



**City of Seattle**

# **STANDARD PLANS for MUNICIPAL CONSTRUCTION**

**2023 EDITION**



**CITY OF SEATTLE**

**2023 Edition**


**STANDARD PLANS**

**FOR**

**MUNICIPAL CONSTRUCTION**

Prepared by  
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Andrew Lee, General Manager / CEO


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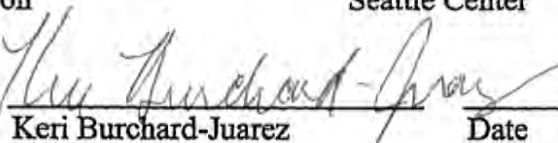
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3/14/2023  
Date

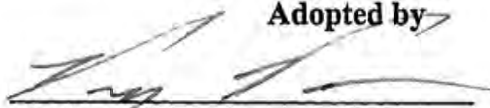
  
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## **PREFACE**

The 2023 Edition City of Seattle Standard Plans for Municipal Construction (2023 Standard Plans) have been prepared by Seattle Public Utilities in cooperation with the Department of Facilities and Administrative Services, Seattle Department of Transportation, Seattle Parks and Recreation, Seattle City Light, and the Seattle Center. These Plans have been coordinated with the 2023 Edition City of Seattle Standard Specifications for Road, Bridge, and Municipal Construction.

The 2023 Standard Plans apply whenever any public or private construction is performed within the City of Seattle Right of Way, including work performed by private parties at their own expense under authority granted by ordinance of the City Council or by permit from the Seattle Department of Transportation's Street Use section.

For the convenience of our users, the table of contents entries shown in **BOLD TEXT** with a vertical line in the margin (as shown here) indicate where 2023 Editions Standard Plans were revised from the corresponding 2020 Edition Standard Plans. A revision date, located in the upper right corner of each Standard Plan, also indicates when Standard Plans were created or last updated.

Our sincere thanks and appreciation to all who participated in the effort of producing this 2023 Edition of our Standard Plans, and to the many other City personnel who provided review and submitted comments.

In particular, thanks to the following stakeholders who shouldered most of the work in authoring and reviewing changes, coordinating among their departments' subject matter experts, meeting deadlines, and cooperatively resolving inconsistencies within and between the Standard Specifications and the Standard Plans:

Department of Facilities and Administrative Services: Mark Nakagawara and Pam Honma

Seattle Public Utilities: Charles Oppelt, Pat Schreibe, Bill Duyungan, Shaunie Vail, Jason Miller, Mark Fredrickson and Adam Currie

Seattle Department of Transportation: Erich Ellis, Abner Gallardo, Tom Le, Ben Hansen, Nick Shrope, Lok Chan, Jocelyn Mamchur, Stephen Wilson, Mario Macias, Oli Frenchowicz, Ross Brazzale, Stuart Vitagliano, Ainalem Molla, Patty Jenkins and Katey Bean

Seattle Parks and Recreation: Scott Stevens and Narinna Kay

Seattle City Light: Michael Danielsen and Bob Stewart

Seattle Center: Stephen Levengood and Jae Lee

The hardcopy version of this document is available at the Department of Facilities and Administrative Services Treasury Services cashier counter located in the Seattle Municipal Tower, 700 Fifth Avenue, Suite 4200, Seattle, Washington 98104, 206-684-5214. The 2023 Standard Plans may also be ordered on-line from the website listed below. Additional features on the website include an archive of previous editions of our Standards dating back to 1910, CAD files of our Standard Plans, and proposed amendments to this edition (including pdf redline markups showing what has changed).

**<https://www.seattle.gov/utilities/construction-resources/standards-and-guidelines/standard-specs-and-plans>**

Despite considerable efforts to produce a completely error-free document, minor errors will inevitably be included in this 2023 Edition of our Standard Plans. If you discover errors in this document, please alert us by sending an email to the City's Construction Standards Engineer at **City\_Standards\_Engineer@Seattle.gov**.

If conflicts are discovered between this copy of the 2023 Standard Plans and any version of the 2023 Standard Specifications, the current edition of the 2023 Standard Specifications takes precedence.

This preface is for informational purposes only and is not to be used to interpret or affect the terms of the Contract between the City of Seattle as the Owner and the Contractor.

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# 2023 Edition City of Seattle Standard Plans for Municipal Construction

## Table of Contents

For the convenience of some of our users, the Table of Contents shows revised Plans with a vertical bar as well as bold type.

### **000 General-Legal-Miscellaneous**

Datum	Elevations & Datums	001	
	Elevations & Datums	001a	
Abbreviations	<b>Abbreviations</b>	<b>002a-002f</b>	
Standard Symbols	Electrical	003a	
	Electrical	003b	
	Electrical	003c	
	Electrical	003d	
	Signalization / Channelization & Signage	003e	
	<b>Paving</b>	<b>003f</b>	
	<b>Paving</b>	<b>003g</b>	
	Sewer & Drainage	003h	
	Sewer & Drainage	003i	
	Sewer & Drainage	003j	
	Topographic & Misc	003k	
	Topographic & Misc	003l	
	Topographic & Misc	003m	
	Topographic & Misc	003n	
	Private Utilities	003o	
	Water	003p	
	Water	003q	
	Water	003r	
Payment	Sewer/Drainage Measurement Diagram	010	
Monument	Monument Frame & Cover	020a	
	Monument Frame & Cover	020b	
	<b>Survey Monument</b>	<b>020c</b>	
Miscellaneous	<b>Desirable Locations for Utilities (Residential Street)</b>	<b>030</b>	
	Stabilized Construction Entrance	040	

### **100 Landscape Planting**

Trees	Deciduous Tree Planting in Planting Strip	100a
	Tree & Shrub Planting on Slopes	100b
	Tree Planting in Amended Trench	100c
	Coniferous Tree Planting	101
Shrub & Ground Cover	Shrub Planting	110
	Ground Cover Planting	111
	Planting Pattern	112
	Median Planting	113
Irrigation	Hose Bib Assembly & Quick Coupler Valve	121
	Irrigation Valves	122
	Irrigation Valves	123
	Irrigation Valves	124
	Irrigation Valves	125
	Pop Up & Fixed Irrigation Heads	126
	Irrigation Controller Pedestal & Enclosure Grounding	127

## 2023 Edition City of Seattle Standard Plans for Municipal Construction

	Irrigation Trenches	128
	Irrigation Controller Cabinet	129
Tree Protection	<b>Tree Protection During Construction</b>	<b>132a</b>
	<b>Reusable Temporary Protection Fence</b>	<b>132b</b>
	<b>Tree Protection During Trenching, Tunneling or Excavation</b>	<b>133</b>
Grading	Slope Rounding	140
	<b>Rock Facing</b>	<b>141</b>
	Soil Amendment and Depth	142

### 200 Sewer-Drainage Appurtenances

Maintenance holes	Type 204a Maintenance Hole	204a
	Type 204b Maintenance Hole	204b
	Type 204.5a Maintenance Hole	204.5a
	Type 204.5b Maintenance Hole	204.5b
	Type 205a Maintenance Hole	205a
	Type 205b Maintenance Hole	205b
	Type 206a Maintenance Hole	206a
	Type 206b Maintenance Hole	206b
	Type 207a Maintenance Hole	207a
	Type 207b Maintenance Hole	207b
	Type 208a Maintenance Hole	208a
	Type 208b Maintenance Hole	208b
	Type 209a Maintenance Hole	209a
	Type 209b Maintenance Hole	209b
	Type 210a Maintenance Hole	210a
	Type 210b Maintenance Hole	210b
	Type 211a Maintenance Hole	211a
	Type 211b Maintenance Hole	211b
	Type 212a Maintenance Hole	212a
	Type 212b Maintenance Hole	212b
	Flexible Joint for VCP Connection	215
	Rebuild Existing Brick Maintenance Hole	220
Materials	<b>2'-0" Diameter Frame &amp; Cover</b>	<b>230</b>
	Sewer Replacement Cover	231
	Maintenance Hole Ladder Step & Handhold	232a
	Maintenance Hole Ladder Step & Handhold	232b
	Outside Drop Connection	233a
	Inside Drop Connection	233b
	6" or 8" Vertical Connection to Concrete or Clay	234a
	6" or 8" Vertical Connection to Ductile Iron	234b
Catch Basins	<b>Type 240 Catch Basin</b>	<b>240</b>
	Type 241 Catch Basin	241a
	Type 241 Catch Basin Installations	241b
	Type 242 Catch Basin	242
	Precast Catch Basin Top Slab	243a
	Precast Catch Basin Extension Risers	243b
Inlets	Type 250 Inlet	250
	Type 252 Inlet	252
	<b>Inlet/Catch Basin Location &amp; Installation</b>	<b>260a</b>
	<b>Catch Basin &amp; Inlet Installation</b>	<b>260b</b>
	Catch Basin & Inlet with 563b Hood	260c
	Typical Catch Basin Connection	261

## 2023 Edition City of Seattle Standard Plans for Municipal Construction

	<b>Type 262 Inlet Frame</b>	<b>262</b>
	<b>Type 263 Inlet Frame</b>	<b>263a</b>
	Type 263 Alternative Inlet Hood	263b
	<b>Inlet Frame &amp; Grate</b>	<b>264</b>
	<b>Vaned Grate</b>	<b>265a</b>
	<b>Vaned Grates</b>	<b>265b</b>
	<b>Type 266 Replacement Vaned Grate</b>	<b>266</b>
	Outlet Trap	267
	Extension for Inlet	268
	Beehive Grate for Bioretention	269
Flow Control	<b>Flow Control Structure with Detention Pipe</b>	<b>270</b>
	CMP Detention Pipe Private System Only	271a
	CMP Detention Structure End Plate Details Types A & B	271b
	CMP Detention Structure End Plate Details Types C	271c
	CMP Detention Structure End Plate Dimensions	271d
	Flow Control Device Assembly	272a
	PVC Shear Gate for Use in ROW Only	272b
	Type 277 Junction Box & Installation	277
	Vertical Clean Out/Corrugated Metal Pipe	278
Pipe Installation	Tee Installation Corrugated Metal Pipe	279
	8" Clean Out	280
	Bioretention Under Drain Clean-out & Observation Port	281
	Corrugated Metal Pipe Coupling Bands	282a
	Corrugated Metal Pipe Coupling Bands	282b
	<b>Side Sewer Installation</b>	<b>283</b>
	Typical Trench Detail for Sewer & Storm Drain	284
	Pipe Bedding Sewer/Storm Drain	285
Clearance Plans	<b>Sewer &amp; Water Spacing &amp; Clearances</b>	<b>286a</b>
	<b>Sewer &amp; Water Spacing &amp; Clearances</b>	<b>286b</b>
Drains	Bridge Drain	290
	PVC Subsurface Drain Pipe	291
	Infiltrating Bioretention with Sloped Sides	292
	Infiltrating Bioretention with Sloped Sides & Under Drain	293a
	Non-Infiltrating Bioretention with Sloped Sides & Under Drain	293b
	Vegetated Conveyance Swale	294
	Typical Drain Curb Cut for Bioretention	295a
	Drain Curb Cut Type 1	295b
	Drain Curb Cut Type 2	295c
	Drain Curb Cut Type 3	295d
	Presettling Zone	299

### **300 Watermain Appurtenances**

Pipe Connections	Connections to Existing Watermains	300a
	Connections to Existing Watermains	300b
	Connections to Existing Watermains	300c
	<b>Water Service Relocation For Up To 2" Service Pipe</b>	<b>301</b>
	<b>Watermain Setback Requirements for C.I. Lead</b>	



## 2023 Edition City of Seattle Standard Plans for Municipal Construction

	<b>Joint &amp; D.I. Slip Joint Pipe</b>	<b>302</b>
Hydrants	<b>Type 310a Hydrant Setting Detail</b>	<b>310a</b>
	<b>Type 310b Hydrant Setting Detail</b>	<b>310b</b>
	Type 311 Hydrant Setting Detail	311a
	<b>Type 311 Hydrant Setting Detail</b>	<b>311b</b>
	<b>Fire Hydrant Marker Layout</b>	<b>312</b>
	<b>Wall Requirements for Hydrants</b>	<b>313</b>
	<b>Fire hydrant Locations &amp; Clearances</b>	<b>314a</b>
	<b>Clearances for Typical Water Service Vaults</b>	<b>314b</b>
Valves	Cast Iron Valve Box & Operating Nut Extension	315a
	Cast Iron Valve Box & Operating Nut Extension	315b
	Air Release Air Vacuum Valve	320
Concrete Blocking	Watermain Thrust Blocking Vertical Fittings	330a
	Watermain Thrust Blocking Vertical Fittings	330b
	Watermain Thrust Blocking Horizontal Fittings	331a
	Watermain Thrust Blocking Horizontal Fittings	331b
Blow Off	<b>2" Blow Off Type A Non Traffic Installation</b>	<b>340a</b>
	<b>2" Blow Off Detail Type B Traffic Installation</b>	<b>340b</b>
Pipe Bedding	<b>Watermain Trench and Bedding</b>	<b>350</b>
	<b>Rebuild Existing Brick Water Valve Chamber</b>	<b>359</b>
Miscellaneous	Watermain Electrolysis Test Station	360
	Type 361a Valve Chamber Frame & Cover	361a
	Type 361b Valve Chamber Frame & Cover	361b
	Type 361c Valve Chamber Frame & Cover	361c
	Type 361d Valve Chamber Frame & Cover	361d
	Joint Bonding for DIP Watermains & Joint Bonding Detail	362
	Electrolysis Test Station Wire Installation Details	363
	Sacrificial Anode Bonded to Pipe	364
	Sacrificial Anode Installation Details	365

### 400 Street Paving & Appurtenances

Paving	Half Section, Grading	400
	<b>Residential Pavement Sections</b>	<b>401</b>
	<b>Commercial and Arterial Pavement Sections</b>	<b>402</b>
	<b>Roadway Cement Concrete Alley Pavements</b>	<b>403</b>
	Pavement Patching	404a
	Pavement Patching	404b
	Pavement Patching Zone of Influence	404c
	<b>Roadway Concrete Pavement Repair</b>	<b>405a</b>
	Pavement Repair Dowel Bar & Tie Bar Details	405b
	<b>Roadway Concrete Pavement Joints</b>	<b>405c</b>
	Through Joints and Optional Keyways for Cement Concrete Roadway	405d
	<b>Frame &amp; Cover Cement Concrete Reinforcement Detail</b>	<b>406</b>
	Curbs	<b>Type 410 Curb</b>
<b>Curb Joints &amp; Dowels</b>		<b>411</b>
Extruded Curb		412
3' Precast Traffic Curb (Dual Sloped)		413a

## 2023 Edition City of Seattle Standard Plans for Municipal Construction

	8' Block and Radial Traffic Curb	413b
	Traffic Circle Details	415
Sidewalks	Concrete Sidewalk Details	420
	Sidewalk with Monolithic Curb	421
	<b>Curb Ramp Details</b>	<b>422a</b>
	<b>Curb Ramp Details</b>	<b>422b</b>
	<b>Curb Ramp Details</b>	<b>422c</b>
	<b>Curb Ramp Details</b>	<b>422d</b>
	<b>Curb Ramp Details</b>	<b>422e</b>
	<b>Curb Ramp Details</b>	<b>422f</b>
	<b>Curb Ramp Details</b>	<b>422g</b>
	<b>Curb Ramp Details</b>	<b>422h</b>
	<b>Curb Ramp Details</b>	<b>422i</b>
	Curb Ramp Details (Intentionally Omitted)	422j
	<b>Curb Ramp Details</b>	<b>422k</b>
	<b>Curb Ramp Sections</b>	<b>422l</b>
	<b>Expandable Tree Pit Detail</b>	<b>424a</b>
	Tree Pit Detail	424b
	Alternative Walkways	425
Driveways	<b>Type 430a &amp; 430b Driveways</b>	<b>430a</b>
	<b>Type 430b Driveway</b>	<b>430b</b>
	<b>Cement Concrete Driveway Placed with Cement Concrete Sidewalk</b>	<b>431</b>
	Multi-Purpose Trail at Street Crossing	432a
	Multi-Purpose Trail at Street Crossing	432b
	Speed Hump	436a
	Speed Cushion	436b
Stairway, Steps	Cement Concrete Stairway & Handrail	440a
	<b>Cement Concrete Stairway &amp; Handrail</b>	<b>440b</b>
	Cement Concrete Stairway & Bike Runnel	440c
	Cement Concrete Stairway & Single Bike Runnel	440d
	Cement Concrete Steps	441
	Steel Pipe Handrail	442
	Pedestrian Railing	443
Fence	Chain Link Fence	450a
	Chain Link Fence	450b
	Chain Link Gates	450c
Miscellaneous	Temporary Pedestrian Walkway	456
	Ecology Block, Concrete	460
	Fixed & Removable Wood Bollard	463
	Removable Steel Bollard	464
	Fixed Steel Bollard	465

### 500 Signalization-Lighting

Signal Controller	Signal Controller Cabinet & Foundation	500a
	Signal Controller Foundation Conduit Layout	500b
	Service Cabinet Foundation Detail	501a
	Joint Signal Controller/Service Cabinet Foundation Detail	501b

## 2023 Edition City of Seattle Standard Plans for Municipal Construction

Vehicular Signal	<b>Vehicular Signal Mounting</b>	<b>510a</b>
	Vehicular Signal Mounting	510b
	Signal Head Bracket Assembly	511
Pedestrian Signal	Pedestrian Signal Clamshell Mounting	520
	Pedestrian Pushbutton Post & Foundation	521
	Accessible Pedestrian signal (APS) PED	
	Pushbutton Assembly	522a
	Bicycle Pushbutton Assembly	522b
	Pedestal & Foundation	524
	Rectangular Rapid Flashing Beacon	525
Loop Detectors	Detector Loop Lead-In	530a
	Detector Loop Details	530b
	Detector Loop Wire & Signal Cable Splice	530c
Pole Foundations	<b>Traffic Signal Pole Foundation Detail</b>	<b>541a</b>
	Strain Pole Foundation	
	Schedule / Notes (Type T, V, X & Z)	541b
	<b>Street Light Pole Foundations</b>	<b>543a</b>
	<b>Pedestrian Street Light Pole Foundations</b>	<b>543b</b>
Handholes	<b>Handholes</b>	<b>550a</b>
	Handholes	550b
	Polymer Concrete Handholes	550c
	Polymer Concrete Handholes	550d
Poles	Steel Mast Arm Pole	562a
	<b>Steel Mast Arm Pole Foundation Schedule &amp; Detail (w/o METRO Trolley Loads)</b>	<b>562b</b>
	Miscellaneous Steel Pole Details	563a
	Miscellaneous Steel Pole Details	563b
	Terminal Cabinet Pole Mounting	564
	Strain Pole Details (Type V, X & Z Poles)	566a
	Strain Pole Details (Type V, X & Z Poles)	566b
	Type T Strain Pole Details Traffic Signal Only	567a
	Type T Strain Pole Details Traffic Signal Only	567b
	Steel Street Light Pole with Bracket Arm	572
Conduit Risers	Traffic Conduit Riser	580
<b>600 Signs</b>		
Overhead	Span Wire Installation	601a
	Overhead Signs Span Wire Mounted	601b
	Sign Installation (Non-Spanwire Mounting)	601c
Pole Mounted	Standard Sign Installation Steel Poles	610
	SNS Bracket for Steel Poles	615
	Traffic Sign Mounting on Metal Poles	616
Post Mounted	Stop and Yield Sign Post and Anchor	
	Installation	620
	Warning and Regulatory Sign Post	621a
	Warning and Regulatory Sign Post	
	Anchor Installations	621b

# 2023 Edition City of Seattle Standard Plans for Municipal Construction

Street Name Sign Installation	622
Street Name Sign Pedestal Installation	623
Post Cap	624
Traffic Sign Posts	625
Object Marker Installation in Traffic Circle	626
Metro Bus Zone Sign Installation	630
Pedestrian Wayfinding Sign	631

## 700 Pavement Markings

Traffic Buttons/Lane Markers	Traffic Buttons and Lane Markers	700
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Channelization	Typical Left Turn Channelization and Legend Placement	710a
	<b>Typical Lane Drop Channelization and Legend Placement</b>	<b>710b</b>
	<b>Typical Intersection Guideline Channelization</b>	<b>710c</b>
	Typical White Barrier Area Channelization	711
	<b>Typical Crosswalk &amp; Stop Line Installation Details</b>	<b>712</b>
	Curb Marking Details	713
	Typical Angled Parking Stall Channelization	714
	Trail Obstruction Channelization	715
	<b>Typical Curbside Red Bus Lane Layout</b>	<b>717</b>

Legends / Symbols	Mandatory Movement Arrows	720
	Optional Movement Arrows	721
	Optional Movement Arrows with Oblique Arrows	722
	Merge Arrows	723
	Speed Hump & Speed Cushion Symbol	728
	Yield Line Layout & Yield Line Triangle Symbols	729
	Pavement Markings Legends	730
	International Symbol for Accessibility	740
	Pedestrian Symbol	741
	<b>Red Bus Lane Markings</b>	<b>750</b>
	Helmeted Bicyclist Symbol with Arrow	770
	Sharrow & Bike Symbol	771
	Bicycle Detector Symbol	772
	Bike DOT Symbol with Arrow	773
	Greenway Markings	774
	<b>Narrow Bike Lane Turn Arrow Symbols</b>	<b>775</b>
	<b>Cross Bike Pavement Marking</b>	<b>780</b>
Bike Lane Pavement Marking at Driveway	781	

## 800 Structures

Walls	<b>Support Wall</b>	<b>800</b>
	<b>Curb Wall</b>	<b>801</b>



**Vertical Datums within the City of Seattle:**

The National Geodetic Survey (NGS) Benchmark 944 7130 TIDAL 7 PID SY0289 is a disk set 3.0 feet above the concrete sidewalk in the SW granite cornerstone of the National Building located on the NE corner of the intersection of the Western Avenue and Madison Street, Seattle, Washington.

The following elevations are values for that benchmark in different datums.

- NAVD 88 = 19.26 feet
- NGVD 29 = 15.67 feet
- King Co & Metro = 115.67
- Obsolete COS Datum = 9.54 feet
- USACOE = 22.51 feet
- MLLW = 21.59 feet

NAVD88 = The North American Vertical Datum of 1988 (Official City of Seattle Datum per Ordinance #121291 of October 9, 2003)

NGVD 29 = The National Geodetic Vertical Datum of 1929

King Co & Metro = Add 100 feet to NGVD 29

Obsolete COS = The Old City of Seattle Elevation. Plans, profiles and records prior to 2004 use this datum. Add 9.7 feet to this datum to get to NAVD88.

USACOE = US Army Corps of Engineers Lake Washington & Lake Union Datum

MLLW = Mean Lower Low Water Datum (TIDAL EPOCH 1983 TO 2001)

**NOTES**

- 1. Tidal elevations vary according to tidal observations in 18 year epochs.
- 2. The Old (Obsolete) City of Seattle Datum varies between 9.1 and 9.9 feet below NAVD88 depending on the location in the City. The difference between these two datums must be ascertained from field observations in each specific area. Add approximately 9.7 feet to the old COS Datum to get to the NAVD elevation.

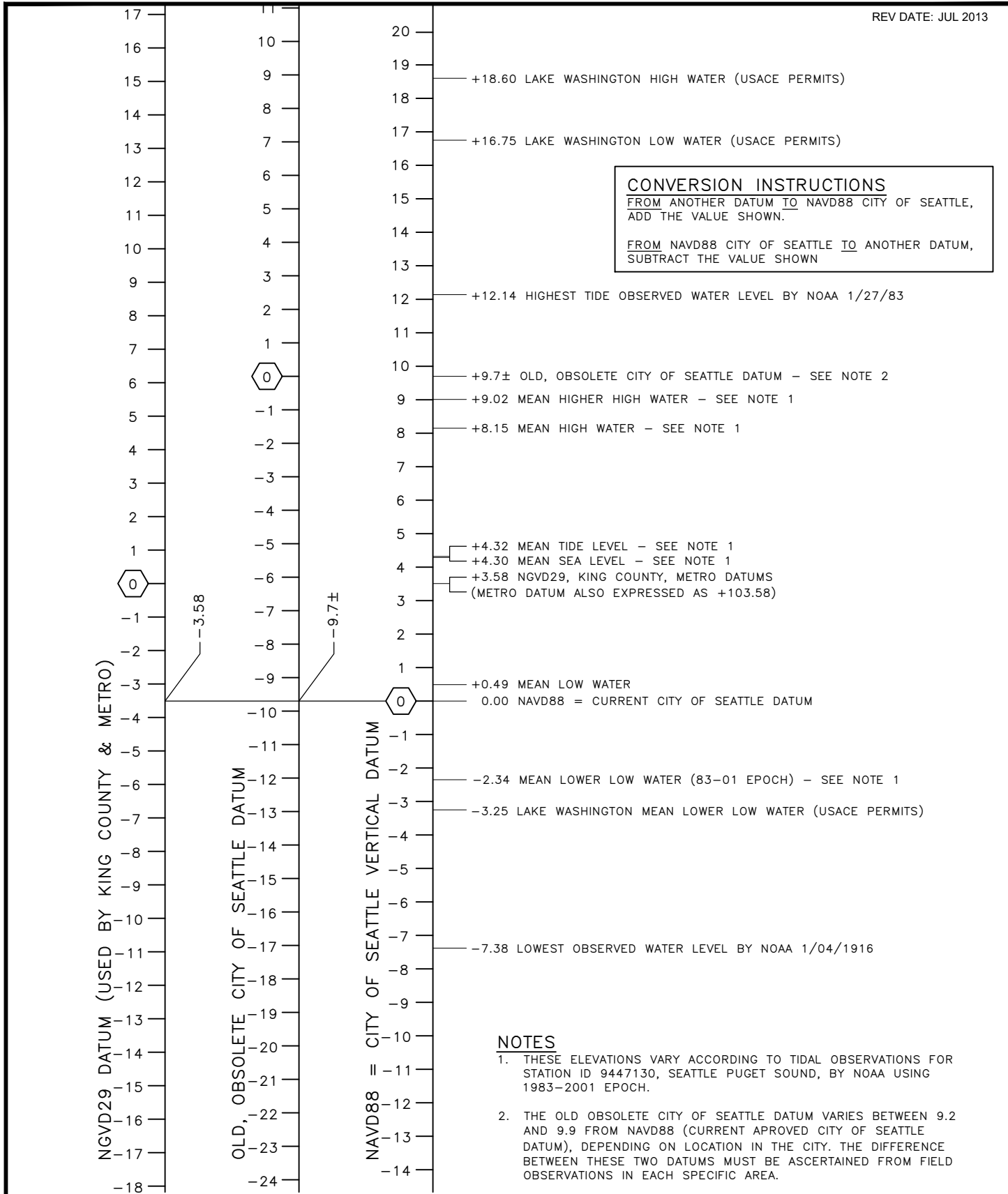
REF STD SPEC SEC 1-07.16(1)A, 1-07.28



City of Seattle

NOT TO SCALE

ELEVATIONS & DATUMS



REF STD SPEC SEC 1-07.16(1)A, 1-07.28



City of Seattle

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ELEVATIONS & DATUMS

ABAN	Abandon(ed)
ABW	Asphalt Bike Way
ACV	Automatic Control Valve
ACP	Asphalt Concrete Pavement
ADA	Americans with Disabilities Act
ADJ	Adjust
AHD	Ahead
AIC	Aerial Interconnect Cable
AL	Aluminum
AP	Angle Point
APP	Approved
APPROX	Approximate
APWA	American Public Works Association
ASPH	Asphalt
ATB	Asphalt Treated Base
AV	Air Valve
AVB	Automatic Vacuum Breaker
AVE	Avenue
AVG	Average
AW	Asphalt Walk
AWG	American Wire Gage
AWWA	American Water Works Assoc.
BAT	Backflow Assembly Tester
B&B	Ball & Burlap
BC	Bolt Circle, Back of Curb
BF	Bottom Face
BFV	Butterfly Valve
BK	Back
BLDG	Building
BLK	Block
BLKG	Blocking
BLKHD	Bulkhead
BLRD	Bollard

BLVD	Boulevard
BM	Bench Mark
BO	Blow Off
BOC	Beginning of Curb
BPD	Backflow Prevention Device
BR	Bare Root, Brick
BRG	Bearing
BRKN	Broken
BSMT	Basement
BTW	Between
BV	Ball valve
BVC	Beginning of Vertical Curve
C&G	Curb & Gutter
CAL	Caliper
CALC	Calculation
CB	Cable, Catch Basin
CBW	Concrete Bike Way
C—C	Center to Center
CC	Concrete Culvert
CD	Conduit
CDF	Controlled Density Fill
CEM	Cement
CF	Cubic Feet
CH	Chamber
CIP	Cast Iron Pipe
CL	Center Line or Class
CL	Center Line
CLF	Chain Link Fence
CLR	Clearance
CMP	Corrugated Metal Pipe
CO	Clean Out
COMP	Compression
CONC	Concrete

REF STD SPEC SEC 1-01.2



City of Seattle

NOT TO SCALE

ABBREVIATIONS

COND	Condition
CONN	Connect/Connection
CONSTR	Construction
CONT	Continuous
CORP	Corporation
COS	City of Seattle
CPEP	Corrugated Polyethylene Pipe
CR	Cross, Curb Radius
CSB	Chief Seattle Base
CSECP	Construction Stormwater & Erosion Control Plan
CULV	Culvert
CW	Concrete Walk
CY	Cubic Yard
DB	Direct Burial Cable
DC	Direct Current
DCVA	Double Check Valve Assembly
DEPT	Department
DGV	District Gate Valve
DIA $\phi$	Diameter
DIP or DI	Ductile Iron Pipe
DIPRA	Ductile Iron Pipe Research Assoc.
DR	Drive
DS	Downspout
DWG	Drawing
DWY	Driveway
E	East
EA	Each
ECB	Electrical Cable
ECC	Eccentric
ECD	Electrical Conduit
ED	Electrical Duct
EL/ELEV	Elevation
ELEC	Electric/Electrical

EMH	Electrical Maintenance Hole
ENCL	Enclosure
ENGR	Engineer
EOC	End of Curb
EQ	Equal
ESAL	Equivalent Single Axle Loads
ESMT	Easement
EV	Electrical Vault
EVC	End of Vertical Curb
EW	Each Way
EX	Existing
EXP	Expansion
FACB	Fire Alarm Cable
FAHH	Fire Alarm Handhole
FC	Face of Curb
FCS	Flow Control Structure
FDN	Foundation
FF	Far Face, Finished Floor
FG	Finished Grade
FIG	Figure
FIPT	Female Iron Pipe Thread
FL	Flow Line
FLG	Flange
FLR	Floor
FLT	Flat Bar
FM	Force Main
FO or FOC	Fiber Optics
FS	Far Side
FT	Feet
FTB	Fluidized Thermal Backfill
FTG	Footing
G	Gas
G REG	Gas Regulator

REF STD SPEC SEC 1-01.2



City of Seattle

NOT TO SCALE

ABBREVIATIONS



GA	Gauge
GAL	Gallon
GALV	Galvanize/Galvanized
GAS V	Gas Valve
GFCI	Ground Fault Circuit Interrupter
GIP	Galvanized Iron Pipe
GM	Gas Meter
GND	Ground
GP	Guy Pole
GPM	Gallons Per Minute
GR	Grade
GRHH	Ground Rod Handhole
GS	Gas Service
GSI	Green Stormwater Infrastructure
GSP	Galvanized Steel Pipe
GV	Gate Valve
GVC	Gate Valve Chamber
GVL	Gravel
HB	Horizontal Bend
HBR	Hose Bib Riser
HDPE	High Density Polyethylene
HEX	Hexagon/Hexagonal
HGL	Hydraulic Grade Line
HH	Handhole
HI	High
HMA	Hot Mix Asphalt
HORIZ	Horizontal
HPG	High Pressure Gas
HPS	High Pressure Sodium
HR	Hour
HSE	House
HT	Height
HYD	Hydrant

ID	Inside Diameter/Dimension
I/D	Incentive/Disincentive
IE	Invert Elevation
IF	Inside Face
IN	Inch(es)
INL	Inlet
INT	Intersection
INV	Invert (Line)
IP(S)	Iron Pipe (Size)
IRC	Irrigation Controller
IRRG	Irrigation
IRRGV	Irrigation Valve
ISO	Isolation Coupling
JB	Junction Box
JT	Joint
K	Kips (1000 lbs)
KSI	Kips Per Square Inch
KV	Kilovolt
LAL	Limited Access Line
LB, LBS	Pound, Pounds
LF	Linear/Lineal Feet
LID	Local Improvement District
LIT	Large Inlet Top (Catch Basin)
LOC	Locate/Location
LONGIT	Longitudinal
LP	Light Pole
LS	Lump Sum
LSCAPE	Landscape, Landscaping
LT	Left
LTG	Lighting
LUM	Luminaire
MA	Mast Arm
MATL	Material


REF STD SPEC SEC 1-01.2




City of Seattle

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ABBREVIATIONS

MAX	Maximum
MB	Mailbox
MCV	Manual Control Valve
MDV	Manual Drain Valve
MH	Maintenance Hole
MIC	Monument in Case
MIN	Minimum
MIPT	Male Iron Pipe Thread
MISC	Miscellaneous
MJ	Mechanical Joint
ML 	Monument Line
MNRL AGG	Mineral Aggregate
MOD	Modify/Modified
MON	Monument
MW	Monitor Well
N	North
NAD	North American Datum
NAVD	North American Vertical Datum
NF	Near Face
NGVD	National Geodetic Vertical Datum
NIC	Not in Contract
NO	Number
NOM	Nominal
NS	Near Side
NTS	Not To Scale
OC	On Center
OD	Outside Diameter/Dimension
OF	Outside Face
OH	Overhead
PAV	Pavement
PC	Point of Curvature
PCC	Point of Compound Curve
PCW	Pervious Concrete Walk

PDP	Perforated Drain Pipe
PE	Plain End
PED	Pedestrian
PG	Performance Grade
PH	Phase
PI	Point of Intersection
PL	Plate, Place, Polyethylene
	Property Line
POC	Point on Curve
PP	Power Pole
PPB	Pedestrian Push Button
PR	Pair
PRC	Point of Reverse Curve
PROP	Proposed
PRKG	Parking
PRV	Pressure Reducing Valve
PS	Pipe Sewer Combined
PSD	Pipe Storm Drain
PSDD	Pipe Storm Drain Detention
PSI	Pounds per Square Inch
PSIA	Pounds per Square Inch Absolute
PSIG	Pounds per Square Inch Gauge
PSS	Pipe Sewer Sanitary
PT	Point of Tangency
PVB	Pressure Vacuum Breaker
PVC	Polyvinyl Chloride
PVT	Private
QTY	Quantity
R	Radius
R&R	Remove & Replace
R/W	Right of Way
RCP	Reinforced Concrete Pipe
RD	Roof Drain

REF STD SPEC SEC 1-01.2



City of Seattle

NOT TO SCALE

ABBREVIATIONS

RDWY	Roadway
RECONN	Reconnect
RED	Reducer
REF	Refer/Reference
REINF	Reinforce/Reinforcement
RELOC	Relocate
REM	Remove
REPL	Replace
REQD	Required
RET	Retire/Retired
RET WALL	Retaining Wall
RF	Rock Facing
RGS	Rigid Galvanized Steel
RIT	Round Inlet Top
RJ	Restrained Joint
RLWY	Railway
RP	Rock Pocket
RPBA	Reduced Pressure Backflow Assembly
RR	Railroad
RS	Rigid Steel
RT	Right
S	South
SB	Sandbox
SCH	Schedule
SCL	Seattle City Light
SDCI	Seattle Department of Construction & Inspections
SDS	Street Designation Sign
SD	Service Drain
SDOT	Seattle Department of Transportation
SEC	Section
SHLD	Shield
SHT	Sheet
SL	Sleeve, Street Light

SL	Survey Line
SLHH	Street Light Handhole
SNS	Street Name Sign
SP	Strain Pole
SPCS	Spaces
SPEC	Specifications
SPR	Seattle Parks & Recreation
SPU	Seattle Public Utilities
SQ	Square
SS	Stainless Steel, Side Sewer—Combined
SSD	Sub—Surface Drain
SSS	Side Sewer—Sanitary
SSTONE	Sandstone
ST	Street
STA	Station
STD	Standard
STL	Steel
STL P	Steel Pipe
STM LOG	Steam Log
STRUCT	Structure/Structural
SW	Sidewalk
SY	Square Yard
SYS	System
T	Tee
TB	Test Boring
TC	Traffic Control
TCB	Telephone Cable
TCD	Telephone Conduit
TCHH	Traffic Control Handhole
TD	Telephone Duct
TEB	Telephone Enclosure Box
TEL	Telephone
TEMP	Temporary

REF STD SPEC SEC 1-01.2







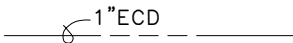
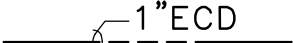
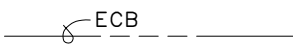
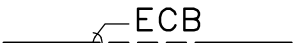
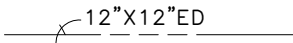

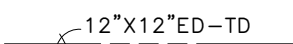
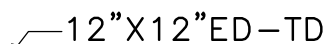


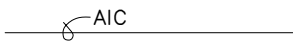






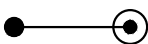
City of Seattle

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ABBREVIATIONS





ITEM	EXISTING	PROPOSED
Signal Controller Cabinet		
Electrical Vault		
Electrical Conduit		
Electrical Cable (direct burial)		
Electrical Duct		
Combined Electrical & Telephone Duct		
Span Wire		
Aerial Interconnect Cable		
Transmission Pole (steel w/ conc base)		
City Wood Pole		
City Wood Pole w/ HPS		


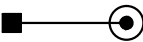
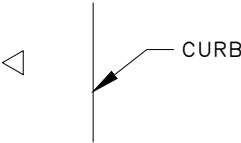
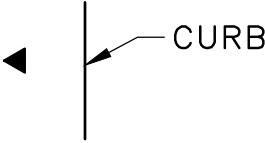
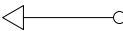
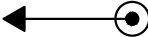



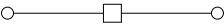









REF STD SPEC SEC



City of Seattle

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STANDARD SYMBOLS  
ELECTRICAL

ITEM	EXISTING	PROPOSED
Light Pole (metal) w/ HPS		
Strain Pole (metal)		
Combined Lighting Strain Pole HPS		
Luminaire		
Mercury Vapor Luminaire		
Double Light Pole		
Utility Wood Pole		
Utility Guy Pole		
Anchor		
Ground		

REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS  
ELECTRICAL

ITEM

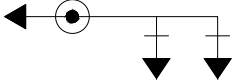
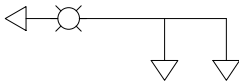
EXISTING

PROPOSED

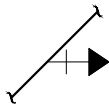
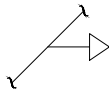
Traffic Signal Mast  
Arm Pole



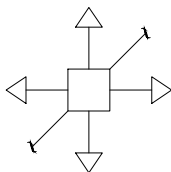
Traffic Signal Mast Arm  
Pole w/ Luminaire



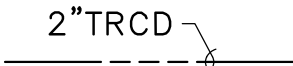
Traffic Signal on  
Span Wire



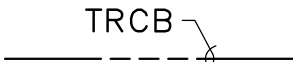
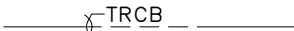
Multi-Directional Traffic  
Signal on Span Wire



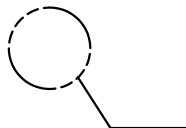
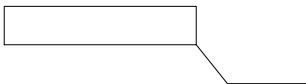
Traffic Signal Conduit



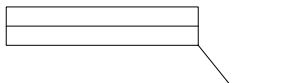
Traffic Signal Cable



Detector Loop, Dipole  
(loop schedule)



Detector Loop, Quadrapole  
(loop schedule)































REF STD SPEC SEC



City of Seattle

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STANDARD SYMBOLS  
ELECTRICAL

ITEM	EXISTING	PROPOSED
Signal Pedestal		
Vehicle Signal		
Vehicle Signal w/ Backplate		
Vehicle Signal (optically programmed)		
Pedestrian Signal		
Pedestrian Signal (optically programmed)		
Pedestrian Push Button Post		
Pedestrian Push Button		
Illuminated Sign		
Junction Box		
Handhole		
Traffic Control Handhole		
Street Light Handhole		
Ground Rod Handhole		
Fire Alarm Handhole		

REF STD SPEC SEC



City of Seattle

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STANDARD SYMBOLS  
ELECTRICAL

SIGNALIZATION



Vehicle & Pedestrian Signal Head  
(?=Identification Number)



Traffic Sign (=?=Identificaiton Number)



Cable Runs  
(?=Run Number per Wiring Schedule)



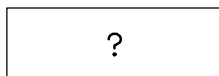
Removal/Relocation Item  
(?=Identification Number per Removal/Relocation Plan)



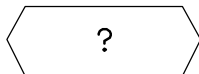
Construction Item  
(?=Identification Number per Signalization Plan)

Signal Poles, Signal Pedestals, Push Button Pedestals &  
Push Buttons Identified by Number on Signalization Plan.

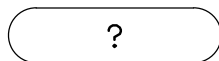
CHANNELIZATION & SIGNAGE



Install Channelization/Signage  
(?=Channelization / Signage Identified on Plan)



Remove Channelization / Signage  
(?=Channelization / Signage Identified on Plan)



Relocate Signage  
(?=Signage Identified on Plan)

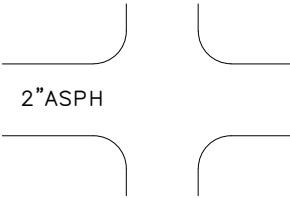
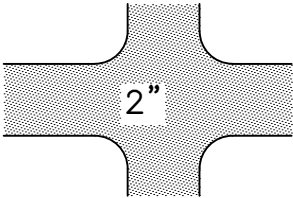
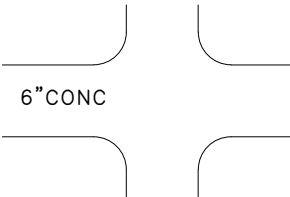
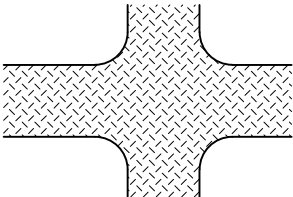
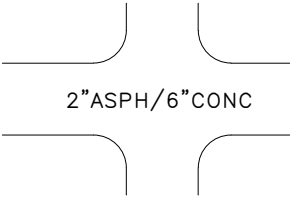
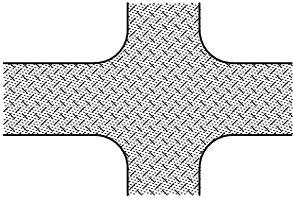
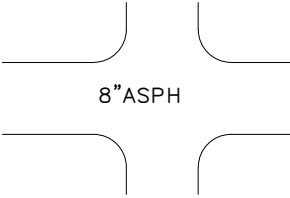
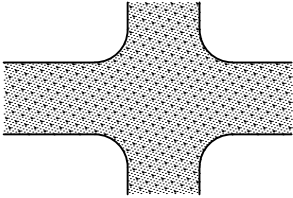

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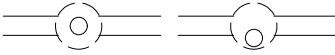
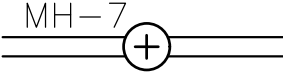
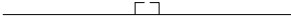





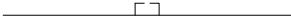






















City of Seattle

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STANDARD SYMBOLS  
SIGNALIZATION/CHANNELIZATION  
& SIGNAGE

ITEM	EXISTING	PROPOSED
Pavement, HMA or WMA (CL ½")	 <p>2"ASPH</p>	 <p>2"</p>
Roadway Cement Concrete, (type to be shown in drawings)	 <p>6"CONC</p>	
2" HMA or WMA, CL ½" Over Roadway Cement Concrete Base	 <p>2"ASPH/6"CONC</p>	
2" HMA or WMA, CL ½" over HMA or WMA, CL 1"	 <p>8"ASPH</p>	
REF STD SPEC SEC		
 City of Seattle	NOT TO SCALE	STANDARD SYMBOLS PAVING

ITEM	EXISTING	PROPOSED
Type 410b Curb & Gutter		
Type 410c Curb		
Cement Concrete Walk		
Pervious Concrete Walk		
Curb Ramp		
Type 430a Conc Dwy		
Pervious Concrete Surface		
Grading		

ITEM	EXISTING	PROPOSED
Maintenance Holes		
Inlet Type 250A		
Inlet Type 250B		
Inlet Type 252		
Inlet Type 268		
Catch Basin round inlet top		
Private CB & Inlet		
Catch Basin Type 151 (pre 1985)		
Catch Basin Type 240A		
Catch Basin Type 240B		
Catch Basin Type 240C		
Catch Basin Type 240D		
Catch Basin Type 241		
Catch Basin Type 242A		
Catch Basin Type 242B		
Junction Box Type 277A		
Junction Box Type 277B		
Area Drain		

REF STD SPEC SEC




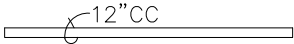
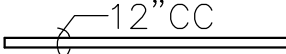
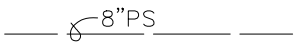
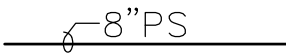
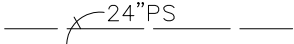
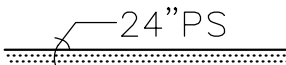
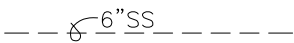
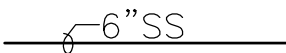

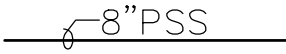
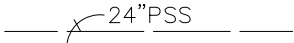
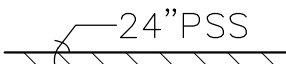
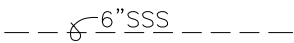
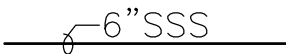

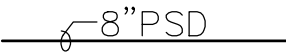
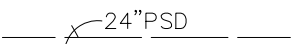
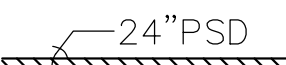


City of Seattle

NOT TO SCALE

STANDARD SYMBOLS  
SEWER & DRAINAGE



ITEM	EXISTING	PROPOSED
Sand Box		
Clean Out		
Concrete Culvert		
Pipe Sewer Combined <1'-0"Dia		
Pipe Sewer Combined ≥1'-0"Dia		
Side Sewer Combined		
Pipe Sewer Sanitary <1'-0"Dia		
Pipe Sewer Sanitary ≥1'-0"Dia		
Side Sewer Sanitary		
Pipe Storm Drain <1'-0"Dia		
Pipe Storm Drain ≥1'-0"Dia		

REF STD SPEC SEC



City of Seattle

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STANDARD SYMBOLS  
SEWER & DRAINAGE

ITEM	EXISTING	PROPOSED
Service Drain		
Inlet & CB Connection		
Open Ended Pipe		
Ditch		
Stream		

REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS  
SEWER & DRAINAGE

ITEM	EXISTING	PROPOSED
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Bench Mark (found or set)



Brass Plug/Cap (found or set)



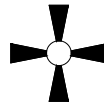
Hub/Tack (found or set)

Monument in Case  
(found or set)

Conc. Mon. (found or set)



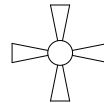
Section Corner (found or set)



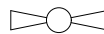
Quarter Corner (found or set)



Section Corner (calculated)



Quarter Corner (calculated)

Rebar/Cap, Pipe/Cap Rebar,  
Iron Pipe (found or set)Tack/Lead, Tack PK Nail,  
Spike (found or set)

Bench Mark (not found)

Brass Plug/Cap  
(not found)

MIC. (not found)



Conc. Mon. (not found)

Rebar/Cap, Pipe/Cap Rebar,  
Iron Pipe (not found)Tack/Lead, Tack PK Nail,  
Spike (not found)

Survey Shot Point





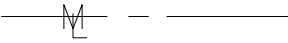





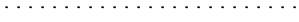



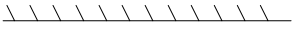

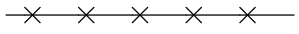
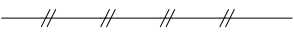
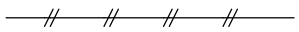
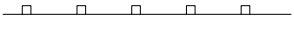
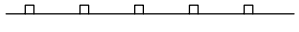
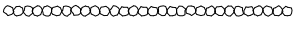
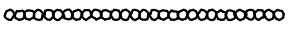




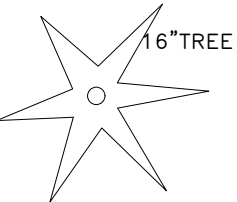
REF STD SPEC SEC






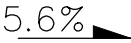
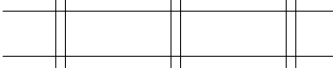


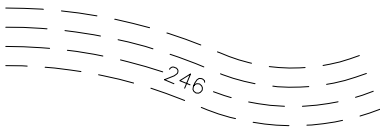




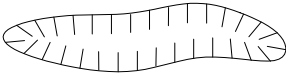
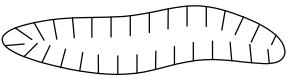

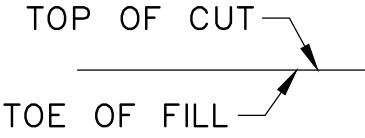




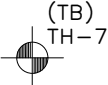
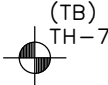





















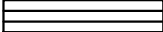


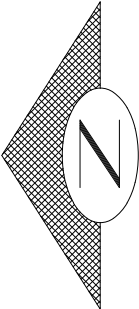
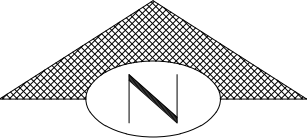
City of Seattle

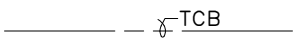
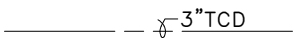
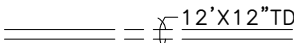



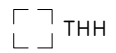



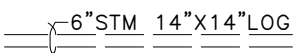
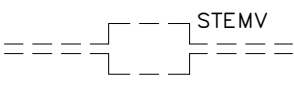

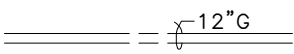



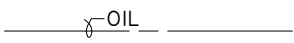
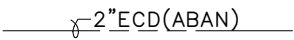
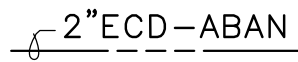
NOT TO SCALE

STANDARD SYMBOLS  
TOPOGRAPHIC & MISC

ITEM	EXISTING	PROPOSED
Center Line		
Monument Line		
Survey Line		
Right of Way Line		
Lot & Ownership Line		
Permanent Easement Line		
Temp Const Easement Line		
Vacated Street or Alley		
State Highway Limited Access Line		
Building		
Chain Link Fence		
Wood Fence		
Guardrail		
Rock Facing		
Rock Facing		
Riprap		
Trees		
		PER DRAWINGS

ITEM	EXISTING	PROPOSED
Shrub or Bush		
Ground, Grade Line		
Grade (arrow downhill)		
Rail Road Tracks		
City Limits		
Slope Line		
Contours		
Slope Angle Horiz:Vert		
Vertical Curve		
Depression		
Stump		
Top of Cut Toe of Fill		
Dimension Line		
Match Line		
Test Hole & Number (test boring)		
Bench Mark		

ITEM	EXISTING	PROPOSED
Monitor Well		
Street Name Sign		
Traffic Sign		
US Mail Box		
Private Mail Box		
Bollard		
Posts		
Parking Meter & Pay Station		
Rectangular Casting		
Circular Casting		
Column		
Jersey Barrier & Eco Block		
Tree Pit		
North Arrow horizontal		
North Arrow vertical		

ITEM	EXISTING	PROPOSED
Telephone Cable (direct burial)	 TCB	
Telephone Conduit	 3" TCD	
Telephone Duct	 12'X12" TD	
Telephone Enclosure	 TEB	
Telephone Maintenance Hole	 TEL VAULT	
Telephone Pole	 TP	
Telephone Handhole	 THH	
Television Cable (direct Burial)	 TVCB	
Television Handhole	 TVHH	
Telegraph Maintenance Hole	 TELEG MH	
Steam Log	 6" STM 14"X14" LOG	
Steam Vault	 STEMV	
Gas Main <1'-0"Dia	 4" G	
Gas Main ≥1'-0"Dia	 12" G	
Gas Valve		
Gas Meter	 GM	
Gas Regulator	 G REG	
Petroleum or Oil	 OIL	
Abandon(ed)	 2" ECD (ABAN)	 2" ECD - ABAN

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City of Seattle

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STANDARD SYMBOLS  
PRIVATE UTILITIES

## ITEM

## EXISTING

## PROPOSED

90° Bend w/Conc Blocking

Plug w/Conc Blocking

Tee w/Conc Blocking

Watermain  
<1'-0"DiaWatermain  
≥1'-0"Dia

11 1/4° Bend

22 1/2° Bend

45° Bend

90° Bend

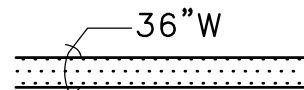
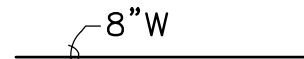
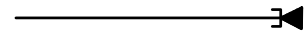
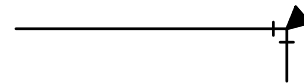
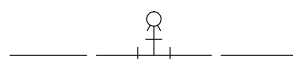
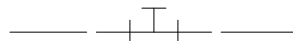
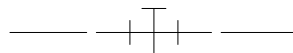
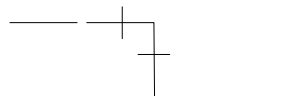
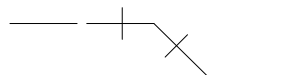
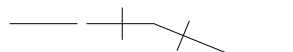
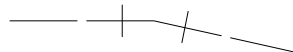
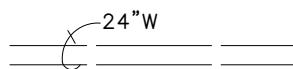
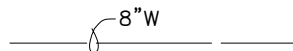
Cross

Tee

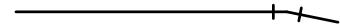
Pipe Sleeve

Plug

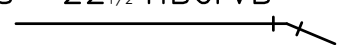
Hydrant



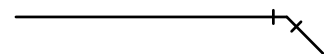
8" – 11 1/4° HBoR VB



8" – 22 1/2° HBoR VB



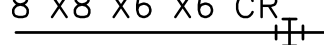
8" – 45° HBoR VB



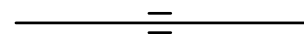
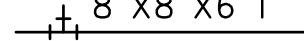
8" – 90° HBoR VB



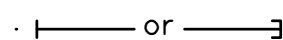
8" X 8" X 6" X 6" CR



8" X 8" X 6" T



or



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STANDARD SYMBOLS  
WATER

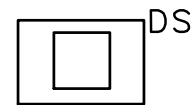
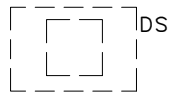


## ITEM

## EXISTING

## PROPOSED

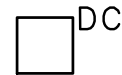
6" & Larger  
Domestic Service



3" & 4" Domestic  
Service



4" & Larger Fire  
Service



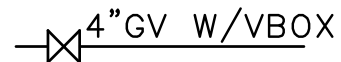
2" & Smaller  
Water Service



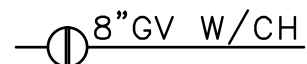
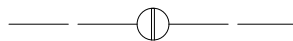
Valve Box



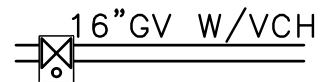
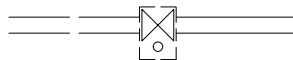
Gate Valve



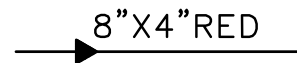
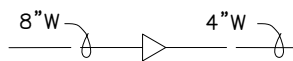
Gate Valve  
w/ Chamber



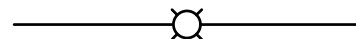
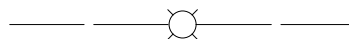
Gate Valve  
w/ Vault Chamber



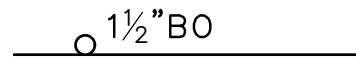
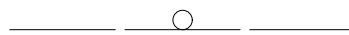
Reducer



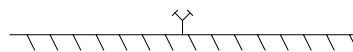
Air Valve



Blowoff



Fire Standpipe



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS  
WATER

## ITEM

## EXISTING

## PROPOSED

Water Test Station



Water Chamber



Sprinkler Head



Irrigation Valve



Angle Valve



Butterfly Valve



Ball Valve



Check Valve



Cone Valve



Globe Valve



Needle Valve



Plug Valve



Resilient Seal Gate Valve



Vertical Bend



Concrete Blocking



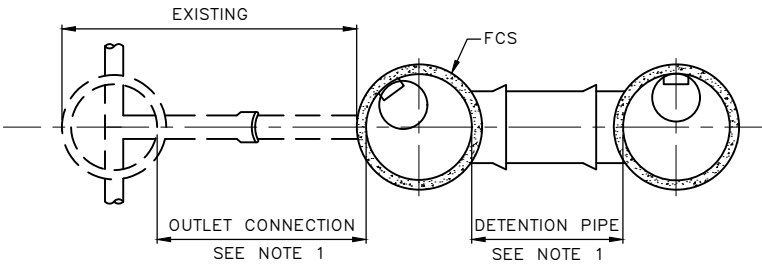
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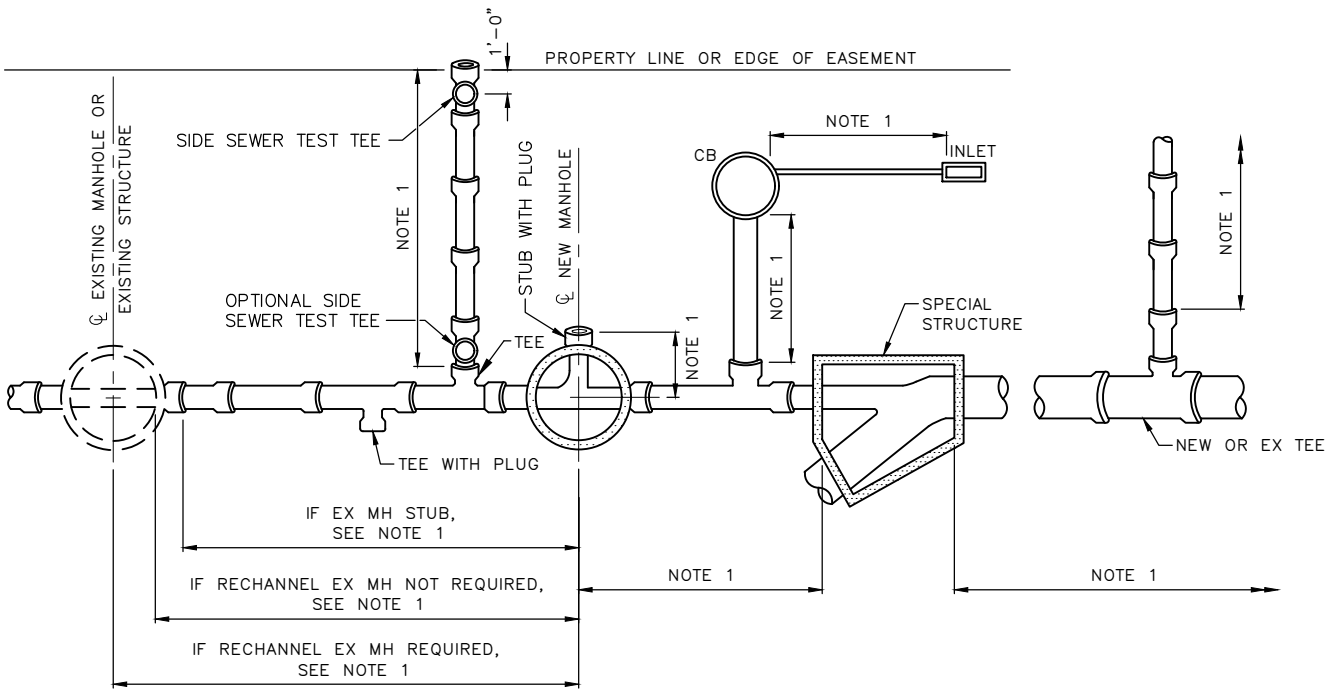
City of Seattle

NOT TO SCALE

STANDARD SYMBOLS  
WATER



PLAN VIEW



PLAN VIEW

**NOTES:**

1. MEASUREMENT PER LINEAR FOOT. PIPE ENDING IN STRUCTURE MEASURED TO EITHER INSIDE FACE OR TO CENTERLINE OF STRUCTURE AS INDICATED, OR TO TEE OR WYE AS INDICATED.
2. TEE OR WYE INCLUDING PLUG - UNIT PRICE EACH
3. ALL PIPE MUST BE MEASURED ON THE SLOPE ALONG THE CENTERLINE OF PIPE TO NEAREST 0.10 LF.

REF STD SPEC SEC DIVISION 7



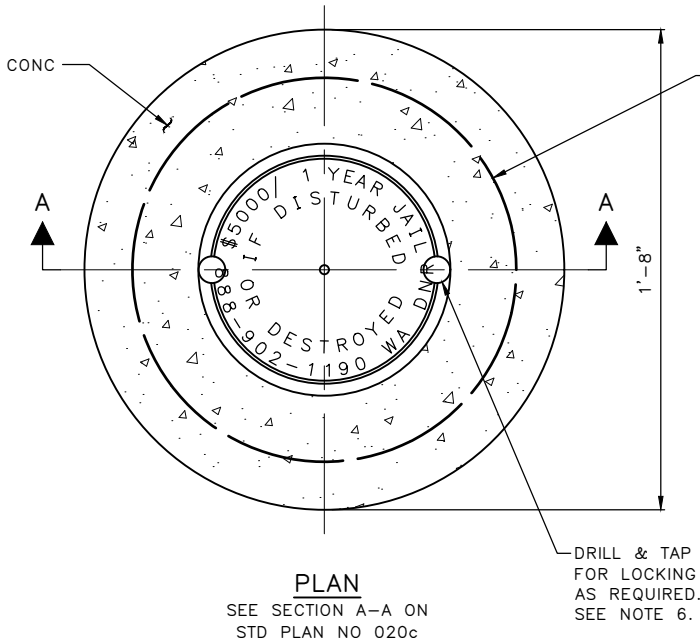
City of Seattle

NOT TO SCALE

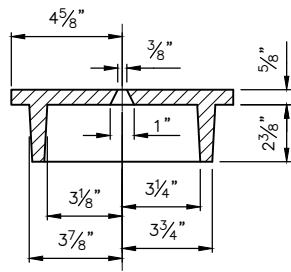
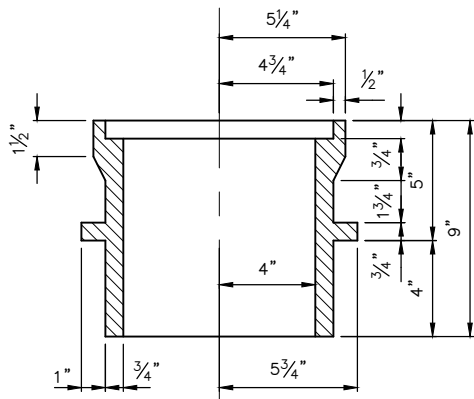
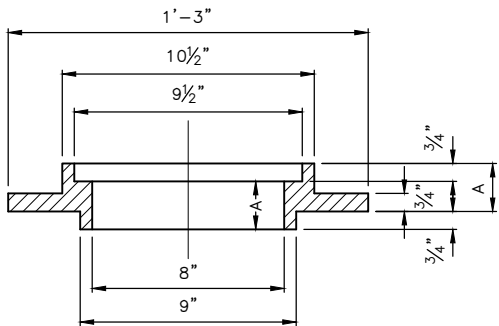
SEWER/DRAINAGE  
MEASUREMENT DIAGRAM

NOTES:

- 1. MONUMENT CASE TO BE INSTALLED BY CONTRACTOR.
- 2. BASE TO BE PLACED ON A WELL COMPACTED FOUNDATION.
- 3. FRAME AND COVER MUST BE TESTED FOR ACCURACY OF FIT AND MUST BE MARKED IN SETS FOR DELIVERY.
- 4. FRAME AND COVER MUST BE CAST IRON AND HAVE COATING APPLIED TO ALL FACES.
- 5. CASTINGS IN RIGID PAVEMENT MUST HAVE REINFORCING STEEL IN THE PAVEMENT.
- 6. USE LOCKING COVER IN R/W. DRILL AND TAP, APPLY ANTI-SEIZE COATING AND BOLT DOWN WITH 3/8"S.S. ALLEN-HEAD BOLTS -2 PLACES.



RISER RING DIMENSIONS			
A (SIZE)	1 1/2"	2"	3"



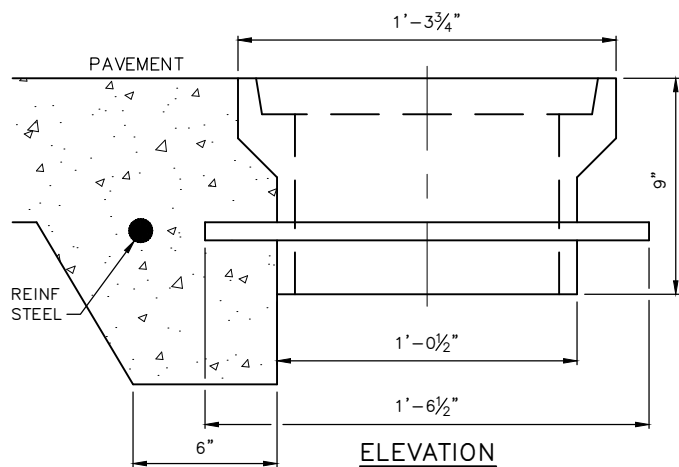
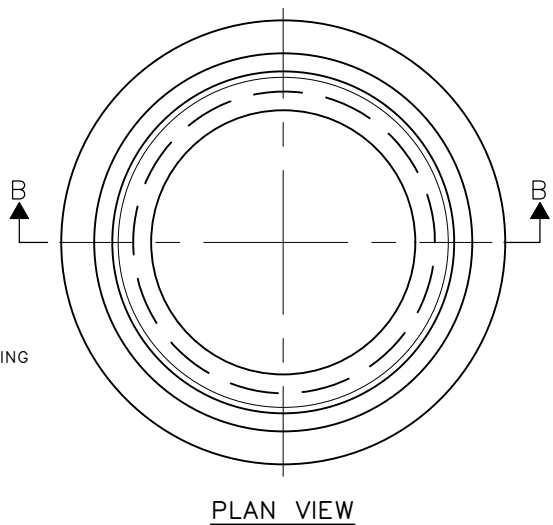
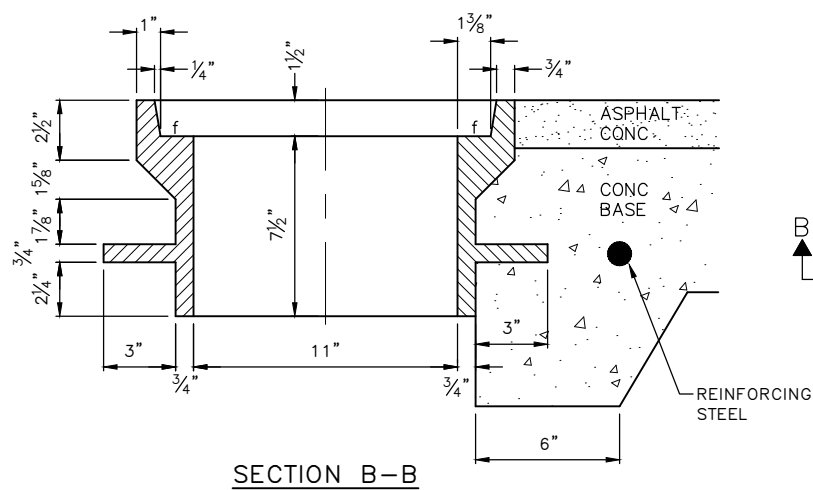
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City of Seattle

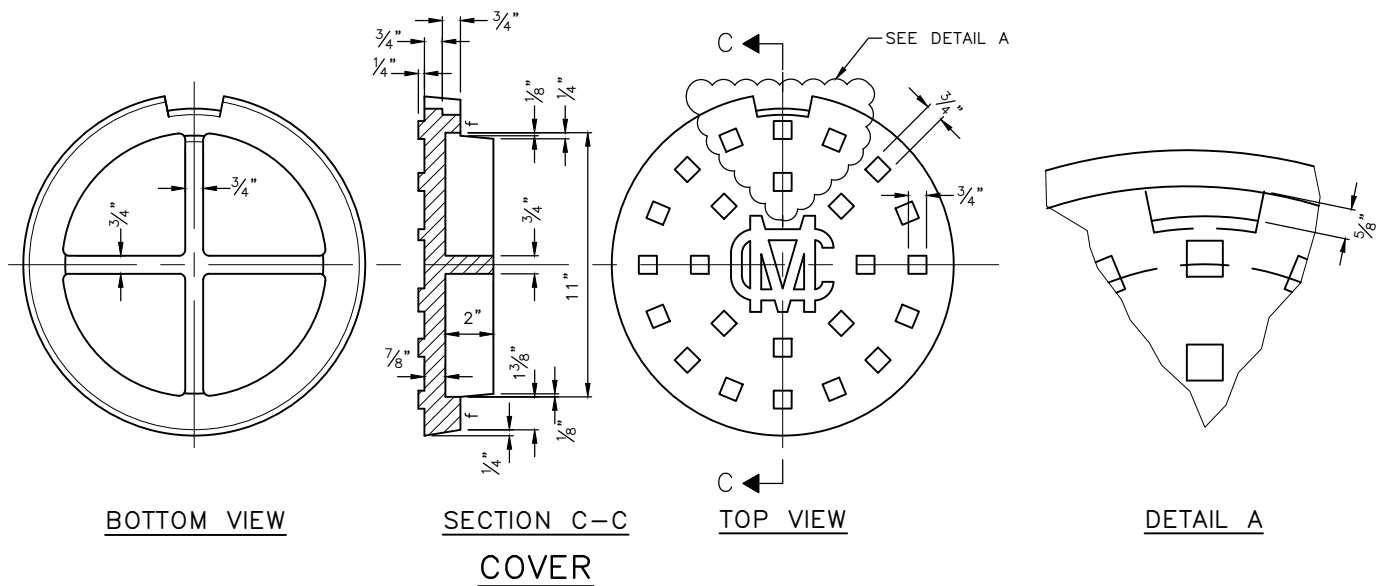
NOT TO SCALE

MONUMENT FRAME & COVER



**NOTES:**

1. FRAME AND COVER MUST BE TESTED FOR ACCURACY OF FIT AND MUST BE MARKED IN SETS FOR DELIVERY
2. FRAME AND COVER SHALL BE CAST IRON
3. "f"=FINISH
4. CASTINGS IN RIGID PAVEMENT MUST HAVE REINFORCING STEEL IN THE PAVEMENT.



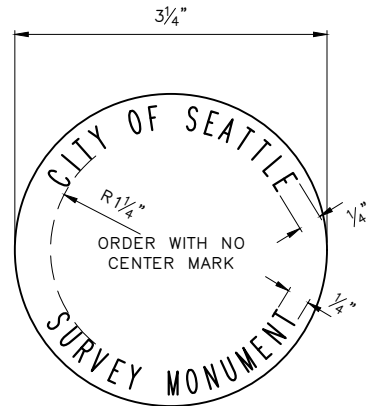
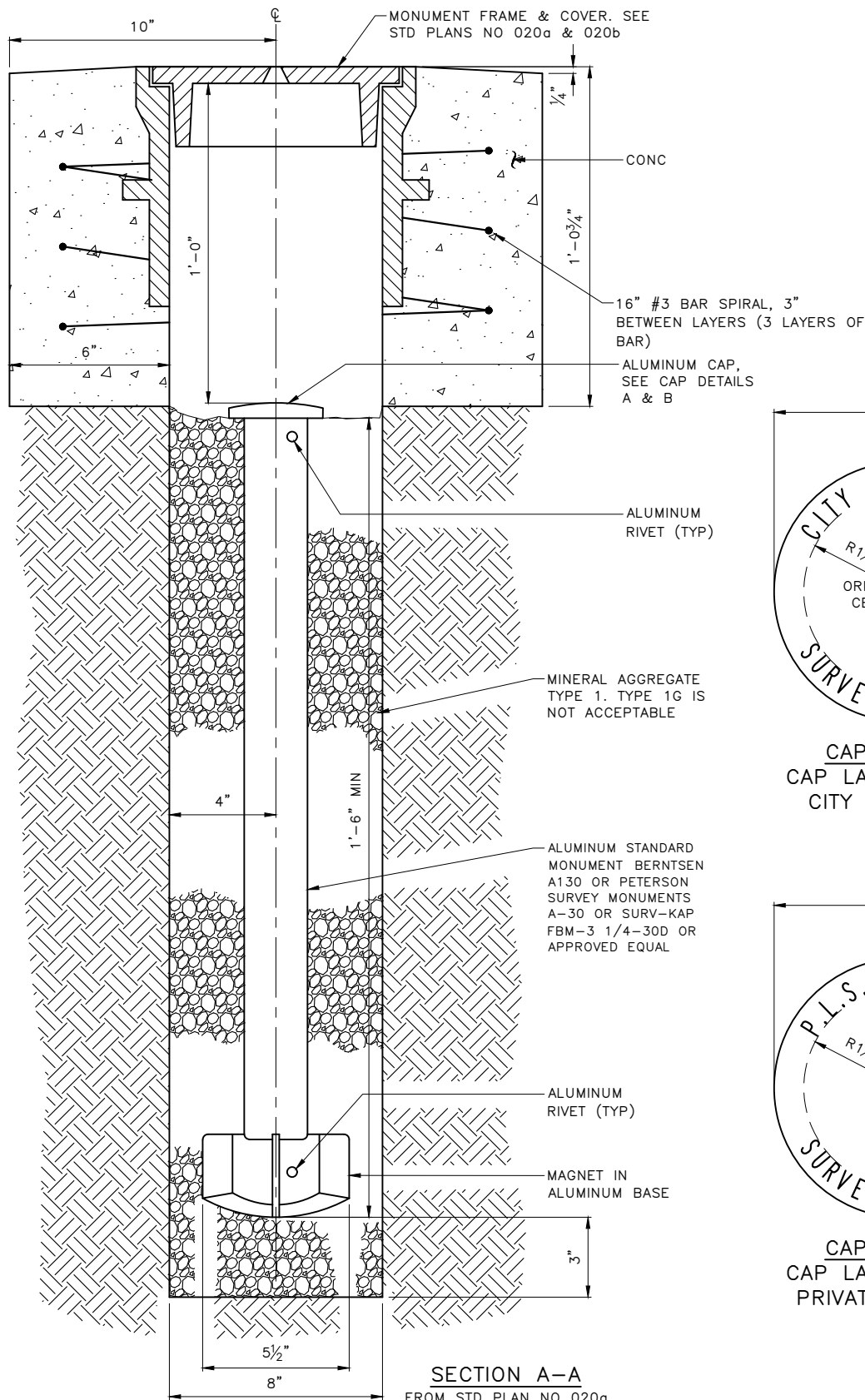
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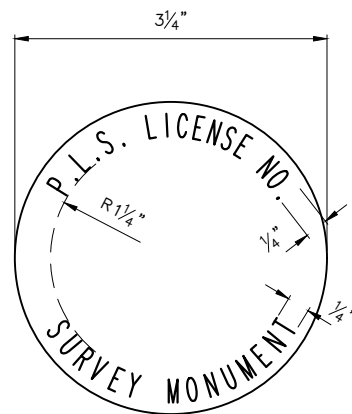
City of Seattle

NOT TO SCALE

MONUMENT FRAME & COVER



CAP DETAIL A  
CAP LAYOUT SET BY  
CITY OF SEATTLE



CAP DETAIL B  
CAP LAYOUT SET BY  
PRIVATE SURVEYOR

SECTION A-A  
FROM STD PLAN NO 020a

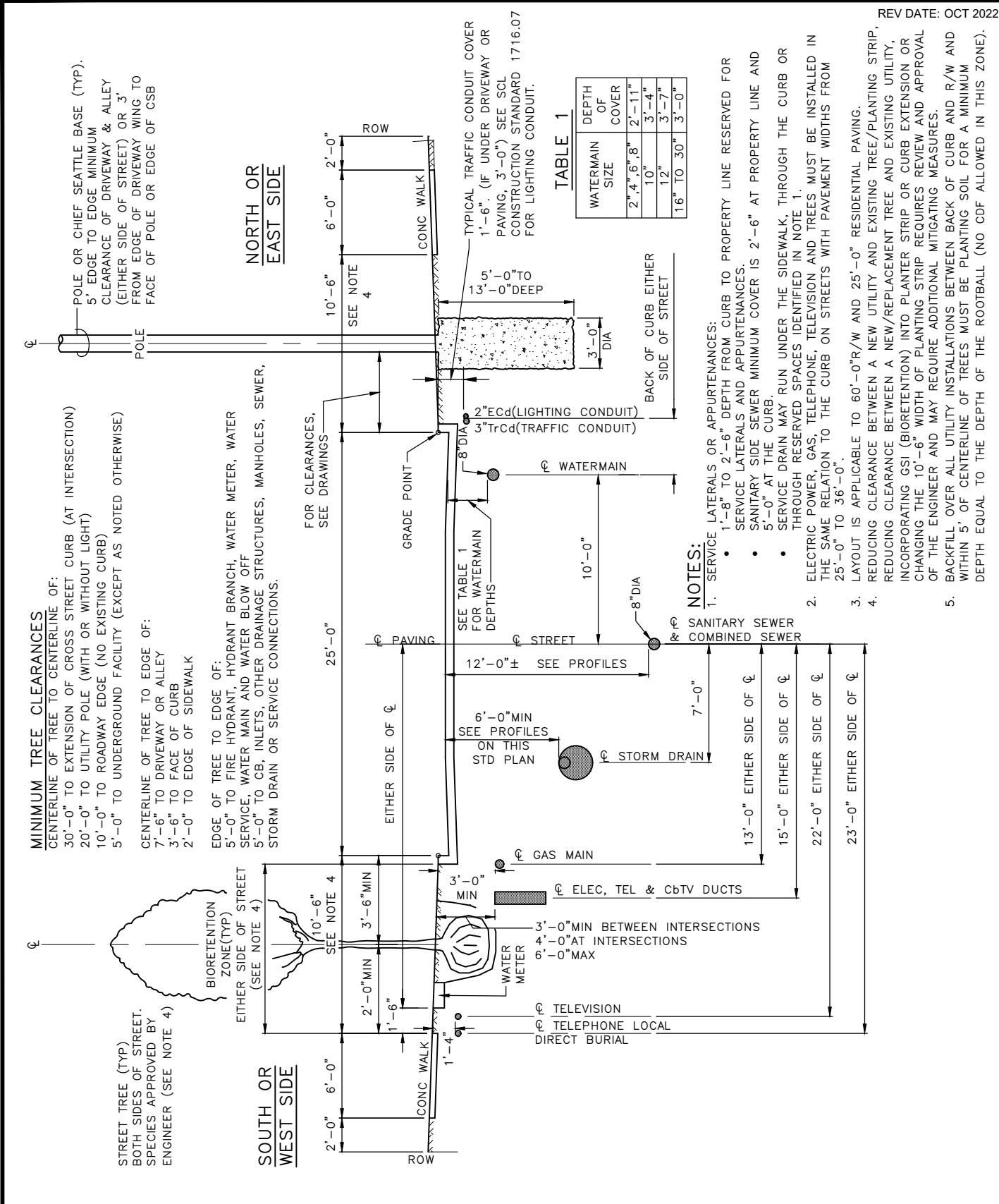
REF STD SPEC SEC 8-13



City of Seattle

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SURVEY MONUMENT



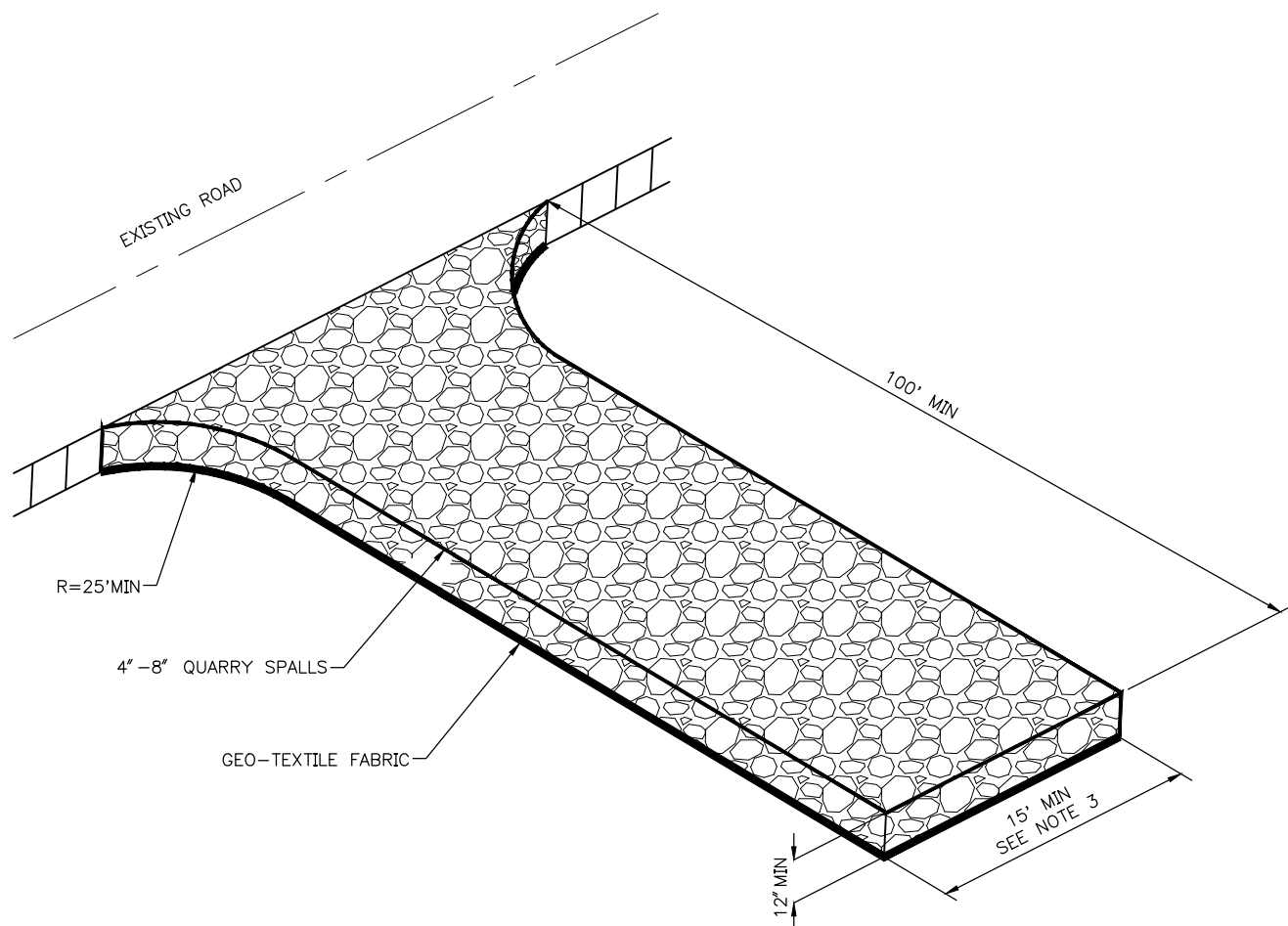
REF STD SPEC SEC 1-07.16, 1-07.17, 1-07.28



City of Seattle

NOT TO SCALE

DESIRABLE LOCATIONS  
FOR UTILITIES  
(RESIDENTIAL STREET)



**NOTES:**

1. STABILIZED ACCESS MUST BE USED IN ALL AREAS OF THE SITE WITH VEHICLE TRAFFIC AND PARKING, INCLUDING PLANTING STRIPS.
2. SEE SECTION 9-37.2 (TABLE 3) FOR GEOTEXTILE REQUIREMENTS. GEOTEXTILE MODIFICATIONS BASED ON SPECIFIC PROJECT SITE CONDITIONS MAY BE APPROVED BY THE ENGINEER.
3. STABILIZED CONSTRUCTION ENTRANCES ON SEATTLE PARKS & RECREATION PROPERTY ARE LIMITED TO A MAXIMUM WIDTH OF 10 FEET UNLESS DIRECTED OTHERWISE.

REF STD SPEC SEC 8-01



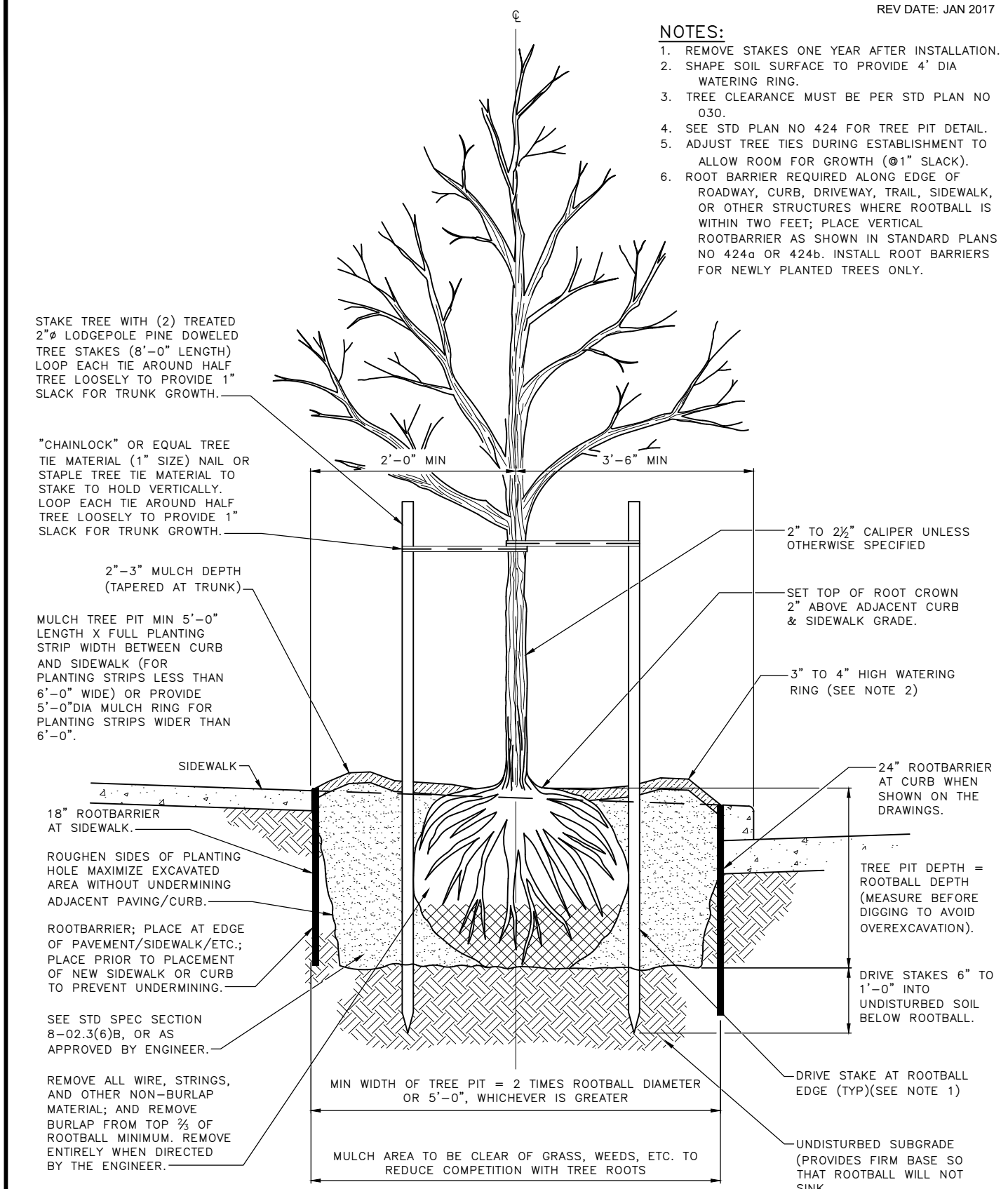
City of Seattle

NOT TO SCALE

**STABILIZED CONSTRUCTION  
ENTRANCE**



- NOTES:
- 1. REMOVE STAKES ONE YEAR AFTER INSTALLATION.
  - 2. SHAPE SOIL SURFACE TO PROVIDE 4' DIA WATERING RING.
  - 3. TREE CLEARANCE MUST BE PER STD PLAN NO 030.
  - 4. SEE STD PLAN NO 424 FOR TREE PIT DETAIL.
  - 5. ADJUST TREE TIES DURING ESTABLISHMENT TO ALLOW ROOM FOR GROWTH (@1" SLACK).
  - 6. ROOT BARRIER REQUIRED ALONG EDGE OF ROADWAY, CURB, DRIVEWAY, TRAIL, SIDEWALK, OR OTHER STRUCTURES WHERE ROOTBALL IS WITHIN TWO FEET; PLACE VERTICAL ROOTBARRIER AS SHOWN IN STANDARD PLANS NO 424a OR 424b. INSTALL ROOT BARRIERS FOR NEWLY PLANTED TREES ONLY.



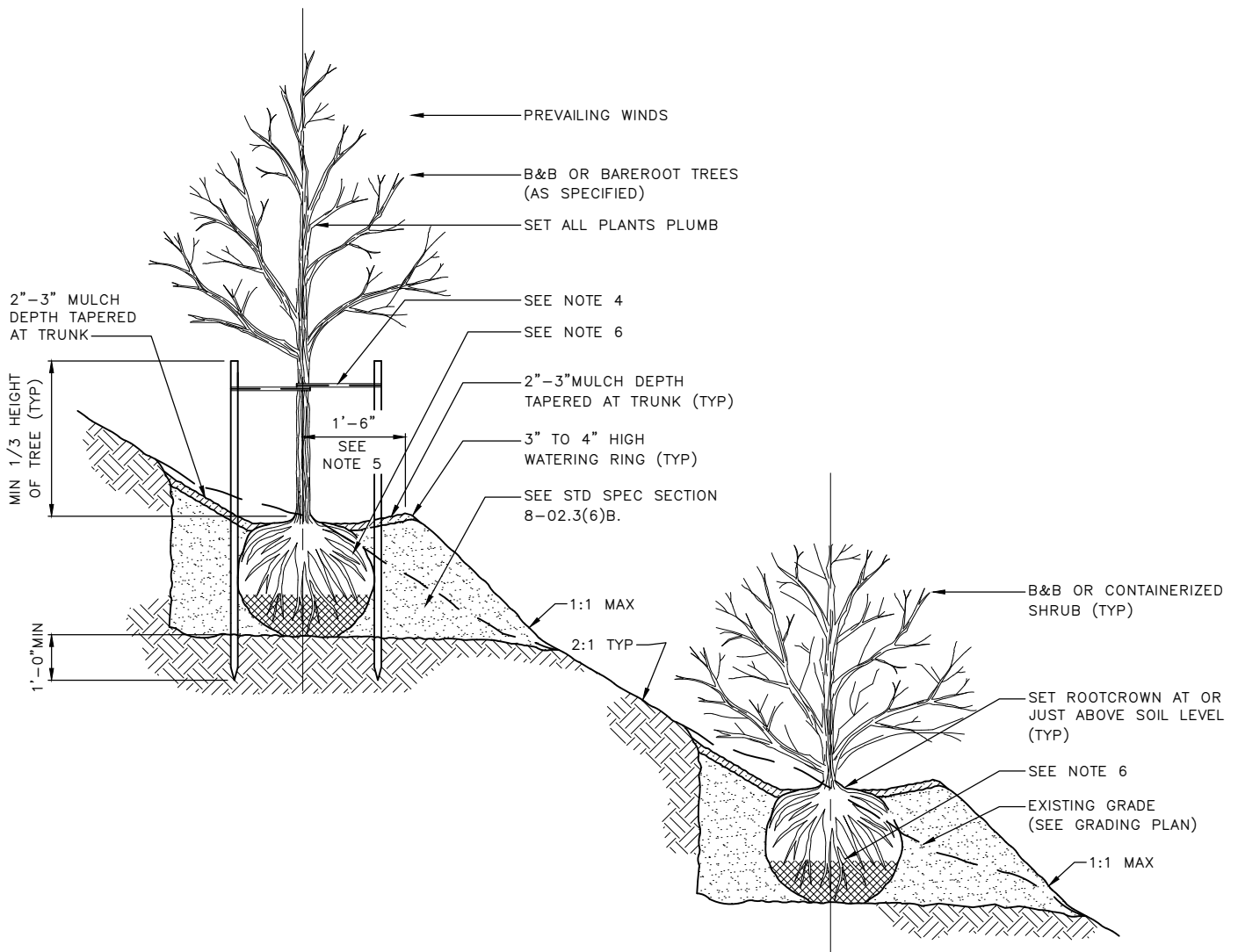
REF STD SPEC SEC 8-02



City of Seattle

NOT TO SCALE

DECIDUOUS TREE PLANTING  
IN PLANTING STRIP

**NOTES:**

1. STAKE TREES PER STD PLAN NO 100a.
2. ONE STAKE PER TREE ON WINDWARD SIDE; SECOND STAKE ON LEEWARD SIDE.
3. SLOPES STEEPER THAN 2:1 MAY REQUIRE AN APPROVED EMBANKMENT STABILIZATION SYSTEM TO CREATE A LEVEL TREE PIT SUCH AS:
  - ROCK FACING
  - PRECAST CONCRETE WALL UNITS
  - TIMBER WALL
  - MANUFACTURED SLOPE RETENTION UNITS
4. CHAINLOCK TREE TIE. LOOP EACH TIE AROUND TREE LOOSELY TO PROVIDE 1" SLACK FOR DIAMETER GROWTH.
5. SHAPE SOIL TO PROVIDE 3' DIAMETER OR ROOTBALL DIAMETER, WHICHEVER IS GREATER, WATERING RING.
6. REMOVE AL WIRE, STRINGS AND OTHER NON-BURLAP MATERIAL; AND REMOVE BURLAP FROM TOP  $\frac{2}{3}$  OF ROOTBALL.

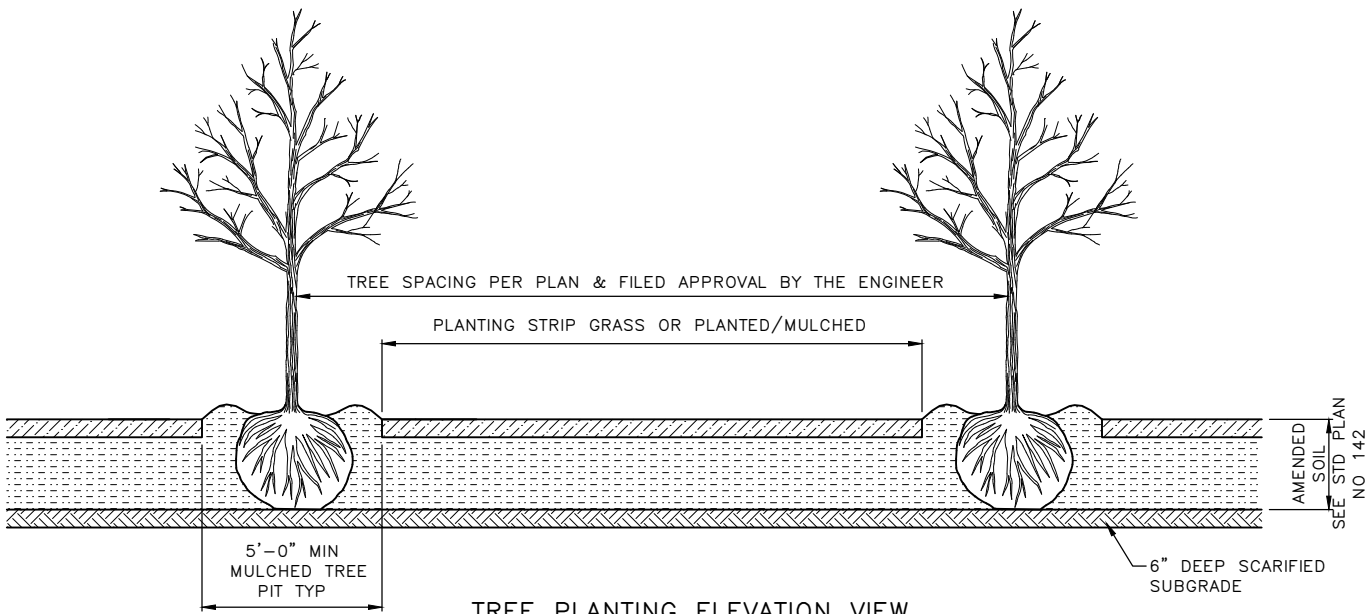
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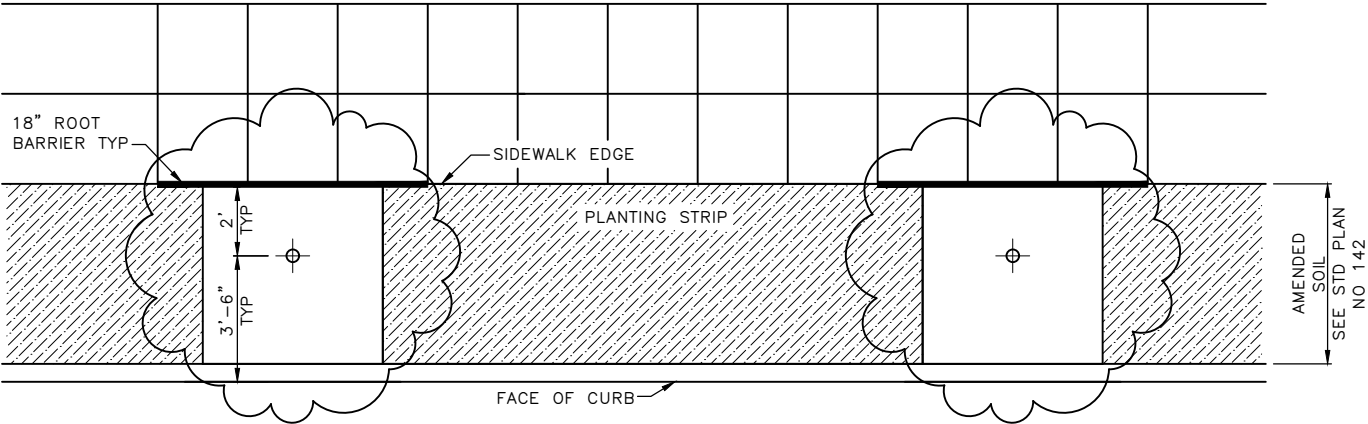
City of Seattle

NOT TO SCALE

**TREE & SHRUB PLANTING  
ON SLOPES**



TREE PLANTING ELEVATION VIEW



TREE PLANTING PLAN VIEW

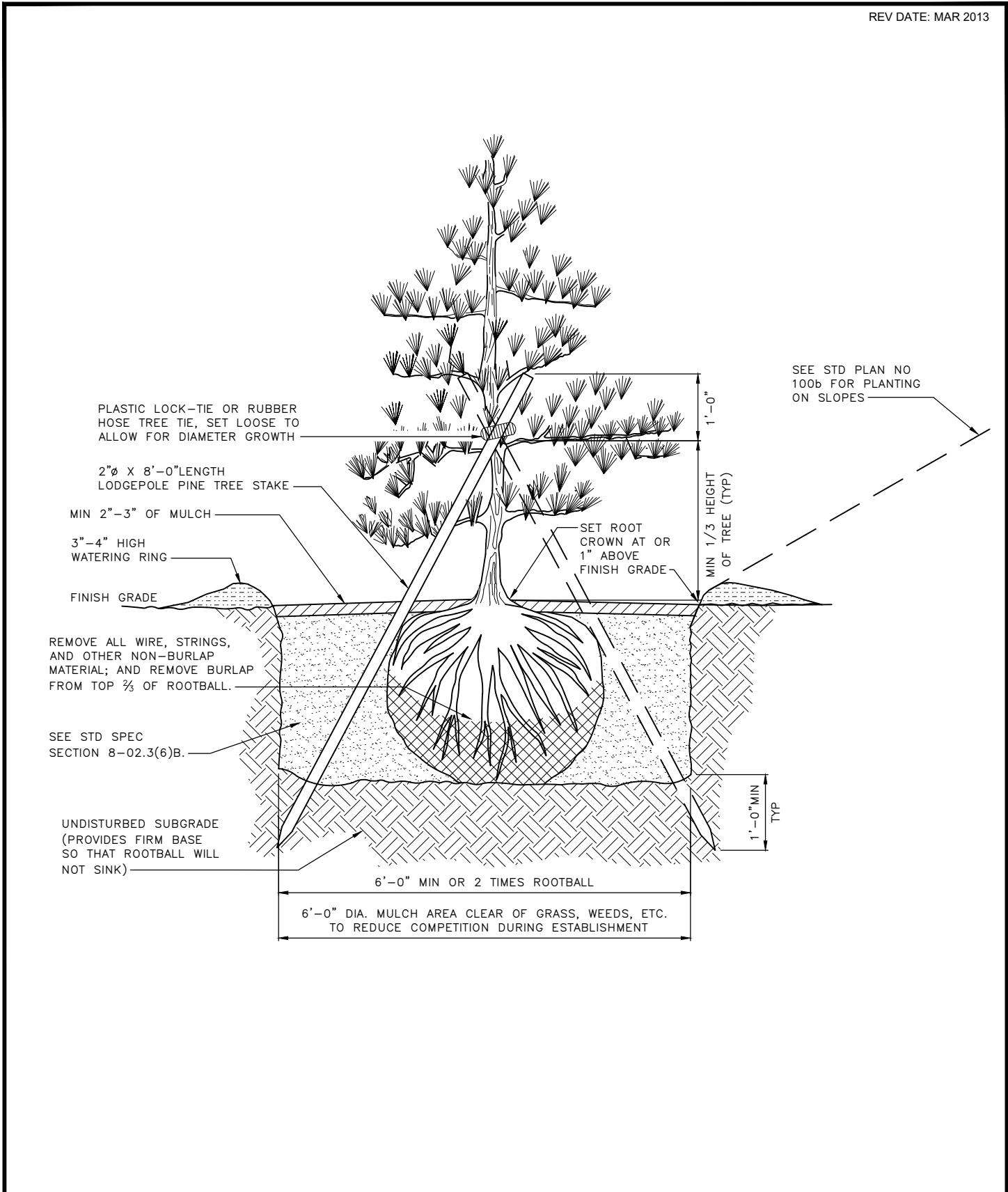
REF STD SPEC SEC 8-02



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TREE PLANTING IN  
AMENDED TRENCH



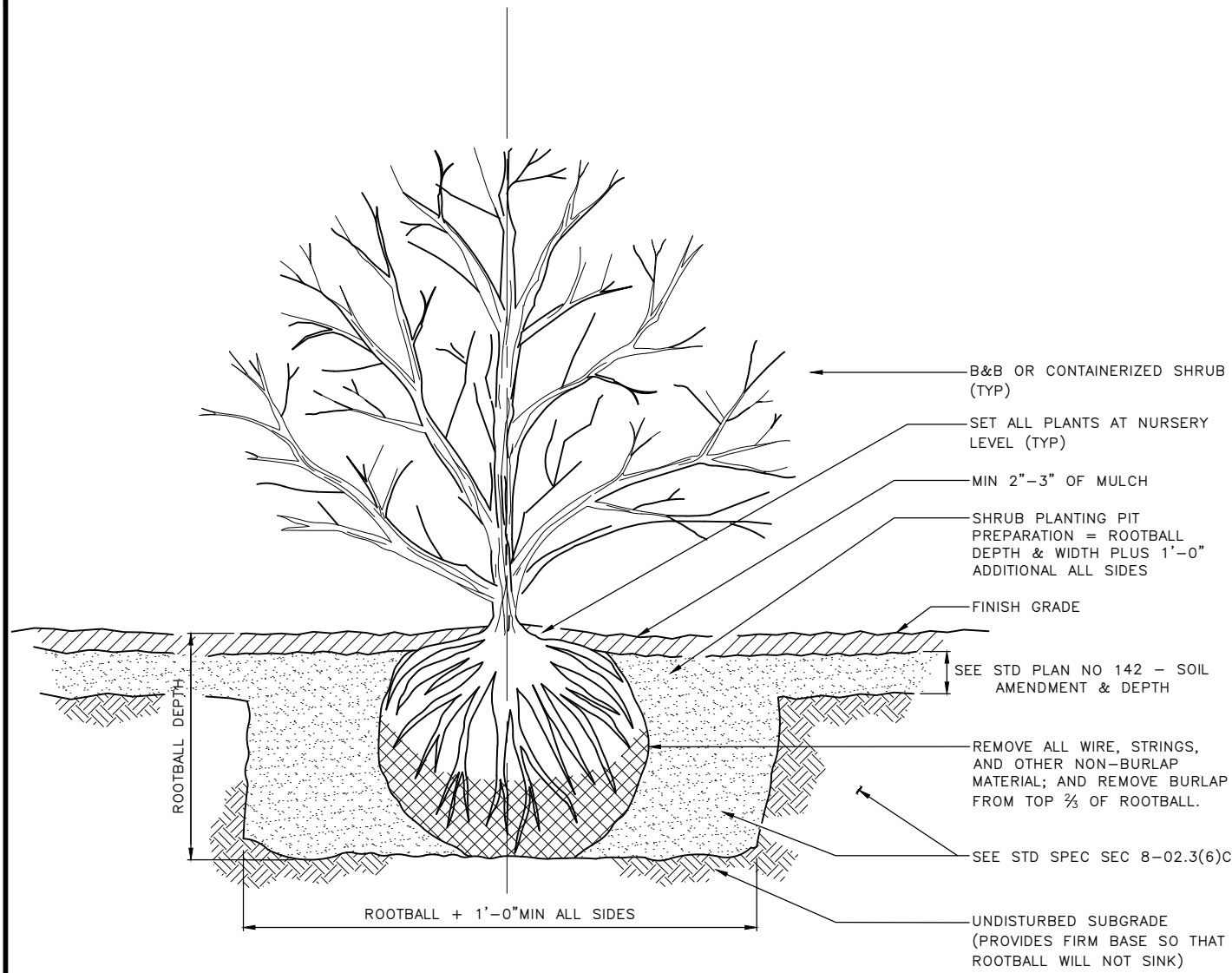
REF STD SPEC SEC 8-02



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CONIFEROUS TREE PLANTING



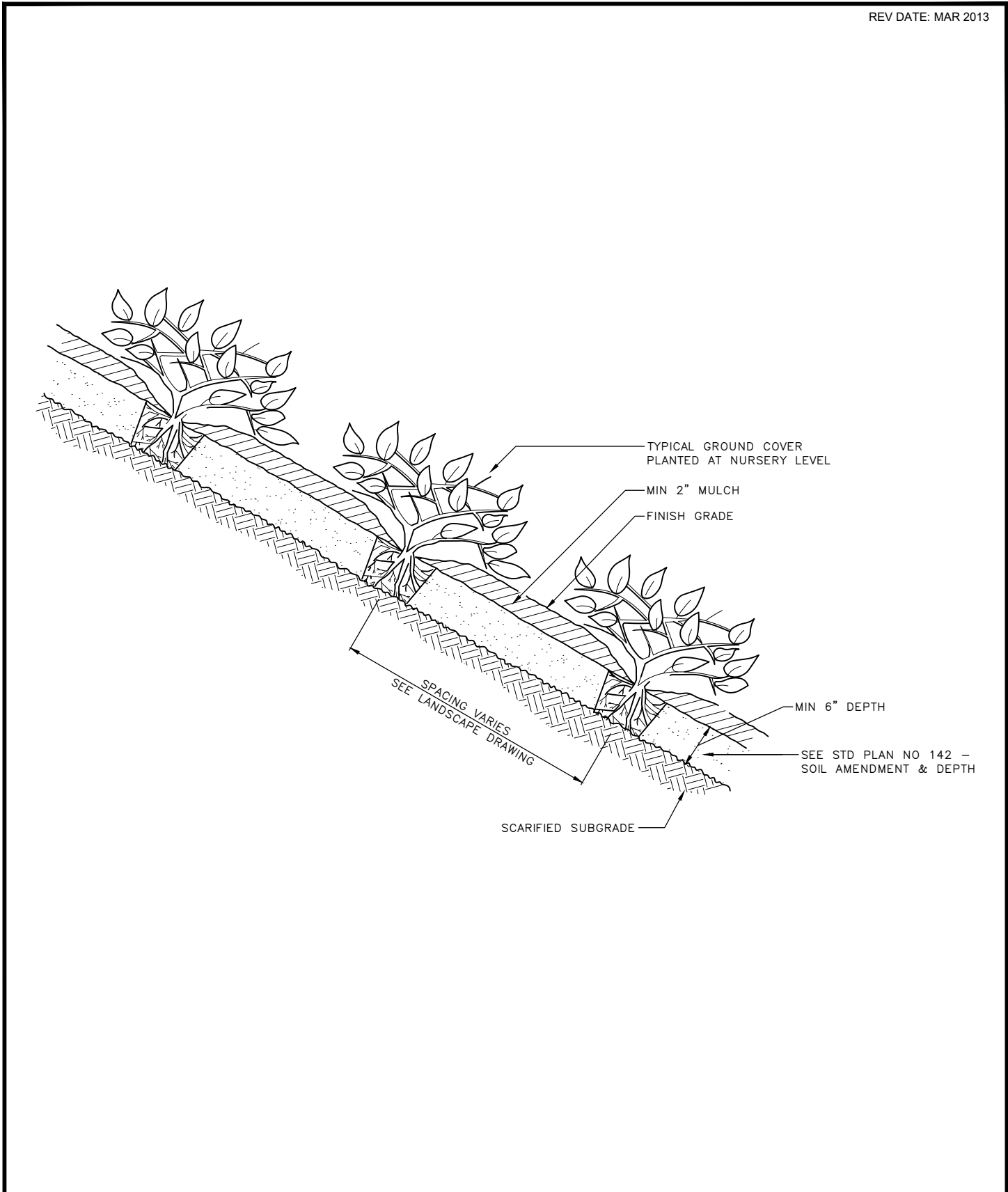
REF STD SPEC SEC 8-02



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NOT TO SCALE

SHRUB PLANTING



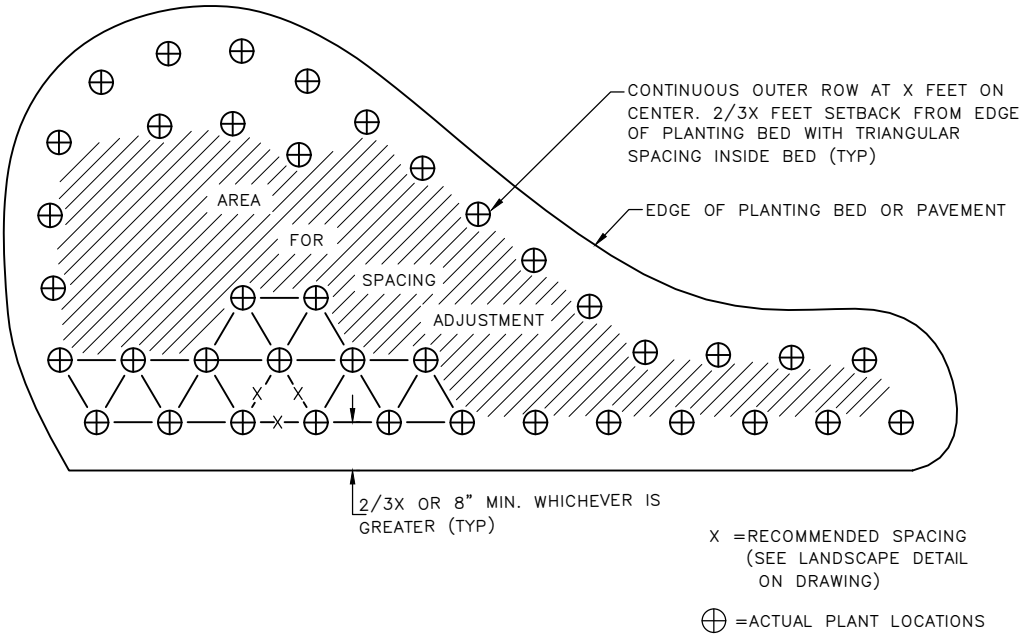
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City of Seattle

NOT TO SCALE

GROUND COVER PLANTING



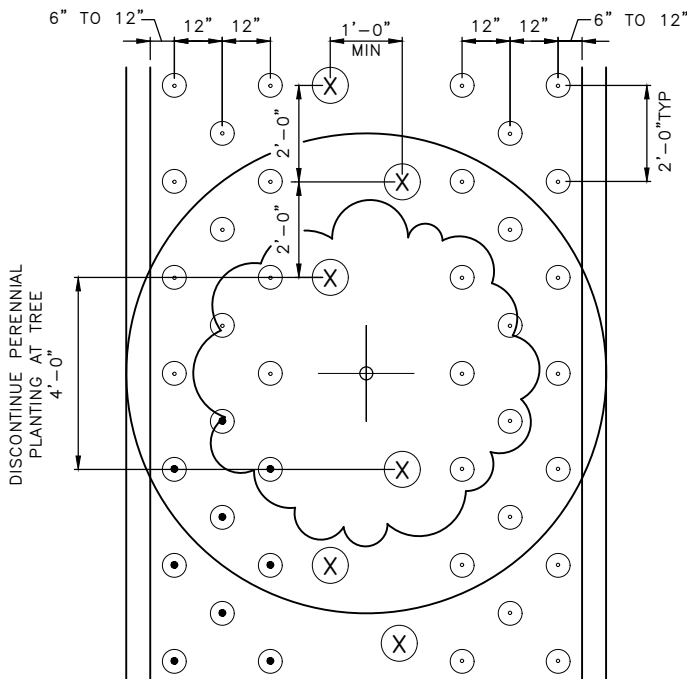
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City of Seattle

NOT TO SCALE

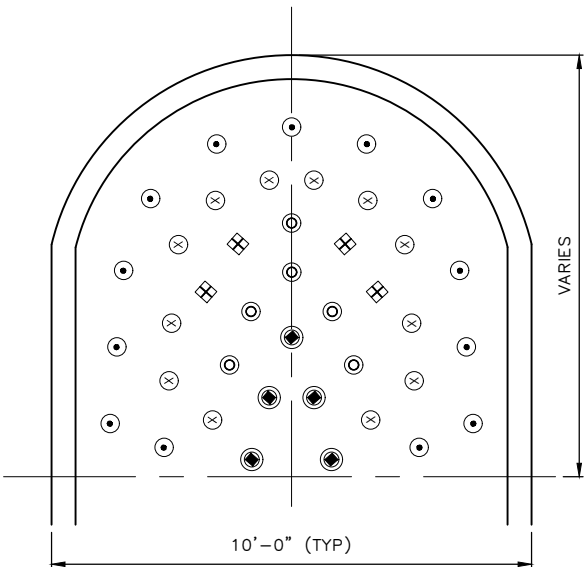
PLANTING PATTERN



QUANT PER 10'-0" LF MEDIAN

○ GROUNDCOVER	30
⊗ SHRUB	5

DETAIL AT TREE  
PLAN



QUANT PER END CAP

◇ PERENNIAL TYPE 1	4
⊙ PERENNIAL TYPE 2	6
● PERENNIAL TYPE 3	5
● EVERGREEN GROUNDCOVER TYPE 1	13
⊗ EVERGREEN GROUNDCOVER TYPE 2	12

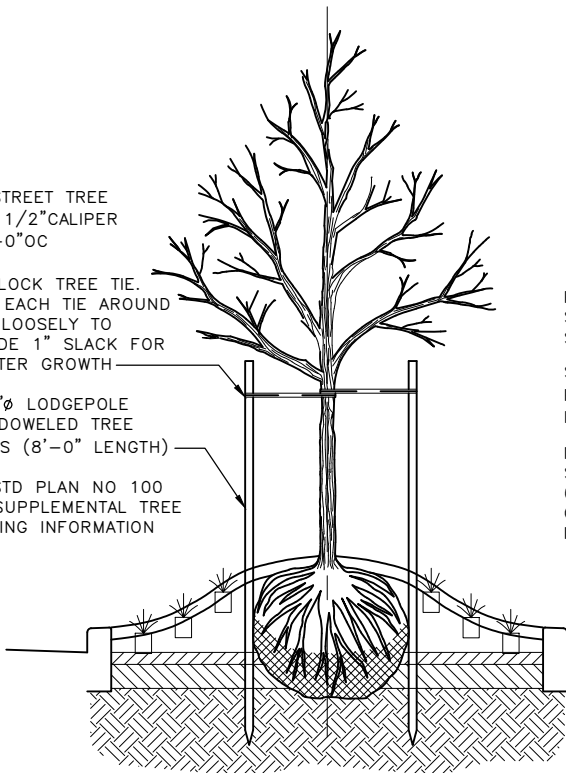
END CAP DETAIL

TYP STREET TREE  
2"-2 1/2" CALIPER  
@ 30'-0" OC

CHAINLOCK TREE TIE.  
LOOP EACH TIE AROUND  
TREE LOOSELY TO  
PROVIDE 1" SLACK FOR  
DIAMETER GROWTH

(2) 2" Ø LODGEPOLE  
PINE DOWELED TREE  
STAKES (8'-0" LENGTH)

SEE STD PLAN NO 100  
FOR SUPPLEMENTAL TREE  
PLANTING INFORMATION



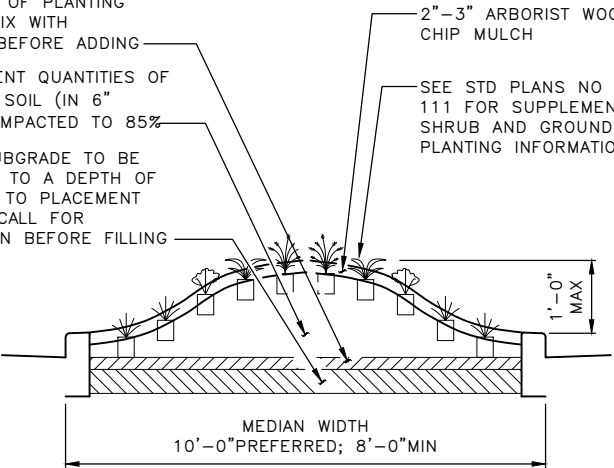
PLACE 3" OF PLANTING  
SOIL & MIX WITH  
SUBSOIL BEFORE ADDING

SUBSEQUENT QUANTITIES OF  
PLANTING SOIL (IN 6"  
LIFTS) COMPACTED TO 85%

NATIVE SUBGRADE TO BE  
SCARIFIED TO A DEPTH OF  
6" PRIOR TO PLACEMENT  
OF FILL. CALL FOR  
INSPECTION BEFORE FILLING

2"-3" ARBORIST WOOD  
CHIP MULCH

SEE STD PLANS NO 110 &  
111 FOR SUPPLEMENTAL  
SHRUB AND GROUNDCOVER  
PLANTING INFORMATION



REF STD SPEC SEC 8-02

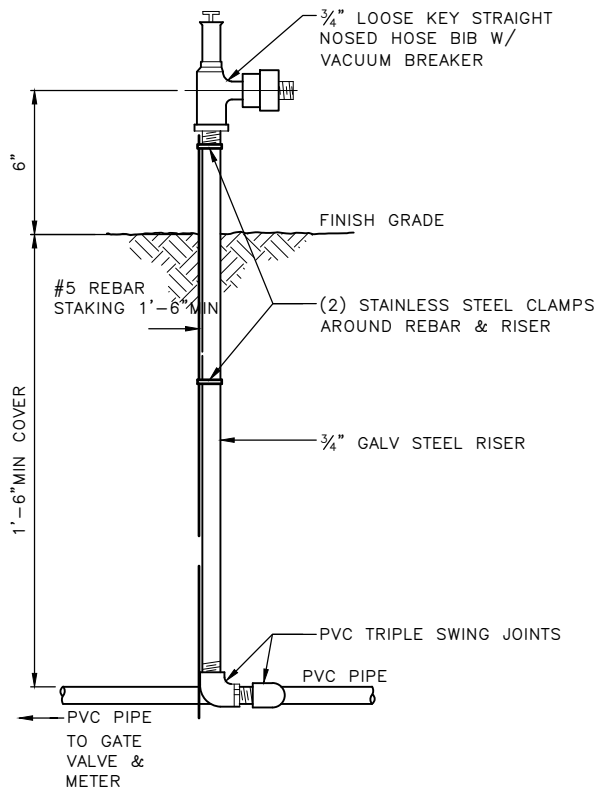


City of Seattle

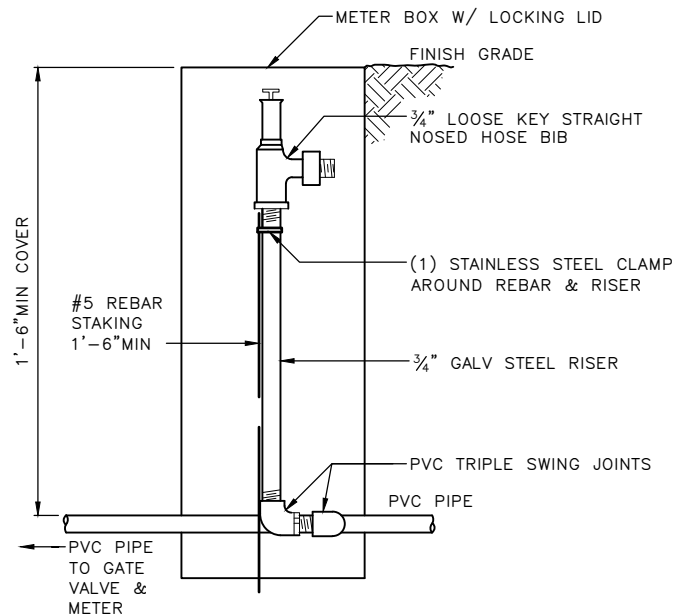
NOT TO SCALE

MEDIAN PLANTING

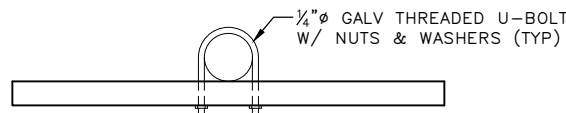




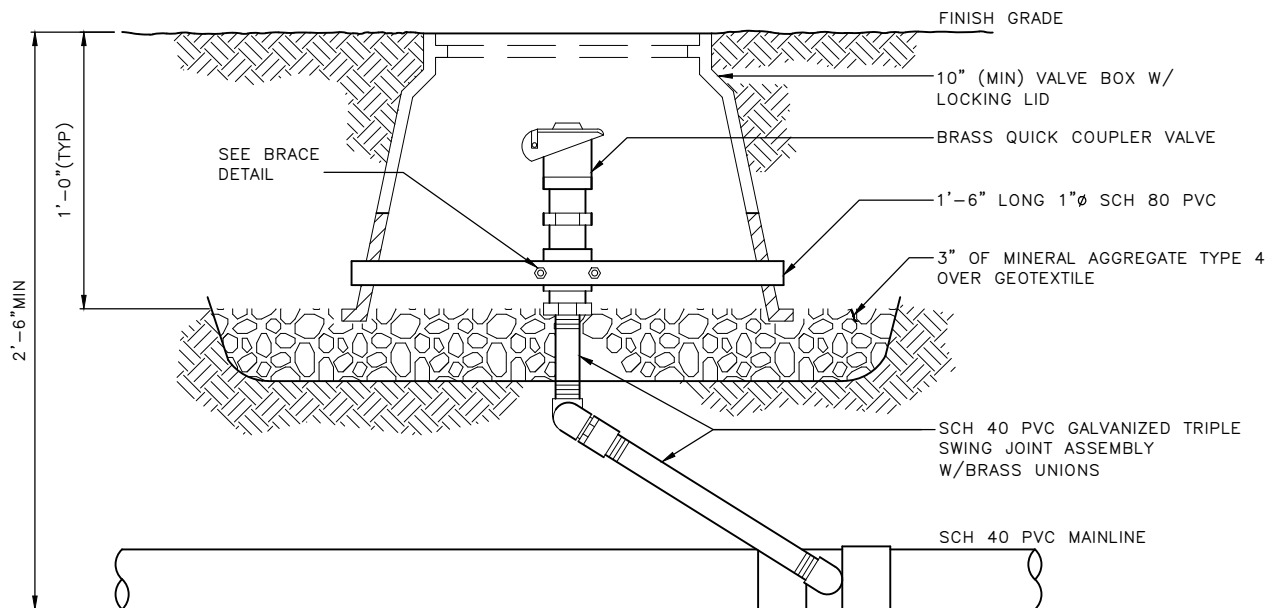
ABOVE GROUND HOSE BIB



BELOW GROUND HOSE BIB



BRACE DETAIL - PLAN VIEW



ELEVATION VIEW

QUICK COUPLER VALVE  
TURF OR BED AREAS

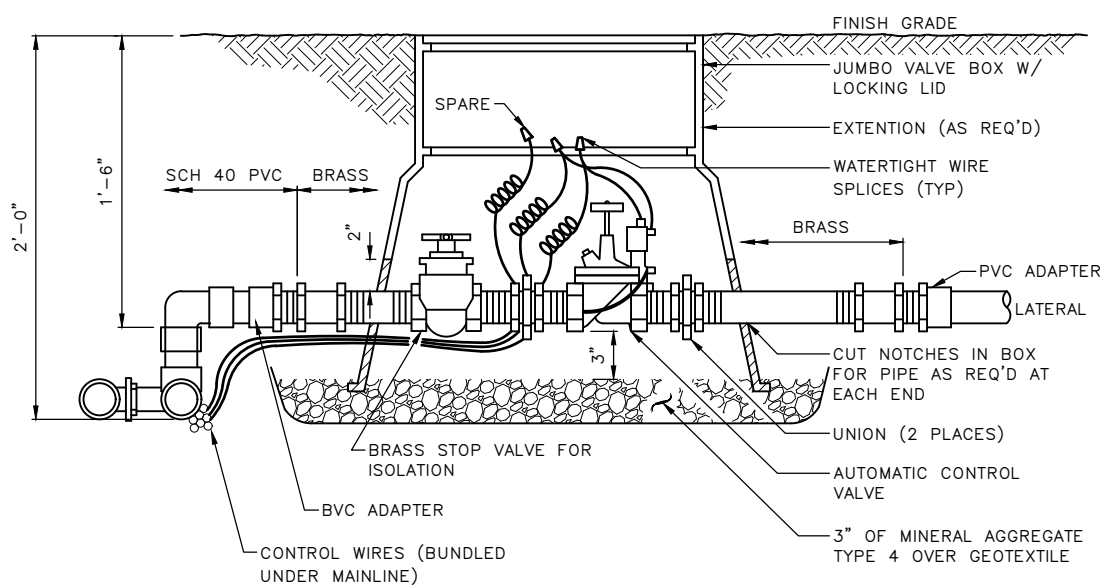
REF STD SPEC SEC 8-03



City of Seattle

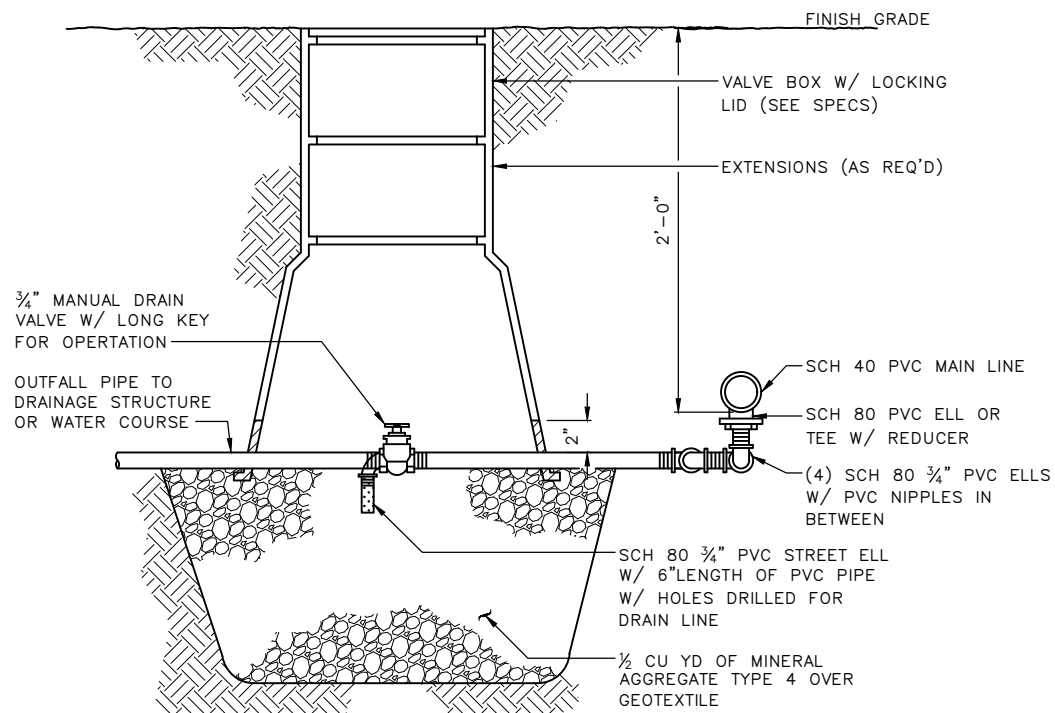
NOT TO SCALE

HOSE BIB ASSEMBLY AND  
QUICK COUPLER VALVE



NOTE:  
"U" SHAPED CUT-OUT IN VALVE  
BOX THAT ALLOWS 2" CLEARANCE  
FROM TOP OF PIPE TO TOP OF "U"

AUTOMATIC CONTROL VALVE



MANUAL DRAIN VALVE

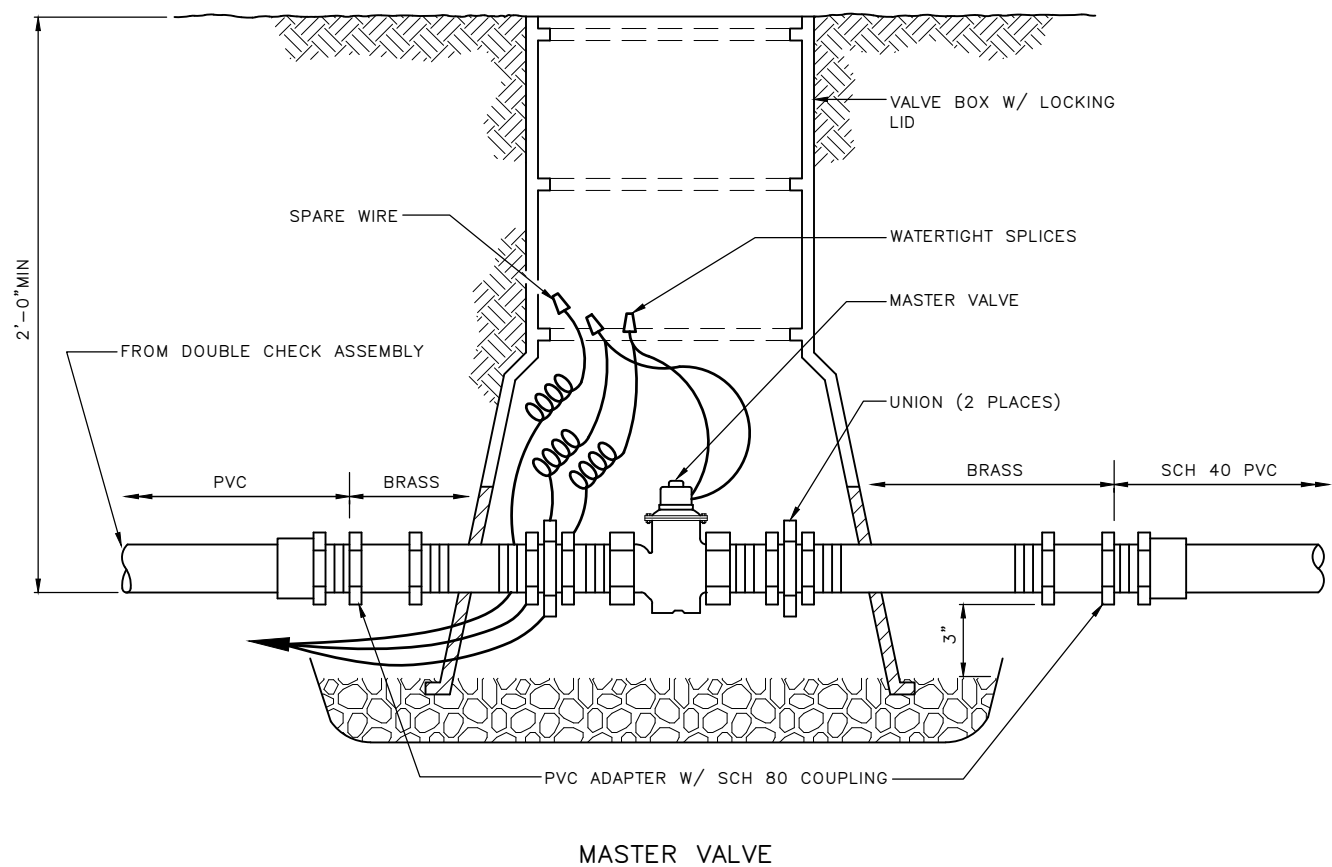
REF STD SPEC SEC 8-03



City of Seattle

NOT TO SCALE

IRRIGATION VALVES



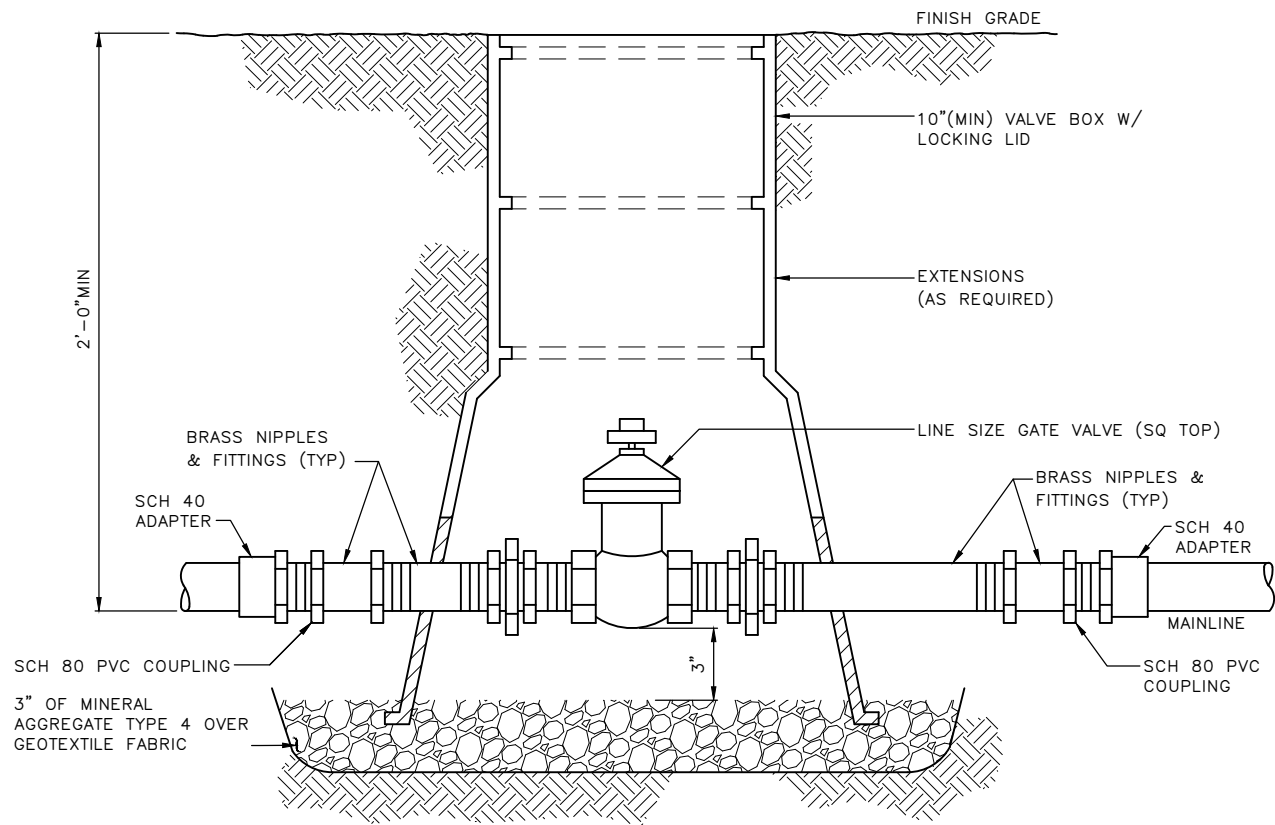
REF STD SPEC SEC 8-03



City of Seattle

NOT TO SCALE

IRRIGATION VALVES



GATE VALVE – 2 1/2" & LARGER

NOTES:  
USE TEFLON TAPE ON ALL THREADED FITTINGS

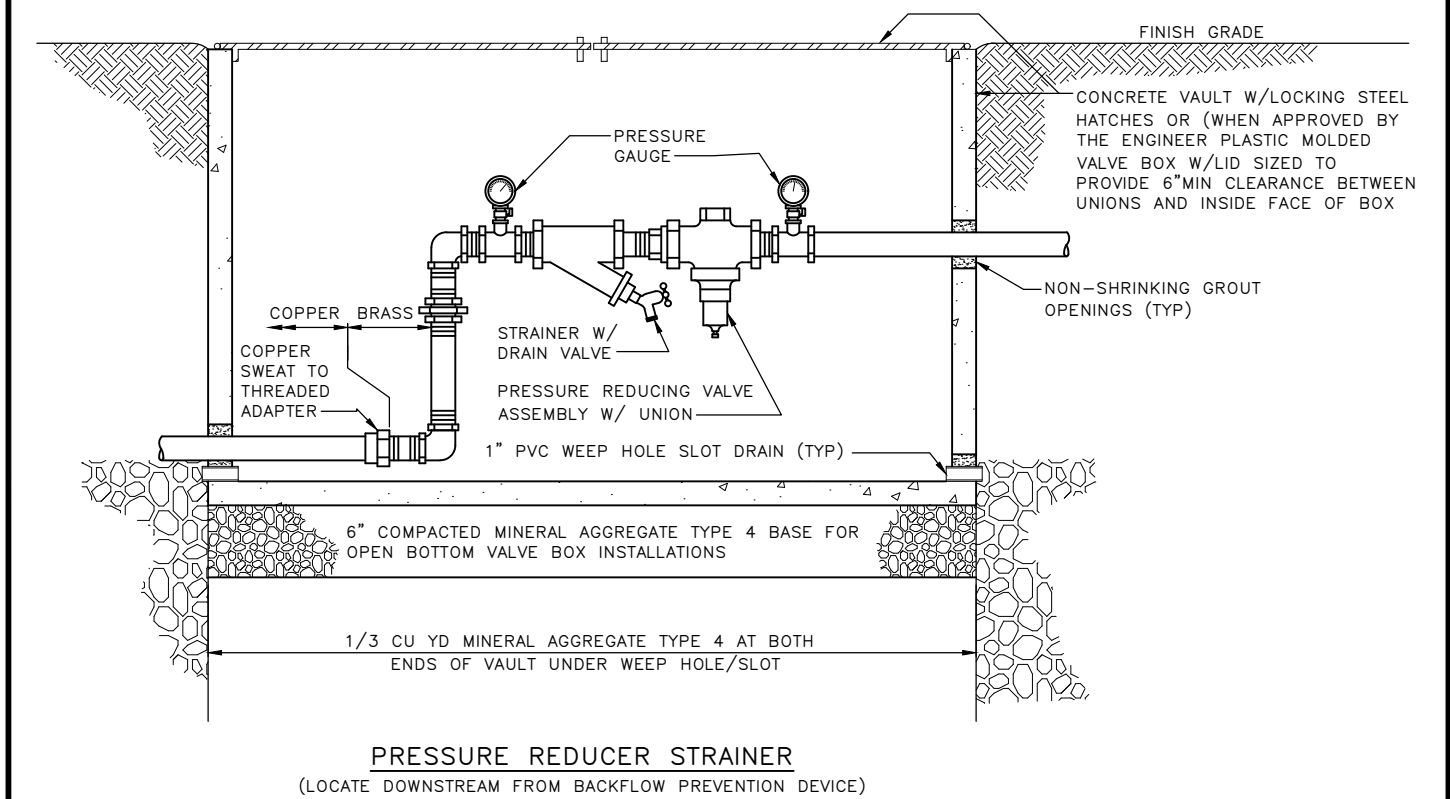
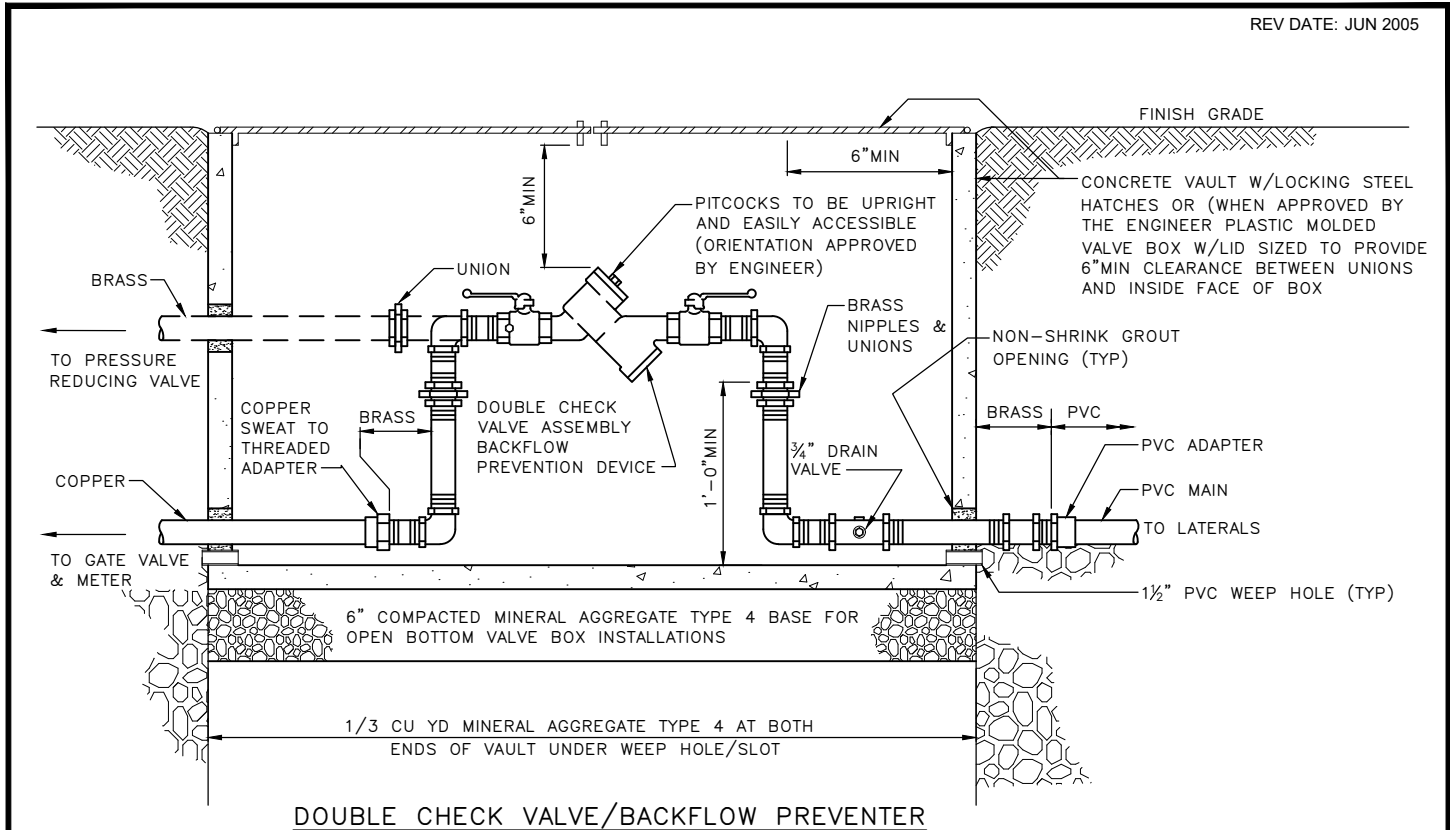
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City of Seattle

NOT TO SCALE

IRRIGATION VALVES



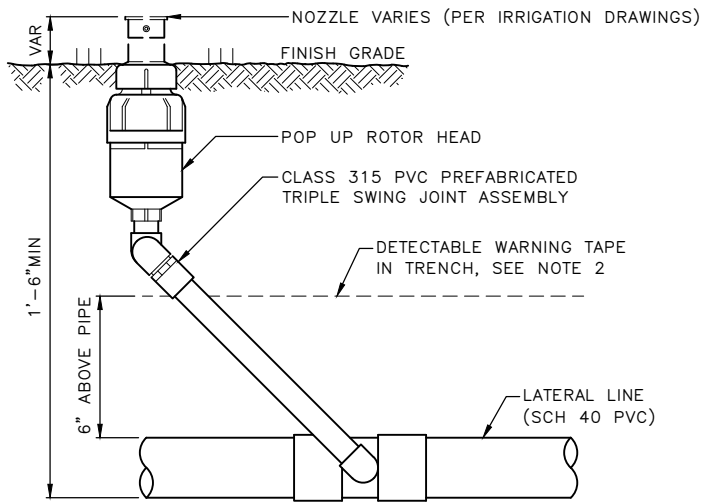
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City of Seattle

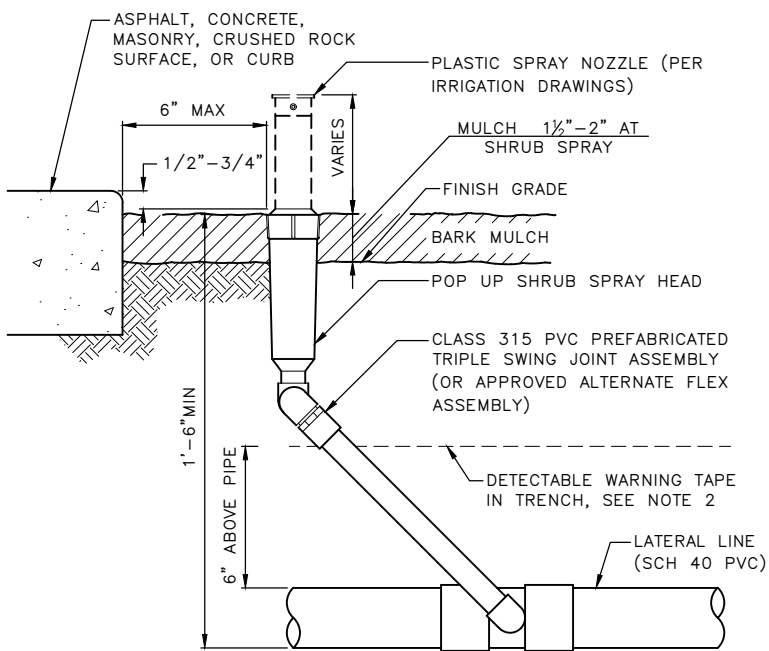
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IRRIGATION VALVES

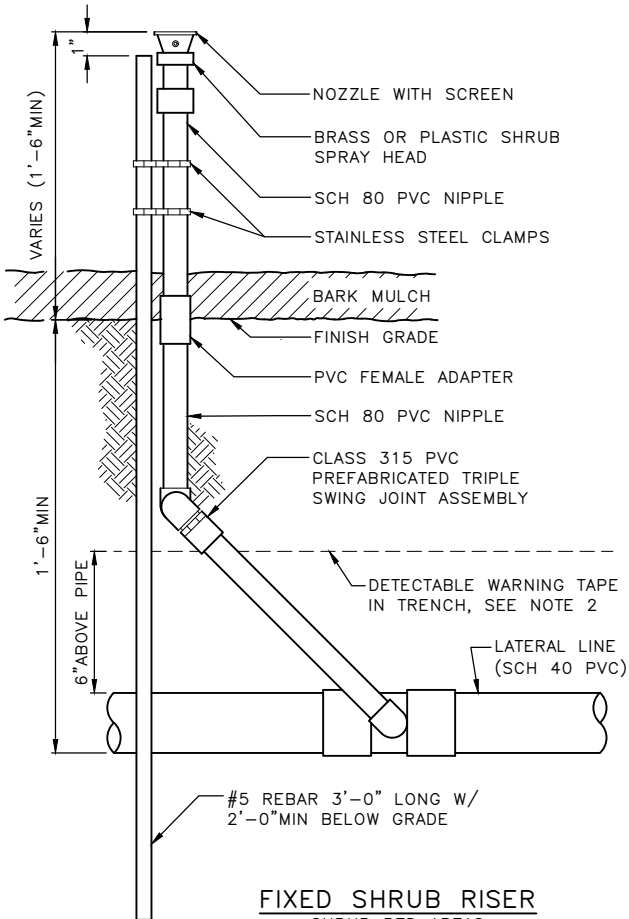


**POP UP ROTOR HEAD**  
TURF AREAS

- NOTE:**
- 1. USE TEFLON TAPE ON ALL THREADED FITTINGS
  - 2. DETECTABLE MARKING TAPE COLOR PER STANDARD SPECIFICATIONS SECTION 9-15.11 FOR POTABLE OR NON-POTABLE WATER



**POP UP ROTOR HEAD**  
**(SHRUB BED AREAS)**  
AT EDGE OF PAVEMENT



**FIXED SHRUB RISER**  
SHRUB BED AREAS

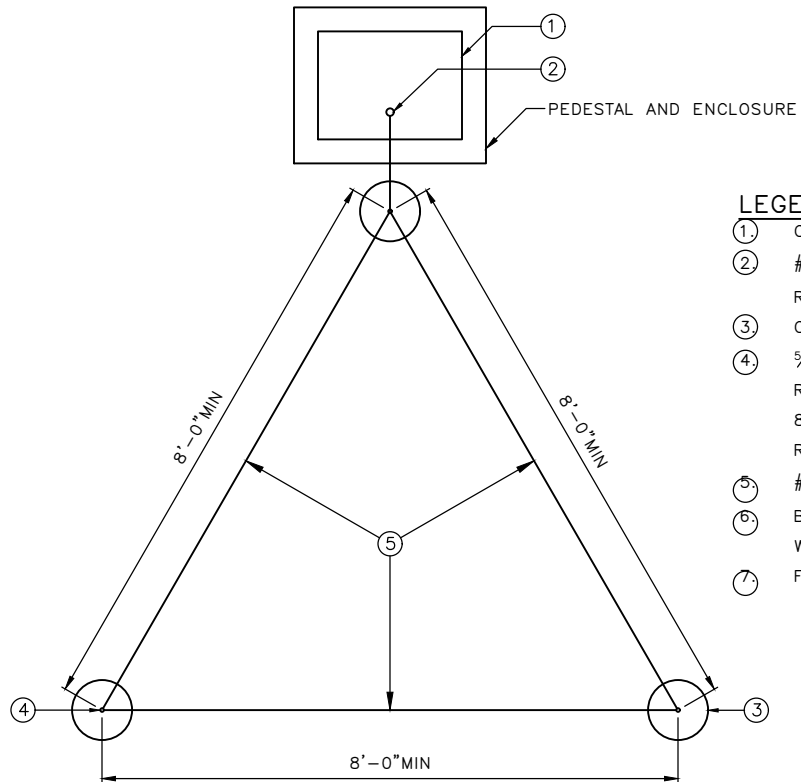
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City of Seattle

NOT TO SCALE

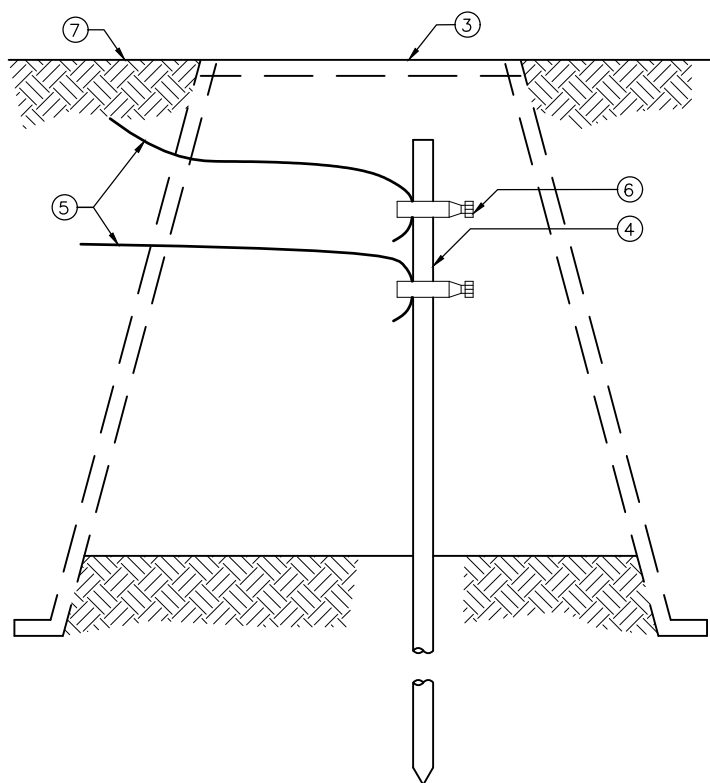
**POP UP & FIXED**  
**IRRIGATION HEADS**



**LEGEND**

- ① CONTROLLER
- ② #10 AWG SOLID BARE COPPER WIRE FROM GROUNDING ROD TO CONTROLLER MAKE WIRE AS SHORT AS POSSIBLE
- ③ COVER GROUNDING ROD WITH 10" ROUND VALVE BOX
- ④ 5/8" X 10'-0" COPPER CLAD GROUNDING ROD. INSTALL 3 RODS IN SOIL IN A TRIANGULAR PATTERN, SPACES 8'-0" MIN APART. GROUNDING GRID TO HAVE A RESISTANCE OF 10 OHMS OR LESS
- ⑤ #10 AWG BARE COPPER WIRE BETWEEN GROUNDING RODS
- ⑥ BRASS WIRE CLAMP. USE SEPARATE CLAMP FOR EACH WIRE
- ⑦ FINISH GRADE

GROUND ROD LAYOUT



GROUND ROD ASSEMBLY

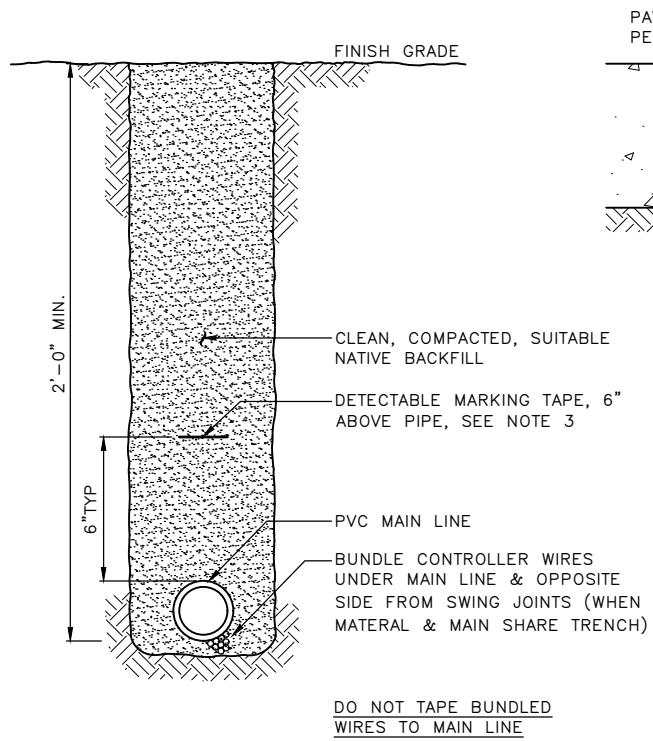
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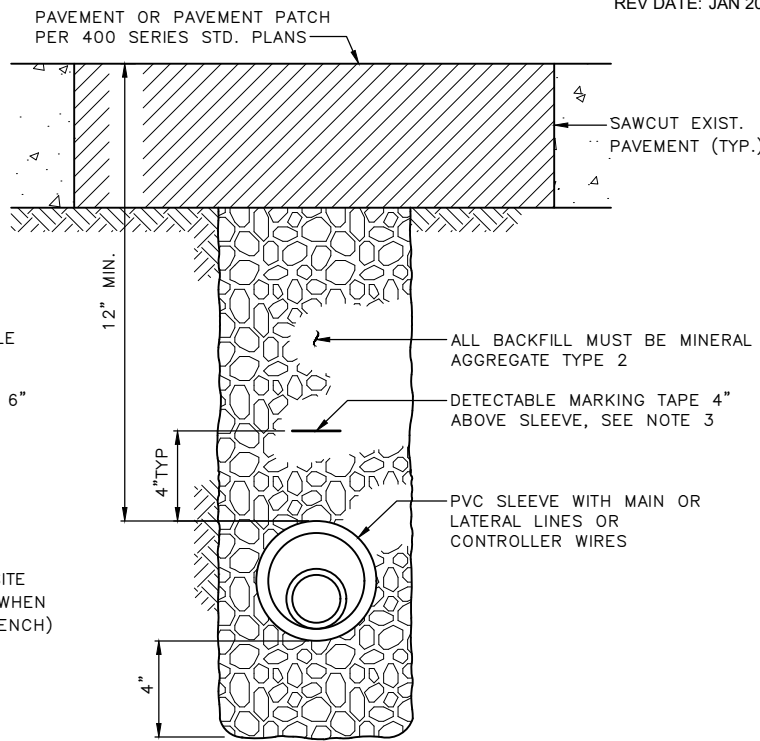
City of Seattle

NOT TO SCALE

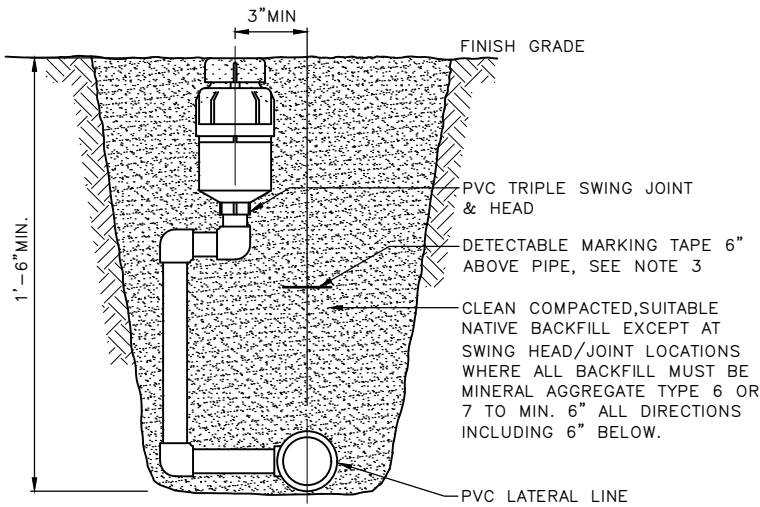
**IRRIGATION CONTROLLER  
PEDESTAL AND ENCLOSURE  
GROUNDING**



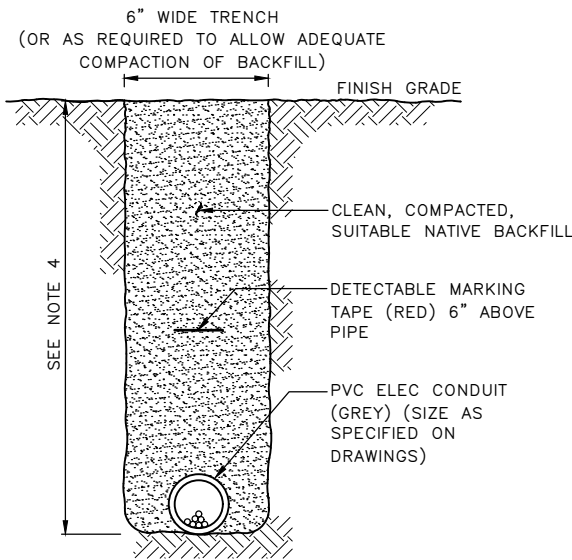
MAIN LINE



SLEEVE TRENCHING



LATERAL LINE



ELECTRICAL SUPPLY TRENCH

- NOTES:
1. SLEEVE SIZE AS SHOWN ON DRAWINGS OR ID OF SLEEVE TO BE 1" GREATER THAN OD OF PIPE
  2. SLEEVES REQUIRED UNDER ALL PAVED AREAS
  3. DETECTABLE MARKING TAPE COLOR PER STANDARD SPECIFICATIONS SECTION 9-15.11 FOR POTABLE OR NON-POTABLE WATER
  4. CONDUIT DEPTH MUST BE PER SCL CONSTRUCTION STANDARD 1716.07

REF STD SPEC SEC 8-03



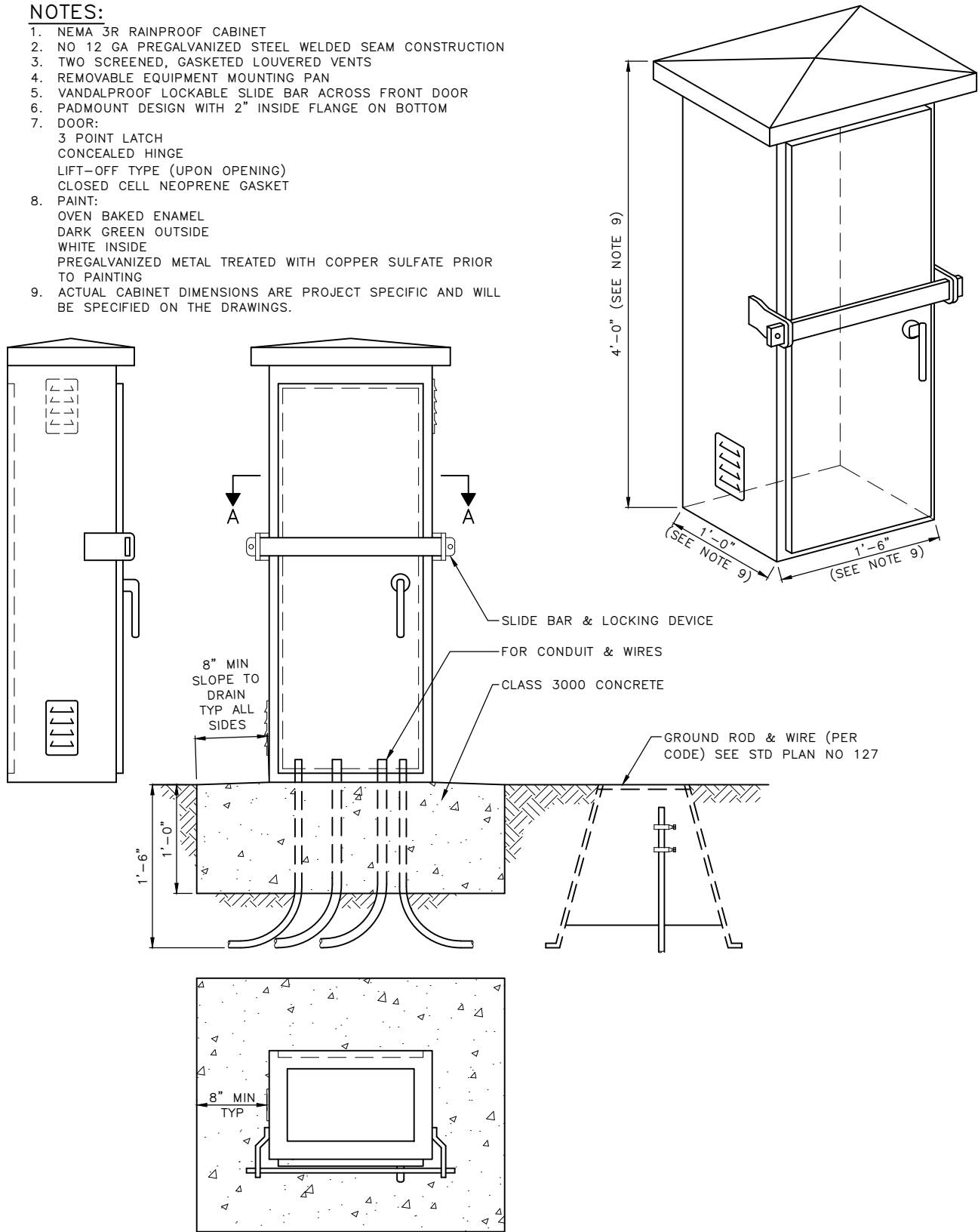
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NOT TO SCALE

IRRIGATION TRENCHES



- NOTES:
- 1. NEMA 3R RAINPROOF CABINET
  - 2. NO 12 GA PREGALVANIZED STEEL WELDED SEAM CONSTRUCTION
  - 3. TWO SCREENED, GASKETED LOUVERED VENTS
  - 4. REMOVABLE EQUIPMENT MOUNTING PAN
  - 5. VANDALPROOF LOCKABLE SLIDE BAR ACROSS FRONT DOOR
  - 6. PADMOUNT DESIGN WITH 2" INSIDE FLANGE ON BOTTOM
  - 7. DOOR:
    - 3 POINT LATCH
    - CONCEALED HINGE
    - LIFT-OFF TYPE (UPON OPENING)
    - CLOSED CELL NEOPRENE GASKET
  - 8. PAINT:
    - OVEN BAKED ENAMEL
    - DARK GREEN OUTSIDE
    - WHITE INSIDE
    - PREGALVANIZED METAL TREATED WITH COPPER SULFATE PRIOR TO PAINTING
  - 9. ACTUAL CABINET DIMENSIONS ARE PROJECT SPECIFIC AND WILL BE SPECIFIED ON THE DRAWINGS.



REF STD SPEC SEC 8-03

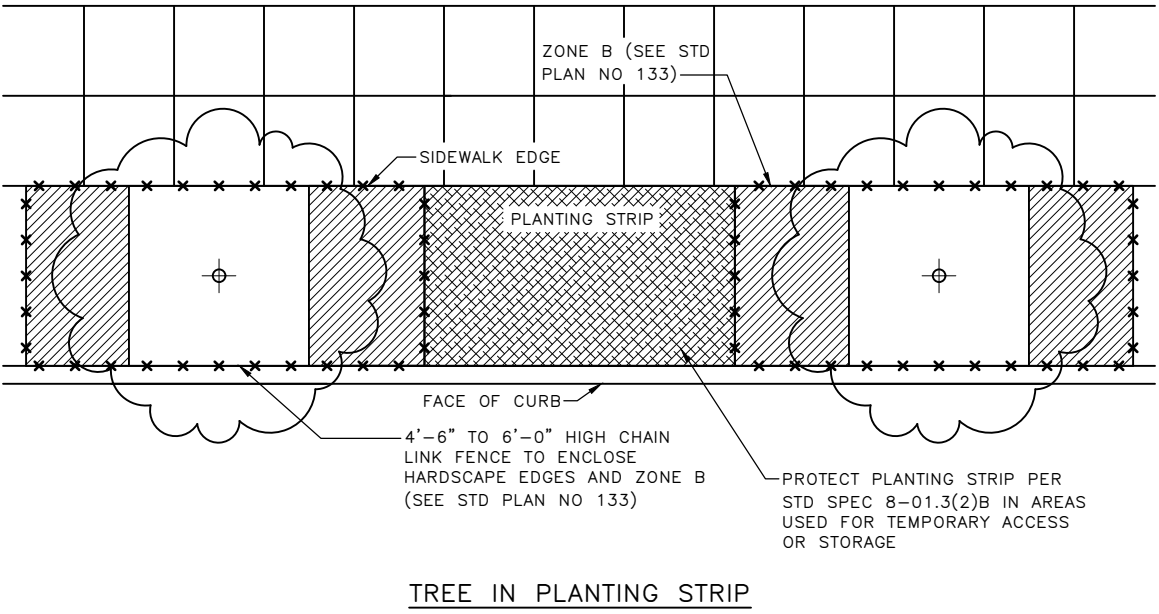
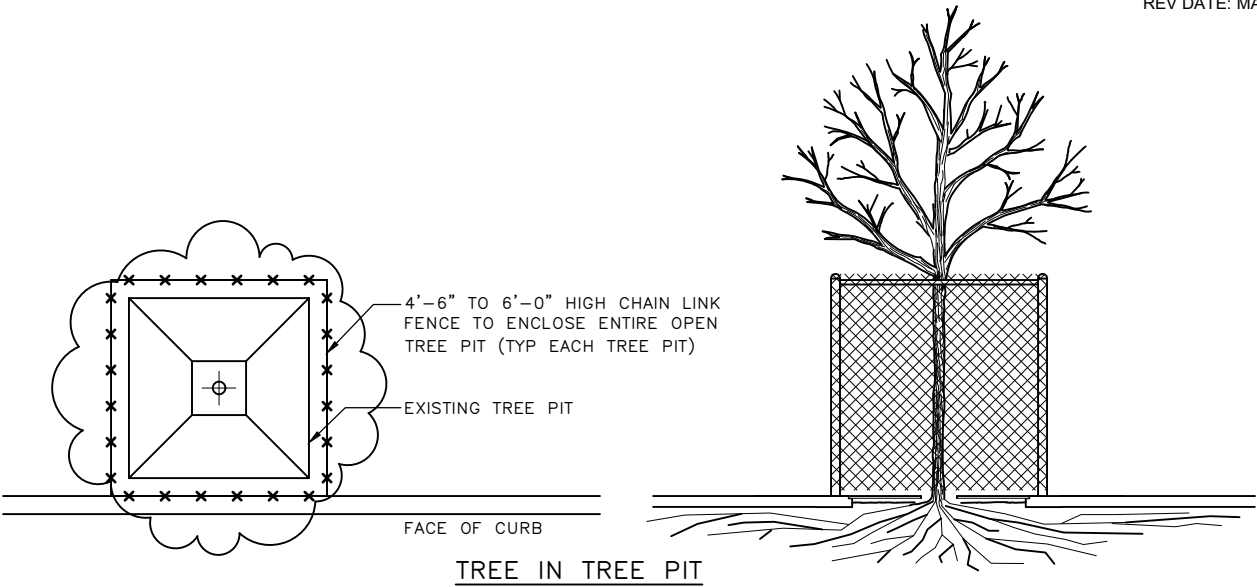
SECTION A-A



City of Seattle

NOT TO SCALE

IRRIGATION  
CONTROLLER CABINET



- NOTES:
- 1. CONSIDER TRAFFIC TURNING VISIBILITY AND PEDESTRIAN VISIBILITY WHEN SELECTING FENCE HEIGHT; TYPICALLY SHORTER FENCING AROUND TREE PITS BETWEEN SIDEWALK AND ROADWAY IS DESIRED.
  - 2. TO BE USED FOR TREES IN PLANTING STRIPS AND FOR WORK LASTING 31 CALENDAR DAYS OR MORE. FOR TREES IN TREE PITS AND LASTING 30 CALENDAR DAYS OR LESS, SEE STD PLAN 132b.

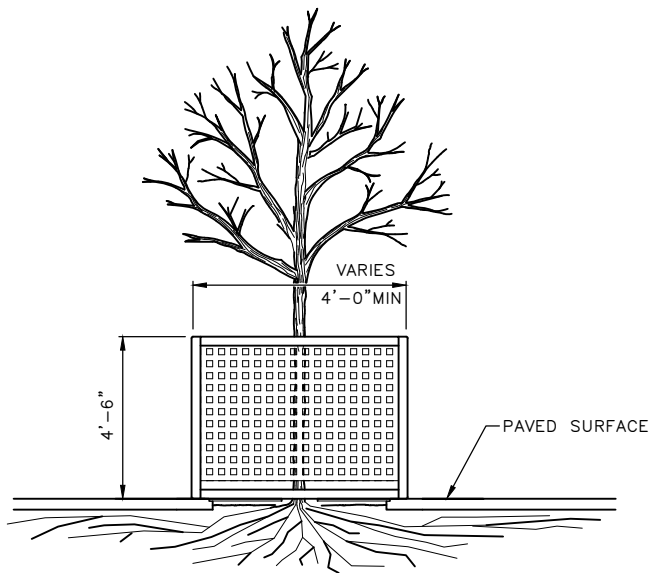
REF STD SPEC SEC 1-07.16(2), 8-01



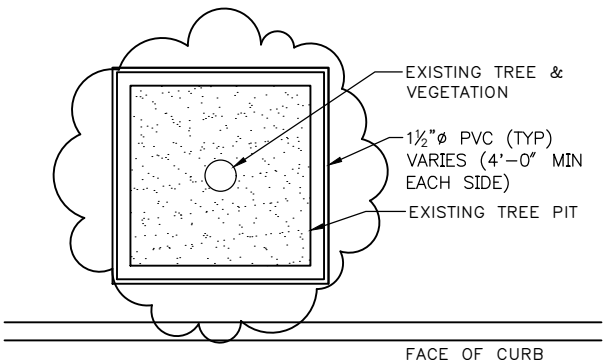
City of Seattle

NOT TO SCALE

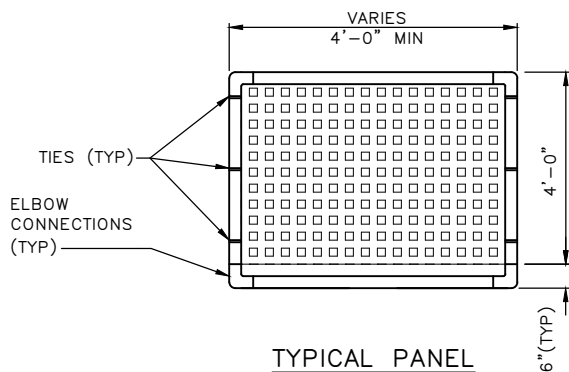
TREE PROTECTION  
DURING CONSTRUCTION



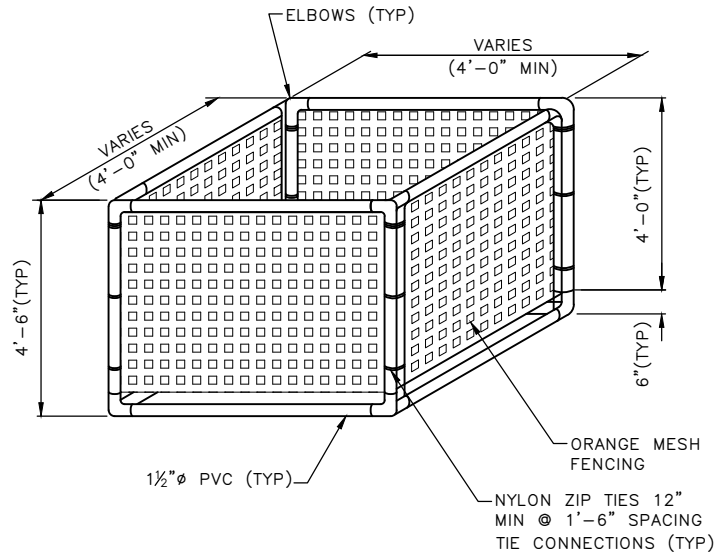
TYPICAL TREE GUARD RAIL



PLAN VIEW



TYPICAL PANEL



NOTES:

1. REUSABLE TEMPORARY PROTECTION FENCING USED TO PROTECT TREES IN TREE PITS MUST SURROUND THE ENTIRE UNPAVED TREE PIT AREA AND BE ANCHORED AND MAINTAINED IN A STABLE UPRIGHT CONDITION. SEE SECTION 8-01.3(2)B.
2. REUSABLE TEMPORARY PROTECTION FENCING USED ONLY FOR TREES IN TREE PITS AND ONLY FOR WORK LASTING 30 DAYS OR LESS. FOR TREES IN THE PLANTING STRIP AND WORK LASTING LONGER THAN 30 DAYS, SEE STD PLAN 132a.

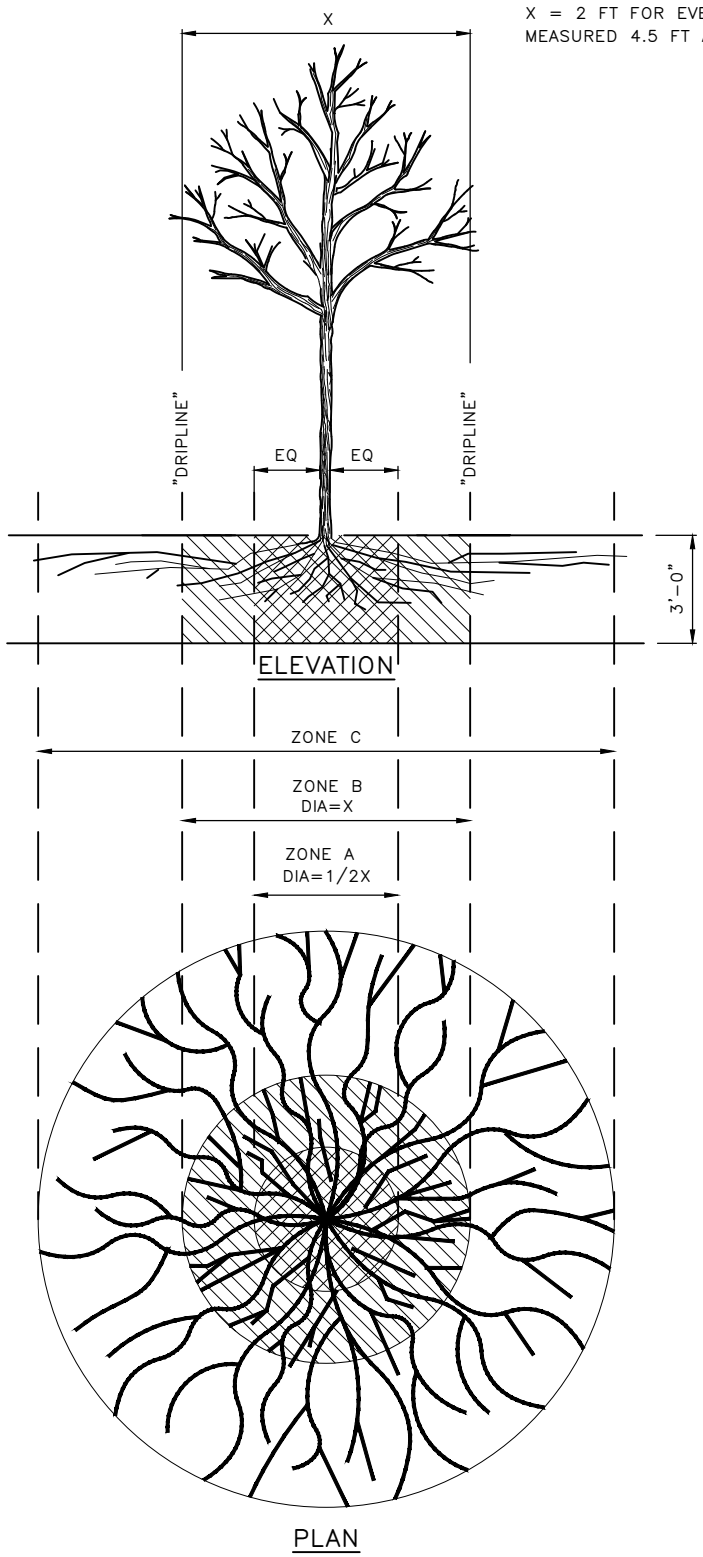
REF STD SPEC SEC 1-07.16(2), 8-01



City of Seattle

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REUSABLE TEMPORARY  
PROTECTION FENCE



X = 2 FT FOR EVERY 1 INCH OF TRUNK DIA  
MEASURED 4.5 FT ABOVE GRADE (MIN 8 FT)

TRENCHING/EXCAVATION

ZONE A (INTERIOR CRITICAL ROOT ZONE)

- 1. NO DISTURBANCE ALLOWED WITHOUT SITE VISIT AND APPROVED TVSPP PER SECTION 8-01.3(2)B.
- 2. TUNNELING REQUIRED TO INSTALL UTILITIES 3'-0" OR DEEPER.

ZONE B (CRITICAL ROOT ZONE)

- 1. NO DISTURBANCE ALLOWED WITHOUT APPROVAL OF METHODS TO MINIMIZE ROOT DAMAGE.
- 2. NO MORE THAN 30 PERCENT OF ZONE B SHALL BE DISTURBED.
- 3. TUNNELING MAY BE REQUIRED FOR BELOW-GRADE IMPROVEMENTS.

ZONE C (EXTENDED ROOT ZONE)

- 1. DISTURBANCE ALLOWED BASED ON APPROVED PLANS. SEE NOTE.

**NOTE:**  
SEVERANCE OF ROOTS LARGER THAN 2"  
REQUIRES ENGINEER'S APPROVAL.

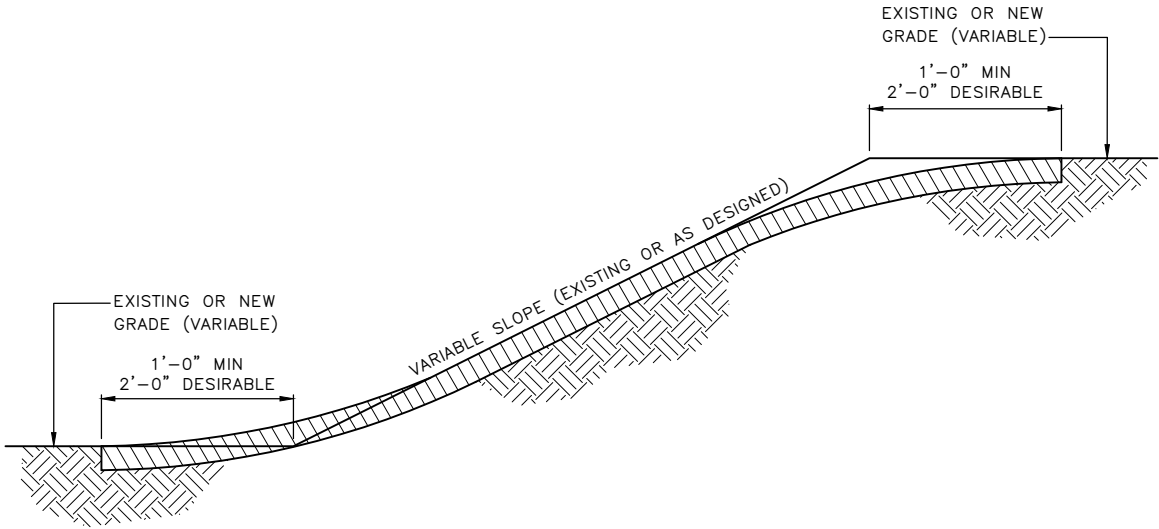
REF STD SPEC SEC 1-07.16(2), 8-01



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**TREE PROTECTION DURING  
TRENCHING, TUNNELING OR  
EXCAVATION**



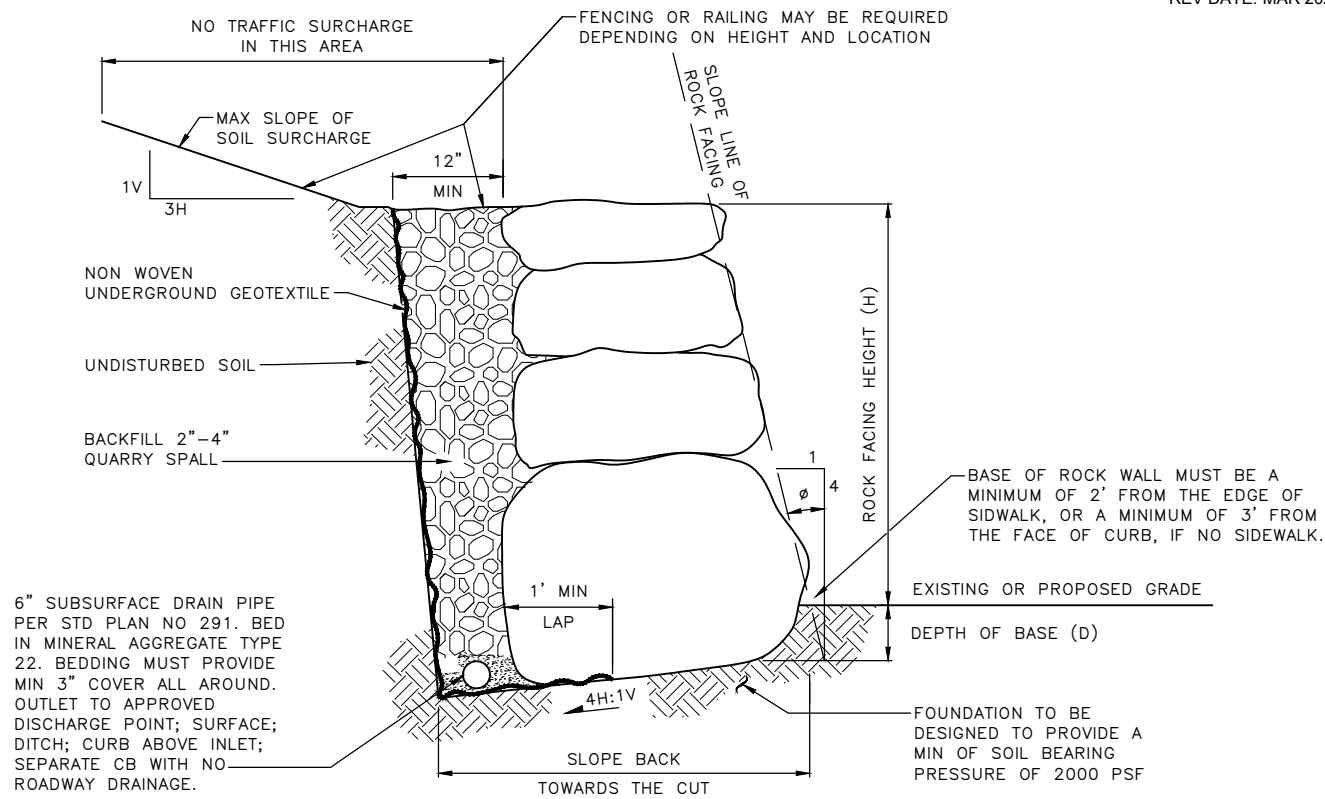
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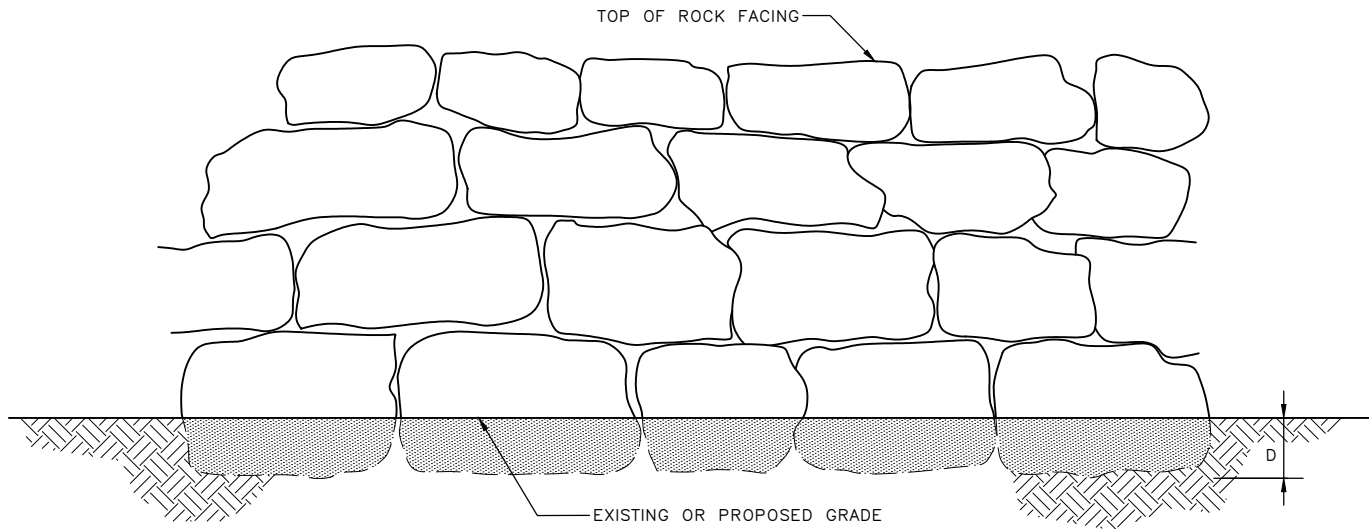
City of Seattle

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SLOPE ROUNDING



SECTION



ELEVATION

		MINIMUM ROCK	
(H)	(D)	SIZE(BASE)	SIZE(TOP)
2 FEET	3 INCHES	2-MAN	1-MAN
4 FEET	6 INCHES	3-MAN	2-MAN
6 FEET	9 INCHES	4-MAN	2-MAN
8 FEET	12 INCHES	5-MAN	2-MAN

Ø = 14" ± 1"

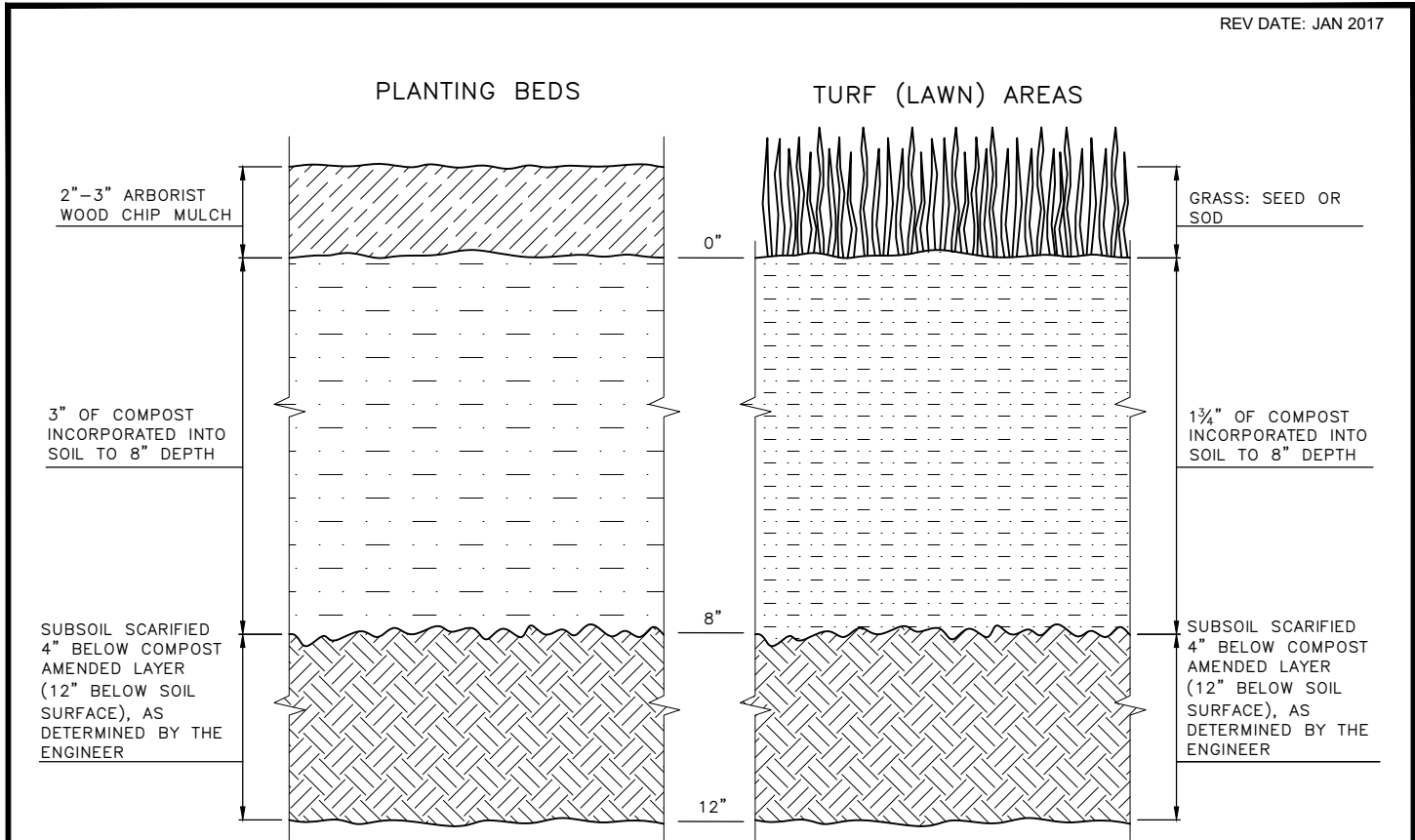
REF STD SPEC SEC 2-13



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ROCK FACING

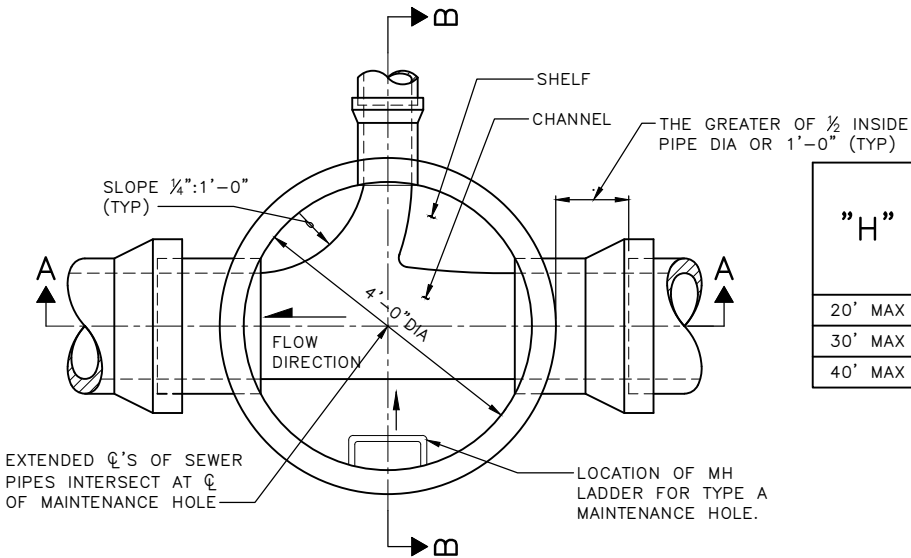


**NOTES:**

1. ALL SOIL AREAS DISTURBED OR COMPACTED DURING CONSTRUCTION, AND NOT COVERED BY BUILDINGS OR PAVEMENT, MUST BE AMENDED WITH COMPOST AS DESCRIBED BELOW.
2. SUBSOIL SHOULD BE SCARIFIED (LOOSENEED) 4 INCHES BELOW AMENDED LAYER, TO PRODUCE 12-INCH DEPTH OF UN-COMPACTED SOIL, EXCEPT WHERE SCARIFICATION WOULD DAMAGE TREE ROOTS OR AS DETERMINED BY THE ENGINEER.
3. COMPOST MUST BE TILLED IN TO 8 INCH DEPTH INTO EXISTING SOIL, OR PLACE 8 INCHES OF COMPOST-AMENDED SOIL, PER SOIL SPECIFICATION.
4. TURF AREAS MUST RECEIVE 1.75 INCHES OF COMPOST TILLED IN TO 8-INCH DEPTH, OR MAY SUBSTITUTE 8" OF IMPORTED SOIL CONTAINING 20-25% COMPOST BY VOLUME. THEN PLANT GRASS SEED OR SOD PER SPECIFICATION.
5. PLANTING BEDS MUST RECEIVE 3 INCHES OF COMPOST TILLED IN TO 8-INCH DEPTH, OR MAY SUBSTITUTE 8" OF IMPORTED SOIL CONTAINING 35-40% COMPOST BY VOLUME. MULCH AFTER PLANTING, WITH 2-3 INCHES OF ARBORIST WOOD CHIP MULCH OR APPROVED EQUAL.
6. SETBACKS: TO PREVENT UNEVEN SETTLING, DO NOT COMPOST-AMEND SOILS WITHIN 3 FEET OF UTILITY INFRASTRUCTURES (POLES, VAULTS, METERS ETC.). WITHIN ONE FOOT OF PAVEMENT EDGE, CURBS AND SIDEWALKS SOIL SHOULD BE COMPACTED TO APPROXIMATELY 90% PROCTOR TO ENSURE A FIRM SURFACE.

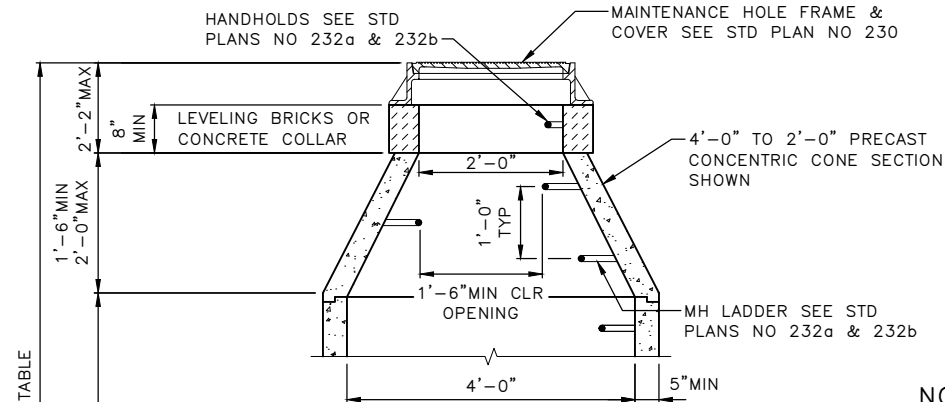
REF STD SPEC SEC 8-01, 8-02, 9-14

	City of Seattle	NOT TO SCALE	SOIL AMENDMENT AND DEPTH
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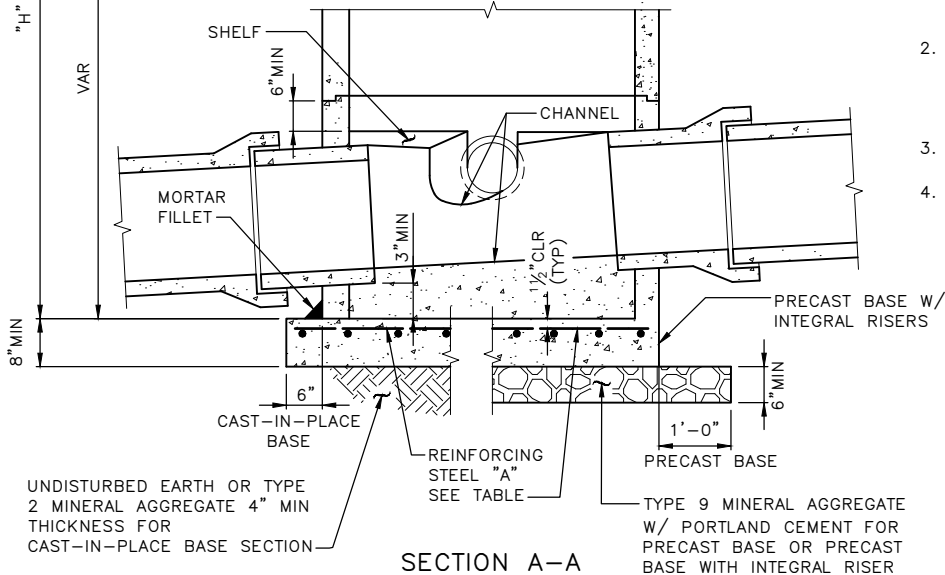


"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.25	0.17
30' MAX	0.31	0.22
40' MAX	0.36	0.25

PLAN VIEW  
(TOP REMOVED)



SECTION B-B



SECTION A-A

- NOTES:**
1. MATERIALS: CONCRETE—CLASS 4000; REINFORCING STEEL—ASTM A615 GRADE 60 MIN; CHANNEL AND SHELF MATERIAL — CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 5 IN. MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

REF STD SPEC SEC 7-05



City of Seattle

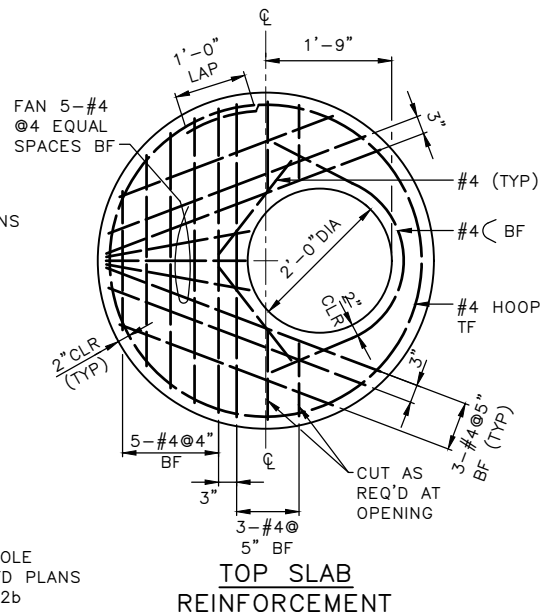
NOT TO SCALE

TYPE 204a MAINTENANCE HOLE

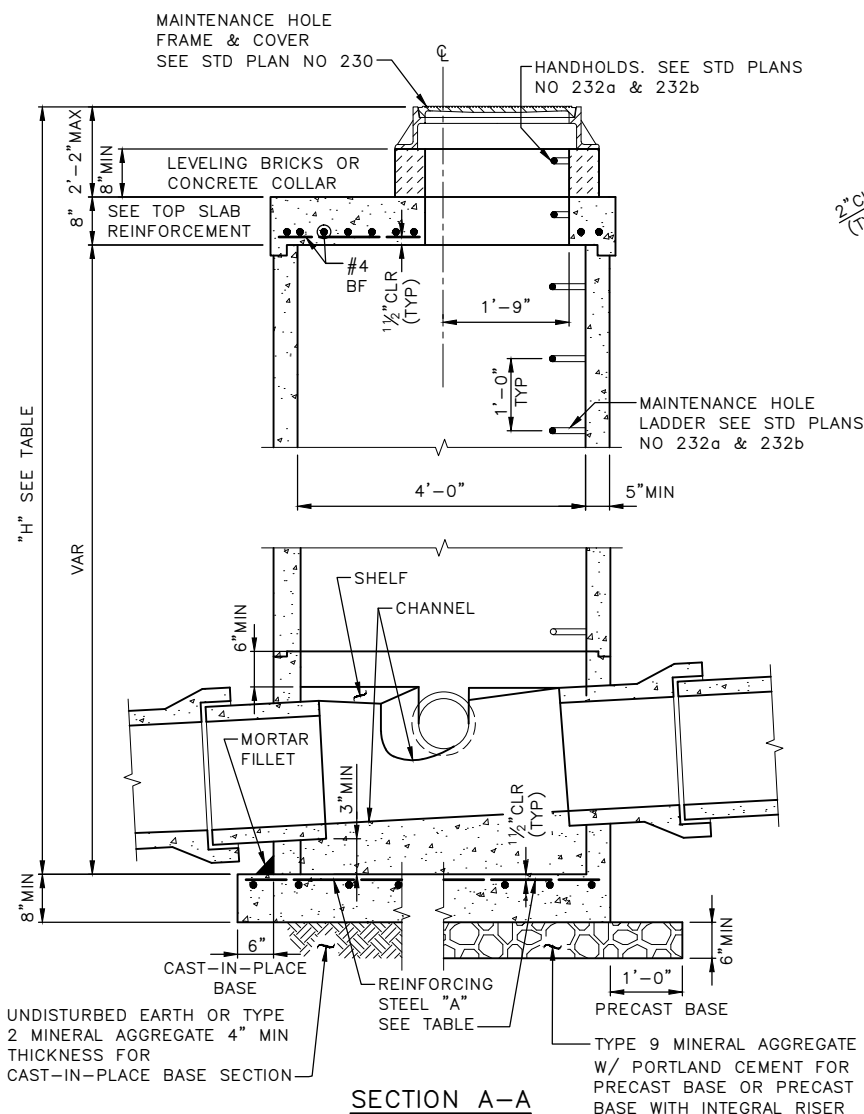


PLAN VIEW  
(TOP REMOVED)

<p>”H”</p>	<p>REINFORCING STEEL ”A”</p> <p>MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION</p>	
	<p>PRECAST BASE</p>	<p>CAST-IN-PLACE BASE</p>
	<p>20' MAX</p>	<p>0.17</p>
	<p>30' MAX</p>	<p>0.22</p>
<p>40' MAX</p>	<p>0.25</p>	<p>0.25</p>



TOP SLAB  
REINFORCEMENT



SECTION A-A

NOTES:

1. MATERIALS: CONCRETE—CLASS 4000;  
REINFORCING STEEL—ASTM A615 GRADE  
60 MIN; CHANNEL AND SHELF MATERIAL  
— CONCRETE CLASS 3000.
2. PRECAST MAINTENANCE HOLE  
COMPONENTS MUST CONFORM TO ASTM  
C 478. JOINTS BETWEEN PRECAST  
COMPONENTS MUST BE RUBBER  
GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING =  
3,000 LBS/SQ FT
4. MAX HOLE SIZE MUST BE OD OF PIPE  
PLUS 5 IN. MIN HOLE SIZE MUST BE  
OD OF PIPE PLUS 3 IN. MIN CLEAR  
DISTANCE BETWEEN HOLES IS 8 IN.

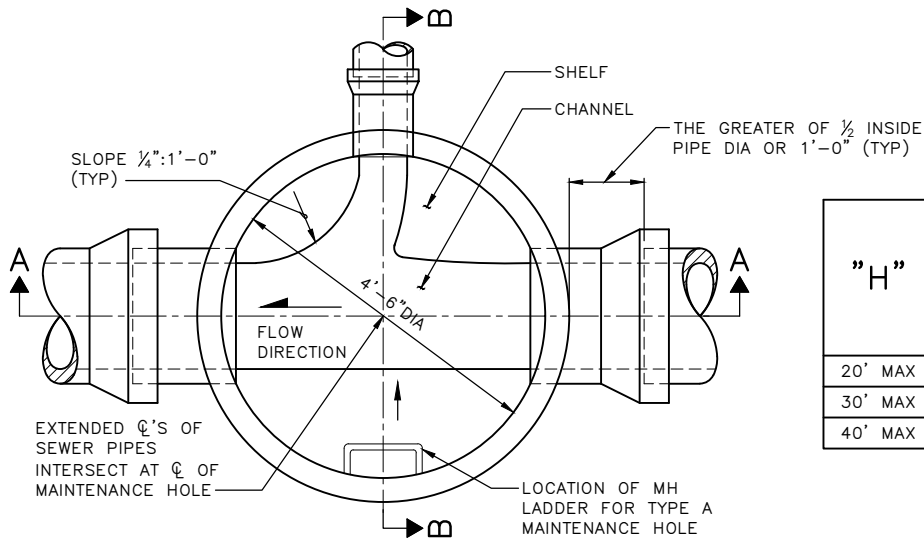
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City of Seattle

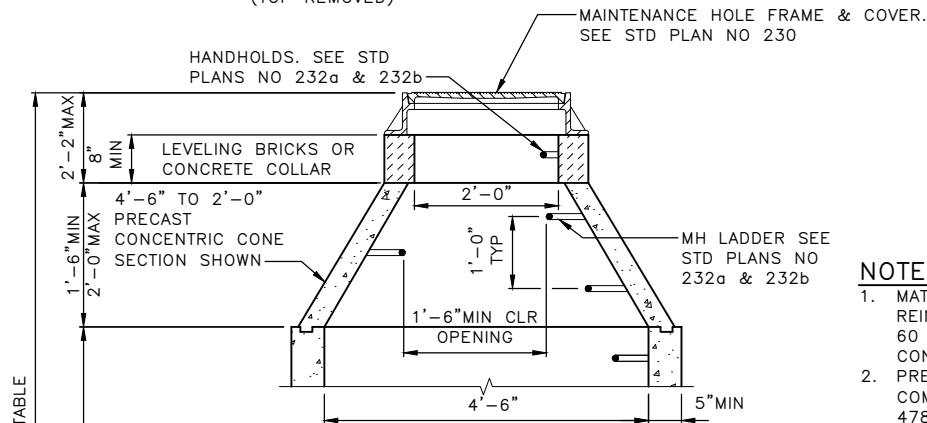
NOT TO SCALE

## TYPE 204b MAINTENANCE HOLE



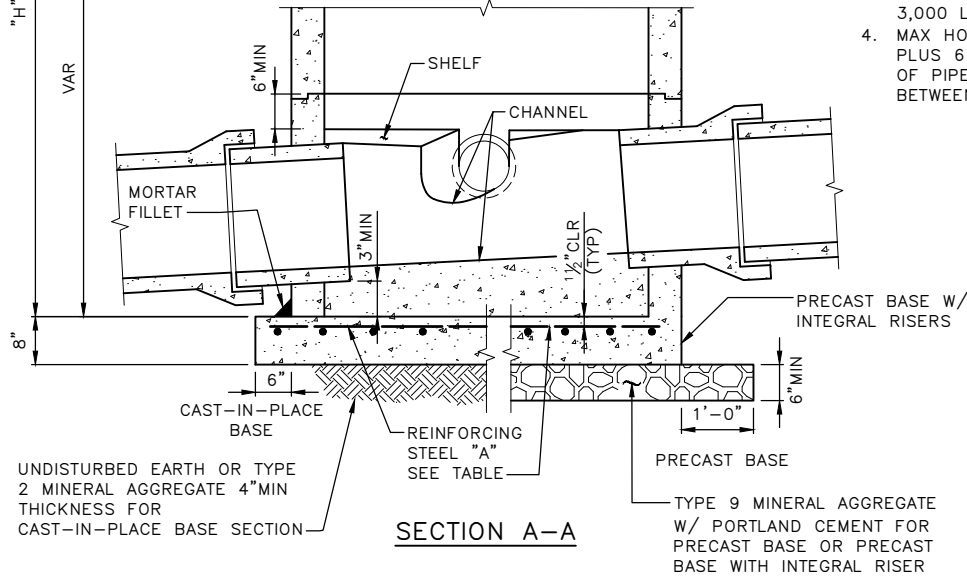
PLAN VIEW  
(TOP REMOVED)

"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.29	0.21
30' MAX	0.36	0.26
40' MAX	0.42	0.31



SECTION B-B

- NOTES:
1. MATERIALS: CONCRETE—CLASS 4000; REINFORCING STEEL—ASTM A615 GRADE 60 MIN; CHANNEL AND SHELF MATERIAL — CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.



SECTION A-A

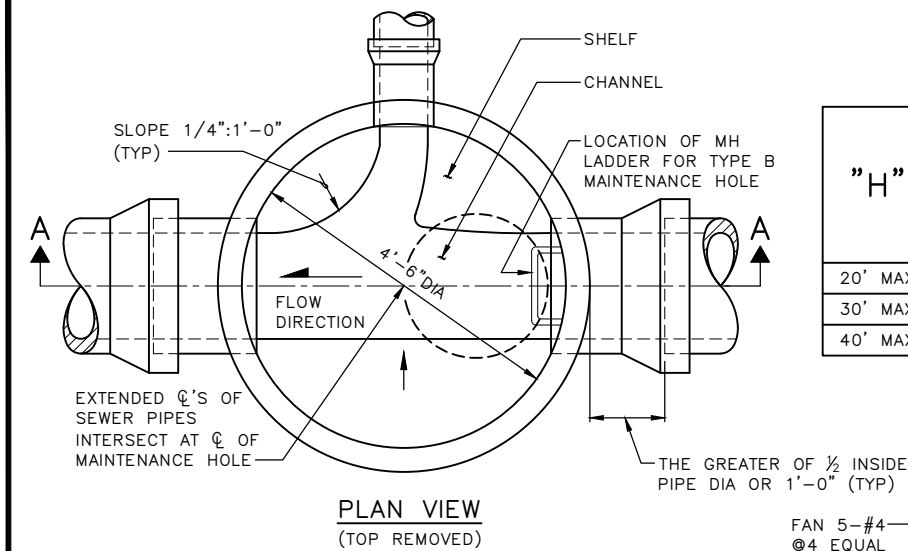
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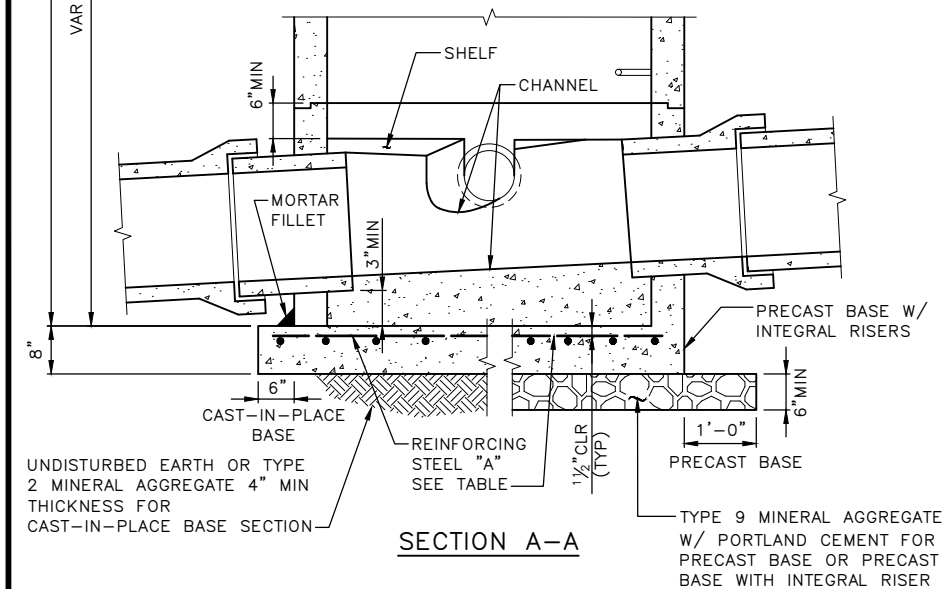
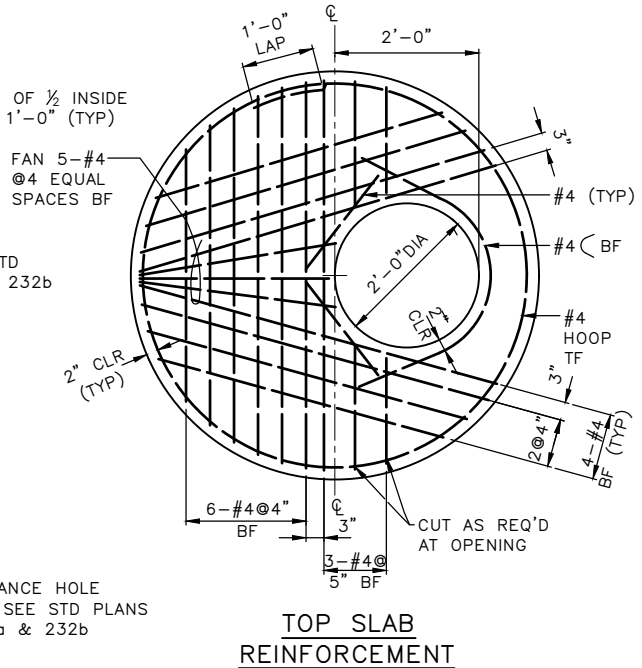
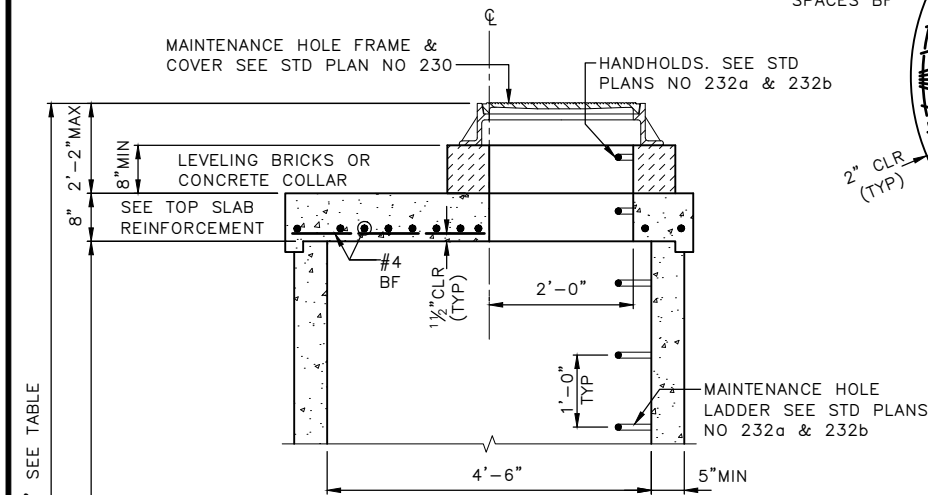
City of Seattle

NOT TO SCALE

TYPE 204.5a MAINTENANCE HOLE



"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.29	0.21
30' MAX	0.36	0.26
40' MAX	0.42	0.31



- NOTES:**
1. MATERIALS: CONCRETE—CLASS 4000; REINFORCING STEEL—ASTM A615 GRADE 60 MIN; CHANNEL AND SHELF MATERIAL — CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

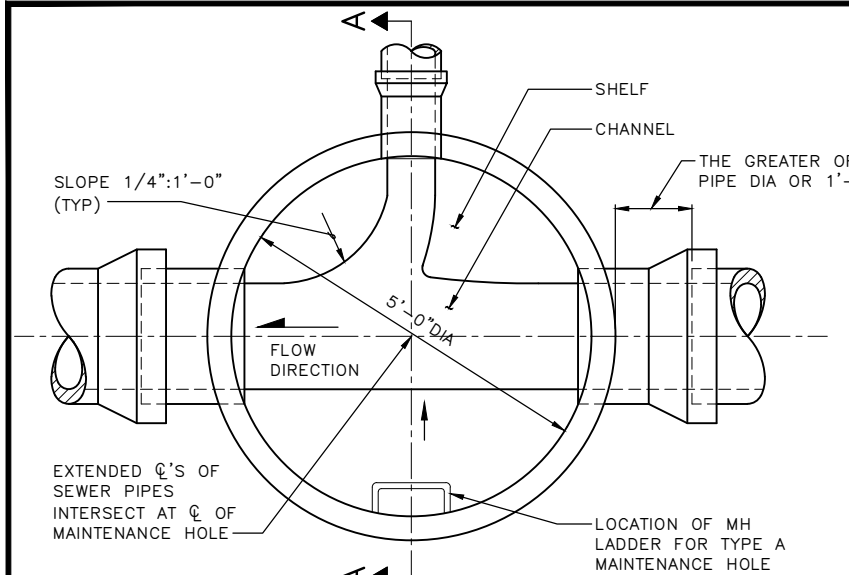
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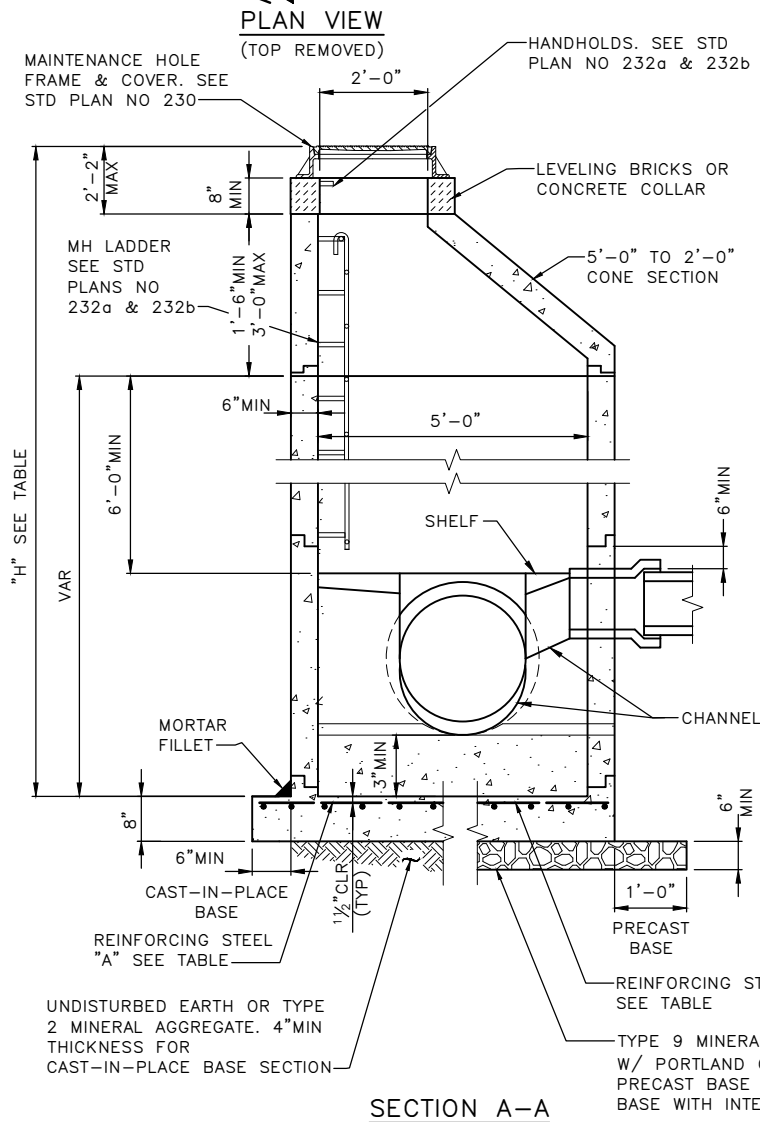
City of Seattle

NOT TO SCALE

TYPE 204.5b MAINTENANCE HOLE



"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.33	0.25
30' MAX	0.41	0.31
40' MAX	0.49	0.37



- NOTES:
1. MATERIALS: CONCRETE—CLASS 4000; REINFORCING STEEL—ASTM A615 GRADE 60 MIN; CHANNEL AND SHELF MATERIAL — CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

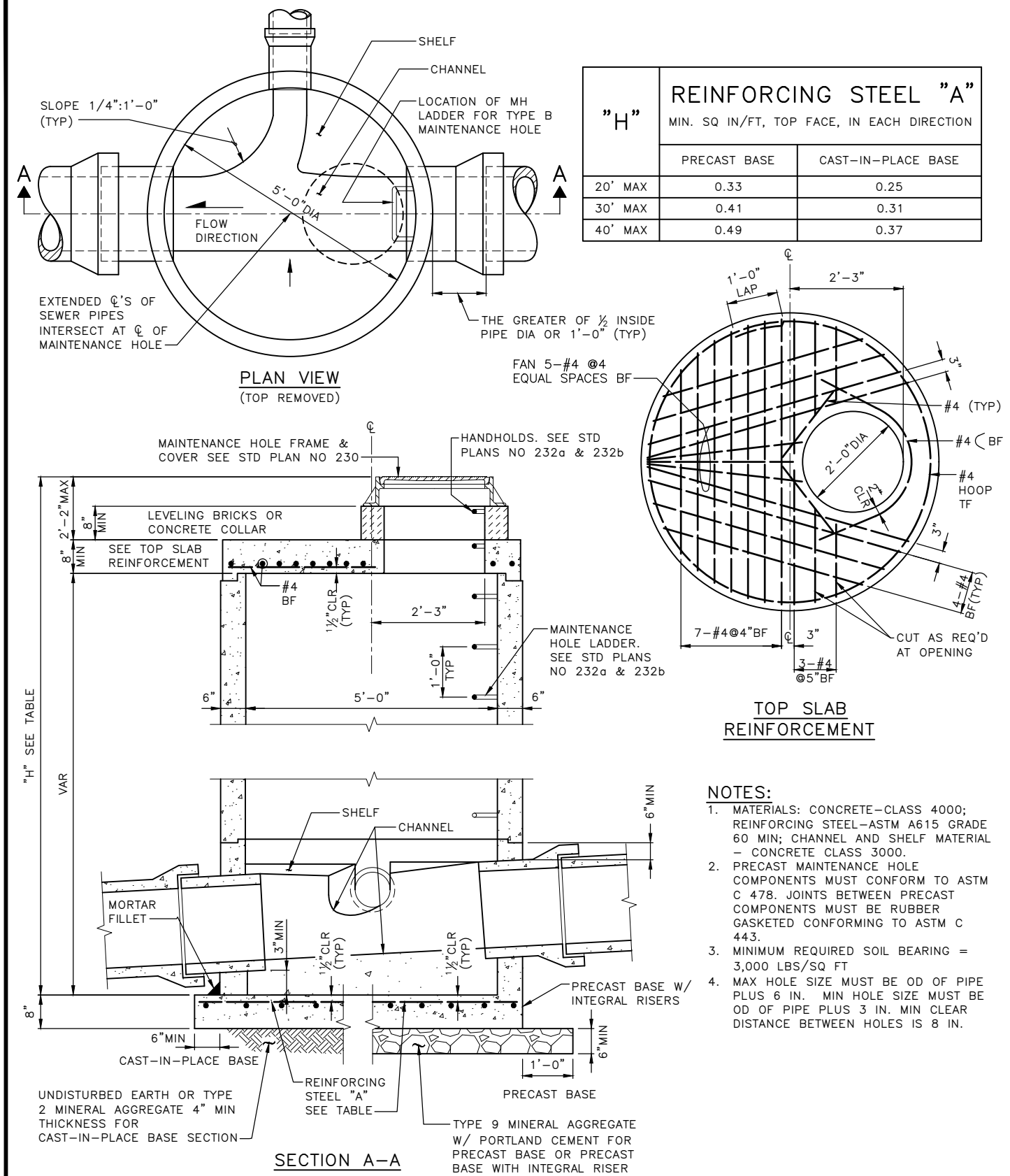
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TYPE 205a MAINTENANCE HOLE



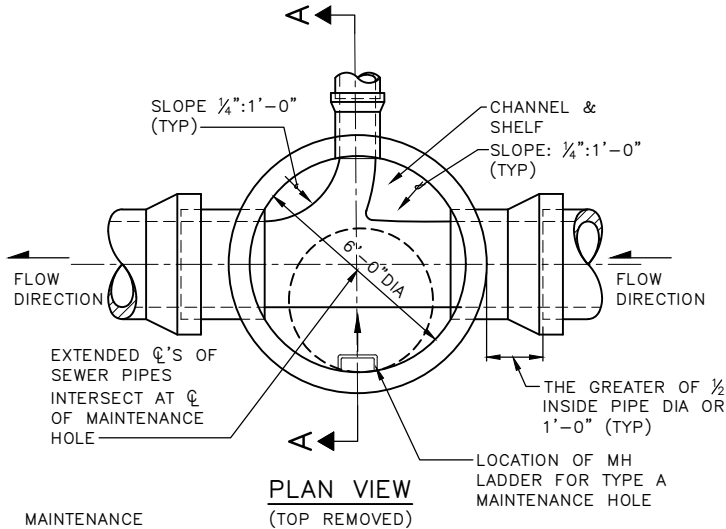
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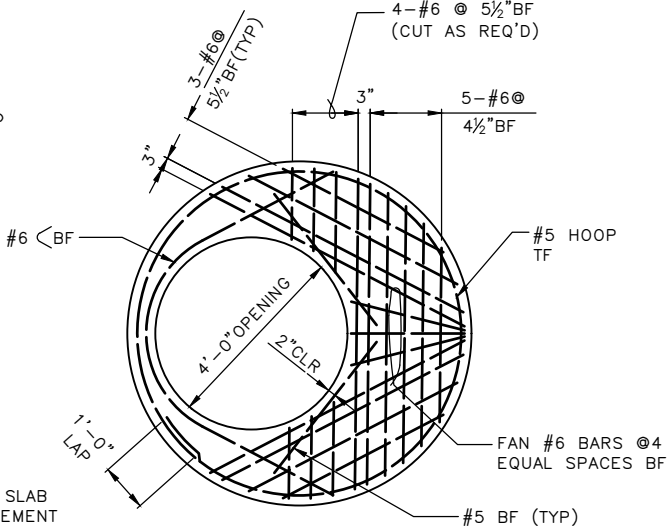
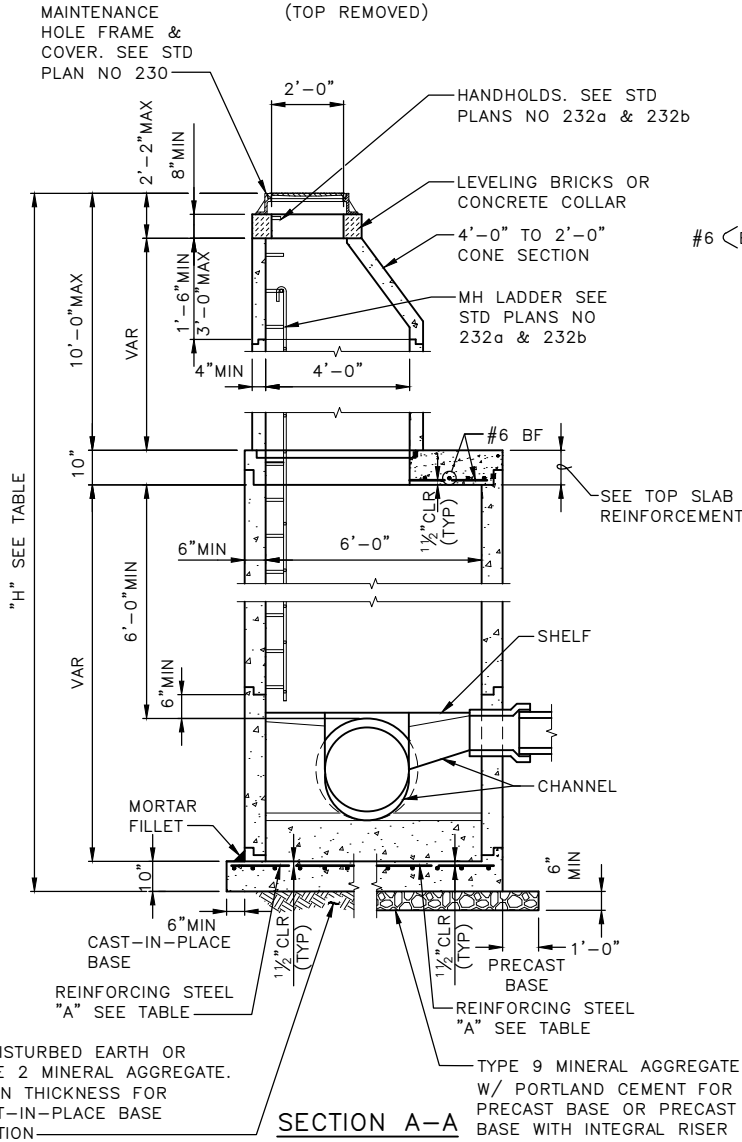
City of Seattle

NOT TO SCALE

TYPE 205b MAINTENANCE HOLE



"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.39	0.30
30' MAX	0.47	0.37
40' MAX	0.56	0.46



- NOTES:
1. MATERIALS: CONCRETE-CLASS 4000; REINFORCING STEEL-ASTM A615 GRADE 60 MIN; CHANNEL AND SHELF MATERIAL - CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 7 IN. MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.

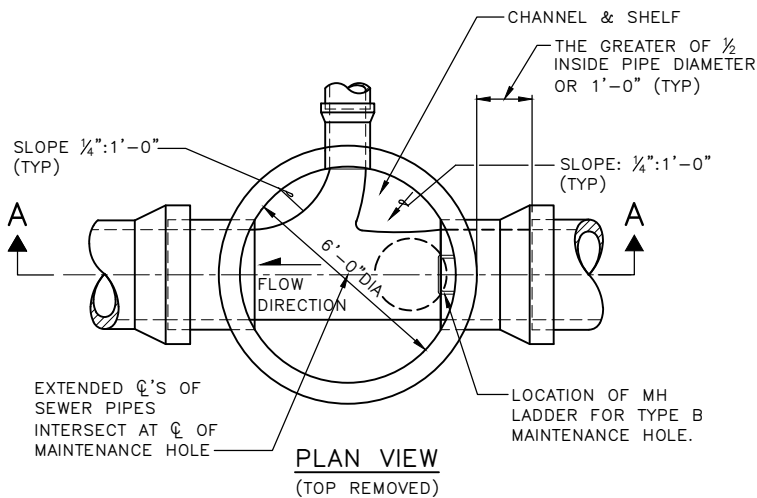
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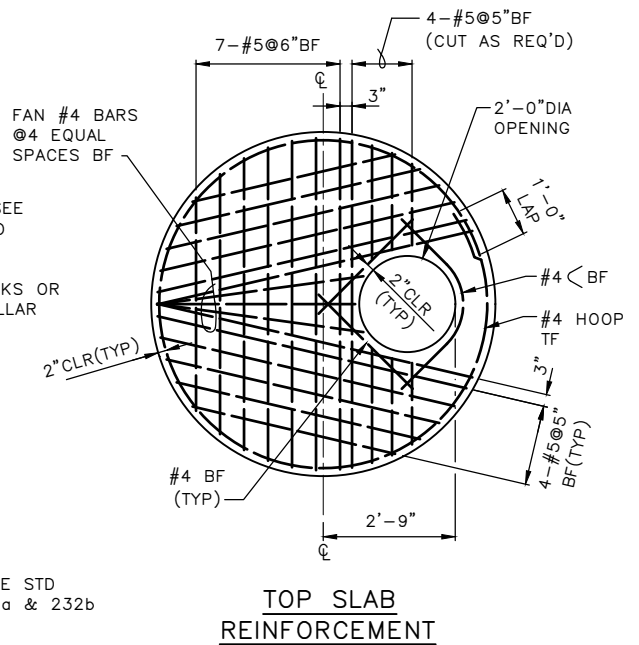
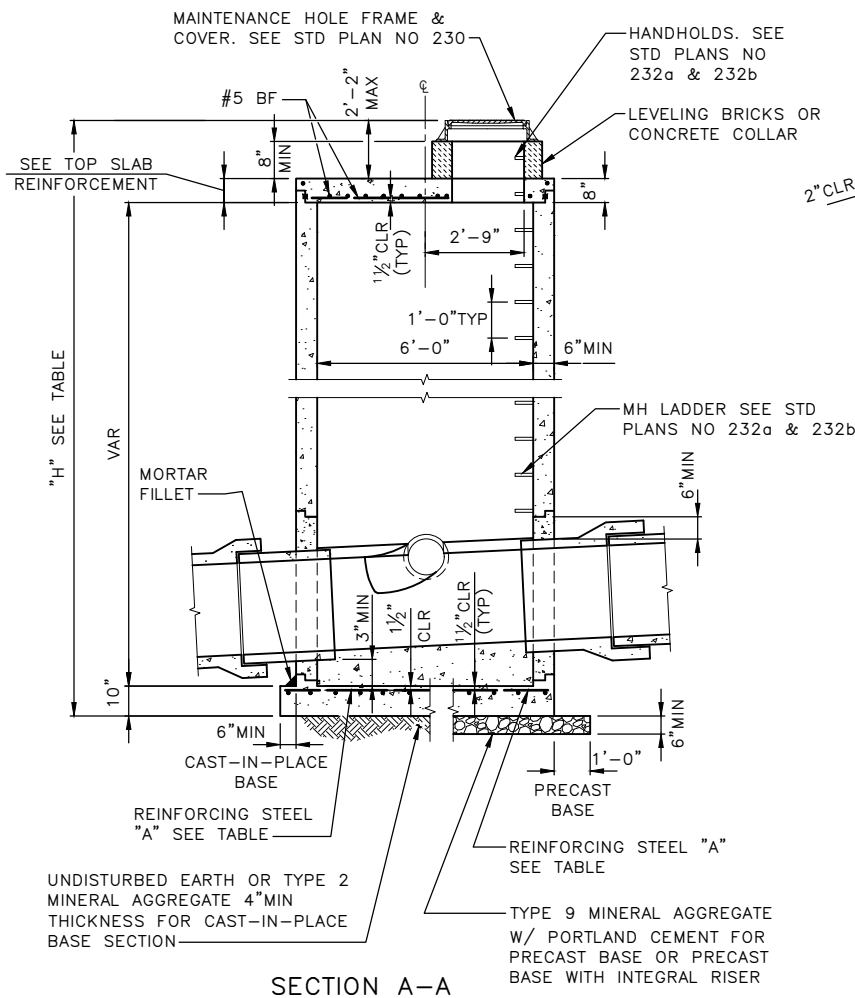
City of Seattle

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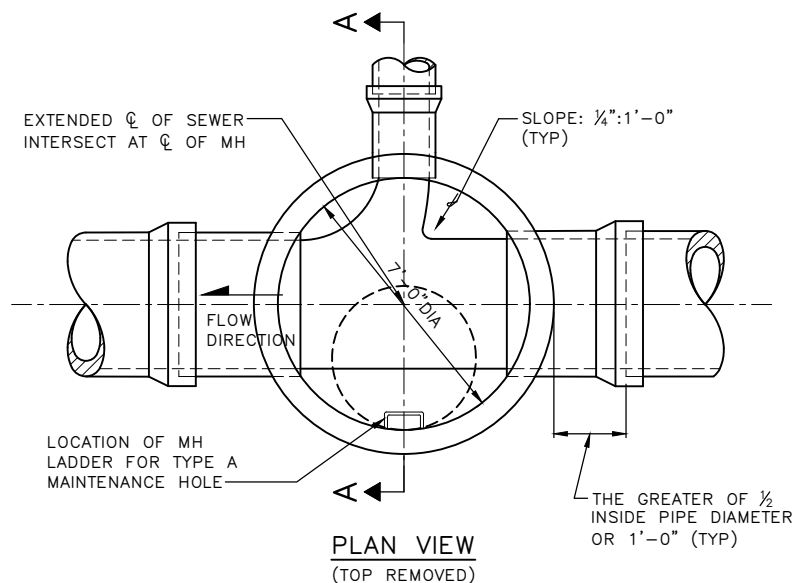
TYPE 206a MAINTENANCE HOLE



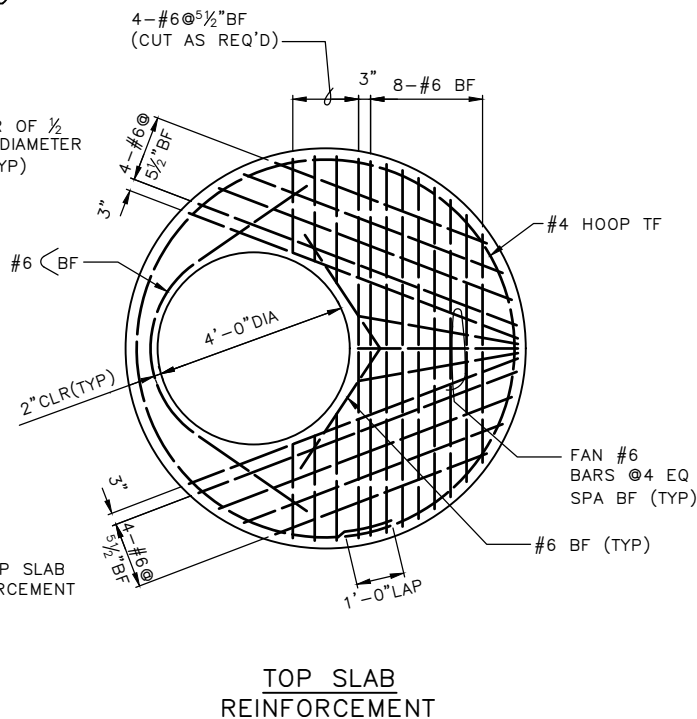
"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.29	0.24
30' MAX	0.41	0.32
40' MAX	0.49	0.41



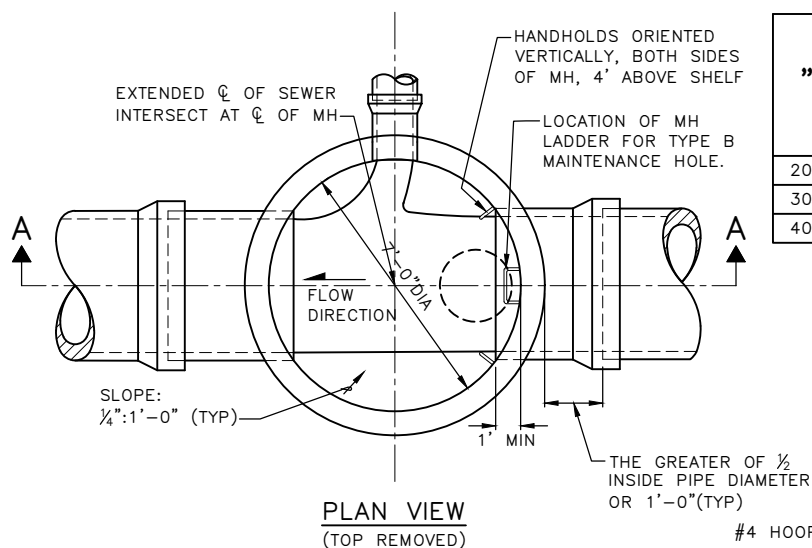
- NOTES:**
1. MATERIALS: CONCRETE—CLASS 4000; REINFORCING STEEL—ASTM A615 GRADE 60 MIN; CHANNEL AND SHELF MATERIAL — CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 7 IN. MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.



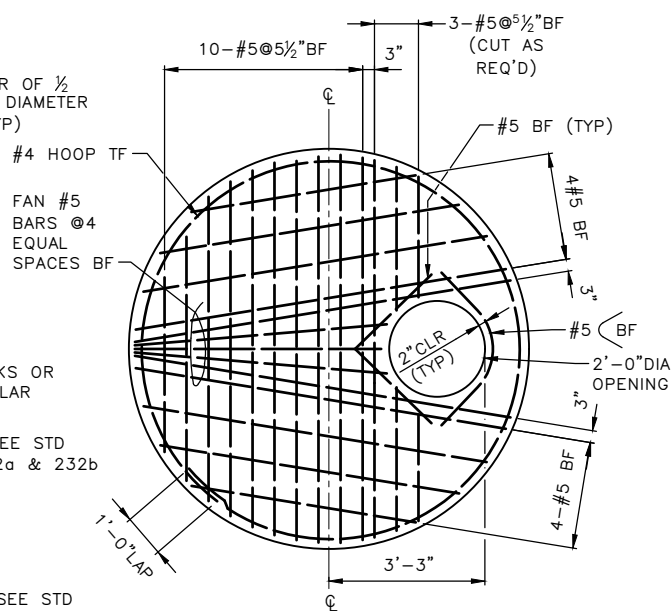
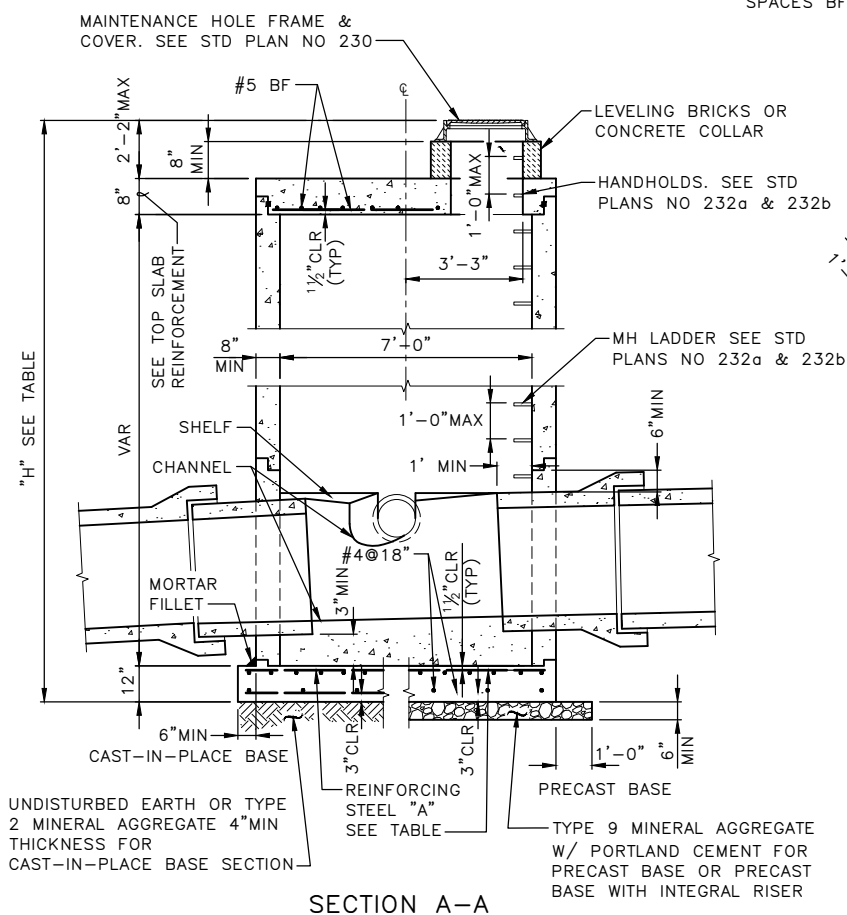
<p>”H”</p>	<p>REINFORCING STEEL ”A”</p> <p>MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION</p>	
	<p>PRECAST BASE</p>	<p>CAST-IN-PLACE BASE</p>
<p>20' MAX</p>	<p>0.42</p>	<p>0.34</p>
<p>30' MAX</p>	<p>0.51</p>	<p>0.41</p>
<p>40' MAX</p>	<p>0.60</p>	<p>0.48</p>







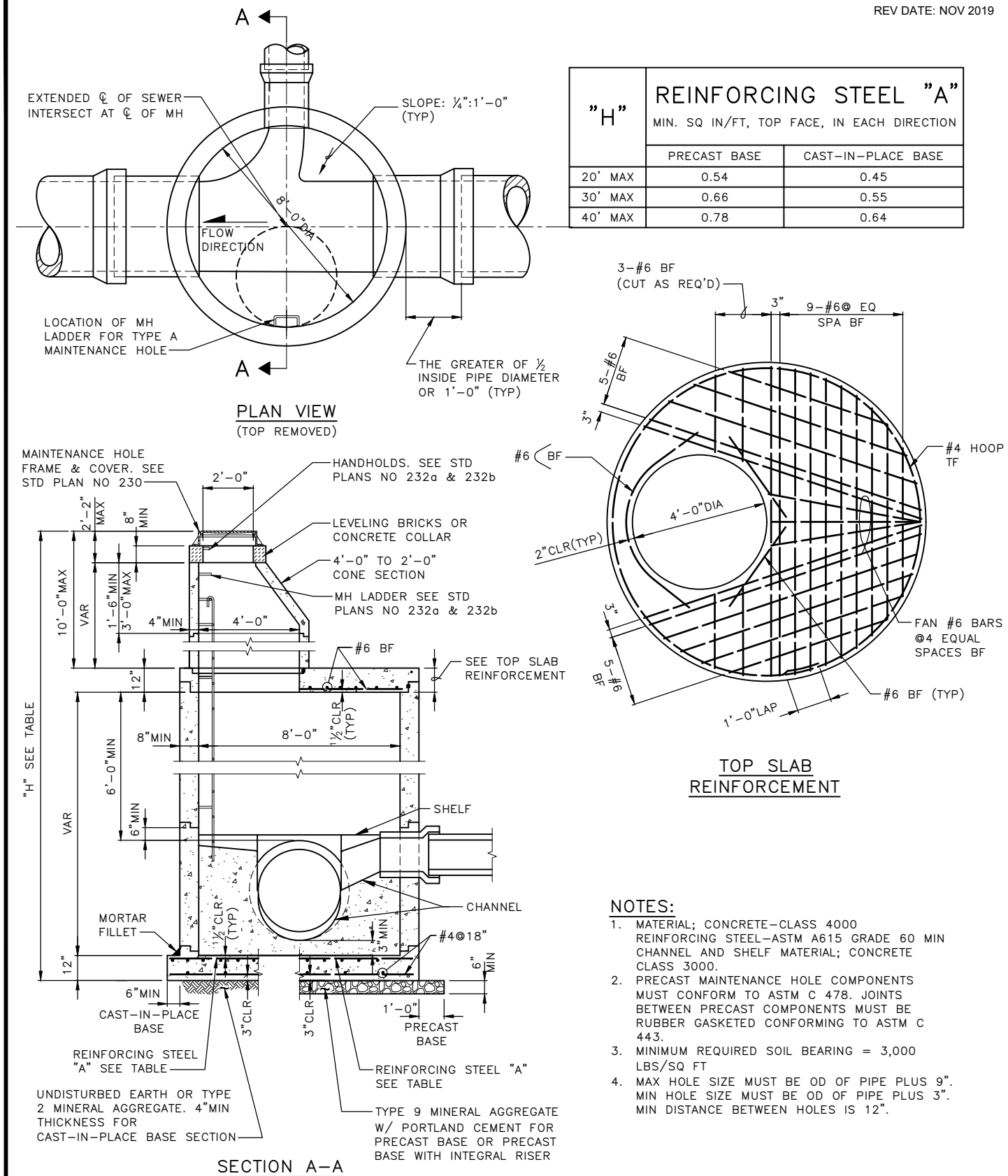
<div style="text-align: center; font-size: 2em;">"H"</div>	<div style="font-size: 1.5em; margin-bottom: 5px;">REINFORCING STEEL "A"</div> <div style="font-size: 0.8em; margin-bottom: 5px;">MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION</div>	
	PRECAST BASE	CAST-IN-PLACE BASE
	20' MAX	0.34
	30' MAX	0.43
40' MAX	0.52	0.42



- NOTES:

1. MATERIAL: CONCRETE—CLASS 4000;  
REINFORCING STEEL—ASTM A615 GRADE 60  
MIN; CHANNEL AND SHELF MATERIAL—  
CONCRETE CLASS 3000.
2. PRECAST MAINTENANCE HOLE COMPONENTS  
MUST CONFORM TO ASTM C 478. JOINTS  
BETWEEN PRECAST COMPONENTS MUST BE  
RUBBER GASKETED CONFORMING TO ASTM C  
443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000  
LBS/SQ FT
4. MAX HOLE SIZE MUST BE OD OF PIPE  
PLUS 8 IN. MIN HOLE SIZE MUST BE OD  
OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE  
BETWEEN HOLES IS 12 IN.





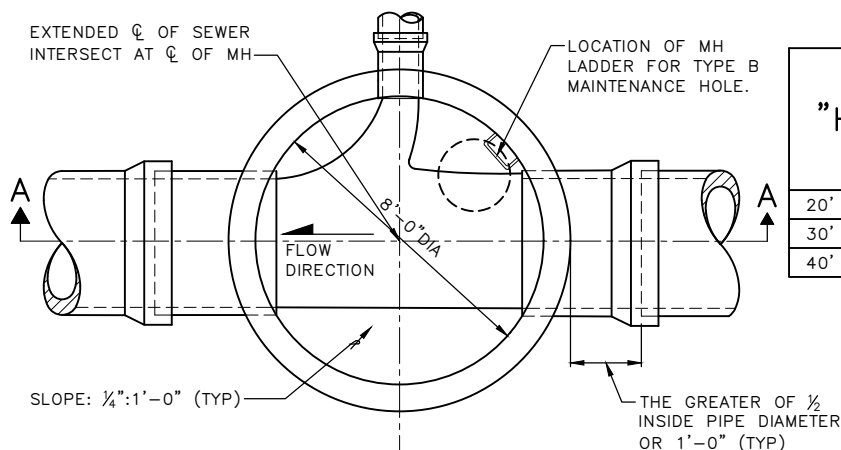
REF STD SPEC SEC 7-05



City of Seattle

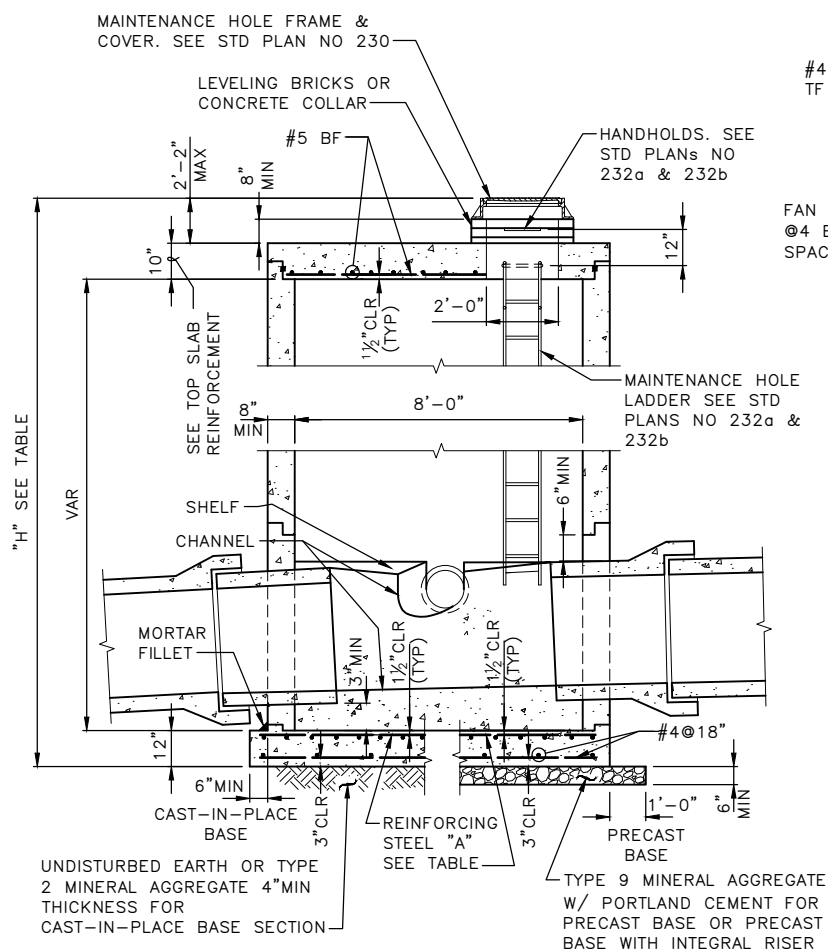
NOT TO SCALE

TYPE 208a MAINTENANCE HOLE

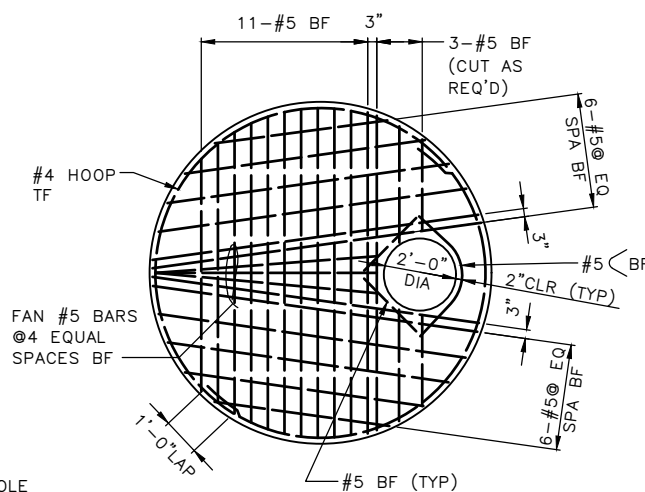


PLAN VIEW  
(TOP REMOVED)

<div style="text-align: center; font-size: 2em;">"H"</div>	<div style="font-size: 1.5em; margin-bottom: 5px;">REINFORCING STEEL "A"</div> <div style="font-size: 0.8em;">MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION</div>	
	PRECAST BASE	CAST-IN-PLACE BASE
	20' MAX	0.42
	30' MAX	0.53
40' MAX	0.65	0.54



SECTION A-A



TOP SLAB  
REINFORCEMENT

NOTES:

1. MATERIAL; CONCRETE—CLASS 4000  
REINFORCING STEEL—ASTM A615 GRADE 60 MIN  
CHANNEL AND SHELF MATERIAL; CONCRETE  
CLASS 3000.
2. PRECAST MAINTENANCE HOLE COMPONENTS  
MUST CONFORM TO ASTM C 478. JOINTS  
BETWEEN PRECAST COMPONENTS MUST BE  
RUBBER GASKETED CONFORMING TO ASTM C  
443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000  
LBS/SQ FT
4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 9".  
MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3".  
MIN DISTANCE BETWEEN HOLES IS 12".

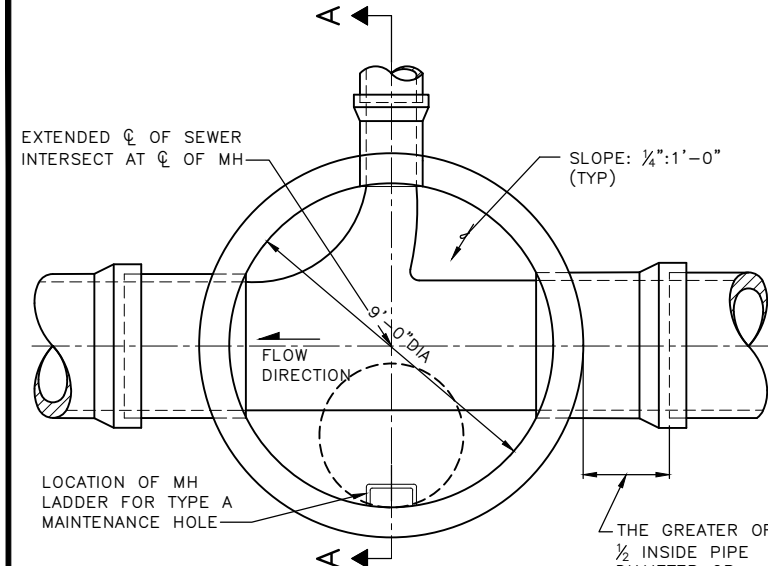
REF STD SPEC SEC 7-05



City of Seattle

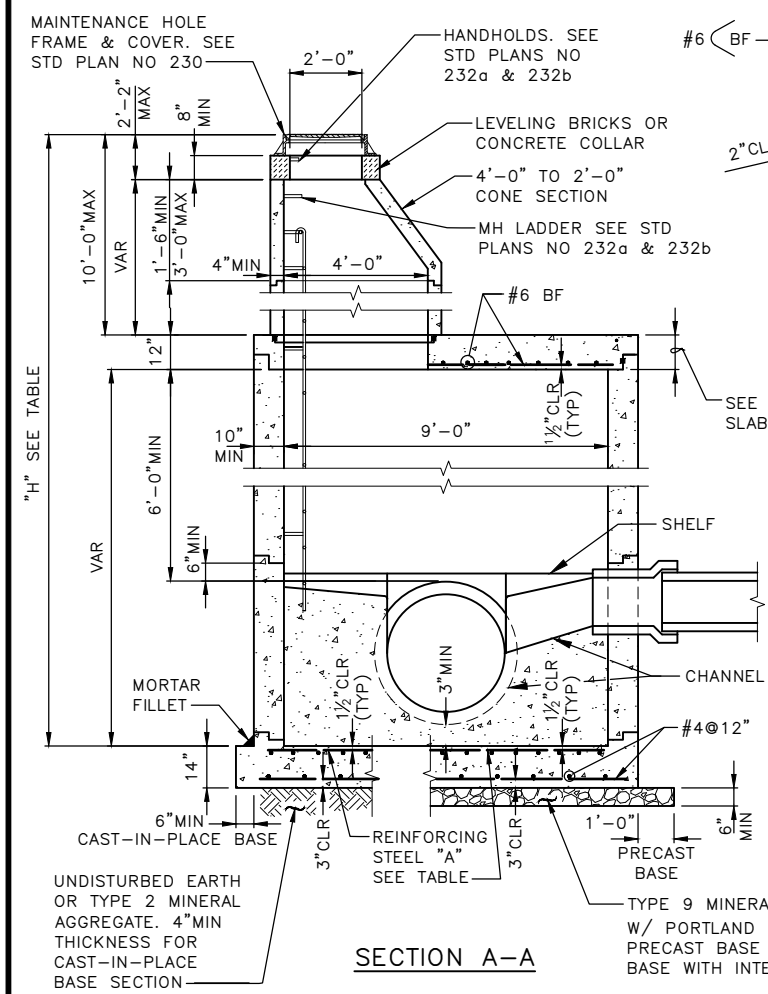
NOT TO SCALE

## TYPE 208b MAINTENANCE HOLE

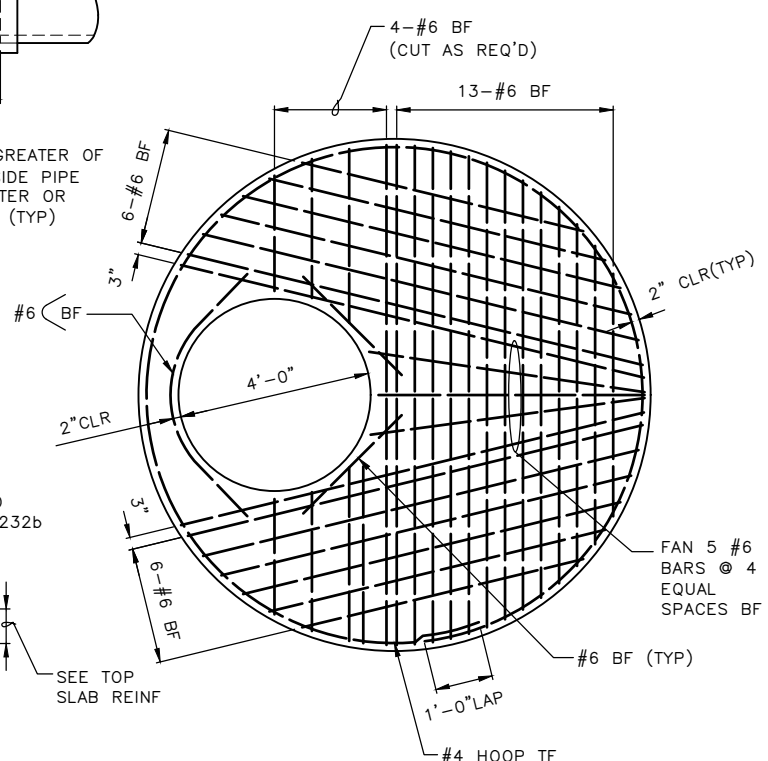


PLAN VIEW  
(TOP REMOVED)

"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.57	0.49
30' MAX	0.70	0.59
40' MAX	0.81	0.69

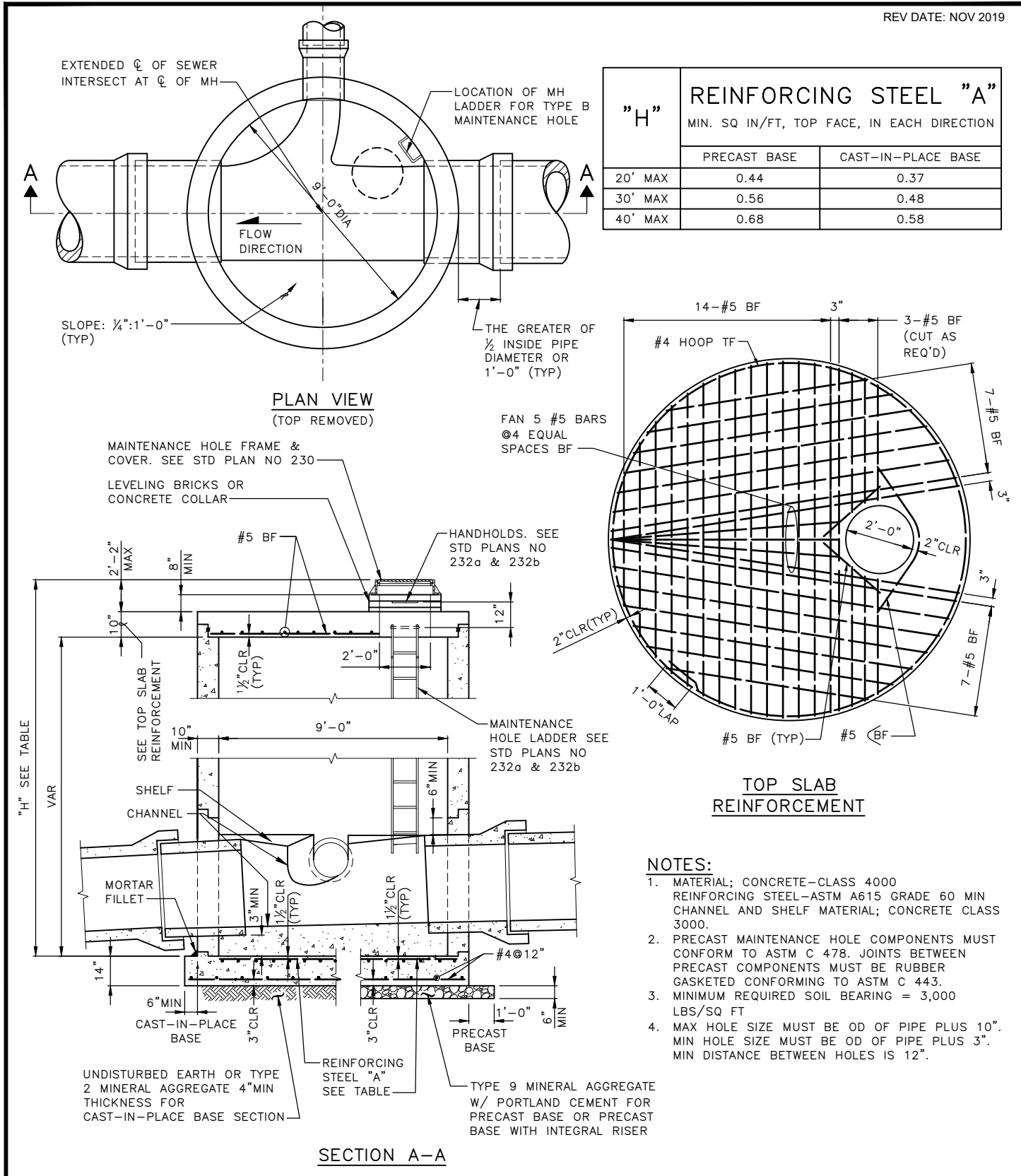


SECTION A-A

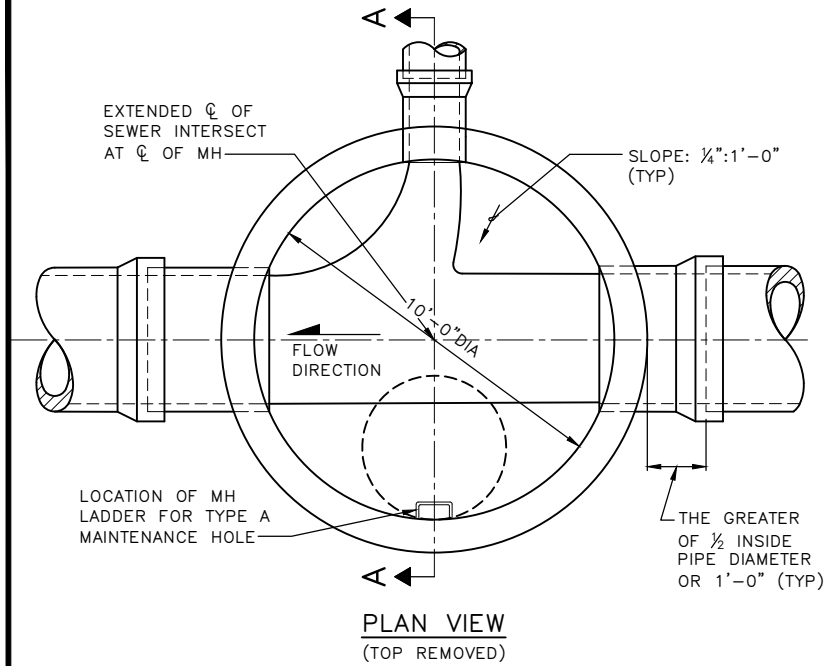


TOP SLAB  
REINFORCEMENT

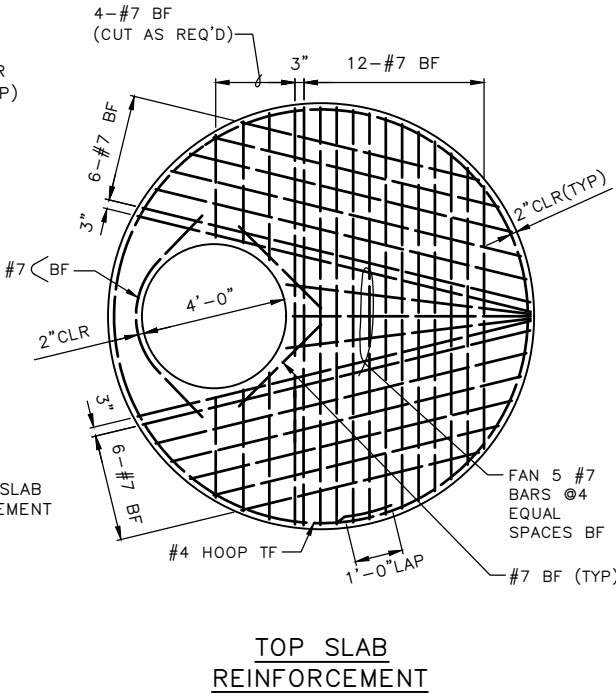
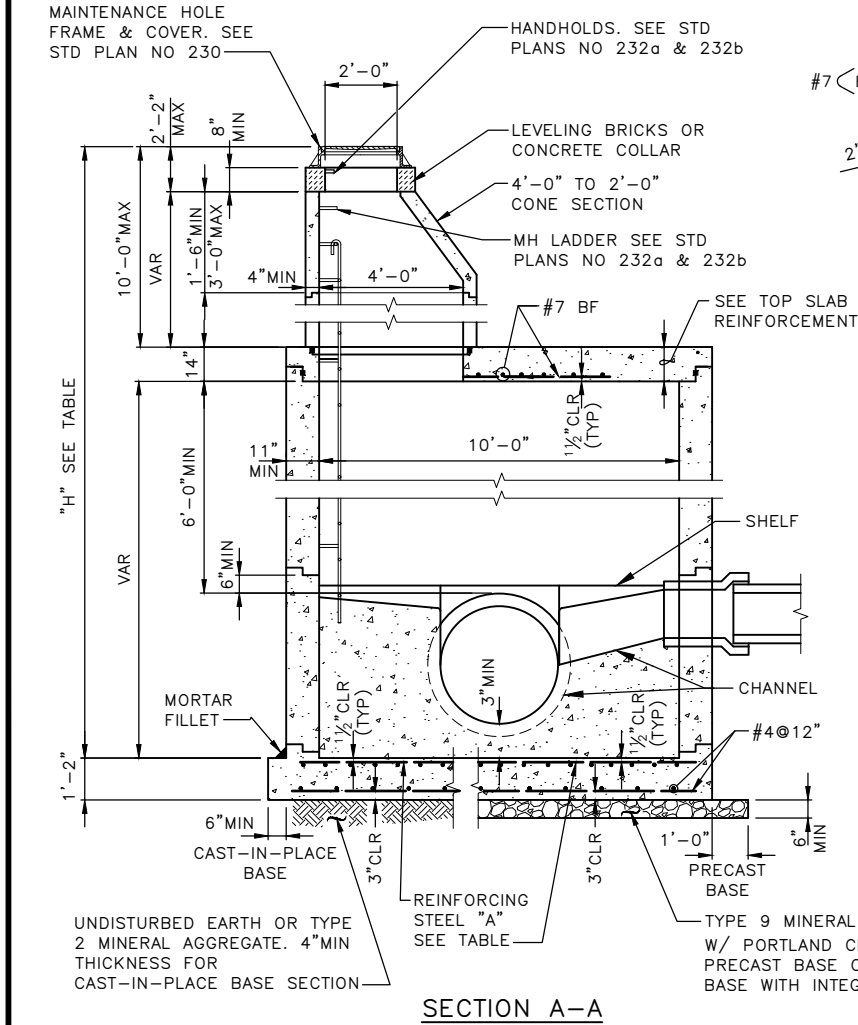
- NOTES:
1. MATERIAL; CONCRETE-CLASS 4000 REINFORCING STEEL-ASTM A615 GRADE 60 MIN CHANNEL AND SHELF MATERIAL; CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 10". MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".



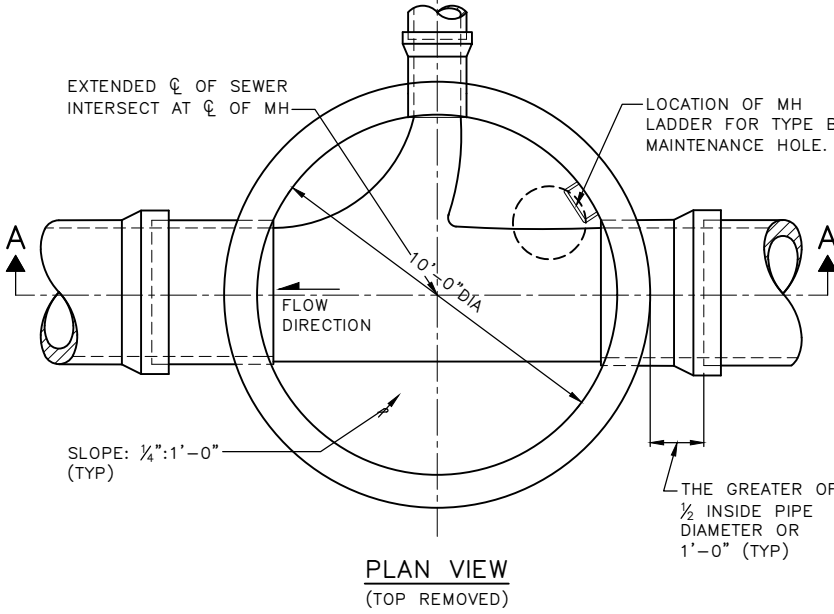
- NOTES:**
1. MATERIAL; CONCRETE-CLASS 4000  
REINFORCING STEEL-ASTM A615 GRADE 60 MIN CHANNEL AND SHELF MATERIAL; CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 10". MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".



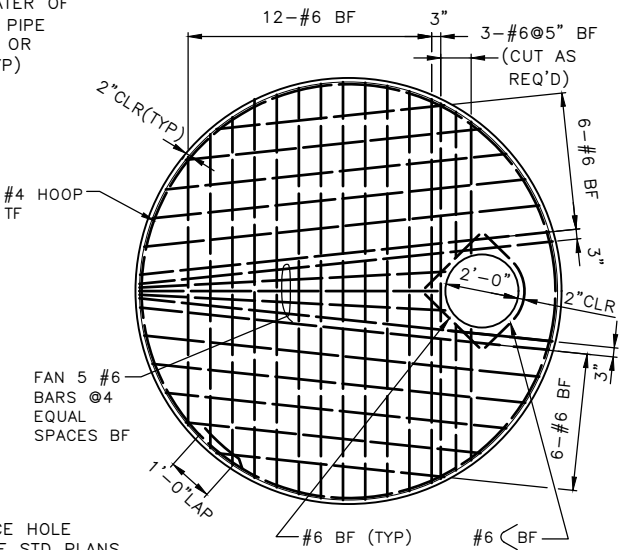
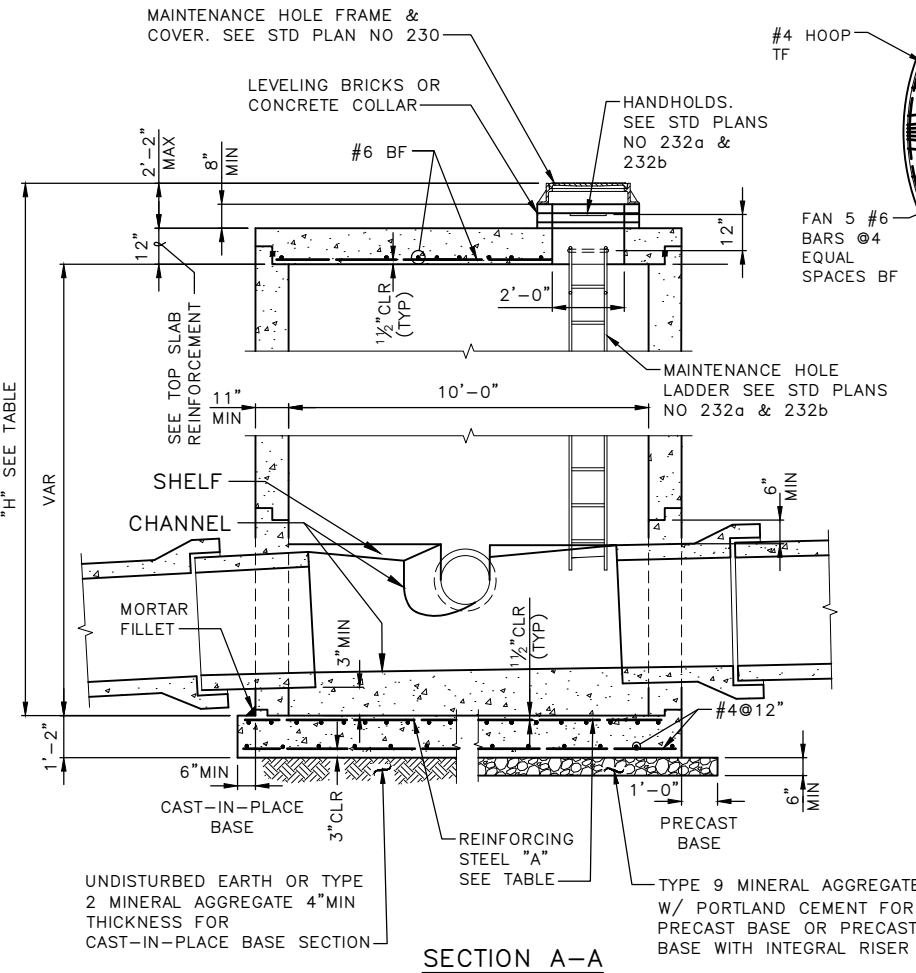
"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.70	0.60
30' MAX	0.85	0.73
40' MAX	1.00	0.86



- NOTES:**
- MATERIAL; CONCRETE—CLASS 4000  
REINFORCING STEEL—ASTM A615 GRADE 60 MIN  
CHANNEL AND SHELF MATERIAL; CONCRETE CLASS 3000.
  - PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  - MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  - MAX HOLE SIZE MUST BE OD OF PIPE PLUS 11". MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".



"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.52	0.45
30' MAX	0.66	0.57
40' MAX	0.81	0.70



**TOP SLAB REINFORCEMENT**

- NOTES:**
1. MATERIAL; CONCRETE-CLASS 4000 REINFORCING STEEL-ASTM A615 GRADE 60 MIN CHANNEL AND SHELF MATERIAL; CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 11". MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

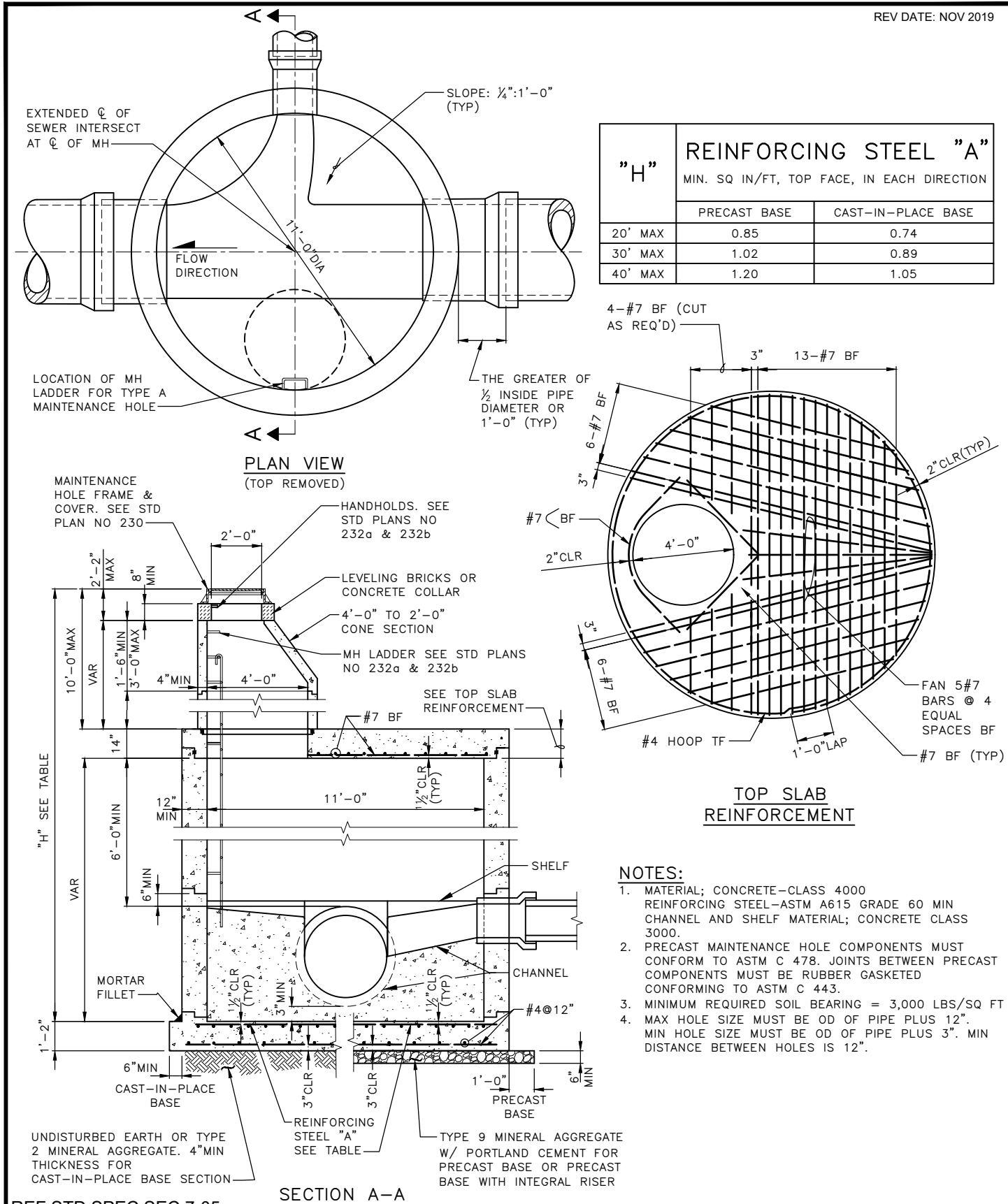
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

TYPE 210b MAINTENANCE HOLE



REF STD SPEC SEC 7-05

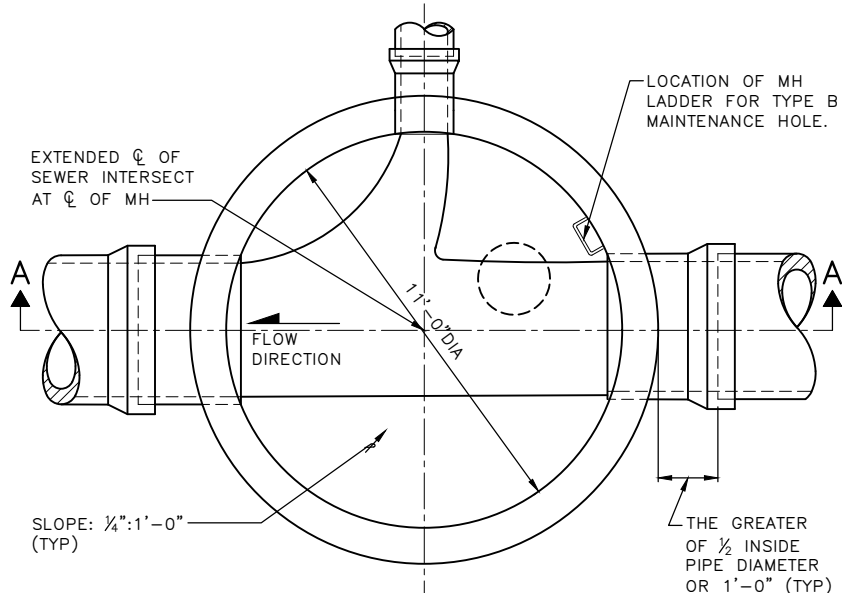


City of Seattle

NOT TO SCALE

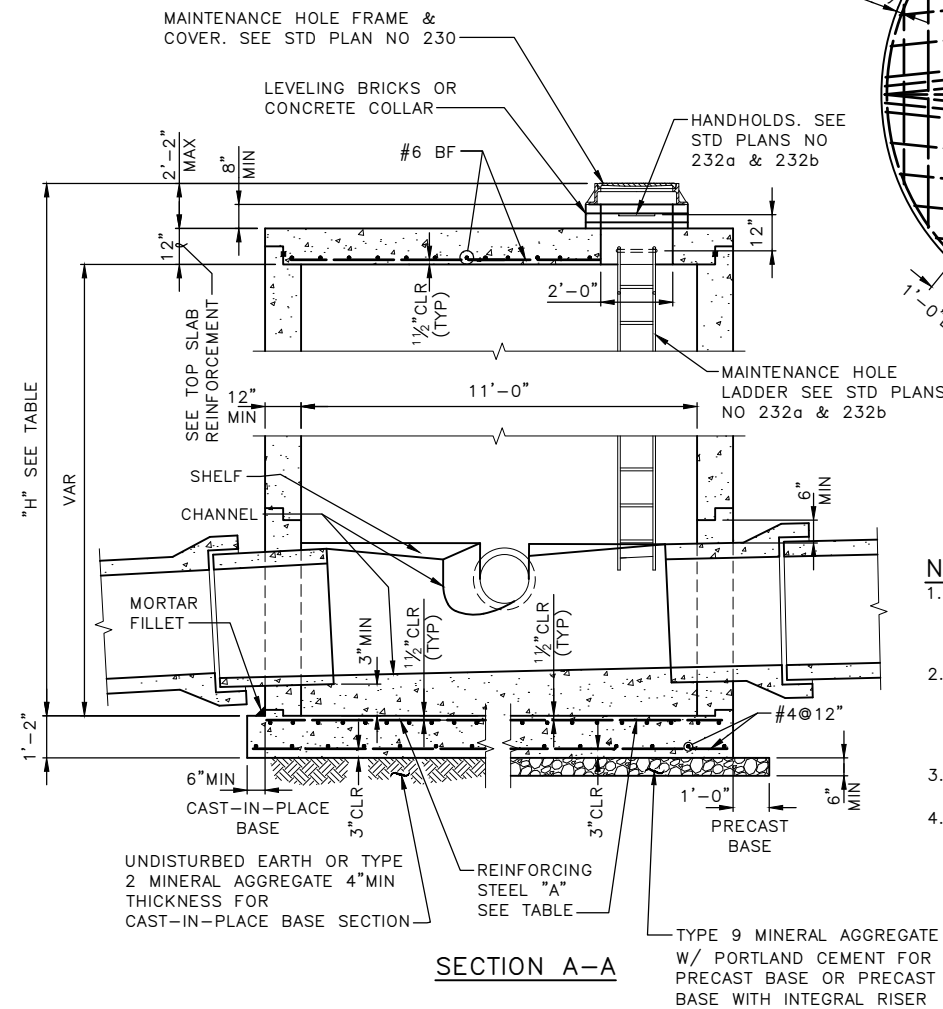
TYPE 211a MAINTENANCE HOLE



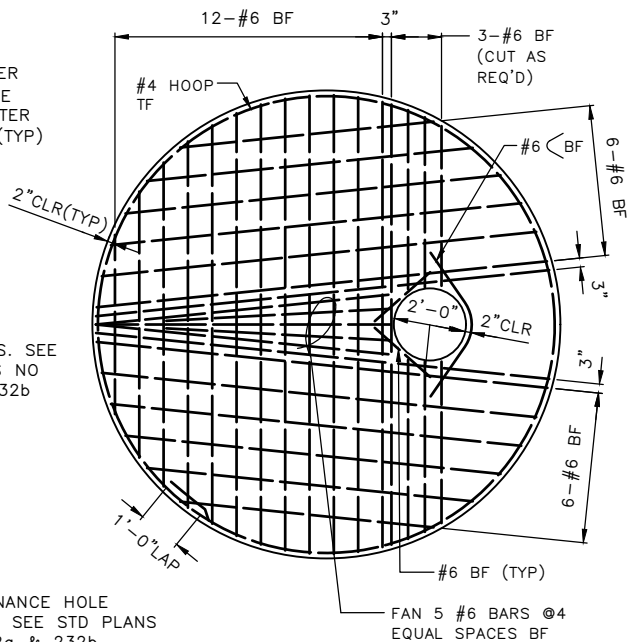


"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.62	0.54
30' MAX	0.79	0.69
40' MAX	0.97	0.85

**PLAN VIEW**  
(TOP REMOVED)

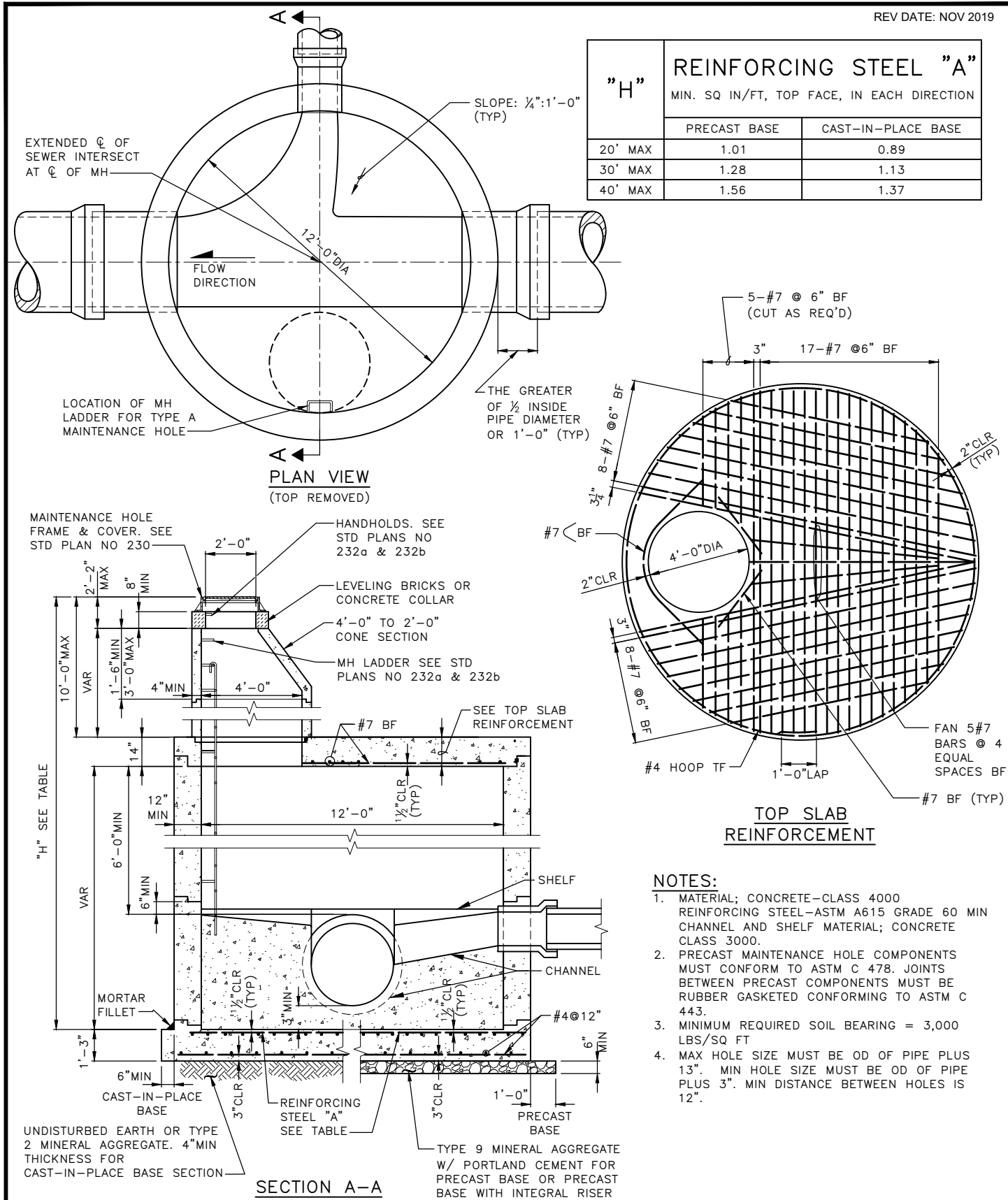


**SECTION A-A**



**TOP SLAB REINFORCEMENT**

- NOTES:**
1. MATERIAL; CONCRETE—CLASS 4000  
REINFORCING STEEL—ASTM A615 GRADE 60 MIN  
CHANNEL AND SHELF MATERIAL; CONCRETE  
CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS  
MUST CONFORM TO ASTM C 478. JOINTS  
BETWEEN PRECAST COMPONENTS MUST BE  
RUBBER GASKETED CONFORMING TO ASTM C  
443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000  
LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS  
12". MIN HOLE SIZE MUST BE OD OF PIPE  
PLUS 3". MIN DISTANCE BETWEEN HOLES IS  
12".



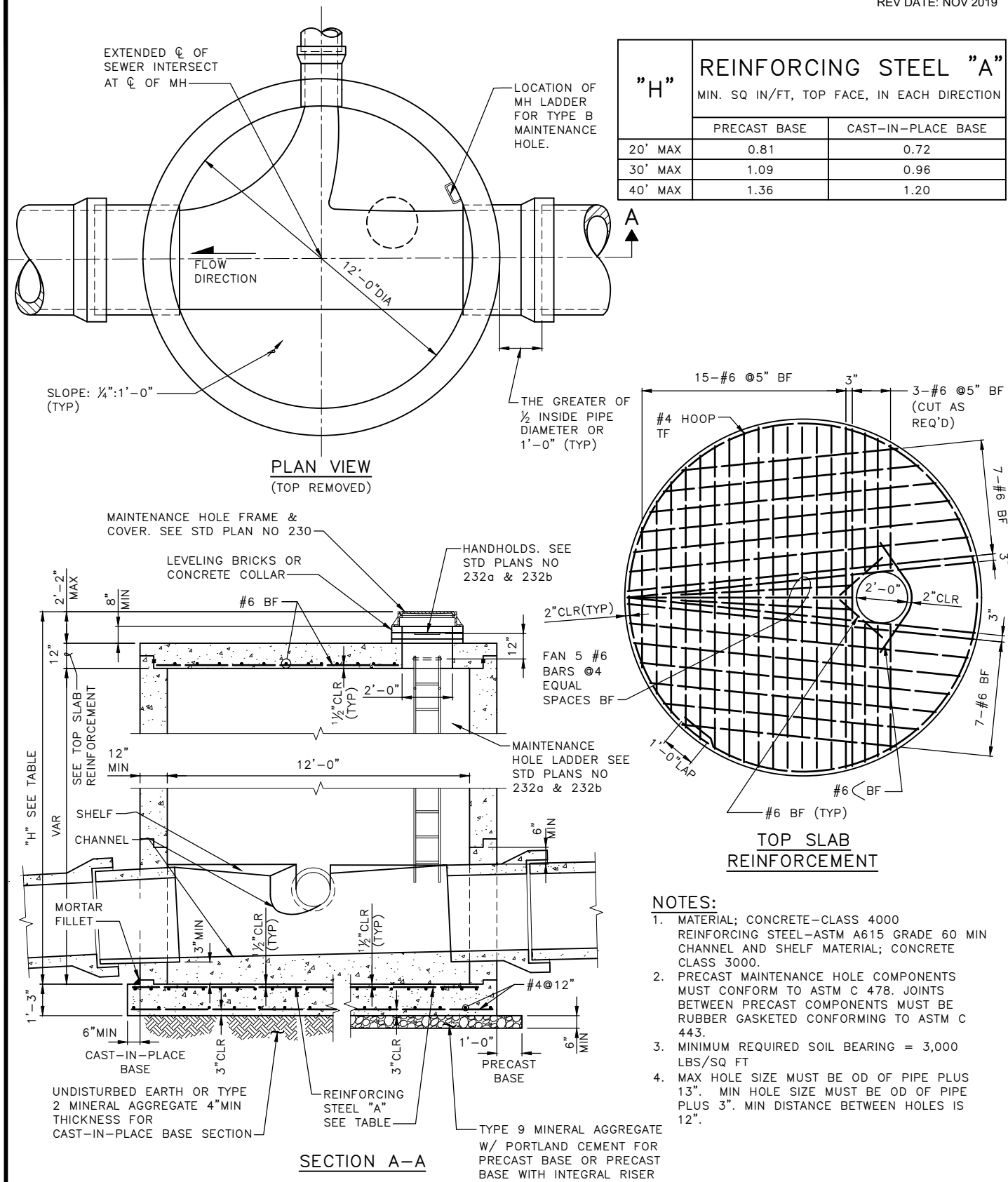
REF STD SPEC SEC 7-05



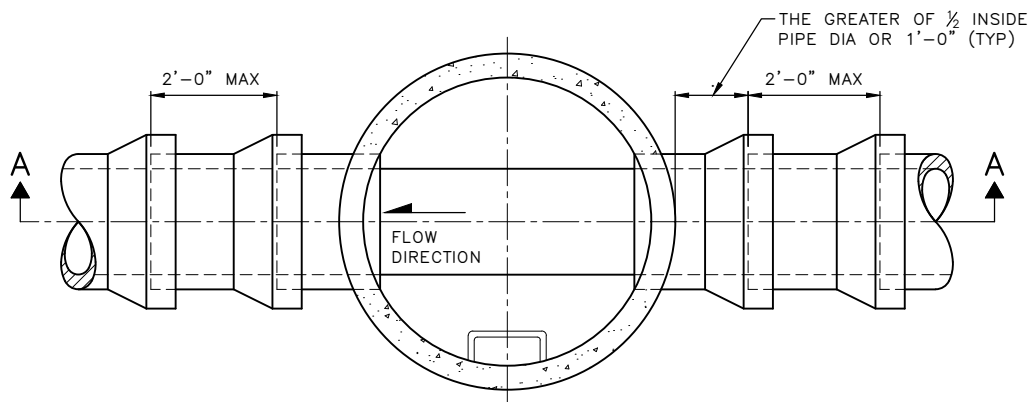
City of Seattle

NOT TO SCALE

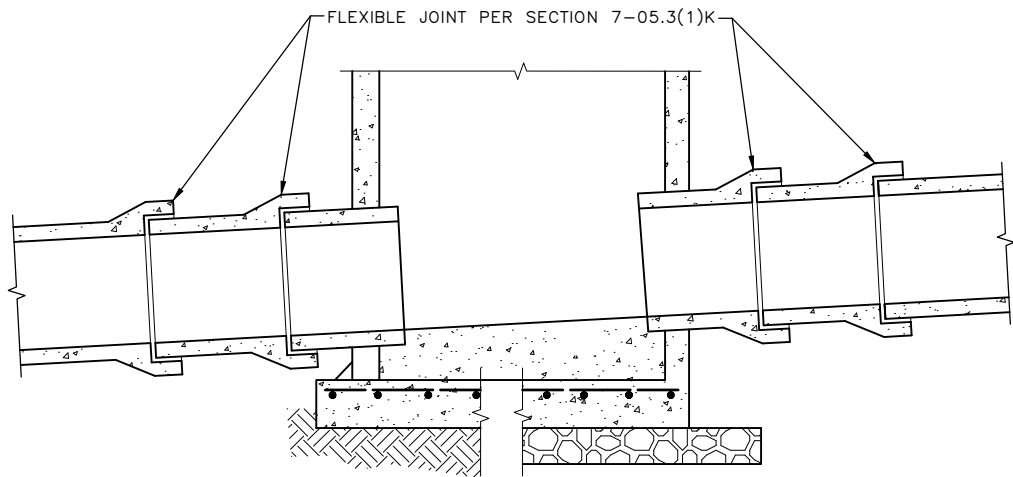
TYPE 212a MAINTENANCE HOLE



- NOTES:**
1. MATERIAL; CONCRETE-CLASS 4000 REINFORCING STEEL-ASTM A615 GRADE 60 MIN CHANNEL AND SHELF MATERIAL; CONCRETE CLASS 3000.
  2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
  3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
  4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 13". MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".



PLAN VIEW  
(TOP REMOVED)



SECTION A-A

- NOTES:
1. SEE STANDARD PLANS NO 204a THROUGH 212b FOR MAINTENANCE HOLE REQUIREMENTS.

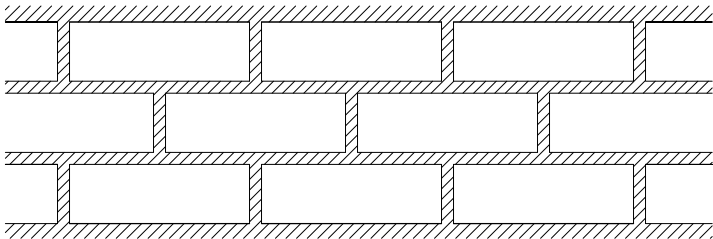
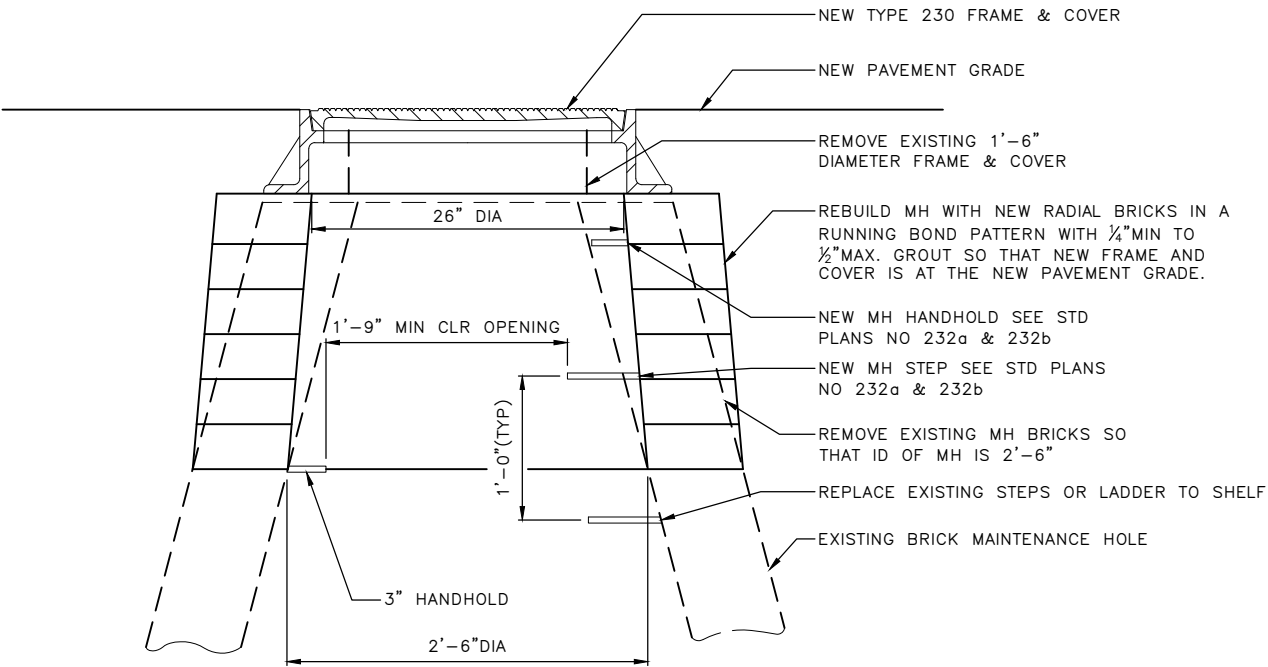
REF STD SPEC SEC 7-05



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**FLEXIBLE JOINT FOR VCP  
CONNECTION TO  
MAINTENANCE HOLES**



**RUNNING BOND PATTERN**  
GROUT BETWEEN ALL BRICKS

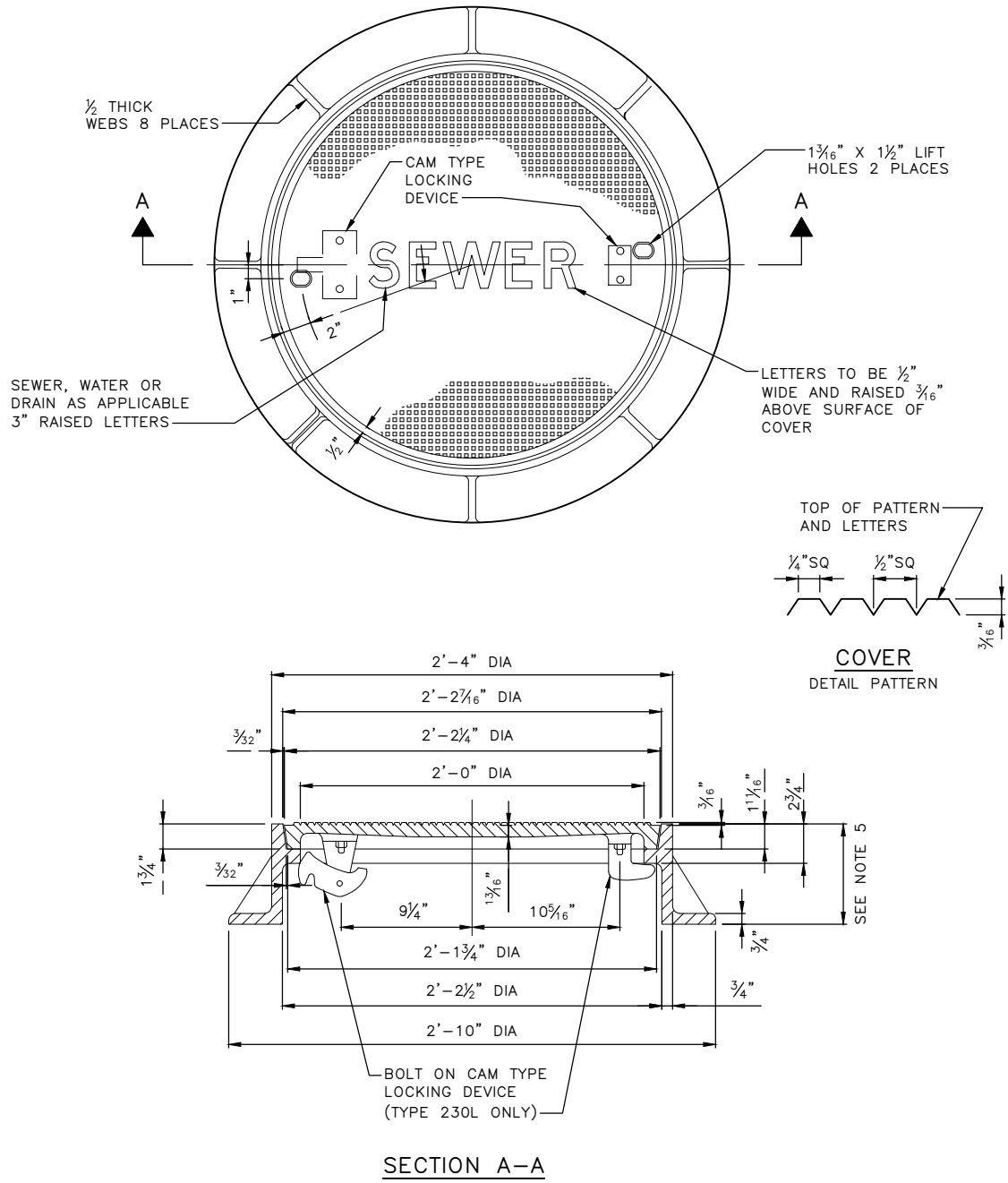
REF STD SPEC SEC 7-05



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**REBUILD EXISTING  
BRICK MAINTENANCE HOLE**



NOTES:

1. DESIGNATE LOCKING COVER AS TYPE 230L FOR USE IN NON-VEHICULAR TRAFFIC AREAS.
2. COVER THICKNESS IS MEASURED FROM THE BOTTOM OF THE PATTERN.
3. FRAMES MUST BE MANUFACTURED FROM CAST IRON OR DUCTILE IRON.
4. COVERS MUST BE MANUFACTURED FROM DUCTILE IRON.
5. CASTING HEIGHT MUST BE 7" OR 10". WHERE CASTING IS WITHIN ROADWAY, 10" MUST BE USED. SEE ALSO STD PLAN NO. 406.

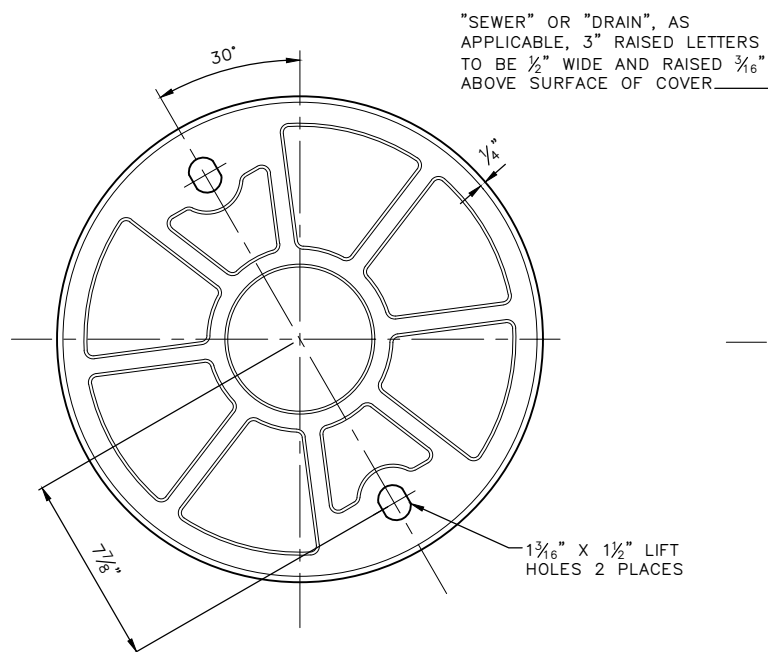
REF STD SPEC SEC 7-05, 9-12



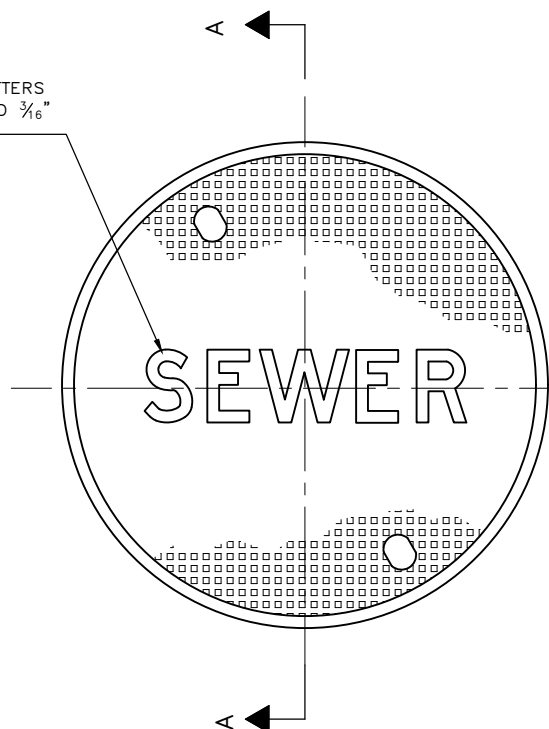
City of Seattle

NOT TO SCALE

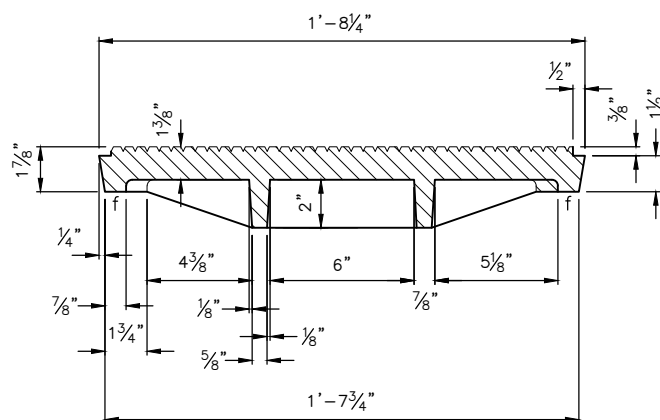
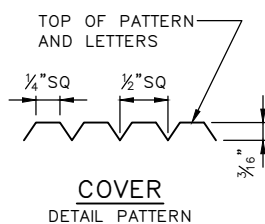
2'-0" DIAMETER  
FRAME & COVER



BOTTOM VIEW



TOP VIEW



SECTION A-A

f=MACHINED FINISH

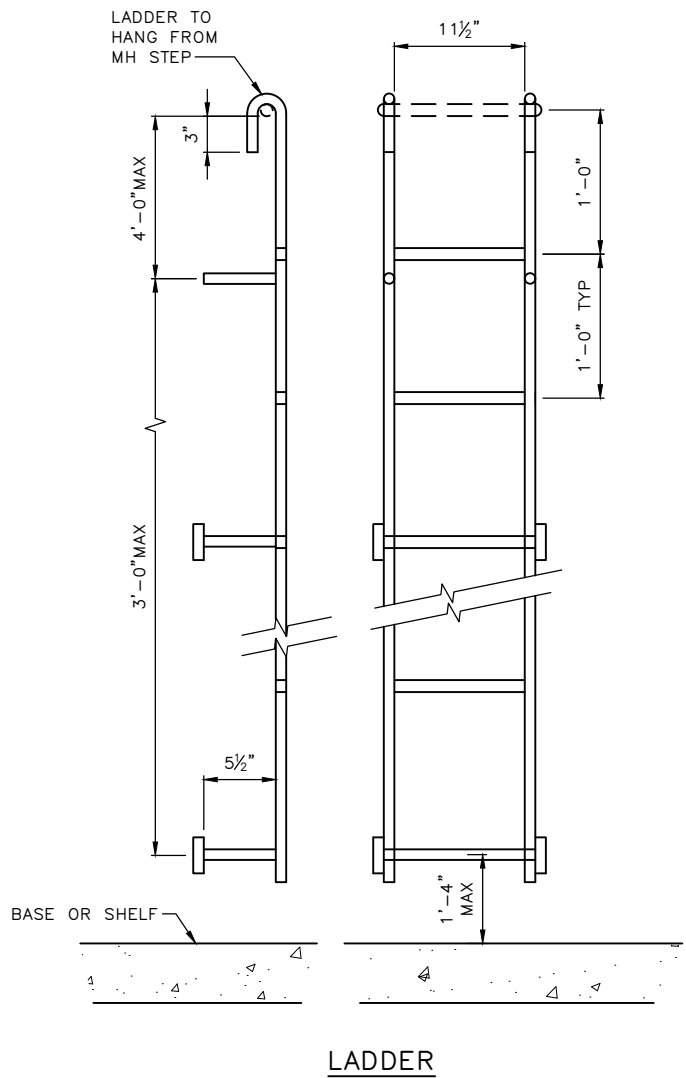
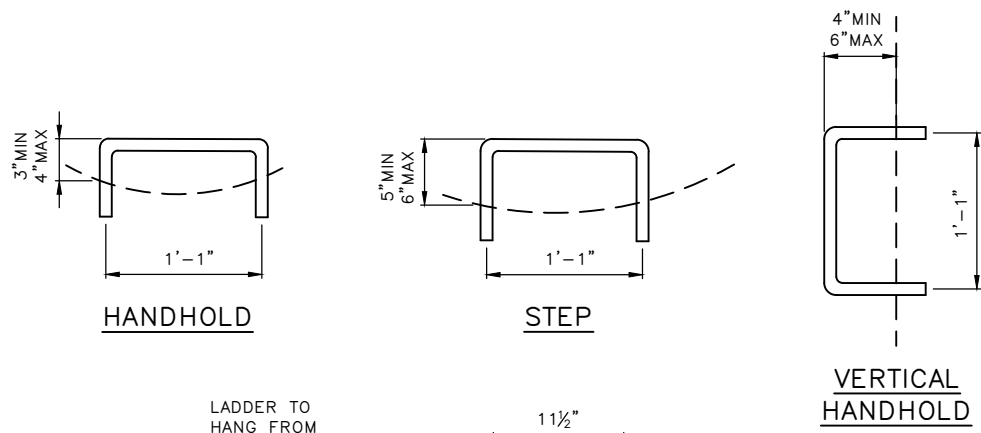
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City of Seattle

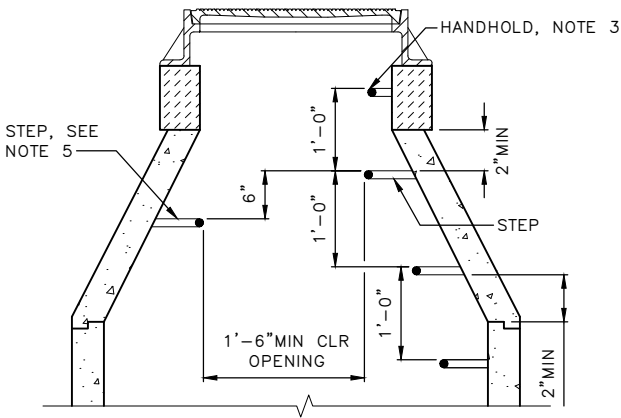
NOT TO SCALE

SEWER  
REPLACEMENT COVER

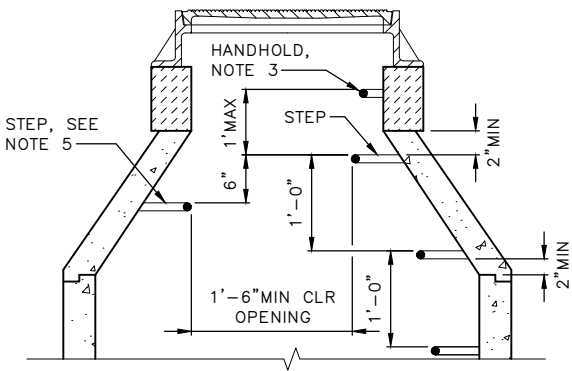


- NOTES:**
- 1. MATERIAL - STEEL REINFORCED POLYPROPYLENE
  - 2. DIMENSIONS FOR THE MH LADDER AND STEP ARE MINIMUM REQUIREMENTS ONLY.
  - 3. WHEN THE DISTANCE FROM THE LAST (HIGHEST) STEP OR HANDHOLD TO THE TOP OF THE MH FRAME EXCEEDS 1'-6", A HANDHOLD MUST BE INSTALLED MID-WAY IN THE LEVELING BRICK OR COLLAR.
  - 4. EITHER STEPS, LADDERS OR A COMBINATION OF THE TWO CAN BE USED. IF BOTH STEPS AND LADDERS ARE USED IN ANY MH, THEY MUST BE FROM THE SAME MANUFACTURER.
  - 5. A VERTICAL HANDHOLD MUST BE INSTALLED 4'-0" ABOVE THE SHELF WHEN INDICATED IN MH PLAN VIEW.

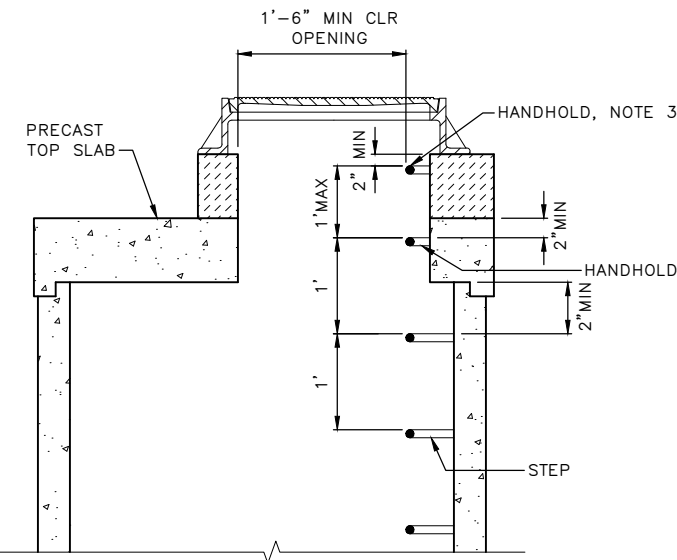




24" HIGH CONCENTRIC CONE



18" HIGH CONCENTRIC CONE



MH WITH PRECAST TOP SLAB

**NOTES:**

- 1. MATERIAL - STEEL REINFORCED POLYPROPYLENE.
- 2. DIMENSIONS FOR THE MH LADDER AND STEP ARE MINIMUM REQUIREMENTS ONLY.
- 3. WHEN THE DISTANCE FROM THE LAST (HIGHEST) STEP OR HANDHOLD TO THE TOP OF THE MH FRAME EXCEEDS 1'-6", A HANDHOLD MUST BE INSTALLED MID-WAY IN THE LEVELING BRICK OR COLLAR.
- 4. EITHER STEPS, LADDERS OR A COMBINATION OF THE TWO CAN BE USED. IF BOTH STEPS AND LADDERS ARE USED IN ANY MH, THEY MUST BE FROM THE SAME MANUFACTURER.
- 5. STEP ON OPPOSITE SIDE OF MH MUST BE PLACED MID WAY BETWEEN STEPS ON OPPOSING SIDE.

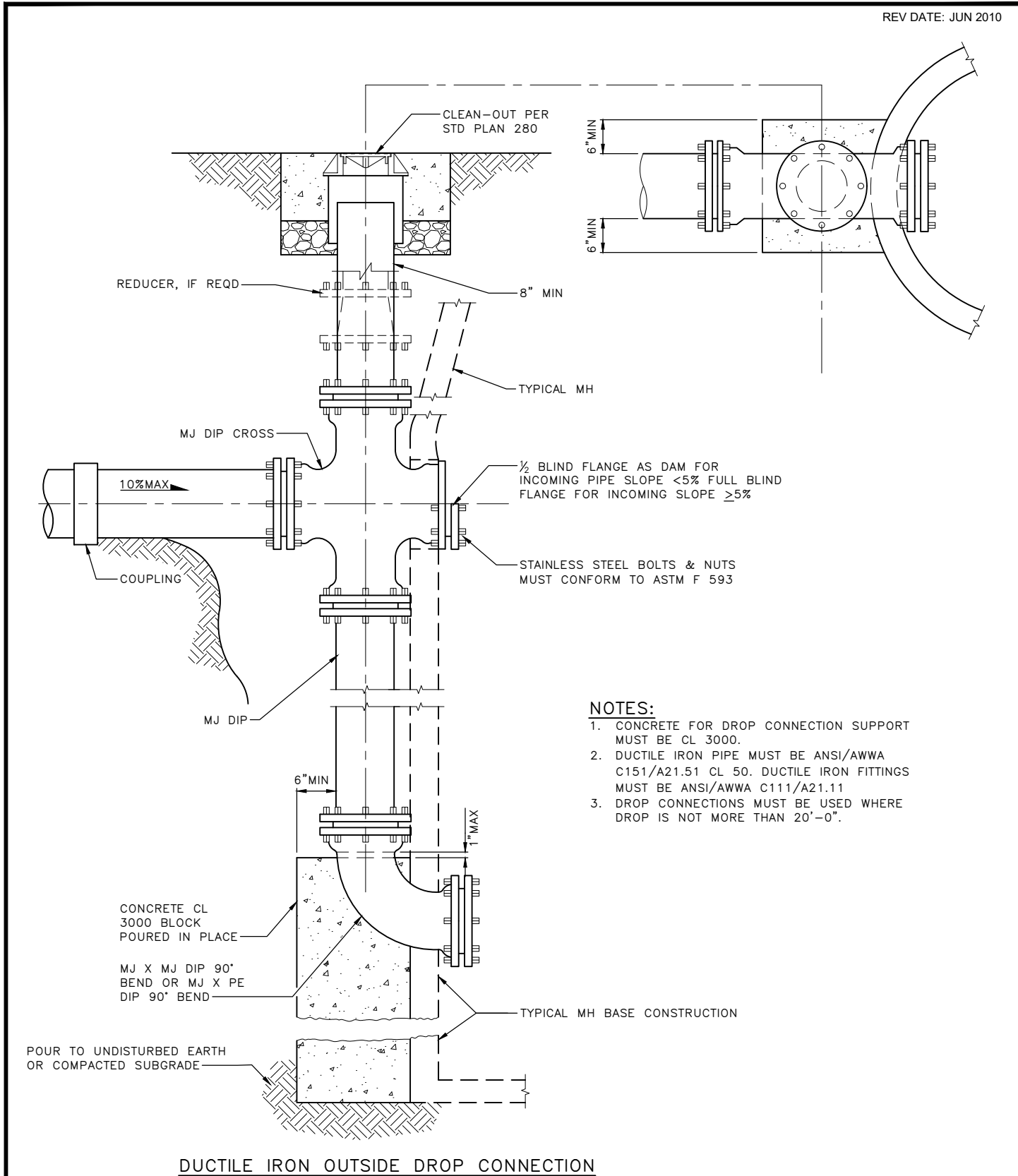
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

MAINTENANCE HOLE LADDER,  
STEP AND HANDHOLD



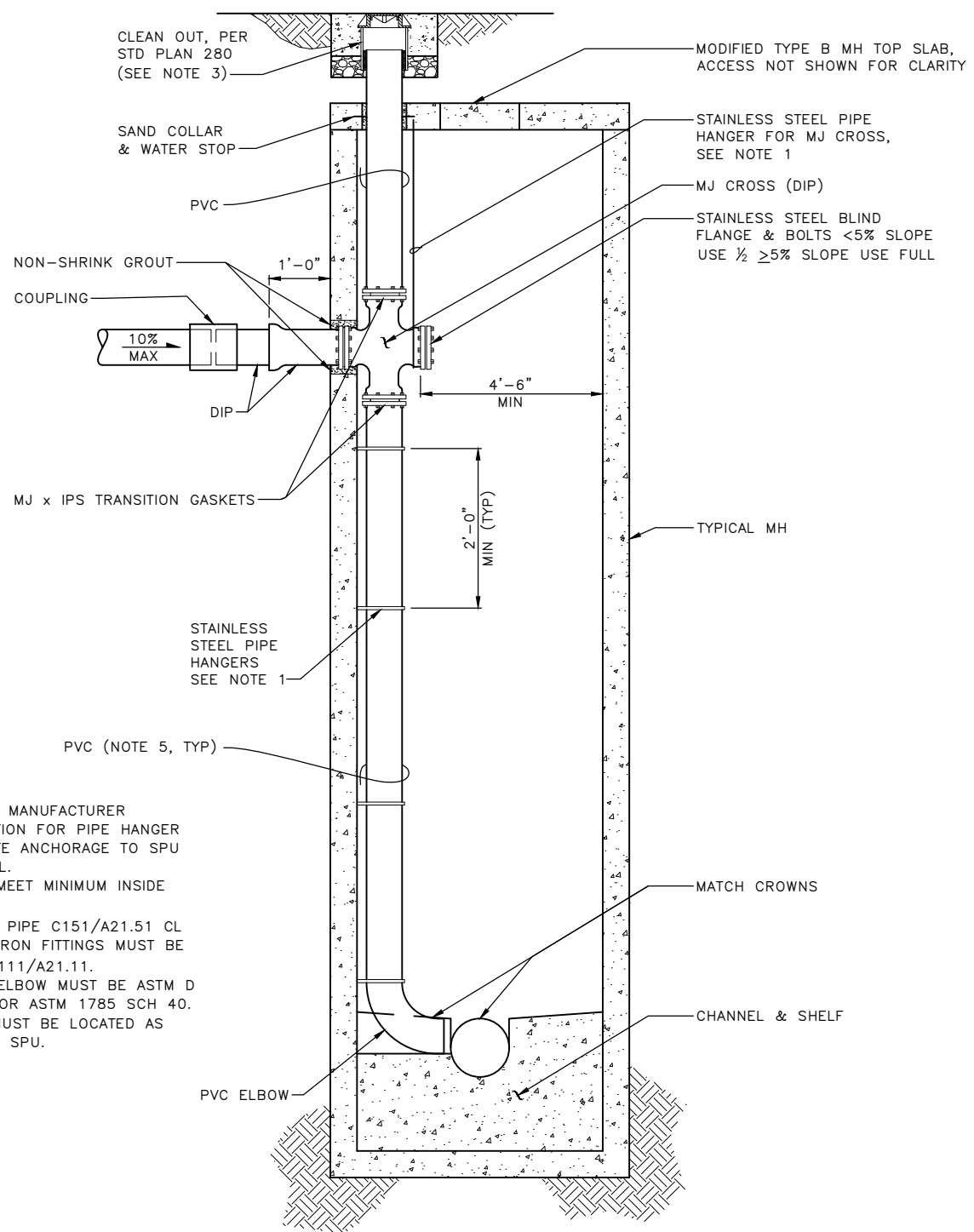
REF STD SPEC SEC 7-08



City of Seattle

NOT TO SCALE

OUTSIDE DROP CONNECTION



**NOTES:**

- 1. PROVIDE PIPE MANUFACTURER RECOMMENDATION FOR PIPE HANGER AND CONCRETE ANCHORAGE TO SPU FOR APPROVAL.
- 2. SIZE MH TO MEET MINIMUM INSIDE CLEARANCE.
- 3. DUCTILE IRON PIPE C151/A21.51 CL 50, DUCTILE IRON FITTINGS MUST BE ANSI/AWWA 6111/A21.11.
- 4. PVC PIPE & ELBOW MUST BE ASTM D 2241 CL200 OR ASTM 1785 SCH 40.
- 5. CLEAN-OUT MUST BE LOCATED AS APPROVED BY SPU.

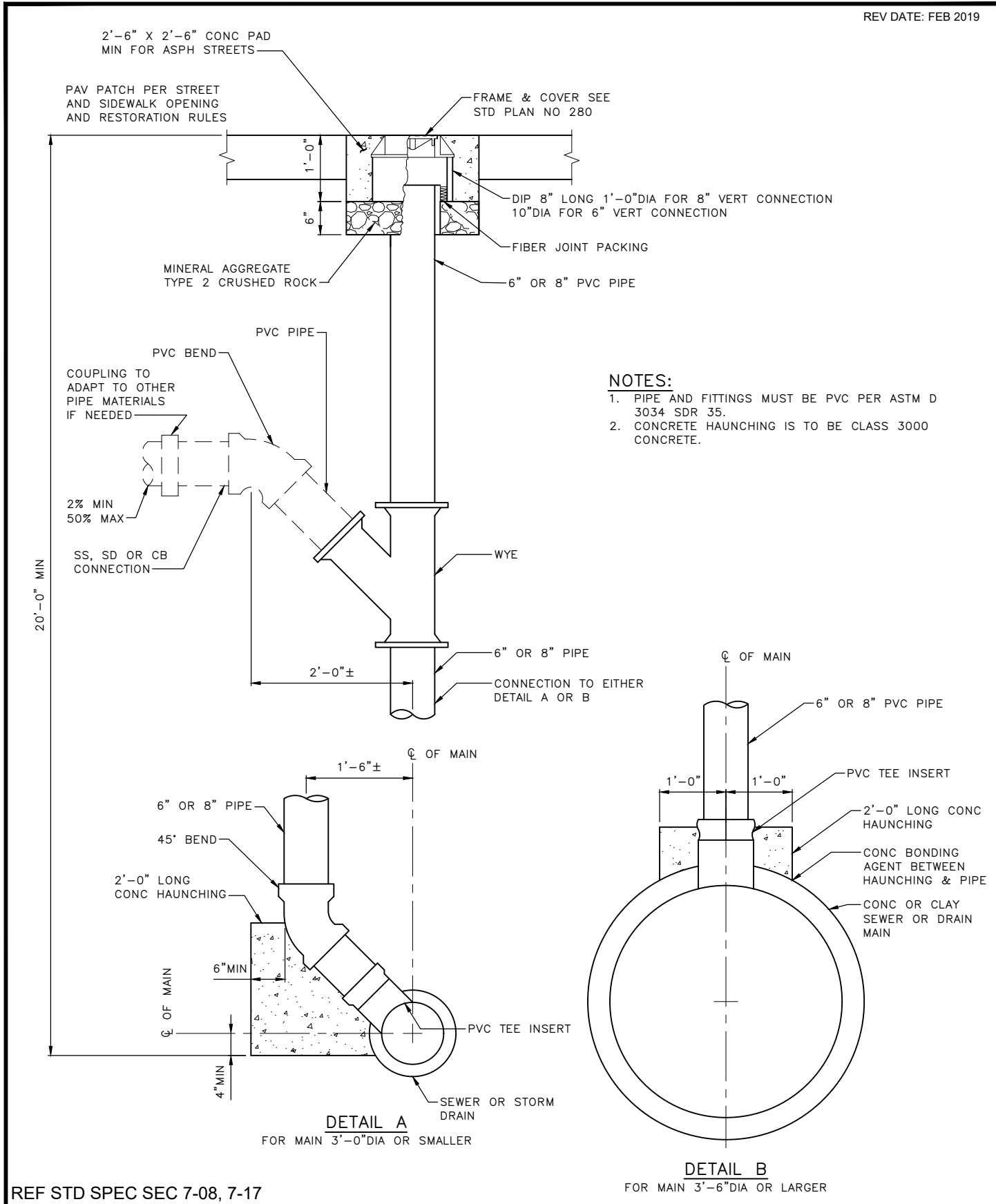
REF STD SPEC SEC 7-08



City of Seattle

NOT TO SCALE

INSIDE DROP CONNECTION



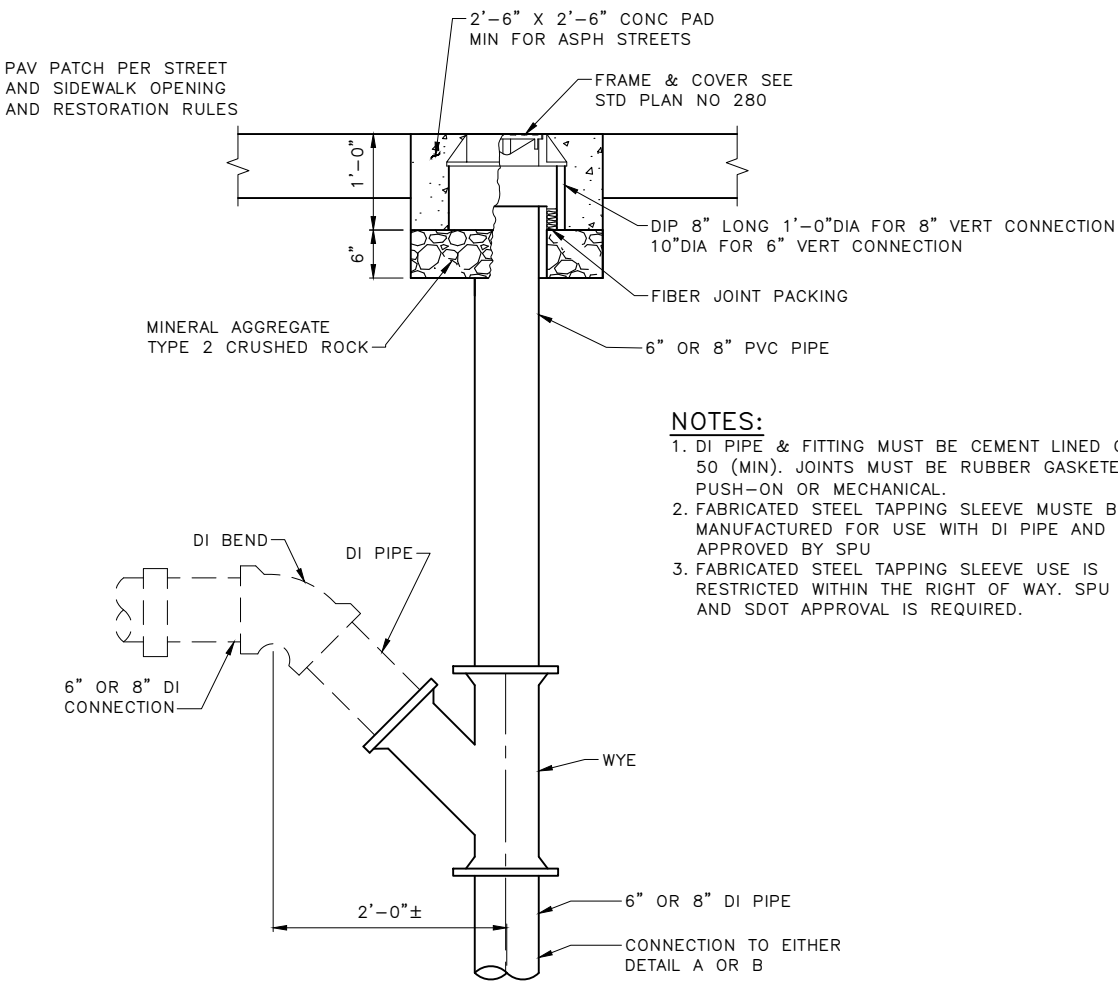
REF STD SPEC SEC 7-08, 7-17



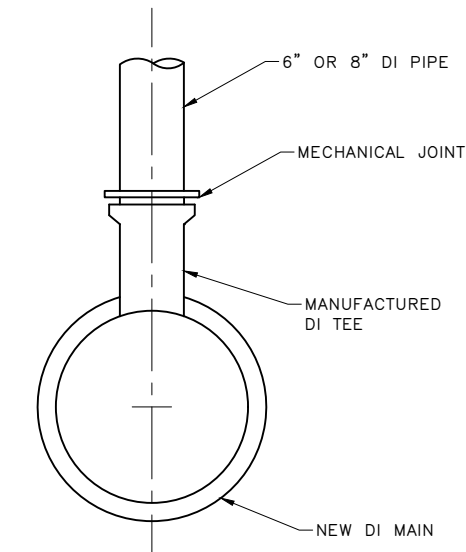
City of Seattle

NOT TO SCALE

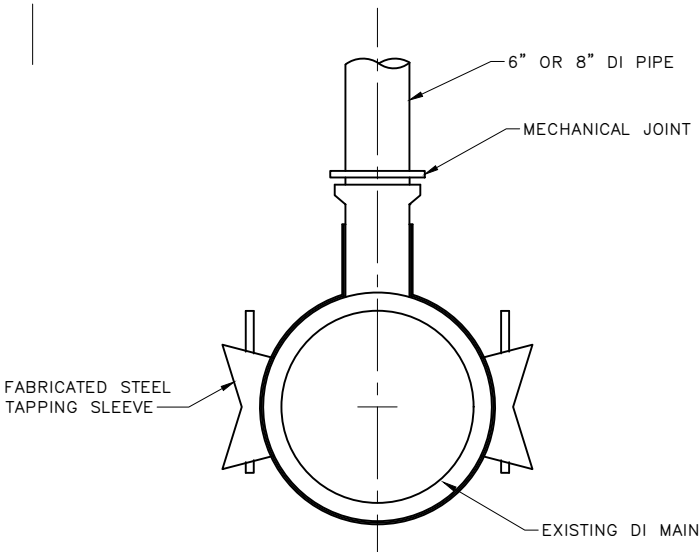
6" OR 8" VERTICAL CONNECTION  
TO CONCRETE OR CLAY PIPE



- NOTES:**
- 1. DI PIPE & FITTING MUST BE CEMENT LINED CL 50 (MIN). JOINTS MUST BE RUBBER GASKETED PUSH-ON OR MECHANICAL.
  - 2. FABRICATED STEEL TAPPING SLEEVE MUST BE MANUFACTURED FOR USE WITH DI PIPE AND APPROVED BY SPU
  - 3. FABRICATED STEEL TAPPING SLEEVE USE IS RESTRICTED WITHIN THE RIGHT OF WAY. SPU AND SDOT APPROVAL IS REQUIRED.



**DETAIL A**  
FOR VERTICAL CONNECTIONS TO  
NEW DI MAIN



**DETAIL B**  
FOR VERTICAL CONNECTIONS TO  
EXISTING DI MAIN

REF STD SPEC SEC 7-08, 7-17



City of Seattle

NOT TO SCALE

**6" OR 8" VERTICAL CONNECTION  
TO DUCTILE IRON PIPE**

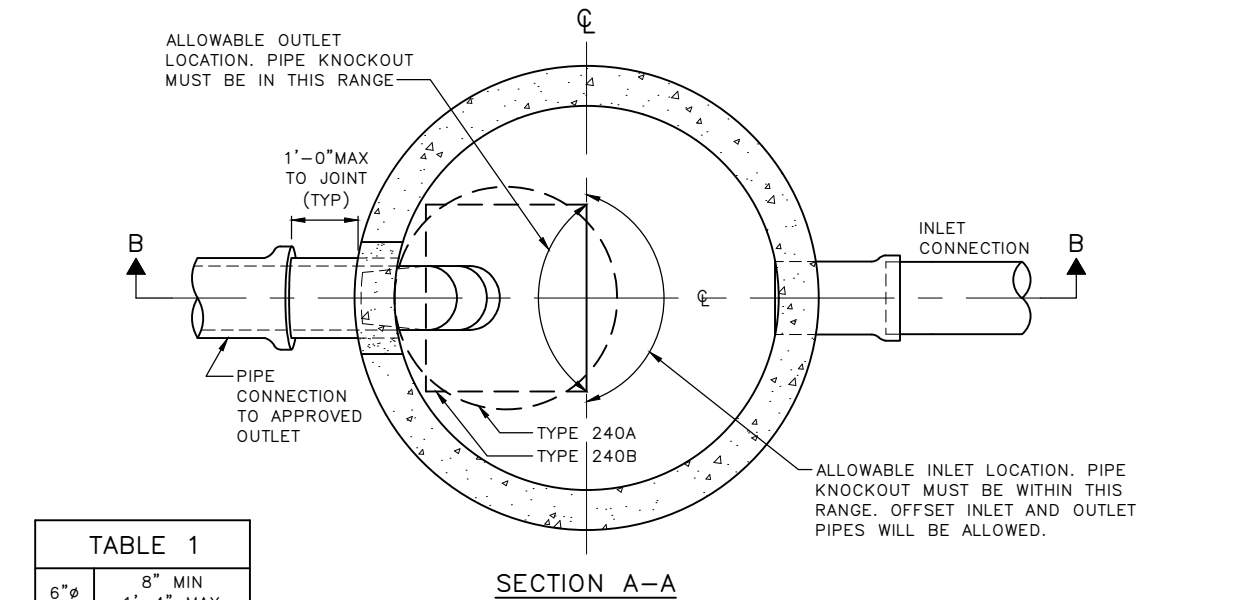
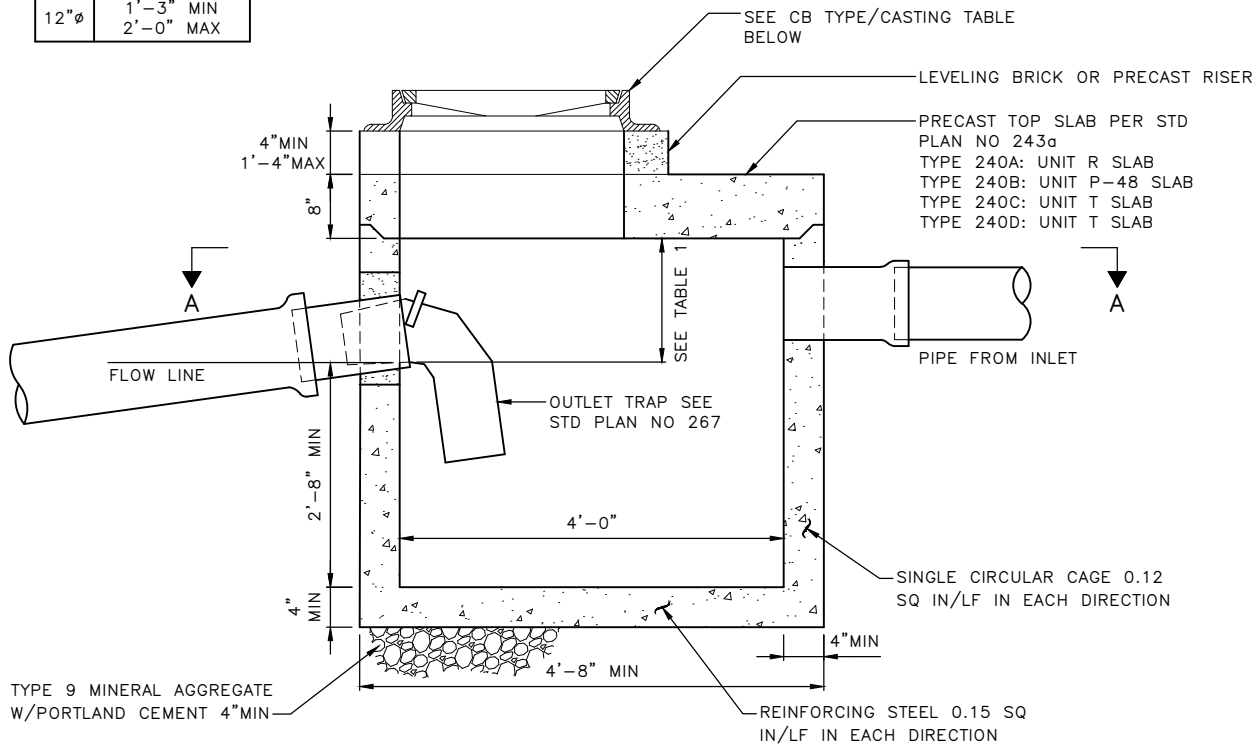


TABLE 1	
6" $\phi$	8" MIN 1'-4" MAX
8" $\phi$	10" MIN 1'-4" MAX
12" $\phi$	1'-3" MIN 2'-0" MAX



- NOTES:
1. FRAME & GRATE OR FRAME & COVER MUST BE LOCATED OVER TRAP.
  2. INVERT OF INLET PIPE MUST BE 2" MIN ABOVE INVERT OF OUTLET PIPE.
  3. SEE STD PLAN 261 FOR ALLOWABLE OUTLET LOCATIONS.

CB TYPE	CASTING	
	FRAME	COVER
240A	PER STD PLAN 230	PER STD PLAN 230
240B	PER STD PLAN 264	PER STD PLAN 264
240C	PER STD PLAN 262	PER STD PLAN 265
240D	PER STD PLAN 263A	PER STD PLAN 265

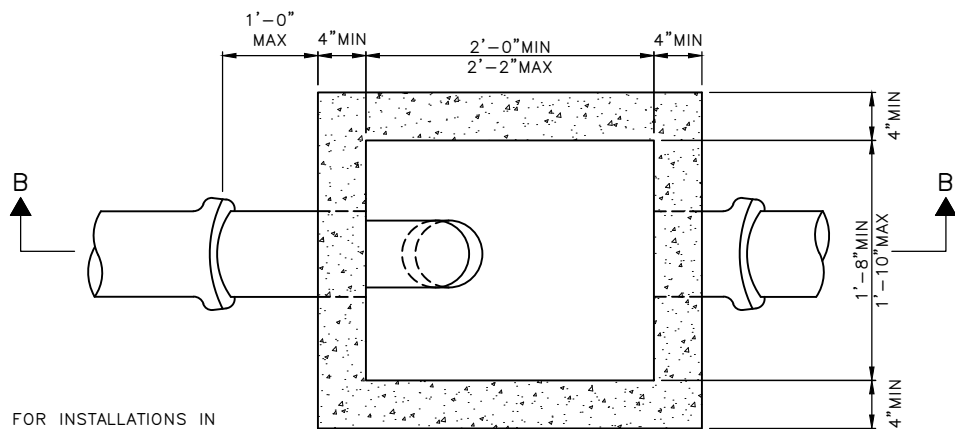
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City of Seattle

NOT TO SCALE

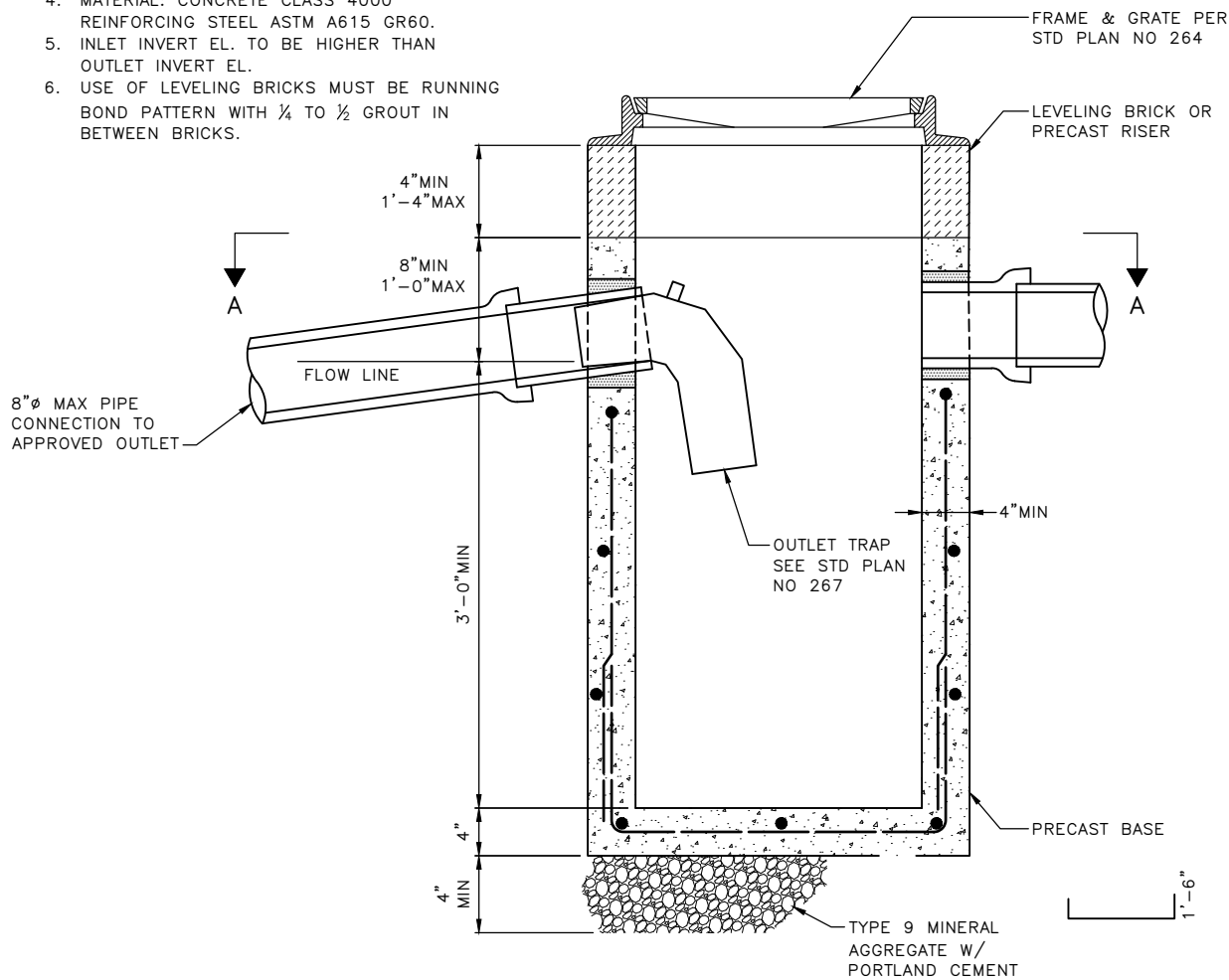
TYPE 240 CATCH BASIN



SECTION A-A

**NOTES:**

1. THIS CATCH BASIN IS FOR INSTALLATIONS IN ALLEYS AND UNPAVED AREAS IN THE RIGHT-OF-WAY. ANY OTHER USE IN THE R/W WILL REQUIRE THE APPROVAL OF SPU.
2. FOR CURB DISCHARGE INSTALLATION SEE STD PLAN NO 241b.
3. INSTALL PER STD PLAN NO 261.
4. MATERIAL: CONCRETE CLASS 4000 REINFORCING STEEL ASTM A615 GR60.
5. INLET INVERT EL. TO BE HIGHER THAN OUTLET INVERT EL.
6. USE OF LEVELING BRICKS MUST BE RUNNING BOND PATTERN WITH ¼ TO ½ GROUT IN BETWEEN BRICKS.



SECTION B-B

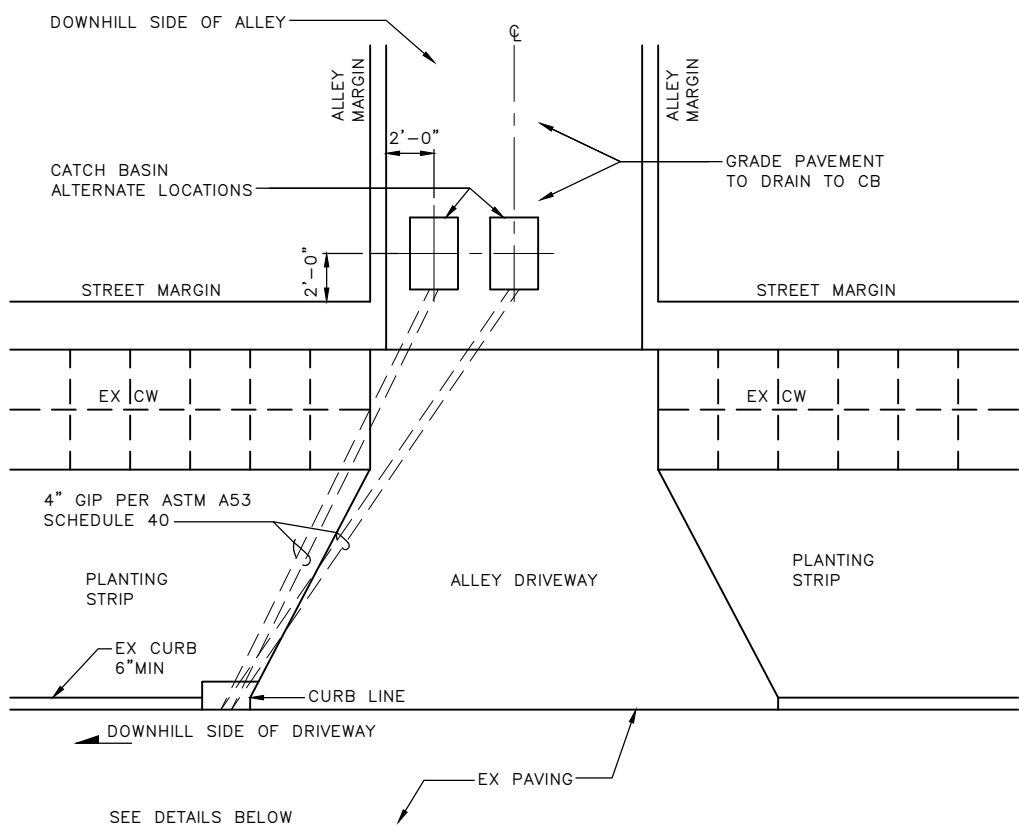
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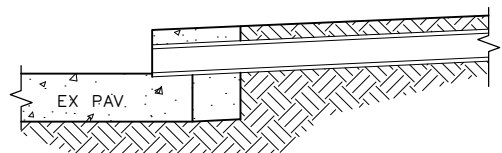
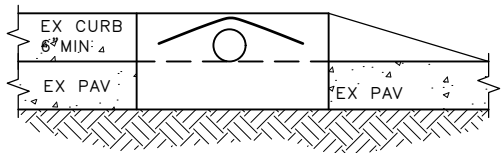
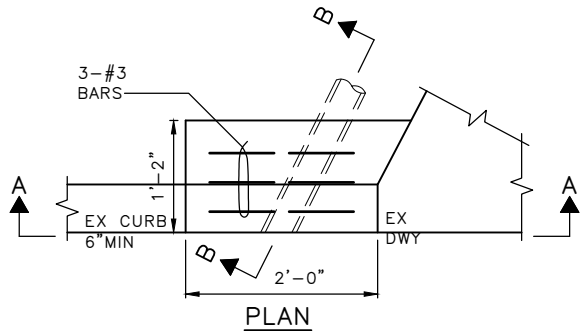
City of Seattle

NOT TO SCALE

TYPE 241 CATCH BASIN



PLAN



REF STD SPEC SEC 7-05, 7-08

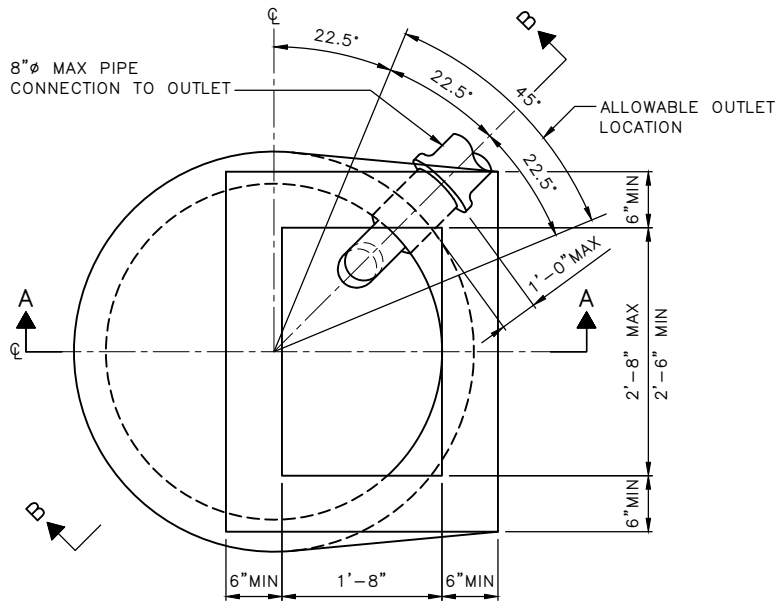


City of Seattle

NOT TO SCALE

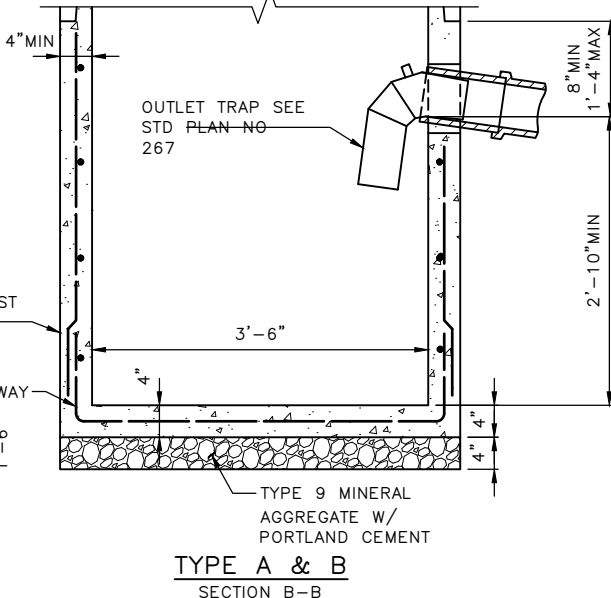
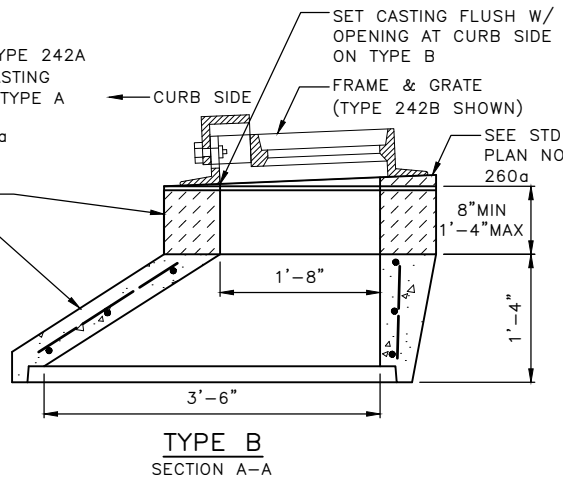
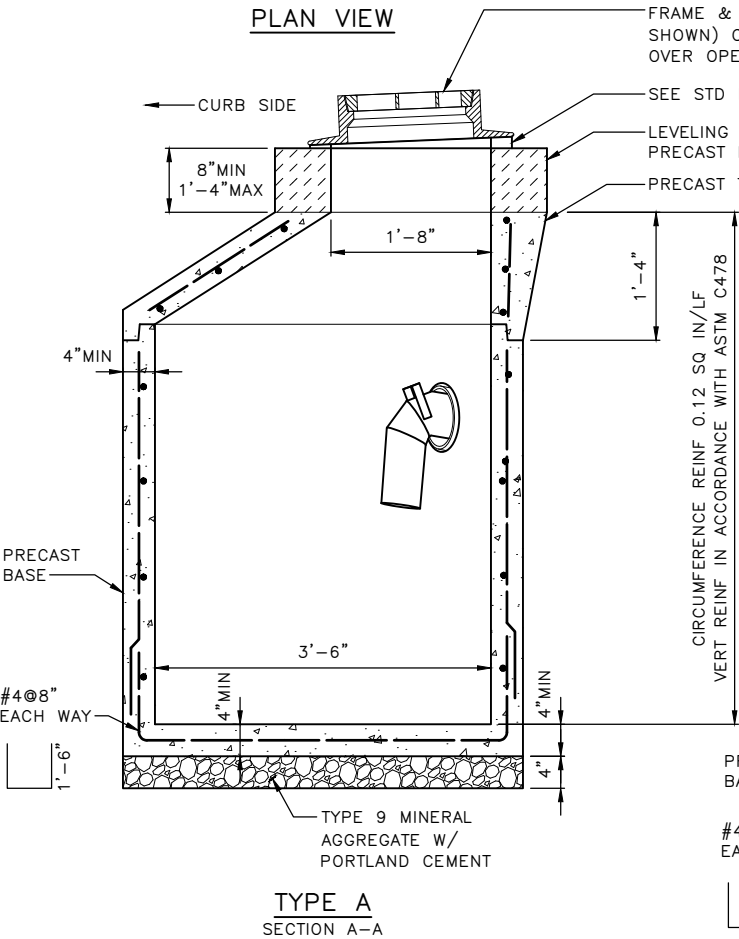
TYPE 241 CATCH BASIN  
INSTALLATIONS





CB TYPE	CASTING		
	FRAME	GRATE	HOOD
A	NO 262	NO 265	NONE
B	NO 263A	NO 265	NO 263A
C	NO 263A	NO 265	NO 263B

- NOTES:
1. MATERIAL: CONCRETE: CLASS 4000  
REINFORCING STEEL: ASTM A 615 GR 60
  2. INSTALL & LOCATE PER STD PLANS NO 260 & 261
  3. OUTLET TRAP TO BE LOCATED DIRECTLY BELOW FRAME AND GRATE
  4. USE OF LEVELING BRICKS MUST BE RUNNING BOND PATTERN WITH 1/4 TO 1/2 GROUT IN BETWEEN BRICKS.



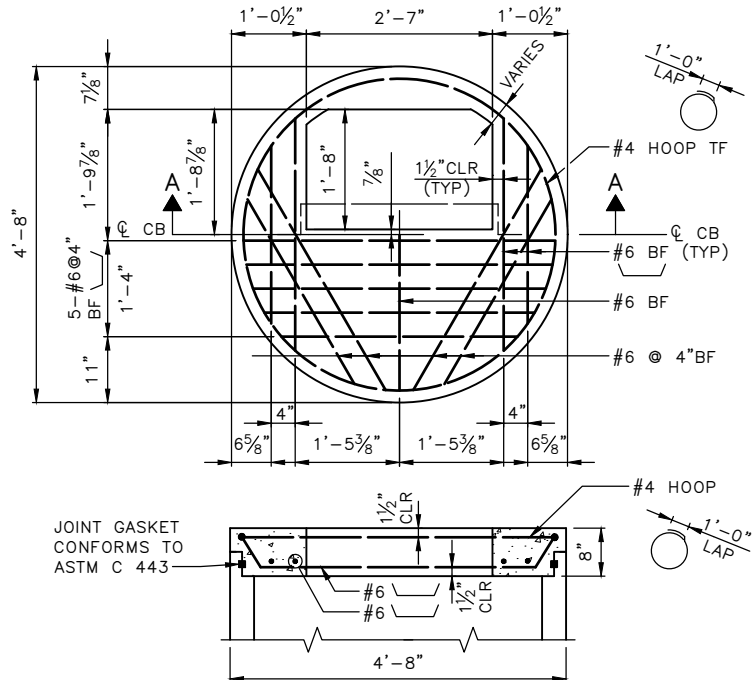
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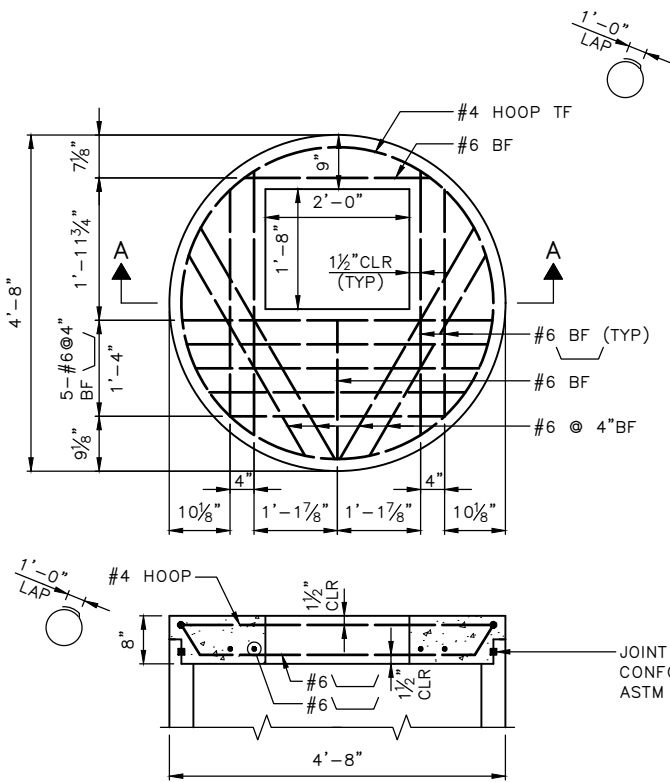
City of Seattle

NOT TO SCALE

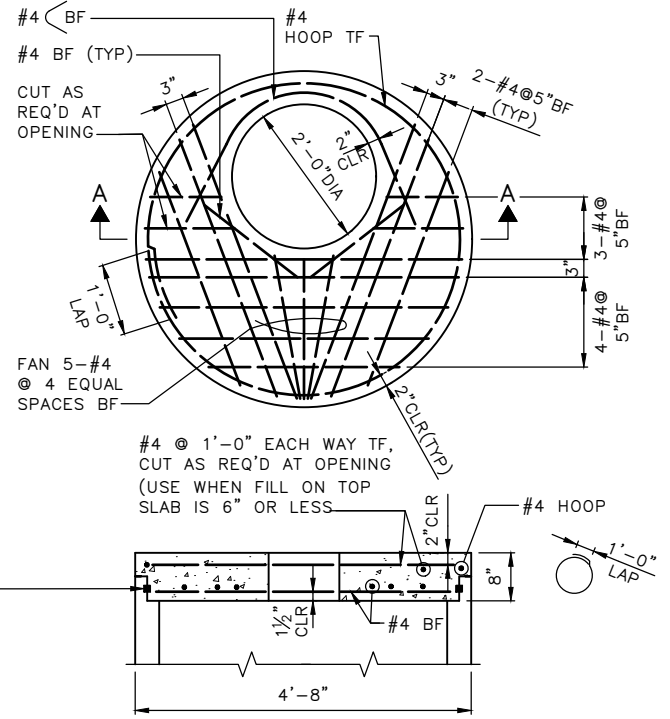
TYPE 242 CATCH BASIN



UNIT T  
SECTION A-A



UNIT P-48  
SECTION A-A



UNIT R  
SECTION A-A

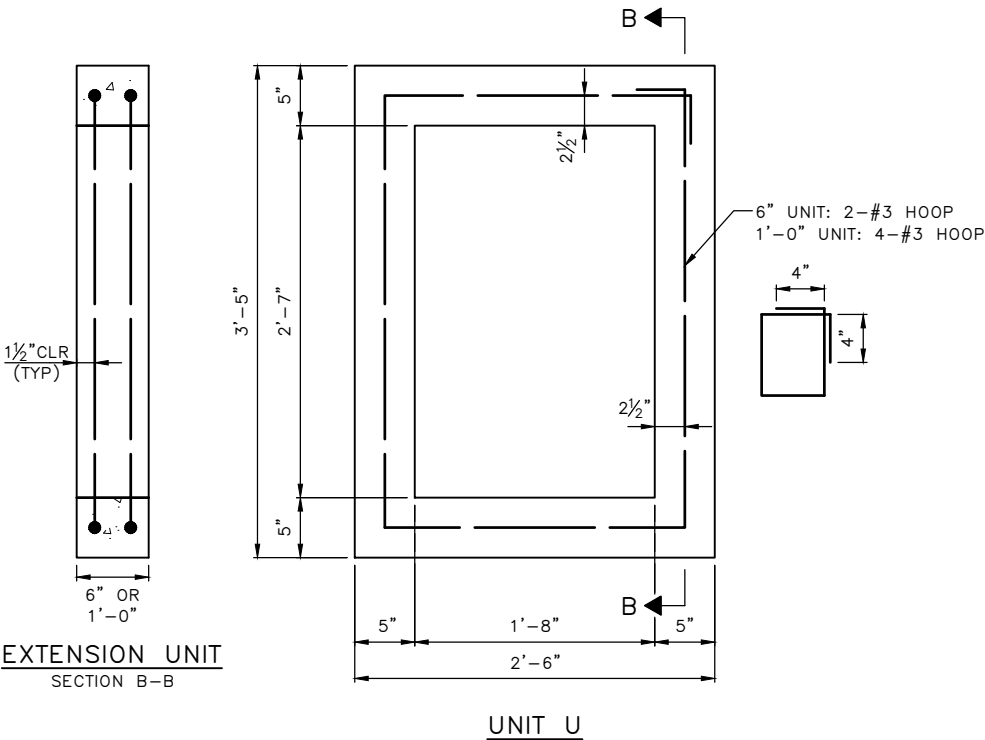
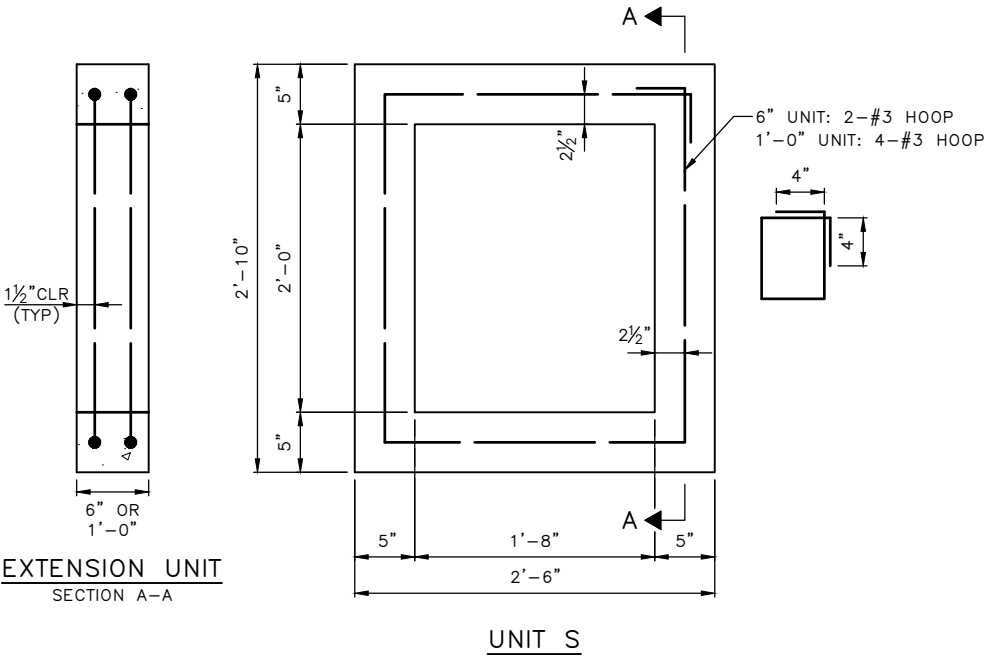
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

PRECAST CATCH BASIN  
TOP SLAB



- NOTES:
1. CONCRETE: CLASS 4000
  2. REINFORCING STEEL: ASTM A615 GR 60

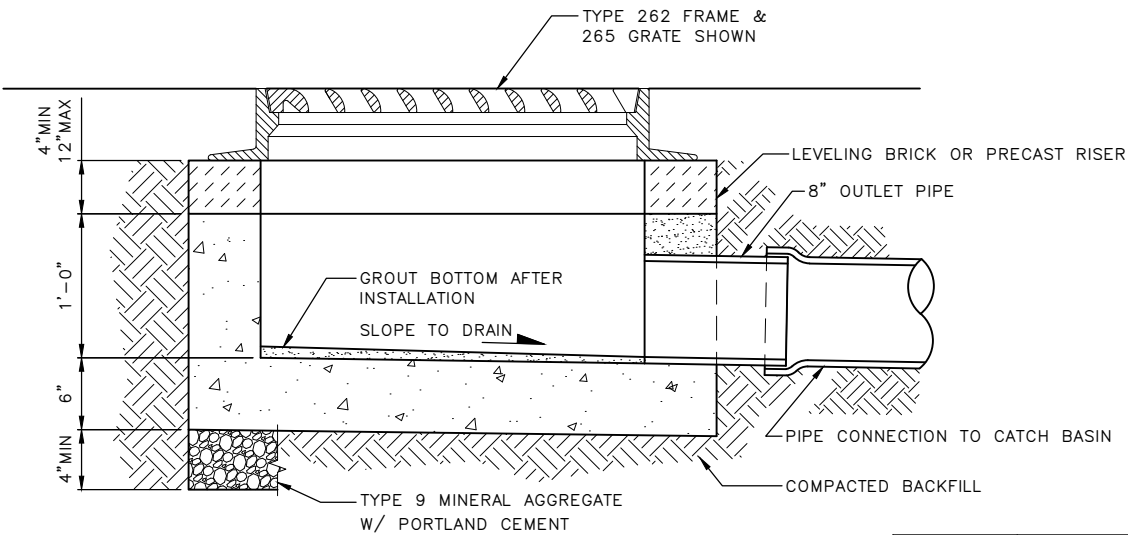
REF STD SPEC SEC 7-05



City of Seattle

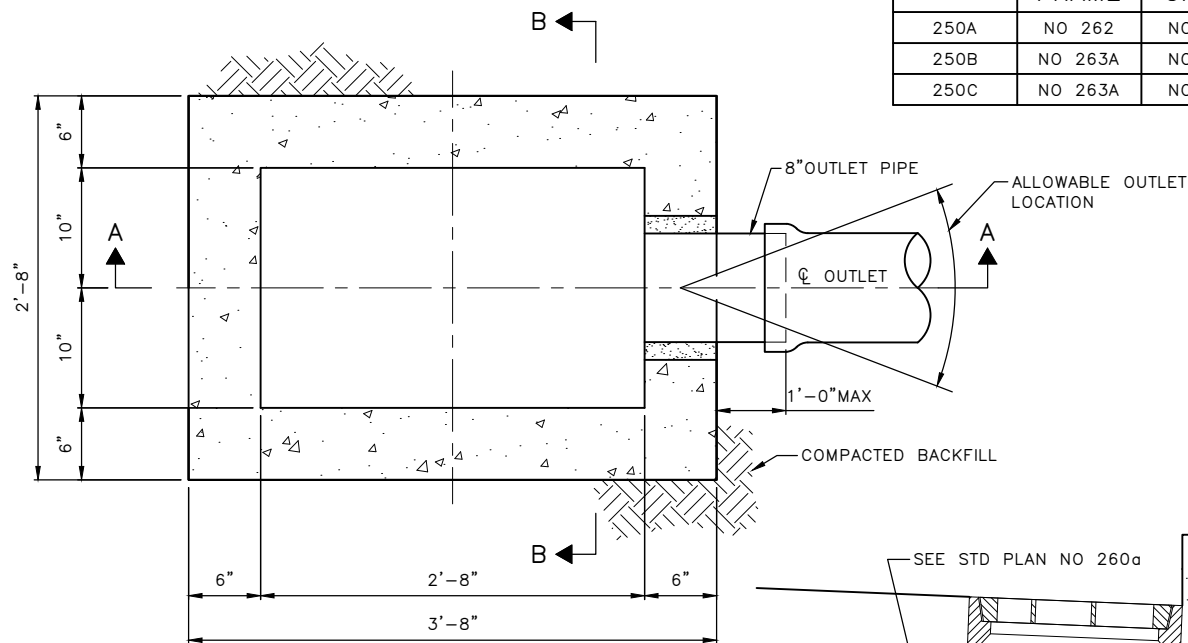
NOT TO SCALE

PRECAST CATCH BASIN  
EXTENSION RISERS

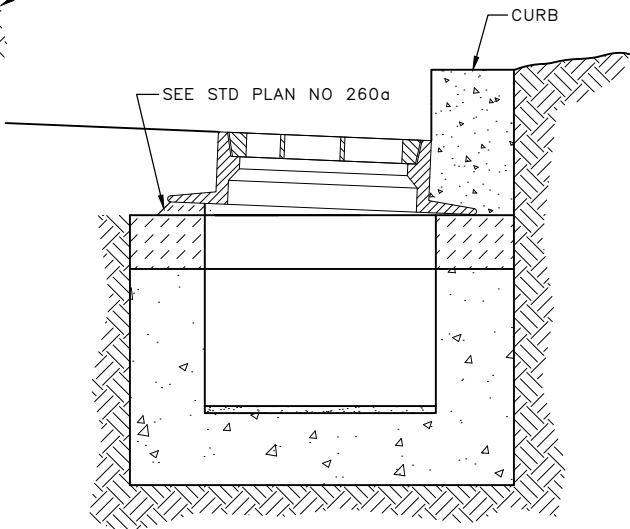


SECTION A-A

INLET TYPE	CASTING		
	FRAME	GRATE	HOOD
250A	NO 262	NO 265	NONE
250B	NO 263A	NO 265	NO 263A
250C	NO 263A	NO 265	NO 263B



PLAN VIEW



SECTION B-B

TYPE A ONLY

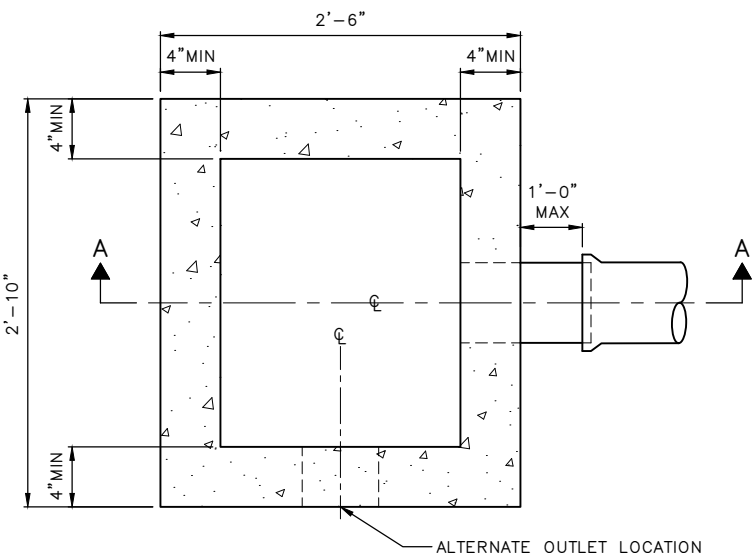
REF STD SPEC SEC 7-05



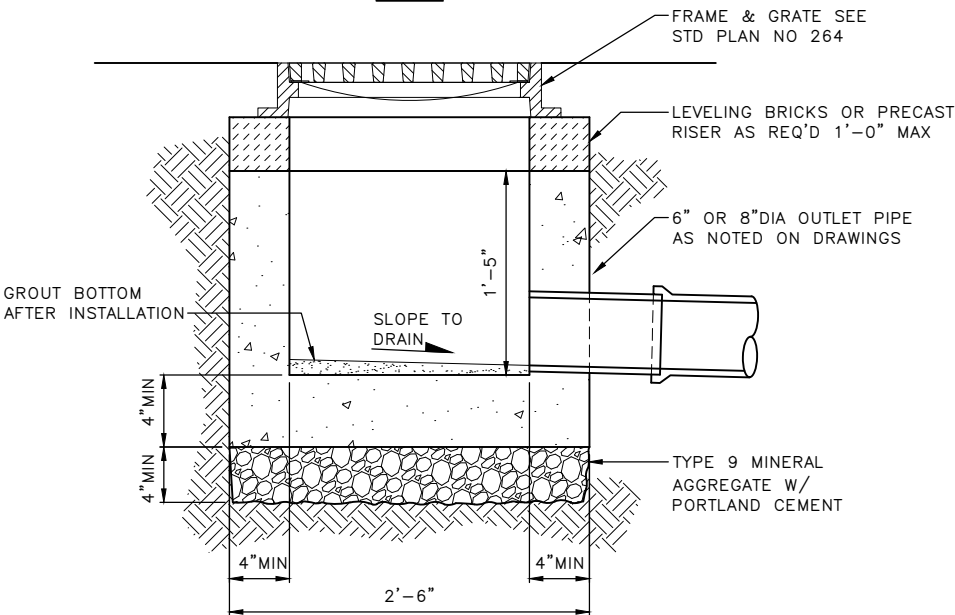
City of Seattle

NOT TO SCALE

TYPE 250 INLET



PLAN



SECTION A-A

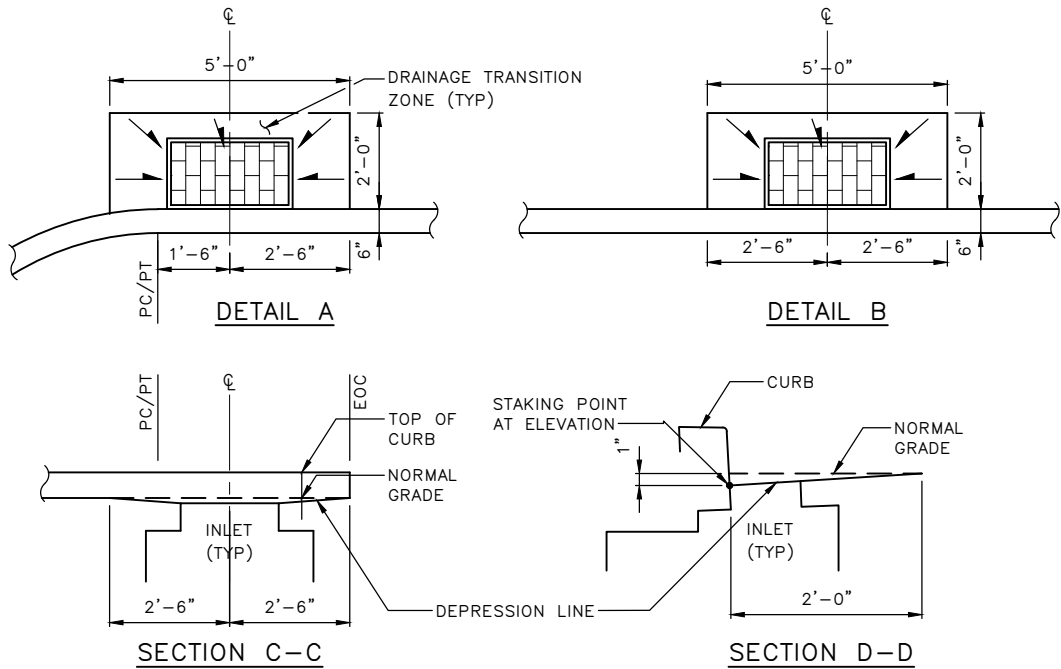
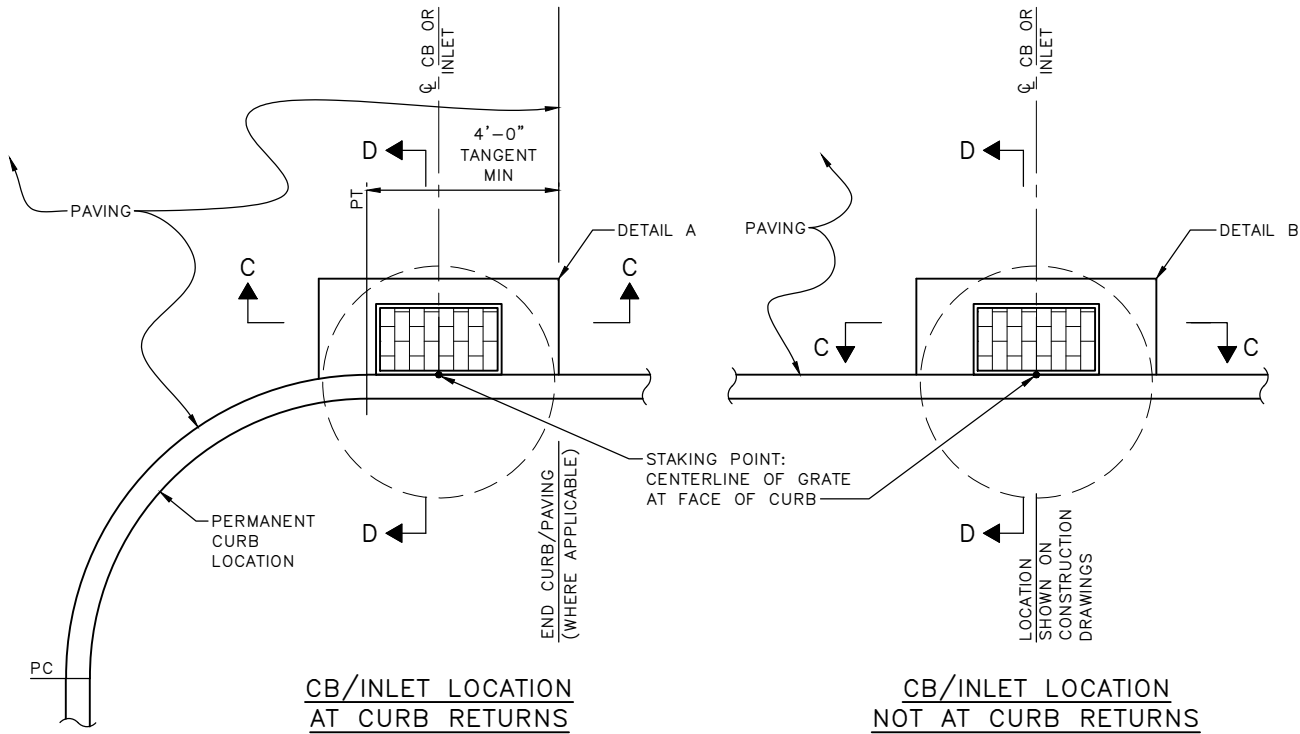
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

TYPE 252 INLET



**NOTES:**

1. CB INLET GRATES MUST NOT BE PLACED IN CROSSWALKS.
2. CB INLETS MUST NOT BE PLACED IN CURB RAMP LANDINGS.
3. CASTINGS LOCATED WITHIN THE CROSSWALK MUST BE ADA ACCESSIBLE.

REF STD SPEC SEC 7-05

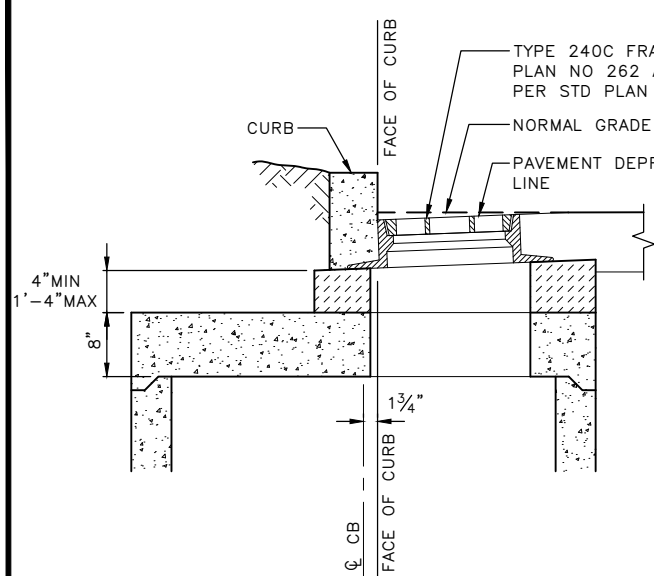


City of Seattle

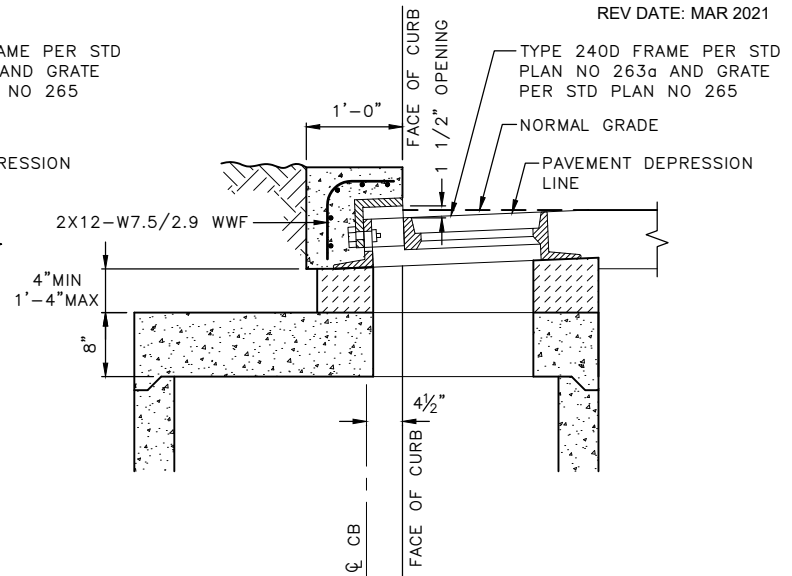
NOT TO SCALE

**INLET / CATCH BASIN LOCATION  
& INSTALLATION**

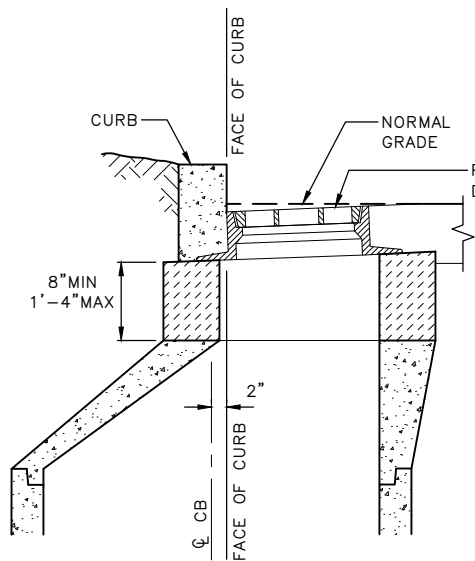
REV DATE: MAR 2021



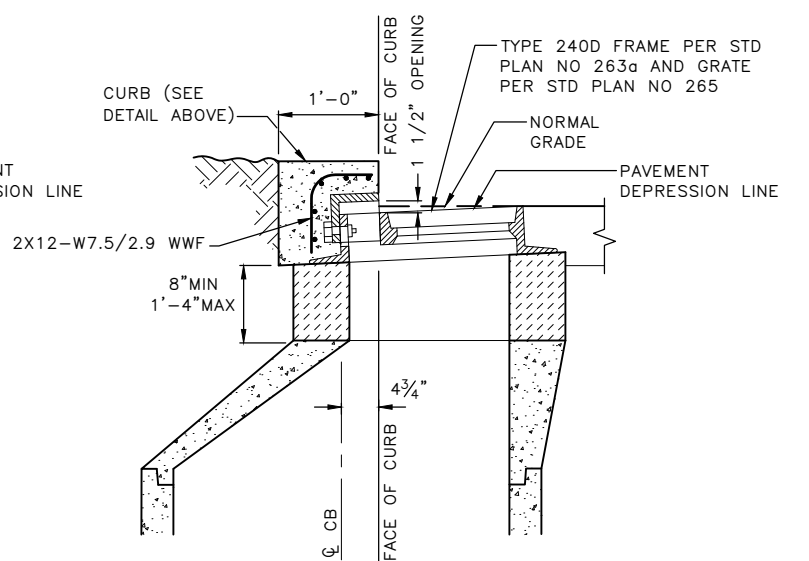
TYPE 240C CB



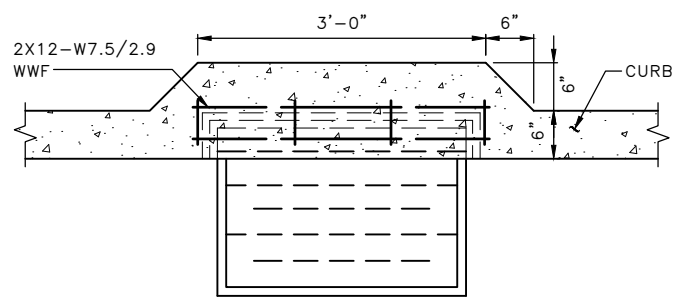
TYPE 240D CB



TYPE 242A CB  
(TYPE 250A INLET SIMILAR)



TYPE 242B CB  
(TYPE 250B INLET SIMILAR)



CURB DETAIL (PLAN VIEW) FOR  
TYPE 240D & 242B CB & TYPE 250B INLET

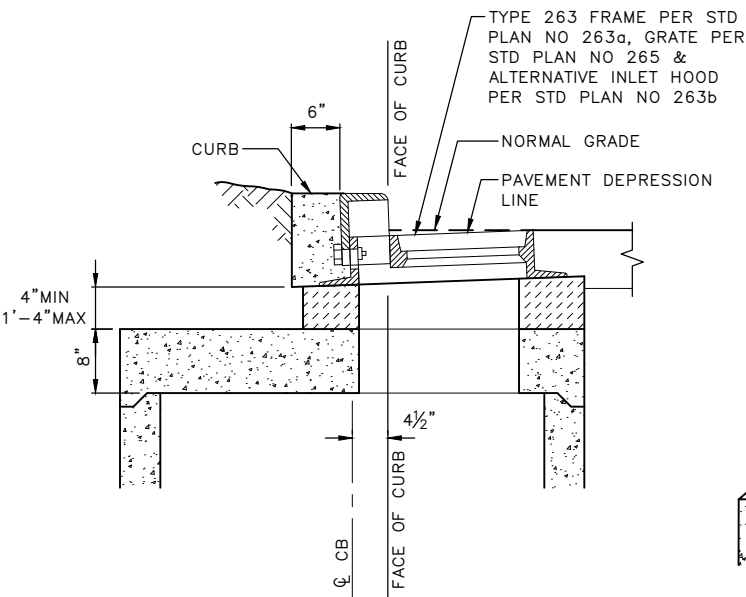
REF STD SPEC SEC 7-05



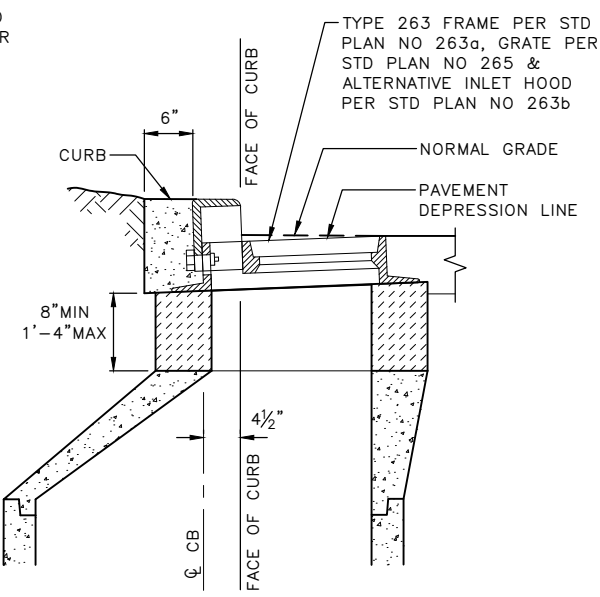
City of Seattle

NOT TO SCALE

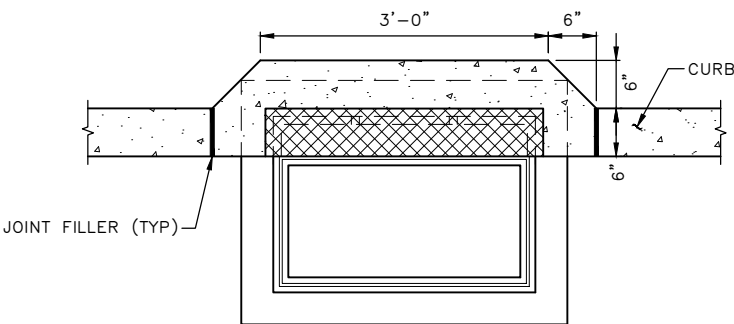
CATCH BASIN &  
INLET INSTALLATION



TYPE 240C CB



TYPE 242A CB



CURB DETAIL (PLAN VIEW) FOR  
TYPE 240D & 242C CB & TYPE 250B INLET

REF STD SPEC SEC 7-05

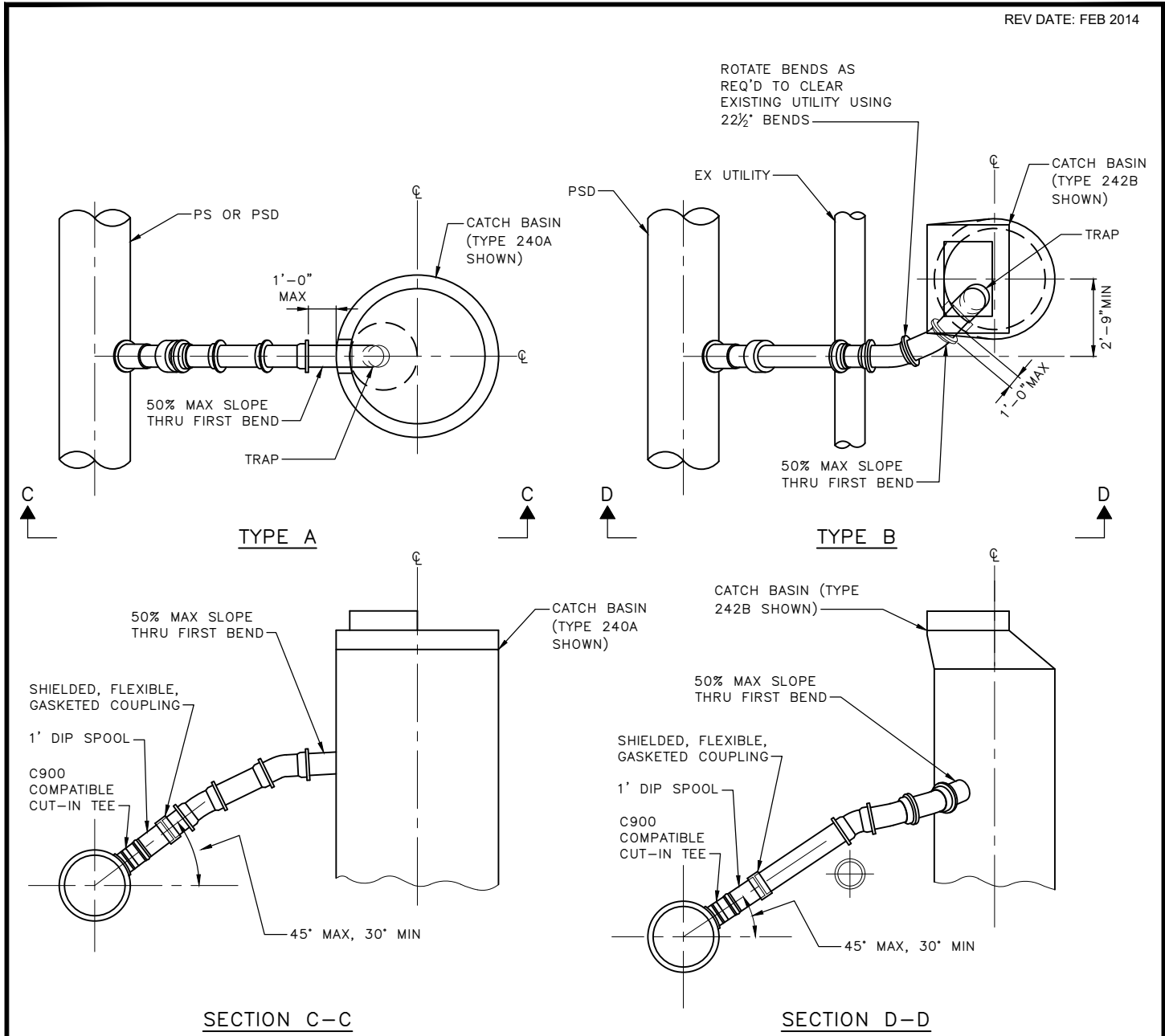


City of Seattle

NOT TO SCALE

CATCH BASIN & INLET  
INSTALLATION WITH STANDARD  
PLAN 263B ALTERNATIVE HOOD





- NOTES:
- 1. TYPE A CONNECTIONS MUST BE USED WITH CB TYPES 240A, 240B AND 241.
  - 2. TYPE B CONNECTIONS MUST BE USED WITH CB TYPES 240C, 240D, 242A AND 242B.
  - 3. CONNECTIONS MUST MAINTAIN A MINIMUM OF 2% AND A MAXIMUM OF 100% GRADE.
  - 4. MAX BEND MUST BE 22 1/2° OR 1/8 BEND. USE OF 1/8 BEND REQUIRES APPROVAL BY SPU.
  - 5. 1' DI SPOOL AND COUPLING REQUIRED WITH CUT-IN TEE.

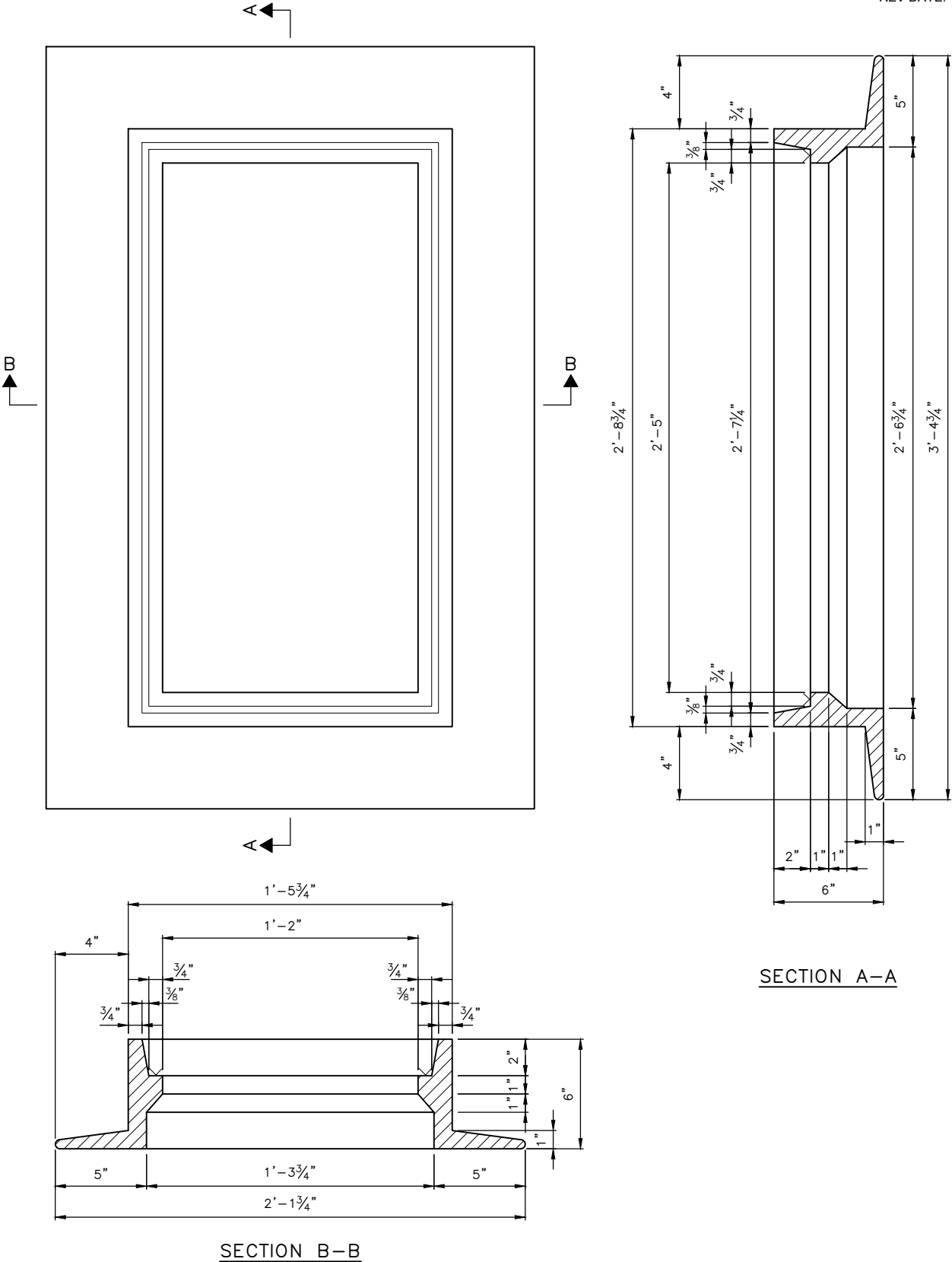
REF STD SPEC SEC 7-08



City of Seattle

NOT TO SCALE

TYPICAL CATCH BASIN  
CONNECTION



SECTION A-A

SECTION B-B

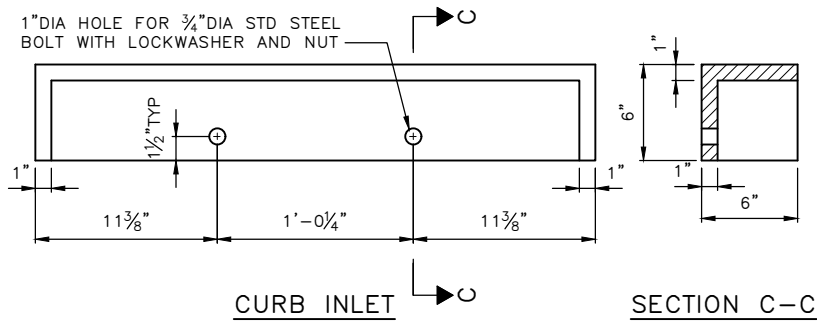
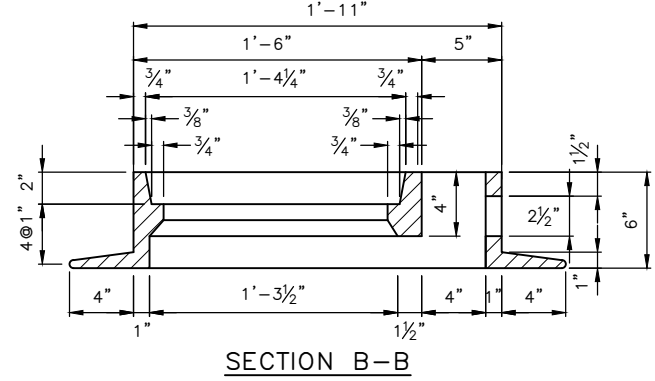
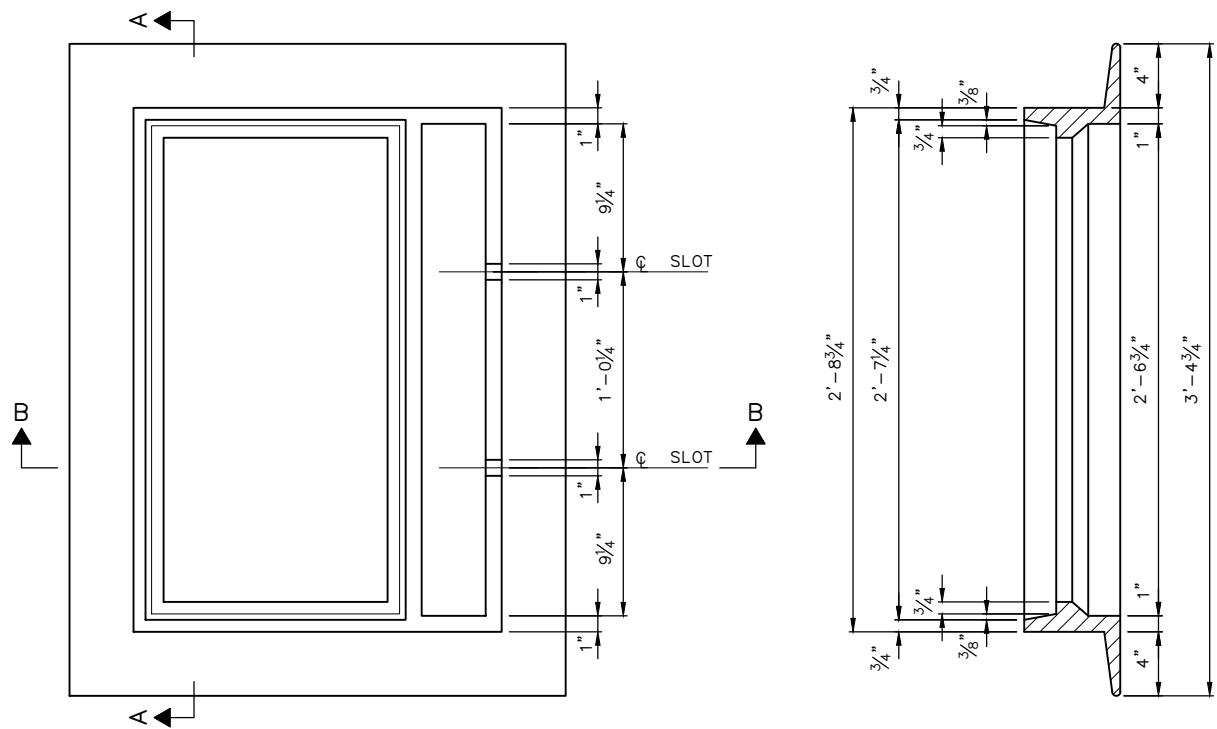
REF STD SPEC SEC 9-12

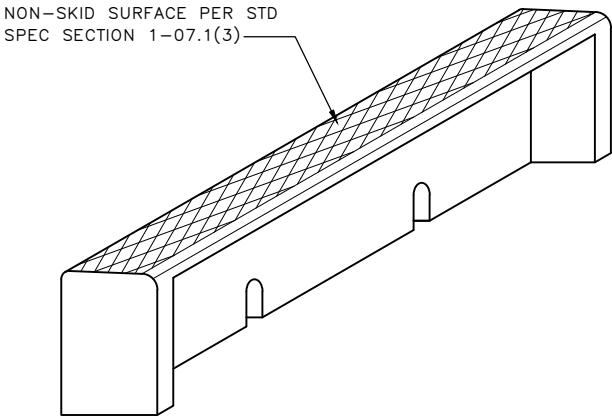
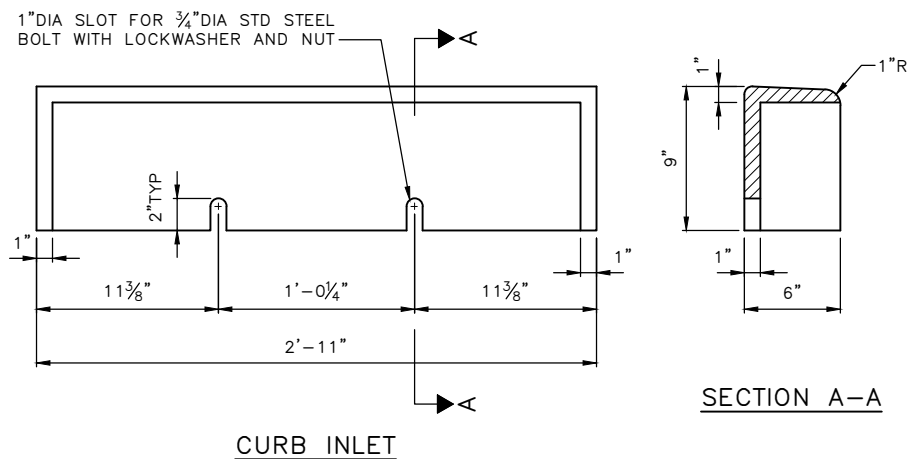


City of Seattle

NOT TO SCALE

TYPE 262 INLET FRAME





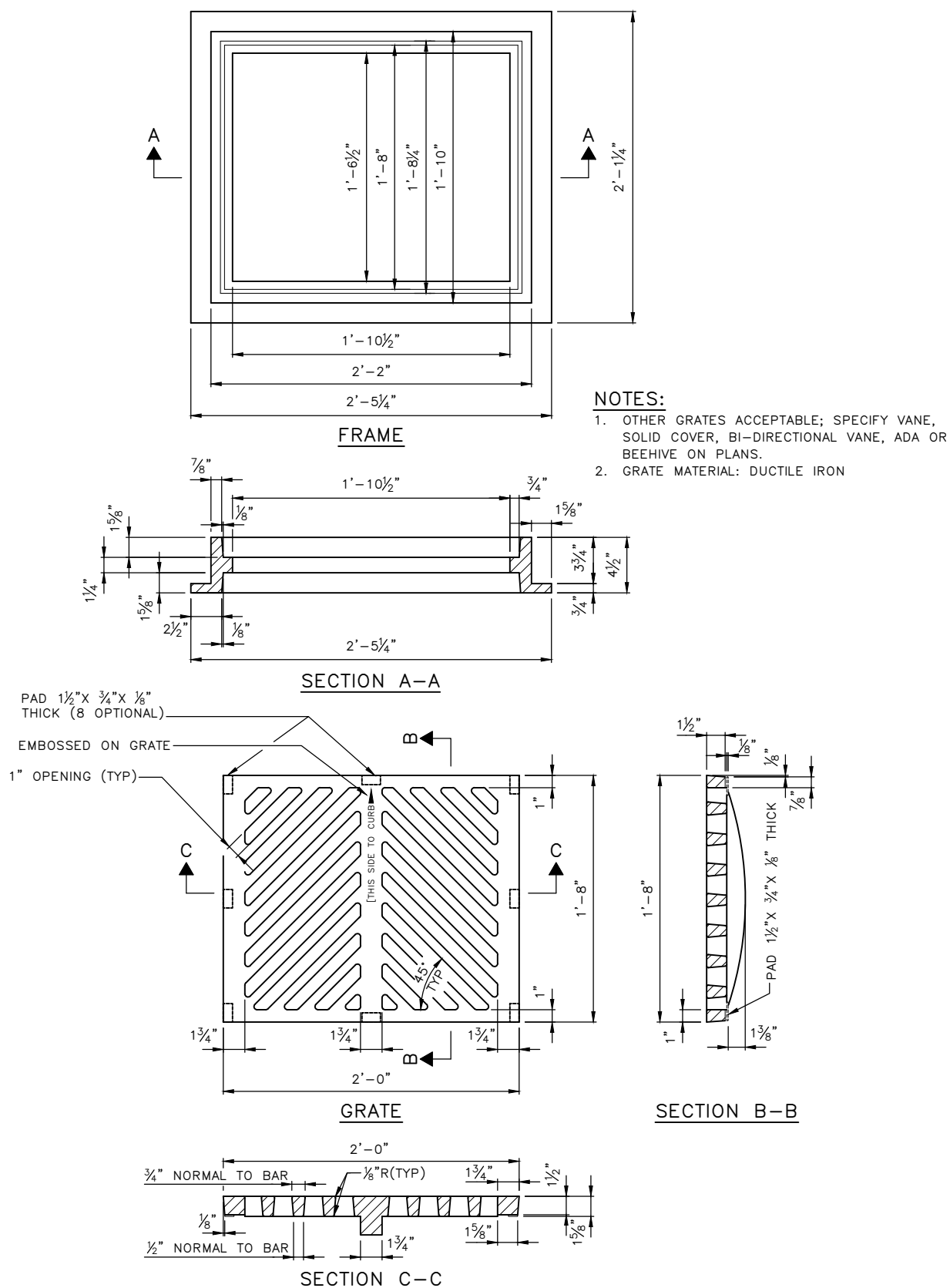
REF STD SPEC SEC 9-12



City of Seattle

NOT TO SCALE

TYPE 263 ALTERNATIVE  
INLET HOOD



NOTES:

1. OTHER GRATES ACCEPTABLE; SPECIFY VANE, SOLID COVER, BI-DIRECTIONAL VANE, ADA OR BEEHIVE ON PLANS.
2. GRATE MATERIAL: DUCTILE IRON

PAD 1½"X ¾"X ⅛"  
THICK (8 OPTIONAL)

EMBOSSSED ON GRATE

1" OPENING (TYP)

GRATE

SECTION B-B

SECTION C-C

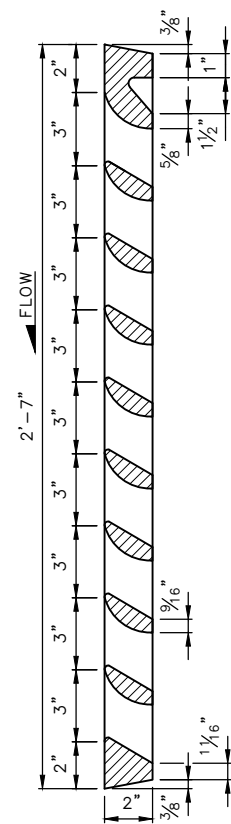
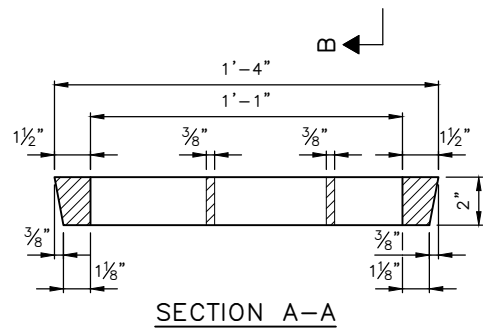
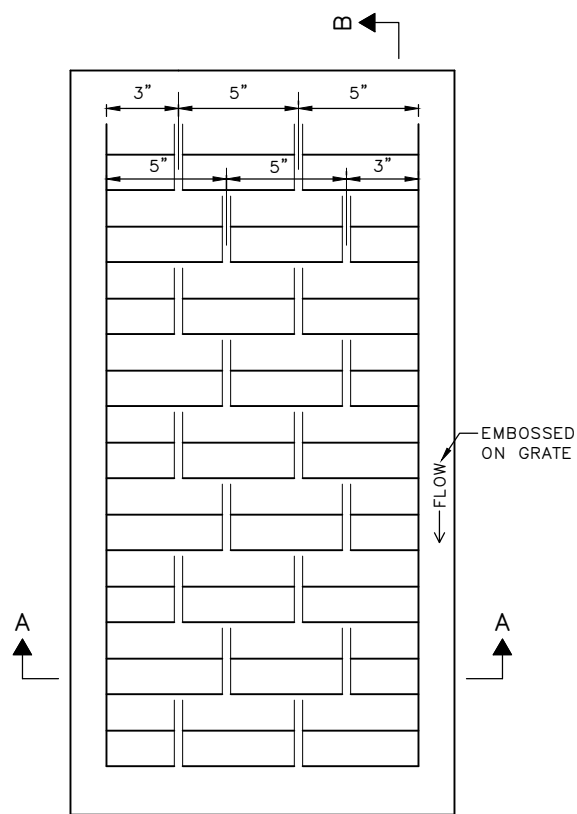
REF STD SPEC SEC 7-05



City of Seattle

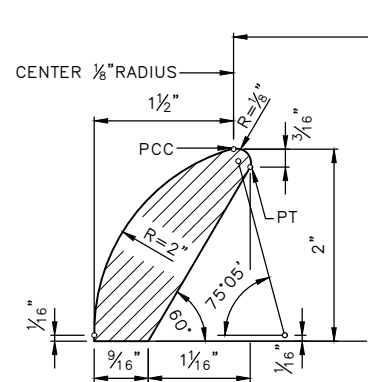
NOT TO SCALE

## INLET FRAME & GRATE

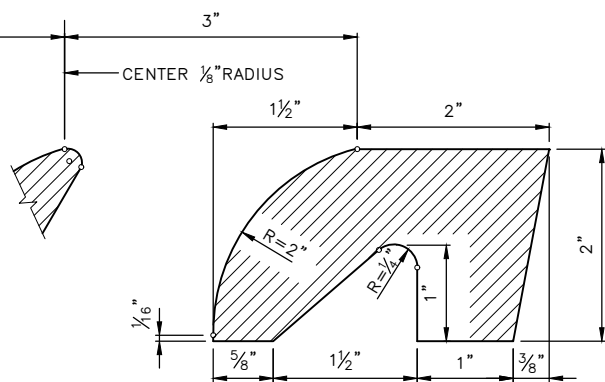


SECTION B-B

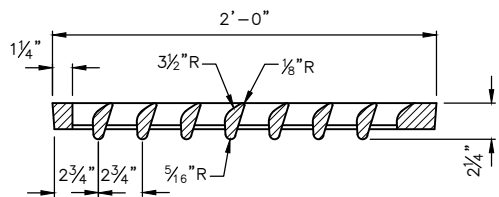
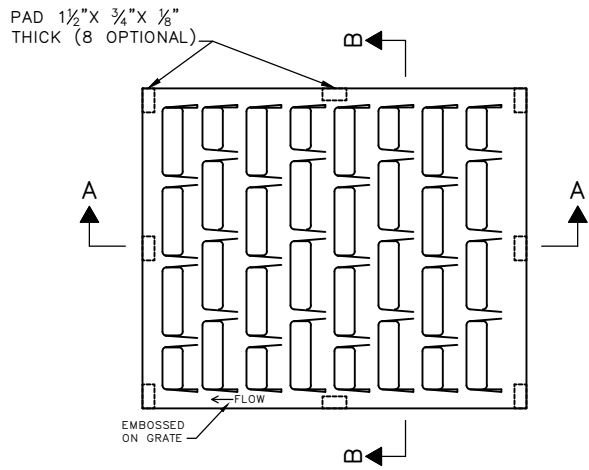
- NOTES:
- 1. OTHER GRATES ACCEPTABLE; SPECIFY VANE, SOLID COVER, BI-DIRECTIONAL VANE, ADA OR BEEHIVE ON PLANS.
  - 2. GRATE MATERIAL: DUCTILE IRON
  - 3. FOR USE WITH TYPE 262 & 263 INLET FRAMES.



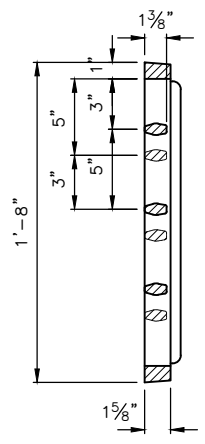
VANE DETAIL



END DETAIL

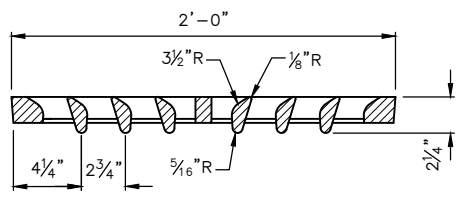
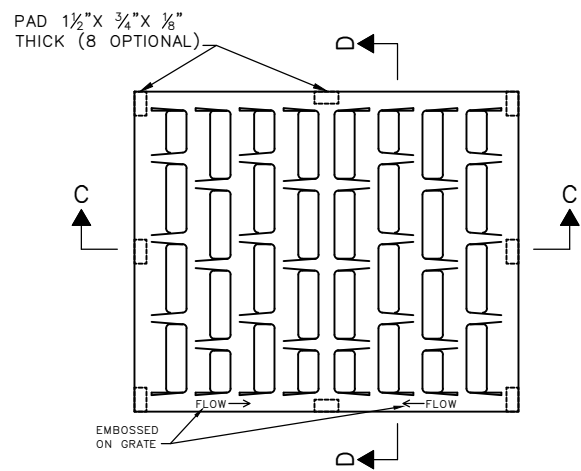


SECTION A-A  
**DIRECTIONAL VANED GRATE**  
TO BE USED WITH FRAME 264

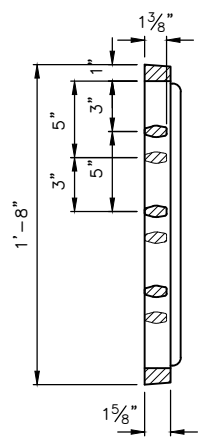


SECTION B-B


- NOTES:**
- 1. OTHER GRATES ACCEPTABLE; SPECIFY VANE, SOLID COVER, BI-DIRECTIONAL VANE, ADA OR BEEHIVE ON DRAWINGS.
  - 2. GRATE MATERIAL: DUCTILE IRON.
  - 3. FOR USE WITH TYPE 264 INLET FRAMES.

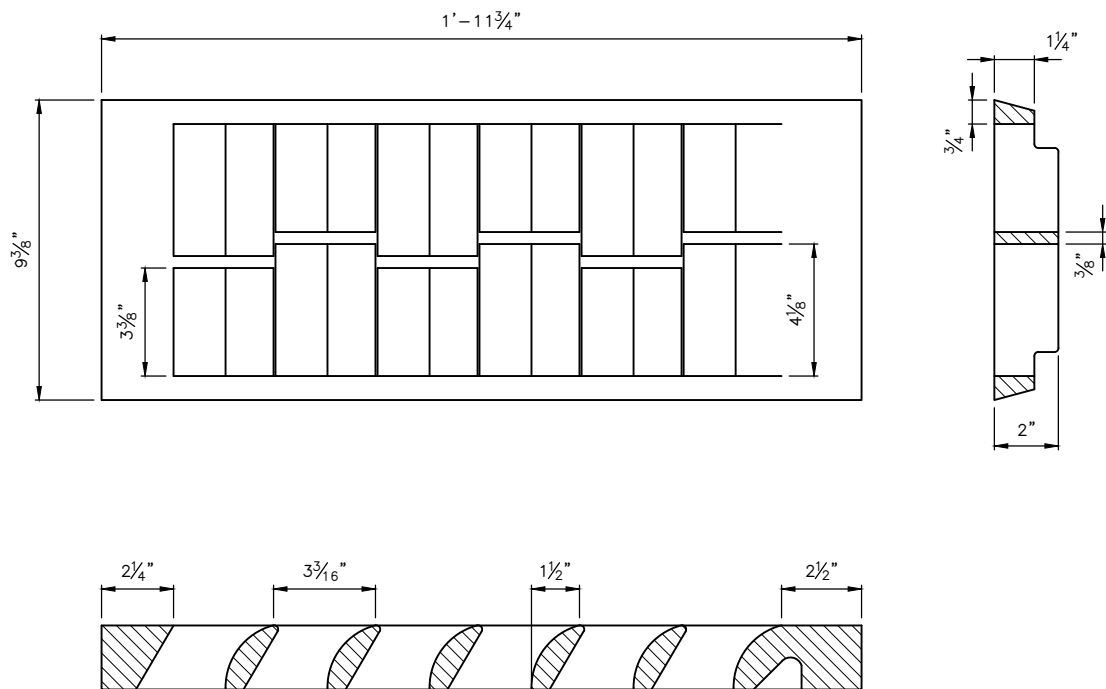


SECTION C-C  
**BI-DIRECTIONAL VANED GRATE**  
TO BE USED WITH FRAME 264



SECTION D-D

REF STD SPEC SEC 7-05		
 City of Seattle	NOT TO SCALE	VANED GRATES



**NOTES:**

- 1. OPEN AREA - 100 SQUARE INCHES.
- 2. 1.OTHER GRATES ACCEPTABLE; SPECIFY VANE, SOLID COVER, BI-DIRECTIONAL VANE, ADA OR BEEHIVE ON PLANS.
- 3. SEE STD PLAN NO 265 FOR VANE AND END DETAIL.
- 4. STD PLAN NO 266 DIMENSIONS GOVERN ON END DETAIL.
- 5. REPLACEMENT VANED GRATE FOR TYPE 164 INLET FRAMES.

REF STD SPEC SEC 7-20.3(6), 9-12

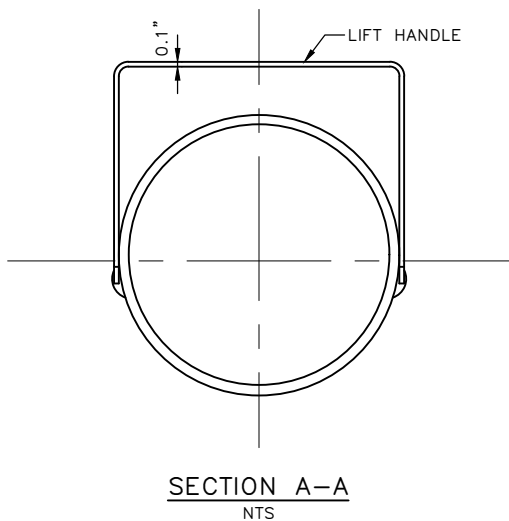
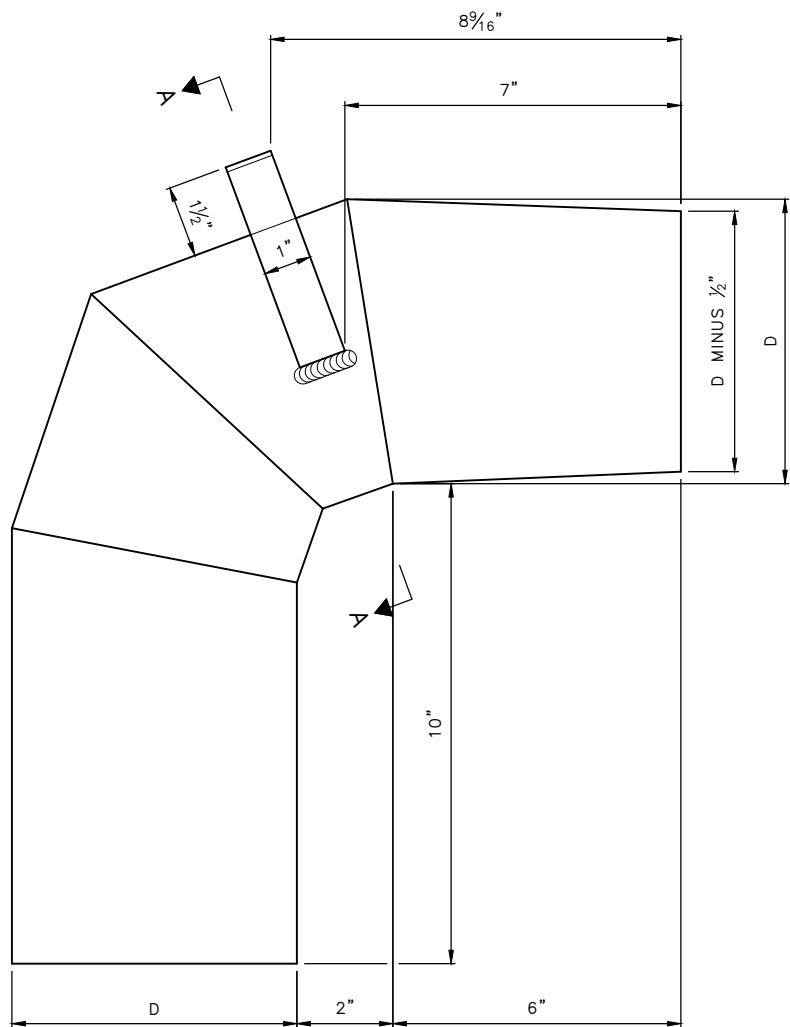


City of Seattle

NOT TO SCALE

TYPE 266 REPLACEMENT  
VANED GRATE





**NOTES:**

1. TRAP TO BE MADE OF 22 GA SHEET METAL OR 16 GA ALUMINUM
2. ALL JOINTS TO BE SEAMED AND SOLDERED, OR WELDED
3. ALL LONGITUDINAL JOINTS TO BE RIVETED OR WELDED
4. DIAMETER "D" IS NOMINAL DIAMETER OF OUTLET PIPE
5. LIFT HANDLE MUST BE WELDED TO OUTSIDE OF TRAP (1" WIDE X 0.1" THICK)

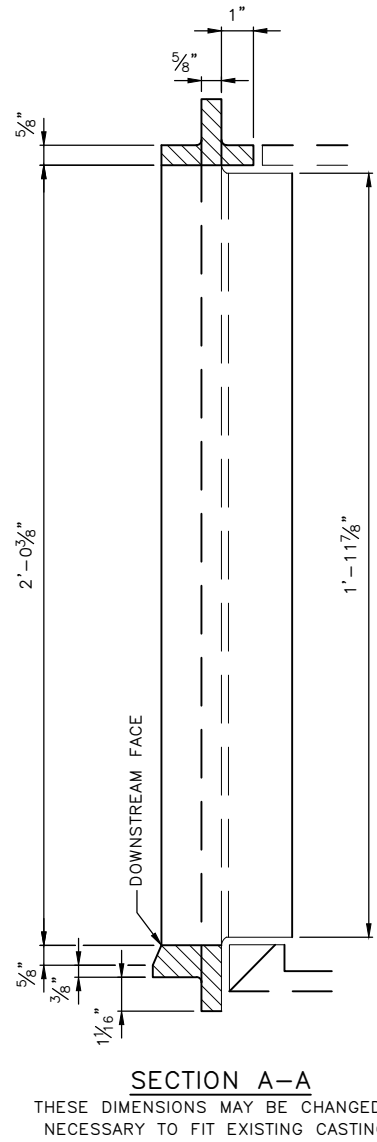
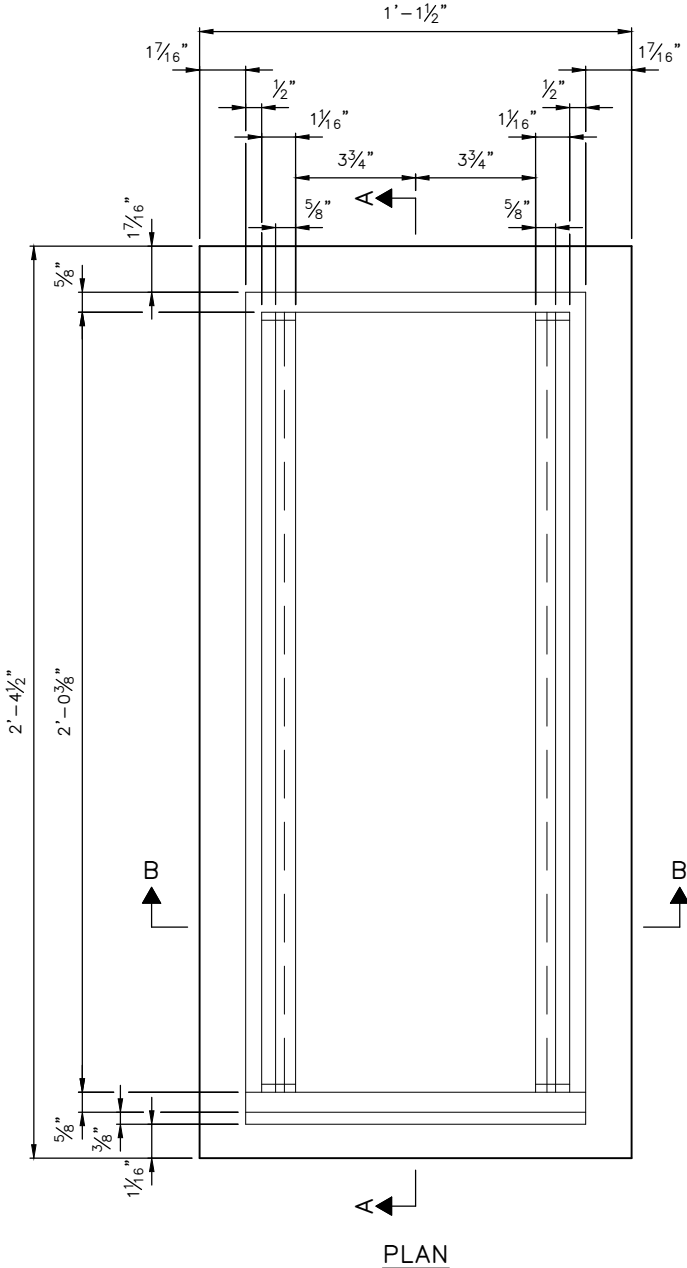
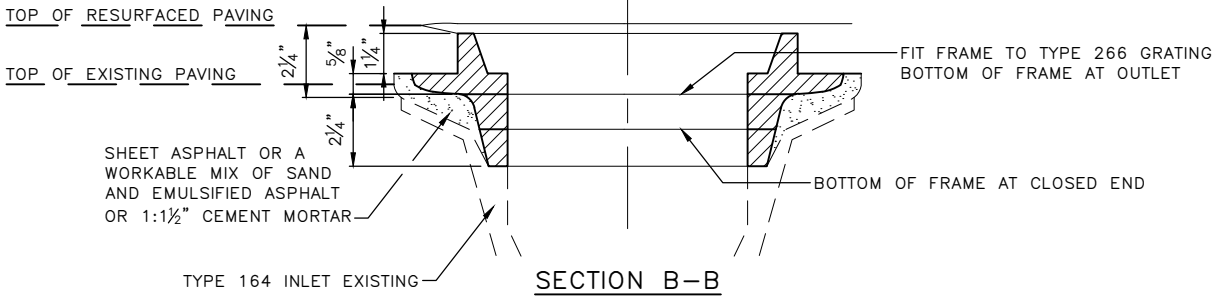
REF STD SPEC SEC 9-12



City of Seattle

NOT TO SCALE

OUTLET TRAP



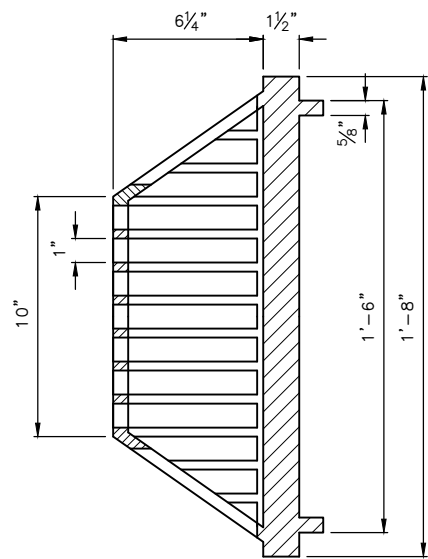
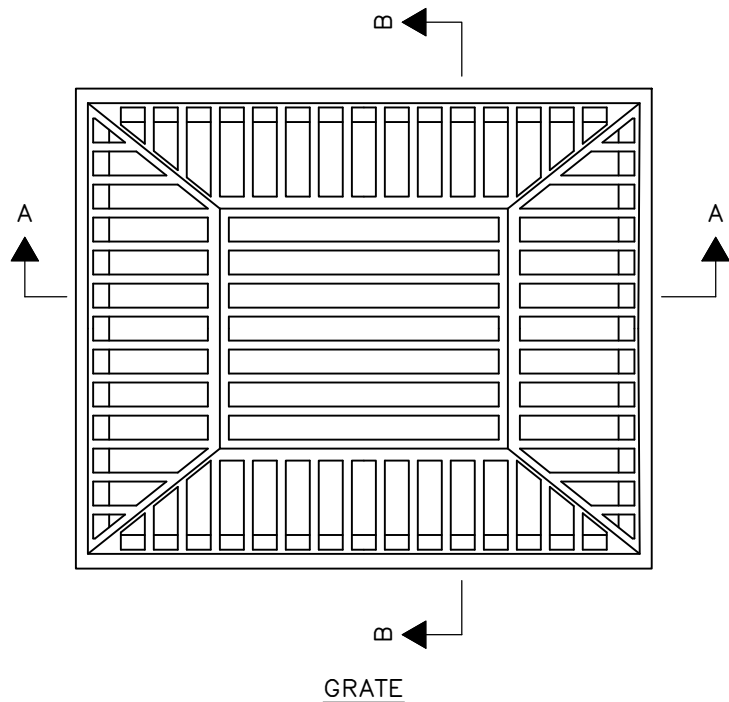
REF STD SPEC SEC 9-05



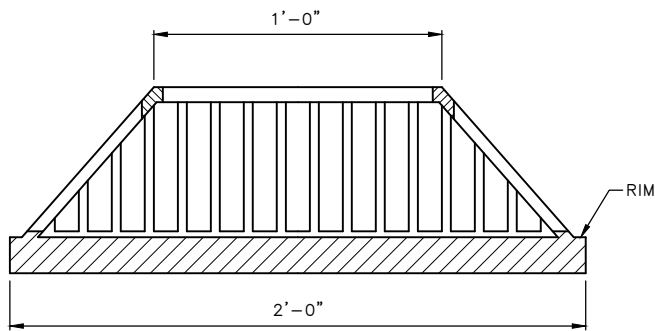
City of Seattle

NOT TO SCALE

EXTENSION FOR INLET



SECTION B-B



SECTION A-A

- NOTES:**
- 1. GRATE MATERIAL: DUCTILE IRON
  - 2. FRAME PER STD PLAN NO 264

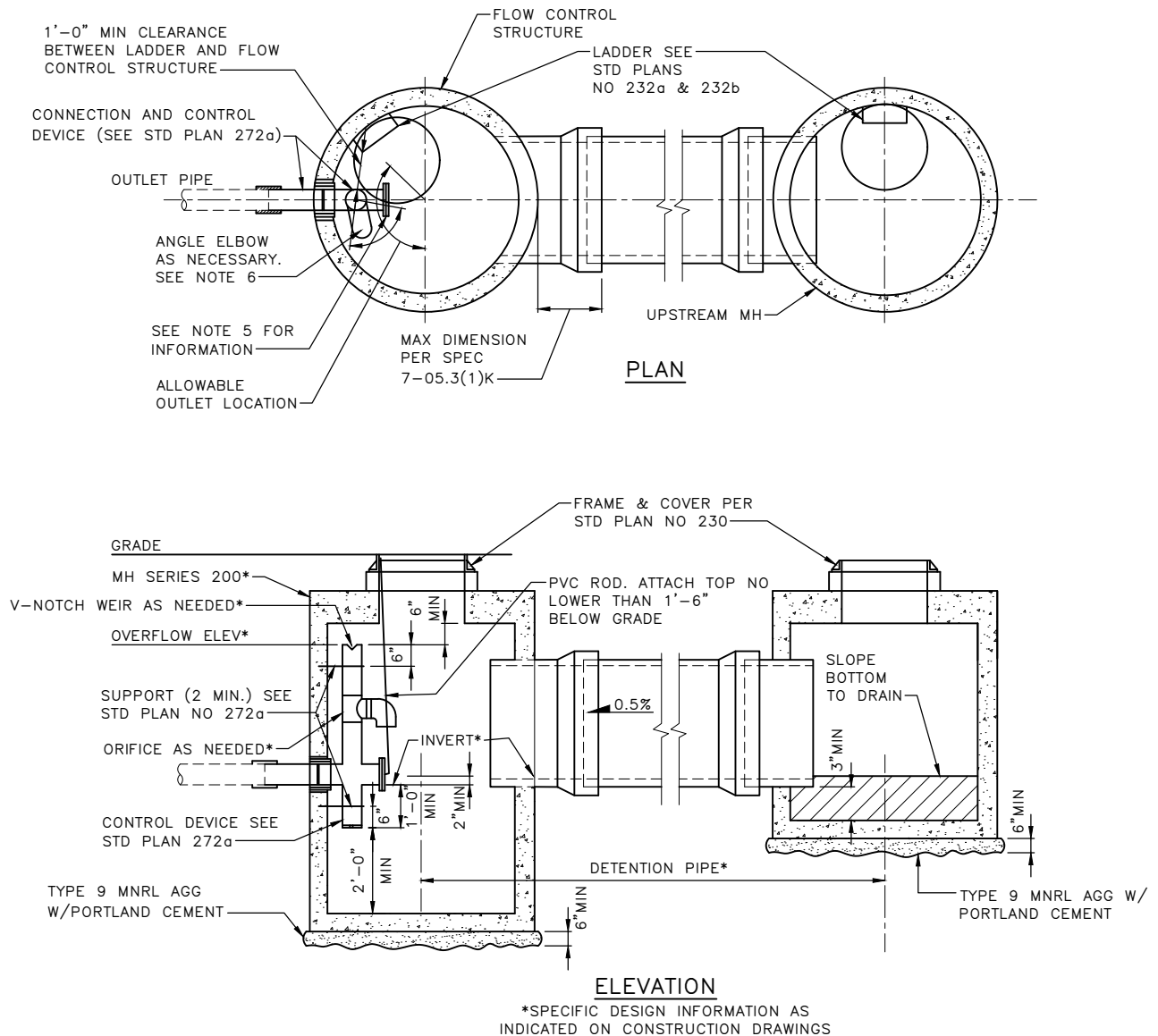
REF STD SPEC SEC 9-12



City of Seattle

NOT TO SCALE

**BEEHIVE GRATE FOR  
BIORETENTION**

**NOTES:**

1. DETENTION PIPE MATERIAL MUST BE AS SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS. MATERIALS THAT MAY BE APPROVED FOR USE IN THE ROW INCLUDE:
  - \* DUCTILE IRON PIPE (DIP)
  - \* REINFORCED CONCRETE PIPE (RCP)
  - \* POLYPROPYLENE PIPE (PP DETENTION)
  - \* STEEL REINFORCED POLYETHYLENE PIPE (STL REINF PE DETENTION). ONLY MANUFACTURER SUPPLIED TEES MUST BE USED FOR CONNECTIONS.
2. BEDDING FOR DETENTION PIPE MUST BE CLASS B. DIP AND RCP MUST BE BEDDED IN MINERAL AGGREGATE TYPE 9. FLEXIBLE PIPE MUST BE BEDDED IN MINERAL AGGREGATE TYPE 22.
3. INTERMEDIATE MHS WILL BE REQUIRED FOR DETENTION PIPE LENGTHS GREATER THAN 350LF.
4. OUTLET PIPE MUST CONNECT TO MH ON MAINLINE.
5. STRUCTURE DESIGN MUST BE MODIFIED FOR PRIVATE SYSTEM WITH EXCLUSION OF SHEAR GATE
6. ROTATE ELBOW RESTRICTOR CLEAR OF ACCESS OPENING.
7. FRAME LADDER AND STEPS OFFSET:
  - 7.1. CLEAN OUT IS VISIBLE FROM TOP
  - 7.2. CLIMB DOWN SPACE IS CLEAR OF RISER AND CLEAN OUT GATE
  - 7.3. MH OPENING MUST NOT BE PLACED DIRECTLY OVER THE TOP OF INLET PIPE
8. THE MAINTENANCE HOLES MUST BE SIZED FOR THE OUTSIDE DIAMETER OF THE DETENTION PIPE, WHICH WILL VARY DEPENDING ON THE DETENTION PIPE MATERIAL.

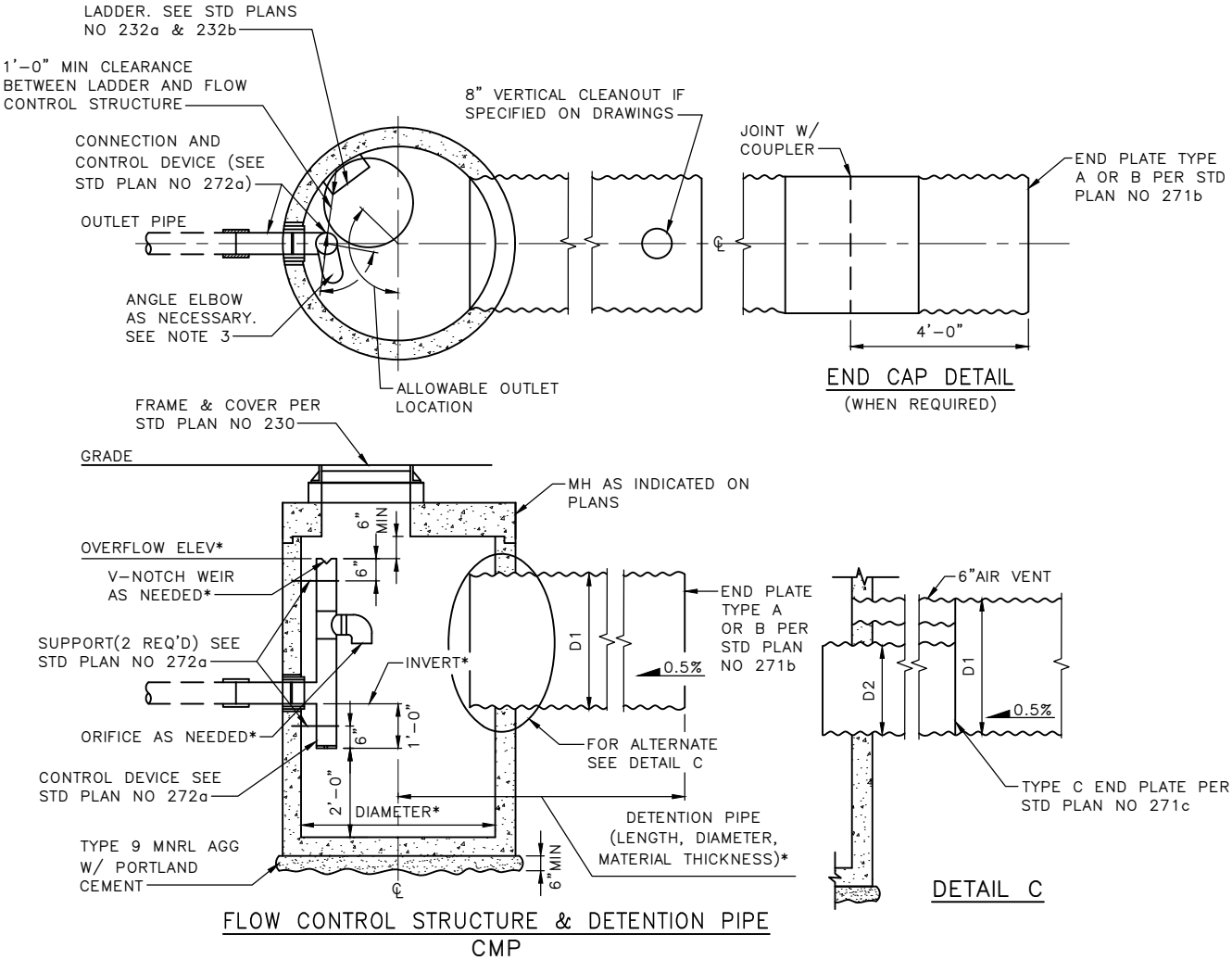
REF STD SPEC SEC 7-16



City of Seattle

NOT TO SCALE

**FLOW CONTROL STRUCTURE  
WITH DETENTION PIPE**



- NOTES:
1. INVERT OF DETENTION PIPE TO BE HIGHER THAN INVERT OF OUTLET PIPE
  2. \*SPECIFIC DESIGN INFORMATION WILL BE INDICATED ON ACTUAL CONSTRUCTION DRAWINGS
  3. ROTATE ELBOW RESTRICTOR CLEAR OF ACCESS OPENING
  4. FOR ALTERNATIVE PIPE MATERIALS, REFER TO STD PLAN NO 270
  5. FRAME LADDER AND STEPS OFFSET:
    - 5.1. CLEAN OUT IS VISIBLE FROM TOP
    - 5.2. CLIMB DOWN SPACE IS CLEAR OF RISER AND CLEAN OUT GATE
    - 5.3. MH OPENING MUST NOT BE PLACED DIRECTLY OVER THE TOP OF INLET PIPE

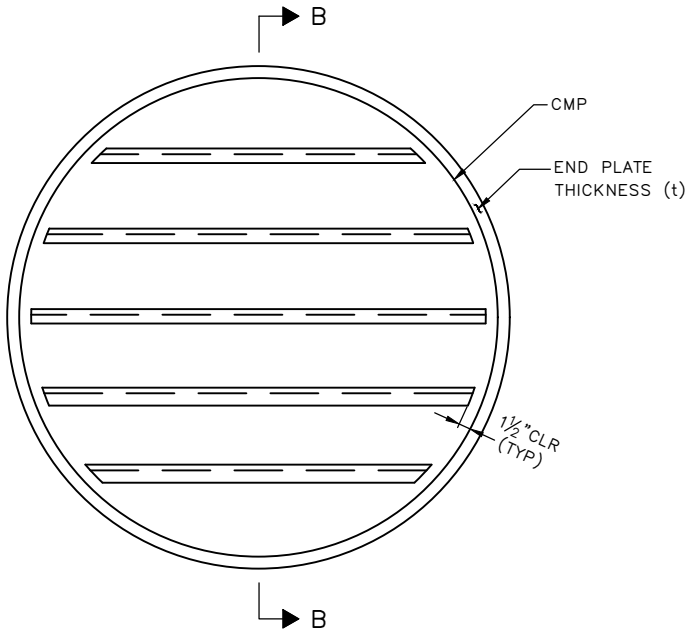
REF STD SPEC SEC 7-16



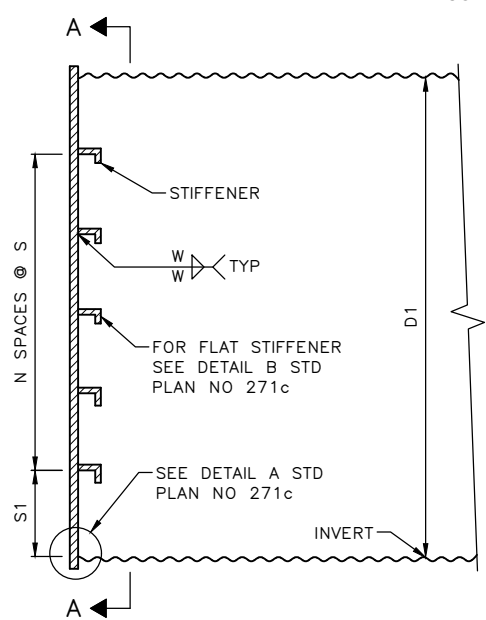
City of Seattle

NOT TO SCALE

CMP DETENTION PIPE  
PRIVATE SYSTEM ONLY

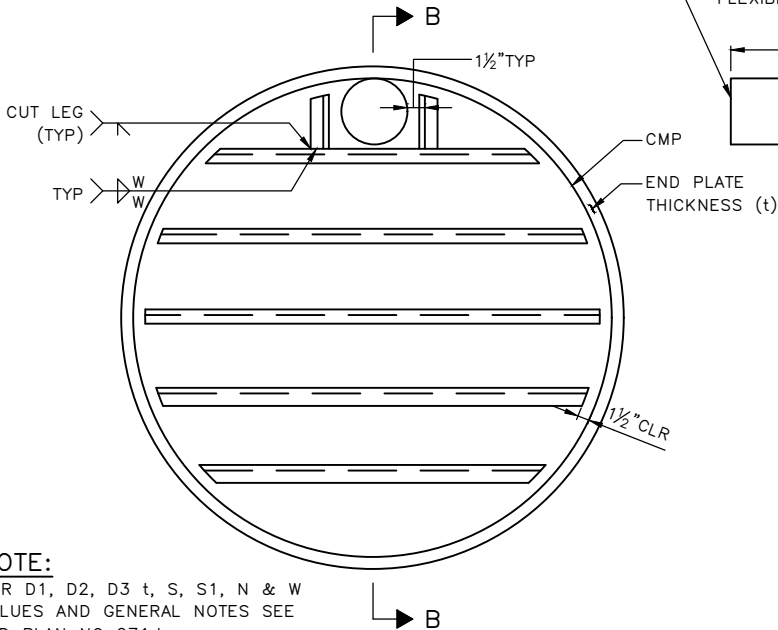


SECTION A-A

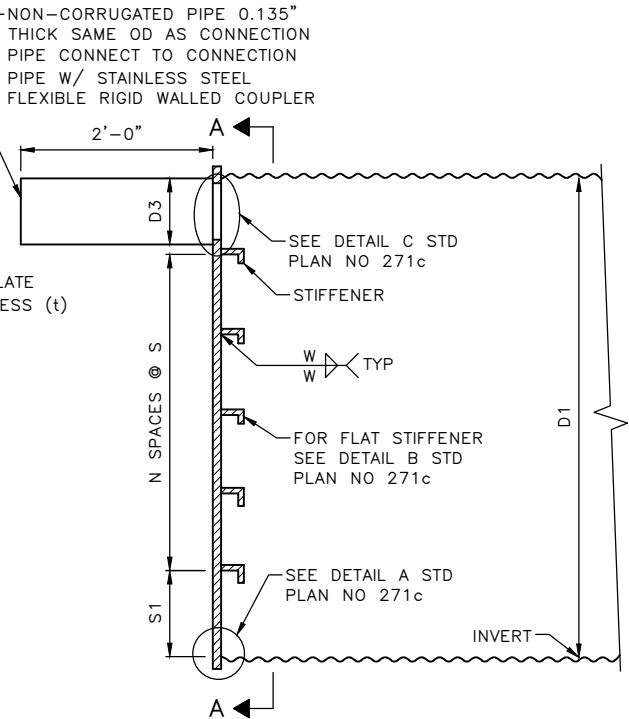


SECTION B-B

TYPE A



SECTION A-A



SECTION B-B

TYPE B

NOTE:  
FOR D1, D2, D3 t, S, S1, N & W  
VALUES AND GENERAL NOTES SEE  
STD PLAN NO 271d

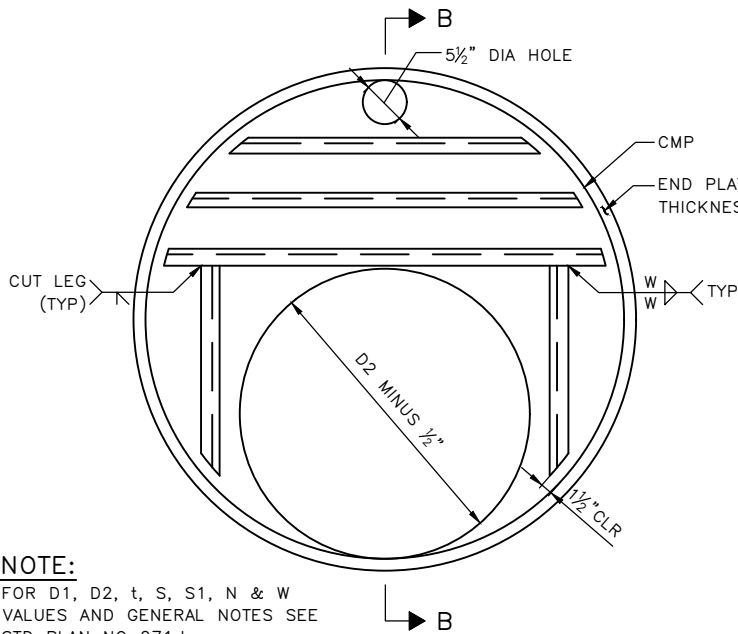
REF STD SPEC SEC 7-16



City of Seattle

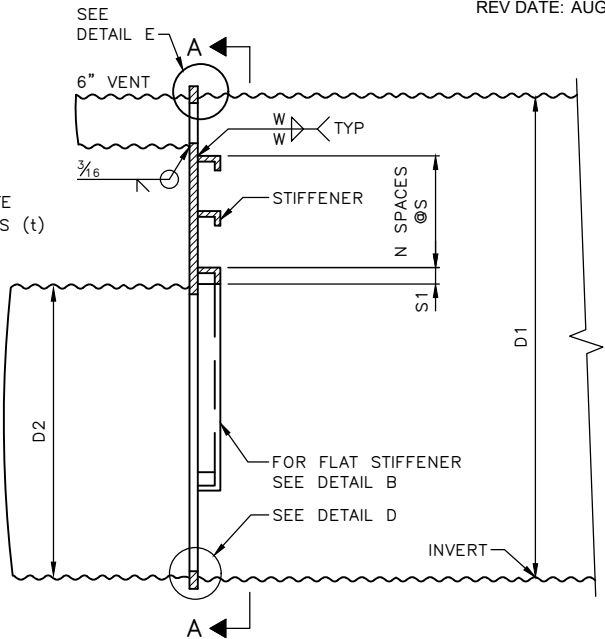
NOT TO SCALE

**CMP DETENTION STRUCTURE  
END PLATE DETAILS  
TYPES A & B**



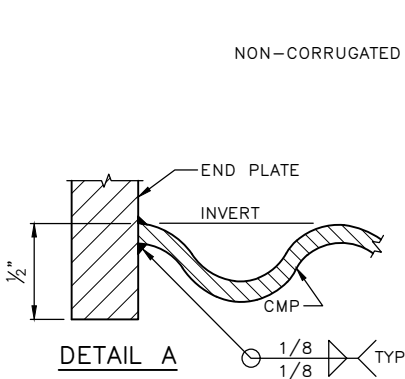
NOTE:  
FOR D1, D2, t, S, S1, N & W  
VALUES AND GENERAL NOTES SEE  
STD PLAN NO 271d

SECTION A-A

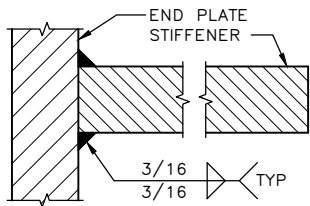


SECTION B-B

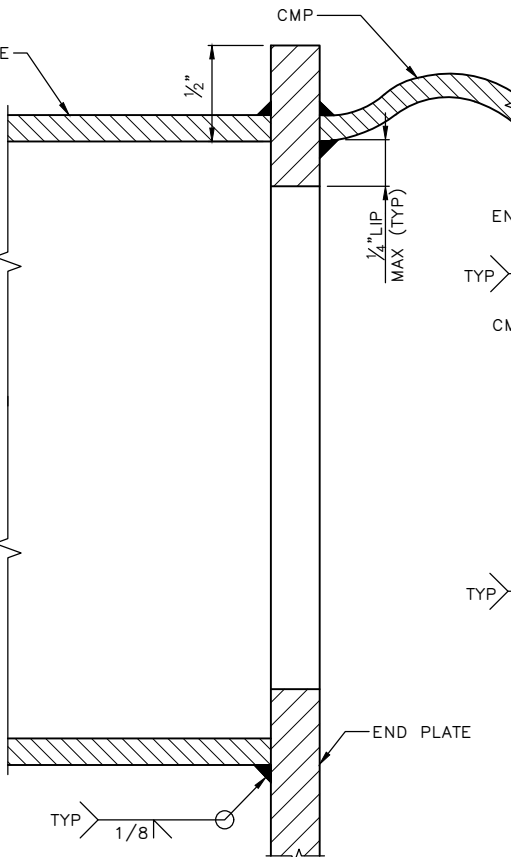
TYPE C



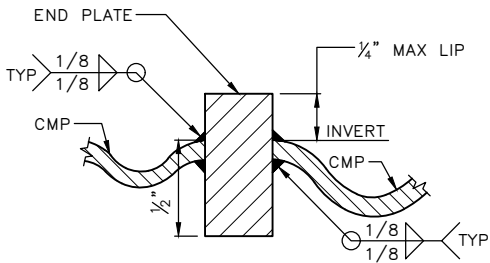
DETAIL A



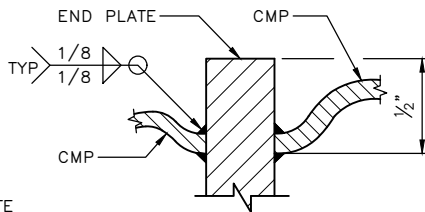
DETAIL B  
FLAT STIFFENER



DETAIL C



DETAIL D



DETAIL E

REF STD SPEC SEC 7-16



City of Seattle

NOT TO SCALE

CMP DETENTION STRUCTURE  
END PLATE DETAILS  
TYPE C

PIPE DIAMETER			END PLATE THICKNESS	STIFFENER TYPE & SIZE	STIFFENER SPACING			SIZE W
D1	D2	D3			t	S1	S	
TYPE A								
30"	—	—	¼"	FLAT 2½" X ¼"	6"	6"	3	⅜"
36"	—	—	¼"	FLAT 3" X ¼"	6"	6"	4	⅜"
48"	—	—	¼"	FLAT 4¼" X ¼"	8"	8"	4	⅜"
60"	—	—	⅜"	L 2½" X 2" X ⅜"	10"	10"	4	¼"
72"	—	—	⅜"	L 3" X 3" X ⅜"	6"	10"	6	¼"
TYPE B								
30"	—	6"	¼"	FLAT 2½" X ¼"	5½"	5½"	3	⅜"
	—	8"			5"	5"	3	
	—	12"			4"	6"	2	
36"	—	6"	¼"	FLAT 3" X ¼"	6"	5½"	4	⅜"
	—	8"			6"	5"	4	
	—	12"			5½"	5½"	3	
48"	—	6"	¼"	FLAT 4¼" X ¼"	8"	8"	4	⅜"
	—	8"			6"	8"	4	
	—	12"			4"	7½"	4	
60"	—	6"	⅜"	L 2½" X 2" X ⅜"	7"	9"	5	¼"
	—	8"			10"	10"	4	
	—	12"			6"	10"	4	
72"	—	6"	⅜"	L 3" X 3" X ⅜"	8"	8"	7	¼"
	—	8"			8"	9"	6	
	—	12"			8"	10"	5	
TYPE C								
48"	30"	—	¼"	FLAT 4¼" X ¼"	2"	8"	1	⅜"
60"	36"	—	⅜"	L 2½" X 2" X ⅜"	2"	7"	2	½"
72"	36"	—	⅜"	L 2" X 3" X ⅜"	3"	8½"	3	¼"

**NOTES:**

- DESIGNS VALID FOR PIPE INSTALLED WITH 6'-0" OR LESS OF COVER FROM CROWN OF PIPE TO GRADE. MAXIMUM WATER SURCHARGE 3'-0" ABOVE CROWN OF PIPE
- END PLATE MATERIAL: ALUMINUM 6061-T6
- DESIGNS MUST BE USED ONLY FOR ALUMINUM CMP

REF STD SPEC SEC 7-16

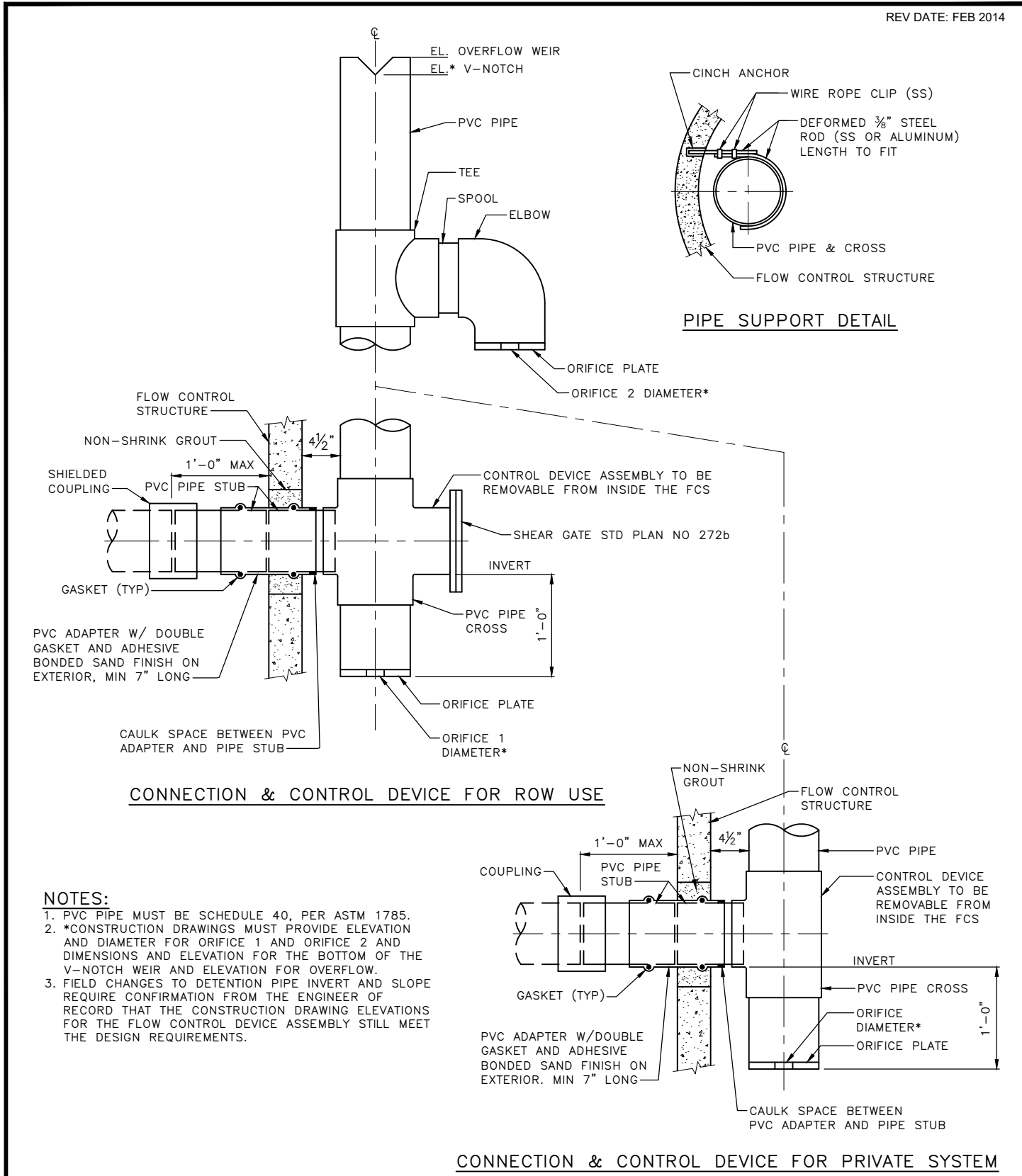


City of Seattle

NOT TO SCALE

**CMP DETENTION STRUCTURE  
END PLATE DIMENSIONS**



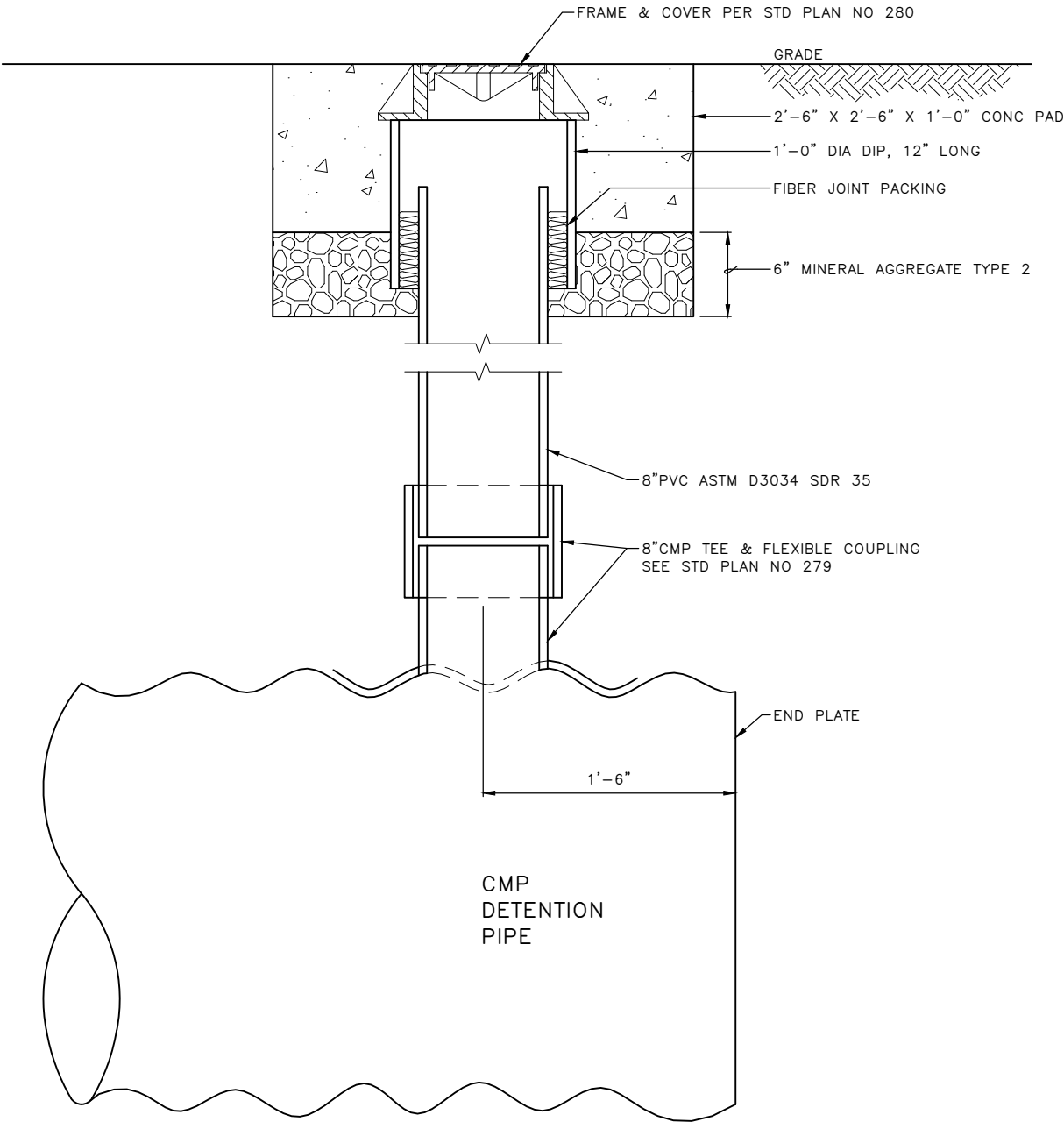


NOTES:

- 1. PVC PIPE MUST BE SCHEDULE 40, PER ASTM 1785.
- 2. \*CONSTRUCTION DRAWINGS MUST PROVIDE ELEVATION AND DIAMETER FOR ORIFICE 1 AND ORIFICE 2 AND DIMENSIONS AND ELEVATION FOR THE BOTTOM OF THE V-NOTCH WEIR AND ELEVATION FOR OVERFLOW.
- 3. FIELD CHANGES TO DETENTION PIPE INVERT AND SLOPE REQUIRE CONFIRMATION FROM THE ENGINEER OF RECORD THAT THE CONSTRUCTION DRAWING ELEVATIONS FOR THE FLOW CONTROL DEVICE ASSEMBLY STILL MEET THE DESIGN REQUIREMENTS.







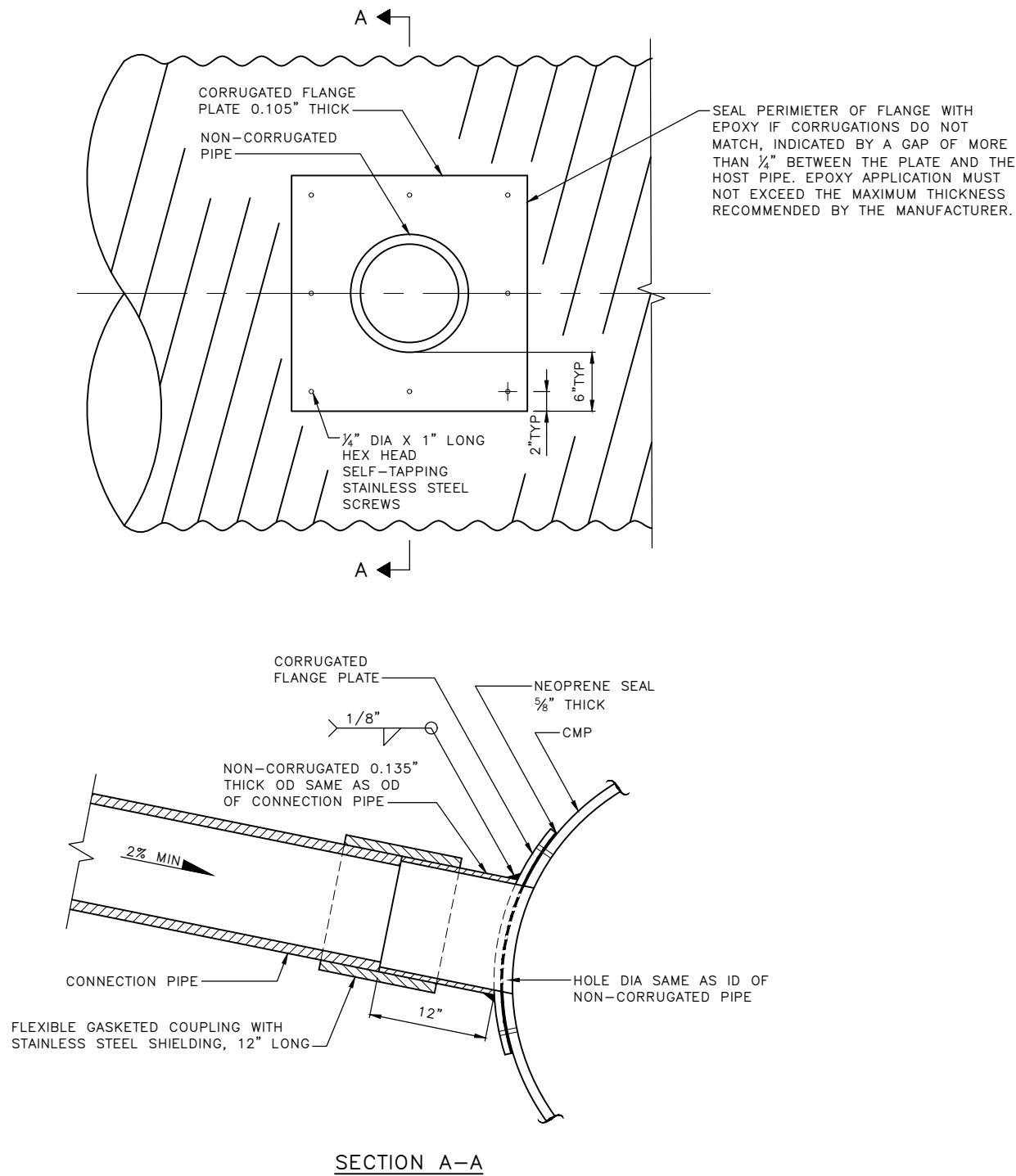
REF STD SPEC SEC 7-19, 7-16.2



City of Seattle

NOT TO SCALE

VERTICAL CLEAN OUT/  
CORRUGATED METAL PIPE



- NOTES:
- 1. CORRUGATED FLANGE PLATE AND NON-CORRUGATED PIPE MUST BE ALUMINUM.
  - 2. SELF-TAPPING SCREWS TO BE STAINLESS STEEL MEETING ASTM A 307.

REF STD SPEC SEC 7-17, 7-16.2

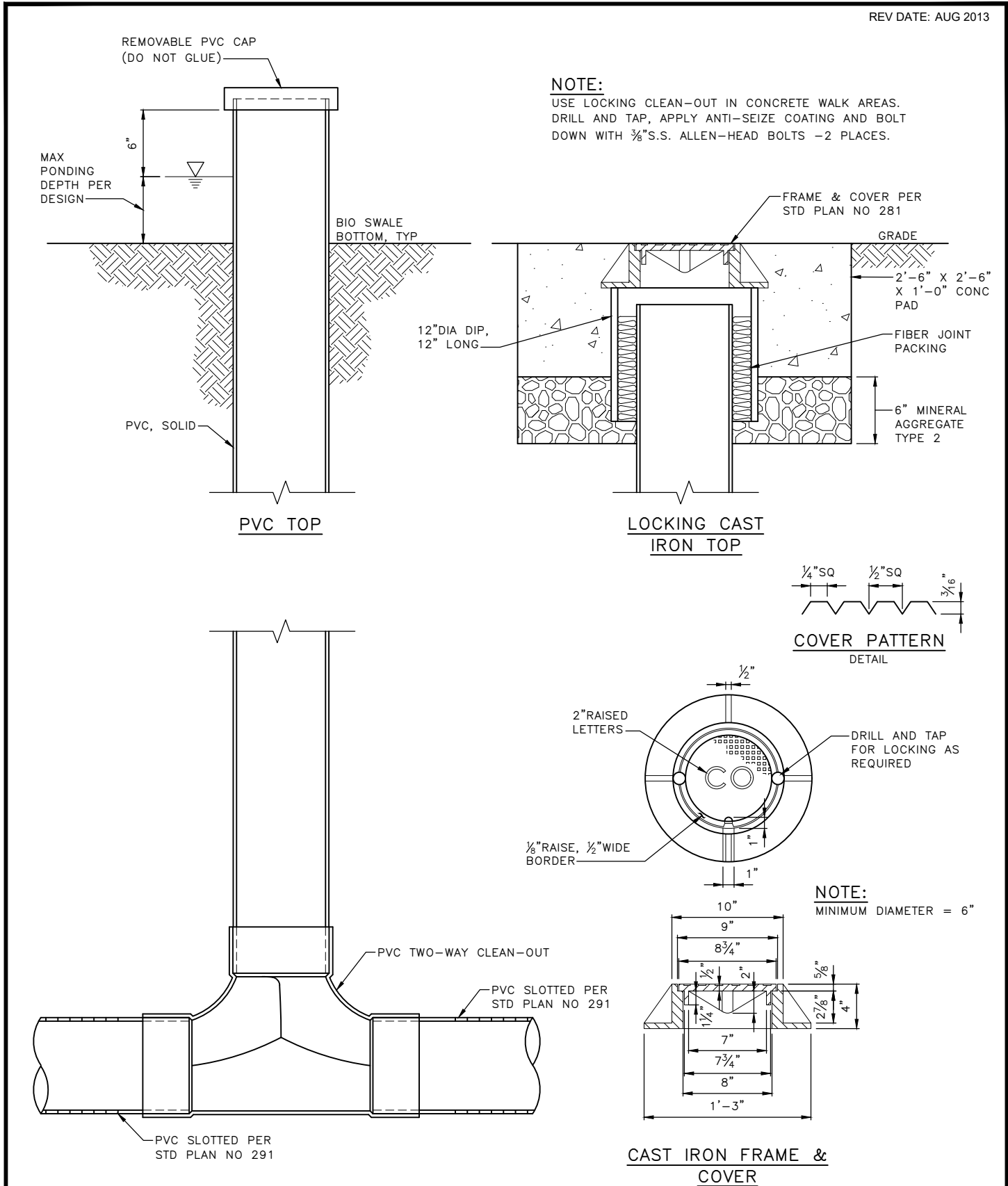


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NOT TO SCALE

TEE INSTALLATION  
CORRUGATED METAL PIPE





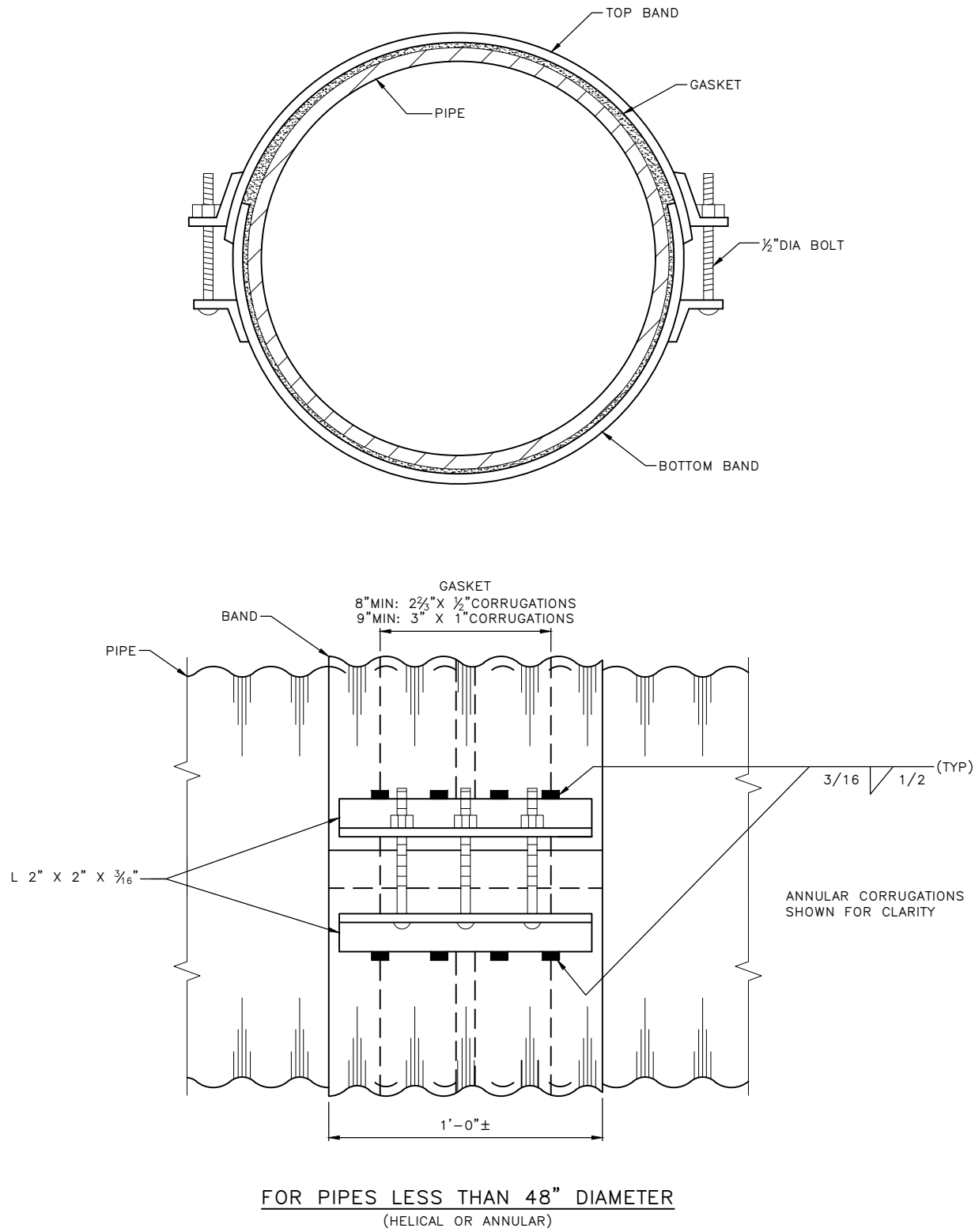
REF STD SPEC SEC 7-19



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NOT TO SCALE

BIORETENTION UNDER DRAIN  
CLEAN-OUT AND  
OBSERVATION PORT



REF STD SPEC SEC 7-16.2, 9-05

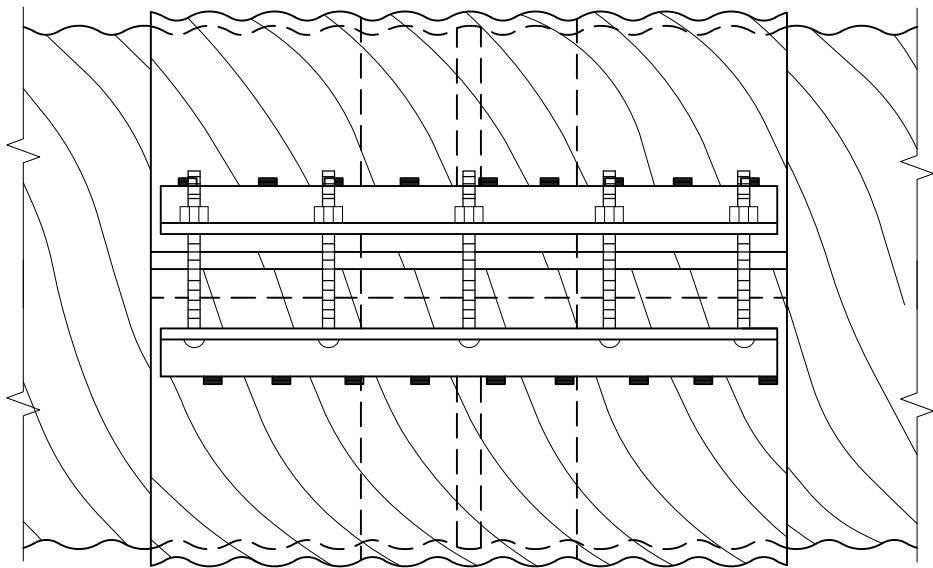
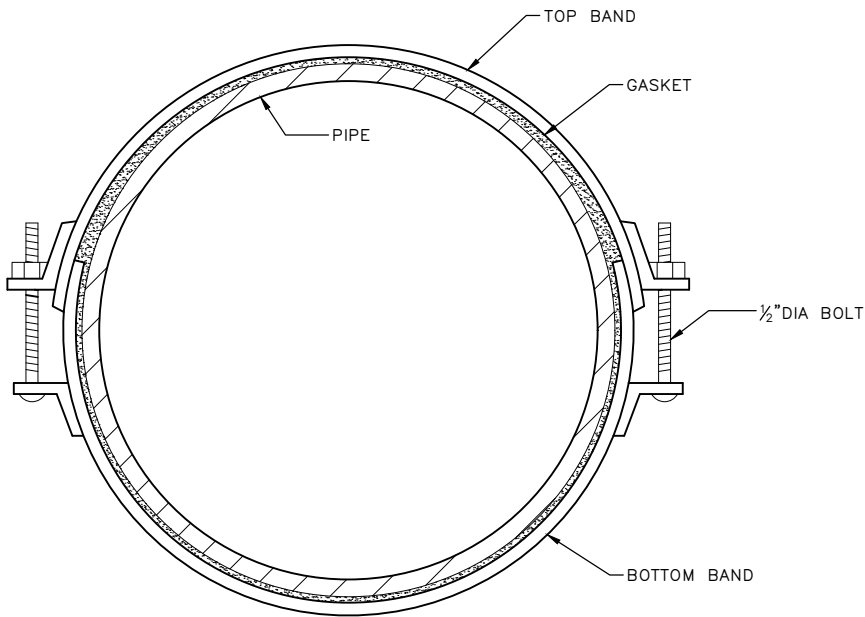


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**CORRUGATED METAL  
PIPE COUPLING BANDS**





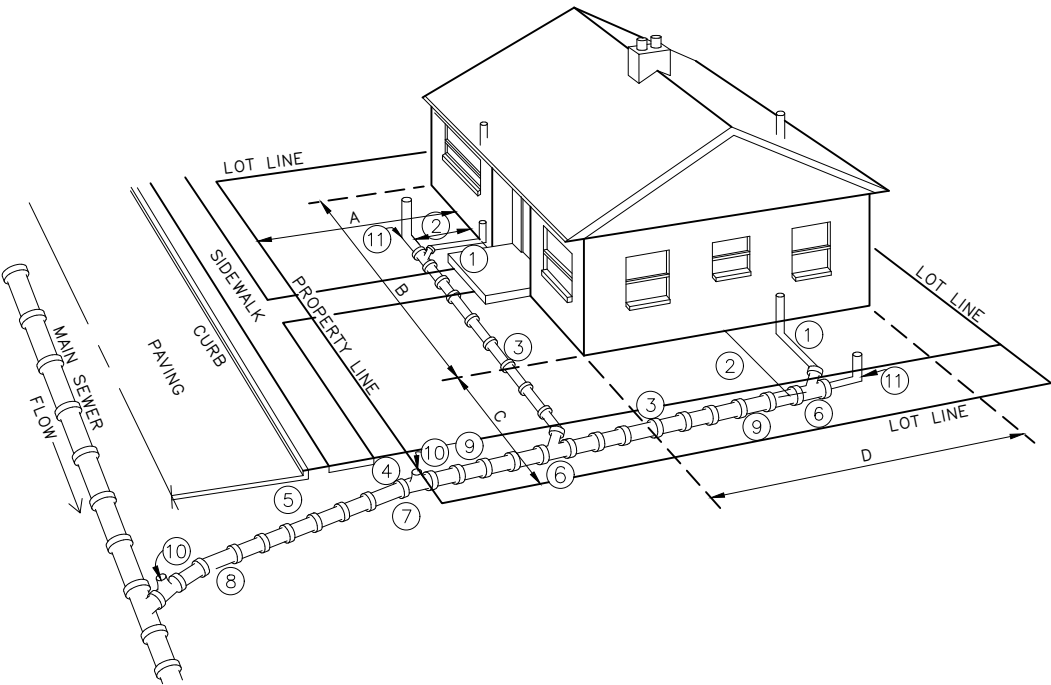
REF STD SPEC SEC 7-16.2, 9-05



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NOT TO SCALE

**CORRUGATED METAL  
PIPE COUPLING BANDS**



**NOTES:**

1. ALL SANITARY PLUMBING OUTLETS MUST BE CONNECTED TO THE SANITARY SEWER OR COMBINED SEWER.
2. 2'-6" MIN DISTANCE FROM HOUSE, EXCEPT FOR SOIL PIPE CONNECTION.
3. 1'-6" MIN COVER OF PIPE.
4. 2'-6" MIN COVER AT PROPERTY LINE.
5. 5'-0" MIN COVER AT CURB LINE.
6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH BENDS OR WYES.
7. STANDARD 4" TO 6" INCREASER.
8. 6" SEWER PIPE: MIN SIZE IN STREET, AND ELSEWHERE AS DIRECTED. 2% MIN GRADE, 100% MAX.
9. 4" SEWER PIPE: MIN SIZE ON PROPERTY. 2% MIN GRADE, 100% (45') MAX.
10. TEST "T" WITH PLUG
11. CLEANOUT AT UPSTREAM END OF SIDE SEWER.
12. CONSTRUCTION IN STREET MUST BE DONE BY A REGISTERED SIDE SEWER CONTRACTOR.
13. ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH THE CURRENT SIDE SEWER ORDINANCE.

**DIMENSIONS:**

- A = FRONT YARD SETBACK  
B = LENGTH OF HOUSE  
C = SIDE YARD SETBACK  
D = WIDTH OF HOUSE

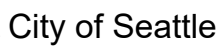
REF STD SPEC SEC 7-18



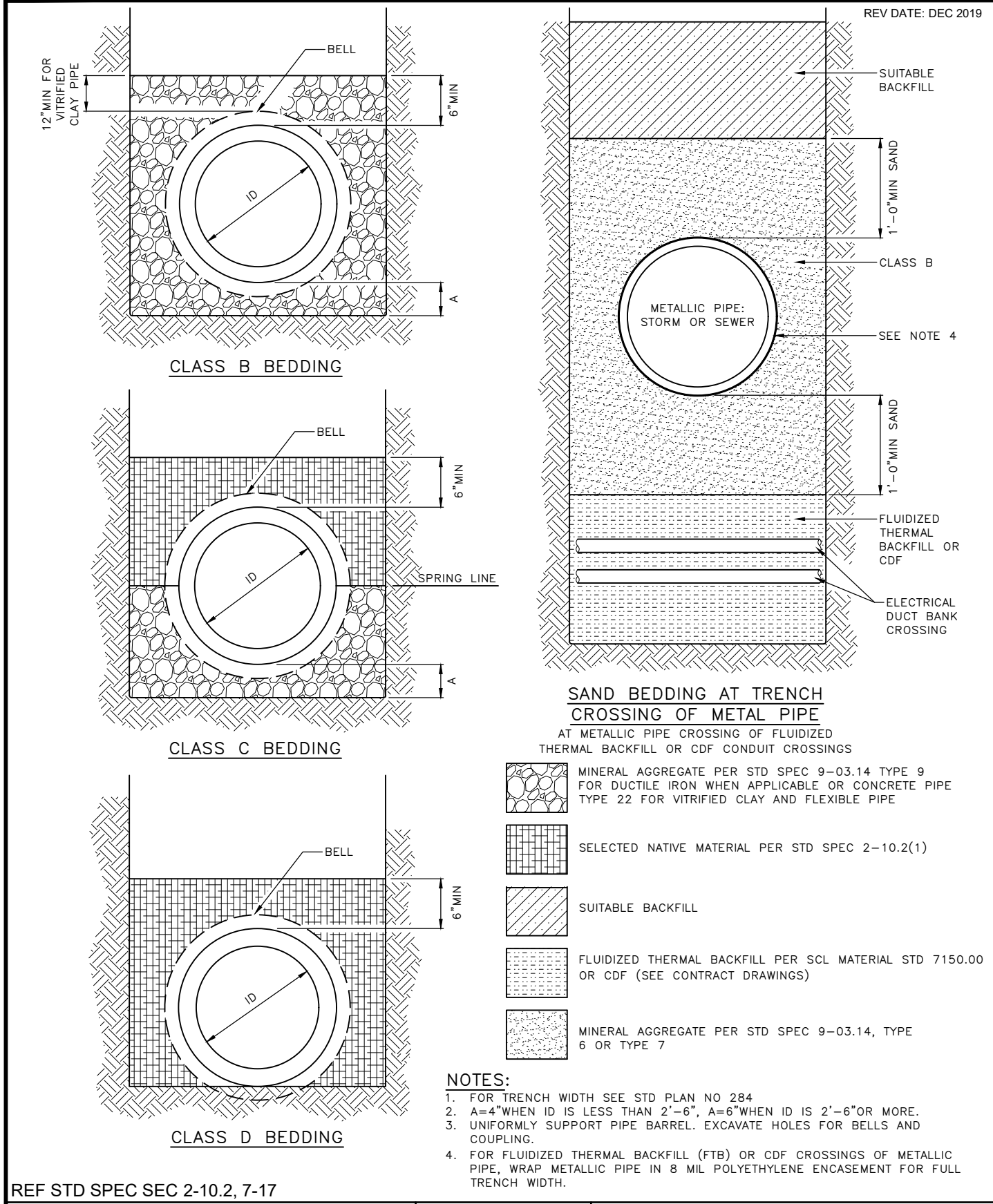
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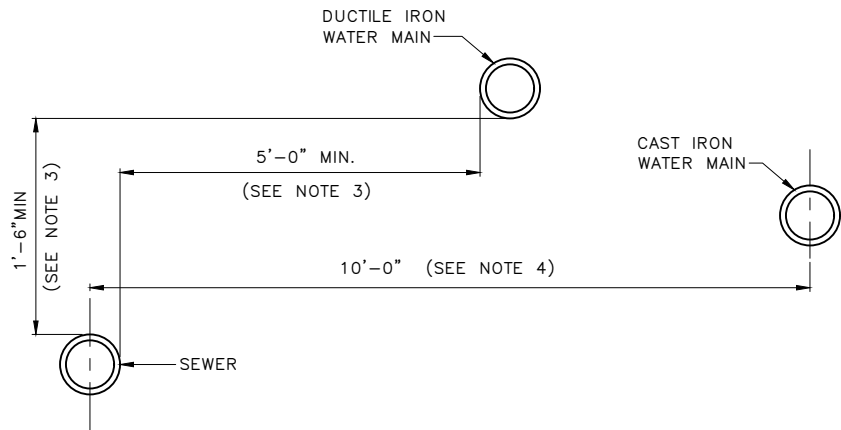
NOT TO SCALE

SIDE SEWER INSTALLATION

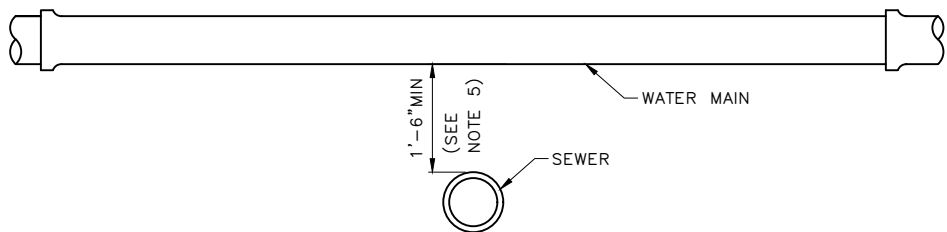


## TYPICAL TRENCH DETAIL FOR SEWER & STORM DRAIN

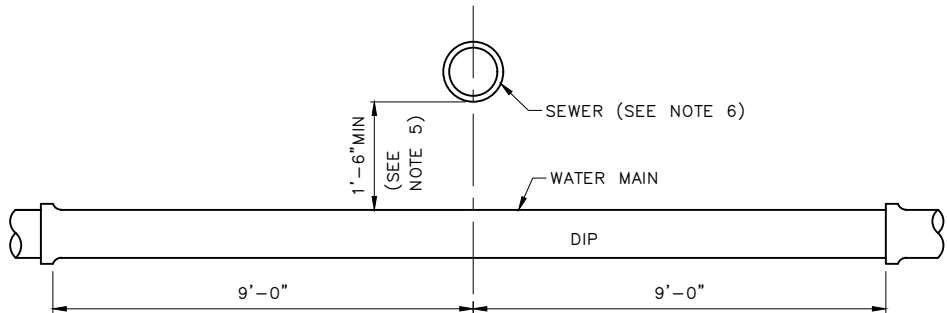




PARALLEL INSTALLATION



CROSSING WATER OVER SEWER



STANDARD SINGLE 18'-0" NOMINAL LENGTH DUCTILE IRON WATER MAIN SECTION CENTERED AT THE POINT OF CROSSING

CROSSING WATER UNDER SEWER

- NOTES:**
1. EXCEPTIONS TO STD PLAN NO 286a & 286b MUST BE APPROVED BY SEATTLE PUBLIC UTILITIES.
  2. "SEWER" INCLUDES SANITARY SEWER, COMBINED SEWER AND SIDE SEWER.
  3. WHERE MINIMUM CLEARANCES CANNOT BE MET, SEWER MUST BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS INCLUDING WATER MAIN PRESSURE TESTING REQUIREMENTS.
  4. NO VERTICAL CLEARANCE REQUIRED.
  5. IF MINIMUM VERTICAL SEPARATION CANNOT BE MET, WATER MAIN MUST BE A STANDARD SINGLE 18'-0" NOMINAL LENGTH DUCTILE IRON WATER MAIN SECTION CENTERED AT THE POINT OF CROSSING.
  6. SEWER MUST HAVE ADEQUATE FOUNDATION SUPPORT TO PREVENT SETTLEMENT ON THE WATER MAIN AND TO PREVENT DEFLECTION OF WATER MAIN JOINTS.
  7. CROSSINGS AT AN ANGLE BETWEEN 90° AND 45° MAY OCCUR BETWEEN 9'-0" AND 6'-0" OF WATER MAIN JOINT. FOR CROSSINGS LESS THAN 45°, SEE NOTE 1.

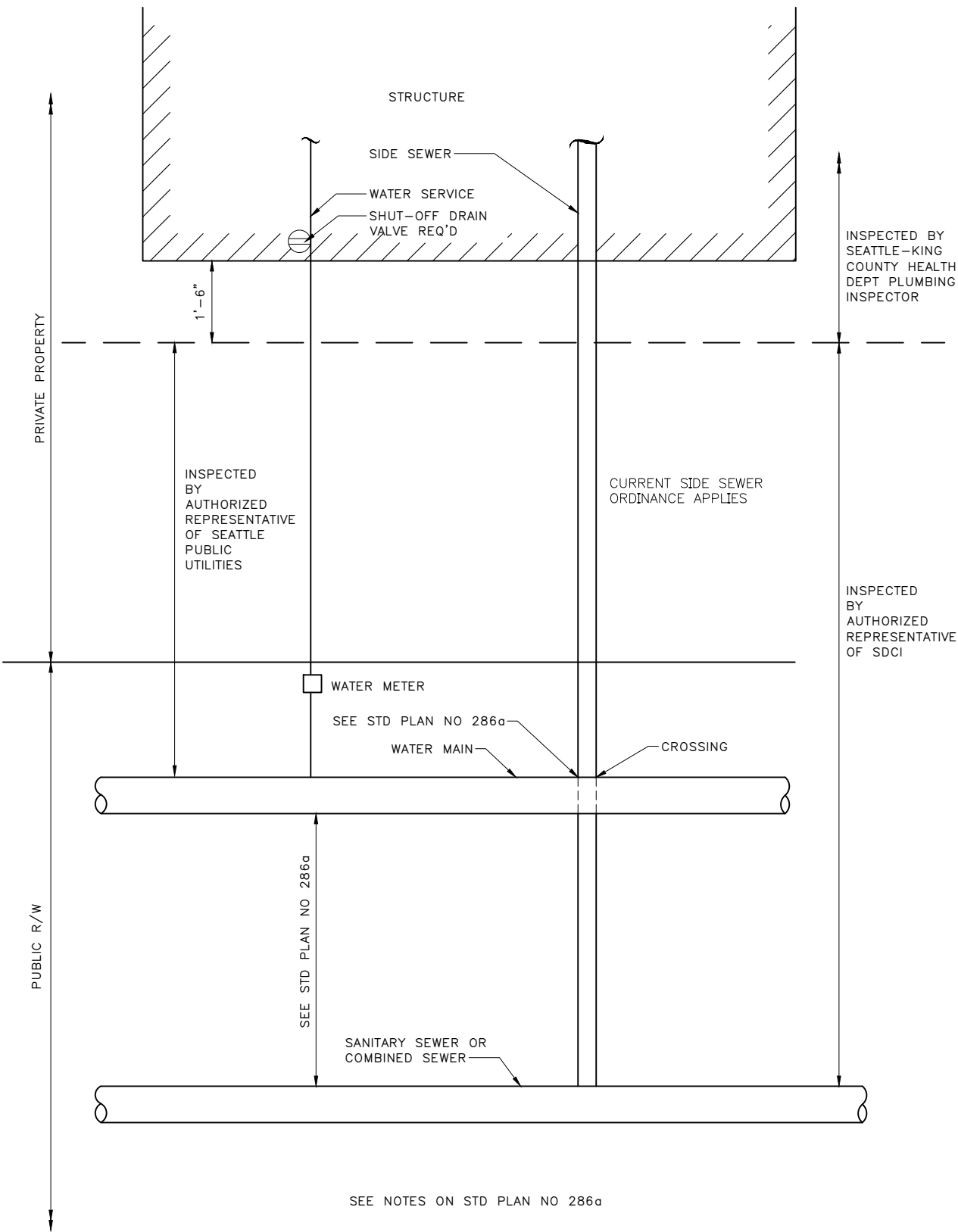
REF STD SPEC SEC 1-07.17, 7-11



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NOT TO SCALE

SEWER & WATER  
SPACING & CLEARANCES



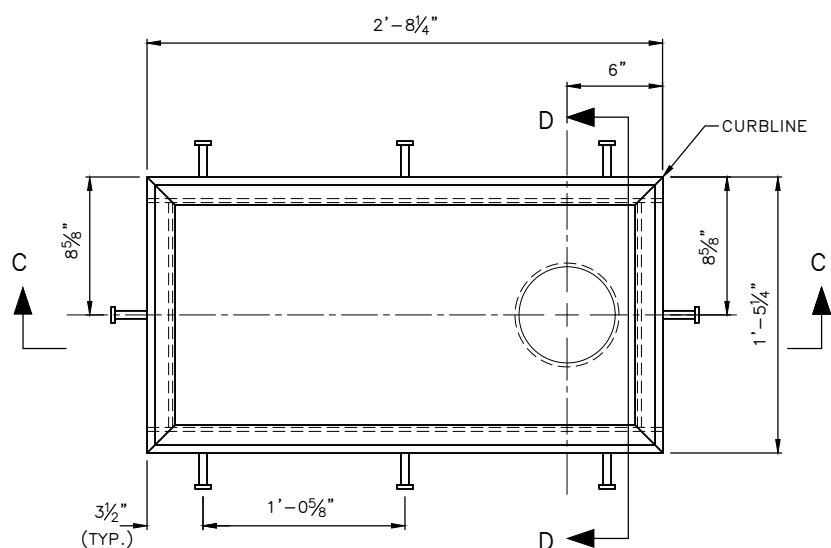
REF STD SPEC SEC 1-07.17, DIV 7



City of Seattle

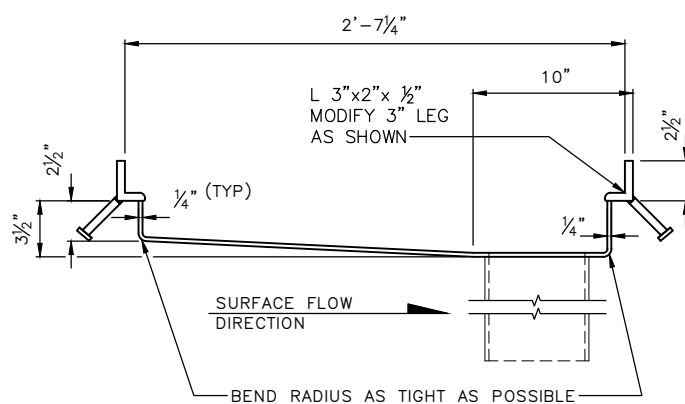
NOT TO SCALE

SEWER & WATER  
SPACING & CLEARANCES

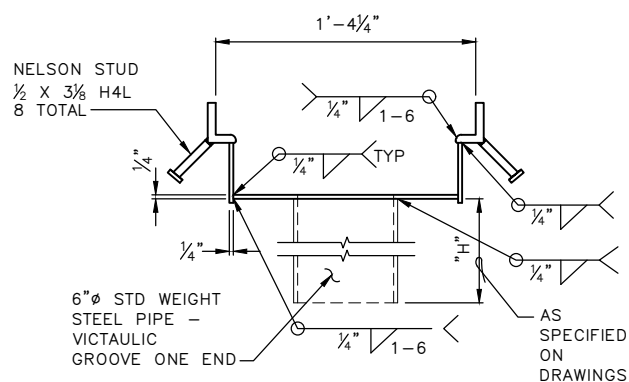


PLAN VIEW - BRIDGE DRAIN

SURFACE FLOW  
DIRECTION



SECTION C-C



SECTION D-D

NOTES:

1. ALL  $\frac{1}{4}$ " STEEL & L3"x 2"x  $\frac{1}{2}$ " TO BE A-36.
2. 6"Ø PIPE TO BE STANDARD WEIGHT STEEL.
3. AFTER FABRICATION, DRAIN ASSEMBLY TO BE HOT DIP GALVANIZED.
4. VANED GRATE TO BE PER STD PLAN NO 265.

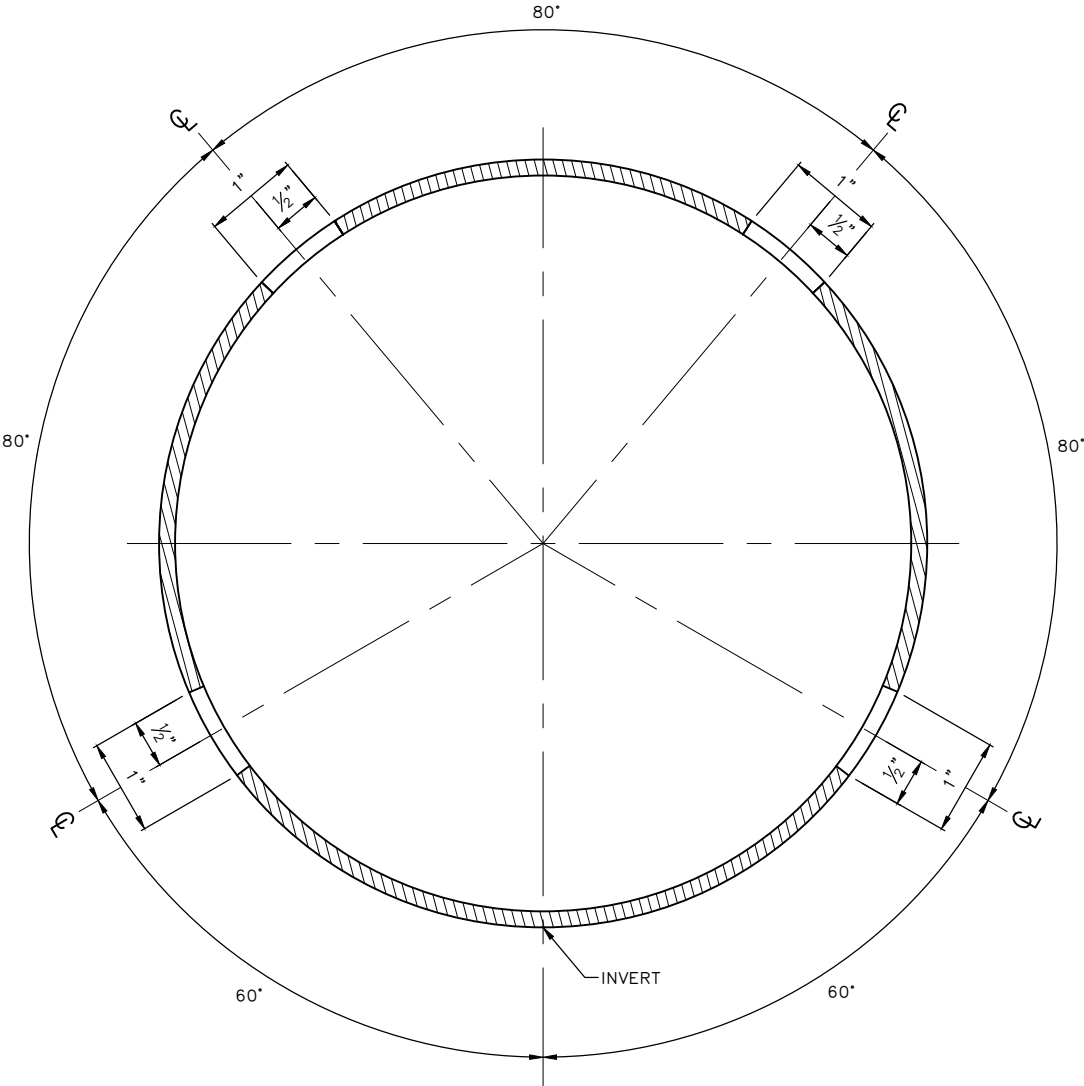
REF STD SPEC SEC 6-01, 7-05



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NOT TO SCALE

BRIDGE DRAIN



**NOTES:**

- 1. ASTM D 2241 SDR 21 CLASS 200 PVC PIPE OR  
ASTM D 1785 SCH 40.
- 2. SLOT DIMENSIONS ARE 0.064" WIDE X 1.00" LONG  
SPACED ALONG PIPE AT 0.3" ON CENTER.

REF STD SPEC SEC 9-05.4(1)

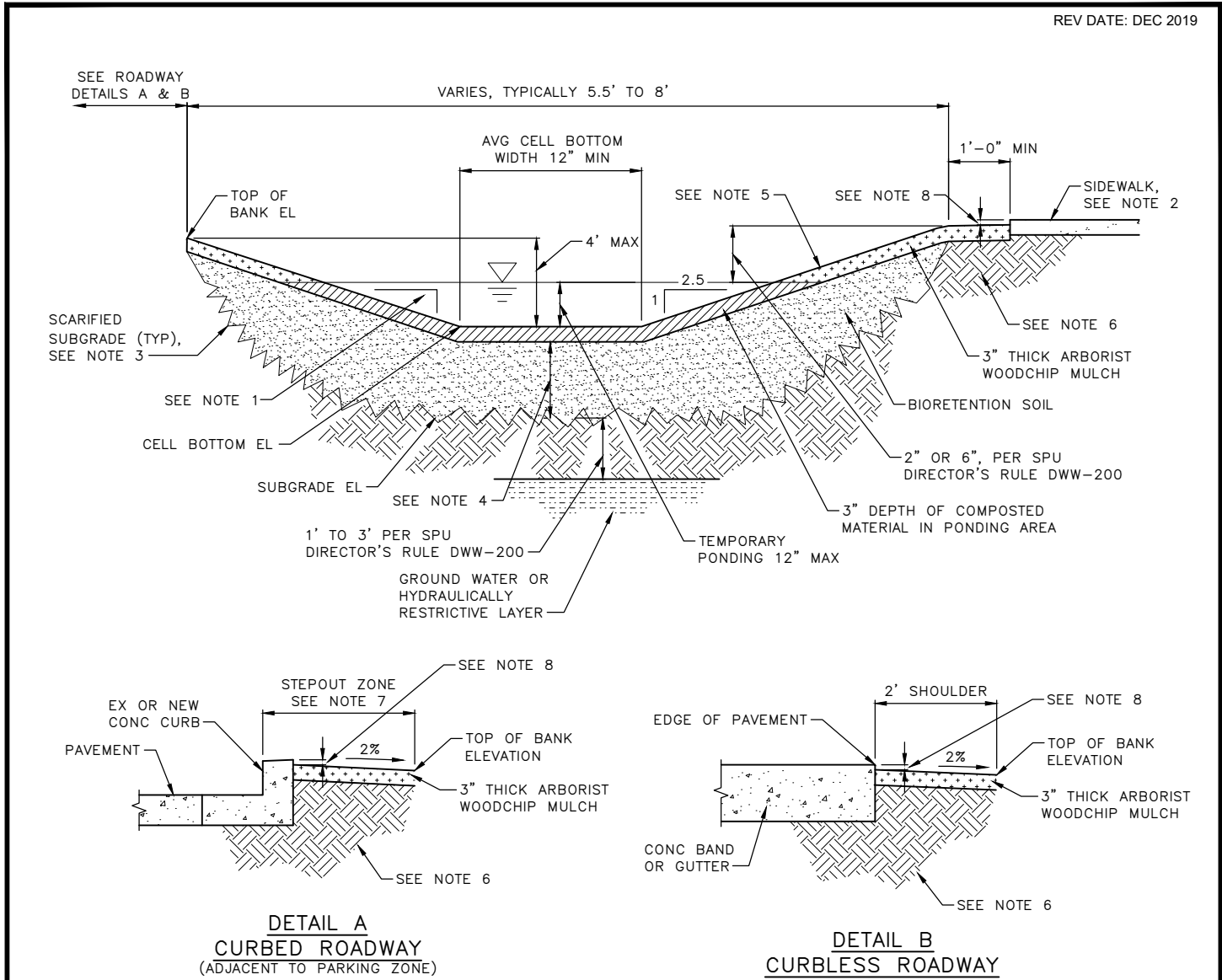


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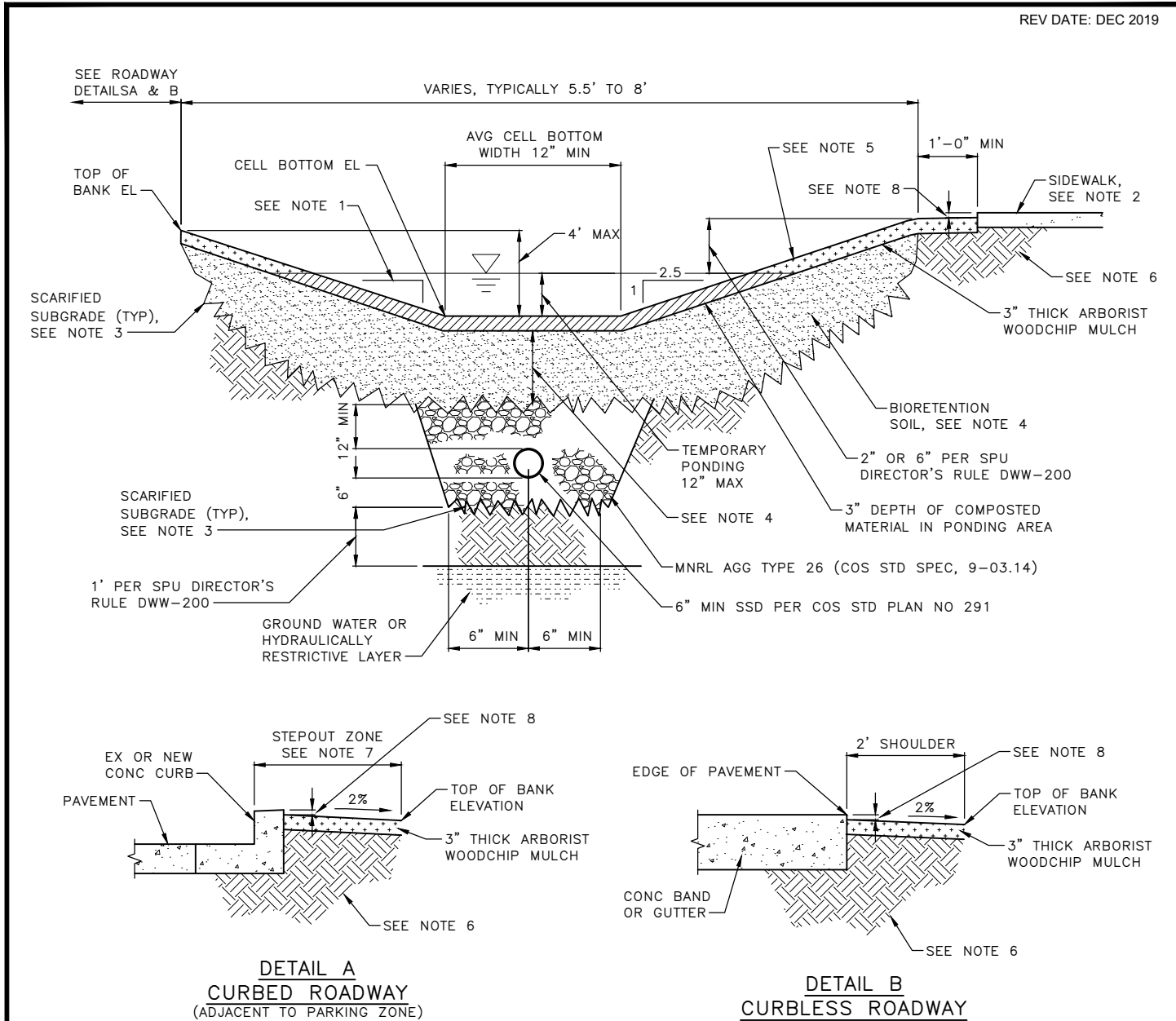
PVC SUBSURFACE DRAIN PIPE





NOTES:

1. TYPICAL MAXIMUM SLOPE ALLOWED IS 2.5H=1V, 3H=1V MAX WHEN WITHIN 50- FEET OF INTERSECTIONS OR CURBLESS ROADWAY.
2. BIORETENTION OVERFLOW ELEVATIONS MUST BE SET BELOW SIDEWALK ELEVATION.
3. SCARIFY SUBGRADE AS SPECIFIED IN SPEC SECTION 7-21.3(2)B IN THE AREA SUBJECT TO TEMPORARY PONDING BEFORE BIORETENTION SOIL INSTALLATION.
4. 12" MIN OR 18" MIN IF WATER QUALITY TREATMENT IS REQUIRED PER STORMWATER CODE REQUIREMENT.
5. CELL MUST BE PLANTED PER APPROVED LANDSCAPE PLAN.
6. SOIL UNDER SHOULDERS OR PAVED AREAS MUST BE UNDISTURBED NATIVE SOIL OR APPROVED FILL COMPACTED TO 95% DENSITY.
7. FACE OF CURB TO TOP OF SLOPE MUST BE MIN 2'-0" FOR NON-MAJOR ARTERIAL STREET, MIN 4'-0" FOR MAJOR ARTERIAL STREET.
8. PROVIDE MIN ONE INCH GAP BETWEEN TOP OF WALKS, CURBS, PAVEMENTS AND DRIVEWAYS AND TOP OF ARBORIST WOODCHIP MULCH.



**NOTES:**

1. TYPICAL MAXIMUM SLOPE ALLOWED IS 2.5H=1V, 3H=1V MAX WHEN WITHIN 50'-FEET OF INTERSECTIONS OR CURBLESS ROADWAY.
2. BIORETENTION OVERFLOW ELEVATIONS MUST BE SET BELOW SIDEWALK ELEVATION.
3. SCARIFY SUBGRADE AS SPECIFIED IN SPEC SECTION 7-21.3(2)B IN THE AREA SUBJECT TO TEMPORARY PONDING BEFORE BIORETENTION SOIL INSTALLATION.
4. 12" MIN OR 18" MIN IF WATER QUALITY TREATMENT IS REQUIRED PER STORMWATER CODE REQUIREMENT.
5. CELL MUST BE PLANTED PER APPROVED LANDSCAPE PLAN.
6. SOIL UNDER SHOULDERS OR PAVED AREAS MUST BE UNDISTURBED NATIVE SOIL OR APPROVED SOIL COMPACTED TO 95% DENSITY.
7. FACE OF CURB TO TOP OF SLOPE MUST BE MIN 2'-0" FOR NON-MAJOR ARTERIAL STREET, MIN 4'-0" FOR MAJOR ARTERIAL STREET.
8. PROVIDE MIN ONE INCH GAP BETWEEN TOP OF WALKS, CURBS, PAVEMENTS AND DRIVEWAYS AND TOP OF ARBORIST WOODCHIP MULCH.

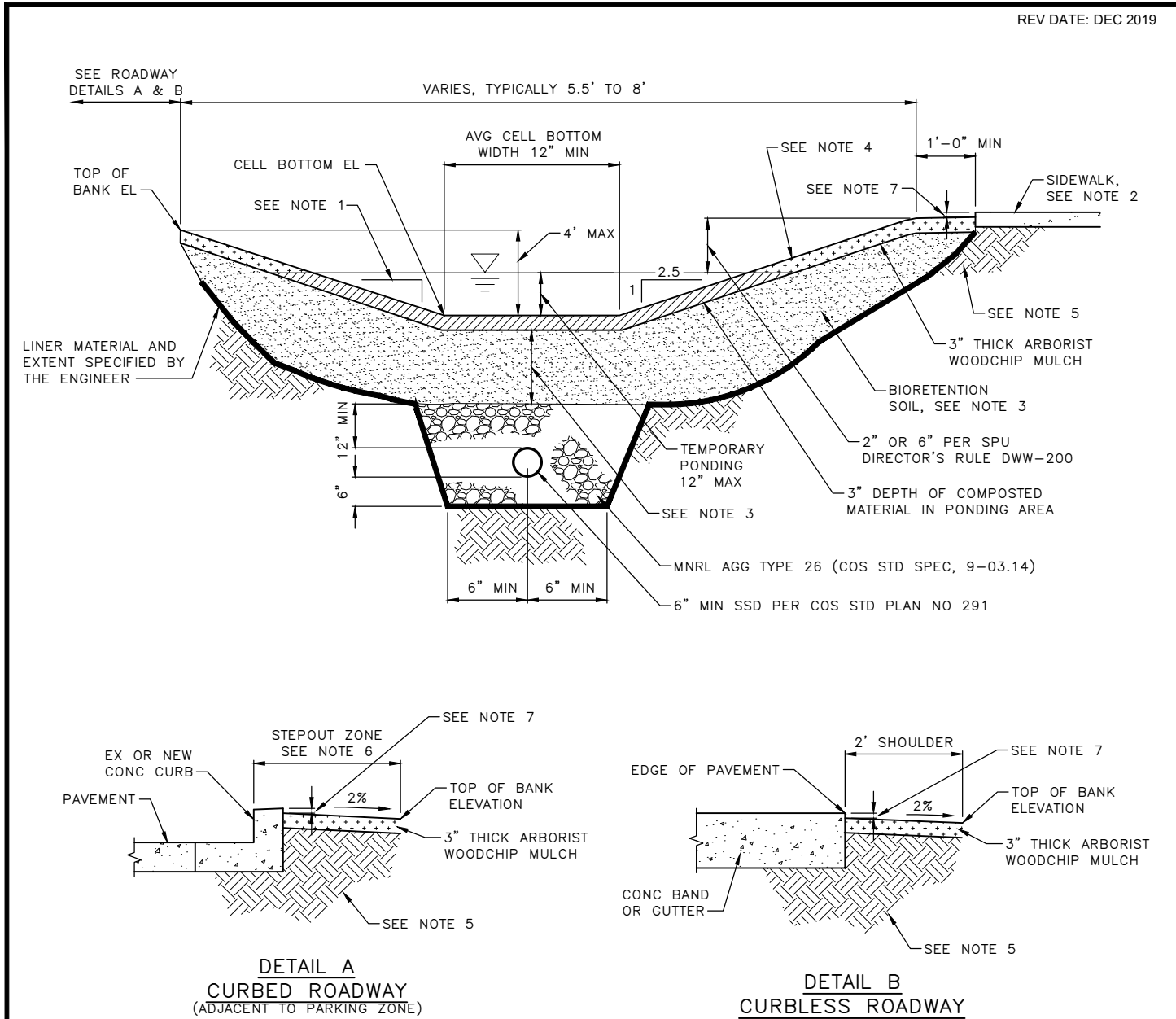
REF STD SPEC SEC 7-21



City of Seattle

NOT TO SCALE

**INFILTRATING BIORETENTION  
WITH SLOPED SIDES  
& UNDER DRAIN**



- NOTES:**
- 1. TYPICAL MAXIMUM SLOPE ALLOWED IS 2.5H=1V, 3H=1V MAX WHEN WITHIN 50- FEET OF INTERSECTIONS OR CURBLESS ROADWAY.
  - 2. BIORETENTION OVERFLOW ELEVATIONS MUST BE SET BELOW SIDEWALK ELEVATION.
  - 3. 12" MIN OR 18" MIN IF WATER QUALITY TREATMENT IS REQUIRED PER STORMWATER CODE REQUIREMENT.
  - 4. CELL MUST BE PLANTED PER APPROVED LANDSCAPE PLAN.
  - 5. SOIL UNDER SHOULDERS OR PAVED AREAS MUST BE UNDISTURBED NATIVE SOIL OR APPROVED SOIL COMPACTED TO 95% DENSITY
  - 6. FACE OF CURB TO TOP OF SLOPE MUST BE MIN 2'-0" FOR NON-MAJOR ARTERIAL STREET, MIN 4'-0" FOR MAJOR ARTERIAL STREET.
  - 7. PROVIDE MIN ONE INCH GAP BETWEEN TOP OF WALKS, CURBS, PAVEMENTS AND DRIVEWAYS AND TOP OF ARBORIST WOODCHIP MULCH.

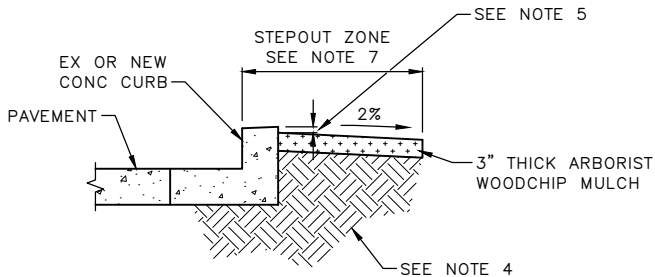
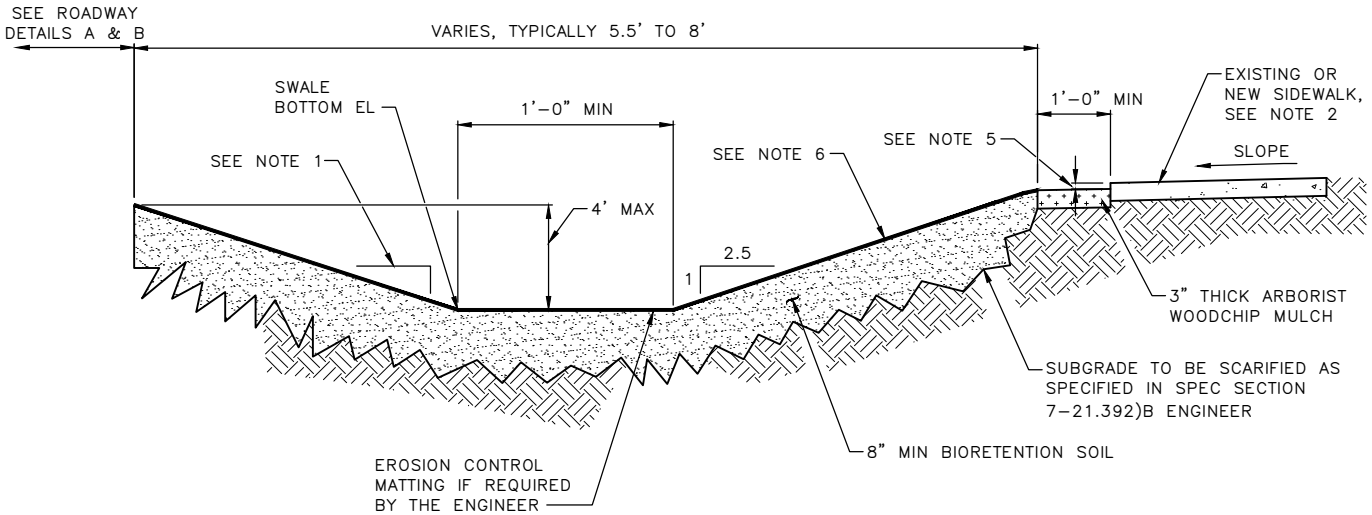
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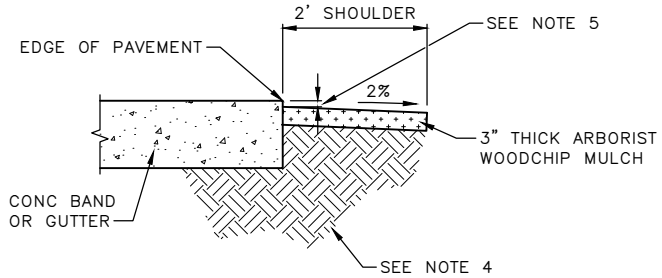
City of Seattle

NOT TO SCALE

NON-INFILTRATING BIORETENTION  
WITH SLOPED SLIDES  
& UNDER DRAIN



DETAIL A  
CURBED ROADWAY  
(ADJACENT TO PARKING ZONE)



DETAIL B  
CURBLESS ROADWAY

- NOTES:
- 1. TYPICAL MAXIMUM SLOPE ALLOWED IS 2.5H=1V, 3H=1V MAX WHEN WITHIN 50- FEET OF INTERSECTIONS OR CURBLESS ROADWAY.
  - 2. CONVEYANCE SWALE OVERFLOW ELEVATIONS MUST BE SET BELOW SIDEWALK ELEVATION.
  - 3. LONGITUDINAL SLOPE GREATER THAN OR EQUAL TO 4%, CHECK DAM REQUIRED.
  - 4. UNDISTURBED NATIVE SOIL OR APPROVED SOIL COMPACTED TO 95% DENSITY.
  - 5. PROVIDE MIN ONE INCH GAP BETWEEN TOP OF WALKS, CURBS, PAVEMENTS AND DRIVEWAYS AND TOP OF TREATMENT LAYER.
  - 6. PLANTING PER APPROVED LANDSCAPE PLAN.
  - 7. FACE OF CURB TO TOP OF SLOPE MUST BE MIN 2'-0" FOR NON-MAJOR ARTERIAL STREETS, MIN 4'-0" FOR MAJOR ARTERIAL STREETS.

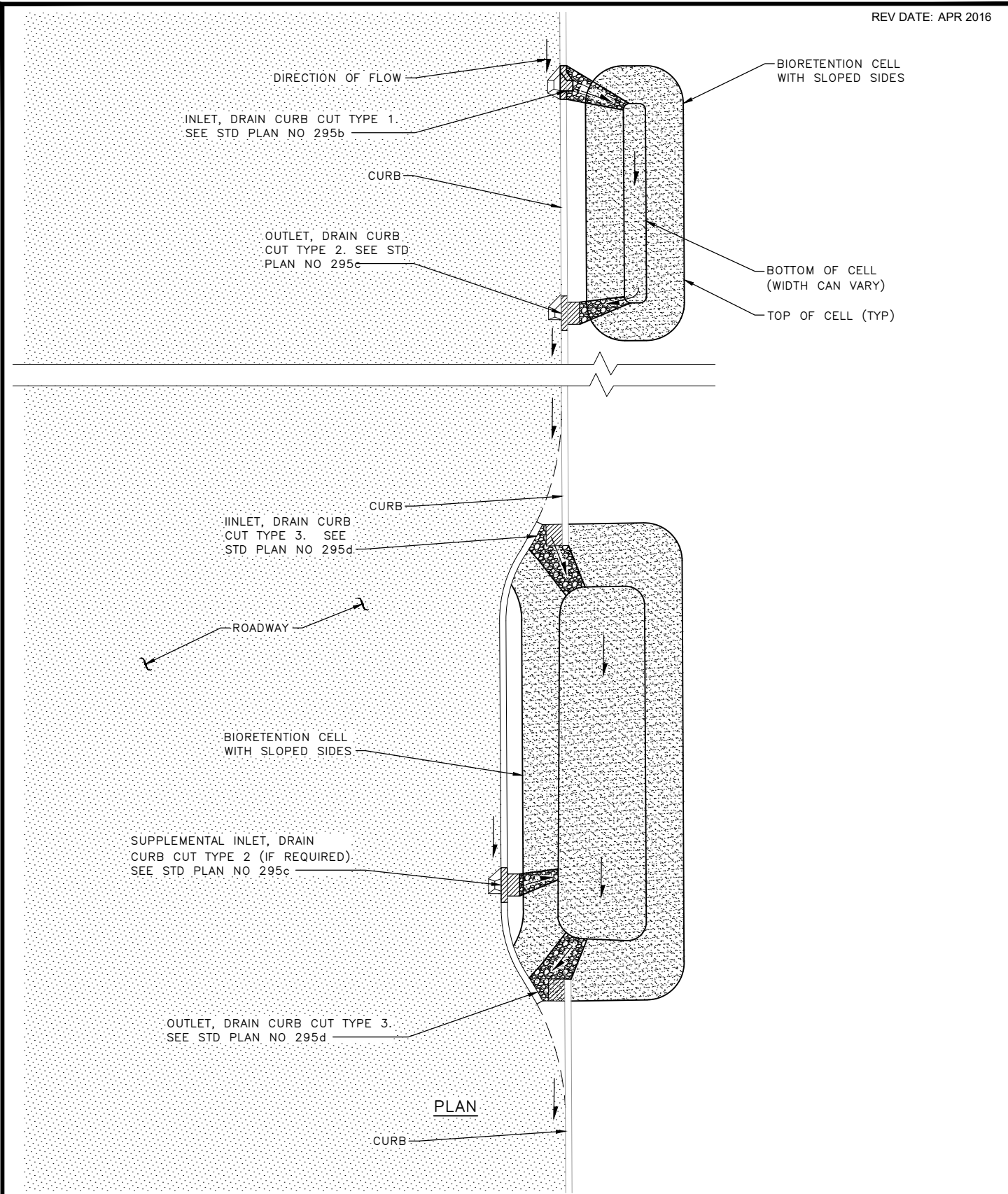
REF STD SPEC SEC 7-21



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NOT TO SCALE

VEGETATED CONVEYANCE SWALE  
(NOT FOR WATER QUALITY  
TREATMENT)



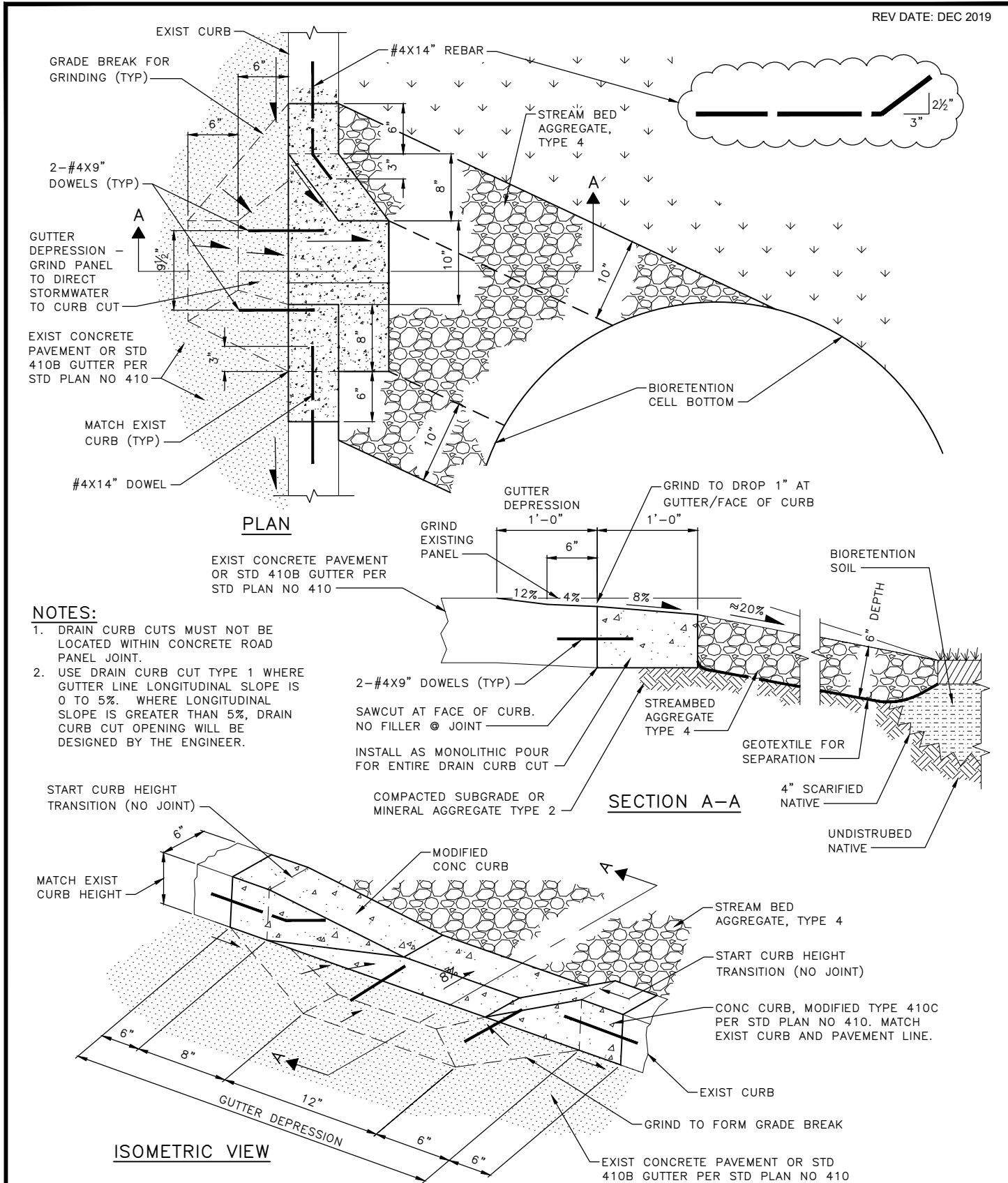
REF STD SPEC SEC 7-21, 9-03



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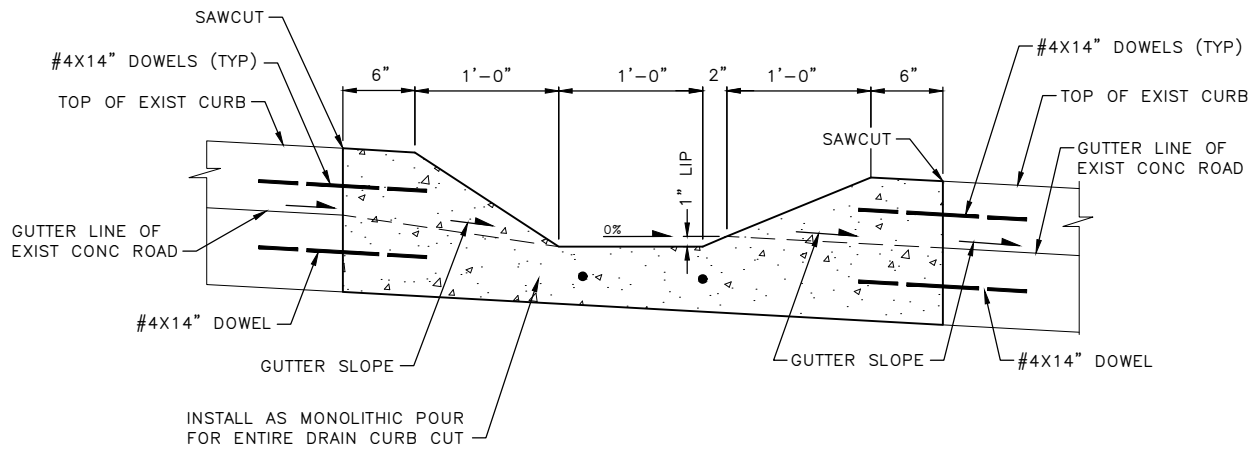
TYPICAL DRAIN CURB CUT  
LOCATION FOR BIORETENTION  
WITH SLOPED SIDES



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NOT TO SCALE

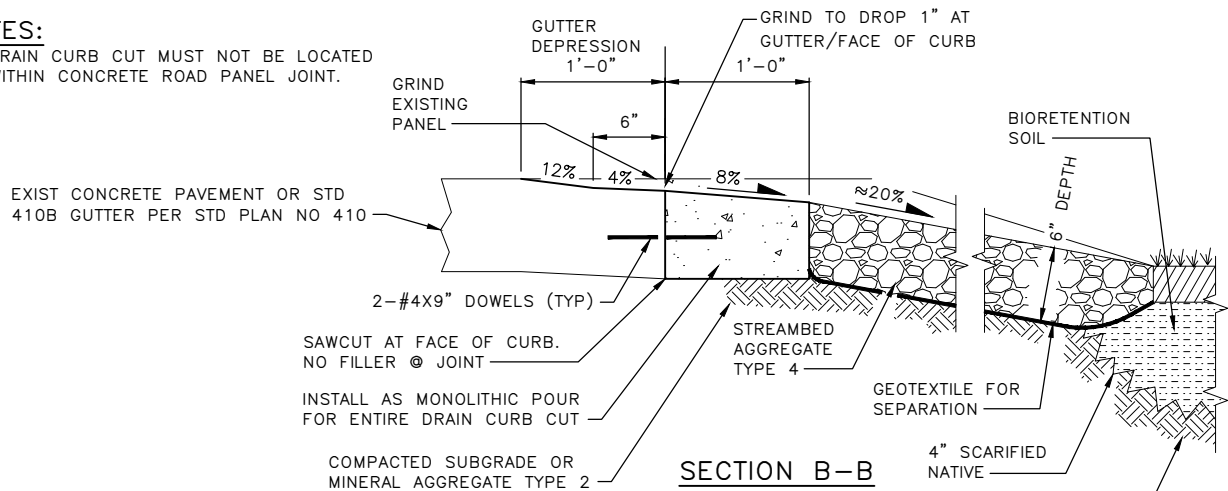
DRAIN CURB CUT TYPE 1



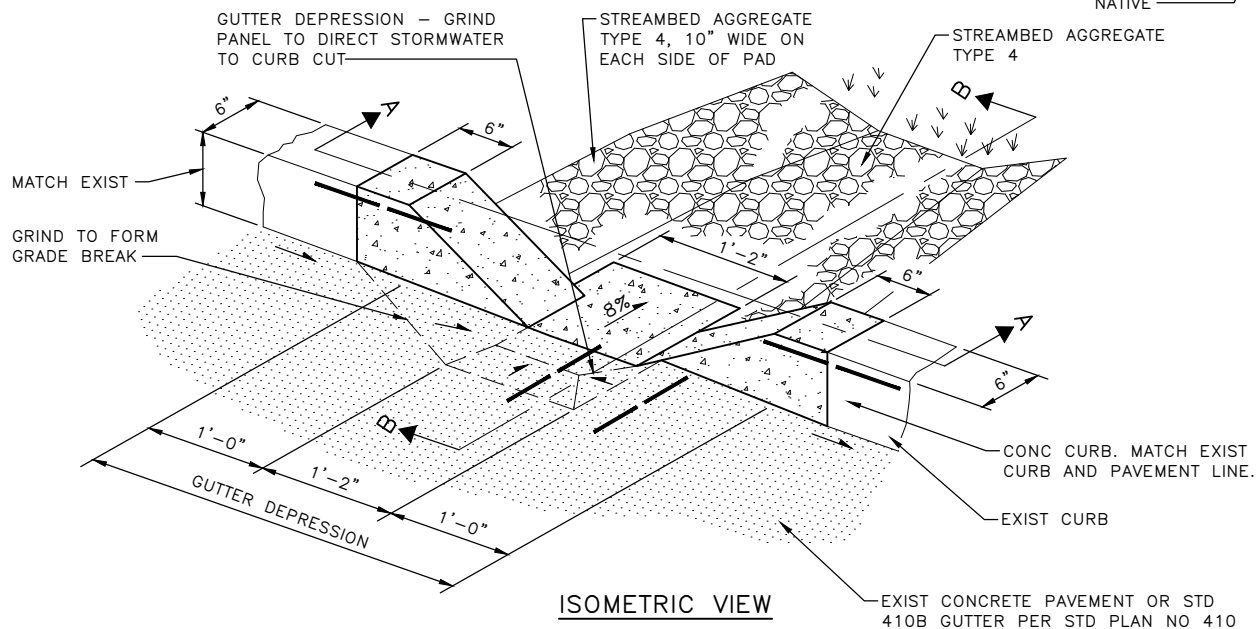
SECTION A-A

NOTES:

1. DRAIN CURB CUT MUST NOT BE LOCATED  
WITHIN CONCRETE ROAD PANEL JOINT.



SECTION B-B



## ISOMETRIC VIEW

REF STD SPEC SEC 7-21, 9-03

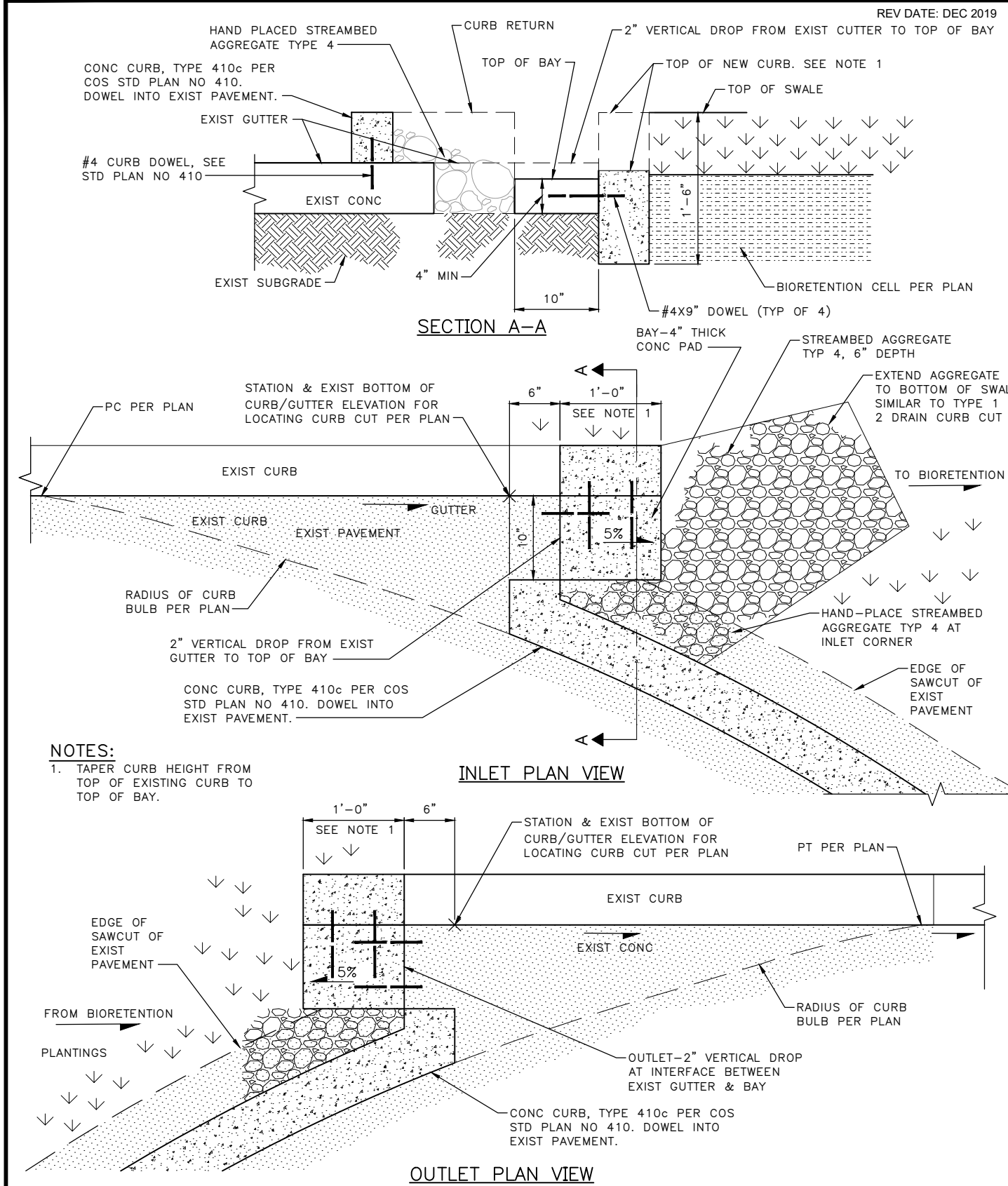


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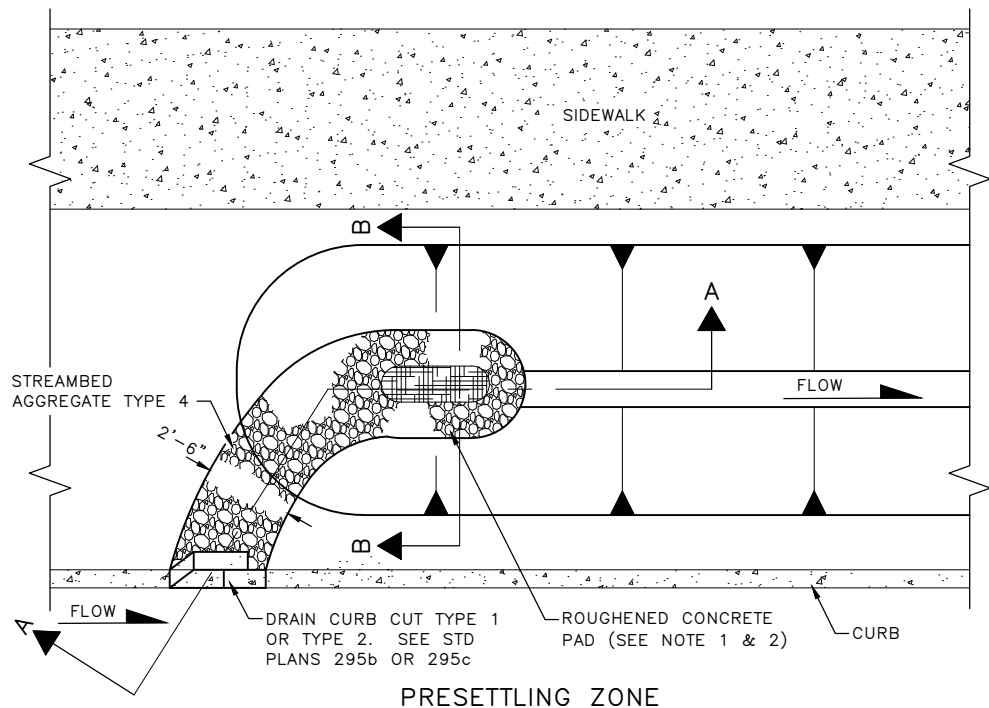
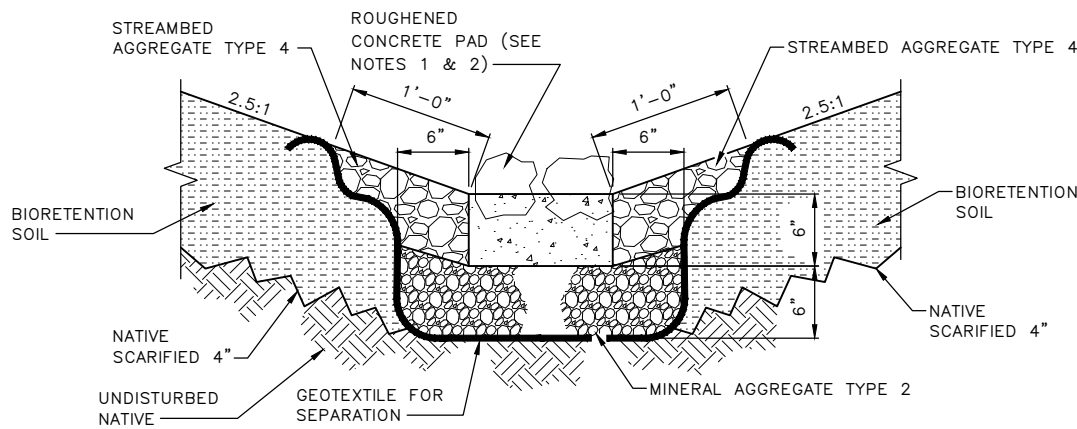
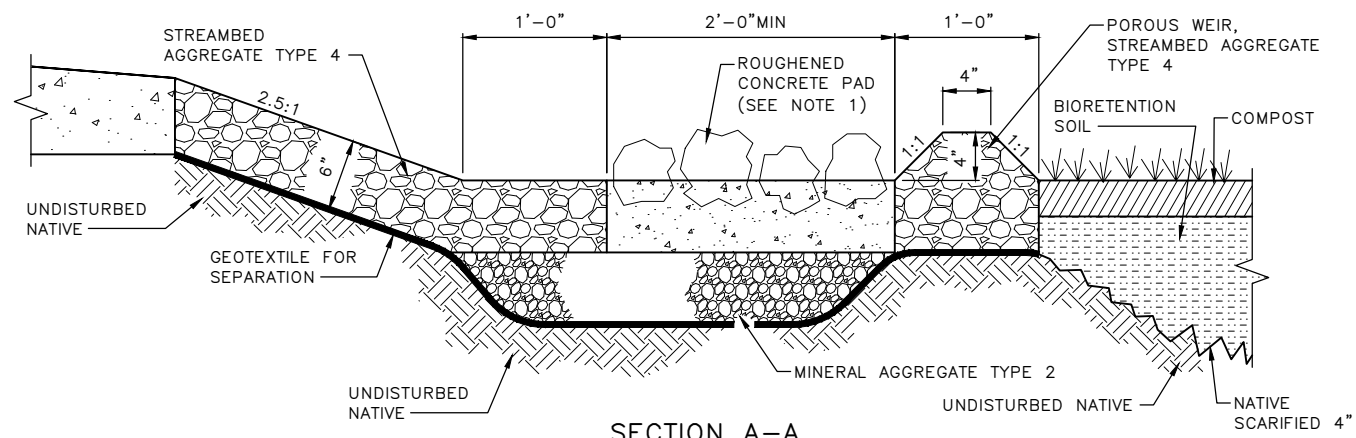
NOT TO SCALE

### DRAIN CURB CUT TYPE 2

REV DATE: DEC 2019







- NOTES:
- 1. ROUGHENED CONCRETE PAD MUST BE MIN 2' LONG & 2.5 SF OR 5.0SF PER SPU DIRECTOR'S RULE 200
  - 2. ROUGHENED CONCRETE PAD MUST BE CONSTRUCTED WITH COMMERCIAL CONCRETE (STD SPEC 6-02) EMBED WELL MIXED 6"-8" STREAMBED AGGREGATE TO CREATE ROUGHNESS. 50% MIN OF THE SURFACE MUST HAVE PROTRUDING AGGREGATE

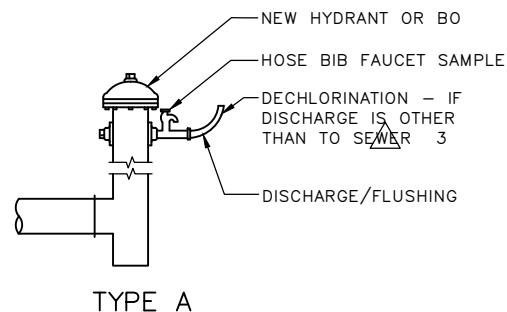
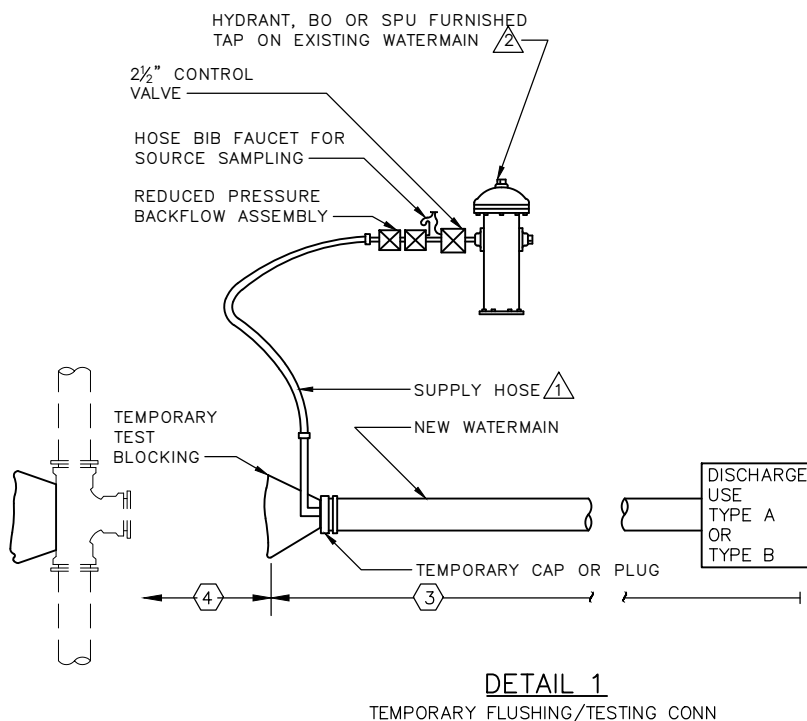
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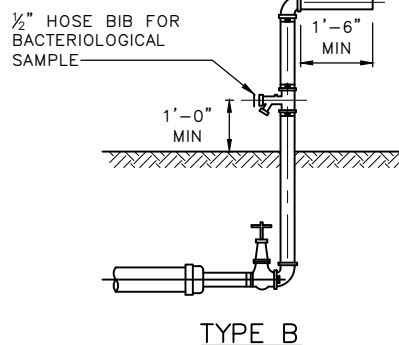
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NOT TO SCALE

PRESETTLING ZONE



TEMP SAMPLE TAP AND FLUSHING ASSEMBLY (RESTRAINT OR BLOCKING REQ'D)

**NOTES:**

1. ALL FITTINGS MUST BE DUCTILE IRON
2. ALL EXCAVATION MUST PROVIDE A MINIMUM OF 1'-0" CLEAR AROUND PIPE AND FITTINGS.
3. THESE PLANS ARE FOR DIP AND CIP WATERMAINS 12" OR SMALLER DIA OTHER SIZES AND TYPES SEE PROJECT DRAWINGS
4. REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) MUST BE INSTALLED AS A UNIT (TWO SHUT-OFF VALVES, RELIEF PORT, TWO CHECK VALVES AND FOUR TEST COCKS). WHEN RPBA IS CONNECTED TO HYDRANT AND THE HOSE BIB FAUCET SAMPLE THEY MUST BE CAPPED WHEN NOT IN USE. ASSEMBLY MUST BE TESTED WHEN INSTALLED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER (BAT) AND A CURRENT TEST REPORT MUST BE ON SITE. FOR INSTALLATION PROCEDURES CALL 684-3536.
5. ALL FITTINGS AND MATERIALS FURNISHED BY CONTRACTOR AND TO BE INSTALLED BY SPU MUST BE VERIFIED, INSPECTED AND ON THE JOB SITE PRIOR TO SHUTDOWN OF EXISTING MAIN. FAILURE TO MEET THIS REQUIREMENT COULD RESULT IN DELAYS.

**LEGEND**

1. CLEAN & DISINFECTED POTABLE WATER HOSE ONLY. SIZE FLUSHING RISER PER TABLE IN STD SPEC SEC 7-11.3(12)
2. HYDRANT PERMIT REQUIRED
3. CHECK WITH SEWER UTILITY BEFORE DISCHARGE TO SEWERS
1. CONTRACTOR TO DETERMINE ALIGNMENT, GRADE AND OUTSIDE DIAMETER OF EXISTING PIPE PRIOR TO INSTALLING NEW WATERMAIN. ENGINEER TO DETERMINE OUTSIDE DIAMETER OF EXISTING PIPE WHEN CONTRACTOR EXCAVATES TO DETERMINE ALIGNMENT & GRADE.
2. ALL EXCAVATION, PIPE, FITTINGS (EXCEPT AS NOTED BELOW), OTHER MATERIAL, BEDDING, BACKFILL, COMPACTION & STREET RESTORATION BY CONTRACTOR. ALL MATERIALS MUST BE ON JOB SITE PRIOR TO SHUTDOWN OF EXISTING MAIN.
3. INSTALLED BY CONTRACTOR
4. CONNECTION PIPE: CONTRACTOR FURNISHED, INSTALLED BY SPU
5. WATERMAIN WITH PLAIN ENDS
6. MECHANICAL JOINT SLEEVE WITH SPACER CUT TO FIT GAP, FURNISHED AND INSERTED AT TIME OF CONNECTION BY SPU
7. TAPPING SLEEVE & TAPPING VALVE FURNISHED AND INSTALLED BY SPU
8. APPLIES TO PIPES 4" THROUGH 12". ALL LARGER SIZES TO BE ADDRESSED ON DRAWINGS
9. MECHANICAL JOINT SLEEVE, FURNISHED BY CONTRACTOR AND INSTALLED BY SPU, SPACERS BY SPU WHERE REQUIRED.

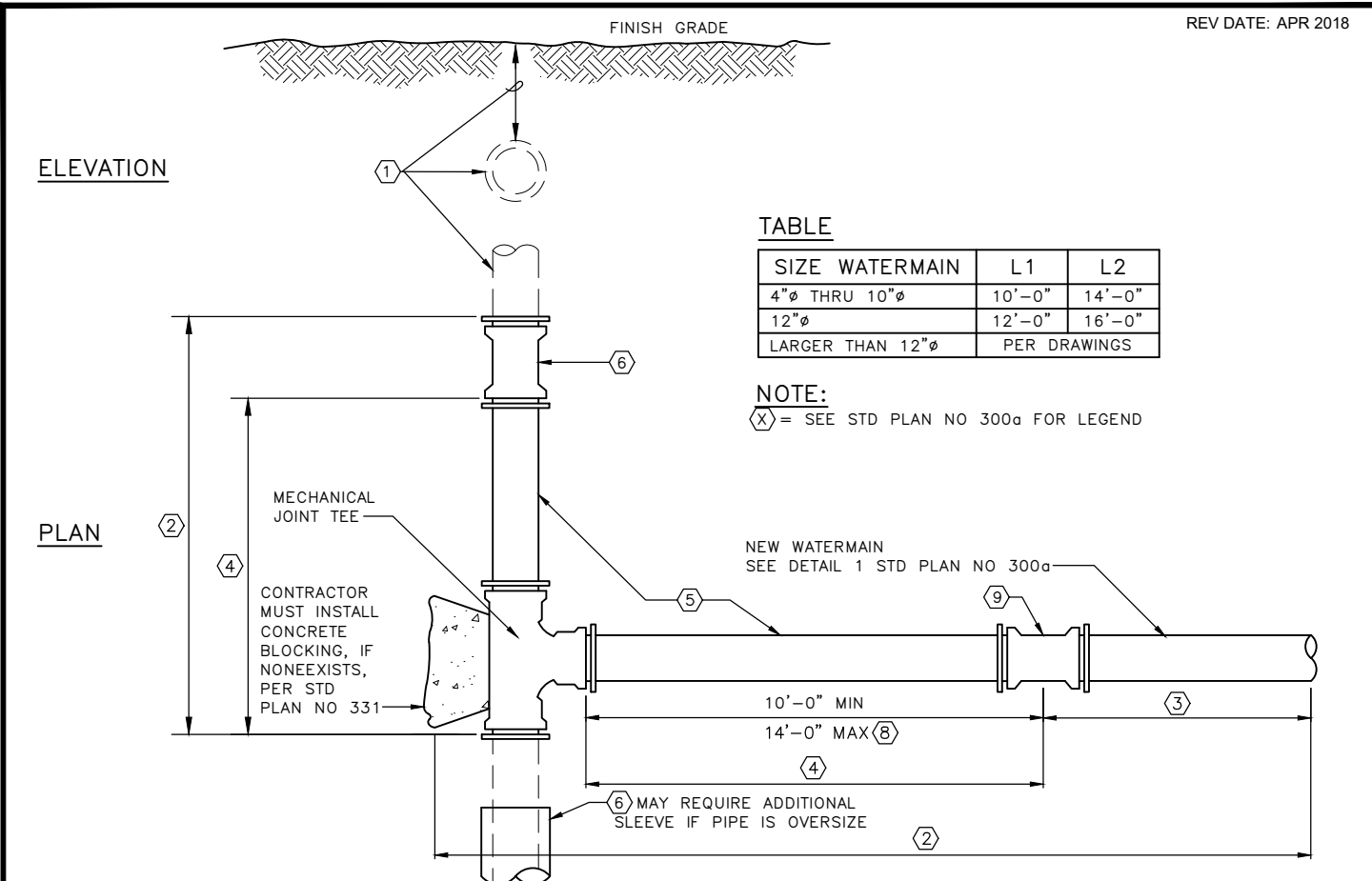
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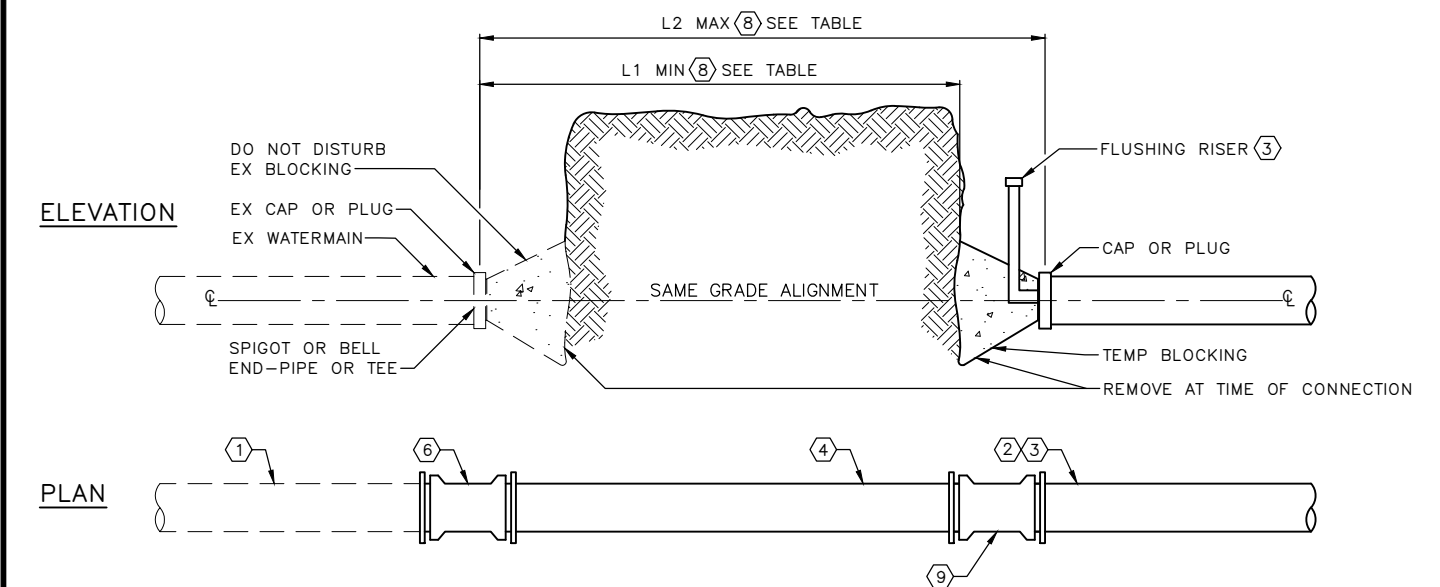
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NOT TO SCALE

**CONNECTIONS TO  
EXISTING WATERMAINS**



CONNECTIONS TO EXISTING MAIN, WITH A NEW TEE OR CROSS  
(CUT IN NEW TEE)



CONNECTIONS TO EXISTING MAIN, STUB  
OR END OUTLET OF TEE OR CROSS

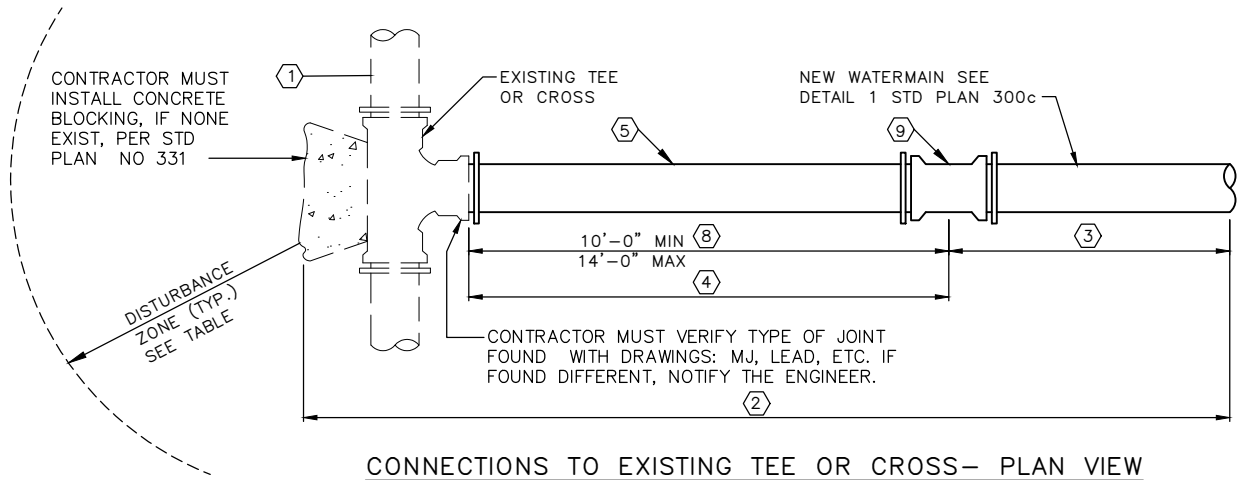
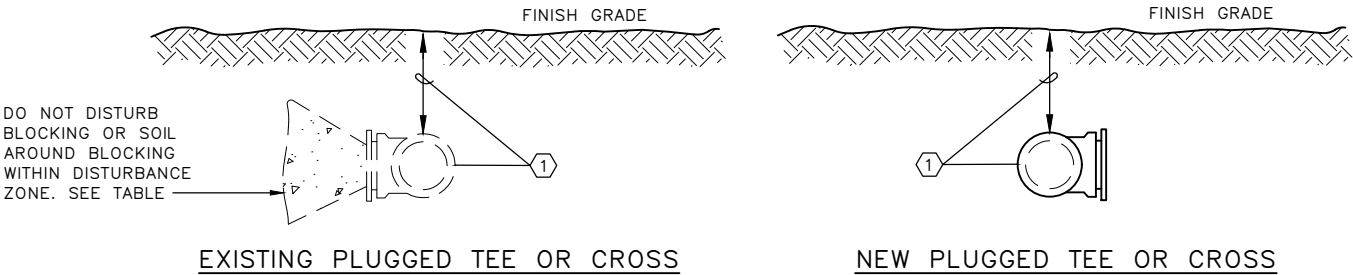
REF STD SPEC SEC 7-11



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NOT TO SCALE

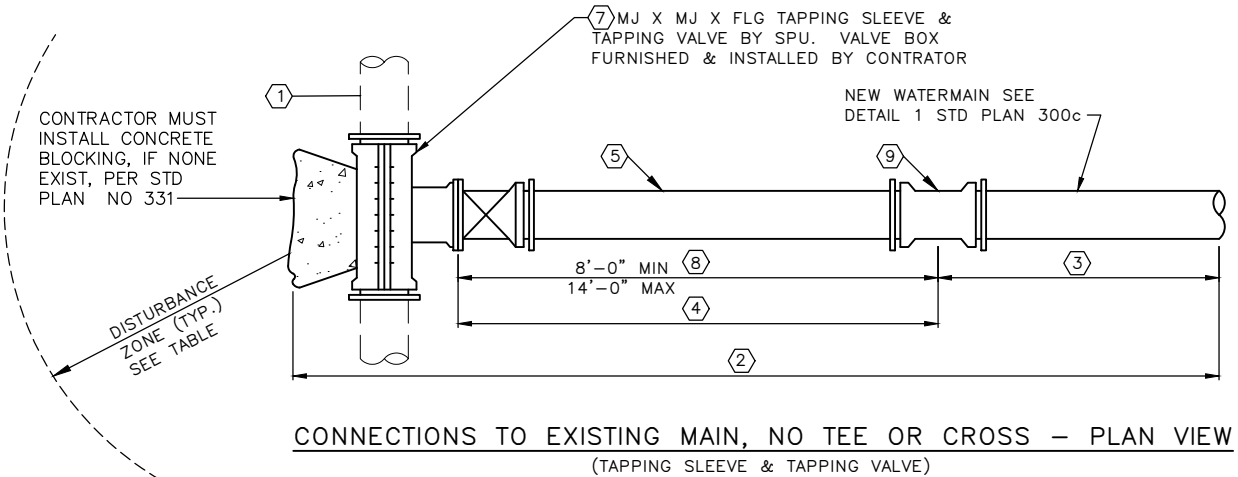
CONNECTIONS TO  
EXISTING WATERMAINS



NOTE:  
X = SEE STD PLAN NO 300a FOR LEGEND

SIZE OF WATERMAIN	DISTURBANCE ZONE
UP TO & INCLUDING 10"φ	10'-0"
OVER 10"φ	12'-0"

\* SPU MAY INCREASE DISTURBANCE ZONE.  
SEE CONTRACT DOCUMENTS



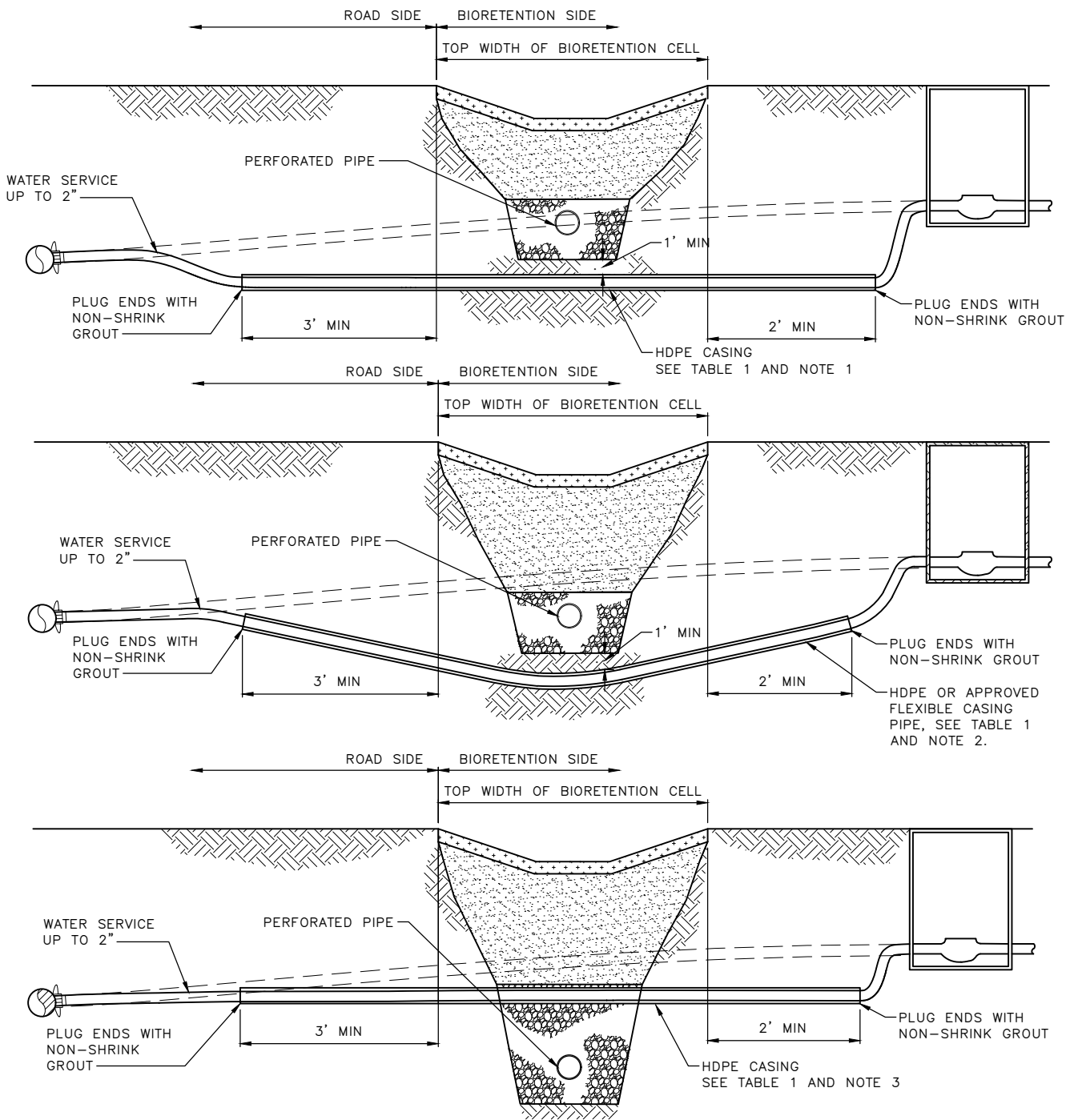
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

CONNECTIONS TO  
EXISTING WATERMAINS



NOTES:

1. THIS CONFIGURATION APPLIES TO WATER SERVICE RELOCATION DEPTH 5' OR LESS.
2. THIS CONFIGURATION APPLIES TO WATER SERVICE RELOCATION DEPTH BETWEEN 5' AND 6'
3. THIS CONFIGURATION APPLIES TO WATER SERVICE RELOCATION DEPTH GREATER THAN 6'
4. FOR BIORETENTION CELLS WITH LINERS, ANY PENETRATION OF THE LINER MUST BE SEALED
5. THIS CONFIGURATION ALSO APPLIES TO OTHER UTILITIES UNLESS THE OTHER UTILITY HAS MORE STRINGENT CLEARANCE REQUIREMENTS.

TABLE 1  
CASING SIZE

WATER SERVICE Ø	CASING Ø
¾"	2"
1.5"	2"
2"	3"

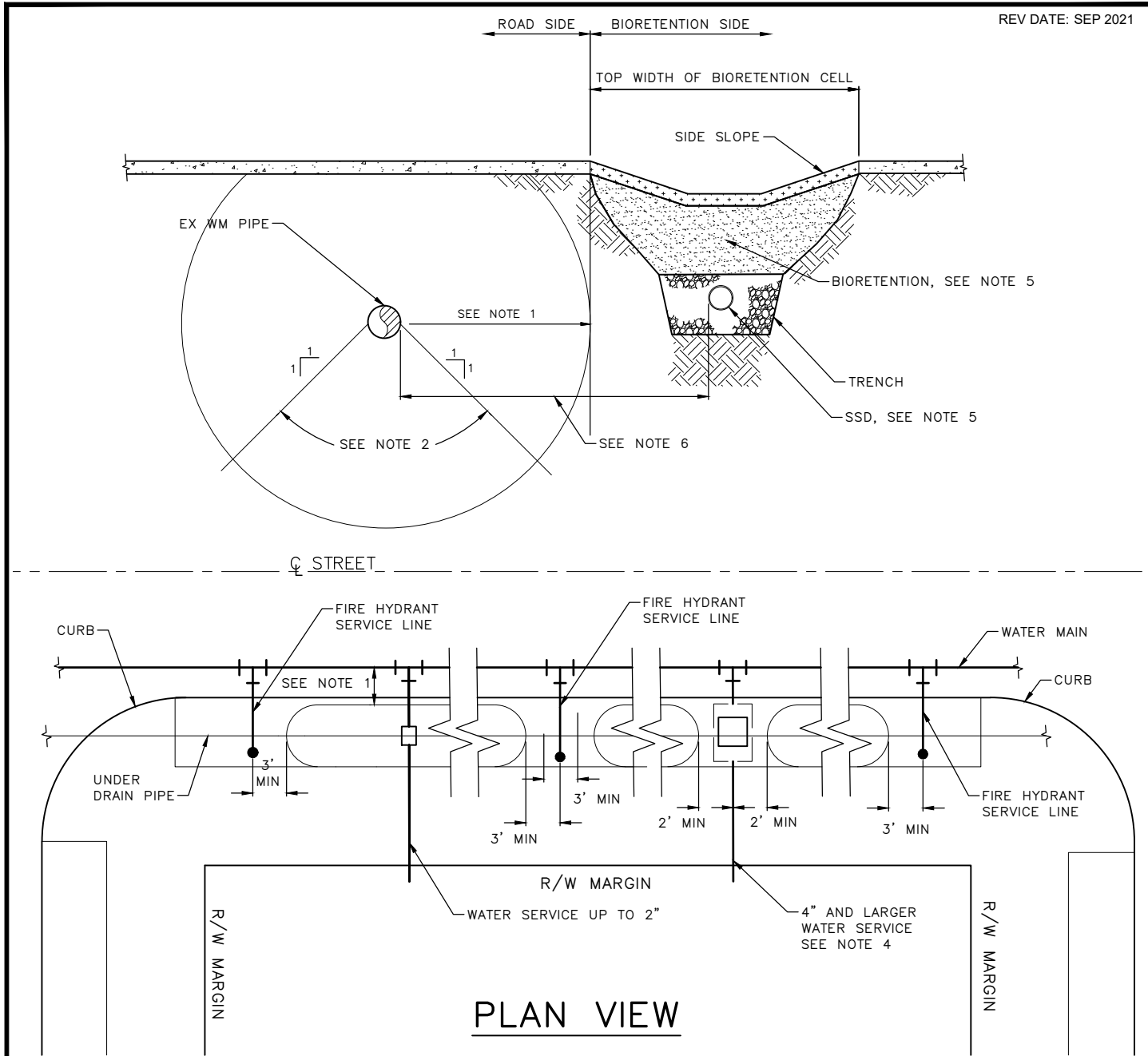
REF STD SPEC SEC 1-07.17



City of Seattle

NOT TO SCALE

WATER SERVICE RELOCATION  
FOR UP TO 2" SERVICE PIPE  
THROUGH BIORETENTION



NOTES:

1. HORIZONTAL SETBACK DISTANCE FROM THE WATER MAIN (MEASURED FROM THE EDGE OF THE PIPE TO THE EDGE OF ANY BIORETENTION CELL) MUST BE MINIMUM 3.5 FEET FOR WATER MAIN UP TO AND INCLUDING 12"Ø WATER MAIN. WATER MAIN LARGER THAN 12"Ø MUST BE EVALUATED AND APPROVED ON A CASE BY CASE BASIS BY SEATTLE PUBLIC UTILITIES. IF SOIL WITHIN SETBACK IS DISTURBED A SUPPORT PLAN AND SOIL RE-COMPACTION TO 95% MIN COMPACTION WILL BE REQUIRED. EXCEPTIONS TO THE MINIMUM 3.5' HORIZONTAL SETBACK MUST BE APPROVED BY SEATTLE PUBLIC UTILITIES PLAN REVIEW SECTION AND WATER QUALITY DIVISION.
2. SOIL WITHIN THE ZONE OF INFLUENCE MUST NOT BE DISTURBED IN ORDER TO MAINTAIN STRUCTURAL SUPPORT TO THE WATER MAIN.
3. BIORETENTION CELL MUST MAINTAIN 3' MIN CLEARANCE FROM THE EDGE OF ANY EXISTING FIRE HYDRANT SERVICE LINE TO THE EDGE OF THE BIORETENTION. FOR THE FIRE HYDRANT OPERATION THERE MUST BE A 4' MIN CLEARANCE AROUND THE FIRE HYDRANT WHERE NOTHING CAN BE AS TALL AS THE FIRE HYDRANT OPENING NUT.
4. BIORETENTION CELL MUST MAINTAIN 2' MIN CLEARANCE FROM THE EDGE OF THE BIORETENTION TO THE EDGE OF THE EXISTING 4" OR LARGER WATER SERVICE LINE OR SERVICE VAULT.
5. SEE STANDARD PLAN NO 292, 293A AND 293B FOR BIORETENTION REQUIREMENTS.
6. HORIZONTAL SETBACK DISTANCE BETWEEN EXISTING WATER MAIN AND THE BIORETENTION SSD PIPE MUST COMPLY WITH STD PLAN NO 286A. EXCEPTION TO STD PLAN NO 286A PARALLEL INSTALLATION APPLIES IF THE UNDER DRAIN PIPE ONLY RECEIVES TREATED RUNOFF PER STORMWATER CODE REQUIREMENTS FOR WATER QUALITY TREATMENT.

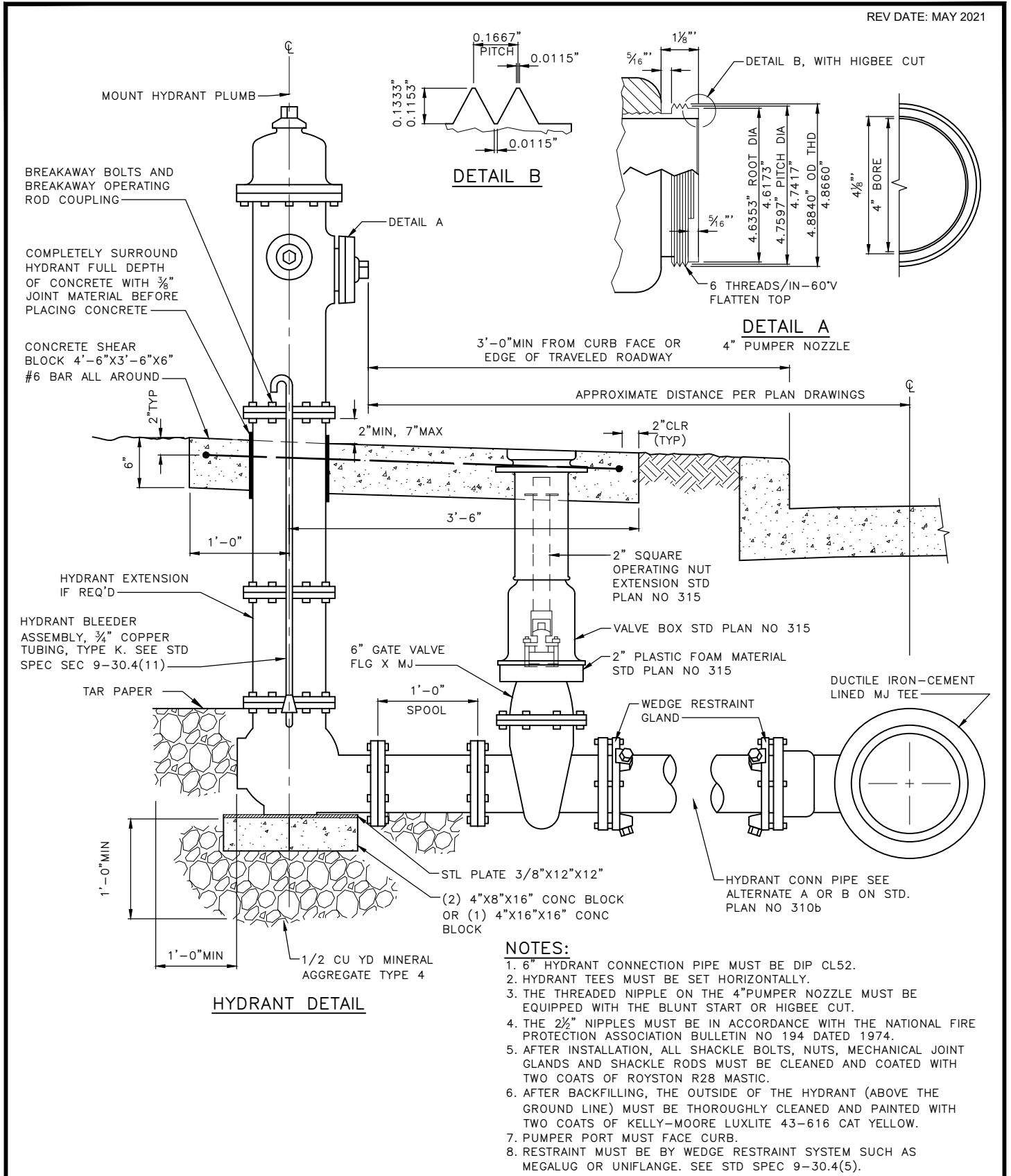
REF STD SPEC SEC 1-07.17



City of Seattle

NOT TO SCALE

WATERMAIN SETBACK  
REQUIREMENT FOR C.I. LEAD  
JOINT AND D.I. SLIP JOINT PIPE



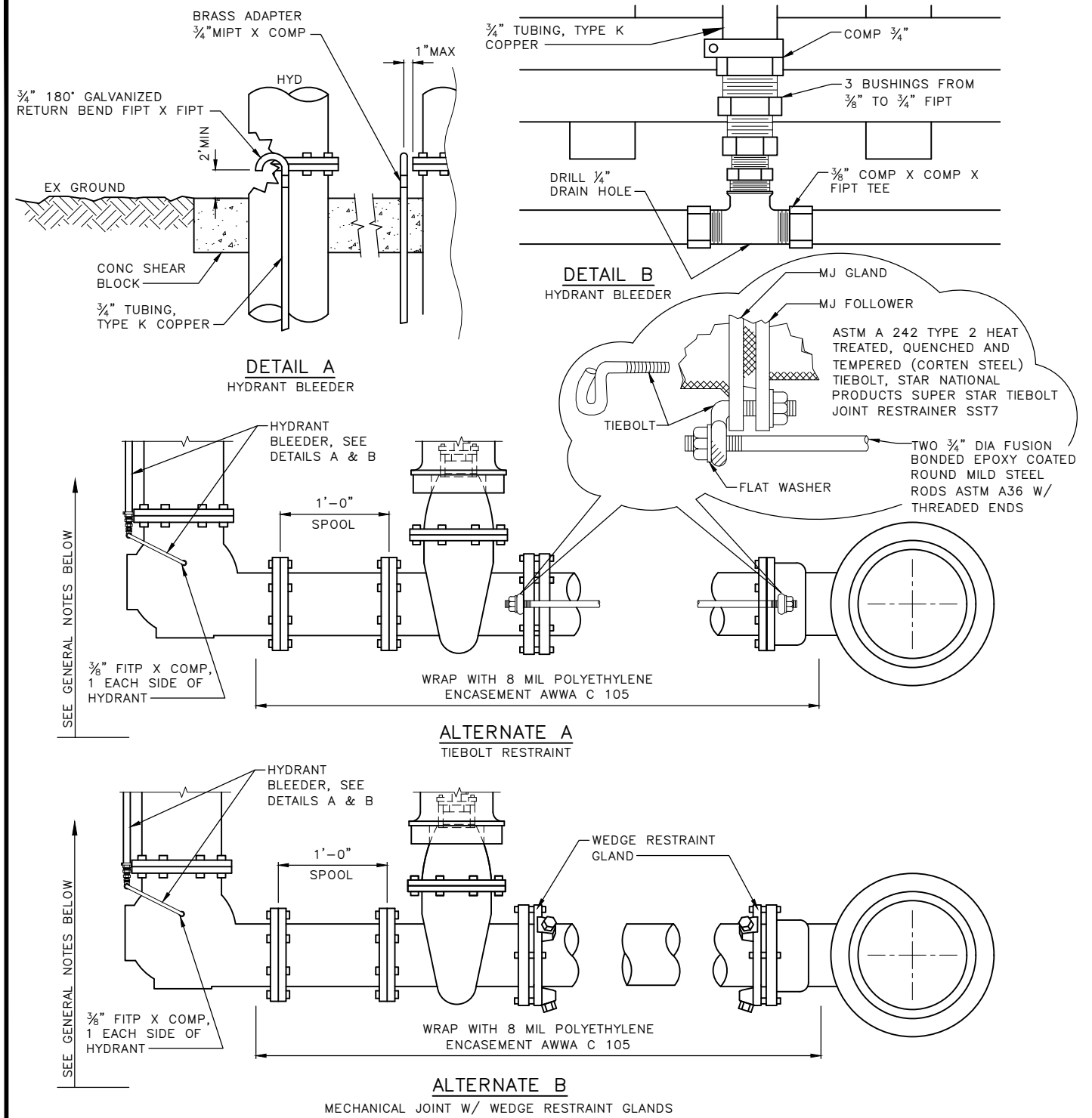
REF STD SPEC SEC 7-14




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NOT TO SCALE

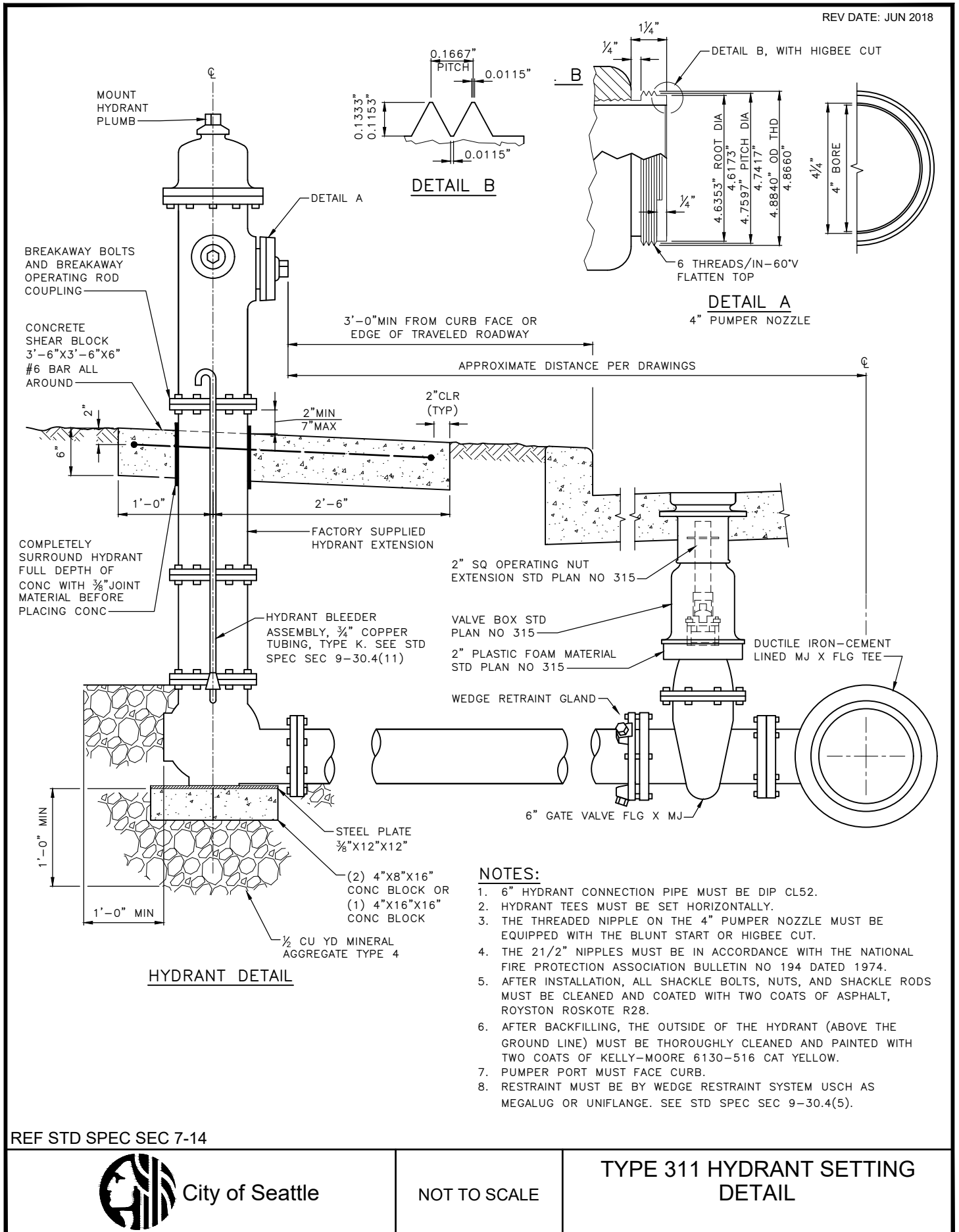
**TYPE 310 HYDRANT SETTING  
DETAIL**



- NOTES:**
- 1. WHERE WATERMAINS ARE INSTALLED WITH POLYETHYLENE ENCASEMENT OR TAPE COATINGS, THE HYDRANT BARREL AND VALVE MUST BE SIMILARLY ENCASED, COATED AND/OR JOINTS BONDED. WHERE WATERMAIN IS THERMOPLASTIC COATED, THE HYDRANT BARREL MUST BE TAPE COATED
  - 2. WHERE 6" GATE VALVE IS TO BE LOCATED WITHIN A PARKING-PERMITTED AREA, A SECOND 6" GATE VALVE MUST BE INSTALLED AT THE HYDRANT ASSEMBLY PER STD PLAN NO 310a

REF STD SPEC SEC 7-14	 City of Seattle	TYPE 310 HYDRANT SETTING DETAIL
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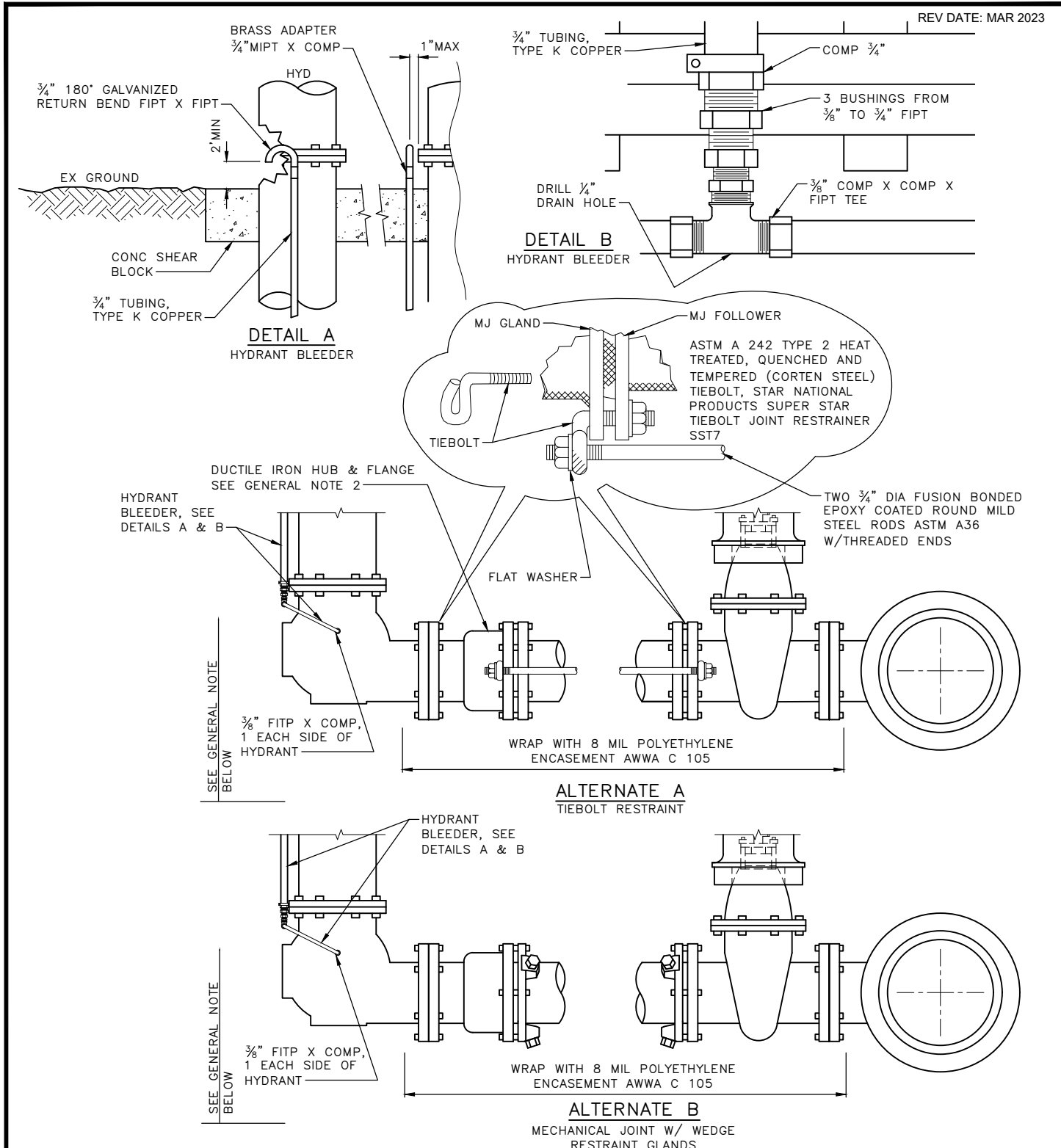
REF STD SPEC SEC 7-14



City of Seattle

NOT TO SCALE

TYPE 311 HYDRANT SETTING  
DETAIL



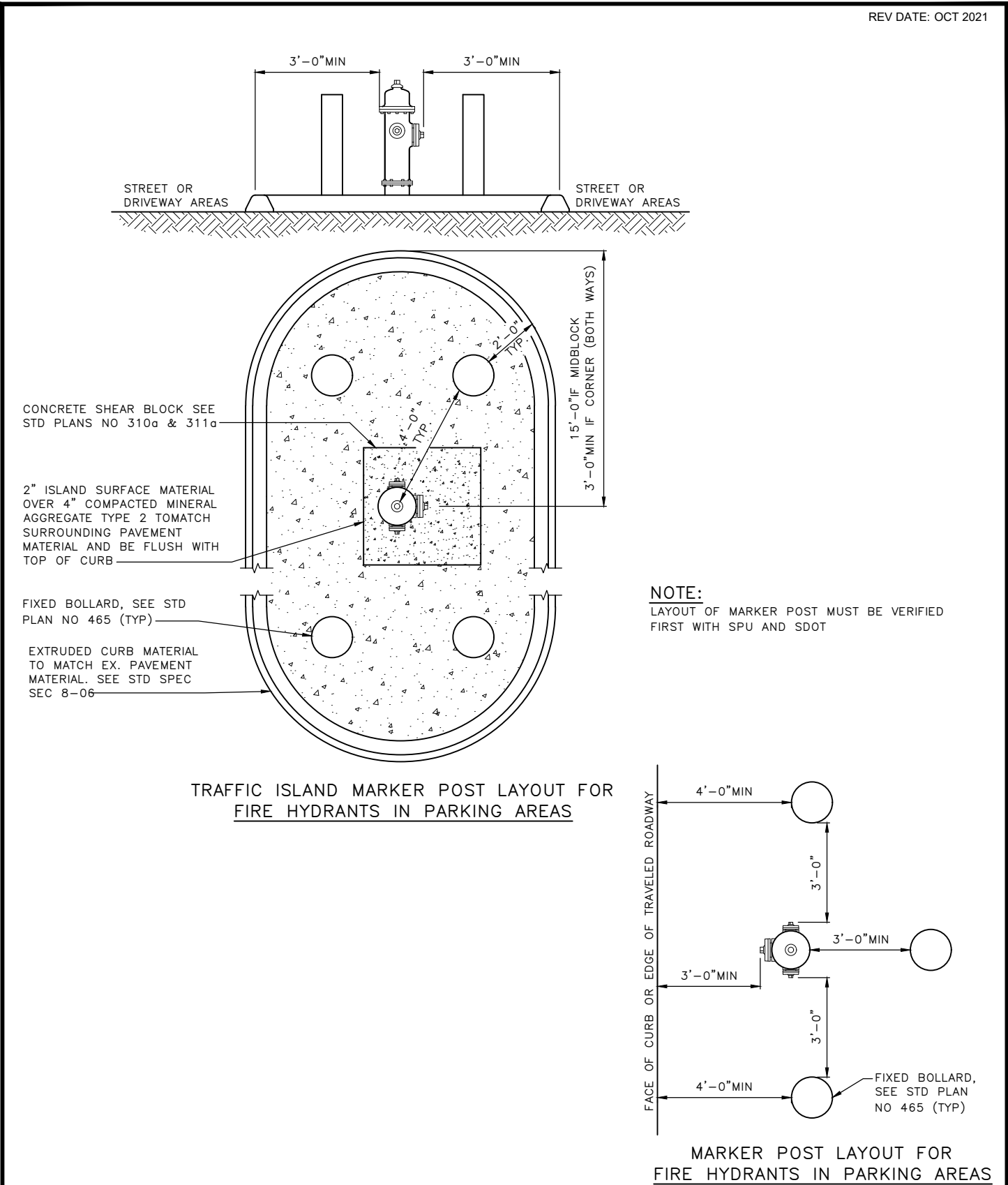
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City of Seattle

NOT TO SCALE

TYPE 311 HYDRANT SETTING  
DETAIL



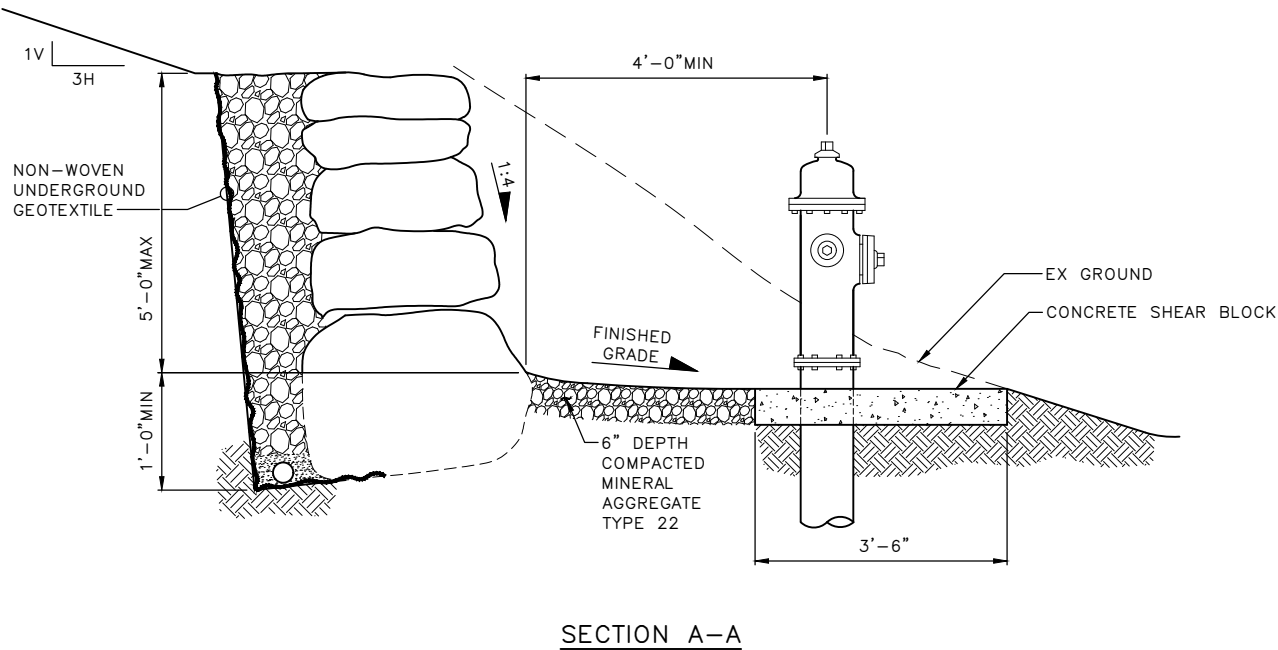
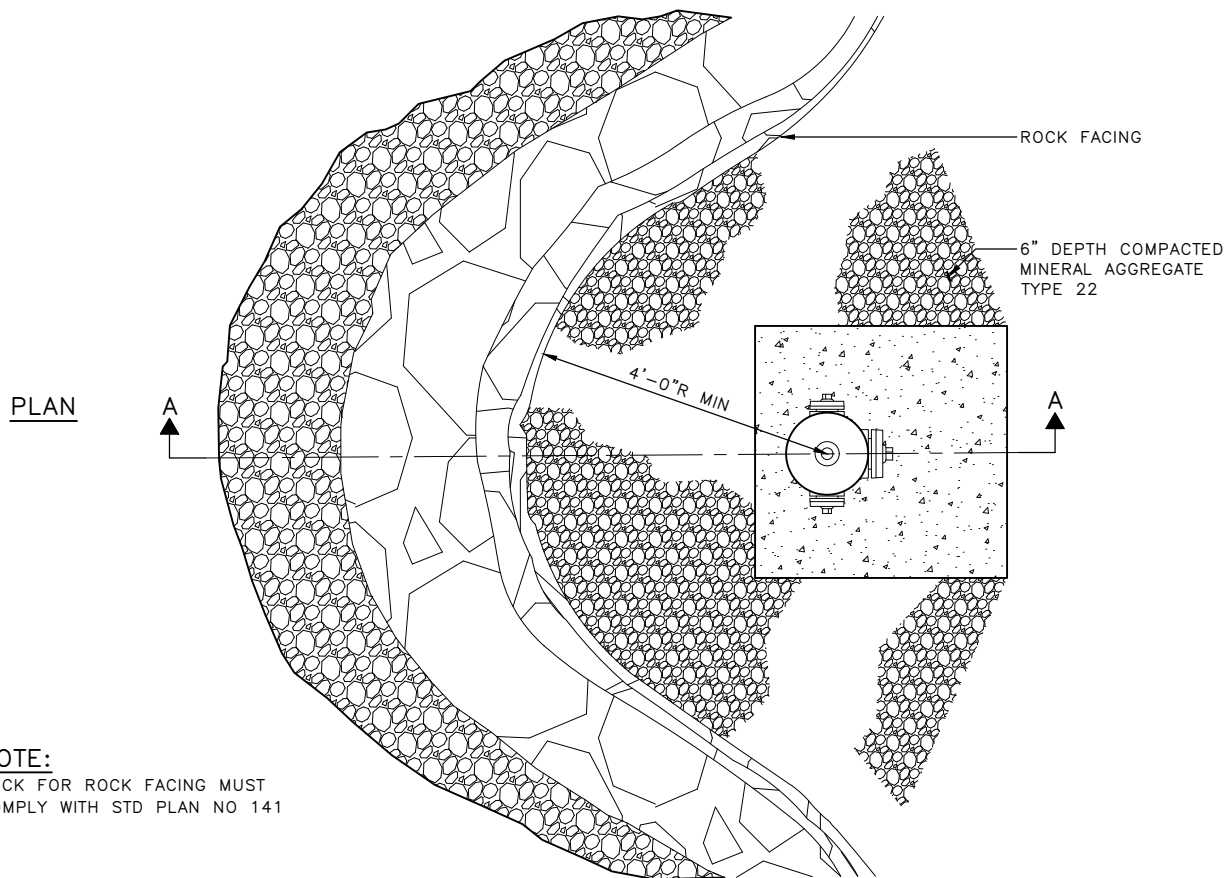
REF STD SPEC SEC 7-14



City of Seattle

NOT TO SCALE

FIRE HYDRANT MARKER LAYOUT



REF STD SPEC SEC 2-13



City of Seattle

NOT TO SCALE

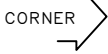
WALL REQUIREMENTS  
FOR HYDRANTS

REV DATE: OCT 2022

CURB OR EDGE OF  
TRAVELED PORTION  
OF ROADWAY

NOTES:

1. NO PARKING ZONE WITHIN 15'-0" RADIUS OF FIRE HYDRANT.
2. MIN DISTANCE FROM CENTER OF HYDRANT TO FIXED OBJECT 4'.
3. MIN DISTANCE FROM HYDRANT PUMPER PORT TO CURB  
FACE/ROADWAY 3'
4. MIN DISTANCE FROM HYDRANT TO ANY PART OF CURB RAMP  
MUST BE 2'
5. BLUE LANE MARKER MUST BE 6" OFFSET FROM CENTER OF  
ROADWAY IF CENTERLINE IS NOT STRIPED, OR 6" OFF STRIPED  
CENTERLINE. WHERE MEDIANS OR TWO-WAY LEFT TURN LANES  
EXIST, MARKER MUST BE INSTALLED WITH 6" OFFSET FROM THE  
LANE LINE CLOSEST TO THE HYDRANT

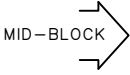
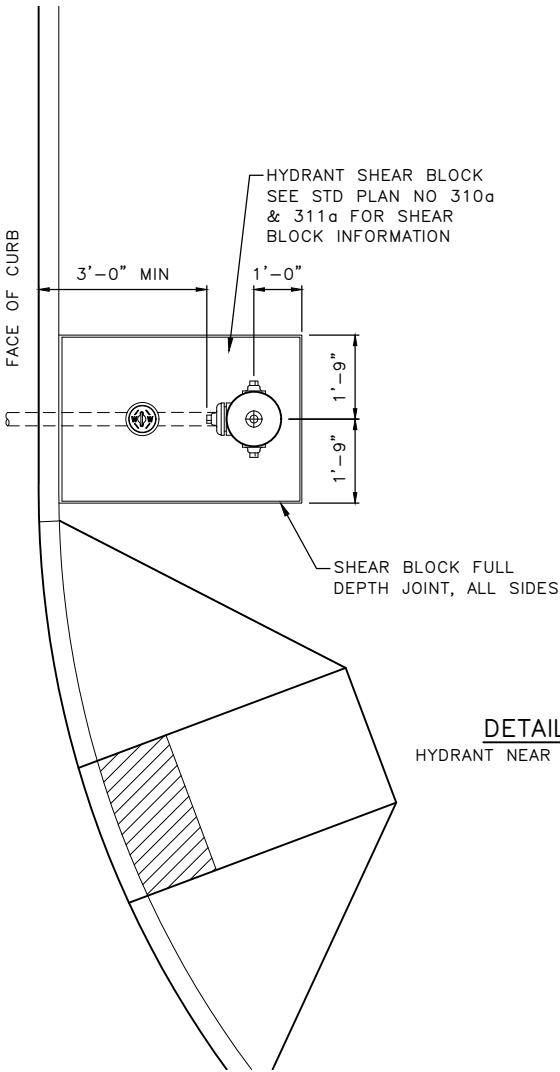


INSTALL BLUE TYPE 2A LANE  
MARKER ADJACENT TO FIRE  
HYDRANTS. SEE NOTE 5 (TYP)

3'-0" MIN, 15'-0" MAX ON CORNERS  
7'-0" MAX MIDBLOCK

R/W MARGIN

5'-0" MIN  
5'-0" STD



10'-0" STD  
N OR E

TREE

LOT LINE

SIDE SEWER

DETAIL A  
HYDRANT NEAR CURB RAMP

Q STREET



5'-0" STD  
R/W MARGIN

SEE DETAIL A

REF STD SPEC SEC 7-14, 8-08



City of Seattle

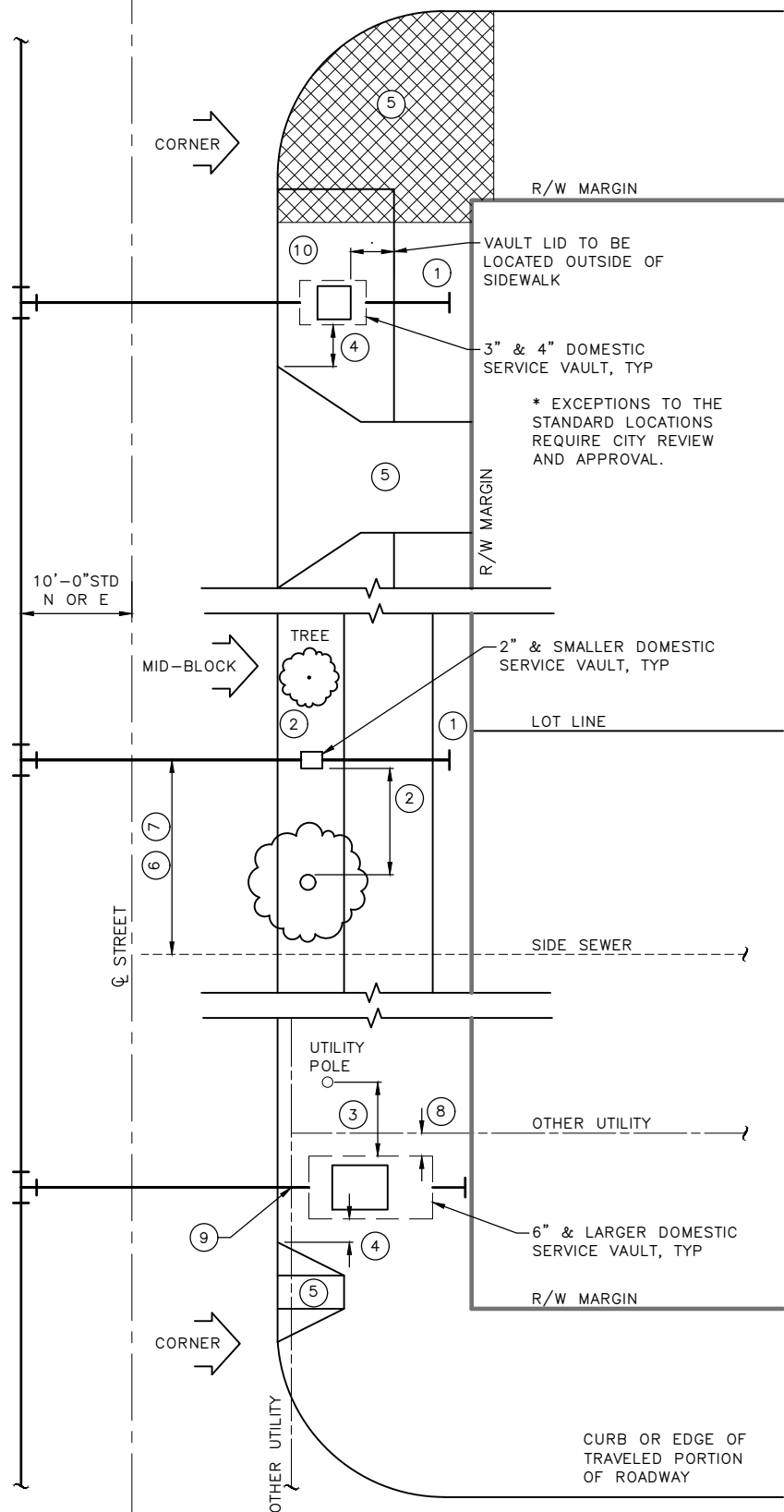
NOT TO SCALE

FIRE HYDRANT  
LOCATIONS & CLEARANCES

NOTES:

- ①. UNION POINT 2' OUTSIDE OF VAULT UNLESS OTHERWISE NOTED ON PLANS.
- ②. 5' CLEARANCE MINIMUM FROM NEW OR EXISTING TREES. IF EXCAVATION IS REQUIRED WITHIN ROOT ZONE OF EXISTING TREES, THE EXCAVATION MUST BE ACCOMPLISHED BY HAND METHODS, CONDUCTED TO PREVENT DAMAGE TO FEEDER AND SURFACE ROOTS, AND MINIMIZE COMPACTION SOILS.
- ③. 5' CLEAR FROM POLES.
- ④. 2' CLEAR FROM EDGE OF DRIVEWAY OR ADA RAMP.
- ⑤. WATER SERVICE NOT TO BE INSTALLED IN DRIVEWAY, BEHIND ADA RAMP, OR STREET CORNER.
- ⑥. SIDE SEWER HORIZONTAL CLEARANCE 10' FOR CAST IRON WATER PIPE OR 5' FOR DUCTILE IRON WATER PIPE.
- ⑦. SIDE SEWER VERTICAL CLEARANCE 1.5' MIN.
- ⑧. VAULT HORIZONTAL CLEARANCE 3' MIN FROM OTHER UTILITIES. UNLESS OTHERWISE NOTED IN STD SPECS.
- ⑨. VERTICAL CLEARANCE 12" MIN FOR ALL OTHER UTILITY CROSSINGS UNLESS OTHERWISE NOTED IN STD SPECS.
- ⑩. ALLOWABLE LOCATION OF WATER SERVICE VAULT, 2' MINIMUM CLEAR OF CURB.

PERMIT REQUIREMENTS WILL DETERMINE LOCATION AND ORIENTATION OF ALL SERVICE VAULTS IN THE RIGHT OF WAY. VAULTS SHOWN ON THIS STD PLAN ARE FOR GRAPHICAL PURPOSES ONLY.



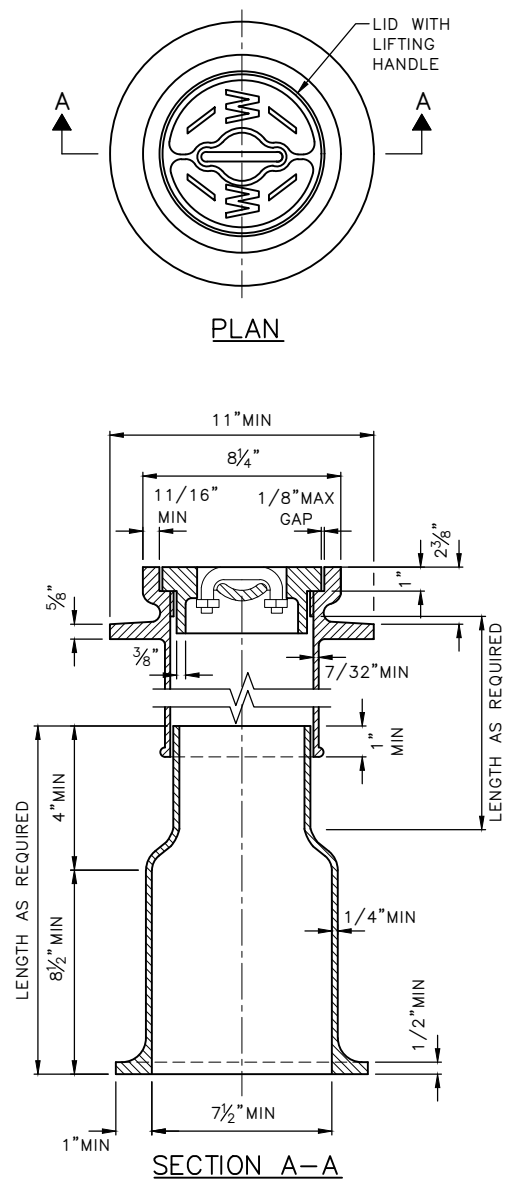
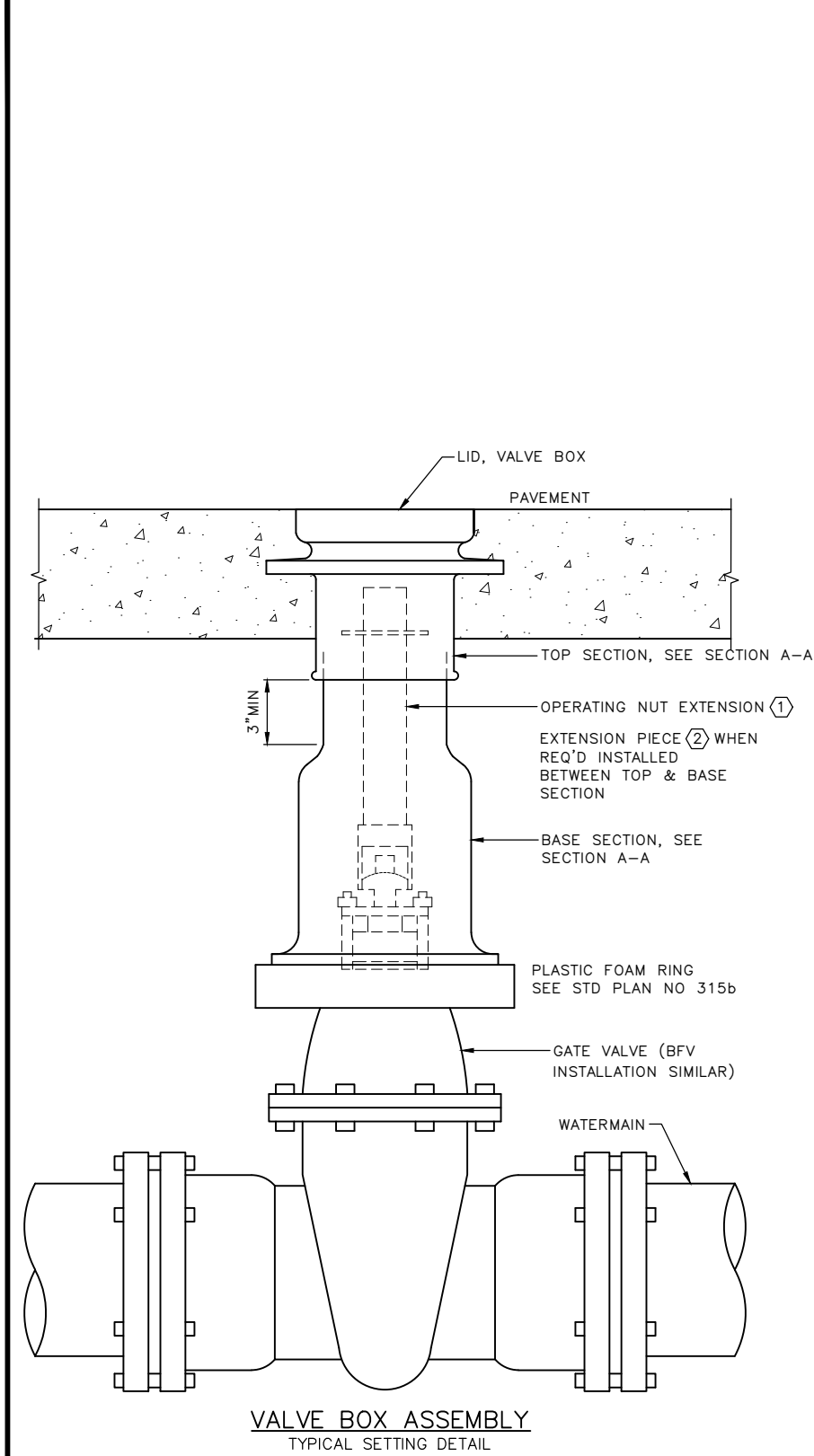
REF STD SPEC SEC 1-07.17(2)



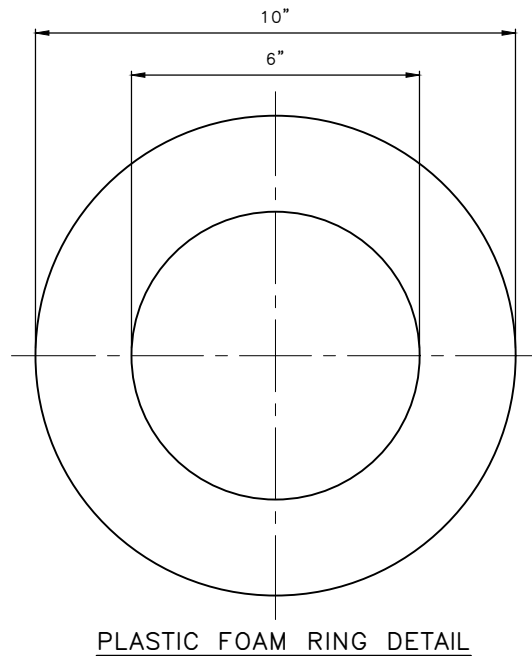
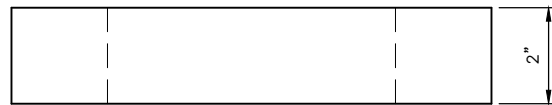
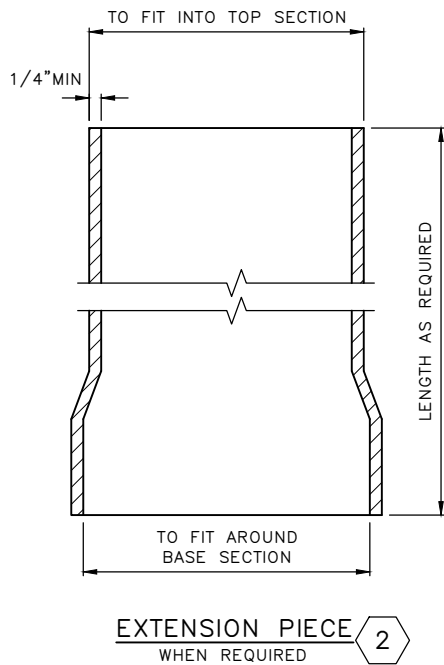
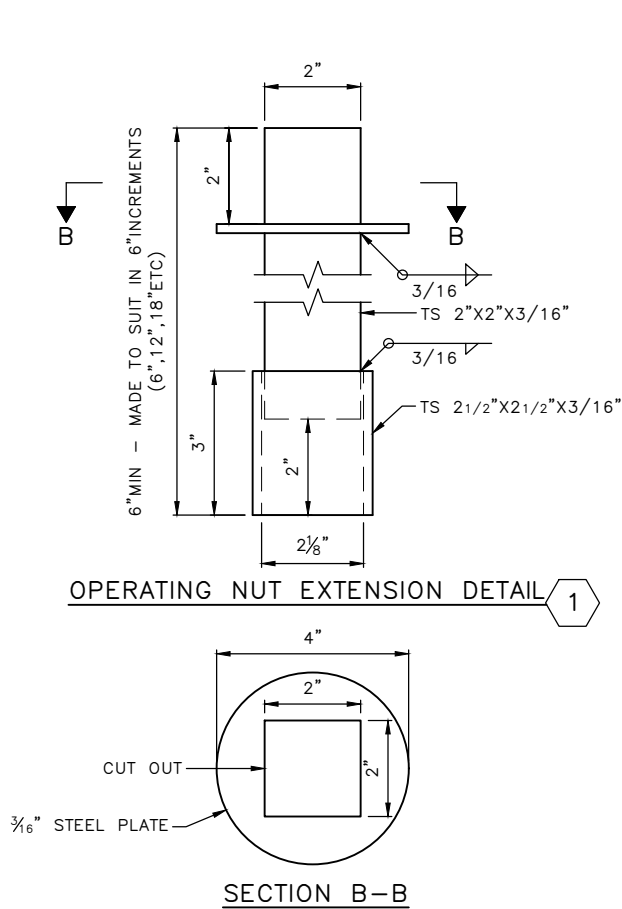
City of Seattle

NOT TO SCALE

**CLEARANCES FOR TYPICAL  
WATER SERVICE VAULTS**



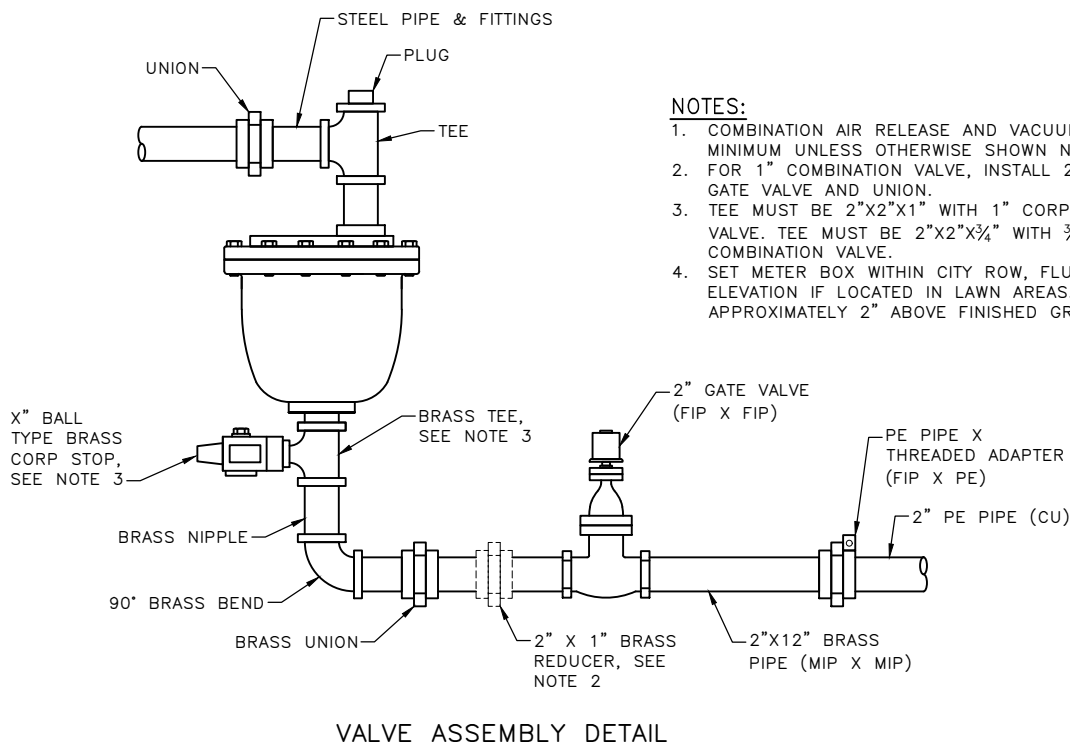
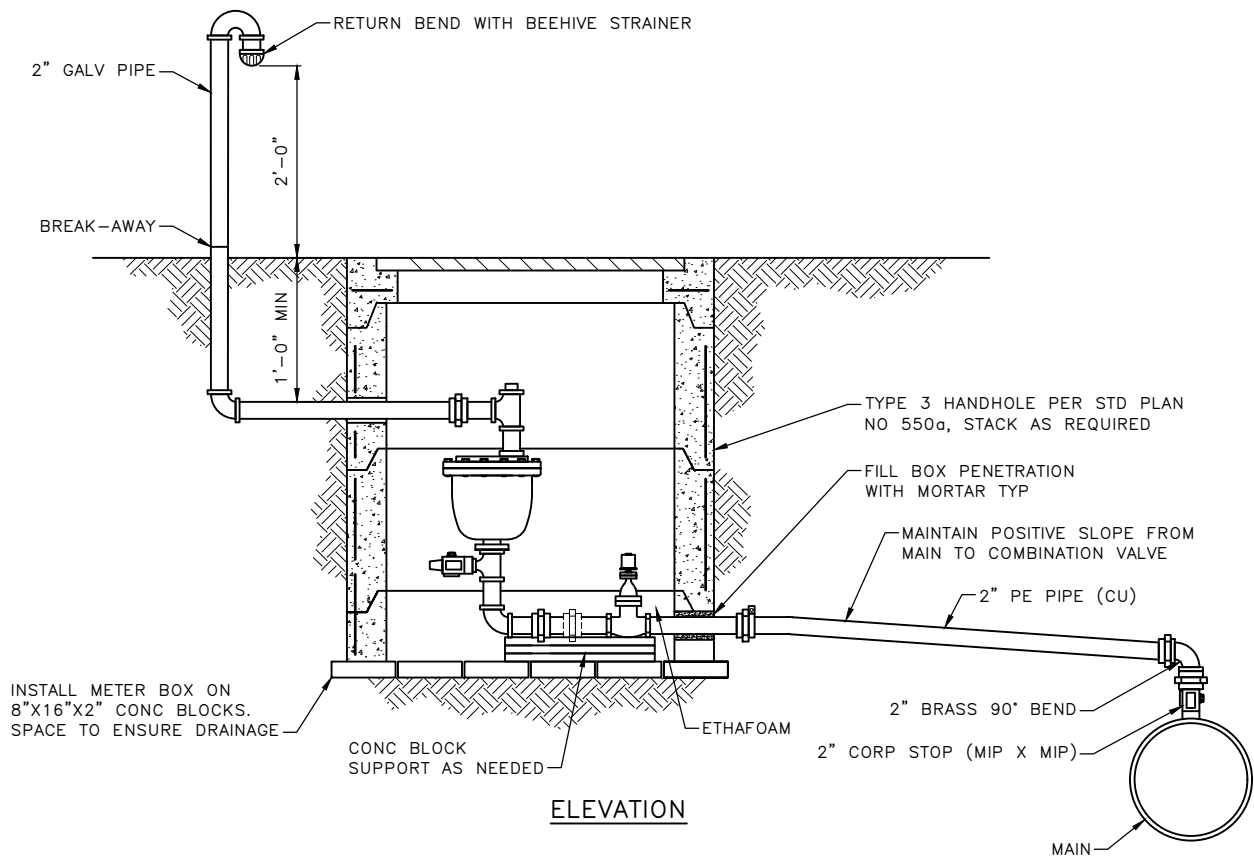
**NOTE:**  
VALVE BOX FOR USE ON 12" OR  
SMALLER VALVE INSTALLATIONS



- NOTES:
1. FRAME AND COVER MUST BE TESTED FOR ACCURACY OF FIT AND MUST BE MARKED IN SETS FOR DELIVERY
  2. CASTINGS AND EXTENSIONS MUST BE HOT-DIPPED IN ASPHALTIC VARNISH ROYSTON ROSKOTE #612XM OR 2 COATS OF MASTIC ROYSTON INSIDE AND OUT.
  3. VALVE BOXES MUST BE EAST JORDAN: COVER & TOP SECTION #3664, BOTTOM SECTION #8555; OR OLYMPIC FOUNDRY: LID #1908-33, TOP SECTION #1106-33, BASE SECTION #1301-33
  4. ALL CASTINGS MUST BE DUCTILE OR GREY CAST IRON

- LEGEND:
1. AN OPERATING NUT EXTENSION MUST BE INSTALLED WHEN THE GROUND SURFACE IS MORE THAN 2'-6" ABOVE THE VALVE OPERATING NUT. THE OPERATING NUT EXTENSION MUST EXTEND INTO THE TOP SECTION OF THE STANDARD VALVE BOX AND MUST CLEAR THE BOTTOM OF THE LID BY 6" MIN
  2. EXTENSION PIECES (WHEN USED) MUST CONFORM TO MINIMUM THICKNESS REQUIREMENTS AND MUST FIT INTO THE TOP SECTION AND OVER THE BOTTOM SECTION





- NOTES:**
1. COMBINATION AIR RELEASE AND VACUUM VALVE MUST BE A 2" SIZE MINIMUM UNLESS OTHERWISE SHOWN N THE PLANS.
  2. FOR 1" COMBINATION VALVE, INSTALL 2" X 1" REDUCER BETWEEN GATE VALVE AND UNION.
  3. TEE MUST BE 2"x2"x1" WITH 1" CORP STOP FOR 2" COMBINATION VALVE. TEE MUST BE 2"x2"x¾" WITH ¾" CORP STOP FOR 1" COMBINATION VALVE.
  4. SET METER BOX WITHIN CITY ROW, FLUSH WITH SIDEWALK OR CURB ELEVATION IF LOCATED IN LAWN AREAS. SET METER BOX APPROXIMATELY 2" ABOVE FINISHED GRADE IF IN LANDSCAPED AREA.

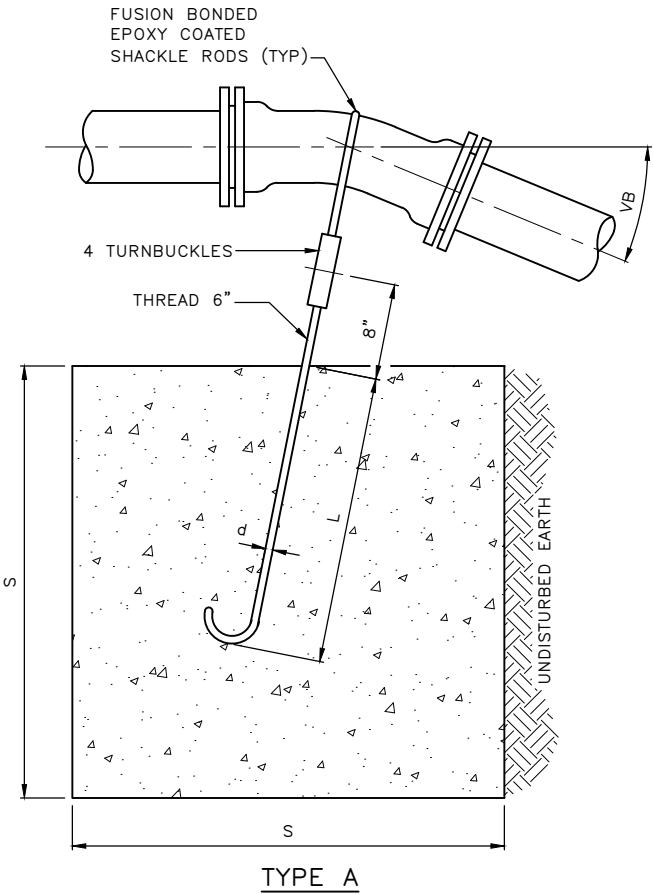
REF STD SPEC SEC 7-12



City of Seattle

NOT TO SCALE

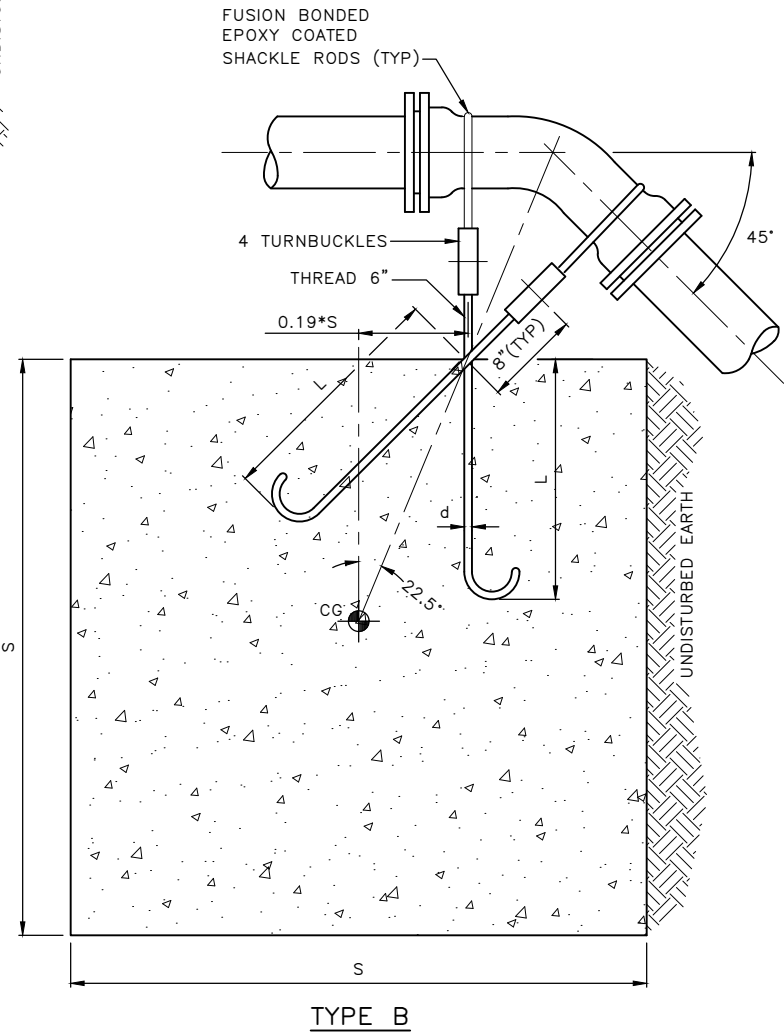
AIR RELEASE  
AIR VACUUM VALVE



TYPE A BLOCKING FOR 11¼° & 22½° VERTICAL BENDS						
PIPE SIZE NOM DIA INCHES	TEST PRESSURE PSI	VB VERTICAL BEND DEGREES	NO OF CU FT OF CONC BLOCKING	S SIDE OF CUBE FEET	d DIA OF SHACKLE RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE INCHES
4"	300	11¼	8	2	¾	18
		22½	12	2¼		24
6"	300	11¼	12	2¼	¾	24
		22½	27	3		24
8"	300	11¼	16	2½	¾	24
		22½	43	3½		24
12"	300	11¼	64	4	1	24
		22½	125	5	1	36

TYPE B BLOCKING FOR 45° VERTICAL BENDS						
PIPE SIZE NOM DIA INCHES	TEST PRESSURE PSI	VB VERTICAL BEND DEGREES	NO OF CU FT OF CONC BLOCKING	S SIDE OF CUBE FEET	d DIA OF SHACKLE RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE INCHES
4"	300	45	27	3	¾	20
6"			64	4		
8"			125	5		
12"			216	6		

FOR NOTES SEE STD PLAN NO 330b



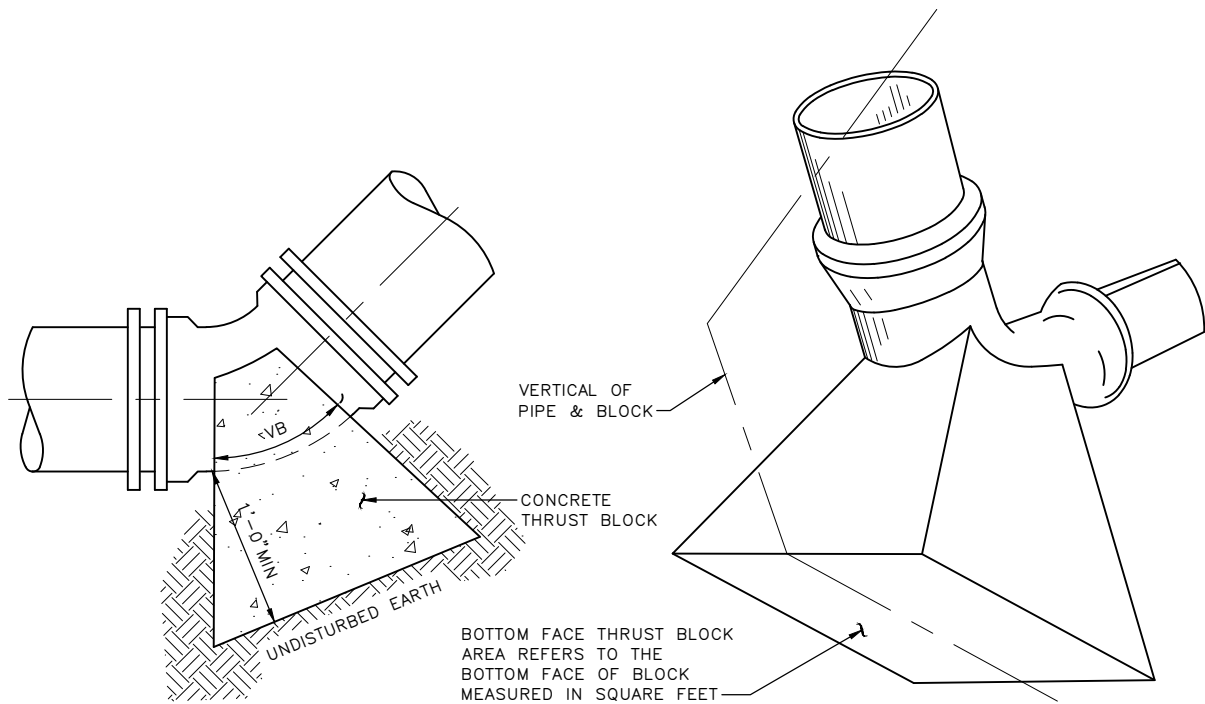
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

**WATERMAIN THRUST BLOCKING  
VERTICAL FITTINGS**



TYPE C

TYPE "C" BLOCKING FOR 11¼°, 22½°, 45° AND 90° VERTICAL BENDS										
THRUST BLOCK AREA IN SQUARE FEET										
PIPE SIZE	SOIL	FIRM SILT OR FIRM SILTY SAND			COMPACT SAND			COMPACT SAND & GRAVEL		
	FITTING	90° BEND	TEE, 45° BEND & DEAD END	11¼° & 22½° BEND	90° BEND	TEE, 45° BEND & DEAD END	11¼° & 22½° BEND	90° BEND	TEE, 45° BEND & DEAD END	11¼° & 22½° BEND
	4"	5.8	4.2	1.7	2.9	2.1	1.0	2.2	1.6	1.0
	6"	13.3	9.4	3.8	6.7	4.7	1.9	5.0	3.5	1.4
	8"	23.3	16.7	6.7	11.7	8.4	3.4	8.8	6.3	2.5
	12"	53.0	37.5	15.0	26.5	18.8	7.5	20.0	14.0	5.6
AREAS CALCULATED ON 300 PSI TEST PRESSURE AND 3'-0" MIN COVER OVER WATERMAIN										

- NOTES:
1. LOCATION AND SIZE OF BLOCKING FOR PIPE LARGER THAN 12" DIAMETER AND FOR SOIL TYPES DIFFERENT THAN SHOWN MUST BE DETERMINED BY THE ENGINEER.
  2. ALL BLOCKING FOR VERTICAL FITTINGS (POURED IN PLACE) MUST BEAR AGAINST UNDISTURBED NATIVE GROUND.
  3. ALL POURED THRUST BLOCKS MUST BE BACKFILLED AFTER MIN. 1 DAY. PRESSURE TESTING MUST OCCUR AFTER CONCRETE HAS REACHED f'c.
  4. ALL BLOCKING MUST BE CONCRETE CL 3000.
  5. AFTER INSTALLATION, SHACKLE RODS & TURNBUCKLES MUST BE CLEANED AND COATED WITH 2 COATS OF ASPHALTIC VARNISH, ROYSTON ROYKOTE #612M OR APPROVED EQUAL.
  6. SHACKLE RODS MUST BE FUSION BONDED EPOXY COATED ROUND MILD STEEL, ASTM A 36, WITH THREADS ON ENDS ONLY.
  7. BLOCKING AGAINST FITTINGS MUST BEAR AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT MUST NOT COVER OR ENCLOSE BELL ENDS, JOINT BOLTS OR GLANDS. REASONABLE ACCESS TO BOLTS AND GLANDS MUST BE PROVIDED.

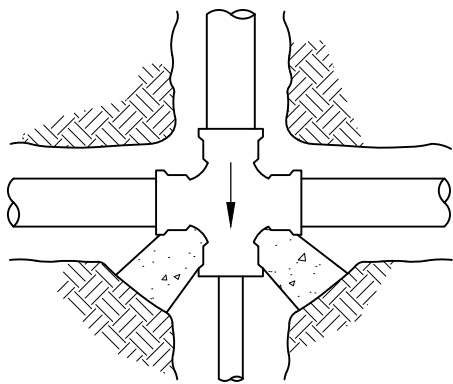
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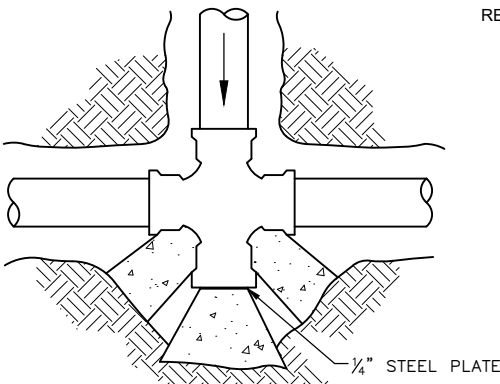
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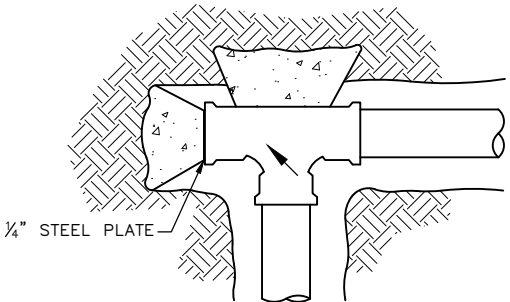
WATERMAIN THRUST BLOCKING  
VERTICAL FITTINGS



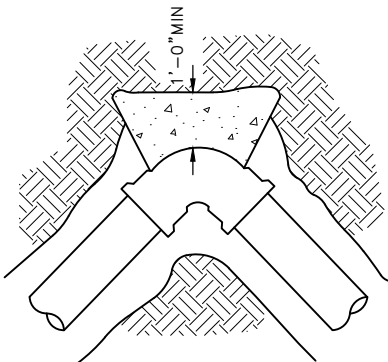
UNBALANCED CROSS



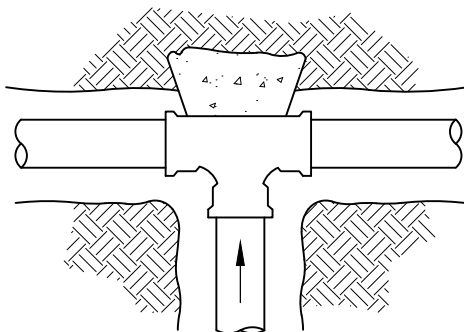
CROSS WITH PLUG



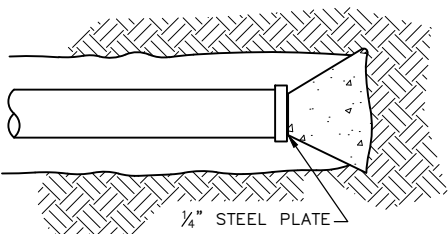
PLUGGED TEE



HORIZONTAL BEND



TEE



PIPE & CAP

THRUST BLOCK AREA IN SQUARE FEET (SEE STD PLAN NO 331B)													
PIPE SIZE	SOIL	FIRM SILT OR FIRM SILTY SAND				COMPACT SAND				COMPACT SAND & GRAVEL			
	FITTING	90° BEND	TEE	45° BEND CAP OR PLUG	11¼' & 22½' BEND	90° BEND	TEE	45° BEND CAP OR PLUG	11¼' & 22½' BEND	90° BEND	TEE	45° BEND CAP OR PLUG	11¼' & 22½' BEND
	4"	7.0	4.2	4.2	1.7	2.9	2.1	2.1	1.0	2.2	1.6	1.6	1.0
	6"	13.3	9.4	9.4	3.8	6.7	4.7	4.7	1.9	5.0	3.5	3.5	1.4
	8"	23.3	16.7	16.7	6.7	11.7	8.4	8.4	3.4	8.8	6.3	6.3	2.5
	12"	53.0	37.5	37.5	15.0	26.5	18.8	18.8	7.5	20.0	14.0	14.0	5.6
AREAS CALCULATED ON 300 PSI TEST PRESSURE AND 3'-0" MIN COVER OVER WATERMAIN													



ECOLOGY BLOCKS, PER STD PLAN NO 460, MAY BE USED, AT THE DISCRETION OF THE ENGINEER ONLY, IN LIEU OF POURED-IN-PLACE BLOCKING FOR FITTINGS IN HEAVY OUTLINED PORTION OF TABLE. ECOLOGY BLOCKS USED FOR THRUST BLOCKING AT TEES MUST TRANSFER LOAD TO THE PIPE BODY PER SPEC SECTION 7-11.3(13).

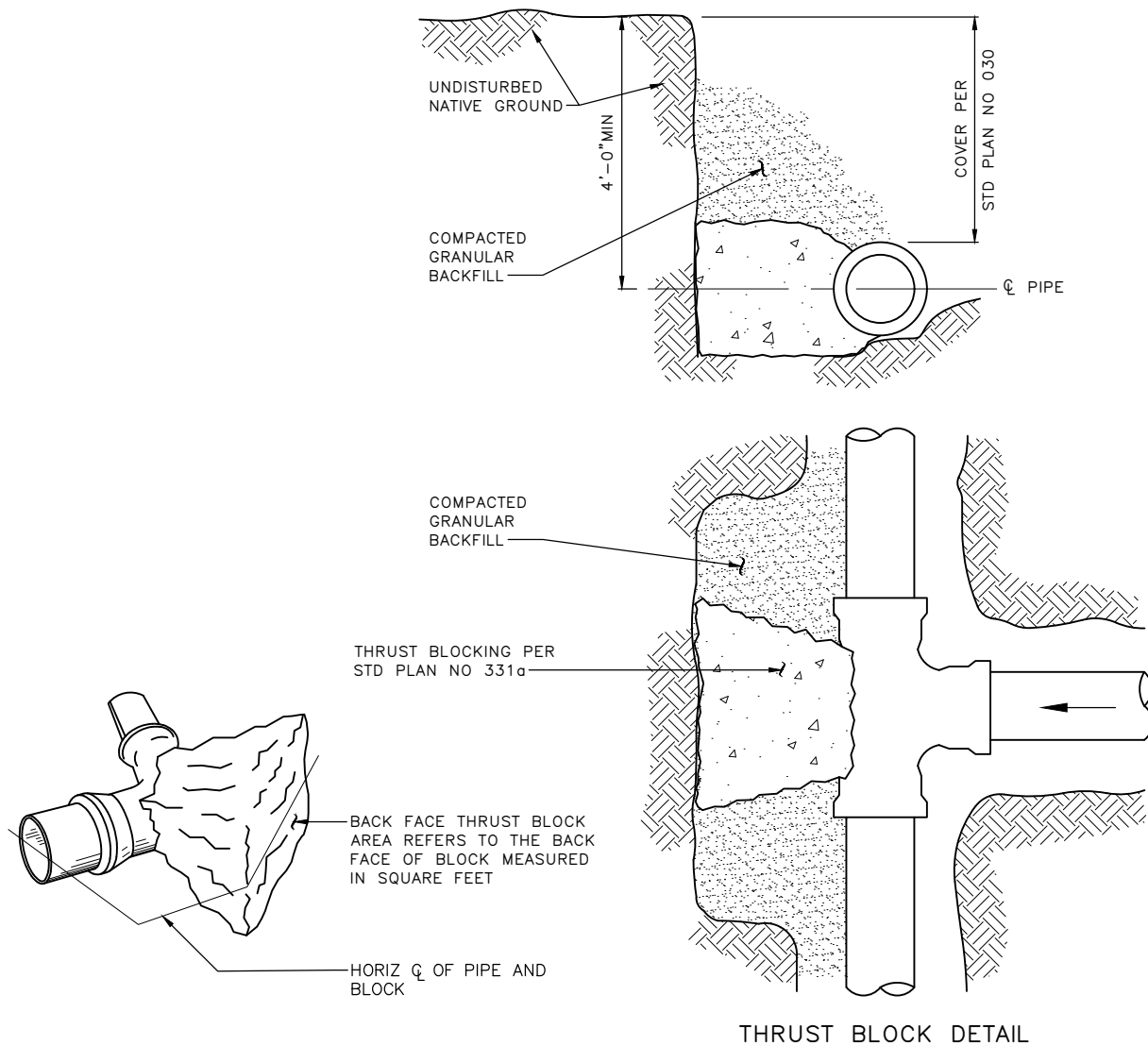
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

WATERMAIN THRUST BLOCKING  
HORIZONTAL FITTINGS

**NOTES:**

1. LOCATION AND SIZE OF BLOCKING FOR PIPE LARGER THAN 12" DIAMETER AND FOR SOIL TYPES DIFFERENT THAN SHOWN MUST BE DETERMINED BY THE ENGINEER.
2. ALL BLOCKING FOR HORIZONTAL FITTINGS (POURED IN PLACE) MUST BEAR AGAINST UNDISTURBED NATIVE GROUND.
3. ALL POURED THRUST BLOCKS MUST BE BACKFILLED AFTER MIN. 1 DAY. PRESSURE TESTING MUST OCCUR AFTER CONCRETE HAS REACHED f'c.
4. ALL BLOCKING TO BE CONCRETE CL 3000.
5. BLOCKING AGAINST FITTINGS MUST BEAR AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT MUST NOT COVER OR ENCLOSE BELL ENDS, JOINT BOLTS OR GLANDS. ACCESS TO BOLTS AND GLANDS MUST BE PROVIDED.
6. ALL HORIZONTAL BLOCKING THRUST AREAS MUST BE CENTERED ON PIPE.
7. WHERE POURED-IN-PLACE BLOCKING IS REQUIRED AT A POINT OF CONNECTION TO AN EXISTING WATERMAIN, THE BLOCKING MUST BE INSTALLED PRIOR TO CONNECTION.
8. TEMPORARY BLOCKING, IF USED, MUST BE APPROVED BY ENGINEER.

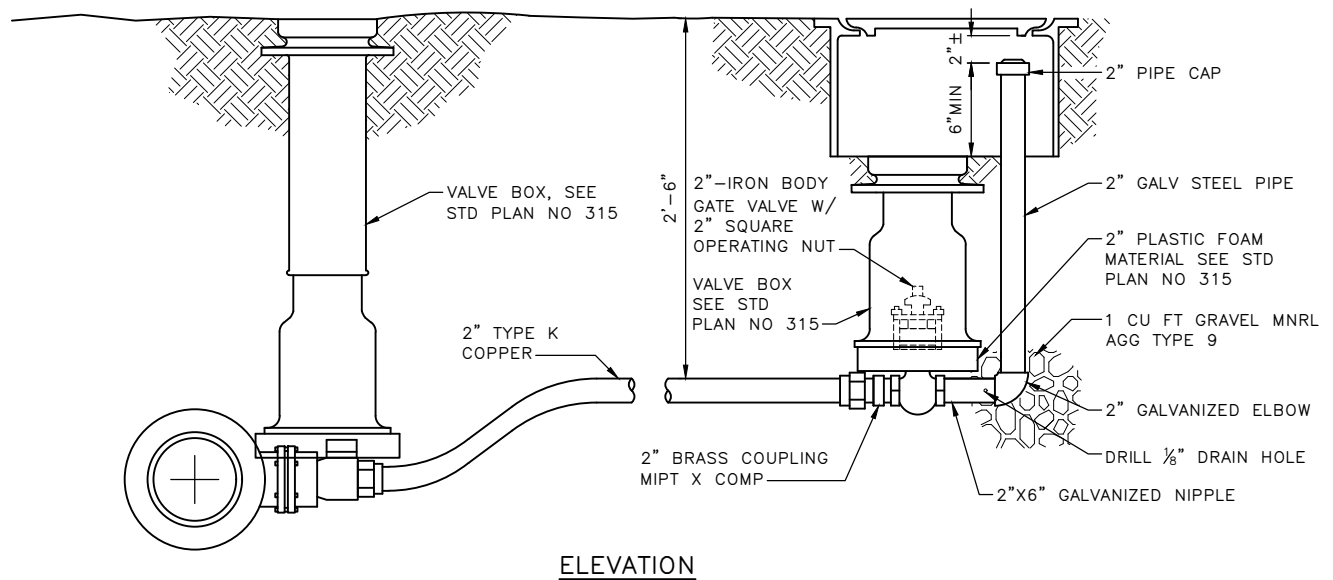
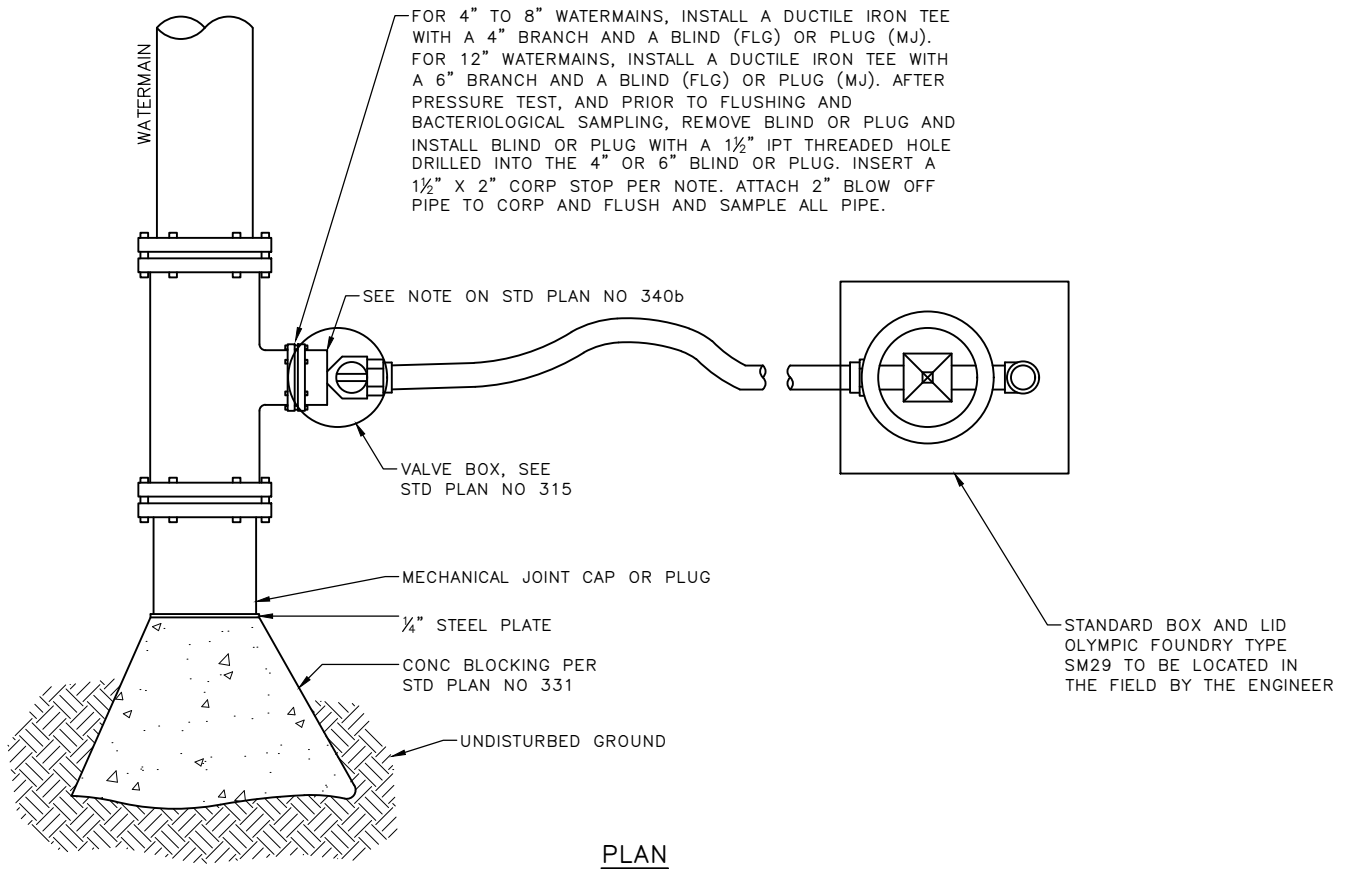
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

**WATERMAIN THRUST BLOCKING  
HORIZONTAL FITTINGS**



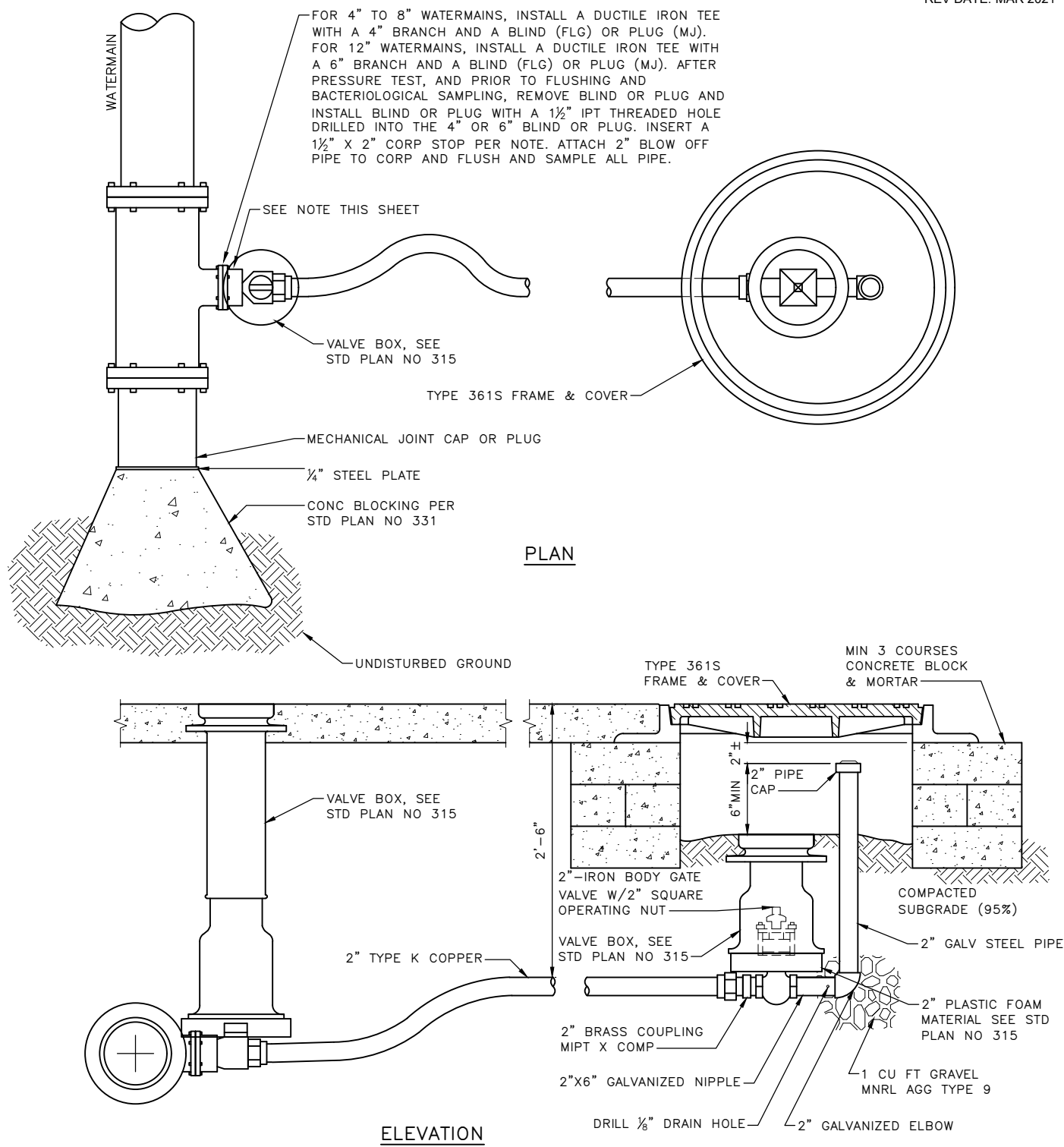
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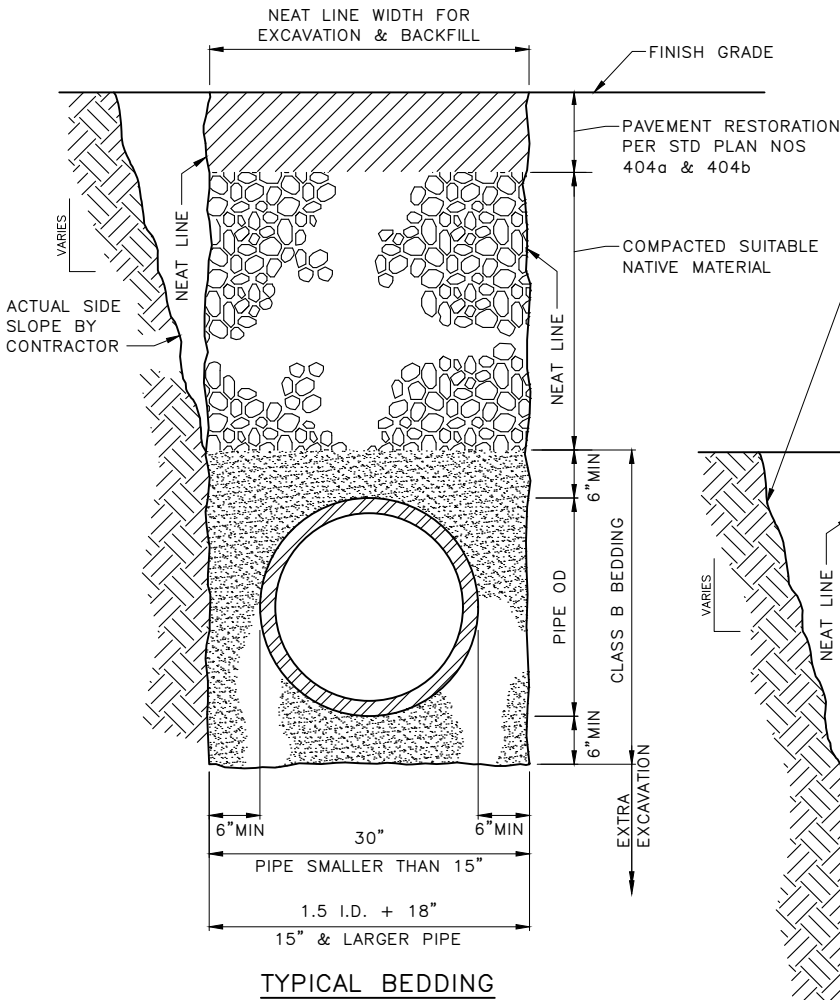
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NOT TO SCALE

2" BLOW OFF TYPE A  
NON TRAFFIC INSTALLATION



**NOTE:**  
1½"X2" CORP STOP, BALL TYPE BRASS BODY AWWA X CORP.  
WHERE COATED DUCTILE IRON PIPE IS USED, THE MECHANICAL JOINT  
CAP AND CORP MUST BE WAX TAPED PER 7-11.3(8)A AND 9-30.1(4)F.



TYPICAL BEDDING

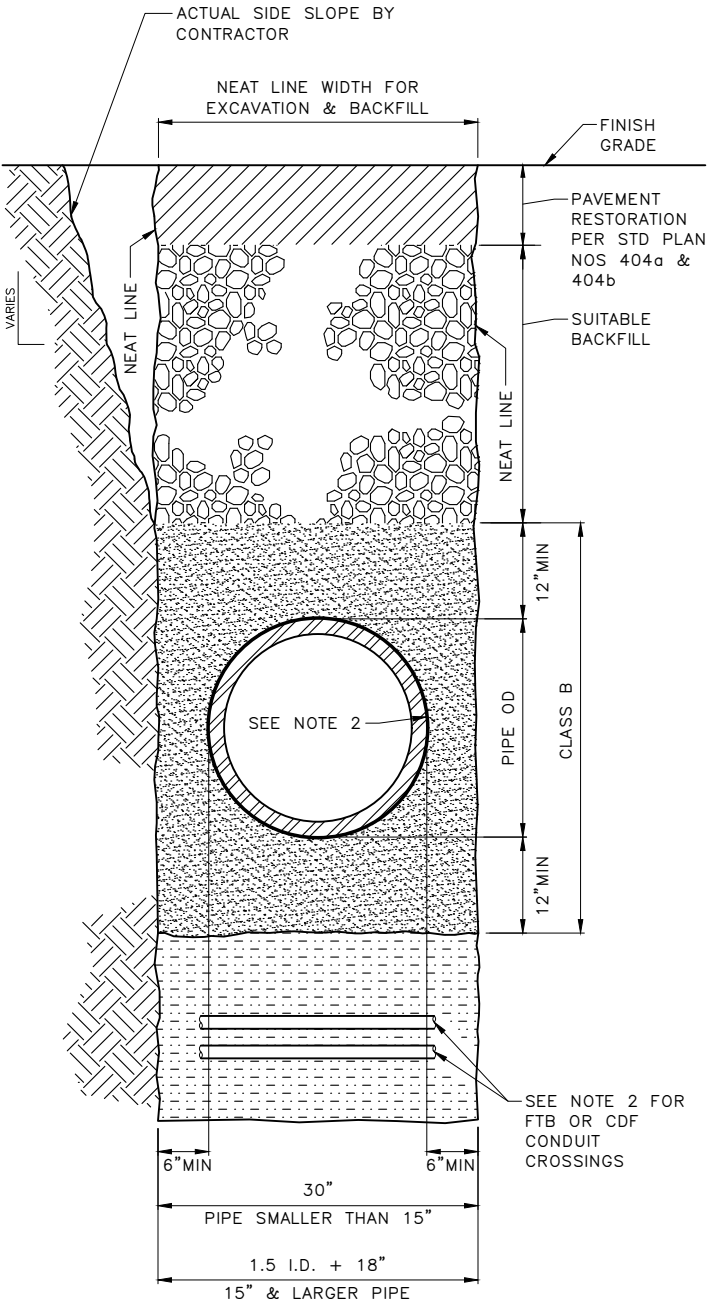
**BEDDING MATERIAL**

**CLASS B:**

- FOR DISTRIBUTION WATERMAIN, MINERAL AGGREGATE PER STD SPEC 9-03.14 TYPE 6 OR TYPE 7
- FOR TRANSMISSION WATERMAIN, MINERAL AGGREGATE PER STD SPEC 9-03.14 TYPE 9
- SPECIAL BEDDING TO BE INDICATED ON DRAWINGS

**NOTES:**

1. EXCAVATE FOR THE BELL TO ENSURE UNIFORM SUPPORT FOR THE PIPE BARREL
2. FOR FLUIDIZED THERMAL BACKFILL (FTB) OR CDF CROSSINGS OF METALLIC PIPE, WRAP METALLIC PIPE IN 8 MIL POLYETHYLENE ENCASEMENT FOR FULL TRENCH WIDTH.
3. FLUIDIZED THERMAL BEDDING PER SCL MATERIAL STANDARD 7150.00



BEDDING AT TRENCH CROSSING

REF STD SPEC SEC 7-11

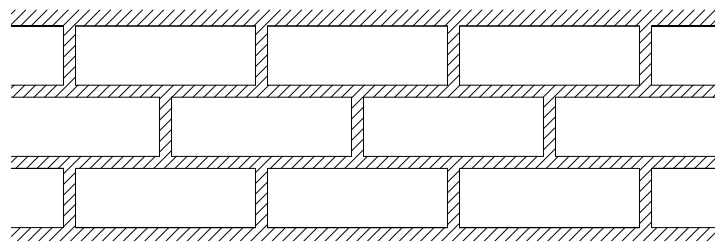
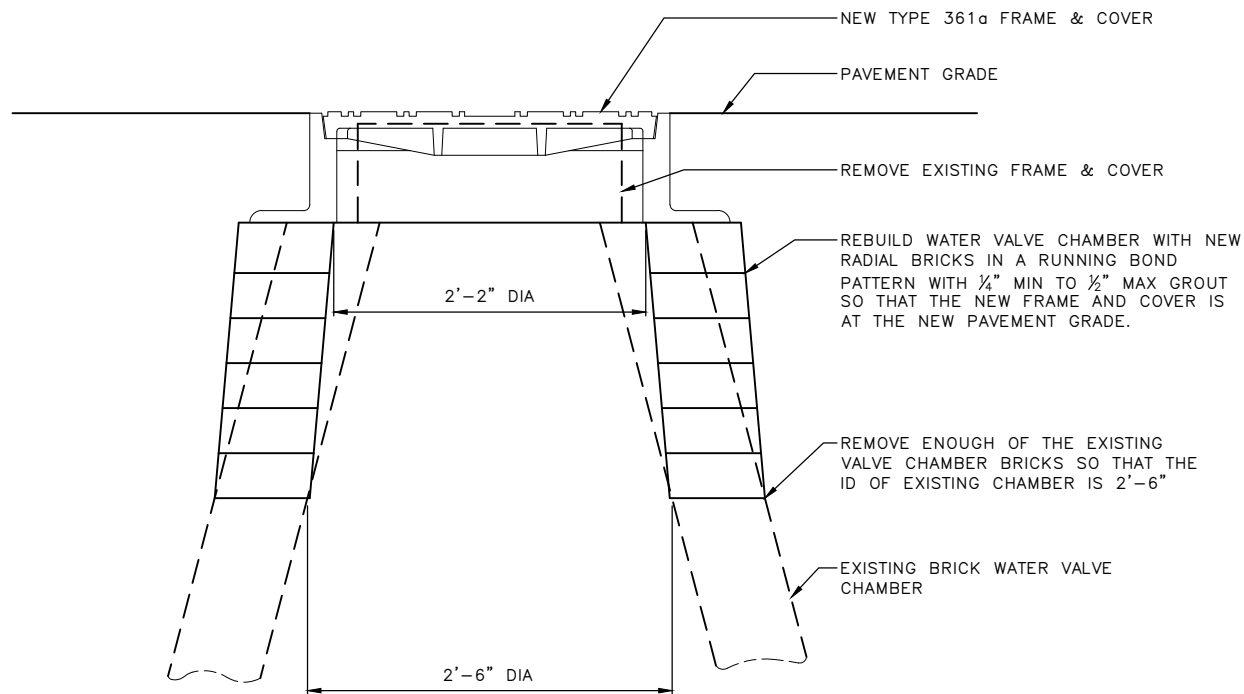


City of Seattle

NOT TO SCALE

WATERMAIN TRENCH  
AND BEDDING





**RUNNING BOND PATTERN**  
GROUT BETWEEN ALL BRICKS

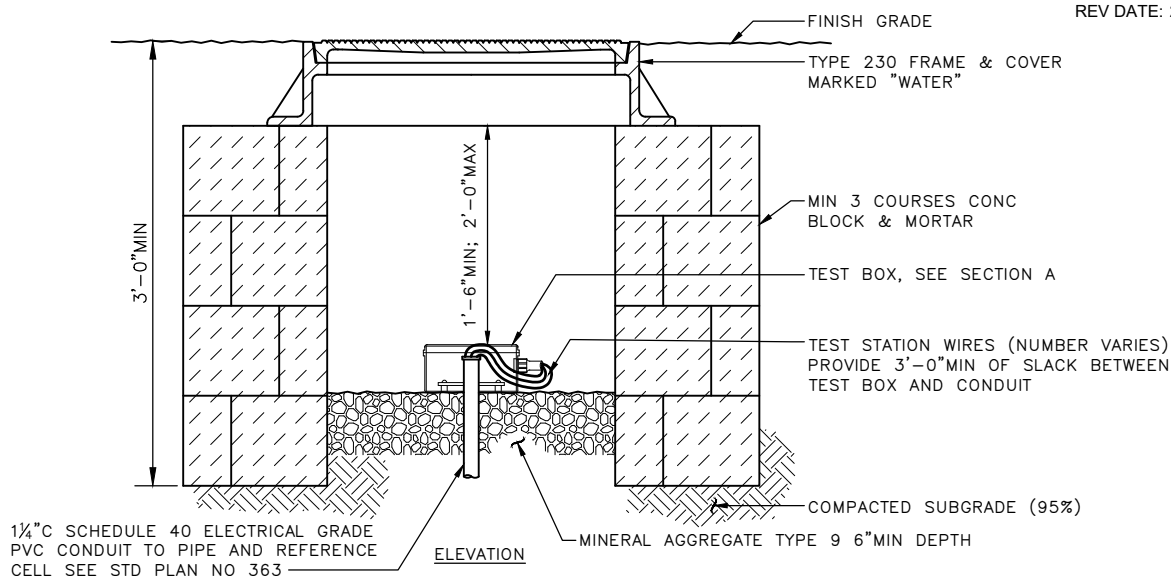
REF STD SPEC SEC 7-20



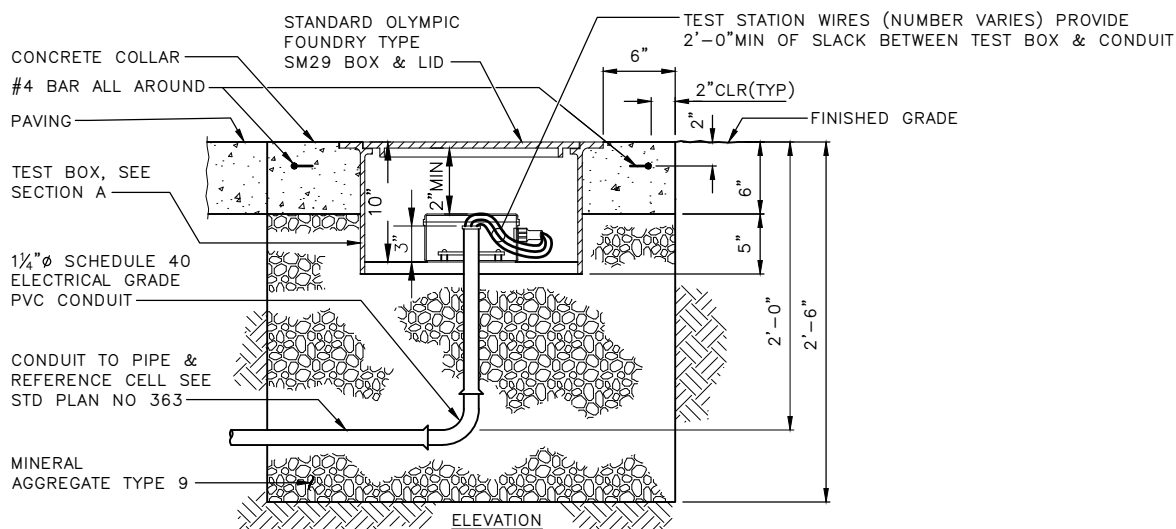
City of Seattle

NOT TO SCALE

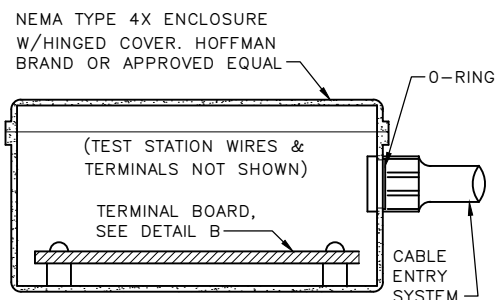
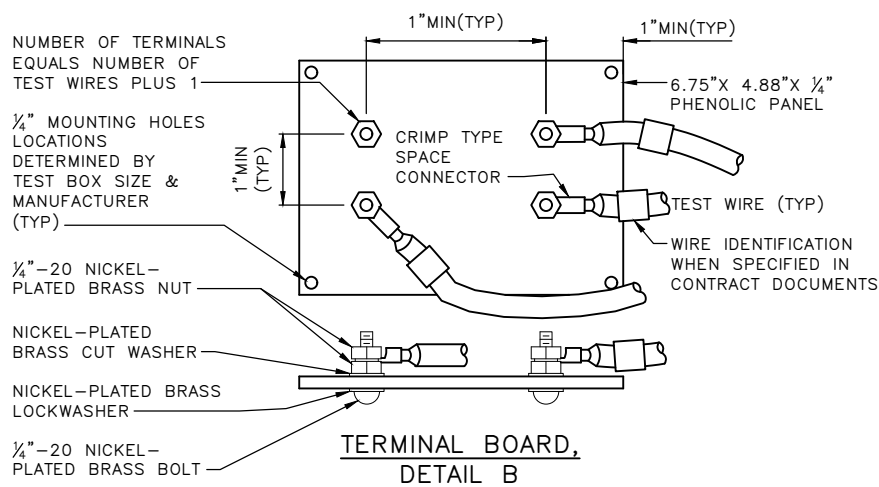
**REBUILD EXISTING  
BRICK WATER VALVE CHAMBER**



ELECTROLYSIS TEST STATION - TRAFFIC AREA



ELECTROLYSIS TEST STATION - NON-TRAFFIC AREA



TEST BOX, SECTION A

REF STD SPEC SEC 7-11

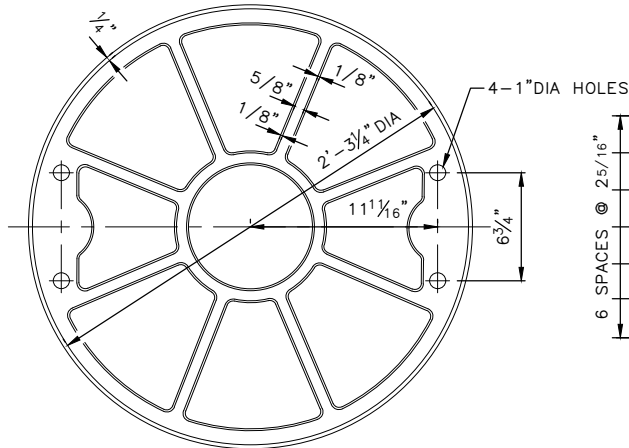


City of Seattle

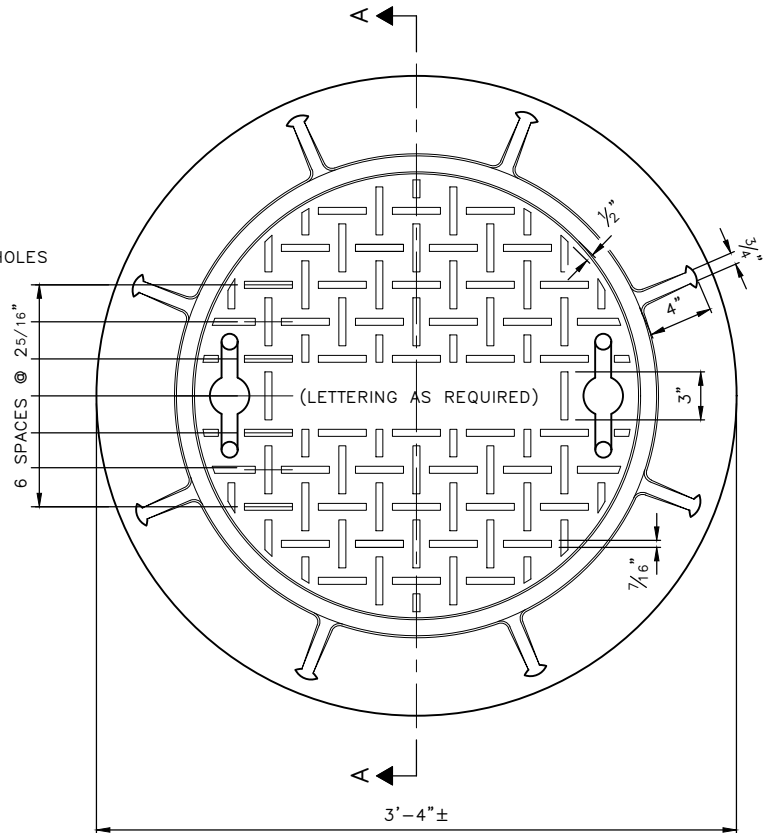
NOT TO SCALE

# WATERMAIN ELECTROLYSIS TEST STATION

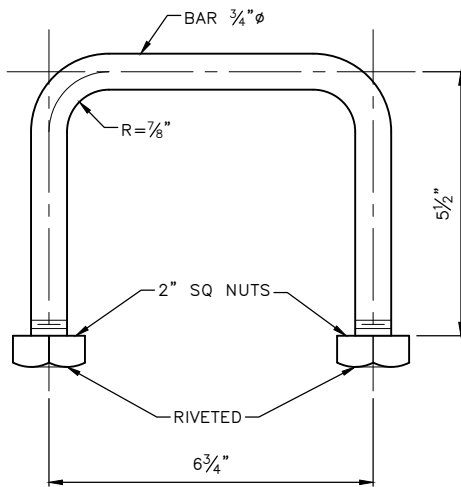
FRAME & COVER MUST BE TESTED  
FOR ACCURACY OF FIT AND MUST BE  
MARKED IN SETS FOR DELIVERY



BOTTOM VIEW

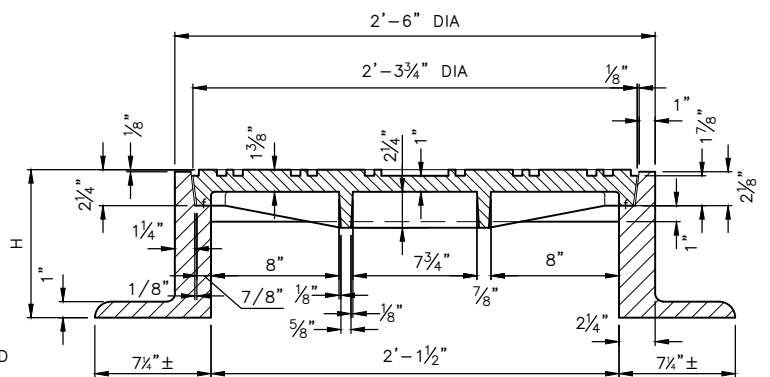


TOP VIEW



LIFTING HANDLE  
(2 REQUIRED)

TYPE 361  
H=9 1/4"  
DESIGNATE  
SHALLOW  
FRAME AS  
TYPE 361S  
H=4 1/4"  
f=MACHINED  
FINISH



SECTION A-A

REF STD SPEC SEC 7-12

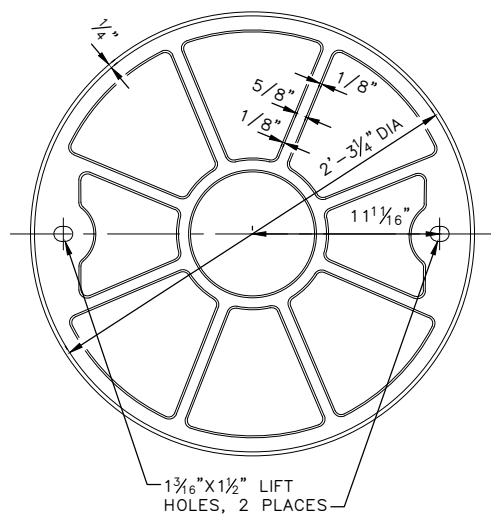


City of Seattle

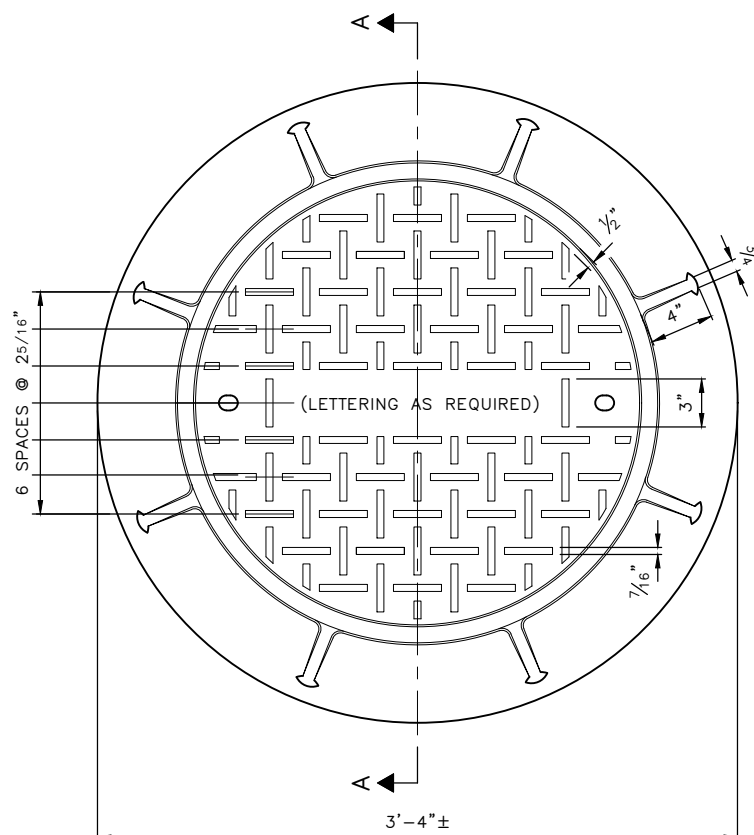
NOT TO SCALE

TYPE 361a VALVE CHAMBER  
FRAME & COVER IN  
VEHICULAR TRAVELWAYS

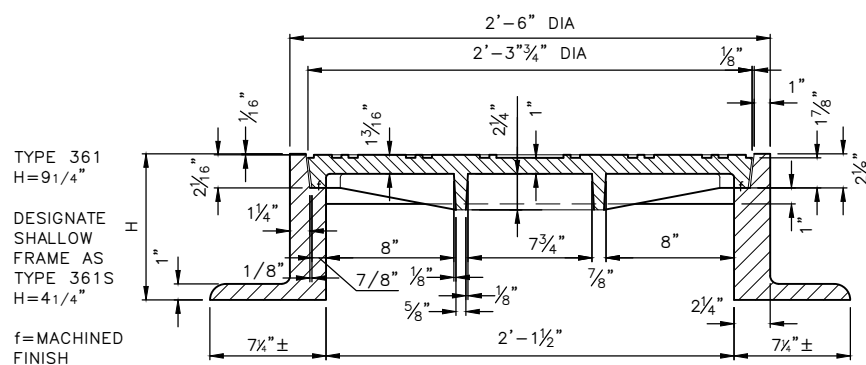
FRAME & COVER MUST BE TESTED  
FOR ACCURACY OF FIT AND MUST BE  
MARKED IN SETS FOR DELIVERY



BOTTOM VIEW



TOP VIEW



DESIGNATE  
SHALLOW  
FRAME AS  
TYPE 361S  
H=41/4"

f=MACHINED  
FINISH

SECTION A-A

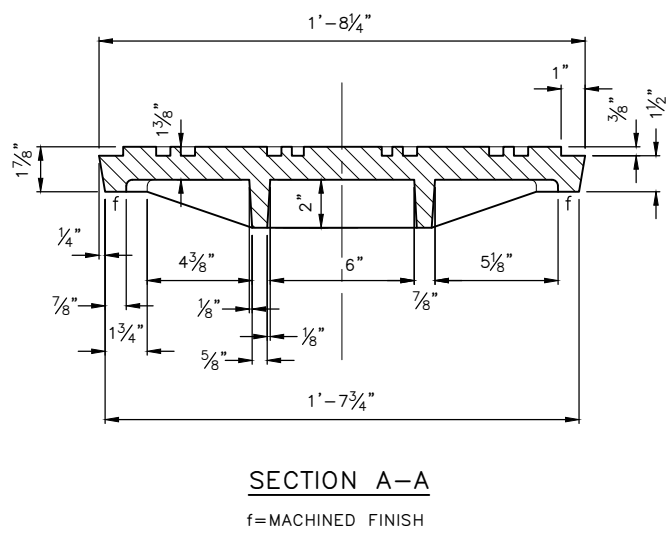
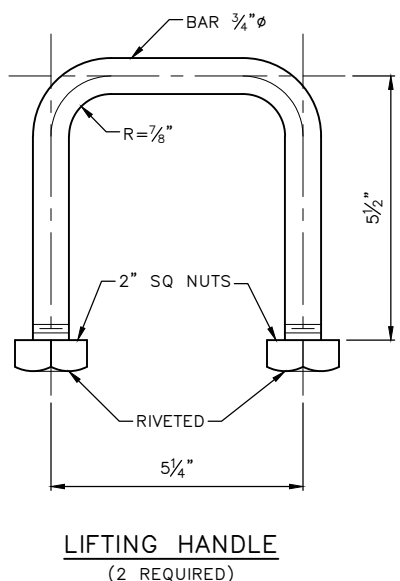
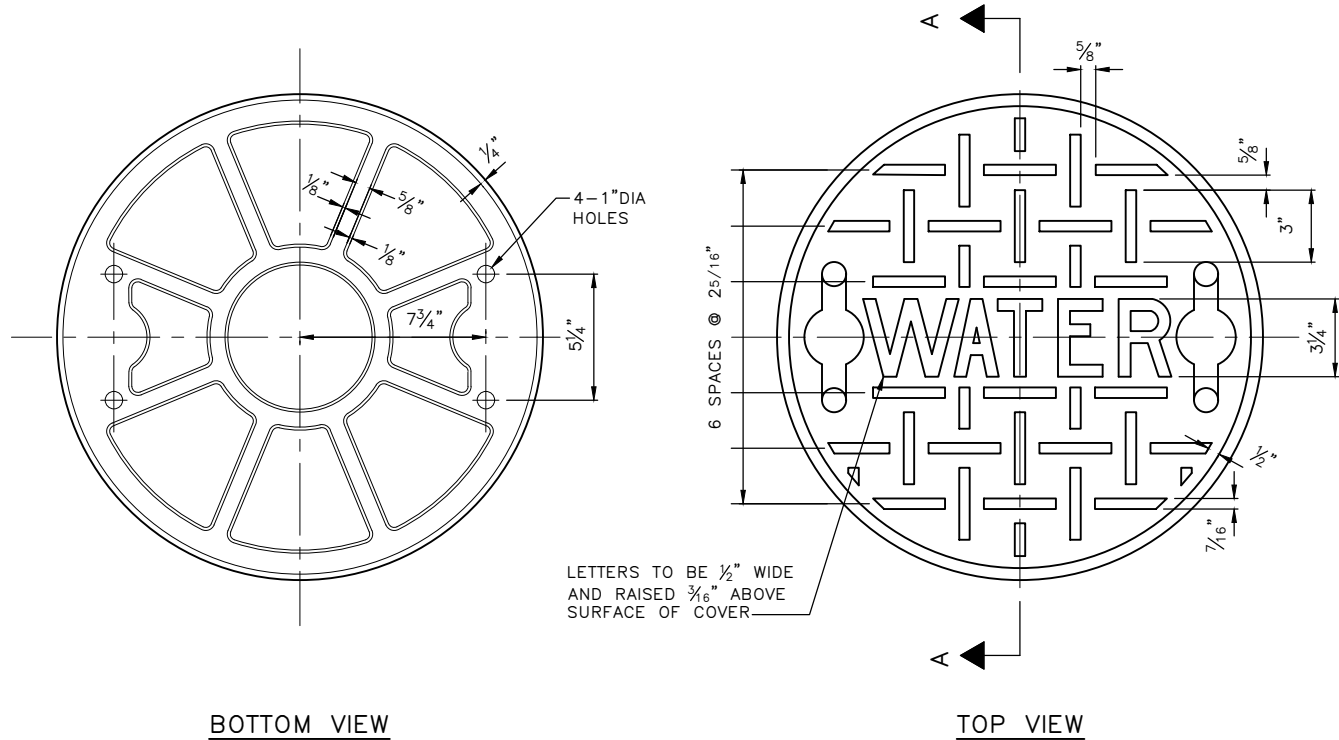
REF STD SPEC SEC 7-12

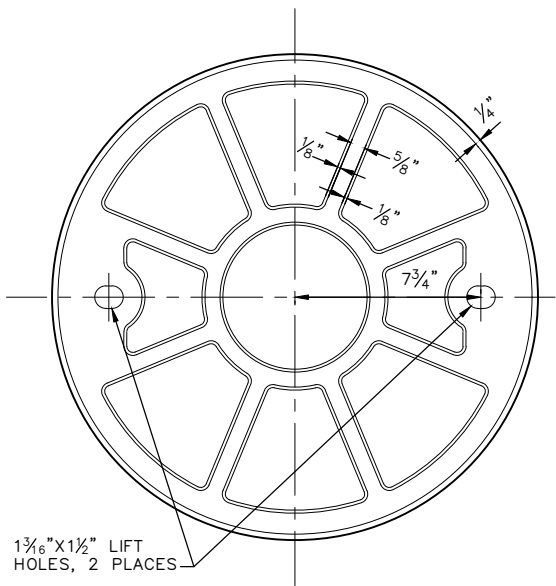


City of Seattle

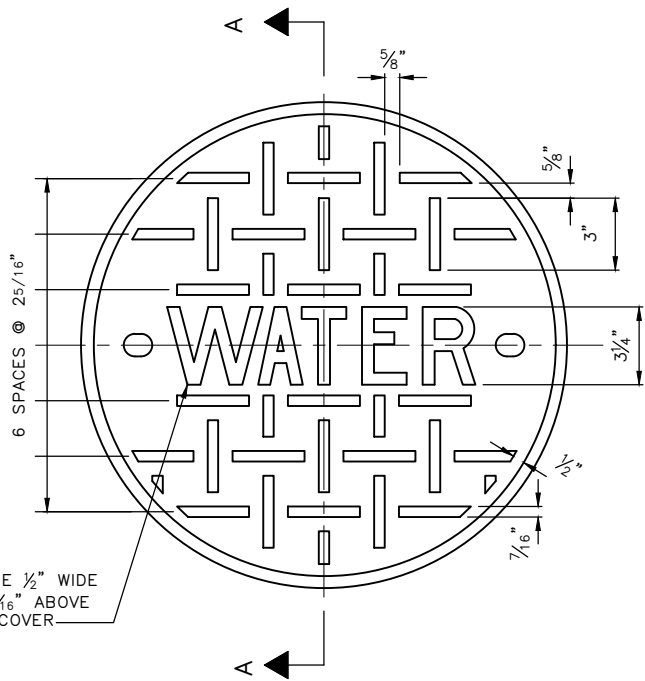
NOT TO SCALE

## TYPE 361b VALVE CHAMBER FRAME & COVER IN PEDESTRIAN PATHWAYS

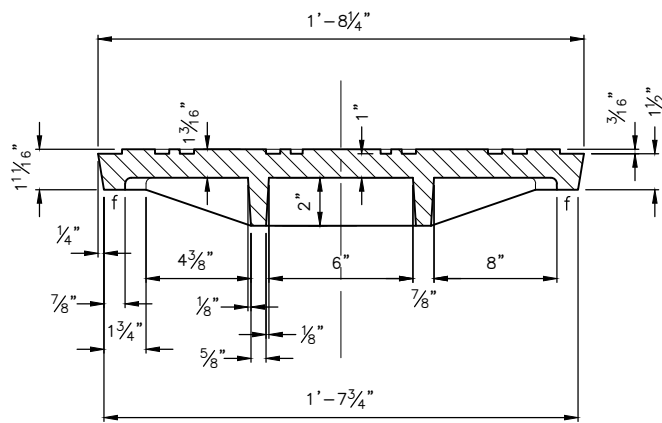




BOTTOM VIEW



TOP VIEW



SECTION A-A

f=MACHINED FINISH

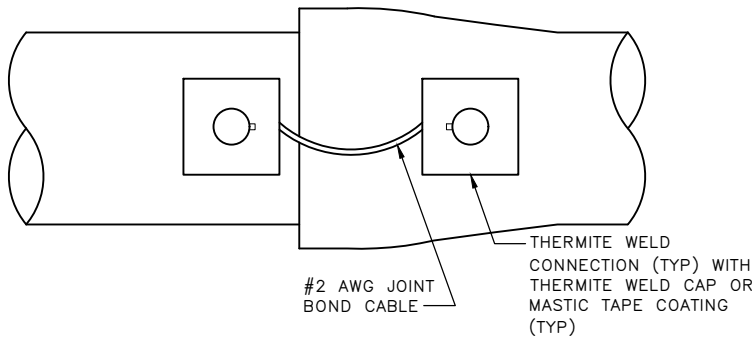
REF STD SPEC SEC 7-12, 7-20



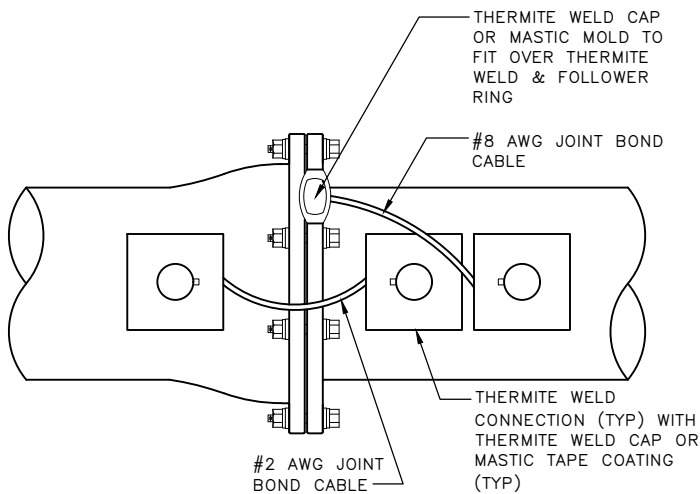
City of Seattle

NOT TO SCALE

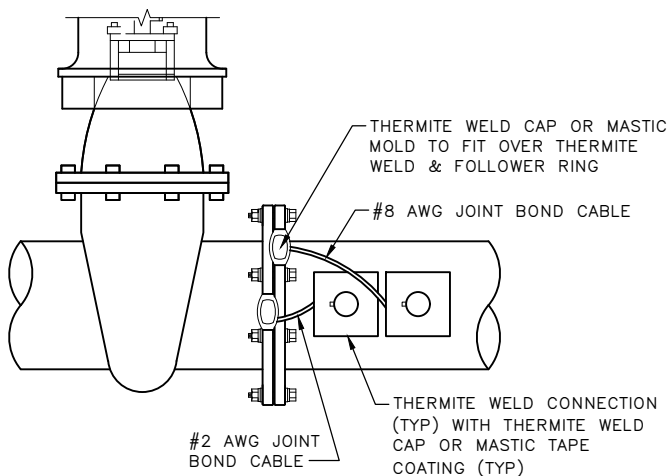
TYPE 361d WATER VALVE  
REPLACEMENT COVER IN  
PEDESTRIAN PATHWAYS



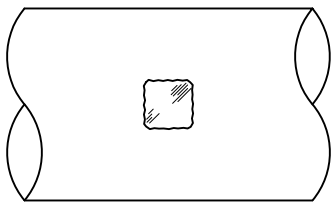
SLIP JOINT BOND CONNECTION



MECHANICAL JOINT BOND CONNECTION

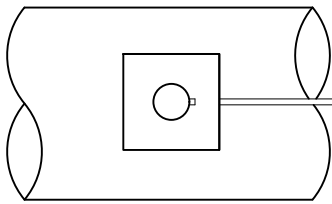
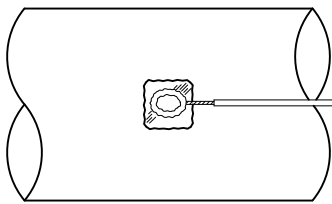
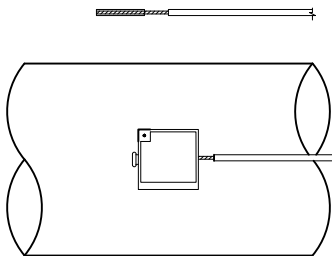


VALVE JOINT BOND CONNECTION



CONNECTION SEQUENCE:

1. REMOVE PIPE COATING TO BRIGHT & CLEAN METAL
2. STRIP INSULATION FROM TEST STION WIRE, INSTALL ADAPTER SLEEVE
3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE
4. REMOVE SLAG AND ALLOW TO COOL
5. 16 OUNCE HAMMER TEST PER STD. SPEC SEC 7-11.3(15)D1
6. FINAL CONNECTION TO BE MADE WATERTIGHT WITH MASTIC COATING OR PREFORMED THERMITE WELD CAP



THERMITE WELD CONNECTION

- NOTES:**
1. JOINT BONDS FOR PIPE 16" DIAMETER AND SMALLER.
  2. FOR PIPE LARGER THAN 16" DIAMETER OR IMPRESSED SYSTEMS, SEE PROJECT DRAWINGS FOR JOINT BONDING DETAILS.

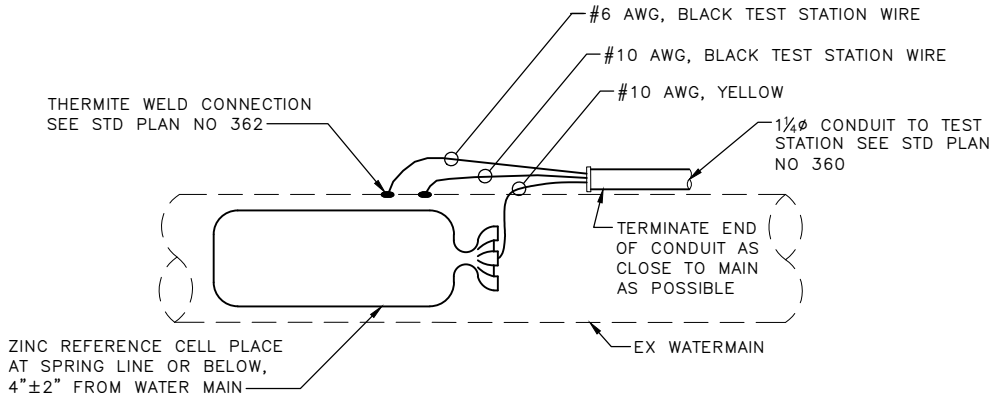
REF STD SPEC SEC 7-11



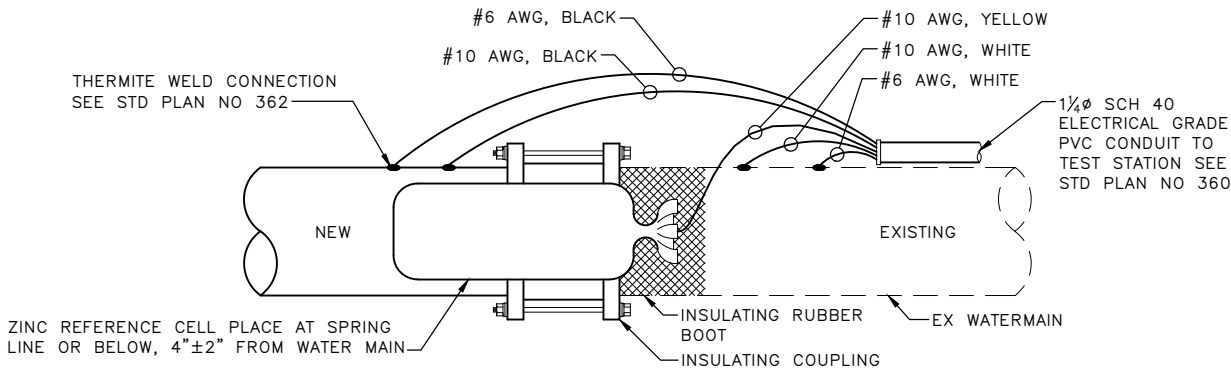
City of Seattle

NOT TO SCALE

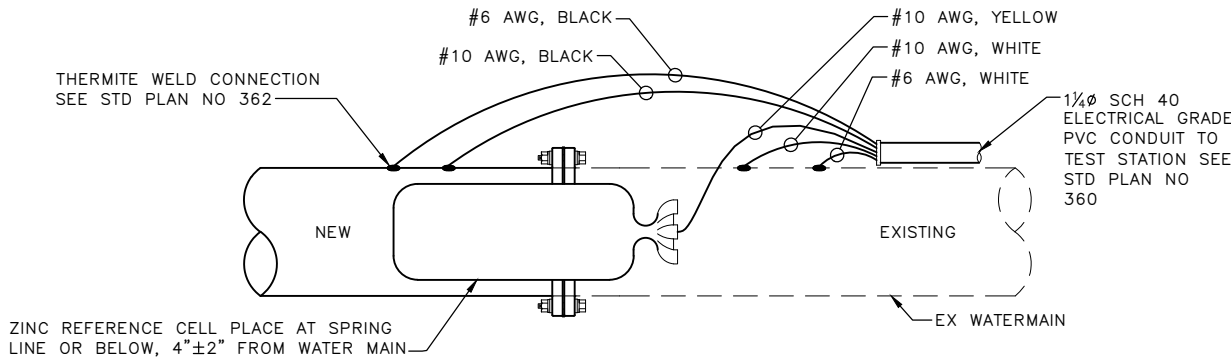
JOINT BONDING FOR DIP WATERMAINS & JOINT BONDING DETAIL



STANDARD 3-WIRE TEST STATION



INSULATING COUPLING 5-WIRE TEST STATION



INSULATING FLANGE 5-WIRE TEST STATION

**NOTE:**  
WIRE INSTALLATION PER STD SPEC SEC 9-30.12(3)

REF STD SPEC SEC 7-11.3(15), 9-30.12

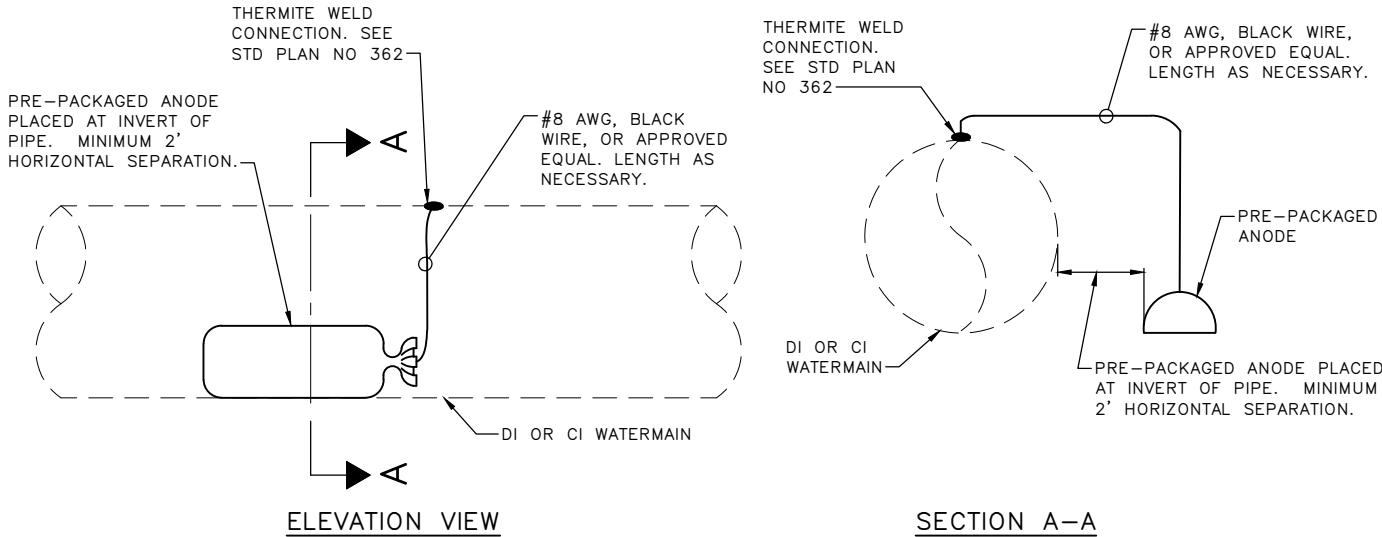


City of Seattle

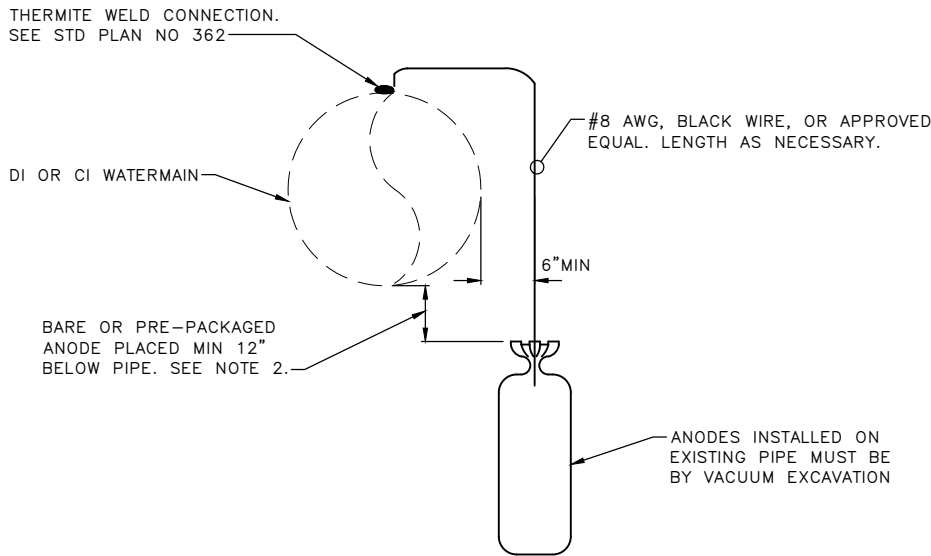
NOT TO SCALE

ELECTROLYSIS TEST STATION  
WIRE INSTALLATION DETAILS





TYPICAL SINGLE  
HORIZONTAL ANODE INSTALLATION



TYPICAL SINGLE  
VERTICAL ANODE INSTALLATION

- NOTES:
- 1. SPU CORROSION PROTECTION MAY SPECIFY TYPE AND REQUIRED SPACING OF ANODE(S) LONGITUDINALLY ALONG WATER MAIN TO BE SHOWN IN DESIGN DRAWINGS. MAXIMUM SPACING MUST BE 36' UNLESS OTHERWISE NOTED ON PLANS.
  - 2. FOR VERTICAL ANODE INSTALLATION, IF ANODE IS NOT PRE-PACKAGED, BARE ANODE MUST BE INSTALLED W/MIN 6" SACRIFICIAL ANODE BACKFILL PER SPEC SECTION 9-30.(7), AROUND ALL SIDES OF ANODE.
  - 3. ANODE SIZE MUST BE 17LB HIGH POTENTIAL MAGNESIUM ANODE, UNLESS OTHERWISE NOTED ON THE PLANS.
  - 4. PLACE RED "CAUTION" OR "DANGER" TAPE 6" OVER ANODE WIRES. TAPE MUST BE MIN 3" WIDE.
  - 5. BACKFILL OVER ANODE WITH SUITABLE NATIVE MATERIAL OR APPROVED EQUAL.

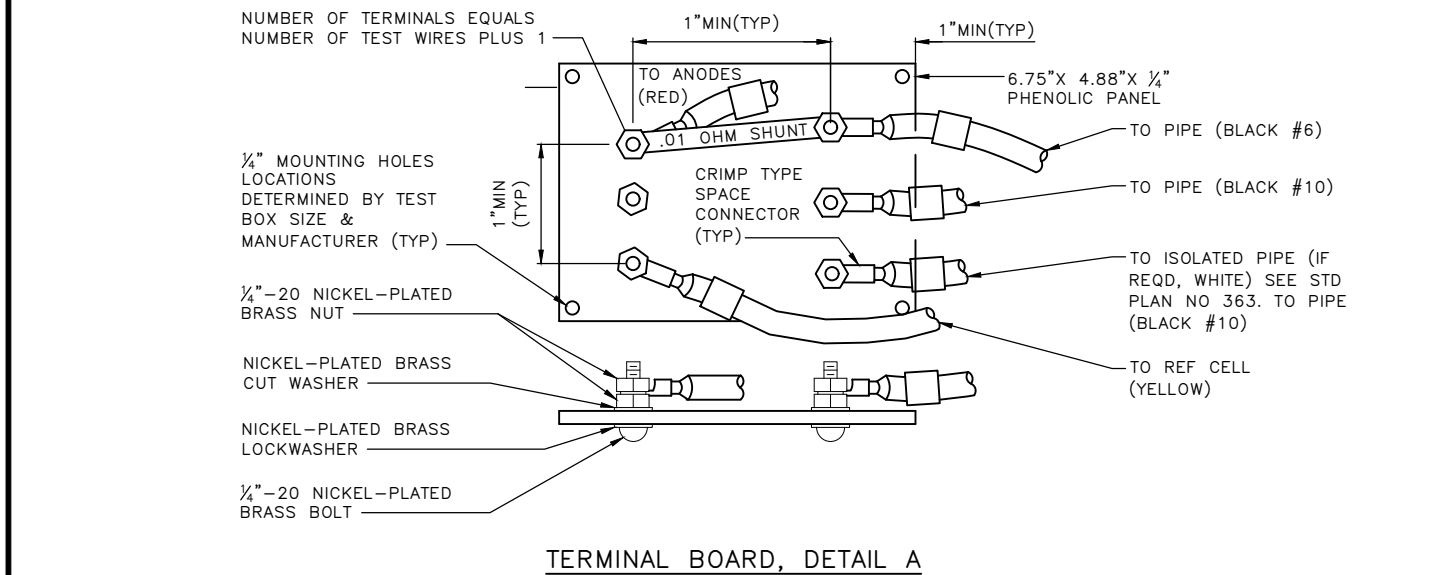
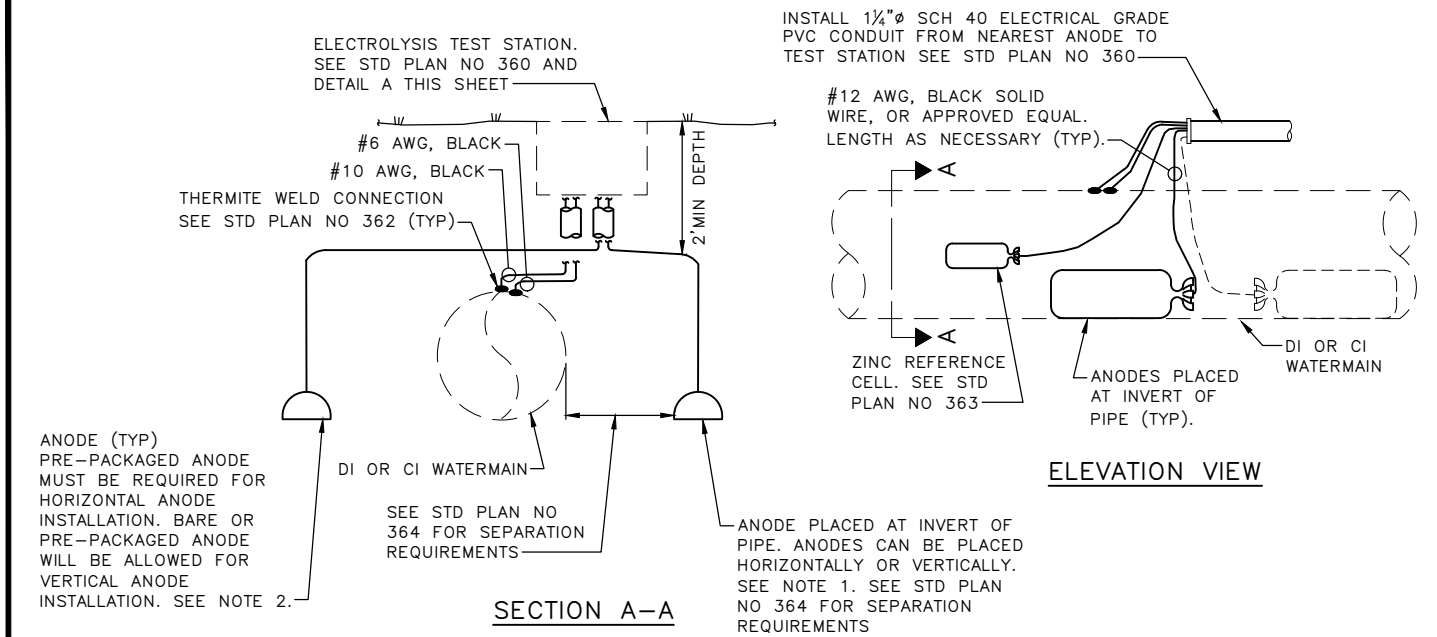
REF STD SPEC SEC 7-11, 9-30



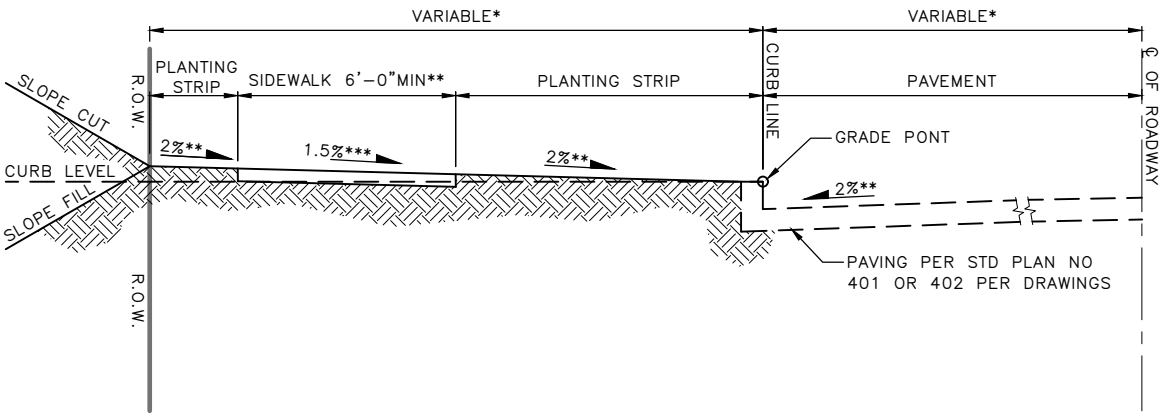
City of Seattle

NOT TO SCALE

SACRIFICIAL ANODE  
BONDED TO PIPE  
INSTALLATION DETAILS



- NOTES:
1. REQUIRED SPACING OF ANODE(S) TO BE SHOWN IN DESIGN DRAWINGS.
  2. FOR VERTICAL INSTALLATION, IF ANODE IS NOT PRE-PACKAGED, BARE ANODE MUST BE INSTALLED W/ MIN 6" SACRIFICIAL ANODE BACKFILL PER SPEC SECTION 9-30.9(7), AROUND ALL SIDES OF ANODE.
  3. ANODE SIZE MUST BE 17LB HIGH POTENTIAL MAGNESIUM ANODE, UNLESS OTHERWISE NOTED ON THE PLANS.
  4. PLACE RED "CAUTION" OR "DANGER" TAPE 6" OVER ANODE WIRES AND CONDUIT. TAPE MUST BE MIN 3" WIDE.
  5. BACKFILL OVER ANODE WITH SUITABLE NATIVE MATERIAL OR APPROVED EQUAL.



\* SEE RIGHT OF WAY IMPROVEMENT MANUAL FOR DIMENSIONS.  
\*\* UNLESS OTHERWISE APPROVED BY THE ENGINEER.  
\*\*\* 2% MAXIMUM, 0.5% MINIMUM; USE 1.5% UNLESS OTHERWISE SHOWN IN CONTRACT OR APPROVED BY THE ENGINEER.

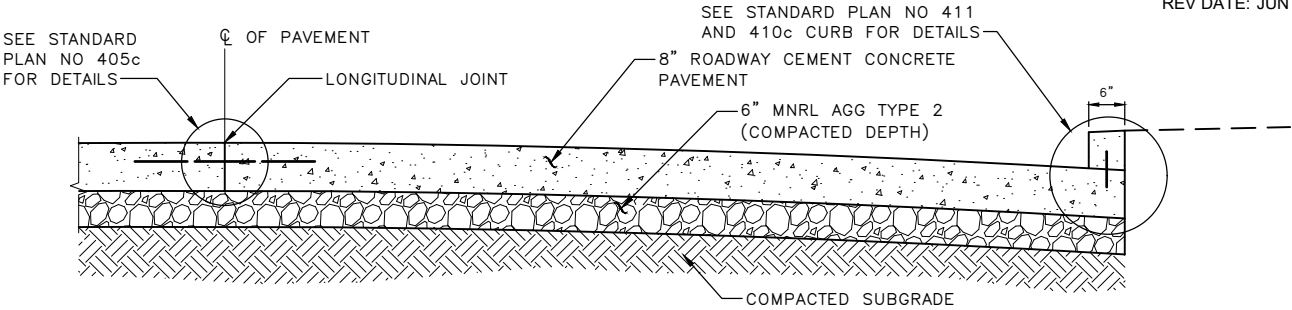
REF STD SPEC SEC 2-04



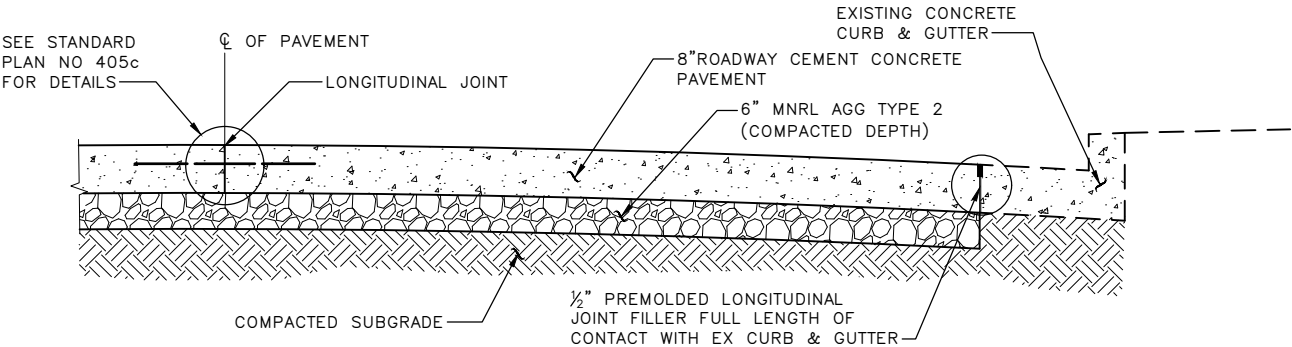
City of Seattle

NOT TO SCALE

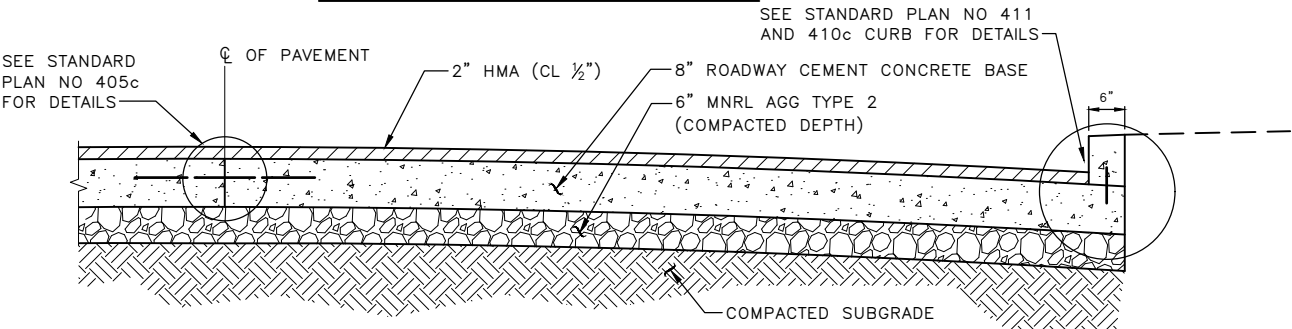
HALF SECTION, GRADING



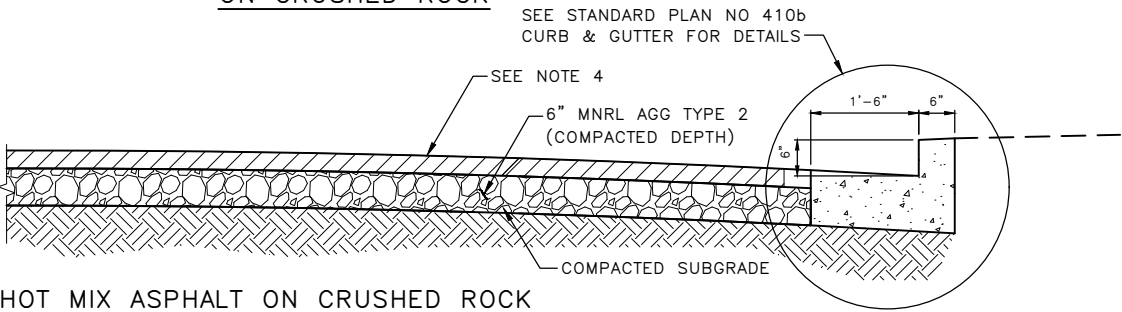
401A-ROADWAY CEMENT CONCRETE PAVEMENT ON CRUSHED ROCK



401B-ROADWAY CEMENT CONCRETE PAVEMENT ON CRUSHED ROCK WITH EXISTING CURB & GUTTER



401C-HOT MIX ASPHALT ON ROADWAY CEMENT CONCRETE BASE ON CRUSHED ROCK



401D-HOT MIX ASPHALT ON CRUSHED ROCK

HMA DESIGN CRITERIA:

1. 3 MILLION ESAL'S UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS
2. ASPHALT PG 58H-22 UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS
3. WARM MIX ASPHALT MAY BE USED IN PLACE OF HMA WHERE SHOWN ON THE DRAWINGS
4. PAVEMENT DEPTH MUST BE 3" HMA (CL 1/2") WHEN REPLACING BITUMINOUS SURFACE TREATED RESIDENTIAL STREETS OR 2" HMA (CL 1/2") OVER 6" HMA (CL 1") FOR ALL OTHER RESIDENTIAL STREETS.
5. PROTECT ADJACENT PANELS FROM DAMAGE DUE TO UNDERMINING DURING EXCAVATION & PLACEMENT OF SUBGRADE. SEE SPEC SECTION 1-07.13.

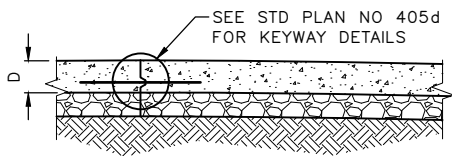
REF STD SPEC SEC 4-04, 5-04, 5-05, 8-04



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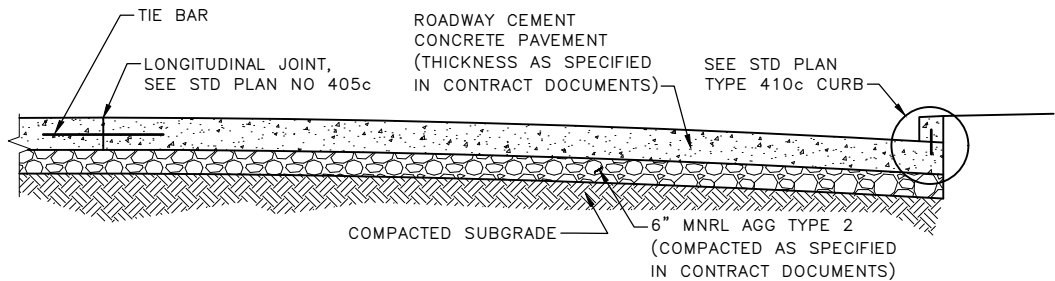
NOT TO SCALE

RESIDENTIAL PAVEMENT SECTIONS

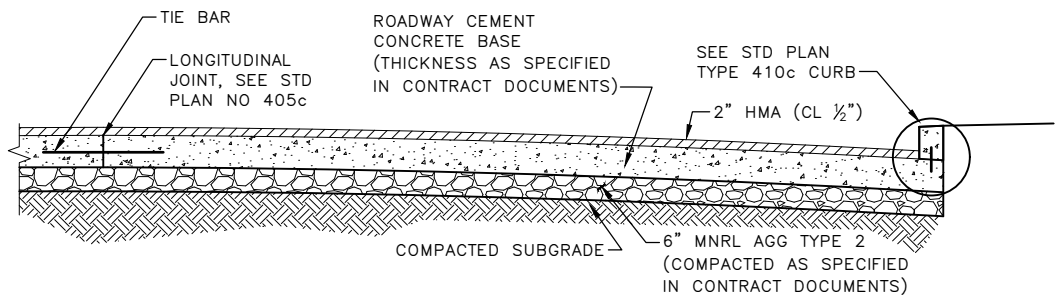


OPTIONAL KEYWAY  
FOR LONGITUDINAL JOINT

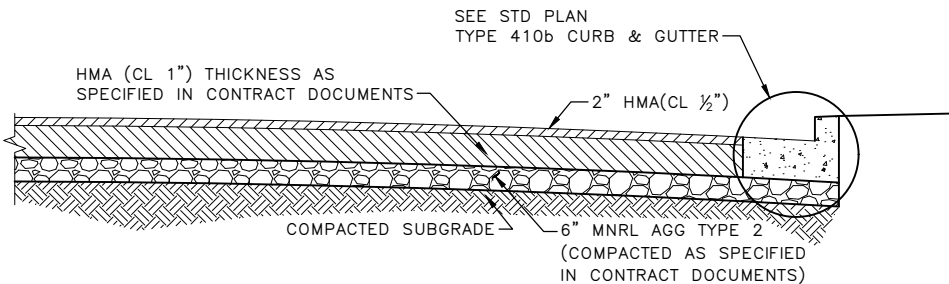
NOTES:  
IF CONC THICKNESS IS 9 INCH OR GREATER  
OPTIONAL KEYWAY MAY BE USED SEE STD PLANS  
NO 405c & 405d FOR DETAILS



402A-ROADWAY CEMENT CONCRETE PAVEMENT ON CRUSHED ROCK



402B-HOT MIX ASPHALT ON ROADWAY CEMENT CONCRETE BASE  
ON CRUSHED ROCK



402C-HOT MIX ASPHALT ON CRUSHED ROCK

- HMA DESIGN CRITERIA:
- 1. 10 MILLION ESAL'S UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS.
  - 2. ASPHALT PG 58H-22 UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS.
  - 3. WARM MIX ASPHALT MAY BE USED IN PLACE OF HMA WHERE SHOWN ON THE DRAWINGS.
  - 4. PROTECT ADJACENT PANELS FROM DAMAGE DUE TO UNDERMINING DURING EXCAVATION & PLACEMENT OF SUBGRADE. SEE SPEC SECTION 1-07.13.

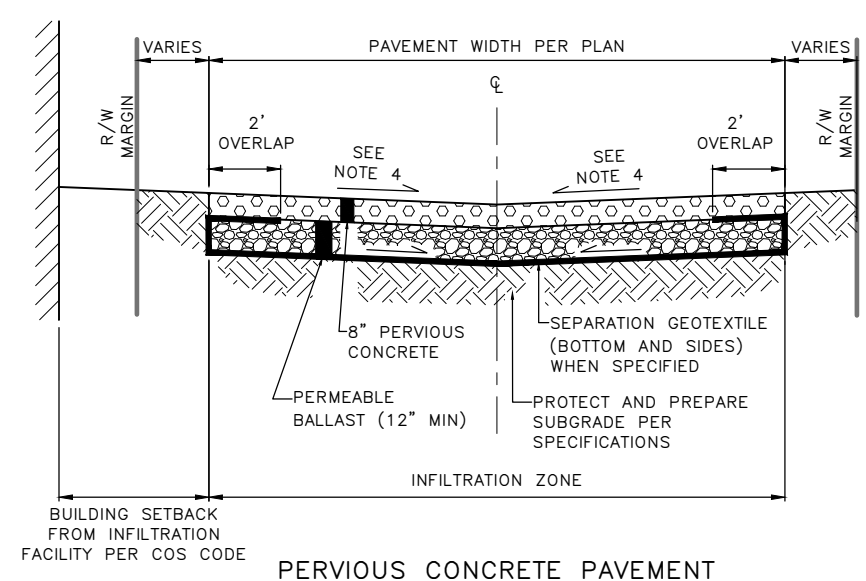
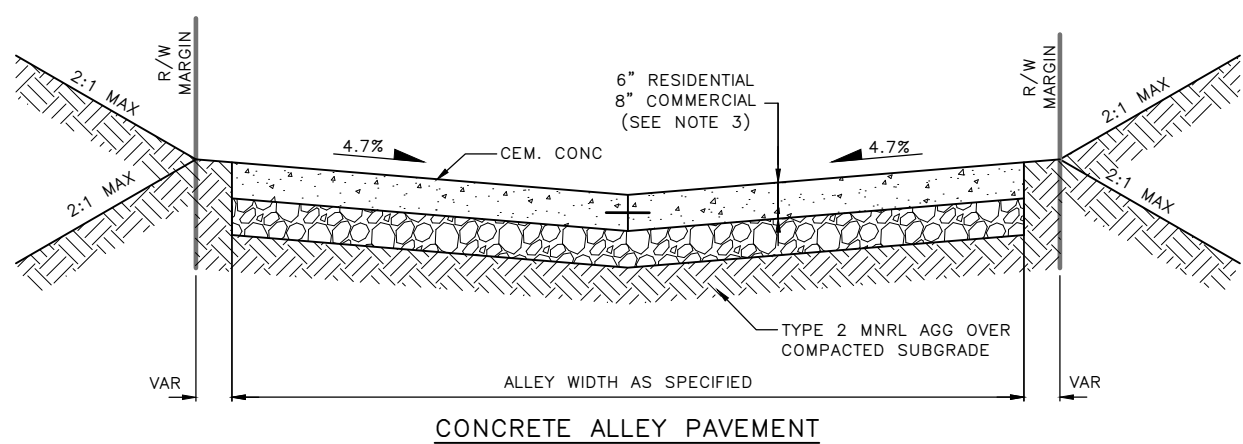
REF STD SPEC SEC 4-04, 5-04, 5-05, 8-04



City of Seattle

NOT TO SCALE

COMMERCIAL AND  
ARTERIAL PAVEMENT  
SECTIONS



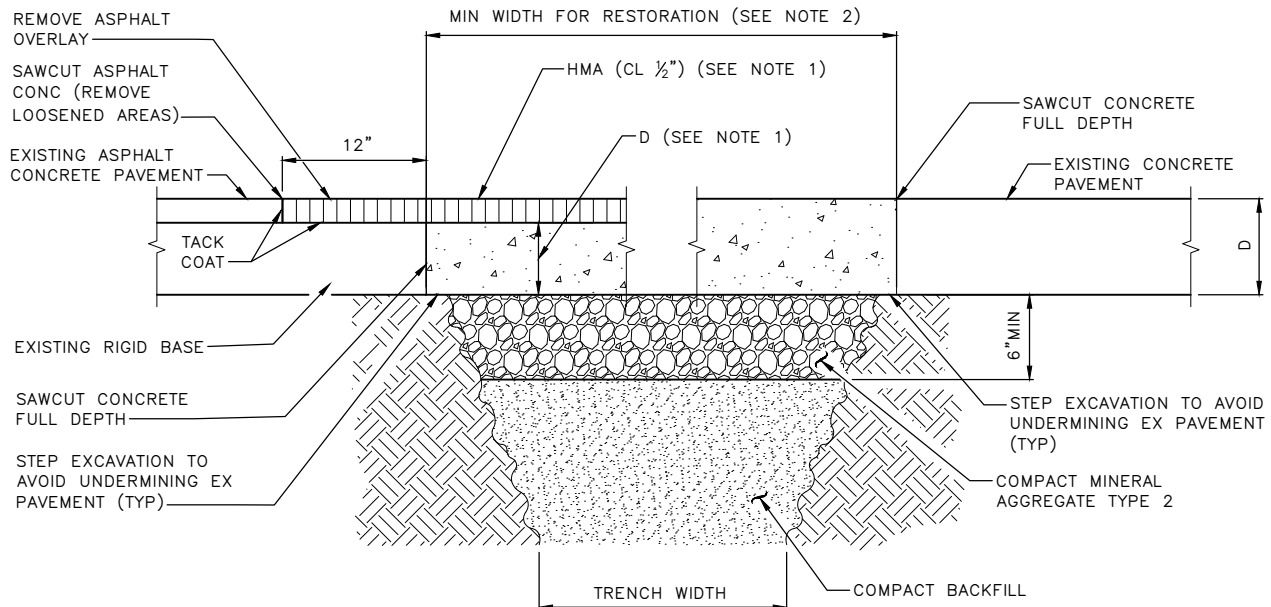
- NOTES:
1. WHEN ALLEY PAVEMENT IS 16'-0" OR WIDER PLACE CONSTRUCTION JOINT WITH TIE BAR PER STD PLAN NO 405 ALONG CENTERLINE OF ALLEY.
  2. FOR ADA ACCESSIBLE ACCESS TO ENTRY IN ALLEY CONSIDER ALTERNATIVE DESIGN; SUBJECT TO APPROVAL BY THE ENGINEER.
  3. 8" OR AS SHOWN IN CONTRACT OR APPROVAL BY THE ENGINEER.
  4. MIN CROSS SLOPE IS 1%. MAX CROSS SLOPE IS 2%.
  5. PERMEABLE BALLAST MUST BE MINERAL AGGREGATE TYPE 13, COS STD SPEC 9.03-13, UNLESS DETERMINED OTHERWISE BY ENGINEER.
  6. FOR PERVIOUS CONCRETE ALLEYS, CONTRACTION JOINTS MUST NOT EXCEED 12 FT. FOR PAVEMENT THICKNESS OF 9 IN. OR LESS. FOR THICKER PAVEMENT, CONTRACTION JOINTS MAY BE 15 FT.

HALF SECTION

RIGID PAVEMENT WITH ASPHALT CONCRETE SURFACE

HALF SECTION

CEMENT CONCRETE PAVEMENT



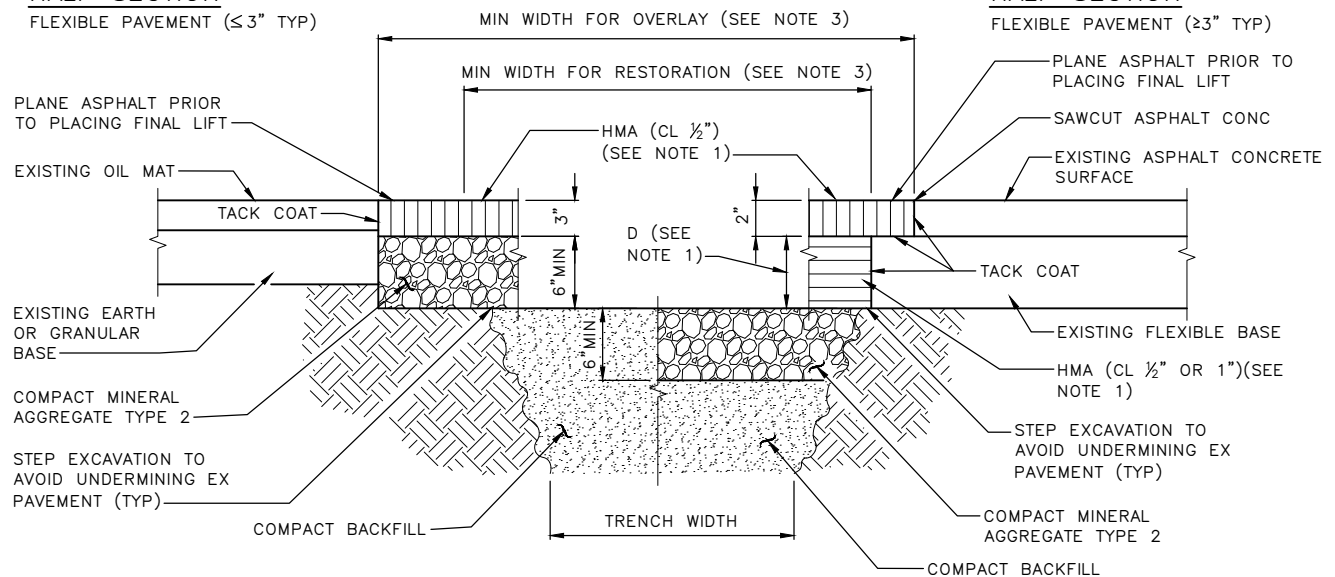
### TYPICAL PATCH FOR RIGID PAVEMENT

HALF SECTION

FLEXIBLE PAVEMENT ( $\leq 3"$  TYP)

HALF SECTION

FLEXIBLE PAVEMENT (≥3" TYP)



### TYPICAL PATCH FOR FLEXIBLE PAVEMENT

1. DEPTH OF RESTORATION MUST MEET THE REQUIREMENTS OF "RIGHT OF WAY OPENING AND RESTORATION RULES".
2. FOR RIGID PAVEMENT (FULL DEPTH), WIDTH OF RESTORATION MUST EXTEND TO FULL PANEL WIDTH, OR AS REQUIRED IN THE "RIGHT OF WAY OPENING AND RESTORATION RULES" FOR OVERSIZED OR NON-STANDARD PANELS.
3. FOR FLEXIBLE PAVEMENT (FULL DEPTH & OVERLAY) RESTORATION WIDTH MUST MEET REQUIREMENTS OF STANDARD PLAN NO 404c AND THE "RIGHT OF WAY OPENING AND RESTORATION RULES".

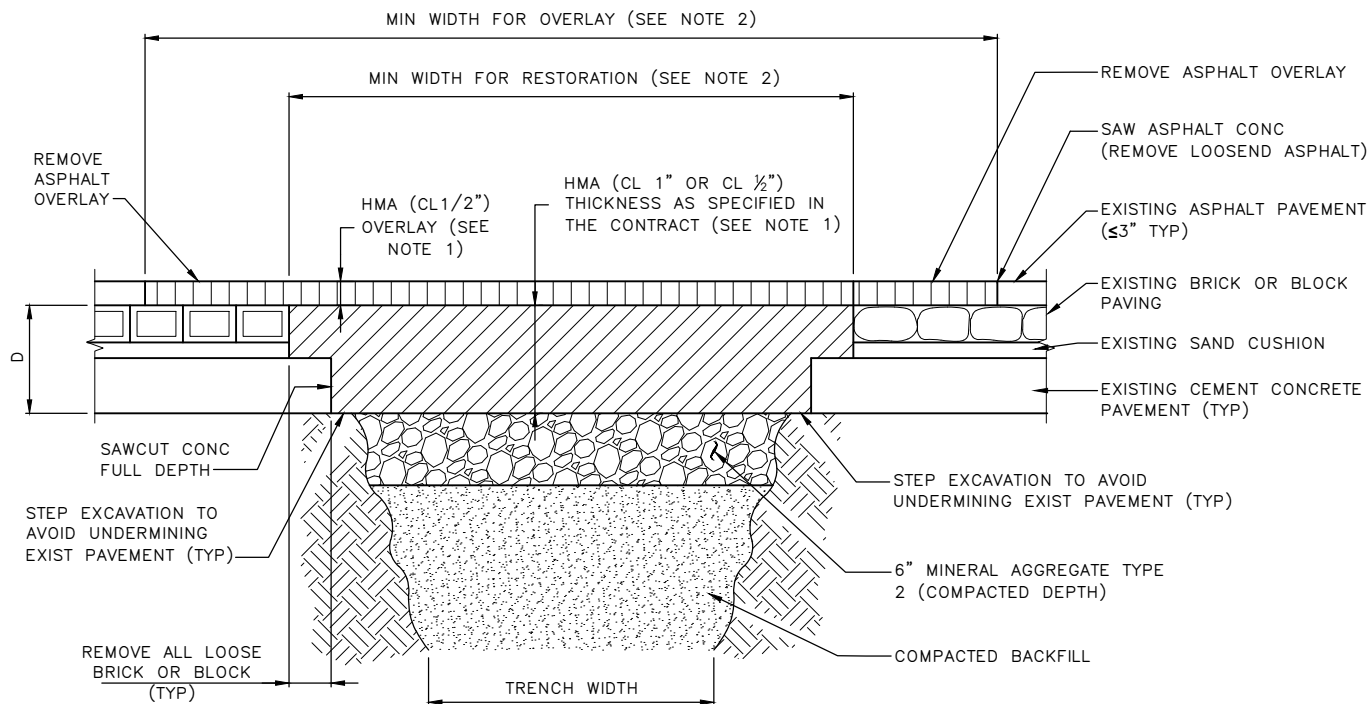
REF STD SPEC SEC 2-02, 5-04, 5-05



City of Seattle

NOT TO SCALE

## PAVEMENT PATCHING



HOT MIX ASPHALT OVER SHEET ASPHALT, BRICK, OR STONE BLOCK PAVEMENT  
HALF SECTION

1. DEPTH OF RESTORATION MUST MEET THE REQUIREMENTS OF THE "RIGHT OF WAY OPENING AND RESTORATION RULES".
2. WIDTH OF RESTORATION MUST EXTEND TO FULL PANEL WIDTH, OR AS REQUIRED IN THE "RIGHT OF WAY OPENING AND RESTORATION RULES" FOR OVERSIZED OR NON-STANDARD PANELS.

REF STD SPEC SEC 2-02, 5-04, 5-05

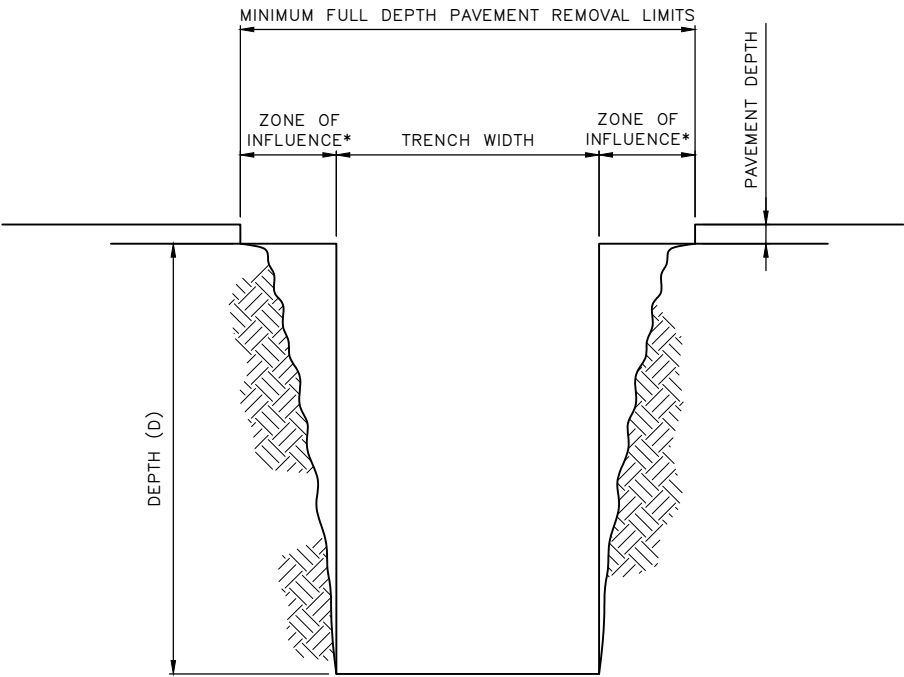


City of Seattle

NOT TO SCALE

PAVEMENT PATCHING





\*TYPICALLY  $D/4$

**NOTES:**

1. DUE TO POTENTIAL LOSS OF SOIL STRENGTH IN AREAS ADJACENT TO TRENCH OPENINGS, PAVEMENT REMOVAL MUST BE WIDENED TO INCLUDE THE ZONE OF INFLUENCE.
2. SEE "RIGHT-OF-WAY OPENING AND RESTORATION RULES" FOR MORE INFORMATION ON PAVEMENT OPENINGS ZONE OF INFLUENCE.  
[HTTP://WWW.SEATTLE.GOV/TRANSPORTATION/STUSE\\_PAVEMENTOPEN.HTM](http://www.seattle.gov/transportation/stuse_pavementopen.htm)

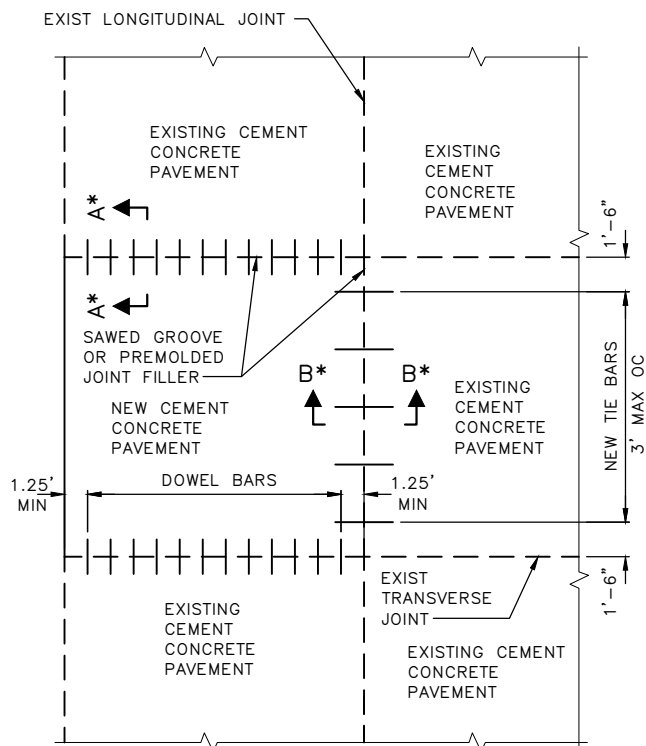
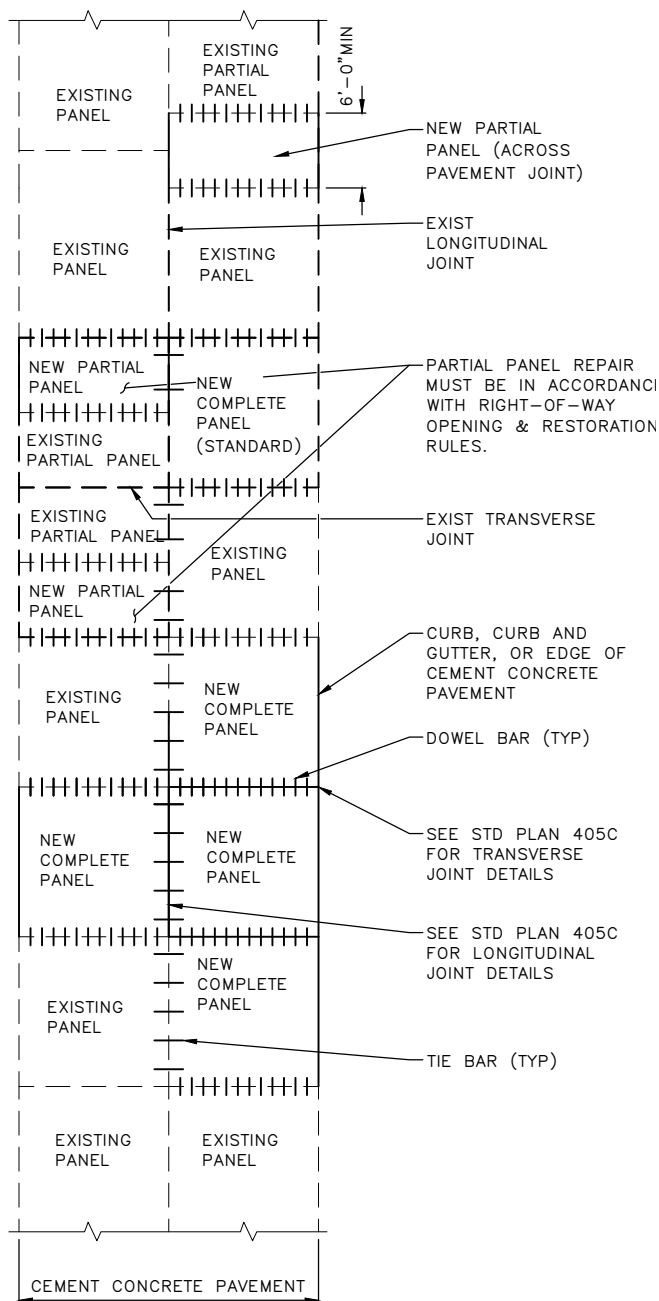
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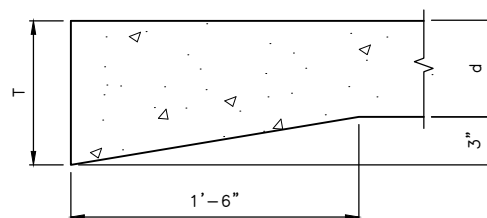
City of Seattle

NOT TO SCALE

PAVEMENT OPENING  
ZONE OF INFLUENCE



PLAN VIEW  
COMPLETE PANEL REPLACEMENT



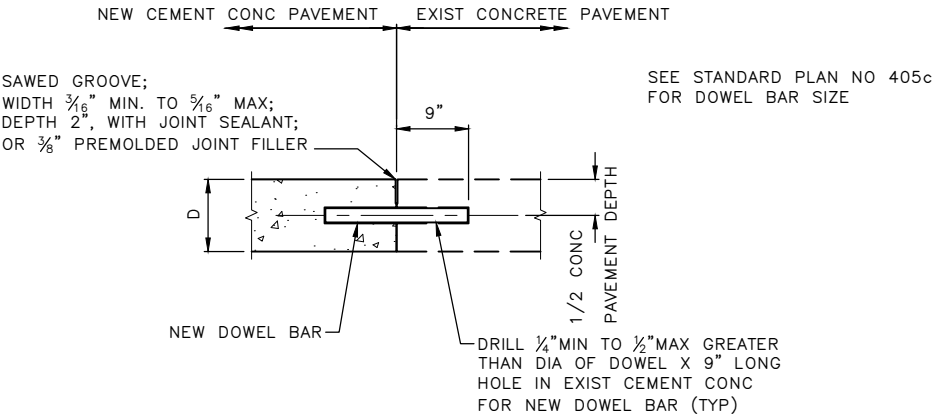
THICKENED EDGE DETAIL  
(REQUIRED ONLY WHERE SHOWN ON THE DRAWINGS)

## NOTES

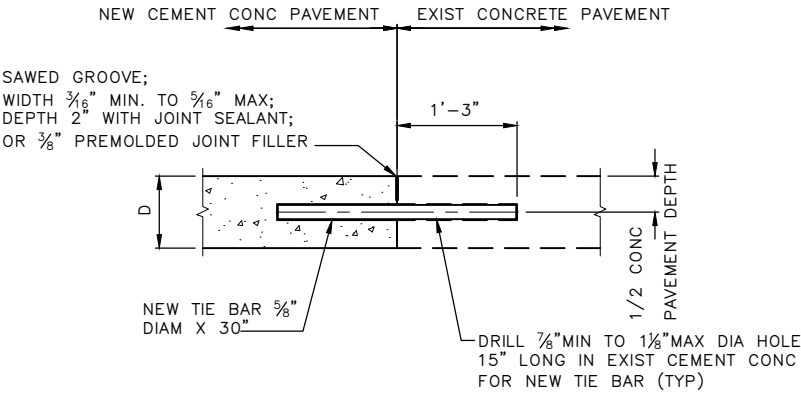
1. INSTALL TIE BARS ALONG LONGITUDINAL JOINT BETWEEN FULL PANEL REPLACEMENT AND EXIST CEMENT CONC PAVEMENT. TIE BARS ARE NOT INSTALLED BETWEEN CEMENT CONC PAVEMENT AND HOT MIX ASPHALT SHOULDERS.
2. TIE BARS AND DOWELS ARE NOT REQUIRED:
  - 2.1. WHEN INDICATED ON THE DRAWINGS BY "NO TIE BARS" OR "NO DOWEL BARS".
  - 2.2. WHEN EXISTING PAVEMENT IS 8" OR LESS OR WHEN THE ENGINEER DETERMINES THE EXISTING CONC NOT TO BE COMPETENT.
3. DO NOT PLACE LONGITUDINAL JOINTS OR SKEWED JOINTS WITHIN BIKE LANES.
4. WHEN PAVING ADJACENT TO EXISTING PANELS, THE NEW TRANSVERSE JOINTS MUST BE PLACED TO MATCH JOINT LOCATIONS OF THE EXISTING ADJACENT PAVEMENT UNLESS OTHERWISE DIRECTED BY THE ENGINEER. SEE STD PLAN NO 405C FOR MAXIMUM TRANSVERSE JOINT SPACING.

A\* SEE SECTION A-A STANDARD PLAN 405b  
B\* SEE SECTION B-B STANDARD PLAN 405b

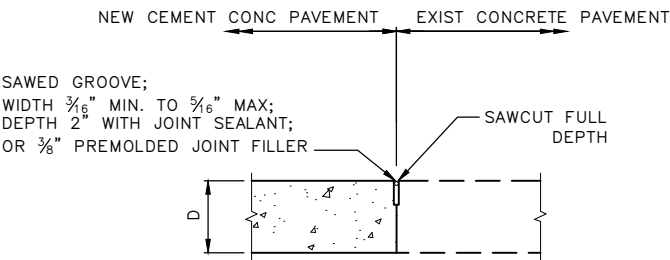




SECTION A-A  
DOWEL BAR DETAIL



SECTION B-B  
TIE BAR DETAIL



WITHOUT TIE BAR OR DOWEL  
USE ONLY WHEN SHOWN IN  
CONTRACT OR APPROVED BY  
THE ENGINEER

REF STD SPEC SEC 5-05



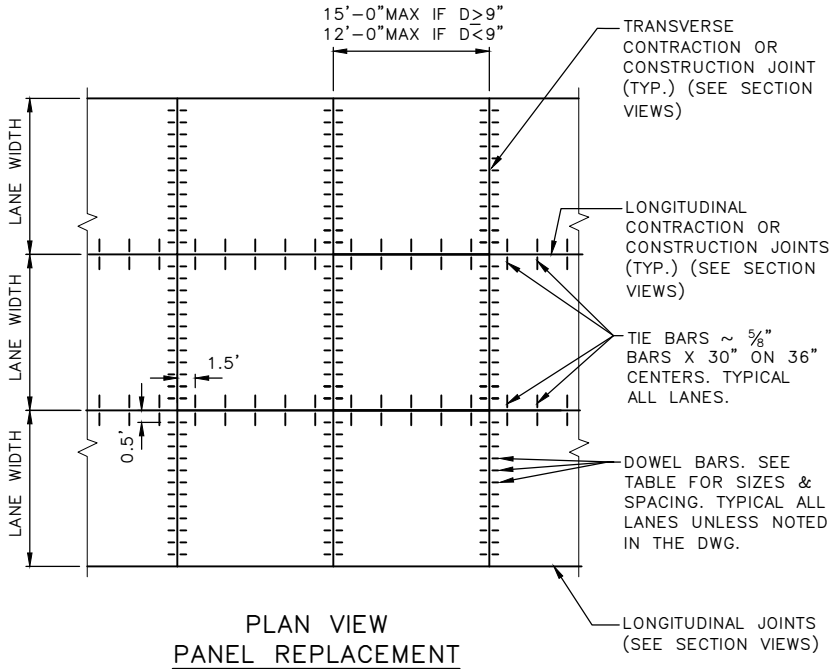
City of Seattle

NOT TO SCALE

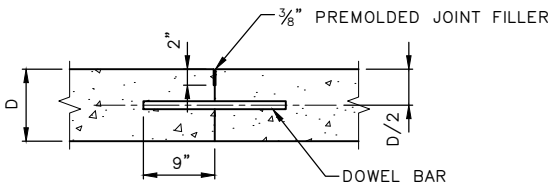
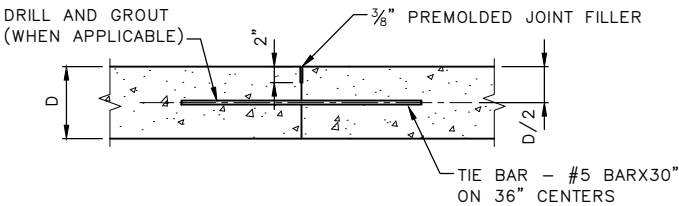
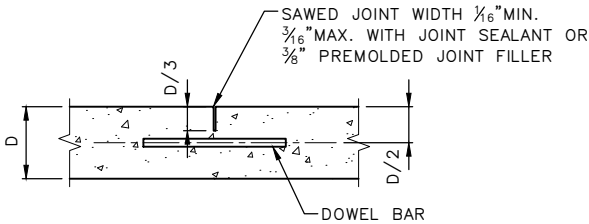
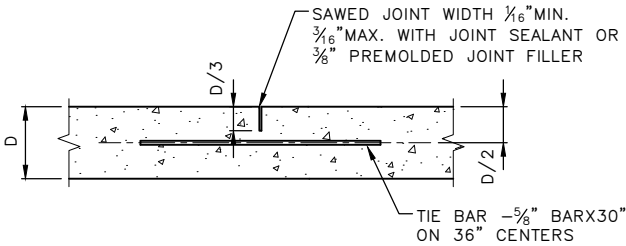
PAVEMENT REPAIR  
DOWEL BAR AND  
TIE BAR DETAILS

NOTES:

1. DO NOT PLACE LONGITUDINAL JOINTS OR SKEWED JOINTS WITHIN BIKE LANES.
2. WHEN A JOINT IS WITHIN 18 INCHES OF A CASTING JOINTS SHOULD BE SKEWED TO MEET THE CASTING AT 90 DEGREES UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR SHOWN ON THE DRAWINGS.
3. SEE STD PLAN NO 406 OR DRAWINGS FOR REBAR DETAIL AROUND CASTING 18 INCHES OR GREATER FROM JOINTS.
4. DOWEL BARS MUST NOT BE PLACED WITHIN 15 INCHES OF THE EDGE OF PAVEMENT OR A PARALLEL JOINT.
5. DOWEL BARS NOT REQUIRED FOR RESIDENTIAL PAVEMENT SECTIONS. SEE STD PLAN NO 401.



DEPTH (D) OF RDWY CEM. CONC	SOLID STEEL DOWEL BAR SIZE OUTSIDE DIAMETER (OD) X LENGTH (L) @ ON CENTER (OC)	TUBULAR DOWEL BAR SIZE OUTSIDE DIAMETER (OD), WALL THICKNESS X LENGTH (L) @ ON CENTER (OC)
6" ≤ D < 9"	1.00" OD X 18" L @ 12" OC	1.375" OD, 0.120: MIN X 18" L @ 12" OC
9" ≤ D < 11"	1.25" OD X 18" L @ 12" OC	1.375" OD, 0.120: MIN X 18" L @ 12" OC
11" ≤ D	1.50" OD X 18" L @ 12" OC	1.625" OD, 0.120: MIN X 18" L @ 12" OC



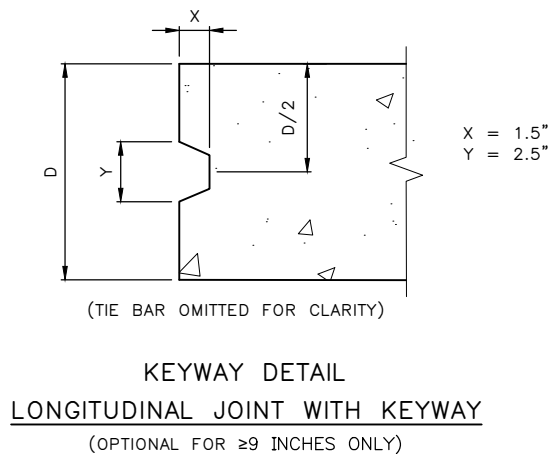
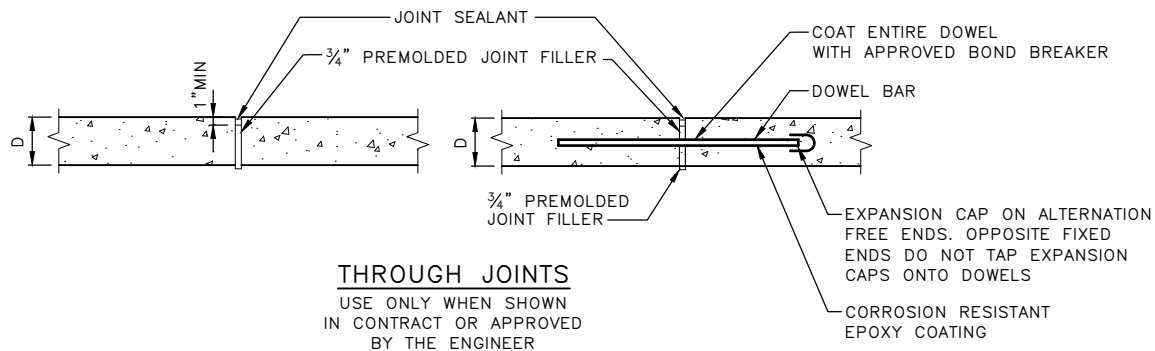
REF STD SPEC SEC 5-05



City of Seattle

NOT TO SCALE

ROADWAY CONCRETE PAVEMENT  
JOINTS



**NOTE:**  
USE OF OPTIONAL KEYWAY MAY BE REVOKED BY THE ENGINEER AT ANYTIME DUE TO QUALITY CONTROL ISSUES WITH MAINTAINING PLACEMENT REQUIREMENTS WITHIN ±3/8" INCH VERTICALLY.

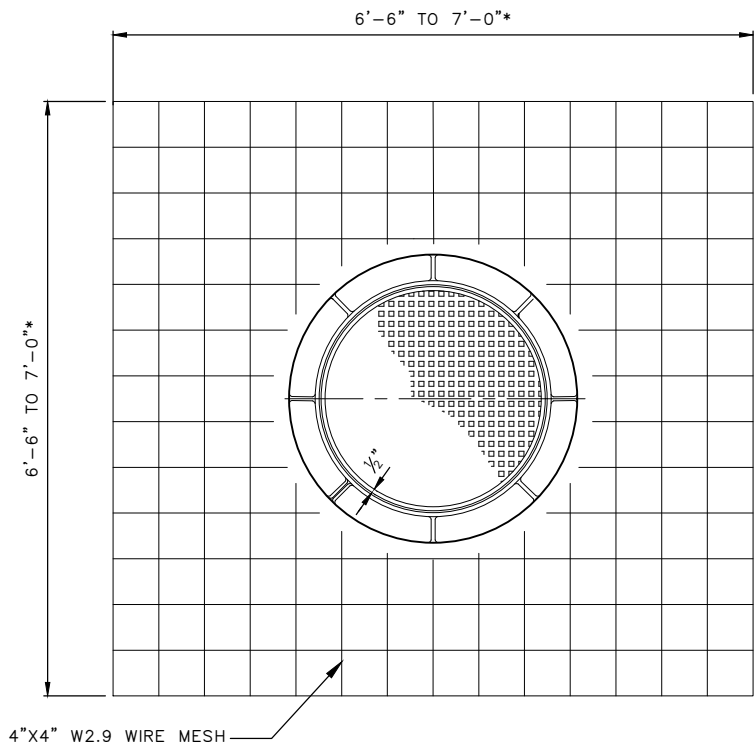
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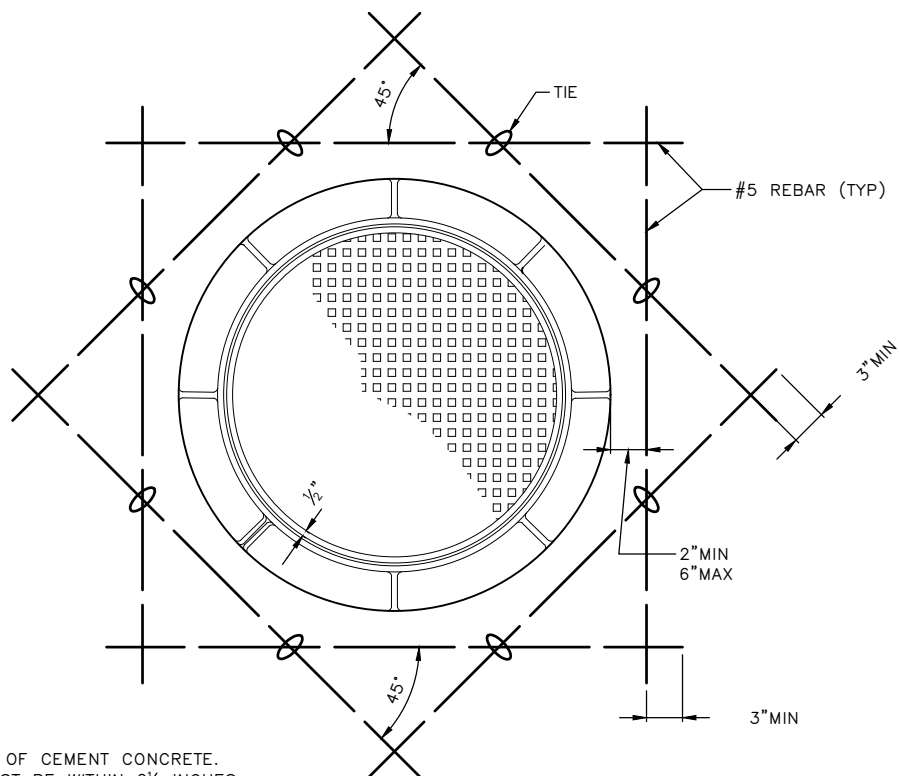
City of Seattle

NOT TO SCALE

**THROUGH JOINTS AND  
OPTIONAL KEYWAYS FOR  
CEMENT CONCRETE ROADWAY**



- NOTES:**
- 1. PLACE WIRE MESH AT  $\frac{1}{2}$  DEPTH OF CEMENT CONCRETE.
  - 2. \*THE DIMENSIONS OF THE MESH MUST BE ADJUSTED WHERE PAVEMENT JOINTS ARE ENCOUNTERED.
  - 3. NO REINFORCING STEEL MUST BE WITHIN  $2\frac{1}{2}$  INCHES (3 INCHES DESIRED) OF ANY CEMENT CONCRETE SURFACE OR JOINT.



- NOTES:**
- 1. PLACE REBAR AT  $\frac{1}{2}$  DEPTH OF CEMENT CONCRETE.
  - 2. NO REINFORCING STEEL MUST BE WITHIN  $2\frac{1}{2}$  INCHES (3 INCHES DESIRED) OF ANY CEMENT CONCRETE SURFACE OR JOINT.

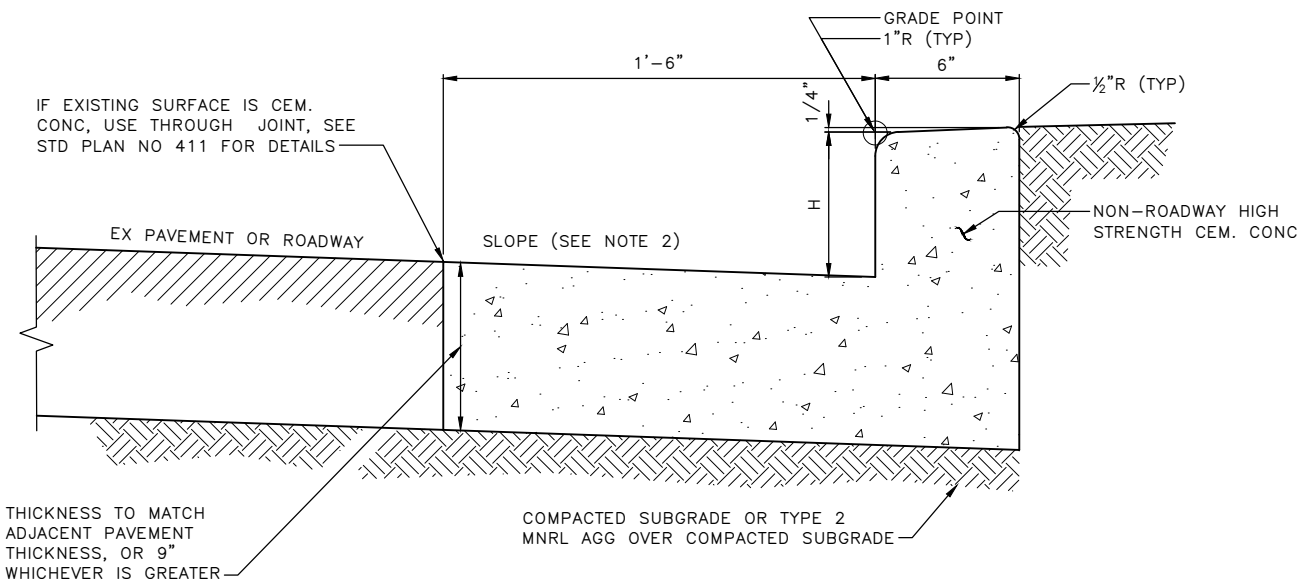
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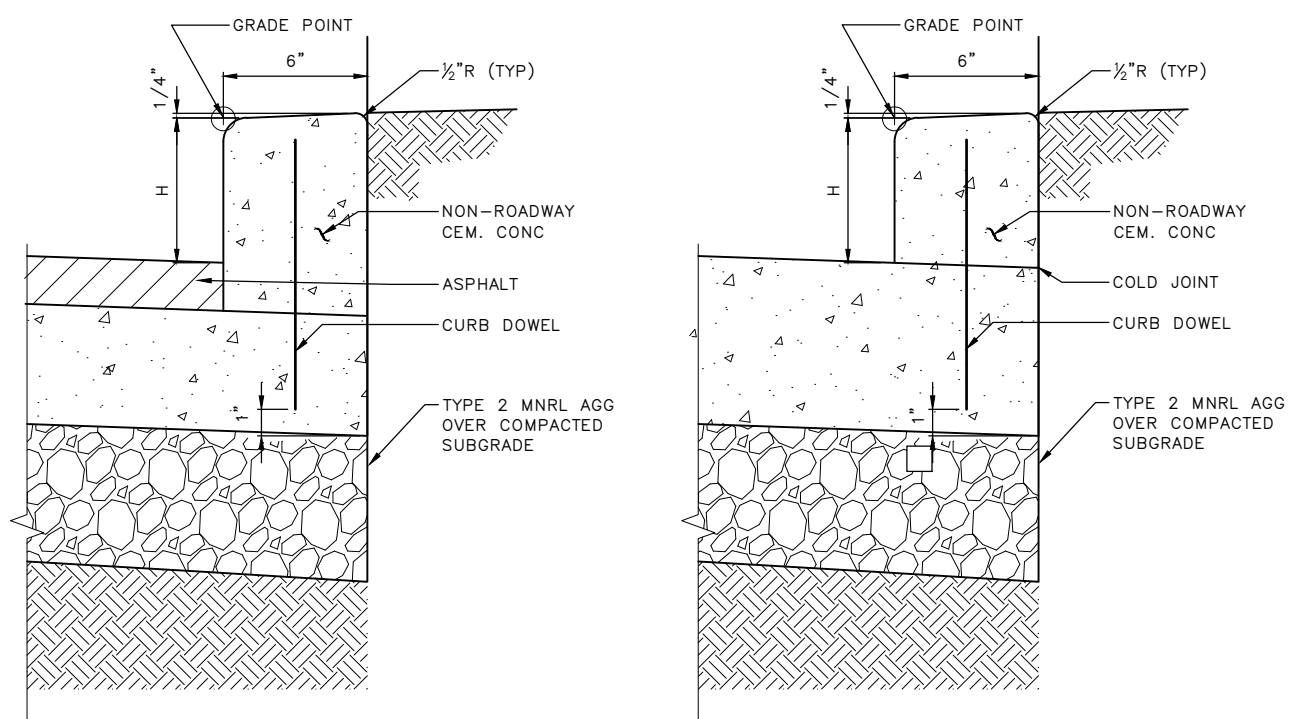
City of Seattle

NOT TO SCALE

FRAME & COVER CEMENT  
CONCRETE REINFORCEMENT  
DETAIL



**410B CURB & GUTTER**



**410C CURB**

- NOTES:**
1. "H" MUST BE 6" FROM FINISHED ROADWAY GRADE UNLESS OTHERWISE SHOWN ON DRAWINGS
  2. GUTTER MUST BE SLOPED THE SAME AS ADJACENT PAVEMENT OR 2% MIN, WHICHEVER IS GREATER.
  3. SEE STD PLAN NO 411 FOR CURB DOWELS

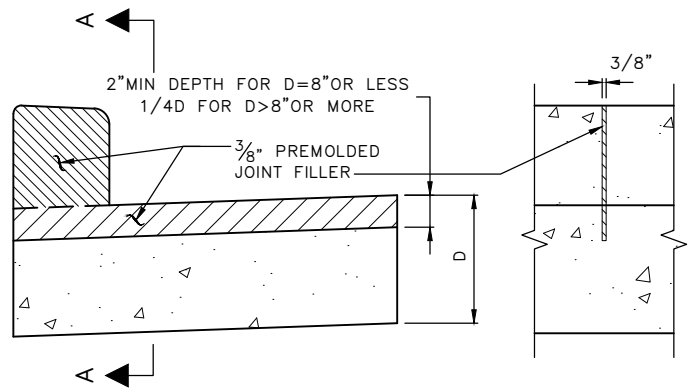
REF STD SPEC SEC 8-04



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NOT TO SCALE

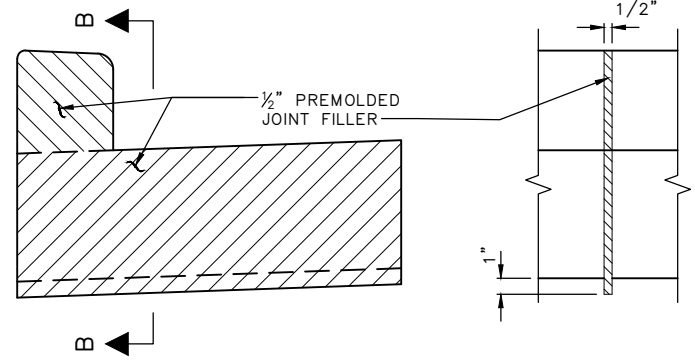
TYPE 410 CURB



NOTE:  
JOINT AND JOINT FILLER FOR  
CURB OR FOR CURB & GUTTER,  
MATCHING PAVEMENT JOINT

CONTRACTION JOINT FOR  
CURB OR CURB & GUTTER

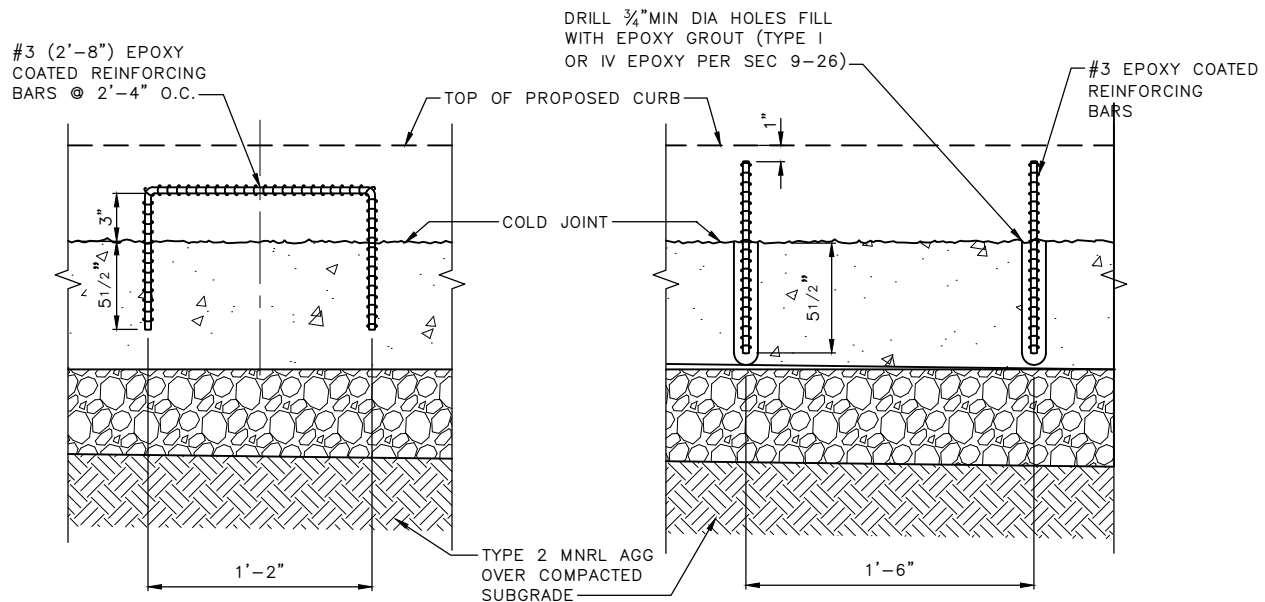
SECTION A-A



NOTE:  
JOINT AND JOINT FILLER FOR  
CURB OR FOR CURB & GUTTER,  
MATCHING PAVEMENT JOINT

THROUGH JOINT FOR  
CURB OR CURB & GUTTER

SECTION B-B



CURB DOWEL ON  
NEW PAVEMENT

CURB DOWEL PINS ON  
EXISTING PAVEMENT

DOWELS FOR DOWELLED CURB CONSTRUCTION

REF STD SPEC SEC 8-04

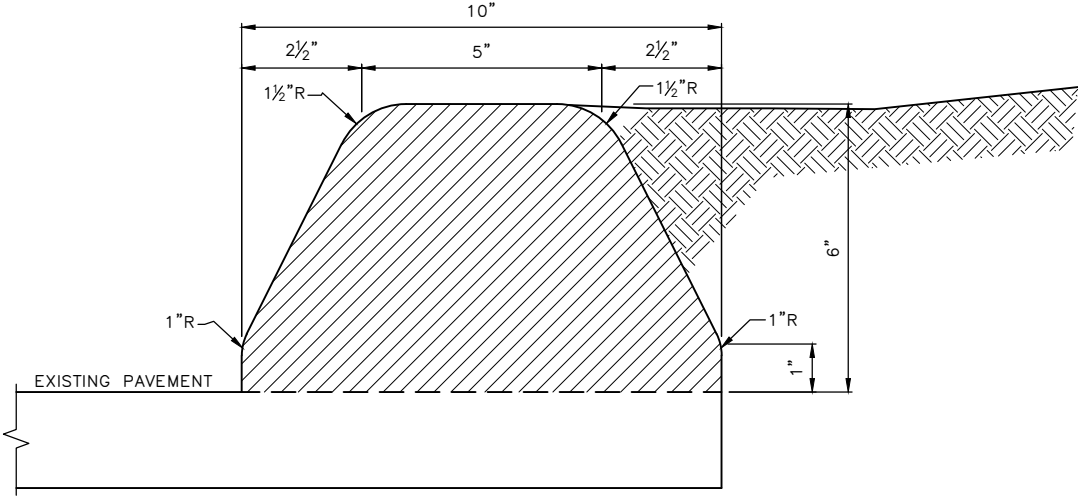


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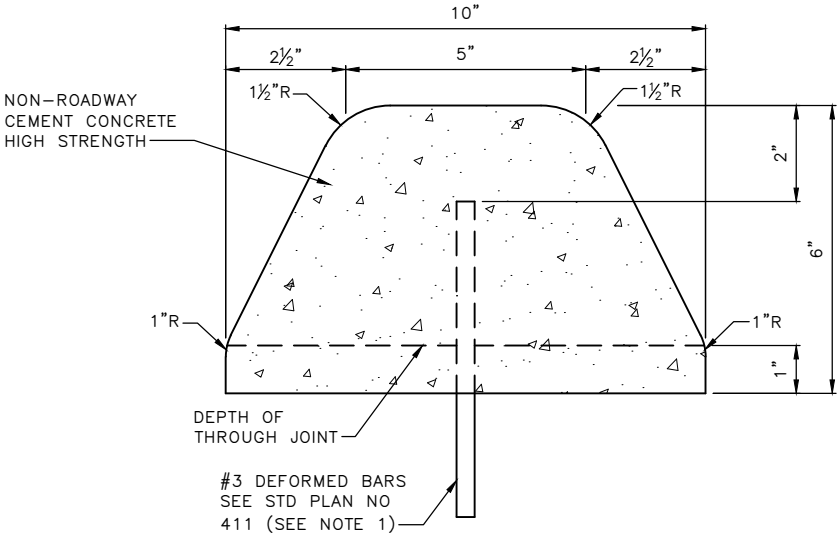
NOT TO SCALE

CURB JOINTS & DOWELS





EXTRUDED ASPHALT CONCRETE CURB



EXTRUDED CEMENT CONCRETE CURB

NOTE:

1. ALTERNATELY, THE USE OF EPOXY BONDING AGENT, IN PLACE OF #3 DEFORMED BARS, WILL BE ALLOWED.
2. EXTRUDED CURB MUST NOT BE USED IN SDOT MANAGED PUBLIC RIGHT OF WAY.

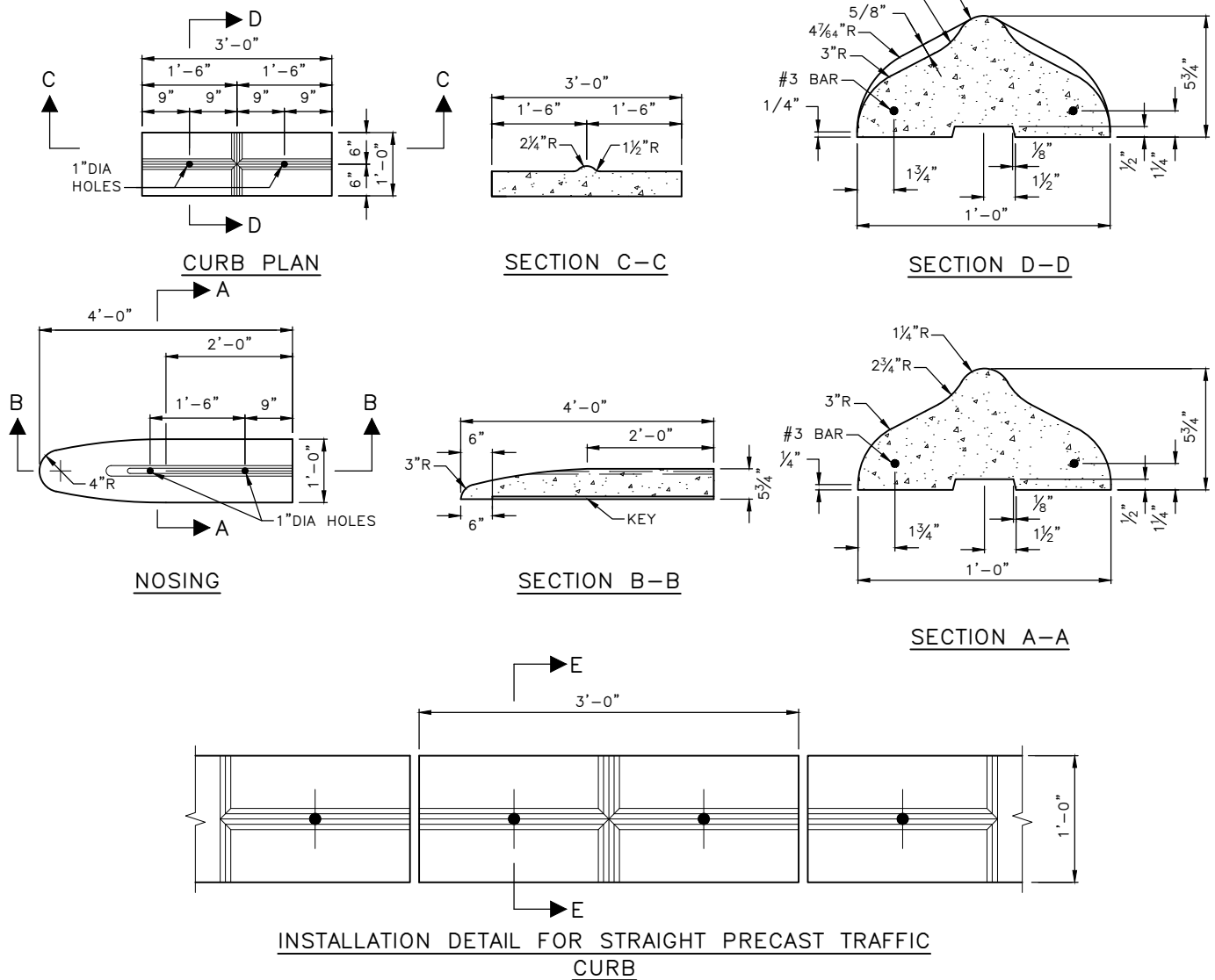
REF STD SPEC SEC 8-06

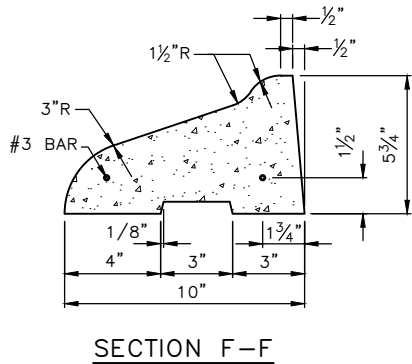
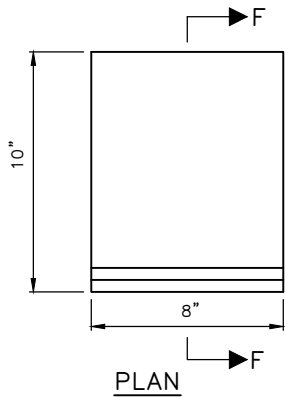


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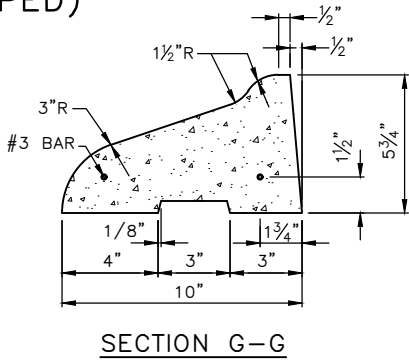
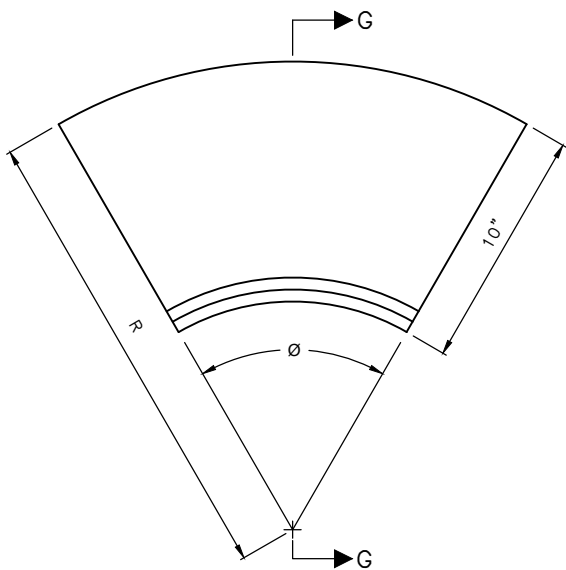
NOT TO SCALE

EXTRUDED CURB





**8" STRAIGHT BLOCK CURB**  
(SINGLE SLOPED)



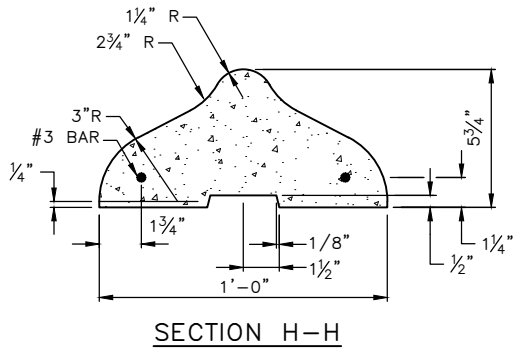
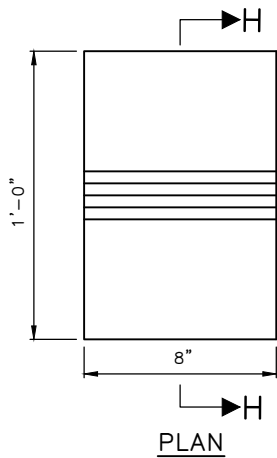
**RADIAL CURB**

**RADIAL CURB**

UNIT	RADIUS	CURB RETURN ANGLE(Ø)MULTIPLE
R1	1'-3"	45°00'
R2	1'-10"	30°00'
R3	2'-6"	22°30'
R4	5'-0"	11°27.54'
R5	10'-0"	5°43.77'

FOR RADII GREATER THAN 10'-0" USE  
SEGMENTS OF STRAIGHT BLOCK CURB

**RADIUS CURB TABLE**



**8" STRAIGHT BLOCK CURB**  
(DUAL SLOPED)

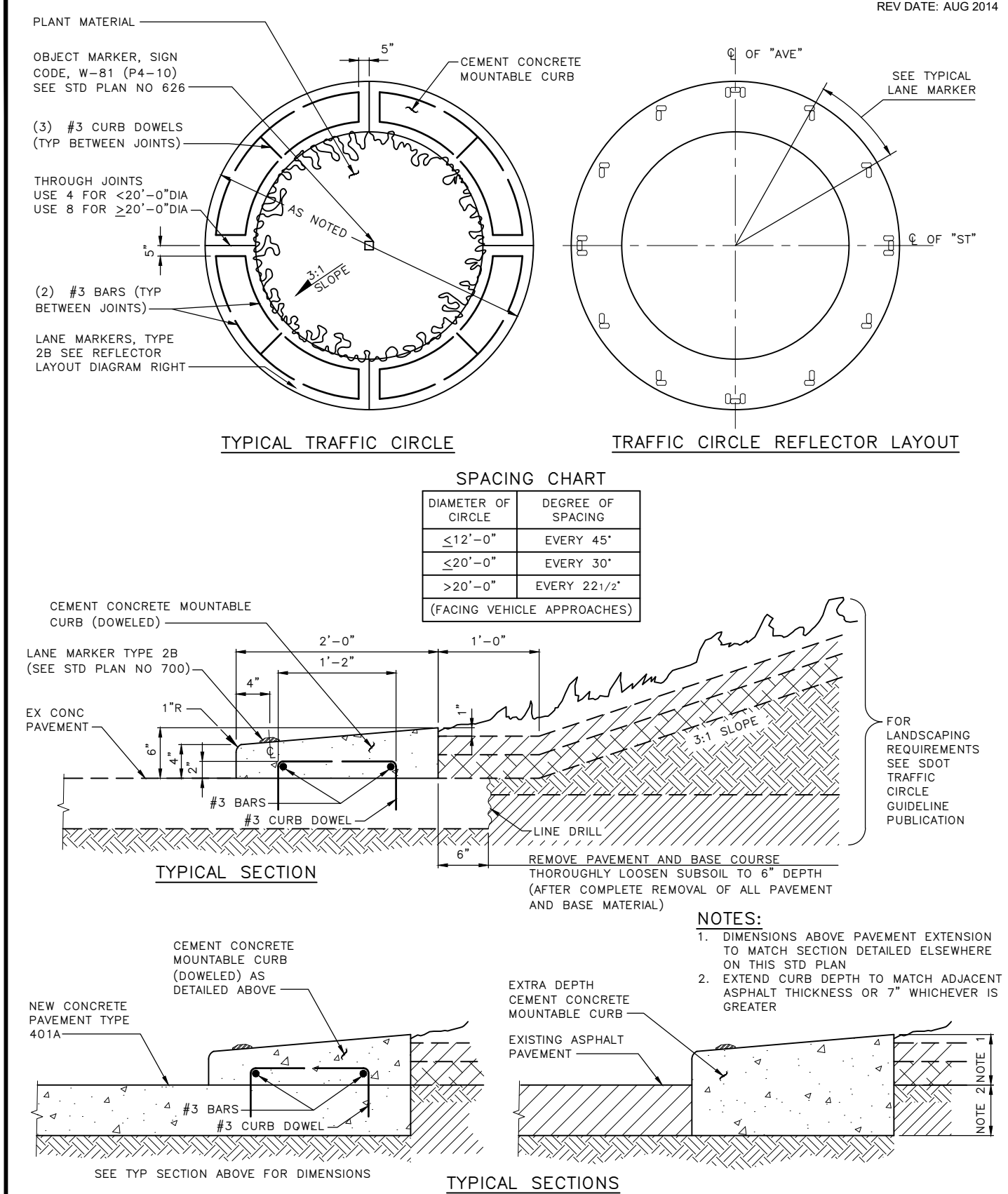
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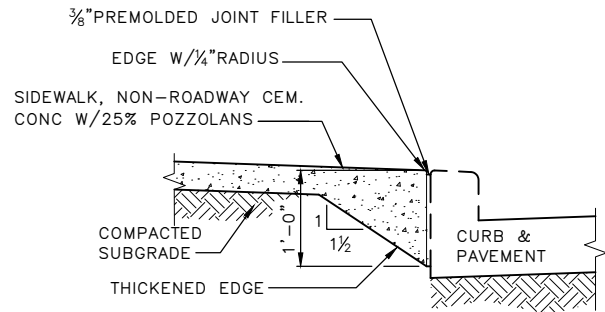
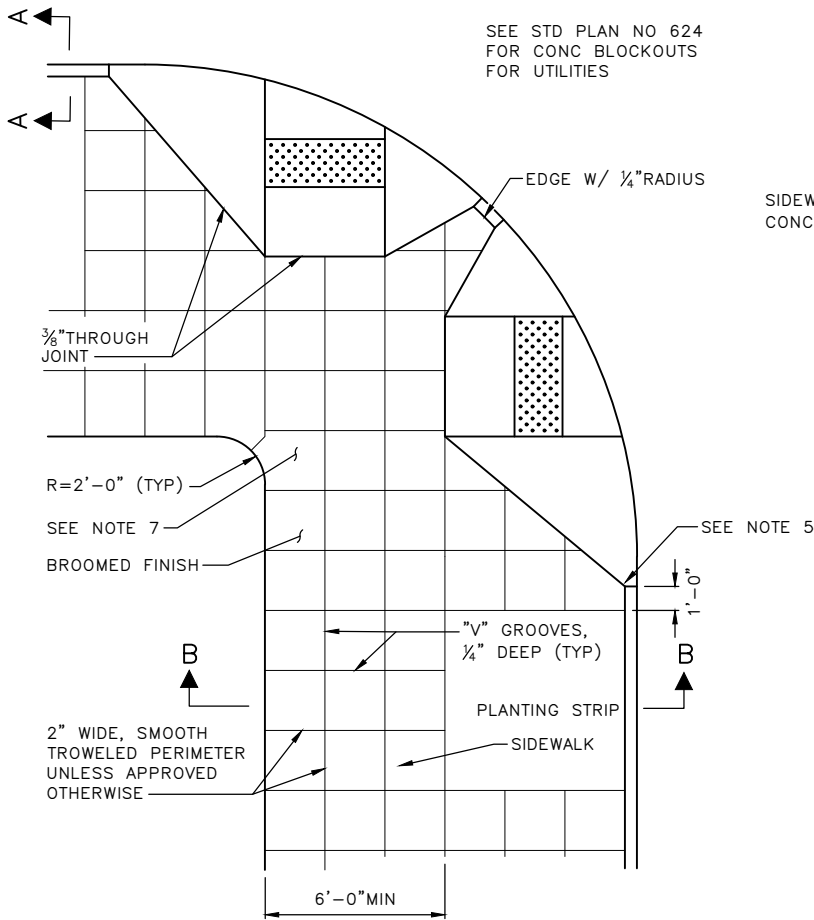


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NOT TO SCALE

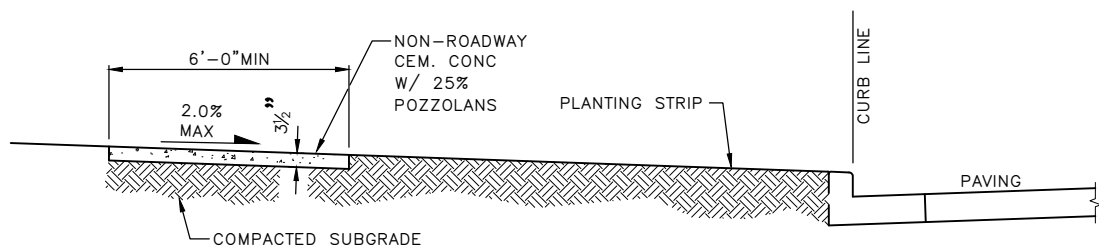
**8" BLOCK AND RADIAL  
TRAFFIC CURB**





THROUGH JOINT @ SECTION A-A  
UNLESS CURB IS MONOLITHIC WITH SIDEWALK

TYPICAL SIDEWALK & CURB RAMP DETAIL



SECTION B-B

NOTES:

1. 3/8" THROUGH AND CONTRACTION JOINTS MUST BE LOCATED AS REQUIRED BY SECTION 8-14.3(6).
2. SAWCUT SCORING MUST MATCH PATTERN IN ADJACENT EXISTING SIDEWALK OR MUST BE A 2' SQUARE SCORING PATTERN UNLESS OTHERWISE OTHERWISE APPROVED BY THE ENGINEER.
3. FOR CURB RAMPS, SEE STANDARD PLAN NO 422.
4. FOR TREE PITS, SEE STANDARD PLAN NO 424.
5. 12" MINIMUM BETWEEN EDGE OF RAMP WING AND PLANTING STRIP IS DESIRABLE.
6. ALL SIDEWALK MUST BE NON-ROADWAY CEM CONC W/ 25% POZZOLANS.
7. 6'-0" MINIMUM CONTINUOUS SIDEWALK MUST BE MAINTAINED AROUND CORNERS.

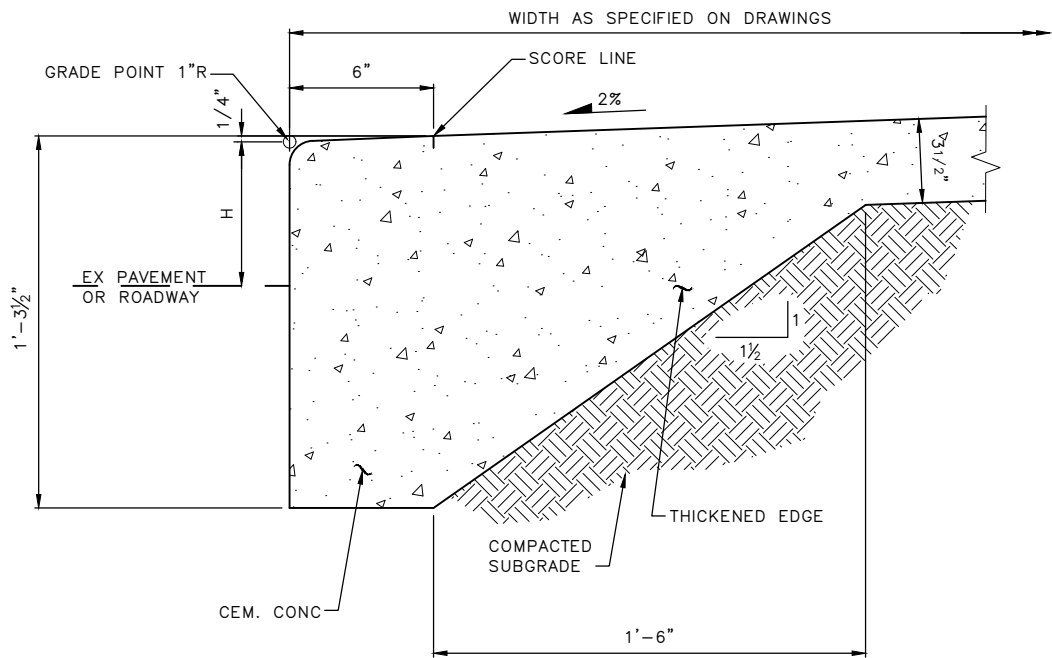
REF STD SPEC SEC 8-14



City of Seattle

NOT TO SCALE

CONCRETE SIDEWALK DETAILS



NOTE:  
"H" MUST BE 6" FROM FINISHED ROADWAY  
GRADE UNLESS OTHERWISE SPECIFIED

REF STD SPEC SEC 8-14



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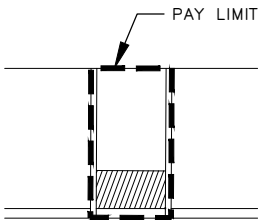
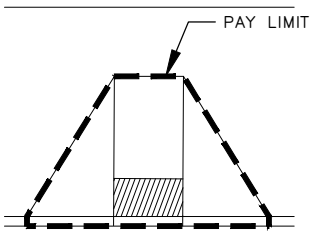
NOT TO SCALE

SIDEWALK WITH  
MONOLITHIC CURB

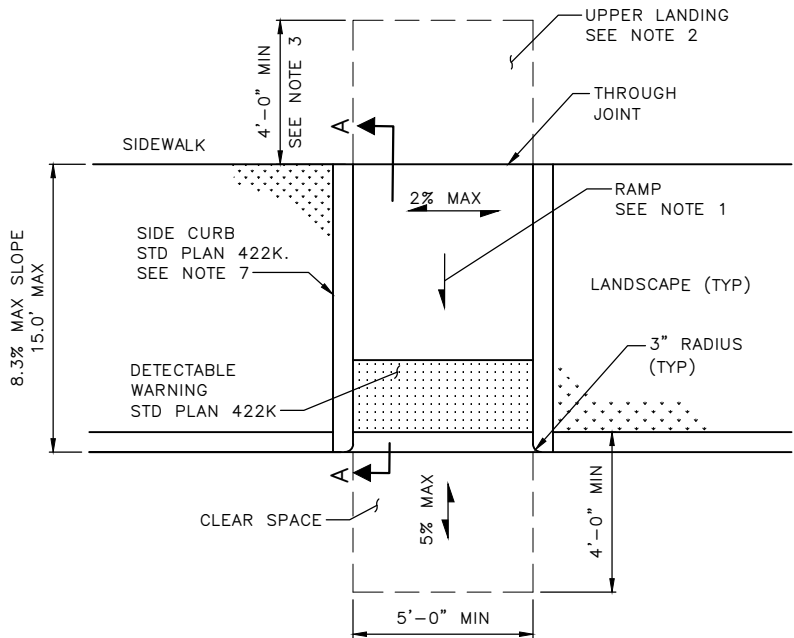
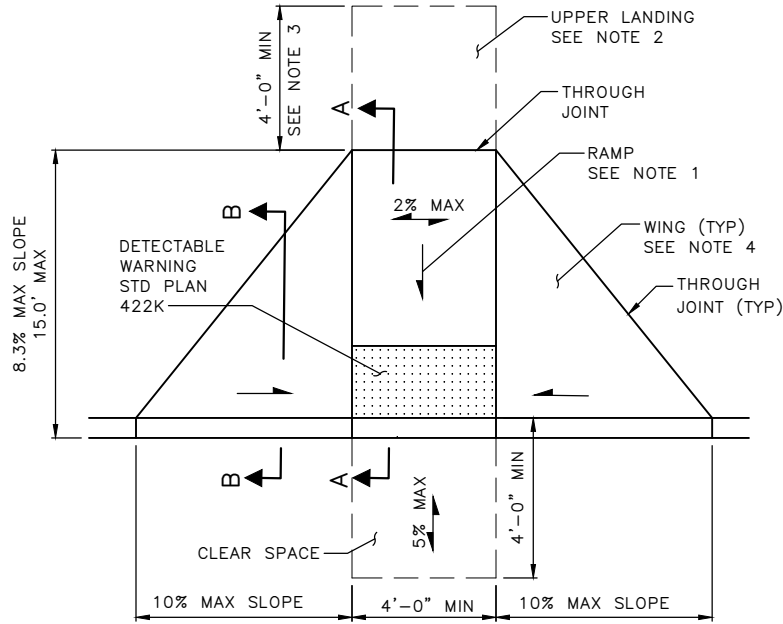
NOTES:

1. RAMP CENTERLINE MUST BE RADIAL/PERPENDICULAR TO THE ALIGNMENT OF THE FACE OF CURB.
2. THE SLOPE ON THE LANDING MUST BE A MINIMUM OF 0.5% IN ANY ONE DIRECTION AND MUST NOT EXCEED 2% IN THE APPLICABLE DIRECTION OF TRAVEL. UPPER LANDING AT THE TOP OF THE CURB RAMP MUST MATCH THE FULL WIDTH OF THE RAMP AND MUST HAVE A MINIMUM DEPTH OF 4'-0".
3. IF THE LANDING IS LIMITED AT THE BACK-OF-SIDEWALK BY A PERMANENT VERTICAL BARRIER, THE DEPTH OF THE TURNING SPACE MUST BE 5'-0" MINIMUM.
4. WINGS MUST HAVE A MAXIMUM SLOPE OF 10%. WINGS MUST HAVE A BRUSHED FINISH PARALLEL TO THE CURB. THE CONCRETE WALK THICKENED EDGE ALONG THE CURB MUST CONTINUE THROUGH EACH WING. WINGS MUST BE MONOLITHIC WITH THE CURB RAMP RUN.
5. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED SURFACE PARALLEL TO THE CURB.
6. REFER TO DETAILS 422K AND 422L FOR GENERAL NOTES AND TYPICAL SECTIONS.
7. RAMP WIDTH MUST BE 5'-0" MINIMUM WHEN SIDE CURB IS USED ON BOTH SIDES INSTEAD OF WINGS.

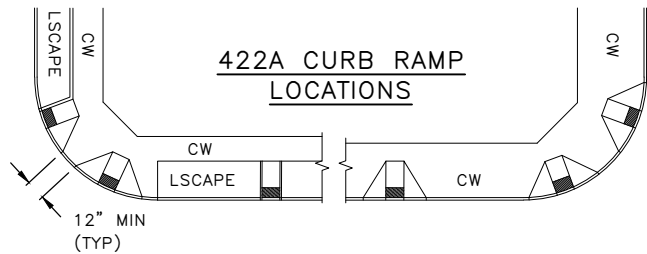
2% MAX  
= MAX SLOPE IN EITHER DIRECTION



PAY LIMITS



PERPENDICULAR CURB RAMPS  
(TYPE 422A)



REF STD SPEC SEC 8-14



City of Seattle

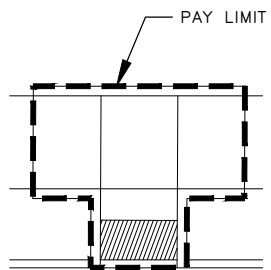
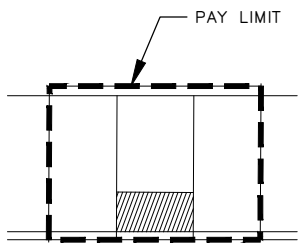
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CURB RAMP DETAILS

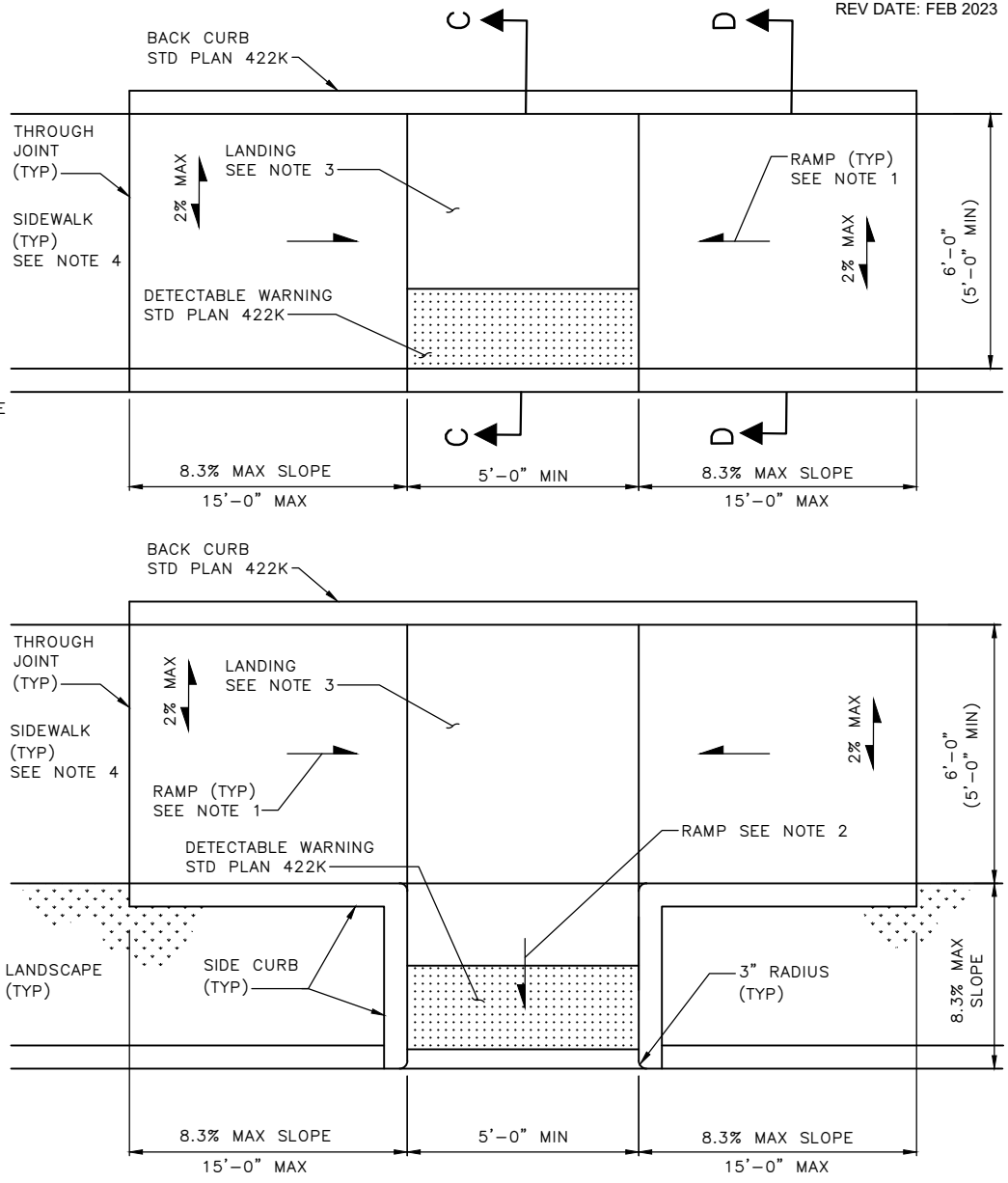
NOTES:

- 1. RAMP CENTERLINE(S) MUST BE PARALLEL TO THE ALIGNMENT OF THE FACE OF CURB. THE WIDTH OF THE RAMP MUST BE 6'-0" (5'-0" MINIMUM).
- 2. RAMP CENTERLINE MUST BE RADIAL/PERPENDICULAR TO THE ALIGNMENT OF THE FACE OF CURB.
- 3. THE SLOPE ON THE LOWER LANDING MUST BE A MINIMUM OF 0.5% IN ANY ONE DIRECTION AND MUST NOT EXCEED 2% IN THE APPLICABLE DIRECTION OF TRAVEL.
- 4. UPPER LANDING AT THE TOP OF THE CURB RAMP MUST MATCH THE FULL WIDTH OF THE RAMP AND MUST HAVE A MINIMUM DEPTH OF 4'-0".
- 5. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED SURFACE RADIAL/PERPENDICULAR TO THE CURB.
- 6. REFER TO DETAILS 422K AND 422L FOR GENERAL NOTES AND TYPICAL SECTIONS.

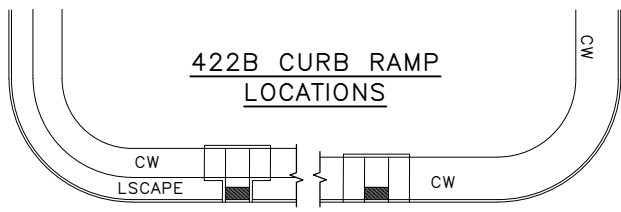
2% MAX  
= MAX SLOPE IN EITHER DIRECTION



PAY LIMITS



PARALLEL CURB RAMPS  
(TYPE 422B)



REF STD SPEC SEC 8-14



City of Seattle

NOT TO SCALE

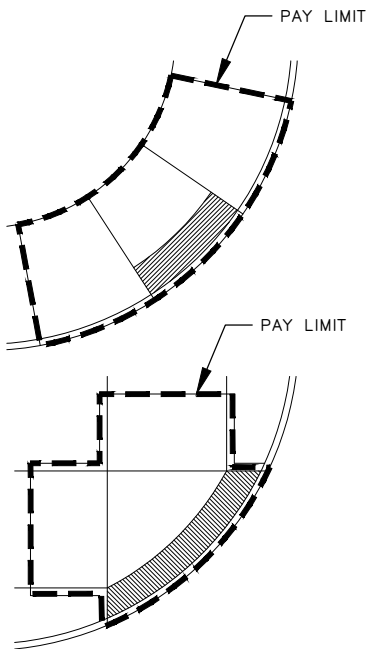
CURB RAMP DETAILS



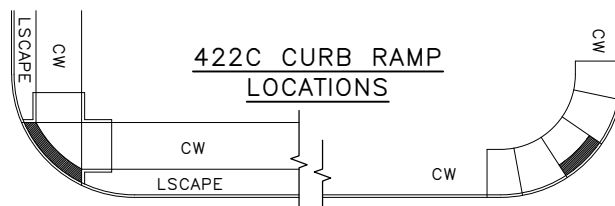
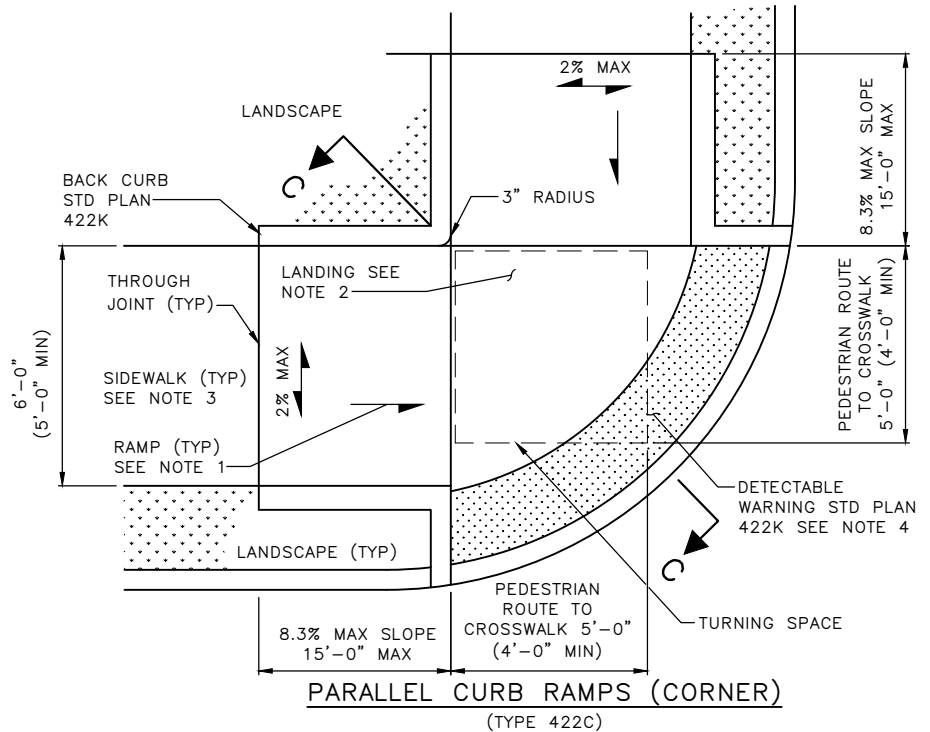
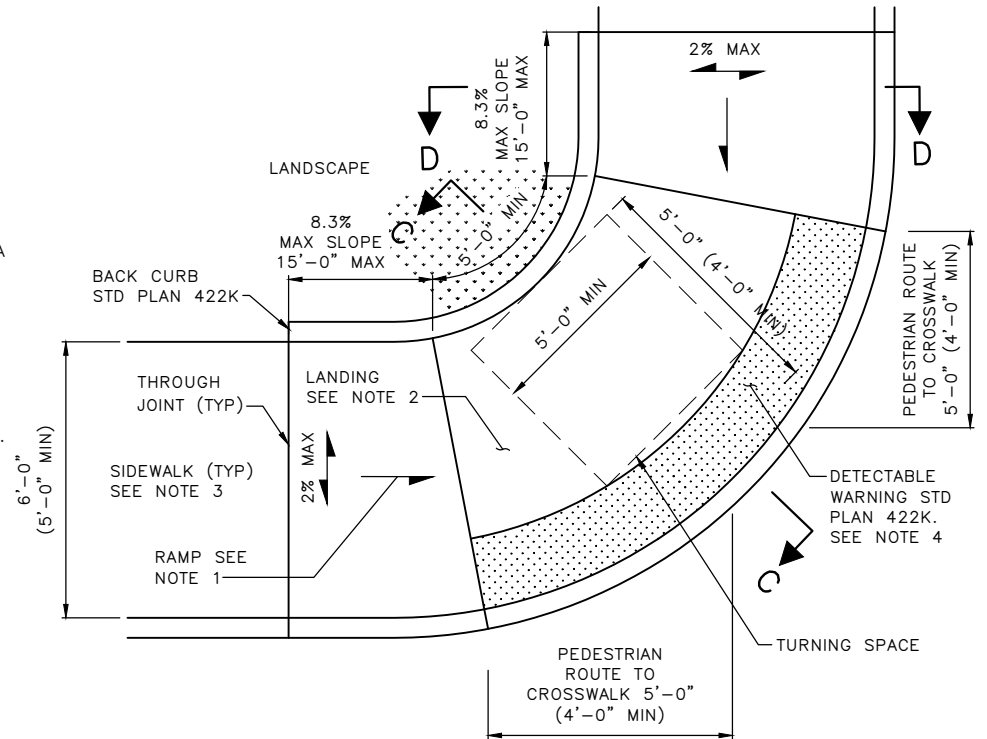
**NOTES:**

1. RAMP CENTERLINE MUST BE PARALLEL TO THE ALIGNMENT OF THE FACE OF CURB. THE WIDTH OF THE RAMP MUST BE 6'-0" (5'-0" MINIMUM).
2. THE SLOPE ON THE LOWER LANDING MUST BE A MINIMUM OF 0.5% IN ANY ONE DIRECTION AND MUST NOT EXCEED 2% IN THE APPLICABLE DIRECTION OF TRAVEL.
3. UPPER LANDING AT THE TOP OF THE CURB RAMP MUST MATCH THE FULL WIDTH OF THE RAMP AND MUST HAVE A MINIMUM DEPTH OF 4'-0".
4. RADIAL TILE MUST BE USED, CUTTING OR ALTERING DETECTABLE WARNING SURFACES MUST BE FIRST APPROVED BY THE ENGINEER.
5. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED SURFACE, RADIAL/PERPENDICULAR TO THE CURB.
6. REFER TO DETAILS 422K AND 422I FOR GENERAL NOTES AND TYPICAL SECTIONS.

2% MAX  
= MAX SLOPE IN  
EITHER DIRECTION



PAY LIMITS



REF STD SPEC SEC 8-14



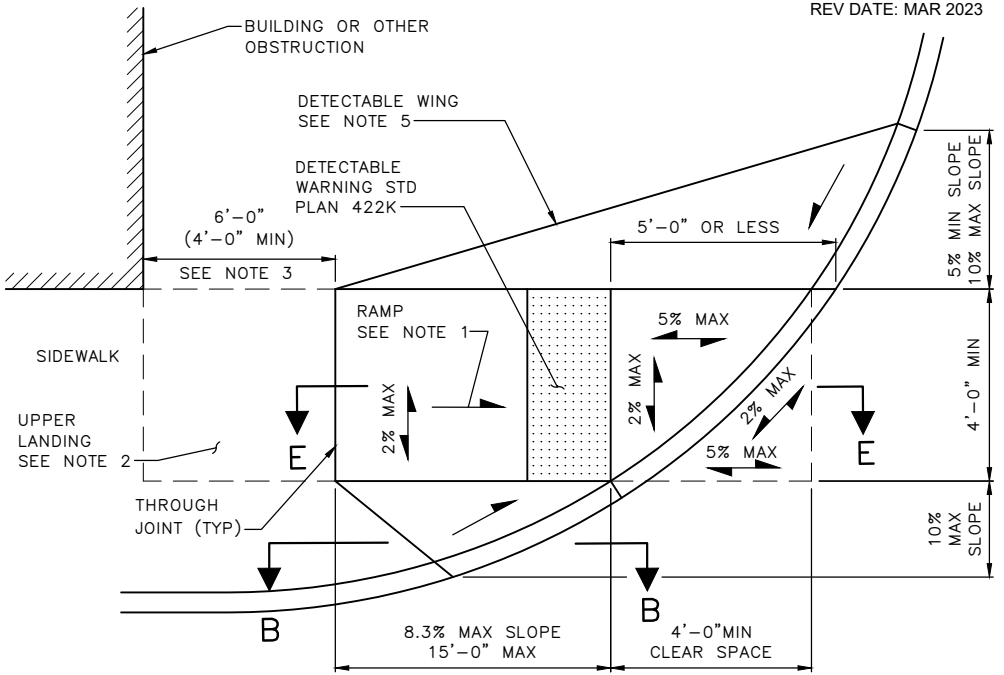
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NOT TO SCALE

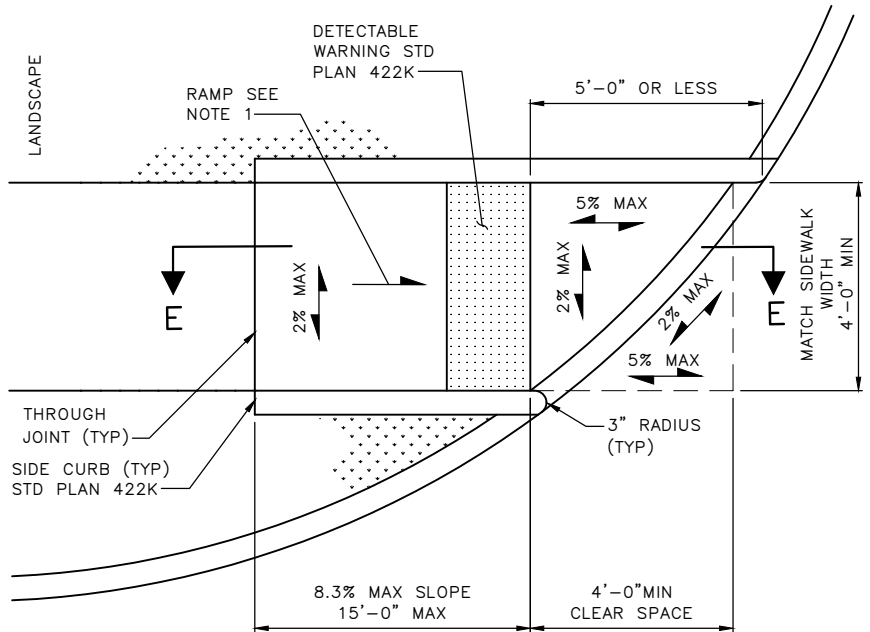
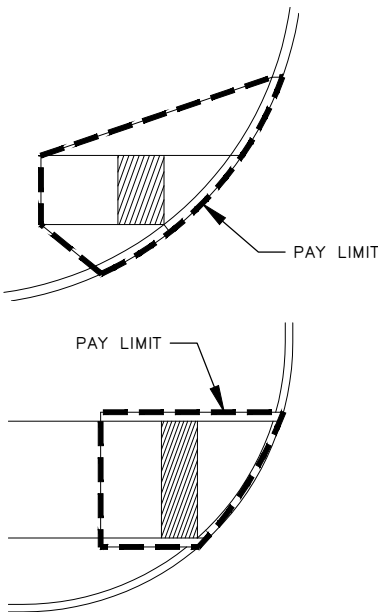
CURB RAMP DETAILS

NOTES:

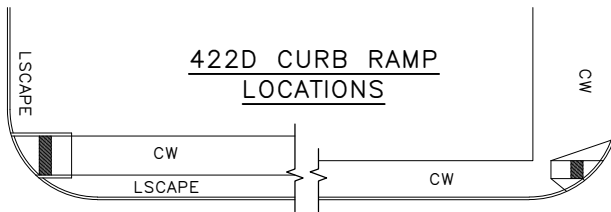
1. RAMP CENTERLINE MUST BE PARALLEL TO CROSSWALK AND/OR THE SIDEWALK.
2. THE SLOPE ON THE LANDING MUST BE A MINIMUM OF 0.5% IN ANY ONE DIRECTION AND MUST NOT EXCEED 2% IN THE APPLICABLE DIRECTION OF TRAVEL. UPPER LANDING AT THE TOP OF THE CURB RAMP MUST MATCH THE FULL WIDTH OF THE RAMP AND MUST HAVE A MINIMUM DEPTH OF 4'-0".
3. IF THE LANDING IS LIMITED AT THE BACK-OF-SIDEWALK BY A PERMANENT VERTICAL BARRIER, THE DEPTH OF THE TURNING SPACE MUST BE 5'-0" MINIMUM, MEASURED PARALLEL TO THE RUN OF THE CURB RAMP.
4. WINGS MUST HAVE A MAXIMUM SLOPE OF 10%. WINGS MUST HAVE A BRUSHED FINISH PARALLEL TO THE CURB. THE CONCRETE WALK THICKENED EDGE ALONG THE CURB MUST CONTINUE THROUGH EACH WING. WINGS MUST BE MONOLITHIC WITH THE CURB RAMP RUN.
5. WING ON THE OPEN SIDE OF THE CURB RAMP MUST HAVE A MINIMUM SLOPE OF 5% TO ASSIST PEDESTRIANS WITH VISUAL IMPAIRMENTS WHERE THE DETECTABLE WARNING SURFACE IS OFFSET FROM THE CURB LINE.
6. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED FINISH PERPENDICULAR TO THE PATH OF TRAVEL.
7. REFER TO DETAILS 422K AND 422I FOR GENERAL NOTES AND TYPICAL SECTIONS.



2% MAX  
= MAX SLOPE IN  
EITHER DIRECTION



DIRECTIONAL CURB RAMPS  
(TYPE 422D)



REF STD SPEC SEC 8-14



City of Seattle

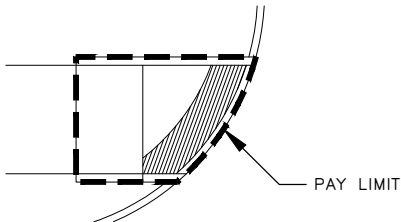
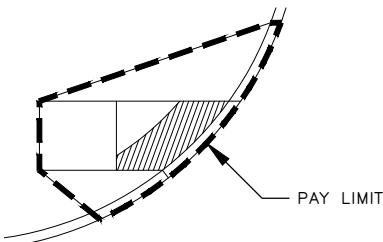
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CURB RAMP DETAILS

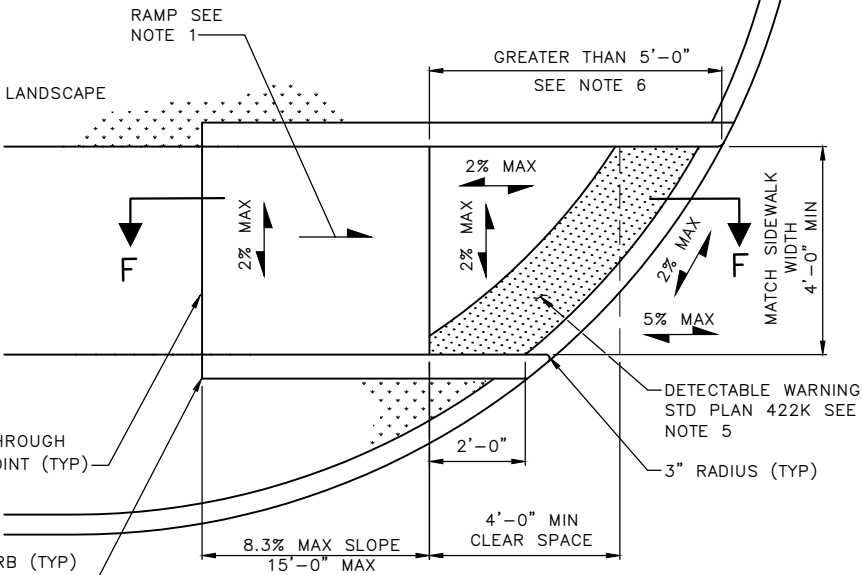
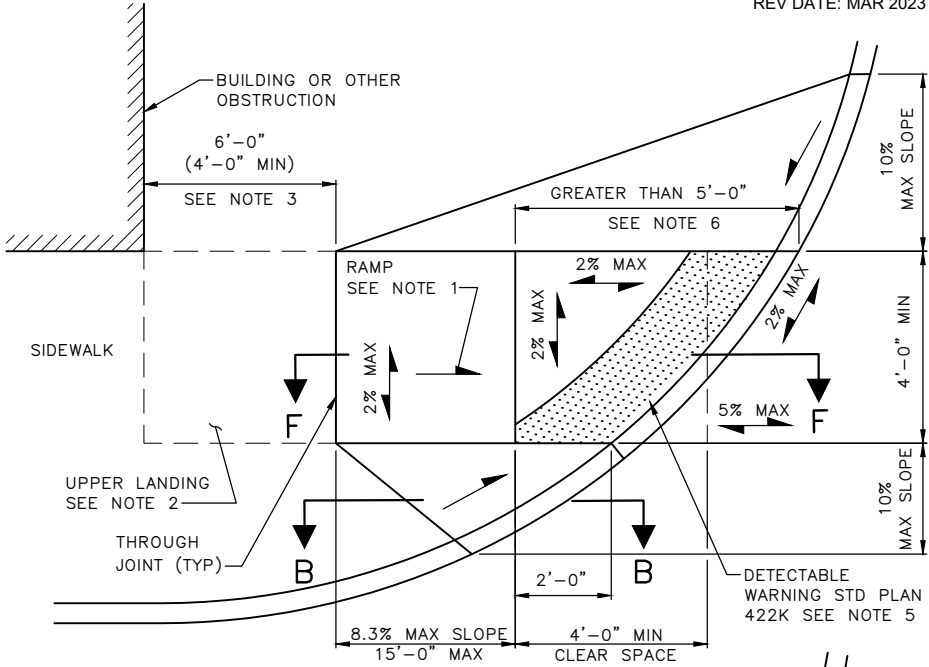
NOTES:

- 1. RAMP CENTERLINE MUST BE PARALLEL TO CROSSWALK AND/OR THE SIDEWALK.
- 2. THE SLOPE ON THE LANDING MUST BE A MINIMUM OF 0.5% IN ANY ONE DIRECTION AND MUST NOT EXCEED 2% IN THE APPLICABLE DIRECTION OF TRAVEL. UPPER LANDING AT THE TOP OF THE CURB RAMP MUST MATCH THE FULL WIDTH OF THE RAMP AND MUST HAVE A MINIMUM DEPTH OF 4'-0".
- 3. IF THE LANDING IS LIMITED AT THE BACK-OF-SIDEWALK BY A PERMANENT VERTICAL BARRIER, THE DEPTH OF THE TURNING SPACE MUST BE 5'-0" MINIMUM, MEASURED PARALLEL TO THE RUN OF THE CURB RAMP.
- 4. WINGS MUST HAVE A MAXIMUM SLOPE OF 10%. WINGS MUST HAVE A BRUSHED FINISH PARALLEL TO THE CURB. THE CONCRETE WALK THICKENED EDGE ALONG THE CURB MUST CONTINUE THROUGH EACH WING. WINGS MUST BE MONOLITHIC WITH THE CURB RAMP RUN.
- 5. WHERE THE SETBACK FROM THE BOTTOM OF THE CURB RAMP TO THE BACK OF CURB LINE EXCEEDS 5'-0", THE DETECTABLE WARNING SURFACE MUST BE INSTALLED AT THE BACK OF CURB (NOT AT THE BOTTOM OF RAMP). RADIAL TILE MUST BE USED. CUTTING OR ALTERING DETECTABLE WARNING SURFACE MUST BE FIRST APPROVED BY THE ENGINEER.
- 6. DIRECTIONAL CURB RAMPS WITH LARGE SETBACK FROM BACK OF CURB TO BOTTOM OF THE CURB RAMP ARE NOT PREFERRED DESIGNS BUT MAY BE USED IF NECESSARY DUE TO EXISTING SITE CONSTRAINTS.
- 7. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED FINISH PERPENDICULAR TO THE PATH OF TRAVEL.
- 8. REFER TO DETAILS 422K AND 422L FOR GENERAL NOTES AND TYPICAL SECTIONS.

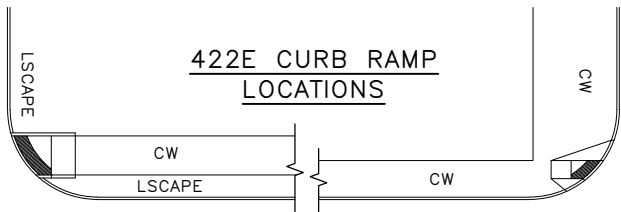
2% MAX  
= MAX SLOPE IN  
EITHER DIRECTION



PAY LIMITS



DIRECTIONAL CURB RAMPS  
(TYPE 422E)



REF STD SPEC SEC 8-14



City of Seattle

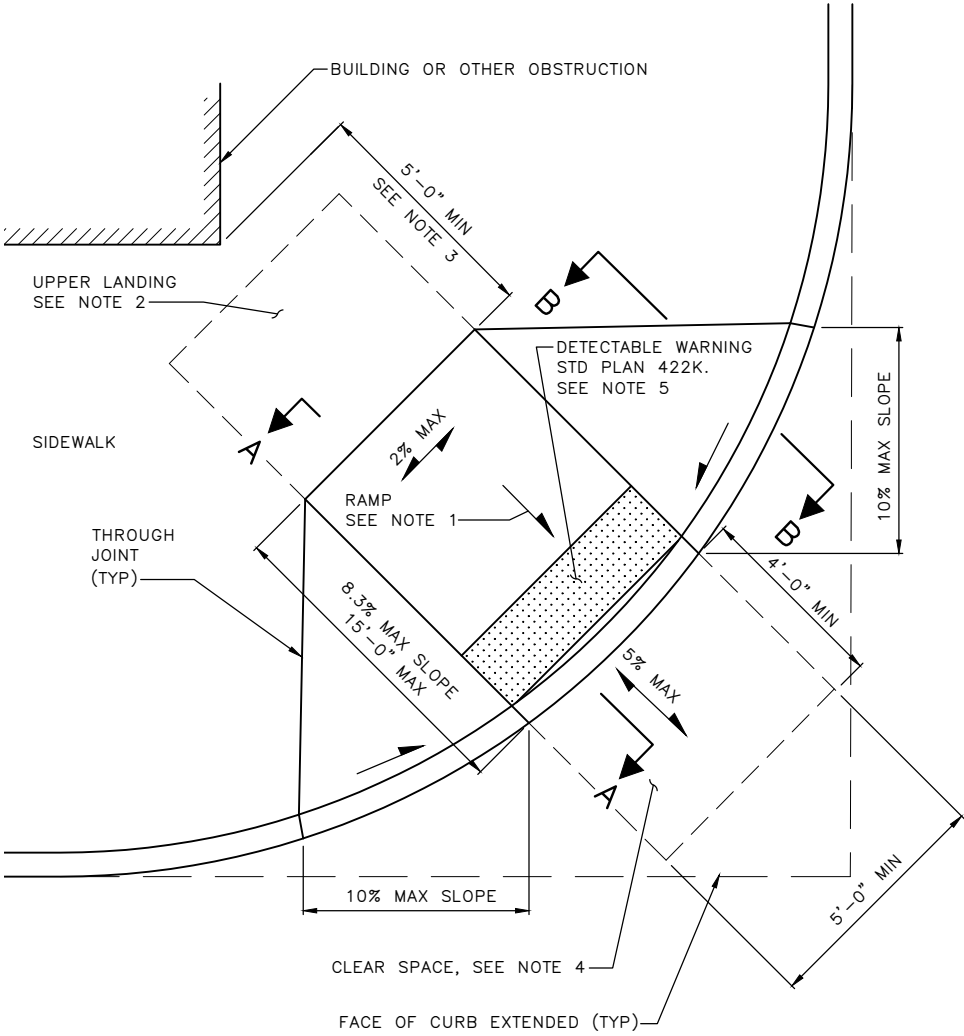
NOT TO SCALE

CURB RAMP DETAILS

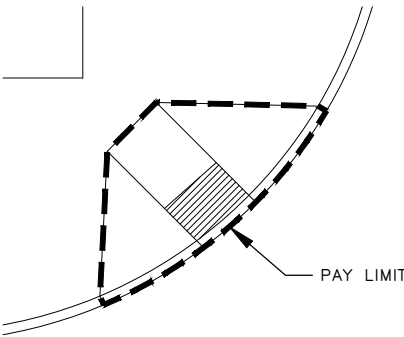
NOTES:

- 1. RAMP CENTERLINE MUST BE RADIAL/PERPENDICULAR TO THE ALIGNMENT OF THE FACE OF CURB.
- 2. THE SLOPE ON THE LANDING MUST BE A MINIMUM OF 0.5% IN ANY ONE DIRECTION AND MUST NOT EXCEED 2% IN THE APPLICABLE DIRECTION OF TRAVEL. UPPER LANDING AT THE TOP OF THE CURB RAMP MUST MATCH THE FULL WIDTH OF THE RAMP AND MUST HAVE A MINIMUM DEPTH OF 4'-0".
- 3. IF THE LANDING IS LIMITED AT THE BACK-OF-SIDEWALK BY A PERMANENT VERTICAL BARRIER, THE DEPTH OF THE TURNING SPACE MUST BE 5'-0" MINIMUM, MEASURED PARALLEL TO THE RUN OF THE CURB RAMP.
- 4. CLEAR SPACE AT THE BOTTOM OF THE RAMP MUST BE 5'-0" MINIMUM IN WIDTH AND MUST EXTEND A MINIMUM OF 4'-0" BEYOND THE RAMP LOWER GRADE BREAK. THE CLEAR SPACE MUST FALL WHOLLY WITHIN THE LEGAL CROSSWALK, MARKED OR UNMARKED. THE CLEAR SPACE MUST FIT BEHIND LINES EXTENDING FROM THE FACE OF CURB RUNNING PARALLEL TO EACH ROADWAY. THERE IS NO ALLOWABLE EXEMPTION FOR MINIMUM CLEAR SPACE REQUIREMENTS AT SHARED DIAGONAL PERPENDICULAR CURB RAMP.
- 5. DETECTABLE WARNING SURFACE MUST BE 8" MAXIMUM FROM FACE OF CURB.
- 6. WINGS MUST HAVE A MAXIMUM SLOPE OF 10%. WINGS MUST HAVE A BRUSHED FINISH PARALLEL TO THE CURB. THE CONCRETE WALK THICKENED EDGE ALONG THE CURB MUST CONTINUE THROUGH EACH WING. WINGS MUST BE MONOLITHIC WITH THE CURB RAMP RUN.
- 7. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED SURFACE PARALLEL TO THE CURB.
- 8. REFER TO DETAILS 422K AND 422L FOR GENERAL NOTES AND TYPICAL SECTIONS.

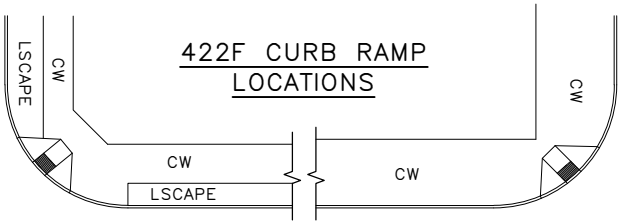
2% MAX  
= MAX SLOPE IN EITHER DIRECTION



SHARED DIAGONAL PERPENDICULAR CURB RAMP  
(TYPE 422F)



PAY LIMITS



REF STD SPEC SEC 8-14



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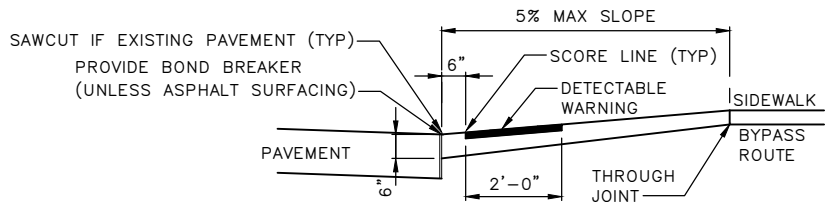
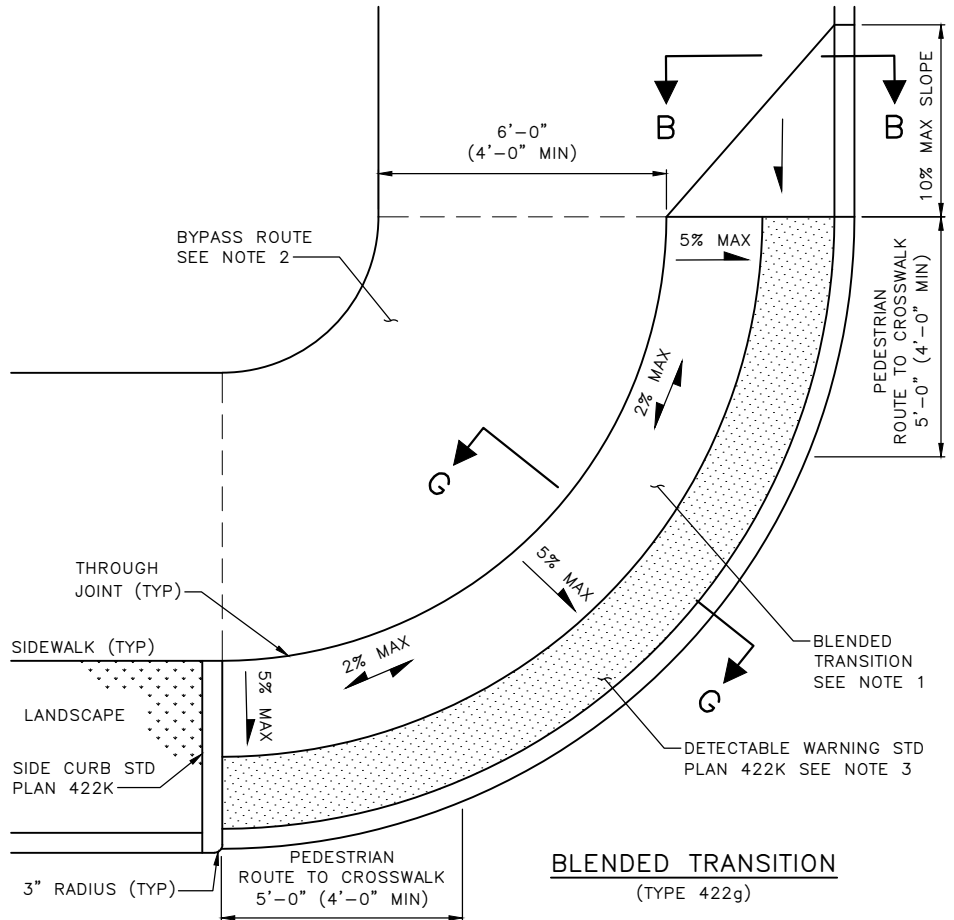
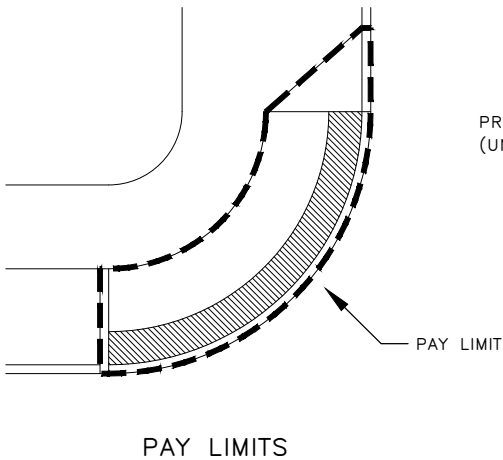
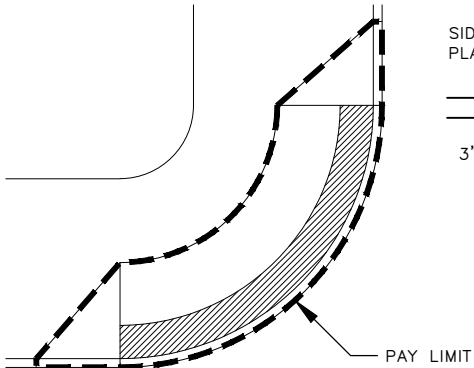
NOT TO SCALE

CURB RAMP DETAILS

**NOTES:**

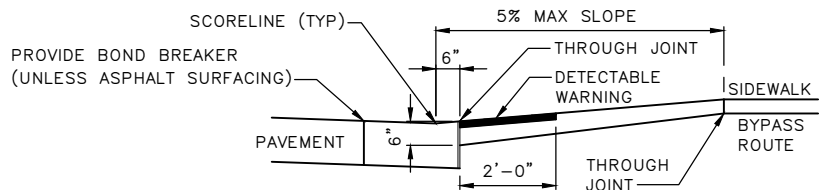
1. THE SIDEWALK MUST TRANSITION DOWN TO THE ROADWAY WITH A MAXIMUM RUNNING SLOPE OF 5%. THE CROSS SLOPE ON THE TRANSITION MUST NOT EXCEED 2% AT ANY POINT.
2. A BYPASS ROUTE MUST BE PROVIDED AT THE TOP OF THE BLENDED TRANSITION WITH A MINIMUM WIDTH OF 6'-0" (4'-0" MIN). THE CROSS SLOPE OF THE BYPASS ROUTE MUST BE A MINIMUM OF 0.5% IN ANY DIRECTION AND MUST NOT EXCEED 2% IN THE APPLICABLE DIRECTION OF TRAVEL.
3. RADIAL TILE MUST BE USED, CUTTING OR ALTERING DETECTABLE WARNING SURFACES MUST BE FIRST APPROVED BY THE ENGINEER.
4. WINGS MUST HAVE A MAXIMUM SLOPE OF 10%. WINGS MUST HAVE A BRUSHED FINISH PARALLEL TO THE CURB. THE CONCRETE WALK THICKENED EDGE ALONG THE CURB MUST CONTINUE THROUGH EACH WING. WINGS MUST BE MONOLITHIC WITH THE CURB RAMP RUN.
5. BLENDED TRANSITION SURFACE MUST HAVE A HEAVY BROOM BRUSHED SURFACE RADIAL/PERPENDICULAR TO THE CURB.
6. REFER TO DETAILS 422K AND 422L FOR GENERAL NOTES AND TYPICAL SECTION B.

2% MAX  
= MAX SLOPE IN  
EITHER DIRECTION



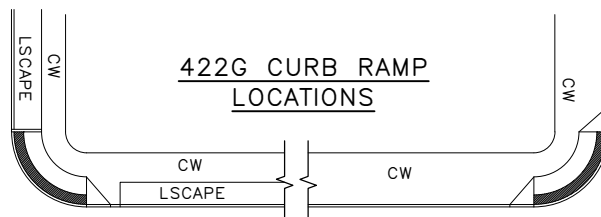
**SECTION G-G**

CURB MONOLITHIC WITH RAMP. NEW PAVEMENT BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT REMOVED AT FACE OF CURB



**SECTION G-G**

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.



REF STD SPEC SEC 8-14



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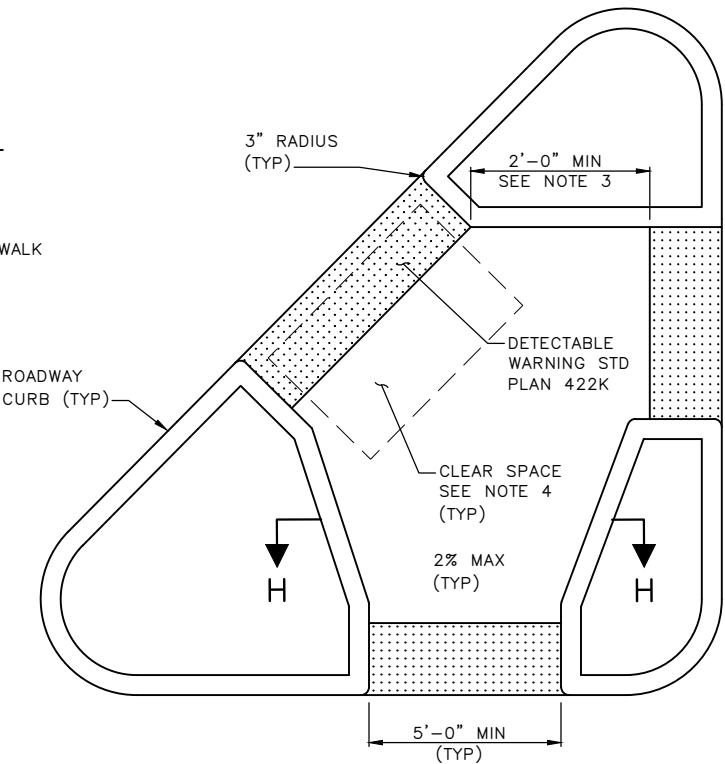
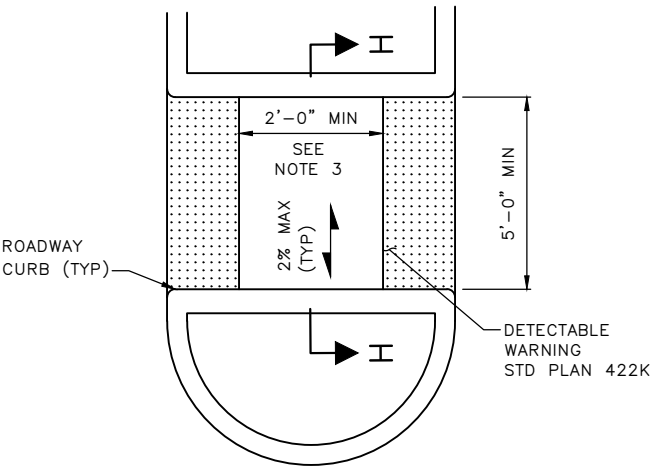
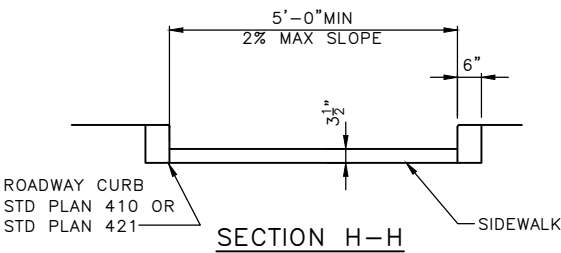
NOT TO SCALE

CURB RAMP DETAILS

NOTES:

- 1. SIZE, SHAPE, AND/OR DIMENSIONS OF CHANNELIZING ISLANDS OR PEDESTRIAN REFUGE ISLANDS MAY VARY. DETAILS SHOWN ARE INTENDED TO SHOW MINIMUM REQUIRED CLEARANCES AND DETECTABLE WARNING SURFACE PLACEMENT LOCATIONS.
- 2. ACCESS THROUGH CHANNELIZING ISLANDS OR PEDESTRIAN REFUGE ISLANDS MAY BE CUT-THROUGH OR ACCESS MAY BE PROVIDED USING STANDARD CURB RAMP DETAILS.
- 3. AT PEDESTRIAN REFUGE ISLANDS, DETECTABLE WARNING MUST NOT TO BE INSTALLED IF THE REFUGE AREA IS LESS THAN 6'-0" IN DEPTH (IN THE DIRECTION OF TRAVEL).
- 4. PROVIDE A MINIMUM 4'-0" WIDTH x 4'-0" DEPTH CLEAR SPACE FOR ACCESS FROM THE CHANNELIZING ISLAND OR PEDESTRIAN REFUGE ISLAND FOR EACH CROSSWALK.

2% MAX  
MAX SLOPE IN EITHER DIRECTION



ISLAND CUT-THROUGHS  
(TYPE 422H)

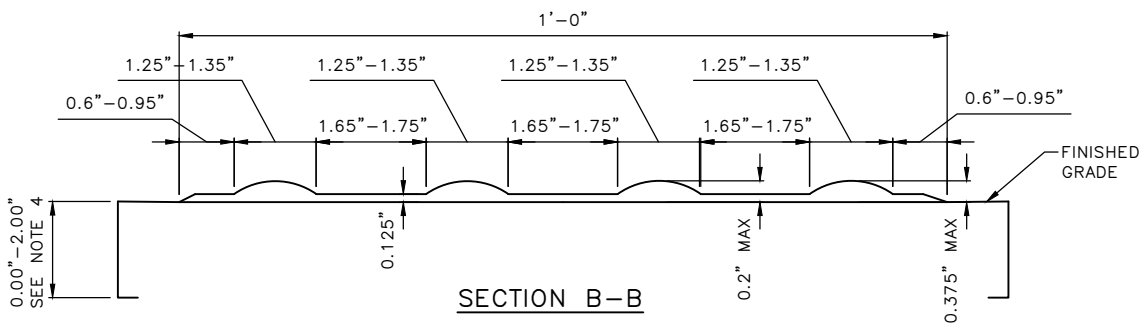
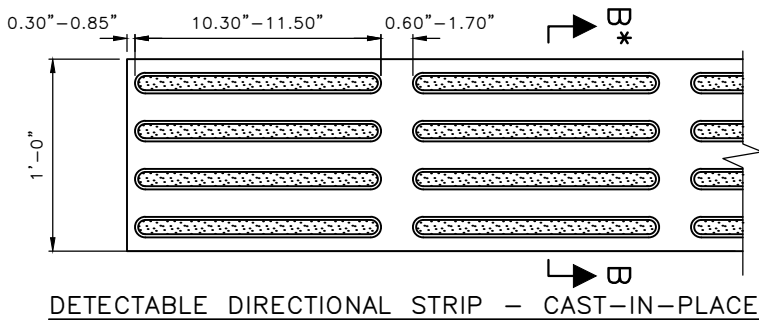
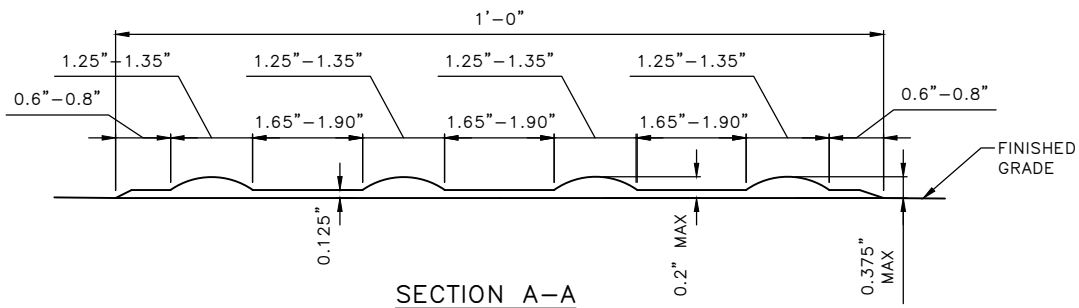
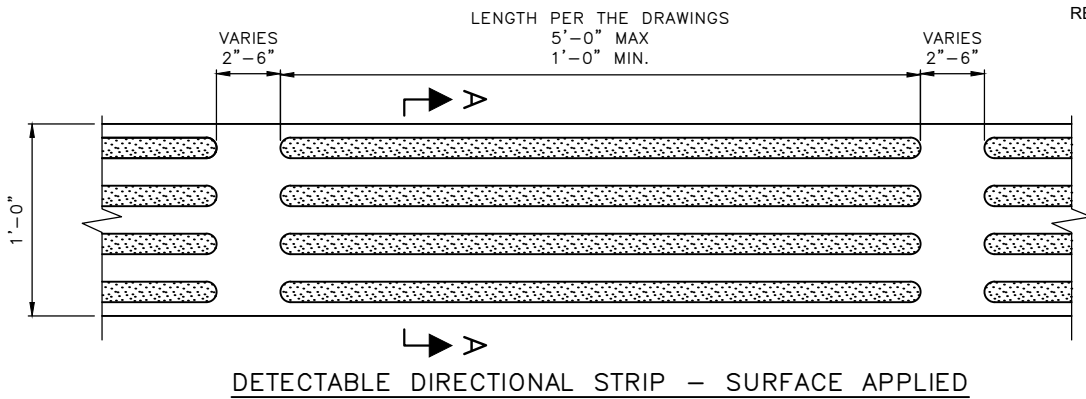
REF STD SPEC SEC 8-14



City of Seattle

NOT TO SCALE

CURB RAMP DETAILS



NOTES:

1. DETECTABLE DIRECTIONAL STRIP MUST BE "FEDERAL YELLOW", UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. STRIP CENTERLINE MUST BE PARALLEL TO THE ALIGNMENT OF THE PEDESTRIAN ACCESS ROUTE.
3. METHYL METHACRYLATE (MMA) DIRECTIONAL STRIP MUST COMPLY WITH ALL THE DIMENSIONS RANGES SHOWN ON THIS STANDARD PLAN FOR SURFACE APPLIED.
4. CAST-IN-PLACE DIRECTIONAL STRIP MAY BE BOLTED DOWN IF APPROVED BY THE ENGINEER.

REF STD SPEC SEC 8-14, 9-36



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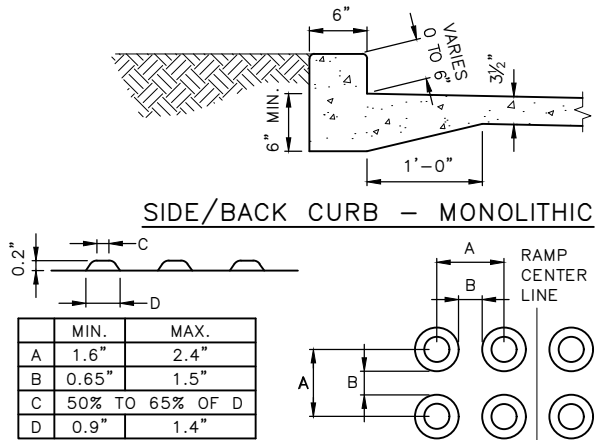
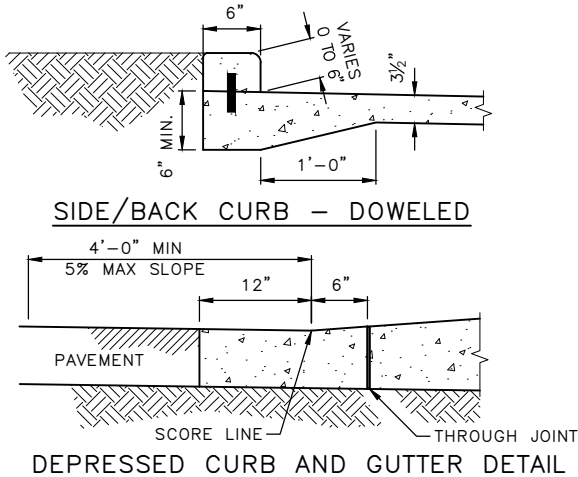
DETECTABLE DIRECTIONAL STRIP

CURB RAMP GENERAL NOTES:

1. TWO CURB RAMP MUST BE INSTALLED AT EACH CORNER UNLESS OTHERWISE DIRECTED BY ENGINEER. SHARED DIAGONAL PERPENDICULAR RAMP MUST NOT BE INSTALLED UNLESS ALL OTHER DESIGN OPTIONS ARE UNABLE TO BE CONSTRUCTED DUE TO EXISTING SITE CONSTRAINTS.
2. CURB RAMP MUST BE AS CLOSELY ALIGNED WITH THE SIDEWALK AND THE PEDESTRIAN STREET CROSSING SERVED AS POSSIBLE.
3. CURB RAMP MUST BE CONSTRUCTED WITH COMPANION RAMP ON OPPOSITE SIDE OF THE ROADWAY WHERE NO RAMP IS PROVIDED UNLESS OTHERWISE DIRECTED BY ENGINEER.
4. CURB RAMP MUST HAVE A MAXIMUM RUNNING SLOPE OF 8.3% AND A MINIMUM WIDTH OF 4'-0" UNLESS OTHERWISE DIRECTED BY ENGINEER. THE CROSS SLOPE OF CURB RAMP MUST BE A MAXIMUM OF 2%. CURB RAMP ARE NOT REQUIRED TO EXCEED A LENGTH OF 15 FEET UNLESS OTHERWISE DIRECTED BY ENGINEER.\*
5. GRADE BREAKS AT THE TOP AND THE BOTTOM OF CURB RAMP RUNS MUST BE PERPENDICULAR TO THE PATH OF TRAVEL. CURB RAMP RUNS ARE DEFINED BY RUNNING SLOPES THAT EXCEED 5% BUT ARE NO MORE THAN 8.3%. SURFACES ABUTTING AT CURB RAMP GRADE BREAKS MUST BE FLUSH.
6. AREAS ADJACENT TO CURB RAMP OR CURB RAMP LANDINGS USABLE BY PEDESTRIANS MUST COMPLY WITH STANDARD PLAN SIDEWALK SLOPE LIMITS OR A CURB RAMP WING MUST BE PROVIDED AS SHOWN IN THE APPLICABLE CURB RAMP DETAILS. THE INSTALLATION OF CURBED EDGES MAY BE USED AT THE SIDES OR BACKS OF CURB RAMP OR CURB RAMP LANDING WHERE THE ADJACENT SURFACE IS LANDSCAPED OR OTHERWISE NOT USABLE BY PEDESTRIANS.
7. THE COUNTER SLOPE OF THE GUTTER OR THE STREET AT THE BOTTOM OF CURB RAMP RUNS MUST BE 5% MAXIMUM. IF TURNING OR CHANGE OF ORIENTATION IS REQUIRED WITHIN THE PEDESTRIAN CROSSING AT THE BOTTOM OF CURB RAMP RUNS, THE SLOPE MUST BE 2% MAXIMUM IN ANY DIRECTION FOR A MINIMUM 4'-0" WIDTH X 4'-0" DEPTH MEASURED FROM THE RAMP BOTTOM GRADE BREAK.
8. CURB RAMP WITH RUNS THAT TERMINATE AT THE ENTRANCE TO THE PEDESTRIAN STREET CROSSING MUST HAVE A CLEAR SPACE AT THE BOTTOM OF THE RAMP. "CLEAR SPACE" IS DEFINED AS A NAVIGABLE 4'-0" BY 4'-0" SPACE, EXTENDING FROM THE RAMP LOWER GRADE BREAK, THAT FALLS WHOLLY WITHIN THE LEGAL CROSSWALK, MARKED OR UNMARKED, AND OUTSIDE THE PARALLEL VEHICULAR TRAFFIC LANE.
9. A 4'-0" MINIMUM WIDTH UNOBSTRUCTED PEDESTRIAN ACCESS ROUTE MUST BE PROVIDED FROM EACH CURB RAMP, BLENDED TRANSITION, OF FLUSH TRANSITION TO THE LEGAL CROSSWALK THAT IS SERVED, MARKED OR UNMARKED, AND LOCATED OUTSIDE THE PARALLEL VERTICAL TRAFFIC LANE.
10. DETECTABLE WARNING MUST BE PROVIDED AT CURB RAMP AND AT LOCATIONS WHERE THE SIDEWALK AND ROADWAY ARE FLUSH. THE DETECTABLE WARNING SURFACE MUST HAVE A TRUNCATED DOME PATTERN AS SHOWN, WITH A MINIMUM DEPTH OF 2'-0", AND MUST BE PLACED AT THE BACK OF CURB BUT NO MORE THAN 8" FROM THE FACE OF CURB FOR MONOLITHIC CURBS OR ATYPICAL CURB WIDTHS. DETECTABLE WARNING MUST MATCH THE WIDTH OF THE RAMP RUN OR THE OPENING WHERE THE SIDEWALK AND ROADWAY ARE FLUSH. THE TRUNCATED DOMES ON THE

- DETECTABLE WARNING SURFACE SHOULD ALIGN WITH THE CURB RAMP RUN OR THE DIRECTION OF TRAVEL. DOMES MAY BE ON A RADIAL GRID PATTERN WHERE RADIAL DETECTABLE WARNING SURFACE IS PLACED AT CURB RADII.
11. DETECTABLE WARNING COLOR MUST BE "FEDERAL SAFETY YELLOW", UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
  12. DETECTABLE WARNING SURFACES MUST NOT BE CUT OR ALTERED TO FIT UNLESS OTHERWISE DIRECTED BY THE ENGINEER. IT APPROVED, CUT OR ALTER THE DETECTABLE WARNING SURFACE PER THE MANUFACTURER'S DIRECTIONS. DETECTABLE WARNING SURFACES PLACED AT CURB RADII MUST MATCH THE CURB RADII WITHOUT GAPS OR INCONSISTENCIES IN PLACEMENT.
  13. HANDHOLES, UTILITY CASTINGS, OR ANY OTHER SURFACE OBSTRUCTIONS MUST NOT BE INSTALLED IN THE CURB RAMP RUN(S) OR LANDING(S) UNLESS OTHERWISE DIRECTED BY THE ENGINEER. IF NECESSARY DUE TO EXISTING CONSTRAINTS, HANDHOLES, UTILITY CASTINGS, OR OTHER SURFACE OBSTRUCTIONS MAY BE LOCATED WITHIN A RAMP RUN, LANDING, OR TURNING SPACE BUT MUST ADHERE TO SURFACE REQUIREMENTS. LEVEL CHANGES BETWEEN SURFACES MUST NOT EXCEED 1/4" OR 1/2" WITH A 1:2 BEVEL. GAPS BETWEEN SURFACES OR GRATINGS MAY NOT EXCEED 1/2". SURFACES MUST BE FIRM, STABLE, AND SLIP RESISTANT.
  14. HANDHOLES, UTILITY CASTINGS, OR OTHER SURFACE OBSTRUCTIONS MUST NOT REDUCE THE REQUIRED DEPTH OF DETECTABLE WARNING.
  15. POLES, HYDRANTS AND OTHER ABOVE GROUND OBSTRUCTIONS MUST HAVE A MINIMUM LATERAL CLEARANCE OF 1'-0" FROM RAMP RUN(S) OR LANDING(S). EXCEPT FOR PUSHBUTTON POSTS.
  16. ALL CHANGES IN LEVEL ACROSS JOINTS MUST BE FLUSH. ANY DIFFERENCE IN ELEVATION OF 3/16 INCH OR GREATER MUST BE REPAIRED OR REPLACED.
  17. CURB RAMP ARE DESIGNED TO ENSURE THAT WATER DOES NOT ACCUMULATE ON RAMP SURFACES AND IN FRONT OF THE CURB RAMP WHERE IT IS FLUSH WITH THE ROADWAY. THE CONTRACTOR MUST CHECK GRADE LINES AND GUTTER FLOW LINE PRIOR TO CONSTRUCTION. IF THE CHECK REVEALS THAT SITE CONDITIONS WOULD RESULT IN PONDING, OR WOULD CONFLICT WITH OBTAINING THE GRADES AT THE BOTTOM OF CURB RAMP OR AT CURB RAMP LOWER LANDINGS AS SHOWN ON THE DRAWINGS OR PLANS, THE CONTRACTOR MUST NOTIFY THE ENGINEER IMMEDIATELY AND STOP WORK ON THE CURB RAMP UNTIL DIRECTED TO CONTINUE BY THE ENGINEER.

\*\* IT IS RECOMMENDED THAT CURB RAMP RUNNING SLOPES BE DESIGNED TO 7.5% MAX. AND CURB RAMP LANDINGS BE DESIGNED TO 1.5% MAX TO ALLOW FOR A LIMITED MARGIN OF ERROR DURING CONSTRUCTION.



REF STD SPEC SEC 8-14

DETECTABLE WARNING TRUNCATED DOMES PATTERN

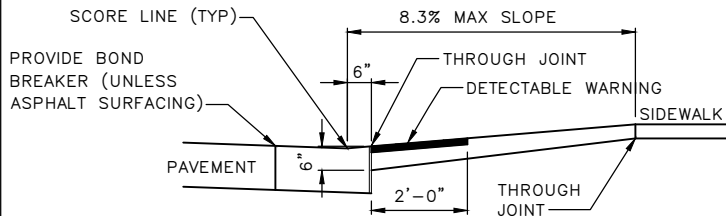


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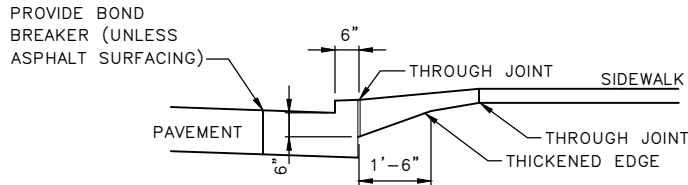
CURB RAMP DETAILS



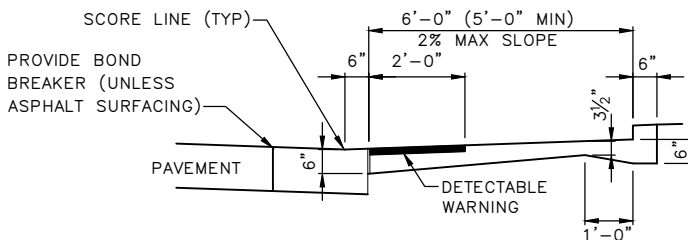


**SECTION A-A**

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.

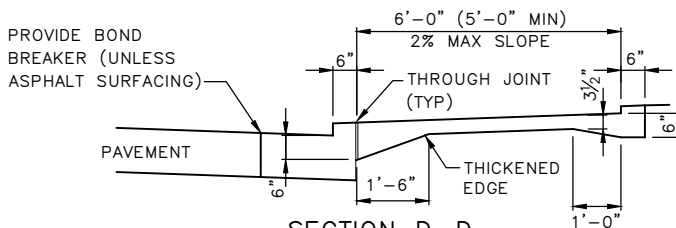


**SECTION B-B**

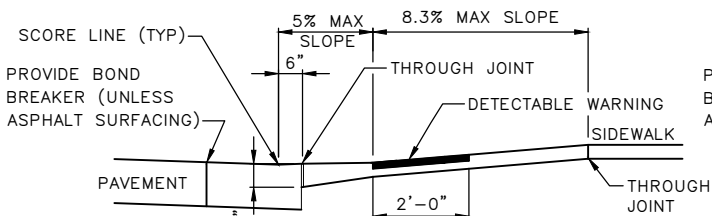


**SECTION C-C**

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.

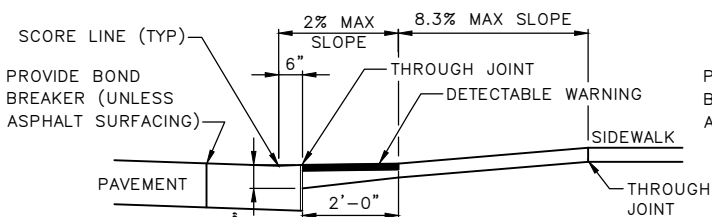


**SECTION D-D**



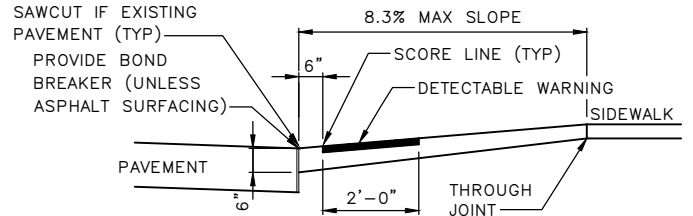
**SECTION E-E**

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.



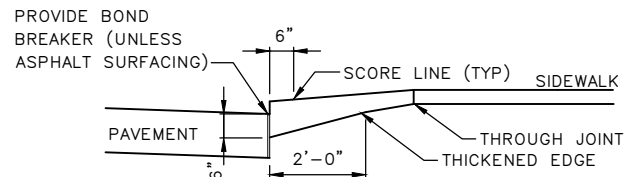
**SECTION F-F**

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP

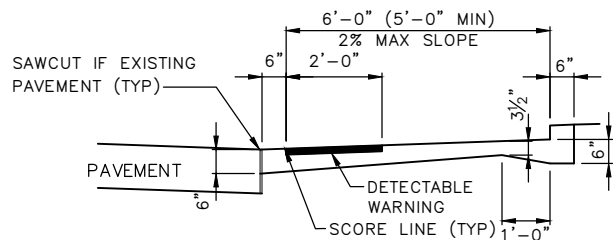


**SECTION A-A**

CURB MONOLITHIC WITH RAMP. NEW PAVEMENT BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT REMOVED AT FACE OF CURB

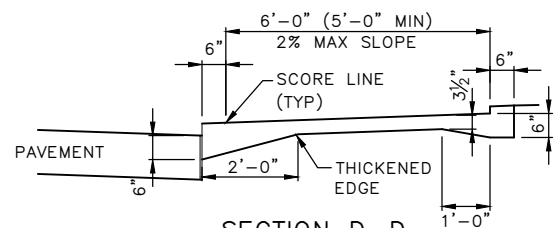


**SECTION B-B**

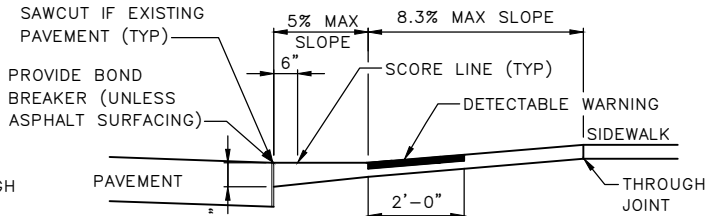


**SECTION C-C**

CURB MONOLITHIC WITH RAMP. NEW PAVEMENT BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT REMOVED AT FACE OF CURB

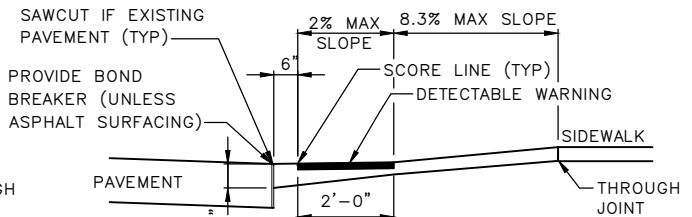


**SECTION D-D**



**SECTION E-E**

CURB MONOLITHIC WITH RAMP. NEW PAVEMENT BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT REMOVED AT FACE OF CURB



**SECTION F-F**

CURB MONOLITHIC WITH RAMP. NEW PAVEMENT BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT REMOVED AT FACE OF CURB

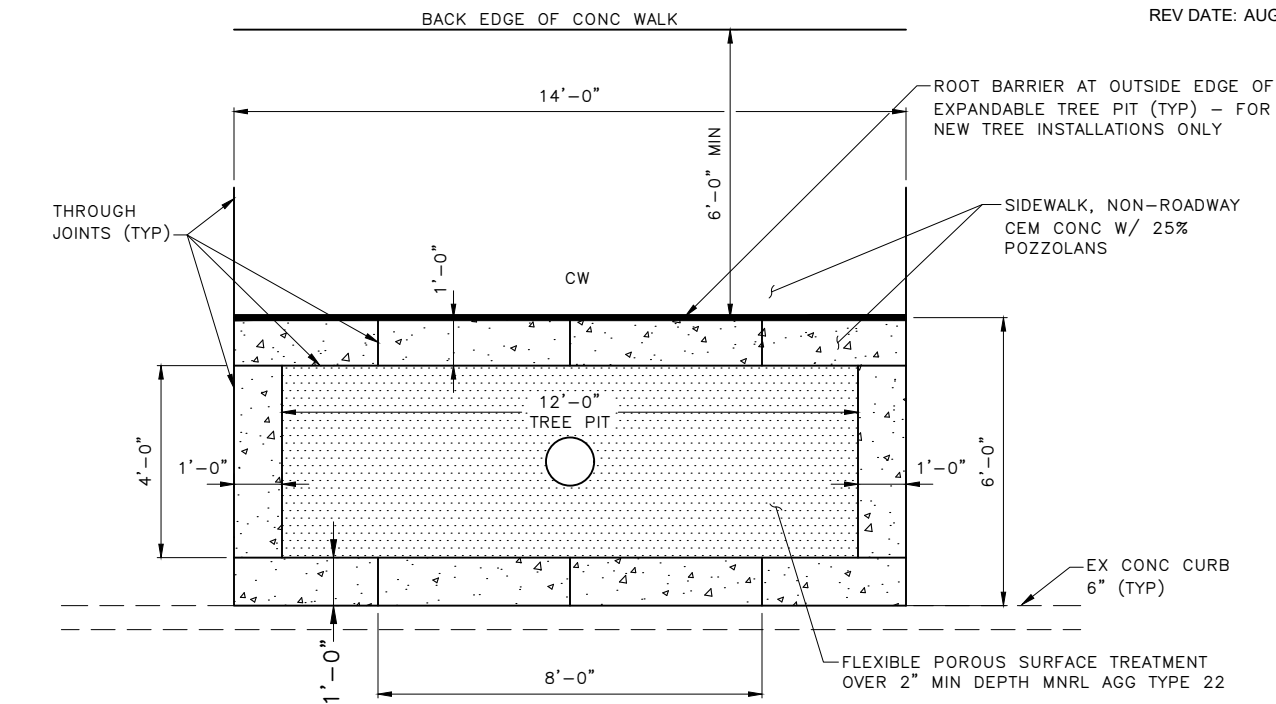
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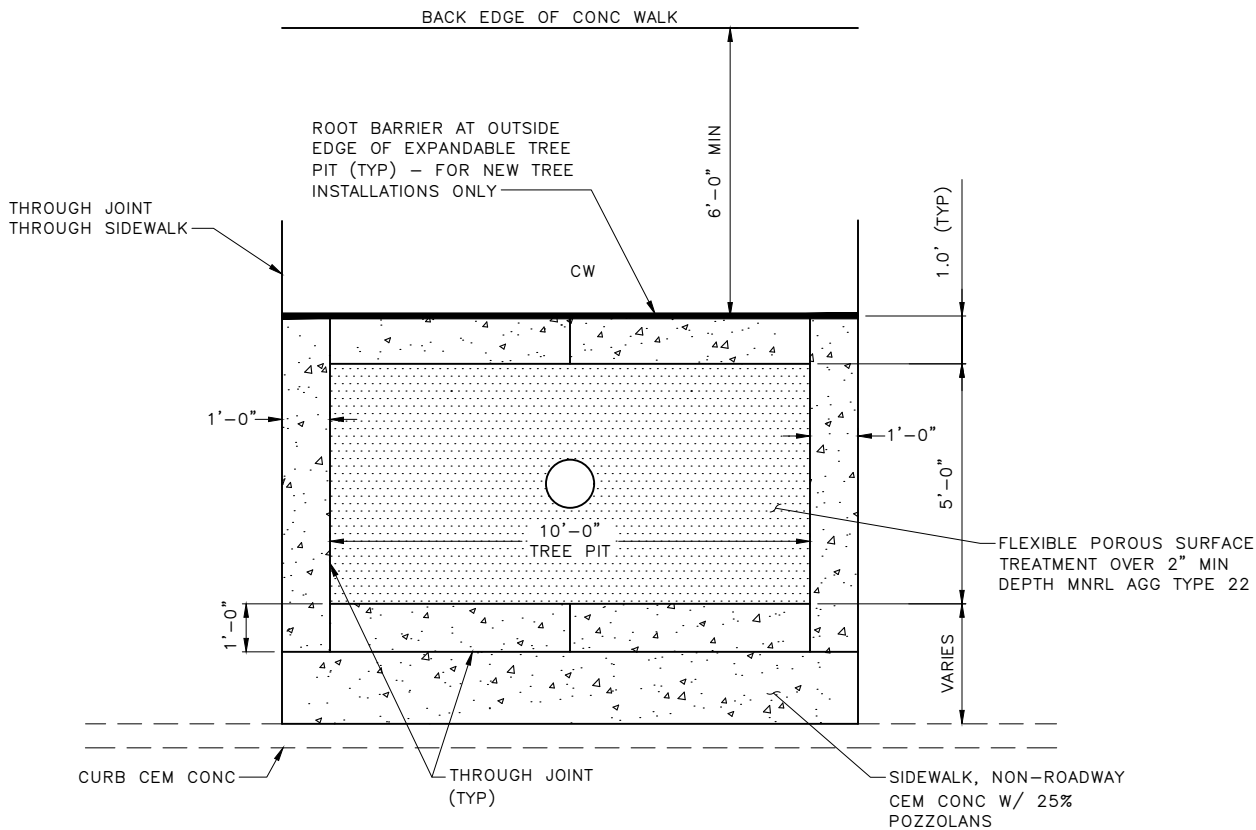
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CURB RAMP SECTIONS



TYPE A



TYPE B

- NOTES:
1. SEE STD PLAN 420 FOR CW SCORING DETAILS.
  2. INSTALL ROOT BARRIER PER STANDARD PLAN NO 100a.
  3. WHEN INSTALLING NEW TREE PITS IN EXISTING SIDEWALK, REMOVE SIDEWALK TO FULL PANEL WIDTH. INSTALL TREE PIT AS SHOWN ON THIS DETAIL.

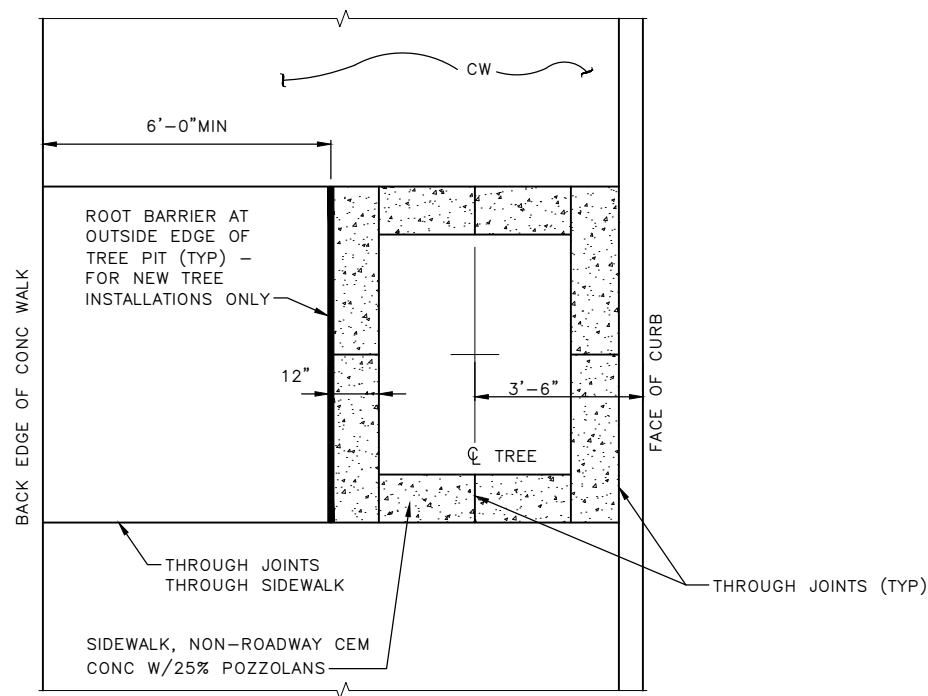
REF STD SPEC SEC 8-02, 8-14



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EXPANDABLE TREE PIT DETAIL



FOR ADDITIONAL SIDEWALK SCORING REQUIREMENTS  
SEE STD PLAN NO 420

TYPE C

- TREE PIT DIMENSIONAL REQUIREMENTS:
- 24 SQ FT MIN TREE PIT SIZE
  - 3'-0" MIN REQ'D BETWEEN TREE CL & FACE OF CURB
  - 2'-0" MIN REQ'D BETWEEN TREE CL & CONC SIDEWALK
  - 6'-0" MIN CONC WALKING SURFACE

NOTES:

1. INSTALLATIONS REQUIRING LESS THAN STANDARD MIN CLEARANCES MUST BE ALLOWED ONLY WITH APPROVAL BY THE ENGINEER.
2. INSTALL ROOT BARRIER AS NOTED. SEE STANDARD PLAN NO 100a.
3. SEE STD PLAN NO 420 FOR CW SCORING DETAILS.
4. WHEN INSTALLING NEW TREE PITS IN EXISTING SIDEWALK, REMOVE SIDEWALK TO FULL PANE WIDTH. INSTALL TREE PIT AS SHOWN ON THIS DETAIL.

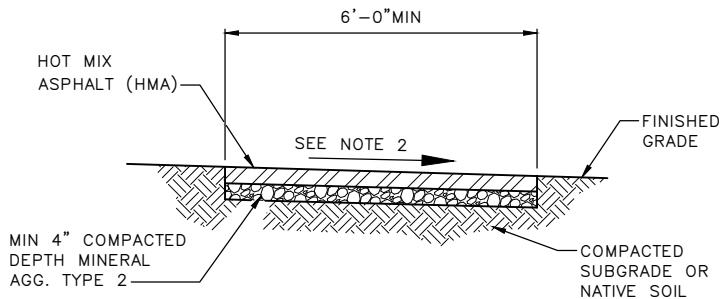
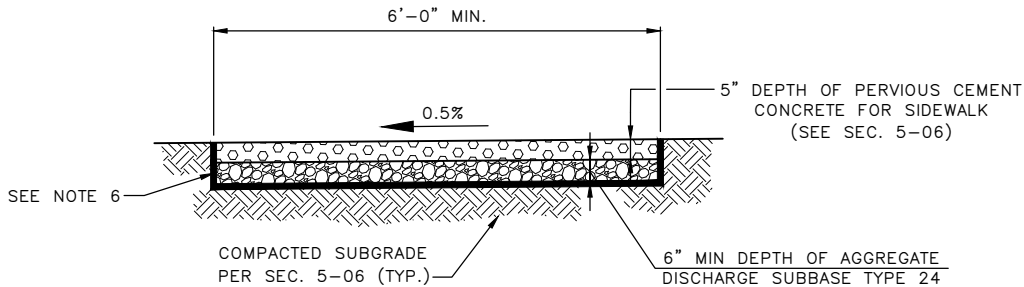
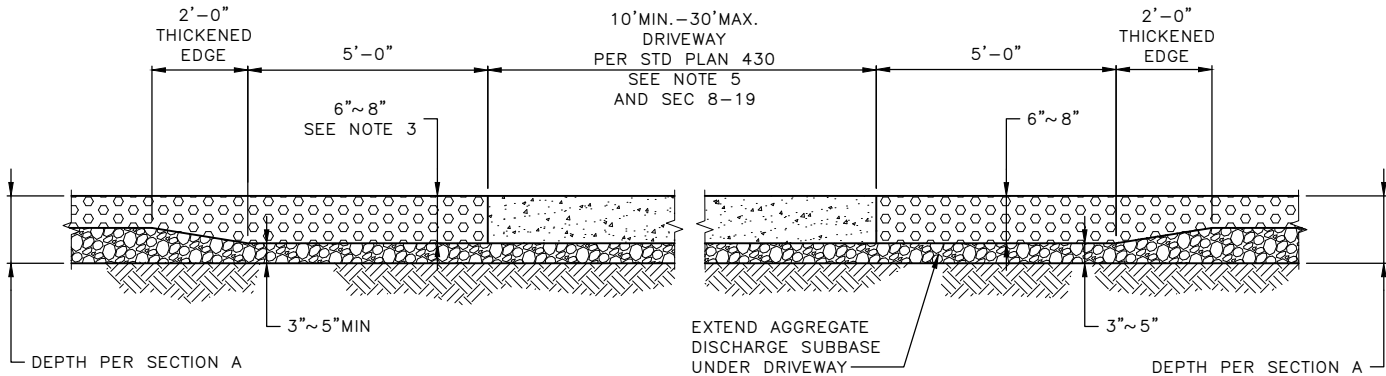
REF STD SPEC SEC 8-02, 8-14



City of Seattle

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TREE PIT DETAIL



NOTES:

1. DEPTHS SHOWN FOR PAVEMENT SECTIONS ARE COMPACTED DEPTH.
2. SIDEWALK DEPTH AT DRIVEWAY TO MATCH DRIVEWAY PAVEMENT DEPTH.
3. DEPTH OF POROUS CEMENT CONCRETE FOR DRIVEWAYS MUST BE 8" MIN.
4. 6% MAX. PERVIOUS CEMENT CONCRETE PROFILE GRADE.
5. WHERE PERVIOUS CONCRETE IS SHOWN ON PLANS FOR ALLEY, PERVIOUS CONCRETE MUST BE 8" WITH 3" AGGREGATE DISCHARGE SUBBASE.
6. APPLY SEPARATION GEOTEXTILE SEC. 9-37, ON BOTTOM AND SIDES. EXTEND GEOTEXTILE ABOVE PERVIOUS CONCRETE FOR SIDEWALK PAVEMENT. AFTER PAVEMENT HAS CURED AND ADJACENT FINISHED GRADE HAS BEEN STABILIZED, CUT SEPARATION GEOTEXTILE AT FINISHED GRADE (TYP.)
7. CONTRACTION JOINTS FOR PERVIOUS CONCRETE SIDEWALKS MUST BE PLACED AT A MAXIMUM OF 15 FT ON CENTER SPACING.

REF STD SPEC SEC 5-04, 5-06



City of Seattle

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ALTERNATIVE WALKWAYS

Diagram illustrating a lap joint with a 1/2" THROUGH JOINT, a 6" overlap, and a SCORE LINE.

DRIVEWAY W/ MONOLITHIC  
CURB & APPROACH

1. TYPE 430A MUST BE USED UNLESS OTHERWISE DIRECTED BY ENGINEER. USE OF DRIVEWAY TYPE 430B IS SUBJECT TO ENGINEER APPROVAL.
2. DRIVEWAYS MUST BE NON-ROADWAY CEM. CONC. HIGH STRENGTH.
3. WING WIDTH ON ARTERIAL STREETS WHERE TRAVEL LANE IS NEXT TO THE CURB MUST BE 5'-0". OTHERWISE, WING WIDTH MUST BE 2'-6".
4. "V" GROOVE SCORING MUST MATCH PATTERN IN ADJACENT EXISTING SIDEWALK.
5. FOR CONCRETE DRIVEWAY CONSTRUCTED WITH CONCRETE SIDEWALK, SEE STANDARD PLAN NO 431.
6. CONCRETE DRIVEWAYS WITH A WIDTH GREATER THAN 15'-0" MUST HAVE A  $\frac{3}{8}$ " TRANSVERSE CONTRACTION JOINT NEAR THE CENTERLINE OF DRIVEWAY.
7. FOR TYPE 430A CROSS-SLOPE IN THE 6'-0" MINIMUM WIDE AREA CONNECTING TO C/W ON EACH SIDE OF THE DRIVEWAY MUST BE MAXIMUM 2% AND MINIMUM 0.5% (1.5% DESIRABLE) AND MUST SLOPE TOWARDS THE STREET. FOR TYPE 430B, CROSS-SLOPE OF THE DRIVEWAY BETWEEN THE TWO RAMP SECTIONS MUST BE MAXIMUM 2% AND MINIMUM 0.5%.
8. RAMP MUST HAVE A MAXIMUM SLOPE OF 8.3% AND A MINIMUM WIDTH OF 6'-0". THE CROSS SLOPE OF THE RAMP MUST BE MAXIMUM OF 2.0%. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED SURFACE PERPENDICULAR TO THE CURB.
9. ALL CHANGES IN LEVEL ACROSS JOINTS MUST BE FLUSH WITH A MAXIMUM DIFFERENCE IN ELEVATION OF  $\frac{3}{16}$  INCH.
10. ALL SLOPE GRADES MUST BE MEASURED OFF THE HORIZON-LINE. IF EXISTING SITE CONDITIONS CONFLICT WITH OBTAINING GRADES SHOWN, THE CONTRACTOR MUST MAKE MINIMUM ADJUSTMENTS TO THE GRADES TO ACCOMMODATE EXISTING SITE CONDITIONS, ADJUSTMENTS ARE SUBJECT TO ENGINEER APPROVAL.
11. CONCRETE WALKWAY OUTSIDE OF THE DRIVEWAY CROSSING MAY BE PERVIOUS.
12. PROTECT ADJACENT PANELS FROM DAMAGE DUE TO UNDERMINING DURING EXCAVATION & PLACEMENT OF SUBGRADE. SEE SPEC SECTION 1-07.13.

## TYPE 430A DRIVEWAY

REF	STD	SPEC
SEC		

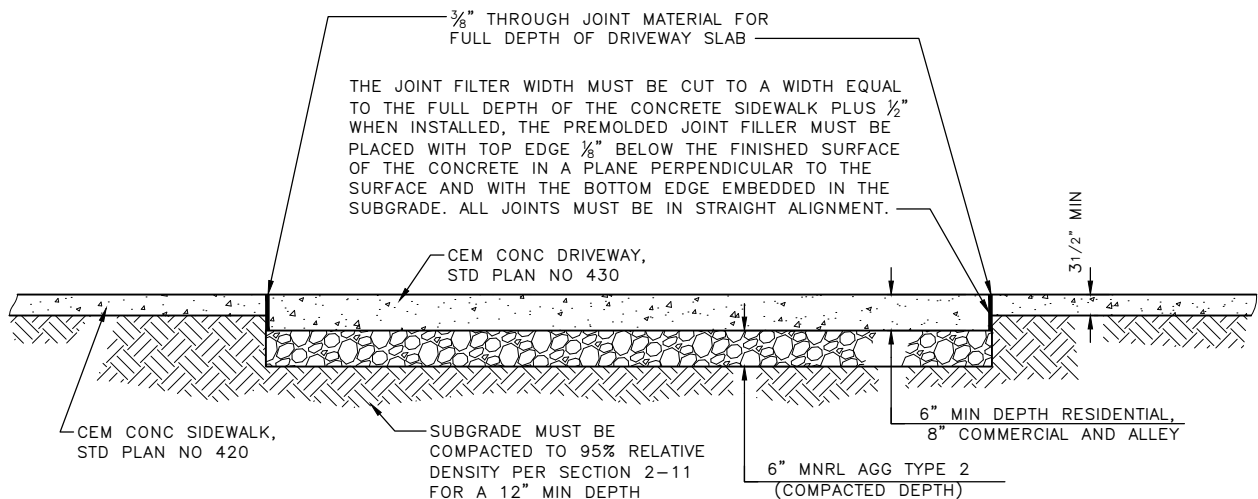
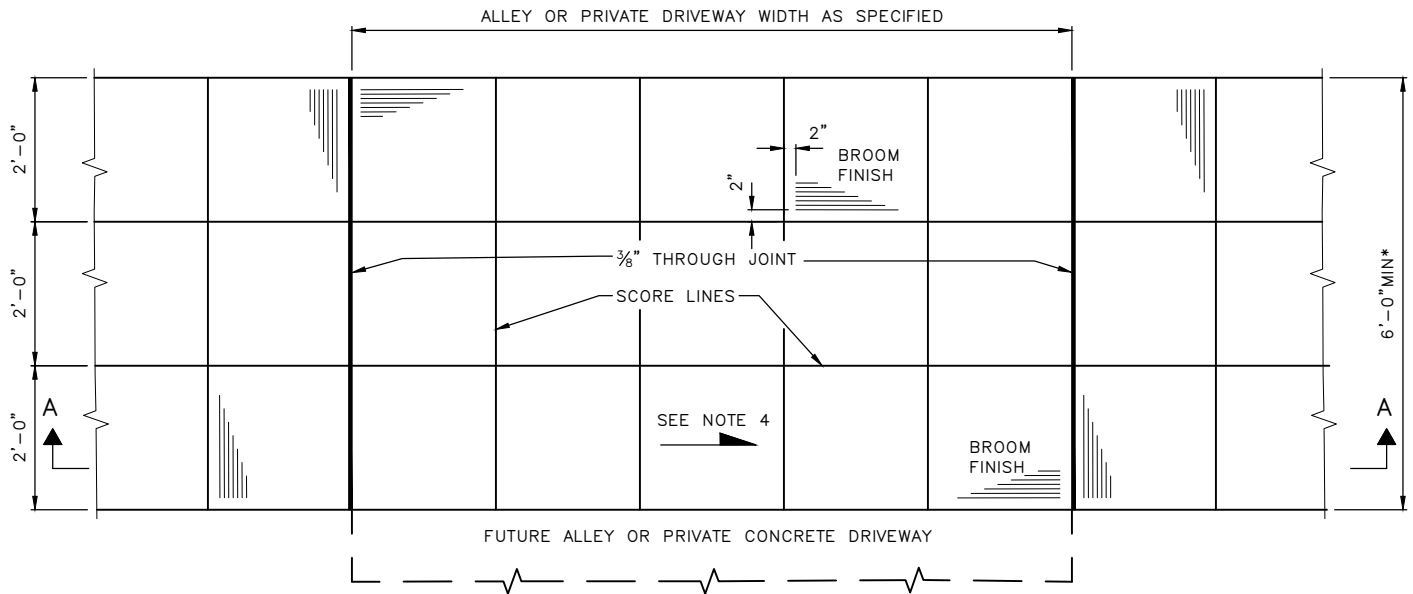
8-19



City of Seattle

NOT TO SCALE

## TYPE 430B DRIVEWAY



SECTION A-A

\* UNLESS OTHERWISE APPROVED

NOTES:

1. DRIVEWAY WIDTH GREATER THAN 15'-0" MUST HAVE 3/8" TRANSVERSE CONTRACTION JOINT AT OR NEAR ITS CENTER.
2. DRIVEWAY GREATER THAN 30'-0" REQUIRES APPROVAL. SET 3/8" TRANSVERSE CONTRACTION JOINTS AT INTERVALS OF 8' TO 15', UNLESS OTHERWISE SPECIFIED.
3. PROVIDE SCORE LINES PER STD PLAN NO 420 AND THE DRAWINGS.
4. THE SURFACE MUST BE BRUSHED IN THE TRANSVERSE DIRECTION IN RELATION TO THE CENTERLINE OF THE DRIVEWAY OR ALLEY WITH A FIBER HAIR BRUSH OR OTHER APPROVED BRUSH TYPE.
5. PROTECT ADJACENT PANELS FROM DAMAGE DUE TO UNDERMINING DURING EXCAVATION & PLACEMENT OF SUBGRADE. SEE SPEC SECTION 1-07.13.

REF STD SPEC SEC 8-19



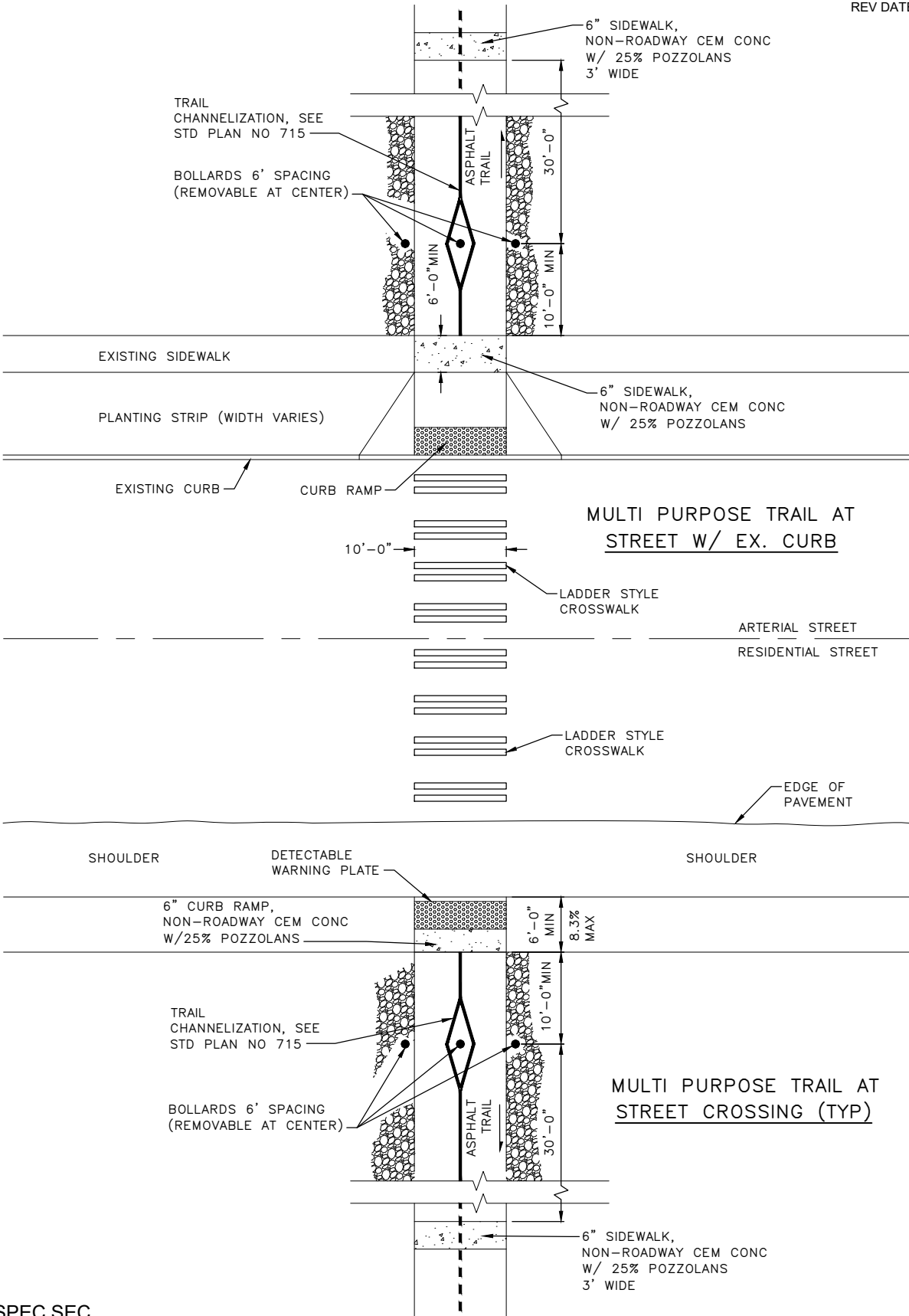
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CEMENT CONCRETE DRIVEWAY  
PLACED WITH CEMENT  
CONCRETE SIDEWALK







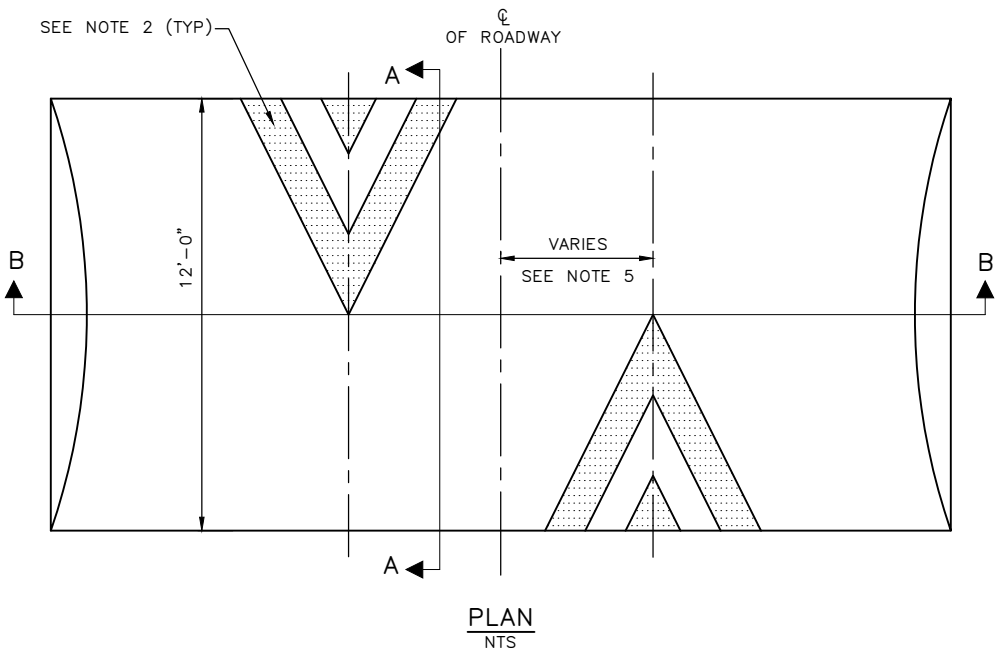
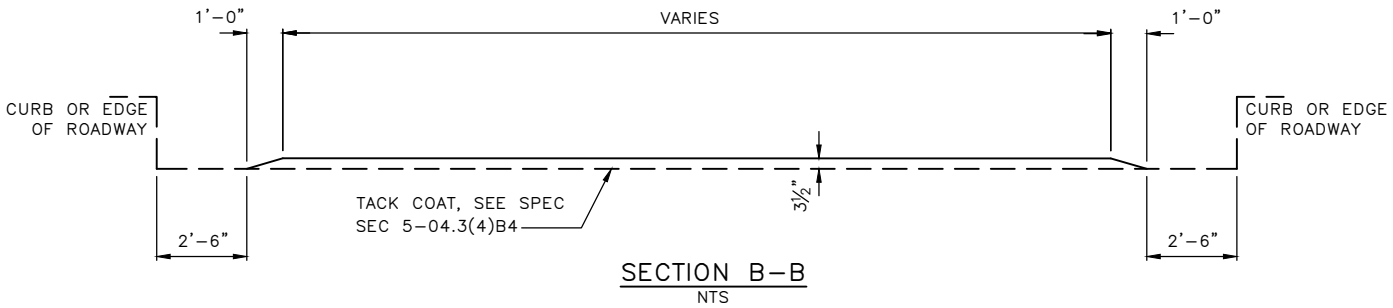
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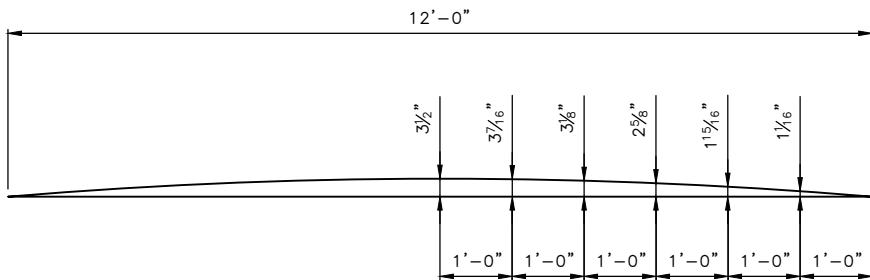
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MULTI-PURPOSE TRAIL  
AT STREET CROSSING



NOTES:

1. SPEED HUMP MUST BE HMA CL  $\frac{3}{8}$ "
2. CHEVRON SYMBOL PER STD PLAN NO 728A
3. TOLERANCE AT CENTER IS  $\frac{1}{2}$ "
4. PARABOLIC SHAPE MUST BE MAINTAINED
5. CHEVRON MUST BE CENTERED IN THE TRAVEL WAY AND MISSING THE WHEEL PATH
6. SEAL ALL EDGES WHERE NEW ASPHALT MEETS EXISTING PER 5-04.3(10)B
7. SEALING MATERIALS MUST MEET 9-02.1(8)



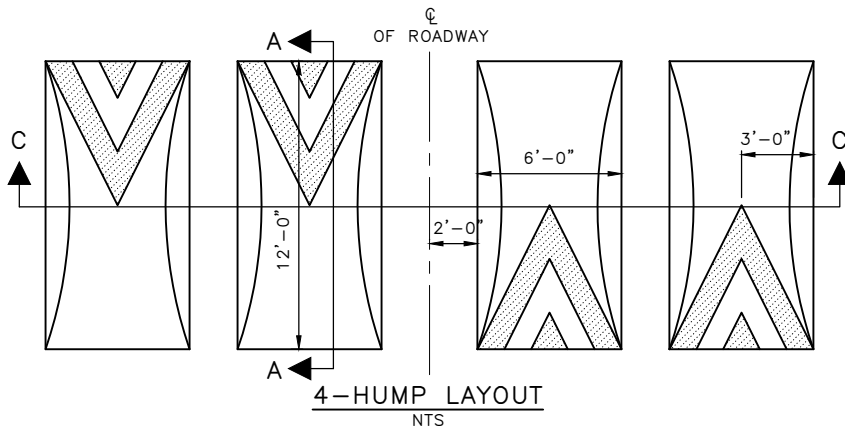
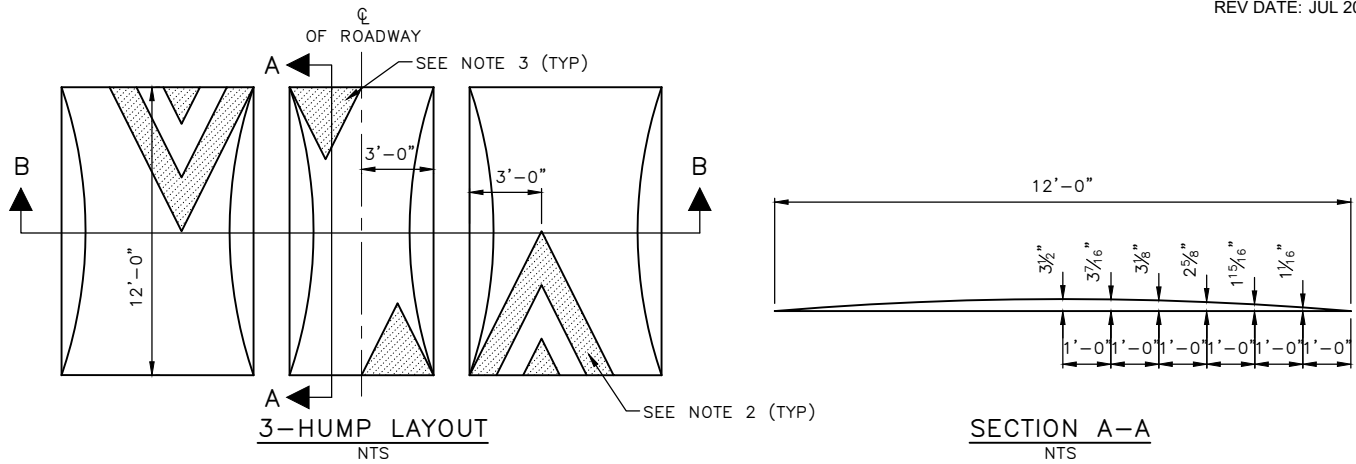
REF STD SPEC SEC 5-04



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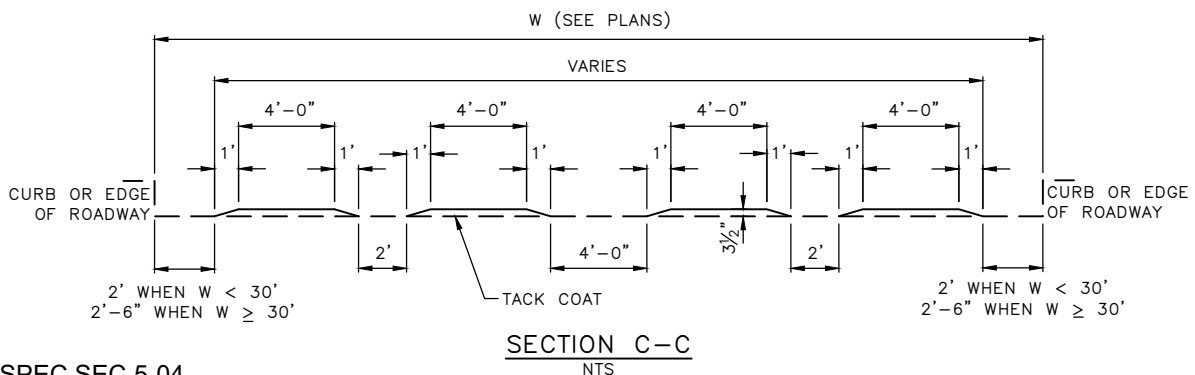
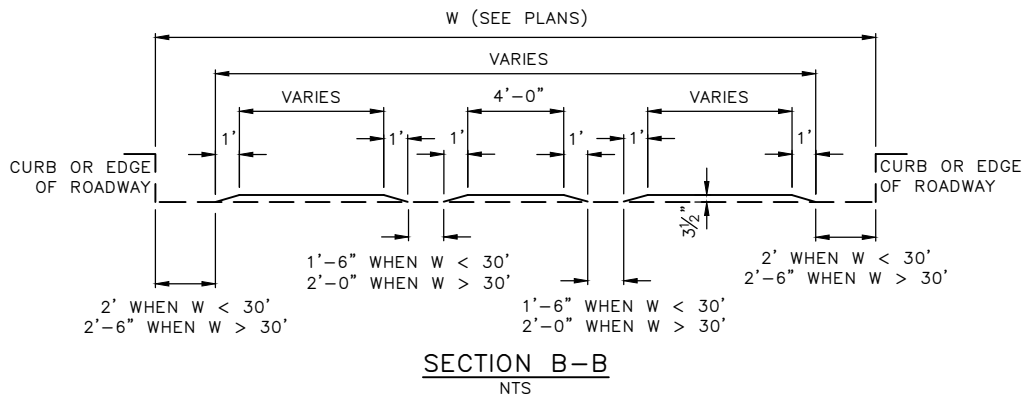
NOT TO SCALE

SPEED HUMP



**NOTES:**

1. CUSHION MUST BE HMA CL 3/8".
2. CHEVRON SYMBOL PER STD PLAN NO 728A
3. TRIANGLE SYMBOL PER STD PLAN NO 728B
4. TOLERANCE AT CENTER IS 1/2"
5. PARABOLIC SHAPE MUST BE MAINTAINED



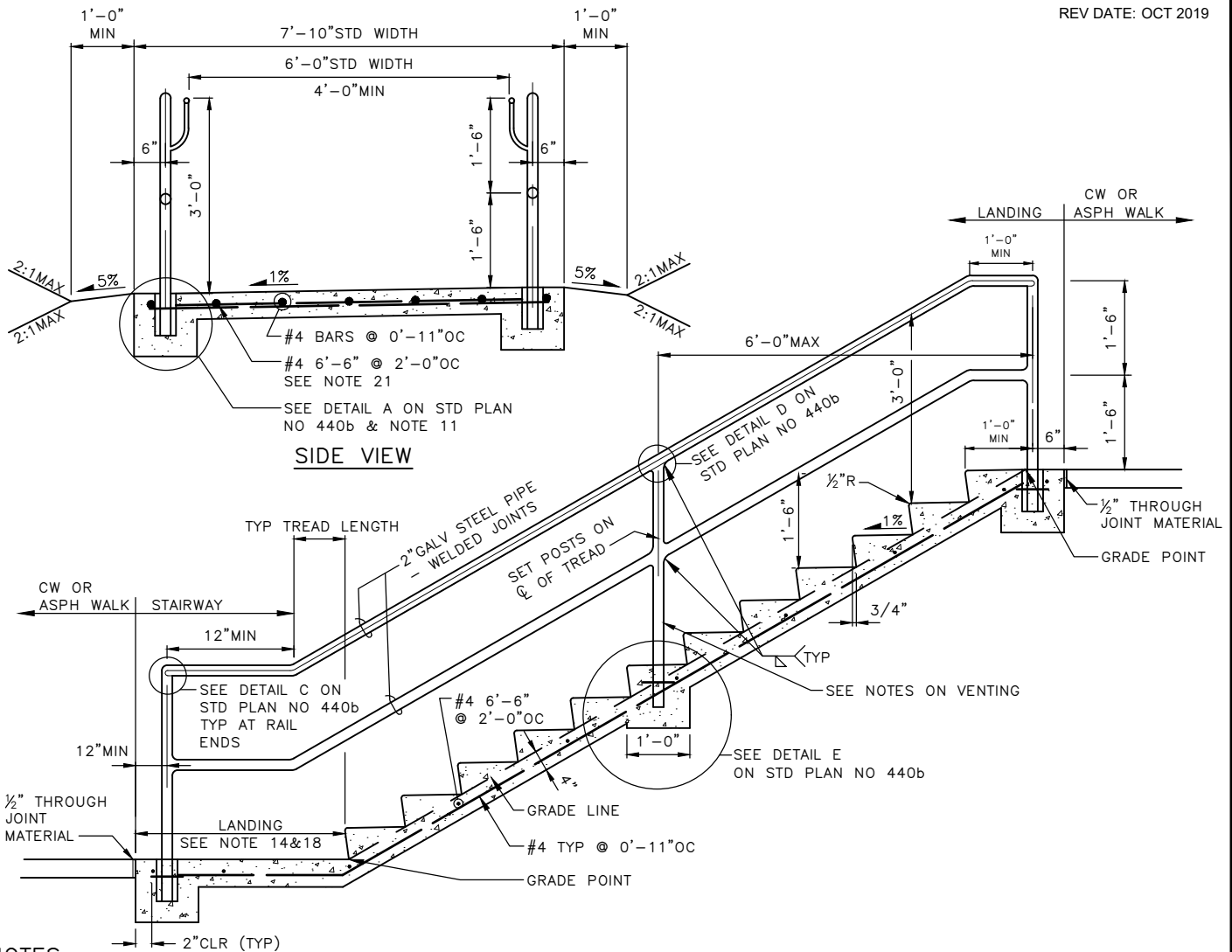
REF STD SPEC SEC 5-04



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SPEED CUSHION

**NOTES:**

1. FLIGHTS OF STAIRS MUST HAVE MAX VERTICAL RISE OF 12' BEFORE A LANDING.
2. AVOID FEWER THAN 2 RISERS PER FLIGHT.
3. STEPS IN FLIGHT MUST HAVE UNIFORM TREAD RUNS AND UNIFORM RISER HEIGHTS WITH TOLERANCE OF  $\pm 3/8"$ .
4. TREADS MUST BE 11" MIN, 12" MAX. RISERS MUST BE 5" MIN, 7" MAX.
5. LANDINGS BETWEEN FLIGHTS OF RISERS MUST HAVE SAME WIDTH AS STEPS AND A MIN LENGTH OF 4'-0".
6. STAIRWAYS WITH 1 OR MORE RISERS MUST HAVE HANDRAILS ON BOTH SIDES.
7. HANDRAILS MUST BE CONTINUOUS ACROSS LANDINGS BETWEEN FLIGHTS OF STEPS.
8. ALL STEEL MUST BE HOT DIPPED GALVANIZED.
9. PIPE MATERIAL MUST BE ASTM A53 AND ROUND BAR ASTM A36.
10. REINFORCING STEEL MUST BE ASTM A615 GR 60.
11. FOR FORMAL DRAINAGE PICK-UP SEE DETAIL B ON STD PLAN NO 440b (THIS IS OPTIONAL AND MUST BE CALLED OUT ON DRAWINGS).
12. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
13. CONCRETE CLASS CL3000.
14. LANDINGS MUST BE 0.5% MIN FOR A MIN LENGTH OF 4', ADJACENT SIDEWALK MAY BE PART OF LANDING IF SLOPE CRITERIA AND SETBACKS FROM HANDRAILS ARE MET.
15. TREAD SURFACE MUST HAVE GROOVES AT THE NOSE FOR TRACTION.
16. IF LANDING IS ELEVATED, LANDING MUST HAVE VERTICAL RAILING PER RIGHT OF WAY IMPROVEMENT MANUAL.
17. STAIRWAYS DEVIATING FROM STANDARD PLAN TO ACCOMMODATE BICYCLE FEATURES MAY BE USED PER STD PLAN NO 440C OR 440D.
18. DIMENSION FROM THE BOTTOM LANDING RAILING TO THE NOSE OF THE TREAD MUST BE 12" MIN + 1 TREAD LENGTH.
19. HANDRAIL GRIPPING SURFACE AND ADJACENT SURFACES MUST BE FREE FROM SHARP OR ABRASIVE ELEMENTS AND MUST HAVE ROUNDED EDGES.
20. BOTTOM HANDRAIL EXTENSION MUST EXTEND ONE TREAD LENGTH MINIMUM PARALLEL TO THE SLOPE OF THE STAIR BEYOND BOTTOM STAIR NOSING.
21. TOP HANDRAIL EXTENSION MUST EXTEND HORIZONTALLY ABOVE LANDING 12" MINIMUM BEYOND TOP STAIR NOSING.
22. REBAR SIZING AND SPACING MAY CHANGE FOR WIDER OR NARROWER STAIRWAYS.
23. EXTERNAL VENT HOLES MUST BE AS CLOSE TO THE WELD AS POSSIBLE AND MUST BE 25% THE SIZE OF THE I.D. OF THE PIPE, BUT NOT LESS THAN  $3/8"$  IN DIA.
24. VENT HOLES IN END SECTIONS OR IN SIMILAR SECTIONS MUST BE  $1/2"$  IN DIA.
25. ENDS MUST BE LEFT COMPLETELY OPEN. ANY DEVICE USED FOR FIELD-ERECTION THAT PREVENTS FULL OPENINGS ON ENDS OF HORIZONTAL RAILS AND VERTICAL LEGS MUST BE GALVANIZED SEPARATELY AND ATTACHED AFTER GALVANIZING.

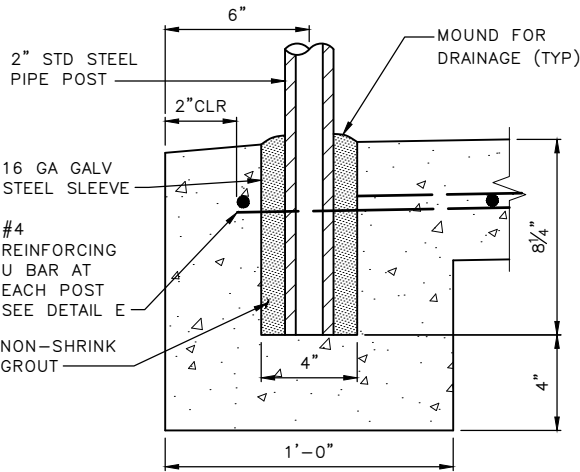
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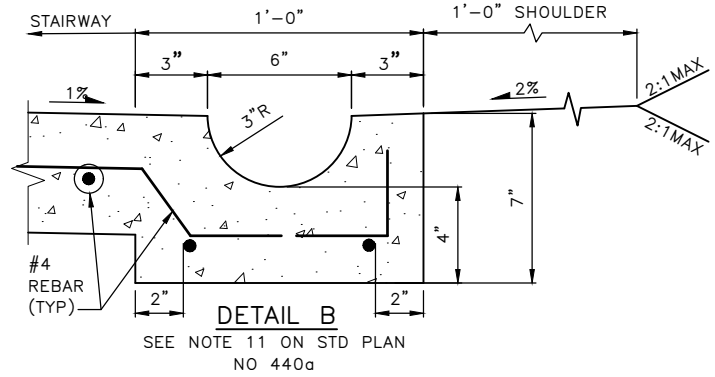
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CEMENT CONCRETE  
STAIRWAY & HANDRAIL

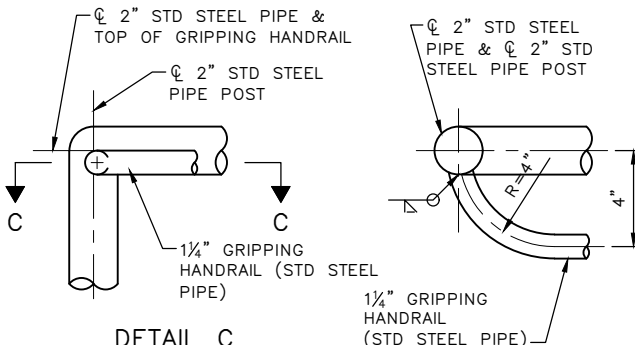


DETAIL A



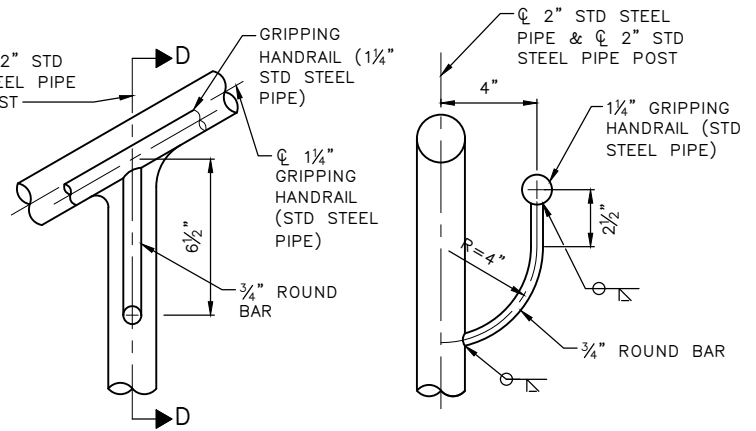
DETAIL B

SEE NOTE 11 ON STD PLAN  
NO 440a



DETAIL C  
HAND GRIP TERMINATION

SECTION C-C

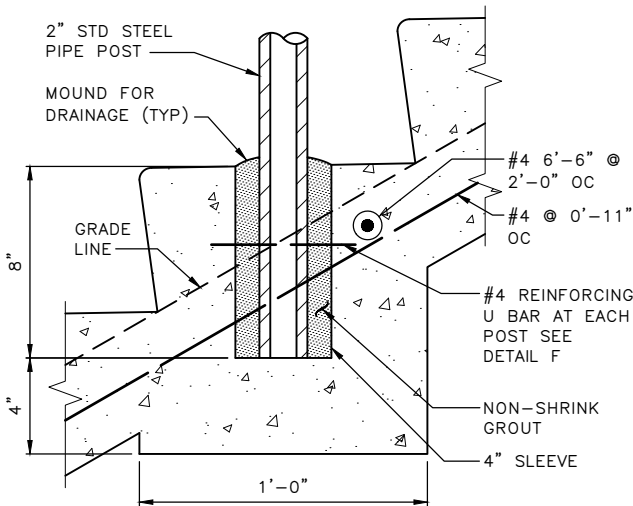


DETAIL D

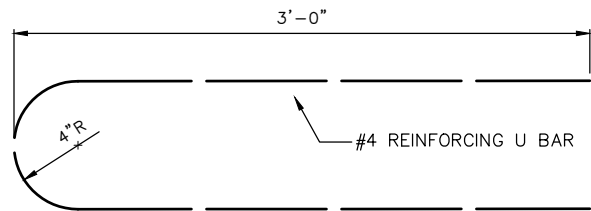
SECTION D-D

NOTE:

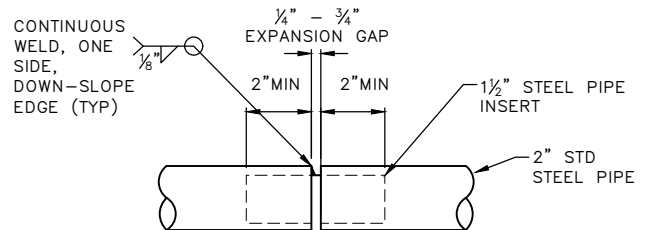
PIPE DIAMETERS SHOWN CORRESPOND TO PIPE  
"SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF  
STEEL CONSTRUCTION MANUAL.



DETAIL E



DETAIL F



DETAIL G  
SLIP JOINT

REF STD SPEC SEC 8-18

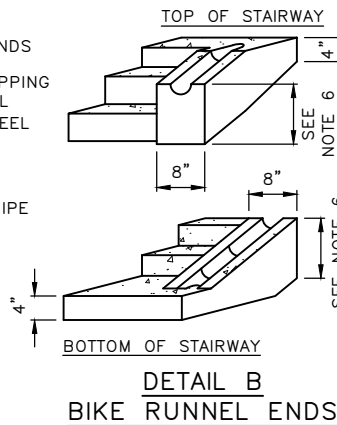
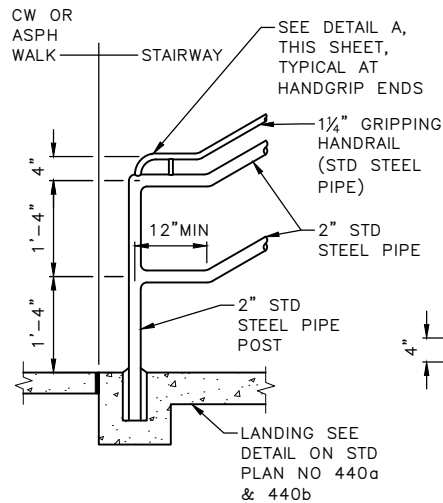
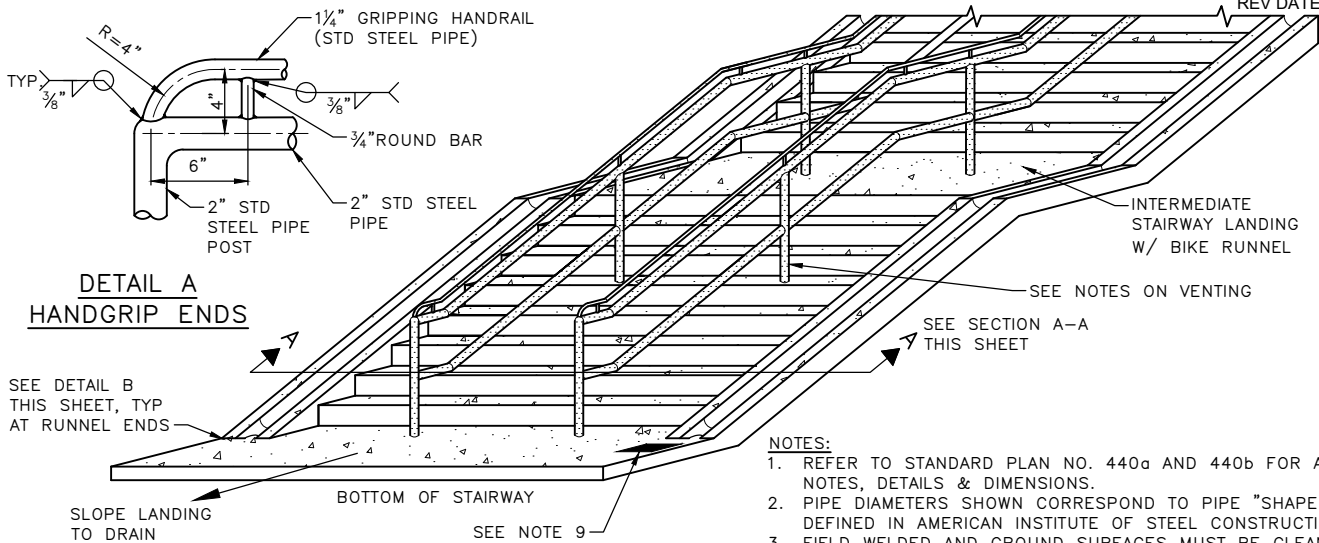


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CEMENT CONCRETE  
STAIRWAY & HANDRAIL

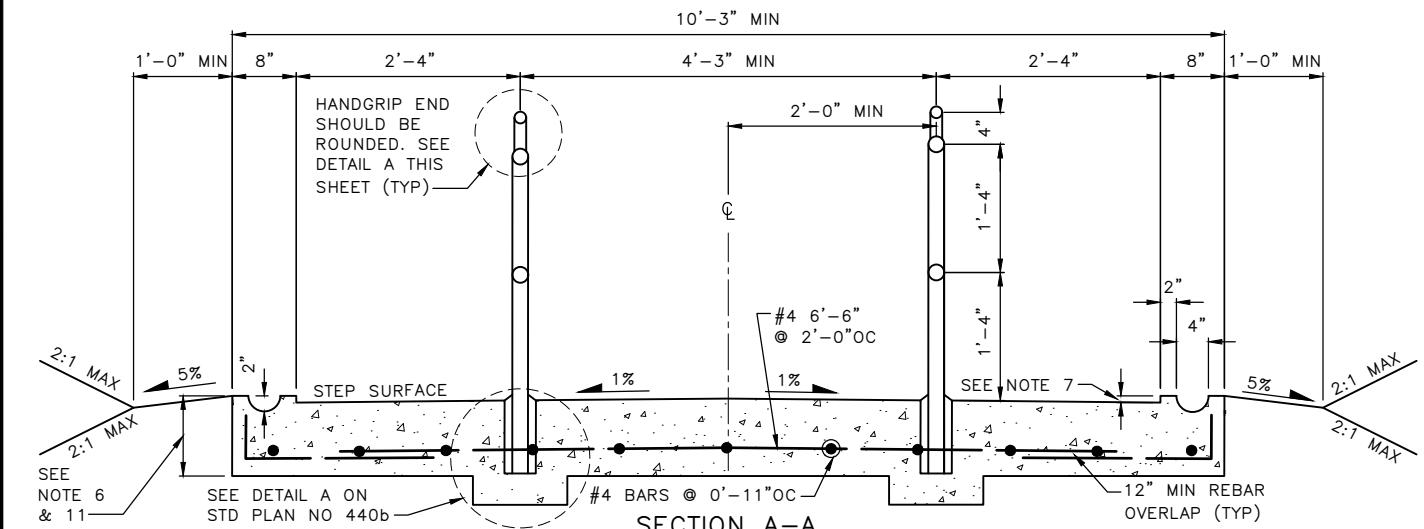
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**NOTES:**

1. REFER TO STANDARD PLAN NO. 440a AND 440b FOR ADDITIONAL NOTES, DETAILS & DIMENSIONS.
2. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
3. FIELD WELDED AND GROUND SURFACES MUST BE CLEANED AND COATED WITH ZINC SPRAY TO A MIN. OF 3 MILS, DRY PAINT THICKNESS.
4. DIMENSIONS SHOWN ON ONE SIDE OF THE SECTION VIEW ARE TYPICAL TO THE OTHER SIDE, UNLESS NOTED OTHERWISE.
5. DISTANCE BETWEEN HANDGRIP SUPPORTS MUST NOT EXCEED 6'-0".
6. BIKE RUNNEL SLAB THICKNESS VARIES WITH STEP RISER HEIGHT. MIN. 10.5", MAX. 12.5"
7. RUNNEL LIP HEIGHT 1.5" ABOVE STEP NOSING AND LANDING.
8. INTERMEDIATE STAIR LANDINGS THAT INTERSECT OTHER STAIRS OR WALKS MUST BE AT LEAST 6' LONG TO ALLOW FOR A MIN. 4' OF CLEAR AREA WITHOUT RUNNEL & RAIL.
9. STAMP CONCRETE AT TOP AND BOTTOM OF RUNNEL. SEE CONCRETE STAMP DETAIL STD PLAN NO 440d.
10. LONG STAIRWAYS OR STAIRWAYS WITH SIGHT OBSTRUCTIONS TO CYCLISTS MUST HAVE SIDEWALK BREAKS TO ALLOW ONCOMING CYCLISTS PASSAGE. LOCATIONS OF SIDEWALK BREAKS TO BE DETERMINED BY ENGINEER.
11. ANY CONSTRUCTION OUTSIDE OF RUNNEL MUST ALLOW ENOUGH CLEARANCE FOR BIKE PEDALS AND HANDLEBARS FROM INTERFERING WITH MOVEMENT.
12. EXTERNAL VENT HOLES MUST BE AS CLOSE TO THE WELD AS POSSIBLE AND MUST BE 25% THE SIZE OF THE I.D. OF THE PIPE, BUT NOT LESS THAN 3/8" IN DIA.
13. VENT HOLES IN END SECTIONS OR IN SIMILAR SECTIONS MUST BE 1/2" IN DIA.
14. ENDS MUST BE LEFT COMPLETELY OPEN. ANY DEVICE USED FOR FIELD-ERECTION THAT PREVENTS FULL OPENINGS ON ENDS OF HORIZONTAL RAILS AND VERTICAL LEGS MUST BE GALVANIZED SEPARATELY AND ATTACHED AFTER GALVANIZING.

**RAIL ENDS DETAIL**



REF STD SPEC SEC 8-18

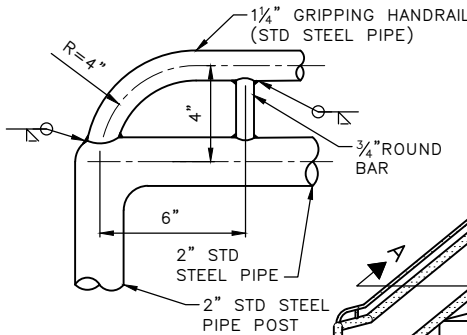


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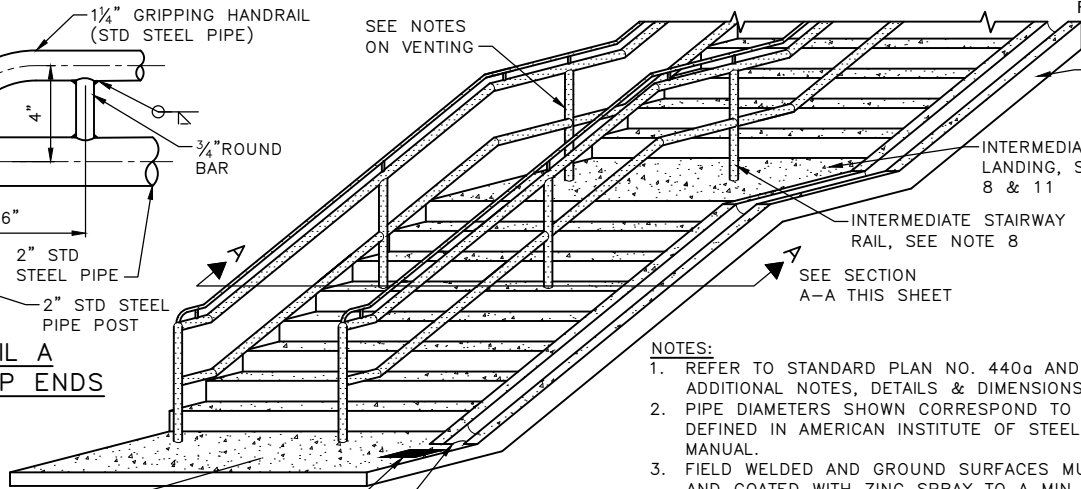
**CEMENT CONCRETE  
STAIRWAY & BIKE RUNNEL**

REV DATE: JAN 2019



**DETAIL A  
HANDGRIP ENDS**

SEE NOTES  
ON VENTING

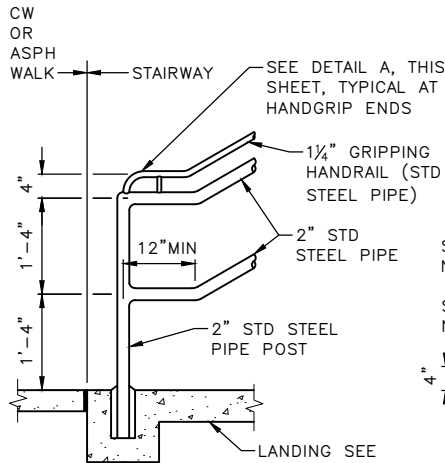


SEE NOTE 12

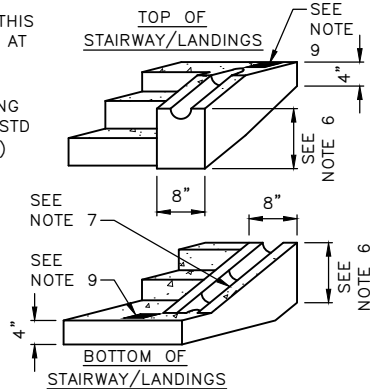
SEE SECTION  
A-A THIS SHEET

**NOTES:**

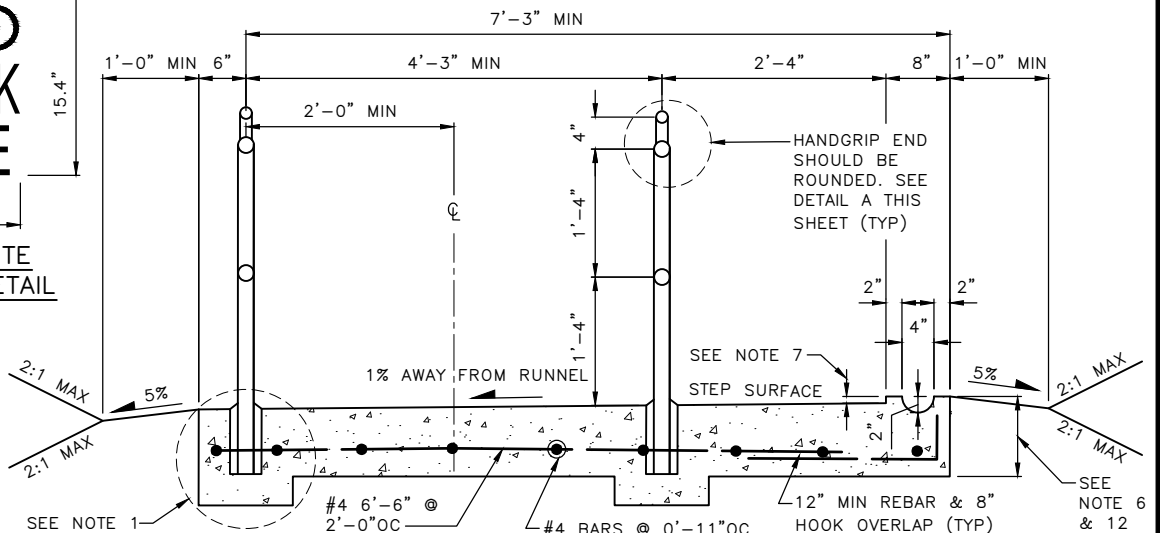
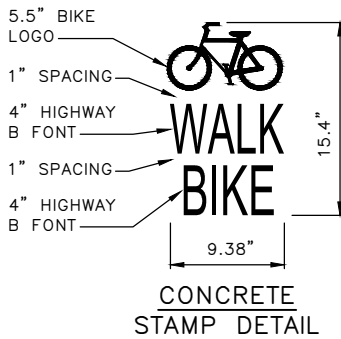
1. REFER TO STANDARD PLAN NO. 440a AND 440b FOR ADDITIONAL NOTES, DETAILS & DIMENSIONS.
2. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
3. FIELD WELDED AND GROUND SURFACES MUST BE CLEANED AND COATED WITH ZINC SPRAY TO A MIN. OF 3 MILS, DRY PAINT THICKNESS.
4. DIMENSIONS SHOWN ON ONE SIDE OF THE SECTION VIEW ARE TYPICAL TO THE OTHER SIDE, UNLESS NOTED OTHERWISE.
5. DISTANCE BETWEEN HANDGRIP SUPPORTS MUST NOT EXCEED 6'.
6. BIKE RUNNEL SLAB THICKNESS VARIES WITH STEP RISER HEIGHT. MIN. 10.5", MAX. 12.5"
7. RUNNEL LIP HEIGHT 1.5" ABOVE STEP NOSING AND LANDING.
8. LANDINGS THAT INTERSECT OTHER STAIRS OR WALKS MUST BE AT LEAST 6' LONG TO ALLOW FOR A MIN. 4' OF CLEAR AREA WITHOUT RUNNEL & RAIL.
9. STAMP CONCRETE AT TOP AND BOTTOM OF RUNNEL. SEE CONCRETE STAMP DETAIL.
10. RUNNEL LOCATION MUST BE ON EITHER SIDE OF STAIRWAY AS DETERMINED BY ENGINEER.
11. LONG STAIRWAYS OR STAIRWAYS WITH SIGHT OBSTRUCTIONS TO CYCLISTS MUST HAVE SIDEWALK BREAKS TO ALLOW ONCOMING CYCLISTS PASSAGE. LOCATIONS OF SIDEWALK BREAKS TO BE DETERMINED BY ENGINEER.
12. ANY CONSTRUCTION OUTSIDE OF RUNNEL MUST ALLOW ENOUGH CLEARANCE FOR BIKE PEDALS AND HANDLEBARS FROM INTERFERING WITH MOVEMENT.
13. EXTERNAL VENT HOLES MUST BE AS CLOSE TO THE WELD AS POSSIBLE AND MUST BE 25% THE SIZE OF THE I.D. OF THE PIPE, BUT NOT LESS THAN 3/8" IN DIA.
14. VENT HOLES IN END SECTIONS OR IN SIMILAR SECTIONS MUST BE 1/2" IN DIA.
15. ENDS MUST BE LEFT COMPLETELY OPEN. ANY DEVICE USED FOR FIELD-ERECTION THAT PREVENTS FULL OPENINGS ON ENDS OF HORIZONTAL RAILS AND VERTICAL LEGS MUST BE GALVANIZED SEPARATELY AND ATTACHED AFTER GALVANIZING.



**RAIL ENDS DETAIL**



**DETAIL B  
BIKE RUNNEL ENDS**



**SECTION A-A**

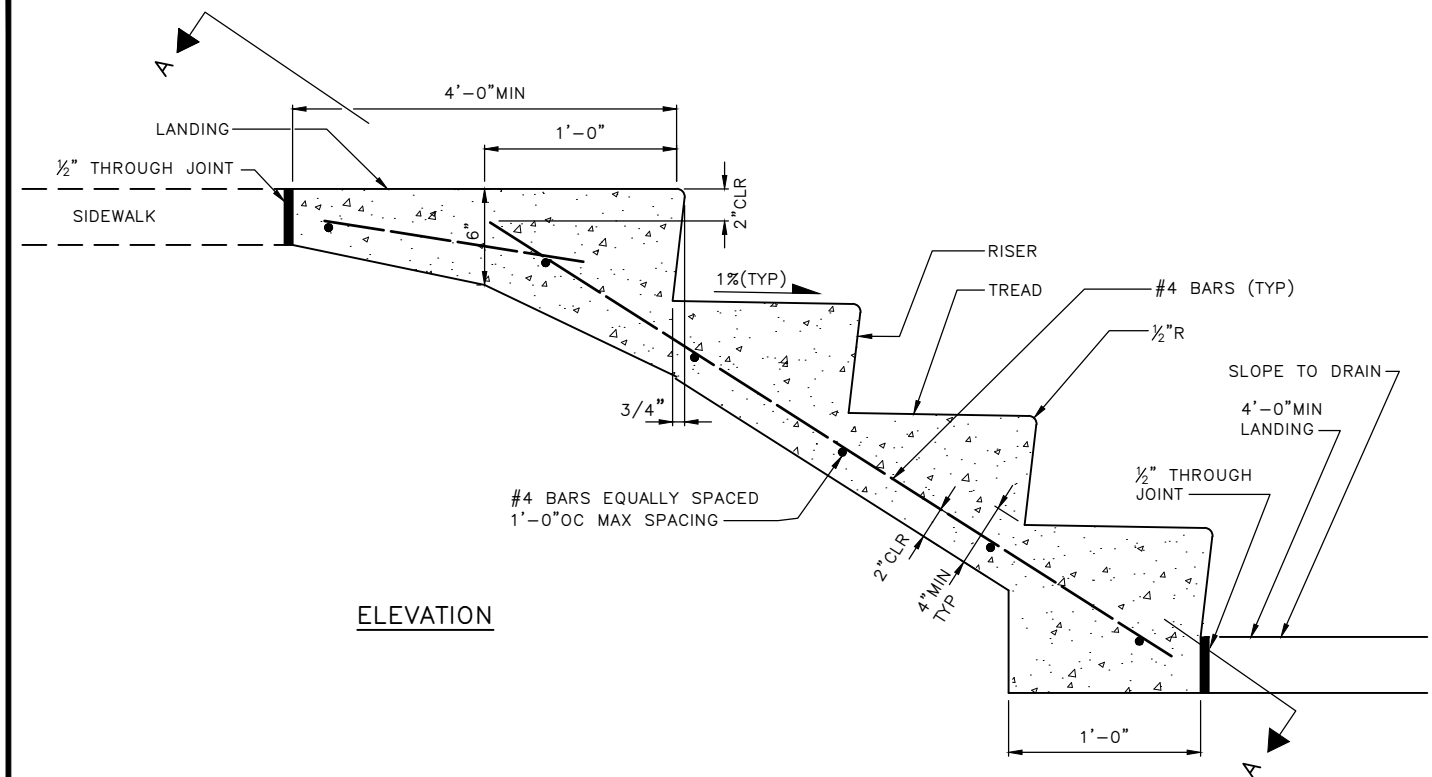
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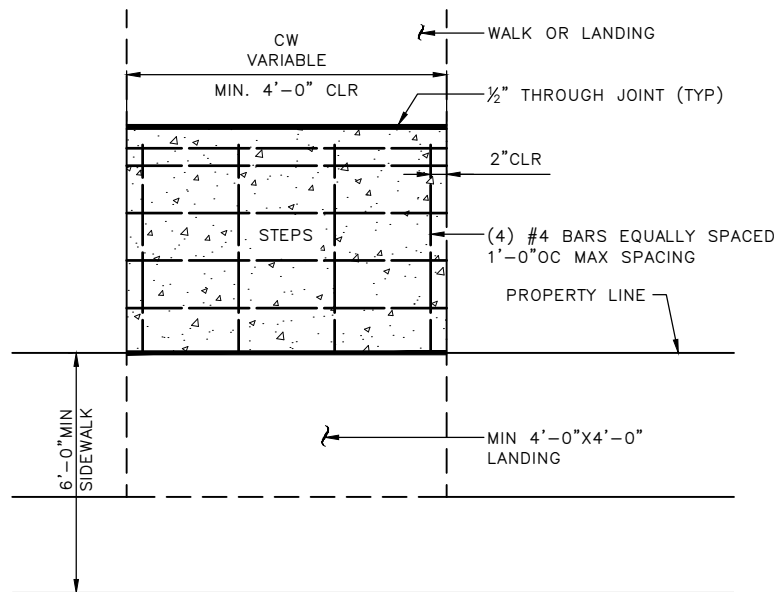
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**CEMENT CONCRETE  
STAIRWAY & SINGLE BIKE RUNNEL**



ELEVATION



SECTION A-A

NOTES:

1. CEMENT CONCRETE MUST BE CL 3000 TROWEL FINISH
2. NUMBER OF STEPS MUST SUIT INDIVIDUAL CONDITIONS WITH UNIFORM TREAD AND RISER DIMENSIONS AS FOLLOWS:  
TREADS MUST BE 11" MIN - 1'-0" MAX  
RISERS MUST BE 5" MIN - 7" MAX
3. STEP WIDTH MUST MATCH WIDTH OF EXISTING WALK, BUT MUST BE NO LESS THAN 2'-6" WIDE
4. STAIRWAYS WITH 1 OR MORE RISERS MUST INCLUDE A HANDRAIL ON BOTH SIDES. SEE STD PLAN NO 440
5. REINFORCING STEEL ASTM A 615 GR60
6. TREAD SLOPES OUTWARD @ 1%

REF STD SPEC SEC 8-18

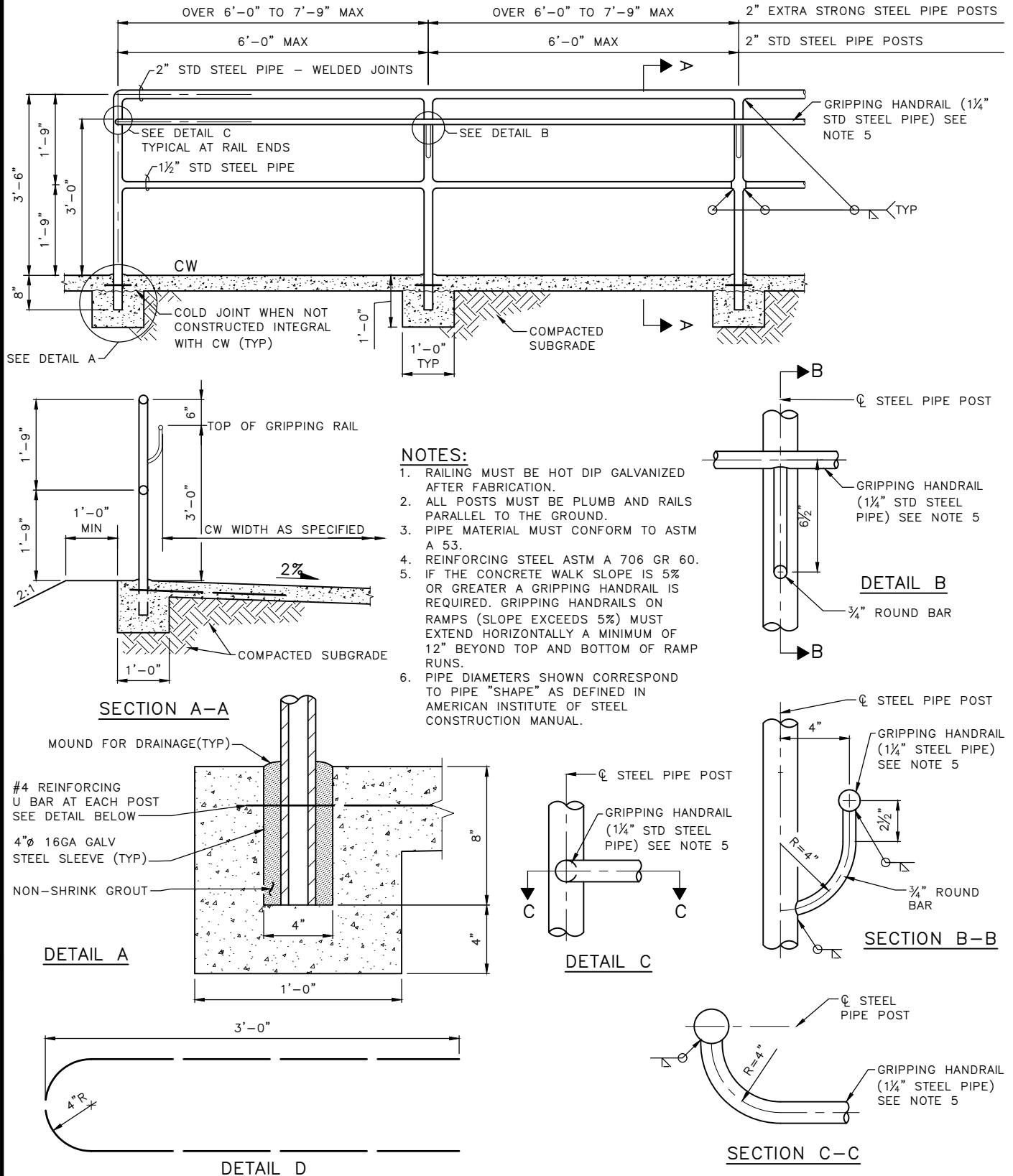


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CEMENT CONCRETE STEPS

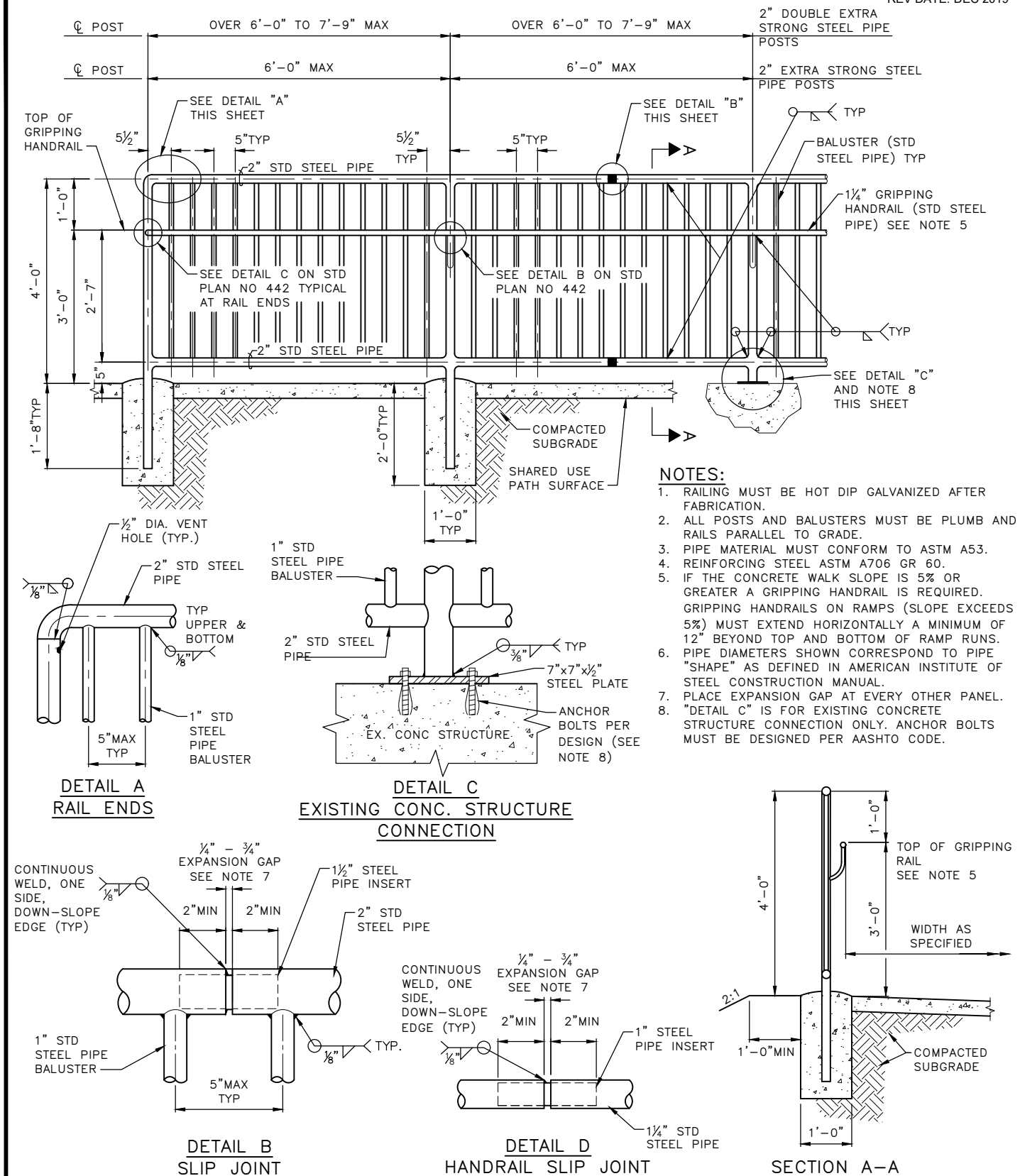




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STEEL PIPE HANDRAIL



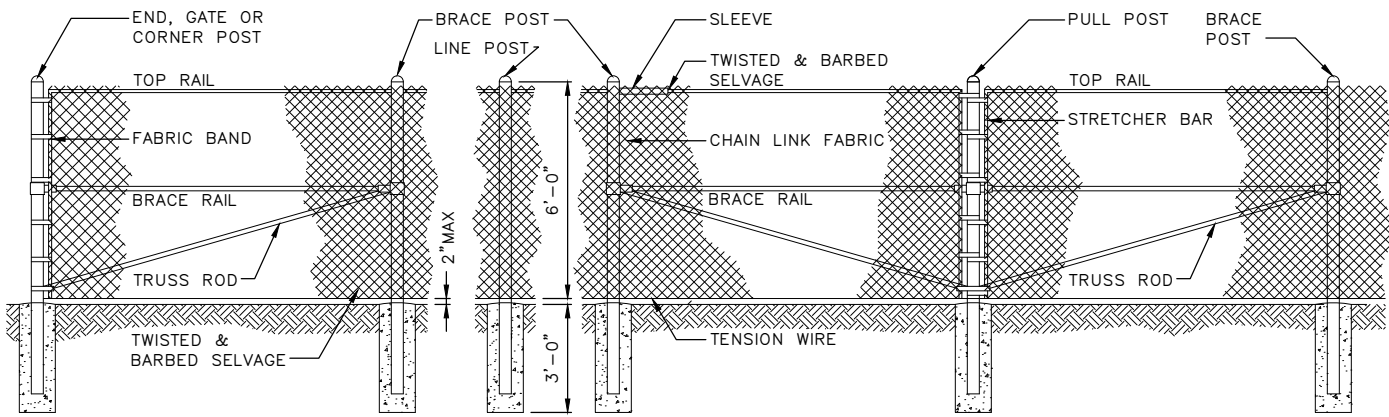
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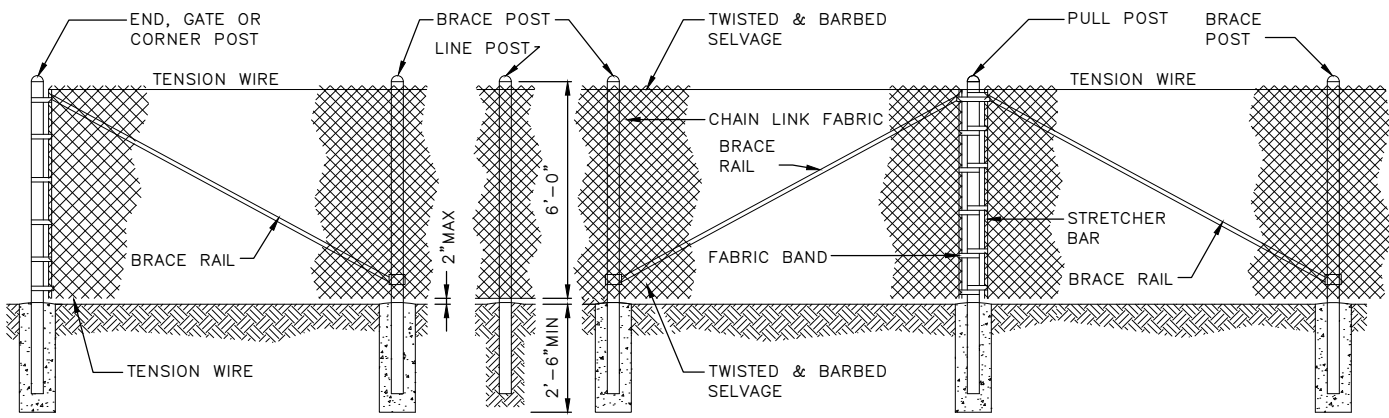
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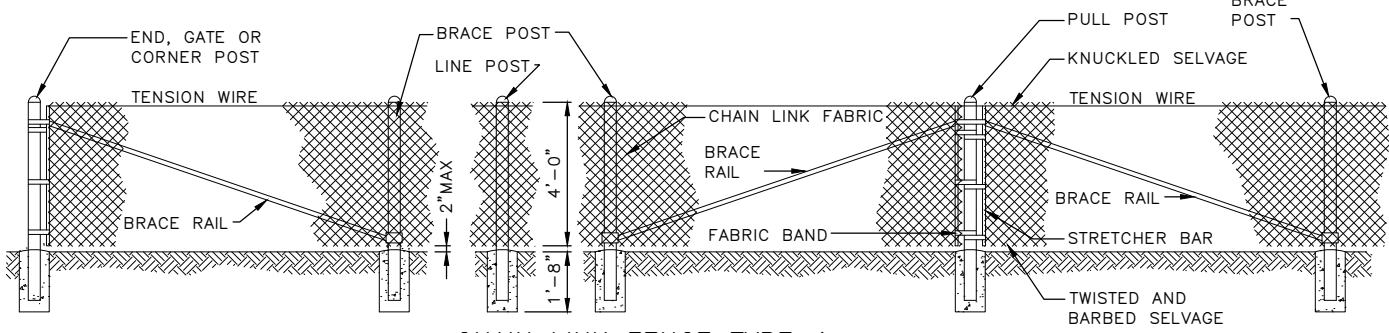
PEDESTRIAN RAILING



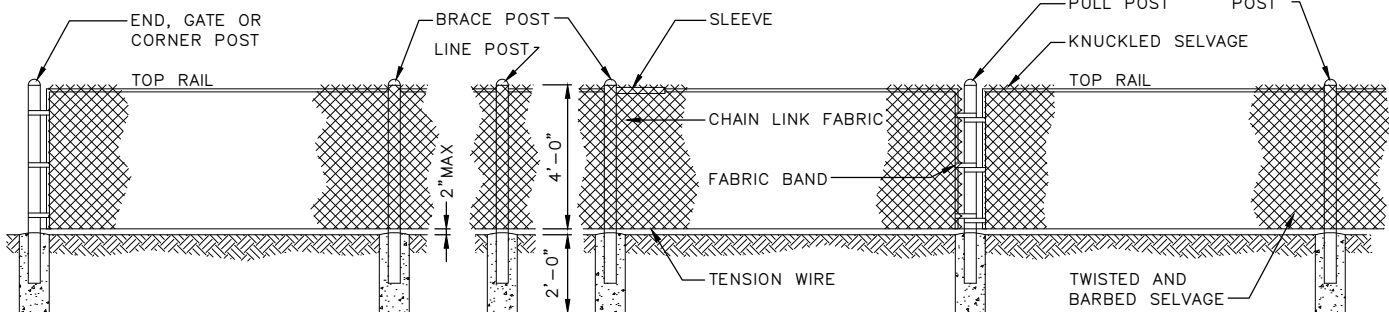
CHAIN LINK FENCE TYPE 1



CHAIN LINK FENCE TYPE 3



CHAIN LINK FENCE TYPE 4



CHAIN LINK FENCE TYPE 6

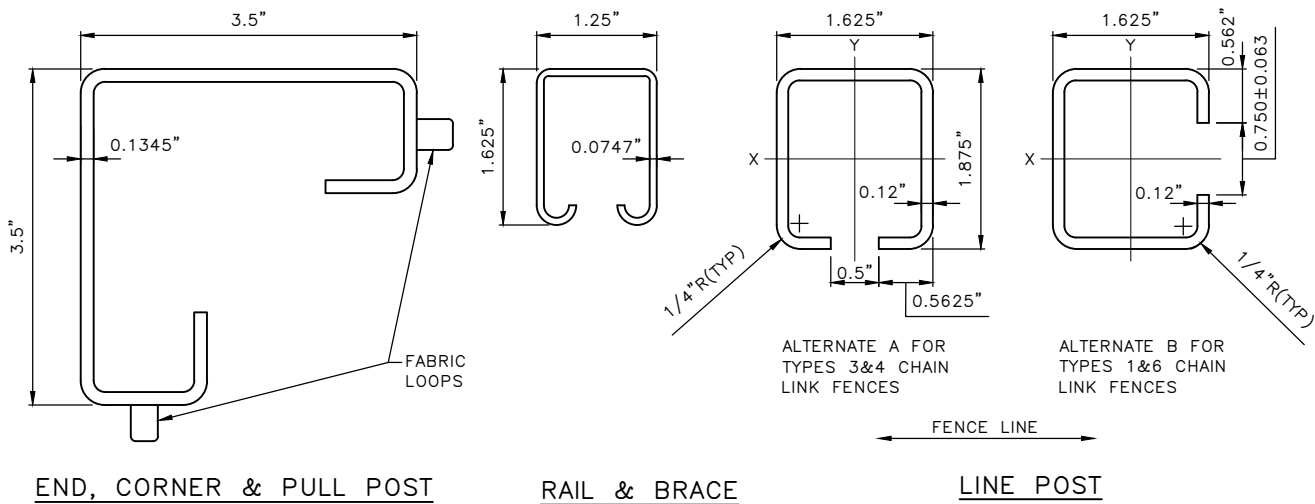
REF STD SPEC SEC 8-12



City of Seattle

NOT TO SCALE

CHAIN LINK FENCE



ROLL FORMED SECTIONS

MEMBER												
TYPE	BRACE RAIL & TOP RAIL						LINE & BRACE POST					
	ROUND		H-COLUMN		ROLL FORMED		ROUND		H-COLUMN		ROLL FORMED	
	ID PIPE INCHES	WEIGHT PER FT POUNDS	SIZE INCHES	WEIGHT PER FT POUNDS	SIZE INCHES	WEIGHT PER FT POUNDS	ID PIPE INCHES	WEIGHT PER FT POUNDS	SIZE INCHES	WEIGHT PER FT POUNDS	SIZE INCHES	WEIGHT PER FT POUNDS
1	1.25	2.27	1.25X1.62	1.35	1½X1¼	1.35	2	3.65	2¼	4.0		
3							1½	2.72	1⅞	2.72	1½X1⅞	2.34
4							1½	2.72	1⅞	2.72	1½X1⅞	2.34
6			1.25X1.62	1.35			2	3.65	2¼	4.0		

MEMBER							
TYPE	END, CORNER & PULL POSTS				GATE POST ROUND		ALL POSTS
	ROUND		H-COLUMN		SIZE INCHES	WEIGHT PER FT POUNDS	LENGTH
	ID PIPE INCHES	WEIGHT PER FT POUNDS	SIZE INCHES	WEIGHT PER FT POUNDS			
1	2½	5.79	3½X3½	5.14	3½	9.1	8' – 8"
3	2	3.65					8' – 8"
4	2	3.65					5' – 6"
6	2½	5.79					5' – 6"

- NOTES:
- 1. ALL CONCRETE POST BASES MUST BE 10" MINIMUM DIAMETER, CL3000
  - 2. POSTS MUST BE SPACED AT 10'-0" MAXIMUM INTERVALS UNLESS OTHERWISE DIRECTED BY THE ENGINEER
  - 3. TOP OR BOTTOM TENSION WIRES MUST BE PLACED WITHIN THE LIMITS OF THE FIRST FULL FABRIC WEAVE
  - 4. THE ILLUSTRATIVE DETAIL SHOWN HEREON MUST NOT BE CONSTRUED AS LIMITING TO HARDWARE DESIGN OR POST SELECTION FOR ANY PARTICULAR FENCE TYPE
  - 5. CONCRETE OR GROUT AROUND POST AT GROUND LINE MUST BE MOUNDED FOR DRAINAGE

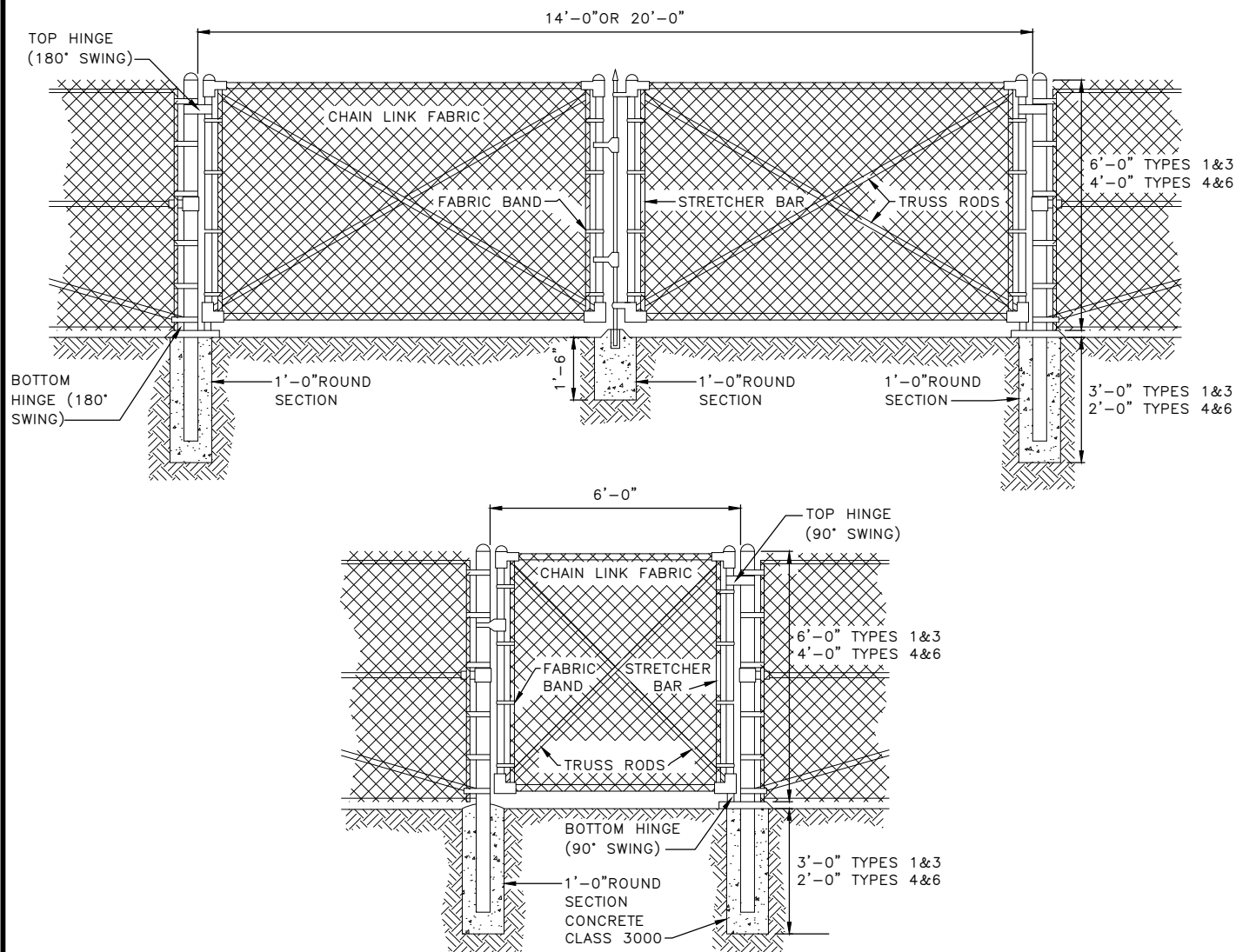
REF STD SPEC SEC 8-12



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NOT TO SCALE

CHAIN LINK FENCE



**NOTES:**

1. FENCE FABRIC MUST BE SECURED TO GATE FRAMES WITH KNUCKLED SELVAGE ALONG TOP EDGE FOR TYPES 4&6 CHAIN LINK FENCE INSTALLATIONS
2. MINIMUM POST LENGTH:  
TYPES 1&3: 8'-8"  
TYPES 4&6: 5'-6"
3. CONCRETE OR GROUT AROUND POST AT GROUND LINE MUST BE MOUNDED FOR DRAINAGE

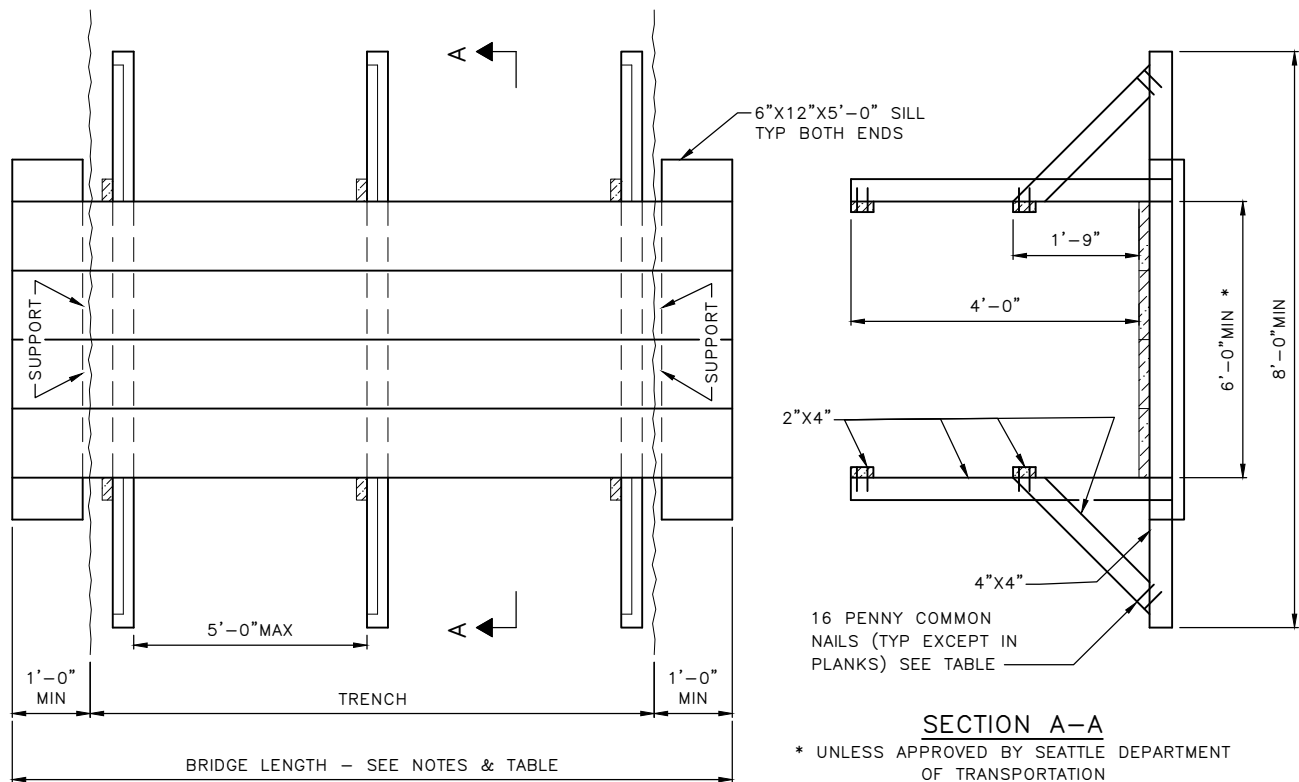
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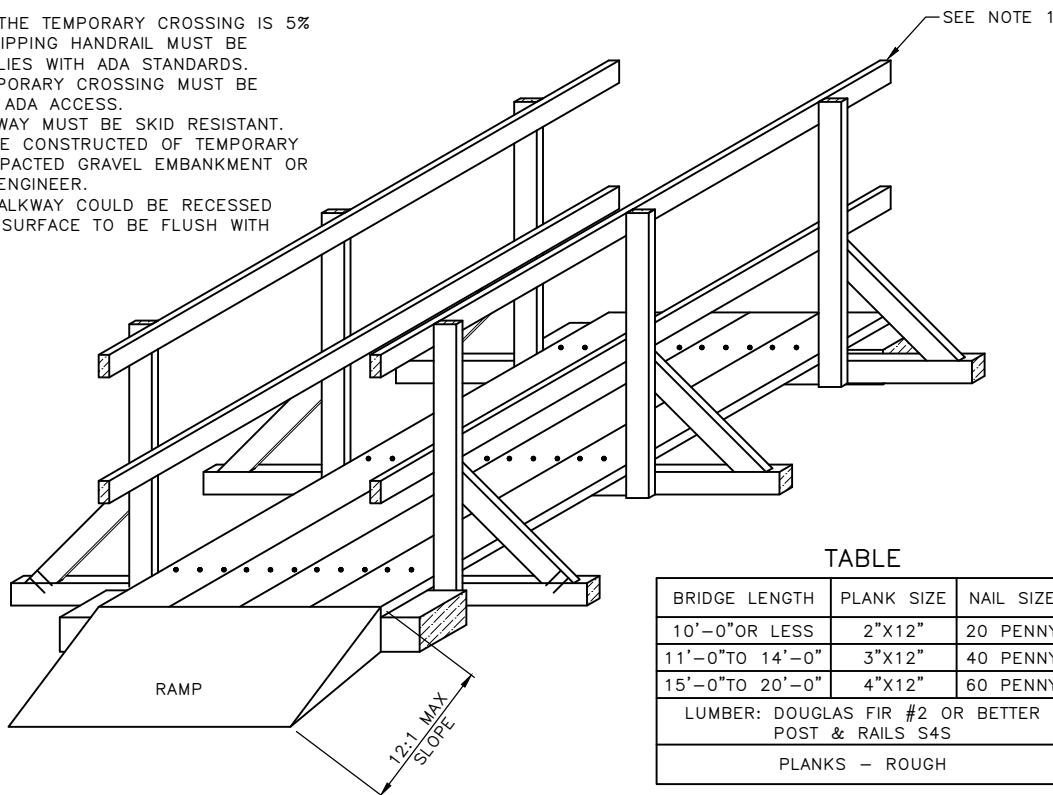
NOT TO SCALE

CHAIN LINK GATES



NOTES:

1. IF THE SLOPE OF THE TEMPORARY CROSSING IS 5% OR GREATER, A GRIPPING HANDRAIL MUST BE ADDED THAT COMPLIES WITH ADA STANDARDS.
2. ENDS OF THE TEMPORARY CROSSING MUST BE SLOPED TO ALLOW ADA ACCESS.
3. SURFACE OF WALKWAY MUST BE SKID RESISTANT.
4. THE RAMP MUST BE CONSTRUCTED OF TEMPORARY PAVEMENT OR COMPACTED GRAVEL EMBANKMENT OR AS APPROVED BY ENGINEER.
5. THE TEMPORARY WALKWAY COULD BE RECESSED FOR THE WALKING SURFACE TO BE FLUSH WITH ADJOINING GRADE.



TABLE

BRIDGE LENGTH	PLANK SIZE	NAIL SIZE
10'-0" OR LESS	2"x12"	20 PENNY
11'-0" TO 14'-0"	3"x12"	40 PENNY
15'-0" TO 20'-0"	4"x12"	60 PENNY
LUMBER: DOUGLAS FIR #2 OR BETTER POST & RAILS S4S		
PLANKS - ROUGH		

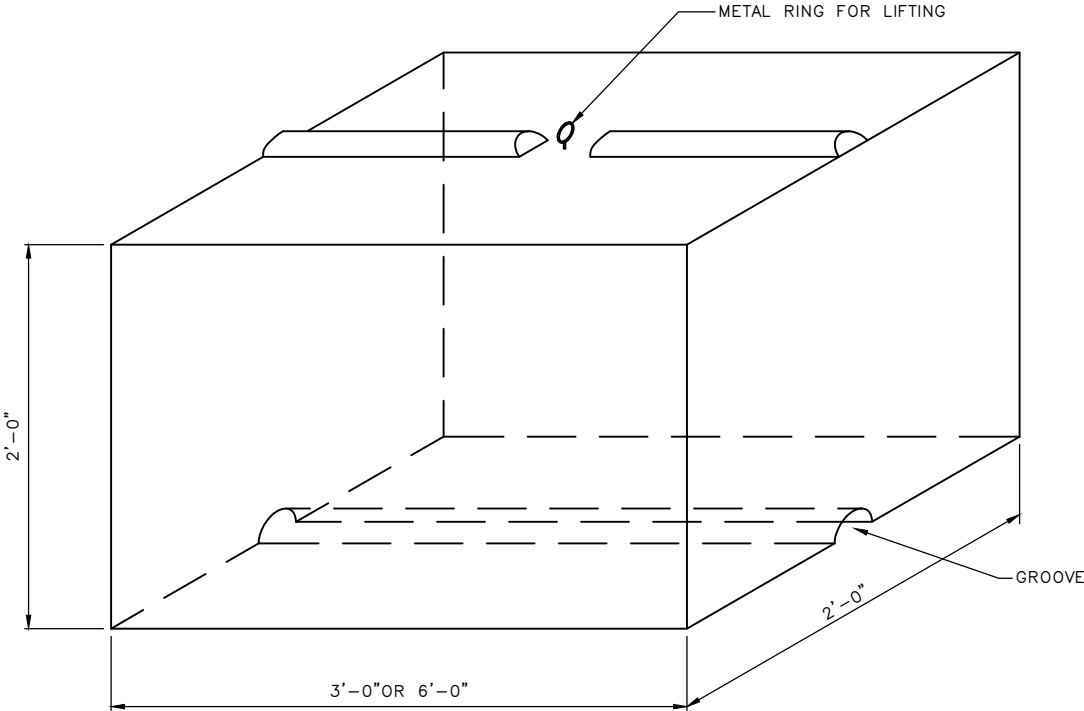
REF STD SPEC SEC 1-07.23



City of Seattle

NOT TO SCALE

TEMPORARY PEDESTRIAN  
WALKWAY



CONCRETE TONGUE & GROOVE BLOCK

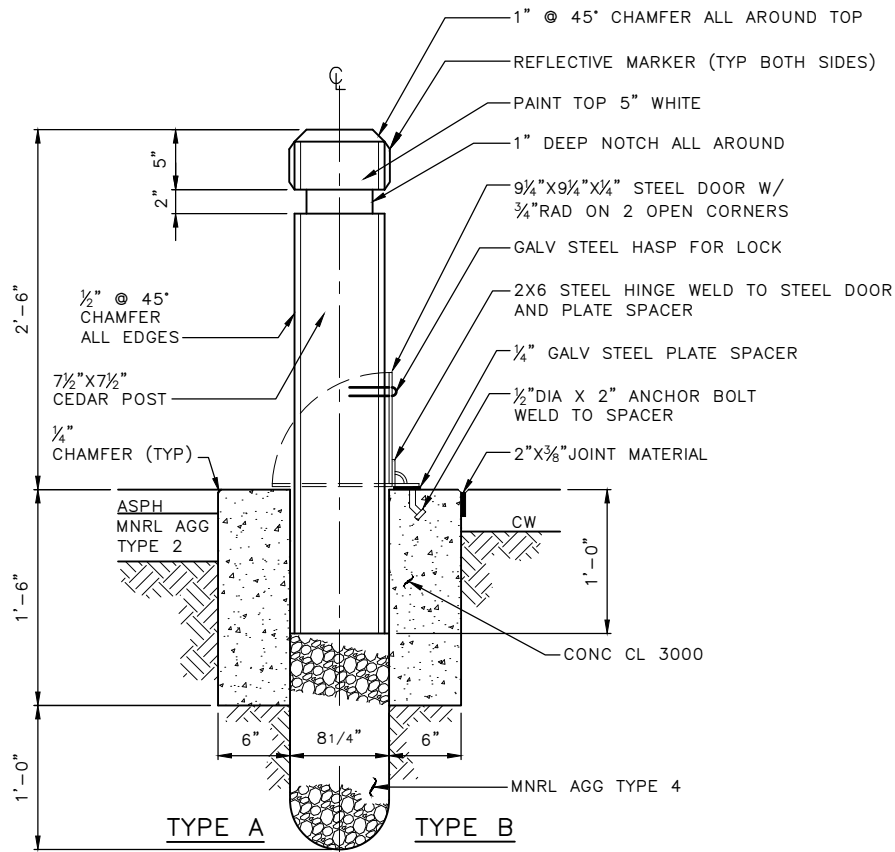
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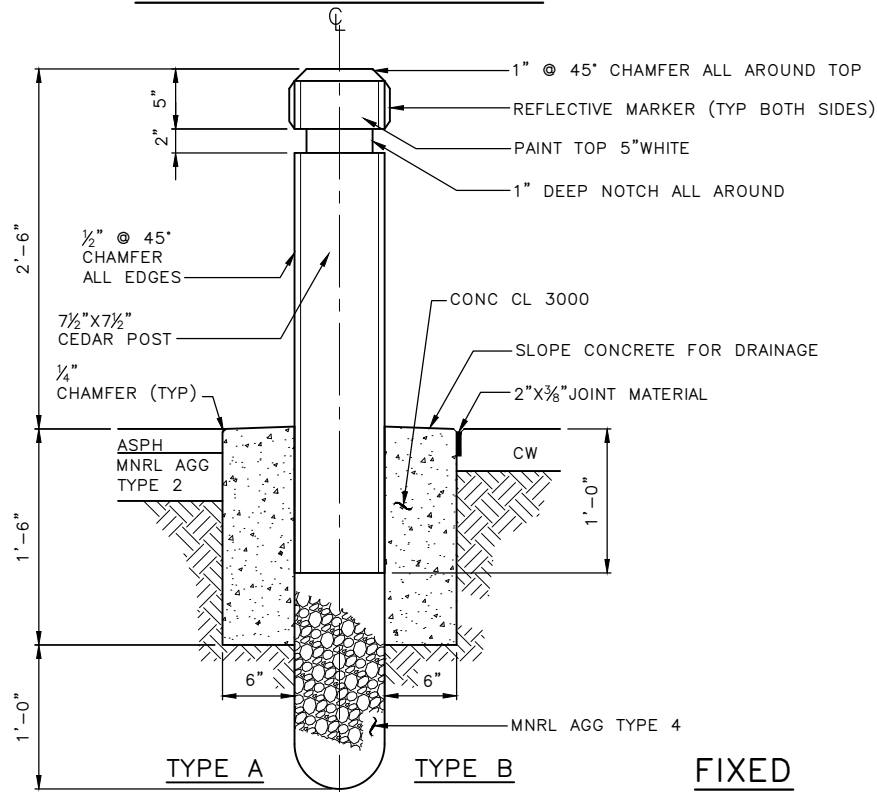
City of Seattle

NOT TO SCALE

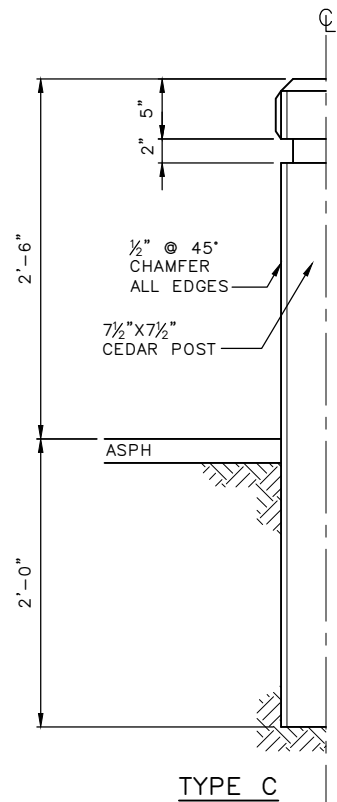
ECOLOGY BLOCK, CONCRETE



**REMOVABLE BOLLARDS**



**FIXED BOLLARDS**



**TYPE C**

REF STD SPEC SEC 8-02

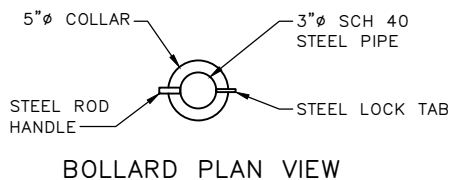
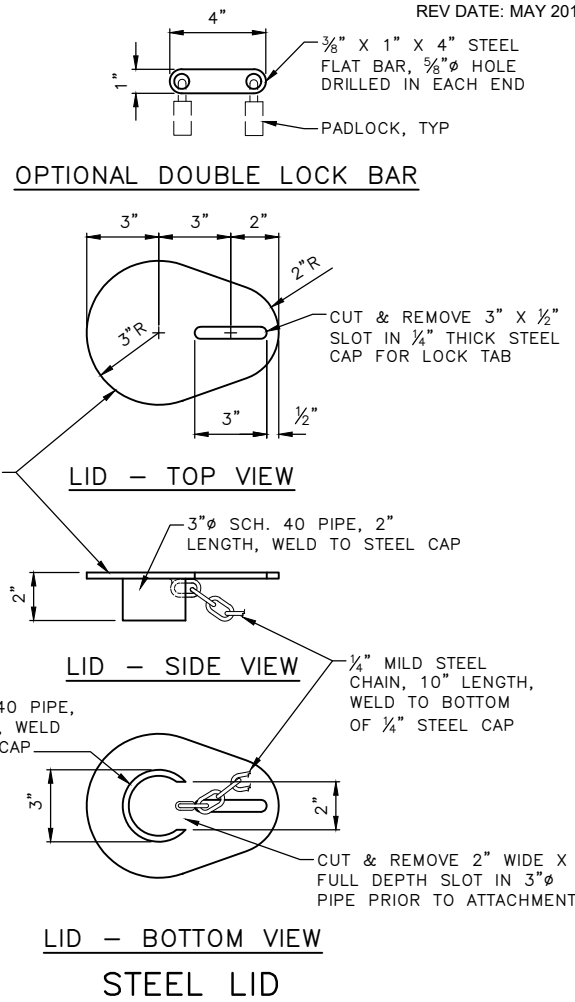
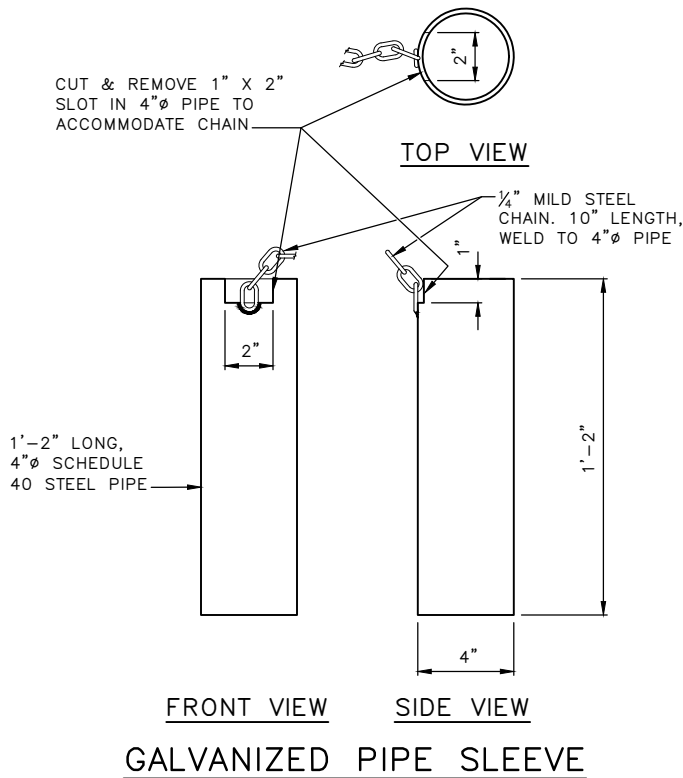


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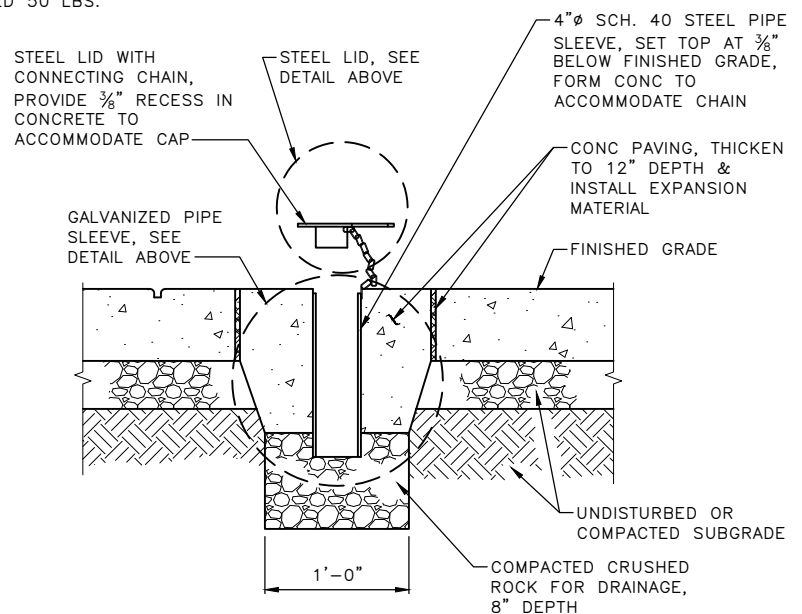
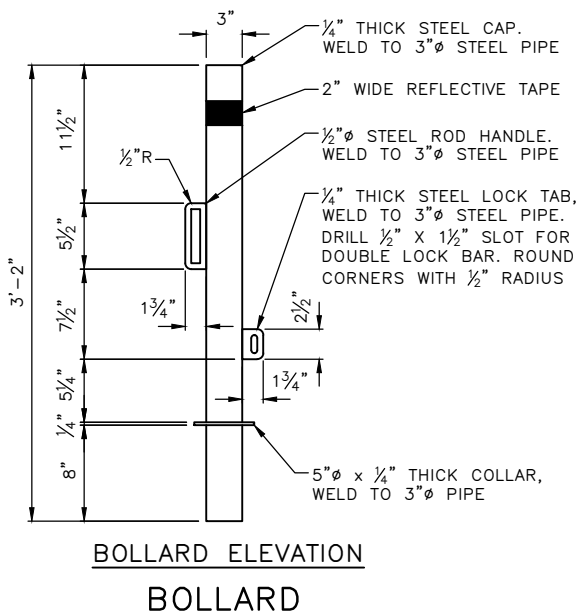
NOT TO SCALE

**FIXED & REMOVABLE WOOD BOLLARD**





- NOTES:**
1. ALL PIPE SECTIONS MUST BE CONSTRUCTED OF SCHEDULE 40 STEEL PIPE AND ALL COMPONENTS MUST BE HOT DIPPED GALVANIZED AFTER FABRICATION.
  2. BOLLARD MUST NOT EXCEED 50 LBS.



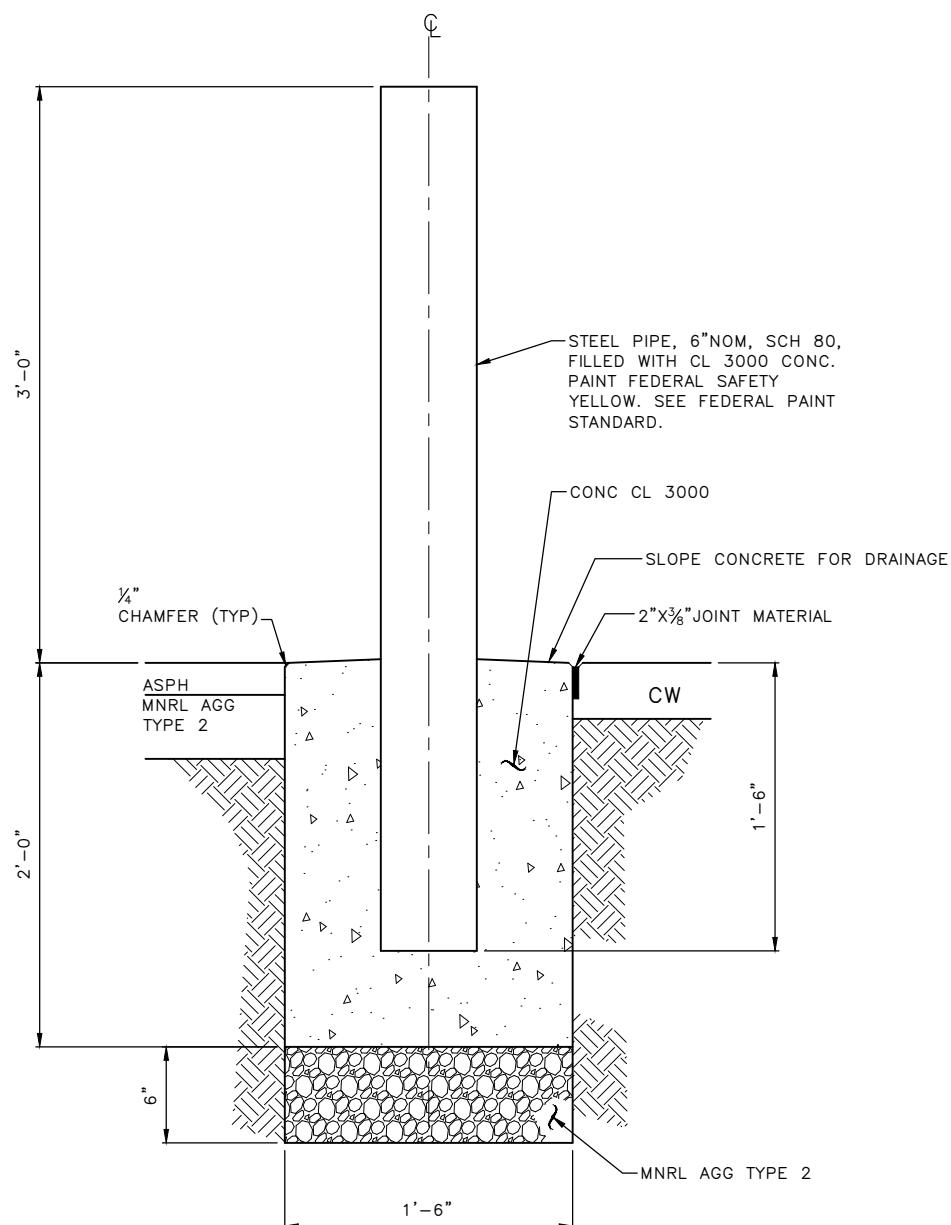
REF STD SPEC SEC 8-02



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NOT TO SCALE

REMOVABLE STEEL BOLLARD



1/4"  
CHAMFER (TYP)

ASPH  
MNRL AGG  
TYPE 2

-STEEL PIPE, 6"NOM, SCH 80,  
FILLED WITH CL 3000 CONC.  
PAINT FEDERAL SAFETY  
YELLOW. SEE FEDERAL PAINT  
STANDARD.

-CONC CL 3000

—SLOPE CONCRETE FOR DRAINAGE

- 2"X $\frac{3}{8}$ " JOINT MATERIAL

CW

6

9

1'-6"

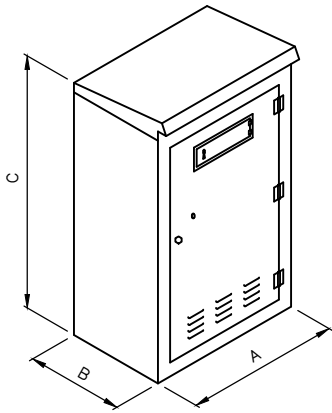
—MNRL AGG TYPE 2

REF STD SPEC SEC 8-02



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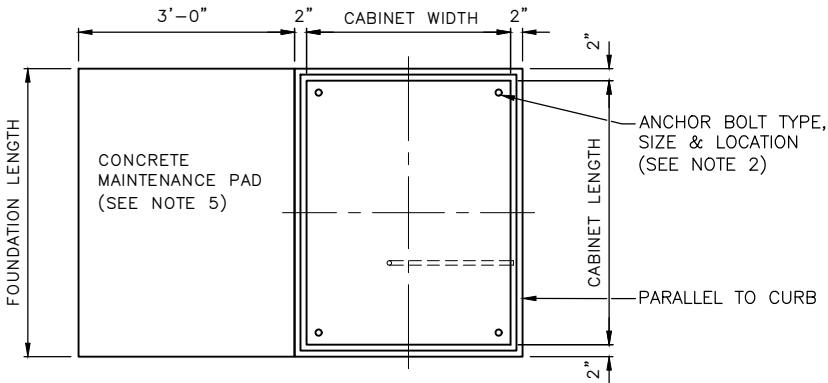
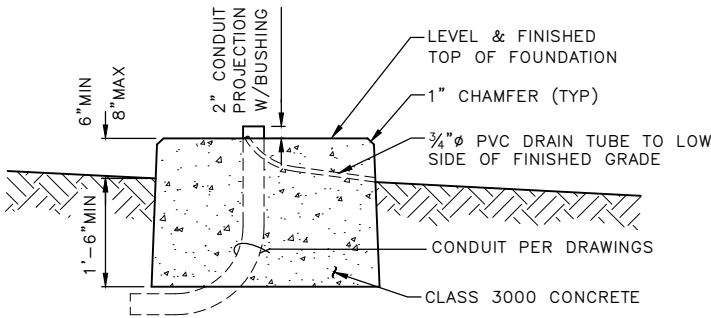
## FIXED STEEL BOLLARD



- NOTES:
1. UNLESS OTHERWISE SPECIFIED, TRAFFIC SIGNAL CONTROLLER CABINET MUST BE FURNISHED BY THE CITY
  2. UNLESS OTHERWISE SPECIFIED, EXACT CABINET DIMENSIONS & ANCHOR BOLT LOCATIONS MUST BE PROVIDED BY THE TRAFFIC SIGNAL SHOP
  3. PLACE CABINET DOOR ON SIDEWALK SIDE OF FOUNDATION
  4. SEAL CABINET TO FOUNDATION WITH GREY OR CLEAR SILICONE TO PREVENT MOISTURE FROM ENTERING THE CABINET
  5. CABINET FOUNDATIONS INSTALLED IN A LANDSCAPE AREA MUST INCLUDE A CONCRETE SIDEWALK MAINTENANCE PAD ON THE SDOT DOOR SIDE OF THE FOUNDATION, SEE STD SPEC SEC 8-32.3(2)B

DIMENSION	TYPE II	TYPE III	VI
A	30"	44"	44"
B	17"	25 1/2"	25 1/2"
C	38" TO 52"	50" TO 58"	64 3/4" TO 67 1/2"

SIGNAL CONTROLLER CABINET–TYPES II, III, VI



SIGNAL CONTROLLER FOUNDATION

SEE STD PLANS NO 500b & 500c FOR CONDUIT LAYOUT

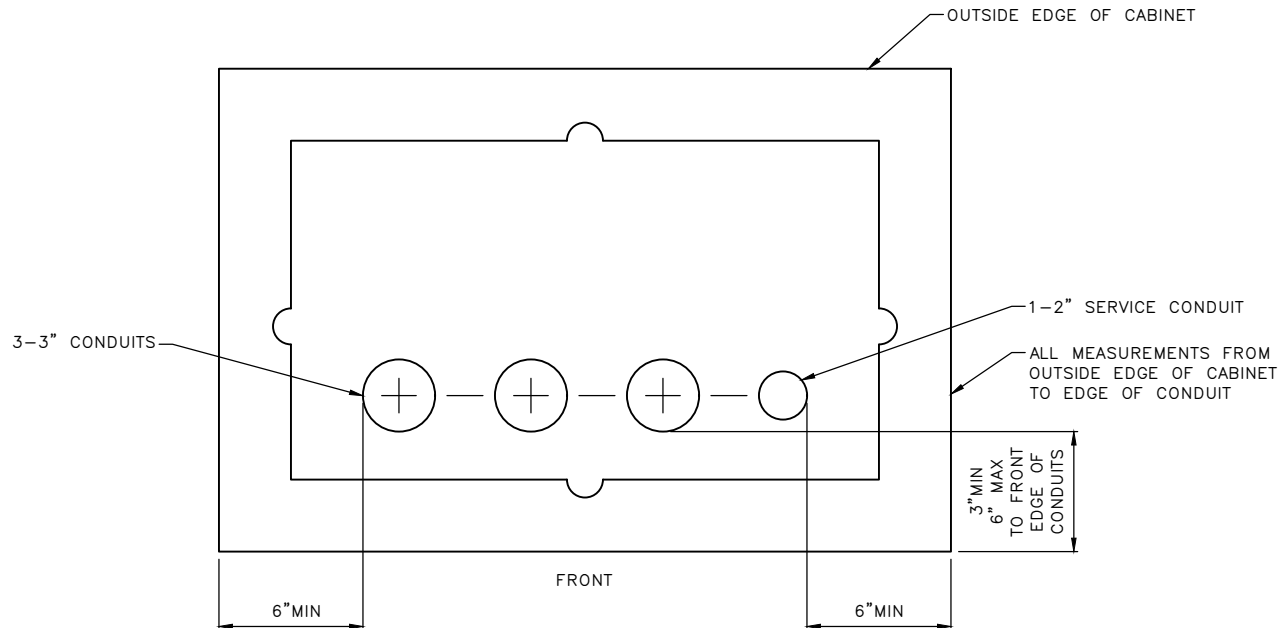
REF STD SPEC SEC 8-31, 8-32



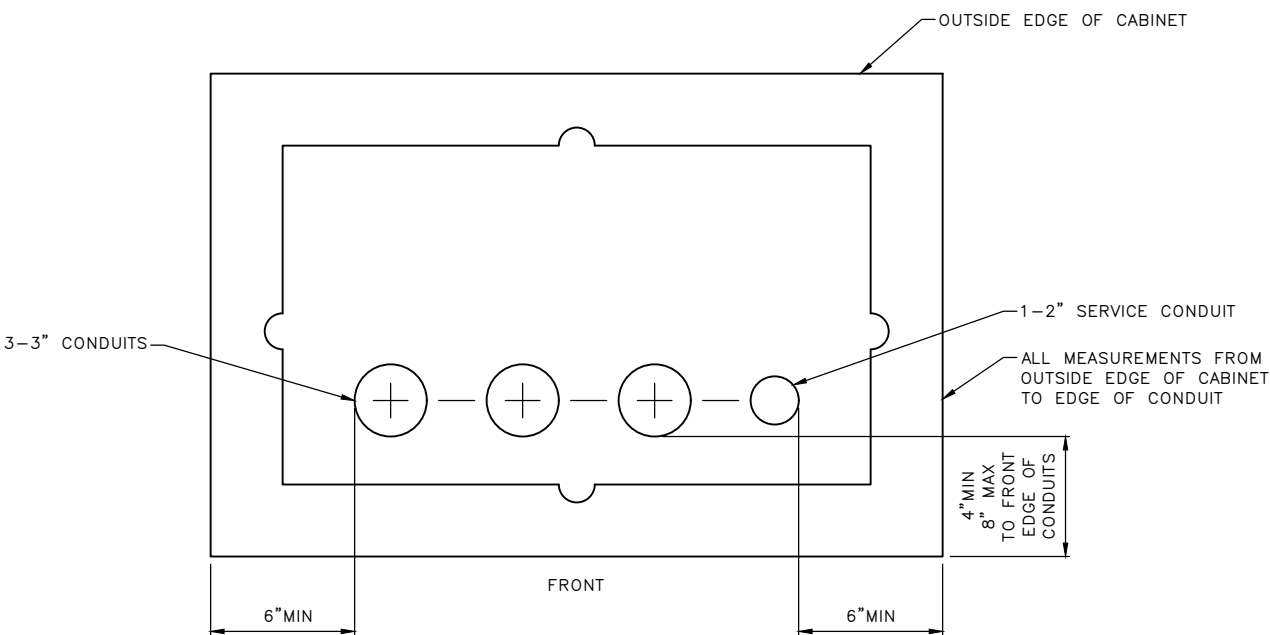
City of Seattle

NOT TO SCALE

SIGNAL CONTROLLER  
CABINET & FOUNDATION



CONDUIT LAYOUT – TYPE II SIGNAL CONTROLLER FOUNDATION



CONDUIT LAYOUT – TYPE III/VI SIGNAL CONTROLLER FOUNDATION

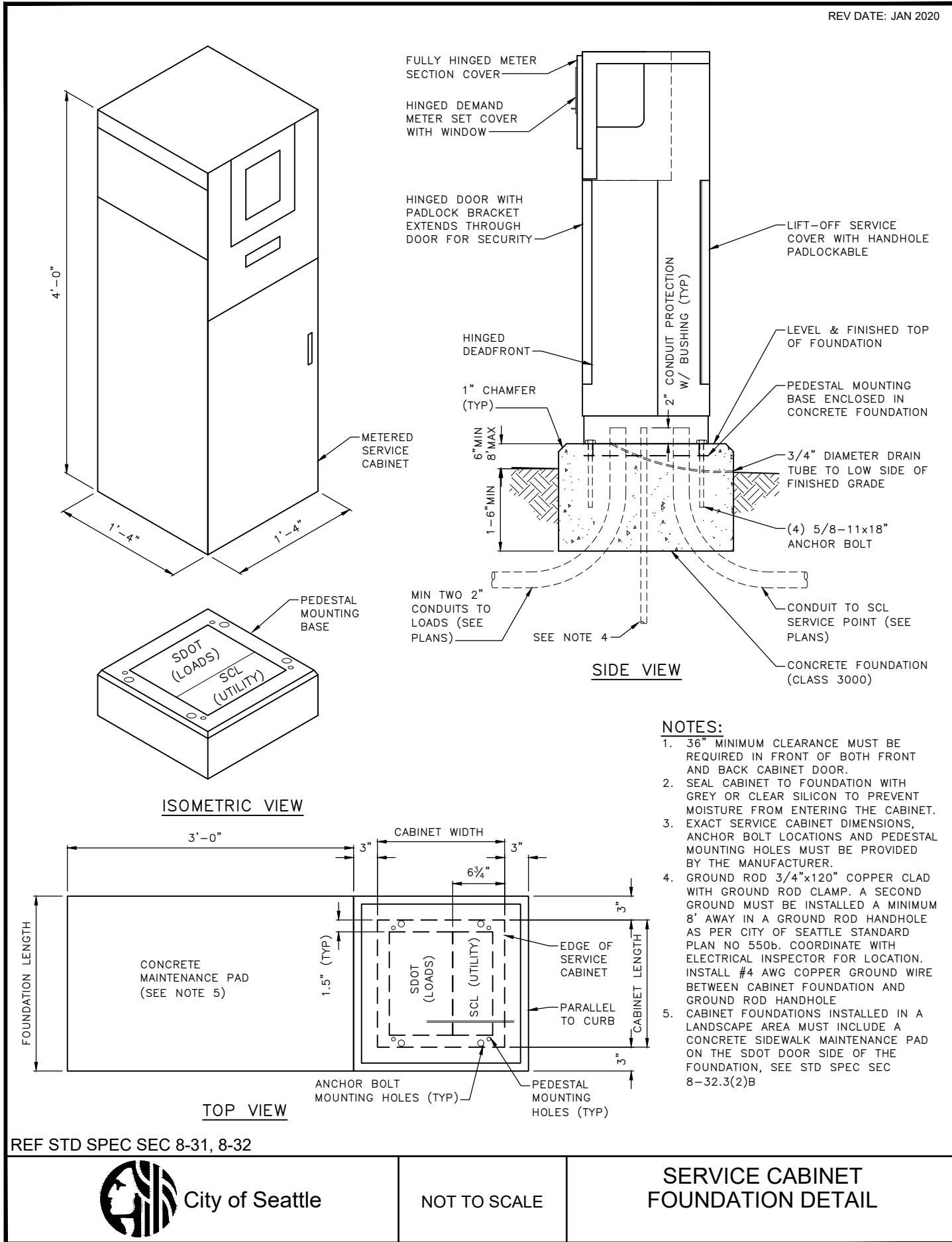
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City of Seattle

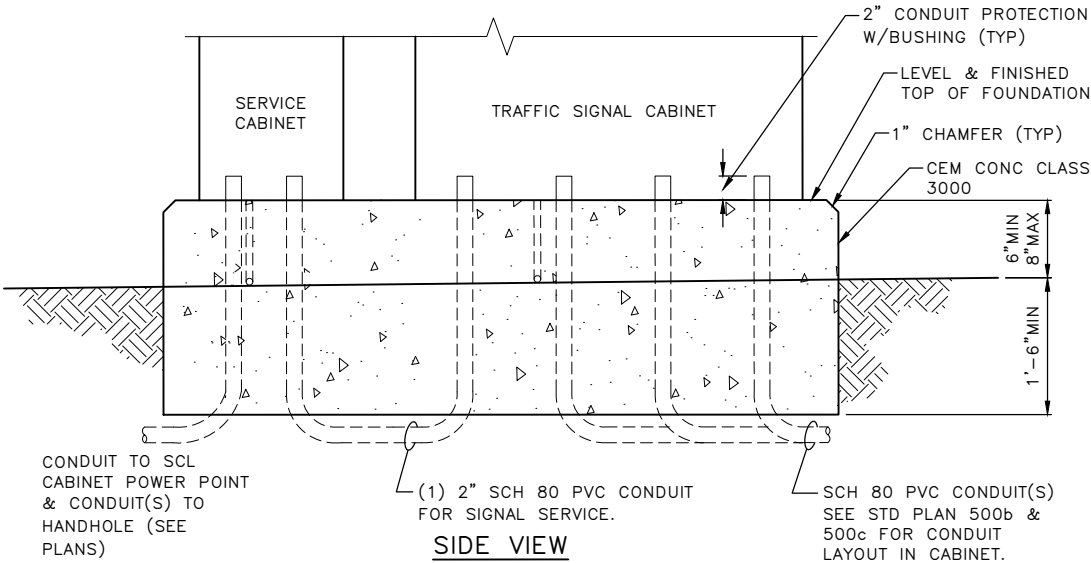
NOT TO SCALE

**SIGNAL CONTROLLER  
FOUNDATION CONDUIT LAYOUT**

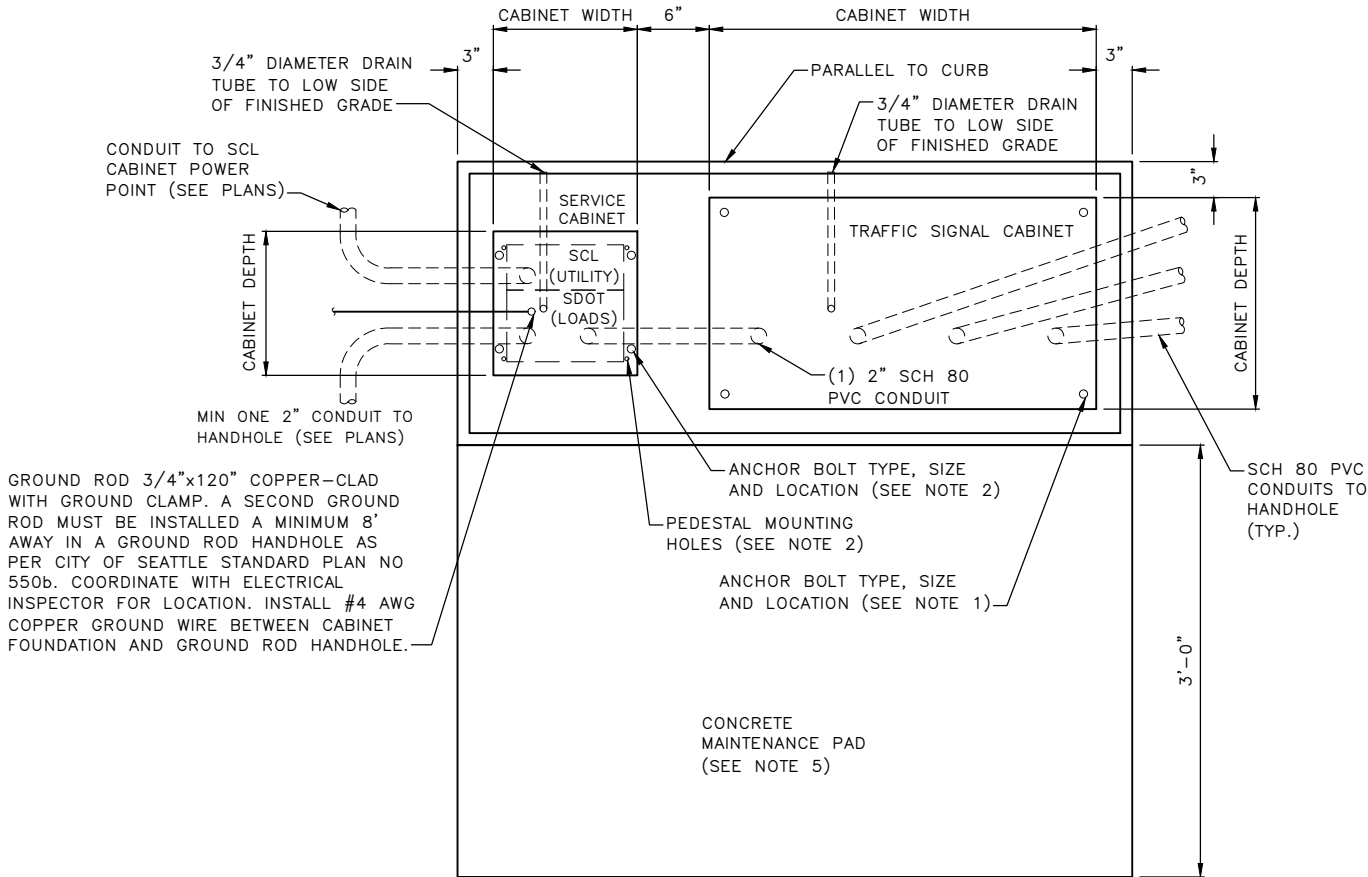


NOTES:

1. FOR SIGNAL CONTROLLER DIMENSIONS AND OTHER REQUIREMENTS, SEE STD PLAN NO. 500a.
2. FOR SERVICE CABINET DIMENSIONS AND OTHER REQUIREMENTS, SEE STD PLAN NO 501a.
3. SEAL CABINETS TO FOUNDATION WITH GREY OR CLEAR SILICON TO PREVENT MOISTURE FROM ENTERING THE CABINET.
4. THE SERVICE CABINET MUST BE PLACED ON THE OPPOSITE SIDE OF THE CONTROLLER CABINET FROM THE UPS.
5. CABINET FOUNDATIONS INSTALLED IN A LANDSCAPE AREA MUST INCLUDE A CONCRETE SIDEWALK MAINTENANCE PAD ON THE SDOT DOOR SIDE OF THE FOUNDATION, SEE STD SPEC SEC 8-32.3(2)B



SIDE VIEW



TOP VIEW

JOINT SIGNAL CONTROLLER/SERVICE CABINET FOUNDATION DETAIL  
NOT TO SCALE

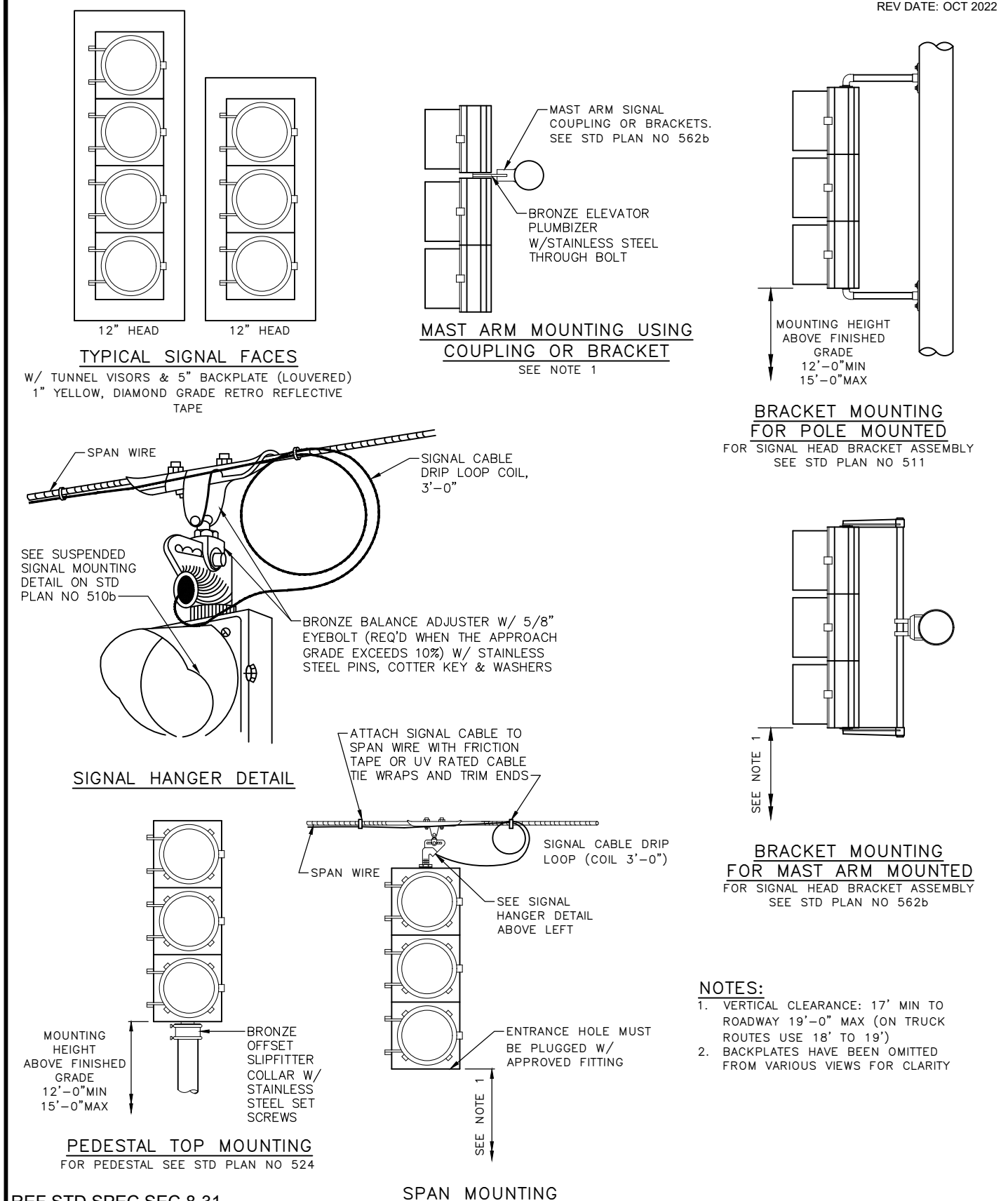
REF STD SPEC SEC 8-31, 8-32

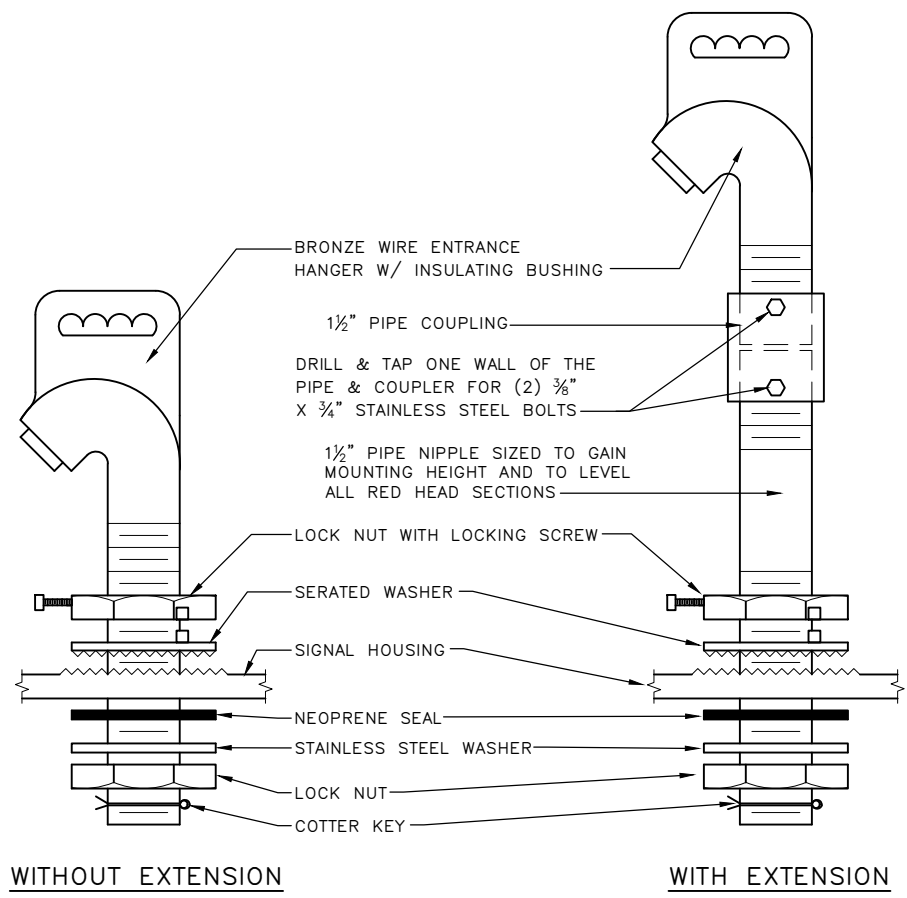


City of Seattle

NOT TO SCALE

JOINT SIGNAL CONTROLLER/  
SERVICE CABINET  
FOUNDATION DETAIL





SUSPENDED SIGNAL MOUNTING DETAIL

REF STD SPEC SEC 8-31

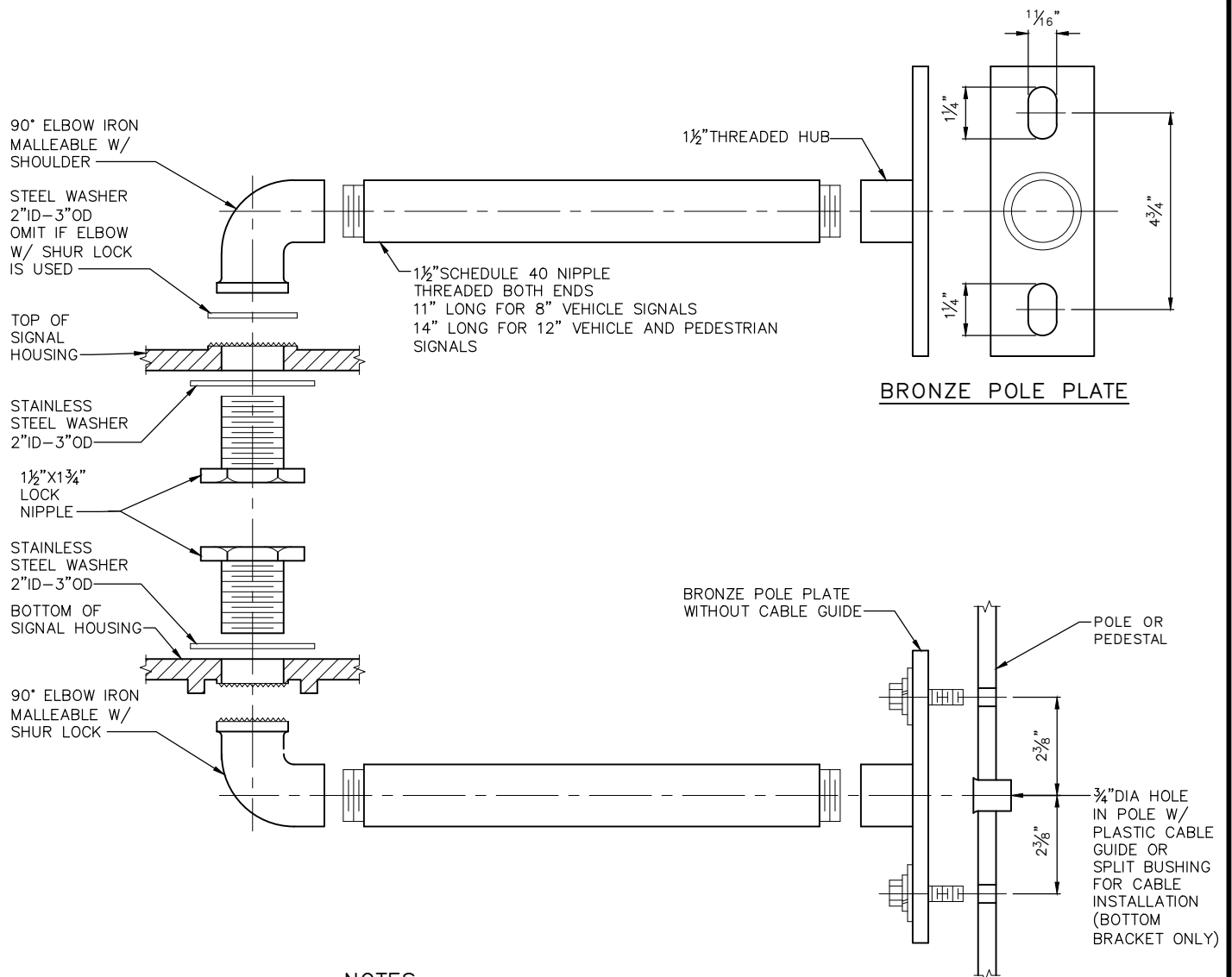


City of Seattle

NOT TO SCALE

VEHICULAR SIGNAL MOUNTING



**NOTES:**

1. ⅜"X1½" BOLT, ⅜" LOCK WASHER, 7/16"X1⅜" WASHER 4 OF EACH REQUIRED PER ASSEMBLY; ALL STAINLESS STEEL.
2. MOUNTING MUST BE AS FOLLOWS:
  - ON METAL POLES THINNER THAN 7 GAUGE, USE ⅜" STAINLESS STEEL RIVNUTS.
  - ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR ⅜" BOLT (STAINLESS STEEL RIVNUTS OPTIONAL).
  - ON POLES FILLED OR MADE WITH CONCRETE USE ⅜"X2½" MIN STUD BOLT ANCHORS, SLEEVE TYPE.
  - ON WOOD POLES USE 1½"X2½" LAG BOLTS.

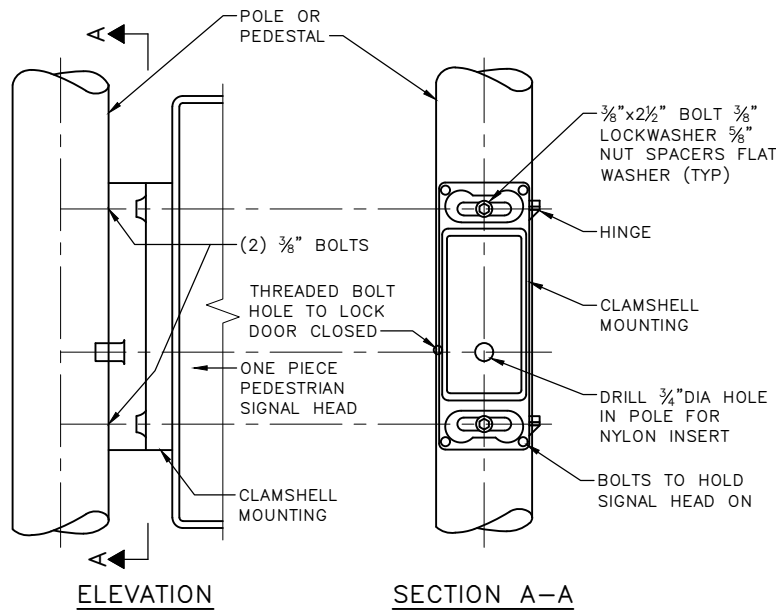
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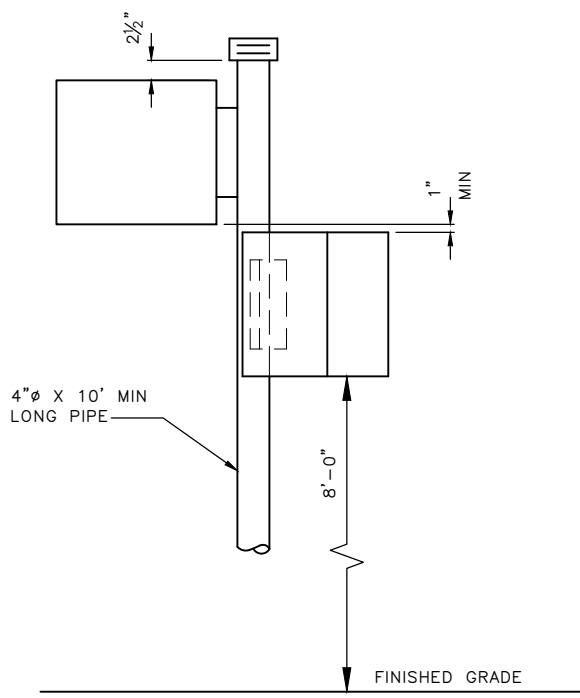
City of Seattle

NOT TO SCALE

**SIGNAL HEAD BRACKET  
ASSEMBLY**

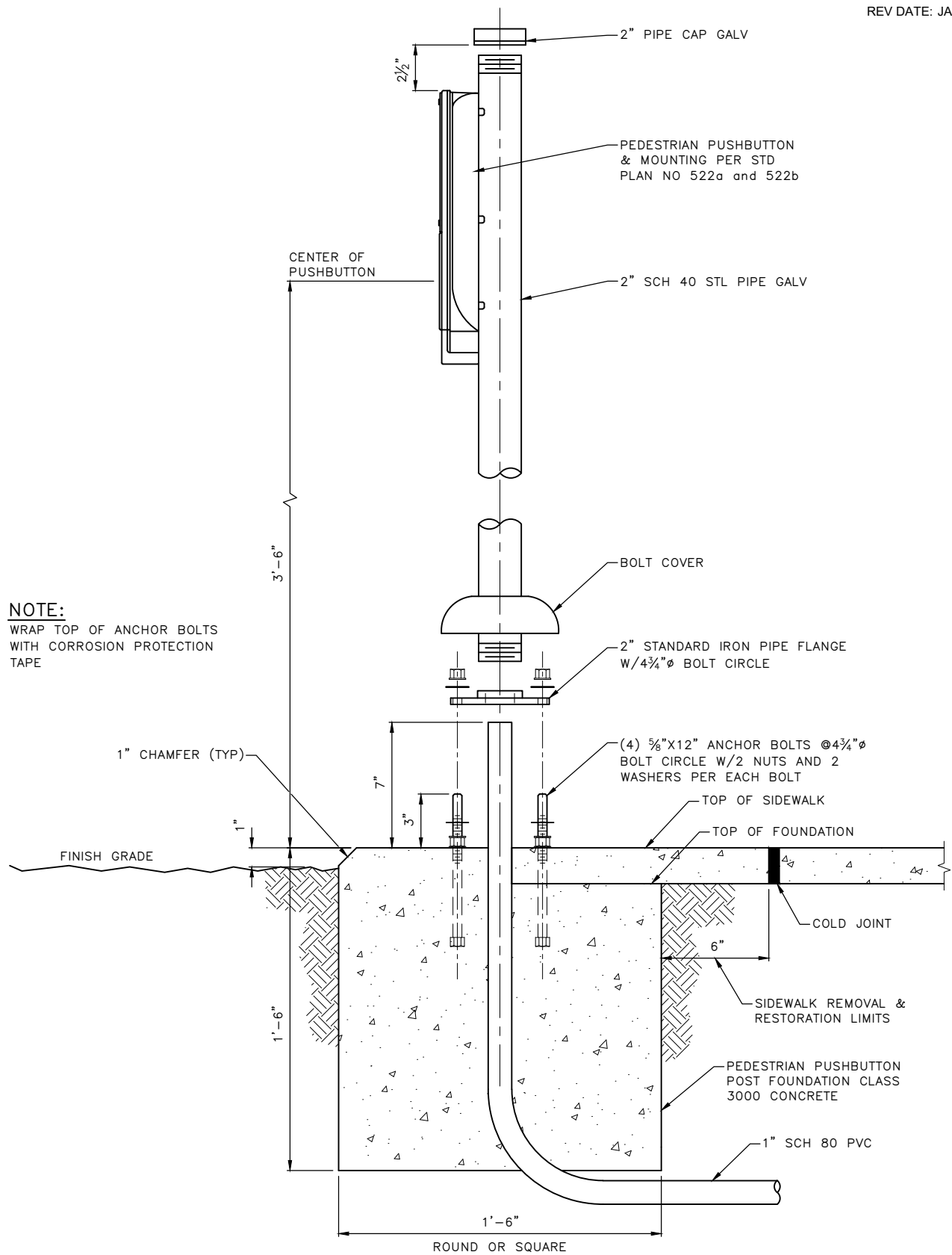


METAL POLE MOUNT



PEDESTAL MOUNT

- NOTES:**
- 1. BOLT AND WASHERS MUST BE STAINLESS STEEL PER ASTM A 563 DH AND ASTM F 436
  - 2. MOUNTING MUST BE AS FOLLOWS:
    - ON METAL POLES THINNER THAN 7 GAUGE, USE 3/8" STAINLESS STEEL RIVNUTS
    - ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR 3/8" BOLT (STAINLESS STEEL RIVNUTS OPTIONAL)
    - ON POLES FILLED WITH OR MADE FROM CONCRETE USE 3/8"x2 1/2" STUD BOLT ANCHORS WITH HEX NUT
  - 3. FOR STREET NAME SIGN PEDESTAL INSTALLATION, SEE STD PLAN NO 623



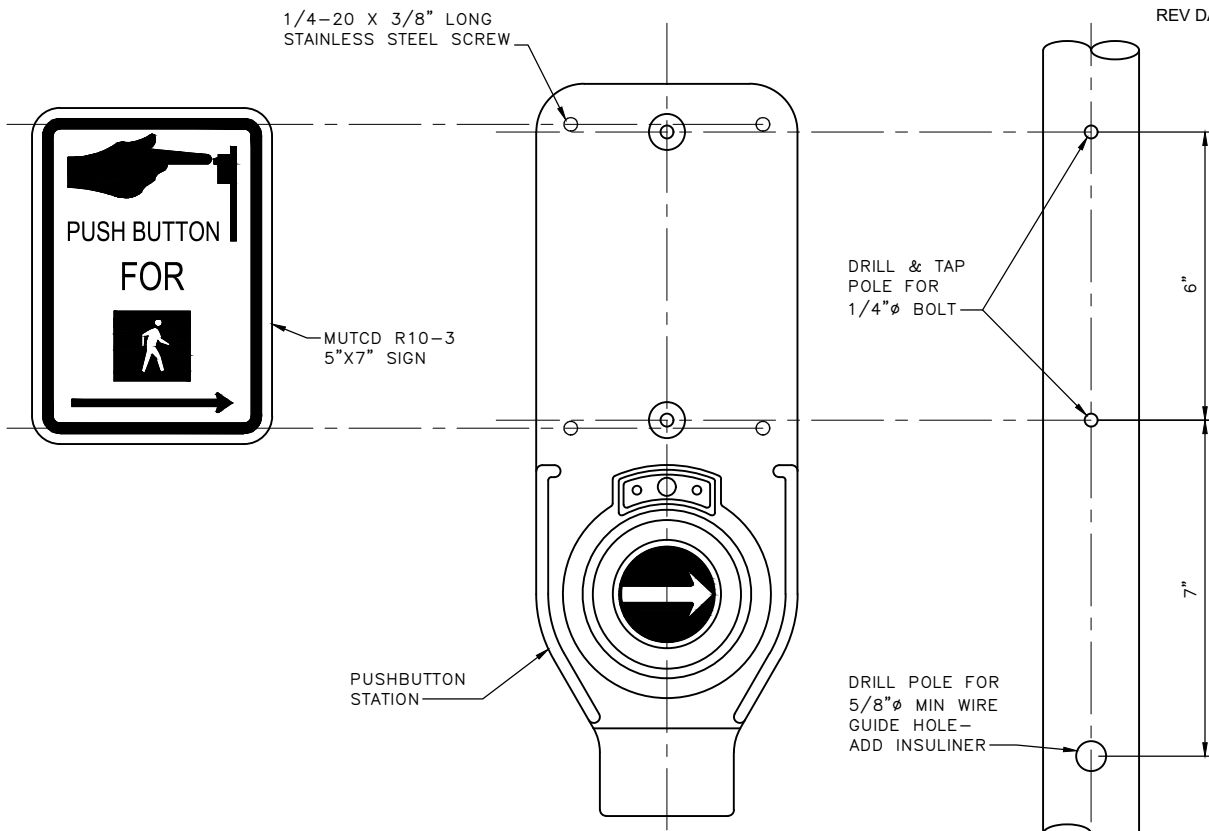
REF STD SPEC SEC 8-31, 8-32



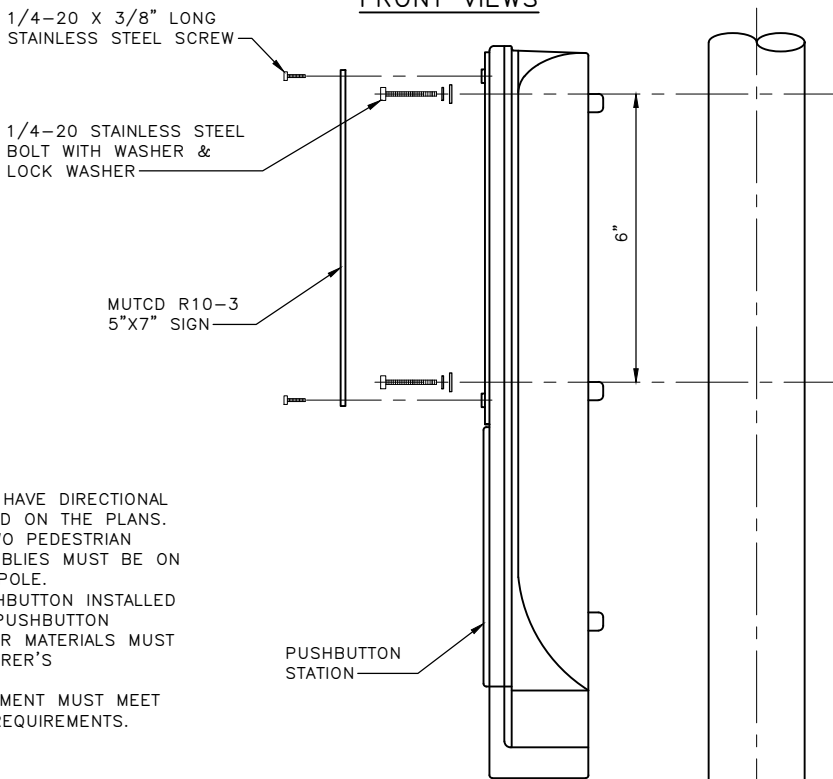
City of Seattle

NOT TO SCALE

PEDESTRIAN PUSHBUTTON  
POST & FOUNDATION



FRONT VIEWS



SIDE VIEW

NOTES:

1. PUSHBUTTON MUST HAVE DIRECTIONAL ARROW AS SPECIFIED ON THE PLANS.
2. INSTALLATION OF TWO PEDESTRIAN PUSHBUTTON ASSEMBLIES MUST BE ON A 4"Ø OR LARGER POLE.
3. DETAIL SHOWS PUSHBUTTON INSTALLED ON METAL POLE. PUSHBUTTON INSTALLED ON OTHER MATERIALS MUST BE PER MANUFACTURER'S RECOMMENDATION.
4. PUSHBUTTON PLACEMENT MUST MEET MUTCD AND SDOT REQUIREMENTS.

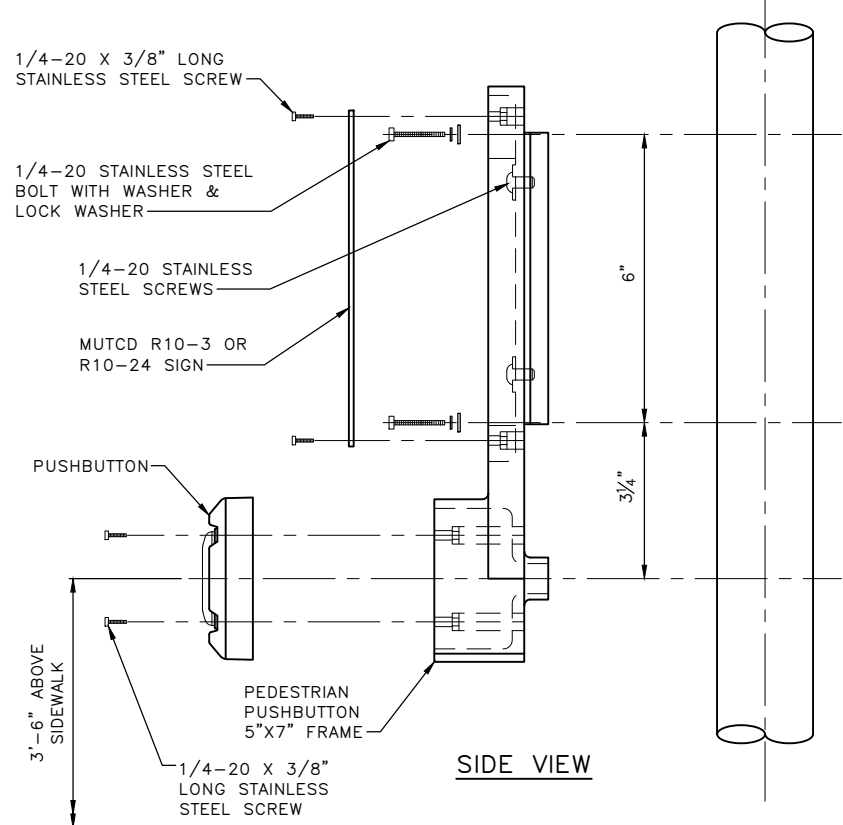
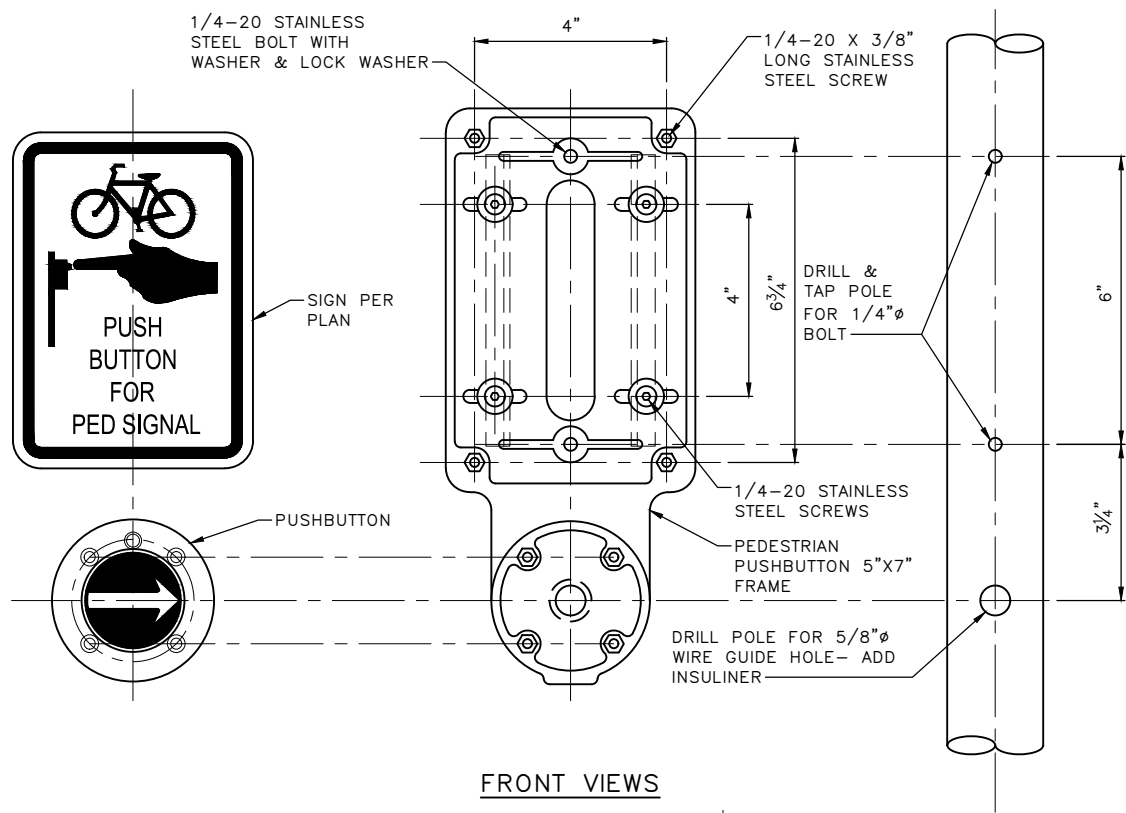
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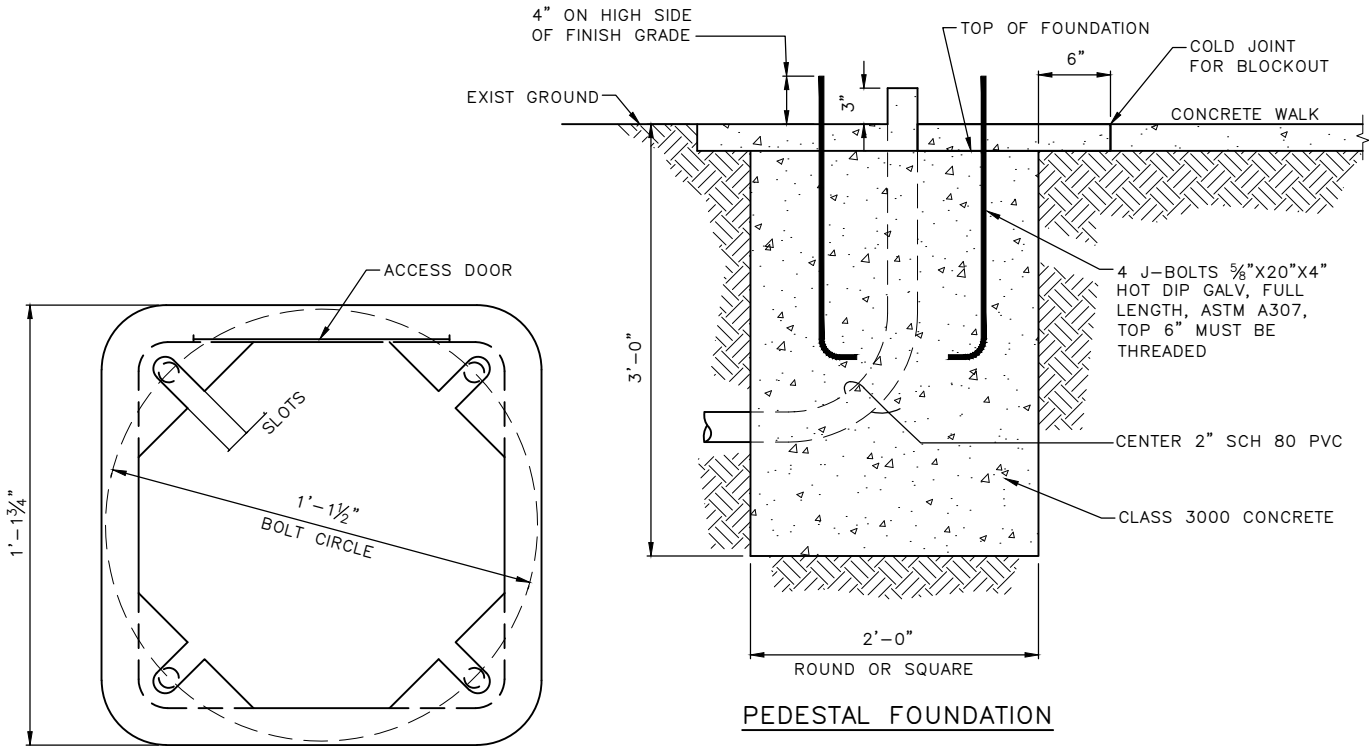
City of Seattle

NOT TO SCALE

ACCESSIBLE PEDESTRIAN  
SIGNAL (APS)  
PED. PUSHBUTTON ASSEM.



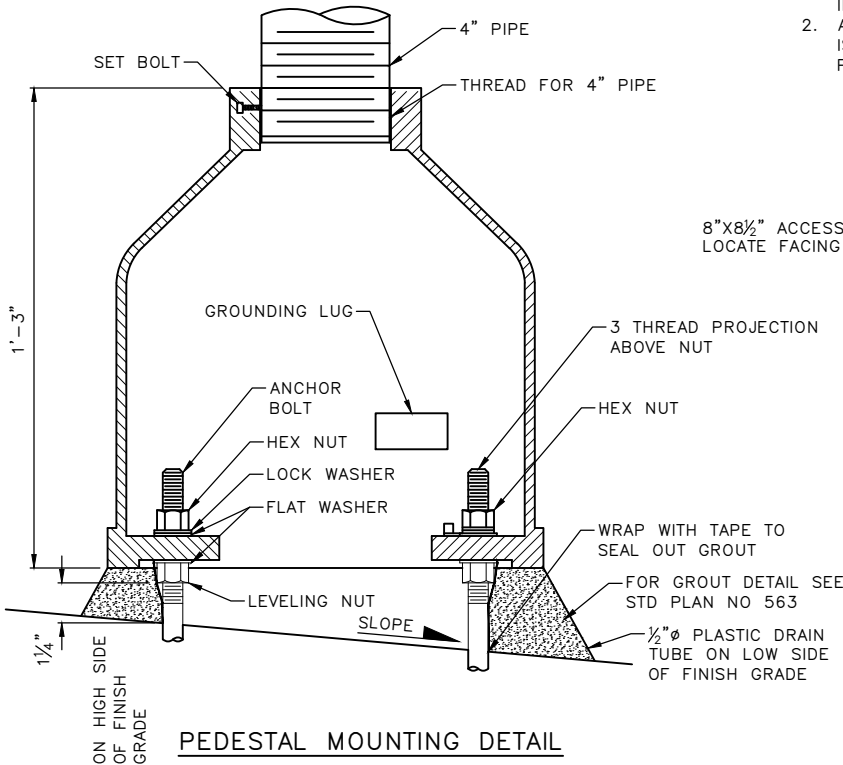
- NOTES:**
- 1. PUSHBUTTON MUST HAVE DIRECTIONAL ARROW AS SPECIFIED ON THE PLANS.
  - 2. INSTALLATION OF TWO PEDESTRIAN PUSHBUTTON ASSEMBLIES MUST BE ON A 4"Ø OR LARGER POLE.
  - 3. DETAIL SHOWS PUSHBUTTON INSTALLED ON METAL POLE. PUSHBUTTON INSTALLED ON OTHER MATERIALS MUST BE PER MANUFACTURER'S RECOMMENDATION.
  - 4. THIS PUSHBUTTON ASSEMBLY MUST NOT BE INSTALLED FOR PEDESTRIAN USE UNLESS APPROVED BY THE ENGINEER.



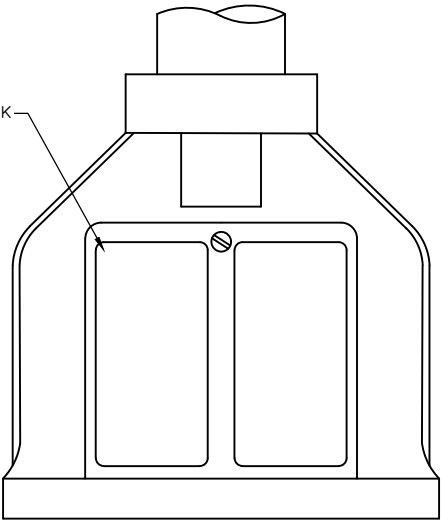
BOTTOM VIEW

NOTES:

- 1. 3'-0" MIN CLEARANCE IS REQUIRED IN FRONT OF ACCESS DOOR.
- 2. A POLE AND BASE COLLAR ASSEMBLY IS REQUIRED FOR ALUMINUM PEDESTAL SHAFTS TALLER THAN 10'.



8"x8 1/2" ACCESS DOOR  
LOCATE FACING SIDEWALK



SQUARE BASE PEDESTAL

REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

PEDESTAL & FOUNDATION

TYPICAL SOLAR PANEL LOCATION WHERE SOLAR PANEL IS NOTED IN THE DRAWINGS. SIZE, MOUNTING AND HARDWARE MUST BE PER MANUFACTURER. SEE NOTES 1 & 4.

SIGNS MUST BE MOUNTED WITH STAINLESS STEEL BRACKET PER STD PLAN 616. PROVIDE MINIMUM CLEARANCE BETWEEN SIGN AND CURB OR ROADWAY EDGE PER STD PLAN 621A

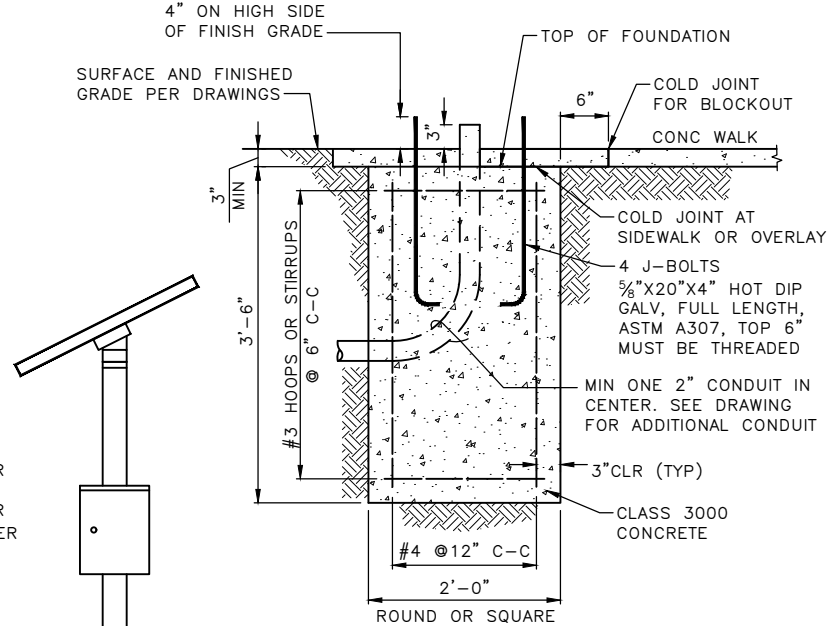
- (2) W11-15
- (2) LIGHT BAR
- (2) W16-7PL (24"x12") OR (2) W16-7PR (24"x12")

PUSHBUTTON ASSEMBLY SIGN TO BE EITHER R10-25 OR R10-25C (9"x12"), AS NOTED IN DRAWINGS. PUSHBUTTON ASSEMBLY TO BE SIZED TO ACCOMMODATE SIGN. SEE NOTE 7

PEDESTAL POLE PER STD PLAN 524

SURFACE AND FINISHED GRADE PER DRAWINGS

RECTANGULAR RAPID FLASHING BEACON



RRFB FOUNDATION

SEE NOTE 3

- NOTES:
1. RECTANGULAR RAPID FLASHING BEACON MUST BE HARDWIRED TO A SERVICE CABINET UNLESS OTHERWISE NOTED IN THE DRAWINGS.
  2. RECTANGULAR RAPID FLASHING BEACON MUST HAVE SIGNS AND LIGHT BAR ON BOTH SIDES OF PEDESTAL, AND BE ORIENTED TO FACE ONCOMING VEHICULAR TRAFFIC UNLESS NOTED OTHERWISE IN DRAWINGS.
  3. (1) PEDESTRIAN LED INDICATION, 1/2" (MIN) WIDE X 1-3/4" (MIN) HIGH, MUST BE PROVIDED MOUNTED ON SIDE OF THE LIGHT BAR. PEDESTRIAN LED INDICATION MUST BE DIRECTED TOWARD CROSSWALK AND BE VISIBLE TO PEDESTRIANS IN THE CROSSWALK. WHERE RAPID FLASHING BEACON IS LOCATED IN A MEDIAN, OR SERVES MULTIPLE DIRECTIONS OF PEDESTRIAN TRAVEL, PEDESTRIAN LED INDICATION MUST BE PROVIDED ON BOTH SIDES OF LIGHT BAR.
  4. IF A SOLAR PANEL IS INCLUDED ON THE POLE, USING THE STANDARD FOUNDATION SHOWN, THEN MOUNTING HEIGHT OF SOLAR PANEL MUST BE NO MORE THAN 17'-6".
  5. FOUNDATION SOILS MUST BE FREE OF LANDFILL OR OTHER SETTLEMENT-PRONE MATERIAL AND GROUNDWATER.
  6. ALL REINFORCING BARS MUST BE DEFORMED BILLET STEEL CONFORMING TO ASTM CLASS A706, GRADE 60.
  7. PUSHBUTTON TO BE SUPPLIED WITH RECTANGULAR RAPID FLASHING BEACON.

SIDE VIEW

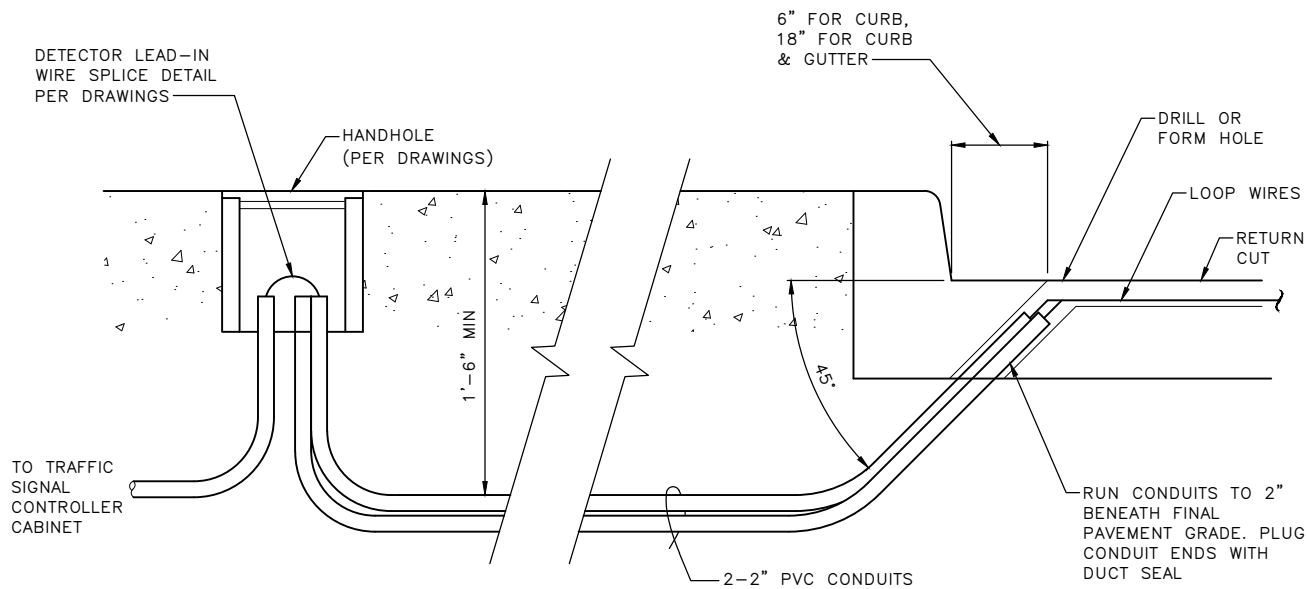
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

RECTANGULAR RAPID FLASHING BEACON



CURB/PAVEMENT ENTRANCE FOR DETECTOR LOOP WIRES

- NOTES:**
- 1. SHARP EDGE TOOLS MUST NOT BE USED IN PLACING CONDUCTORS IN SAW CUTS
  - 2. EACH PAIR OF LOOP WIRES IN THE RETURN CUT MUST BE TWISTED A MINIMUM OF 3 TURNS PER FOOT AND MAY SHARE COMMON RETURN CUTS WITH OTHER TWISTED PAIRS MAX 3 LOOPS PER CUT.
  - 3. TAPE LOOP WIRE A MINIMUM OF 2 TURNS AT EACH CORNER
  - 4. REMOVE SHARP CORNER EDGES IN SAW CUTS WHERE LOOP WIRE WILL BE BENT AROUND
  - 5. PERFORM RESISTANCE AND CONTINUITY TESTS PRIOR TO SEALING LOOP WIRES
  - 6. COIL 5'-0" OF LOOP WIRE IN HANDHOLE

REF STD SPEC SEC 8-31

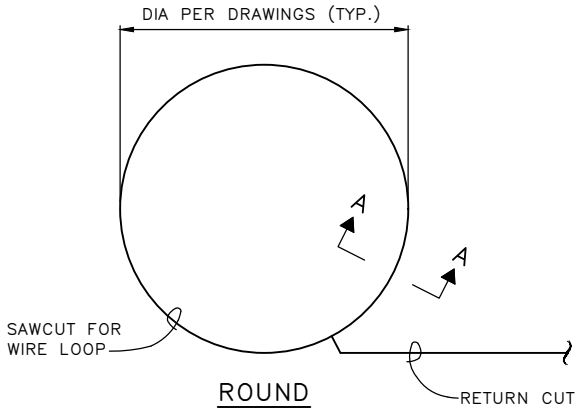


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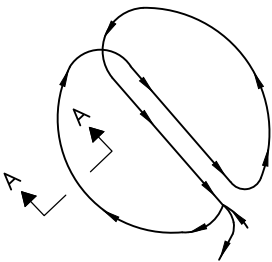
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DETECTOR LOOP LEAD-IN

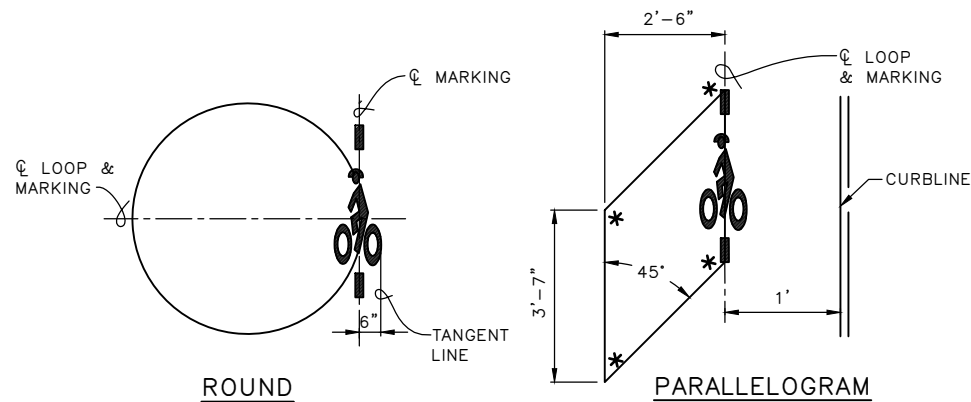
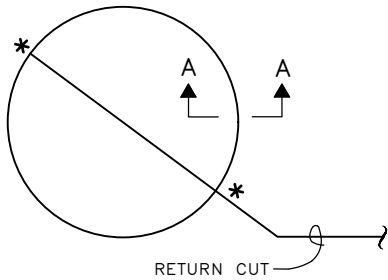




ROUND  
DIPOLE LOOP DETECTOR

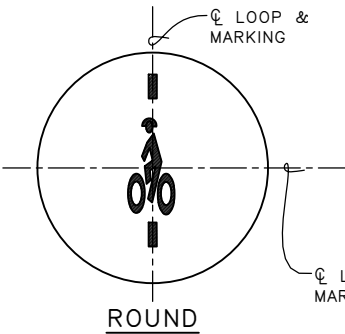


WINDING  
DETAIL  
QUADRIPOLE LOOP DETECTOR

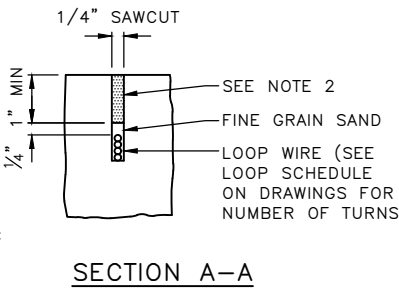


ROUND  
BICYCLE DIPOLE

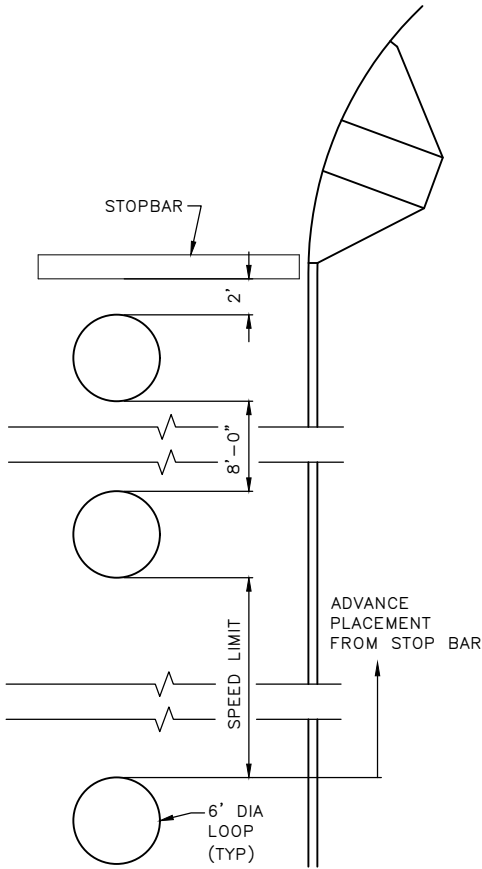
**\*NOTE:**  
OVERLAP CUT FOR FULL DEPTH AT  
CORNERS (TYP) CHIP 1" BACK THEN  
ROUND OFF CORNERS WHERE LOOP  
WIRE WILL BE BENT 90° OR LESS.



ROUND  
BICYCLE QUADRIPOLE



SECTION A-A



STANDARD LOOP SPACING

- NOTES:**
1. SEE STD PLAN NO 772 FOR BICYCLE DETECTOR PAVEMENT MARKER DETAIL.
  2. FILL CUT AFTER VERTICAL PLACEMENT AND TESTING WITH HOT PAVING GRADE LIQUID ASPHALT ASTM D 312 TYPE III OR QUICK SETTING HIGH STRENGTH GROUT

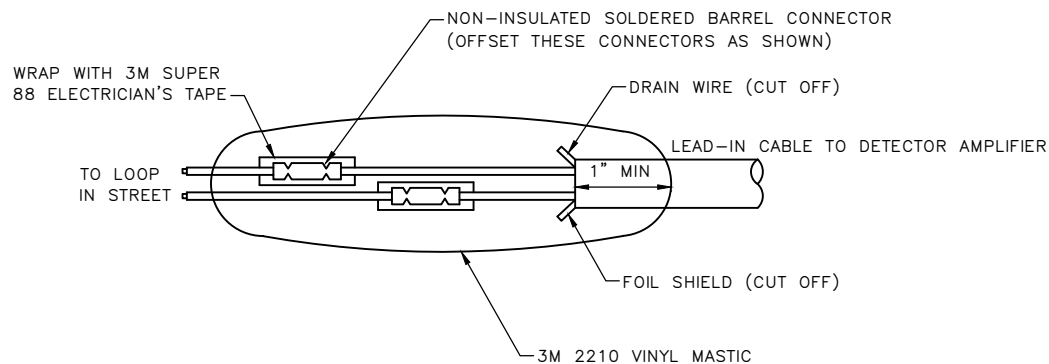
REF STD SPEC SEC 8-31



City of Seattle

NOT TO SCALE

DETECTOR LOOP DETAILS



DETECTOR LEAD-IN WIRE SPLICE DETAIL

NOTE:  
SOLDER CONNECTION AFTER CRIMPING

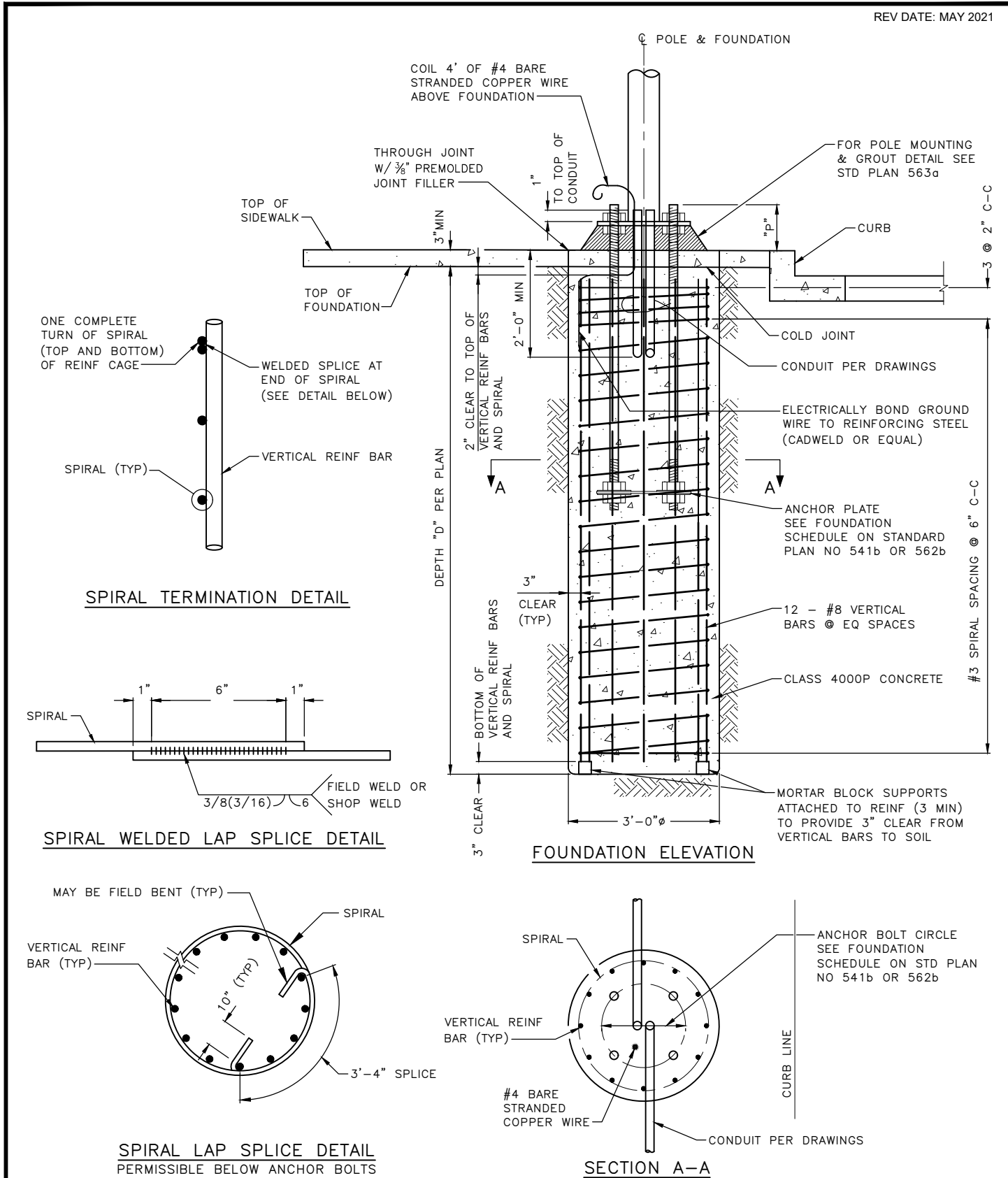
REF STD SPEC SEC 8-31



City of Seattle

NOT TO SCALE

DETECTOR LOOP WIRE &  
SIGNAL CABLE SPLICE



REF STD SPEC SEC 8-32, 6-02



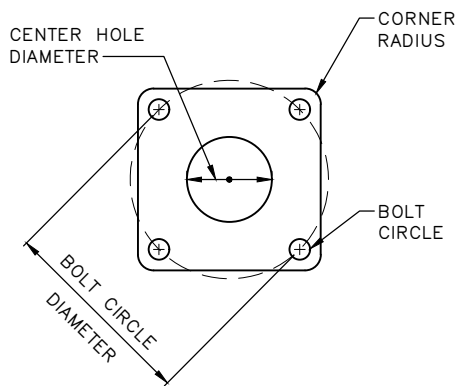
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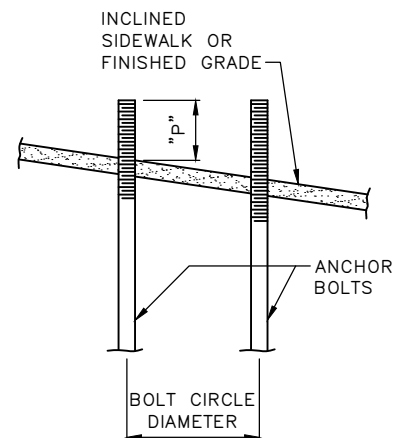
TRAFFIC SIGNAL POLE  
FOUNDATION DETAIL

FOUNDATION SCHEDULE							
POLE TYPE	PROJECTION	ANCHOR BOLTS (TOTAL 4 PER POLE)	ANCHOR PLATE DIMENSIONS				
	P		BOLT CIRCLE DIA	SIZE	BOLT HOLE	CENTER HOLE	CORNER RADIUS
T	7½"	1½" DIA X 60"	14½"	⅜" X 16" X 16"	1⅝"	10"	1⅝"
V	9"	1¾" DIA X 72"	18"	⅜" X 16" X 16"	1⅞"	12½"	1⅝"
X	10"	2" DIA X 72"	20"	⅜" X 18" X 18"	2⅛"	14"	2"
Z	11½"	2½" DIA X 72"	22"	½" X 20" X 20"	2⅝"	15"	2¼"

FOUNDATION PER PLAN. WHERE POLE TYPE OTHER THAN NOTED ABOVE IS REQUIRED, REFER TO PLANS FOR ANCHOR BOLTS AND ANCHOR PLATE DIMENSIONS.



ANCHOR PLATE



INCLINED CONDITION

#### NOTES:

1. CONCRETE MUST BE CLASS 4000P.
2. ANCHOR BOLTS FOR TYPE T,V,X AND Z MUST CONFORM TO ASTM F1554 GRADE 105 CLASS 2A THREADS INCLUDING SUPPLEMENTARY REQUIREMENTS S2 THROUGH S4. PROVIDE NUTS ACCORDING TO ASTM A536 HEAVY HEX GRADE DH AND NUTS PER ASTM F436.
3. ANCHOR PLATE: ASTM A36. HOT DIP GALVANIZED PER ASTM A123.
4. ALL REINFORCING BARS MUST BE DEFORMED BILLET STEEL CONFORMING TO ASTM CLASS A706, GRADE 60.
5. ANCHOR BOLTS MUST BE HOT DIP GALVANIZED PER ASTM F2329 INCLUDING NUTS & WASHERS (FULL LENGTH) WITH 18" OF THREADS ON TOP & 12" ON BOTTOM
6. TAPE THE TOP OF ANCHOR BOLTS WITH CORROSION PROTECTION TAPE PER STD SPEC SEC 8-32.3(2)A PRIOR TO POURING CONCRETE.
7. FOUNDATION DEPTH, REINFORCEMENT AND ANCHOR BOLTS MUST BE IN CONFORMANCE WITH "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" (6TH EDITION, 2013). DESIGN BASIC WIND SPEED IS 85 MPH AND RECURRENCE INTERVAL/DESIGN LIFE IS 50 YEARS

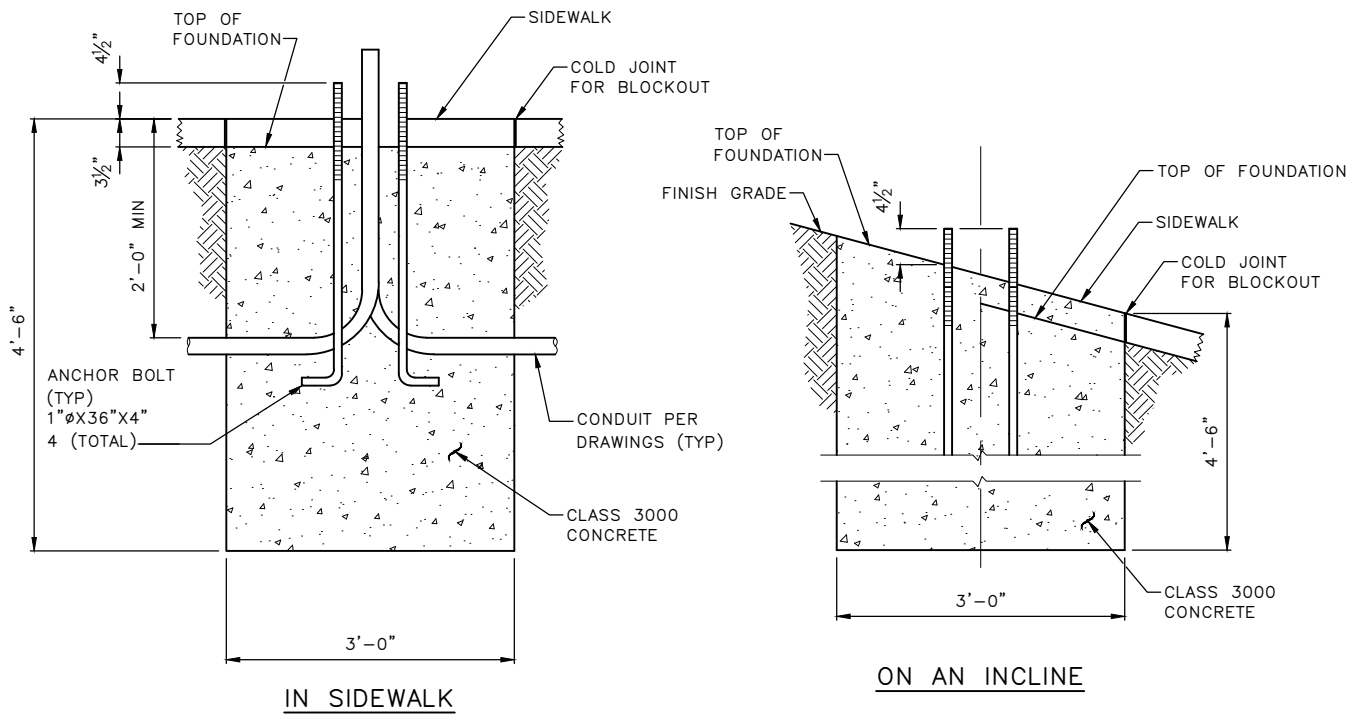
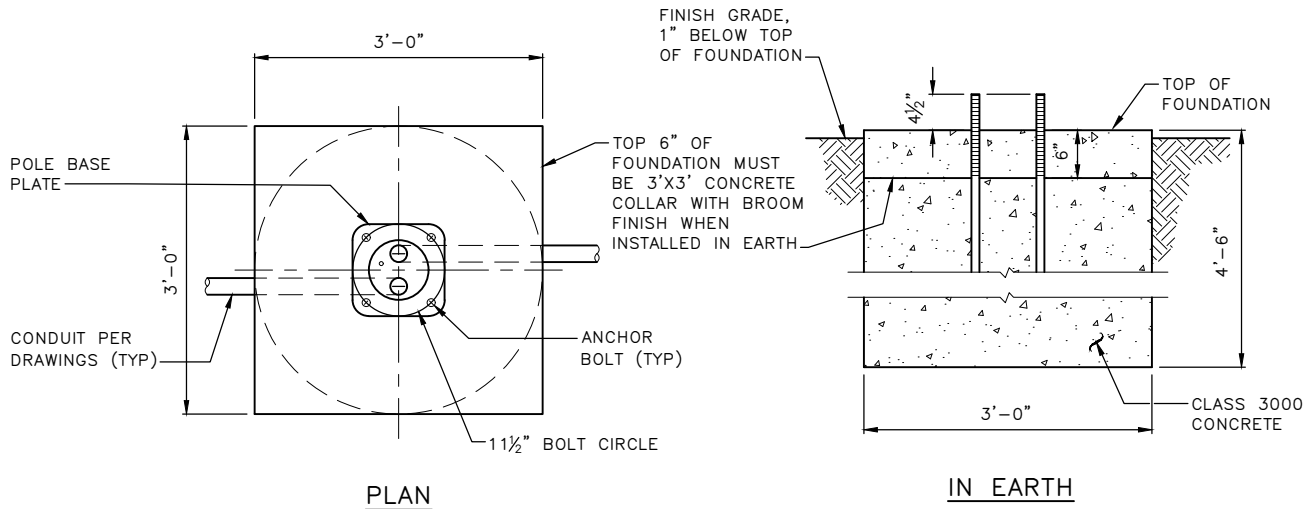
REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

STRAIN POLE FOUNDATION  
SCHEDULE & NOTES  
(TYPE T, V, X & Z)



- NOTES:
1. SEE SCL CONSTRUCTION STANDARD 1716.34 FOR POLE MOUNTING AND GROUT DETAIL
  2. ANCHOR BOLTS MUST BE HOT DIP GALVANIZED ASTM A153 OR F2329, FULL LENGTH AND FABRICATED FROM ASTM F1554 OR A576 WITH 12" THREADS ON TOP
  3. ALL SHRUBBERY AND FOLIAGE MUST BE PLANTED A MINIMUM OF 2' FROM SCL STRUCTURE PER SCL CONSTRUCTION STANDARD 0214.00

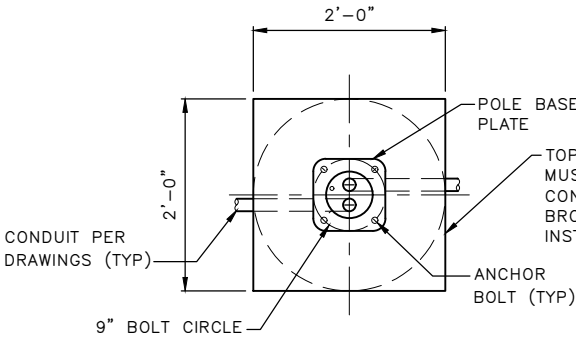
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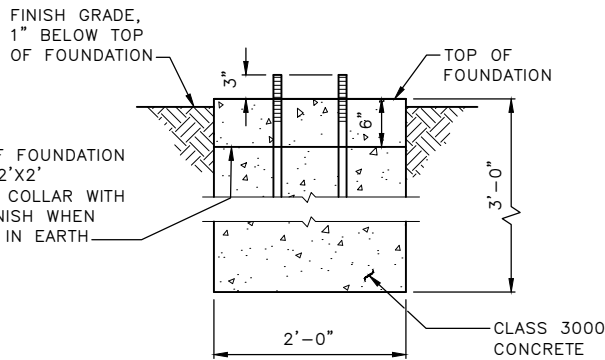
City of Seattle

NOT TO SCALE

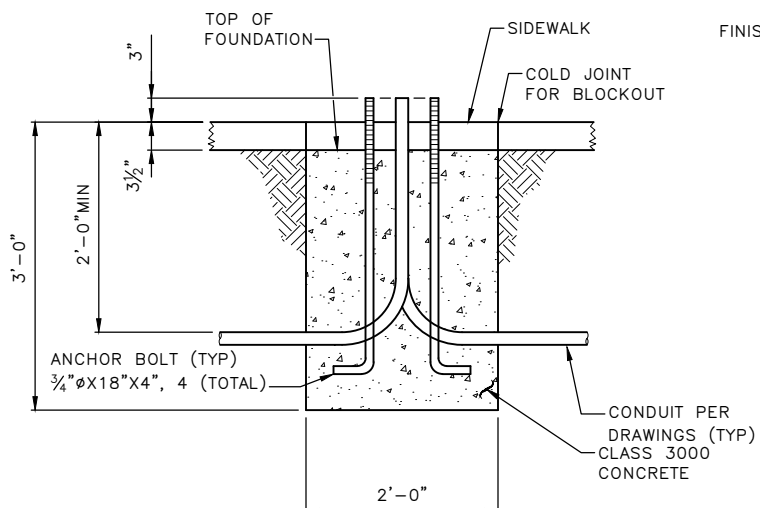
STREET LIGHT  
POLE FOUNDATIONS



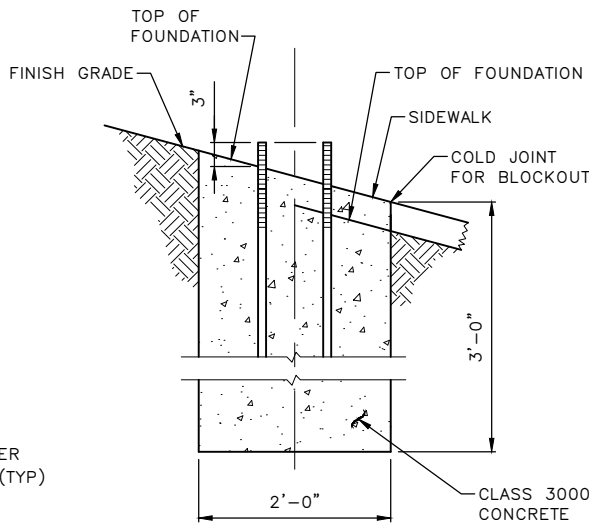
PLAN



IN EARTH



IN SIDEWALK



ON AN INCLINE

NOTES:

1. SEE SCL CONSTRUCTION STANDARD 1716.34 FOR POLE MOUNTING AND GROUT DETAIL
2. ANCHOR BOLTS MUST BE HOT DIP GALVANIZED TO ASTM A153 OR F2329, FULL LENGTH AND FABRICATED FROM ASTM F1554 OR A576 WITH 8" OF THREADS ON TOP
3. SEE SCL MATERIAL STANDARD 5756.09 FOR POLES
4. SEE SCL CONSTRUCTION STANDARD 1716.07 FOR STREETLIGHT HANDHOLE AND CONDUIT REQUIREMENTS.
5. ALL SHRUBBERY AND FOLIAGE MUST BE PLANTED A MINIMUM OF 2' FROM SCL STRUCTURE PER SCL CONSTRUCTION STANDARD 0214.00

REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

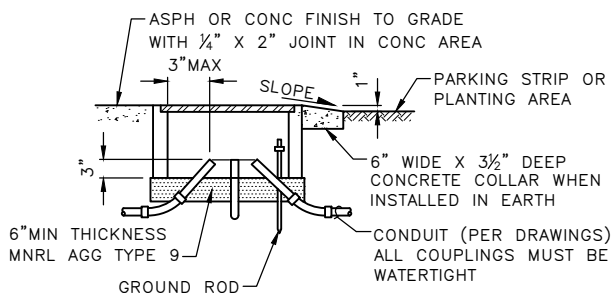
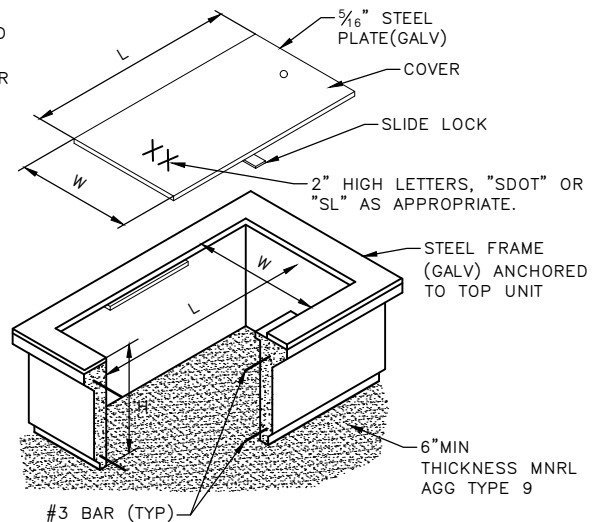
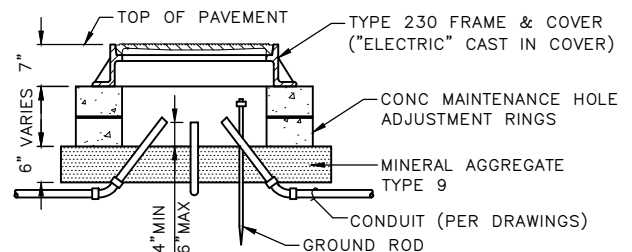
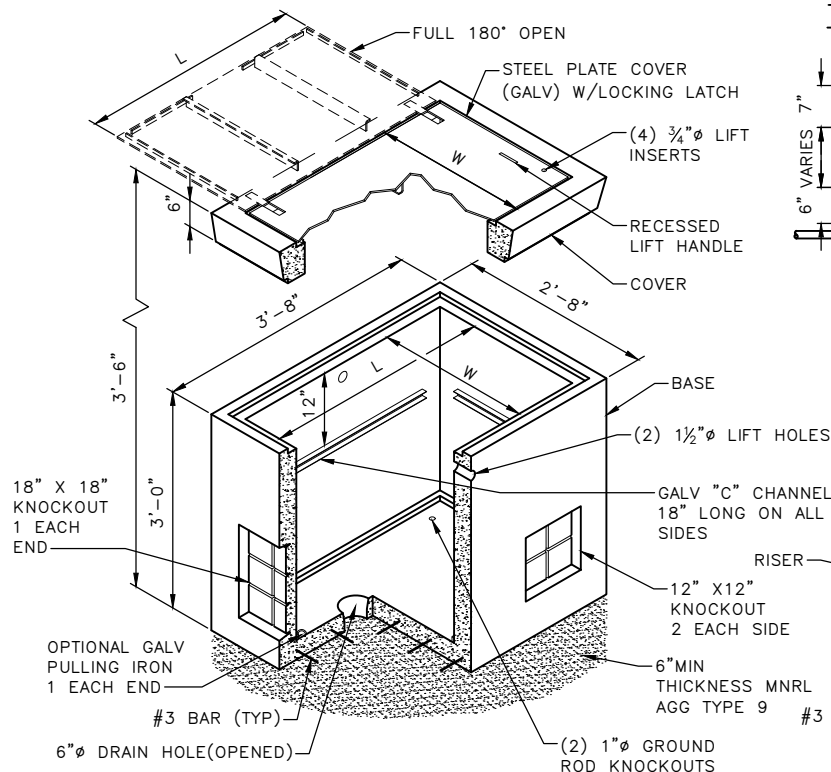
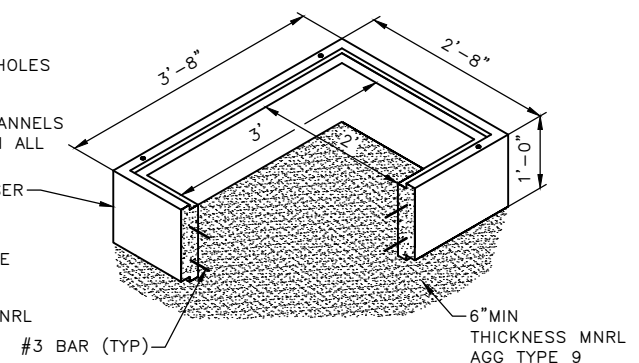
PEDESTRIAN STREET LIGHT  
POLE FOUNDATIONS

**NOTES:**

1. THE COVER MUST HAVE  $\frac{1}{8}$ " TO  $\frac{1}{2}$ " CLEARANCE ON EACH EDGE WITHIN THE FRAME AFTER GALVANIZING.
2. THE GROUND ROD MUST EXTEND 4" ABOVE THE BOTTOM OF THE HANDHOLE OR MINERAL AGGREGATE.
3. TYPE 1, 2, 3, 5 & 6 HANDHOLE COVERS MUST HAVE "SDOT" OR "SL" ON THEM, AS APPROPRIATE.
4. TYPE 4 HANDHOLE MUST BE INSTALLED IN ROADWAYS, PARKING LOTS, ETC.
5. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSIONS (SEE STD PLAN NO 231) TO BRING THE COVER UP THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
6. A 4' LENGTH OF #6 THWN OR THHN COPPER WIRE MUST BE SECURED FROM THE HANDHOLE COVER TO THE FRAME. BOND FROM FRAME LID, AND LID TO GROUND ROD.
7. ALL HANDHOLE COVERS AND FRAMES MUST HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)
8. ALL HANDHOLES MUST HAVE A LOAD RATING OF H20.
9. GROUND ROD REQUIRED IN ALL STREETLIGHT HANDHOLES PER SCL CONSTR STD 1714.50
10. SEE SCL CONSTRUCTION STANDARD 1716.07 & SCL MATERIAL STD 7203.10 FOR STREETLIGHT HANDHOLE AND CONDUIT REQUIREMENTS.
11. ALL SHRUBBERY AND FOLIAGE MUST BE PLANTED A MINIMUM OF 2' FROM SCL STRUCTURE PER SCL CONSTRUCTION STANDARD 0214.00

**HANDHOLE SCHEDULE**

HANDHOLE TYPE	TOP UNIT INSIDE DIMENSION			EXTENSION UNIT(E)	COVER DIMENSIONS	
	L	W	H		L	W
1	22"	17"	12"	12"	17 $\frac{3}{4}$ "	12 $\frac{3}{4}$ "
2	33"	22"	12"	12"	27 $\frac{3}{4}$ "	16 $\frac{3}{4}$ "
3	36"	24"	12"	12"	35"	24"
4	24"Ø		VAR	NA	NA	NA
5	36"	24"	32"	NA	35"	24"
6	42"	42"	38 $\frac{1}{2}$ "	NA	33 $\frac{1}{2}$ "	33 $\frac{3}{4}$ "
GRHH	8"Ø			NA		

**HANDHOLE INSTALLATION DETAIL****TYPE 1 & 2 HANDHOLE****TYPE 4 HANDHOLE**  
TRAFFIC BEARING**TYPE 5 HANDHOLE****TYPE 3 HANDHOLE**  
(COVER SAME AS TYPE 5)

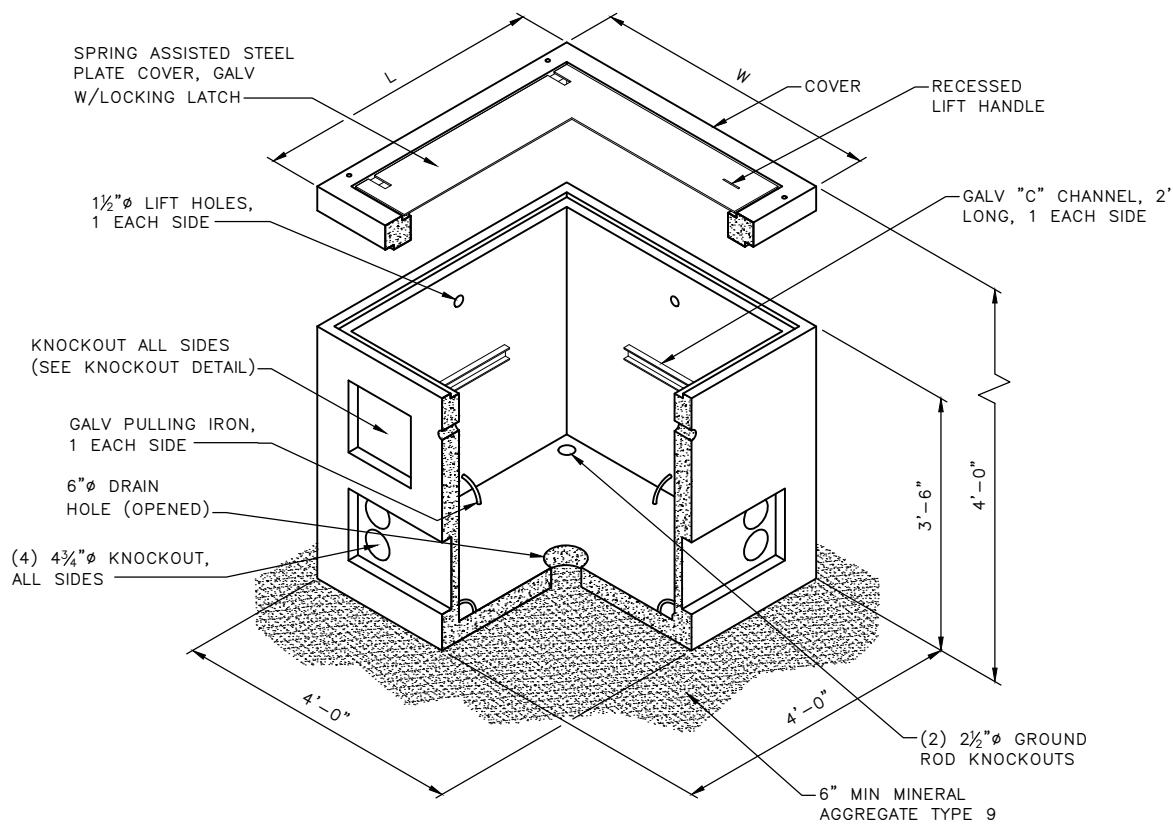
REF STD SPEC SEC 8-33



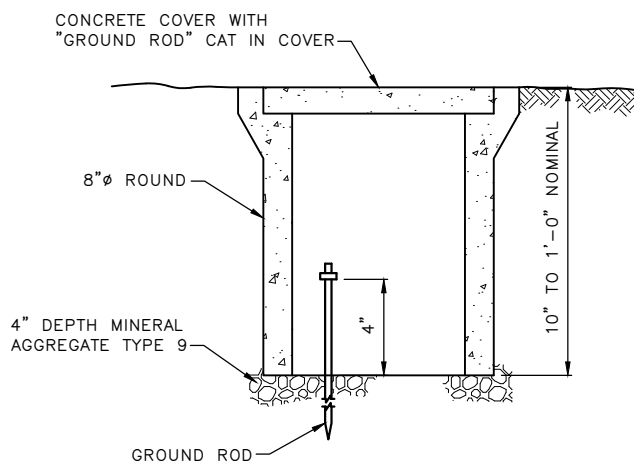
City of Seattle

NOT TO SCALE

HANDHOLES



TYPE 6 HANDHOLE



GROUND ROD HANDHOLE (GRHH)

NOTES:

1. ALL HANDHOLES MUST HAVE A H20 LOAD RATING.
2. ALL HANDHOLE COVERS AND FRAMES MUST HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)

REF STD SPEC SEC 8-33



City of Seattle

NOT TO SCALE

HANDHOLES

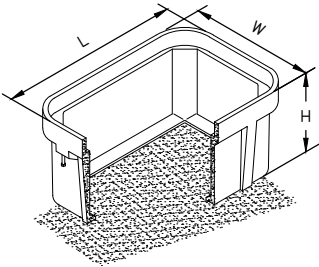


NOTES:

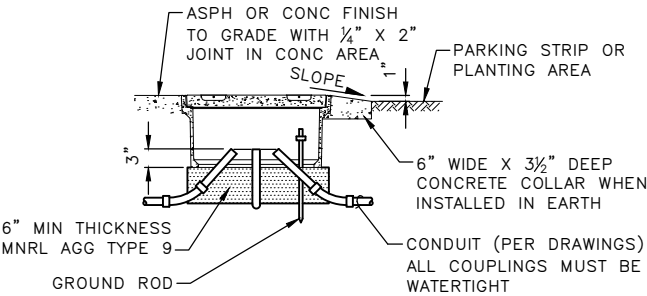
- 1. ALL NON-DELIBERATE TRAFFIC PULL BOX COVERS MUST COMPLY WITH ALL TEST PROVISIONS OF ANSI/SCTE 77 2010 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY", & MUST MEET THE TIER 15 APPLICATION. MARKING SHOWING THE TIER 15 RATING MUST BE EMBOSSED IN THE TOP SURFACE OF THE COVER.
- 2. ALL NON-DELIBERATE TRAFFIC PULL BOXES MUST COMPLY WITH ALL TEST PROVISIONS OF ANSI/SCTE 77 2012 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY", & MUST MEET THE TIER 22 APPLICATION. MARKINGS SHOWING THE TIER 22 RATING MUST BE LABELED OR STENCILED ON THE INSIDE & OUTSIDE OF THE BOX.
- 3. ALL NON-DELIBERATE TRAFFIC PULL BOXES & COVERS MUST BE MADE OF POLYMER CONCRETE WITH FIBERGLASS REINFORCEMENT. THE BOX MUST HAVE CONTINUOUS FIBERGLASS CLOTH REINFORCEMENT ON THE INSIDE & OUTSIDE PERIMETERS. THE COVER MUST HAVE A MINIMUM OF TWO LAYERS OF FIBERGLASS CLOTH REINFORCEMENT.
- 4. ALL NON-DELIBERATE TRAFFIC PULL BOXES & COVERS MUST BE TESTED & CERTIFIED, MEETING ALL TEST PROVISIONS ON THE ANSI/SCTE 77, TO THE 66WF, MEETING ALL TEST PROVISIONS OF THE LATEST REVISION OF ANSI/SCTE 77.
- 5. PULL SLOTS MUST BE RATED FOR MINIMUM PULL OUT OF 3,000 POUNDS.
- 6. TYPE 4 HANDHOLE MUST BE INSTALLED IN ROADWAYS PARKING LOTS, ETC. ALL COVERS MUST BE COMPLETE WITH A MOLDED LOGO, MANUFACTURERS NAME & TIER RATING LOGO (NO GLUE IN LOGO). LOGO MUST READ "SDOT" OR "SL" UNLESS STATED OTHERWISE BY THE CITY OF SEATTLE.
- 7. THE GROUND ROD MUST EXTEND 4" ABOVE THE BOTTOM OF THE HANDHOLE OR MINERAL AGGREGATE.
- 8. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSIONS (SEE STD PLAN NO 231) TO BRING THE COVER UP THE THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
- 9. A 4' LENGTH OF #6 THWN OR THHN COPPER WIRE MUST BE SECURED FROM THE HANDHOLE COVER TO THE FRAME. WITH A 4'-0" LENGTH FROM FRAME THAT CAN BE HOOKED UP TO A GROUND ROD.
- 10. ALL HANDHOLE COVERS AND FRAMES MUST HAVE A NON-SKID SURFACE (SCL MATERIAL STANDARD 7203.10)
- 11. SEE SCL CONSTRUCTION STANDARD 1716.07 FOR STREET HANDHOLE AND CONDUIT REQUIREMENTS.

HANDHOLE SCHEDULE

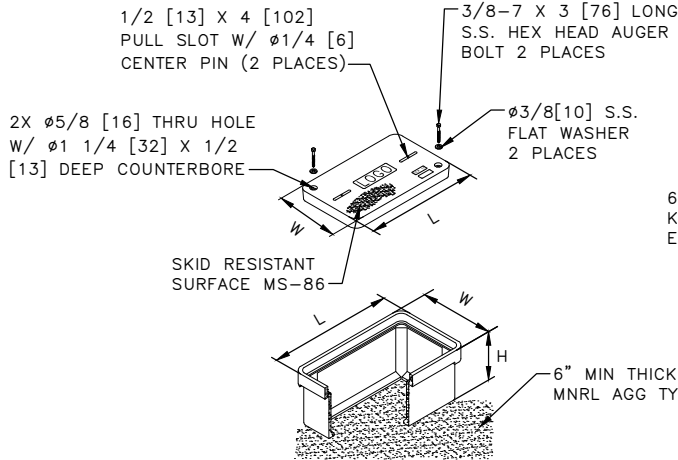
HANDHOLE TYPE	TOP UNIT INSIDE DIMENSION			EXTENSION UNIT(E)	COVER DIMENSIONS	
	L	W	H		L	W
1	24"	13"	12"	12"	24"	13"
2	30"	17"	12"	12"	30"	17"
3	36"	24"	18"	12"	36"	24"
4	24"Ø	VAR	NA	NA	NA	NA
5	30"	48"	36"	NA	30"	48"
6	48"	48"	48"	NA	48"	48"
GRHH	8"Ø			NA		



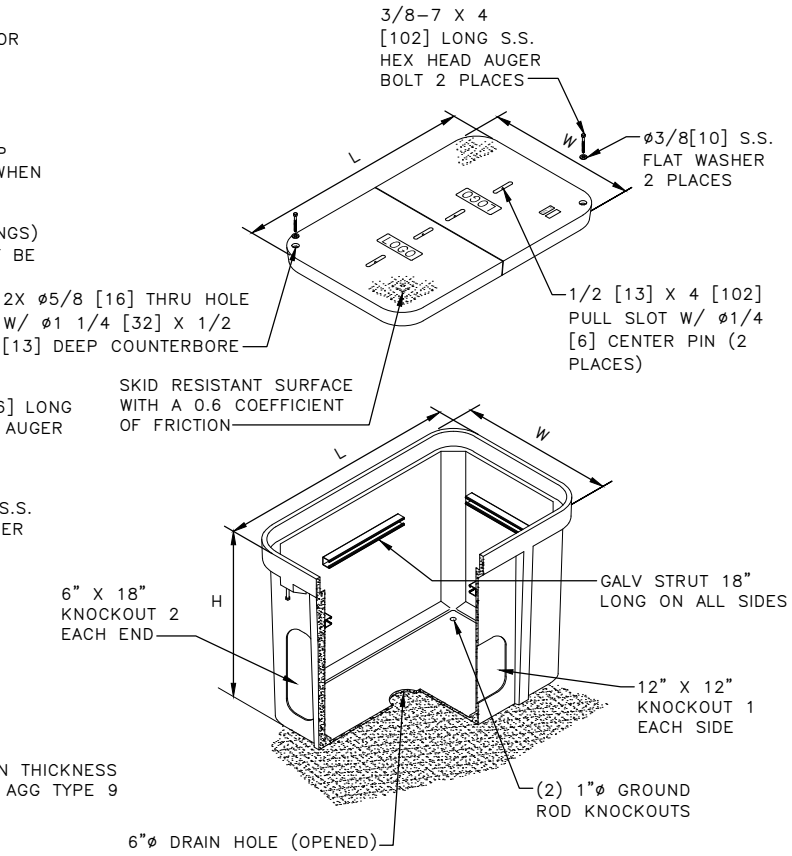
TYPE 3 HANDHOLE  
(COVER SAME AS TYPE 5)



HANDHOLE INSTALLATION DETAIL



TYPE 1 & 2 HANDHOLE



TYPE 5 HANDHOLE

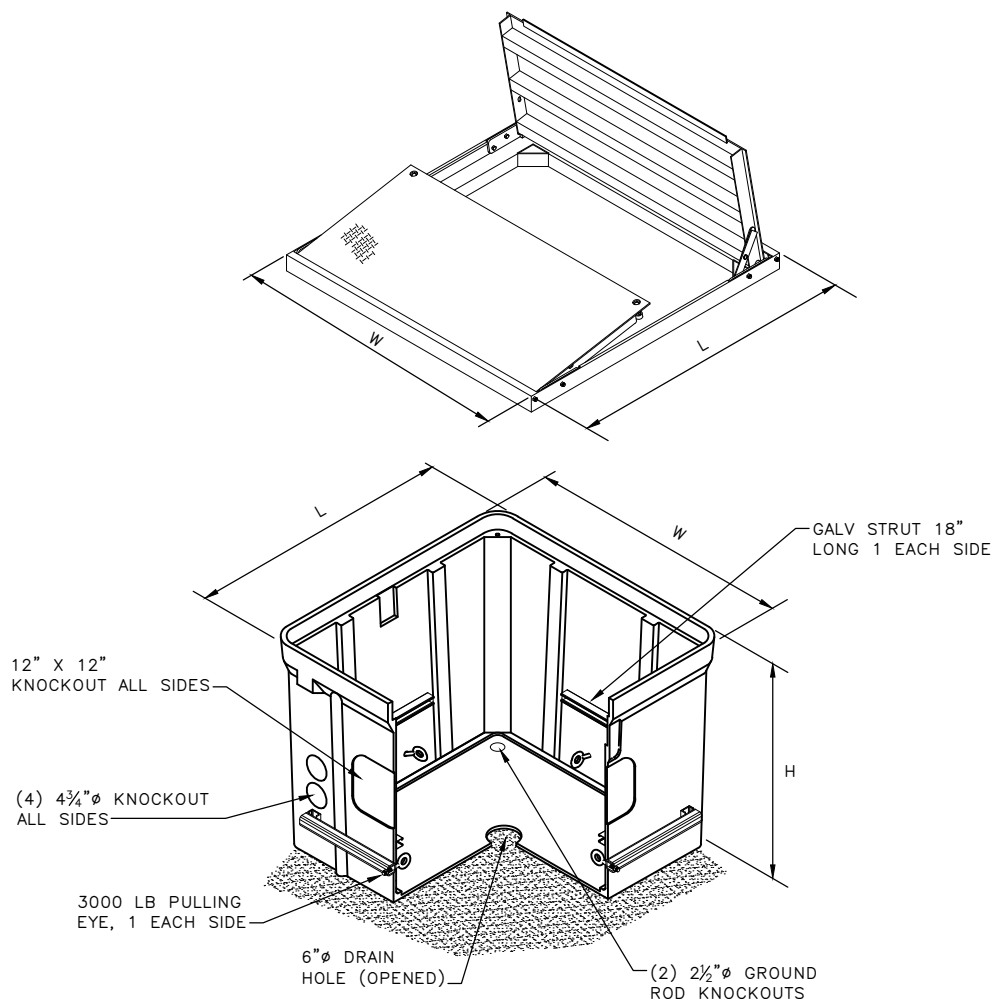
REF STD SPEC SEC 8-33



City of Seattle

NOT TO SCALE

POLYMER CONCRETE  
HANDHOLES



TYPE 6 HANDHOLE

NOTES:

1. FOR DETAILS NOT SHOWN, SEE STD PLAN NO 550b
2. ALL HANDHOLE COVERS AND FRAMES MUST HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)

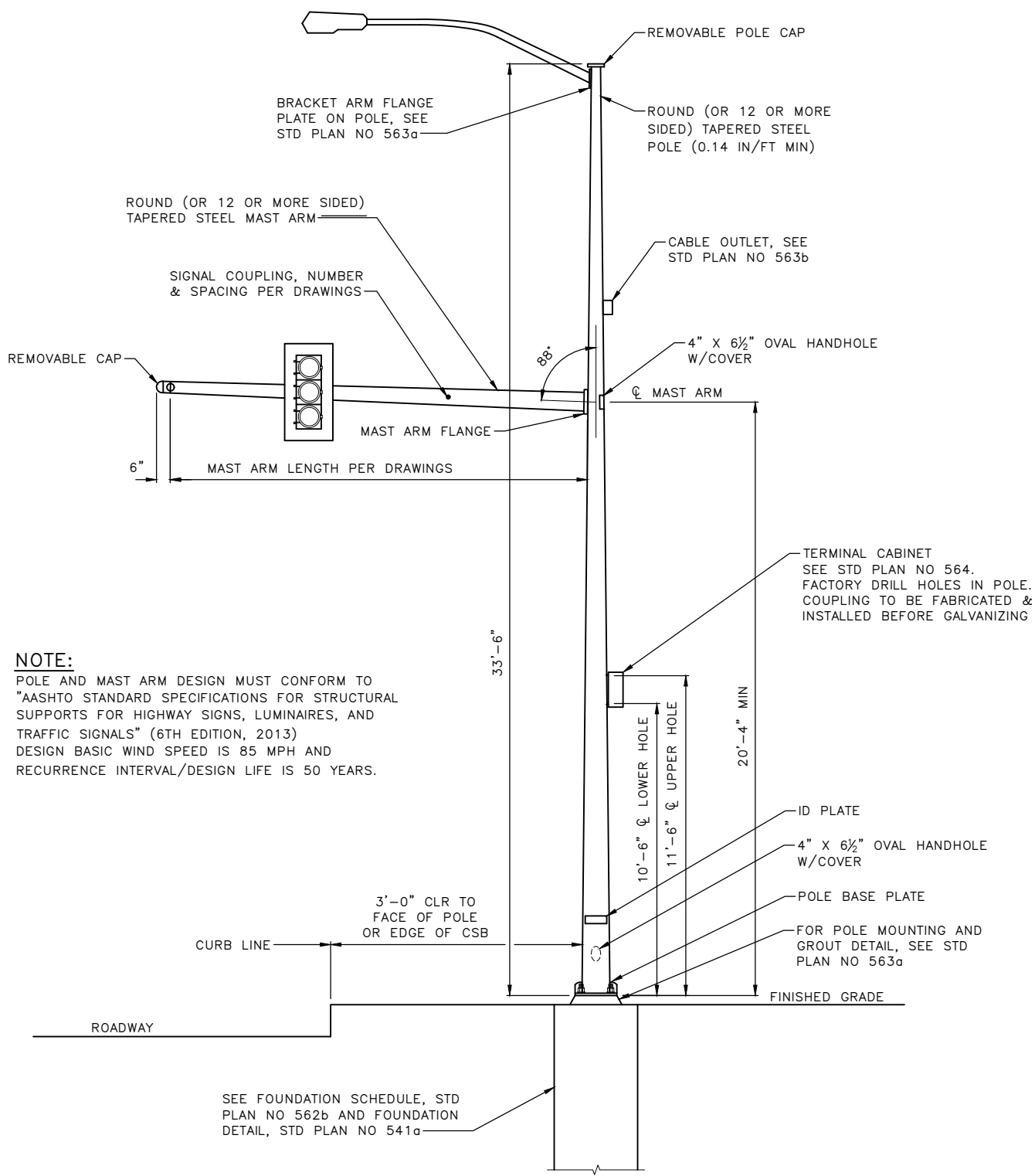
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City of Seattle

NOT TO SCALE

POLYMER CONCRETE  
HANDHOLES



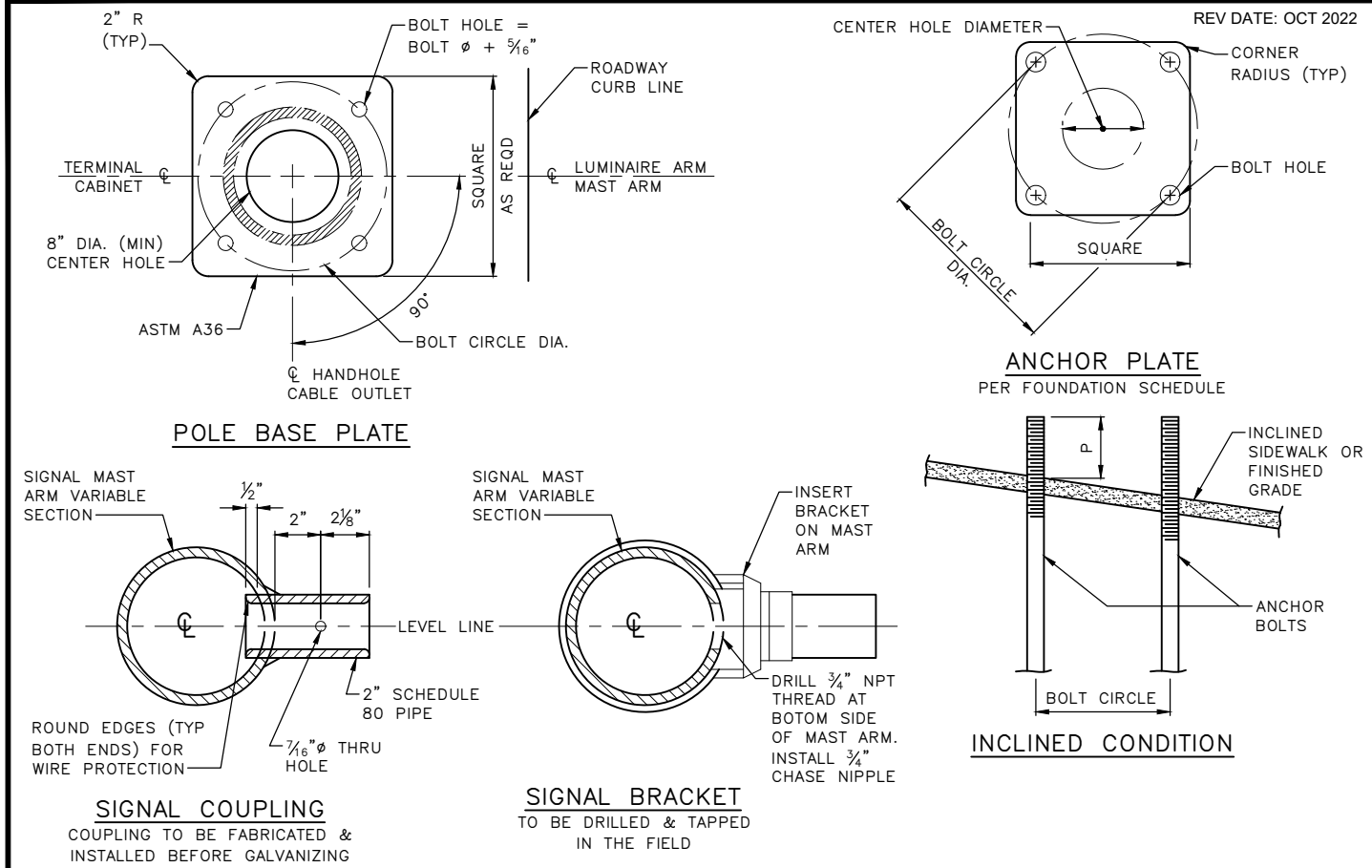
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City of Seattle

NOT TO SCALE

STEEL MAST ARM POLE

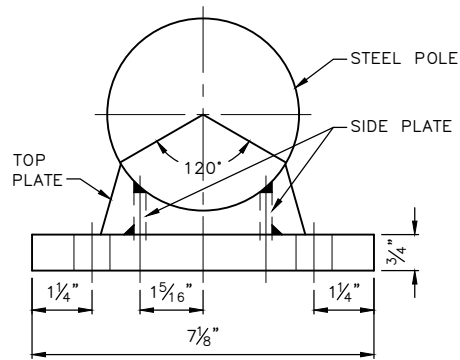


POLE SCHEDULE			
MAST ARM LENGTH	POLE BASE PLATE		
	SQUARE	BOLT CIRCLE "A"	BOLT HOLE
15'-0" TO 30'-0"	16" X 16"	14 1/2"	1 3/16"
31'-0" TO 40'-0"	18" X 18"	16 1/2"	2 1/16"
41'-0" TO 45'-0"	18" X 18"	18"	2 1/16"
46'-0" TO 60'-0"	20" X 20"	20"	2 5/16"

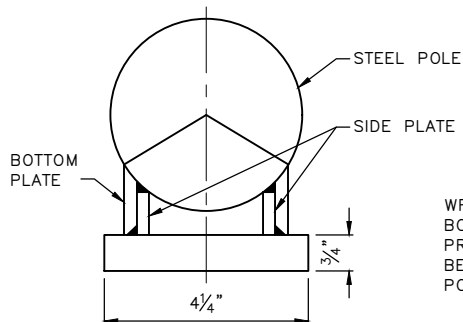
1. CONCRETE MUST BE CLASS 4000P.  
2. ANCHOR BOLTS MUST BE ASTM F1554 GRADE 105 CLASS 2A THREADS INCLUDING SUPPLEMENTARY REQUIREMENTS S2 THROUGH S4. NUTS: ASTM A563 HEAVY HEX GRADE DH. HARDENED STEEL WASHERS: ASTM F436.  
3. BOTTOM ANCHOR PLATE: ASTM A36. HOT DIP GALVANIZED PER ASTM A123.  
4. ALL REINFORCING BARS MUST BE DEFORMED BILLET STEEL CONFORMING TO ASTM CLASS A706, GRADE 60.  
5. ANCHOR BOLTS MUST BE HOT DIP GALVANIZED PER ASTM F2329 INCLUDING NUTS & WASHERS (FULL LENGTH) WITH A MINIMUM OF 18" OF THREADS ON TOP & 12" ON BOTTOM.  
6. TAPE THE TOP OF ANCHOR BOLTS WITH CORROSION PROTECTION TAPE PER STD SPEC SEC 8-32.3(2)A PRIOR TO POURING CONCRETE.  
7. SEE STD PLAN NO 541a FOR FOUNDATION DETAILS.  
8. FOUNDATION DEPTH, REINFORCEMENT AND ANCHOR BOLTS MUST BE IN CONFORMANCE WITH "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" (6TH EDITION, 2013). DESIGN BASIC WIND SPEED IS 85 MPH AND RECURRENCE INTERVAL/DESIGN LIFE IS 50 YEARS

FOUNDATION SCHEDULE							
MAST ARM LENGTH	ANCHOR BOLTS			ANCHOR PLATE DIMENSIONS			
	PROJECTION "P"	BOLT CIRCLE DIA	SIZE	SIZE	BOLT HOLE	CENTER HOLE	CORNER RADIUS
15'-0" TO 30'-0"	7 1/2"	14 1/2"	1 1/2" X 60"	3/8" X 16" X 16"	1 5/8"	10"	1 5/8"
31'-0" TO 40'-0"	9"	16 1/2"	1 3/4" X 72"	3/8" X 16" X 16"	1 7/8"	12 1/2"	1 5/8"
41'-0" TO 45'-0"	9"	18"	1 3/4" X 72"	3/8" X 16" X 16"	1 7/8"	12 1/2"	1 5/8"
46'-0" TO 60'-0"	10"	20"	2" X 72"	3/8" X 18" X 18"	2 1/8"	14"	2"

FOUNDATION DEPTH MUST BE PER PLANS.



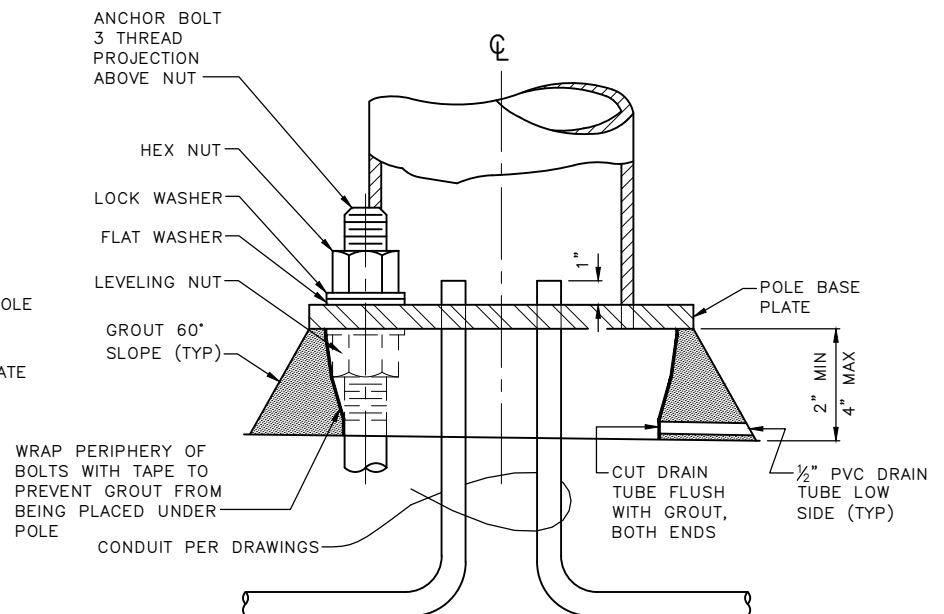
SECTION A-A

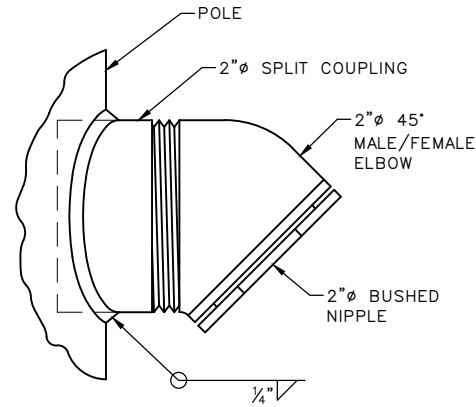


SECTION  
B-B

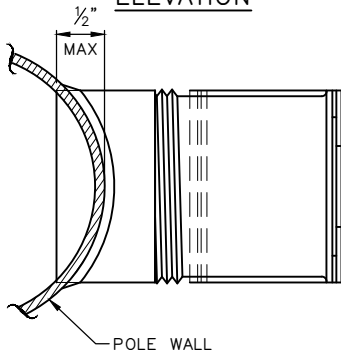
NOTE:

GROUT MUST BE PREMIXED,  
NON-SHRINK AND NON-METALLIC



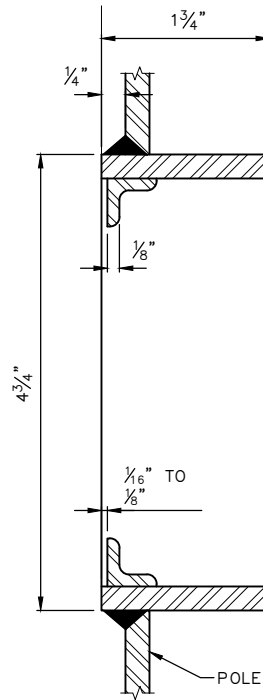


ELEVATION



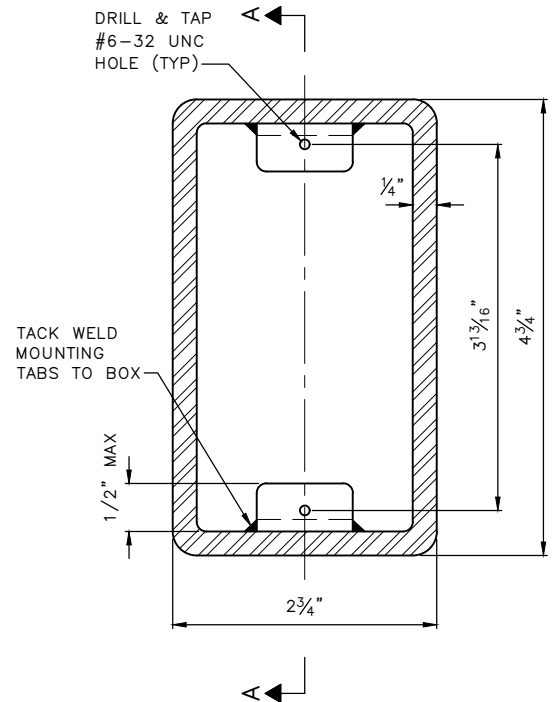
PLAN

CABLE OUTLET DETAIL



SECTION A-A

FESTOON OUTLET BOX



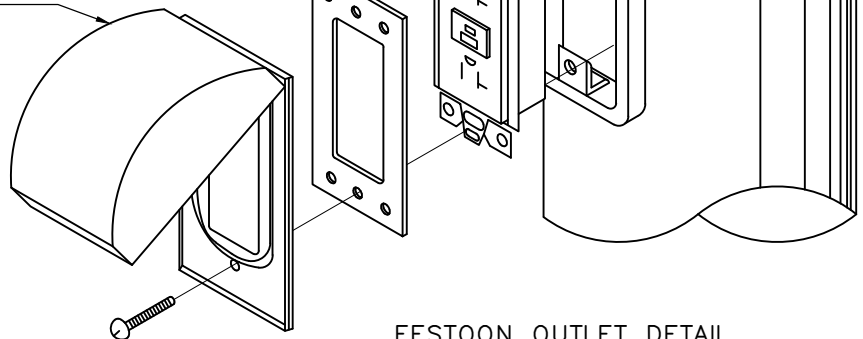
INSERT BOX INTO POLE SHAFT

FESTOON OUTLET BOX

HOSPITAL GRADE GFCI  
OUTLET (20 AMP RATED)

WEATHERPROOF GASKET

WEATHERPROOF COVER  
WHILE-IN-USE  
APPLICATIONS, NEMA  
3R RATED TYPE



FESTOON OUTLET DETAIL  
(METAL POLES)

NOTES:

1. ALL OUTLETS MUST BE PLUGGED WITH THREADED INSERT PLUGS DURING SHIPMENT TO PREVENT DAMAGE TO PLUGS.
2. REMOVE BURRS AND SHARP EDGES TO PREVENT DAMAGE TO ELECTRICAL CABLE.
3. SPLIT COUPLING MUST EXTEND INTO THE POLE 1/2" MAX AS SHOWN.

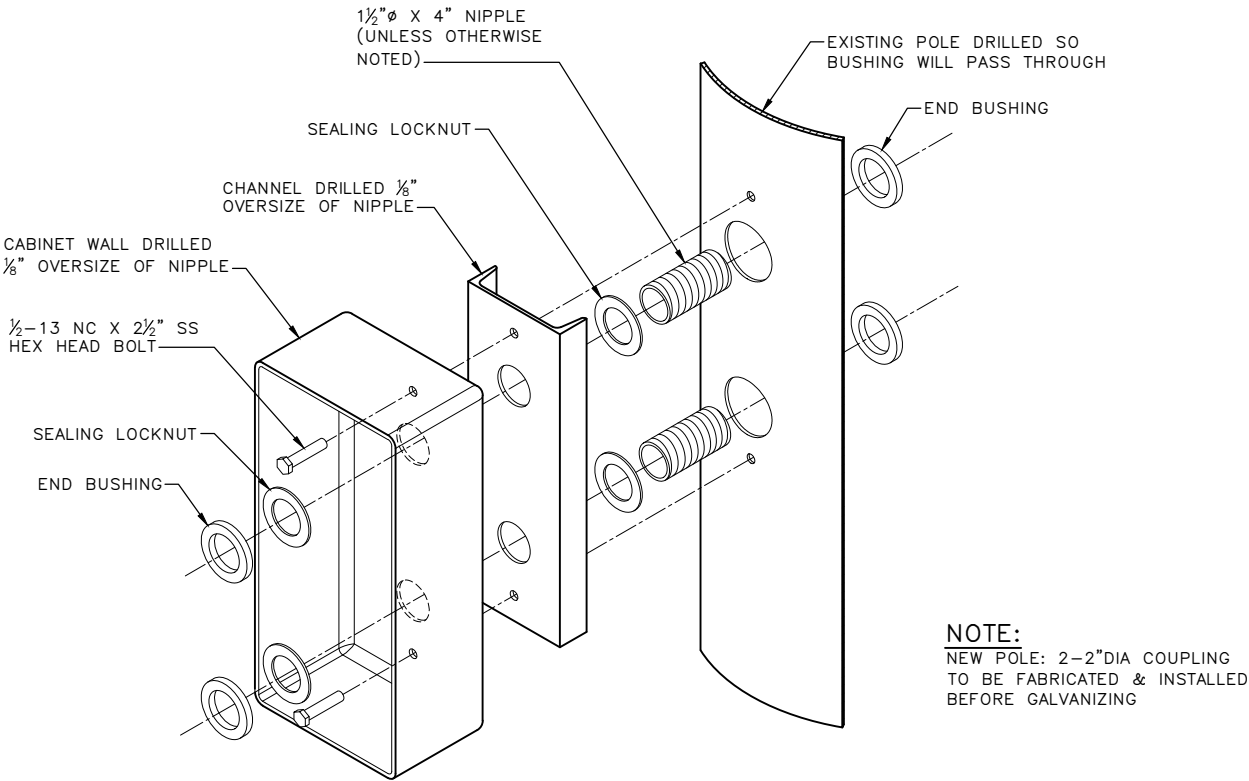
REF STD SPEC SEC 8-30, 8-32



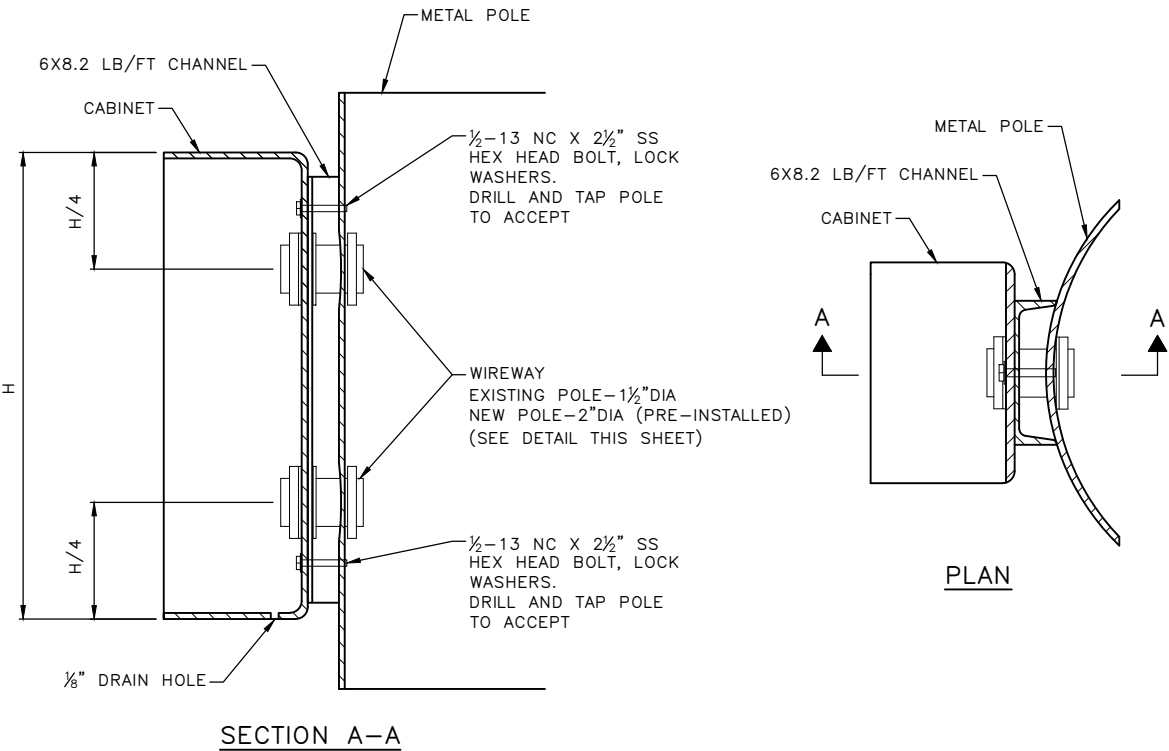
City of Seattle

NOT TO SCALE

MISCELLANEOUS STEEL  
POLE DETAILS



WIREWAY ISOMETRIC DETAIL



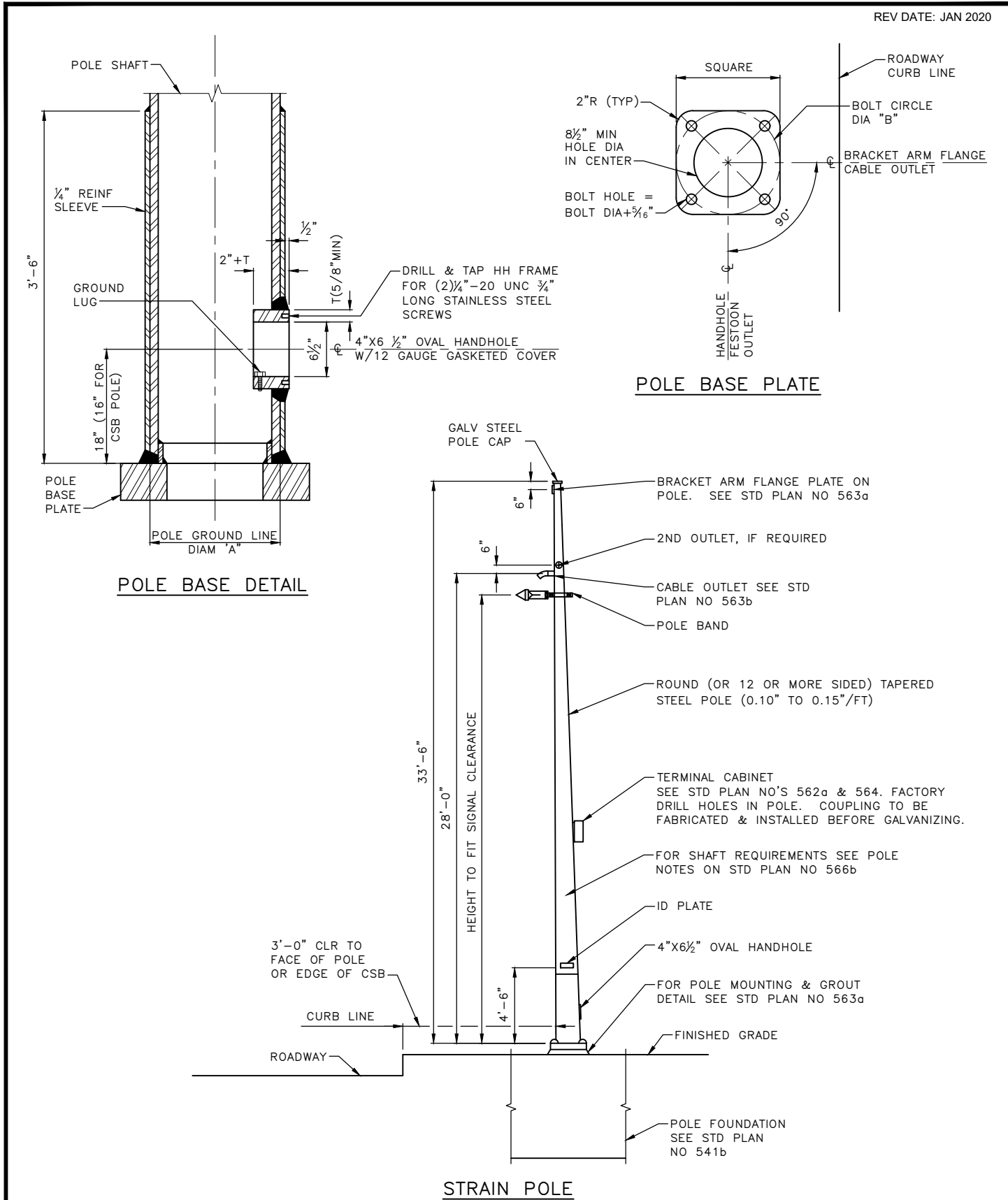
REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

TERMINAL CABINET  
POLE MOUNTING



REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

STRAIN POLE DETAILS  
(TYPE V, X & Z POLES)



POLE TYPE	POLE SCHEDULE						
	GROUND LINE DIA "A"		POLE BASE PLATE SIZE		BOLT CIRCLE DIA "B"	BOLT HOLE	ANCHOR BOLTS
	STD	CSB	STD	CSB			
V	12"	12"	1 $\frac{3}{4}$ "X18"X18"	1 $\frac{3}{4}$ "X23"X23"	18"	2 $\frac{1}{8}$ "	1 $\frac{3}{4}$ "DIA X 72"
X	14"	12 $\frac{1}{2}$ "	2"X20"X20"	2"X23"X23"	20"	2 $\frac{5}{16}$ "	2"DIA X 72"
Z	15"	--	2 $\frac{1}{2}$ "X23"X23"	--	22"	2 $\frac{1}{8}$ "	2 $\frac{1}{2}$ "DIA X 72"

**NOTES:**

1. POLE SHAFT AND REINFORCING SLEEVE: ASTM A572 GRADE 50, 60 OR 65 (Fy=50, 60 OR 65 KSI RESPECTIVELY) OR ASTM A595 GRADE A OR B (Fy=55 OR 60 KSI RESPECTIVELY).
2. BASE PLATE AND HANDHOLE REINFORCING RIM: ASTM A36 OR ASTM A572 GRADE 42. BASE PLATE Fy $\geq$ 0.65 POLE SHAFT Fy THE BASE PLATE THICKNESS MAY BE REDUCED BY  $\frac{1}{4}$ " IF ASTM A572 GRADE 42 STEEL IS USED.
3. REINFORCING SLEEVE MUST BE FABRICATED FROM THE SAME MATERIAL AND YIELD STRENGTH AS THE POLE SHAFT.
4. POLE SHAFTS MUST HAVE NO MORE THAN TWO LONGITUDINAL WELDS IN EACH PLY.
5. MINIMUM SHAFT WALL THICKNESS OF EACH PLY MUST BE 0.239" (3 GAUGE). POLE MUST HAVE A MAXIMUM OF TWO PLYS NOT INCLUDING THE  $\frac{1}{4}$ " REINFORCING SLEEVE.
6. MAXIMUM SILICON CONTENT IN STEEL MUST BE 0.04%. SEE STD SPEC SECTION 9-33.1(3) FOR GENERAL GALVANIZING REQUIREMENTS.
7. POLE DIAMETER FOR 12 OR MORE SIDED POLES MUST BE MEASURED FROM THE POINT TO POINT DIMENSION.
8. POLES MUST MEET DEFLECTION CRITERIA STATED IN STD SPEC SECTION 9-33.2(2) WITH THE DEAD LOAD APPLIED AT 25' ABOVE GROUND LINE.
9. POLE STRENGTH MUST MEET REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (6TH EDITION, 2013). DESIGN WIND SPEED IS 85 MPH AND RECURRENCE INTERVAL/DESIGN LIFE IS 50 YEARS.

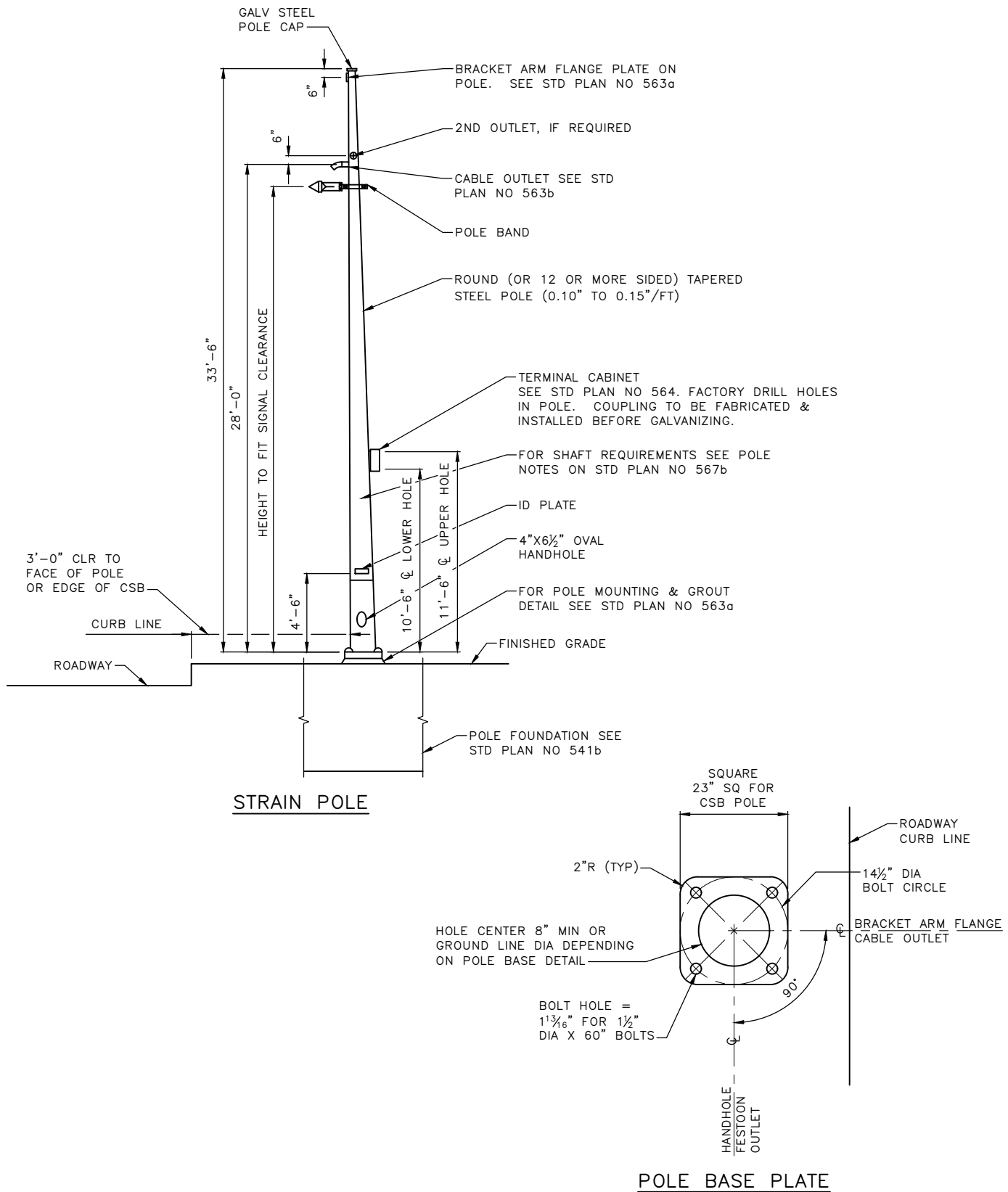
REF STD SPEC SEC 8-32, 9-33



City of Seattle

NOT TO SCALE

**STRAIN POLE DETAILS**  
 (TYPE V, X, & Z POLES)



REF STD SPEC SEC 8-32

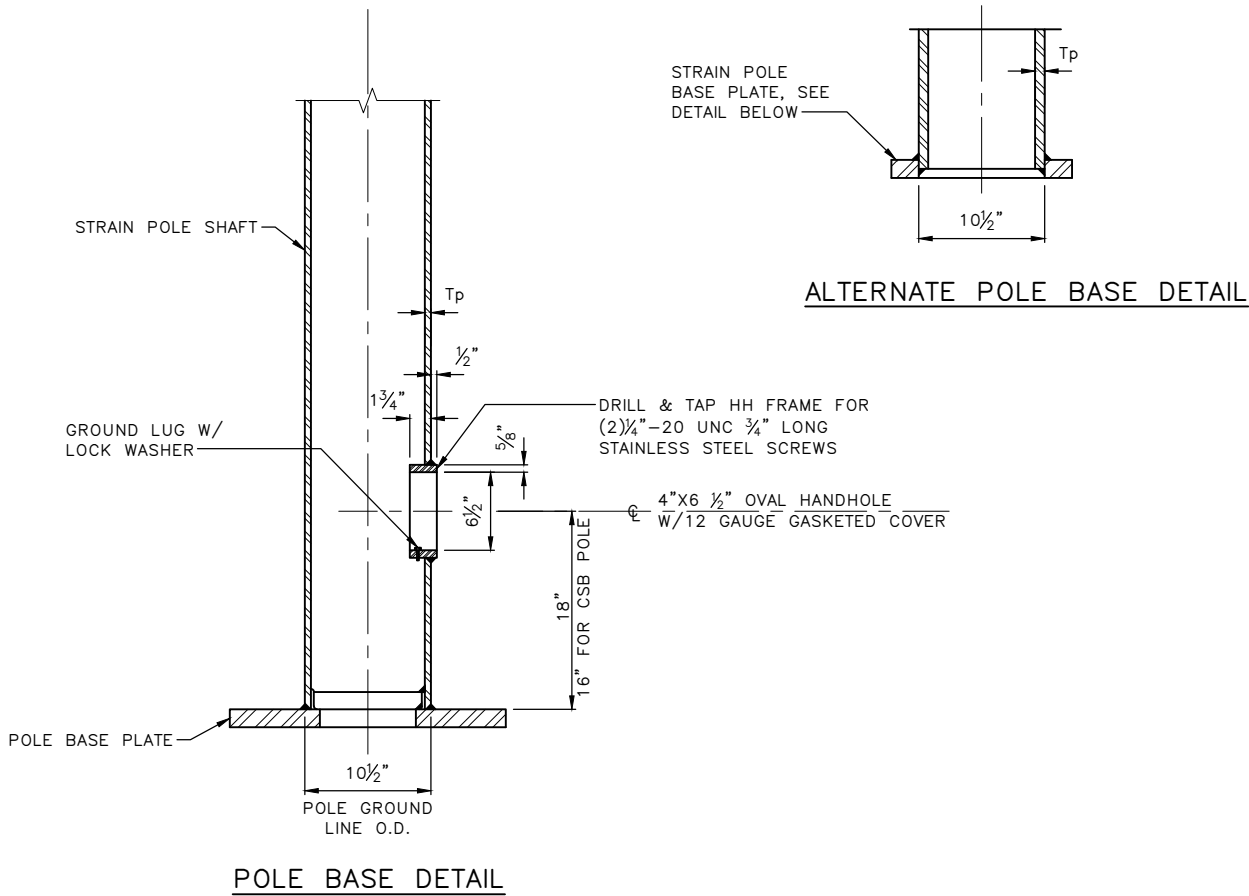


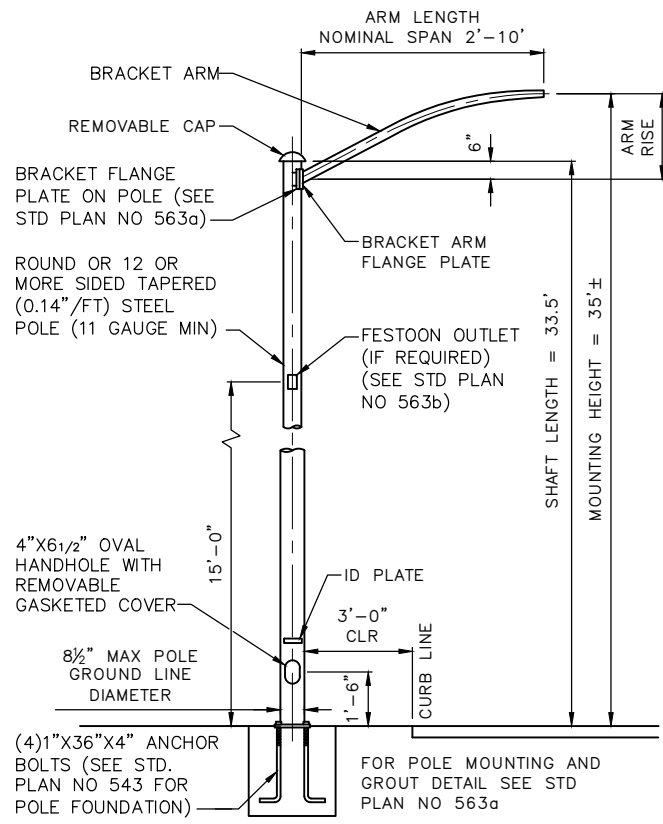
City of Seattle

NOT TO SCALE

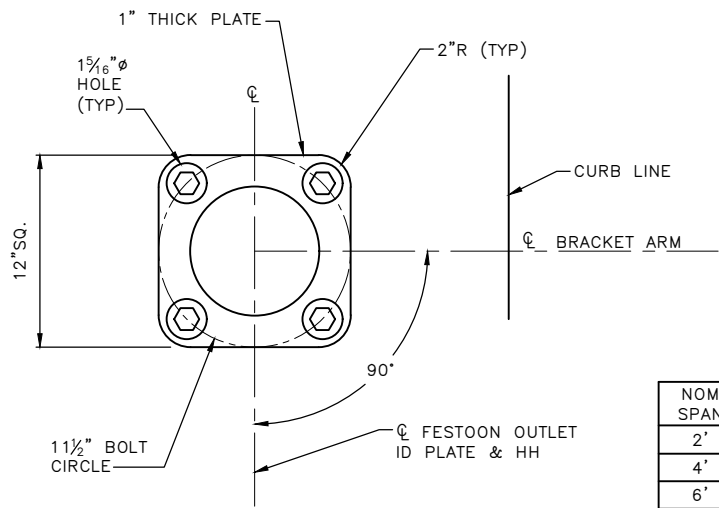
TYPE T STRAIN POLE DETAILS  
TRAFFIC SIGNAL ONLY

- NOTES:
- 1. POLE STRENGTH MUST MEET REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (6TH EDITION, 2013). DESIGN WIND SPEED IS 85 MPH AND RECURRENCE INTERVAL/DESIGN LIFE IS 50 YEARS.
  - 2. POLE SHAFT: ASTM A572 GRADE 50, 60 OR 65 (Fy=50, 60 OR 65 KSI RESPECTIVELY), OR ASTM A595 GRADE A OR B (Fy=55 OR 60 KSI RESPECTIVELY)
  - 3. BASE PLATE AND HANDHOLE REINFORCING RIM: ASTM A36 OR ASTM A572 GRADE 42. BASE PLATE Fy≥0.65 POLE SHAFT Fy THE BASE PLATE THICKNESS MAY BE REDUCED BY ¼" IF ASTM A572 GRADE 42 STEEL IS USED.
  - 4. POLE SHAFTS MUST HAVE NO MORE THAN TWO LONGITUDINAL WELDS IN EACH PLY.
  - 5. MINIMUM SHAFT WALL THICKNESS OF EACH PLY MUST BE 0.239" (3 GAUGE). POLE MUST HAVE A MAXIMUM OF TWO PLYS.
  - 6. MAXIMUM SILICON CONTENT IN STEEL MUST BE 0.04%. SEE STD SPEC SECTION 9-33.1(3) FOR GENERAL GALVANIZING REQUIREMENTS.
  - 7. POLE DIAMETER FOR 12 OR MORE SIDED POLES MUST BE MEASURED FROM THE POINT TO POINT DIMENSION.
  - 8. POLES MUST MEET DEFLECTION CRITERIA STATED IN STD SPEC SECTION 9-33.2(2) WITH THE DEAD LOAD APPLIED AT 27' ABOVE GROUND LINE.
  - 9. THE POLES MUST BE COMPACT AND MUST MEET THE REQUIREMENTS IN AASHTO SECTION 4, TABLE 1.4 1B(1).



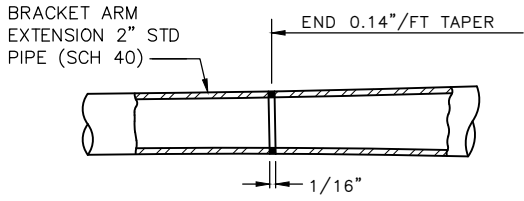


STEEL STREET LIGHT POLE

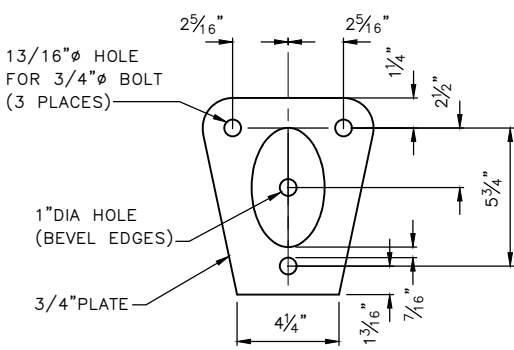


POLE BASE PLATE

NOTE:  
 1. ALL OTHER ARM LENGTHS REQUIRE SCL REVIEW AND APPROVAL

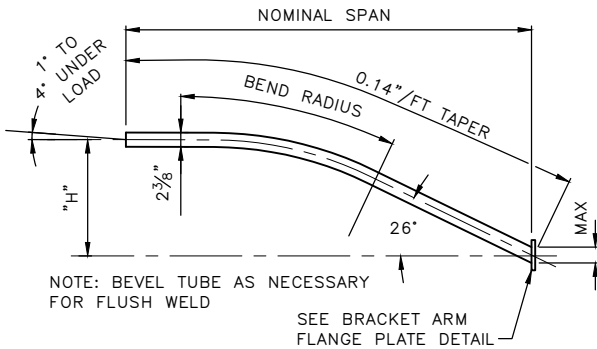


BRACKET ARM EXTENSION IF REQUIRED



NOTE:  
 FLANGE DIMENSIONS AND HOLE LOCATIONS MUST MATCH THOSE ON FLANGE PLATE ON POLE (SEE STD PLAN NO 563a)

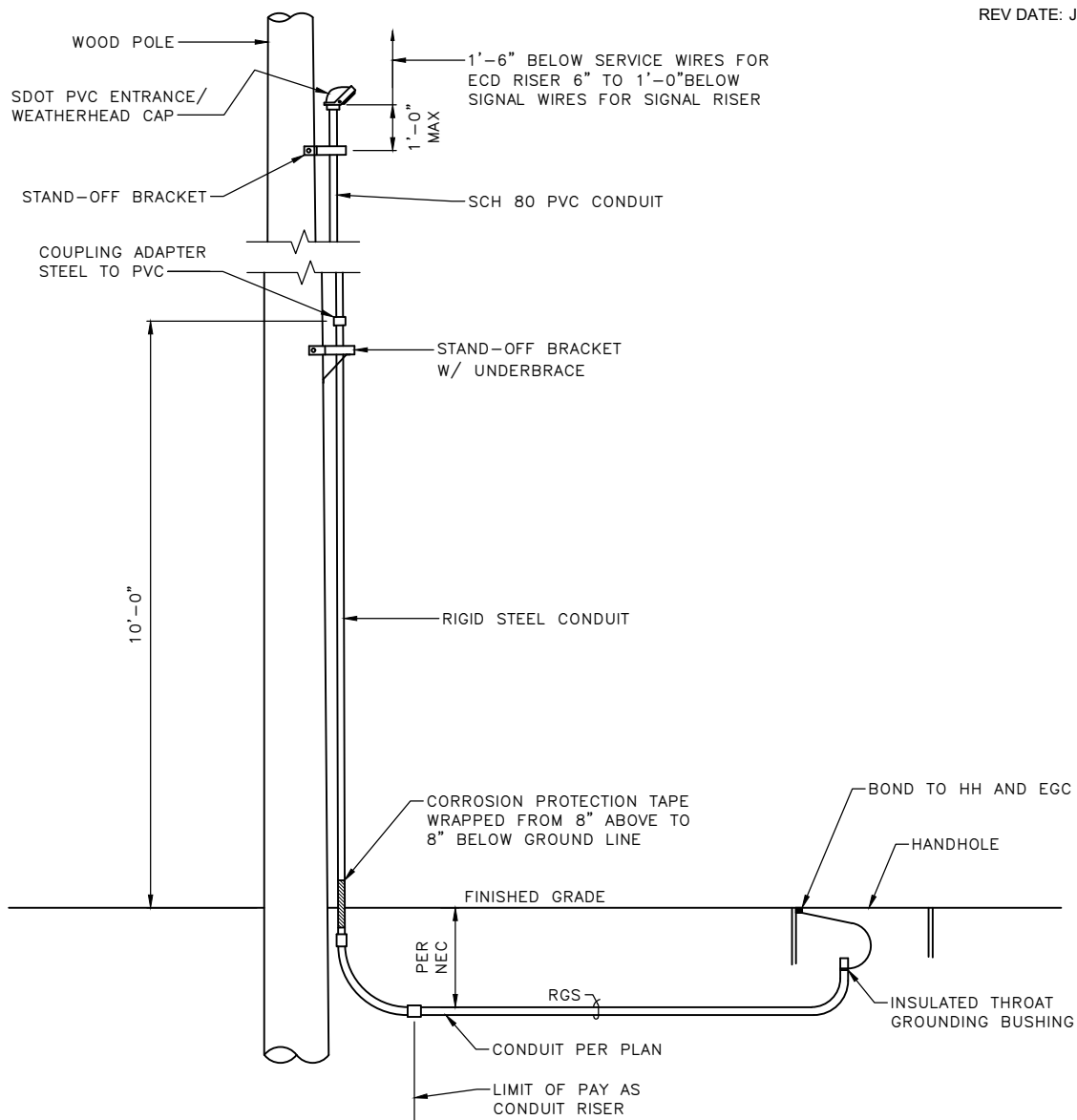
BRACKET ARM FLANGE PLATE



2' THRU 10' BRACKET ARMS

NOM SPAN	H*	BEND RADIUS	TUBE REQUIREMENT	MATERIAL SPECIFICATION
2'	5 1/4"	—	2" STD PIPE	PLATE AND SHAPES: ASTM A36
4'	12"	6'	11 GAUGE	POLE SHAFTS: ASTM A570 GR 40 MIN.
6'	18"	9'	11 GAUGE	ANCHOR BOLTS: ASTM A307
8'	24"	13'	11 GAUGE	BRACKET ARM FLANGE PLATE BOLT: ASTM A325
10'	30"	15'	11 GAUGE	

\* THESE DIMENSIONS ARE ONLY ILLUSTRATIVE OF THE GENERAL OUTLINE AND MATERIALS USED IN THE CONSTRUCTION OF THESE ARMS AND ARE NOT INTENDED TO EXCLUDE MANUFACTURER'S STANDARD PRODUCTS.



**CONDUIT RISER (WITH STAND-OFF BRACKET\*)**

\*WHEN THERE WILL BE ONLY ONE CONDUIT (1½" OR SMALLER) ON THE POLE, TWO HOLE MALLEABLE IRON CLAMPS WITH DOUBLE HEADED NAILS MUST BE USED TO SECURE THE CONDUIT TO THE POLE IN LIEU OF THE STAND-OFF BRACKETS

**NOTES:**

1. ON POLES WITH EXISTING CONDUITS, NEW CONDUITS MUST BE INSTALLED IN ACCORDANCE WITH THIS STANDARD PLAN.
2. RIGID STEEL CONDUIT MUST BE GROUNDED JUST BELOW COUPLING, APPROXIMATELY 8'-0" TO 10'-0" ABOVE GROUND, AS SHOWN
3. ALL RISERS BONDED IN HH
4. THE GROUND WIRE MUST BE ONE CONTINUOUS LENGTH. INSERT THE GROUND WIRE FROM THE BOTTOM OF THE GROUND CLAMP & BEND OVER THE CLAMP BEFORE TIGHTENING
5. ALL STEEL HARDWARE MUST BE HOT DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123
6. CONDUIT CLAMP SPACING MUST BE PER THE NEC WITH A MINIMUM OF TWO HOLE CLAMP PER 10'-0" LENGTH OF CONDUIT
7. SERVICE AND SIGNAL CONDUCTORS MUST NOT BE PLACED IN THE SAME CONDUIT.
8. WHEN POSSIBLE, RISER MUST BE INSTALLED ON DOWNSTREAM SIDE OF TRAFFIC
9. SEE SCL CONSTRUCTION STANDARD 1714.50 FOR STREETLIGHT HANDHOLE AND CONDUIT REQUIREMENTS & 0224.34 FOR STREETLIGHT CONDUIT RISERS.

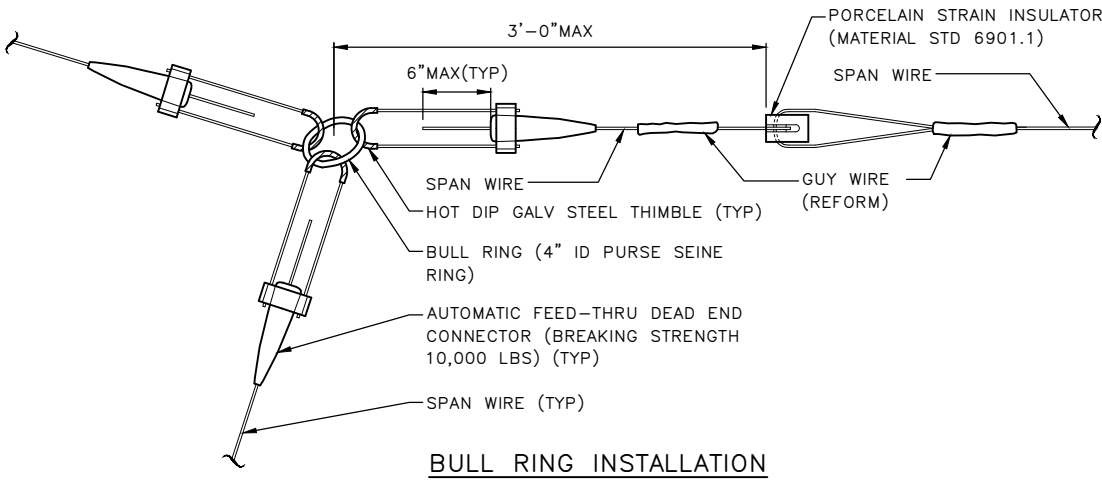
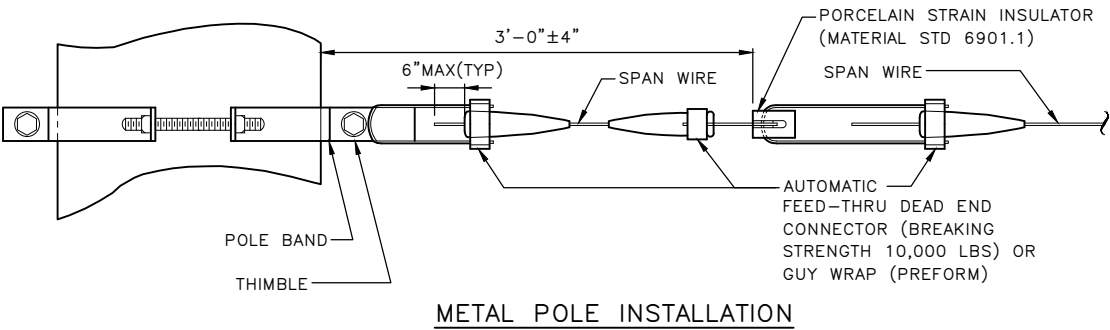
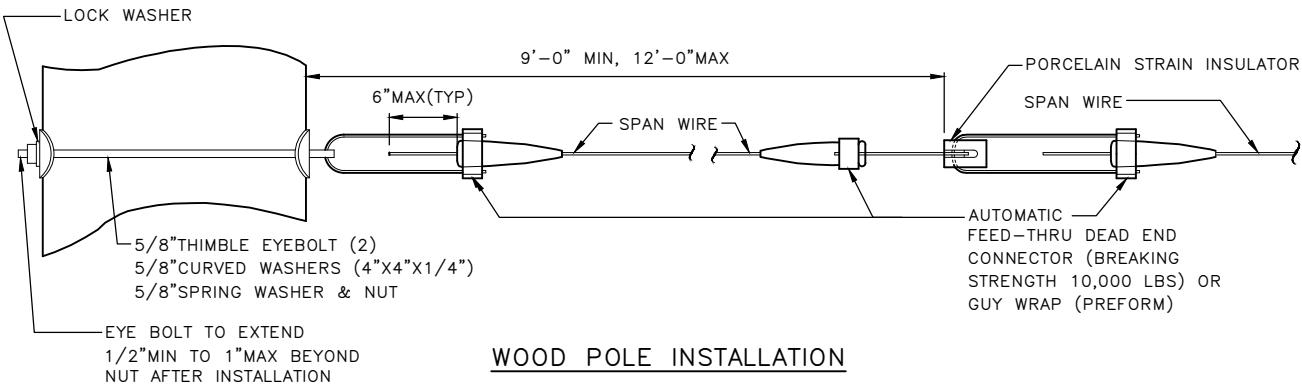
REF STD SPEC SEC 8-33



City of Seattle

NOT TO SCALE

TRAFFIC CONDUIT RISER



- NOTES:**
- 1. ALL STEEL HARDWARE TO BE HOT DIP GALVANIZED OR STAINLESS STEEL UNLESS OTHERWISE STIPULATED IN THE DRAWINGS.
  - 2. SPAN WIRE MUST BE ALUMINUM COATED STEEL.
  - 3. SPREAD THIMBLE TO FIT THE BAIL OF THE AUTOMATIC DEAD END.

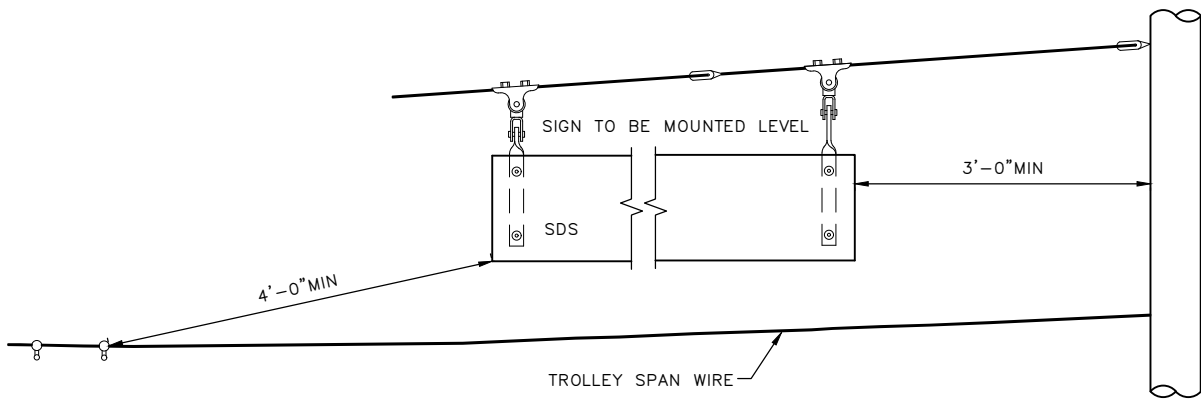
REF STD SPEC SEC 8-21, SCL MATERIAL STANDARD 6901.1



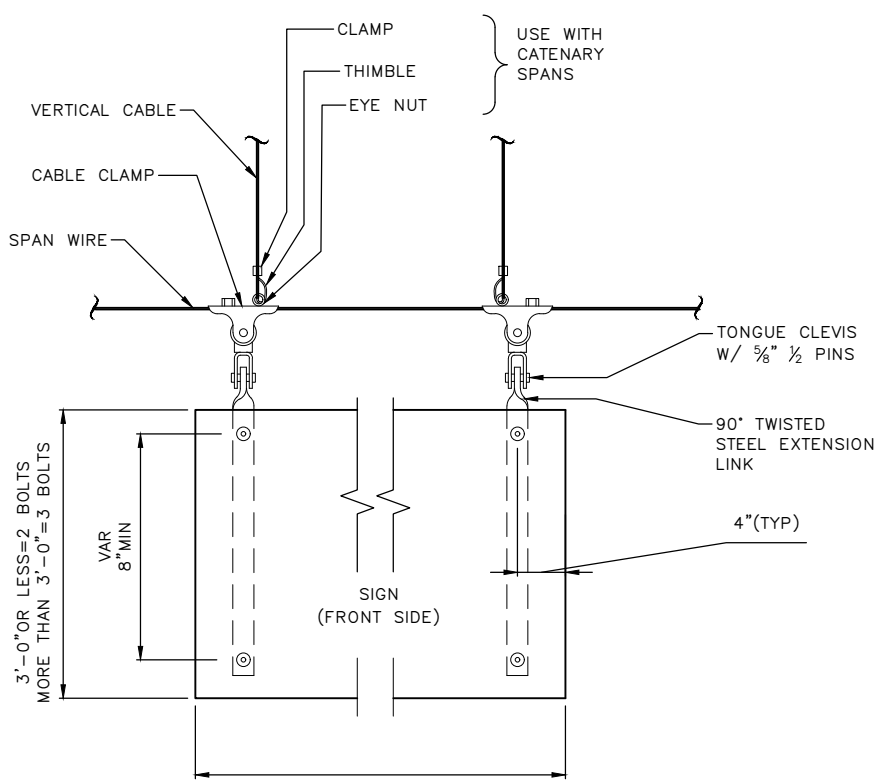
City of Seattle

NOT TO SCALE

SPAN WIRE INSTALLATION



STREET DESIGNATION SIGN



6'-0" OR LESS = 2 LINKS REQ'D  
MORE THAN 6'-0" = 3 LINKS REQ'D

SPAN WIRE MOUNTED SIGN

- NOTES:**
- 1. ALL HARDWARE MUST BE STAINLESS STEEL. OTHER THAN HARDWARE MUST BE HOT DIP GALVANIZED.
  - 2. NEOPRENE GASKETS MUST NOT BE USED FOR SPAN WIRE OR AERIAL CONNECTIONS.

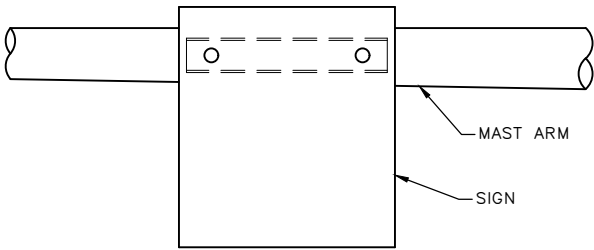
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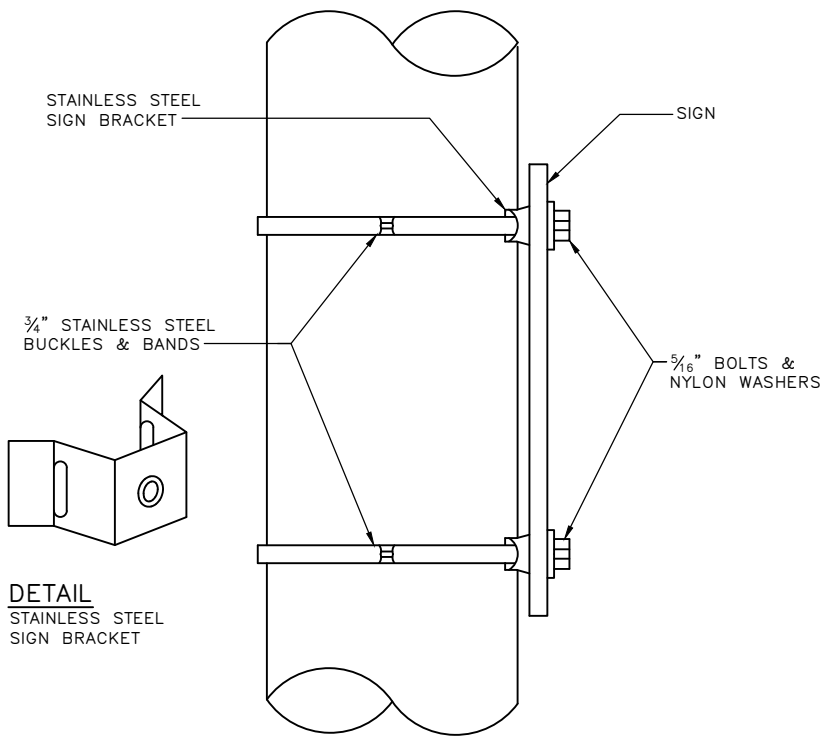
City of Seattle

NOT TO SCALE

**OVERHEAD SIGNS  
SPANWIRE MOUNTED**



SIGN MOUNTING ON MAST ARM



TEMPORARY SIGN MOUNTING ON METAL POLE

**NOTES:**

1. EXCEPT AS NOTED OTHERWISE, ALL HARDWARE MUST BE STAINLESS STEEL.
2. MOUNTING OF TRAFFIC SIGNS MUST BE AS FOLLOWS: ON METAL POLE THINNER THAN 7 GAUGE, USE 3/8" STAINLESS STEEL RIVNUTS ON METAL POLES 7 GAUGE OR THICKER, FOR 3/8" BOLT (STAINLESS STEEL RIVNUT OPTIONAL) ON POLES FILLED WITH OR MADE FROM CONCRETE, USE 3/8"x21/2"MIN STUD BOLT ANCHORS WITH HEX NUT.
3. FOR SIGN FEATURE, CONTACT TRAFFIC ENGINEER.

REF STD SPEC SEC 8-21

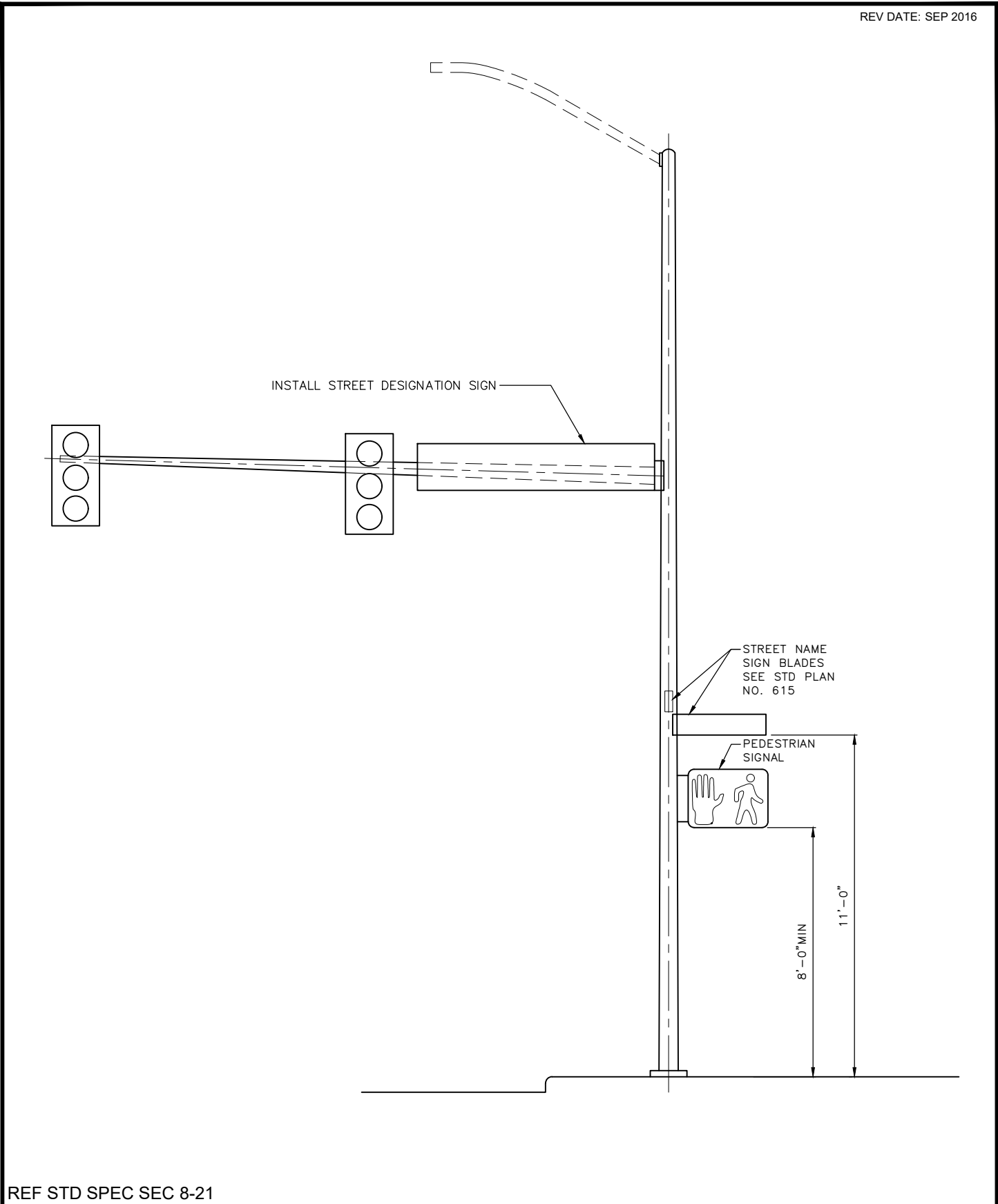


City of Seattle

NOT TO SCALE

**SIGN INSTALLATION  
(NON-SPANWIRE MOUNTING)**





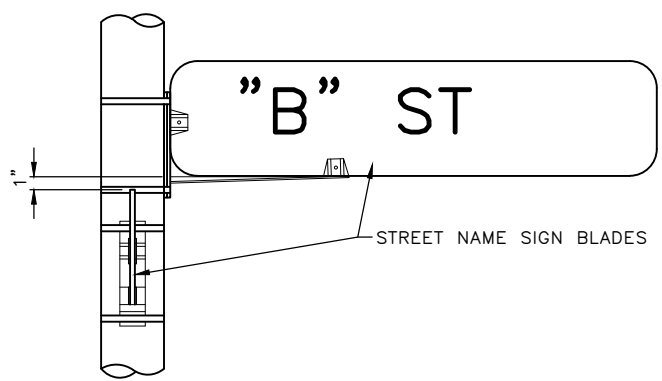
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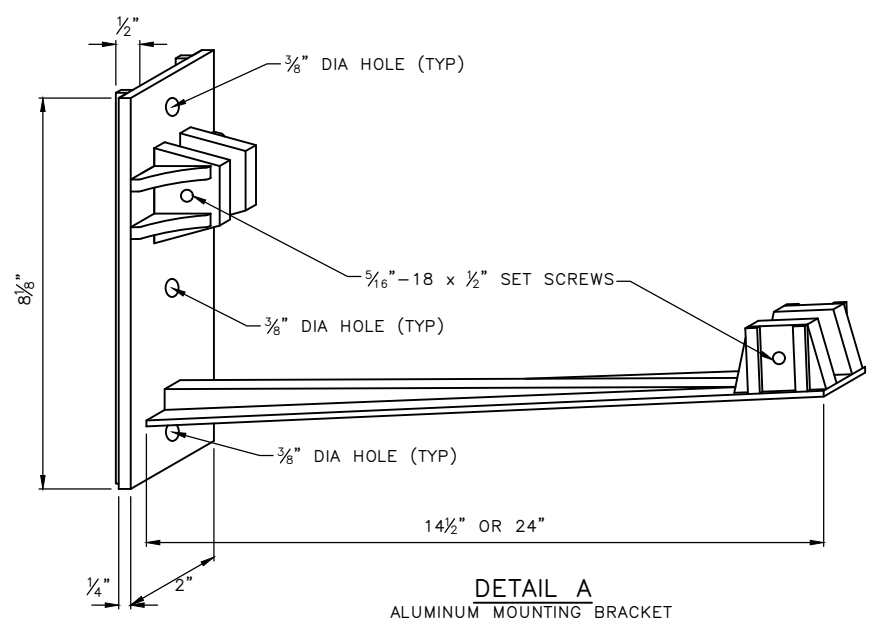
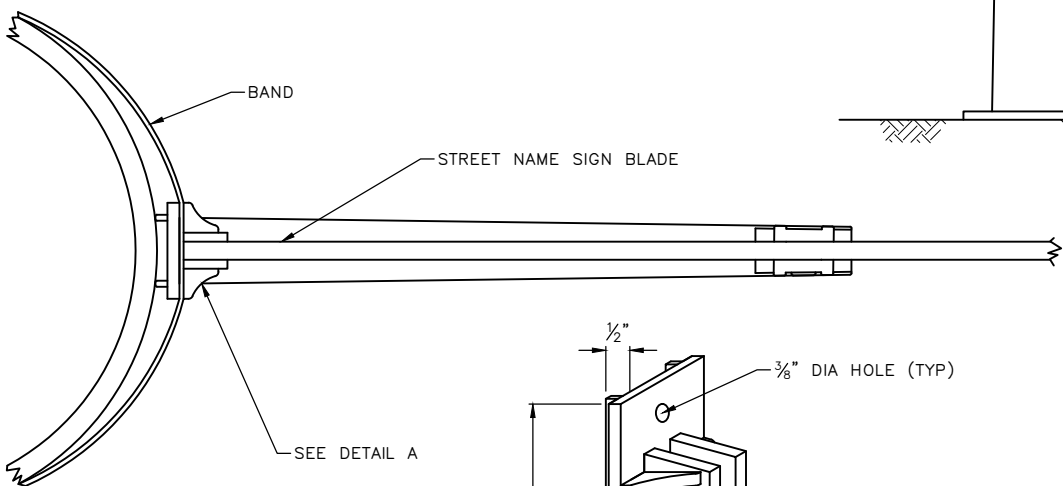
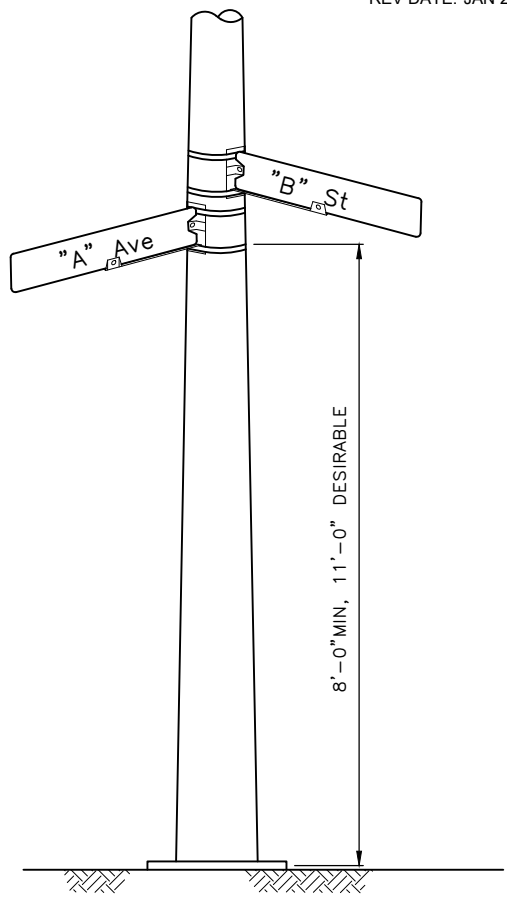
City of Seattle

NOT TO SCALE

STANDARD SIGN INSTALLATION  
STEEL POLES



- NOTES:
- 1. STAGGER SNS BLADES WITH THE "AVENUE" DESIGNATION BLADE BELOW THE "STREET" DESIGNATION BLADE
  - 2. SNS MUST BE INSTALLED PARALLEL TO CORRESPONDING STREET
  - 3. ALL NUTS, BOLTS & WASHERS TO BE STAINLESS STEEL EXCEPT ALUMINUM RIV NUTS ON ALUMINUM POLES.



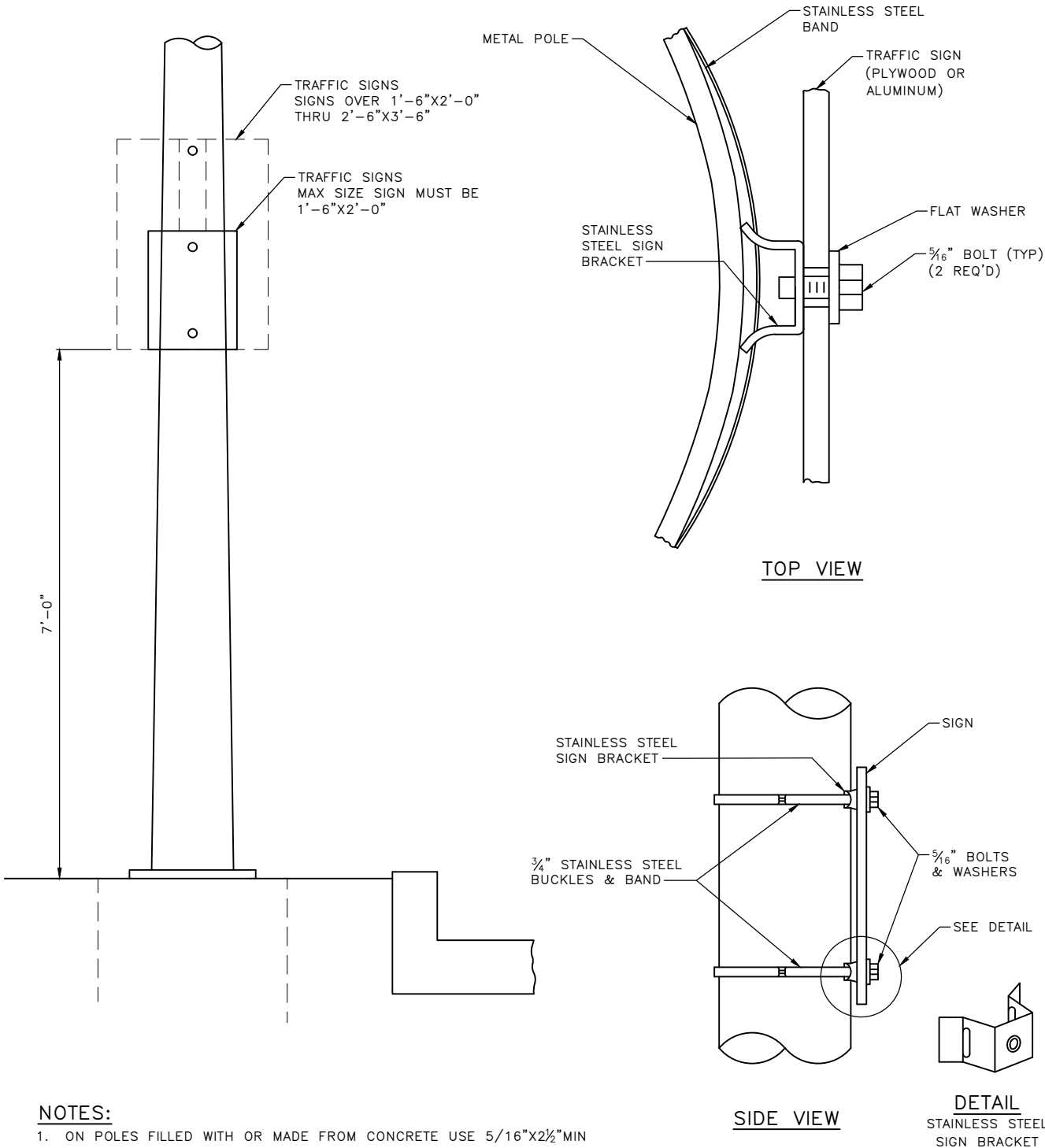
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

SNS BRACKET FOR  
STEEL POLES



- NOTES:**
- 1. ON POLES FILLED WITH OR MADE FROM CONCRETE USE 5/16"x2 1/2" MIN STUD BOLT ANCHORS WITH HEX NUT
  - 2. FOR SIGNS OVER 2'-6"x3'-6" MOUNT SIGNS USING SIGN BRACKETS AS SPECIFIED IN SECTION 8-21.3(1)B3 FOR STREET DESIGNATION SIGNS.
  - 3. FOR DARK COLORED POLES PAINT BAND TO MATCH POLE
  - 4. ALL HARDWARE TO BE STAINLESS STEEL.

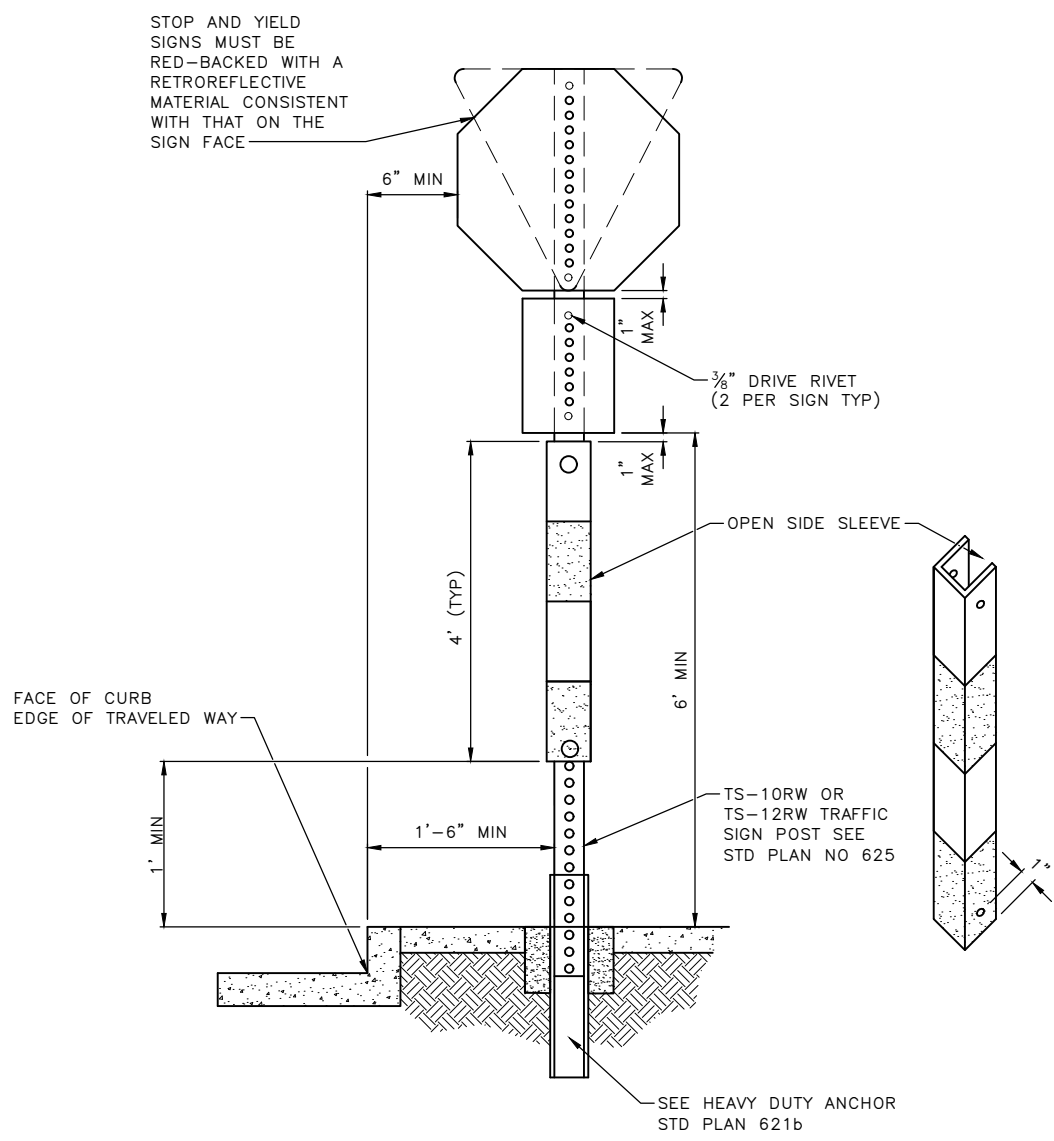
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

TRAFFIC SIGN MOUNTING  
ON METAL POLES



POST ANCHOR INSTALLATIONS

NOTE:

- 1. CONTACT SEATTLE DEPARTMENT OF TRANSPORTATION (684-5087) FOR DETAILS REGARDING SIGN MESSAGE AND FOUNDATION.
- 2. STEEL SELF-TAPPING #10 X 1/2" WITH HEX WASHER HEAD ZINC PLATED
- 3. RED AND WHITE SLEEVE
- 4. SEE STANDARD 621a FOR OTHER WARNING & REGULATORY SIGN POST

REF STD SPEC SEC 8-21



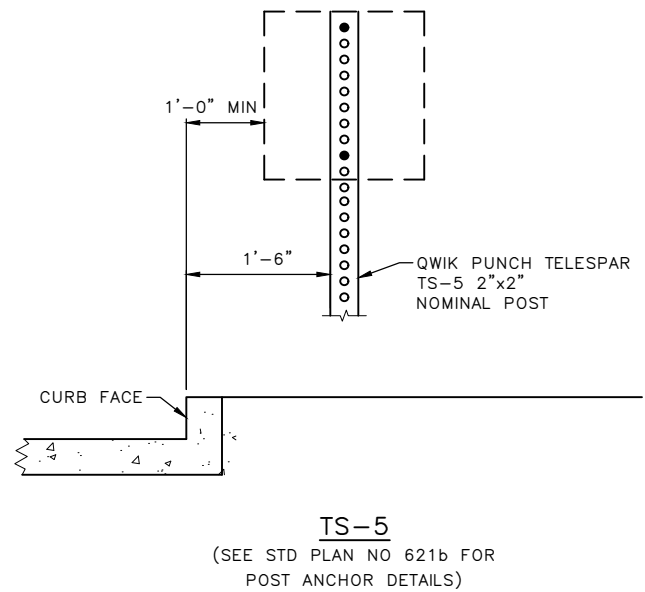
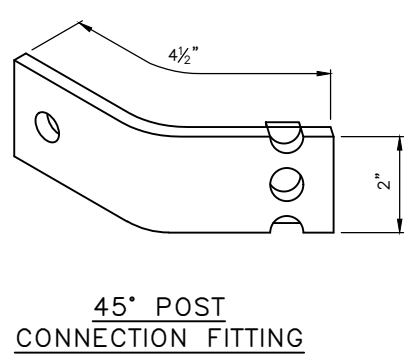
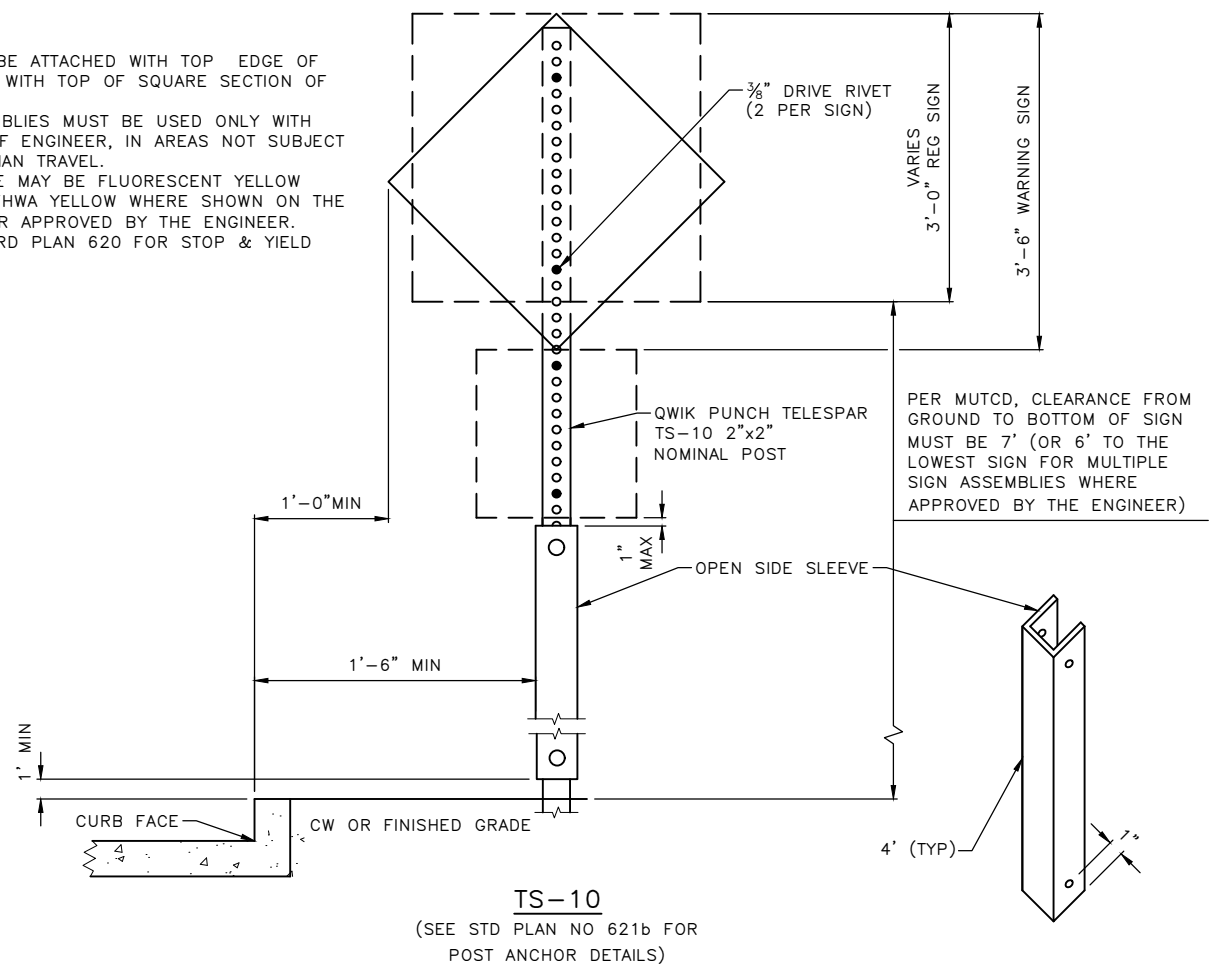
City of Seattle

NOT TO SCALE

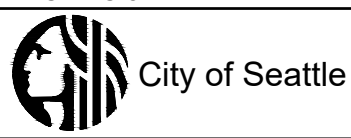
STOP AND YIELD SIGN POST  
AND ANCHOR INSTALLATION

NOTES:

- 1. SIGN MUST BE ATTACHED WITH TOP EDGE OF SIGN FLUSH WITH TOP OF SQUARE SECTION OF POST.
- 2. TS-5 ASSEMBLIES MUST BE USED ONLY WITH APPROVAL OF ENGINEER, IN AREAS NOT SUBJECT TO PEDESTRIAN TRAVEL.
- 3. POST SLEEVE MAY BE FLUORESCENT YELLOW GREEN OR FHWA YELLOW WHERE SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER.
- 4. SEE STANDARD PLAN 620 FOR STOP & YIELD SIGN POST.

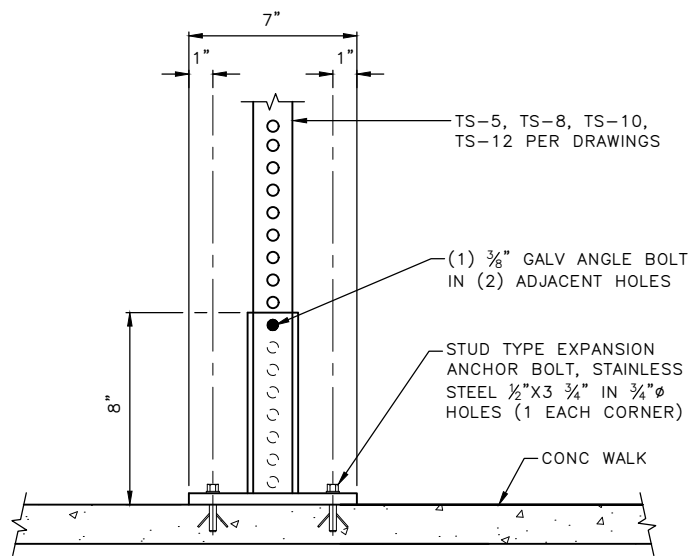


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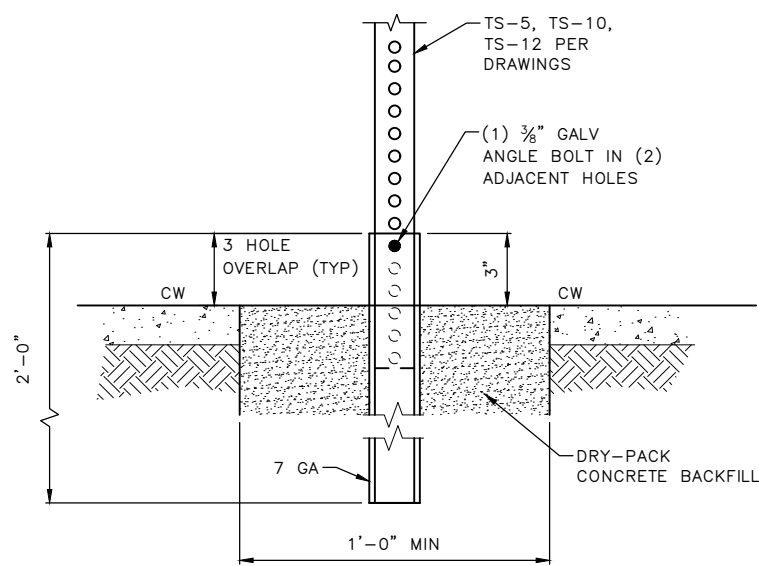
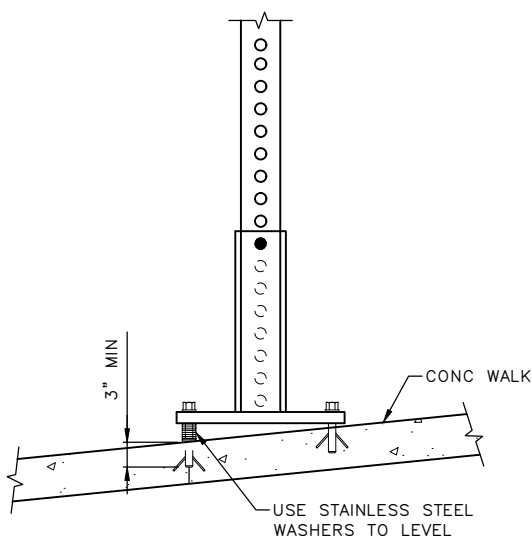


NOT TO SCALE

WARNING AND REGULATORY  
SIGN POST



SURFACE MOUNT



HEAVY DUTY ANCHOR

NOTES:

1. FOR UNLEVEL SIDEWALKS INSERT WASHERS AS SPACERS BETWEEN PLATE AND SIDEWALK. IF BOLT CANNOT PENETRATE SIDEWALK AT LEAST 3", CONTACT THE ENGINEER.
2. USE CONCRETE FOOTINGS FOR ALL SIGNS LARGER THAN 96 SQUARE INCHES.

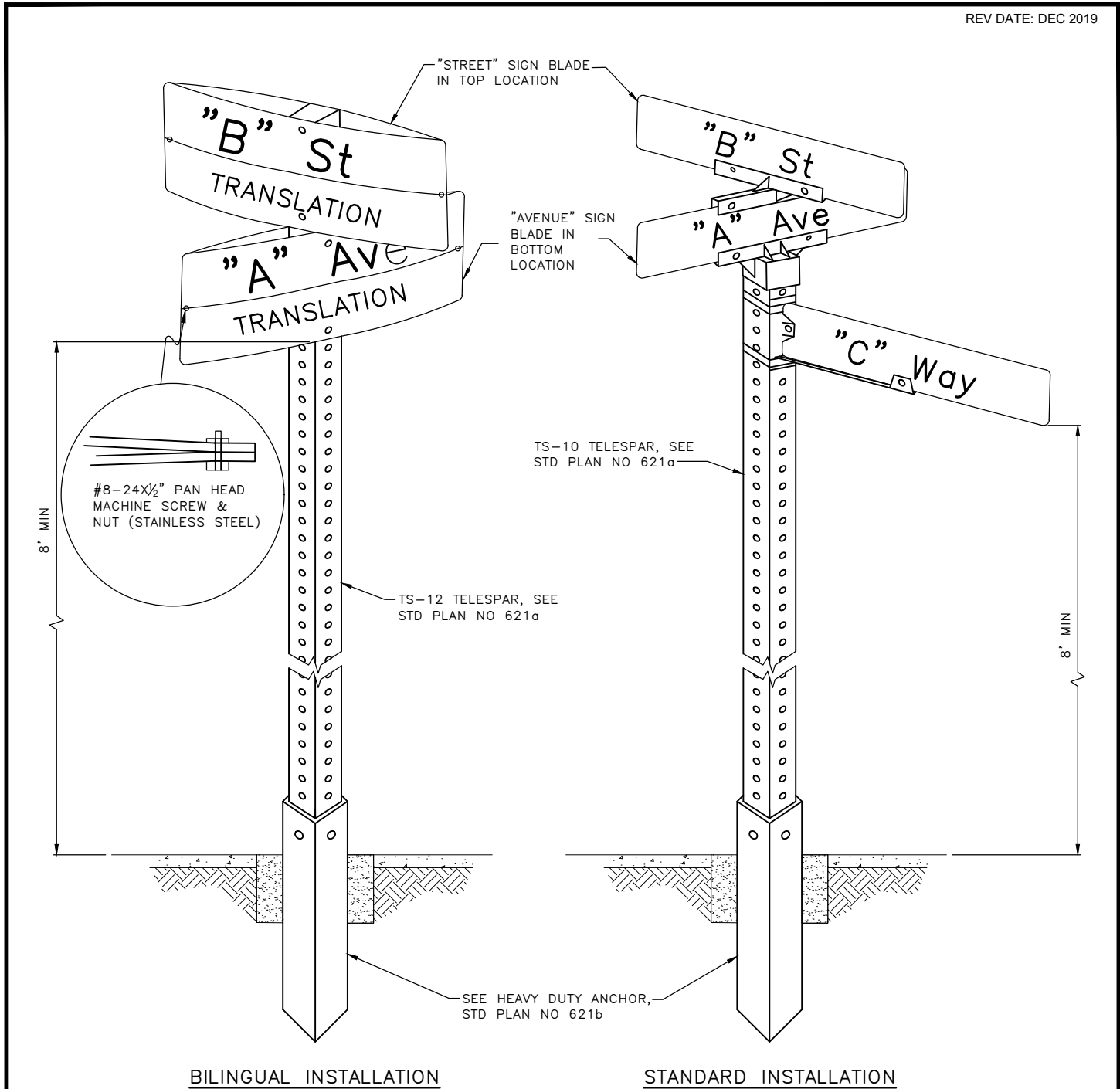
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

**WARNING AND REGULATORY  
SIGN POST ANCHOR  
INSTALLATIONS**



- NOTES:
- 1. SNS BLADE MUST BE INSTALLED PARALLEL TO CORRESPONDING STREET
  - 2. INSTALLATION OF SNS ON ANY OTHER METAL POLE MUST REQUIRE REVIEW AND APPROVAL BY THE ENGINEER
  - 3. SNS/SP RELOCATION: OLD CONCRETE MUST BE REMOVED AND NEW CONCRETE BASE MUST BE CONSTRUCTED
  - 4. ALL STREET NAME SIGNS WILL BE FURNISHED BY THE CITY OF SEATTLE AT PROJECT OR PERMITEE'S EXPENSE

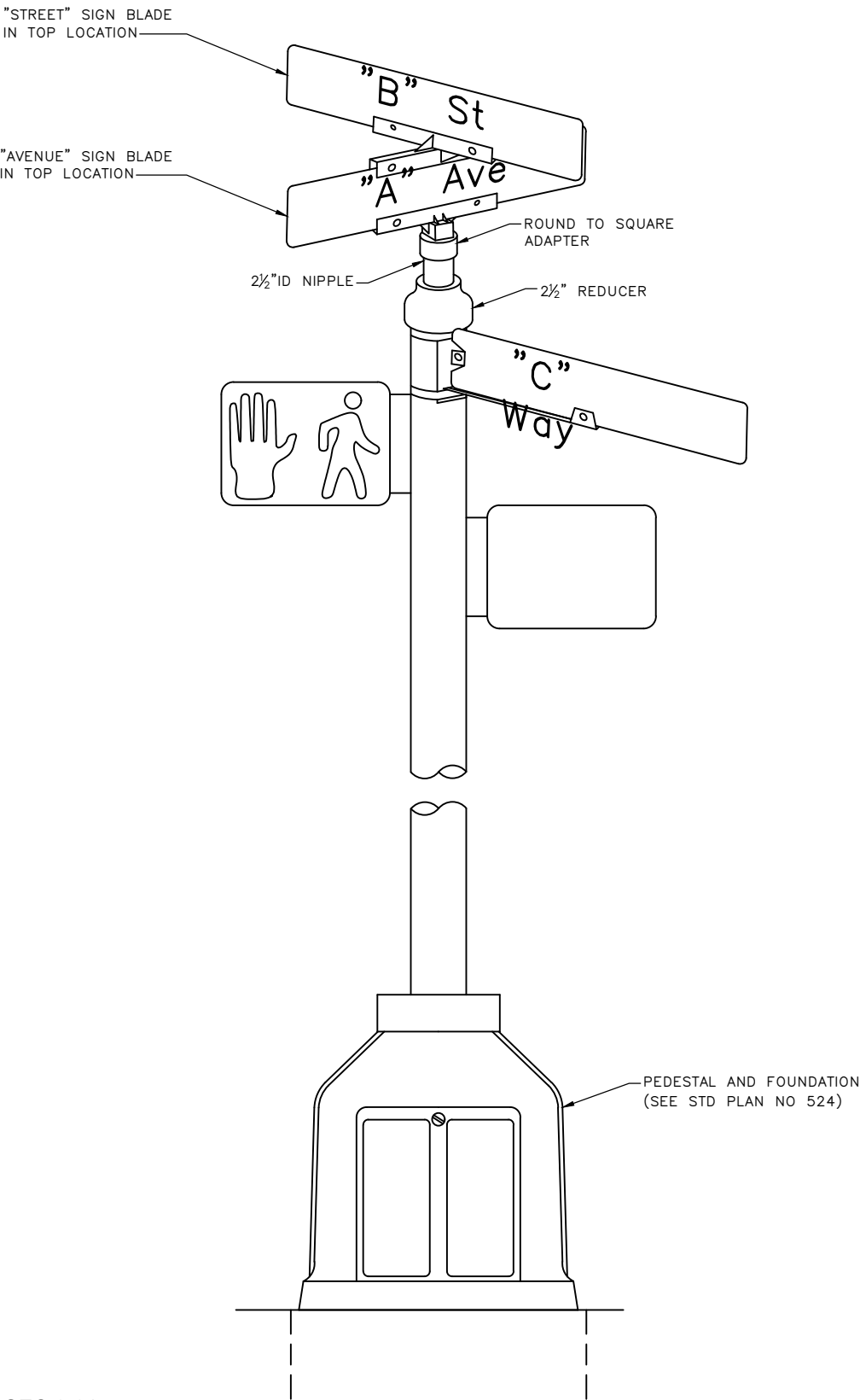
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

STREET NAME SIGN  
INSTALLATION



REF STD SPEC SEC 8-21

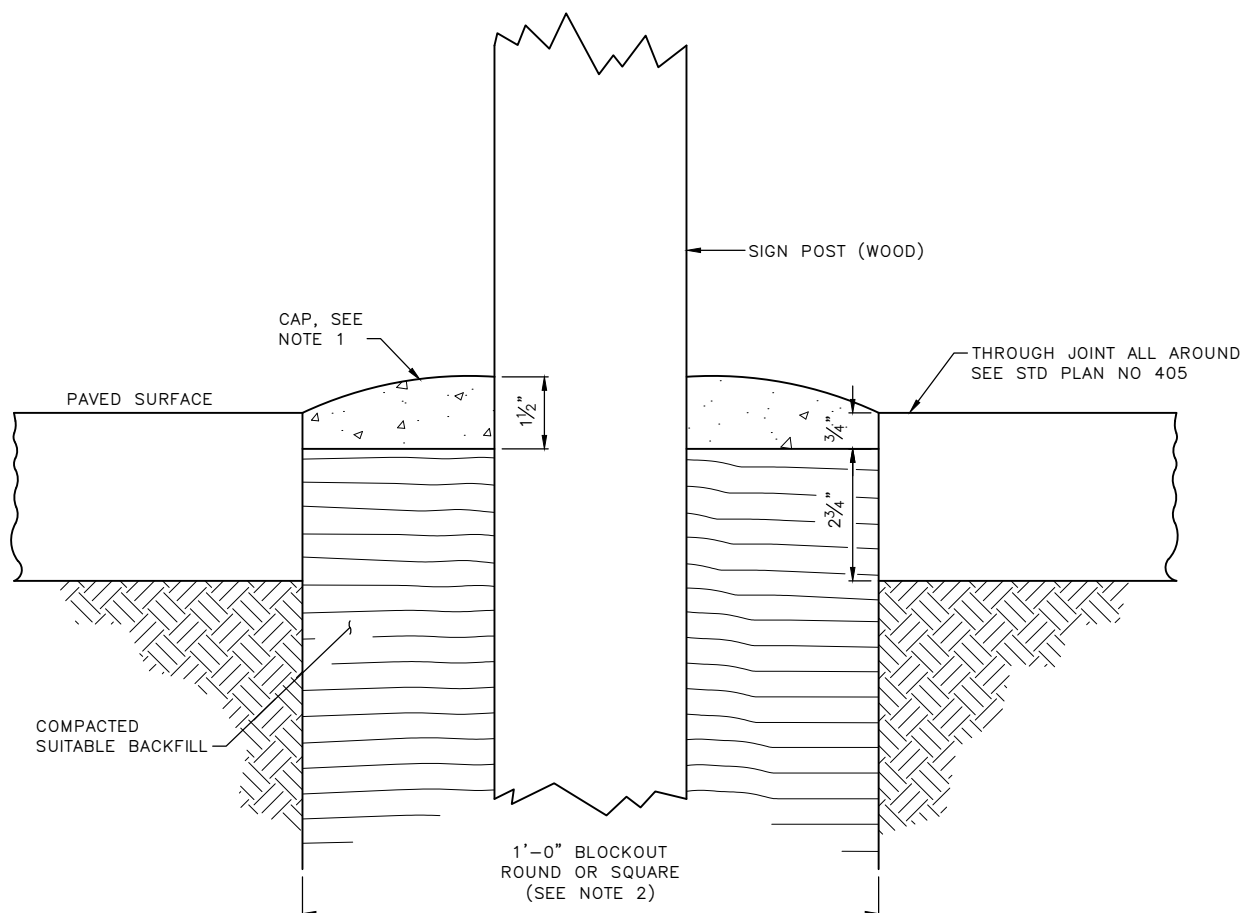


City of Seattle

NOT TO SCALE

STREET NAME SIGN  
PEDESTAL INSTALLATION





**NOTES:**

1. CAP MUST BE MADE OF THE SAME MATERIAL AS THE SURROUNDING PAVED SURFACE AND MUST BE MOUNDED FOR DRAINAGE AWAY FROM POST.
2. BLOCKOUTS MUST BE PROVIDED FOR POST LOCATIONS WHERE NEW CONCRETE PAVEMENT (SIDEWALK, ROADWAY, ETC) IS BEING INSTALLED.
3. WHERE POST IS BEING INSTALLED IN EXISTING PAVED AREAS, HOLE IN PAVED SURFACE MUST NOT EXCEED 1'-0" NOMINAL DIAMETER.

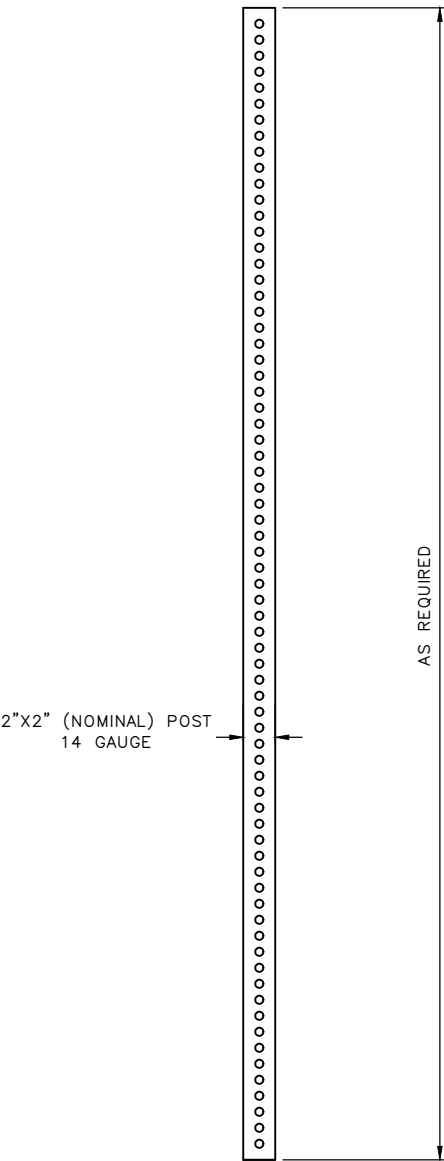
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

POST CAP



PERFORATED TELES PAR STANDARD SIGN POST  
(TS-5, TS-10, TS-12)(SEE NOTE 2)

- NOTES:
- 1. SEE STD PLANS NO 620 & 621.
  - 2. SUFFIXES ATTACHED TO TELES PAR NAME DESIGNATIONS INDICATE SLEEVE  
TYPES: RW-RED/WHITE, FYG-FLOURESCENT YELLOW GREEN, Y-FHWA YELLOW.

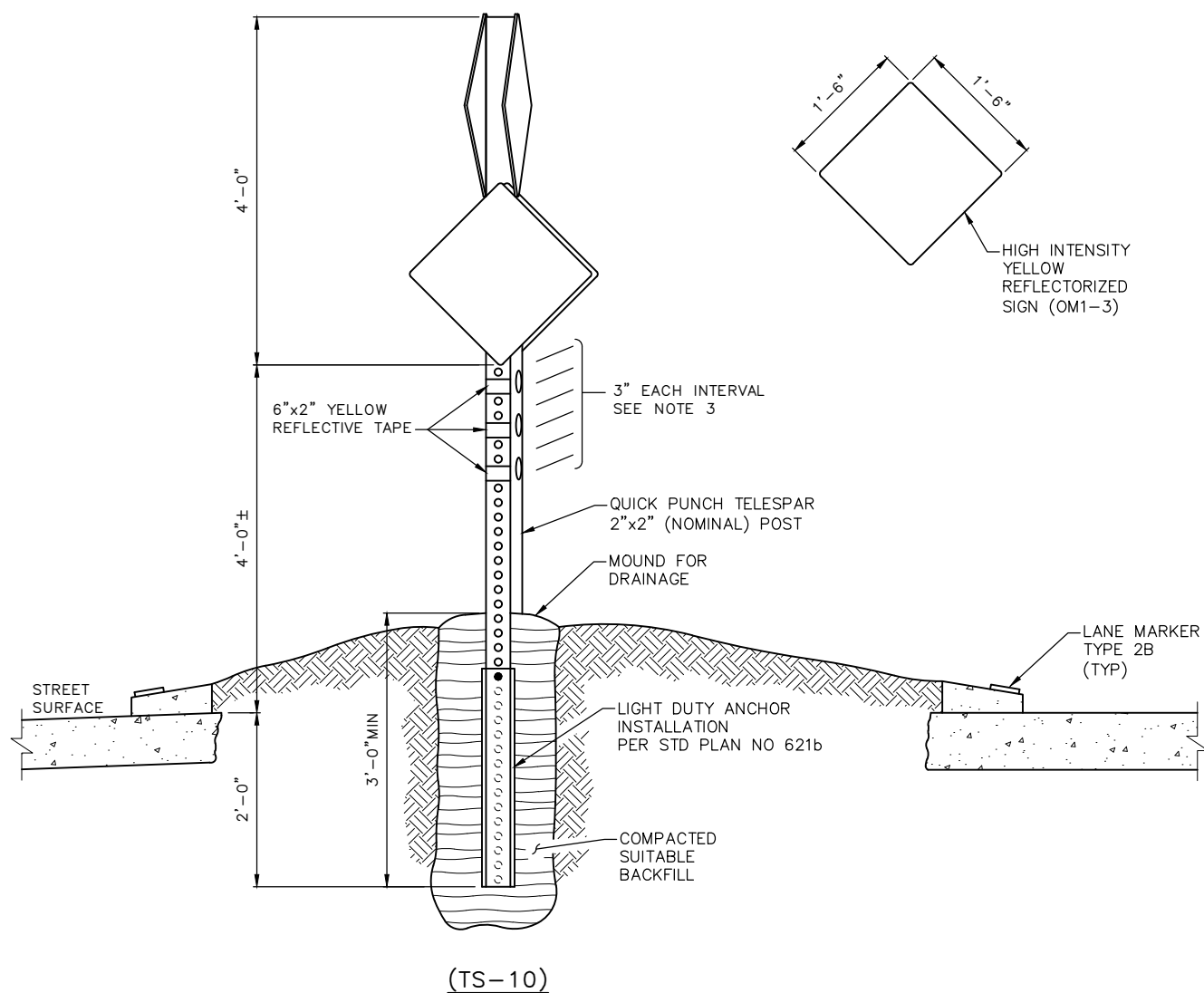
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

TRAFFIC SIGN POSTS



NOTES:

1. IN THE CASE WHERE ALL APPROACHES OF THE INTERSECTION ARE PRIMARILY AT THE SAME LEVEL WITH RESPECT TO GRADES (LESS THAN 3%) THE LOWER SET OF SIGNS MUST FACE THE HIGHER TRAFFIC VOLUME STREET
2. IN THE CASE WHERE AN APPROACH HAS A GRADE LARGER THAN 3% THE HIGHER SIGNS WILL FACE THE STEEPEST APPROACH TO ALLOW BETTER SIGHT DISTANCE
3. PLACE A MINIMUM OF THREE (3) REFLECTORS ON EACH AND EVERY SIDE OF POST OR PLACE THREE (3) HIGH INTENSITY REFLECTORIZED STRIPS COMPLETELY AROUND POST

2. IN THE CASE WHERE AN APPROACH HAS A GRADE LARGER THAN 3% THE HIGHER SIGNS WILL FACE THE STEEPEST APPROACH TO ALLOW BETTER SIGHT DISTANCE

3. PLACE A MINIMUM OF THREE (3) REFLECTORS ON EACH AND EVERY SIDE OF POST OR PLACE THREE (3) HIGH INTENSITY REFLECTORIZED STRIPS COMPLETELY AROUND POST

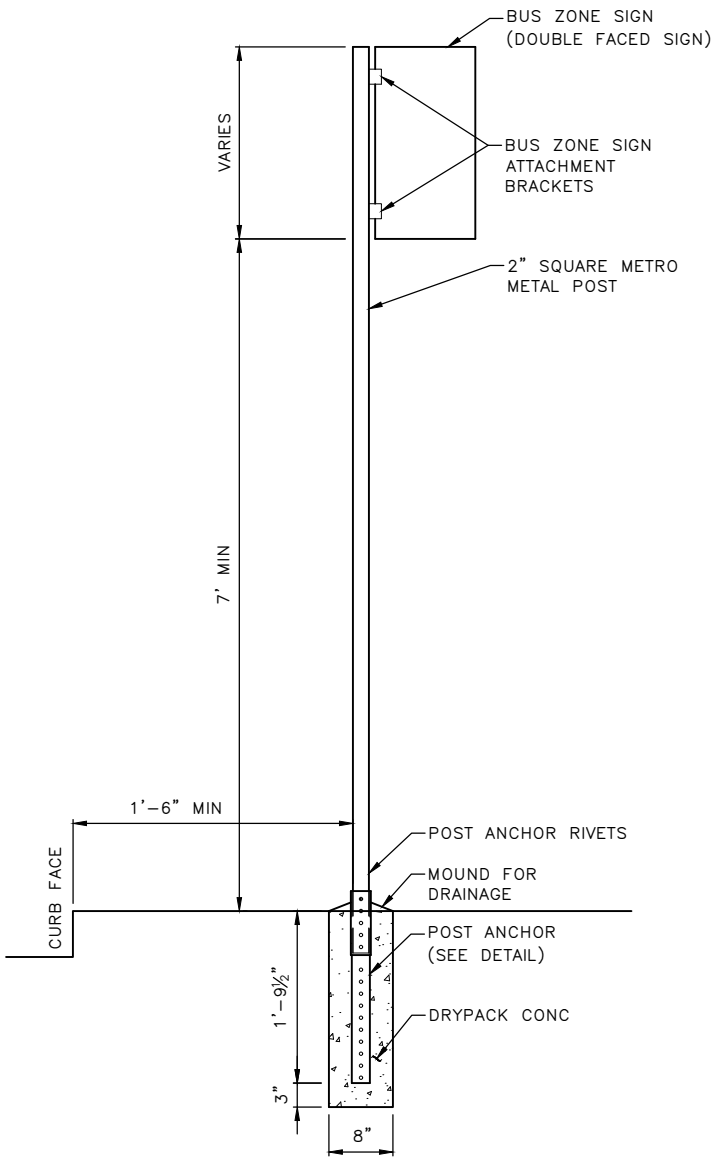
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City of Seattle

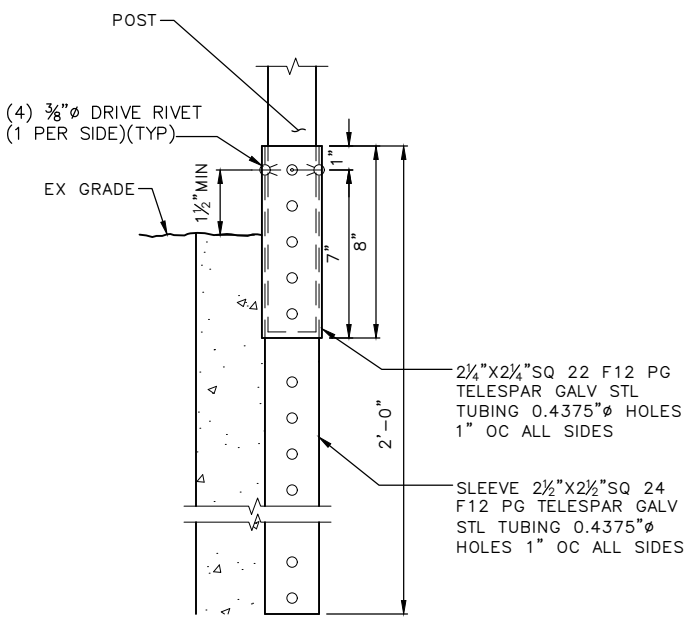
NOT TO SCALE

## OBJECT MARKER INSTALLATION IN TRAFFIC CIRCLE

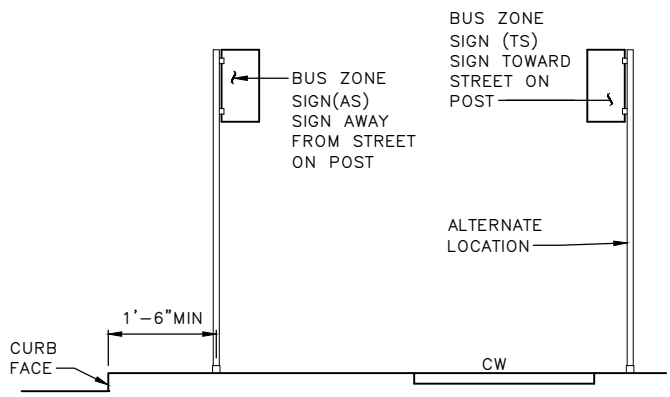


DIRECT BURIAL INSTALLATION

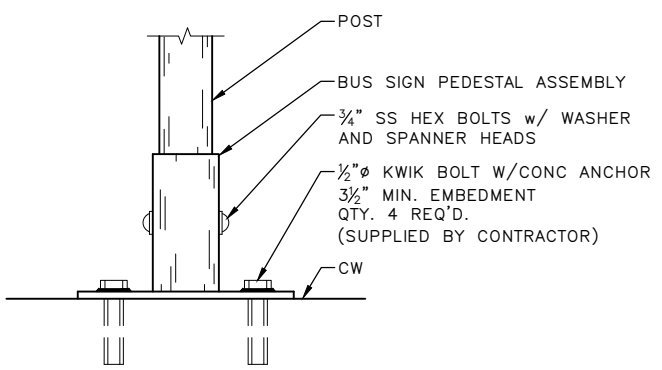
- NOTES:**
1. POST ANCHOR RIVETS MUST BE 1½" ABOVE GROUND LEVEL
  2. ATTACHMENT BRACKETS MUST FACE AWAY FROM STREET AS WHEN POST IS LOCATED 3'-0" FROM EDGE OF CURB. ATTACHMENT BRACKETS MUST FACE TOWARDS STREET (TS) WHEN POST IS LOCATED AT BACK SIDE OF SIDEWALK
  3. FOR POST RELOCATIONS, OLD CONCRETE MUST BE REMOVED FROM POST
  4. ALL SIGNS, STRUCTURES AND HARDWARE PROVIDED BY METRO EXCEPT WHERE NOTED OTHERWISE ON THIS STD PLAN.
  5. WHERE SURFACE MOUNTED BUS ZONE SIGNS ARE REQUIRED ON SLOPED SIDEWALK, THE CONTRACTOR MUST PLUMB THE POST BY BUILDING A NON-SHRINK GROUT PAD UNDER PEDESTAL ASSEMBLY WITH SMOOTH 1H TO 1V TAPER ON THE GROUT EDGE. THE BOLT ANCHOR LENGTH MUST BE ADJUSTED TO PROVIDE A MIN 3½" EMBEDMENT THROUGH THE GROUT INTO THE EXISTING CONCRETE.



POST ANCHOR DETAIL



SIGN LOCATION DETAIL



SURFACE MOUNT INSTALLATION

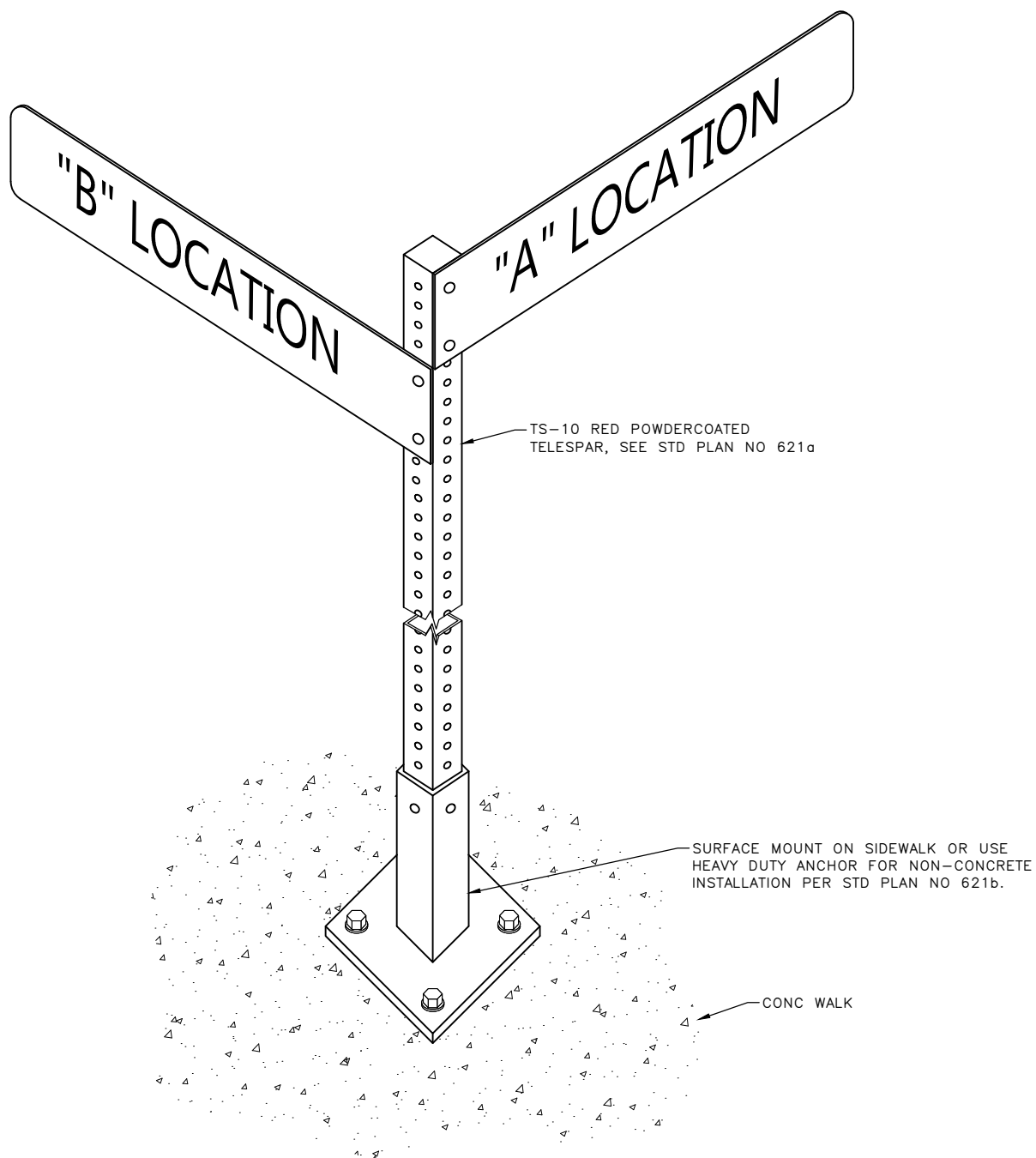
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

METRO BUS ZONE SIGN  
INSTALLATION



**NOTES:**

- 1. WAYFINDING BLADE MUST BE INSTALLED POINTING IN THE DIRECTION OF THE LOCATION ON BLADE.
- 2. CITY OF SEATTLE WILL FABRICATE WAYFINDING SIGNS. CONTRACTOR MUST SUPPLY MOUNTING HARDWARE AND INSTALL SIGNS.
- 3. MAINTAIN 8 FEET MINIMUM OF VERTICAL CLEARANCE FROM CONCRETE WALK TO THE BOTTOM OF PEDESTRIAN WAYFINDING BLADES.

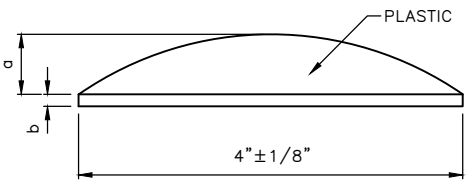
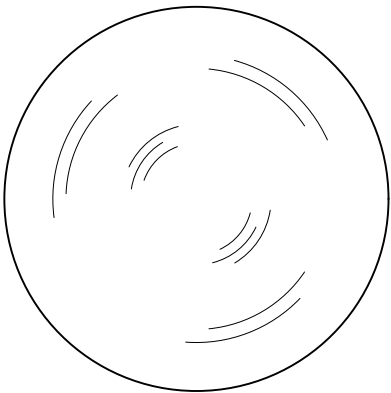
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City of Seattle

NOT TO SCALE

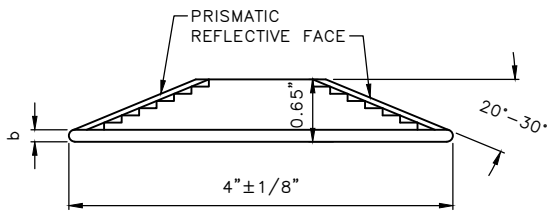
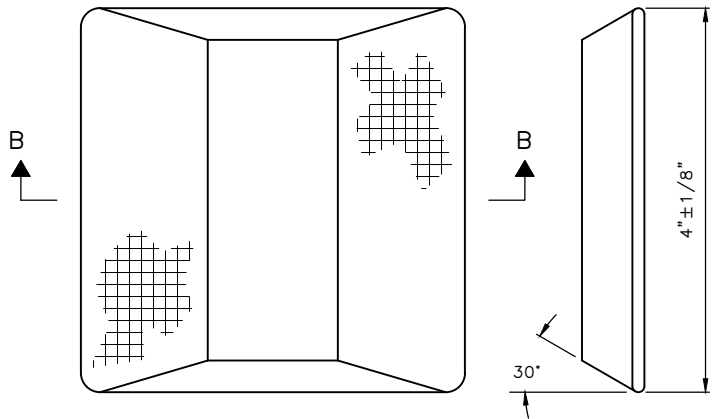
**PEDESTRIAN  
WAYFINDING SIGN**



LANE MARKER—TYPE 1

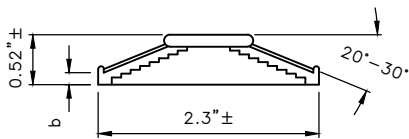
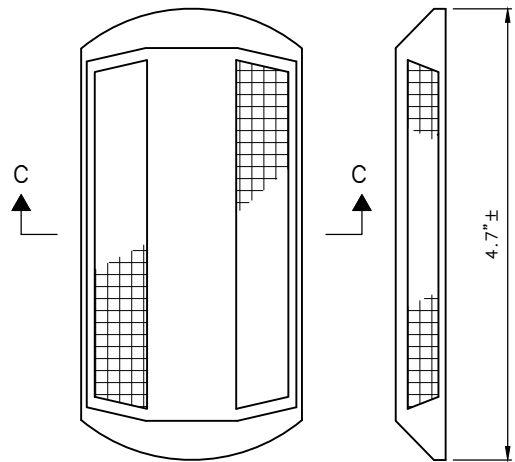
$a = 5/8" \pm 1/8"$   
 $b = 1/8" \pm 1/16"$

▲ DIRECTION OF TRAFFIC



SECTION B—B

LANE MARKER—TYPE 2A  
4" PRISMATIC REFLECTIVE MARKER



SECTION C—C

LANE MARKER—TYPE 2B

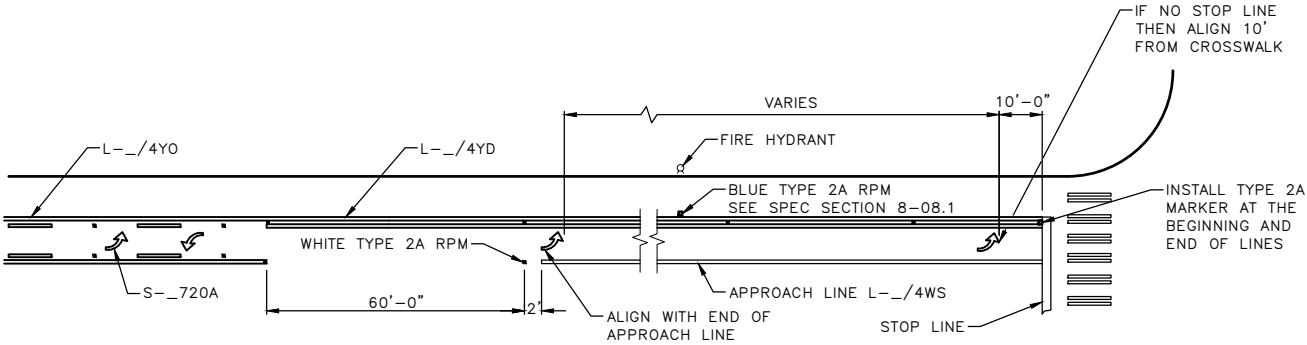
REF STD SPEC SEC 8-08



City of Seattle

NOT TO SCALE

TRAFFIC BUTTONS &  
LANE MARKERS

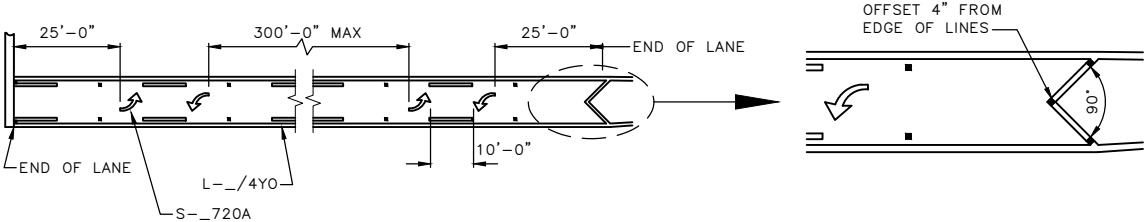


TYPICAL TURN LANE CHANNELIZATION

NUMBER OF LEGEND SETS REQUIRED BASED ON THE LENGTH OF APPROACH LINES

APPROACH LENGTH	LEGEND SETS
LESS THAN 50 FEET	1 SET AT X-WALK END OF POCKET
50 FEET TO 120 FEET	2 SETS
125 FEET TO 300 FEET	3 SETS (SECOND LEGEND LOCATED MIDWAY BETWEEN FIRST AND LAST LEGENDS)
OVER 300 FEET	ADDITIONAL SETS SPACED AT APPROX 100 FT INTERVALS BETWEEN FIRST AND LAST SETS

NOTES:  
LEFT TURN LANE LAYOUT SHOWN ABOVE. SAME LAYOUT APPLIES FOR OTHER TURN LANES.



TYPICAL TWO WAY LEFT TURN LANE CHANNELIZATION

NUMBER OF LEGEND SETS REQUIRED BASED ON THE LENGTH OF TYPICAL TWO WAY LEFT TURN LANES

APPROACH LENGTH	LEGEND SETS
LESS THAN 50 FEET	1 SET AT X-WALK END OF POCKET
50 FEET TO 300 FEET	2 SETS
OVER 300 FEET	3 SETS (SECOND LEGEND LOCATED MIDWAY BETWEEN FIRST AND LAST LEGENDS) ADDITIONAL SETS SPACED AT APPROX 300 FT INTERVALS

NOTE:  
LINE CALLOUTS ARE IDENTIFIED & DESCRIBED IN STD SPEC SEC 8-22.

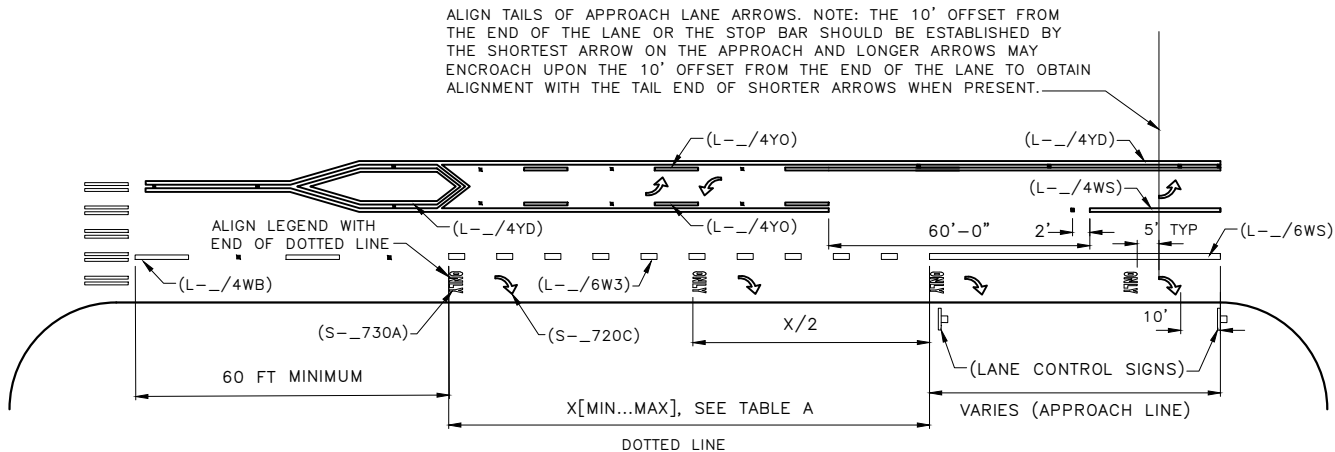
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

TYPICAL TURN LANE  
CHANNELIZATION AND  
LEGEND PLACEMENT



NOTE:  
LEGENDS, SYMBOLS & ARROWS MUST BE CENTERED WITHIN THE LANE TO WHICH THEY APPLY, AS SHOWN.

TABLE A

POSTED OR 85TH-PERCENTILE SPEED	X	
	MAX	MIN
	MUTCD TABLE 2C-4 CONDITION A	MERGING TAPER
20 MPH	225 FT	75 FT
25 MPH	325 FT	115 FT
30 MPH	460 FT	165 FT
35 MPH	565 FT	225 FT
40 MPH	670 FT	295 FT
45 MPH	775 FT	375 FT

TYPICAL LEGEND AND SYMBOL INSTALLATION DETAILS

LINE LENGTH	LEGEND SETS	
	WITHIN APPROACH LINE	WITHIN DOTTED LINE
LESS THAN 50 FEET	APPROACH LINE (1 TOTAL)	NA
50 FEET TO 120 FEET	ADD 1 SET AT BEGINNING OF APPROACH LINE (2 TOTAL)	ADD 1 SET MIDWAY BETWEEN FIRST SET AND APPROACH LINE (2 TOTAL)
125 FEET TO 300 FEET	ADD 1 SET LOCATED MIDWAY BETWEEN FIRST AND LAST SETS (3 TOTAL)	ADD 1 SET, WITH EQUAL INTERVALS, BETWEEN FIRST SET AND APPROACH LINE (3 TOTAL)
OVER 300 FEET	ADD SETS SPACED AT APPROX. 100 FEET INTERVALS BETWEEN FIRST AND LAST SETS	

NOTE:  
1. SEE MUTCD SECTION 2B.20 FOR GUIDANCE ON SIGNS.  
2. MANDATORY MOVEMENT LANE CONTROL SIGNS MUST BE PAIRED WITH LEGENDS PLACED WITHIN THE APPROACH LINE

REF STD SPEC SEC 8-22

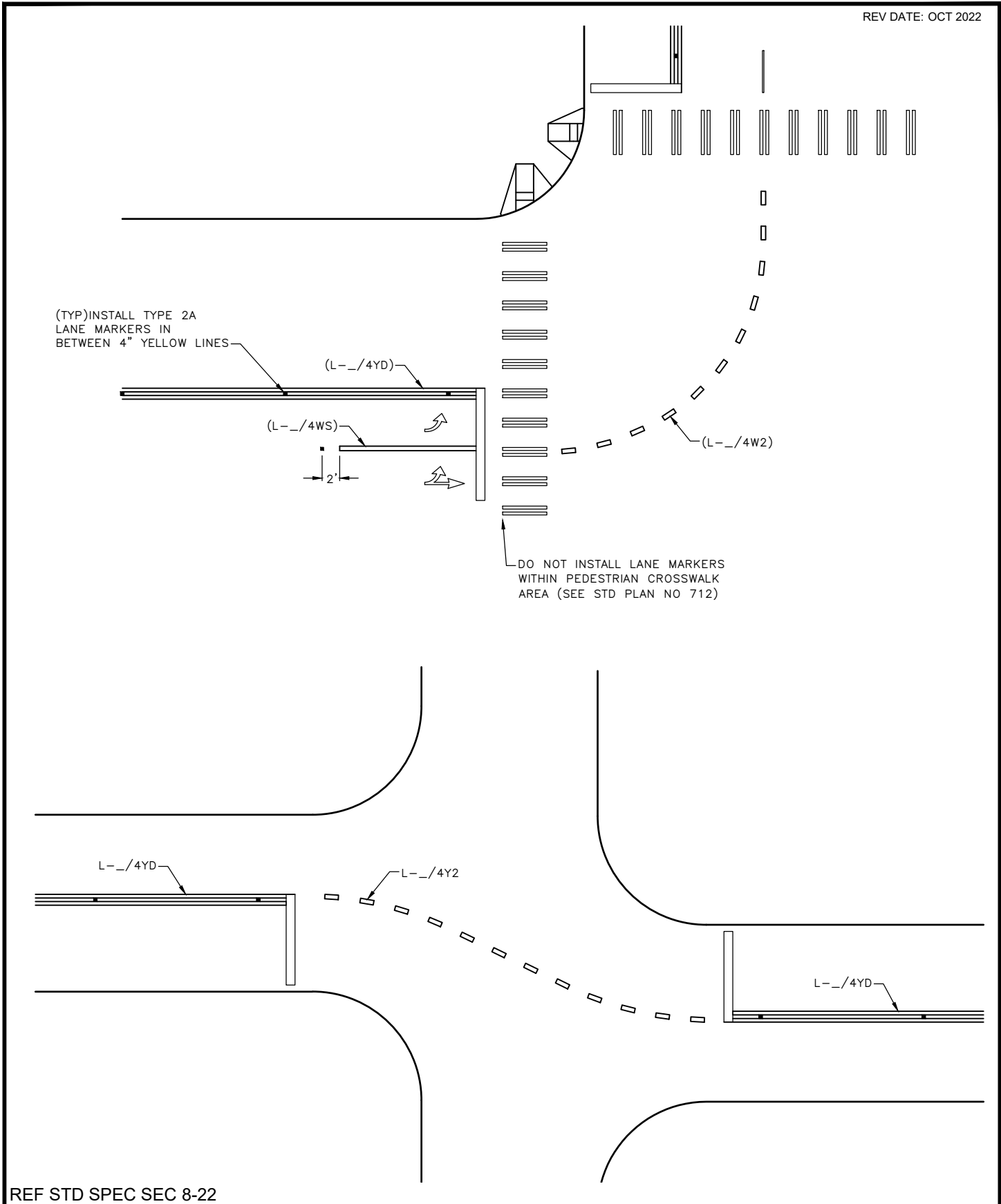


City of Seattle

NOT TO SCALE

TYPICAL LANE DROP  
CHANNELIZATION AND  
LEGEND PLACEMENT





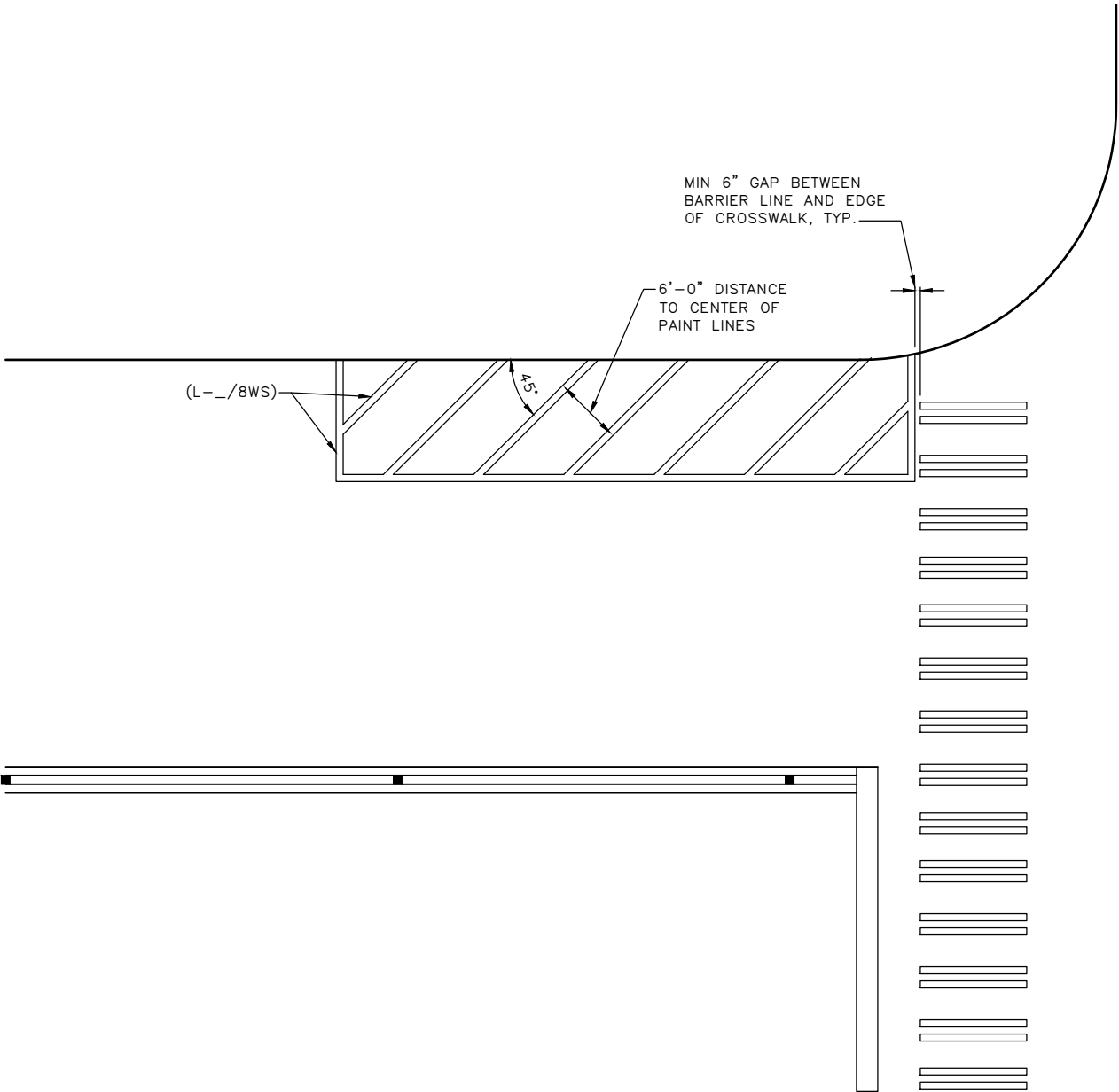
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

TYPICAL INTERSECTION  
GUIDELINE CHANNELIZATION



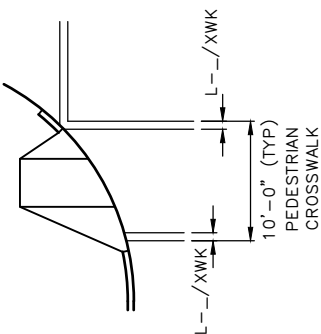
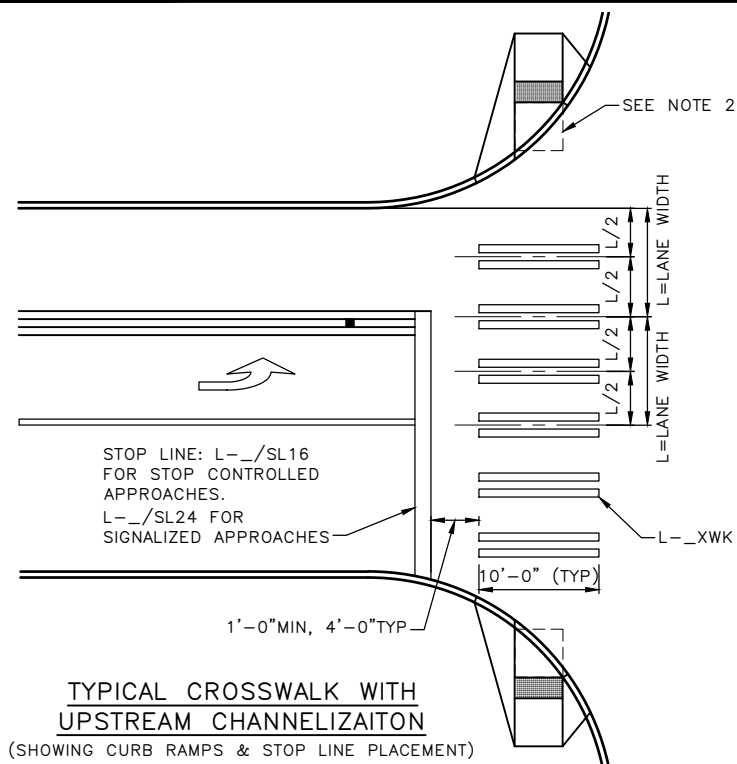
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

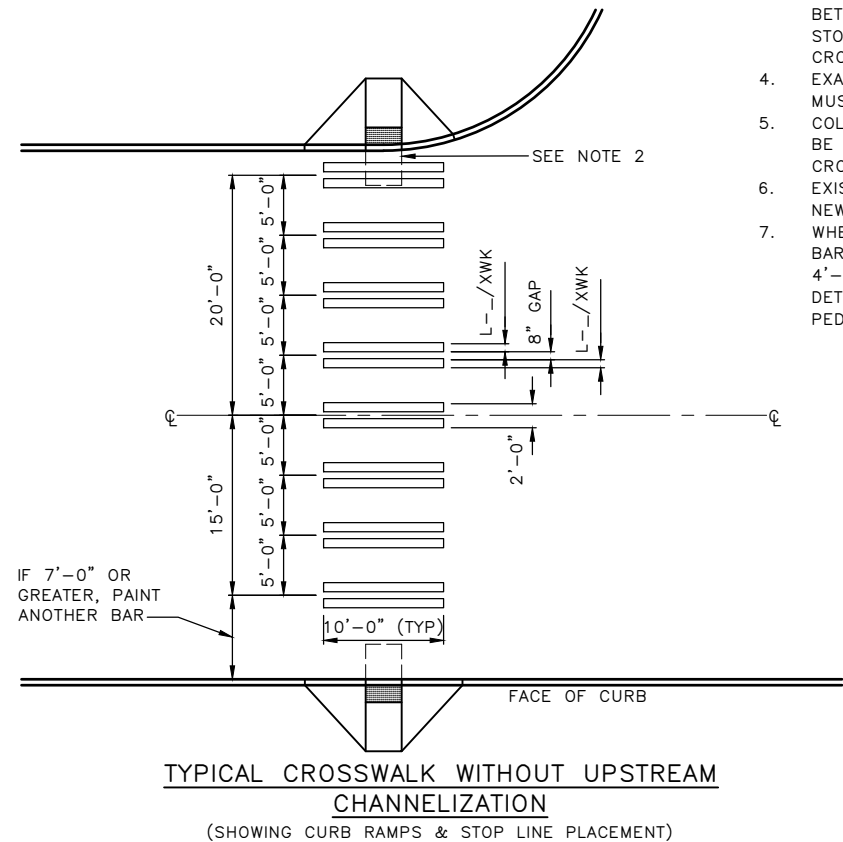
TYPICAL WHITE BARRIER  
AREA CHANNELIZATION



### TYPICAL TRANSVERSE LINE CROSSWALK

NOTES:

1. "LADDER STYLE" CROSSWALK MUST BE USED IN MOST APPLICATIONS. "TRANSVERSE LINE" CROSSWALK (L-\_/XWK2, L-\_/XWK) MAY ONLY BE USED WITH APPROVAL OF ENGINEER.
2. LOWER LANDING OF CURB RAMP MUST FALL WHOLLY WITHIN CROSSWALK LINES.
3. WHERE EXISTING TRAFFIC LOOP LOCATIONS ARE BETWEEN 1' AND 4' FROM THE EDGE OF CROSSWALK, STOP LINE MAY BE PLACED UP TO 2' FROM THE CROSSWALK WITH THE APPROVAL OF ENGINEER.
4. EXACT LOCATION OF CROSSWALK AND STOP LINES MUST BE APPROVED BY SDOT.
5. COLORED OR TEXTURED PAVEMENT CROSSWALKS MUST BE SUPPLEMENTED WITH "TRANSVERSE LINE" CROSSWALK MARKINGS.
6. EXISTING CROSSWALK MARKINGS THAT CONFLICT WITH NEW CROSSWALK MARKINGS MUST BE REMOVED.
7. WHEN MARKED CROSSWALK ARE NOT PRESENT, STOP BAR MUST BE PLACED AT A MINIMUM DISTANCE OF 4'-0" UPSTREAM FROM THE EDGE OF THE DETECTABLE WARNING SURFACE OR ANTICIPATED PEDESTRIAN TRAVEL PATH, WHICHEVER IS GREATER.



WHERE TRAFFIC LANE LINES ARE NOT USED, LADDER BARS MUST BE 5'-0" CENTER TO CENTER, BEGINNING AT THE MARKED CENTERLINE OF THE ROADWAY

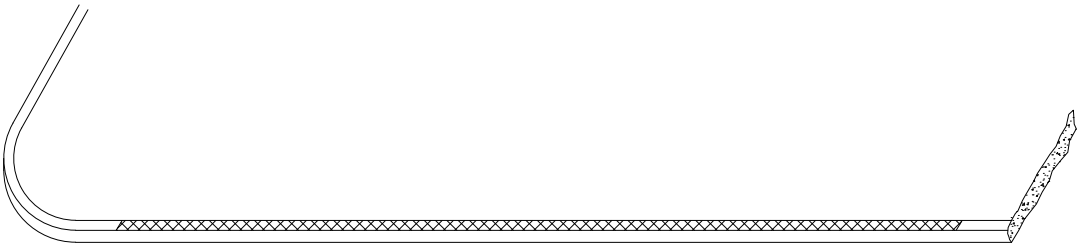
REF STD SPEC SEC 8-22



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NOT TO SCALE

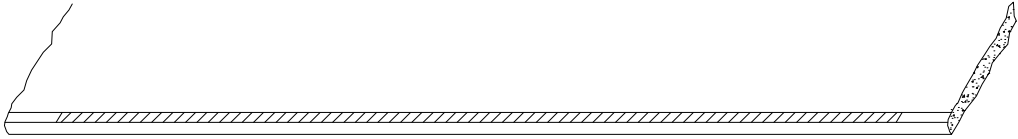
## TYPICAL CROSSWALK & STOP LINE INSTALLATION DETAILS



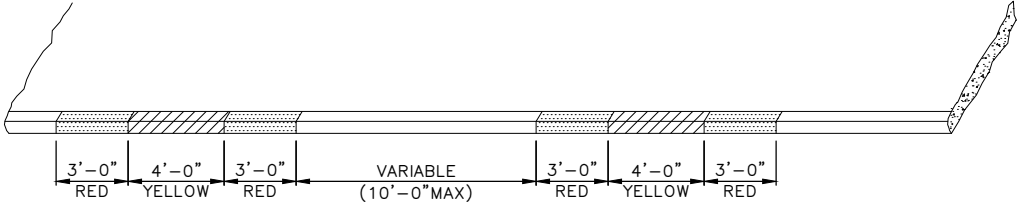
C-\_/W  
PASSENGER LOAD ZONE, ETC  
(WHITE)



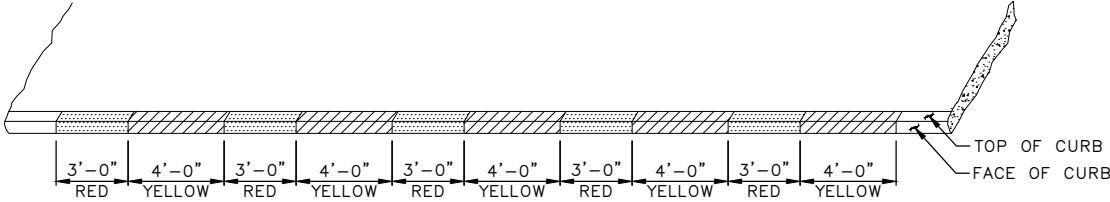
C-\_/R  
TOW-AWAY ZONE  
(RED)



C-\_/Y  
COMMERCIAL LOAD, TRUCK LOAD, LOAD & UNLOAD ZONE, ETC  
(YELLOW)



C-\_/BUS  
BUS ZONE (NON PARKING METERED AREAS)  
BUS ZONES ARE PAINTED ON TOP & FACE OF CURB



C-\_/BUSB  
BUS ZONE (PARKING METERED AREAS)  
BUS ZONES ARE PAINTED ON TOP & FACE OF CURB

- NOTES:**
1. TOTAL LENGTH OF CURB MARKINGS MUST BE AS SHOWN ON DRAWINGS
  2. PAINT MUST BE APPLIED NEATLY ON THE CURB AND ALL PAINT SMEARS ON ADJACENT SURFACES MUST BE REMOVED

REF STD SPEC SEC 8-22

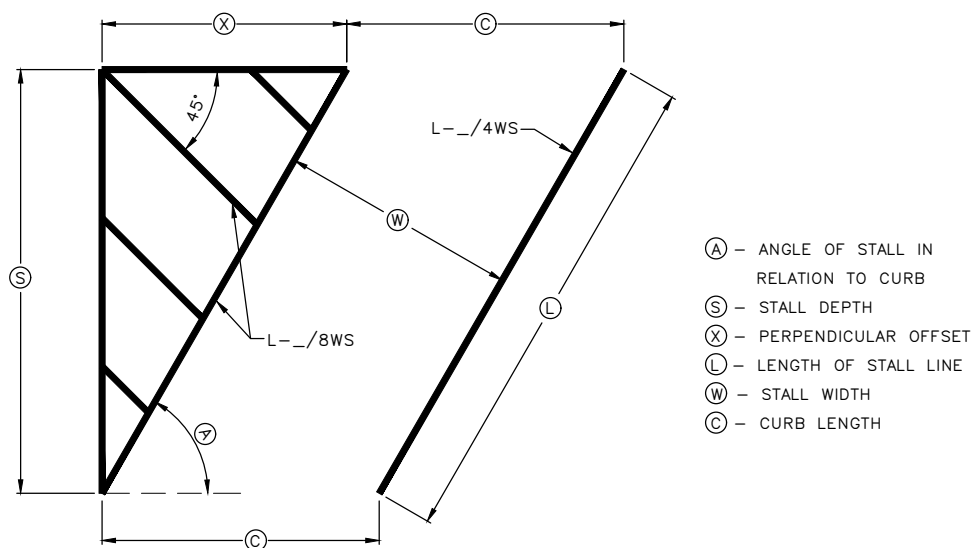


City of Seattle

NOT TO SCALE

CURB MARKING DETAILS

A	S	X	L	W	C		A	S	X	L	W	C
45°	15'	15'	21.21'	8.5'	12.02'		60°	15'	8.66'	17.32'	8.5'	9.81'
	15'	15'	21.30'	9.0'	12.75'			15'	8.5'	17.2'	9.0'	10.5'
	16'	16'	22.63'	9.0'	12.73'			16'	9.24'	18.48'	9.0'	10.39'
	17'	17'	24.04'	9.5'	13.44'			17'	9.81'	19.63'	9.5'	10.97'
	18'	18'	25.46'	10.0'	14.14'			18'	10.39'	20.78'	10.0'	11.55'

**NOTES:**

1. THE WIDTH OF THE TRAVEL LANE NEXT TO ANGLED PARKING SPACES MUST BE A MINIMUM OF 12'-6" FOR 45-DEGREE STALLS AND 17'-0" FOR 60-DEGREE STALLS.
2. BARRIER CROSSHATCH LINES MUST BE ALIGNED AS SHOWN, INTERSECTING THE EDGE OF THE PARKING LANE AT 45-DEGREES AND ANGLED AGAINST THE ANGLING OF THE PARKING SPACES

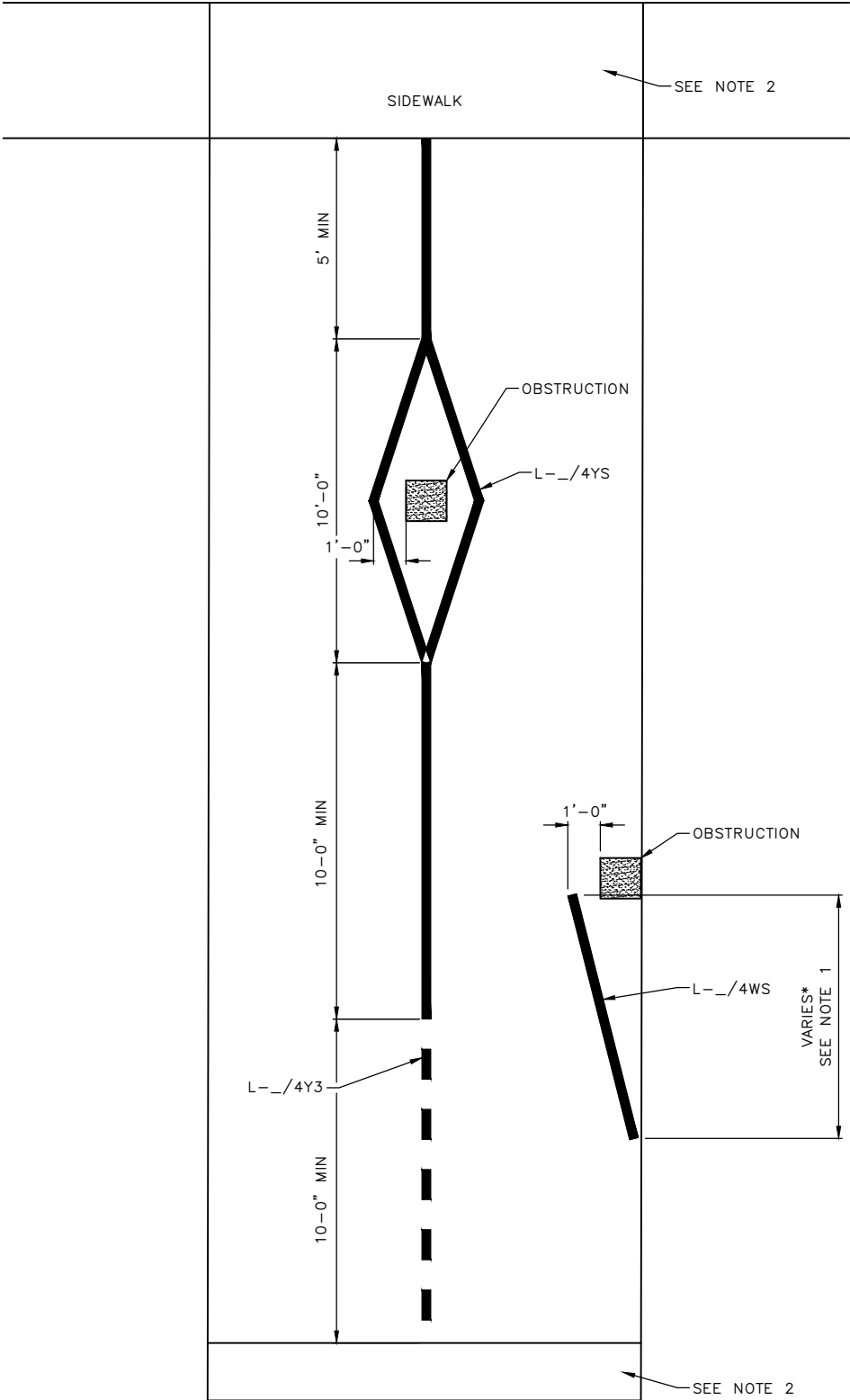
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

TYPICAL ANGLED PARKING  
STALL CHANNELIZATION



- NOTE:
- 1. SEE 2009 MUTCD FIGURE 91-8 FOR TAPER FORMULA.
  - 2. SEE STD PLAN NO'S 432a & 432b FOR MULTI-PURPOSE TRAIL DESIGN PLANS.

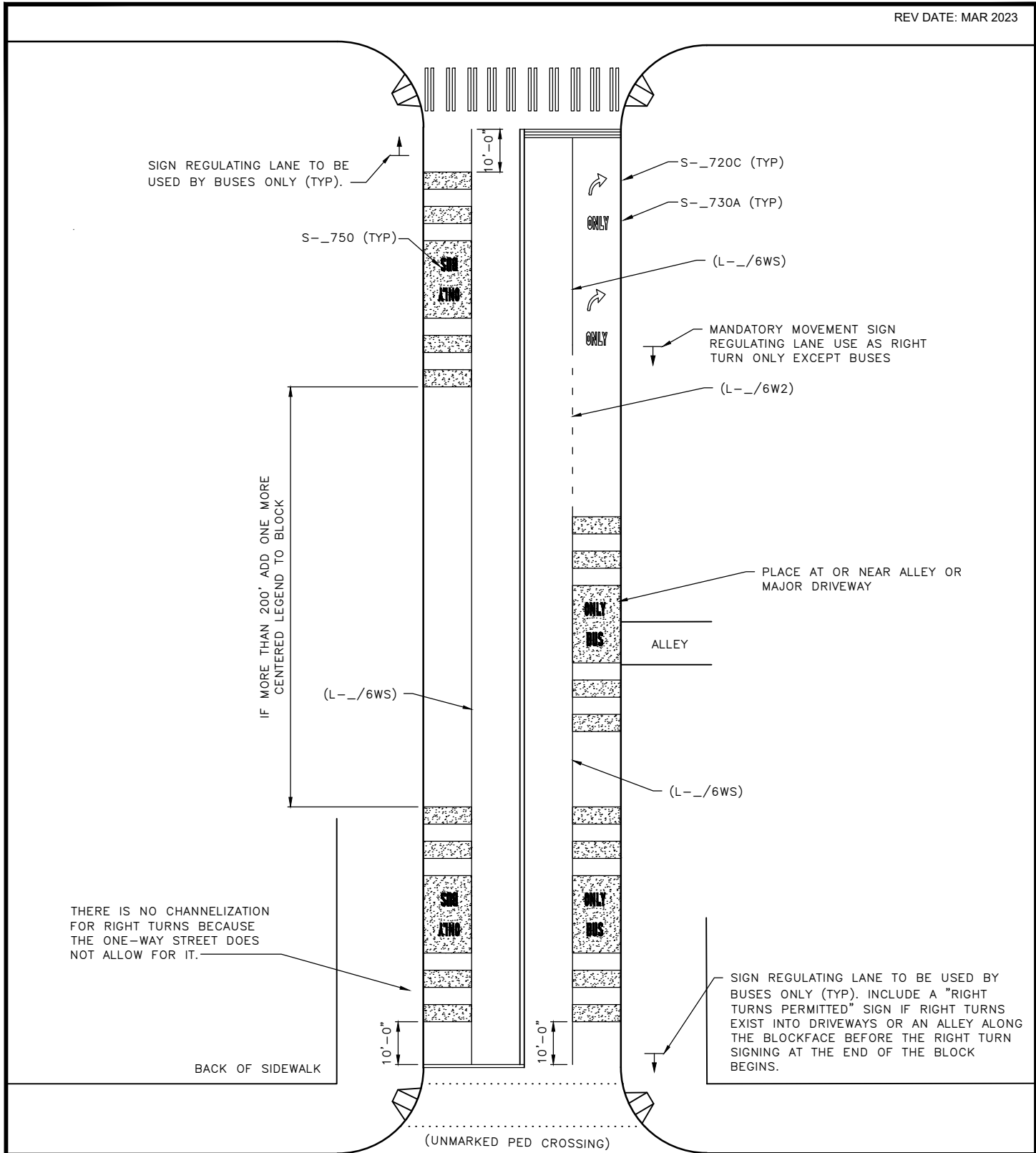
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

TRAIL OBSTRUCTION  
CHANNELIZATION



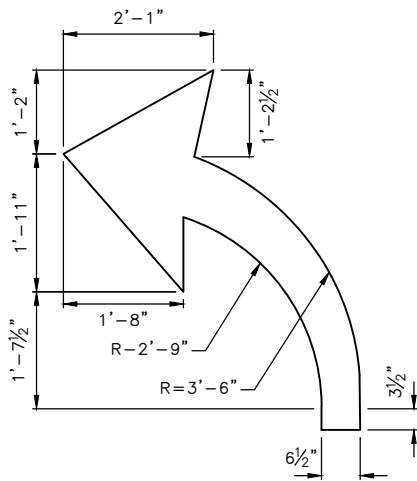
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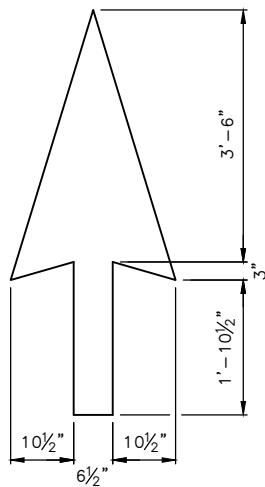
City of Seattle

NOT TO SCALE

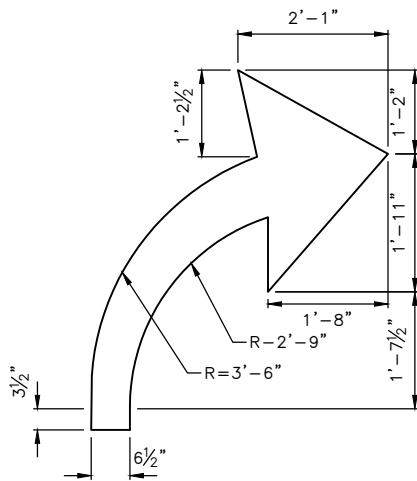
TYPICAL CURBSIDE RED  
BUS LANE LAYOUT



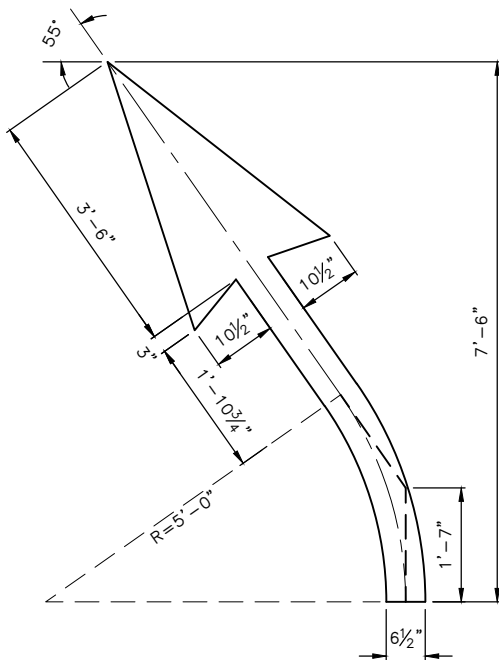
**720A**  
LEFT ARROW



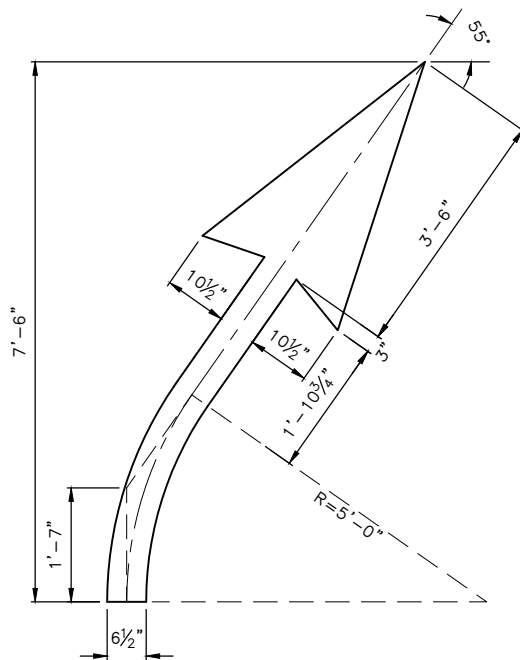
**720B**  
THROUGH ARROW



**720C**  
RIGHT ARROW



**720D**  
OBLIQUE LEFT ARROW



**720E**  
OBLIQUE RIGHT ARROW

REF STD SPEC SEC 8-22

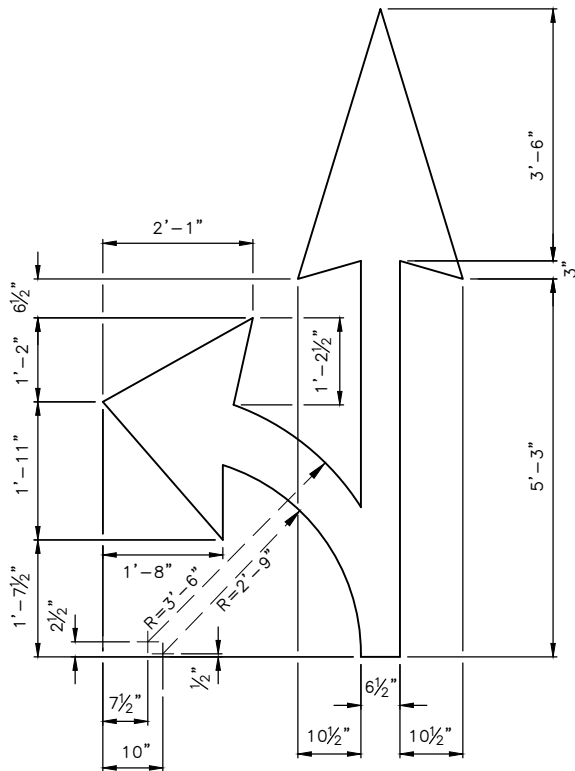


City of Seattle

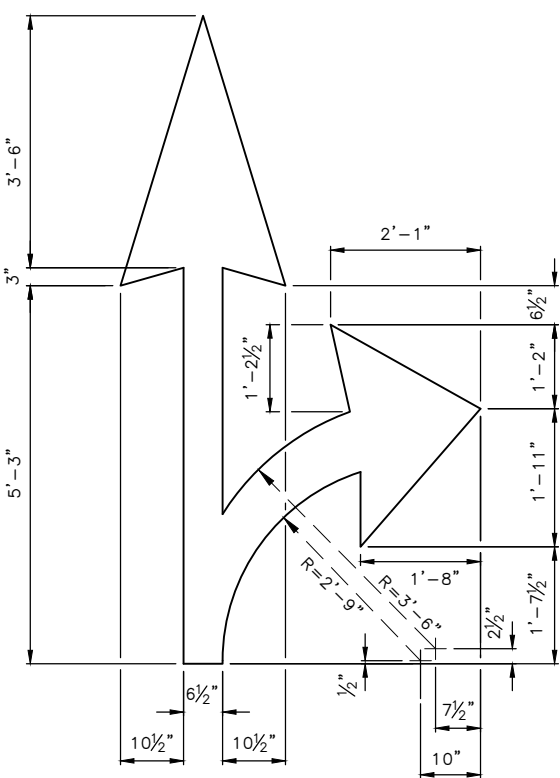
NOT TO SCALE

MANDATORY MOVEMENT  
ARROWS

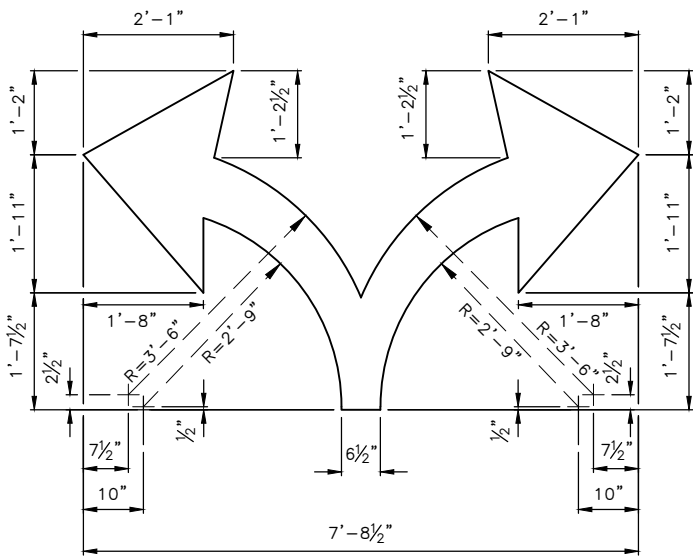




**721A**  
LEFT & THROUGH ARROWS



**721B**  
RIGHT & THROUGH ARROWS



**721C**  
LEFT & RIGHT ARROWS

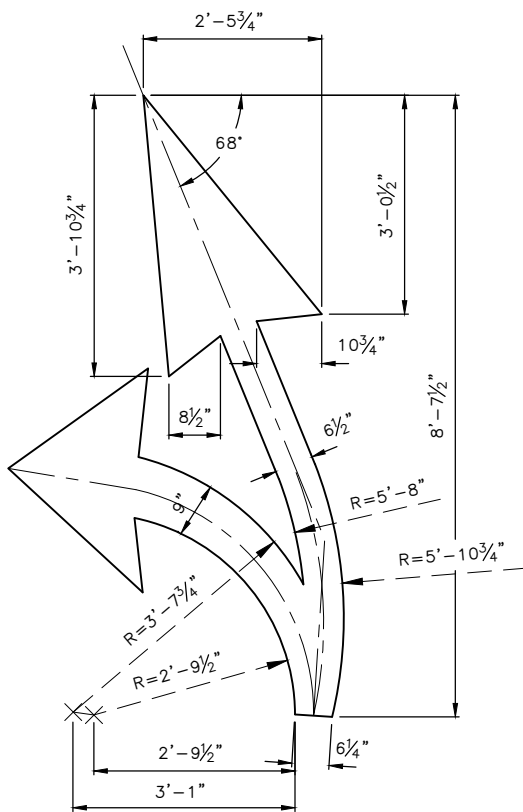
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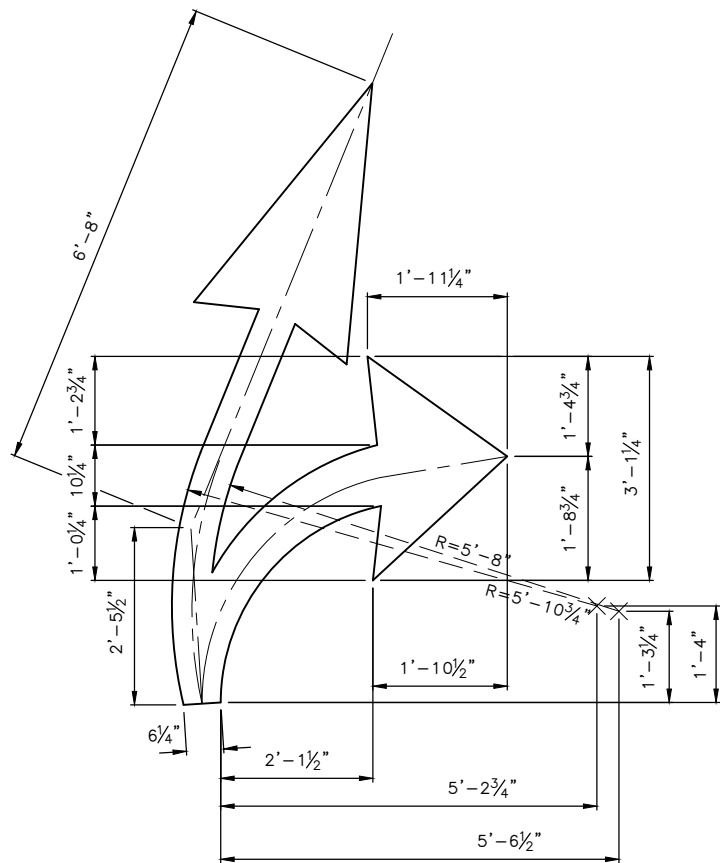
City of Seattle

NOT TO SCALE

OPTIONAL MOVEMENT  
ARROWS



**722A**  
LEFT & OBLIQUE LEFT ARROW



**722B**  
RIGHT & OBLIQUE RIGHT ARROW

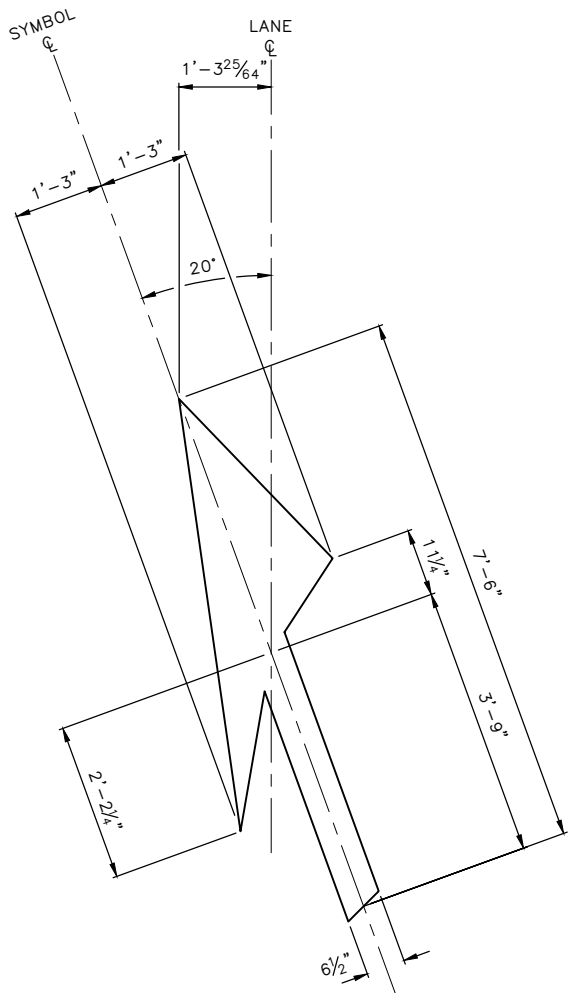
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City of Seattle

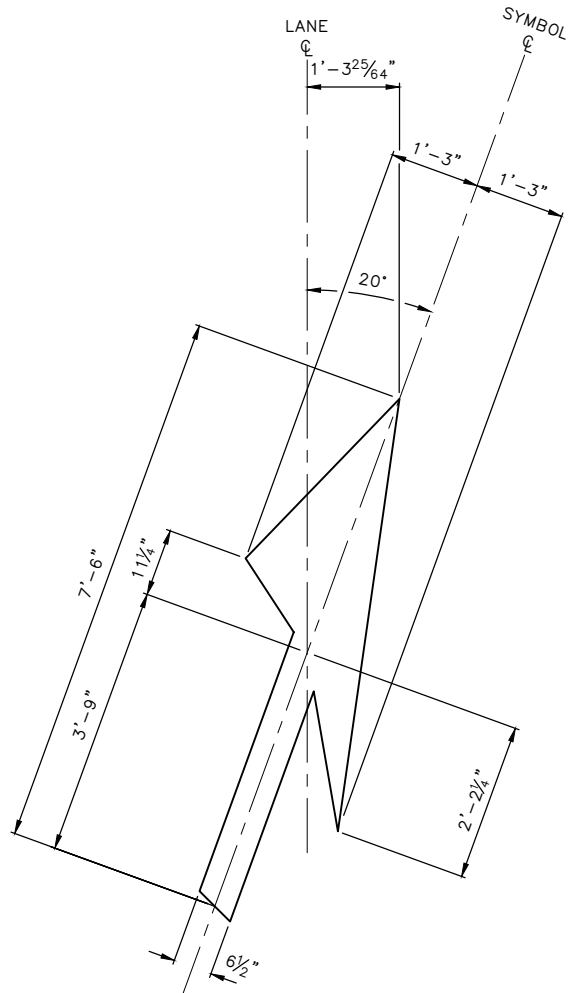
NOT TO SCALE

OPTIONAL MOVMENT ARROWS  
WITH OBLIQUE ARROWS



**723A**

LEFT MERGE/LANE REDUCTION ARROWS



**723B**

RIGHT MERGE/LANE REDUCTION ARROWS

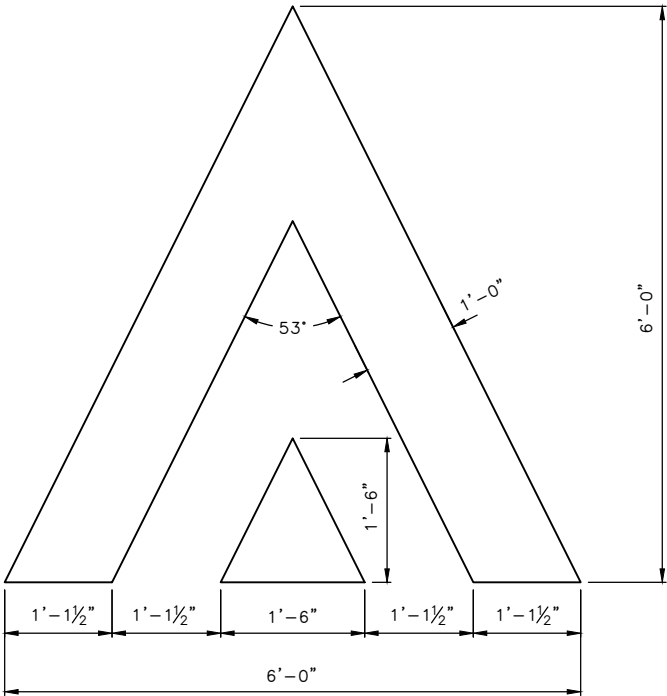
REF STD SPEC SEC 8-22



City of Seattle

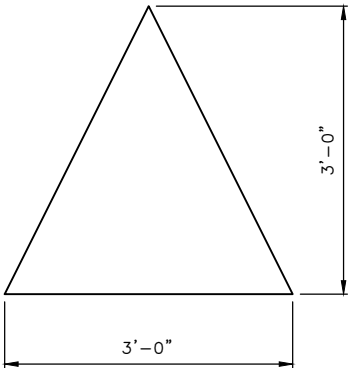
NOT TO SCALE

MERGE ARROWS



**728A**  
CHEVRON WITH TRIANGLE

**NOTE:**  
THIS SYMBOL MAY BE RESIZED FOR BIKE FACILITIES.  
DIMENSIONS IN THOSE INSTANCES MUST BE SHOWN ON  
DESIGN DRAWINGS.



**728B**  
CENTER CUSHION TRIANGLE

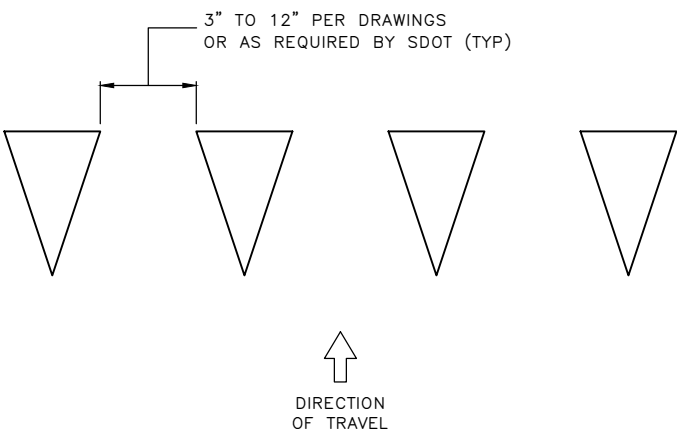
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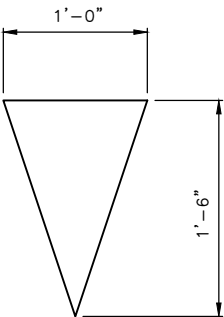
City of Seattle

NOT TO SCALE

**SPEED HUMP &  
SPEED CUSHION SYMBOL**

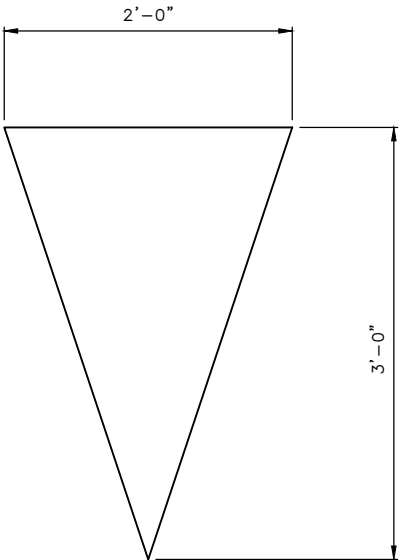


YIELD LINE LAYOUT



729A

YIELD LINE WITH 18" TALL TRIANGLES



729B

YIELD LINE WITH 36" TALL TRIANGLES

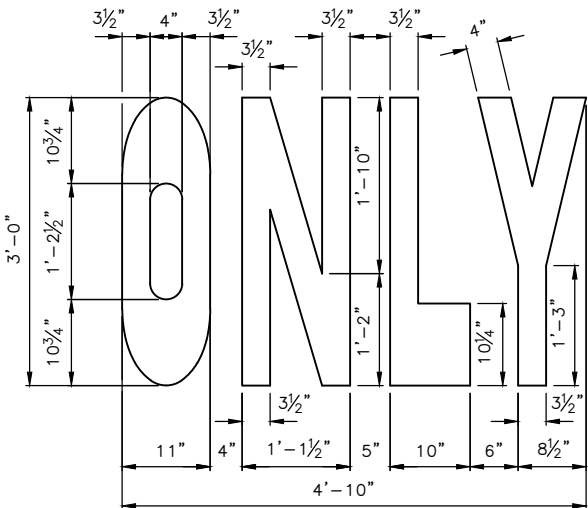
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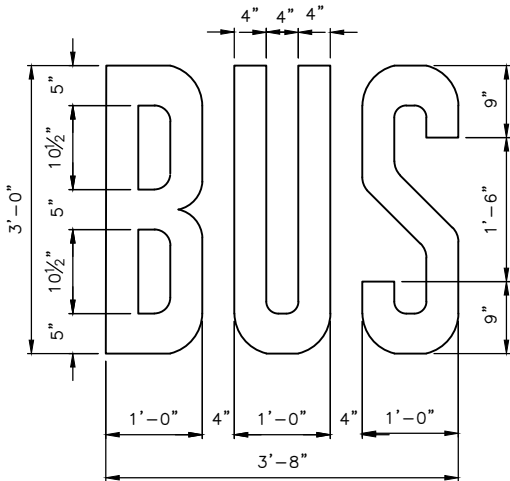
City of Seattle

NOT TO SCALE

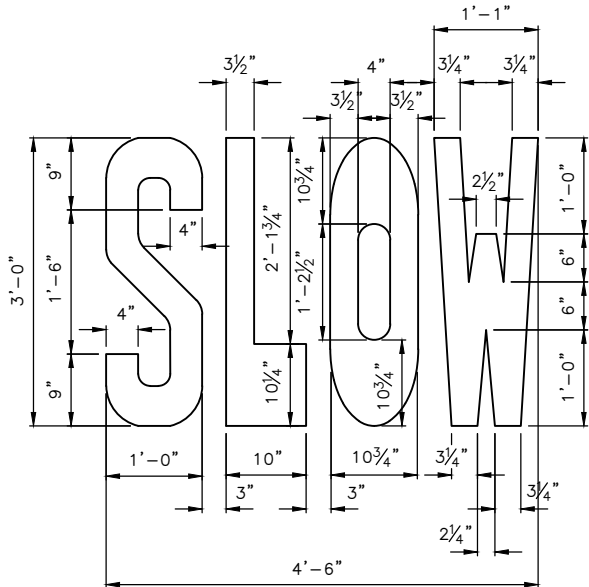
YIELD LINE LAYOUT &  
YIELD LINE TRIANGLE SYMBOLS



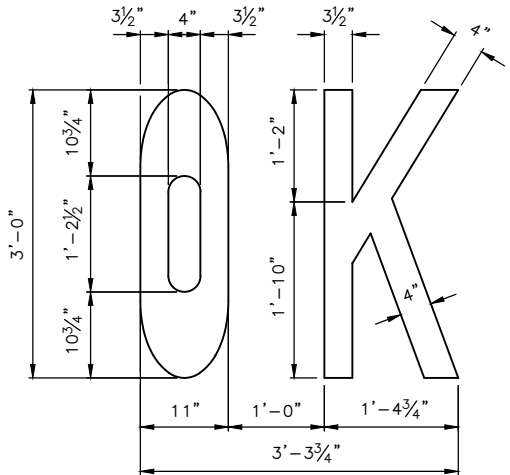
**730A**  
"ONLY" LEGEND



**730B**  
"BUS" LEGEND



**730C**  
"SLOW" LEGEND



**730D**  
"OK" LEGEND

**NOTE:**  
THIS SYMBOL MAY BE RESIZED FOR BIKE FACILITIES

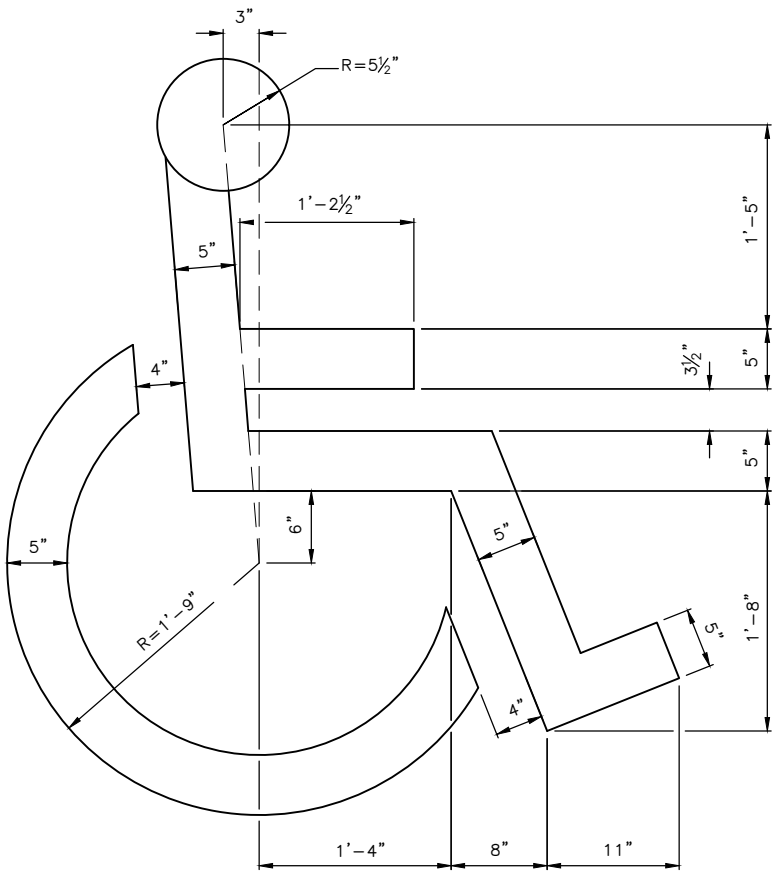
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

PAVEMENT MARKINGS  
LEGENDS



**740A**  
INTERNATIONAL SYMBOL OF ACCESSIBILITY

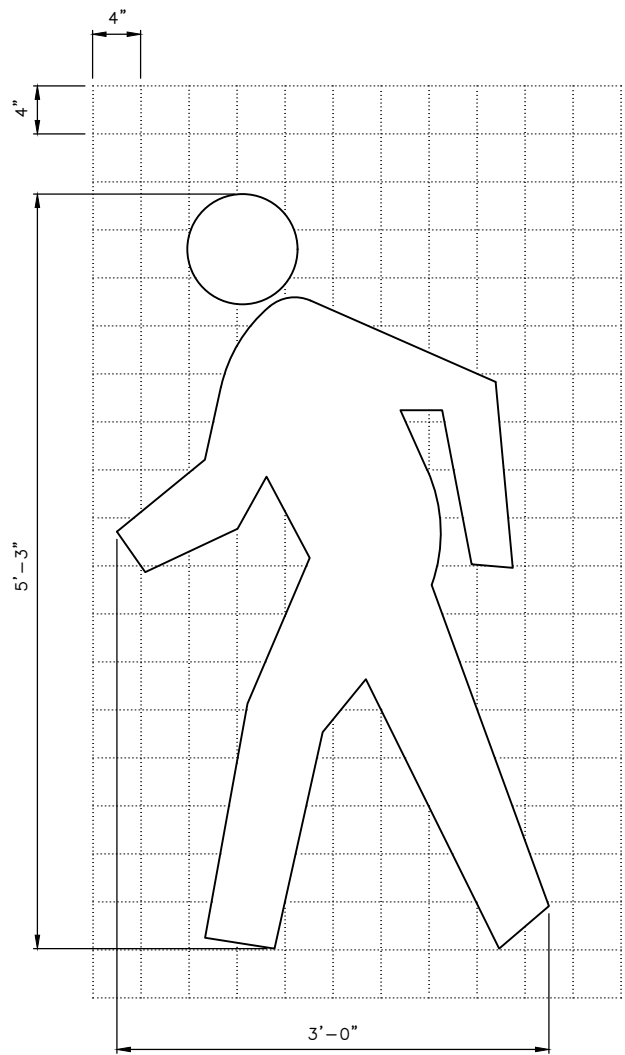
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

INTERNATIONAL SYMBOL  
OF ACCESSIBILITY



741A  
PEDESTRIAN SYMBOL

REF STD SPEC SEC 8-22

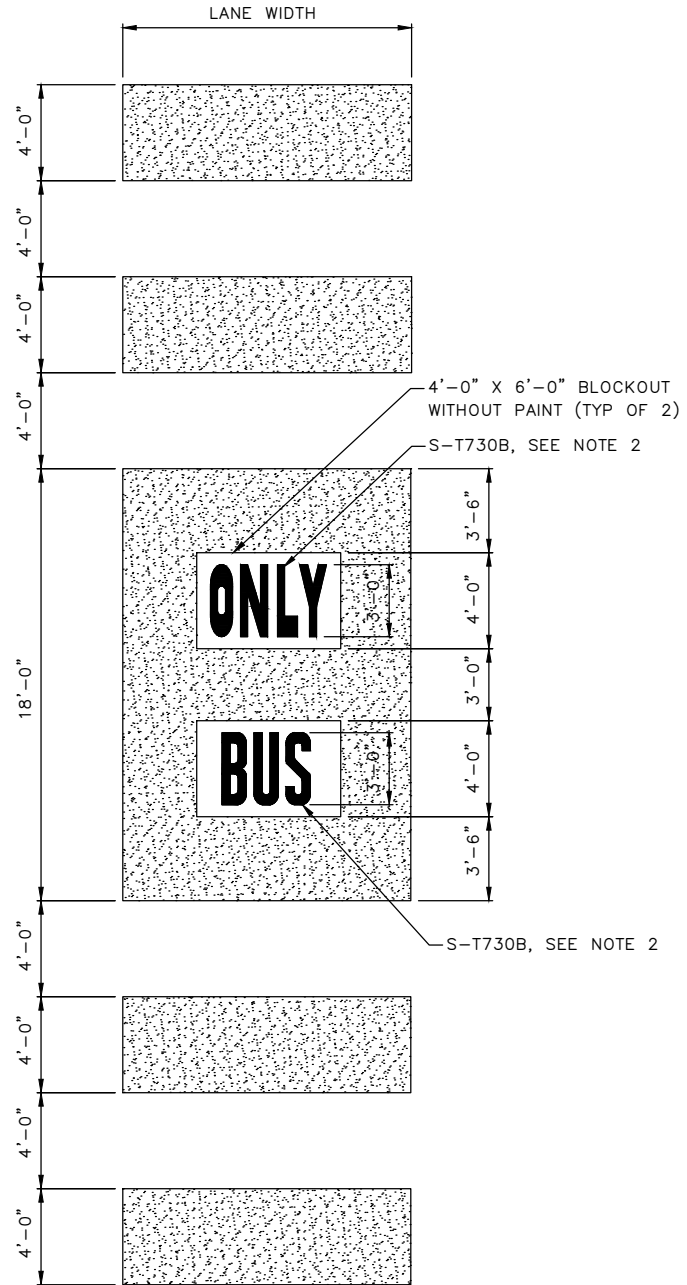
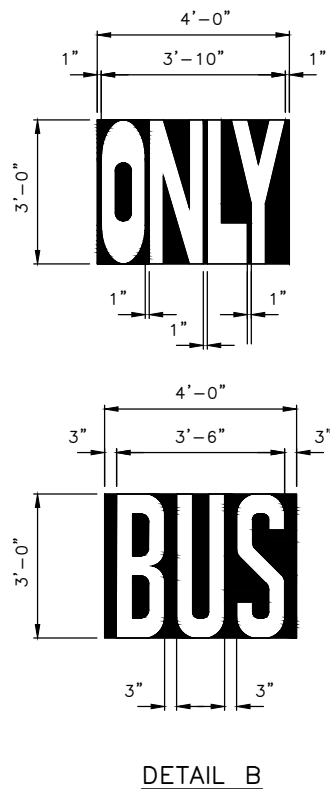
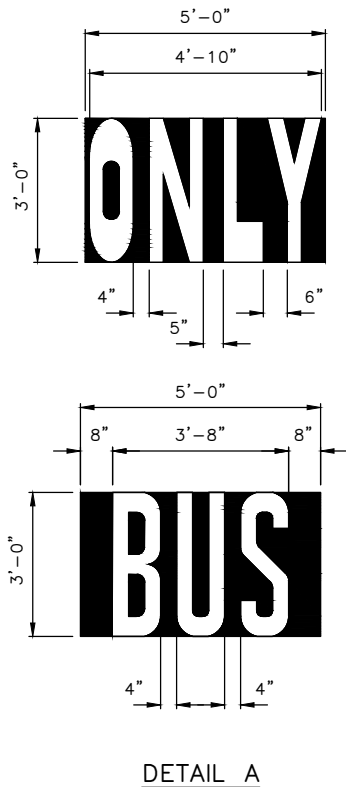


City of Seattle

NOT TO SCALE

PEDESTRIAN SYMBOL





- NOTES:**
- 1. FHWA APPROVED RED COLOR FOR BUS LANES MUST BE USED WITH MMA.
  - 2. FOR APPLICATION ON CEM CONC PVMT, LEGENDS PER STANDARD PLAN 730 MUST HAVE A 5'-0" X 3'-0" COLOR BLACK THERMOPLASTIC BACKGROUND PER DETAIL A. FOR APPLICATION ON CEM CONC PVMT IN A STREET CAR TRACK, LEGENDS PER STANDARD PLAN 730 MUST HAVE A 4'-0" X 3'-0" COLOR BLACK THERMOPLASTIC BACKGROUND PER DETAIL B. PROVIDE 6" MINIMUM GAP BETWEEN THERMO LEGENDS AND RED MMA.

**750**  
RED BUS LANE MARKINGS

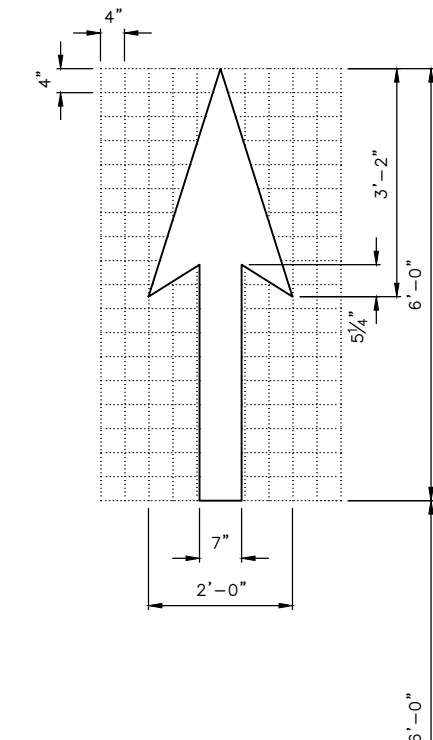
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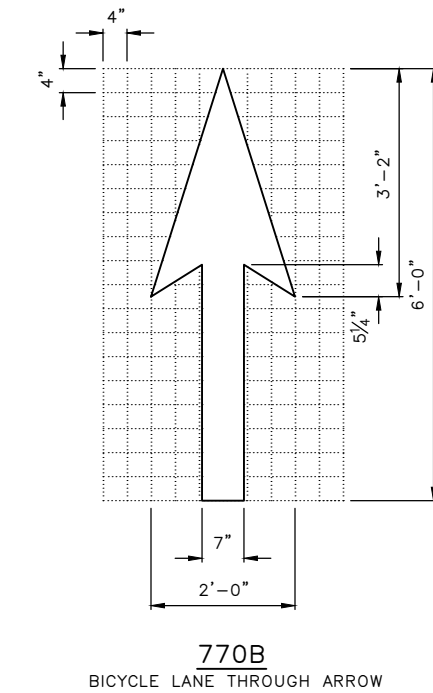
City of Seattle

NOT TO SCALE

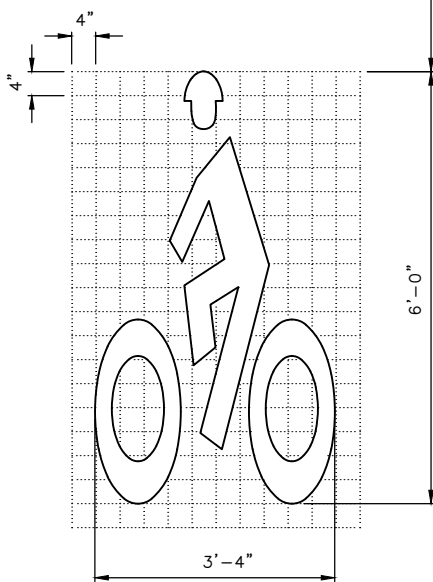
RED BUS LANE MARKINGS



**770A**  
HELMETED BICYCLIST SYMBOL WITH ARROW



**770B**  
BICYCLE LANE THROUGH ARROW



**770C**  
HELMETED BICYCLIST SYMBOL

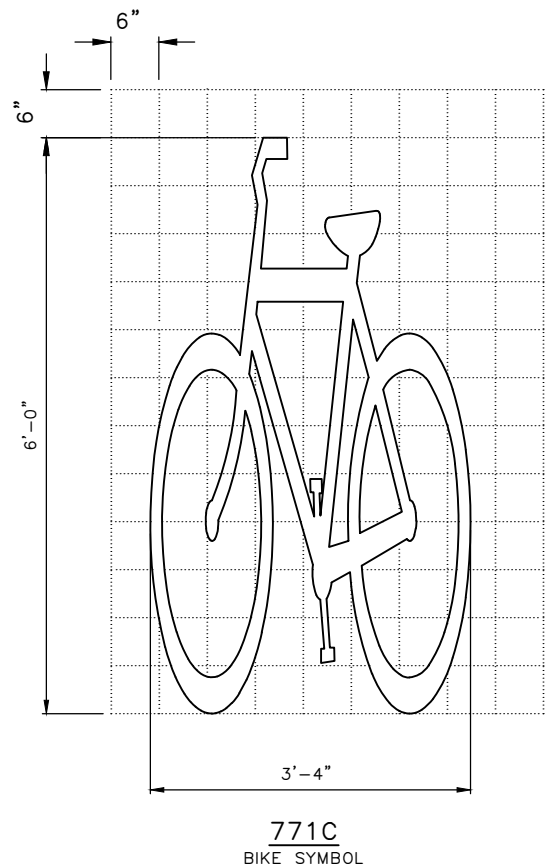
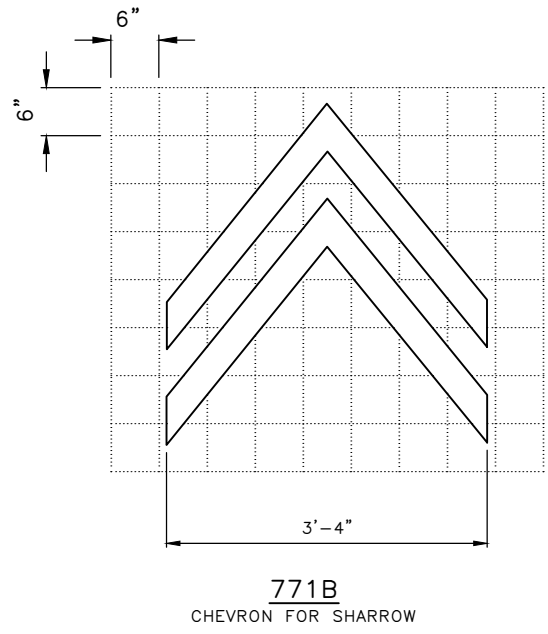
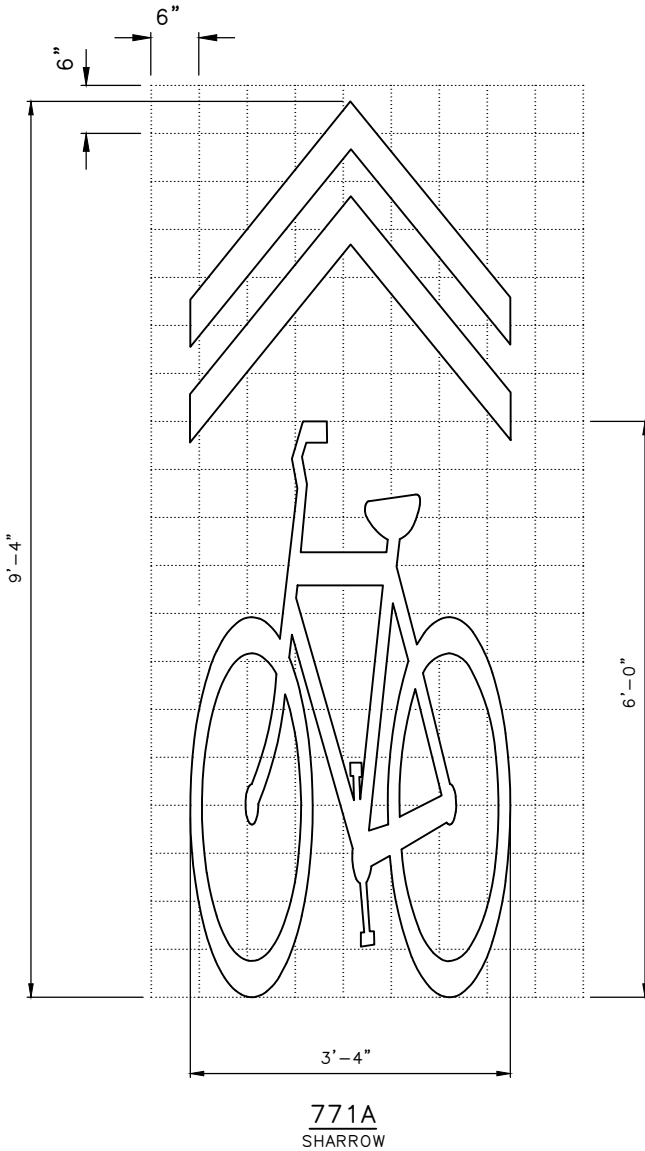
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

HELMETED BICYCLIST SYMBOL  
WITH ARROW



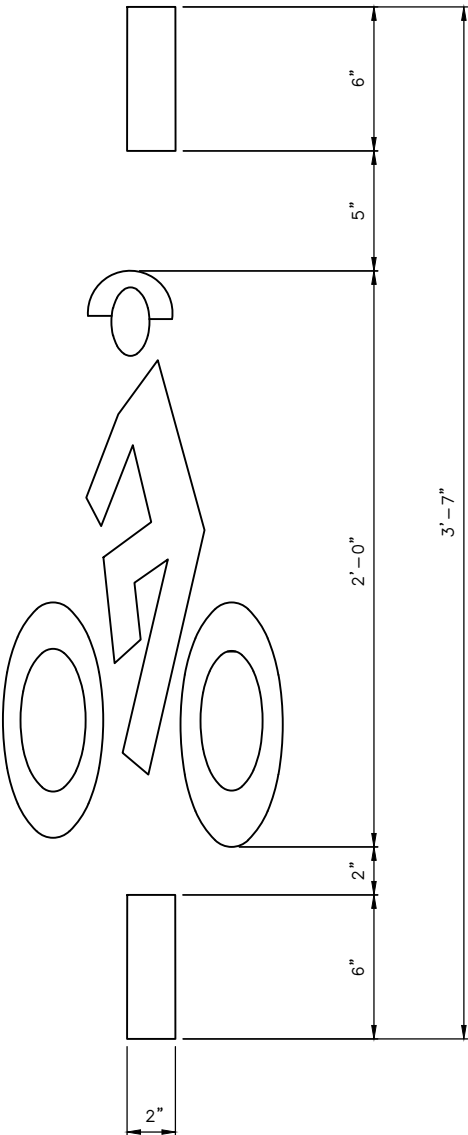
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

SHARROW & BIKE SYMBOLS



772  
BICYCLE DETECTOR SYMBOL

NOTE:  
SEE STD PLAN NO 530b FOR PLACEMENT

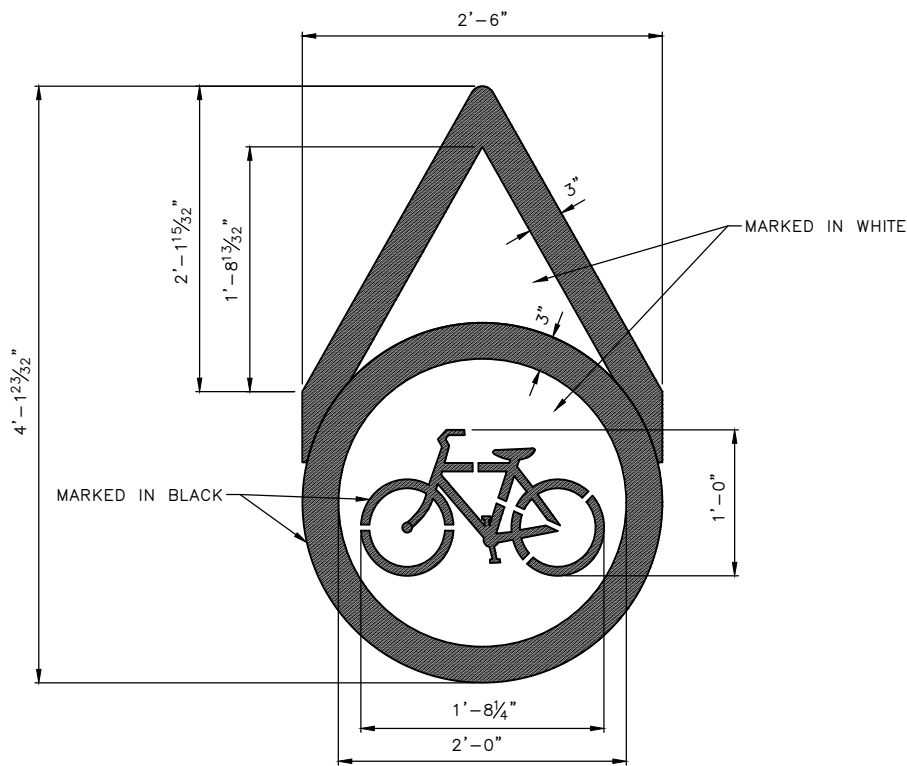
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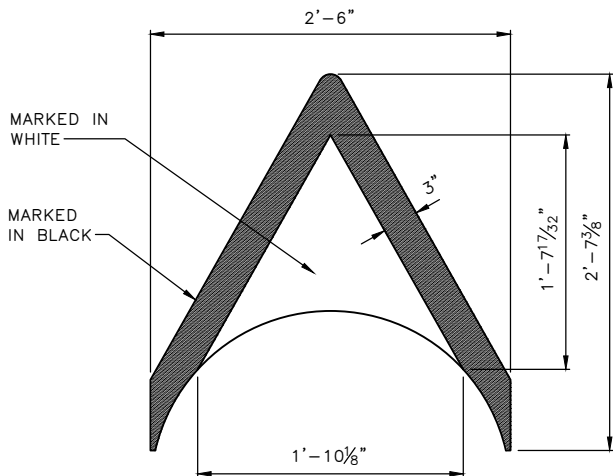
City of Seattle

NOT TO SCALE

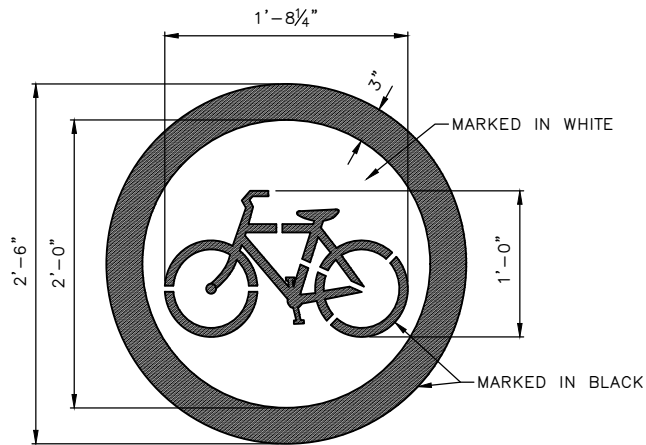
BICYCLE DETECTOR  
SYMBOL



**773A**  
BIKE DOT SYMBOL WITH ARROW



**773B**  
BIKE DOT ARROW



**773C**  
BIKE DOT SYMBOL

REF STD SPEC SEC 8-22

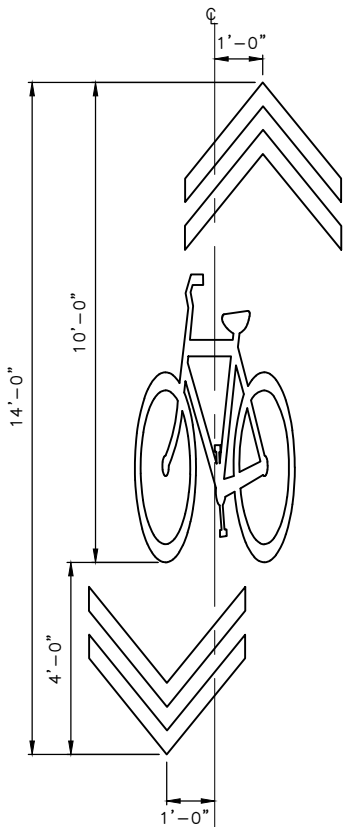


City of Seattle

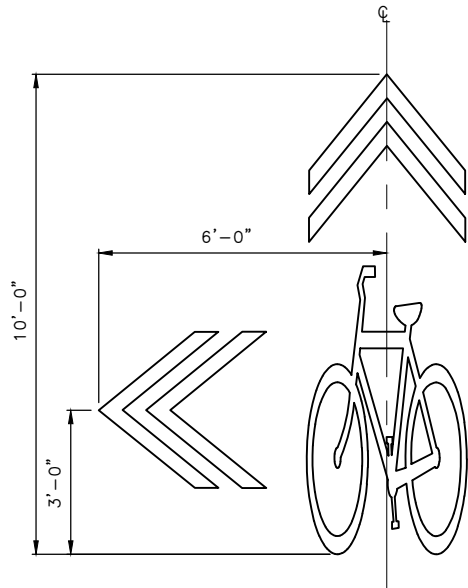
NOT TO SCALE

BIKE DOT SYMBOL  
WITH ARROW

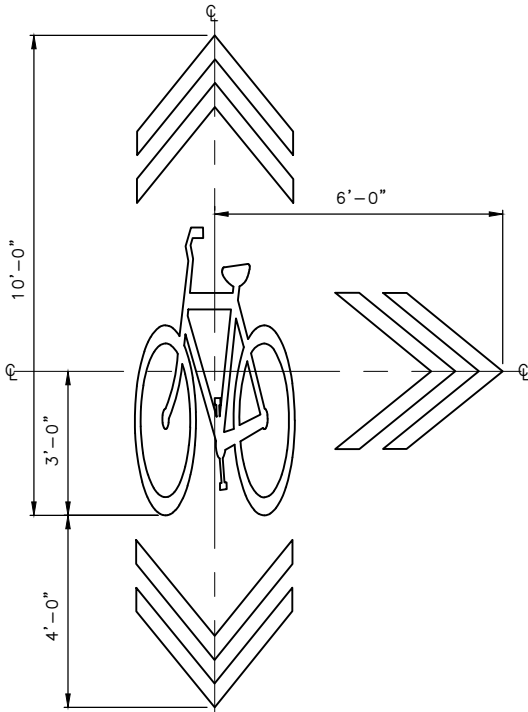
**NOTE:**  
SEE STD PLAN NO 771 FOR SYMBOL DIMENSIONS.



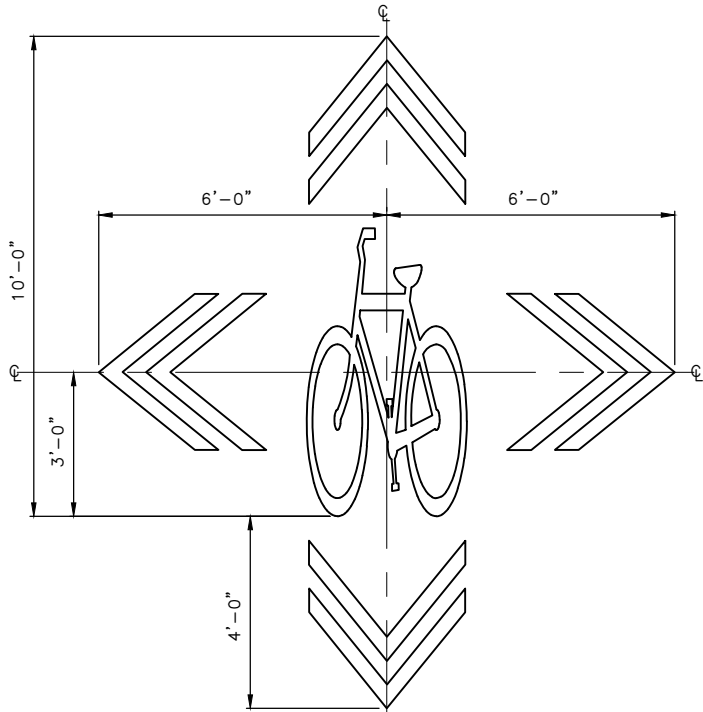
**774A**  
GREENWAY THROUGH SYMBOL



**774B**  
GREENWAY ROUTE TURNS SYMBOL



**774C**  
GREENWAY THREE-ROUTE SYMBOL



**774D**  
GREENWAY FOUR-ROUTE SYMBOL

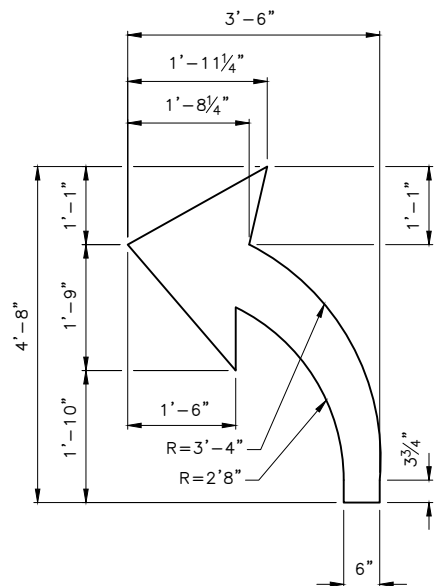
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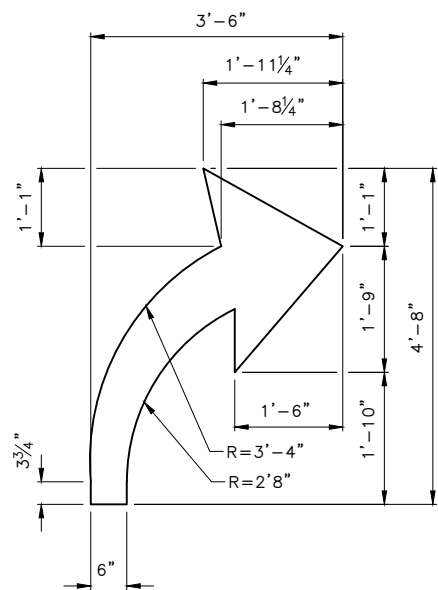
City of Seattle

NOT TO SCALE

GREENWAY MARKINGS



**775A**  
NARROW BIKE LANE  
LEFT ARROW



**775B**  
NARROW BIKE LANE  
RIGHT ARROW

- NOTES:**
1. TURN ARROWS TO BE USED IN BIKE LANES LESS THAN 5' WIDE IN COMBINATION WITH THE HELMETED BICYCLIST SYMBOL 770C.
  2. LAYOUT SIMILAR TO 770A WITH 6' SPACING.

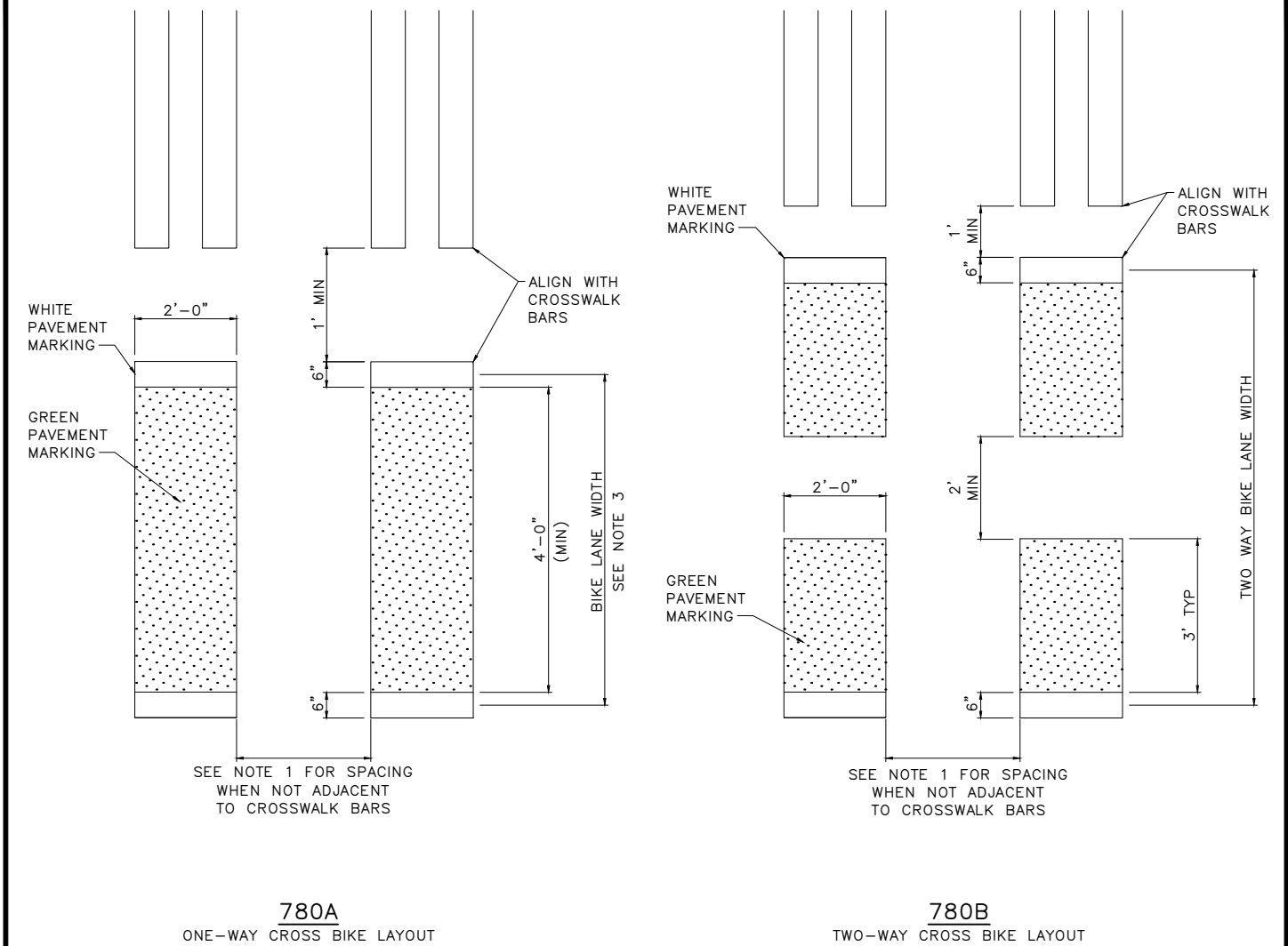
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

NARROW BIKE LANE  
TURN ARROW SYMBOLS



**NOTES:**

- 1. WHERE STRIPED CROSSWALK DOES NOT EXIST, CROSS BIKE MUST BE PLACED AT LANE LINE AND 1/2 LANE WIDTH CONSISTENT WITH STANDARD PLAN 712. IF NO CROSSWALK OR LANE LINE EXISTS, CROSSBIKE MUST BE PLACED AT 5' ON CENTERS.
- 2. CROSS BIKE MATERIAL MUST BE MMA OR PRE-FORMED THERMOPLASTIC.
- 3. WHEN CONNECTING BIKE LANES OF VARYING WIDTH, THE CROSSBIKE WIDTH MUST BE SIZED TO THE NARROWER OF THE TWO FACILITIES.

REF STD SPEC SEC 8-22

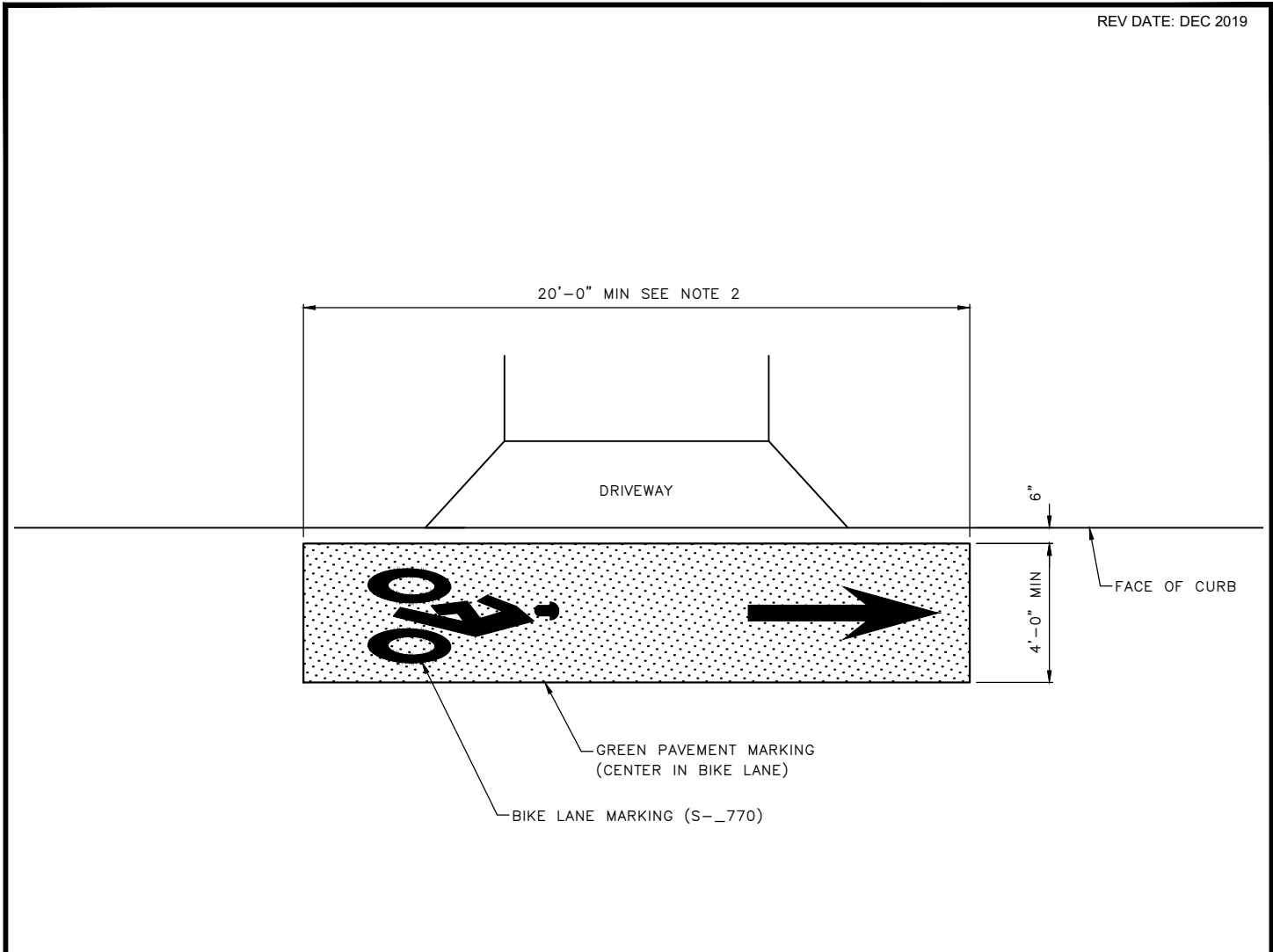


City of Seattle

NOT TO SCALE

CROSS BIKE  
PAVEMENT MARKING





DRIVEWAY CROSSING LAYOUT

- NOTES:
1. DRIVEWAY CROSSING MATERIAL MUST BE MMA OR PRE-FORMED THERMOPLASTIC
  2. MATCH DRIVEWAY APRON IF WIDER THAN 20'

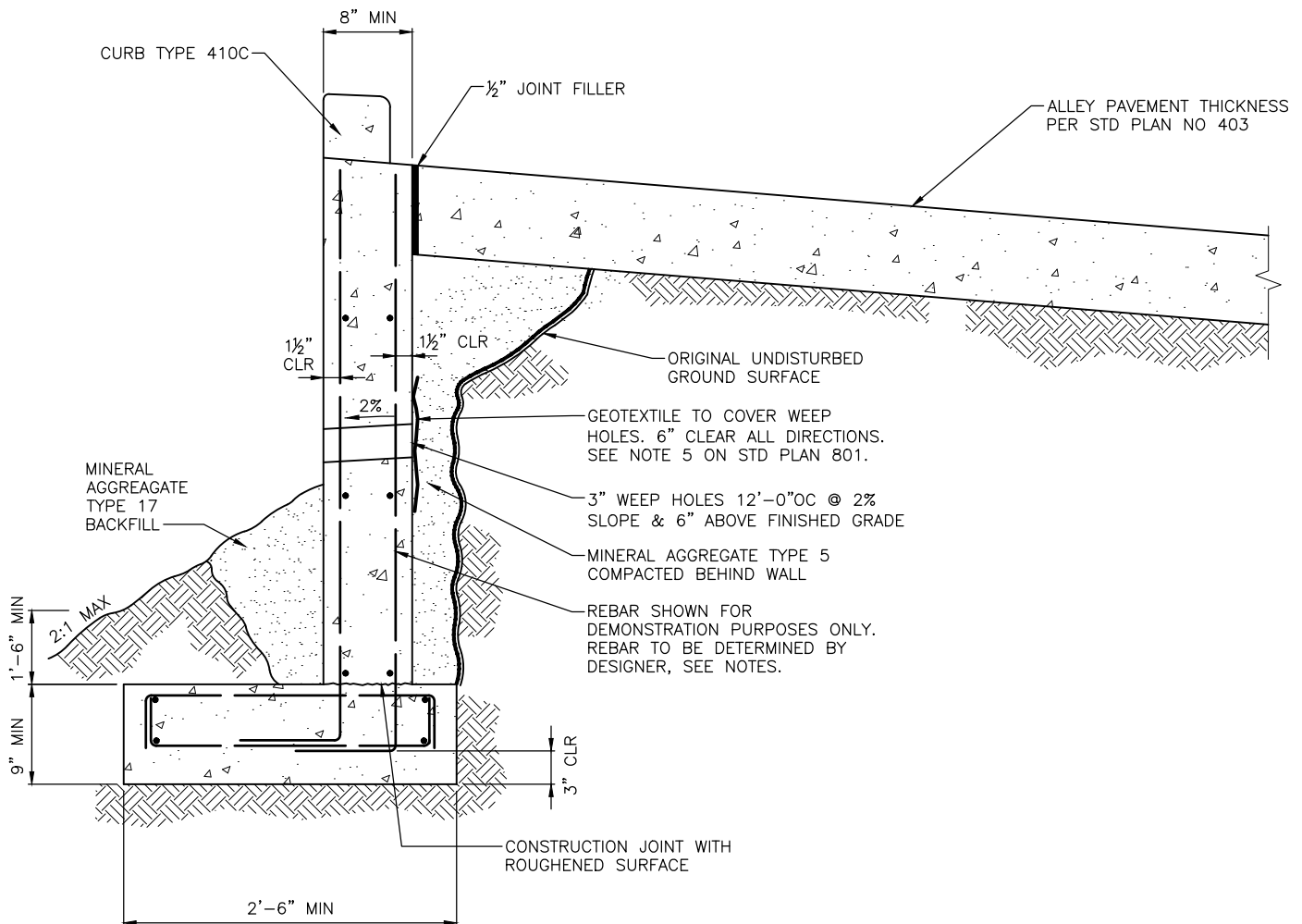
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

**BIKE LANE PAVEMENT MARKING  
AT DRIVEWAY**

**NOTES:**

1. THIS PLAN ONLY COVERS MINIMUM GEOMETRIC REQUIREMENTS. FINAL WALL GEOMETRY MUST BE DETERMINED BY THE DESIGNER AND MUST FOLLOW CURRENT EDITION OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. CALCULATIONS AND GEOTECHNICAL INFORMATION SHALL BE SUBMITTED FOR REVIEW AND APPROVAL.
2. CONCRETE FOR SUPPORT WALL MUST BE CLASS 4000
3. REINFORCING STEEL ASTM A706 (AASHTO M 31 GRADE 60). MINIMUM SIZE BAR, #4.
4. BASE OF SUPPORT WALL TO BE BEARING ON COMPACTED SUITABLE MATERIAL
5. BACK FORM FOR SUPPORT WALL MAY BE OMITTED AND CONCRETE PLACED AGAINST NATIVE EARTH WHEN GROUND CONDITIONS PERMIT. CLEAR COVER MUST BE 1-1/2" UNLESS NOTED OTHERWISE.
6. WALL MUST BE DESIGNED TO ACCOMODATE VEHICULAR LOADS AND PEDESTRIAN RAILING.

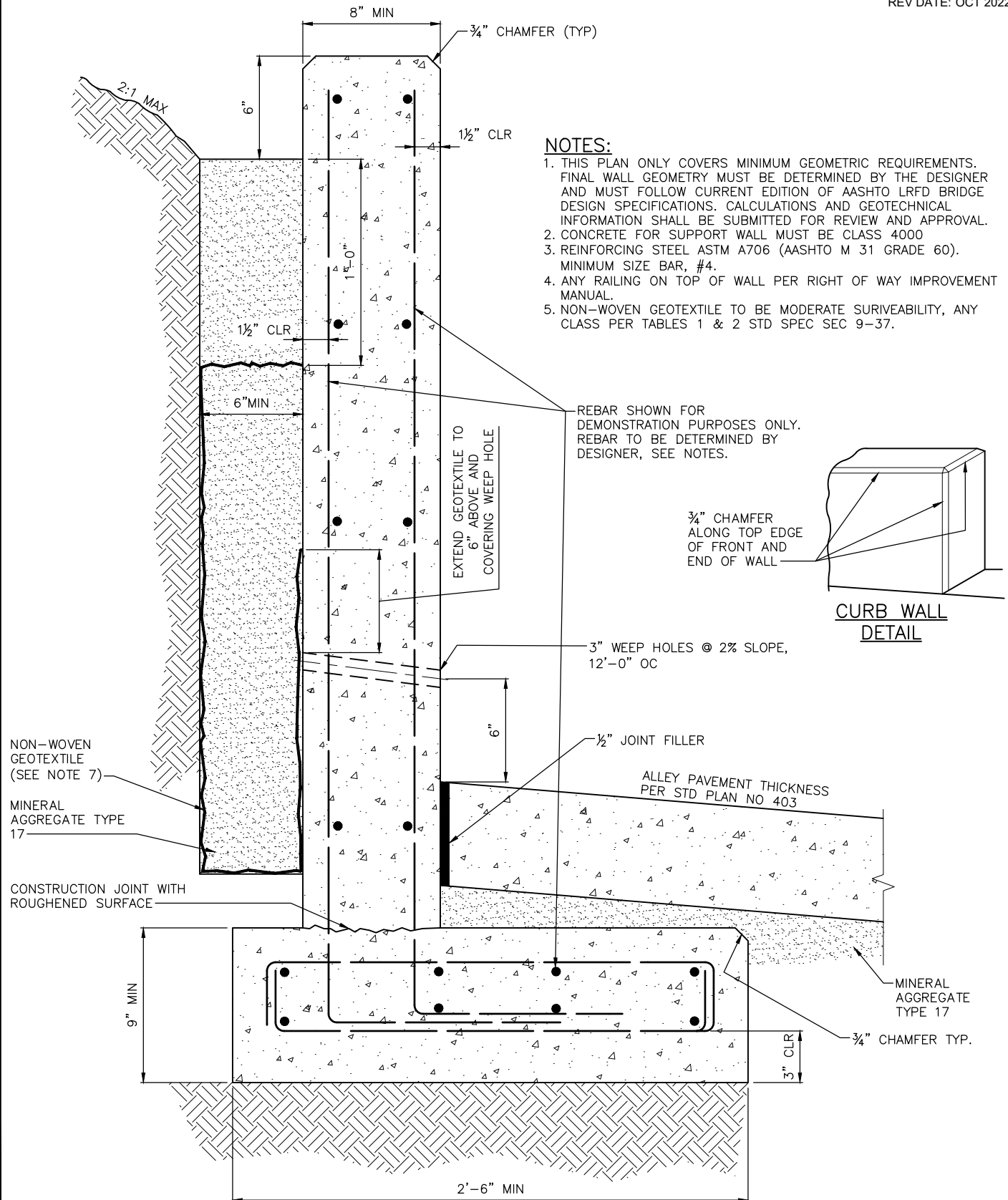
REF STD SPEC SEC 8-17, 8-19



City of Seattle

NOT TO SCALE

SUPPORT WALL



REF STD SPEC SEC 8-17



City of Seattle

NOT TO SCALE

CURB WALL



