

STANDARD PLANS FOR MUNICIPAL CONSTRUCTION



2014 Edition



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CITY OF SEATTLE

2014 edition

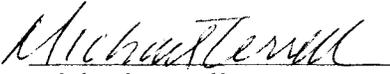
STANDARD PLANS

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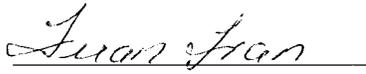
MUNICIPAL CONSTRUCTION

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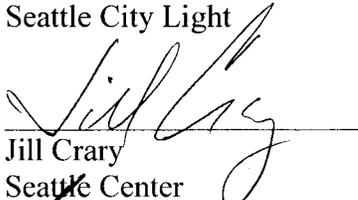
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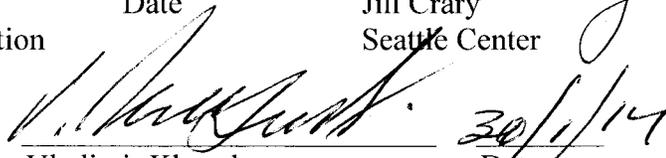
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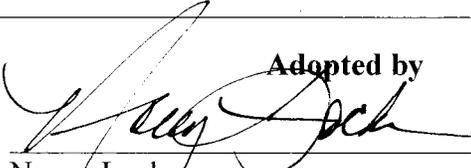
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2014 Edition City of Seattle Standard Plans for Municipal Construction

PREFACE

The 2014 Edition City of Seattle Standard Plans for Municipal Construction (henceforth referred to as the "2014 Standard Plans") have been prepared by Seattle Public Utilities in cooperation with the Department of Finance 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 2014 Edition City of Seattle Standard Specifications.

The 2014 Standard Plans apply whenever any public or private construction is performed within the Rights-of-Way of the City of Seattle including work performed by private parties at their own expense under authority granted by ordinance of the City Council or by permit of the SDOT Street Use section. The 2014 Standard Plans are designed to be used in conjunction with the 2014 Standard Specifications for Road, Bridge and Municipal Construction. Each individual 2014 Standard Plan has a reference located in the bottom left corner to the applicable 2014 Standard Specifications.

For the convenience of our users, 2014 Standard Plans that are new or have been revised from the 2011 Edition Standard Plans are identified in the Table of Contents with **BOLD TEXT** and a vertical bar along the outside page margin. Also, a revision date is located in the upper right corner of each individual Standard Plan to alert the reader to a Standard Plan that is new or has been recently revised.

Despite considerable efforts to produce 1) a completely error-free document, 2) a document consistent with the 2014 Standard Specifications, and 3) a web version of this document, some mistakes and inconsistencies among the versions seem to defy detection until after publication. If you discover errors in this document or inconsistencies between or among the versions please bring them to our attention by contacting the City's Construction Standards Engineer at the following web address:

http://www.seattle.gov/util/Engineering/Standard_Plans_&_Specs

If conflicts are discovered between this hard copy version of the 2014 Standard Plans and any other version, this hard copy shall take precedence. If conflicts are discovered between this hard copy of the 2014 Standard Plans and any version of the 2014 Standard Specifications, the hard copy of the 2014 Standard Specifications shall take precedence.

Our sincere thanks and appreciation to all the individuals who participated in the effort of producing the 2014 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 Financial and Administrative Services: Maura Donoghue, Aleanna Kondelis and Nancy Locke

Seattle Public Utilities: Jason Miller, Dennis Hess, Sigrun Denny, Teri Maringer-Franks, David McDonald, Liz Anderson, Steve Read, Rosalind Liston-Riggs, Jade Sullivan, Charles Oppelt, Paul Kimani, Aziz Alfi, Herman Wong, Shanti Colwell, Erin Walior, Jig Wiley, Tokunbo Fatuga, Cliff Jones and Fred Aigbe.

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Seattle City Light: Mike Nordin, Yaochiem Chao and Stephen Crume

Seattle Center: Bonnie Pendergrass and Beth Duncan

The hardcopy version of this document is available at the Department of Finance 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 2014 Standard Plans may also be ordered on-line from the web address listed above. Additional new 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).

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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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.

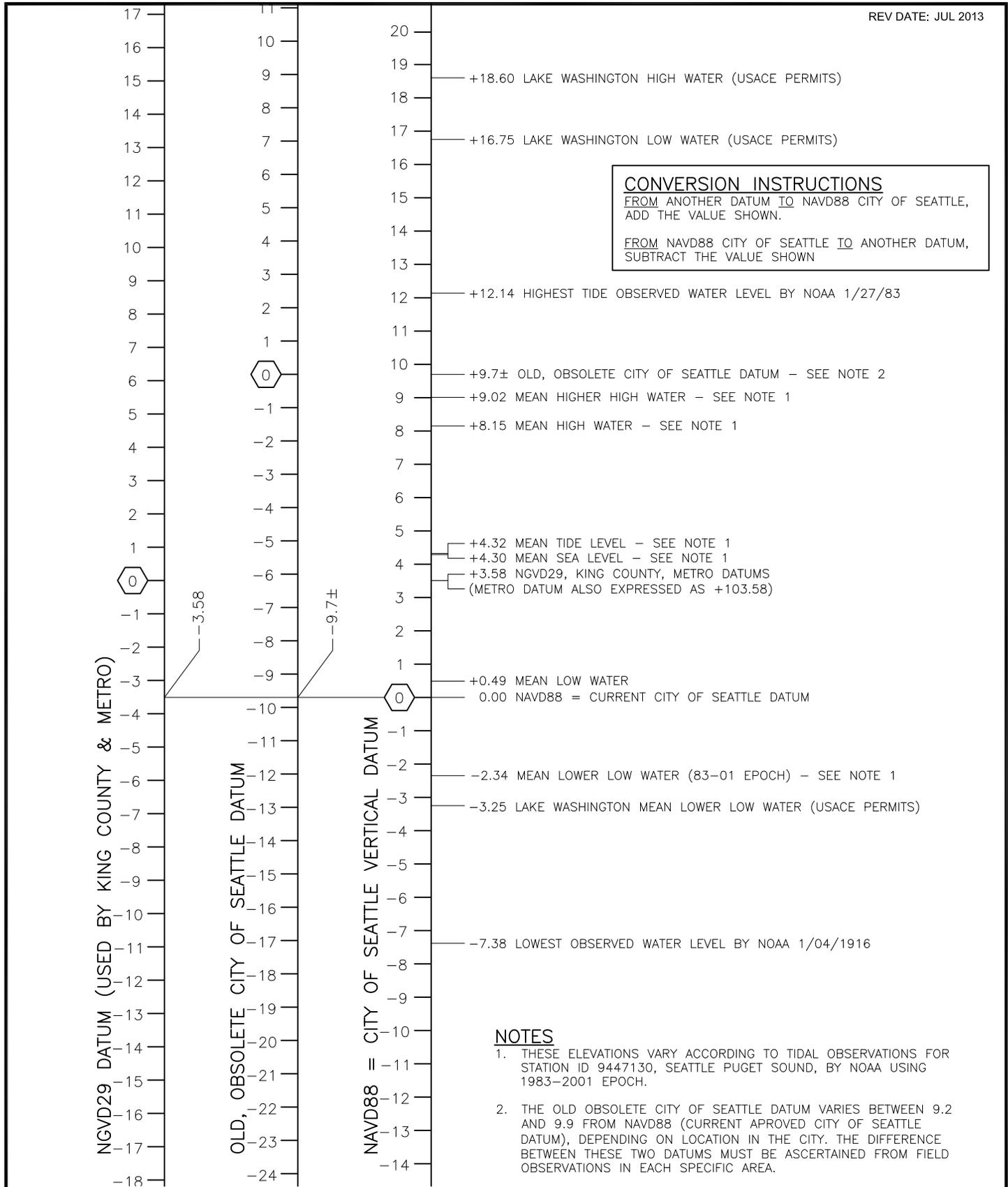
REF STD SPEC SEC 1-07.16(1)A, 1-07.28



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
☉	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
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 0	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
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
GA	Gauge
GAL	Gallon

REF STD SPEC SEC 1-01.2



City of Seattle

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ABBREVIATIONS

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
MAX	Maximum
MB	Mailbox

REF STD SPEC SEC 1-01.2



City of Seattle

NOT TO SCALE

ABBREVIATIONS

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 \overline{M}	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
PDP	Perforated Drain Pipe
PE	Plain End
PED	Pedestrian

PG	Performance Grade
PH	Phase
PI	Point of Intersection
PL	Plate, Place, Polyethylene
\overline{P}	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
RDWY	Roadway
RECONN	Reconnect
RED	Reducer

REF STD SPEC SEC 1-01.2



City of Seattle

NOT TO SCALE

ABBREVIATIONS

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
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
SDS	Street Designation Sign
SD	Service Drain
SDOT	Seattle Department of Transportation
SEC	Section
SHLD	Shield
SHT	Sheet
SL	Sleeve, Street Light
⌘	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
TF	Top Face
TH	Test Hole
THH	Telephone Handhole
TJO	Transfer of Jurisdiction Ordinance
TMH	Telephone Manhole

REF STD SPEC SEC 1-01.2



City of Seattle

NOT TO SCALE

ABBREVIATIONS

ITEM

EXISTING

PROPOSED

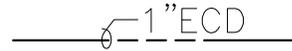
Signal Controller Cabinet



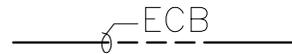
Electrical Vault



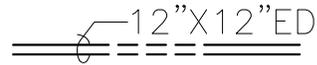
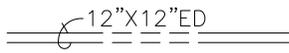
Electrical Conduit



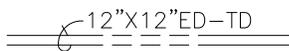
Electrical Cable (direct burial)



Electrical Duct



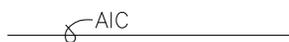
Combined Electrical & Telephone Duct



Span Wire



Aerial Interconnect Cable



Transmission Pole (steel w/ conc base)

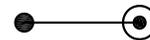


City Wood Pole

OEPP



City Wood Pole w/ HPS



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

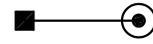
STANDARD SYMBOLS
ELECTRICAL

ITEM

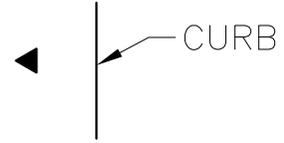
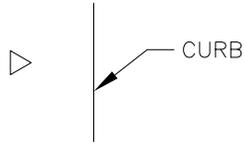
EXISTING

PROPOSED

Light Pole
(metal) w/ HPS



Strain Pole
(metal)



Combined
Lighting Strain
Pole HPS



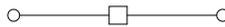
Luminaire



Mercury Vapor
Luminaire



Double Light
Pole



Utility Wood Pole



Utility Guy Pole



Anchor



Ground



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

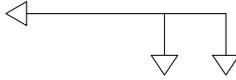
STANDARD SYMBOLS
ELECTRICAL

ITEM

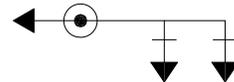
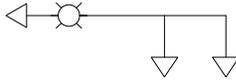
EXISTING

PROPOSED

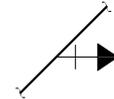
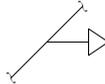
Traffic Signal Mast
Arm Pole



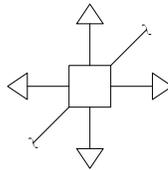
Traffic Signal Mast Arm
Pole w/ Luminaire



Traffic Signal on
Span Wire



Multi-Directional Traffic
Signal on Span Wire



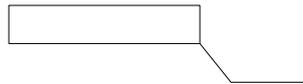
Traffic Signal Conduit



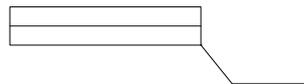
Traffic Signal Cable



Detector Loop, Dipole
(loop schedule)



Detector Loop, Quadrapole
(loop schedule)



Pressure Detector



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

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

NOT TO SCALE

STANDARD SYMBOLS
ELECTRICAL

SIGNALIZATION

Vehicle & Pedestrian Signal Head
(?=Identification Number)



Illuminated Traffic Sign
(?=Identification Number)



Cable Runs
(?=Run Number per Wiring Schedule)

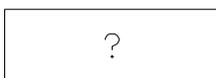


Removal/Relocation Item
(?=Identification Number per Removal/Relocation Plan)



Construction Item
(?=Identification Number per Signalization Plan)

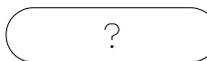
Signal Poles, Signal Pedestals, Push Button Pedestals &
Push Buttons Identified by Number on Signalization Plan.

CHANNELIZATION & SIGNAGE

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



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



Relocate Signage
(?=Signage Identified on Plan)

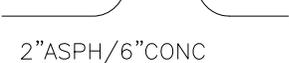
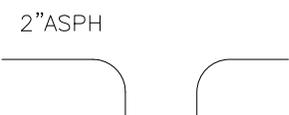
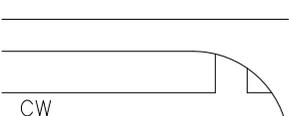
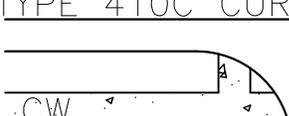
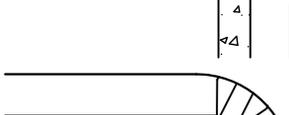
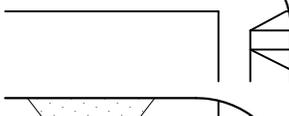
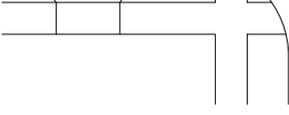
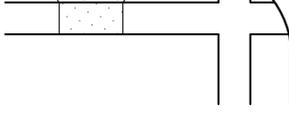
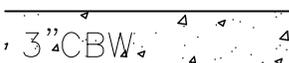
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
SIGNALIZATION/CHANNELIZATION
& SIGNAGE

ITEM	EXISTING	PROPOSED
Cement Concrete Pavement	 <p>6"CONC</p>	 <p>6"CONC PAV</p>
Asphalt Concrete Pavement	 <p>2"ASPH/6"CONC</p>	 <p>8"-402B PAV</p>
Asphalt Concrete Surfacing	 <p>2"ASPH</p>	 <p>2"ASPH</p>
Curb		 <p>TYPE 410C CURB</p>
Cement Concrete Walk	 <p>CW</p>	 <p>CW</p>
Curb Ramp		
Conc Dwy		
Cement Concrete Bike Way	 <p>3"CBW</p>	 <p>3"CBW</p>
Asphalt Concrete Bike Way	 <p>3"ABW</p>	 <p>3"ABW</p>
Grading	 <p>GRADED</p>	 <p>TO BE GRADED</p>

REF STD SPEC SEC



City of Seattle

NOT TO SCALE

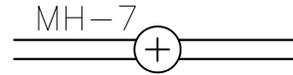
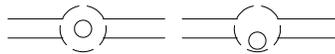
STANDARD SYMBOLS
PAVING

ITEM

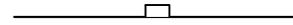
EXISTING

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

NOT TO SCALE

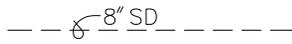
STANDARD SYMBOLS
SEWER & DRAINAGE

ITEM

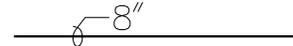
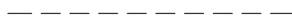
EXISTING

PROPOSED

Service Drain



Inlet & CB Connection



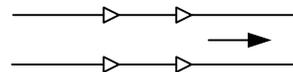
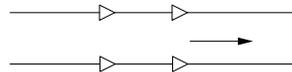
Open Ended Pipe



Ditch



Stream



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
SEWER & DRAINAGE

ITEM

EXISTING

PROPOSED

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)



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



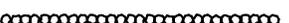
Wood Fence



Guardrail



Rock Facing



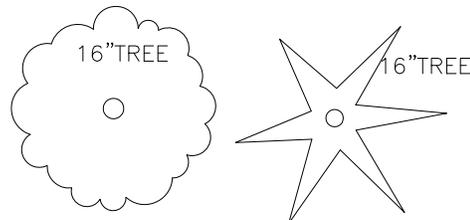
Rock Facing



Riprap



Trees



PER DRAWINGS

REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
TOPOGRAPHIC & MISC

ITEM	EXISTING	PROPOSED
Shrub or Bush		
Ground, Grade Line		
Grade (arrow downhill)	5.6%	5.6%
Rail Road Tracks		
City Limits	CITY OF SEATTLE KING COUNTY	CITY OF SEATTLE KING COUNTY
Slope Line		SLOPE LINE
Contours		
Slope Angle Horiz:Vert	v c	H:V
Vertical Curve	v c	v c
Depression		
Stump		
Top of Cut Toe of Fill	TOP OF CUT 	TOE OF FILL
Dimension Line		
Match Line		
Test Hole & Number (test boring)		
Bench Mark		

REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
TOPOGRAPHIC & MISC

ITEM

EXISTING

PROPOSED

Monitor Well



Street Name Sign



US Mail Box



Private Mail Box



Bollard



Posts



Parking Meter & Pay Station



Rectangular Casting



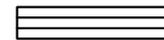
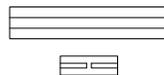
Circular Casting



Column



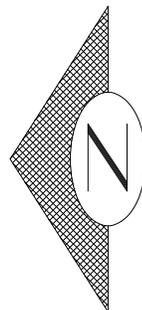
Jersey Barrier & Eco Block



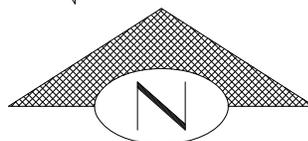
Tree Pit



North Arrow horizontal



North Arrow vertical



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
TOPOGRAPHIC & MISC

ITEM	EXISTING	PROPOSED
Telephone Cable (direct burial)		
Telephone Conduit		
Telephone Duct		
Telephone Enclosure		
Telephone Maintenance Hole		
Telephone Pole		
Telephone Handhole		
Television Cable (direct Burial)		
Television Handhole		
Telegraph Maintenance Hole		
Steam Log		
Steam Vault		
Gas Main		
Gas Valve		
Gas Meter		
Gas Regulator		
Petroleum or Oil		
Abandon(ed)		

REF STD SPEC SEC



City of Seattle

NOT TO SCALE

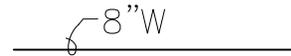
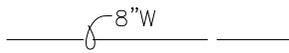
STANDARD SYMBOLS
PRIVATE UTILITIES

ITEM

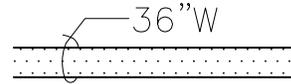
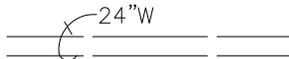
EXISTING

PROPOSED

Watermain
<1'-0"Dia



Watermain
≥1'-0"Dia



11 1/4° Bend w/
Conc Blocking



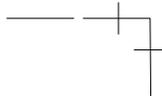
22 1/2° Bend



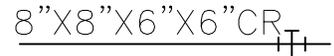
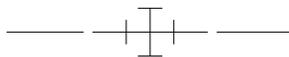
45° Bend



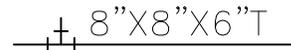
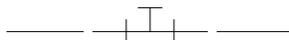
90° Bend



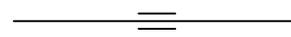
Cross



Tee



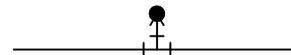
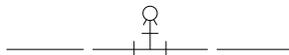
Pipe Sleeve



Plug w/ Conc
Blocking



Hydrant



Water Meter



Valve Box



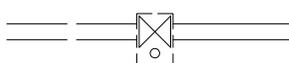
Gate Valve



Gate Valve
w/ Chamber



Gate Valve
w/ Vault Chamber



Reducer



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
WATER

ITEM	EXISTING	PROPOSED
Air Valve		
Blowoff		
Fire Standpipe		
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		
Pipe Sleeve		

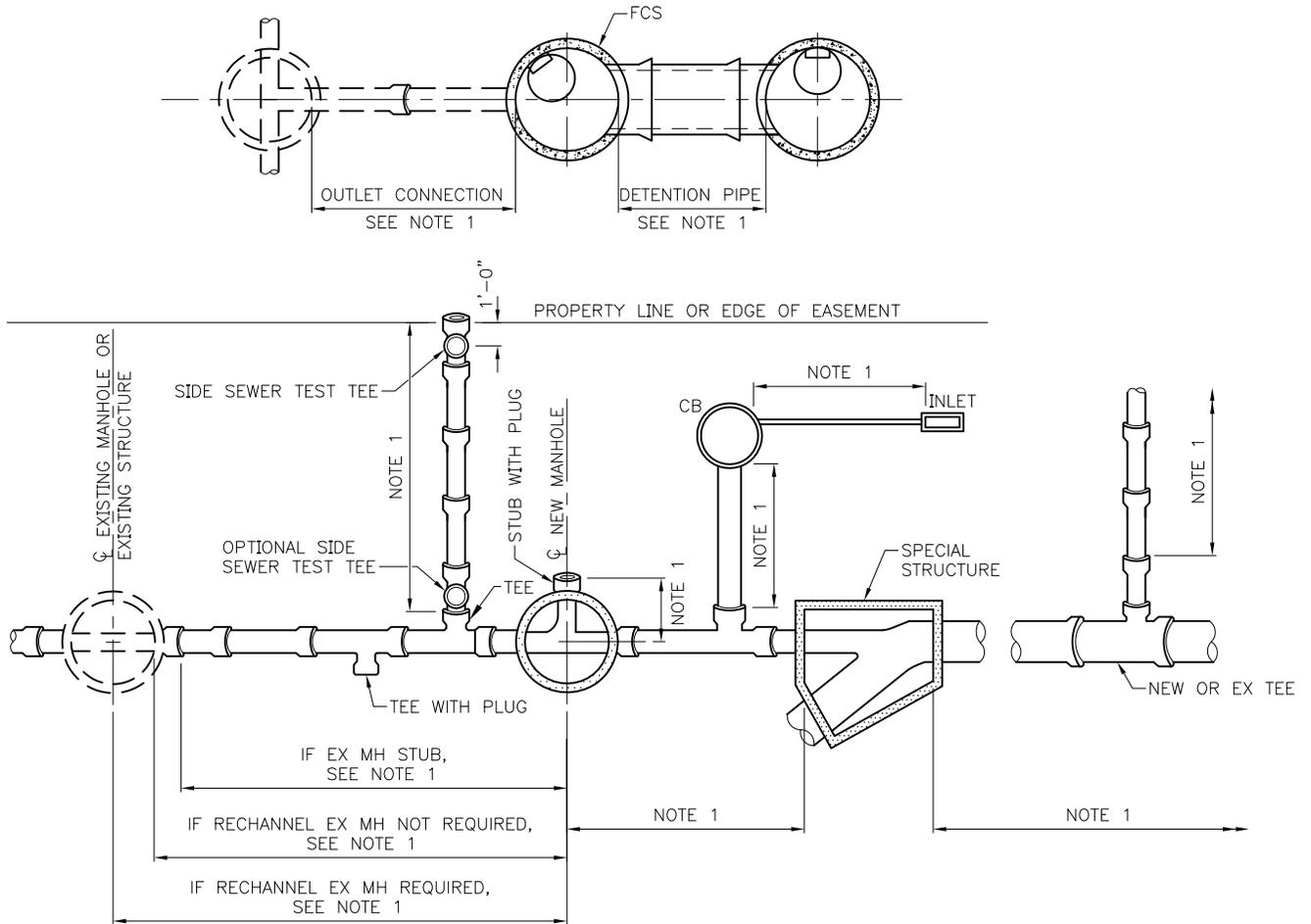
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
WATER



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 SHALL BE MEASURED ON THE SLOPE ALONG THE CENTERLINE OF PIPE TO NEAREST 0.10 LF.

REF STD SPEC SEC 7



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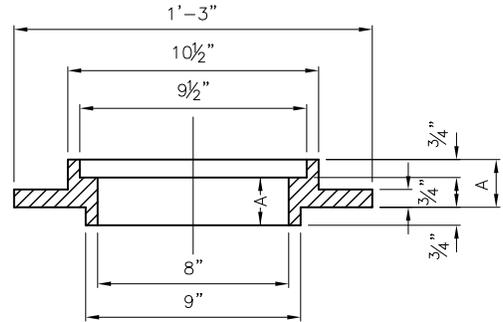
NOT TO SCALE

**SEWER/DRAINAGE
MEASUREMENT DIAGRAM**

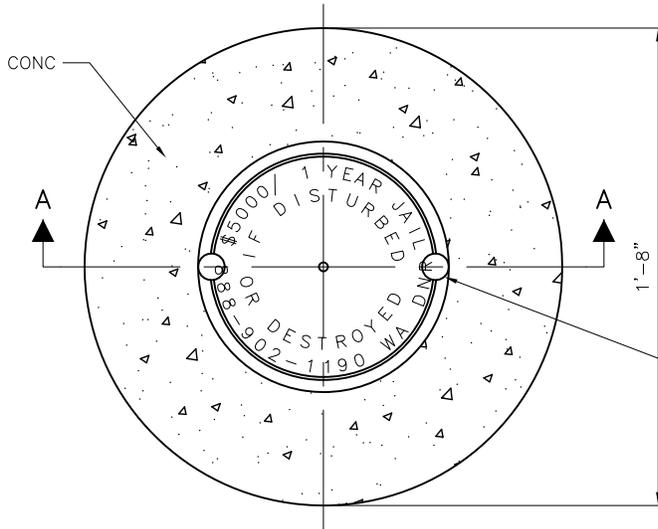
NOTES:

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

RISER RING DIMENSIONS			
A (SIZE)	1½"	2"	3"

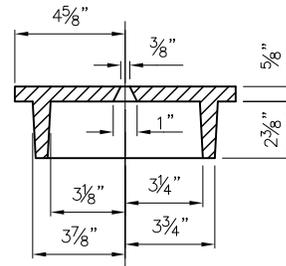


RISER RING SECTION

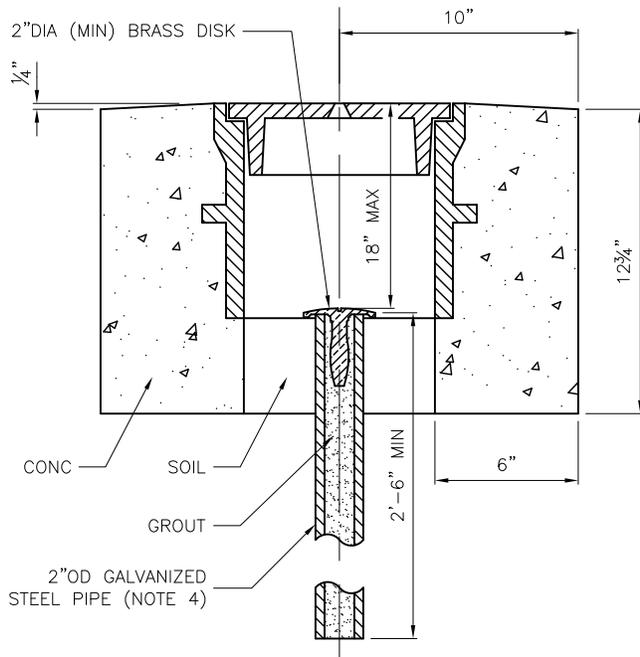


PLAN

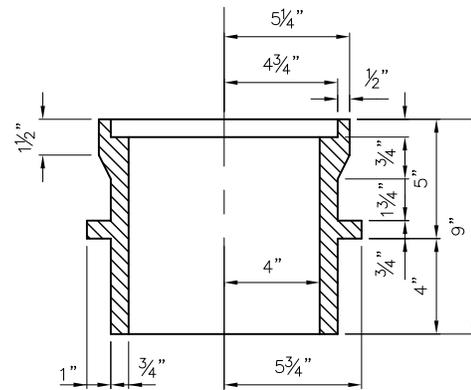
DRILL & TAP FOR LOCKING AS REQUIRED. SEE NOTE 6.



COVER SECTION



SECTION A-A



CASE SECTION

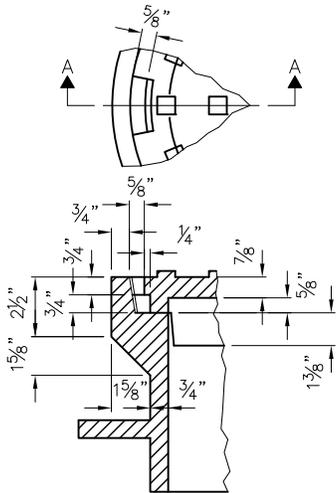
REF STD SPEC SEC 8-13



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NOT TO SCALE

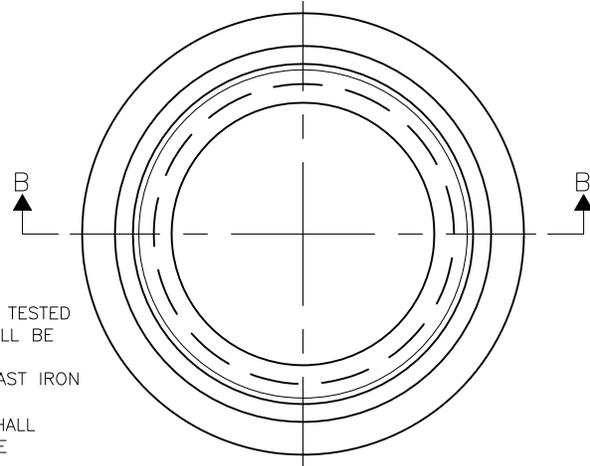
MONUMENT FRAME & COVER



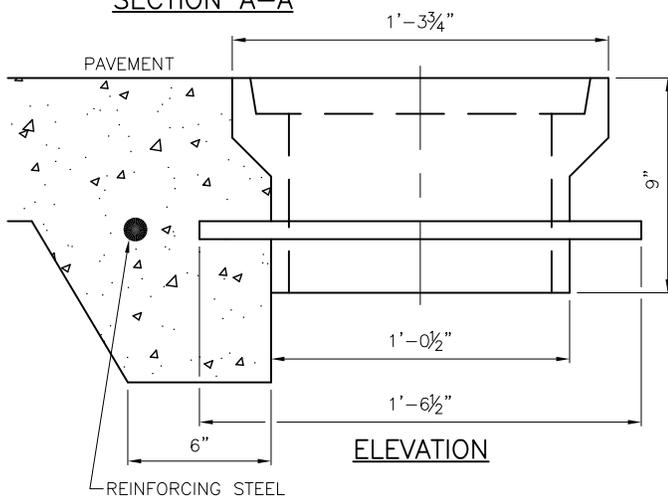
SECTION A-A

NOTES:

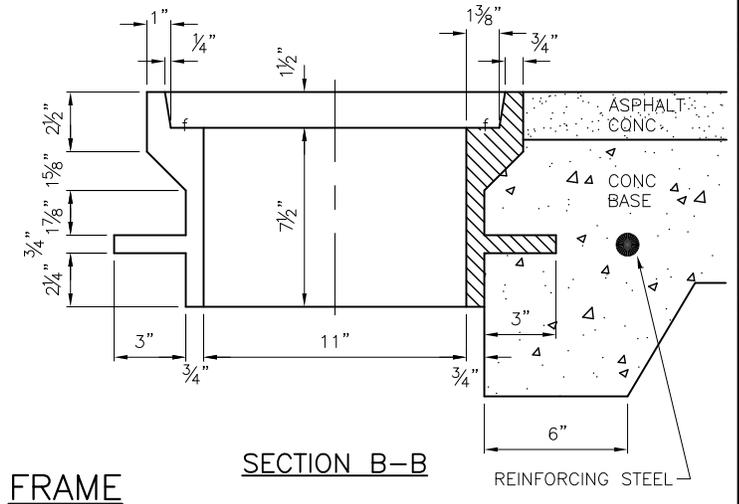
1. FRAME AND COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS FOR DELIVERY
2. FRAME AND COVER SHALL BE CAST IRON
3. "f"=FINISH
4. CASTINGS IN RIGID PAVEMENT SHALL HAVE REINFORCING STEEL IN THE PAVEMENT.



TOP VIEW

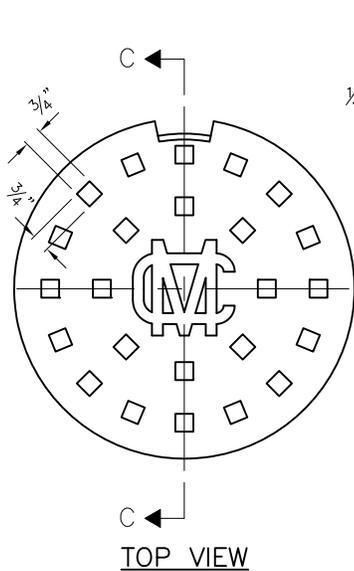


ELEVATION

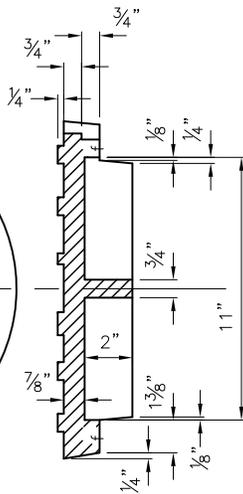


SECTION B-B

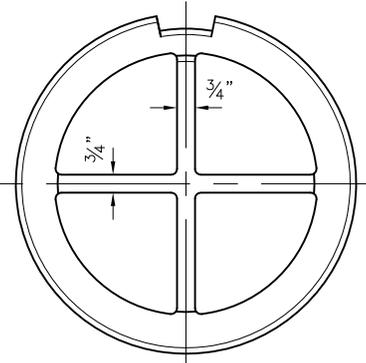
FRAME



TOP VIEW



SECTION C-C



BOTTOM VIEW

COVER

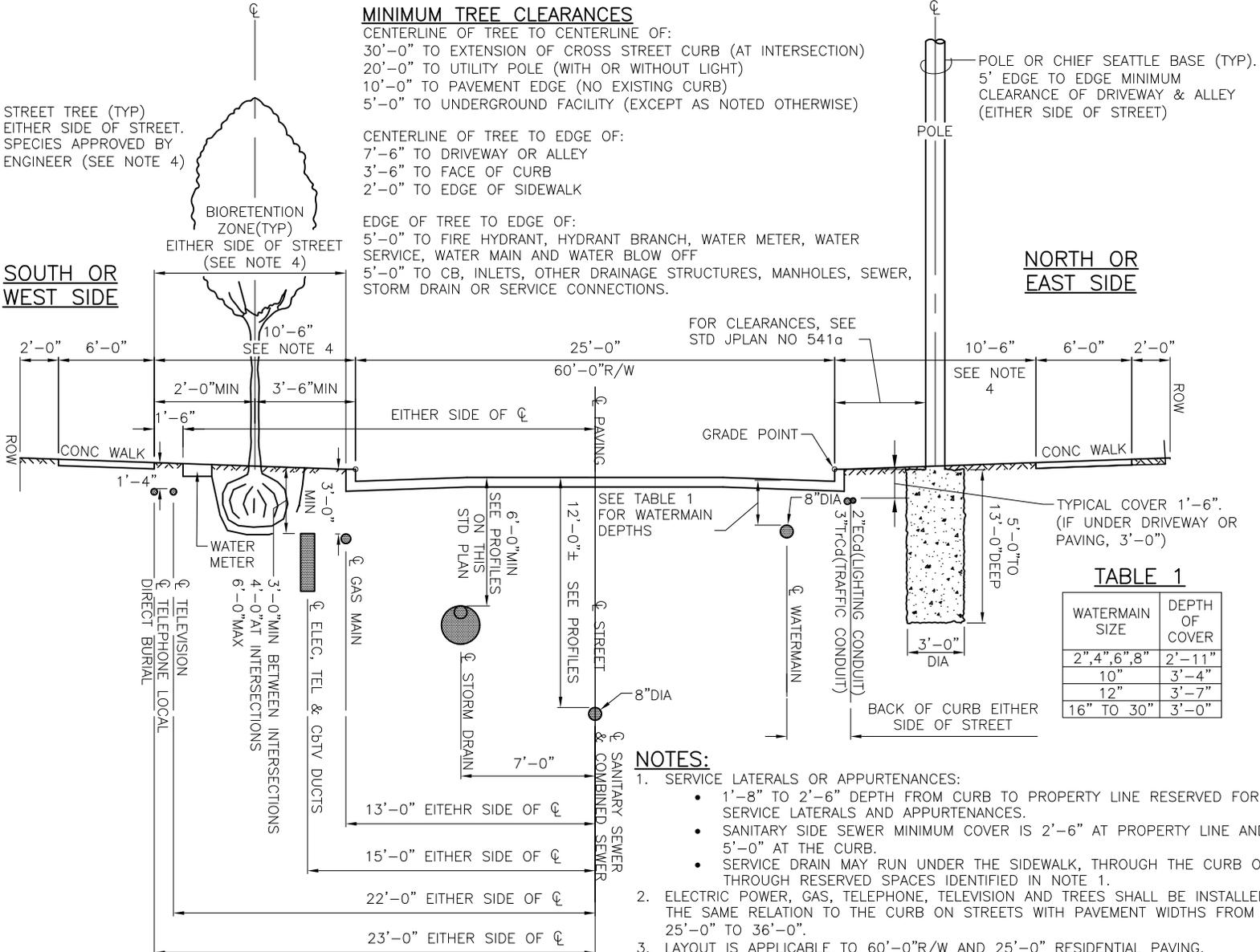
REF STD SPEC SEC 8-13



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NOT TO SCALE

MONUMENT FRAME & COVER



- NOTES:**
- SERVICE LATERALS OR APPURTENANCES:
 - 1'-8" TO 2'-6" DEPTH FROM CURB TO PROPERTY LINE RESERVED FOR SERVICE LATERALS AND APPURTENANCES.
 - SANITARY SIDE SEWER MINIMUM COVER IS 2'-6" AT PROPERTY LINE AND 5'-0" AT THE CURB.
 - SERVICE DRAIN MAY RUN UNDER THE SIDEWALK, THROUGH THE CURB OR THROUGH RESERVED SPACES IDENTIFIED IN NOTE 1.
 - ELECTRIC POWER, GAS, TELEPHONE, TELEVISION AND TREES SHALL BE INSTALLED IN THE SAME RELATION TO THE CURB ON STREETS WITH PAVEMENT WIDTHS FROM 25'-0" TO 36'-0".
 - LAYOUT IS APPLICABLE TO 60'-0" R/W AND 25'-0" RESIDENTIAL PAVING.
 - REDUCING CLEARANCE BETWEEN A NEW UTILITY AND EXISTING TREE/PLANTING STRIP, REDUCING CLEARANCE BETWEEN A NEW/REPLACEMENT TREE AND EXISTING UTILITY, INCORPORATING GSI (BIORETENTION) INTO PLANTER STRIP OR CURB EXTENSION OR CHANGING THE 10'-6" WIDTH OF PLANTING STRIP REQUIRES REVIEW AND APPROVAL OF THE ENGINEER AND MAY REQUIRE ADDITIONAL MITIGATING MEASURES.
 - BACKFILL OVER ALL UTILITY INSTALLATIONS BETWEEN BACK OF CURB AND R/W AND WITHIN 5' OF CENTERLINE OF TREES SHALL BE PLANTING SOIL FOR A MINIMUM DEPTH EQUAL TO THE DEPTH OF THE ROOTBALL (NO CDF ALLOWED IN THIS ZONE).

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

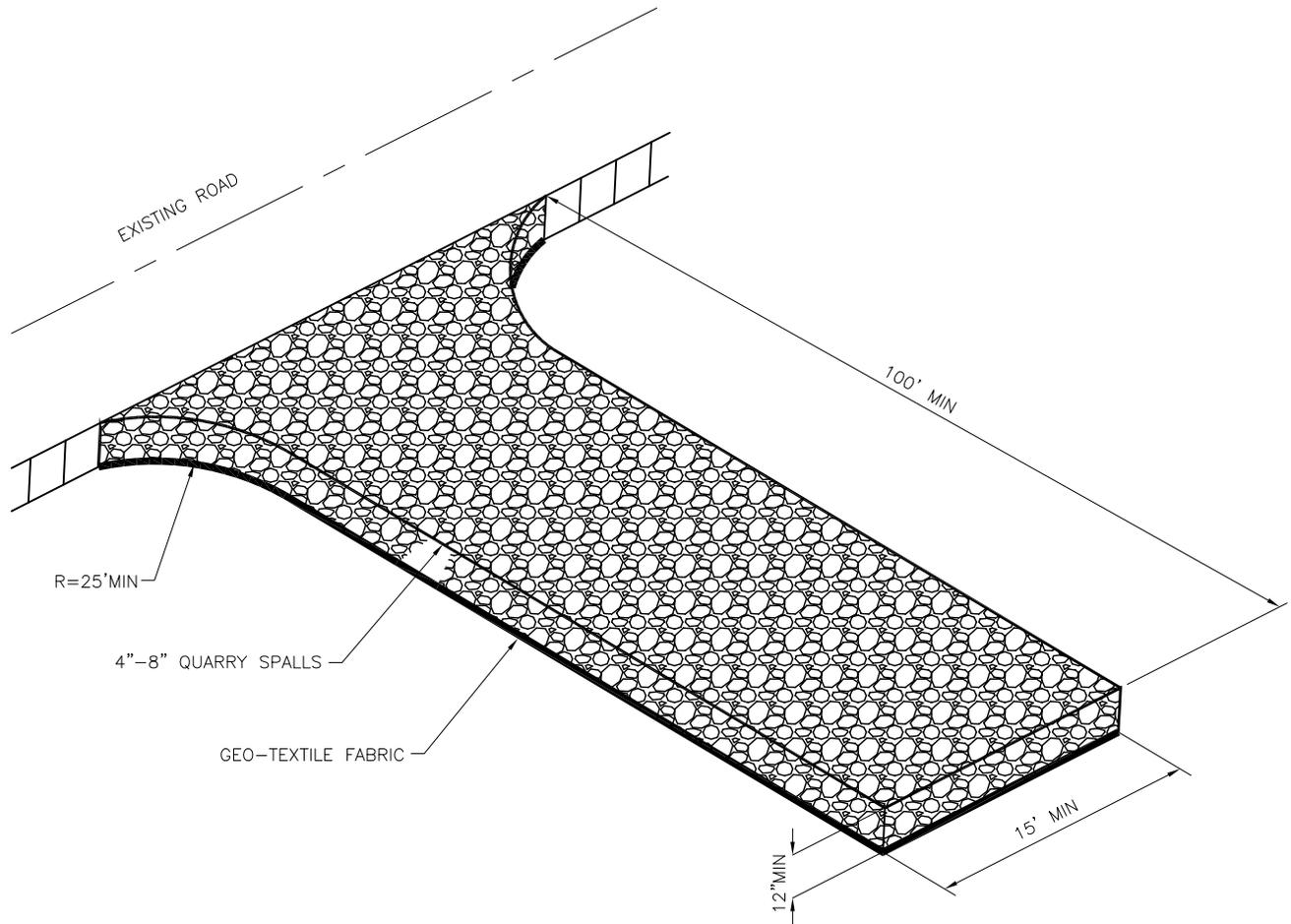


City of Seattle

2014 Edition City of Seattle Standard Plans for Municipal Construction

NOT TO SCALE

DESIRABLE LOCATIONS FOR UTILITIES (RESIDENTIAL STREET)



NOTES:

1. STABILIZED ACCESS SHALL 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.

REF STD SPEC SEC 8-01



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STABILIZED CONSTRUCTION
ENTRANCE

NOTES:

1. PLANTING INCLUDES REMOVAL OF STAKES ONE YEAR AFTER INSTALLATION.
2. SHAPE SOIL SURFACE TO PROVIDE 4" DIA WATERING RING.
3. TREE CLEARANCE SHALL 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.

STAKE TREE WITH (2) TREATED 2"Ø LODGEPOLE PINE DOWELED TREE STAKES (8'-0" LENGTH) LOOP EACH TIE AROUND HALF TREE LOOSELY TO PROVIDE 1" SLACK FOR TRUNK GROWTH.

"CHAINLOCK" OR EQUAL TREE TIE MATERIAL (1" SIZE) NAIL OR STAPLE TREE TIE MATERIAL TO STAKE TO HOLD VERTICALLY. LOOP EACH TIE AROUND HALF TREE LOOSELY TO PROVIDE 1" SLACK FOR TRUNK GROWTH.

2"-3" MULCH DEPTH (TAPERED AT TRUNK)

MULCH TREE PIT MIN 5'-0" LENGTH X FULL PLANTING STRIP WIDTH BETWEEN CURB AND SIDEWALK (FOR PLANTING STRIPS LESS THAN 6'-0" WIDE) OR PROVIDE 5'-0" DIA MULCH RING FOR PLANTING STRIPS WIDER THAN 6'-0".

SIDEWALK

18" ROOTBARRIER AT SIDEWALK.

ROUGHEN SIDES OF PLANTING HOLE MAXIMIZE EXCAVATED AREA WITHOUT UNDERMINING ADJACENT PAVING/CURB.

ROOTBARRIER; PLACE AT EDGE OF PAVEMENT/SIDEWALK/ETC.; PLACE PRIOR TO PLACEMENT OF NEW SIDEWALK OR CURB TO PREVENT UNDERMINING.

SEE STD SPEC SECTION 8-02.3(6)B, OR AS APPROVED BY ENGINEER.

REMOVE ALL WIRE, STRINGS, AND OTHER NON-BURLAP MATERIAL; AND REMOVE BURLAP FROM TOP 2/3 OF ROOTBALL MINIMUM. REMOVE ENTIRELY WHEN DIRECTED BY THE ENGINEER.

MIN WIDTH OF TREE PIT = 2 TIMES ROOTBALL DIAMETER OR 5'-0", WHICHEVER IS GREATER

MULCH AREA TO BE CLEAR OF GRASS, WEEDS, ETC. TO REDUCE COMPETITION WITH TREE ROOTS

SET TOP OF ROOT CROWN 2" ABOVE ADJACENT CURB & SIDEWALK GRADE.

3" TO 4" HIGH WATERING RING (SEE NOTE 2)

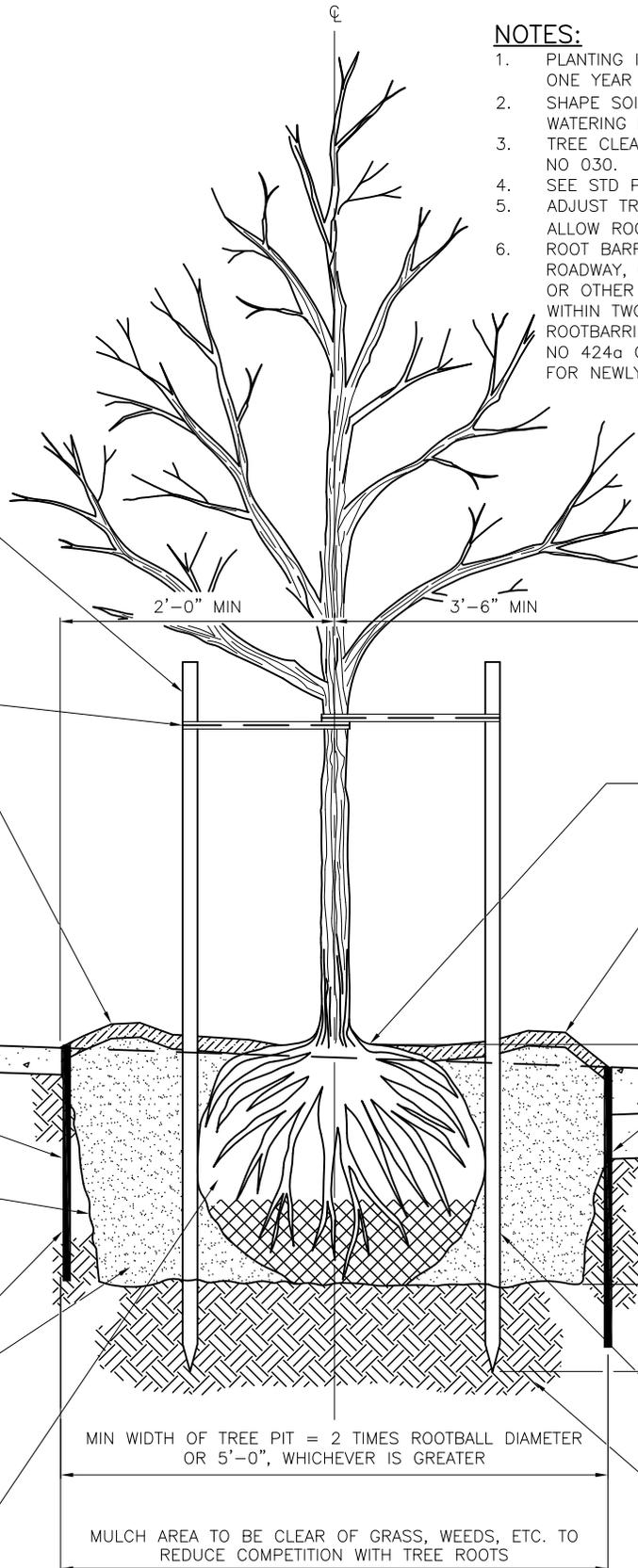
24" ROOTBARRIER AT CURB WHEN SHOWN ON THE DRAWINGS.

TREE PIT DEPTH = ROOTBALL DEPTH (MEASURE BEFORE DIGGING TO AVOID OVEREXCAVATION).

DRIVE STAKES 6" TO 1'-0" INTO UNDISTURBED SOIL BELOW ROOTBALL.

DRIVE STAKE AT ROOTBALL EDGE (TYP)(SEE NOTE 1)

UNDISTURBED SUBGRADE (PROVIDES FIRM BASE SO THAT ROOTBALL WILL NOT SINK).



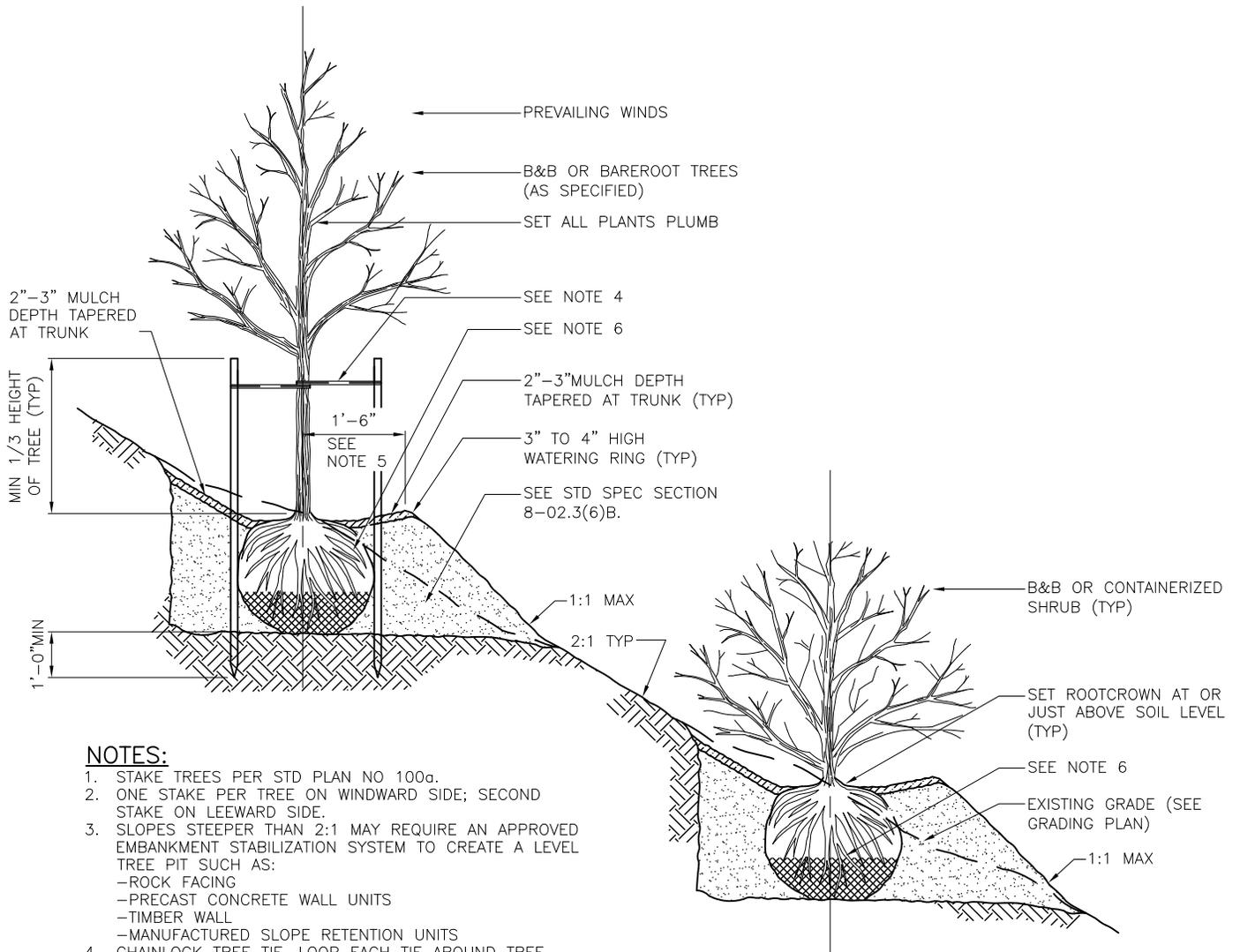
REF STD SPEC SEC 8-02



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**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 2/3 OF ROOTBALL.

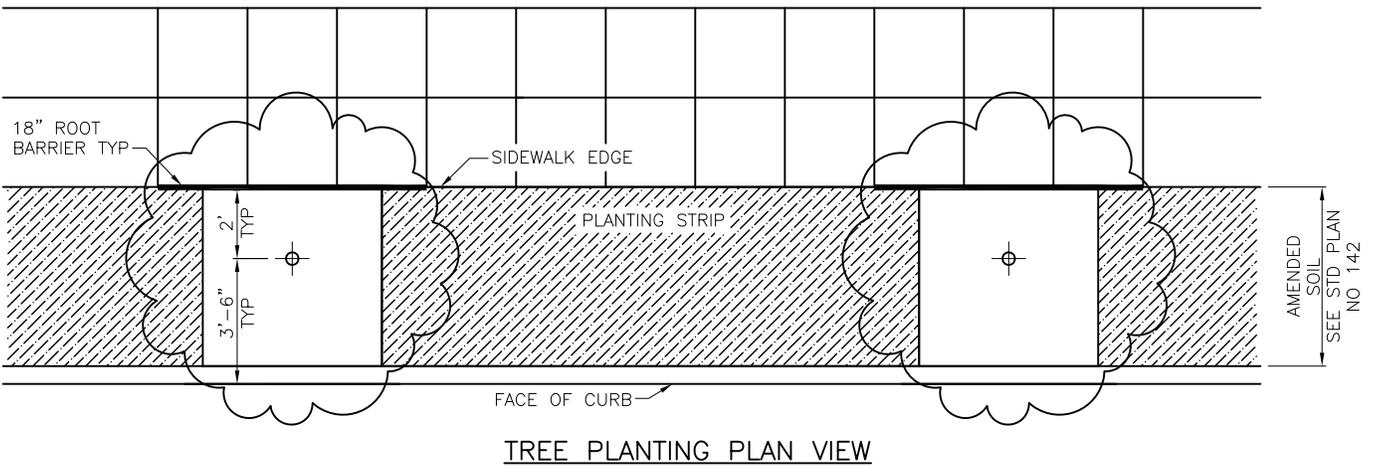
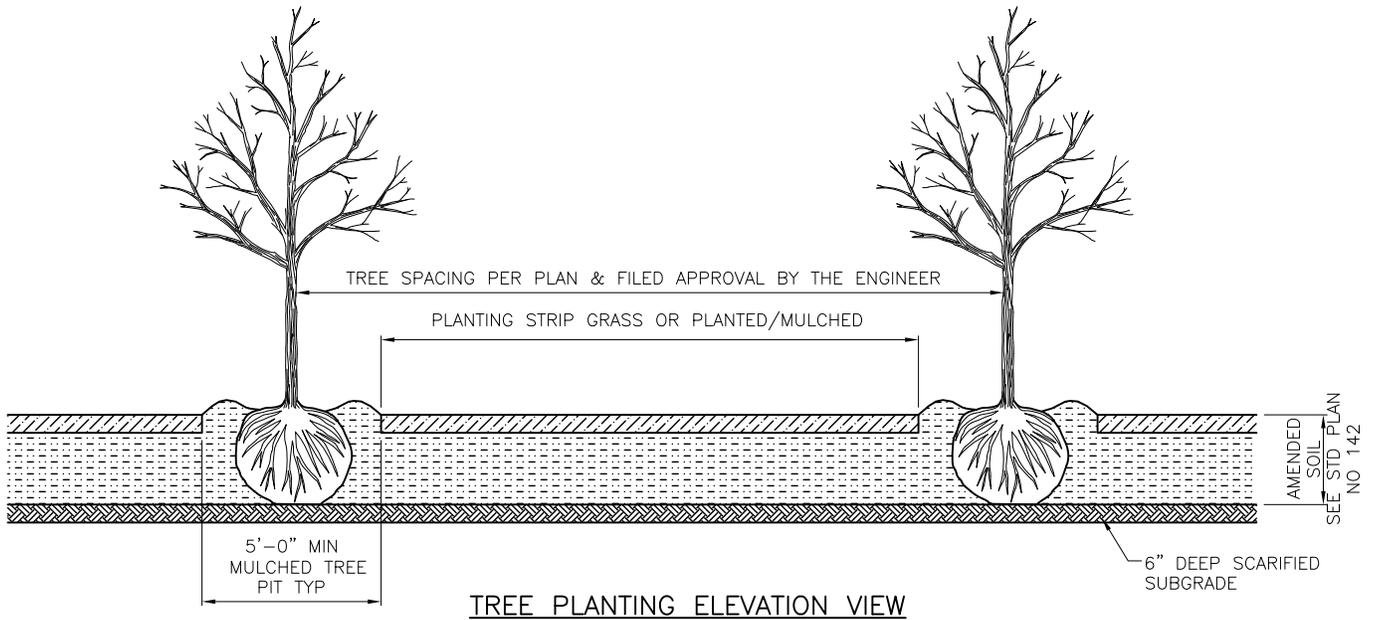
REF STD SPEC SEC 8-02



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TREE & SHRUB PLANTING
ON SLOPES



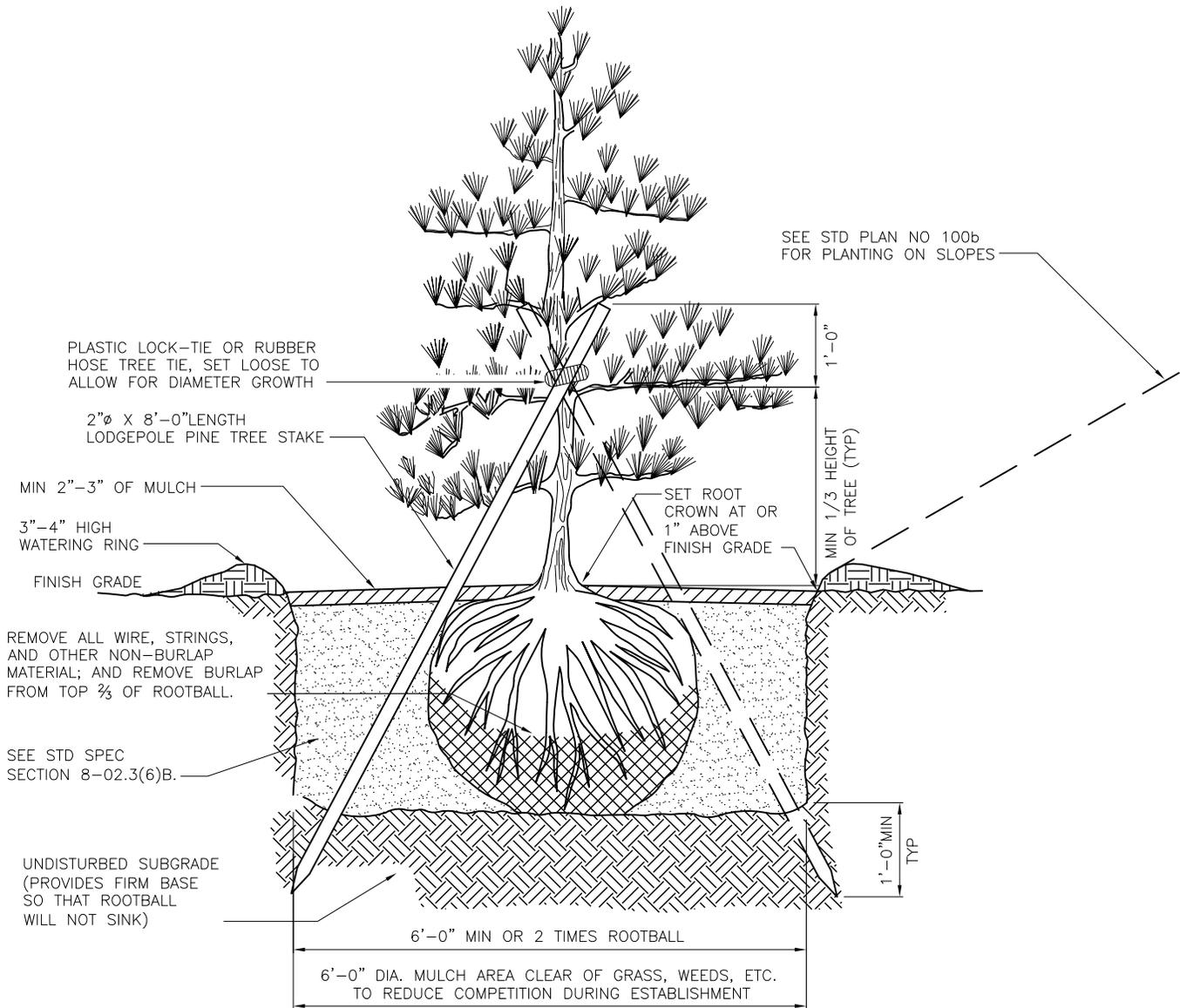
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TREE PLANTING IN AMENDED TRENCH



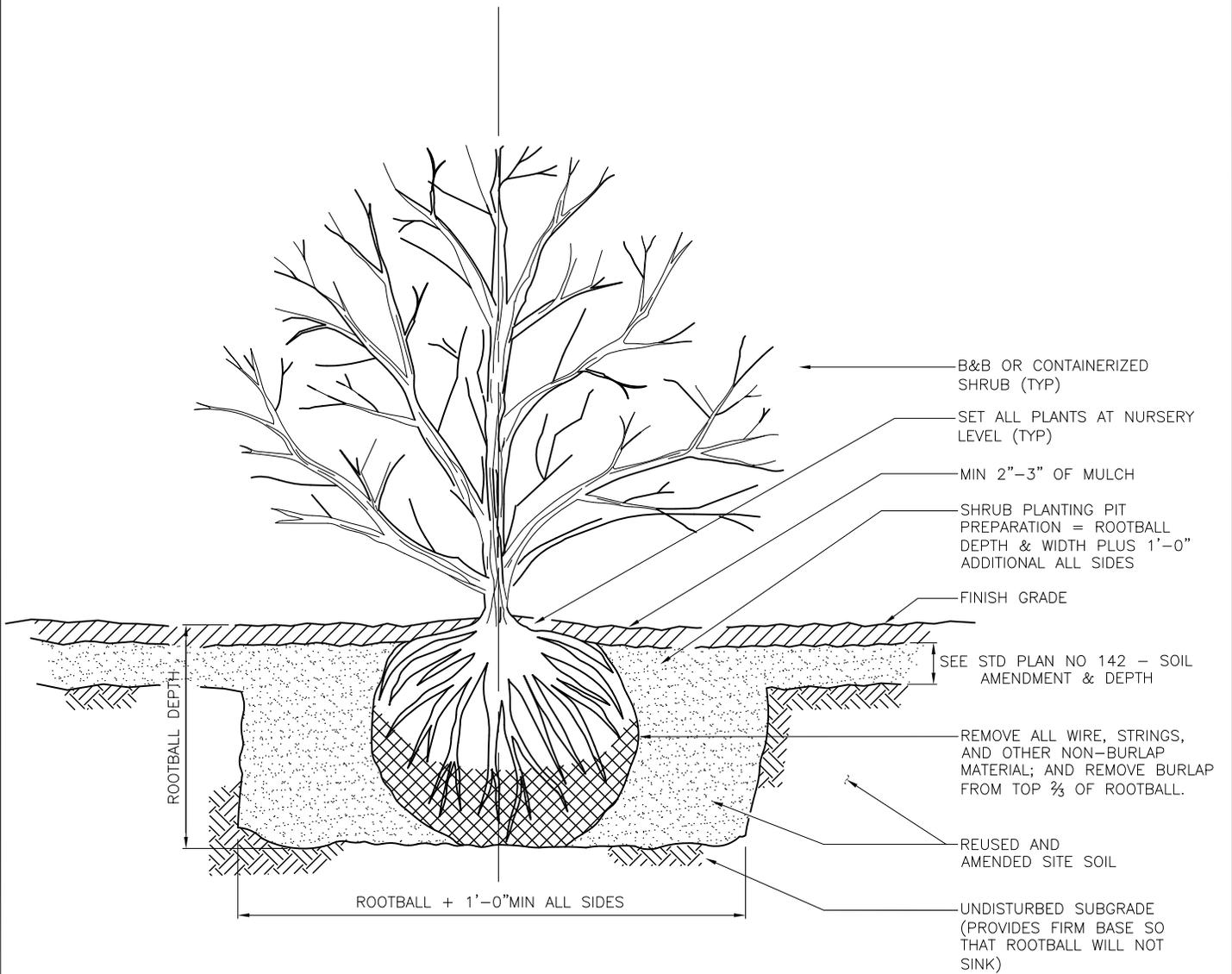
REF STD SPEC SEC 8-02



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CONIFEROUS TREE PLANTING



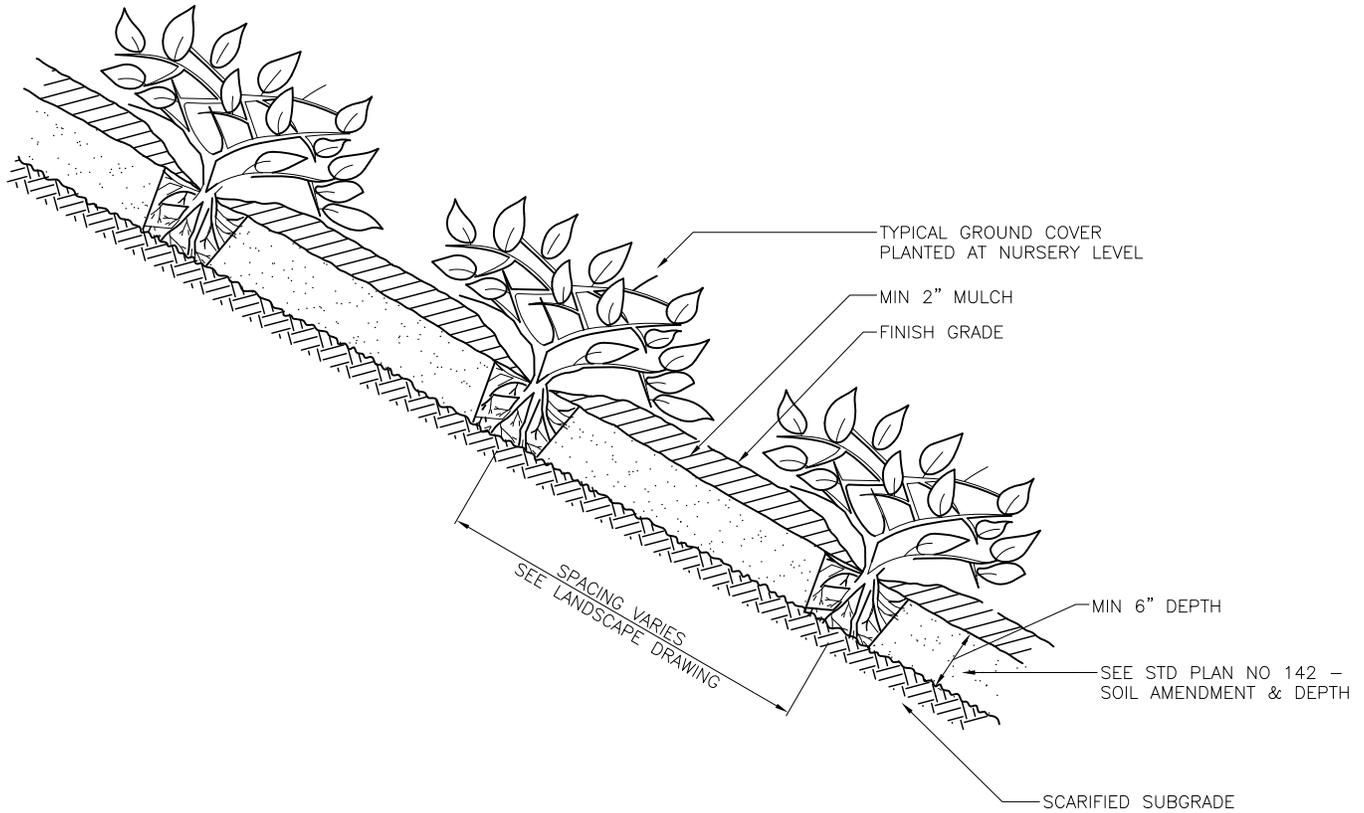
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SHRUB PLANTING



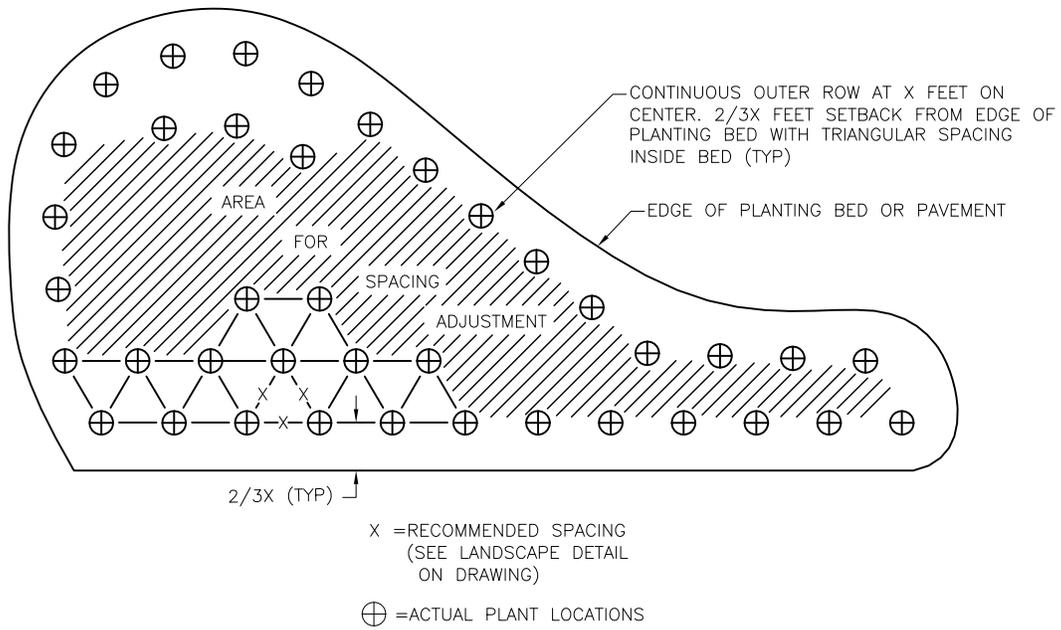
REF STD SPEC SEC 8-02



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GROUND COVER PLANTING



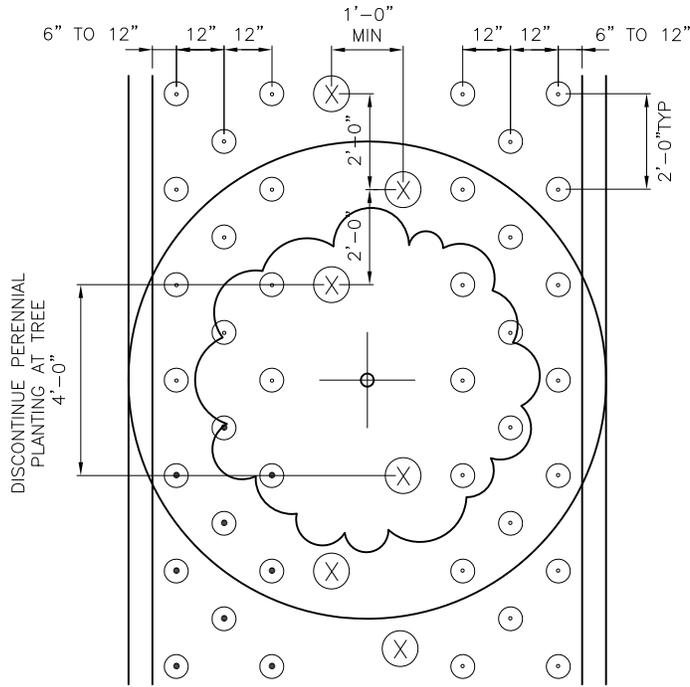
REF STD SPEC SEC 9-14



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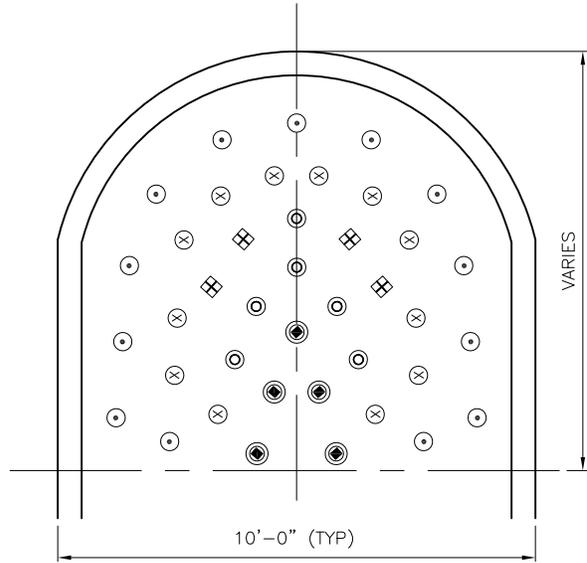
PLANTING PATTERN



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

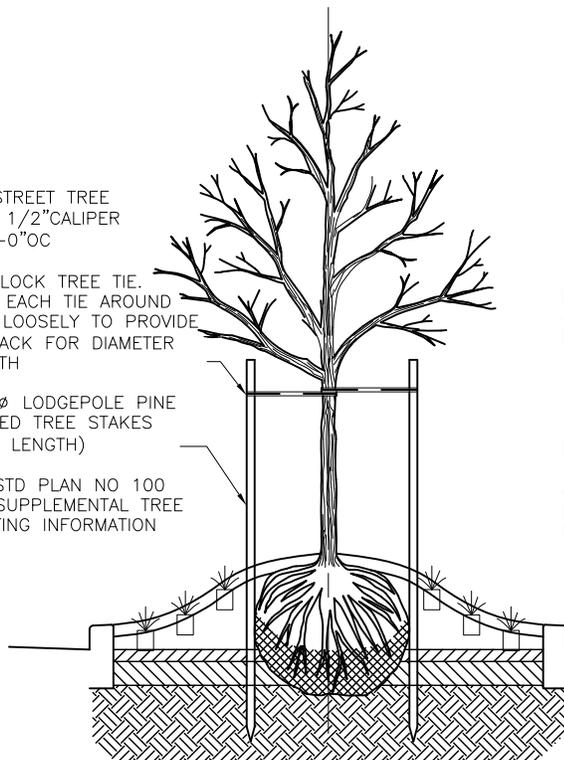
END CAP DETAIL

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

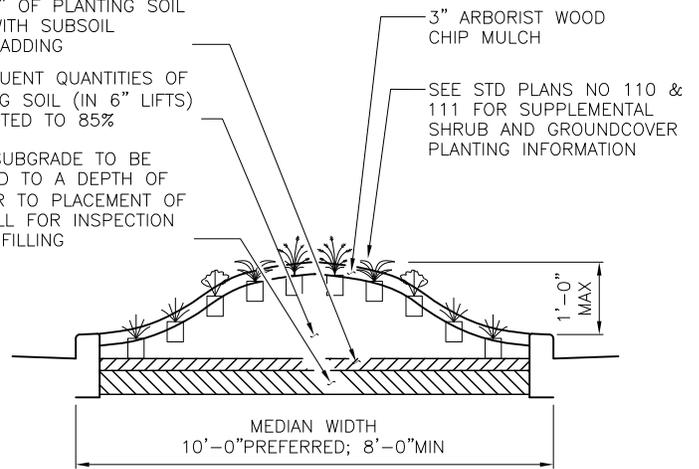


ELEVATION

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



SOIL PREPARATION DETAIL

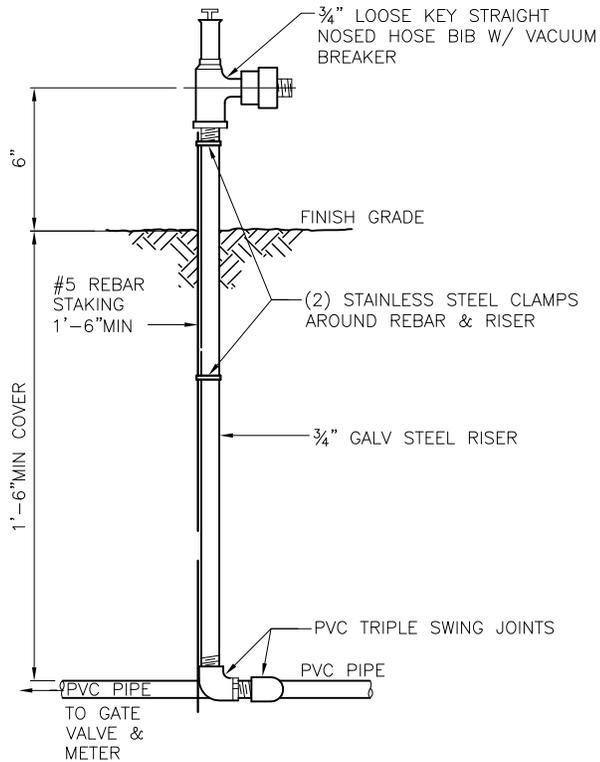
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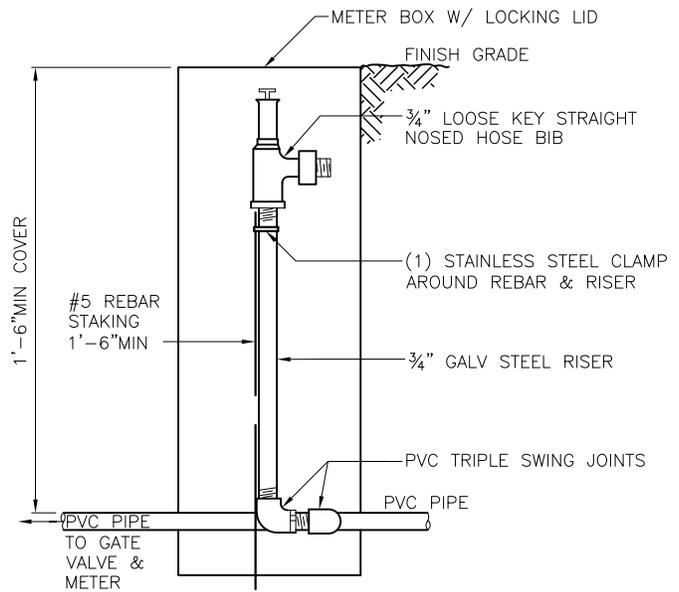
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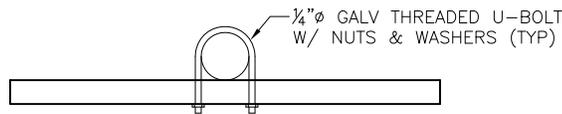
MEDIAN PLANTING



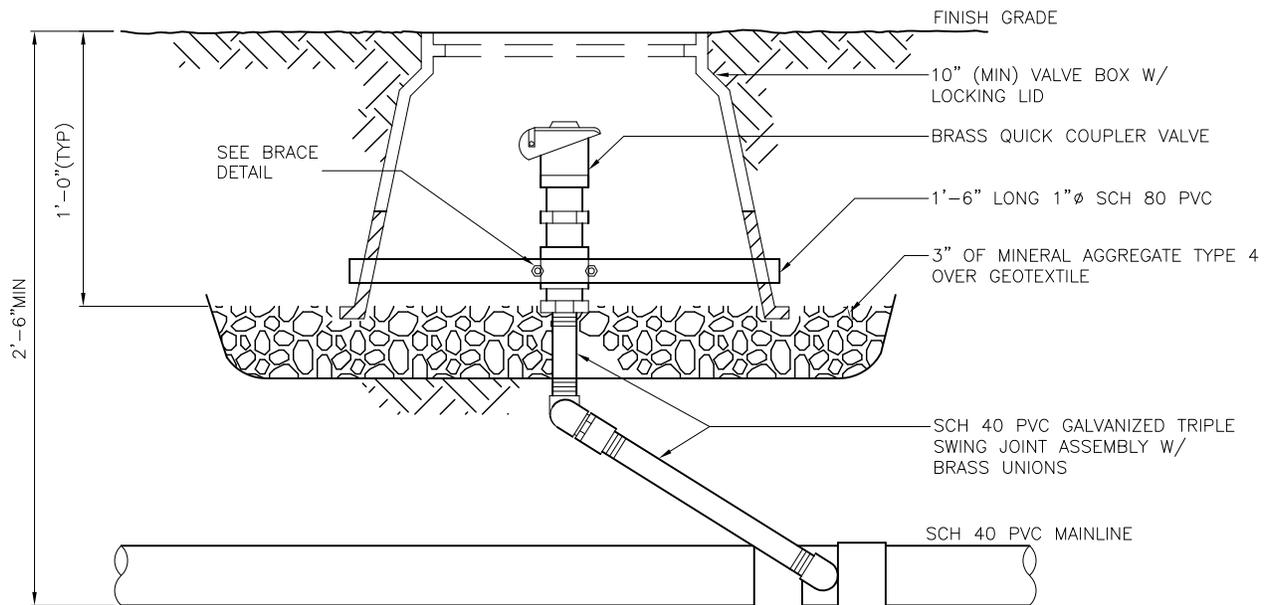
ABOVE GROUND HOSE BIB



BELOW GROUND HOSE BIB



BRACE DETAIL - PLAN VIEW



ELEVATION VIEW

QUICK COUPLER VALVE
TURF OR BED AREAS

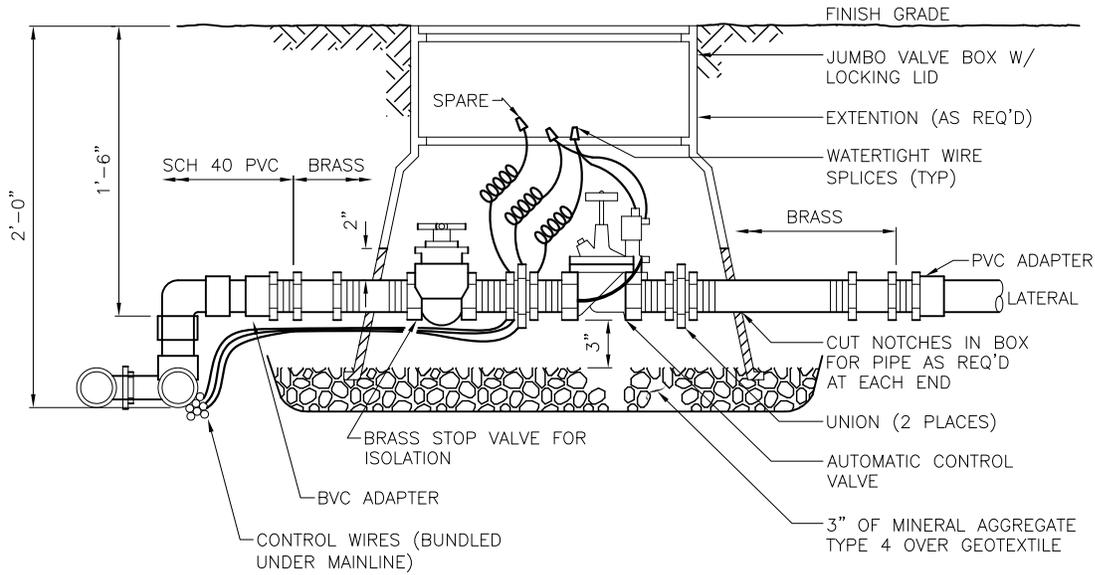
REF STD SPEC SEC 8-03



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NOT TO SCALE

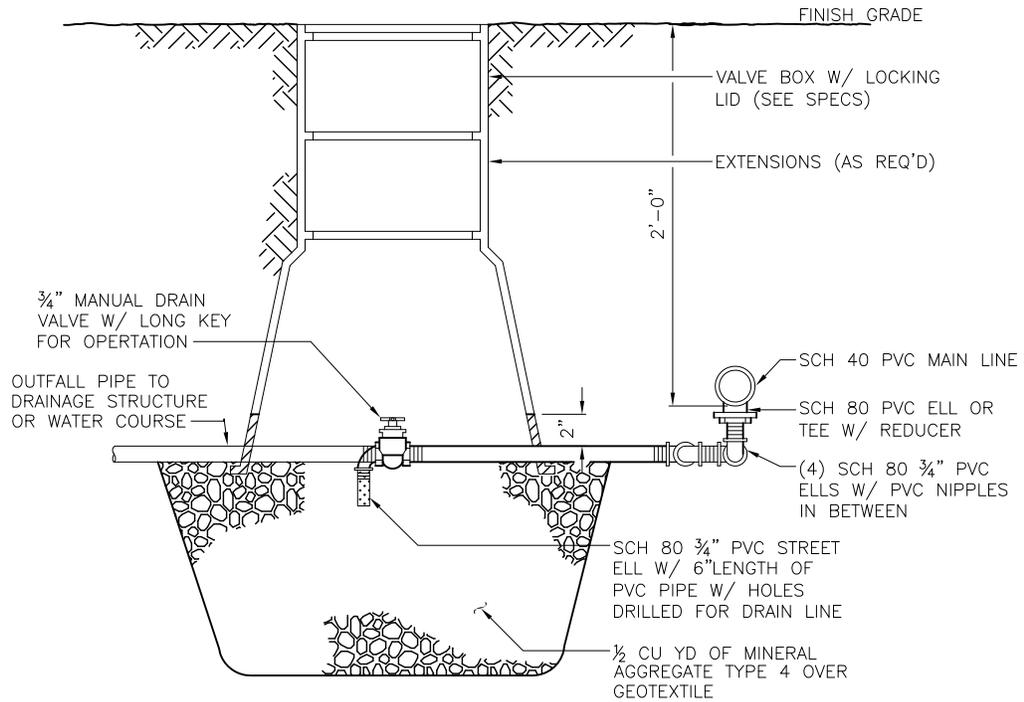
**HOSE BIB ASSEMBLY AND
QUICK COUPLER VALVE**



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

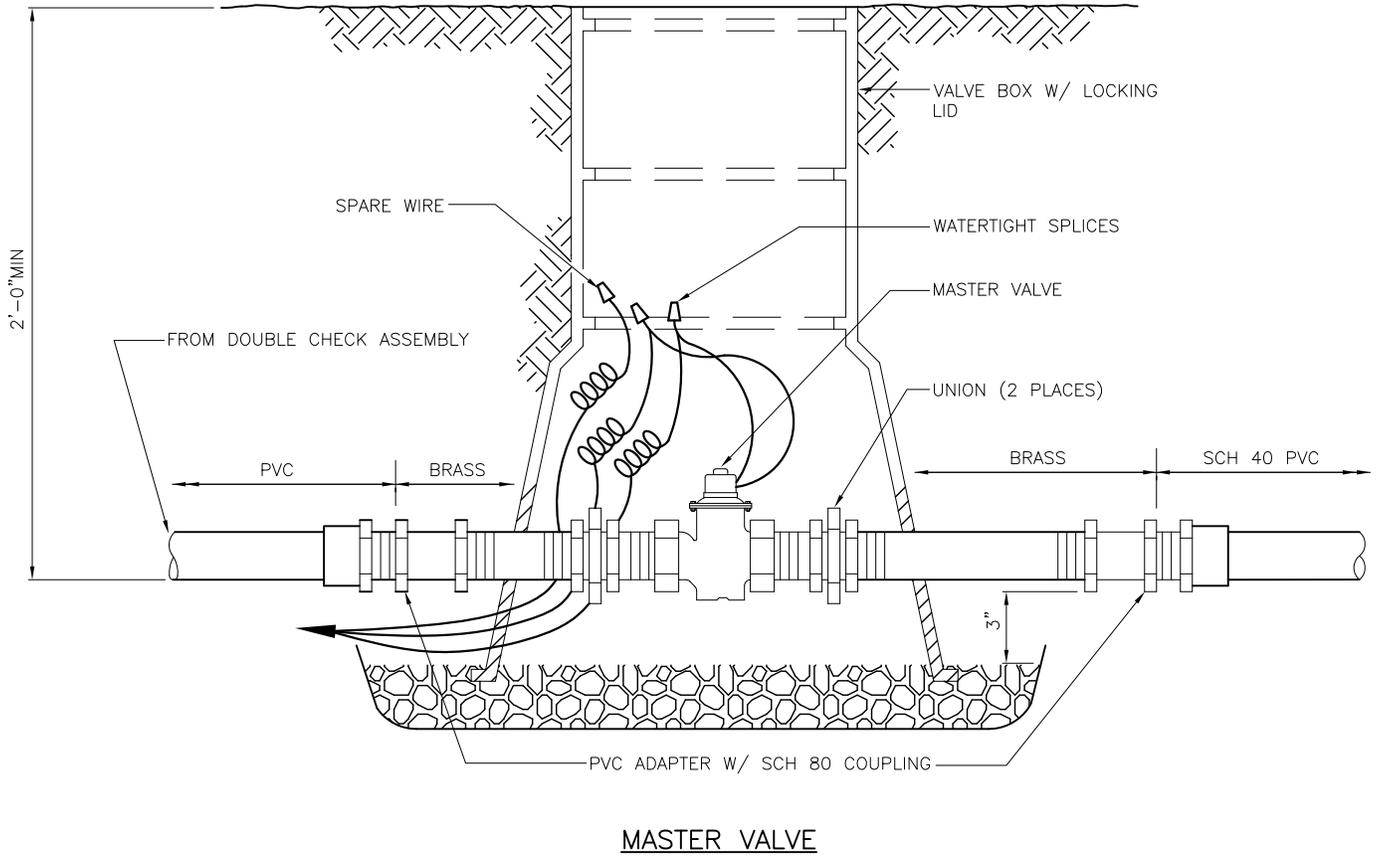
REF STD SPEC SEC 8-03



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NOT TO SCALE

IRRIGATION VALVES



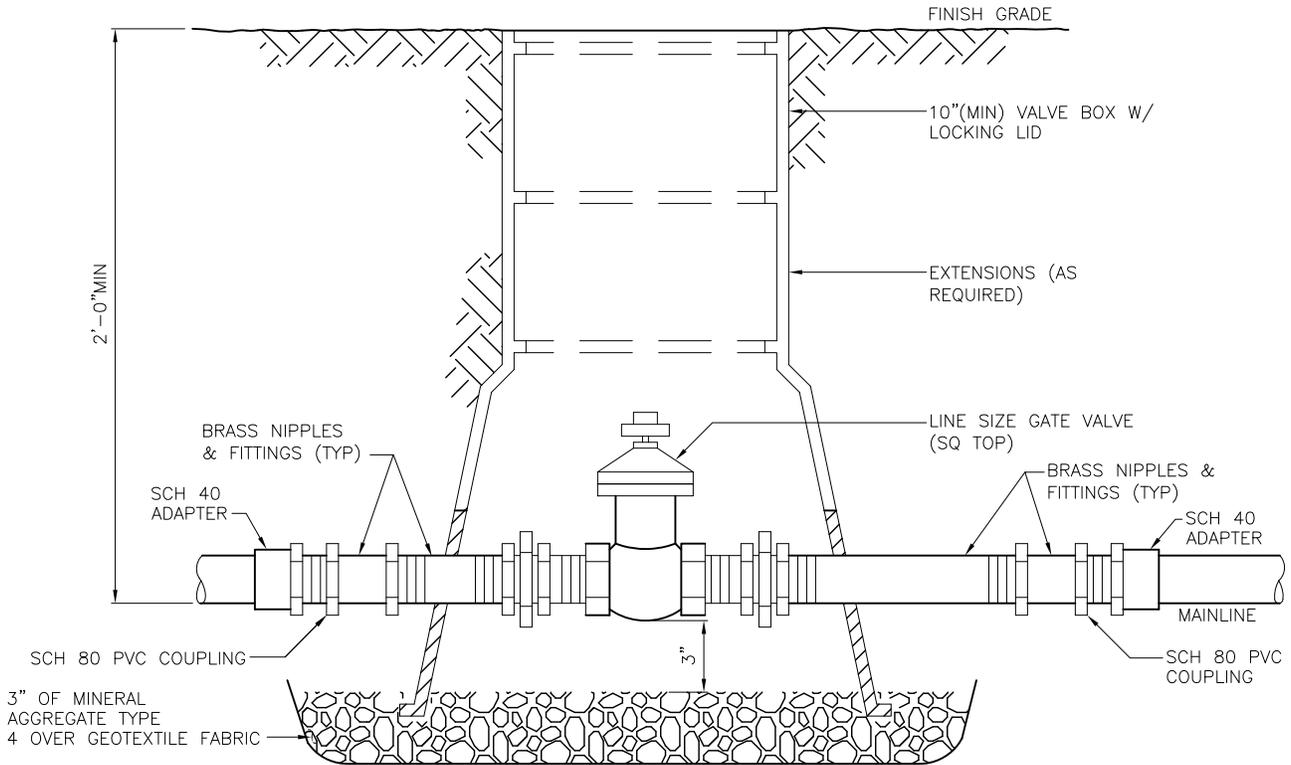
REF STD SPEC SEC 8-03



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NOT TO SCALE

IRRIGATION VALVES



GATE VALVE - 2 1/2" & LARGER

NOTES:
USE TEFLON TAPE ON ALL THREADED FITTINGS

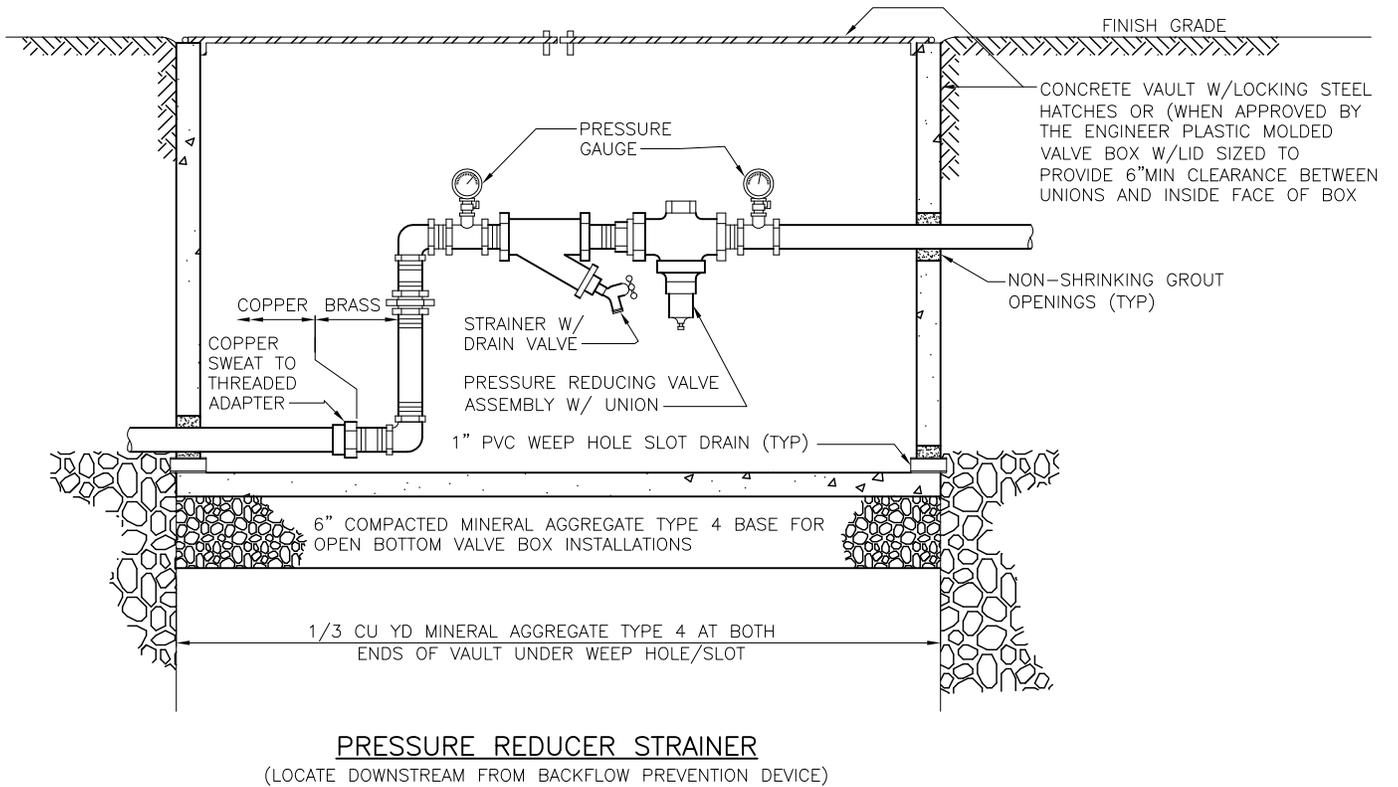
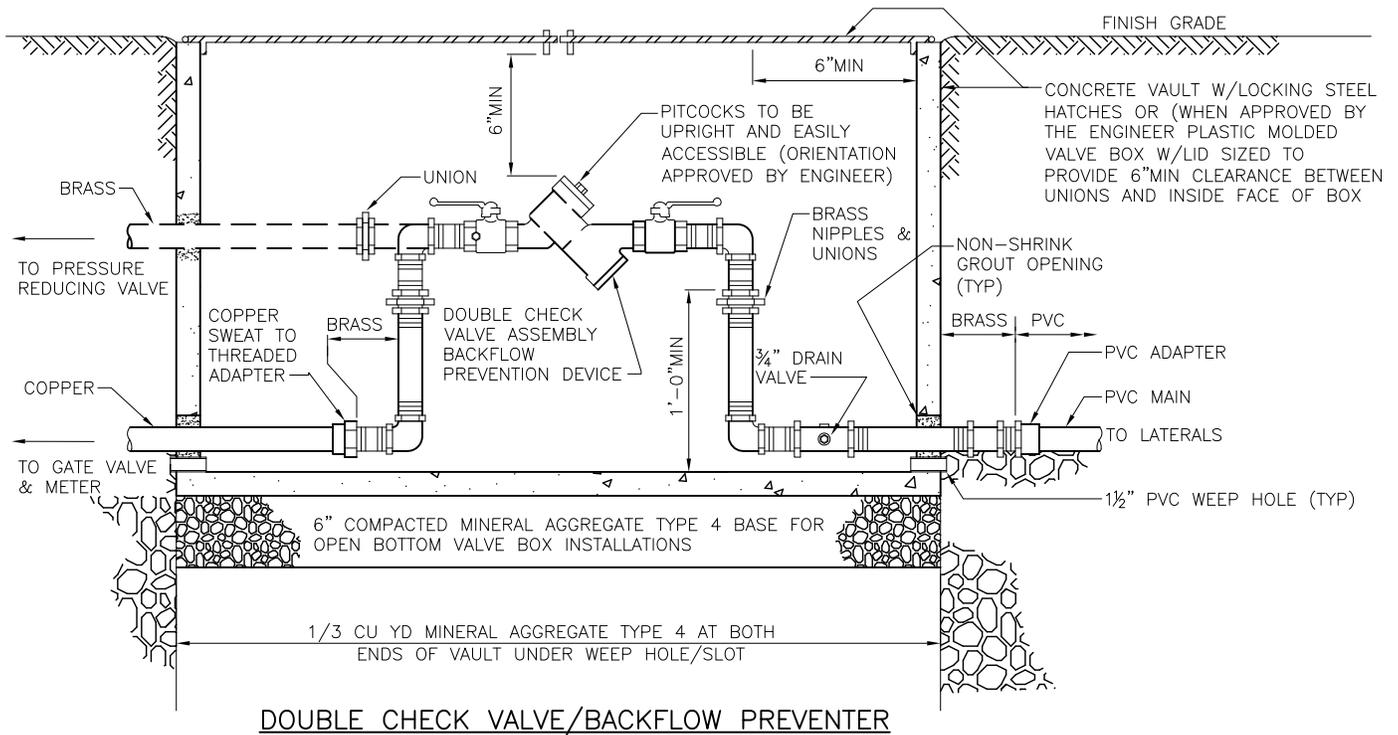
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City of Seattle

NOT TO SCALE

IRRIGATION VALVES



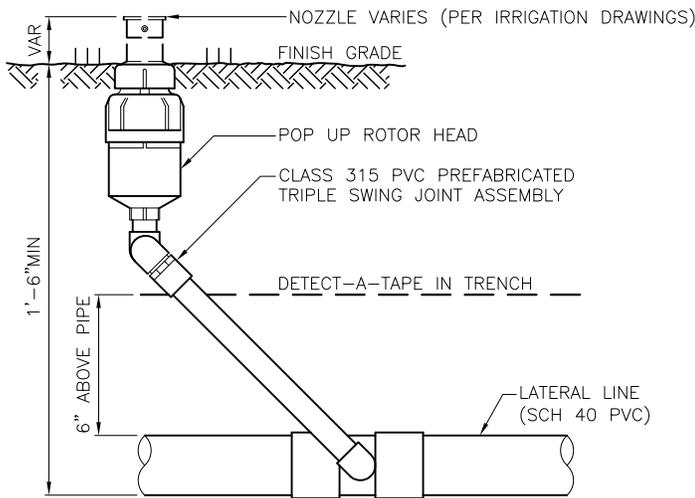
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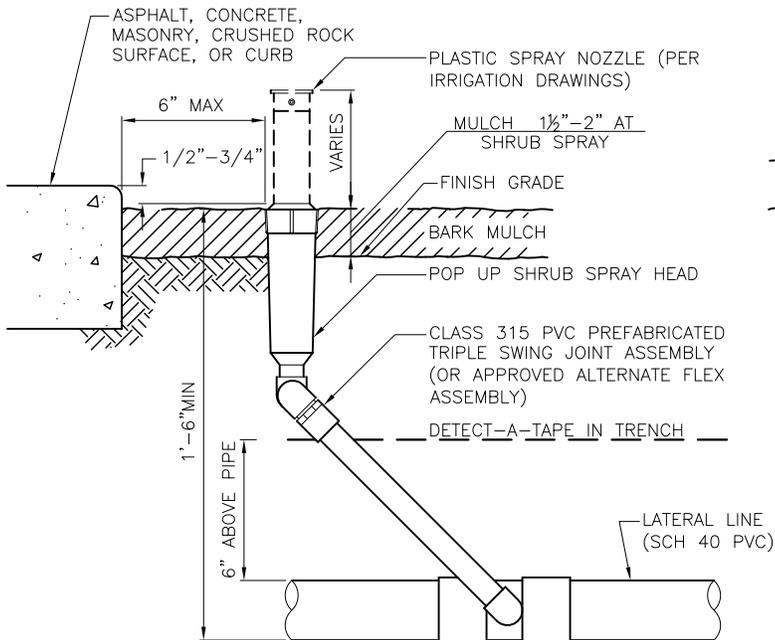
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IRRIGATION VALVES

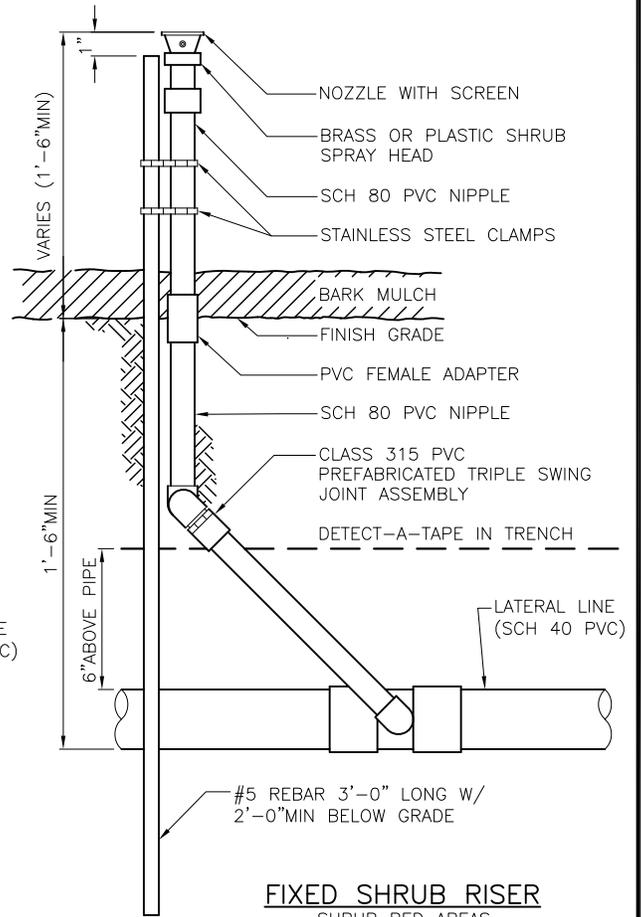


POP UP ROTOR HEAD
TURF AREAS

NOTE:
USE TEFLON TAPE ON ALL THREADED FITTINGS



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



FIXED SHRUB RISER
SHRUB BED AREAS

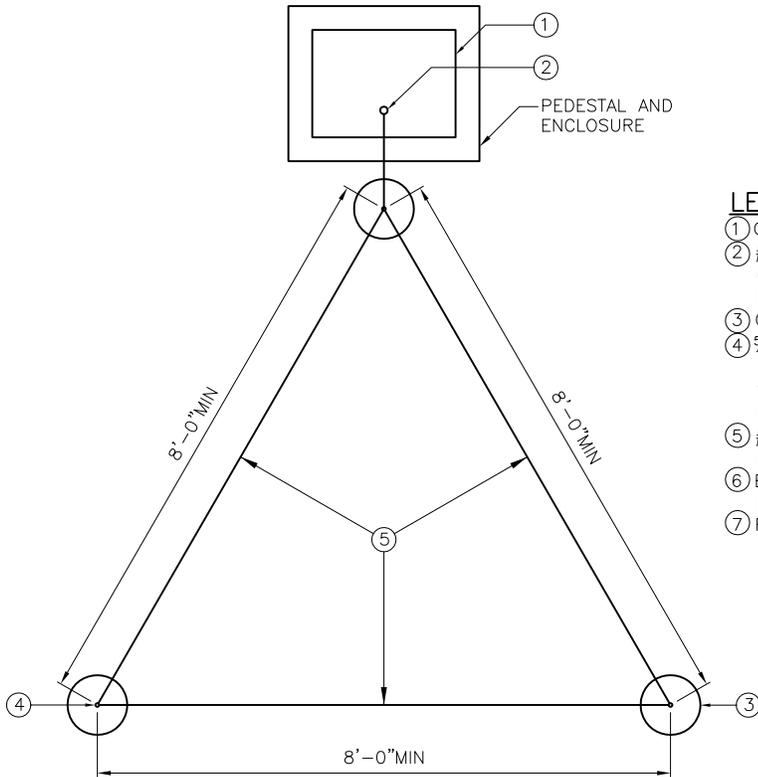
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NOT TO SCALE

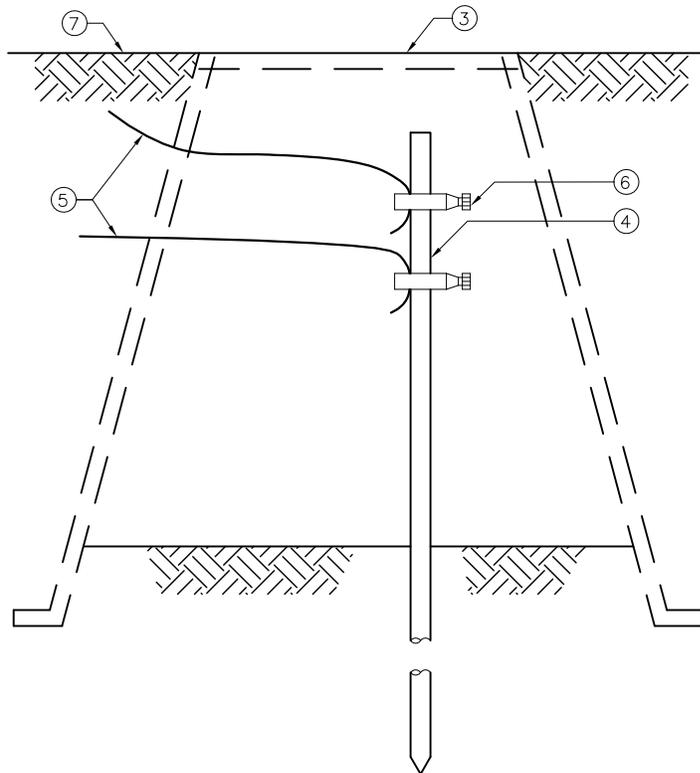
POP UP & FIXED
IRRIGATION HEADS



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

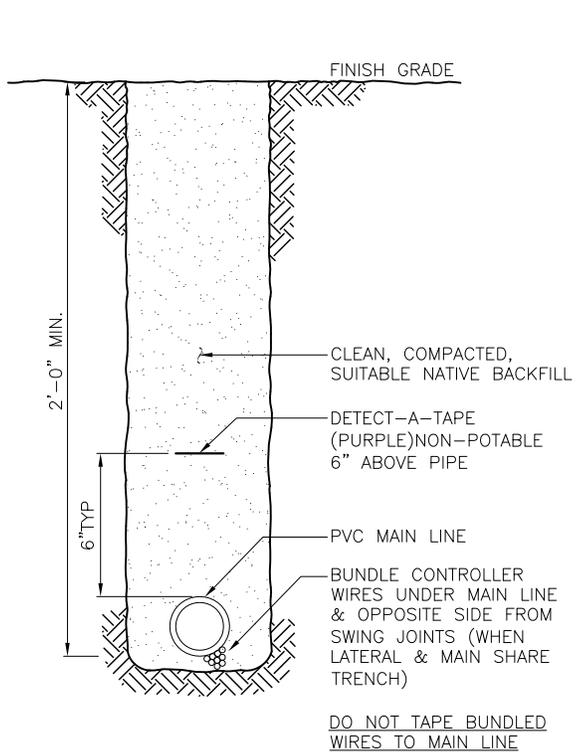
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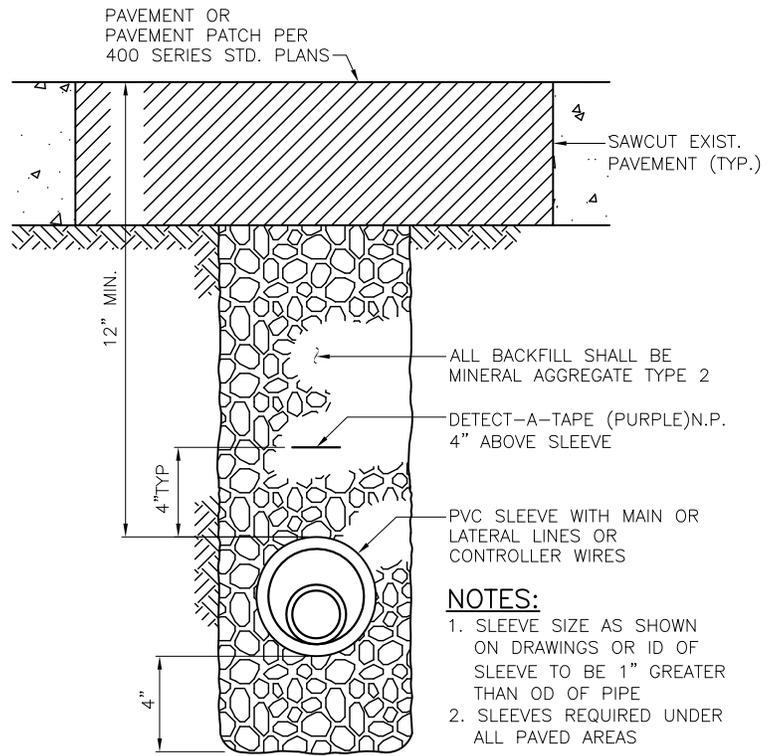
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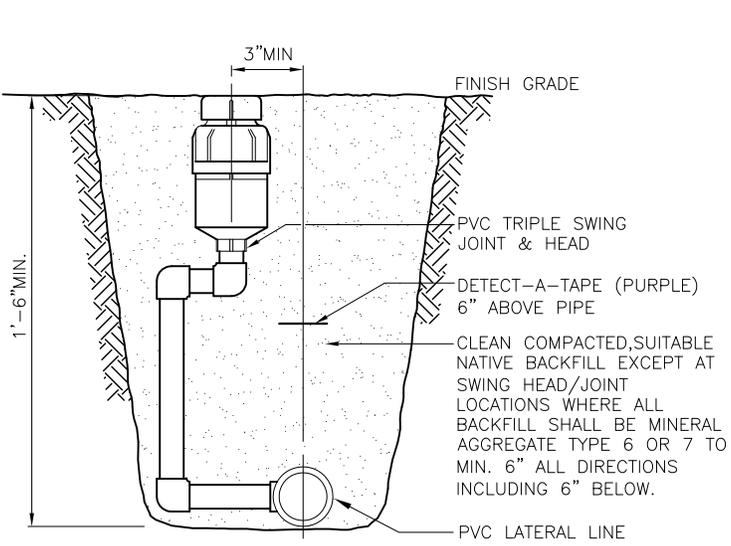
**IRRIGATION CONTROLLER
PEDESTAL AND ENCLOSURE
GROUNDING**



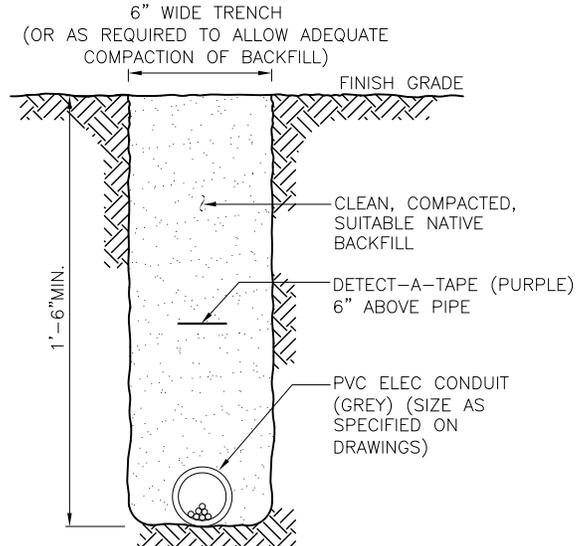
MAIN LINE



SLEEVE TRENCHING



LATERAL LINE



POWER SUPPLY TRENCH

REF STD SPEC SEC 8-03



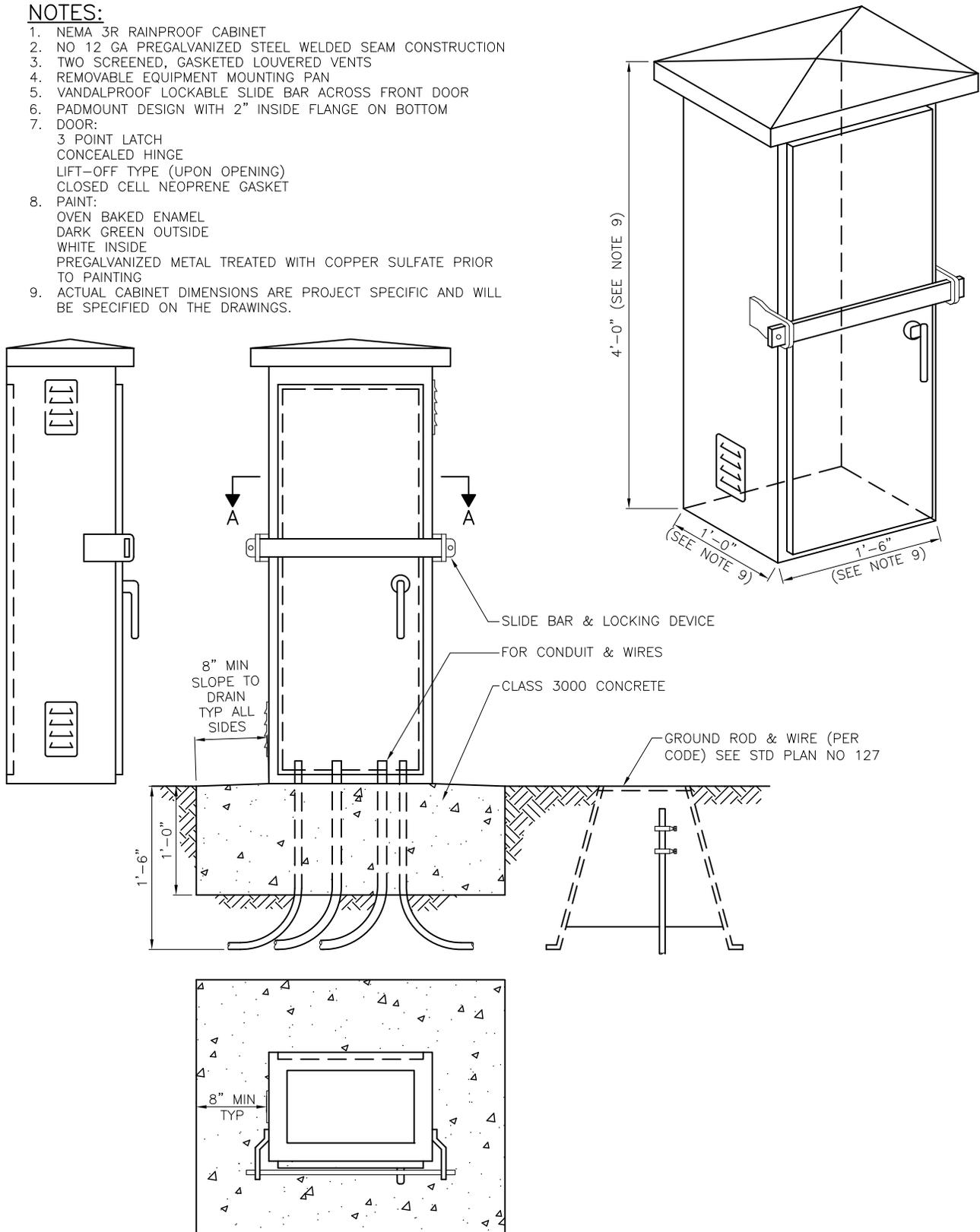
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NOT TO SCALE

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.



SECTION A-A

REF STD SPEC SEC 8-03



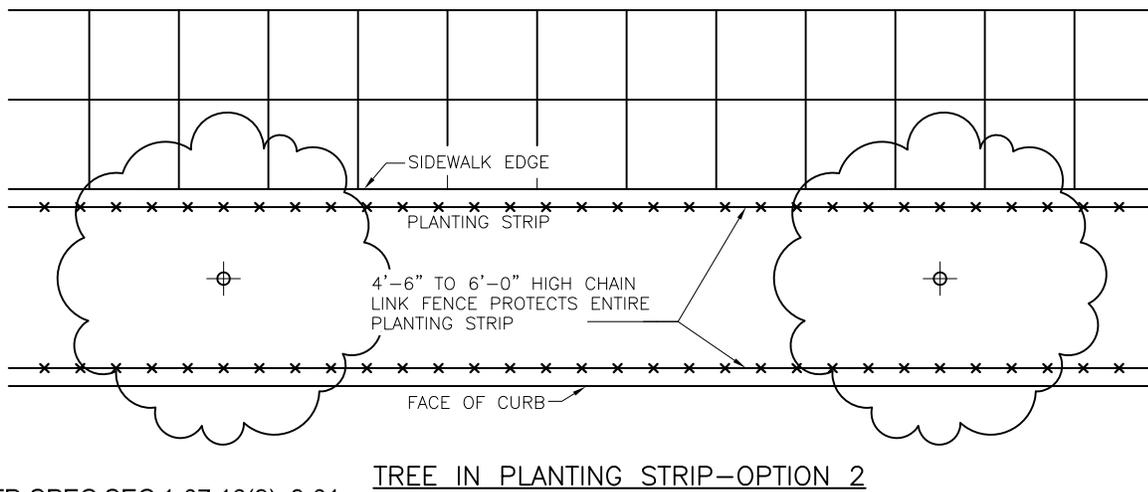
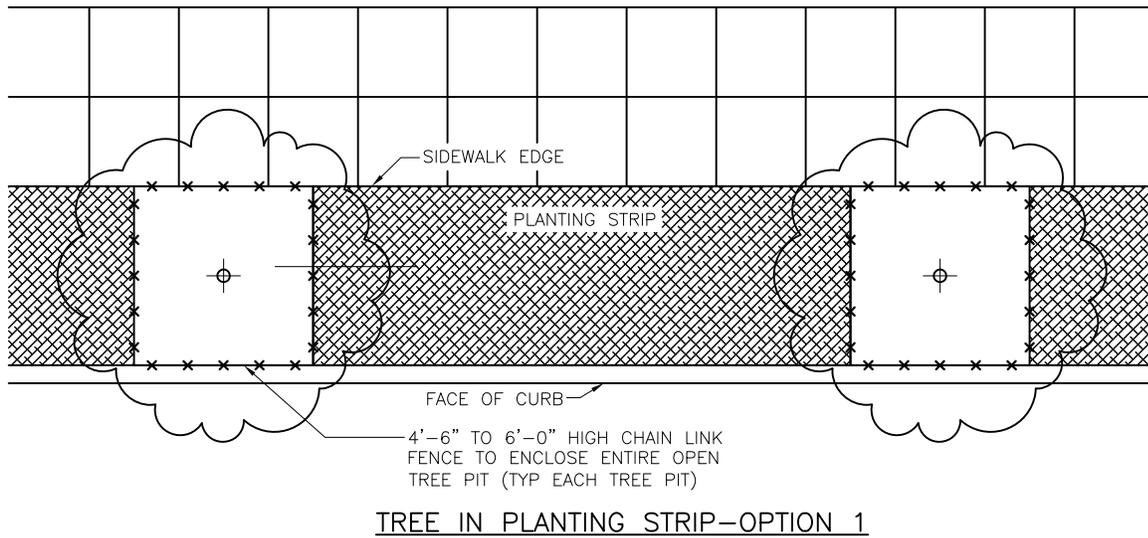
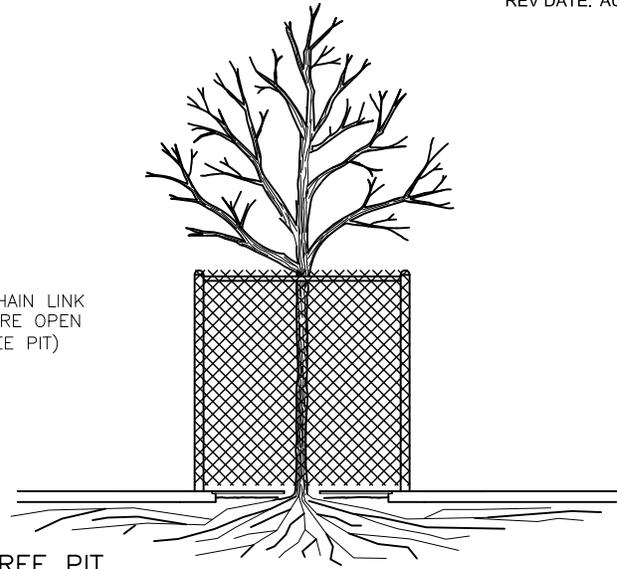
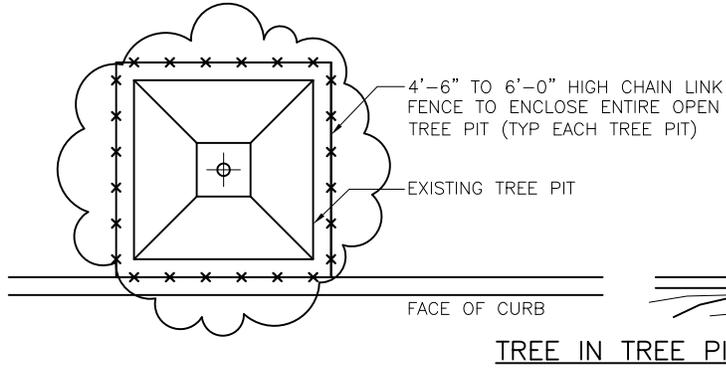
City of Seattle

NOT TO SCALE

IRRIGATION
CONTROLLER CABINET

NOTE:

CONSIDER TRAFFIC TURNING VISIBILITY AND PEDESTRIAN VISIBILITY WHEN SELECTING FENCE HEIGHT; TYPICALLY SHORTER FENCING AROUND TREE PITS BETWEEN SIDEWALK AND ROADWAY IS DESIRED.



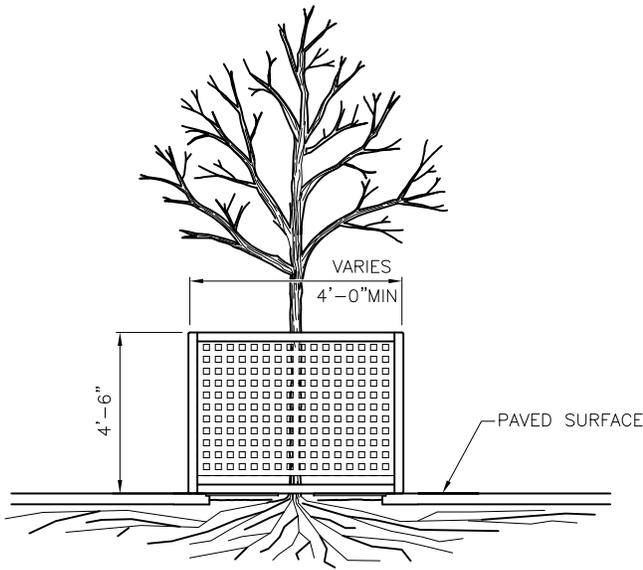
REF STD SPEC SEC 1-07.16(2), 8-01



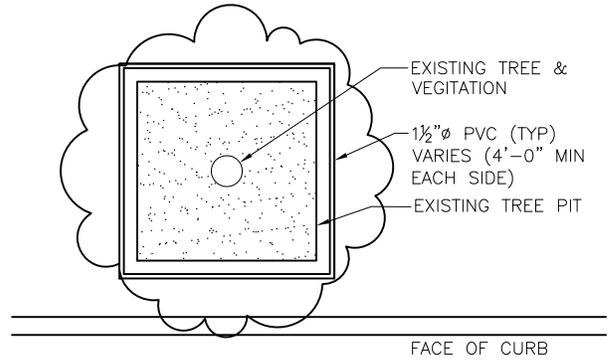
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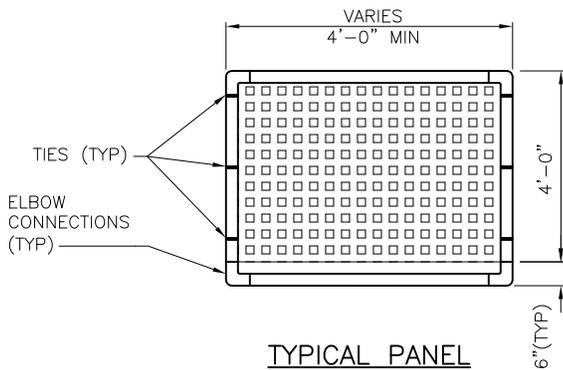
**TREE PROTECTION
DURING CONSTRUCTION**



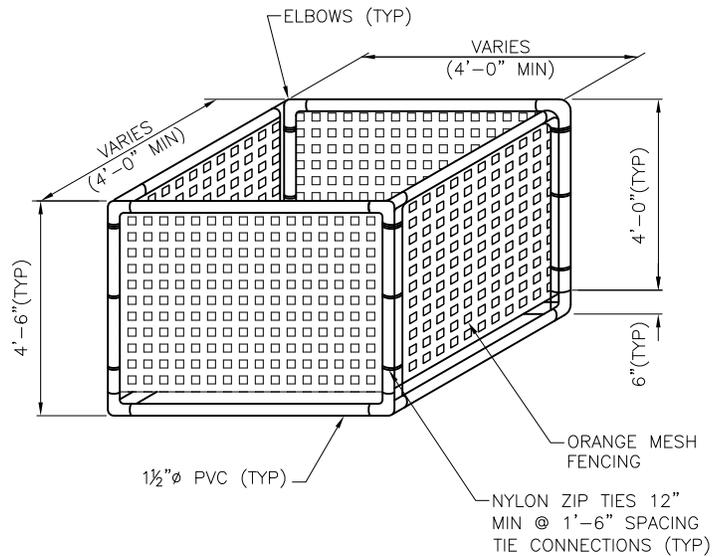
TYPICAL TREE GUARD RAIL



PLAN VIEW



TYPICAL PANEL



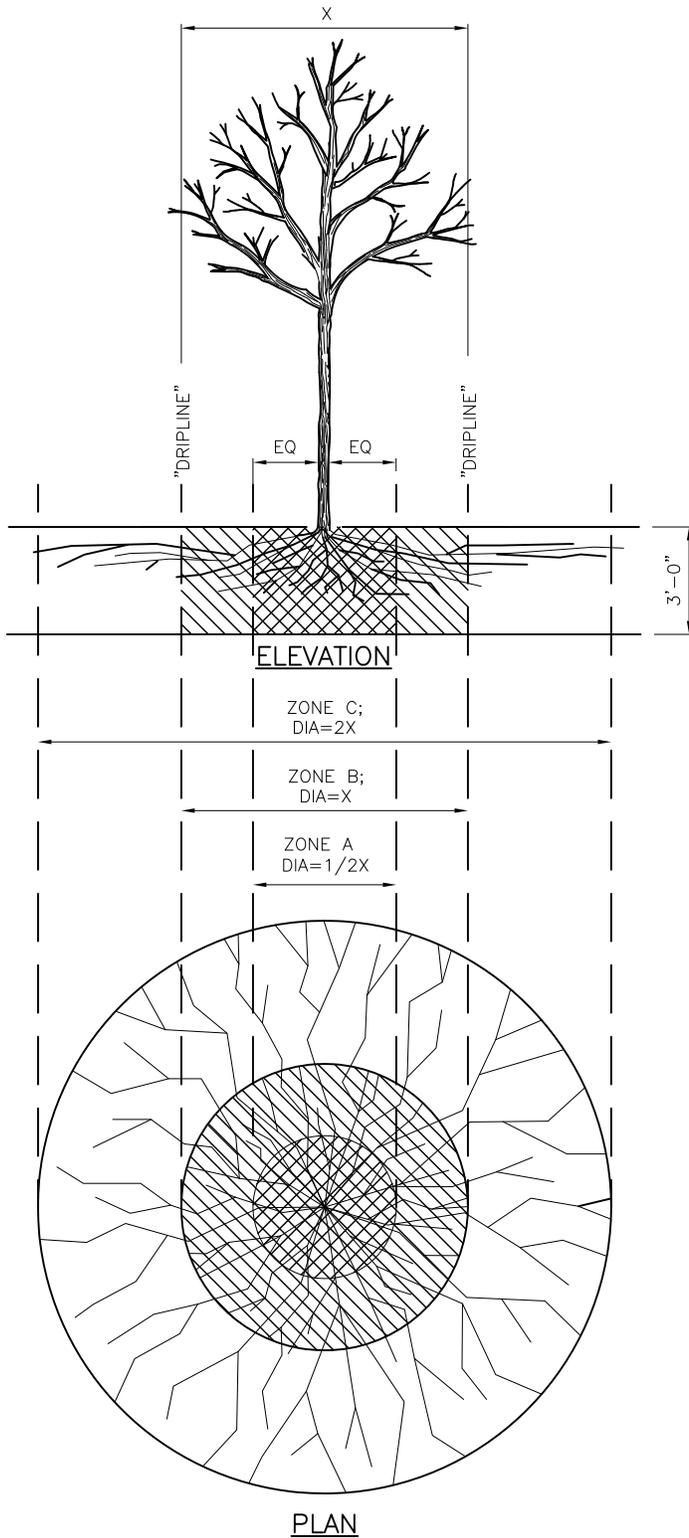
REF STD SPEC SEC 1-07.16(2) & 8-01



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REUSABLE TEMPORARY TREE & LANDSCAPE PROTECTION FENCE



TRENCHING/EXCAVATION

ZONE A (CRITICAL ROOT ZONE)

1. NO DISTURBANCE ALLOWED WITHOUT SITE-SPECIFIC INSPECTION AND APPROVAL OF METHODS TO MINIMIZE ROOT DAMAGE
2. SEVERANCE OF ROOTS LARGER THAN 2" DIA REQUIRES ENGINEER'S APPROVAL
3. TUNNELING REQUIRED TO INSTALL LINES 3'-0" BELOW GRADE OR DEEPER

ZONE B (DRIPLINE)

1. ZONE B FOR ASYMMETRICAL COLUMNAR AND NARROW CONICAL TREE FORMS. ZONE B = 1' RADIUS FOR EVERY 1" OF TRUNK DIAMETER.
2. TUNNELING MAY BE REQUIRED FOR TRENCHES DEEPER THAN 3'-0".

NOTE:

A TREE, VEGETATION, AND SOIL PROTECTION PLAN (TVSPP) IS REQUIRED FOR ALL PROJECTS. APPROVAL OF PLAN REQUIRED PRIOR TO MOBILIZATION. SEE SECTION 8-01.

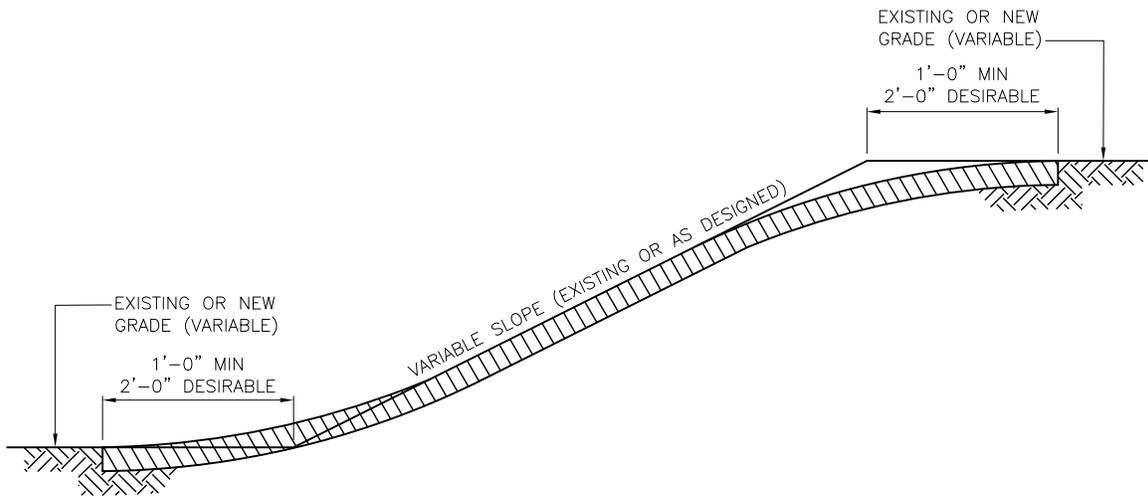
REF STD SPEC SEC 1-07.16(2) & 8-01



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



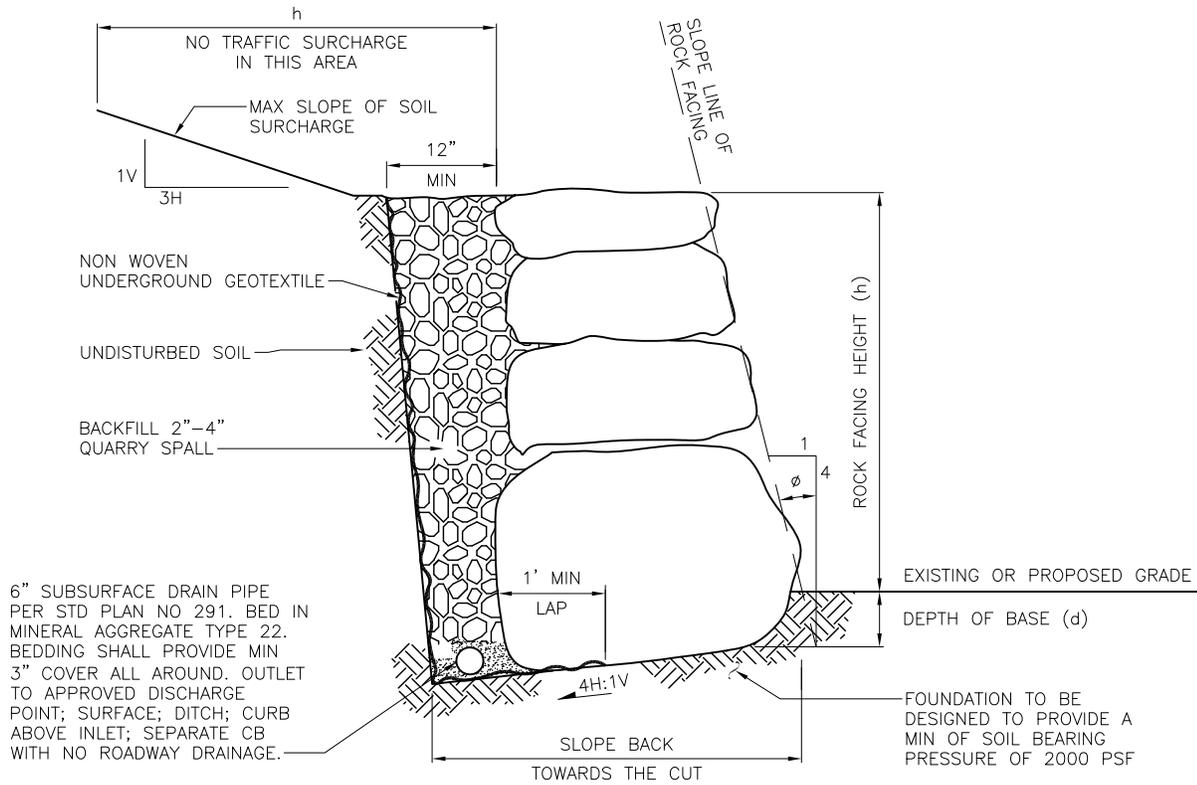
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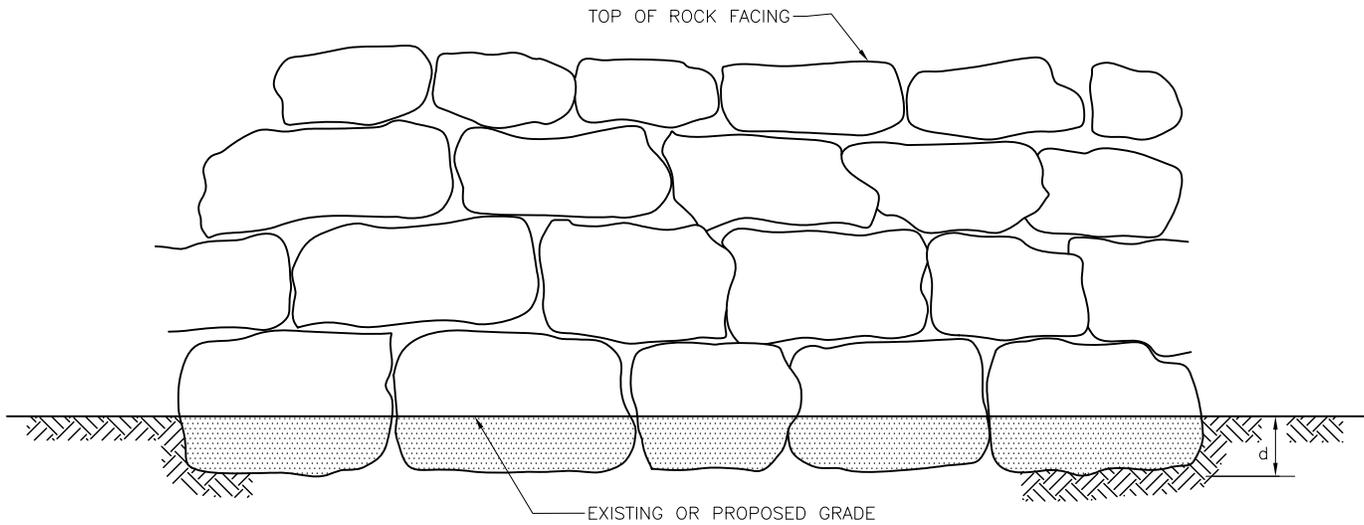
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NOT TO SCALE

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

∅ = 14' ±1'

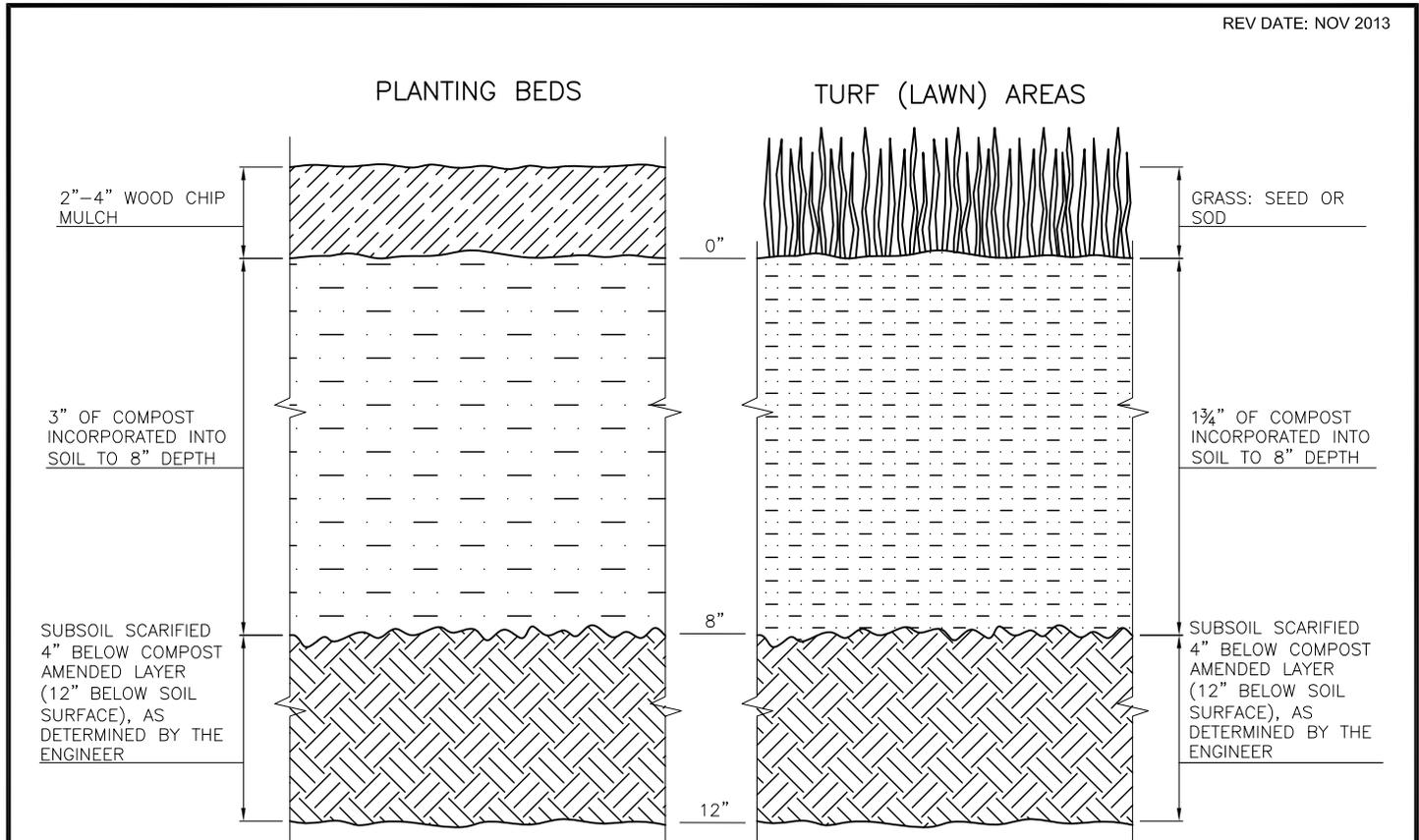
REF STD SPEC SEC 2-13



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NOT TO SCALE

ROCK FACING



NOTES:

1. ALL SOIL AREAS DISTURBED OR COMPACTED DURING CONSTRUCTION, AND NOT COVERED BY BUILDINGS OR PAVEMENT, SHALL 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 SHALL BE TILLED IN TO 8 INCH DEPTH INTO EXISTING SOIL, OR PLACE 8 INCHES OF COMPOST-AMENDED SOIL, PER SOIL SPECIFICATION.
4. TURF AREAS SHALL 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 SHALL 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 2-4 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.

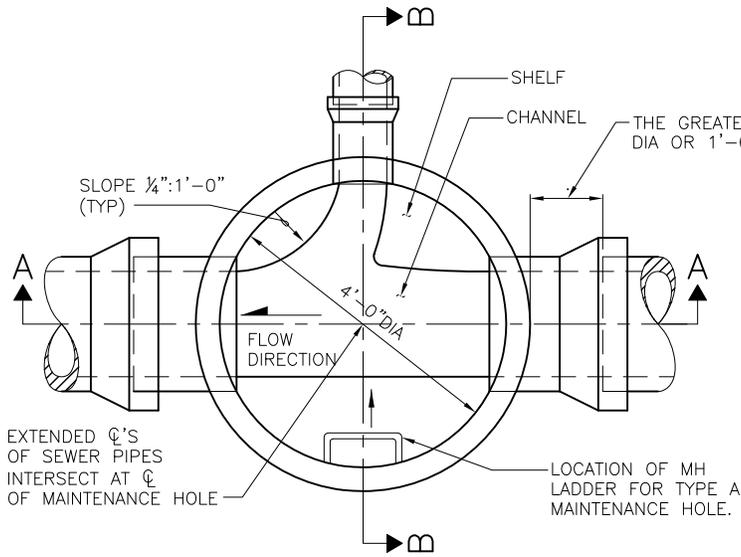
REF STD SPEC SEC 8-01, 8-02 & 9-14



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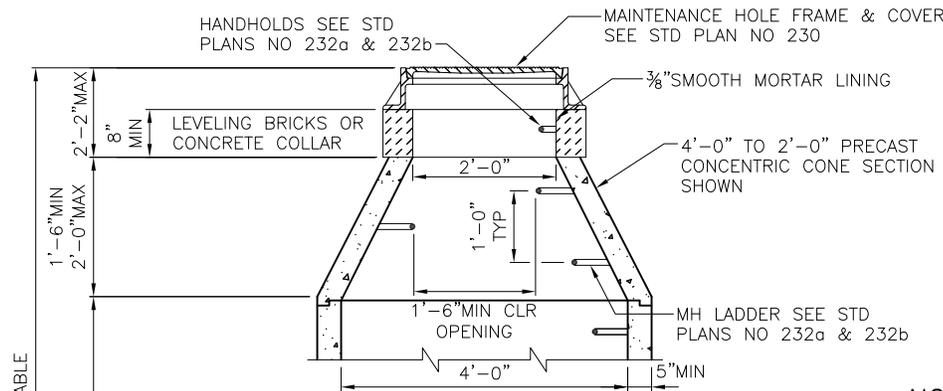
NOT TO SCALE

SOIL AMENDMENT AND DEPTH

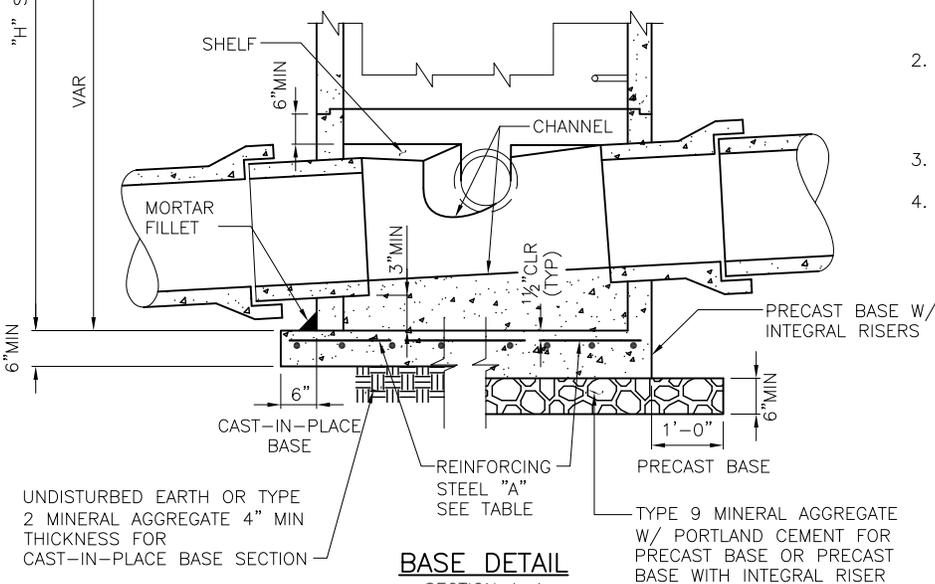


PLAN VIEW
(TOP REMOVED)

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



SECTION B-B



BASE DETAIL
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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 5 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

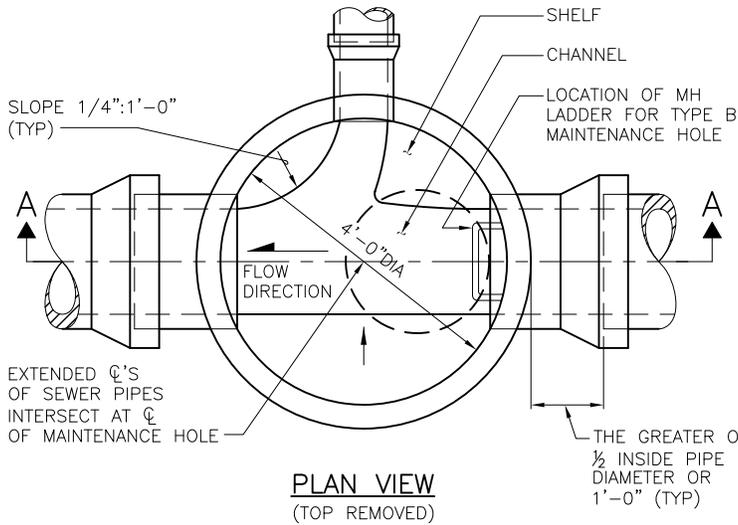
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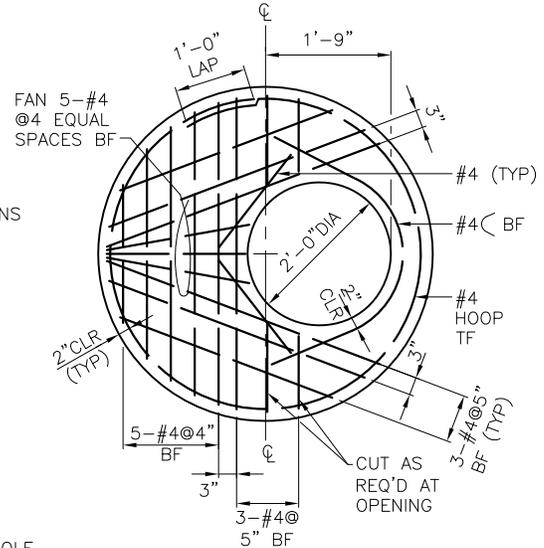
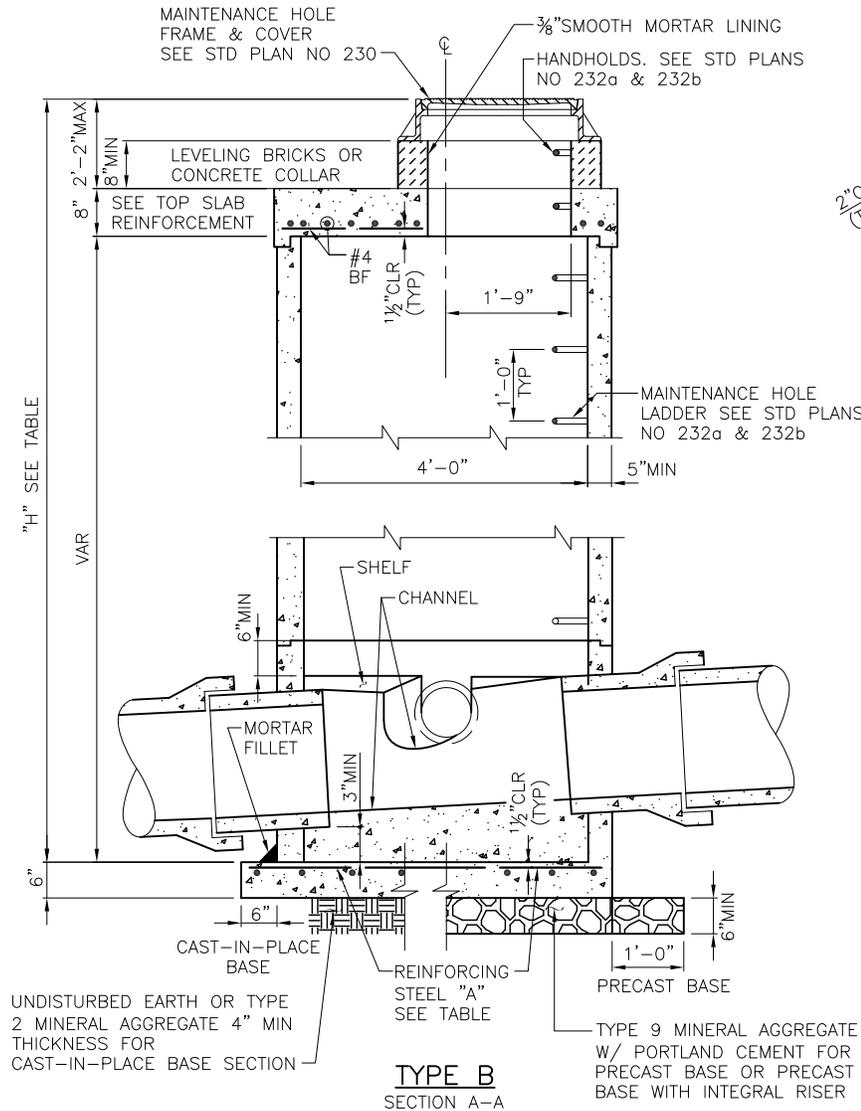
City of Seattle

NOT TO SCALE

TYPE 204a MAINTENANCE HOLE



"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



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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 5 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

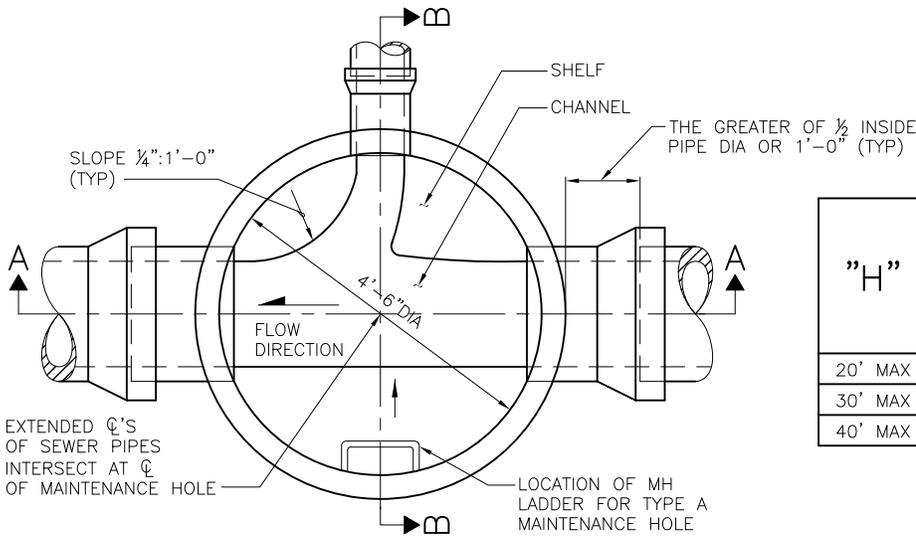
REF STD SPEC SEC 7-05



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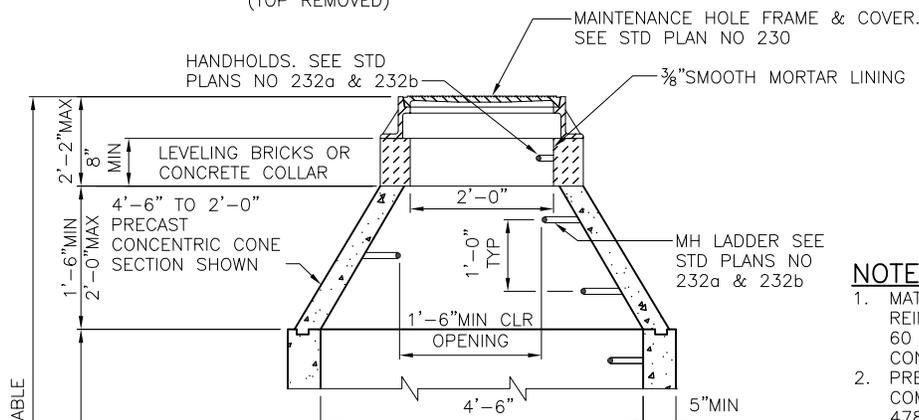
NOT TO SCALE

TYPE 204b MAINTENANCE HOLE



PLAN VIEW
(TOP REMOVED)

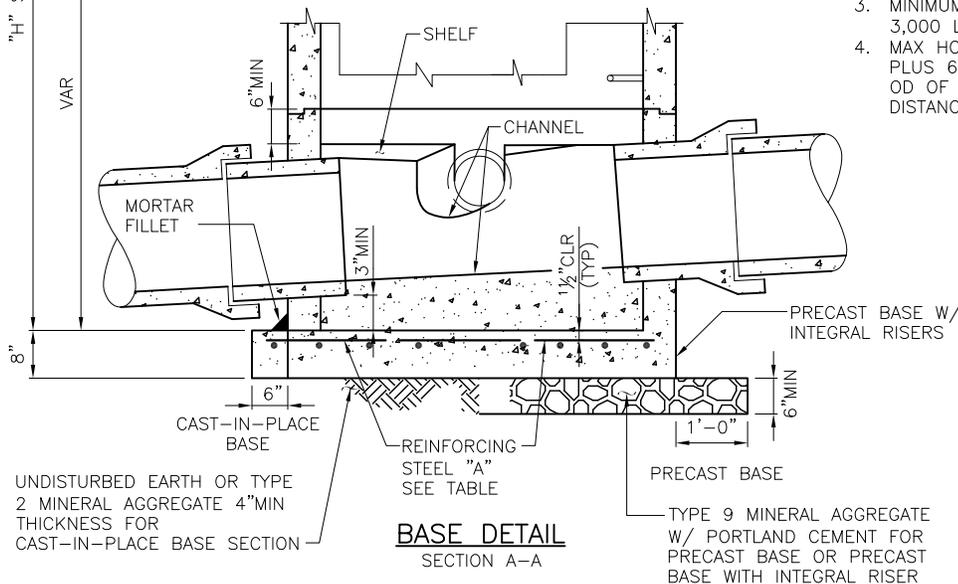
"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.29	0.21
30' MAX	0.36	0.26
40' MAX	0.42	0.31



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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.



BASE DETAIL
SECTION A-A

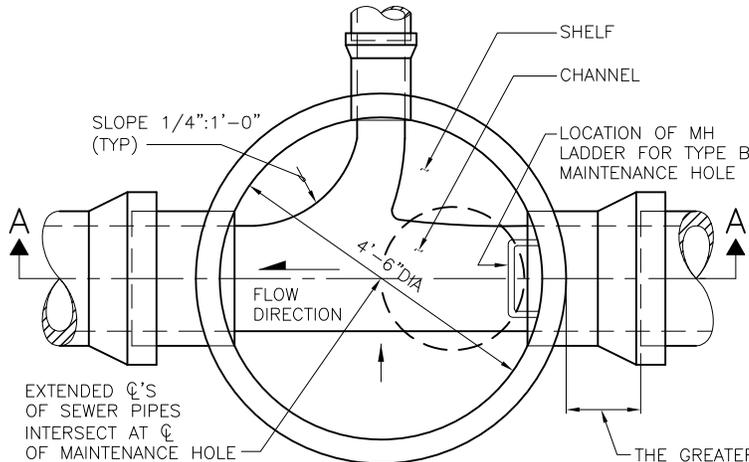
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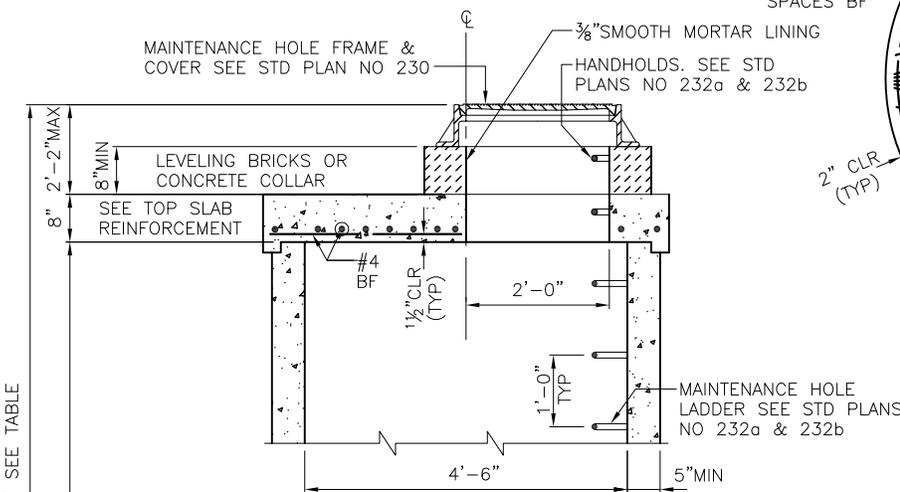
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TYPE 204.5a MAINTENANCE HOLE

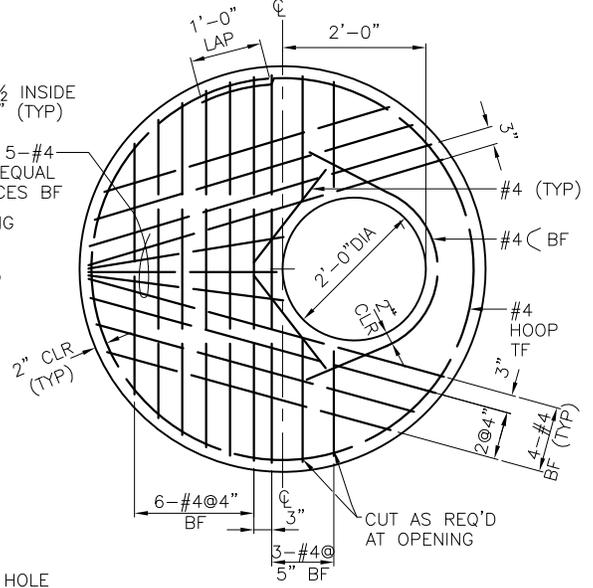


PLAN VIEW
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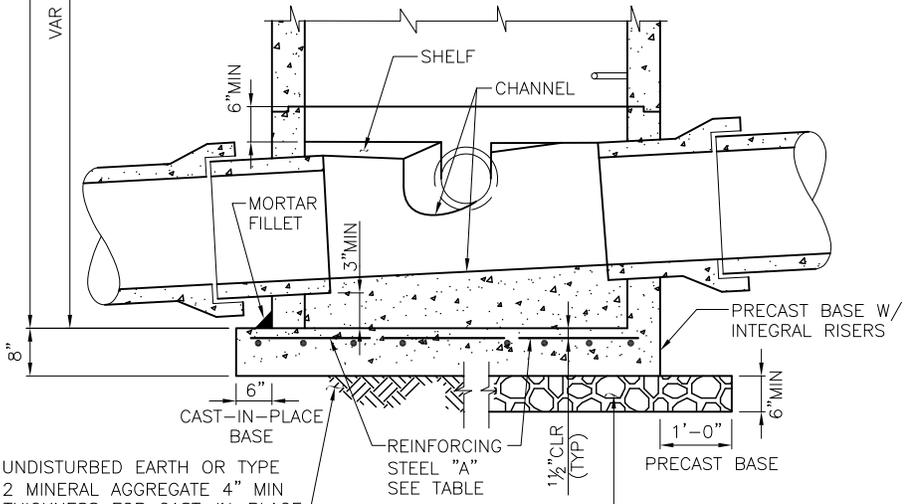
"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.29	0.21
30' MAX	0.36	0.26
40' MAX	0.42	0.31



"H" SEE TABLE
VAR



TOP SLAB REINFORCEMENT



BASE DETAIL
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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

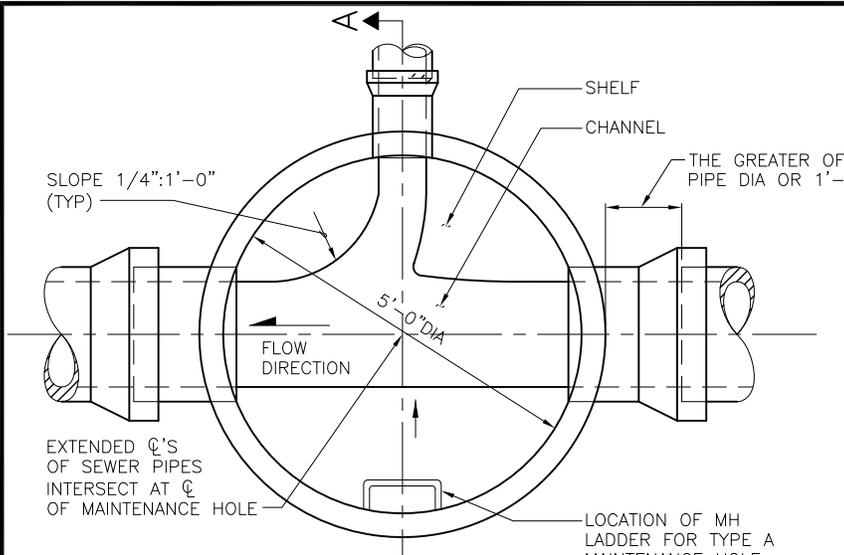
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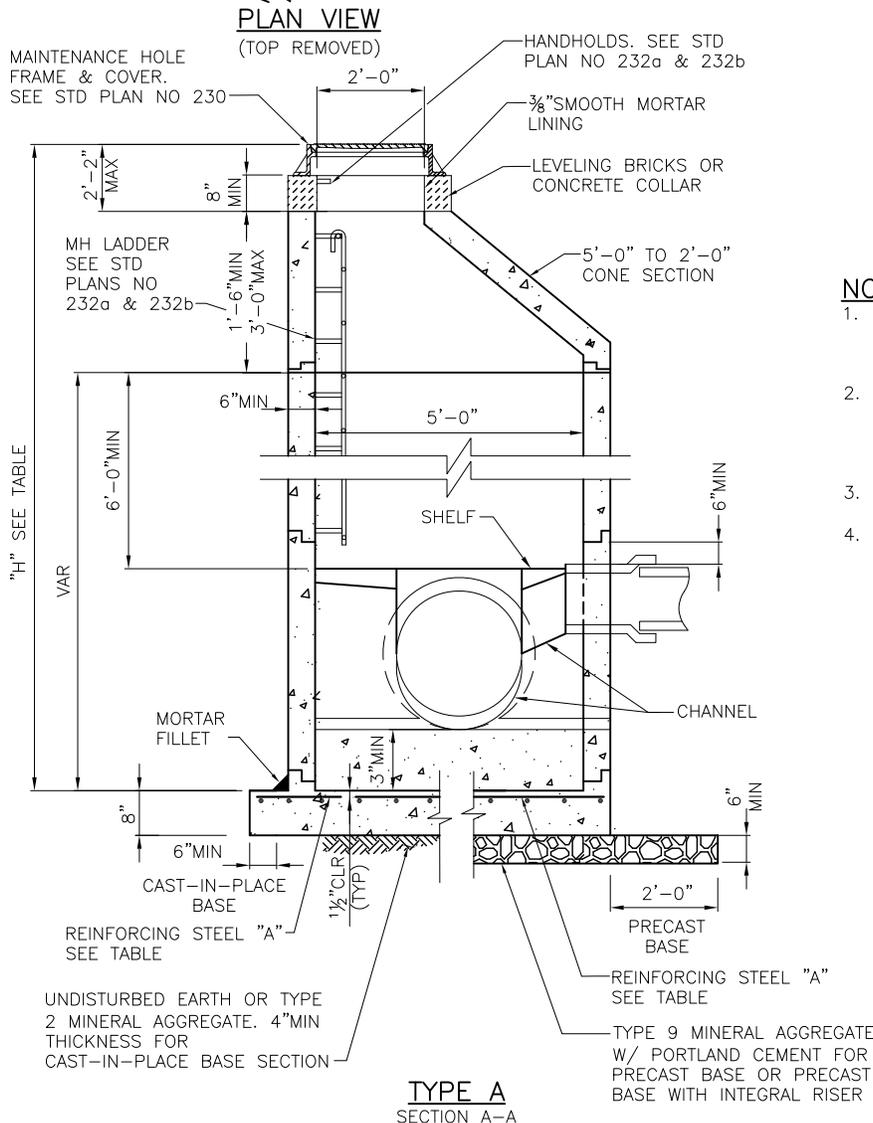
City of Seattle

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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

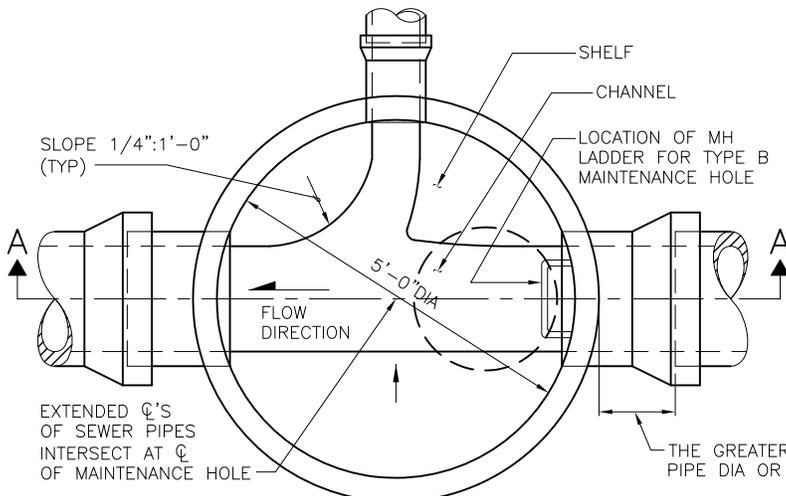
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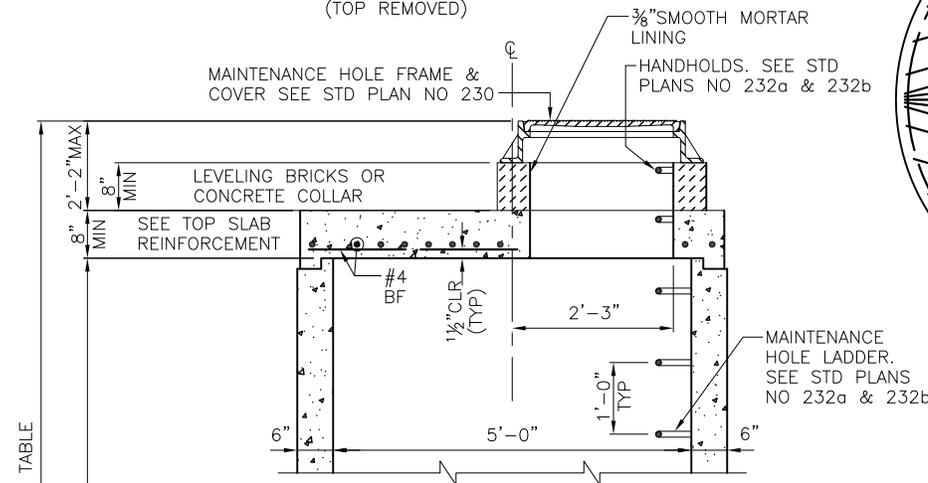
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TYPE 205a MAINTENANCE HOLE

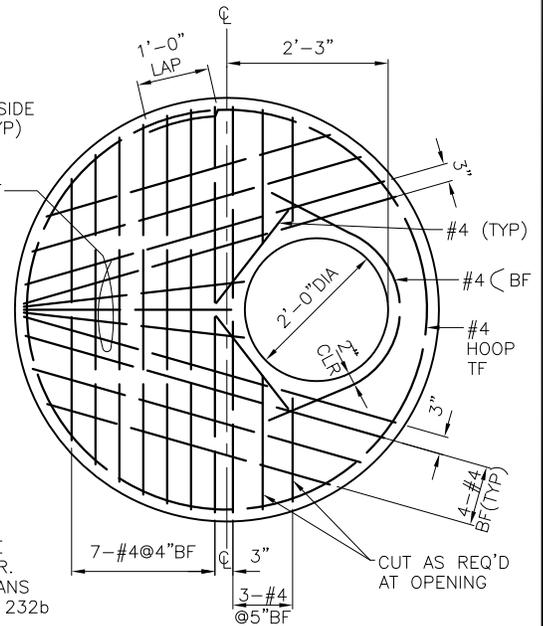


PLAN VIEW
(TOP REMOVED)

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



BASE DETAIL
SECTION A-A



TOP SLAB REINFORCEMENT

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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

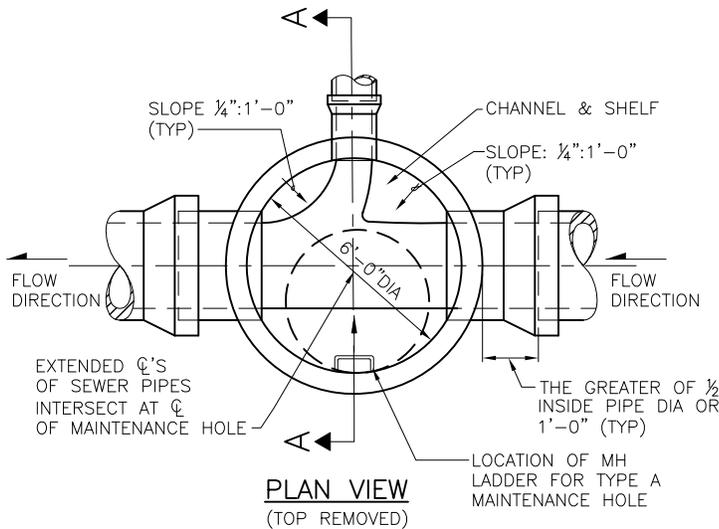
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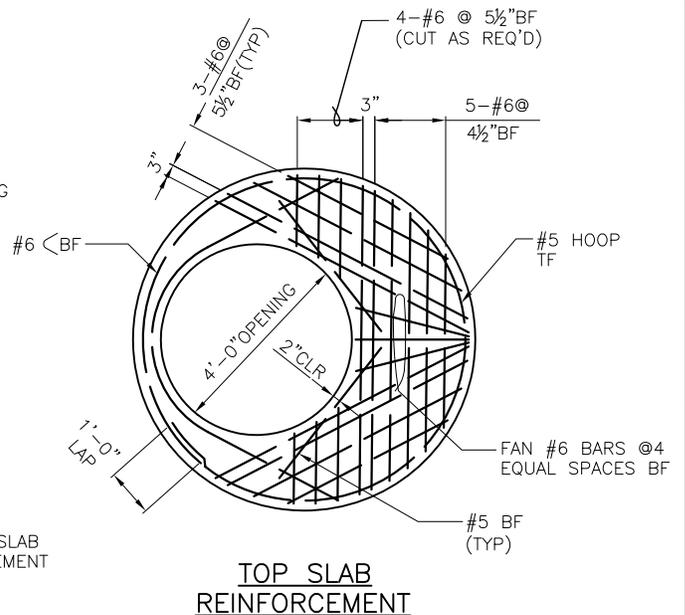
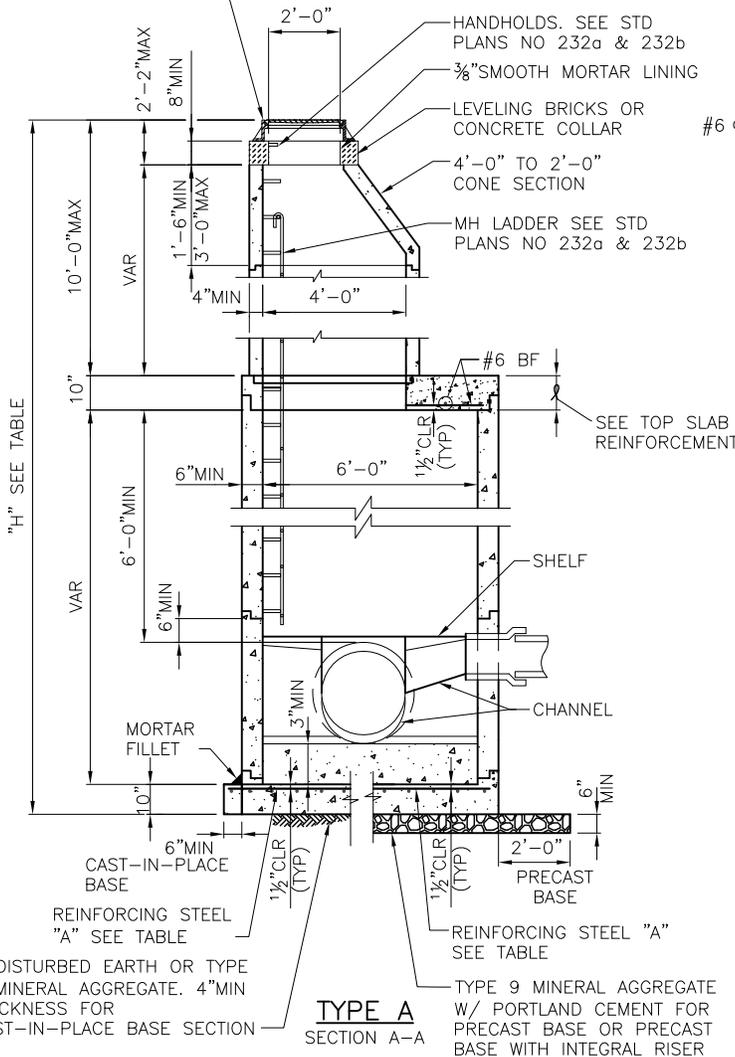
NOT TO SCALE

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

MAINTENANCE HOLE FRAME & COVER. SEE STD PLAN NO 230



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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 7 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.

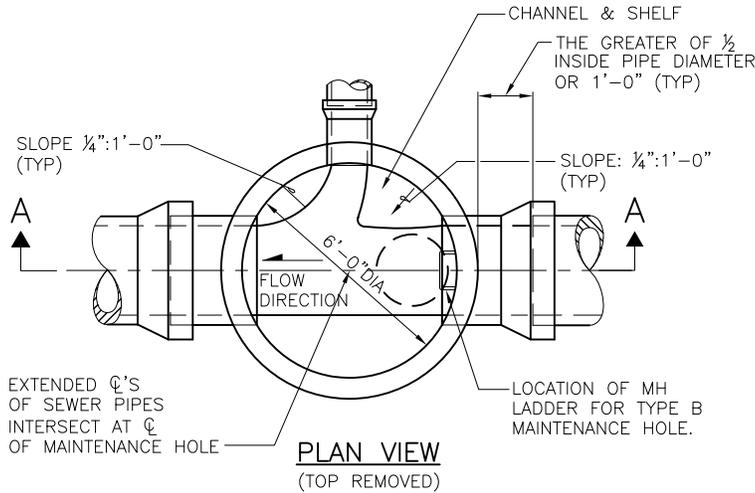
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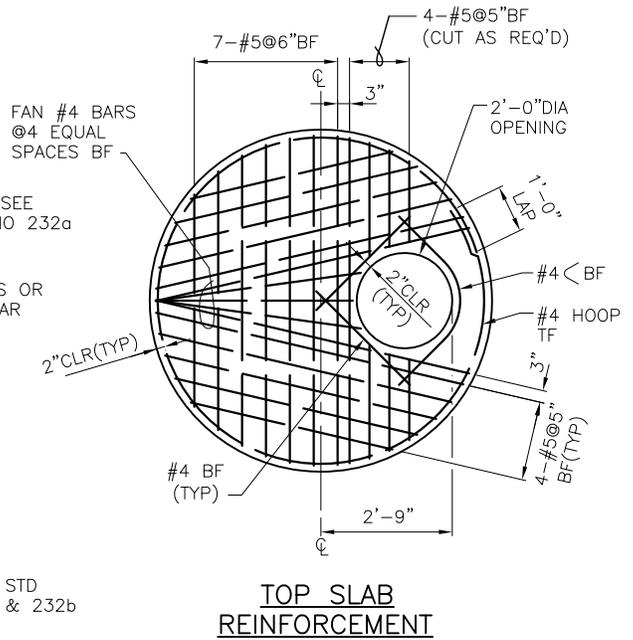
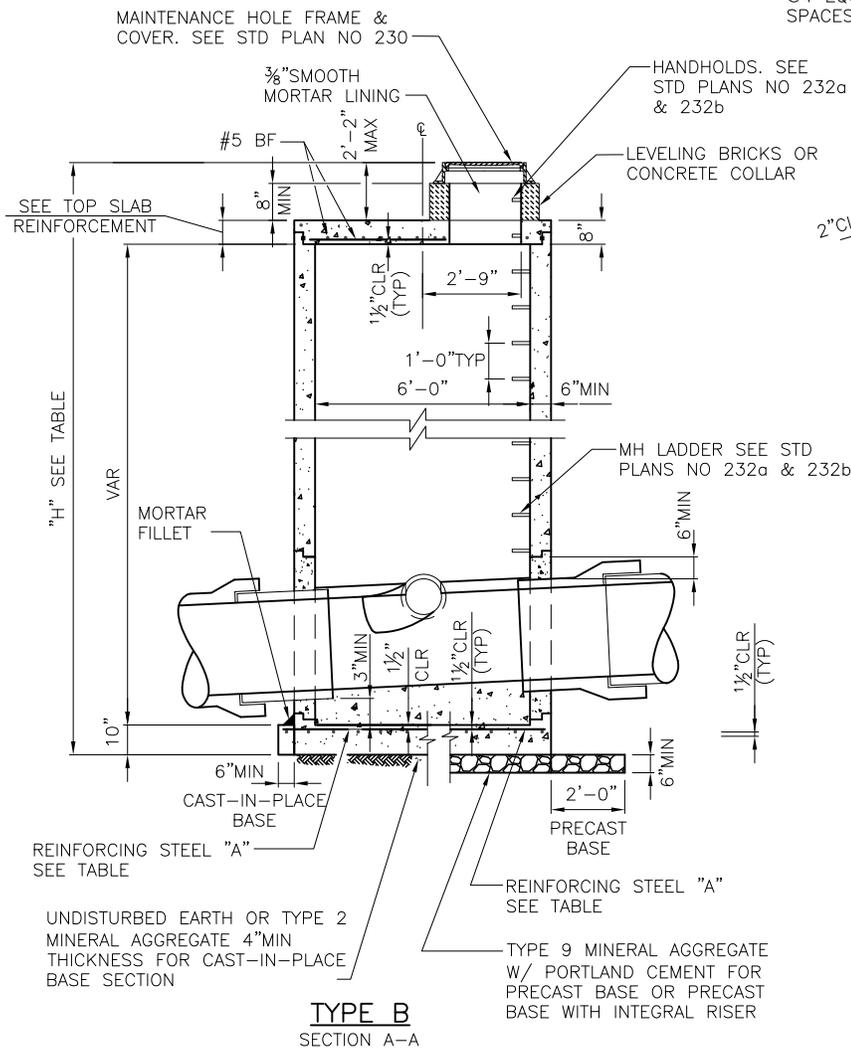
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NOT TO SCALE

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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
 3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
 4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 7 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.

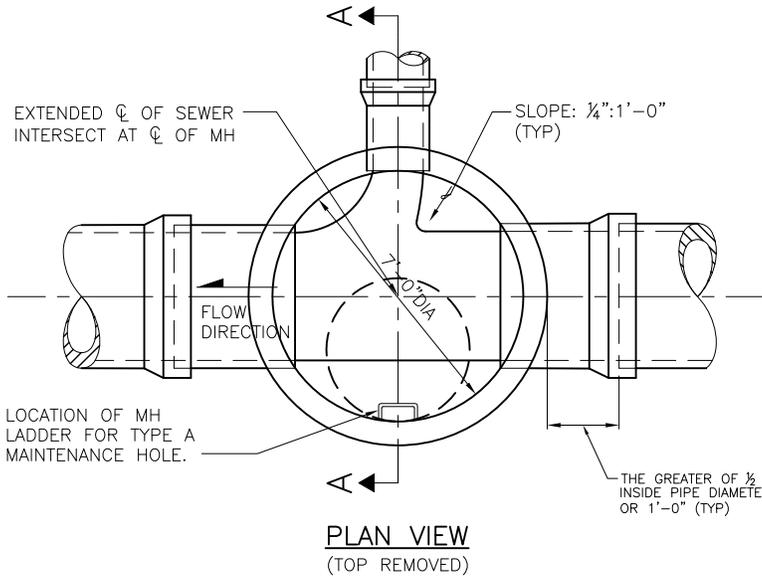
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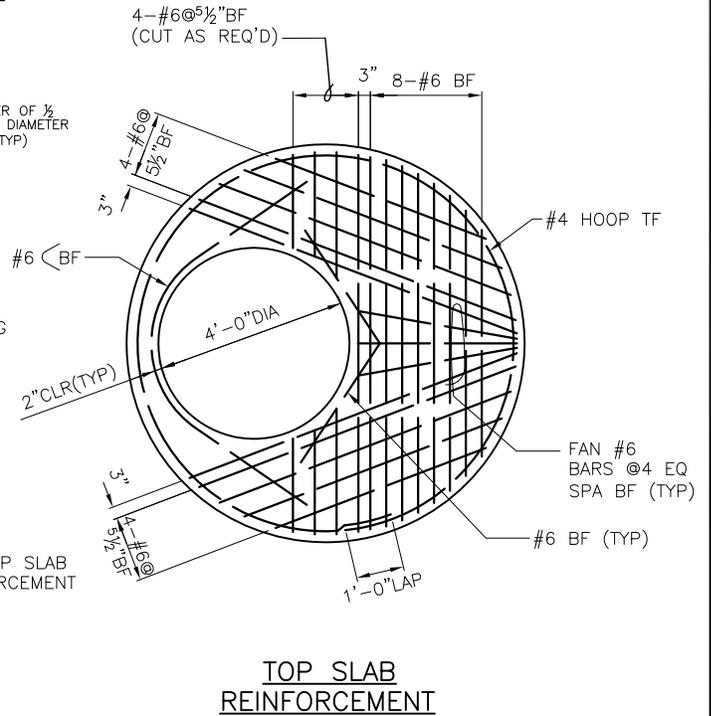
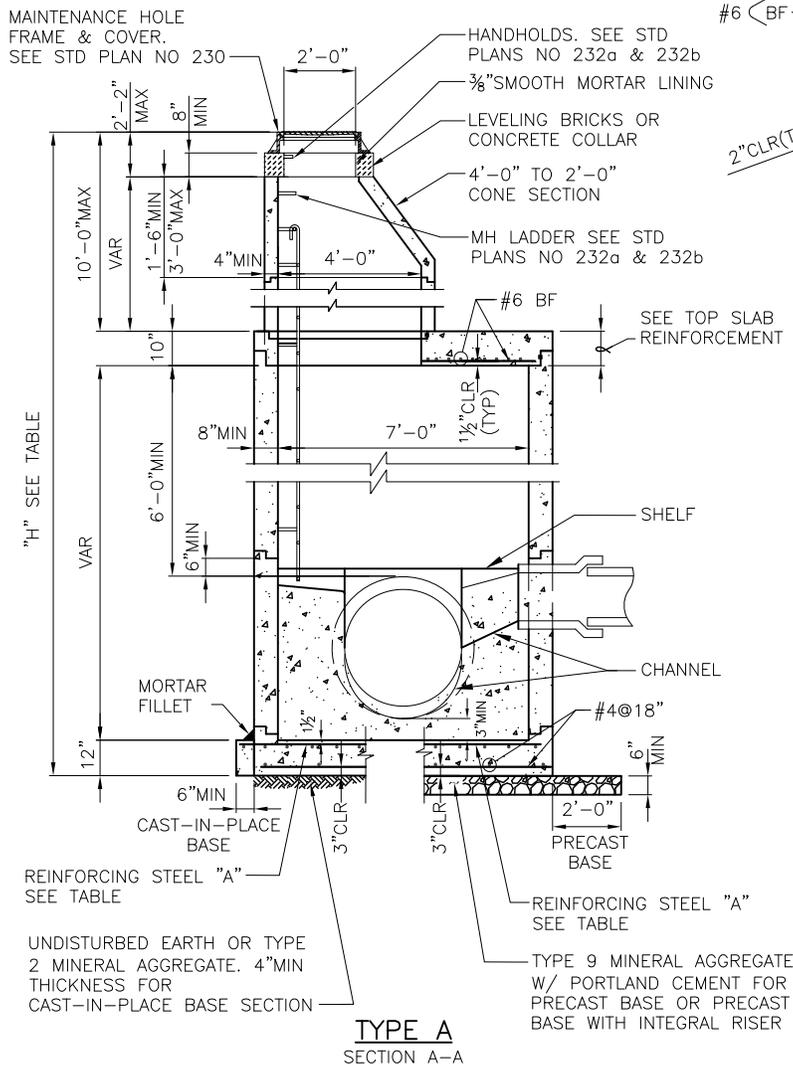
City of Seattle

NOT TO SCALE

TYPE 206b MAINTENANCE HOLE



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



- 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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
 3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
 4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 8 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.

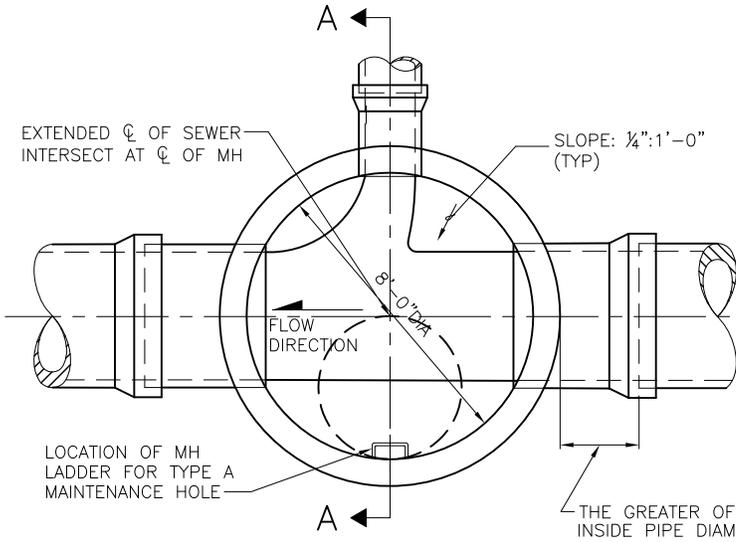
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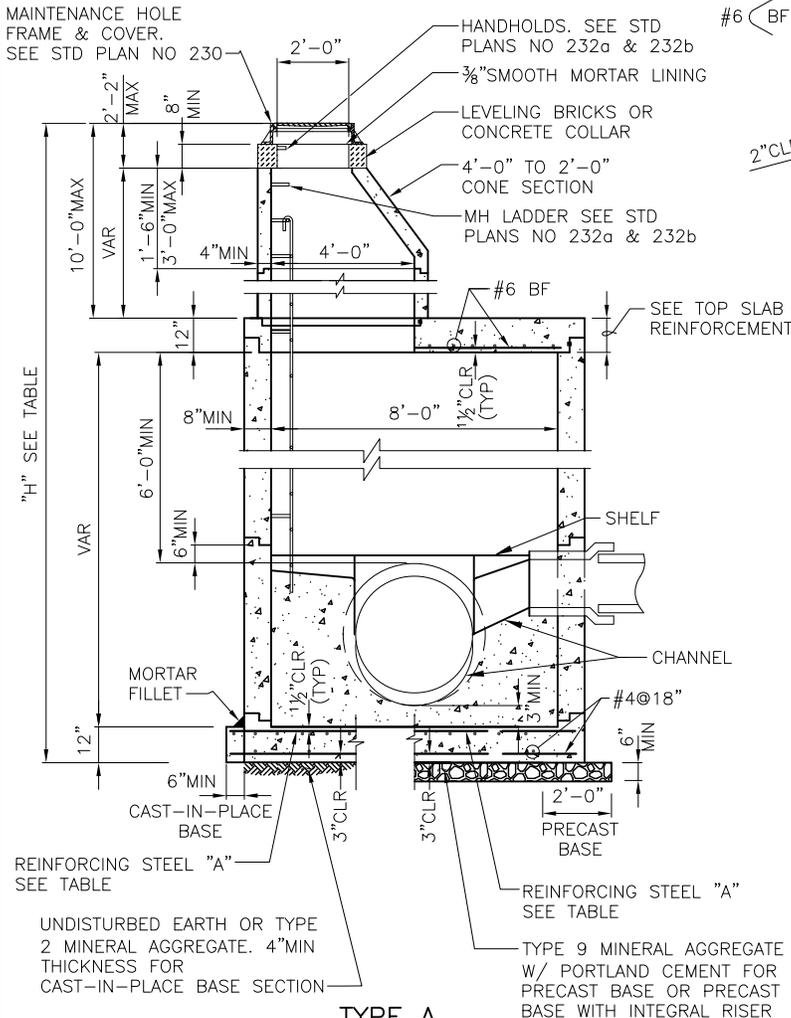
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TYPE 207a MAINTENANCE HOLE

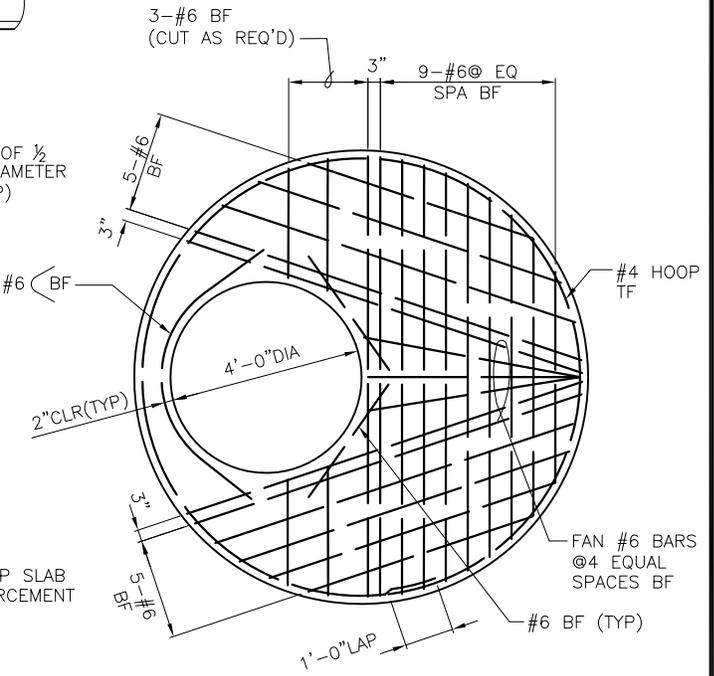


"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.54	0.45
30' MAX	0.66	0.55
40' MAX	0.78	0.64

PLAN VIEW
(TOP REMOVED)



TYPE A
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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 9". MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

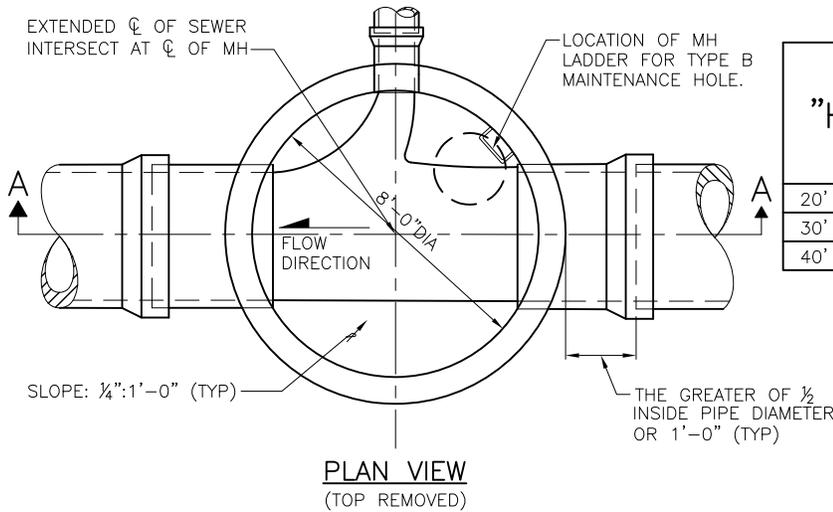
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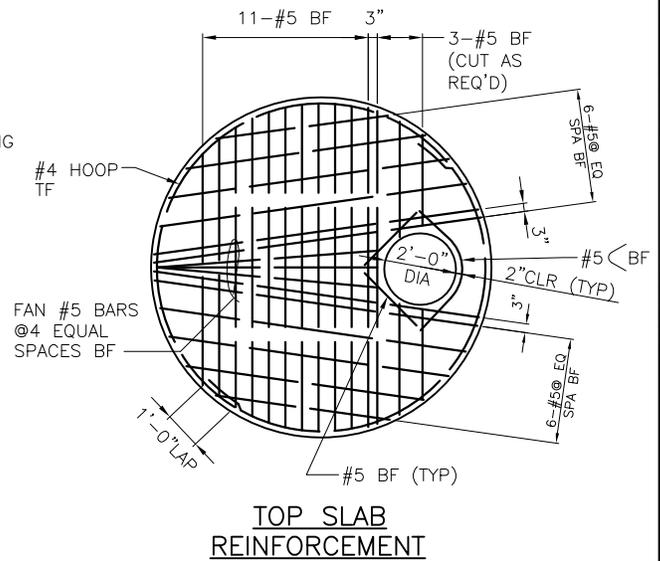
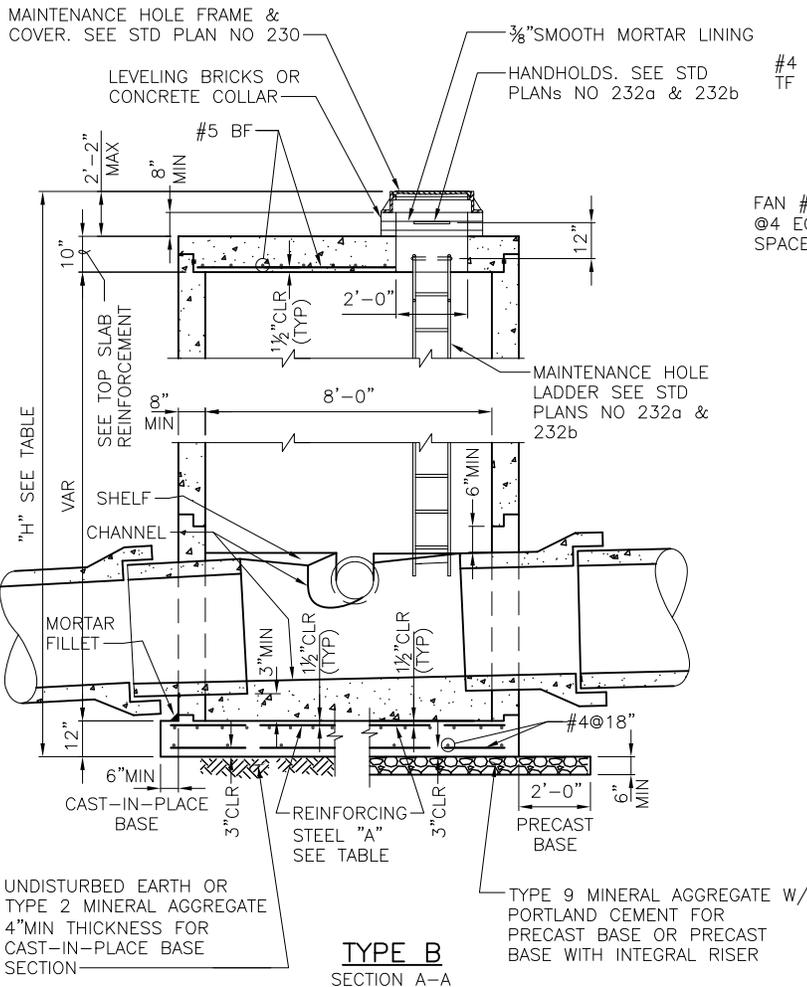
City of Seattle

NOT TO SCALE

TYPE 208a MAINTENANCE HOLE



"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.42	0.35
30' MAX	0.53	0.45
40' MAX	0.65	0.54



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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 9". MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

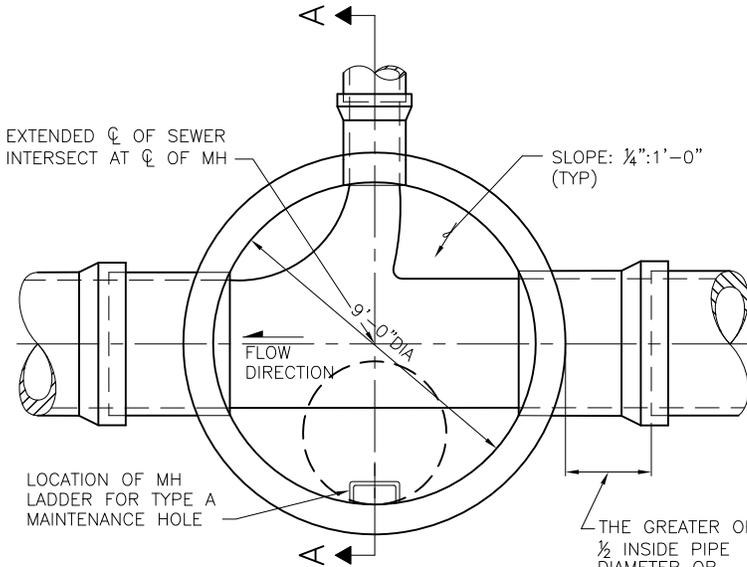
REF STD SPEC SEC 7-05



City of Seattle

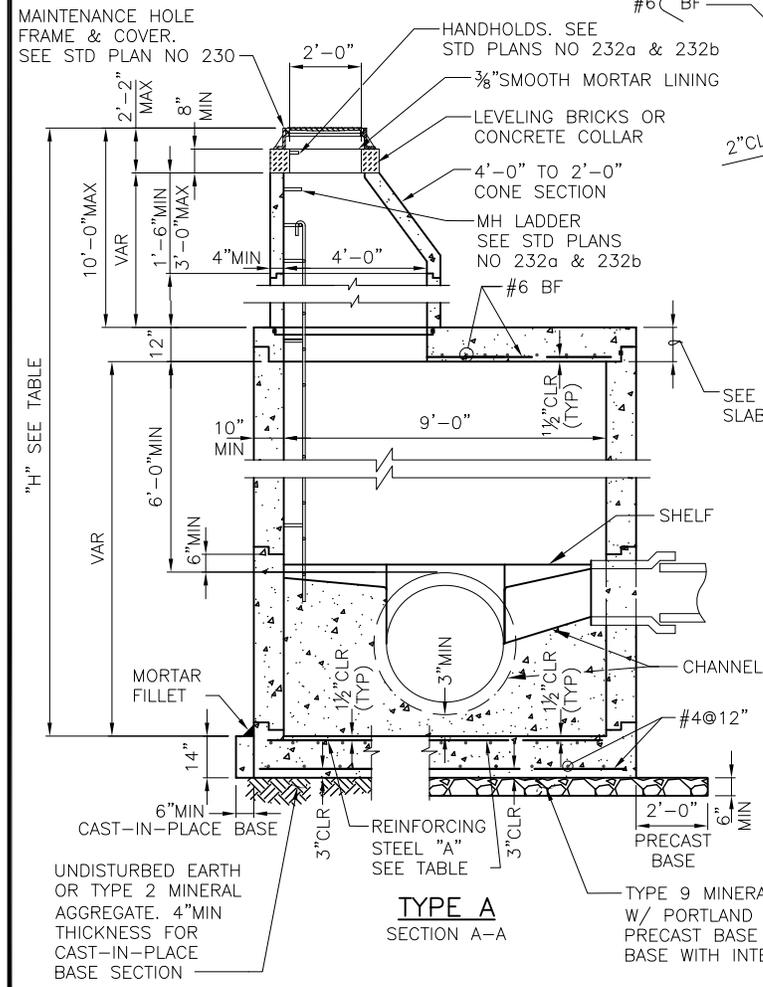
NOT TO SCALE

TYPE 208b MAINTENANCE HOLE

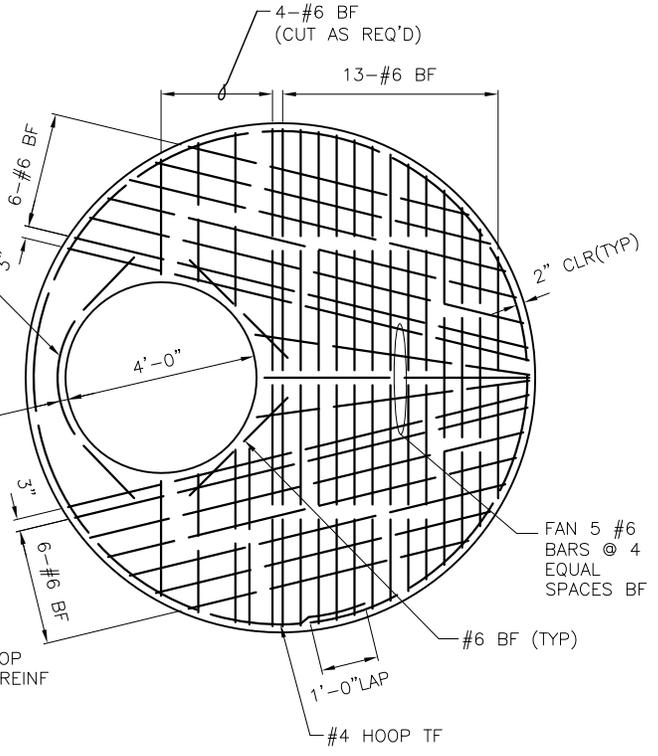


PLAN VIEW
(TOP REMOVED)

"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



TYPE A
SECTION A-A



TOP SLAB REINFORCEMENT

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

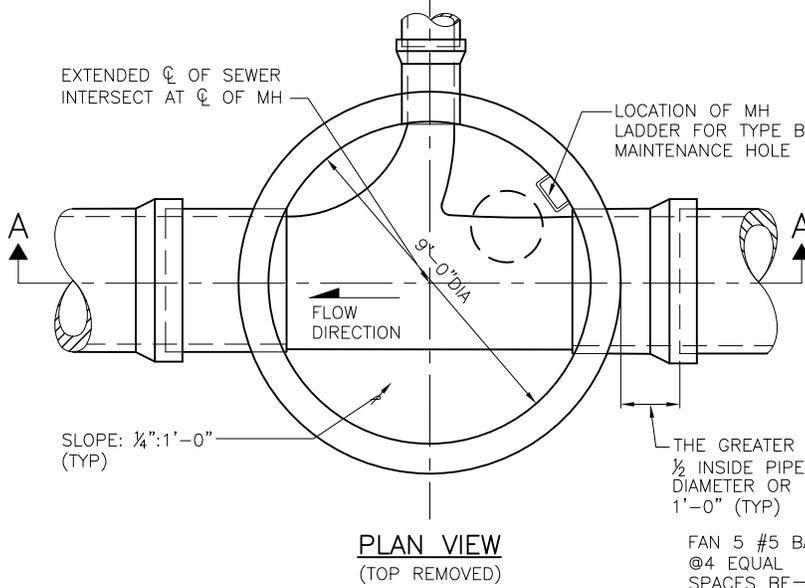
REF STD SPEC SEC 7-05



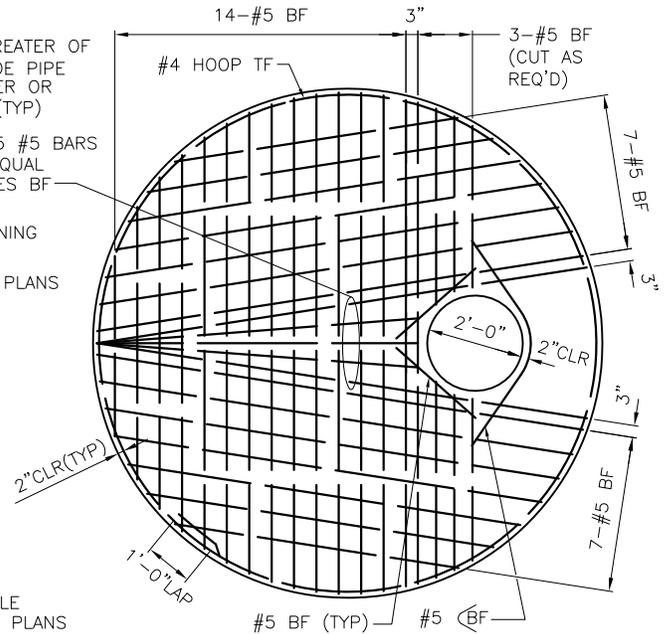
City of Seattle

NOT TO SCALE

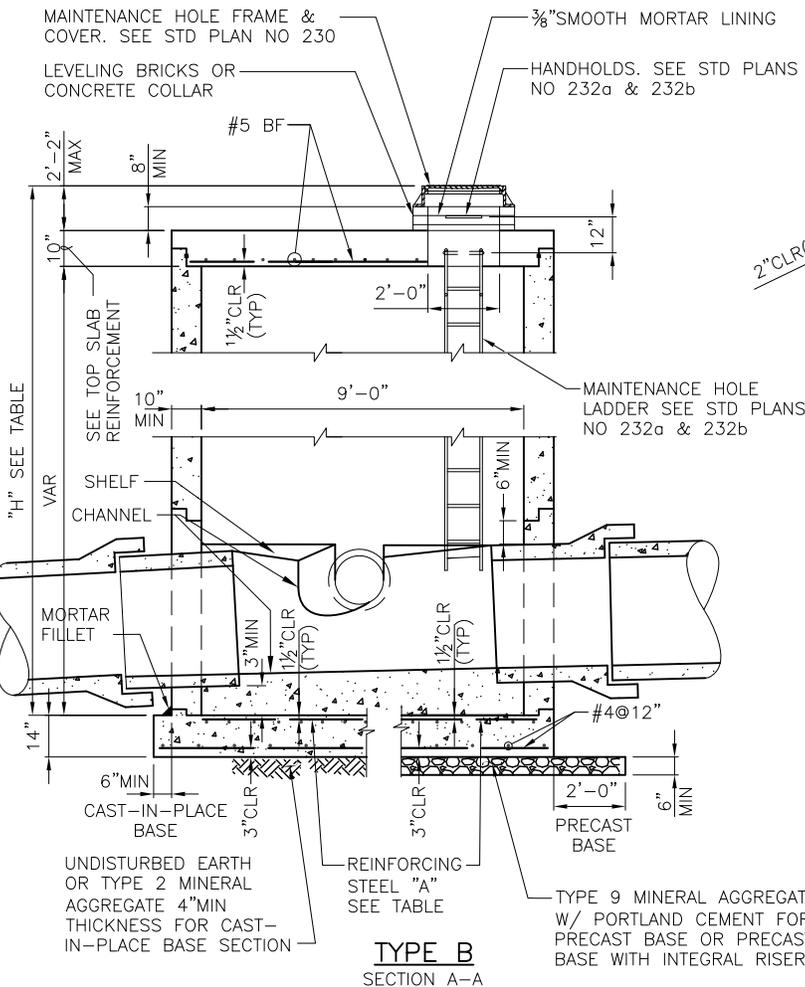
TYPE 209a MAINTENANCE HOLE



"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.44	0.37
30' MAX	0.56	0.48
40' MAX	0.68	0.58



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
SHALL CONFORM TO ASTM C 478. JOINTS
BETWEEN PRECAST COMPONENTS SHALL BE
RUBBER GASKETED CONFORMING TO ASTM C
443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000
LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS
10". MIN HOLE SIZE SHALL BE OD OF PIPE
PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

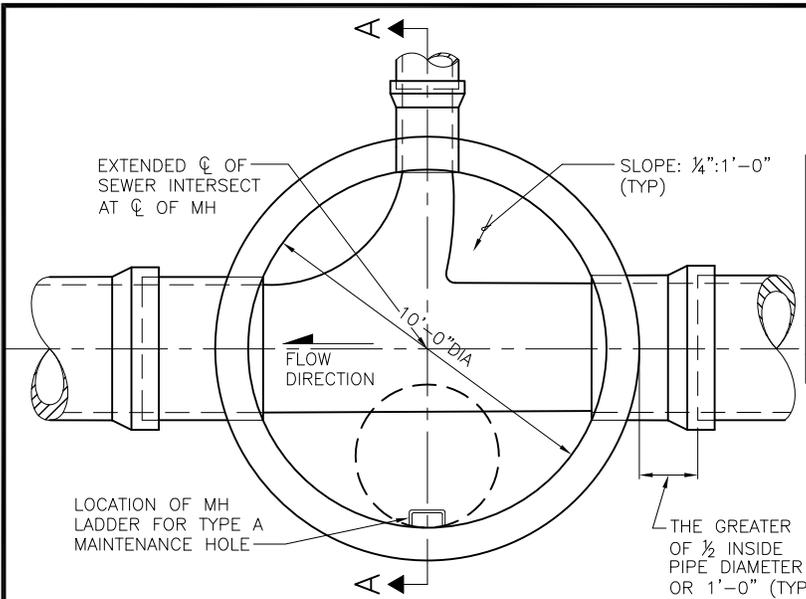
REF STD SPEC SEC 7-05



City of Seattle

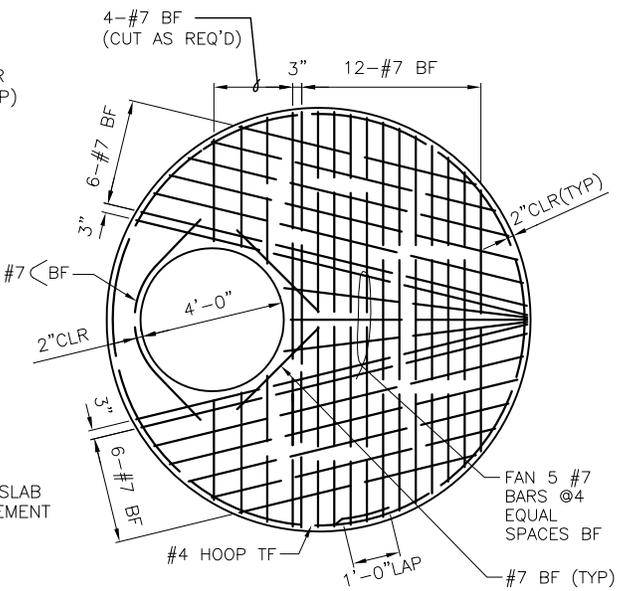
NOT TO SCALE

TYPE 209b MAINTENANCE HOLE



"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

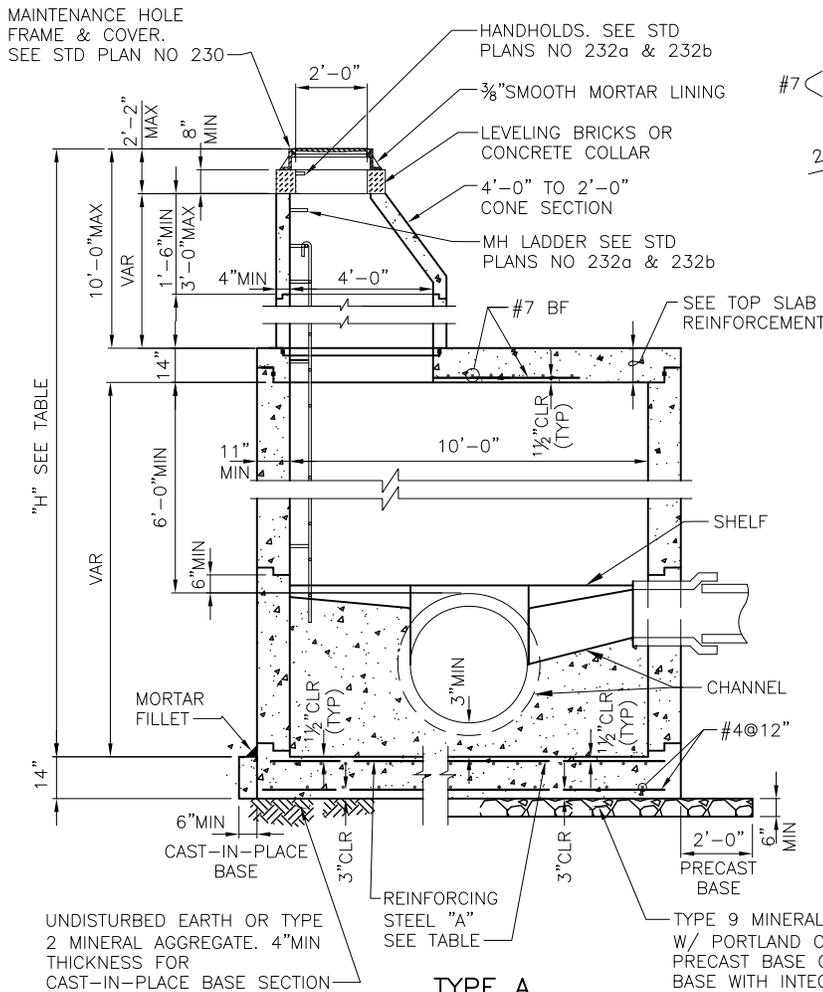
PLAN VIEW
(TOP REMOVED)



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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 11". MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".



TYPE A
SECTION A-A

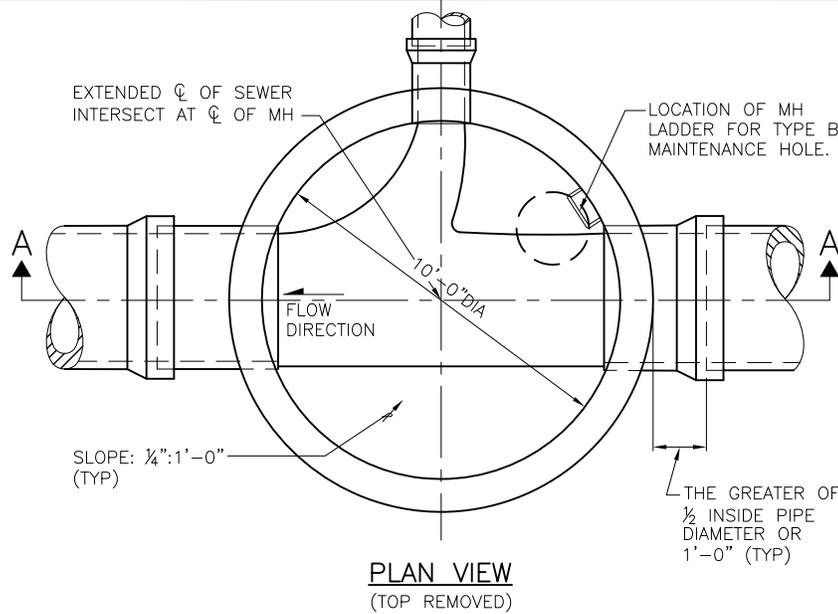
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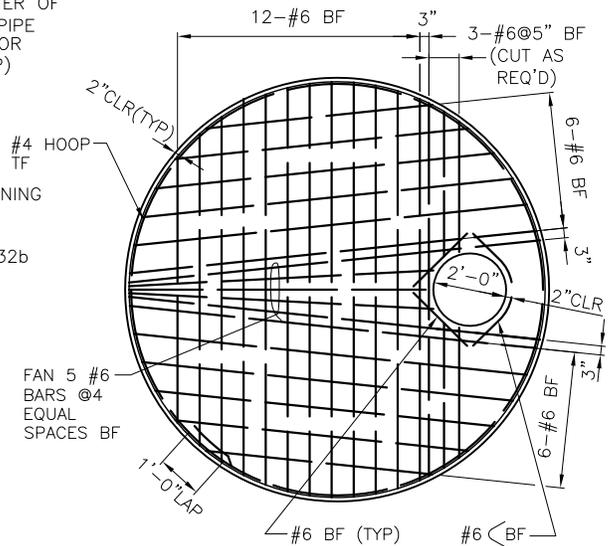
City of Seattle

NOT TO SCALE

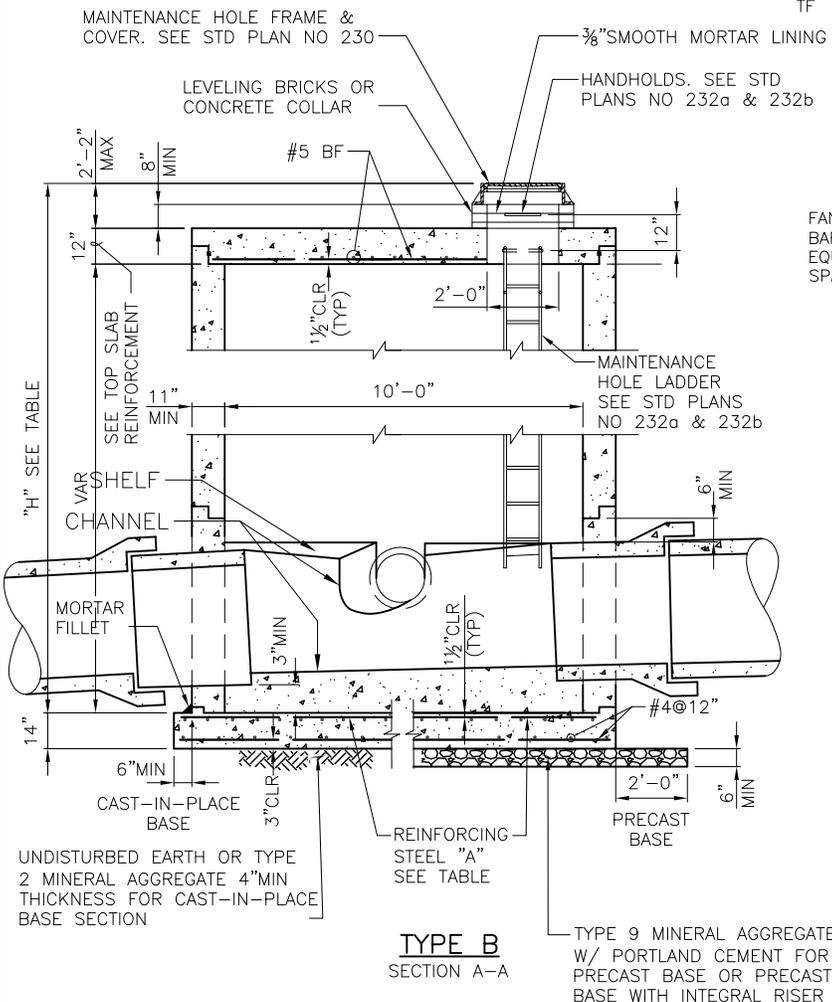
TYPE 210a MAINTENANCE HOLE



"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
SHALL CONFORM TO ASTM C 478. JOINTS
BETWEEN PRECAST COMPONENTS SHALL BE
RUBBER GASKETED CONFORMING TO ASTM C
443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000
LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS
11". MIN HOLE SIZE SHALL BE OD OF PIPE
PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

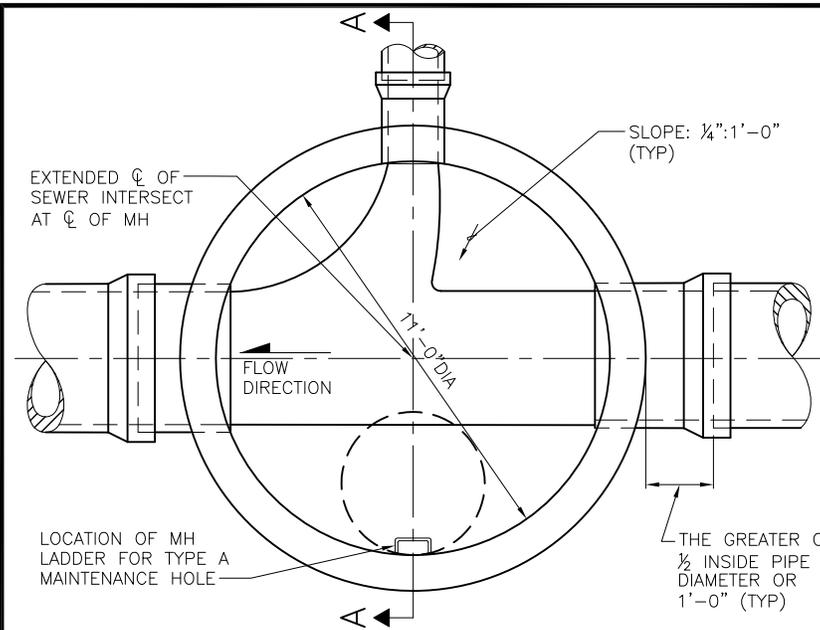
REF STD SPEC SEC 7-05



City of Seattle

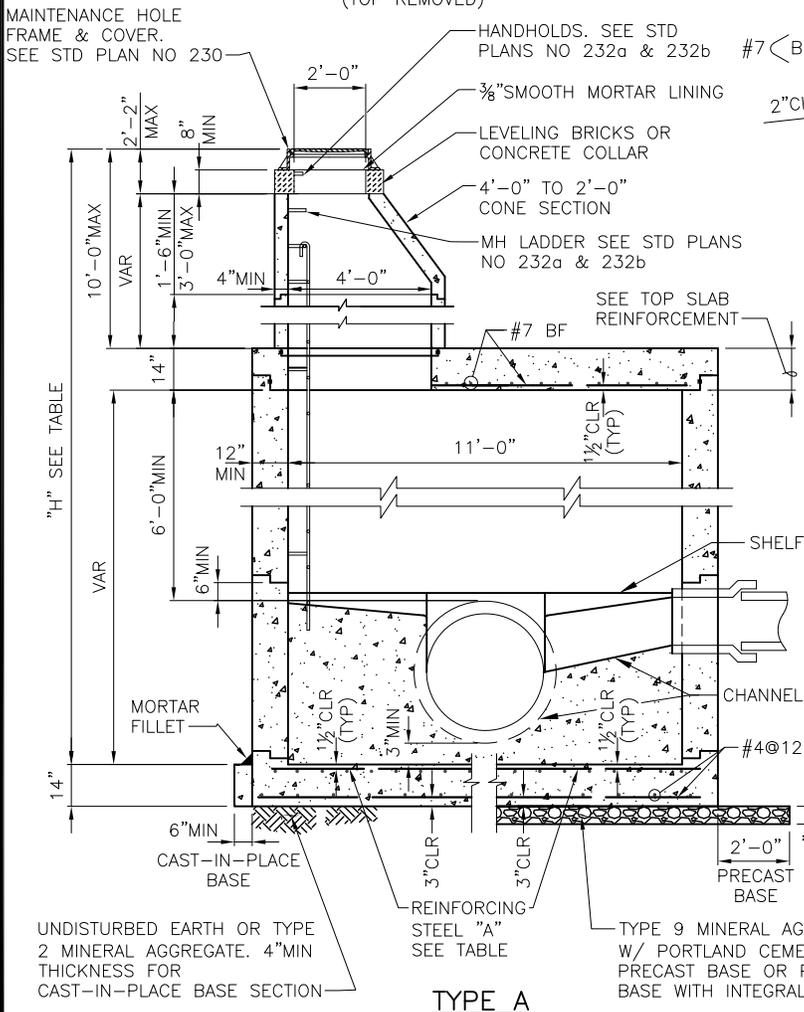
NOT TO SCALE

TYPE 210b MAINTENANCE HOLE

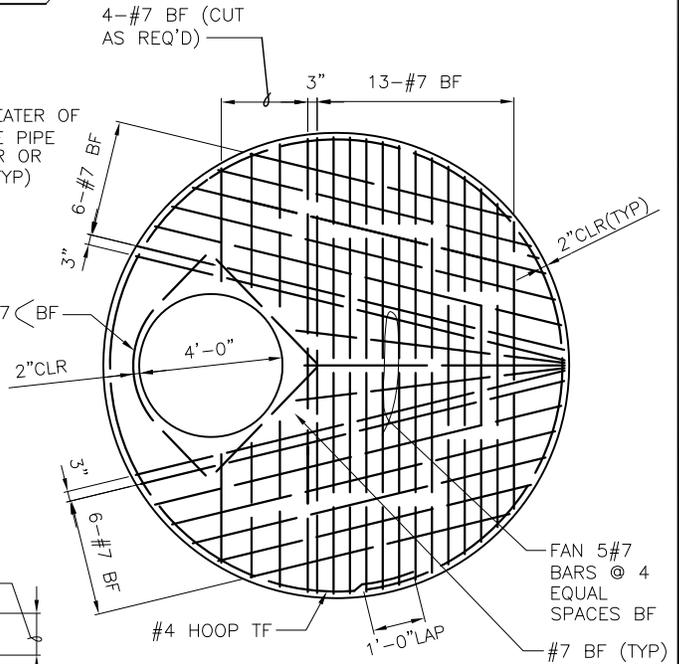


PLAN VIEW
(TOP REMOVED)

"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.85	0.74
30' MAX	1.02	0.89
40' MAX	1.20	1.05



TYPE A
SECTION A-A



TOP SLAB REINFORCEMENT

NOTES:

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

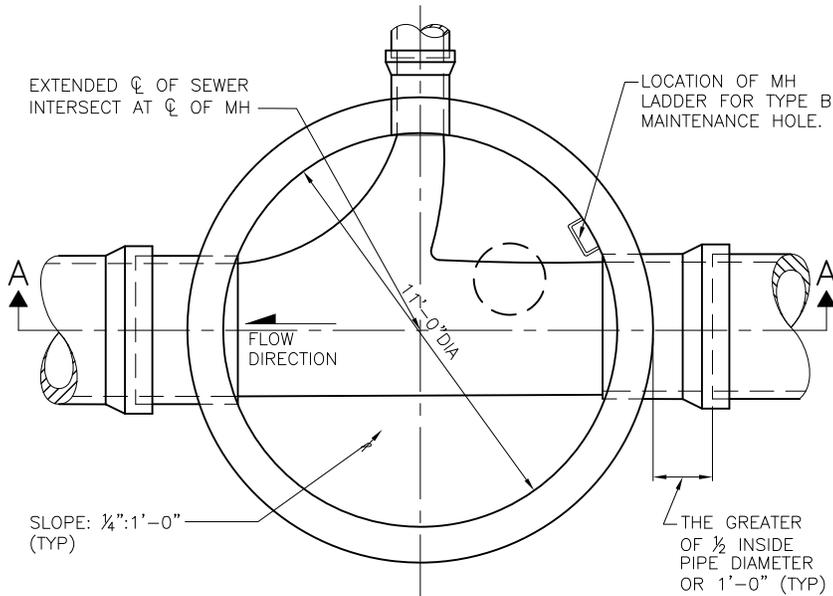
REF STD SPEC SEC 7-05



City of Seattle

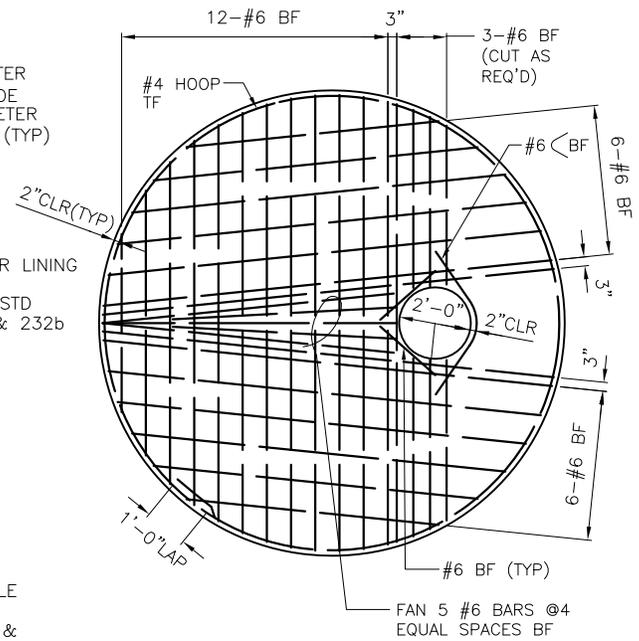
NOT TO SCALE

TYPE 211a MAINTENANCE HOLE

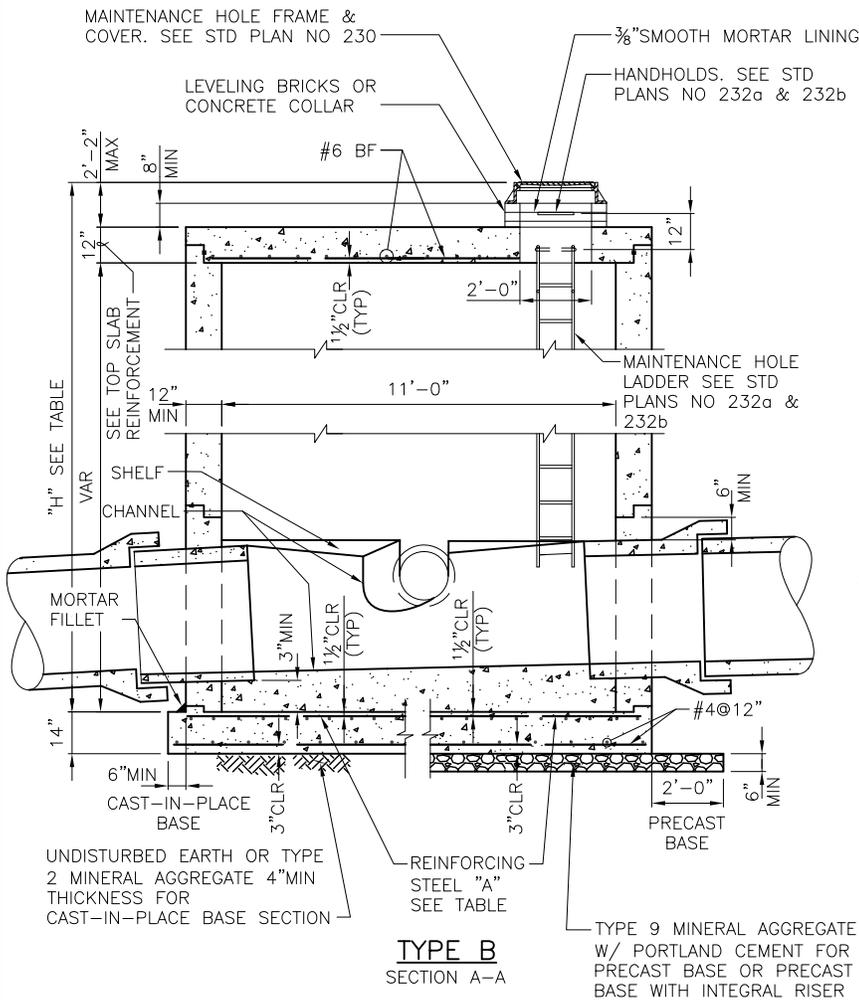


PLAN VIEW
(TOP REMOVED)

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



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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 12". MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

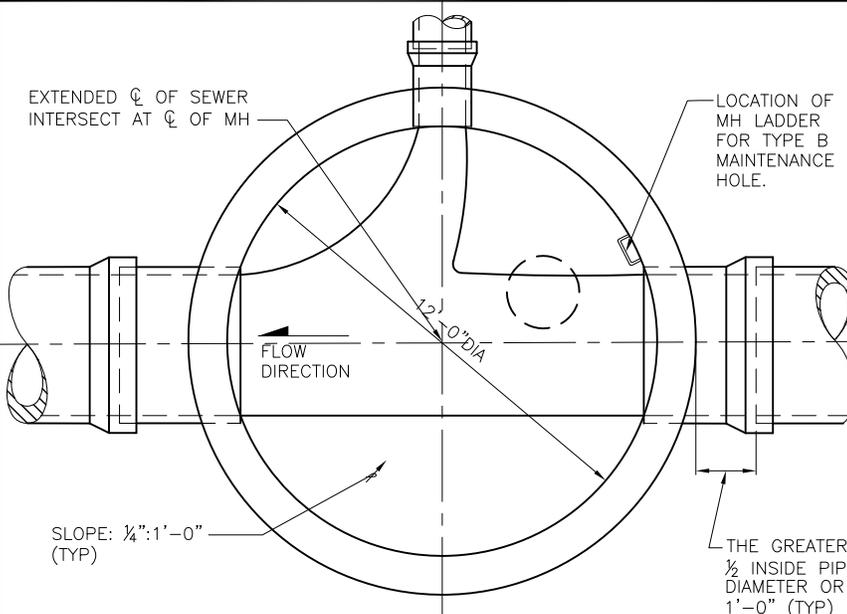
REF STD SPEC SEC 7-05



City of Seattle

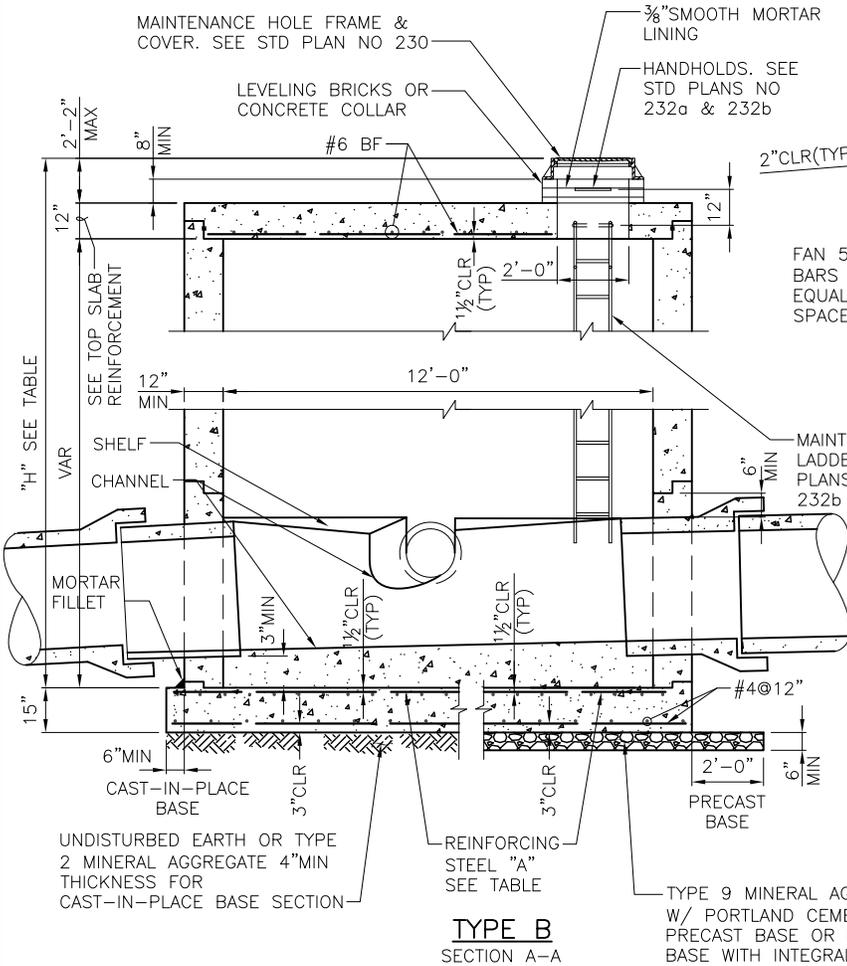
NOT TO SCALE

TYPE 211b MAINTENANCE HOLE

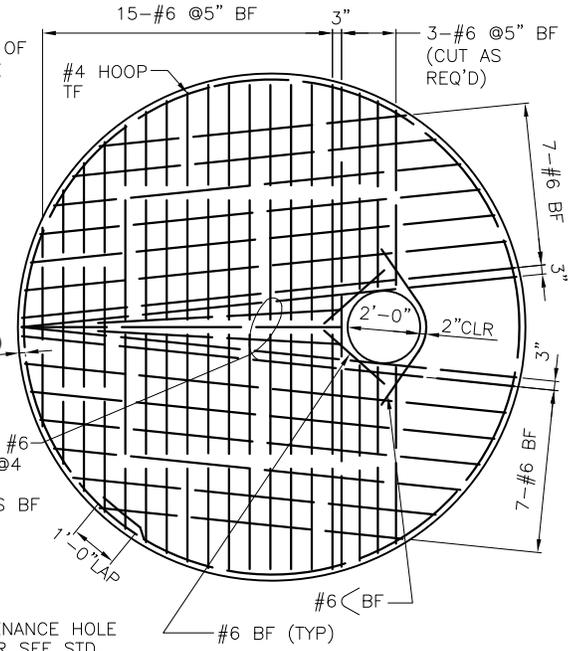


"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.81	0.72
30' MAX	1.09	0.96
40' MAX	1.36	1.20

PLAN VIEW
(TOP REMOVED)



TYPE B
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
SHALL CONFORM TO ASTM C 478. JOINTS
BETWEEN PRECAST COMPONENTS SHALL BE
RUBBER GASKETED CONFORMING TO ASTM C
443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000
LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS
13". MIN HOLE SIZE SHALL BE OD OF PIPE
PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

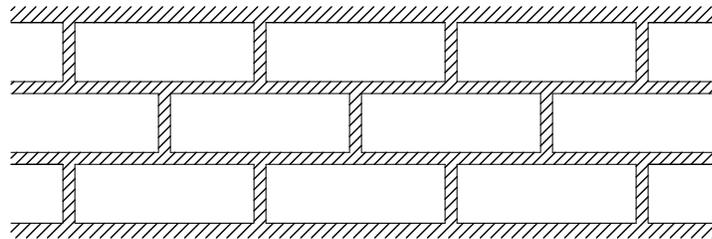
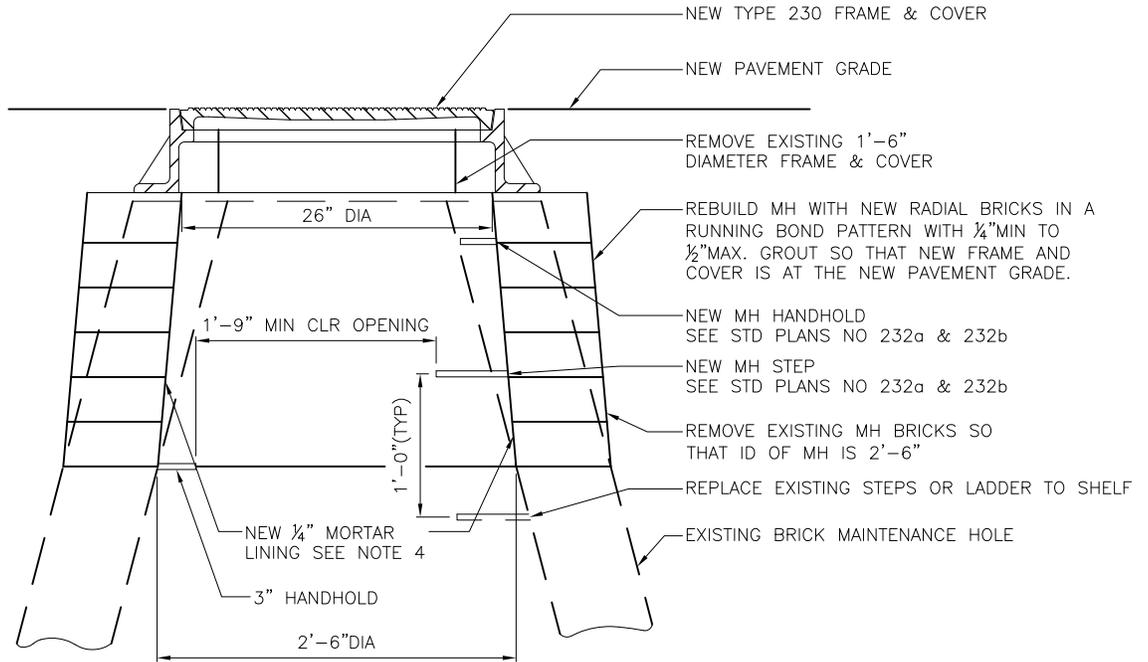
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

TYPE 212b MAINTENANCE HOLE



RUNNING BOND PATTERN
GROUT BETWEEN ALL BRICKS

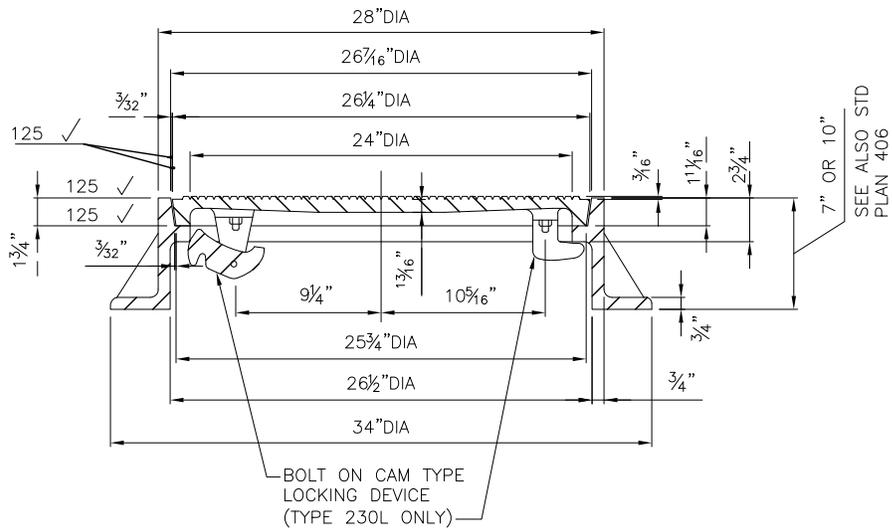
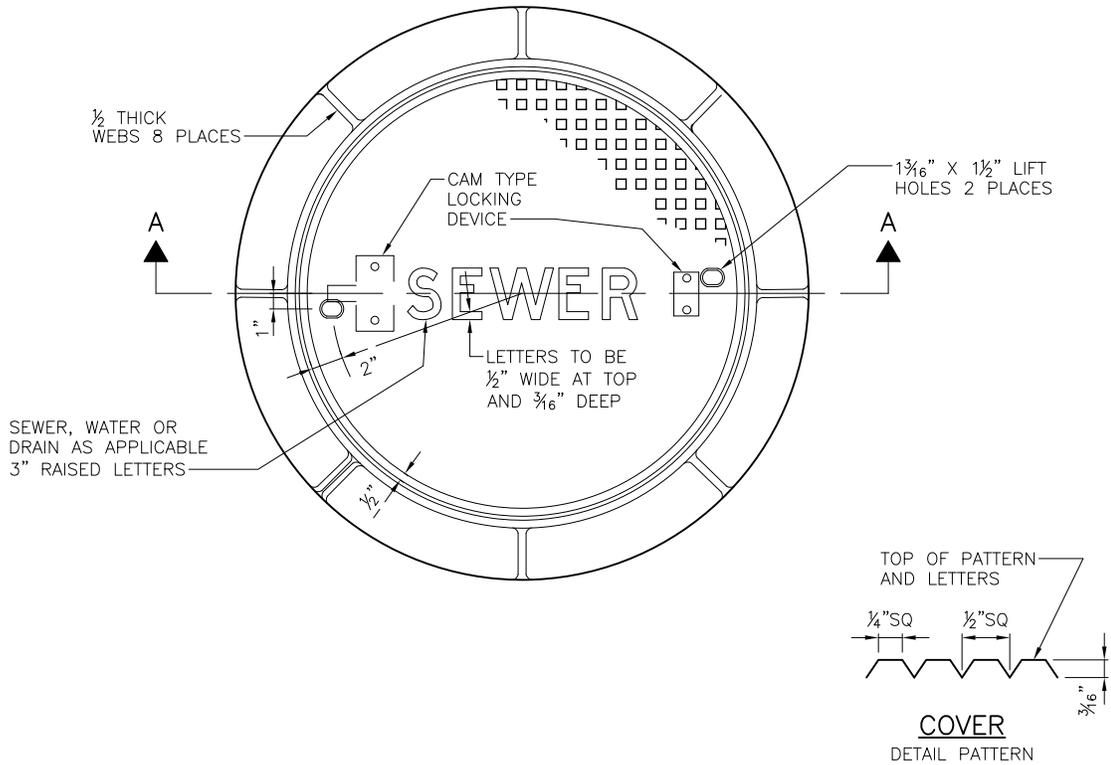
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

**REBUILD EXISTING
BRICK MAINTENANCE HOLE**



SECTION A-A

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 SHALL BE MANUFACTURED FROM CAST IRON OR DUCTILE IRON.
4. COVERS SHALL BE MANUFACTURED FROM DUCTILE IRON.

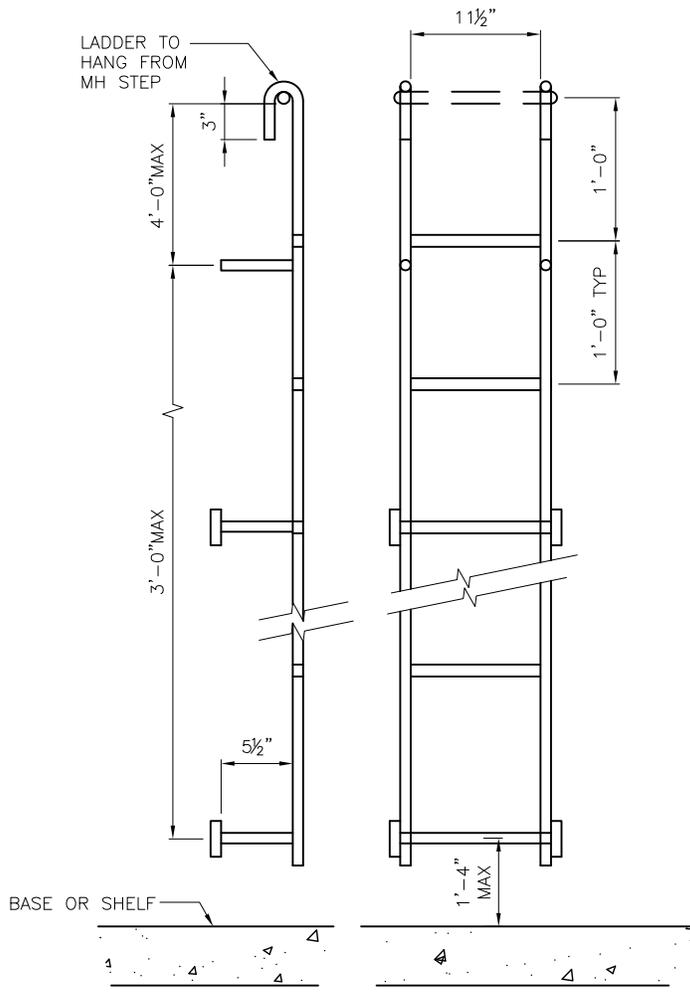
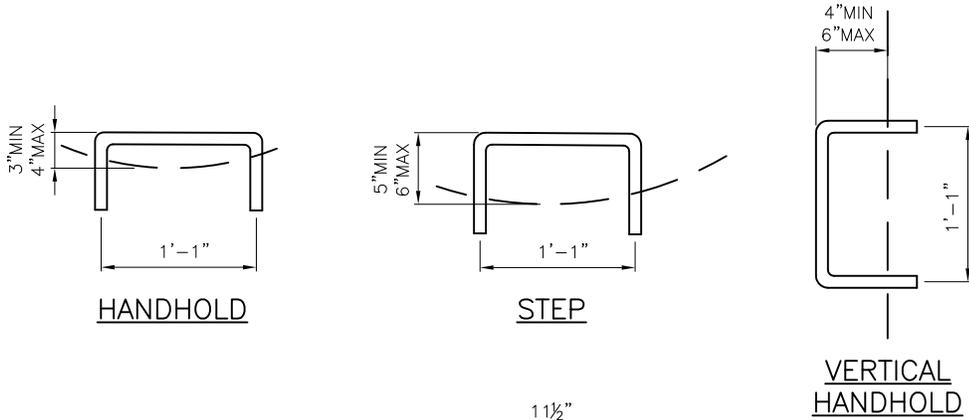
REF STD SPEC SEC 7-05, 9-12



City of Seattle

NOT TO SCALE

2'-0" DIAMETER
FRAME & 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 SHALL 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 SHALL BE FROM THE SAME MANUFACTURER.
5. A VERTICAL HANDHOLD SHALL BE INSTALLED 4'-0" ABOVE THE SHELF WHEN INDICATED IN MH PLAN VIEW.

LADDER

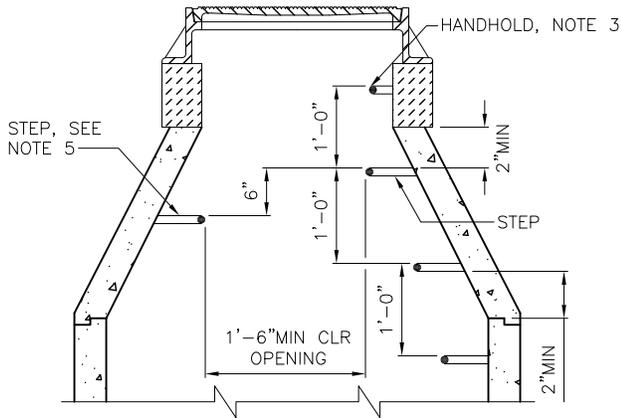
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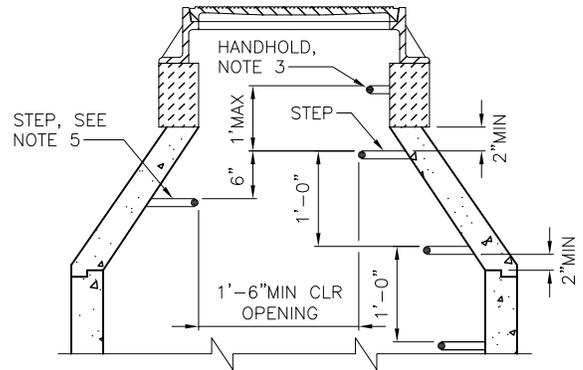
City of Seattle

NOT TO SCALE

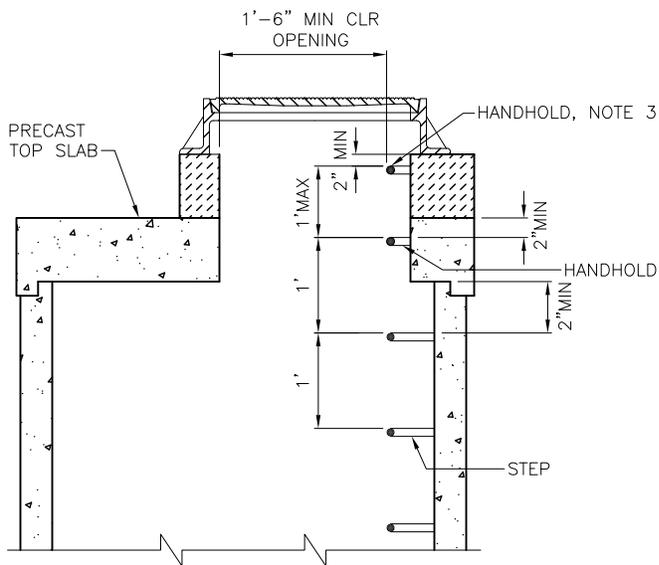
**MAINTENANCE HOLE LADDER,
STEP AND HANDHOLD**



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 SHALL 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 SHALL BE FROM THE SAME MANUFACTURER.
5. STEP ON OPPOSITE SIDE OF MH SHALL BE PLACED MID WAY BETWEEN STEPS ON OPPOSING SIDE.

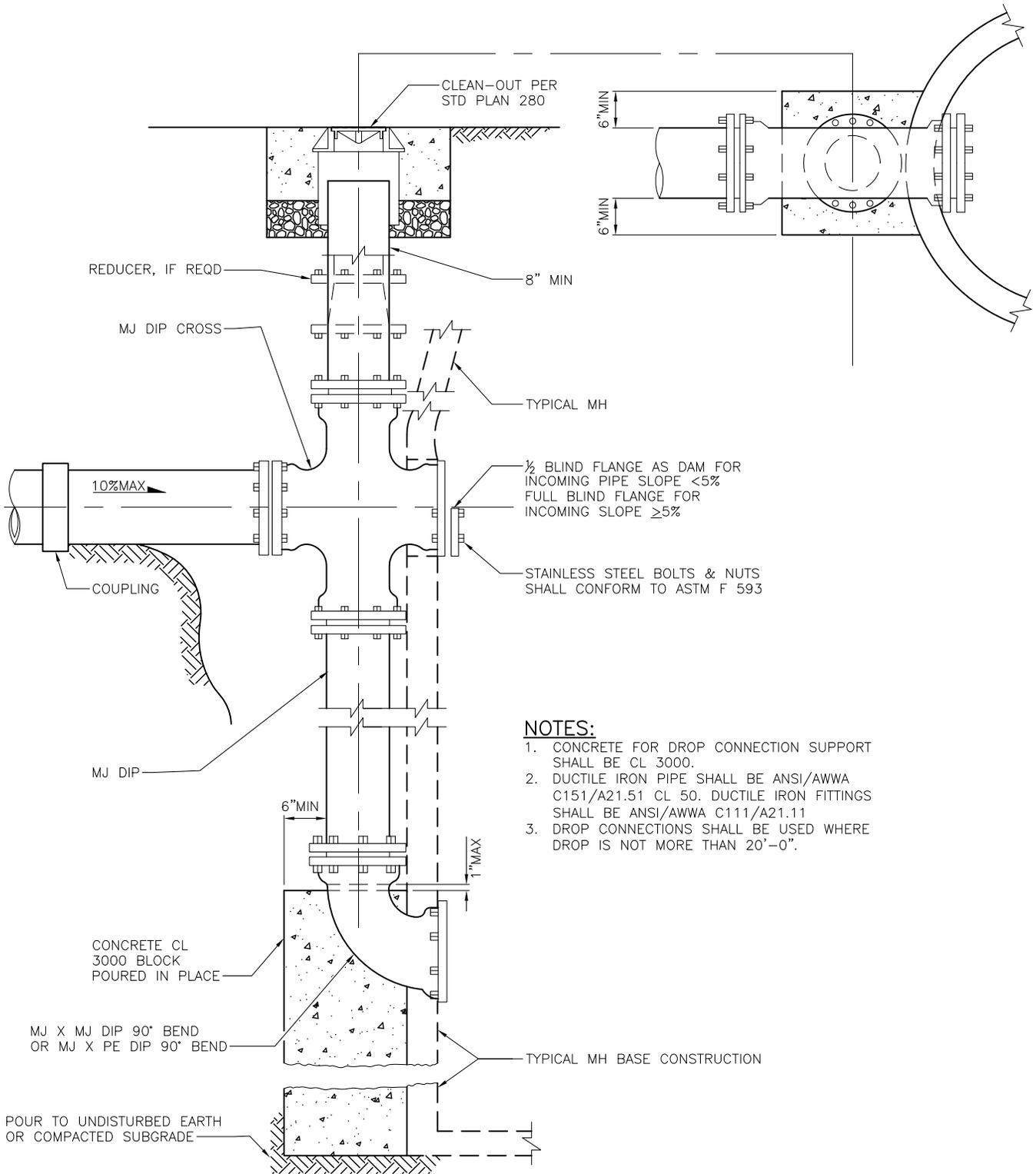
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

**MAINTENANCE HOLE LADDER,
STEP AND HANDHOLD**



NOTES:

1. CONCRETE FOR DROP CONNECTION SUPPORT SHALL BE CL 3000.
2. DUCTILE IRON PIPE SHALL BE ANSI/AWWA C151/A21.51 CL 50. DUCTILE IRON FITTINGS SHALL BE ANSI/AWWA C111/A21.11
3. DROP CONNECTIONS SHALL BE USED WHERE DROP IS NOT MORE THAN 20'-0".

DUCTILE IRON OUTSIDE DROP CONNECTION

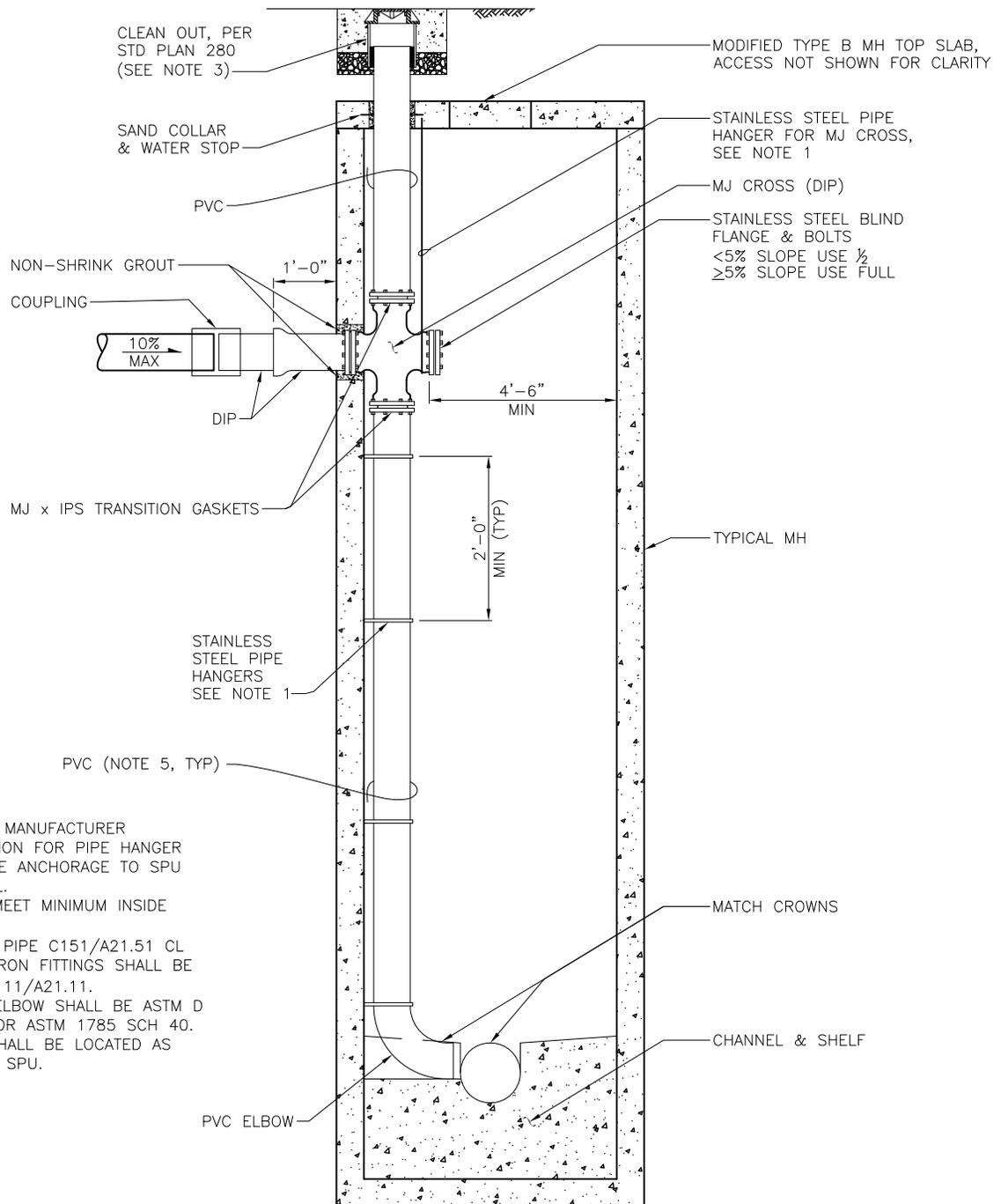
REF STD SPEC SEC 7-08



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 SHALL BE ANSI/AWWA 6111/A21.11.
4. PVC PIPE & ELBOW SHALL BE ASTM D 2241 CL200 OR ASTM 1785 SCH 40.
5. CLEAN-OUT SHALL BE LOCATED AS APPROVED BY SPU.

INSIDE DROP
(18" DIAMETER PIPE MAXIMUM)

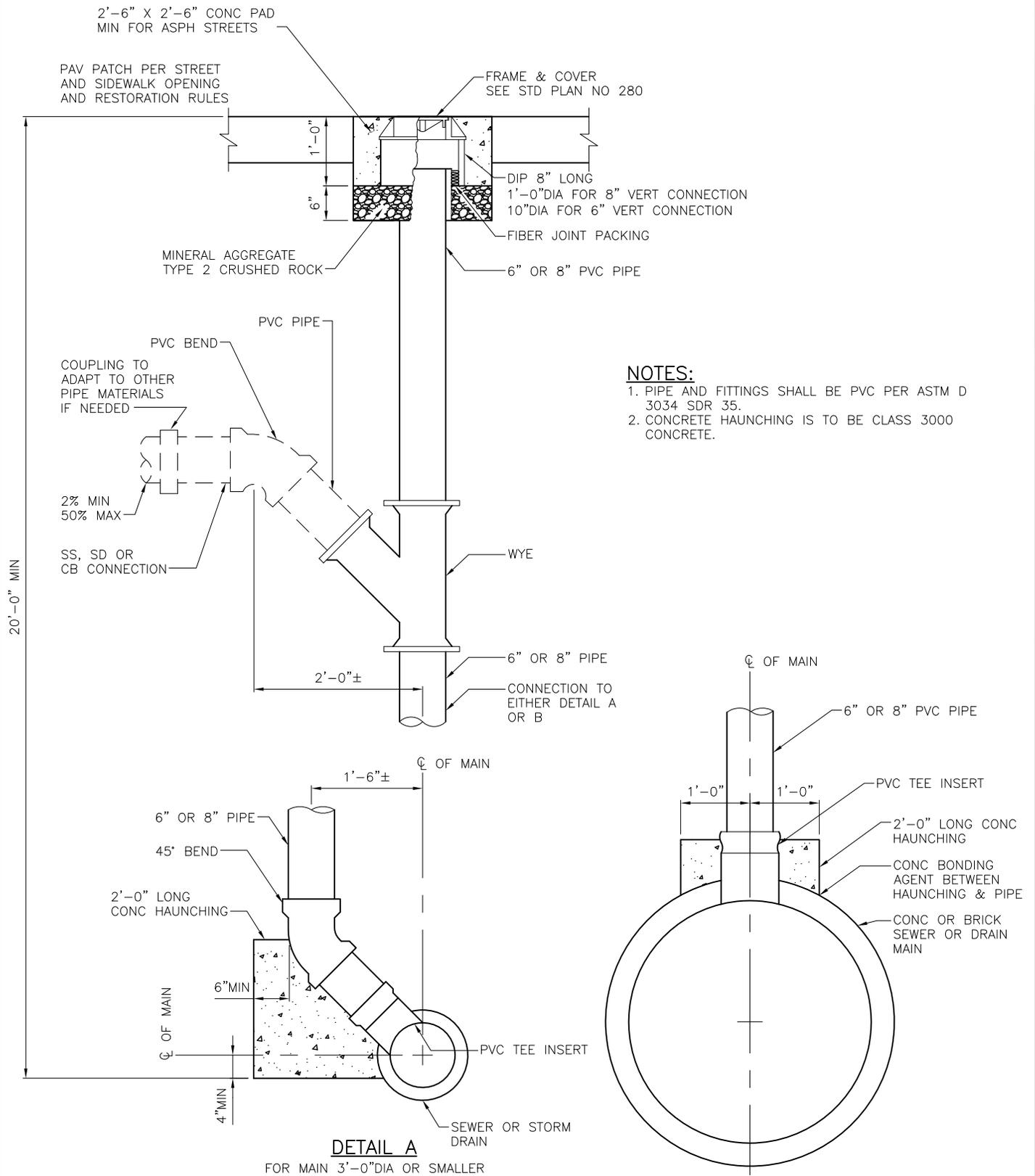
REF STD SPEC SEC 7-08



City of Seattle

NOT TO SCALE

INSIDE DROP CONNECTION



NOTES:

1. PIPE AND FITTINGS SHALL BE PVC PER ASTM D 3034 SDR 35.
2. CONCRETE HAUNCHING IS TO BE CLASS 3000 CONCRETE.

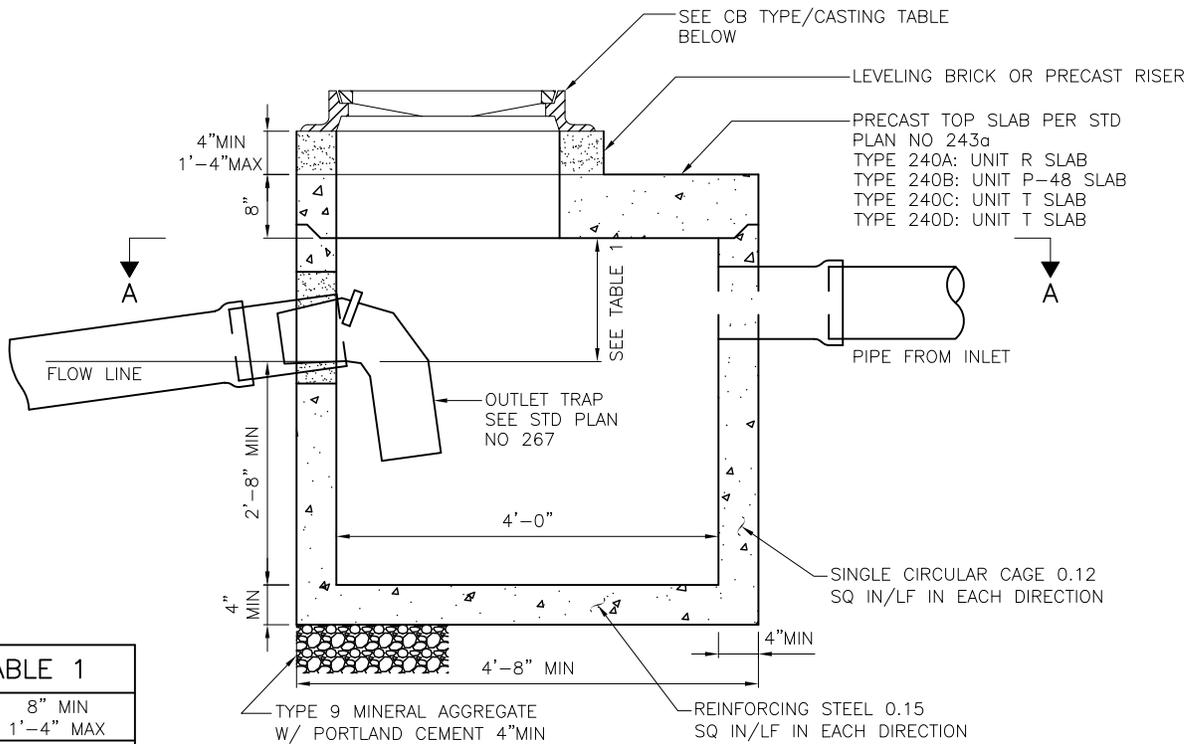
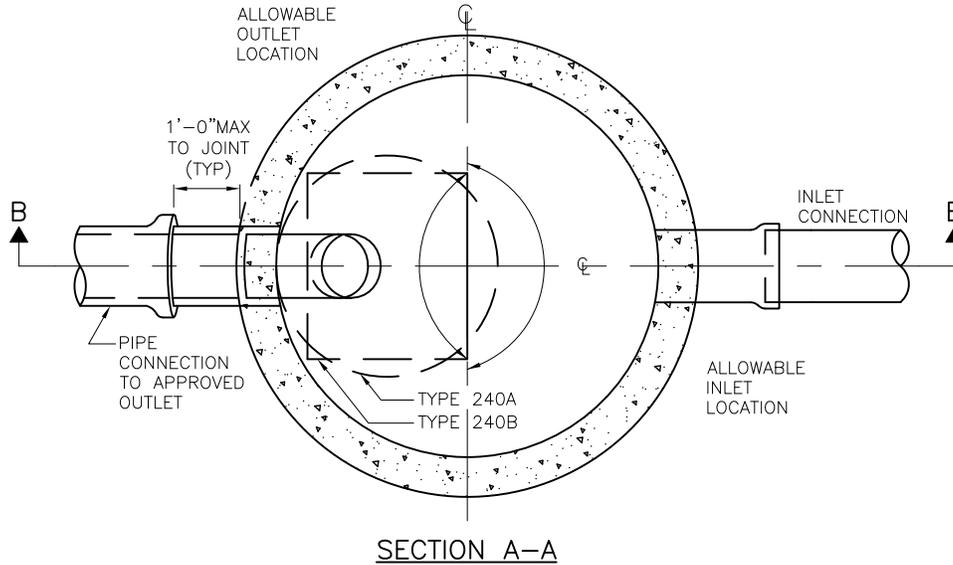
REF STD SPEC SEC 7-08 & 7-17



City of Seattle

NOT TO SCALE

6" OR 8" VERTICAL CONNECTION



6"ø	8" MIN 1'-4" MAX
8"ø	10" MIN 1'-4" MAX
12"ø	1'-3" MIN 2'-0" MAX

NOTES:

1. FRAME & GRATE OR FRAME & COVER SHALL BE LOCATED OVER TRAP.
2. INVERT OF INLET PIPE SHALL 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 263	PER STD PLAN 265

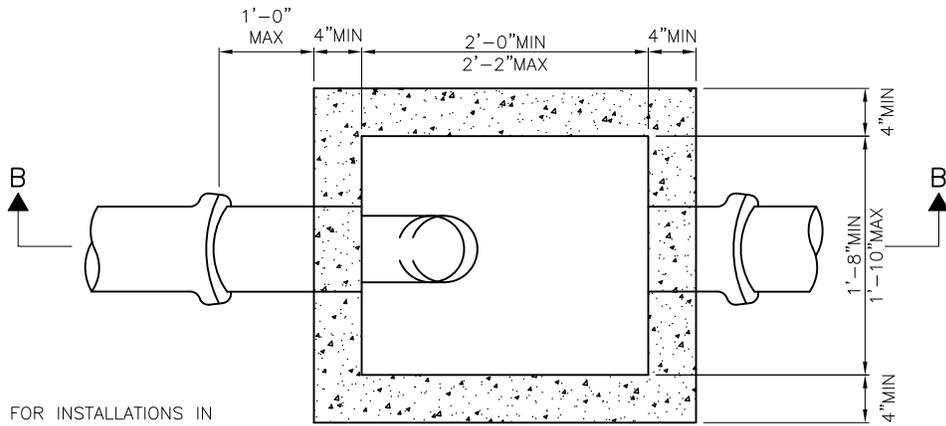
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City of Seattle

NOT TO SCALE

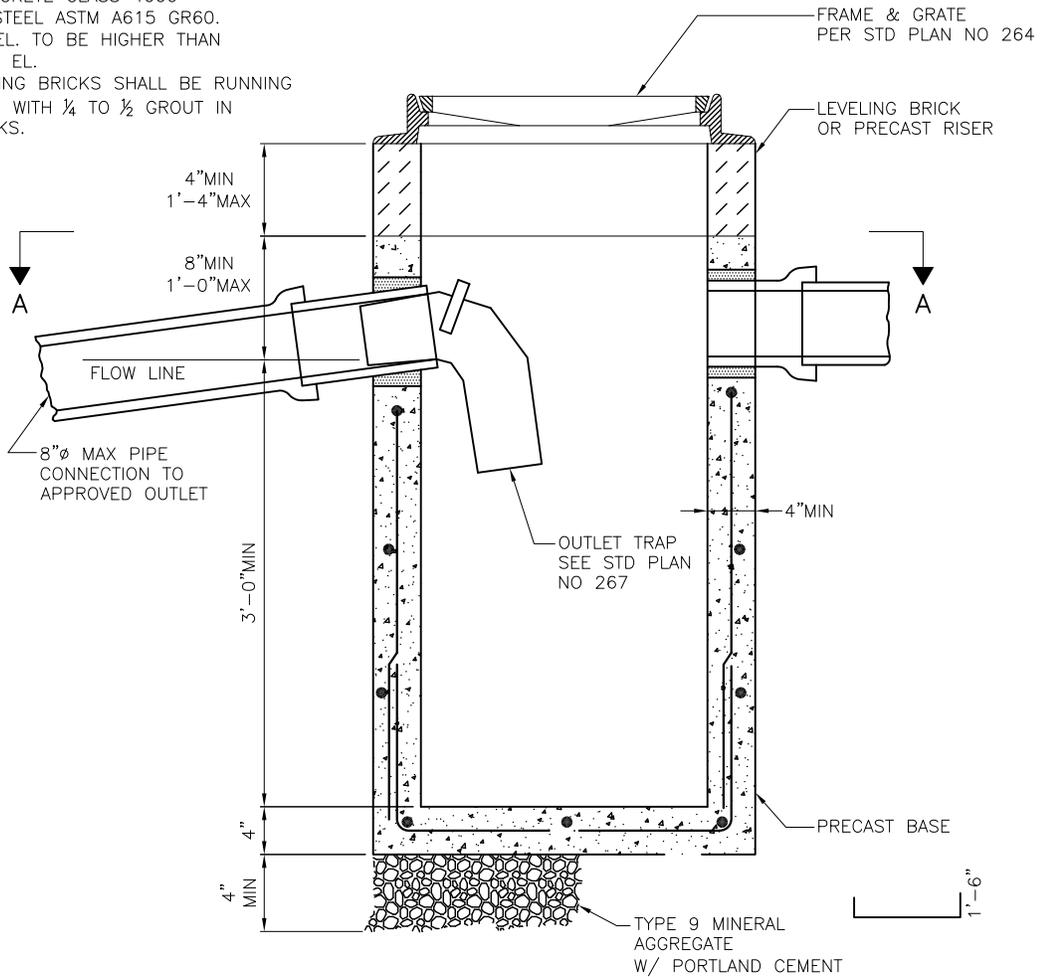
TYPE 240 CATCH BASIN



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 SHALL BE RUNNING BOND PATTERN WITH ¼ TO ½ GROUT IN BETWEEN BRICKS.



SECTION B-B

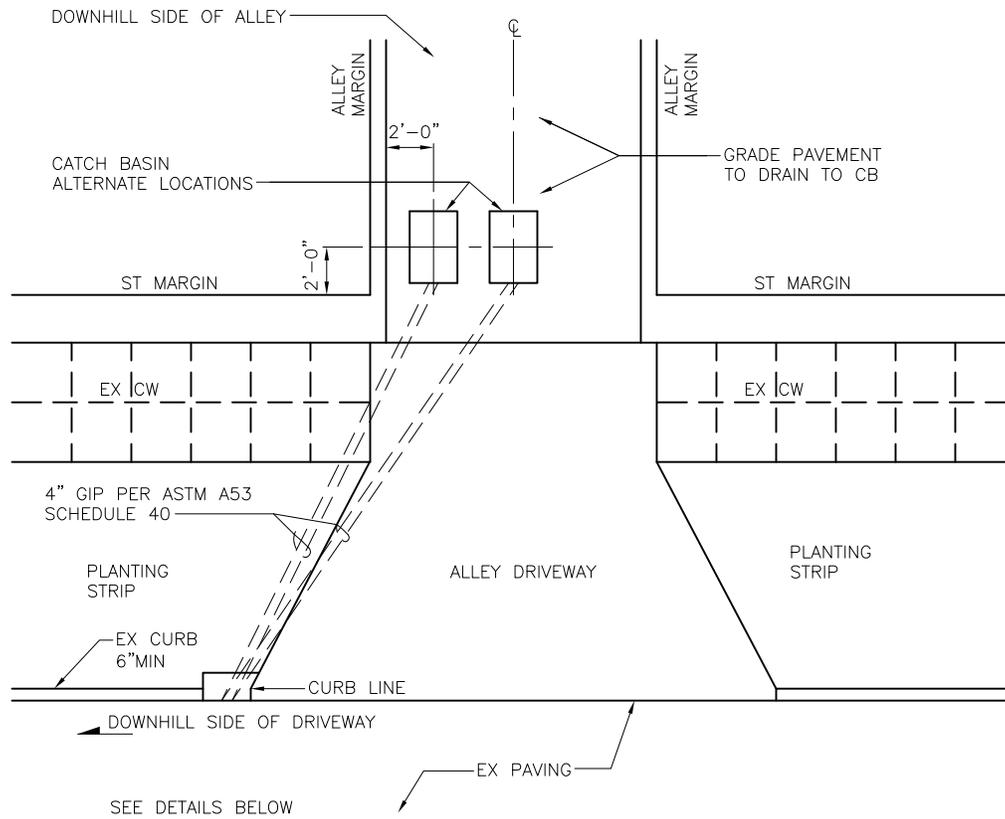
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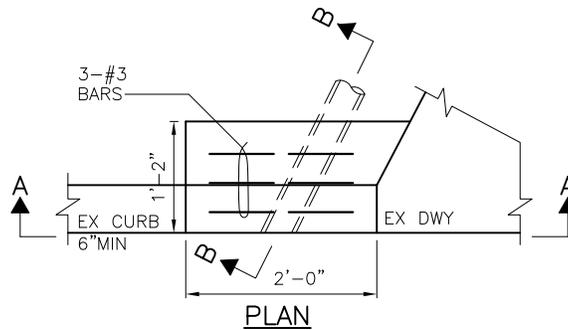
City of Seattle

NOT TO SCALE

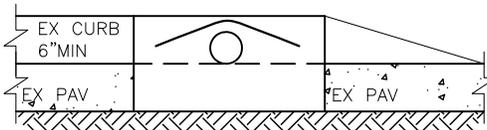
TYPE 241 CATCH BASIN



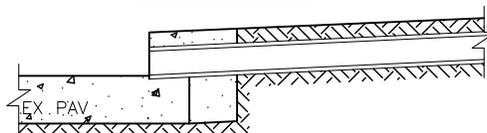
PLAN



PLAN



SECTION A-A



SECTION B-B

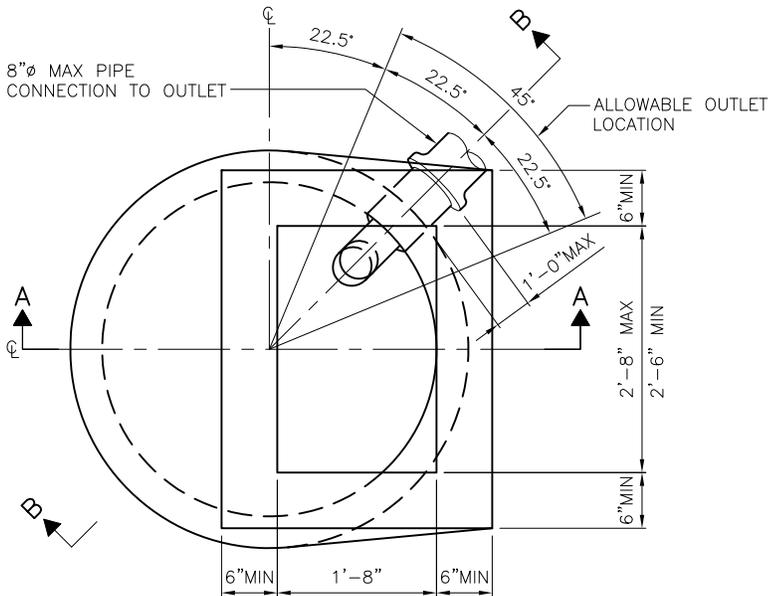
REF STD SPEC SEC 7-05 & 7-08



City of Seattle

NOT TO SCALE

TYPE 241 CATCH BASIN
INSTALLATIONS

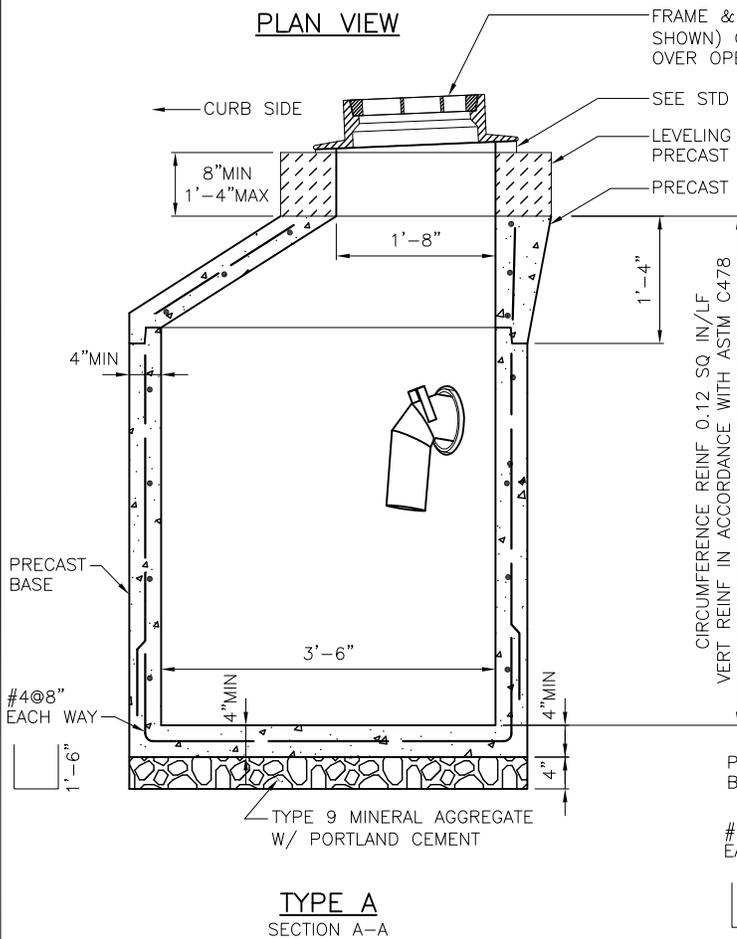


CB TYPE	CASTING	
	FRAME	GRATE
A	NO 262	NO 265
B	NO 263	NO 265

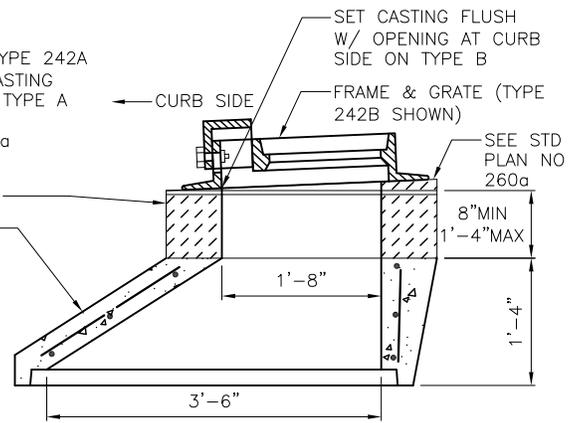
NOTES:

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 SHALL BE RUNNING BOND PATTERN WITH 1/4 TO 1/2 GROUT IN BETWEEN BRICKS.

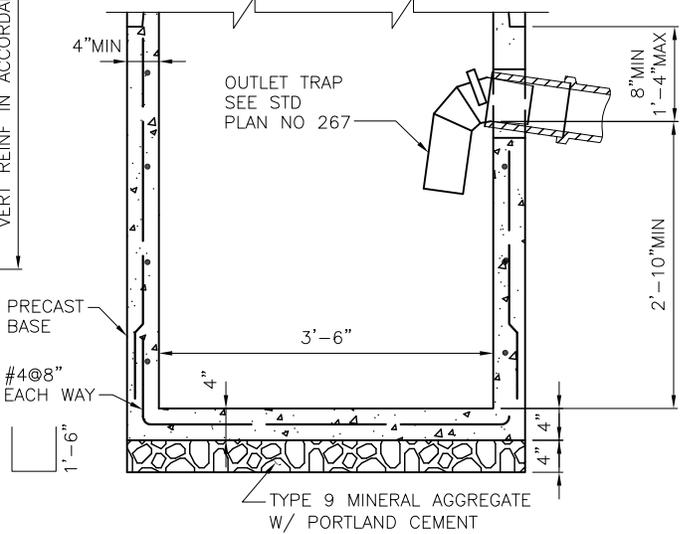
PLAN VIEW



TYPE A
SECTION A-A



TYPE B
SECTION A-A



TYPE A & B
SECTION B-B

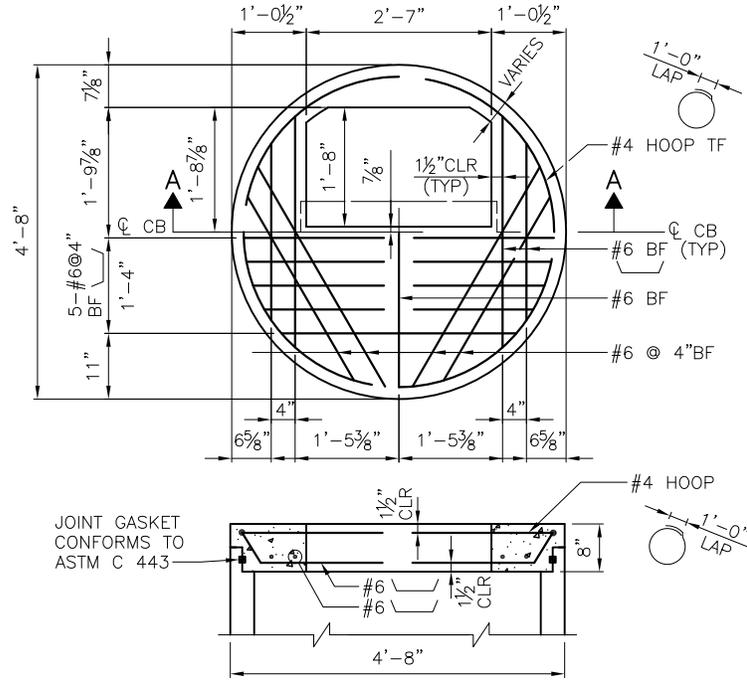
REF STD SPEC SEC 7-05



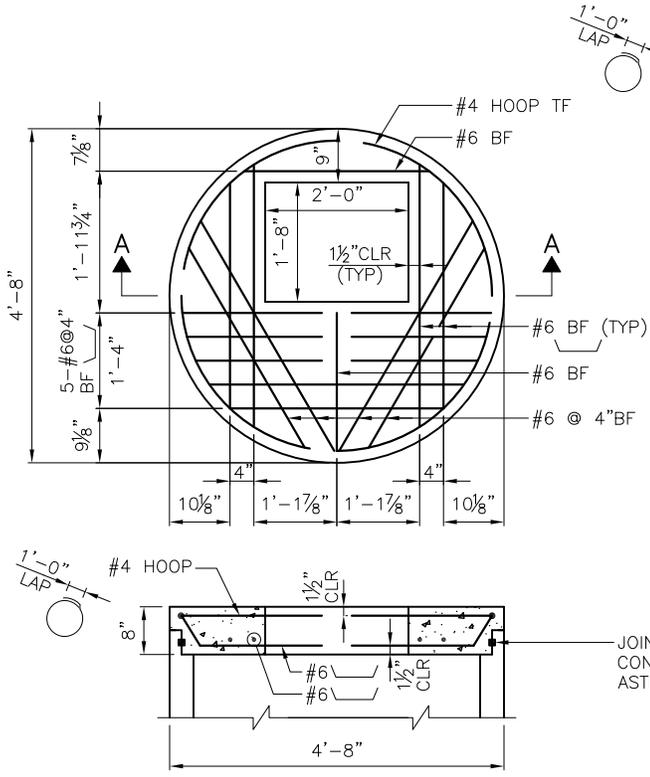
City of Seattle

NOT TO SCALE

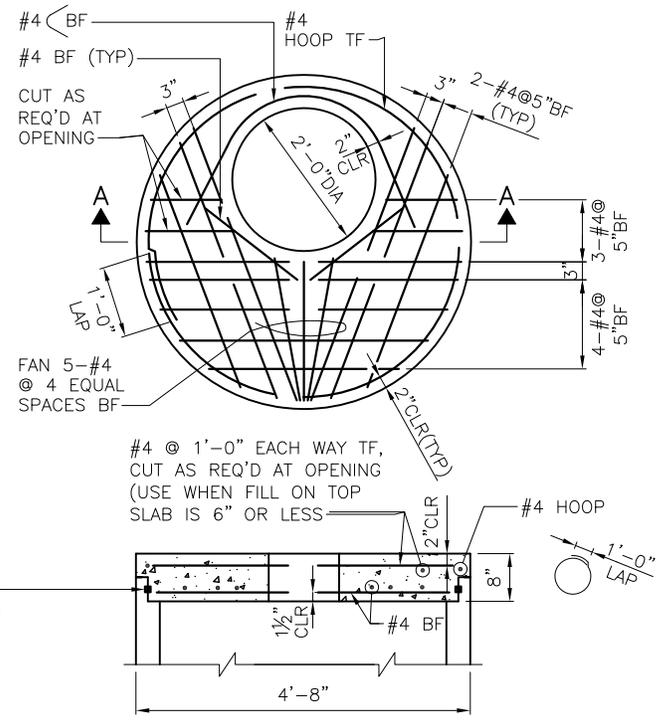
TYPE 242 CATCH BASIN



UNIT T
SECTION A-A



UNIT P-48
SECTION A-A



UNIT R
SECTION A-A

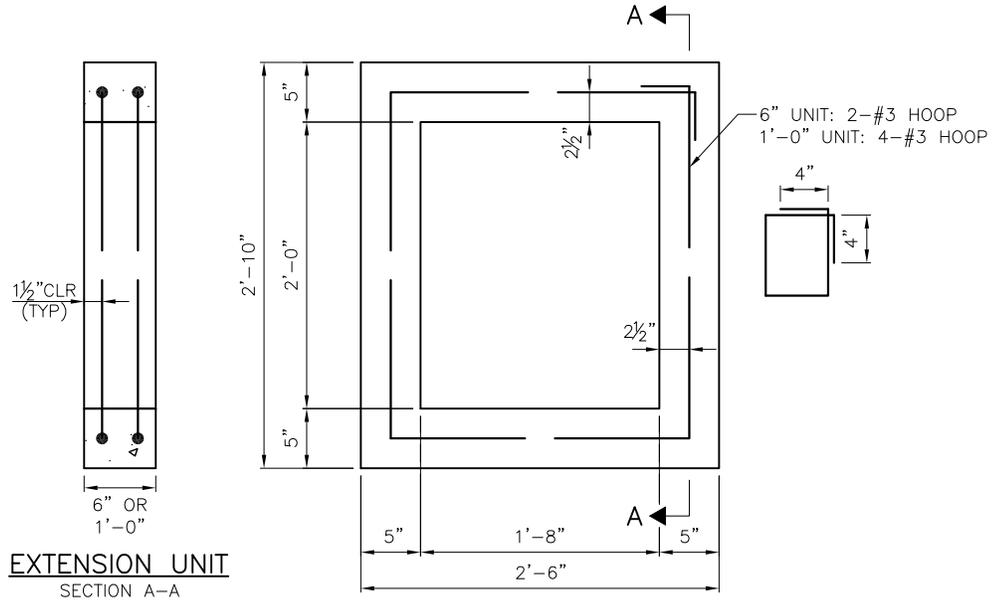
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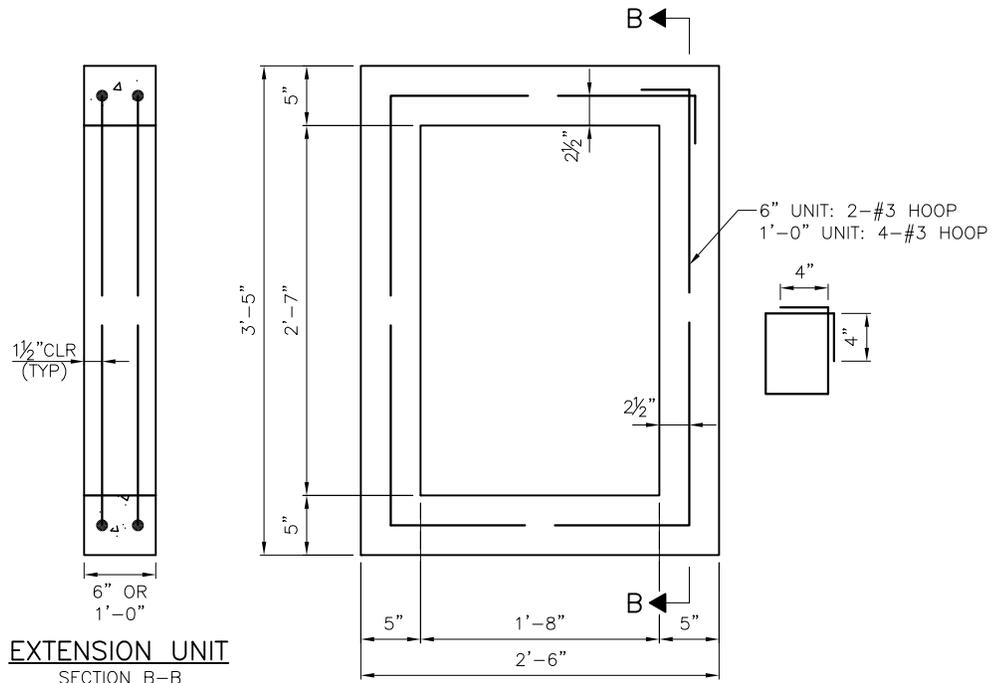
City of Seattle

NOT TO SCALE

PRECAST CATCH BASIN
TOP SLAB



UNIT S



UNIT U

NOTES:

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

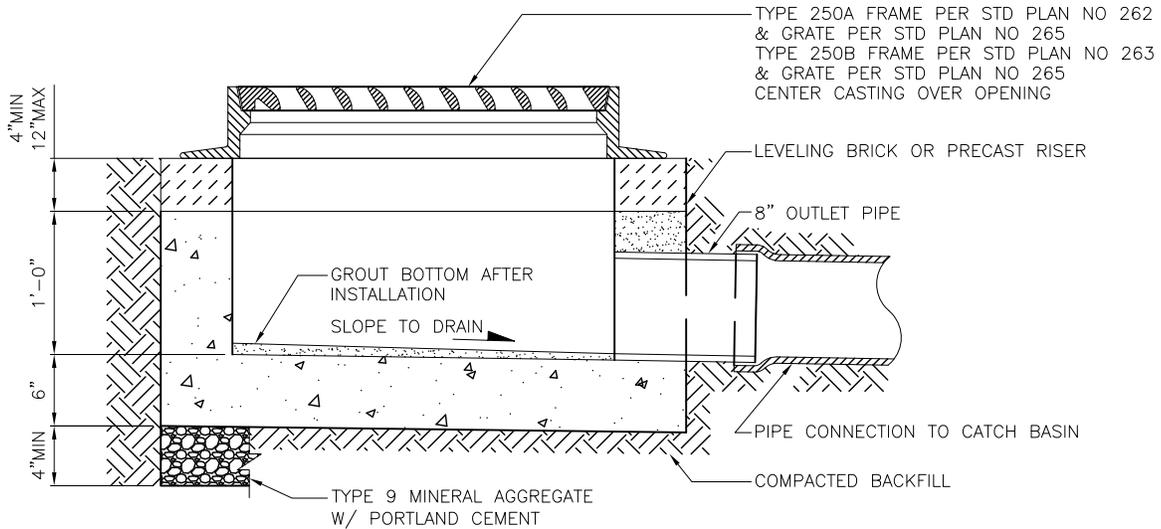
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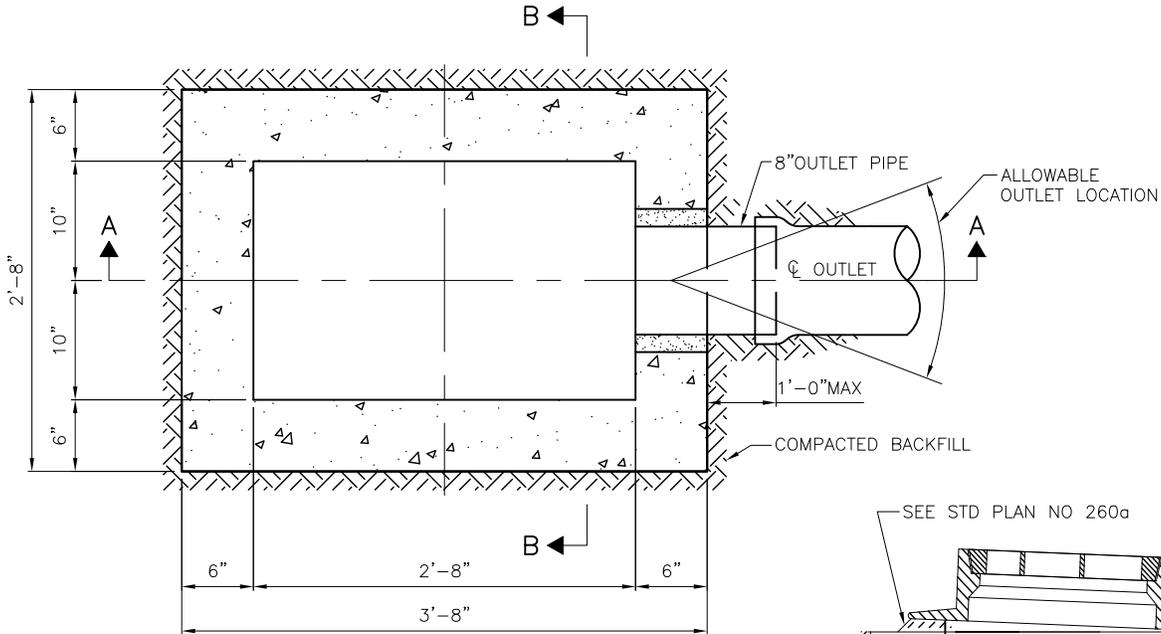
City of Seattle

NOT TO SCALE

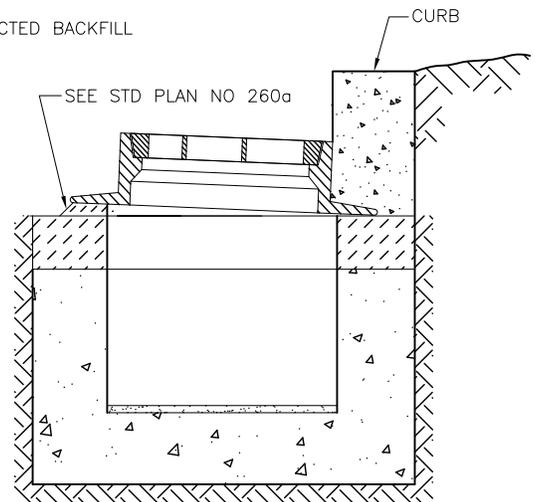
**PRECAST CATCH BASIN
EXTENSION RISERS**



SECTION A-A



PLAN VIEW



SECTION B-B

TYPE A ONLY

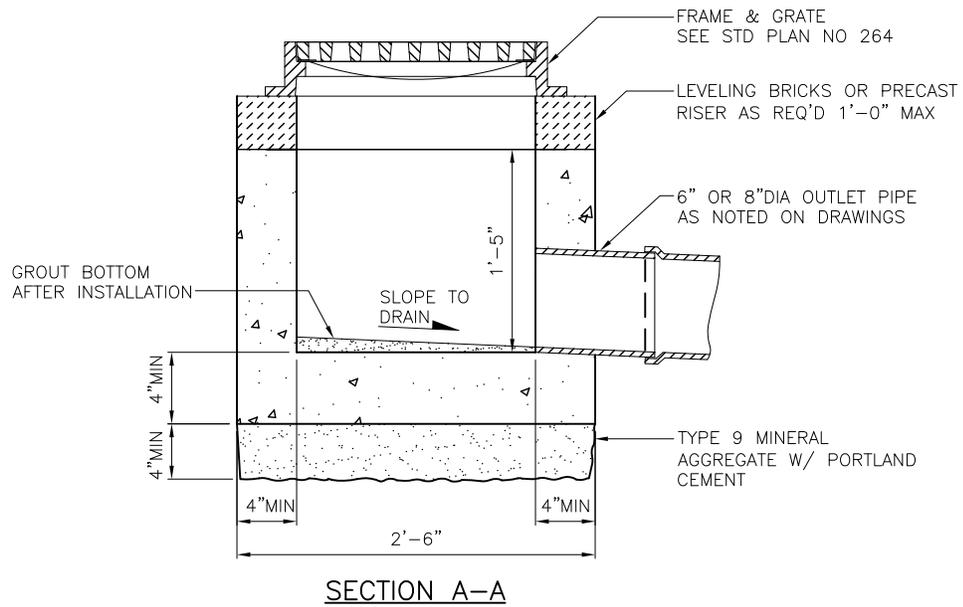
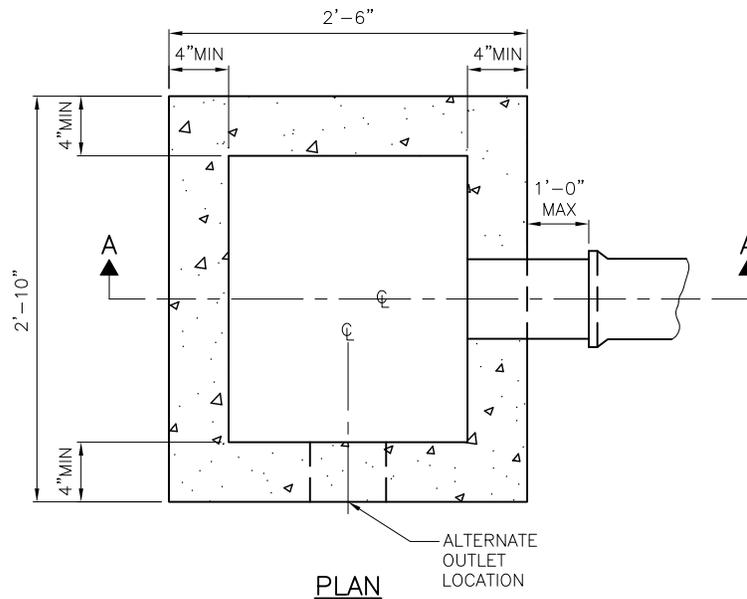
REF STD SPEC SEC 7-05



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TYPE 250 INLET



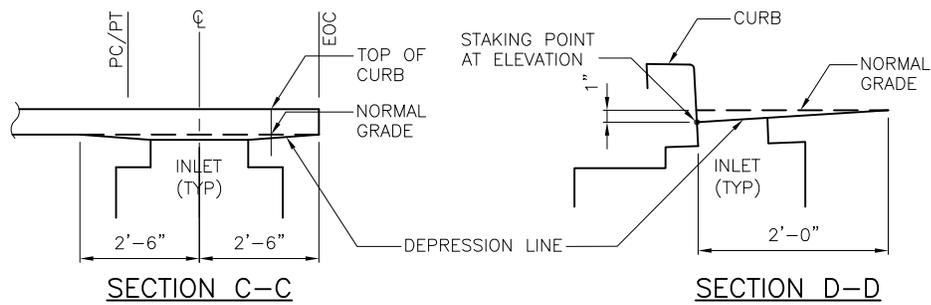
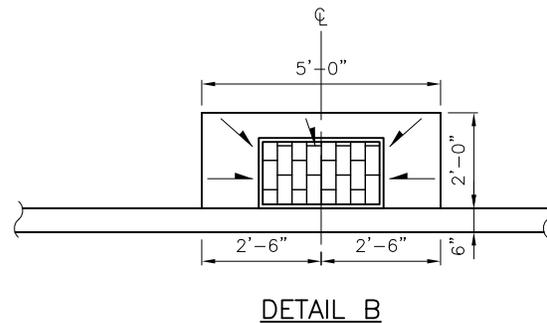
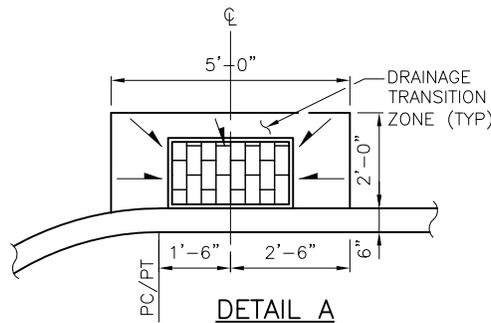
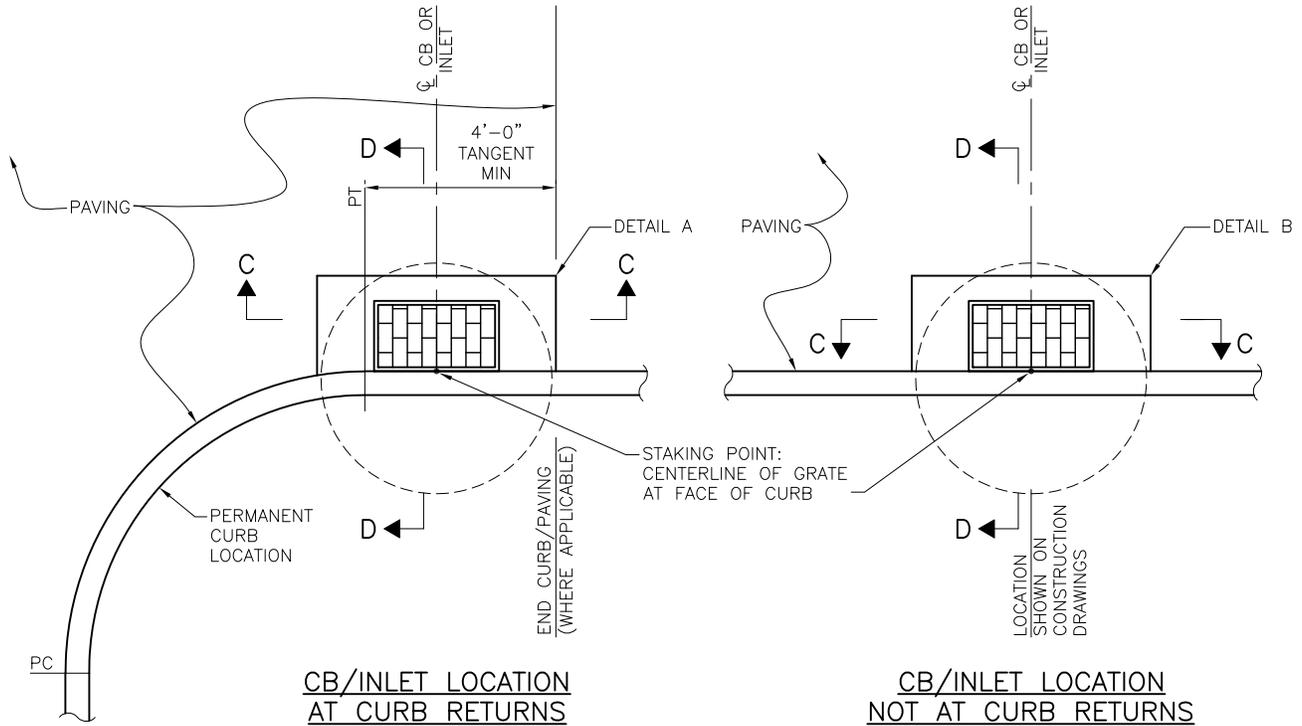
REF STD SPEC SEC 7-05



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TYPE 252 INLET



NOTES:

1. CB INLET GRATES SHALL NOT BE PLACED IN CROSSWALKS.
2. CB INLETS SHALL NOT BE PLACED IN CURB RAMP LANDINGS.

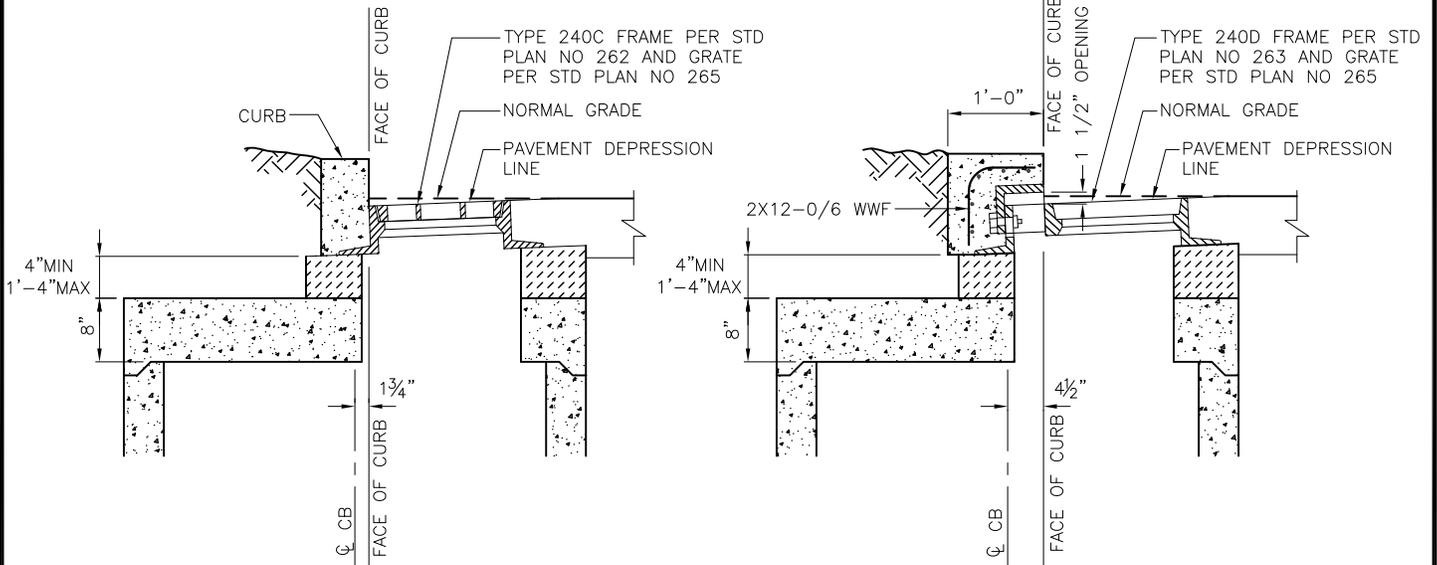
REF STD SPEC SEC 7-05



City of Seattle

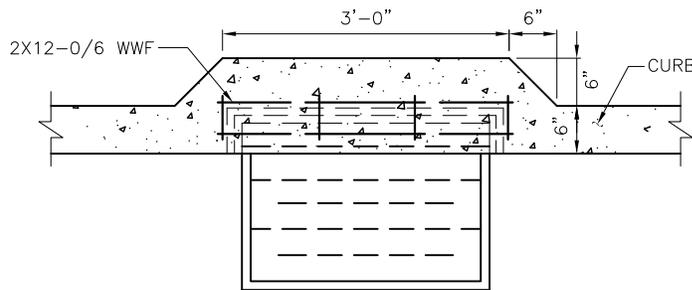
NOT TO SCALE

INLET / CATCH BASIN LOCATION & INSTALLATION

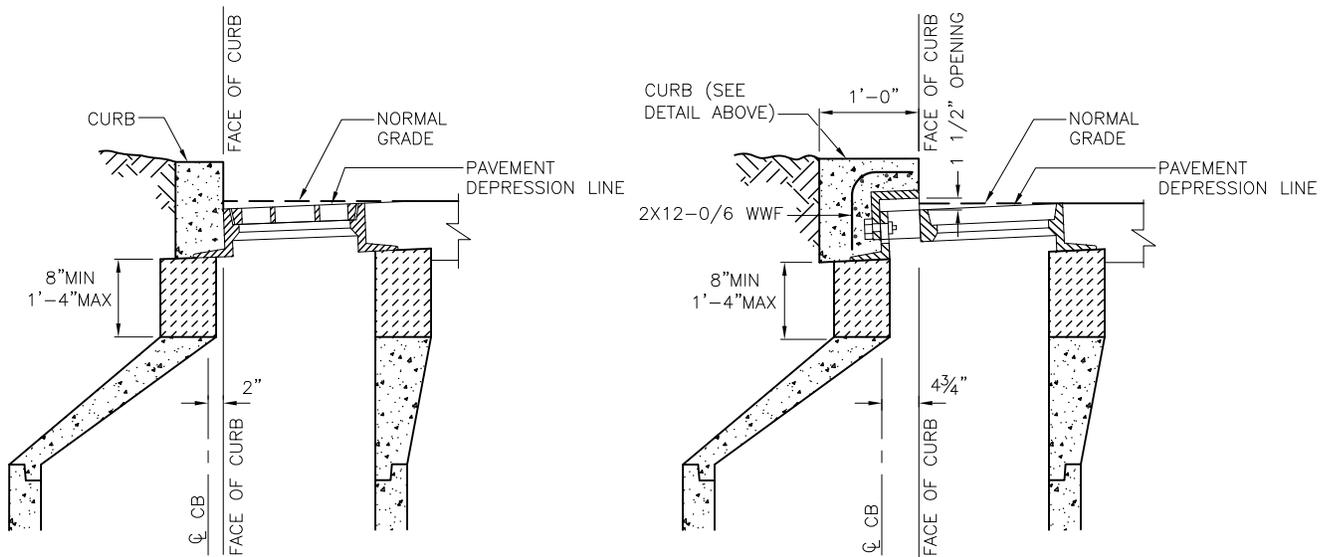


TYPE 240C CB

TYPE 240D CB



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



TYPE 242A CB
(TYPE 250A INLET SIMILAR)

TYPE 242B CB
(TYPE 250B INLET SIMILAR)

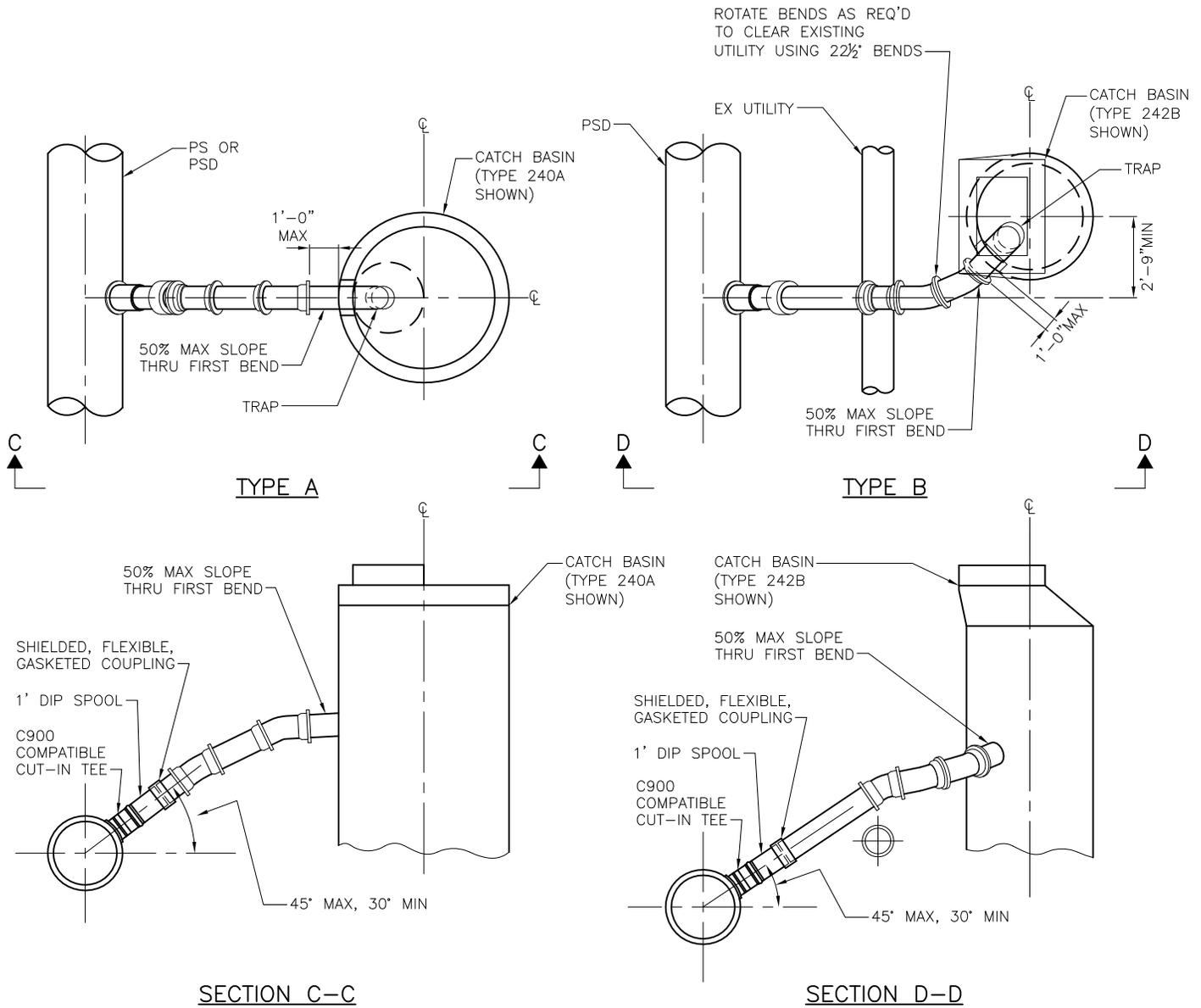
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

CATCH BASIN &
INLET INSTALLATION



NOTES:

1. TYPE A CONNECTIONS SHALL BE USED WITH CB TYPES 240A, 240B AND 241.
2. TYPE B CONNECTIONS SHALL BE USED WITH CB TYPES 240C, 240D, 242A AND 242B.
3. CONNECTIONS SHALL MAINTAIN A MINIMUM OF 2% AND A MAXIMUM OF 100% GRADE.
4. MAX BEND SHALL BE 22½° OR 1/6 BEND. USE OF 1/8 BEND REQUIRES APPROVAL BY SPU.
5. 1' DI SPOOL AND COUPLING REQUIRED WITH CUT-IN TEE.

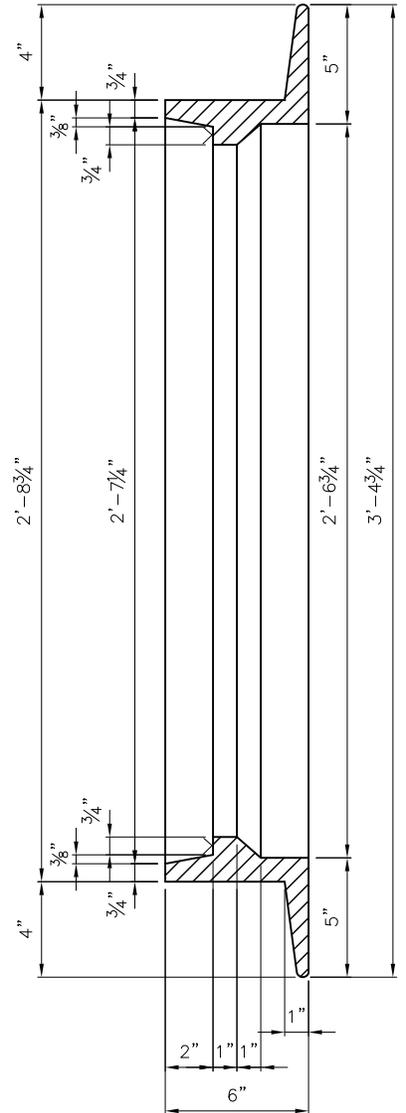
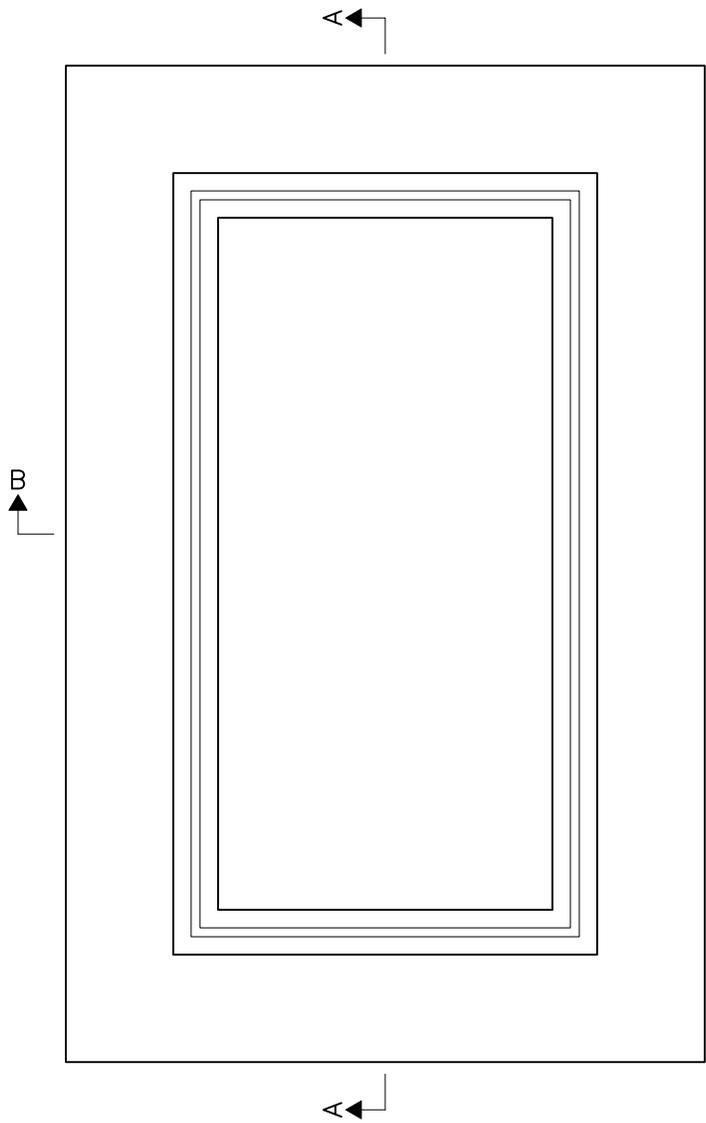
REF STD SPEC SEC 7-08



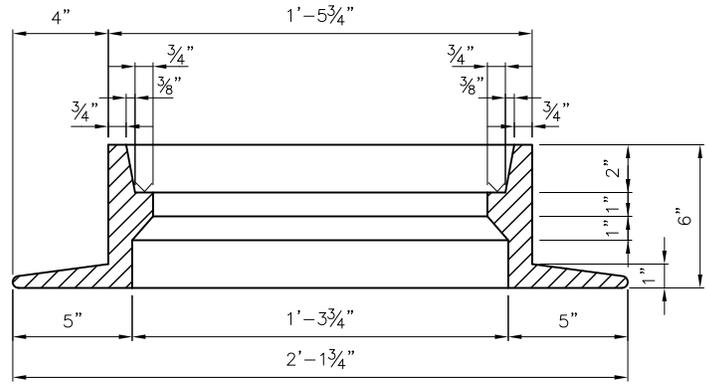
City of Seattle

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TYPICAL CATCH BASIN CONNECTION



SECTION A-A



SECTION B-B

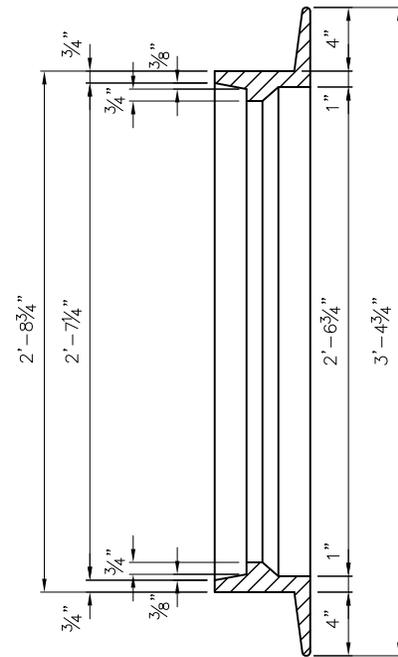
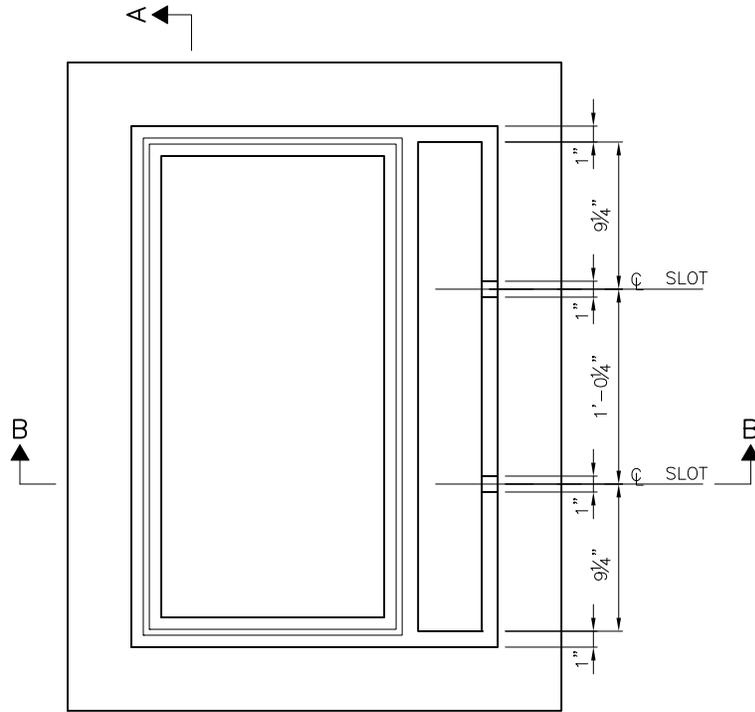
REF STD SPEC SEC 9-12



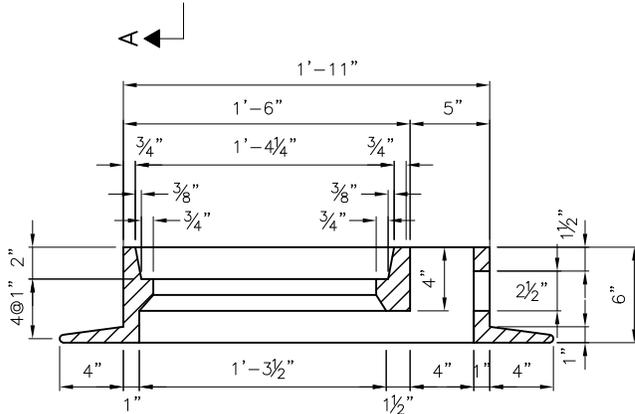
City of Seattle

NOT TO SCALE

TYPE 262 INLET FRAME

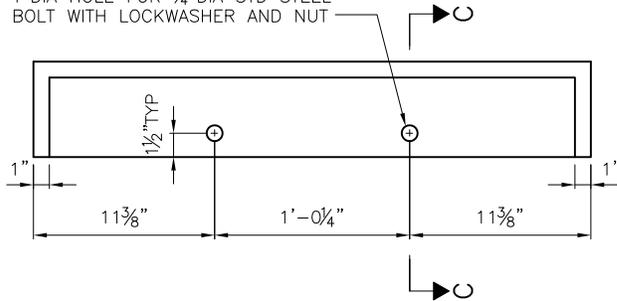


SECTION A-A

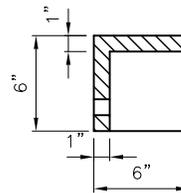


SECTION B-B

1" DIA HOLE FOR 3/4" DIA STD STEEL BOLT WITH LOCKWASHER AND NUT



CURB INLET



SECTION C-C

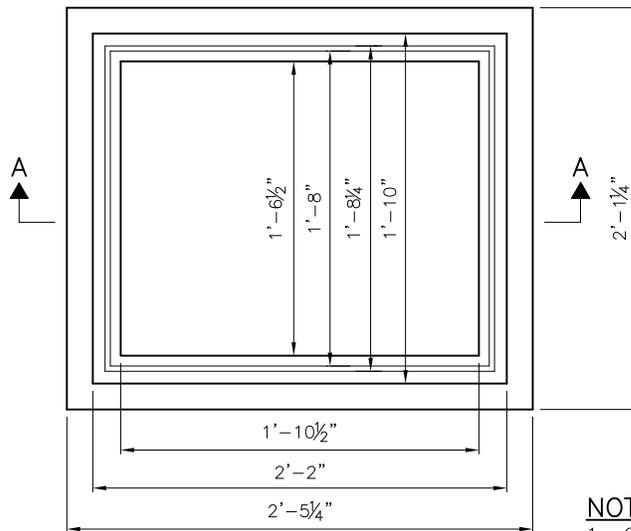
REF STD SPEC SEC 9-12



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NOT TO SCALE

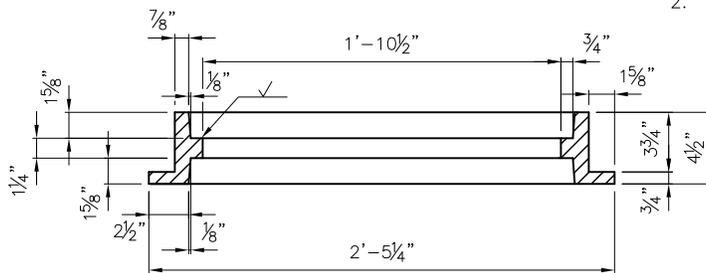
TYPE 263 INLET FRAME



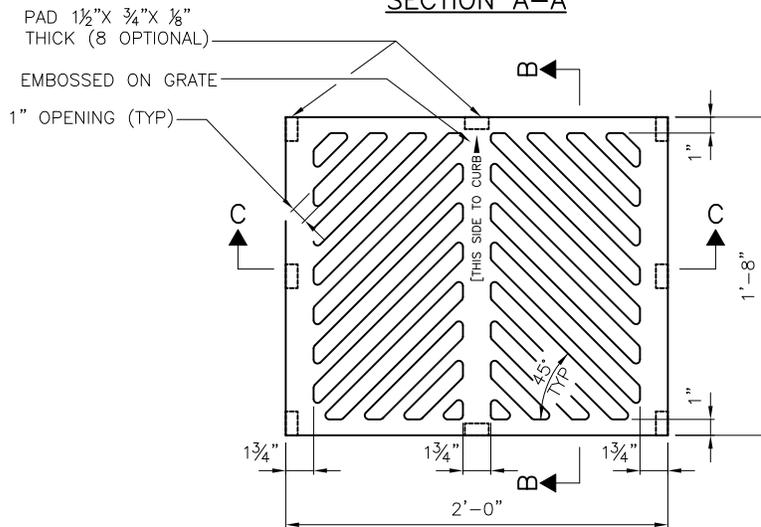
FRAME

NOTES:

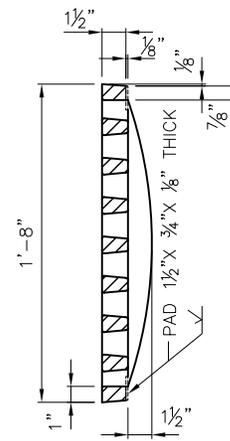
1. OTHER GRATES ACCEPTABLE; SPECIFY VANE, SOLID COVER, BI-DIRECTIONAL VANE, ADA OR BEEHIVE ON PLANS.
2. GRATE MATERIAL: DUCTILE IRON



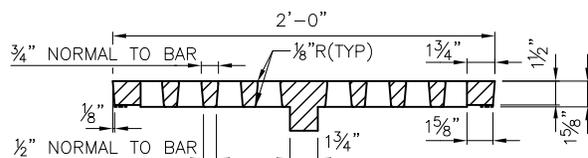
SECTION A-A



GRATE



SECTION B-B



SECTION C-C

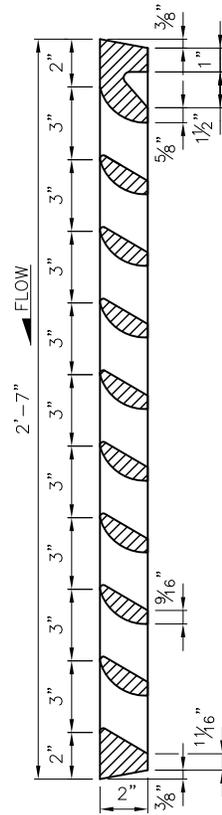
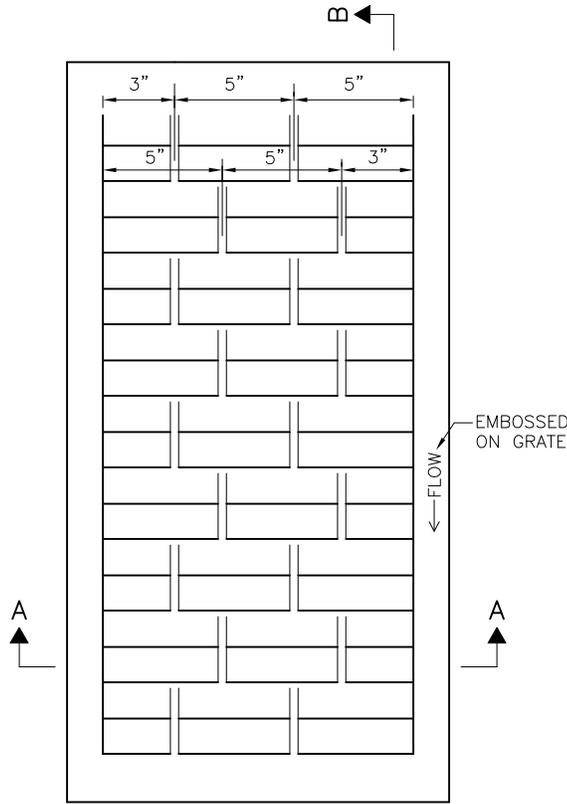
REF STD SPEC SEC 7-05



City of Seattle

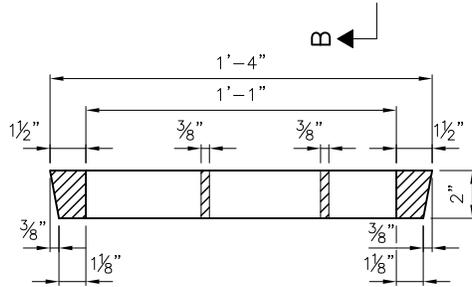
NOT TO SCALE

INLET FRAME & GRATE

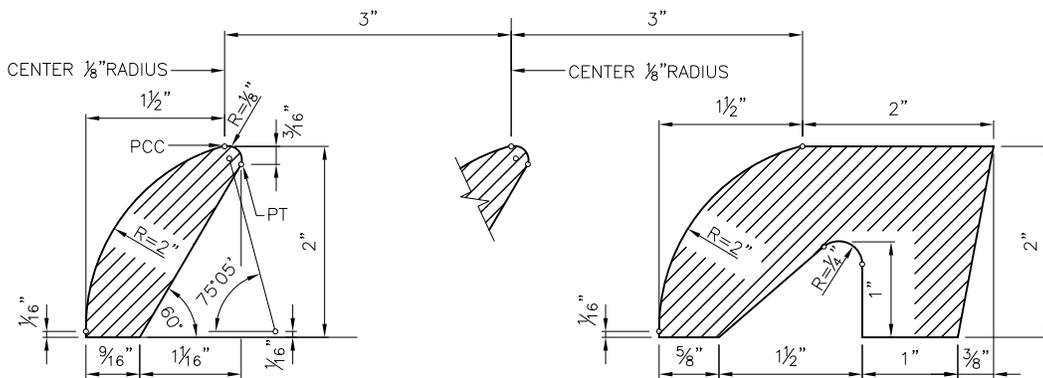


SECTION B-B

GRATE MATERIAL:
DUCTILE IRON



SECTION A-A



VANE DETAIL

END DETAIL

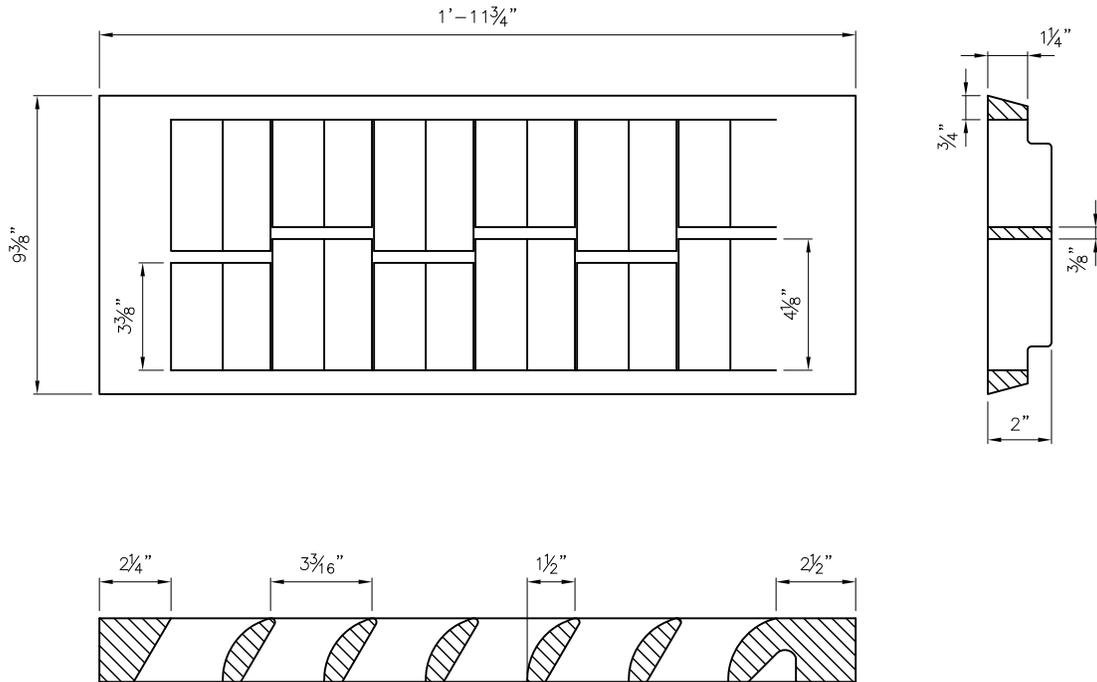
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

VANED GRATE



NOTES:

1. OPEN AREA - 100 SQUARE INCHES.
2. SEE STD PLAN NO 265 FOR VANE AND END DETAIL.
3. STD PLAN NO 266 DIMENSIONS GOVERN ON END DETAIL.
4. REPLACEMENT VANED GRATE FOR TYPE 164 INLET FRAMES.

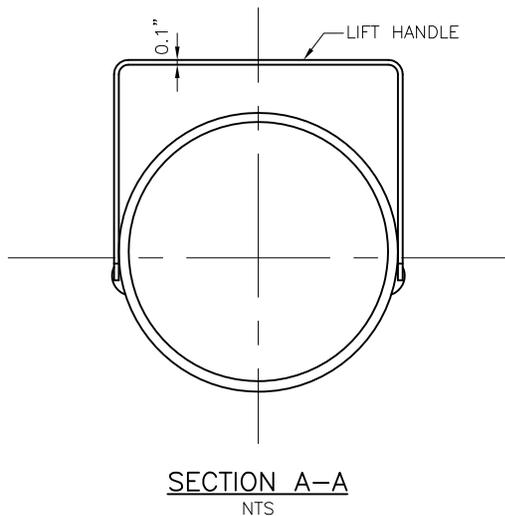
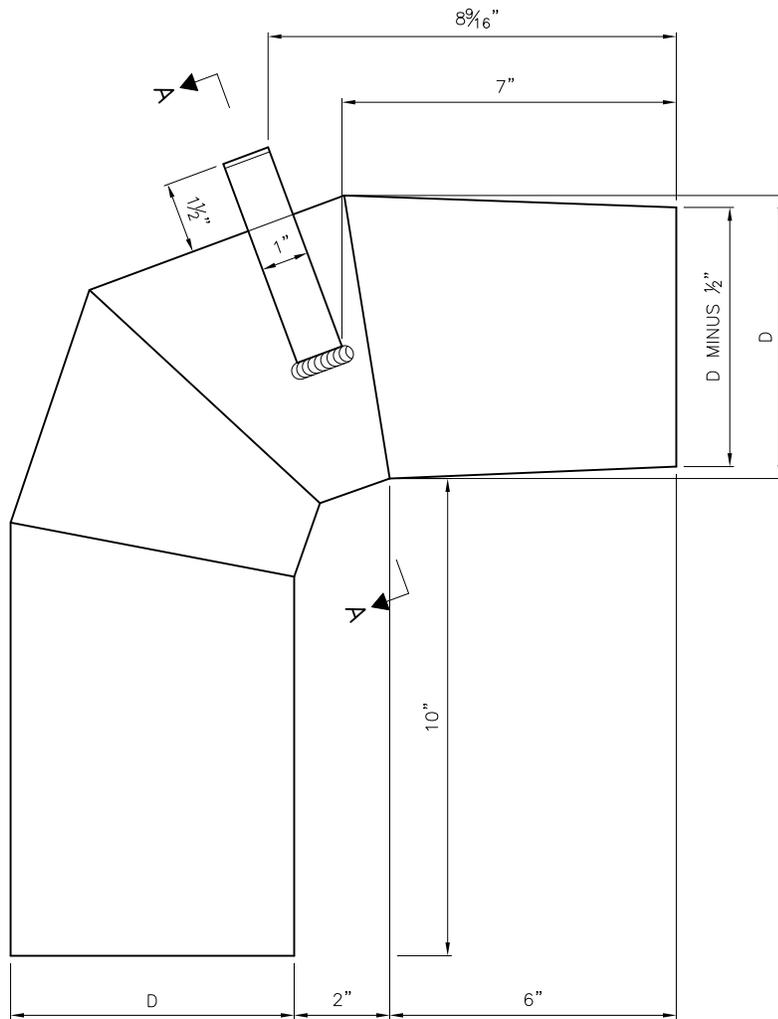
REF STD SPEC SEC 7-20.3(7), 9-12



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 SHALL BE WELDED TO OUTSIDE OF TRAP (1" WIDE X 0.1" THICK)

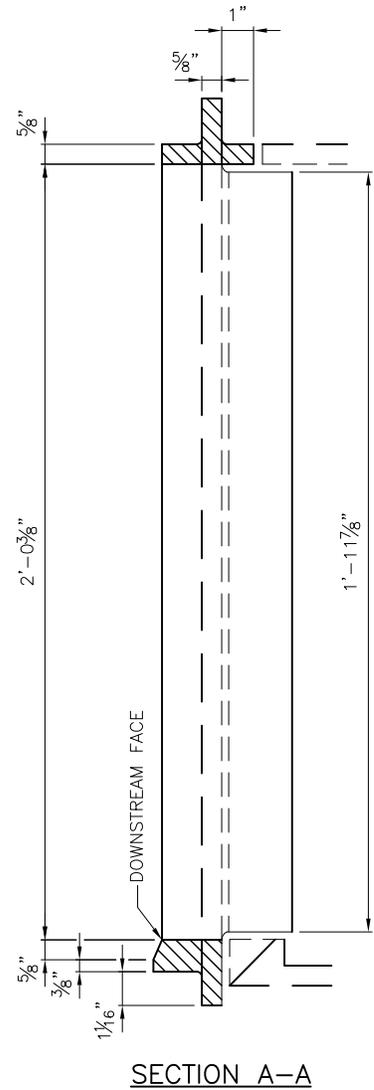
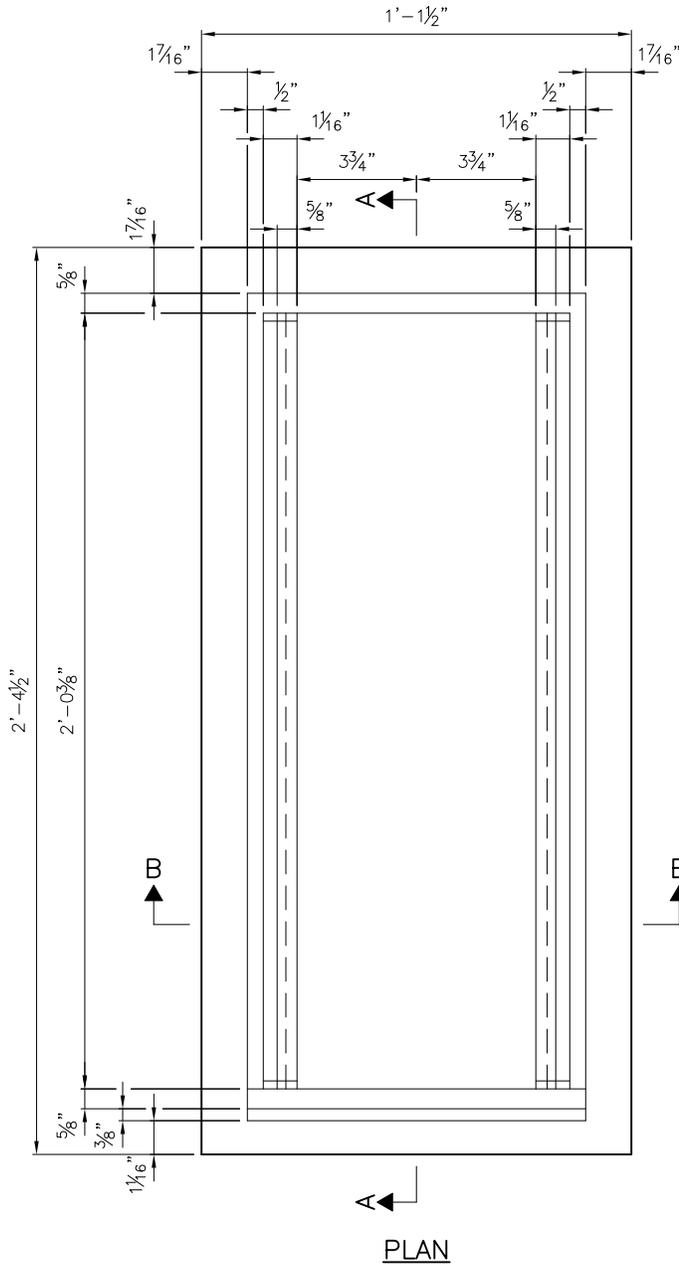
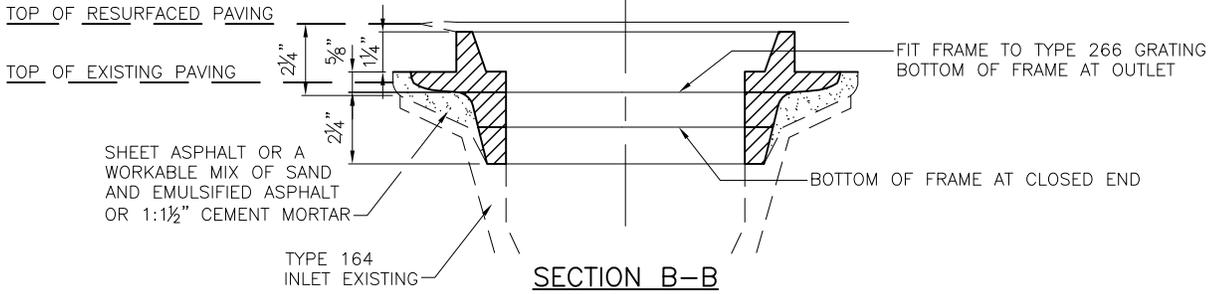
REF STD SPEC SEC 9-12



City of Seattle

NOT TO SCALE

OUTLET TRAP



THESE DIMENSIONS MAY BE CHANGED IF NECESSARY TO FIT EXISTING CASTINGS

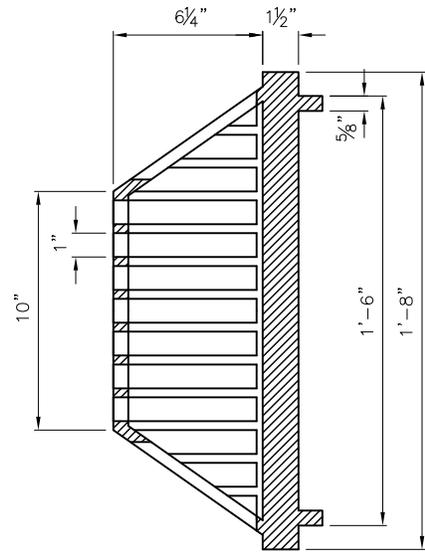
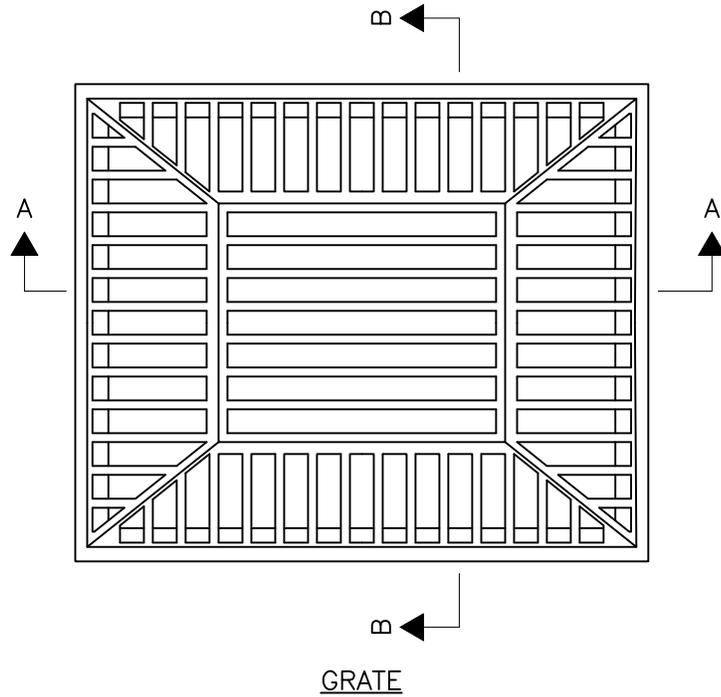
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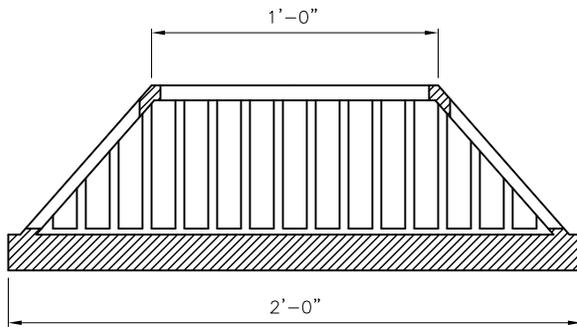
City of Seattle

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

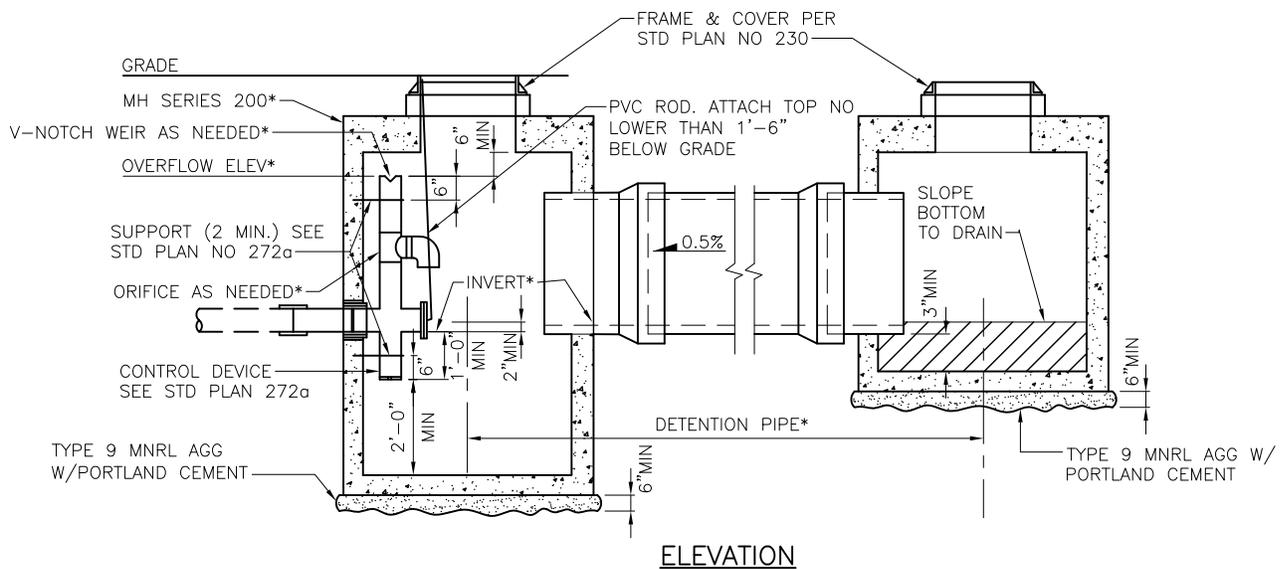
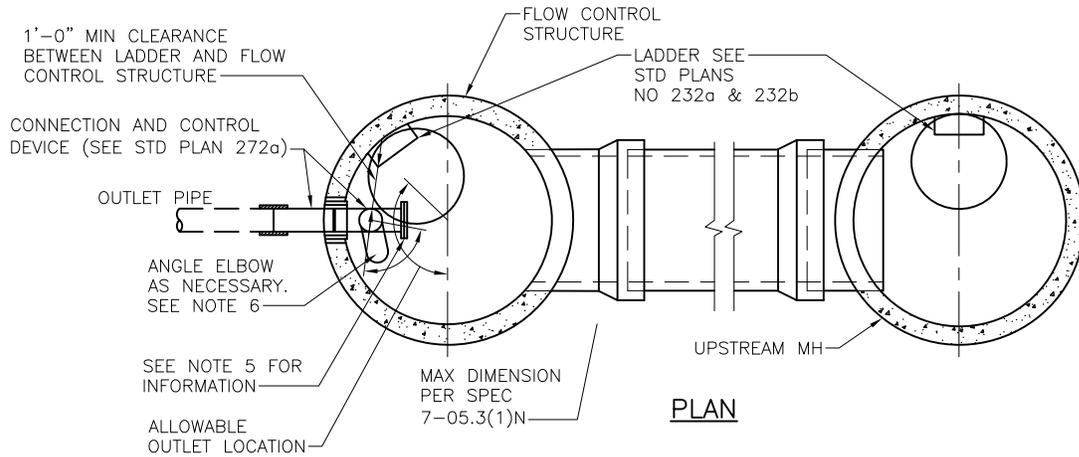
REF STD SPEC SEC 9-12



City of Seattle

NOT TO SCALE

BEEHIVE GRATE FOR
BIORETENTION



NOTES:

1. DETENTION PIPE MATERIAL SHALL 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 SHALL BE USED FOR CONNECTIONS.
2. BEDDING FOR DETENTION PIPE SHALL BE CLASS B. DIP AND RCP SHALL BE BEDDED IN MINERAL AGGREGATE TYPE 9. FLEXIBLE PIPE SHALL BE BEDDED IN MINERAL AGGREGATE TYPE 22.
3. INTERMEDIATE MHS WILL BE REQUIRED FOR DETENTION PIPE LENGTHS GREATER THAN 350LF.
4. OUTLET PIPE SHALL CONNECT TO MH ON MAINLINE.
5. STRUCTURE DESIGN SHALL 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 SHALL NOT BE PLACED DIRECTLY OVER THE TOP OF INLET PIPE

DETENTION PIPE DIAMETER	FLOW CONTROL STRUCTURE* (MH SIZE)	UPSTREAM** (MH SIZE)
18"	204.5b	204b
24"	205b	204.5b
30"	205b	205b
36"	206b	206b
48"	207b	207b
60"	208b	208b
72"	210b	210b

*SPECIFIC DESIGN INFORMATION AS INDICATED ON CONSTRUCTION DRAWINGS

**SIZE OF UPSTREAM MH SHALL BE ADJUSTED FOR ALTERNATIVE PIPE MATERIAL

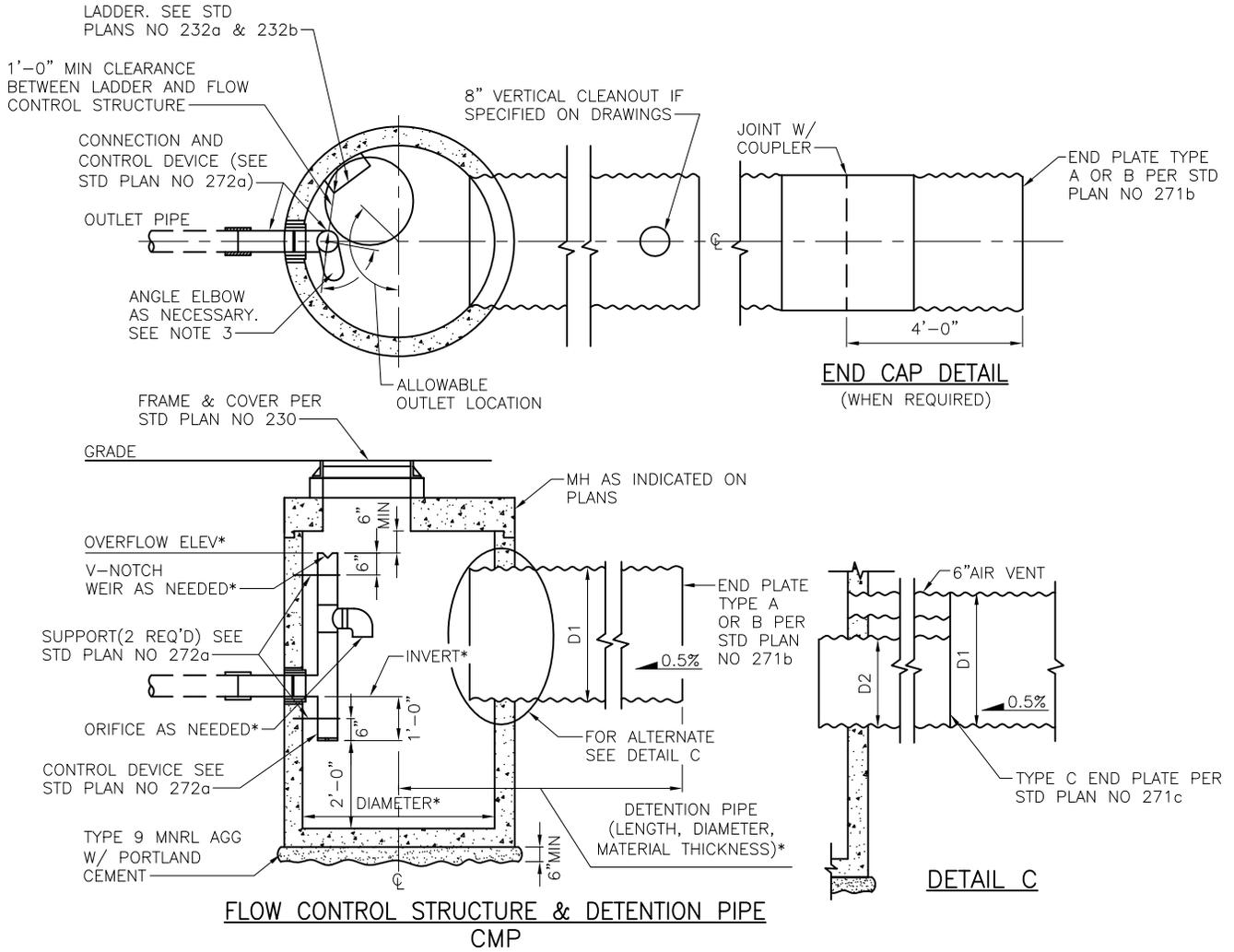
REF STD SPEC SEC 7-16



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 SHALL NOT BE PLACED DIRECTLY OVER THE TOP OF INLET PIPE

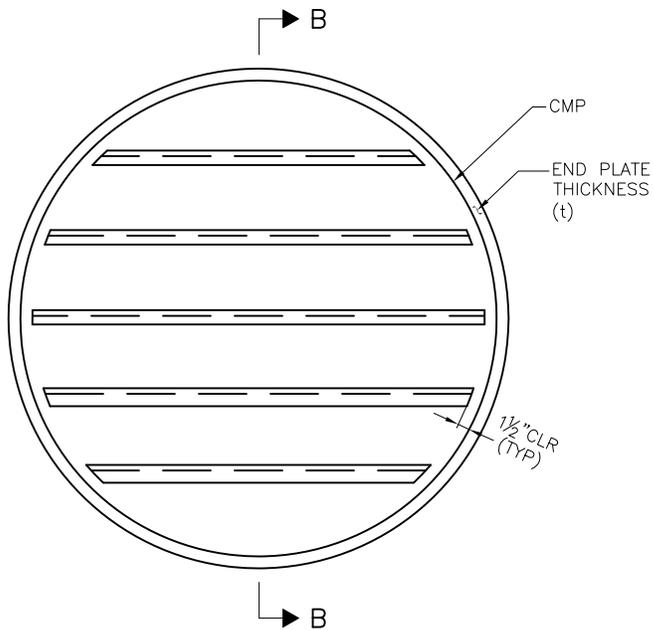
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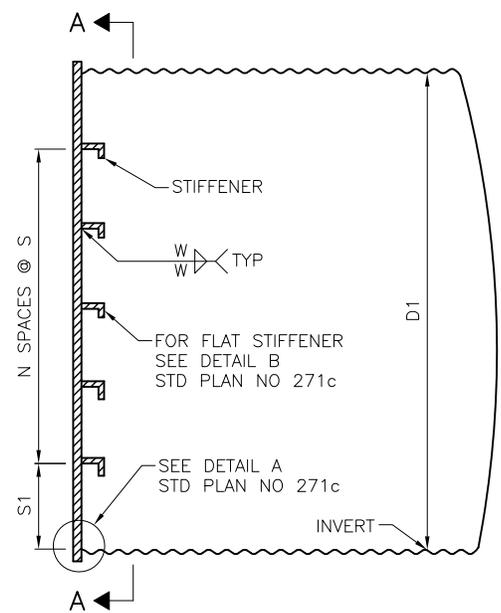
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**CMP DETENTION PIPE
PRIVATE SYSTEM ONLY**

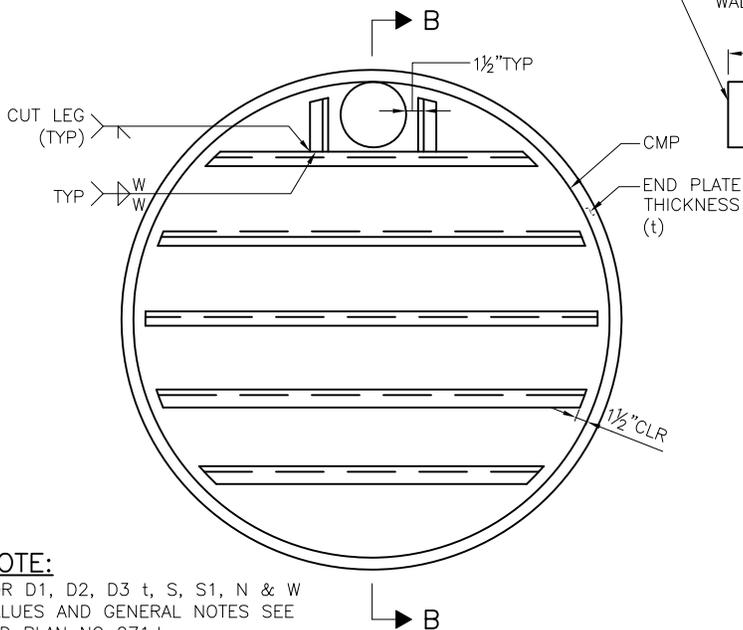


SECTION A-A

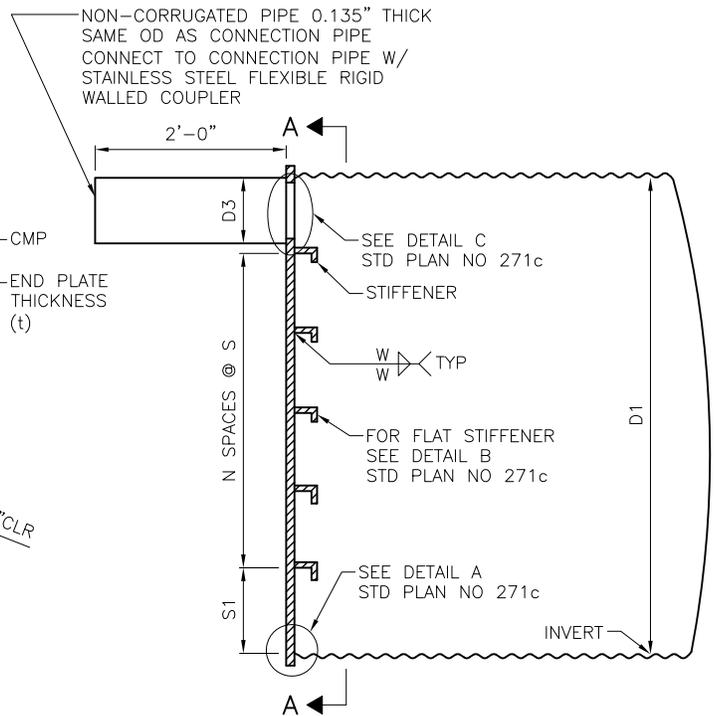


SECTION B-B

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

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

PIPE DIAMETER			END PLATE THICKNESS t	STIFFENER TYPE & SIZE	STIFFENER SPACING			SIZE W
D1	D2	D3			S1	S	N	
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 SHALL BE USED ONLY FOR ALUMINUM CMP

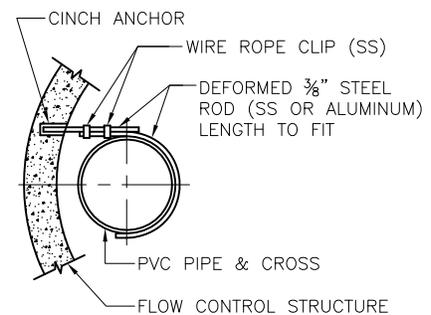
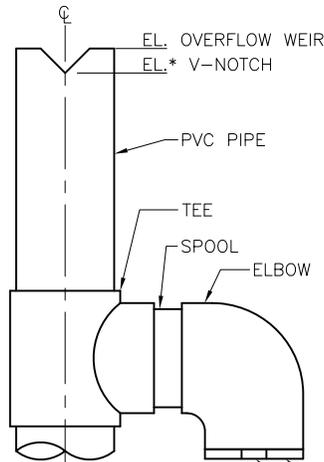
REF STD SPEC SEC 7-16



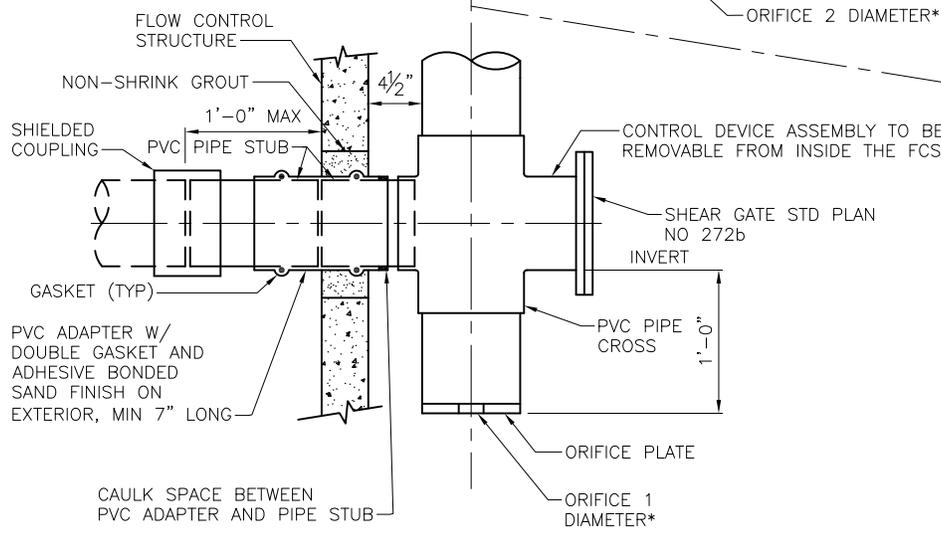
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**CMP DETENTION STRUCTURE
END PLATE DIMENSIONS**



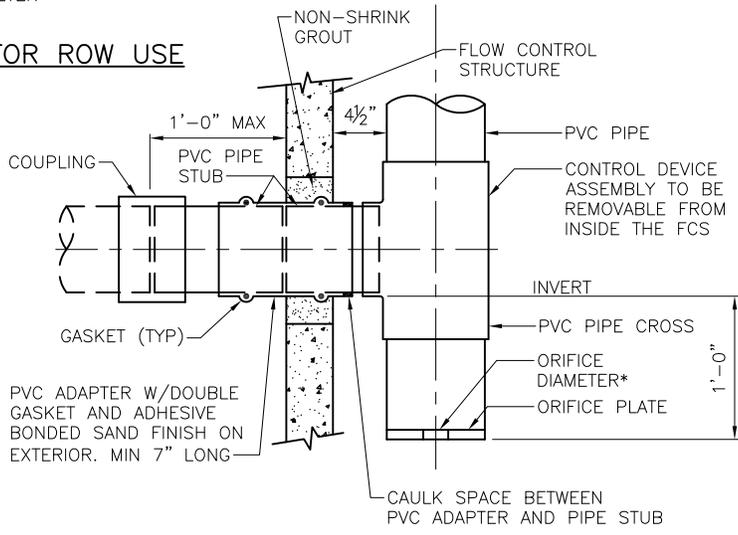
PIPE SUPPORT DETAIL



CONNECTION & CONTROL DEVICE FOR ROW USE

NOTES:

1. PVC PIPE SHALL BE SCHEDULE 40, PER ASTM 1785.
2. *CONSTRUCTION DRAWINGS SHALL 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.



CONNECTION & CONTROL DEVICE FOR PRIVATE SYSTEM

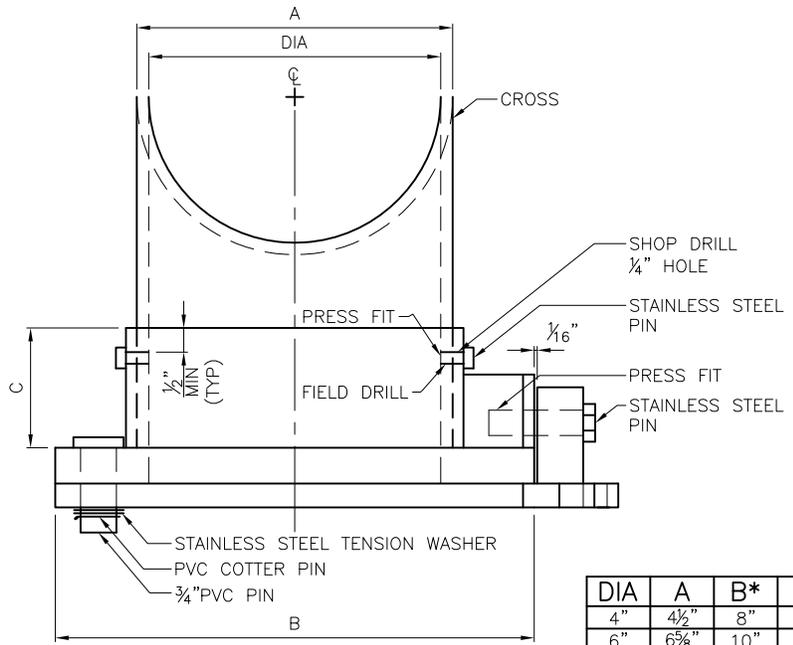
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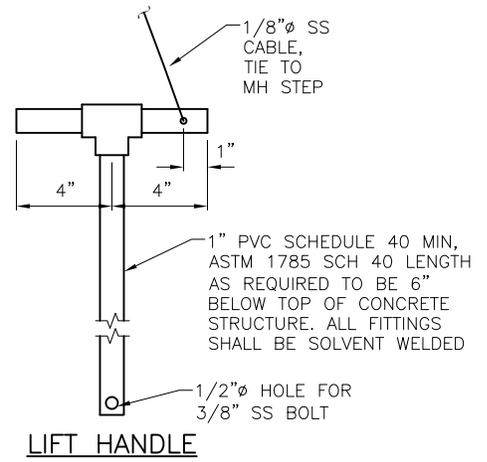
City of Seattle

NOT TO SCALE

FLOW CONTROL DEVICE ASSEMBLY



TOP VIEW

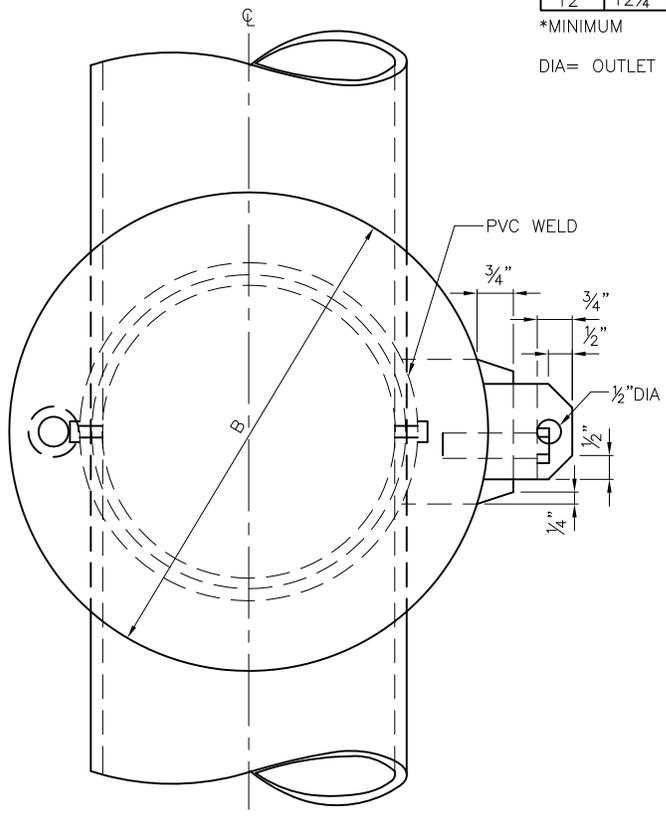


LIFT HANDLE

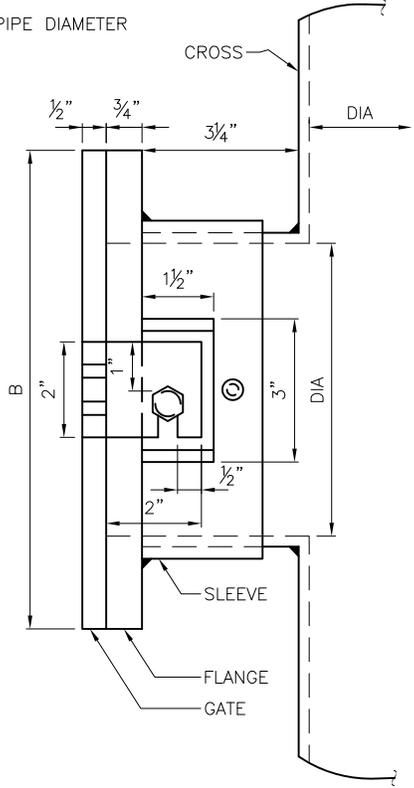
DIA	A	B*	C*
4"	4½"	8"	2"
6"	6¾"	10"	2½"
8"	8¾"	12"	3"
10"	10¾"	14"	3"
12"	12¾"	16"	3"

*MINIMUM

DIA= OUTLET PIPE DIAMETER



FRONT VIEW



SIDE VIEW

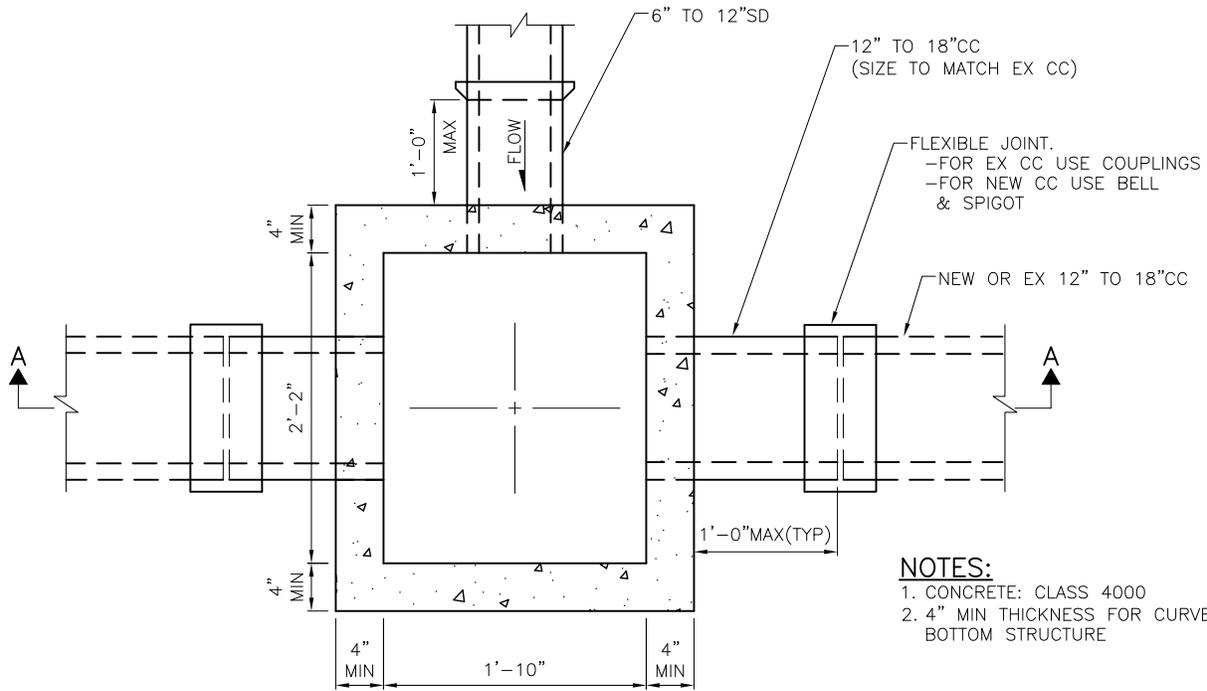
REF STD SPEC SEC 7-16



City of Seattle

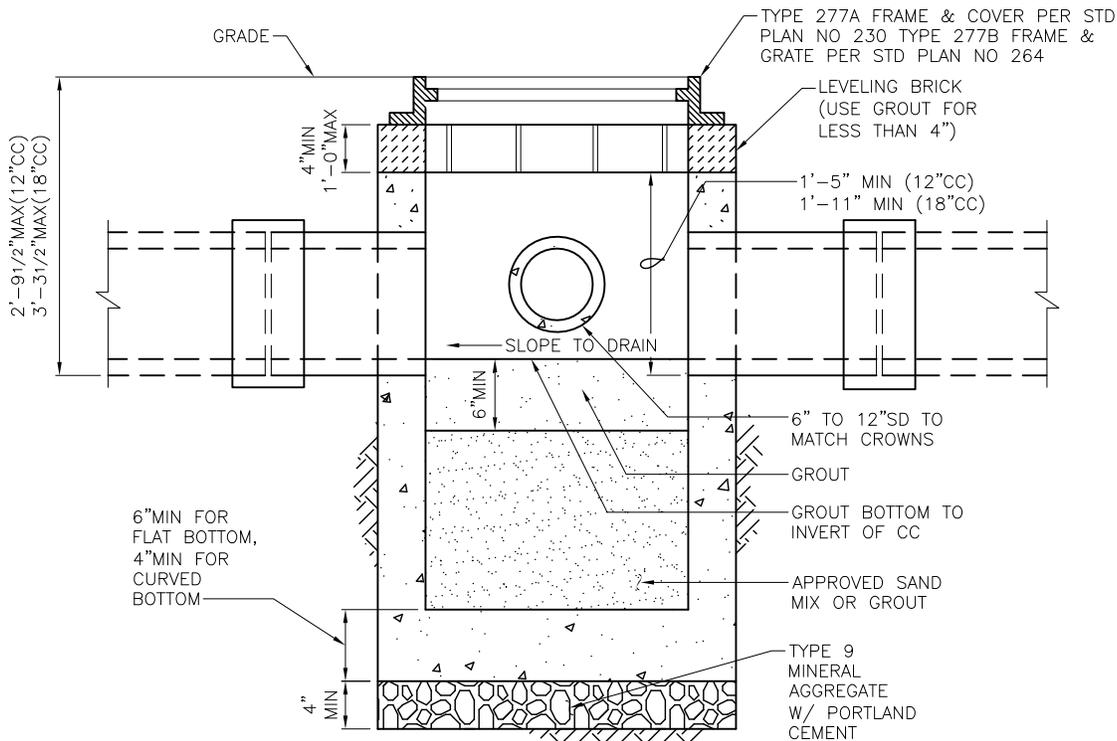
NOT TO SCALE

**PVC SHEAR GATE
FOR USE IN ROW ONLY**



- NOTES:**
1. CONCRETE: CLASS 4000
 2. 4" MIN THICKNESS FOR CURVED BOTTOM STRUCTURE

PLAN



SECTION A-A

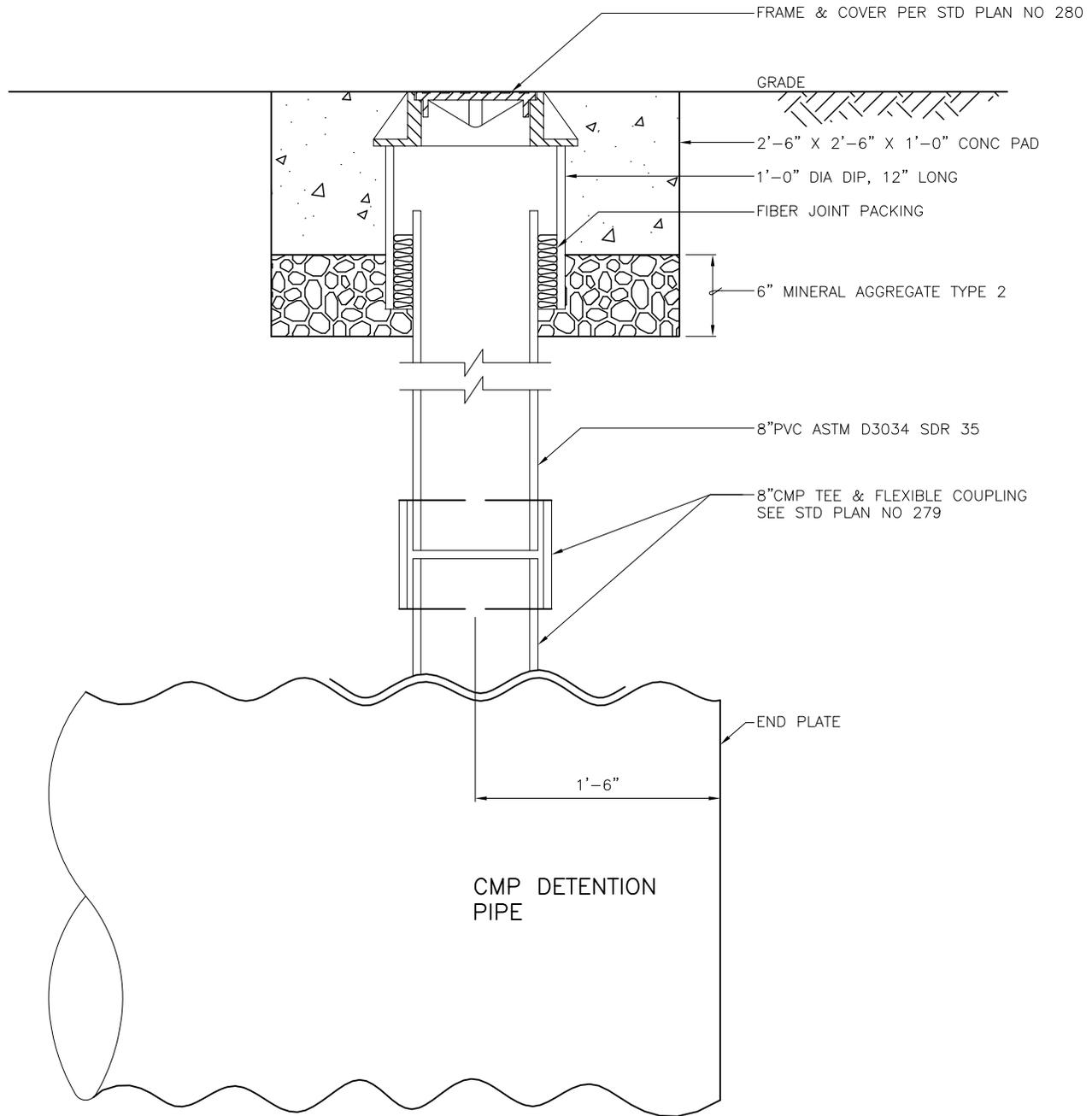
REF STD SPEC SEC 7-02 & 9-12.9



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NOT TO SCALE

TYPE 277 JUNCTION BOX & INSTALLATION



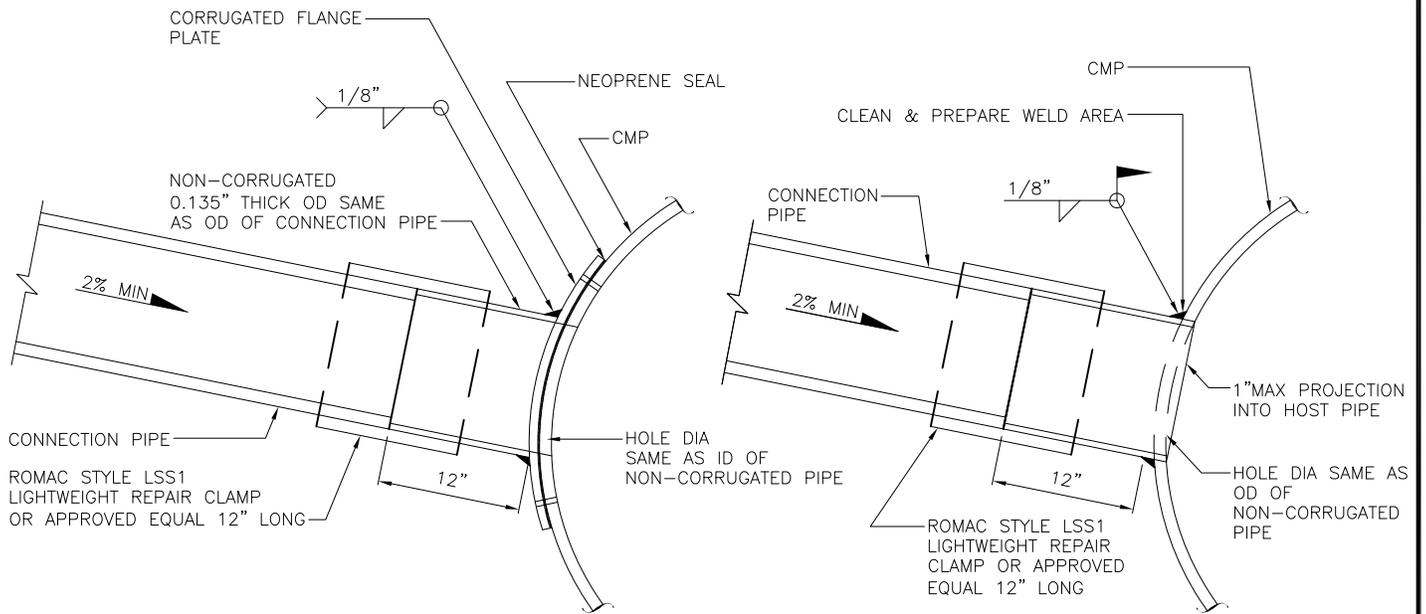
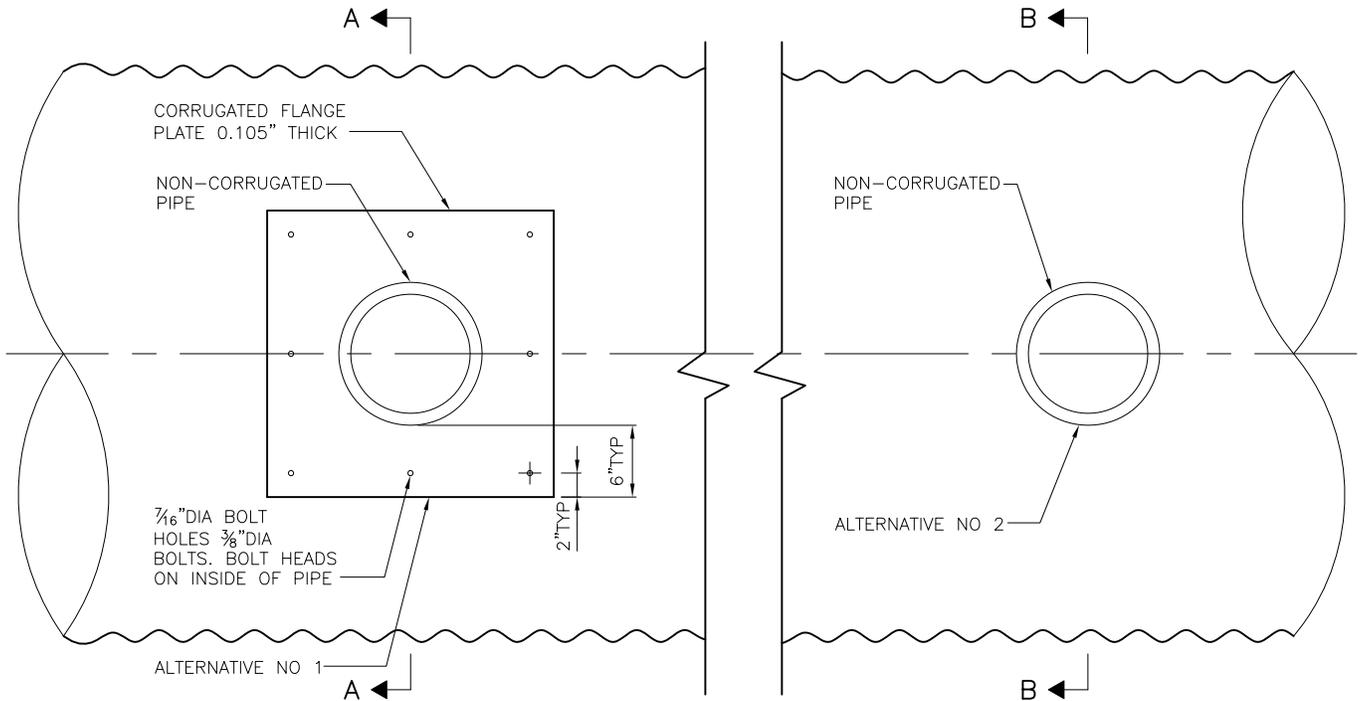
REF STD SPEC SEC 7-19 & 7-16.2



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NOT TO SCALE

VERTICAL CLEAN OUT/
CORRUGATED METAL PIPE



SECTION A-A

SECTION B-B

NOTES:

- CORRUGATED FLANGE PLATE AND NON-CORRUGATED PIPE TO BE SAME MATERIAL AND HAVE SAME COATING AS CMP.
- BOLTS TO BE STAINLESS STEEL MEETING ASTM A 307 OR STAINLESS STEEL MEETING ASTM A 193.

NOTE:

USE ALTERNATIVE NO 1 IF PIPE CONDITION PROHIBITS WELDING

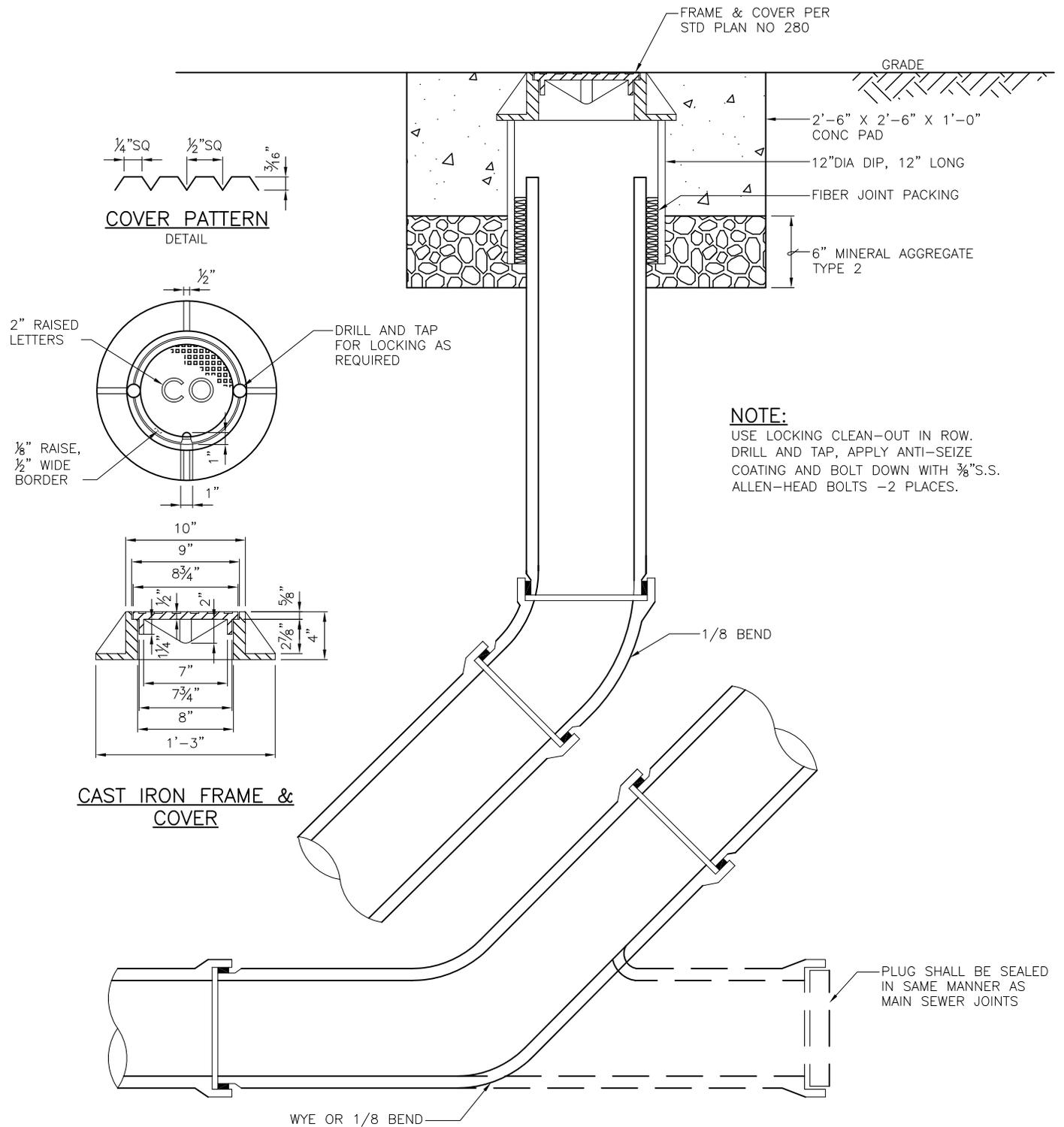
REF STD SPEC SEC 7-17 & 7-16.2



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TEE INSTALLATION
CORRUGATED METAL PIPE



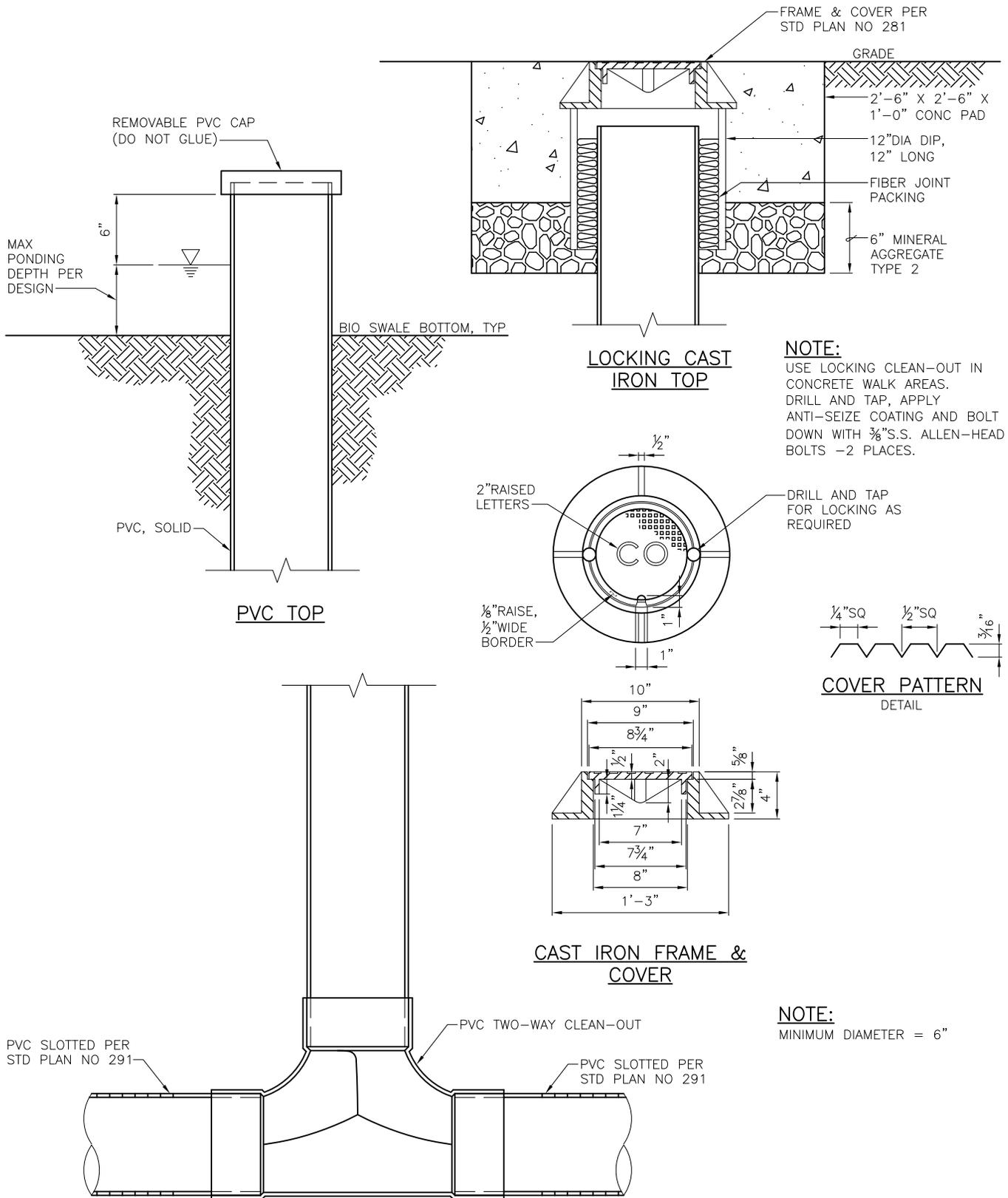
REF STD SPEC SEC 7-19



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NOT TO SCALE

8" CLEAN-OUT



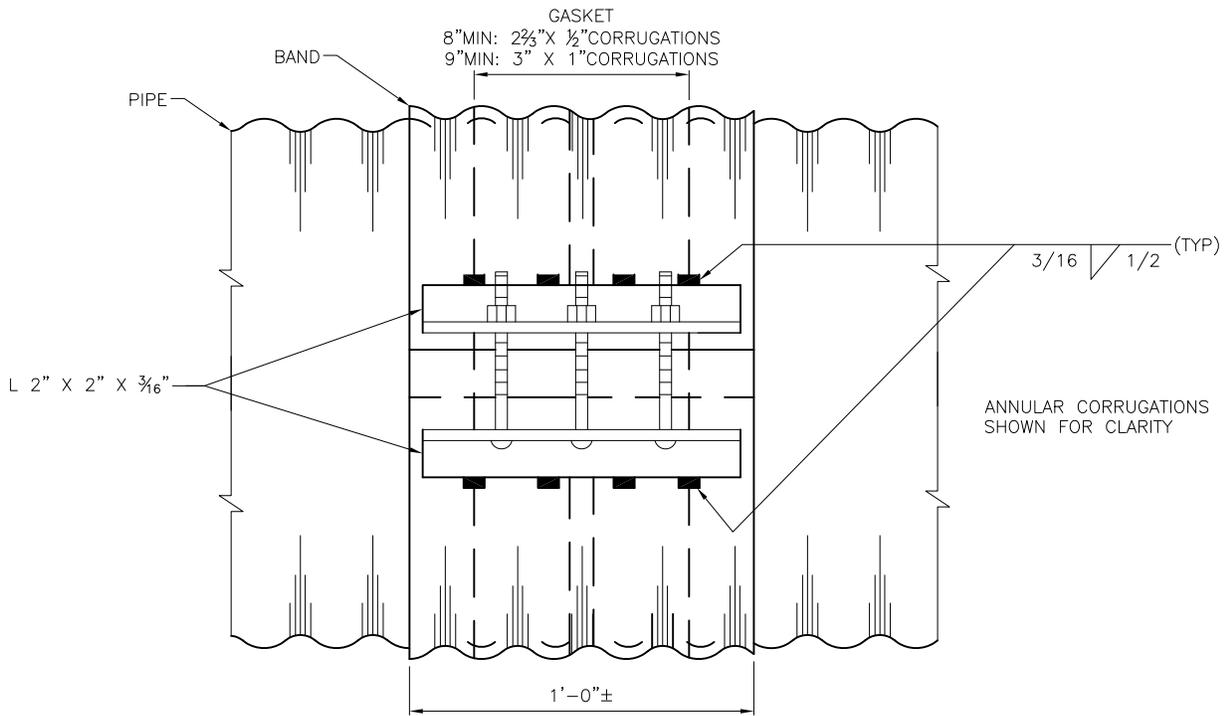
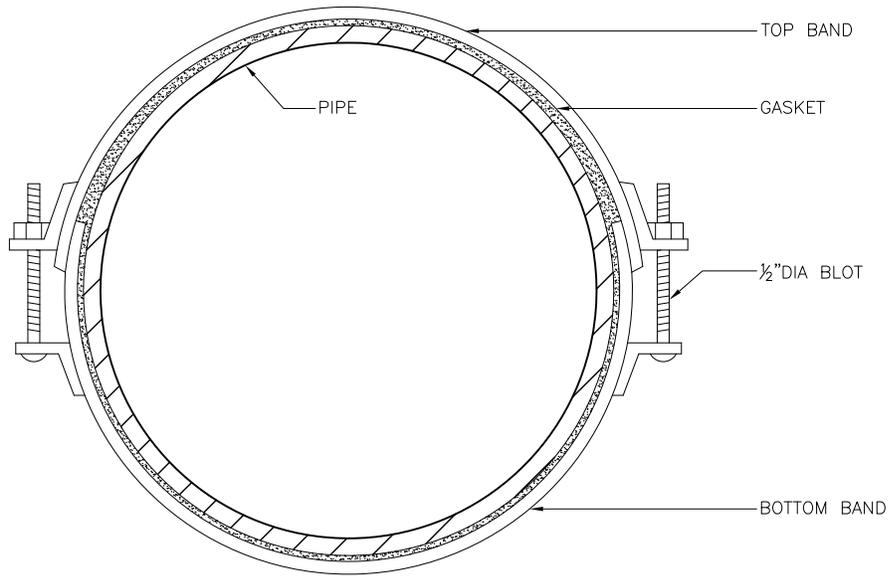
REF STD SPEC SEC 7-19



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NOT TO SCALE

BIORETENTION UNDER DRAIN
CLEAN-OUT AND
OBSERVATION PORT



FOR PIPES LESS THAN 48" DIAMETER
(HELICAL OR ANNULAR)

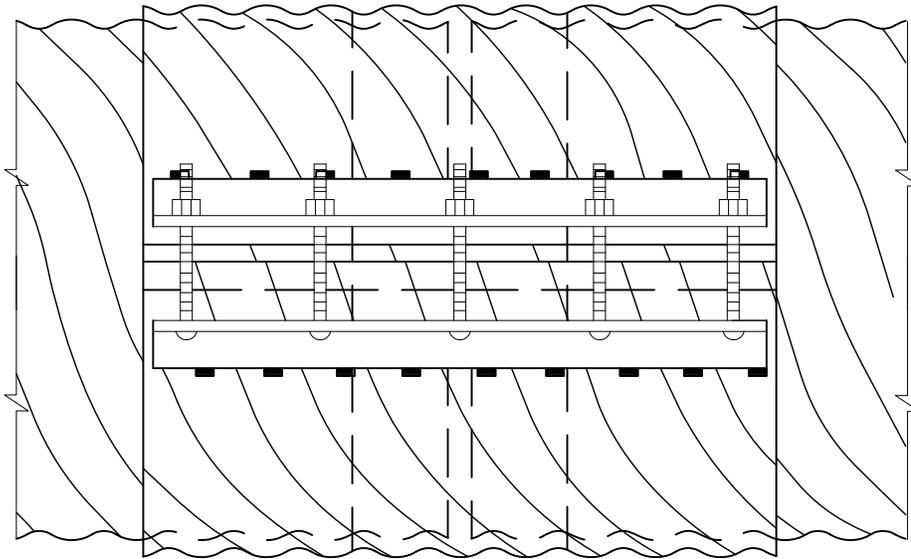
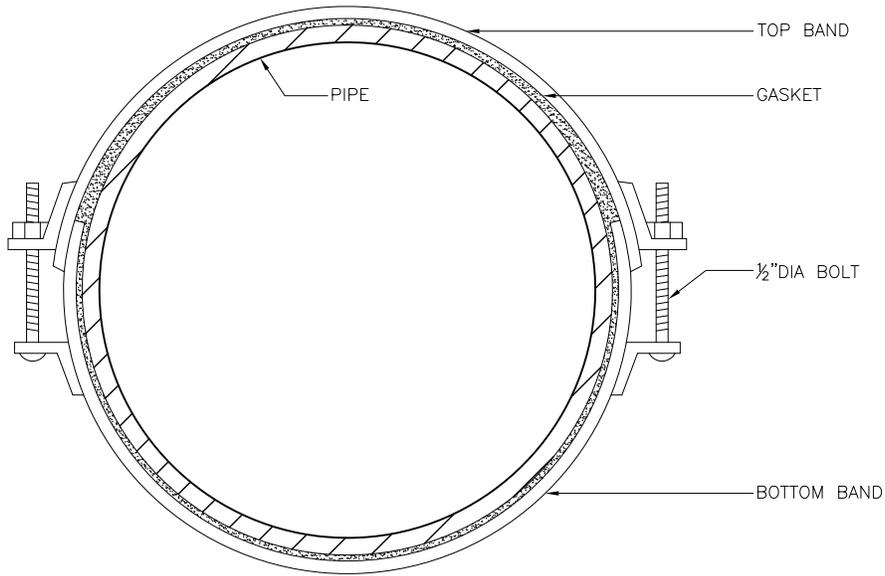
REF STD SPEC SEC 7-16.2 & 9-05



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NOT TO SCALE

CORRUGATED METAL
PIPE COUPLING BANDS



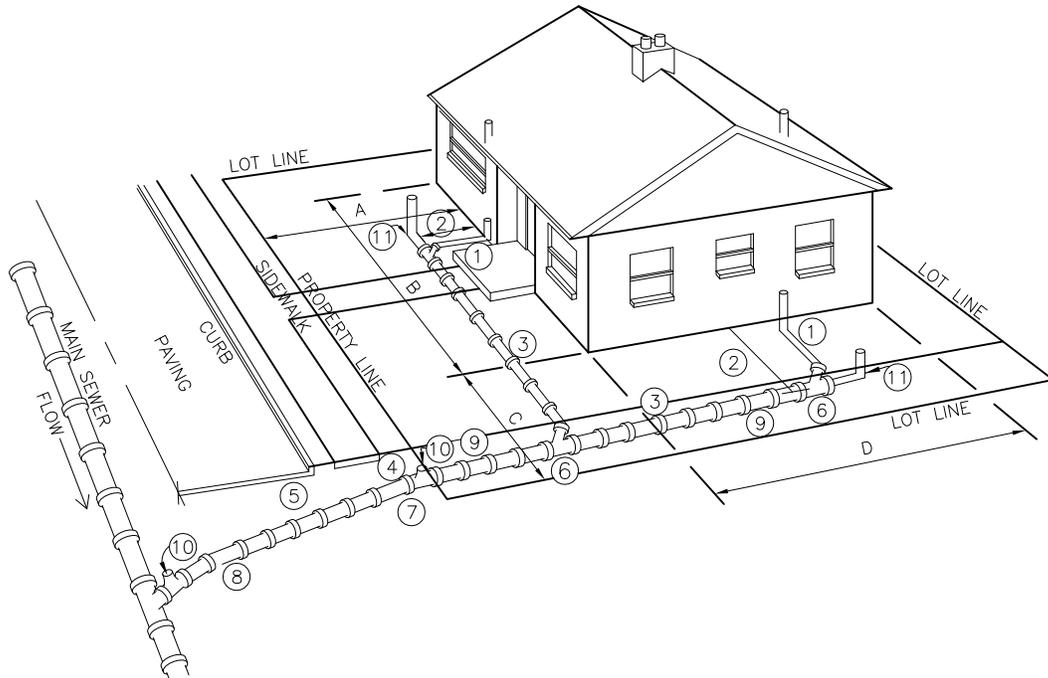
REF STD SPEC SEC 7-16.2 & 9-05



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NOT TO SCALE

**CORRUGATED METAL
PIPE COUPLING BANDS**



NOTES:

1. ALL SANITARY PLUMBING OUTLETS SHALL 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.
- A. CONSTRUCTION IN STREET SHALL BE DONE BY A REGISTERED SIDE SEWER CONTRACTOR.
 B. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT SIDE SEWER ORDINANCE.

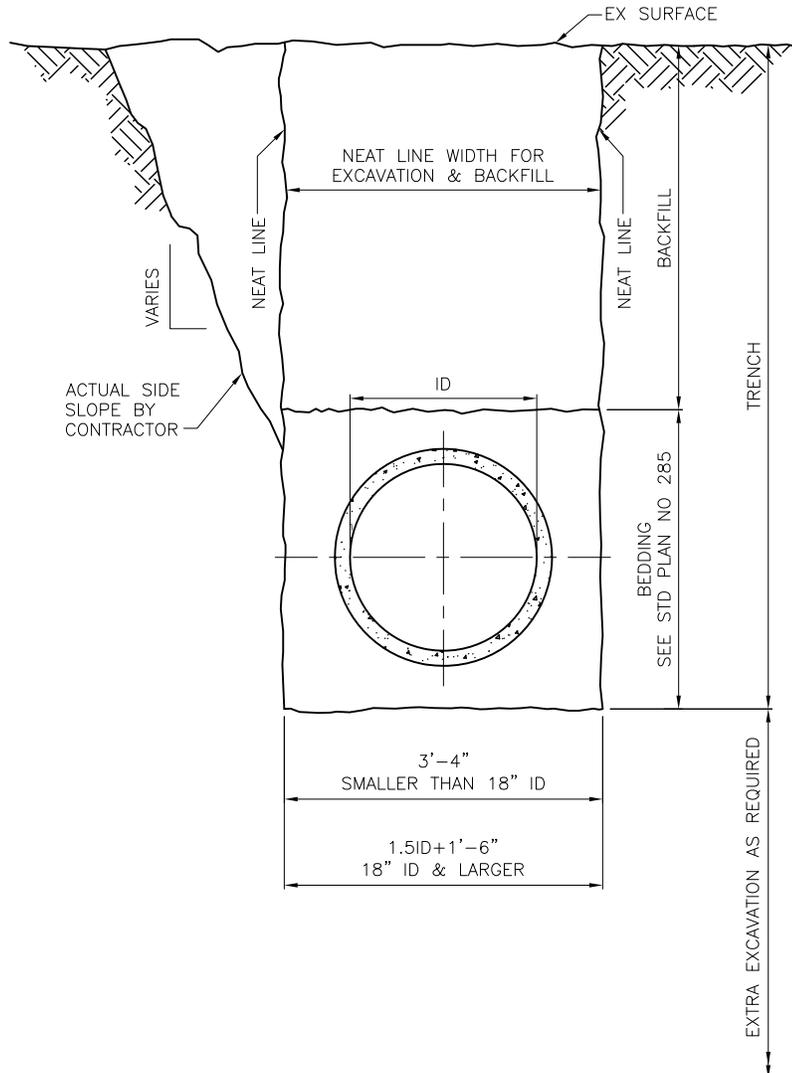
REF STD SPEC SEC 7-18



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NOT TO SCALE

SIDE SEWER INSTALLATION



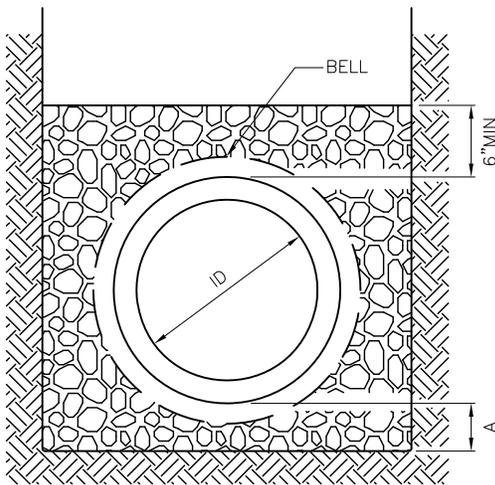
REF STD SPEC SEC 2-07 & 7-17



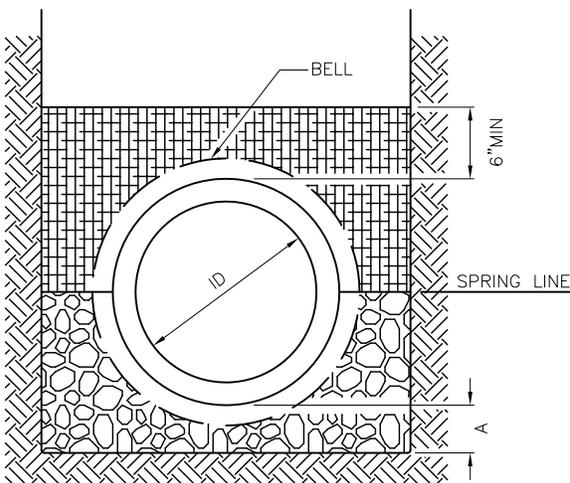
City of Seattle

NOT TO SCALE

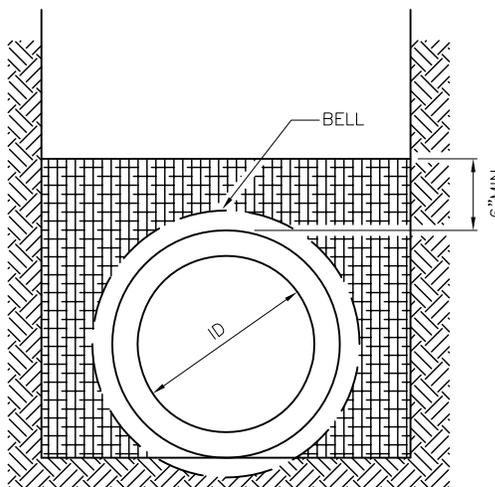
TYPICAL TRENCH DETAIL
FOR SEWER & STORM DRAIN



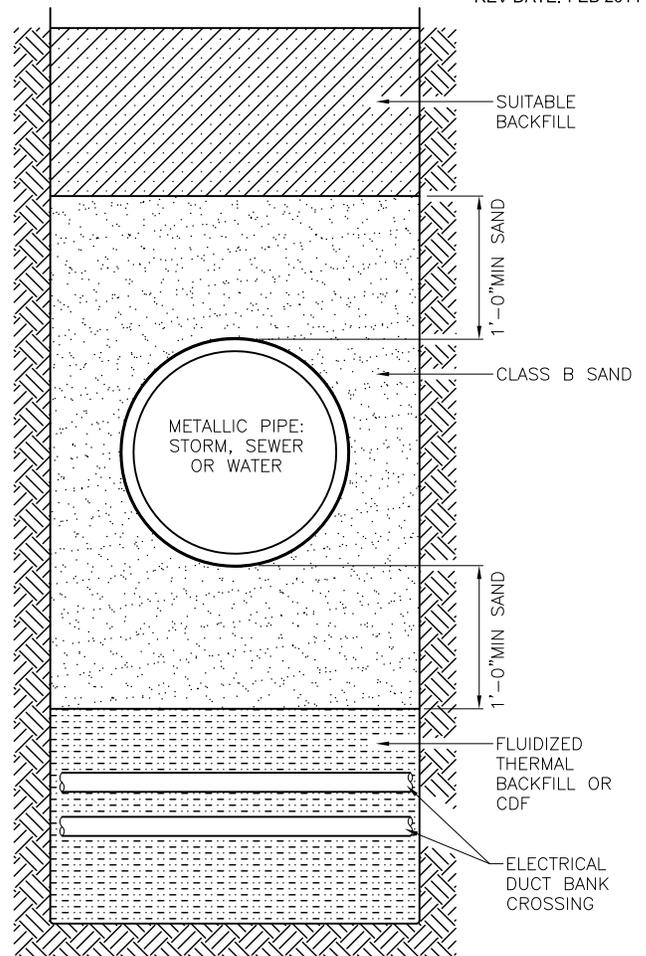
CLASS B BEDDING



CLASS C BEDDING



CLASS D BEDDING



SAND BEDDING AT TRENCH CROSSING OF METAL PIPE

AT METALLIC PIPE CROSSING OF FLUIDIZED THERMAL BACKFILL OR CDF CONDUIT CROSSINGS

-  MINERAL AGGREGATE PER STD SPEC 9-03.16 TYPE 9 FOR DUCTILE IRON WHEN APPLICABLE OR CONCRETE PIPE TYPE 22 FOR VITRIFIED CLAY AND FLEXIBLE PIPE
-  SELECTED NATIVE MATERIAL
-  SUITABLE BACKFILL
-  FLUIDIZED THERMAL BACKFILL OR CDF
-  CLASS B SAND

NOTES:

1. FOR TRENCH WIDTH SEE STD PLAN NO 284
2. A=4" WHEN ID IS LESS THAN 2'-6", A=6" WHEN ID IS 2'-6" OR MORE.
3. UNIFORMLY SUPPORT PIPE BARREL. EXCAVATE HOLES FOR BELLS AND COUPLING.

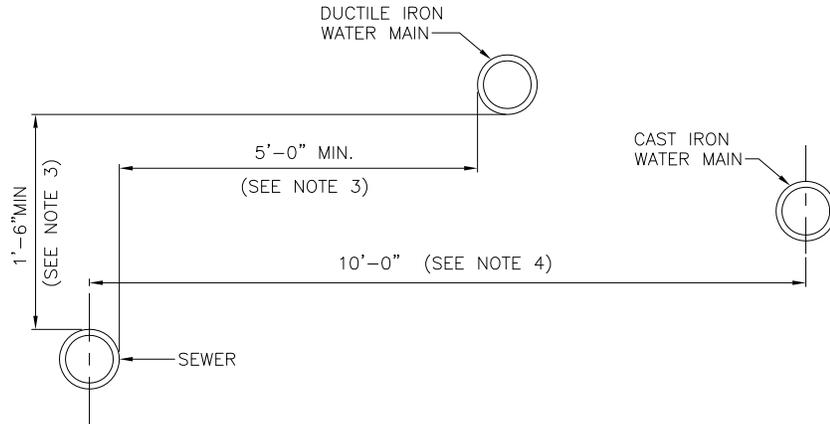
REF STD SPEC SEC 7-11,7-17



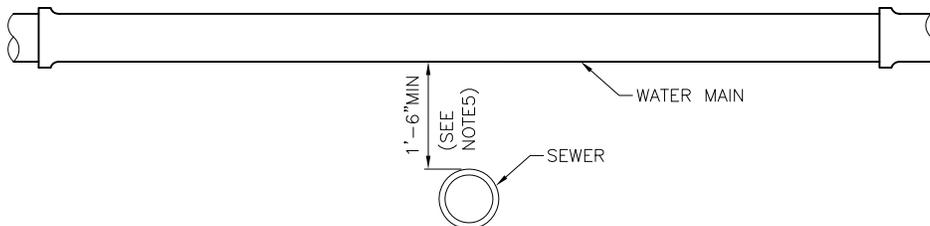
City of Seattle

NOT TO SCALE

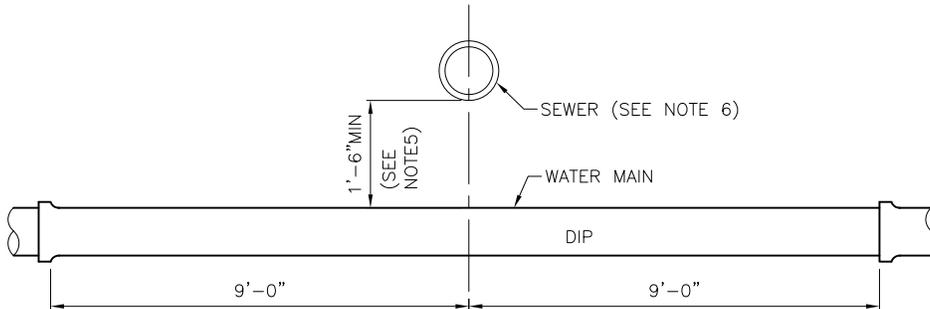
**PIPE BEDDING
SEWER/STORM DRAIN**



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 286 SHALL BE APPROVED BY SEATTLE PUBLIC UTILITIES, WATER QUALITY DIVISION.
2. "SEWER" INCLUDES SANITARY SEWER, COMBINED SEWER AND SIDE SEWER.
3. WHERE MINIMUM CLEARANCES CANNOT BE MET, SEWER SHALL 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 SHALL BE A STANDARD SINGLE 18'-0" NOMINAL LENGTH DUCTILE IRON WATER MAIN SECTION CENTERED AT THE POINT OF CROSSING.
6. SEWER SHALL 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.

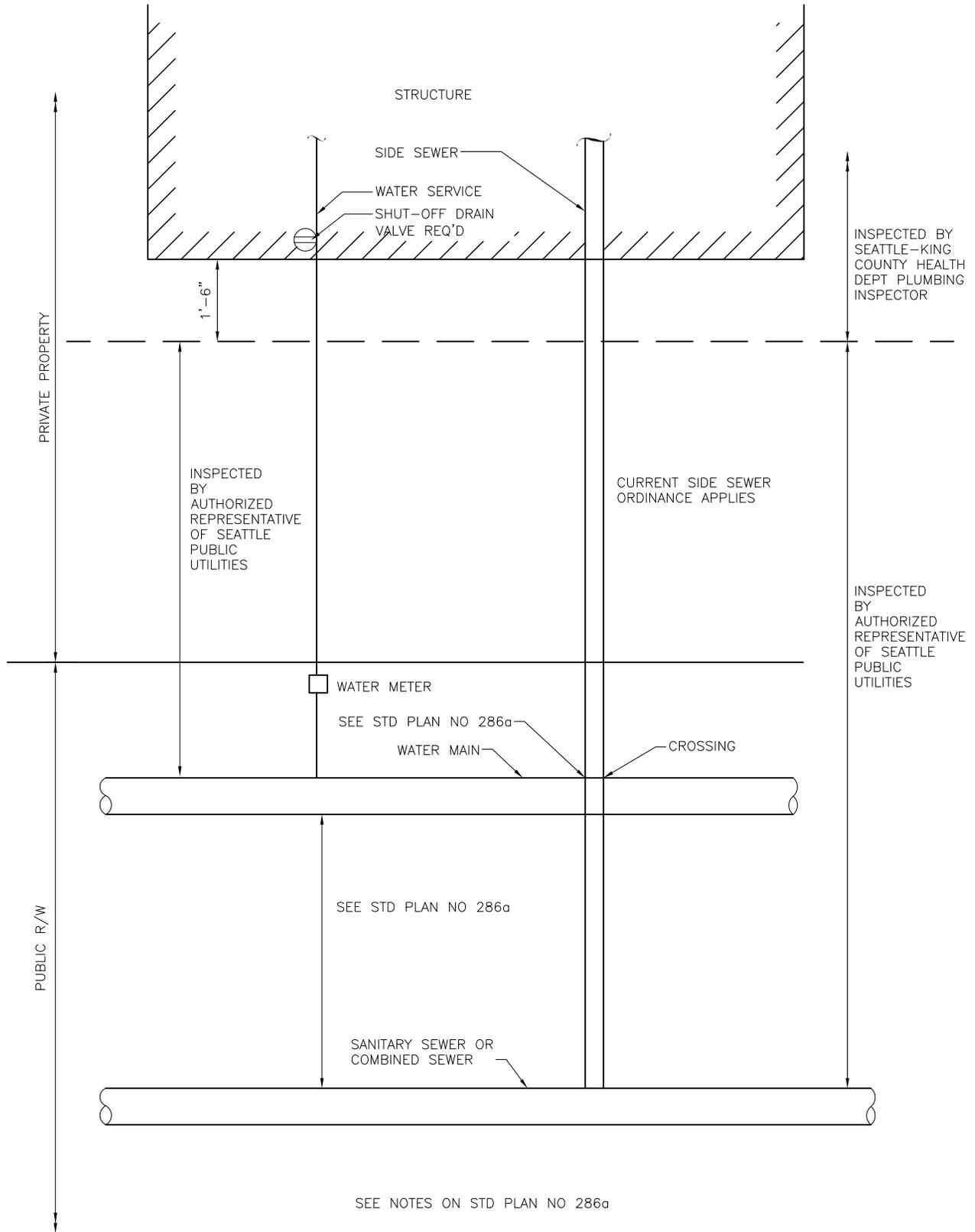
REF STD SPEC SEC 1-07.17 & 7-11



City of Seattle

NOT TO SCALE

SEWER & WATER
SPACING & CLEARANCES



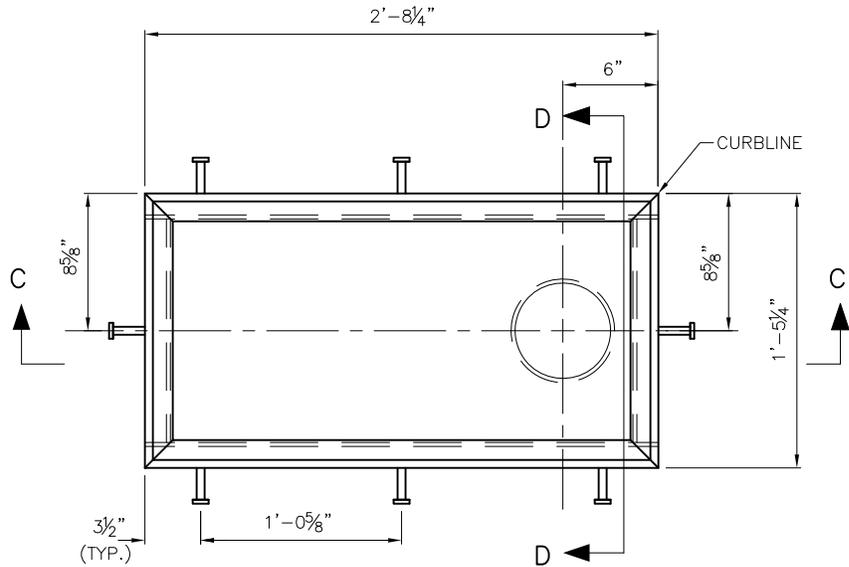
REF STD SPEC SEC 1-07.17 & DIV 7



City of Seattle

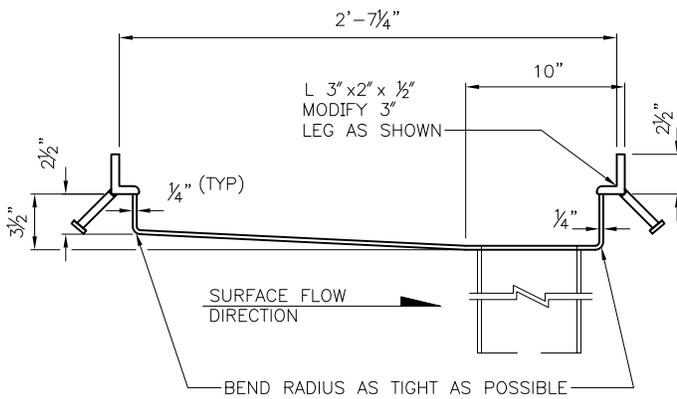
NOT TO SCALE

SEWER & WATER
SPACING & CLEARANCES

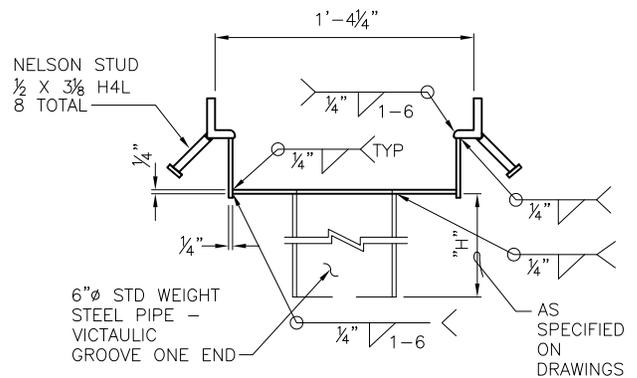


PLAN VIEW - BRIDGE DRAIN

SURFACE FLOW DIRECTION



SECTION C-C



SECTION D-D

NOTES:

1. ALL 1/4" STEEL & L3"x 2"x 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.

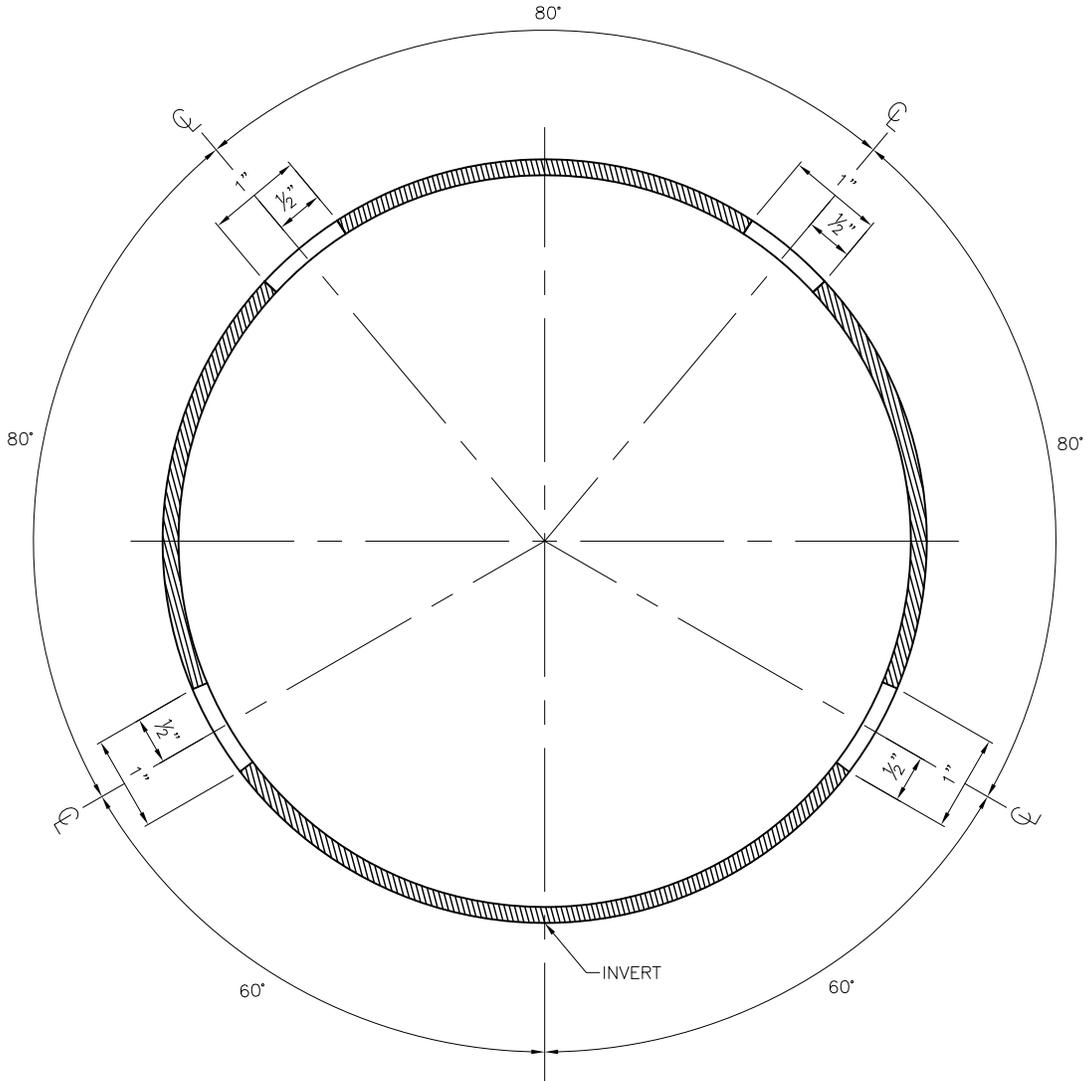
REF STD SPEC SEC 6-01 & 6-02



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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.

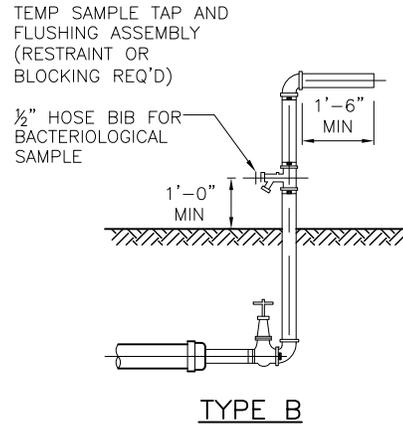
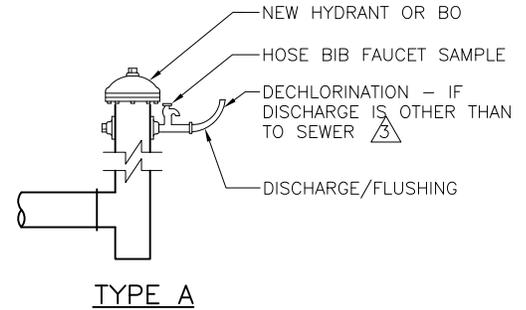
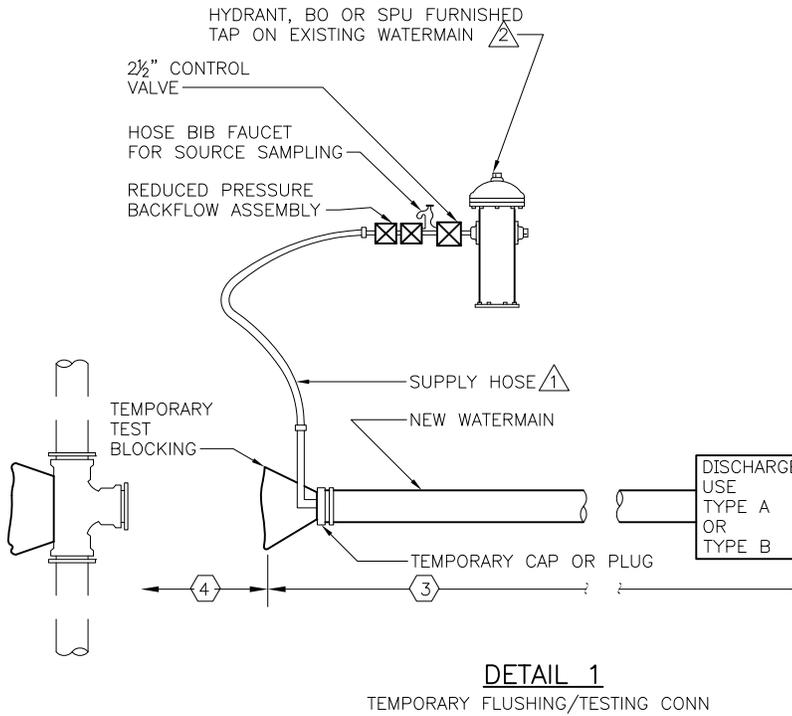
REF STD SPEC SEC 9-05, 3(1)



City of Seattle

NOT TO SCALE

PVC SUBSURFACE DRAIN PIPE



NOTES:

1. ALL FITTINGS SHALL BE DUCTILE IRON
2. ALL EXCAVATION SHALL 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) SHALL 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 SHALL BE CAPPED WHEN NOT IN USE. ASSEMBLY SHALL BE TESTED WHEN INSTALLED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER (BAT) AND A CURRENT TEST REPORT SHALL BE ON SITE. FOR INSTALLATION PROCEDURES CALL 684-3536.
5. ALL FITTINGS AND MATERIALS FURNISHED BY CONTRACTOR AND TO BE INSTALLED BY SPU SHALL 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
- ④ 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.
- ⑤ ALL EXCAVATION, PIPE, FITTINGS (EXCEPT AS NOTED BELOW), OTHER MATERIAL, BEDDING, BACKFILL, COMPACTION & STREET RESTORATION BY CONTRACTOR. ALL MATERIALS SHALL BE ON JOB SITE PRIOR TO SHUTDOWN OF EXISTING MAIN.
- ⑥ INSTALLED BY CONTRACTOR
- ⑦ CONNECTION PIPE: CONTRACTOR FURNISHED, INSTALLED BY SPU
- ⑧ WATERMAIN WITH PLAIN ENDS
- ⑨ MECHANICAL JOINT SLEEVE WITH SPACER CUT TO FIT GAP, FURNISHED AND INSERTED AT TIME OF CONNECTION BY SPU
- ⑩ TAPPING SLEEVE & TAPPING VALVE FURNISHED AND INSTALLED BY SPU
- ⑪ APPLIES TO PIPES 4" THROUGH 12". ALL LARGER SIZES TO BE ADDRESSED ON DRAWINGS
- ⑫ MECHANICAL JOINT SLEEVE, FURNISHED BY CONTRACTOR AND INSTALLED BY SPU, SPACERS BY SPU WHERE REQUIRED

REF STD SPEC SEC 7-11

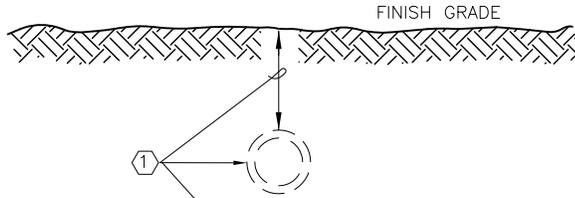


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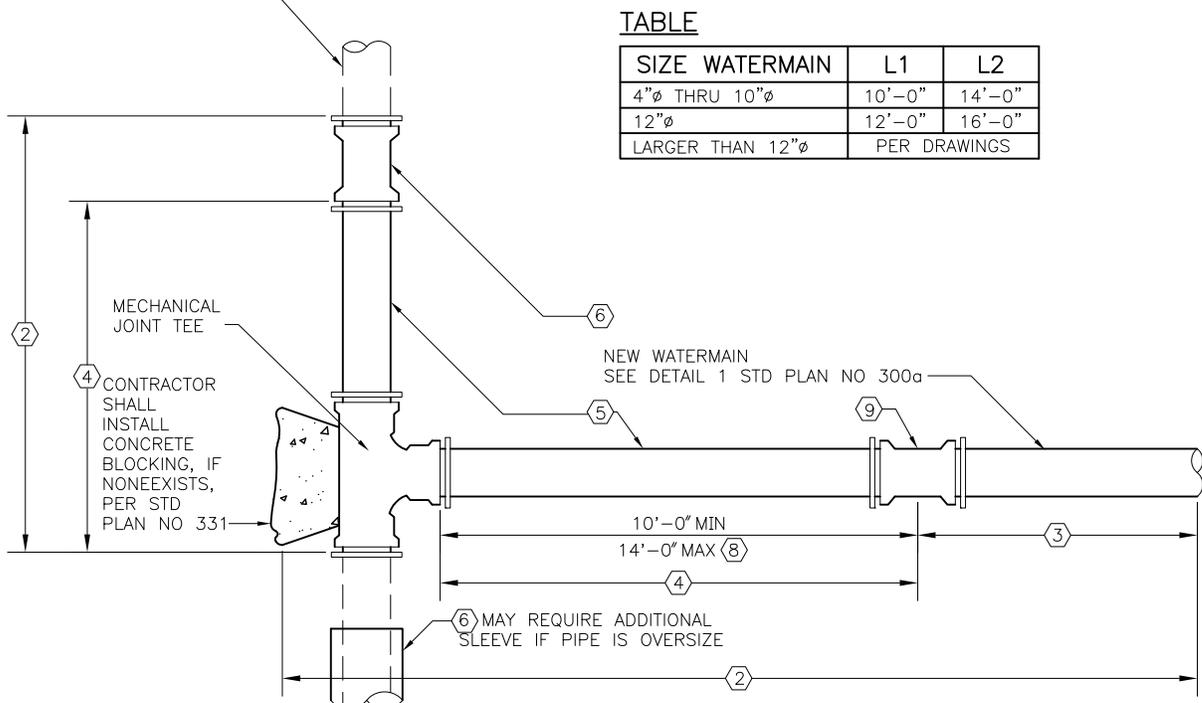
NOT TO SCALE

CONNECTIONS TO EXISTING WATERMAINS

ELEVATION



PLAN

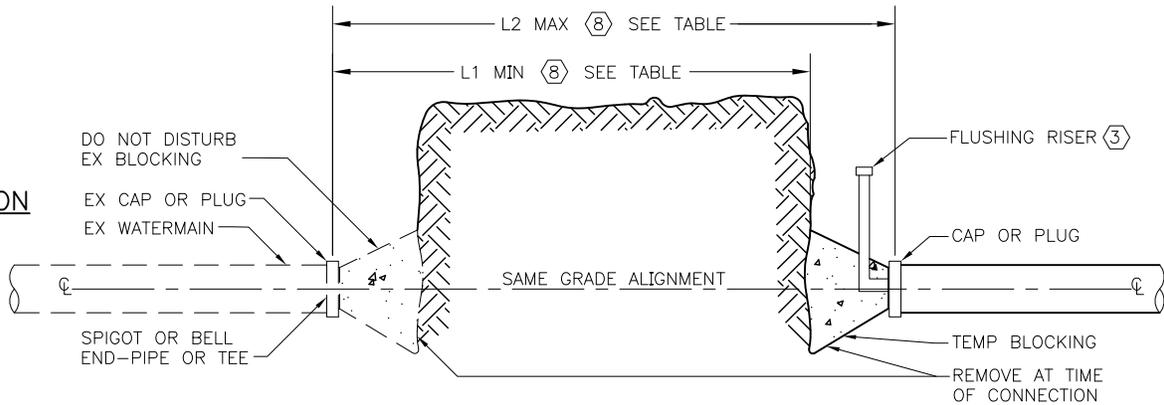


TABLE

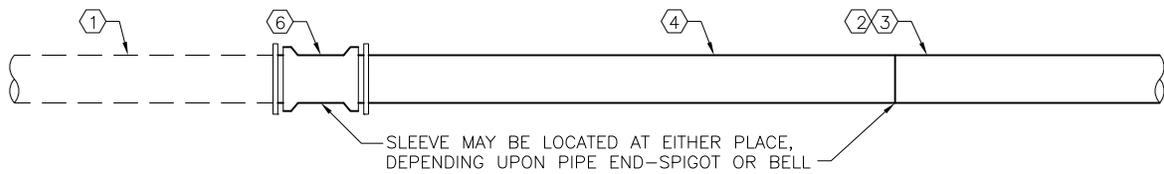
SIZE WATERMAIN	L1	L2
4"φ THRU 10"φ	10'-0"	14'-0"
12"φ	12'-0"	16'-0"
LARGER THAN 12"φ	PER DRAWINGS	

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

ELEVATION



PLAN



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

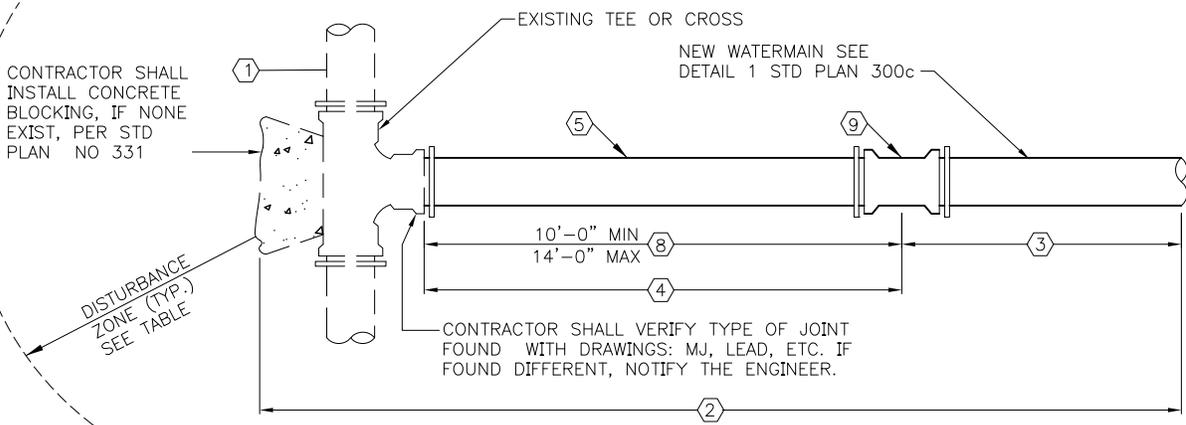
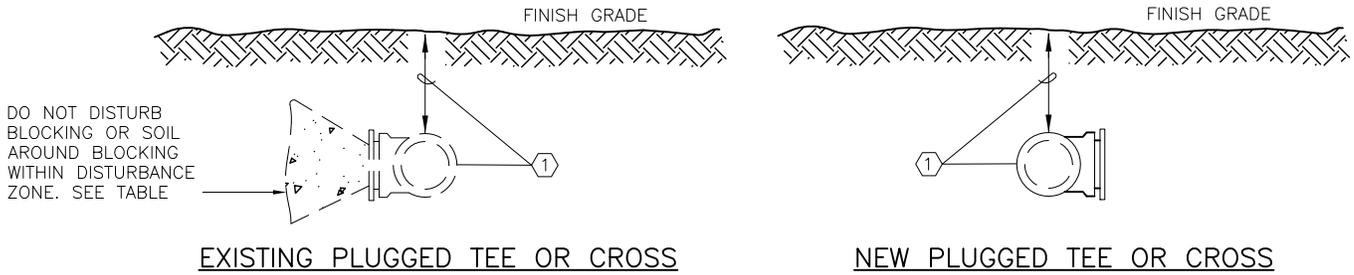
REF STD SPEC SEC 7-11



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CONNECTIONS TO EXISTING WATERMANS

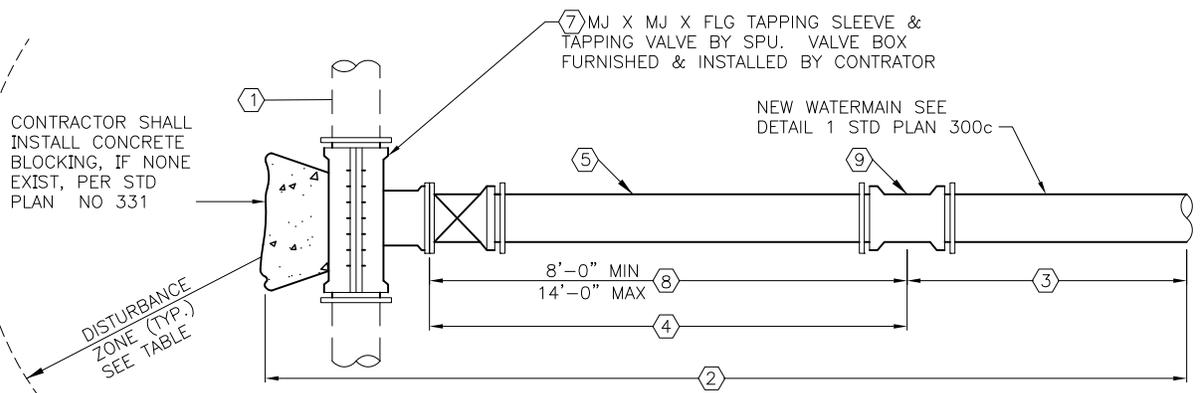


CONNECTIONS TO EXISTING TEE OR CROSS— PLAN VIEW

TABLE

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



CONNECTIONS TO EXISTING MAIN, NO TEE OR CROSS – PLAN VIEW
(TAPPING SLEEVE & TAPPING VALVE)

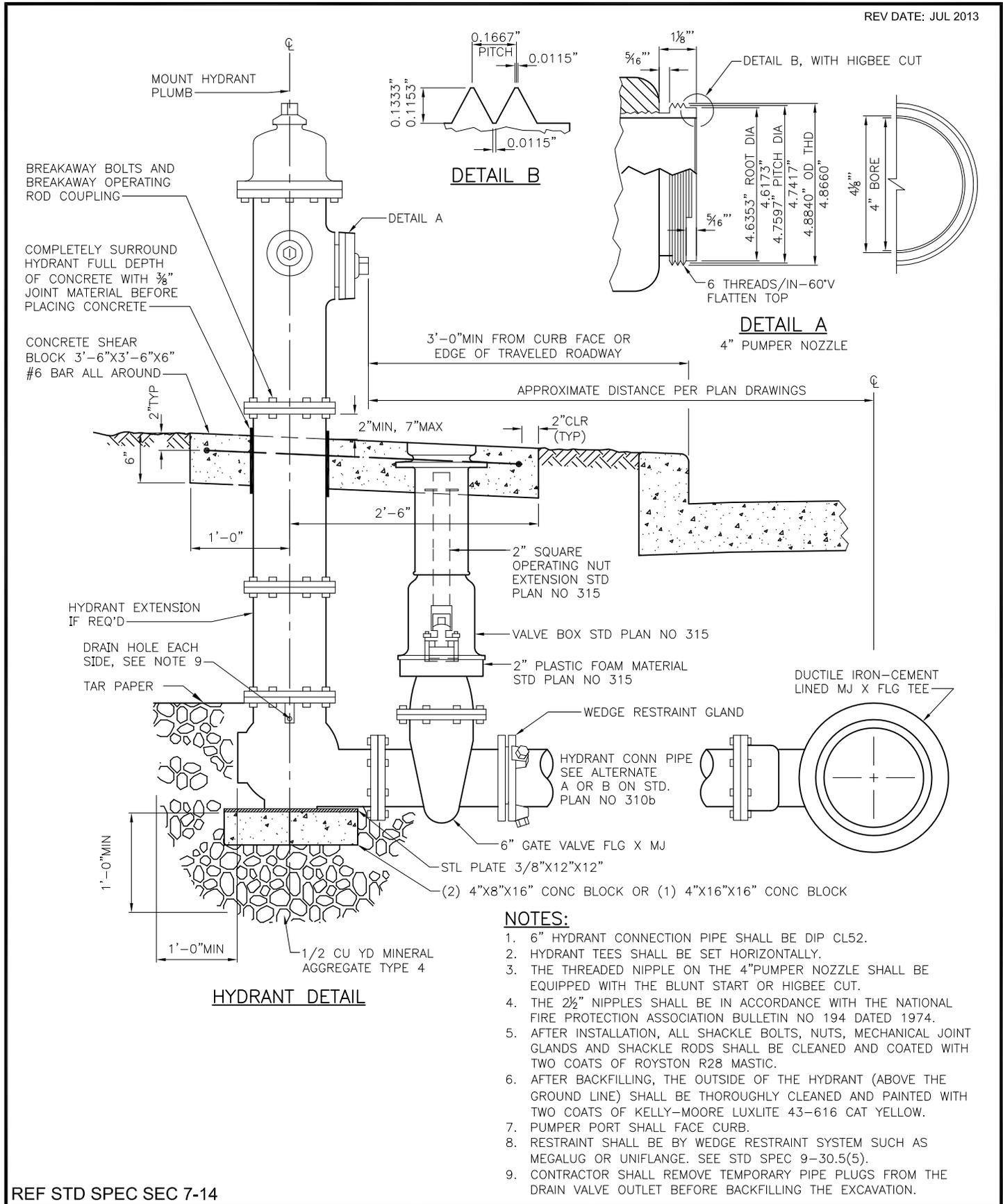
REF STD SPEC SEC 7-11



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NOT TO SCALE

CONNECTIONS TO EXISTING WATERMAINS



REF STD SPEC SEC 7-14

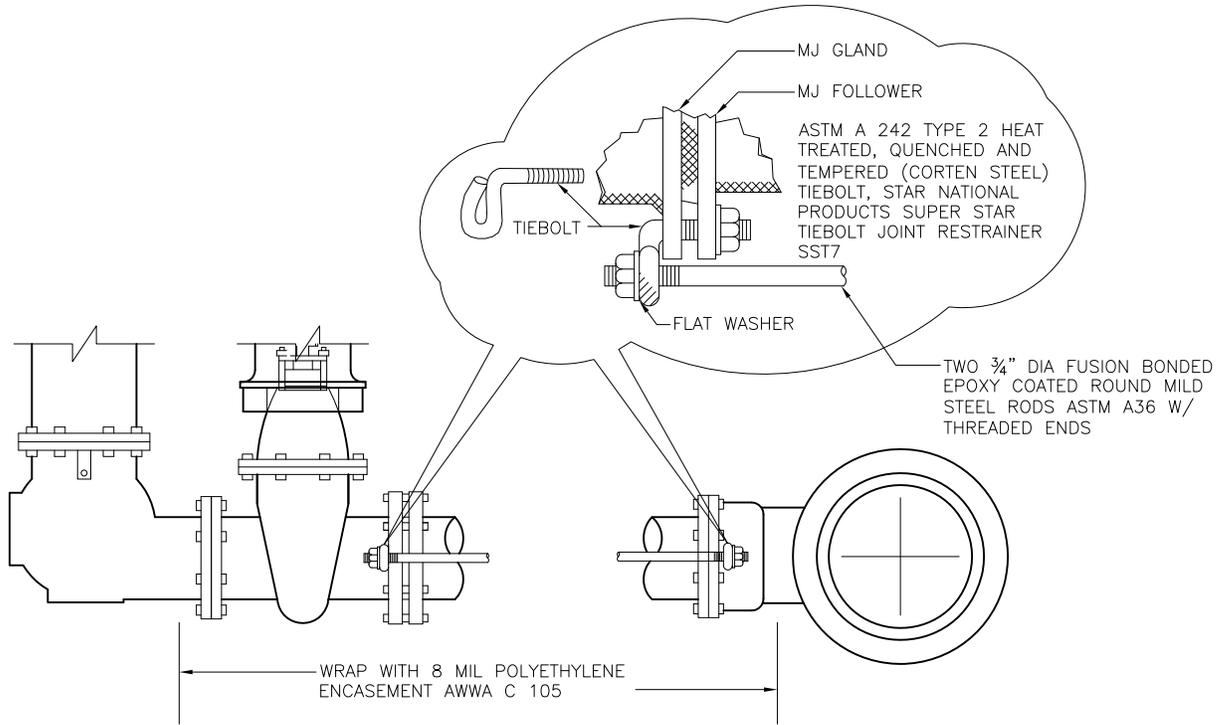


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NOT TO SCALE

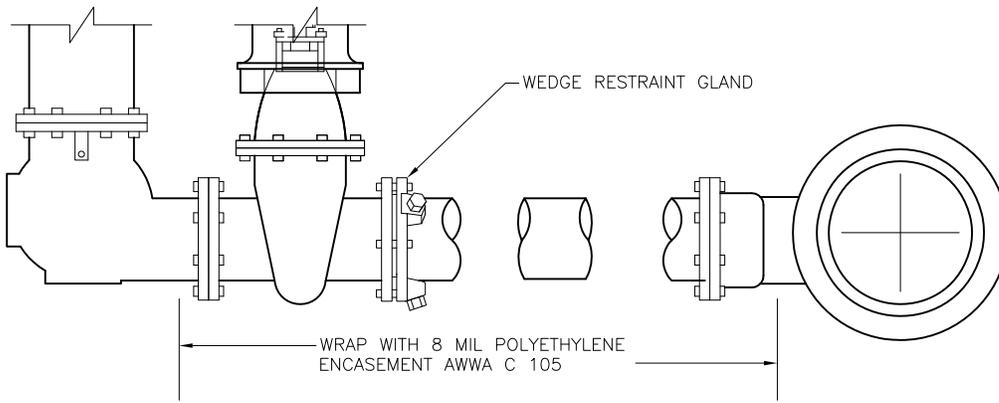
**TYPE 310 HYDRANT SETTING
DETAIL**

SEE GENERAL NOTES
BELOW



ALTERNATE A
TIEBOLT RESTRAINT

SEE GENERAL NOTES
BELOW



ALTERNATE B
MECHANICAL JOINT W/ WEDGE RESTRAINT GLANDS

NOTES:

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

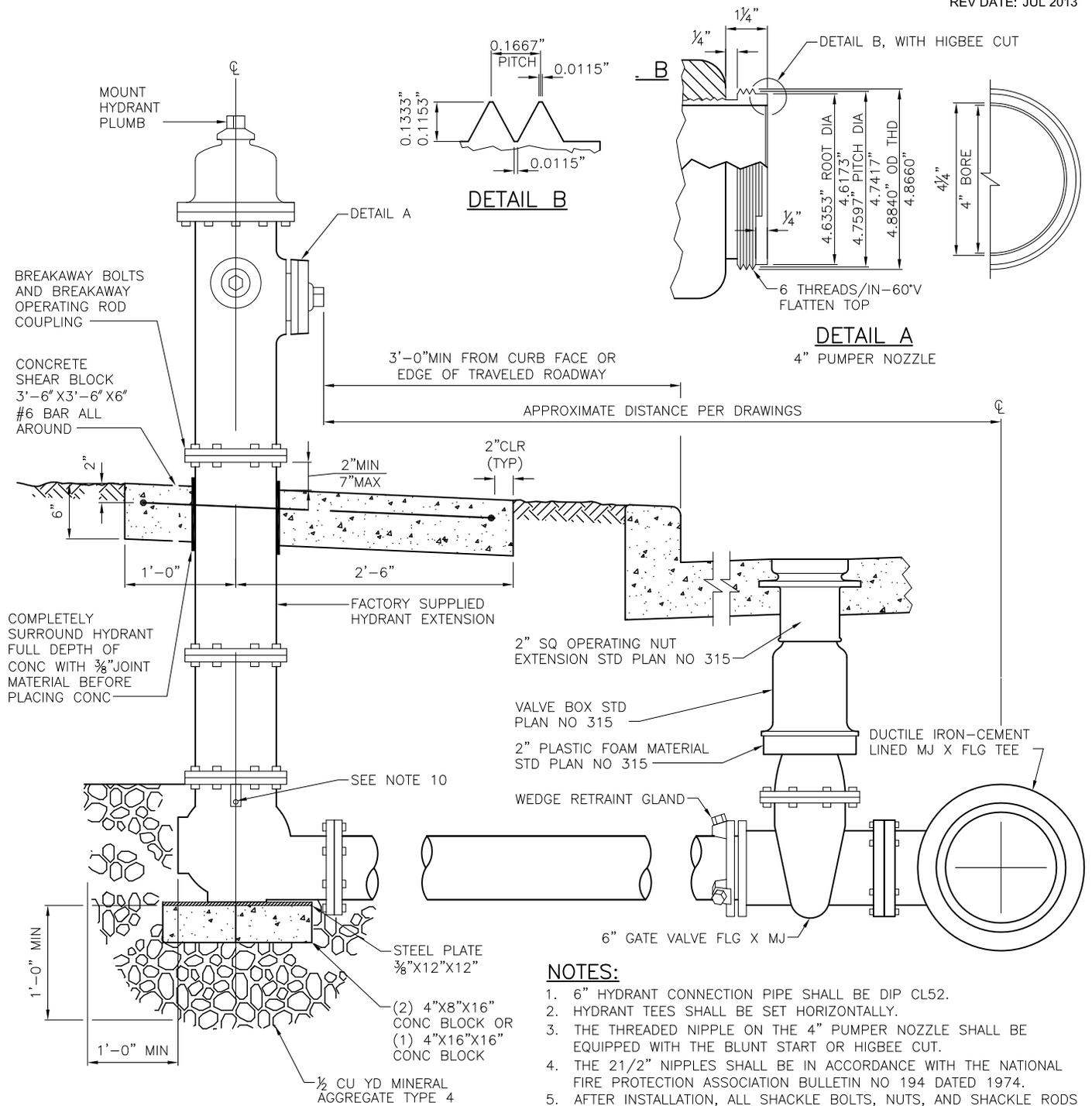
REF STD SPEC SEC 7-14



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**TYPE 310 HYDRANT SETTING
DETAIL**



HYDRANT DETAIL

NOTES:

1. 6" HYDRANT CONNECTION PIPE SHALL BE DIP CL52.
2. HYDRANT TEES SHALL BE SET HORIZONTALLY.
3. THE THREADED NIPPLE ON THE 4" PUMPER NOZZLE SHALL BE EQUIPPED WITH THE BLUNT START OR HIGBEE CUT.
4. THE 2 1/2" NIPPLES SHALL BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION BULLETIN NO 194 DATED 1974.
5. AFTER INSTALLATION, ALL SHACKLE BOLTS, NUTS, AND SHACKLE RODS SHALL BE CLEANED AND COATED WITH TWO COATS OF ASPHALT, ROYSTON ROSKOTE R28.
6. AFTER BACKFILLING, THE OUTSIDE OF THE HYDRANT (ABOVE THE GROUND LINE) SHALL BE THOROUGHLY CLEANED AND PAINTED WITH TWO COATS OF KELLY-MOORE 6130-516 CAT YELLOW.
7. PUMPER PORT SHALL FACE CURB.
8. PUMPER PORT TO BE FITTED WITH QUICK CONNECT ADAPTOR PER FIRE MARSHAL.
9. RESTRAINT SHALL BE BY WEDGE RESTRAINT SYSTEM USCH AS MEGALUG OR UNIFLANGE. SEE STD SPEC SEC 9-30.5(5).
10. CONTRACTOR SHALL REMOVE TEMPORARY PIPE PLUGS FROM THE DRAIN VALVE OUTLET BEFORE BACKFILLING THE EXCAVATION.

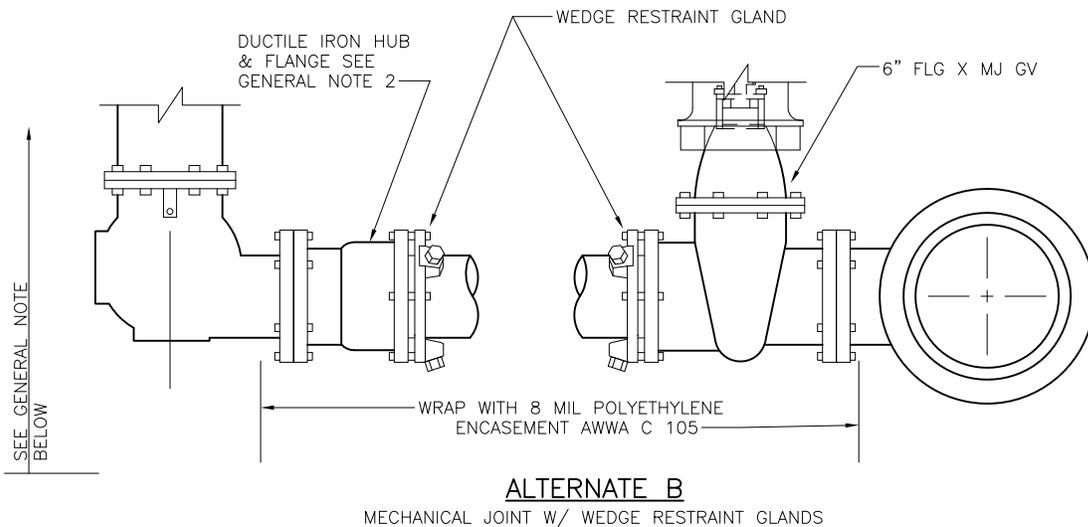
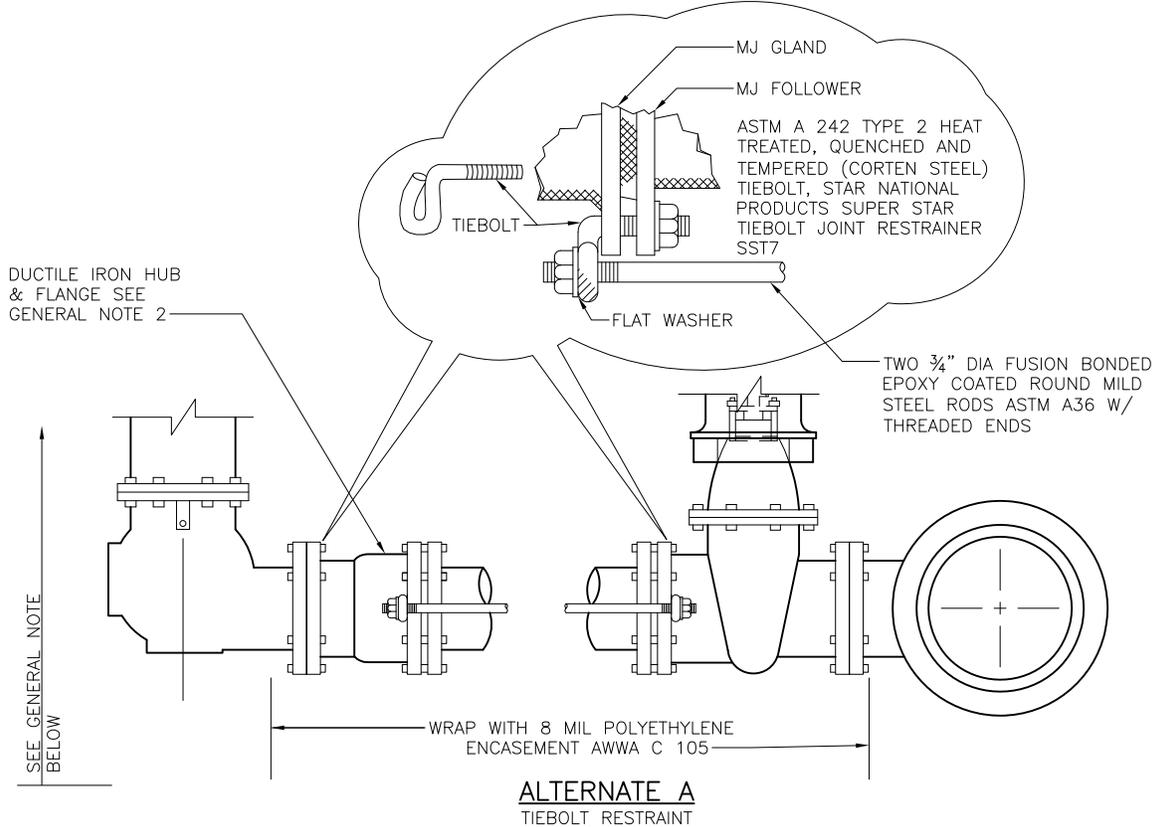
REF STD SPEC SEC 7-14



City of Seattle

NOT TO SCALE

**TYPE 311 HYDRANT SETTING
DETAIL**



GENERAL NOTES:

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

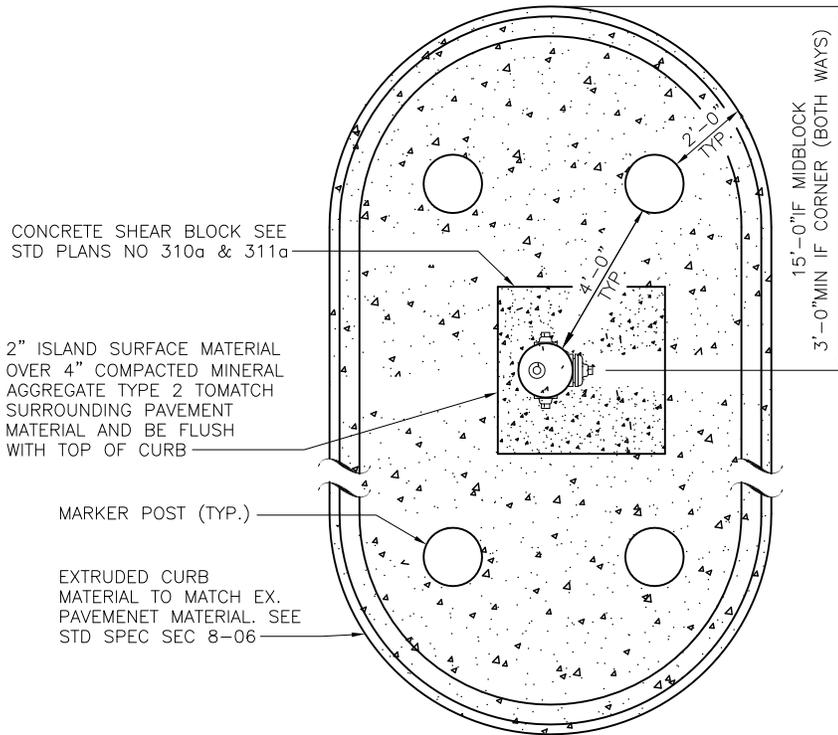
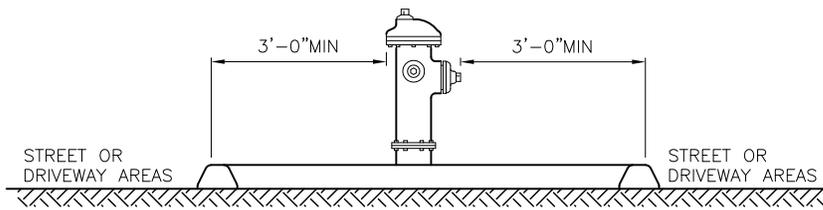
REF STD SPEC SEC 7-14



City of Seattle

NOT TO SCALE

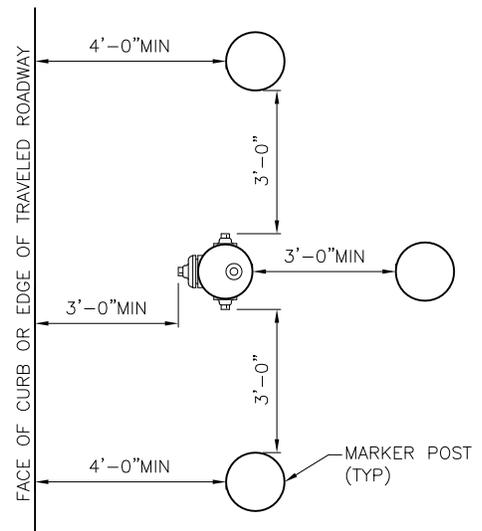
**TYPE 311 HYDRANT SETTING
DETAIL**



TRAFFIC ISLAND MARKER POST LAYOUT FOR FIRE HYDRANTS IN PARKING AREAS

NOTES:

- LAYOUT OF MARKER POST SHALL BE VERIFIED FIRST WITH SPU AND SDOT
- MARKER POST WITH HIGH INTENSITY REFLECTORIZED BANDS PROVIDED BY SPU



MARKER POST LAYOUT FOR FIRE HYDRANTS IN PARKING AREAS

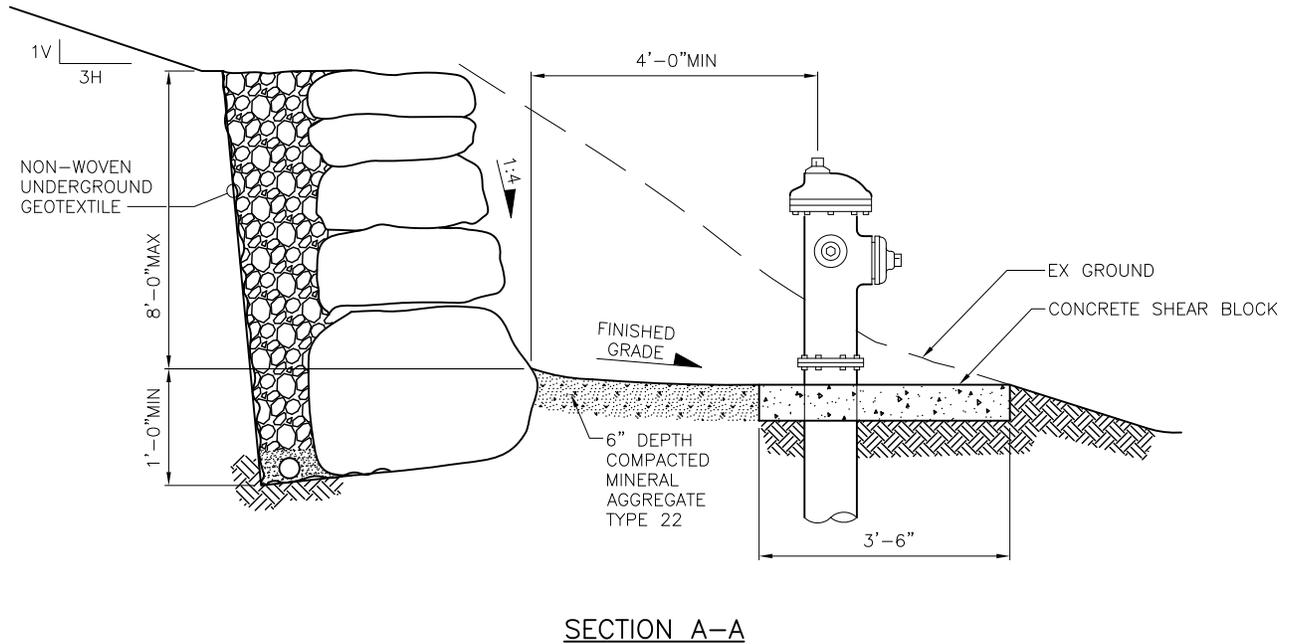
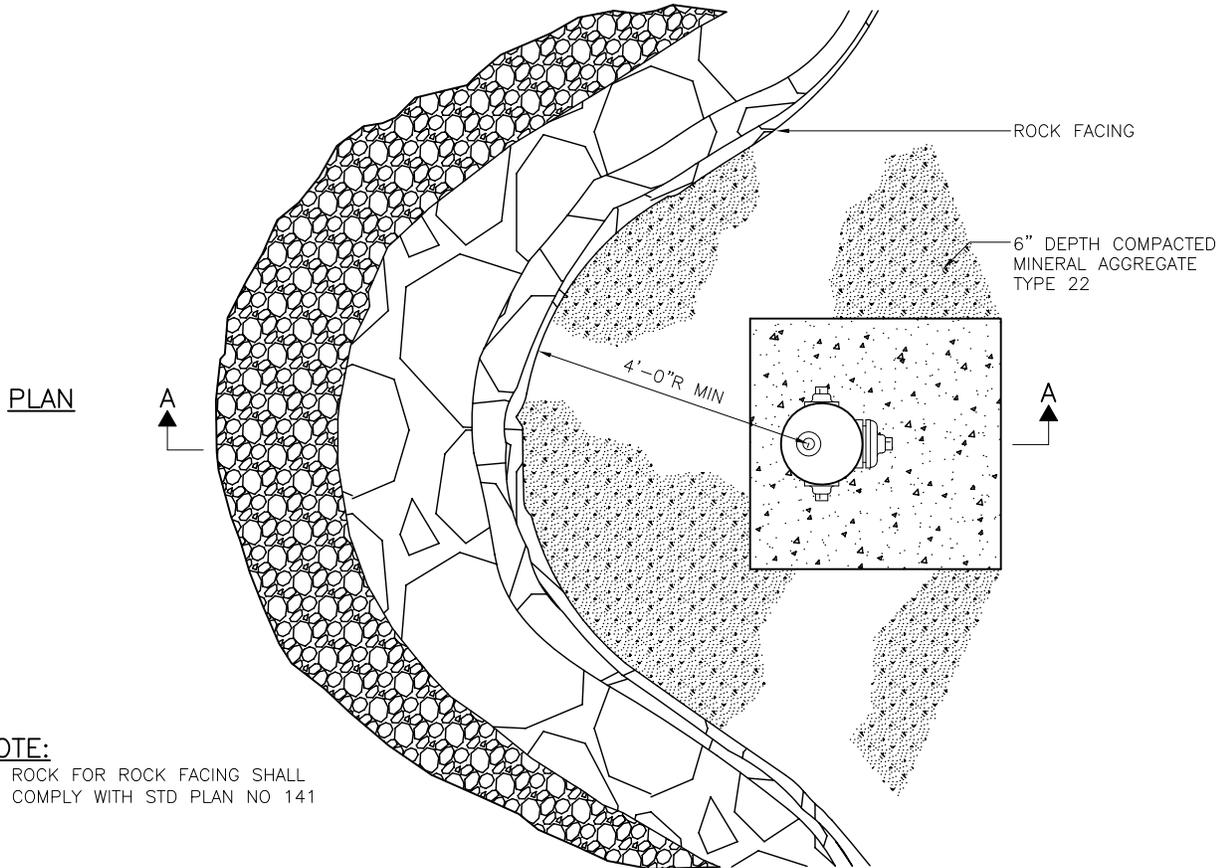
REF STD SPEC SEC 7-14



City of Seattle

NOT TO SCALE

FIRE HYDRANT MARKER LAYOUT



REF STD SPEC SEC 2-13



City of Seattle

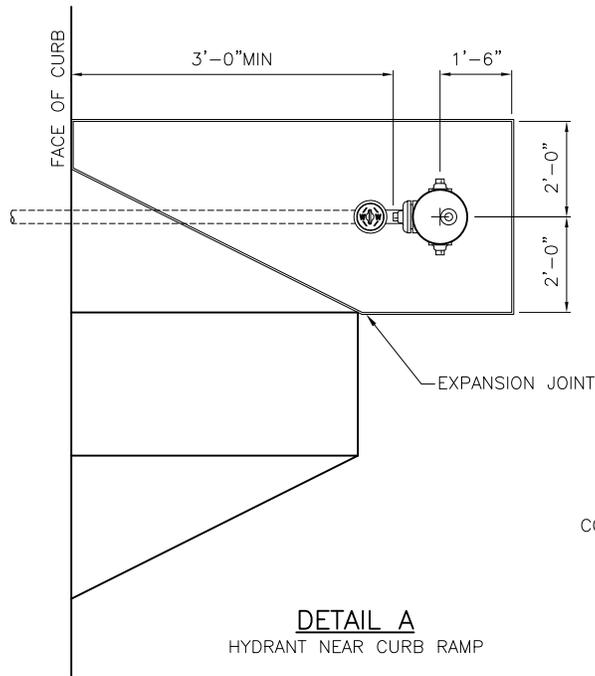
NOT TO SCALE

WALL REQUIREMENTS FOR HYDRANTS

REV DATE: JUN 2013

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

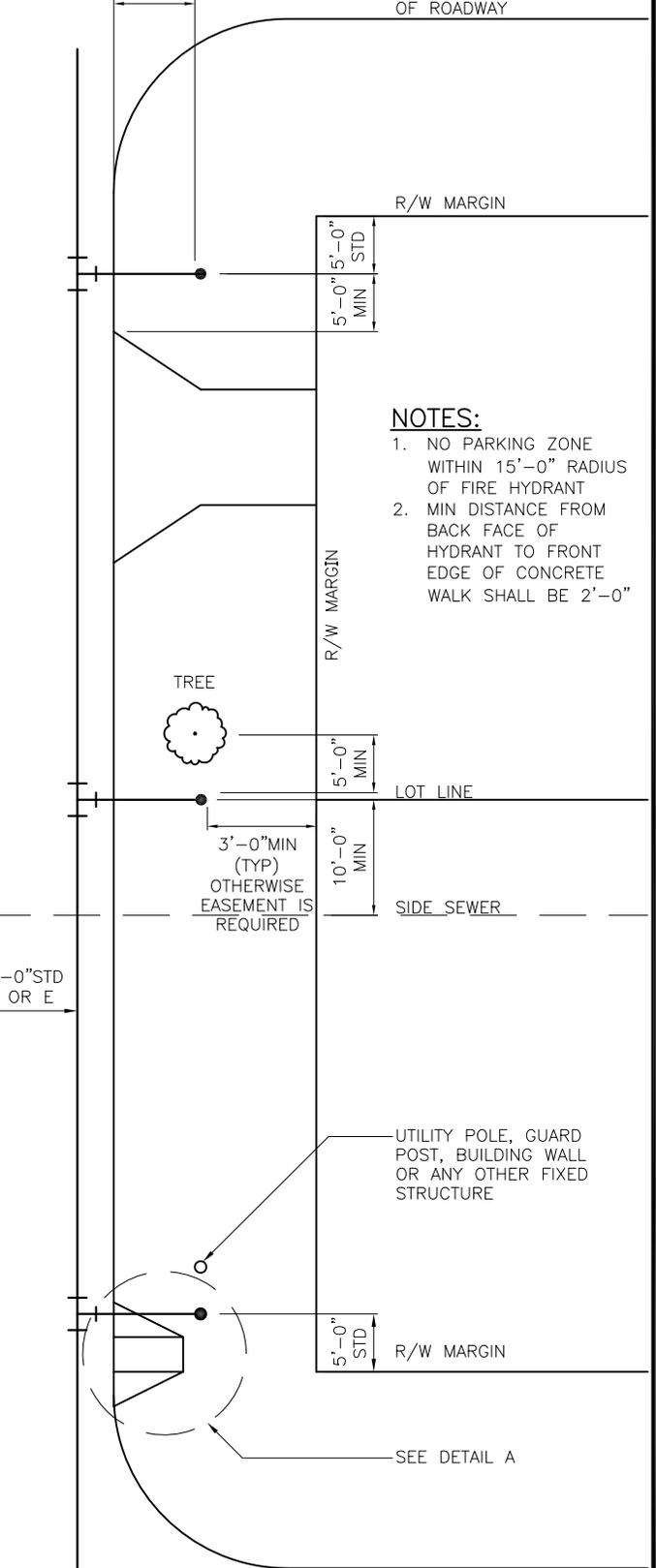
CURB OR EDGE OF
TRAVELED PORTION
OF ROADWAY



DETAIL A
HYDRANT NEAR CURB RAMP

10'-0"STD
N OR E

Q STREET



NOTES:

1. NO PARKING ZONE WITHIN 15'-0" RADIUS OF FIRE HYDRANT
2. MIN DISTANCE FROM BACK FACE OF HYDRANT TO FRONT EDGE OF CONCRETE WALK SHALL BE 2'-0"

REF STD SPEC SEC 7-14



City of Seattle

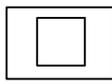
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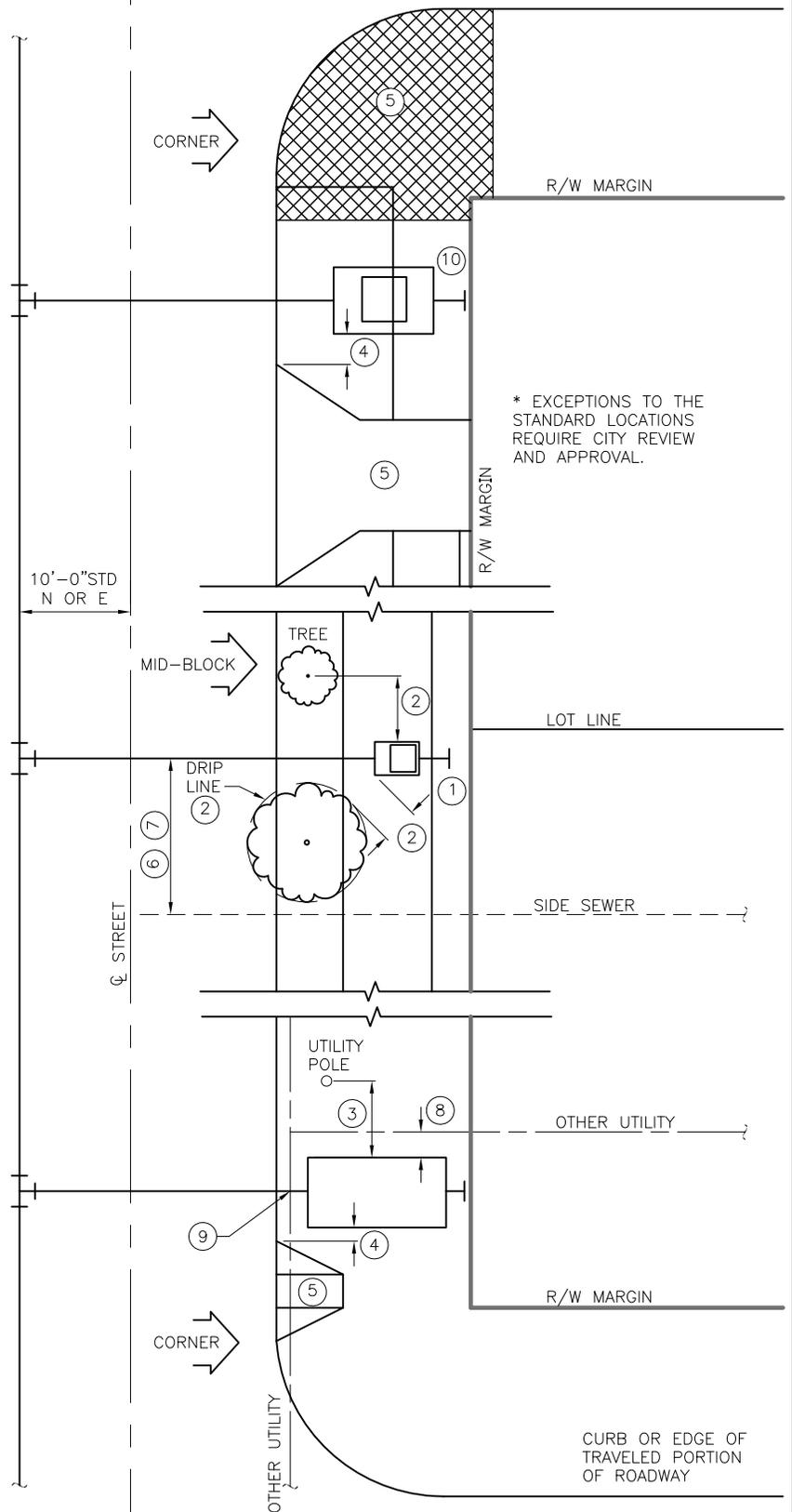
**FIRE HYDRANT
LOCATIONS & CLEARANCES**

NOTES:

- ① UNION POINT 2' OUTSIDE VAULT OR 2' FROM PROPERTY LINE.
- ② 5' CLEARANCE FROM NEW TREES OR CLEAR OF DRIP LINE FOR EXISTING TREES
- 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 12" 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' CLEAR OF CURB AND 2' CLEAR OF PROPERTY LINE.

TYPES OF WATER SERVICES

-  6" & LARGER DOMESTIC SERVICE (DS) 6'X9' VAULT NCVP#
-  3" & 4" DOMESTIC SERVICE (DS) 5'X7' VAULT NCVP#
-  4" & LARGER FIRE SERVICES (DC DETECTOR CHECK) 4'X4' AREA (TYP DIRECT BURY) NCVP#
-  2" & SMALLER WATER SERVICE INSTALLED IN 1.5'X2' METER BOX MB#



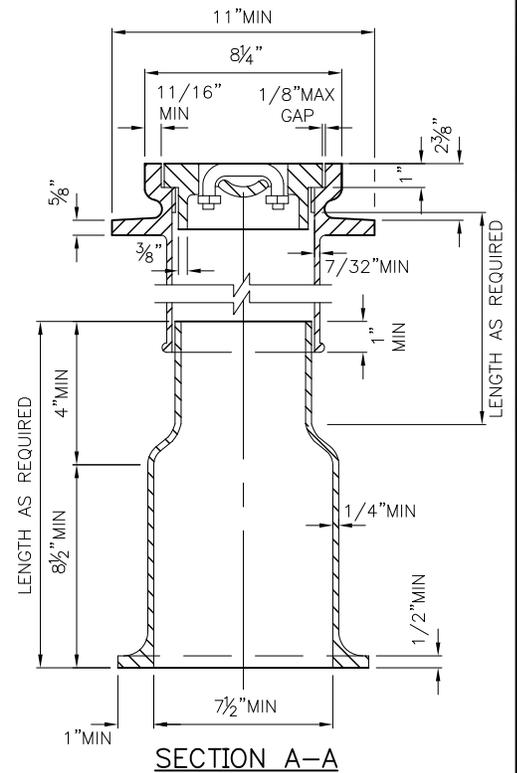
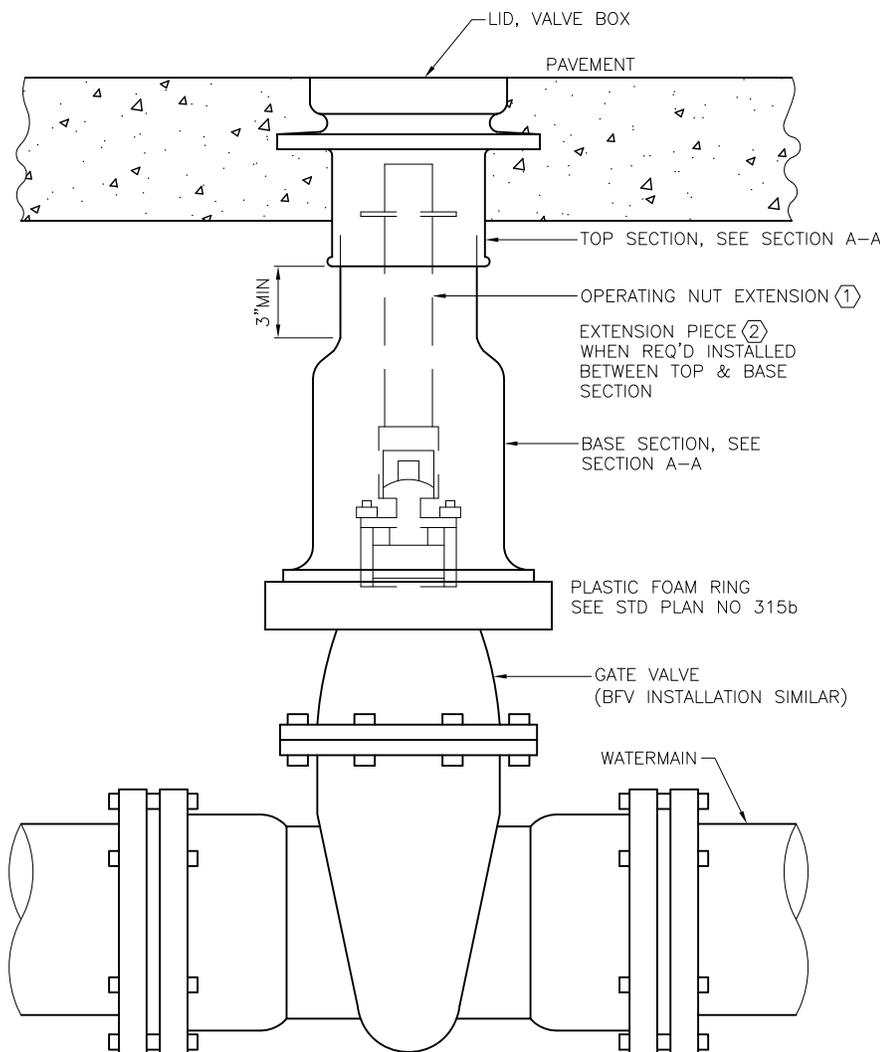
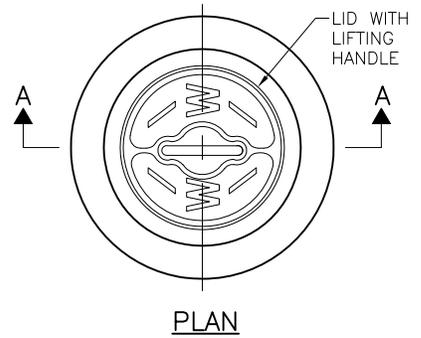
REF STD SPEC SEC 1-07.17(2)



City of Seattle

NOT TO SCALE

WATER SERVICE VAULT LOCATION CLEARANCES



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

VALVE BOX ASSEMBLY
TYPICAL SETTING DETAIL

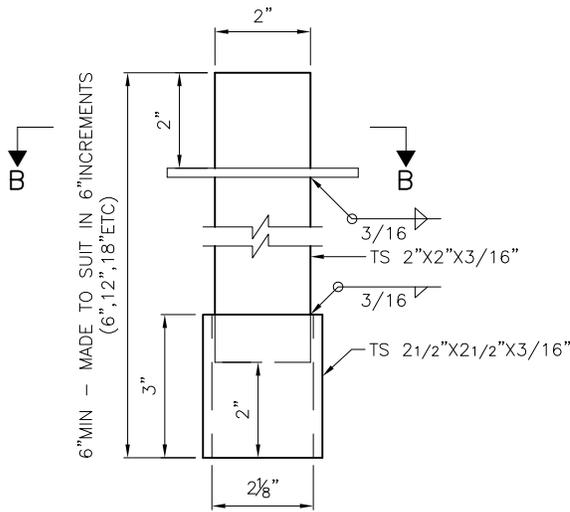
REF STD SPEC SEC 7-12



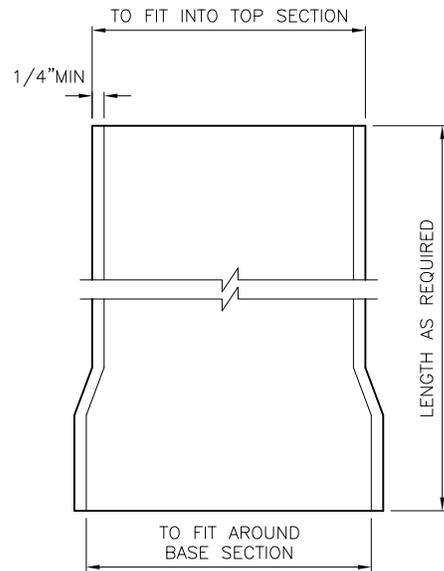
City of Seattle

NOT TO SCALE

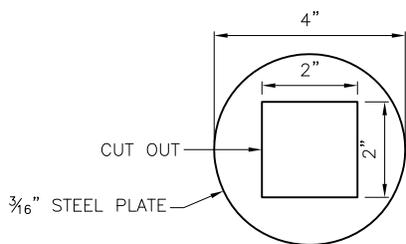
CAST IRON VALVE BOX & OPERATING NUT EXTENSION



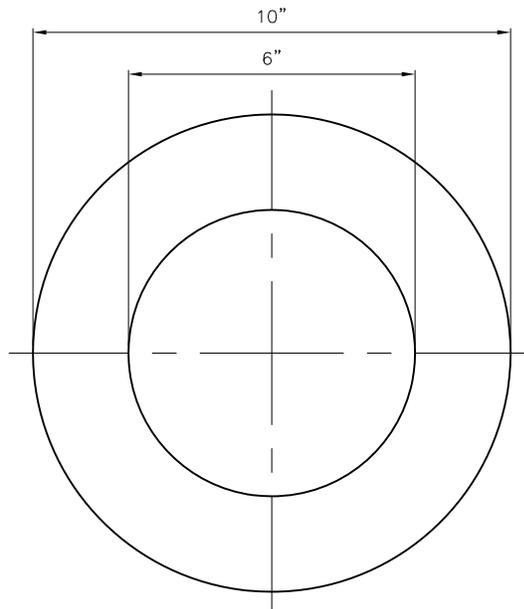
OPERATING NUT EXTENSION DETAIL 1



EXTENSION PIECE 2
WHEN REQUIRED



SECTION B-B



PLASTIC FOAM RING DETAIL

NOTES:

1. FRAME AND COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS FOR DELIVERY
2. CASTINGS AND EXTENSIONS SHALL BE HOT-DIPPED IN ASPHALTIC VARNISH ROYSTON ROSKOTE #612XM OR 2 COATS OF MASTIC ROYSTON INSIDE AND OUT.
3. VALVE BOXES SHALL BE RICH #045: TOP SECTION, LID AND BASE; OR OLYMPIC FOUNDRY: LID #1908-33, TOP SECTION #1106-33, BASE SECTION #1301-33
4. ALL CASTINGS SHALL BE DUCTILE OR GREY CAST IRON

LEGEND:

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

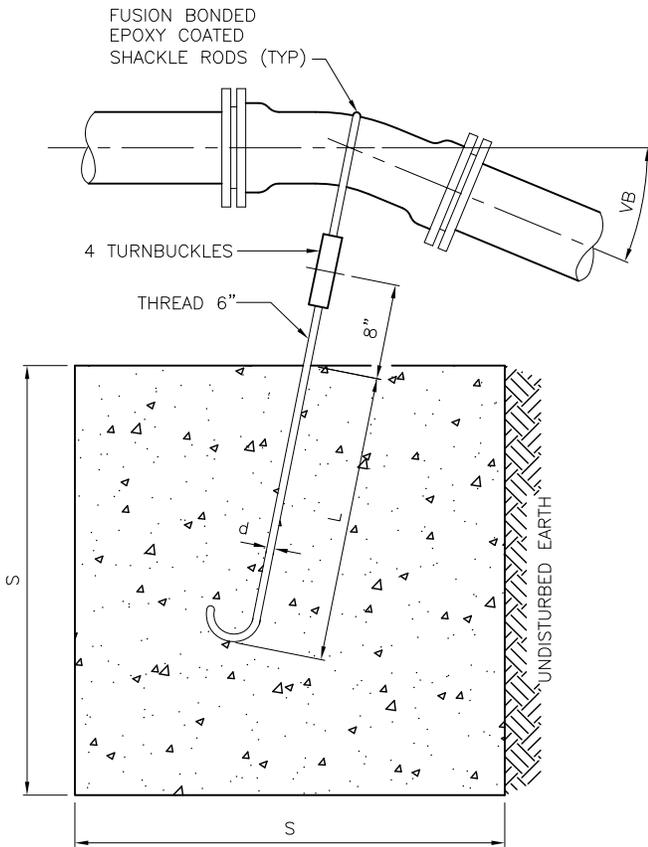
REF STD SPEC SEC 7-12 & 9-30



City of Seattle

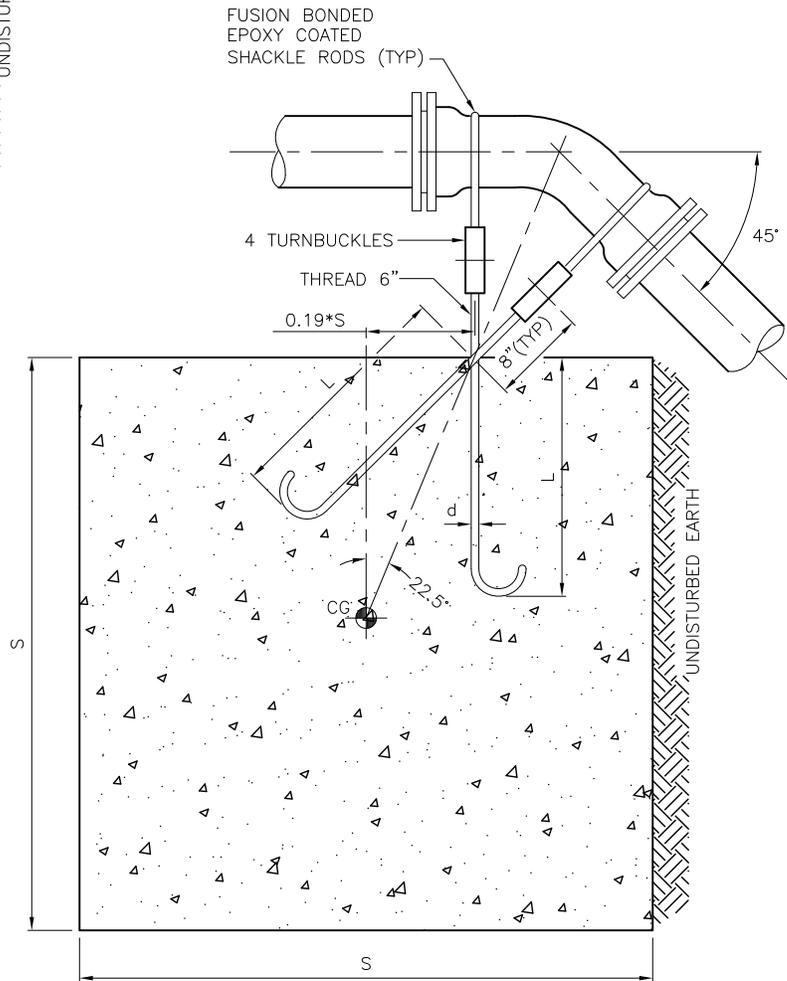
NOT TO SCALE

CAST IRON VALVE BOX & OPERATING NUT EXTENSIONS



TYPE A

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

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

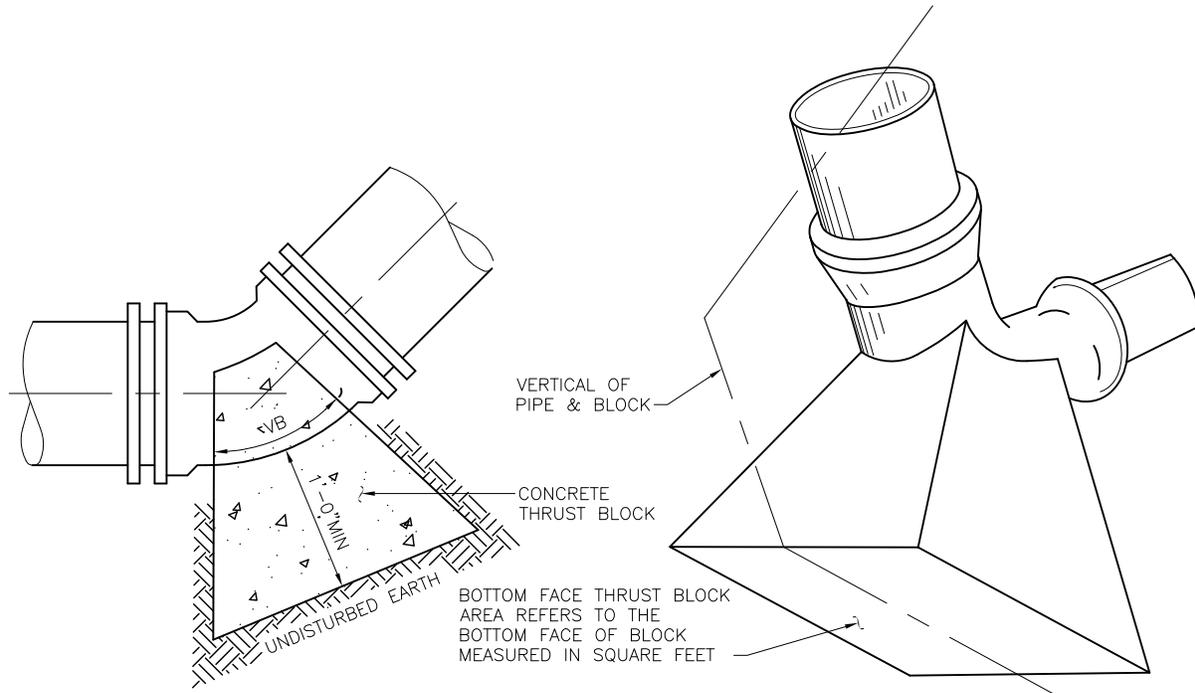
REF STD SPEC SEC 7-11



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

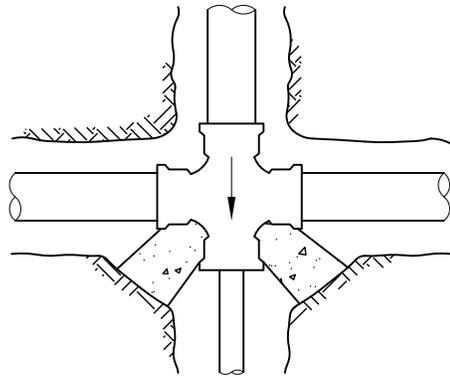
REF STD SPEC SEC 7-11



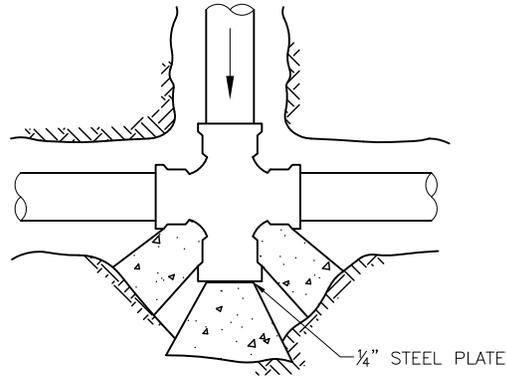
City of Seattle

NOT TO SCALE

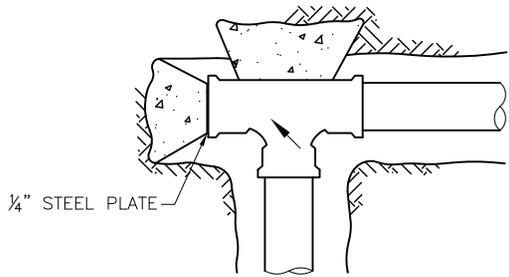
**WATERMAIN THRUST BLOCKING
VERTICAL FITTINGS**



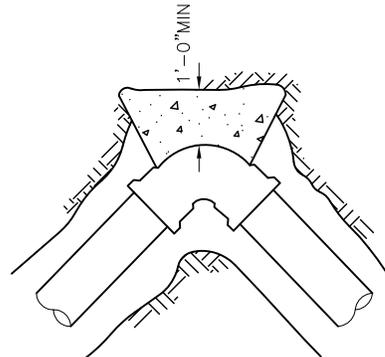
UNBALANCED CROSS



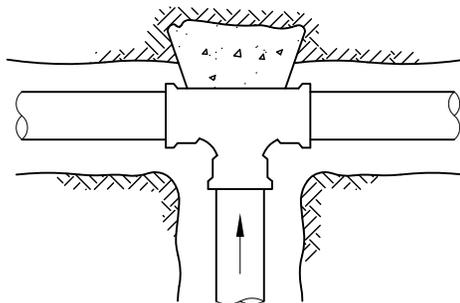
CROSS WITH PLUG



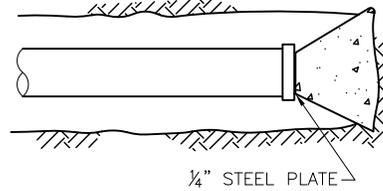
PLUGGED TEE



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			
	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	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	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	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	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	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.

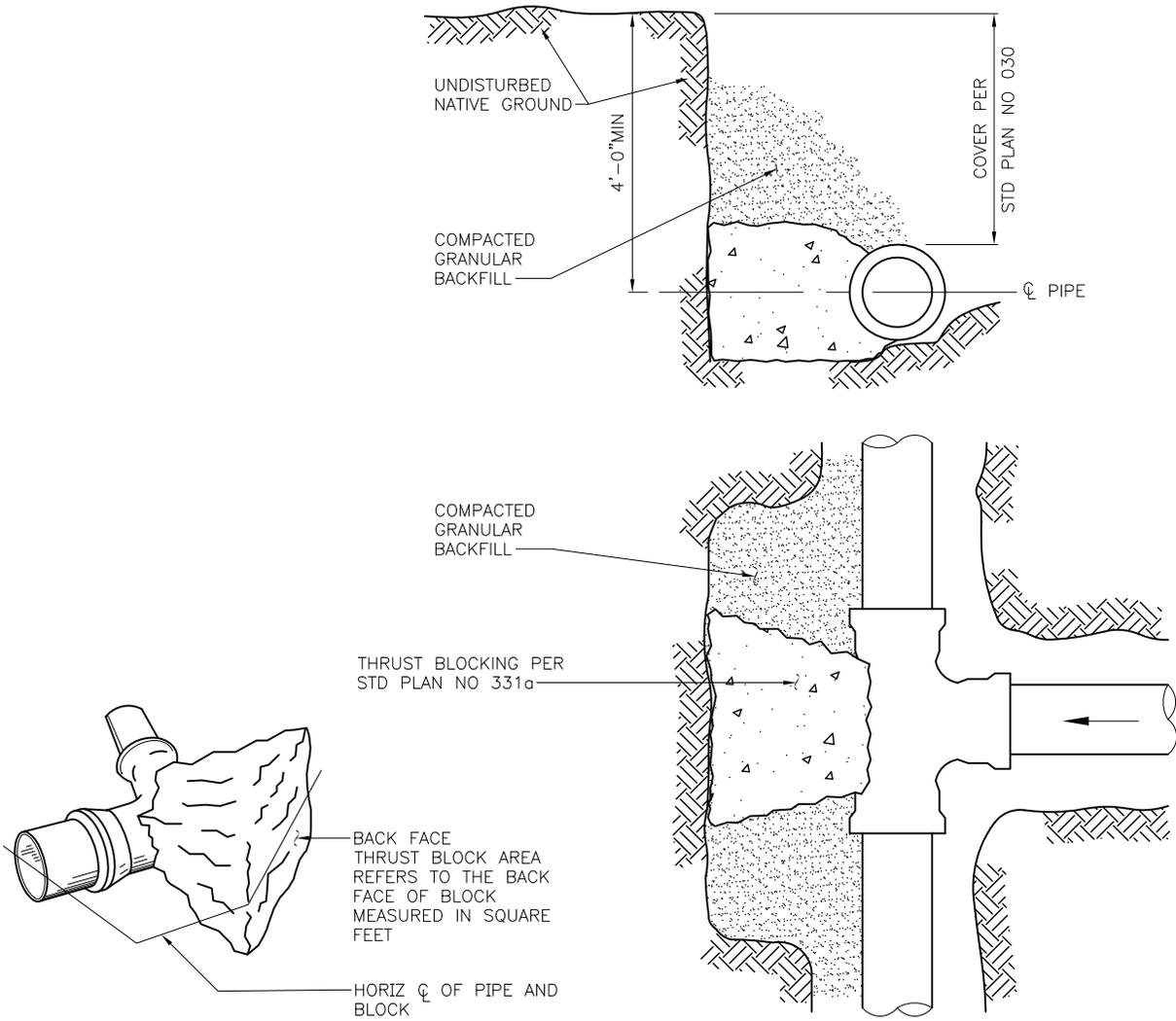
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

WATERMAIN THRUST BLOCKING HORIZONTAL FITTINGS



THRUST BLOCK DETAIL

NOTES:

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

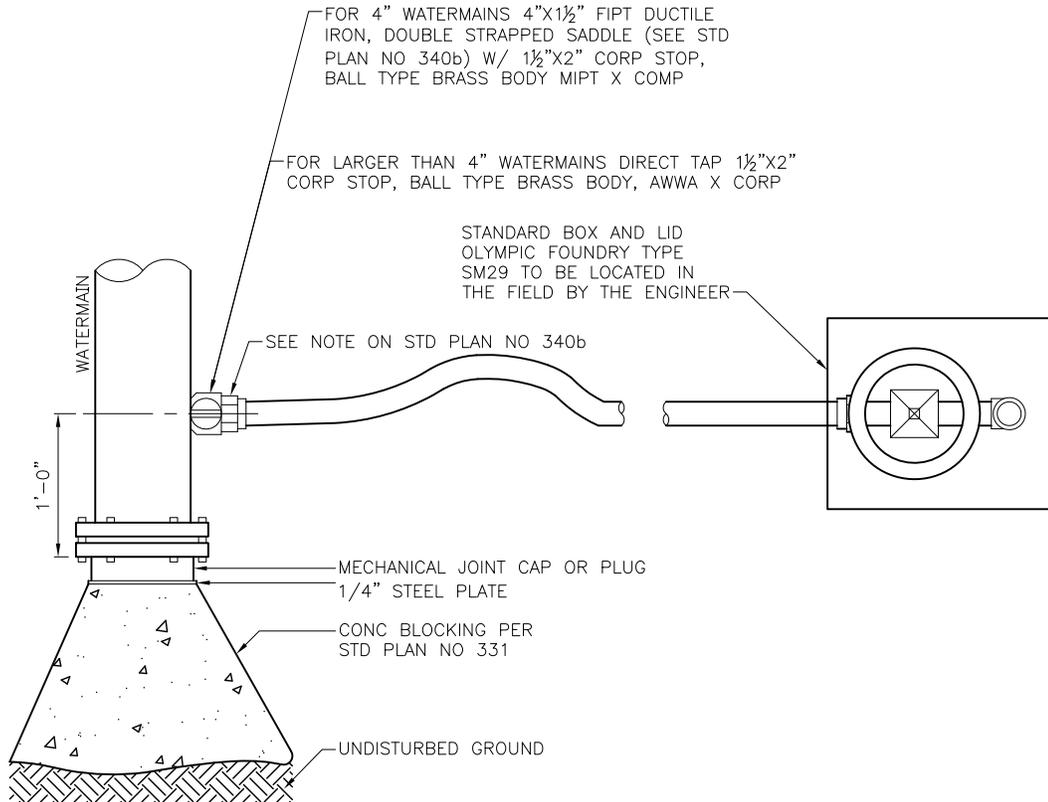
REF STD SPEC SEC 7-11



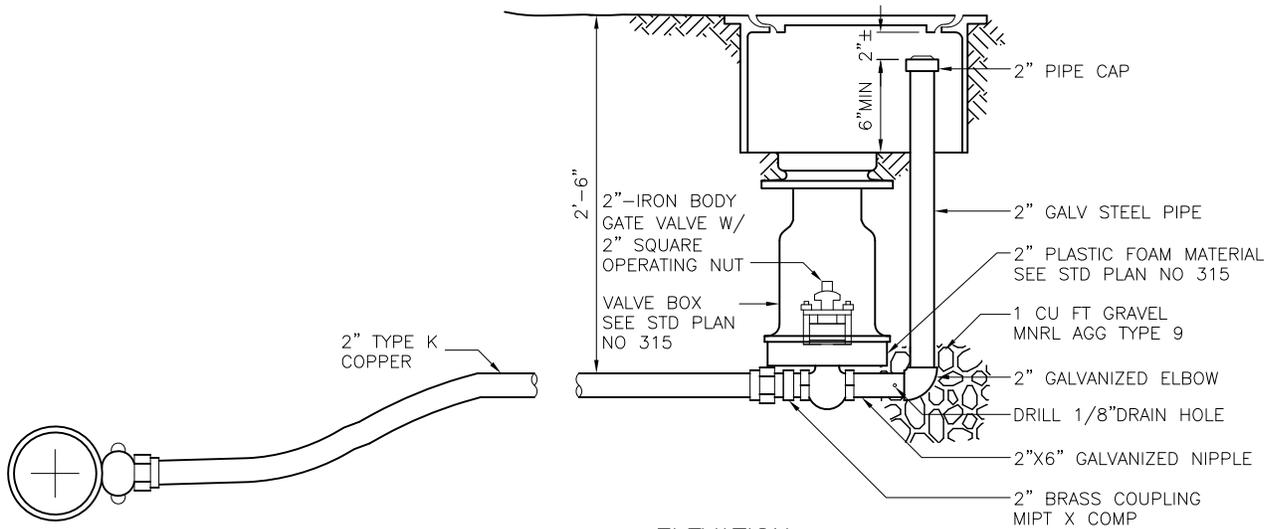
City of Seattle

NOT TO SCALE

**WATERMAIN THRUST BLOCKING
HORIZONTAL FITTINGS**



PLAN



ELEVATION

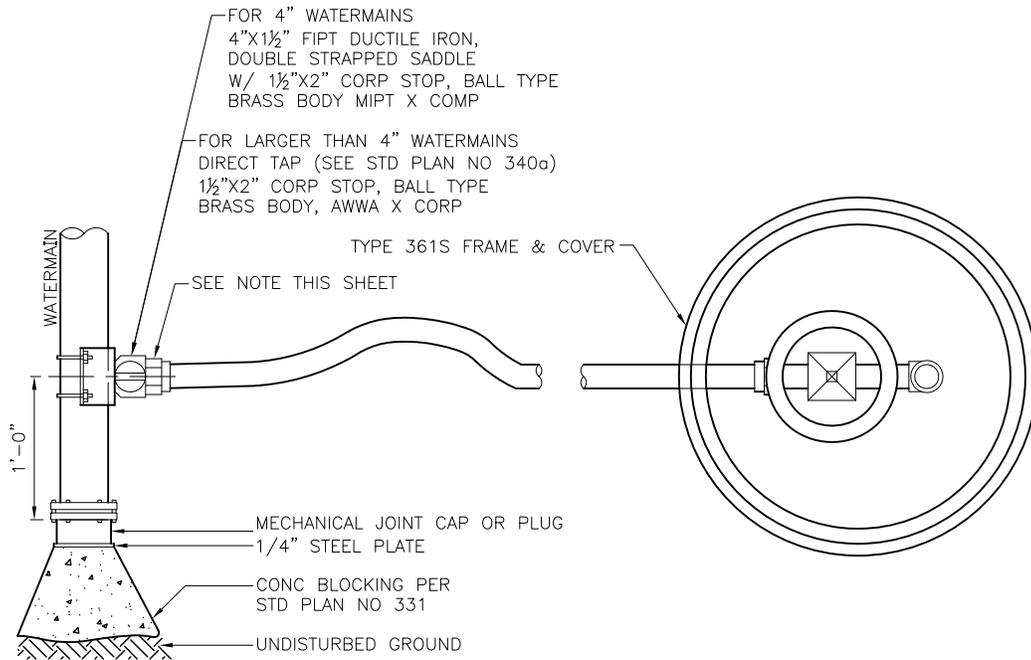
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

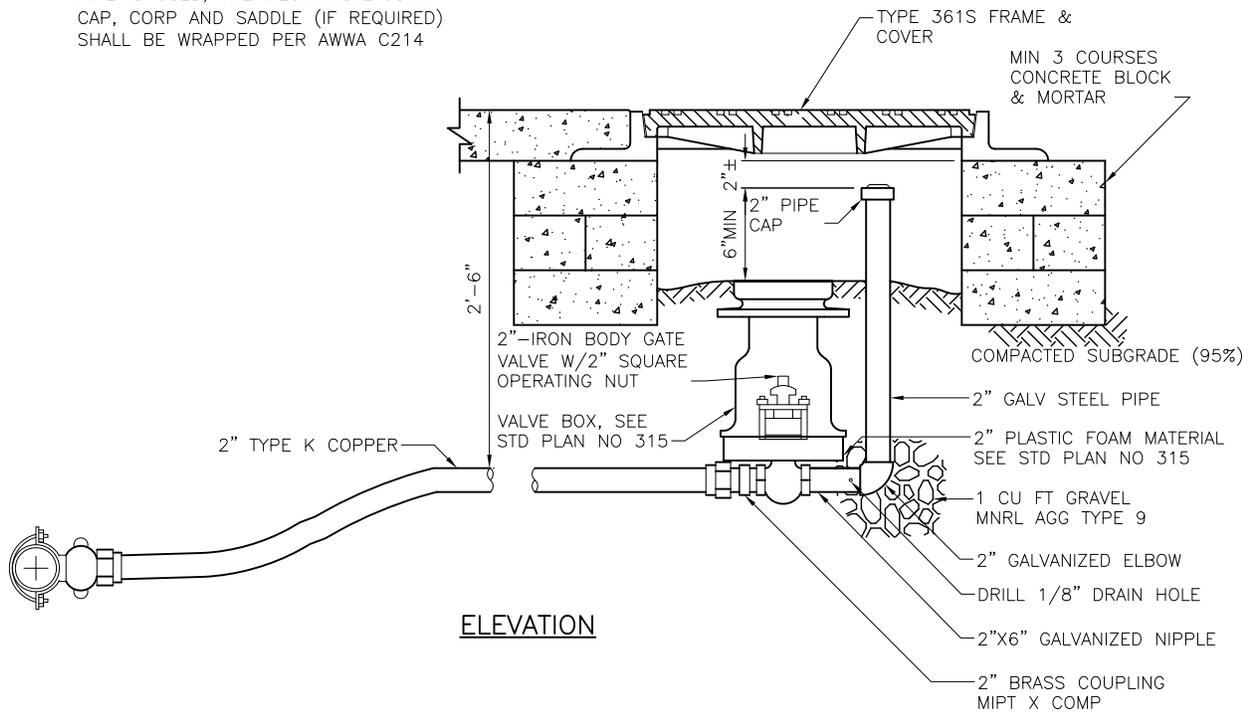
2" BLOW OFF TYPE A
NON TRAFFIC INSTALLATION



NOTE:

WHERE TAPE-WRAPPED DUCTILE IRON PIPE IS USED, THE MECHANICAL JOINT CAP, CORP AND SADDLE (IF REQUIRED) SHALL BE WRAPPED PER AWWA C214

PLAN



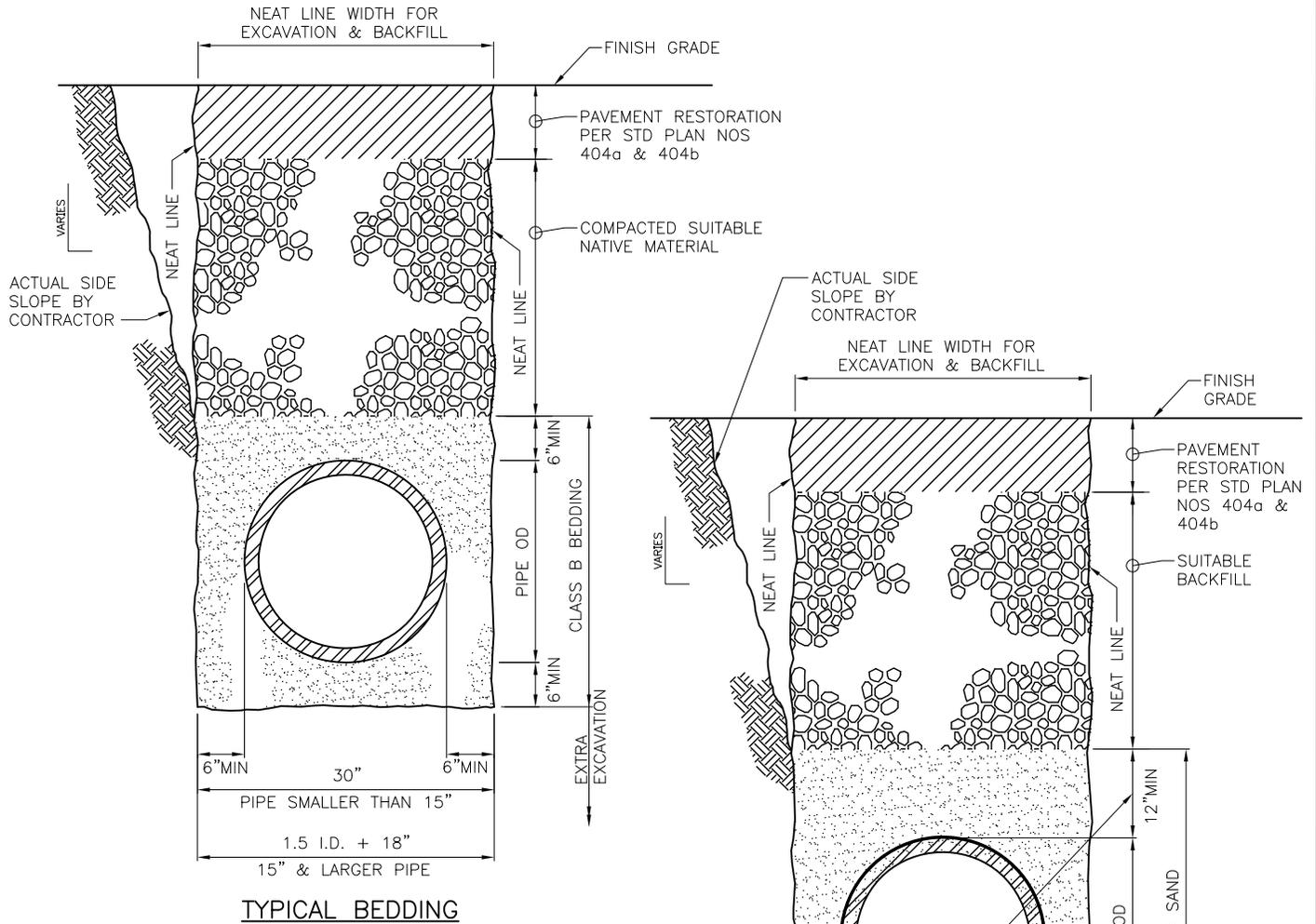
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

**2" BLOW OFF DETAIL TYPE B
TRAFFIC INSTALLATION**



TYPICAL BEDDING

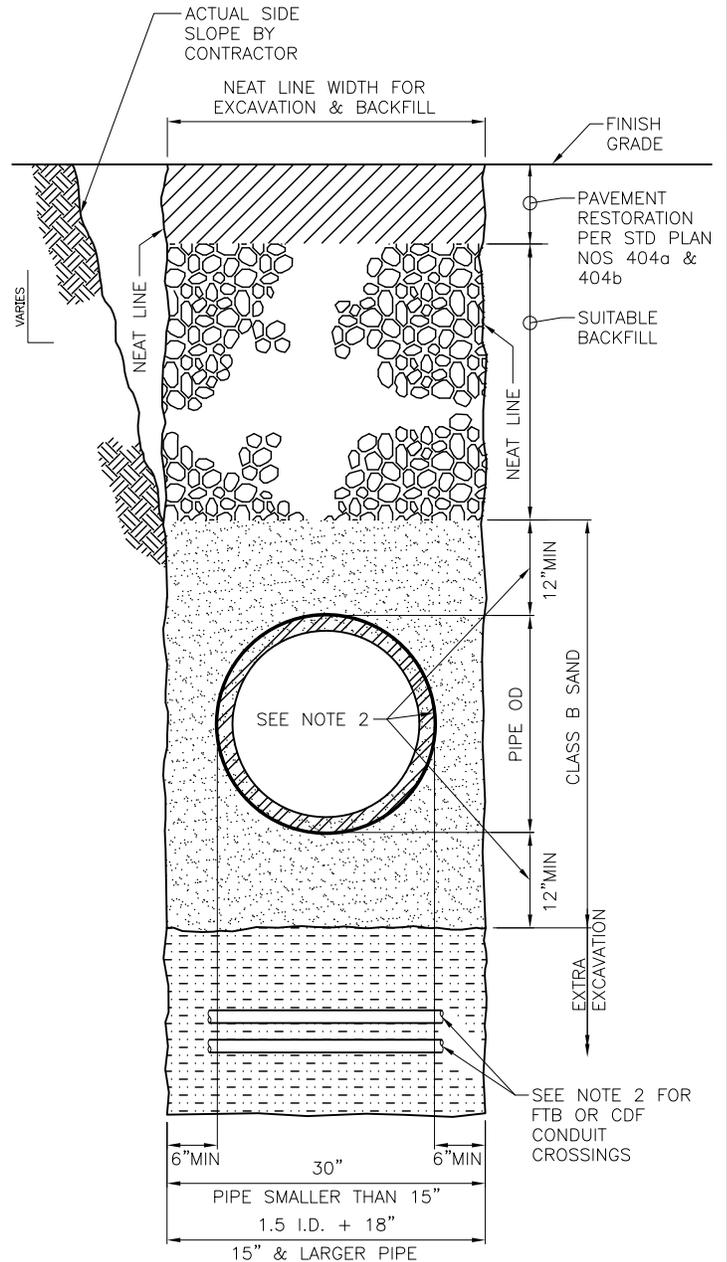
BEDDING MATERIAL

CLASS B:

- FOR DISTRIBUTION WATERMAIN, MINERAL AGGREGATE TYPE 6 OR TYPE 7
- FOR TRANSMISSION WATERMAIN, MINERAL AGGREGATE 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, INCREASE CLASS B SAND DEPTH & COVER TO 12" MIN & ENCASE METALLIC PIPE IN 8 MIL POLYETHYLENE ENCASEMENT FOR FULL TRENCH WIDTH



BEDDING AT TRENCH CROSSING

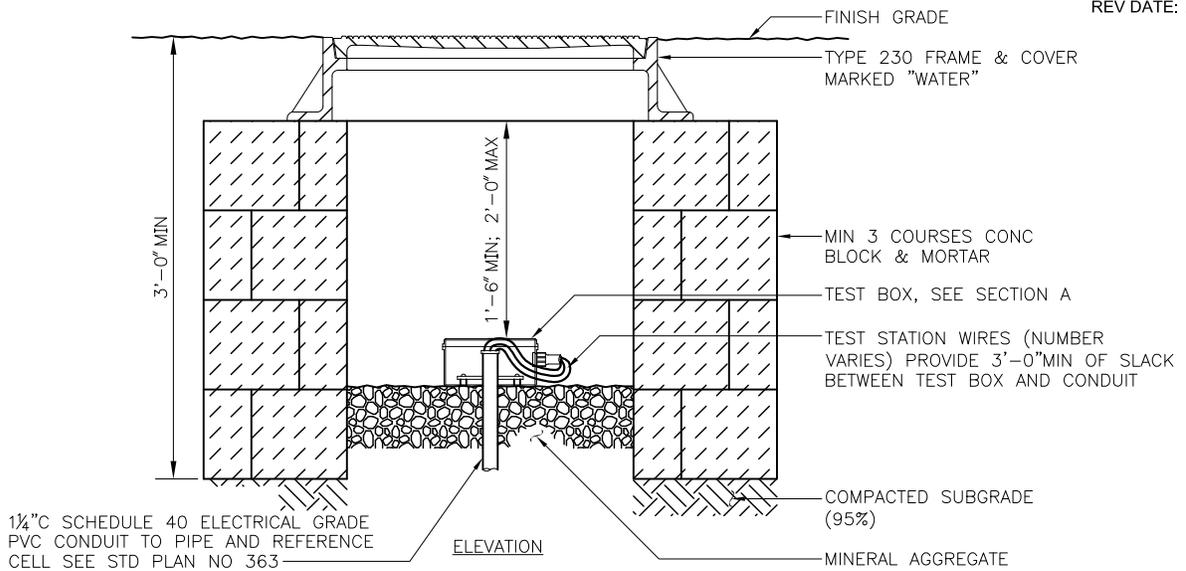
REF STD SPEC SEC 7-11,7-17



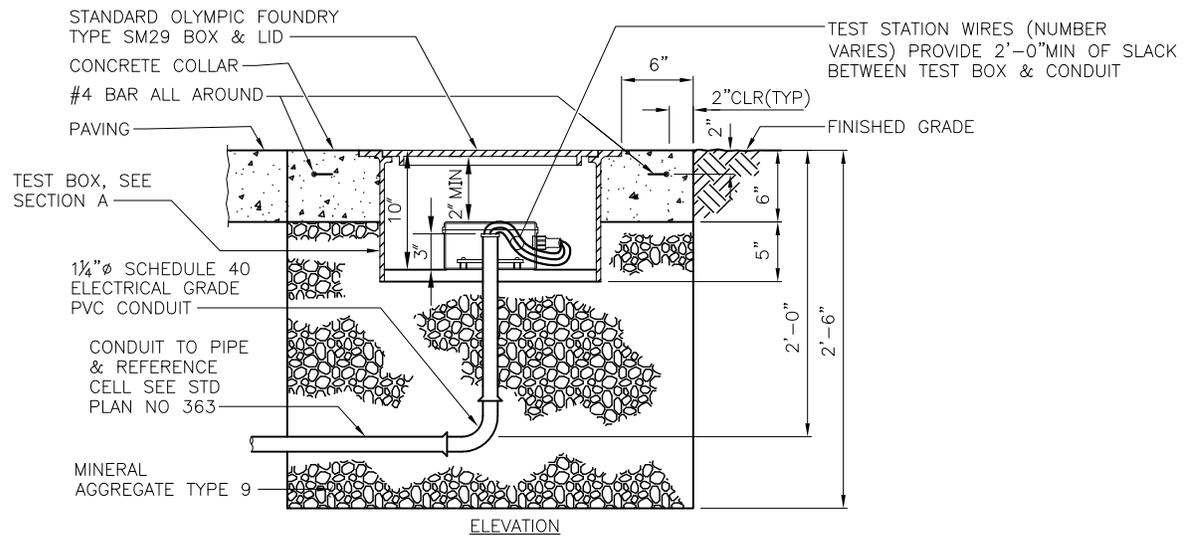
City of Seattle

NOT TO SCALE

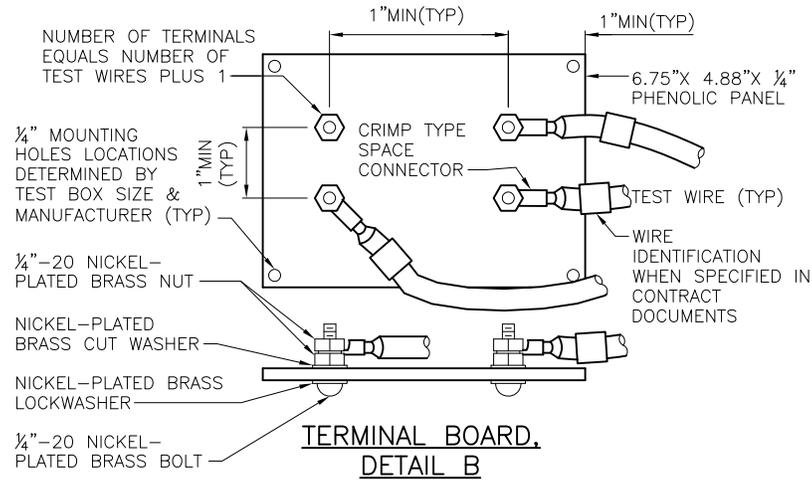
WATERMAIN TRENCH AND BEDDING



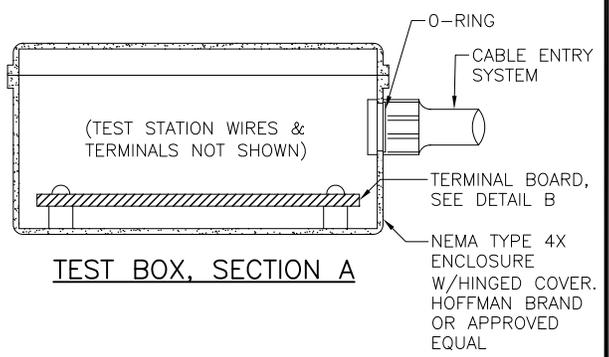
ELECTROLYSIS TEST STATION – TRAFFIC AREA



ELECTROLYSIS TEST STATION – NON-TRAFFIC AREA



TERMINAL BOARD, DETAIL B



TEST BOX, SECTION A

REF STD SPEC SEC 7-11

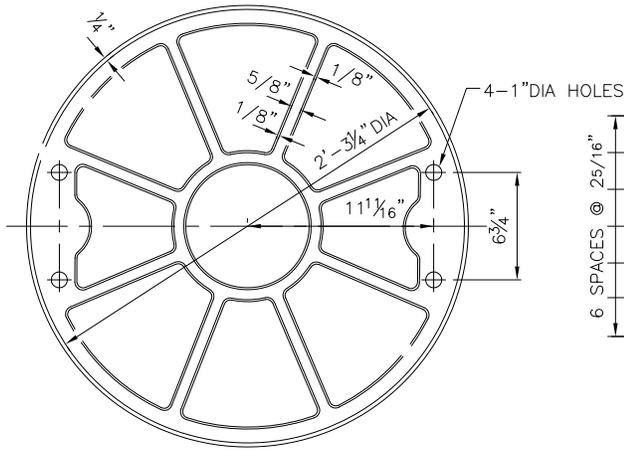


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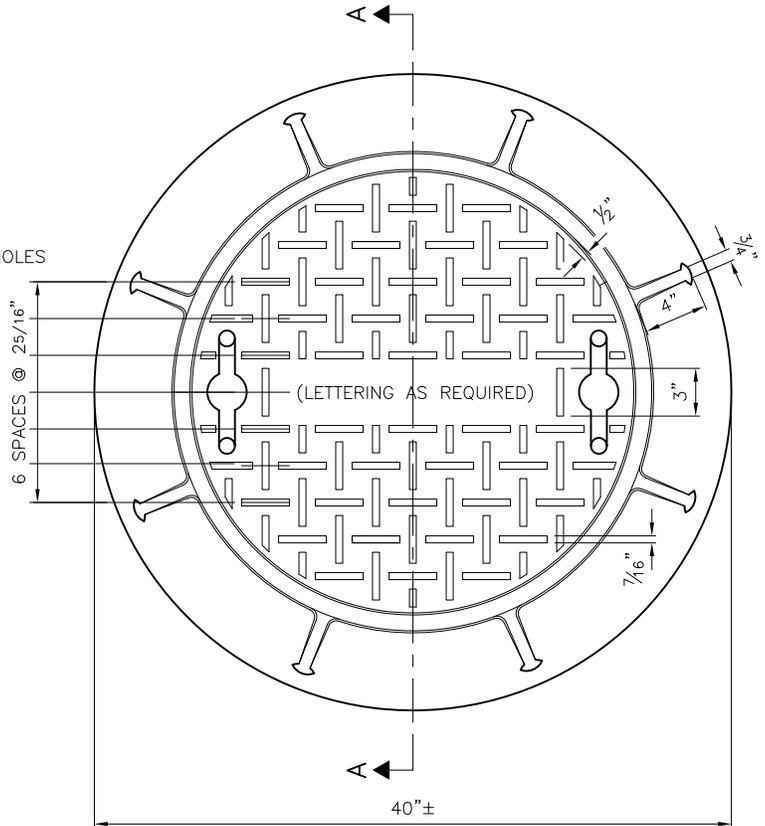
NOT TO SCALE

WATERMAIN ELECTROLYSIS TEST STATION

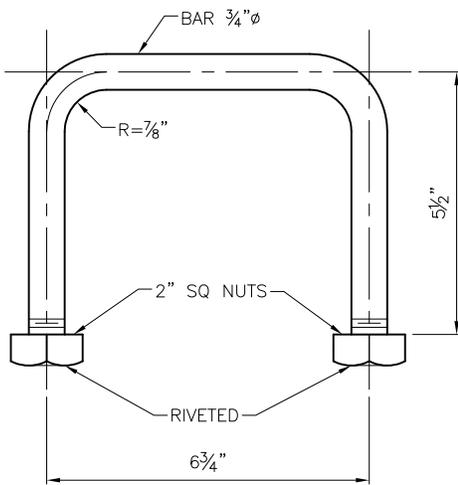
FRAME & COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS FOR DELIVERY



BOTTOM VIEW

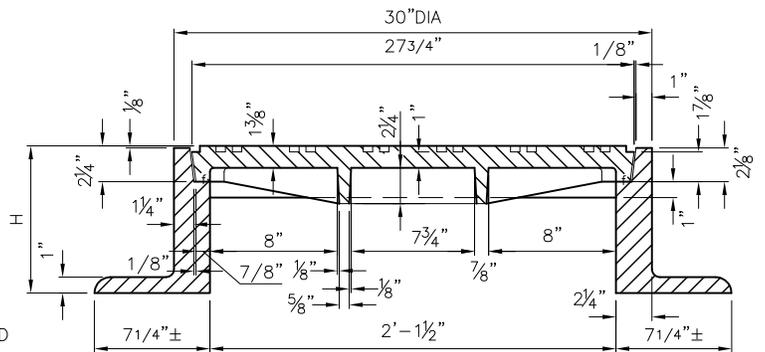


TOP VIEW



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

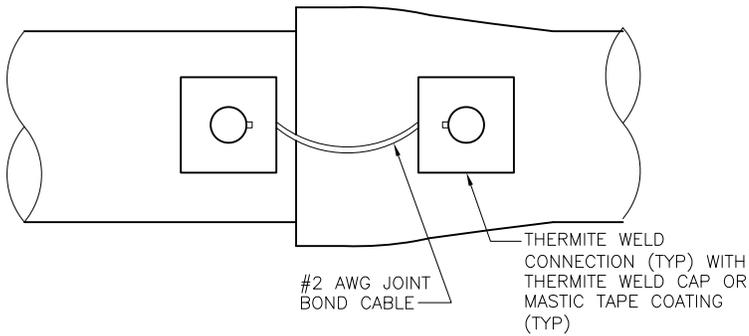
REF STD SPEC SEC 7-12



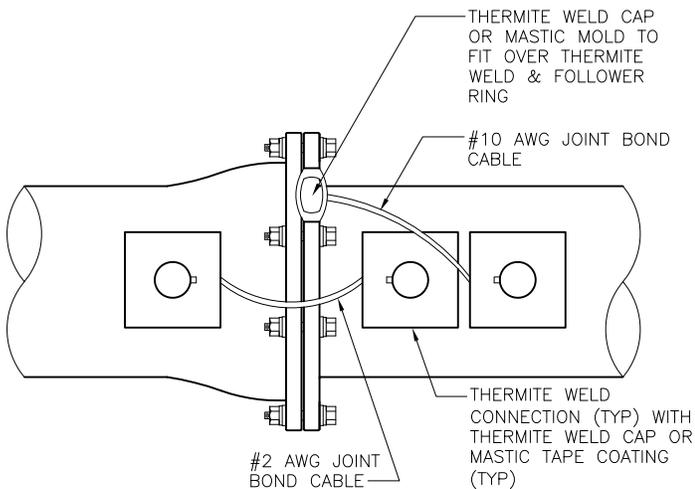
City of Seattle

NOT TO SCALE

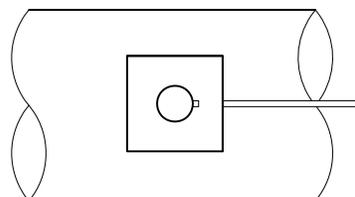
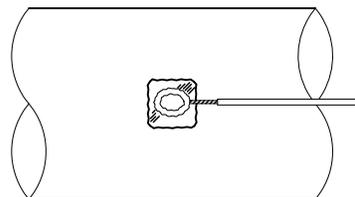
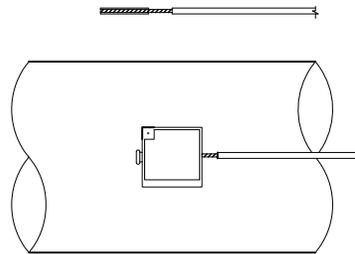
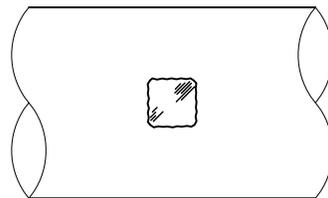
**TYPE 361 VALVE CHAMBER
FRAME & COVER**



SLIP JOINT BOND CONNECTION



MECHANICAL 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

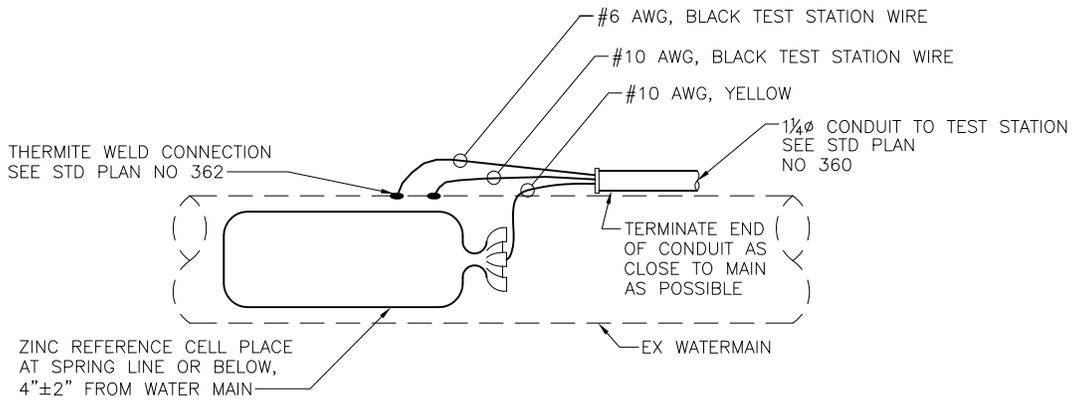
REF STD SPEC SEC 7-11



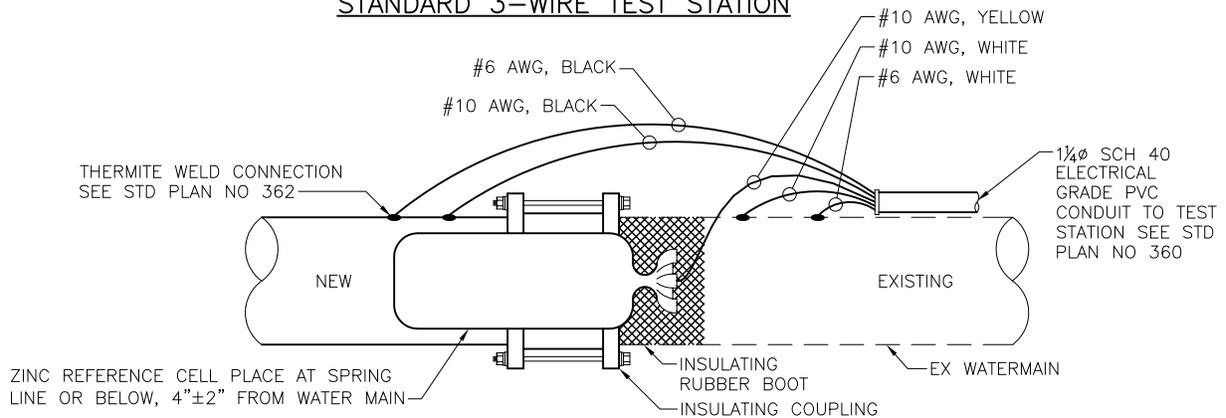
City of Seattle

NOT TO SCALE

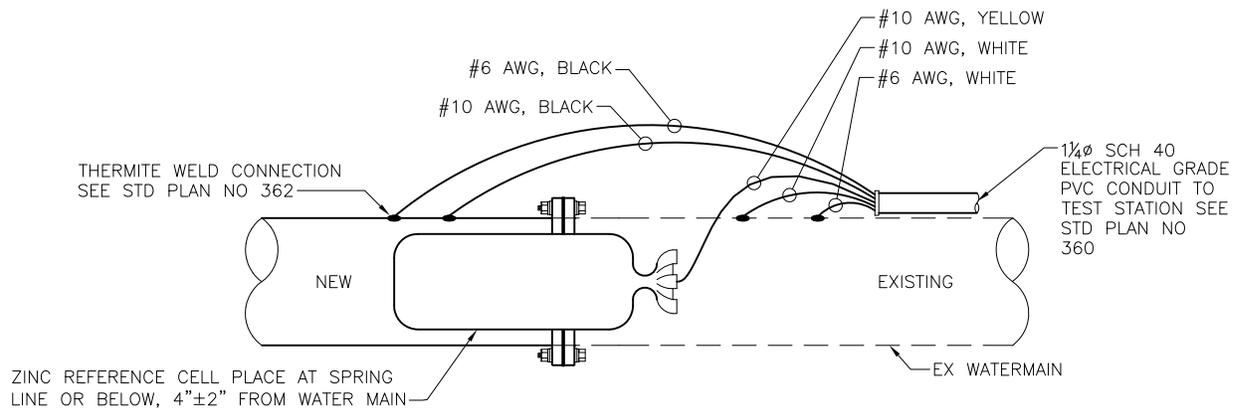
JOINT BONDING FOR DIP WATERMAINS & JOINTS BONDING DETAIL



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)

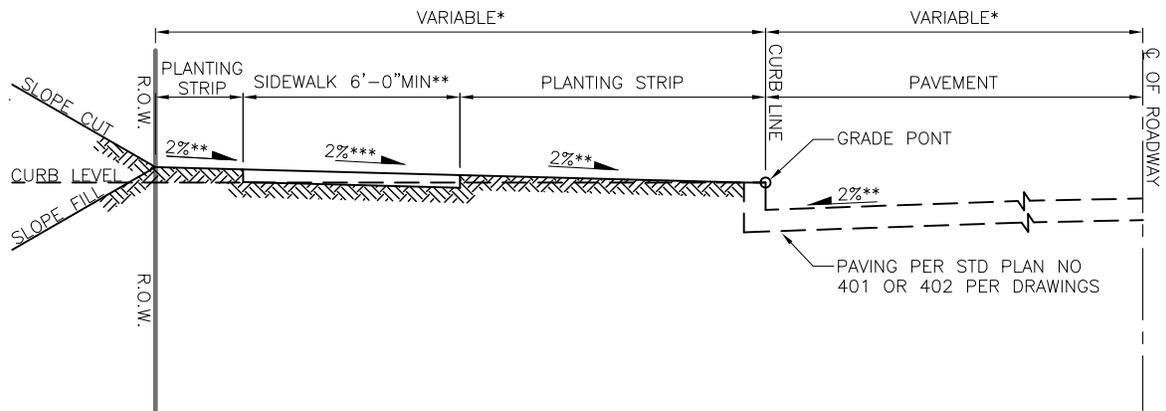
REF STD SPEC SEC 7-11.3(15) & 9-30.12



City of Seattle

NOT TO SCALE

**ELECTROLYSIS TEST STATION
 WIRE INSTALLATION DETAILS**



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

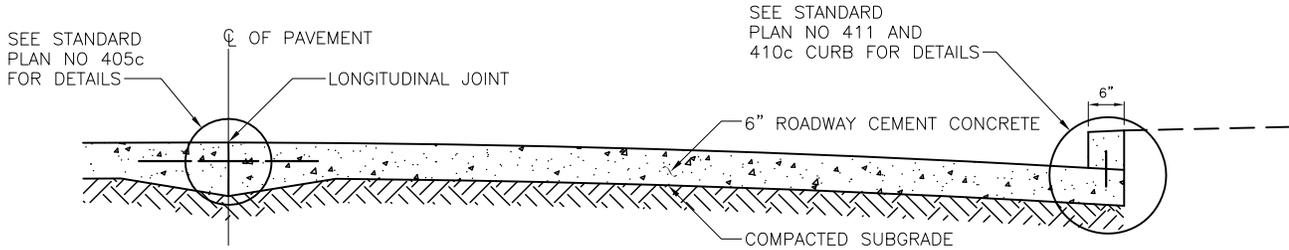
REF STD SPEC SEC 2-04



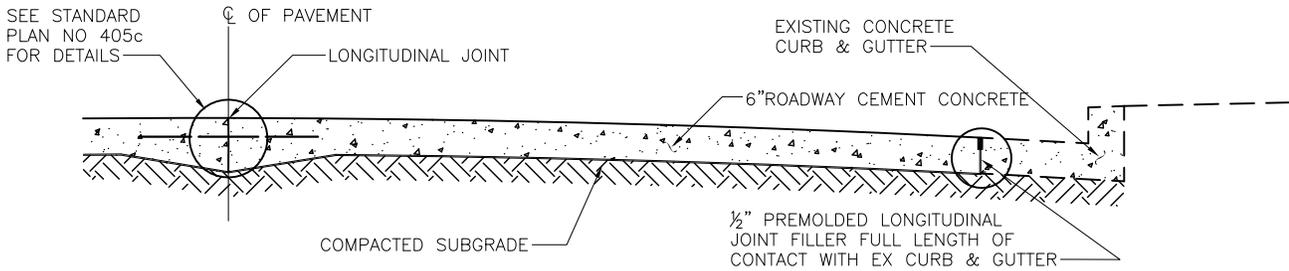
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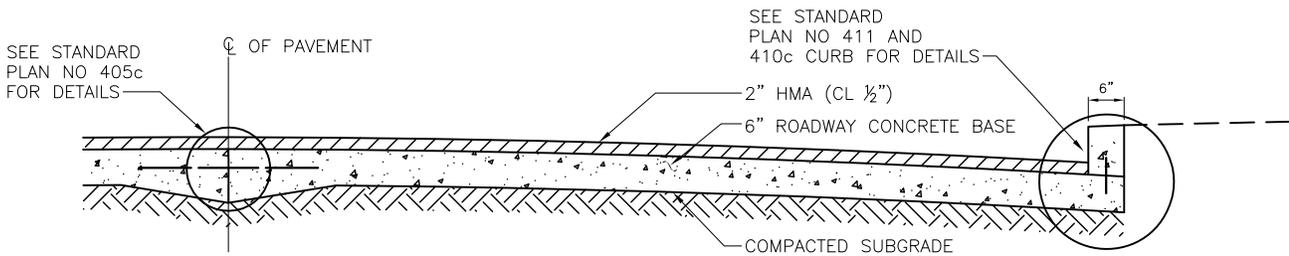
HALF SECTION, GRADING



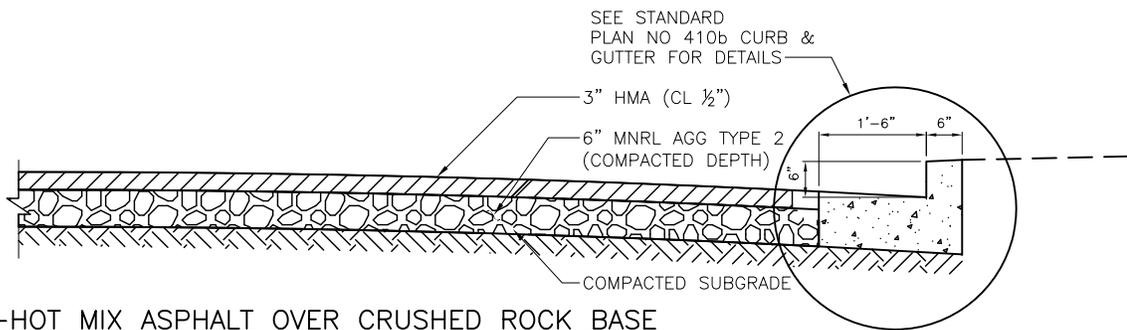
401A-CEMENT CONCRETE PAVEMENT WITH INTEGRAL CURB



401B-CEMENT CONCRETE PAVEMENT WITH EXISTING CURB & GUTTER



401C-HOT MIX ASPHALT ON CEMENT CONCRETE BASE



401D-HOT MIX ASPHALT OVER CRUSHED ROCK BASE

HMA DESIGN CRITERIA:

1. 3 MILLION ESAL'S UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS
2. ASPHALT PG 64-22 UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS
3. WARM MIX ASPHALT MAY BE USED IN PLACE OF HMA WHERE SHOWN ON THE DRAWINGS

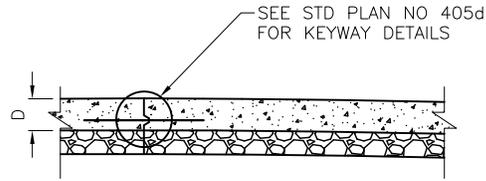
REF STD SPEC SEC 4-04, 5-04, 5-05, 8-04



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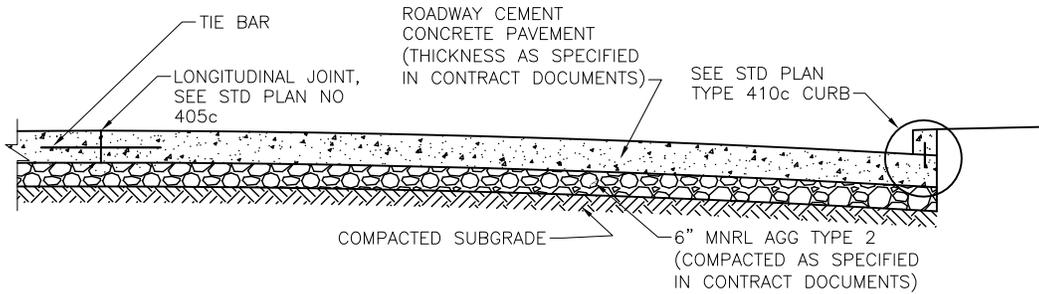
NOT TO SCALE

**RESIDENTIAL PAVEMENT
SECTIONS**

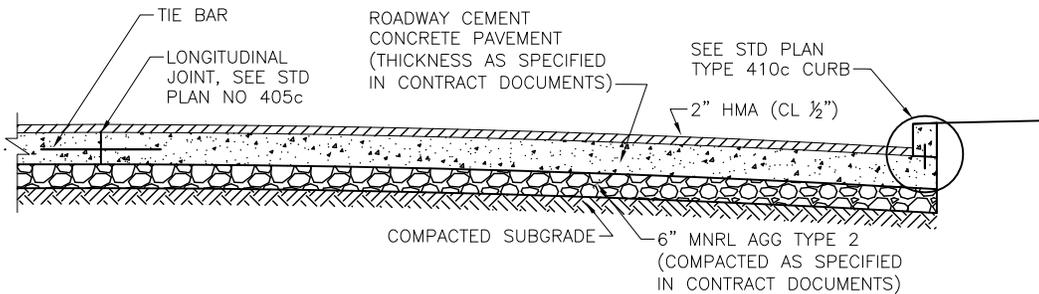


NOTES:
 IF CONC THICKNESS IS 9 INCH OR GREATER
 OPTIONAL KEYWAY MAY BE USED
 SEE STD PLANS NO 405c & 405d FOR DETAILS

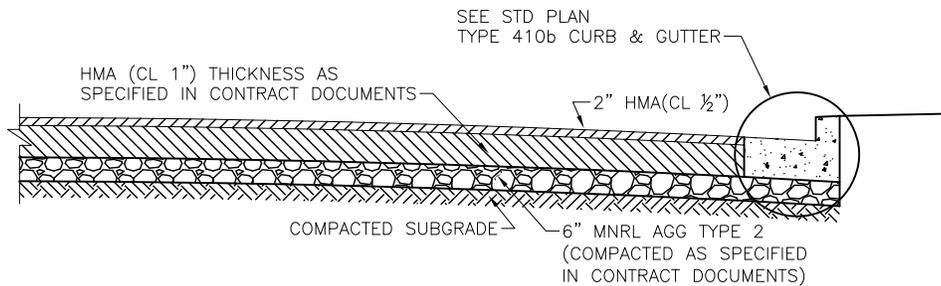
OPTIONAL KEYWAY
 FOR LONGITUDINAL JOINT



402A-ROADWAY CONCRETE PAVEMENT ON CRUSHED ROCK



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



402C-HOT MIX ASPHALT ON CRUSHED ROCK BASE

HMA DESIGN CRITERIA:

1. 10 MILLION ESAL'S UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS.
2. ASPHALT PG 64-22 UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS.
3. WARM MIX ASPHALT MAY BE USED IN PLACE OF HMA WHERE SHOWN ON THE DRAWINGS.

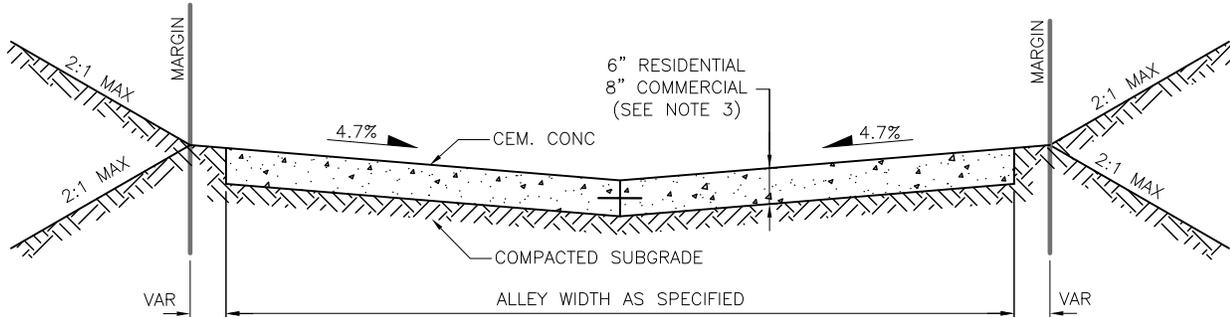
REF STD SPEC SEC 4-04, 5-04, 5-05 & 8-04



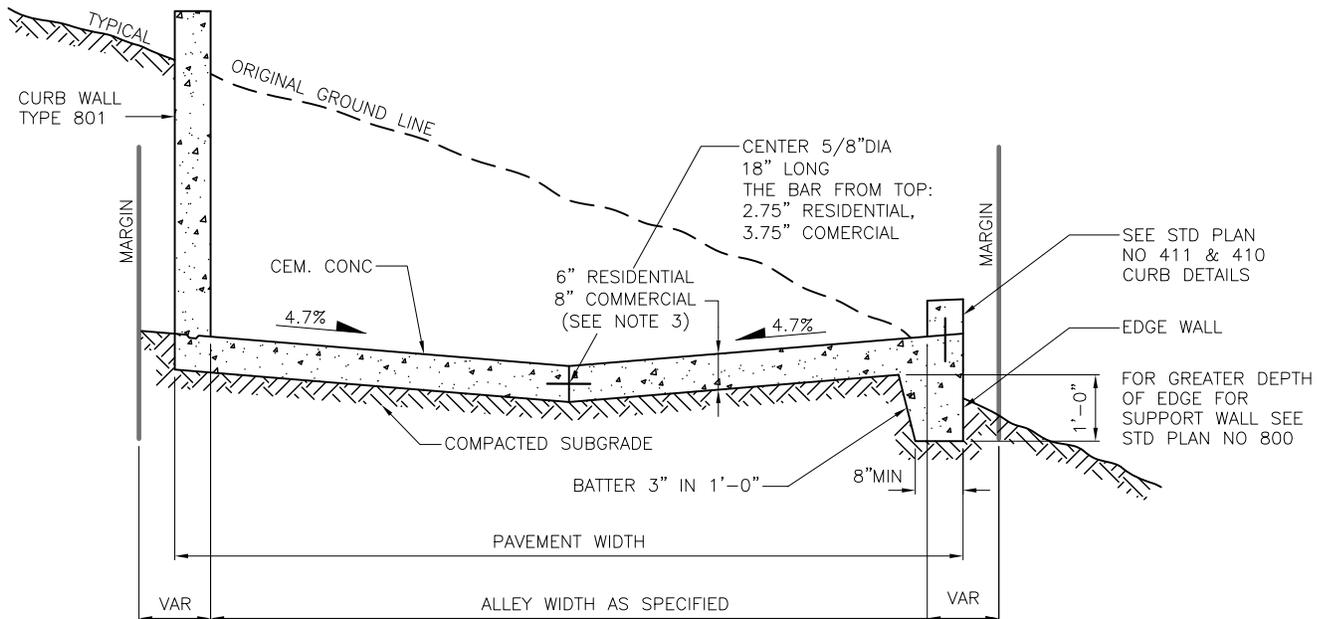
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NOT TO SCALE

**COMMERCIAL AND
 ARTERIAL PAVEMENT
 SECTIONS**



CONCRETE ALLEY PAVEMENT



**CEMENT CONCRETE ALLEY PAVEMENT
403B—FOR SHALLOW EMBANKMENT AREA**

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.

REF STD SPEC SEC 8-17, 8-19



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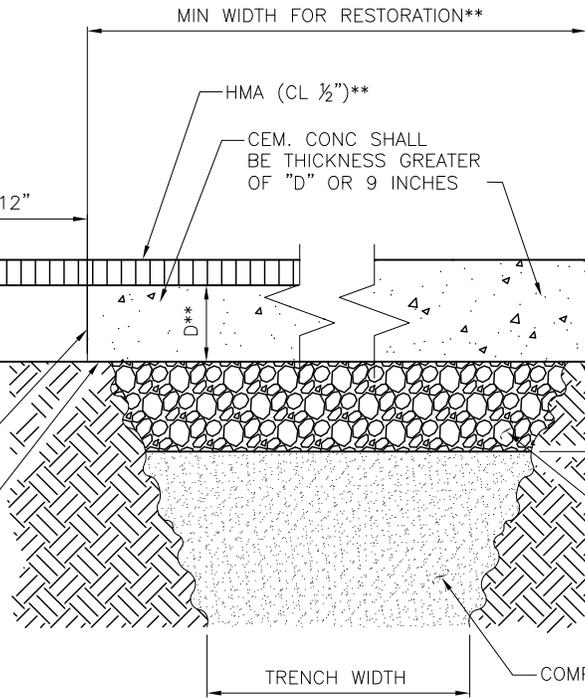
**ROADWAY CEMENT CONCRETE
ALLEY PAVEMENTS**

HALF SECTION

RIGID PAVEMENT WITH ASPHALT CONCRETE SURFACE

REMOVE ASPHALT OVERLAY
SAWCUT ASPHALT CONC (REMOVE LOOSENEED AREAS)
EXISTING ASPHALT CONCRETE PAVEMENT

TACK COAT
EXISTING RIGID BASE
SAWCUT CONCRETE FULL DEPTH
STEP EXCAVATION TO AVOID UNDERMINING EX PAVEMENT (TYP)



HALF SECTION
CEMENT CONCRETE PAVEMENT

SAWCUT CONCRETE FULL DEPTH
EXISTING CONCRETE PAVEMENT

STEP EXCAVATION TO AVOID UNDERMINING EX PAVEMENT (TYP)
COMPACT MINERAL AGGREGATE TYPE 2
COMPACT BACKFILL

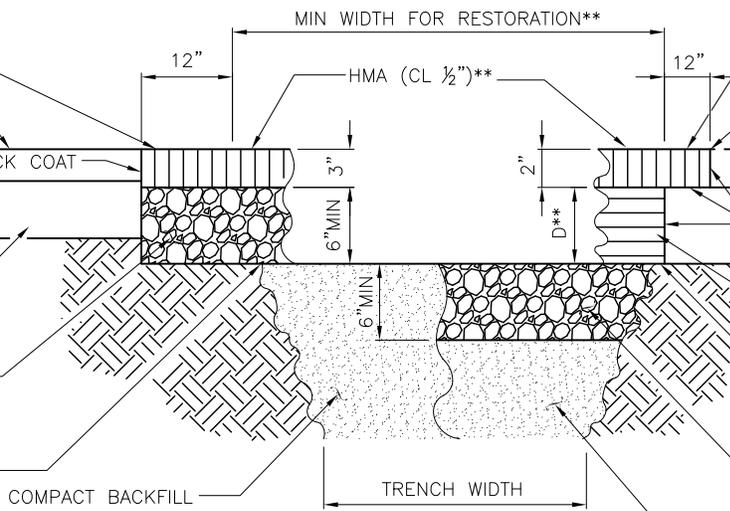
TYPICAL PATCH FOR RIGID PAVEMENT

HALF SECTION

FLEXIBLE PAVEMENT (≤ 3' TYP)

PLANE ASPHALT PRIOR TO PLACING FINAL LIFT
EXISTING OIL MAT

TACK COAT
EXISTING EARTH OR GRANULAR BASE
COMPACT MINERAL AGGREGATE TYPE 2
STEP EXCAVATION TO AVOID UNDERMINING EX PAVEMENT (TYP)



HALF SECTION

FLEXIBLE PAVEMENT (≥ 3' TYP)

PLANE ASPHALT PRIOR TO PLACING FINAL LIFT
SAWCUT ASPHALT CONC
EXISTING ASPHALT CONCRETE SURFACE

TACK COAT
EXISTING FLEXIBLE BASE
HMA (CL 1/2'' OR 1'')**
STEP EXCAVATION TO AVOID UNDERMINING EX PAVEMENT (TYP)
COMPACT MINERAL AGGREGATE TYPE 2
COMPACT BACKFILL

TYPICAL PATCH FOR FLEXIBLE PAVEMENT

- ** DEPTH OF RESTORATION SHALL MEET THE REQUIREMENTS OF "STREET AND SIDEWALK PAVEMENT OPENING AND RESTORATION RULES".
- WIDTH OF RESTORATION SHALL MEET REQUIREMENTS OF STANDARD PLAN 404c.

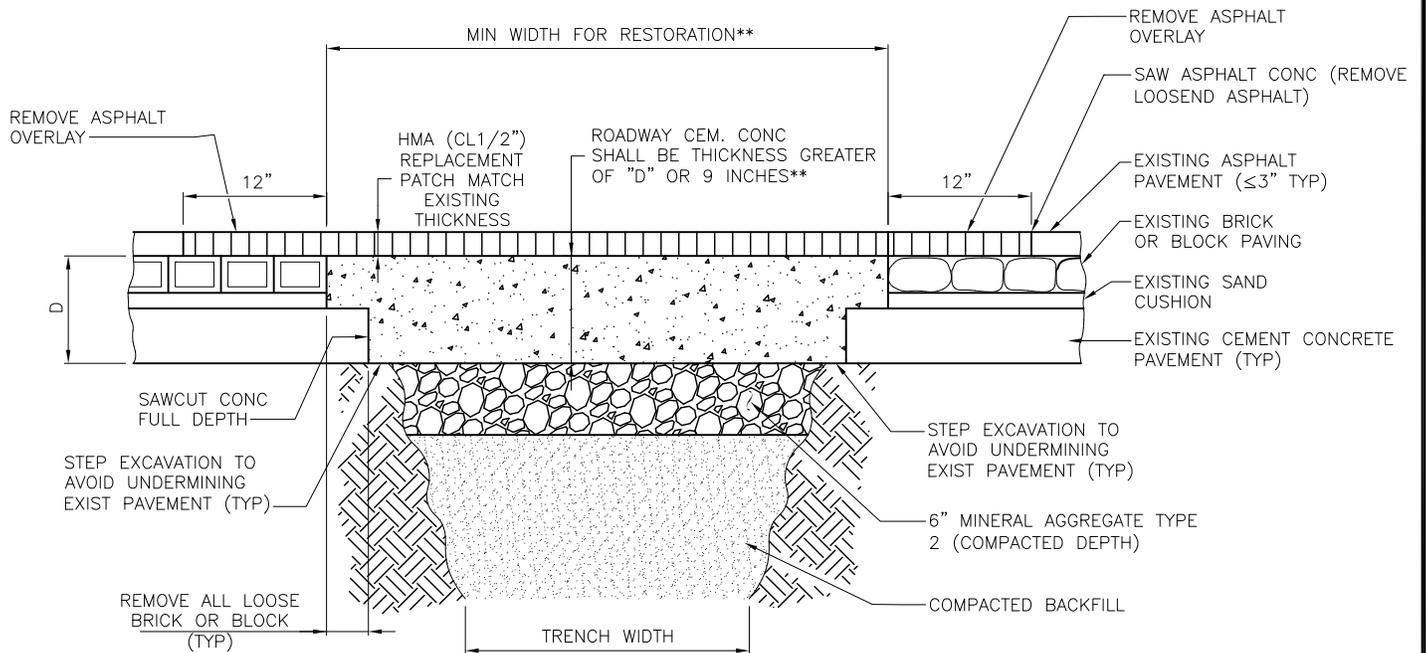
REF STD SPEC SEC 2-02, 5-04 & 5-05



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NOT TO SCALE

PAVEMENT PATCHING



ASPHALT OVER RIGID BASE OF BRICK OR STONE BLOCK PAVEMENT

HALF SECTION

- ** WIDTH OF RESTORATION SHALL MEET REQUIREMENTS OF STANDARD PLAN 404c.
- DEPTH OF RESTORATION SHALL MEET THE REQUIREMENTS OF "STREET AND SIDEWALK PAVEMENT OPENING AND RESTORATION RULES".

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



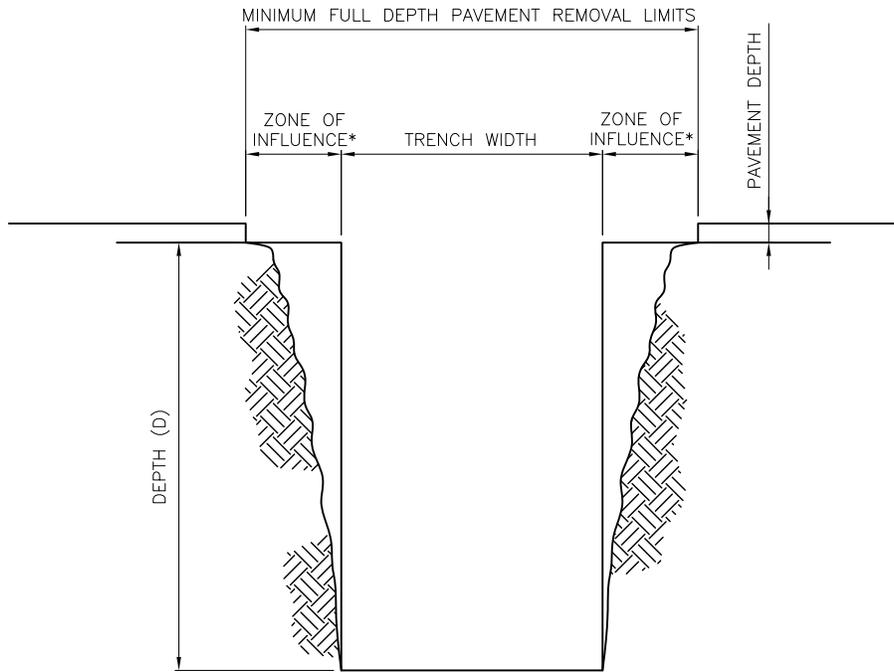
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PAVEMENT PATCHING

NOTES:

1. DUE TO POTENTIAL LOSS OF SOIL STRENGTH IN AREAS ADJACENT TO TRENCH OPENINGS, PAVEMENT REMOVAL SHALL BE WIDENED TO INCLUDE THE ZONE OF INFLUENCE.
2. SEE STREET AND SIDEWALK PAVEMENT 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)



*TYPICALLY D/4

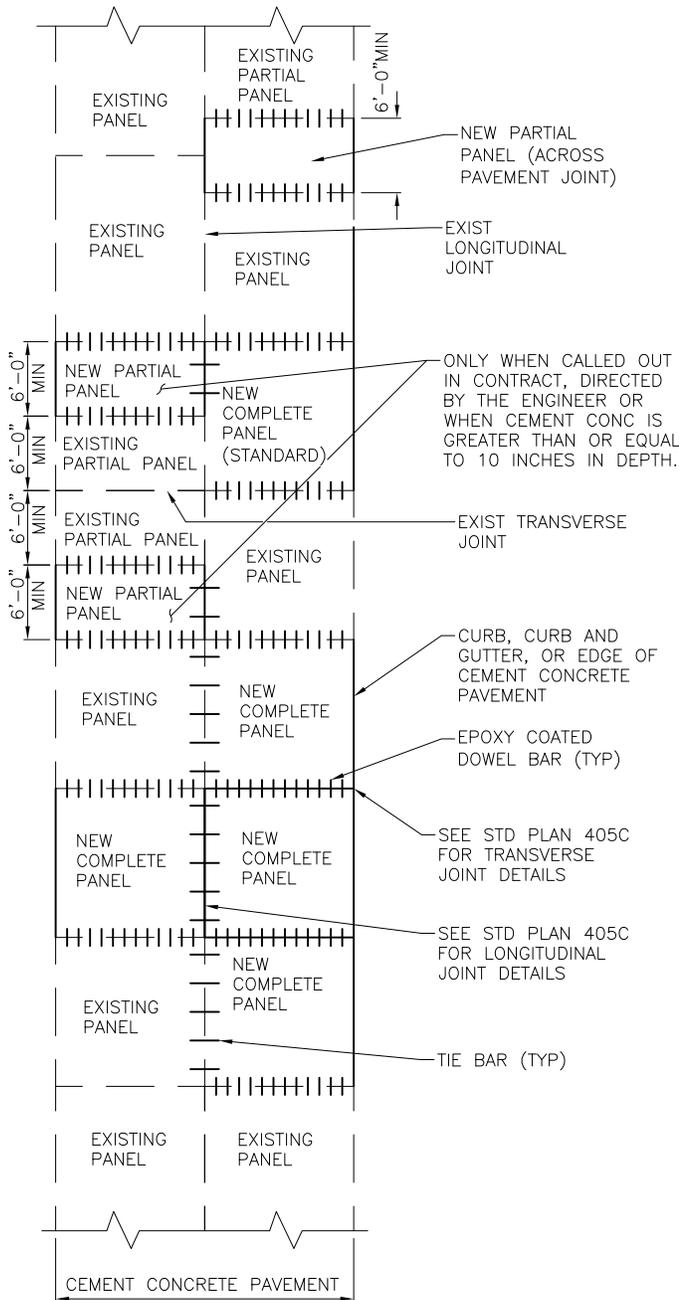
REF STD SPEC SEC 2-02, 2-04



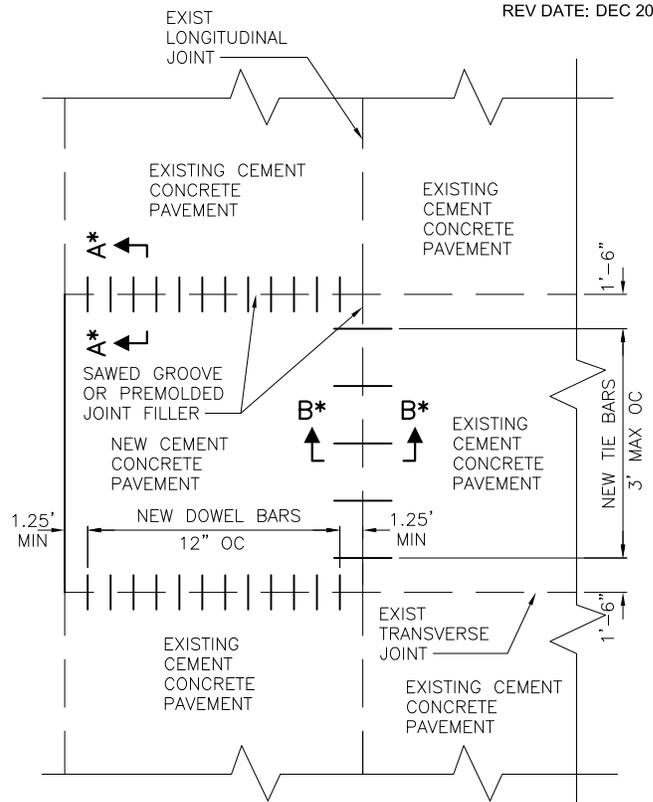
City of Seattle

NOT TO SCALE

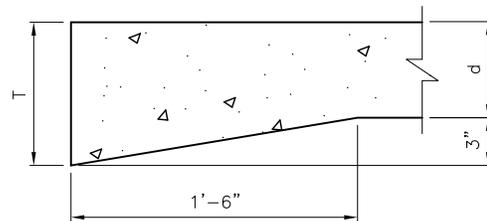
PAVEMENT OPENING
ZONE OF INFLUENCE



PLAN VIEW
PANEL REPLACEMENT



PLAN VIEW
COMPLETE PANEL REPLACEMENT



THICKENED EDGE DETAIL

(NOT NEEDED FOR TYPE A JOINTS WIDTH $d \geq 10"$)
(NOT NEEDED FOR TYPE B JOINTS WIDTH $d \geq 9"$)

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 LESS THAN A THICKNESS OF 8" 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 SHALL 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

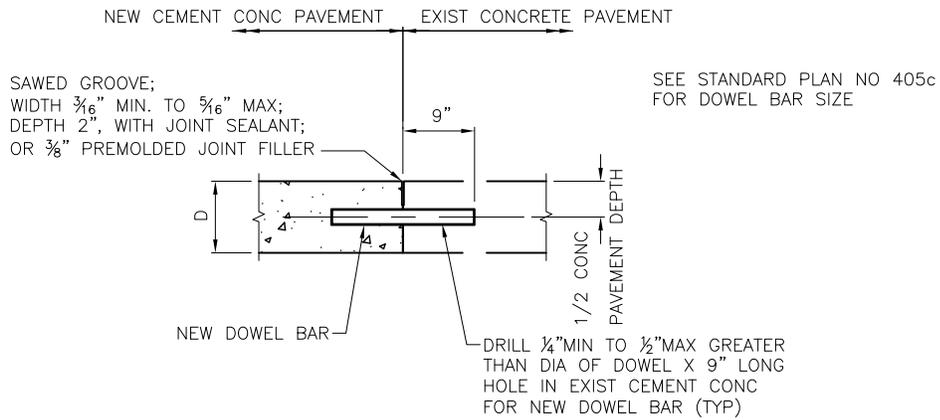
REF STD SPEC SEC 5-05



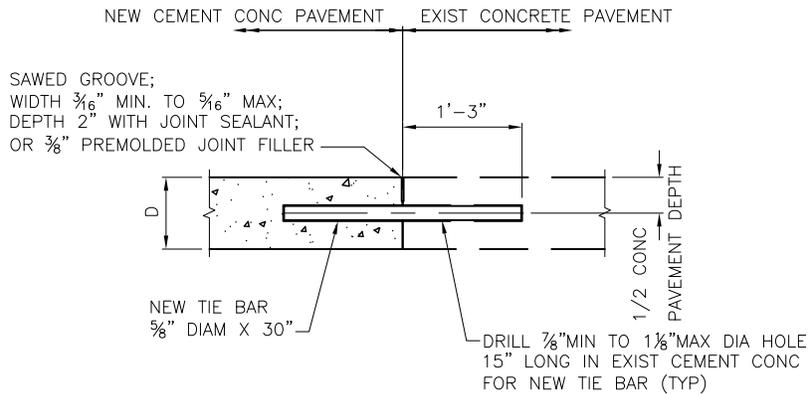
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NOT TO SCALE

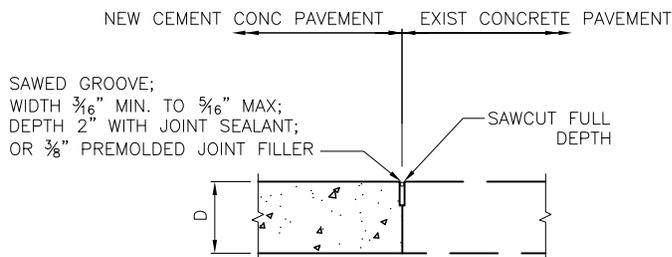
ROADWAY CONCRETE
PAVEMENT REPAIR



**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



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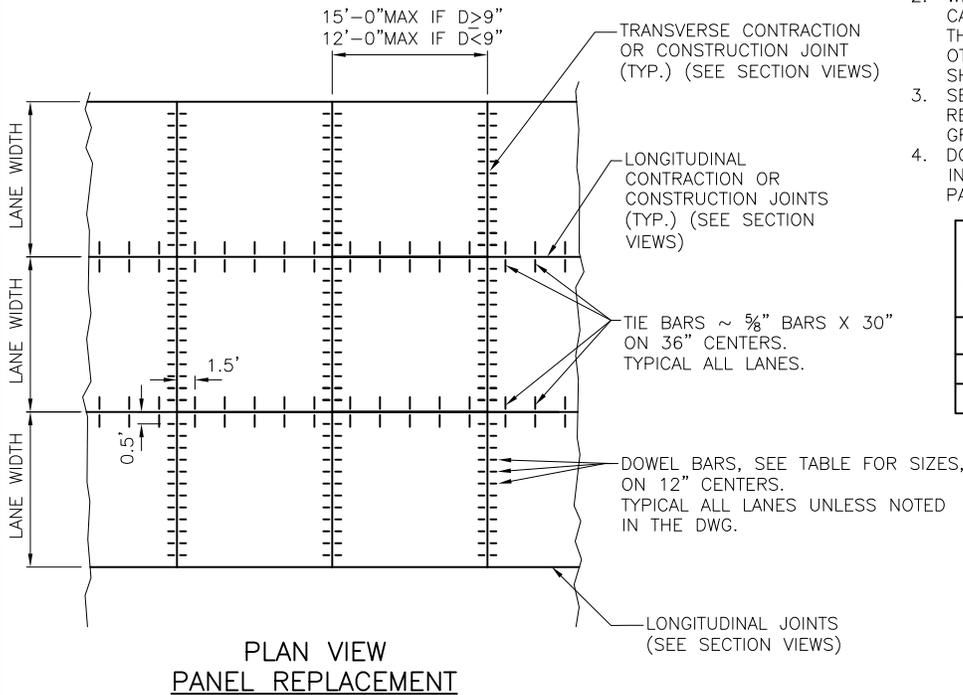
NOT TO SCALE

**PAVEMENT REPAIR
DOWEL BAR AND
TIE BAR DETAILS**

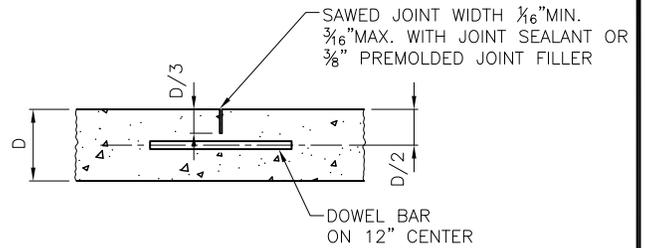
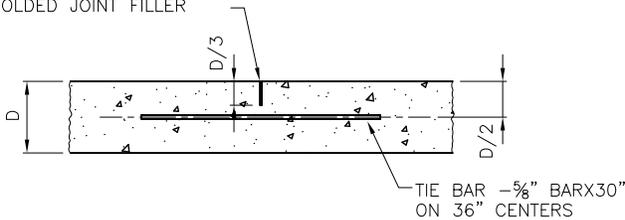
NOTES:

- DO NOT PLACE LONGITUDINAL JOINTS OR SKEWED JOINTS WITHIN BIKE LANES.
- 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.
- SEE STD PLAN NO 406 OR DRAWINGS FOR REBAR DETAIL AROUND CASTING 18 INCHES OR GREATER FROM JOINTS.
- DOWEL BARS SHALL NOT BE PLACED WITHIN 15 INCHES OF THE EDGE OF PAVEMENT OR A PARALLEL JOINT.

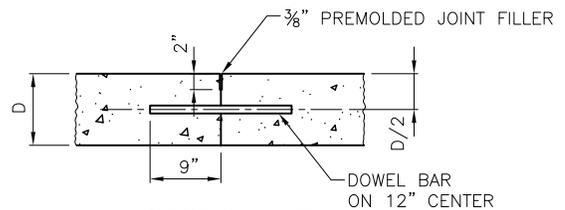
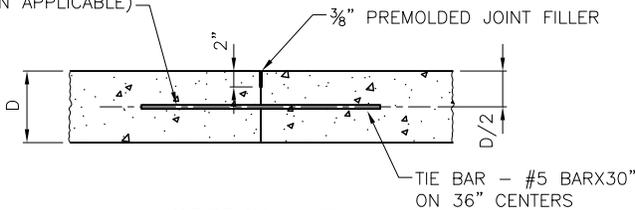
DEPTH (D) OF RDWY CEM. CONC	DOWEL BAR SIZE (DIA ϕ)
6" \leq D < 9"	1" X 18"
9" \leq D < 11"	1 1/4" X 18"
11" \leq D	1 1/2" X 18"



SAWED JOINT WIDTH 1/16" MIN.
3/16" MAX. WITH JOINT SEALANT OR
3/8" PREMOLDED JOINT FILLER



DRILL AND GROUT (WHEN APPLICABLE)



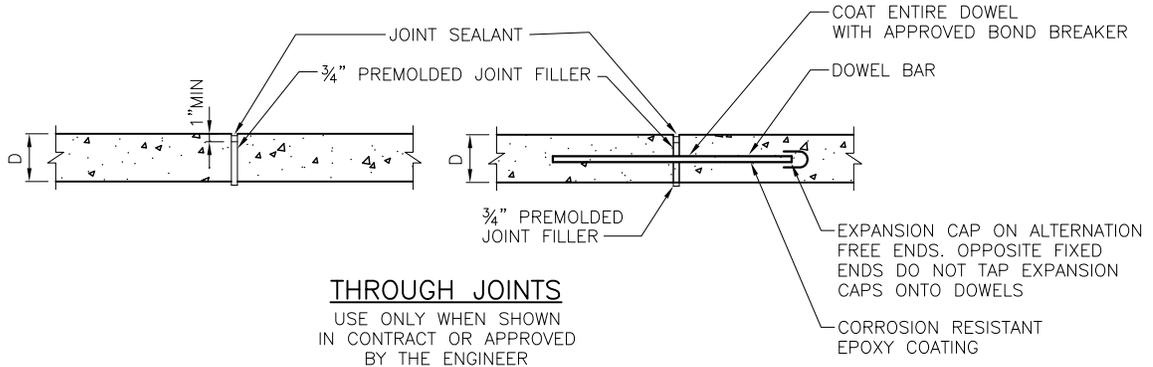
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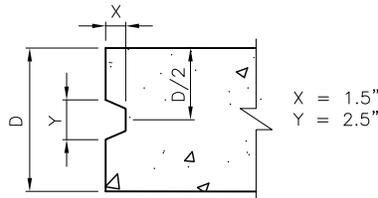
City of Seattle

NOT TO SCALE

**ROADWAY CONCRETE PAVEMENT
JOINTS**



THROUGH JOINTS
 USE ONLY WHEN SHOWN
 IN CONTRACT OR APPROVED
 BY THE ENGINEER



(TIE BAR OMITTED FOR CLARITY)

KEYWAY DETAIL
LONGITUDINAL JOINT WITH KEYWAY
 (OPTIONAL FOR ≥9 INCHES ONLY)

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.

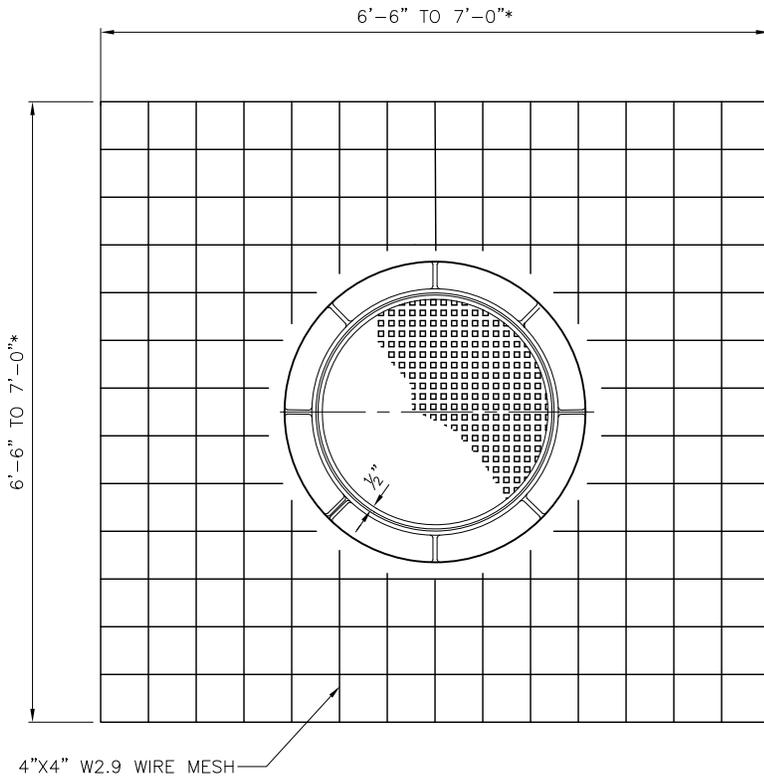
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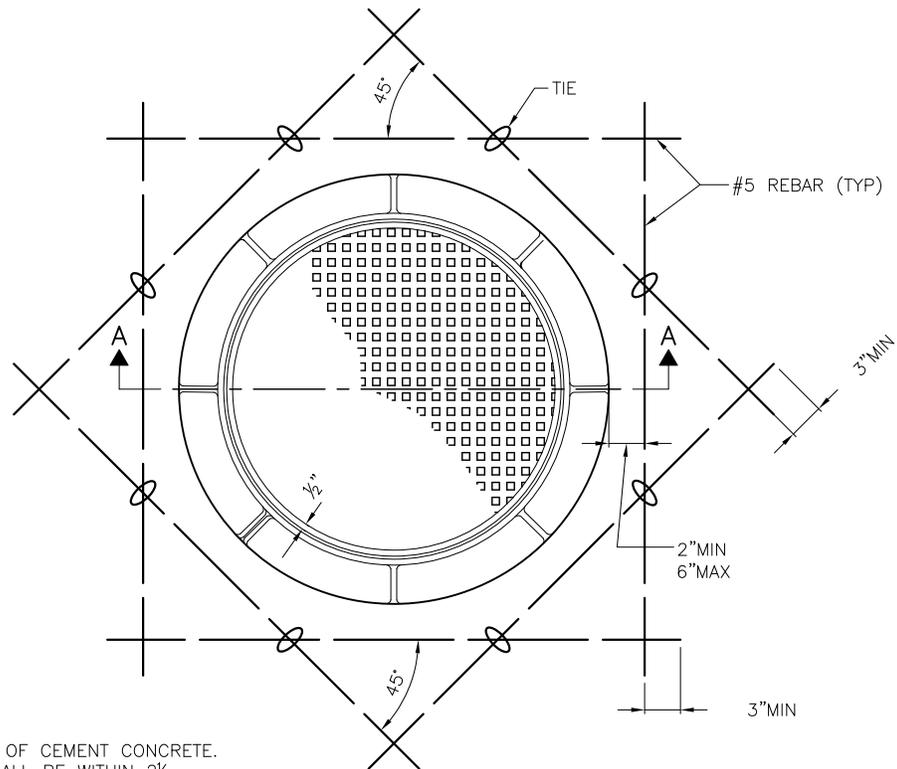
NOT TO SCALE

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



NOTES:

1. PLACE WIRE MESH AT 1/2 DEPTH OF CEMENT CONCRETE.
2. *THE DIMENSIONS OF THE MESH SHALL BE ADJUSTED WHERE PAVEMENT JOINTS ARE ENCOUNTERED.
3. NO REINFORCING STEEL SHALL BE WITHIN 2 1/2 INCHES OF ANY CEMENT CONCRETE SURFACE OR JOINT.



NOTES:

1. PLACE REBAR AT 1/2 DEPTH OF CEMENT CONCRETE.
2. NO REINFORCING STEEL SHALL BE WITHIN 2 1/2 INCHES (3 INCHES DESIRED) OF ANY CEMENT CONCRETE SURFACE OR JOINT.

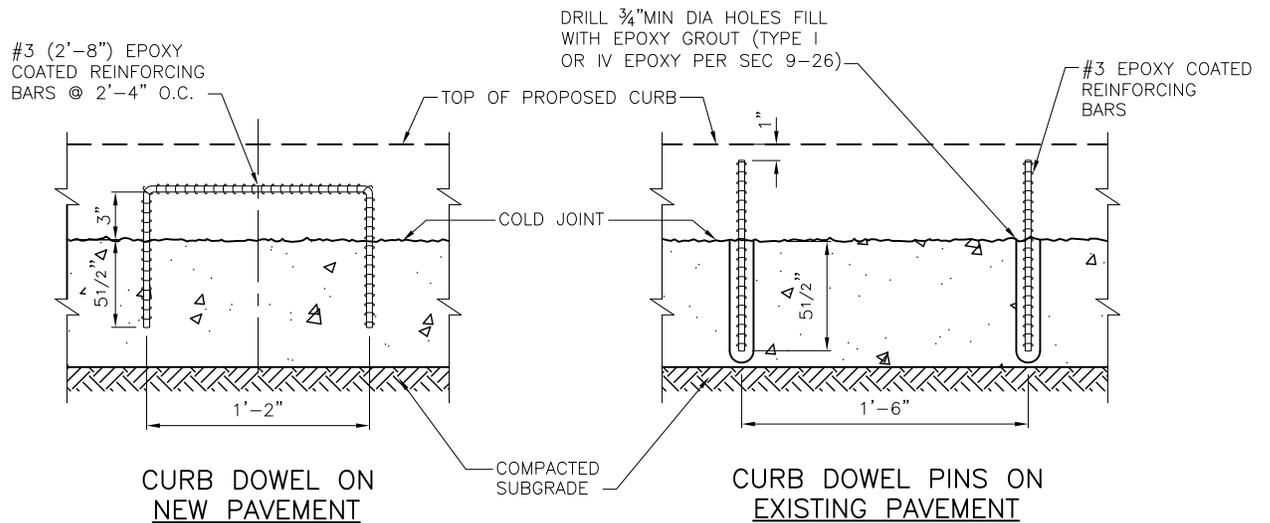
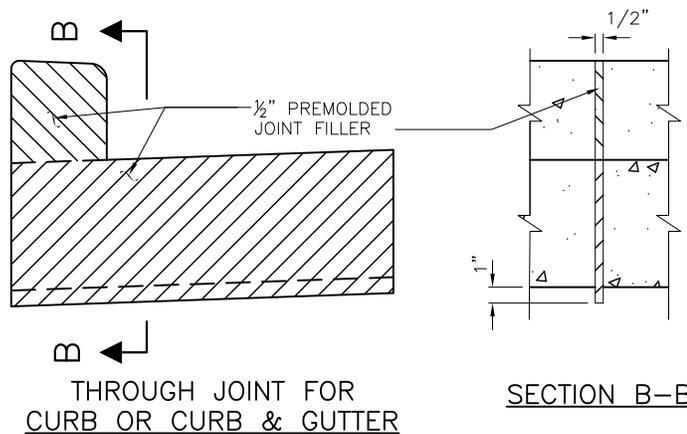
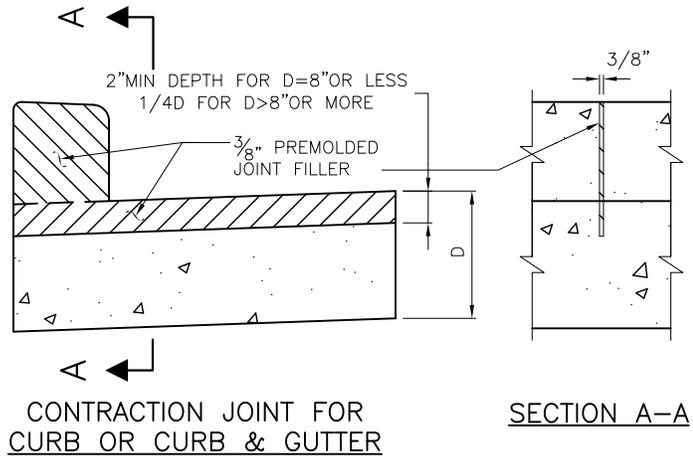
REF STD SPEC SEC 5-05



City of Seattle

NOT TO SCALE

**FRAME & COVER CEMENT
CONCRETE REINFORCEMENT
DETAIL**



DOWELS FOR DOWELLED CURB CONSTRUCTION

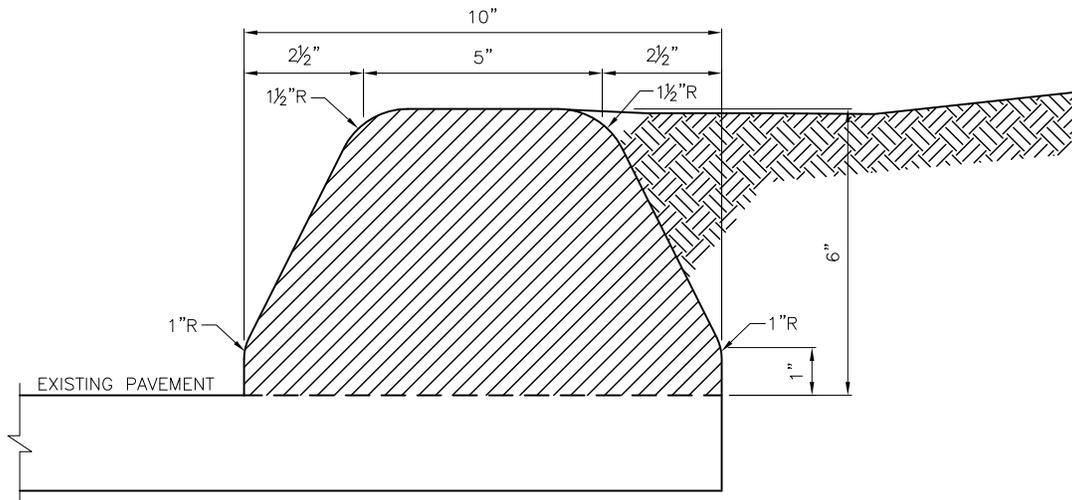
REF STD SPEC SEC 8-04



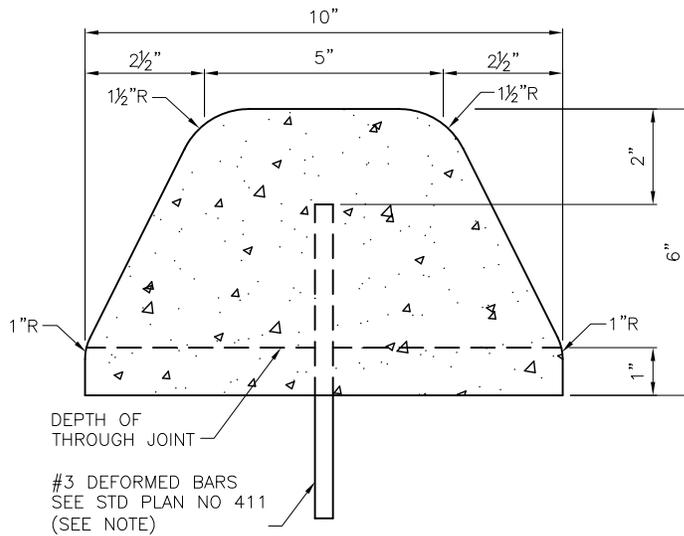
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NOT TO SCALE

CURB JOINTS & DOWELS



EXTRUDED ASPHALT CONCRETE CURB



EXTRUDED CEMENT CONCRETE CURB

NOTE:

ALTERNATELY, THE USE OF EPOXY BONDING AGENT, IN PLACE OF #3 DEFORMED BARS, WILL BE ALLOWED.

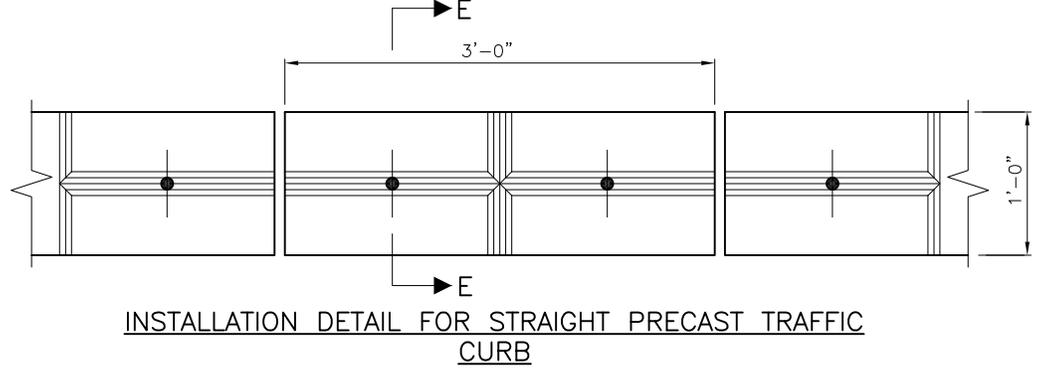
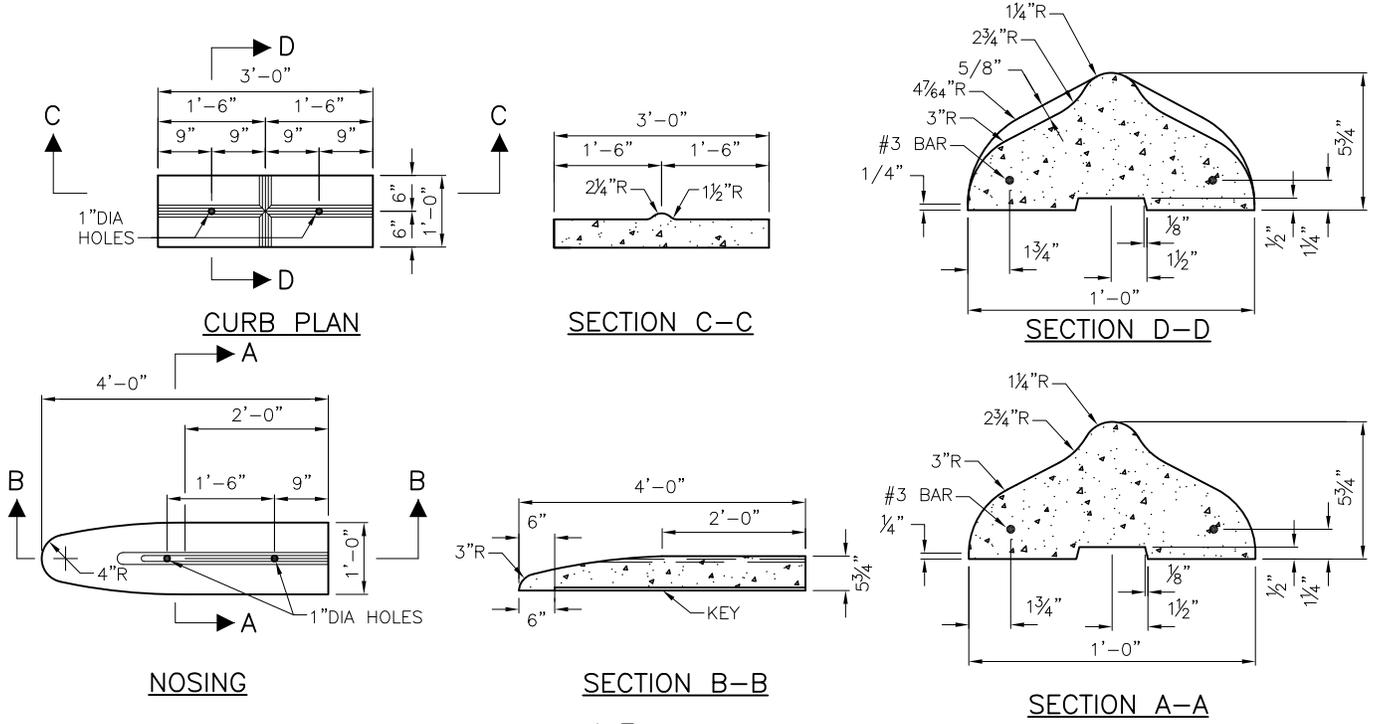
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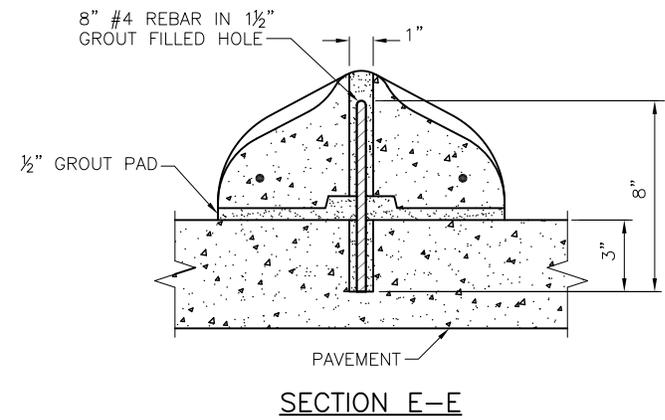
City of Seattle

NOT TO SCALE

EXTRUDED CURB



NOTE:
 INSTALL 8" #4 REBAR IN EVERY HOLE
 AND FILL HOLE WITH GROUT

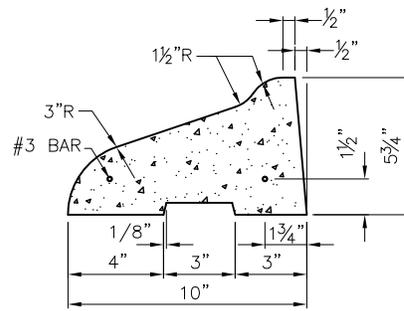
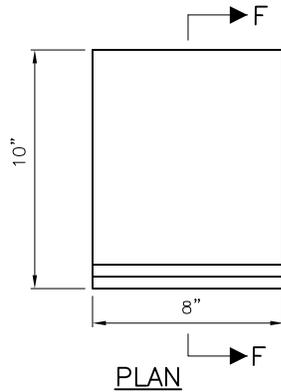


REF STD SPEC SEC 8-07



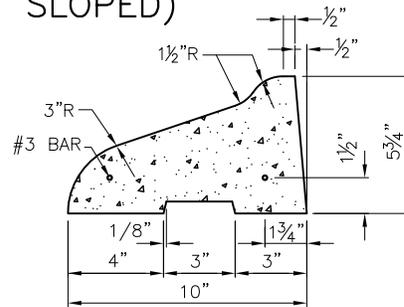
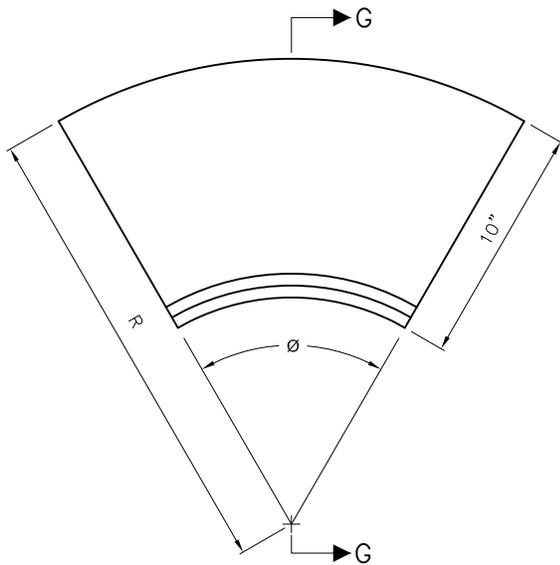
NOT TO SCALE

**3' PRECAST TRAFFIC CURB
 (DUAL SLOPED)**



SECTION F-F

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



SECTION G-G

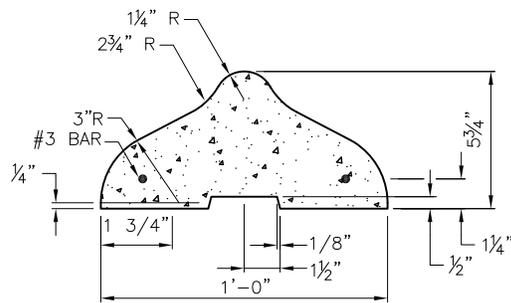
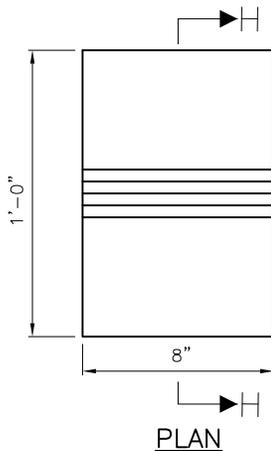
RADIAL CURB

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

RADIAL CURB

RADIUS CURB TABLE



SECTION H-H

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

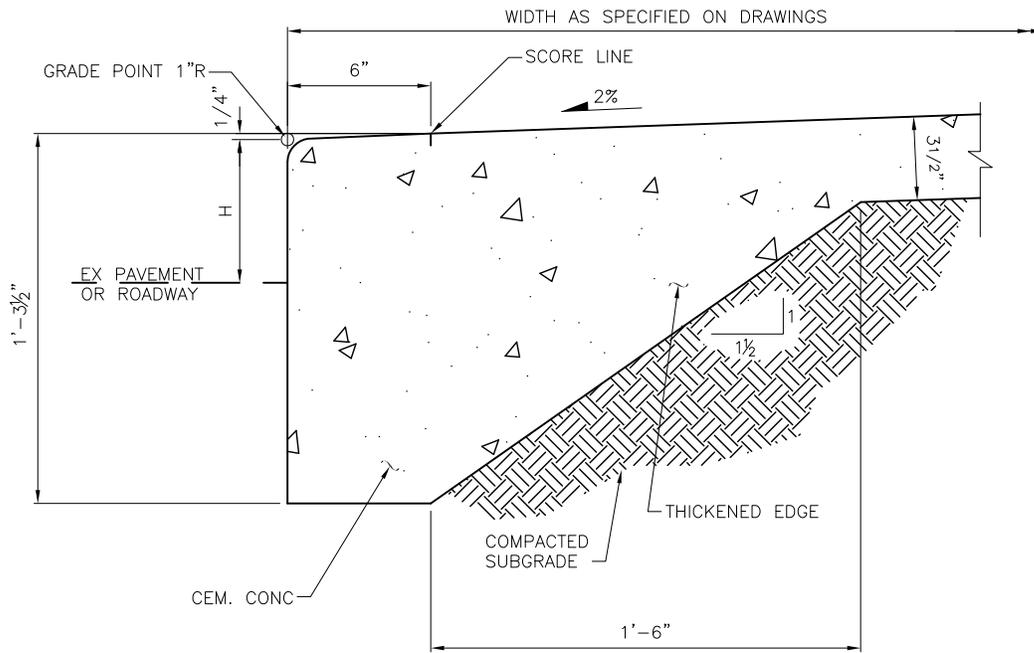
REF STD SPEC SEC 8-07



City of Seattle

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**8" BLOCK AND RADIAL
TRAFFIC CURB**



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

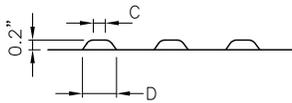
REF STD SPEC SEC 8-14



City of Seattle

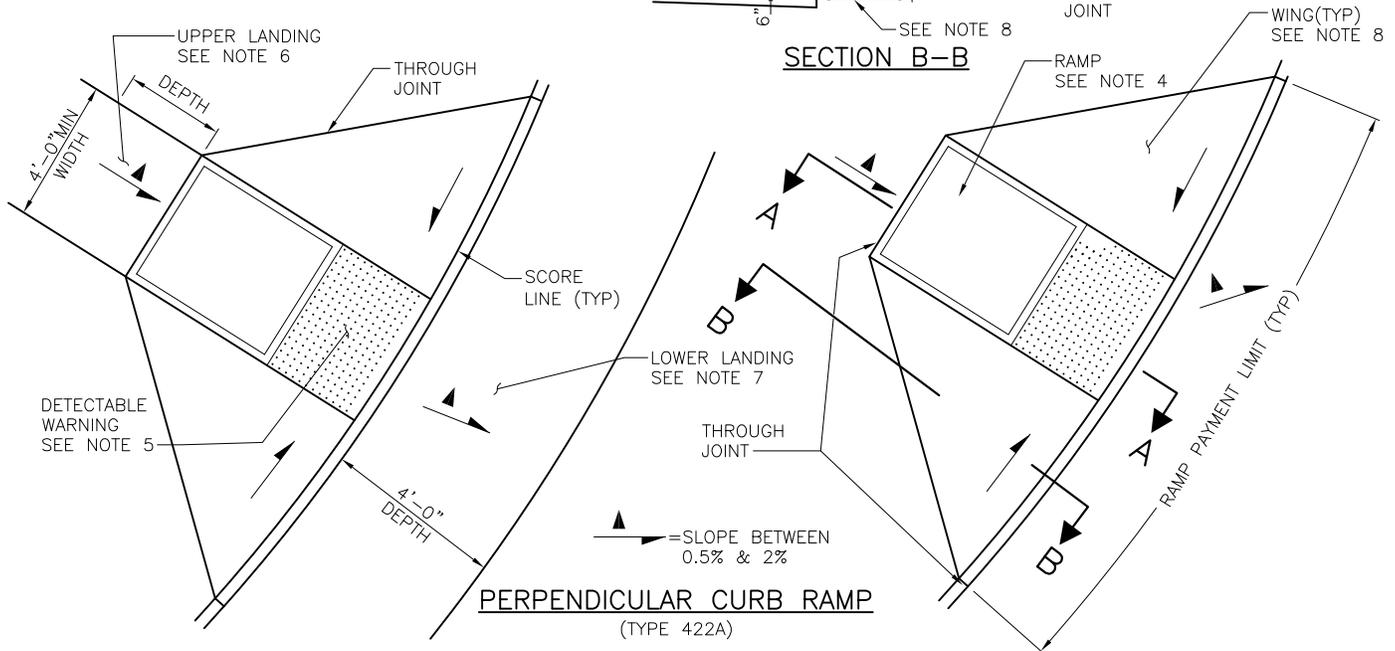
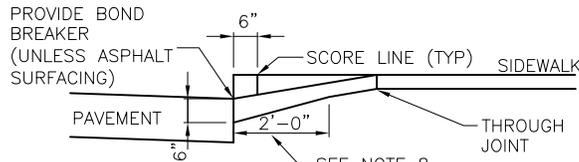
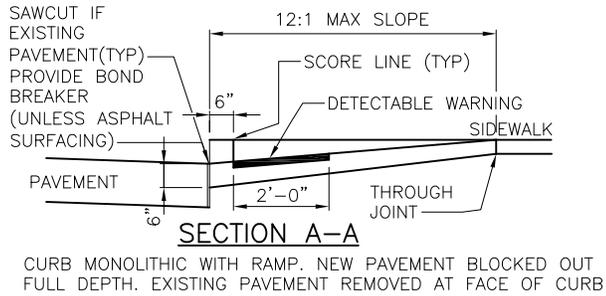
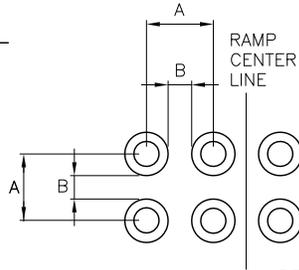
NOT TO SCALE

SIDEWALK WITH MONOLITHIC CURB



	MIN.	MAX.
A	1.6"	2.4"
B	0.65"	1.5"
C	50% TO 65% OF D	
D	0.9"	1.4"

**TRUNCATED DOMES PATTERN
DETECTABLE WARNING CONC PANELS**



NOTES:

- TYPE 422A PERPENDICULAR CURB RAMP SHALL BE USED UNLESS OTHERWISE DIRECTED BY ENGINEER.
- TWO CURB RAMPS SHALL BE INSTALLED AT EACH CORNER UNLESS OTHERWISE DIRECTED BY ENGINEER. RECOMMENDED MINIMUM DISTANCE BETWEEN TWO ADJACENT CURB RAMPS SHALL BE 3'-0". WHERE SPACE IS RESTRICTED THE MINIMUM DISTANCE BETWEEN TWO ADJACENT CURB RAMPS MAY BE REDUCED TO 1'-0".
- CURB RAMP SHALL BE CONSTRUCTED WITH COMPANION RAMP ON OPPOSITE SIDE OF THE ROADWAY UNLESS OTHERWISE DIRECTED BY ENGINEER.
- RAMP CENTERLINE SHALL BE RADIAL/PERPENDICULAR TO THE ALIGNMENT OF THE FACE OF CURB. RAMP SHALL HAVE A MAXIMUM SLOPE 12H:1V. AND A MINIMUM WIDTH OF 4'-0". THE CROSS SLOPE OF THE RAMP SHALL BE MAXIMUM OF 50H:1V. RAMP SURFACE SHALL HAVE A HEAVY BROOM BRUSHED SURFACE PARALLEL TO THE CURB. MAXIMUM RAMP LENGTH SHALL BE 15 FEET
- DETECTABLE WARNING SHALL HAVE A TRUNCATED DOME PATTERN AS SHOWN, A MINIMUM WIDTH OF 2'-0" AND SHALL BE PLACED AT THE RAMP BOTTOM STARTING AT THE BACK OF CURB. DETECTABLE WARNING COLOR SHALL BE "FEDERAL SAFETY YELLOW", UNLESS OTHERWISE DIRECTED.
- UPPER LANDING SHALL BE FULL WIDTH OF THE RAMP AND SHALL HAVE A MINIMUM DEPTH OF 4'-0". SLOPE ON THE UPPER LANDING SHALL BE BETWEEN 0.5% AND 2%. AVOID PLACING HANDHOLES, UTILITY CASTINGS OR OTHER OBSTRUCTIONS IN THE UPPER LANDING.
- LOWER LANDING SHALL BE FULL WIDTH OF THE RAMP AND SHALL EXTEND A MINIMUM 4'-0" BEYOND DETECTABLE WARNING. THE LOWER LANDING SHALL BE THE WIDTH OF THE RAMP AND FALL WHOLLY WITHIN THE LEGAL CROSSWALK, MARKED OR UNMARKED. SLOPE ON THE LOWER LANDING SHALL BE BETWEEN 0.5% AND 2%. GUTTER FLOW LINE SHALL BE SURVEYED BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ENSURE PONDING OF WATER SHALL NOT OCCUR ON THE LOWER LANDING.
- WINGS SHALL HAVE A MAXIMUM SLOPE OF 10H:1V. IF UPPER LANDING HAS A DEPTH LESS THAN 4'-0", THE MAXIMUM SLOPE FOR THE WINGS SHALL BE 12H:1V. WINGS SHALL HAVE A BRUSHED FINISH. PARALLEL TO THE CURB. THE CONCRETE WALK THICKENED EDGE ALONG THE CURB SHALL CONTINUE THROUGH EACH WING.
- POLES, HYDRANTS AND OTHER ABOVE GROUND OBSTRUCTIONS SHALL HAVE A MINIMUM LATERAL CLEARANCE OF 1'-0" FROM THE UPPER LANDING AND RAMP SURFACE.
- ALL CHANGES IN LEVEL ACROSS JOINTS SHALL BE FLUSH. ANY DIFFERENCE IN ELEVATION OF 3/16 INCH OR GREATER SHALL BE REPAIRED OR REPLACED.
- ALL SLOPE GRADES SHALL BE MEASURED OFF THE HORIZON-LINE. IF EXISTING SITE CONDITIONS CONFLICT WITH OBTAINING GRADES SHOWN, THE DESIGNER / CONTRACTOR SHALL MAKE MINIMUM ADJUSTMENTS TO THE GRADES SHOWN TO MEET EXISTING SITE CONDITIONS; ADJUSTMENTS ARE SUBJECT TO ENGINEER APPROVAL.

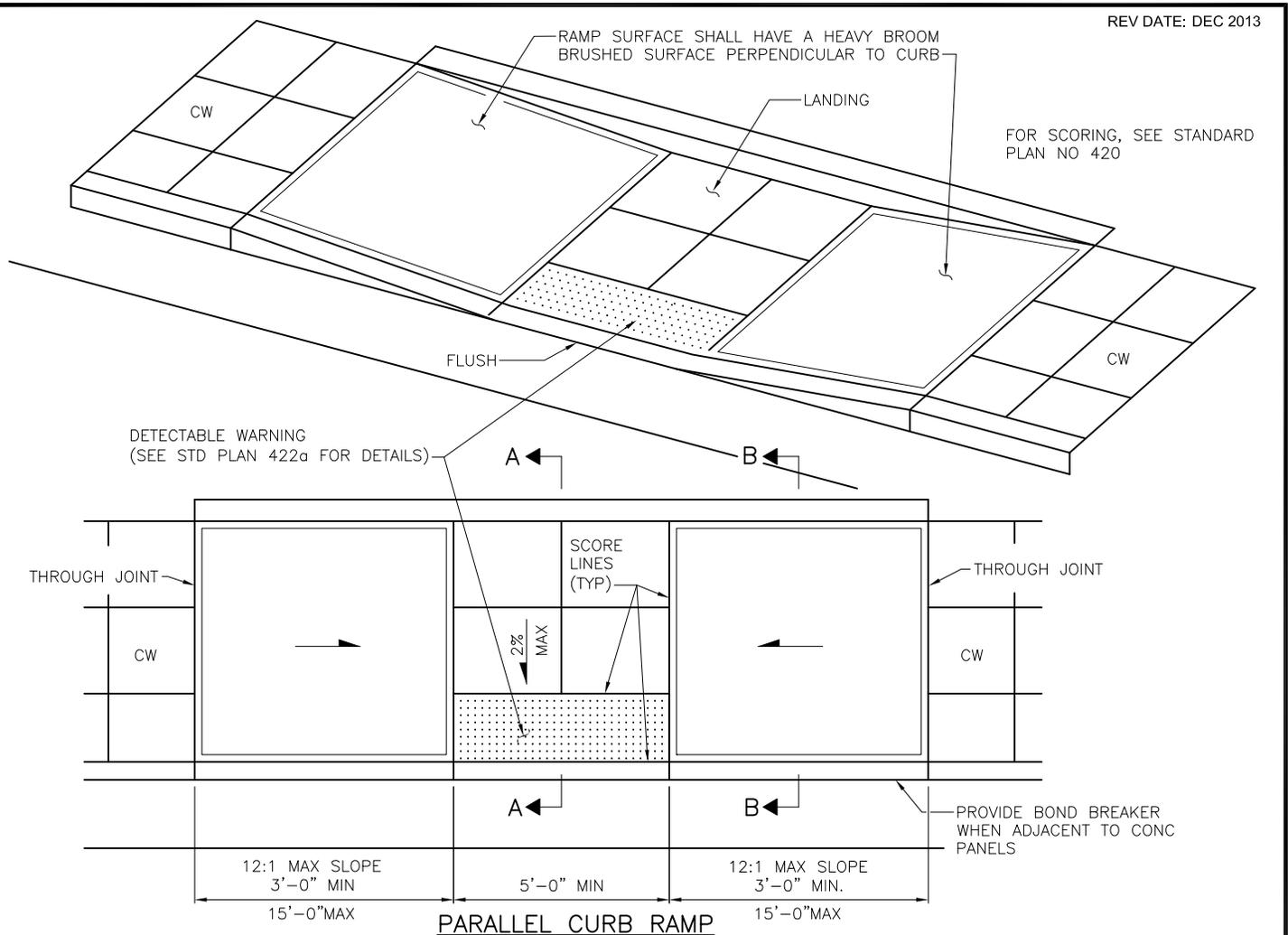
REF STD SPEC SEC 8-14



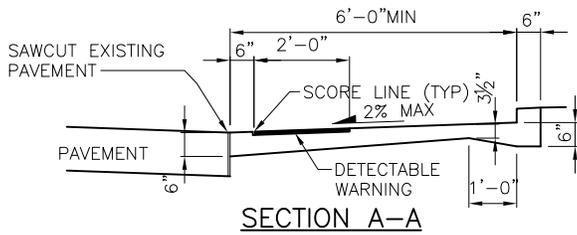
City of Seattle

NOT TO SCALE

CURB RAMP DETAILS

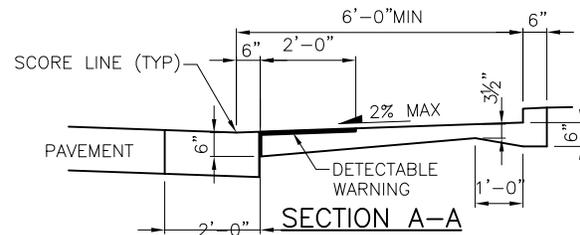


USE PARALLEL CURB RAMPS ONLY WHEN SHOWN IN DRAWINGS OR WITH APPROVAL OF ENGINEER.
 PARALLEL CURB RAMPS MAY ALSO BE USED ON CURVES; ALL REQUIREMENTS SHALL APPLY.

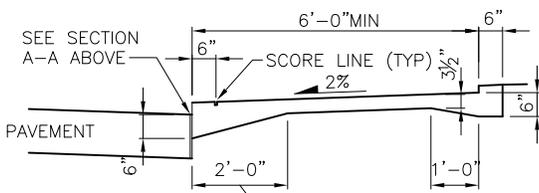


SECTION A-A
CURB MONOLITHIC WITH RAMP

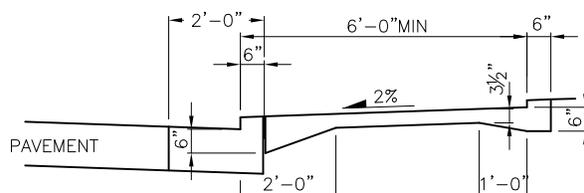
NEW PAVEMENT BLOCKED OUT FULL DEPTH.
 EXISTING PAVEMENT REMOVED AT FACE OF CURB



SECTION A-A
DEPRESSED CURB & GUTTER SEPARATE FROM RAMP



SECTION B-B
NON CURB & GUTTER



SECTION B-B
WITH CURB & GUTTER

REF STD SPEC SEC 8-14

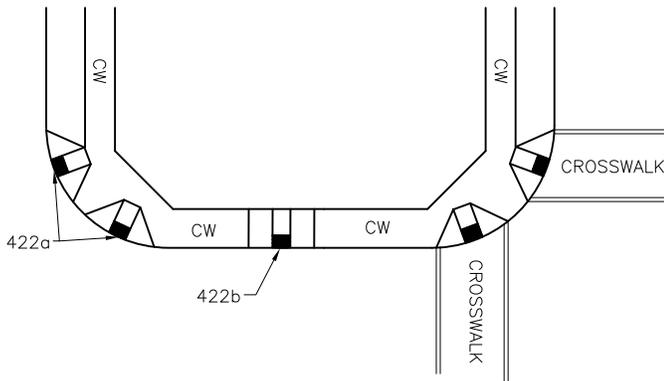


City of Seattle

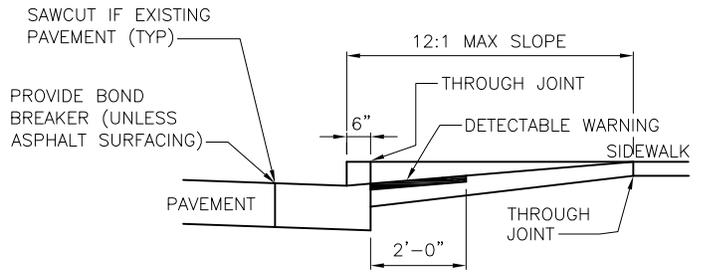
NOT TO SCALE

CURB RAMP DETAILS

SEE STD PLAN NO 422a FOR NOTES

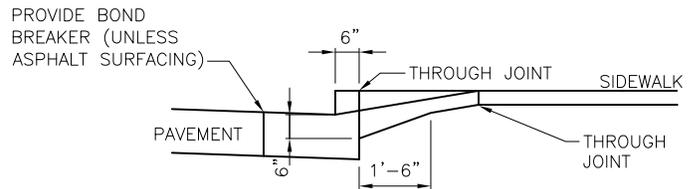


CURB RAMP LOCATIONS

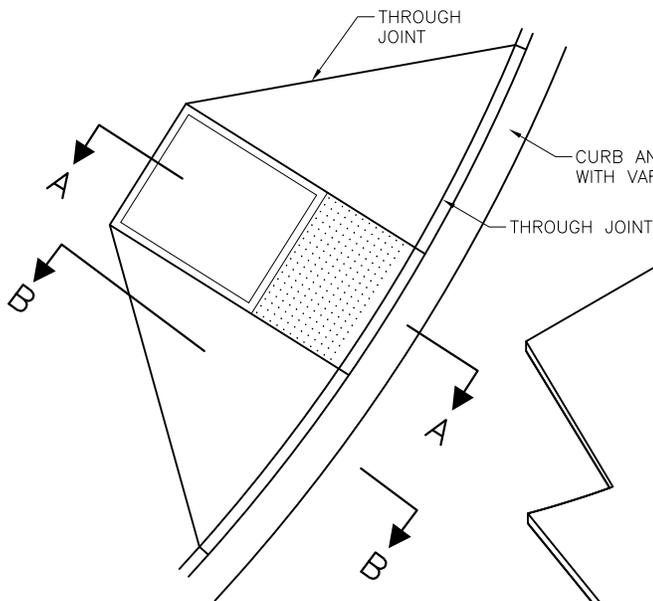


SECTION A-A

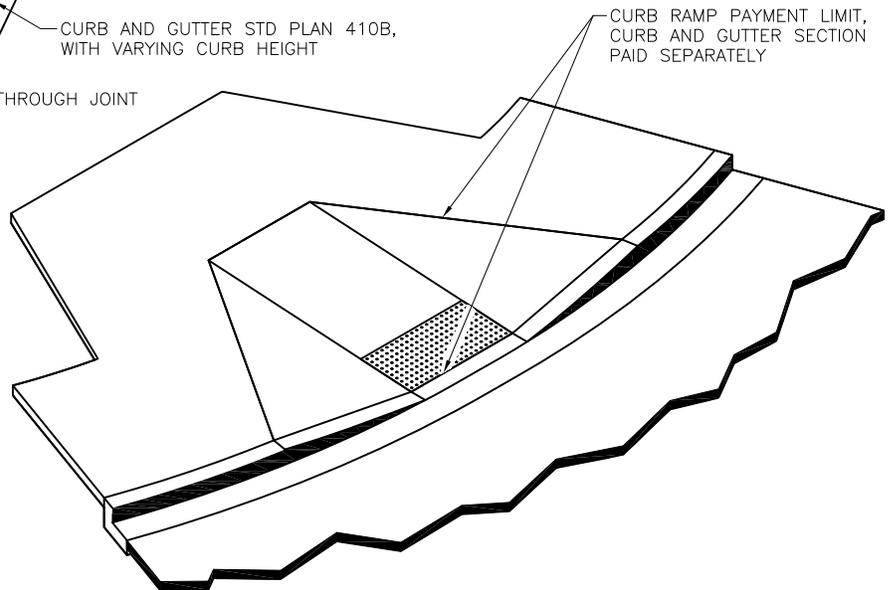
DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.



SECTION B-B



PERPENDICULAR CURB RAMP
(TYPE 422A WITH CURB AND GUTTER)



PERPENDICULAR CURB RAMP PAYMENT LIMIT
ISOMETRIC VIEW

NOTES:

1. FOR DETECTABLE WARNING PLATE/TRUNCATED DOMES DETAILS, SEE STANDARD PLAN NO 422a.
2. FOR NOTES AND DETAILS NOT SHOWN, SEE STANDARD PLAN NO 422a.

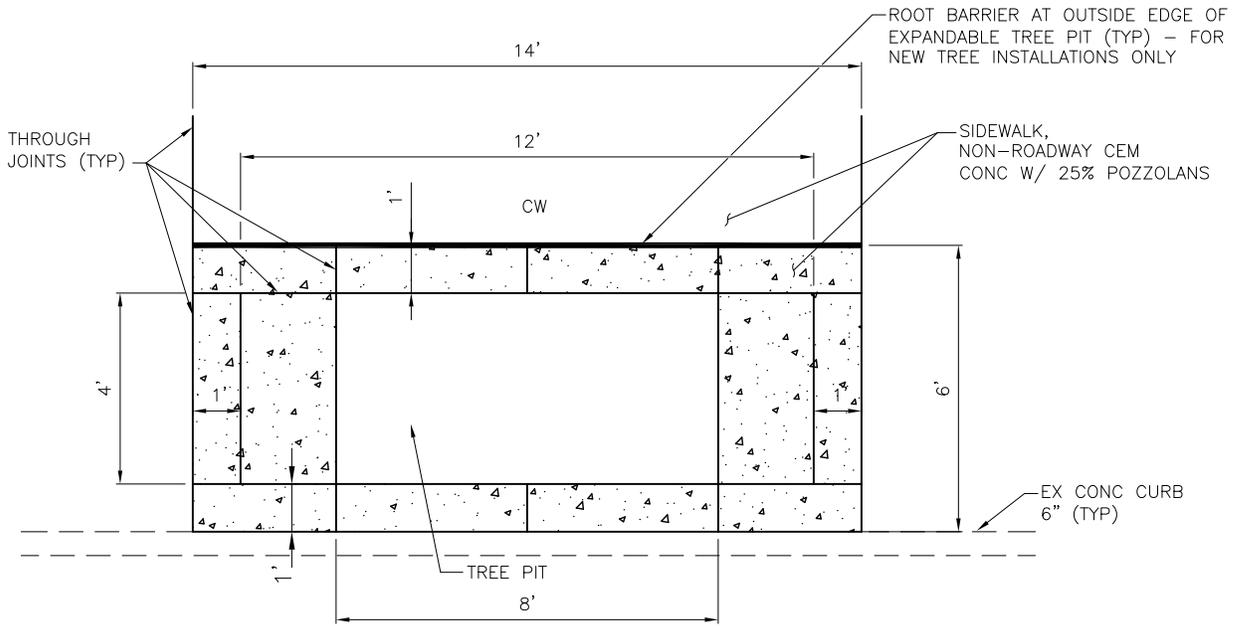
REF STD SPEC SEC 8-14



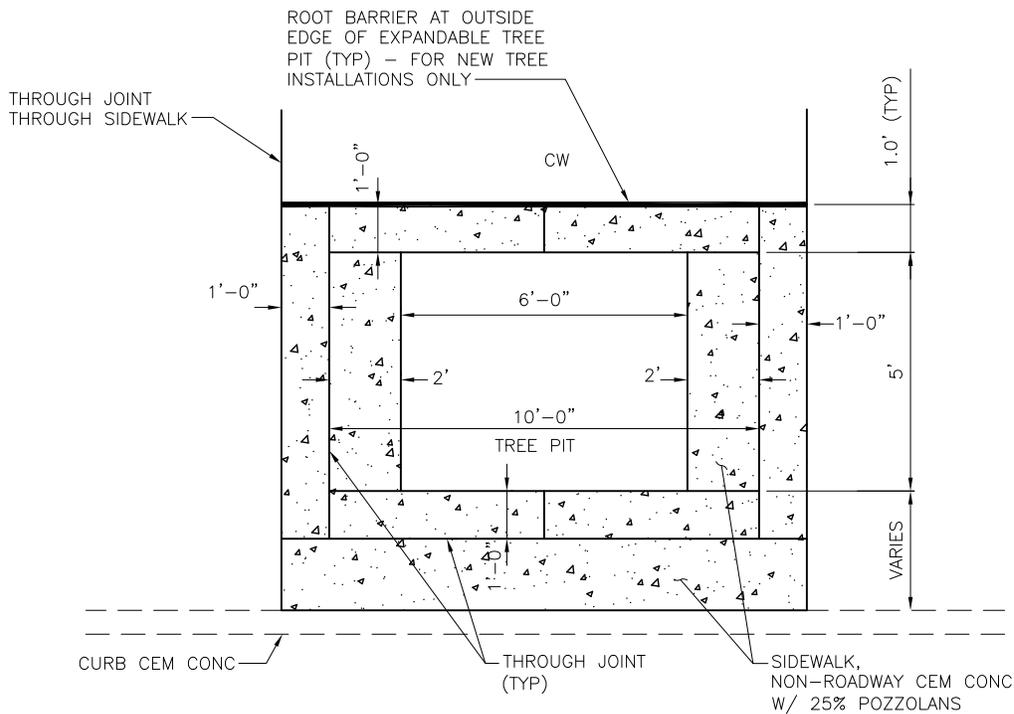
City of Seattle

NOT TO SCALE

CURB RAMP DETAILS



TYPE A



TYPE B

NOTES:

1. SEE STD PLAN 420 FOR CW SCORING DETAILS.
2. INSTALL ROOT BARRIER PER STANDARD PLAN NO 100a.

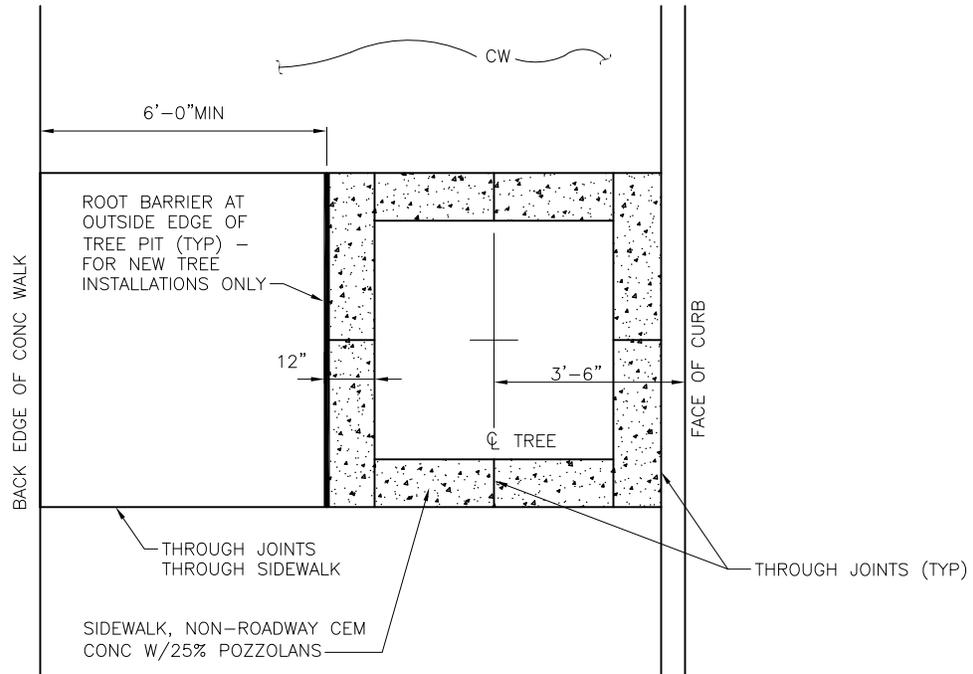
REF STD SPEC SEC 8-02 & 8-14



City of Seattle

NOT TO SCALE

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 ϕ & FACE OF CURB
 - 2'-0" MIN REQ'D BETWEEN TREE ϕ & CONC SIDEWALK
 - 6'-0" MIN CONC WALKING SURFACE

NOTES:

1. INSTALLATIONS REQUIRING LESS THAN STANDARD MIN CLEARANCES SHALL 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.

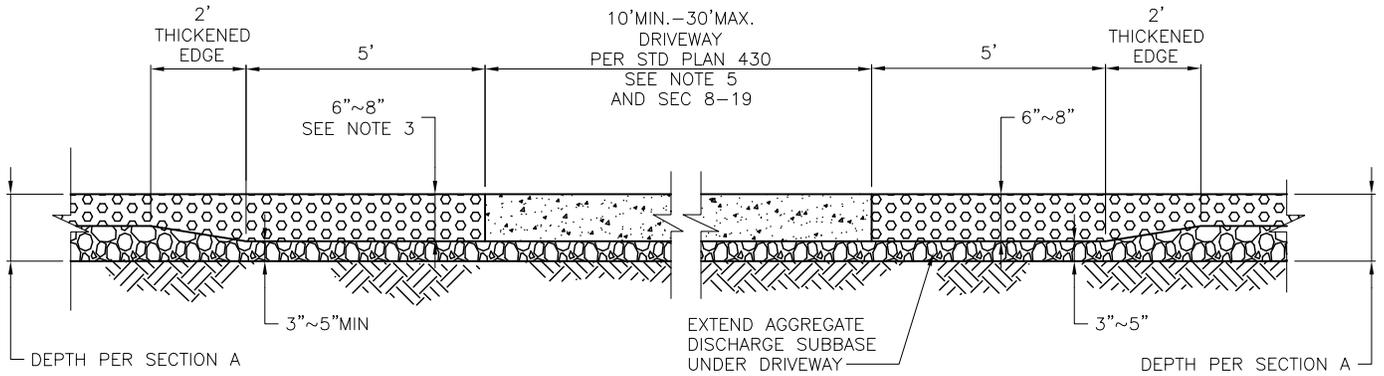
REF STD SPEC SEC 8-02 & 8-14



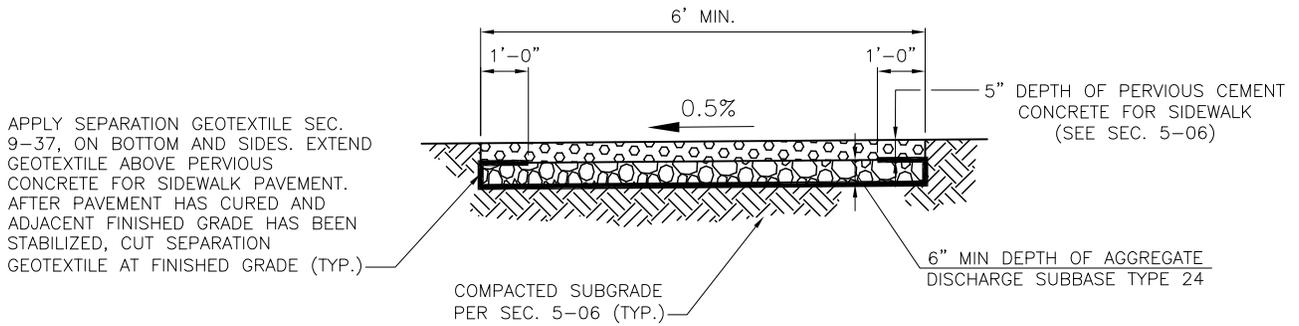
City of Seattle

NOT TO SCALE

TREE PIT DETAIL



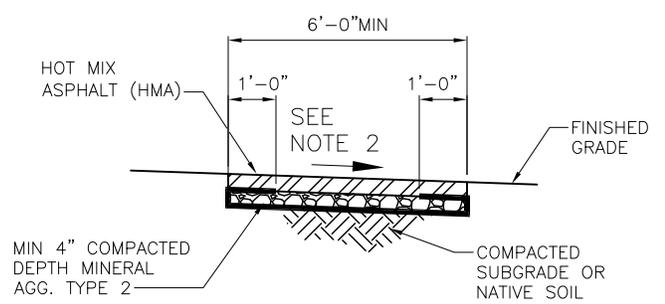
PERVIOUS CONC CEM SIDEWALK DEPTH TRANSITION AT DRIVEWAYS PROFILE VIEW



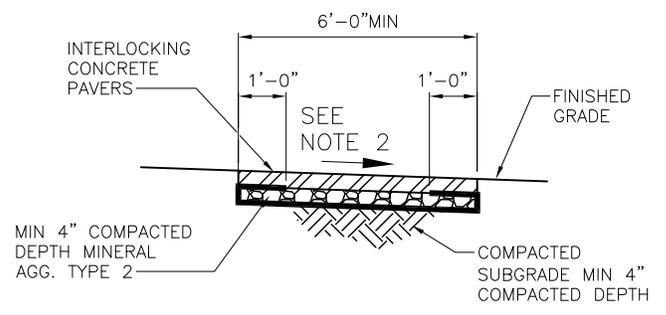
PERVIOUS CONC SECTION A

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 SHALL BE 8" MIN.
4. 5% MAX. PERVIOUS CEMENT CONCRETE PROFILE GRADE.



HOT MIX ASPHALT PAVEMENT SIDEWALK SECTION



CONCRETE PAVER SIDEWALK SECTION

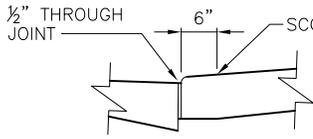
REF STD SPEC SEC 5-04, 5-06



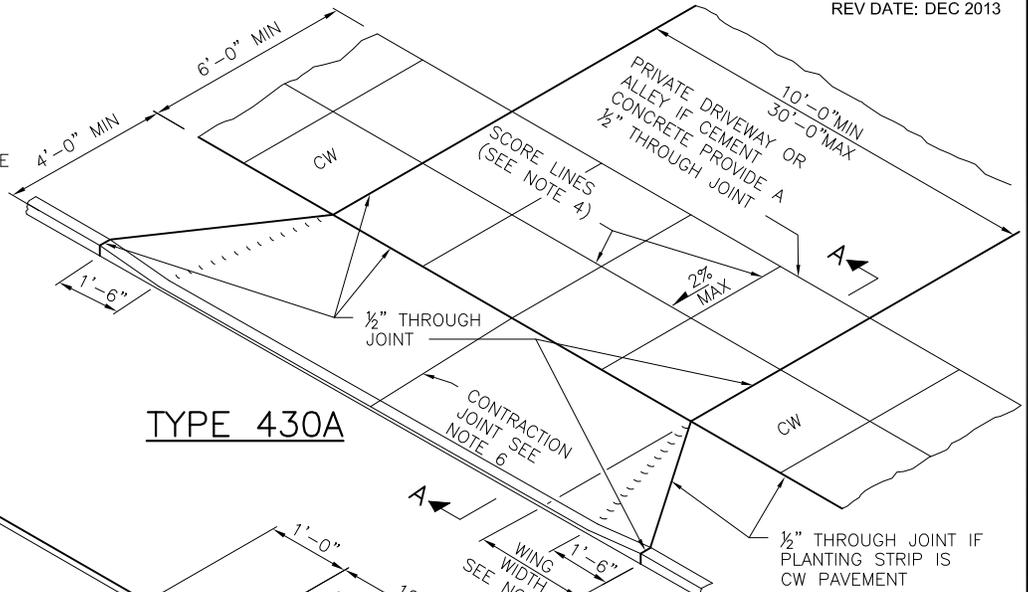
City of Seattle

NOT TO SCALE

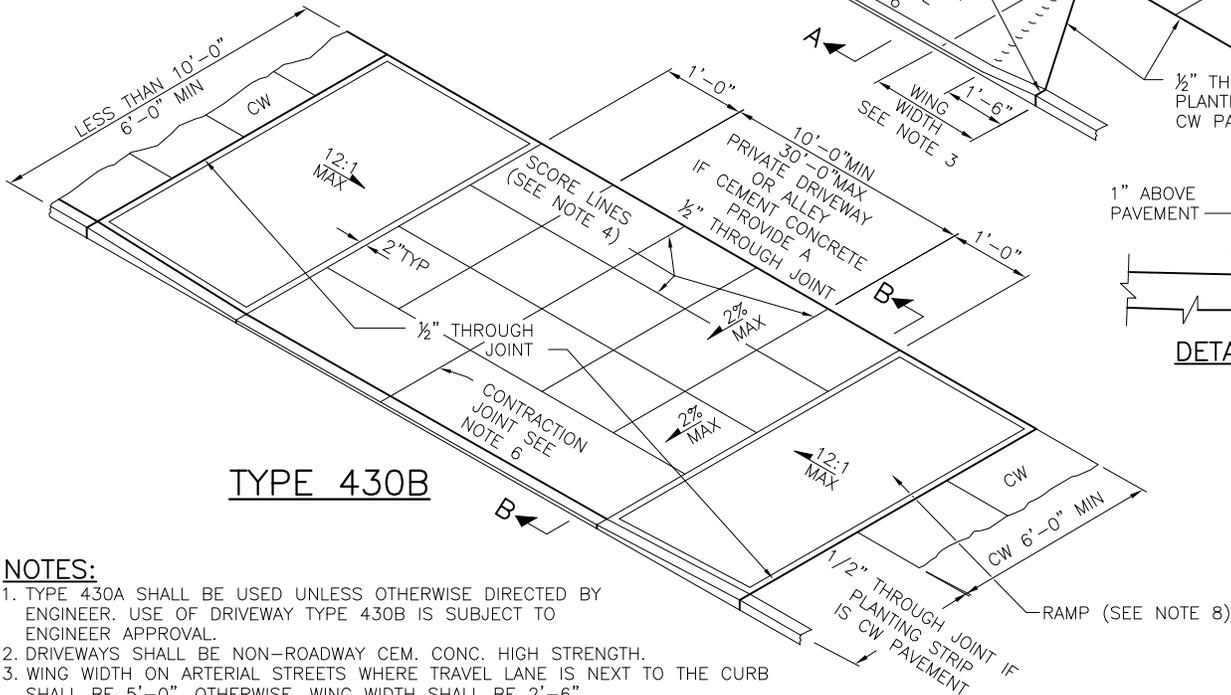
ALTERNATIVE WALKWAYS



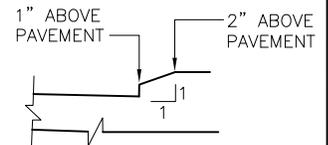
DETAIL B
DRIVENRY W/ MONOLITHIC CURB & APPROACH



TYPE 430A



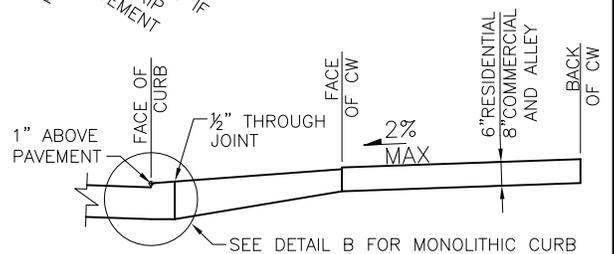
TYPE 430B



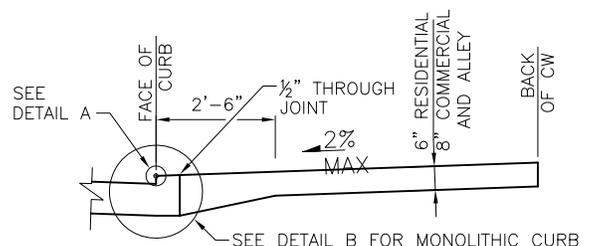
DETAIL A

NOTES:

1. TYPE 430A SHALL BE USED UNLESS OTHERWISE DIRECTED BY ENGINEER. USE OF DRIVEWAY TYPE 430B IS SUBJECT TO ENGINEER APPROVAL.
2. DRIVEWAYS SHALL BE NON-ROADWAY CEM. CONC. HIGH STRENGTH.
3. WING WIDTH ON ARTERIAL STREETS WHERE TRAVEL LANE IS NEXT TO THE CURB SHALL BE 5'-0". OTHERWISE, WING WIDTH SHALL BE 2'-6".
4. "V" GROOVE SCORING SHALL 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" SHALL HAVE A 3/8" TRANSVERSE CONTRACTION JOINT NEAR THE CENTERLINE OF DRIVEWAY. SEE DETAIL SECTION C-C STANDARD PLAN NO 420.
7. FOR TYPE 430A SLOPE IN THE 6'-0" MINIMUM WIDE AREA CONNECTING TO CW ON EACH SIDE OF THE DRIVEWAY SHALL BE MAXIMUM 2% AND MINIMUM 0.5%. FOR TYPE 430B, SLOPE OF THE DRIVEWAY BETWEEN THE TWO RAMP SECTIONS SHALL BE MAXIMUM 2% AND MINIMUM 0.5%. DRIVEWAY ON THE PRIVATE SIDE OF THE CW MAY BE SLOPED AS NEEDED TO MATCH EXISTING SITE CONDITIONS.
8. RAMP SHALL HAVE A MAXIMUM SLOPE 12H:1V. AND A MINIMUM WIDTH OF 6'-0". THE CROSS SLOPE OF THE RAMP SHALL BE MAXIMUM OF 50H:1V. RAMP SURFACE SHALL HAVE A HEAVY BROOM BRUSHED SURFACE PERPENDICULAR TO THE CURB.
9. ALL CHANGES IN LEVEL ACROSS JOINTS SHALL BE FLUSH WITH A MAXIMUM DIFFERENCE IN ELEVATION OF 3/16 INCH.
10. ALL SLOPE GRADES SHALL BE MEASURED OFF THE HORIZON-LINE. IF EXISTING SITE CONDITIONS CONFLICT WITH OBTAINING GRADES SHOWN, THE CONTRACTOR SHALL MAKE MINIMUM ADJUSTMENTS TO THE GRADES TO ACCOMMODATE EXISTING SITE CONDITIONS, ADJUSTMENTS ARE SUBJECT TO ENGINEER APPROVAL.



SECTION A-A



SECTION B-B

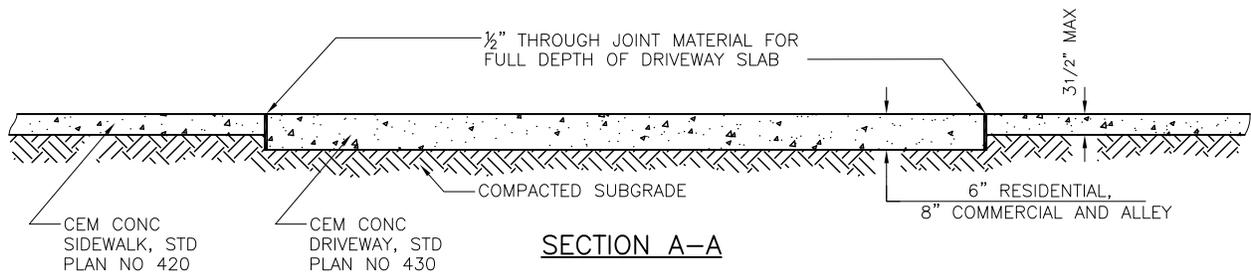
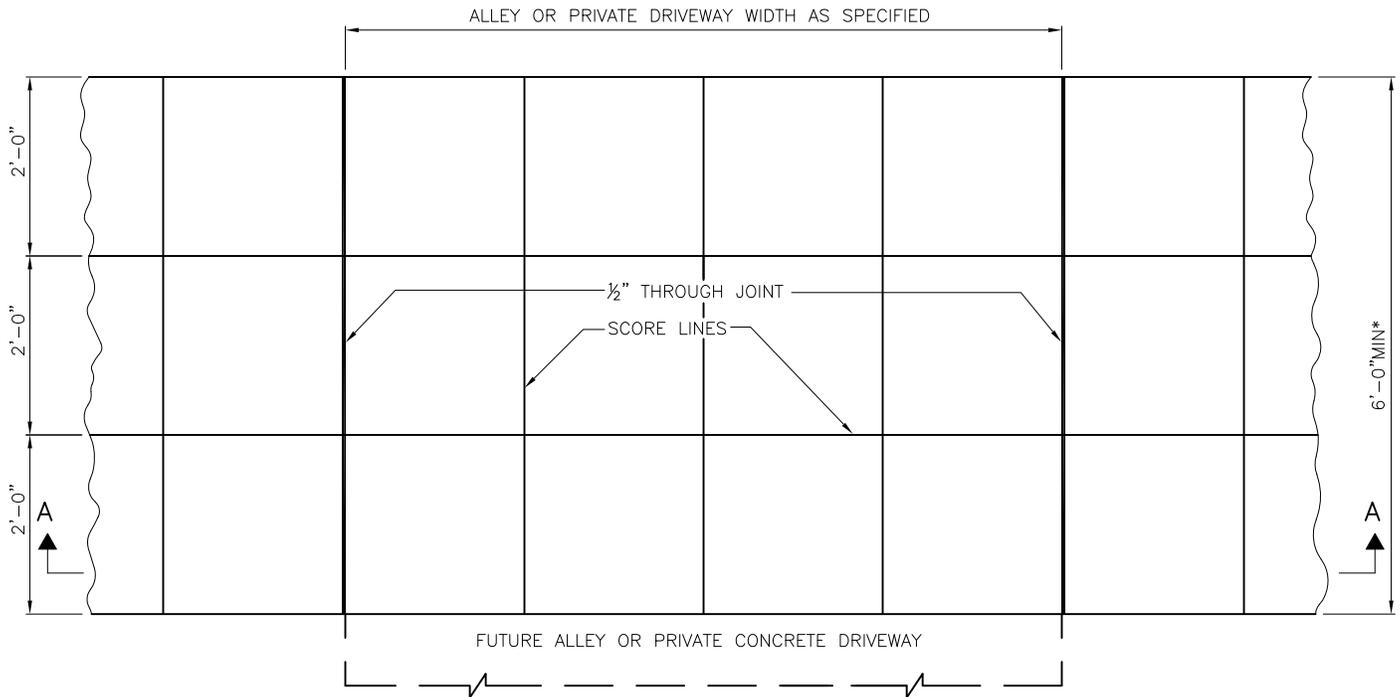
REF STD SPEC SEC 8-19



City of Seattle

NOT TO SCALE

TYPE 430 DRIVEWAY



* UNLESS OTHERWISE APPROVED BY SDOT.

NOTES:

1. DRIVEWAY WIDTH GREATER THAN 15'-0" AND LESS THAN OR EQUAL TO 30' SHALL HAVE TRANSVERSE CONSTRUCTION JOINTS AT IT'S CENTER.
2. DRIVEWAY GREATER THAN 30'-0" REQUIRES SDOT APPROVAL AND SHALL HAVE TRANSVERSE CONTRACTION JOINTS EVENLY PLACED SO THE DISTANCE BETWEEN CONTRACTION JOINTS, OR BETWEEN THE EDGE THROUGH JOINTS AND CONTRACTION JOINTS IS NOT GREATER THAN 15'-0".
3. PROVIDE SCORE LINES PER STD PLAN NO 420 AND THE DRAWINGS.

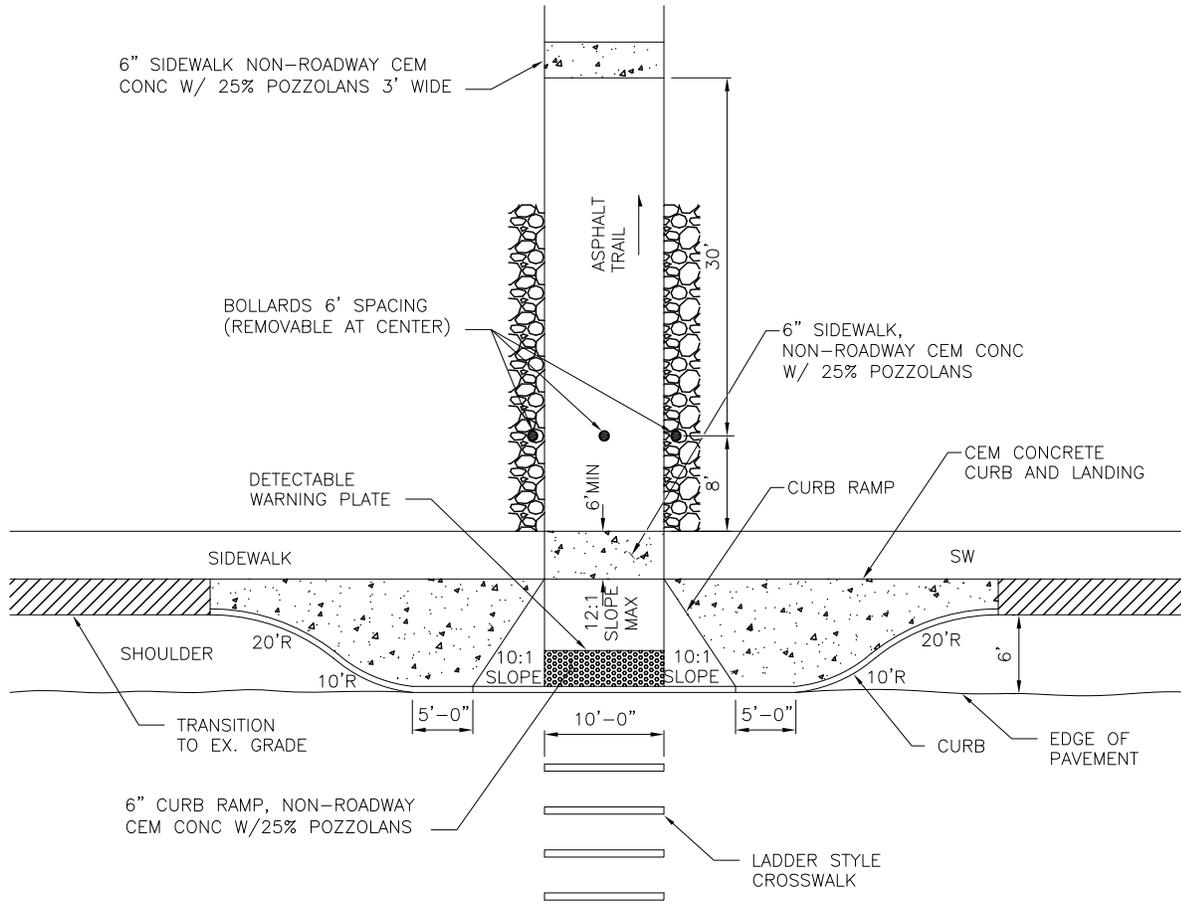
REF STD SPEC SEC 8-14 & 8-19



City of Seattle

NOT TO SCALE

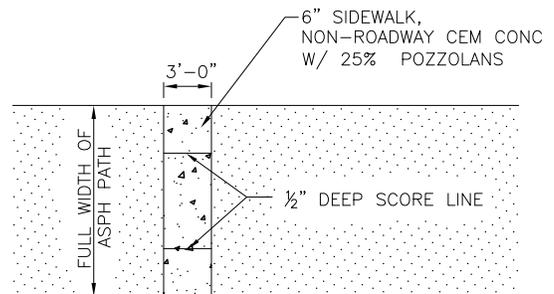
**CEMENT CONCRETE DRIVEWAY
PLACED WITH CEMENT
CONCRETE SIDEWALK**



MULTI PURPOSE TRAIL AT ARTERIAL STREET W/BULB-OUT (TYP)

NOTES:

1. FOR CURB RAMP AND DETECTABLE WARNING DETAILS SEE STANDARD PLAN NO 422.
2. FOR CROSSWALK DETAILS SEE STANDARD PLAN NO 712.
3. FOR BOLLARD DETAIL SEE STANDARD PLAN NO 463.
4. ASPHALT TRAIL CROSS SLOPE MINIMUM 1%, MAXIMUM 2%.
5. CEMENT CONCRETE WARNING PAD THICKNESS TO MATCH ASPHALT THICKNESS OR MINIMUM 6" THICK WHICHEVER IS GREATER.
6. CRUSHED ROCK ON EDGE OF TRAIL AS NEEDED TO DISBURSE DRAINAGE FLOW.
7. ALL CHANGES IN LEVEL ACROSS JOINTS SHALL BE FLUSH WITH A MAXIMUM DIFFERENCE IN ELEVATION OF 3/16 INCH.
8. ALL SLOPE GRADES SHALL BE MEASURED OFF THE HORIZON-LINE. IF EXISTING SITE CONDITIONS CONFLICT WITH OBTAINING GRADES SHOWN, THE CONTRACTOR SHALL MAKE MINIMUM ADJUSTMENTS TO THE GRADES TO ACCOMMODATE EXISTING SITE CONDITIONS, ADJUSTMENTS ARE SUBJECT TO APPROVAL BY THE ENGINEER.
9. ALL CEMENT CONCRETE WARNING PADS SHALL BE BRUSHED FINISHED AND "V" GROOVED TO MATCH PATTERN IN ADJACENT OR NEARBY SIDEWALKS.



CEM CONC WARNING PAD

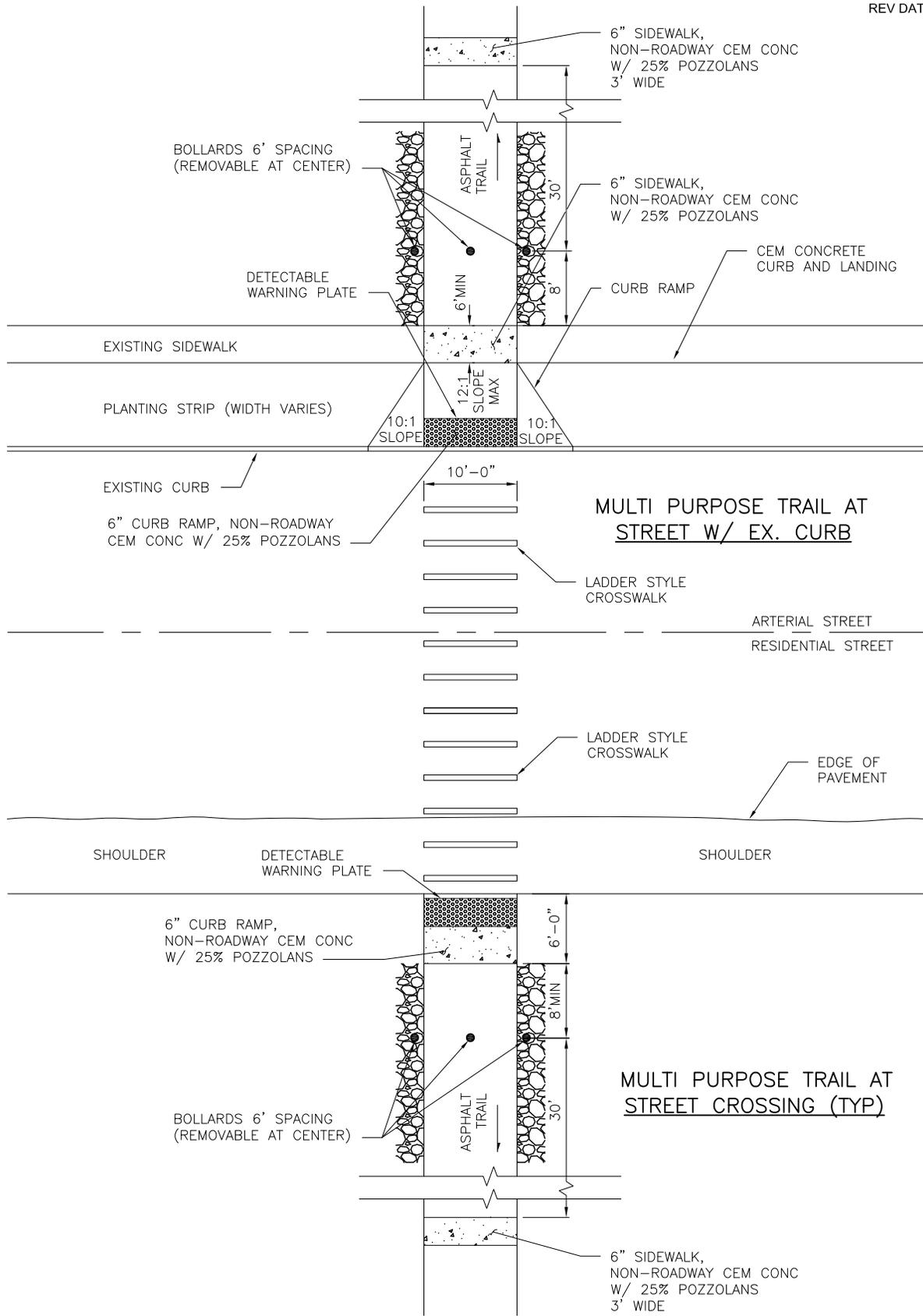
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

MULTI-PURPOSE TRAIL
AT STREET CROSSING



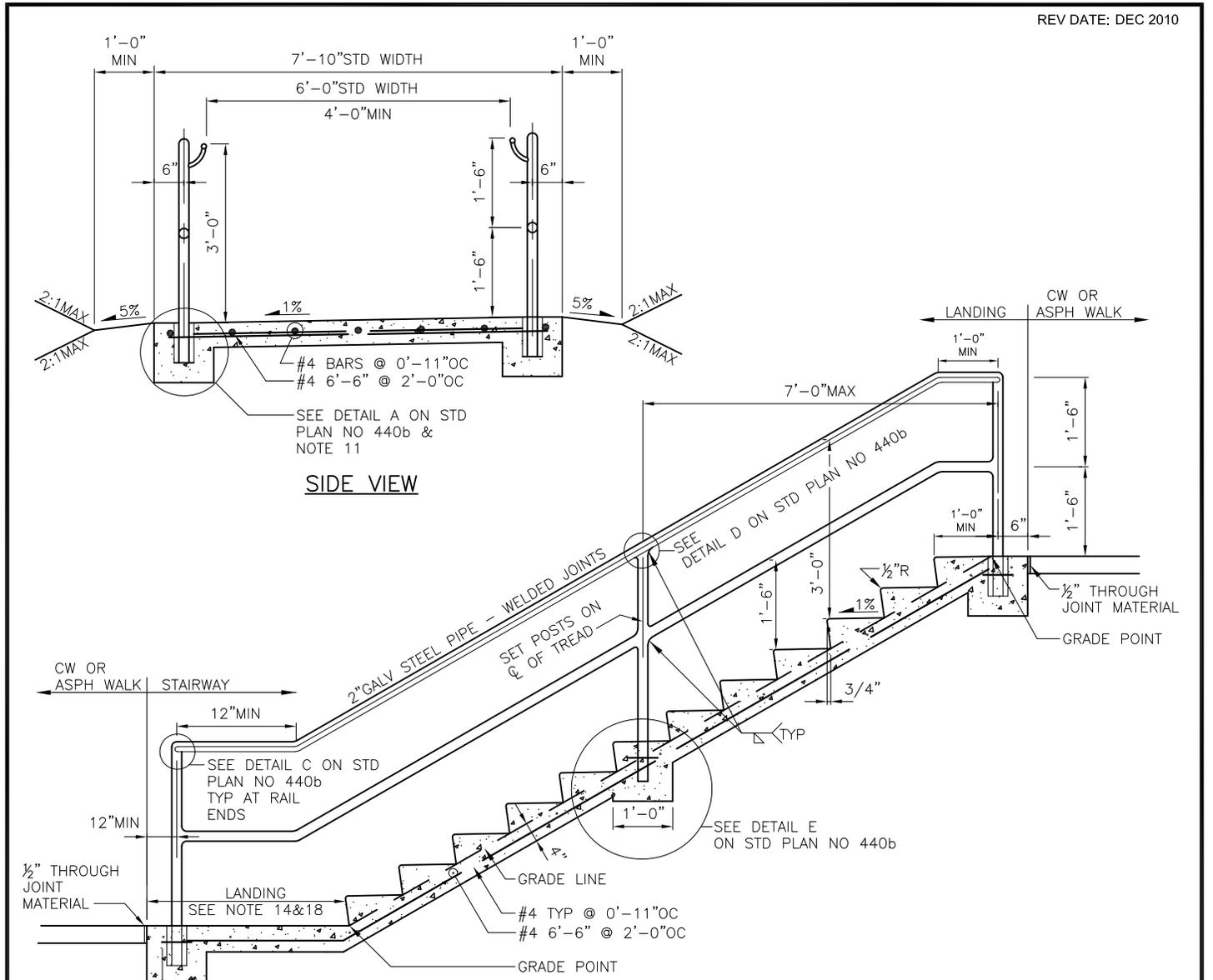
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

MULTI-PURPOSE TRAIL AT STREET CROSSING



NOTES:

1. FLIGHTS OF STAIRS SHALL 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 SHALL BE 11"MIN, 12"MAX. RISERS SHALL BE 5"MIN, 7"MAX.
5. LANDINGS BETWEEN FLIGHTS OF STAIRS MUST HAVE SAME WIDTH AS STEPS AND A MIN LENGTH OF 4'-0".
6. FLIGHTS OF 2' OR MORE STEPS SHALL HAVE HANDRAILS ON BOTH SIDES.
7. HANDRAILS SHALL BE CONTINUOUS ACROSS LANDINGS BETWEEN FLIGHTS OF STEPS.
8. HANDRAILS SHALL BE GALVANIZED AFTER FABRICATION.
9. PIPE MATERIAL SHALL BE ASTM A53.
10. REINFORCING STEEL SHALL 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 ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
13. CONCRETE CLASS CL3000.
14. LANDINGS SHALL BE 0.5%MIN FOR A MIN OF 4', ADJACENT SIDE WALK MAY BE PART OF LANDING IF SLOPE CRITERIA AND SETBACKS FROM HANDRAILS ARE MET.
15. TREAD SURFACE SHALL HAVE GROOVES AT THE NOSE FOR TRACTION.
16. IF LANDING IS ELEVATED, LANDING SHALL HAVE GUARDRAIL.
17. STAIRWAYS DEVIATING FROM STANDARD PLAN TO ACCOMMODATE BICYCLE FEATURES MAY BE USED UPON REVIEW.
18. BOTTOM LANDING DIMENSION FROM THE RAILING TO THE NOSE OF THE TREAD SHALL BE 2'-0"MIN + 1 TREAD WIDTH.

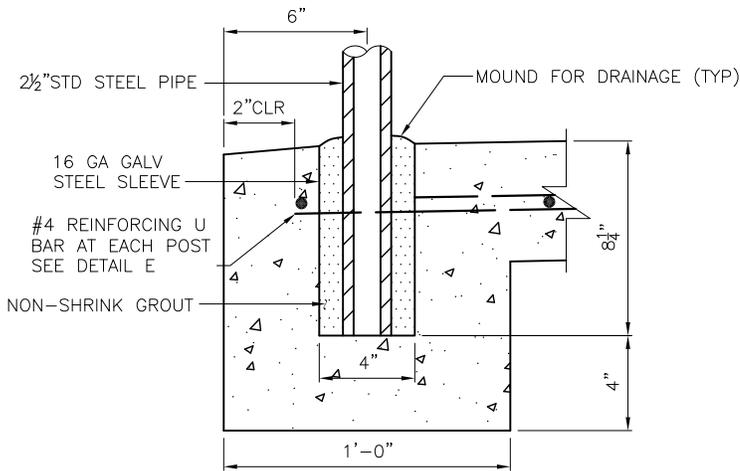
REF STD SPEC SEC 8-18



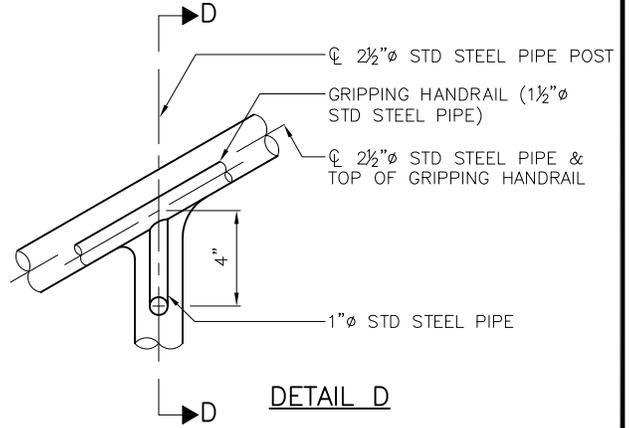
City of Seattle

NOT TO SCALE

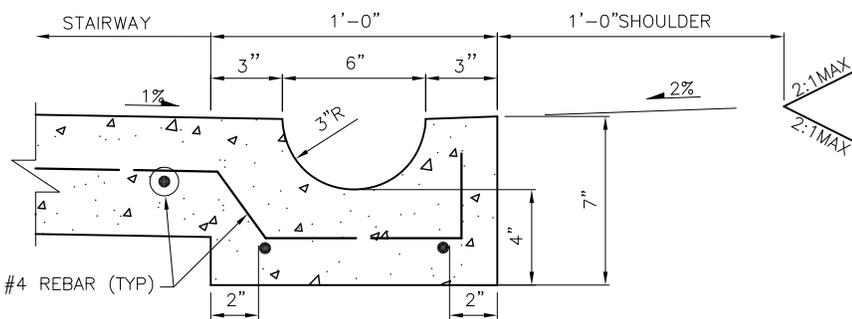
**CEMENT CONCRETE
STAIRWAY & HANDRAIL**



DETAIL A

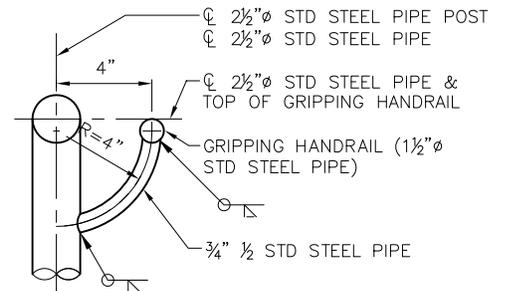


DETAIL D

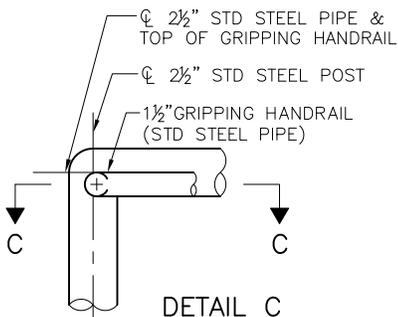


DETAIL B

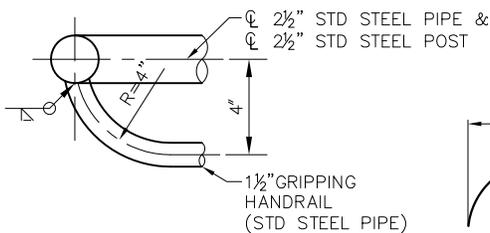
SEE NOTE 11 ON STD PLAN NO 440a



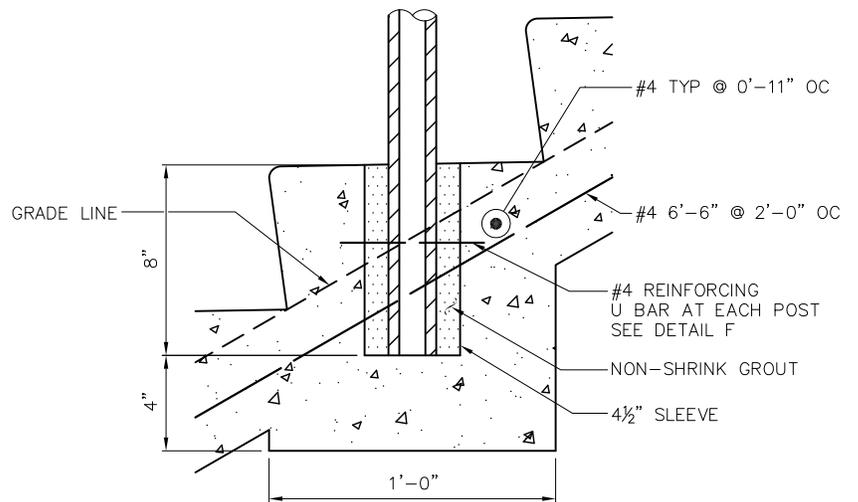
SECTION D-D



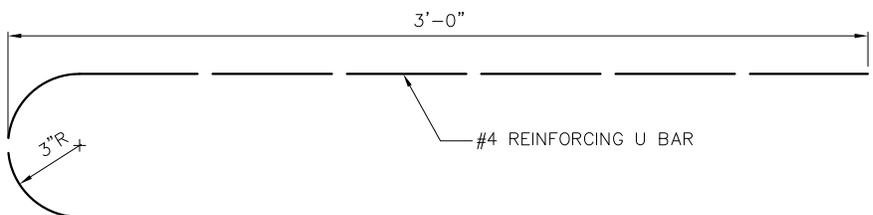
DETAIL C



SECTION C-C



DETAIL E



DETAIL F

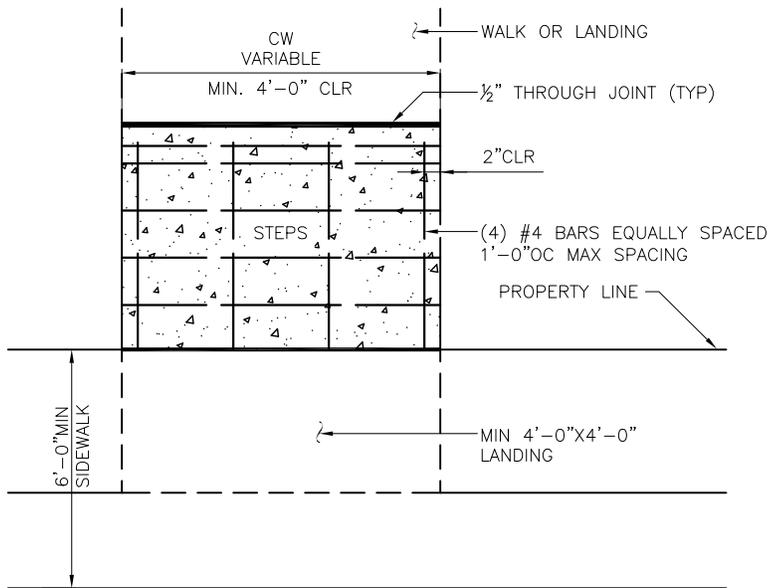
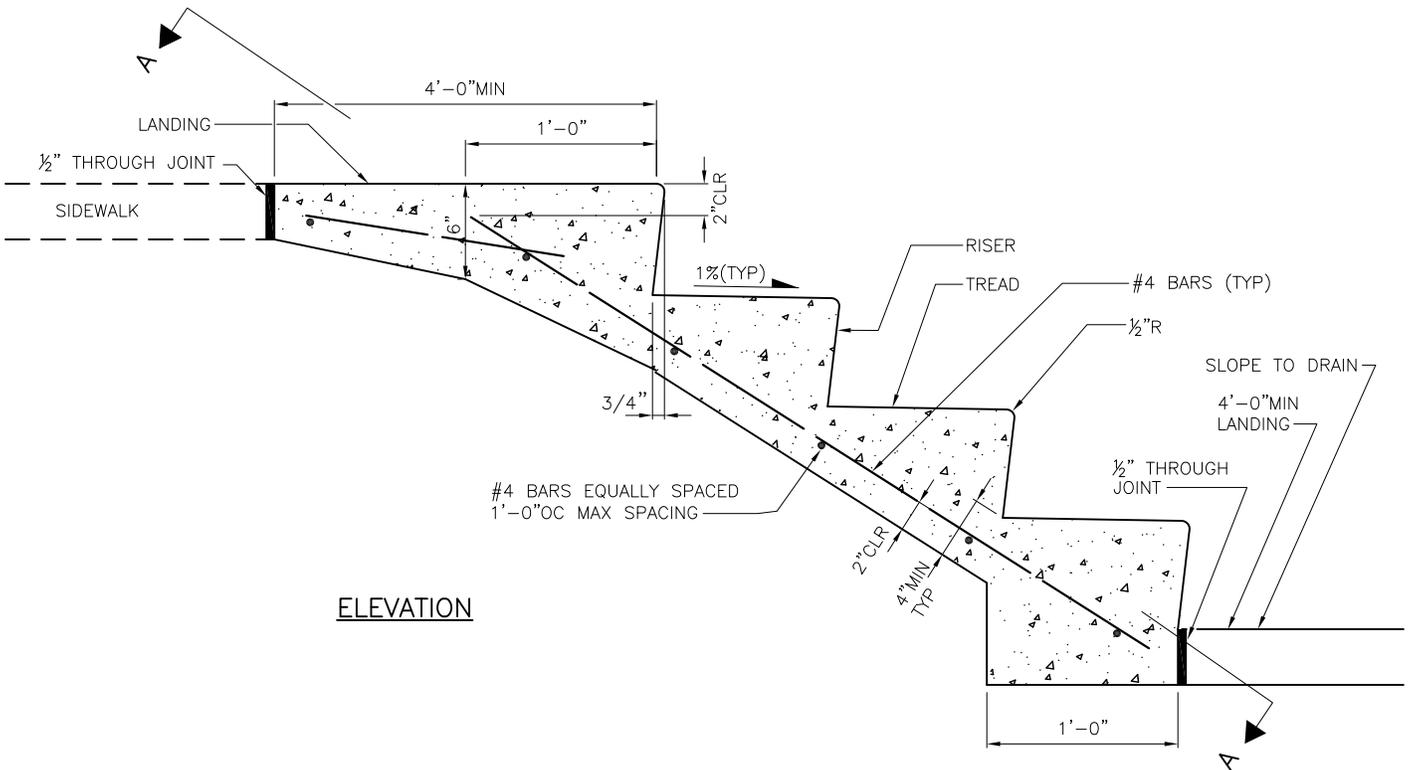
REF STD SPEC SEC 8-18



City of Seattle

NOT TO SCALE

CEMENT CONCRETE
STAIRWAY & HANDRAIL



NOTES:

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

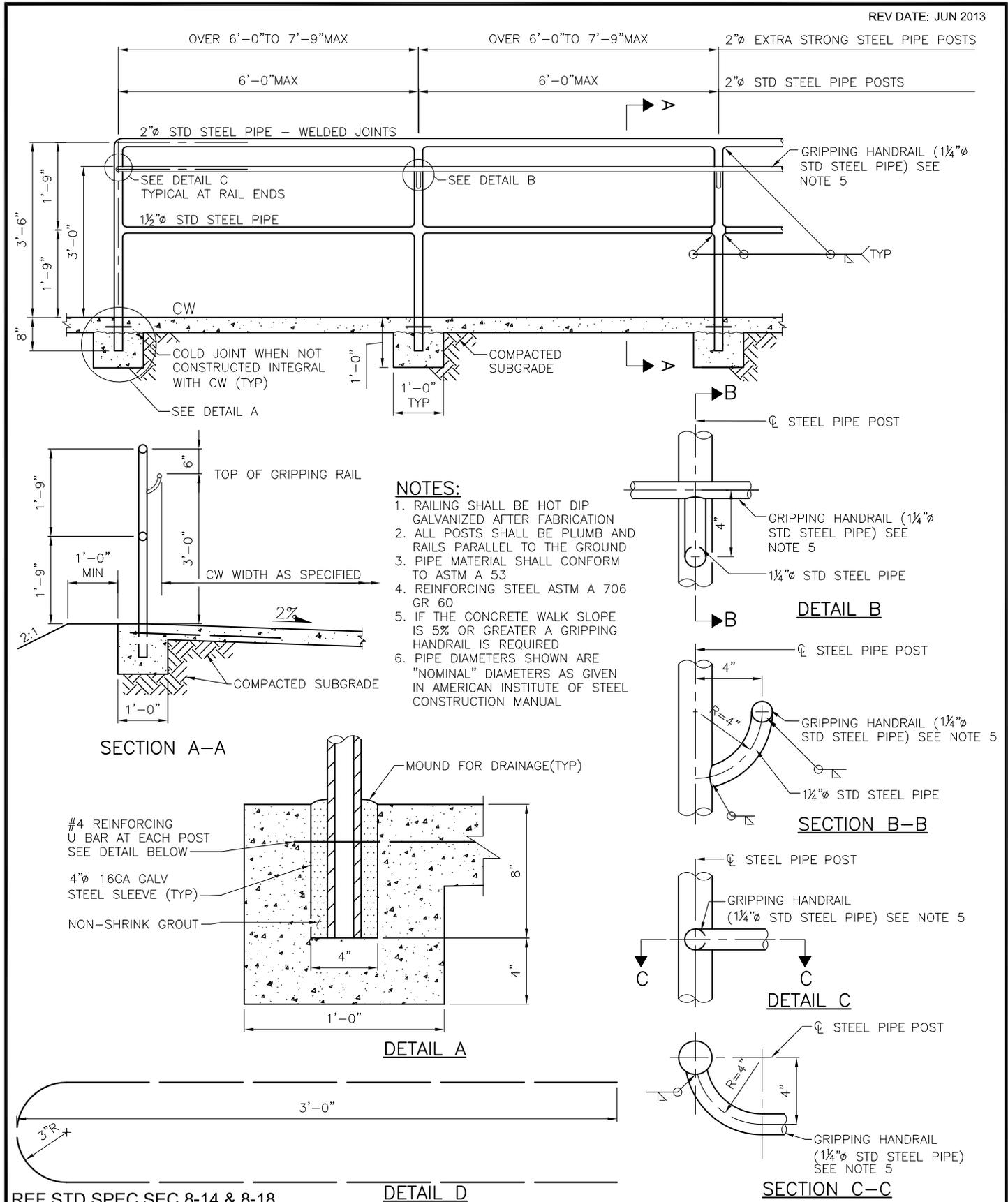
REF STD SPEC SEC 8-18



City of Seattle

NOT TO SCALE

CEMENT CONCRETE STEPS



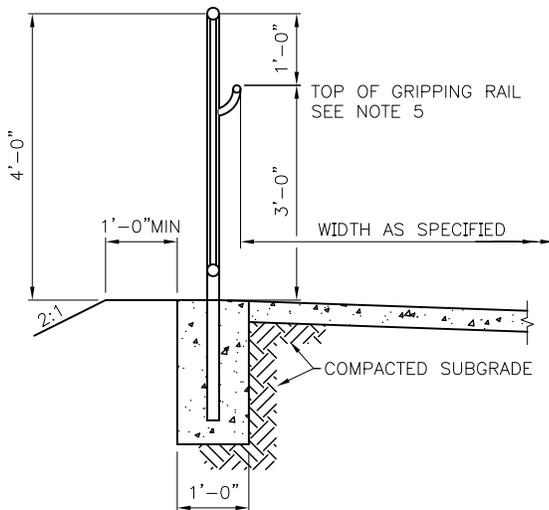
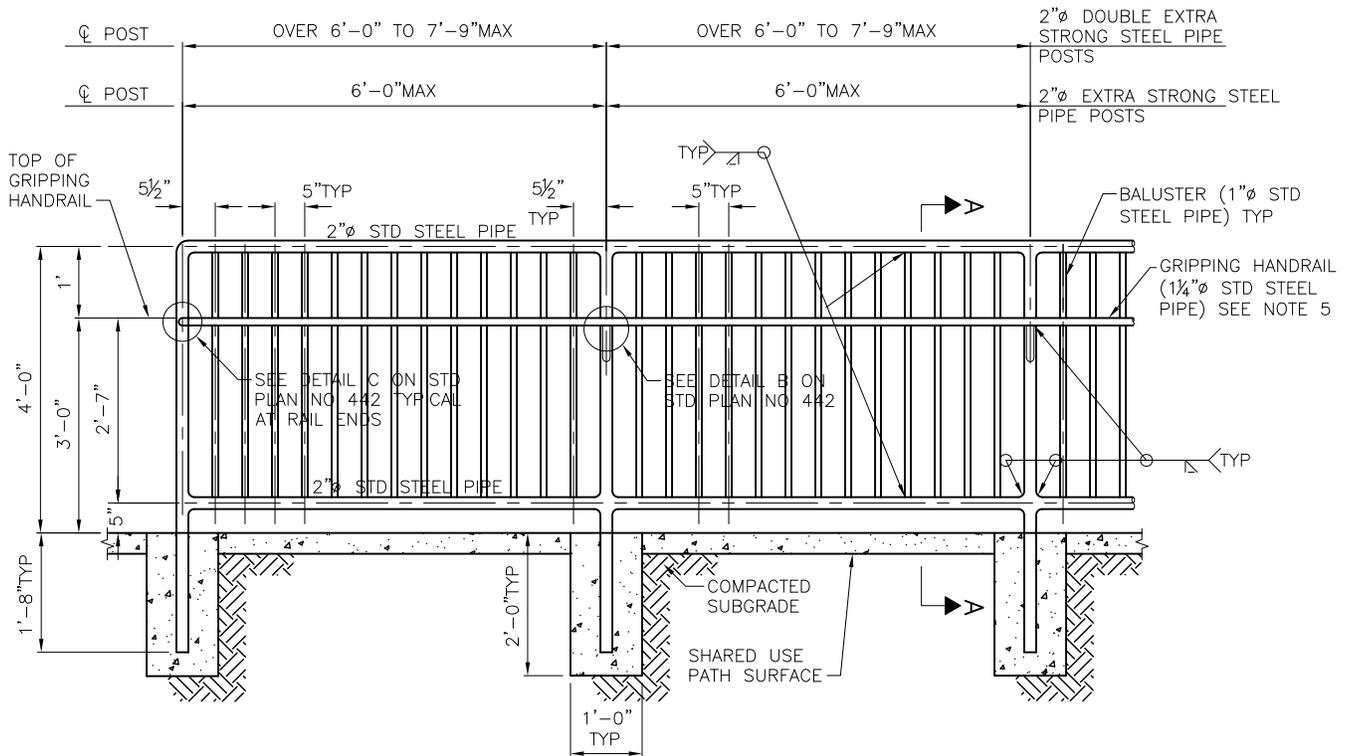
REF STD SPEC SEC 8-14 & 8-18



City of Seattle

NOT TO SCALE

STEEL PIPE HANDRAIL



SECTION A-A

NOTES:

1. RAILING SHALL BE HOT DIP GALVANIZED AFTER FABRICATION
2. ALL POSTS AND BALUSTERS SHALL BE PLUMB AND RAILS PARALLEL TO GRADE
3. PIPE MATERIAL SHALL CONFORM TO ASTM A53
4. REINFORCING STEEL ASTM A706 GR 60
5. IF THE CONCRETE WALK SLOPE IS 5% OR GREATER A GRIPPING HANDRAIL IS REQUIRED
6. PIPE DIAMETERS SHOWN ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL

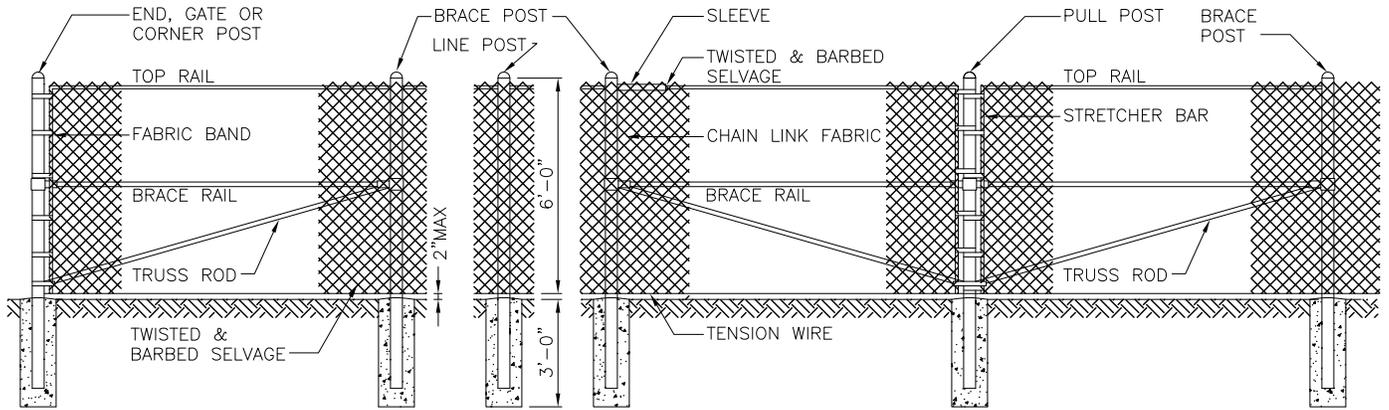
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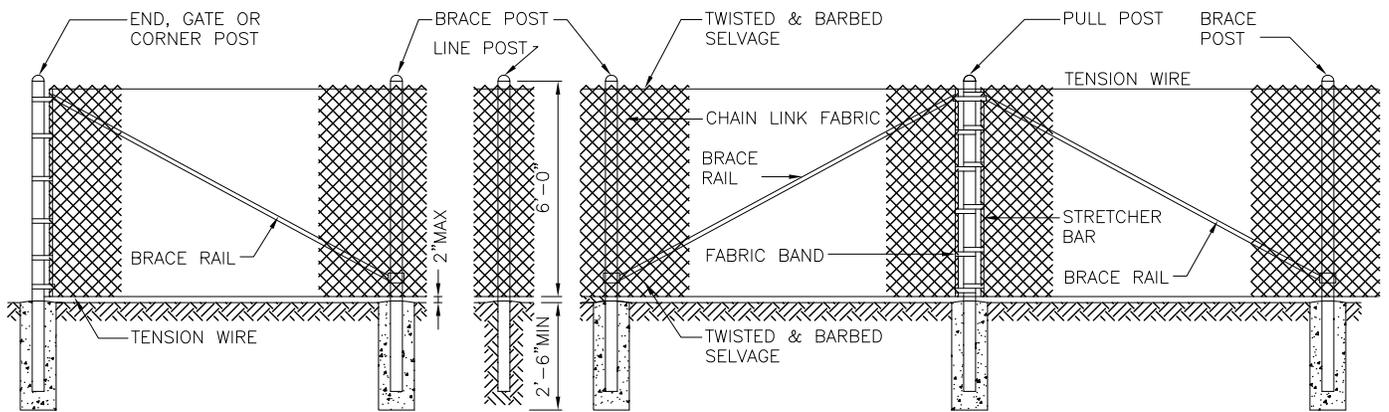
City of Seattle

NOT TO SCALE

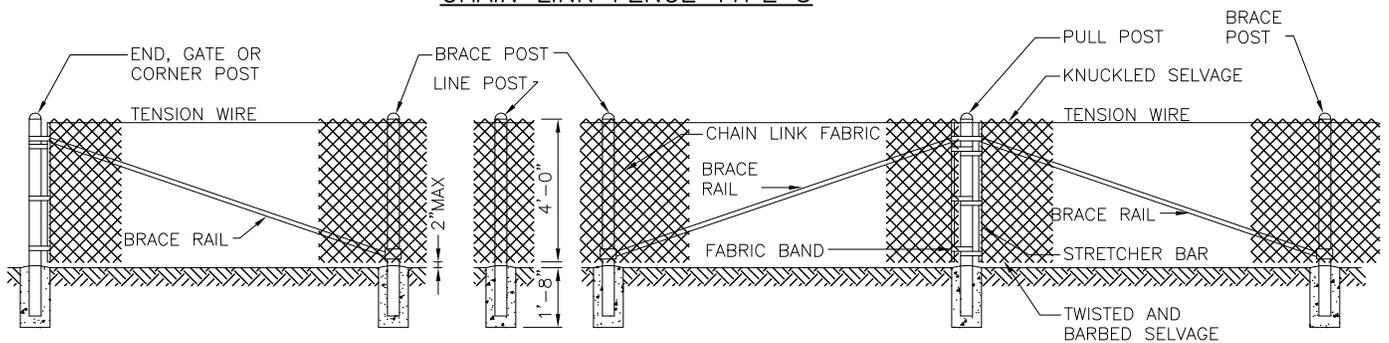
VERTICAL RAILING



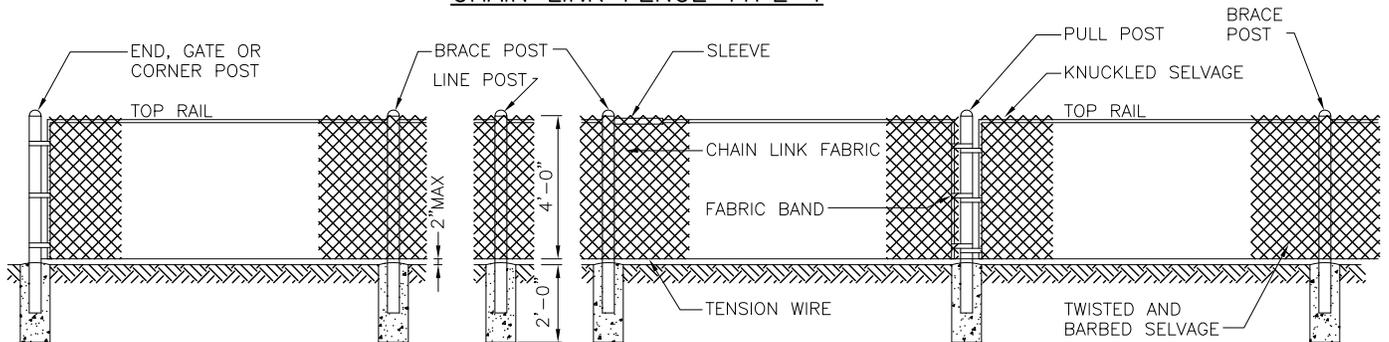
CHAIN LINK FENCE TYPE 1



CHAIN LINK FENCE TYPE 3



CHAIN LINK FENCE TYPE 4



CHAIN LINK FENCE TYPE 6

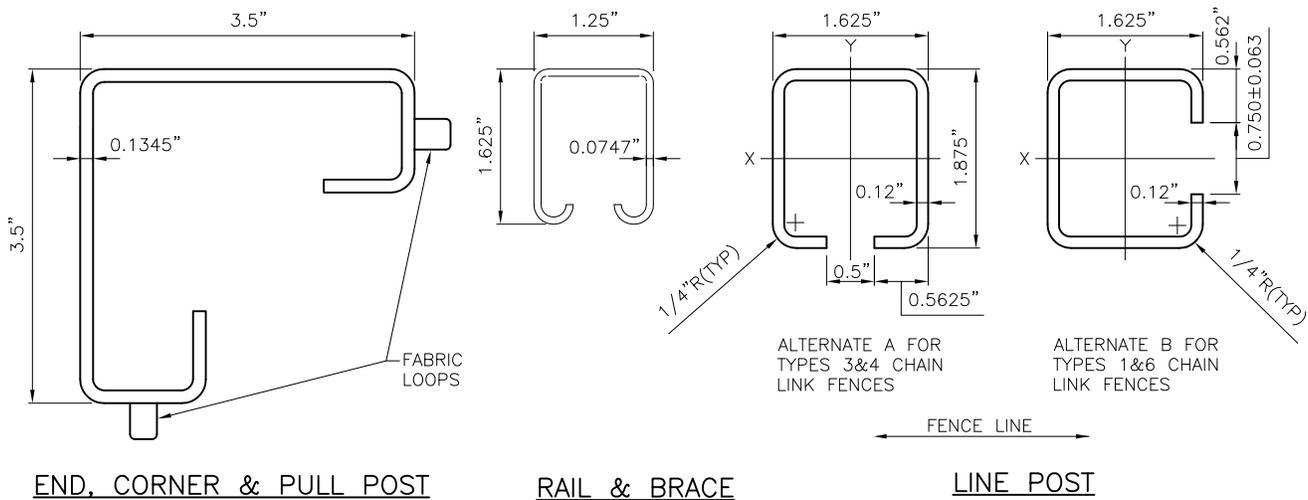
REF STD SPEC SEC 8-12



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	1⅞X1⅞	2.34
4							1½	2.72	1⅞	2.72	1⅞X1⅞	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	
	ID PIPE INCHES	WEIGHT PER FT POUNDS	SIZE INCHES	WEIGHT PER FT POUNDS			LENGTH
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:

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

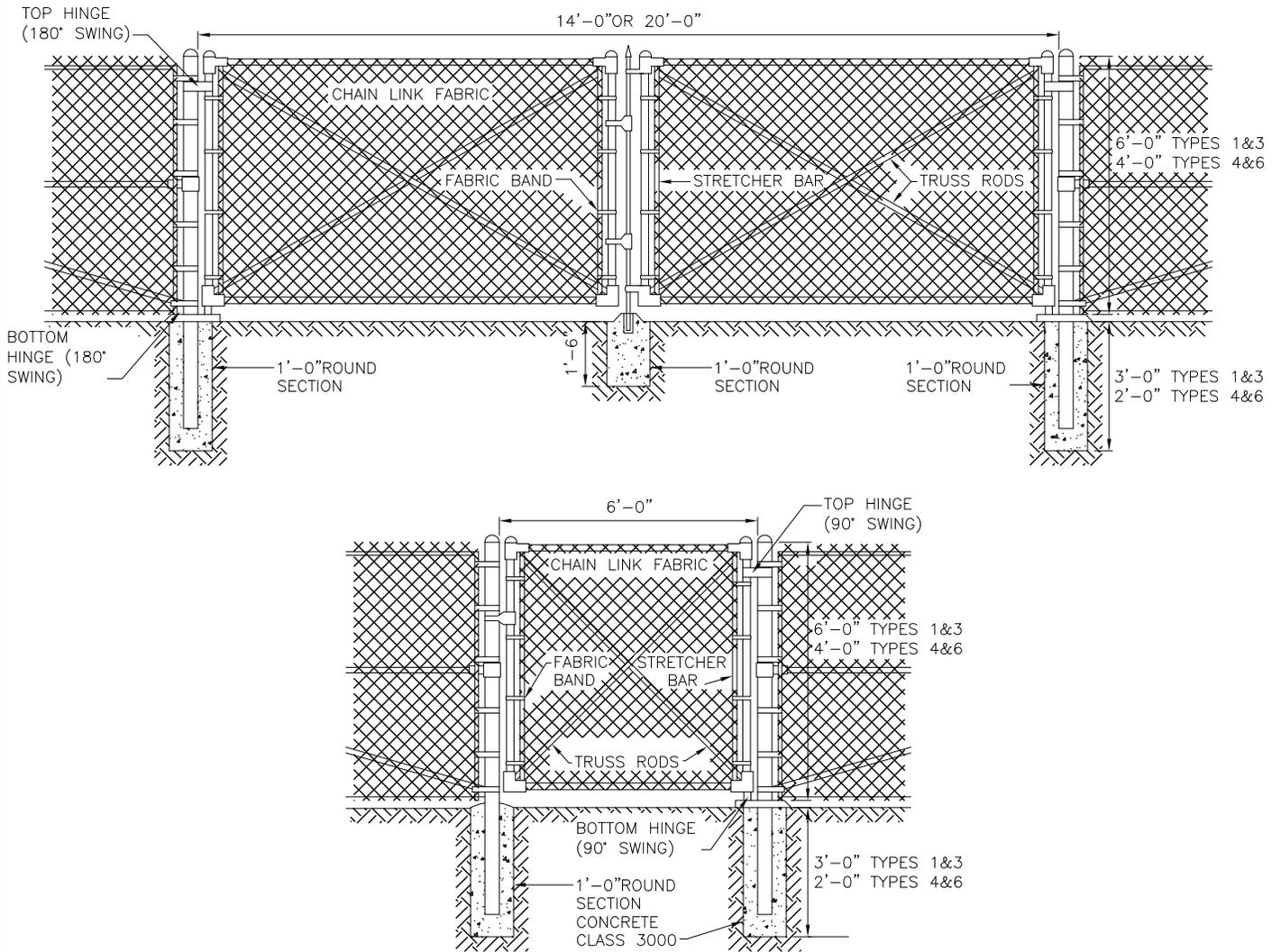
REF STD SPEC SEC 8-12



City of Seattle

NOT TO SCALE

CHAIN LINK FENCE



NOTES:

1. FENCE FABRIC SHALL 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 SHALL BE MOUNDED FOR DRAINAGE

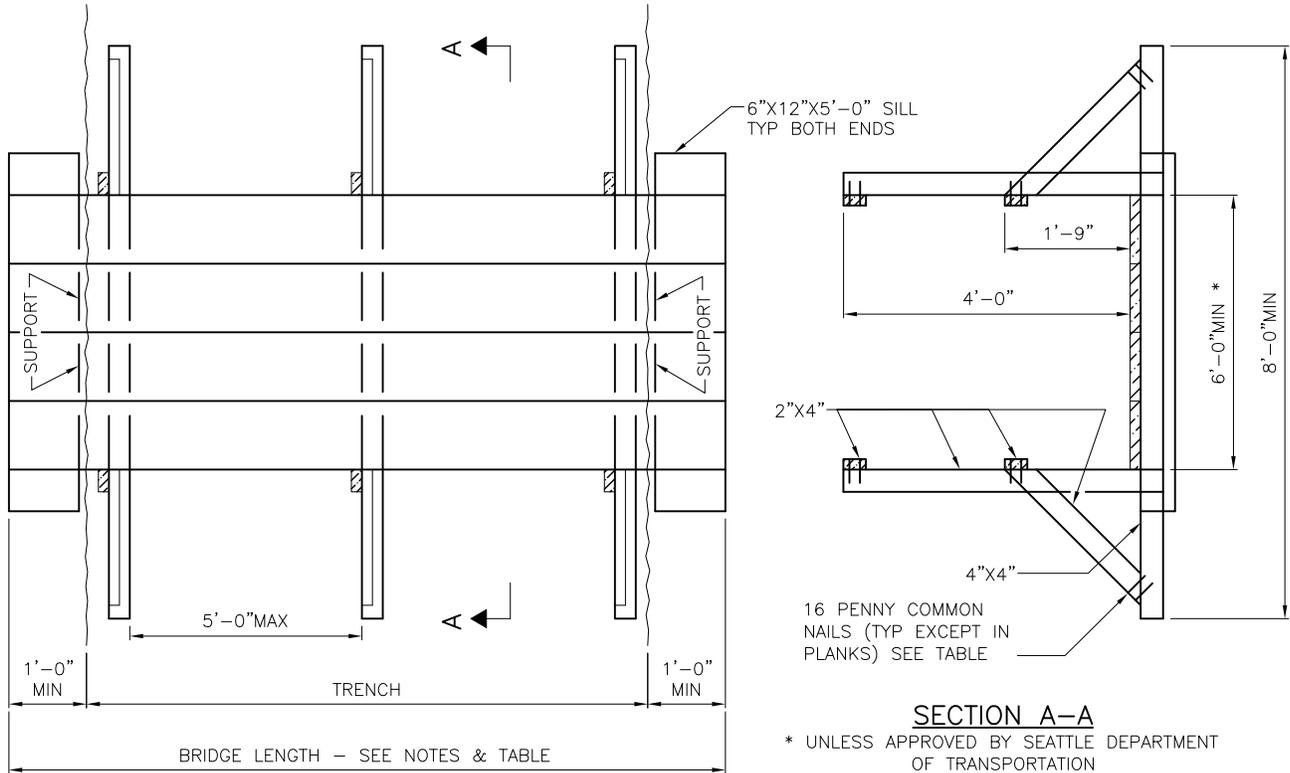
REF STD SPEC SEC 8-12



City of Seattle

NOT TO SCALE

CHAIN LINK GATES

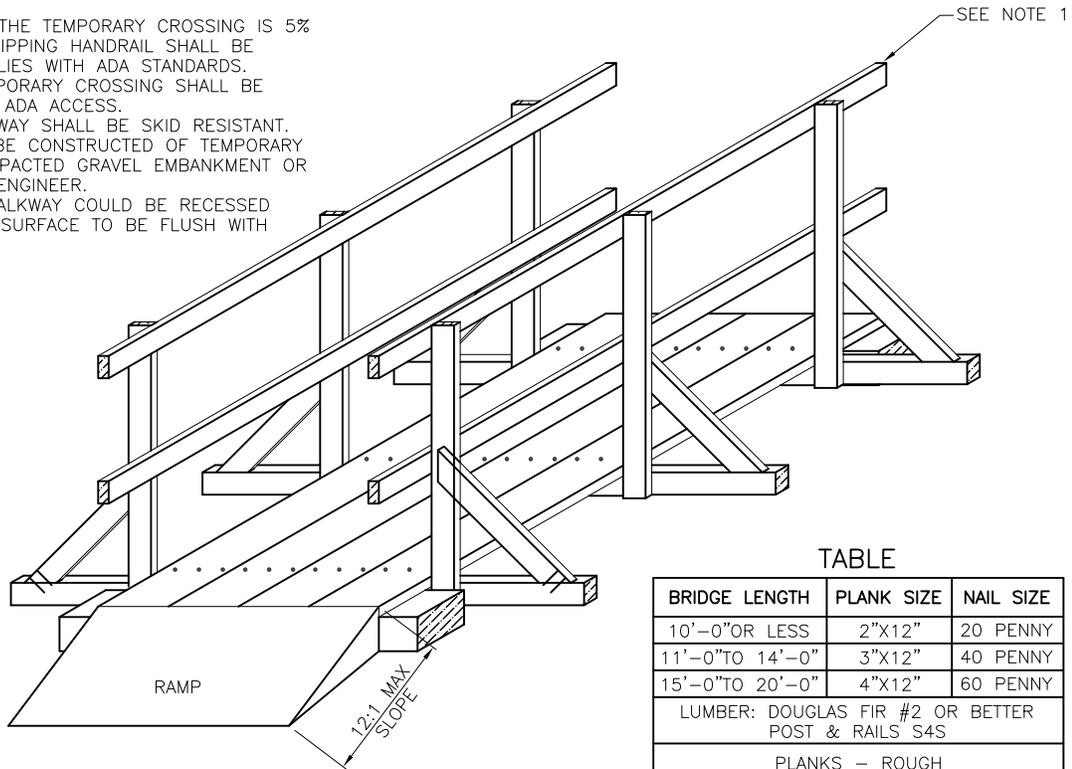


SECTION A-A

* UNLESS APPROVED BY SEATTLE DEPARTMENT OF TRANSPORTATION

NOTES:

1. IF THE SLOPE OF THE TEMPORARY CROSSING IS 5% OR GREATER, A GRIPPING HANDRAIL SHALL BE ADDED THAT COMPLIES WITH ADA STANDARDS.
2. ENDS OF THE TEMPORARY CROSSING SHALL BE SLOPED TO ALLOW ADA ACCESS.
3. SURFACE OF WALKWAY SHALL BE SKID RESISTANT.
4. THE RAMP SHALL 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		

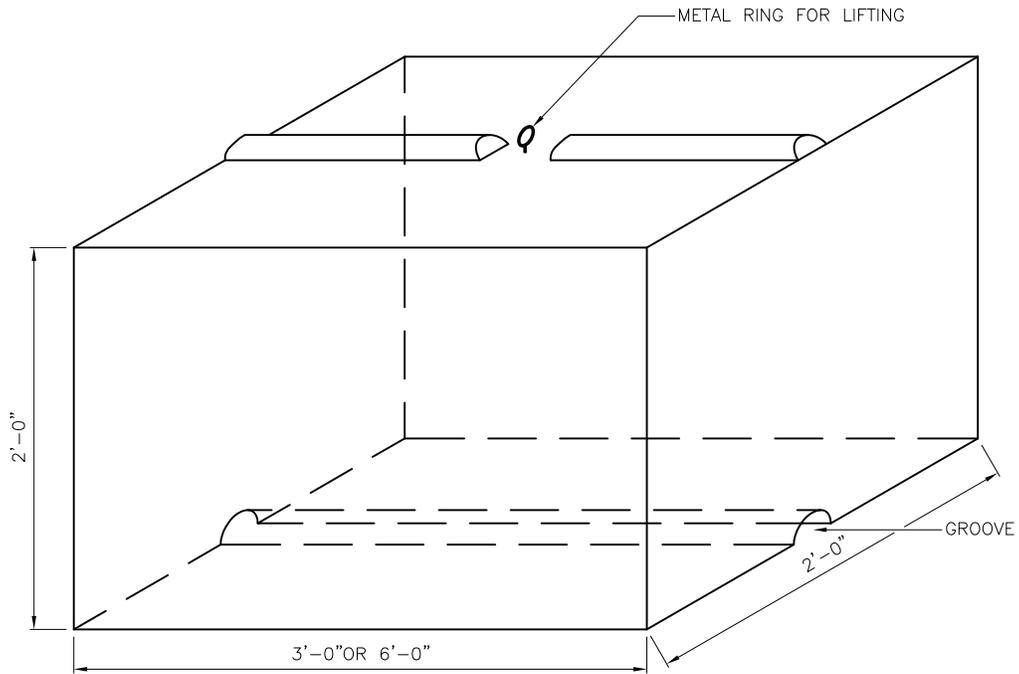
REF STD SPEC SEC 1-07.23



City of Seattle

NOT TO SCALE

TEMPORARY PEDESTRIAN WALKWAY



CONCRETE TONGUE & GROOVE BLOCK

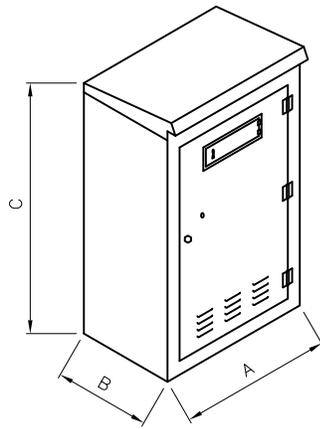
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

ECOLOGY BLOCK, CONCRETE

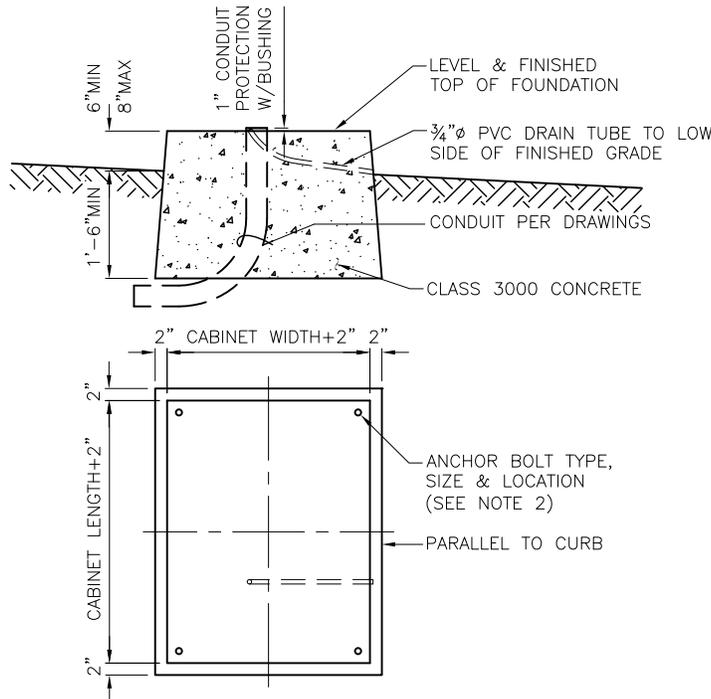


NOTES:

1. UNLESS OTHERWISE SPECIFIED, TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE FURNISHED BY THE CITY
2. UNLESS OTHERWISE SPECIFIED, EXACT CABINET DIMENSIONS & ANCHOR BOLT LOCATIONS SHALL BE PROVIDED BY THE TRAFFIC SIGNAL SHOPS
3. PLACE CABINET DOOR ON SIDEWALK SIDE OF FOUNDATION
4. SEAL CABINET TO FOUNDATION WITH GREY OR CLEAR SILICON TO PREVENT MOISTURE FROM ENTERING THE CABINET

DIMENSION	2'	TYPE III	TYPE 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

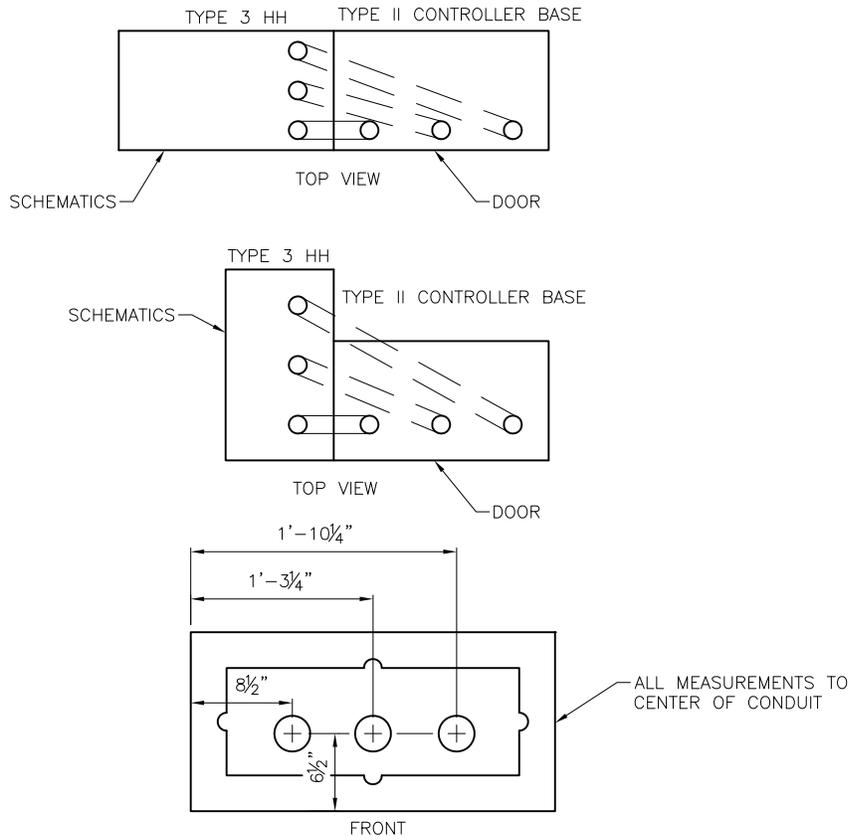
REF STD SPEC SEC 8-31 & 8-32



City of Seattle

NOT TO SCALE

SIGNAL CONTROLLER CABINET & FOUNDATION



CONDUIT LAYOUT—TYPE II SIGNAL CONTROLLER FOUNDATION

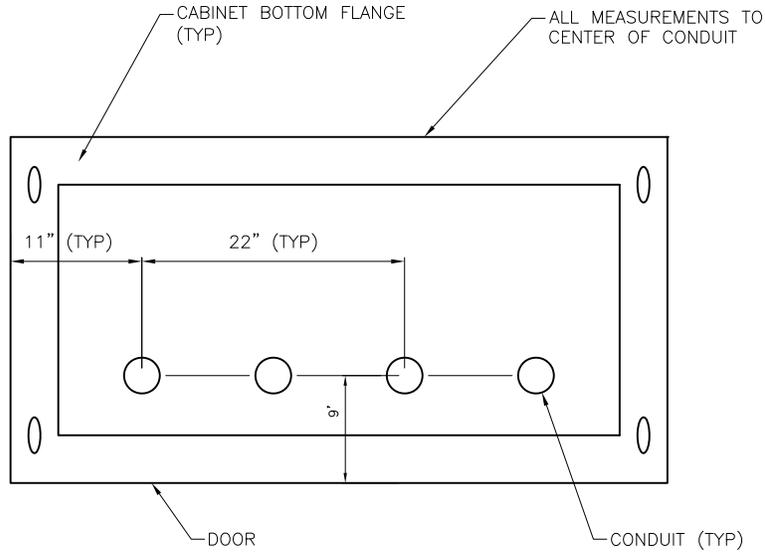
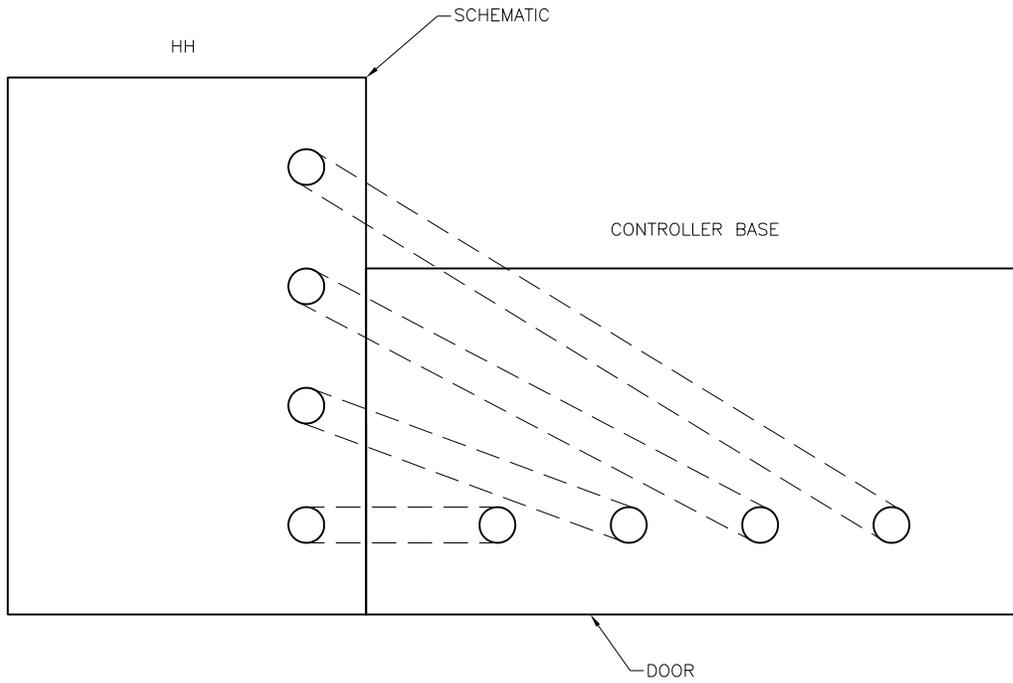
REF STD SPEC SEC 8-31 & 8-32



City of Seattle

NOT TO SCALE

SIGNAL CONTROLLER
FOUNDATION CONDUIT LAYOUT



TOP VIEWS

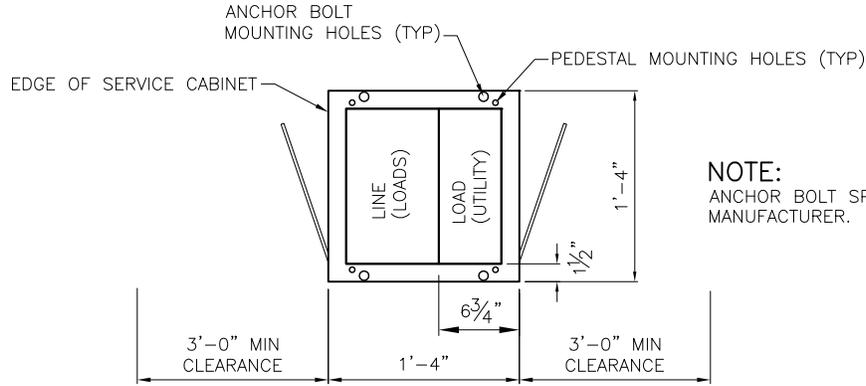
REF STD SPEC SEC 8-31 & 8-32



City of Seattle

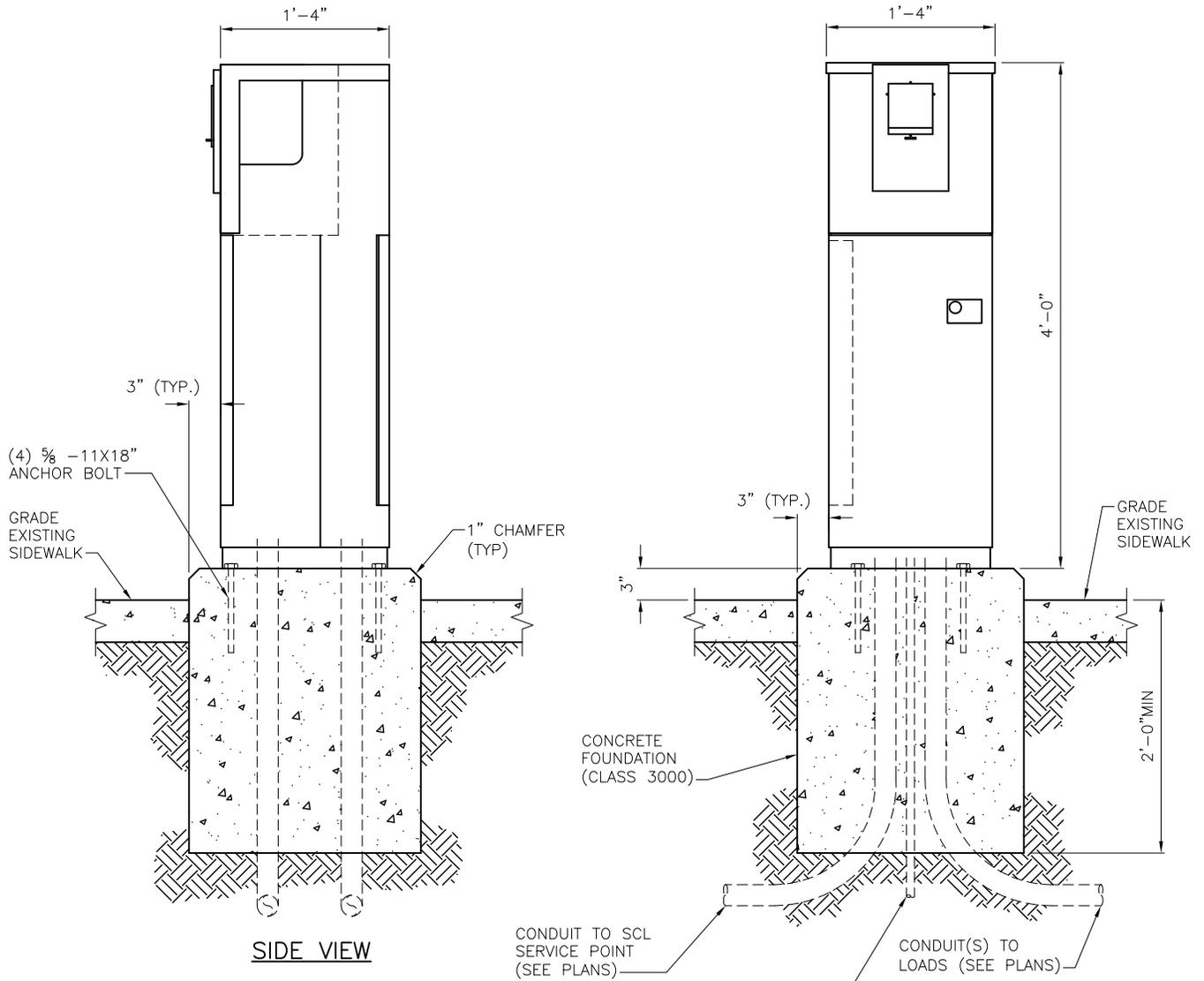
NOT TO SCALE

**SIGNAL CONTROLLER TYPE III & VI
FOUNDATION CONDUIT LAYOUT**



NOTE:
ANCHOR BOLT SPACING PROVIDED BY
MANUFACTURER.

TOP VIEW



SIDE VIEW

FRONT VIEW

GROUND ROD 3/4"x120" COPPER WITH GROUND CLAMP. A SECOND GROUND SHALL BE INSTALLED A MINIMUM 8' AWAY IN A GROUND ROD HANDHOLE AS PER CITY OF SEATTLE STANDARD PLAN NO 550b. COORDINATE WITH ELECTRICAL INSPECTOR FOR LOCATION. INSTALL #4 AWG COPPER-CLAD GROUND WIRE BETWEEN CABINET FOUNDATION AND GROUND ROD HANDHOLE

REF STD SPEC SEC



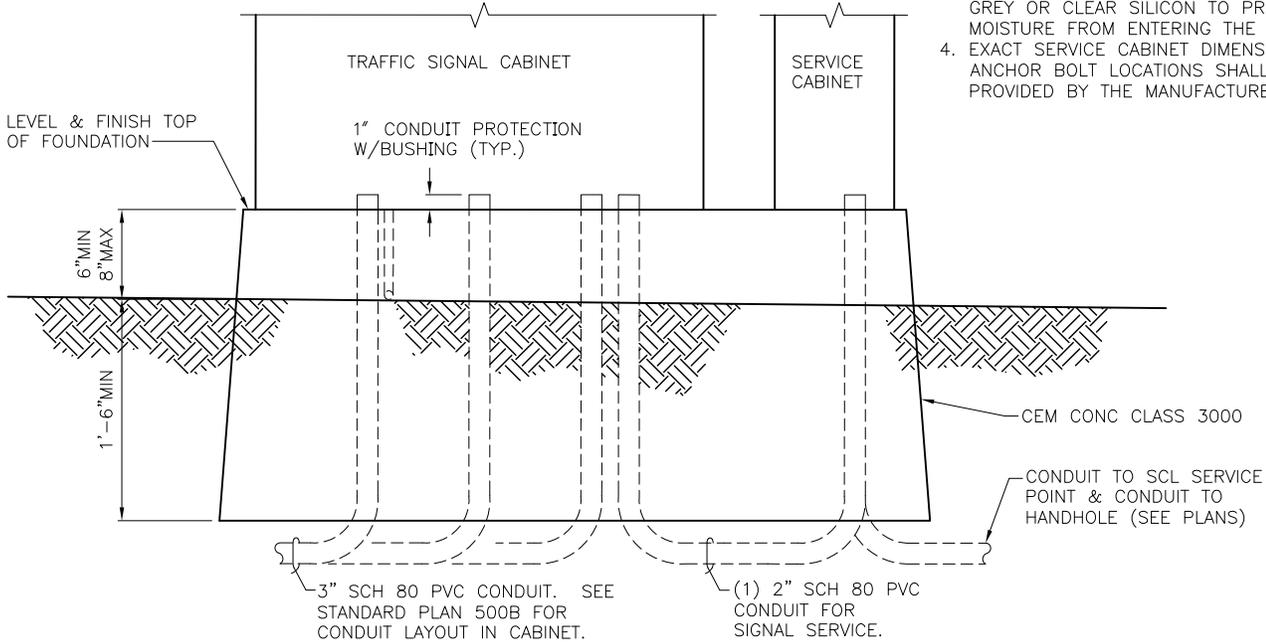
City of Seattle

NOT TO SCALE

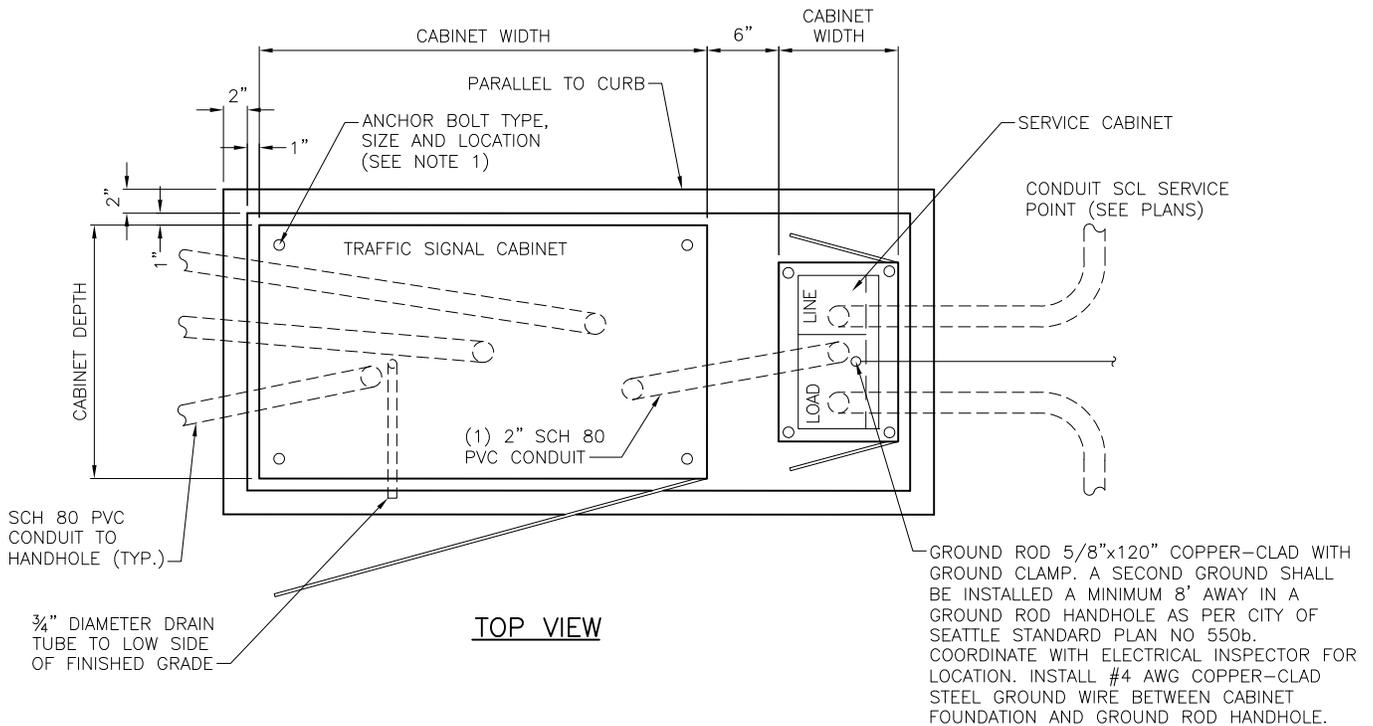
SERVICE CABINET
FOUNDATION DETAIL

NOTES:

1. EXACT TRAFFIC SIGNAL CABINET DIMENSIONS AND ANCHOR BOLT LOCATIONS SHALL BE PROVIDED BY THE SIGNAL SHOP.
2. TRAFFIC SIGNAL CABINET SHALL BE INSTALLED WITH DOOR ON SIDEWALK SIDE OF FOUNDATION.
3. SEAL CABINETS TO FOUNDATION WITH GREY OR CLEAR SILICON TO PREVENT MOISTURE FROM ENTERING THE CABINET.
4. EXACT SERVICE CABINET DIMENSIONS AND ANCHOR BOLT LOCATIONS SHALL BE PROVIDED BY THE MANUFACTURER.



SIDE VIEW



TOP VIEW

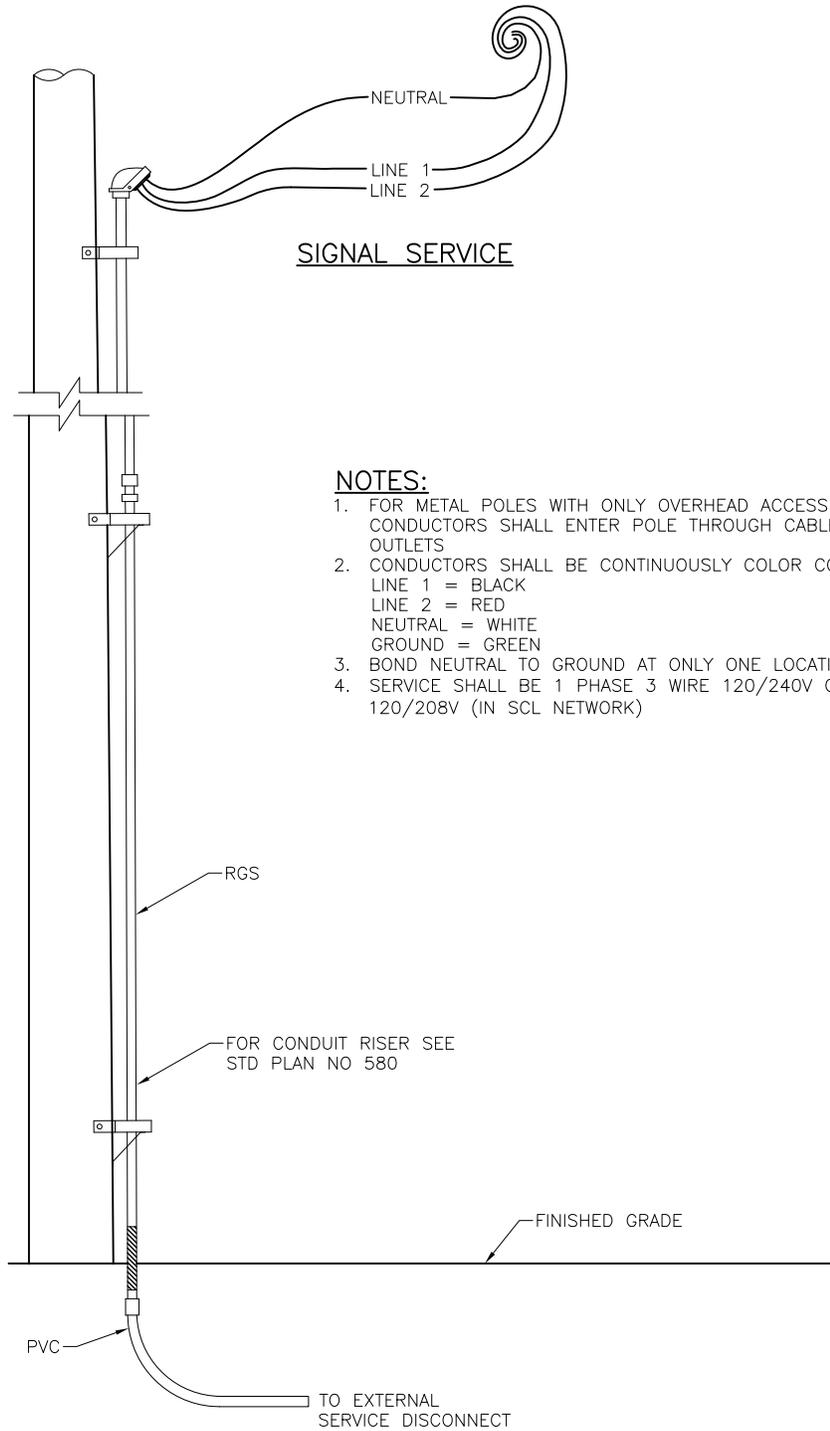
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

**JOINT SIGNAL CONTROLLER/
SERVICE CABINET
FOUNDATION DETAIL**



OVERHEAD SERVICE CONNECTION

REF STD SPEC SEC 8-30, 8-31, 9-31, & 9-32



City of Seattle

NOT TO SCALE

SIGNAL SERVICE
CONNECTION WIRING DETAIL

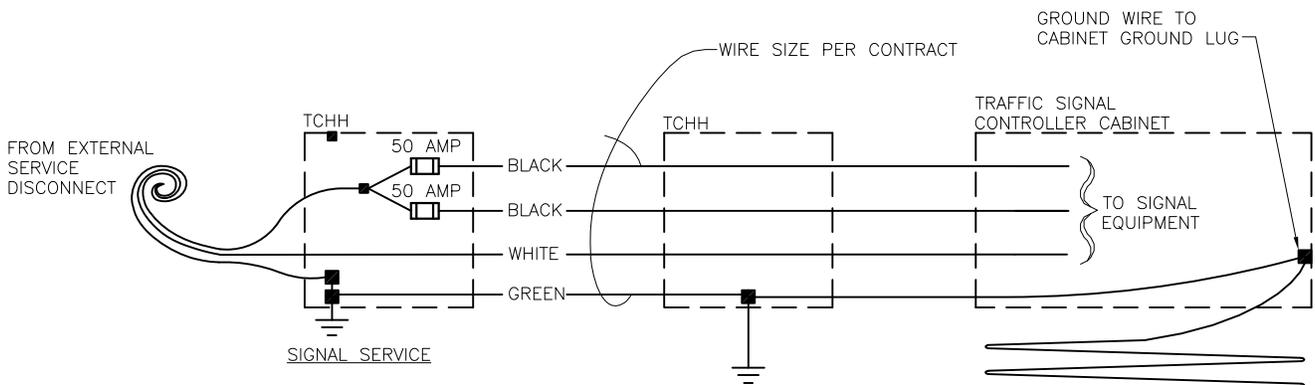
VOLTAGE PER DRAWINGS

CURRENT LIMITERS BY SCL

LINE 1 & NEUTRAL 120V

SCL UNDERGROUND SERVICE POINT VAULT/HANDHOLE/ MAINTENANCE HOLE

TO EXTERNAL SERVICE DISCONNECT



UNDERGROUND SERVICE CONNECTION

NOTE:

BOND NEUTRAL TO GROUND AT ONLY ONE LOCATION

COIL 20' OF #4 SOLID BARE COPPER WIRE IN CONTROLLER CABINET FOUNDATION W/2" MINIMUM CLEARANCE FROM ALL SIDES (UFER GROUND)

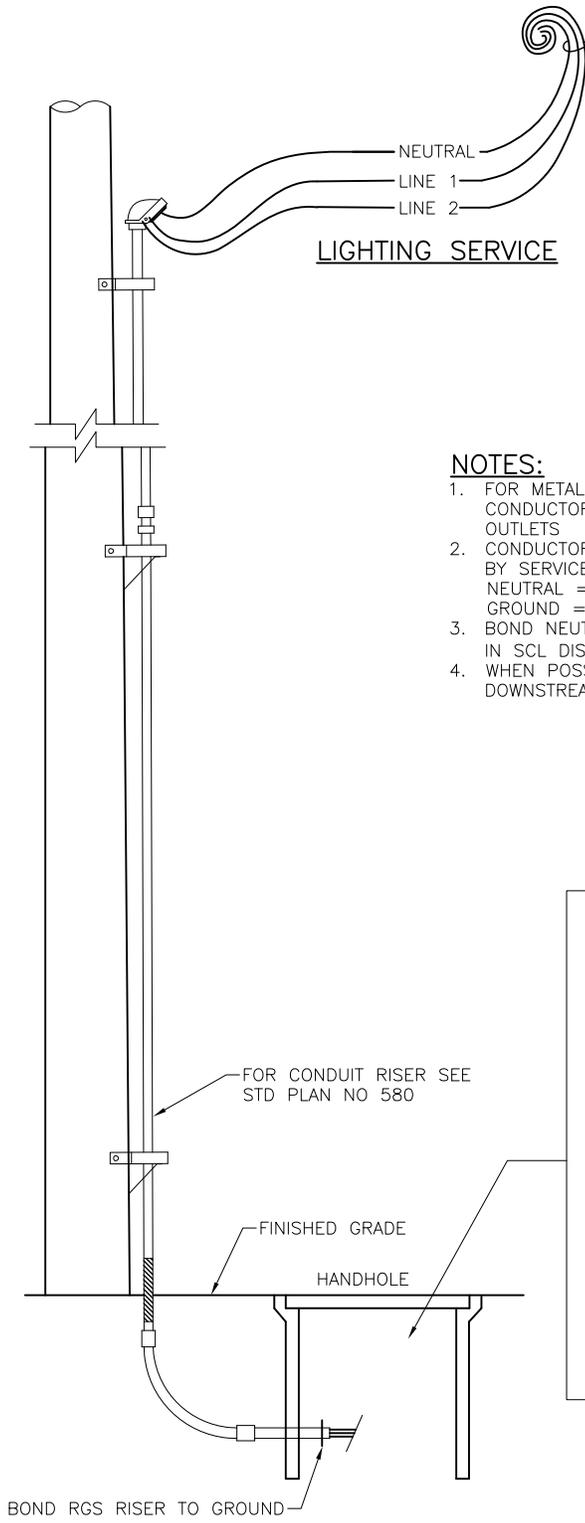
REF STD SPEC SEC 8-30 & 8-31



City of Seattle

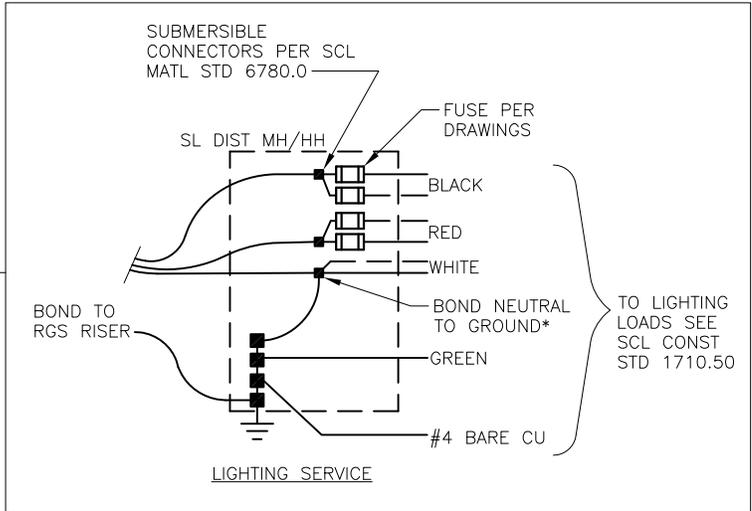
NOT TO SCALE

SIGNAL SERVICE CONNECTION WIRING DETAIL



NOTES:

1. FOR METAL POLES WITH ONLY OVERHEAD ACCESS, CONDUCTORS SHALL ENTER POLE THROUGH CABLE OUTLETS
2. CONDUCTORS SHALL BE CONTINUOUSLY COLOR CODED BY SERVICE VOLTAGE
NEUTRAL = WHITE
GROUND = GREEN
3. BOND NEUTRAL TO GROUND AT ONLY ONE LOCATION IN SCL DISTRIBUTION MH/HH
4. WHEN POSSIBLE, RISER SHALL BE INSTALLED ON DOWNSTREAM SIDE OF TRAFFIC



OVERHEAD SERVICE CONNECTION

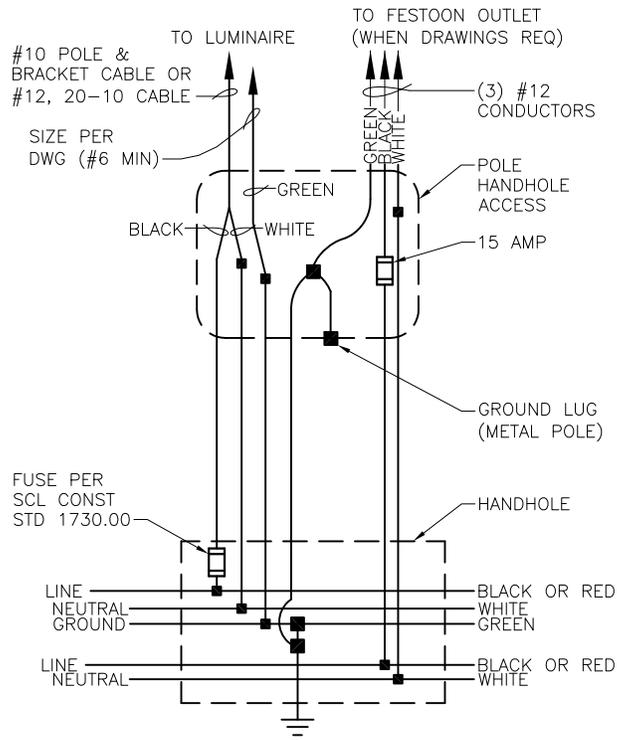
REF STD SPEC SEC 8-30, 8-31, 9-31 & 9-32



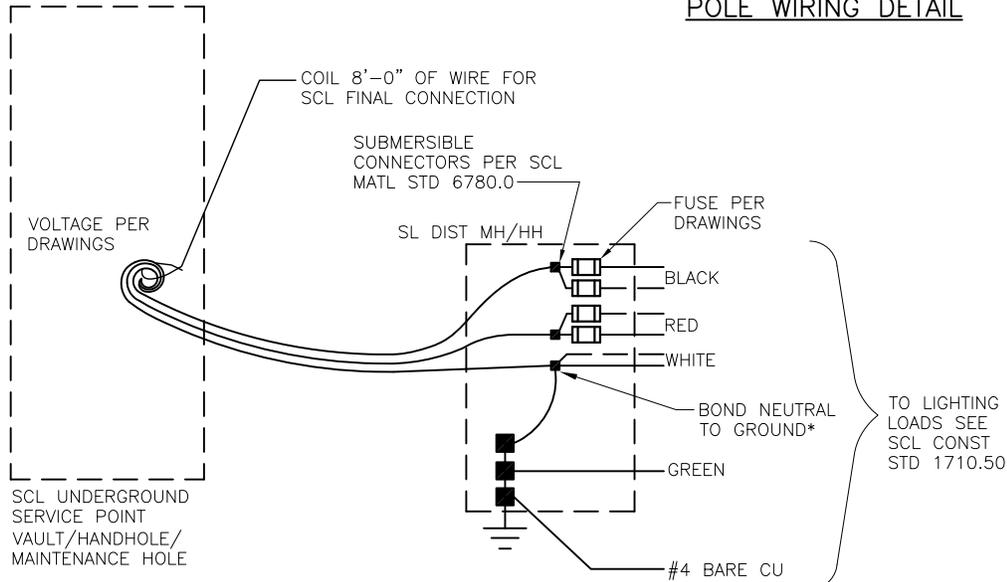
City of Seattle

NOT TO SCALE

**LIGHTING SERVICE
CONNECTION & LIGHT POLE
WIRING DETAIL**



POLE WIRING DETAIL



LIGHTING SERVICE

UNDERGROUND SERVICE CONNECTION

NOTES:

1. SCL REQ NEUTRAL TO BE BONDED TO GROUND IN SCL SERVICE POINT
2. BOND NEUTRAL TO GROUND AT ONLY ONE LOCATION
3. FOR JOINT SCL STREETLIGHT & SDOT TRAFFIC HANDHOLES, SEE SCL CONST STD 1810.05

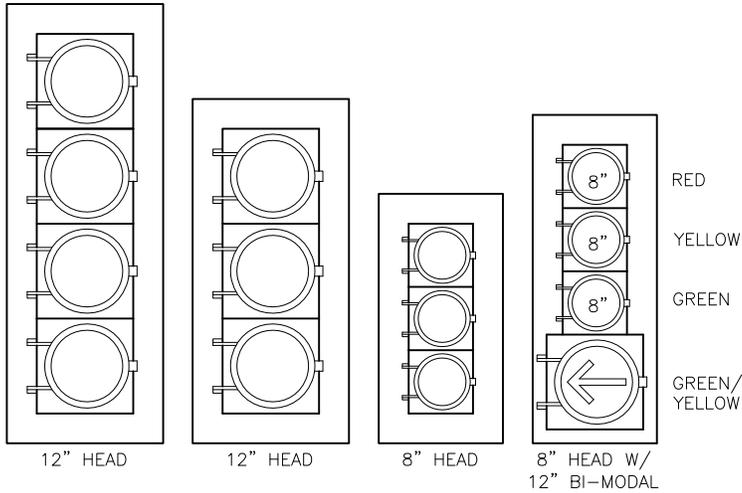
REF STD SPEC SEC 8-30 & 8-31



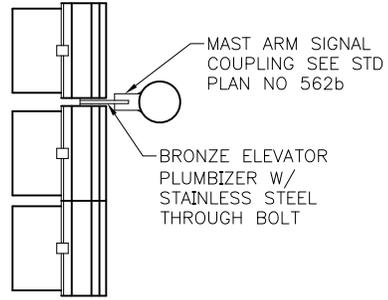
City of Seattle

NOT TO SCALE

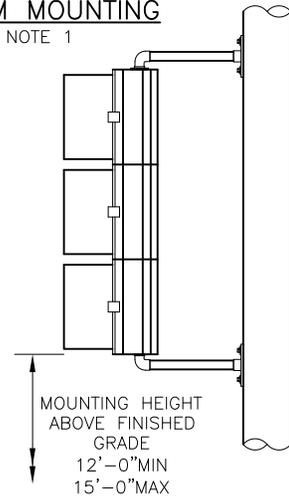
LIGHTING SERVICE CONNECTION & LIGHT POLE WIRING DETAIL



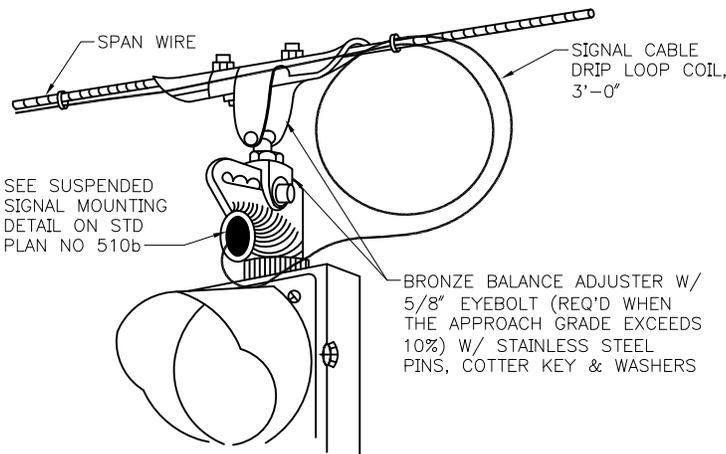
TYPICAL SIGNAL FACES
W/ TUNNEL VISORS &
5" BACKPLATE (LOUVERED)



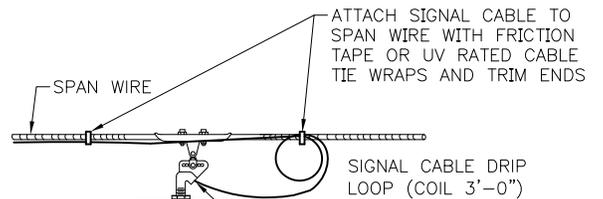
MAST ARM MOUNTING
SEE NOTE 1



BRACKET MOUNTING
FOR SIGNAL HEAD BRACKET ASSEMBLY
SEE STD PLAN NO 511

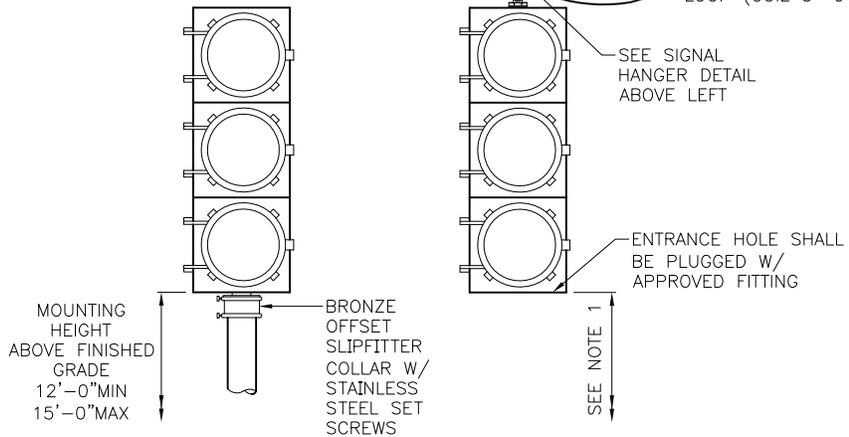


SIGNAL HANGER DETAIL



NOTES:

1. VERTICAL CLEARANCE: 17' MIN TO ROADWAY 19'-0" MAX (ON TRUCK ROUTES USE 18' TO 19')
2. BACKPLATES HAVE BEEN OMITTED FROM VARIOUS VIEWS FOR CLARITY



PEDESTAL TOP MOUNTING
FOR PEDESTAL SEE STD PLAN NO 524

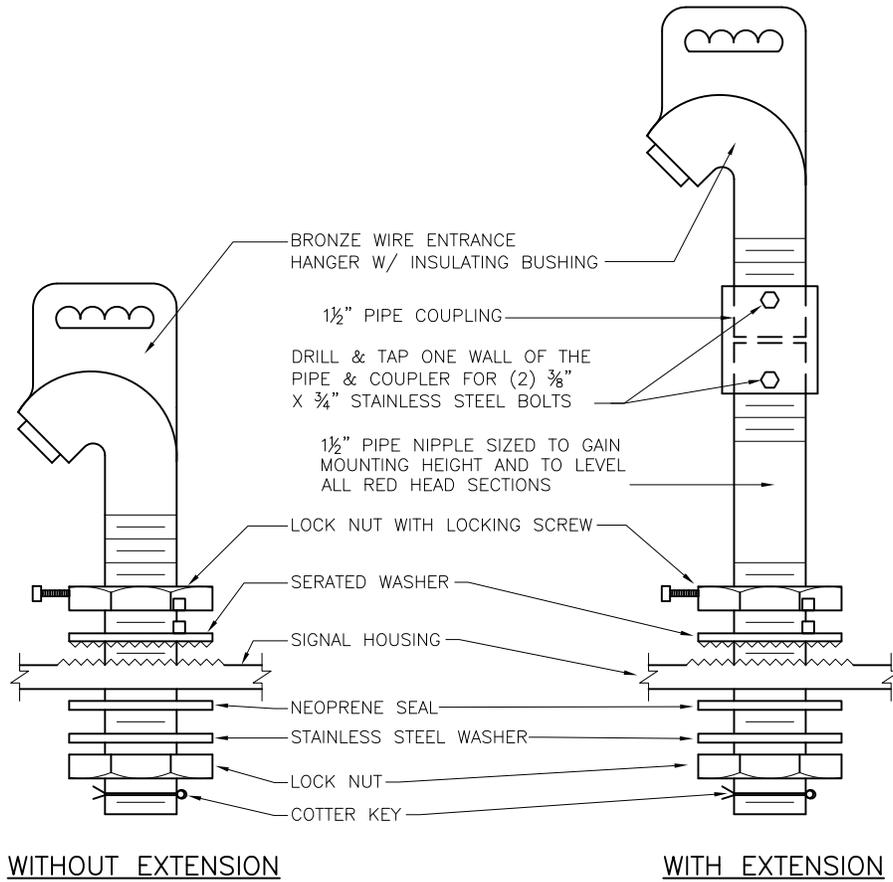
REF STD SPEC SEC 8-31



City of Seattle

NOT TO SCALE

VEHICULAR SIGNAL MOUNTING



SUSPENDED SIGNAL MOUNTING DETAIL

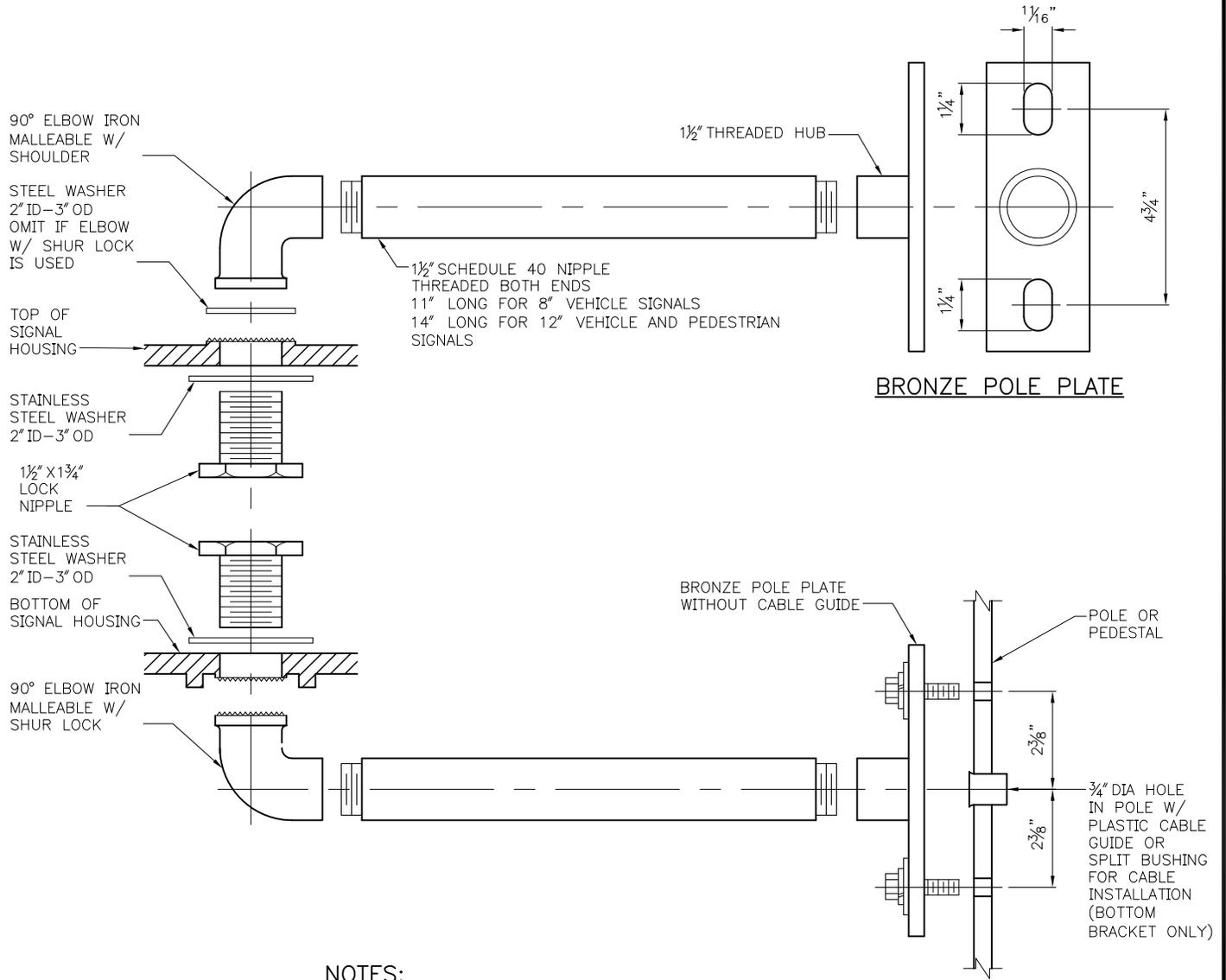
REF STD SPEC SEC 8-31



City of Seattle

NOT TO SCALE

VEHICULAR SIGNAL MOUNTING



NOTES:

1. 3/8"x1 1/2" BOLT, 3/8" LOCK WASHER, 7/16"x1 3/8" WASHER 4 OF EACH REQUIRED PER ASSEMBLY; ALL STAINLESS STEEL.
2. MOUNTING SHALL 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 OR MADE WITH CONCRETE USE 3/8"x2 1/2" MIN STUD BOLT ANCHORS, SLEEVE TYPE.
 - ON WOOD POLES USE 1 1/2"x2 1/2" LAG BOLTS.

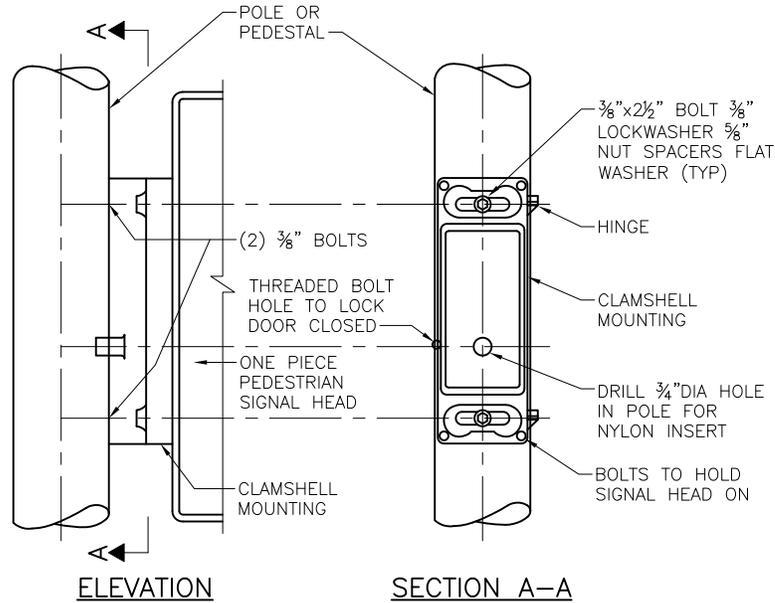
REF STD SPEC SEC 8-31



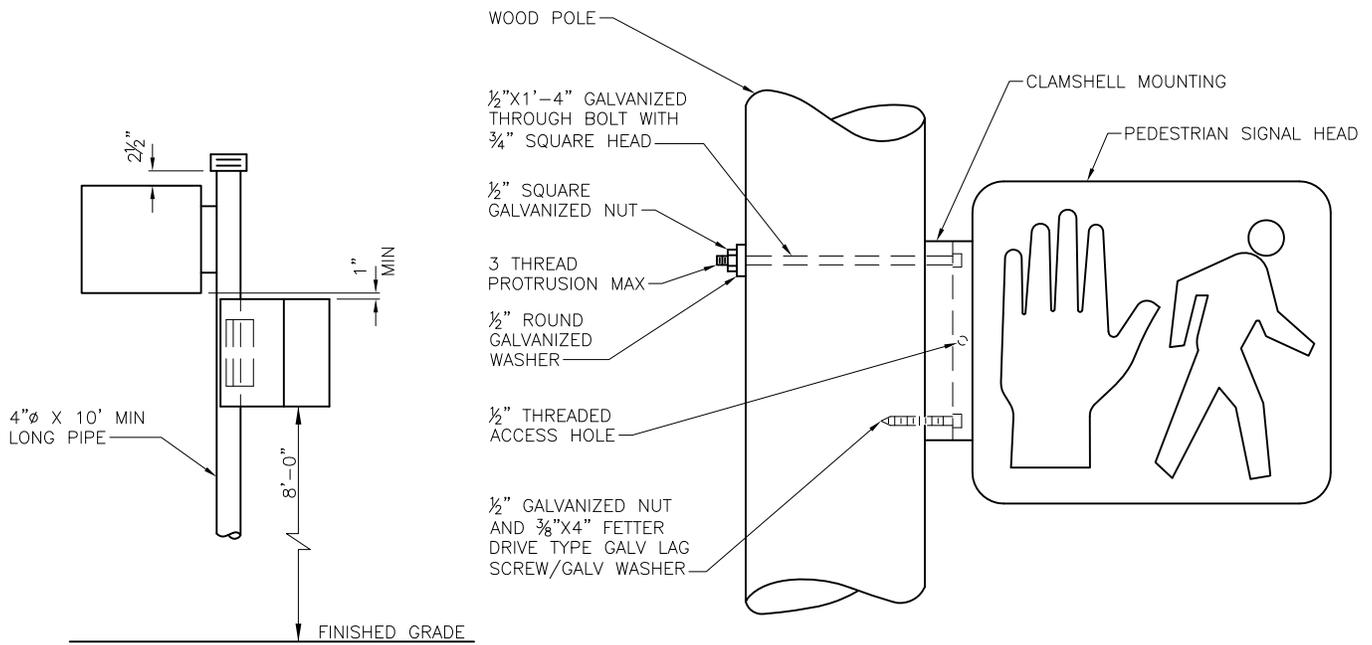
City of Seattle

NOT TO SCALE

SIGNAL HEAD BRACKET ASSEMBLY



METAL POLE MOUNT



PEDESTAL MOUNT

WOOD POLE MOUNT

NOTES:

1. BOLT AND WASHERS SHALL BE STAINLESS STEEL PER ASTM A 563 DH AND ASTM F 436
2. MOUNTING SHALL 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

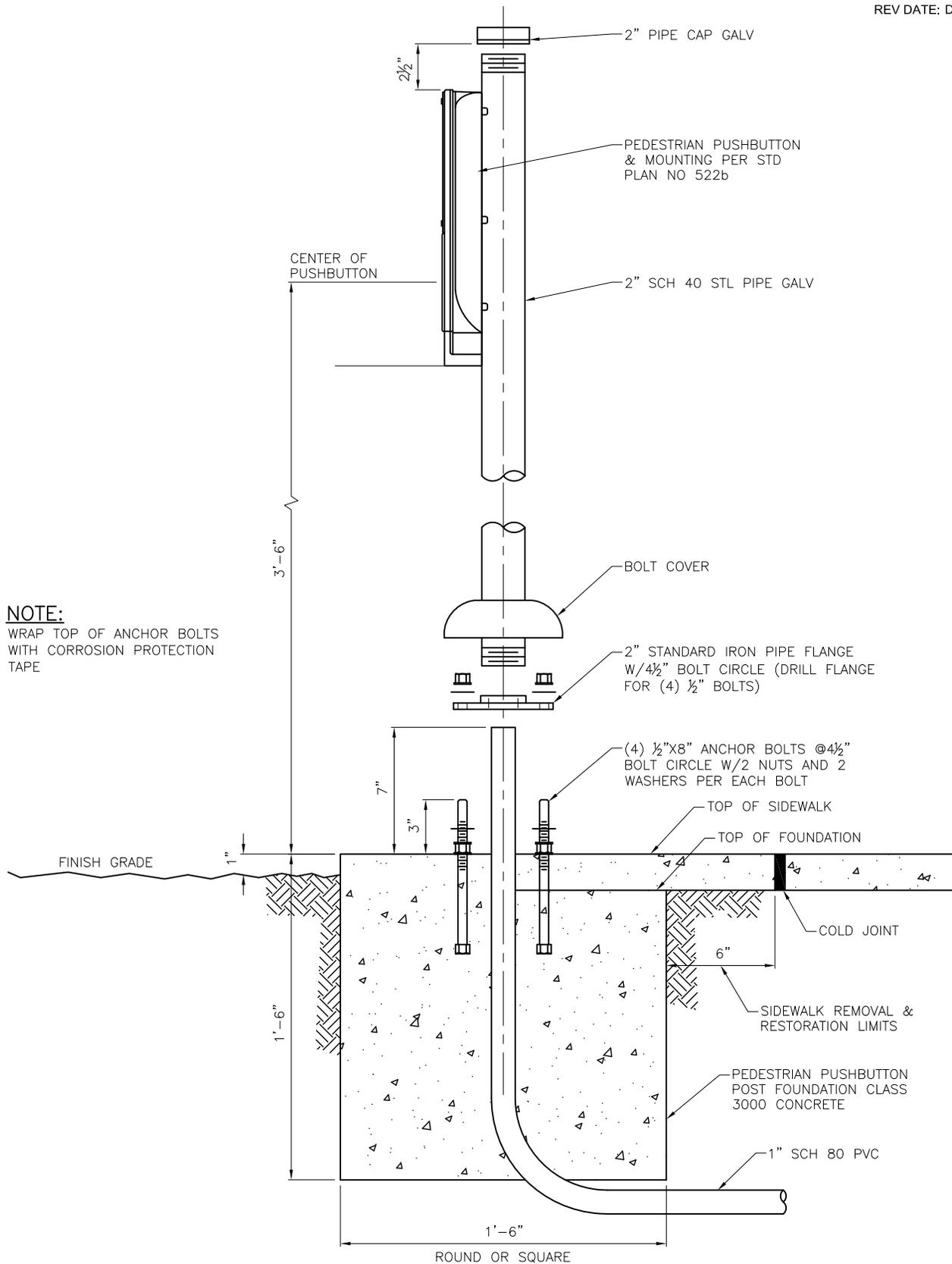
REF STD SPEC SEC 8-31



City of Seattle

NOT TO SCALE

PEDESTRIAN SIGNAL
CLAMSHELL MOUNTING



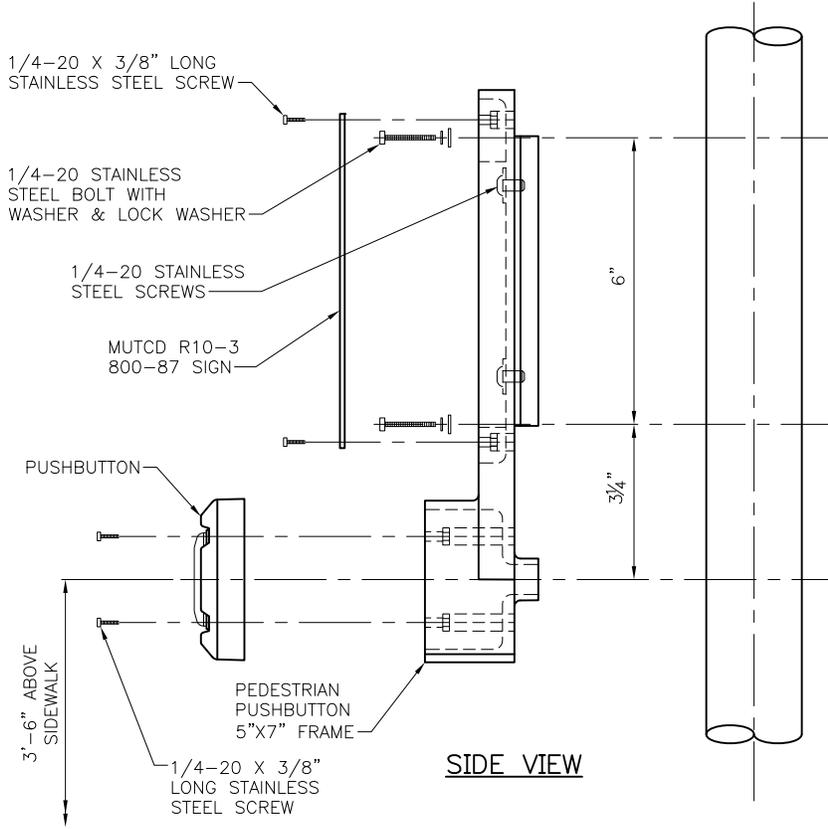
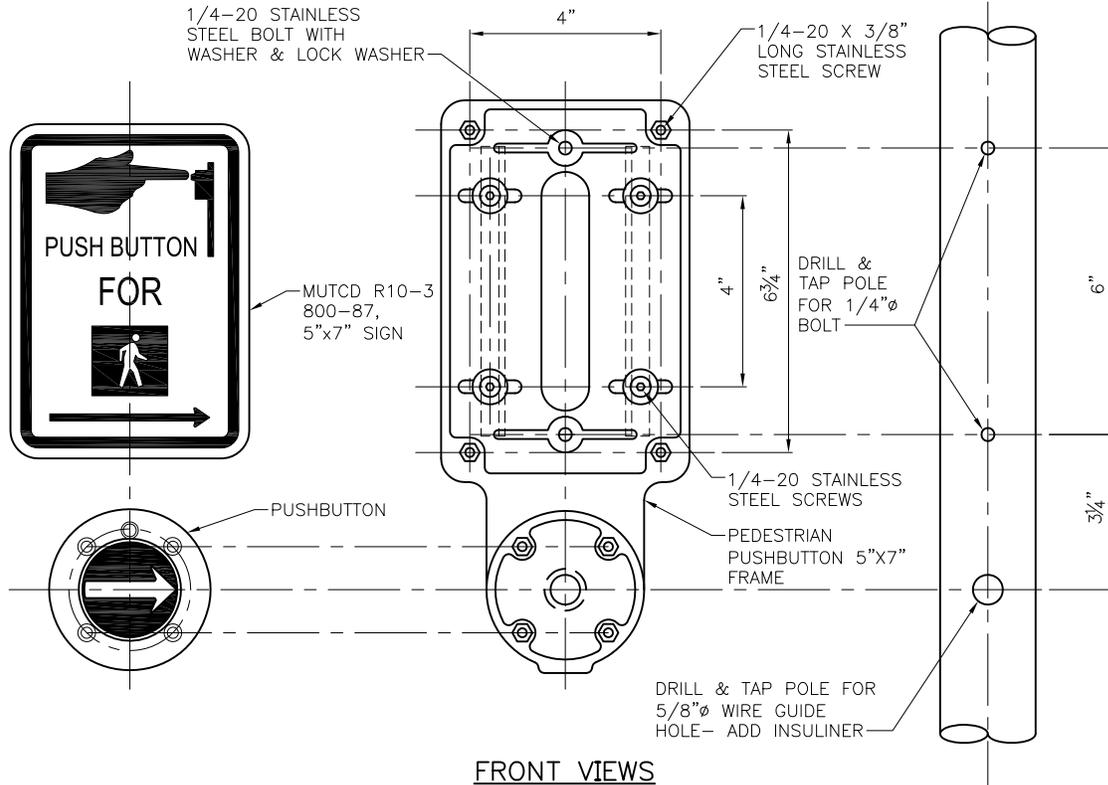
REF STD SPEC SEC 8-31 & 8-32



City of Seattle

NOT TO SCALE

PEDESTRIAN PUSHBUTTON
POST & FOUNDATION



NOTES:

1. PUSHBUTTON SHALL HAVE DIRECTIONAL ARROW AS SPECIFIED ON THE PLANS.
2. INSTALLATION OF TWO PEDESTRIAN PUSHBUTTON ASSEMBLIES SHALL REQUIRE A MOUNTING ADAPTER.

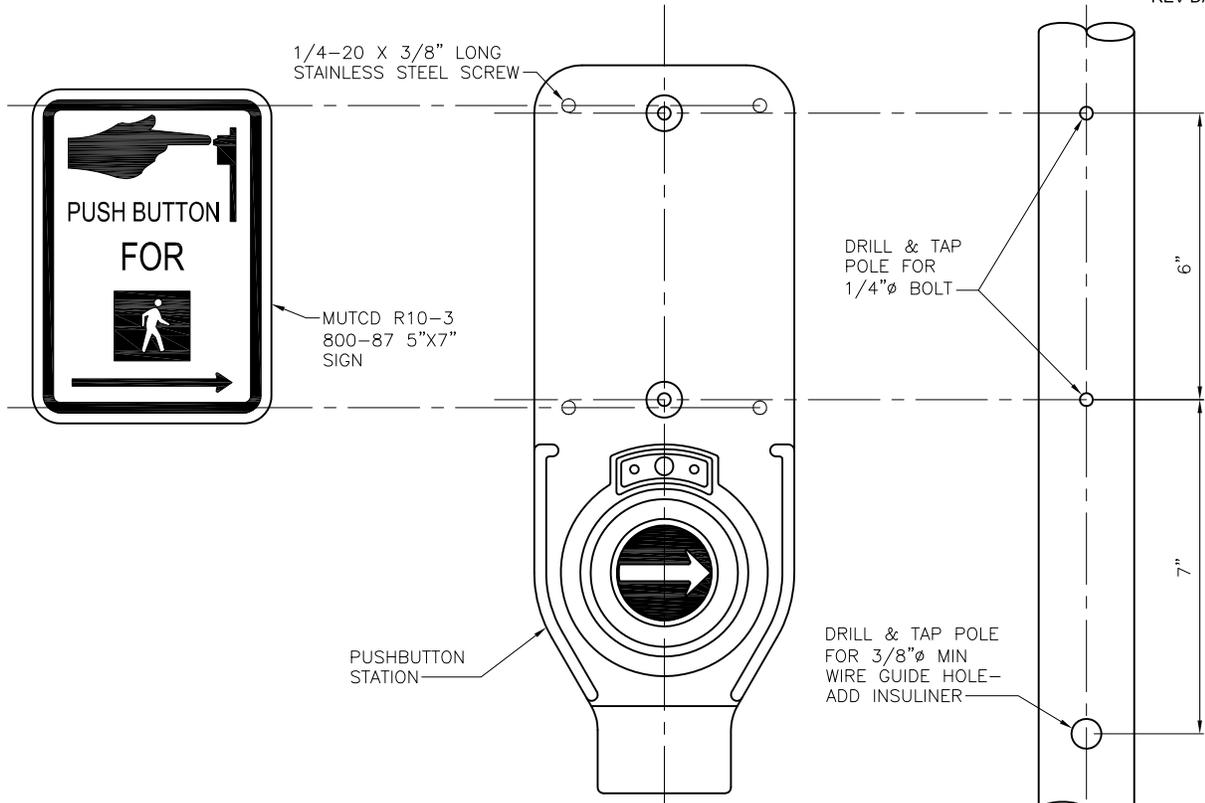
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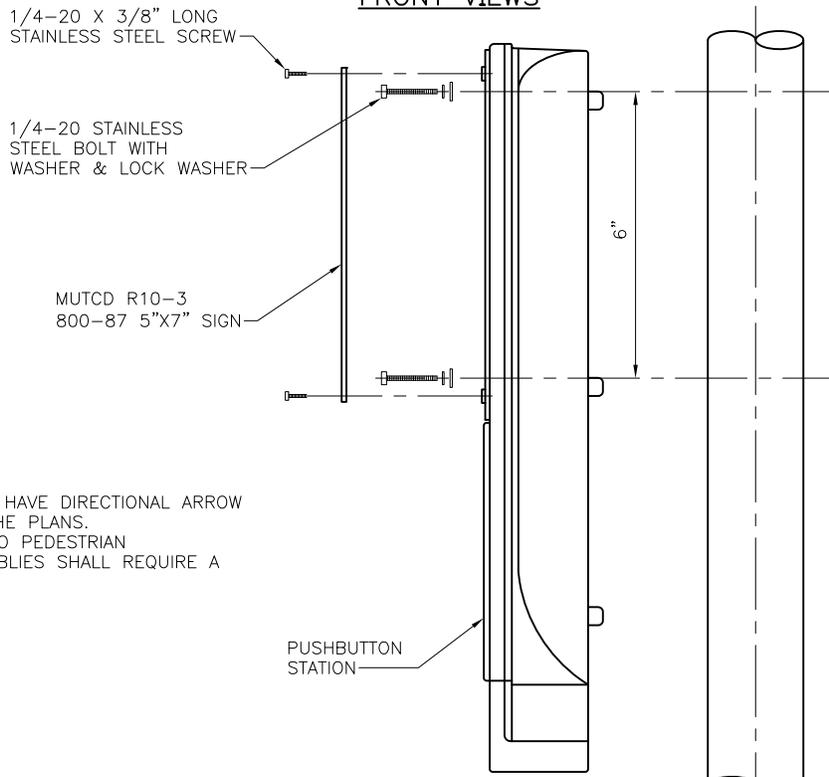
City of Seattle

NOT TO SCALE

PEDESTRIAN PUSHBUTTON ASSEMBLY



FRONT VIEWS



SIDE VIEW

NOTES:

1. PUSHBUTTON SHALL HAVE DIRECTIONAL ARROW AS SPECIFIED ON THE PLANS.
2. INSTALLATION OF TWO PEDESTRIAN PUSHBUTTON ASSEMBLIES SHALL REQUIRE A MOUNTING ADAPTER.

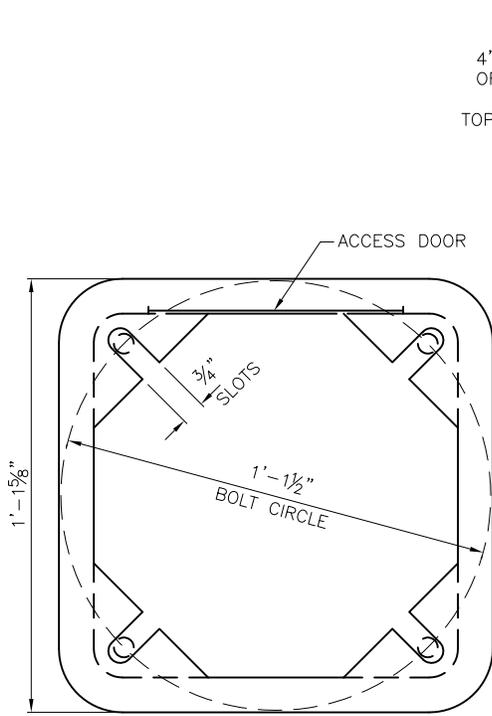
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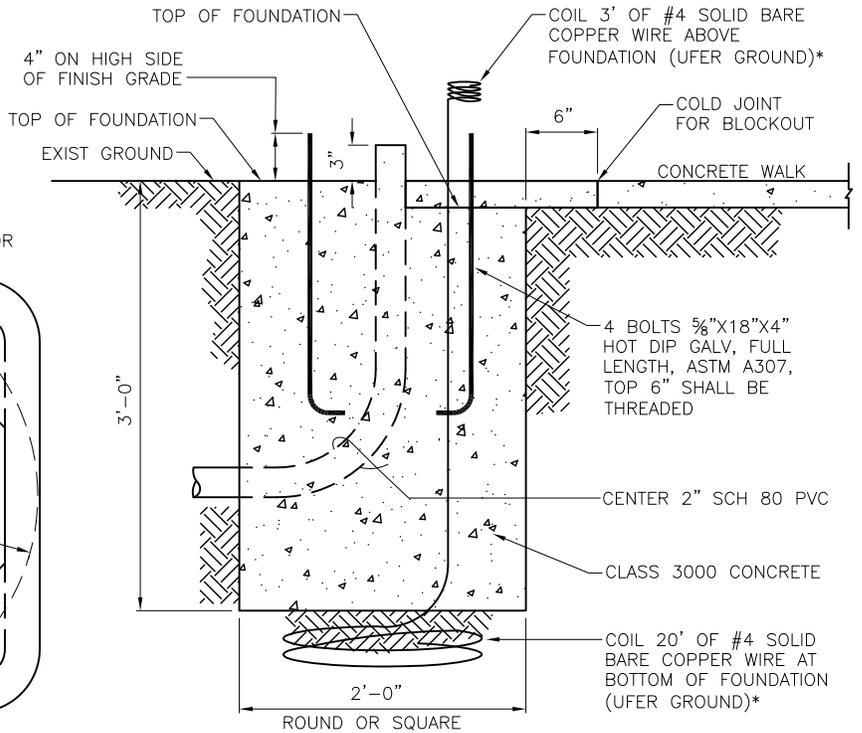
City of Seattle

NOT TO SCALE

**ACCESSIBLE PEDESTRIAN
PUSHBUTTON STATION**

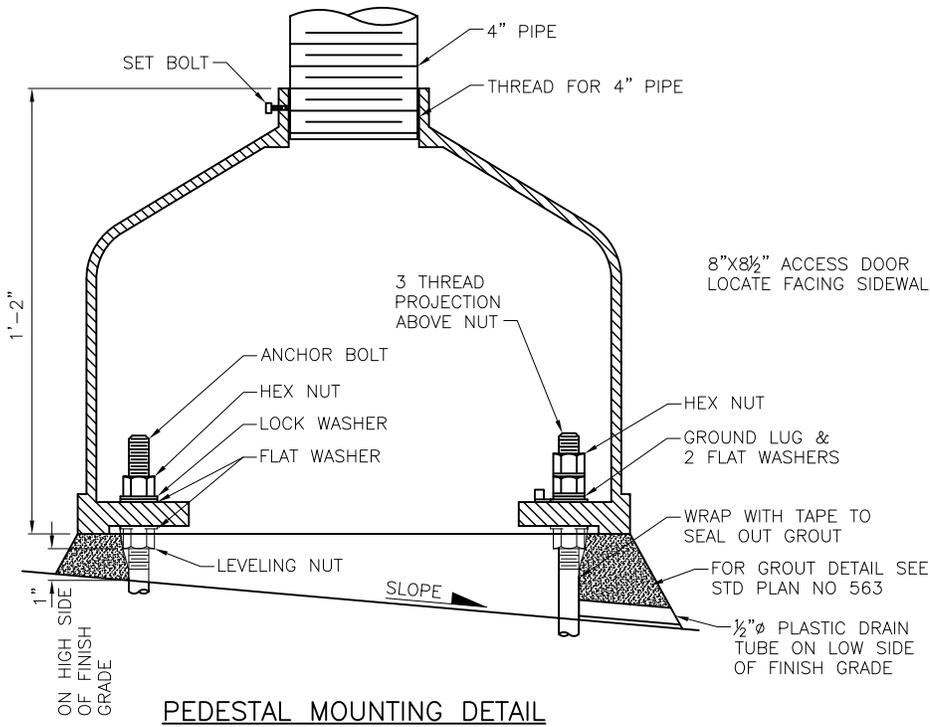


BOTTOM VIEW

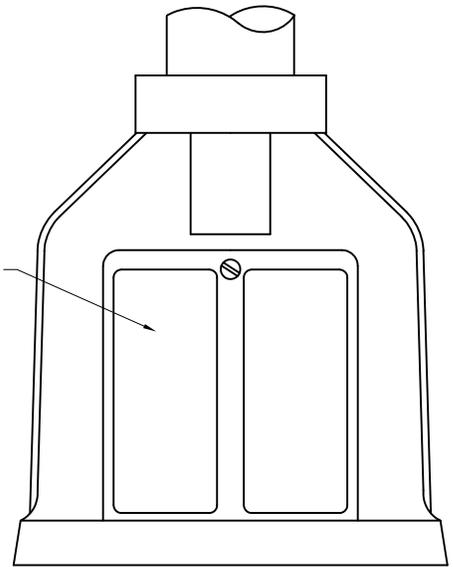


PEDESTAL FOUNDATION

*UFER GROUND ONLY INSTALLED ON LIGHT POLE FOUNDATIONS



PEDESTAL MOUNTING DETAIL



SQUARE BASE PEDESTAL

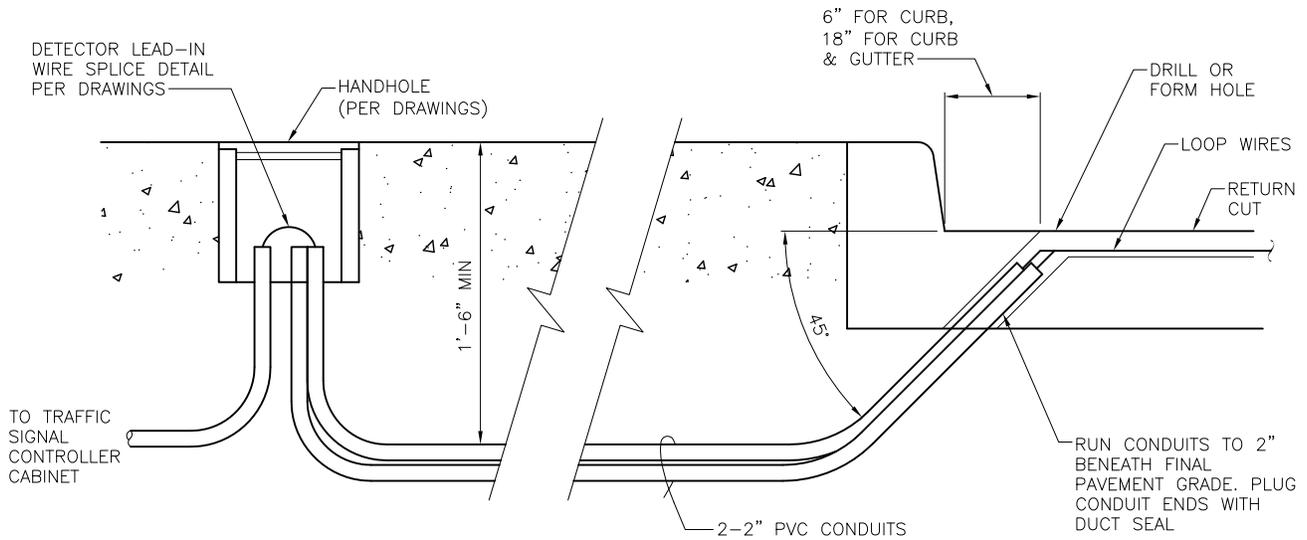
REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

PEDESTAL & FOUNDATION



CURB/PAVEMENT ENTRANCE FOR DETECTOR LOOP WIRES

NOTES:

1. SHARP EDGE TOOLS SHALL NOT BE USED IN PLACING CONDUCTORS IN SAW CUTS
2. EACH PAIR OF LOOP WIRES IN THE RETURN CUT SHALL BE TWISTED A MINIMUM OF 3 TURNS PER FOOT AND MAY SHARE COMMON RETURN CUTS WITH OTHER TWISTED PAIRS
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

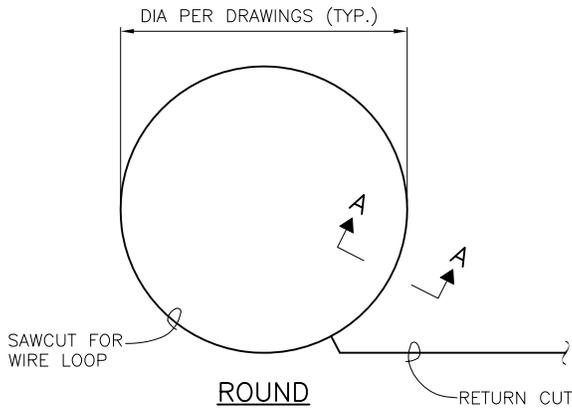
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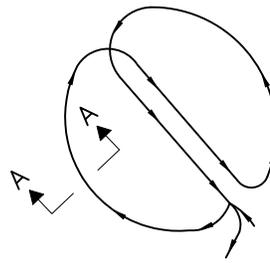
City of Seattle

NOT TO SCALE

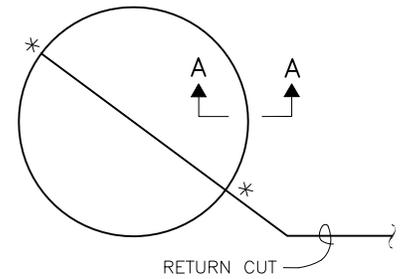
LOOP DETECTORS



DIPOLE LOOP DETECTOR

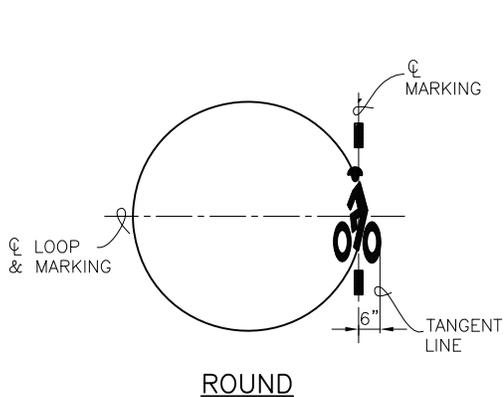


WINDING
DETAIL



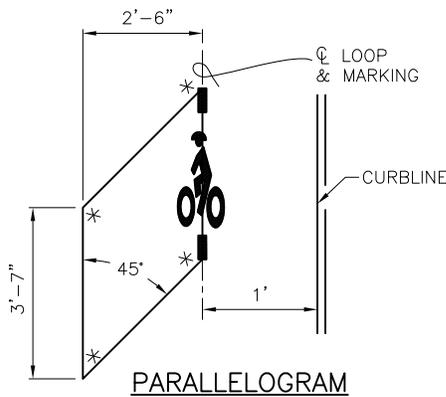
ROUND

QUADRIPOLE LOOP DETECTOR



ROUND

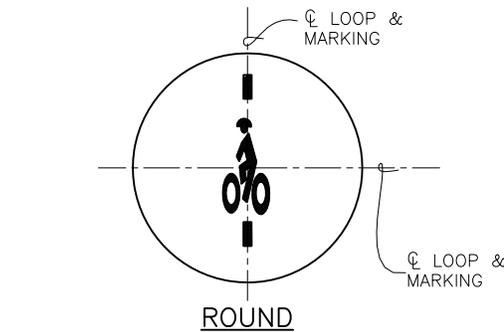
BICYCLE DIPOLE



PARALLELOGRAM

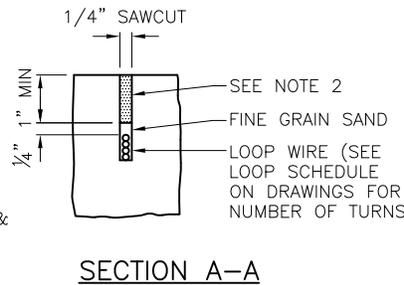
***NOTE:**

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

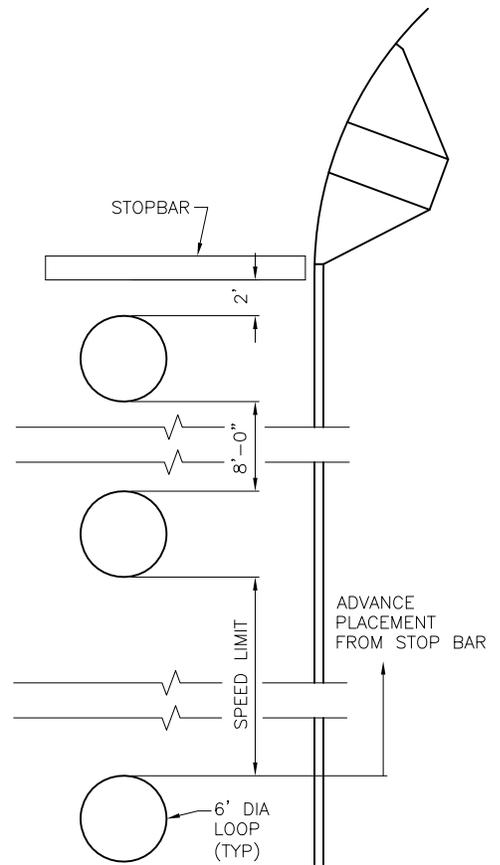


ROUND

BICYCLE QUADRIPOLE



SECTION A-A



STANDARD LOOP SPACING

NOTES:

1. SEE STD PLAN NO. 725 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

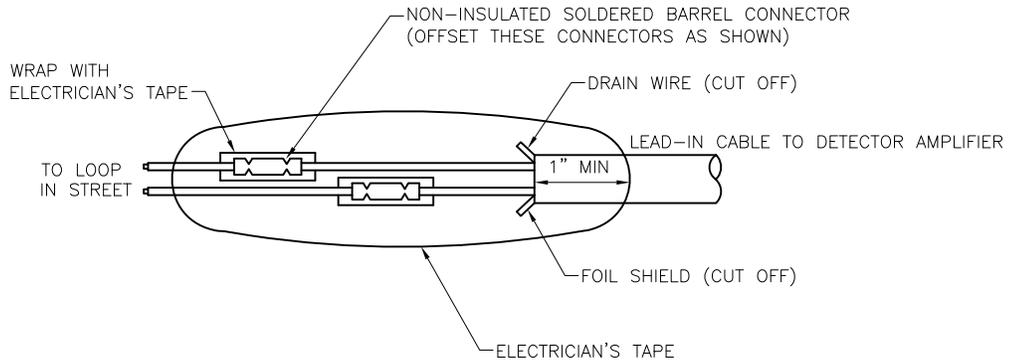
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City of Seattle

NOT TO SCALE

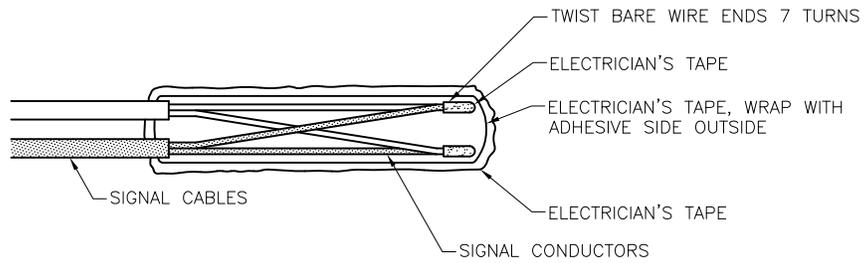
**BICYCLE DETECTOR PAVEMENT
MARKING LOCATIONS
ON DETECTOR LOOPS**



DETECTOR LEAD-IN WIRE SPLICE DETAIL

NOTE:

SOLDER CONNECTION AFTER CRIMPING



SIGNAL CABLE SPLICE

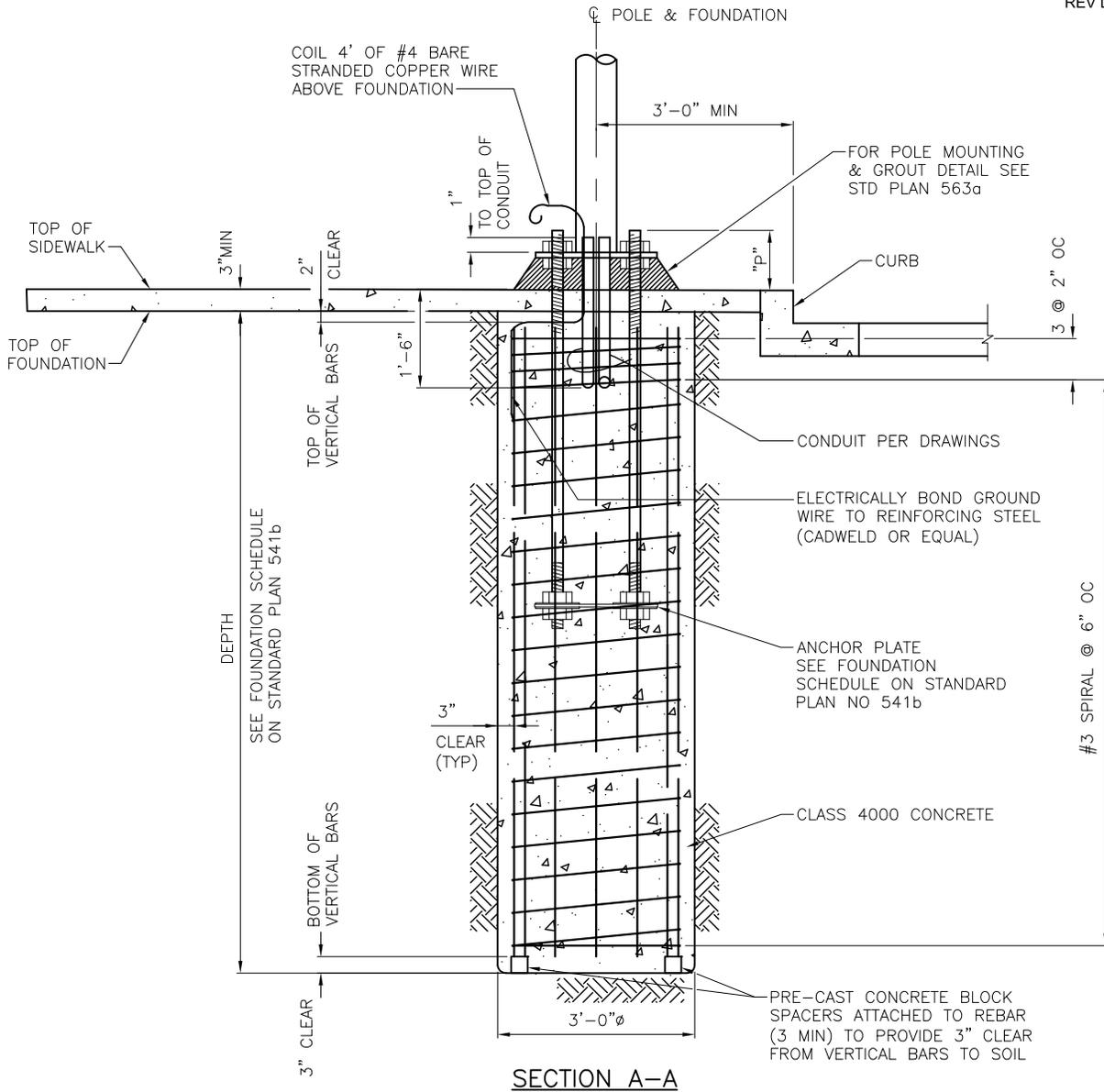
REF STD SPEC SEC 8-31



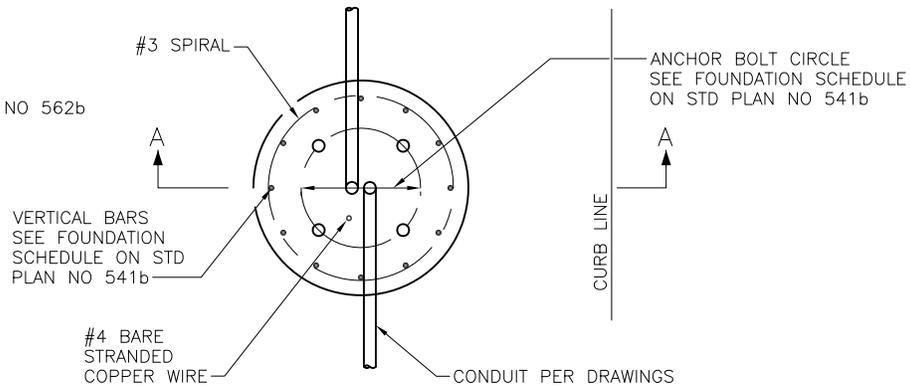
City of Seattle

NOT TO SCALE

**DETECTOR LOOP WIRE &
SIGNAL CABLE SPLICE**



NOTE:
FOR STEEL MAST ARM POLE FOUNDATION SEE STD PLAN NO 562b



PLAN VIEW
STRAIN POLE FOUNDATION IN SIDEWALK

REF STD SPEC SEC 8-32, 6-02

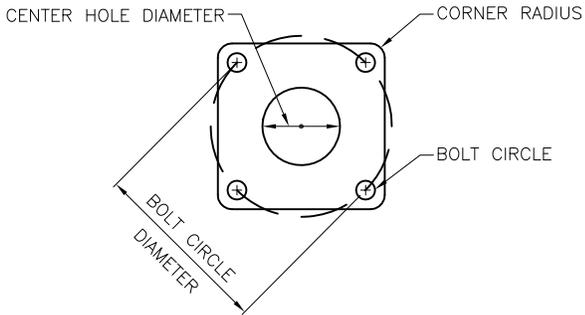


City of Seattle

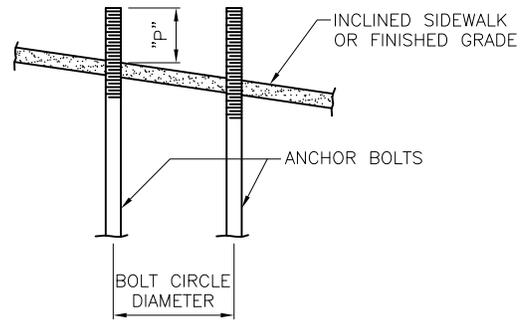
NOT TO SCALE

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

FOUNDATION SCHEDULE										
POLE TYPE	PROJECTION	VERTICAL REINFORCING	DEPTH (LATERAL BEARING)		ANCHOR BOLTS (TOTAL 4 PER POLE)	ANCHOR PLATE DIMENSIONS				
	P		100#/SF/FT	150#/SF/FT		SIZE	BOLT CIRCLE DIA	BOLT HOLE	CENTER HOLE	CORNER RADIUS
T	7½"	10 #8	8'-0"	7'-6"	1½" DIA X 60"	¾" X 16" X 16"	14½"	1½"	10"	1½"
V	9"	10 #8	9'-6"	8'-6"	1¾" DIA X 72"	¾" X 16" X 16"	18"	1½"	12½"	1½"
X	10"	12 #8	12'-6"	10'-6"	2" DIA X 72"	¾" X 18" X 18"	20"	2½"	14"	2"
Z	11½"	12 #8	15'-0"	13'-0"	2½" DIA X 72"	½" X 20" X 20"	22"	2½"	15"	2¼"



ANCHOR PLATE



INCLINED CONDITION

NOTES:

1. CONCRETE STRENGTH SHALL BE CLASS 4000, 3/4" MAX SIZE COARSE AGGREGATE.
2. ANCHOR BOLTS FOR TYPE V,X,Z: ASTM F1554-99, GRADE 105, CLASS 2A INCLUDING SUPPLEMENTARY REQUIREMENTS S2, S3 AND S5. ANCHOR BOLTS FOR TYPE T: ASTM F 1554 FY=55 KSI MIN. NUTS: ASTM A563 HEAVY HEX GRADE DH. HARDENED STEEL WASHERS: ASTM F436.
3. ANCHOR PLATE: ASTM A36. HOT DIP GALVANIZED.
4. ALL REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM CLASS A706, GRADE 60.
5. ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED ASTM A153 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.

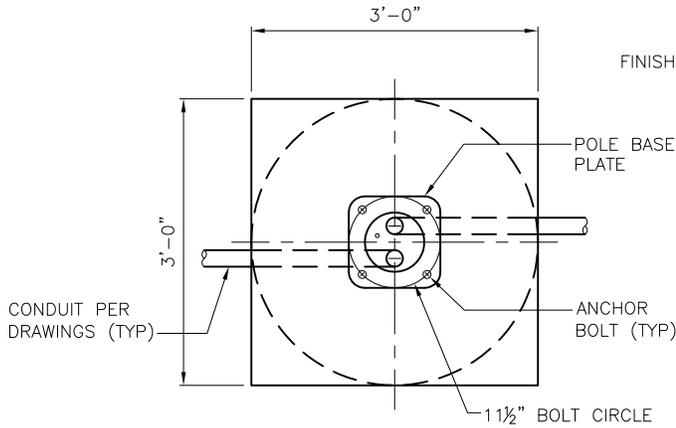
REF STD SPEC SEC 8-32



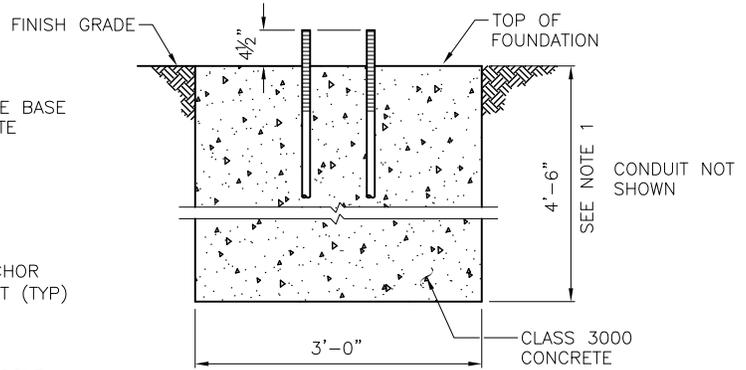
City of Seattle

NOT TO SCALE

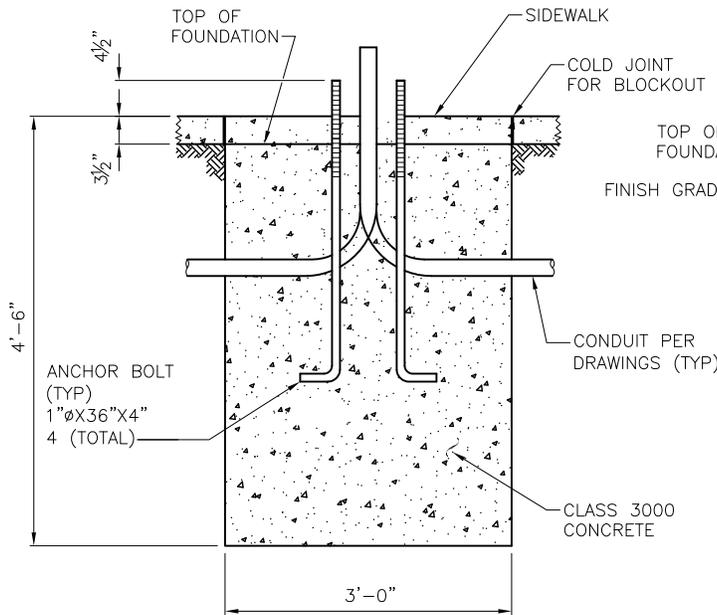
**STRAIN POLE FOUNDATION
SCHEDULE & NOTES
(TYPE T, V, X & Z)**



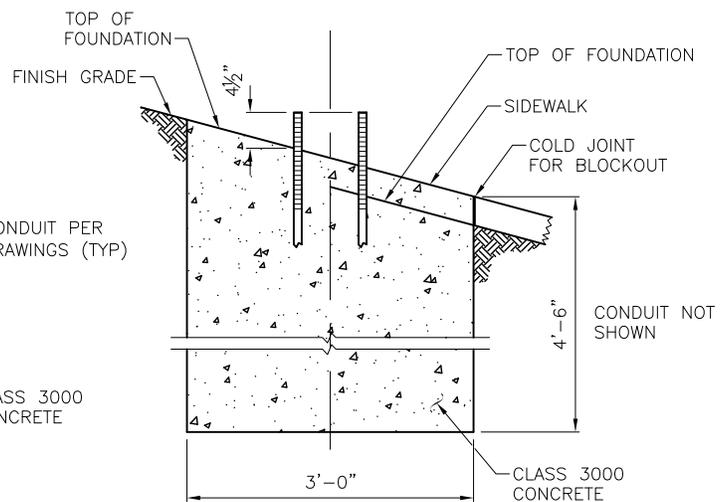
PLAN



IN EARTH



IN SIDEWALK



ON AN INCLINE

NOTES:

1. BOLT CIRCLE: 1 1/2" TYP
2. SEE STD PLAN NO 563a FOR POLE MOUNTING AND GROUT DETAIL
3. ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED (ASTM A153) FULL LENGTH AND FABRICATED FROM ASTM F1554 OR A576 WITH 12" THREADS ON TOP
4. INSTALL UFER GROUND IN FOUNDATION (SEE STD PLAN NO 524a)

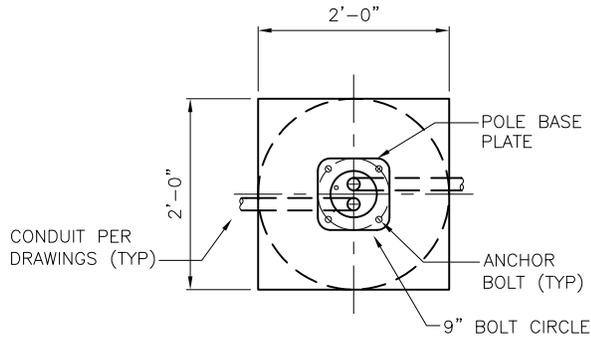
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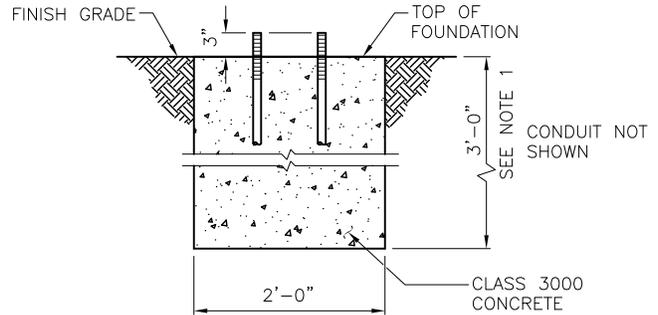
City of Seattle

NOT TO SCALE

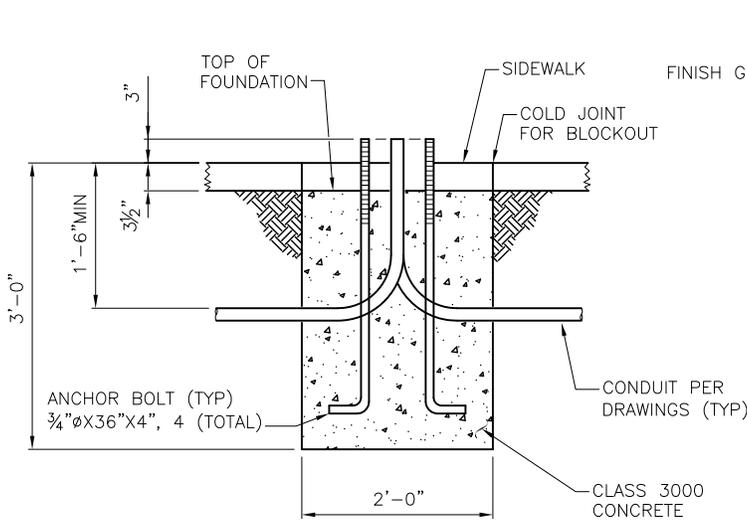
STREET LIGHT
POLE FOUNDATIONS



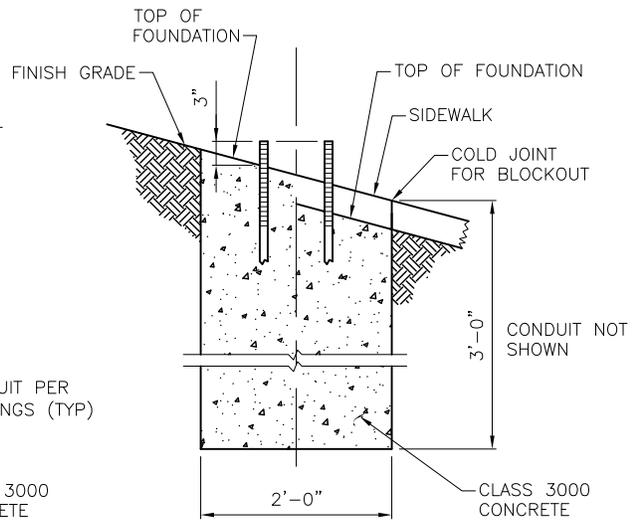
PLAN



IN EARTH



IN SIDEWALK



ON AN INCLINE

NOTES:

1. BOLT CIRCLE: 9" TYP
2. SEE STD PLAN NO 563a FOR POLE MOUNTING AND GROUT DETAIL
3. ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED (ASTM A153) FULL LENGTH AND FABRICATED FROM ASTM F1554 OR A576 WITH 12" THREADS ON TOP
4. SEE SCL MATERIAL STANDARD 5756.09 FOR POLES

REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

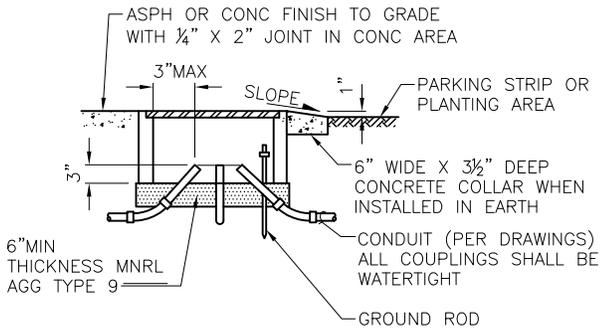
PEDESTRIAN STREET LIGHT POLE FOUNDATIONS

NOTES:

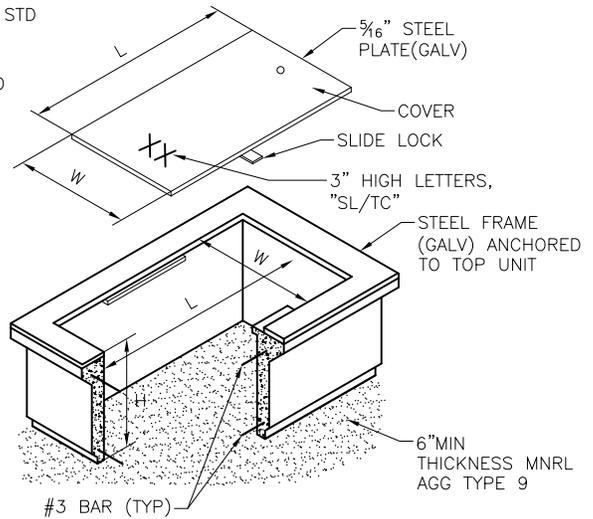
1. THE COVER SHALL HAVE 1/16" TO 1/8" CLEARANCE ON EACH EDGE WITHIN THE FRAME AFTER GALVANIZING.
2. THE GROUND ROD SHALL EXTEND 4" ABOVE THE BOTTOM OF THE HANDHOLE OR MINERAL AGGREGATE.
3. TYPE 1, 2, 3, 5 & 6 HANDHOLE COVERS SHALL HAVE "TC" AND/OR "SL" ON THEM, AS APPROPRIATE.
4. TYPE 4 HANDHOLE SHALL 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 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 SHALL 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.
7. ALL HANDHOLE COVERS AND FRAMES SHALL HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)
8. ALL HANDHOLES SHALL HAVE A LOAD RATING OF H20.
9. GROUND ROD REQUIRED IN ALL STREETLIGHT HANDHOLES PER SCL CONSTR STD 1710.50

HANDHOLE SCHEDULE

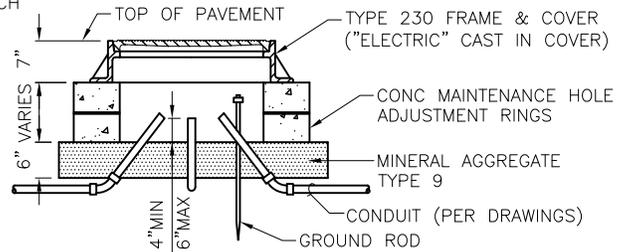
HANDHOLE TYPE	TOP UNIT INSIDE DIMENSION			EXTENSION UNIT(E)	COVER DIMENSIONS	
	L	W	H	H	L	W
1	19"	14"	12"	12"	18"	13"
2	28"	17"	12"	12"	26 1/2"	17"
3	36"	24"	12"	12"	35"	24"
4	24"Ø	VAR	NA	NA	NA	NA
5	36"	24"	32"	NA	35"	24"
6	42"	42"	38 1/2"	NA	33 1/2"	33 3/4"
GRHH	8"Ø			NA		



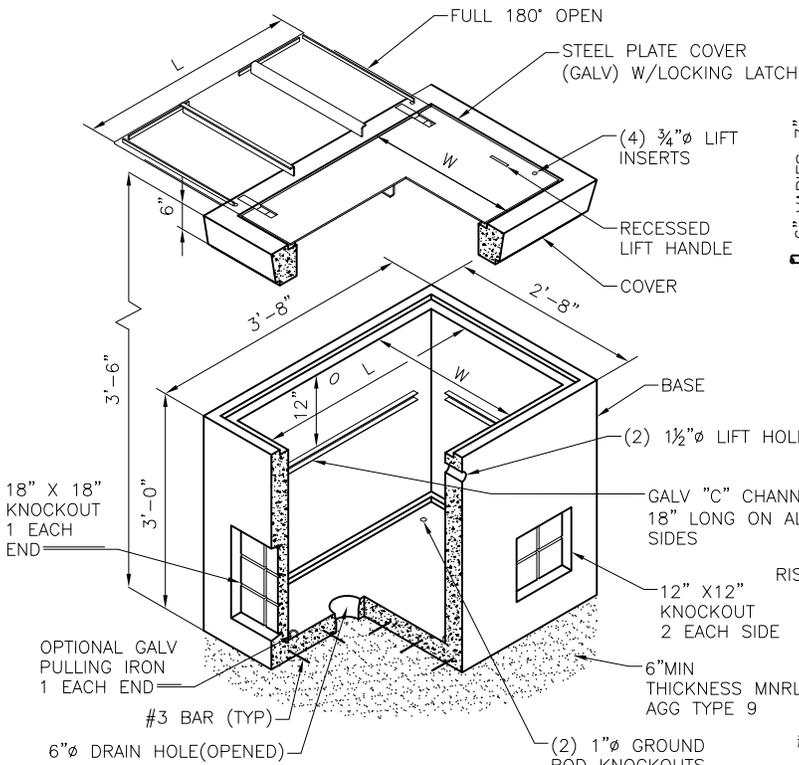
HANDHOLE INSTALLATION DETAIL



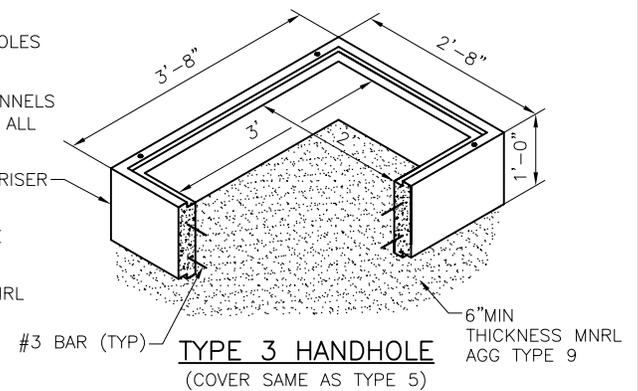
TYPE 1 & 2 HANDHOLE



TYPE 4 HANDHOLE
TRAFFIC BEARING



TYPE 5 HANDHOLE



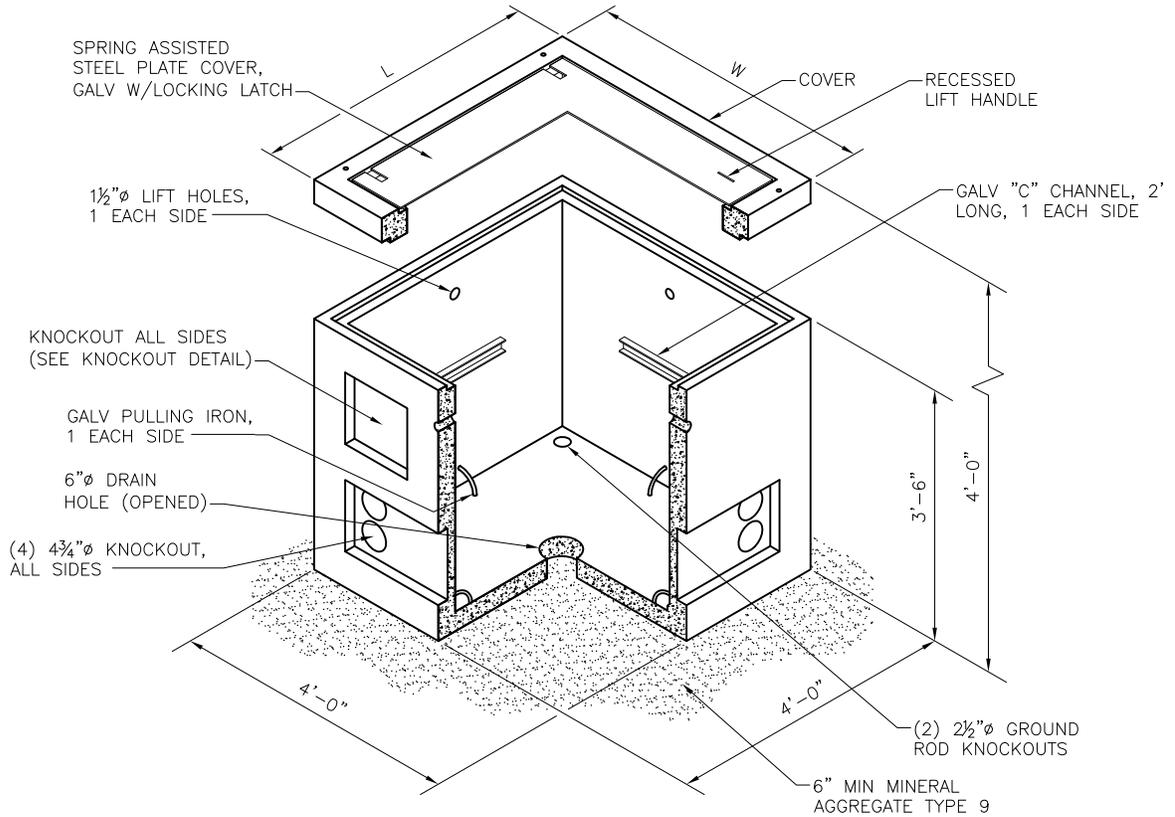
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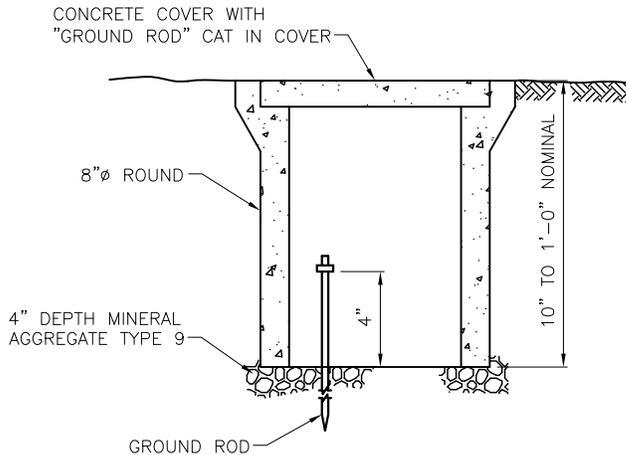
City of Seattle

NOT TO SCALE

HANDHOLES



TYPE 6 HANDHOLE



GROUND ROD HANDHOLE (GRHH)

NOTES:

1. ALL HANDHOLES SHALL HAVE A H2O LOAD RATING.
2. ALL HANDHOLE COVERS AND FRAMES SHALL HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)

REF STD SPEC SEC 8-33



City of Seattle

NOT TO SCALE

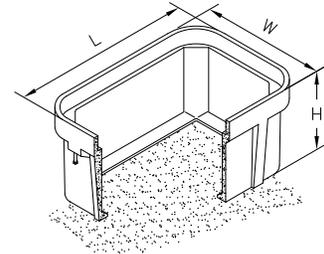
HANDHOLES

NOTES:

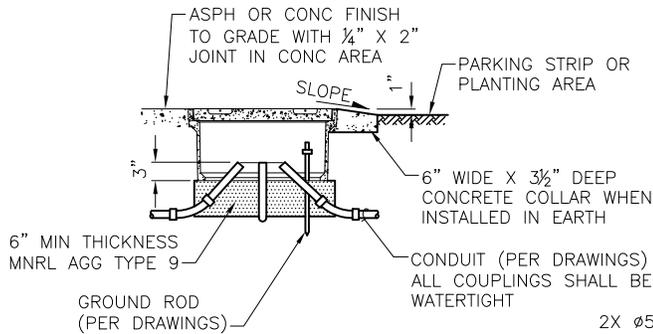
1. ALL NON-DELIBERATE TRAFFIC PULL BOX COVERS MUST COMPLY WITH ALL TEST PROVISIONS OF ANSI/SCTE 77 2010 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY", & MUST MEET THE TIER 15 APPLICATION. MARKING SHOWING THE TIER 15 RATING MUST BE EMBOSSED IN THE TOP SURFACE OF THE COVER.
2. ALL NON-DELIBERATE 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 PROVISION 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 SHALL 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 SHALL READ "TC" AND/OR "SL" UNLESS STATED OTHERWISE BY THE CITY OF SEATTLE.
7. THE GROUND ROD SHALL 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 SHALL 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 SHALL HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)

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"	13"	VAR	NA	NA	NA
5	30"	48"	36"	NA	30"	48"
6	48"	48"	48"	NA	48"	48"
GRHH	8"Ø			NA		



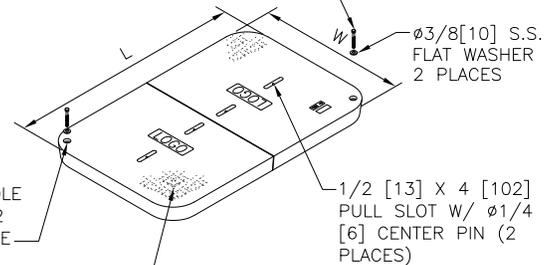
TYPE 3 HANDHOLE
(COVER SAME AS TYPE 5)



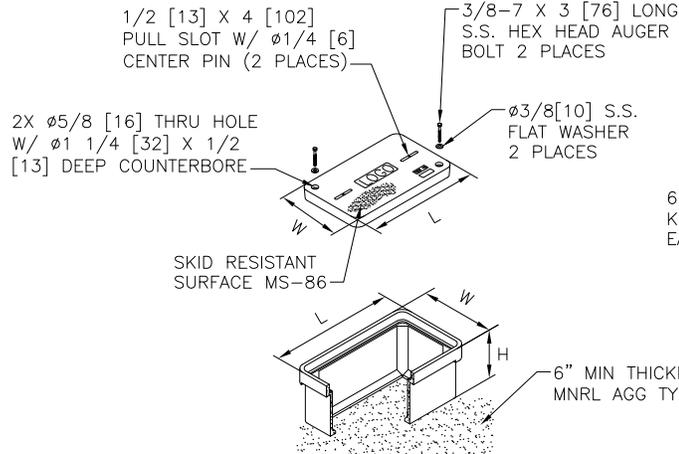
HANDHOLE INSTALLATION DETAIL

2X Ø5/8 [16] THRU HOLE
W/ Ø1 1/4 [32] X 1/2 [13] DEEP COUNTERBORE

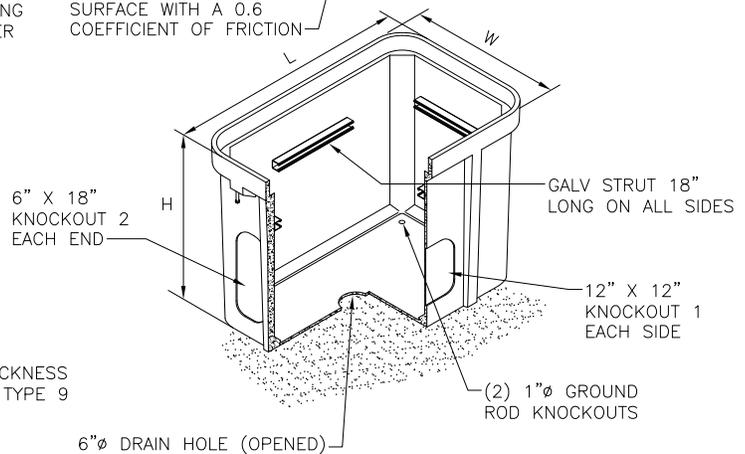
3/8-7 X 4
[102] LONG S.S.
HEX HEAD AUGER
BOLT 2 PLACES



SKID RESISTANT SURFACE WITH A 0.6 COEFFICIENT OF FRICTION



TYPE 1 & 2 HANDHOLE



TYPE 5 HANDHOLE

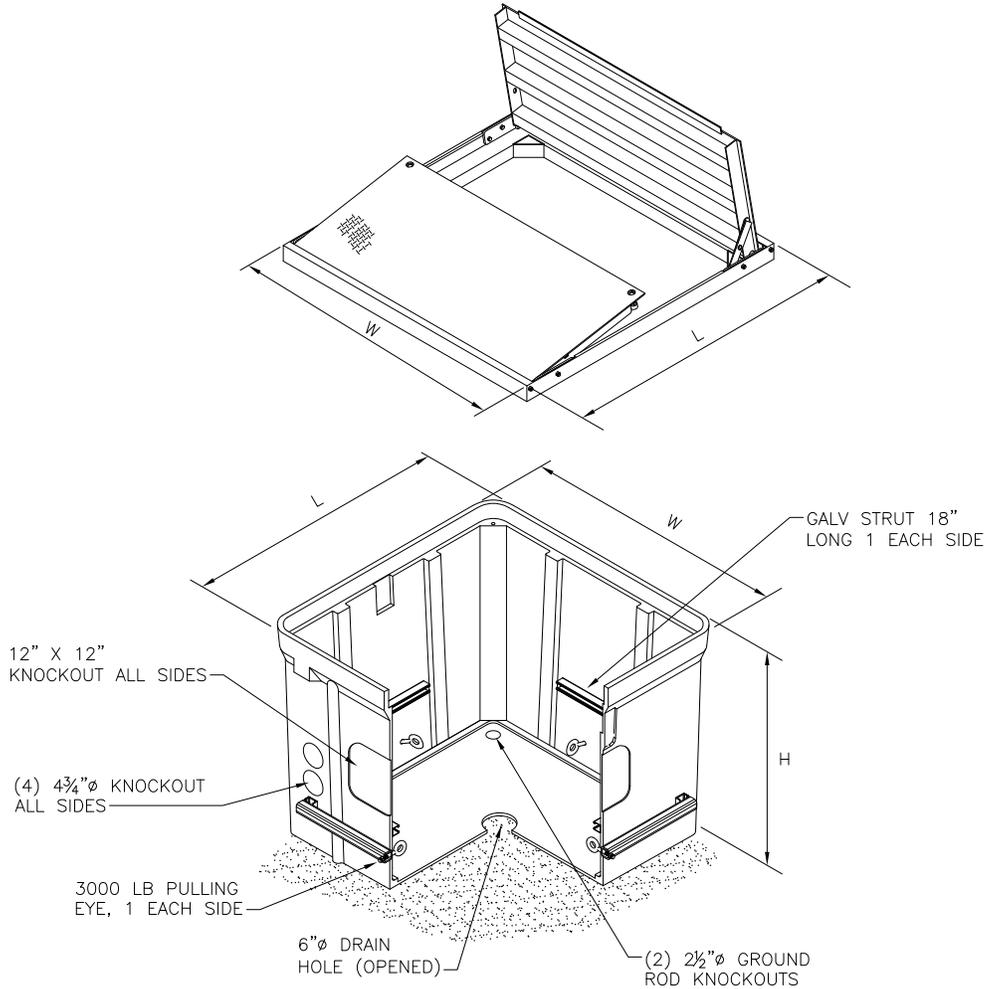
REF STD SPEC SEC 8-33



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 SHALL HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)

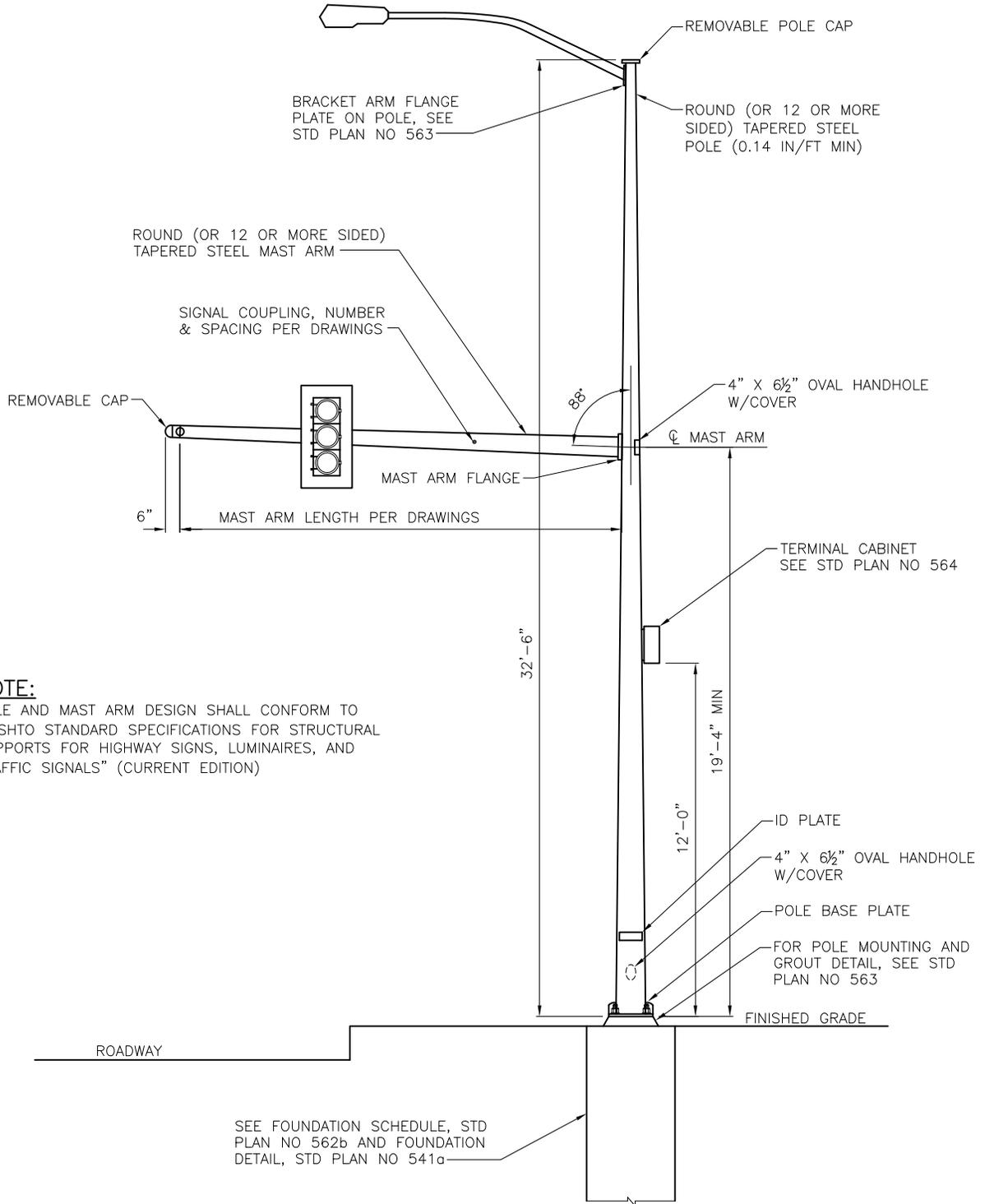
REF STD SPEC SEC 8-33



City of Seattle

NOT TO SCALE

POLYMER CONCRETE
HANDHOLES



NOTE:
 POLE AND MAST ARM DESIGN SHALL CONFORM TO "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS" (CURRENT EDITION)

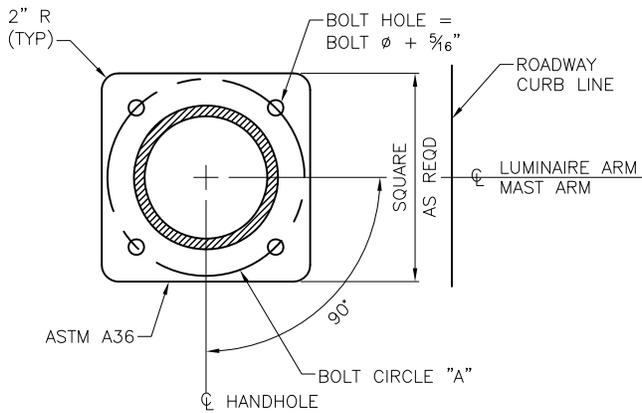
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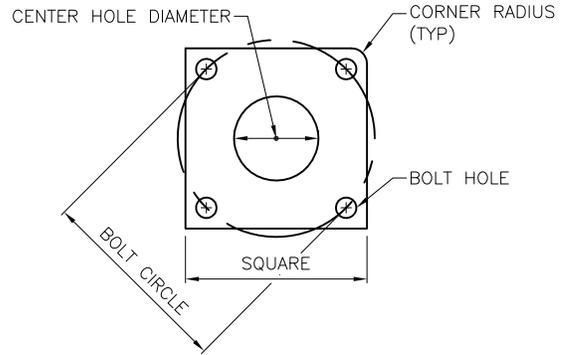
City of Seattle

NOT TO SCALE

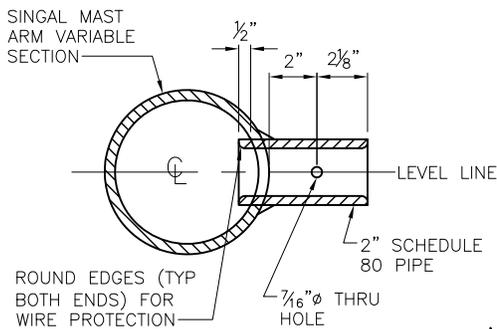
STEEL MAST ARM POLE



POLE BASE PLATE

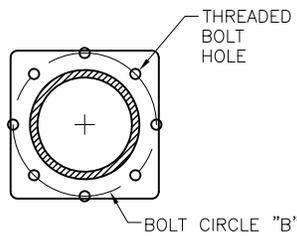


ANCHOR PLATE
PER FOUNDATION SCHEDULE

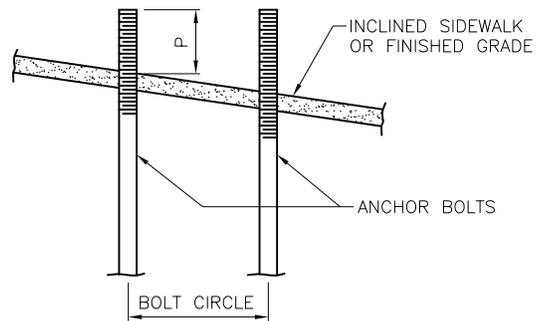


SIGNAL COUPLING

COUPLING TO BE FABRICATED & INSTALLED BEFORE GALVANIZING



MAST ARM FLANGE



INCLINED CONDITION

MAST ARM SCHEDULE		POLE SCHEDULE			
MAST ARM LENGTH	FLANGE PLATE		POLE BASE PLATE		
	BOLT CIRCLE "B"	THREADED BOLT DIA	SQUARE	BOLT CIRCLE "A"	BOLT HOLE
15'-0" TO 30'-0"	11"	1"-8NC	16" X 16"	14½"	1¾"
31'-0" TO 40'-0"	12"	1¼"-7NC	18" X 18"	16½"	2¼"
41'-0" TO 45'-0"	13½"	1¼"-7NC	18" X 18"	18"	2¼"
46'-0" TO 60'-0"	14"	1½"-6NC	20" X 20"	20"	2½"

POLE FOUNDATION NOTES

1. CONCRETE STRENGTH SHALL BE CLASS 4000 AIR ENTRAINED.
2. ANCHOR BOLTS SHALL HAVE $F_y = 55$ KSI MIN, NUTS: ASTM A563 HEAVY HEX GRADE DH. HARDENED STEEL WASHERS: ASTM F436.
3. BOTTOM ANCHOR PLATE: ASTM A36. HOT DIP GALVANIZED.
4. ALL REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM CLASS A706, GRADE 60.
5. ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED ASTM A153 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.

FOUNDATION SCHEDULE											
MAST ARM LENGTH	FOUNDATION DEPTH (LATERAL BEARING)		ANCHOR BOLTS ($F_y=55$ KSI MIN.)			VERTICAL REINFORCING	ANCHOR PLATE DIMENSIONS				
	150#/SF /FT	100#/SF /FT	PROJECTION	BOLT CIRCLE DIA	SIZE (J HOOK)		SIZE	BOLT CIRCLE DIA	BOLT HOLE	CENTER HOLE	CORNER RADIUS
15'-0" TO 30'-0"	7'-6"	8'-0"	7½"	14½"	1½" X 60"	10 #8	¾" X 16" X 16"	14½"	1½"	10"	1½"
31'-0" TO 40'-0"	8'-6"	9'-6"	9"	16½"	1¾" X 72"	10 #8	¾" X 16" X 16"	16½"	1⅞"	12½"	1½"
41'-0" TO 45'-0"	8'-6"	9'-6"	9"	18"	1¾" X 72"	10 #8	¾" X 16" X 16"	18"	1⅞"	12½"	1½"
46'-0" TO 60'-0"	10'-6"	12'-6"	10"	20"	2" X 72"	12 #8	¾" X 18" X 18"	20"	2⅞"	14"	2"

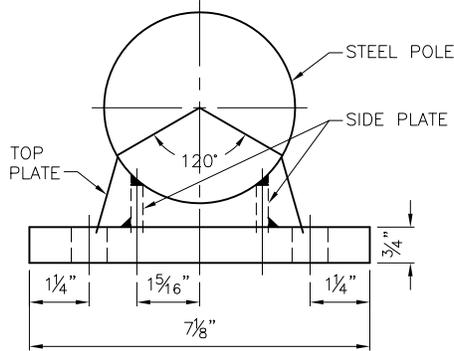
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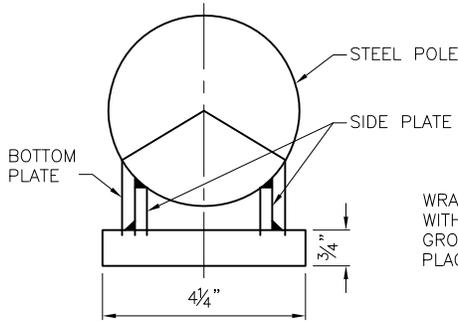
City of Seattle

NOT TO SCALE

**STEEL MAST ARM POLE
FOUNDATION SCHEDULE & DETAIL
W/O METRO TROLLEY LOADS)**

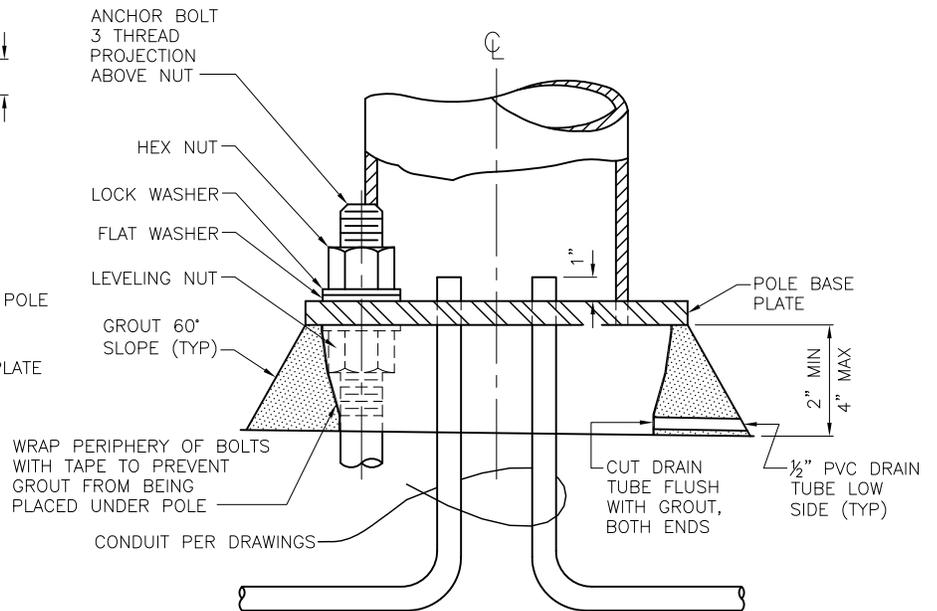


SECTION A-A



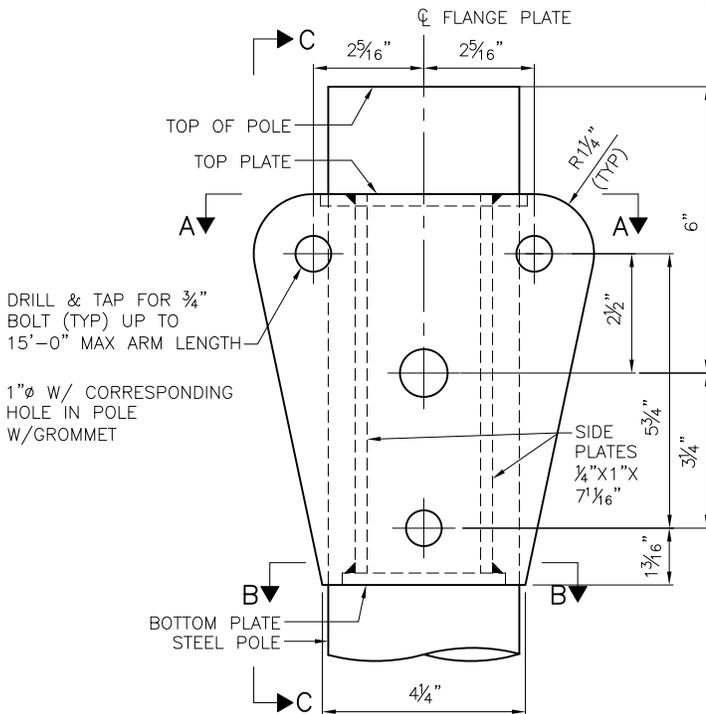
SECTION B-B

NOTE:
GROUT SHALL BE PREMIXED,
NON-SHRINK AND NON-METALLIC

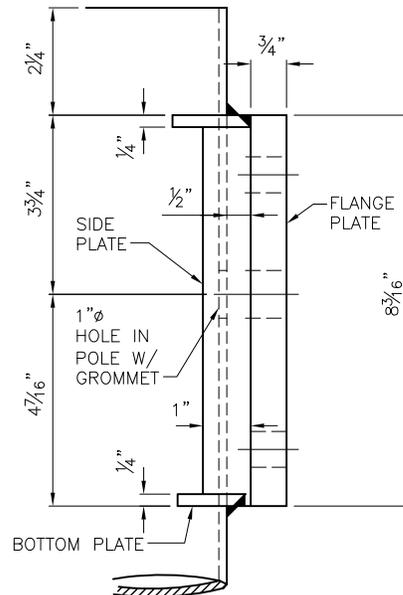


POLE MOUNTING & GROUT DETAIL

(EXCEPT FOR POLES W/CHIEF SEATTLE BASE)



**BRACKET ARM FLANGE
PLATE ON POLE**



SECTION C-C
STRUCTURAL CARBON STEEL PLATES
SHALL BE ASTM A36

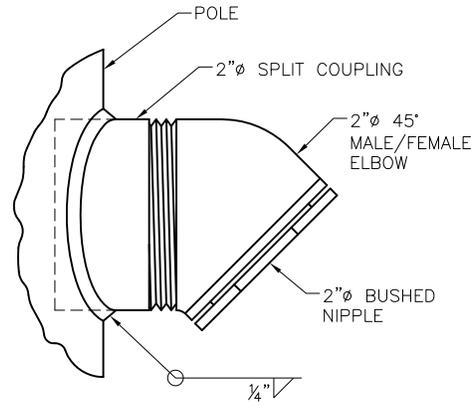
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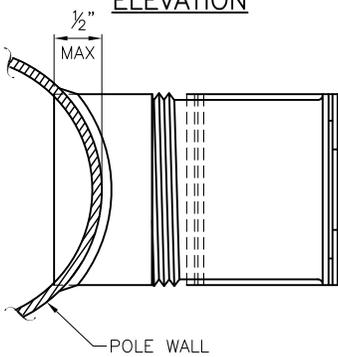
City of Seattle

NOT TO SCALE

**MISCELLANEOUS STEEL
POLE DETAILS**

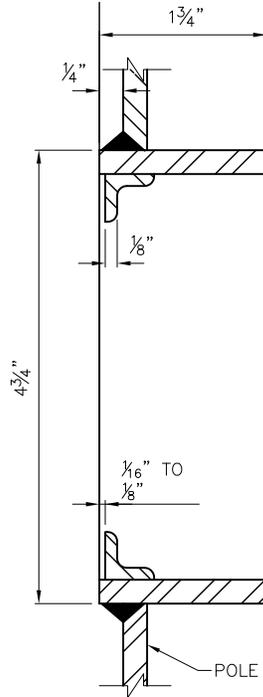


ELEVATION



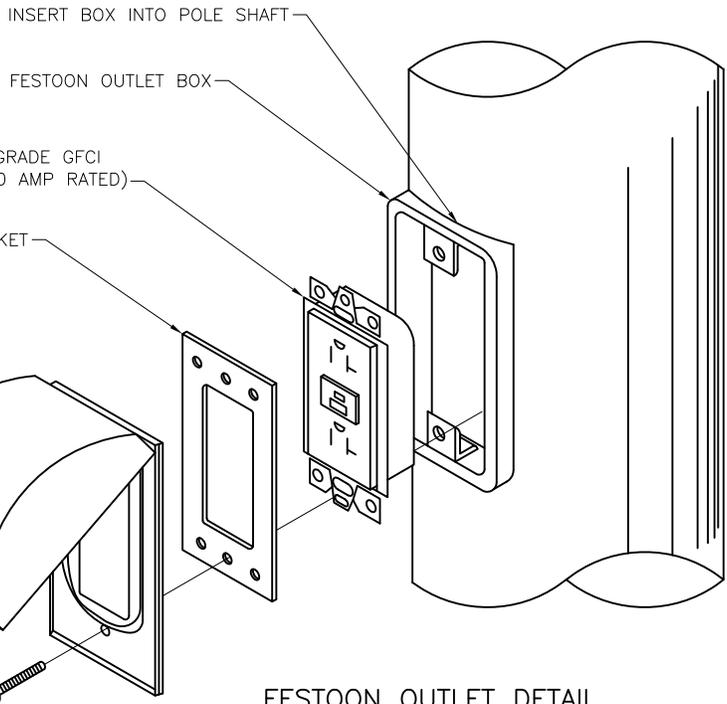
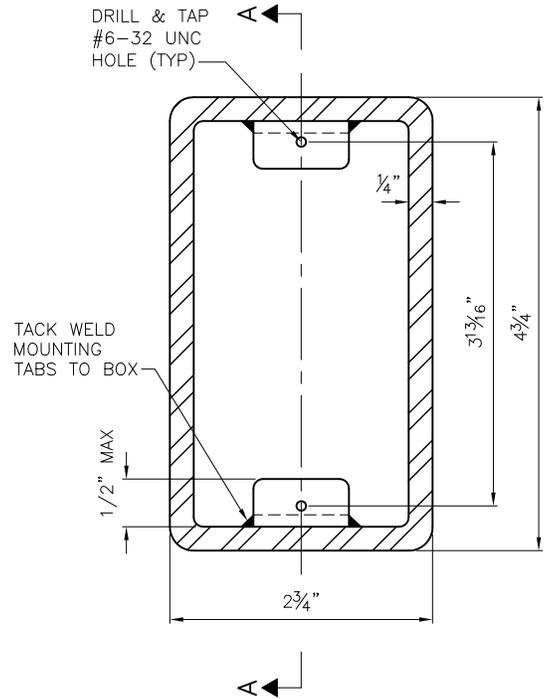
PLAN

CABLE OUTLET DETAIL



SECTION A-A

FESTOON OUTLET BOX



FESTOON OUTLET DETAIL

(METAL POLES)

NOTES:

1. ALL OUTLETS SHALL 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 SHALL EXTEND INTO THE POLE ½" MAX AS SHOWN.

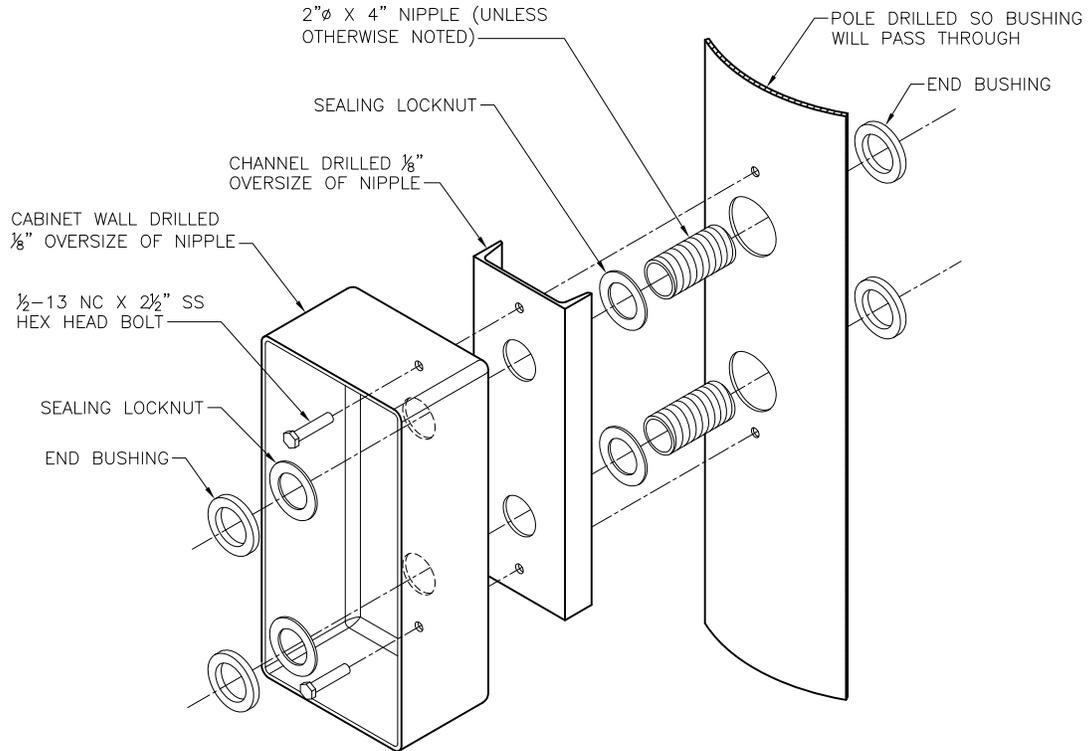
REF STD SPEC SEC 8-30 & 8-32



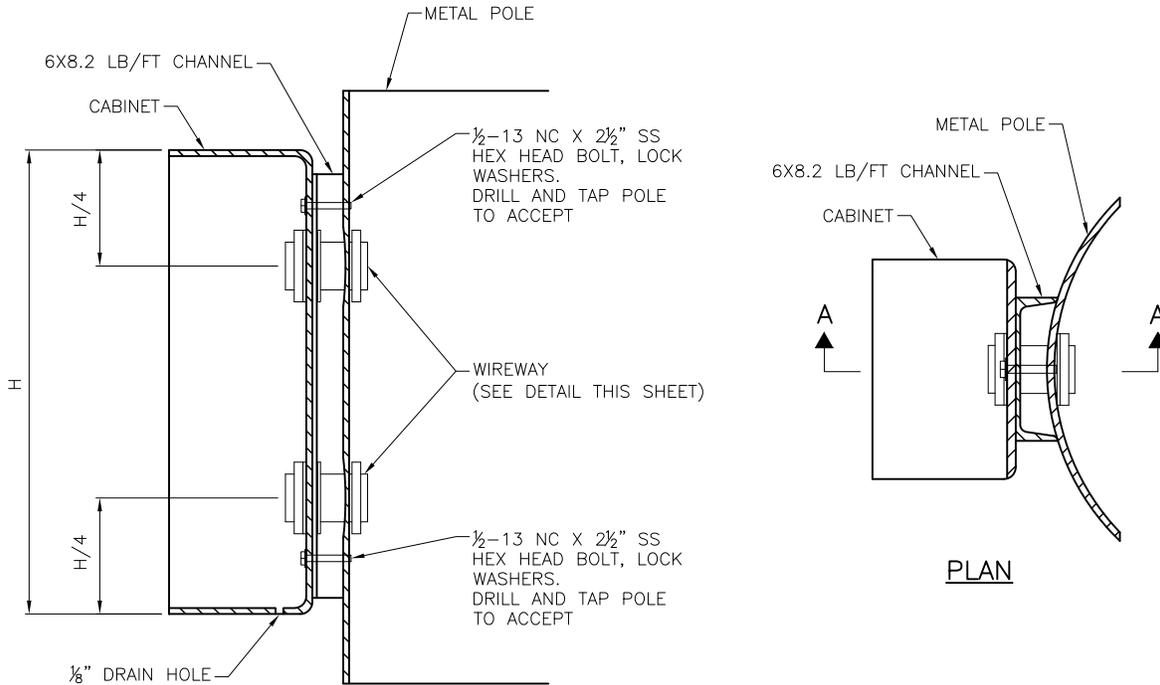
City of Seattle

NOT TO SCALE

MISCELLANEOUS STEEL POLE DETAILS



WIREWAY ISOMETRIC DETAIL



SECTION A-A

PLAN

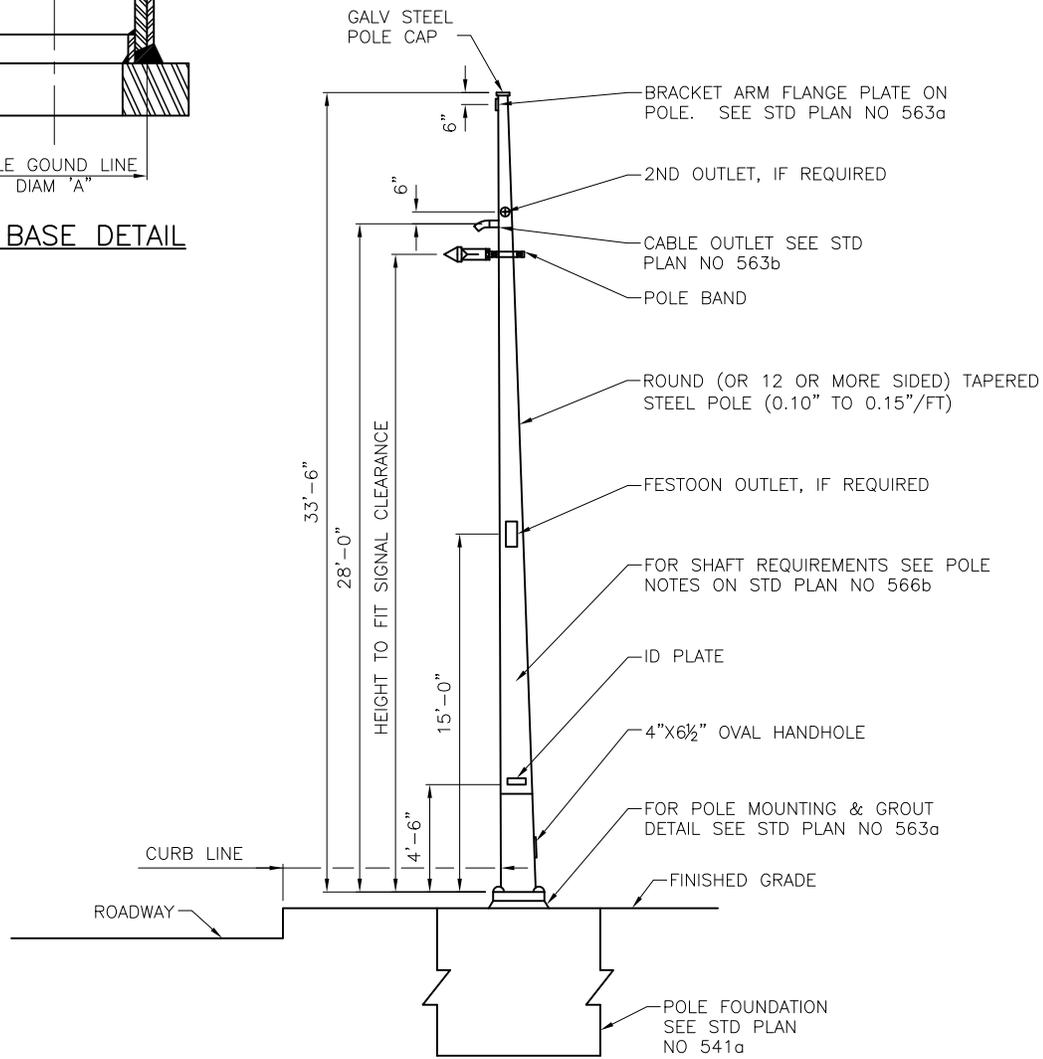
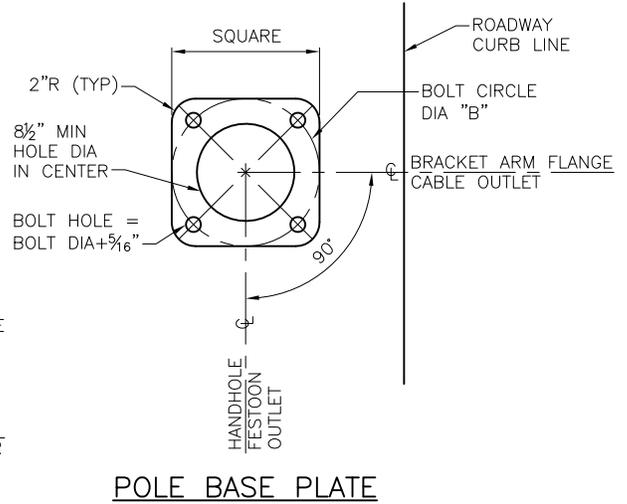
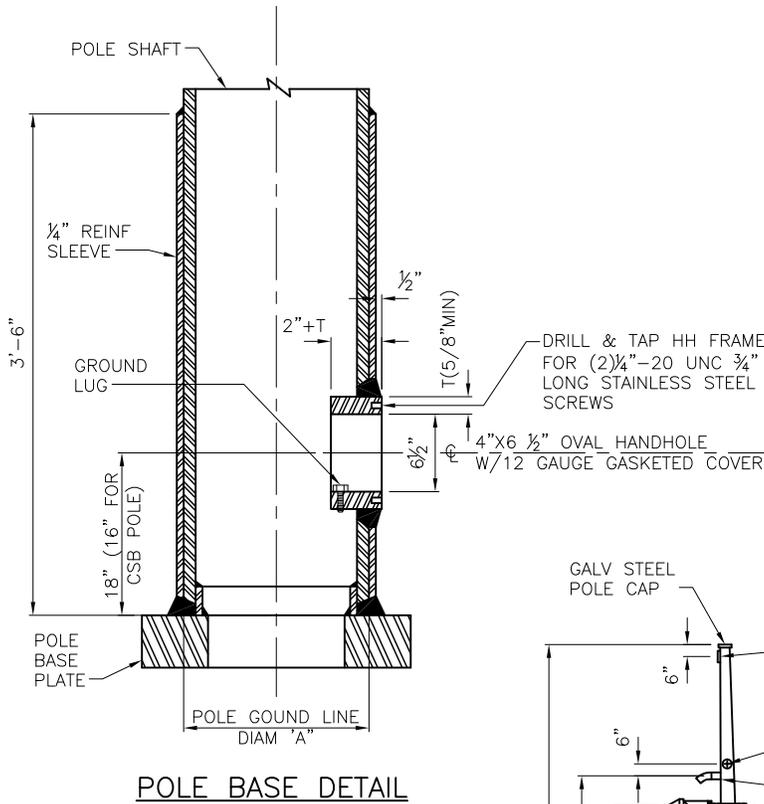
REF STD SPEC SEC 8-32



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	DEAD LOAD MOMENT KIP-FT (AT GROUND LINE)	POLE SCHEDULE						
		GROUND LINE DIA "A"		POLE BASE PLATE SIZE		BOLT CIRCLE DIA "B"	BOLT HOLE	ANCHOR BOLTS
		STD	CSB	STD	CSB			
V	51	12"	12"	1¾"X18"X18"	1¾"X23"X23"	18"	2¼"	1¾"DIA X 72"
X	93	14"	12½"	2"X20"X20"	2"X23"X23"	20"	2⅝"	2"DIA X 72"
Z	164	15"	--	2½"X23"X23"	--	22"	2⅓"	2½"DIA X 72"

NOTES:

1. THE YIELD MOMENT SHALL BE 2X THE DEAD LOAD MOMENT. THE ULTIMATE PLASTIC MOMENT SHALL BE 2.5X THE DEAD LOAD MOMENT.
2. 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).
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. REINFORCING SLEEVE SHALL BE FABRICATED FROM THE SAME MATERIAL AND YIELD STRENGTH AS THE POLE SHAFT.
5. POLE SHAFTS SHALL HAVE NO MORE THAN TWO LONGITUDINAL WELDS IN EACH PLY.
6. MINIMUM SHAFT WALL THICKNESS OF EACH PLY SHALL BE 0.239" (3 GAUGE). POLE SHALL HAVE A MAXIMUM OF TWO PLYS NOT INCLUDING THE ¼" REINFORCING SLEEVE.
7. MAXIMUM SILICON CONTENT IN STEEL SHALL BE 0.04%. SEE STD SPEC SECTION 9-33.1(3) FOR GENERAL GALVANIZING REQUIREMENTS.
8. POLE DIAMETER FOR 12 OR MORE SIDED POLES SHALL BE MEASURED FROM THE POINT TO POINT DIMENSION.
9. POLES SHALL MEET DEFLECTION CRITERIA STATED IN STD SPEC SECTION 9-33.2(2) WITH THE DEAD LOAD APPLIED AT 25' ABOVE GROUND LINE.
10. POLE STRENGTH SHALL MEET REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (CURRENT EDITION).

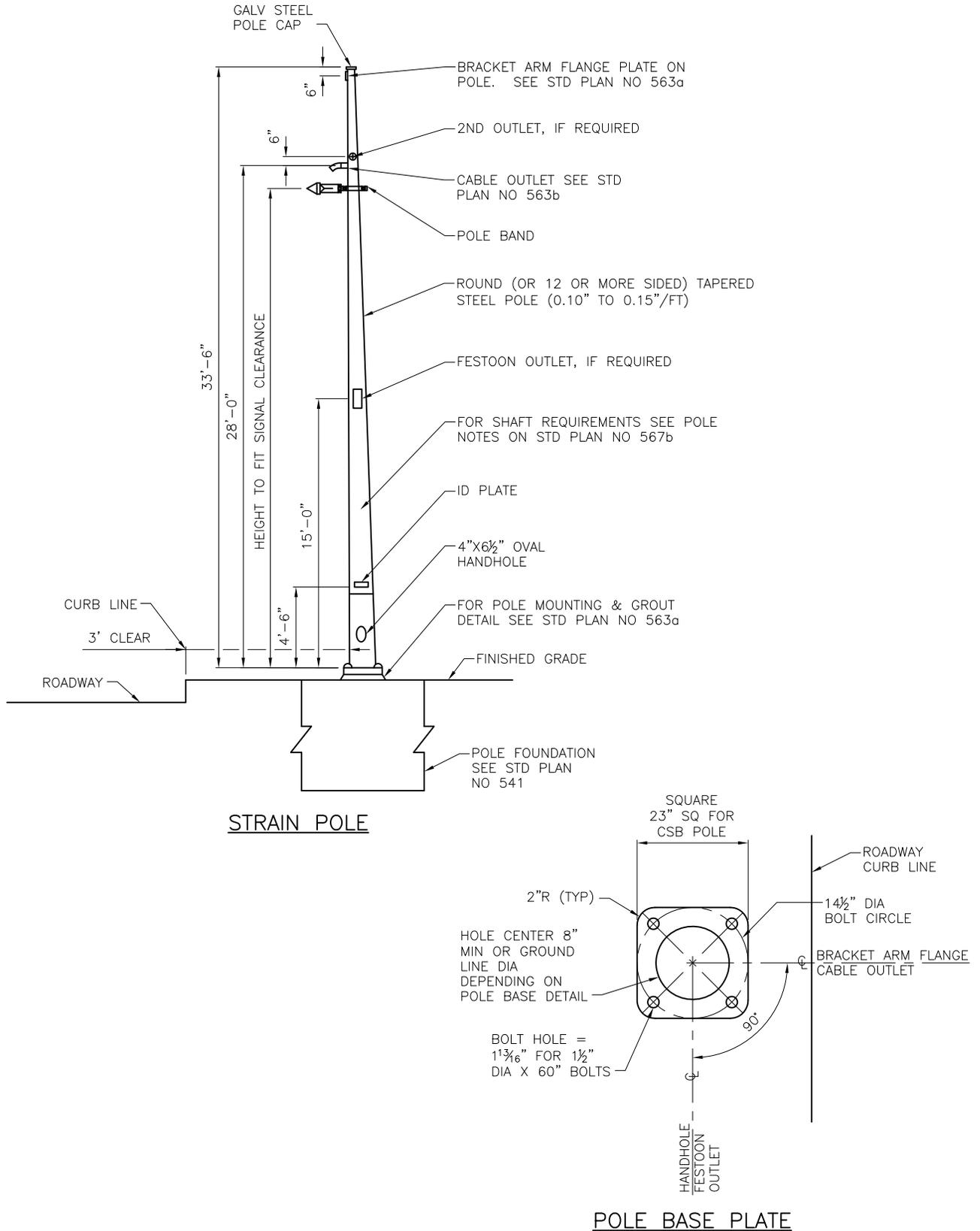
REF STD SPEC SEC 8-32, 9-33



City of Seattle

NOT TO SCALE

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



REF STD SPEC SEC 8-32



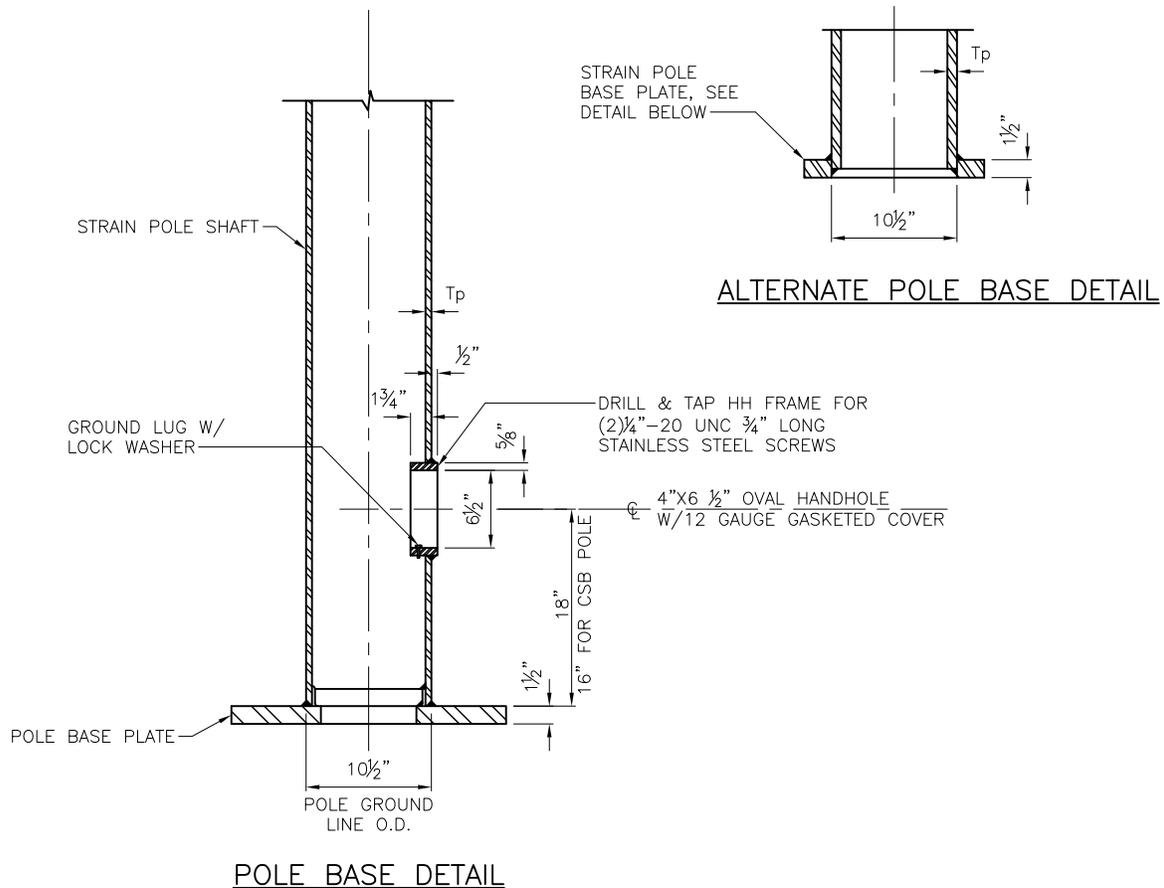
City of Seattle

NOT TO SCALE

TYPE T STRAIN POLE DETAILS
TRAFFIC SIGNAL ONLY

NOTES:

1. THE DEAD LOAD MOMENT AT THE GROUNDLINE SHALL BE 40 KIP-FT. THE YIELD MOMENT SHALL BE 2X DEAD LOAD MOMENT.
2. POLE STRENGTH SHALL MEET REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (CURRENT EDITION).
3. POLE SHAFT: ASTM A572 GRADE 50, 60 OR 65 ($F_y=50, 60$ OR 65 KSI RESPECTIVELY), OR ASTM A595 GRADE A OR B ($F_y=55$ OR 60 KSI RESPECTIVELY)
4. BASE PLATE AND HANDHOLE REINFORCING RIM: ASTM A36 OR ASTM A572 GRADE 42. BASE PLATE $F_y \geq 0.65$ POLE SHAFT F_y THE BASE PLATE THICKNESS MAY BE REDUCED BY $\frac{1}{4}$ " IF ASTM A572 GRADE 42 STEEL IS USED.
5. POLE SHAFTS SHALL HAVE NO MORE THAN TWO LONGITUDINAL WELDS IN EACH PLY.
6. MINIMUM SHAFT WALL THICKNESS OF EACH PLY SHALL BE 0.239" (3 GAUGE). POLE SHALL HAVE A MAXIMUM OF TWO PLYS.
7. MAXIMUM SILICON CONTENT IN STEEL SHALL BE 0.04%. SEE STD SPEC SECTION 9-33.1(3) FOR GENERAL GALVANIZING REQUIREMENTS.
8. POLE DIAMETER FOR 12 OR MORE SIDED POLES SHALL BE MEASURED FROM THE POINT TO POINT DIMENSION.
9. POLES SHALL MEET DEFLECTION CRITERIA STATED IN STD SPEC SECTION 9-33.2(2) WITH THE DEAD LOAD APPLIED AT 27' ABOVE GROUND LINE.
10. THE POLES SHALL BE COMPACT AND MUST MEET THE REQUIREMENTS IN AASHTO SECTION 4, TABLE 1.4 1B(1).



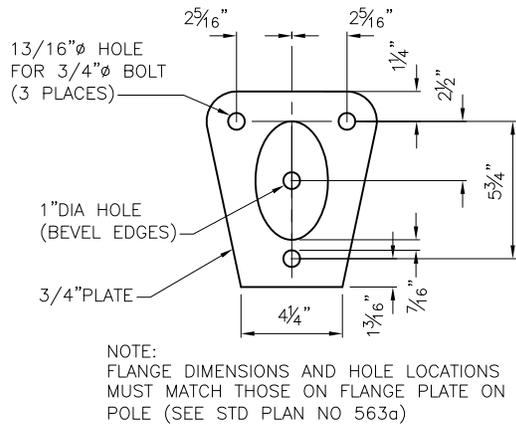
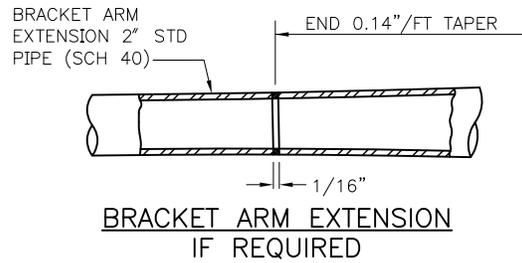
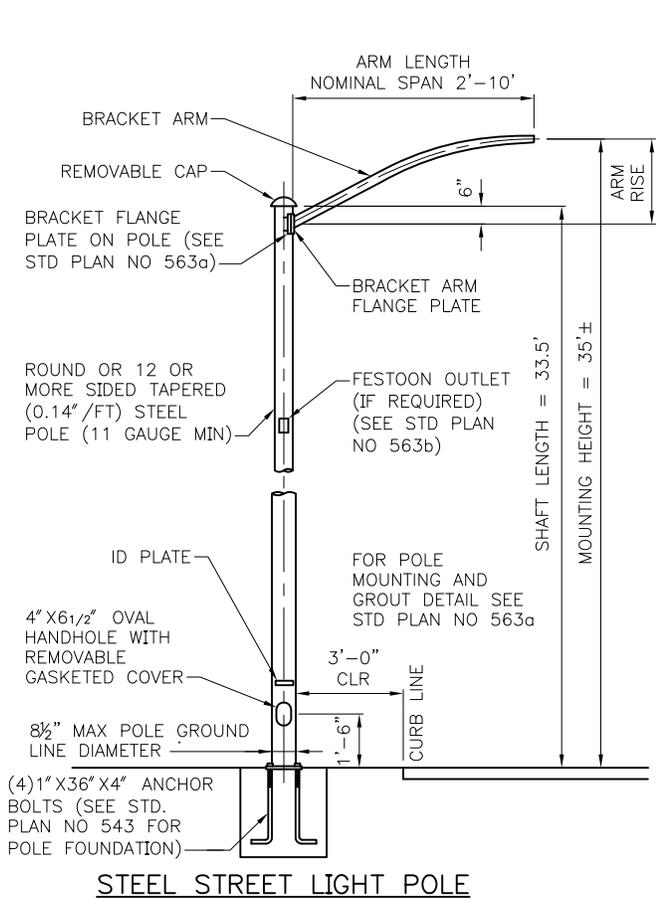
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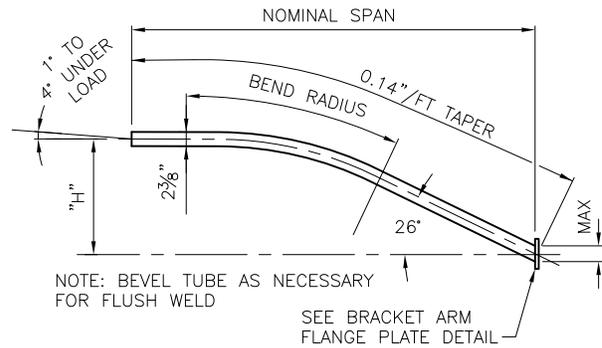
City of Seattle

NOT TO SCALE

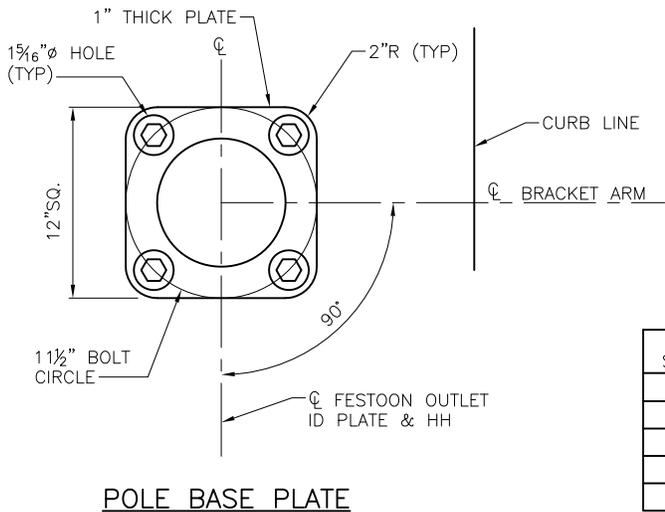
**TYPE T STRAIN POLE DETAILS
TRAFFIC SIGNAL ONLY**



BRACKET ARM FLANGE PLATE



2' THRU 10' BRACKET ARMS



NOM SPAN	H*	BEND RADIUS	TUBE REQUIREMENT
2'	5 1/4"	-	2" STD PIPE
4'	12"	6'	11 GAUGE
6'	18"	9'	11 GAUGE
8'	24"	13'	11 GAUGE
10'	30"	15'	11 GAUGE

MATERIAL SPECIFICATION
 PLATE AND SHAPES:
 ASTM A36
 POLE SHAFTS:
 ASTM A570
 GR 40 MIN.
 ANCHOR BOLTS:
 ASTM A307
 BRACKET ARM FLANGE
 PLATE BOLT: ASTM A325

NOTE:

1. ALL OTHER ARM LENGTHS REQUIRE SCL REVIEW AND APPROVAL

* 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.

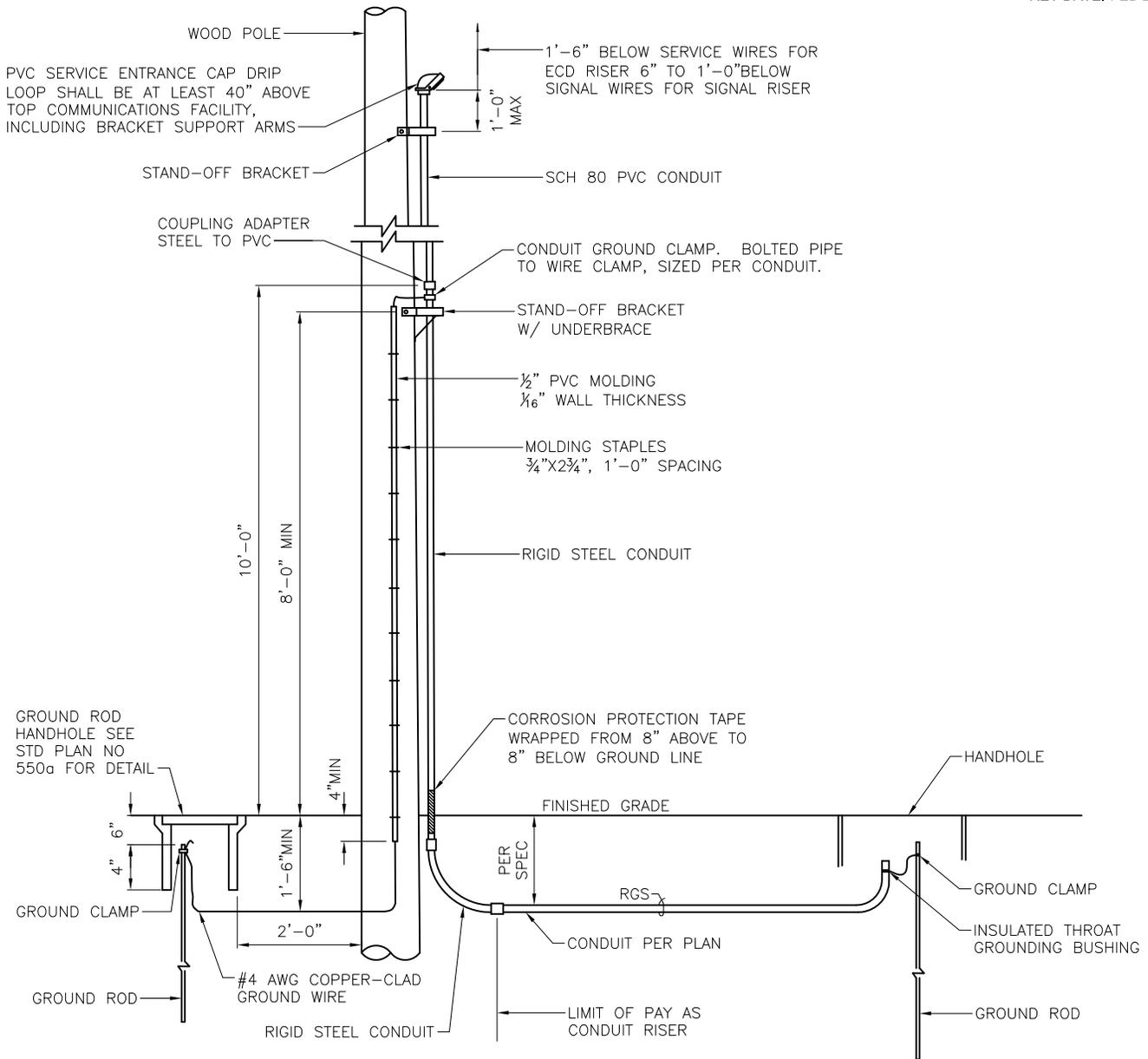
REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

STEEL STREET LIGHT POLE WITH BRACKET ARM



CONDUIT RISER (WITH STAND-OFF BRACKET*)

*WHEN THERE WILL BE ONLY ONE CONDUIT (1/2" OR SMALLER) ON THE POLE, ONE HOLE MALLEABLE IRON CLAMPS WITH 4" LAG SCREWS SHALL 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 SHALL BE INSTALLED IN ACCORDANCE WITH THIS STANDARD PLAN.
2. RIGID STEEL CONDUIT SHALL BE GROUNDED JUST BELOW COUPLING, APPROXIMATELY 8'-0" TO 10'-0" ABOVE GROUND, AS SHOWN
3. WHEN 2 OR MORE RIGID STEEL CONDUITS ARE INSTALLED ON ONE POLE, ONE CONDUIT SHALL BE GROUNDED AS SHOWN. THE CONDUIT SUPPORTS & STRAPS SHALL SERVE AS A BONDING DEVICE BETWEEN THE STEEL CONDUITS
4. THE GROUND WIRE SHALL BE ONE CONTINUOUS LENGTH. INSERT THE GROUND WIRE FROM THE BOTTOM OF THE GROUND CLAMP & BEND OVER THE CLAMP BEFORE TIGHTENING
5. PLACE GROUND WIRE IN QUADRANT BETWEEN POLE FACE & SECONDARY NEUTRAL
6. ALL STEEL HARDWARE SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123
7. CONDUIT CLAMP SPACING SHALL BE PER THE NEC WITH A MINIMUM OF TWO HOLE CLAMP PER 10'-0" LENGTH OF CONDUIT
8. POWER AND SIGNAL CONDUCTORS SHALL NOT BE PLACED IN THE SAME CONDUIT.
9. WHEN POSSIBLE, RISER SHALL BE INSTALLED ON DOWNSTREAM SIDE OF TRAFFIC

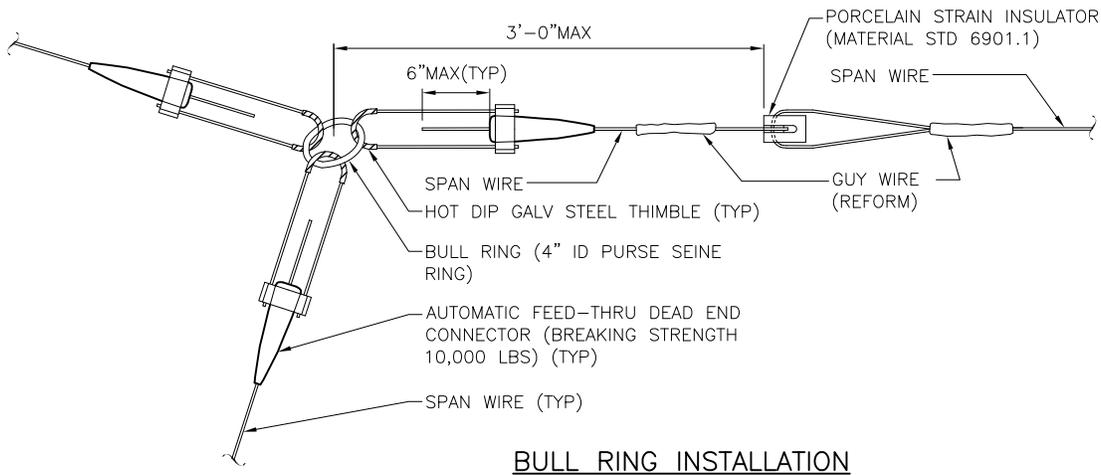
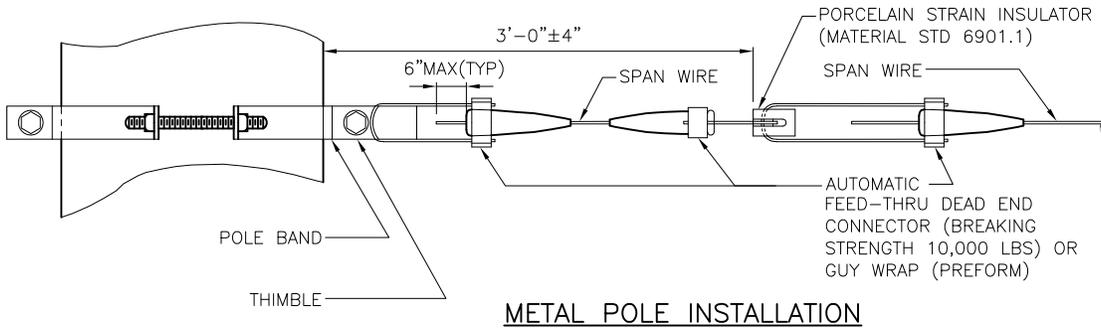
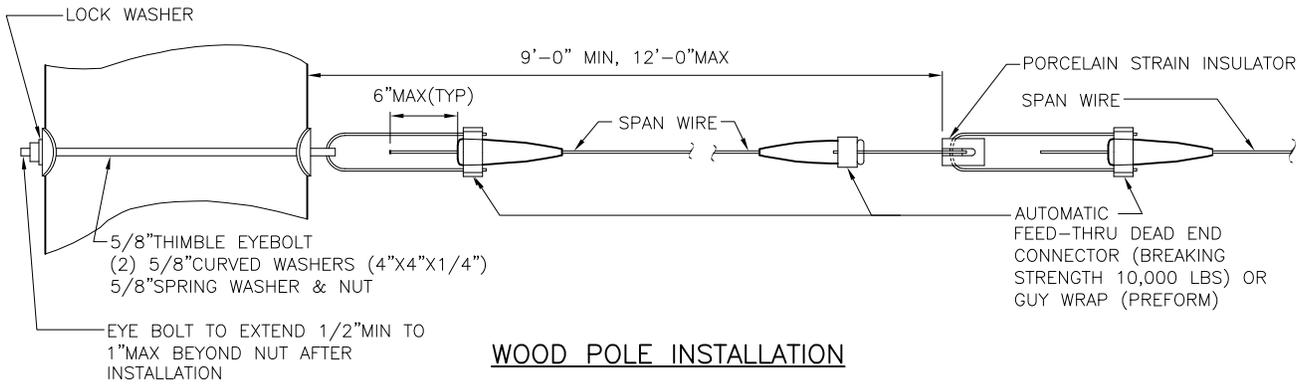
REF STD SPEC SEC 8-33, SCL CONSTRUCTION GUIDELINES U 7-10



City of Seattle

NOT TO SCALE

CONDUIT RISER



NOTES:

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

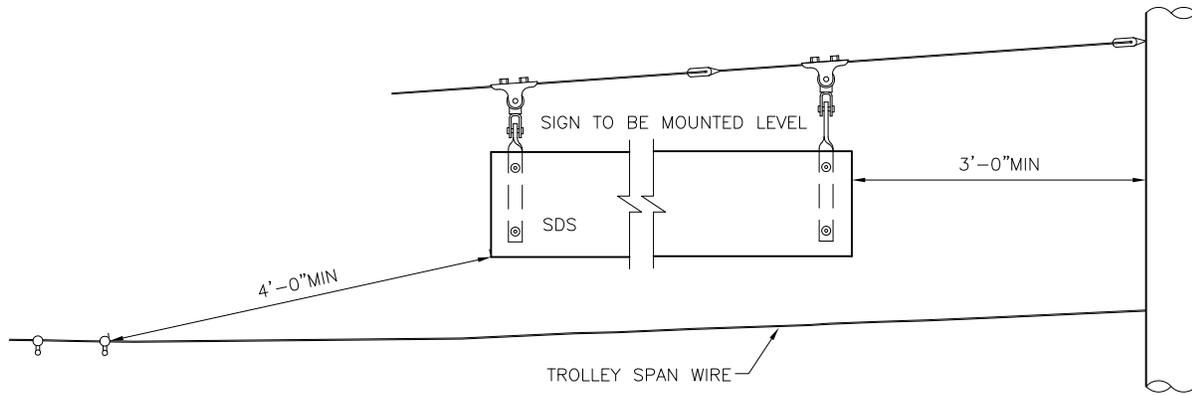
REF STD SPEC SEC 8-21 & SCL MATERIAL STANDARD 6901.1



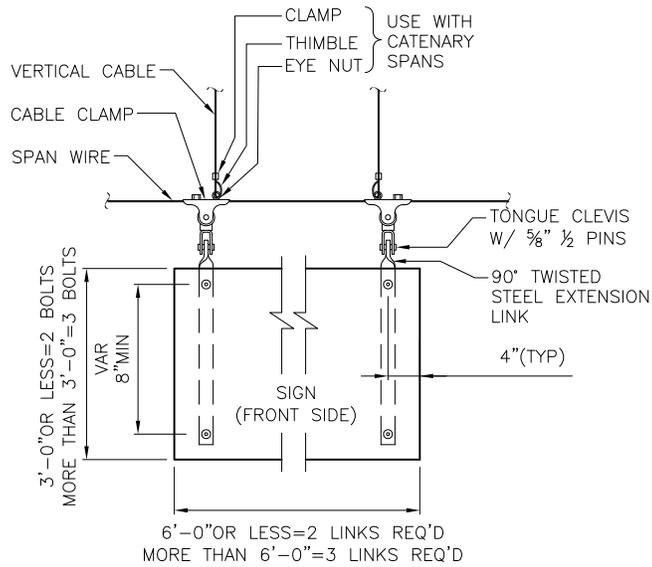
City of Seattle

NOT TO SCALE

SPAN WIRE INSTALLATION



STREET DESIGNATION SIGN



SPAN WIRE MOUNTED SIGN

NOTES:

1. ALL HARDWARE SHALL BE STAINLESS STEEL. OTHER THAN HARDWARE SHALL BE HOT DIP GALVANIZED.
2. NEOPRENE GASKETS SHALL NOT BE USED FOR SPAN WIRE OR AERIAL CONNECTIONS.

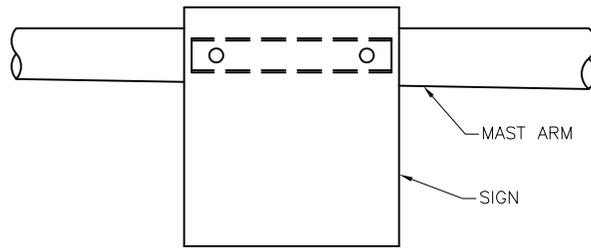
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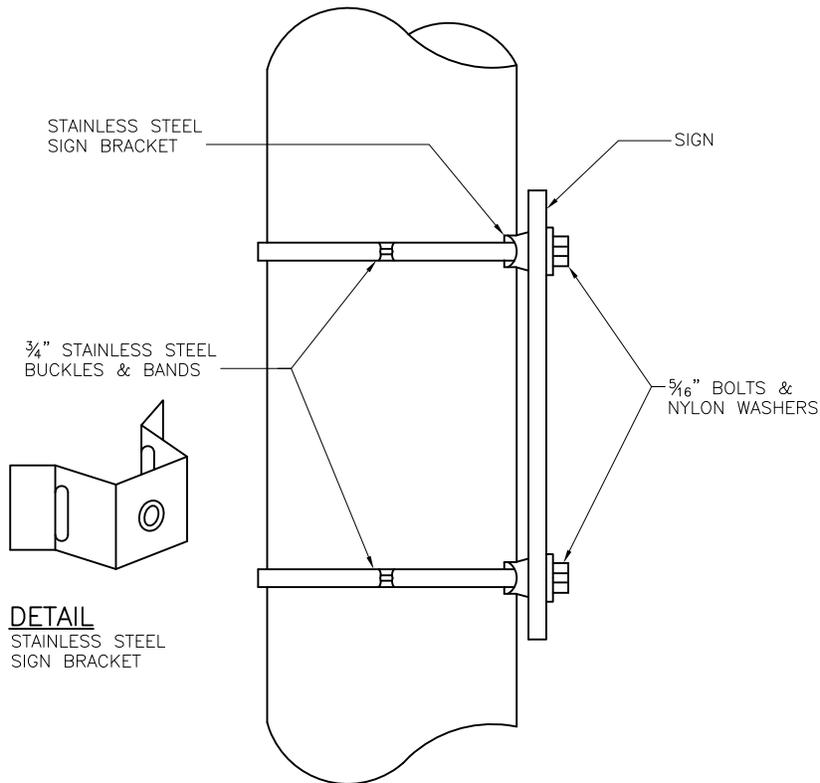
City of Seattle

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 SHALL BE STAINLESS STEEL.
2. MOUNTING OF TRAFFIC SIGNS SHALL 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.

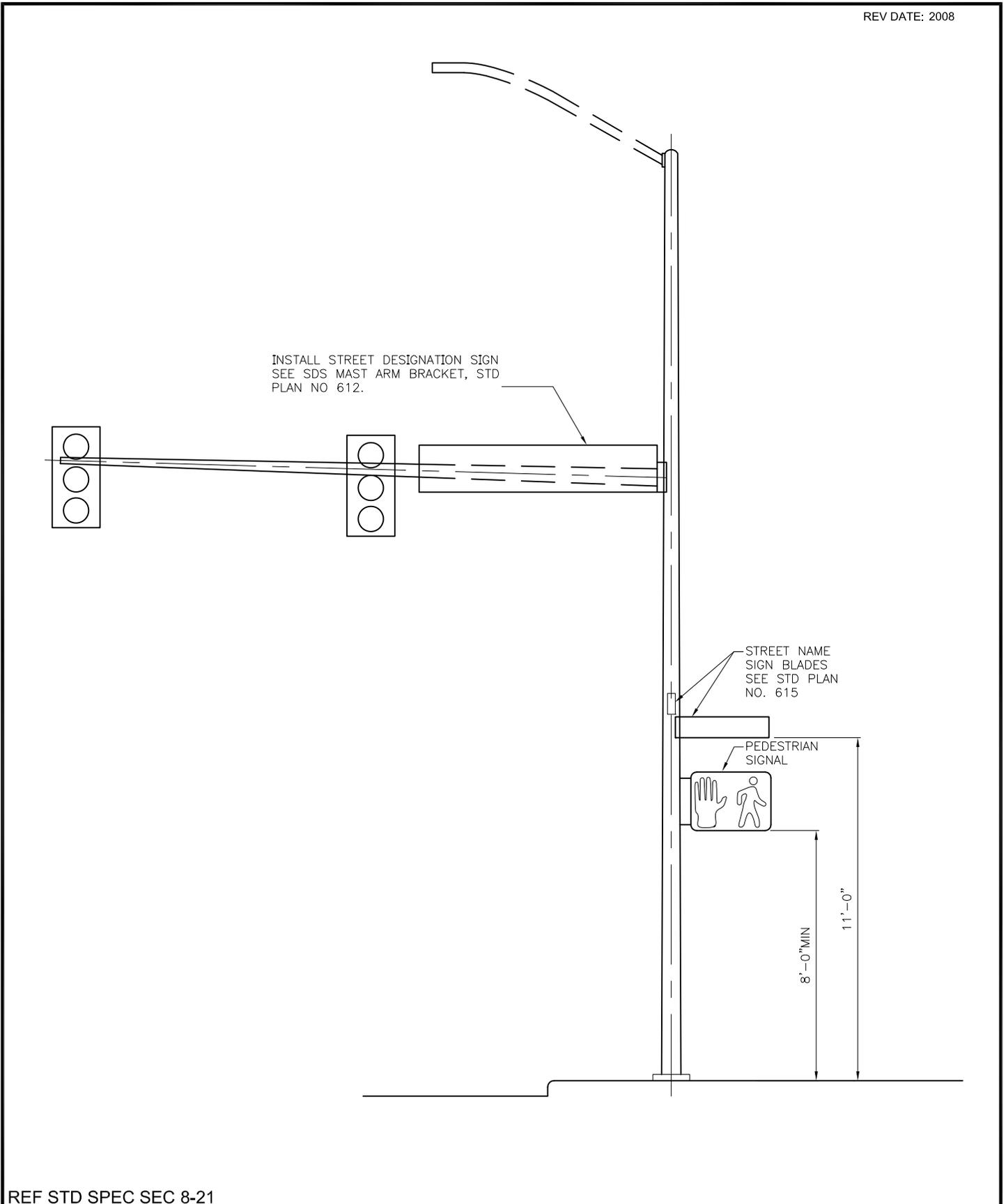
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

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



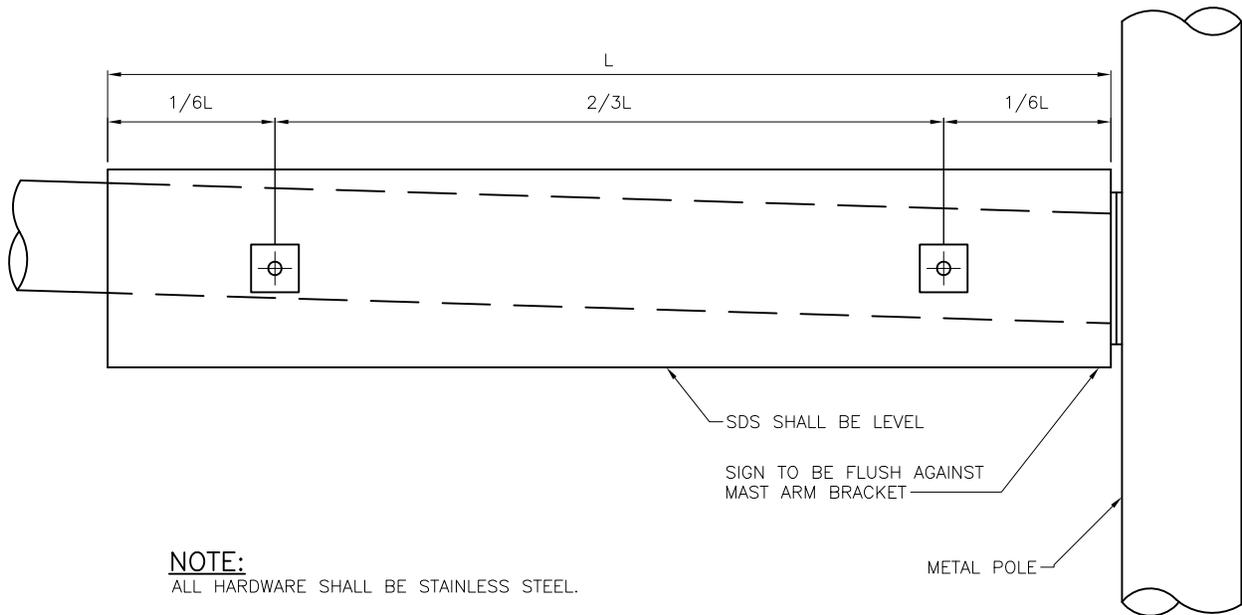
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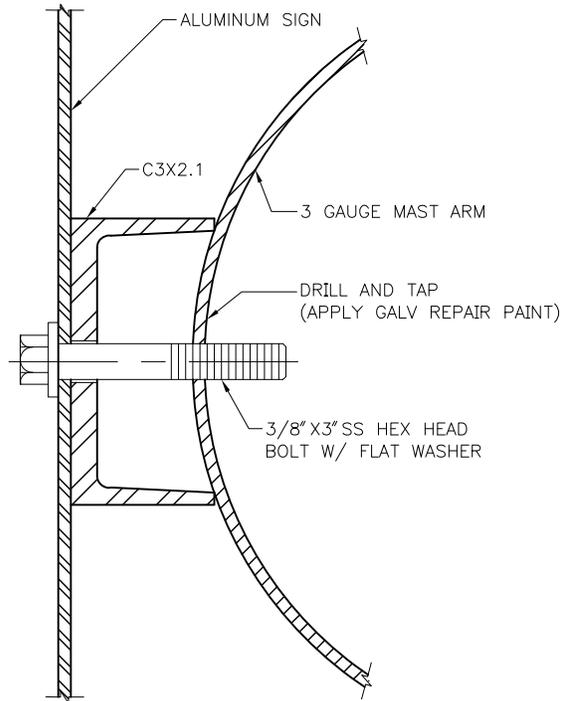
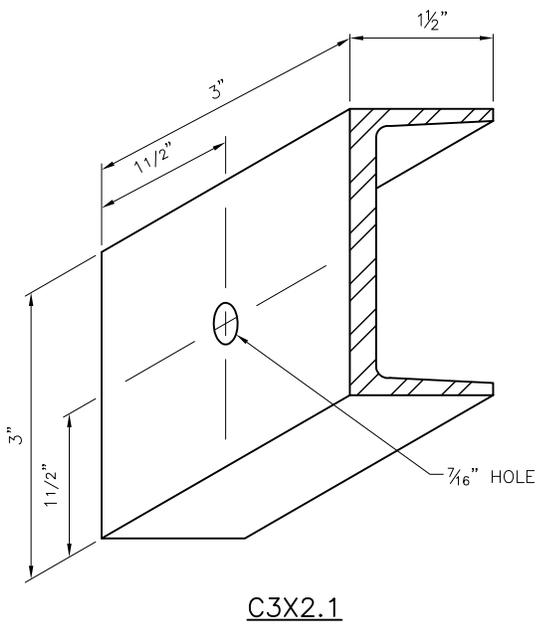
City of Seattle

NOT TO SCALE

STANDARD SIGN INSTALLATION
STEEL POLES



NOTE:
ALL HARDWARE SHALL BE STAINLESS STEEL.



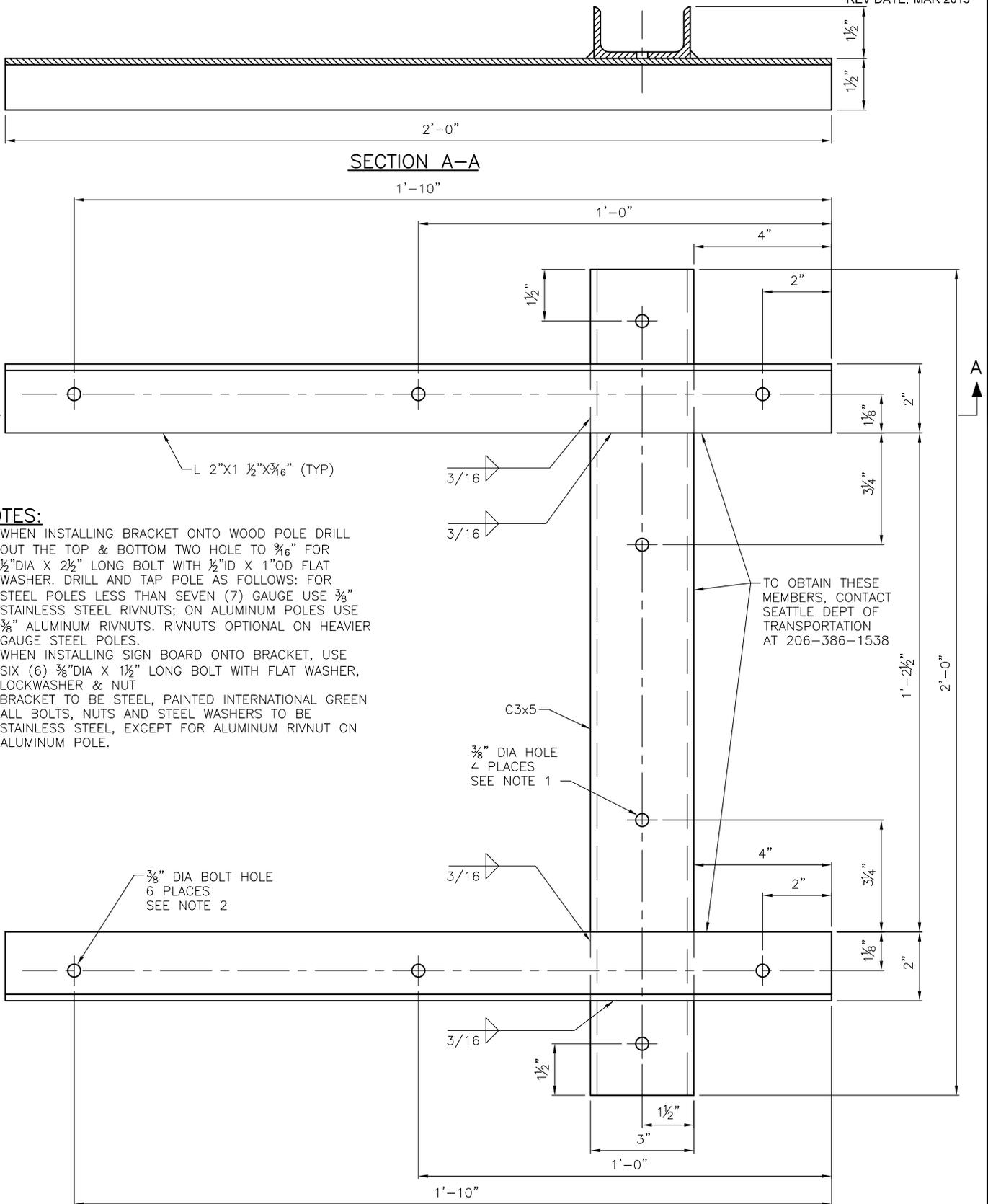
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

SDS BRACKET FOR STEEL
MAST ARM POLES



NOTES:

1. WHEN INSTALLING BRACKET ONTO WOOD POLE DRILL OUT THE TOP & BOTTOM TWO HOLE TO $\frac{3}{16}$ " FOR $\frac{1}{2}$ " DIA X $2\frac{1}{2}$ " LONG BOLT WITH $\frac{1}{2}$ " ID X 1" OD FLAT WASHER. DRILL AND TAP POLE AS FOLLOWS: FOR STEEL POLES LESS THAN SEVEN (7) GAUGE USE $\frac{3}{8}$ " STAINLESS STEEL RIVNUTS; ON ALUMINUM POLES USE $\frac{3}{8}$ " ALUMINUM RIVNUTS. RIVNUTS OPTIONAL ON HEAVIER GAUGE STEEL POLES.
2. WHEN INSTALLING SIGN BOARD ONTO BRACKET, USE SIX (6) $\frac{3}{8}$ " DIA X $1\frac{1}{2}$ " LONG BOLT WITH FLAT WASHER, LOCKWASHER & NUT
3. BRACKET TO BE STEEL, PAINTED INTERNATIONAL GREEN
4. ALL BOLTS, NUTS AND STEEL WASHERS TO BE STAINLESS STEEL, EXCEPT FOR ALUMINUM RIVNUT ON ALUMINUM POLE.

TO OBTAIN THESE MEMBERS, CONTACT SEATTLE DEPT OF TRANSPORTATION AT 206-386-1538

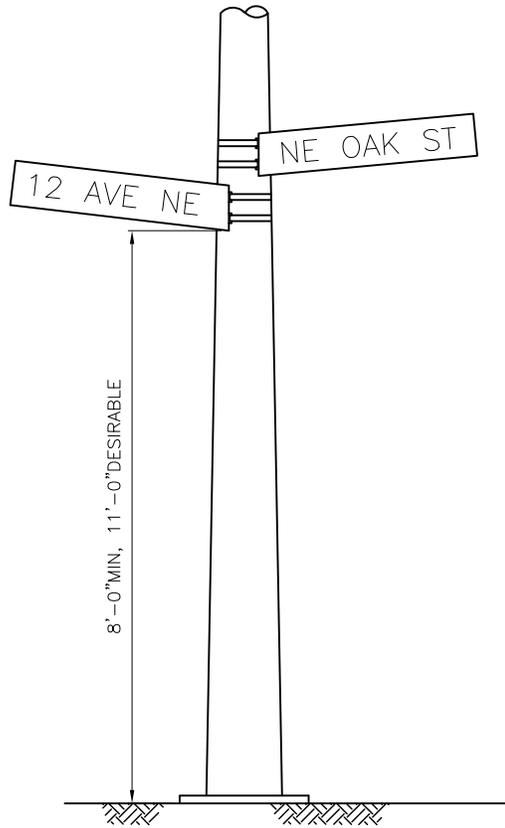
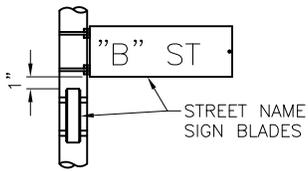
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City of Seattle

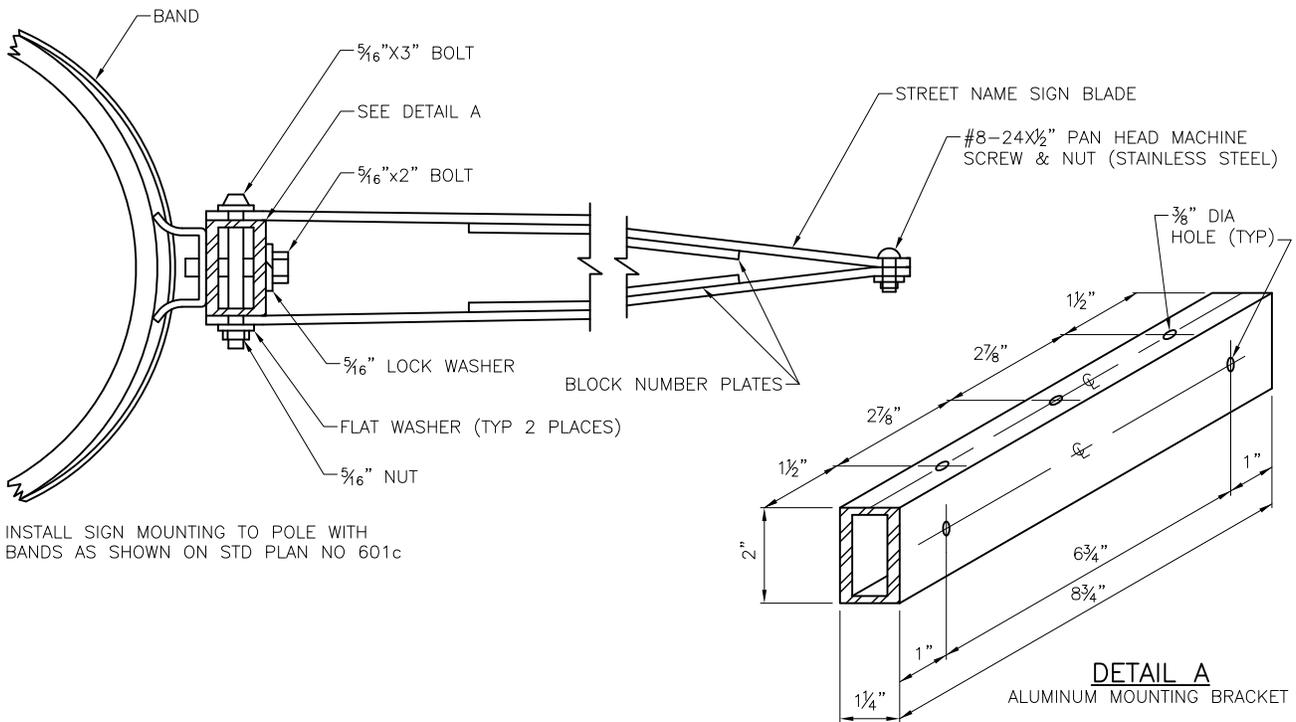
NOT TO SCALE

SDS BRACKET FOR STEEL OR WOOD POLES



NOTES:

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



INSTALL SIGN MOUNTING TO POLE WITH BANDS AS SHOWN ON STD PLAN NO 601c

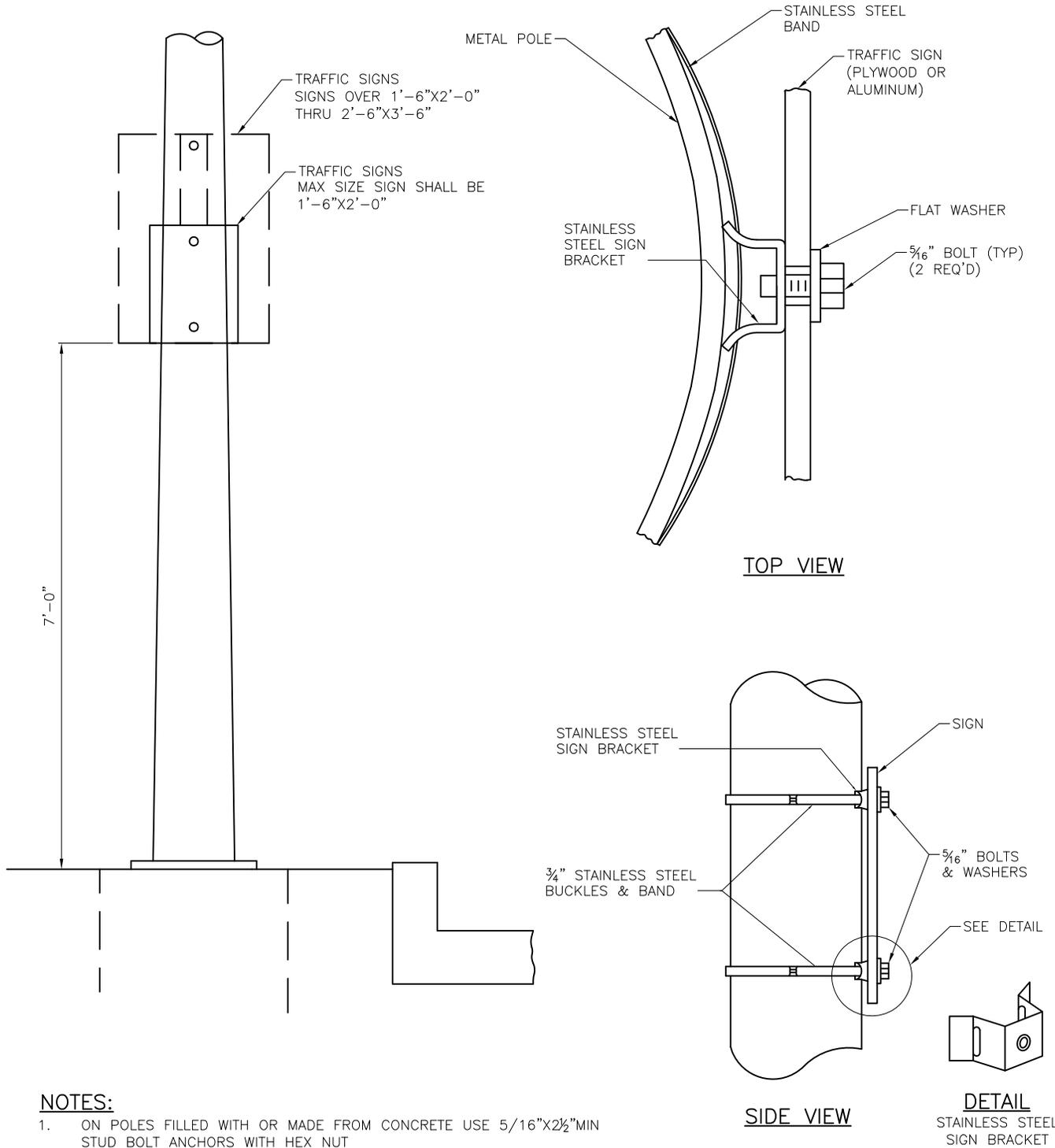
REF STD SPEC SEC 8-21



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" USE STD PLAN NO 612. MOUNT SIGNS VERTICALLY ON STRAIN POLE WITH THREE (3) FASTENERS MIN
3. FOR DARK COLORED POLES PAINT BAND TO MATCH POLE
4. ALL HARDWARE TO BE STAINLESS STEEL.

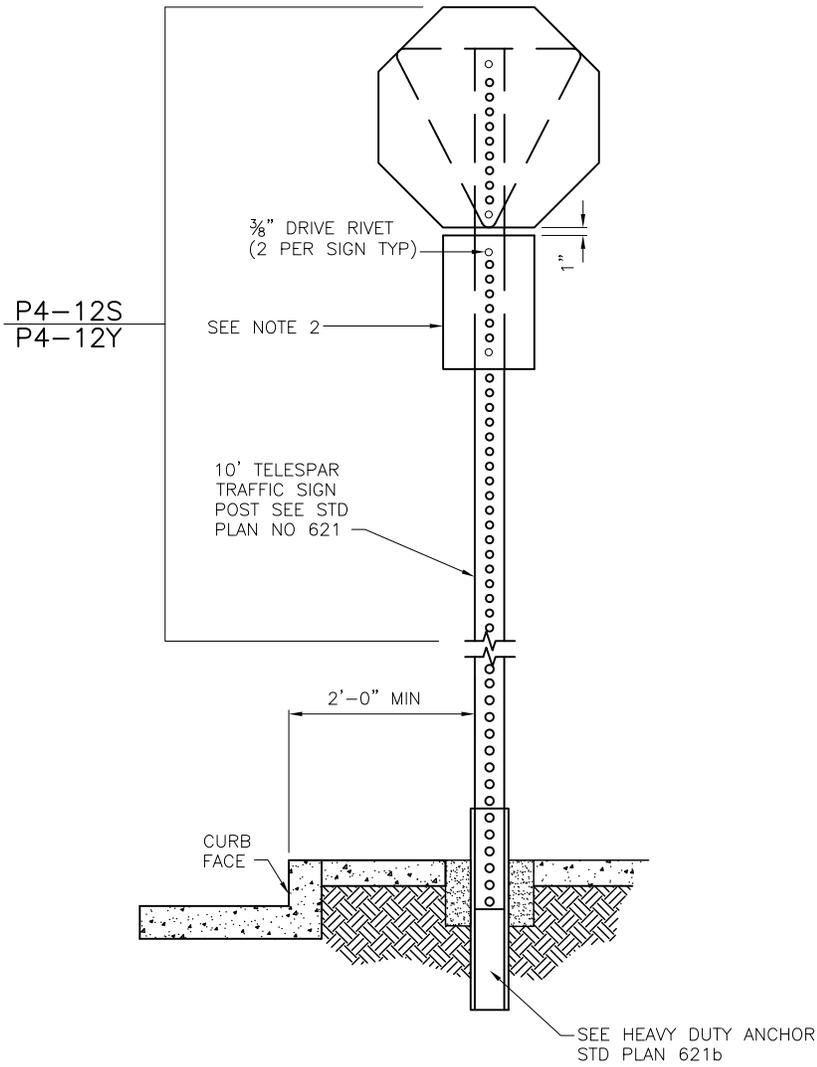
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

TRAFFIC SIGN MOUNTING
ON METAL POLES



POST ANCHOR INSTALLATIONS

NOTE:

CONTACT SEATTLE DEPARTMENT OF TRANSPORTATION (684-5087) FOR DETAILS REGARDING SIGN MESSAGE AND FOUNDATION.

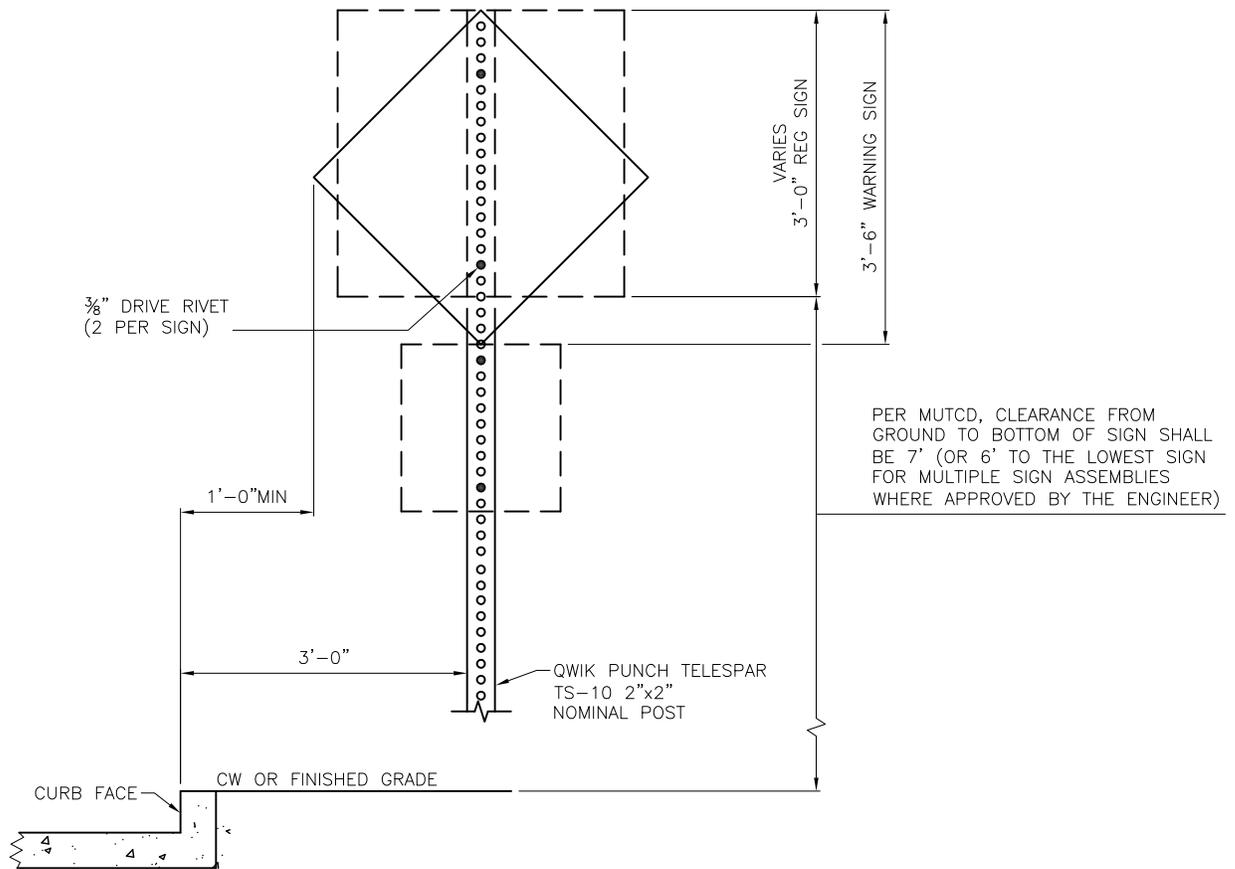
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City of Seattle

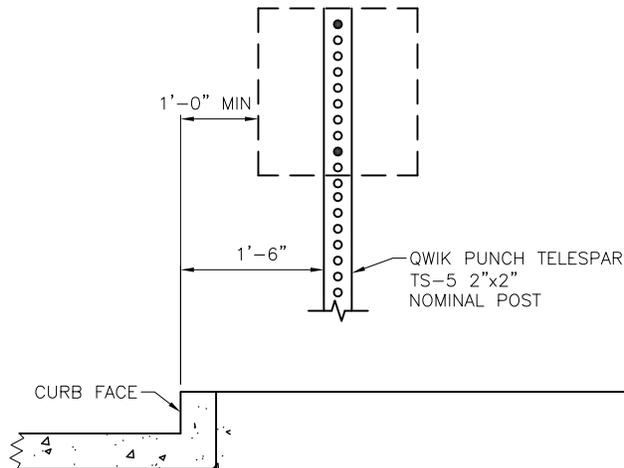
NOT TO SCALE

STOP AND YIELD SIGN POST
AND ANCHOR INSTALLATION



TS-10

(SEE STD PLAN NO 621b FOR POST ANCHOR DETAILS)



TS-5

(SEE STD PLAN NO 621b FOR POST ANCHOR DETAILS)

NOTES:

1. SIGN SHALL BE ATTACHED WITH TOP EDGE OF SIGN FLUSH WITH TOP OF SQUARE SECTION OF POST.
2. TS-5 ASSEMBLIES SHALL BE USED ONLY WITH APPROVAL OF ENGINEER, IN AREAS NOT SUBJECT TO PEDESTRIAN TRAVEL.

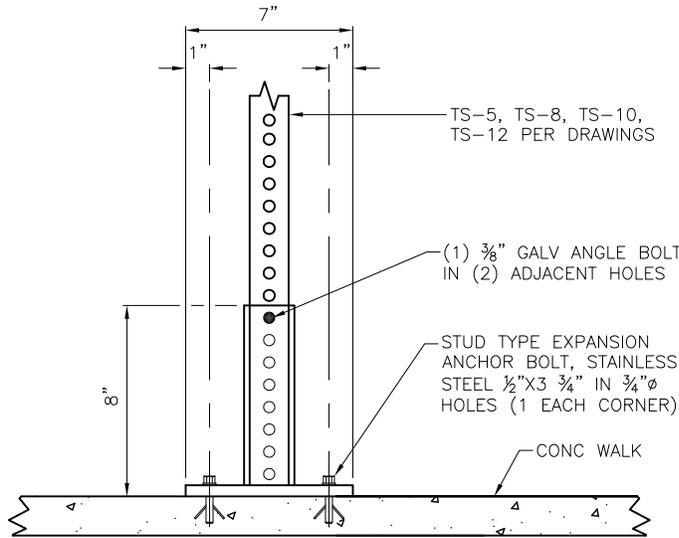
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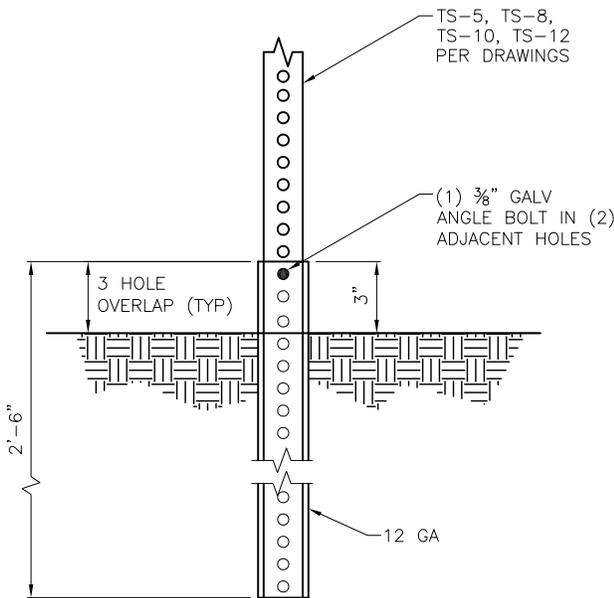
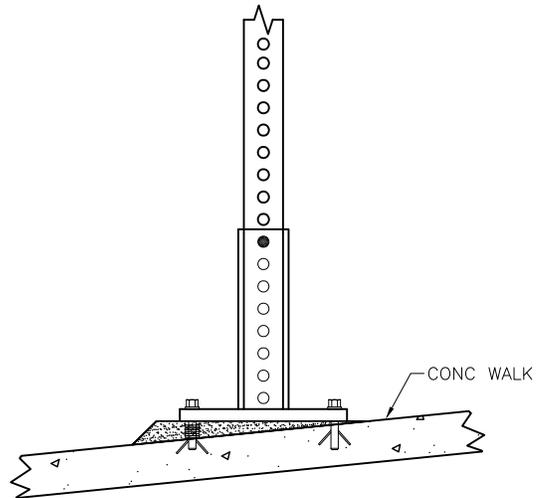
City of Seattle

NOT TO SCALE

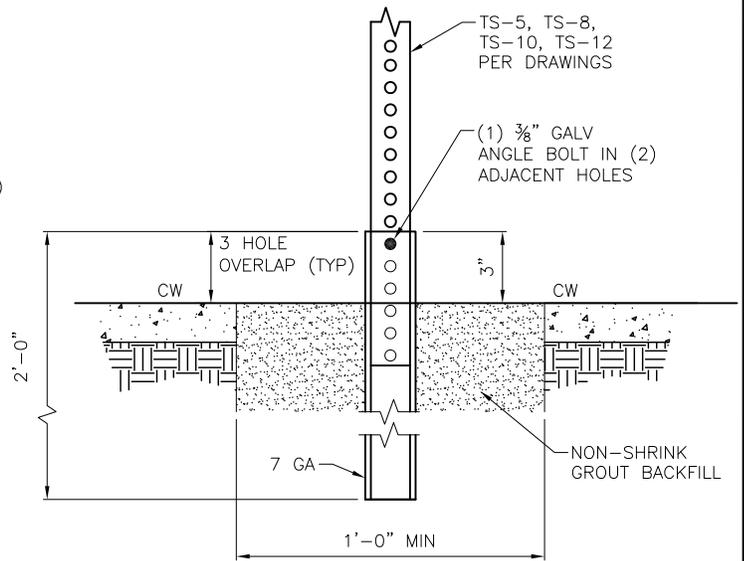
WARNING AND REGULATORY SIGN POST



SURFACE MOUNT



LIGHT DUTY ANCHOR



HEAVY DUTY ANCHOR

NOTES:

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

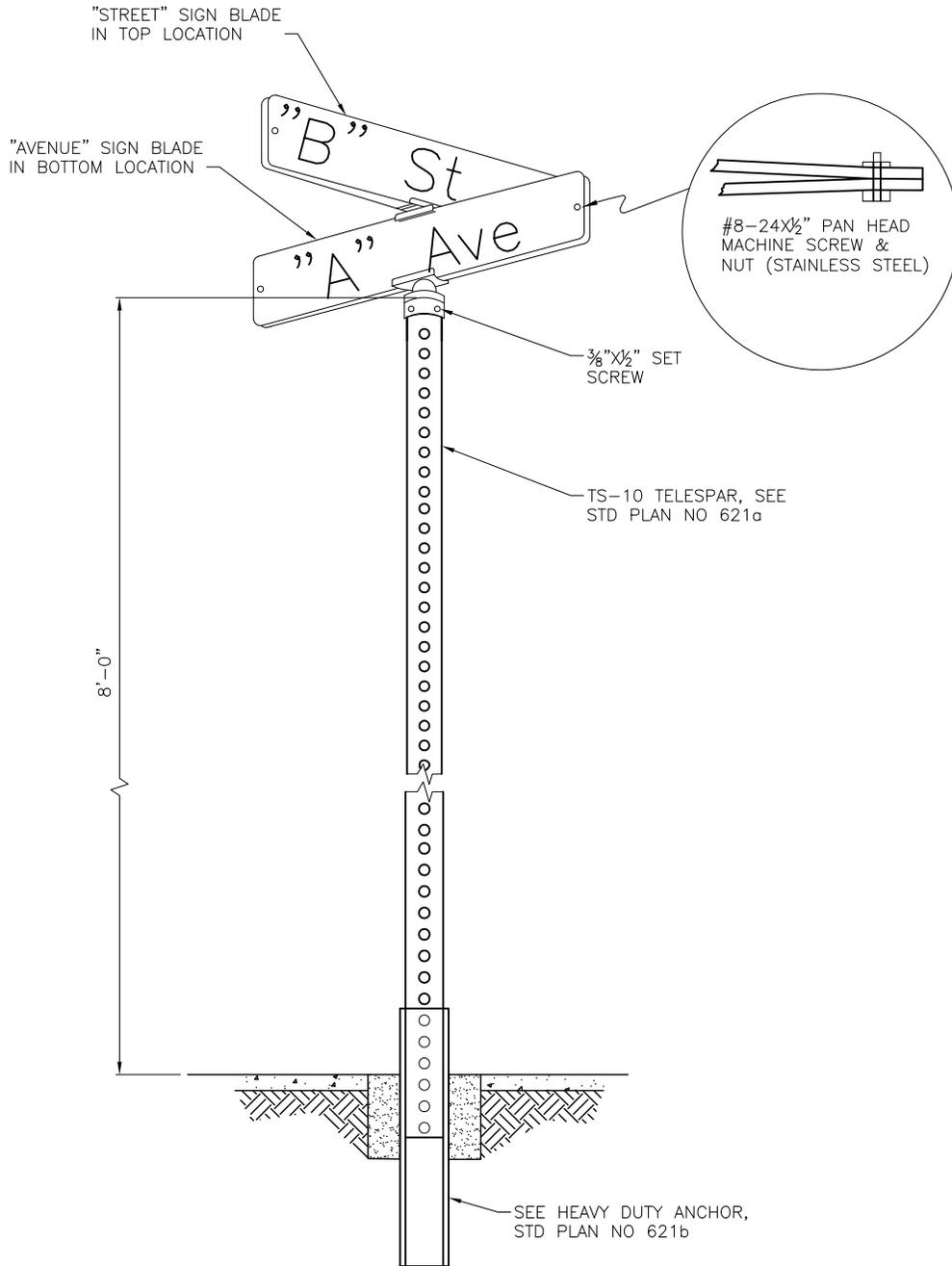
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

**WARNING AND REGULATORY
SIGN POST ANCHOR
INSTALLATIONS**



NOTES:

1. SNS BLADE SHALL BE INSTALLED PARALLEL TO CORRESPONDING STREET
2. INSTALLATION OF SNS ON ANY OTHER METAL POLE SHALL REQUIRE REVIEW AND APPROVAL BY THE ENGINEER
3. SNS/SP RELOCATION: OLD CONCRETE SHALL BE REMOVED AND NEW CONCRETE BASE SHALL BE CONSTRUCTED
4. CITY OF SEATTLE SHALL FABRICATE SNS BLADES AND SUPPLY MOUNTING HARDWARE AT PROJECT OR CONTRACTOR EXPENSE

REF STD SPEC SEC 8-21



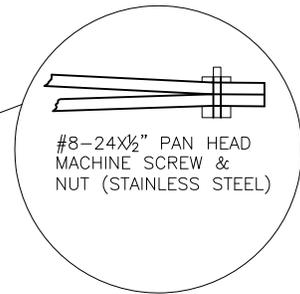
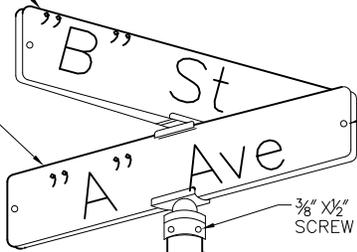
City of Seattle

NOT TO SCALE

STREET NAME SIGN
INSTALLATION

"STREET" SIGN BLADE
IN TOP LOCATION

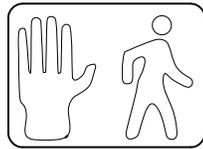
"AVENUE" SIGN BLADE
IN BOTTOM LOCATION



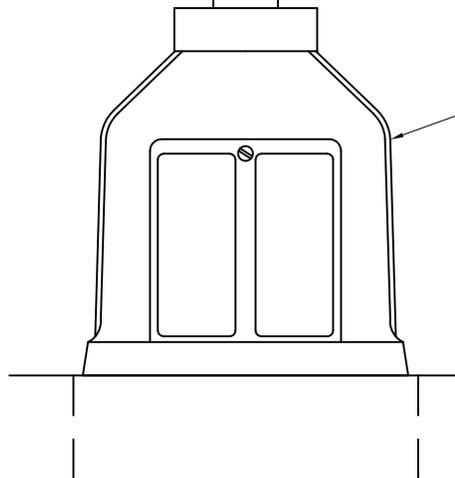
$\frac{3}{8}$ " X $\frac{1}{2}$ " SET
SCREW

2 $\frac{1}{2}$ " ID NIPPLE

2 $\frac{1}{2}$ " REDUCER



PEDESTAL AND FOUNDATION
(SEE STD PLAN NO 524)



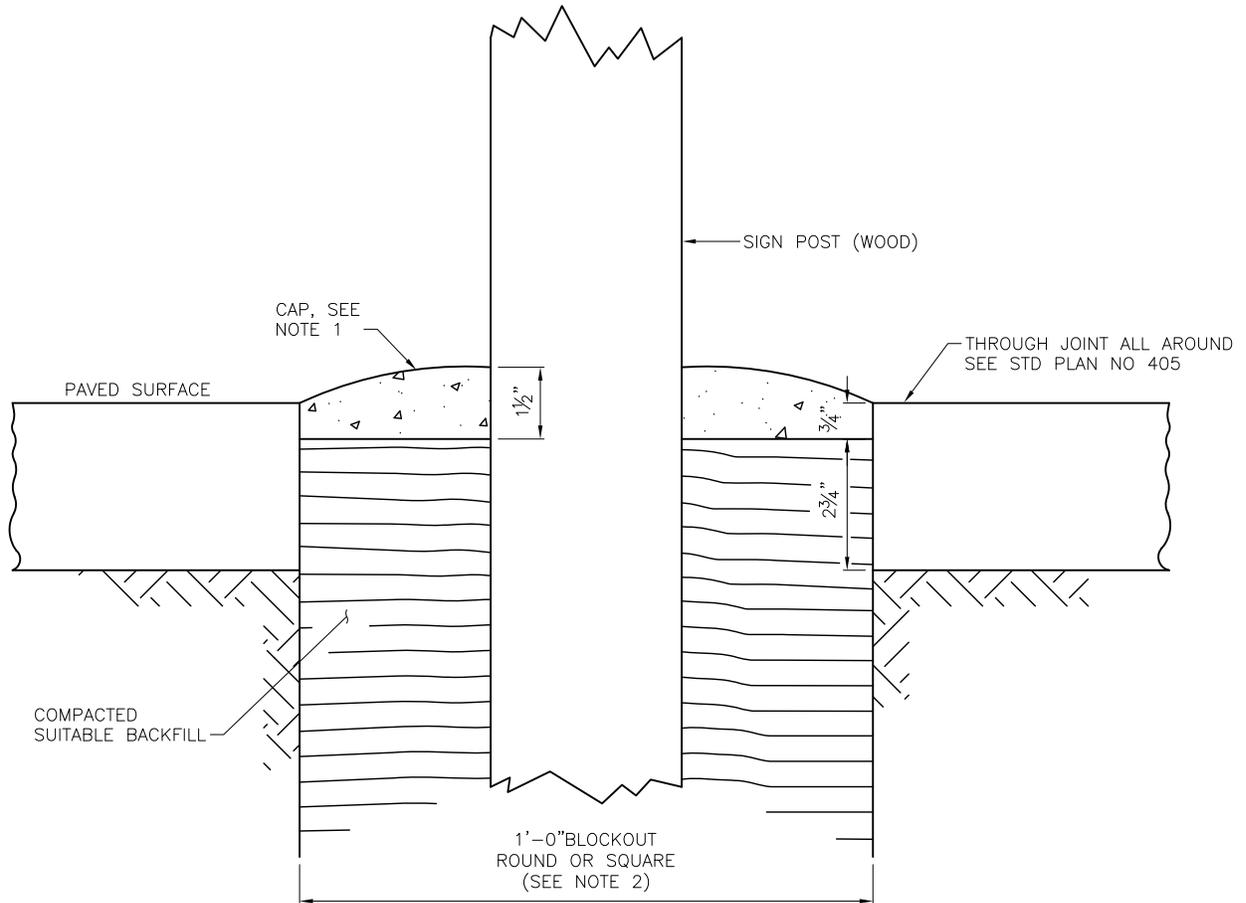
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

STREET NAME SIGN
PEDESTAL INSTALLATION



NOTES:

1. CAP SHALL BE MADE OF THE SAME MATERIAL AS THE SURROUNDING PAVED SURFACE AND SHALL BE MOUNDED FOR DRAINAGE AWAY FROM POST.
2. BLOCKOUTS SHALL 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 SHALL NOT EXCEED 1'-0" NOMINAL DIAMETER.

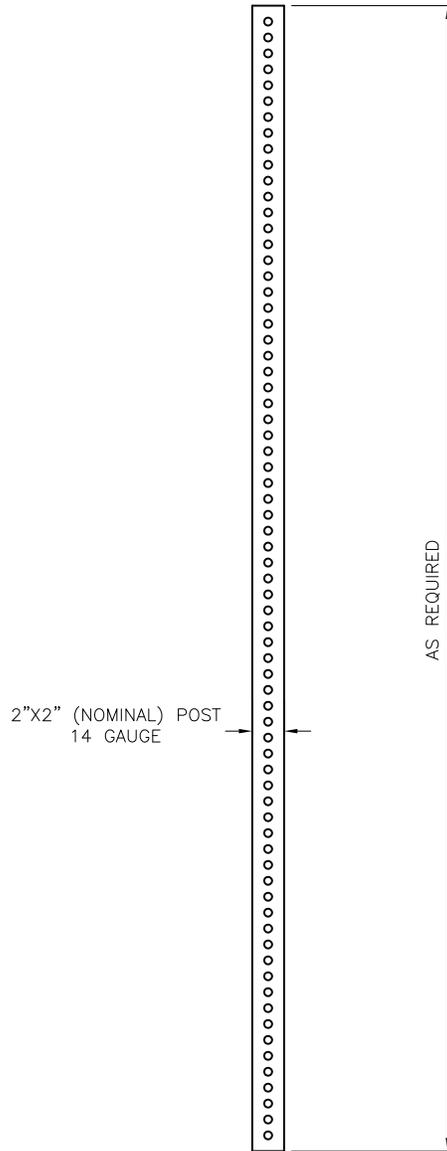
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

POST CAP



QWIK PUNCH TELES PAR STANDARD SIGN POST
(TS-5, TS-8, TS-10, TS-12)

NOTES:

1. SEE STD PLANS NO 620 & 621

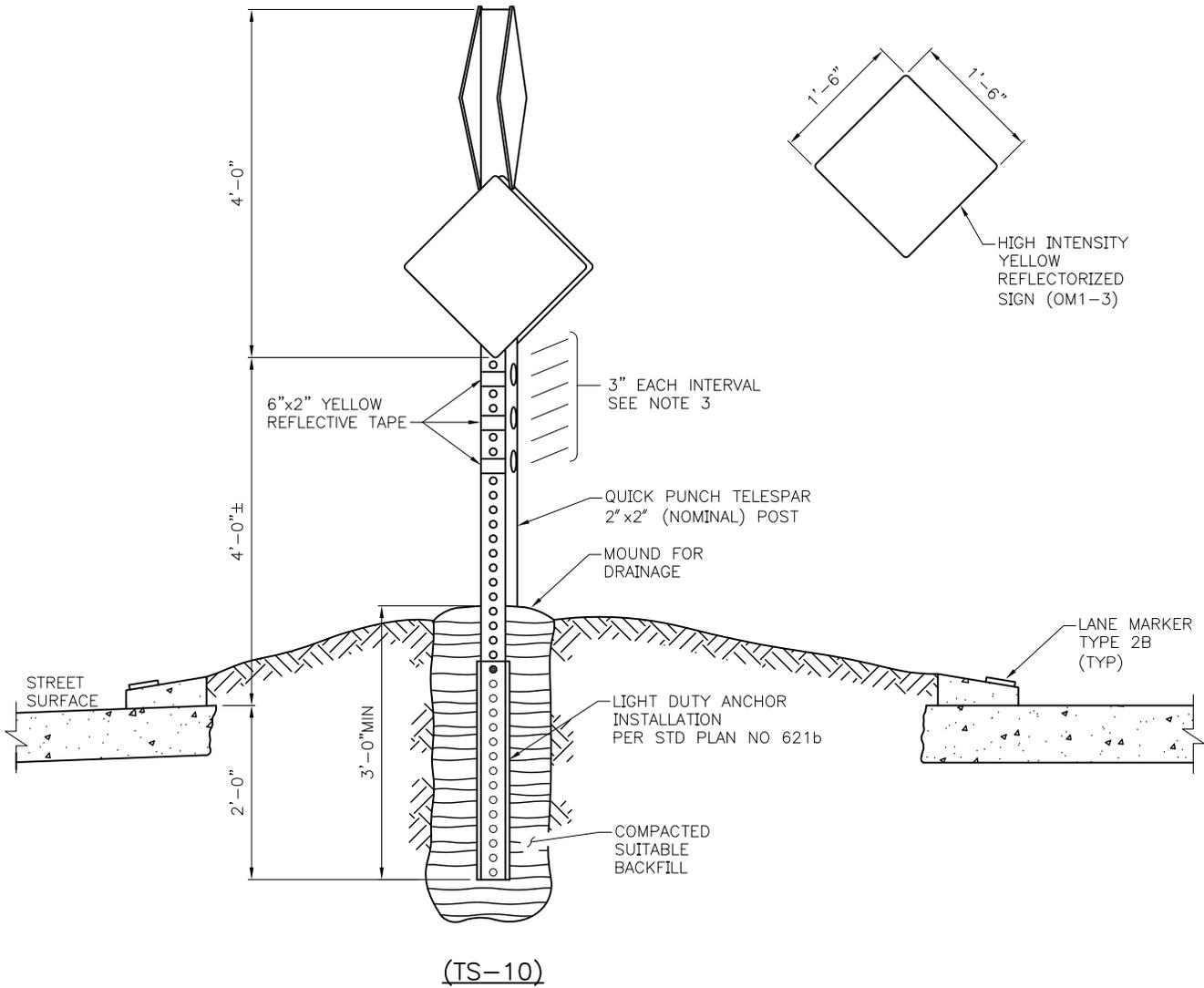
REF STD SPEC SEC 8-21



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 SHALL 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

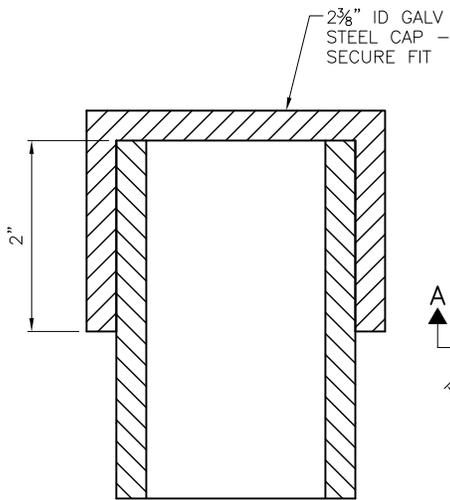
REF STD SPEC SEC 8-21



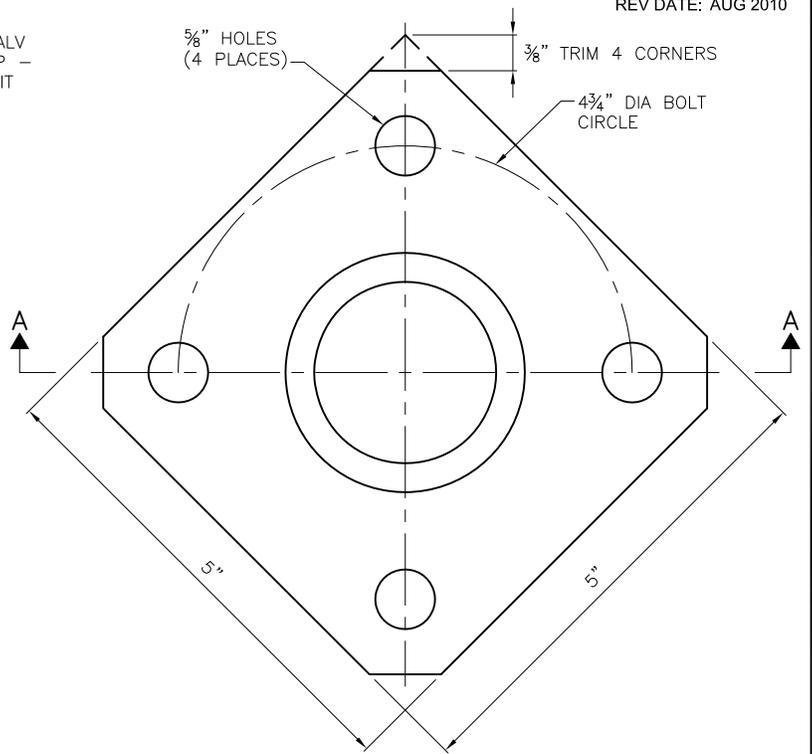
City of Seattle

NOT TO SCALE

**OBJECT MARKER INSTALLATION
IN TRAFFIC CIRCLE**

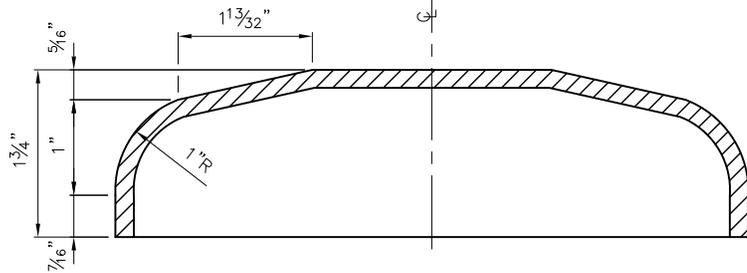
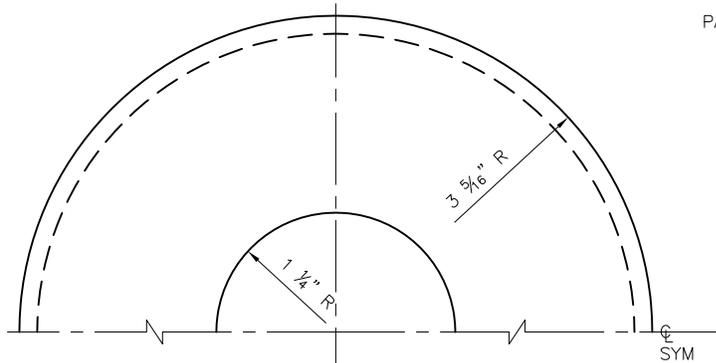


METER POST CAP
(TO BE USED W/ SIGN INSTALLATION)

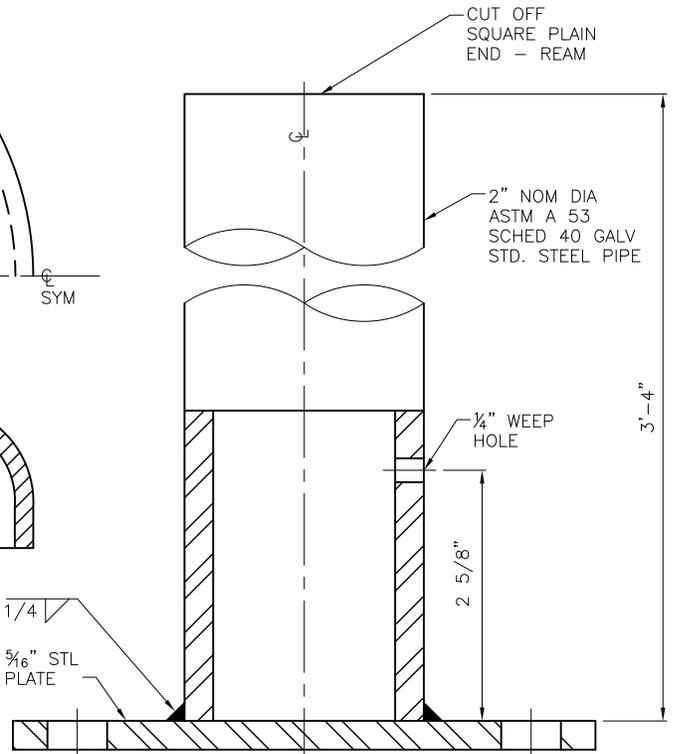


METER POST

PRIME WITH EPOXY ZINC PHOSPHATE PRIMER.
PAINT WITH TWO (2) COATS OF POLY URETHANE PAINT, ALUMINUM COLOR



METER POST BASE CANOPY
MATERIAL: 0.062' 2-5-0 ALUM



SECTION A-A

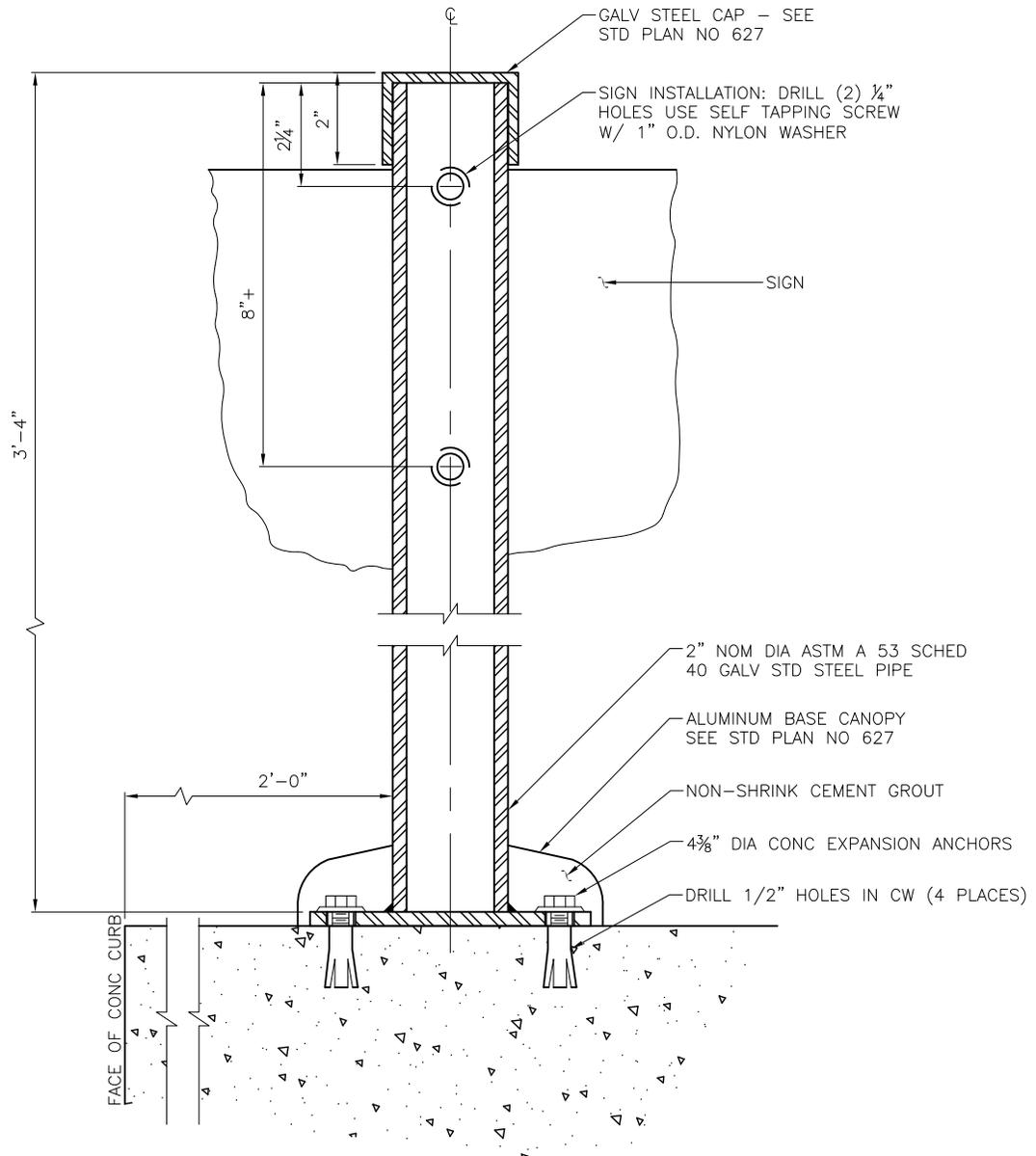
REF STD SPEC SEC 8-21



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PARKING METER POST & ACCESSORIES



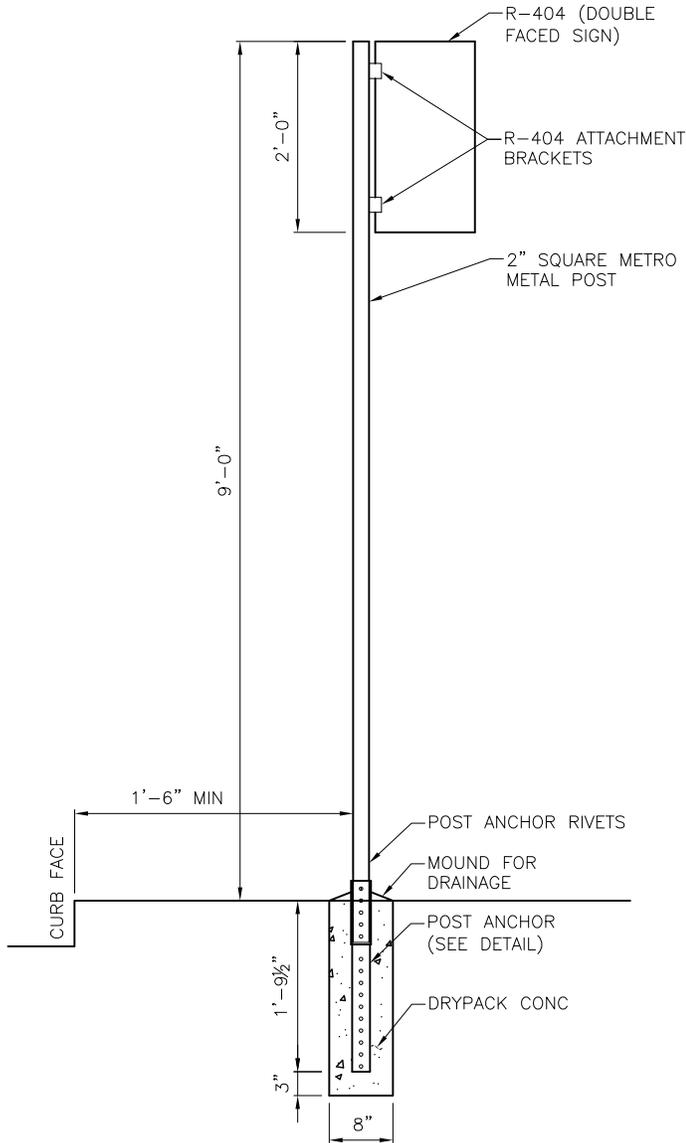
REF STD SPEC SEC 8-21



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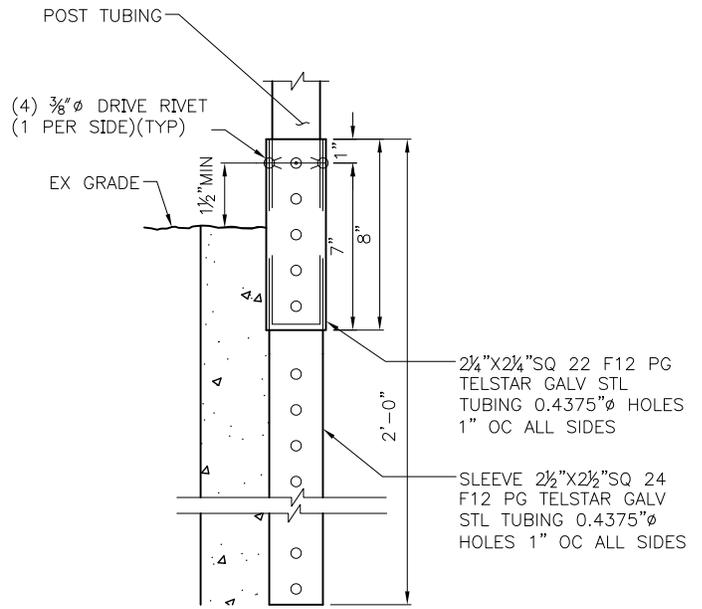
SURFACE MOUNT METER POST INSTALLATION DETAIL



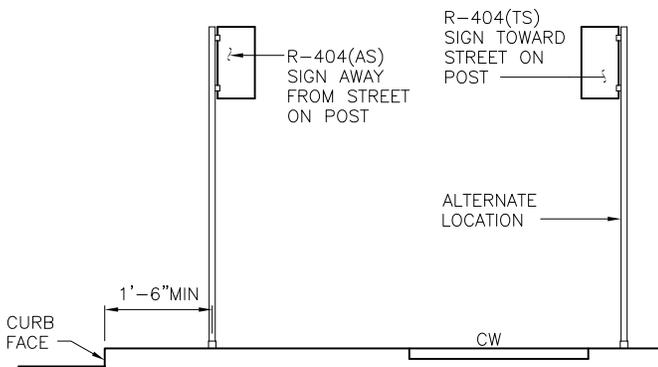
DIRECT BURIAL INSTALLATION

NOTES:

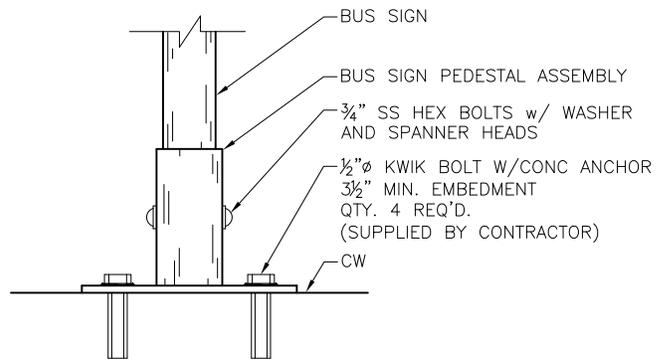
1. POST ANCHOR RIVETS SHALL BE 1 1/2" ABOVE GROUND LEVEL
2. ATTACHMENT BRACKETS SHALL FACE AWAY FROM STREET AS WHEN POST IS LOCATED 3'-0" FROM EDGE OF CURB. ATTACHMENT BRACKETS SHALL FACE TOWARDS STREET (TS) WHEN POST IS LOCATED AT BACK SIDE OF SIDEWALK
3. FOR POST RELOCATIONS, OLD CONCRETE SHALL BE 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 SHALL 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 SHALL BE ADJUSTED TO PROVIDE A MIN 3 1/2" EMBEDMENT THROUGH THE GROUT INTO THE EXISTING CONCRETE.



POST ANCHOR DETAIL



SIGN LOCATION DETAIL



SURFACE MOUNT INSTALLATION

REF STD SPEC SEC 8-21

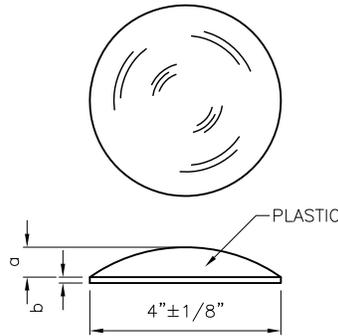


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NOT TO SCALE

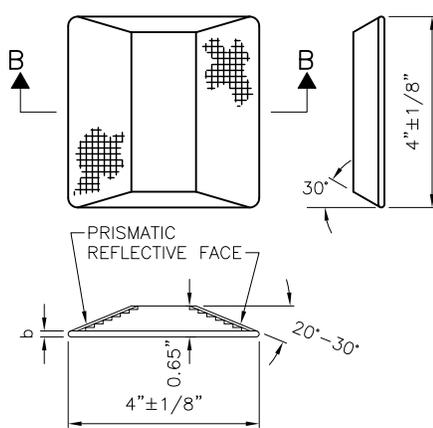
METRO BUS ZONE SIGN INSTALLATION

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



LANE MARKER—TYPE 1

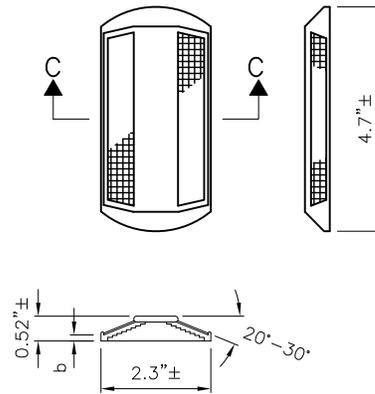
▲ DIRECTION OF TRAFFIC



SECTION B-B

LANE MARKER—TYPE 2A

4" PRISMATIC REFLECTIVE MARKER



SECTION C-C

LANE MARKER—TYPE 2B

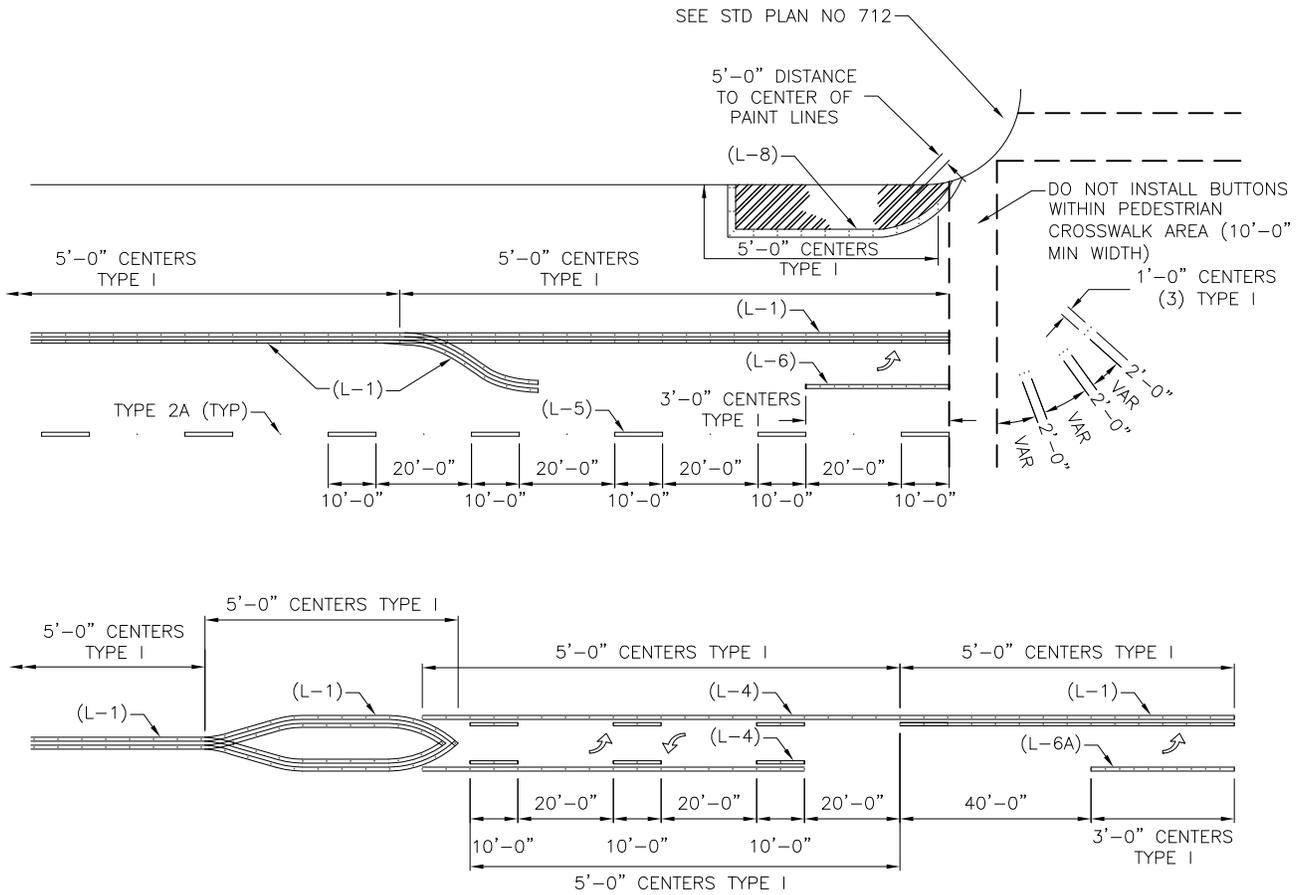
REF STD SPEC SEC 8-08 & 9-21



City of Seattle

NOT TO SCALE

TRAFFIC BUTTONS &
LANE MARKERS



TYPICAL TYPE 1 TRAFFIC BUTTON (4") INSTALLATION DETAILS

TRAFFIC BUTTONS SHALL BE INSTALLED TO CONFORM WITH TYPE OF PAVEMENT MARKING (DESIGNATED AS L-1, L-4, ETC) AND ARE TO BE ARRANGED AND SPACED AS SHOWN ON THIS DRAWING. COLOR OF TRAFFIC BUTTONS IS TO MATCH COLOR OR PAVEMENT MARKINGS. TRAFFIC BUTTONS SHALL BE INSTALLED PRIOR TO ANY PAINT LINE INSTALLATION, EXISTING CHANNELIZATION IN CONFLICT WITH NEW OR REVISED CHANNELIZATION SHALL BE REMOVED (SEE STD SPEC SEC 2-02.3(3)J)

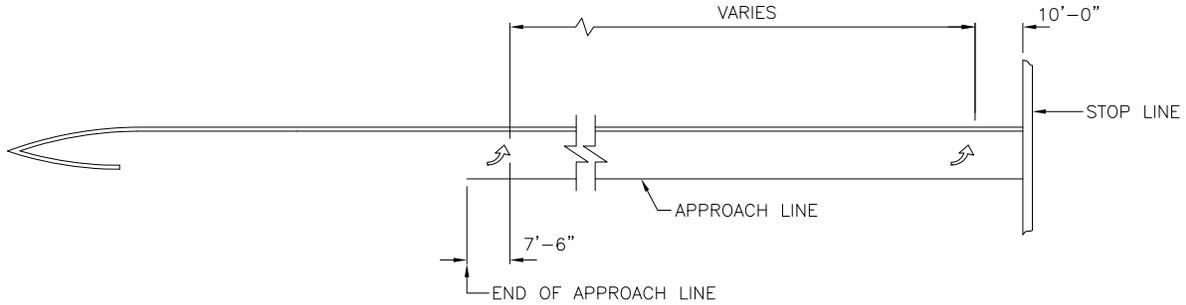
REF STD SPEC SEC 8-22



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NOT TO SCALE

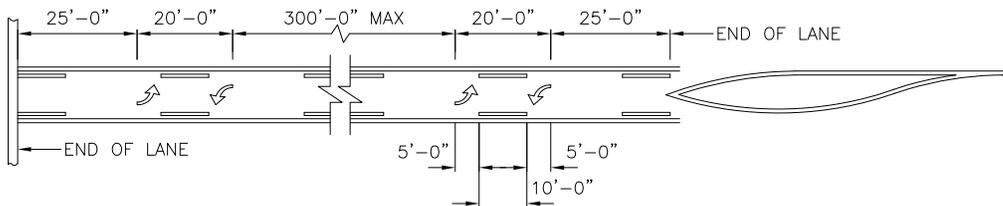
TYPICAL LEFT TURN
CHANNELIZATION AND
LEGEND PLACEMENT



TYPICAL LEFT TURN CHANNELIZATION

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

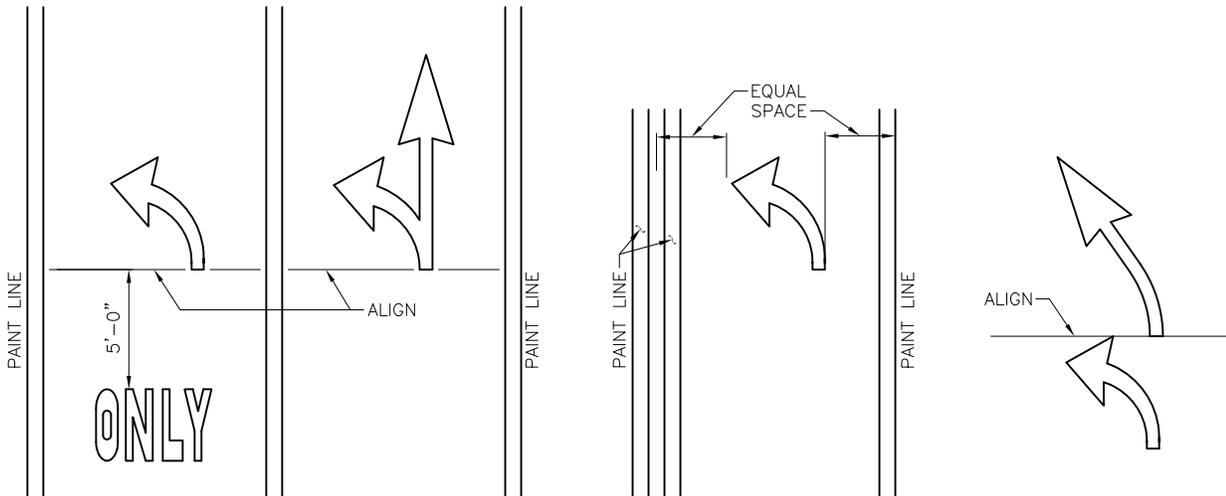
APPROACH LINE LENGTH	LEGEND SETS
LESS THAN 50 FEET	1 SET AT X-WALK END OF POCKET
50 FEET-120 FEET	2 SETS
125 FEET-300 FEET	3 SETS (SECOND LEGEND LOCATED MIDWAY BETWEEN FIRST AND LAST LEGENDS)
OVER 300 FEET	ADDITIONAL SETS SPACED AT APPROX 100 FT INTERVALS BETWEEN FIRST AND LAST SETS



TYPICAL TWO WAY LEFT TURN LANES

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

LANE LENGTH	LEGEND SETS
LESS THAN 50 FEET	1 SET (CENTERED BETWEEN BOTH ENDS OF LANE)
0 FEET-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



LEGEND PLACEMENT
LEGENDS IN ADJACENT LANES SHALL BE ALIGNED AS SHOWN

LEGENDS SHALL BE CENTERED WITHIN THE LANE TO WHICH THEY APPLY, AS SHOWN

LEGEND COMBINATIONS
OBLIQUE LEFT & 90° LEFT LEGENDS AND OBLIQUE RIGHT & 90° RIGHT LEGENDS MAY BE COMBINED AS SHOWN

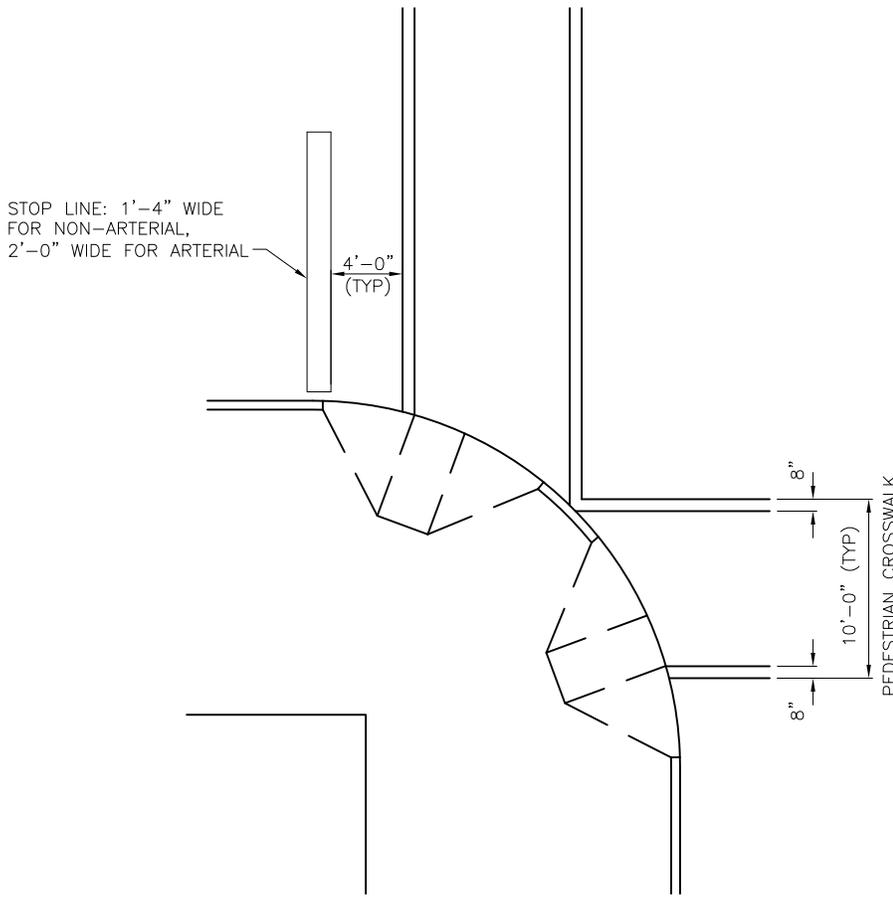
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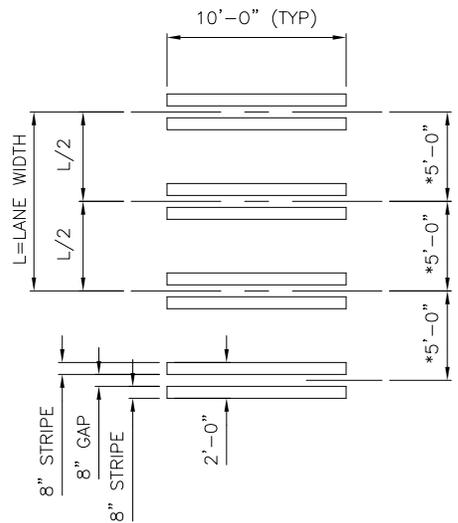
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NOT TO SCALE

TYPICAL LEFT TURN CHANNELIZATION AND LEGEND PLACEMENT



TYPICAL TRANSVERSE LINE CROSSWALK
(SHOWING CURB RAMPS & STOP LINE PLACEMENT)



TYPICAL "LADDER STYLE" PEDESTRIAN CROSSWALK

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

NOTES:

1. "LADDER STYLE" CROSSWALK SHALL BE USED IN MOST APPLICATIONS. "TRANSVERSE LINE" CROSSWALK MAY ONLY BE USED WITH APPROVAL OF ENGINEER.
2. LOWER LANDING OF CURB RAMP SHALL FALL WHOLLY WITHIN CROSSWALK LINES. SEE STANDARD PLAN NO 422a.
3. WHERE EXISTING TRAFFIC LOOP LOCATIONS ARE BETWEEN 4'-0" AND 2'-0" FROM THE EDGE OF CROSSWALK, STOP LINE MAY BE PLACED UP TO 2'-0" FROM THE CROSSWALK.
4. EXACT LOCATION OF CROSSWALK AND STOP LINES SHALL BE APPROVED BY SDOT.
5. COLORED OR TEXTURED PAVEMENT CROSSWALKS SHALL BE SUPPLEMENTED WITH EITHER "LADDER STYLE" OR "TRANSVERSE LINE" CROSSWALK MARKINGS.
6. EXISTING CROSSWALK MARKINGS THAT CONFLICT WITH NEW CROSSWALK MARKINGS SHALL BE REMOVED BY GRINDING.

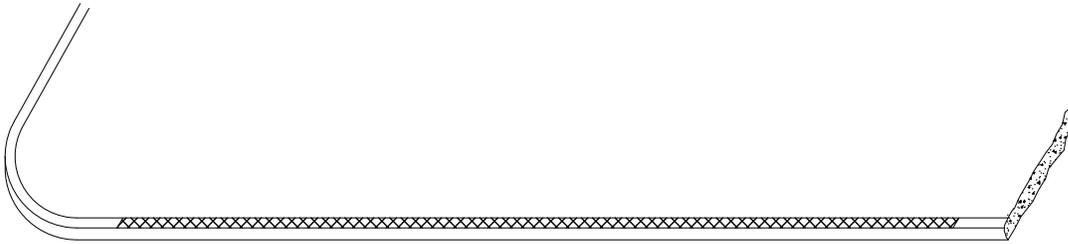
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

TYPICAL CROSSWALK & STOP LINE INSTALLATION DETAILS



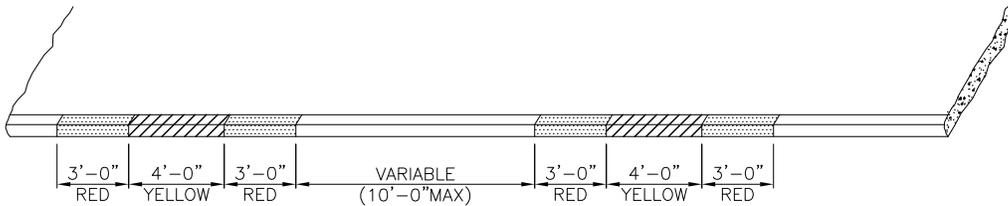
L-10
PASSENGER LOAD ZONE, ETC
(WHITE)



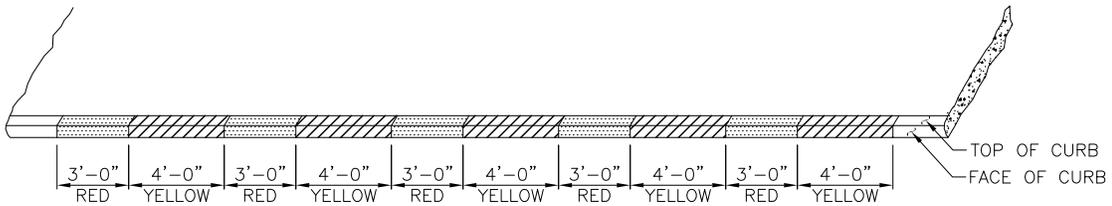
L-11
TOW-AWAY ZONE
(RED)



L-12
COMMERCIAL LOAD, TRUCK LOAD, LOAD & UNLOAD ZONE, ETC
(YELLOW)



L-13
BUS ZONE (NON PARKING METERED AREAS)
BUS ZONES ARE PAINTED ON TOP & FACE OF CURB



L-13
BUS ZONE (PARKING METERED AREAS)
BUS ZONES ARE PAINTED ON TOP & FACE OF CURB

NOTES:

1. TOTAL LENGTH OF CURB MARKINGS SHALL BE AS SHOWN ON DRAWINGS
2. PAINT SHALL BE APPLIED NEATLY ON THE CURB AND ALL PAINT SMEARS ON ADJACENT SURFACES SHALL BE REMOVED

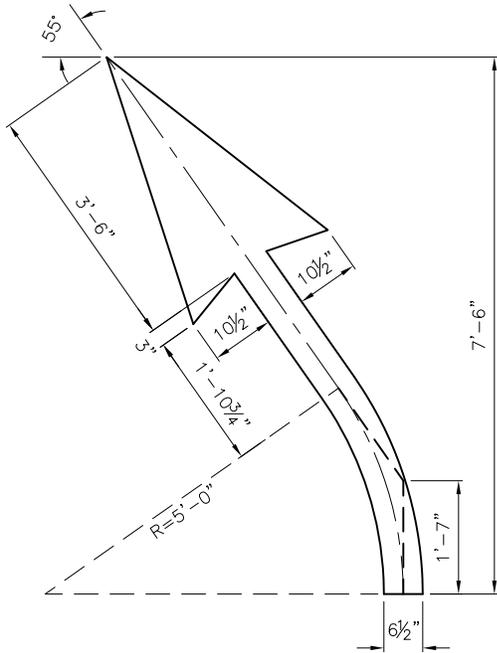
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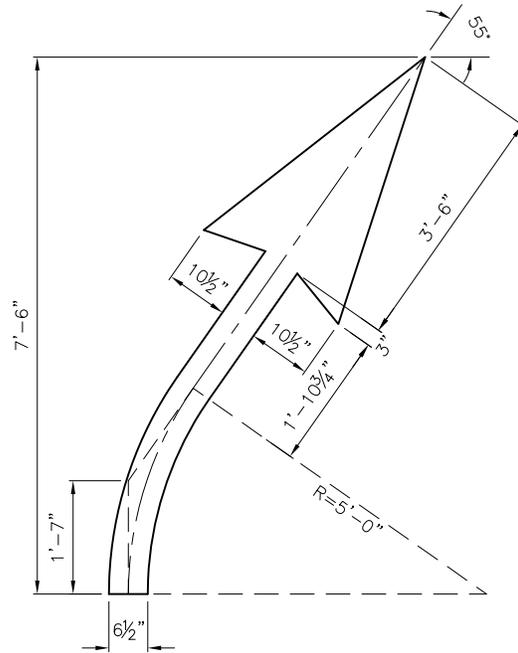
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NOT TO SCALE

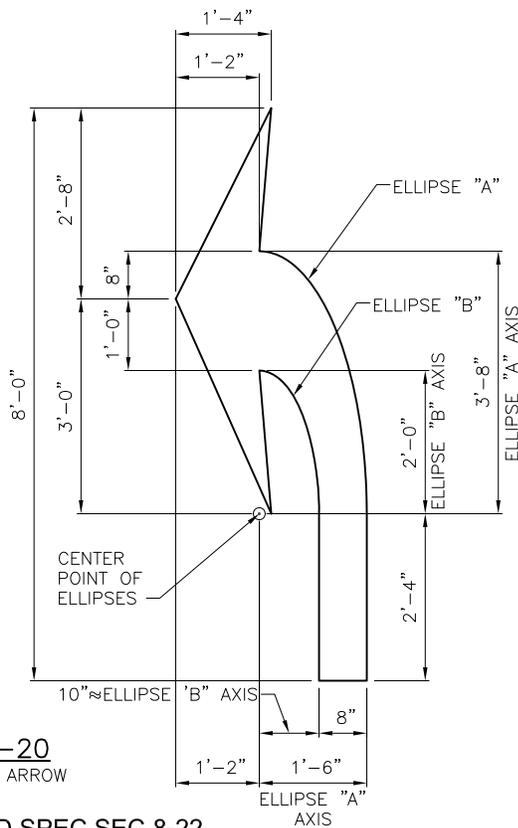
**CURB SPACE MARKING
DETAILS**



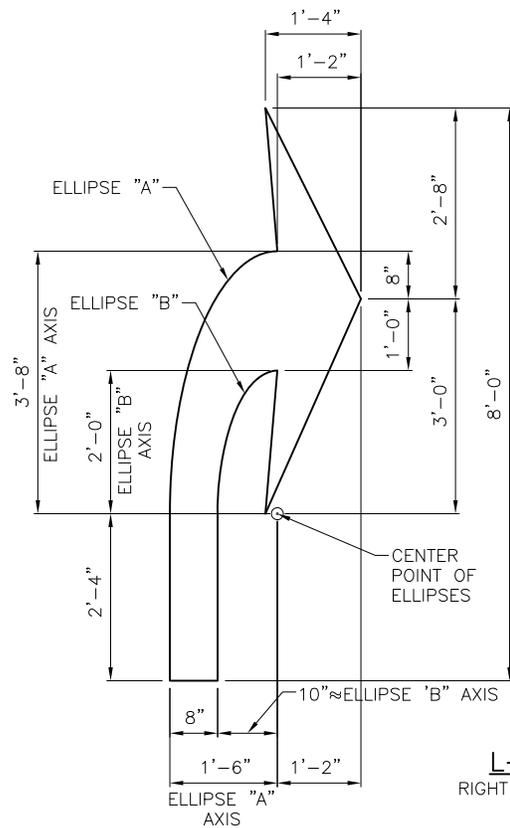
L-18
OBLIQUE LEFT ARROW



L-19
OBLIQUE RIGHT ARROW



L-20
LEFT ARROW



L-21
RIGHT ARROW

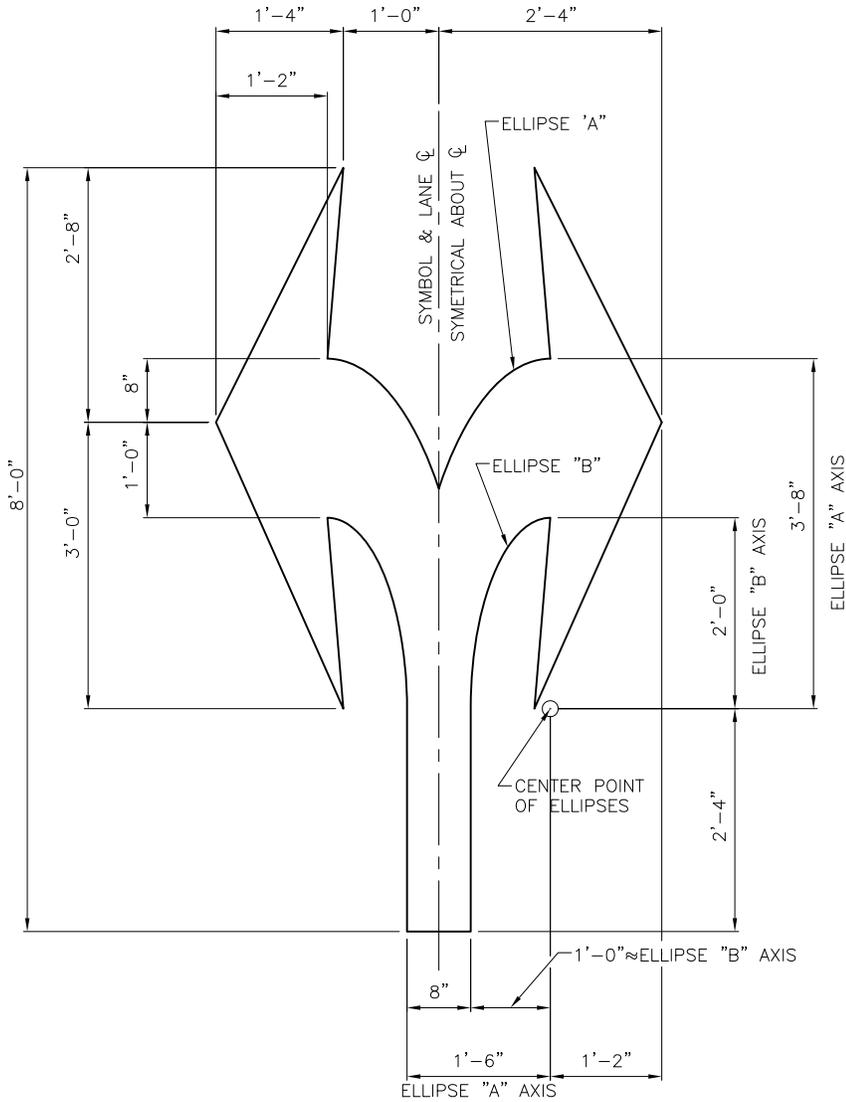
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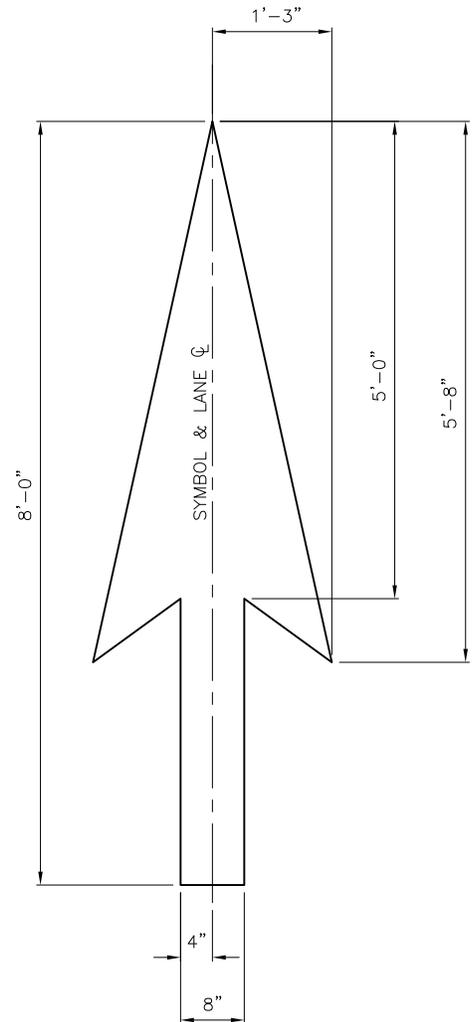
NOT TO SCALE

PAVEMENT MARKINGS
LEGENDS/SYMBOLS



L-17, L-17T
LEFT & RIGHT ARROWS

NOTE:
"T" = THERMOPLASTIC



L-22, L-22T
THROUGH ARROW

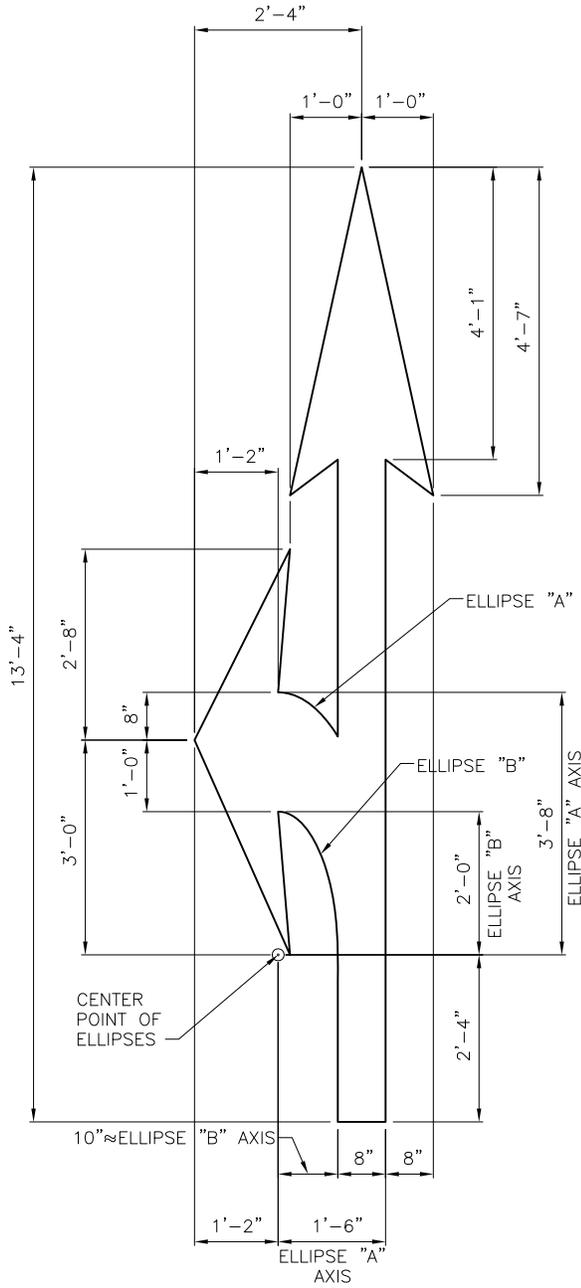
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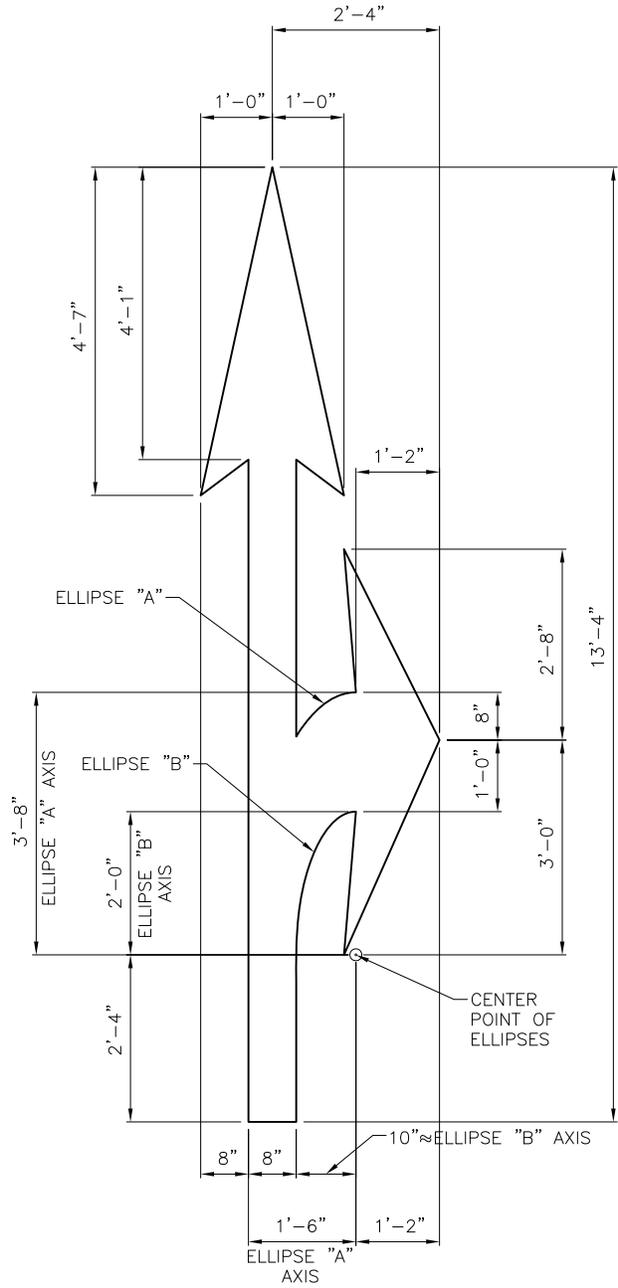
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NOT TO SCALE

PAVEMENT MARKINGS
LEGENDS/SYMBOLS



L-23
LEFT & THROUGH ARROWS



L-24
RIGHT & THROUGH ARROWS

REF STD SPEC SEC 8-22



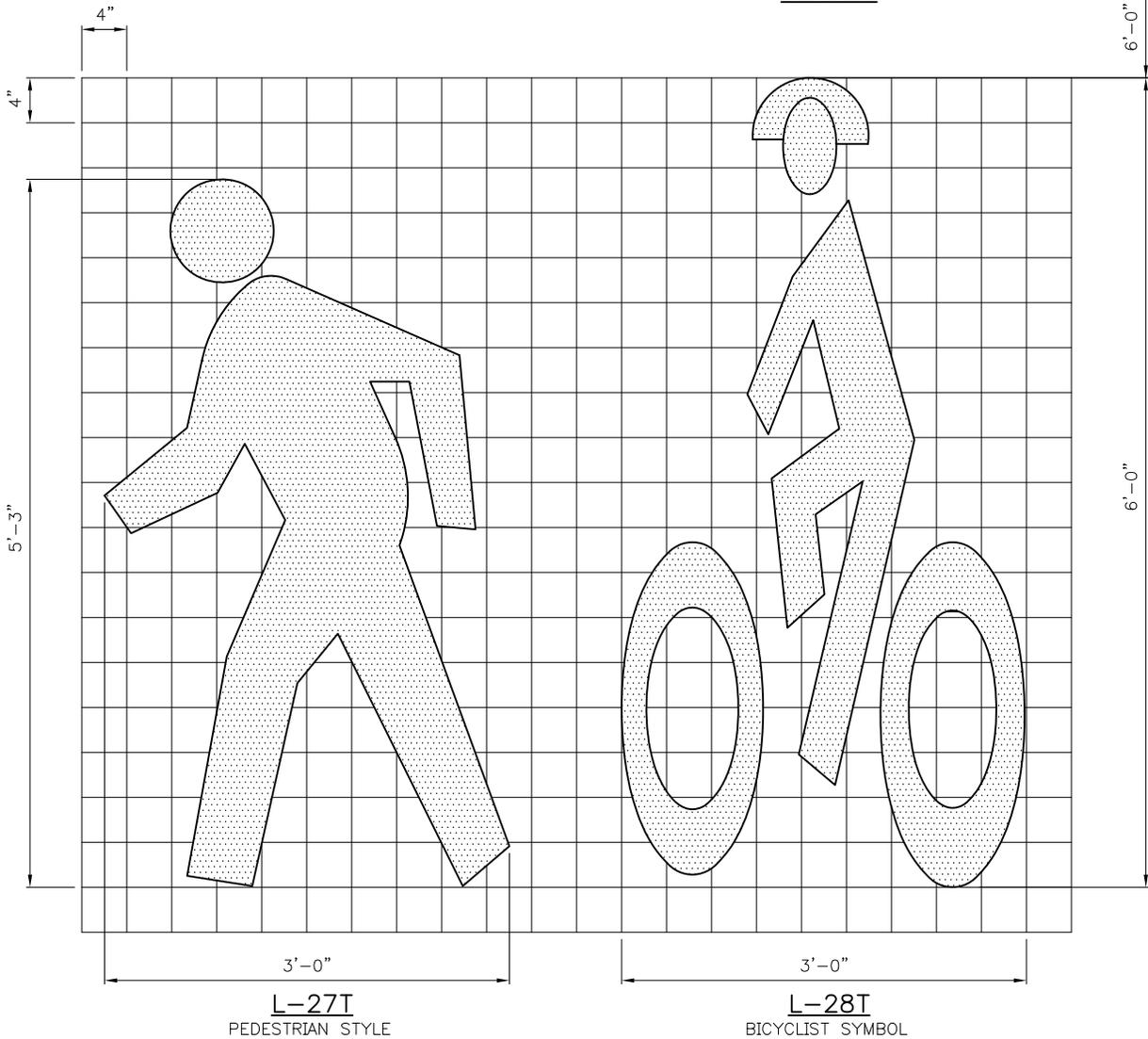
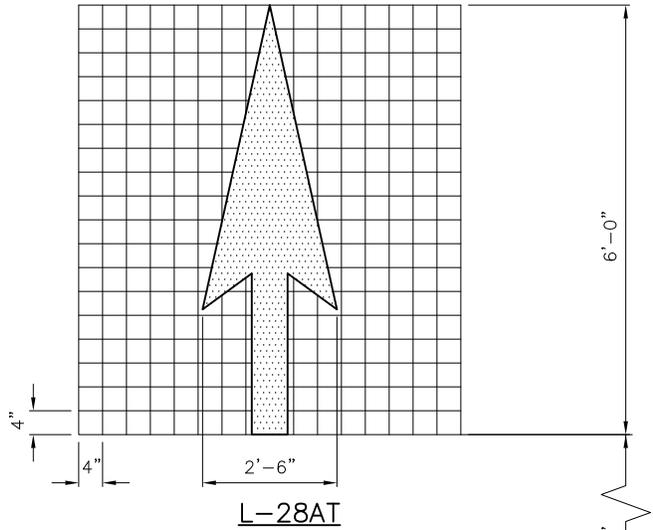
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NOT TO SCALE

PAVEMENT MARKINGS
LEGENDS/SYMBOLS

NOTES:

- 1. "T" = THERMOPLASTIC
- 2. L-28AT INCLUDES BICYCLE SYMBOL AND ARROW



L-27T
PEDESTRIAN STYLE

L-28T
BICYCLIST SYMBOL
(INCLUDES L-28A, LT-28AT)
(SEE NOTE 2)

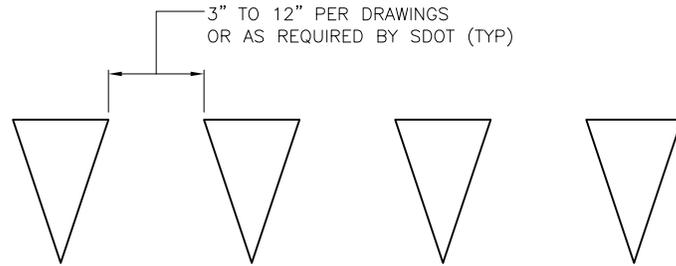
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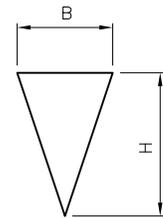
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**BICYCLIST & PEDESTRIAN
SYMBOLS**



↑
DIRECTION
OF TRAVEL



B = BASE WIDTH (12" OR 24" TYPICALLY)
H = HEIGHT (18" OR 36" TYPICALLY)

(1.5 x B)=H

L-9A, L-9AT
YIELD LINE

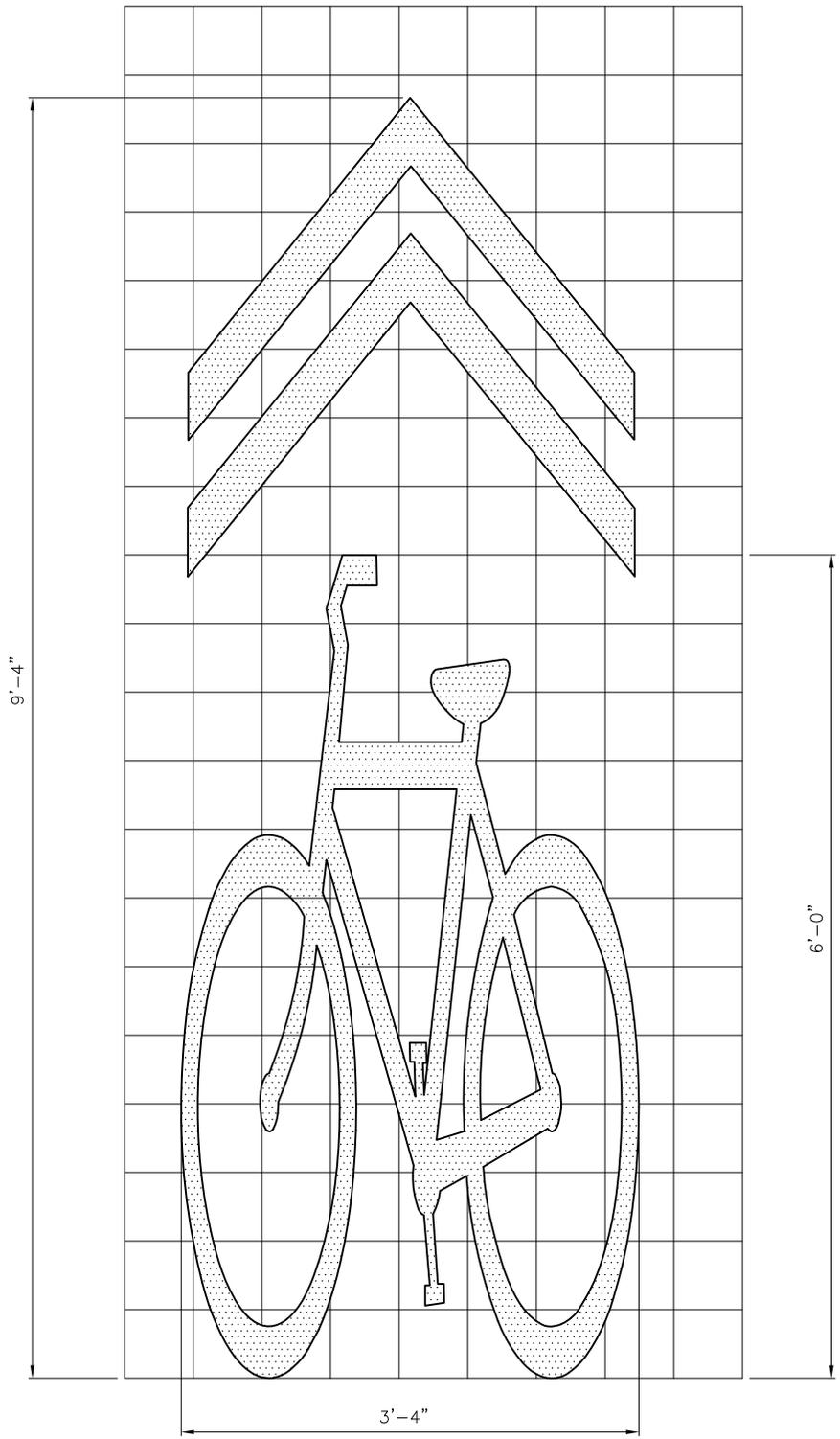
REF STD SPEC SEC 8-22



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NOT TO SCALE

PAVEMENT MARKINGS
LEGENDS/SYMBOLS



NOTES:
ALL ROUNDED CORNERS SHALL HAVE
A 1" RADIUS

L-28BT
SHARROW

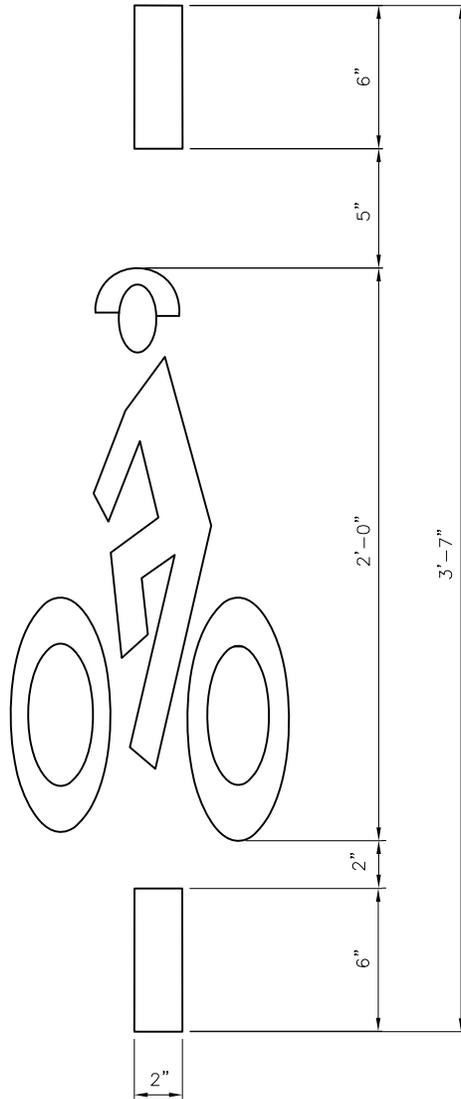
REF STD SPEC SEC 8-22



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NOT TO SCALE

SHARROW SYMBOL



L-36T

BICYCLE DETECTOR LOOP SYMBOL

NOTES:

SEE STD PLAN NO 530b FOR PLACEMENT

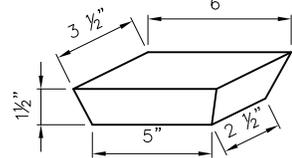
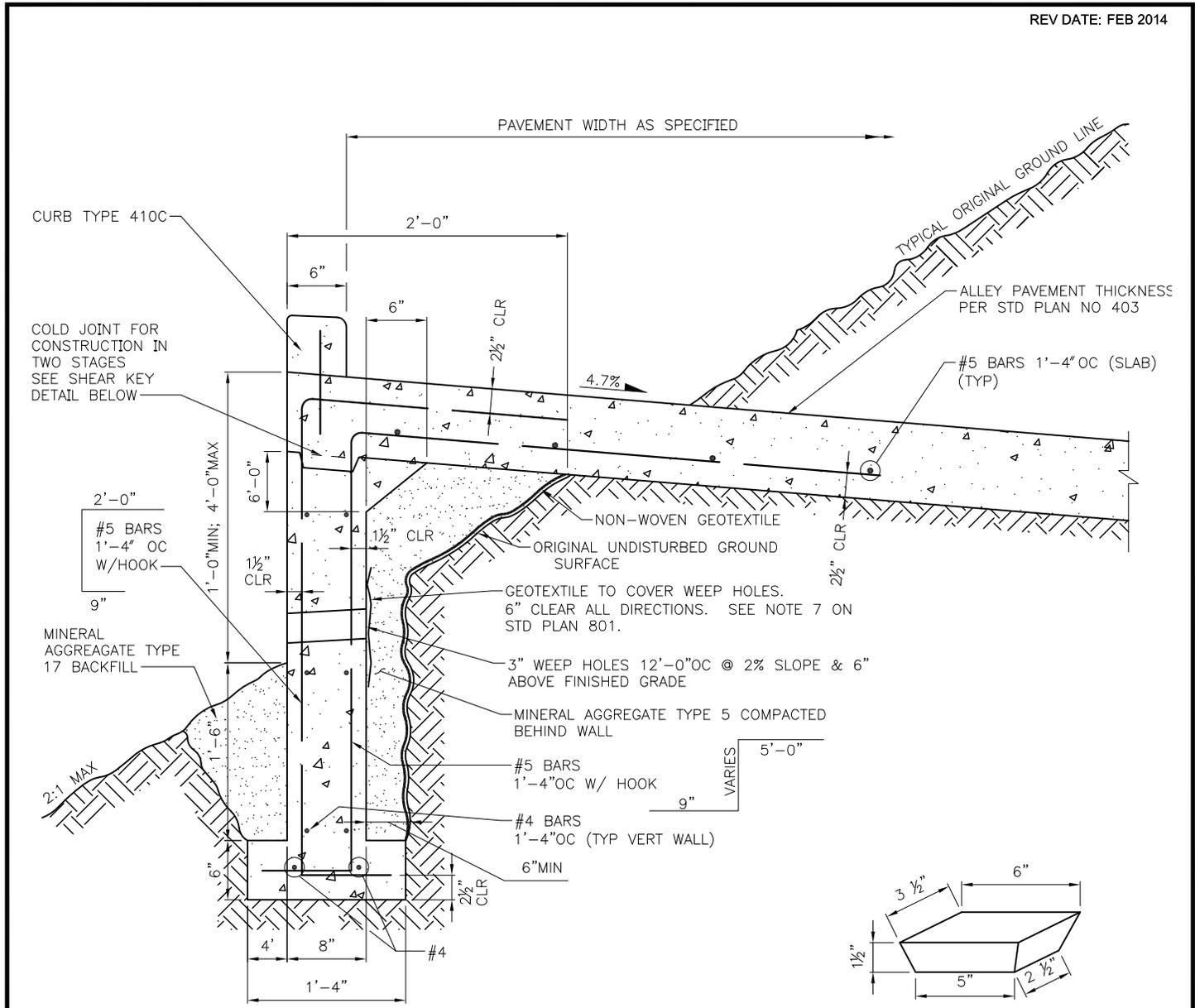
REF STD SPEC SEC 8-22



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**BICYCLE DETECTOR
PAVEMENT MARKING**



BEVELED BLOCK FOR FORMING SHEAR KEY IN WALL SECTION TO BE MADE FROM STANDARD 2"x4"x6" WOOD OR OTHER SUITABLE MATERIAL (SEE NOTE 3)

SHEAR KEY

NOTES:

1. BASE OF SUPPORT WALL TO BE BEARING ON COMPACTED SUITABLE MATERIAL
2. BACK FORM FOR SUPPORT WALL MAY BE OMITTED AND CONCRETE PLACED AGAINST NATIVE EARTH WHEN GROUND CONDITIONS PERMIT. CLEARANCE TO REINF STEEL IN BACK FACE SHALL BE 2 1/2"
3. WHEN CONSTRUCTION OF ALLEY PAVEMENT IS NOT PLACED INTEGRAL WITH SUPPORT WALL, SHEAR KEYS SHALL BE INSTALLED 1'-6" ON CENTERS
4. CONCRETE FOR SUPPORT WALL SHALL BE CLASS 4000
5. REINFORCING STEEL ASTM A706 (AASHTO M 31 GRADE 60)
6. VEHICULAR & PEDESTRIAN RAILING PER RIGHT OF WAY IMPROVEMENT MANUAL

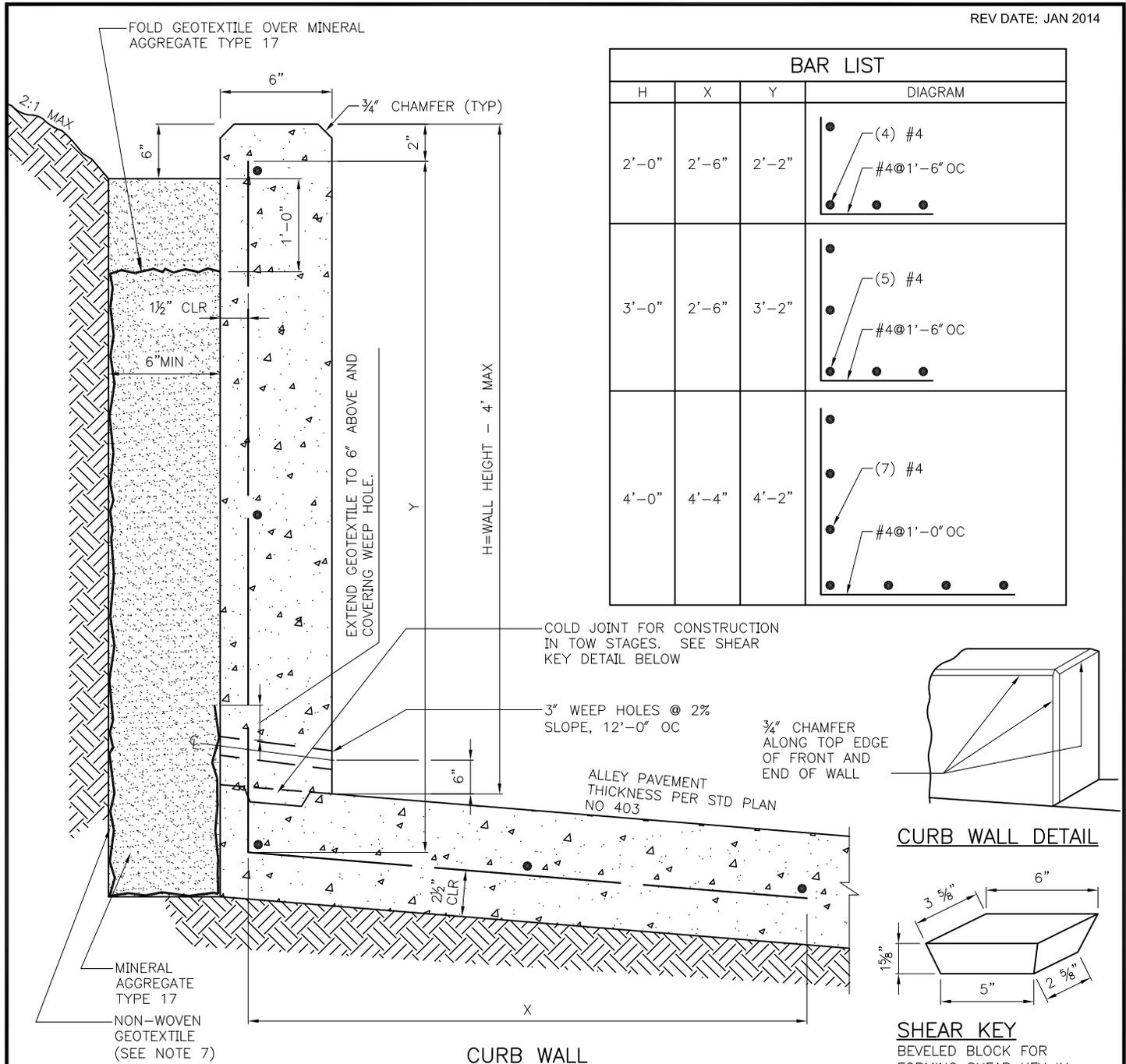
REF STD SPEC SEC 8-17, 8-19



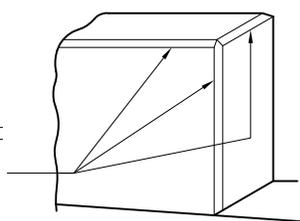
City of Seattle

NOT TO SCALE

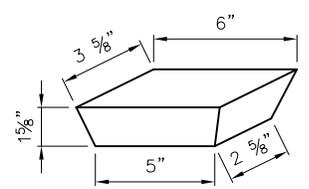
SUPPORT WALL



BAR LIST			
H	X	Y	DIAGRAM
2'-0"	2'-6"	2'-2"	
3'-0"	2'-6"	3'-2"	
4'-0"	4'-4"	4'-2"	



CURB WALL DETAIL



SHEAR KEY
BEVELED BLOCK FOR FORMING SHEAR KEY IN WALL SECTION TO BE MADE FROM STANDARD 2"x4"x6" WOOD OR OTHER SUITABLE MATERIAL (SEE NOTE 4)

NOTES:

1. MATCH WALL THROUGH JOINTS WITH PAVEMENT THROUGH JOINTS. DISCONTINUE HORIZONTAL REINFORCEMENT AT JOINTS AND MAINTAIN 1 1/2' CLEAR TO ALL REINFORCING AT JOINTS
2. CONC CLASS 4000 FOR CURB WALL
3. MAX HEIGHT 4'-0" (MIN PAVEMENT WIDTH IS 12'-0" FOR WALLS HIGHER THAN 3'-0")
4. WHEN CONSTRUCTION OF WALL IS NOT PLACED INTEGRAL WITH ALLEY PAVEMENT, SHEAR KEY INDENTATIONS SPACED 1'-6" OC SHALL BE INSTALLED IN THE PAVEMENT SLAB
5. REINF STEEL ASTM A706 (AASHTO M 31 GRADE 60)
6. ANY RAILING ON TOP OF WALL PER RIGHT OF WAY IMPROVEMENT MANUAL
7. NON-WOVEN GEOTEXTILE TO BE MODERATE SURVIVABILITY, ANY CLASS PER TABLES 1 AND 2 STD SPEC SEC 9-37
8. ALLEY THICKNESS PER STANDARD PLAN NO 403

REF STD SPEC SEC 8-17



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CURB WALL