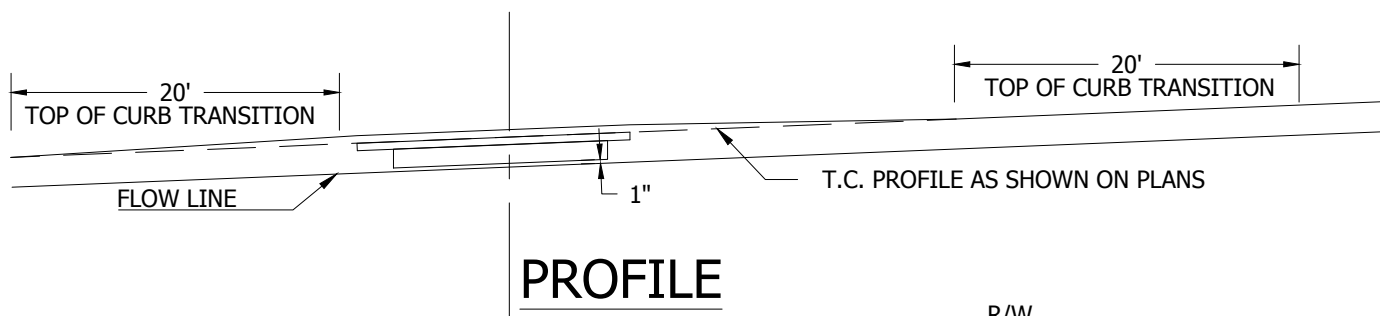
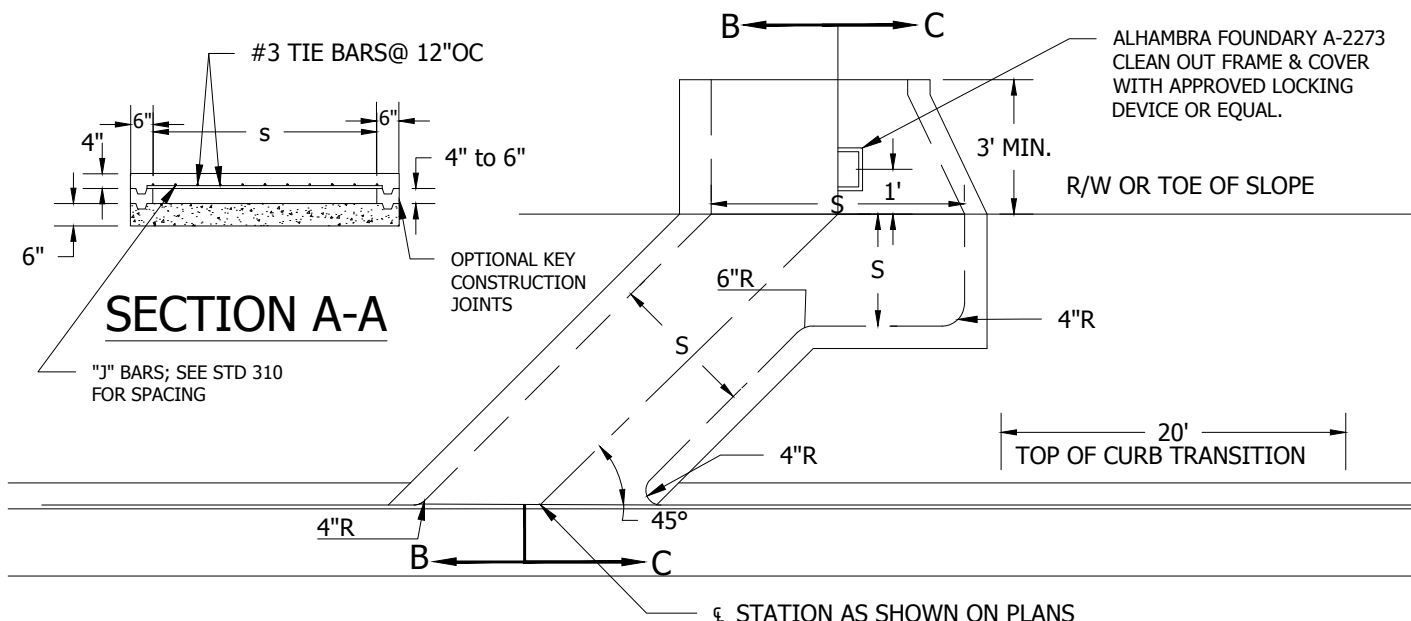
DATE: 11/3/2020

PARKWAY CULVERT TYPE "A"

STANDARD DRAWING NO.

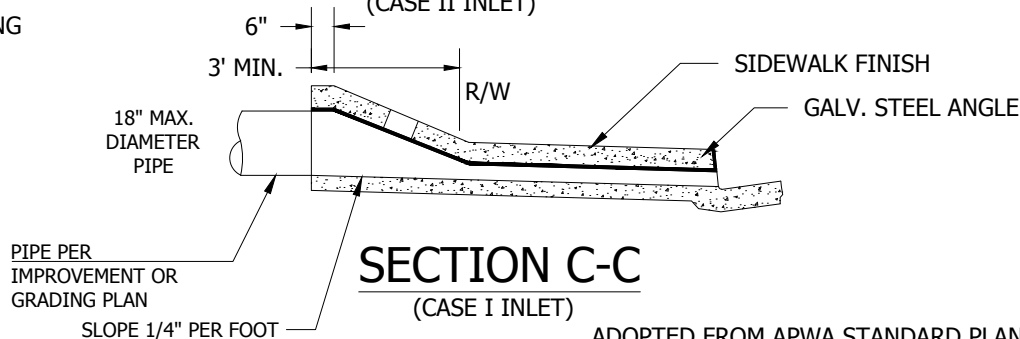
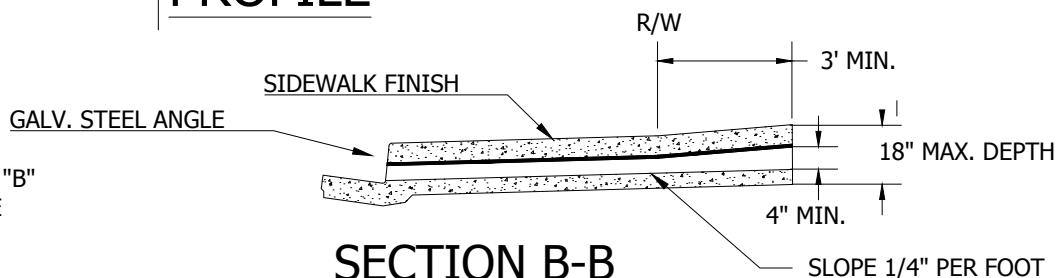
307

SHEET 1 OF 1



NOTES

1. USE PARKWAY CULVERT - TYPE "B" WHEN INLET VELOCITIES WILL BE LESS THAN 10 f.p.s..
2. SEE STD 310 FOR DETAILS AND NOTES
3. SPAN "S" AND HEIGHT OF OPENING AND CURB FACE AT CULVERT SHALL BE NOTED ON PLANS.
4. SEE STD 310 FOR STEEL LIST.



ADOPTED FROM APWA STANDARD PLAN 310-2

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 318-L

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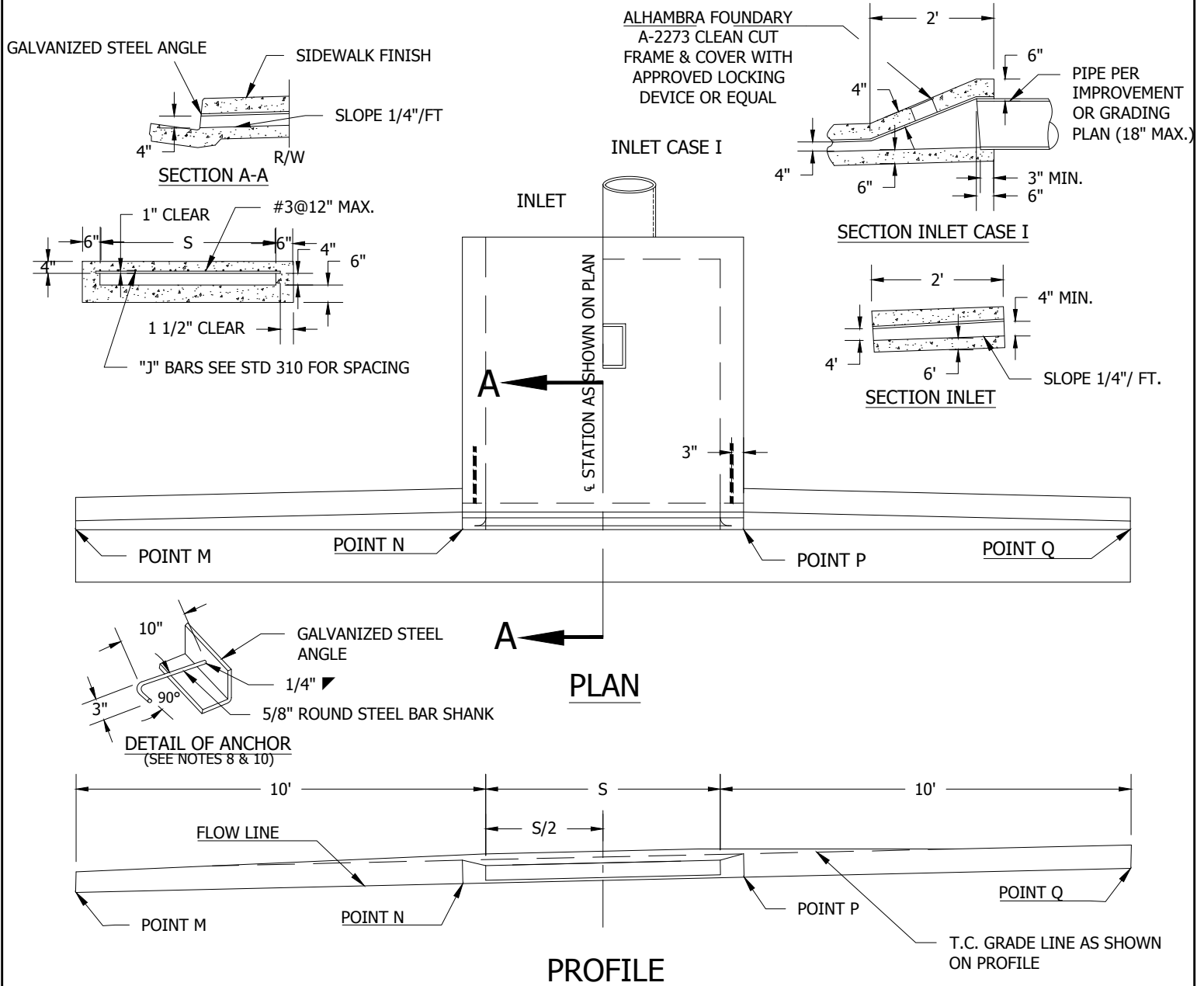
DATE: 11/3/2020

PARKWAY CULVERT TYPE "B"

STANDARD DRAWING NO.

308

SHEET 1 OF 1



NOTES:

1. SEE STD 310 FOR STEEL LIST.
2. SEE STD 310 FOR DETAILS AND NOTES.
3. USE PARKWAY CULVERT-TYPE "C" WHEN INLET VELOCITIES ARE LESS THAN 5 f.p.s.
4. FLOOR OF BOX TO BE TROWELED SMOOTH.
5. WHEN THE TOE OF THE SLOPE IS WITHIN THE R/W, INLET TYPE I BEGINS AT THE TOE RATHER THAN AT THE R/W LINE.
6. FOR OPEN DITCH APPROACH (TYPE II) THE EXTENSION IS NOT REQUIRED WHEN THE BACK OF WALK IS 2' OR MORE FROM THE R/W LINE
7. TOP OF THE INLET STRUCTURE (TYPE I & II) TO BE FLUSH WITH THE ADJACENT SURFACE WHERE PRACTICABLE.
8. A HEADED STEEL STUD 5/8" X 6 3/8" WITH HEAD D=1" ATTACHED BY A FULL PENETRATION BUTT WELD MAY BE USED AS AN ALTERNATE ANCHOR.
9. NORMAL CURB FACE AT POINT M AND Q, B+5" AT POINT N AND P.
10. THE 3' LEG OF INTERIOR ANCHORS AND 10" SHANK OF ALL ANCHORS SHALL BE PARALLEL TO THE TOP OF SIDEWALK.
11. SPAN "S" AND HEIGHT OF OPENING AND CURB FACE AT CULVERT SHALL BE NOTED ON PLANS.

ADOPTED FROM APWA STANDARD PLAN 310-2
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 319-L

APP.

James M. Hinkle
CITY ENGINEER

51568

RCE

11/24/2020

DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

DATE: 11/3/2020

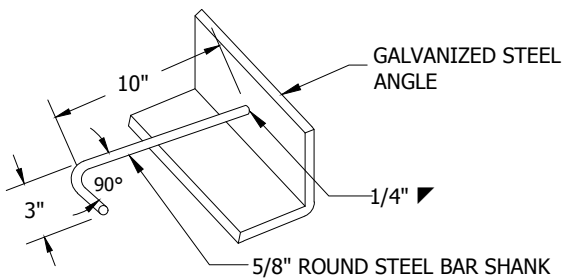
PARKWAY CULVERT TYPE "C"

STANDARD DRAWING NO.

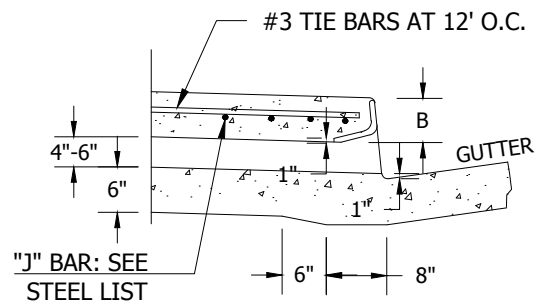
309

SHEET 1 OF 1

S	B	GALVANIZED STEEL ANGLE	ANCHORS REQUIRED	J-BAR		
				SIZE	SPACING	LENGTH
1'-0"	3"	2 1/2" X 2"X 3/8"	2	#3	7"	1'-9"
1'-6"	3"	2 1/2" X 2"X 3/8"	2	#3	7"	2'-3"
2'-0"	3"	2 1/2" X 2"X 3/8"	2	#3	7"	2'-9"
2'-6"	3"	2 1/2" X 2"X 3/8"	2	#3	7"	3'-3"
3'-0"	3"	2 1/2" X 2"X 3/8"	3	#3	7"	3'-9"
3'-6"	3"	2 1/2" X 2"X 3/8"	3	#3	6"	4'-3"
4'-0"	3"	2 1/2" X 2"X 3/8"	3	#3	5"	4'-9"
4'-6"	4"	3 1/2" X 3"X 1/2"	3	#3	6 1/2"	5'-3"
5'-0"	4"	3 1/2" X 3"X 1/2"	3	#3	5"	5'-9"
5'-6"	4"	3 1/2" X 3"X 1/2"	3	#3	4"	6'-3"
6'-0"	4"	3 1/2" X 3"X 1/2"	3	#3	3 1/2"	6'-9"



DETAIL OF ANCHOR
(SEE NOTES 8 & 10)



OUTLET DETAIL

NOTES:

- FLOOR OF BOX TO BE TROWELED SMOOTH.
- WHEN THE TOE OF THE SLOPE IS WITHIN THE R/W, INLET TYPE I BEGINS AT THE TOE RATHER THAN AT THE R/W LINE.
- FOR OPEN DITCH APPROACH (TYPE II) THE EXTENSION IS NOT REQUIRED WHEN THE BACK OF WALK IS 2' OR MORE FROM THE R/W LINE.
- TOP OF THE INLET STRUCTURE (TYPE I & II) TO BE FLUSH WITH THE ADJACENT SURFACE WHERE PRACTICABLE.
- A HEADED STEEL STUD 5/8" X 6 3/8" WITH HEAD D=1" ATTACHED BY A FULL PENETRATION BUTT WELD MAY BE USED AS AN ALTERNATE ANCHOR.
- NORMAL CURB FACE AT POINT M AND Q, B+5" AT POINT N AND P.
- THE 3' LEG OF INTERIOR ANCHORS AND 10" SHANK OF ALL ANCHORS SHALL BE PARALLEL TO THE TOP OF SIDEWALK.
- SPAN "S" AND HEIGHT OF OPENING AND CURB FACE AT CULVERT SHALL BE NOTED ON PLANS.
- NORMAL CURB FACE AT POINT M AND Q, B+5" AT POINT N AND P.
- HEIGHT OF CURB OPENINGS FOR TYPES A & B PARKWAY CULVERTS WILL VARY WITH TYPES OF CURB.
- REINFORCING STEEL SHALL BE 1" CLEAR TO INSIDE OF CULVERT UNLESS OTHERWISE SHOWN.

ADOPTED FROM APWA STANDARD PLAN 310-2
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 320-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

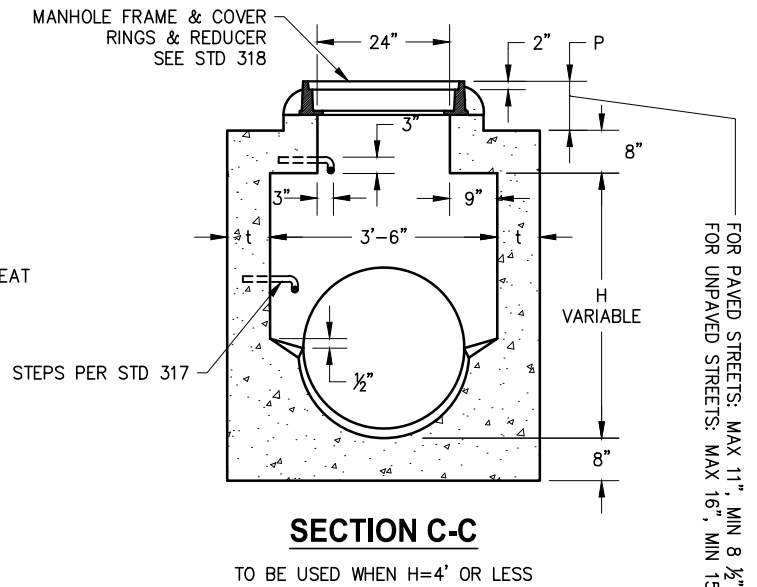
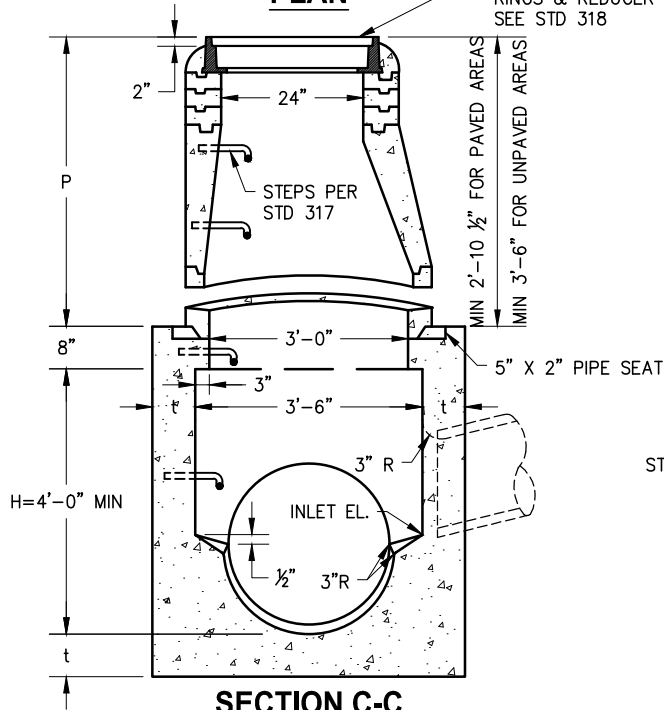
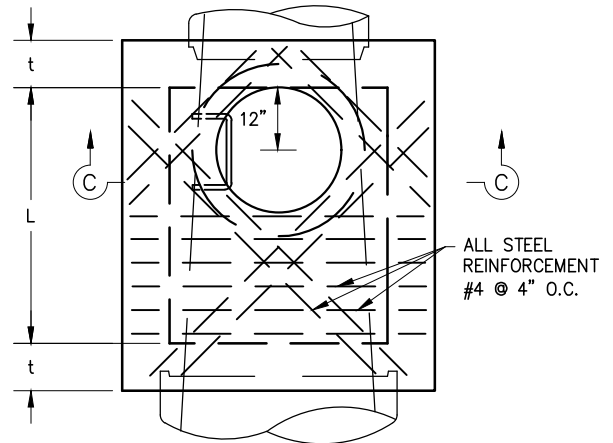
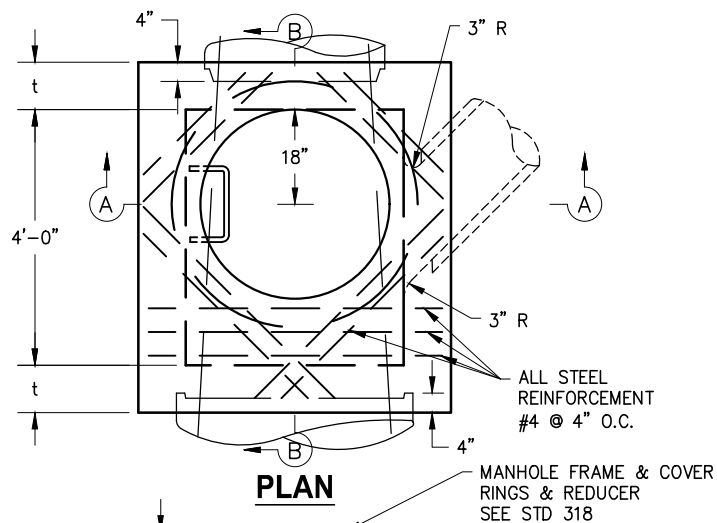
DATE: 11/3/2020

PARKWAY CULVERT STEEL LIST, DETAILS & NOTES

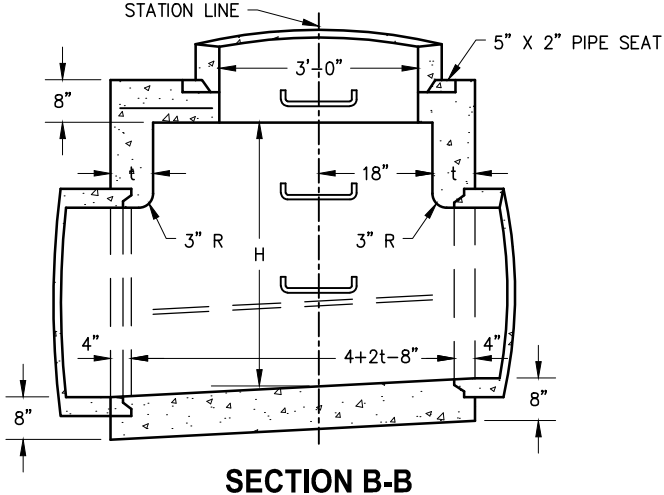
STANDARD DRAWING NO.

310

SHEET 1 OF 1



TO BE USED WHEN H=4' OR MORE



H	t
UNDER 8'	8"
8'-1" & OVER	10"

NOTES:

1. REINFORCING STEEL SHALL BE STRAIGHT BARS 1 1/2" CLEAR FROM FACE OF CONCRETE.
2. P-DEPTH, P, MAY BE REDUCED TO AN ABSOLUTE LIMIT OF 6" WHEN LARGER VALUE OF P WOULD REDUCE H TO 3'-6" OR LESS.
3. STATIONS OF MANHOLES SHOWN ON PLAN APPLY AT CENTERLINE OF SHAFT. ELEVATIONS ARE SHOWN AT SHAFT CENTER AND REFER TO THE PROLONGED INVERT GRADE LINE.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 310-L

APP.

James M. Hinkle

51568

CITY ENGINEER

RCE

11/24/2020

DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

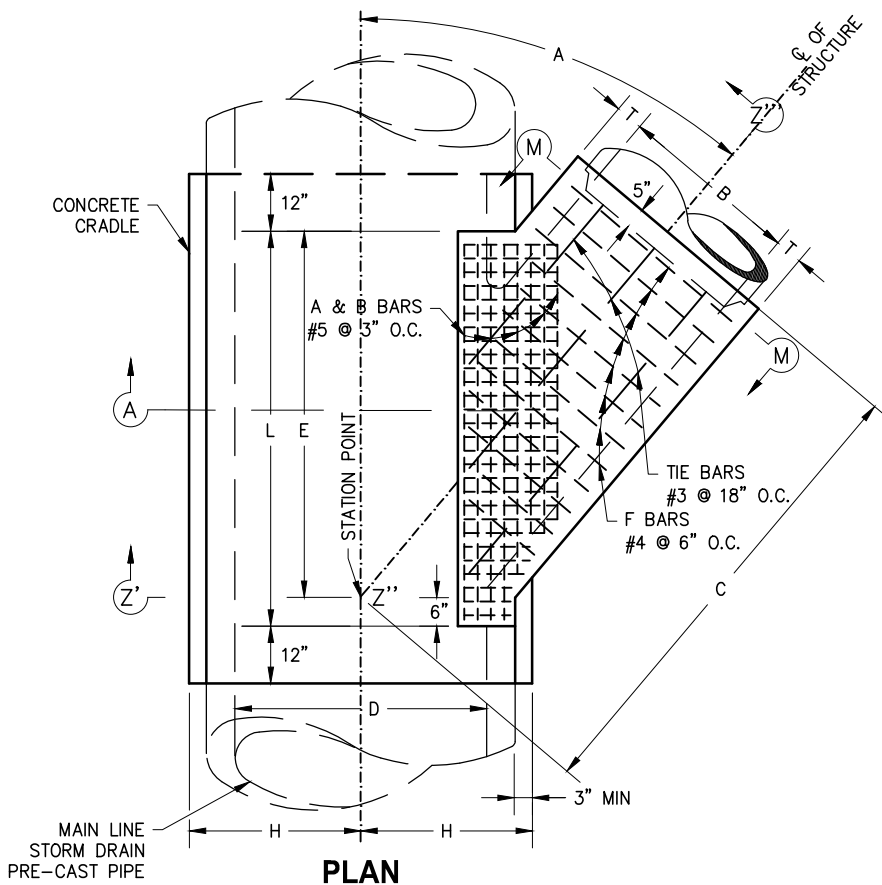
DATE: 11/3/2020

JUNCTION STRUCTURE No. 1

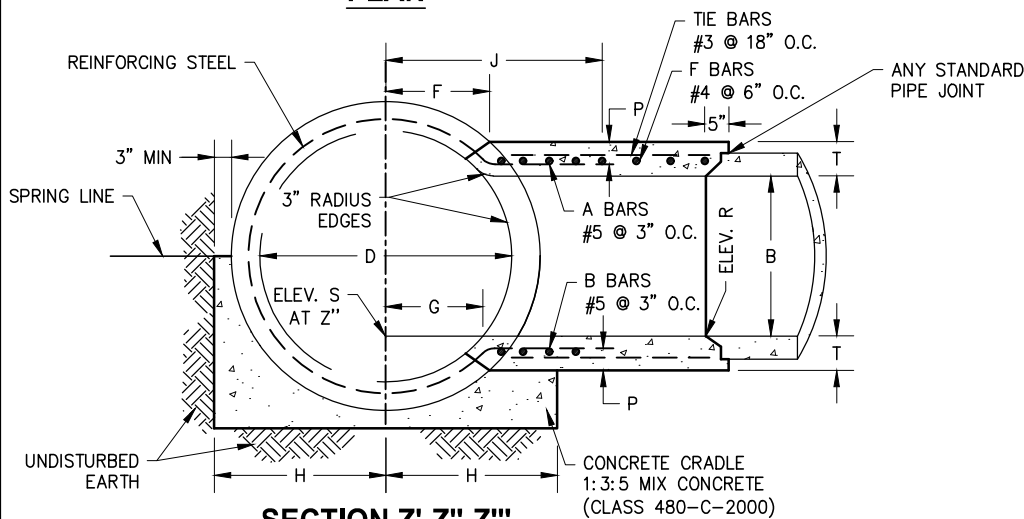
STANDARD DRAWING NO.

311

SHEET 1 OF 1



PLAN

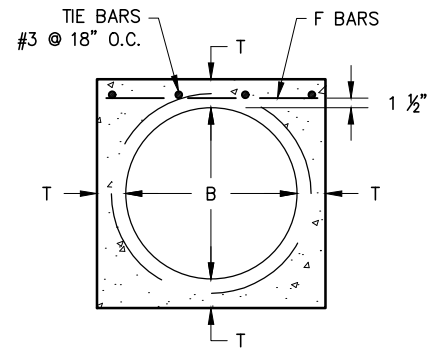


SECTION Z'-Z''-Z'''

PROJECTED ON Y-Z'''

NOTES:

- VALUES FOR A, B, C, D, E, F, G, L, ELEVATION R, AND ELEVATION S ARE SHOWN ON PLAN.
- "H" PIPE SHALL BE CRADLED IN 1:3:5 CONCRETE MIX EXTENDING LONGITUDINALLY 12" BEYOND THE LIMITS OF L. $H = \frac{1}{2}$ " OUTSIDE DIAMETER OF PIPE + 3" AS A MINIMUM.
- "J" - A AND B BARS SHALL BE CARRIED TO A POINT NOT LESS THAN J DISTANCE FROM CENTERLINE = $\frac{7D}{2} + 6"$
- "L" RECTANGULAR OPENING IN MAIN LINE PIPE SHALL BE CUT WITHIN THESE LIMITS NORMAL TO PIPE SURFACE WITHOUT DAMAGING STEEL. THERE SHALL BE AT LEAST 12" CLEARANCE FROM EDGE OF OPENING TO PIPE JOINT. NO MORE THAN ONE OPENING SHALL BE MADE IN ONE SECTION OF PIPE.
- "P" TRANSVERSE REINFORCEMENT IN PIPE SHALL BE CUT IN CENTER OF OPENING AND BENT TO UNIFORM DISTANCE FROM TOP AND BOTTOM OF JUNCTION STRUCTURE.
- REINFORCING STEEL SHALL BE 1 $\frac{1}{2}$ " CLEAR FROM FACE OF CONCRETE UNLESS OTHERWISE SHOWN.
- FLOOR OF STRUCTURE SHALL BE STEEL-TROWELED TO SPRING LINE.
- ELEVATION "S" APPLIES AT CENTER OF MAIN LINE ON PROLONGATION OF INVERT OF SPUR.
- CRADLE MAY BE OMITTED OPPOSITE LATERAL INLET WHEN CONSTRUCTED IN CONNECTION WITH EXISTING PIPE STORM DRAIN.
- JUNCTION STRUCTURE NO. 2 TO BE USED WHEN O.D. OF "B" IS GREATER THAN $\frac{1}{2}$ THE I.D. OF "D" OR "B" IS GREATER THAN $\frac{3}{4}$ D OR 39". FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 311-L



SECTION M-M

TABLE OF VALUES FOR T

B	T
12"	4"
15"	4 $\frac{1}{4}$ "
18"	4 $\frac{1}{2}$ "
21"	5"
24"	5 $\frac{1}{4}$ "
27"	5 $\frac{1}{2}$ "
30"	6"
33"	6 $\frac{1}{4}$ "
36"	6 $\frac{1}{2}$ "
39"	7"

MINIMUM DEPTH OF TOP AND BOTTOM SLABS SHALL BE $\frac{D}{2} + 2"$

APP.

James M. Hinkle

51568

CITY ENGINEER

RCE

11/24/2020

DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

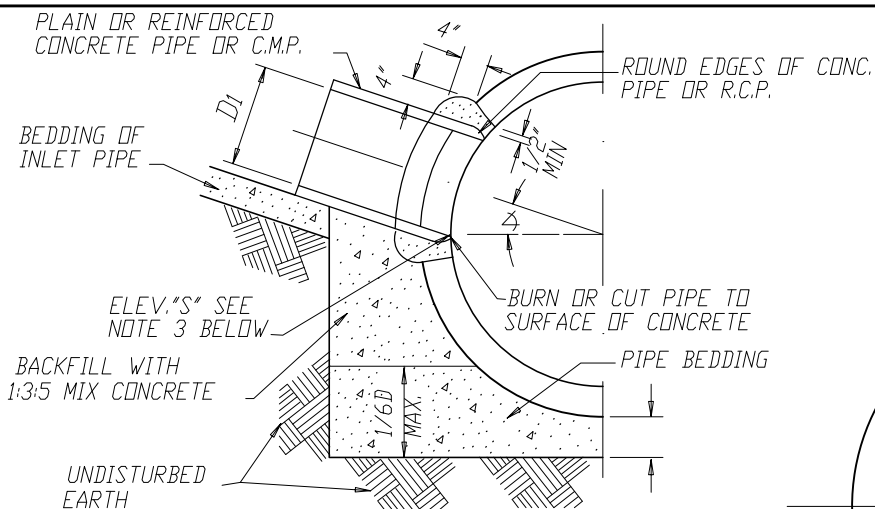
DATE: 11/3/2020

JUNCTION STRUCTURE No. 4

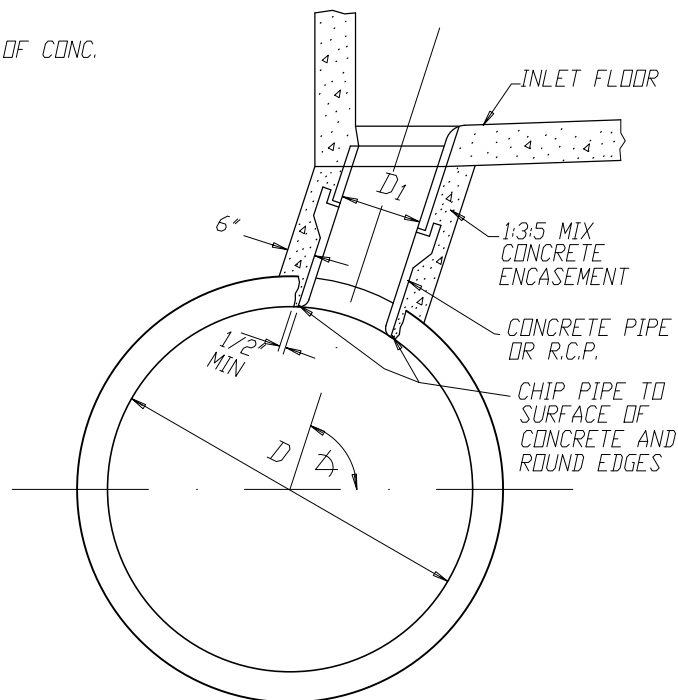
STANDARD DRAWING NO.

314

SHEET 1 OF 1

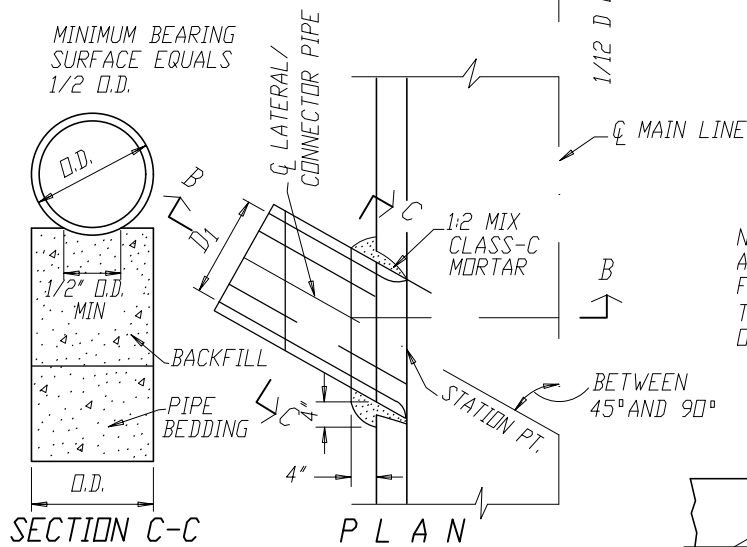


SECTION B-B
CASE-1 SIDE JUNCTION

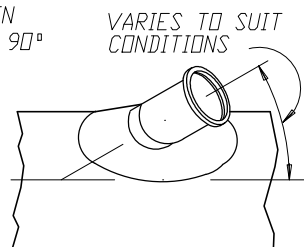


CASE-2
INLET ABOVE STORM DRAIN

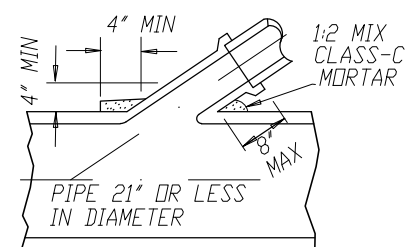
NOTE:
ALL CONNECTOR PIPES (WITHIN THE ANGLES SPECIFIED FOR CASE 2) SHALL BE ENCASED WHEN LAID WITHIN THE MAIN LINE EXCAVATED TRENCH, OR WHEN LAID ON FILL WHICH HAS NOT BEEN DENSIFIED.



CASE-1 SIDE JUNCTION



PLAN
CASE-3 SADDLE CONNECTION



NOTES: CASES 1 AND 2

1. "D1" SHALL BE 24" OR LESS. FOR LARGER VALUES OF "D1", USE MANHOLE, JUNCTION STRUCTURE NO. 2
2. IN NO CASE SHALL THE OUTSIDE DIAMETER OF THE INLET PIPE EXCEED ONE-HALF THE INSIDE DIAMETER OF MAIN STORM DRAIN.
3. CENTERLINE OF JUNCTION SHALL BE ON RADIUS OF MAIN STORM DRAIN EXCEPT WHERE ELEVATION "S" IS SHOWN ON PROJECT DRAWING.
4. THE MINIMUM OPENING INTO THE EXISTING STORM DRAIN SHALL BE THE OUTSIDE DIAMETER OF THE CONNECTING PIPE PLUS ONE INCH.
5. ALL CORRUGATED METAL PIPE AND FITTINGS SHALL BE GALVANIZED.
6. IF Δ IS 45° OR LESS, USE CASE-1; IF Δ IS GREATER THAN 45°, USE CASE-2.

NOTES: CASE 3

1. CONNECTION TO PIPE 21" OR LESS IN DIAMETER WITHOUT JUNCTION STRUCTURES OR PRECAST "Y" BRANCHES SHALL BE MADE WITH SADDLES.
2. TRIM OR CUT SADDLE TO FIT SNUGLY OVER THE OUTSIDE OF THE MAIN PIPE, AND SO ITS AXIS WILL BE ON THE LINE AND GRADE OF THE CONNECTING PIPE.
3. THE OPENING INTO THE PIPE SHALL BE CUT AND TRIMMED TO FIT THE SADDLE SO THAT NO PART WILL PROJECT WITHIN THE BORE OF THE SADDLE PIPE.
4. THE CONNECTING PIPE SHALL BE SUPPORTED AS SHOWN IN CASES 1 AND 2.

ADOPTED FROM LACDPW STD. DWG. NO. 3033-0

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

DATE: 11/3/2020


JUNCTION STRUCTURE No. 5

STANDARD DRAWING NO.

315

SHEET 1 OF 1

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 312-L

APP.  51568
CITY ENGINEER RCE 11/24/2020
DATE

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS
DATE: 11/3/2020

JUNCTION STRUCTURE No. 6

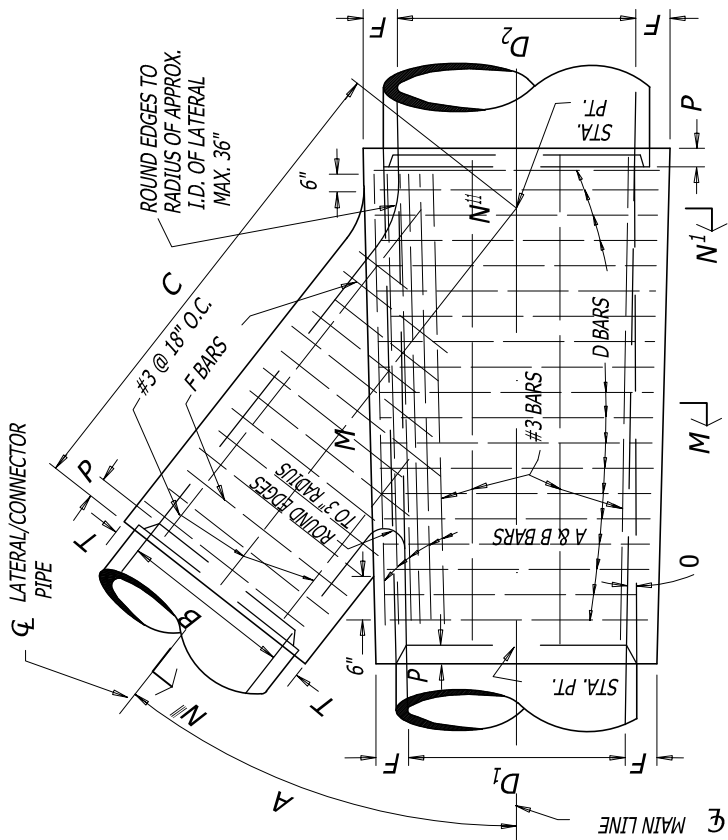
STANDARD DRAWING NO.

316

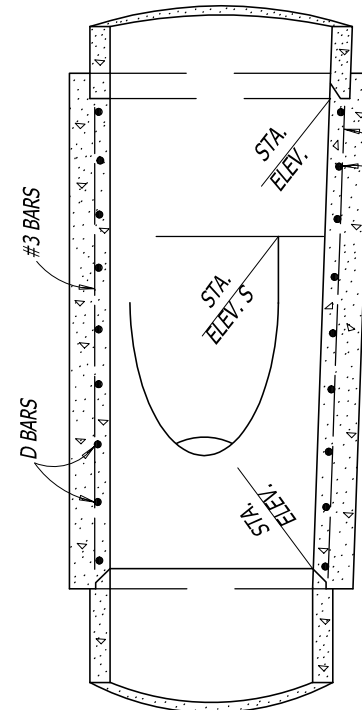
SHEET 1 OF 1

ADOPTED FROM LACDPW STD. DWG. 3042-0

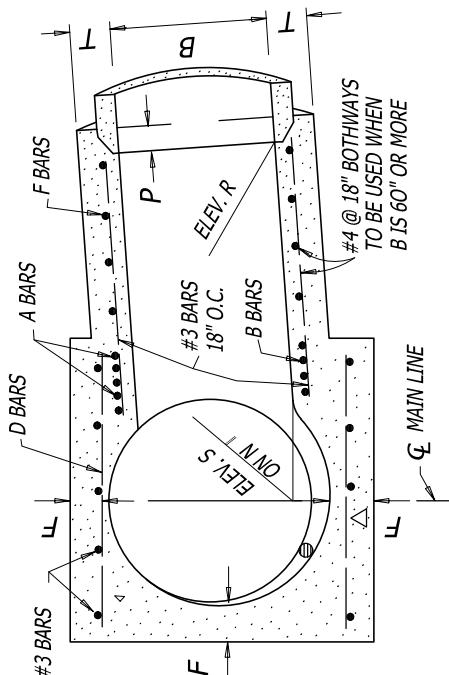
NO.	DATE	DESCRIPTION OF REVISIONS



PLAN



LONGITUDINAL SECTION

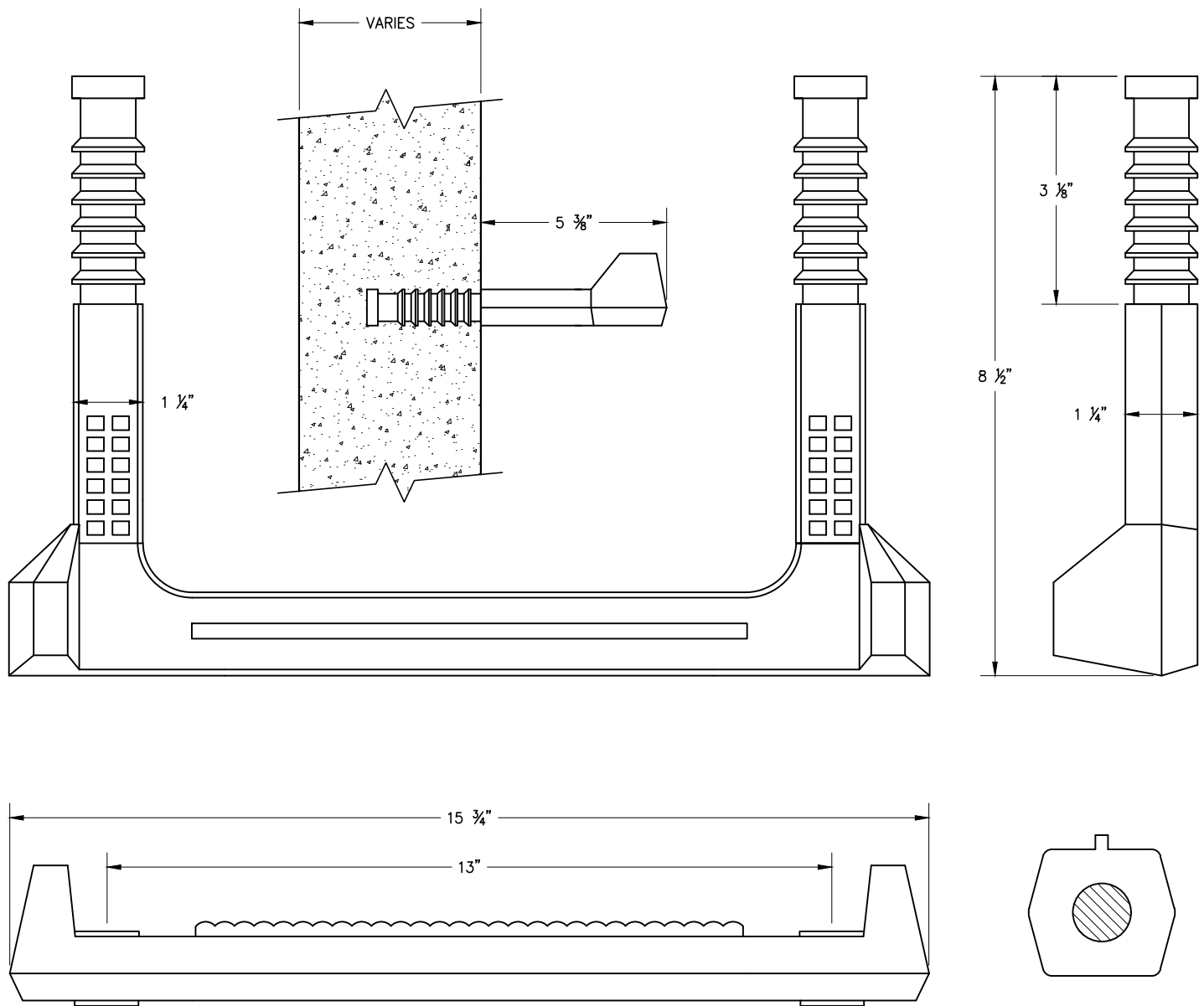


SECTION N-N-N
PROJECTED ON M-M-N

NOTES:

1. THE HORIZONTAL ANGLE OF CONVERGENCE OR DIVERGENCE ϕ , SHALL NOT EXCEED $5^{\circ}45'$.
2. VALUES FOR A, B, C, D1 AND D2, ELEV. R AND ELEV. S ARE SHOWN ON THE PROJECT DRAWINGS.
3. FLOOR OF STRUCTURE SHALL BE STEEL TROWELED TO SPRING LINE.
4. REINFORCING STEEL SHALL BE A MINIMUM OF $1\frac{1}{2}"$ CLEAR FROM FACE OF CONCRETE UNLESS OTHERWISE SHOWN. LONGITUDINAL BARS SHALL BE #3 AT 18" OR LESS ON CENTERS.
5. ELEVATION "S" APPLIES AT CENTER OF MAIN LINE ON PROLONGED INVERT OF SPUR.
6. TRANSITION STRUCTURE SHALL BE POURED IN ONE CONTINUOUS OPERATION EXCEPT THAT THE CONTRACTORS SHALL HAVE THE OPTION OF PLACING AT THE SPRING LINE A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY.
7. THE LENGTH OF THE STRUCTURE MAY BE INCREASED AT THE OPTION OF THE CONTRACTOR TO MEET PIPE ENDS, USING D BARS IN EXTENDED PORTION OF SAME DIAMETER AND SPACING AS SPECIFIED IN THE TABLE, BUT ANY CHANGE IN THE LOCATION OF THE SPUR MUST BE APPROVED BY THE ENGINEER.
8. EMBEDMENT "P" SHALL BE AS SPECIFIED IN THE TABLE UNLESS OTHERWISE SHOWN ON THE PROJECT DRAWINGS.
9. WHEN DIMENSION "C" IS NOT SPECIFIED THE SPUR SHALL NOT BE CONSTRUCTED AND A AND B BARS SHALL BE OMITTED.


TABLE FOR DIMENSIONS AND BAR SIZES			8"		5"	
			#7 @ 3" O.C. #6 @ 6" O.C.	#6 @ 3" O.C. #5 @ 6" O.C.	#5 @ 3" O.C. #4 @ 6" O.C.	For BARS For BARS
D ₂ OR B	F OR T	P				
12"	4"					
15"	4 1/4"					
18"	4 1/2"					
21"	5"					
24"	5 1/4"					
27"	5 1/2"					
30"	6"					
33"	6 1/4"					
36"	6 1/2"					
39"	7"					
42"	7 1/2"					
45"	7 3/4"					
48"	8"					
51"	8 1/2"					
54"	9"					
57"	9 1/4"					
60"	9 1/2"					
63"	10"					
66"	10 1/4"					
69"	10 3/4"					
72"	11"					
78"	11 3/4"					
84"	12 1/2"					
90"	13 1/4"					
94"	14"					
102"	15 1/2"					
108"	16"					
114"	16 1/2"					
120"	17"					
126"	17 1/2"					
132"	17 1/2"					
138	17 1/2"					
144	18"					



GENERAL NOTES:

1. TOP STEP SHALL BE NO MORE THAN 24" FROM THE TOP OF THE STRUCTURE.
2. BOTTOM STEP SHALL BE NO MORE THAN 30" ABOVE THE INVERT.
3. STEP SPACING SHALL BE 16" ON CENTER.
4. STEPS MAY BE CAST IN PLACE OR EPOXIED IN 1 1/4" DIAMETER DRILL HOLES.
5. STEPS FOR STORM DRAIN MANHOLES AND OTHER STRUCTURES SHALL BE POLYPROPYLENE WITH A 1/2" DIAMETER 80,000 PSI TENSILE STRENGTH STEEL CORE PER ASTM A-82 AND ASTM C-478 PARAGRAPH 11.
6. EPOXY SHALL CONFORM TO STATE OF CALIFORNIA SPECIFICATION 95-1.02D AND BE USED IN STRICT ACCORD WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.
7. PLASTIC MATERIAL SHALL BE COPOLYMER POLYPROPYLENE ASTM TYPE II GRADE 43758.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 404-L

APP.  51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

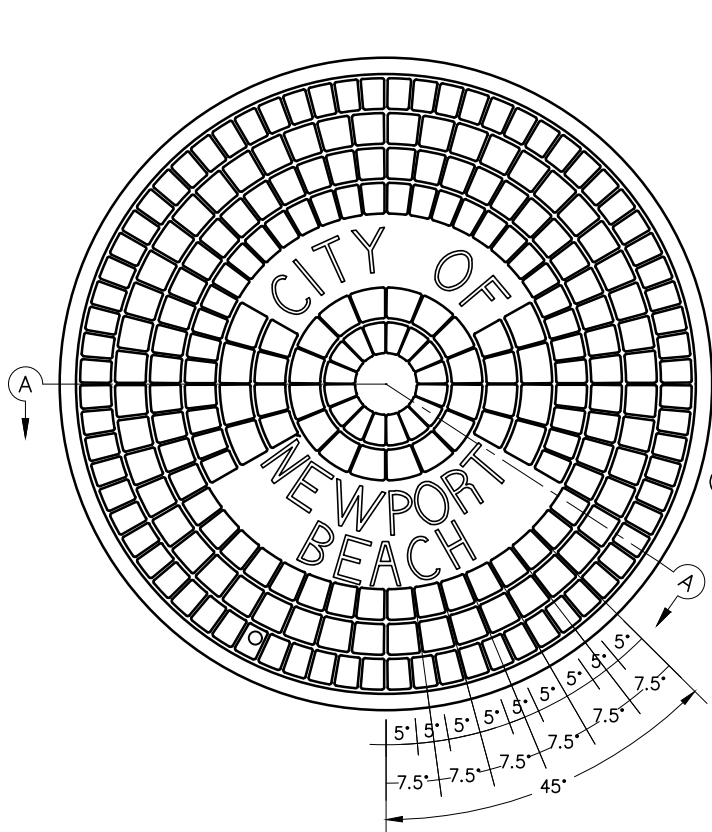
DATE: 11/3/2020

STEPS FOR MANHOLES AND STRUCTURES

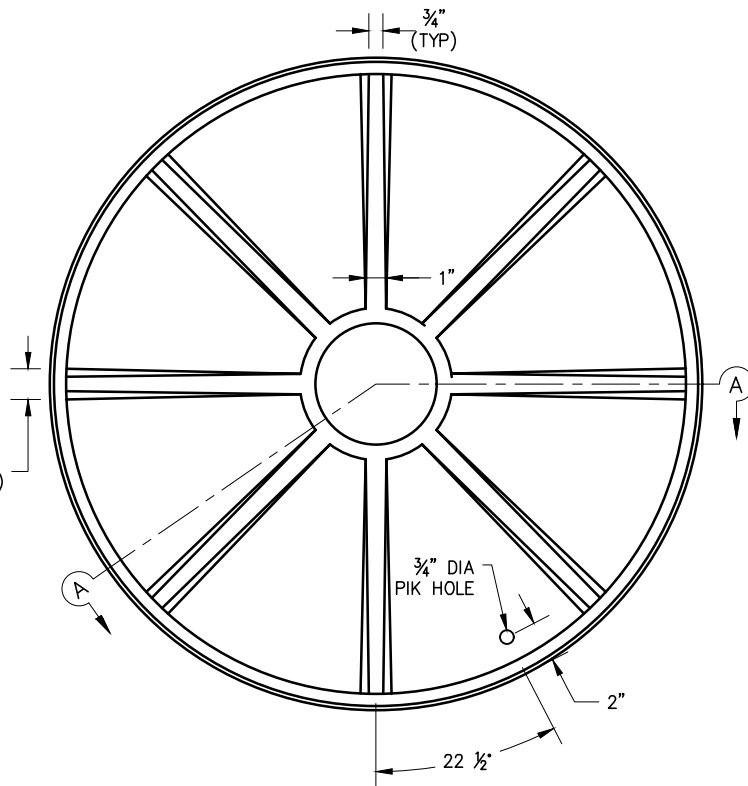
STANDARD DRAWING NO.

317

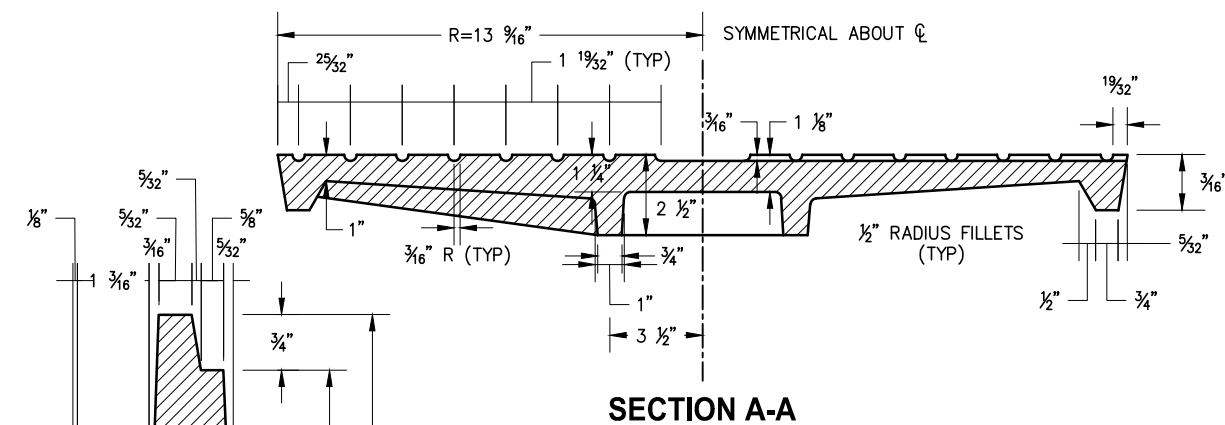
SHEET 1 OF 1



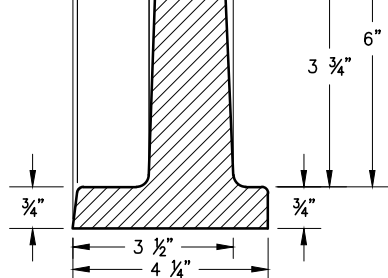
COVER FOR 24" CLEAR OPENING FRAME



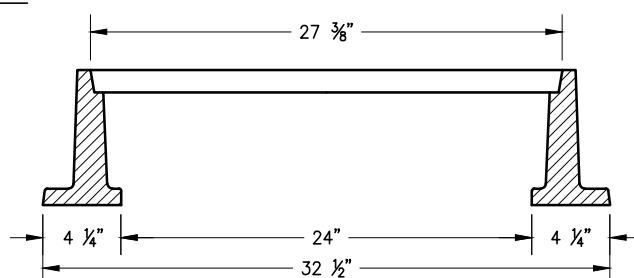
BOTTOM PLAN OF COVER



SECTION A-A



DETAIL OF FRAME



SECTION THRU FRAME

NOTES:

1. MANHOLE FRAME AND COVER SHALL BE MADE OF GRAY CAST IRON CONFORMING TO ASTM A-48, CLASS 30, AND PAINTED WITH ASPHALTUM PAINT EXCEPT FOR MACHINED SURFACES. (ALHAMBRA FOUNDRY A-1495).
2. STORM DRAIN (SANITARY SEWER) COVERS SHALL BE CAST WITH THE LETTER "D" ("S") IN THE CENTER OF THE COVER AND "NEWPORT BEACH" SHALL BE CAST IN THE COVER.

APP.

James M. Hinkle
CITY ENGINEER

51568

RCE

11/24/2020

DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

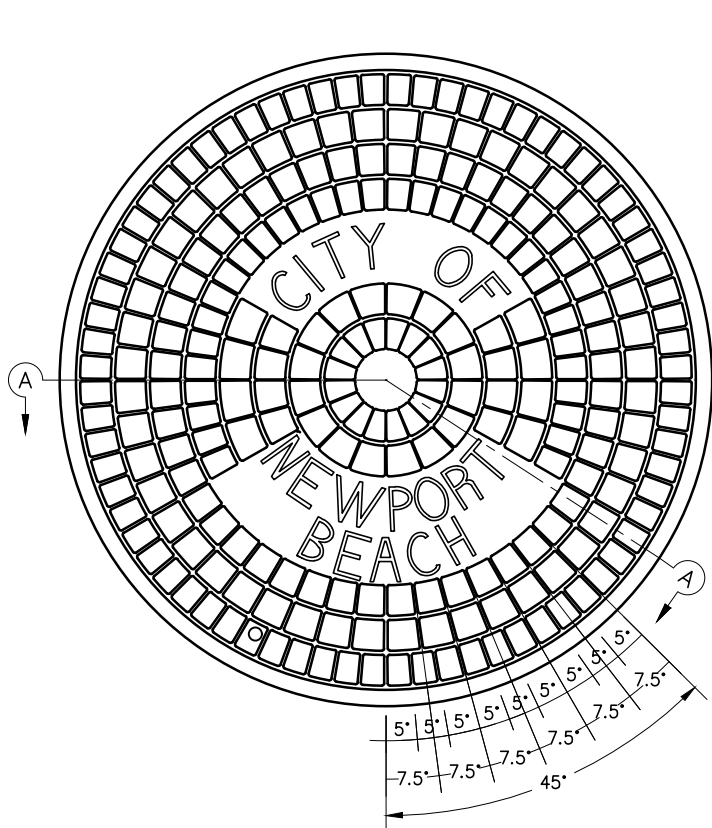
**STANDARD MANHOLE FRAME AND COVER
(24-INCH)**

STANDARD DRAWING NO.

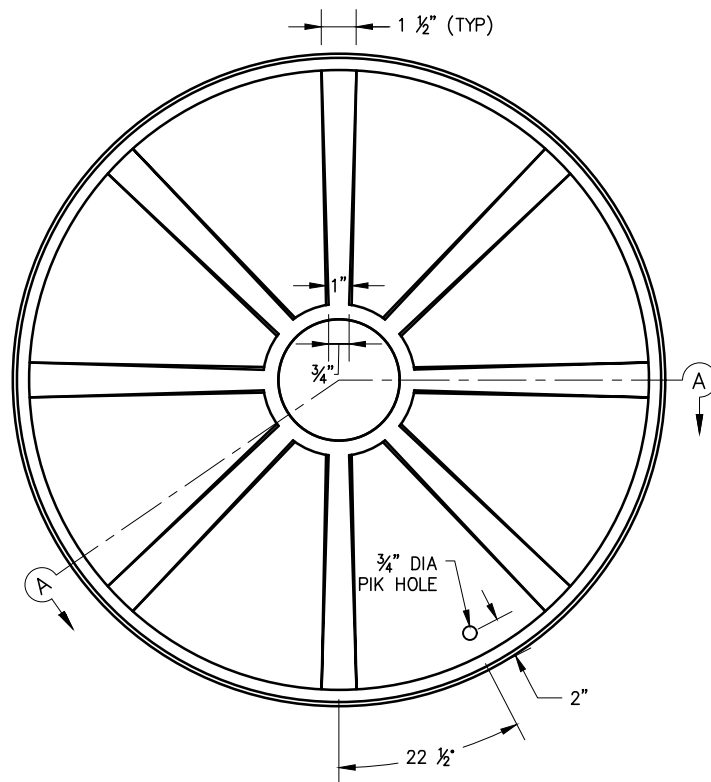
318

SHEET 1 OF 3

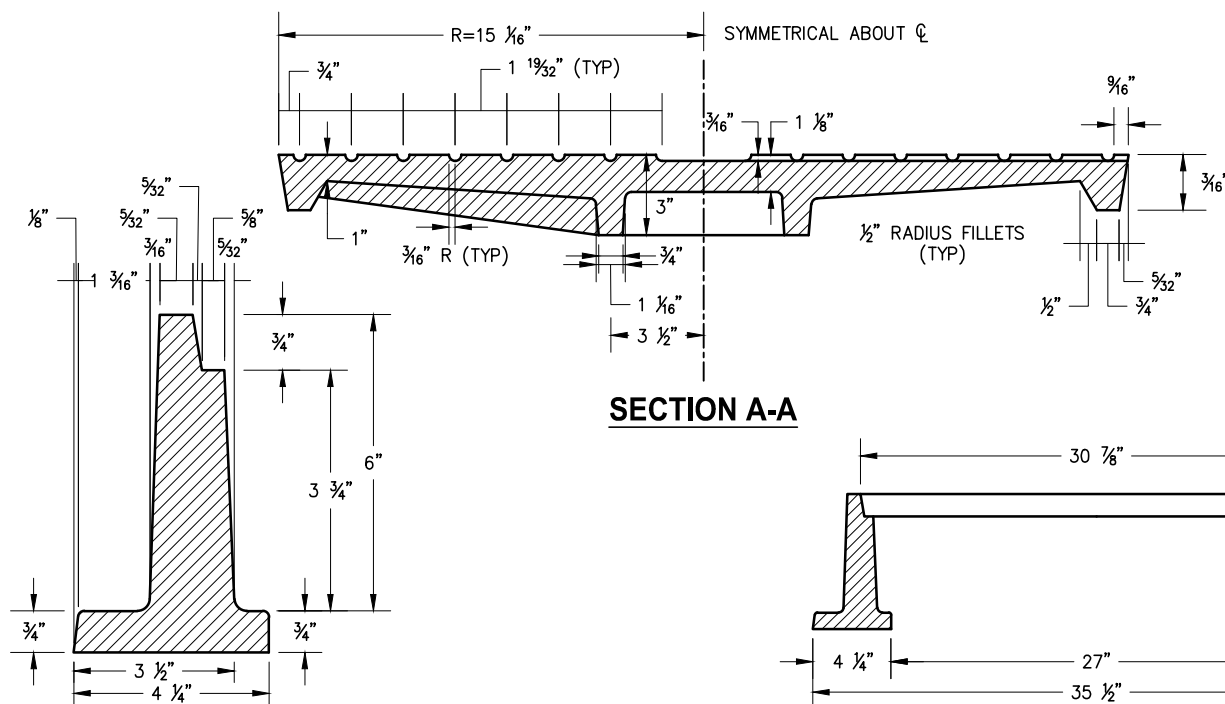
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 112-L



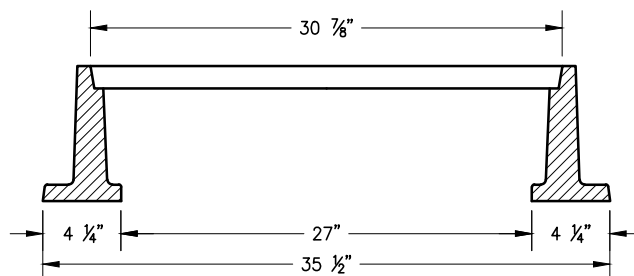
COVER FOR 27" CLEAR OPENING FRAME



BOTTOM PLAN OF COVER



SECTION A-A



SECTION THRU FRAME

NOTES:

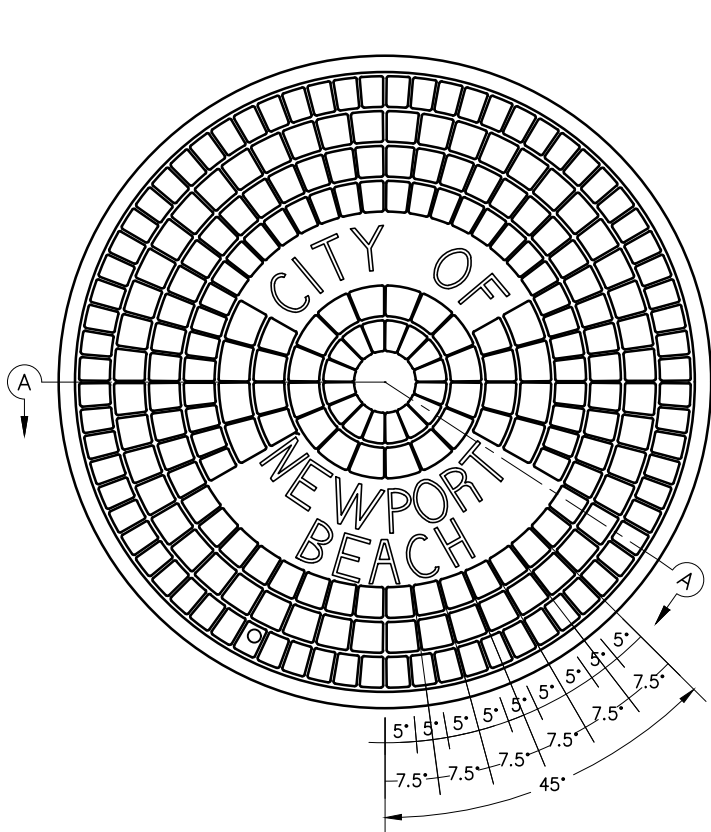
1. MANHOLE FRAME AND COVER SHALL BE MADE OF GRAY CAST IRON CONFORMING TO ASTM A-48, CLASS 30, AND PAINTED WITH ASPHALTUM PAINT EXCEPT FOR MACHINED SURFACES. (ALHAMBRA FOUNDRY A-1495).
2. STORM DRAIN (SANITARY SEWER) COVERS SHALL BE CAST WITH THE LETTER "D" ("S") IN THE CENTER OF THE COVER AND "NEWPORT BEACH" SHALL BE CAST IN THE COVER.

APP. <i>James M. Hinkle</i>	51568	11/24/2020			
CITY ENGINEER	RCE	DATE	NO.	DATE	DESCRIPTION OF REVISIONS

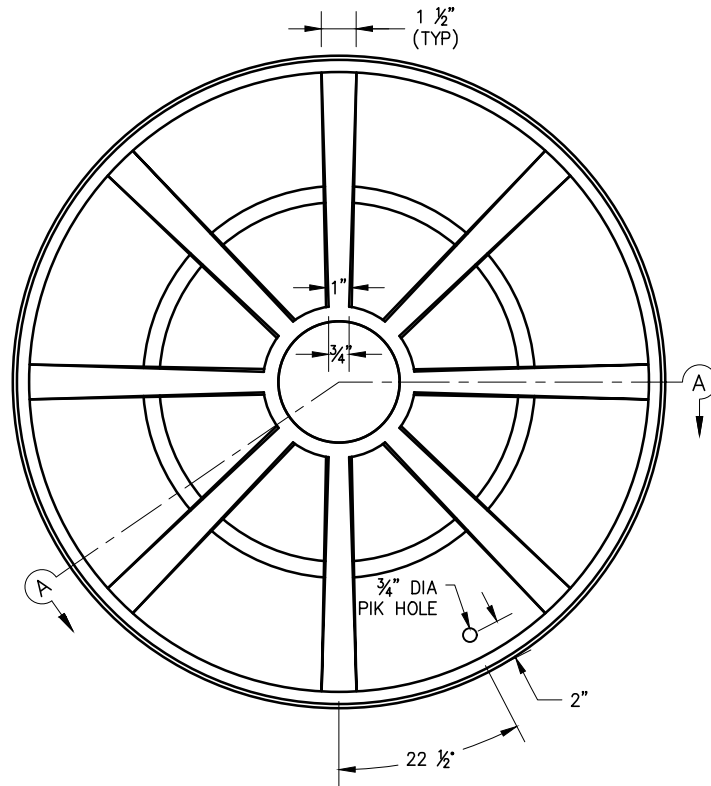
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI	STANDARD MANHOLE FRAME AND COVER (27-INCH)	STANDARD DRAWING NO. 318
DATE: 11/3/2020		SHEET 2 OF 3

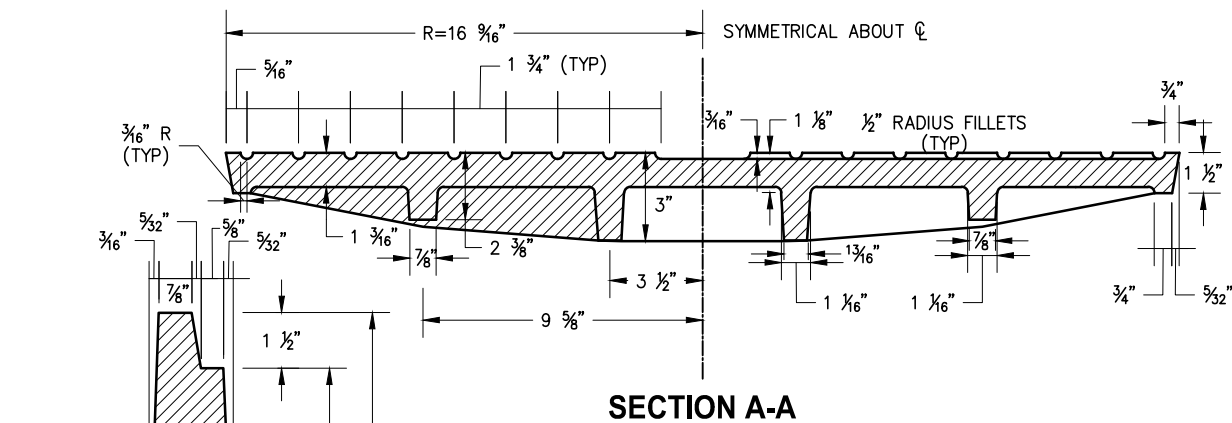
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 113-L



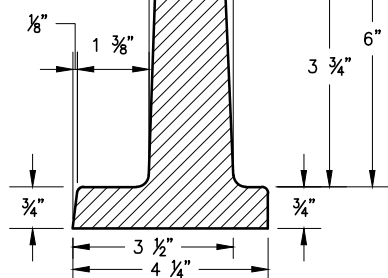
COVER FOR 30" CLEAR OPENING FRAME



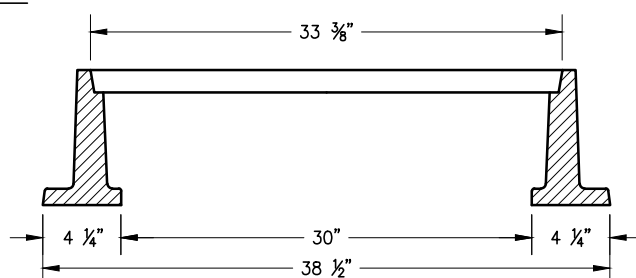
BOTTOM PLAN OF COVER



SECTION A-A



DETAIL OF FRAME



SECTION THRU FRAME

NOTES:

1. MANHOLE FRAME AND COVER SHALL BE MADE OF GRAY CAST IRON CONFORMING TO ASTM A-48, CLASS 30, AND PAINTED WITH ASPHALTUM PAINT EXCEPT FOR MACHINED SURFACES. (ALHAMBRA FOUNDRY A-1495).
2. STORM DRAIN (SANITARY SEWER) COVERS SHALL BE CAST WITH THE LETTER "D" ("S") IN THE CENTER OF THE COVER AND "NEWPORT BEACH" SHALL BE CAST IN THE COVER.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

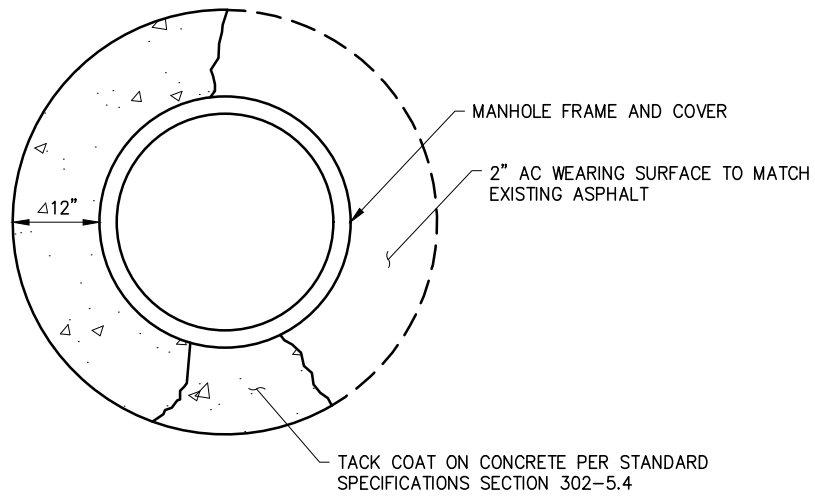
**STANDARD MANHOLE FRAME AND COVER
(30-INCH)**

STANDARD DRAWING NO.

318

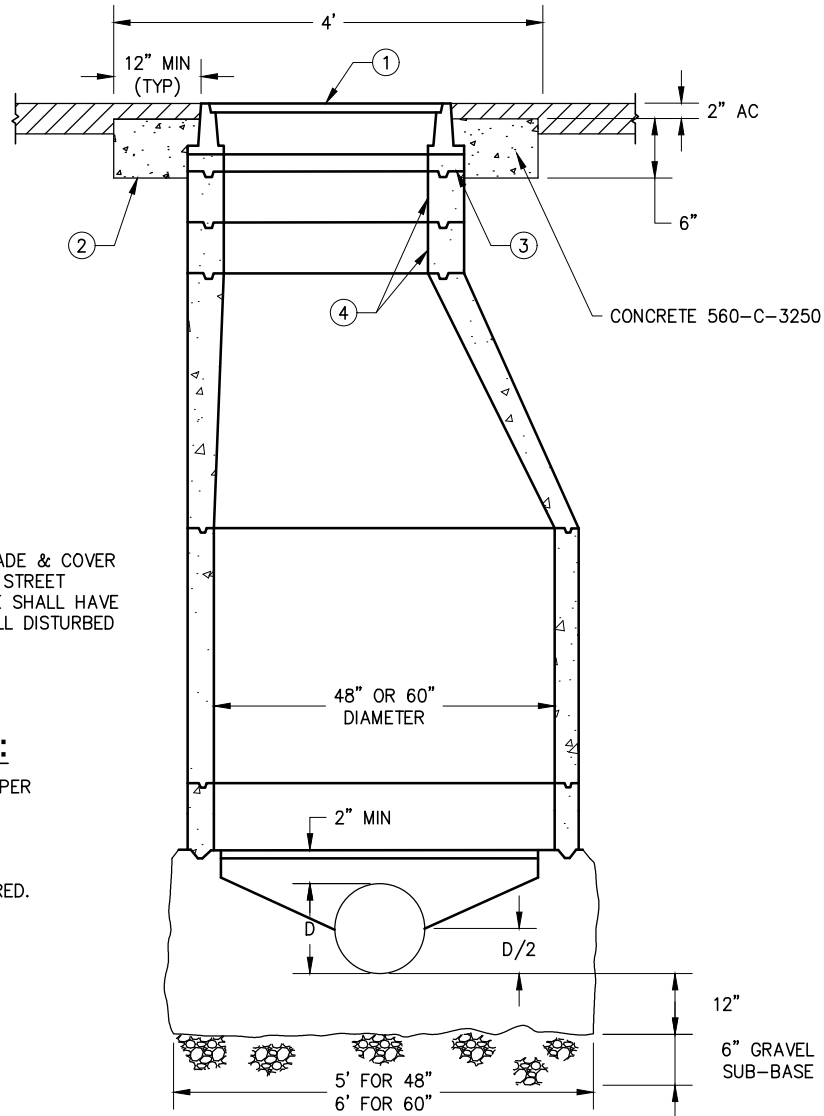
SHEET 3 OF 3

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 114-L



PLAN VIEW

CONCRETE SHALL BE POURED WITH A MINIMUM DISTANCE OF 12" AROUND THE LIP OF THE M.H. RING.



TYPICAL SECTION

ADJUSTMENT NOTES:

1. LOWER MANHOLE TO 6" BELOW SUBGRADE & COVER WITH 4'X4'X1/2" STEEL PLATE PRIOR TO STREET CONSTRUCTION. INTERIOR OF MANHOLE SHALL HAVE MORTAR REPLACED AND POINTED IN ALL DISTURBED AREAS.

CONSTRUCTION NOTES:

- ① INSTALL MANHOLE FRAME AND COVER PER STD 318.
- ② CONSTRUCT CONCRETE COLLAR 12"X6".
- ③ INSTALL 3" GRADE RING WHERE REQUIRED.
- ④ INSTALL 6" GRADE RING.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 111-L

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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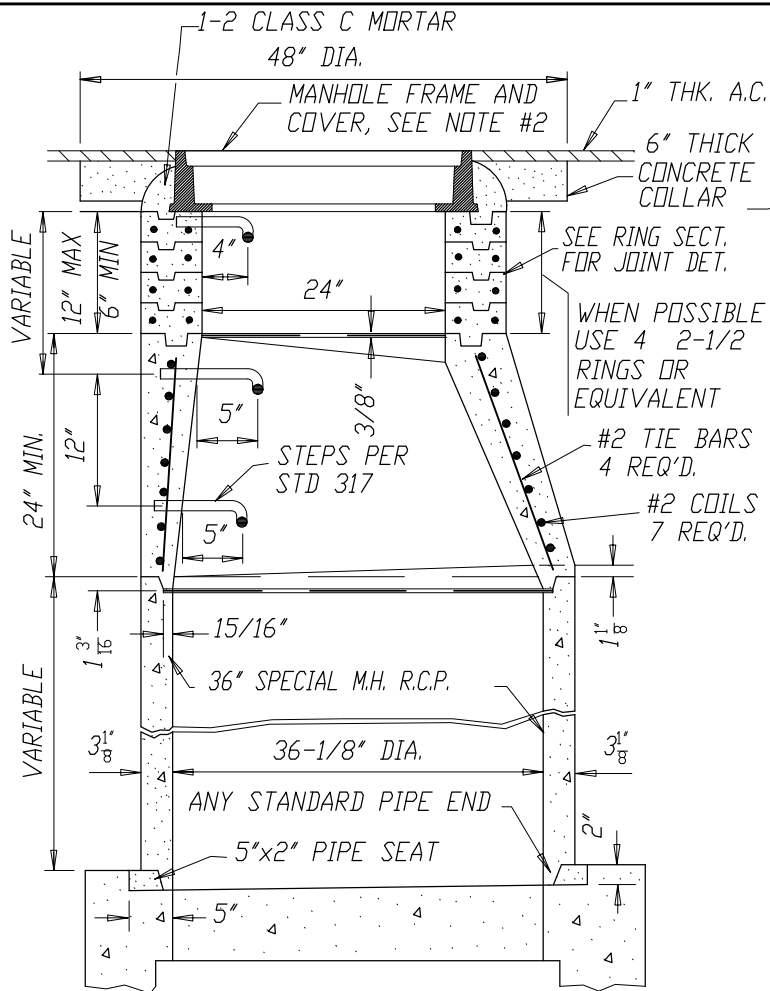
DATE: 11/3/2020

MANHOLE ADJUSTMENT DETAIL

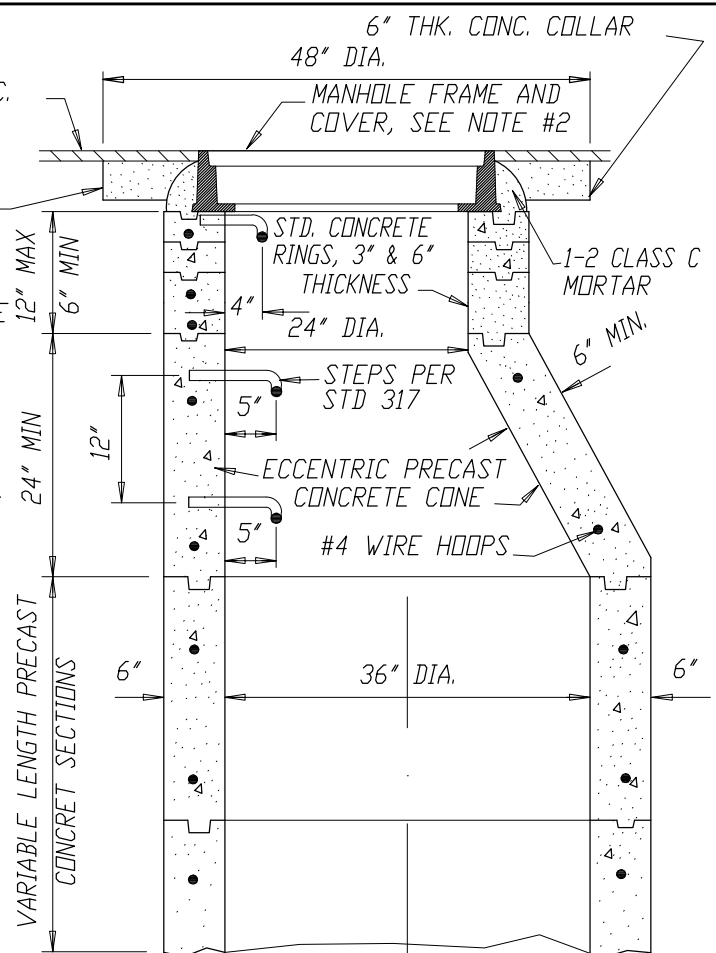
STANDARD DRAWING NO.

321

SHEET 1 OF 1



VERTICAL SECTION OF
REINFORCED CONCRETE
ECCENTRIC MANHOLE SHAFT



VERTICAL SECTION OF
PLAIN CONCRETE
ECCENTRIC MANHOLE SHAFT

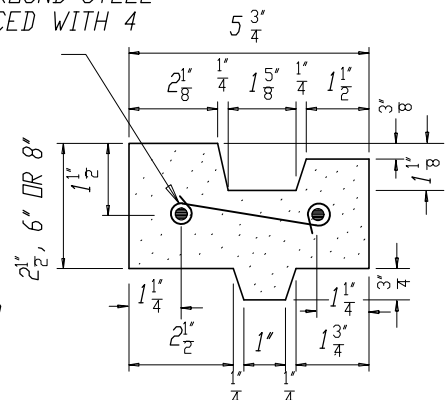
2-1/2" RINGS SHALL BE REINFORCED WITH TWO 1/4" ROUND STEEL HOOPS; 6 INCH AND 8 INCH RINGS SHALL BE REINFORCED WITH 4 HOOPS, TIED WITH NO. 14 A.S. & W. GA. WIRE 8" O.C.

NOTES:

1. ALL JOINTS SHALL BE FILLED WITH 1-2 CLASS C MORTAR AND NEATLY POINTED OR WIPED ON INSIDE OF SHAFT.
2. MANHOLE FRAME AND COVER PER STD 318 WITH LETTER "D" IN CENTER OF COVER SURFACE OF LETTER SHALL FLUSH WITH FINISHED SURFACE OF COVER.
3. PRESSURE MANHOLE FRAME AND COVER SHALL BE ALHAMBRA FOUNDRY A-1500 OR APPROVED EQUAL, WITH LETTER "D" IN CENTER OF COVER, SURFACE OF LETTER SHALL FLUSH WITH FINISHED SURFACE OF COVER.
4. ECCENTRIC MANHOLE SHAFT, REDUCER AND RINGS MAY BE PLAIN CONCRETE. FOR UNREINFORCED SECTIONS, THE MINIMUM THICKNESS SHALL BE 6 INCHES.
5. TOP STEP SHALL BE PLACED DIRECTLY BENEATH THE MANHOLE COVER FRAME EXCEPT WHERE SHOWN OTHERWISE, SPACING OF STEPS IN SHAFT SHALL BE 12 INCHES ON CENTER. SEE STD 317.

ADOPTED FROM LACDPW STD. DWG. NO. 3029-0

REF. STD 317 AND 318



SECTION OF
R.C. RING

APP.

James M. Hinkle

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

DATE: 11/3/2020

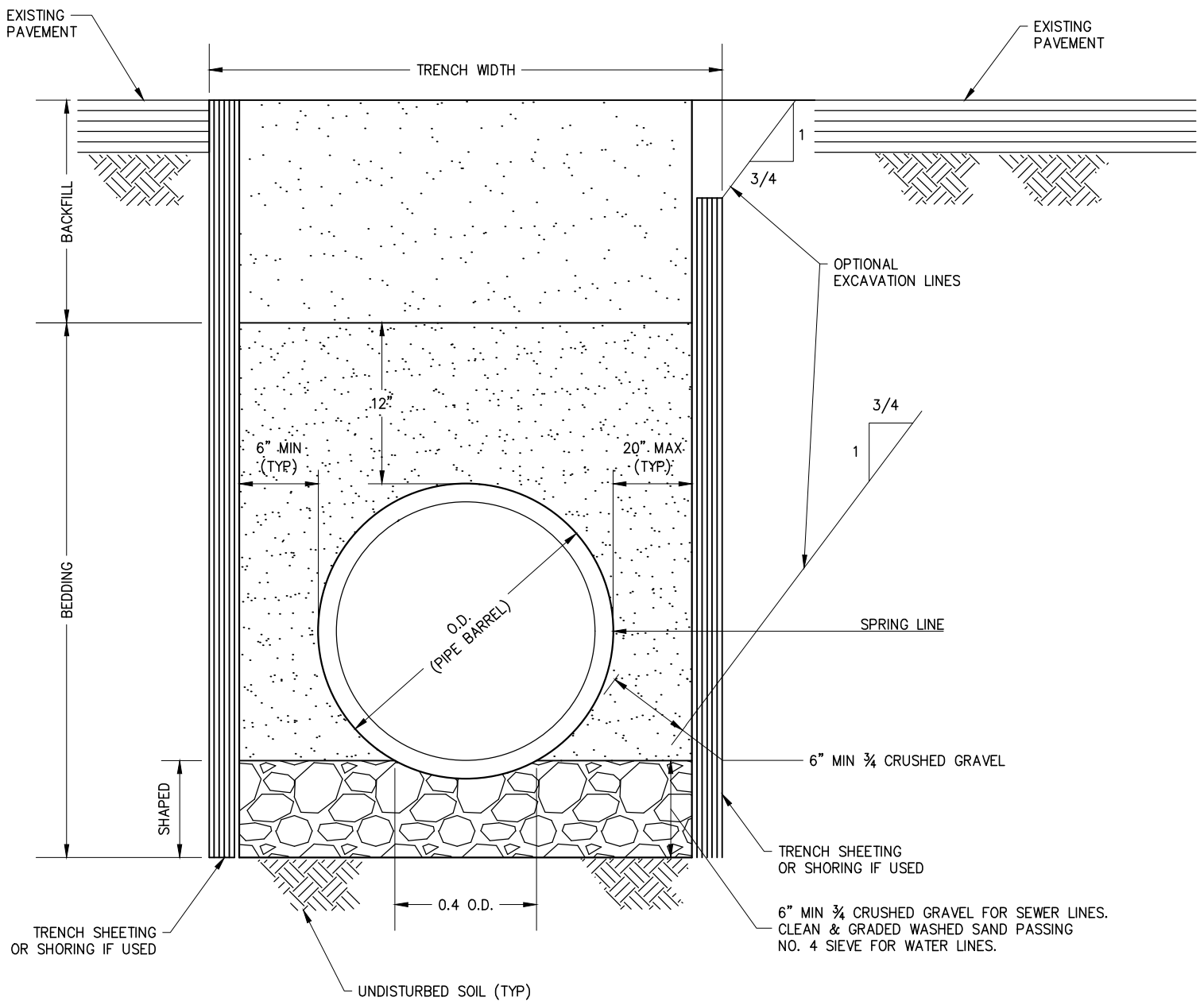
CONCRETE RINGS, REDUCER AND SHAFT FOR SD MANHOLE

STANDARD DRAWING NO.

322

SHEET 1 OF 1

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 309-L



NOTES:

1. TRENCH WIDTH SHALL BE O.D. + 6" MINIMUM OR O.D. + 20" MAXIMUM EACH SIDE, INCLUDING THICKNESS OF TRENCH SHORING OR SHEETING.
2. BACKFILL SHALL BE PER STANDARD SPECIFICATIONS SECTION 306-12, EXCEPT THAT RELATIVE COMPACTION SHALL BE 90 PERCENT MINIMUM. USE OF SLURRY BACKFILL WILL REQUIRE CITY APPROVAL.
3. WHEN THE MAXIMUM TRENCH WIDTH IS EXCEEDED, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL, DRAWINGS WITH SUBSTANTIATING ENGINEERING CALCULATIONS FOR THOSE MODIFICATIONS OF PIPE STRENGTH AND/OR BEDDING WHICH WILL PROVIDE AN IN-PLACE FACTOR OF SAFETY EQUIVALENT TO THAT PROVIDED IN THE CONTRACT.
4. BEDDING SHALL BE PER STANDARD SPECIFICATIONS SECTION 306-6, EXCEPT THAT:
 - A. CLASS 100-E-100 (1-SACK) SLURRY MAY BE SUBSTITUTED FOR SHAPED BEDDING AT THE CONTRACTOR'S OPTION AND SOLE EXPENSE.
 - B. HAUNCH BEDDING SHALL BE HAND TAMPED TO 90 PERCENT RELATIVE COMPACTION MINIMUM FOR PVC, RPM, HDPE, AND ALL OTHER FLEXIBLE PIPE INSTALLATIONS. WHEREUPON THE REMAINDER OF THE BEDDING (ABOVE SPRINGLINE) MAY BE COMPACTED CONCURRENTLY WITH THE BACKFILL.
5. TRENCH RESURFACING SHALL BE PER STD 106-A.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 106-L

APP. *[Signature]* 51568 11/24/2020
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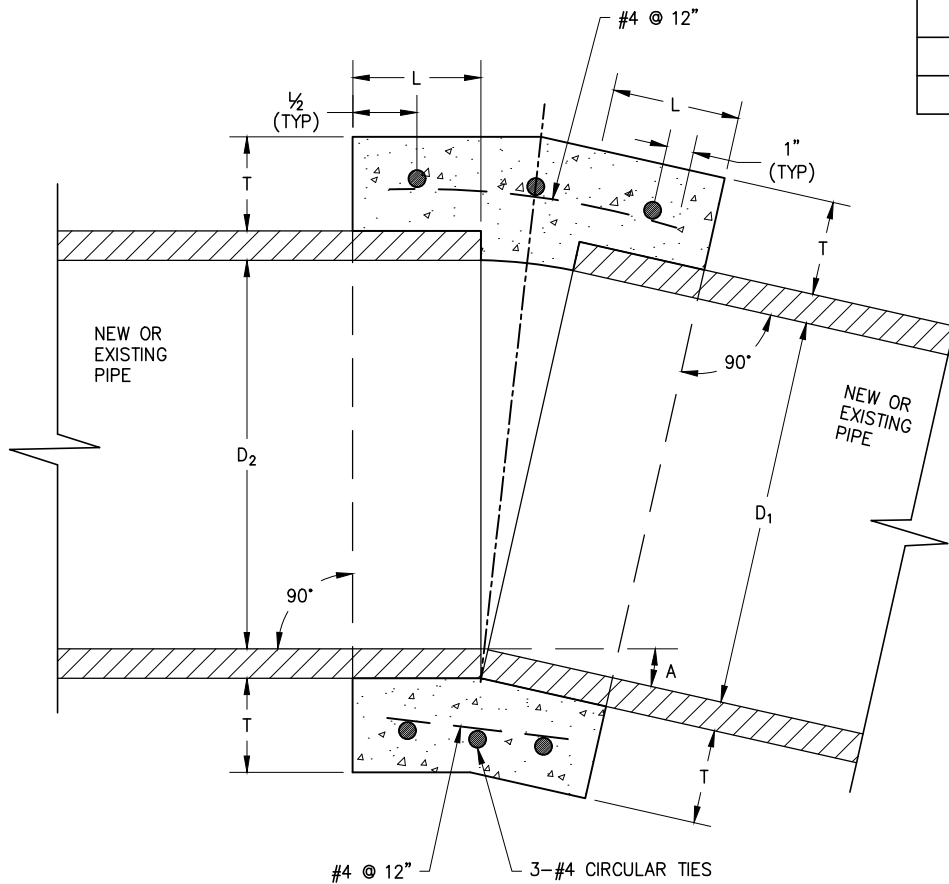
PIPE BEDDING

STANDARD DRAWING NO.

323

SHEET 1 OF 1

D	L	T
12"	1.0'	4"
18"	1.0'	5"
24"	1.0'	6"
36"	1.5'	8"
48"	1.5'	10"
57"	1.5'	10"
60"	1.75'	11"
66"	1.75'	11"



NOTES:

1. A CONCRETE COLLAR IS REQUIRED WHERE THE CHANGE IN GRADE EXCEEDS 0.10 FT PER FT.
2. WHERE PIPES OF DIFFERENT DIAMETERS ARE JOINED WITH A CONCRETE COLLAR, L AND T SHALL BE THOSE OF THE LARGER PIPE. $D = D_1 \text{ OR } D_2 \text{ WHICHEVER IS GREATER.}$
3. FOR PIPES LARGER THAN 66" A SPECIAL COLLAR DETAIL IS REQUIRED.
4. FOR PIPE SIZE NOT LISTED USE NEXT SIZE LARGER.
5. WHERE REINFORCING IS REQUIRED, THE DIAMETER OF THE CIRCULAR TIES SHALL BE $D + (2 \times \text{WALL THICKNESS}) + 8".$
6. WHEN D_1 IS EQUAL TO OR LESS THAN D_2 , JOIN INVERTS. WHEN D_1 IS GREATER THAN D_2 JOIN SOFFITS.
7. PIPE MAY BE CONCRETE PIPE OR REINFORCED CONCRETE PIPE.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 313-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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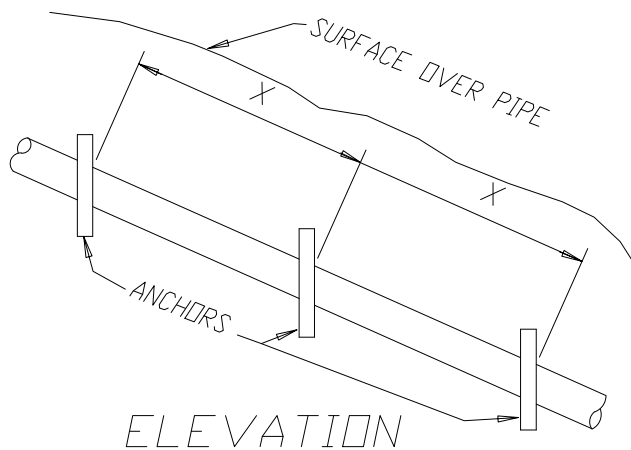
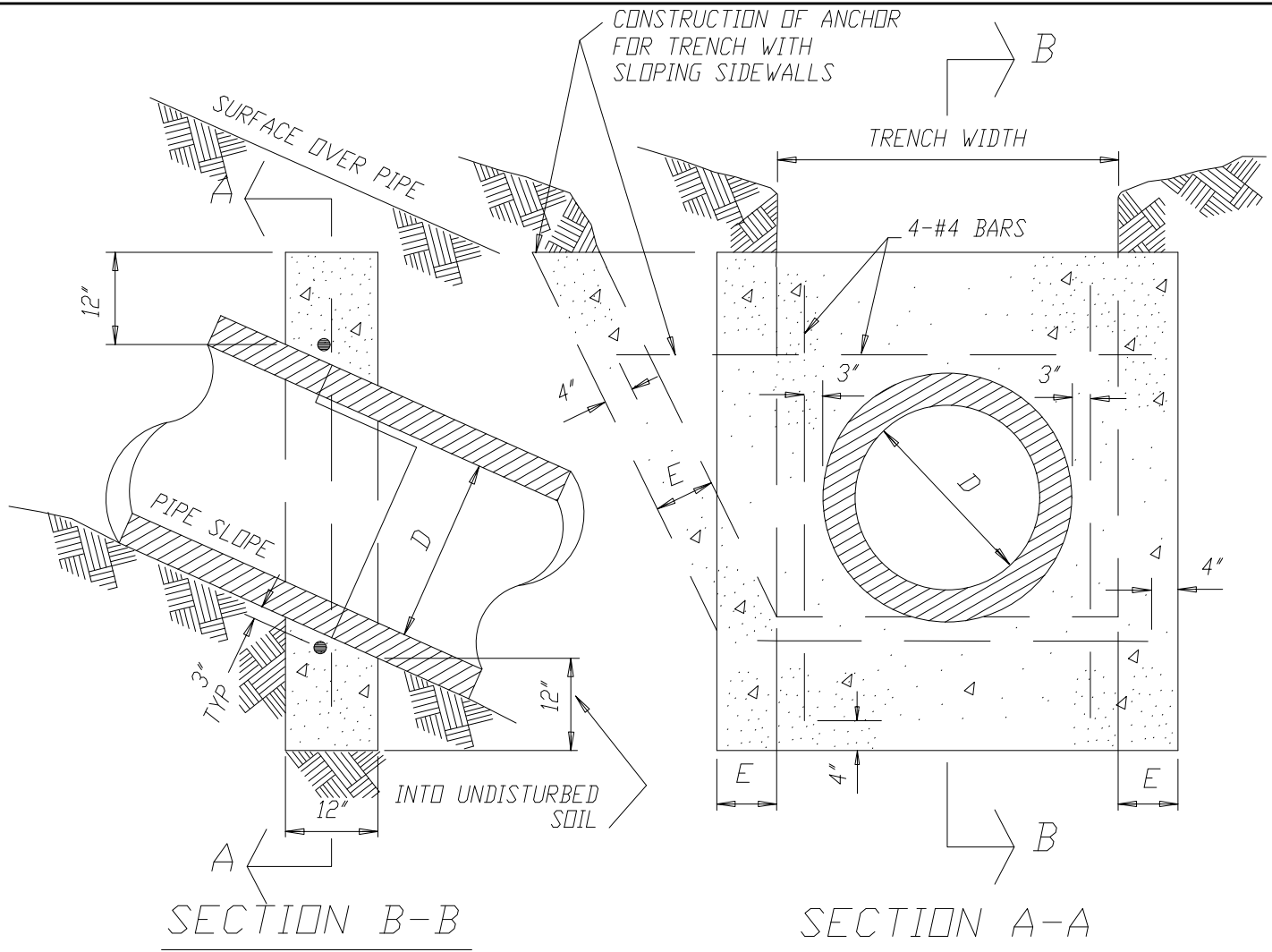
DATE: 11/3/2020

CONCRETE PIPE COLLAR FOR PIPES 12" THRU 66"

STANDARD DRAWING NO.

324

SHEET 1 OF 1



PIPE SLOPE	X DISTANCE
1:1	12'
1-1/2:1	14'
2:1	16'
2-1/2:1	18'
3:1	20'

CONCRETE PIPE ANCHORS

NOTES:

1. PIPE ANCHORS REQUIRED ON ALL SLOPES OF 3:1 OR STEEPER.
2. ALL REINFORCING STEEL SHALL BE EPOXY-COATED NUMBER 4 BARS. EXPOSED CUT ENDS SHALL BE SPRAYED WITH EPOXY COATING.
3. "E" SHALL BE 8" UNLESS OTHERWISE SPECIFIED.

ADOPTED FROM L.A.C. STD. PLAN S-251-1

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

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DATE

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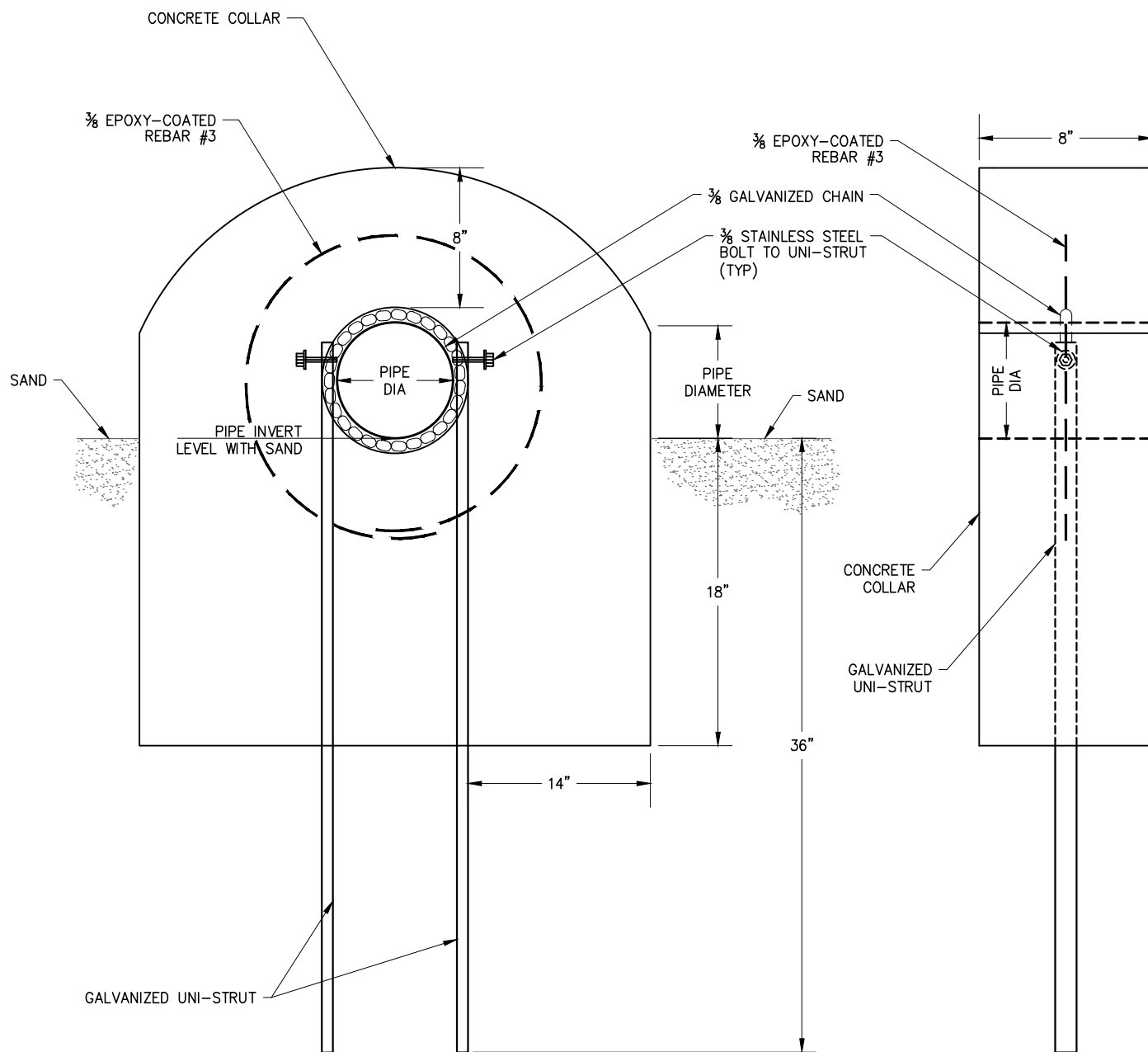
CONCRETE PIPE SLOPE ANCHORS

STANDARD DRAWING NO.

325

SHEET 1 OF 1

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 314-L



NOTES:

1. CONCRETE SHALL BE 560-C-3250.
2. ALL HARDWARE SHALL BE STAINLESS STEEL (THREADED STOCK, WASHERS, LOCK WASHERS AND NUTS).
3. TO SUPPORT THE PIPE AND COLLAR, UNI-STRUTS SHALL BE EMBEDDED INTO THE SAND A MINIMUM OF 36-INCHES AND FASTENED TO A GALVANIZED CHAIN WRAPPED AROUND THE PIPE.

APP.

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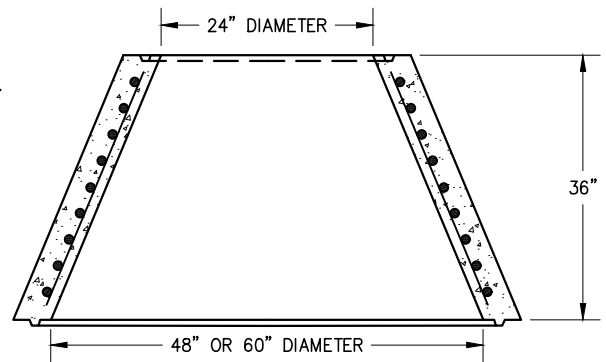
DATE: 11/3/2020


STORM DRAIN PIPE COLLAR

STANDARD DRAWING NO.

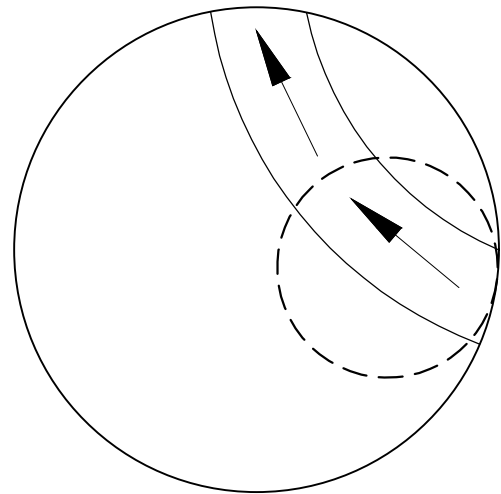
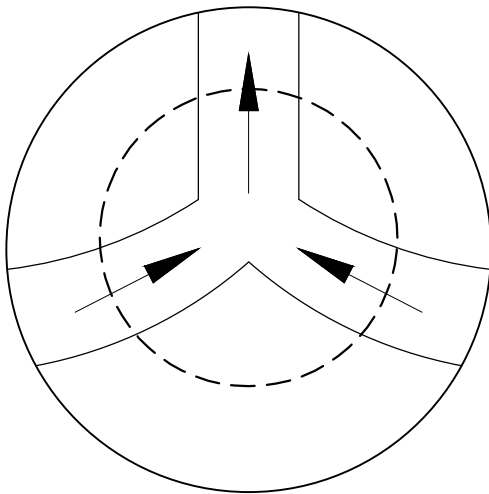
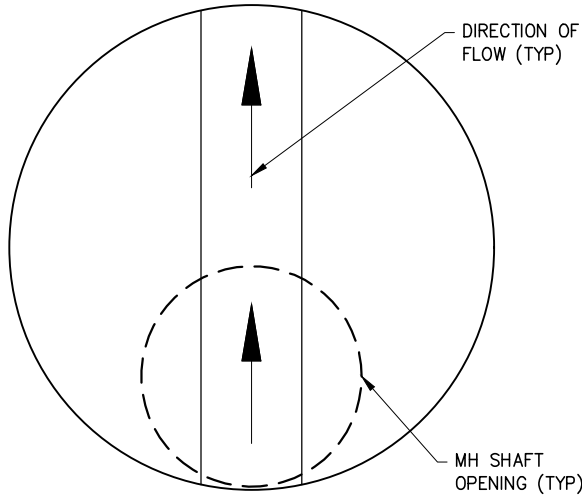
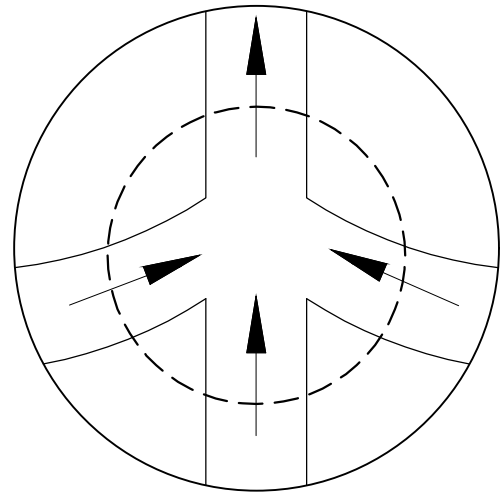
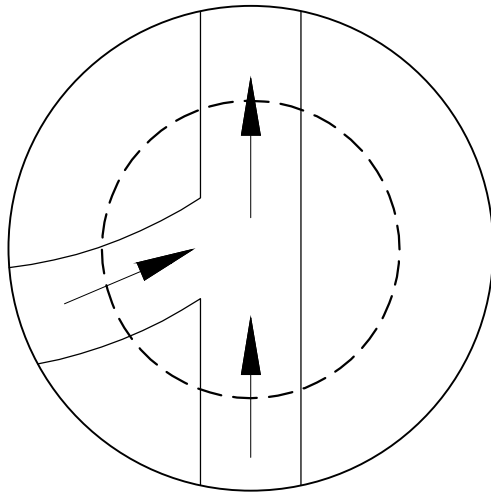
326

SHEET 1 OF 1



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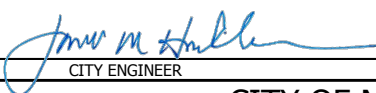
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS		
DRAWN: P. KHARAZMI DATE: 11/3/2020	<h1 style="margin: 0;">STANDARD MANHOLE</h1>	STANDARD DRAWING NO. <h2 style="margin: 0;">400</h2> SHEET 1 OF 1



GENERAL NOTES:

1. MANHOLE FRAME AND COVER SHALL BE IN ACCORD WITH APPLICABLE PORTIONS OF STD 318 AND 400.
2. DEVIATIONS FROM THESE STANDARD MANHOLE COVER ORIENTATIONS REQUIRES SPECIAL PERMISSION FROM THE CITY.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 409-L

APP.  51568 11/24/2020
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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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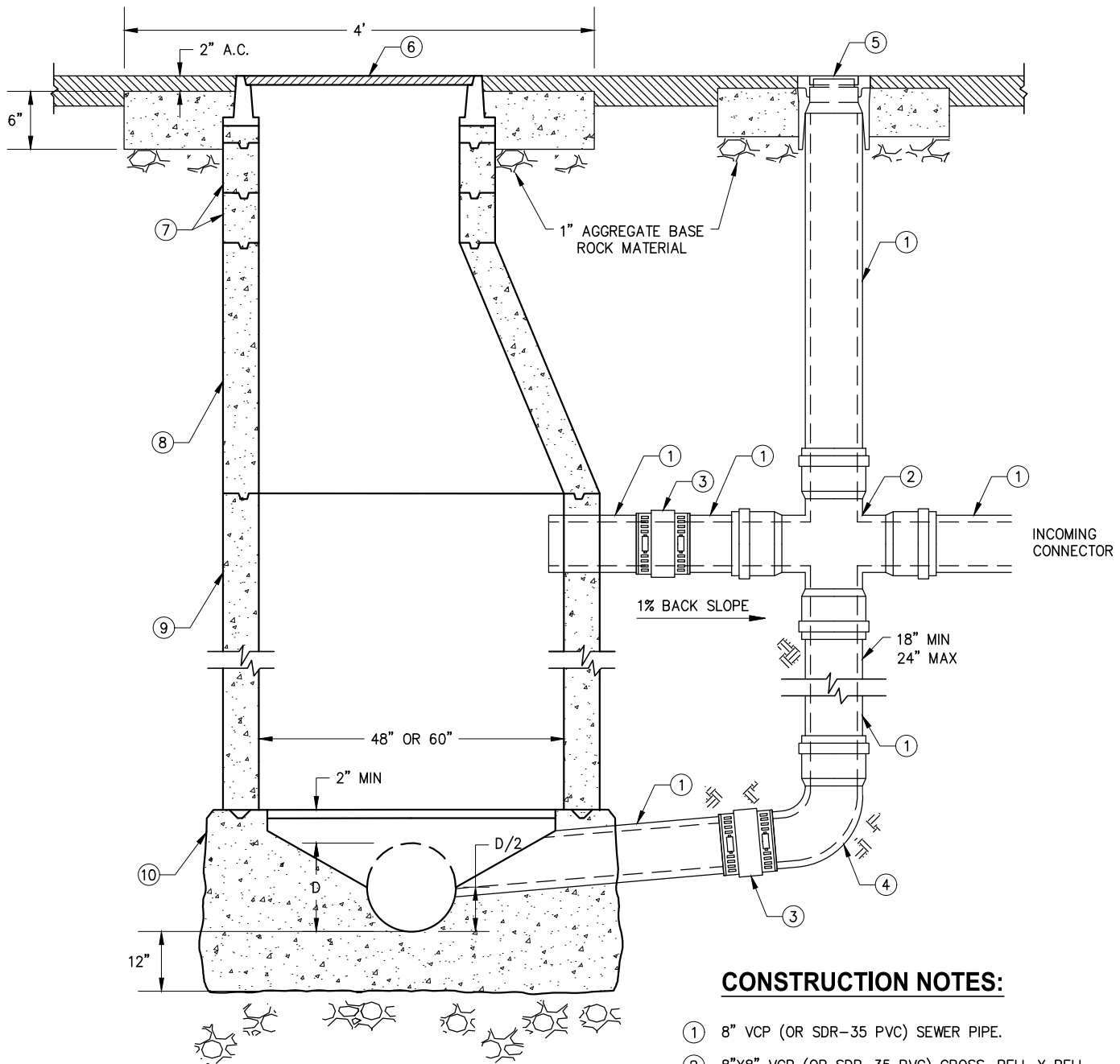
DATE: 11/3/2020

MANHOLE SHAFT ORIENTATION

STANDARD DRAWING NO.

401

SHEET 1 OF 1



GENERAL NOTES:

1. DROP MANHOLES MAY ONLY BE USED BY SPECIAL PERMISSION BY CITY. (THEN ONLY IN THE CASE OF VERY DEEP SEWER MAINS).
2. SEWER PIPE MATERIAL SHALL MATCH INCOMING CONNECTOR PIPELINE MATERIAL, UNLESS OTHERWISE APPROVED BY THE UTILITIES DEPARTMENT.
3. FOR MANHOLE BASE AND OTHER PERTINENT CONSTRUCTION DETAILS, REFER TO STD 400.
4. 60" MANHOLE FOR DEPTH OF 15' OR DEEPER. (REQUIRES LARGER RINGS & 30" MANHOLE COVER).
5. VCP SHALL BE HIGH STRENGTH.

CONSTRUCTION NOTES:

- ① 8" VCP (OR SDR-35 PVC) SEWER PIPE.
- ② 8"x8" VCP (OR SDR-35 PVC) CROSS, BELL X BELL.
- ③ 8" RUBBER MECHANICAL BANDED SEAL COUPLING; STAINLESS STEEL BANDS; MISSION CLAY ADJUSTABLE REPAIR COUPLING (TYPE 2) OR CITY-APPROVED EQUAL.
- ④ 8" VCP (OR SDR-35 PVC) LONG RADIUS 90° BEND, BELL X SPIGOT END.
- ⑤ VALVE BOX COVER PER APPLICABLE PORTIONS OF STD 513 WITH COVER MARKED "SEWER". ALHAMBRA FOUNDRY A-1244.
- ⑥ MANHOLE FRAME AND COVER PER STD 318.
- ⑦ 24" DIAMETER GRADE RINGS AS IN STD 400.
- ⑧ 48"x24" OR 60"x30" ECCENTRIC MANHOLE CONE.
- ⑨ 48" OR 60" DIAMETER MANHOLE SECTION; PRECAST REINFORCED CONCRETE, HEIGHT AS REQUIRED.
- ⑩ POURED-IN-PLACE CONCRETE MANHOLE BASE SECTION. REFER TO STD 400.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 403-L

APP.

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CITY ENGINEER

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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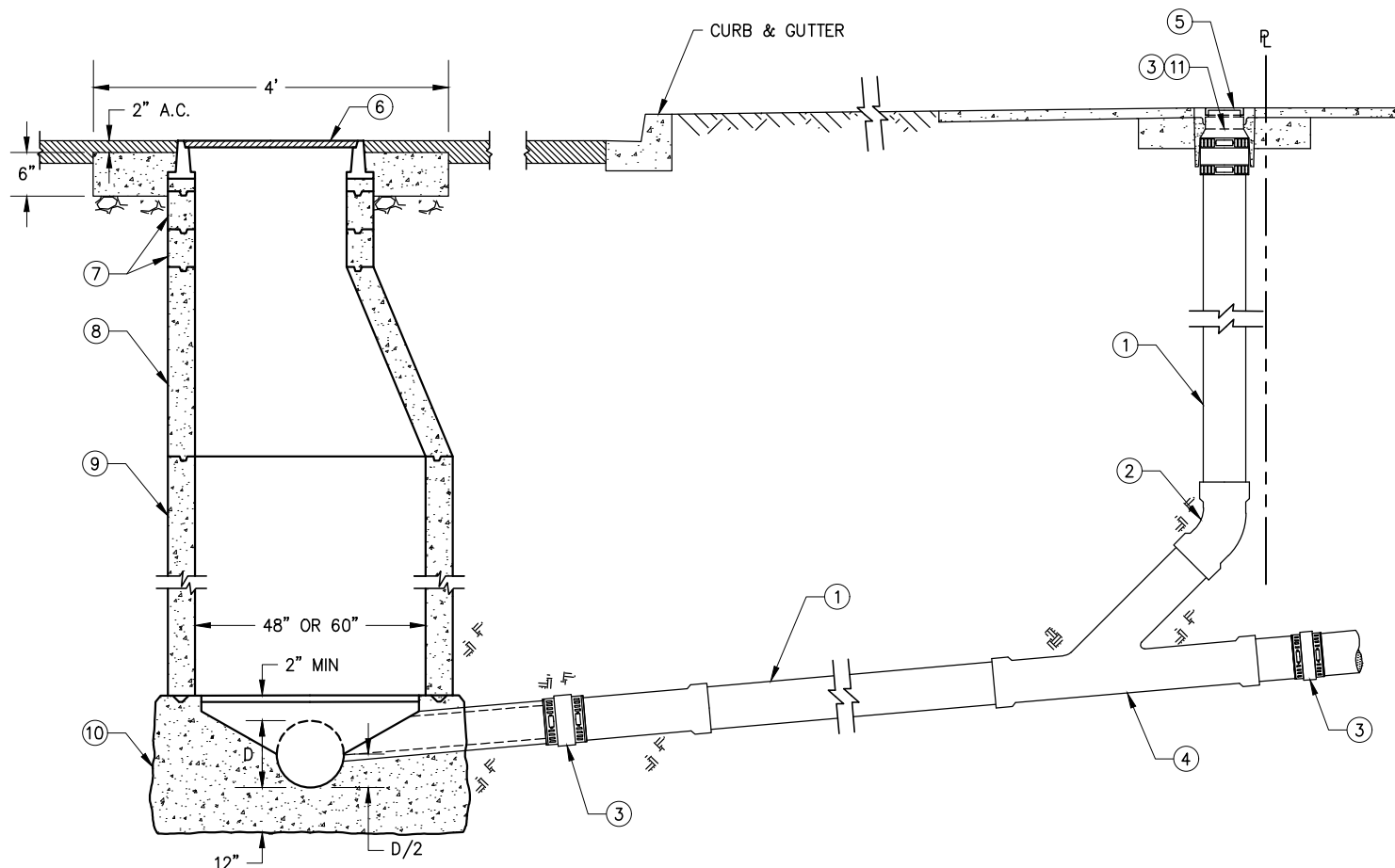
DATE: 11/3/2020

DROP MANHOLE

STANDARD DRAWING NO.

403

SHEET 1 OF 1



GENERAL NOTES:

1. VCP SHALL BE HIGH STRENGTH.
2. DETAIL MAY BE USED FOR 6-INCH LATERAL CONNECTIONS. SUBSTITUTE 6-INCH VCP WHERE 8-INCH IS NOTED. REPLACE SEWER CLEANOUT COVER WITH 4tt VALVE BOX AND COVER PER APPLICABLE PORTIONS OF STD 513. MARK LID "SEWER".
3. SEWER PIPE MATERIAL SHALL MATCH INCOMING CONNECTOR PIPELINE MATERIAL, UNLESS OTHERWISE APPROVED BY THE UTILITIES DEPARTMENT.

CONSTRUCTION NOTES:

- ① 8" VCP (OR SDR-35 PVC) SEWER PIPE WITH GASKET, INTEGRAL BELL AND SPIGOT JOINTS.
- ② 8" VCP (OR SDR-35 PVC) 45° BEND.
- ③ 8" RUBBER MECHANICAL BANDED SEAL COUPLING; STAINLESS STEEL BANDS; MISSION CLAY ADJUSTABLE REPAIR COUPLING (TYPE 2) OR CITY-APPROVED EQUAL.
- ④ 8"X8" VCP (OR SDR-35 PVC) WYE BRANCH FITTING.
- ⑤ SEWER CLEANOUT COVER PER APPLICABLE PORTIONS OF STD 513 WITH COVER MARKED "SEWER". ALHAMBRA FOUNDRY A-1244.
- ⑥ MANHOLE FRAME AND COVER PER STD 318.
- ⑦ 24" DIAMETER GRADE RINGS AS IN STD 400.
- ⑧ 48"X24" OR 60"X30" ECCENTRIC MANHOLE CONE.
- ⑨ 48" OR 60" DIAMETER MANHOLE SECTION; PRECAST REINFORCED CONCRETE, HEIGHT AS REQUIRED.
- ⑩ POURED-IN-PLACE CONCRETE MANHOLE BASE SECTION. REFER TO STD 400.
- ⑪ INSTALL ABS STOPPER IN RUBBER COUPLING. USE MISSION CLAY PRODUCTS STOPPER OR APPROVED EQUAL.

APP.

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CITY ENGINEER

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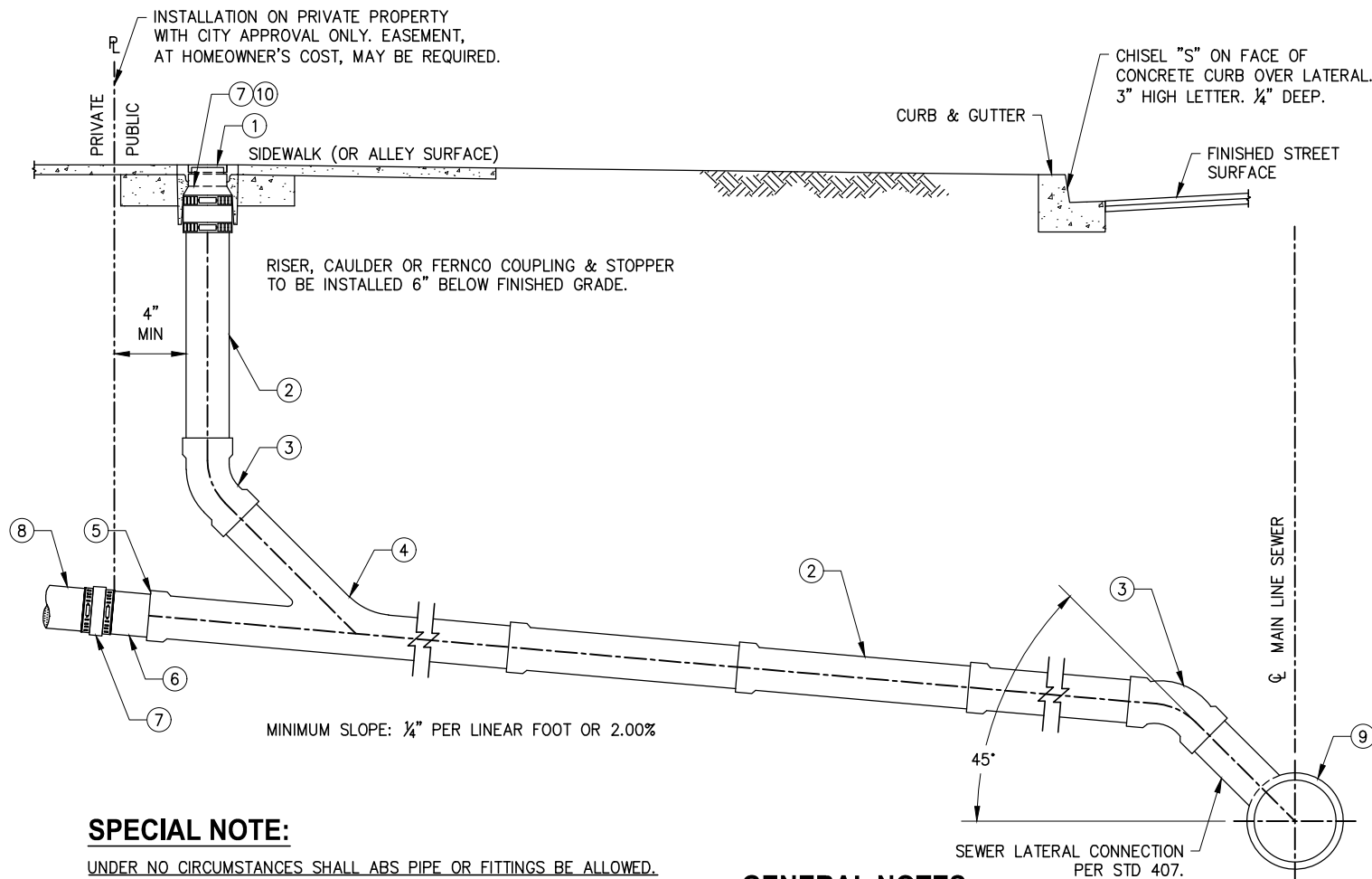
DATE: 11/3/2020

8" LATERAL CONNECTION

STANDARD DRAWING NO.

405

SHEET 1 OF 1



SPECIAL NOTE:

UNDER NO CIRCUMSTANCES SHALL ABS PIPE OR FITTINGS BE ALLOWED. ALL SEWER LATERALS SHALL BE INSPECTED BY THE CITY AND BE REPLACED TO MEET CURRENT CITY STANDARDS IF NECESSARY.

CONSTRUCTION NOTES:

- ① INSTALL SEWER CLEANOUT COVER PER APPLICABLE PORTIONS OF STD 513. TRIANGULAR COVER WITH "S" ON TOP.
- ② 4" (OR 6") VCP (OR SDR-35 PVC) SEWER PIPE WITH GASKET, INTEGRAL BELL AND SPIGOT JOINTS.
- ③ 4" (OR 6") VCP (OR SDR-35 PVC) 45° BEND.
- ④ 4"x4" (OR 6"x6") VCP (OR SDR-35 PVC) WYE BRANCH FITTING.
- ⑤ 4" (OR 6") ABS STOPPER (WHERE LATERALS ARE STUBBED).
- ⑥ 4" (OR 6") SHORT PIECE, VCP (OR SDR-35 PVC), 6" LONG.
- ⑦ 4" (OR 6") RUBBER MECHANICAL BANDED SEAL CLAMP. MISSION CLAY ADJUSTABLE REPAIR COUPLING (TYPE 2) OR CITY-APPROVED EQUAL.
- ⑧ 4" (OR 6") PRIVATE SEWER PIPE.
- ⑨ 8"x4" (OR 6") WHY BRANCH FITTING. VCP OR SDR-35 PVC.
- ⑩ INSTALL ABS STOPPER IN RUBBER COUPLING. USE MISSION CLAY PRODUCTS STOPPER OR APPROVED EQUAL.
- ⑪ SIDEWALK REPLACEMENT SHALL BE IN FULL PANEL.

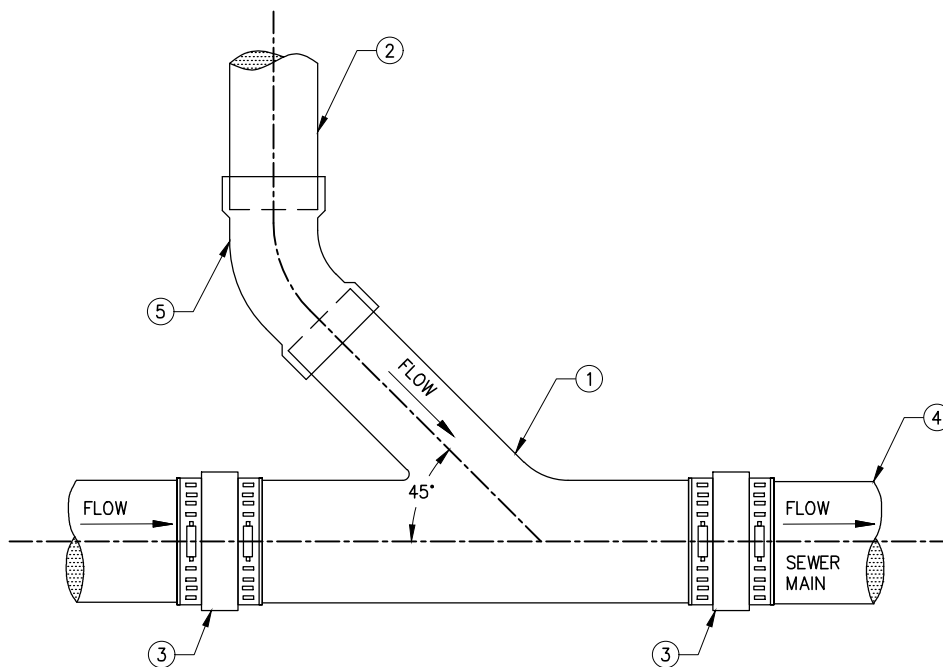
GENERAL NOTES:

1. FOR SLOPE LESS THAN $\frac{1}{4}$ " PER FOOT, A 6" LATERAL SHALL BE USED WITH A MINIMUM SLOPE = $\frac{1}{8}$ " PER FOOT.
2. CLEANOUT MAY BE INSTALLED ON PRIVATE PROPERTY SIDE OF PROPERTY LINE AT SPECIAL REQUEST BY HOMEOWNER AND APPROVAL BY CITY.
3. SEWER CLEANOUT COVERS SHALL BE BROOKS PRODUCTS NO. 4TT OR J&R NO. 4T MARKED SEWER.
4. CLEANOUT COVERS PLACED IN SIDEWALKS MAY BE BROOKES PRODUCTS NO. 1-RB AND NO. 1-R (CONCRETE COVER) OR J&R NO. 1-R BY SPECIAL PERMISSION ONLY.
5. SEWER CLEANOUT RISER PIPE MATERIAL SHALL BE VCP WHEN EXISTING SEWER MAIN IS VCP AND SDR-35 PVC PIPE SHALL BE USED WHEN THE SEWER MAIN IS PVC.
6. PVC SHALL BE SDR-35 PER ASTM 3034.
7. SEWER PIPE AND FITTINGS SHALL BE BEDDED WITH $\frac{3}{4}$ " CRUSHED ROCK MATERIAL PER STD 323. IN AREAS OF GROUND WATER OR TIDE WATER, $\frac{3}{8}$ " CRUSHED ROCK SHALL BE USED.
8. USE GENERAL NOTES #1 & #2 FROM STD 407.
9. SADDLE TYPE CONNECTIONS TO SEWER MAINS ARE PROHIBITED, EXCEPT BY SPECIAL PERMISSION FROM THE CITY.
10. GLUE OR SOLVENT JOINTS ARE PROHIBITED.
11. CCTV OF EXISTING LATERAL WILL BE REQUIRED WHEN USING THE ALTERNATIVE SET-UP.
12. IF SERVICED BY OTHER AGENCY, MUST USE AGENCY'S STANDARD.
13. LATERAL SIZE (4" OR 6") SHALL MATCH EXISTING LATERAL SIZES ASSOCIATED WITH CONNECTION.

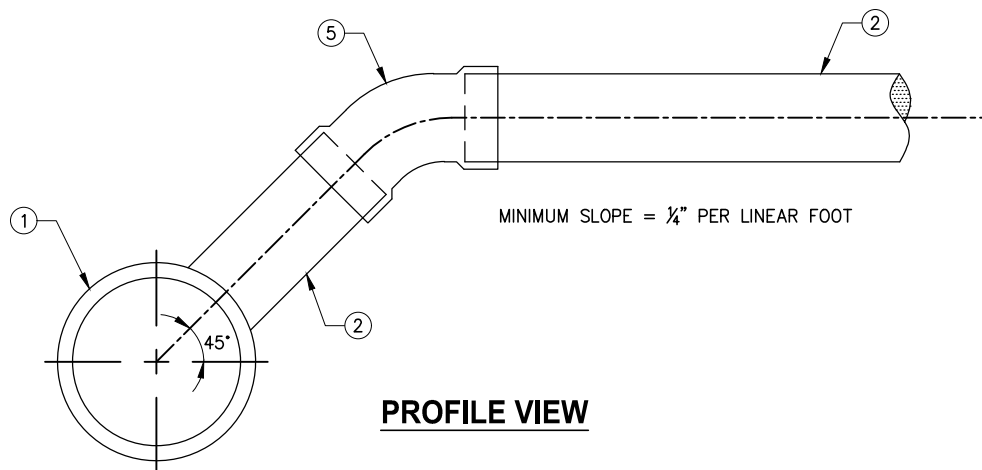
FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 406-L

APP.	<i>James M. Hinkle</i>	51568	11/24/2020			
	CITY ENGINEER	RCE	DATE			
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS				NO.	DATE	DESCRIPTION OF REVISIONS
DRAWN: P. KHARAZMI				STANDARD DRAWING NO.		
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				SHEET 1 OF 1		

SEWER LATERAL WITH CLEANOUT



VCP & PVC SEWER LATERAL CONNECTION TYPE "A"



PROFILE VIEW

NOTE:

IF EXISTING PIPE IS VCP, USE VCP, AND IF LATERAL IS 6",
CLEAN OUT SHALL BE 6", ETC.

GENERAL NOTES:

1. ALL RESIDENTIAL SEWER LATERALS SHALL BE AT LEAST 4" DIAMETER AND SHALL MATCH LATERAL CONNECTION SIZE.
2. ALL COMMERCIAL SEWER LATERALS SHALL BE A MINIMUM OF 6" DIAMETER. LARGER COMMERCIAL LATERALS REQUIRE SPECIAL DESIGN.
3. PIPE AND FITTINGS SHALL BE EITHER VCP OR SDR-35 PVC. VCP IS PREFERRED. ABS PIPE IS STRICTLY PROHIBITED.
4. PIPE AND FITTINGS SHALL NOT BE GLUE-JOINT TYPE FITTINGS.
5. GLUE-JOINTS ARE PROHIBITED.
6. VCP SHALL BE HIGH STRENGTH.

CONSTRUCTION NOTES:

- ① 8"x4" (OR 8"x6") VCP (OR SDR-35 PVC) WYE BRANCH FITTING.
- ② 4" (OR 6") DIAMETER SEWER LATERAL PIPE PER STD 406.
- ③ 8" DIAMETER, BANDED, RUBBER MECHANICAL COUPLING. BANDS SHALL BE STAINLESS STEEL. MISSION CLAY ADJUSTABLE REPAIR COUPLINGS (TYPE 2) FOR ALL WYE CUT-INS. IF SDR-35 PVC, USE AMAZON SHEAR RING RUBBER COUPLING.
- ④ EXISTING 8" VCP (OR SDR-35 PVC) SEWER MAIN.
- ⑤ 4" (OR 6") 45° ELL. ROTATE FITTING TO PROVIDE PROPER VERTICAL AND HORIZONTAL ALIGNMENT.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 405-L

APP.

James M. Hinkle
CITY ENGINEER

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NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

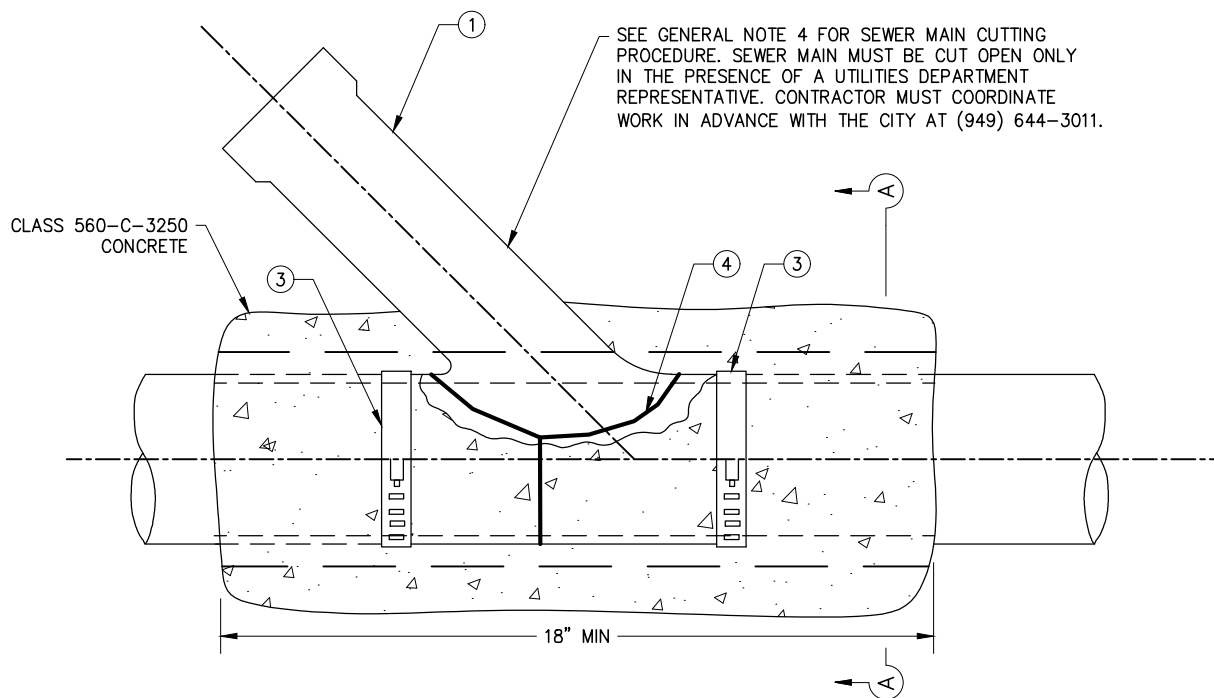
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SEWER LATERAL CONNECTION TYPE "A"

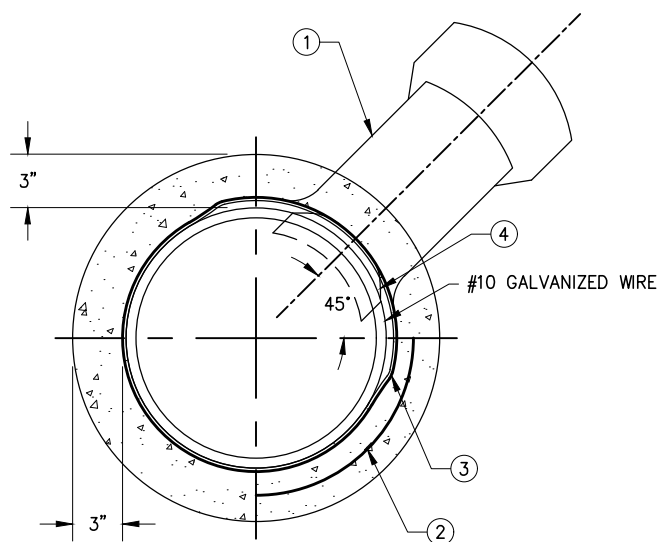
STANDARD DRAWING NO.

407

SHEET 1 OF 1



PLAN VIEW



SECTION A-A

CONSTRUCTION NOTES:

- ① 4" (OR 6") SADDLE TYPE WYE BRANCH CONNECTION PIECE.
- ② INSTALL GALVANIZED "CHICKEN WIRE" REINFORCEMENT AROUND EXISTING MAIN. MINIMUM COVER SHALL BE 1 1/2". THIS LAYER OF REINFORCEMENT FOR CONCRETE PROTECTION MUST BE 1 1/2" OFF SEWER PIPE WALL.
- ③ INSTALL STAINLESS STEEL BAND.
- ④ EPOXY GLUE.

GENERAL NOTES:

1. THIS TYPE OF INSTALLATION REQUIRES SPECIAL APPROVAL FROM THE UTILITIES DEPARTMENT.
2. EXCAVATION MUST BE THOROUGHLY DEWATERED AND PROPERLY SHORED PRIOR TO ANY PIPE CUTTING OR CONNECTION.
3. CONCRETE ACCELERATOR (CHLORIDES) MAY NOT BE USED. CONNECTION MAY NOT BE BACKFILLED UNTIL CONCRETE HAS REACHED ITS INITIAL SET.
4. SEWER MAIN SHALL BE CORED USING A 4" OR 6" DIAMETER CORING BLADE.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 407-L

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

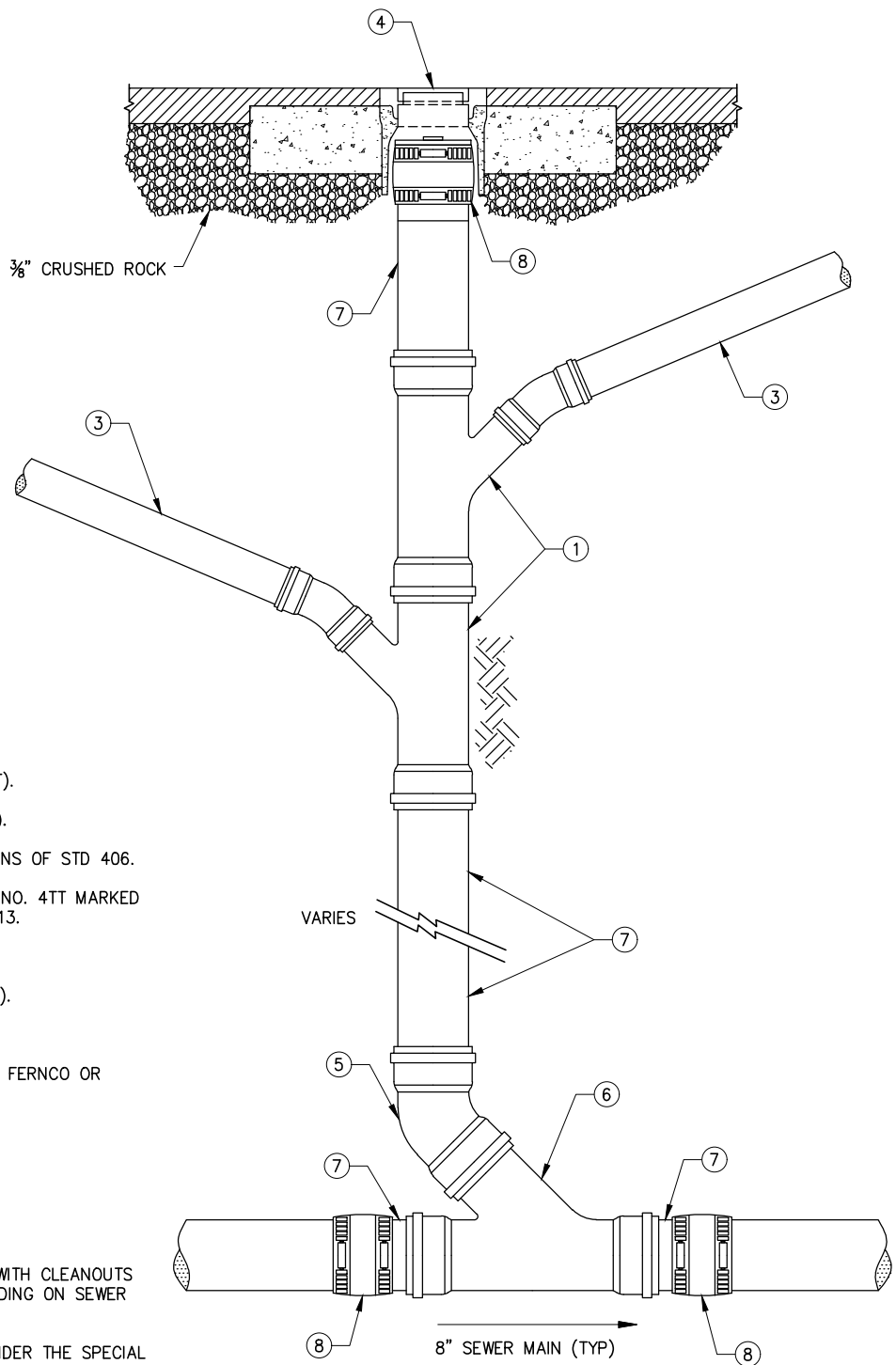
DATE: 11/3/2020

**SEWER LATERAL CONNECTION TYPE "B"
(SADDLE TYPE INSTALLATION)**

STANDARD DRAWING NO.

408

SHEET 1 OF 1



CONSTRUCTION NOTES:

- ① 8"X4" VCP (OR SDR-35 PVC) WYE (F X M X F).
- ② 4" VCP (OR SDR-35 PVC) 22.5° BEND (F X M).
- ③ INCOMING 4" LATERAL PER APPLICABLE PORTIONS OF STD 406.
- ④ FRAME & COVER SHALL BE BROOKS PRODUCT NO. 4TT MARKED "SEWER" PER APPLICABLE PORTIONS OF STD 513.
- ⑤ 8" VCP (OR SDR-35 PVC) 45° BEND (F X M).
- ⑥ 8"X8" VCP (OR SDR-35 PVC) WYE (F X F X F).
- ⑦ 8" VCP (OR SDR-35 PVC) PIPE.
- ⑧ 8" RUBBER MECHANICAL BANDED SEAL CLAMP. FERNCO OR CITY-APPROVED EQUAL.


GENERAL NOTES:

1. UP TO TWO RESIDENTIAL WYES PER CHIMNEY WITH CLEANOUTS AT PROPERTY LINE WILL BE PERMITTED DEPENDING ON SEWER MAIN DEPTH.
2. CHIMNEY INSTALLATION IS ONLY PERMITTED UNDER THE SPECIAL APPROVAL OF CITY.
3. COMMERCIAL LATERALS MAY NOT BE STACKED ON A CHIMNEY WITH OTHER LATERALS.
4. SEWER PIPE AND FITTINGS SHALL BE BEDDED WITH $\frac{3}{4}$ " CRUSHED ROCK MATERIAL PER STD 323. IN AREAS OF GROUND WATER OR TIDE WATER, $\frac{3}{8}$ " CRUSHED ROCK SHALL BE USED.
5. VCP SHALL BE HIGH STRENGTH.

NOTE:

IF EXISTING PIPE IS VCP, USE VCP. IF EXISTING PIPE IS SDR, USE SDR.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 408-L

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SEWER LATERAL CHIMNEY CONNECTION(S)

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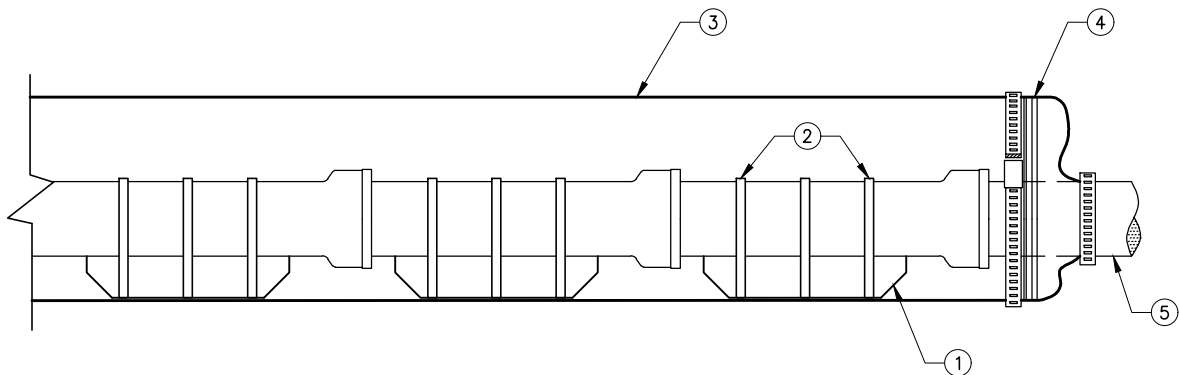
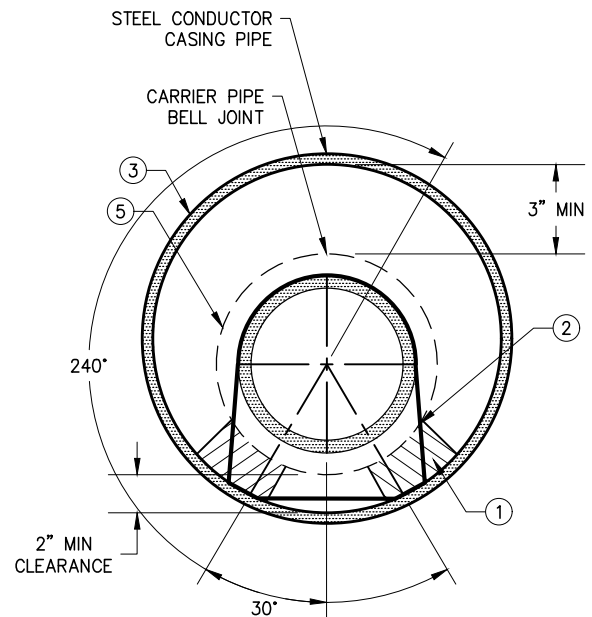
409

SHEET 1 OF 1

SHEET 1 OF 1

FOR VITRIFIED CLAY PIPE (VCP)					
CARRIER PIPE			CASING PIPE		
NOMINAL SIZE	OUTER DIAMETER	BELL DIAMETER	NOMINAL SIZE	MIN WALL THICKNESS	NOMINAL SIZE
8"	10.0"	12.5"	18"	1/4"	3" X 3"
10"	12.7"	15.9"	20"	5/16"	3" X 3"
12"	15.2"	18.8"	24"	5/16"	4" X 4"
15"	18.7"	23.1"	30"	3/8"	4" X 4"

FOR POLYVINYLCHLORIDE PIPE (PVC)					
CARRIER PIPE			CASING PIPE		
NOMINAL SIZE	OUTER DIAMETER	COUPLE DIAMETER	NOMINAL SIZE	MIN WALL THICKNESS	NOMINAL SIZE
8"	8.625"	10.19"	16"	1/4"	3" X 3"
10"	10.750"	12.44"	18"	5/16"	3" X 3"
12"	12.750"	14.65"	20"	5/16"	4" X 4"
16"	16.000"	17.40"	24"	3/8"	4" X 6"



CONSTRUCTION NOTES:

- ① UNFINISHED REDWOOD SKIDS 3 FEET LONG, BEVELED AT BOTH ENDS. NOTCH SKIDS TO SEAT STRAPS. SIZE PER TABLE.
- ② STAINLESS STEEL BAND STRAPS. 8 GAUGE BY 3/4" WIDE. INSTALL 3 STRAPS PER SKID.
- ③ STEEL CASING PIPE. MINIMUM THICKNESS PER TABLE.
- ④ SYNTHETIC RUBBER CASING END SEAL. 1/8" THICK, MODEL "C" END SEAL AS MANUFACTURED BY PIPE SEAL INSULATOR, INC.
- ⑤ CARRIER PIPE. EXTRA STRENGTH VCP OR SDR-35 PVC GASKETED RESTRAINED-JOINT YELOMINE SEWER PIPE AS MANUFACTURED BY CERTAINTED CORPORATION.

GENERAL NOTES:

1. CASING SHALL BE INSTALLED BY THE BORE, JACK AND/OR TUNNEL METHOD.
2. SIZE AND THICKNESS OF CASING SHALL BE AS SHOWN IN SCHEDULE. THICKNESSES ARE MINIMUMS.
3. ALL STEEL CASING PIPE FIELD JOINTS SHALL BE BUTT-WELDED FULL-CIRCUMFERENCE.
4. SKIDS SHALL BE UNFINISHED REDWOOD. STEEL CASING INSULATORS MAY BE SUBSTITUTED BY SPECIAL PERMISSION.
5. FOR PVC CARRIER PIPE, SKIDS SHALL BE WITHIN 1 FOOT OF EACH PIPE END & AT MID-SPAN.
6. EACH END OF CASING SHALL BE SEALED AS INDICATED.
7. BACKFILL FOR CASING IN OPEN CUT SHALL BE IN ACCORD WITH STD 323.
8. CASING VOIDS SHALL NOT BE FILLED WITH SAND OR GROUT WITHOUT SPECIAL PERMISSION. SEAL ENDS ONLY.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 410-L

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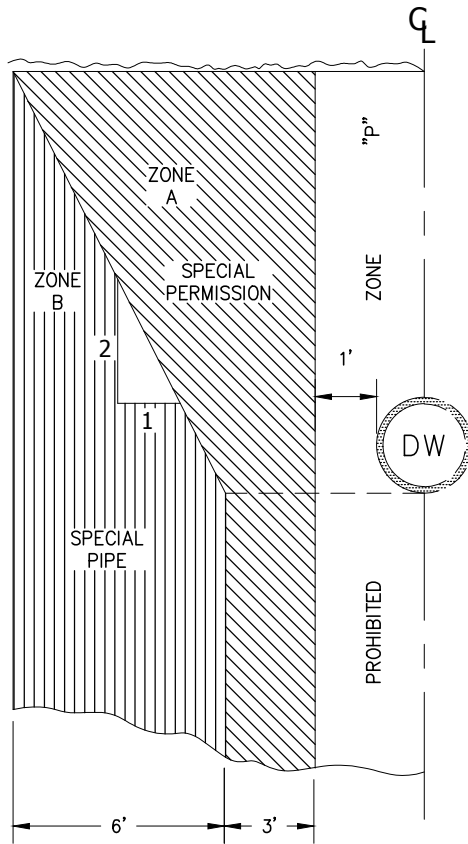
DATE: 11/3/2020

CASED SEWER MAIN FOR HIGHWAY CROSSINGS

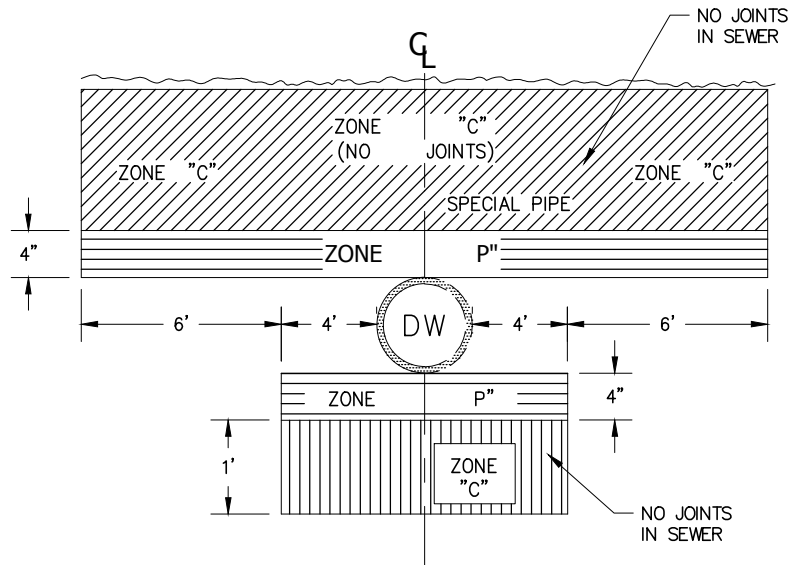
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411

SHEET 1 OF 1



SEWER MAIN PARALLEL TO
DOMESTIC WATER (DW) MAIN



SEWER MAIN CROSSING
DOMESTIC WATER (DW) MAIN

SPECIAL CONSTRUCTION REQUIRED FOR SEWER MAINS

- ZONE
- "A" NO SEWER MAINS PARALLEL TO DW MAINS SHALL BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE PUBLIC WORKS AND UTILITIES DEPARTMENT.
- "B" SEWER MAIN SHALL BE CONSTRUCTED OF:
1. HIGH STRENGTH VITRIFIED CLAY PIPE WITH MISSION CLAY ADJUSTABLE REPAIR COUPLING (TYPE Z).
 2. PLASTIC SEWER PIPE (SDR-35) WITH RUBBER COUPLING WITH AMAZON SHEAR RING.
- "C" SEWER MAIN SHALL BE CONSTRUCTED OF:
1. HIGH STRENGTH VITRIFIED CLAY PIPE WITH MISSION CLAY ADJUSTABLE REPAIR COUPLING (TYPE Z).
 2. PLASTIC SEWER PIPE (SDR-35) WITH RUBBER COUPLING WITH AMAZON SHEAR RING. THERE SHALL BE NO JOINTS IN THIS ZONE.
- "P" PROHIBITED. NO SEWER MAIN SHALL BE CONSTRUCTED IN THIS ZONE.

BASIC SEPARATION STANDARDS

1. PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN DW AND SEWER MAINS SHALL BE AT LEAST 10 FEET.
2. PERPENDICULAR CONSTRUCTION (CROSSING): SEWER MAINS SHALL BE AT LEAST ONE FOOT ABOVE DW MAIN LINES AND FOUR INCHES BELOW WHERE LINES MUST CROSS. ANY INSTALLATION WITHIN THESE STANDARDS WILL REQUIRE SPECIAL INSTALLATION REQUIREMENTS AND MUST BE APPROVED BY THE PUBLIC WORKS AND UTILITIES DEPARTMENTS.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 533-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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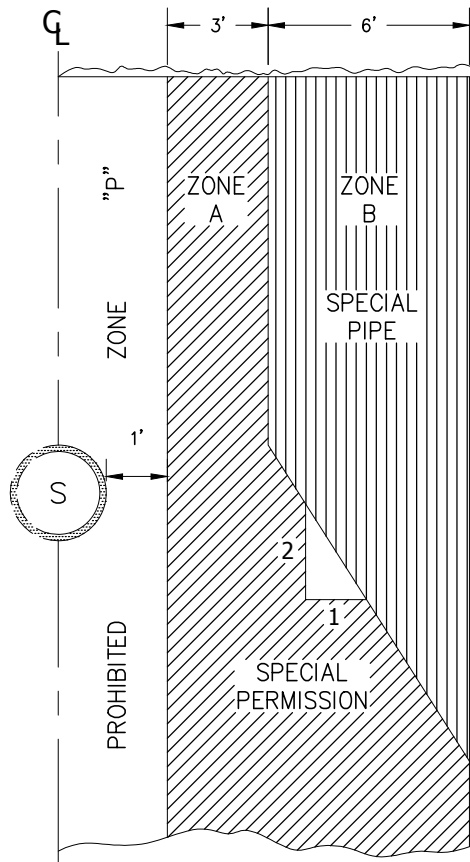
SEWER & WATER SEPARATION (EXISTING WATER)

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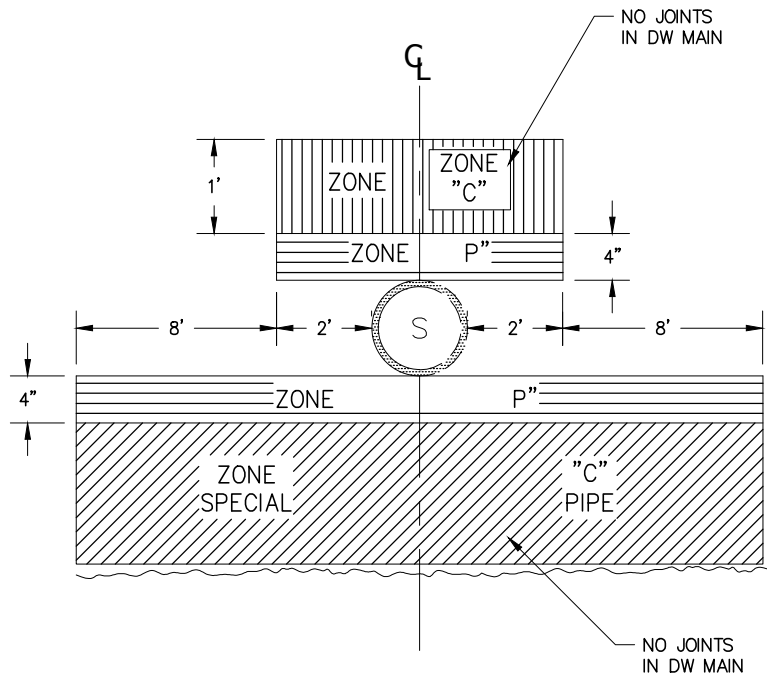
500-A

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DATE: 11/3/2020



DOMESTIC WATER (DW) MAIN
PARALLEL TO SEWER MAIN



DOMESTIC WATER (DW) MAIN
CROSSING SEWER MAIN


SPECIAL CONSTRUCTION REQUIRED FOR SEWER MAINS

- ZONE
"A" NO DW MAINS PARALLEL TO SEWER MAINS SHALL BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE PUBLIC WORKS AND UTILITIES DEPARTMENTS.
- "B" DW MAIN SHALL BE CONSTRUCTED OF:
1. CLASS 52 DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING.
2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (SDR-14).
- "C" DW MAIN SHALL BE CONSTRUCTED OF:
1. CLASS 52 DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING.
2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (SDR-14). THERE SHALL BE NO JOINTS IN THIS ZONE.
- "P" PROHIBITED. NO DW MAIN SHALL BE CONSTRUCTED IN THIS ZONE.

BASIC SEPARATION STANDARDS

1. PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN DW AND SEWER MAINS SHALL BE AT LEAST 10 FEET.
2. PERPENDICULAR CONSTRUCTION (CROSSING): DW MAINS SHALL BE AT LEAST ONE FOOT BELOW SEWER MAIN LINES AND FOUR INCHES ABOVE WHERE LINES MUST CROSS. ANY INSTALLATION WITHIN THESE STANDARDS WILL REQUIRE SPECIAL INSTALLATION REQUIREMENTS AND MUST BE APPROVED BY THE PUBLIC WORKS AND UTILITIES DEPARTMENTS.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 533-L

APP. 	51568	11/24/2020			
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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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SEWER & WATER SEPARATION (EXISTING SEWER)

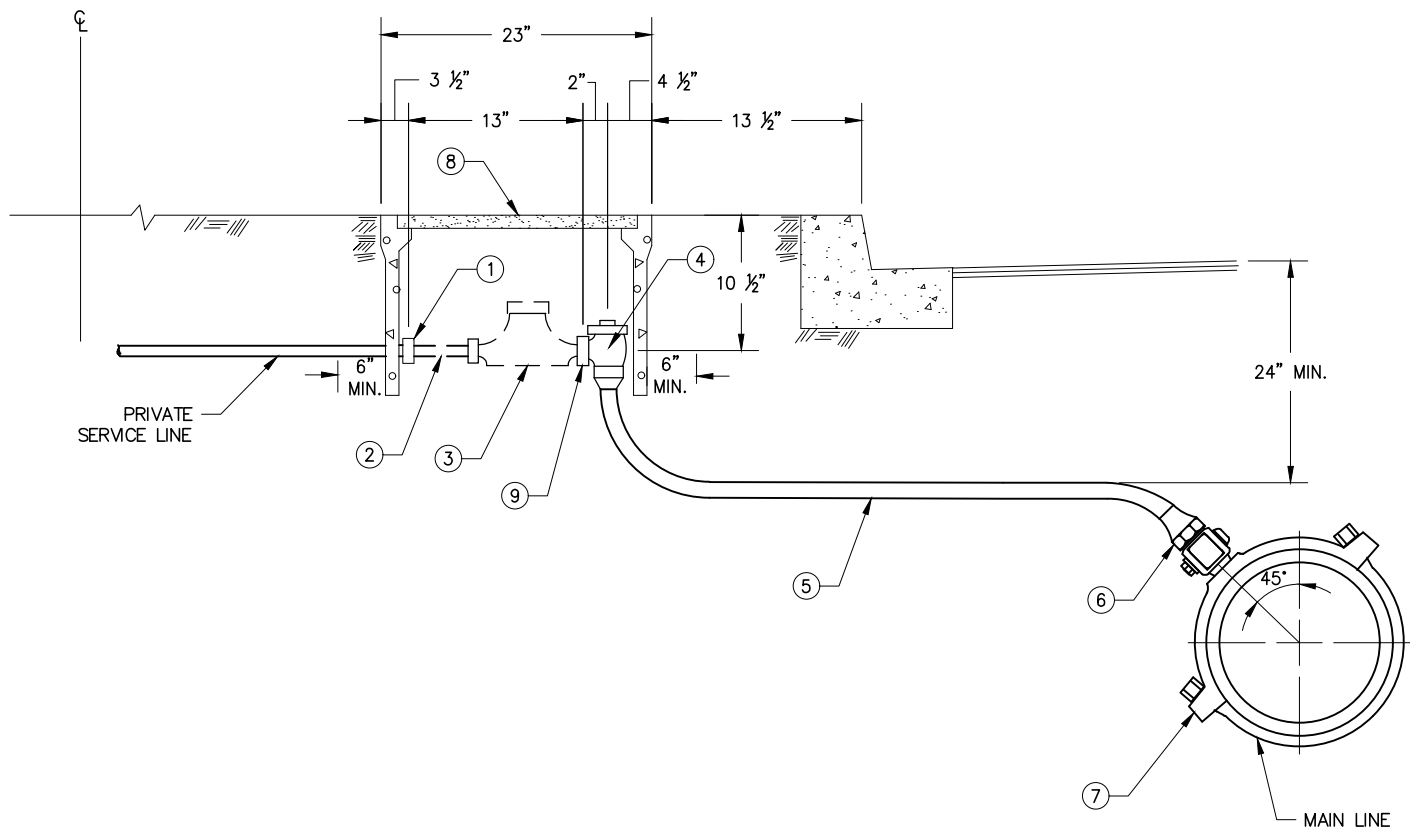
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500-B

SHEET 1 OF 1

DATE: 11/3/2020

SHEET 1 OF 1



* SEE GENERAL NOTE #7

CONSTRUCTION NOTES

- ① BRASS COUPLING WITH FEMALE I.P. THREAD, USA.
- ② BRASS TAIL PIECE AND METER INSTALLED BY CITY AFTER METER BOX IS IN PLACE. TAIL PIECE SHALL BE FORD C38-23-X (WHERE X IS THE TAIL PIECE LENGTH IN INCHES) OR JONES J-134 - $\frac{3}{4}$ " FOR A $\frac{3}{4}$ " METER, AND FORD C38-44-X (WHERE X IS THE TAIL PIECE LENGTH IN INCHES) OR JONES J-134-1.
- ③ MUELLER/HERSEY AMI METER.
- ④ ANGLE METER STOP WITH COPPER FLARE INLET AND LOCKWING, JAMES JONES J-1525 OR FORD KV23-444W. IF APPROVED FOR INLINE METER STOP, USE JAMES JONES J-1901W.
- ⑤ TYPE "K" COPPER TUBING.
- ⑥ CORPORATION STOP, MALE C.C. THREADS INLET AND COPPER FLARE OUTLET, JONES J-1500, FORD F600-4, OR MUELLER H-15000.
- ⑦ DOUBLE STRAP BRONZE SERVICE SADDLE WITH C.C. THREADS, JONES J-979 OR FORD 202B. FOR PVC, USE J-969 SERIES OR 202BS WRAP IN PLASTIC SHEETING (10 MIL.)
- ⑧ DFW HDPE METER BOX, DFW486C-AF4T MUE NWPT<->-LID. BOXES SUBJECT TO TRAFFIC LOADING REQUIRE TRAFFIC RATED COVERS. (NO APPROVED EQUAL).
- ⑨ WHEN INSTALLING A $\frac{3}{4}$ " METER, INSTALL A METER BUSHING AFTER THE 1" ANGLE STOP. BUSHING SHALL BE JONES J-128-H.

GENERAL NOTES

1. COUPLINGS WILL NOT BE PERMITTED WHEN SERVICE LINE IS LESS THAN 60 FEET IN LENGTH.
2. ALL TUBING AND FITTINGS BETWEEN THE MAIN AND THE METER SHALL BE 1" DIAMETER (EXCEPT WHERE NOTED). IF A COUPLING IS REQUIRED AND APPROVED, USE A COUPLING WITH COPPER FLARE ENDS, JONES J-1528 OR J-1529, FORD C-22-44 OR CS-22-44. FOR REPAIRS ONLY, A COMPRESSION FITTING MAY BE USED ONLY AND COUPLING WITH COPPER FLARE ENDS, JONES J-1528 OR J-1529, FORD C-22-44 OR CS-22-44 WITH AN APPROVAL FROM THE UTILITIES DEPARTMENT.
3. TUBING SHALL BE BENT WITH AN APPROVED BENDER. DISTORTION OF O.D. SHALL NOT EXCEED $\frac{1}{8}$ OF ITS ORIGINAL DIAMETER.
4. SPACING OF MULTIPLE TAP CONNECTIONS SHALL BE A MINIMUM OF 24" APART AND 45° ANGLE OR OTHERWISE PERMITTED BY UTILITIES DEPARTMENT.
5. SEE STD 510 FOR SERVICE TAP ON STEEL WATER MAINS.
6. FOR ALL NEW INSTALLATIONS, COMPRESSION FITTING OF ALL TYPES ARE EXPRESSLY PROHIBITED FROM USE.
7. WHERE SERVICES ARE TO BE INSTALLED ON STEEL WATER MAINS, REFER TO STD 510. WHERE SERVICES ARE TO BE REPLACED ON EXISTING OR DUCTILE IRON WATER MAINS, CHANGE THE EXISTING SADDLE TO A STAINLESS STEEL SERVICE CLAMP WITH IRON PIPE THREADED BUSHING. FORD FS1-CC4 FOR APPROPRIATE PIPE DIAMETER.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 502-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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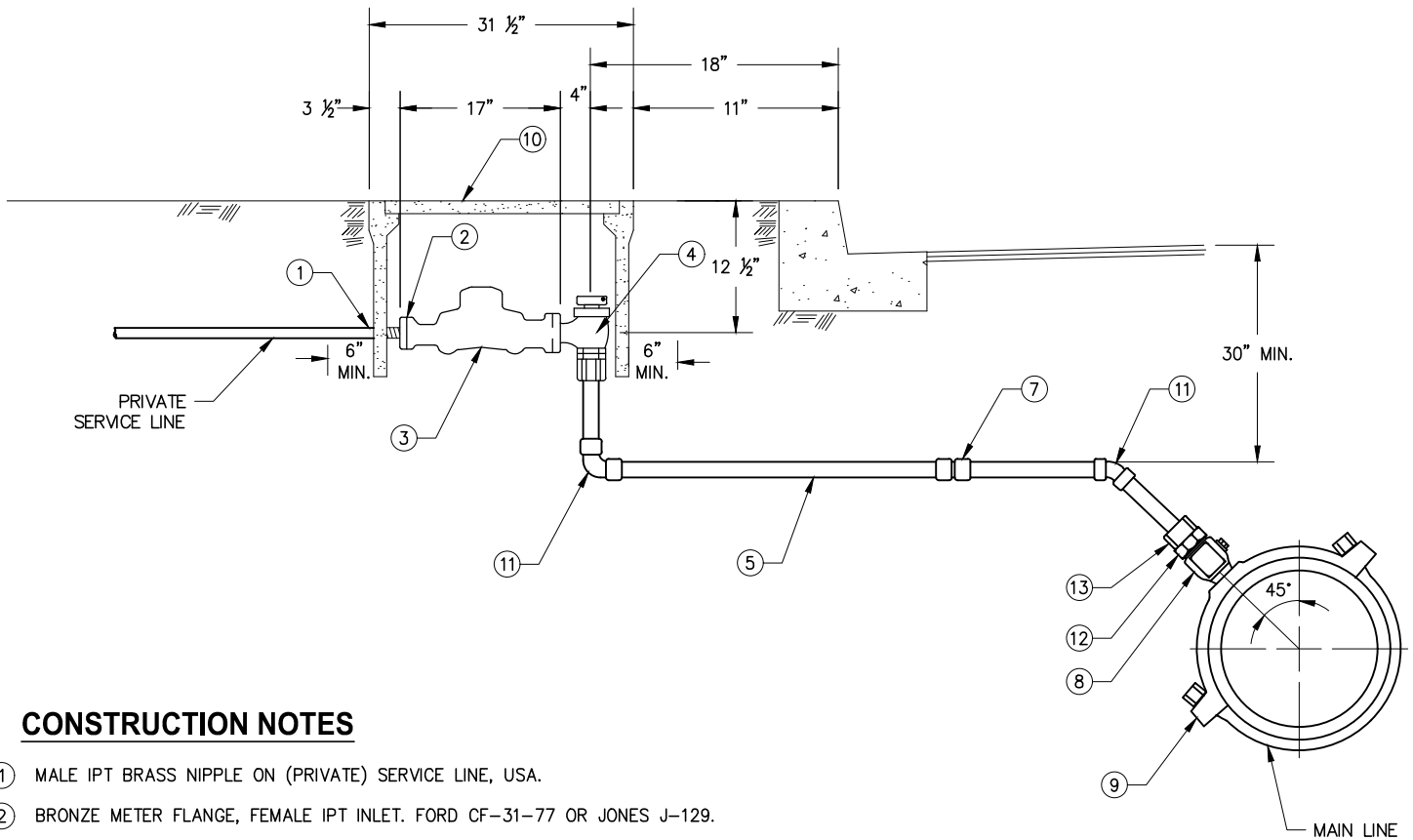
DATE: 11/3/2020

1" WATER SERVICE

STANDARD DRAWING NO.

502

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① MALE IPT BRASS NIPPLE ON (PRIVATE) SERVICE LINE, USA.
- ② BRONZE METER FLANGE, FEMALE IPT INLET. FORD CF-31-77 OR JONES J-129.
- ③ METER SHALL BE INSTALLED BY CITY AFTER METER BOX IS IN PLACE. MUELLER/HERSEY AMI METER.
- ④ ANGLE METER BALL STOP WITH FEMALE IPT INLET AND TEE-HEAD WITH LOCK-WING, JONES J-1974W OR FORD BFA13-777W.
- ⑤ TYPE "K" RIGID COPPER TUBING.
- ⑥ LONG RADIUS 90° ELBOW, NIBCO OR EQUIVALENT DOMESTIC COPPER FITTING.
- ⑦ IF SERVICE LINE IS OVER 20 FEET IN LENGTH, A COPPER FITTING (NIBCO OR EQUIVALENT DOMESTIC COPPER FITTING) MAY BE USED. FOR REPAIRS ONLY, A COMPRESSION FITTING MAY BE USED ONLY WITH AN APPROVAL FROM THE UTILITIES DEPARTMENT.
- ⑧ MALE IPT INLET BY MALE IPT OUTLET BALL CORPORATION STOP, JONES J-1943 OR FORD FB-500-7.
- ⑨ DOUBLE BRONZE STRAP SADDLE WITH IRON PIPE THREAD. JONES J-979 OR FORD 202B-IP7. FOR PVC, USE JONES J-969 OR FORD 202BS-IP7 WRAP IN PLASTIC SHEETING (10 MIL.)
- ⑩ DFW HDPE METER BOX, DFW65CB-AF4T MUE NWPT<->-LID. BOXES SUBJECT TO TRAFFIC LOADING REQUIRE TRAFFIC RATED COVERS. (NO APPROVED EQUAL).
- ⑪ COPPER 45° ELBOW, NIBCO OR EQUIVALENT DOMESTIC COPPER FITTING.
- ⑫ 2" BRASS COUPLING, (THREADED) ON CORP, NIBCO, USA.
- ⑬ COPPER ADAPTER, MALE IPT X WROT COPPER, NIBCO TYPICAL. NO THIN WALL FITTINGS.

GENERAL NOTES

1. WROT COPPER, SILVER BRAZED, SOLDER COUPLINGS WILL BE PERMITTED AT INTERVALS OF 20 FEET OR GREATER.
2. TUBING MAY NOT BE BENT. ALL DEFLECTIONS AND CHANGES IN DIRECTION OF COPPER TUBE SHALL BE ACCOMPLISHED BY MEANS OF WROT COPPER FITTINGS. BENT OR DAMAGED COPPER LINES SHALL BE REJECTED.
3. SPACING OF MULTIPLE SERVICE CONNECTIONS SHALL BE A MINIMUM OF 24" APART AND 45° ANGLE OR OTHERWISE PERMITTED BY UTILITIES DEPARTMENT.
4. SEE STD 510 FOR SERVICE CONNECTIONS ON STEEL WATER MAINS.
5. LEAD SOLDER SHALL NOT BE USED. SOLDER SHALL BE SILVER BASED MATERIAL.
6. FLARE AND COMPRESSION FITTINGS ARE STRICTLY PROHIBITED.
7. MAINTAIN POSITIVE SLOPE IN SERVICE LINE FROM WATER MAIN TO METER BOX. MAIN MAY BE TAPPED AT SPRING LINE (BY SPECIAL PERMISSION ONLY) WHERE MAINS ARE SHALLOW OR OTHER CONDITIONS WARRANT.
8. ALL FITTINGS SHALL BE 2" DIAMETER.
9. WHERE SERVICES ARE TO BE INSTALLED ON STEEL WATER MAINS, REFER TO STD 510.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 503-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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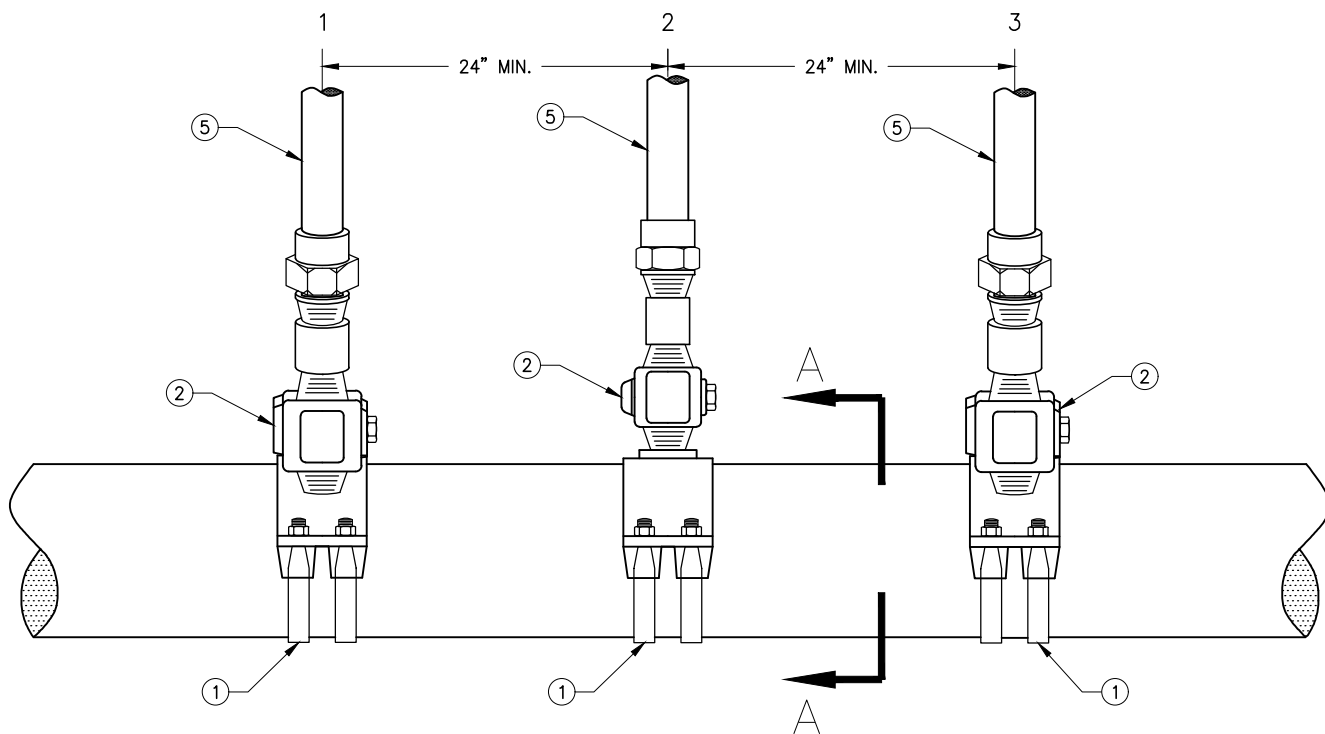
DATE: 11/3/2020

2" WATER SERVICE

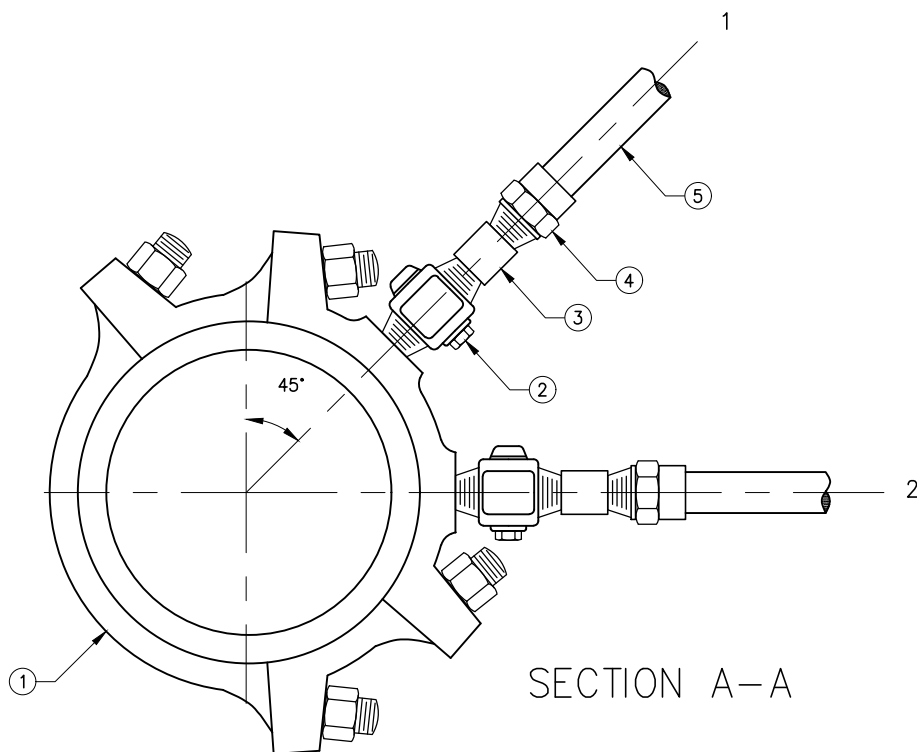
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503

SHEET 1 OF 1



PLAN VIEW



SECTION A-A

CONSTRUCTION NOTES

- ① BRONZE DOUBLE STRAP SERVICE SADDLE, JONES J-979 OR FORD F202B WITH I.P. THREAD. FOR PVC, USE J-969 SERIES OR 202BS. STAINLESS STEEL SERVICE SADDLE SHALL BE WRAPPED IN 10 MIL THICK PLASTIC WRAP.
- ② 2" CORP STOP. MIP x MIP, JONES E-1943 OR FORD FB500-7.
- ③ 2" BRASS COUPLING, FIP x FIP, MADE IN USA.
- ④ 2" COPPER ADAPTOR, MALE NPT.
- ⑤ 2" COPPER TUBING, TYPE K.

GENERAL NOTES

1. REFER TO STANDARD DRAWING STD 503 FOR ADDITIONAL WATER SERVICE DETAILS.
2. THIS STANDARD DRAWING IS APPLICABLE TO 2" SERVICES ONLY.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 516-L

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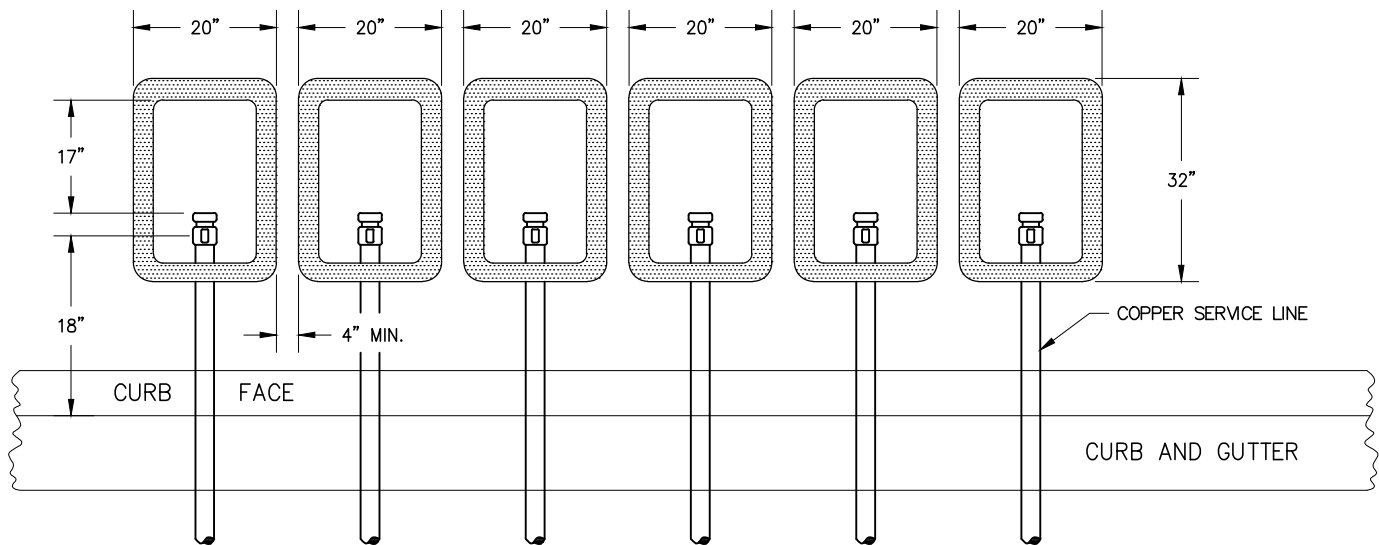
DATE: 11/3/2020

MULTIPLE WATER SERVICE CONNECTION TO MAIN

STANDARD DRAWING NO.

504

SHEET 1 OF 1



NOT TO SCALE

GENERAL NOTES

- METER BOXES SHALL BE PLACED SUCH THAT SPACE BETWEEN BOXES IS A MINIMUM OF 4 INCHES.
- WHERE PRACTICAL, A CONCRETE SLAB SHALL BE POURED AROUND AND BETWEEN METER BOXES.
- WATER SERVICE CONNECTIONS TO THE MAIN SHALL BE PER STD 502 OR STD 503.
- CONCRETE METER BOX SHALL BE FROM THE FOLLOWING (NO APPROVED EQUAL):

FOR 1" METERS:

1" DFW METER BOX W/ DFW486C-AF4T MUE NWPT LID

FOR 2" METERS:

2" DFW METER BOX W/ DFW65CB-AF4T MUE NWPT LID

- METER BOXES SUBJECT TO TRAFFIC LOADING SHALL HAVE TRAFFIC RATED LIDS.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 518-L

APP.

James M. Hinkle
CITY ENGINEER

51568

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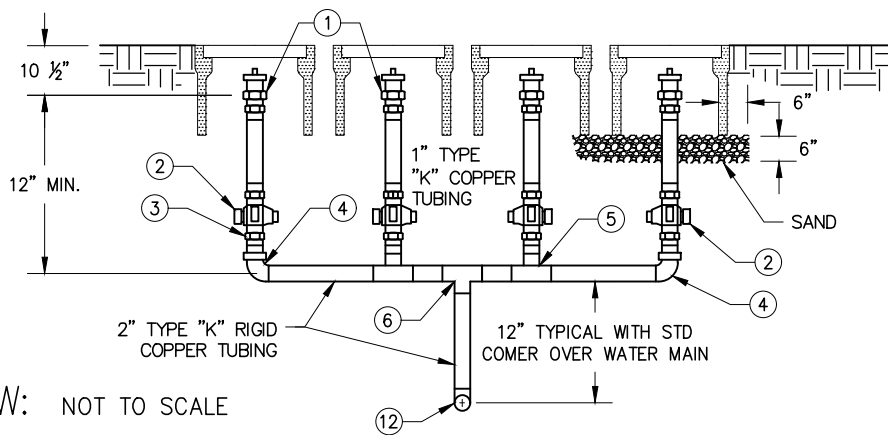
DATE: 11/3/2020

MULTIPLE WATER METER & SERVICE BOX INSTALLATIONS

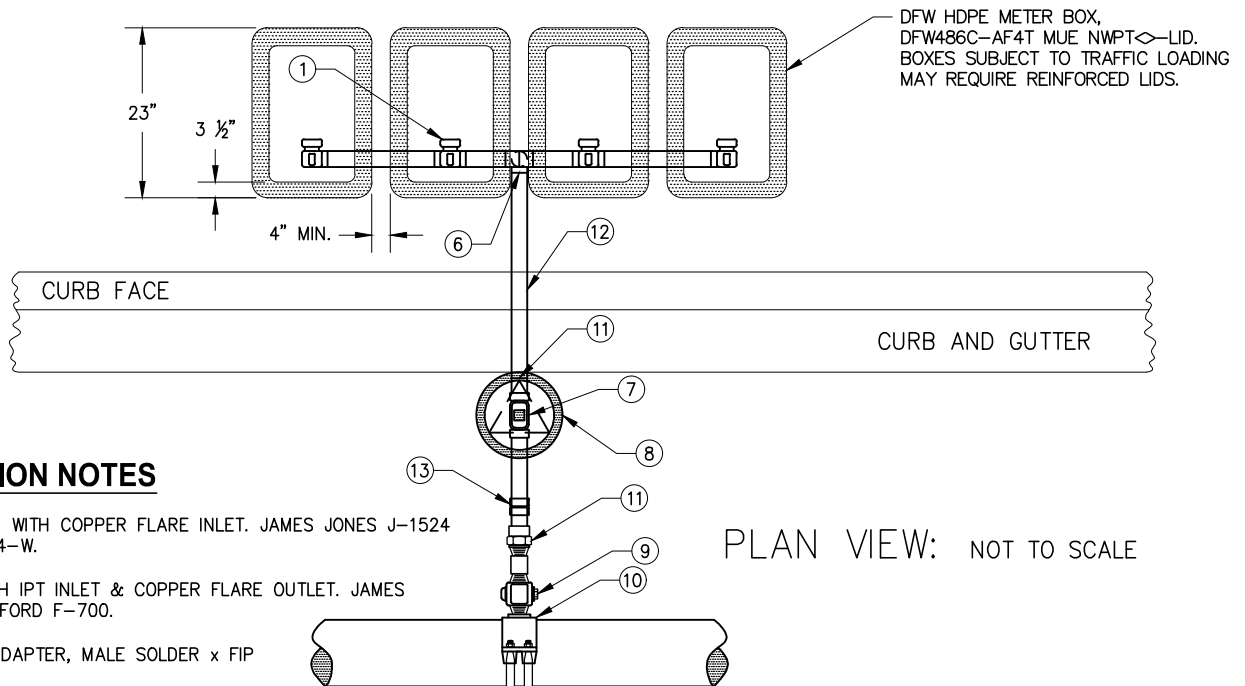
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505

SHEET 1 OF 1



SECTION VIEW: NOT TO SCALE



CONSTRUCTION NOTES

- ① ANGLE METER STOP WITH COPPER FLARE INLET. JAMES JONES J-1524 OR FORD KV-23444-W.
- ② 1" CORP. STOP WITH IPT INLET & COPPER FLARE OUTLET. JAMES JONES J-1505 OR FORD F-700.
- ③ 1" WROT COPPER ADAPTER, MALE SOLDER x FIP THREAD. NIBCO.
- ④ 2" x 1" CAST BRASS REDUCING 90° ELL WITH FEMALE SOLDER ENDS. NIBCO TYPICAL, USA.
- ⑤ 2" x 1" WROT COPPER TEE WITH FEMALE SOLDER ENDS. NIBCO.
- ⑥ 2" x 2" WROT COPPER TEE WITH FEMALE SOLDER ENDS. NIBCO.
- ⑦ 2" TEE HEAD BALL CORP., MIP THREAD ENDS. JONES J-1945 WITH J-2816 SQUARE VALVE OPERATING NUT ADAPTER OR FORD FB-500, TEE-HEAD & QT67 ADAPTER NUT.
- ⑧ BROOKS NO. 4TT OR EISLE NO. 4TT VALVE BOX COVER & RISER PER CNB STD 513.
- ⑨ 2" BALL CORP. STOP WITH MIP THREAD INLET & OUTLET. JAMES JONES J-1943 OR FORD FB-500.
- ⑩ DOUBLE STRAP BRONZE SERVICE CLAMP WITH IPT OUTLET. JAMES JONES J-979 OR FORD 202B. REFER TO STD 510 FOR WATER MAIN TAP DETAILS. WRAP IN (10 MIL) THICK PLASTIC SHEETING.
- ⑪ 2" WROT COPPER ADAPTER, MALE NPT. NIBCO.
- ⑫ 2" WROT COPPER 90° ELL WITH FEMALE SOLDER ENDS. NIBCO.
- ⑬ 2" WROT COPPER 45° ELL WITH FEMALE SOLDER ENDS. NIBCO.

PLAN VIEW: NOT TO SCALE

GENERAL NOTES

1. USE OF THIS STANDARD SHALL REQUIRE SPECIAL WRITTEN PERMISSION BY THE CITY.
2. ALL CONNECTIONS TO LINED AND COATED STEEL MAINS REQUIRE SPECIAL APPROVAL FROM THE UTILITIES DEPARTMENT.
3. NO MORE THAN FOUR (4) SERVICES MAY BE INSTALLED ON A MANIFOLD.
4. ALL FITTINGS SHALL BE SILVER SOLDERED. LEAD BASED SOLDER MATERIALS ARE STRICTLY PROHIBITED.
5. COUPLINGS WILL BE PERMITTED AT INTERVALS OF 20 FT. IN 2" SERVICE LINES OF RIGID COPPER. NIBCO OR EQUAL SHALL BE USED AT JOINTS.
6. TUBING SHALL BE BENT WITH AN APPROVED BENDER. DISTORTION OF THE O.D. SHALL NOT EXCEED 1/8 OF ITS ORIGINAL DIAMETER.
7. REFER ALSO TO CNB STD 502, STD 503, STD 510, AND STD 513.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 519-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

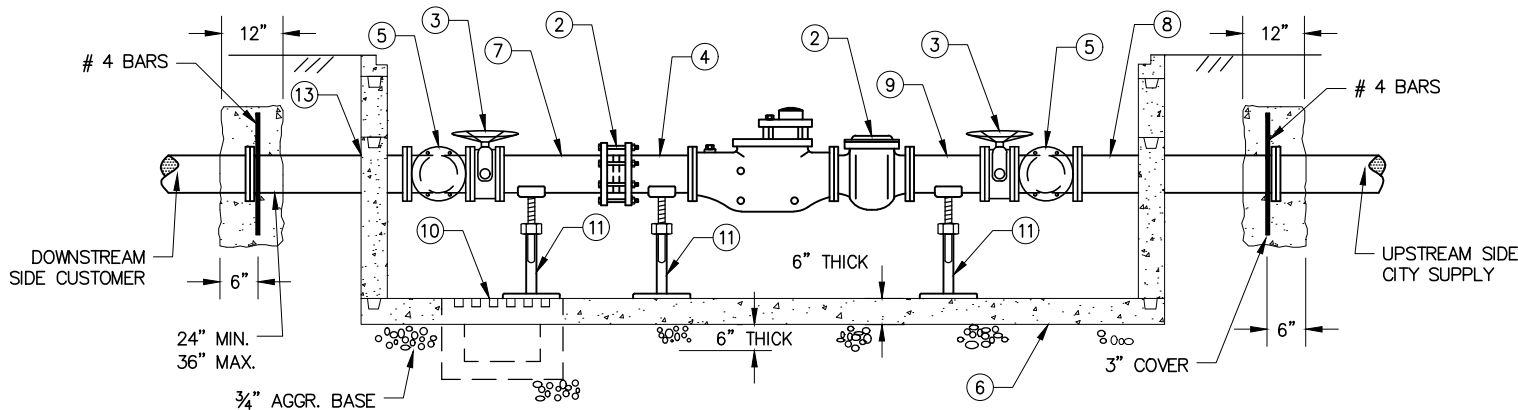
DATE: 11/3/2020

1" MULTIPLE SERVICE MANIFOLD

STANDARD DRAWING NO.

506

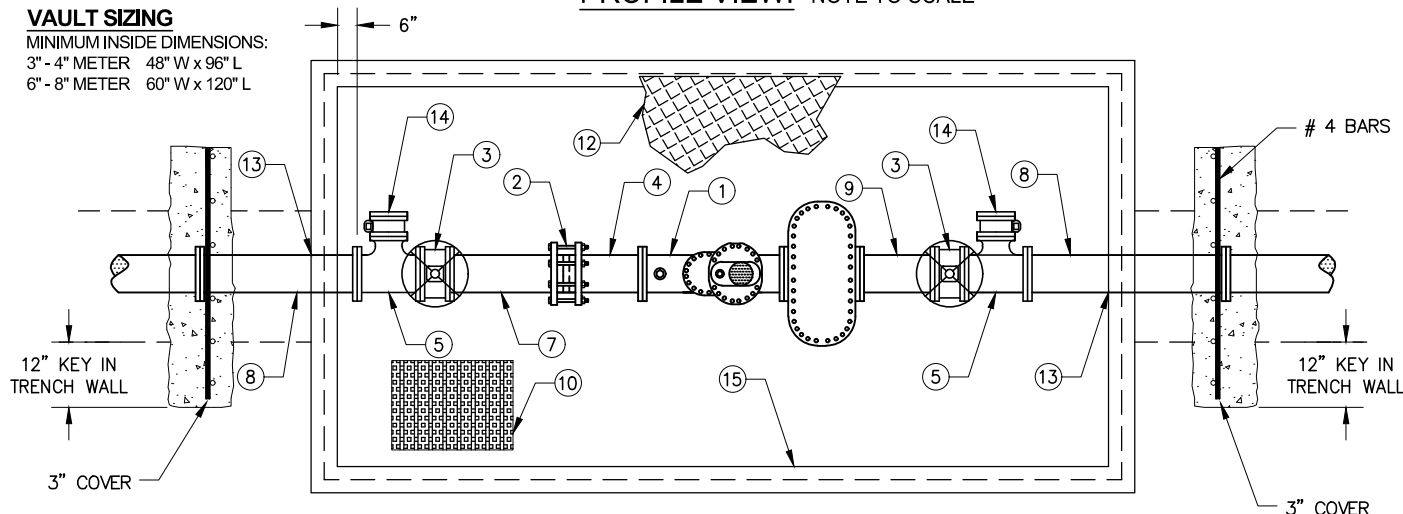
SHEET 1 OF 1



PROFILE VIEW: NOTE TO SCALE

VAULT SIZING

MINIMUM INSIDE DIMENSIONS:
3" - 4" METER 48" W x 96" L
6" - 8" METER 60" W x 120" L



PLAN VIEW: NOTE TO SCALE

CONSTRUCTION NOTES

- ① COMPACT DUAL REGISTER HIGH PERFORMANCE COMPOUND METER WITH SOLID BRONZE IN-LINE STRAINER, COMPACT SINGLE REGISTER TURBINE METER WITH SOLID BRONZE IN-LINE STRAINER OR COMPACT FM METER ASSEMBLY W/INTEGRAL DETECTOR CHECK VALVES, MAINLINE AND BY-PASS TURBINE METER AND IN-LINE STRAINER. CONTACT CNB UTILITIES DEPARTMENT FOR SPECS AND APPROVED METERS.
- ② DUCTILE IRON FLEX COUPLING. FORD, ROMAC, DRESSER OR APPROVED EQUIVALENT.
- ③ RESILIENT WEDGE GATE VALVE WITH HAND WHEEL OPERATOR & FLANGED ENDS.
- ④ CLASS 52, MORTAR LINED, D.I.P. SPINDLE PIECE (FOE.) 12" LONG. FABRICATE WITH HARNESS LUGS.
- ⑤ FE, COMPACT (SHORT BODY PATTERN), MORTAR LINED DUCTILE IRON TEE. BRANCH DIA. TO BE 2" LESS THAN RUN DIA. IE., 8" x 6" TEE. WHEN BRANCH LINE IS LESS THAN 4", REPLACE TEE WITH 2" CORP STOP AND SADDLE.
- ⑥ 6" THICK CONCRETE SLAB OR PRECAST CONCRETE VAULT FLOOR OF EQUAL SPECIFICATION. REINFORCED WITH W1.4 x W1.4 WELD WIRE MESH. CONCRETE SHALL BE 560-C-3250 MIX. VAULT MANUFACTURER SHALL BE AS APPROVED BY CNB UTILITIES DEPARTMENT CALL 644-3011.
- ⑦ CLASS 52, MORTAR LINED, D.I.P. SPINDLE PIECE (FOE.) 18" LONG. FABRICATE INTEGRALLY WITH HARNESS ASSEMBLY LUGS.
- ⑧ CLASS 52, MORTAR LINED, D.I.P. SPOOL PIECE (FBE). 48" LONG.
- ⑨ CLASS 52, MORTAR LINED, D.I.P. SPOOL PIECE (FBE). 6" OR 12" LONG.
- ⑩ RECESSED CAST IRON SUMP GRATE. ALHAMBRA FOUNDRY OR EQUIVALENT.
- ⑪ ADJUSTABLE PIPE SUPPORT PER STD 521.
- ⑫ J&R U.S.F. DIAMOND PLATE ALUMINUM COVER. SPRING ASSISTED, TWO PIECE COVER WITH LOCKING, HINGED, ROUND METER READING LIDS CENTERED OVER EACH METER. SPECIAL DESIGN REQUIRED FOR TRAFFIC LOADING APPLICATIONS.
- ⑬ "LINK-SEAL" MECHANICAL PIPING SEAL IN ANNULAR SPACE BETWEEN PIPE O.D. & CAST-IN-PLACE WATER STOP RING IN VAULT OPENING OR HYDRAULIC CEMENT WITH PRIOR CITY APPROVAL.
- ⑭ 4" DIAMETER RESILIENT WEDGE GATE VALVE WITH BURIED SERVICE SQUARE OPERATOR NUT AND FLANGED ENDS WITH ANSI RATED 125# BLIND FLANGE INSTALLED.
- ⑮ VAULT LADDER PER STD 525. EXACT LOCATION TO BE DETERMINED BY CITY.

GENERAL NOTES

1. ALL ABOVE GRADE PIPING SHALL BE PAINTED WITH AN ALKYD ENAMEL PAINT SYSTEM CONSISTING OF A 2 MIL PRIMER COAT AND TWO (2) COATS OF 2 MILS (EACH) HIGH GLOSS ENAMEL. COLOR SHALL BE WHITE OR BLUE, AS REQUIRED BY THE CITY.
2. ALL BELOW GRADE DUCTILE IRON FITTINGS SHALL BE C-110. ALL BELOW GRADE DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED IN ACCORDANCE WITH AWWA STANDARDS IN AN 8 MIL POLYETHYLENE WRAP.
3. ALL FLANGE JOINTS SHALL BE CONNECTED WITH TYPE 316 STAINLESS STEEL FASTENERS. MECHANICAL JOINT SHALL BE JOINED WITH EITHER MALLEABLE IRON OR SELF-WEATHERING CORTEN STEEL.
4. ALL VAULTS REQUIRE THE INSTALLATION OF ONE VENT AT THE LOW POINT AND ONE AT THE HIGH POINT. VAULT VENTS SHALL BE INSTALLED PER STD 528-A OR STD 528-B. SIZING OF VENTS SHALL BE DETERMINED BY THE PROJECT'S ENGINEER.
5. ALL WATER METER VAULTS SHALL HAVE METER READING LID WITH 6" x 6" MIN OPENING DIRECTLY OVER METER.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 524-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

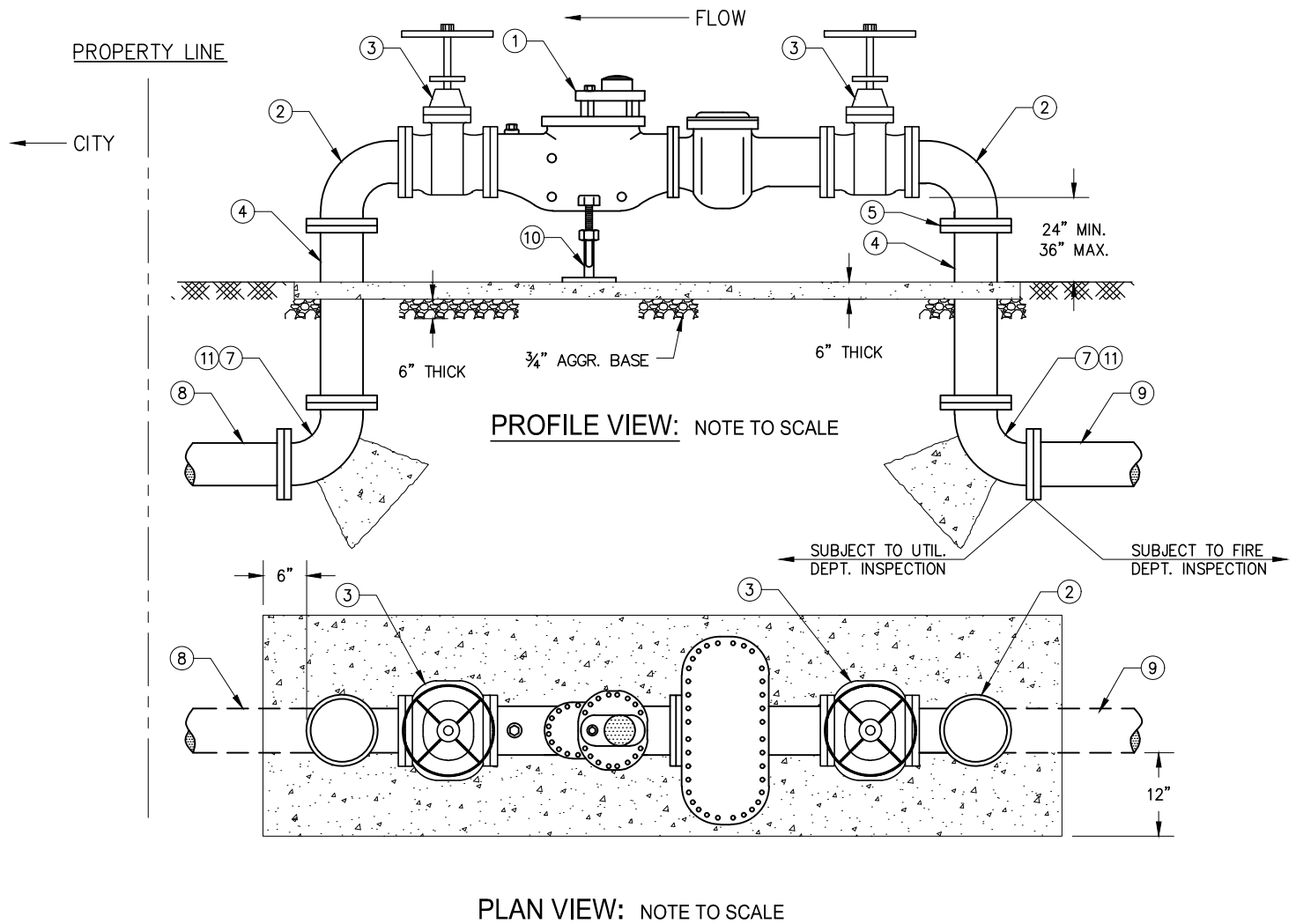
DATE: 11/3/2020

WATER METER ASSEMBLY

STANDARD DRAWING NO.

507

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① COMPACT DUAL REGISTER HIGH PERFORMANCE COMPOUND METER WITH SOLID BRONZE IN-LINE STRAINER, COMPACT SINGLE REGISTER TURBINE METER WITH SOLID BRONZE IN-LINE STRAINER OR COMPACT FM METER ASSEMBLY W/INTEGRAL DETECTOR CHECK VALVES, MAINLINE AND BY-PASS TURBINE METER AND IN-LINE STRAINER. CONTACT CNB UTILITIES DEPARTMENT FOR SPECS AND APPROVED METERS.
- ② LONG RADIUS 90° BEND, FE x FE, CEMENT LINED D.I.
- ③ RESILIENT WEDGE GATE VALVE, HAND WHEEL OPERATOR W/FLANGED ENDS.
- ④ D.I.P. MORTAR LINED SPOOL PIECE (FE).
- ⑤ 150 LB. ANSI RATED FLANGE. FABRICATED INTEGRALLY WITH SPOOL.
- ⑥ 6" THICK CONCRETE SLAB. REINFORCED WITH W1.4 x W1.4 WELD WIRE MESH. CONCRETE SHALL BE C-560-3250 MIX.
- ⑦ LONG RADIUS 90° BEND, CEMENT LINED D.I., FE x FE OR FE x MJ ENDS W/ RETAINER GLANDS.
- ⑧ C-900 PVC CLASS 200.
- ⑨ CONSUMER PIPING AWWA APPROVED POTABLE WATER PIPE MATERIAL, C-900 PVC CLASS 200.

- ⑩ ADJUSTABLE PIPE SUPPORT PER STD 521.
- ⑪ INSTALL THRUST BLOCK PER STD 516-A.

GENERAL NOTES

1. ALL ABOVE GRADE PIPING SHALL BE PAINTED WITH AN ALKYD ENAMEL PAINT SYSTEM CONSISTING OF A 2 MIL PRIMER COAT AND TWO (2) COATS OF 2 MILS (EACH) HIGH GLOSS ENAMEL. COLOR SHALL BE DETERMINED BY CNB UTILITIES DEPARTMENT.
2. ALL BELOW GRADE DUCTILE IRON FITTINGS SHALL BE C-110. ALL BELOW GRADE DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED IN ACCORDANCE WITH AWWA STANDARDS IN AN 8 MIL POLYETHYLENE WRAP.
3. ALL FLANGE BOLTS SHALL BE TYPE 316 STAINLESS STEEL. MECHANICAL JOINT BOLTS SHALL BE MANUFACTURED FROM EITHER MALLEABLE IRON OR SELF-WEATHERING CORTEN STEEL.
4. BACKFLOW DEVICE SHALL BE INSTALLED IN EASEMENT GRANTED TO CITY. MINIMUM SIZE IS 5' WDE x 10' LONG.

APP.

James M. Hinkle

51568
RCE

11/24/2020
DATE

CITY ENGINEER

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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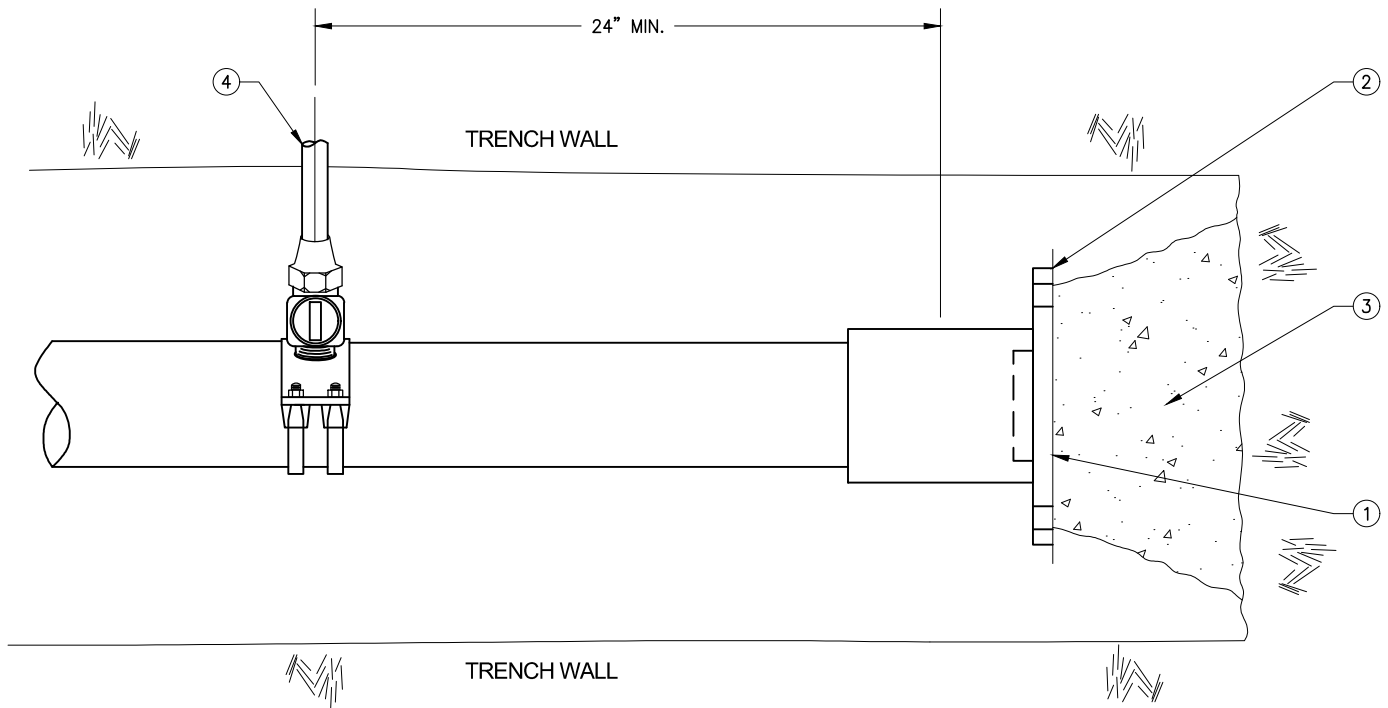
DATE: 11/3/2020

3" AND LARGER ABOVE GROUND WATER METER

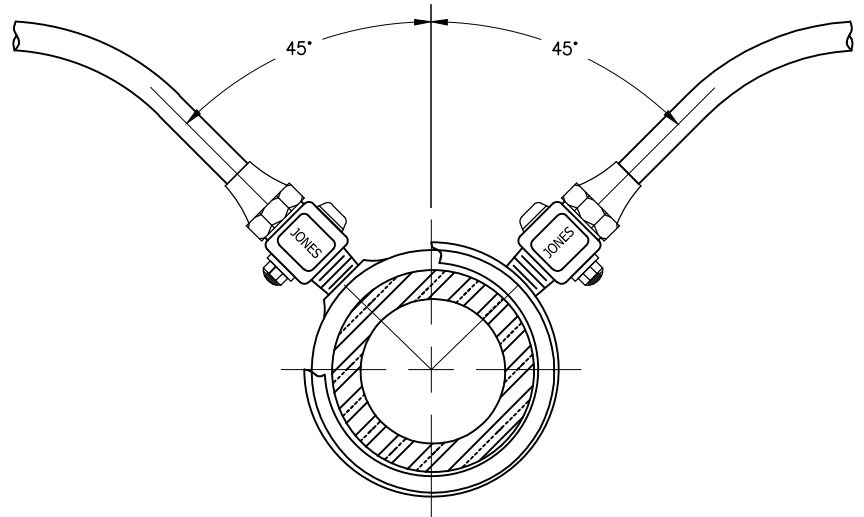
STANDARD DRAWING NO.

508

SHEET 1 OF 1



PLAN VIEW




SECTION A-A

CONSTRUCTION NOTES

- ① INSTALL SOLID C.I. PLUG WITH LUG WINGS.
- ② INSTALL 15 POUND WEIGHT BUILDING PAPER.
- ③ INSTALL CONCRETE THRUST BLOCK PER STD 516-A.
- ④ INSTALL SERVICE PER STD 502 (FOR 1" SERVICE) OR STD 503 (FOR 2" SERVICE).

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 504-L

APP.  51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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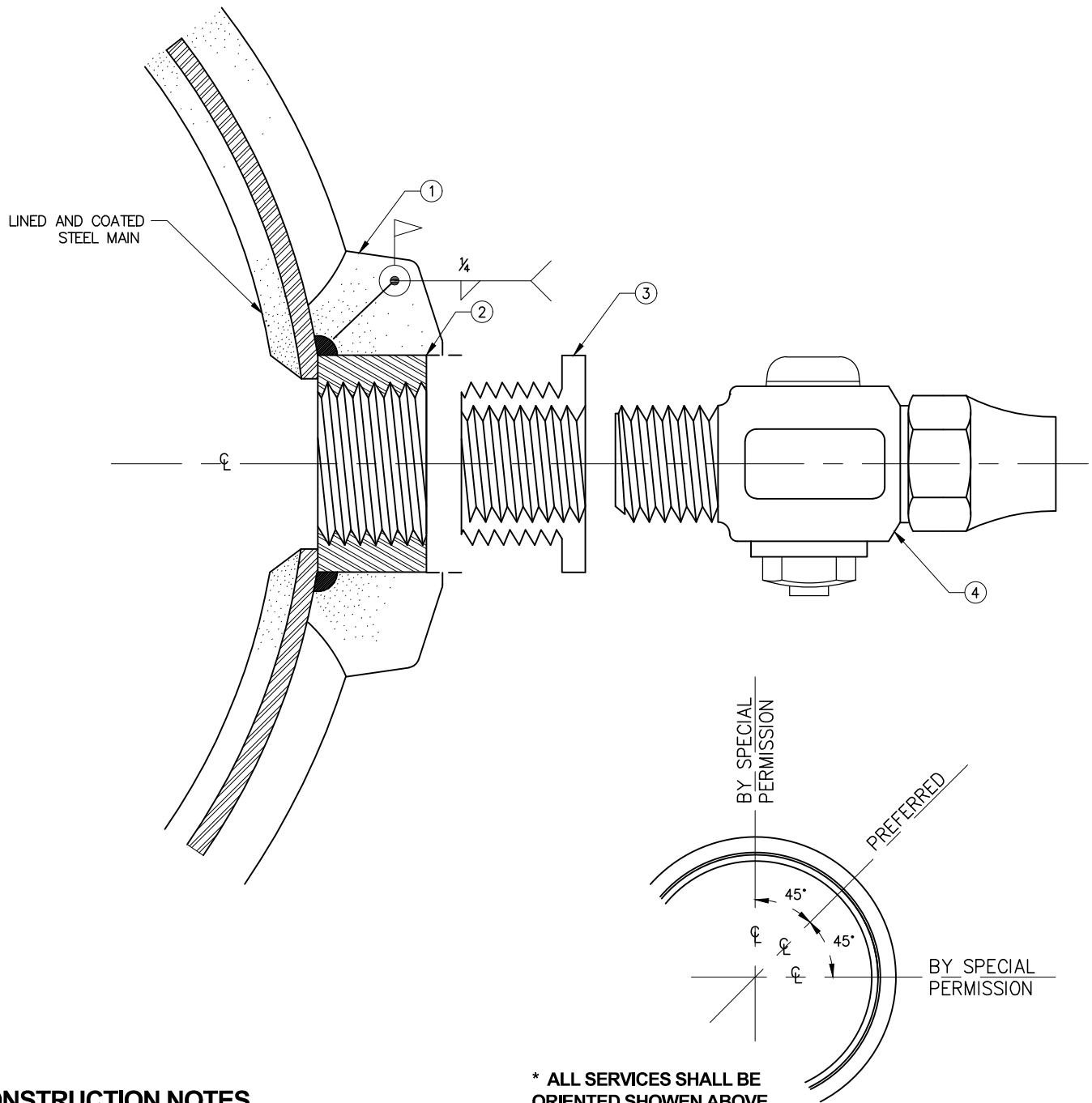
DATE: 11/3/2020

WATER SERVICE CONNECTION FOR DEAD-END A.C. MAINS

STANDARD DRAWING NO.

509

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① REMORTAR TO THE BOTTOM OF THE CORPORATION STOP.
- ② INSTALL HEAVY BLACK STEEL "THREAD-O-LET" WELD COUPLING. FOR 1" SERVICE, USE 1 1/2" (THREAD-O-LET) WELD COUPLING. FOR A 2" SERVICE, USE A 2 1/2" (THREAD-O-LET) WELD COUPLING.
- ③ INSTALL TYPE 316 STAINLESS STEEL BUSHING. ONE SIZE LARGER THAN THE SERVICE.
- ④ INSTALL CORPORATION STOP WITH IRON PIPE THREAD INLET AND COPPER FLARE TUBE NUT OUTLET FOR 1" (SEE STD 502) OR IRON PIPE THREAD OUTLET FOR 2" (SEE STD 503).

GENERAL NOTES

1. ALL CONNECTIONS TO LINED AND COATED STEEL MAINS REQUIRE APPROVAL FROM THE UTILITIES DEPARTMENT.
2. ALL LINING AND COATING DAMAGED OR REMOVED FOR INSTALLATION OF THE SERVICE SHALL BE REPLACED TO ITS ORIGINAL OR NEW CONDITION, WHICHEVER IS SUPERIOR.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 505-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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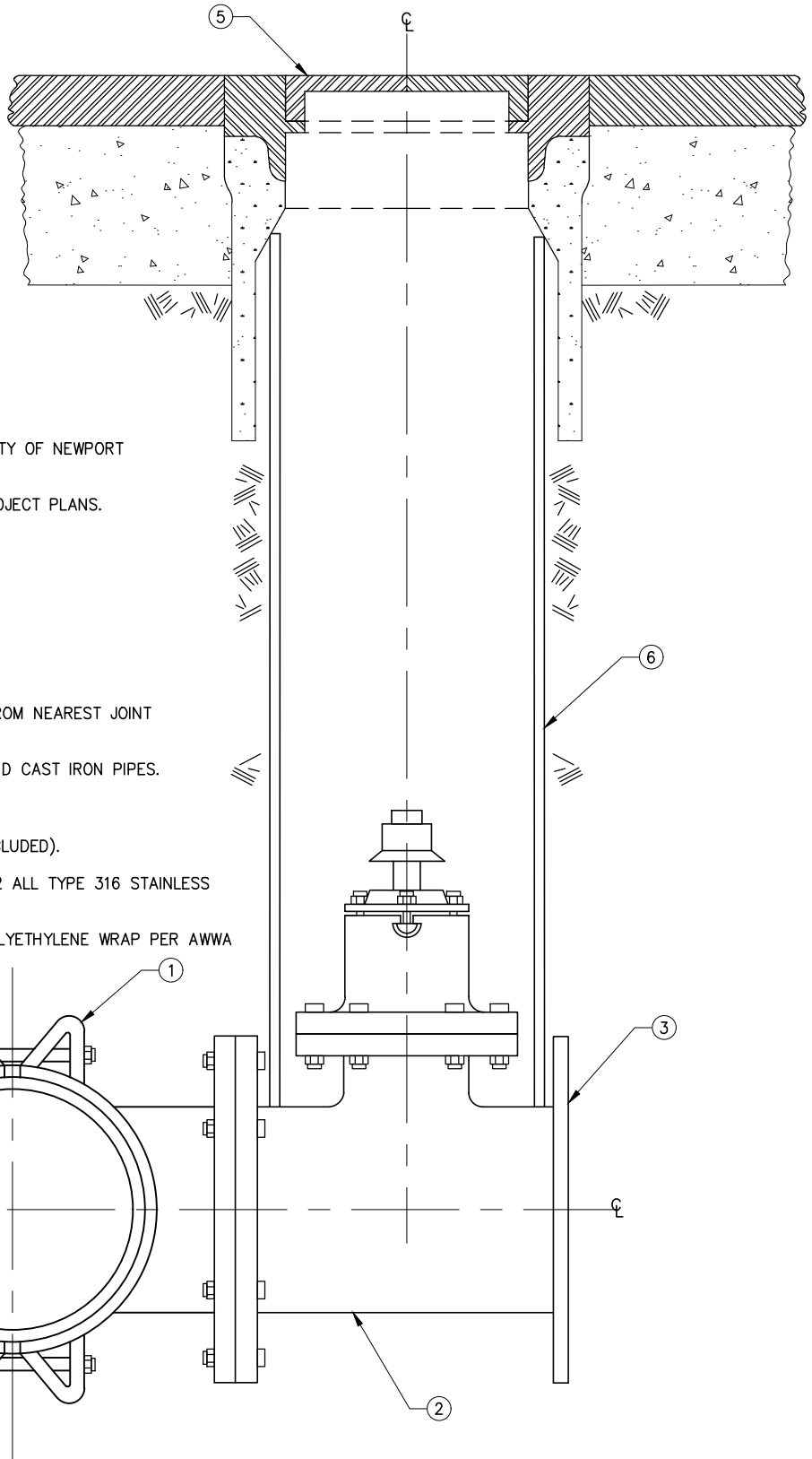
DATE: 11/3/2020

SERVICE TAP TO LINED AND COATED STEEL MAINS

STANDARD DRAWING NO.

510

SHEET 1 OF 1

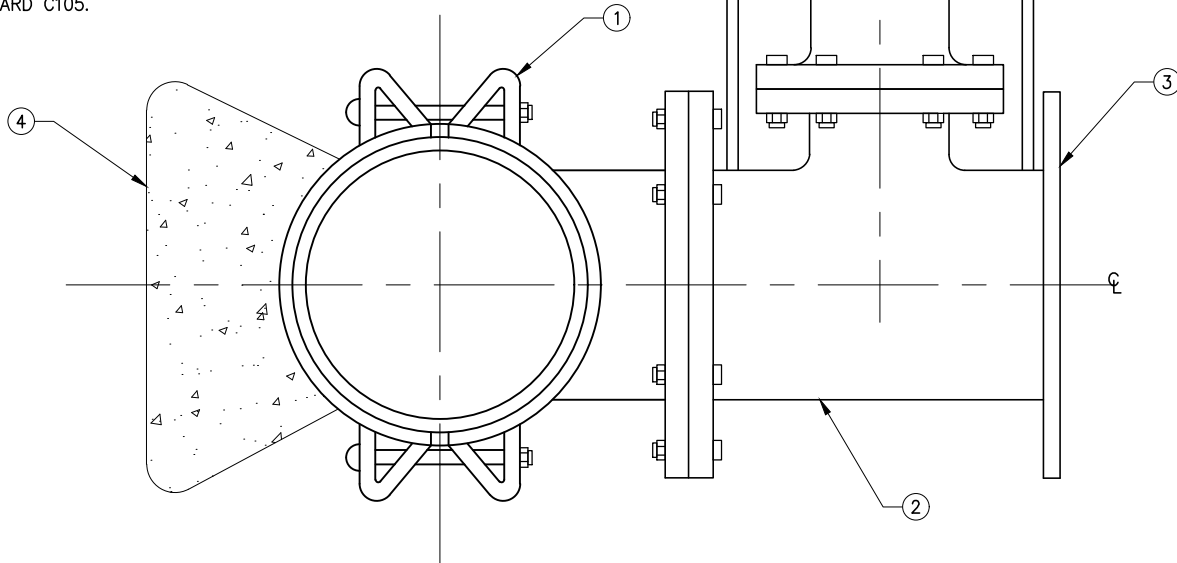


CONSTRUCTION NOTES

- ① INSTALL TAPPING SLEEVE (SEE GENERAL NOTES FOR TAPPING SLEEVE SPECIFICATIONS).
- ② INSTALL RESILIENT WEDGE TAPPING VALVE. REFER TO CITY OF NEWPORT BEACH DESIGN CRITERIA FOR VALVE REQUIREMENTS.
- ③ INSTALL MECHANICAL JOINT OR FLANGED. REFER TO PROJECT PLANS.
- ④ INSTALL THRUST BLOCK PER STD 516-A.
- ⑤ INSTALL VALVE BOX COVER PER STD 513.
- ⑥ 8" DIAMETER SDR-35 PIPE.

GENERAL NOTES

1. ALL TAPPING SLEEVES MUST BE A MINIMUM OF 24" FROM NEAREST JOINT OR SERVICE.
2. TAPPING SLEEVE SHALL NOT BE APPLIED TO STEEL AND CAST IRON PIPES.
3. ALL TAPPING SLEEVES SHALL BE FULL CIRCLE TYPE.
4. ALL SLEEVES SHALL BE STAINLESS STEEL (FLANGE INCLUDED).
5. FOR ALL STANDARD TAPS, USE HYDROMETRIC JCM 432 ALL TYPE 316 STAINLESS STEEL.
6. ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.



FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 507-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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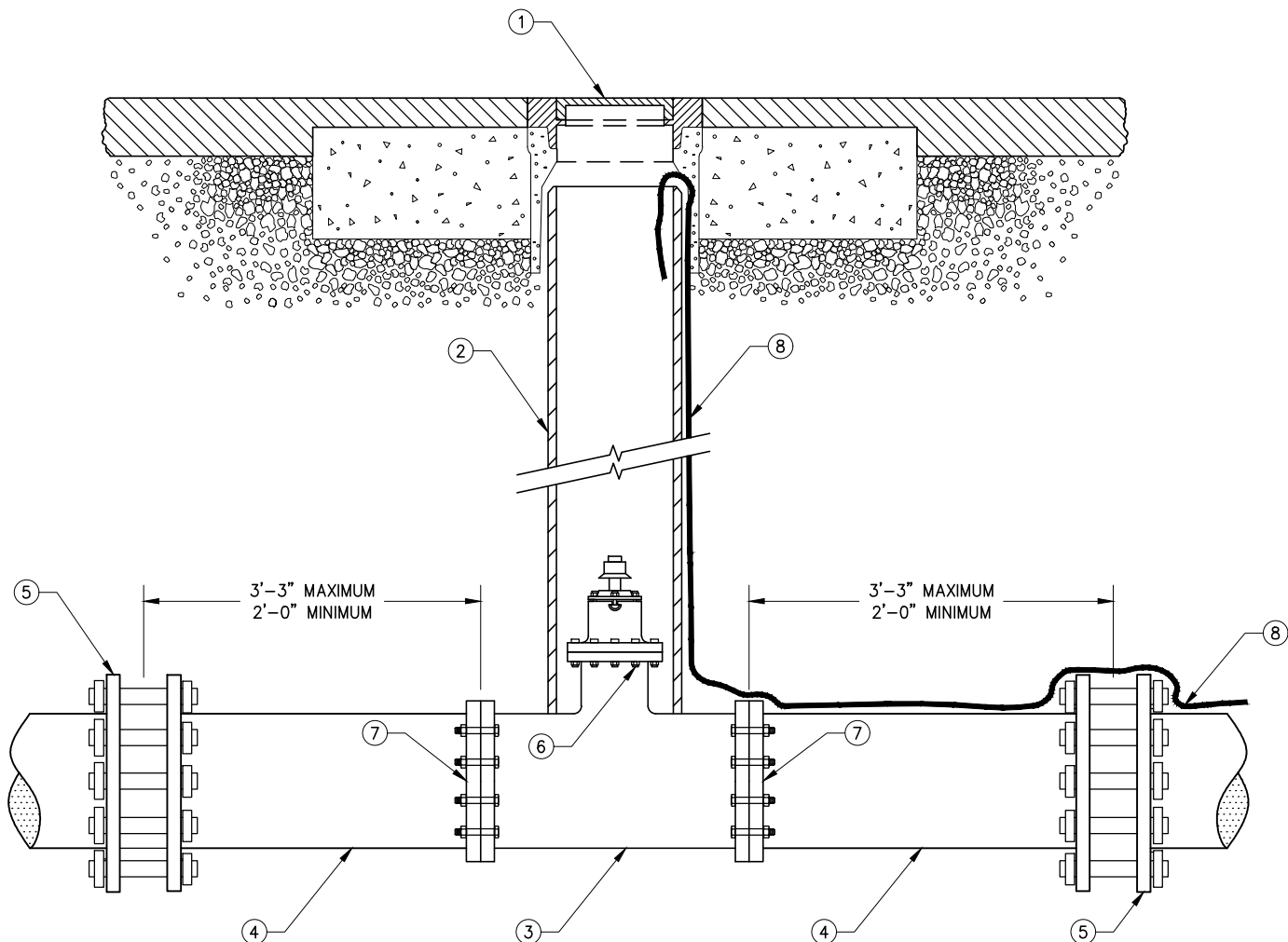
DATE: 11/3/2020

WATER MAIN TAP

STANDARD DRAWING NO.

511

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① INSTALL VALVE BOX COVER PER STD 513.
- ② INSTALL 8" DIAMETER SDR-35 PIPE.
- ③ INSTALL AVK 65 SERIES RESILIENT WEDGE GATE VALVE OR APPROVED EQUAL.
- ④ INSTALL C-900 P.V.C. MOA PIECE.
- ⑤ INSTALL FORD ULTRA-FLEX WIDE-RANGE COUPLING, OR APPROVED EQUAL, (LONG BODY FOR 12" AND ABOVE INSTALLATIONS) IN ACCORDANCE WITH THE STANDARD SPECIAL PROVISIONS. 316 SS NUTS AND BOLTS ON THE COUPLING REQUIRED.
- ⑥ ALL BONNET SCREWS AND CAP NUTS SHALL BE TYPE 316 STAINLESS STEEL.
- ⑦ VALVE WITH MECHANICAL-JOINT ENDS WITH RETAINER GLANDS UNLESS OTHERWISE DESIGNATED ON THE PROJECT PLANS.
- ⑧ THE TRACING WIRE SHALL BE ATTACHED OUTSIDE THE VALVE RISER AND 18" OF WIRE SHALL DROP INTO THE RISER FROM THE VALVE BOX.

GENERAL NOTES

1. ALL VALVES SHALL BE RESILIENT WEDGE GATE VALVES DESIGNED FOR BURIED-SERVICE CONDITION IN ACCORD WITH CITY STANDARDS AND THIS DRAWING UNLESS OTHERWISE APPROVED BY THE UTILITIES DEPARTMENT.
2. VALVES BODY AND GEAR BOX SHALL BE CAST IRON OR DUCTILE IRON.
3. ALL FLANGE BOLTS SHALL BE TYPE 316 STAINLESS STEEL COATED WITH ANTI-SEIZE COMPOUND.
4. BUTTERFLY VALVES MAY BE INSTALLED WITH APPROVAL FROM THE UTILITIES DEPARTMENT.
5. ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 508-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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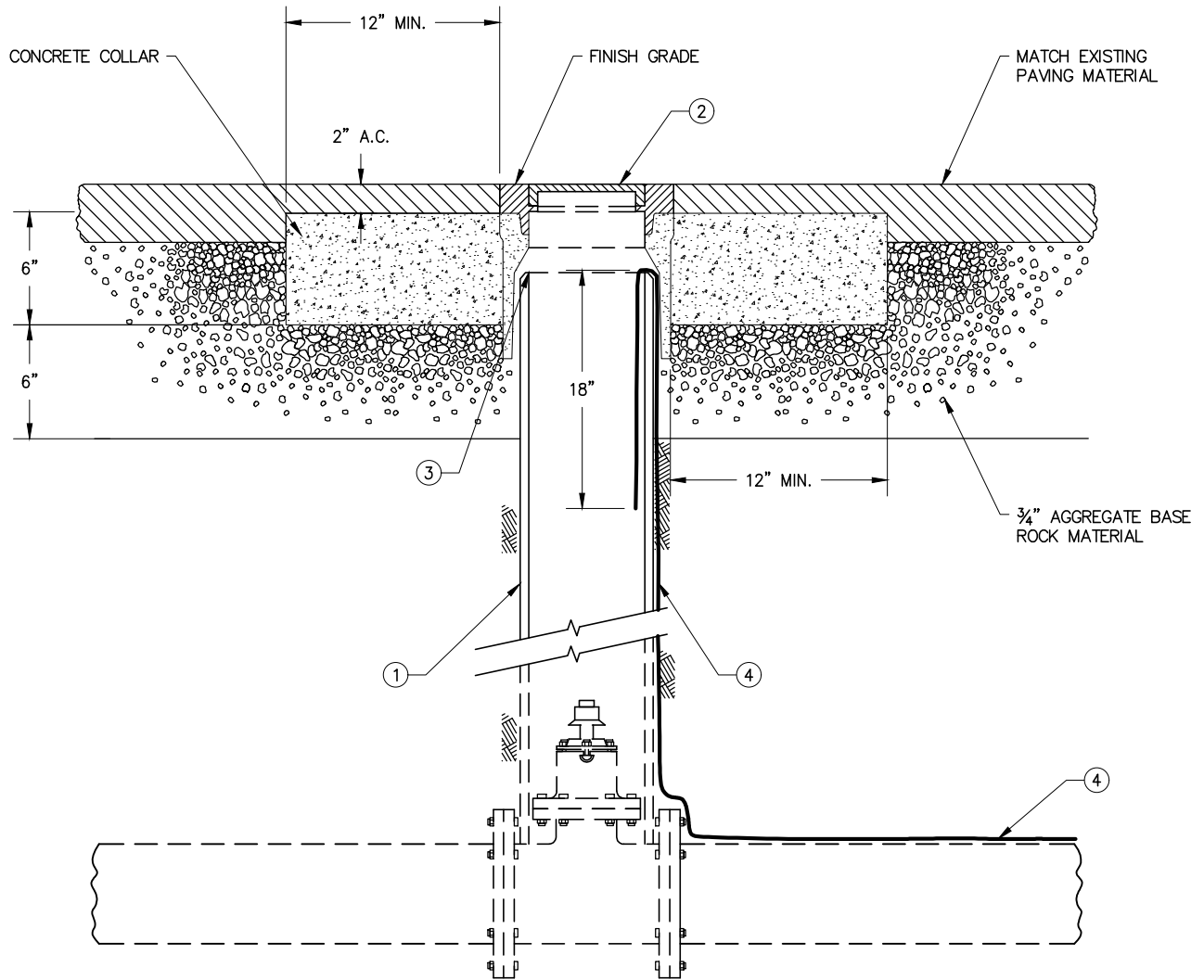
DATE: 11/3/2020

MAIN LINE VALVE

STANDARD DRAWING NO.

512

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① 8" DIAMETER SDR-35 PIPE.
- ② CAST IRON FRAMES AND COVERS SHALL BE TRIANGULAR, BROOKS PRODUCTS NO. 4TT, J&R NO. 4T, OR EISEL ENTERPRISES 1-4, MARKED "NEWPORT WATER".
- ③ THE VALVE BOX SHOULD NOT BE (LOAD) WEIGHT BEARING ON THE VALVE RISER.
- ④ THE TRACING WIRE SHALL BE ATTACHED OUTSIDE THE VALVE RISER AND 18" OF WIRE SHALL DROP INTO THE RISER FROM THE VALVE BOX.

GENERAL NOTES

1. CONCRETE SHALL BE 560-C-3250.
2. PORTIONS OF THIS STANDARD ALSO APPLY TO SEWER CLEANOUTS.
3. ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 511-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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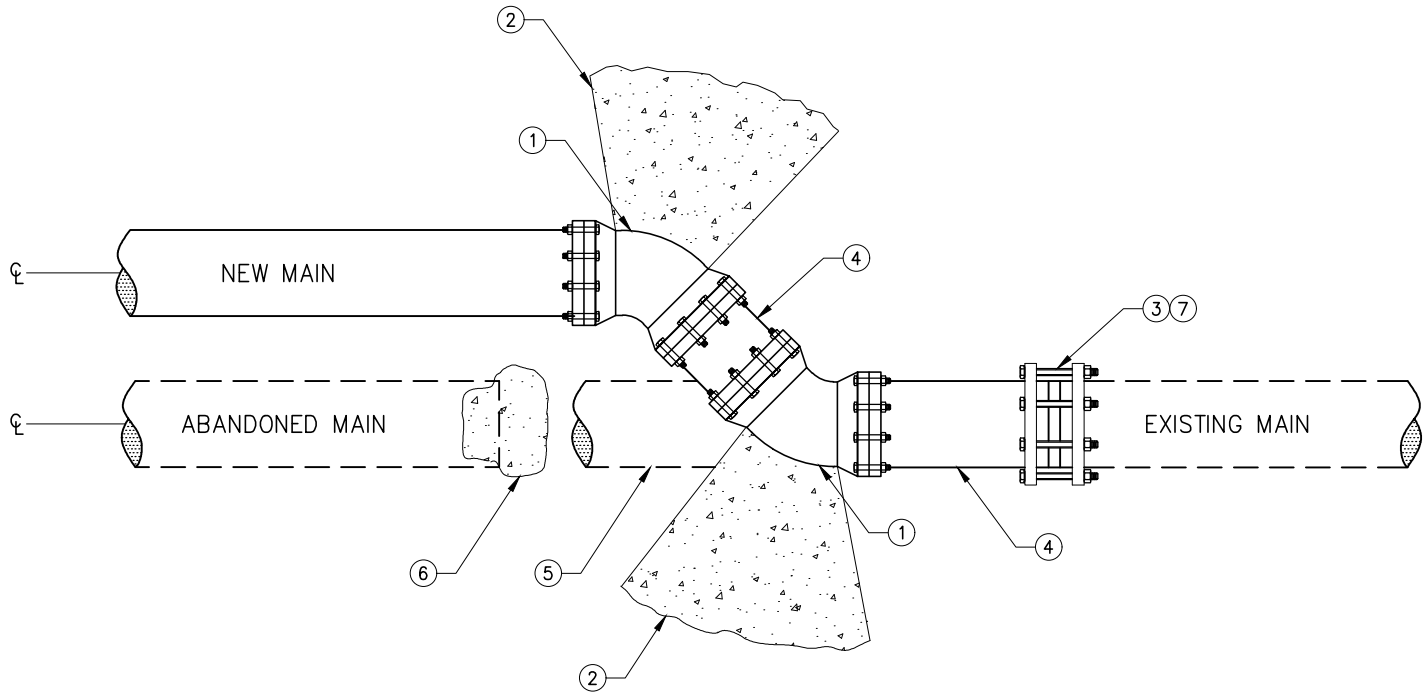
VALVE BOX COVER AND RISER

STANDARD DRAWING NO.

513

SHEET 1 OF 1

* NOTE: IF TOO SHALLOW, USE
THRUST BLOCK PER STD 516-A




PLAN VIEW

CONSTRUCTION NOTES

- ① INSTALL 11 1/4", 22 1/2", OR 45° BEND. MJ XMJ WITH RETAINER GLANDS. NO GALVANIZED BOLTS PERMITTED. 316 SS BOLTS AND NUTS REQUIRED. MJ x MJ MUST BE T10 BOLTS AND FL x FL MUST BE STAINLESS STEEL BOLTS.
- ② INSTALL THRUST BLOCK PER STD 516-A.
- ③ INSTALL FORD ULTRA-FLEX LONG SLEEVE WIDE RANGE COUPLING. ALL COUPLINGS SHALL HAVE TYPE 316 STAINLESS STEEL BOLTS, BE FACTORY EPOXY COATED, AND HAVE CENTER SLEEVES LONGER THAN 9".
- ④ INSTALL PIPE OF APPROPRIATE MATERIAL TYPE TO CONNECT MAIN AND SPECIFIED FITTINGS. PIPE SHALL BE C-900 P.V.C. WITH AN SDR-14 THICKNESS. REFER TO PROJECT PLANS.
- ⑤ REMOVE INTERFERING PIPE AND FITTINGS.
- ⑥ CUT AND PLUG EXISTING WATER MAIN WITH CONCRETE.
- ⑦ ALL BELOW GRADE DUCTILE IRON FITTINGS AND PIPING SHALL BE ENCASED WITH A POLYETHYLENE WRAP PER AWWA STANDARD C105. ADD TO UNDERGROUND INSTALLATION.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 509-L

APP.  51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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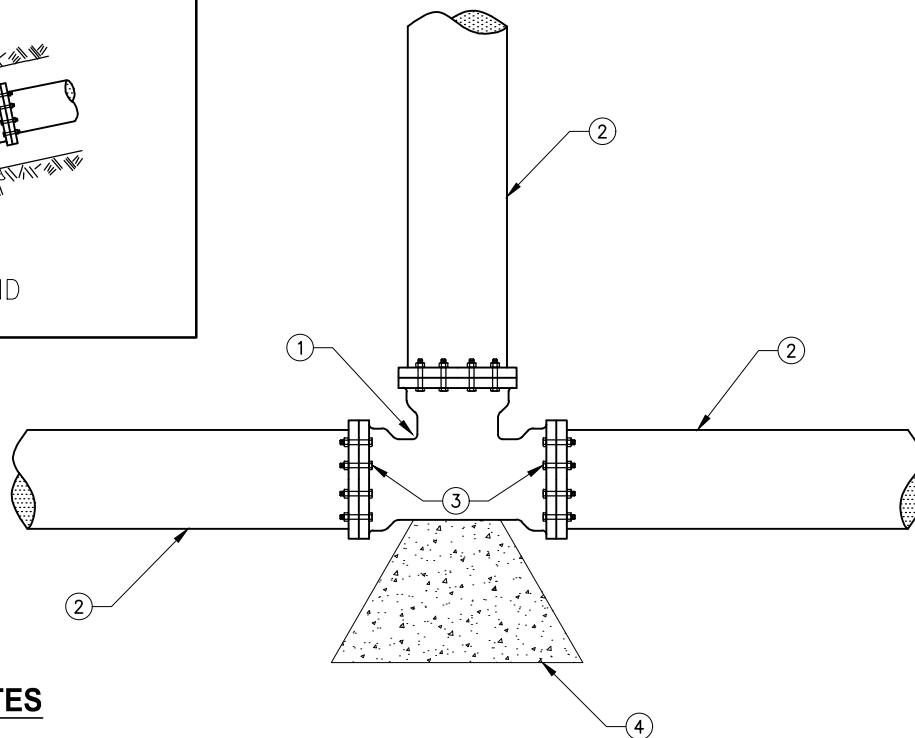
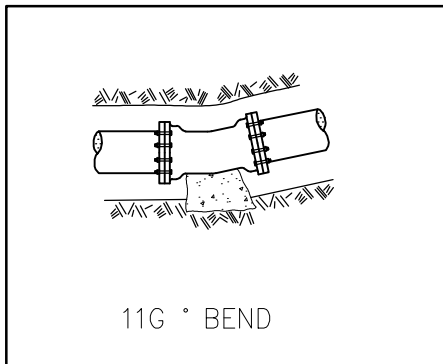
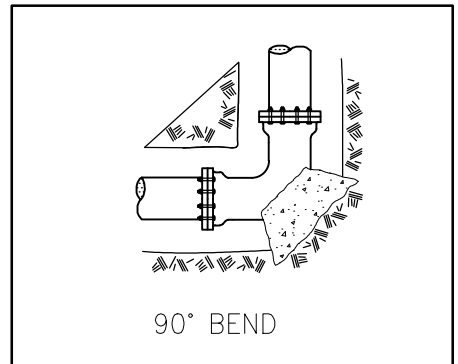
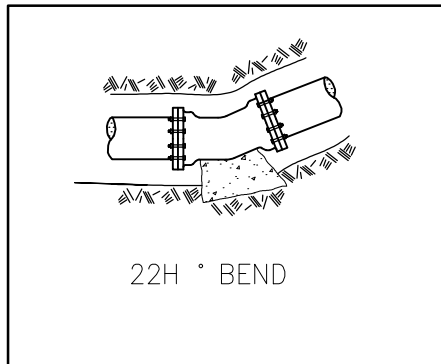
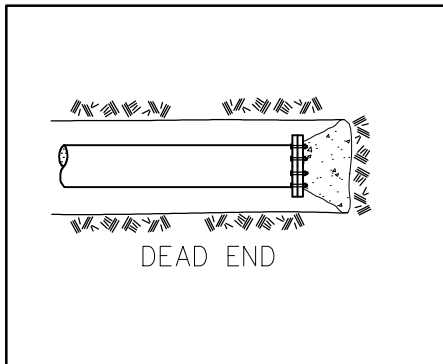
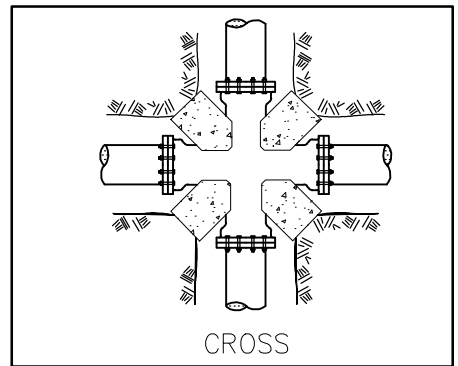
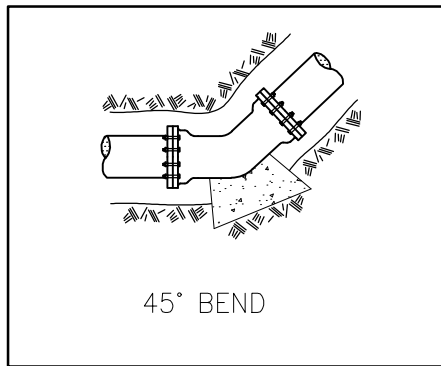
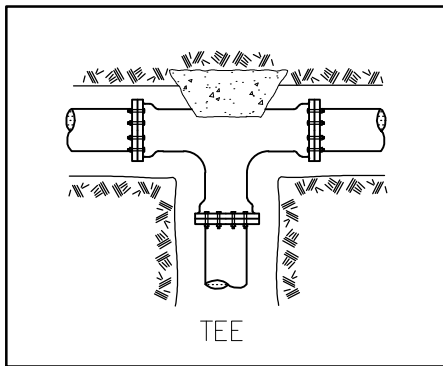
DATE: 11/3/2020

TYPICAL OFFSET WATER MAIN TIE-IN

STANDARD DRAWING NO.

514

SHEET 1 OF 1




CONSTRUCTION NOTES

- ① INSTALL MJ x MJ x MJ TEE WITH RETAINER GLANDS.
- ② INSTALL PVC C-900 MOA PIECE.
- ③ ALL BONNET SCREWS AND CAP NUTS SHALL BE TYPE 316 STAINLESS STEEL.
- ④ THRUST BLOCK PER STD 516-A.

NOTE:

ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

APP.  51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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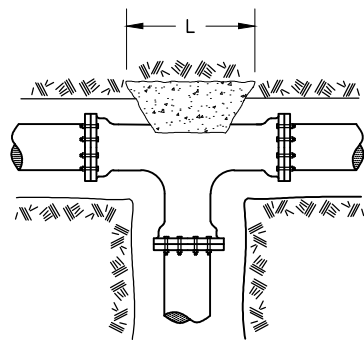
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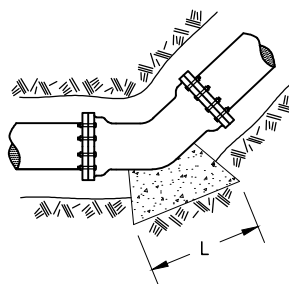
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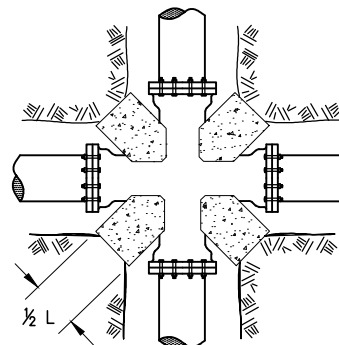
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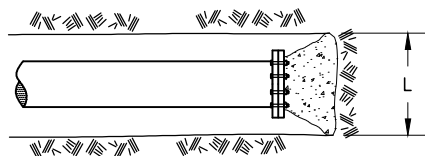
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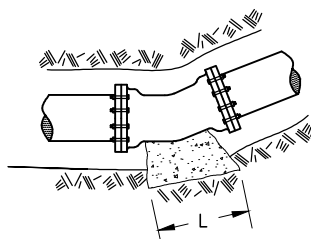
45° BEND



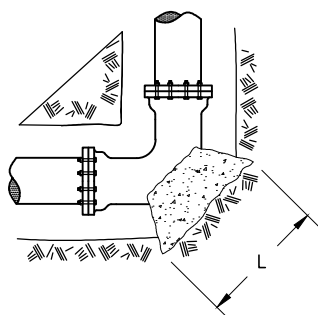
CROSS



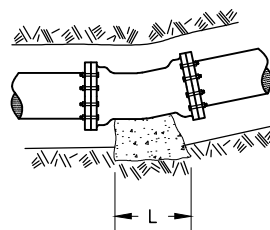
DEAD END



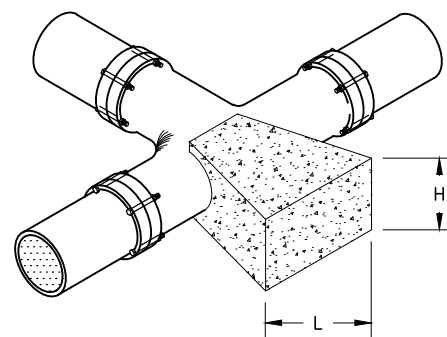
22H° BEND



90° BEND



11G° BEND



TYPICAL
THRUST BLOCK

GENERAL NOTES

1. FORCE MAIN PRESSURE TEST SHALL BE PERFORMED IN ACCORD WITH CONCRETE CURING REQUIREMENTS. CONCRETE SHALL BE 560-C-3250.
2. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED SOIL, BACKFILL COMPACTED TO 100% RELATIVE COMPACTION, OR CLASS 100 E 100 SLURRY.
3. BEARING AREAS $L \times H$ ARE COMPUTED FOR TEST PRESSURES OF 225 PSI IN MAINS LAID IN A COHESIONLESS SOIL ($C=0$) WITH INTERNAL ANGLE OF FRICTION OF 37°, A UNIT WEIGHT OF 110 PCF, AND AT LEAST 36" OF COVER.
4. BEARING AREAS $L \times H$ SHALL BE APPROVED BY THE ENGINEER WHERE MAINS: (A) BEAR AGAINST WEAKER SOIL THAN DESCRIBED ABOVE, (B) HAVE LESS THAN 36" OF COVER, (C) WILL BE TESTED AT MORE THAN 225 PSI OR (D) ARE NOT REPRESENTED BY A FITTING OR SIZE SHOWN HEREON.
5. L IS APPROXIMATELY EQUAL TO H FOR SMALLER THRUST BLOCKS. L IS GREATER THAN H FOR LARGER THRUST BLOCKS. H SHALL NOT EXCEED TRENCH HEIGHT. SEE STD 106 FOR STANDARD TRENCH DIMENSIONS.
6. ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

THRUST BLOCK BEARING AREA $L \times H$ IN SQUARE FEET

FITTING & SIZE	DEAD END	TEE OR CROSS	90° BEND	45° BEND	22H° BEND	11G° BEND
4"	1.7	2.4	2.4	1.3	0.7	0.3
6"	3.7	5.3	5.3	2.9	1.5	0.7
8"	6.7	9.4	9.4	5.1	2.6	1.3
12"	15.0	21.2	21.2	11.5	5.8	2.9
16"	26.6	37.6	37.6	20.4	10.4	5.2
18"	33.7	47.6	47.6	25.8	13.1	6.6
24"	59.9	84.6	84.6	45.8	23.3	11.7
30"	93.6	132.2	132.2	71.5	36.5	18.3

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 510-L-A

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

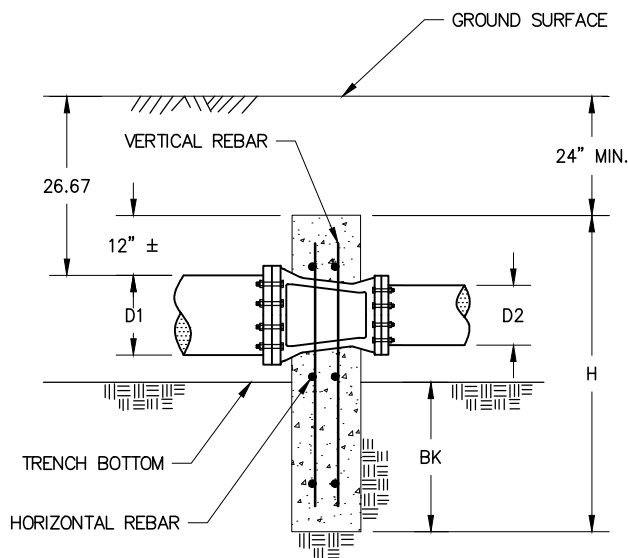
DATE: 11/3/2020

THRUST BLOCKS

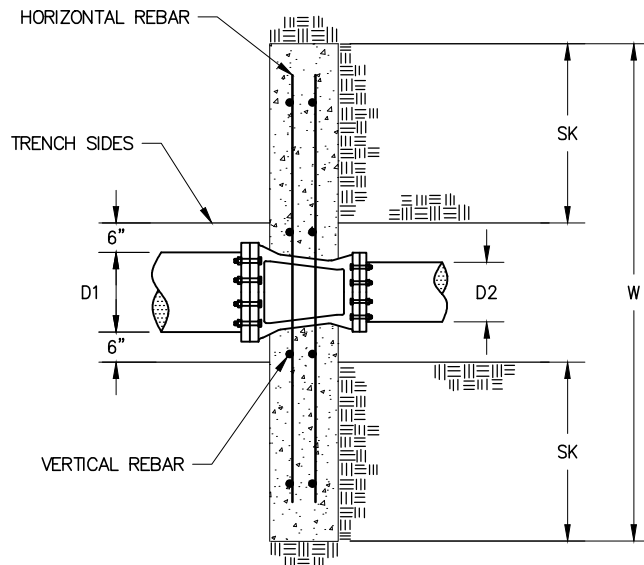
STANDARD DRAWING NO.

516-A

SHEET 1 OF 1



PROFILE VIEW (NOT TO SCALE)



PLAN VIEW (NOT TO SCALE)

GENERAL NOTES

1. THRUST BLOCK CONCRETE SHALL BE 560-C-3250.
2. REINFORCING STEEL SHALL BE GRADE 60 #4 CONFORMING TO ASTM 615, UNLESS OTHERWISE DESIGNED BY A CALIFORNIA REGISTERED PROFESSIONAL ENGINEER. ALL REBARS EXPOSED TO SOIL SHALL BE EPOXY COATED.
3. THRUST BLOCKS SHALL BE KEYED INTO UNDISTURBED SOIL USING THE DIMENSIONS FOR BOTTOM KEY (BK.) AND SIDE KEY (SK.) SPECIFIED IN THE TABLE BELOW.
4. DESIGN VALUES FOR THRUST IN POUNDS ARE FOR A 250 PSI TEST PRESSURE. IN INSTANCES WHERE A TEST PRESSURE HIGHER THAN 250 PSI IS REQUIRED, VALUES GIVEN IN THIS STANDARD DRAWING ARE NOT VALID AND SPECIAL CALCULATIONS SHALL BE PERFORMED.
5. DESIGN VALUES FOR THRUST BLOCK DIMENSIONS ARE CALCULATED ASSUMING A COHESIONLESS SOIL ($C=0$) WITH AN INTERNAL ANGLE OF FRICTION OF 37° AND A UNIT WEIGHT OF 110 PCF. WHEN THE SOIL CONDITIONS UNDER CONSIDERATION INDICATE WEAKER PROPERTIES, VALUES IN THIS STANDARD DO NOT APPLY AND SPECIAL CALCULATIONS SHALL BE PERFORMED.
6. THRUST BLOCK CONCRETE SHALL NOT BE POURED ON PIPE ON EITHER SIDE OF THE REDUCER OR ON ANY FITTING BOLTS.
7. MINIMUM CONCRETE COVER FOR REBARS SHALL BE 3".
8. ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

THRUST BLOCK BEARING AREA L x H IN SQUARE FEET

REDUCER SIZE D1 x D2 (IN.)	THRUST (LBS.)	WIDTH W (IN.)	HEIGHT H (IN.)	BOTTOM KEY BK (IN.)	SIDE KEY SK (IN.)	THICKNESS TH (IN.)
30 x 24	57526	150	98	54	54	30
24 x 18	44532	132	95	48	48	24
18 x 16	12017	78	54	24	24	19
16 x 12	19792	100	54	36	36	18
12 x 10	7775	60	46	24	18	14
12 x 8	14137	84	51	30	30	14
12 x 6	19085	96	57	36	36	14
12 x 4	22619	96	69	42	36	14
10 x 8	6362	58	43	18	18	12
8 x 6	4948	56	29	18	18	11
8 x 4	8482	68	40	24	24	11
6 x 4	3534	42	31	18	12	9

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 510-L-B

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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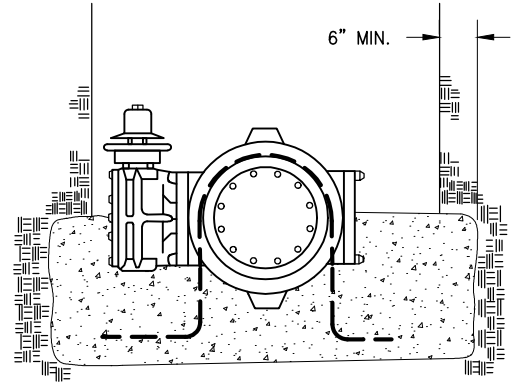
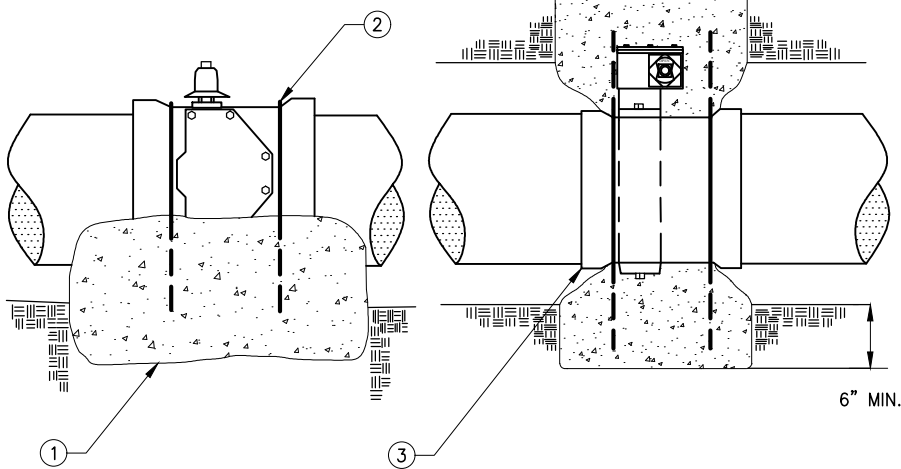
REDUCER THRUST BLOCK

STANDARD DRAWING NO.

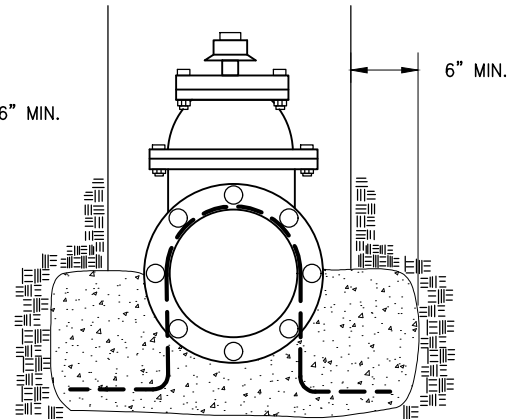
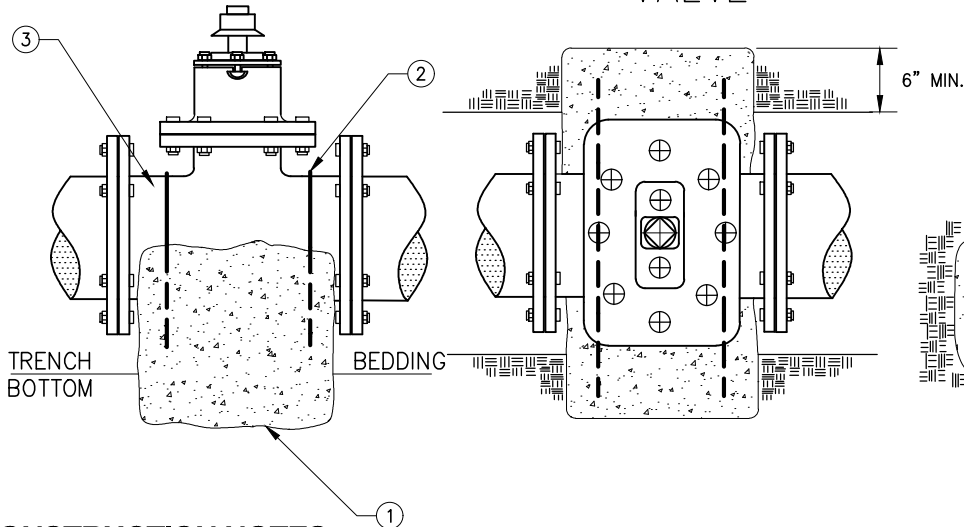
516-B

SHEET 1 OF 1

BUTTERFLY VALVES



GATE VALVES VALVE



CONSTRUCTION NOTES

- ① PORTLAND CEMENT CONCRETE BLOCK MIX 560-C-3250
- ② REBAR GRADE 60, #4. SEE NOTE 1.
- ③ NO CONCRETE SHALL BE POURED ON VALVE TO PIPE JOINT.

GENERAL NOTES

1. REINFORCING STEEL SHALL BE GRADE 60 #4 CONFORMING TO ASTM 615, UNLESS OTHERWISE DESIGNED BY A CALIFORNIA REGISTERED PROFESSIONAL ENGINEER. ALL REBARS EXPOSED TO SOIL SHALL BE EPOXY COATED.
2. THE ANCHOR BLOCK SHALL BE KEYED NO LESS THAN 6" INTO UNDISTURBED SOIL OF THE TRENCH WALL AND NO LESS THAN 6" INTO THE TRENCH BOTTOM. SIZE SHALL BE ACCORDING TO DEAD ENDS ON STD 516-A.
3. ANCHORS ARE TO BE INSTALLED ON ALL VALVES 8" AND LARGER, UNLESS OTHERWISE NOTED ON PLANS.
4. VALVE ANCHORS SHALL NOT BE USED ON VALVES WHICH ARE FLANGED TO TEES OR CROSSES WHICH HAVE THRUST BLOCKS.
5. ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 510-L-C

APP.

James M. Hinkle
CITY ENGINEER

51568
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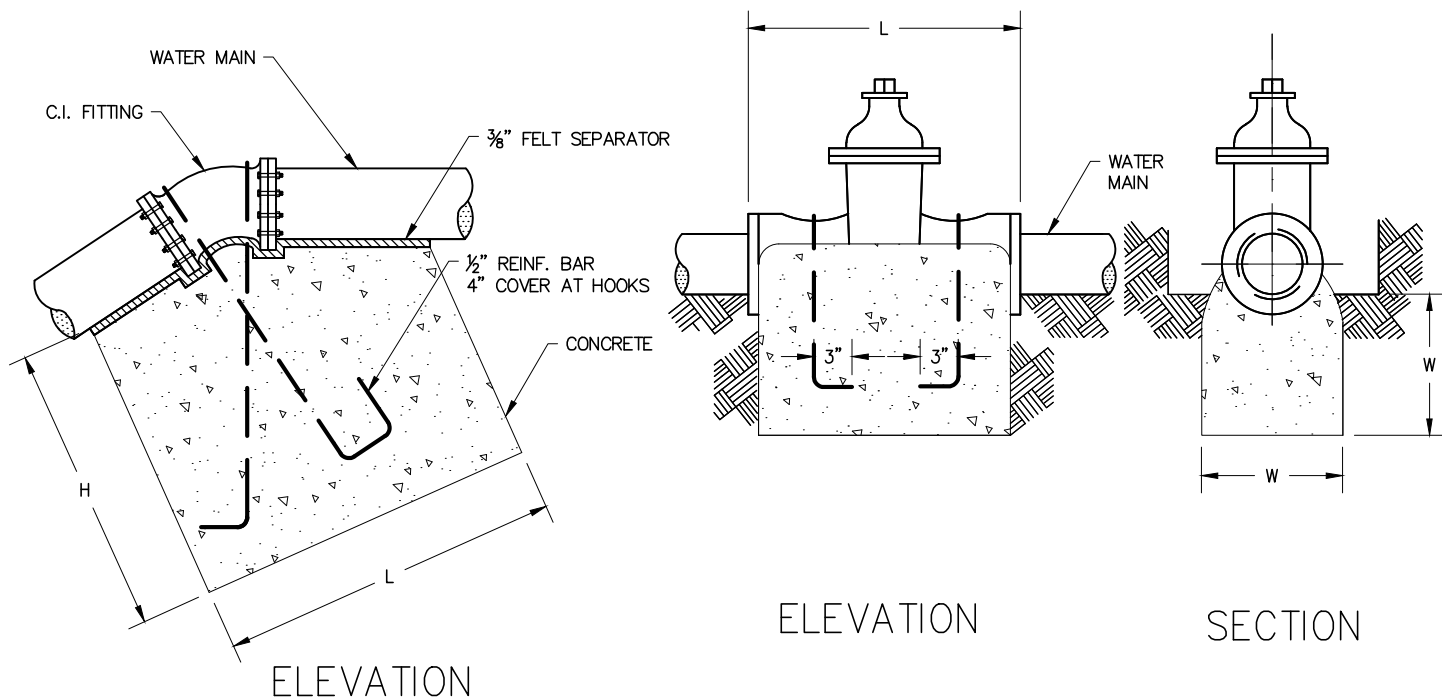
VALVE ANCHOR

STANDARD DRAWING NO.

516-C

SHEET 1 OF 1

ANCHOR BLOCK DIMENSIONS L=H=W IN FEET			
FITTING & SIZE	22-1/2 BENDS	45 BENDS	VALVES
4"	1.9	2.4	1.5
6"	2.5	3.1	2.0
8"	3.1	3.8	2.5
10"	3.5	4.4	3.0
12"	4.0	5.0	3.5
14"	4.4	5.5	4.0
16"	5.0	6.0	4.5
18"	5.3	6.5	5.0



VERTICAL BEND ANCHORS & VALVE ANCHORS

1. WATER MAIN PRESSURE TESTS SHALL BE PERFORMED SUBSEQUENT TO ADEQUATE CONCRETE CURING.
2. ANCHOR BLOCKS, WHERE REQUIRED, SHALL BE POURED AGAINST UNDISTURBED SOIL, BACK FILL COMPACTED TO 100% RELATIVE COMPACTION OR CLASS 100-E-100 SLURRY.
3. DIMENSIONS L, H AND W ARE COMPUTED FOR TEST PRESSURES OF 225 PSI IN FORCE MAINS LAID IN SANDY SILT WITH AT LEAST 3 FEET OF COVER.
4. DIMENSIONS L, H, AND W SHALL BE APPROVED BY THE ENGINEER FOR THOSE WATER MAINS WHICH (A) ARE NOT POURED AGAINST UNDISTURBED SOIL, COMPACTED BACK FILL OR SLURRY, (B) WILL BE TESTED TO MORE THAN 225 PSI, OR (C) ARE NOT REPRESENTED BY A FITTING OR SIZE SHOWN HEREON.
5. JOINT FASTENERS SHALL NOT BE EMBEDDED IN CONCRETE.
6. REINFORCING STEEL SHALL BE GRADE 60 #4 CONFORMING TO ASTM 615, UNLESS OTHERWISE DESIGNED BY A CALIFORNIA REGISTERED PROFESSIONAL ENGINEER. ALL REBARS EXPOSED TO SOIL SHALL BE EPOXY COATED.
7. NO ANCHOR BLOCKS SHALL BE REQUIRED FOR VALVES IN WATER MAINS LESS THAN 8" DIAMETER.
8. ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 510-L-D

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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DATE: 11/3/2020

ANCHOR BLOCK DETAIL I

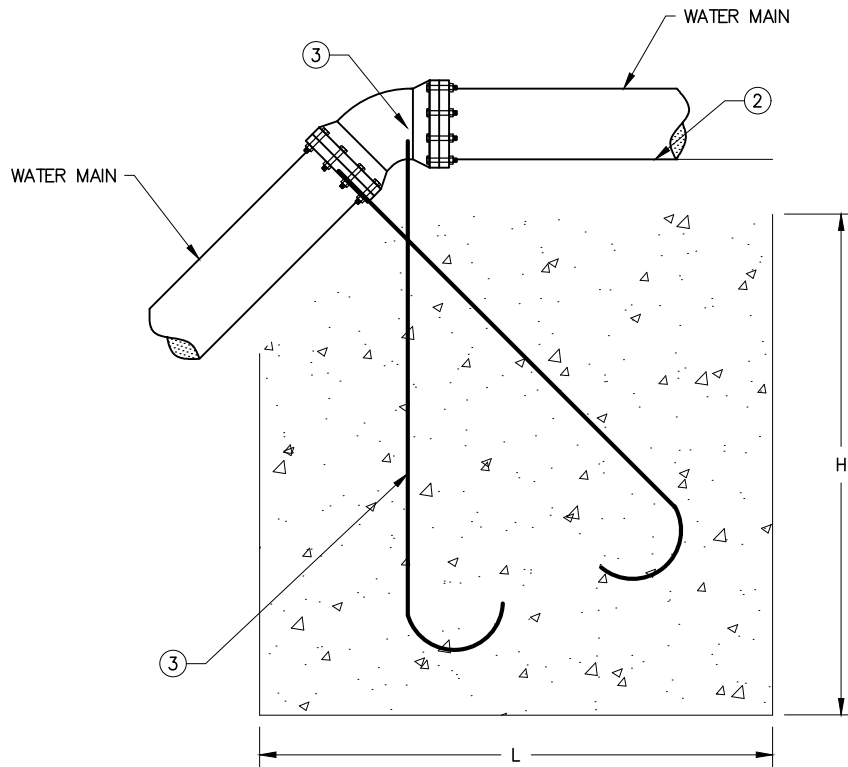
STANDARD DRAWING NO.

516-D

SHEET 1 OF 1

ANCHOR BLOCK DIMENSIONS L=H=W IN FT.

FITTING & SIZE	22½° BEND	45° BEND
4"	1.9	2.4
6"	2.5	3.1
8"	3.1	3.8
10"	3.5	4.4
12"	4.0	5.0
14"	4.4	5.5
16"	5.0	6.0
18"	5.3	6.5



VERTICAL BEND ANCHORS

CONSTRUCTION NOTES

- ① ½" DIAMETER REINFORCING STEEL WITH 4" MINIMUM CONCRETE COVER AT HOOKS.
- ② ⅜" THICK FELT PAPER SEPARATOR BARRIER.
- ③ ALL REBAR EXPOSED TO THE SOIL SHALL BE EPOXY COATED.

GENERAL NOTES

1. WATER MAIN PRESSURE TESTS SHALL BE PERFORMED SUBSEQUENT TO ADEQUATE CONCRETE CURING.
2. ANCHOR BLOCKS, WHERE REQUIRED, SHALL BE POURED AGAINST UNDISTURBED SOIL, BACKFILL COMPACTED TO 100% RELATIVE COMPACTION OR CLASS 100-E-100 SLURRY.
3. DIMENSIONS L, H, AND W ARE COMPUTED FOR TEST PRESSURES OF 225 PSI IN FORCE MAINS LAID IN SANDY SILT WITH AT LEAST 3 FEET OF COVER.
4. DIMENSIONS L, H, AND W SHALL BE APPROVED BY THE ENGINEER FOR THOSE WATER MAINS WHICH (A) ARE NOT POURED AGAINST UNDISTURBED SOIL, COMPACTED BACKFILL, OR SLURRY; (B) WILL BE TESTED TO MORE THAN 225 PSI; OR (C) ARE NOT REPRESENTED BY A FITTING SIZE SHOWN HEREON.
5. JOINT FASTENERS SHALL NOT BE EMBEDDED IN CONCRETE.
6. REINFORCING STEEL SHALL BE GRADE 60 #4 CONFORMING TO ASTM 615, UNLESS OTHERWISE DESIGNED BY A CALIFORNIA REGISTERED PROFESSIONAL ENGINEER. ALL REBARS EXPOSED TO SOIL SHALL BE EPOXY COATED.
7. ALL DUCTILE IRON FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 510-L-E

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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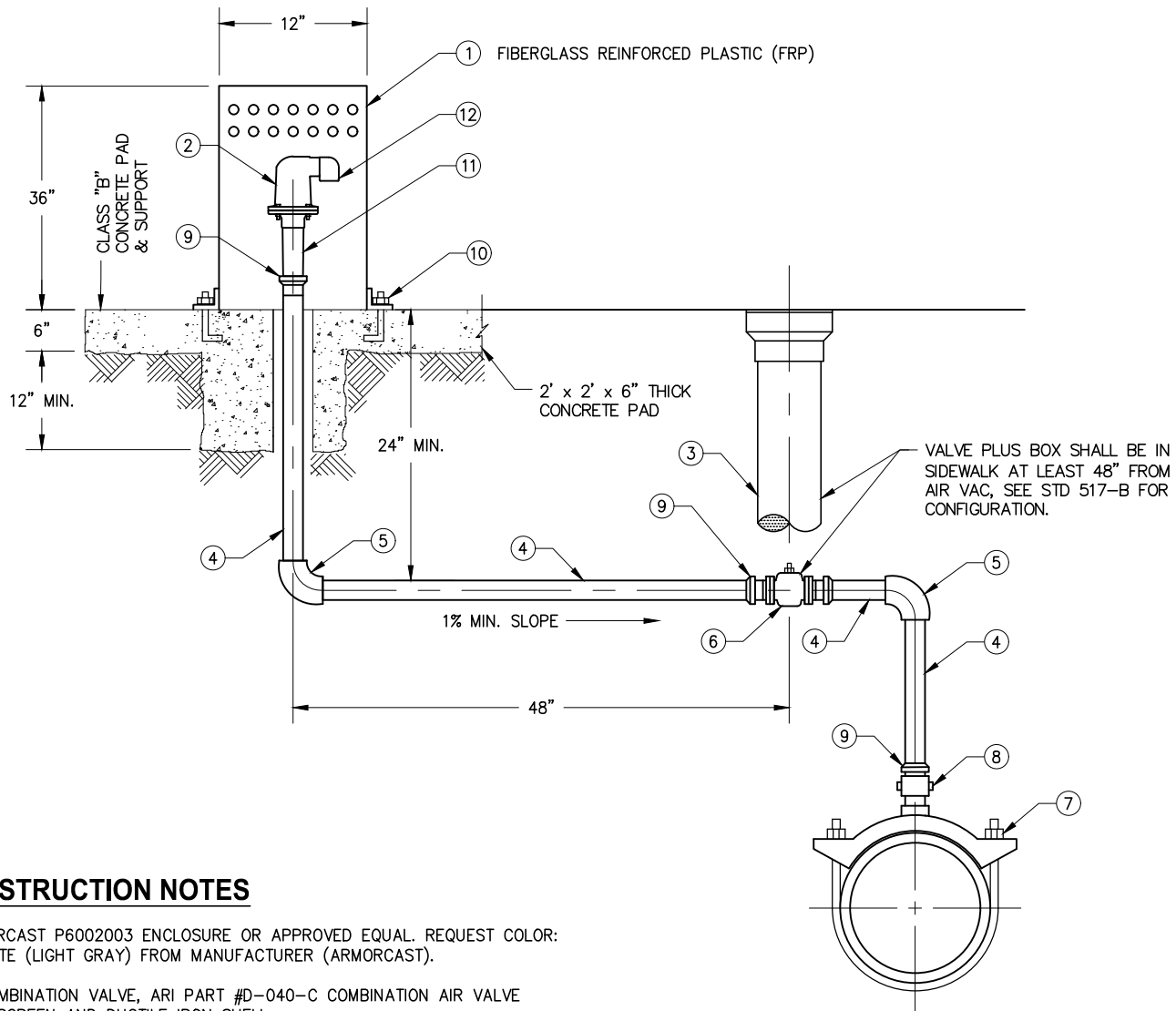
DATE: 11/3/2020

ANCHOR BLOCK DETAIL II

STANDARD DRAWING NO.

516-E

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① ARMORCAST P6002003 ENCLOSURE OR APPROVED EQUAL. REQUEST COLOR: GRANITE (LIGHT GRAY) FROM MANUFACTURER (ARMORCAST).
- ② 1" COMBINATION VALVE, ARI PART #D-040-C COMBINATION AIR VALVE WITH SCREEN AND DUCTILE IRON SHELL.
- ③ INSTALL VALVE BOX COVER AND RISER PER STD 513.
- ④ INSTALL 1" COPPER TUBING TYPE "K"
- ⑤ INSTALL 1" 90° WROUGHT COPPER ELBOW.
- ⑥ INSTALL 1" BRONZE BALL VALVE, JONES J-1995 WITH J-1901W 2" SQUARE OPERATING NUT.
- ⑦ INSTALL BRONZE DOUBLE STRAP SERVICE SADDLE, JONES J-979 OR FORD F202B WITH C.C. THREADS. WRAP IN (10 MIL) THICK PLASTIC SHEETING.
- ⑧ INSTALL 1" CORP. STOP, IP THREAD INLET X FIP OUTLET, JONES J-1500.
- ⑨ INSTALL WROUGHT FEMALE ADAPTER. (COPPER X FEMALE NPT).
- ⑩ INSTALL 1/2" DIAMETER STAINLESS STEEL ANCHOR BOLTS SET IN CONCRETE SLAB.
- ⑪ INSTALL 1" THREADED BRASS NIPPLE, MIP, METER FLANGE ONE END, USA.
- ⑫ OUTLET MUST BE SCREENED.

GENERAL NOTES

1. ALL COPPER FITTINGS SHALL BE SILVER SOLDERED. CONCRETE SHALL BE 560-C-3250.
2. REINFORCE CONCRETE SLAB WITH W1.2 x W1.2 WELD WIRE MESH.
3. ASSEMBLY SHALL BE LOCATED SO AS TO HAVE THE MIN. IMPACT ON PEDESTRIAN TRAFFIC. USE "ALTERNATE ORIENTATION" IN SIDEWALK AREAS. WHERE SPACE PERMITS, SET IN BACK OF SIDEWALK. FOR ALTERNATE ORIENTATION, REFER TO STD 517-B. PRIOR TO INSTALLATION, ALL AIR VAC LOCATIONS SHALL BE APPROVED BY UTILITIES DEPARTMENT OR PUBLIC WORKS INSPECTOR.
4. VALVE CAN FINISH SHALL BE EPOXY COATED WHITE.
5. INSTALL DOWNWARD FACING SCREENED VENT.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 515-L-A

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James M. Hinkle
CITY ENGINEER

51568
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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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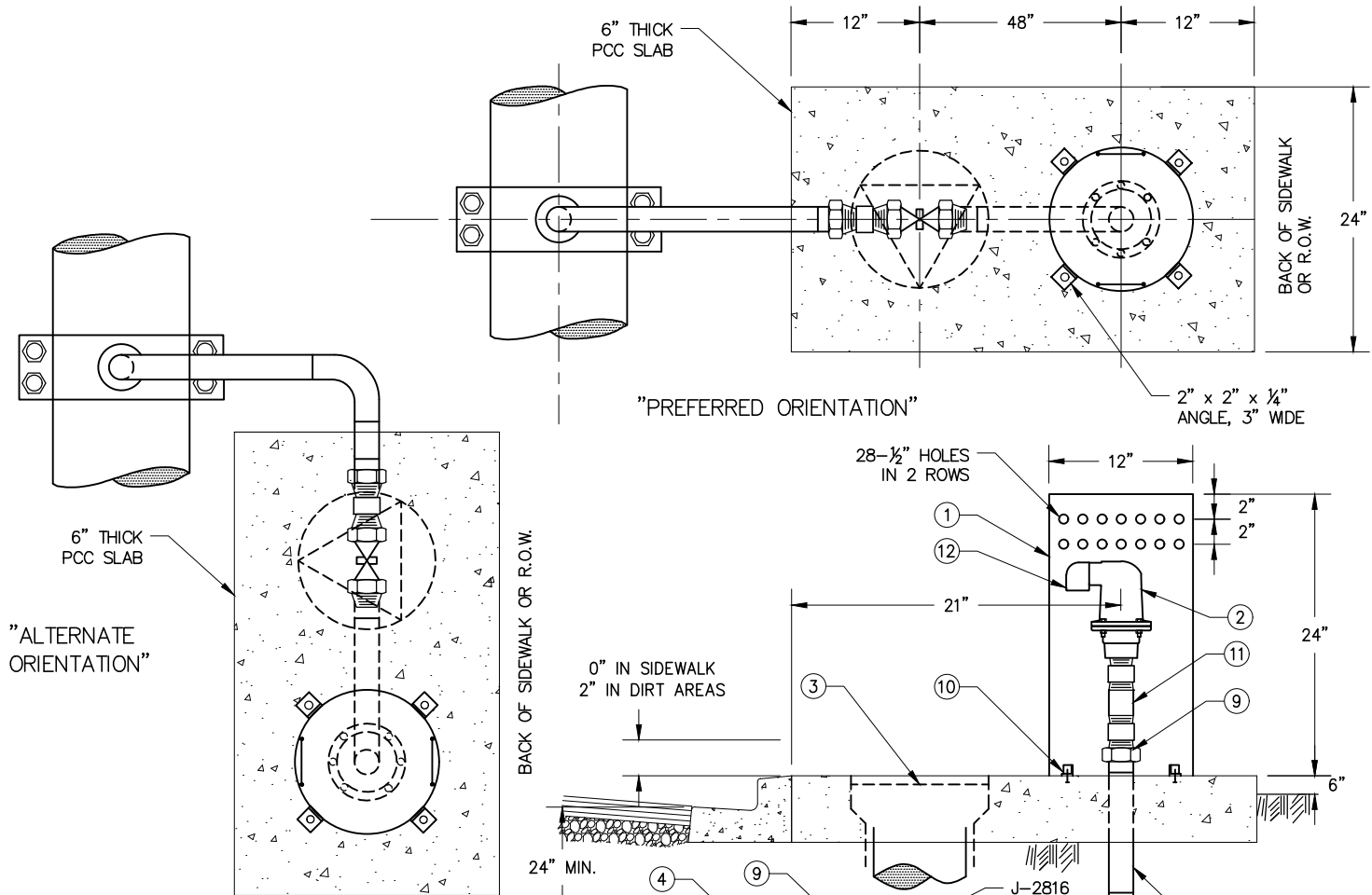
DATE: 11/3/2020

1" COMBINATION AIR-RELEASE VALVE ASSEMBLY

STANDARD DRAWING NO.

517-A

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① THE ARMORCAST P6002003 ENCLOSURE, OR APPROVED EQUAL, 12" x 24" ENCLOSURE IS MADE FROM 10 GAUGE MATERIAL CYLINDER AND 3/16" LID. HOLES ARE PLACED EVENLY IN 2 ROWS, 2 DROP HANDLES, AND 4 WELD ON LEGS. THE CAN SHALL BE GRANITE (LIGHT GRAY) COLOR FROM MANUFACTURER (ARMORCAST).
- ② 2" COMBINATION VALVE. ARI PART #D-040-C COMBINATION AIR VALVE WITH SCREEN AND DUCTILE IRON SHELL, OR APPROVED EQUAL.
- ③ VALVE BOX, COVER AND RISER PER STD 513.
- ④ 2" COPPER TUBING TYPE "K."
- ⑤ 2" 90° WROUGHT COPPER ELBOW.
- ⑥ 2" BRONZE BALL VALVE, JONES E-1955 MIP x MIP.
- ⑦ BRONZE DOUBLE STRAP SERVICE SADDLE, JONES J-979 OR FORD F202B WITH I.P. THREAD. FOR PVC, USE J-969 SERIES OR 202BS. STAINLESS STEEL SERVICE SADDLE SHALL BE WRAPPED IN 10 MIL THICK PLASTIC WRAP.
- ⑧ 2" CORP. STOP, MIP x MIP, JONES J-1943 OR FORD FB-500-7.
- ⑨ 2" COPPER ADAPTOR, MALE NPT.
- ⑩ 1/2" DIAMETER STAINLESS STEEL ANCHOR BOLTS SET IN CONCRETE SLAB.
- ⑪ 2" SCHEDULE 80 P.V.C. THREADED NIPPLE, MALE x MALE.
- ⑫ OUTLET MUST BE SCREENED.
- ⑬ 2" BRASS COUPLING, FIP x FIP. MADE IN USA. REFER TO STD 504.

GENERAL NOTES

1. ALL COPPER FITTING SHALL BE SILVER SOLDERED.
2. REINFORCE CONCRETE SLAB WITH W1.2 X W1.2 WELD WIRE MESH.
3. VALVE CAN FINISH SHALL BE EPOXY COATED WHITE.
4. INSTALL DOWNWARD FACING SCREENED VENT.
5. ADA MINIMUM CLEARANCE SHALL BE MAINTAINED AT ALL TIMES.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 515-L

APP. *James M. Hinkle* 51568 11/24/2020
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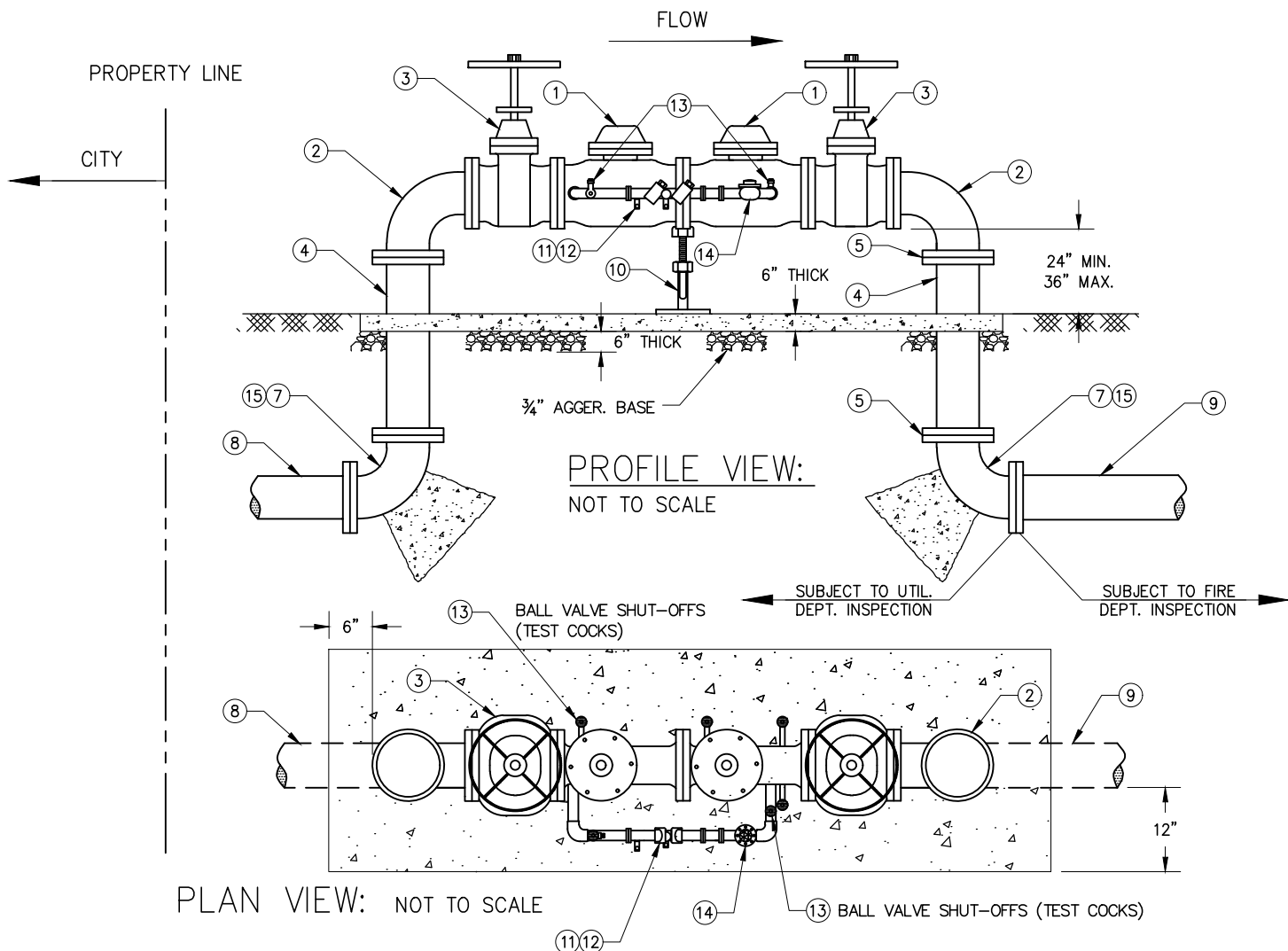
DATE: 11/3/2020

2" COMBINATION AIR-RELEASE VALVE ASSEMBLY

STANDARD DRAWING NO.

517-B

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① APPROVED DOUBLE CHECK DETECTOR ASSEMBLY. REFER TO UNIVERSITY OF SOUTHERN CALIFORNIA APPROVED LIST.
- ② LONG RADIUS 90° BEND, FE x FE, CEMENT LINED D.I.
- ③ RESILIENT WEDGE GATE VALVE, OS & Y W/ FLANGED ENDS.
- ④ D.I.P. MORTAR LINED SPOOL PIECE (FE).
- ⑤ 150 LB. ANSI RATED FLANGE. FABRICATED INTEGRALLY WITH SPOOL.
- ⑥ 6" THICK CONCRETE SLAB. REINFORCED WITH W1.4 x W1.4 WELD WIRE MESH. CONCRETE SHALL BE C-560-3250 MIX.
- ⑦ LONG RADIUS 90° BEND, CEMENT LINED D.I., FE x FE OR FE x MJ ENDS W/ RETAINER GLANDS.
- ⑧ C-900 PVC CLASS 200.
- ⑨ CONSUMER PIPING AWWA APPROVED POTABLE WATER PIPE MATERIAL, C-900 PVC CLASS 200.
- ⑩ ADJUSTABLE PIPE SUPPORT PER STD 521.
- ⑪ BYPASS DOUBLE, SPRING LOADED, POPPET CHECK VALVE ASSEMBLY WITH MULTIPLE TEST COCKS.
- ⑫ ASSEMBLY MUST BE MATCHED TO THE MAIN LINE ASSEMBLY TO PROVIDE LOWER HEAD LOSS.
- ⑬ BRONZE BODY, RUBBER SEATED BALL VALVE SHUT-OFF WITH LEVER OPERATOR.
- ⑭ MAGNETIC DRIVE, LOW HEAD LOSS, BYPASS METER CAPABLE OF READING FLOWS FROM 1/4 TO 20 GPM. REGISTER SHALL RECORD FLOWS IN UNITS OF CUBIC FEET. MUELLER/HERSEY AMI METER.
- ⑮ INSTALL THRUST BLOCK PER STD 516-A.

GENERAL NOTES

1. ALL ABOVE GRADE PIPING SHALL BE PAINTED WITH AN ALKYD ENAMEL PAINT SYSTEM CONSISTING OF A 2 MIL PRIMER COAT AND TWO (2) COATS OF 2 MILS (EACH) HIGH GLOSS ENAMEL. COLOR SHALL BE DETERMINED BY THE UTILITIES DEPARTMENT.
2. ALL BELOW GRADE DUCTILE IRON FITTINGS SHALL BE C-110. ALL BELOW GRADE DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED IN ACCORDANCE WITH AWWA STANDARDS IN AN 8 MIL POLYETHYLENE WRAP.
3. ALL FLANGE BOLTS SHALL BE TYPE 316 STAINLESS STEEL. MECHANICAL JOINT BOLTS SHALL BE MANUFACTURED FROM EITHER MALLEABLE IRON OR SELF-WEATHERING CORTEN STEEL.
4. REDUCED PRESSURE BACKFLOW ASSEMBLY MAY BE REQUIRED AT THE DIRECTION OF THE UTILITIES DEPARTMENT.
5. 10-GAUGE TRACING WIRE MUST BE USED FOR ALL C-900 APPLICATIONS.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 517-L

APP. *James M. Hinkle* 51568
CITY ENGINEER RCE

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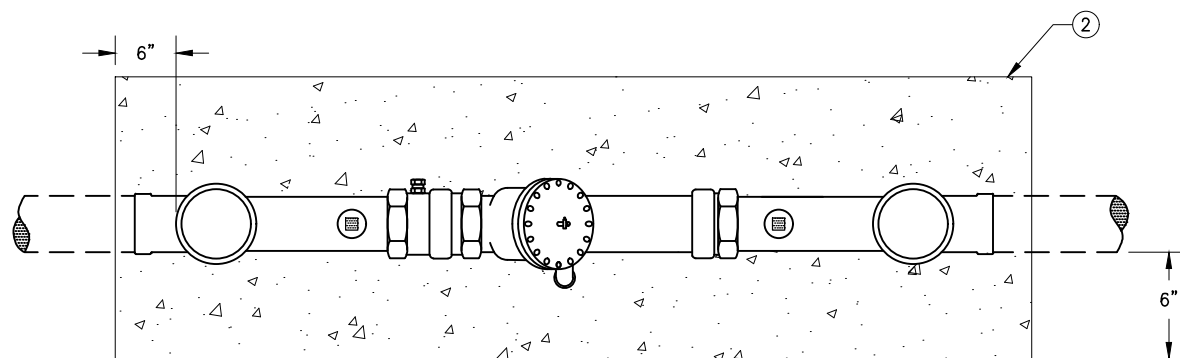
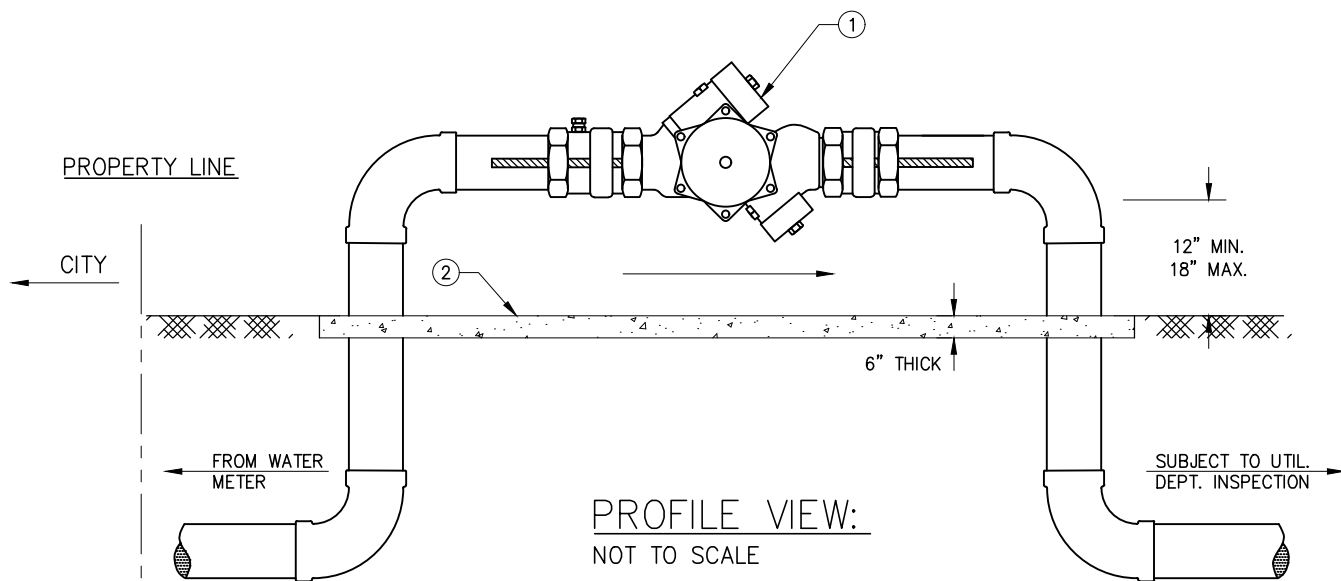
DATE: 11/3/2020

3" AND LARGER DOUBLE CHECK DETECTOR BACKFLOW PREVENTION ASSEMBLY

STANDARD DRAWING NO.

518

SHEET 1 OF 1



PLAN VIEW:
NOT TO SCALE

CONSTRUCTION NOTES

- ① REDUCED PRESSURE PRINCIPAL BACKFLOW AND DOUBLE CHECK PREVENTION ASSEMBLY. DEVICE SHALL BE APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC) FOUNDATION FOR THE CROSS-CONNECTION AND HYDRAULIC RESEARCH APPROVED LIST (WWW.USC.EDU/DEPT/FCCCHR/LIST.HTML).
- ② 6" THICK CONCRETE PAD, WHERE INSTALLATION IS NOT WITHIN A CONCRETE AREA. REINFORCED WITH W1.4 X W1.4 WELD WIRE MESH. CONCRETE MIX SHALL BE 560-C-3250.

GENERAL NOTES

1. ALL BACKFLOW PREVENTION DEVICES SHALL BE LOCATED ABOVE GROUND, AND INSTALLED AS CLOSE AS PRACTICAL TO THE WATER METER AND SHALL BE INSTALLED IN A LOCATION THAT IS READILY ACCESSIBLE FOR TESTING AND MAINTENANCE AS APPROVED BY THE UTILITIES DEPARTMENT. BACKFLOW DEVICES SHALL NOT BE INSTALLED ON CITY PROPERTY.
2. IMMEDIATELY AFTER INSTALLATION, RELOCATION OR REPAIR, ALL BACKFLOW PREVENTION DEVICES SHALL BE TESTED BY A CERTIFIED TESTER APPROVED BY THE CITY. NO SERVICE SHALL BE TURNED ON UNTIL THE DEVICE IS TESTED AND CERTIFIED AFTER INSTALLATION.
3. RISERS AND TUBING SHALL BE TYPE "K" RIGID COPPER AND ALL FITTINGS SHALL BE SOLDER-JOINT TYPE (OR THREADED BRASS) PER UNIFORM PLUMBING CODE.
4. CITY MAY REQUIRE AN APPROVED ENCLOSURE AROUND BACKFLOW.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 520-L-A

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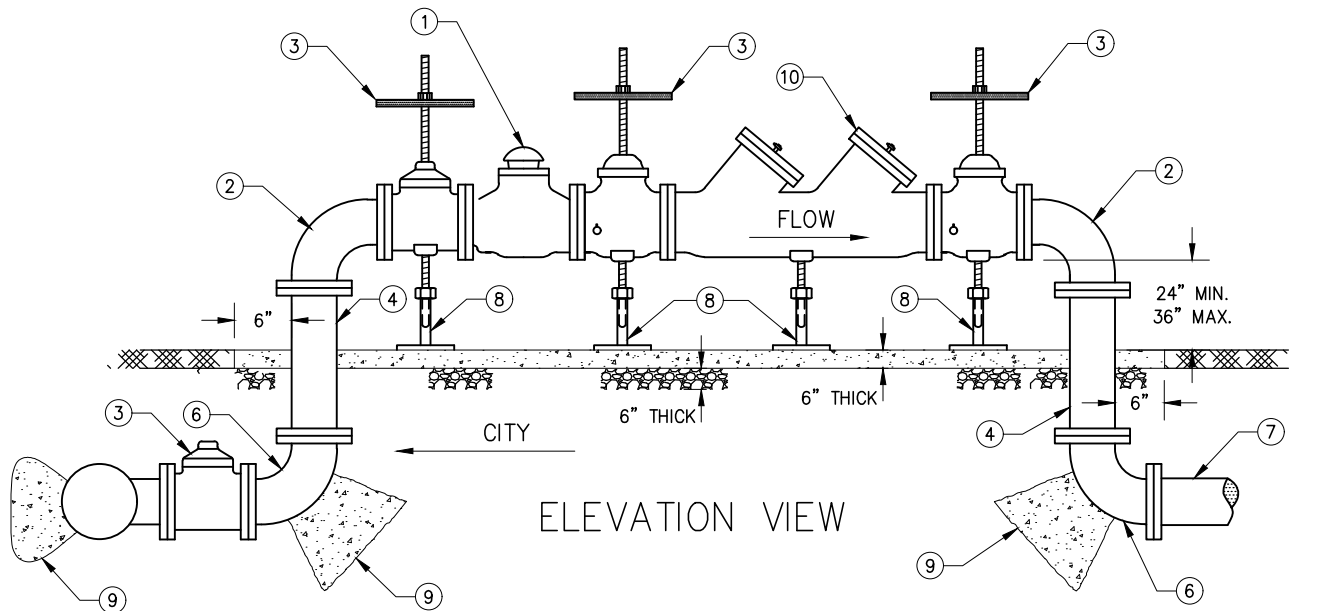
DATE: 11/3/2020

1" THROUGH 2" REDUCED PRESSURE PRINCIPLE AND DOUBLE CHECK BACKFLOW DEVICE

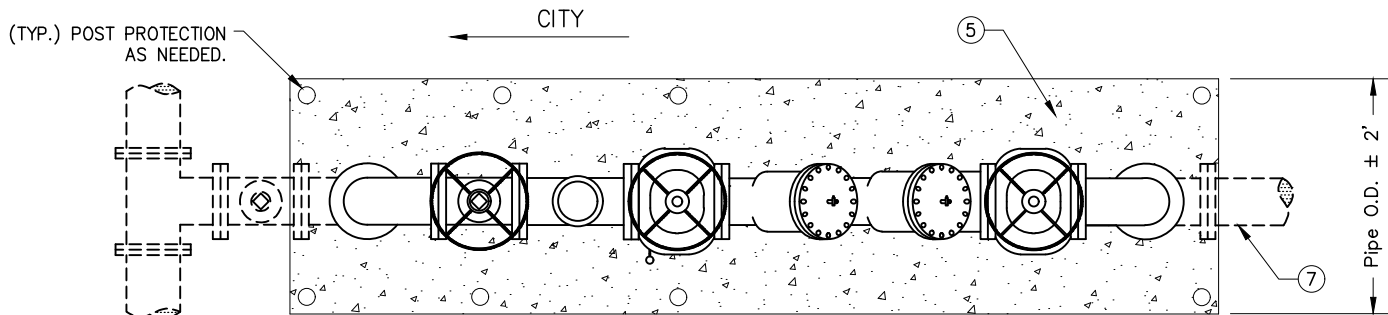
STANDARD DRAWING NO.

519-A

SHEET 1 OF 1



ELEVATION VIEW



PLAN VIEW

CONSTRUCTION NOTES

- ① COMPACT DUAL REGISTER HIGH PERFORMANCE COMPOUND METER AND ATTACHED IN-LINE METER STRAINER. 8 DIGIT SERIAL# (PROVIDED BY UTILITIES DEPARTMENT) TO BE PLACED ON METER. CONTACT CNB UTILITIES DEPARTMENT FOR SPECS AND APPROVED MANUFACTURES.
- ② 90° BEND, FE x FE. CEMENT LINE DI.
- ③ RESILIENT WEDGE GATE VALVE, OS & Y W/FLANGED ENDS.
- ④ DIP MORTAR LINED SPOOL PIECE (FE).
- ⑤ 6" THICK CONCRETE SLAB. REINFORCED WITH W1.4 x W1.4 WELD WIRE MESH. CONCRETE SHALL BE C-560-3250 MIX.
- ⑥ 90° BEND, CEMENT LINED DI, FE x FE x MJ ENDS W/RETAINER GLANDS.
- ⑦ CONSUMER PIPING. AWWA APPROVED POTABLE WATER PIPE MATERIAL, C-900 PVC CLASS 200.
- ⑧ ADJUSTABLE PIPE SUPPORT PER STD 521.
- ⑨ INSTALL THRUST BLOCK PER STD 516-A.
- ⑩ APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY WITH SPRING LOADED CHECK VALVES & INTEGRAL DIAPHRAM ACTUATED RELIEF VALVE. REFER TO UNIVERSITY OF SOUTHER CALIFORNIA FOUNDATION FOR CROSS CONNECTION AND HYDRAULIC RESEARCH APPROVED LIST (WWW.USC.EDU/DEPT/FCCCHR/LIST.HTML).

GENERAL NOTES

1. ALL ABOVE GRADE PIPING SHALL BE PAINTED WITH AN ALKYD ENAMEL PAINT SYSTEM CONSISTING OF A 2 MIL PRIMER CAT AND TWO (2) CAT OF 2 MILS (EACH) HIGH GLOSS ENAMEL. COLOR SHALL BE WHITE, BLUE OR RED, AS REQUIRED BY THE CITY.
2. ALL BELOW GRADE DUCTILE IRON FITTINGS SHALL BE C-110. ALL BELOW GRADE DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.
3. ALL FLANGE BOLTS SHALL BE MANUFACTURED FORM TYPE 316 STAINLESS STEEL. MECHANICAL JOINT CONNECTIONS SHALL BE MADE WITH EITHER MALLEABLE IRON OR SELF-WEATHERING CORTEN STEEL.
4. BACKFLOW DEVICE SHALL BE INSTALLED IN EASEMENT GRANTED TO CITY. MINIMUM SIZE IS 5' WIDE x 10' LONG.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 520-L-B

APP.

James M. Hinkle

51568

11/24/2020

CITY ENGINEER

RCE

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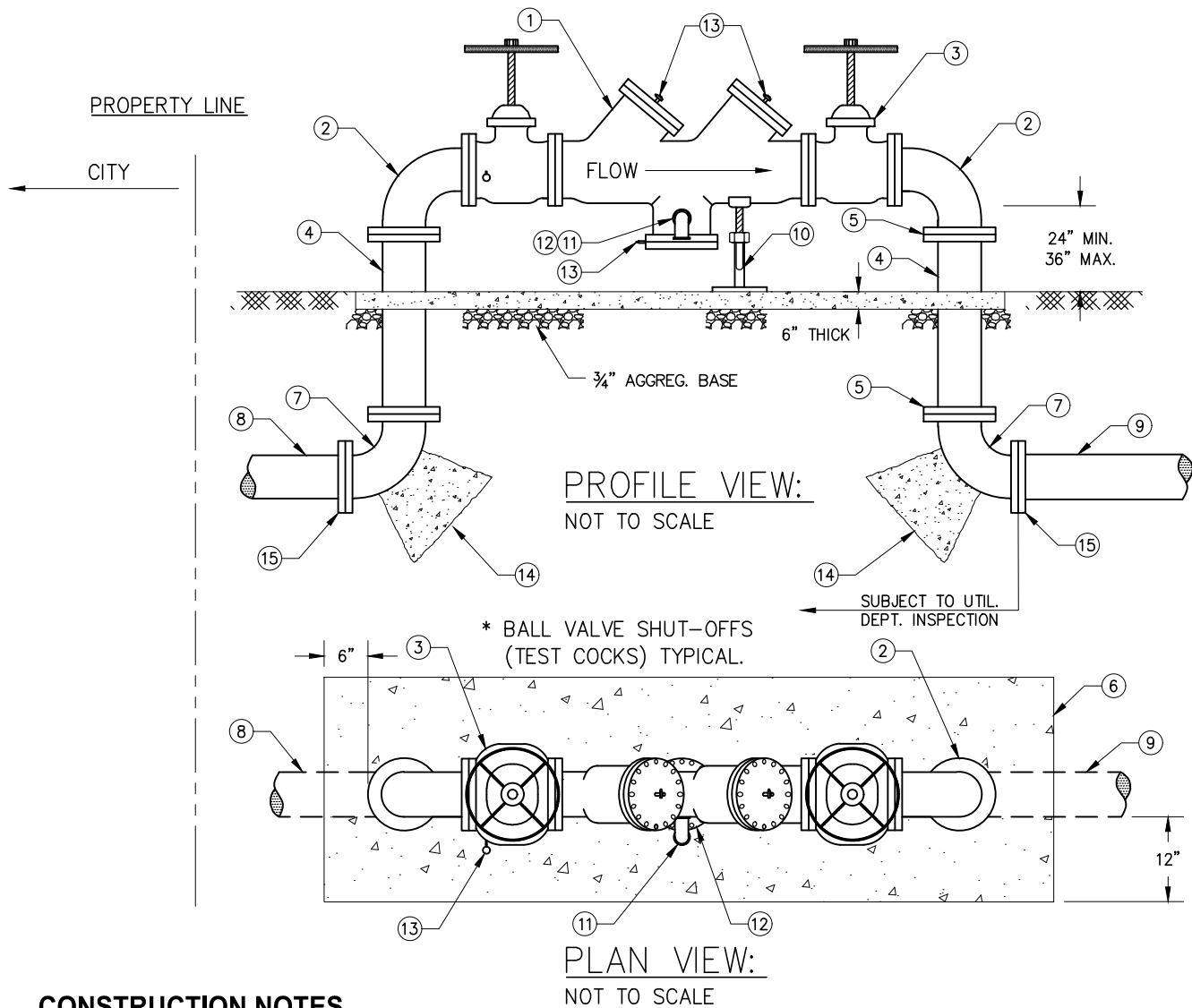
DATE: 11/3/2020

WATER METER/BACKFLOW PREVENTION ASSEMBLY TYP. 3", 4", 6", AND 8"

STANDARD DRAWING NO.

519-B

SHEET 1 OF 1




CONSTRUCTION NOTES

- ① APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY WITH SPRING LOADED CHECK VALVES & INTEGRAL DIAPHRAM ACTUATED RELIEF VALVE. REFER TO UNIVERSITY OF SOUTHER CALIFORNIA FOUNDATION FOR CROSS-CONNECTION AND HYDRAULIC RESEARCH APPROVED LIST (WWW.USC.EDU/DEPT/FCCCHR/LIST.HTML).
- ② 90° BEND, FE x FE. CEMENT LINE DI.
- ③ RESILIENT WEDGE GATE VALVE.
- ④ DIP MORTAR LINED SPOOL PIECE (FE).
- ⑤ 150 LB. ANSI RATED FLANGE. FABRICATED INTEGRALLY WITH SPOOL OR SPINDLE PIECE. THREADED FLANGES EXCEPTED.
- ⑥ 6" THICK CONCRETE SLAB. REINFORCED WITH W1.4 x W1.4 WELD WIRE MESH. CONCRETE SHALL BE C-560-3250 MIX.
- ⑦ 90° BEND, CEMENT LINED DI, FE x FE x MJ ENDS W/RETAINER GLANDS.
- ⑧ C-900 PVC CLASS 200.
- ⑨ CONSUMER PIPING. AWWA APPROVED POTABLE WATER PIPE MATERIAL, C-900 PVC CLASS 200.
- ⑩ ADJUSTABLE PIPE SUPPORT PER STD 521.
- ⑪ AIR GAP RELIEF VALVE DRAIN PORT TO ATMOSPHERE. OUTLET MUST BE AT LEAST 12" ABOVE THE VALVE ASSEMBLY SLAB.
- ⑫ DIAPHRAM ACTUATED, SPRING LOADED, DOUBLE SEATED RELIEF VALVE SET TO SENSE AND AT LEAST A 2 PSI PRESSURE DIFFERENTIAL BETWEEN THE CHECK VALVES.
- ⑬ BRONZE BODY, TEST VALVES. RUBBER SEATED BALL VALVE SHUTOFF WITH LEVER.
- ⑭ INSTALL THRUST BLOCK PER STD 516-A.
- ⑮ FE x MJ ADAPTER WITH RETAINER GLAND.

GENERAL NOTES

1. ALL ABOVE GRADE PIPING SHALL BE PAINTED WITH AN ALKYD ENAMEL PAINT SYSTEM CONSISTING OF A 2 MIL PRIMER CAT AND TWO (2) CAT OF 2 MILS (EACH) HIGH GLOSS ENAMEL. COLOR SHALL BE WHITE, BLUE, RED, OR GREEN, AS REQUIRED BY THE CITY.
2. ALL BELOW GRADE DUCTILE IRON FITTINGS SHALL BE C-110. ALL BELOW GRADE DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED IN ACCORDANCE WITH AWWA STANDARDS IN AN 8 MIL POLYETHYLENE WRAP.
3. ALL FLANGE BOLTS SHALL BE MANUFACTURED FORM TYPE 316 STAINLESS STEEL. MECHANICAL JOINT CONNECTIONS SHALL BE MADE WITH EITHER MALLEABLE IRON OR SELF-WEATHERING CORTEN STEEL.
4. DOUBLE CHECK BACKFLOW ASSEMBLY SUBSTITUTION SHALL REQUIRE SPECIAL WRITTEN PERMISSION FROM THE UTILITIES DEPARTMENT.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 520-L

APP. 	51568	11/24/2020			
CITY ENGINEER	RCE	DATE	NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS

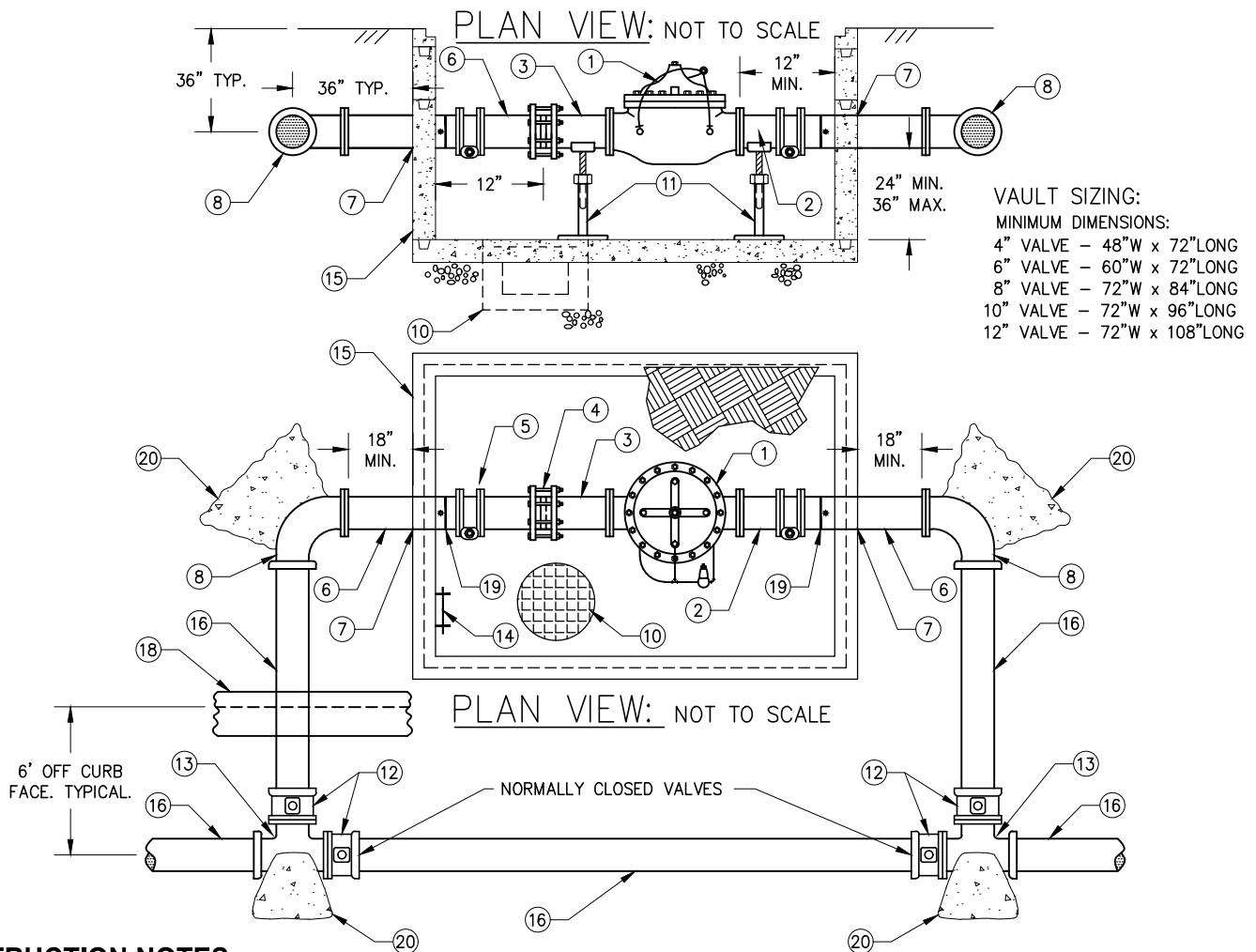
DATE: 11/3/2020

3" AND LARGER REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

STANDARD DRAWING NO.

519-C

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① CLA-VAL MODEL 100-01 HYTROL PRESSURE REDUCING VALVE (GLOBE PATTERN VALVE). DUCTILE IRON BODY WITH 316SS STAINLESS STEEL INTERNAL AND EXTERNAL TRIM AND EPOXY COATED BODY.
- ② CLASS 52, MORTAR LINED, DIP SPINDLE PIECE (FOE).
- ③ CLASS 52, MORTAR LINED, DIP SPINDLE PIECE (FOE). FABRICATE WITH HARNESS LUGS WITH DRESSER.
- ④ DUCTILE IRON FLEX COUPLING. FORD, ROMAC, DRESSER OR APPROVED EQUIVALENT. STAINLESS STEEL TIEBACKS TO THE NEAREST FLANGES.
- ⑤ 504A K-FLOW BUTTERFLY VALVE FE x FE.
- ⑥ CLASS 52, MORTAR LINED, DIP SPINDLE PIECE (FOE.) 54\" LONG. FABRICATE WITH HARNESS LUGS.
- ⑦ "LINK-SEAL" MECHANICAL PIPING SEAL IN ANNULAR SPACE BETWEEN PIPE O.D. & ROUND, SLEEVE LINED, VAULT OPENING. CAST SLEEVE IN PLACE WITH VAULT.
- ⑧ 90° BEND, MORTAR LINED DIP WITH MJ x FE ENDS & CONCRETE BLOCK.
- ⑩ ROUND, RECESSED DRAIN SUMP WITH ALHAMBRA FOUNDRY PRECAST GRATING. 12\" MINIMUM DEPTH & DIAMETER.
- ⑪ ADJUSTABLE PIPE SUPPORT STAINLESS STEEL PER STD 521.
- ⑫ RESILIENT WEDGE GATE VALVE WITH "BURIED SERVICE OPERATOR". MJ x FE ENDS.
- ⑬ MORTAR LINED DUCTILE IRON TEE. MJ x FE x FE WITH CONCRETE THRUST BLOCK.

- ⑭ INSTALL A LADDER BOLTED TO THE SIDE WALL OF VAULT PER STD 525-B
- ⑮ J&R PRECAST VAULT W/8\" CONCRETE SLAB FLOOR. SECTIONAL VAULT MAY BE USED IN PARKWAY AREAS.
- ⑯ SDR-14 C-900 PVC PIPE.
- ⑰ J&R U.S.F. DIAMOND PLATE ALUMINUM COVER IN PARKWAYS. J&R U.S.F. DIAMOND PLATE STAINLESS STEEL FOR TRAFFIC AREAS. SPRING ASSISTED, HINGED, TWO PIECE, LOCKING, COVER.
- ⑱ CONCRETE CURB AND GUTTER SECTION, TYPICAL. VAULTS SHOULD BE PLACED IN PARKWAY, PLANTER OR MEDIAN AREAS WHERE PRACTICAL.
- ⑲ 1\" TAP WITH SADDLE CAST-IRON EPOXY COATING WITH STAINLESS STEEL STRAP AND 1\" TYPE 316 SS BALL VALVE.
- ⑳ THRUST BLOCKS PER STD 516-A.

GENERAL NOTES

1. ALL ABOVE GRADE PIPING SHALL BE PAINTED WITH AN ALKYD ENAMEL PAINT SYSTEM CONSISTING OF A 2 MIL PRIMER COAT AND TWO (2) COATS OF 2 MILS (EACH) HIGH GLOSS ENAMEL. COLOR SHALL BE BLUE.
2. ALL BELOW GRADE DUCTILE IRON FITTINGS SHALL BE C-110. ALL BELOW GRADE DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED IN ACCORDANCE WITH AWWA STANDARDS IN AN 8 MIL POLYETHYLENE WRAP.
3. ALL FLANGE JOINTS SHALL BE CONNECTED WITH TYPE 316 STAINLESS STEEL FASTENERS. MECHANICAL JOINT SHALL BE JOINED WITH EITHER MALLEABLE IRON OR SELF-WEATHERING CORTEN STEEL.
4. ALL VAULTS REQUIRE THE INSTALLATION OF ONE VENT AT THE LOW POINT AND ONE AT THE HIGH POINT. VAULT VENTS SHALL BE INSTALLED PER STD 528-A OR STD 528-B. SIZING OF VENTS SHALL BE DETERMINED BY THE PROJECT'S ENGINEER.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 521-L

APP.

James M. Hinkle

51568

CITY ENGINEER

RCE

11/24/2020

DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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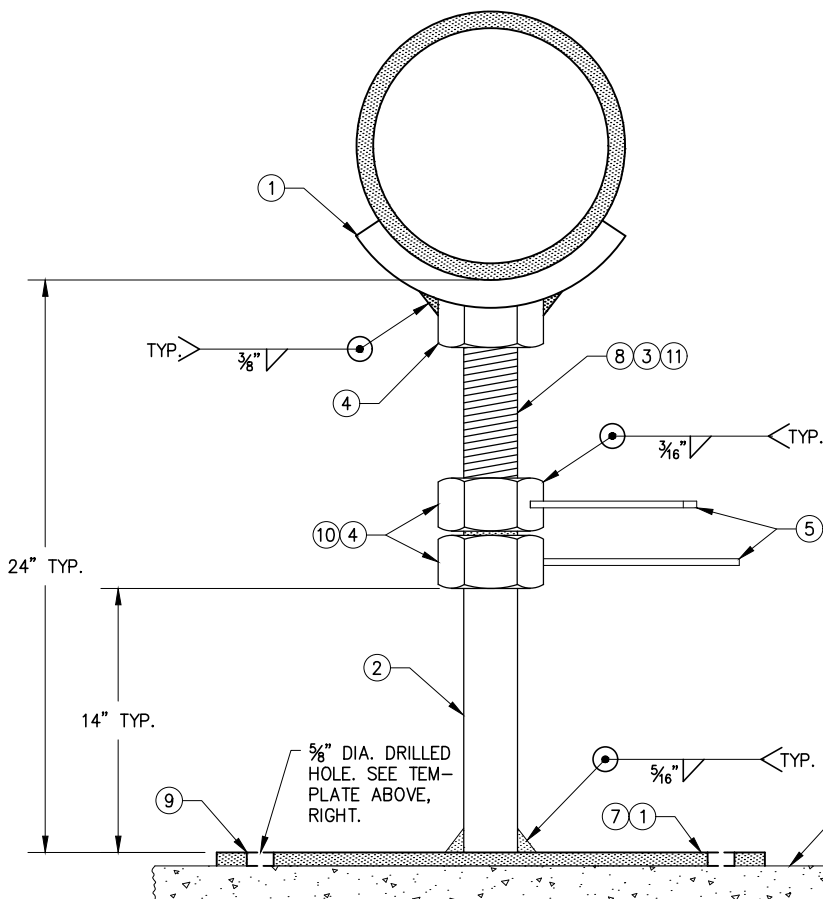
DATE: 11/3/2020

PRESSURE REDUCING STATION

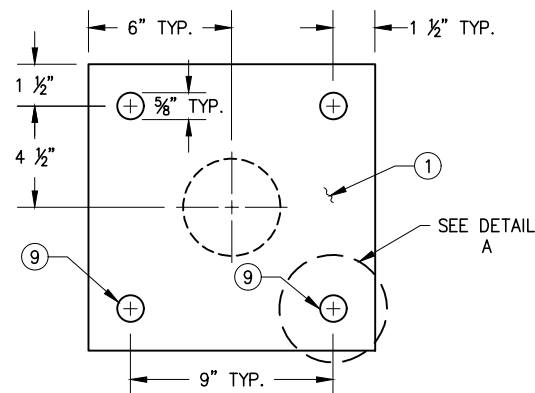
STANDARD DRAWING NO.

520

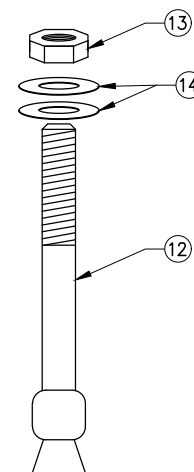
SHEET 1 OF 1



PROFILE VIEW: NOT TO SCALE



PLAN VIEW: NOT TO SCALE
BASE PLATE DRILLING TEMPLATE



DETAIL A: NOT TO SCALE
BASE PLATE ANCHOR BOLT

CONSTRUCTION NOTES

- ① SQUARE STAINLESS STEEL PLATE. 12" x 12" x 0.375" THICK.
- ② STAINLESS STEEL PIPE SUPPORT TUBE. 2.5" DIAMETER x 14" LONG x 0.375" WALL THICKNESS.
- ③ STAINLESS STEEL ALL THREAD ROD. 2.0" DIAMETER x 18" LONG. TACK WELD TO TOP HEX NUT.
- ④ HEAVY HEX HEAD STAINLESS STEEL NUT.
- ⑤ STAINLESS STEEL FLAT BAR STOCK. 1" WIDE x 12" LONG x 0.375" THICK. FILLET WELD TO HEX NUT, ONE FACE, EACH NUT. DELETE IN WASTEWATER PUMP STATION APPLICATIONS.
- ⑥ SADDLE SUPPORT. STAINLESS STEEL PIPE BENT OPEN TO ACCOMMODATE SAME SIZE PIPE OR ROLLED STAINLESS STEEL FLAT BAR TO MATCH SUPPORTED PIPE OR FITTING FLANGE O.D. 3" MINIMUM WIDTH x 12" ROLLED LENGTH. FILLET WELD HEX NUT TO BOTTOM OF SADDLE SUPPORT.
- ⑦ INSTALL BASE PLATE ON LEVELING COURSE OF HIGH STRENGTH EPOXY CEMENT COMPOUND.
- ⑧ COAT THREADS WITH LIBERAL AMOUNT OF ANTI-SEIZE COMPOUND.
- ⑨ DRILL CONCRETE PAD OR VAULT FLOOR AND MOUNT BASE PLATE WITH 4 EACH. 1/2" STAINLESS STEEL CONCRETE ANCHOR BOLTS. SEE BASE PLATE TEMPLATE.
- ⑩ TIGHTEN DOUBLE HEX NUTS SNUG AGAINST SUPPORT TUBE. USE 60 FT. LBS. TORQUE.

- ⑪ TACK WELD ALL THREAD ROD TO HEAVY HEX NUT UNDER SUPPORT SADDLE.
- ⑫ RED HEAD™ STAINLESS STEEL CONCRETE ANCHOR BOLT. 1/2" DIAMETER x 4" LONG.
- ⑬ 1/2" STAINLESS STEEL HEX HEAD ANCHOR NUT. RED HEAD OR APPROVED EQUAL.
- ⑭ 1" x 1/2" HEAVY STAINLESS STEEL WASHERS. DOUBLE STACK ON TOP OF SUPPORT PLATE.

GENERAL NOTES

1. ALL PIPE SUPPORT COMPONENTS SHALL BE STAINLESS STEEL.
2. PIPE SUPPORTS SHALL BE INSTALLED ON ALL BACKFLOW PREVENTION ASSEMBLIES AND AS INDICATED FOR ALL VAULT INSTALLATIONS. REFER TO STANDARD DRAWINGS STD 507, 508, 518, 519 AND 520.
3. FOR AN ALTERNATIVES PIPE SUPPORT CONTACT THE UTILITIES DEPARTMENT REPRESENTATIVE.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 522-L

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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DATE: 11/3/2020

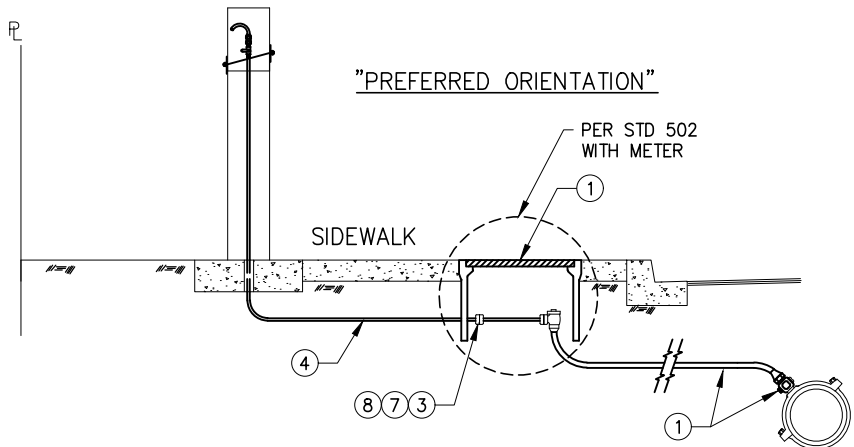
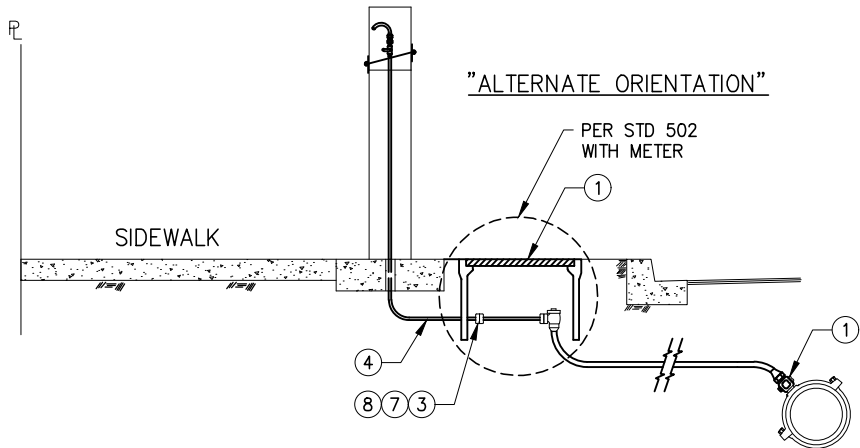
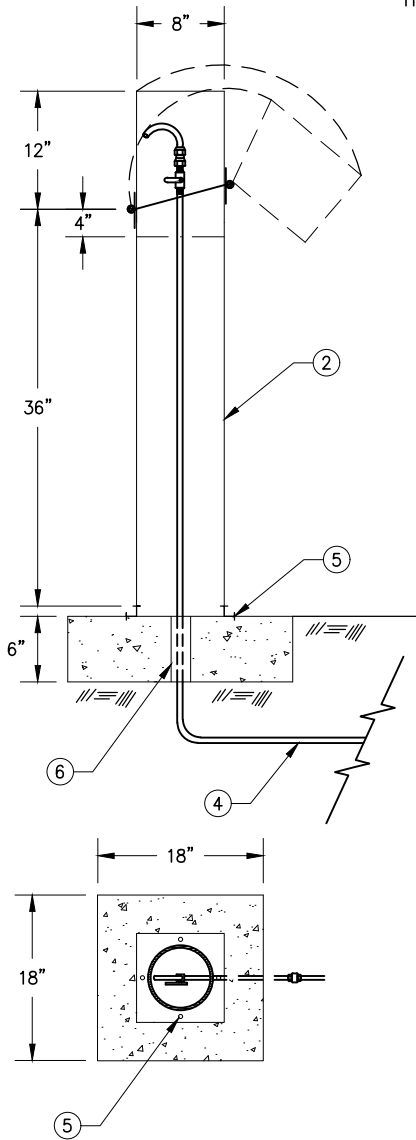
PIPE SUPPORT ASSEMBLY

STANDARD DRAWING NO.

521

SHEET 1 OF 1

* FOR AN ALTERNATIVE SAMPLING STATION CONTACT
THE C.N.B. UTILITIES DEPT. REPRESENTATIVE.



SECTION VIEW: NOT TO SCALE

CONSTRUCTION NOTES

- ① INSTALL 1" STANDARD SERVICE PER APPLICABLE PORTIONS OF STD 502.
- ② AMERICAN MACHINE & CONVEYOR CORP MODEL EZ-01 WATER SAMPLING STATION 44" HIGH POWDER COAT FINISH GREEN #RAL600.
- ③ $\frac{1}{2}$ " x $\frac{3}{4}$ " BRASS BELL REDUCER, USA.
- ④ $\frac{1}{2}$ " SOFT COPPER.
- ⑤ $\frac{1}{2}$ " DIAMETER STAINLESS STEEL ANCHOR BOLTS SET IN CONCRETE SLAB.
- ⑥ 1 $\frac{1}{2}$ " SCH. 80 PVC SLEEVE.
- ⑦ J-130, $\frac{3}{4}$ " TAILPIECE.
- ⑧ J-1535 $\frac{3}{4}$ " FLARE x FIP ADAPTER.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 523-L

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CITY ENGINEER

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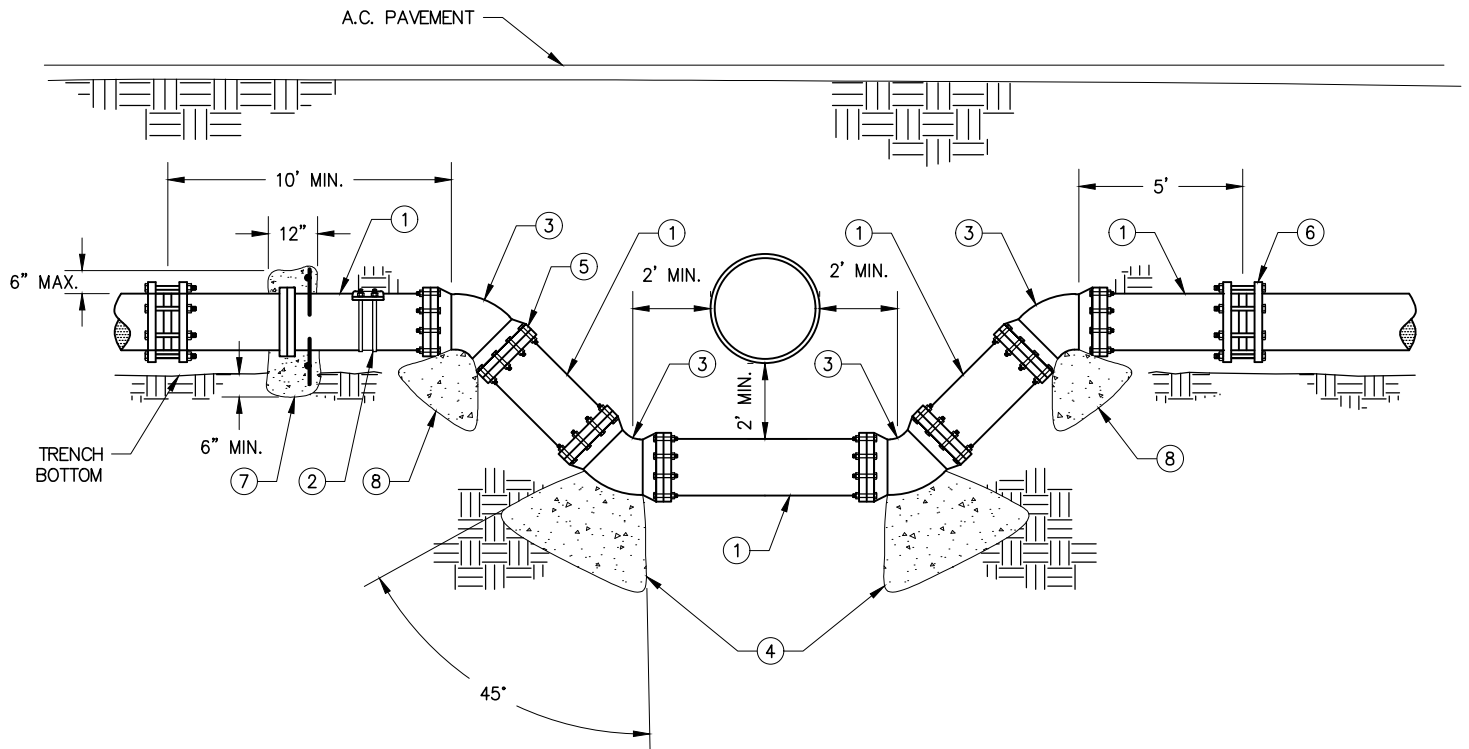
DATE: 11/3/2020

WATER SAMPLING STATION

STANDARD DRAWING NO.

522

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① DUCTILE IRON PIPE CLASS 52 OR C-900 P.V.C.
- ② SERVICE SADDLE, PER STD 517, FOR AIR/VACUUM RELEASE WHERE REQUIRED.
- ③ 45° BEND. DUCTILE IRON MECHANICAL JOINT FITTING RETAINER GLAND.
- ④ STANDARD THRUST BLOCK PER STD 516-A.
- ⑤ MJ RETAINER GLAND. TYPICAL CUT AT ALL MECHANICAL JOINTS.
- ⑥ FLEX OR TRANSITION COUPLING.
- ⑦ CONCRETE RESTRAINT BLOCK, SEE TOP VIEW BELOW.
- ⑧ CONCRETE ANCHOR BLOCK PER STD 516-D AND 516-E.

GENERAL NOTES

1. RESTRAINT BLOCKS SHALL BE A MINIMUM OF 24" IN HEIGHT AND 12" THICK. THE TOP OF THE BLOCK SHALL BE NO MORE THAN 6" ABOVE TOP OF PIPE.
2. ALL PIPE JOINTS AT 45° BENDS SHALL BE MECHANICAL JOINT WITH RETAINER GLANDS. FLANGED JOINTS MAY BE USED WHERE CONDITIONS WARRANT.
3. ALL FITTINGS SHALL BE ENCASED IN POLYETHYLENE WRAP PER AWWA STANDARD C105.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 528-L

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James M. Hinkle
CITY ENGINEER

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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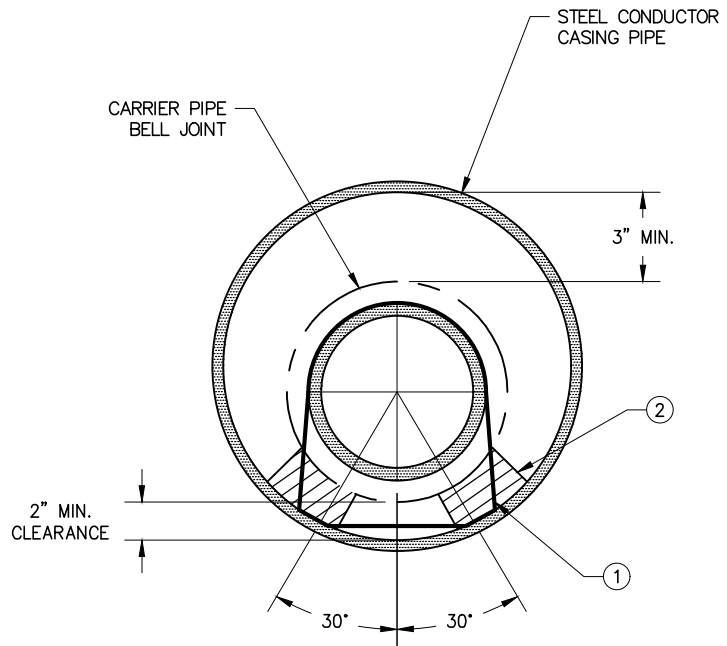
INVERTED SIPHON

STANDARD DRAWING NO.

523

SHEET 1 OF 1

STEEL CONDUCTOR CASING FOR DIP & PVC PIPE			
	MINIMUM CASING SIZE	MIN. WALL	SKIDS
4"	12 3/4" O.D.	1/4"	2" x 2"
6"	12 3/4" O.D.	1/4"	
8"	16" O.D.	1/4"	
12"	24" O.D.	5/16"	4" x 4"
16"	24" O.D.	3/8"	




CONSTRUCTION NOTES

- ① UNFINISHED REDWOOD SKIDS 3 FEET LONG BEVELED AT BOTH ENDS FOUR (4) SKIDS PER LENGTH OF PIPE TO BE STRAPPED IN PLACE, 3 FEET FROM EACH END OF PIPE. NOTCH SKID TO SEAT STRAP. STAINLESS STEEL BAND STRAPS.
- ② 8 GAUGE BY 1" WIDE. INSTALL THREE (3) STRAPS PER SKID. TENSION STRAPS SNUGLY TO CARRIER PIPE AND SKIDS.

GENERAL NOTES

1. CASING SHALL BE INSTALLED BY THE BORE, JACK AND/OR TUNNEL METHOD.
2. BACKFILL FOR CASING IN OPEN CUT SHALL BE IN ACCORD WITH STD 323.
3. ALL STEEL CASING PIPE FIELD JOINTS SHALL BE BUTT WELDED, FULL CIRCUMFERENCE.
4. SKIDS SHALL BE UNFINISHED ROUGH-SAWN REDWOOD.
5. EACH END OF CASING SHALL BE SEALED WITH BANDED RUBBER CASING SEALS.
6. SIZE AND THICKNESS OF CASING SHALL BE AS SHOWN IN SCHEDULE. THICKNESSES ARE MINIMUMS. (FOR LONG BORES OR SPECIAL SITUATIONS, THICKER WALL PIPE MAY BE REQUIRED BY ENGINEER.)
7. A.C. PIPE SHALL NOT BE PLACED IN CASINGS.
8. STEEL PIPE SHALL NOT BE PLACED IN CASINGS.
9. ALL CARRIER PIPE JOINTS INSIDE THE CONDUCTOR CASING SHALL HAVE RESTRAINED OR HARNESSSED JOINTS.
10. MANUFACTURED CASING SPACER SKIDS MAY BE CONSIDERED AS AN ALTERNATE TO WOOD SKIDS.

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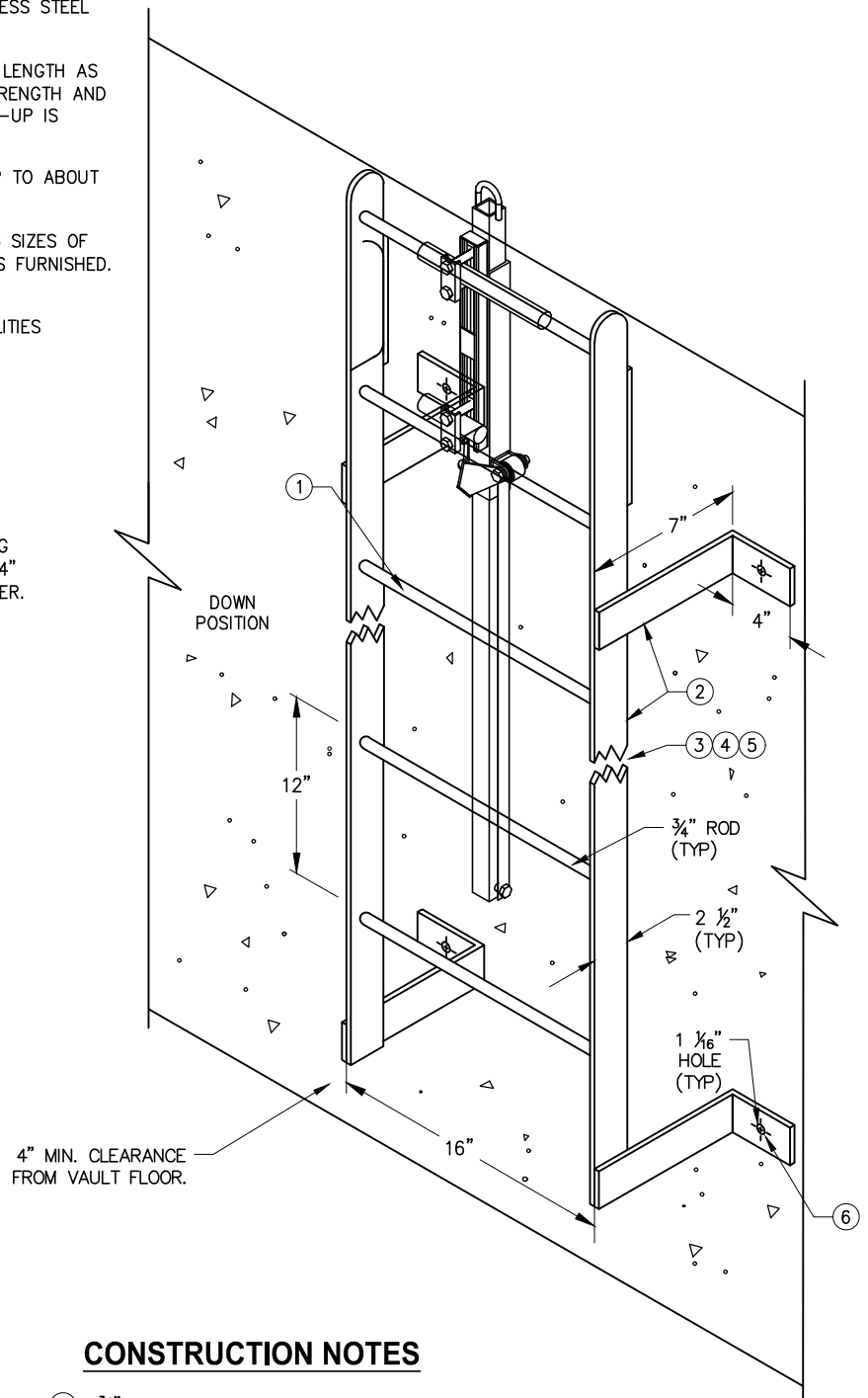
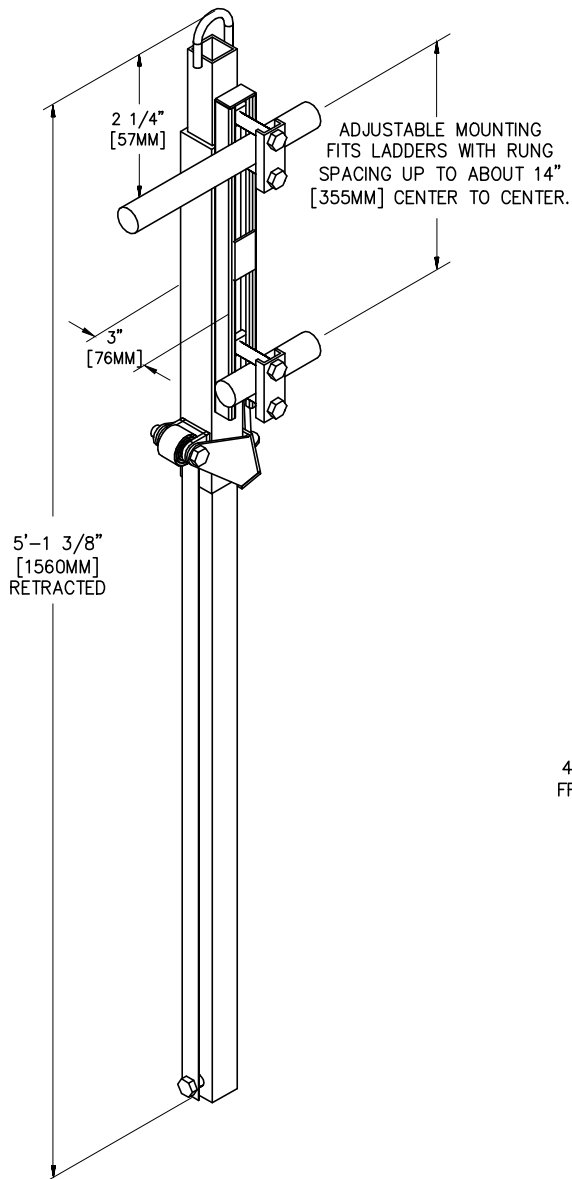
APP. 	51568	11/24/2020			
CITY ENGINEER	RCE	DATE	NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: M. ELIAS	CASED WATER MAIN CROSSINGS	STANDARD DRAWING NO. 524 SHEET 1 OF 1
DATE: 11/3/2020		

GENERAL NOTES

1. THE BILCO LADDER-UP SAFETY POST IS FURNISHED COMPLETELY ASSEMBLED READY TO MOUNT ON REAR OF LADDER WITH CLAMP BRACKETS ON CLIMBING SIDE. LADDER MUST BE STRUCTURALLY SOUND AND SECURELY ANCHORED. BILCO PRODUCT # LU-1 W/STAINLESS STEEL MOUNTING BOLTS AND POWDER COATING.
2. ON HOLLOW RUNG LADDERS INSERT SOLID ROUND BAR (SAME LENGTH AS RUNG) INTO THE TOP TWO RUNGS TO PROVIDE ADDITIONAL STRENGTH AND PREVENT CRUSHING OF THE LADDER RUNG WHEN THE LADDER-UP IS FASTENED.
3. ADJUSTABLE MOUNTING FITS LADDERS WITH RUNG SPACING UP TO ABOUT 14" (355MM) CENTER TO CENTER.
4. CLAMP BRACKETS MAY BE REVERSED TO ACCOMMODATE RUNG SIZES OF $\frac{3}{4}$ " (19MM) TO 1 $\frac{1}{4}$ " (32MM) WITH STANDARD 2" (51MM) BOLTS FURNISHED. LARGER RUNGS WILL REQUIRE LONGER BOLTS.
5. FOR VAULTS LESS THAN 5' IN DEPTH, CONTACT THE CNB UTILITIES DEPARTMENT FOR ALTERNATE OPTIONS.



CONSTRUCTION NOTES

- ① $\frac{3}{4}$ " DIAMETER ROD PIN WELDED TO LADDER SIDE RAIL.
- ② ALL RAILS AND BRACKETS SHALL BE FABRICATED FROM $\frac{1}{4}$ " STEEL FLAT BAR STOCK.
- ③ ALL JOINTS SHALL BE WELDED PER AMERICAN WELDING SOCIETY STANDARDS.
- ④ ALL SURFACE WELDS SHALL BE GROUND SMOOTH AND CLEANED AFTER FABRICATION.
- ⑤ HOT-DIP GALVANIZE AFTER FABRICATION.
- ⑥ ALL CONNECTING AND MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 530-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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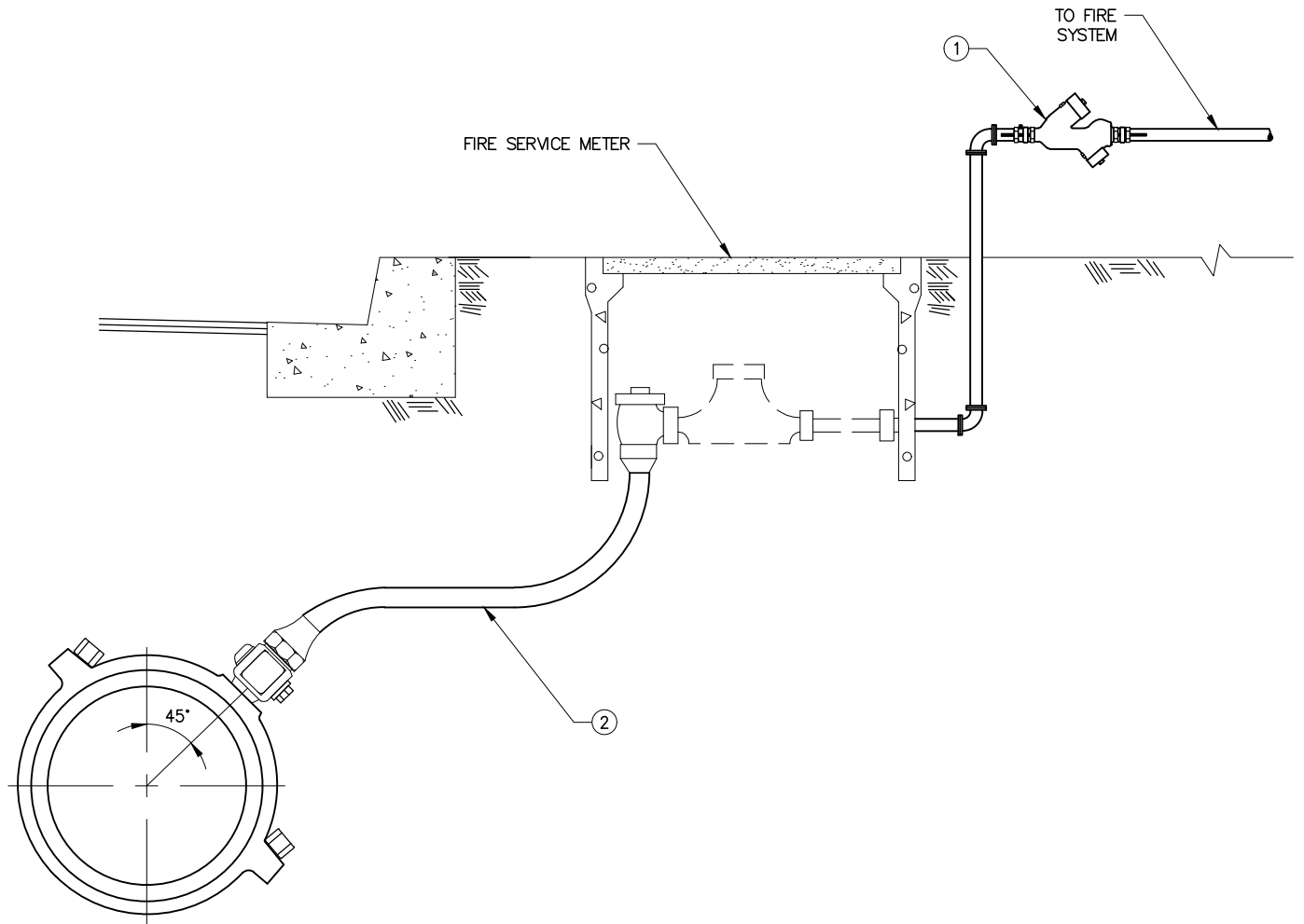
DATE: 11/3/2020

STANDARD VAULT LADDER

STANDARD DRAWING NO.

525

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① DOUBLE CHECK BACKFLOW DEVICE. REFER TO UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS-CONNECTION AND HYDRAULIC RESEARCH APPROVED LIST (WWW.USC.EDU/DEPT/FCCCHR.LIST.HTML) AND STD 519-A FOR DETAILS.
- ② WATER SYSTEM SERVICE. REFER TO STD 502 & STD 503 FOR DETAILS.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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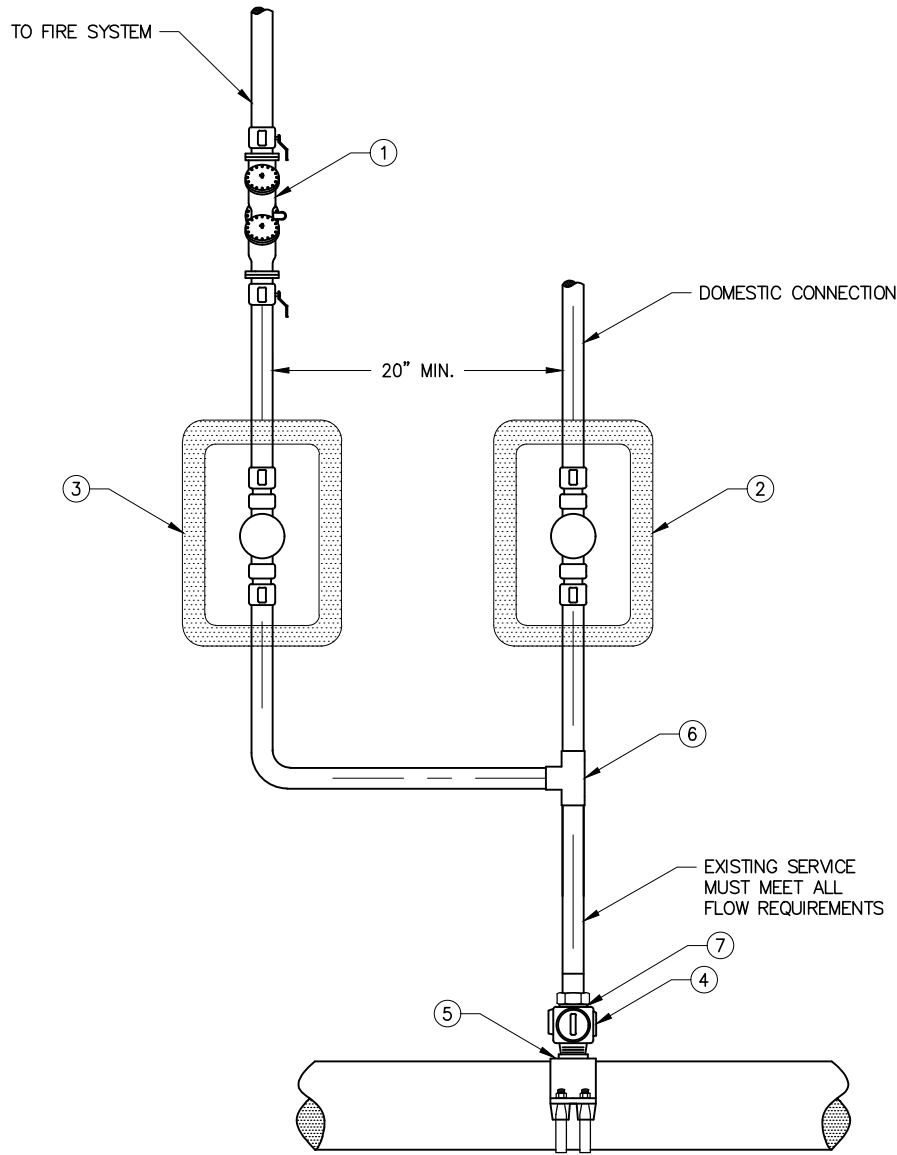
DATE: 11/3/2020

3/4" - 2" JR. FIRE SYSTEM SERVICE TYPE 1

STANDARD DRAWING NO.

526

SHEET 1 OF 1



CONSTRUCTION NOTES

- ① DOUBLE CHECK BACKFLOW DEVICE. REFER TO UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS-CONNECTION AND HYDRAULIC RESEARCH APPROVED LIST (WWW.USC.EDY/DEPT/FCCCHR/LIST.HTML) AND STD 519-A FOR DETAILS.
- ② WATER SYSTEM SERVICE METER. REFER TO STD 502 & STD 503 FOR DETAILS.
- ③ FIRE SYSTEM SERVICE METER. REFER TO STD 526 FOR DETAILS.
- ④ 1" OR 2" BALL CORP. STOP F600-4 WITH MIP THREAD INLET & OUTLET. JAMES JONES J-1943 OR FORD FB-500.
- ⑤ DOUBLE STRAP BRONZE SERVICE CLAMP WITH IPT OUTLET. JAMES JONES J-979 OR FORD 202B. REFER TO STD 502 FOR WATER MAIN TAP DETAILS. WRAP IN 10 MIL THICK PLASTIC SHEETING.
- ⑥ 1" OR 2" WROT COPPER TEE WITH FEMALE SOLDER ENDS. $\frac{3}{4}$ "-1" FLARE T.
- ⑦ FOR 1 $\frac{1}{2}$ " SERVICE, OR GREATER, MUST HAVE 2" FIP X FIP COUPLING, MADE IN USA.

APP.

James M. Hinkle
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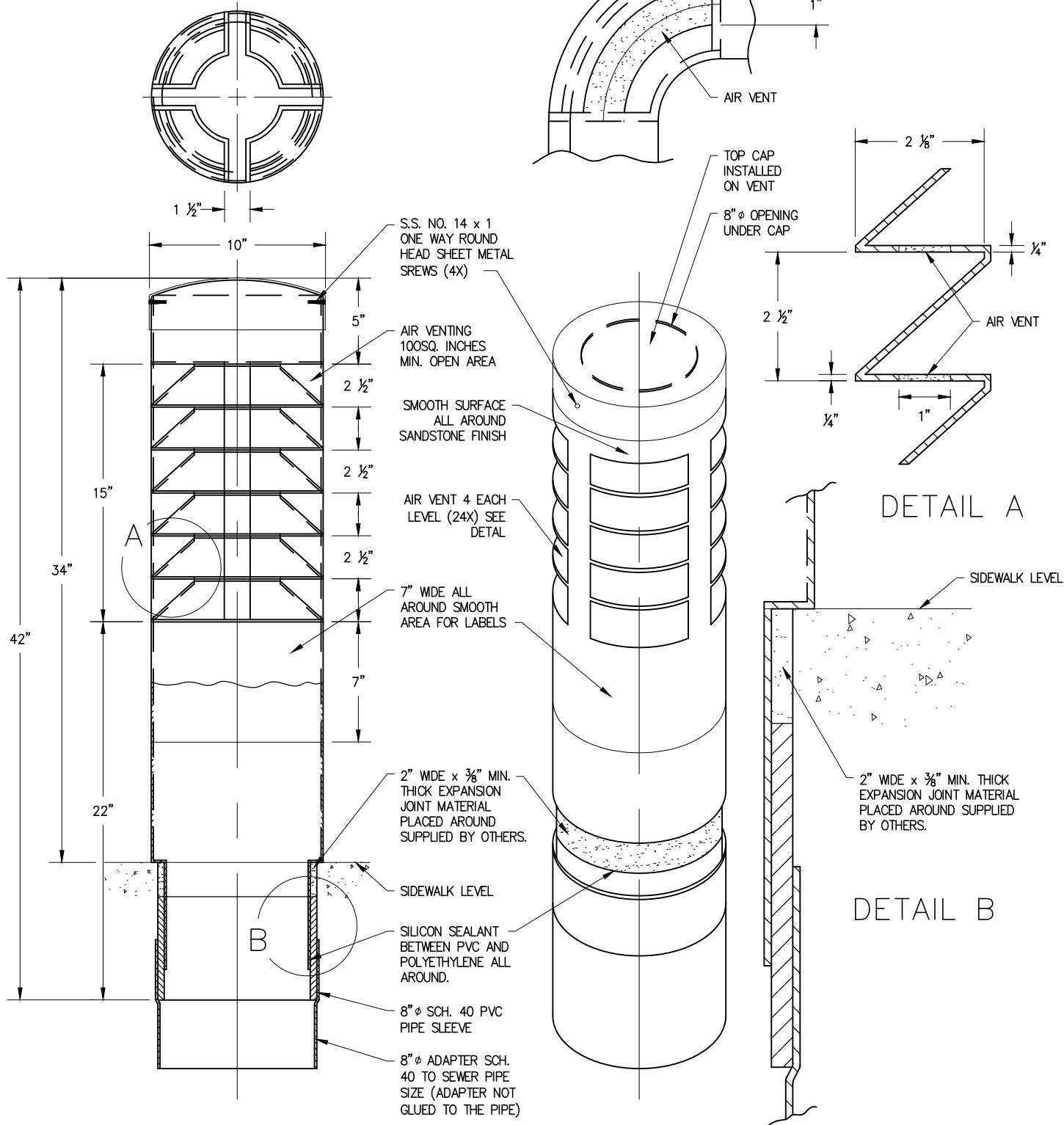
3/4" - 2" JR. FIRE SYSTEM SERVICE TYPE 2

STANDARD DRAWING NO.

527

SHEET 1 OF 1

FOR NEW INSTALLATIONS VENT HAS CAPS INSTALLED



GENERAL NOTES

1. STAND PIPE VENT SHALL BE ARMORCAST PRODUCTS COMPANY – MODEL# P6002608–SND (SANDSTONE FINISH)

APP.

James M. Hinkle
CITY ENGINEER

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DESCRIPTION OF REVISIONS

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DRAWN: M. ELIAS

DATE: 11/3/2020

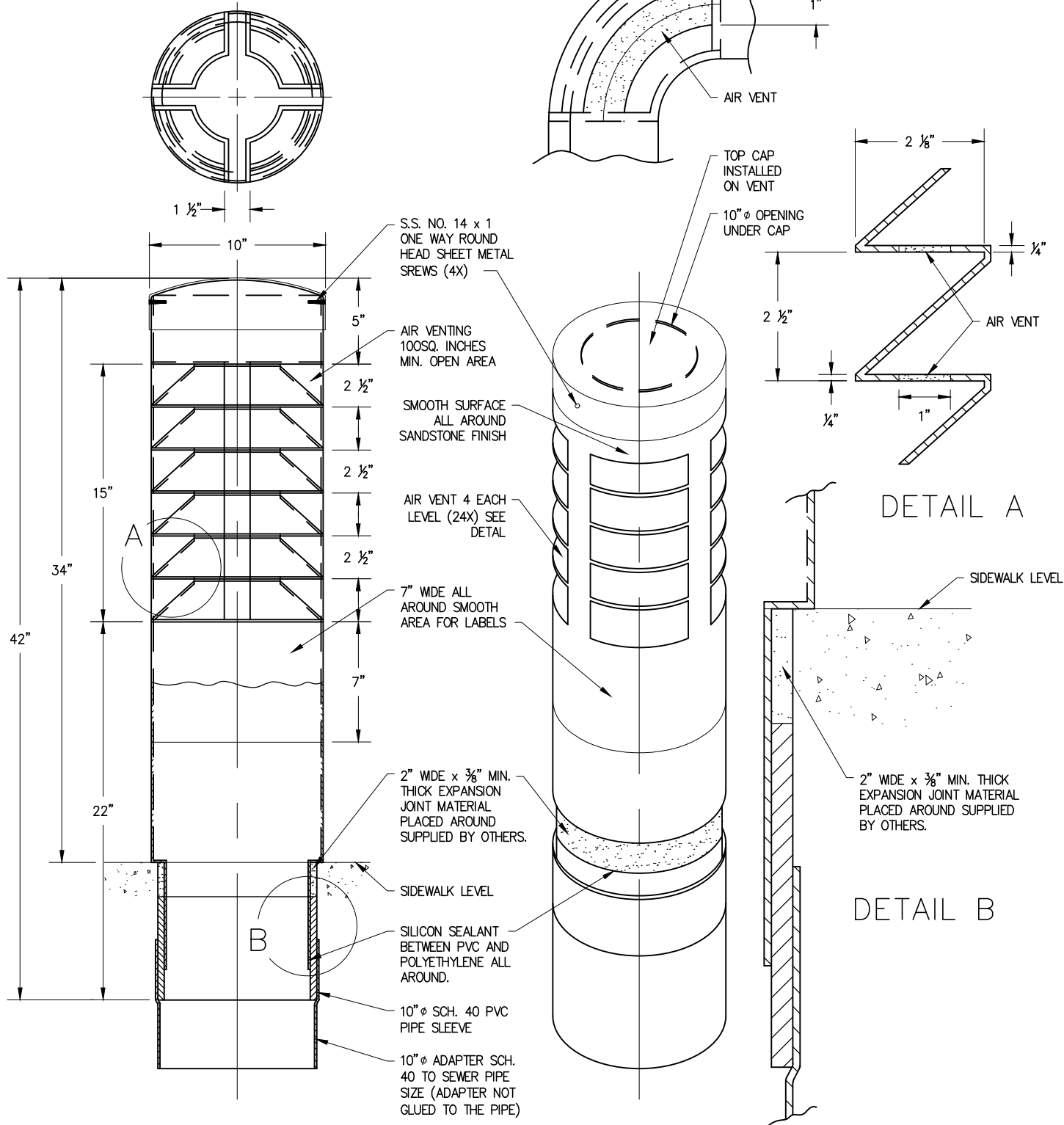
8" DIA. x 42" STAND PIPE VENT

STANDARD DRAWING NO.

528-A

SHEET 1 OF 1

FOR NEW INSTALLATIONS VENT HAS CAPS INSTALLED



GENERAL NOTES

1. STAND PIPE VENT SHALL BE ARMORCAST PRODUCTS COMPANY – MODEL# P6002610–SND (SANDSTONE FINISH)

APP.

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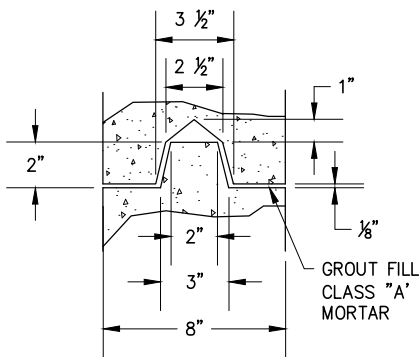
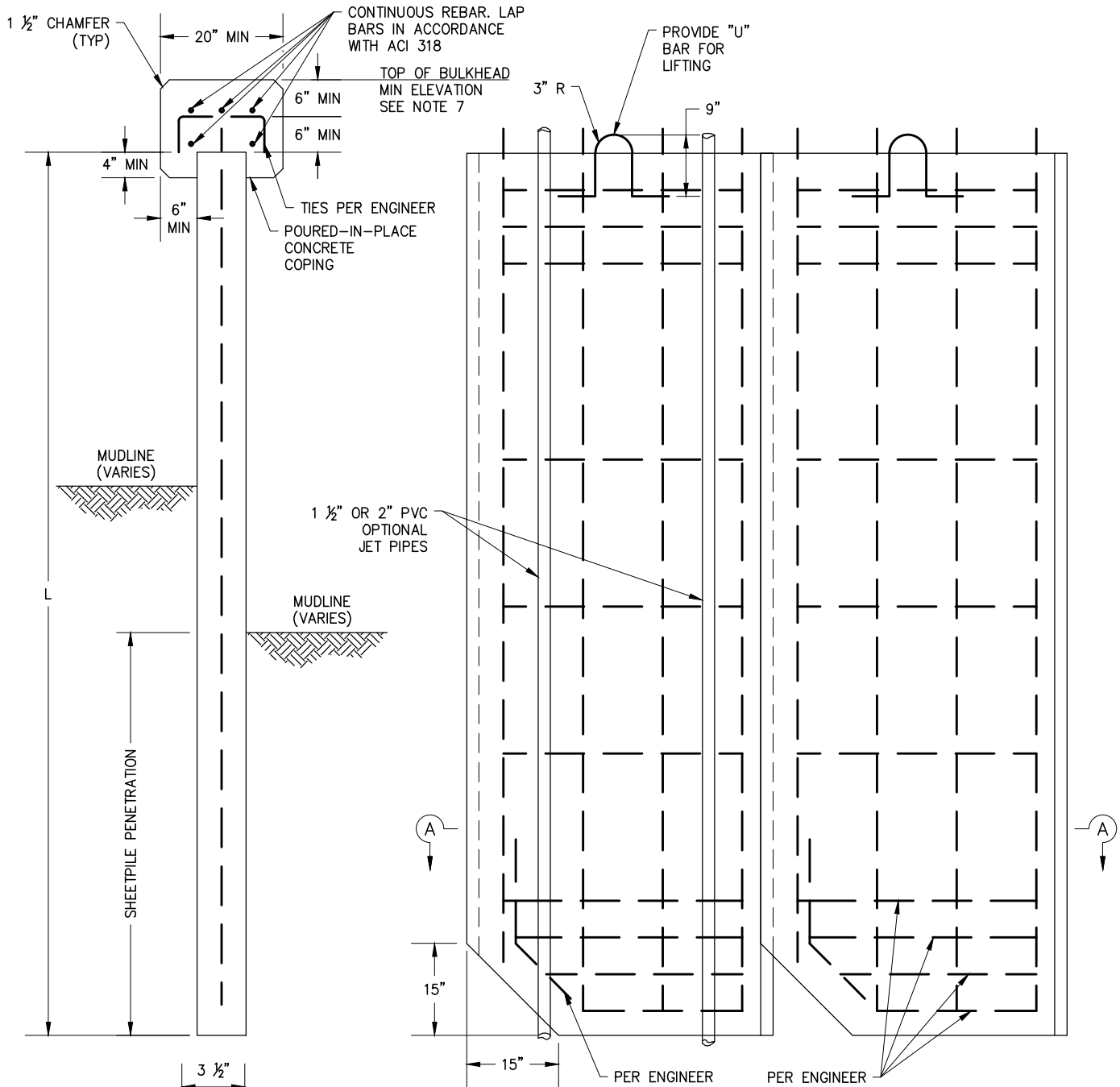
DATE: 11/3/2020

10" DIA. x 42" STAND PIPE VENT

STANDARD DRAWING NO.

528-B

SHEET 1 OF 1



TYPICAL PANEL JOINT

NOTES:

1. PANELS TO HAVE A SMOOTH FINISH ON BOTH SIDES.
2. REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 3" AND BE EPOXY-COATED PER ASTM A-775 OR ASTM A-934. GRADE 60 BARS SHALL BE USED.
3. AS AN OPTION, APPLICANT MAY USE PRESTRESSED CONCRETE SHEETS PER STD 602.
4. USE OF JETTING TECHNIQUES MAY REQUIRE SPECIAL PERMITS AND MITIGATION MEASURES BY LOCAL, STATE AND FEDERAL AGENCIES.
5. CONCRETE: SEE HARBOR DESIGN CRITERIA FOR CONCRETE REQUIREMENTS.
6. PANEL MUST BE DESIGNED BY A CALIFORNIA LICENSED CIVIL OR STRUCTURAL ENGINEER.
7. SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

SECTION A-A

APP.

James M. Hinkle

51568
RCE

11/24/2020
DATE

CITY ENGINEER

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

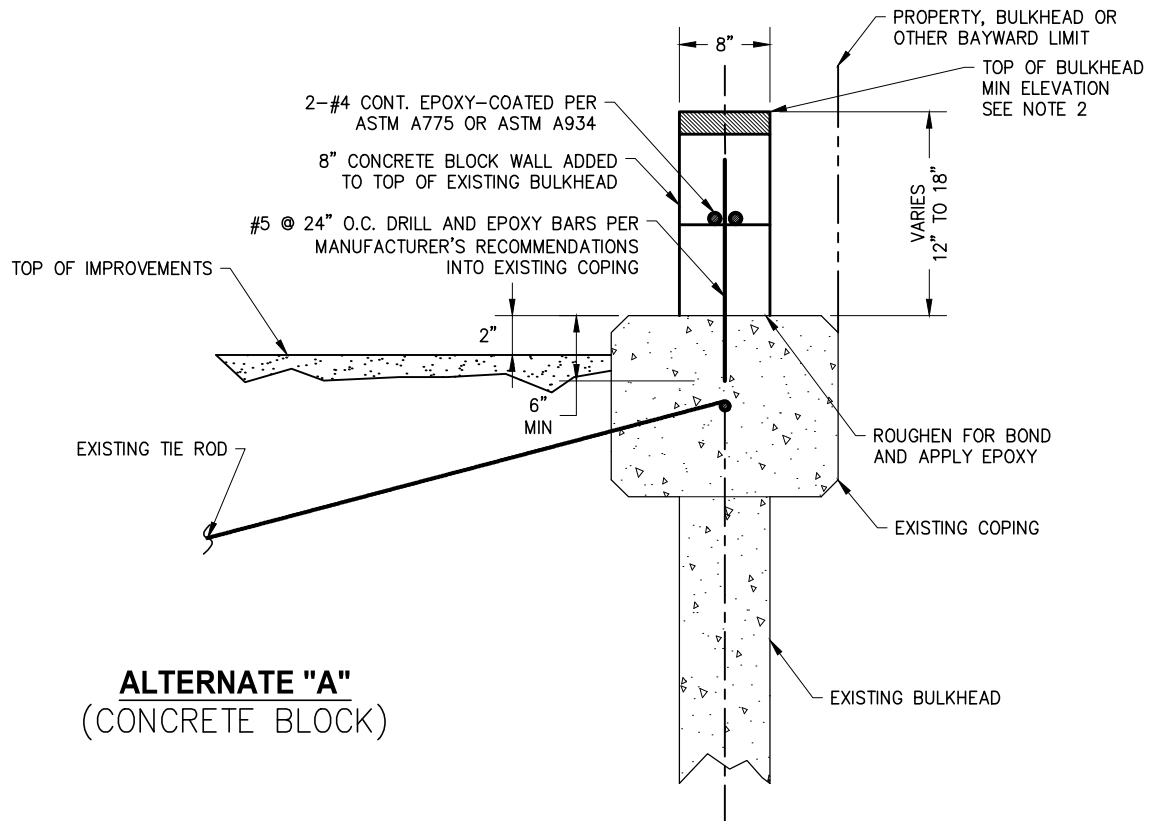
DATE: 11/3/2020

**PRECAST REINFORCED CONCRETE GROIN PANEL
(NOT FOR BULKHEAD USE)**

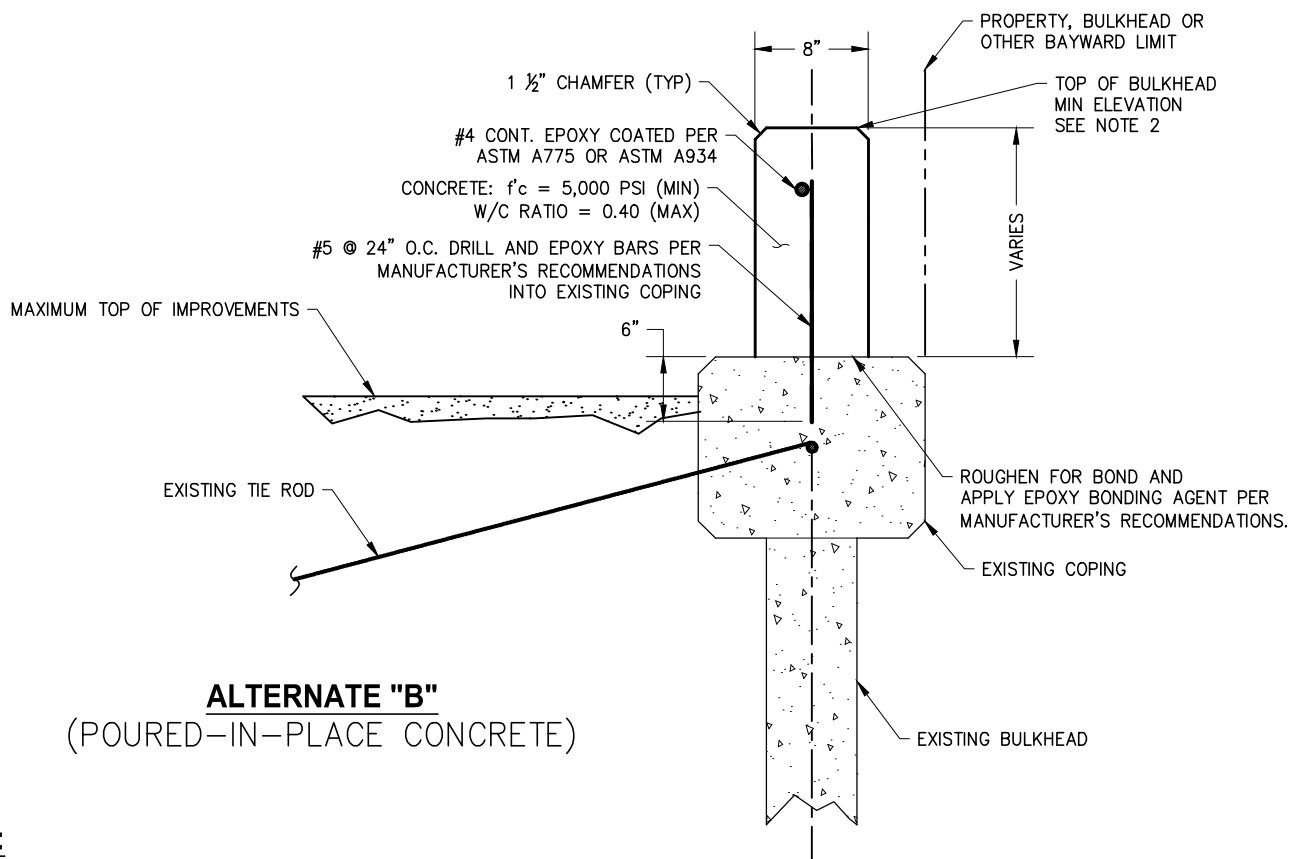
STANDARD DRAWING NO.

600

SHEET 1 OF 1



ALTERNATE "A"
(CONCRETE BLOCK)



ALTERNATE "B"
(POURED-IN-PLACE CONCRETE)

NOTES:

1. EPOXY SHALL CONFORM TO ASTM C881 STANDARD AND BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.
2. SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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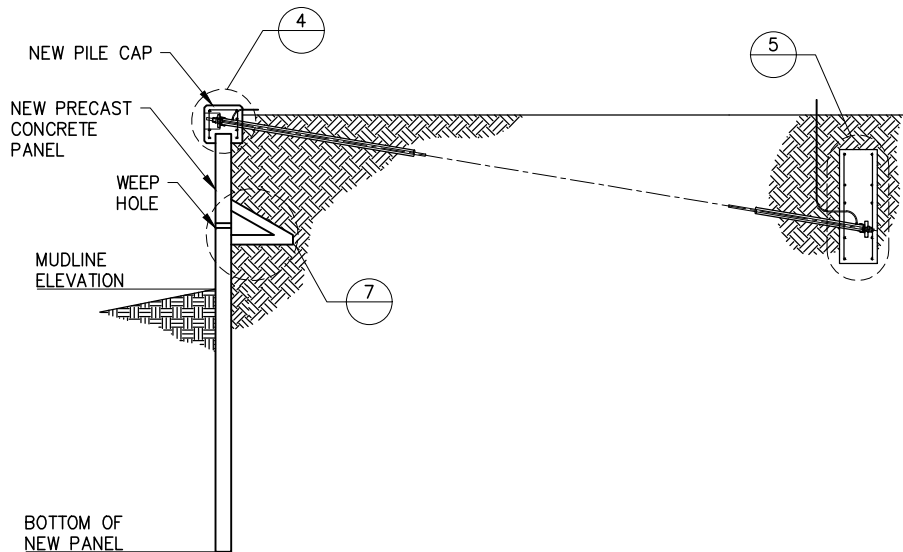
DATE: 11/3/2020

DETAIL FOR RAISING BULKHEADS

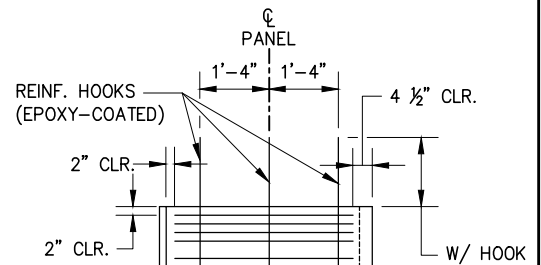
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601

SHEET 1 OF 1

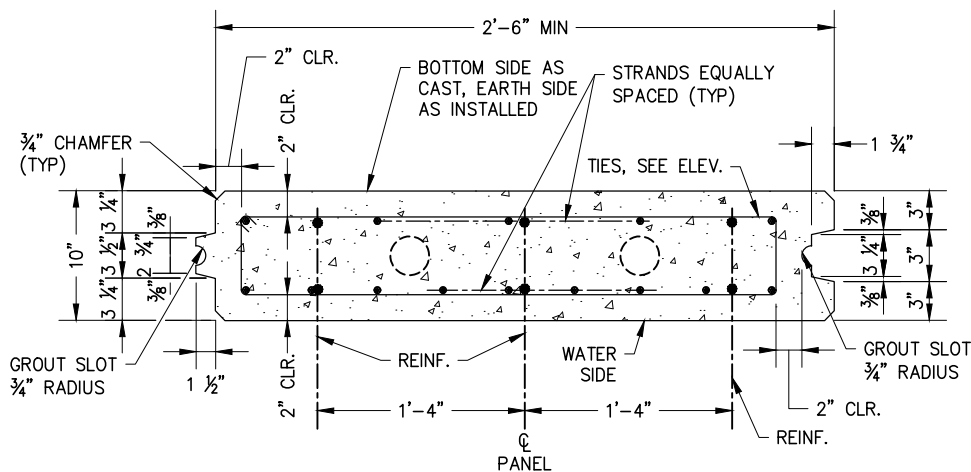


SECTION AT BULKHEAD (1)



PRECAST (PRESTRESSED) PANEL ELEVATION (1) (2)

(WATER SIDE)



PRECAST (PRESTRESSED) PANEL SECTION (1) (3)

NOTES:

1. DIMENSIONS AND SIZES NOTED TO BE CONFIRMED OR AMENDED BY THE ENGINEER OF RECORD.
2. CONCRETE: SEE NEWPORT BEACH HARBOR DESIGN CRITERIA FOR CONCRETE REQUIREMENTS.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

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DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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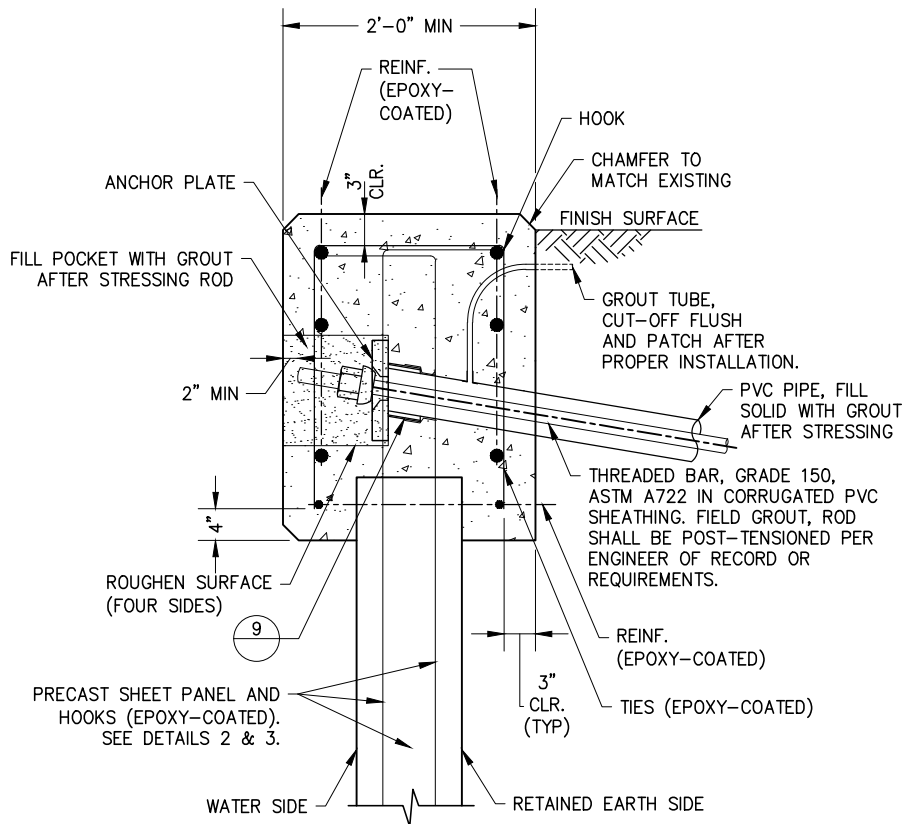
DATE: 11/3/2020

**BULKHEAD & PRECAST PANEL
SECTION & ELEVATION**

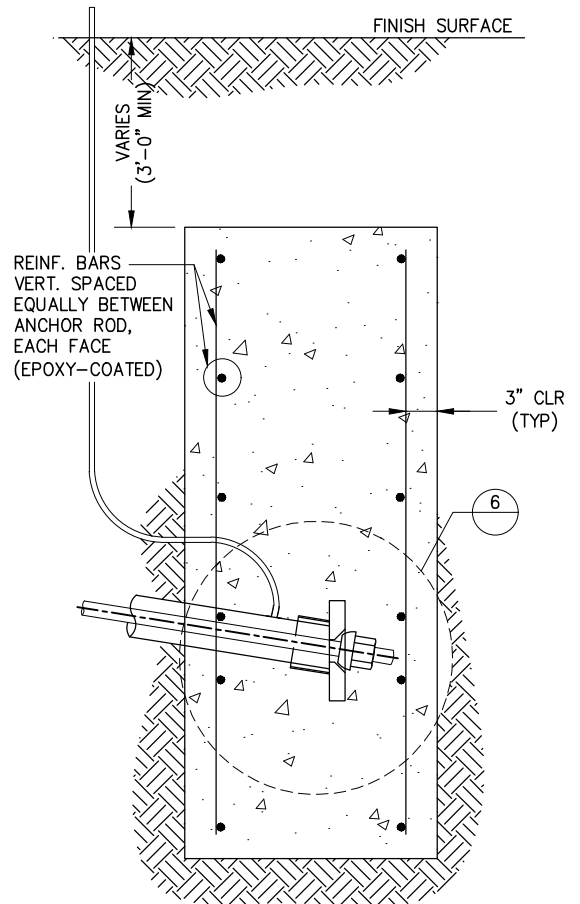
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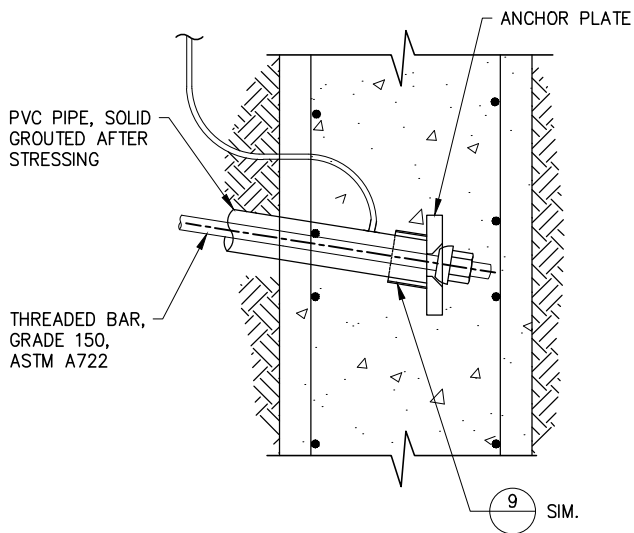
SHEET 1 OF 3



**SECTION AT BULKHEAD CAP
(STRESSING END)⁽¹⁾** 4



**CONCRETE DEADMAN SECTION
(FIXED END)⁽¹⁾** 5



DETAIL (FIXED END)⁽¹⁾ 6

NOTES:

- DIMENSIONS AND SIZES NOTED TO BE CONFIRMED OR AMENDED BY THE CIVIL OR STRUCTURAL ENGINEER OF RECORD.
- DETAILS OF THREAD BAR, ENCASMENT, ANCHOR PLATES, NUTS, WASHERS AND POCKETS MAY DIFFER FROM MANUFACTURER TO MANUFACTURER.
- THE 2'-0" PILE CAP WIDTH IS A MINIMUM DIMENSION AND DOES NOT ALLOW FOR MISALIGNMENT OF CONCRETE PANEL. CONTRACTOR SHALL MAKE ALL NECESSARY ADJUSTMENTS TO THE CAP WIDTH TO MAINTAIN INDICATED CLEARANCES. WIDTH OF CAP SHALL BE MAINTAINED FOR THE ENTIRE LENGTH OF NEW CAP.
- REINFORCEMENT, WALL DIMENSIONS AND THICKNESSES TO BE DESIGNED FOR THE SPECIFIC SITE CONDITIONS AND LOADS.

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

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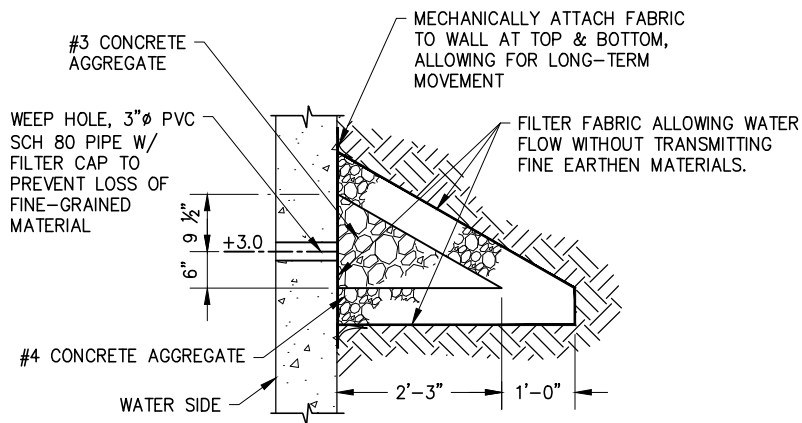
DATE: 11/3/2020

**BULKHEAD CAP & DEADMAN
SECTIONS & DETAIL**

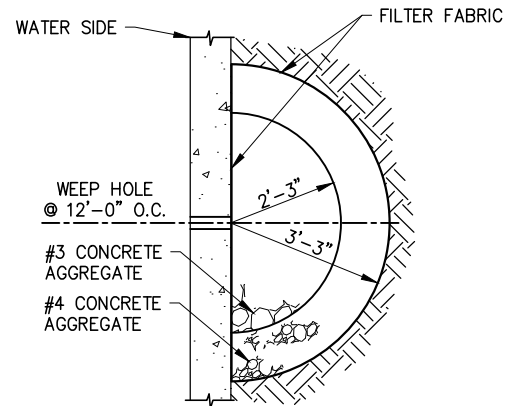
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SHEET 2 OF 3



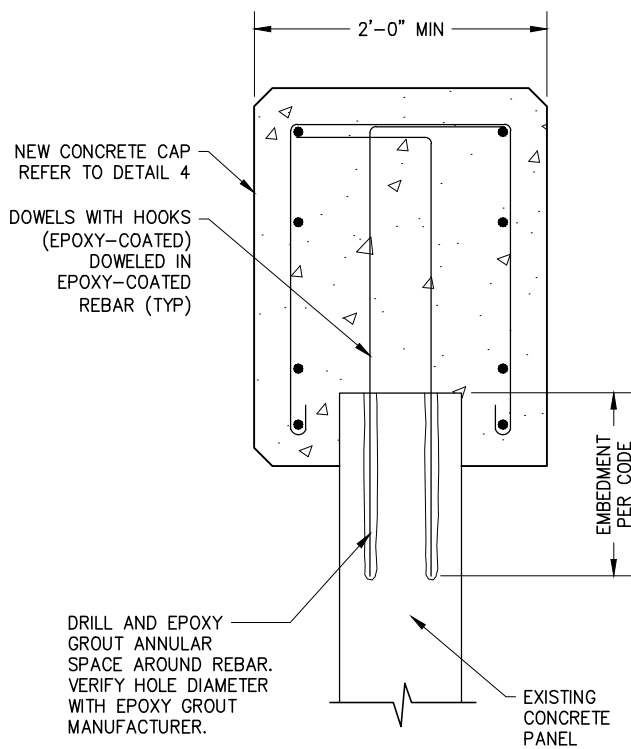
ELEVATION



PLAN

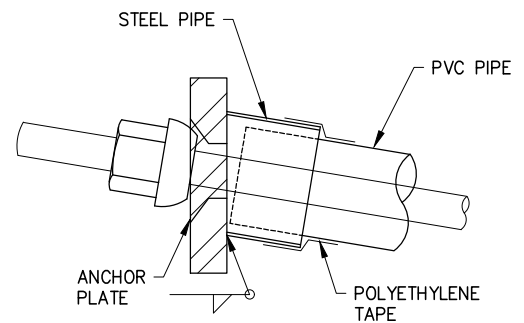
WEEP HOLE SECTION

7



SECTION AT BULKHEAD DOWELS

8



NOTE:

PLATE DETAIL AT STRESSING END (CAP) SHOWN, PLATE DETAIL, SIMILAR AT FIXED END (DEADMAN).

DETAIL

9

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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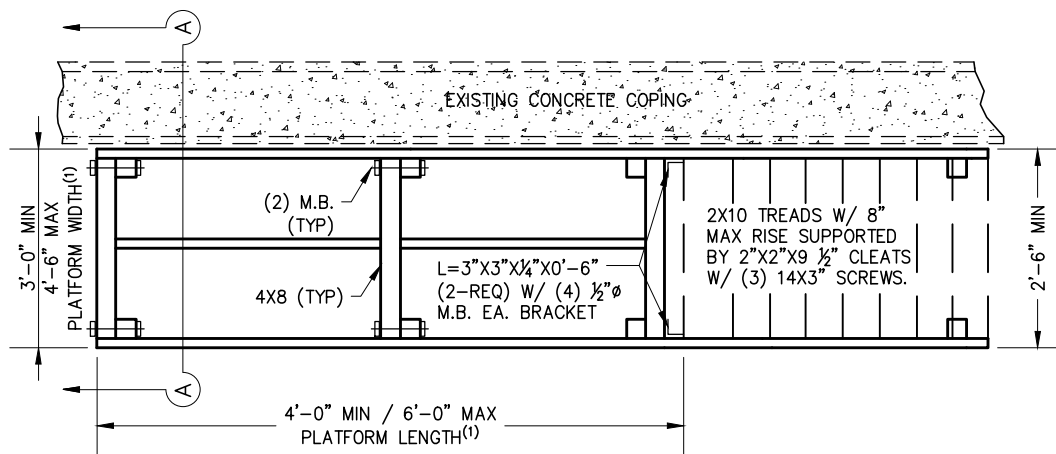
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**BULKHEAD
SECTIONS & DETAILS**

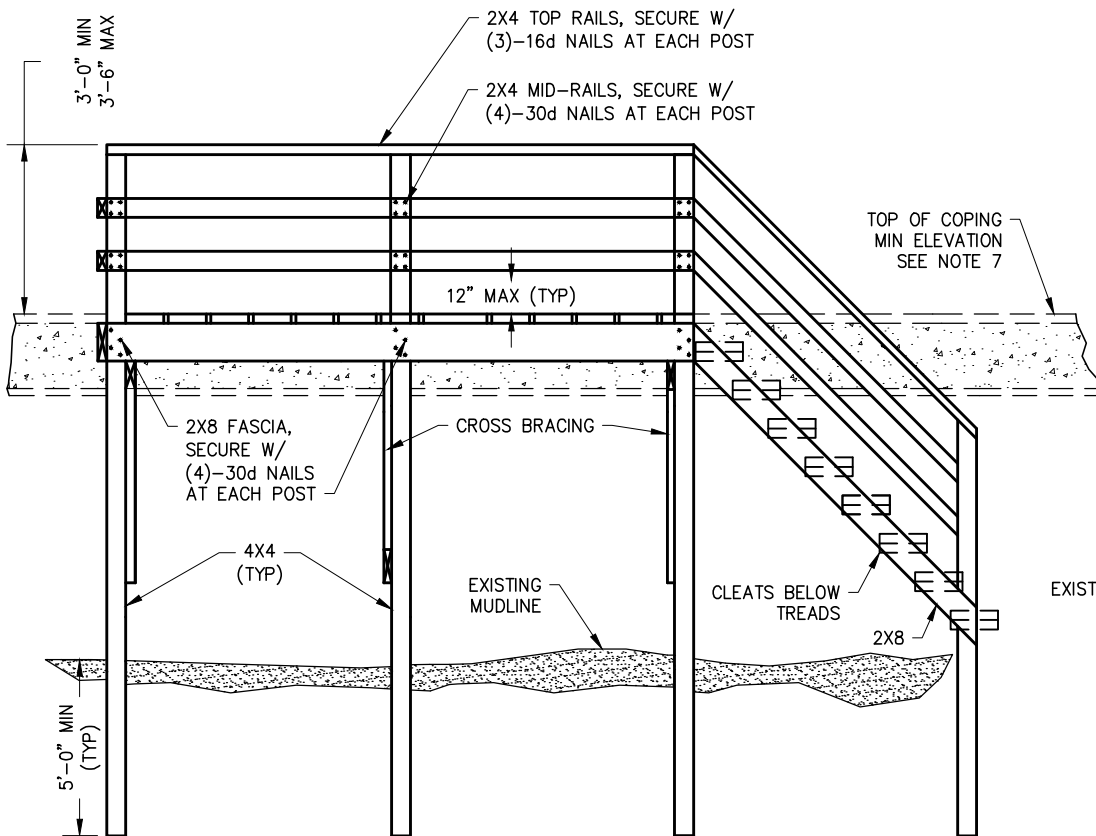
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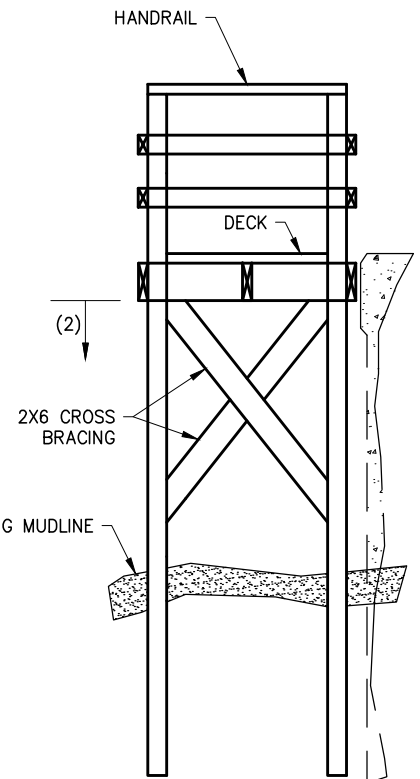
SHEET 3 OF 3



PLAN



ELEVATION



SECTION A-A

NOTES:

- OVERALL PLATFORM SIZE (NOT INCLUDING STEPS) SHALL NOT BE GREATER THAN 27 SQ. FT.
- ALL STRUCTURAL PLATFORM SUPPORTING MEMBERS BELOW ELEV 7.5 MLLW SHALL BE SUITABLE FOR MARINE ENVIRONMENT SUBMERSION INTO HARBOR WATERS AS WELL AS SUBTERRANEAN EMBEDMENT INTO THE MUDFLATS. TREATED LUMBER IS NOT ALLOWED FOR THIS SERVICE, UNLESS ENCAPSULATED IN AN IMPERVIOUS MEMBRANE. ALTERNATIVE OR COMPOSITE MATERIALS OR CONSTRUCTION CAN BE SUBMITTED FOR CITY APPROVAL.
- PLATFORM SHALL NOT BE ANCHORED TO COPING.
- PRESERVATIVE TREATMENT FOR ALL LUMBER USED ABOVE ELEV 7.5 MLLW SHALL MEET STATE OF CALIFORNIA REQUIREMENTS.
- ALL METAL CONNECTION PLATES SHALL BE GALVANIZED OR STAINLESS STEEL. ALL FASTENERS (LAG BOLTS, SCREWS AND/OR NAILS) SHALL BE GALVANIZED STEEL, STAINLESS STEEL OR A PRODUCT SPECIFICALLY DESIGNED TO RESIST CORROSION IN THE MARINE ENVIRONMENT, AND APPROVED BY THE CITY.
- NON-STRUCTURAL MEMBERS MAY BE ALTERNATIVE MATERIALS SUCH AS PLASTIC DIMENSIONAL LUMBER. SUBMIT PRODUCT SPECIFICATIONS TO THE CITY FOR APPROVAL.
- SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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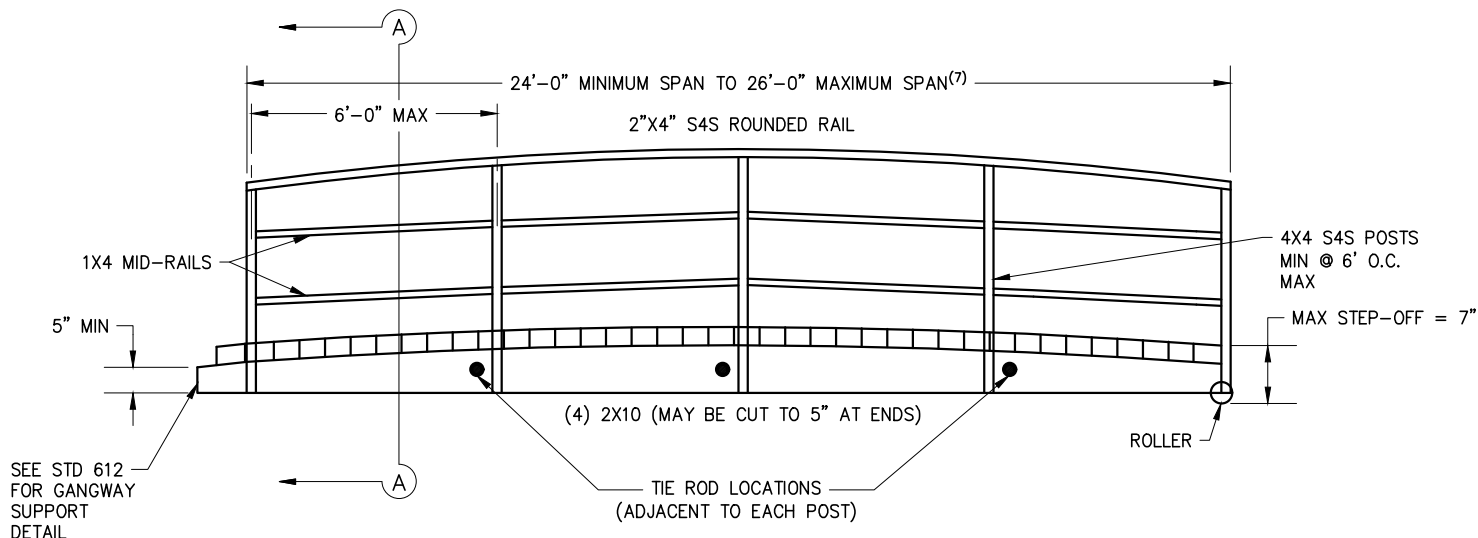
DATE: 11/3/2020

GRAND CANAL - PLATFORM & STEPS

STANDARD DRAWING NO.

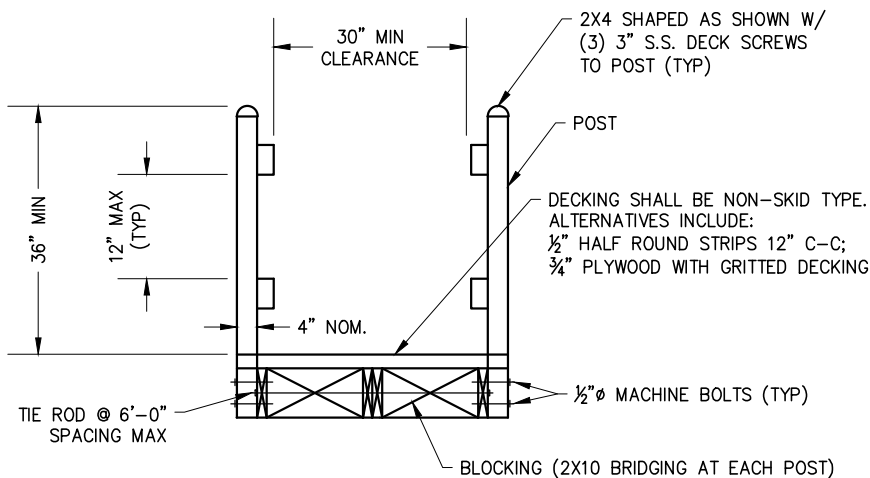
603

SHEET 1 OF 1



GANGWAY SIDE ELEVATION

(USING STANDARD SAWN LUMBER STRINGERS)
(MAX SLOPE FOR RESIDENTIAL USE = 1:2.5)



SECTION A-A

NOTES:

1. TIMBER SHALL BE SELECT STRUCTURAL DOUGLAS FIR TREATED WITH A STATE OF CALIFORNIA-APPROVED PRESERVATIVE (CALIFORNIA COASTAL COMMISSION AND REGIONAL WATER QUALITY CONTROL BOARD). (ALLOWABLE BENDING STRESS, $F_b = 1500$ PSI).
2. FIELD CUTS AND BORED HOLES SHALL RECEIVE A FIELD-APPLIED COAT OF PRESERVATIVE TREATMENT, PER STATE AND FEDERAL GUIDELINES.
3. FASTENERS SHALL BE STAINLESS, HOT-DIP GALVANIZED OR EPOXY-COATED STEEL.
4. WALKING SURFACES SHALL HAVE A SKID-RESISTANT FINISH, SUCH AS UNPAINTED TIMBER, GRIT ON TIMBER, OR OTHER SURFACING DEEMED APPROPRIATE FOR THE INTENDED SERVICE BY THE CITY.
5. NON-STRUCTURAL MEMBERS MAY BE ALTERNATIVE MATERIALS SUCH AS COMPOSITE DIMENSIONAL LUMBER. SUBMIT PRODUCT SPECIFICATIONS TO THE CITY FOR APPROVAL.
6. OPTIONAL GANGWAY TYPES:
ALUMINUM GANGWAYS WITH NON-SKID WALKING PLANKS ARE RECOMMENDED AS A SUBSTITUTE FOR THE DETAILS NOTED IN THIS STANDARD. ALUMINUM GANGWAYS ARE NORMALLY PROVIDED BY QUALIFIED DESIGN/BUILD ALUMINUM FABRICATORS.
7. FOR LENGTHS OVER 26', APPLICANT TO PROVIDE STRUCTURAL ENGINEERING CALCULATIONS.

APP.

James M. Hinkle
CITY ENGINEER

51568

RCE

11/24/2020

DATE

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CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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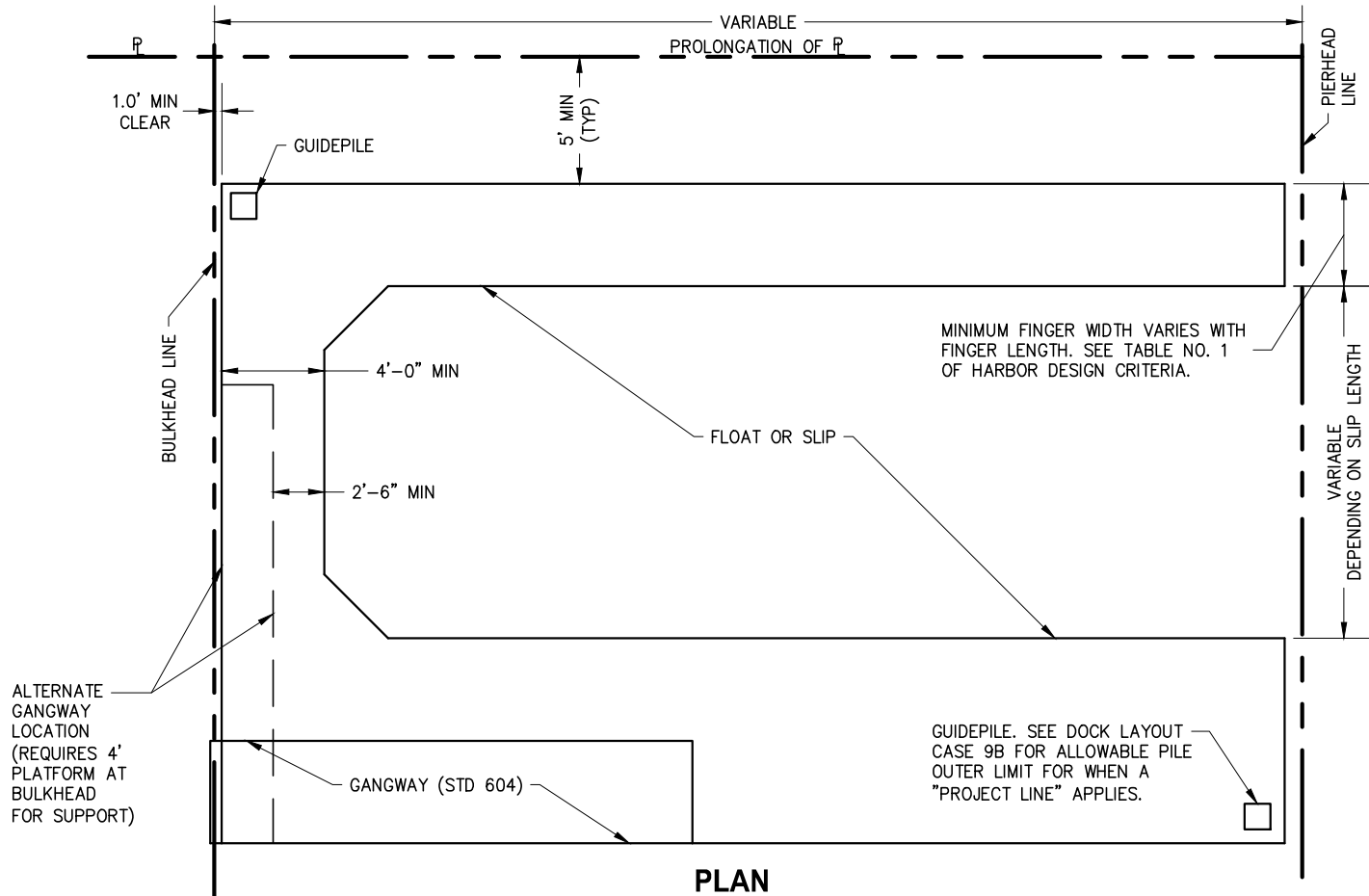
DATE: 11/3/2020

SINGLE OR JOINT RESIDENTIAL USE GANGWAY

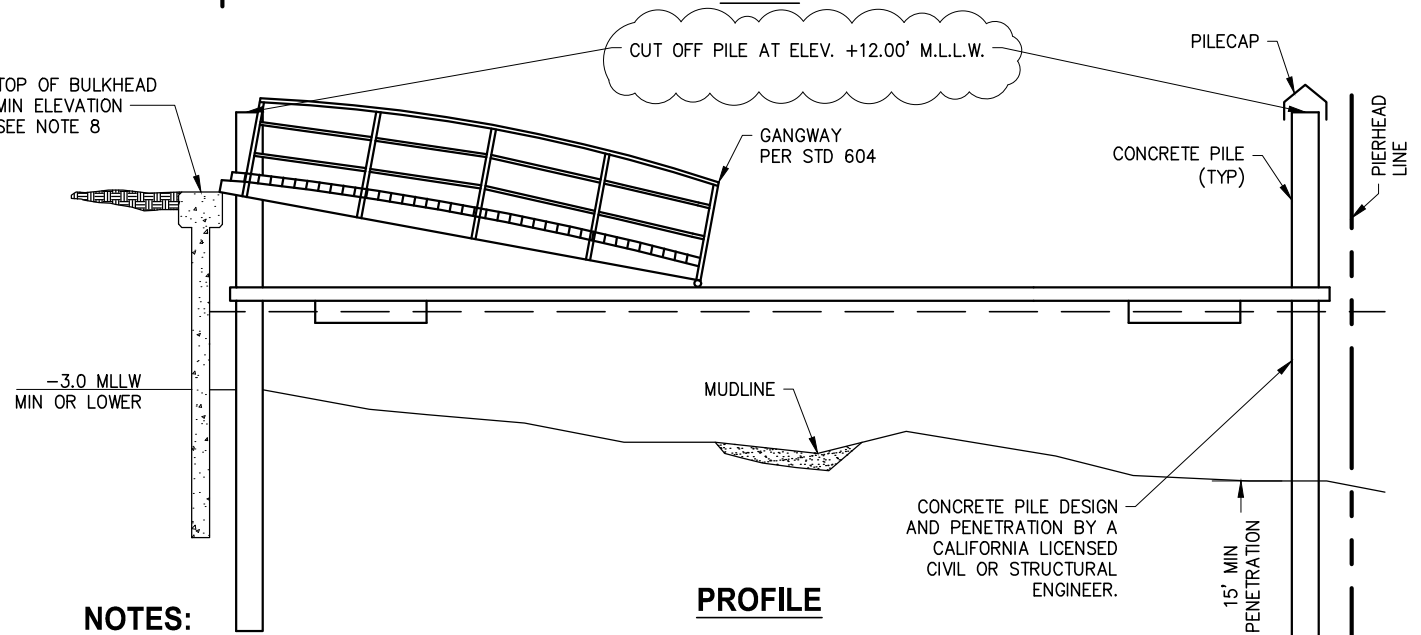
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604

SHEET 1 OF 1



PLAN



PROFILE

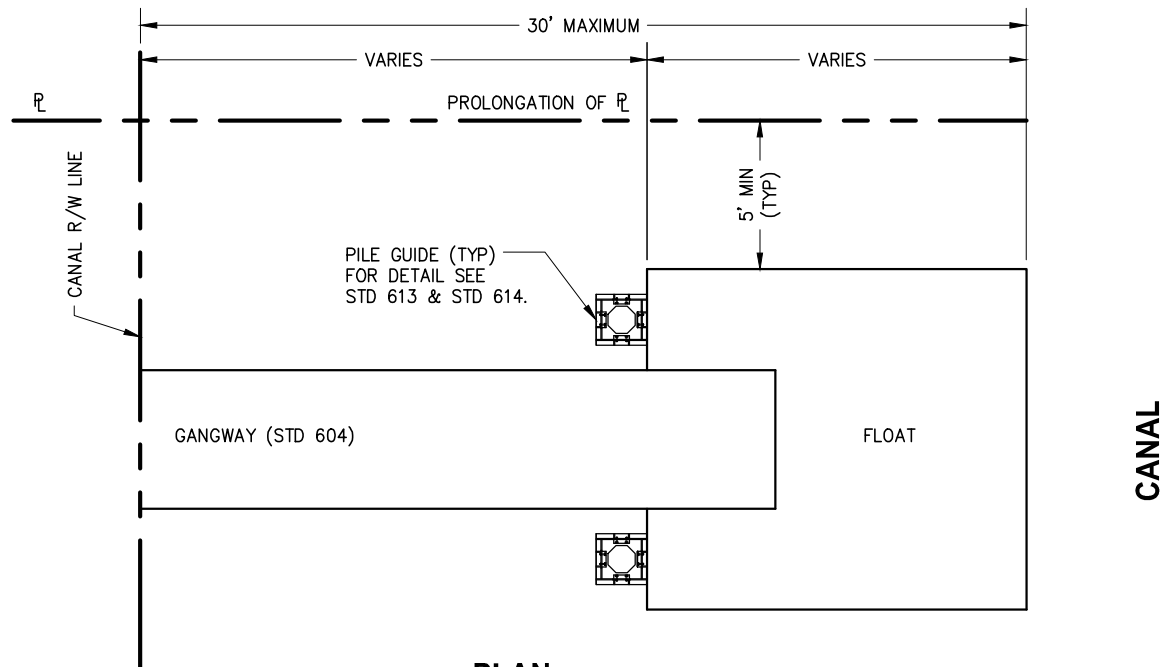
NOTES:

1. TIMBER SHALL BE SELECT STRUCTURAL DOUGLAS FIR TREATED WITH PRESERVATIVE APPROVED BY THE STATE OF CALIFORNIA (CALIFORNIA COASTAL COMMISSION AND REGIONAL WATER QUALITY CONTROL BOARD).
2. FIELD CUTS AND BORED HOLES SHALL RECEIVE A BRUSH COAT OF PRESERVATIVE TREATMENT PER STATE AND FEDERAL GUIDELINES.
3. FASTENERS SHALL BE STAINLESS, HOT-DIP GALVANIZED OR EPOXY-COATED STEEL.
4. WALKING SURFACES SHALL HAVE A SKID RESISTANT FINISH, SUCH AS UNPAINTED TIMBER OR GRIT ON TIMBER, OR OTHER SURFACING DEEMED APPROPRIATE FOR THE INTENDED SERVICE, BY THE CITY.
5. NON-STRUCTURAL MEMBERS MAY BE ALTERNATIVE MATERIALS SUCH AS COMPOSITE DIMENSIONAL LUMBER. SUBMIT PRODUCT SPECIFICATIONS TO THE CITY FOR APPROVAL.
6. SEE STD 604 & HARBOR DESIGN CRITERIA FOR GANGWAY DESIGN REQUIREMENTS.
7. LOCATION OF PLATFORM, GANGWAY, SLIP & FLOATS IS OPTIONAL PROVIDING PROPER SETBACKS ARE MAINTAINED.
8. SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

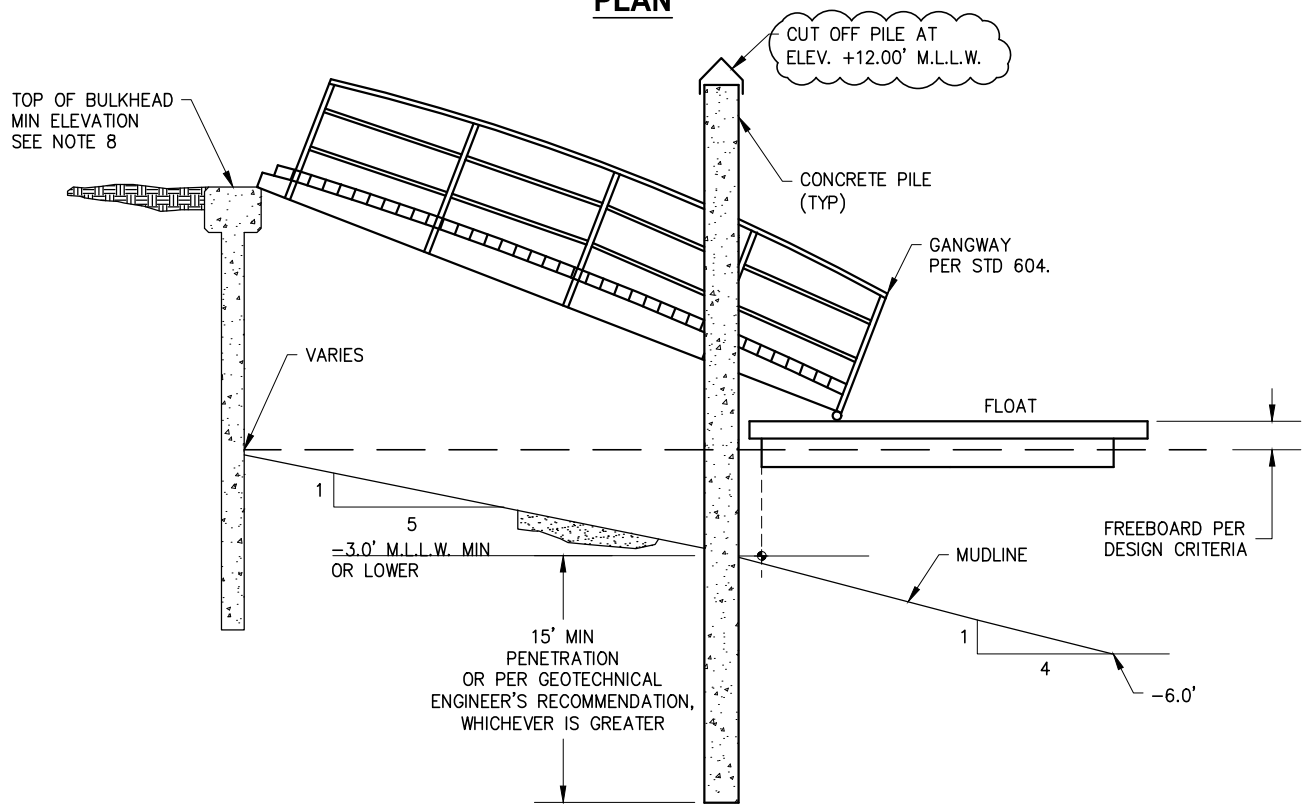
APP. <i>James M. Hinkle</i>	51568	11/24/2020			
CITY ENGINEER	RCE	DATE	NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI	<h1>SINGLE RESIDENTIAL USE FLOAT WITHOUT PIER</h1>	STANDARD DRAWING NO.
DATE: 11/3/2020		<h1>605</h1> <p>SHEET 1 OF 1</p>



PLAN



PROFILE

NOTES:

1. TIMBER SHALL BE SELECT STRUCTURAL DOUGLAS FIR TREATED WITH PRESERVATIVE APPROVED BY THE STATE OF CALIFORNIA (CALIFORNIA COASTAL COMMISSION AND REGIONAL WATER QUALITY CONTROL BOARD).
2. FIELD CUTS AND BORED HOLES SHALL RECEIVE A BRUSH COAT OF PRESERVATIVE TREATMENT PER STATE AND FEDERAL GUIDELINES.
3. FASTENERS SHALL BE STAINLESS, HOT DIP GALVANIZED OR EPOXY-COATED STEEL.
4. WALKING SURFACES SHALL HAVE A SKID RESISTANT FINISH, SUCH AS UNPAINTED TIMBER OR GRIT ON TIMBER, OR OTHER SURFACING DEEMED APPROPRIATE FOR THE INTENDED SERVICE, BY THE CITY.
5. NON-STRUCTURAL MEMBERS MAY BE ALTERNATIVE MATERIALS SUCH AS COMPOSITE DIMENSIONAL LUMBER, SUBMIT PRODUCT SPECIFICATIONS TO THE CITY FOR APPROVAL.
6. SEE STD 604 & HARBOR DESIGN CRITERIA FOR GANGWAY DESIGN REQUIREMENTS.
7. LOCATION OF PLATFORM, GANGWAY, SLIP & FLOATS IS OPTIONAL PROVIDING PROPER SETBACKS ARE MAINTAINED.
8. SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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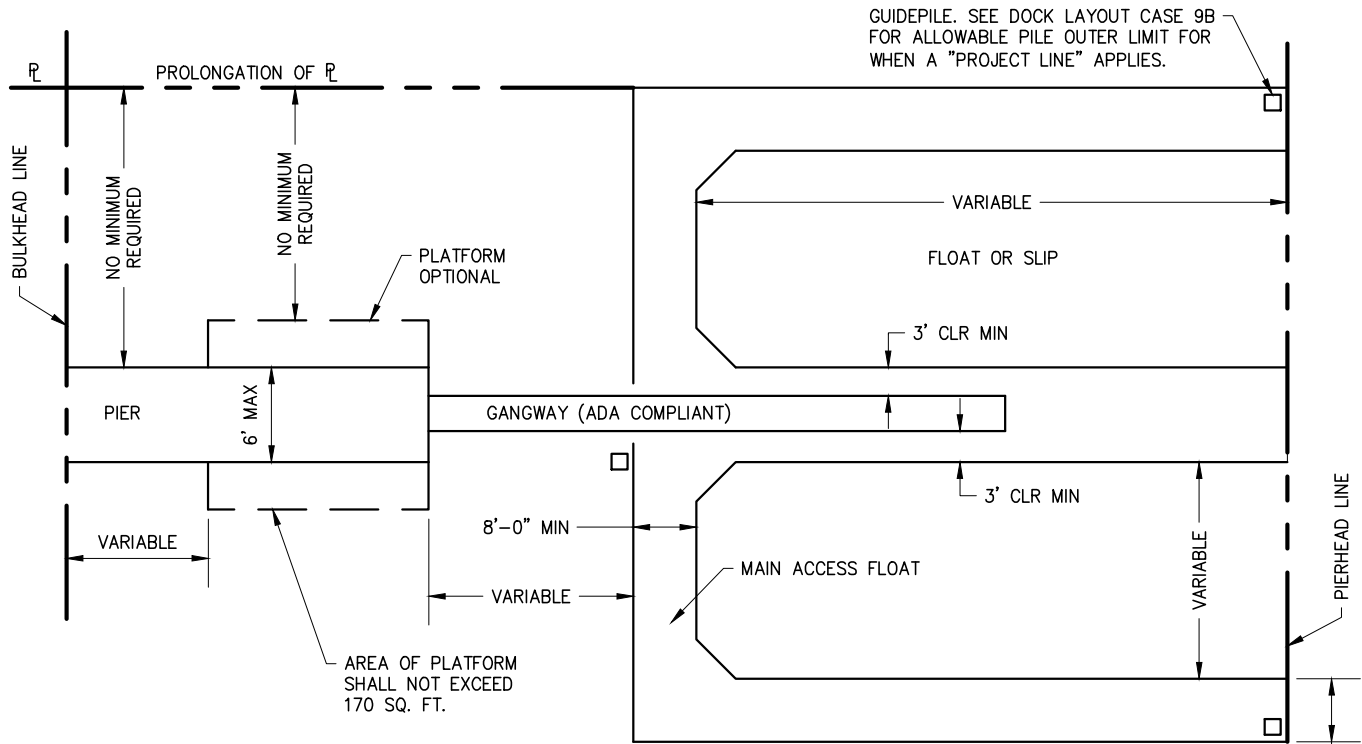
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**SINGLE RESIDENTIAL USE FLOAT
WEST NEWPORT CHANNELS**

STANDARD DRAWING NO.

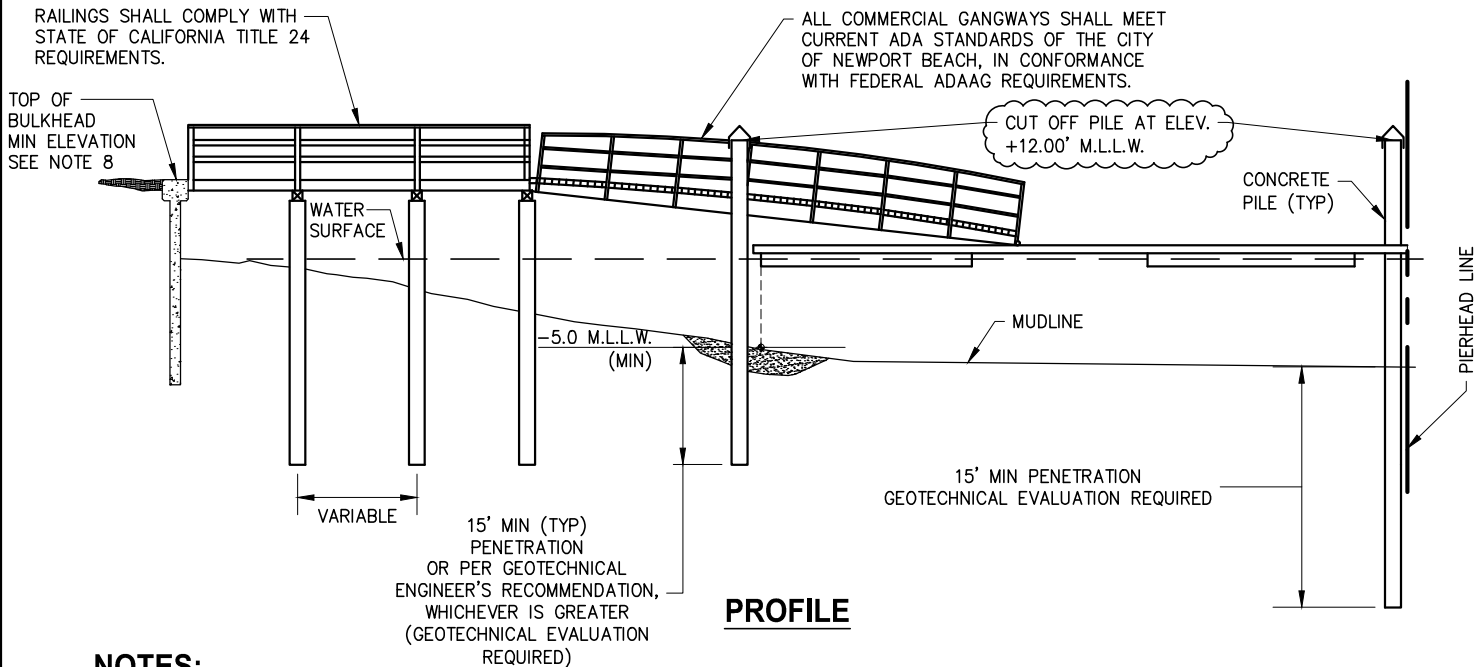
606

SHEET 1 OF 1



PLAN

MIN FINGER WIDTH VARIES WITH FINGER LENGTH. SEE TABLE NO. 1 OF HARBOR DESIGN CRITERIA.



PROFILE

NOTES:

1. TIMBER SHALL BE SELECT STRUCTURAL DOUGLAS FIR TREATED WITH PRESERVATIVE APPROVED BY THE STATE OF CALIFORNIA (CALIFORNIA COASTAL COMMISSION AND REGIONAL WATER QUALITY CONTROL BOARD).
2. FIELD CUTS AND BORED HOLES SHALL RECEIVE A BRUSH COAT OF PRESERVATIVE TREATMENT PER STATE AND FEDERAL GUIDELINES.
3. FASTENERS SHALL BE STAINLESS, HOT DIP GALVANIZED OR EPOXY-COATED STEEL.
4. WALKING SURFACES SHALL HAVE A SKID RESISTANT FINISH, SUCH AS UNPAINTED TIMBER OR GRIT ON TIMBER, OR OTHER SURFACING DEEMED APPROPRIATE FOR THE INTENDED SERVICE, BY THE CITY.
5. NON-STRUCTURAL MEMBERS MAY BE ALTERNATIVE MATERIALS SUCH AS COMPOSITE DIMENSIONAL LUMBER, SUBMIT PRODUCT SPECIFICATIONS TO THE CITY FOR APPROVAL.
6. COMMERCIAL PIERS, GANGWAYS, FLOATS AND PILES TO BE DESIGNED BY A CALIFORNIA LICENSED CIVIL OR STRUCTURAL ENGINEER.
7. LOCATION OF PLATFORM, GANGWAY, SLIP & FLOATS IS OPTIONAL PROVIDING PROPER SETBACKS ARE MAINTAINED.
8. SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

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NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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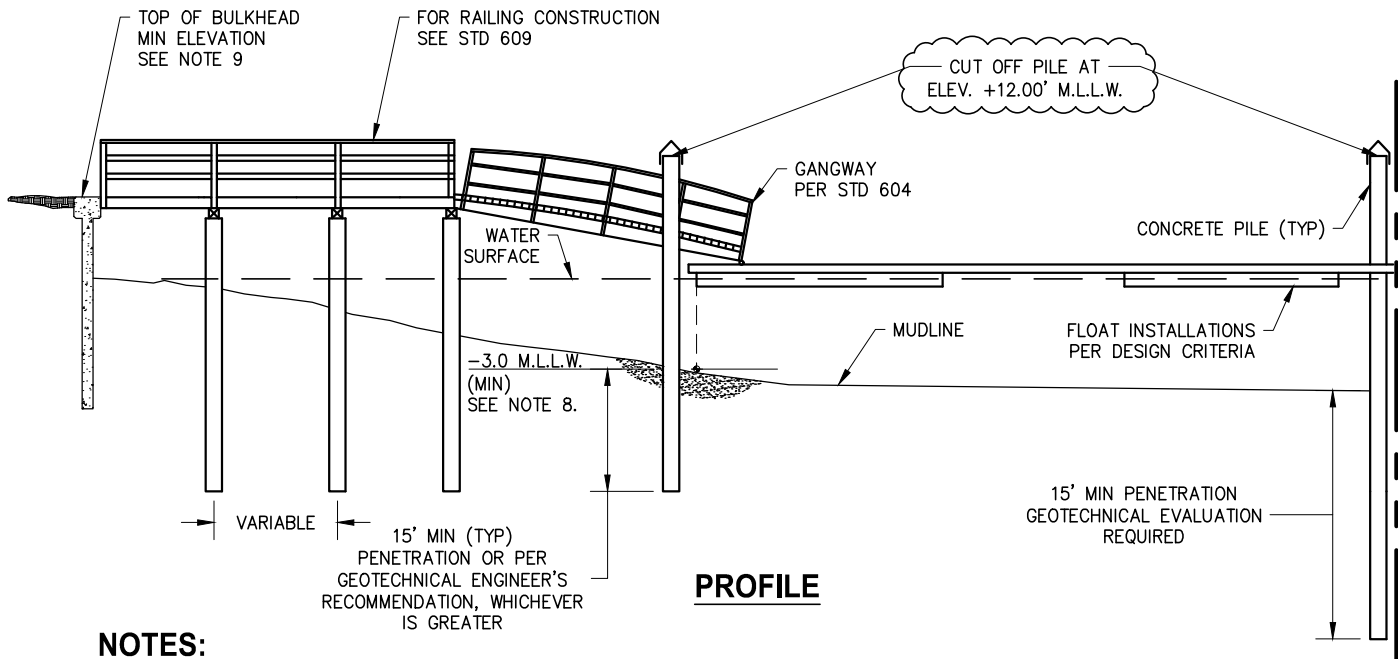
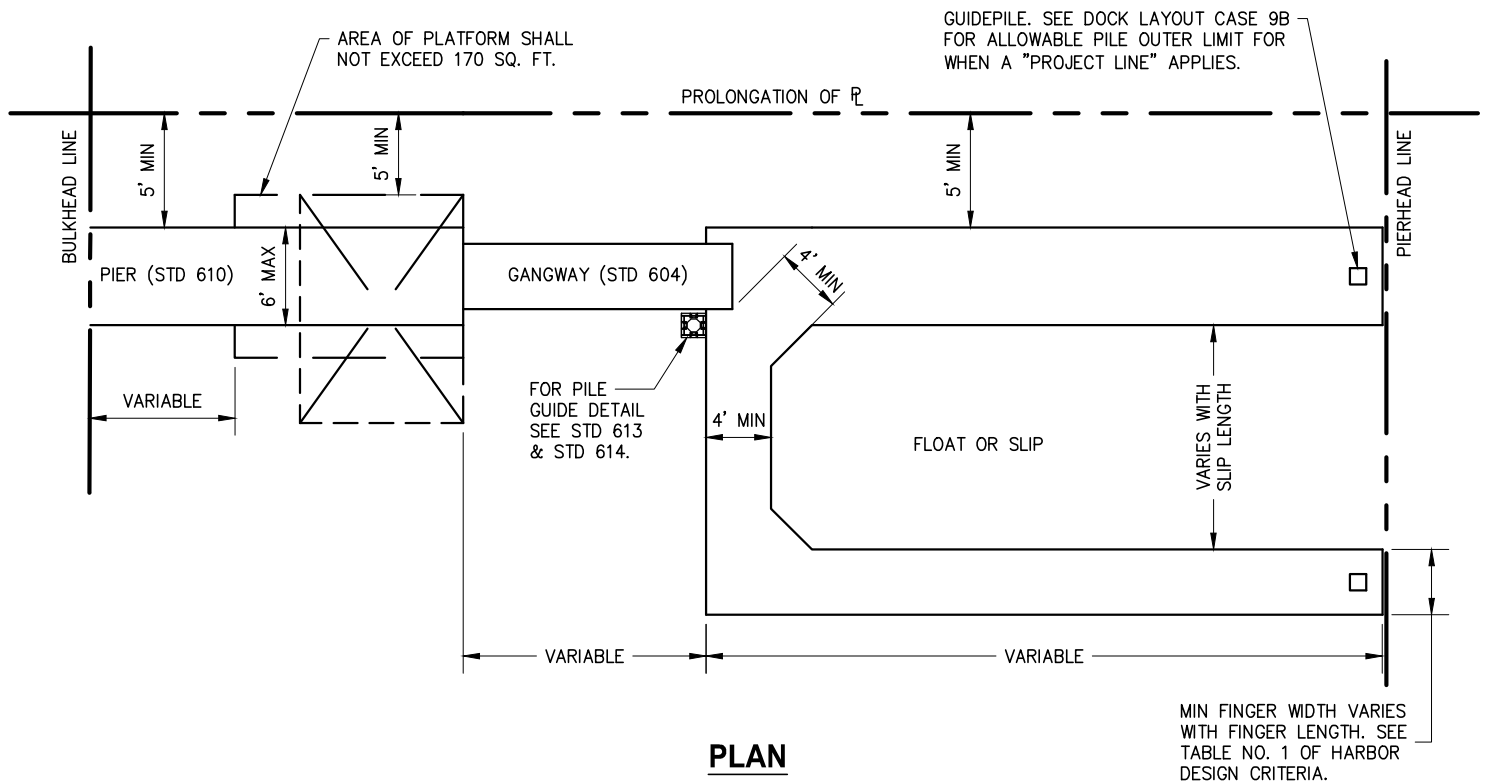
DATE: 11/3/2020

COMMERCIAL PIER & FLOAT INSTALLATION

STANDARD DRAWING NO.


607

SHEET 1 OF 1



NOTES:

1. TIMBER SHALL BE SELECT STRUCTURAL DOUGLAS FIR TREATED WITH PRESERVATIVE APPROVED BY THE STATE OF CALIFORNIA (CALIFORNIA COASTAL COMMISSION AND REGIONAL WATER QUALITY CONTROL BOARD).
2. FIELD CUTS AND BORED HOLES SHALL RECEIVE A BRUSH COAT OF PRESERVATIVE TREATMENT PER STATE AND FEDERAL GUIDELINES.
3. FASTENERS SHALL BE STAINLESS, HOT DIP GALVANIZED OR EPOXY-COATED STEEL.
4. WALKING SURFACES SHALL HAVE A SKID RESISTANT FINISH, SUCH AS UNPAINTED TIMBER OR GRIT ON TIMBER, OR OTHER SURFACING DEEMED APPROPRIATE FOR THE INTENDED SERVICE, BY THE CITY.
5. NON-STRUCTURAL MEMBERS MAY BE ALTERNATIVE MATERIALS SUCH AS COMPOSITE DIMENSIONAL LUMBER, SUBMIT PRODUCT SPECIFICATIONS TO THE CITY FOR APPROVAL.
6. SEE STD 604 & HARBOR DESIGN CRITERIA FOR GANGWAY DESIGN REQUIREMENTS.
7. LOCATION OF PLATFORM, GANGWAY, SLIP & FLOATS IS OPTIONAL PROVIDING PROPER SETBACKS ARE MAINTAINED.
8. UNDER EXTREME LOW WATER CONDITIONS, PONTOON MAY CONTACT MUDLINE. VERIFY IF PONTOONS AND DOCK SYSTEM CAN WITHSTAND THIS STRESS.
9. SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

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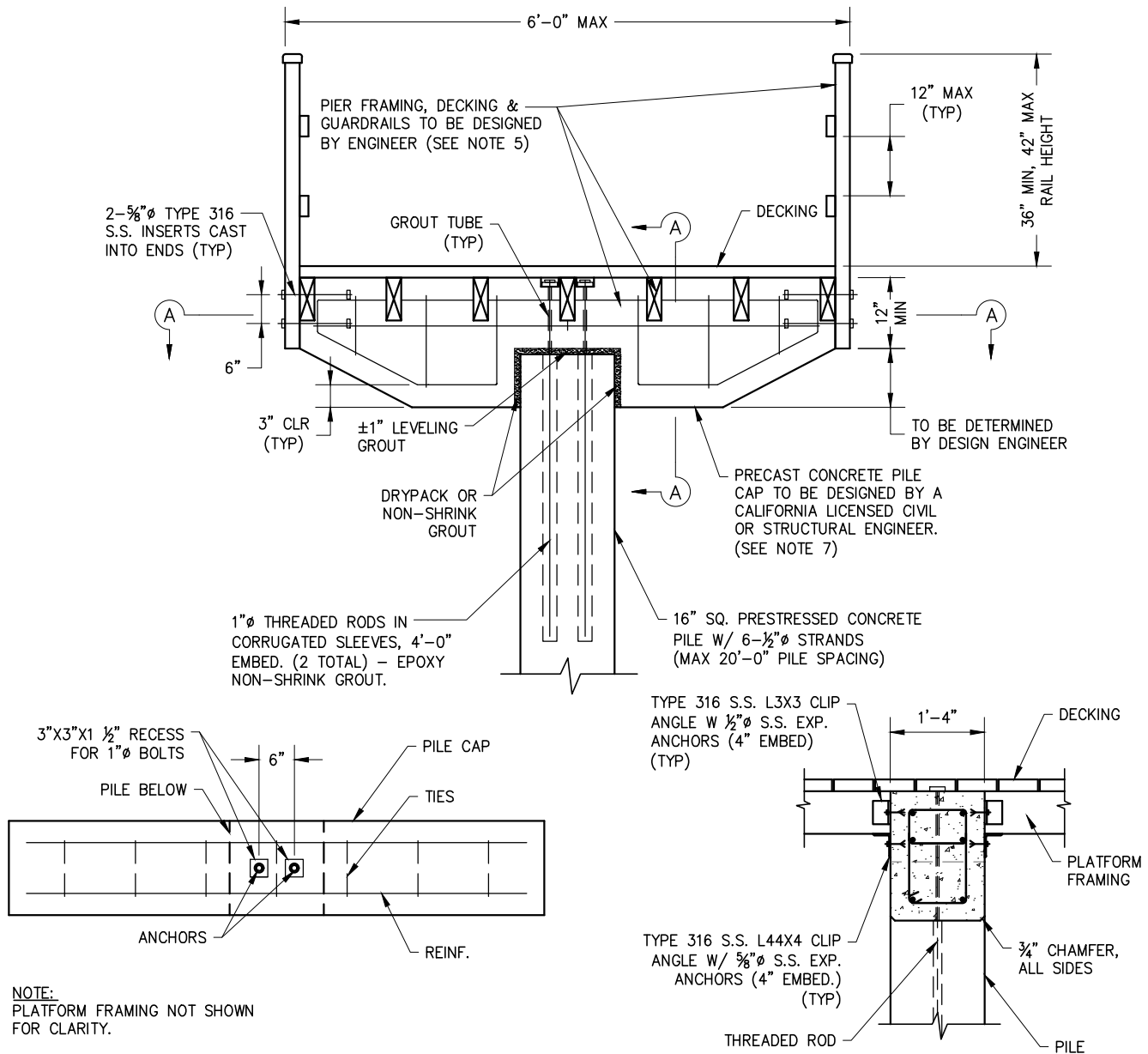
DATE: 11/3/2020

SINGLE RESIDENTIAL USE FLOAT WITH PIER

STANDARD DRAWING NO.

608

SHEET 1 OF 1



SECTION A-A

SECTION B-B

NOTES:

1. CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH $f'_c = 6,000$ PSI. PRE-STRESSING STRANDS SHALL HAVE A MINIMUM $f_{pu} = 270$ KSI. SEE HARBOR DESIGN CRITERIA FOR ADDITIONAL CONCRETE REQUIREMENTS.
2. ALL TIMBER SHALL BE TREATED PER ACCEPTED STATE OF CALIFORNIA REQUIREMENTS.
3. BRACKETS AND FASTENERS FOR TIMBER FRAMING SHALL BE HOTDIP GALVANIZED, EPOXY-COATED OR STAINLESS STEEL. CONNECTORS TO BE 1/4" MIN THICKNESS, UNLESS OTHERWISE NOTED.
4. WALKING SURFACES SHALL BE SKID RESISTANT.
5. ALL TIMBER PLATFORM FRAMING AND RAILINGS SHALL BE DESIGNED BY A LICENSED CIVIL OR STRUCTURAL ENGINEER REGISTERED IN CALIFORNIA AND ARE NOT DETAILED IN THIS STANDARD.
6. TIMBER STRINGER SPLICES ARE NOT PERMITTED BETWEEN PILES.
7. OPTIONAL CAST-IN-PLACE CONSTRUCTION IS ACCEPTABLE. IF SO, LEVELING GROUT AND DRYPACK OR NON-SHRINK GROUT ILLUSTRATION WOULD NOT BE REQUIRED.
8. A LICENSED GEOTECHNICAL ENGINEER REGISTERED IN CALIFORNIA SHALL VERIFY PILE SIZE AND TYPE, AS WELL AS EMBEDMENT. GEOTECHNICAL ENGINEER SHALL COORDINATE THE DESIGN WITH INPUT FROM A LICENSED CIVIL OR STRUCTURAL ENGINEER REGISTERED IN CALIFORNIA.

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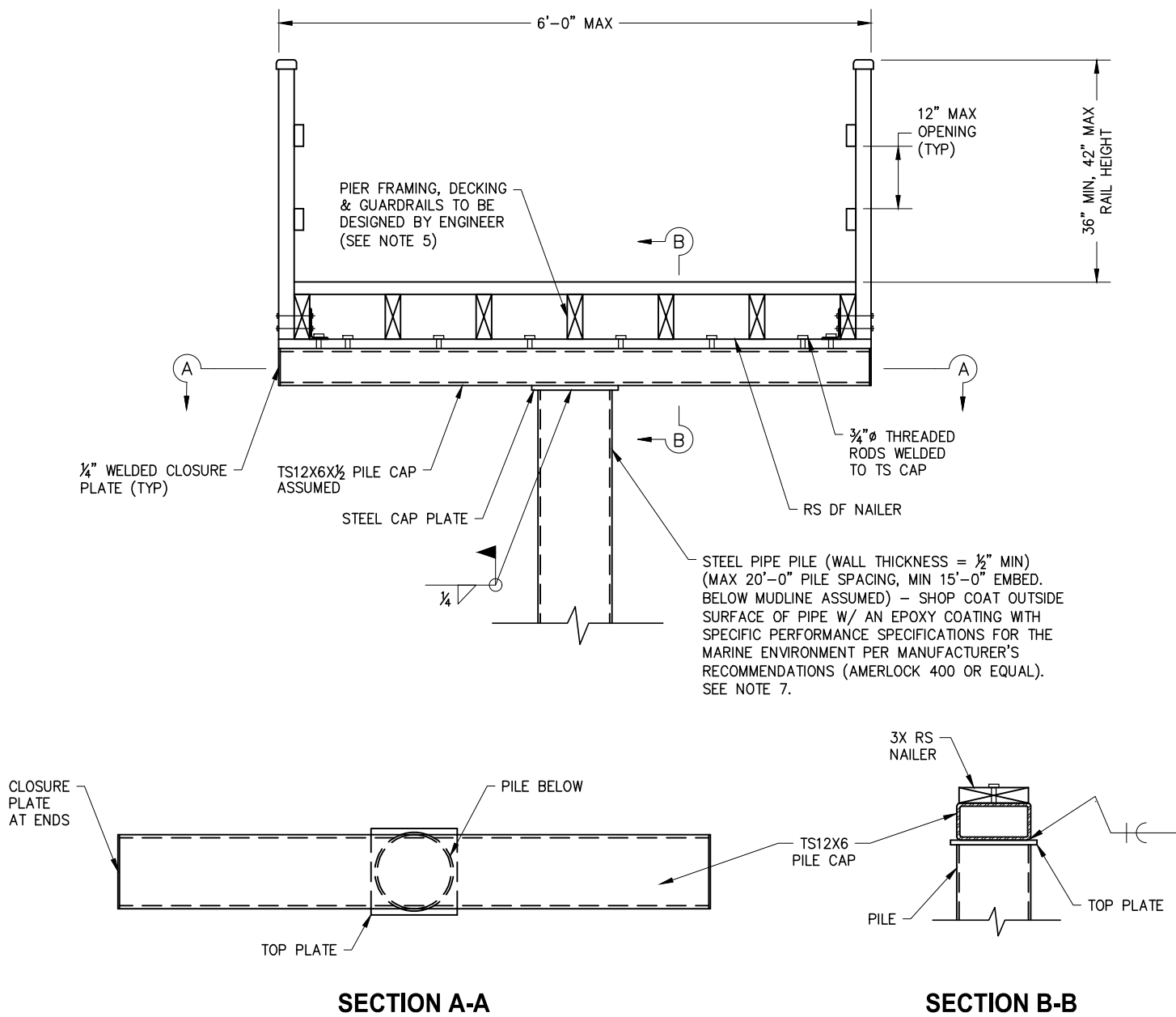
DATE: 11/3/2020

TYPICAL PIER SECTION

STANDARD DRAWING NO.

610

SHEET 1 OF 2



NOTES:

1. ALL STEEL COMPONENTS SHALL BE MINIMUM ASTM A36 (MIN $F_y = 36$ KSI). ALL STEEL PIPE PILES SHALL BE ASTM A53, GR B MATERIAL (MIN $F_y = 35$ KSI).
2. ALL TIMBER SHALL BE TREATED PER ACCEPTED STATE OF CALIFORNIA REQUIREMENTS.
3. BRACKETS AND FASTENERS FOR TIMBER FRAMING SHALL BE HOT-DIP GALVANIZED, EPOXY-COATED OR STAINLESS STEEL. CONNECTORS TO BE 1/4" MIN THICKNESS, UNLESS OTHERWISE NOTED.
4. WALKING SURFACES SHALL HAVE A SKID-RESISTANT FINISH, SUCH AS UNPAINTED TIMBER.
5. ALL TIMBER PLATFORM FRAMING AND RAILINGS SHALL BE DESIGNED BY A LICENSED ENGINEER AND ARE NOT DETAILED IN THIS STANDARD.
6. TIMBER STRINGER SPLICES ARE NOT PERMITTED BETWEEN PILES.
7. NO COATING ON STEELWORK 4" FROM WELDED PARTS (PILE AND CAP) TO ALLOW FOR FIELD WELDING. TOUCH-UP THIS UNCOATED AREA AFTER FABRICATION PER MANUFACTURER'S RECOMMENDATIONS, INCLUDING SURFACE PREPARATION. IF PILES REQUIRE CUT-OFF DUE TO SUFFICIENT BLOW COUNTS PRIOR TO OBTAINING TIP ELEVATION, REMOVE COATING IN UPPER 4" OF PILE TO ALLOW FIELD WELDING.
8. FOR ADDITIONAL CORROSION RESISTANCE, THE APPLICANT MAY WISH TO CONSIDER INSTALLING A PASSIVE OR ACTIVE CATHODIC PROTECTION SYSTEM.
9. AN ENGINEER LICENSED IN THE STATE OF CALIFORNIA SHALL VERIFY PILE SIZE AND TYPE, AS WELL AS EMBEDMENT.

APP.

James M. Hinkle

51568
RCE

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DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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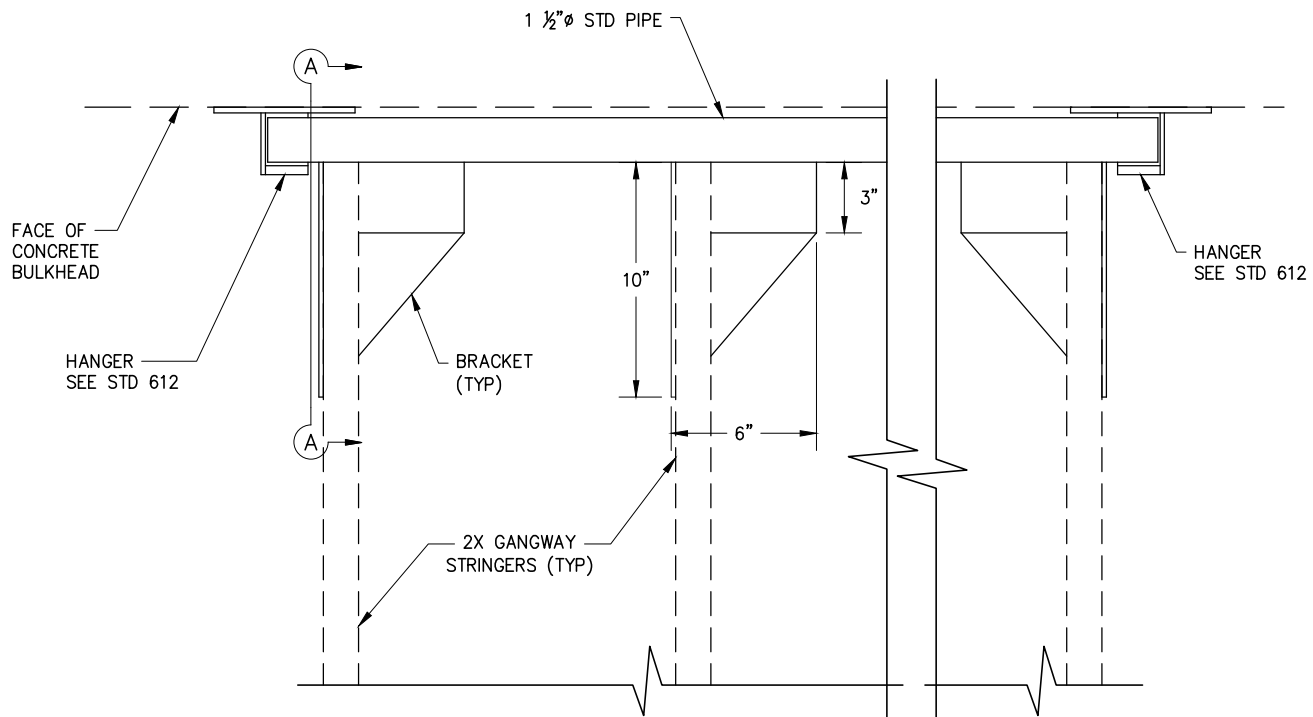
DATE: 11/3/2020

TYPICAL PIER SECTION (ALTERNATE)

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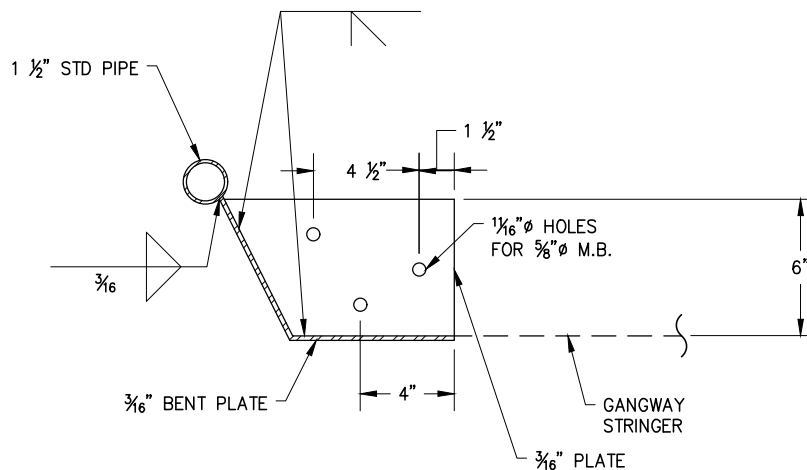
610

SHEET 2 OF 2



PARTIAL PLAN AT GANGWAY

NOTE: 1 1/2" ϕ PIPE AND "KEEPER" PLATE NOT SHOWN FOR CLARITY.



DETAIL A - GANGWAY BRACKET

NOTES:

1. ALL STEEL SHALL BE GALVANIZED.
2. PROVIDE ONE BRACKET PER GANGWAY STRINGER.

APP.

[Signature]
CITY ENGINEER

51568
RCE

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NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

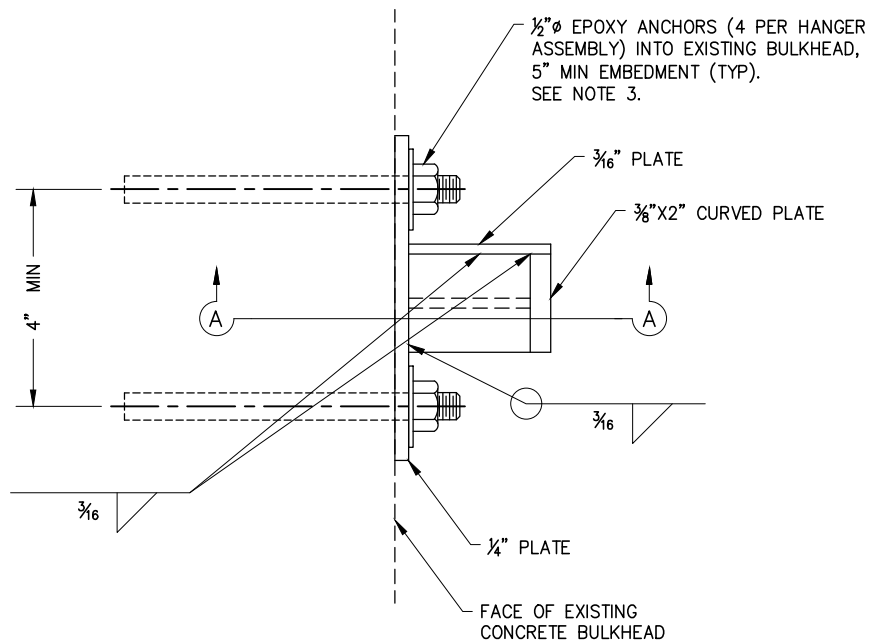
DATE: 11/3/2020

RESIDENTIAL GANGWAY BRACKET - TYPICAL (CONCEPT)

STANDARD DRAWING NO.

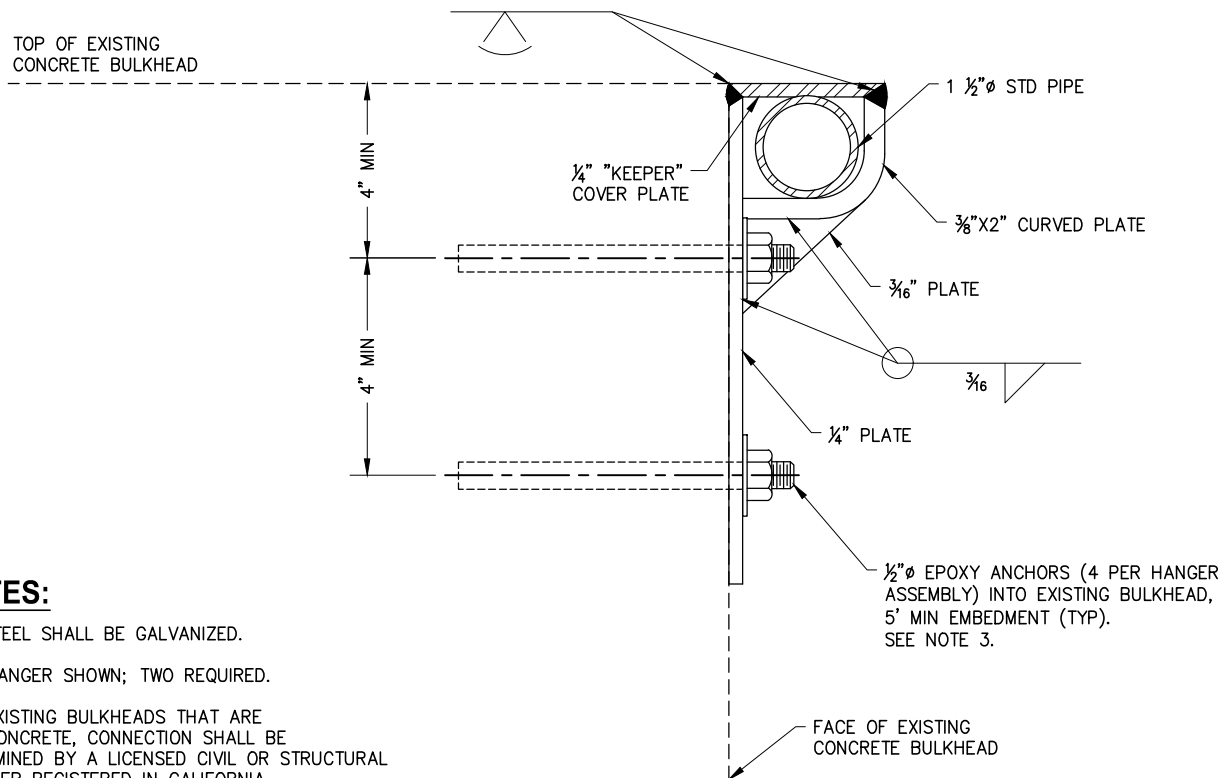
612

SHEET 1 OF 2



PLAN DETAIL - GANGWAY HANGER


NOTE: 1 1/2" Ø PIPE AND "KEEPER" PLATE NOT SHOWN FOR CLARITY.



NOTES:

1. ALL STEEL SHALL BE GALVANIZED.
2. ONE HANGER SHOWN; TWO REQUIRED.
3. FOR EXISTING BULKHEADS THAT ARE NOT CONCRETE, CONNECTION SHALL BE DETERMINED BY A LICENSED CIVIL OR STRUCTURAL ENGINEER REGISTERED IN CALIFORNIA.

DETAIL A - GANGWAY BRACKET

APP.  51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

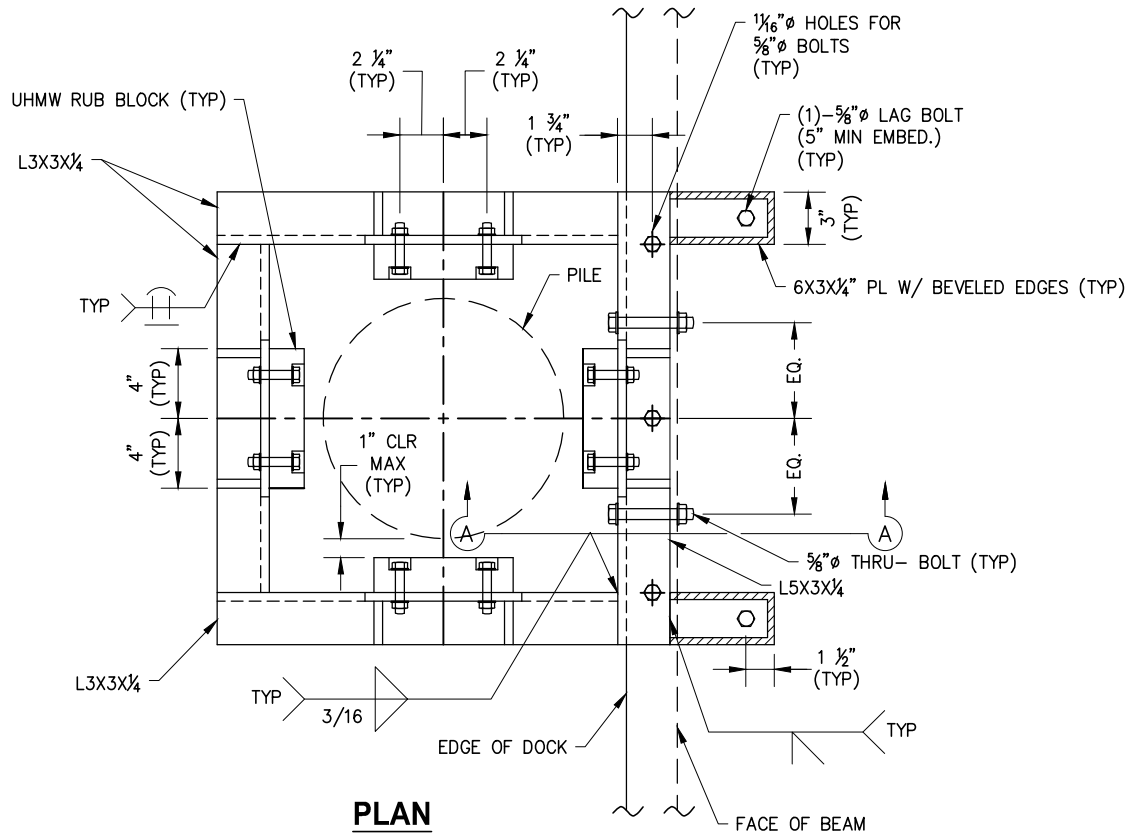
DATE: 11/3/2020

RESIDENTIAL GANGWAY HANGER - TYPICAL (CONCEPT)

STANDARD DRAWING NO.

612

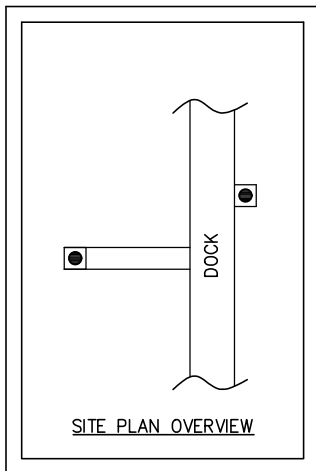
SHEET 2 OF 2



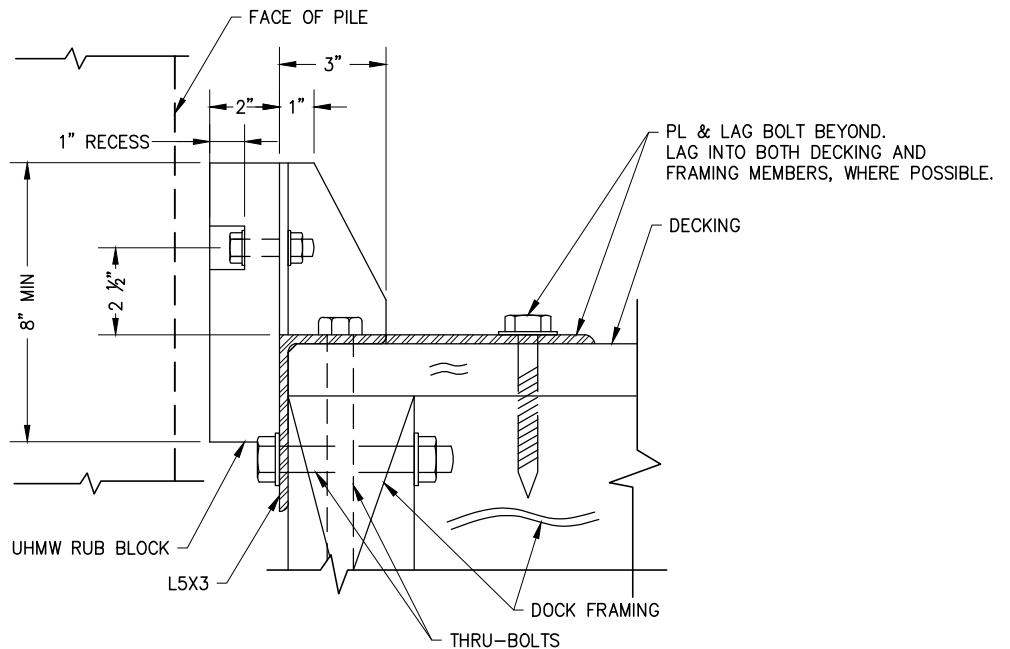
(CONDITION WITH GUIDE FRAME SUPPORTED ON ONE SIDE ONLY)

NOTES:


1. ALL STEEL ANGLES, PLATES AND CONNECTIONS SHALL BE GALVANIZED.
2. ALL WELDING TO BE $\frac{3}{16}$ " FILLET WELDS ALL AROUND BETWEEN CONNECTED PARTS, UNLESS OTHERWISE NOTED.
3. ALL PLATES TO BE $\frac{3}{8}$ " THICKNESS, UNLESS OTHERWISE NOTED.



KEY PLAN



SECTION A-A

APP. 	51568	11/24/2020			
CITY ENGINEER	RCE	DATE	NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

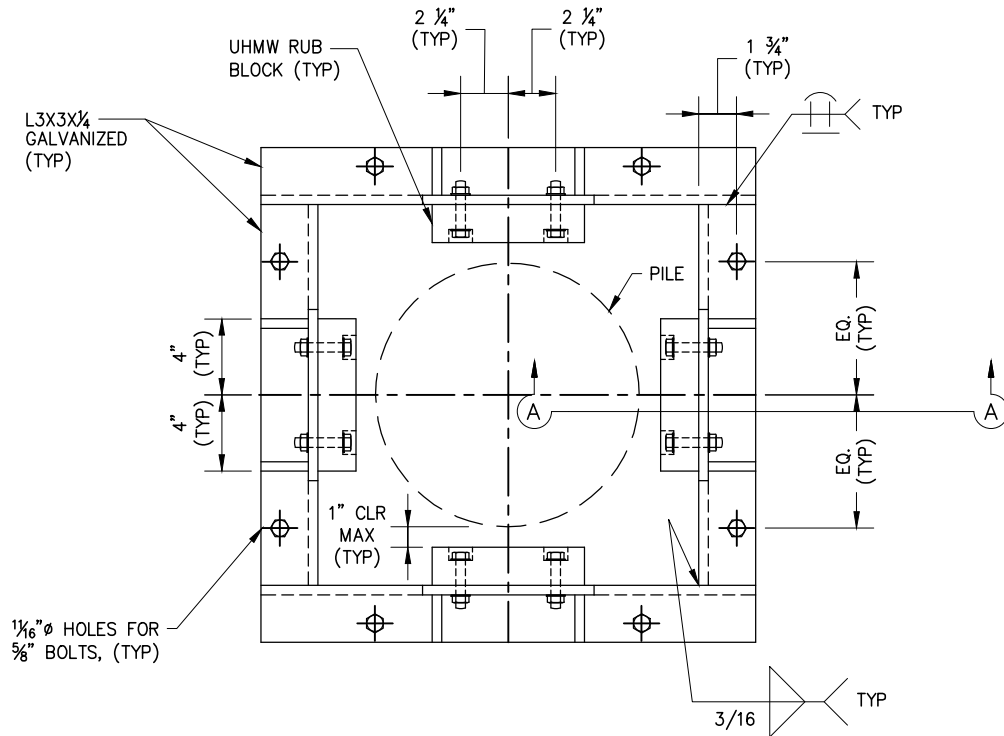
DATE: 11/3/2020

PILE GUIDE RUB BLOCK TYPICAL DETAIL (CASE I)

STANDARD DRAWING NO.

613

SHEET 1 OF 1

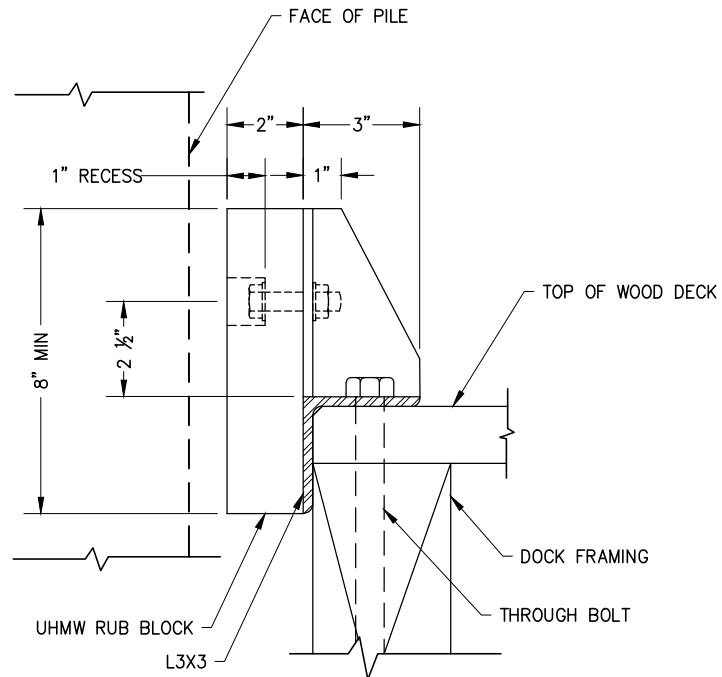


PLAN

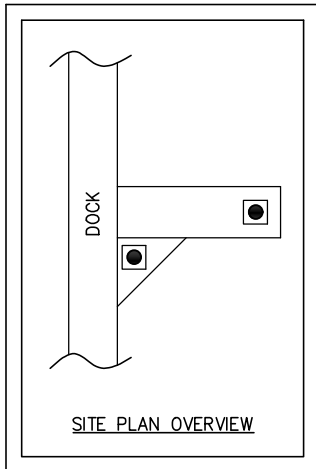
(CONDITION WITH SUPPORT ALL AROUND GUIDE FRAME)

NOTES:

1. ALL STEEL ANGLES, PLATES AND CONNECTIONS SHALL BE GALVANIZED.
2. ALL WELDING TO BE $\frac{3}{16}$ " FILLET WELDS ALL AROUND BETWEEN CONNECTED PARTS, UNLESS OTHERWISE NOTED.
3. ALL PLATES TO BE $\frac{3}{8}$ " THICKNESS, UNLESS OTHERWISE NOTED.



SECTION A-A



KEY PLAN

APP.

James M. Hinkle
CITY ENGINEER

51568

RCE

11/24/2020

DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

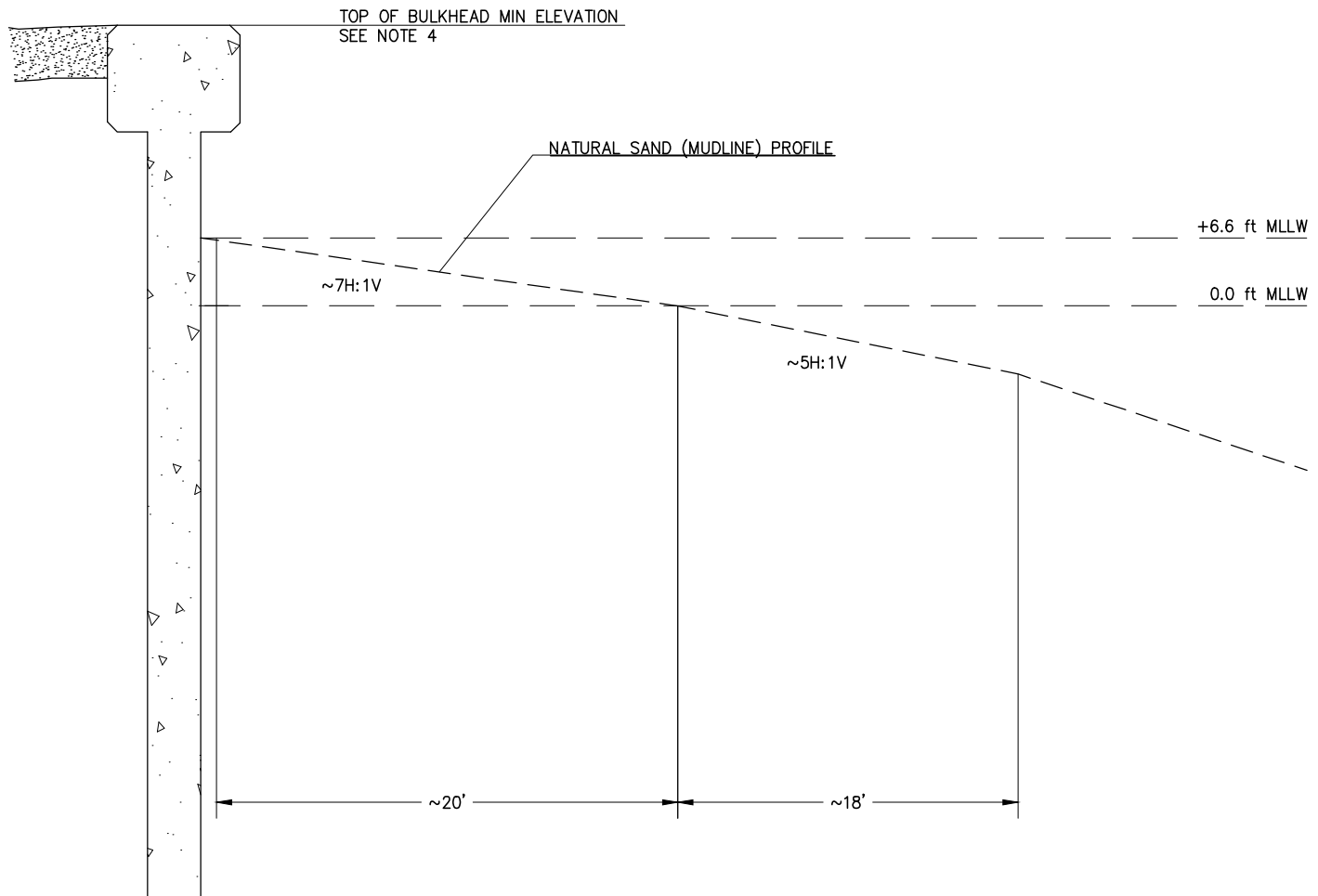
DATE: 11/3/2020

PILE GUIDE RUB BLOCK TYPICAL DETAIL (CASE II)

STANDARD DRAWING NO.

614

SHEET 1 OF 1



PROFILE

NOTES:

1. NATURAL SAND PROFILES VARY BY LOCATION WITHIN THE HARBOR.
2. H:V = HORIZONTAL TO VERTICAL
3. MLLW = MEAN LOWER LOW WATER
4. SEE TABLE NO. 2 IN THE HARBOR DESIGN CRITERIA FOR MINIMUM BULKHEAD ELEVATIONS.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

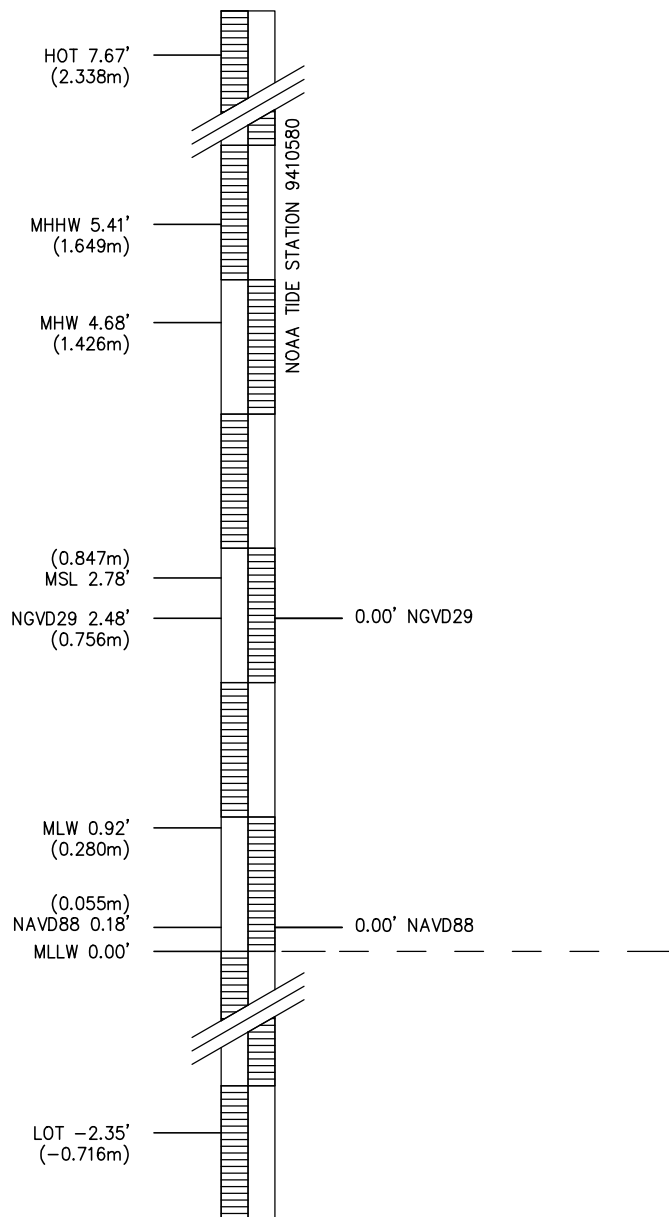
NATURAL SAND PROFILES IN NEWPORT HARBOR

STANDARD DRAWING NO.

615

SHEET 1 OF 1

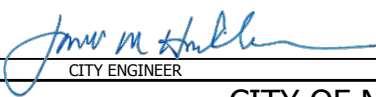
TIDAL DATUMS AND ELEVATIONS

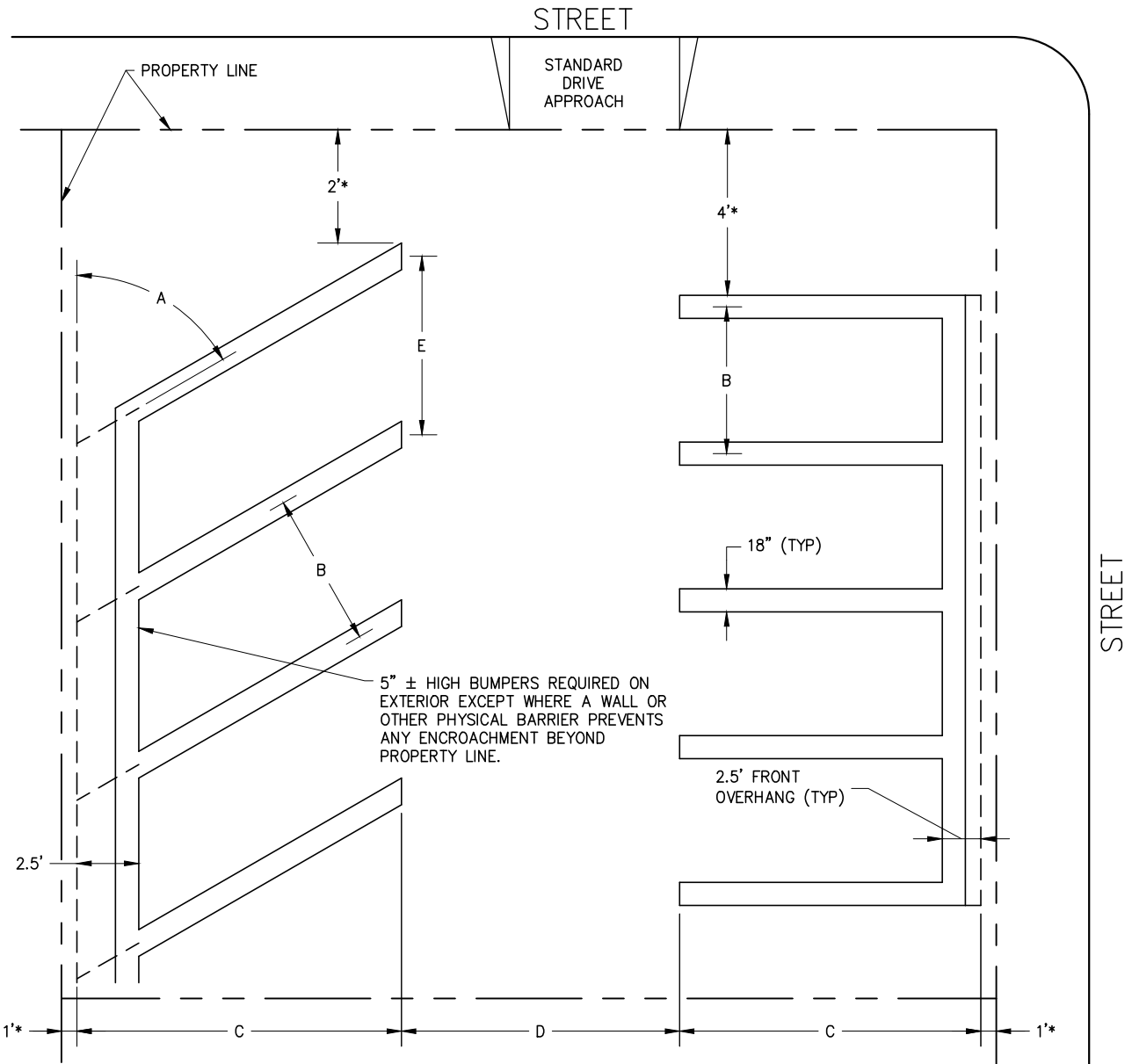


ABBREVIATIONS:

HOT = HIGHEST OBSERVED TIDE (1983.01.28)
 MHHW = MEAN HIGHER HIGH WATER
 MHW = MEAN HIGH WATER
 MSL = MEAN SEA LEVEL
 MLW = MEAN LOW WATER
 MLLW = MEAN LOWER LOW WATER
 LOT = LOWEST OBSERVED TIDE (1988.01.20)
 NAVD88 = NORTH AMERICAN VERTICAL DATUM 1988
 NGVD29 = NATIONAL GEODETIC VERTICAL DATUM 1929

TIDAL DATUM SEPARATIONS SHOWN FOR
 NOAA TIDE STATION 9410580, NEWPORT BAY ENTRANCE
 TIDAL EPOCH 1983 - 2001 (PUBLICATION DATE: 04/21/2003)
<https://co-ops.nos.noaa.gov/datums.html?id=9410580>

APP. 	51568	11/24/2020			
CITY ENGINEER	RCE	DATE	NO.	DATE	DESCRIPTION OF REVISIONS
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS					
DRAWN: P. KHARAZMI	TIDE PLANES AND TIDAL DATUM RELATIONSHIPS				STANDARD DRAWING NO.
DATE: 11/3/2020					616
					SHEET 1 OF 1



* MINIMUM SETBACK UNLESS OTHERWISE SPECIFIED IN PLANNING AND ZONING REGULATIONS

MINIMUM DIMENSIONS OF PARKING SPACES AND ISLES

"A" ANGLE OF PARKING	"B" WIDTH OF SPACE	"C" DEPTH OF SPACE PERPENDICULAR TO AISLE	"D" WIDTH OF AISLE	"E" WIDTH OF SPACE PARALLEL TO AISLE
30°	8'-6"	16'	14'	17'
45°	8'-6"	18'	14'	12'
60°	8'-6"	19'	18'	9'-10"
90°	8'-6"	17'	26'	8'-6"

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 805-L-A

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

PARKING LOT STANDARDS

STANDARD DRAWING NO.

805

SHEET 1 OF 2


OFF-STREET PARKING STANDARDS

1. PARKING SPACES PARALLEL TO A PROPERTY LINE SHALL NOT BE LESS THAN 8'-0" BY 22'-0" PER VEHICLE.
2. SPACES SHALL BE MARKED WITH APPROVED TRAFFIC MARKERS OR PAINTED WHITE LINES NOT LESS THAN 4" WIDE.
3. AISLES AND ENTRANCES INTENDED FOR TWO-DIRECTIONAL TRAVEL SHALL NOT BE LESS THAN 24' WIDE. ONE-WAY TRAVEL AISLES SHALL BE A MINIMUM OF 14'.
4. PARKING LOTS AND AREAS SHALL BE PAVED WITH ASPHALT, CONCRETE OR OTHER STREET SURFACING MATERIAL OF A PERMANENT NATURE.
5. PARKING LOTS SHALL BE SO DESIGNED THAT CARS LEAVING THE LOT WILL NOT BE PERMITTED TO BACK OUT ON THE PORTION OF STREET RIGHT-OF-WAY (EXCEPTING ALLEYS) USED FOR VEHICULAR TRAVEL.
6. DIRECT ACCESS TO PARKING SPACES WILL BE PERMITTED FROM ALLEYS PROVIDING NOT OVER 10 FEET OF THE ALLEY RIGHT-OF-WAY IS USED FOR THE REAR PORTION OF THE REQUIRED AISLE WIDTH, AND PROVIDED THE SPACES ARE SET BACK FROM THE ALLEY THE MINIMUM DISTANCES SHOWN IN THE FOLLOWING TABLE:

<u>ALLEY WIDTH</u>	<u>MINIMUM SET-BACK</u>
15'-0" OR LESS	5'-0"
15'-1" TO 19'-11"	3'-9"
20'-0" OR MORE	2'-6"

7. DIRECT ACCESS TO PARKING SPACES WILL BE PERMITTED FROM LOCAL STREETS PROVIDING THE ALLOWABLE CURB OPENING IS NOT EXCEEDED AND PROVIDED THE SPACE IS SET-BACK A MINIMUM OF 2'-0" FROM THE RIGHT-OF-WAY LINE.
8. PARKING WILL NOT BE PERMITTED ON SLOPES GREATER THAN 5%.
9. THE MAXIMUM RAMP SLOPE SHALL NOT EXCEED 15%.
10. CHANGES IN RAMP SLOPE SHALL NOT EXCEED 11% AND MAY OCCUR AT FIVE FOOT INTERVALS.
11. THE WIDTH OF SPACES NEXT TO WALLS OR SIMILAR OBSTRUCTIONS SHALL BE 9'-0".
12. STRUCTURAL ELEMENTS SHALL NOT ENCROACH INTO THE REQUIRED STALL, WITH THE EXCEPTION THAT THEY WILL BE ALLOWED IN AN ONE FOOT SQUARE AREA AT THE FRONT CORNERS.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 805-L-B

APP.  51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

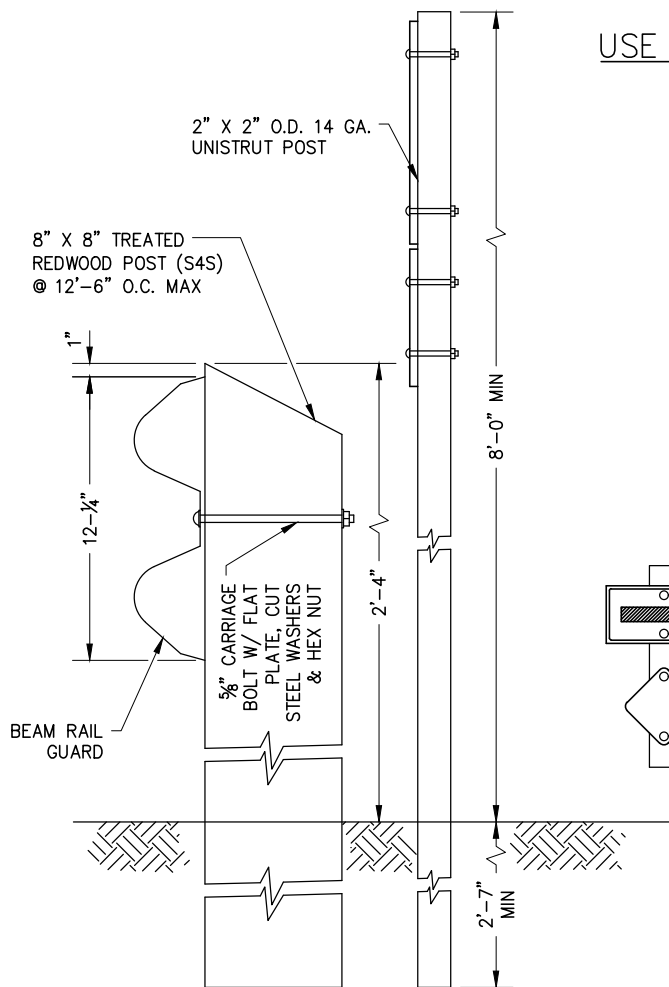
PARKING LOT STANDARDS

STANDARD DRAWING NO.

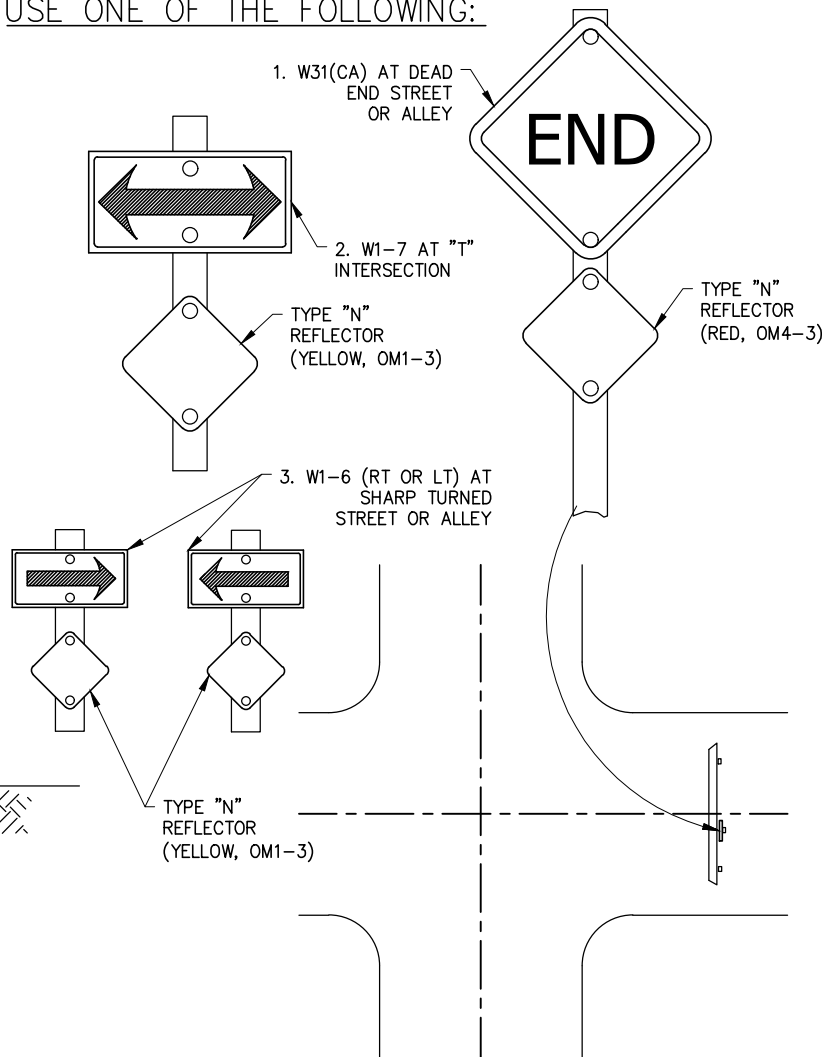
805

SHEET 2 OF 2

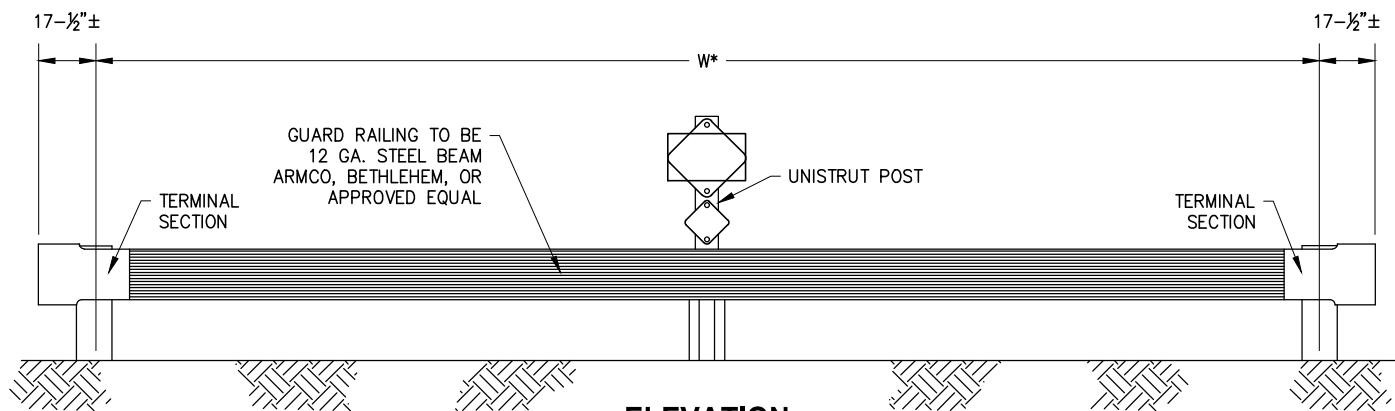
USE ONE OF THE FOLLOWING:



POST DETAIL



PLAN



ELEVATION

ROAD WIDTH	W*
28' AND 32'	2 @ 12'-6" = 25
36' AND 40'	3 @ 10'-0" = 30'
64'	4 @ 12'-6" = 50'

* UNLESS OTHERWISE SHOWN ON THE PLANS

NOTES:

- ALL METAL PARTS INCLUDING RAILING TO BE HOT DIP GALVANIZED.
- SIGNS SHALL BE INSTALLED PER CITY STD 924.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 900-L

APP.

James M. Hinkle

51568

CITY ENGINEER

RCE

11/24/2020

DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

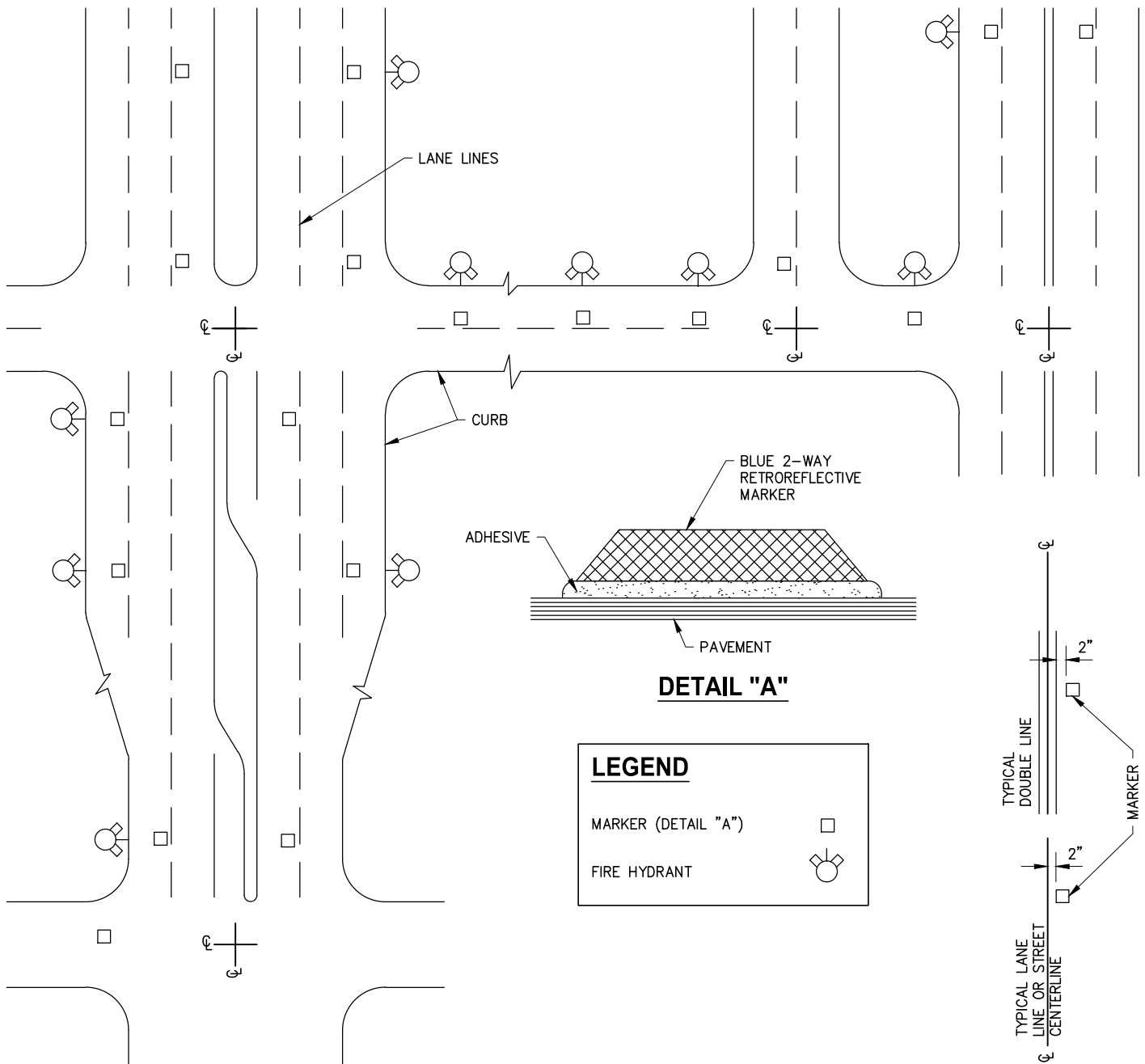
DATE: 11/3/2020

STANDARD STREET BARRICADE

STANDARD DRAWING NO.

900

SHEET 1 OF 1



- MARKERS — SHALL BE BLUE 2-WAY RETROREFLECTIVE WITH GLASS FACES OR 3M 290 SERIES OR EQUAL.
- ADHESIVE — PER MANUFACTURER'S SPECIFICATIONS.
- SURFACES — CLEAN AND DRY PRIOR TO INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS. INSTALL MARKERS WITH RETROREFLECTIVE SURFACES FACING ONCOMING VEHICLES AND OFFSET 2" FROM LANE LINES.

NOTES:

1. FIRE DEPARTMENT WILL PROVIDE LOCATION(S) FOR ALL MARKERS IN PRIVATE RESIDENTIAL DEVELOPMENTS, COMMERCIAL LOTS, AND ALL OTHER AREAS OUTSIDE OF PUBLIC RIGHT OF WAY.
2. MARKERS MUST BE INSTALLED AT ALL NEW AND RELOCATED FIRE HYDRANTS AND WITHIN ALL RESURFACING PROJECTS.
3. FOR STREETS WITHOUT LANE LINES OR STREETS WITH RAISED PAVEMENT MARKERS AND NO PAINTED LANE LINES, INSTALL MARKERS ON CENTELRINE OR IN LINE WITH EXISTING MARKERS.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 902-L

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

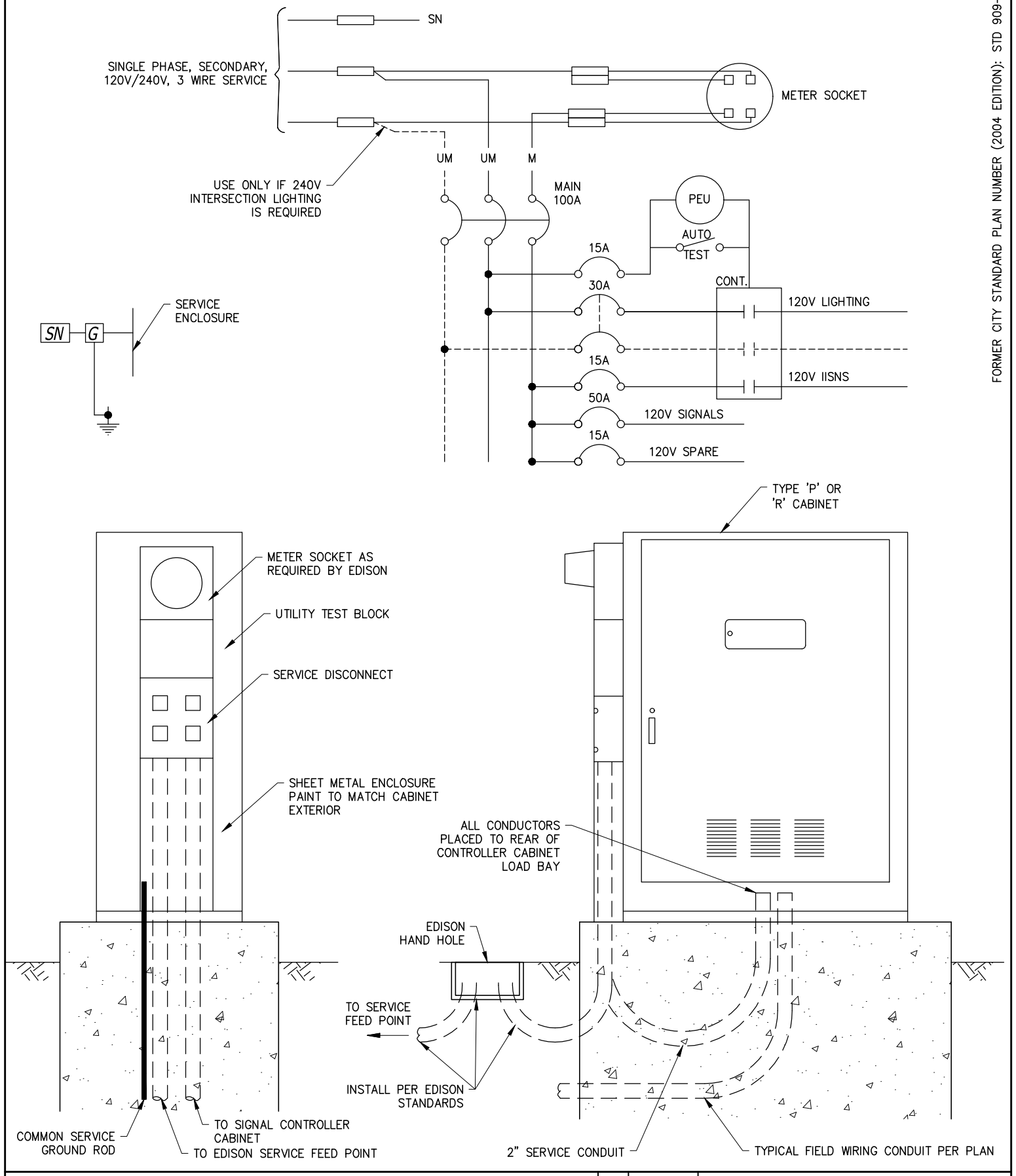
DATE: 11/3/2020

FIRE HYDRANT MARKERS

STANDARD DRAWING NO.

902

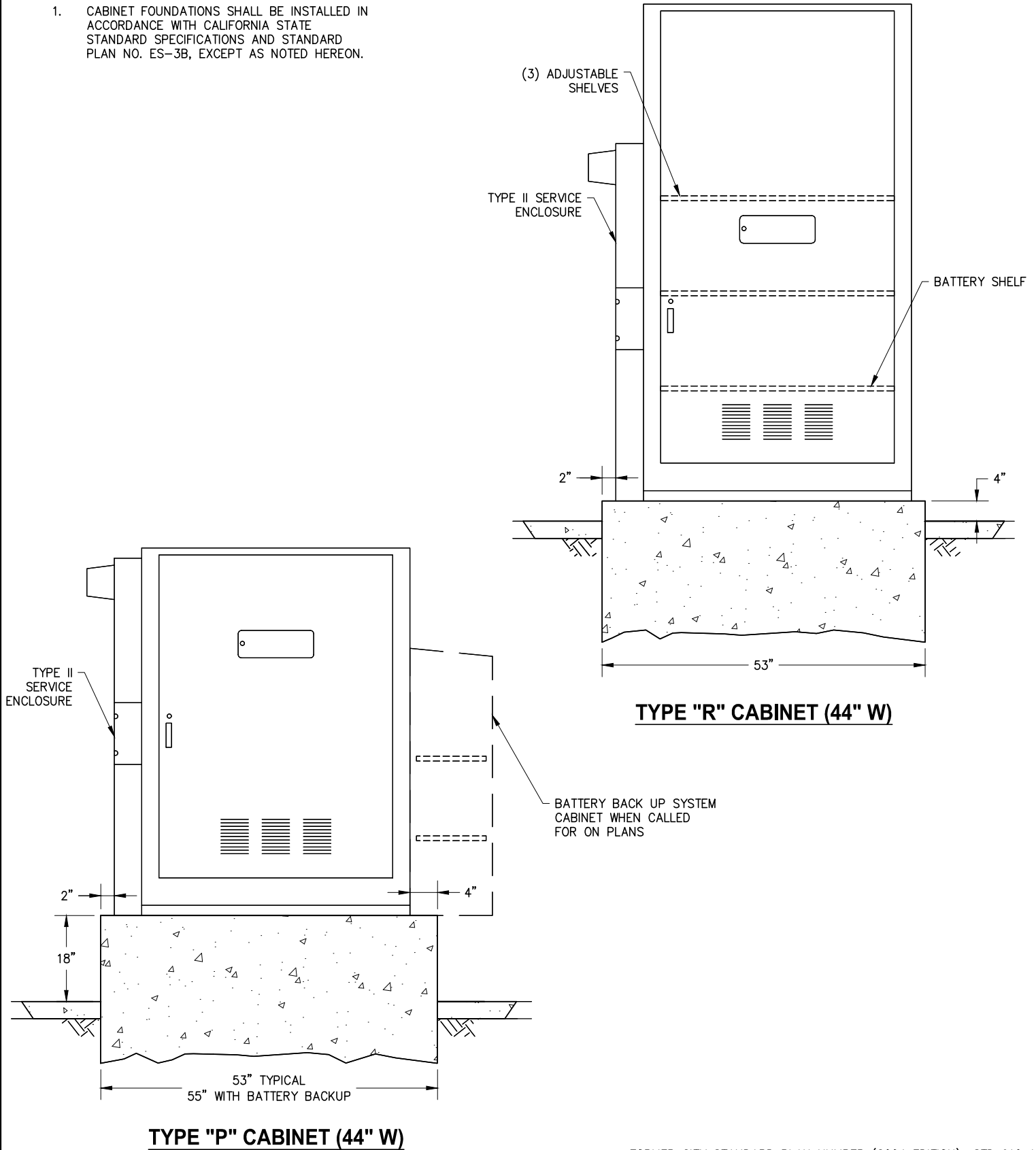
SHEET 1 OF 1



APP. <i>[Signature]</i>	51568	11/24/2020			
CITY ENGINEER	RCE	DATE	NO.	DATE	DESCRIPTION OF REVISIONS
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS					
DRAWN: P. KHARAZMI	TRAFFIC SIGNAL SERVICE (TYPE II)				STANDARD DRAWING NO. 909
DATE: 11/3/2020					SHEET 1 OF 1

NOTE:

- CABINET FOUNDATIONS SHALL BE INSTALLED IN ACCORDANCE WITH CALIFORNIA STATE STANDARD SPECIFICATIONS AND STANDARD PLAN NO. ES-3B, EXCEPT AS NOTED HEREON.



FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 910-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

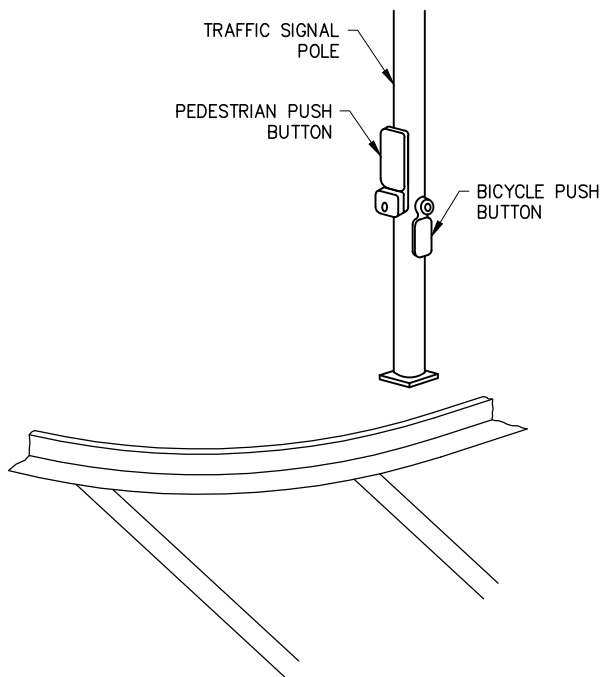
DATE: 11/3/2020

TRAFFIC SIGNAL CABINET AND FOUNDATION

STANDARD DRAWING NO.

910

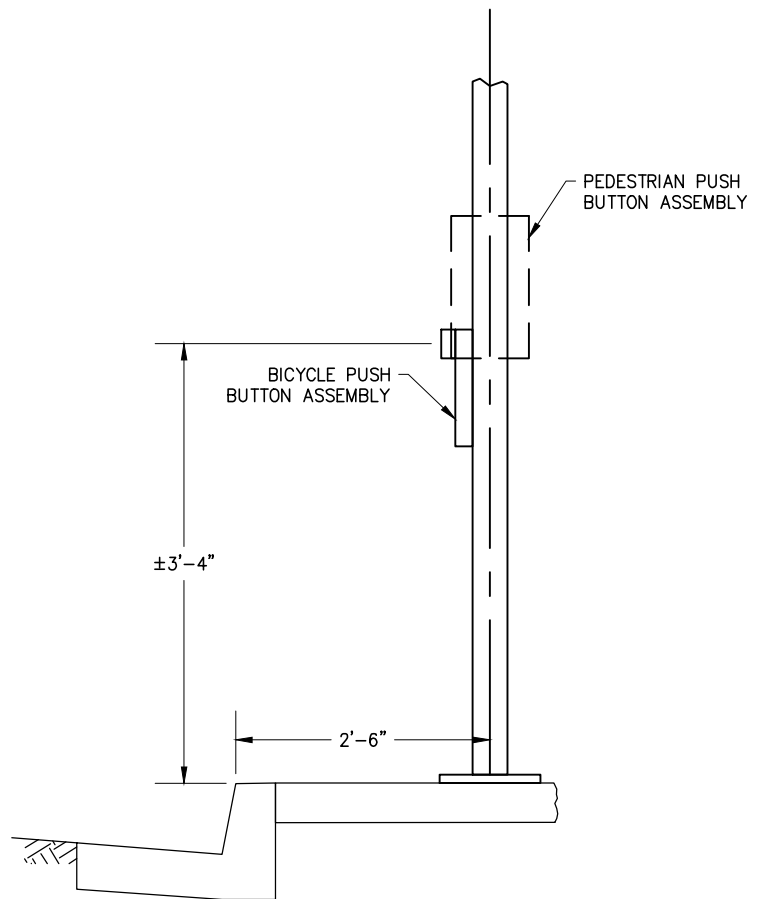
SHEET 1 OF 1



NOTES:

1. BICYCLE PUSH BUTTON (BPB) SIGN SHALL BE 5"X7-1/2" PER CALTRANS STANDARD PLAN ES-5C.
2. BPB HOUSING SHALL BE TYPE B.
3. BPB ASSEMBLY SHALL BE MOUNTED SO THAT BUTTON IS ABOVE SIGN.

PEDESTRIAN AND BICYCLE PUSH BUTTON MOUNTING CONFIGURATION



FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 913-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

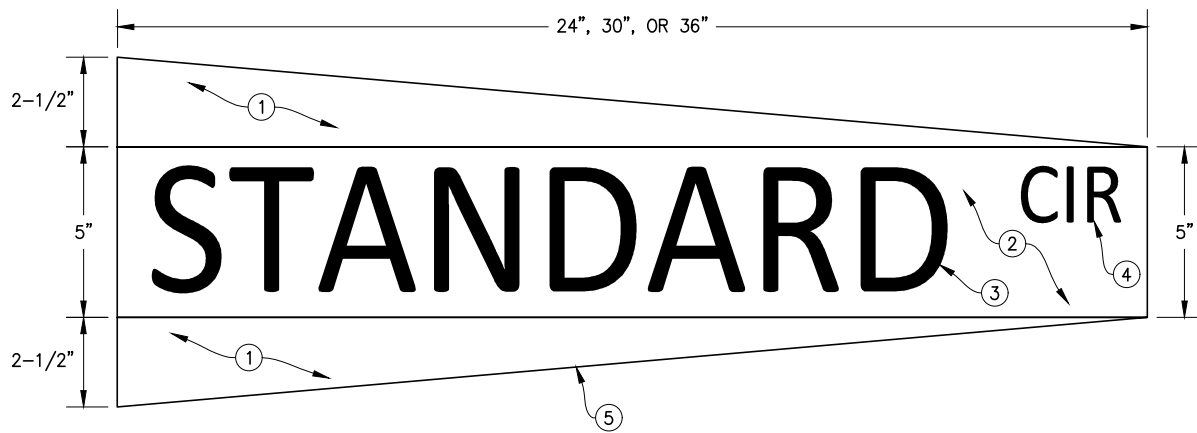
DATE: 11/3/2020

BICYCLE PUSH BUTTON INSTALLATION DETAILS

STANDARD DRAWING NO.

913

SHEET 1 OF 1

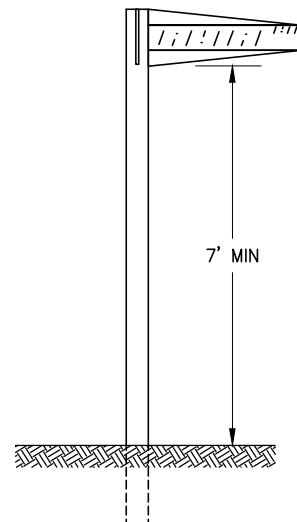


- ① GOLD RETROREFLECTIVE SHEETING.
- ② BLUE RETROREFLECTIVE SHEETING.
- ③ 4" SERIES 'B' MINIMUM WIDTH WHITE (UPPER CASE).
- ④ 2" SERIES 'B' MINIMUM WIDTH WHITE (UPPER CASE).
- ⑤ 0.08" ALUMINUM.

NOTE: RETROREFLECTIVE SHEETING SHALL BE 3M ENGINEERING GRADE PRISMATIC OR APPROVED EQUAL.

APPROVED ABBREVIATIONS

AVENUE	AVE OR AV
BOULEVARD	BLVD
CIRCLE	CIR
COURT	CT
DRIVE	DR
EAST	E
HIGHWAY	HWY
LANE	LN
NORTH	N
PLACE	PL
ROAD	RD
SOUTH	S
STREET	ST
TERRACE	TER
WAY	WY
WEST	W



TYPICAL INSTALLATION

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 915-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

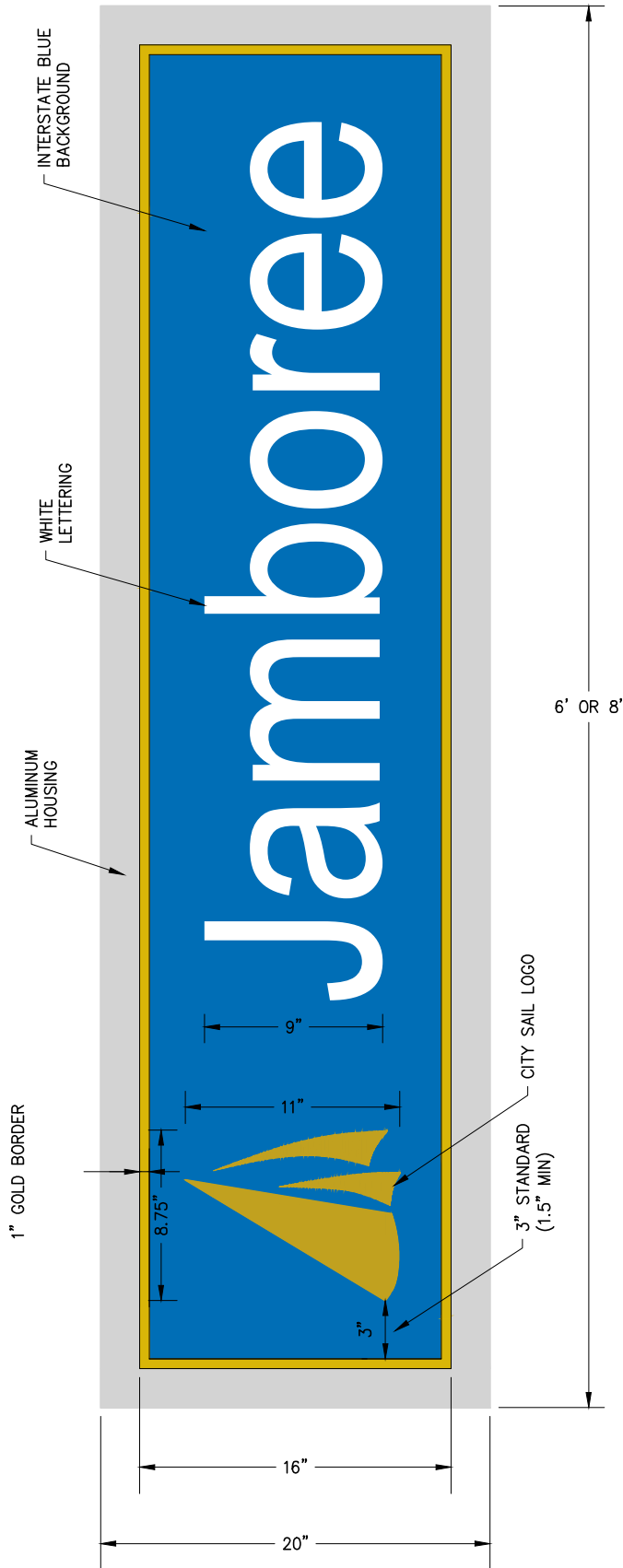
DATE: 11/3/2020

STREET NAME SIGN

STANDARD DRAWING NO.

915

SHEET 1 OF 1



NOTES:

1. BACKGROUND COLOR TO BE INTERSTATE BLUE (MATCH PANTONE 300 C).
2. LETTERING TO BE WHITE, HWY D FONT, AND TO BE CENTERED VERTICALLY. OPTIONALLY, HWY C FONT MAY BE USED TO ACCOMMODATE LONGER STREET NAMES.
3. STANDARD LETTERING SIZE TO BE 9" UPPER CASE/6.75" LOWER CASE.
4. CITY SAIL LOGO TO BE 11" TALL AND 8.75" WIDE.
5. CITY SAIL LOGO TO BE SPACED 3" HORIZONTALLY (STANDARD) FROM THE EDGE OF THE GOLD BORDER. MAY REDUCE TO 1.5" MINIMUM TO ACCOMMODATE LONGER STREET NAMES.
6. CITY SAIL LOGO TO BE GOLD COLORED (RGB EQUIVALENT IS 193,161,131).
7. A 1" GOLD BORDER (RGB EQUIVALENT IS 193,161,131) SHALL BE VISIBLE WHEN INSTALLED IN THE ALUMINUM HOUSING.
8. SIGN PANEL SHALL BE MANUFACTURED PER THE SIGN ASSEMBLY MANUFACTURER'S SPECIFICATIONS.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

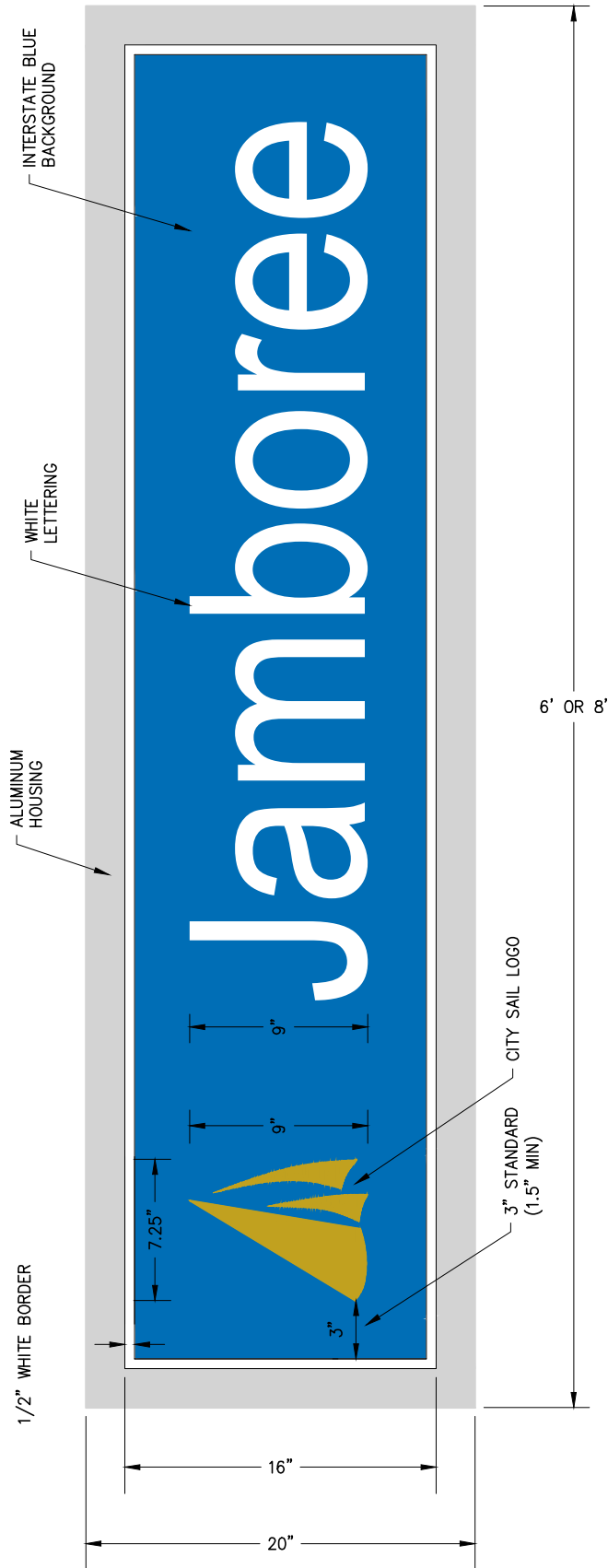
DATE: 11/3/2020

INTERNALLY ILLUMINATED STREET NAME SIGN

STANDARD DRAWING NO.

916-A

SHEET 1 OF 1



NOTES:

1. BACKGROUND COLOR TO BE INTERSTATE BLUE (MATCH PANTONE 300 C).
2. LETTERING TO BE WHITE, HWY D FONT, AND TO BE CENTERED VERTICALLY. OPTIONALLY, HWY C FONT MAY BE USED TO ACCOMMODATE LONGER STREET NAMES.
3. STANDARD LETTERING SIZE TO BE 9" UPPER CASE/6.75" LOWER CASE.
4. CITY SAIL LOGO TO BE 9" TALL AND 7.25" WIDE.
5. CITY SAIL LOGO TO BE SPACED 3" HORIZONTALLY (STANDARD) FROM THE EDGE OF THE WHITE BORDER. MAY REDUCE TO 1.5" MINIMUM TO ACCOMMODATE LONGER STREET NAMES.
6. CITY SAIL LOGO TO BE GOLD COLORED (RGB EQUIVALENT IS 193,161,131).
7. A 1/2" WHITE BORDER SHALL BE VISIBLE WHEN INSTALLED IN THE ALUMINUM HOUSING.
8. SIGN PANEL SHALL BE MANUFACTURED PER THE SIGN ASSEMBLY MANUFACTURER'S SPECIFICATIONS.

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

INTERNALLY ILLUMINATED STREET NAME SIGN (STATE RIGHT-OF-WAY)

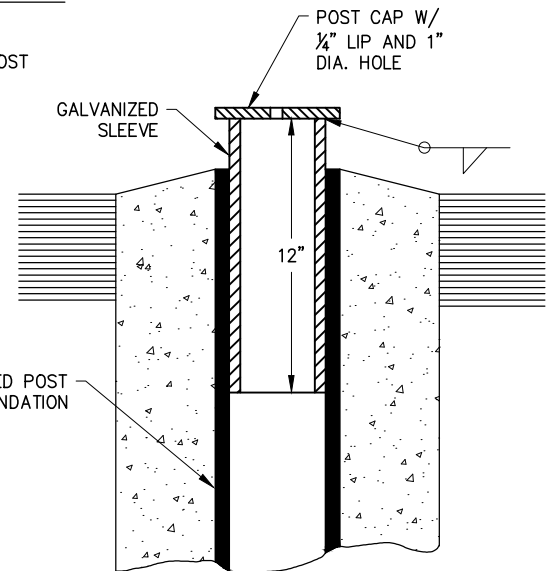
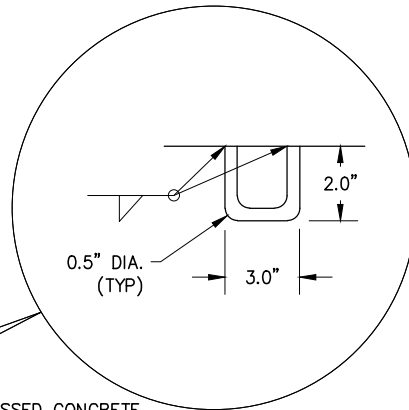
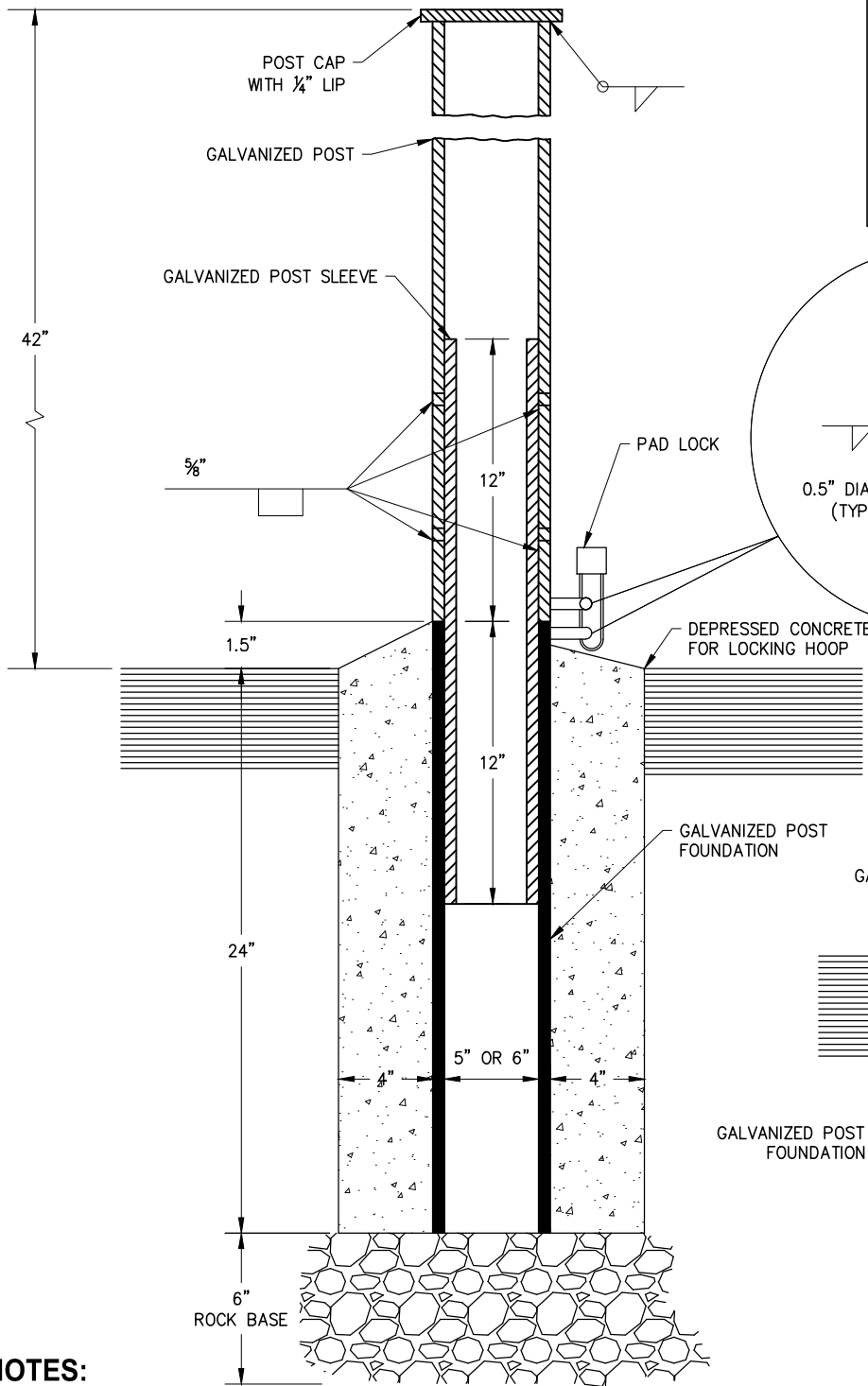
STANDARD DRAWING NO.

916-B

SHEET 1 OF 1

GALVANIZED POSTS

POST I.D.	SLEEVE O.D.
PIPE	
5"	4.5"
6"	5.5"
SQ. TUBE	
5"X5"	4.75"X4.75"
6"X6"	5.75"X5.75"



FOUNDATION PLUG

FOR LONG TERM BOLLARD REMOVAL IN
HEAVY PEDESTRIAN/BICYCLE TRAFFIC AREAS

NOTES:

- SEE STD 918 FOR SIZING AND SPACING REQUIREMENTS.
- CONCRETE SHALL BE 560-C-3250.
- ALL WELDS SHALL BE GROUND AND FINISHED SMOOTH.
- BOLLARD SHALL HAVE RETROREFLECTIVE MATERIAL OR SIGNS PER CA MUTCD (LATEST EDITION).

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 917-L

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

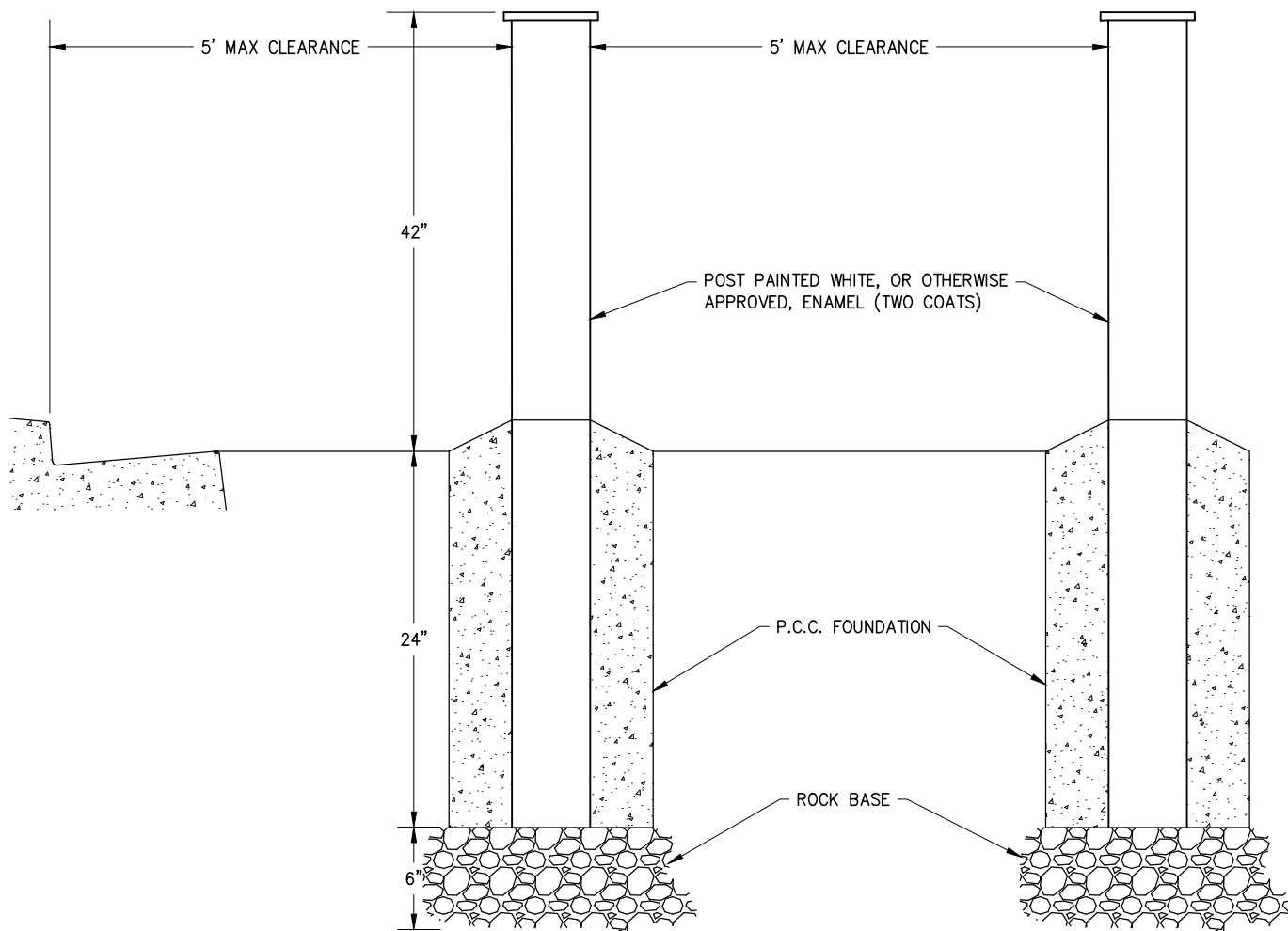
DATE: 11/3/2020

REMOVABLE BOLLARD

STANDARD DRAWING NO.

917

SHEET 1 OF 1



NOTE:

1. BOLLARD SHALL HAVE RETROREFLECTIVE MATERIAL OR SIGNS PER CA MUTCD (LATEST EDITION).

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 918-L

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

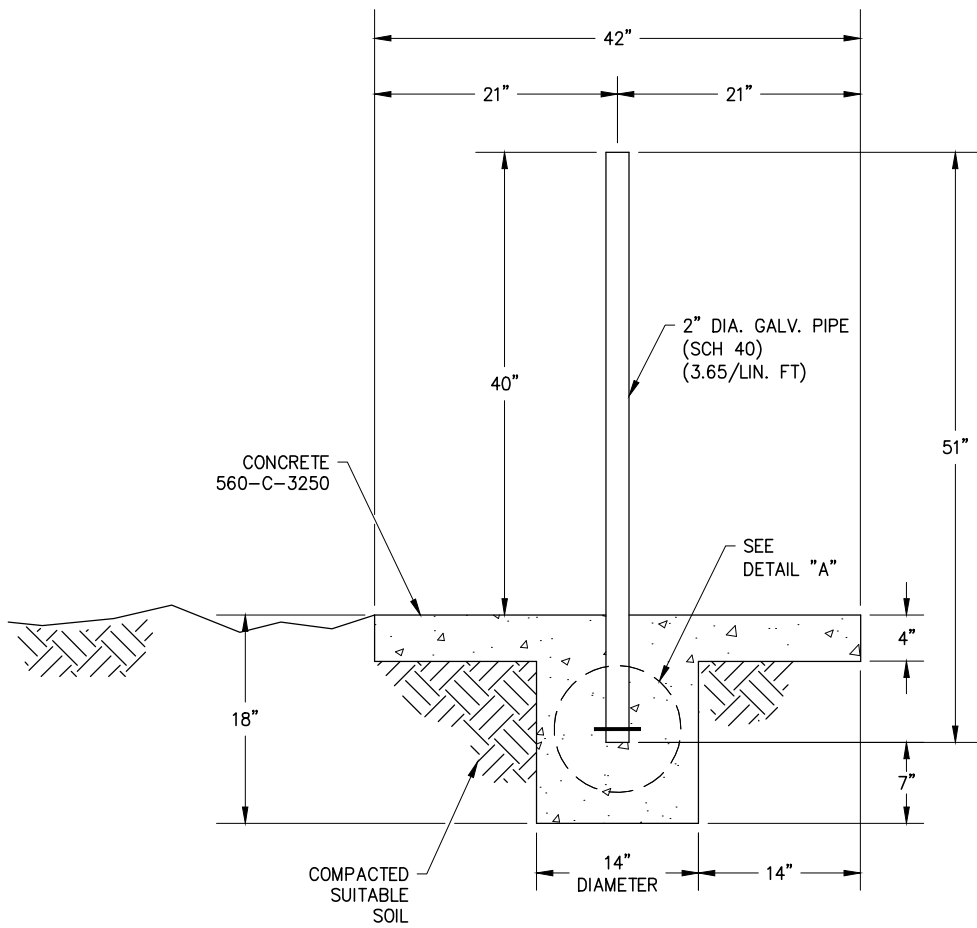
DATE: 11/3/2020

TYPICAL BOLLARD DIMENSIONS

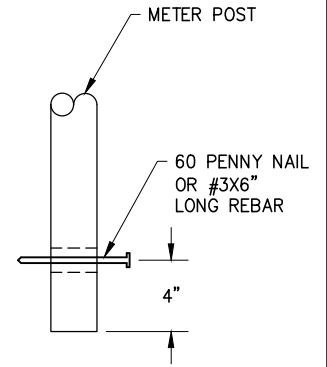
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918

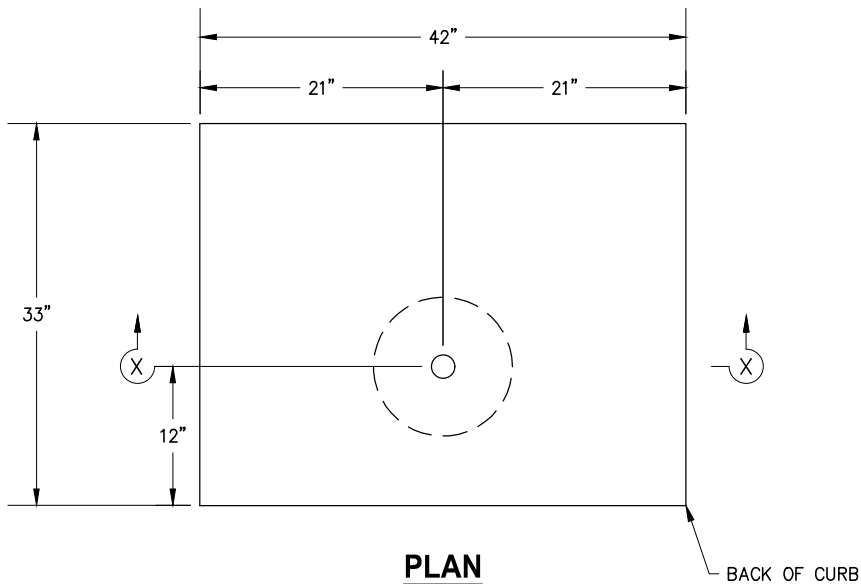
SHEET 1 OF 1



SECTION X-X



DETAIL "A"



FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 920-L

APP. *James M. Hinkle* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

PARKING METER POST INSTALLATION I

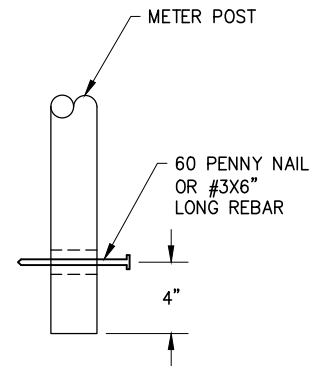
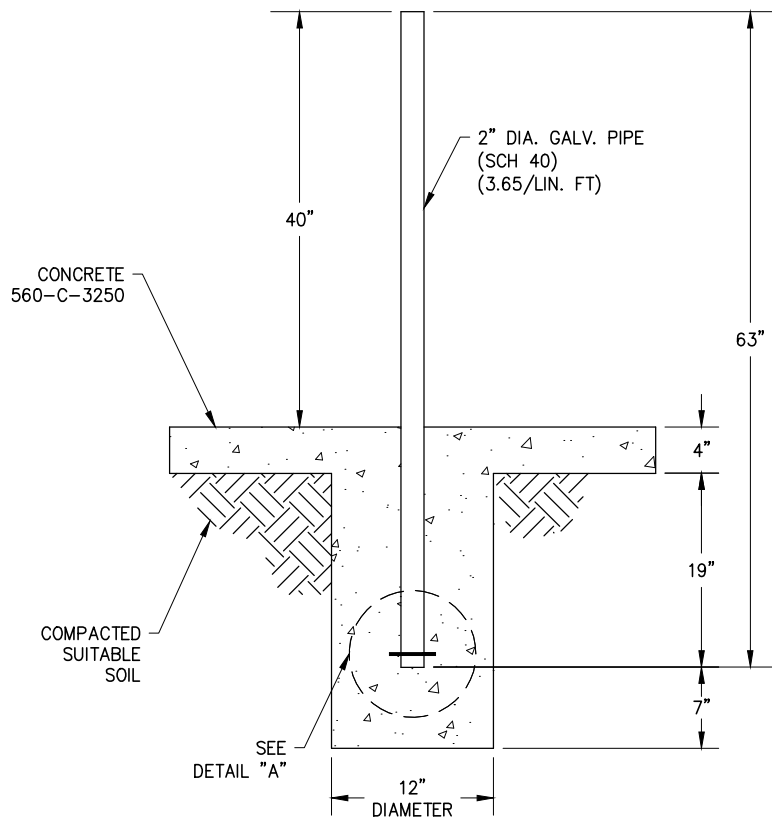
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920

SHEET 1 OF 1

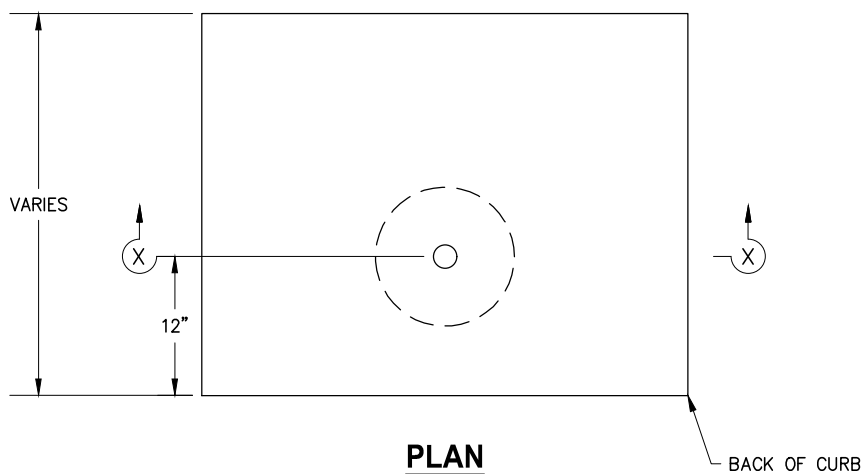


SHEET 1 OF 1



DETAIL "A"

SECTION X-X



NOTE:

FOR USE WITH DECORATIVE
CONCRETE AND SPECIAL
CONCRETE.

FORMER CITY STANDARD PLAN NUMBER (2004 EDITION): STD 922-L

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

DATE: 11/3/2020

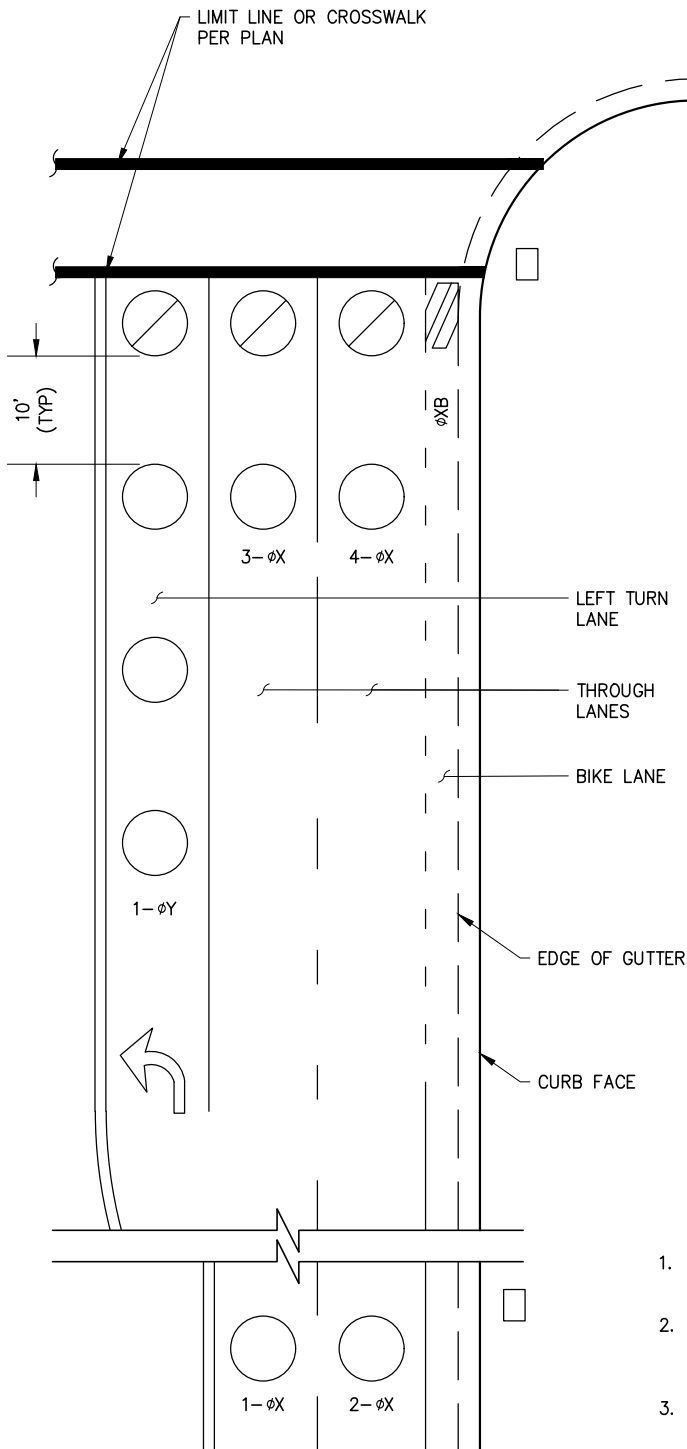
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


922

SHEET 1 OF 1

GENERAL LOOP DETECTOR LAYOUT



LEGEND:

- 1-φX DETECTOR INPUT FOR THROUGH PHASES
- 1-φY DETECTOR INPUT FOR LEFT TURN PHASES
- φXB BICYCLE LOOP DETECTOR INPUT
-  CALTRANS TYPE E LOOP DETECTOR
-  MODIFIED CALTRANS TYPE E LOOP DETECTOR (LEAD LOOPS - SEE SHEET 2)
-  CALTRANS TYPE D LOOP DETECTOR (BIKE LOOP)

NOTES:

1. UNLESS OTHERWISE INDICATED, TYPE E AND MODIFIED TYPE E LOOP DETECTORS SHALL BE 6' DIAMETER AND TYPE D LOOP DETECTORS SHALL BE 3'X6'.
2. LOOP DETECTORS SHALL BE CENTERED IN THE LANE UNLESS OTHERWISE SHOWN. PLACE LEAD LOOP DETECTORS IMMEDIATELY IN ADVANCE OF LIMIT LINE OR CROSSWALK.
3. A MAXIMUM OF 4 LOOP DETECTORS SHALL BE ON 1 DETECTOR LEAD-IN CABLE (DLC).
4. SEE CITY STD 923 SHEET 2 FOR CALTRANS MODIFIED TYPE E LOOP DETECTOR WINDING DETAIL.
5. LOOP DETECTOR WIRE SHALL BE TYPE 2. LOOP DETECTOR LEAD-IN CABLE (DLC) SHALL BE TYPE B.
6. LOOP DETECTORS SHALL BE INSTALLED PER CALTRANS STANDARD PLAN ES-5A AND ES-5B.
7. LOOP DETECTOR SEALANT SHALL BE HOT-MELT RUBBERIZED ASPHALT SEALANT.

APP.

James M. Hinkle
CITY ENGINEER

51568
RCE

11/24/2020
DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

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DATE: 11/3/2020

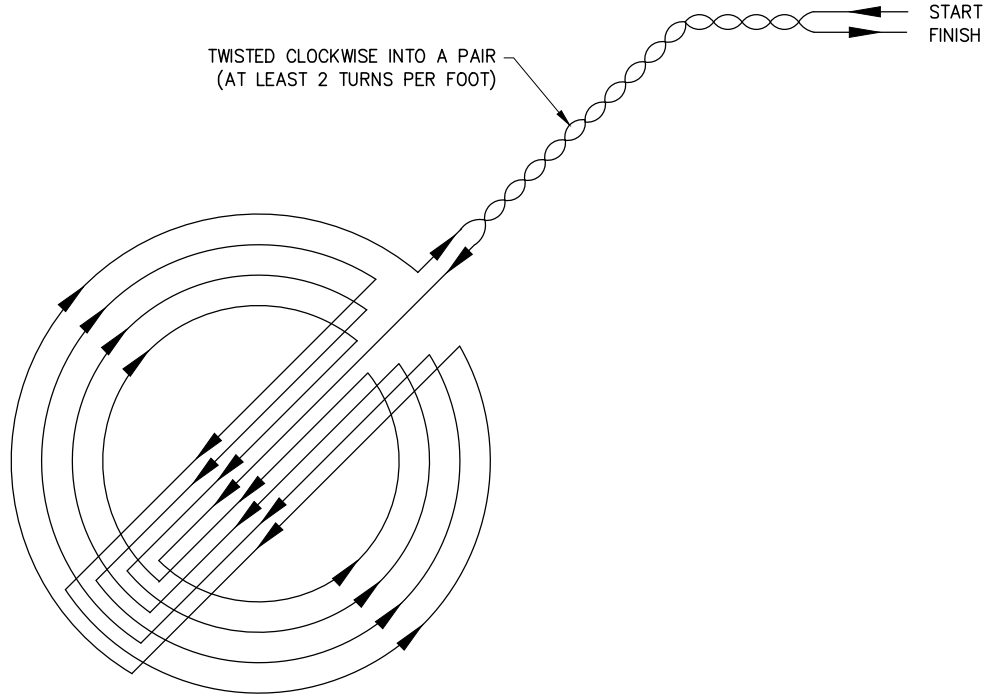
TRAFFIC SIGNAL LOOP DETECTORS

STANDARD DRAWING NO.

923

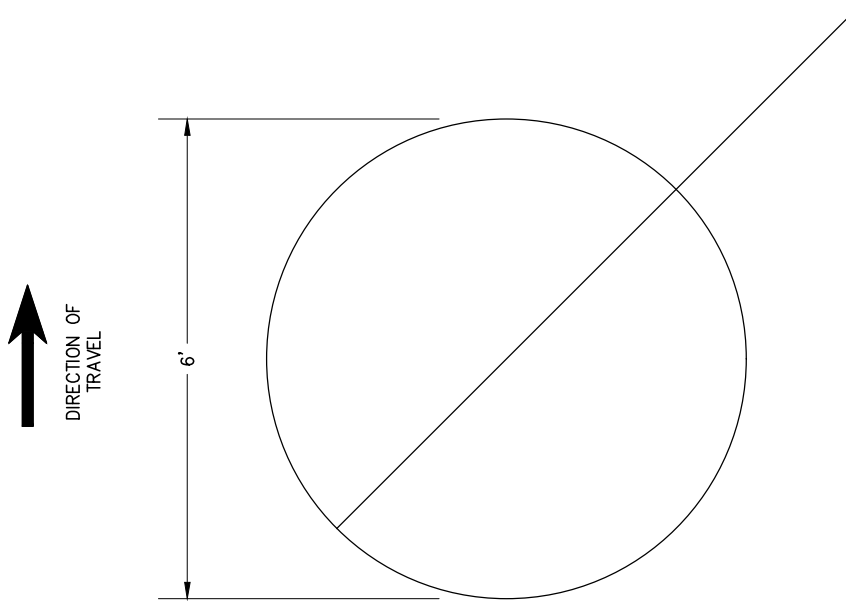
SHEET 1 OF 2

MODIFIED TYPE E DETECTOR (LEAD LOOP)



WINDING DETAIL

MODIFIED TYPE E LOOP DETECTOR
(NOT TO SCALE)



SAWCUT DETAIL

MODIFIED TYPE E LOOP DETECTOR
(NOT TO SCALE)

APP. *[Signature]* 51568 11/24/2020
CITY ENGINEER RCE DATE

NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

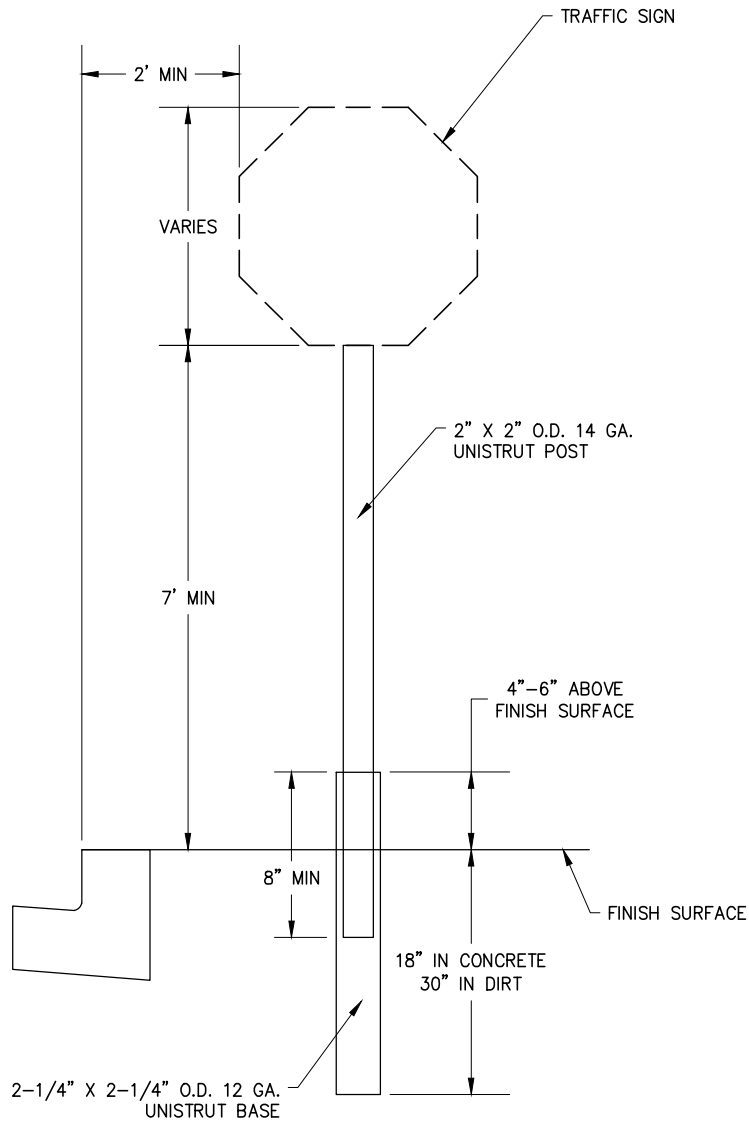
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TRAFFIC SIGNAL LOOP DETECTORS

STANDARD DRAWING NO.

923

SHEET 2 OF 2



TYPICAL SIGN INSTALLATION

NOTES:

1. SIGN SHALL BE STANDARD SIZE PER THE CALIFORNIA MUTCD UNLESS OTHERWISE SHOWN. SIGN SHALL BE MADE OF ALUMINUM (0.08 INCH THICKNESS).
2. REFLECTIVE SHEETING SHALL BE 3M HIGH INTENSITY PRISMATIC (TYPE 4) OR GREATER, OR APPROVED EQUAL.
3. NEW SIGN POSTS SHALL BE 14 GAUGE, 2 INCH SQUARE (O.D.) UNISTRUT INSTALLED INTO A 12 GAUGE 2-1/4 INCH UNISTRUT (O.D.) BASE. UNISTRUT BASE SHALL BE INSTALLED AT A DEPTH OF 18 INCHES IN CONCRETE AND 30 INCHES IN DIRT. CONTRACTOR SHALL USE LOCATION PRIOR TO INSTALLING SIGN.
4. SIGN MOUNTING HARDWARE AND BRACKETS SHALL BE 5/16 INCH STAINLESS STEEL. ANTI-SEIZE LUBRICANT SHALL BE APPLIED TO MOUNTING HARDWARE PRIOR TO INSTALLATION.
5. SIGNS SHALL BE INSTALLED AT A CLEAR HEIGHT OF 7 FEET UNLESS OTHERWISE SHOWN ON PLANS. LOCATION OF SIGNS SHOWN ON PLANS IS APPROXIMATE AND SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.

APP.

James M. Hinkle
CITY ENGINEER

51568

RCE

11/24/2020

DATE

NO.

DATE

DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: P. KHARAZMI

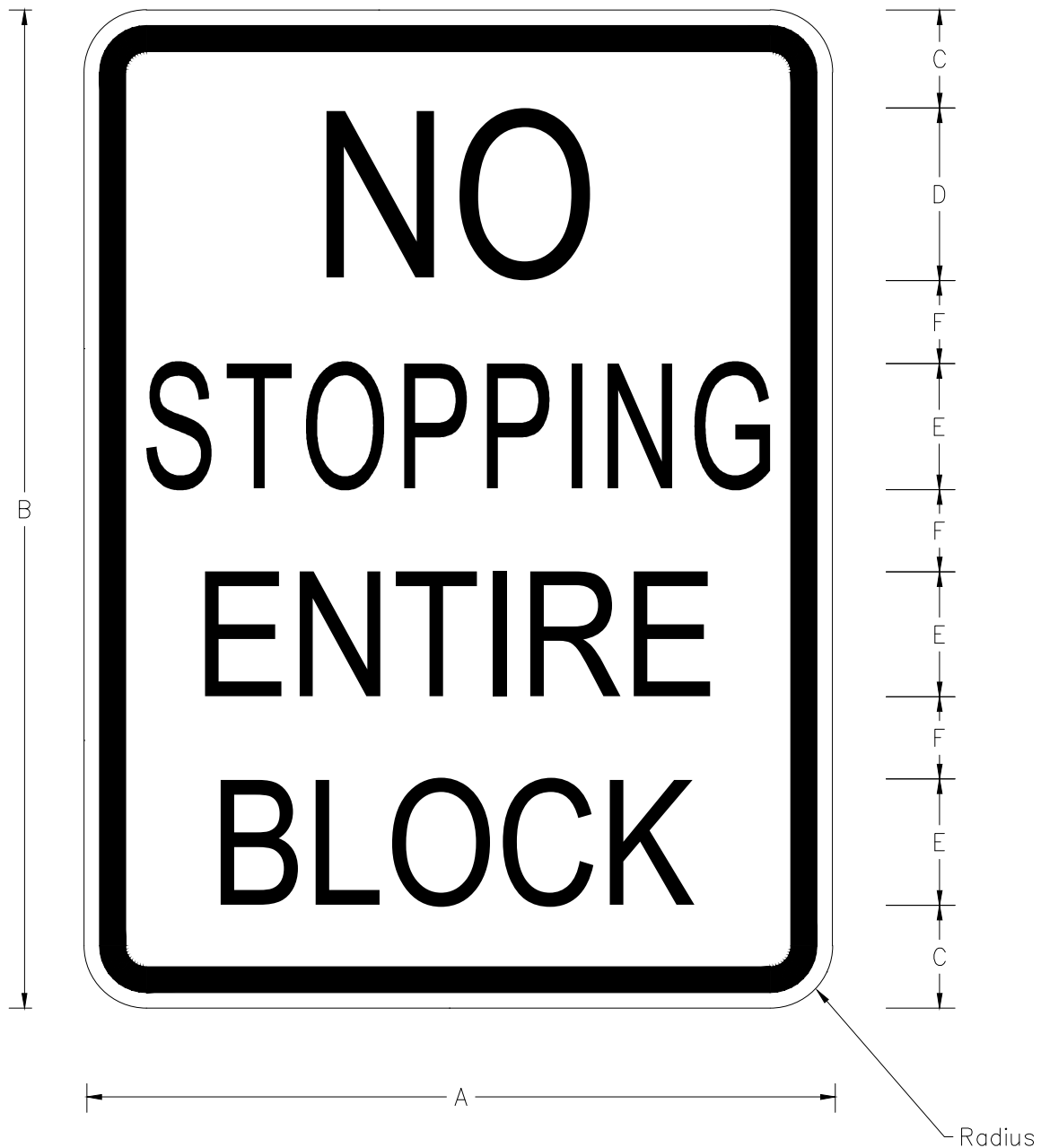
DATE: 11/3/2020

TYPICAL TRAFFIC SIGN INSTALLATION

STANDARD DRAWING NO.

924

SHEET 1 OF 1

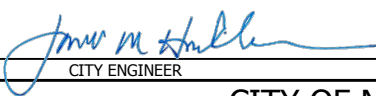


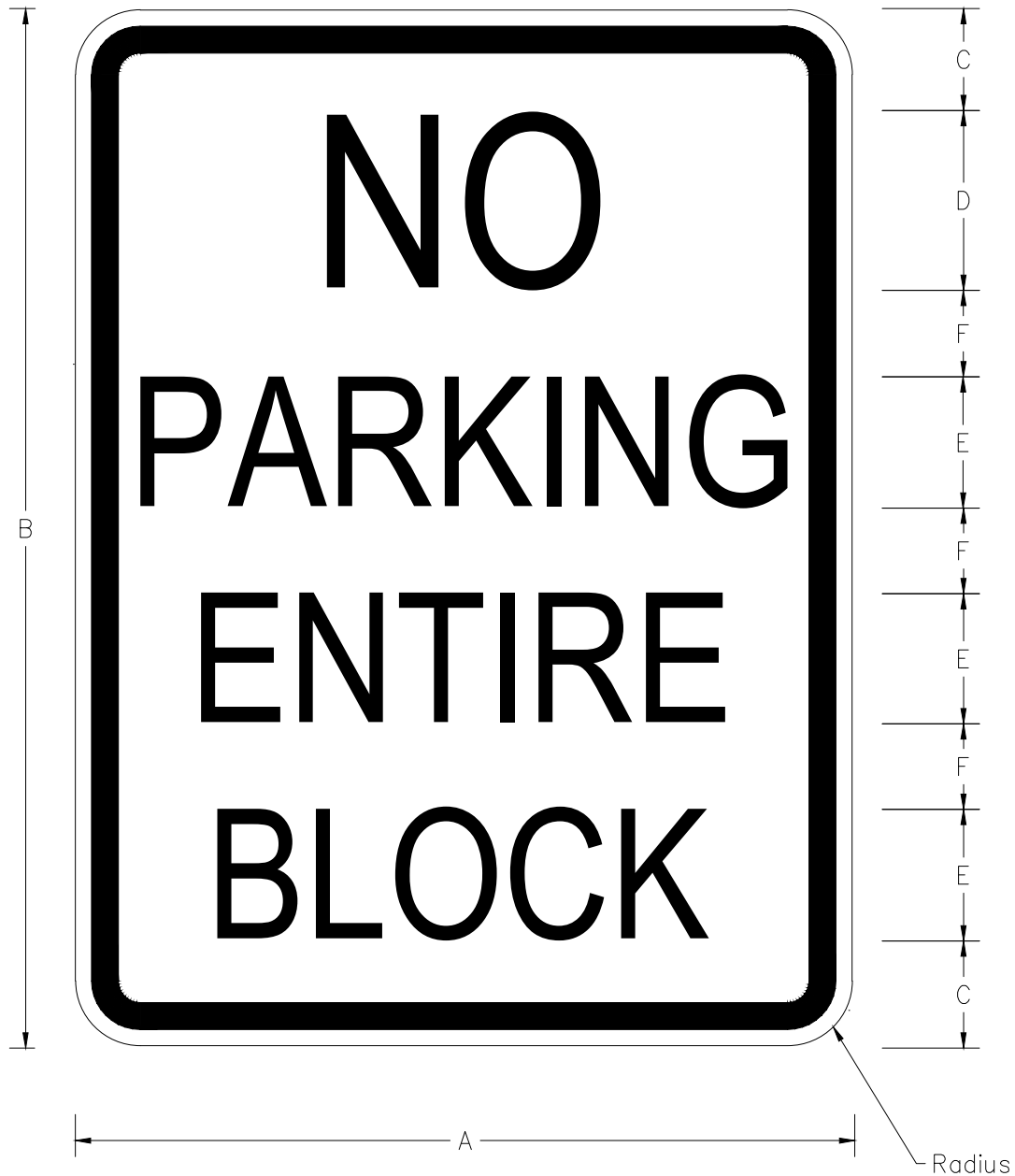
NB349

ALL DIMENSIONS ARE IN INCHES

DIMENSIONS							
A	B	C	D	E	F	Radius	Border Thickness
18	24	2.5	4	3	2	1.5	0.25

COLOR
 BORDER & LEGEND - RED (RETROREFLECTIVE)
 BACKGROUND - WHITE (RETROREFLECTIVE)

APP. 		51568	11/24/2020		
CITY ENGINEER		RCE	DATE	NO.	DATE
				DESCRIPTION OF REVISIONS	
CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS					
DRAWN: J. RUEDAS	NO STOPPING ENTIRE BLOCK SIGN DETAIL				STANDARD DRAWING NO.
DATE: 11/3/2020	(CITY SIGN CODE NB349)				925
					SHEET 1 OF 1




NB350

ALL DIMENSIONS ARE IN INCHES

DIMENSIONS							
A	B	C	D	E	F	Radius	Border Thickness
18	24	2.5	4	3	2	1.5	0.25

COLOR
 BORDER & LEGEND - RED (RETROREFLECTIVE)
 BACKGROUND - WHITE (RETROREFLECTIVE)

APP. 	51568 RCE	11/24/2020 DATE			
			NO.	DATE	DESCRIPTION OF REVISIONS

CITY OF NEWPORT BEACH DEPARTMENT OF PUBLIC WORKS

DRAWN: J. RUEDAS	NO PARKING ENTIRE BLOCK SIGN DETAIL (CITY SIGN CODE NB350)	STANDARD DRAWING NO. 926 SHEET 1 OF 1
DATE: 11/3/2020		

CITY OF NEWPORT BEACH WATERFRONT PROJECT GUIDELINES AND STANDARDS

HARBOR DESIGN CRITERIA COMMERCIAL & RESIDENTIAL FACILITIES



October 30, 2020

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ABBREVIATIONS

ADA	Americans with Disabilities Act
ADAAG	ADA Accessibility Guidelines
CBC	California Building Code
C/C, C-C	center-to-center
CEC	California Electrical Code
CEQA	California Environmental Quality Act
CF	cubic feet
CFC	California Fire Code
CL	centerline
CPC	California Plumbing Code
CY	cubic yard
D.F.	Douglas fir
DL	dead load
DBW	California State Parks Division of Boating and Waterways
EE	eased edge (rounded edge on lumber)
EL., Elev.	Elevation
f ^c	compressive strength (force)
FDC	fire department connection
FHC	fire hose cabinet
HDG	hot dipped galvanized
ksi	thousand pounds per square inch (i.e., 1,000 psi)
Lb	length of berth (DBW definition)
Lbs., #	pounds
LED	light emitting diode (light)
LL	live load
Max.	maximum
mils	one thousandth of an inch
Min.	minimum
MLLW	mean lower low water (datum)
NAVD88	North American Vertical Datum 1988
NEC	National Electrical Code (NFPA 70)
NFPA	National Fire Protection Association
NGVD29	National Geodetic Vertical Datum 1929
OC	on-center
PL	property line, plate
psi	pound(s) per square inch
PVC	polyvinyl chloride (plastic)
ROW	right of way
RWQCB	Regional Water Quality Control Board

S4S	surfaced four sides (in reference to lumber that is smooth/straight cut)
SF	square feet
SUP	stand-up paddleboard
TOW	top of wall
UHMW-PE	ultra-high molecular weight polyethylene (plastic)
ULL	uniform live load
USACE	United States Army Corps of Engineers
WWM	welded wire mesh
w/	with
w/o	without

REFERENCE DESIGN STANDARDS

(per latest edition of)

- American Society of Civil Engineers (ASCE), Standard 7-16
- American Wood Council National Design Specifications (NDS)
- California State Parks Division of Boating and Waterways (DBW), Layout and Design Guidelines for Marina Berthing Facilities, July 2005
- California State Parks Division of Boating and Waterways (DBW), Layout, Design, and Construction Handbook for Small Craft Boat Launching Facilities, March 1991
- California Building Code
- California Electrical Code
- California Fire Code
- California Green Building Standards Code (CALGreen)
- California Plumbing Code
- California Department of Transportation (Caltrans) Standard Specifications
- Caltrans Foundation Manual, 2015 or latest edition
- National Fire Protection Association (NFPA) standards 10, 14, 24, 25, and 303
- Newport Beach Life Safety Services Guideline F.01, Fire Protection for Marinas, Wharves, and Piers
- Newport Beach Standard Drawings for Public Works Construction

REFERENCE MATERIAL STANDARDS

(per latest edition of)

- American Concrete Institute (ACI) 318, Building Code for Structural Concrete
- American Institute of Timber Construction (AITC)
- American Lumber Standard Committee, PS 20-15, American Softwood Lumber Standard
- ASTM International standards
- American Welding Society (AWS) welding codes
- American Wood Preservers Association (AWPA)
- Concrete Reinforcing Steel Institute (CRSI), MSP-2, Manual of Standard Practice for Reinforced Concrete Construction
- NSF International standards
- Precast/Restressed Concrete Institute (PCI), MNL-116, Quality Control for Plants and Production of Structural Concrete Products
- Society of Protective Coatings (SPPC)
- Southern Pine Inspection Bureau (SPIB) Standard Grading Rules
- West Coast Lumber Inspection Bureau (WCLIB), Standard No. 17
- Western Wood Preservers Institute (WWPI) Best Management Practices
- Western Wood Products Association (WWPA), Western Lumber Grading Rules

HARBOR DESIGN CRITERIA

GENERAL

The construction of harbor facilities shall accommodate the need for safety and durability as well as convenience and appearance. Structural elements of the docks, floats, gangways, piles, etc., shall be adequate to safeguard human life, boats, and boating equipment. Boat berthing facilities shall be designed to adequately handle anticipated loads with reasonable factor of safety as deemed appropriate by the City of Newport Beach. Materials of construction shall resist corrosion from saltwater in order to assure low maintenance requirements and long life of the facility. Floats shall be designed to assure stability and buoyancy for safe operations. Adequate utilities meeting all requirements of the current, applicable codes shall be provided for the convenience and safety of boaters and maintenance workers.

Harbor Permits and Plan Check shall be as per Title 17 of the City of Newport Beach Municipal Code and Council Policy H-1.

Dock systems shall be designed by a civil or structural engineer, licensed by the State of California, who is experienced in the design of marine structures. Repairs and non-structural modifications to existing residential docks can be designed by a licensed contractor experienced in dock facilities, at the discretion of the City of Newport Beach.

In accordance to California Building Code [A] 104.10 Modifications. “Wherever there are practical difficulties involved in carrying out the provisions of this code, the [Chief] Building Official shall have the authority to grant modifications for individual cases, upon application of the owner or owner’s representative, provided the [Chief] Building Official shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department of building safety.” Fire Marshal approval shall be required for variances associated with the fire protection system.

In accordance to California Building Code [A] 104.11 Alternative materials, design and methods of construction and equipment. “The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the [Chief] Building Official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.” Fire Marshal approval shall be required for variances associated with the fire protection system.

I. WATERSIDE DEVELOPMENT

The limits and constraints of construction in the harbor are defined by a series of lines that have been established over time by the Federal Government, as well as the City of Newport Beach. These lines have been defined in Chapter 17.01 of the Municipal Code. Prior to the preparation of documents to be submitted to the City of Newport Beach for review of a proposed project, the applicant should obtain a full understanding of these lines and have a qualified engineer, surveyor or contractor define these lines on any plans submitted for a proposed project. These lines include the existing or current edge of construction along the waterfront with respect to the Federal Bulkhead, Pierhead and Project Lines, Channel Lines, property lines (and their projections), Anchorage Area, and Turning Basins.

A. DOCKS

1. ALTERNATIVE BERTHING GEOMETRIES

Various berthing geometries are available and acceptable for the berthing of boats for a docking facility. The following layouts and designs present the generalized arrangements that are considered acceptable to the City of Newport Beach for the berthing of boats. The attached Figures and “Case” geometries can be utilized as shown, or in combination with one another, in an overall marina dock scheme.

2. LAYOUT AND DESIGN (Commercial & Residential)

a. General

- (1) Layout and design of harbor facilities shall be based upon the use of the facility defined as follows:
 - (a) Single or joint residential
 - (b) Multi-residential
 - (c) Commercial (Type 1): typical
 - 1) Passenger (e.g., ferry, event cruise, etc. with no on-dock queuing)
 - 2) Recreational boat marina
 - 3) Yacht club
 - 4) Other commercial (e.g., restaurant, office, yacht broker, etc.)
 - 5) Public pier
 - (d) Commercial (Type 2): not common in Newport Harbor

- 1) On-dock passenger staging (i.e., where passengers queue on the dock prior to boarding)
 - 2) Docks used for transfer of cargo or other materials
- (2) *Layout and Design Guidelines for Marina Berthing Facilities* (2005 edition or as updated) published by the State of California State Parks Division of Boating and Waterways, except as modified by the City's **Harbor Standard Drawings** within the Design Criteria may be used as a guide to design harbor structures.
- (3) See the attached **Harbor Standard Drawings** for plans, sections and details of typical conditions for vessel moorings and docks, gangways, platforms, seawalls, and beach profiles. These Standards are to be considered minimum requirements for the cases represented and, at the City of Newport Beach discretion, may not apply to the specific project submitted. The City of Newport Beach reserves the right to mandate deviation from the Standards, if particular project conditions require special consideration.
- b. Slip and Boat Overhang into Adjacent Fairways
- (1) Berths shall not be occupied by vessels more than three (3) feet longer than the berth or slip, or in the case of fairways with a width of $1.75 \times L_b$ (length of berth), not more than 10% of the length of the berth's finger.
 - (2) For berths either parallel or perpendicular to a main channel, vessels can extend beyond the limits of the slip by as much as the beam of the boat.
- c. Finger and Walkway Widths
- (1) Minimum finger widths for recreational, commercial, and residential docks shall be per **Table No. 1**.
 - (2) Fillets at the connection of walkways to fingers shall not have less than a 4-foot side.
 - (3) Outer end (end tie) and side-tie fingers shall be a minimum of one foot wider than the minimal widths for all other adjacent finger docks.
 - (4) Residential Headwalks and Mainwalks

- (a) Minimum residential headwalk widths shall be no less than six (6) feet for dock lengths up to 120 feet in total length, and eight (8) feet wide for dock lengths of more than 120 feet.
- (5) Commercial Headwalks and Mainwalks
 - (a) Minimum widths shall be no less than six (6) feet for dock lengths up to 120 feet in total length, and eight (8) feet wide for dock lengths of more than 120 feet. If use of a walkway is for staging the public while waiting to board a vessel, the minimum dock width shall be 12 feet.
 - (b) At gangways, a minimum of six (6) feet of walking surface shall be maintained in front of the farthest gangway projection (including toe plate) at high tide, and have a minimum of four (4) feet of clear space to walk along the side of any gangway for access to berthed vessels.

Table No. 1
Minimum Finger Widths

Finger float Width (Feet)	Length of Berth (Feet)
F = 5.0'	All ADA Accessible Finger floats
F = 3.0'	Up to 35'
F = 4.0'	36' to 59'
F = 5.0'	60' to 79'
F = 6.0' ⁽¹⁾	80' to 119'
F = 8.0' ⁽¹⁾	120' and over

⁽¹⁾ Widths of more than that shown in this Table may be necessary for specific site conditions and/or uses of fingers over 70 feet.

^(*) Minimum 5.0' widths are required for the entire path of travel for ADA access, including paths along main- and headwalks. See Section 5 of these Harbor Design Criteria for exceptions.

d. Single and Double-Wide Slips

- (1) Single-wide slips are those slips that have a finger on each side of the boat. Double-wide slips have only one finger adjacent to any given boat.

e. Vessel “Rafting”

- (1) Vessel “rafting” is the practice of connecting multiple vessels together, with only one of the vessels being tied/berthed to a walkway or finger. Rafting of vessels is not allowed, unless specifically approved by the City’s Harbor Department and/or the Fire Department for special facilities and/or events.

f. Long Docks

- (1) Long docks are defined as side-tie docks with more than one boat berthed. Unless specifically identified otherwise, and for the purpose of establishing the number of boats that may utilize a long dock per DBW *Layout and Design Guidelines for Marina Berthing Facilities* (2005 edition or as updated), it will be assumed that one boat is berthed alongside a long dock every 40 feet of long dock length. This would relate to a 30-ft berthed boat, with five (5) feet of clearance on either end. Distance between two adjacent boats shall be minimum 10 feet.

g. Loading Criteria

- (1) The design of the dock system shall incorporate all anticipated dead and live loads. These criteria conform to DBW *Layout and Design Guidelines for Marina Berthing Facilities* (2005 edition or as updated).
 - (a) Dead Loads: Dead loads shall include the weight of the dock system components (walers, bracing, bracket, etc.), which are permanently incorporated into the dock system, and non-dock system components (transformers, dock boxes, gangways, pumps, dinghy/kayak/SUP racks, trash containers, buildings, etc.) which are permanently affixed to the dock system.
 - (b) Live Loads: Live loads are loads produced by the use of the dock system, such as people, carts, mobile equipment, etc. The dock system shall be capable of supporting live loads and freeboards per the “Flotation and Freeboards” section in these standards. The structure shall also be capable of supporting a 400-pound moving point load anywhere on the deck surface, but no closer than 12” from any dock edge, while maintaining the level tolerances cited in this guideline.

- (c) Wildlife Loads: Refer to DBW Layout and Design Guidelines for Marina Berthing Facilities (2005 edition or as updated) for live loads imposed by wildlife on the docks. These wildlife live loads may include sea lions.
- (2) Wind loads shall be calculated both parallel to and perpendicular to the maximum length of vessels and structures in accordance to current California Building Code.
 - (a) Wind load on the lateral area of vessels or structures shall not be less than 15 pounds per square foot acting on the projected area of the docks as well as the profile area - “sail area” of the berthed vessels above water level.
 - (b) Lateral area of vessels for wind load calculations acting on the “sail area” of the vessel shall be as per **Exhibit No. 1**, or the actual sail area of the anticipated vessel, whichever is greater.
 - (c) Ten percent (10%) of the full wind load for an unshielded vessel shall be applied to each vessel in the leeward side of the unshielded vessel.
- (3) Current Loading: Floating docks in areas of the harbor may be subject to current loads. Dock shall be designed for minimum current velocity of 1 feet per second (1 feet/sec).
- (4) Impact Loading: Impact Load from design vessel (maximum boat size that may be moored on the dock) striking dock at 10 degree angle (from parallel to dock) with approach speed of minimum one feet per second (1 feet/sec).
- (5) Wave Loading: A simple wave analysis was conducted to provide general guidance of a 100-year return period wind waves and ocean swells at Newport Harbor. In general, the majority of Newport Harbor is dominated by wind waves except for the areas near the harbor entrance which are dominated by ocean swells. Contact the City of Newport Beach, Public Works Department for details of reference study.

A qualified civil engineer, licensed in the State of California, shall conduct site-specific engineering analysis to evaluate the appropriate design wave loading for the project.

- (6) Environmental Loads: Refer to DBW *Layout and Design Guidelines for Marina Berthing Facilities* (2005 edition or as

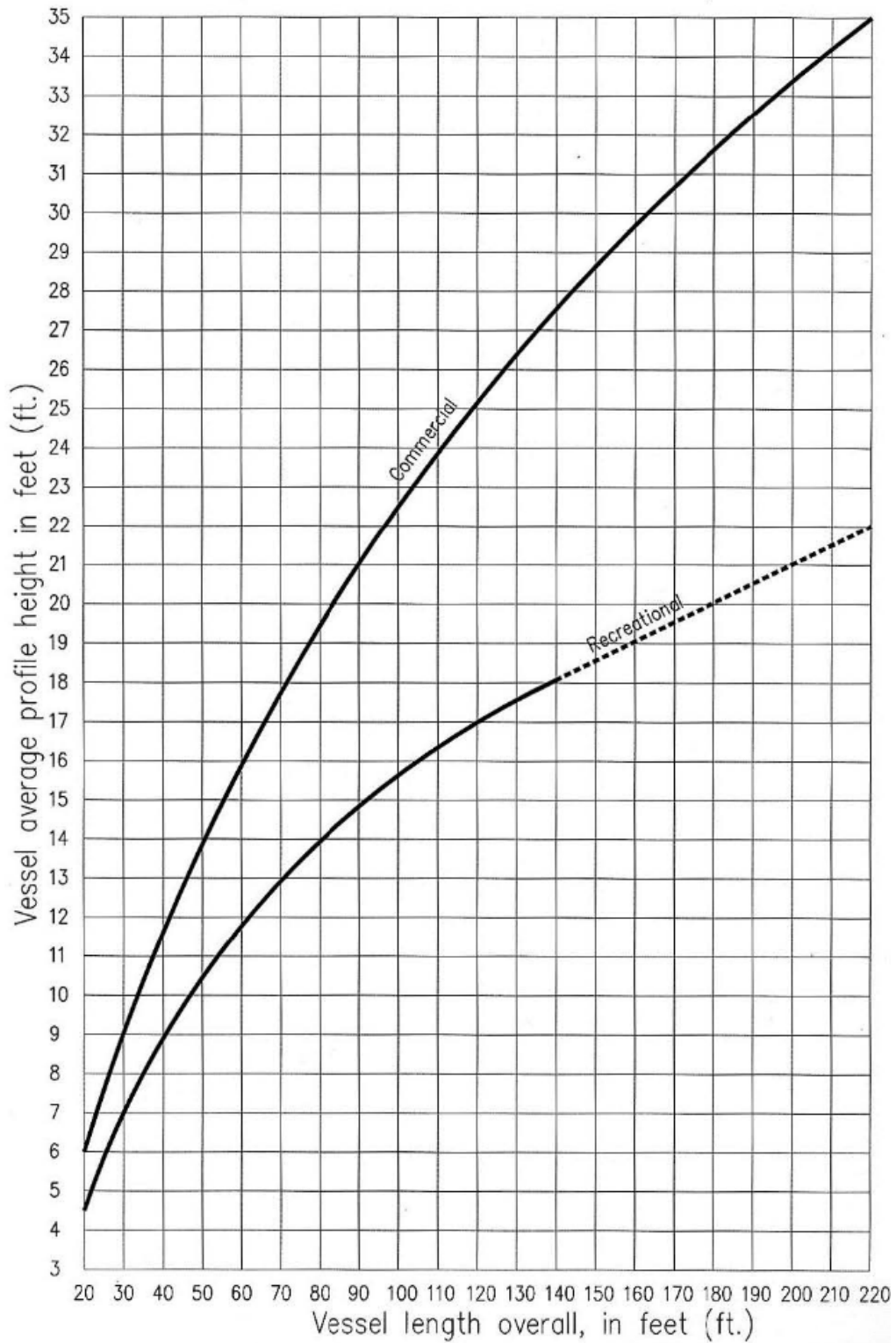
updated) for impact loads imposed by flooding, abandoned boats, broken docks, jetsam, tree limbs, or other debris. Environmental loads may occur throughout the Harbor but specifically in the Upper Bay and near the West Coast Highway bridge.

(7) Load Combinations

- (a) Combined load cases for design of docks shall include the following:
 - 1) Dead load plus uniform live load.
 - 2) Dead load plus concentrated 400-lb live load.
 - 3) Dead load plus wind load plus current & wave loads.
 - 4) Dead load plus impact load.
- (b) Fabrication, handling, and lifting loads shall also be checked in the calculation of the dock system.
- (c) For design of wood structures, the load duration factors in Table 2.3.2 of the latest edition of the American Wood Council National Design Specifications (NDS) may be applied. Allowable Stress Design and Load and Resistance Factor Design values for wood members shall be reduced by the Wet Service Factor according to Tables 4.3.1, 5.3.1 and 8.3.1 of the NDS.
- (d) Calculations shall include the transfer of forces from the dock system into the piles. All components within this transfer mechanism shall be substantiated.
- (e) Load combinations for vertical load bearing structural elements (i.e., piers, wharves, and platforms) in Section 1605 of the California Building Code (2019 or latest edition) and Section 5.3 of the Building Code Requirements for Structural Concrete (ACI 318-19 or latest edition) respectively, shall apply.

Exhibit No. 1

Wind Load
Vessel profile heights for "sail area"
(Recreational & Commercial Vessels)



h. Flotation and Freeboards

- (1) Sufficient flotation shall be provided to support dead load plus live load with freeboards as noted below. Higher live load requirements may be required by the City of Newport Beach, under special circumstances as may be deemed appropriate.

Dock freeboard shall be minimum 14 inches and maximum 24 inches, under dead load. Dock freeboard shall not be less than nine (9) inches and there shall be minimum one (1) inch of pontoon freeboard remaining, under dead plus live load. See Figure No. 13 for typical concrete dock system (where dock system itself is the pontoon) and Figure No. 14 for typical timber, aluminum, steel, and composite framing dock system (where framing is supported by pontoons).

- (a) Residential docks, including multi-family residential, shall be designed for a live load of 25 pounds per square foot.
- (b) Marinas, Public Pier (also known as Public Docks) and Commercial Docks (Type 1 docks subject to high volumes of pedestrian traffic such as docks used for ferries, charter boats, fishing boats, boat shows, shuttles, water taxis, etc.) shall be designed for a live load of 40 pounds per square foot. Type 1 commercial docks are typical in Newport Harbor.

Commercial Docks (Type 2), as previously described, which are also used for the on-dock staging (queuing) of passengers, or are subject to high volumes of cargo or other materials, shall be designed for live load of 65 pounds per square foot. Signage indicating maximum number of people (using occupant load factor 200 pounds/person) that may be staged (Dock Staging Capacity) shall be posted at a prominent location at staging area. Type 2 commercial docks are not common in Newport Harbor.

Exception 1: Docks whose functionality requires dead load freeboard less than 14 inches (docks used for kayaks, rowboat, etc.) shall be designed for 25 pounds per square foot live load. These special docks shall be exempt from the freeboard requirement on “Flotation and Freeboard” in Section h.1. Signage indicating maximum number of people (using occupant load factor = 200 pounds/person) that may use the dock (Dock Capacity) shall be posted at a prominent location.

Exception 2: Repair or modification to less than 50% of an existing dock is exempt from the freeboard requirement on “Floatation and Freeboard” in Section h.1. However, Engineer of Record shall perform freeboard calculation, to provide sufficient floatation under repaired or modified portion of dock section, to match freeboard of existing dock and support minimum live load of 25 pounds per square foot.

- (c) Weight of seawater, for the purposes of floatation calculations, shall be 64 pounds per cubic foot.
- (2) The floatation shall use a rigid block of expanded polystyrene (EPS) cores or equivalent. The use of hollow pontoons shall not be allowed.
- (3) Docks shall have pontoons composed of outer shells of either concrete (1” minimum thickness) or an ultra-violet stable plastic such as fiberglass or cross-linked polyethylene (1/8” minimum thickness). Other alternative materials must be submitted to the City for review and approval, per the “Request for Alternate Material or Method of Construction” appeals process. Exposed foam floatation is not allowed.
- (4) Residential Docks: In addition to the pontoon encapsulation types noted above, residential docks may also use spray-on elastomeric encapsulation systems for pontoons. Spray-on products must demonstrate resistance to ultra-violet rays, solvents that may be present on the water surface, and environmental conditions imposed by saltwater contact. Minimum spray-on product thickness shall be 100 mils.

i. Static Floating Tolerances

- (1) The dock surface of the in-place dock system, which includes finger floats and walkways, under various loading conditions, shall be level within the following tolerances:

Under Dead Load Only, & Under Dead and Live Loads:

- 1/4” per foot, 1” maximum (transverse)
- 1/8” per foot, 1” in 10 feet maximum (longitudinal)

Under Dead and Point Live Loads:

- 1/2” per foot (4%), 2” maximum (transverse)
- 1/4” per foot, 2” in 10 feet maximum (longitudinal)

On Accessible Routes, for ALL Loading Conditions:

- Shall not exceed 1:50 or 2% maximum (transverse)

- (2) Under Dead Load Only conditions, the free ends of finger floats shall always float level or higher than the finger float ends connected to the head or mainwalk, within the limits noted above.

j. Torsional Resistance Requirements

- (1) General: Fingers, connected walkways, and free-standing headwalks unattached to other dock elements must be designed to provide dock stability and resistance to torsional loads. Torsion bars installed in fingers, and/or dock framing construction that provides for calculated and verifiable twist resistance, is required. Free-standing headwalks need not provide independent means of torsional resistance if the width of headwalk is eight (8) feet or more.

Alternative means of providing torsional resistance to fingers and main- or headwalks may be considered by the City of Newport Beach. Methods such as twist-controlling guide roller assemblies may be considered, if acceptable twist resistance can be proved.

k. Guide Piles

- (1) Dock system pilings shall be designed by a licensed Civil or Structural Engineer, registered in the State of California, who shall have demonstrated expertise in the design of marine structures. Pile loading calculations shall be provided based on a soils investigation by a licensed Geotechnical Engineer, registered in the State of California, or based on minimum code values for soil properties.
 - (a) Alternatively, a static pile load test may be conducted by a professional geotechnical or structural engineer licensed in the state of California and qualified third-party testing agency after piles have been driven, to confirm that the piles can withstand the design loads anticipated. Testing procedures shall be in general conformance with testing procedures defined in Chapter 8 of the Caltrans Foundation Manual (2015 or latest edition) and must be approved by the City prior to commencement. Static pile load tests shall be designed for the type of load to be experienced by the pile (lateral loads for guide piles and vertical/uplift loads for

platform/pier piles) and for the estimated loads based on berthed vessel sizes and dead and live loads.

- (2) Soil conditions in Newport Harbor can vary depending on the existence of rock strata near historic bluffs along the coastline. The Applicant is advised to research the soils conditions of the subject site in order to properly assess the conditions for pile stability and installation.
- (3) Loading Conditions & Criteria
 - (a) Applied lateral wind and impact loads shall be calculated for not lower than a +7.5 foot MLLW water surface, and a load height acting upon the piles at no lower than +8.5 foot MLLW.
 - (b) Loads imposed on the dock framing system, as previously noted in this loading criteria, shall be imposed in-like-kind to the piles providing the lateral load resistance for the docks.
 - (c) Pile penetration shall not be less than 15 feet.
 - (d) Pile cutoff elevation shall not be lower than +12.0 feet MLLW in protected areas of the Harbor. Applicant shall consider pile top elevation of +13.0 or higher for facilities in or near the Harbor Entrance, due to more severe environmental conditions.
 - (e) Guide pile caps shall be provided to discourage birds from perching on piles.
- (4) Special Geological Conditions
 - (a) There are locations within the Newport Harbor area that contain rock-like geological conditions, exhibiting different soil resistance characteristics than standard bay mud. The applicant is encouraged to observe the type of guide piles (e.g., driven steel piles, drilled-in concrete piles, etc.) used in the existing surrounding installations to assess the type of piles that may be required for any new project. A licensed Geotechnical Engineer could be retained to provide this information and pile design and installation recommendations, as well.

3. DOCK MATERIALS OF CONSTRUCTION

a. General

Materials used in dock systems shall have a demonstrated history of use in salt water environments of at least 10 years, or otherwise be approved by a professional civil or structural engineer that is licensed in the state of California and who practices in waterfront engineering. Materials used in dock systems are to be new and in good condition.

(1) Flotation

(a) Flotation systems shall be the products of manufacturers and contractors regularly engaged in the production of such items for marine construction.

(b) Flotation units shall consist of:

- 1) Concrete cast around a solid, closed cell foam core, or
- 2) Fiberglass, polyethylene or plastic shell with a fitting, solid, closed cell foam core.

(2) Plastics

All plastics used in the dock systems shall be ultra-violet light stabilized or protected. Plastics proposed for use must have a demonstrable performance history in salt water environments of at least ten years, or be the recommendation of a California-licensed Civil or Structural Engineer. Design strengths and thickness shall be appropriate for the intended purpose.

(3) Foam core for floats shall be a rigid block of closed cell expanded polystyrene with a unit weight of between 0.95 to 1.2 pounds per cubic foot. Properties of foam shall conform to ASTM C578, with maximum water absorption of 3.0 percent or less as determined by ASTM C 272, Method C. The foam core shall not have more than 10 percent reground material, and reground foam pieces shall not exceed 3/8-inch diameter.

b. Timber

(1) All wood-construction fingers shall have framing that includes cross-members that provide rigid connection to the full-length stringers. All connections shall be made using thru-bolts.

Commercial Dock Framing: For independent long docks that float freely and do not have docks and/or fingers attached for stability, all primary load carrying framing members shall be fabricated from glued-laminated beam construction, to prevent warpage of the major members, contributing to dock instability.

- (2) Allowable Stresses: Allowable stresses for harbor structures shall not exceed those stated in the “California Building Code.”
- (3) Timber used for walking decks shall have a minimum net thickness of 1½ inches.
- (4) Timber for walking surfaces shall be Douglas Fir, Select Structural. Sawn timber for other framing members shall be Douglas Fir, No. 1, minimum.
- (5) Glued-laminated timber shall be Douglas Fir 24F-V8, industrial grade for application in wet environments. Fabrication shall comply with Product Standard PS 56-73, “Structural Glued Laminated Timber.”
- (6) Walking surfaces shall have a non-skid finish and be maintained periodically or when worn or presenting a trip hazard. Treated timber decking requires no further non-skid finish.
- (7) Dimensional lumber is not required to be painted. However, if the applicant chooses to paint, such paint shall be maintained to good condition and appearance.
- (8) Plywood utilized within dock framing systems shall be exterior grade material. Plywood shall not be used as the walking surface for a dock system, unless the product can be demonstrated that it is provided with a factory-applied protective, non-skid walking surface that will be durable and has a proven process for patching and touch-up. Internal plywood members shall be provided in such a manner that water can be easily conveyed off the top surface of plywood and not pond or get trapped, leading to early deterioration and dry rot.
- (9) Weight of treated Douglas Fir shall be assumed to be 35 pounds per cubic foot.
- (10) All timber used for dock construction shall be marked with the appropriate grade of material and preservative treatment, or may be subject to rejection by the owner, owner’s representative, or

City Building Inspector, dependent on approved permit plan set and project permit requirements.

(11) Wood Preservative for Timber

- (a) All timber products shall be coated with preservative treatment to retention limits recommended by the American Wood Preservers Association Standard M4 “Standard for the Care of Preservative-Treated Wood Products” and AWPAC Standard C2 “Lumber, Timber, Bridge Ties & Mine Ties – Preservative Treatment by Pressure Processes.”
- (b) Current State and Federal environmental requirements and guidelines for the type and application of preservative treatments will be strictly enforced.
- (c) All lumber must bear a stamp approved by the American Lumber Standards Committee for conformance to the American Preservers Association Standards.
- (d) Field cuts and bored holes shall receive field-applied preservative treatment in accordance with the Western Wood Preservers Institute (WWPI) Best Management Practices. Preservative treatment chemicals shall not be allowed to enter harbor waters.

c. Metal

- (1) Any steel components used in the marine environment shall be hot-dip galvanized with a minimum of three (3) mils of zinc, or epoxy coated per ASTM A 934 and manufacturers recommendations, or shall be stainless steel.
- (2) Structural steel shall conform to Standard Specifications for Structural Steel for Bridges and Buildings. Stainless Steel shall conform to 316 material specifications. Aluminum shall be marine grade.
- (3) Fabrication and erection shall comply with the latest applicable codes as noted:
 - (a) AISC, Latest Editions
 - (b) Aluminum Structural Welding Code, Latest Edition

- (c) Aluminum Design Manual, Latest Edition
 - (d) 12011 Design Manual for Structural Stainless Steel, Latest Edition
- (4) All bolts securing primary structural members shall be a minimum of ½-inch diameter thru bolts. Bolts shall be minimum A307 and include washers where direct contact with timber members occurs. Carriage bolts are also allowed.
 - (5) No connecting device shall protrude beyond the fascia or waler into the berthed area, which may contact any part of the berthed vessel, or extend up into any walking surface creating a tripping hazard.
- d. Concrete and Reinforcing
(for concrete docks, platforms, and piers)
- (1) Concrete shall be designed for permeability, strength, chemical stability and abrasion resistance, appropriate for its application.
 - (2) In absence of geotechnical report recommendations based on soil testing, portland cement shall conform to ASTM C150 Type II/V modified, and low alkali. Chemical admixtures shall conform to ASTM C494. Chemicals designed to limit corrosion of internal reinforcing may be used. Air entrainment admixtures shall conform to ASTM C260. Coarse and fine aggregate shall conform to ASTM C33, and ASTM C330 where lightweight aggregates are used. Lightweight aggregate, if used, shall consist of expanded and coated shale or equivalent material of sufficient strength and durability to provide concrete of the required strength.
 - (3) For concrete that is not subject to saltwater splash or immersion, the minimum 28-day compressive strength shall be $f'_c=4,500$ psi and the water-to-cement ratio shall be 0.45 conforming to the requirements for concrete exposure class S2 in Table 19.3.2.1 of ACI 318-19 (or latest edition).
 - (4) For concrete that is subject to saltwater splash, saltwater immersion, and/or brackish water, the minimum 28-day compressive strength shall be $f'_c=5,000$ psi and the water-to-cement ratio shall be 0.40 conforming to the requirements for concrete exposure class C2 in Table 19.3.2.1 of ACI 318-19 (or latest edition).

- (5) Concrete structures shall be designed to provide sufficient coverage of reinforcing steel, so as to prevent corrosion, per code requirements. For structures exposed to saltwater splash or immersion, bar reinforcement shall conform to ASTM A706, and shall be epoxy coated per ASTM A775 or ASTM A934. Welded wire mesh shall conform to ASTM A185 and shall be galvanized or epoxy coated conforming to ASTM A884, with all visible defects and cut ends repair coated. Wires used to tie reinforcing steel shall be either epoxy-coated steel or 316 stainless steel.

e. Pilings and Anchorage

- (1) Piles shall be the products of manufacturers and contractors regularly engaged in the production of such items for marine construction. Typical materials approved for pile materials include:
 - (a) pre-stressed concrete
 - (b) steel
 - (c) high-strength composite materials

Timber piles are not allowed.

- (2) Unless subsurface soil materials prevent their use, pilings shall be pre-stressed concrete. In absence of soil report recommendations based on soil testing, portland cement shall be ASTM C150 Type II concrete meeting exposure class C2 and having minimum 28-day compressive strength $f'_c=6,000$ psi and a water cement ratio of 0.4 shall be used in compliance with ACI 318-19 Table 19.3.2.1, modified, low alkali. Water for mixing and curing shall be fresh, clean and potable. Aggregates shall conform to ASTM C33, Size Number 67, and be free from any substance that is deleteriously reactive with the alkalis in the cement. Admixtures, if used, shall conform to the requirements of ASTM C494 and not contain chlorides. Corrosion inhibiting concrete admixtures are encouraged. Pre-stressing steel shall be uncoated, seven-wire stress relieved strand with a minimum ultimate stress of 270 ksi conforming to ASTM A416, Grade 270. Spirals shall conform to ASTM A1064, and ties and other reinforcing steel shall conform to ASTM A615, Grade 60, or ASTM A706, Grade 60, plain or deformed. Piles shall cure and reach a strength of not less than $f'_c=4,000$ psi before de-tensioning, cutoff of the strands, and transfer from forms. Piles shall have a minimum strength $f'_c=6,000$ psi at time of driving.

- (3) Guide rollers shall be fabricated from polyethylene, UHMW, polyolefin or polyurethane roller or plate material. As an option to the use of rollers, UHMW rub blocks or sheets may be used. Minimum thickness of a rub block or sheet shall be 2 inches, with attachment bolts countersunk into the UHMW material.
- (4) Any structural steel components used in the marine environment shall be hot-dip galvanized or epoxy coated per manufacturers recommendations, or AISI Type 316 stainless steel.
- (5) Steel piles must be coated with a non-toxic coating that prevents or inhibits the corrosion of the pile base material. Design of steel piles shall include a 1/8-inch additional corrosion allowance. Coatings must be maintained to prevent growth and wear from the guide roller assemblies. Rollers should be cleaned periodically to prevent shell fragment build-up from further deteriorating the coatings protecting the steel piles. For added steel pile protection, sacrificial anodes may also be designed and installed to limit corrosion, and UHMW plastic pile wraps can be installed to limit wear of the steel surface from guide roller friction.
- (6) Installation Criteria
 - (a) Piling shall be installed by a California-licensed contractor regularly engaged in the business of pile driving. Care shall be taken in the handling and driving of piling, to prevent spalling, cracking or other damage. Contractor shall install piles per approved local, state and federal requirements. Piles may be jetted as permitted by the Local Coastal Permit, USACE permit, RWQCB Water Quality Certificate, and local CEQA mitigation measures, as applicable. If jetting is permitted, depth of jetting shall be determined by a California-licensed Geotechnical Engineer and a California-licensed Civil or Structural Engineer.
 - (b) Tolerances
 - 1) The installation elevation of the top of piles shall be within one inch of designer top of pile elevation. Minimum pile top elevation for dock systems shall be +12.0 MLLW, unless noted otherwise in these Harbor Design Criteria.

- 2) Piling shall be installed vertically plumb within tolerances defined in the construction documents, but in no cases more than 1.5% out of vertical plumb, and 2 inches out of horizontal location.

(c) Records, Certifications, and Inspection

- 1) Records of pile driving operations shall be maintained by the Engineer of Record (EOR) or qualified third-party testing agency under the supervision of the Engineer of Record (EOR), and made available to the City upon request. This work shall be performed in accordance with the requirements of CBC Sections 1704 and 1705.
- 2) Contractor shall make the pilings available for City inspection prior to installation.
- 3) Upon completion of the pile driving operation, subject to the requirements of the permit, the Owner's design EOR or qualified third-party testing agency shall certify that the pilings were installed in accordance with the design and these guidelines. Such certification shall be on the EOR's or qualified third-party testing agency's letterhead and bear the EOR's stamp and signature or the deputy inspection authorization of a qualified third-party testing agency, and shall be submitted to the City. This certification is required to final the permit and prior to issuance of the certificate of occupancy upon successful completion of all other permitted work.

f. Alternative and/or Hybrid Materials

Alternative materials such as recycled plastic, PVC, composite and others, which can show a demonstrated experience and useful lifespan in the marine environment and usage, can be proposed to the City of Newport Beach Chief Building Official for consideration. The decision of the City of Newport Beach Chief Building Official regarding the use of alternative or hybrid materials will be final.

4. APPURTENANCES

a. Locker Boxes

- (1) Individual locker “dock” boxes may be provided for slips, and may provide housing for electrical and mechanical services. Locker boxes shall be securely attached to the dock surface. All dock boxes should be located on finger fillets; i.e., the intersection of the finger and the main or headwalk, on the triangular dock surface. Locations other than on a finger fillet require the approval of the City. Locker boxes installed in the path of travel that limits pedestrian access will not be allowed. Minimum clearances for pathways are as follows: two (2) feet clear on fingers, three (3) feet clear path on main and headwalks. See Section 5 of these Harbor Design Criteria for minimum clearances around protrusions along accessible paths of travel.
- (2) Lockers boxes shall be made of 1/8 inch minimum thick fiberglass or cross-linked polyethylene. Flammable materials shall not be kept in locker boxes.

b. Cleats

- (1) Cleats shall be designed to accommodate boats and loads appropriate for their location. A minimum of two cleats on each side of a finger is required. Cleats shall be attached to the dock system by means of through-bolts of adequate size to transmit loads between boats and the dock system.

c. Fendering

- (1) Fendering, such as rub rails and corner bumpers, shall be installed on dock surfaces that will come into contact with boats. Outer corners of fingers should be protected with corner bumpers or dock wheels. Bumper material shall be vinyl, PVC, polyester fabric foam-filled tubes, synthetic rubber, or stabilized rubber marine products. Water retentive material such as rugs, or salvage materials such as tires, shall not be used. Install bumpers with aluminum or stainless steel nails or screws.

d. Boarding Steps

- (1) Boarding steps shall not be kept on main walks. Boarding steps may be kept on, or attached to, finger floats, but in no case shall boarding steps on finger floats occupy more than one-half of the width of the finger float. Boarding steps shall be light-weight and

not used for storage, unless the supporting dock section has been specifically designed for the additional dead and live load. Boarding steps shall not be permanently attached to the outermost five (5) feet of any finger float.

e. Life Rings

- (1) Life rings shall be installed in strategic locations on commercial docks. Life rings for residential docks are encouraged, but not required.

f. Dock Ladders

- (1) Dock ladders shall be installed in strategic locations on commercial docks for safety purposes. Ladders shall extend into the water by at least three (3) feet, and be constructed of materials that resist corrosion and prolong ladder life. Ladders may be provided with the ability to swing out of the water in order to allow for special recreational uses of the docks. Ladders for residential docks are encouraged, but not required.

5. ACCESS/GANGWAYS/AMERICANS WITH DISABILITIES (ADA) COMPLIANCE

a. General

- (1) Landside facilities of commercial docks and of docks serving new multi-family developments shall meet all ADA requirements for the path of travel from the street and parking lot, to the gangway and down to the docks. These ADA requirements are not applicable to single family or joint residential docks.
- (2) Walking surfaces of gangways shall have a non-skid finish, such as punched metal, unpainted timber, or grit impregnated metal, painted non-skid coatings, etc.
- (3) Along accessible paths of travel, minimum clear width shall be five (5) feet. This width can be reduced to a minimum of three (3) feet for a maximum distance of two (2) feet provided these protrusions are separated by 5-foot-wide segments that are a minimum of 4 feet in length. At vessel access points, a clear width of 5 feet shall be provided along the dock edge (e.g., between cleats). See CBC Section 11B and ADAAG for additional requirements.

- (4) Gangway Support: Connections between gangways and the adjacent bulkheads or platforms shall be designed by a licensed engineer, and comply with the following minimum requirements:
 - (a) Gangways shall be supported by the bulkhead or platform through a mechanical connection system, such as face-mounted plates or clip angle hangers with saddles, shackles or pins, attached to the bulkhead or platform with poured-in-place anchor bolts or epoxy-anchored threaded studs. Minimum diameter of bolts shall be 5/8 inch, and material for bolts in contact with concrete or treated lumber shall be AISI Type 316 stainless steel.
 - (b) The hinge and supports shall be capable of transferring full dead and live loads generated by the gangway to the mechanical connection system.
 - (c) Steel angles, plates and other sections utilized in these connections shall be minimum ASTM A36 grade and have a minimum thickness of 3/8 inches. Any exposed edges of plates that may potentially be in the path of travel or in contact with foot traffic shall have beveled or rounded smooth edges.
 - (d) Dissimilar material shall not be in direct contact to prevent galvanic corrosion.
 - (e) All steel members and hardware shall be galvanized, or coated with a formulated non-toxic coating system designed specifically for the marine environment.
 - (f) The gangway shall be restrained from lifting out of the support saddle during extreme high tide elevations, without interfering with rotation at the gangway hinge.
- (5) Gangways shall be braced in the horizontal plane to prevent lateral deformation. The bracing system can consist of diagonal supports within or under the gangway framing system, plywood sheathing, or by decking designed to act as a shear transfer membrane.

b. Commercial Docks (Types 1 and 2)

Commercial docks servicing the public will be required to meet all applicable requirements relating to Federal ADA Compliance requirements. These requirements apply to all commercial docks listed in

Section 1 of these Harbor Design Criteria, including, but not limited to, yacht clubs, public piers, and recreation boat marinas.

- (1) Uniform live loads for the structural design of the gangway shall be 100 pounds per square foot (psf) over the entire walking surface. Dead and live loads of utilities (use 15 pounds per lineal foot, if applicable) and a 15 psf wind load, depending on the gangway geometry, shall also be considered in the structural design.
- (2) Uniform live loads for gangway operations shall be a minimum of 50 psf for gangways functioning strictly for access to the dock system, and a minimum of 100 psf for gangways that can be used as a staging area for passengers boarding vessels. The maximum allowable deflection of a gangway or bridge at mid span is $L/240$, with $L/360$ suggested for walking comfort. Half the total dead and live loads of the gangway shall be applied to the floating dock and half shall be applied to the gangway landside support.
- (3) Gangway slopes shall meet current State and Federal requirements for safety and ADA compliance, where applicable. The California Building Code (2019 or latest edition) and ADAAG allow a gangway that is a minimum 80 feet in length to be compliant with ADA requirements.
- (4) All gangways serving passenger loading facilities shall be ADA compliant. At least one ADA-compliant gangway serving all approved ADA-accessible slips shall be provided at recreational boating marinas and multi-residential facilities.
- (5) All walking surfaces shall be provided with a commercial grade non-skid surface. Worn or slick non-skid surfaces shall be repaired immediately upon notice. Non-skid walking surfaces shall be maintained and/or re-applied at a minimum of every six (6) months. The maximum allowable gap in adjacent walking planks or surfaces shall be $\frac{1}{2}$ inch, and the maximum vertical height differential between adjacent planks or surfaces shall be $\frac{1}{4}$ inch.
- (6) All gangways shall be equipped with transition plates at the bottom of the gangway, and if fabrication details include gaps in the hinge transition of more than $\frac{1}{2}$ inch, at the top of gangway as well. These transition plates shall be of non-skid surface material and provide the transition from the gangway platform and/or dock, onto the gangways. All transition plates shall have a slope no steeper than 1:8 for non-ADA-compliant gangways, and 1:12 for ADA-compliant gangways. Transition plates shall have rounded

edges along the path of travel and a height or thickness at the end of the plate of no greater than 3/8 inch.

- (7) Minimum clearance on the dock system around a gangway landing shall be 6 feet long by 5 feet wide.
- (8) For additional discretionary gangways, other than the required ADA-compliant gangway serving ADA-accessible slips, gangway slopes for commercial docks shall not exceed 1 foot vertically for each 3.0 feet of length, when the tide is at -1.0 feet MLLW. The minimum length of commercial gangway shall be 30 feet.
- (9) Guard, mid and hand railing heights, sizes, and geometries shall meet the requirements of the latest State of California Title 24 requirements.
- (10) Railings shall be designed to resist a uniform live load of 50 pounds per foot applied horizontally to the rail or a 200-pound point load applied vertically at any point along the length of all horizontal rails.

c. Residential Docks (Single-Family, Joint, and Multi-Family)

- (1) Uniform live loads for the structural design of all residential gangways shall be 50 pounds per square foot (psf) over the entire walking surface. Dead and live loads of utilities (use 15 pounds per lineal foot, if applicable) and a 15 psf wind load, depending on the gangway geometry, shall also be considered in the structural design.
- (2) Uniform live loads for all residential gangway operations shall be a minimum of 25 psf for gangways functioning strictly for access to the dock system. The maximum allowable deflection of a gangway or bridge at mid span is $L/240$, with $L/360$ suggested for walking comfort. Half the total dead and live loads of the gangway shall be applied to the floating dock and half shall be applied to the gangway landside support.
- (3) Gangway slopes for all residential docks shall not exceed 1 foot vertically for each 2.5 feet of length, during the full design tidal range in Newport Harbor (approximately 10 feet). The minimum length of residential gangway shall be 24 feet.
- (4) Minimum gangway clearance (within handrails) shall be 30 inches wide.

- (5) A 3-foot long toe plate, at the base of a gangway, is encouraged for ease of use and safety and to provide a continuous sloping path of travel, from the surface of the gangway to the surface of the dock. A gangway bottom “step-off,” if the toe plate is not utilized, shall not exceed 7 inches in vertical height.
- (6) Worn or slick non-skid surfaces shall be repaired immediately upon notice. Non-skid walking surfaces shall be inspected and maintained annually by the owner or by a California-licensed Civil or Structural Engineer for a facility operated by a homeowners association.
- (7) Gangway handrail heights shall be 34 to 38 inches above the gangway walking surface. Openings in rails of residential gangways shall not permit a sphere 12 inches in diameter to pass through.
- (8) The gangway rail shall be designed to resist a uniform live load of 20 pounds per foot of horizontal force applied to the top of the rail.
- (9) If a residential dock system has 25 or more slips, an ADA-compliant gangway system shall be designed to the same requirements for Commercial Docks (Types 1 and 2) in Section 5.b in these Harbor Design Criteria. See Federal ADA Accessibility Guidelines.

6. SPECIAL HARBOR FACILITIES

a. Fuel Floats

- (1) Locate boat-fueling docks near the entrance of the harbor, in an area that is protected from waves and rough water environmental conditions.
- (2) Fuel floats used for dispensing petroleum products shall be adequately designed and placed to provide maximum service to the boater. Adequate guide piles or dolphins shall be required to provide permanence, safety, and stability to the floating docks, and shall be designed by a California-licensed Civil or Structural Engineer with waterfront experience. Fuel floats must be designed to support the dead loads imposed by the dispensers, hose reels, storage, pipe chase ways, etc.
- (3) Fuel facilities shall conform with County, State and Federal codes, ordinances, and law and shall be designed by a California-licensed

Mechanical Engineer. Equipment, such as containment booms and absorbent pads, shall be kept on the fuel dock to contain spills.

- (4) Fuel Floats shall contain all necessary firefighting equipment and systems, as deemed appropriate by the City of Newport Beach Fire Department.

b. Sewage Pump Out Facilities

- (1) Marinas with more than 50 boats are required to have at least one (1) sewage pump out facility. Sewage pump out facilities shall connect to the nearest City of Newport Beach sewage line system. Refer to *City of Newport Beach Standard Drawings for Public Works Construction* for details of these connections.
- (2) Sewage pump out equipment shall be products that have been designed, tested and installed for the specific purpose of vessel sewage pump out. All sewage pump-out facilities shall be inspected on a minimum monthly basis and maintained in operable condition. System inspection shall include checks for leaks and should consist of emptying one 5-gallon buckets of clean water dyed with a red food grade dye. One maintenance personnel team member should walk the suction pipe alignment to check for red dye in the Harbor water. The pump operation and the discharge pipe shall be inspected for leaks as well.

c. Floating Buildings

- (1) To obtain approval from the City of Newport Beach Harbor Department, Public Works Department, Development Services Department, and Planning Department for the installation of a floating building, the applicant must provide compelling reasons that such a facility is necessary and is precluded from location on land. Appropriate regulatory approvals are also required.
- (2) Only commercial facilities are allowed to consider floating buildings. Residential facilities are not allowed to have floating buildings. Potential floating building uses include restrooms, the dock master's office, enclosures on a floating fuel dock, and boat rental office. Other uses may be considered, at the discretion of the City of Newport Beach.
- (3) Floating buildings are subject to the latest edition of all local, State and Federal building codes.

d. Vessel Launching Facilities

- (1) Vessel launching facilities may include vehicle launch ramps for trailered boats, concrete launch ramps with rails and/or tracks for special vessel carriers, elevated travel lift launches, swing hoists on davits, and forklift launching.
- (2) All launch facilities shall be designed considering the launching and vehicle loads imposed on existing and/or planned structures.
- (3) Vessel launching facilities shall be designed in accordance with *Layout, Design, and Construction Handbook for Small Craft Boat Launching Facilities* (1991 edition or as updated) published by the California State Parks Division of Boating and Waterways.

e. Special Mooring Devices

- (1) Special vessel mooring devices may be required or desired for specific berthing conditions. Large vessels may require mooring and/or breasting dolphins (pile groupings designed to resist large impact and berthing loads), berthing walls, or other devices that facilitate vessel docking.
- (2) Special mooring devices shall be designed by a California-licensed Civil or Structural Engineer with input provided by California-licensed Geotechnical Engineer, all with experience in waterfront engineering. Special mooring devices shall be designed to resist berthing loads, wind, wave, and current loading for the localized area.

f. Piers, Platforms, and Wharves

- (1) Piers, platforms, and wharves shall be designed by a California-licensed Civil or Structural Engineer experienced in waterfront structures. A geotechnical report, for pile design and installation, shall be provided that addresses special issues such as liquefaction potential, and the vertical (gravity) and seismic support of the waterfront structure. The geotechnical report shall be prepared by a California-licensed Geotechnical Engineer.
- (2) Refer to the Harbor Standard Drawings for the various geometries allowed for piers and platforms that serve and provide access to residential floating docks.
- (3) Commercial: Structures shall be designed for an assembly area live load of 100 pounds per square foot (psf). If vehicles shall be used

on the structure for maintenance purposes, then vehicle loads shall be used for the design of the structure. If vehicle loads exceed 100 psf, then vehicle loads shall govern.

- (4) Residential: Structures shall be designed for a minimum live load of 50 psf.

g. Seawalls (Bulkheads)

- (1) General: Several types of seawalls are common to support soils and construction on the landside of the wall. Seawall material can be composed of various types of materials, including concrete, steel, and other manufactured materials. Typical wall types include freestanding or “cantilevered” seawalls and “tied-back” seawalls. Cantilevered seawalls are limited by the height of the wall above the waterside mudline and are generally effective for exposed heights of not more than 8 feet. For structural steel type seawalls, higher exposed heights are possible. Tied-back seawalls can be effective for exposed heights over 8 feet and may require continuous caps, walers (beams), steel tie rods and a foundation anchors (deadman), or earth anchors. Tie-back anchor systems shall require protection against corrosion. Galvanic anode cathodic protection system is recommended. Tie-back anchor system shall be designed to last the life of seawall.
- (2) Generally, seawall sheets constructed of reinforced, prestressed concrete are desirable, although for special conditions, structural steel interlocking sheets may be necessary. Steel products in the marine environment require special non-toxic coating protection and cathodic protection, in order to provide extended life spans.
- (3) The City understands there is a threat of flooding and inundation in and around Newport Harbor due to sea level rise. Newport Harbor and adjacent low-lying areas rely on a system of harbor bulkheads, seawalls, revetments, or other improvements to function. Additionally, the system of shoreline defenses protects existing development, public access, public views, and scenic qualities of the coastal zone. The City is committed to using the best available science to determine a range of sea level rise projections for use in developing harbor development standards and in reviewing Coastal Development Permit applications. Currently the best available science is the State of California *Sea Level Rise Guidance*, 2018 Update. Experts acknowledge that there is considerable uncertainty in the magnitude and rate of the rise in sea level and as a result, the City recognizes the need to set standards over time that provide protection from future sea level

rise given the inherent uncertainty of the rate and magnitude of the rise.

Bulkheads, seawalls or other protective improvements shall be constructed and maintained as shown in Table No. 2. The structure shall also be initially designed and constructed to accommodate and receive future increases in height when directed by the City to protect adjacent low-lying areas from future flooding without the need to replace or substantially alter the structure.

Table No. 2

Year Structure Permitted	Adopted NB Standard Elevation (feet) ¹		Design for Adaptability Elevation (feet) ²	
	NAVD88	MLLW	NAVD88	MLLW
2020	10.7	10.9	13.7	13.9
2021-2025	10.9	11.1	14.4	14.6
2026-2030	11.0	11.1	14.6	14.8
2031-2035	11.0	11.2	14.8	15.0

1. Derived using the Upper Limit of the Low Risk Aversion probabilistic sea level rise protection scenario for the Los Angeles tidal gauge, estimated 75 years into the future based on the State of California Sea Level Rise Guidance, 2018 Update. This scenario accounts for the upper range of what is “likely to occur” with approximately an 83 percent probability that sea level rise falls below the elevations shown.

2. Derived using the Medium-High Risk Aversion probabilistic sea level rise protection scenario for the Los Angeles tidal gauge, estimated 75 years into the future based on the State of California Sea Level Rise Guidance, 2018 Update. This scenario accounts for increased sea level with approximately a 1-in-200 or 0.5 percent probability that sea level rise exceeds the elevations shown.

- (4) The distance between seawalls and all floating dock components shall be a minimum of one foot horizontal distance.
- (5) Seawalls shall be designed to resist all applicable vertical and horizontal loads.
- (6) A minimum safety factor of 1.5 shall apply to gravity loads, and a minimum safety factor of 1.1 shall apply to seismic loading cases for the stability of seawalls.
- (7) Decking may butt to the seawall cap, or cantilever over the top of the seawall, if approved.

- (8) Wing Walls: Wing walls are retaining walls that project landward and are perpendicular to the seawall. Wing walls may be necessary to isolate the seawall protection system of one property to the adjacent property. Special care must be taken to assure that the construction of a seawall for the subject property does not adversely impact the seawalls of the adjoining properties, either during construction or over the life of the structures.
- (9) Seawall design requires a soils report from a California-licensed Geotechnical Engineer experienced with the design of waterfront structures. Any sloping surface on the water or landside of the seawall must be accounted for in the calculations for the seawall.
- (10) All concrete sheets used for seawall construction shall be designed as pre-cast, pre-stressed concrete elements. Sheet design shall provide for symmetrical distribution and sizing of strands, to prevent curvature of the wall. See Section 3.e “Pilings & Anchorage” for concrete and reinforcing requirements.
- (11) All seawalls or seawall alterations shall be designed by a California-licensed Civil or Structural Engineer.

7. DREDGING

a. General

All projects that require dredging must follow current local, State and Federal permitting requirements.

b. Maintenance Dredging

For maintenance dredging projects involving small quantities, the City of Newport Beach, in conjunction with the U.S. Army Corps of Engineers, the California Coastal Commission and the Regional Water Quality Control Board, has a program allowing for a simplified permitting process, as long as the amount of dredging and disposal quantities are small and meet material quality requirements for local beach nourishment or disposal at the LA-3 Ocean Dredged Material Disposal Site. The applicant is encouraged to inquire about this simplified process with the City of Newport Beach Public Works Department, to verify qualifications under the Regional General Permit (RGP) 54.

8. UTILITIES

a. General

All utility lines in a floating dock system may maintain clearances as outlined in the DBW *Layout & Design Guidelines for Marina Berthing Facilities*.

b. Electrical Power and Lighting

- (1) All electrical design shall be in accordance with the latest edition of the following codes and standards:

- (a) California Electrical Code (CEC), 2019 or latest edition
- (b) National Fire Protection Association (NFPA) 70 National Electric Code (NEC), 2017 or latest edition on which the current edition of the CEC is based
- (c) NFPA 303, Fire Protection Standard for Marinas and Boatyards

- (2) Electrical systems shall be designed by a California-licensed Electrical Engineer and shall be in accordance with the latest requirements of the City of Newport Beach.

- (3) An electric service connection shall be located at a minimum of every other slip. Electrical receptacles shall be waterproof and approved for marine waterfront exposure. The following are suggested minimum receptacle requirements based on boat size:

- (a) One (1) 120v, 30 amp outlet at each boat slip under 35ft
- (b) Two (2) 120v, 30 amp outlets at each boat slip between the sizes of 36 to 45ft
- (c) One (1) 120v, 30 amp and one (1) 120v, 50 amp receptacle at each boat slip between 46 to 55ft
- (d) Two (2) 120v, 50 amp receptacles for boats between 56 to 65ft

For vessels larger than 65ft, special power requirements may be required and the applicant should consult the vessel manufacturer. Some large vessels may require 220v or 480v, 100 amp services. Sub metering of each boat slip is recommended and has proven to reduce power usage in marinas where meters have been installed.

- (4) Lighting shall be provided on all floating structures to illuminate paths of travel a minimum of one foot-candle at 15 feet from the

light source with light sources not greater than 30 feet on-center. Lighting levels shall be sufficient to illuminate dock edges and obstructions without interfering with boater navigation or projecting onto neighboring properties. All lighting on landside and waterside structures and buildings shall be designed to minimize reflection/glare on the adjacent water areas with consideration for lighting reductions in evening hours.

- (5) Electrical cables and conduits shall be fastened securely to the dock system and gangways such that the system is protected from damage by boats. All electrical equipment shall be located above the harbor water level per latest NEC requirements at all times. If distribution cabling will be subject to water contact, cabling shall be rated for submersible use. All strapping supports for conduit shall be stainless steel. All electrical conduit and cables must be concealed within the dock system.
- (6) Transformers and panels located on the docks shall meet all requirements of the NEC. Several maintenance receptacles should be placed throughout the marina system to allow dock maintenance crews to use small electric tools without using metered power dedicated to slip renters.
- (7) Commercial Facilities
 - (a) Commercial facilities shall provide minimum lighting levels for public safety along the path of travel from land to the berthed vessel. Lighting levels shall be sufficient to illuminate dock edges and obstructions without interfering with boater navigation. This is considered to be a minimum one foot-candle at 15 feet with light sources not greater than 30 feet on-center.
 - (b) Lighting fixtures with a capacity of 9 watts for compact fluorescent lights or 4 watts for LEDs mounted at heights between 1.5 to 3 feet above the floating deck surface in dock boxes or on individual pedestals along the path of travel will generally meet this requirement. Fixtures should be located such that lighting levels on the walking surface are as uniform as possible.
 - (c) In addition, pole-mounted lighting shall be provided to illuminate vertical access systems such as gangways, steps, and lifts, providing a higher level of illumination at vertical transitions in the path of travel.

- (d) Lighting systems shall be designed to provide light for the floating walking and access surfaces and not project light into neighboring properties, skyward and/or water space. Special lens and/or shields may be required to ensure that stray light is blocked and/or managed.
- (e) All lighting shall be controlled by photo cells and/or timers, to assure that their operation is automatic and energy conserving. Lighting systems and controls shall be tested annually for functionality. Light bulbs and photocells shall be replaced as required.

c. Plumbing

- (1) Plumbing systems shall be designed by a licensed Civil or Mechanical Engineer, registered in the State of California, and shall conform to the latest California Plumbing Code requirements. Water mains supplying water to domestic and fire water systems shall conform to the latest editions of the California Fire Code and applicable NFPA standards.
- (2) One hose bib shall be provided for every two (2) boats, as a minimum. Hose bibs for every boat slip are recommended for boater convenience and the reduction of clutter on the docks.
- (3) Backflow preventers shall be provided for all water supply systems into the site. Pressure reducers or booster pumps may be required to meet pressure and flow requirements.
- (4) Refer to Section 6.b “Sewage Pump Out Facilities” for criteria for sewage system installations.
- (5) Supply water and sewage piping shall accommodate the full range of tidal movement, via the installation of flexible hoses and/or mechanical swivel pipe fittings. All materials shall be suited for the salt-water marine environment and be rated as “Food Grade” materials.

d. Fire Protection

(1) General

- (a) All fire protection systems for marinas, wharves and piers shall be in accordance with NFPA Standards 14 and 303, latest edition, and the California Fire Code Appendix II-C, latest edition. See the attached Newport Beach Fire

Department Life Safety Services Guideline F.01 - Fire Protection for Marinas, Wharves, and Piers for system requirements.

(2) Code Requirements

- (a) Retroactivity of code provisions: At the option of the Newport Beach Fire Department, the authority can make the conditions and provisions of applicable current codes retroactive, if deemed necessary for public safety. Otherwise, the provisions of applicable codes that existed or were approved for construction or installation prior to the effective date of the standard shall apply.

(3) Fire Department connections (FDCs), backflow preventers and pressure reducing assemblies, firehose cabinets (FHCs), fire standpipes and portable fire extinguishers shall be provided on the docks, as required by Code. Owner shall perform periodic testing and replacement of fire hoses in conformance with the City of Newport Beach Fire Department requirements.

(4) Commercial Facilities

- (a) All commercial dock installations shall be provided with a fire fighting system, approved by the City of Newport Beach Fire Department. If the City water pressure is not adequate to produce pressures necessary to meet City and Code requirements, an auxiliary booster pump system may be required. In accordance with CBC Sections 104.10 and 104.11, the owner may also submit a request for modification from City and Code requirements with approval by the Fire Marshal and Chief Building Official. The residual water pressure for unassisted firefighting using the on-dock fire hose cabinets and the required boosted water pressure for Fire Department use shall be noted at the FDCs serving the dock system.
- (b) All new and existing marinas and boating facilities shall meet the requirements described in Newport Beach Fire Department Life Safety Services Guideline F.01 - "Fire Protection for Marinas, Wharves, and Piers" and the Figures as made part of these Harbor Design Criteria. The purpose of these requirements is to facilitate safe boating navigation, as well as provide fire-fighting capability.

(5) Residential Facilities

- (a) Fire protection systems for single-family residential docks are optional, although highly recommended. The residential owner should contact their insurance carrier for any policy requirements associated with providing a fire protection system.
- (b) Fire protection for multi-family or condominium residential docks, piers and floats are required to have a fire protection system meeting City and Code requirements.

9. ENVIRONMENTAL

a. Commercial Facilities

- (1) All commercial facilities shall prepare a Best Management Practices (BMP) plan to document environmental practices to be applied to daily operations. BMP plans shall address in-water maintenance limitations, storage and handling of hazardous and/or waste products common to the boating community, and emergency response to chemical spills.
- (2) BMP plans for landside facilities such as parking lots shall meet City and County of Orange water quality management plan (WQMP) and/or low impact development (LID) requirements. Preparation of a WQMP or LID by a California-licensed Civil Engineer may be required for these developments. The RWQCB may require additional compliance with National Pollutant Discharge Elimination System (NPDES) permit requirements based on project-specific construction and post-construction impacts.
- (3) BMP plans for waterside facilities shall comply with local CEQA mitigation measures and the requirements of the Coastal Development Permit, RWQCB Water Quality Certificate, and USACE permit. The Clean Marine Program provides BMP guidance to assist marina, boatyards, and other commercial dock facility owners in the preparation of BMP implementation and operation plans.
- (4) Commercial facilities shall provide a means for vessels to pump out their bilge tanks. The wastewater byproducts shall be conveyed to an approved treatment and disposal facility.

b. Residential Facilities

Not applicable

10. PERMITTING

Project Types and City Classifications: The purpose of project types and City classifications noted below is to establish the permit fee structure and process for submitted projects. Percentage replacement is based on the valuation of total dock system. Values of various types of construction are based on City records for average construction, and are not necessarily based on the construction cost estimates provided to the City by the Applicant.

a. Maintenance Projects

(Does not require State and Federal permit processing)

- (1) Re-decking an existing float, gangway, or pier, like for like (not more than 20% of total replacement cost).
- (2) Fixing dry rot or damage (not more than 20% of total replacement cost).
- (3) Replacing piles, like for like, in the same hole (maximum 7 piles).
- (4) Replacing a gangway to City standards.
- (5) Raising a bulkhead to City standards.
- (6) Replacing deteriorated tie rods with earth anchors.
- (7) Repairing seawall cap beams and deadman.
- (8) Emergency repair of structures deemed by the City to jeopardize public safety. (Follow-up permitting may be required with the Coastal Commission.)
- (9) Partial demolition of structures; i.e., elimination of half of a “U” shaped dock and/or respective piles.
- (10) New waler at sea side of an existing bulkhead, minimum of 2 feet above mudline (without encroaching property line).

b. Alteration and New Construction Projects

(Requires State and Federal permit processing)

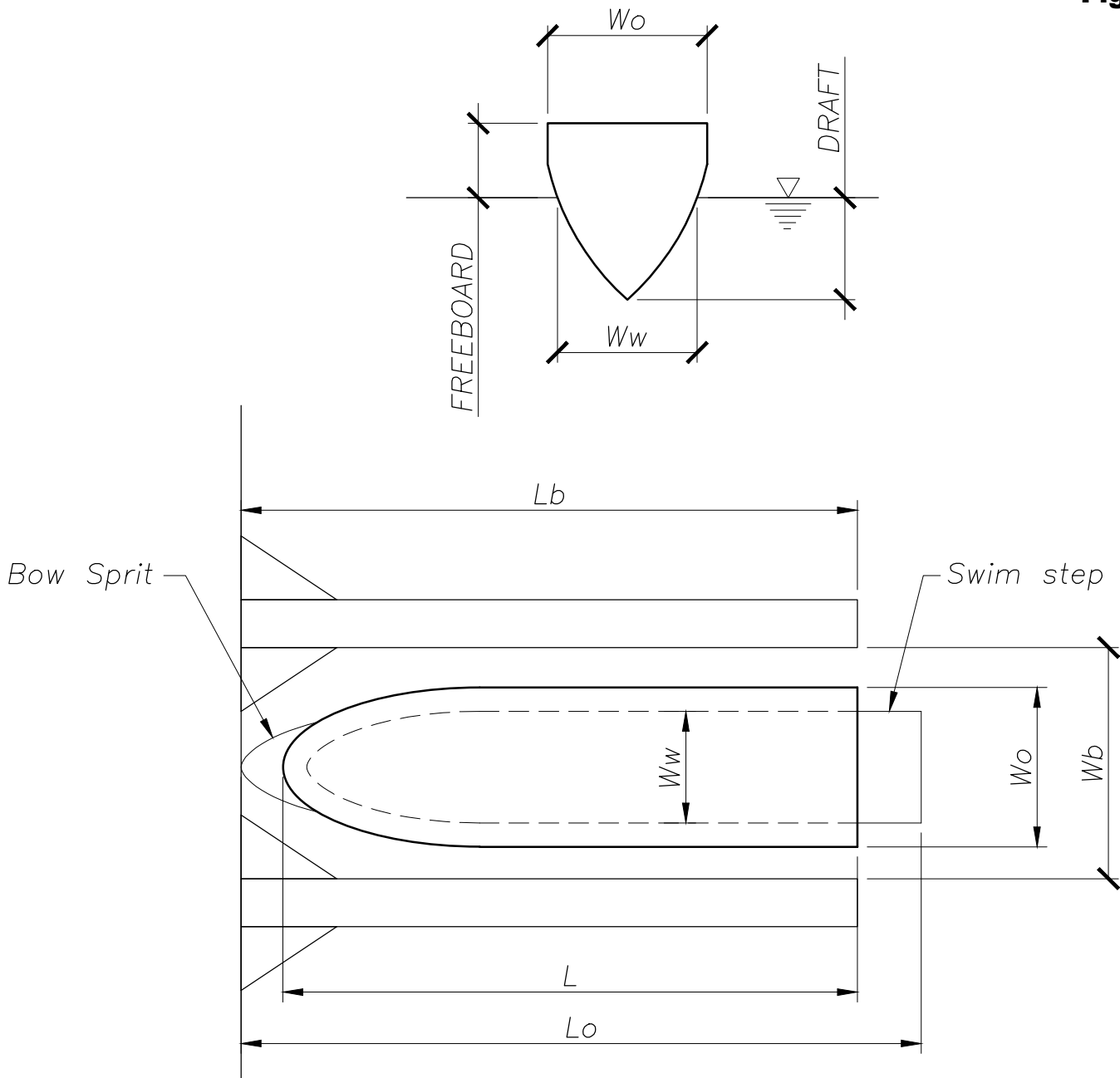
- (1) Re-decking an existing float, gangway, or pier, like for like (more than 20% of total replacement cost).
- (2) Fixing dry rot or damage (not more than 20% of total replacement cost).
- (3) Relocating one (1) or more piles.
- (4) Replace float, pier and/or gangway, like for like.
- (5) Change in orientation or configuration of an existing dock, including pile relocation.
- (6) Any increase in dock footprint.

- (7) Total reconstruction of a float, gangway, and/or pier.
- (8) New configuration of a float, gangway, and/or pier.
- (9) Replace seawall panels.
- (10) New bulkhead system.

II. LANDSIDE DEVELOPMENTS (Commercial Only)

- A. Landside developments of waterfront projects are subject to City of Newport Beach - Community Development Department, Building Division and Planning Division requirements.
- B. See DBW *Layout and Design Guidelines for Marina Berthing Facilities* (2005 edition or as updated) for minimum requirements for landside facilities, in support of waterfront developments.
- C. Landside requirements for marina projects include location and design of restroom facilities, minimum parking requirements and ADA compliance.

Fig. No. 1



LEGEND:

W_w = WIDTH @ WATER LINE

L = LENGTH W/O EXTENSIONS

L_o = LENGTH OVERALL, WITH BOW SPRIT, SWIM STEP OR OTHER PROTRUSIONS

W_o = WIDTH OVERALL (BEAM)

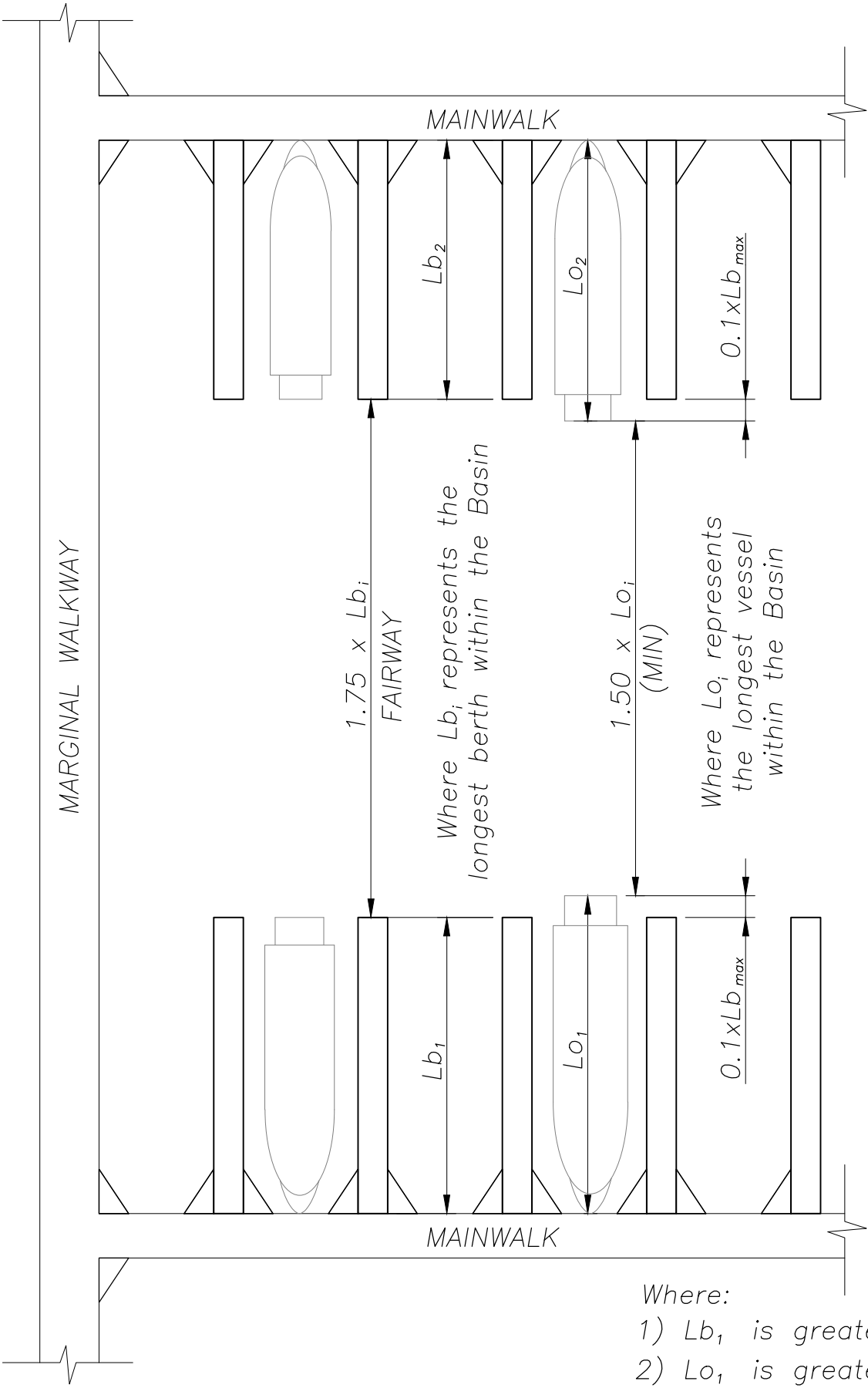
L_b = LENGTH OF BERTH (FINGERFLOAT OR SLIP) (DBAW)

W_b = WIDTH OF BERTH (DBAW)

DBAW = CALIFORNIA STATE PARKS DIVISION OF BOATING AND WATERWAYS, LAYOUT AND DESIGN GUIDELINES FOR MARINA BERTHING FACILITIES

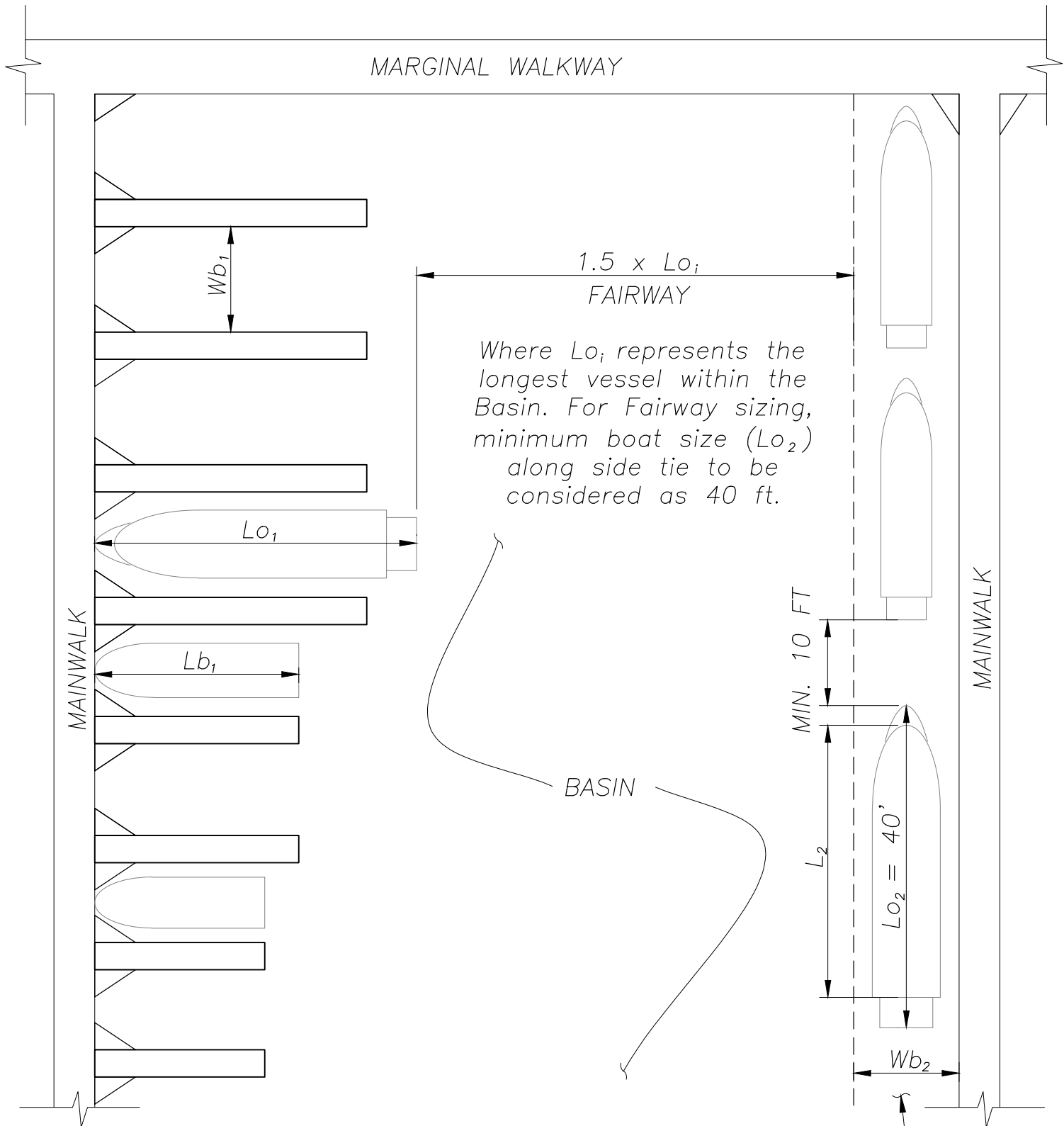
VESSEL SIZE ILLUSTRATION

Fig. No. 2



**DOCK ARRANGEMENT
CASE 1**

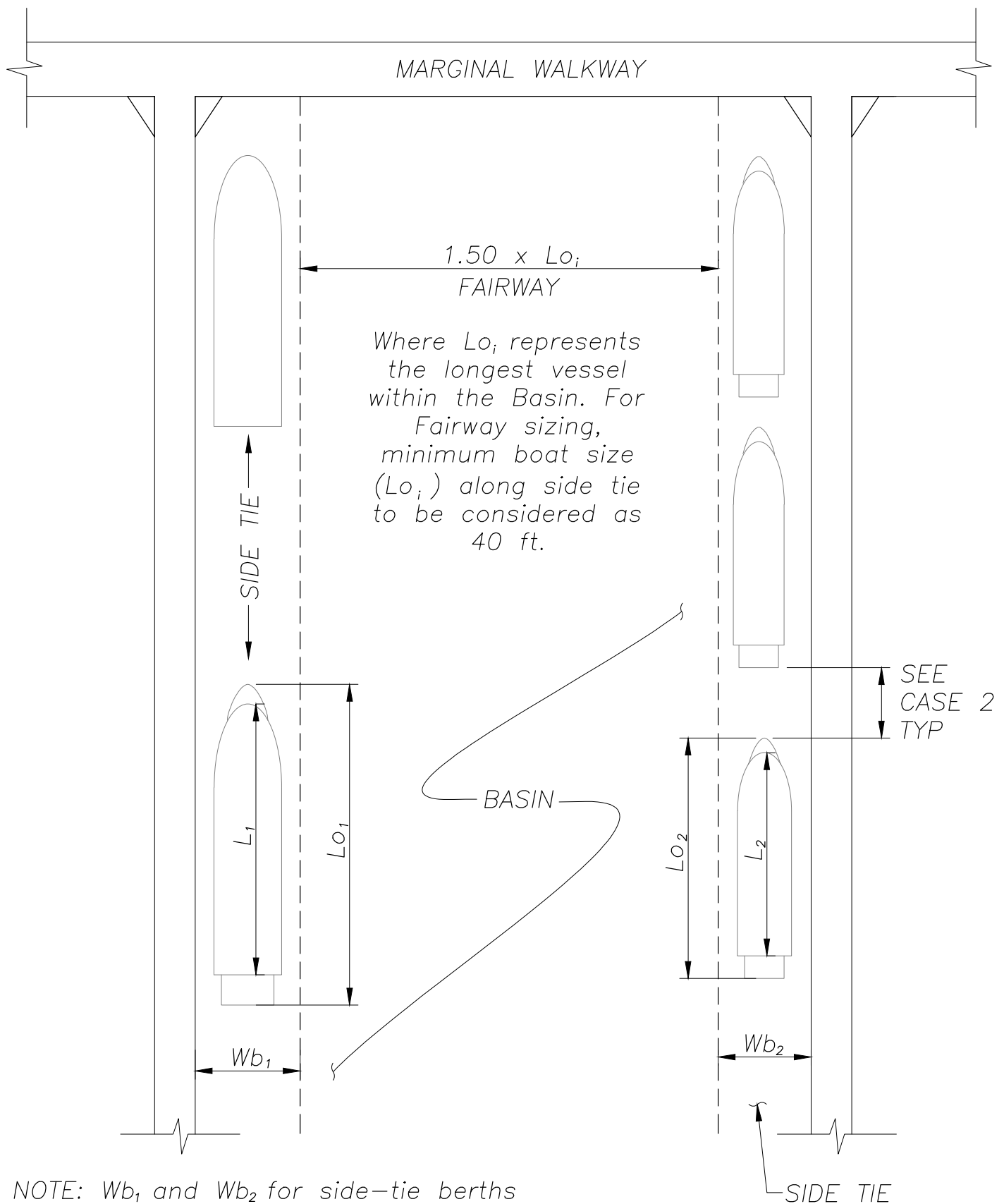
Fig. No. 3



NOTE: Wb_2 for side-tie berth is based on DBAW Table B-5, Single Berth Widths for Powerboats.

DOCK ARRANGEMENT CASE 2

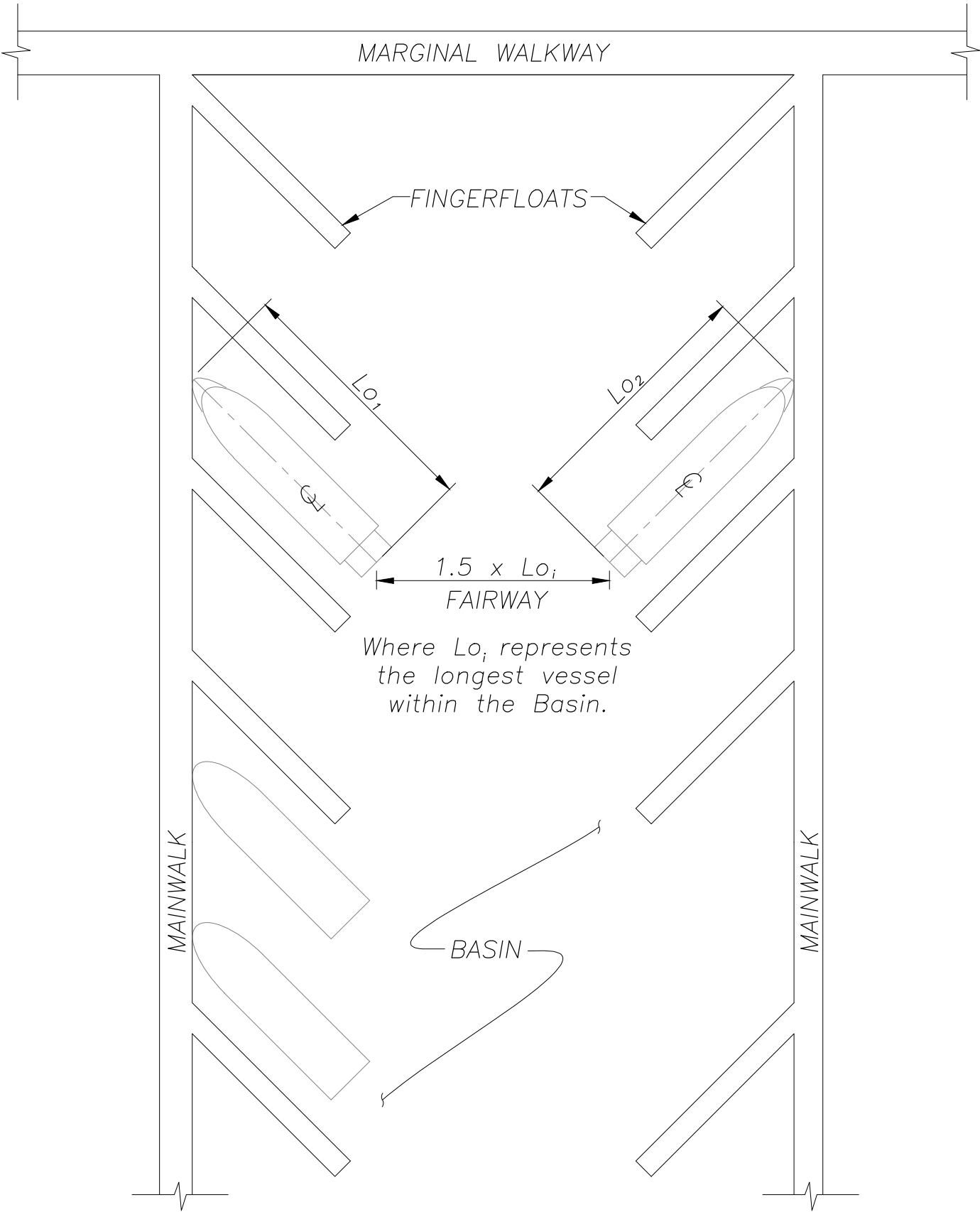
Fig. No. 4



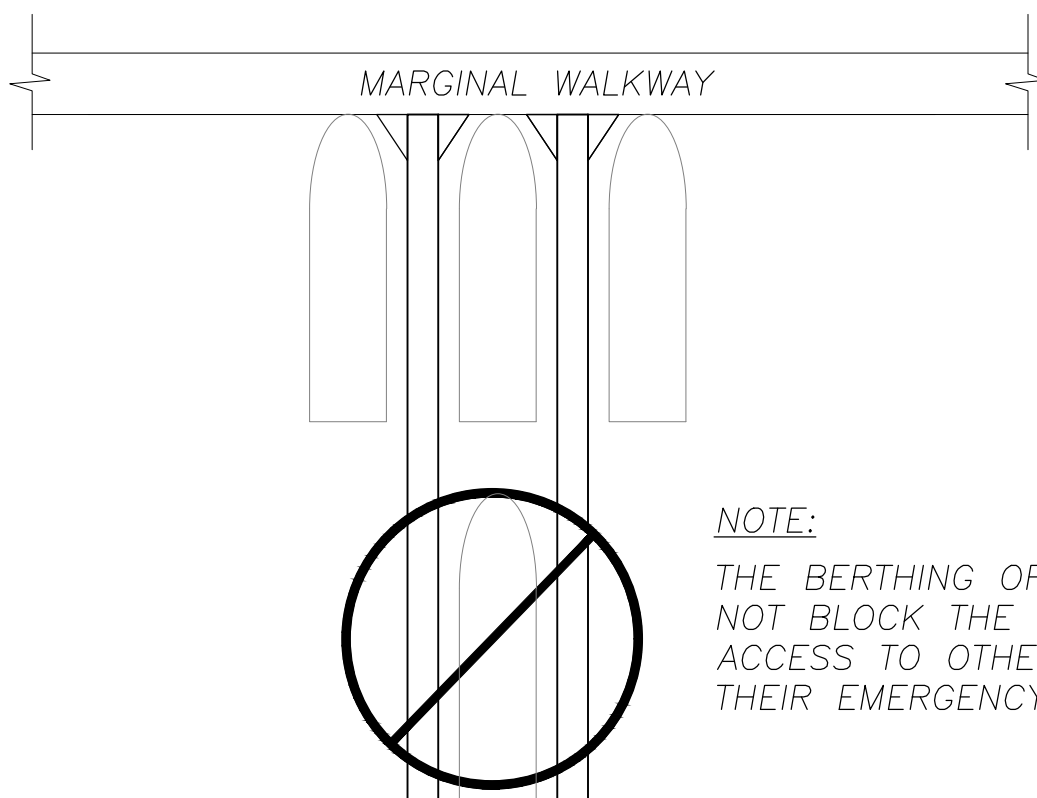
NOTE: Wb_1 and Wb_2 for side-tie berths are based on DBAW Table B-5, Single Berth Widths for Powerboats.

DOCK ARRANGEMENT CASE 3

Fig. No. 5



**DOCK ARRANGEMENT
CASE 4**

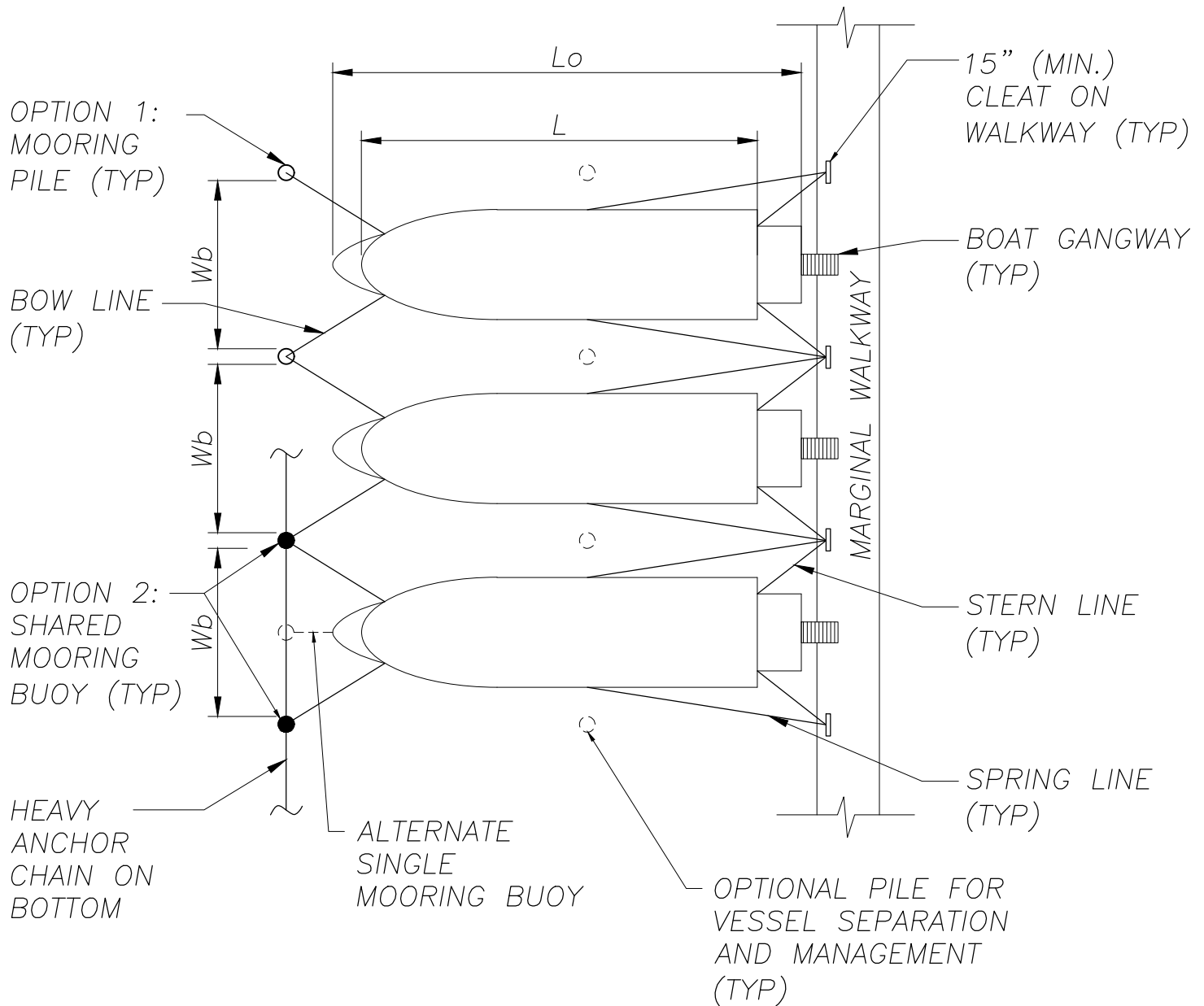


**DOCK ARRANGEMENT
CASE 5**

NOTE:

FOR VESSELS 40'-0" OR LARGER,
SUPPORT PILES, MOORING SYSTEM, &
ACCESS BRIDGES/GANGWAYS TO BE
DESIGNED BY A LICENSED CIVIL OR
STRUCTURAL ENGINEER, REGISTERED IN
THE STATE OF CALIFORNIA, WITH
FLOATING DOCK DESIGN EXPERIENCE.

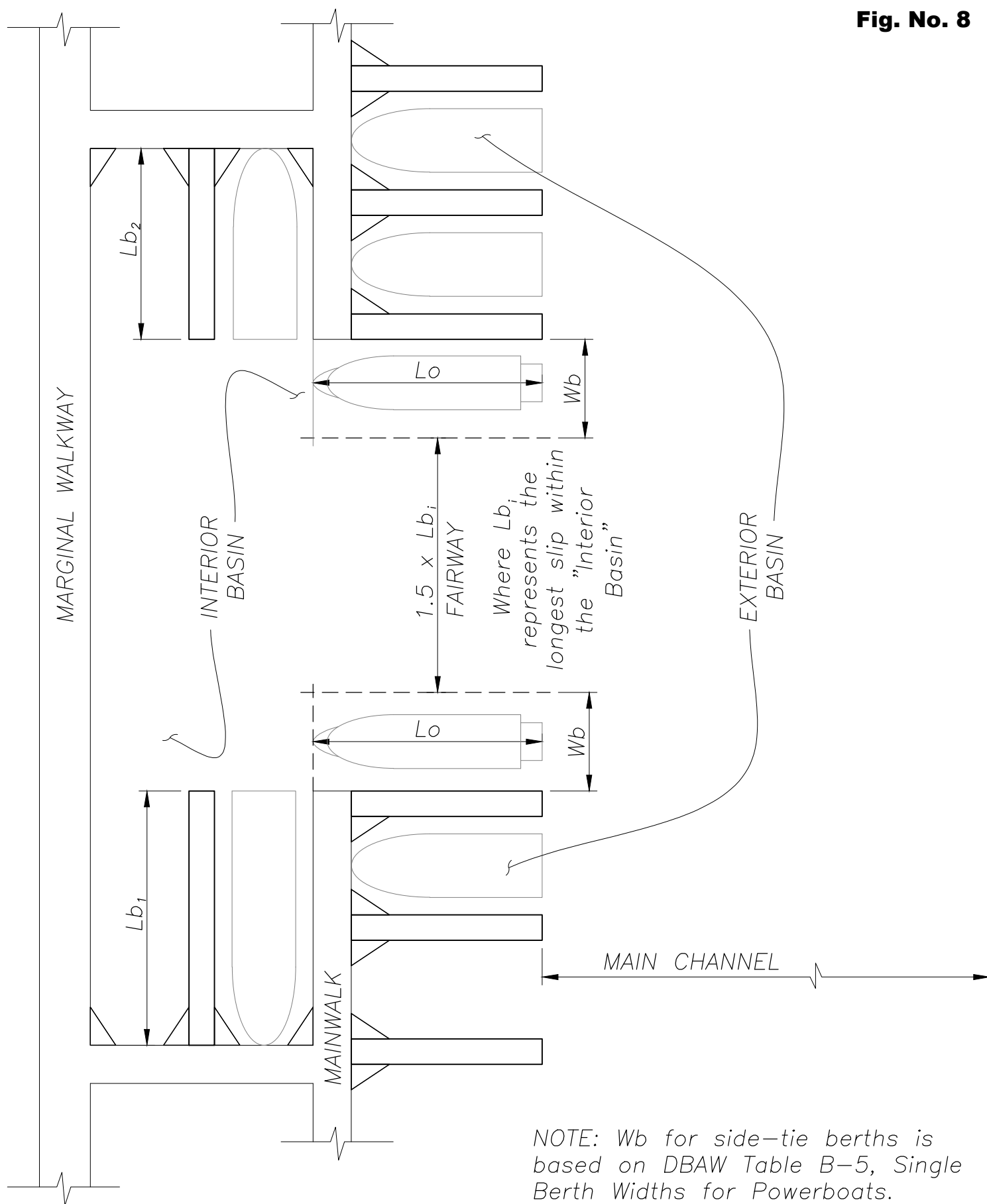
Fig. No. 7



**MEDITERRANEAN-STYLE
MOORING CONCEPT**

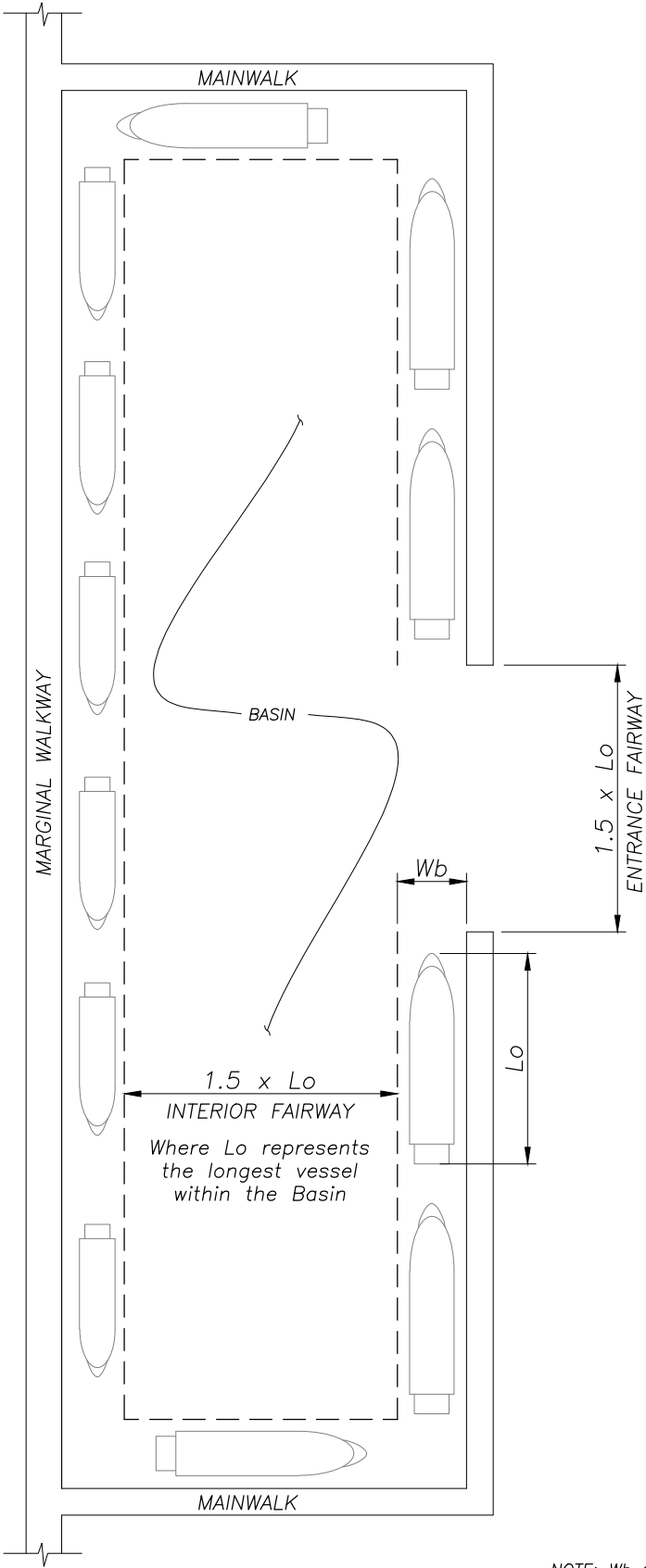
**DOCK ARRANGEMENT
CASE 6**

Fig. No. 8

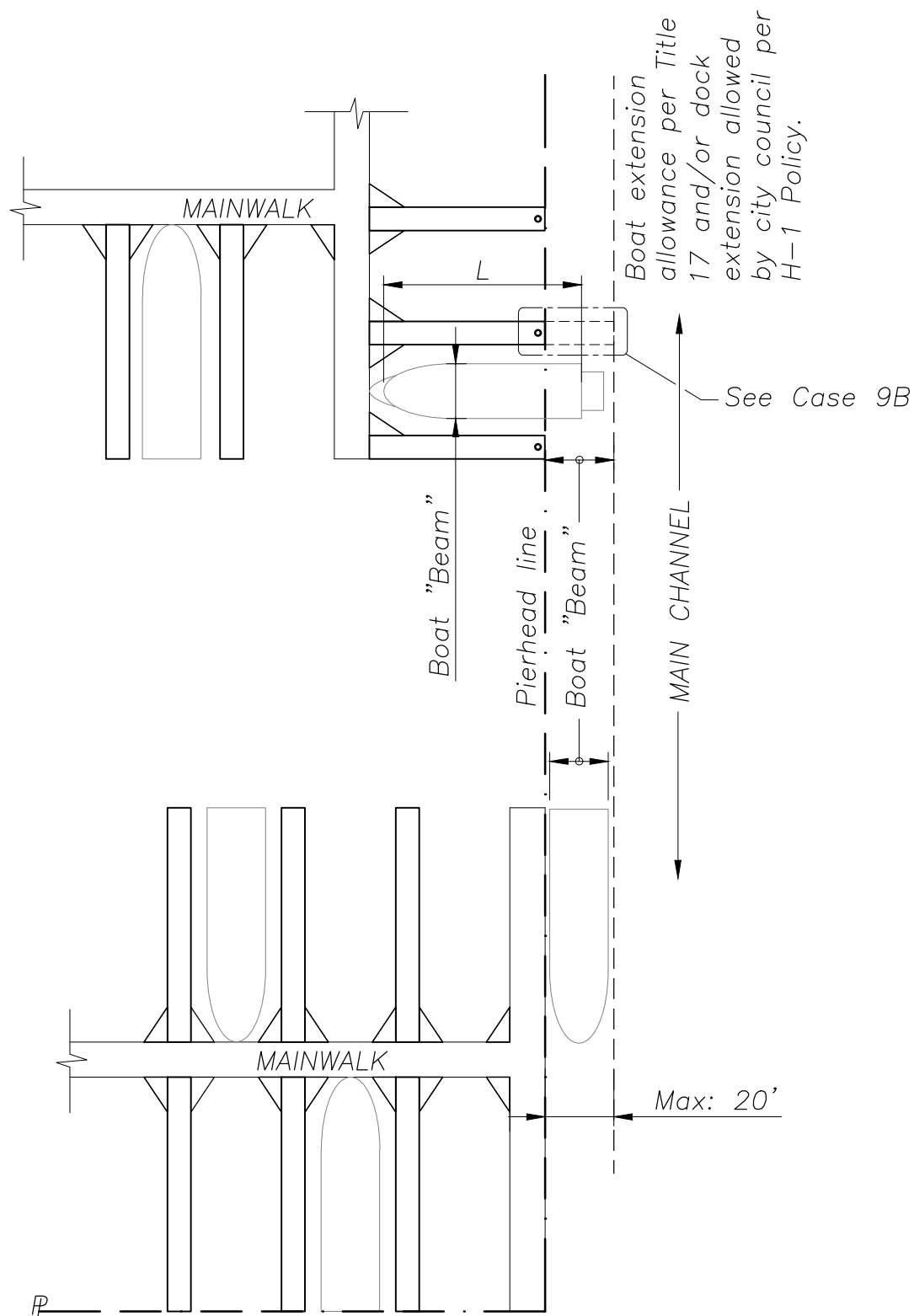


DOCK ARRANGEMENT CASE 7

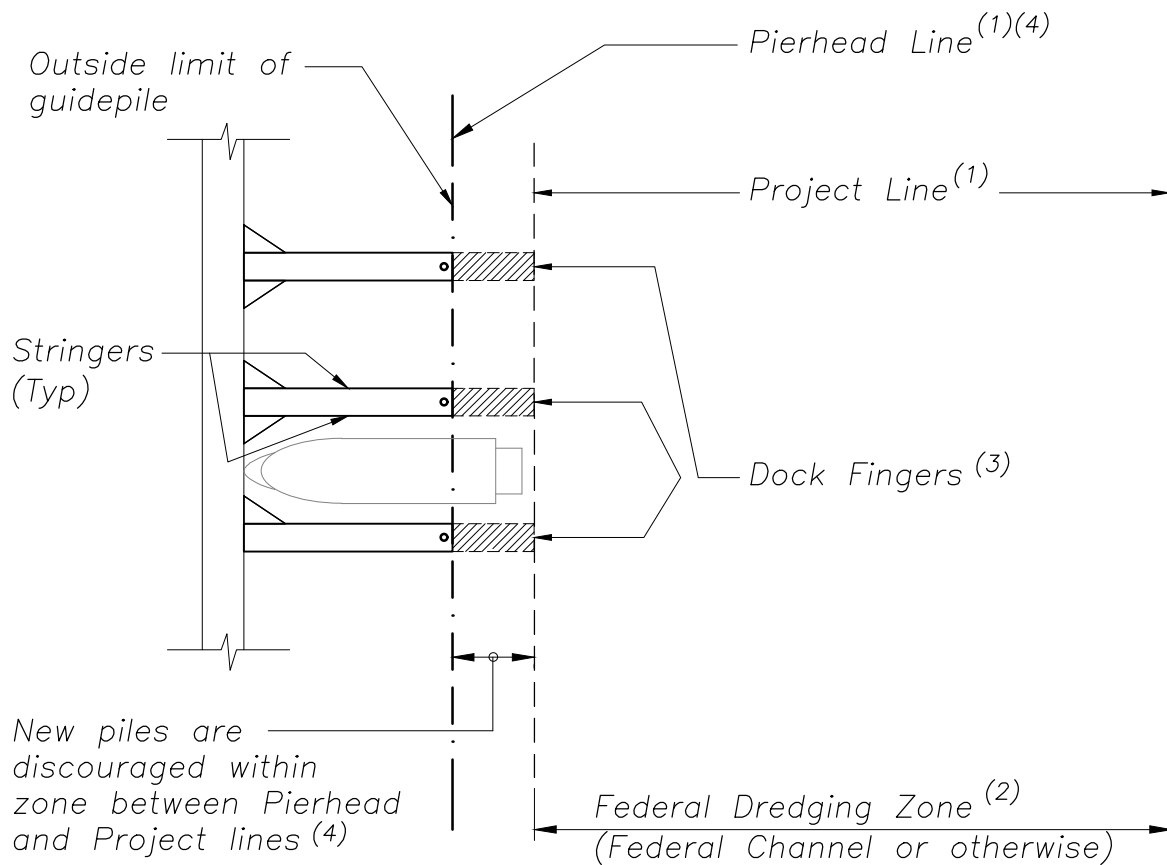
Fig. No. 9



DOCK ARRANGEMENT CASE 8



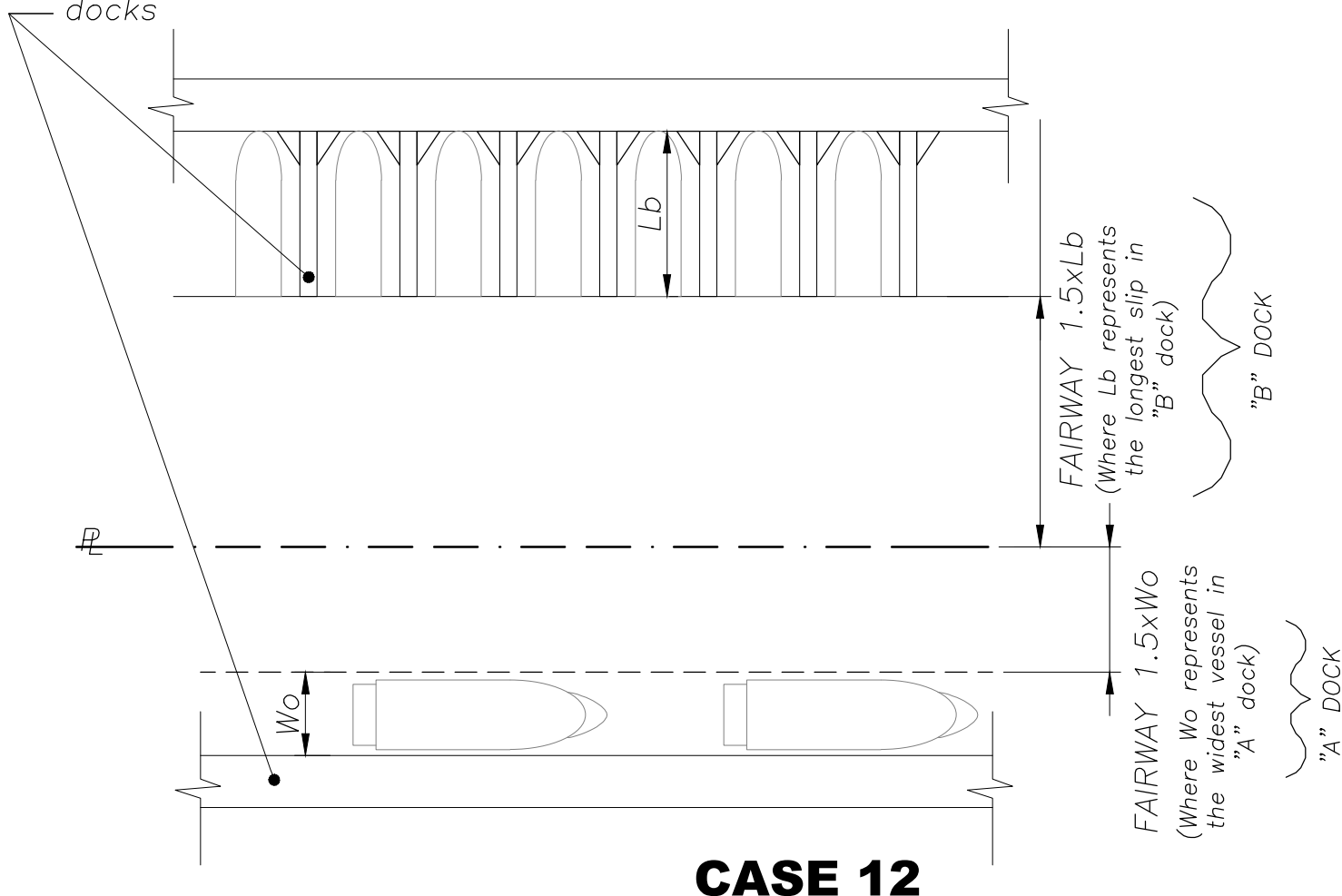
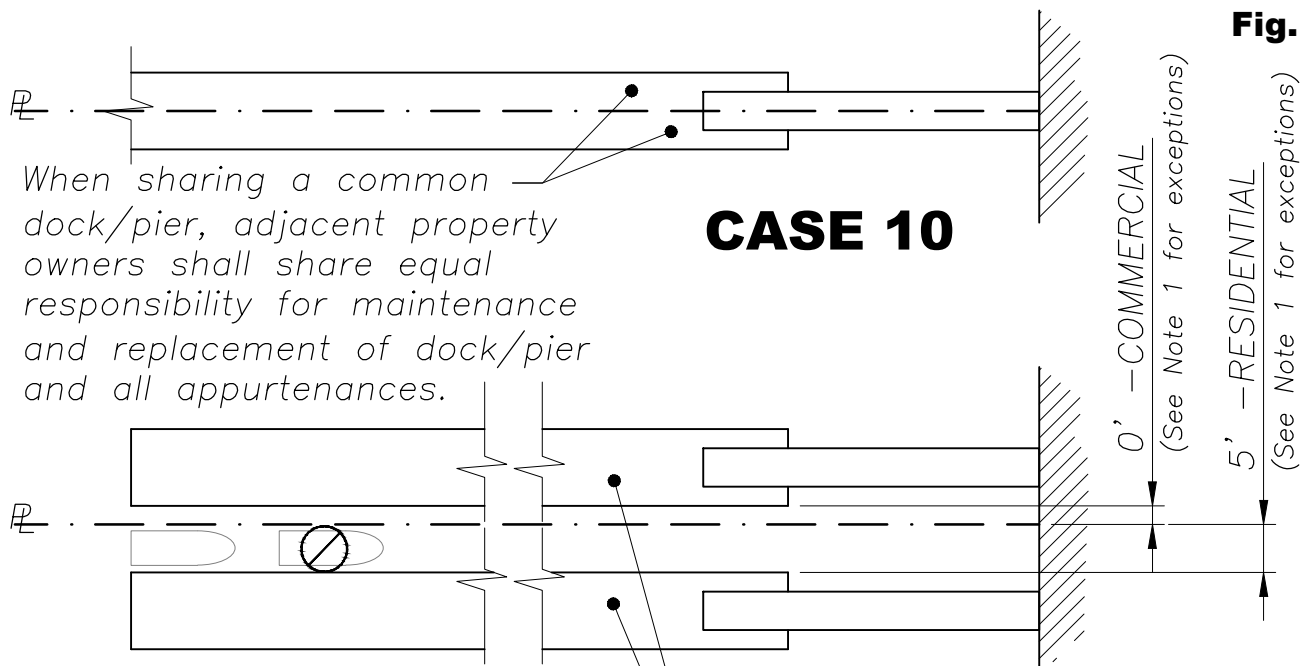
**DOCK ARRANGEMENT
CASE 9A**



- (1) Pierhead and Project lines are established and managed by the federal government.
- (2) Portions of floating docks and/or vessels that extend into Federal Dredging Zone may be required to be removed by the dock owner at dock owner's cost when the federal government conducts periodic dredging operations.
- (3) Dock fingers must be designed and constructed in such a way that provides structural integrity of the fingers to resist lateral impact and dock line loads without guide piles at the finger ends. Continuous structural stringers and/or special moment and shear-carrying splices must be engineered and submitted to the Building Department for approval.
- (4) The City council has allowed limited exceptions for dock construction beyond the Pierhead Lines as noted in Council Policy H-1.

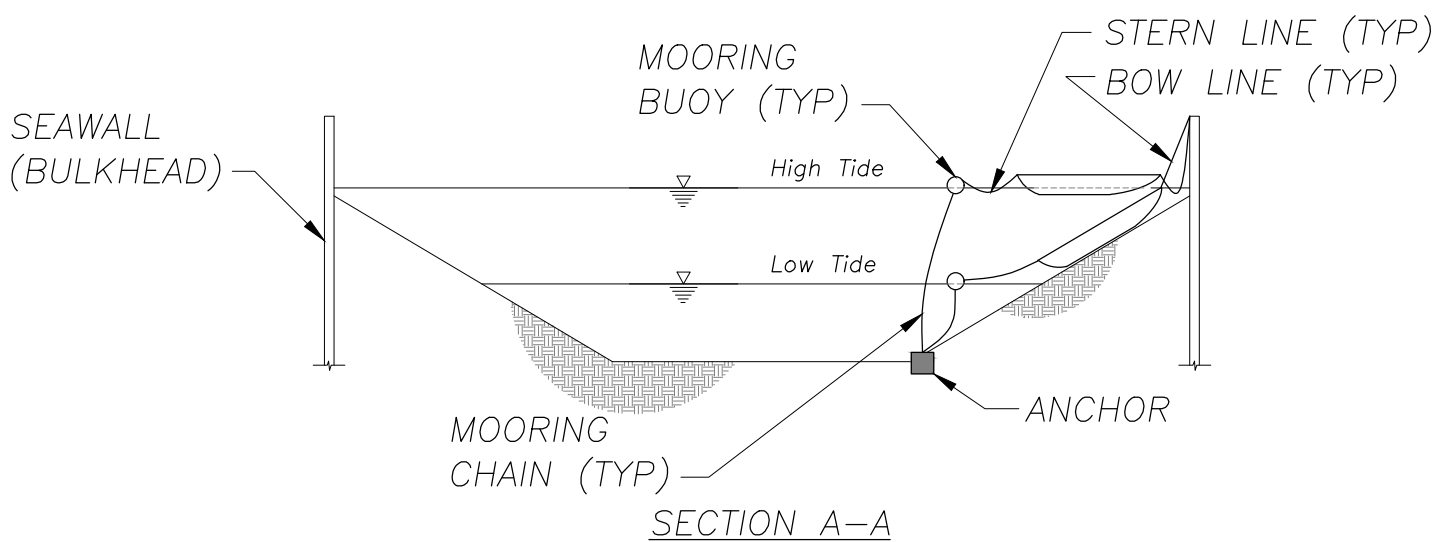
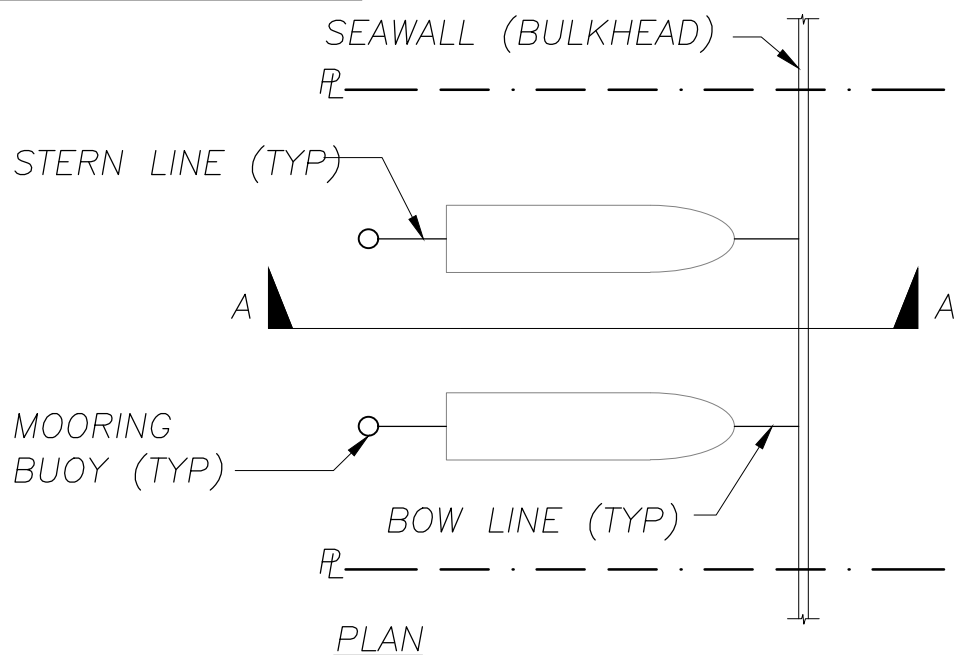
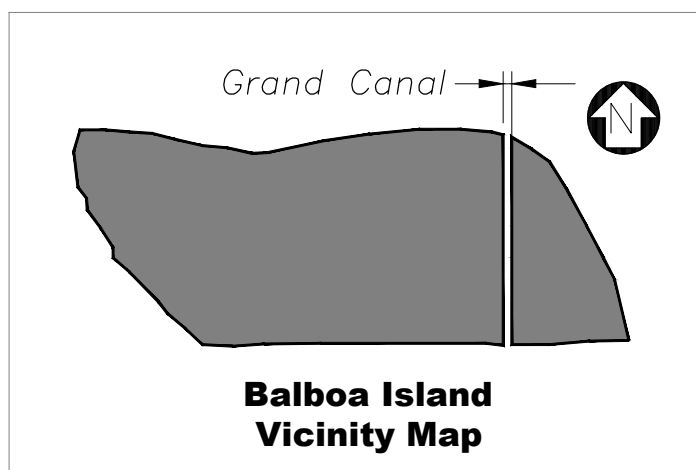
DOCK ARRANGEMENT CASE 9B

Fig. No. 11

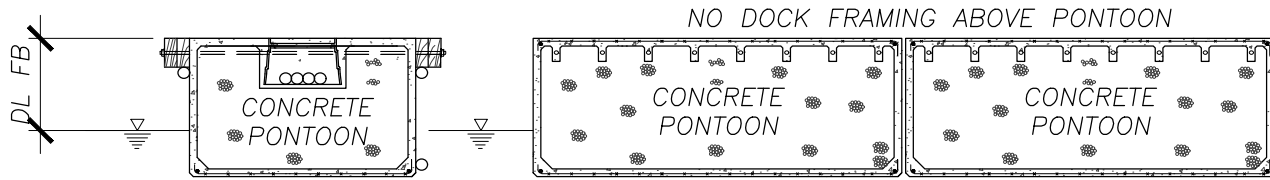


PROPERTY LINE CONDITIONS

Fig. No. 12



**DOCK ARRANGEMENT
CASE 13
(Grand Canal Only)**

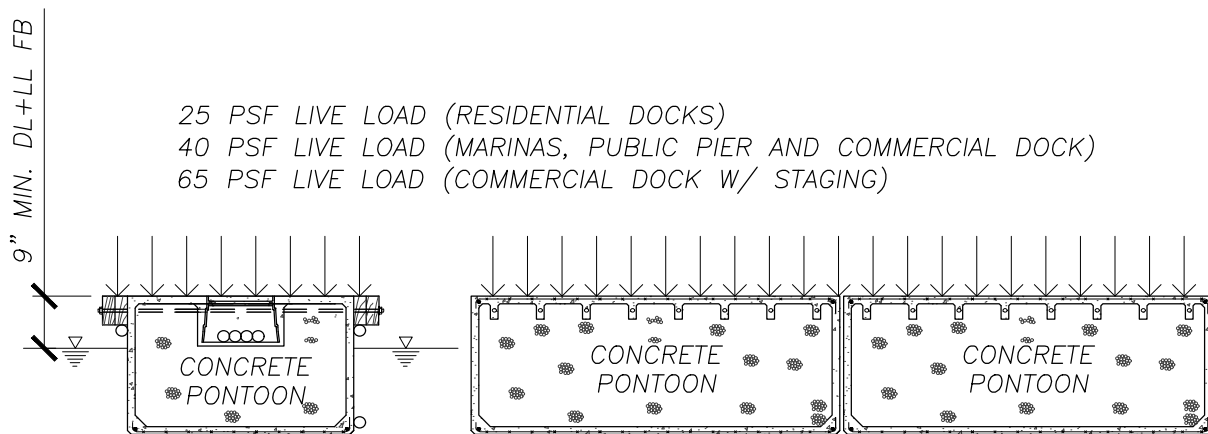


DEAD LOAD FREEBOARD (DL FB) = 14" MIN. 24" MAX
 FLOATATION TYPICALLY VARIES FROM 90% TO 95%

DOCK CROSS SECTION

DOCK LONGITUDINAL SECTION

DEAD LOAD FREEBOARD



DOCK CROSS SECTION

DOCK LONGITUDINAL SECTION

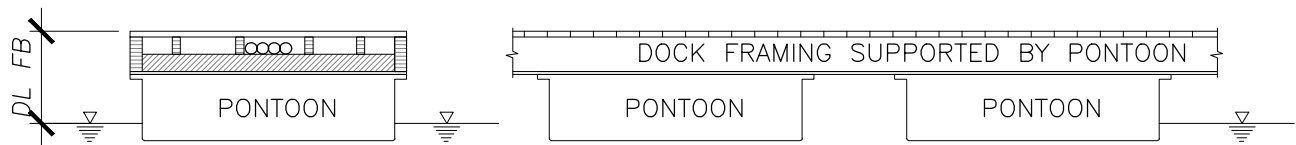
DEAD + LIVE LOAD FREEBOARD (DL+LL FB) = 9" MIN.

NOTE:

1. MIN DL+LL FB MAY BE DICTATED BY UTILITY LOCATION TO MEET ELECTRICAL AND PLUMBING CODES
2. UNDER DL+LL, STRUCTURAL WALERS SHALL NOT BE SUBMERGED
3. CONCRETE PONTOONS CONSIST OF A BUOYANT POLYSTYRENE FOAM CORE FULLY ENCASED BY A REINFORCED CONCRETE SHELL.

DEAD LOAD + LIVE LOAD FREEBOARD

DOCK WITH NO FRAMING SUPPORTED ON PONTOONS (TYPICAL CONCRETE DOCK SYSTEM)



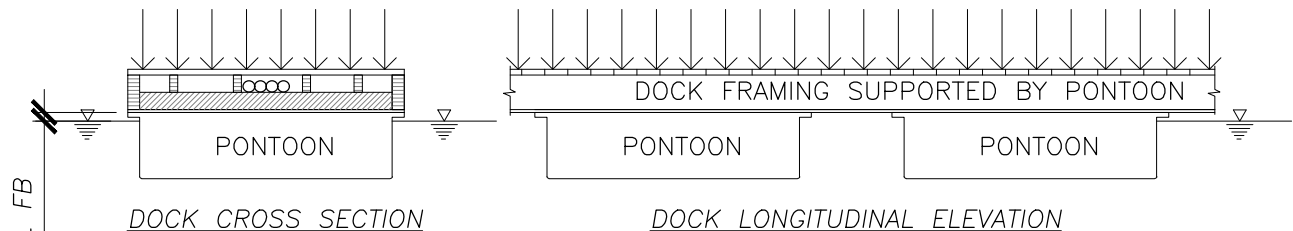
DEAD LOAD FREEBOARD (DL FB) = 14" MIN. 24" MAX
 FLOATION TYPICALLY VARIES FROM 60% TO 95%

DOCK CROSS SECTION

DOCK LONGITUDINAL ELEVATION

DEAD LOAD FREEBOARD

25 PSF LIVE LOAD (RESIDENTIAL DOCKS)
 40 PSF LIVE LOAD (MARINAS, PUBLIC PIER AND COMMERCIAL DOCK)
 65 PSF LIVE LOAD (COMMERCIAL DOCK W/ STAGING)



1" MIN. PONTOON DL+LL FB

DEAD + LIVE LOAD FREEBOARD (DL+LL FB) = 1" MIN. PONTOON FREEBOARD

NOTE:

1. MIN DL+LL FB MAY BE DICTATED BY UTILITY LOCATION TO MEET ELECTRICAL AND PLUMBING CODES
2. UNDER DL+LL, STRUCTURAL WALERS/ DOCK FRAMING SHALL NOT BE SUBMERGED
3. CONCRETE PONTOONS CONSIST OF A BUOYANT POLYSTYRENE FOAM CORE FULLY ENCASED BY A REINFORCED CONCRETE SHELL.

DEAD LOAD + LIVE LOAD FREEBOARD

**DEAD + LIVE LOAD FREEBOARD FOR DOCKS
 WITH FRAMING SUPPORTED ON PONTOONS
 (TYPICAL TIMBER, ALUMINUM, STEEL,
 FIBERGLASS FRAMING DOCK SYSTEM)**