

PROPOSED

2023 Edition of the

**City of Seattle Standard Plans
for Municipal Construction**

2023 Edition City of Seattle Standard Plans for Municipal Construction

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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.

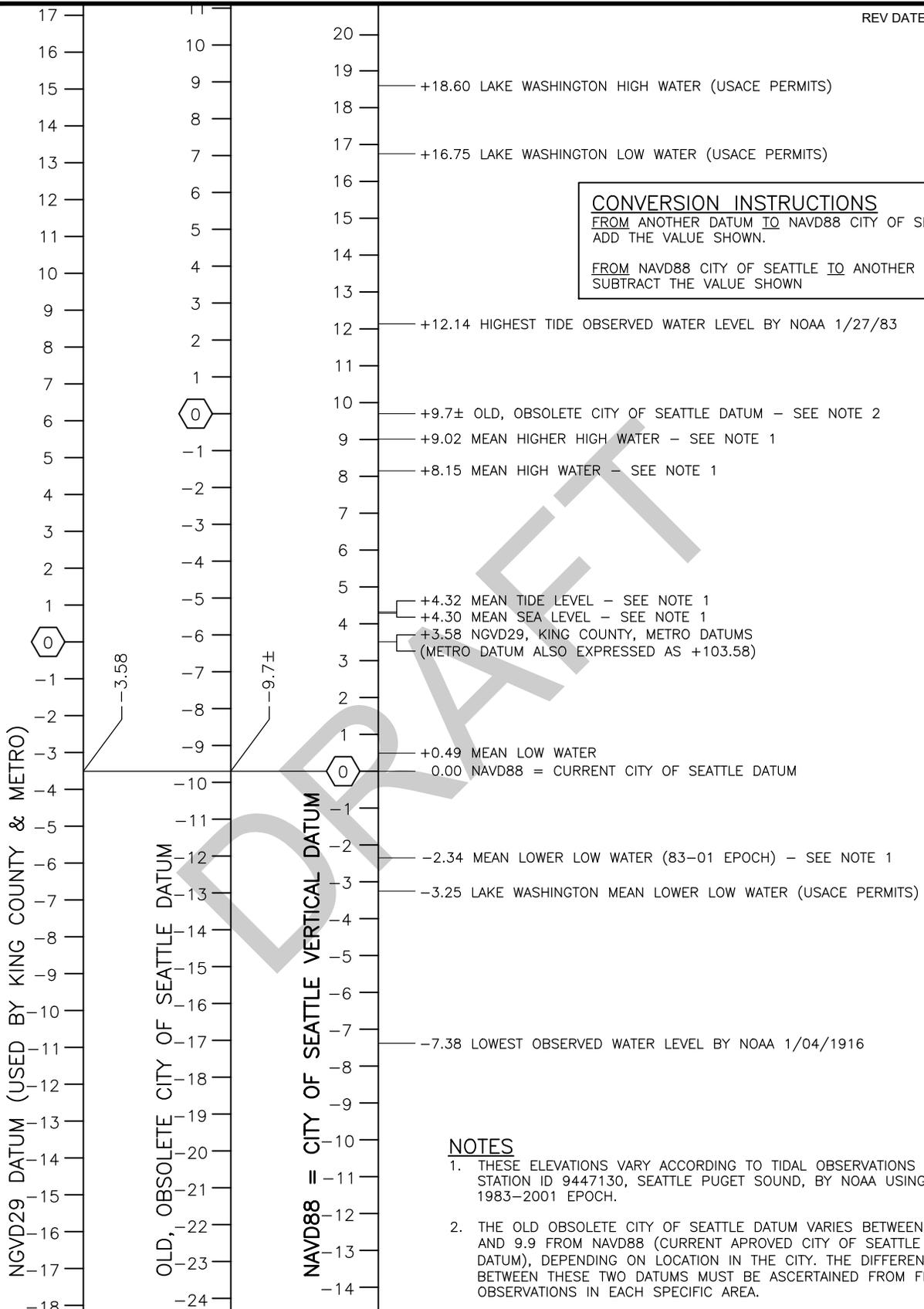
REF STD SPEC SEC 1-07.16(1)A, 1-07.28



City of Seattle

NOT TO SCALE

ELEVATIONS & DATUMS



CONVERSION INSTRUCTIONS
 FROM ANOTHER DATUM TO NAVD88 CITY OF SEATTLE,
 ADD THE VALUE SHOWN.
 FROM NAVD88 CITY OF SEATTLE TO ANOTHER DATUM,
 SUBTRACT THE VALUE SHOWN

NOTES

1. THESE ELEVATIONS VARY ACCORDING TO TIDAL OBSERVATIONS FOR STATION ID 9447130, SEATTLE PUGET SOUND, BY NOAA USING 1983-2001 EPOCH.
2. THE OLD OBSOLETE CITY OF SEATTLE DATUM VARIES BETWEEN 9.2 AND 9.9 FROM NAVD88 (CURRENT APPROVED CITY OF SEATTLE DATUM), DEPENDING ON LOCATION IN THE CITY. THE DIFFERENCE BETWEEN THESE TWO DATUMS MUST BE ASCERTAINED FROM FIELD OBSERVATIONS IN EACH SPECIFIC AREA.

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

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ABBREVIATIONS

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

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

REF STD SPEC SEC 1-01.2



City of Seattle

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ABBREVIATIONS

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

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

REF STD SPEC SEC 1-01.2



City of Seattle

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ABBREVIATIONS

MAX	Maximum
MB	Mailbox
MCV	Manual Control Valve
MDV	Manual Drain Valve
MH	Maintenance Hole
MIC	Monument in Case
MIN	Minimum
MIPT	Male Iron Pipe Thread
MISC	Miscellaneous
MJ	Mechanical Joint
ML \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
PCW	Pervious Concrete Walk

PDP	Perforated Drain Pipe
PE	Plain End
PED	Pedestrian
PG	Performance Grade
PH	Phase
PI	Point of Intersection
PL	Plate, Place, Polyethylene
\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

REF STD SPEC SEC 1-01.2



City of Seattle

NOT TO SCALE

ABBREVIATIONS

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

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

REF STD SPEC SEC 1-01.2



City of Seattle

NOT TO SCALE

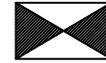
ABBREVIATIONS

ITEM

EXISTING

PROPOSED

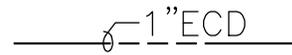
Signal Controller Cabinet



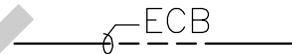
Electrical Vault



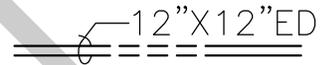
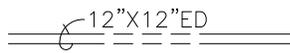
Electrical Conduit



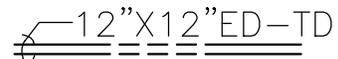
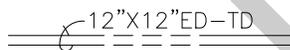
Electrical Cable (direct burial)



Electrical Duct



Combined Electrical & Telephone Duct



Span Wire



Aerial Interconnect Cable



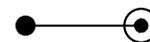
Transmission Pole (steel w/ conc base)



City Wood Pole



City Wood Pole w/ HPS



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

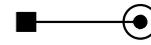
STANDARD SYMBOLS
ELECTRICAL

ITEM

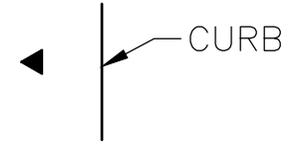
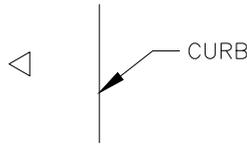
EXISTING

PROPOSED

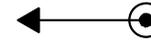
Light Pole
(metal) w/ HPS



Strain Pole
(metal)



Combined
Lighting Strain
Pole HPS



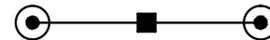
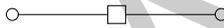
Luminaire



Mercury Vapor
Luminaire



Double Light
Pole



Utility Wood Pole



Utility Guy Pole



Anchor



Ground



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REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
ELECTRICAL

ITEM

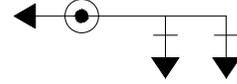
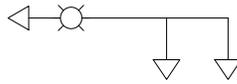
EXISTING

PROPOSED

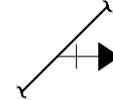
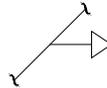
Traffic Signal Mast
Arm Pole



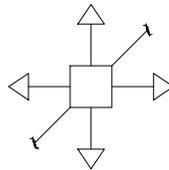
Traffic Signal Mast Arm
Pole w/ Luminaire



Traffic Signal on
Span Wire



Multi-Directional Traffic
Signal on Span Wire



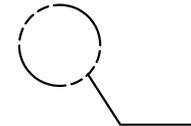
Traffic Signal Conduit



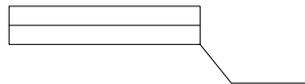
Traffic Signal Cable



Detector Loop, Dipole
(loop schedule)



Detector Loop, Quadrapole
(loop schedule)



REF STD SPEC SEC



City of Seattle

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		

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REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
ELECTRICAL

SIGNALIZATION



Vehicle & Pedestrian Signal Head
(?=Identification Number)



Traffic Sign (=?=Identificaiton Number)



Cable Runs
(?=Run Number per Wiring Schedule)



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



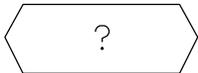
Construction Item
(?=Identification Number per Signalization Plan)

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

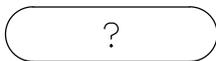
CHANNELIZATION & SIGNAGE



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



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



Relocate Signage
(?=Signage Identified on Plan)

REF STD SPEC SEC



City of Seattle

NOT TO SCALE

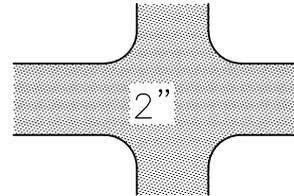
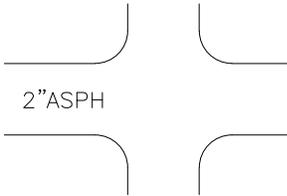
STANDARD SYMBOLS
SIGNALIZATION/CHANNELIZATION
& SIGNAGE

ITEM

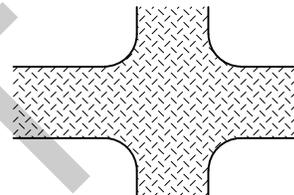
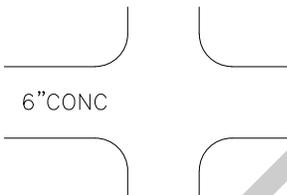
EXISTING

PROPOSED

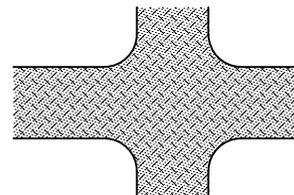
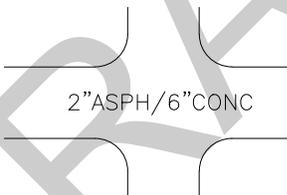
Pavement, HMA or
WMA (CL 1/2")



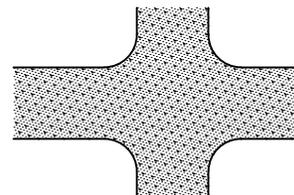
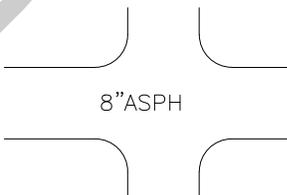
Roadway Cement
Concrete, (type to be
shown in drawings)



2" HMA or WMA, CL 1/2"
Over Roadway Cement
Concrete Base



2" HMA or WMA, CL 1/2"
over HMA or WMA, CL 1"



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REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
PAVING

ITEM

EXISTING

PROPOSED

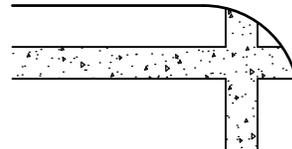
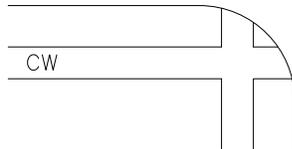
Type 410b Curb & Gutter



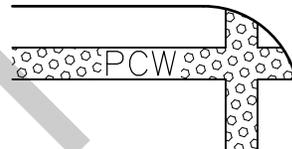
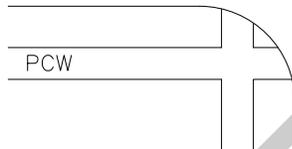
Type 410c Curb



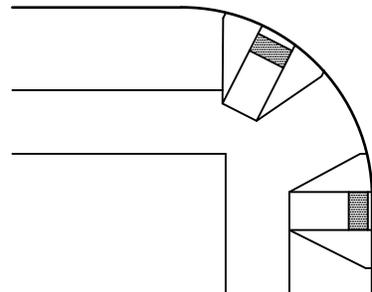
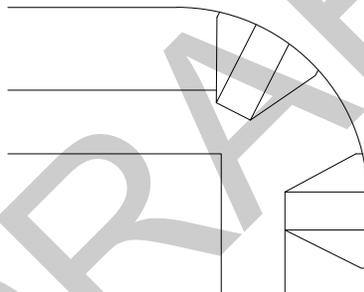
Cement Concrete Walk



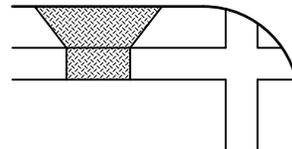
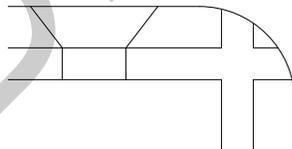
Pervious Concrete Walk



Curb Ramp



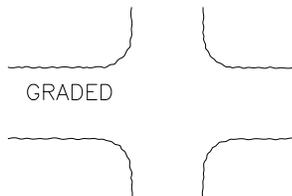
Type 430a Conc Dwy



Pervious Concrete Surface



Grading



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
PAVING

ITEM	EXISTING	PROPOSED
Maintenance Holes		MH-7
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

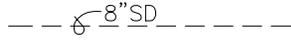
STANDARD SYMBOLS
SEWER & DRAINAGE

ITEM

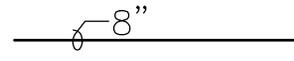
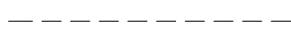
EXISTING

PROPOSED

Service Drain



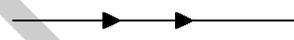
Inlet & CB Connection



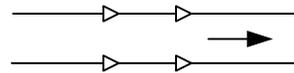
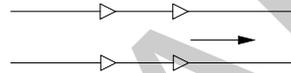
Open Ended Pipe



Ditch



Stream



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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)



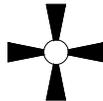
Monument in Case
(found or set)



Conc. Mon. (found or set)



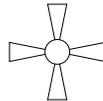
Section Corner (found or set)



Quarter Corner (found or set)



Section Corner (calculated)



Quarter Corner (calculated)



Rebar/Cap, Pipe/Cap Rebar,
Iron Pipe (found or set)



Tack/Lead, Tack PK Nail,
Spike (found or set)



Bench Mark (not found)



Brass Plug/Cap
(not found)



MIC. (not found)



Conc. Mon. (not found)



Rebar/Cap, Pipe/Cap Rebar,
Iron Pipe (not found)



Tack/Lead, Tack PK Nail,
Spike (not found)



Survey Shot Point



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
TOPOGRAPHIC & MISC

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

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	<u>CITY OF SEATTLE</u> KING COUNTY	
Slope Line		SLOPE LINE
Contours		
Slope Angle Horiz:Vert		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		

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REF STD SPEC SEC



City of Seattle

NOT TO SCALE

STANDARD SYMBOLS
TOPOGRAPHIC & MISC

ITEM	EXISTING	PROPOSED
------	----------	----------

Monitor Well



Street Name Sign



Traffic Sign



US Mail Box



Private Mail Box



Bollard



Posts



Parking Meter & Pay Station



Rectangular Casting



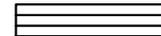
Circular Casting



Column



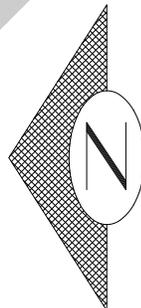
Jersey Barrier & Eco Block



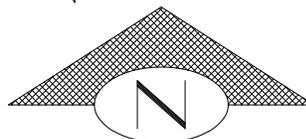
Tree Pit



North Arrow horizontal



North Arrow vertical



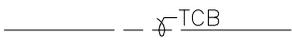
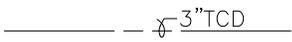
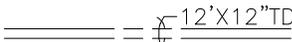
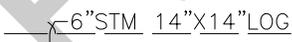
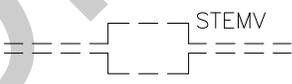
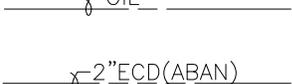
REF STD SPEC SEC



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 <1'-0\" data-bbox="385 640 565 660"/>		
Gas Main ≥1'-0\" data-bbox="385 700 565 720"/>		
Gas Valve		
Gas Meter		
Gas Regulator		
Petroleum or Oil		
Abandon(ed)		

REF STD SPEC SEC



City of Seattle

NOT TO SCALE

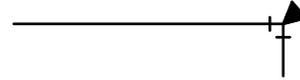
STANDARD SYMBOLS
PRIVATE UTILITIES

ITEM

EXISTING

PROPOSED

90° Bend w/Conc Blocking



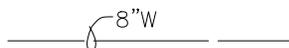
Plug w/Conc Blocking



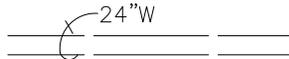
Tee w/Conc Blocking



Watermain
<1'-0" Dia



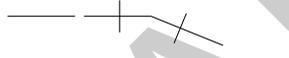
Watermain
≥1'-0" Dia



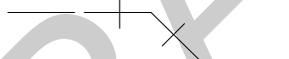
11 1/4° Bend



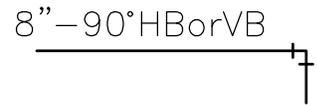
22 1/2° Bend



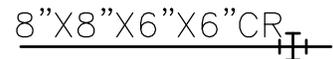
45° Bend



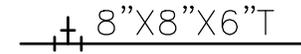
90° Bend



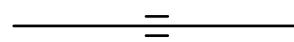
Cross



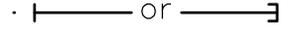
Tee



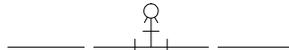
Pipe Sleeve



Plug



Hydrant



REF STD SPEC SEC



City of Seattle

NOT TO SCALE

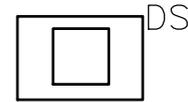
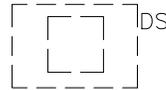
STANDARD SYMBOLS
WATER

ITEM

EXISTING

PROPOSED

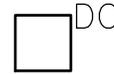
6" & Larger
Domestic Service



3" & 4" Domestic
Service



4" & Larger Fire
Service



2" & Smaller
Water Service



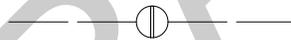
Valve Box



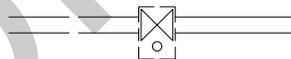
Gate Valve



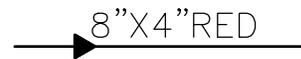
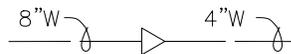
Gate Valve
w/ Chamber



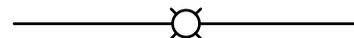
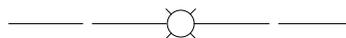
Gate Valve
w/ Vault Chamber



Reducer



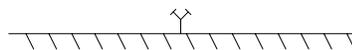
Air Valve



Blowoff



Fire Standpipe



REF STD SPEC SEC



City of Seattle

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STANDARD SYMBOLS
WATER

ITEM	EXISTING	PROPOSED
------	----------	----------

Water Test Station



Water Chamber



Sprinkler Head



Irrigation Valve



Angle Valve



Butterfly Valve



Ball Valve



Check Valve



Cone Valve



Globe Valve



Needle Valve



Plug Valve



Resilient Seal Gate Valve



Vertical Bend



Concrete Blocking



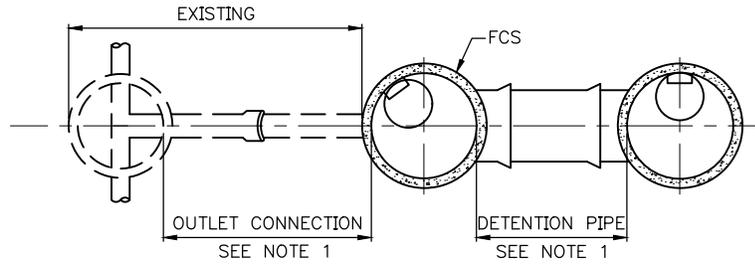
REF STD SPEC SEC



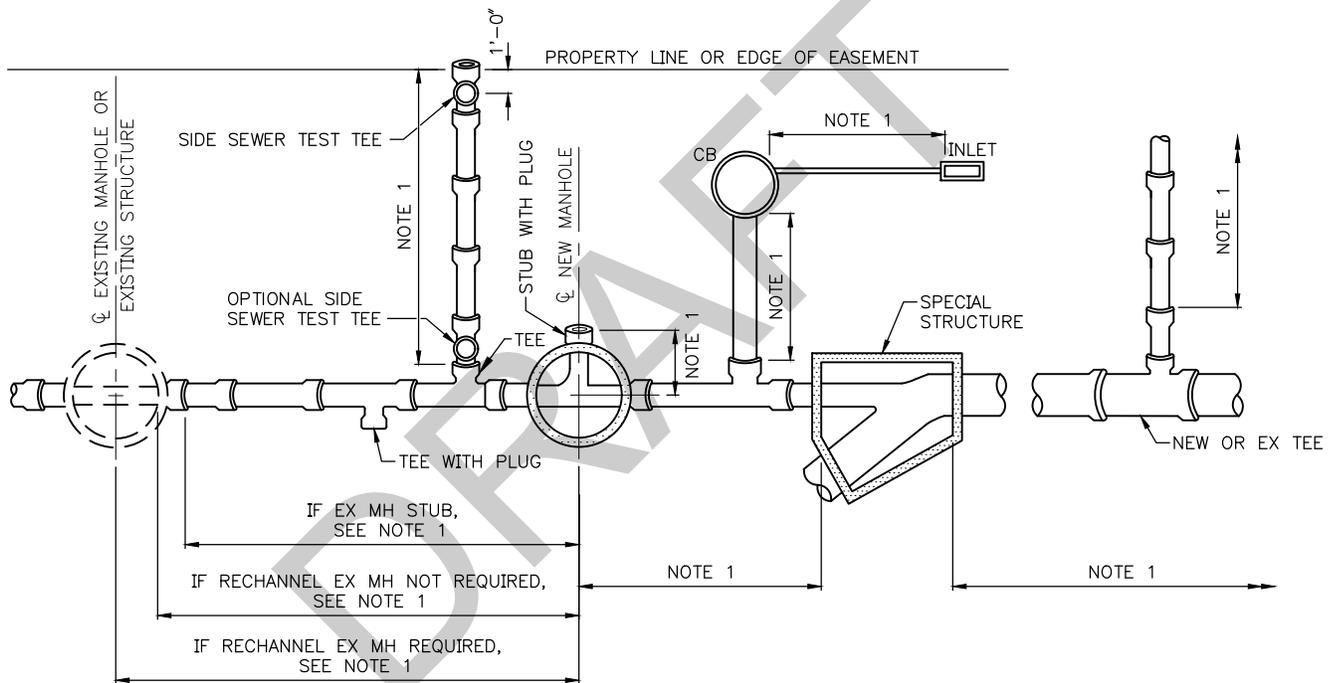
City of Seattle

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STANDARD SYMBOLS
WATER



PLAN VIEW



PLAN VIEW

NOTES:

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

REF STD SPEC SEC DIVISION 7



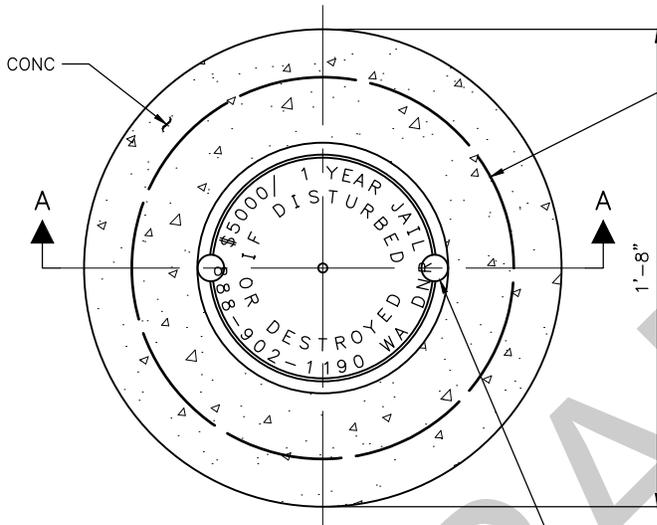
City of Seattle

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**SEWER/DRAINAGE
MEASUREMENT DIAGRAM**

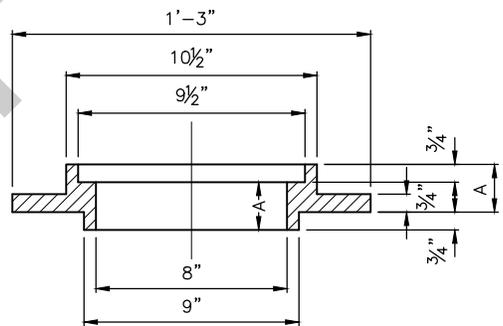
NOTES:

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



16" #3 BAR SPIRAL, 3" BETWEEN LAYERS (3 LAYERS OF BAR)

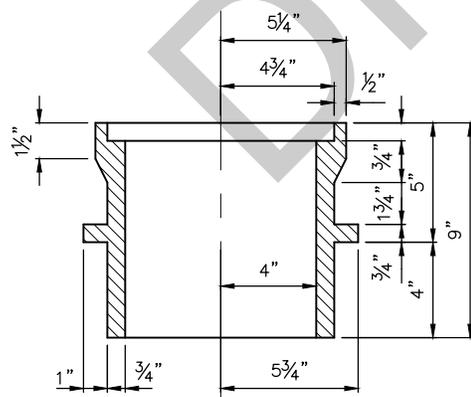
RISER RING DIMENSIONS			
A (SIZE)	1½"	2"	3"



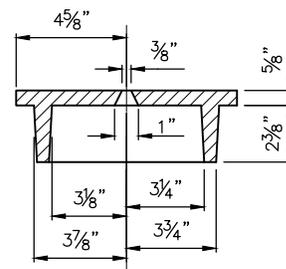
RISER RING SECTION

PLAN
SEE SECTION A-A ON
STD PLAN NO 020c

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



CASE SECTION



COVER SECTION

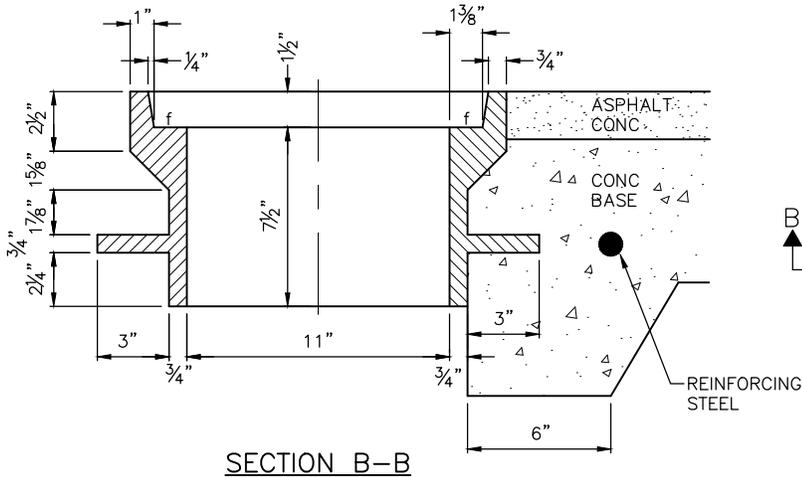
REF STD SPEC SEC 8-13



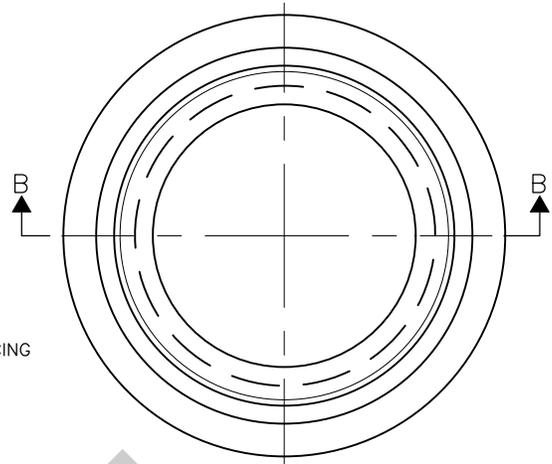
City of Seattle

NOT TO SCALE

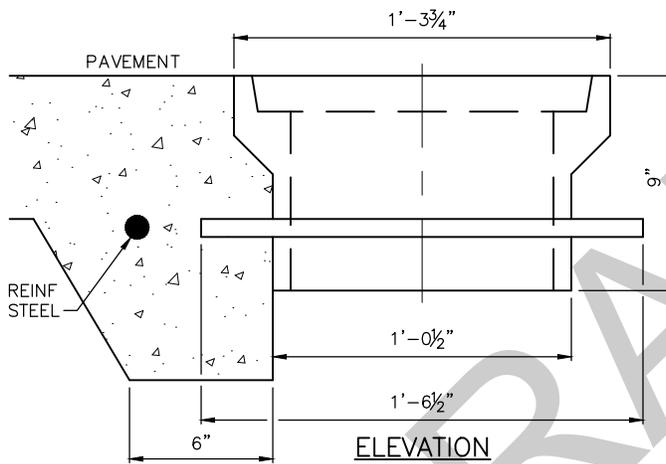
MONUMENT FRAME & COVER



SECTION B-B



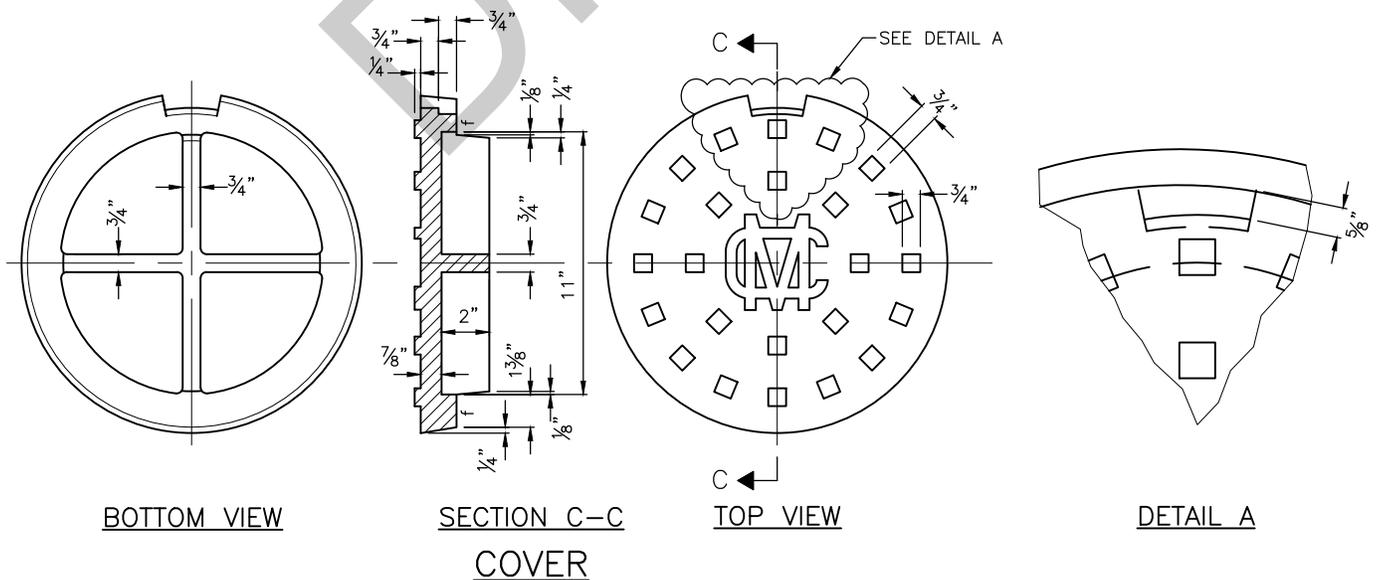
PLAN VIEW



ELEVATION

NOTES:

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



BOTTOM VIEW

SECTION C-C

TOP VIEW

DETAIL A

COVER

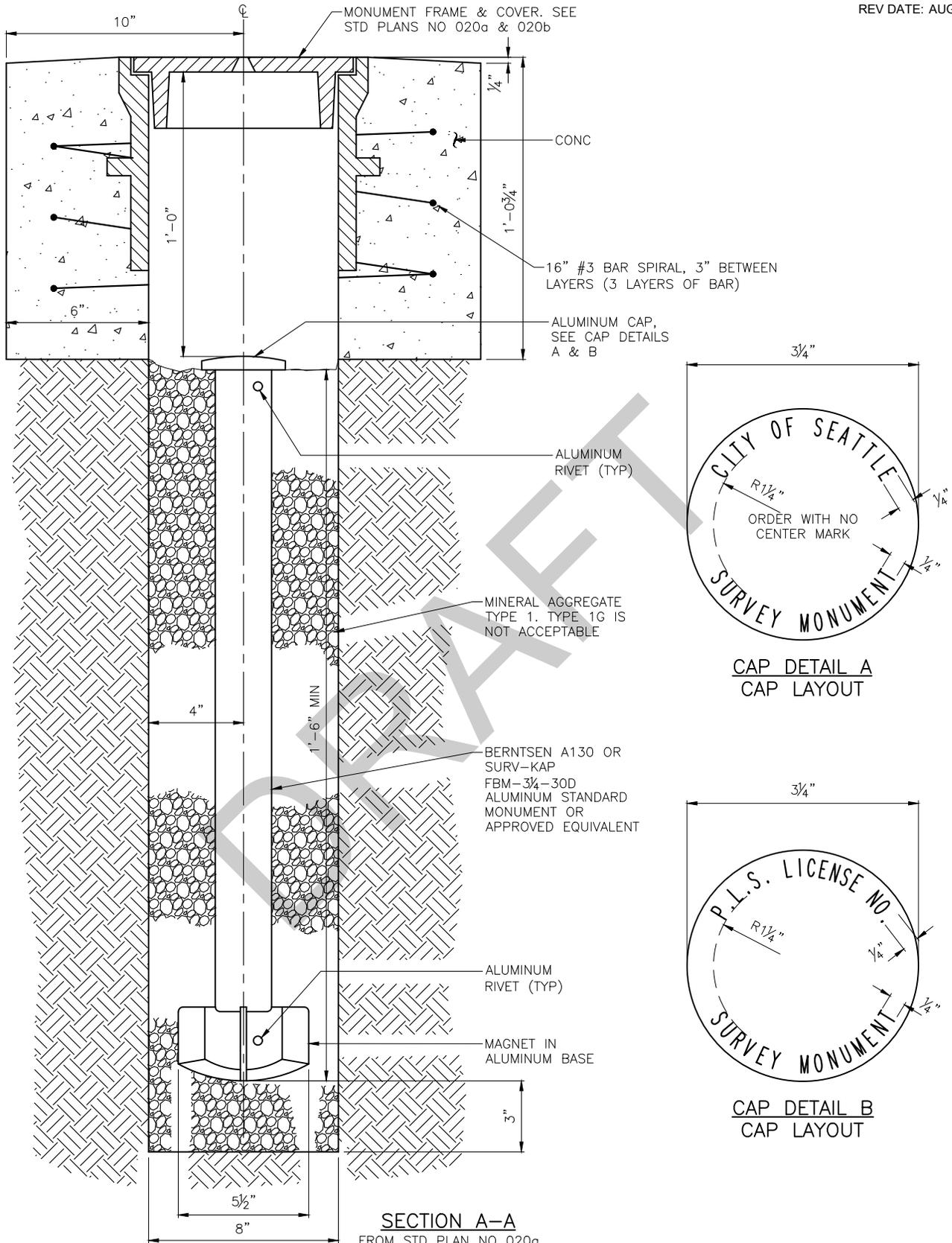
REF STD SPEC SEC 8-13



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MONUMENT FRAME & COVER



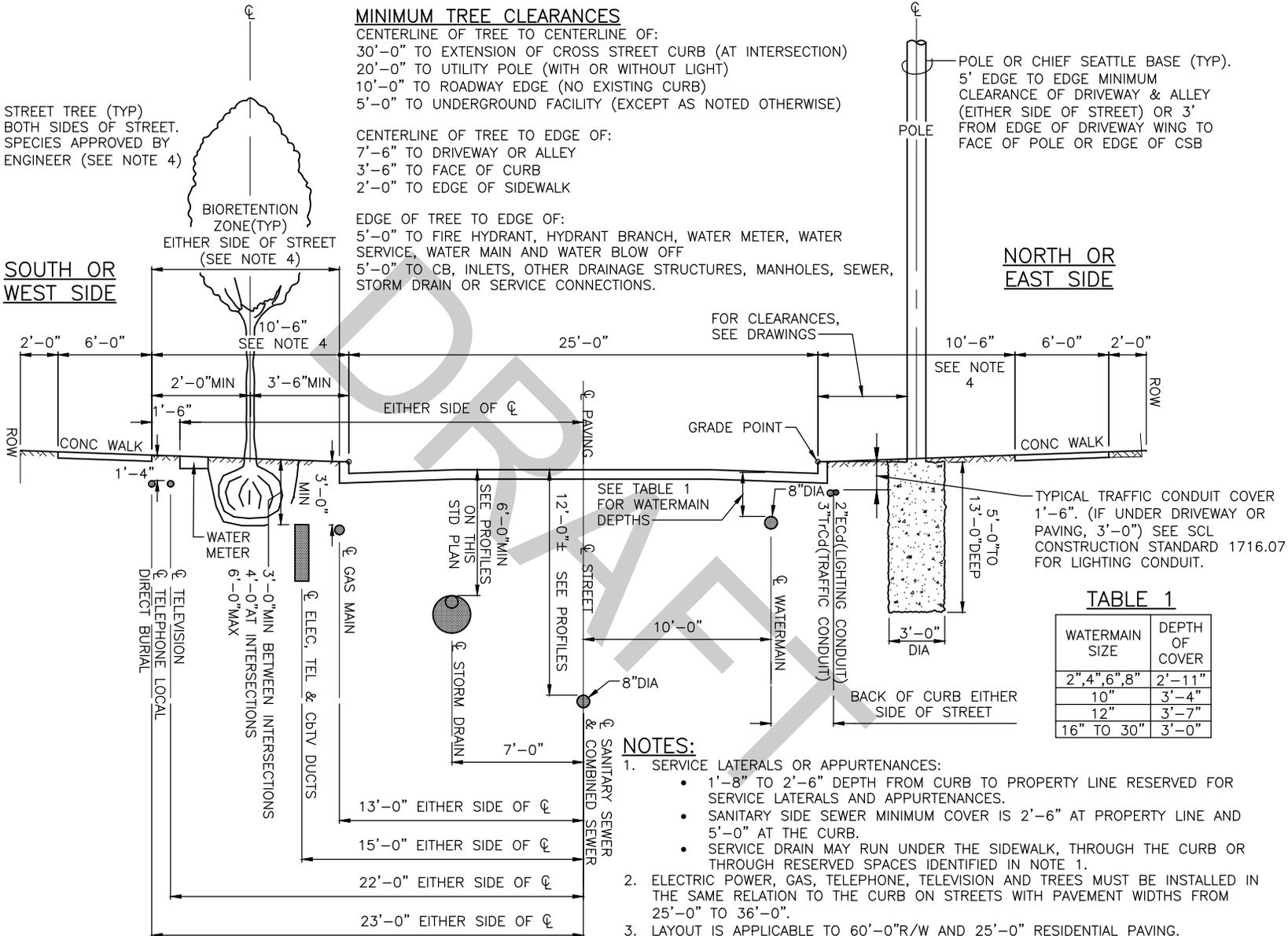
REF STD SPEC SEC 8-13



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SURVEY MONUMENT



- 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 MUST 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 MUST 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

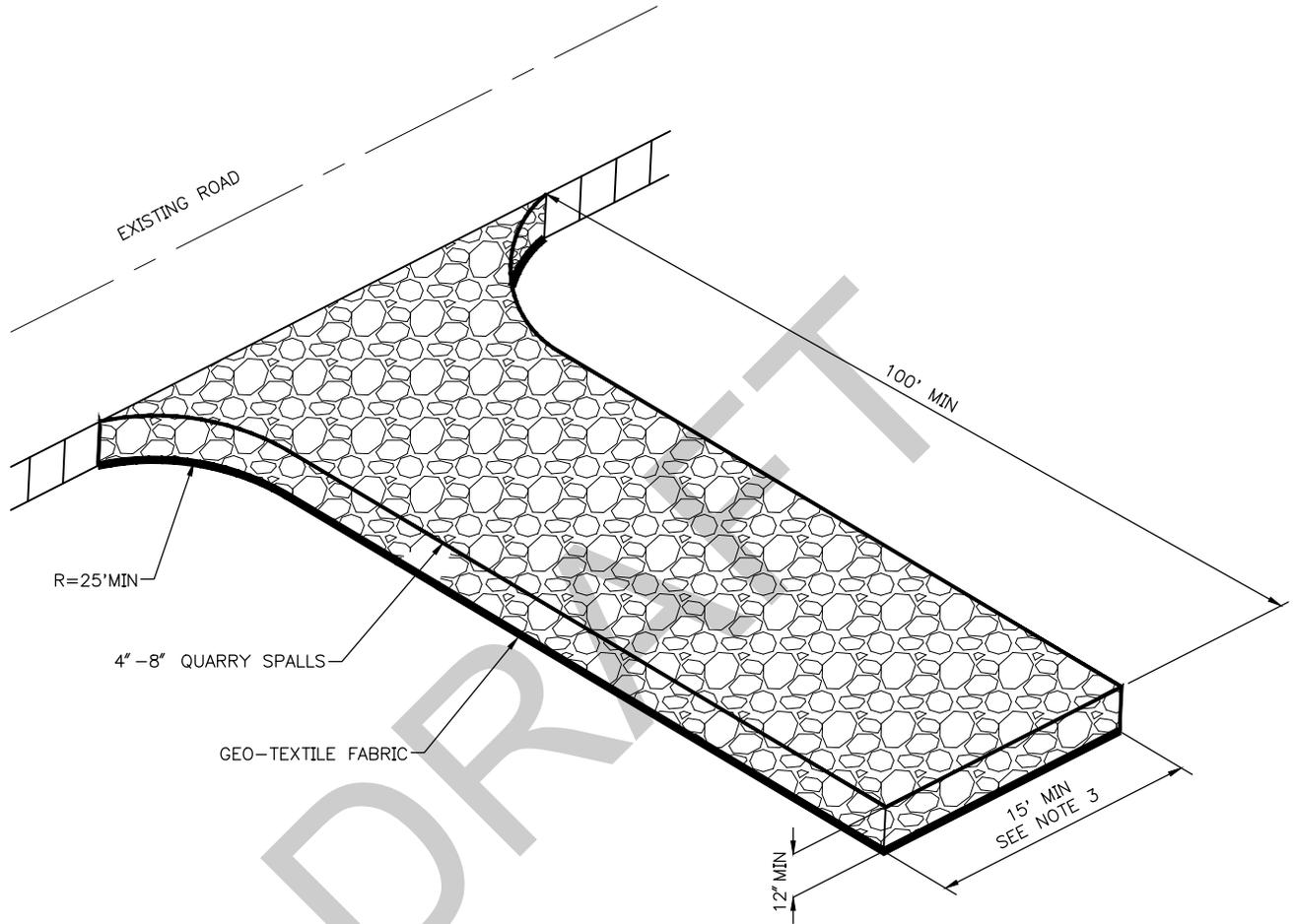


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DESIRABLE LOCATIONS FOR UTILITIES (RESIDENTIAL STREET)

Proposed 2023 Edition City of Seattle Standard Plans for Municipal Construction



NOTES:

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

REF STD SPEC SEC 8-01



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**STABILIZED CONSTRUCTION
ENTRANCE**

NOTES:

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

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

2" TO 2½" CALIPER UNLESS OTHERWISE SPECIFIED

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).

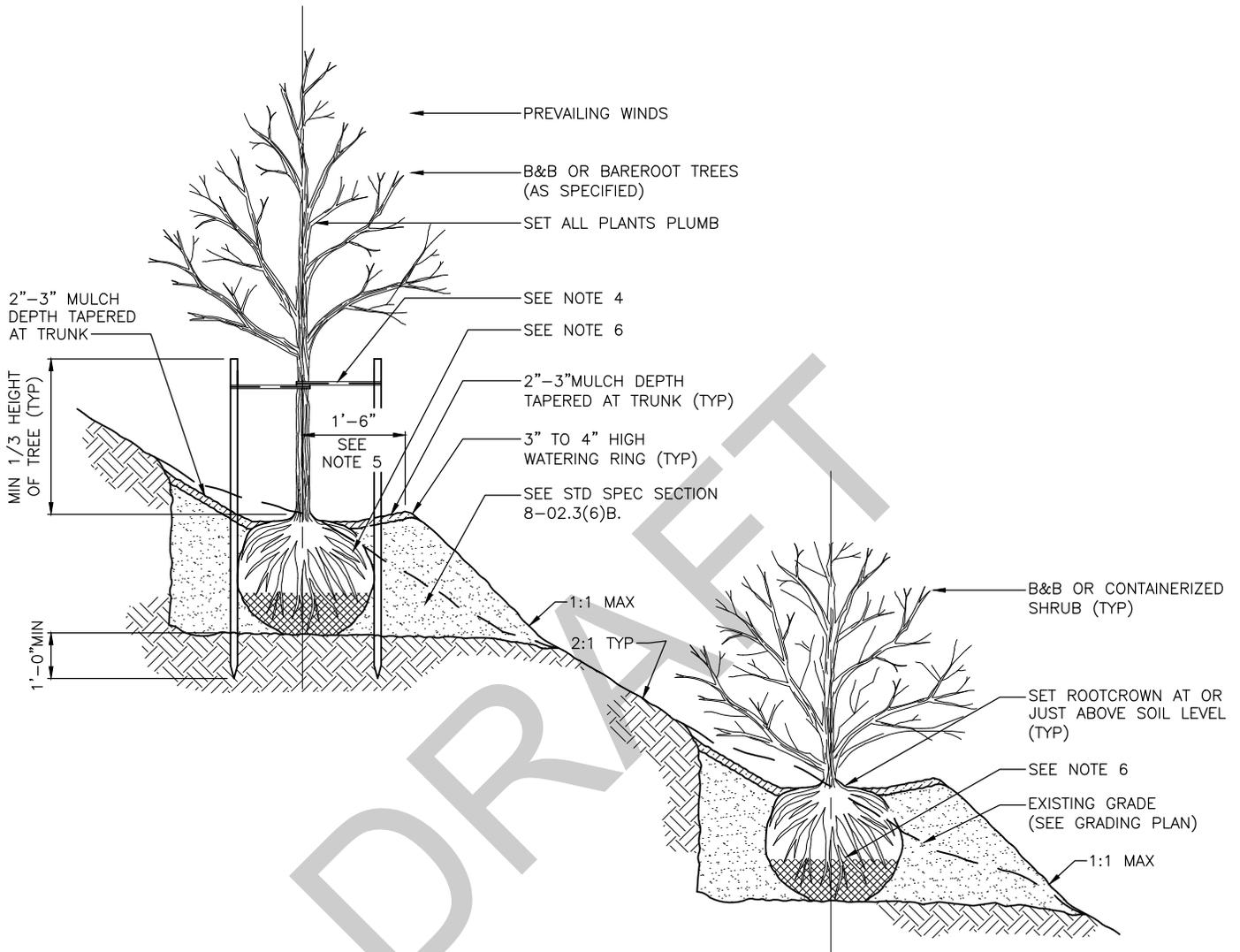
REF STD SPEC SEC 8-02



City of Seattle

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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.

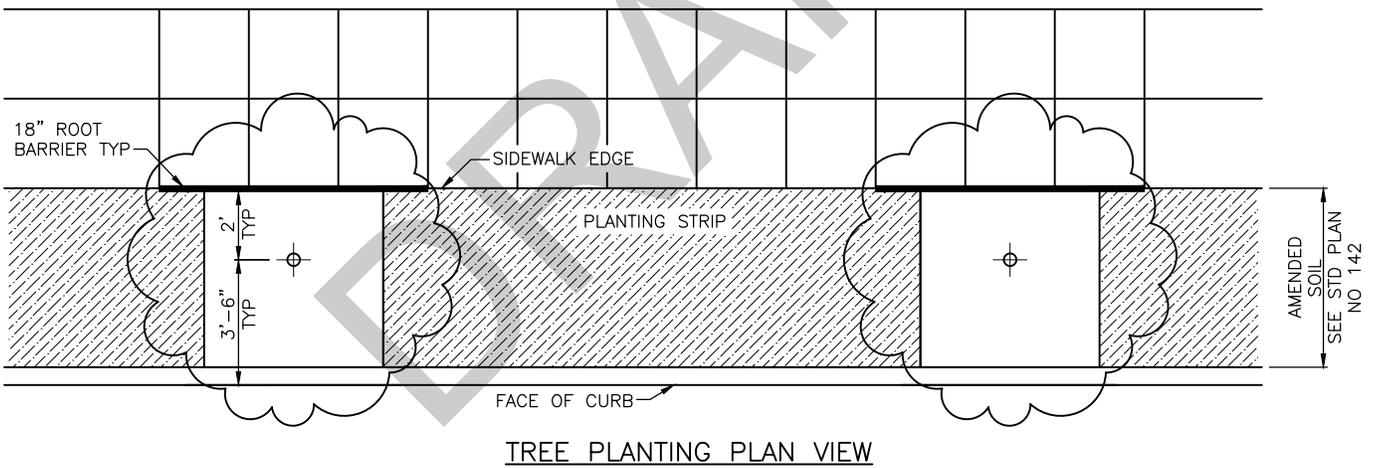
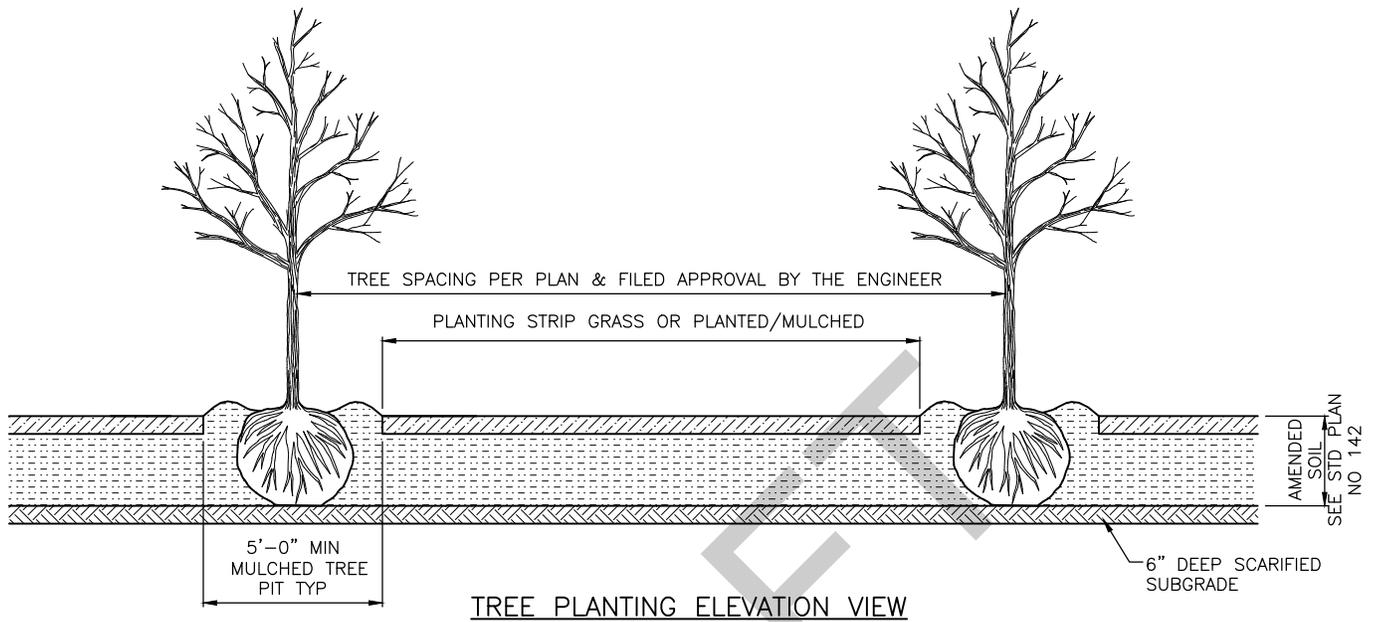
REF STD SPEC SEC 8-02



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TREE & SHRUB PLANTING
ON SLOPES



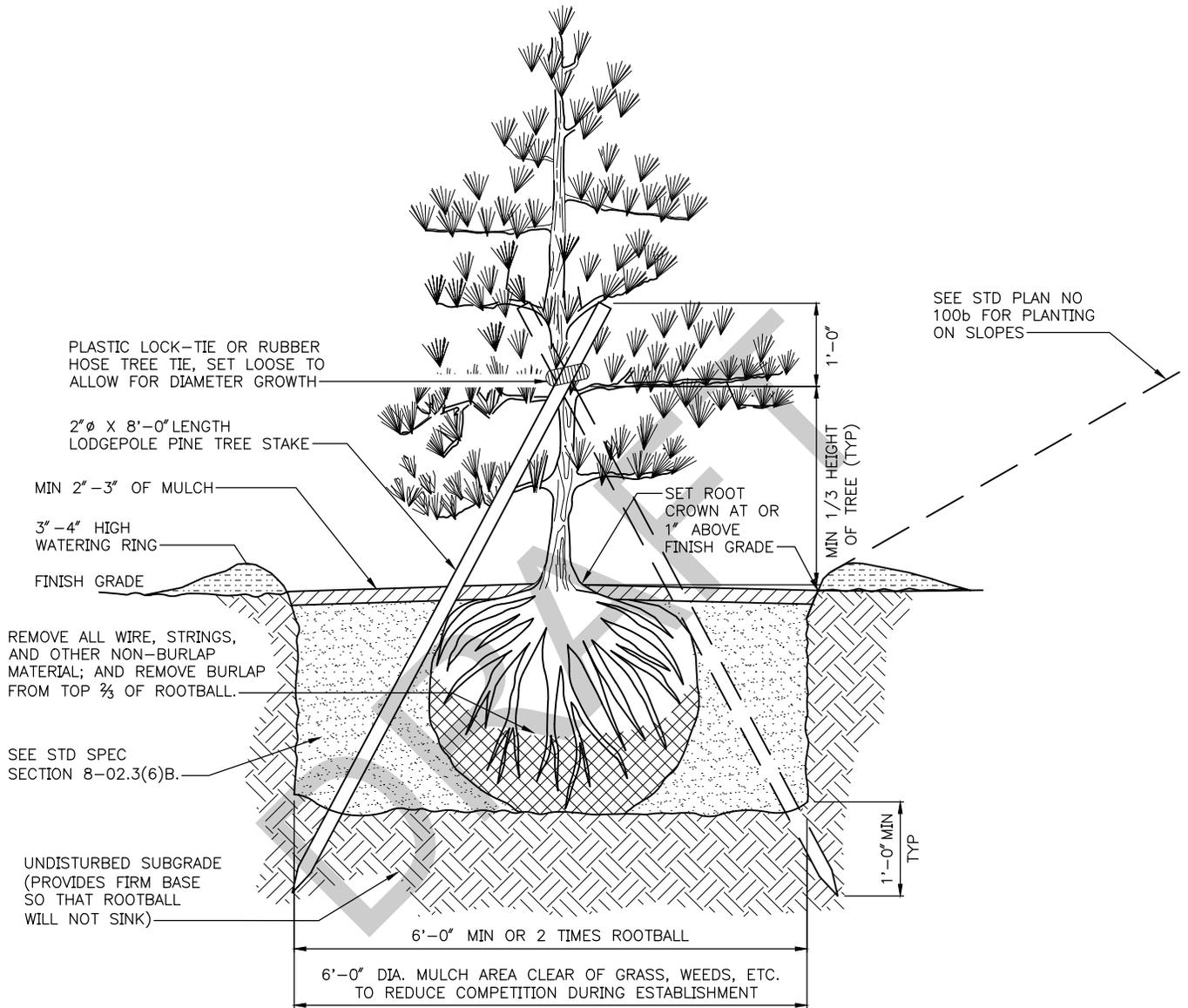
REF STD SPEC SEC 8-02



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TREE PLANTING IN AMENDED TRENCH



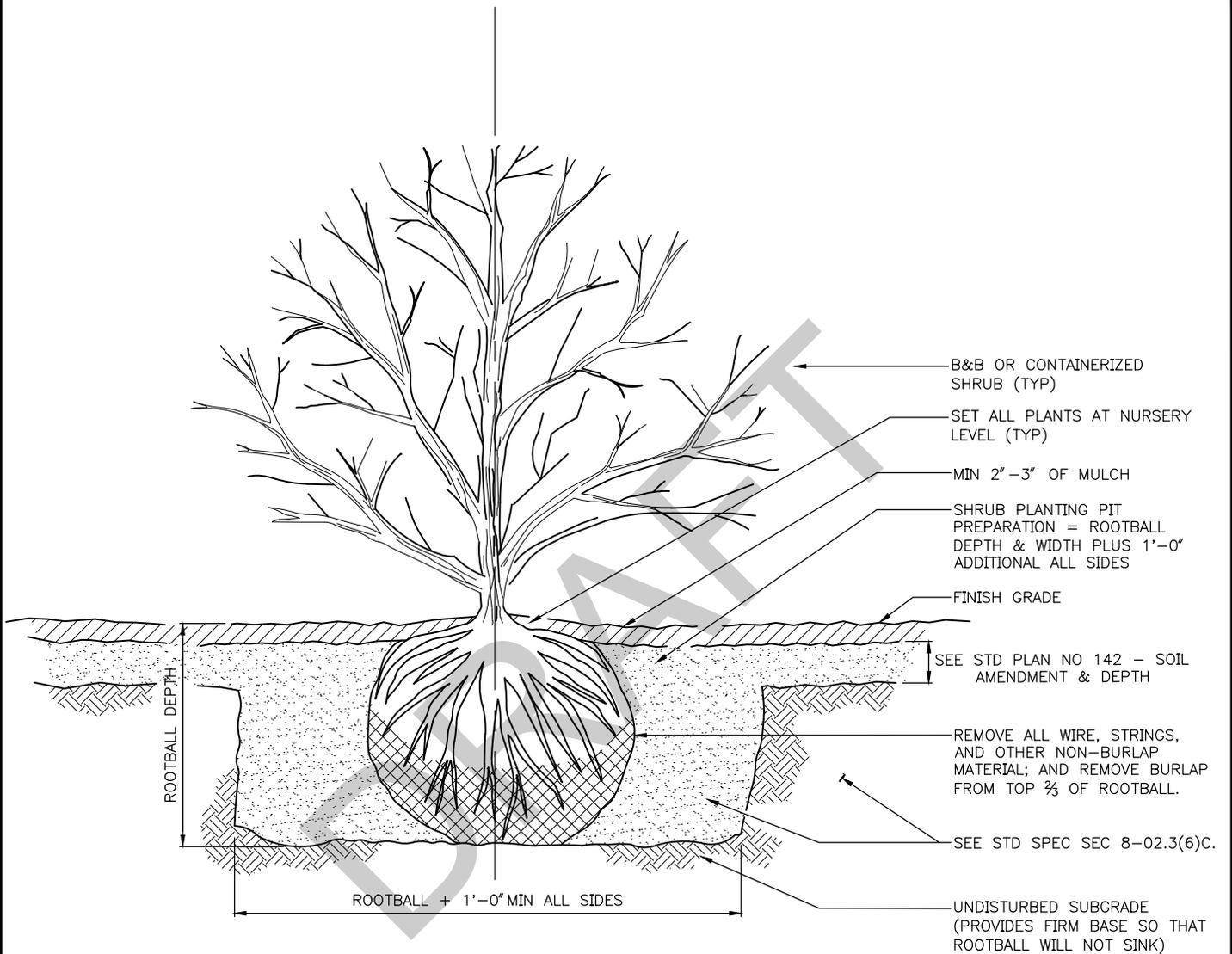
REF STD SPEC SEC 8-02



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CONIFEROUS TREE PLANTING



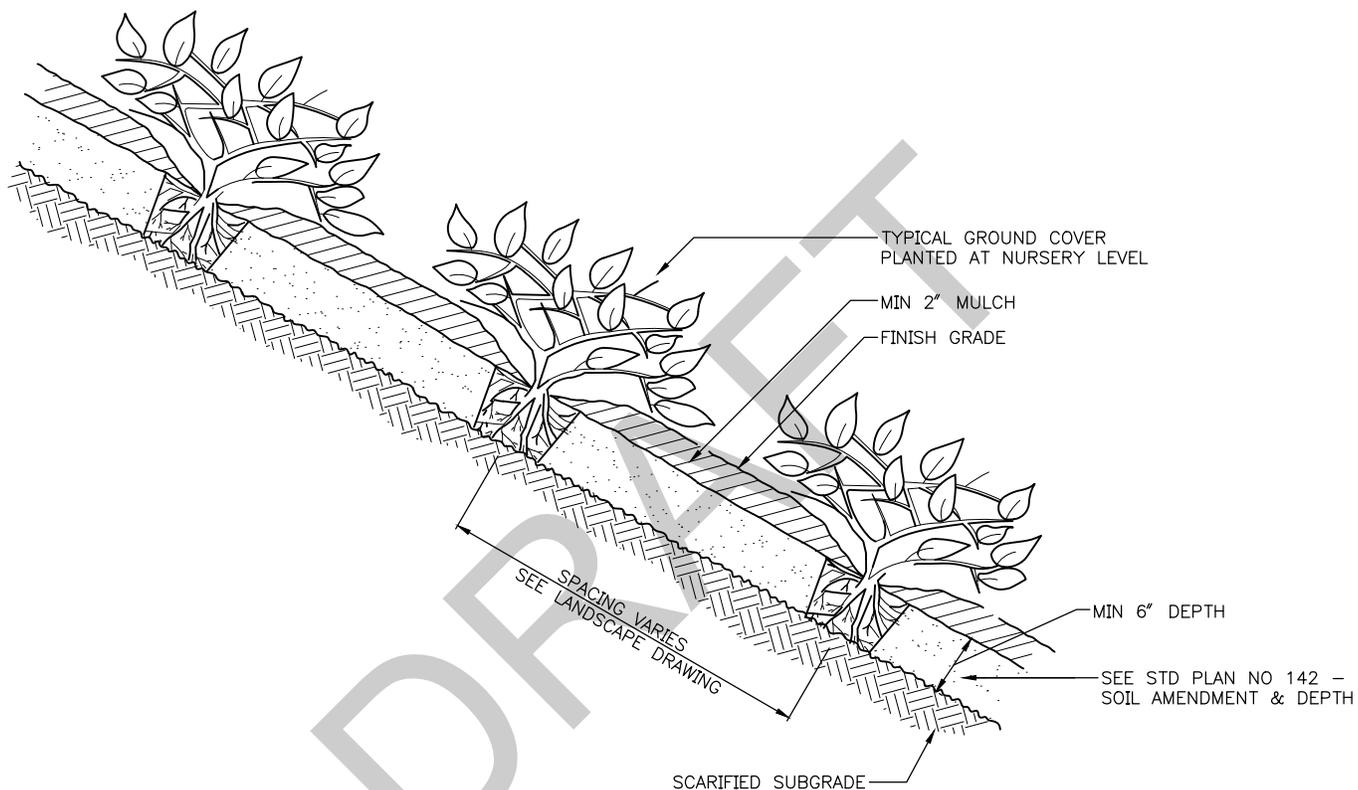
REF STD SPEC SEC 8-02



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SHRUB PLANTING



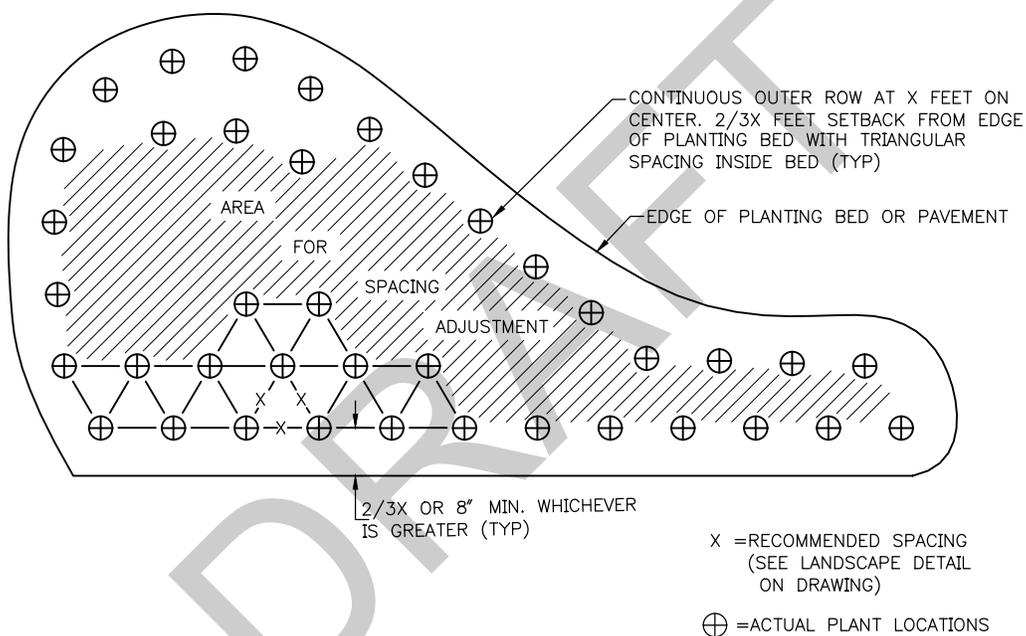
REF STD SPEC SEC 8-02



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GROUND COVER PLANTING



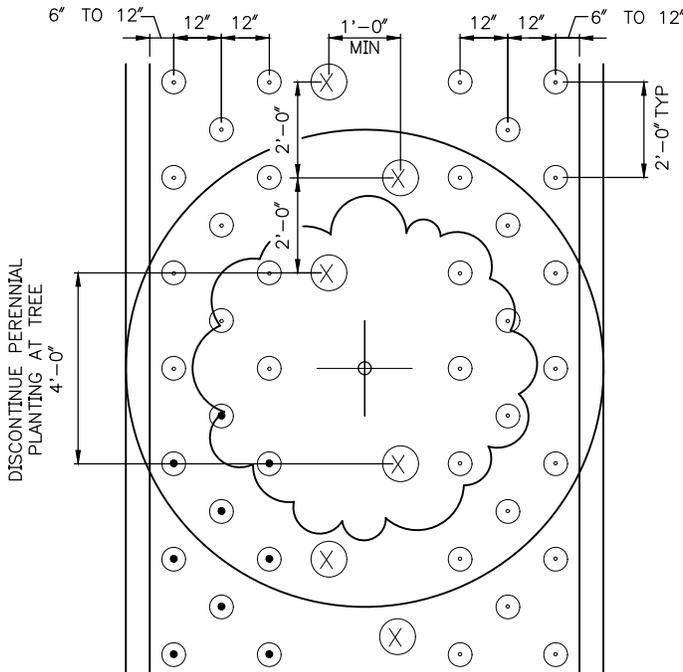
REF STD SPEC SEC 8-02



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PLANTING PATTERN

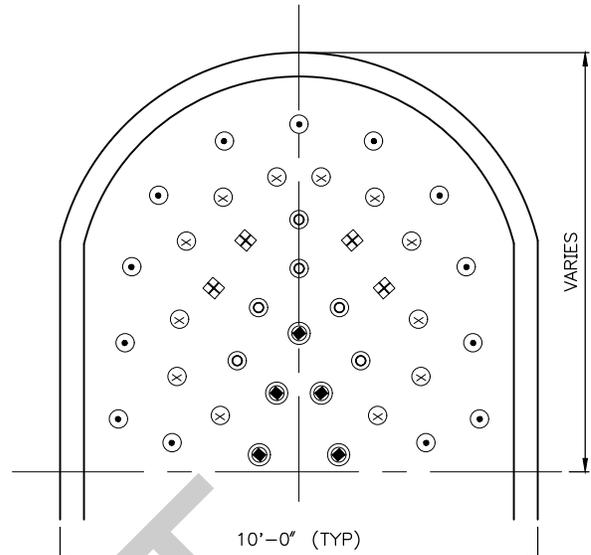


DISCONTINUE PERENNIAL PLANTING AT TREE

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

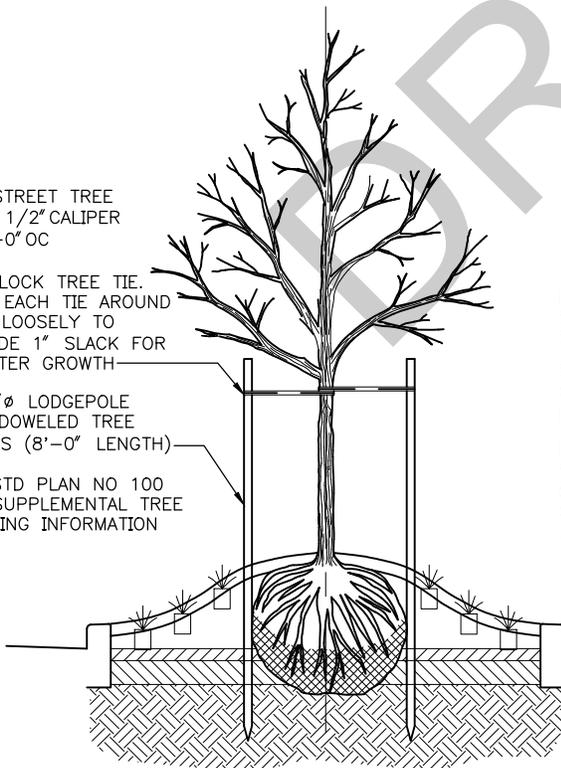
END CAP DETAIL

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
PLANTING INFORMATION



ELEVATION

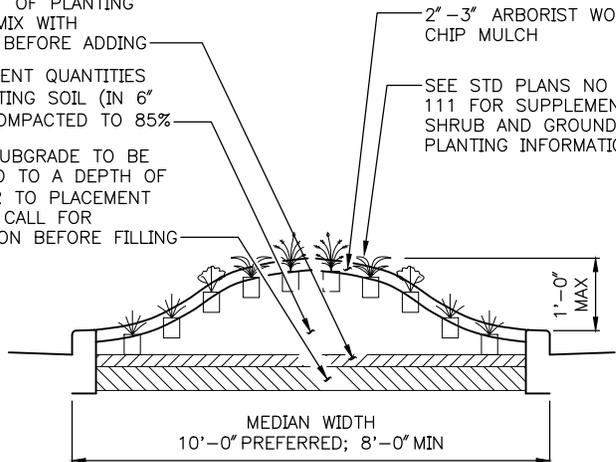
PLACE 3" OF PLANTING
SOIL & MIX WITH
SUBSOIL BEFORE ADDING

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

2" - 3" ARBORIST WOOD
CHIP MULCH

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



SOIL PREPARATION DETAIL

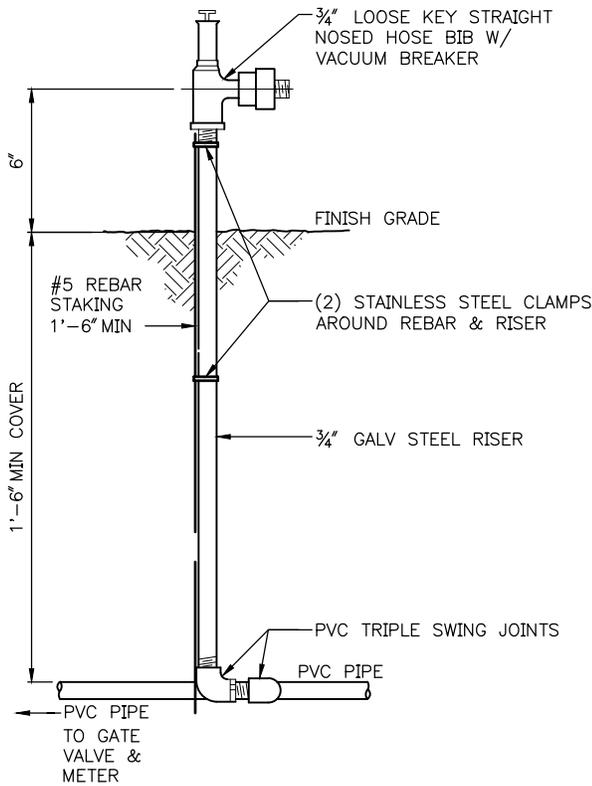
REF STD SPEC SEC 8-02



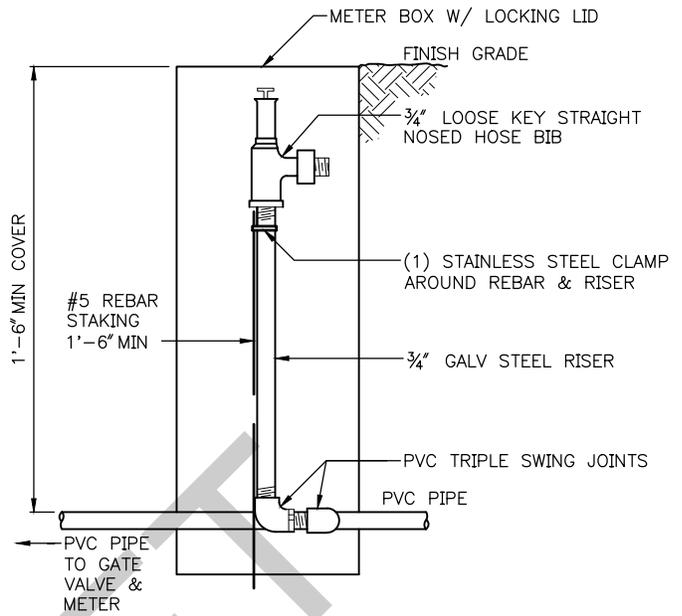
City of Seattle

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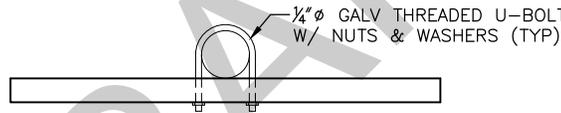
MEDIAN PLANTING



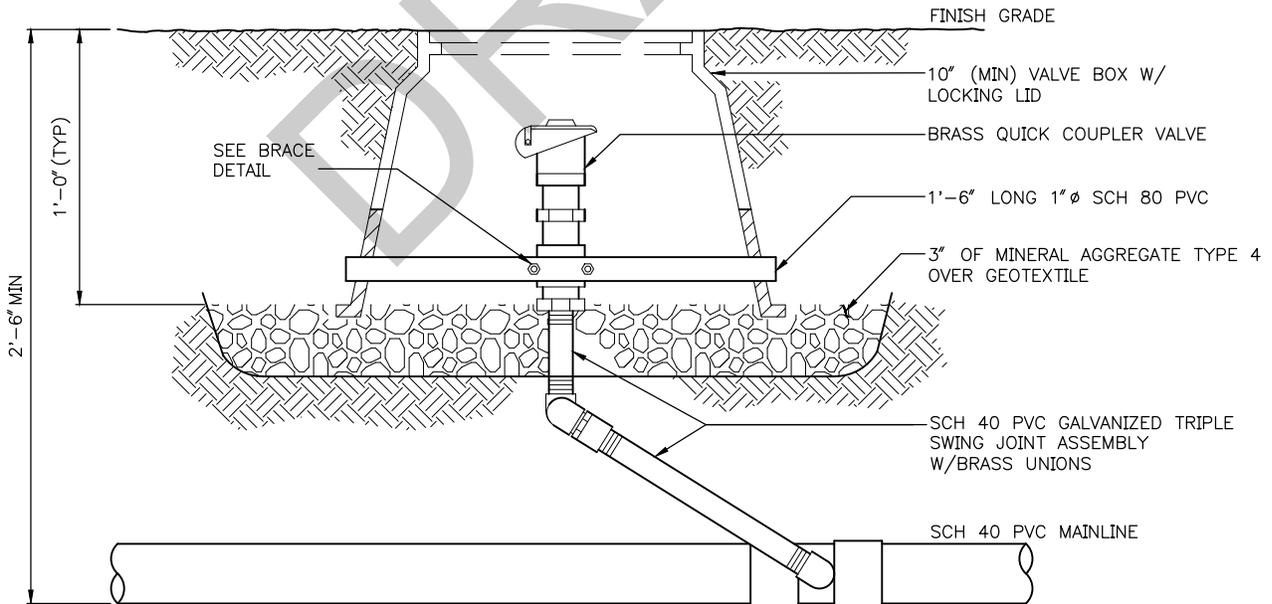
ABOVE GROUND HOSE BIB



BELOW GROUND HOSE BIB



BRACE DETAIL - PLAN VIEW



ELEVATION VIEW

QUICK COUPLER VALVE

TURF OR BED AREAS

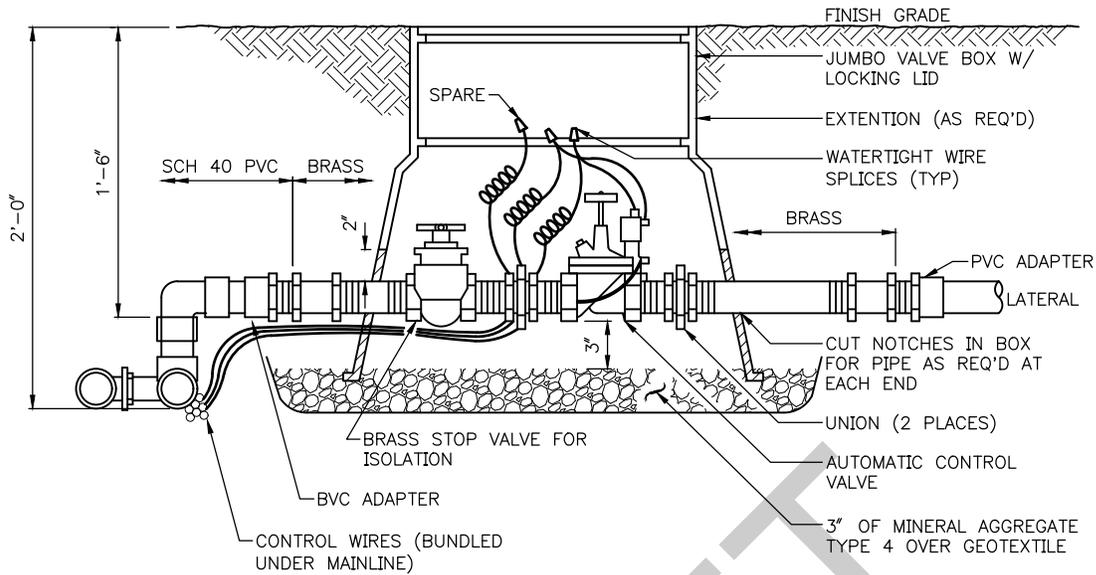
REF STD SPEC SEC 8-03



City of Seattle

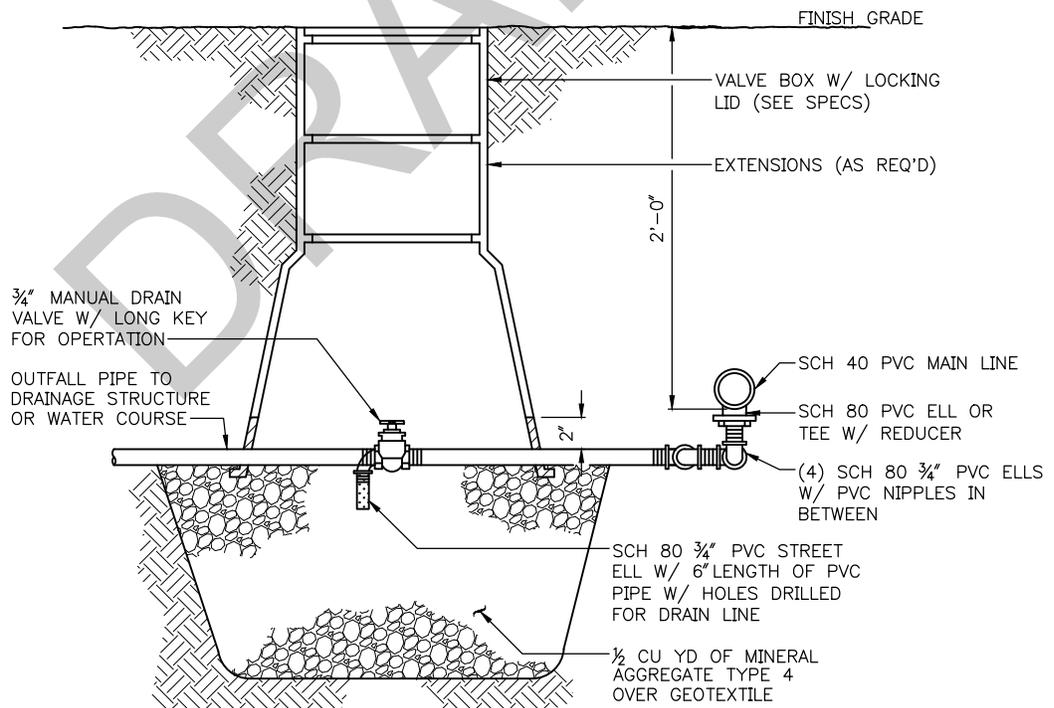
NOT TO SCALE

HOSE BIB ASSEMBLY AND QUICK COUPLER VALVE



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

AUTOMATIC CONTROL VALVE



MANUAL DRAIN VALVE

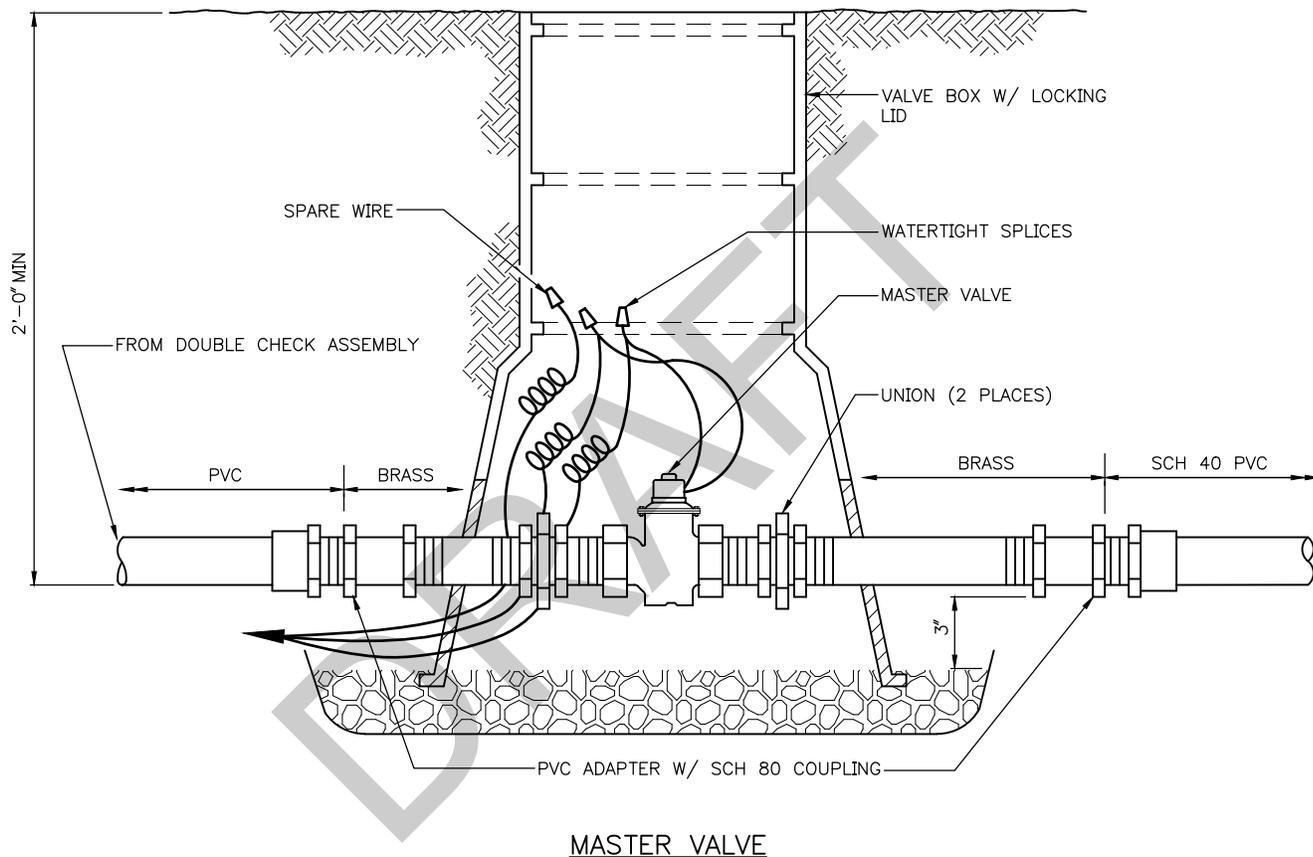
REF STD SPEC SEC 8-03



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NOT TO SCALE

IRRIGATION VALVES



MASTER VALVE

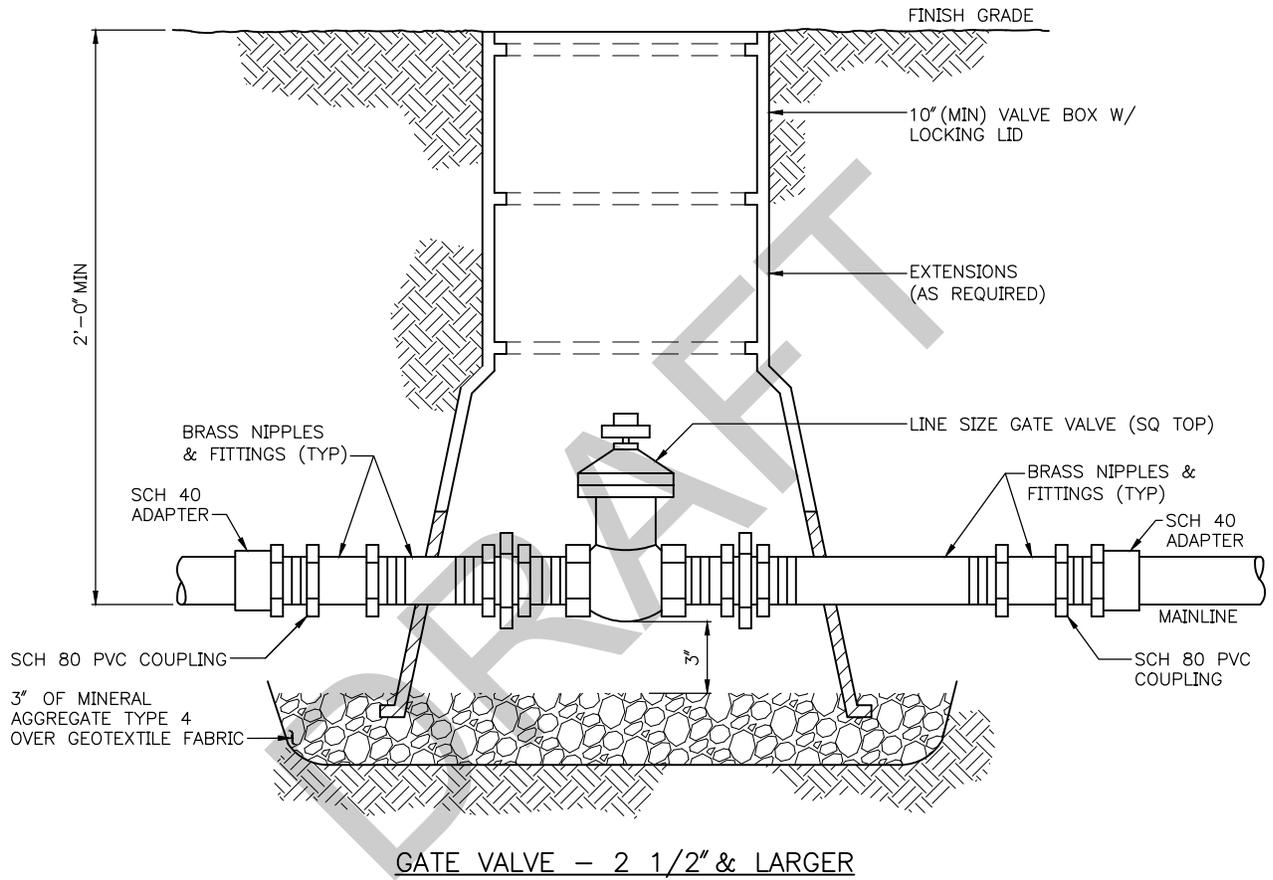
REF STD SPEC SEC 8-03



City of Seattle

NOT TO SCALE

IRRIGATION VALVES



NOTES:
USE TEFLON TAPE ON ALL THREADED FITTINGS

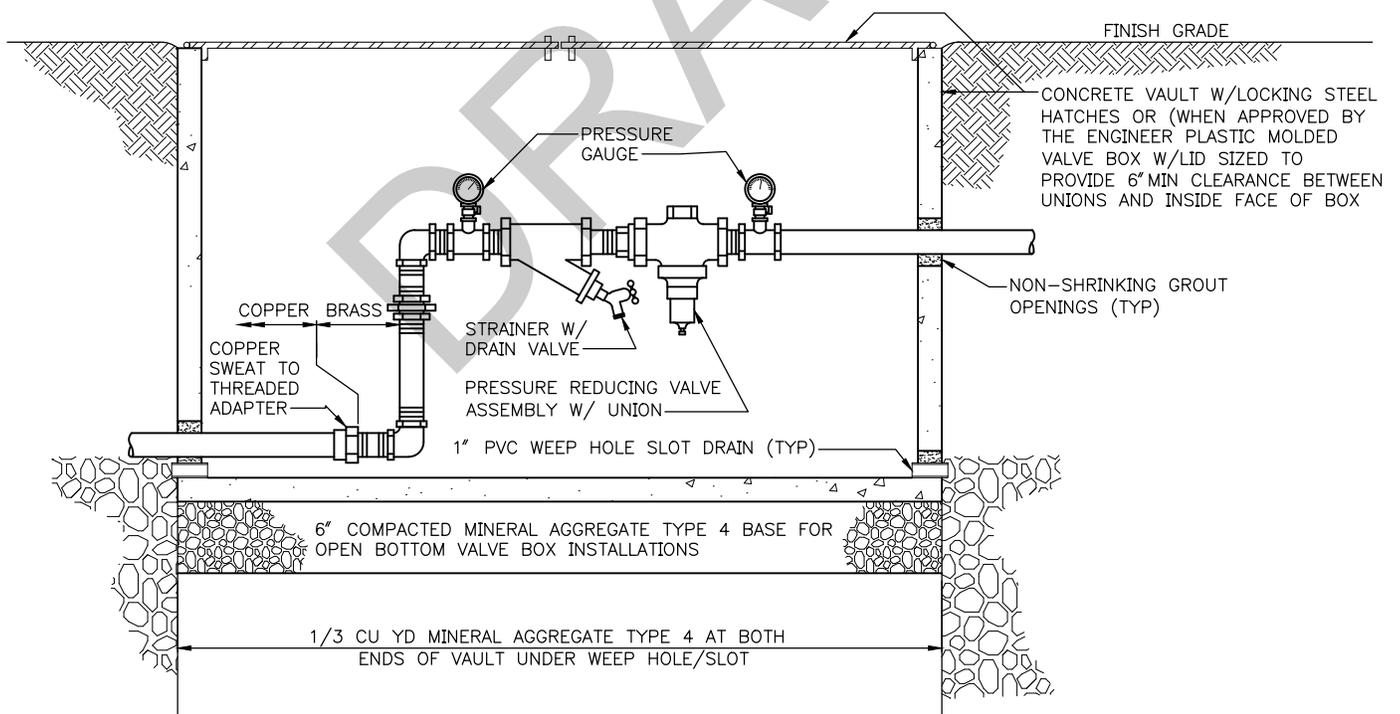
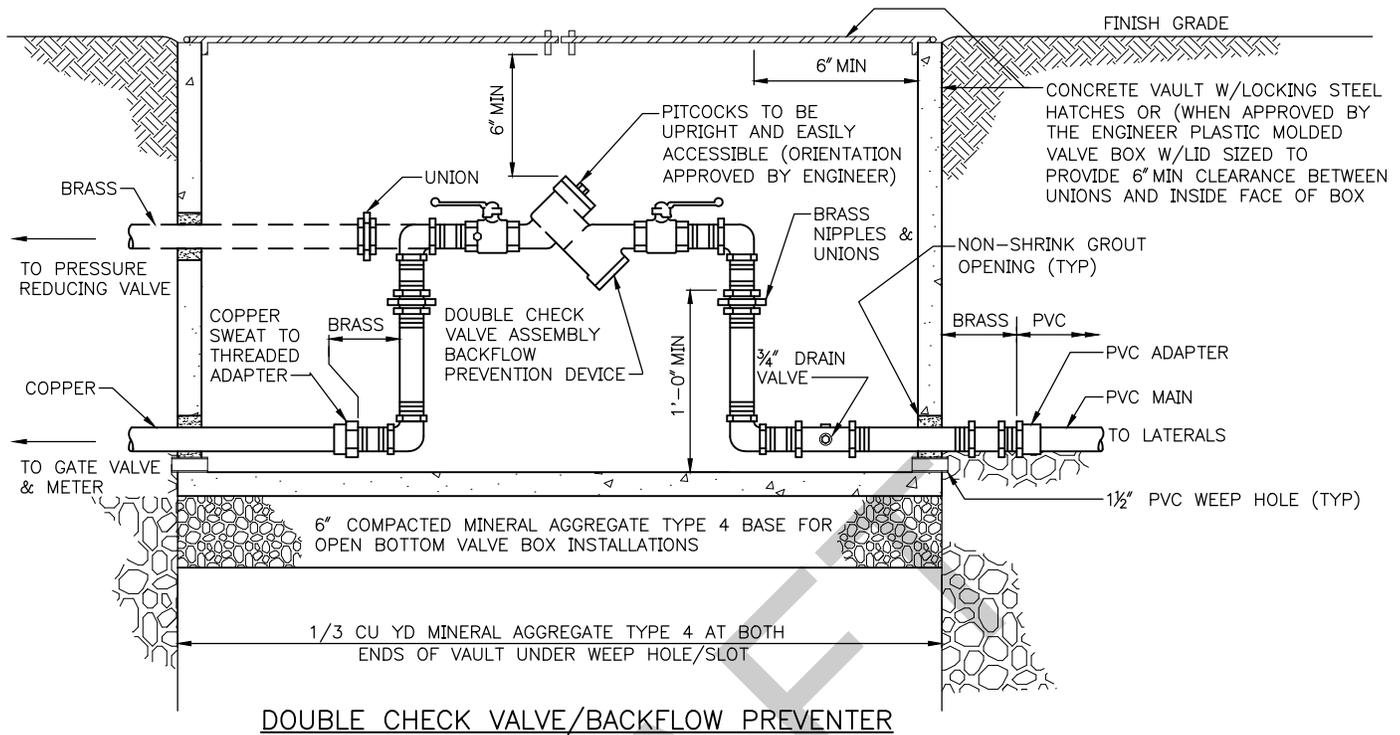
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NOT TO SCALE

IRRIGATION VALVES



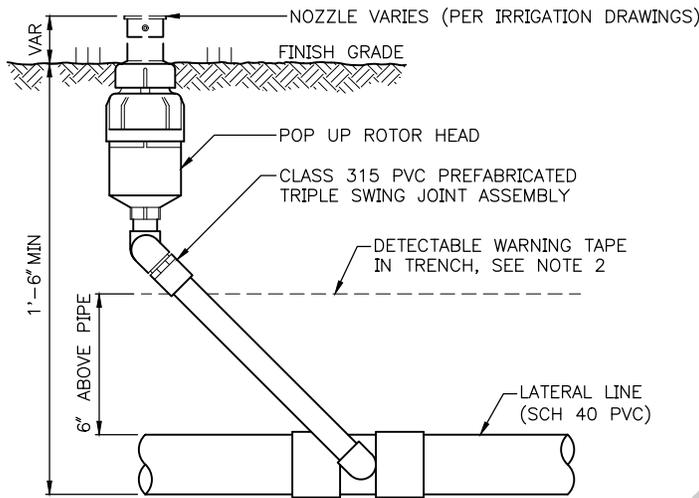
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NOT TO SCALE

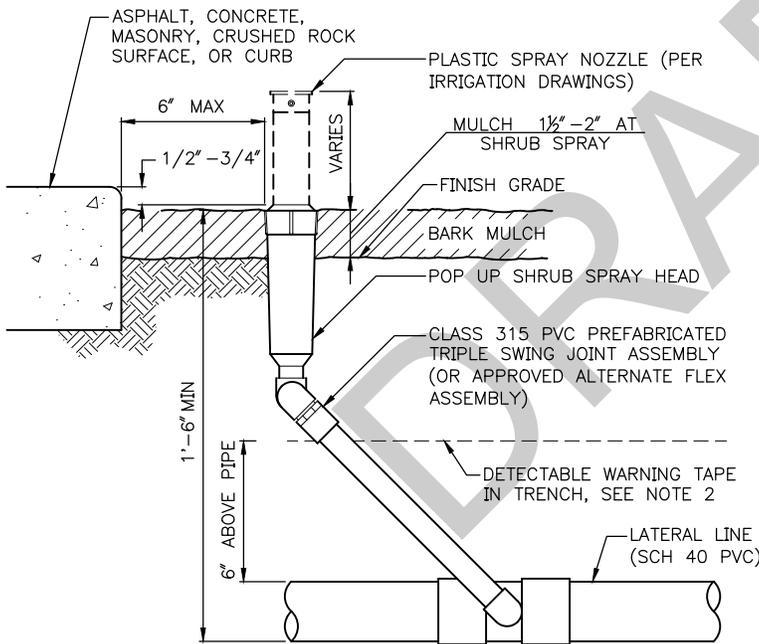
IRRIGATION VALVES



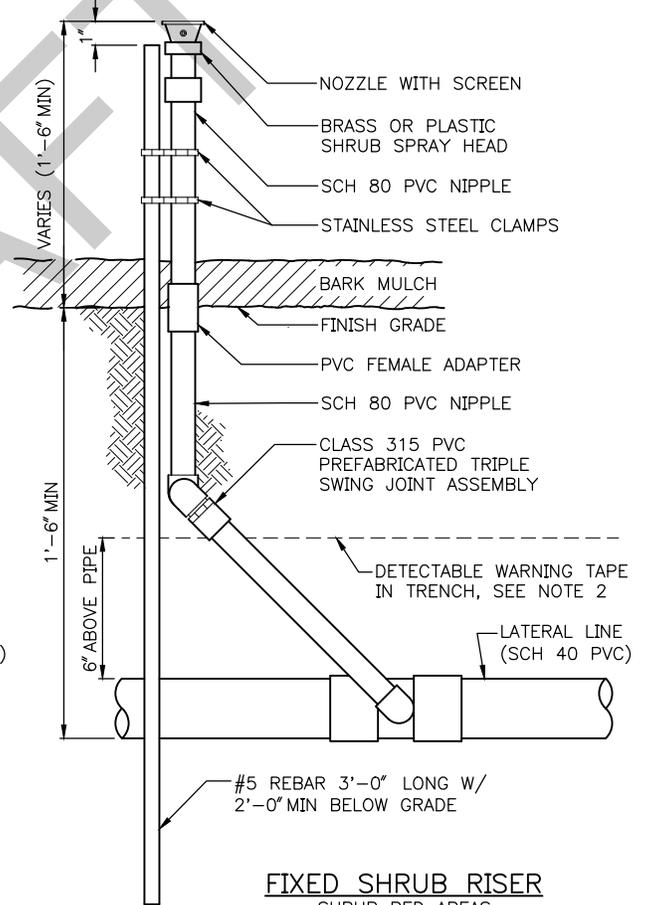
POP UP ROTOR HEAD
TURF AREAS

NOTE:

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



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



FIXED SHRUB RISER
SHRUB BED AREAS

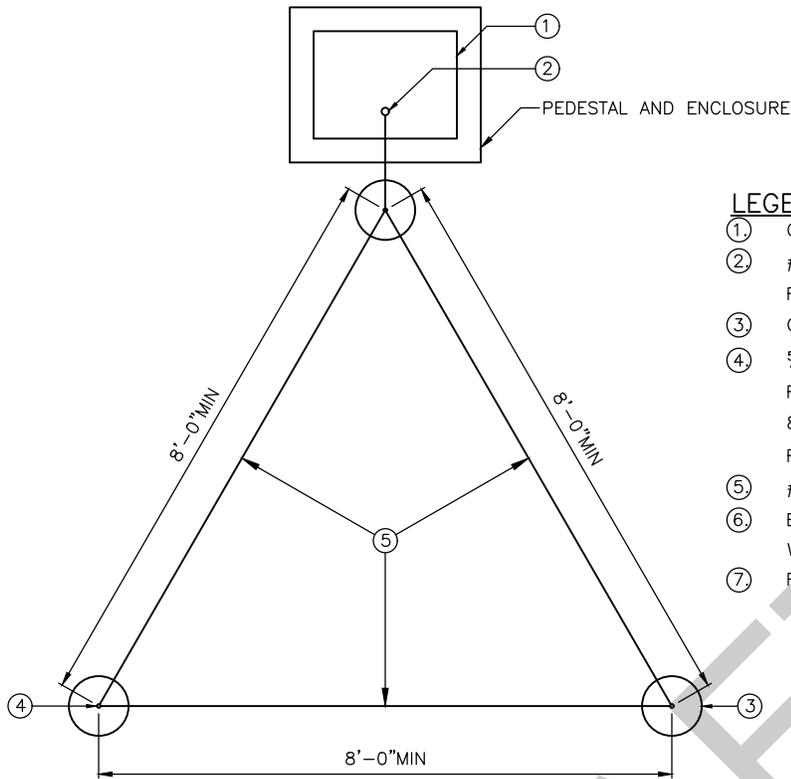
REF STD SPEC SEC 8-03



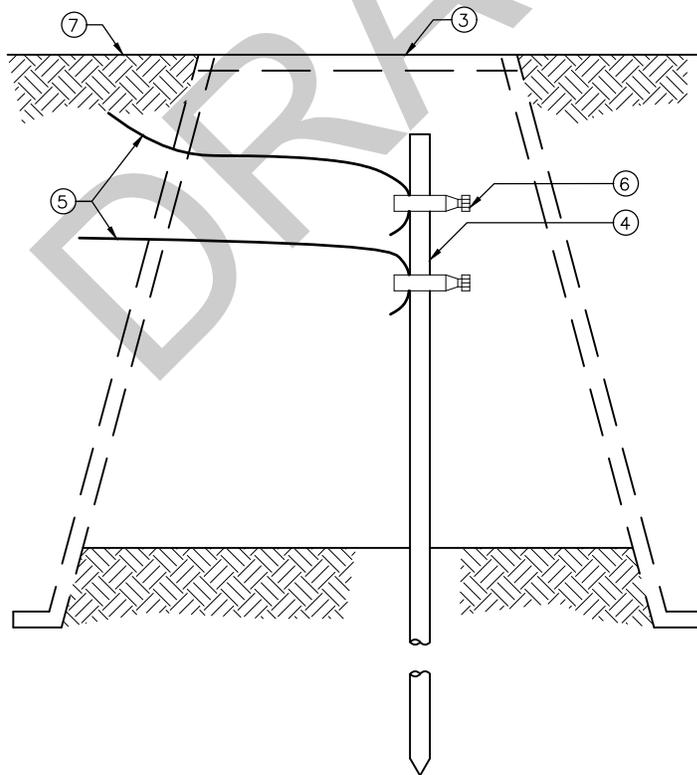
City of Seattle

NOT TO SCALE

POP UP & FIXED
IRRIGATION HEADS



GROUND ROD LAYOUT



GROUND ROD ASSEMBLY

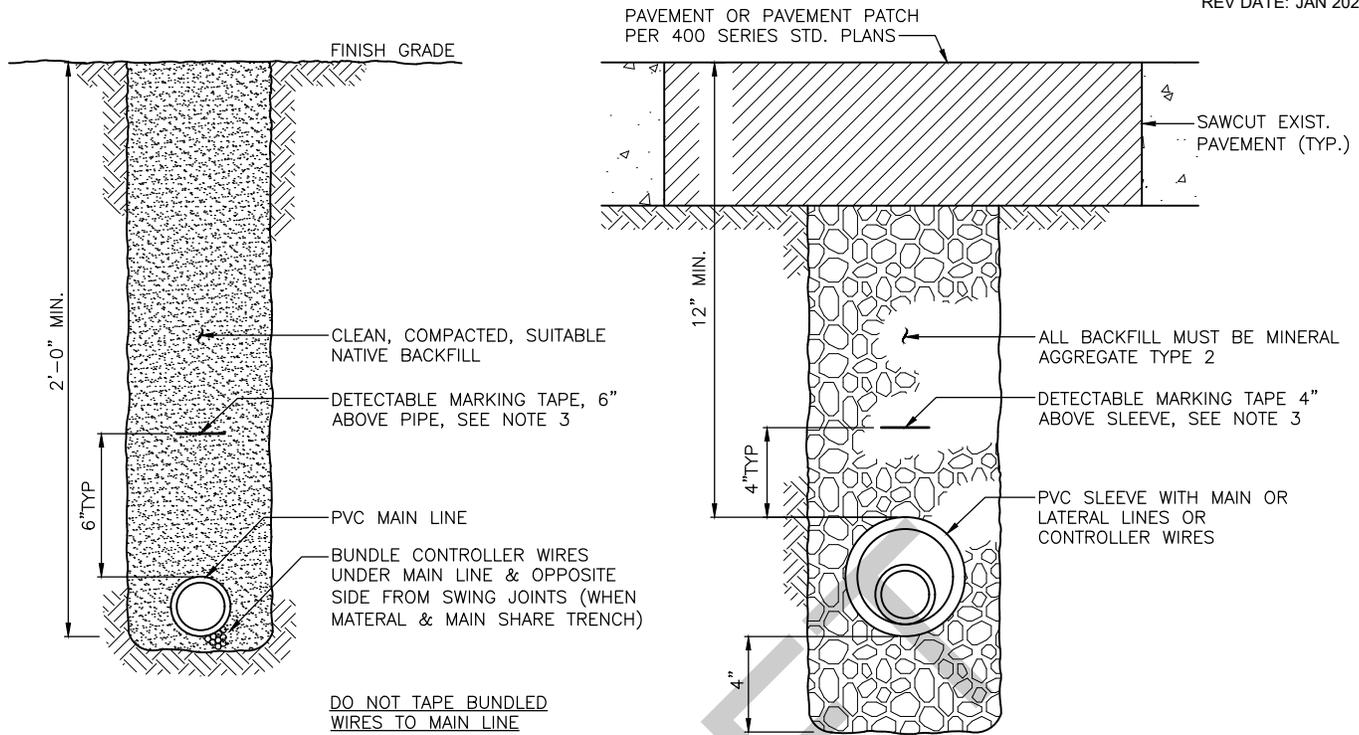
REF STD SPEC SEC 8-03



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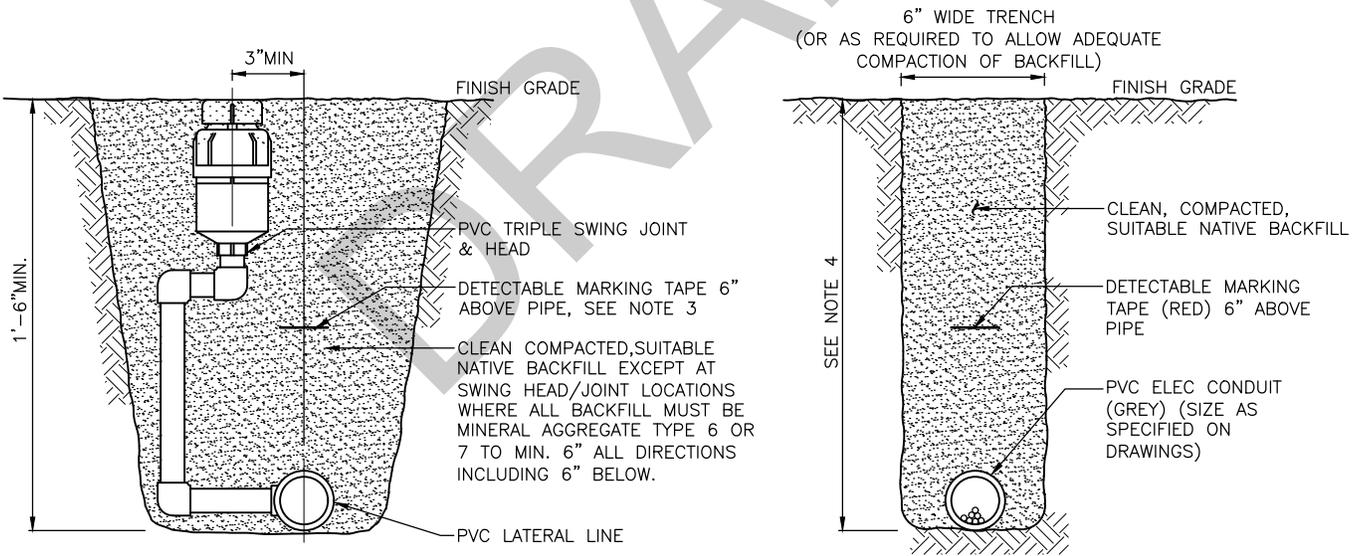
NOT TO SCALE

IRRIGATION CONTROLLER
 PEDESTAL AND ENCLOSURE
 GROUNDING



MAIN LINE

SLEEVE TRENCHING



LATERAL LINE

ELECTRICAL SUPPLY TRENCH

NOTES:

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

REF STD SPEC SEC 8-03



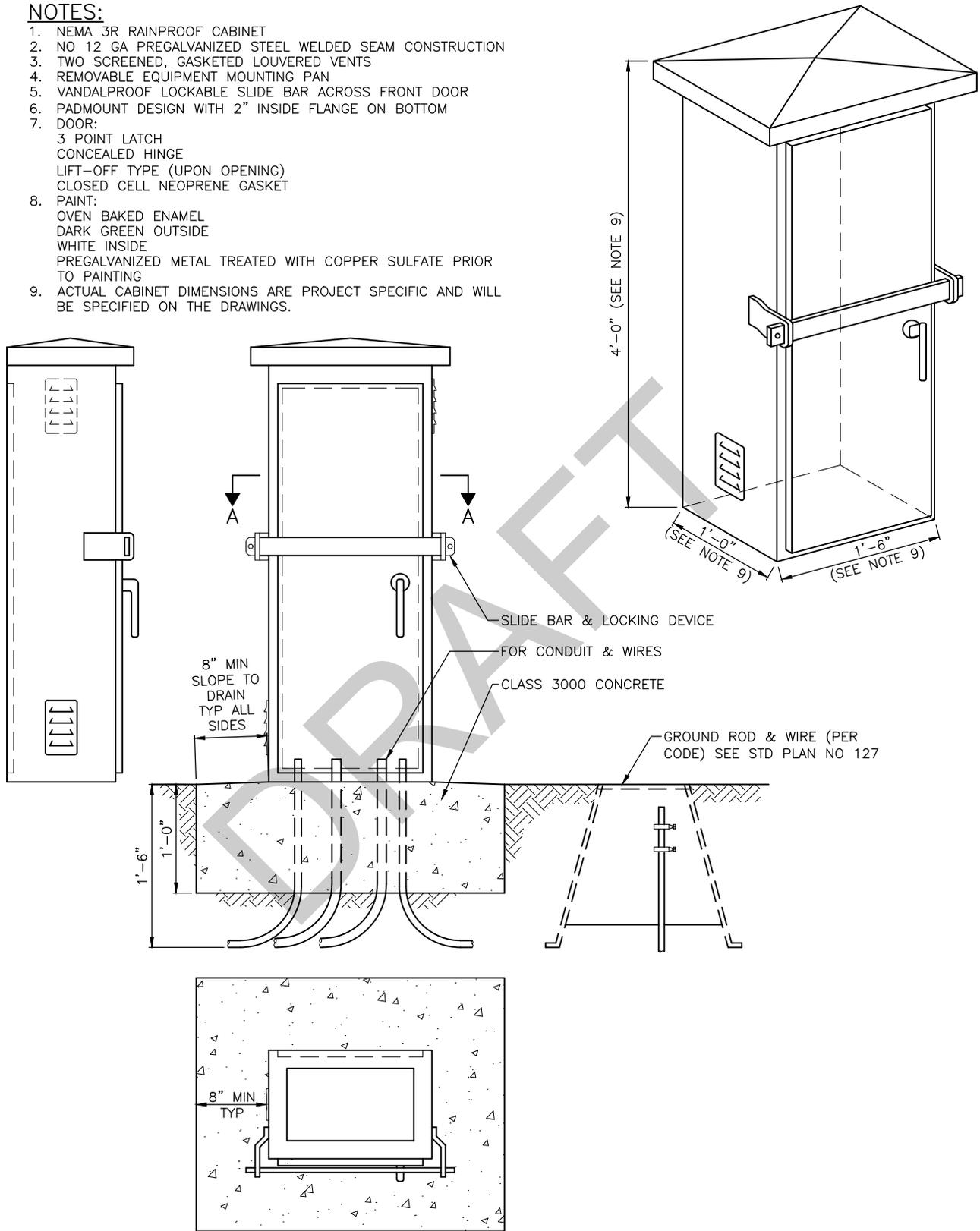
City of Seattle

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



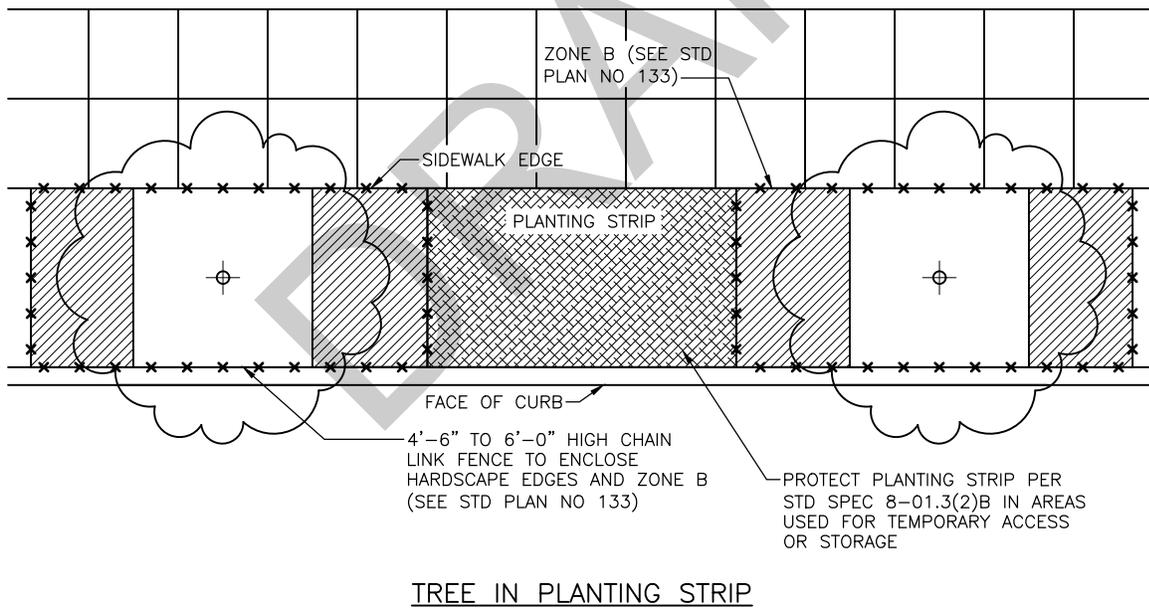
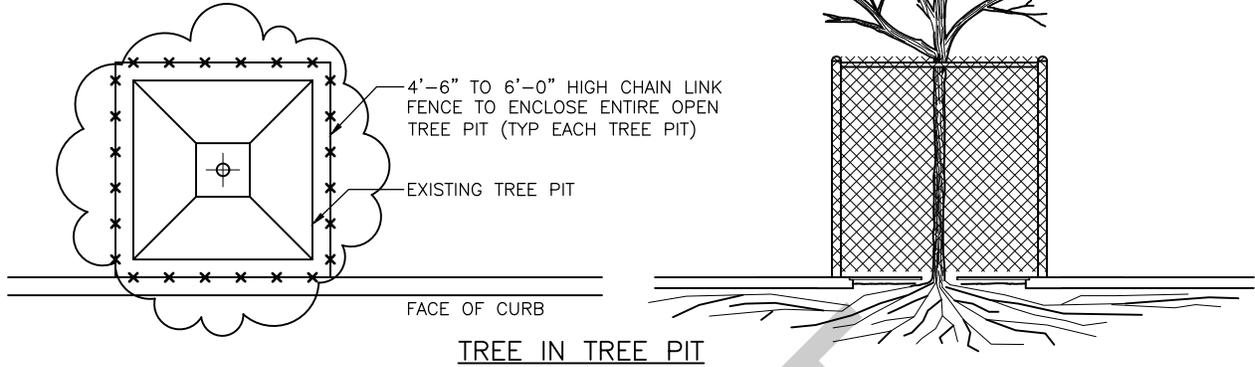
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NOT TO SCALE

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.



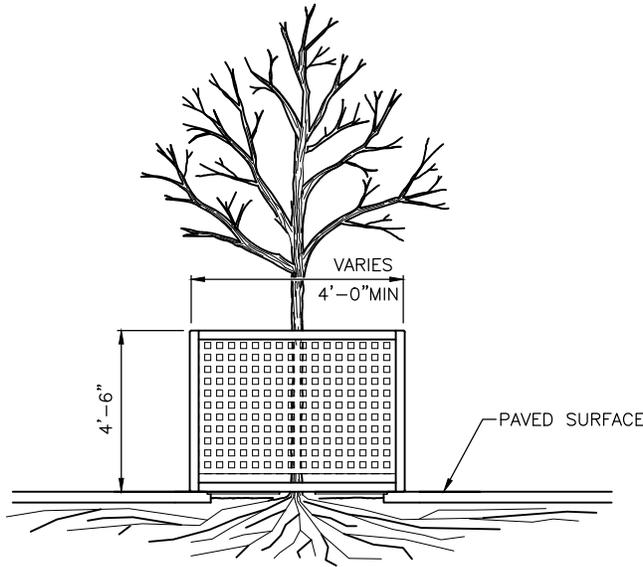
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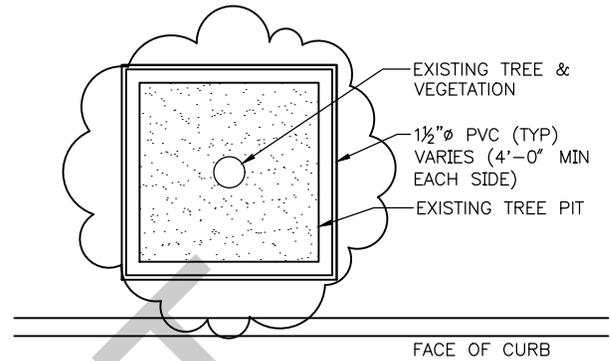
City of Seattle

NOT TO SCALE

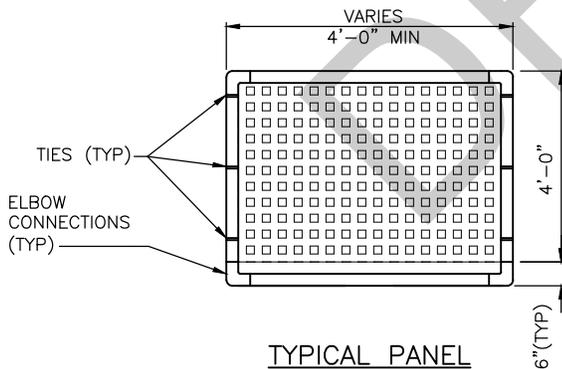
TREE PROTECTION DURING CONSTRUCTION



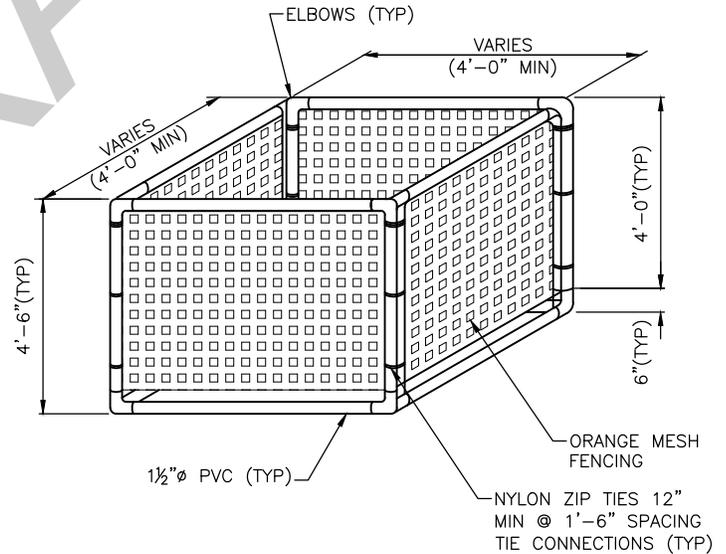
TYPICAL TREE GUARD RAIL



PLAN VIEW



TYPICAL PANEL



NOTES:

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

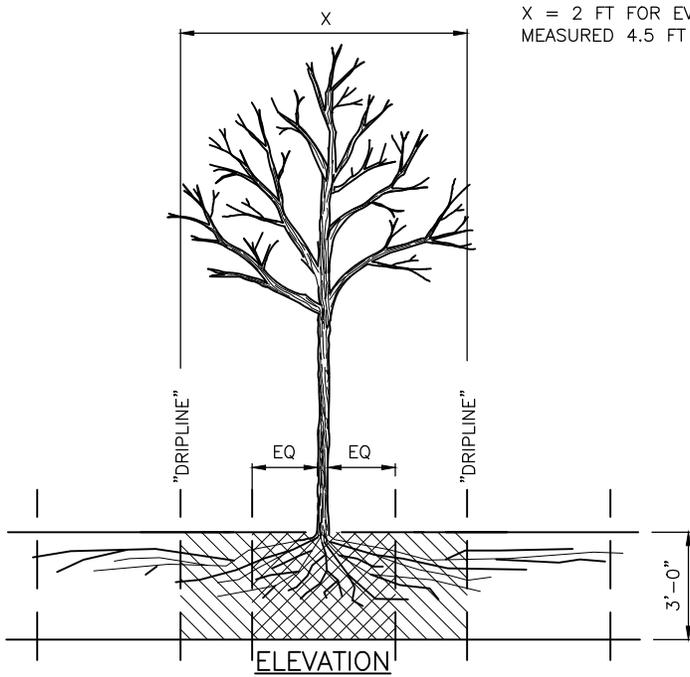
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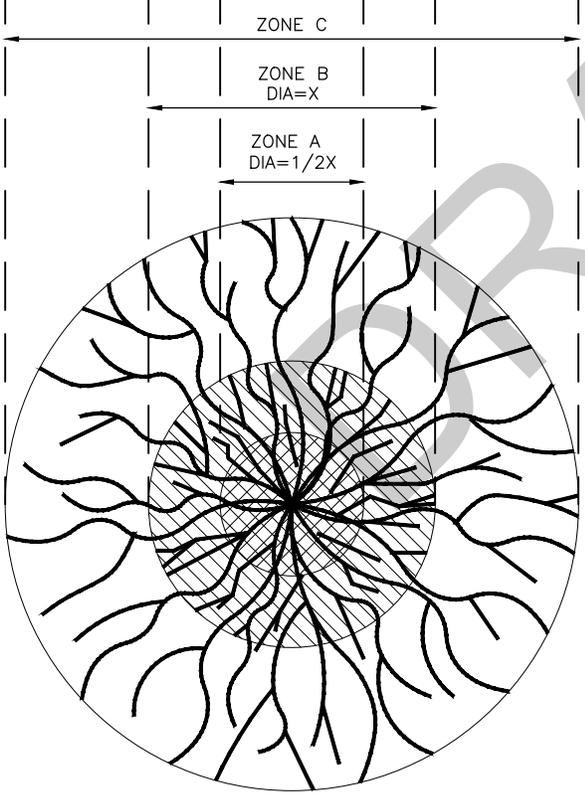
City of Seattle

NOT TO SCALE

REUSABLE TEMPORARY PROTECTION FENCE



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



TRENCHING/EXCAVATION

ZONE A (INTERIOR CRITICAL ROOT ZONE)

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

ZONE B (CRITICAL ROOT ZONE)

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

ZONE C (EXTENDED ROOT ZONE)

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

NOTE:

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

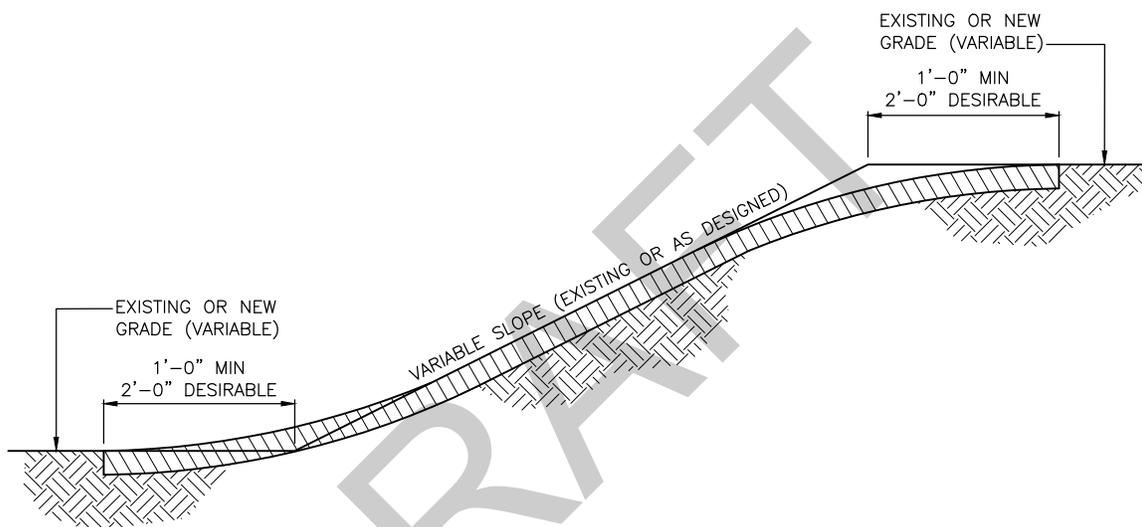
REF STD SPEC SEC 1-07.16(2), 8-01



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NOT TO SCALE

TREE PROTECTION DURING
TRENCHING, TUNNELING OR
EXCAVATION



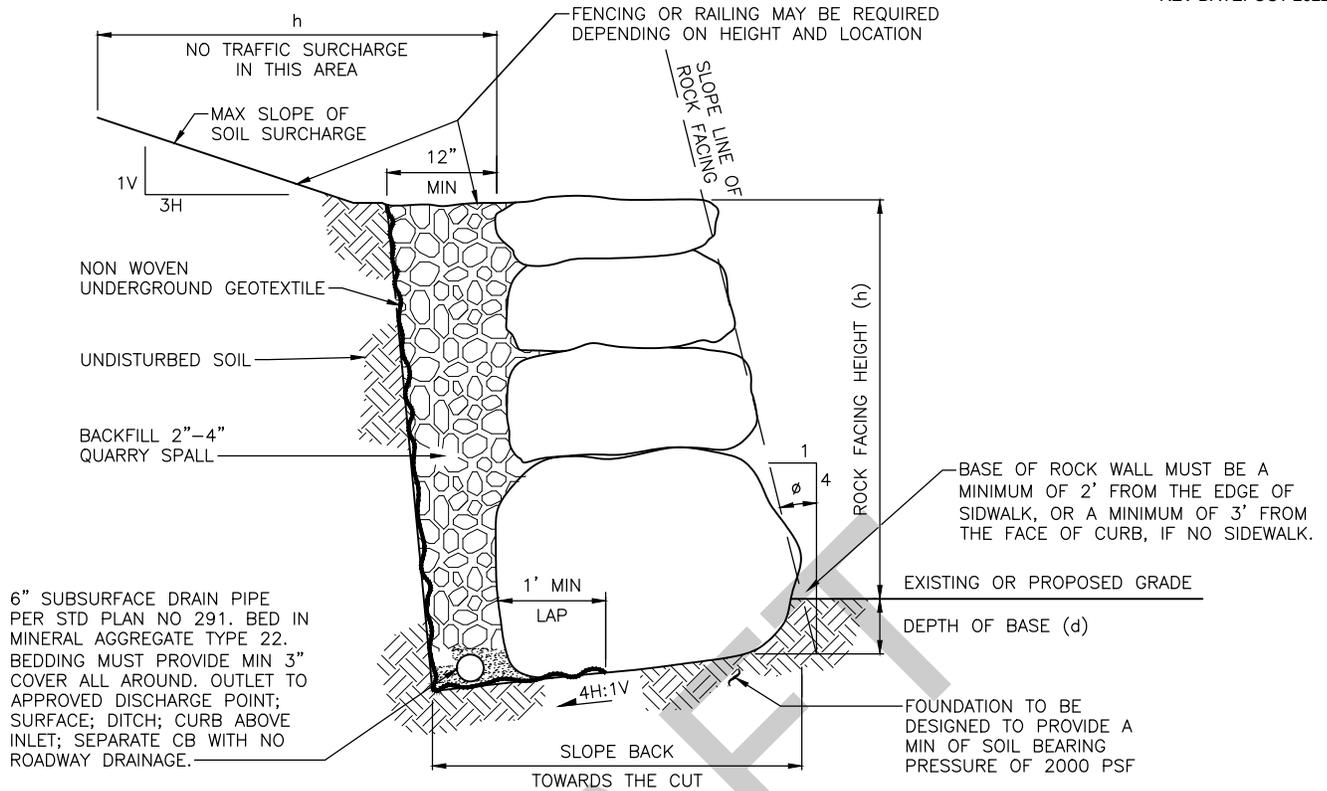
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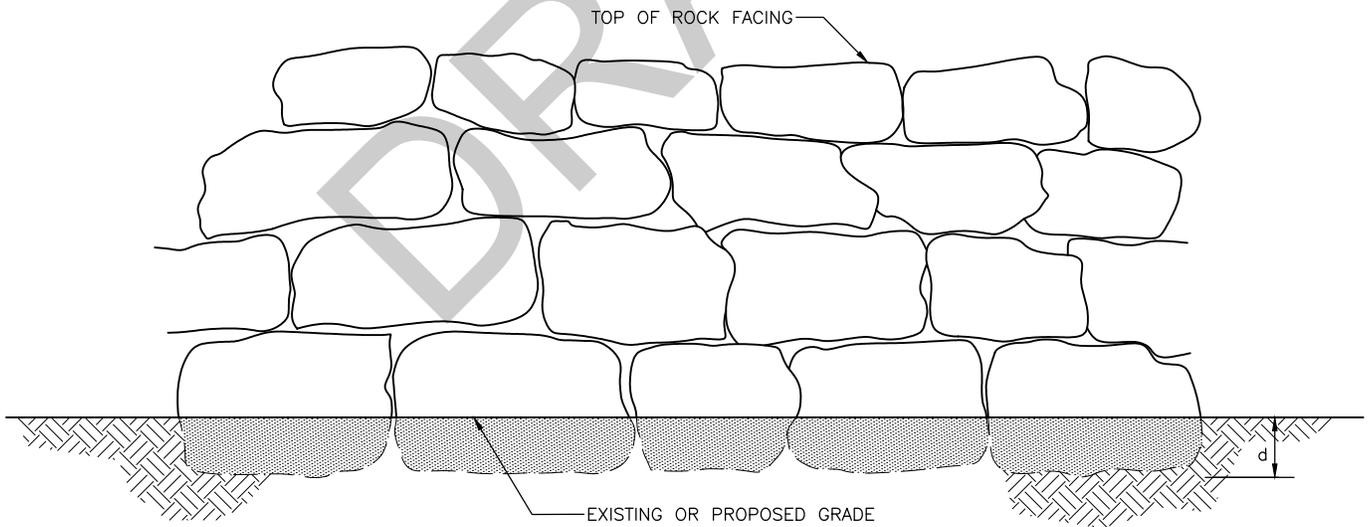
City of Seattle

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'

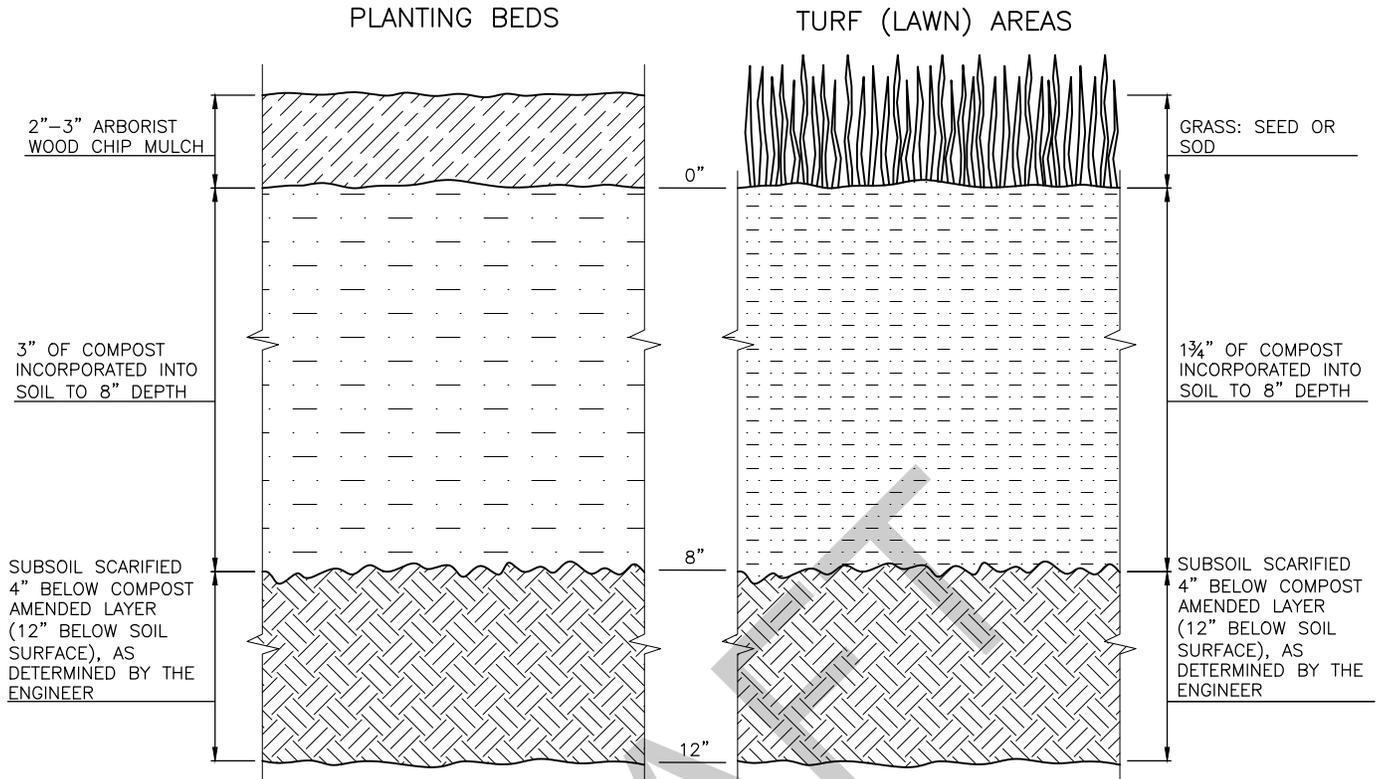
REF STD SPEC SEC 2-13



City of Seattle

NOT TO SCALE

ROCK FACING



NOTES:

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

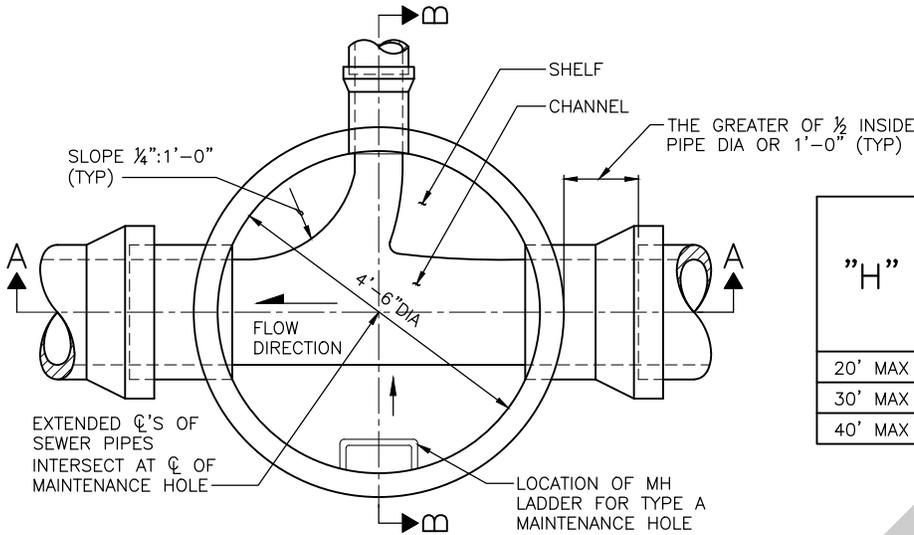
REF STD SPEC SEC 8-01, 8-02, 9-14



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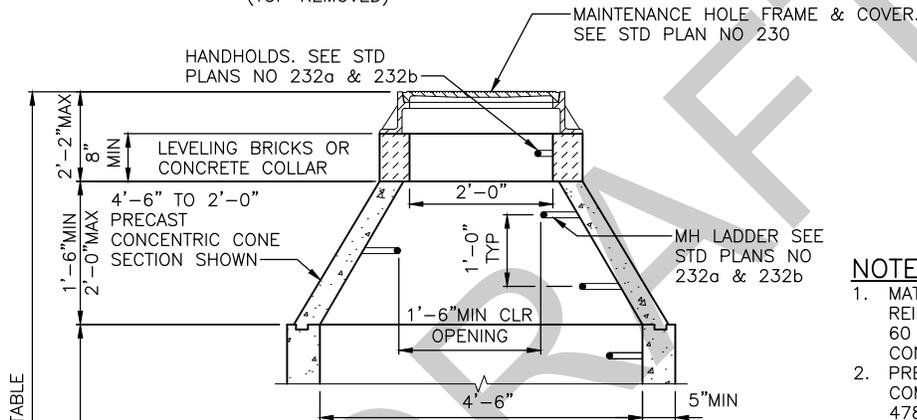
NOT TO SCALE

SOIL AMENDMENT AND DEPTH

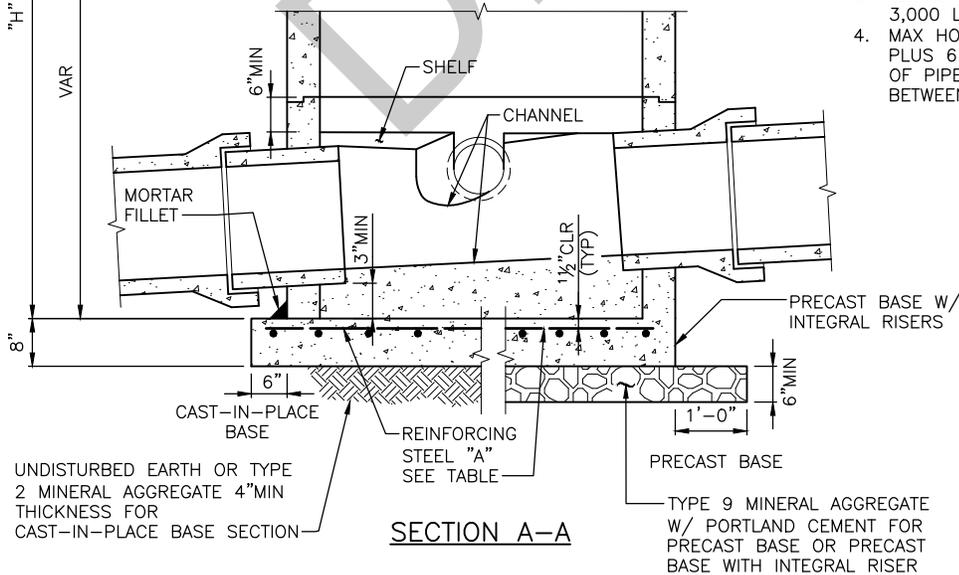


PLAN VIEW
(TOP REMOVED)

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



SECTION B-B



SECTION A-A

NOTES:

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

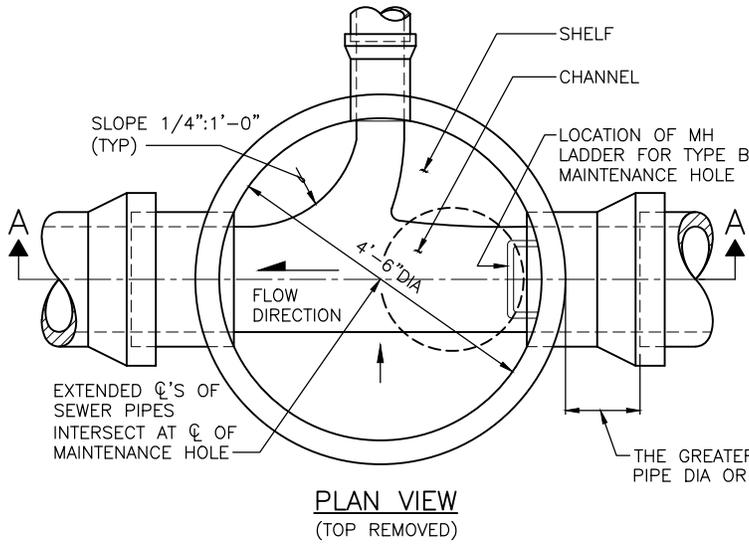
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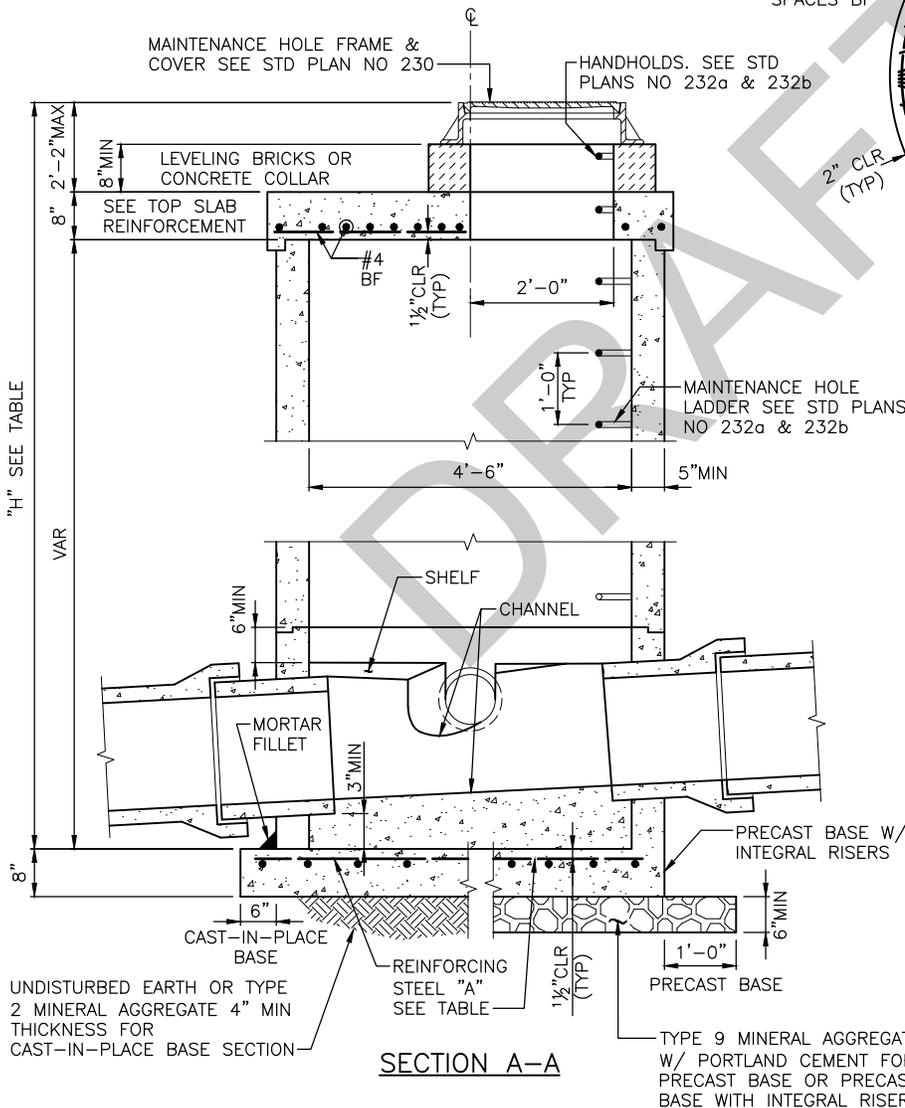
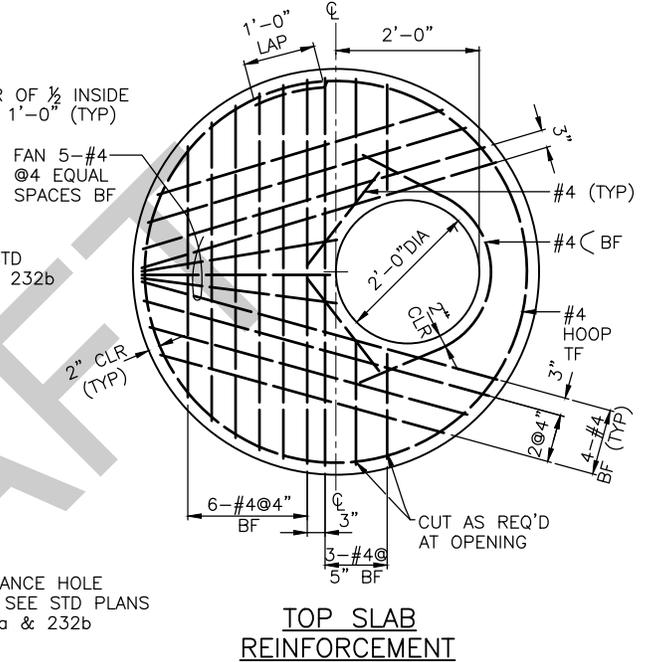
City of Seattle

NOT TO SCALE

TYPE 204.5a MAINTENANCE HOLE



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



NOTES:

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

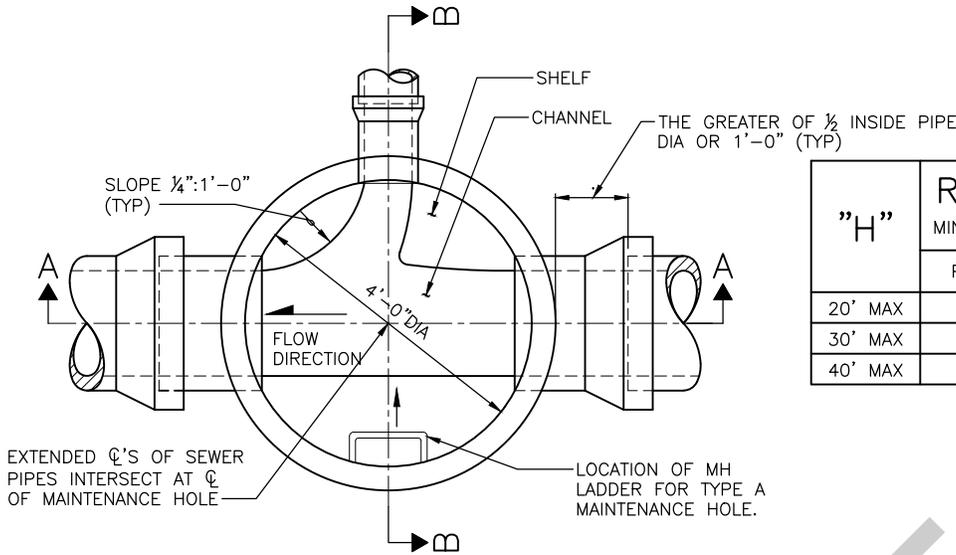
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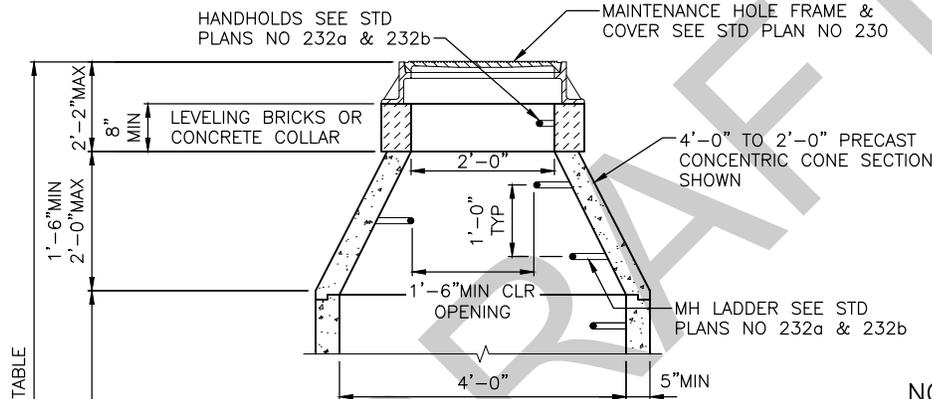
NOT TO SCALE

TYPE 204.5b MAINTENANCE HOLE

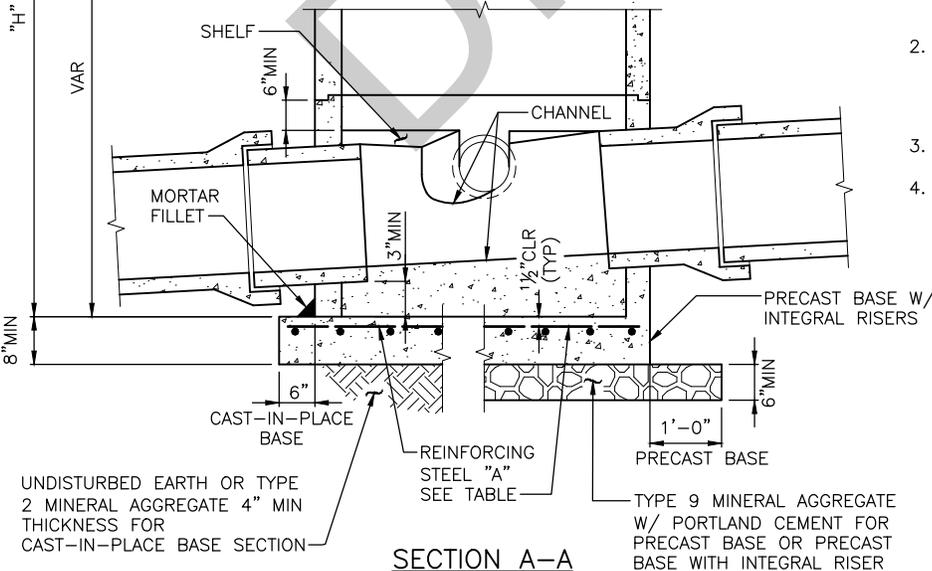


"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.25	0.17
30' MAX	0.31	0.22
40' MAX	0.36	0.25

PLAN VIEW
(TOP REMOVED)



SECTION B-B



SECTION A-A

NOTES:

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

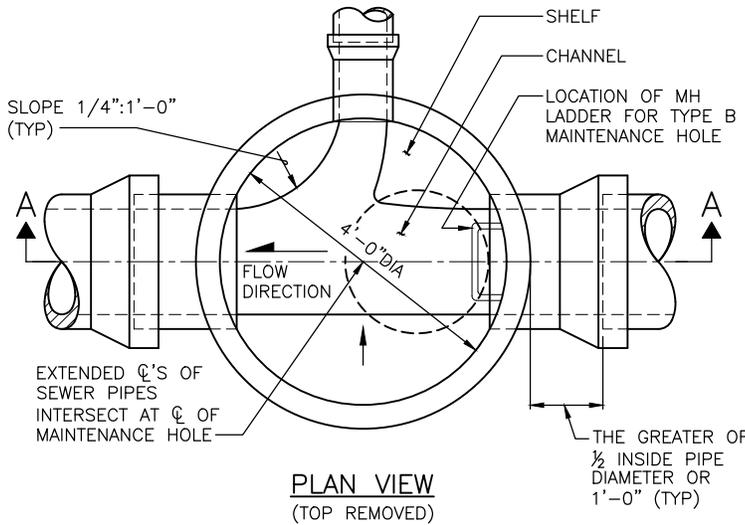
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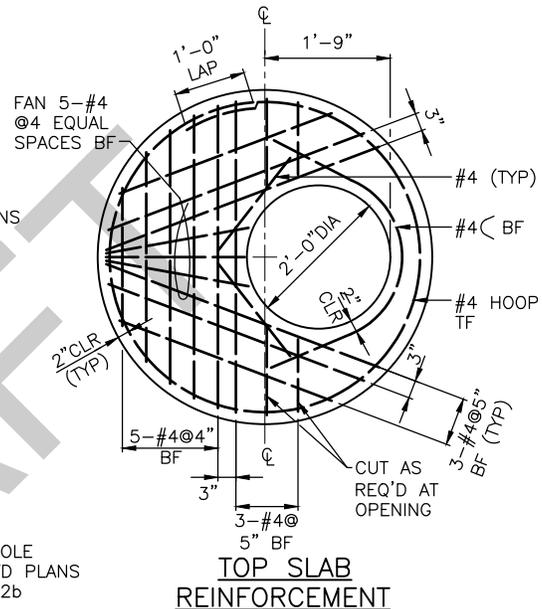
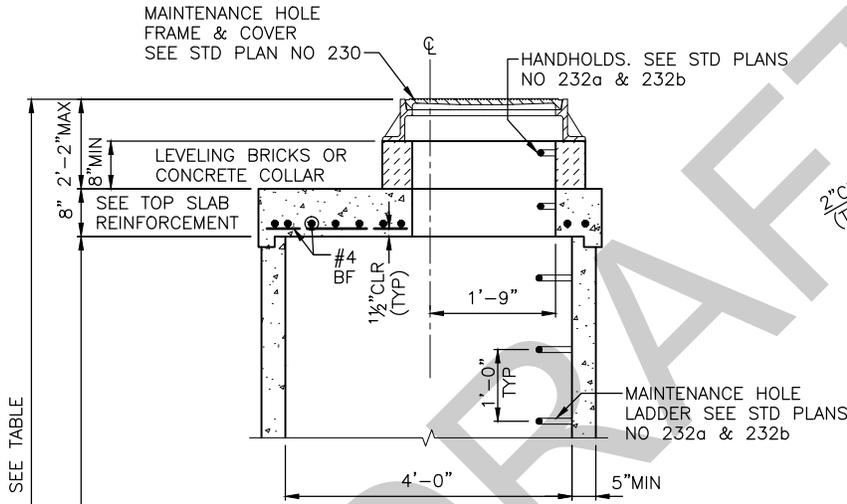
City of Seattle

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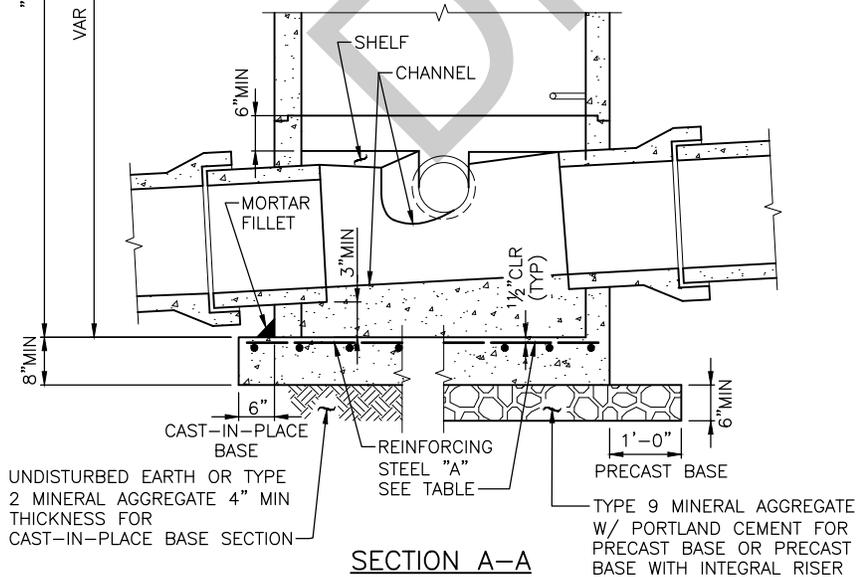
TYPE 204a MAINTENANCE HOLE



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



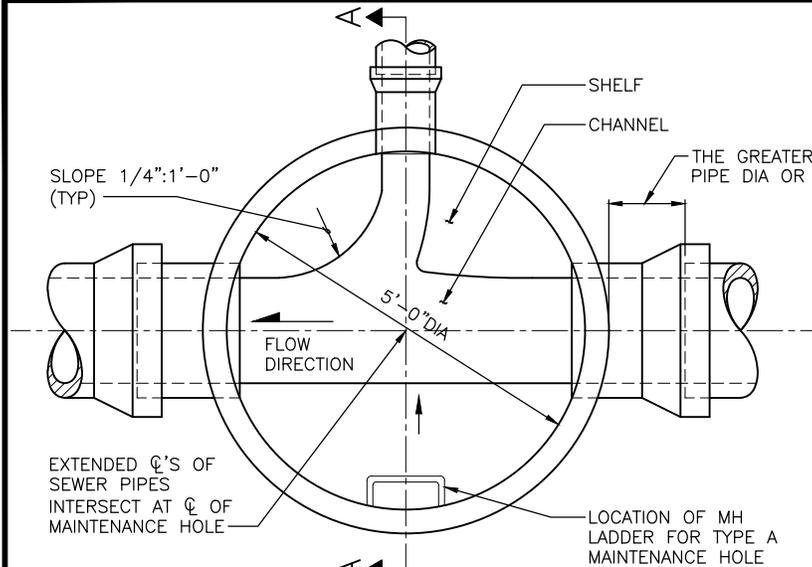
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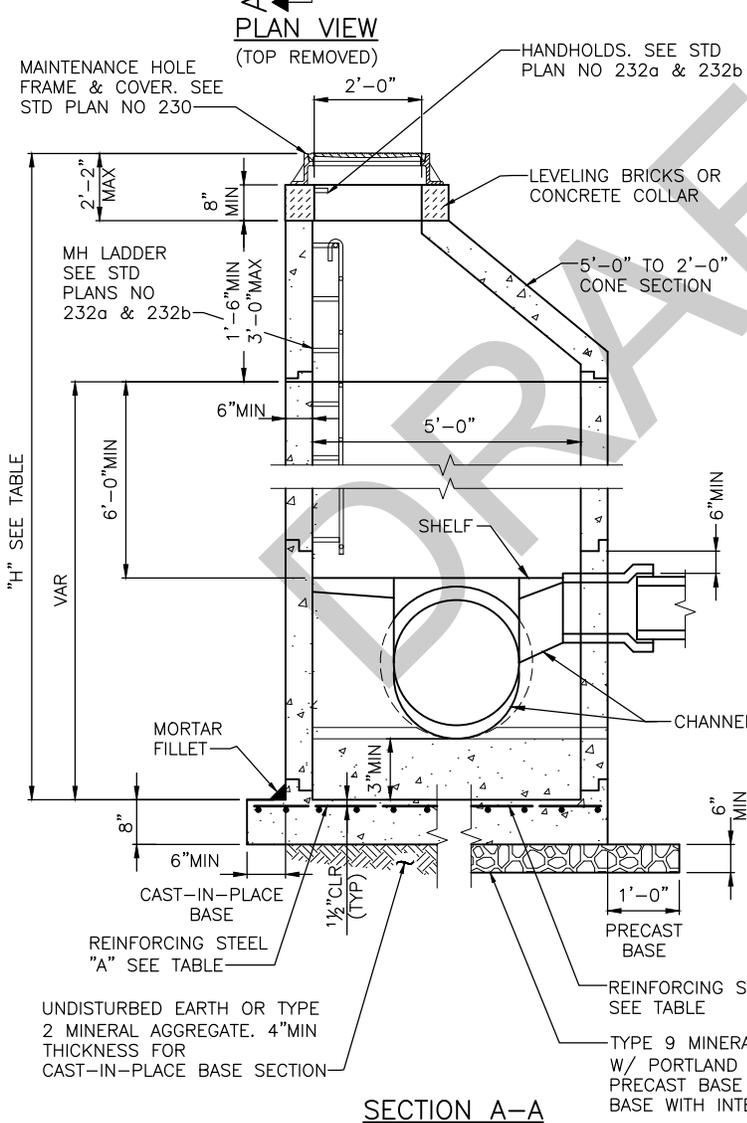
City of Seattle

NOT TO SCALE

TYPE 204b MAINTENANCE HOLE



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



NOTES:

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

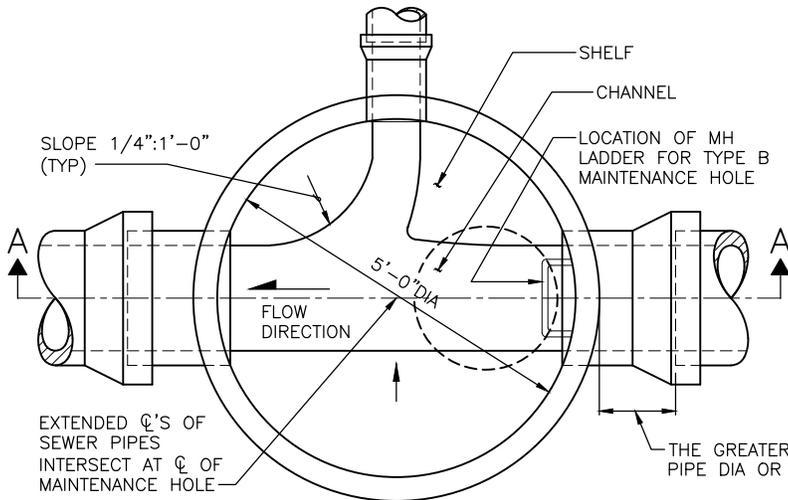
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NOT TO SCALE

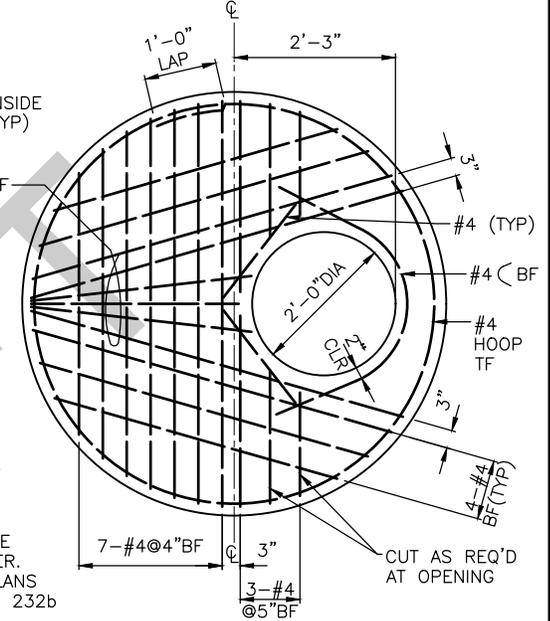
TYPE 205a MAINTENANCE HOLE



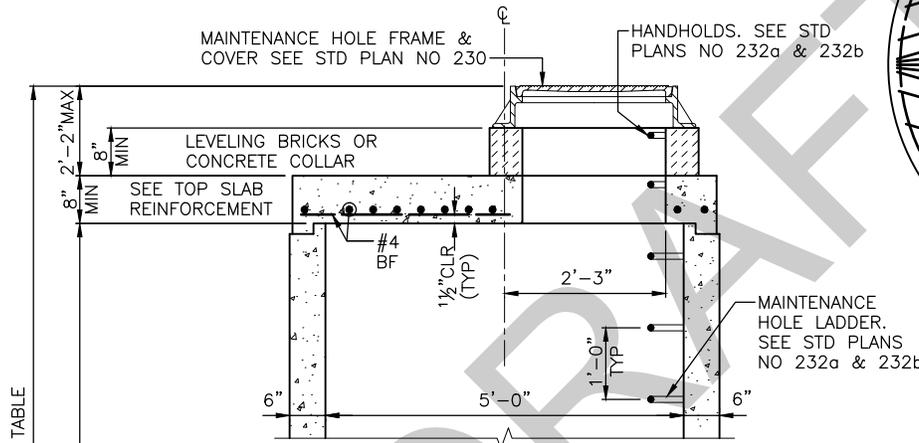
PLAN VIEW
(TOP REMOVED)

"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

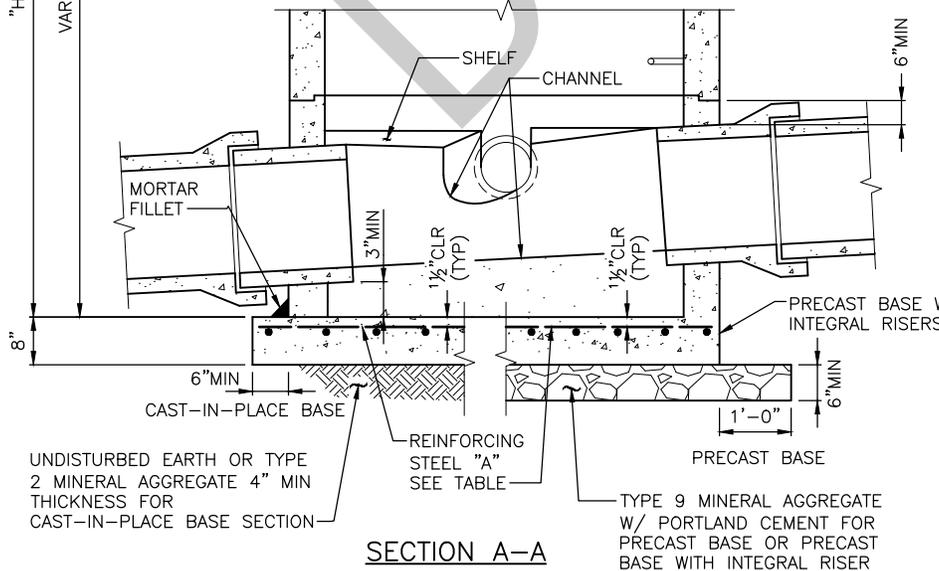
FAN 5-#4 @4
EQUAL SPACES BF



TOP SLAB
REINFORCEMENT



SECTION A-A



NOTES:

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

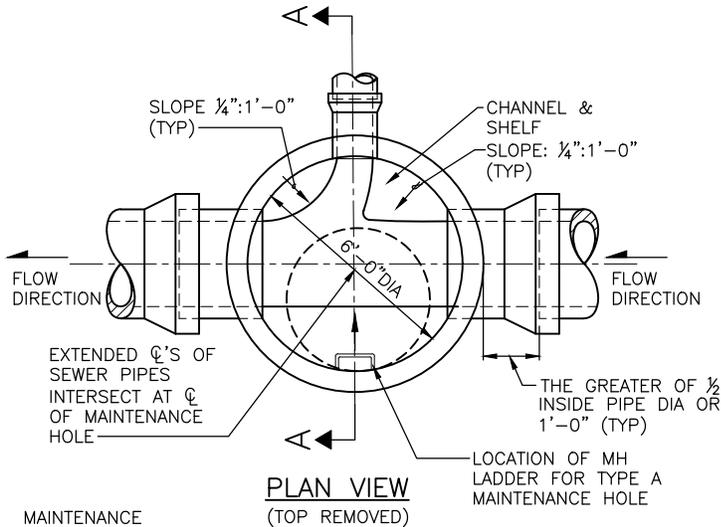
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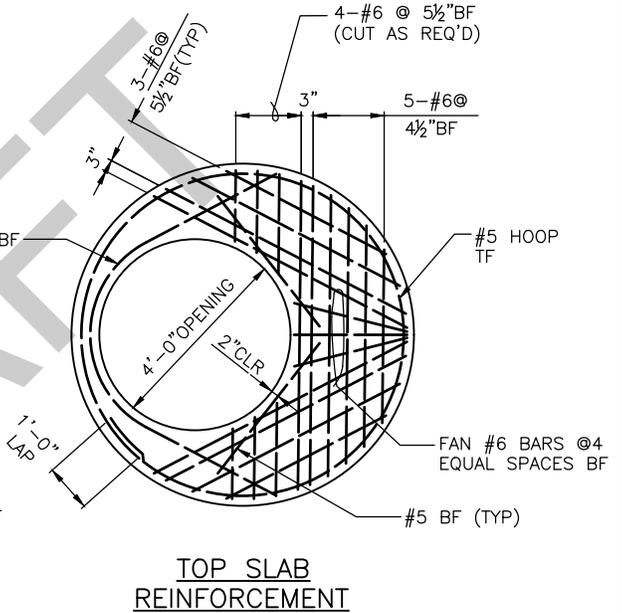
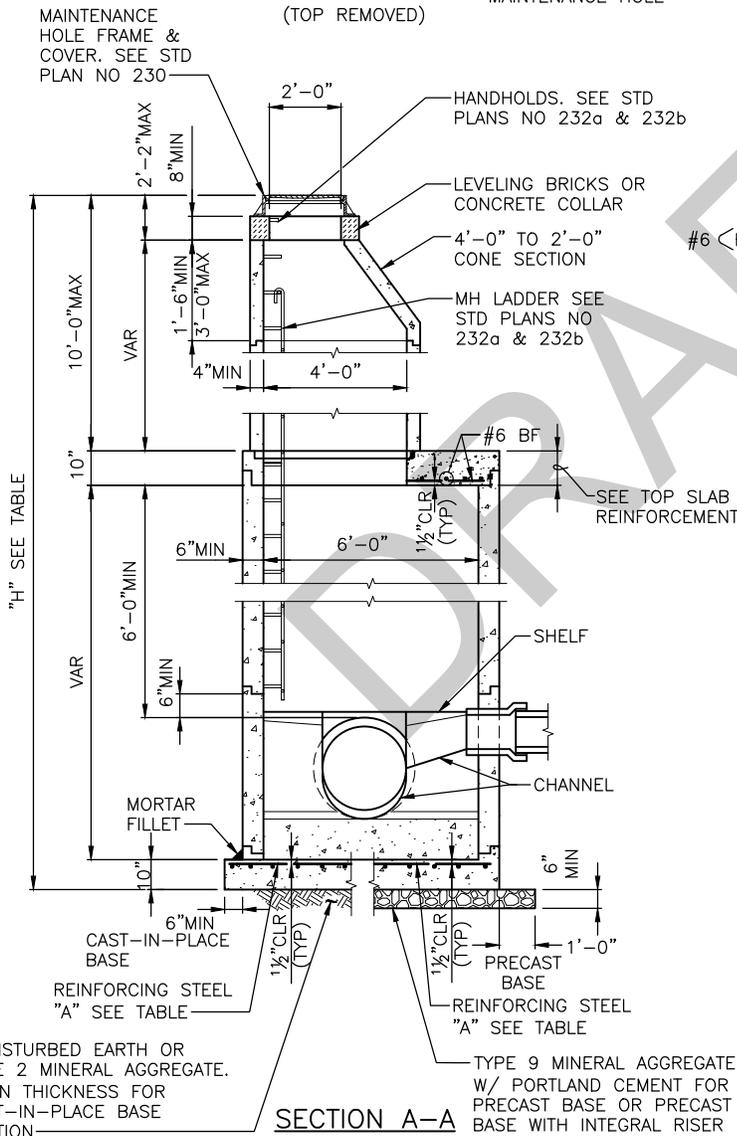
City of Seattle

NOT TO SCALE

TYPE 205b MAINTENANCE HOLE



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



NOTES:

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

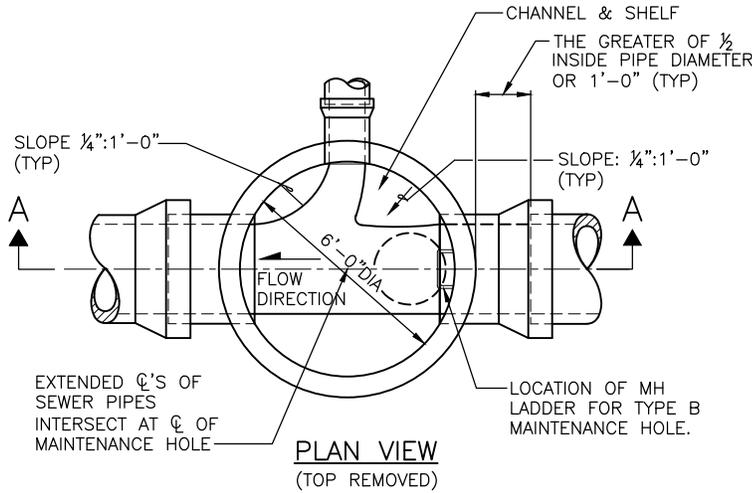
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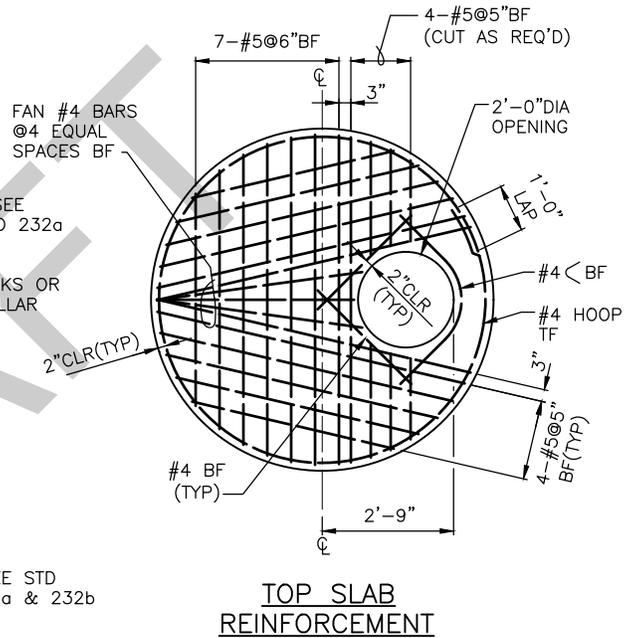
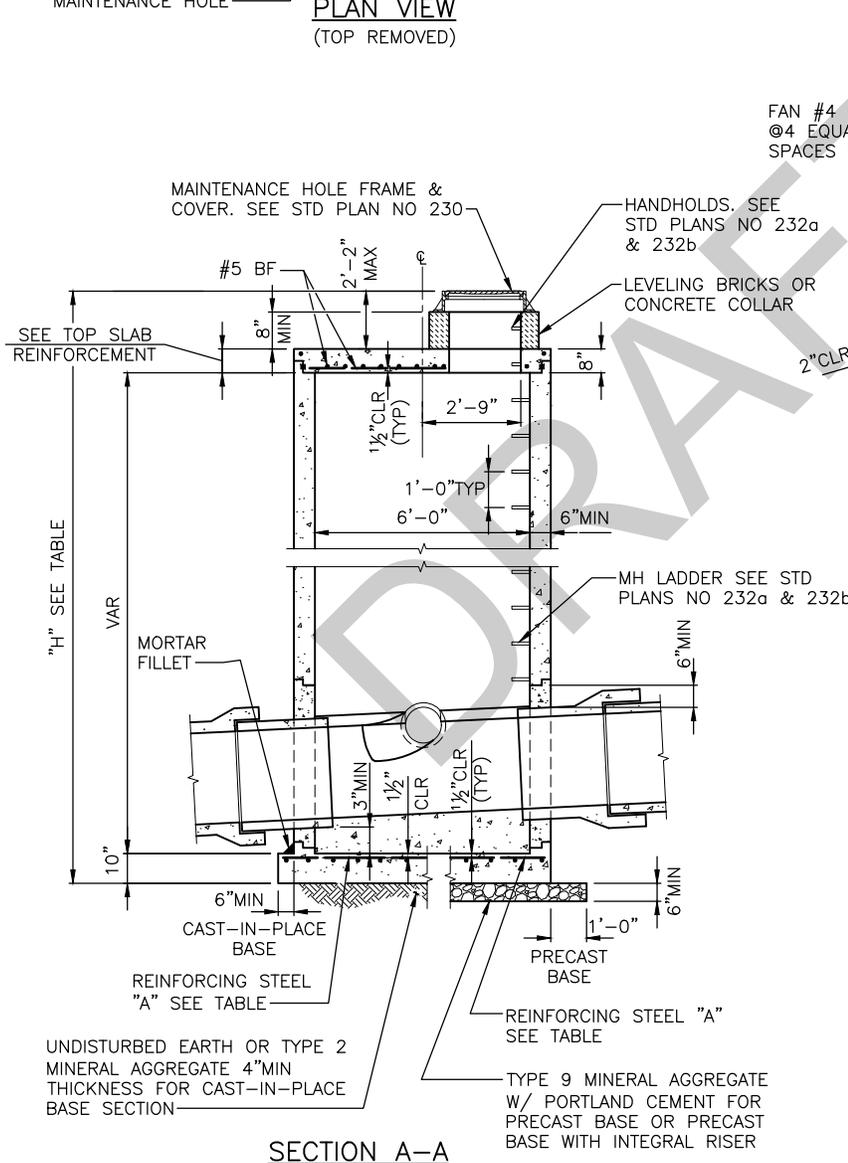
City of Seattle

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

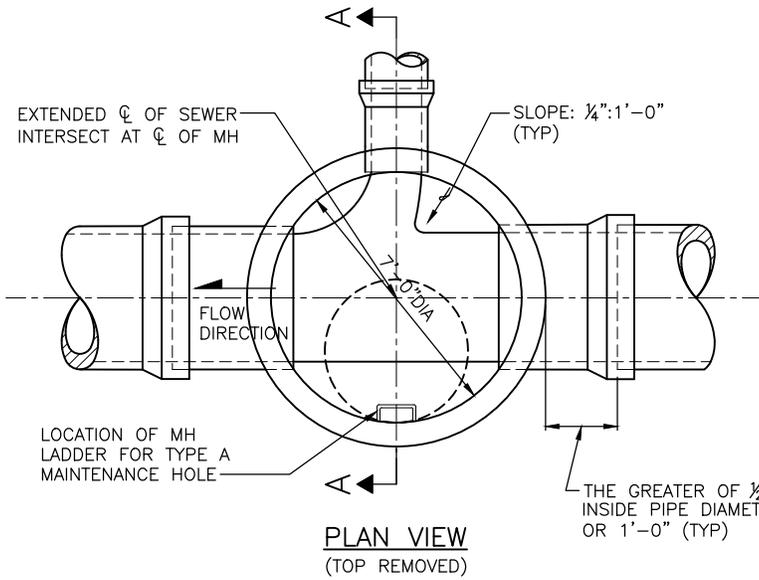
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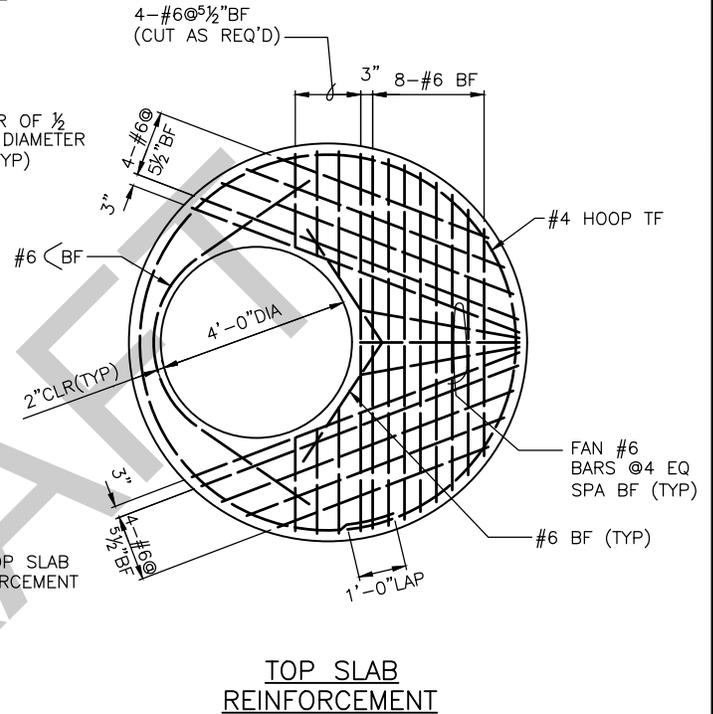
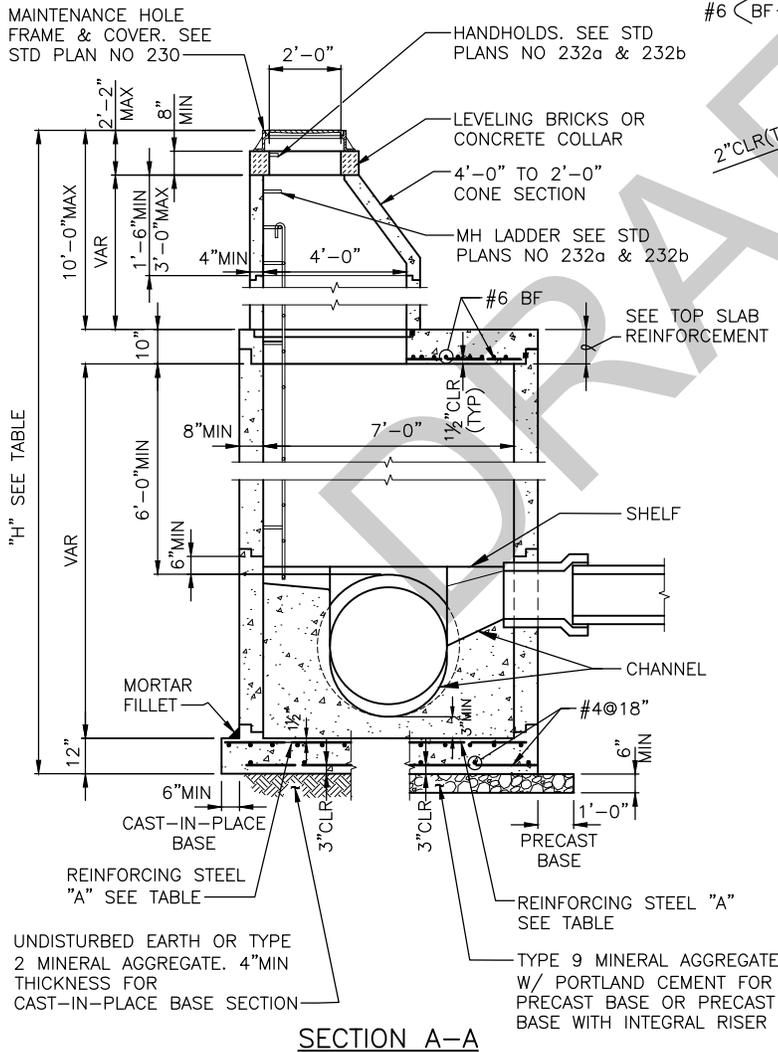
City of Seattle

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

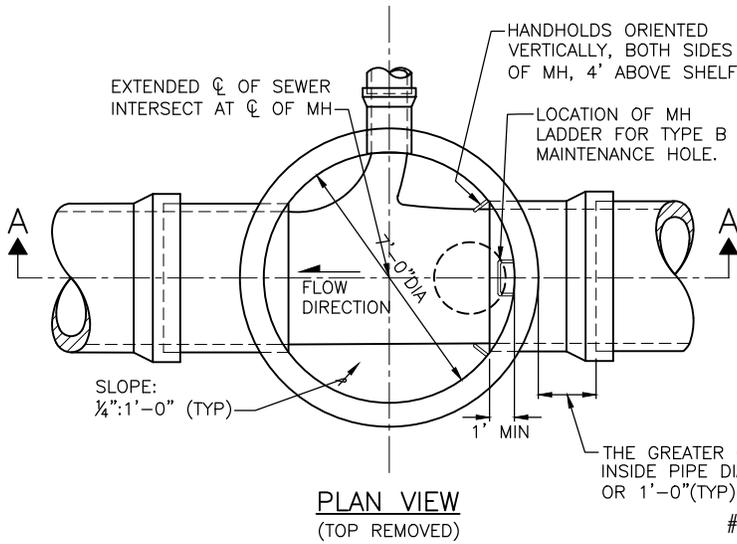
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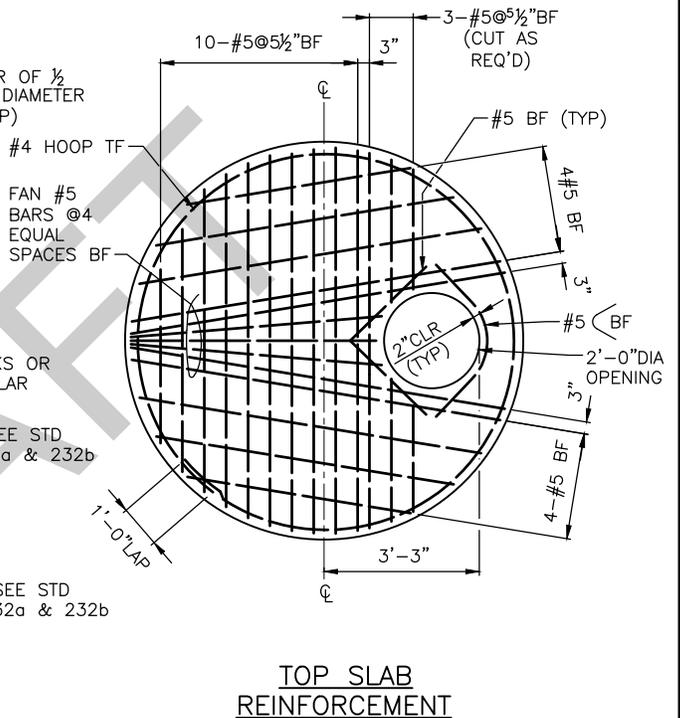
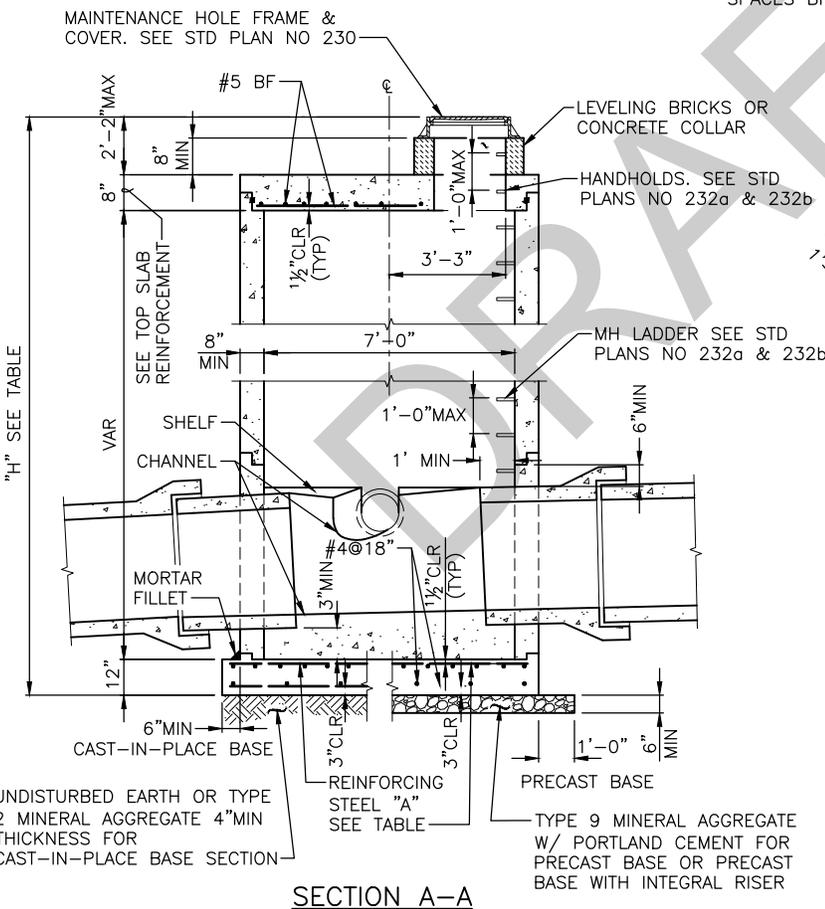
City of Seattle

NOT TO SCALE

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	0.34	0.27
30' MAX	0.43	0.35
40' MAX	0.52	0.42



NOTES:

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

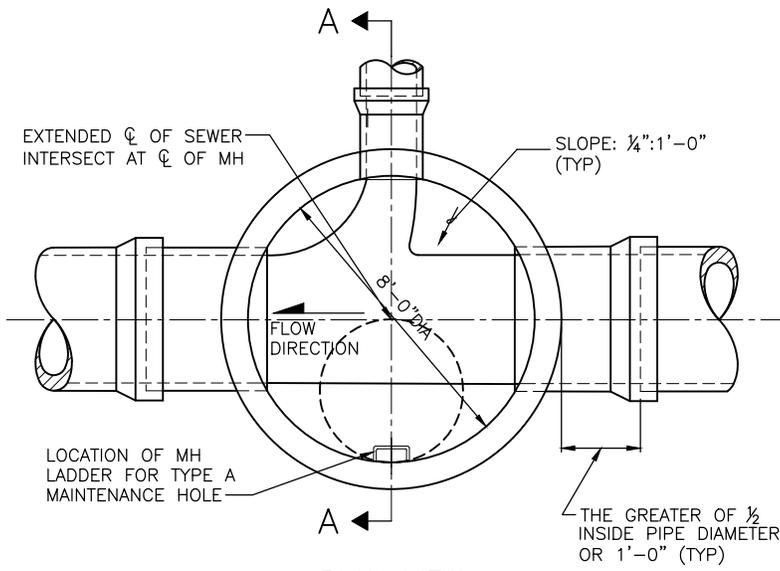
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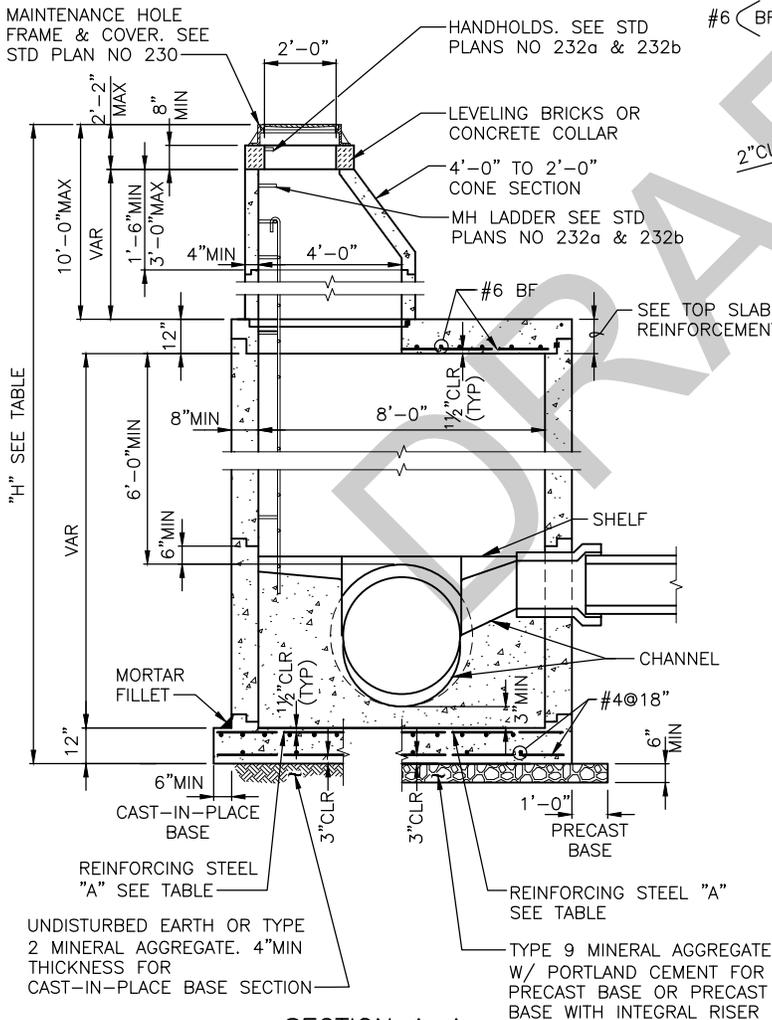
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TYPE 207b MAINTENANCE HOLE

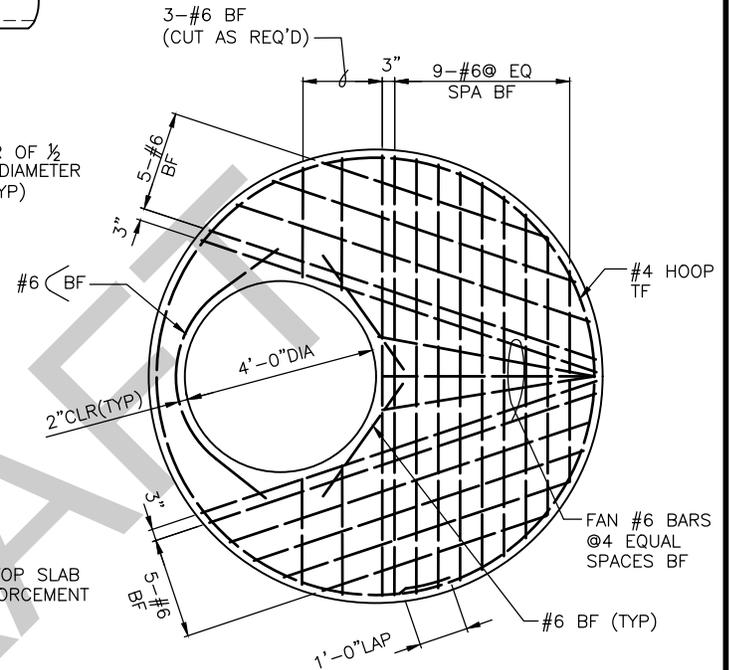


"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.54	0.45
30' MAX	0.66	0.55
40' MAX	0.78	0.64

PLAN VIEW
(TOP REMOVED)



SECTION A-A



TOP SLAB REINFORCEMENT

NOTES:

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

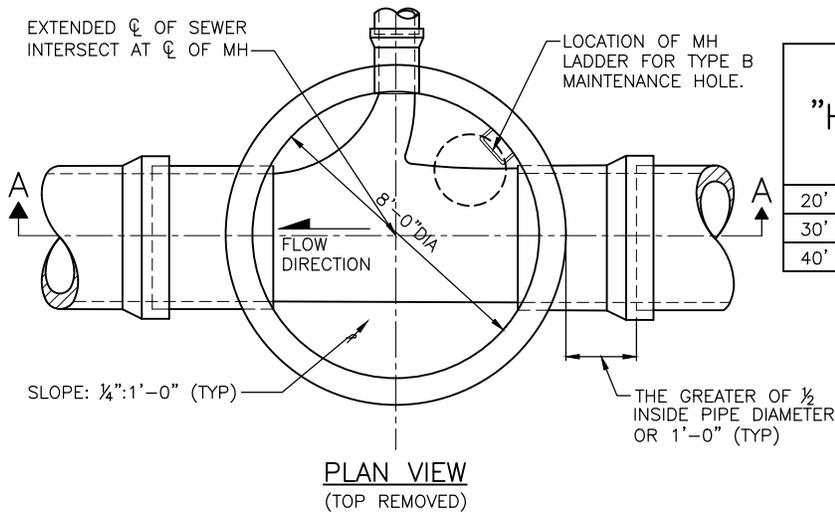
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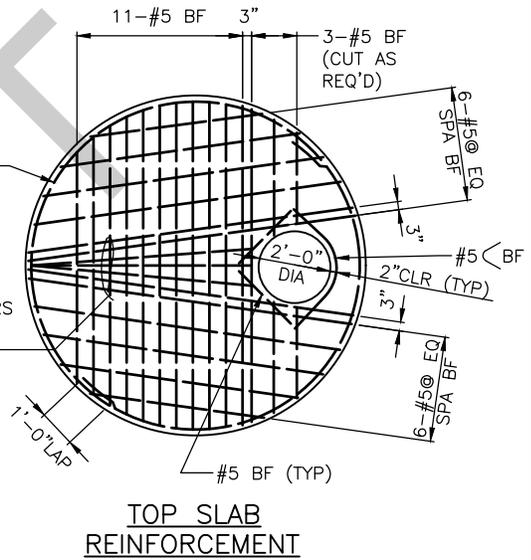
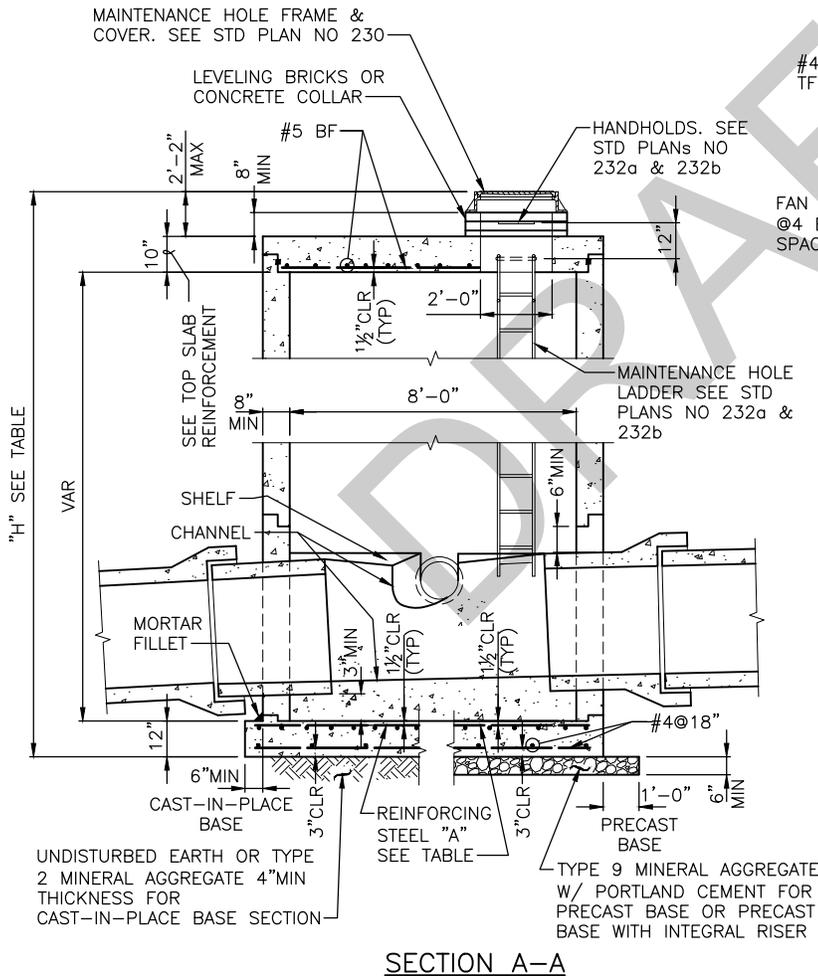
City of Seattle

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

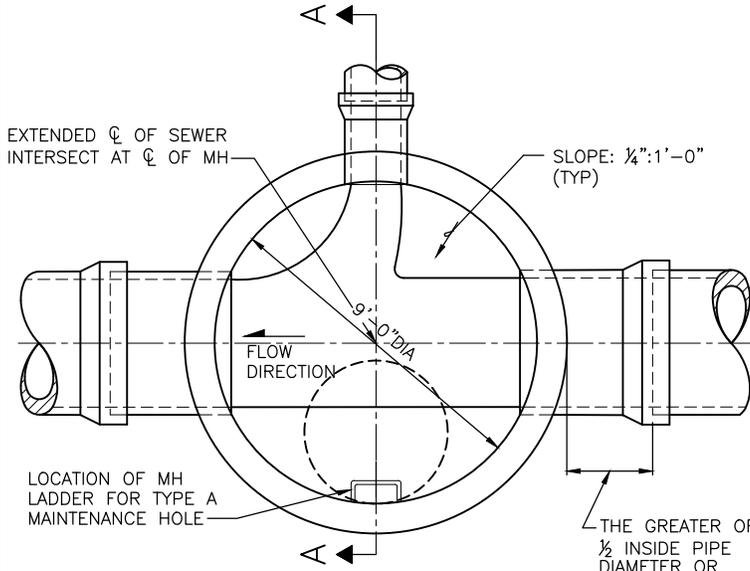
REF STD SPEC SEC 7-05



City of Seattle

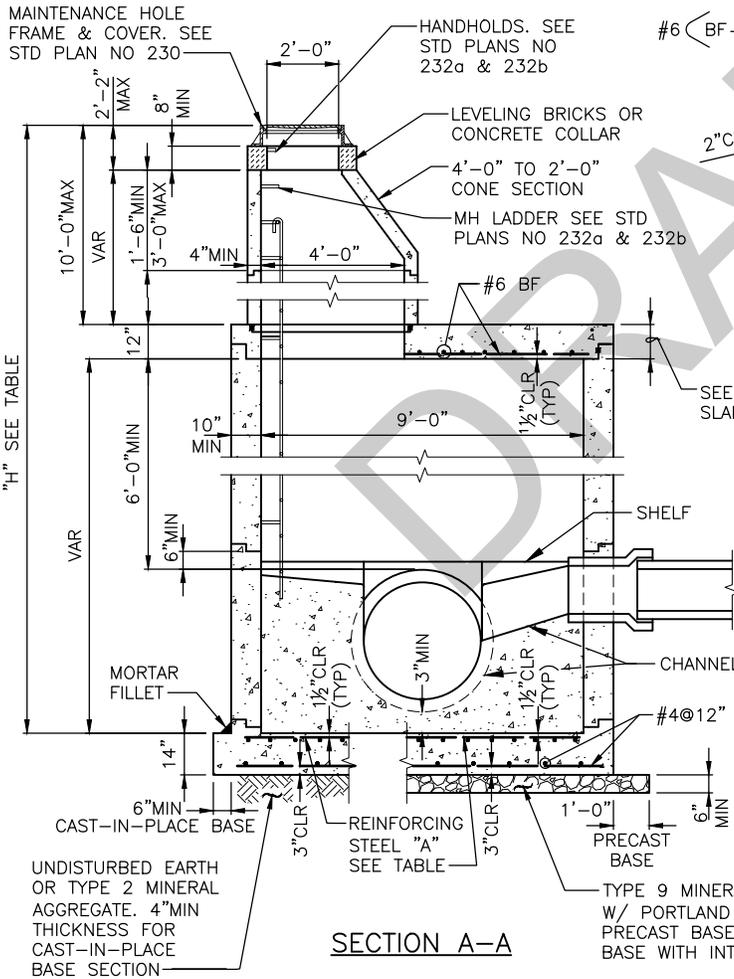
NOT TO SCALE

TYPE 208b MAINTENANCE HOLE

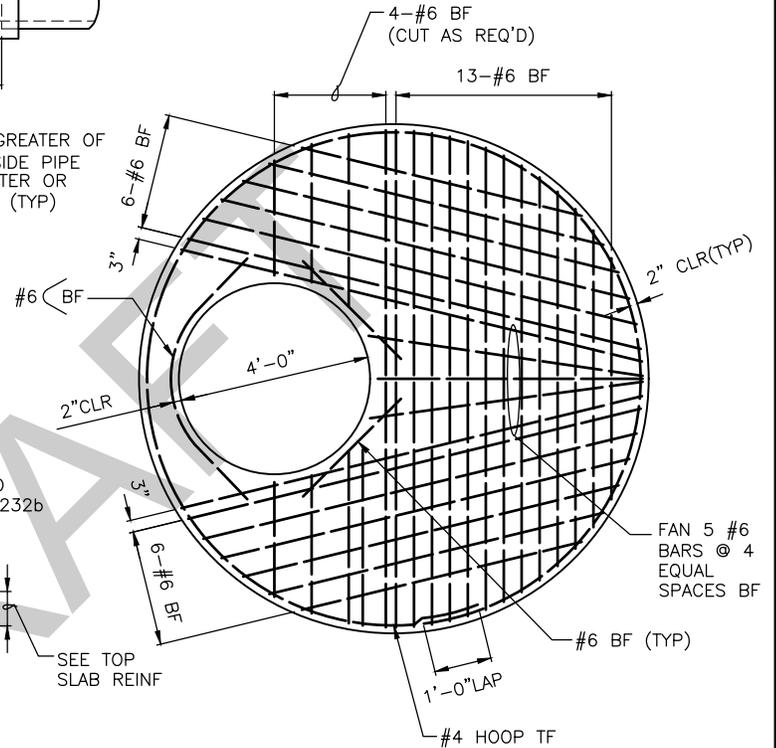


PLAN VIEW
(TOP REMOVED)

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



SECTION A-A



TOP SLAB
REINFORCEMENT

NOTES:

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

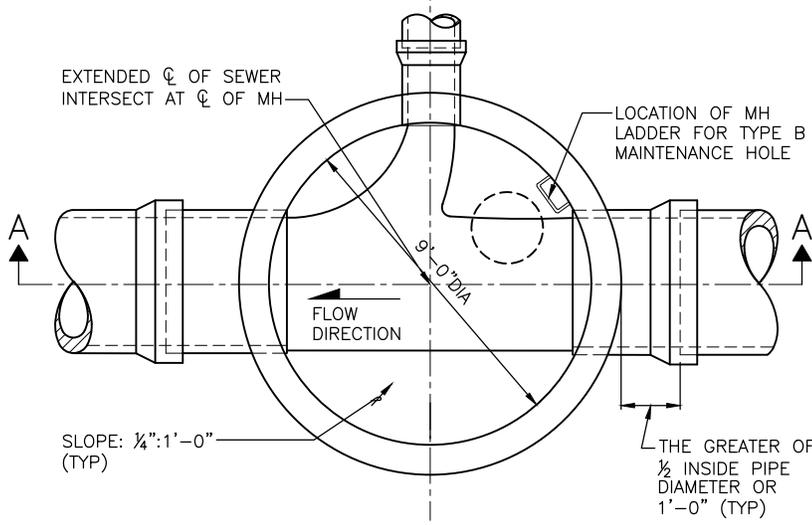
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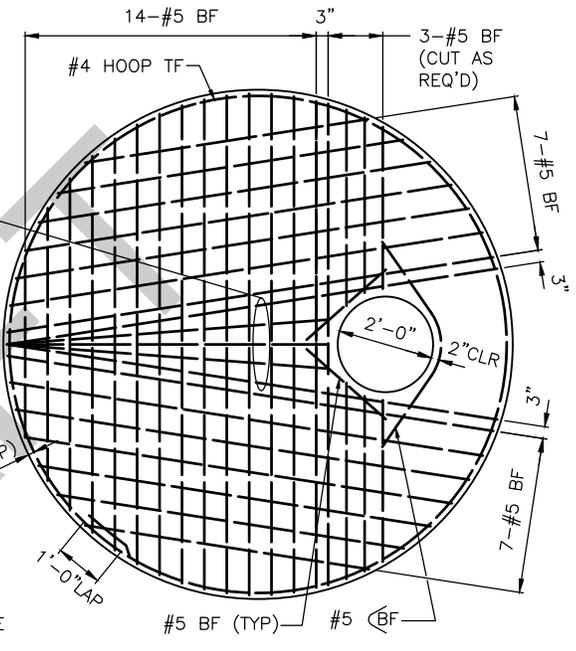
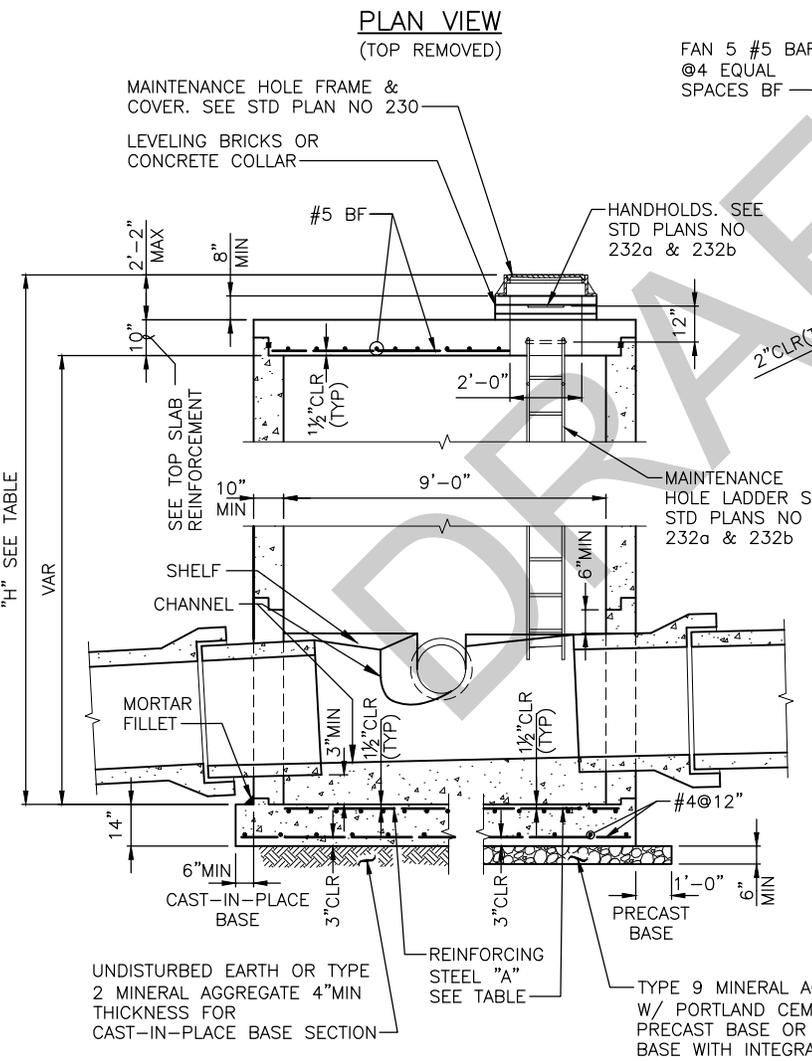
City of Seattle

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

SECTION A-A

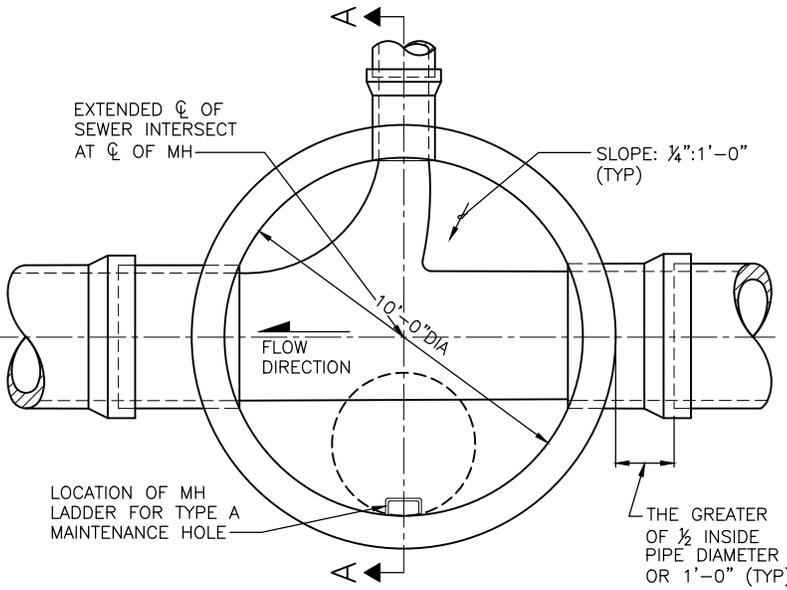
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City of Seattle

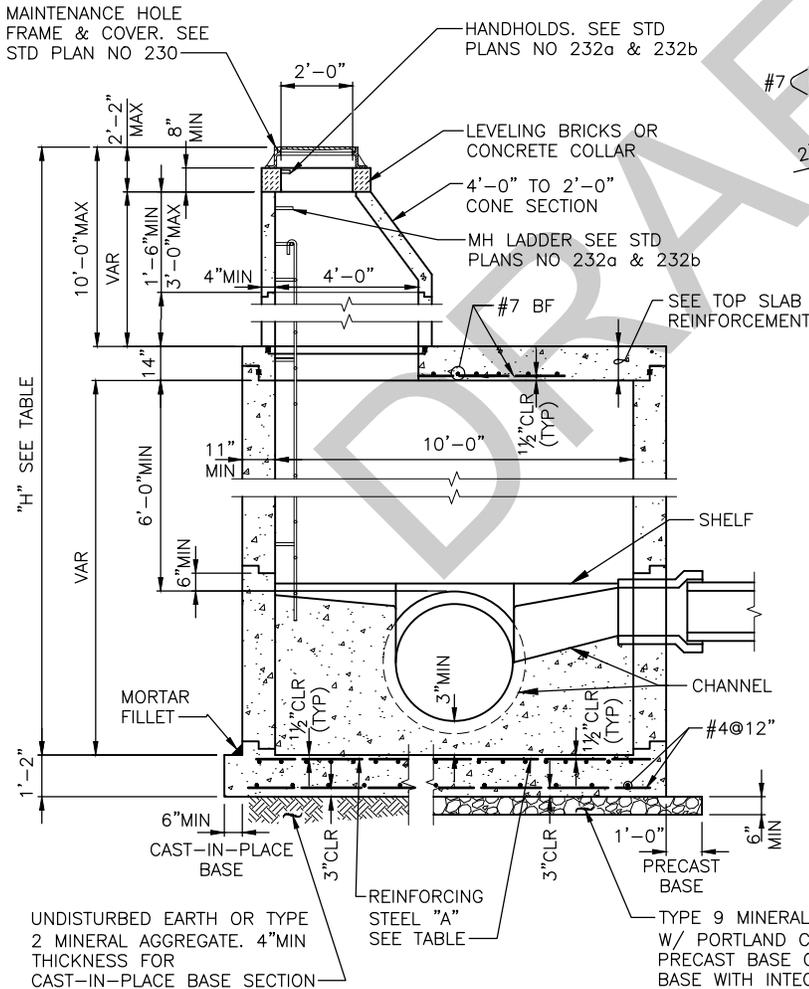
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TYPE 209b MAINTENANCE HOLE

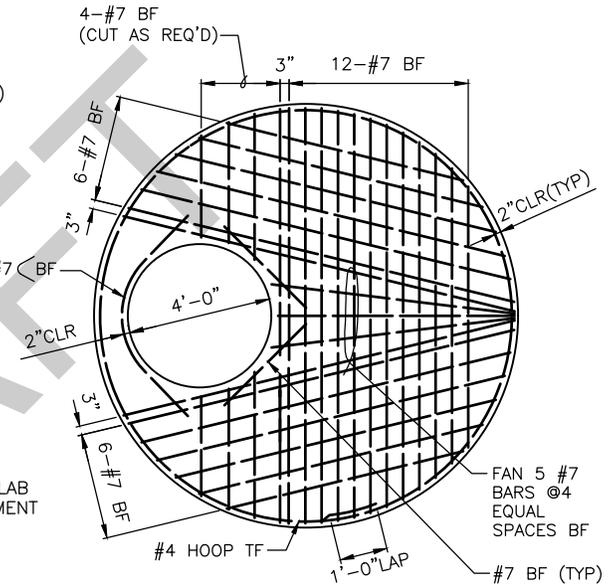


PLAN VIEW
(TOP REMOVED)

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



SECTION A-A



TOP SLAB
REINFORCEMENT

NOTES:

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

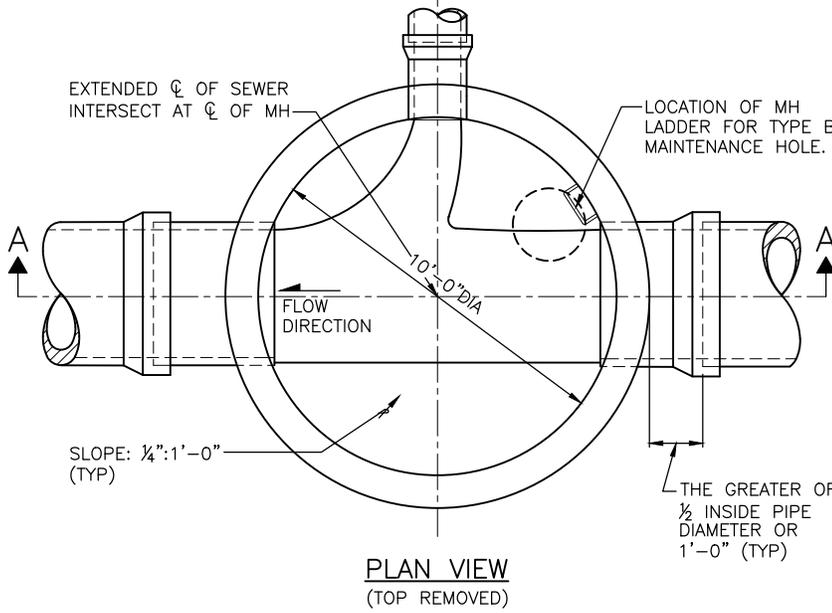
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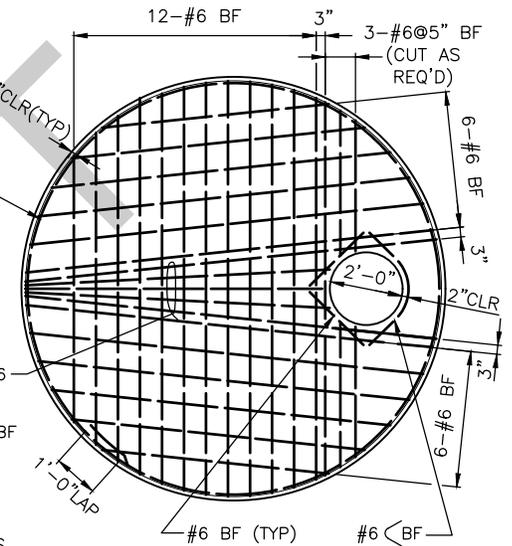
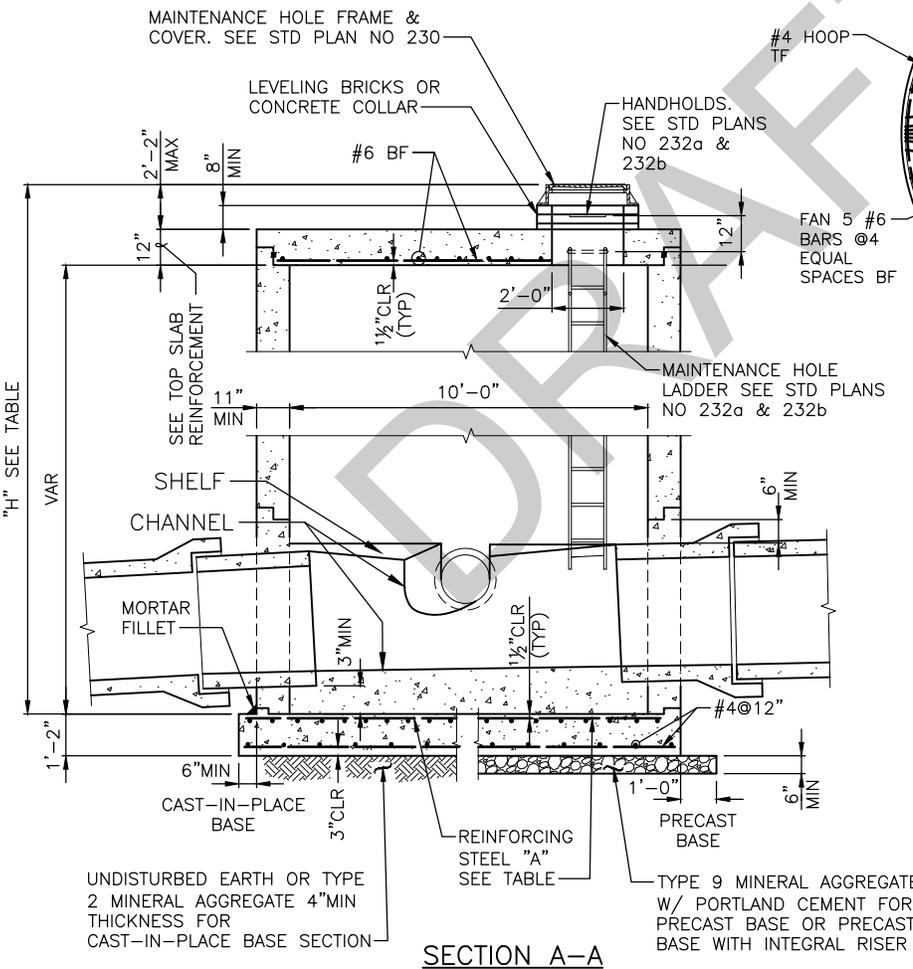
City of Seattle

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

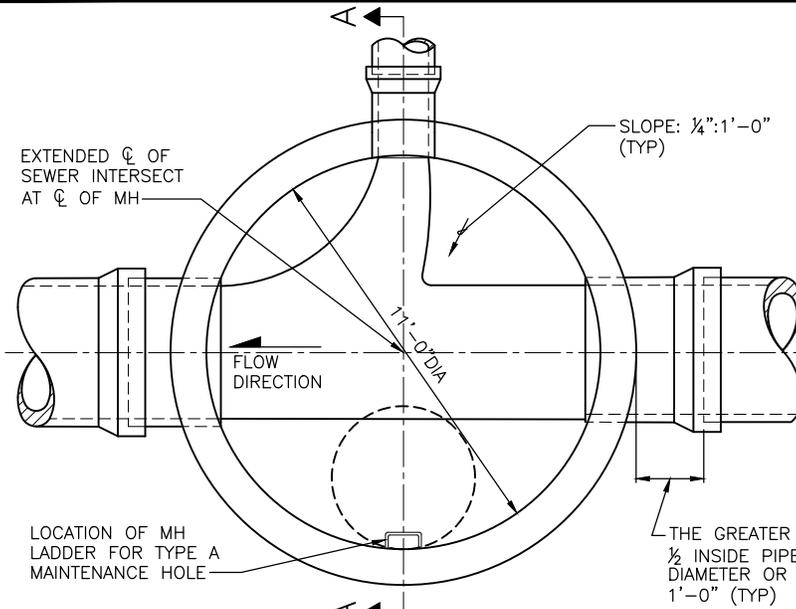
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City of Seattle

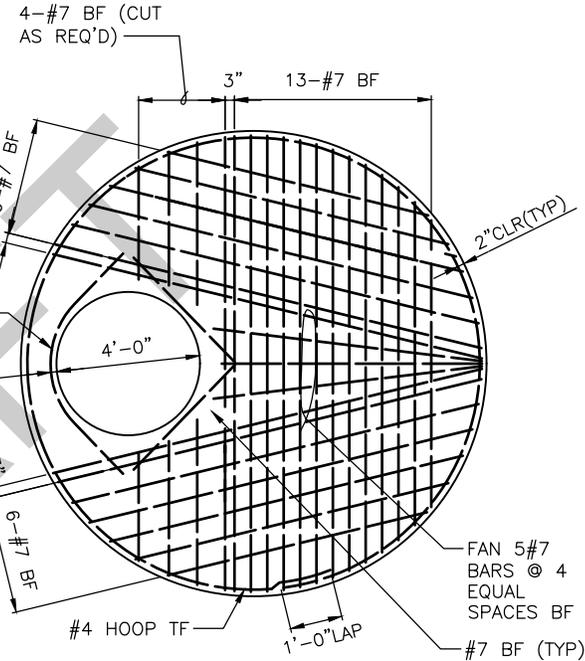
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TYPE 210b MAINTENANCE HOLE

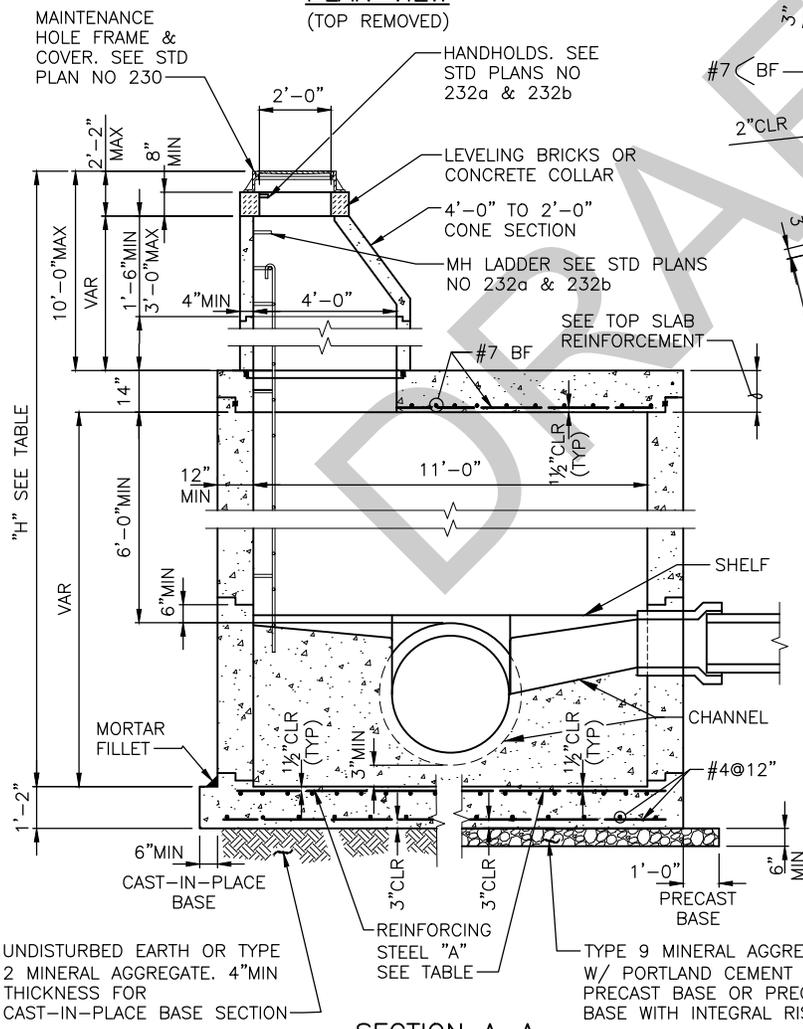


"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.85	0.74
30' MAX	1.02	0.89
40' MAX	1.20	1.05

PLAN VIEW
(TOP REMOVED)



TOP SLAB
REINFORCEMENT



SECTION A-A

NOTES:

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

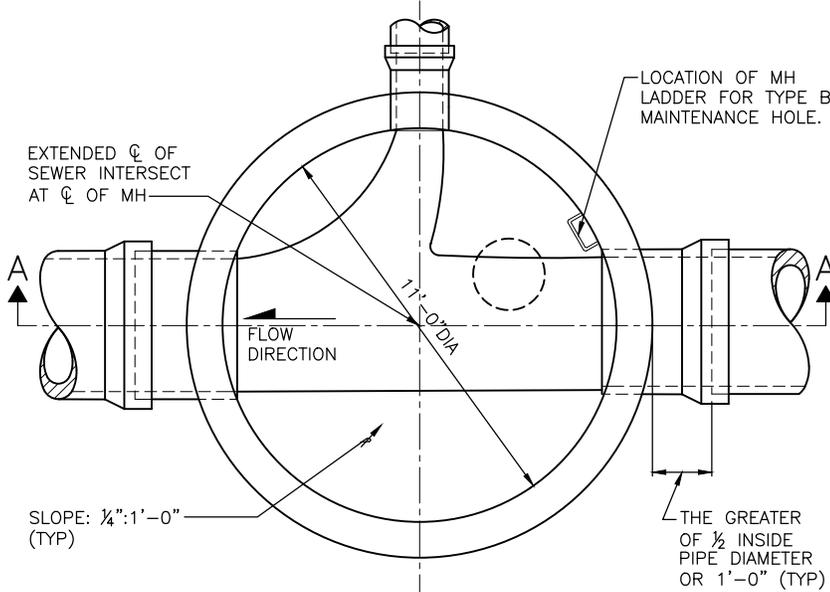
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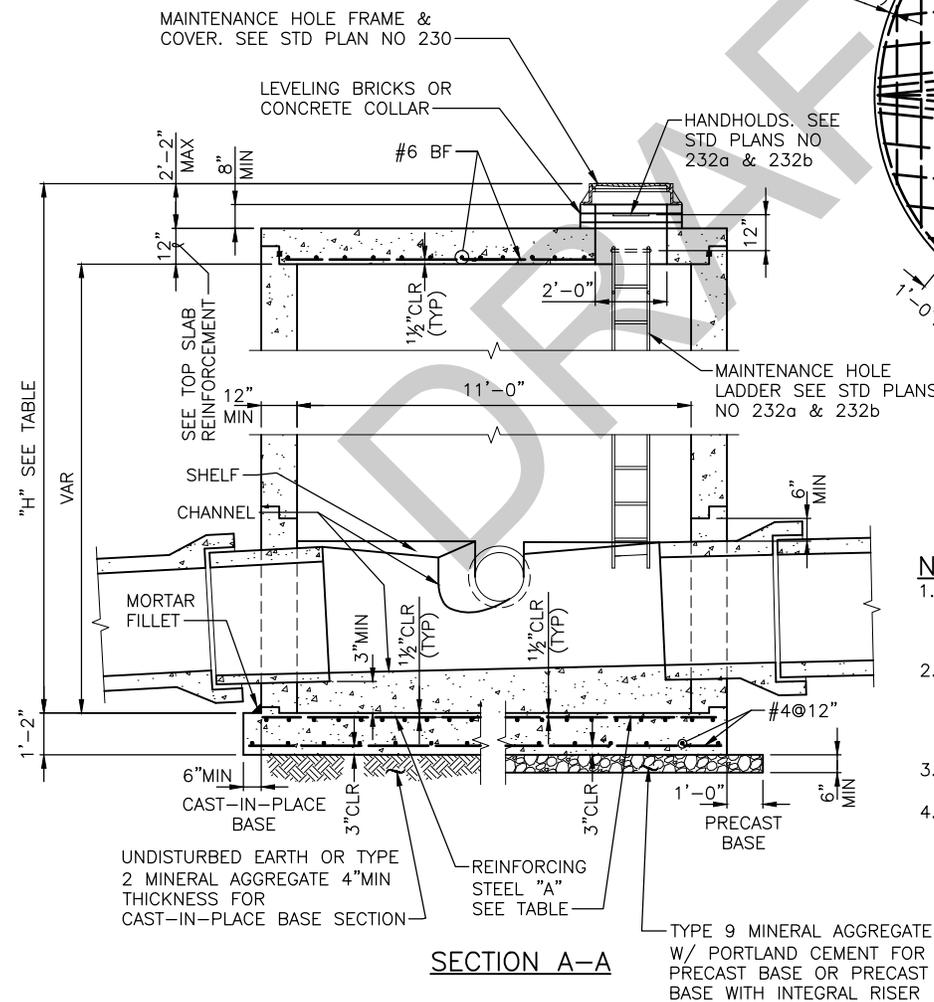
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TYPE 211a MAINTENANCE HOLE

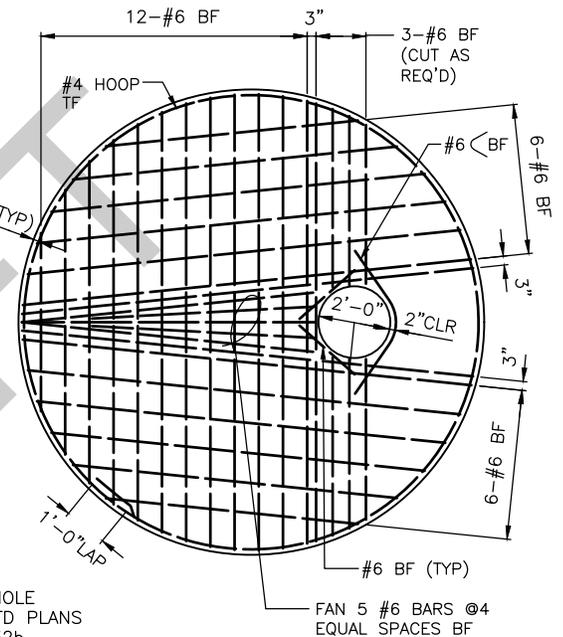


"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	0.62	0.54
30' MAX	0.79	0.69
40' MAX	0.97	0.85

PLAN VIEW
(TOP REMOVED)



SECTION A-A



TOP SLAB
REINFORCEMENT

NOTES:

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

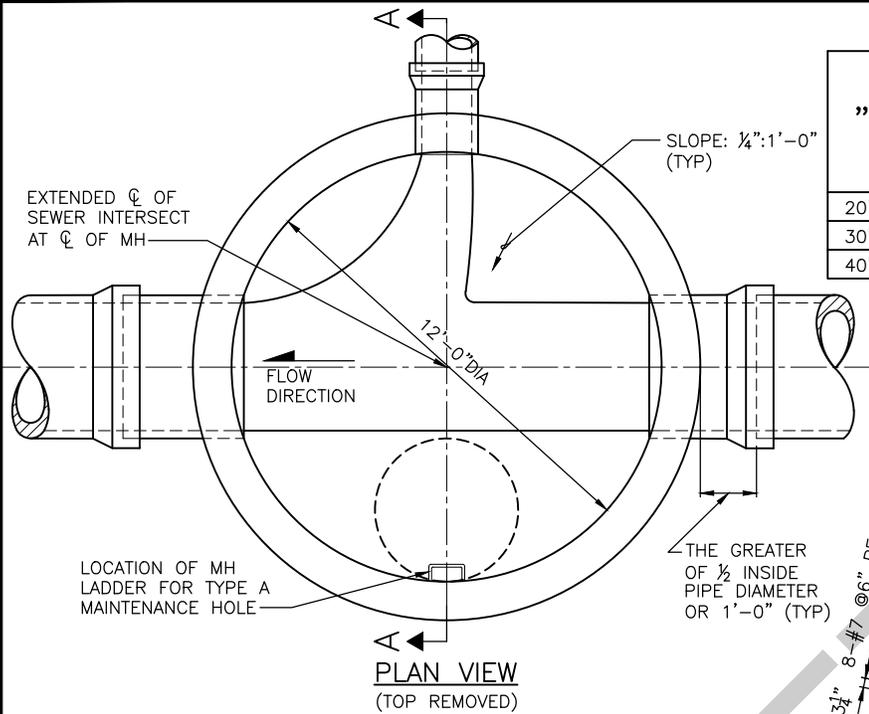
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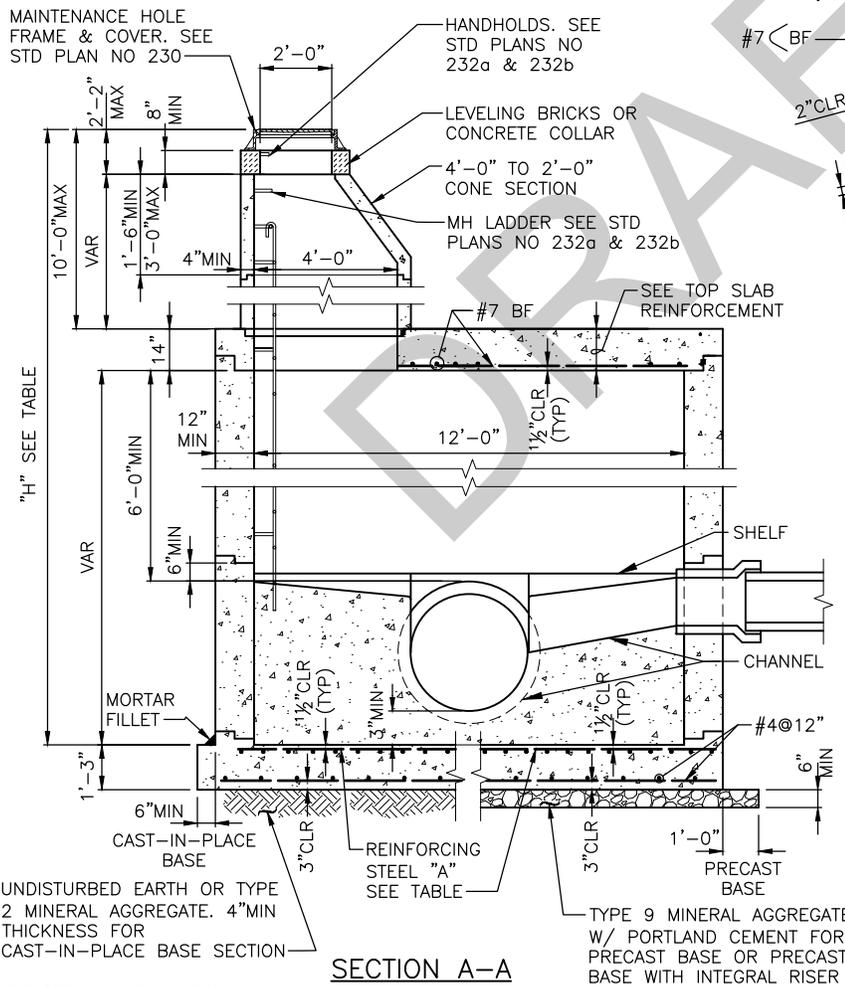
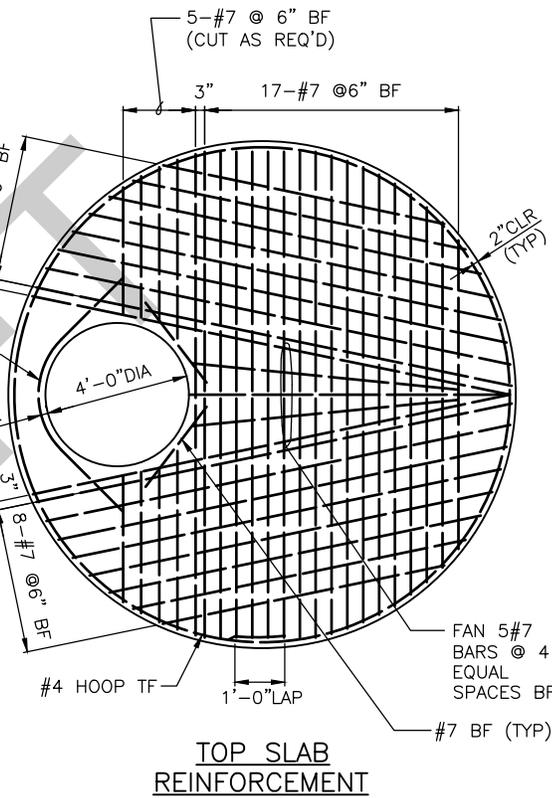
City of Seattle

NOT TO SCALE

TYPE 211b MAINTENANCE HOLE



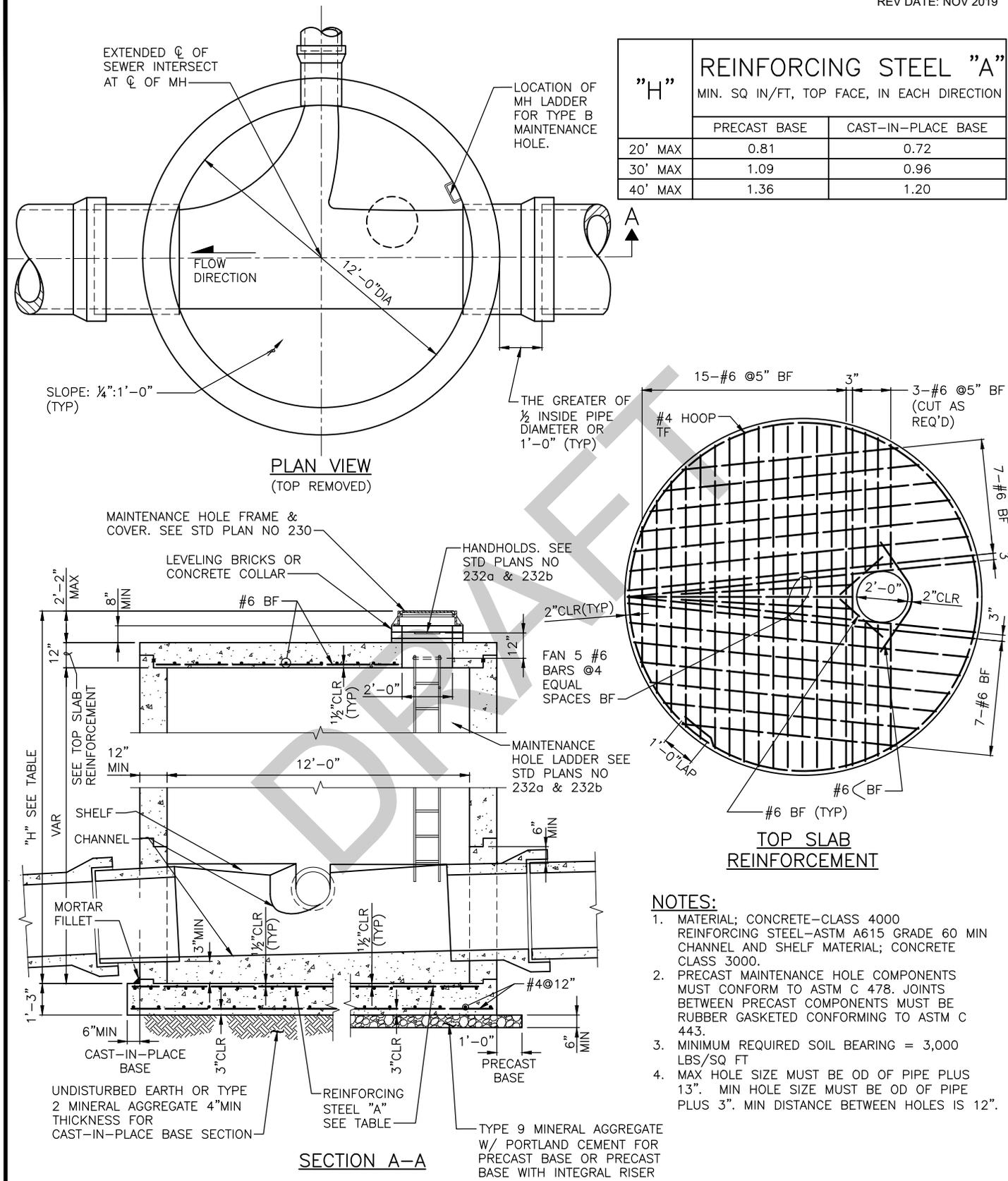
"H"	REINFORCING STEEL "A"	
	MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION	
	PRECAST BASE	CAST-IN-PLACE BASE
20' MAX	1.01	0.89
30' MAX	1.28	1.13
40' MAX	1.56	1.37



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

REF STD SPEC SEC 7-05

 <p>City of Seattle</p>	<p>NOT TO SCALE</p>	<p>TYPE 212a MAINTENANCE HOLE</p>
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- NOTES:**
1. MATERIAL; CONCRETE-CLASS 4000 REINFORCING STEEL-ASTM A615 GRADE 60 MIN CHANNEL AND SHELF MATERIAL; CONCRETE CLASS 3000.
 2. PRECAST MAINTENANCE HOLE COMPONENTS MUST CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS MUST BE RUBBER GASKETED CONFORMING TO ASTM C 443.
 3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
 4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 13". MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

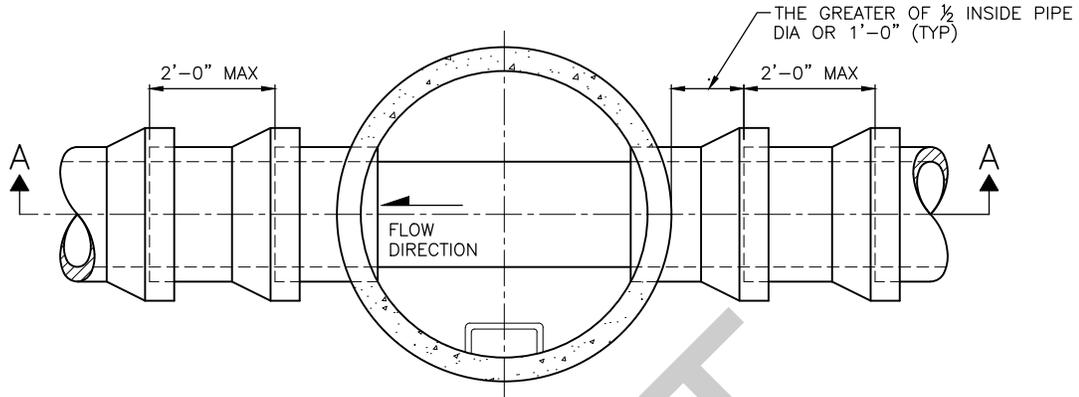
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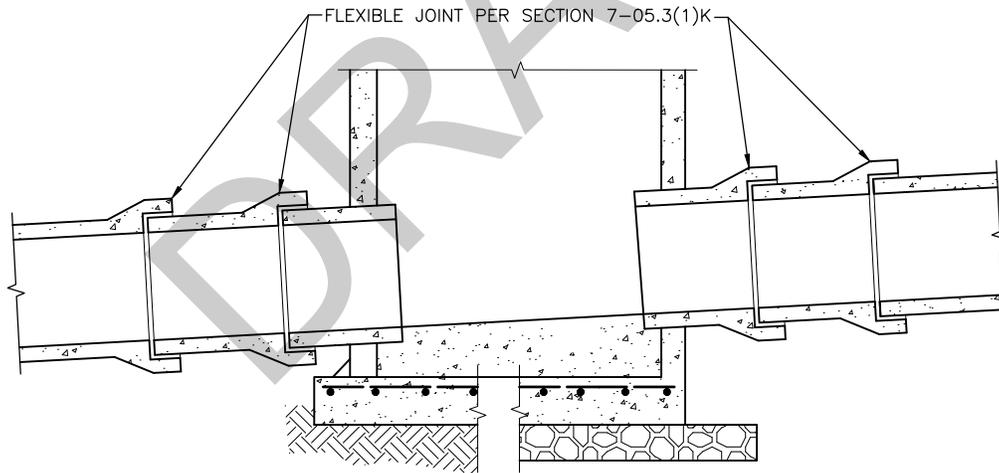
City of Seattle

NOT TO SCALE

TYPE 212b MAINTENANCE HOLE



PLAN VIEW
(TOP REMOVED)



SECTION A-A

NOTES:

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

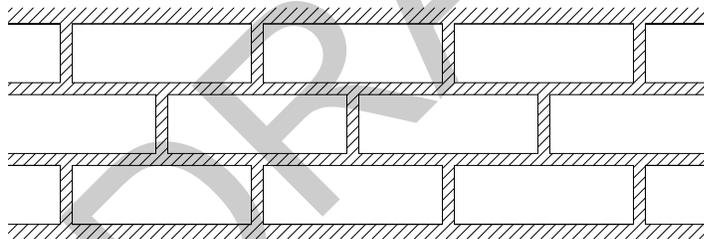
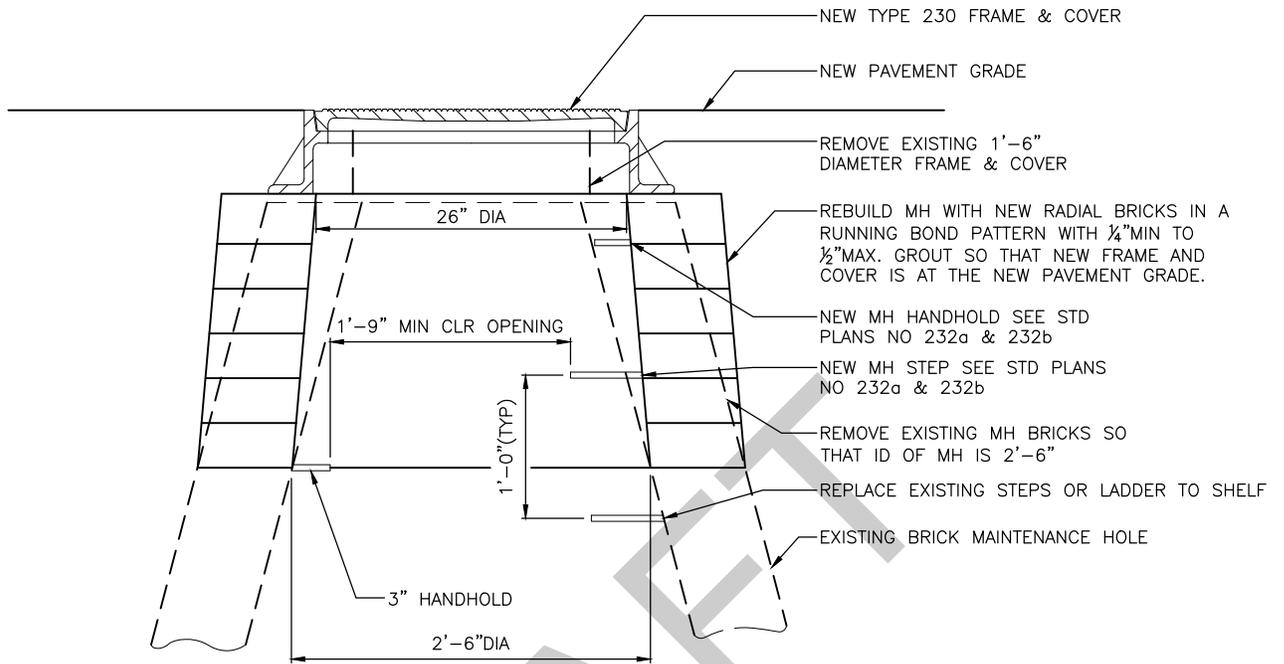
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

FLEXIBLE JOINT FOR VCP
CONNECTION TO
MAINTENANCE HOLES



RUNNING BOND PATTERN
GROUT BETWEEN ALL BRICKS

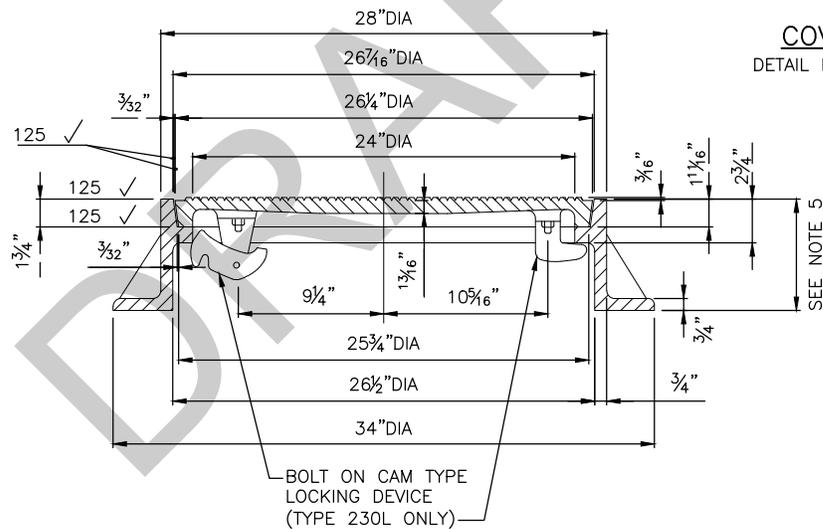
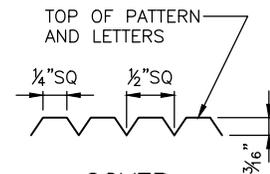
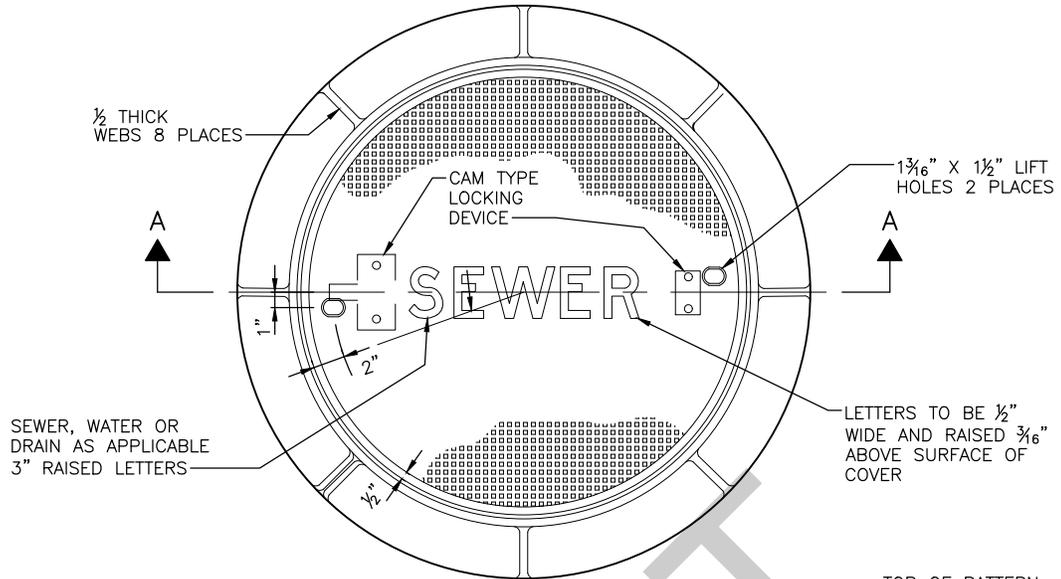
REF STD SPEC SEC 7-05



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 MUST BE MANUFACTURED FROM CAST IRON OR DUCTILE IRON.
4. COVERS MUST BE MANUFACTURED FROM DUCTILE IRON.
5. CASTING HEIGHT MUST BE 7" OR 10". WHERE CASTING IS WITHIN ROADWAY, 10" MUST BE USED. SEE ALSO STD PLAN NO. 406.

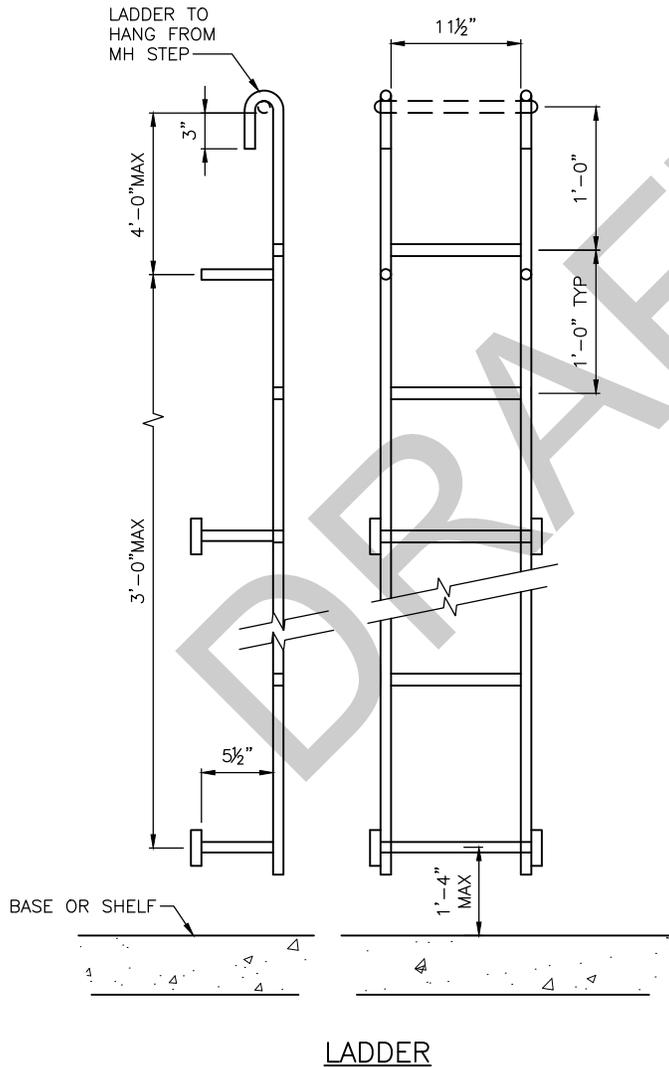
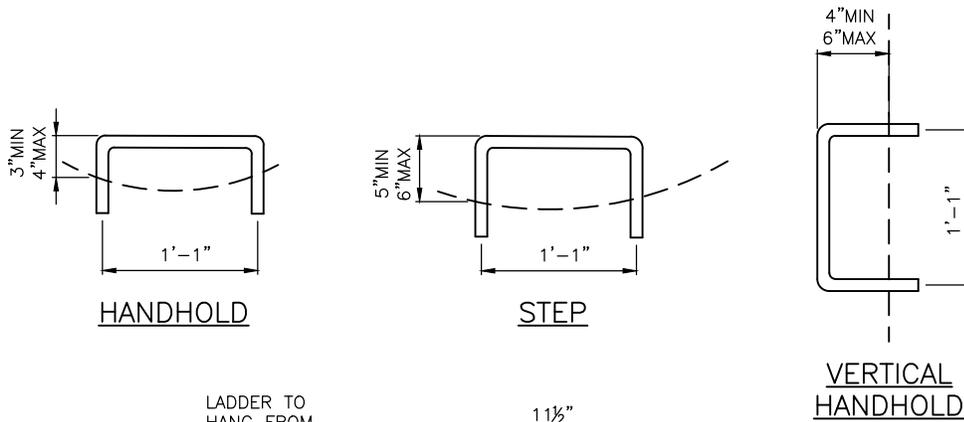
REF STD SPEC SEC 7-05, 9-12



City of Seattle

NOT TO SCALE

2'-0" DIAMETER
FRAME & COVER



NOTES:

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

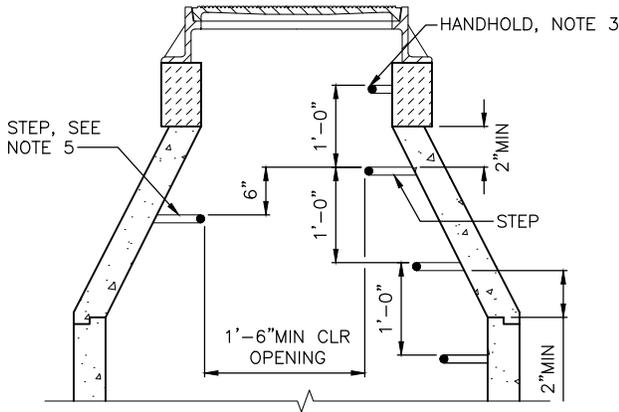
REF STD SPEC SEC 7-05



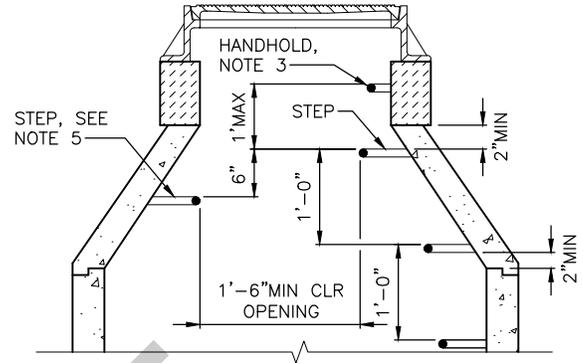
City of Seattle

NOT TO SCALE

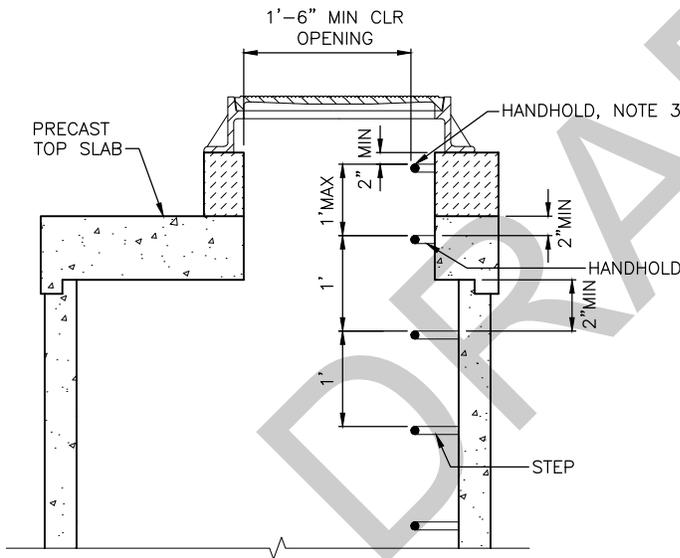
MAINTENANCE HOLE LADDER,
STEP AND HANDHOLD



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 MUST BE INSTALLED MID-WAY IN THE LEVELING BRICK OR COLLAR.
4. EITHER STEPS, LADDERS OR A COMBINATION OF THE TWO CAN BE USED. IF BOTH STEPS AND LADDERS ARE USED IN ANY MH, THEY MUST BE FROM THE SAME MANUFACTURER.
5. STEP ON OPPOSITE SIDE OF MH MUST BE PLACED MID WAY BETWEEN STEPS ON OPPOSING SIDE.

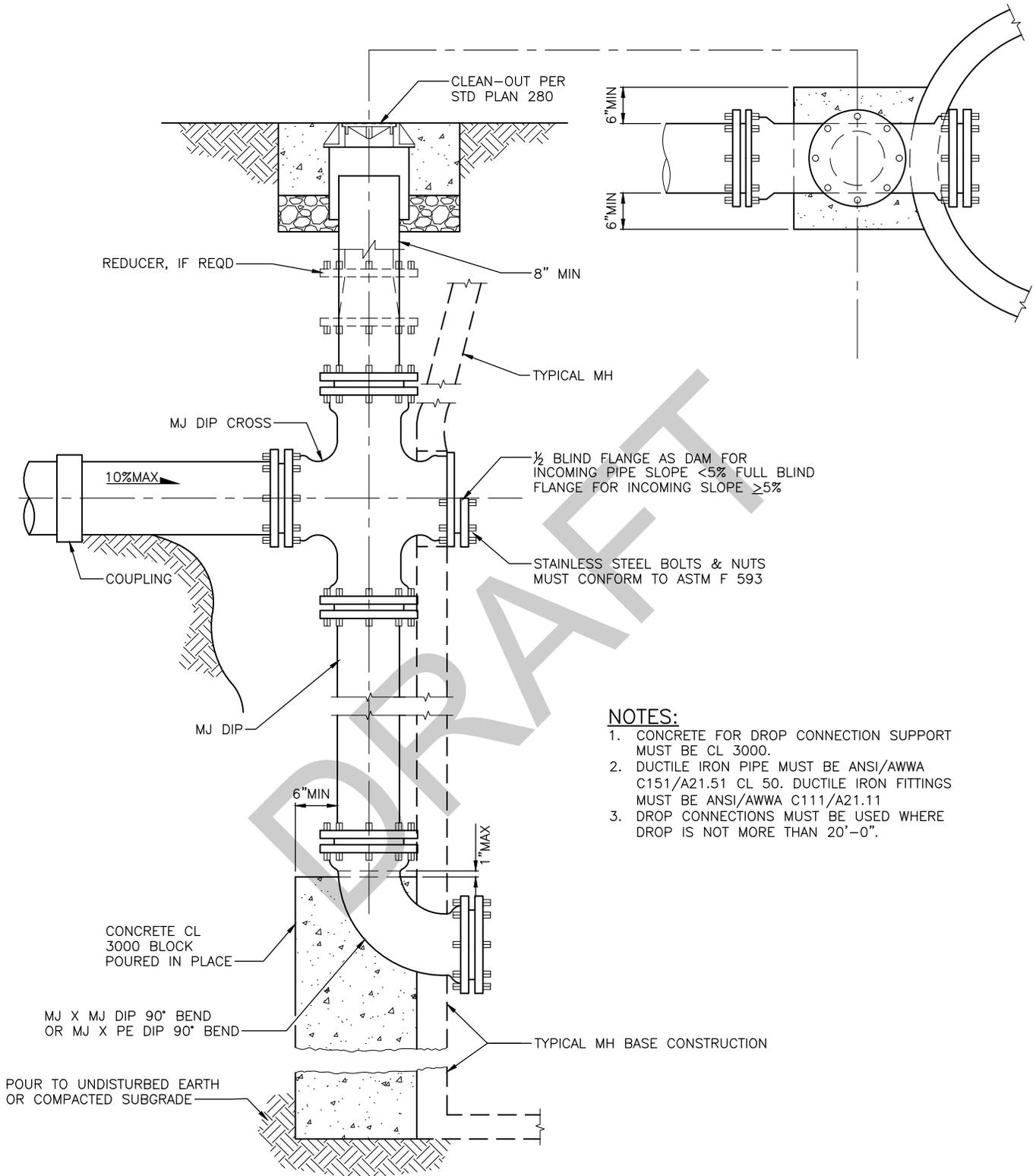
REF STD SPEC SEC 7-05



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**MAINTENANCE HOLE LADDER,
STEP AND HANDHOLD**



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

DUCTILE IRON OUTSIDE DROP CONNECTION

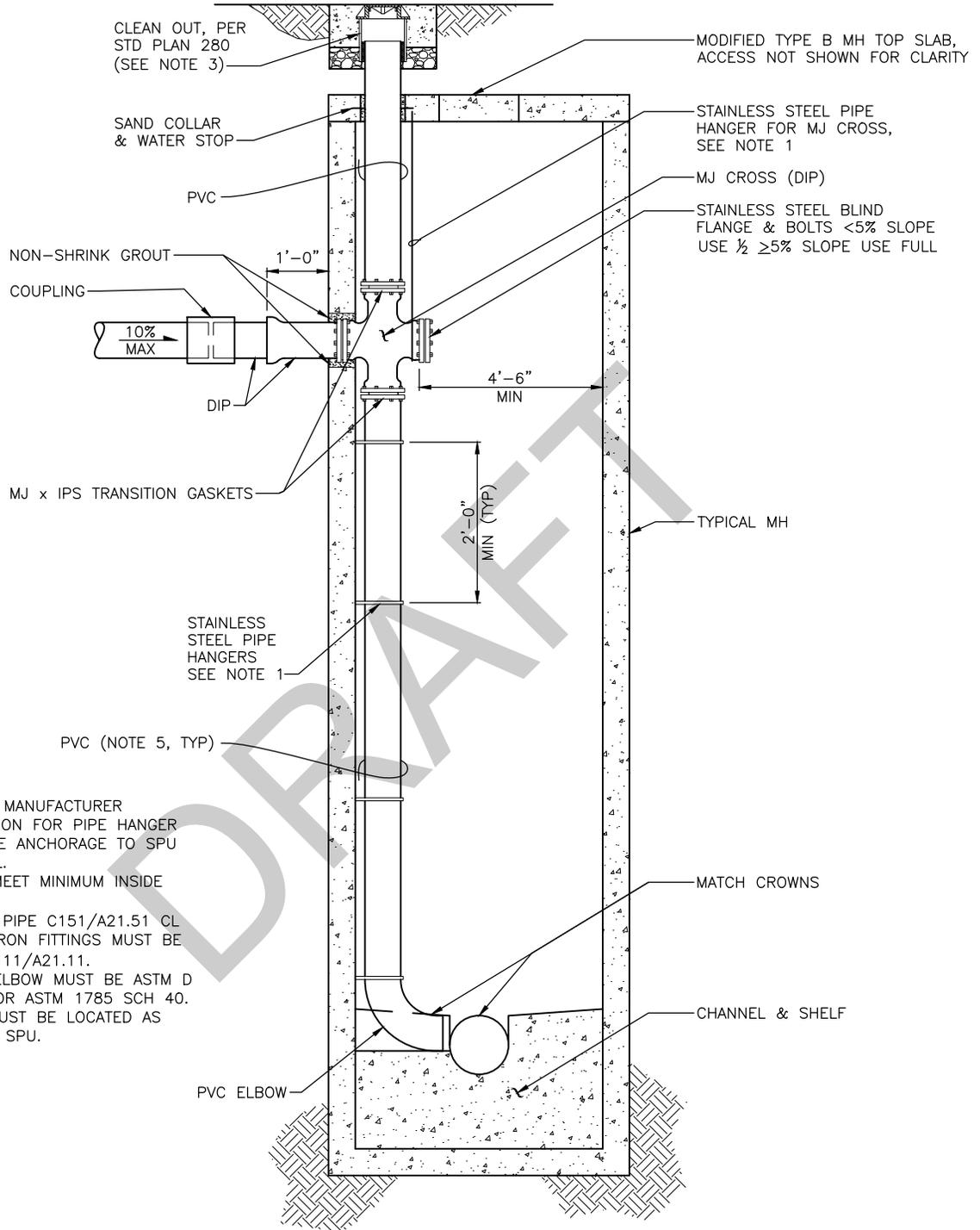
REF STD SPEC SEC 7-08



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OUTSIDE DROP CONNECTION



NOTES:

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

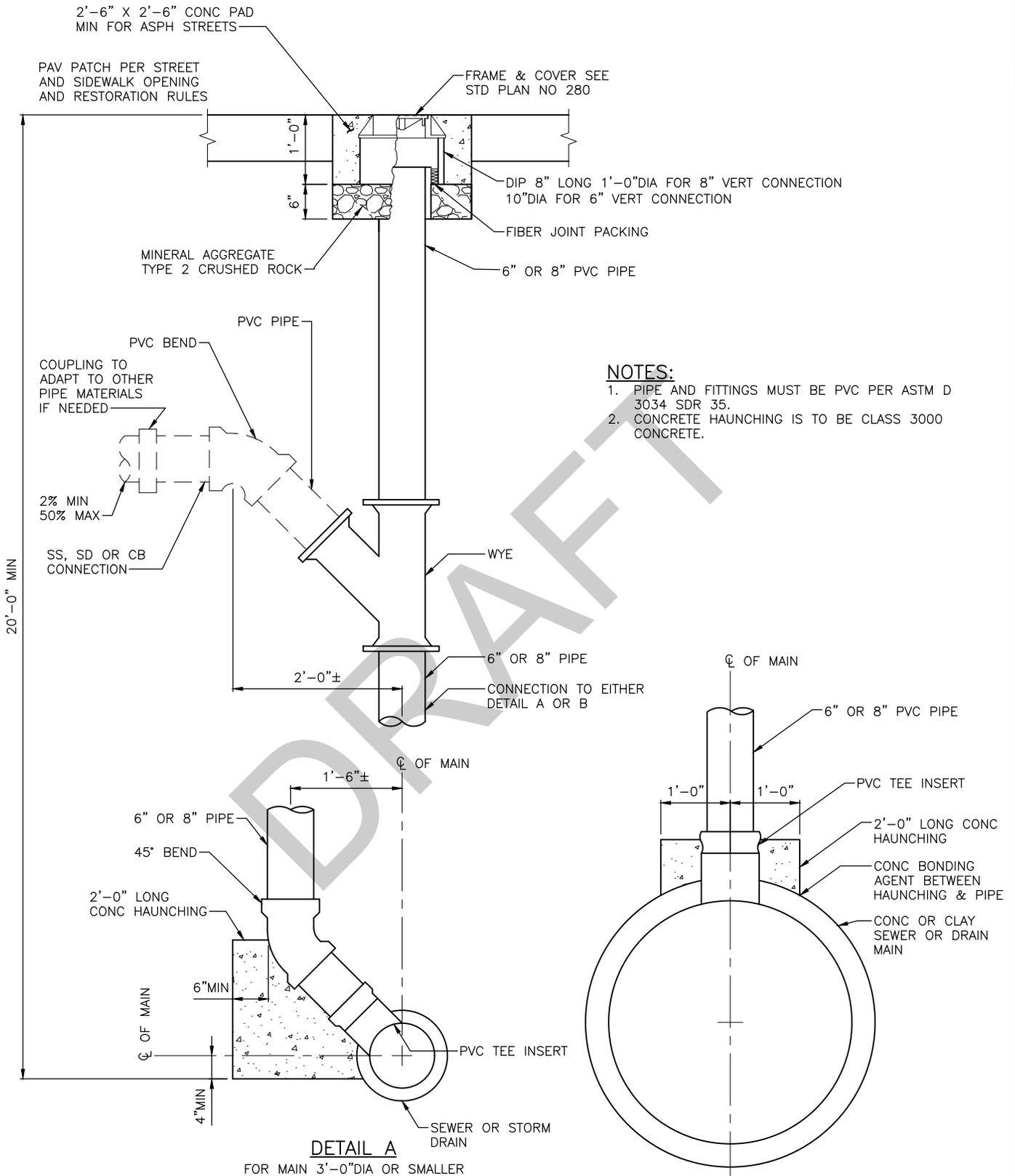
REF STD SPEC SEC 7-08



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NOT TO SCALE

INSIDE DROP CONNECTION



NOTES:

1. PIPE AND FITTINGS MUST 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

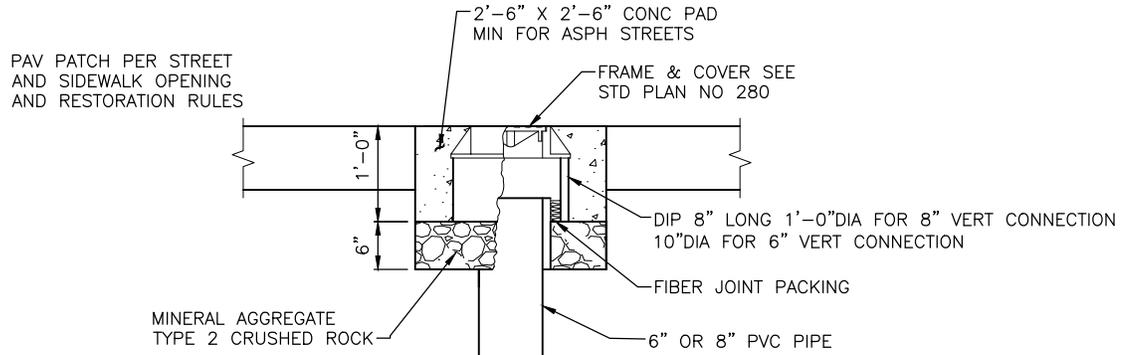
FOR MAIN 3'-6" DIA OR LARGER



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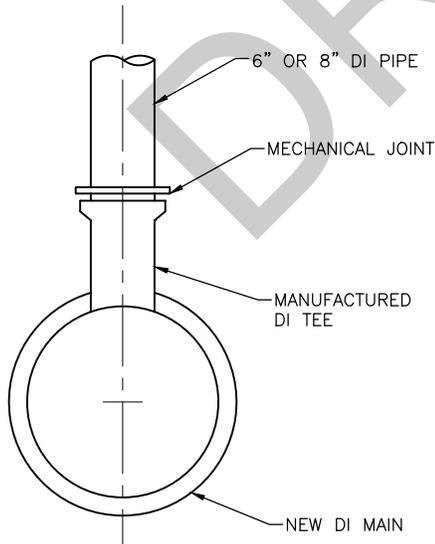
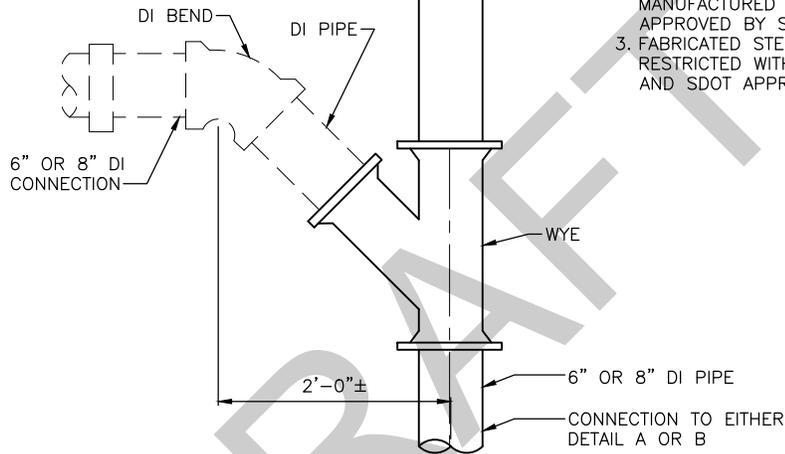
NOT TO SCALE

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

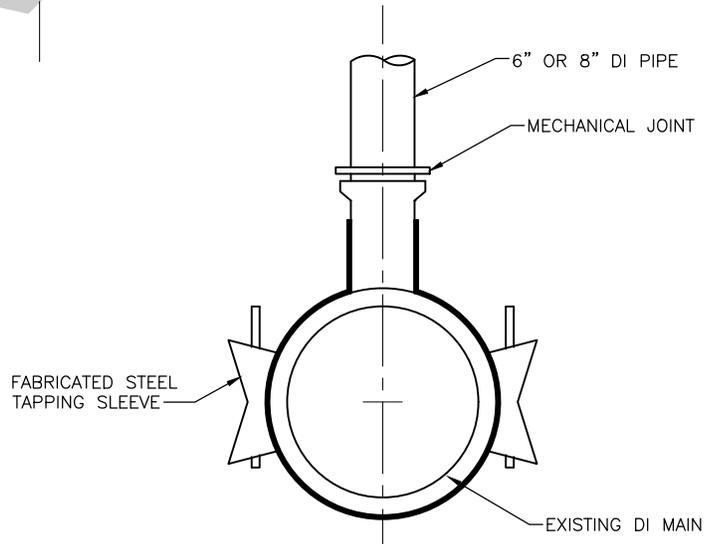


NOTES:

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



DETAIL A
FOR VERTICAL CONNECTIONS TO
NEW DI MAIN



DETAIL B
FOR VERTICAL CONNECTIONS TO
EXISTING DI MAIN

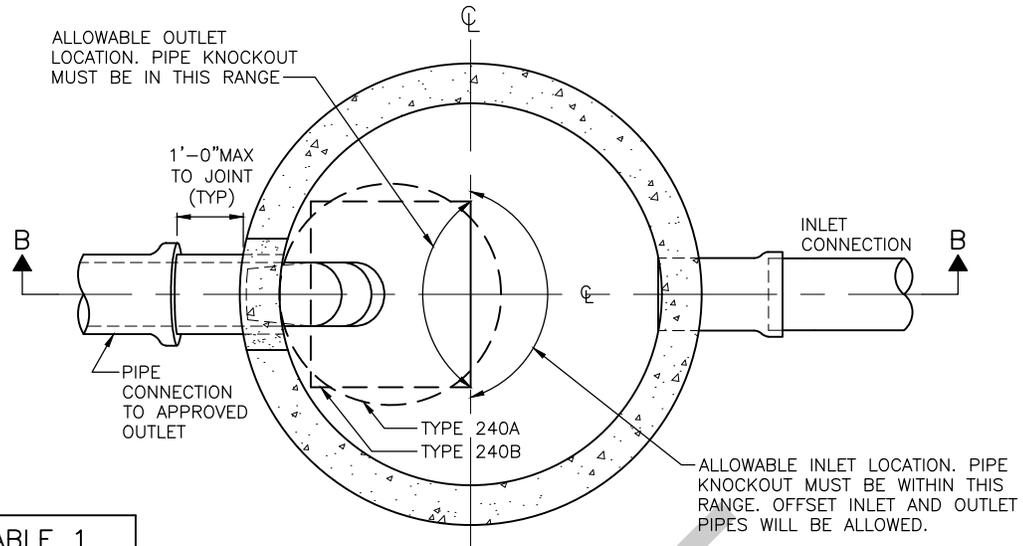
REF STD SPEC SEC 7-08, 7-17



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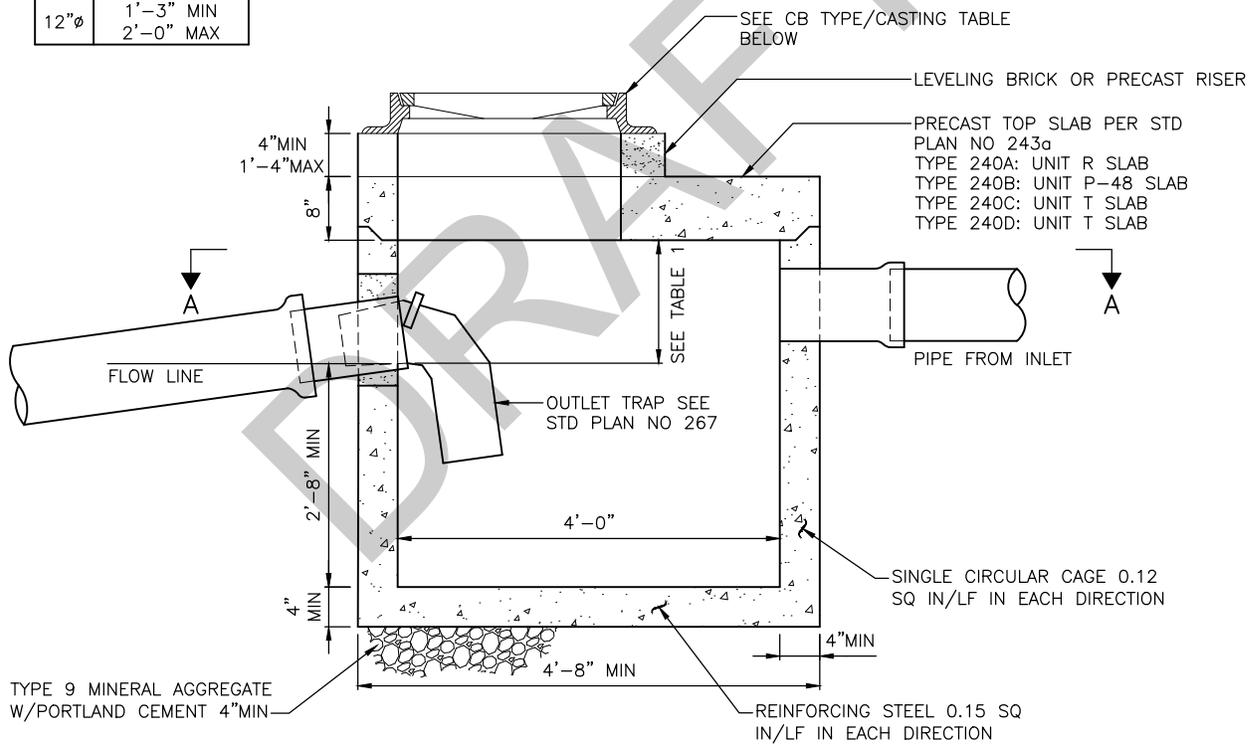
NOT TO SCALE

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



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

SECTION A-A



SECTION B-B

NOTES:

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

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

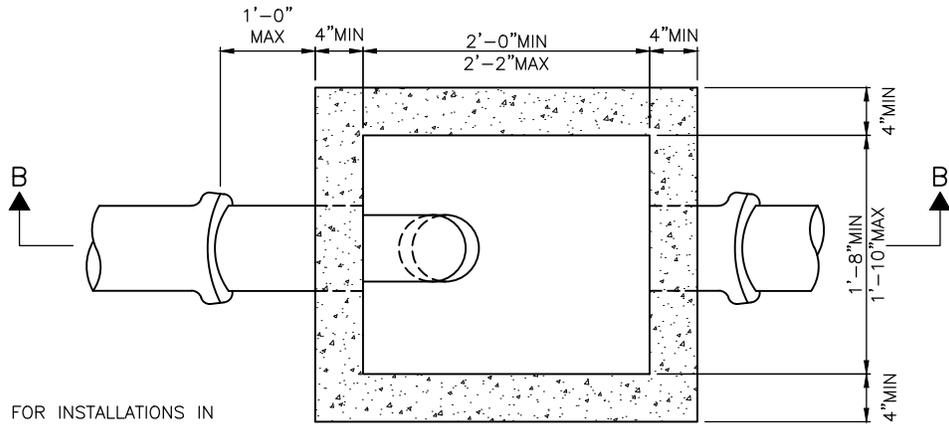
REF STD SPEC SEC 7-05



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NOT TO SCALE

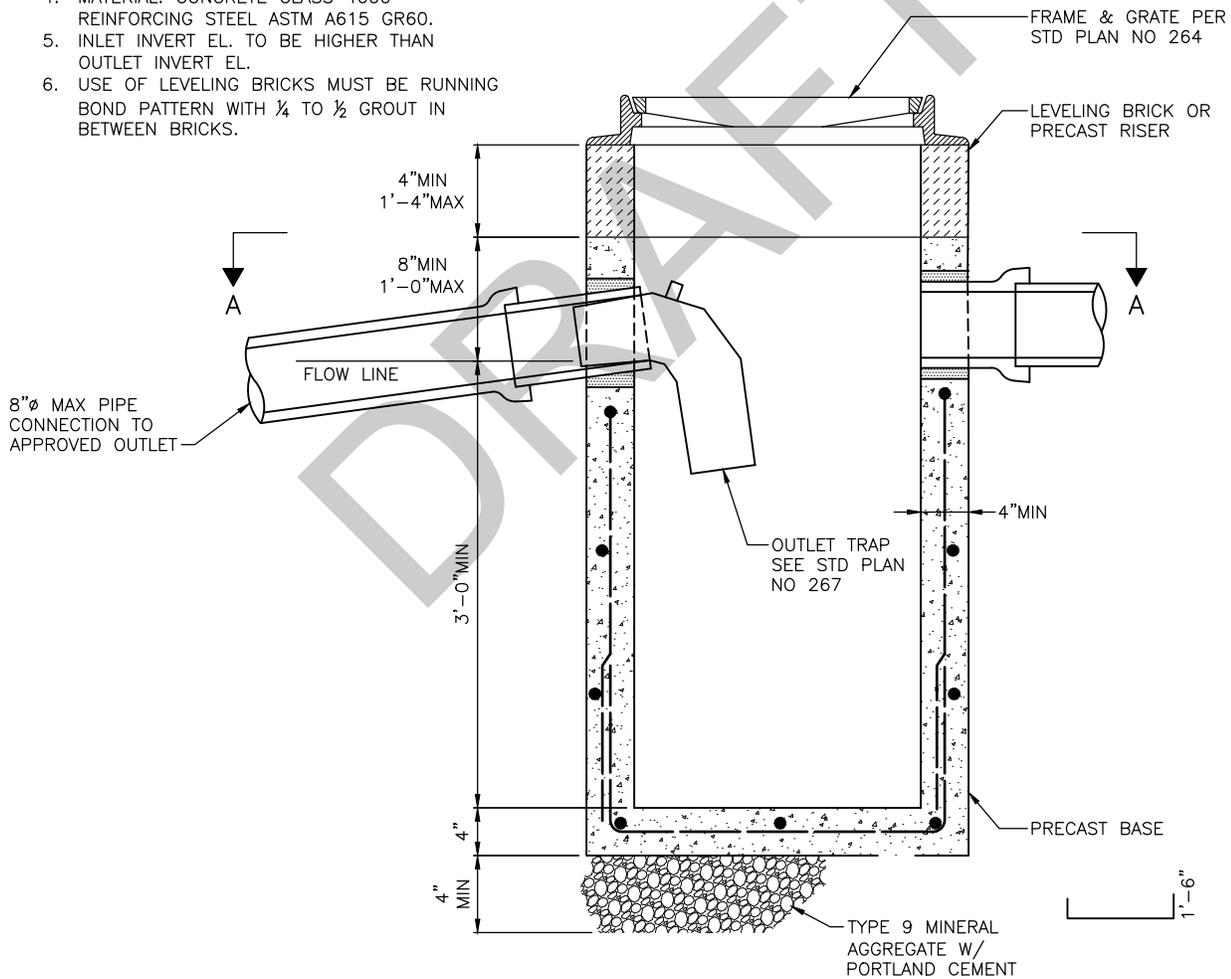
TYPE 240 CATCH BASIN



NOTES:

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

SECTION A-A



SECTION B-B

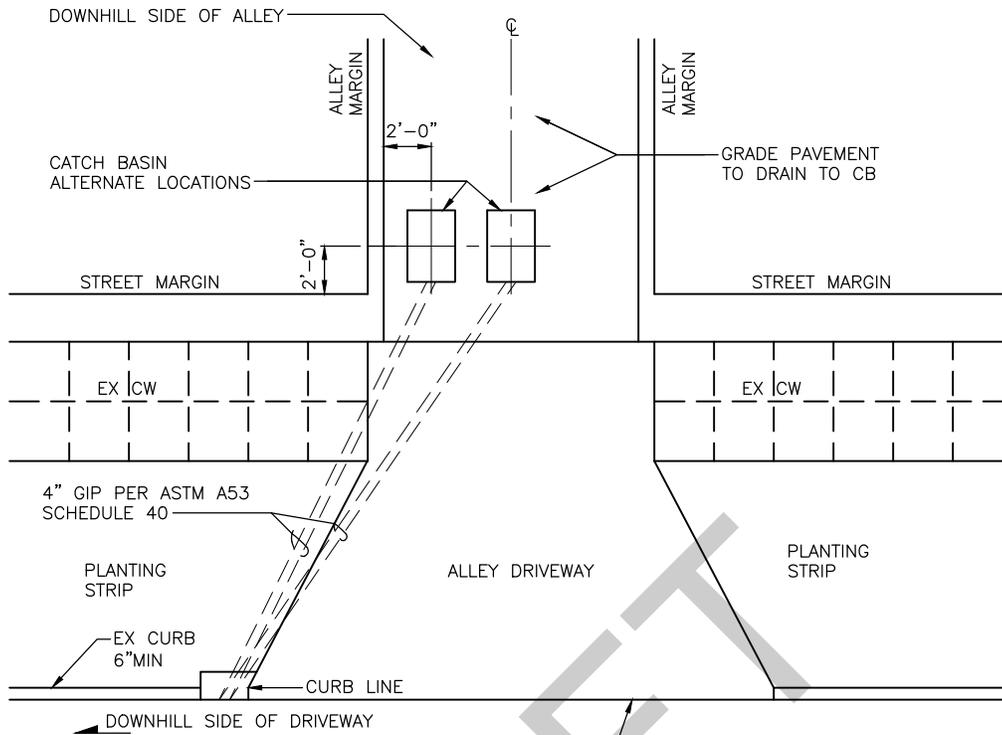
REF STD SPEC SEC 7-05



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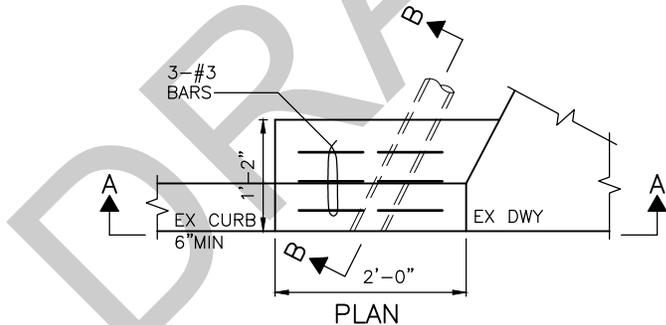
NOT TO SCALE

TYPE 241 CATCH BASIN

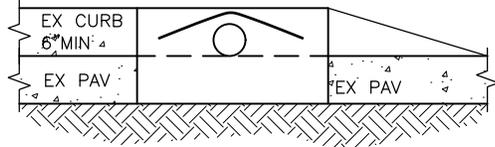


SEE DETAILS BELOW

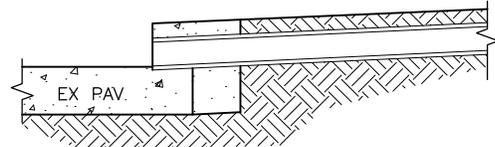
PLAN



PLAN



SECTION A-A



SECTION B-B

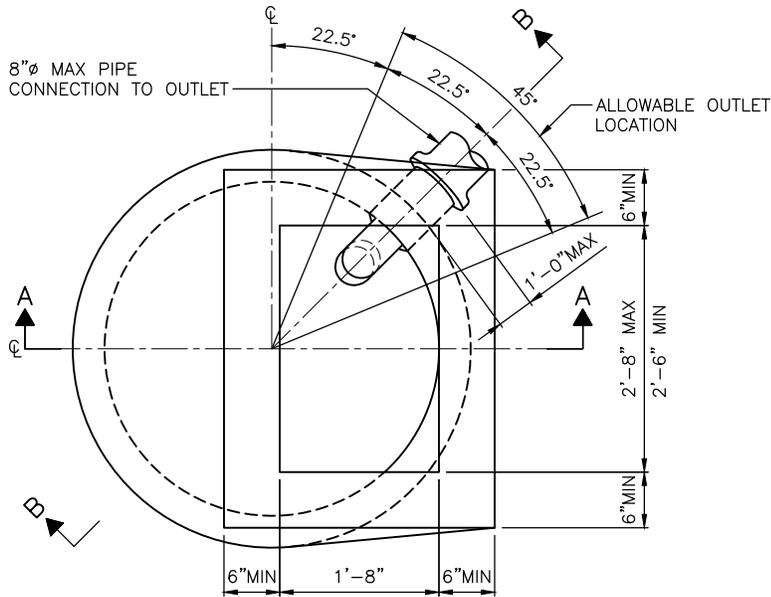
REF STD SPEC SEC 7-05, 7-08



City of Seattle

NOT TO SCALE

TYPE 241 CATCH BASIN INSTALLATIONS

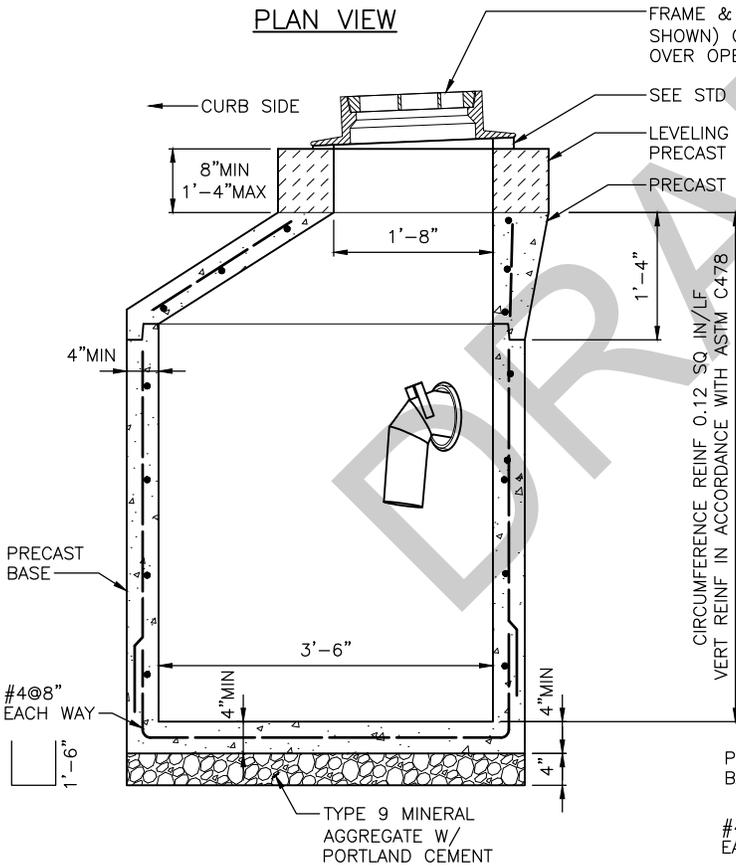


CB TYPE	CASTING		
	FRAME	GRATE	HOOD
A	NO 262	NO 265	NONE
B	NO 263A	NO 265	NO 263A
C	NO 263A	NO 265	NO 263B

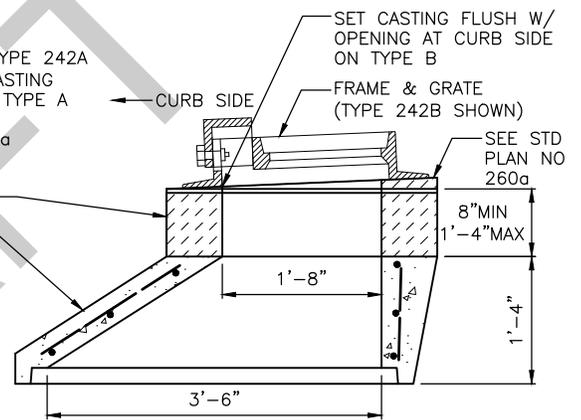
NOTES:

1. MATERIAL: CONCRETE: CLASS 4000
REINFORCING STEEL: ASTM A 615 GR 60
2. INSTALL & LOCATE PER STD PLANS NO 260 & 261
3. OUTLET TRAP TO BE LOCATED DIRECTLY BELOW FRAME AND GRATE
4. USE OF LEVELING BRICKS MUST BE RUNNING BOND PATTERN WITH ¼ TO ½ GROUT IN BETWEEN BRICKS.

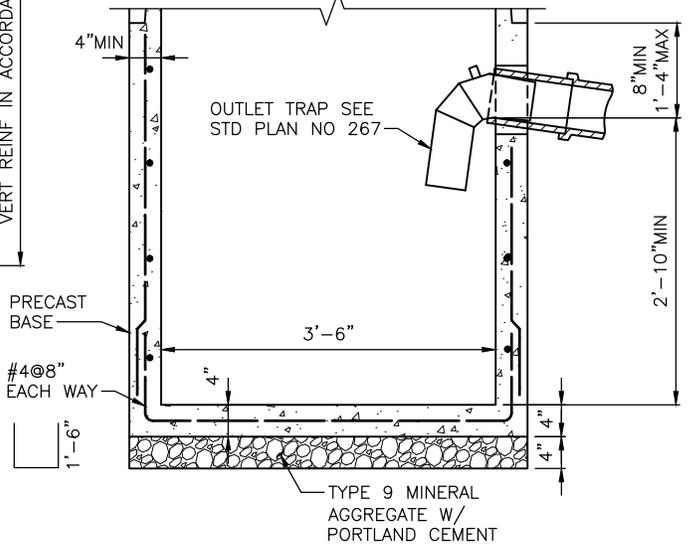
PLAN VIEW



TYPE A
SECTION A-A



TYPE B
SECTION A-A



TYPE A & B
SECTION B-B

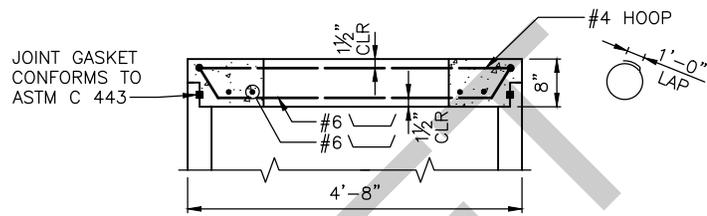
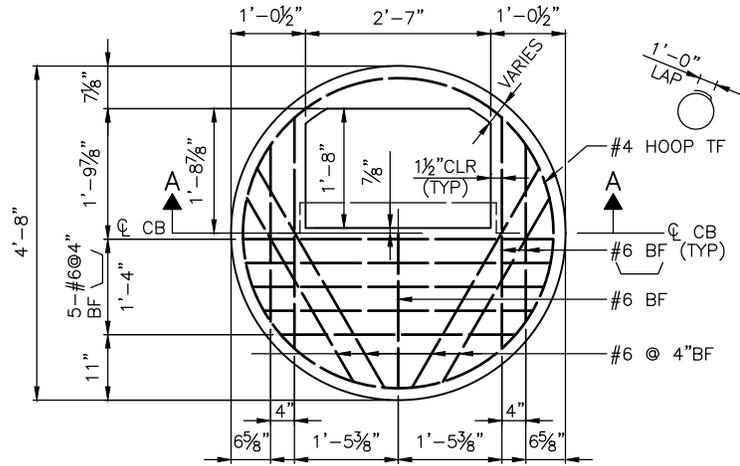
REF STD SPEC SEC 7-05



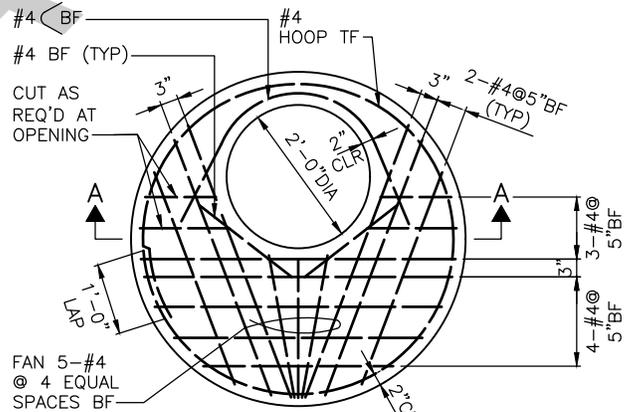
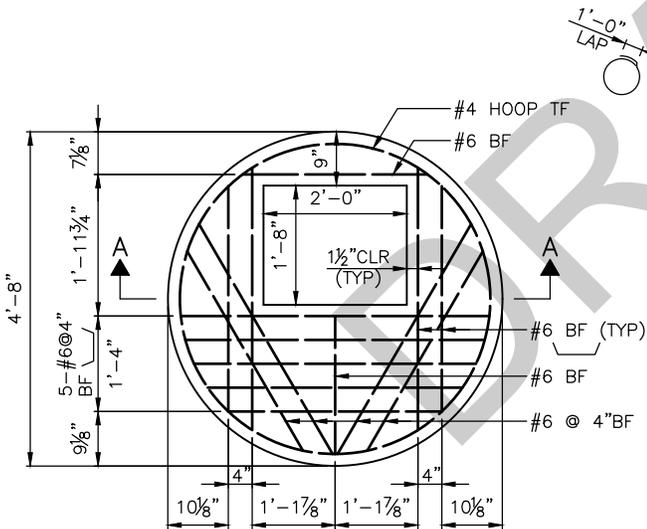
City of Seattle

NOT TO SCALE

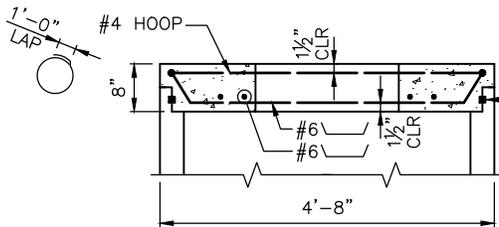
TYPE 242 CATCH BASIN



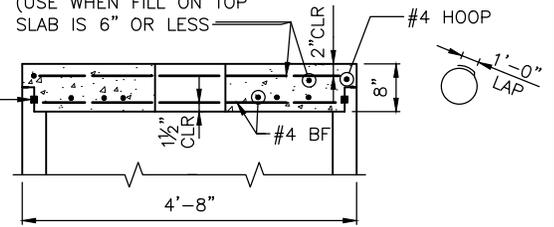
UNIT T
SECTION A-A



#4 @ 1'-0" EACH WAY TF,
CUT AS REQ'D AT OPENING
(USE WHEN FILL ON TOP
SLAB IS 6" OR LESS)



UNIT P-48
SECTION A-A



UNIT R
SECTION A-A

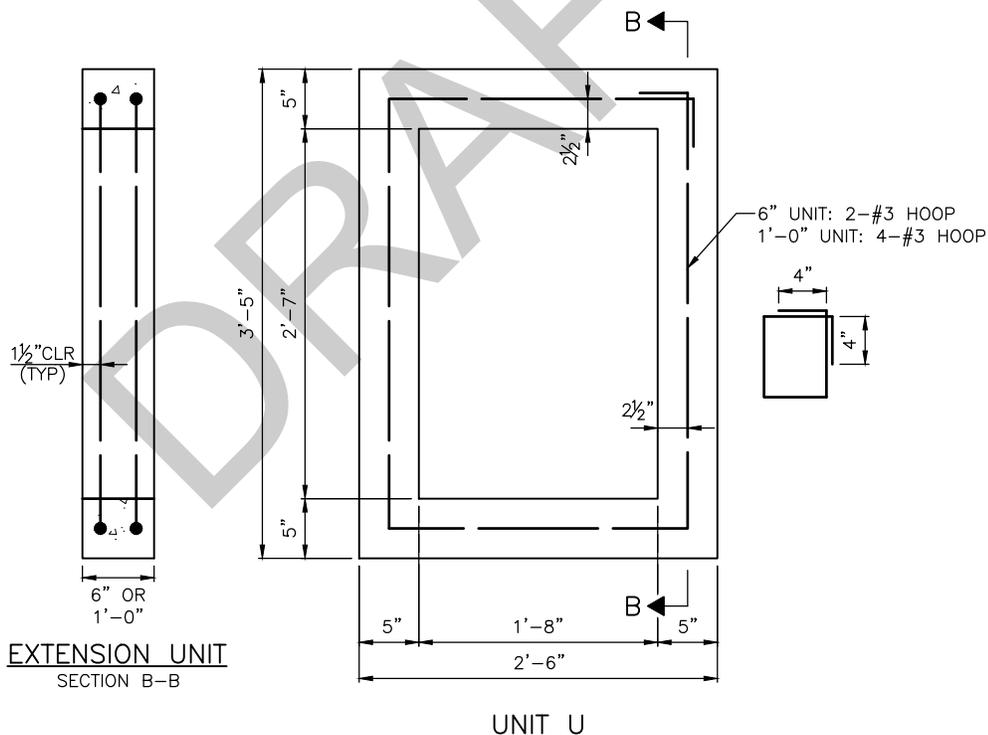
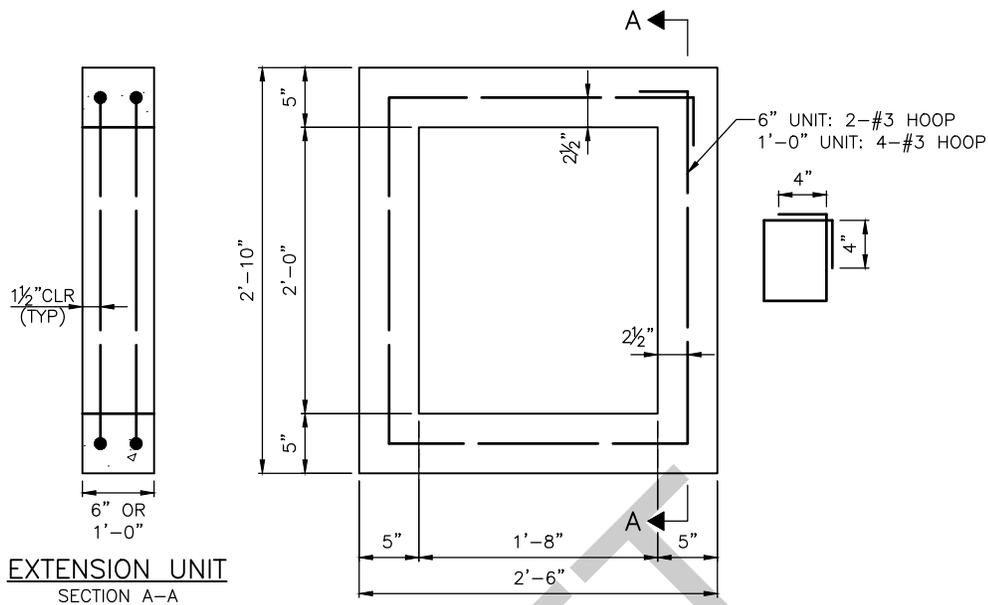
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

PRECAST CATCH BASIN
TOP SLAB



NOTES:

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

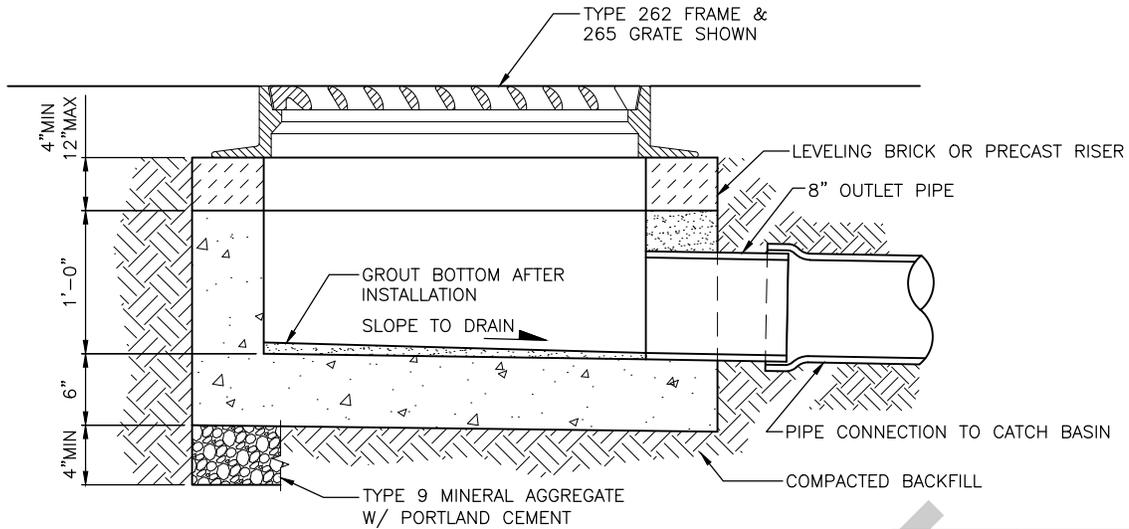
REF STD SPEC SEC 7-05



City of Seattle

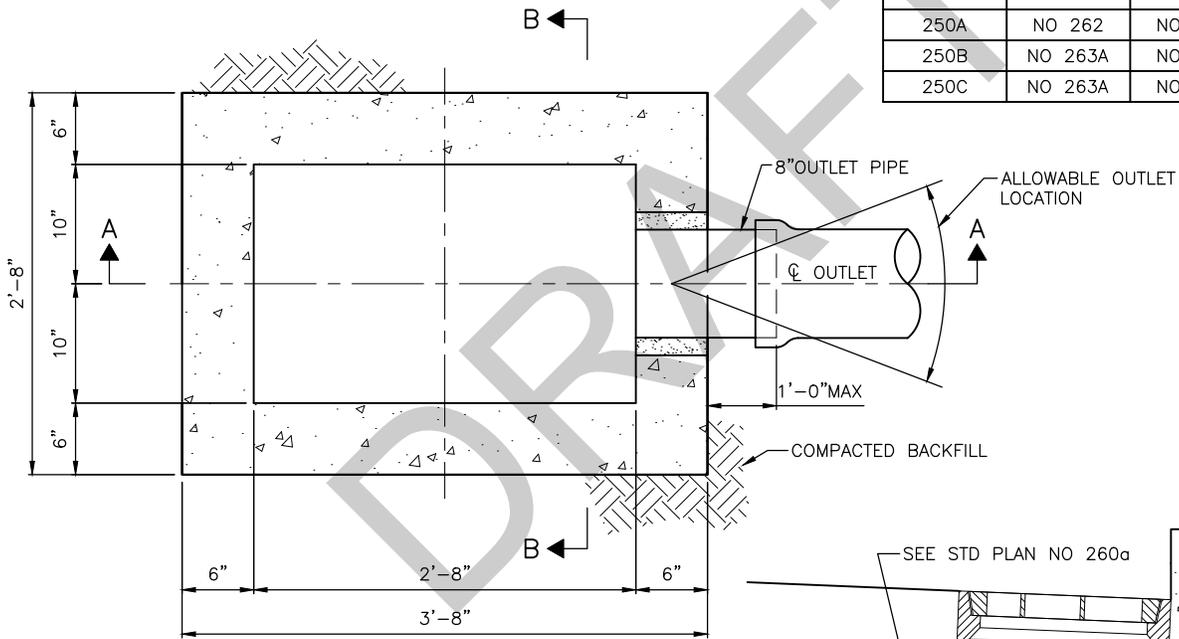
NOT TO SCALE

PRECAST CATCH BASIN
EXTENSION RISERS

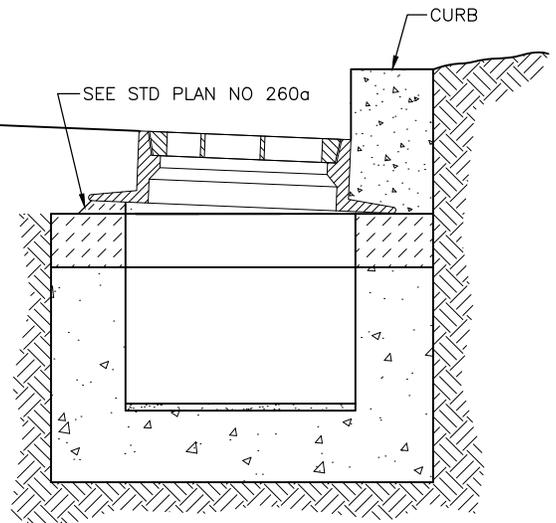


SECTION A-A

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



PLAN VIEW



SECTION B-B

TYPE A ONLY

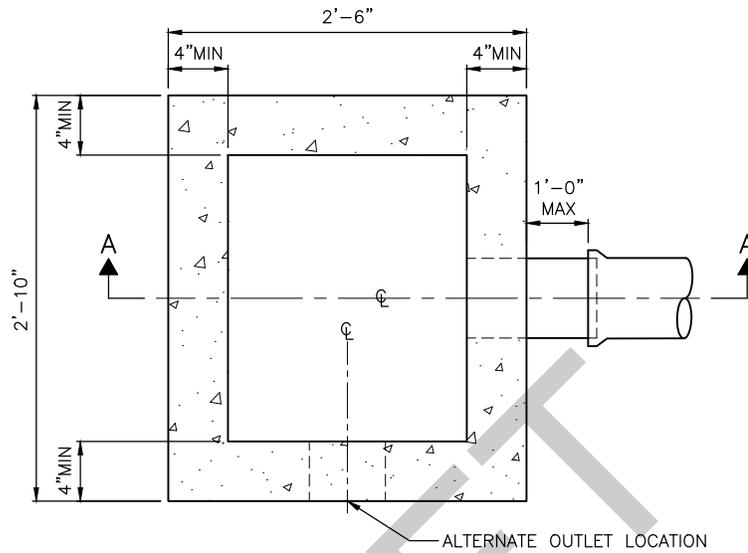
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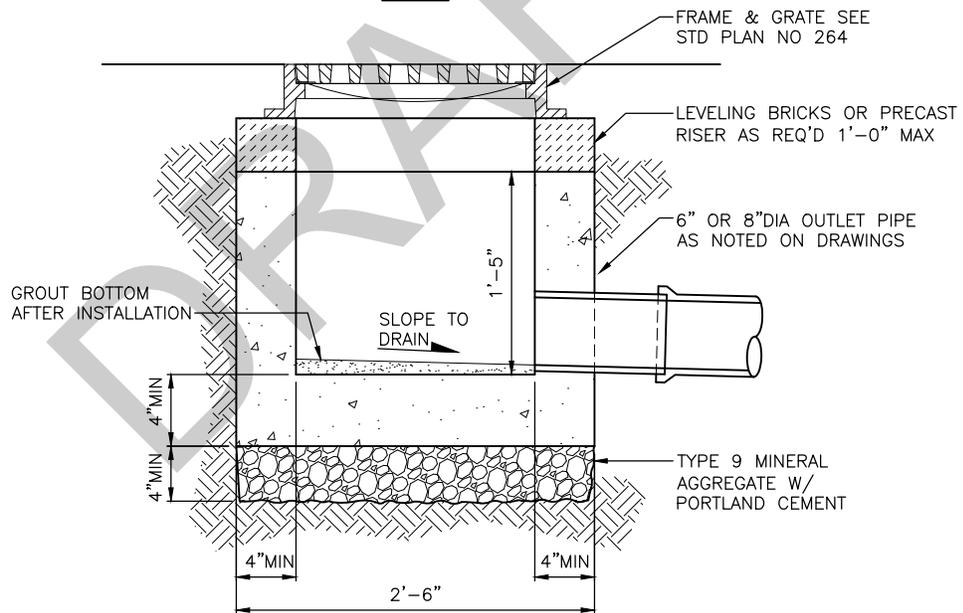
City of Seattle

NOT TO SCALE

TYPE 250 INLET



PLAN



SECTION A-A

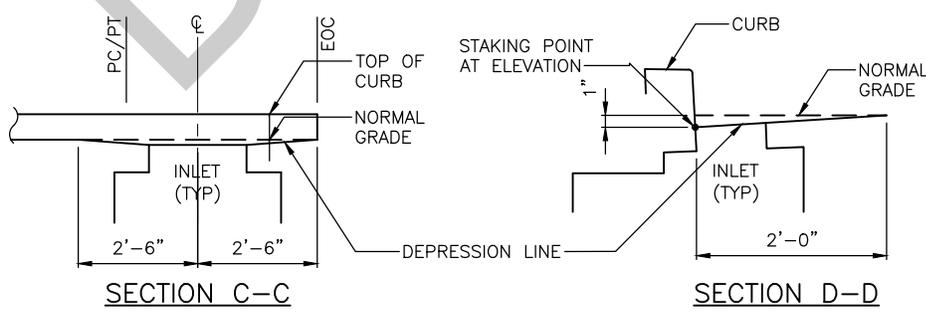
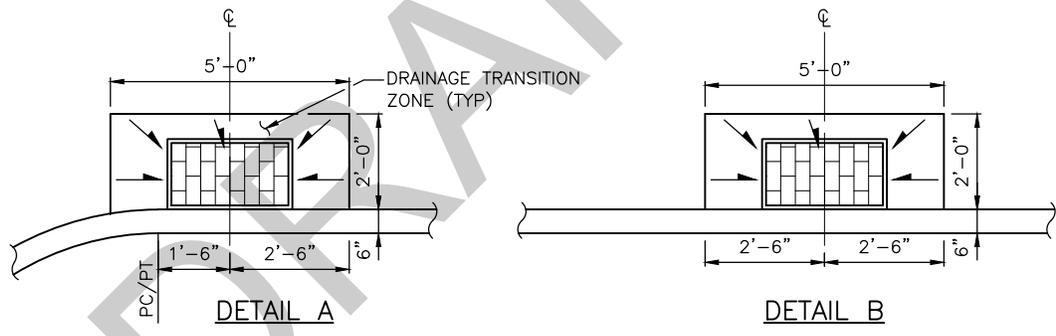
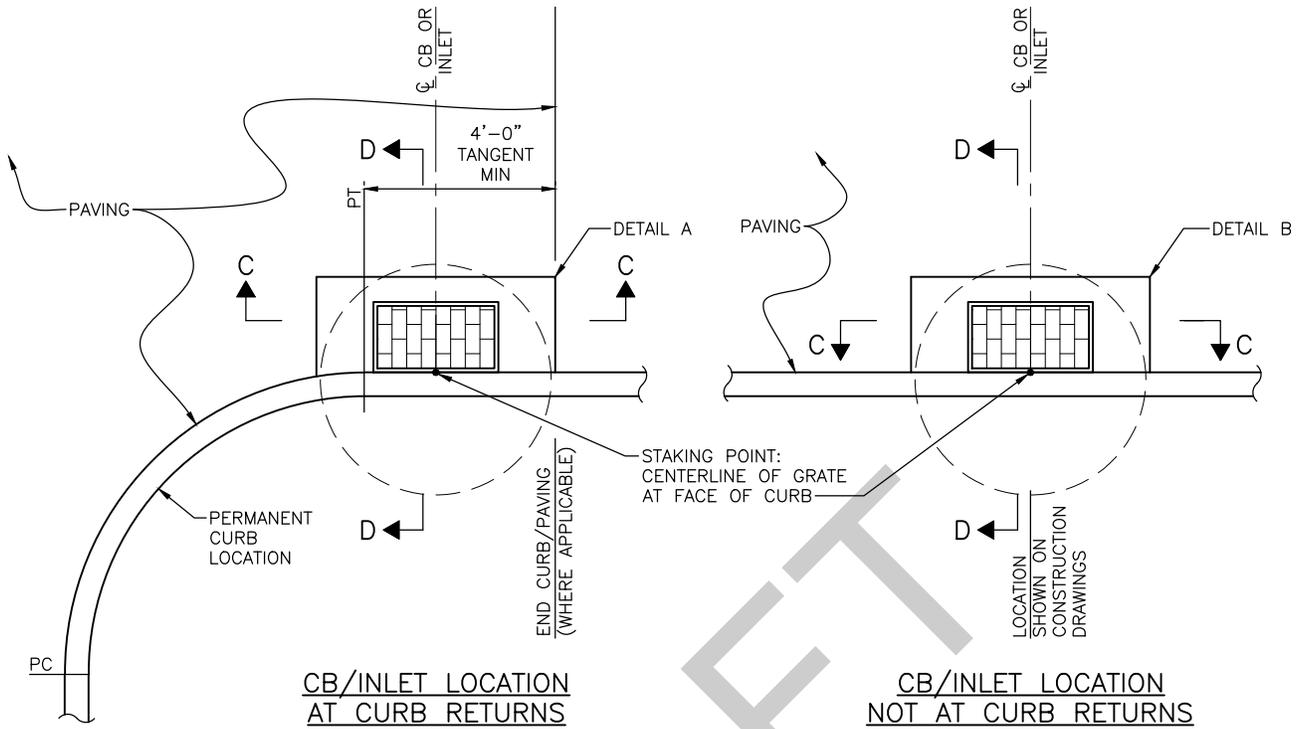
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

TYPE 252 INLET



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

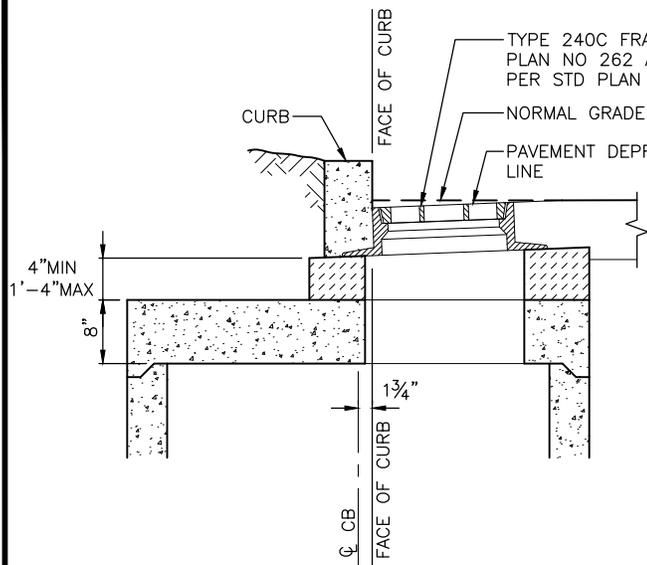
REF STD SPEC SEC 7-05



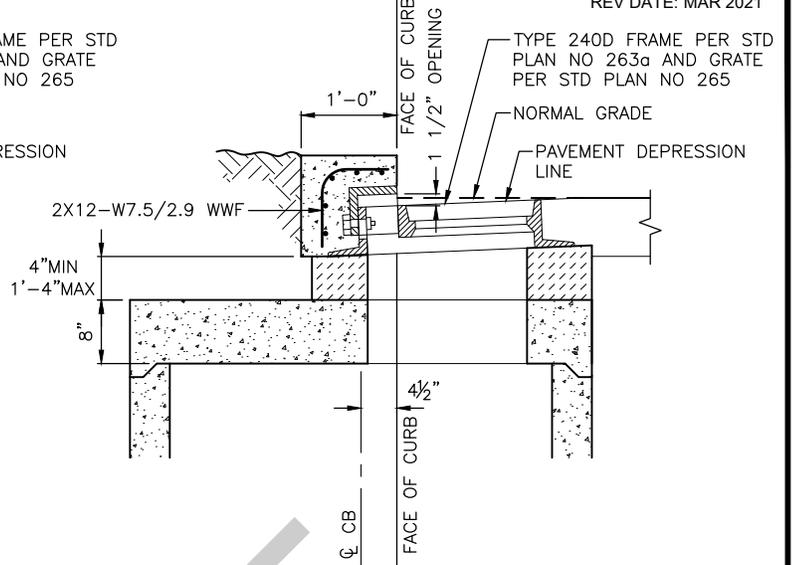
NOT TO SCALE

INLET / CATCH BASIN LOCATION & INSTALLATION

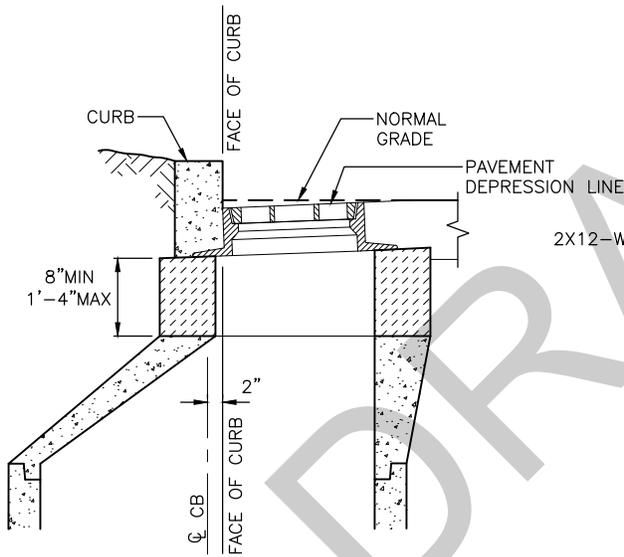
REV DATE: MAR 2021



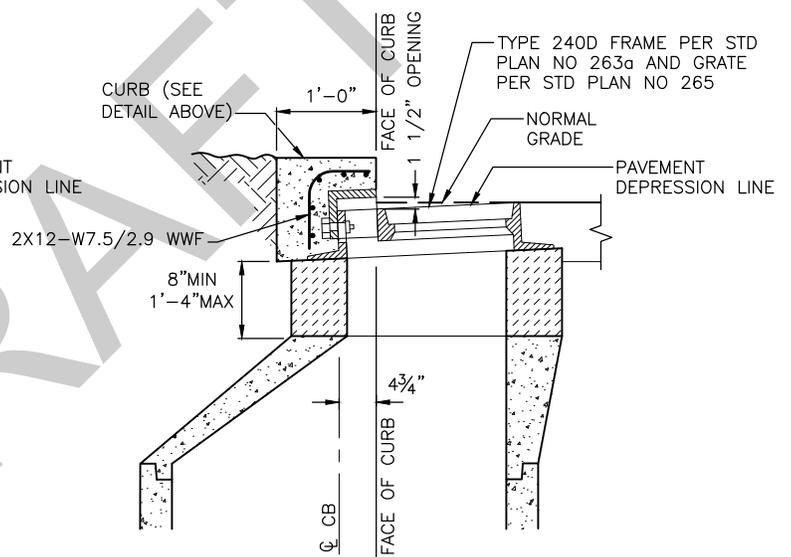
TYPE 240C CB



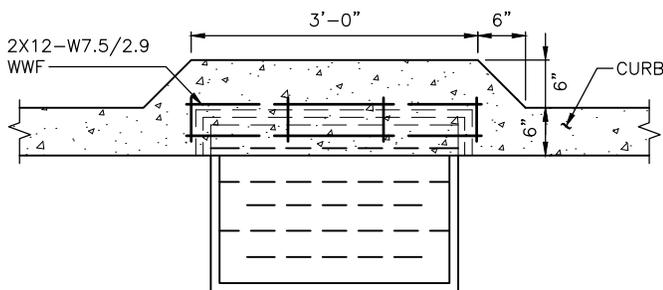
TYPE 240D CB



TYPE 242A CB
(TYPE 250A INLET SIMILAR)



TYPE 242B CB
(TYPE 250B INLET SIMILAR)



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

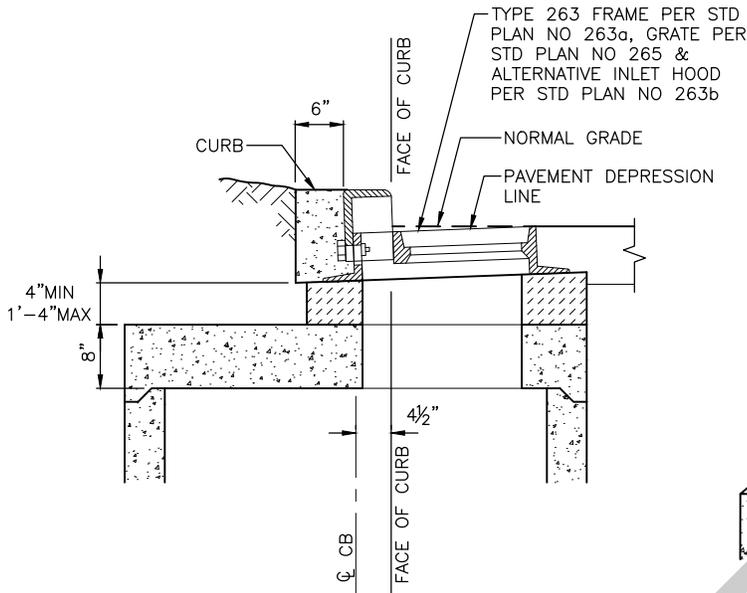
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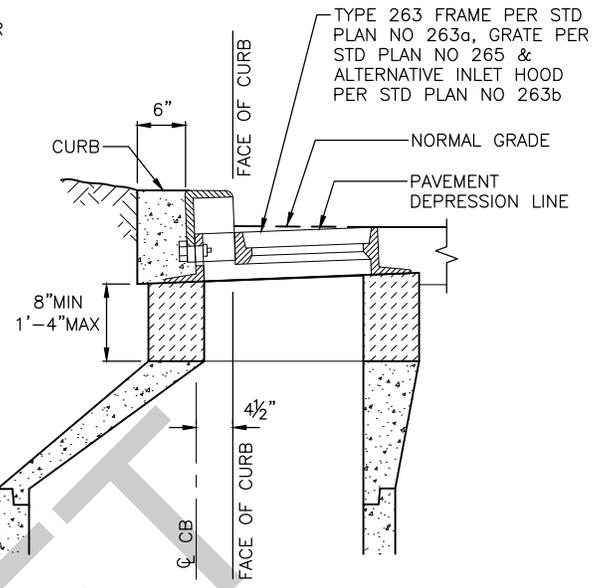
City of Seattle

NOT TO SCALE

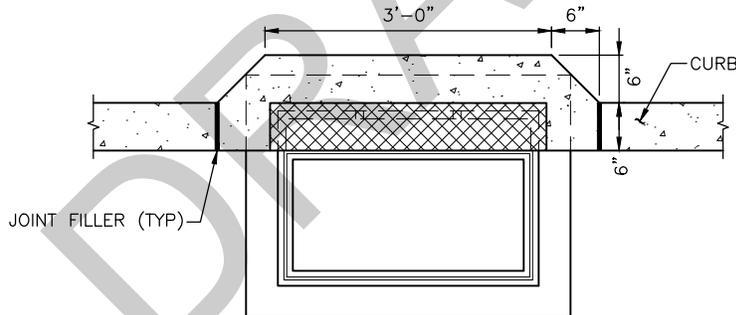
CATCH BASIN &
INLET INSTALLATION



TYPE 240C CB



TYPE 242A CB



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

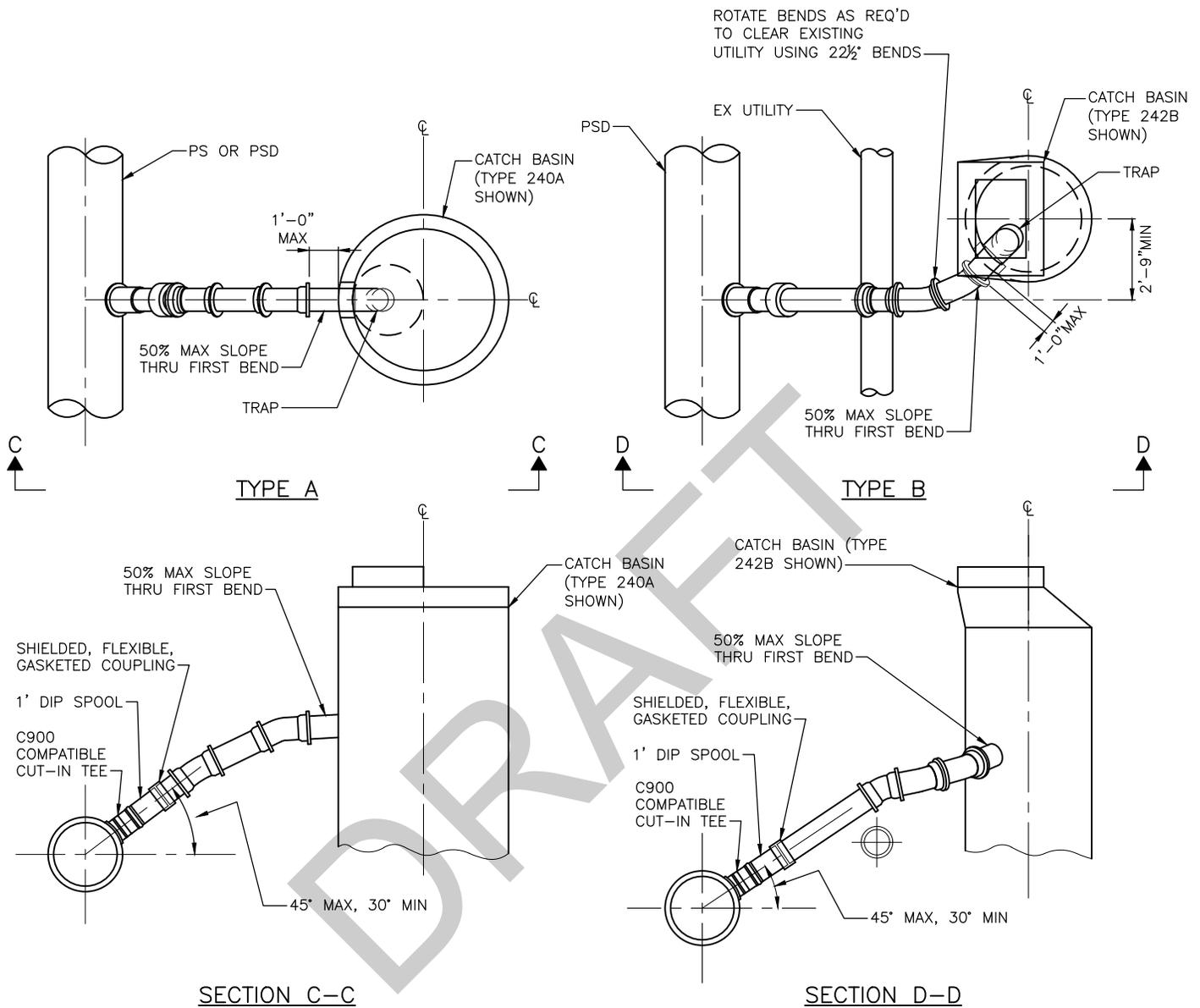
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

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



NOTES:

1. TYPE A CONNECTIONS MUST BE USED WITH CB TYPES 240A, 240B AND 241.
2. TYPE B CONNECTIONS MUST BE USED WITH CB TYPES 240C, 240D, 242A AND 242B.
3. CONNECTIONS MUST MAINTAIN A MINIMUM OF 2% AND A MAXIMUM OF 100% GRADE.
4. MAX BEND MUST BE 22½° OR ¼ BEND. USE OF ¼ BEND REQUIRES APPROVAL BY SPU.
5. 1' DI SPOOL AND COUPLING REQUIRED WITH CUT-IN TEE.

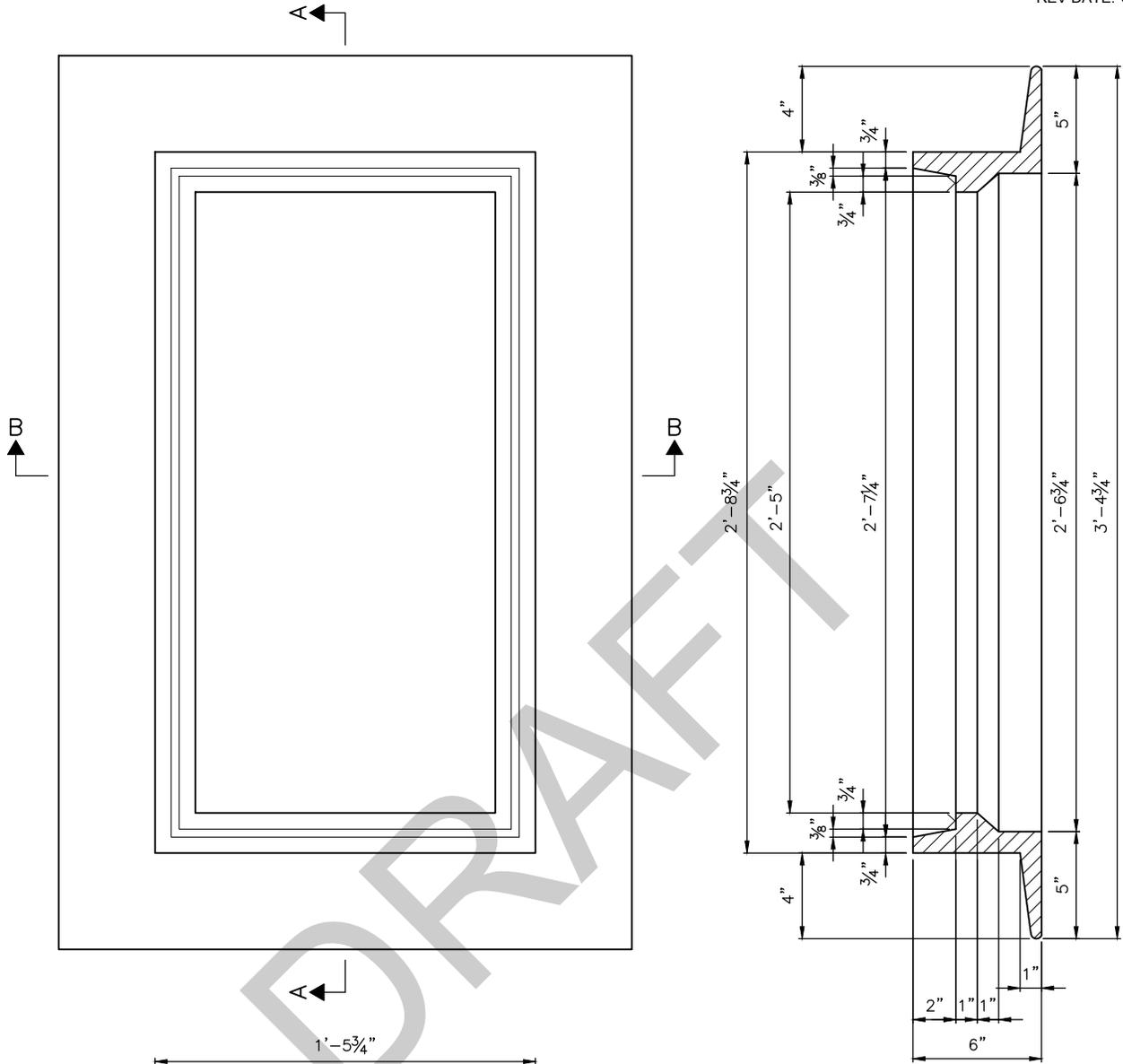
REF STD SPEC SEC 7-08



City of Seattle

NOT TO SCALE

TYPICAL CATCH BASIN CONNECTION



SECTION A-A

SECTION B-B

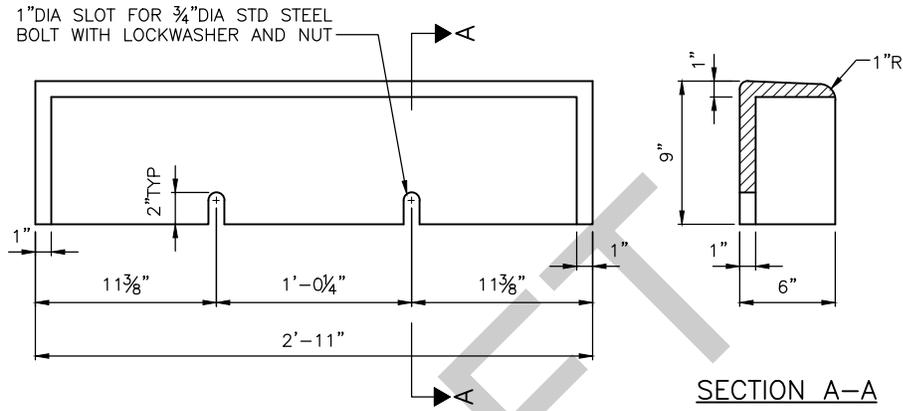
REF STD SPEC SEC 9-12



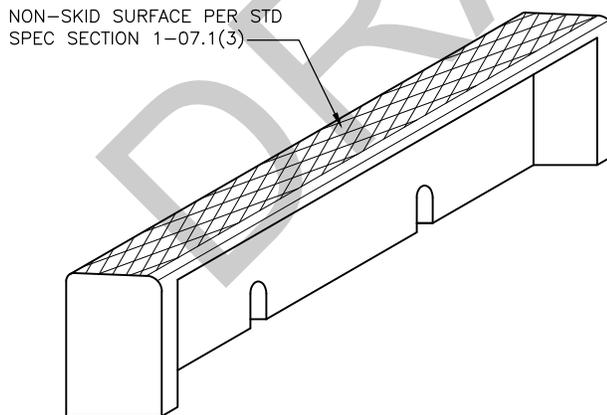
City of Seattle

NOT TO SCALE

TYPE 262 INLET FRAME



CURB INLET



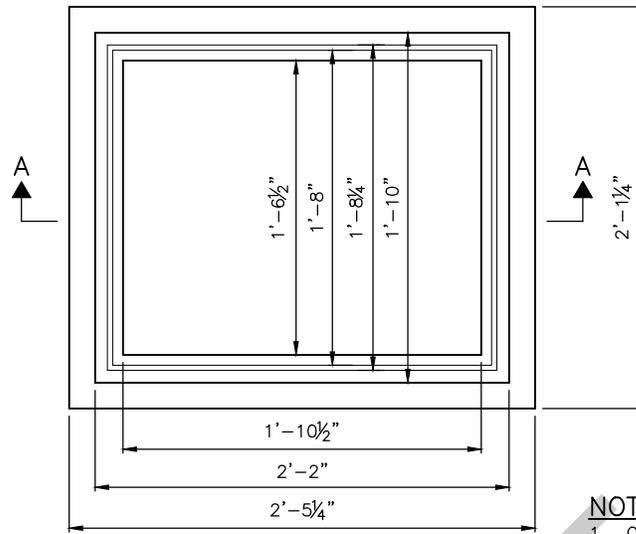
REF STD SPEC SEC 9-12



City of Seattle

NOT TO SCALE

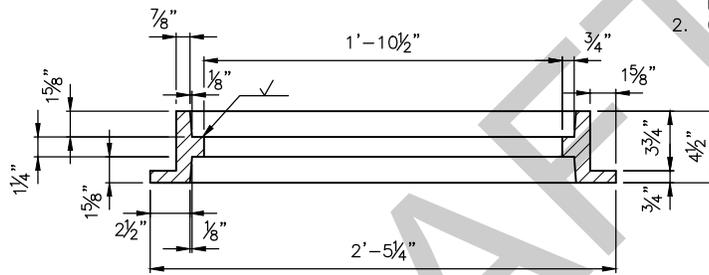
TYPE 263 ALTERNATIVE
INLET HOOD



FRAME

NOTES:

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

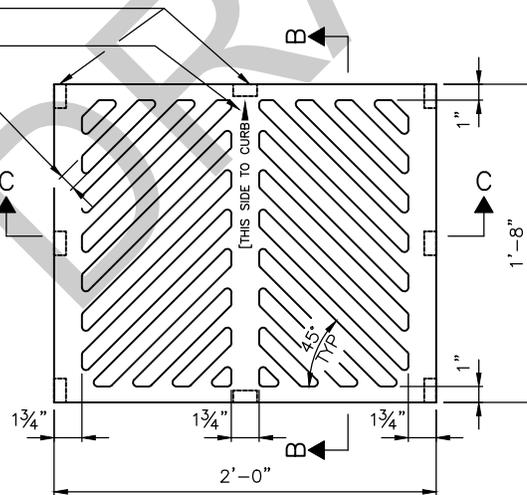


SECTION A-A

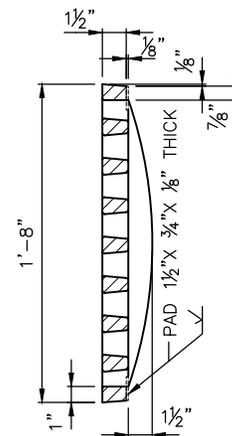
PAD 1 1/2" X 3/4" X 1/8" THICK (8 OPTIONAL)

EMBOSSED ON GRATE

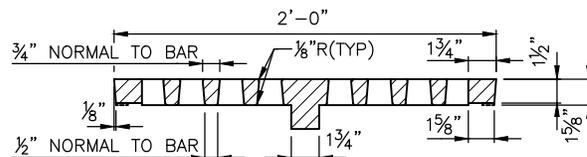
1" OPENING (TYP)



GRATE



SECTION B-B



SECTION C-C

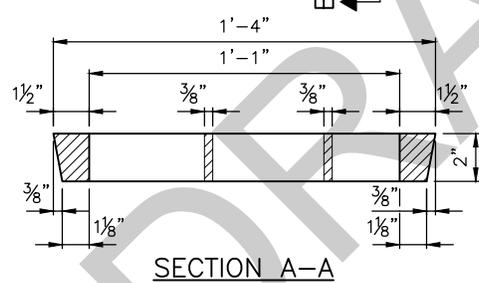
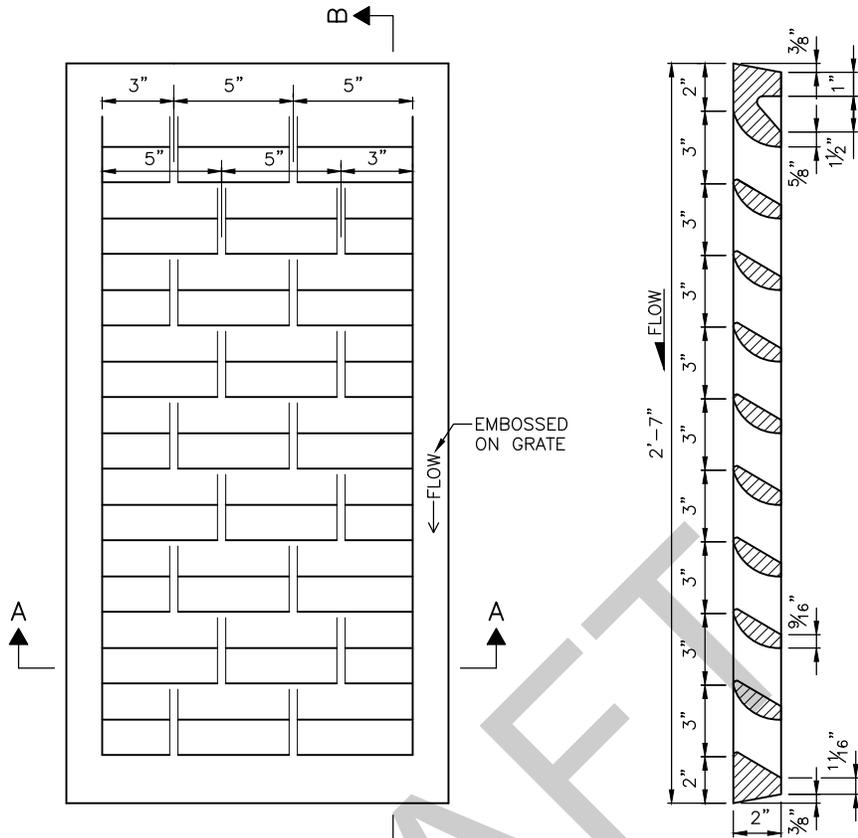
REF STD SPEC SEC 7-05



City of Seattle

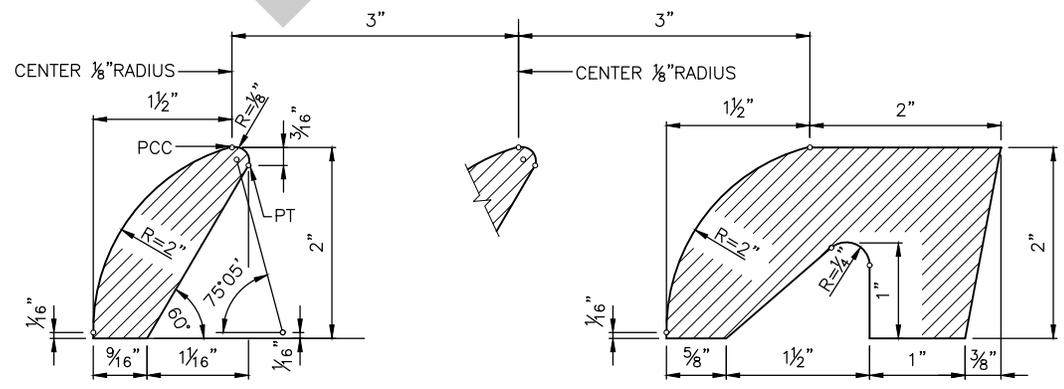
NOT TO SCALE

INLET FRAME & GRATE



SECTION B-B

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



VANE DETAIL

END DETAIL

REF STD SPEC SEC 7-05

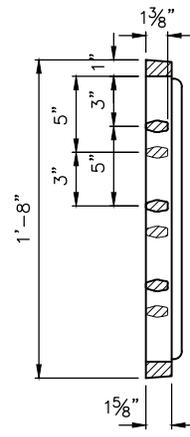
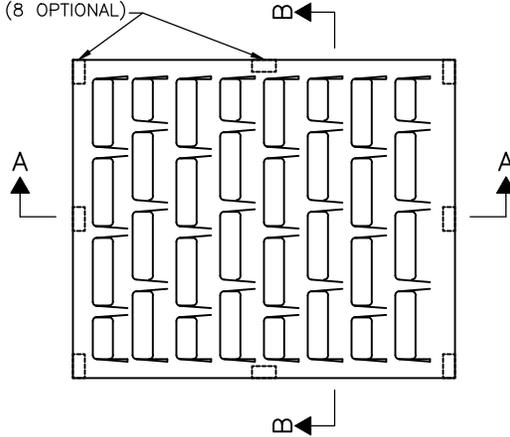


City of Seattle

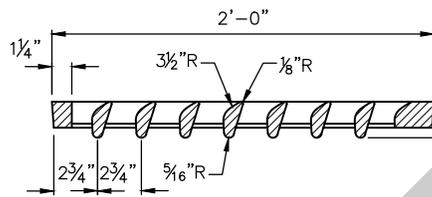
NOT TO SCALE

VANED GRATE

PAD $1\frac{1}{2}$ " X $\frac{3}{4}$ " X $\frac{1}{8}$ " THICK (8 OPTIONAL)



SECTION B-B



SECTION A-A

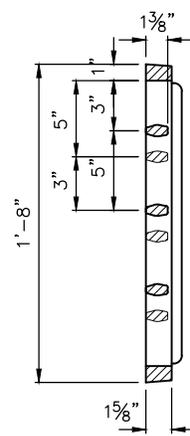
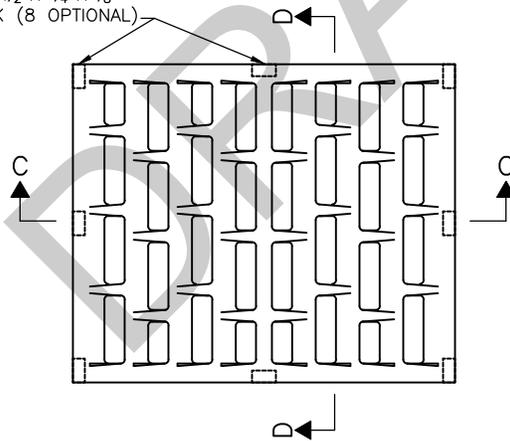
DIRECTIONAL VANED GRATE

TO BE USED WITH FRAME 264

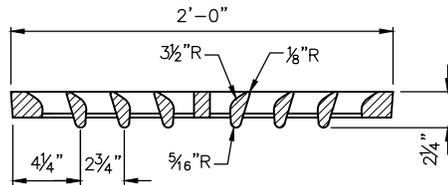
NOTES:

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

PAD $1\frac{1}{2}$ " X $\frac{3}{4}$ " X $\frac{1}{8}$ " THICK (8 OPTIONAL)



SECTION D-D



SECTION C-C

BI-DIRECTIONAL VANED GRATE

TO BE USED WITH FRAME 264

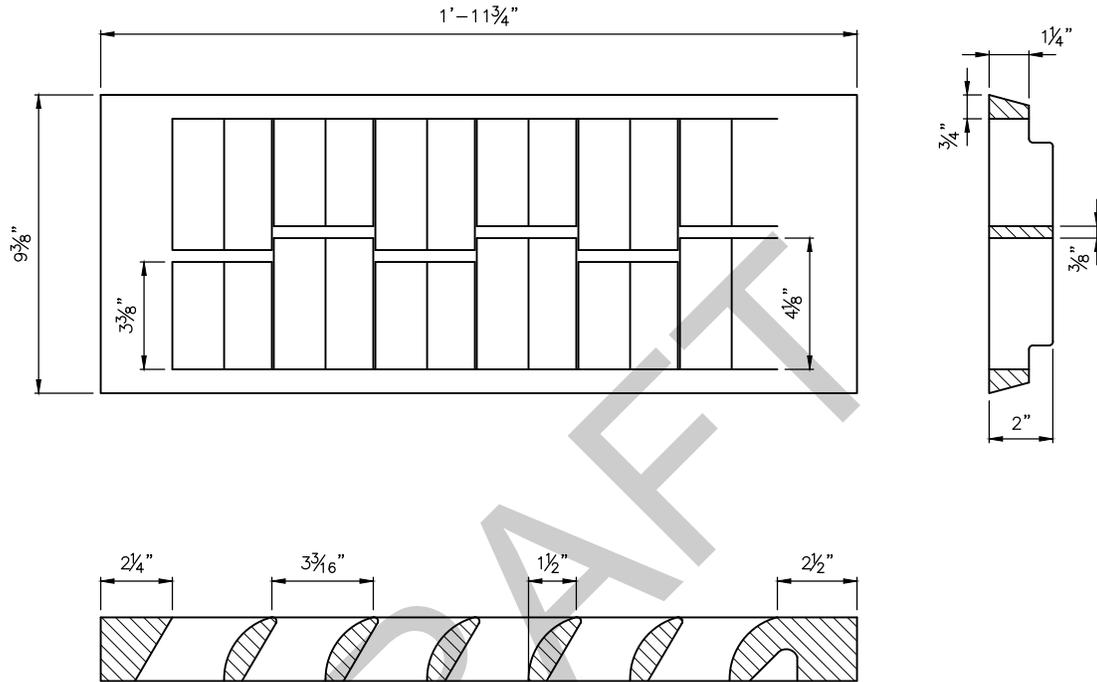
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

VANED GRATES



NOTES:

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

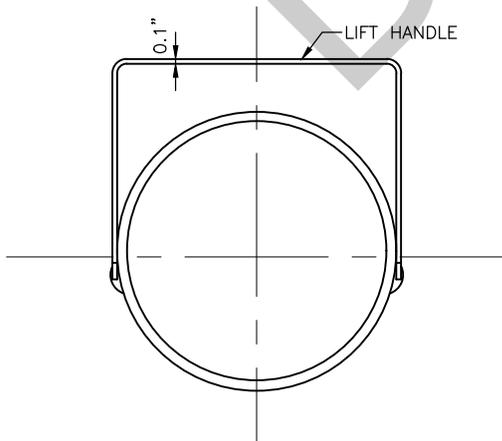
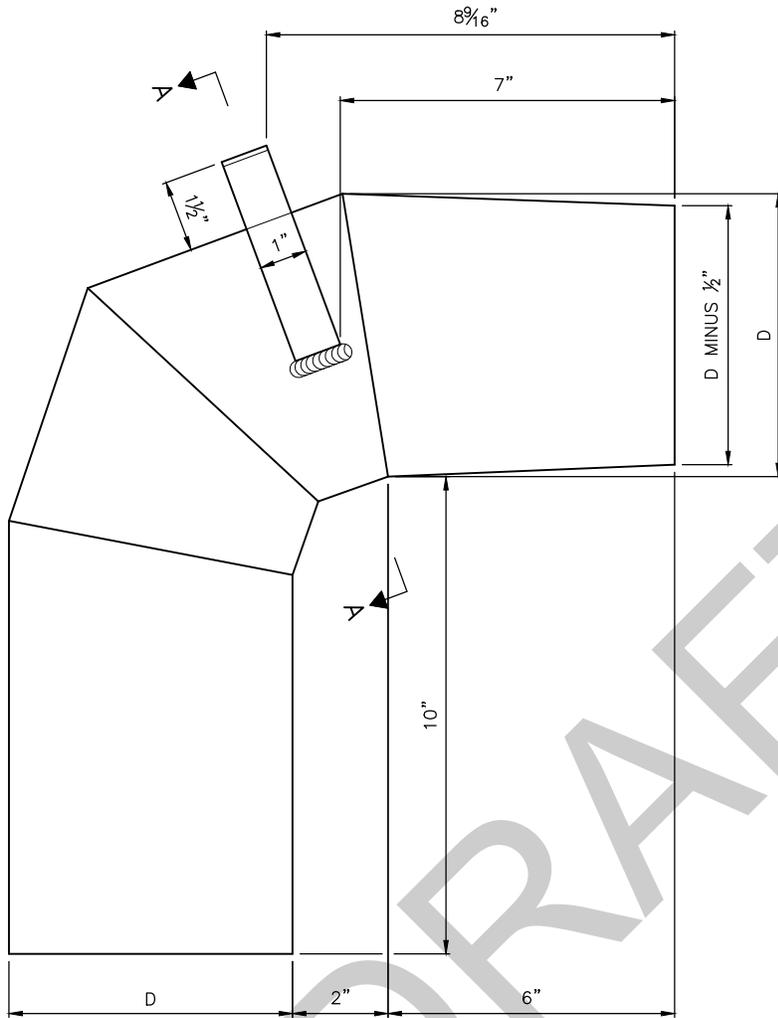
REF STD SPEC SEC 7-20.3(6), 9-12



City of Seattle

NOT TO SCALE

TYPE 266 REPLACEMENT
VANED GRATE



SECTION A-A
NTS

NOTES:

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

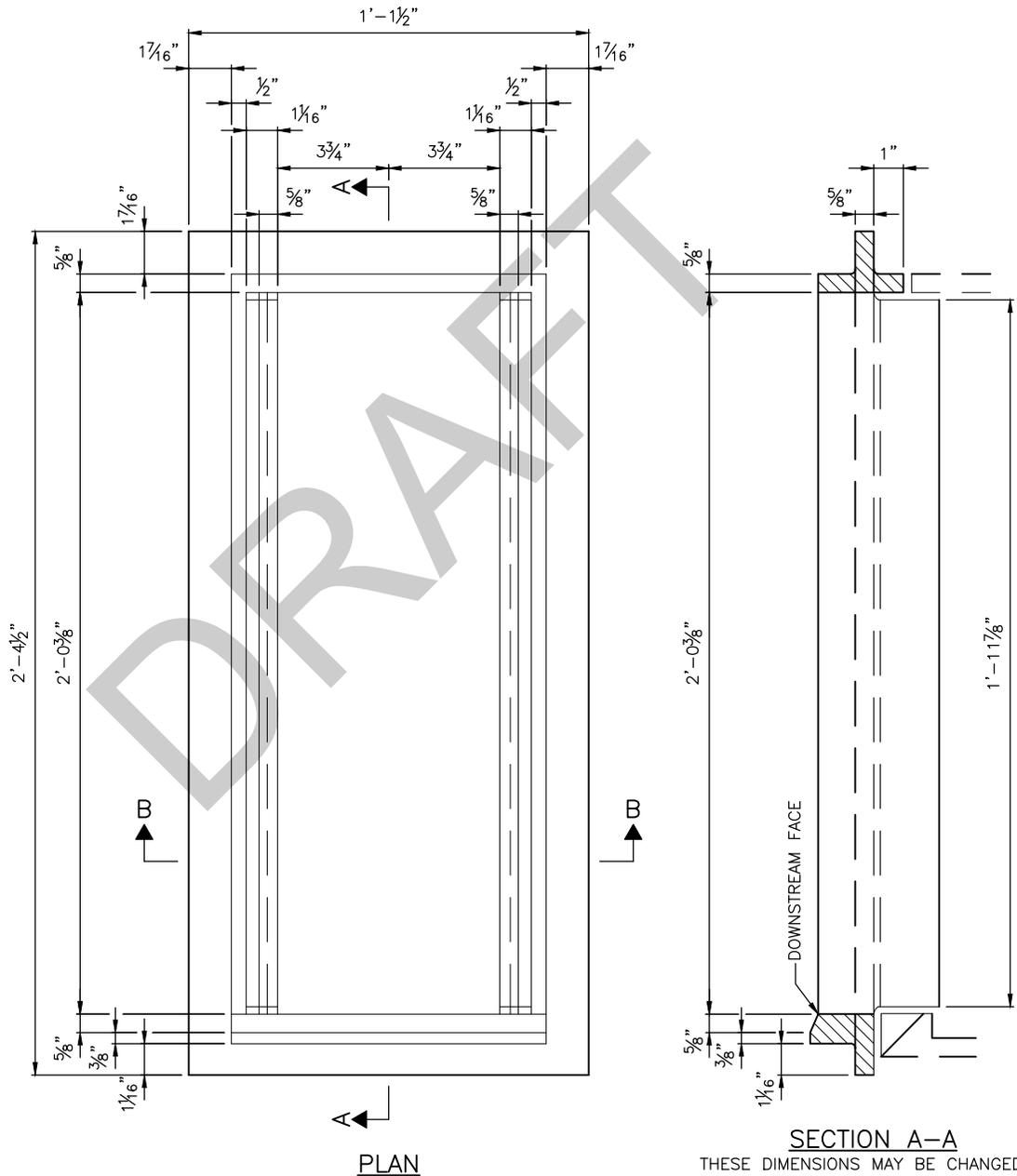
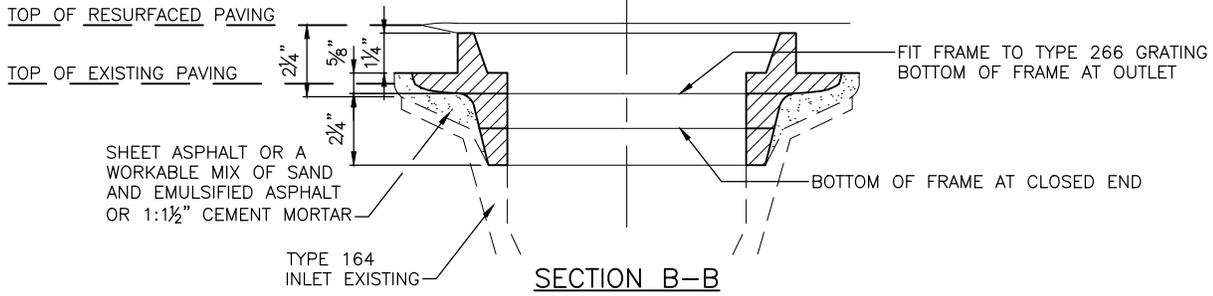
REF STD SPEC SEC 9-12



City of Seattle

NOT TO SCALE

OUTLET TRAP



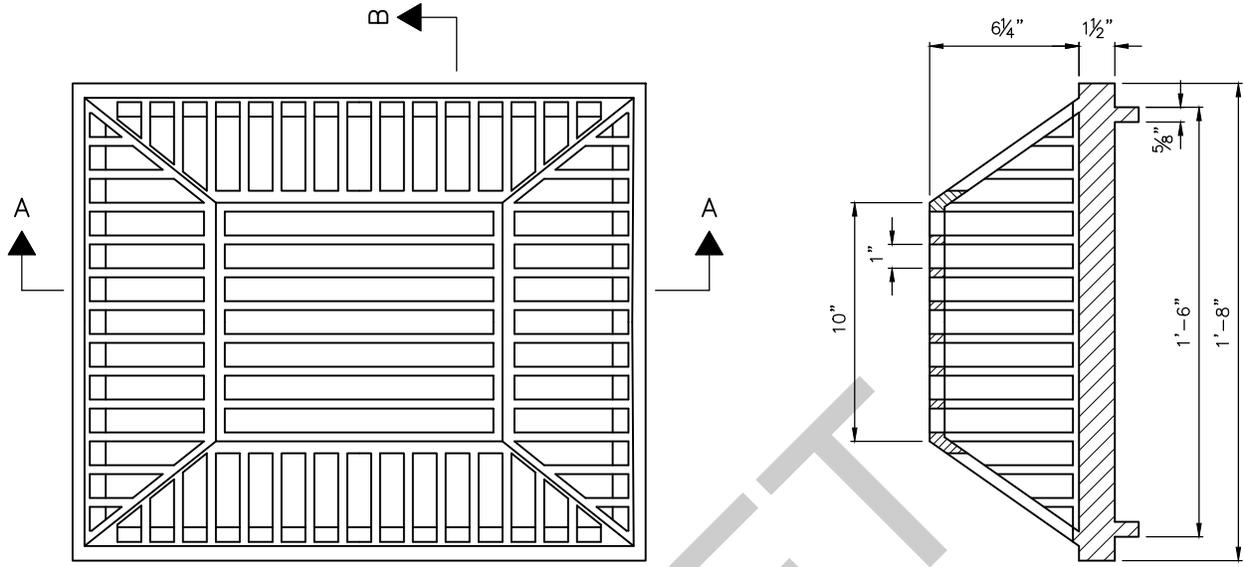
REF STD SPEC SEC 9-05



City of Seattle

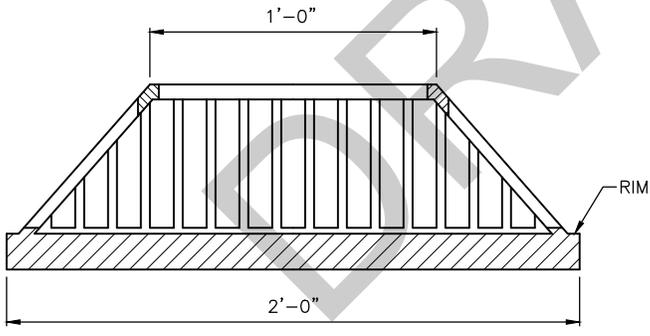
NOT TO SCALE

EXTENSION FOR INLET



GRATE

SECTION B-B



SECTION A-A

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

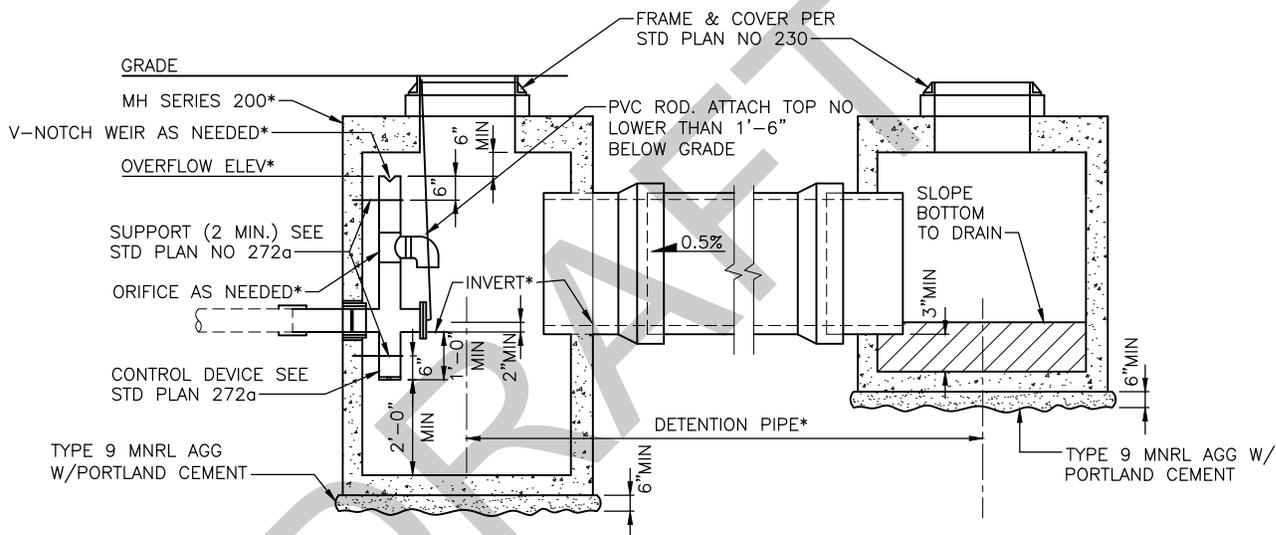
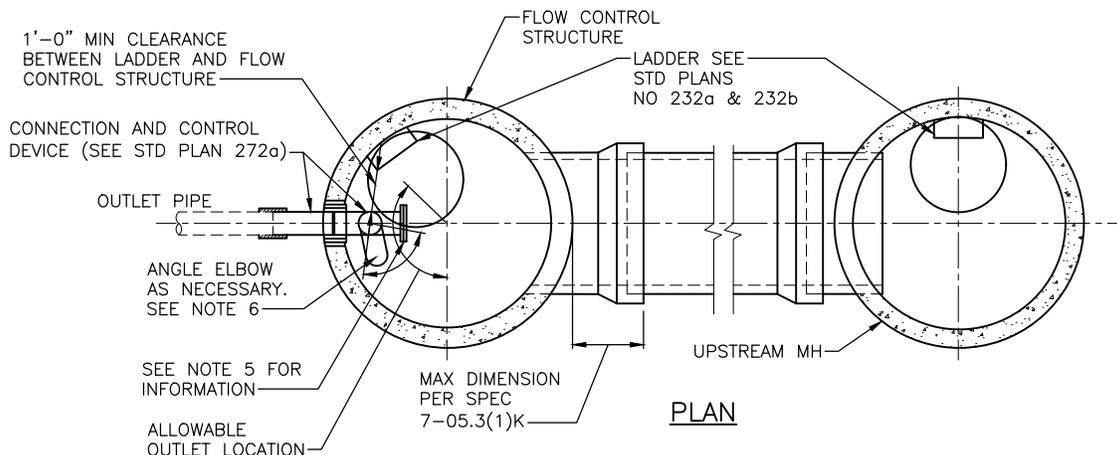
REF STD SPEC SEC 9-12



City of Seattle

NOT TO SCALE

BEEHIVE GRATE FOR
BIORETENTION



ELEVATION

*SPECIFIC DESIGN INFORMATION AS INDICATED ON CONSTRUCTION DRAWINGS

NOTES:

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

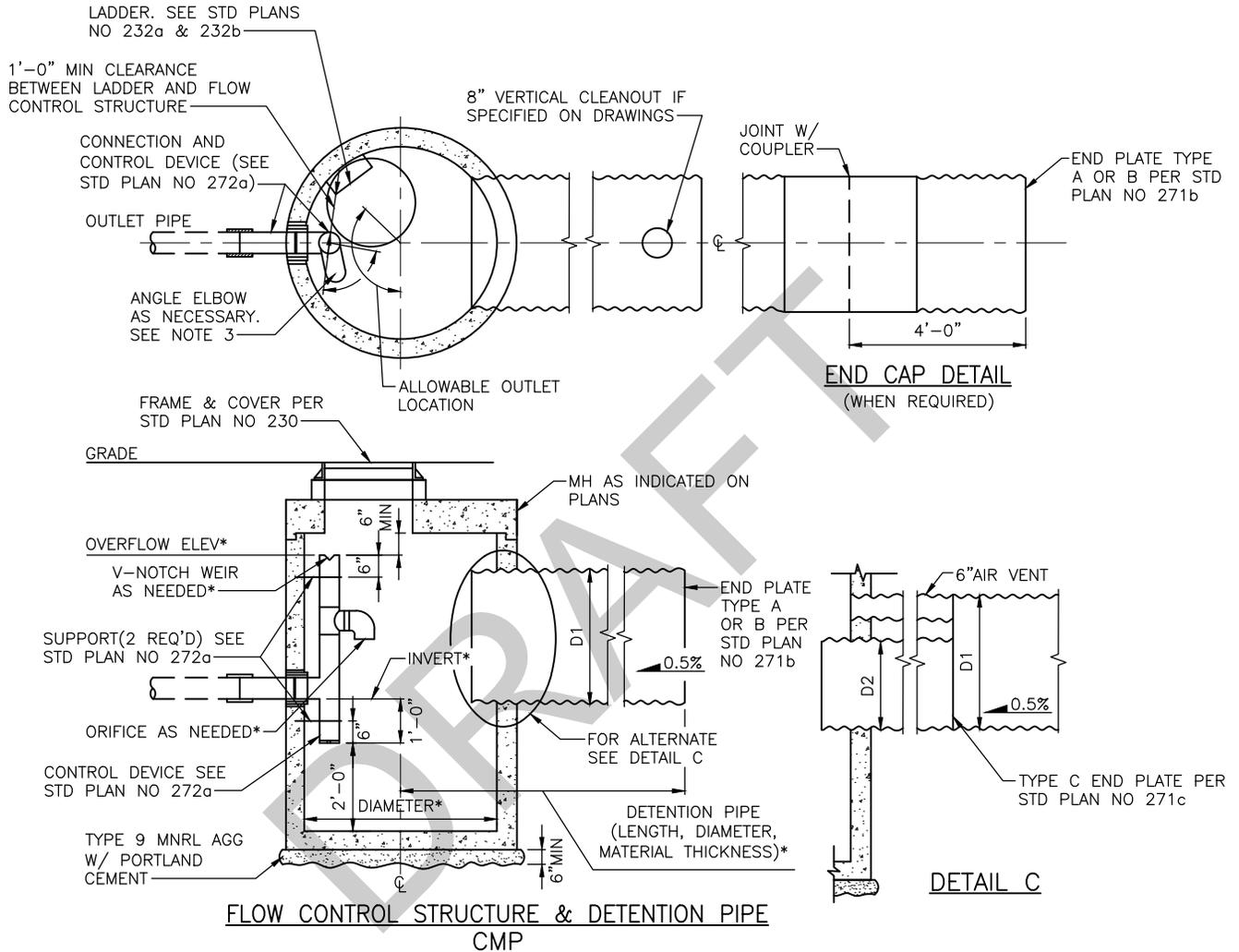
REF STD SPEC SEC 7-16



City of Seattle

NOT TO SCALE

FLOW CONTROL STRUCTURE WITH DETENTION PIPE



NOTES:

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

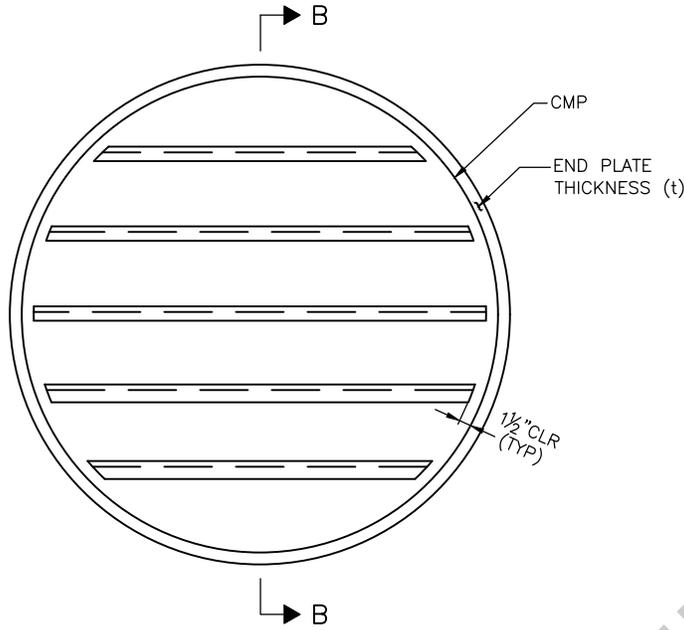
REF STD SPEC SEC 7-16



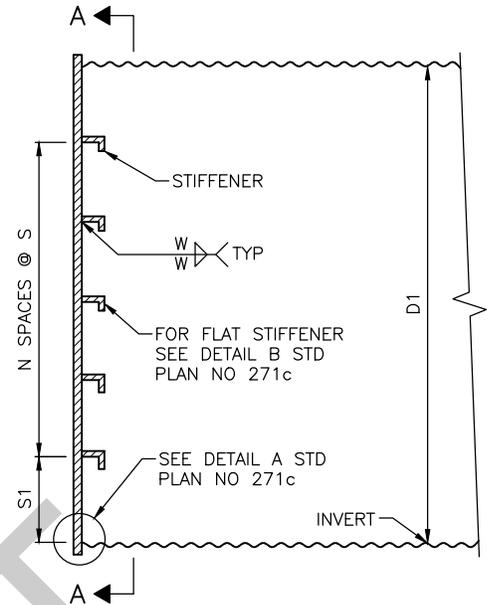
City of Seattle

NOT TO SCALE

**CMP DETENTION PIPE
PRIVATE SYSTEM ONLY**

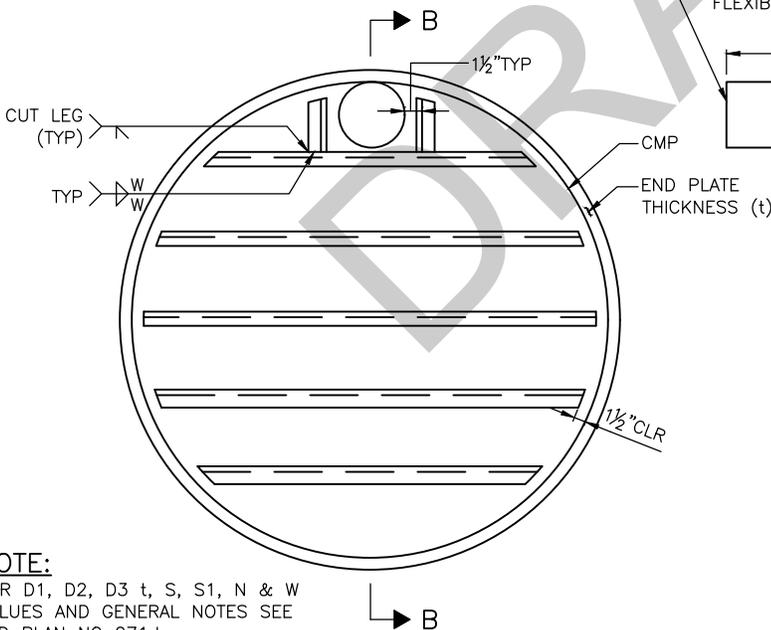


SECTION A-A

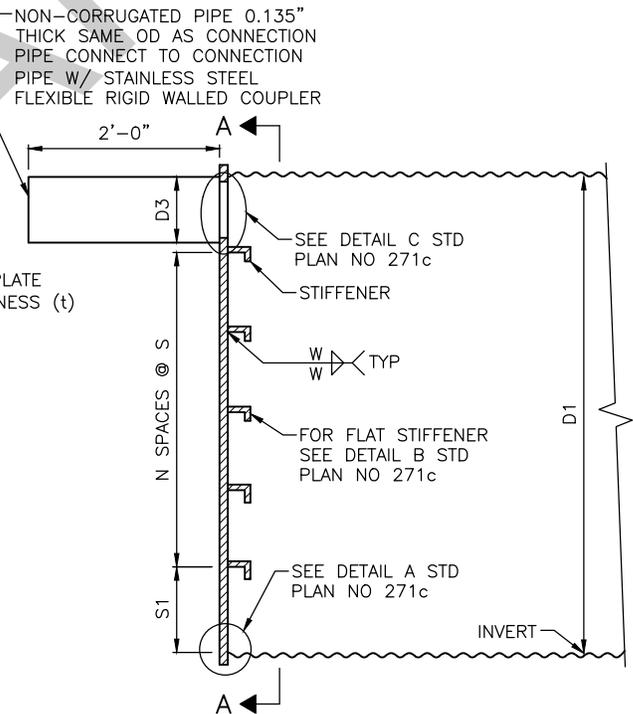


SECTION B-B

TYPE A



SECTION A-A



SECTION B-B

TYPE B

NOTE:

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

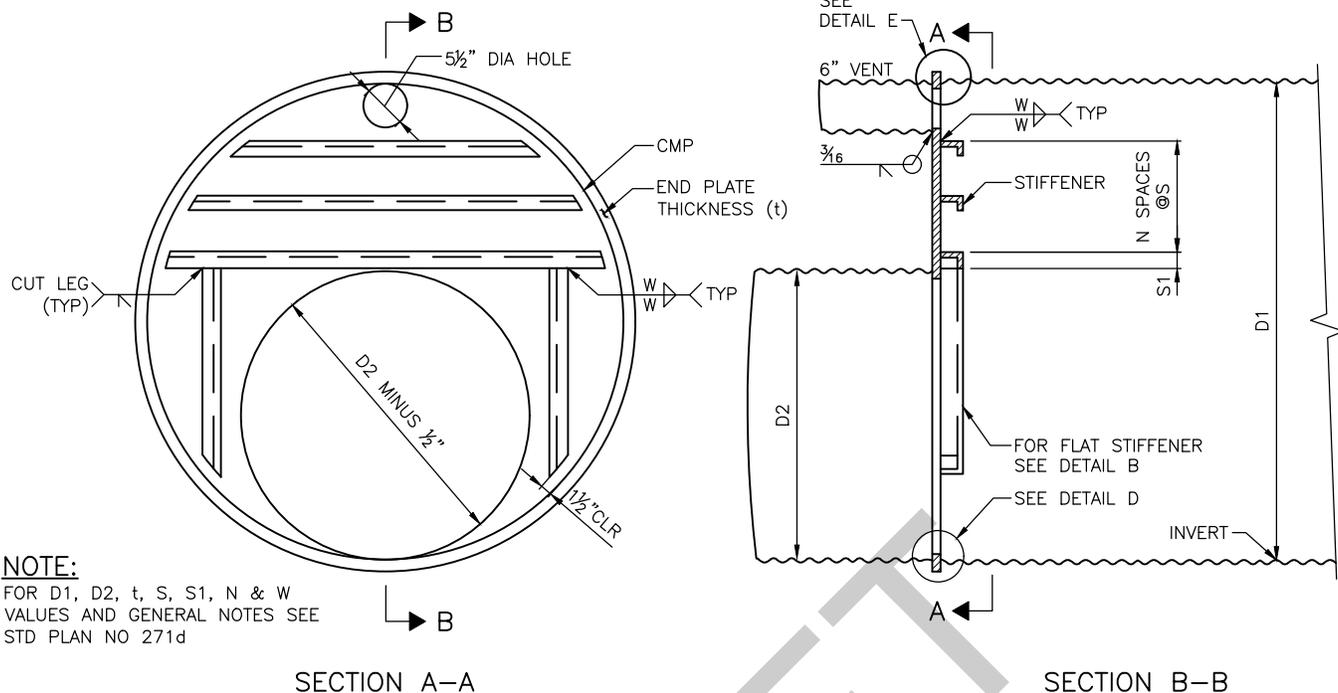
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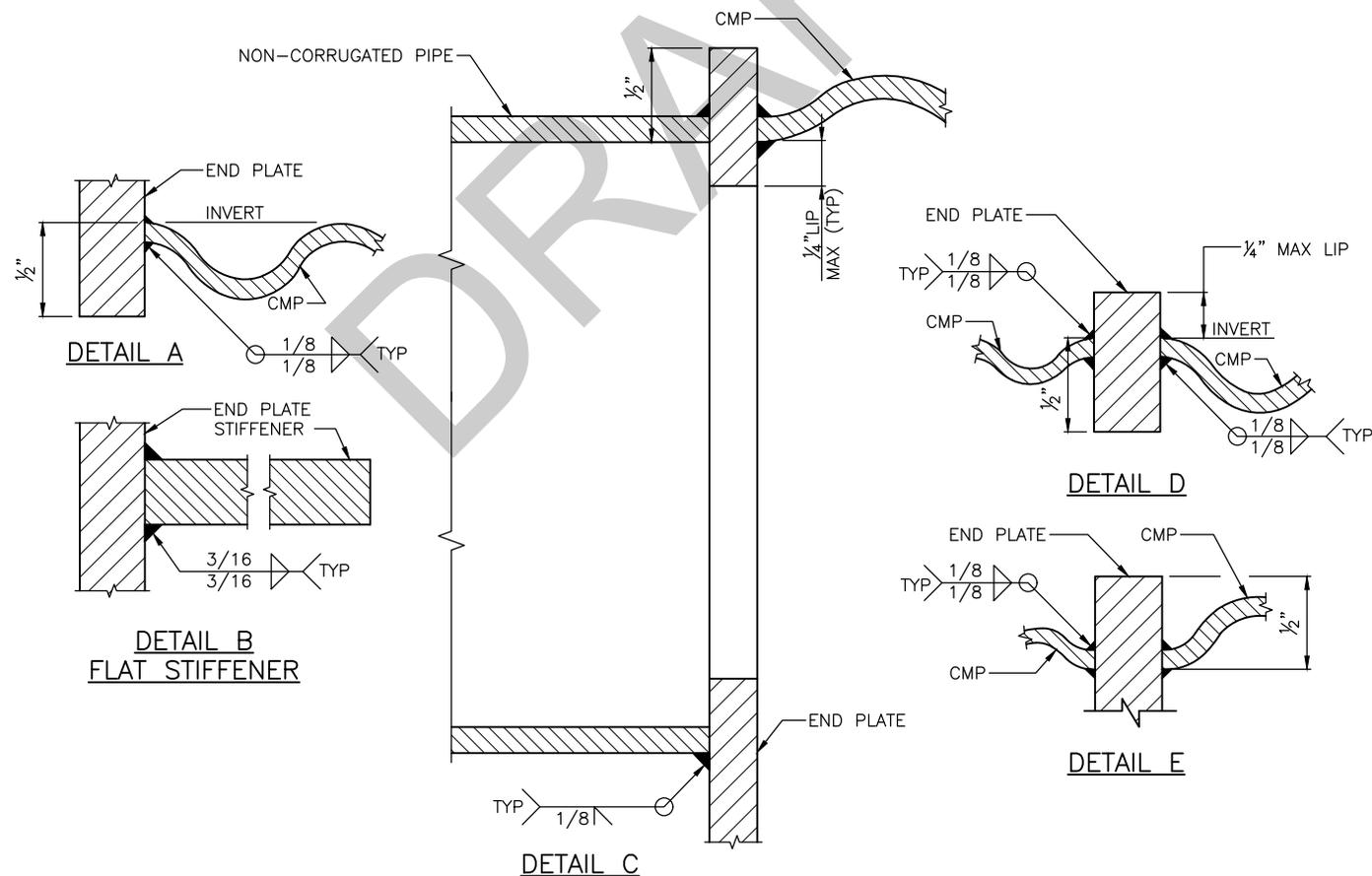
City of Seattle

NOT TO SCALE

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



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



REF STD SPEC SEC 7-16



City of Seattle

NOT TO SCALE

**CMP DETENTION STRUCTURE
 END PLATE DETAILS
 TYPE C**

PIPE DIAMETER			END PLATE THICKNESS 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 MUST BE USED ONLY FOR ALUMINUM CMP

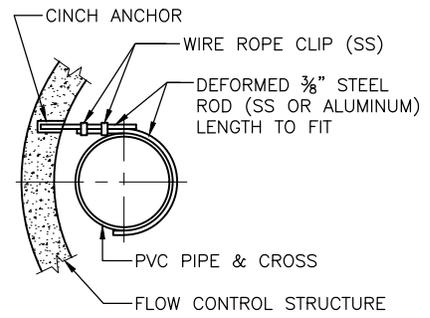
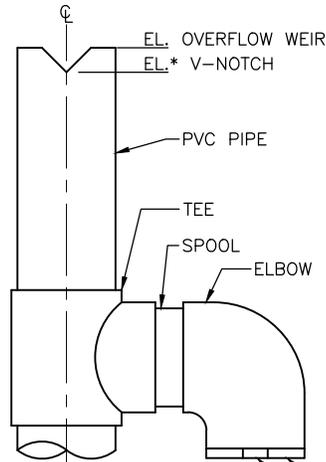
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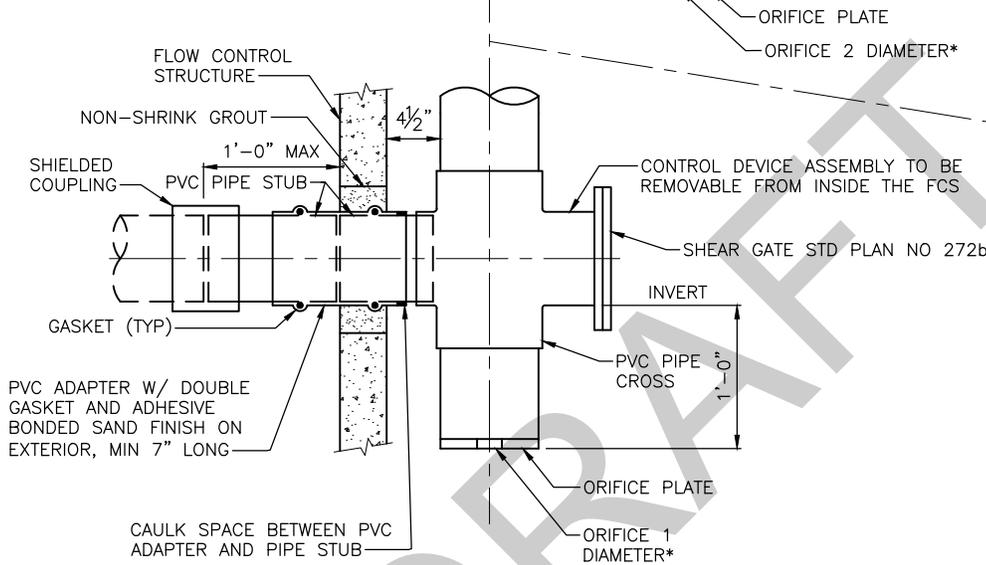
City of Seattle

NOT TO SCALE

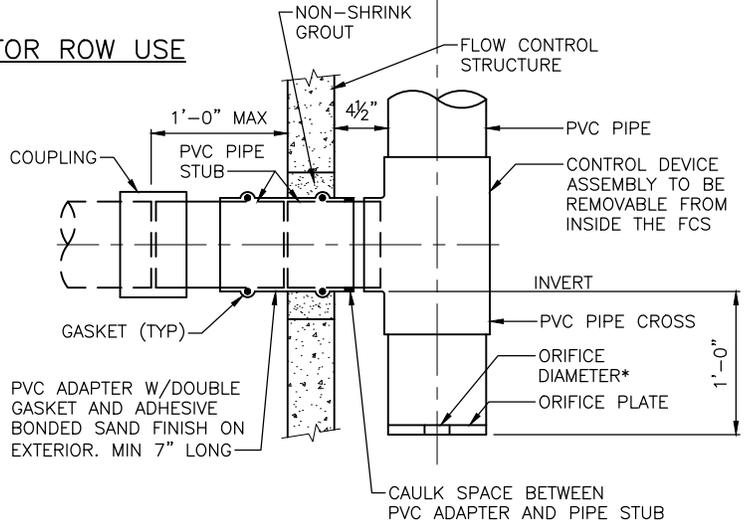
CMP DETENTION STRUCTURE
END PLATE DIMENSIONS



PIPE SUPPORT DETAIL



CONNECTION & CONTROL DEVICE FOR ROW USE



CONNECTION & CONTROL DEVICE FOR PRIVATE SYSTEM

NOTES:

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

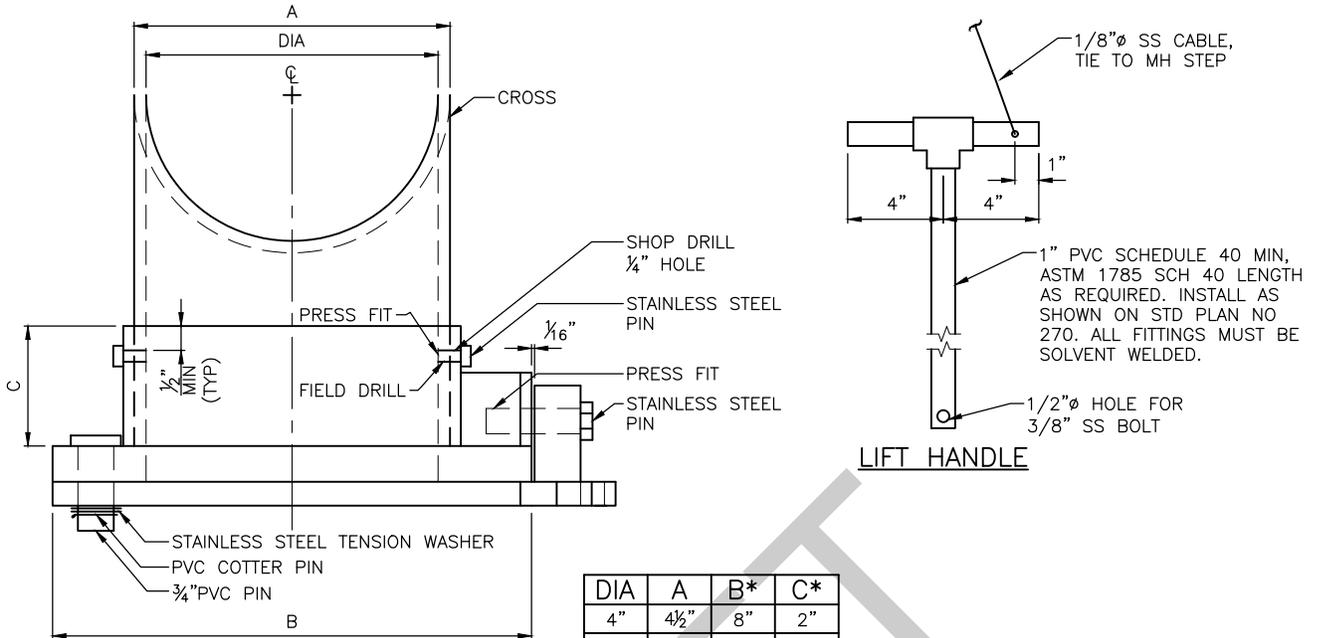
REF STD SPEC SEC 7-16



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NOT TO SCALE

FLOW CONTROL DEVICE ASSEMBLY

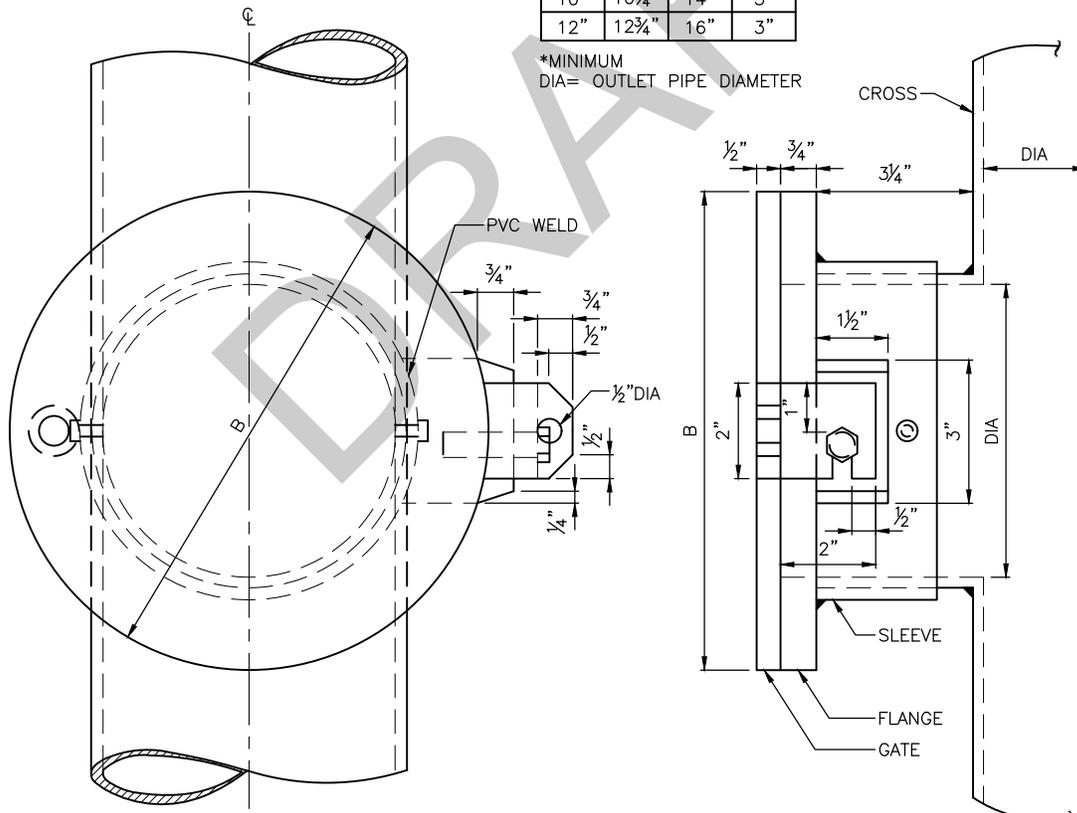


TOP VIEW

LIFT HANDLE

DIA	A	B*	C*
4"	4½"	8"	2"
6"	6⅝"	10"	2½"
8"	8⅝"	12"	3"
10"	10¾"	14"	3"
12"	12¾"	16"	3"

*MINIMUM DIA= OUTLET PIPE DIAMETER



FRONT VIEW

SIDE VIEW

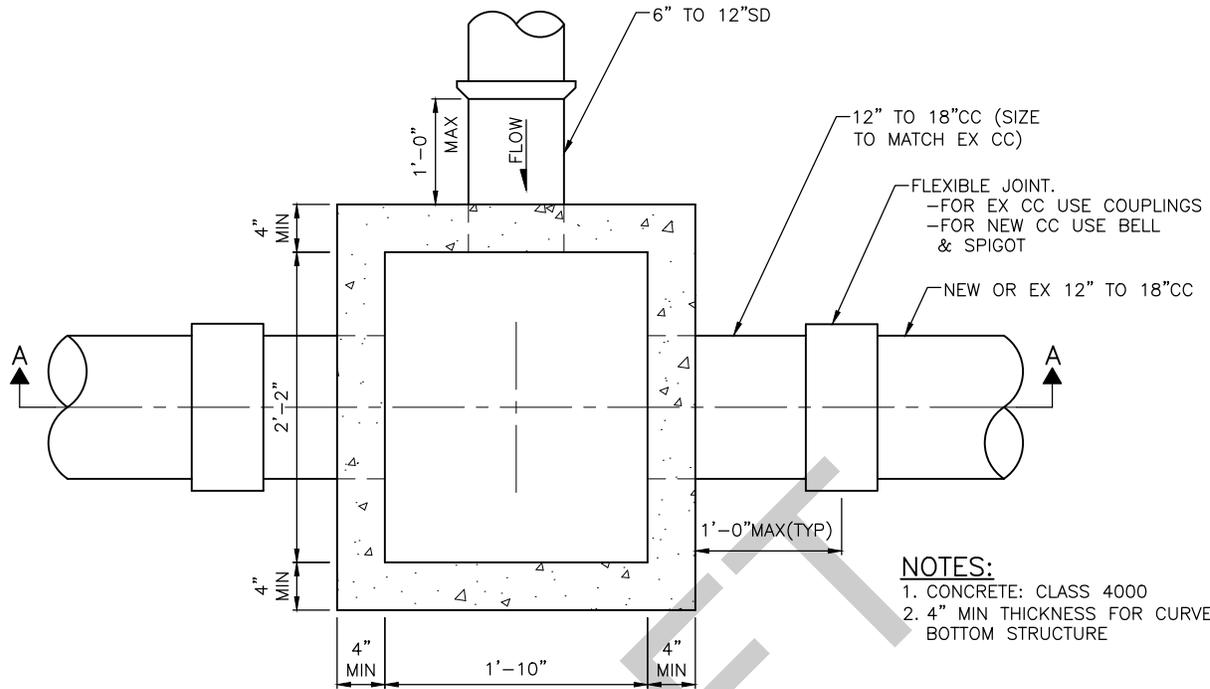
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City of Seattle

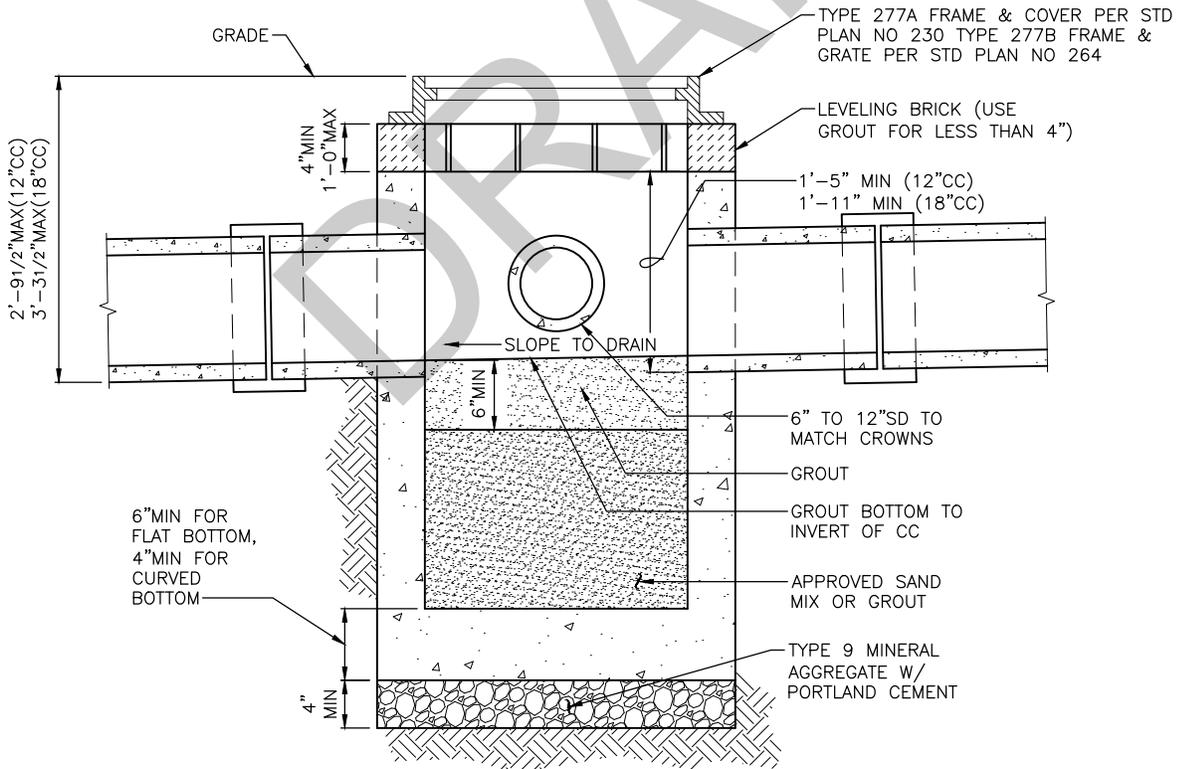
NOT TO SCALE

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

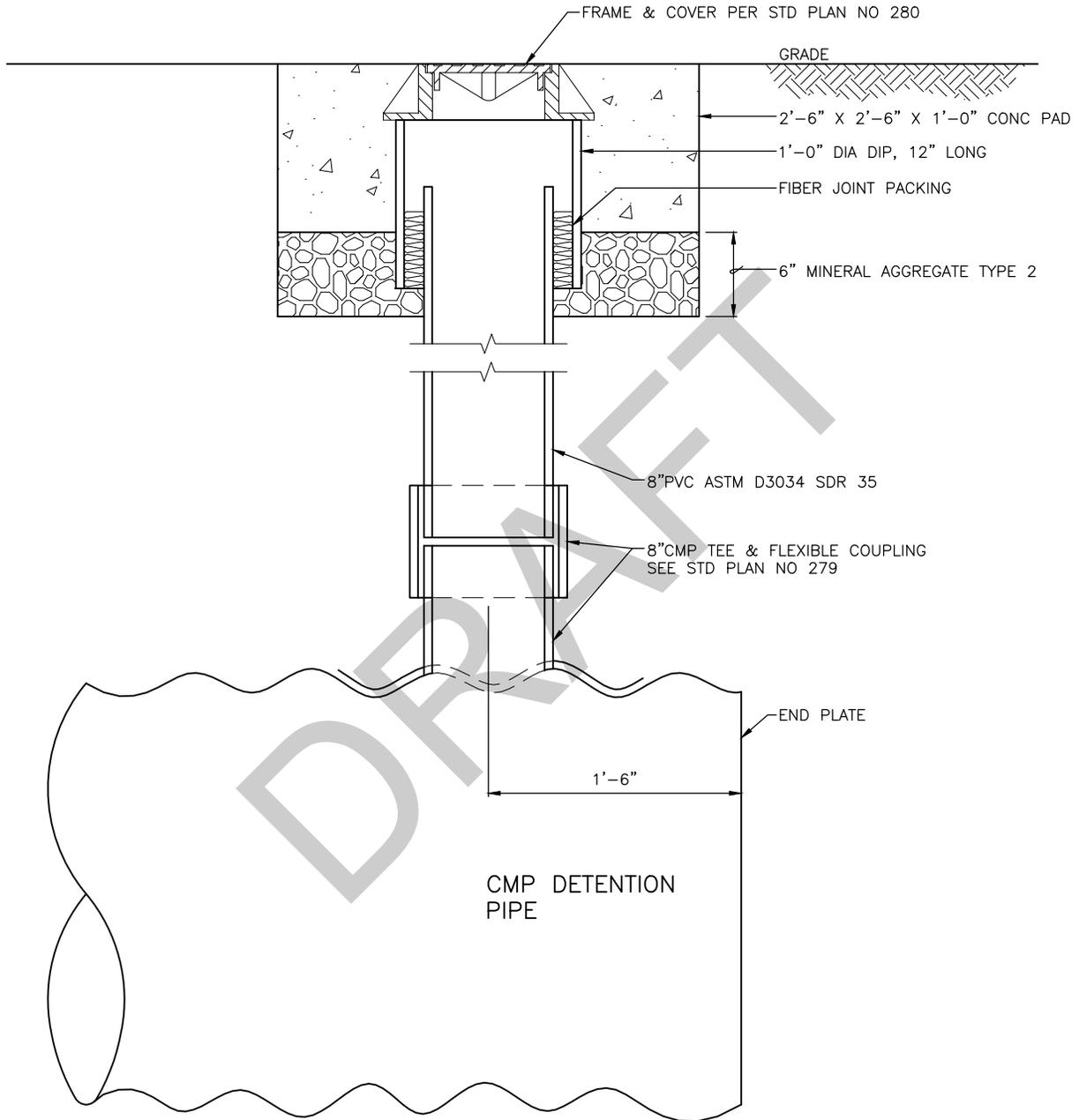
REF STD SPEC SEC 7-05



City of Seattle

NOT TO SCALE

TYPE 277 JUNCTION BOX & INSTALLATION



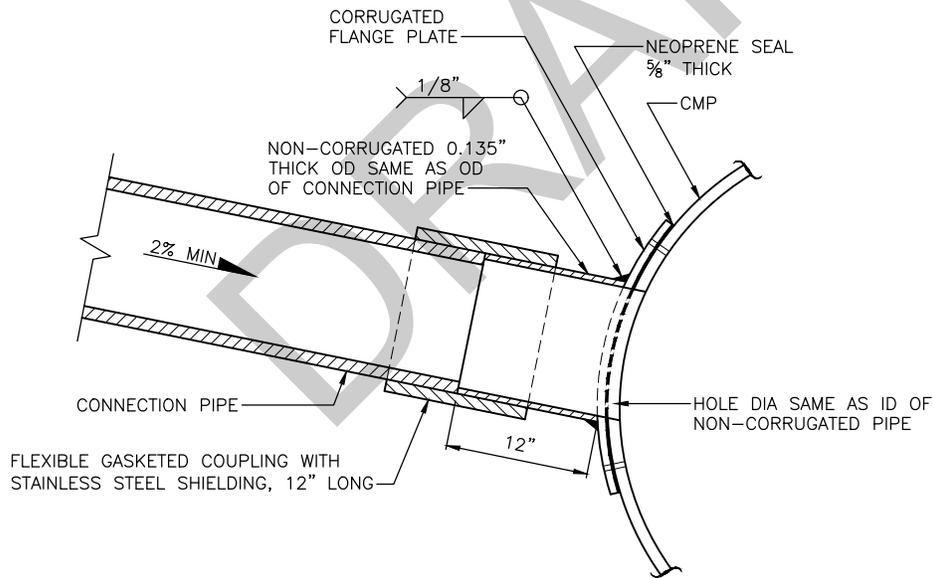
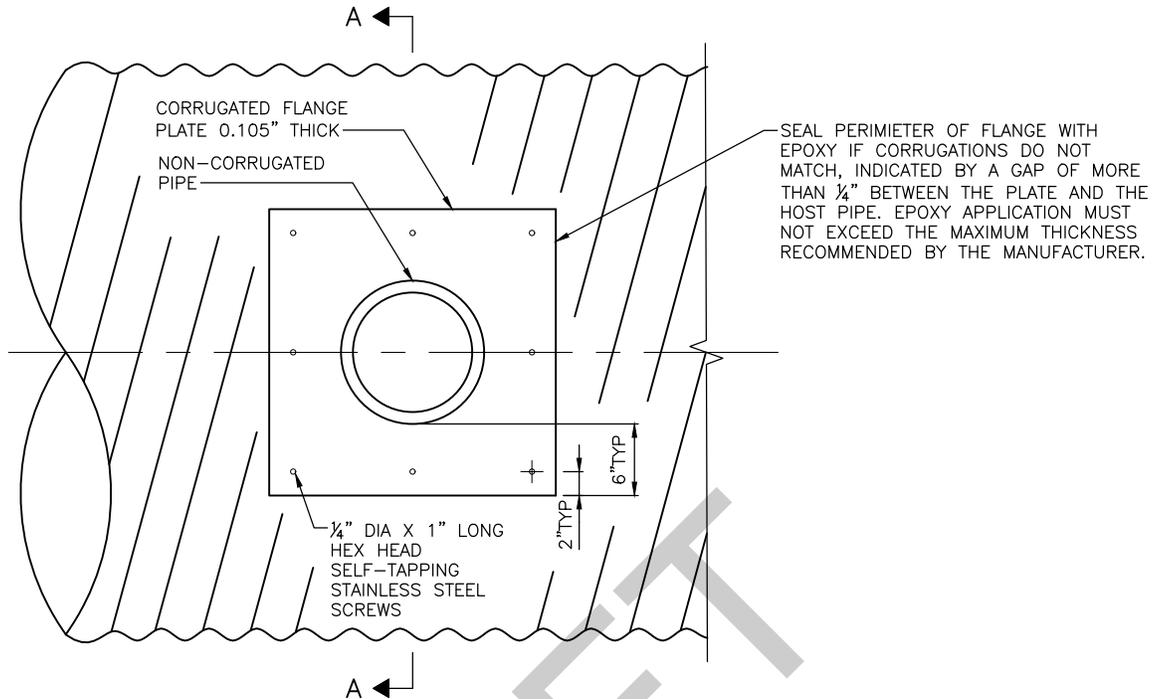
REF STD SPEC SEC 7-19, 7-16.2



City of Seattle

NOT TO SCALE

VERTICAL CLEAN OUT/
CORRUGATED METAL PIPE



SECTION A-A

NOTES:

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

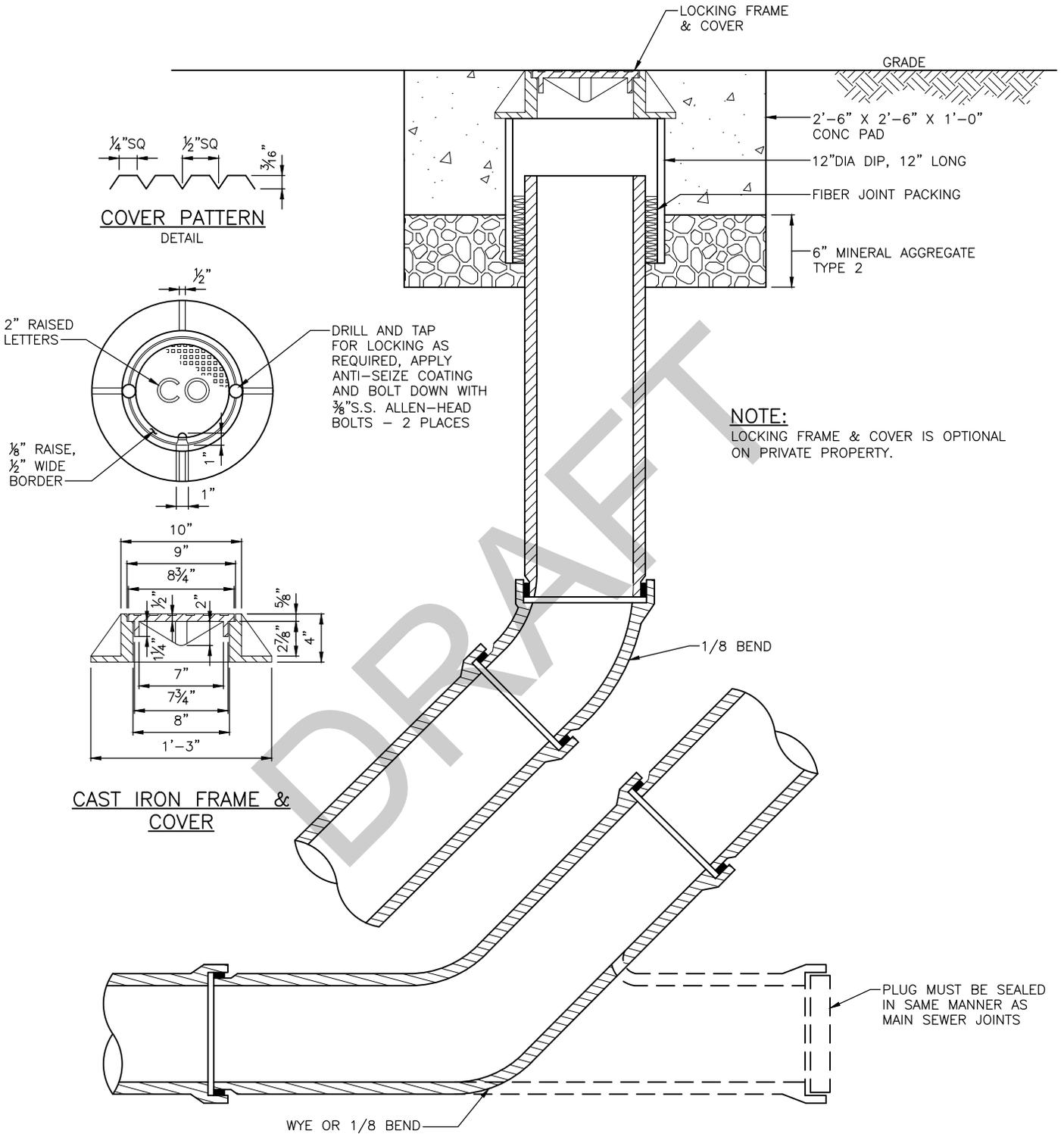
REF STD SPEC SEC 7-17, 7-16.2



City of Seattle

NOT TO SCALE

TEE INSTALLATION
CORRUGATED METAL PIPE



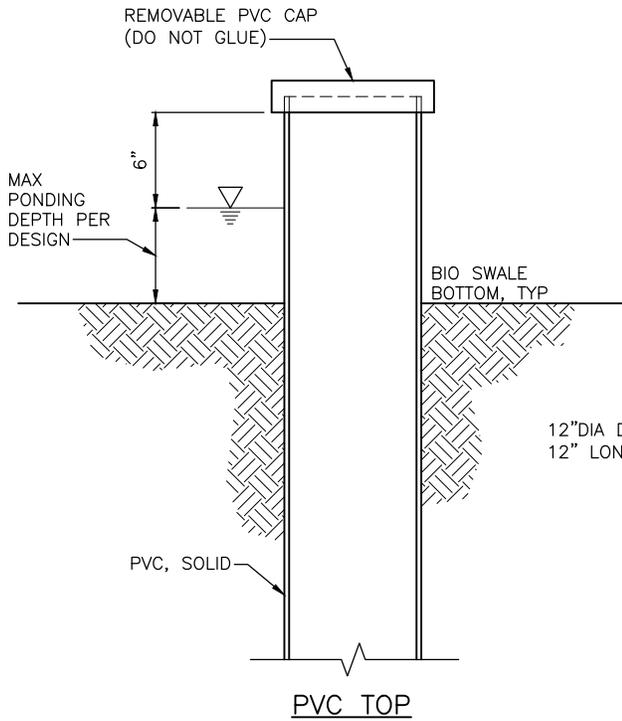
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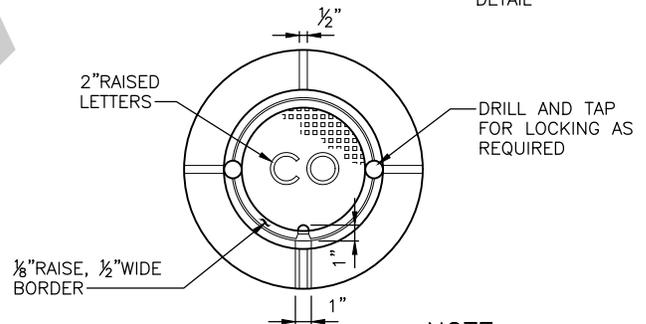
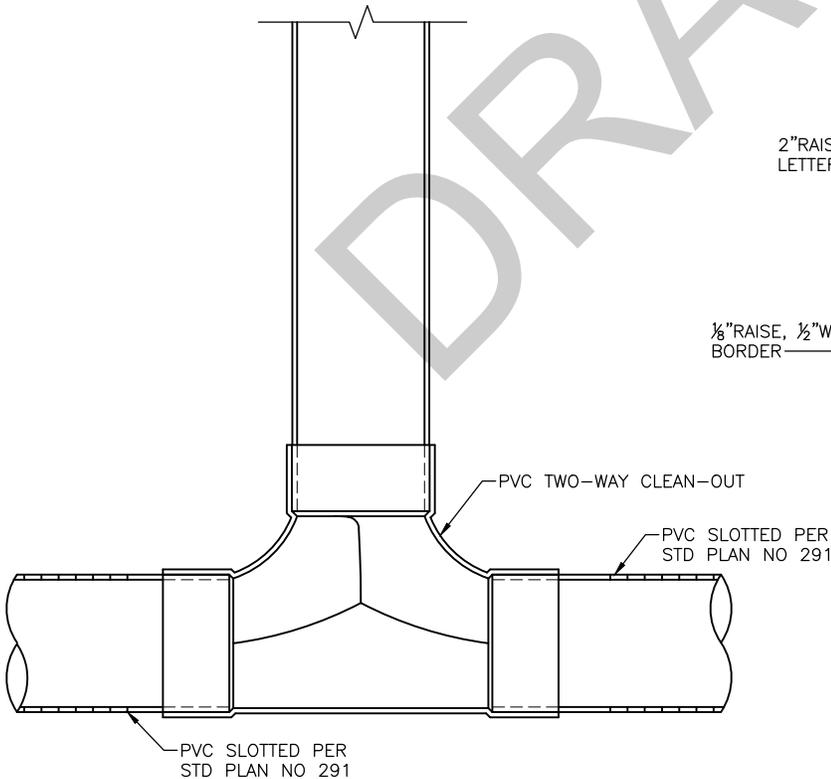
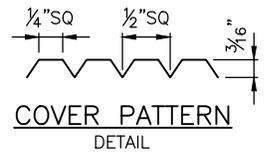
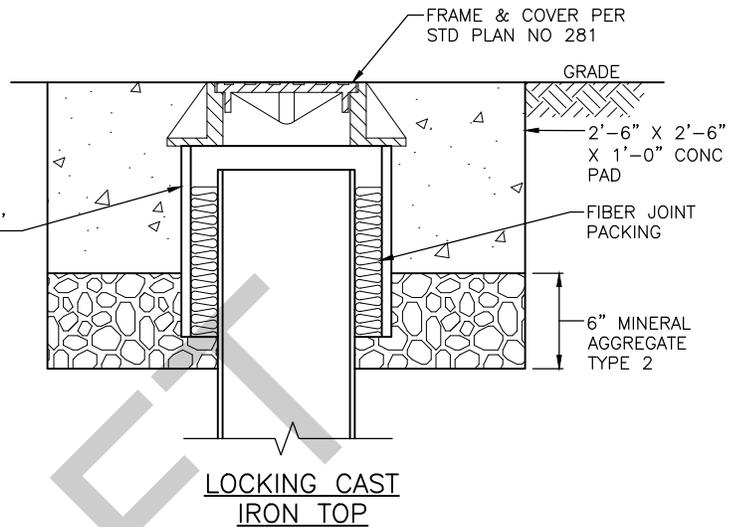
City of Seattle

NOT TO SCALE

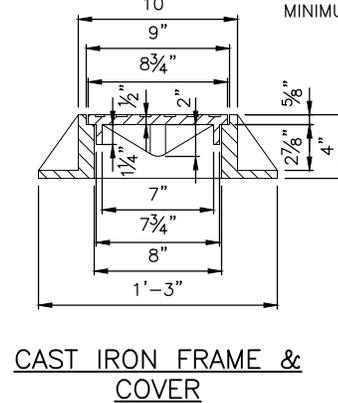
8" CLEAN-OUT



NOTE:
 USE LOCKING CLEAN-OUT IN CONCRETE WALK AREAS. DRILL AND TAP, APPLY ANTI-SEIZE COATING AND BOLT DOWN WITH 3/8" S.S. ALLEN-HEAD BOLTS - 2 PLACES.



NOTE:
 MINIMUM DIAMETER = 6"



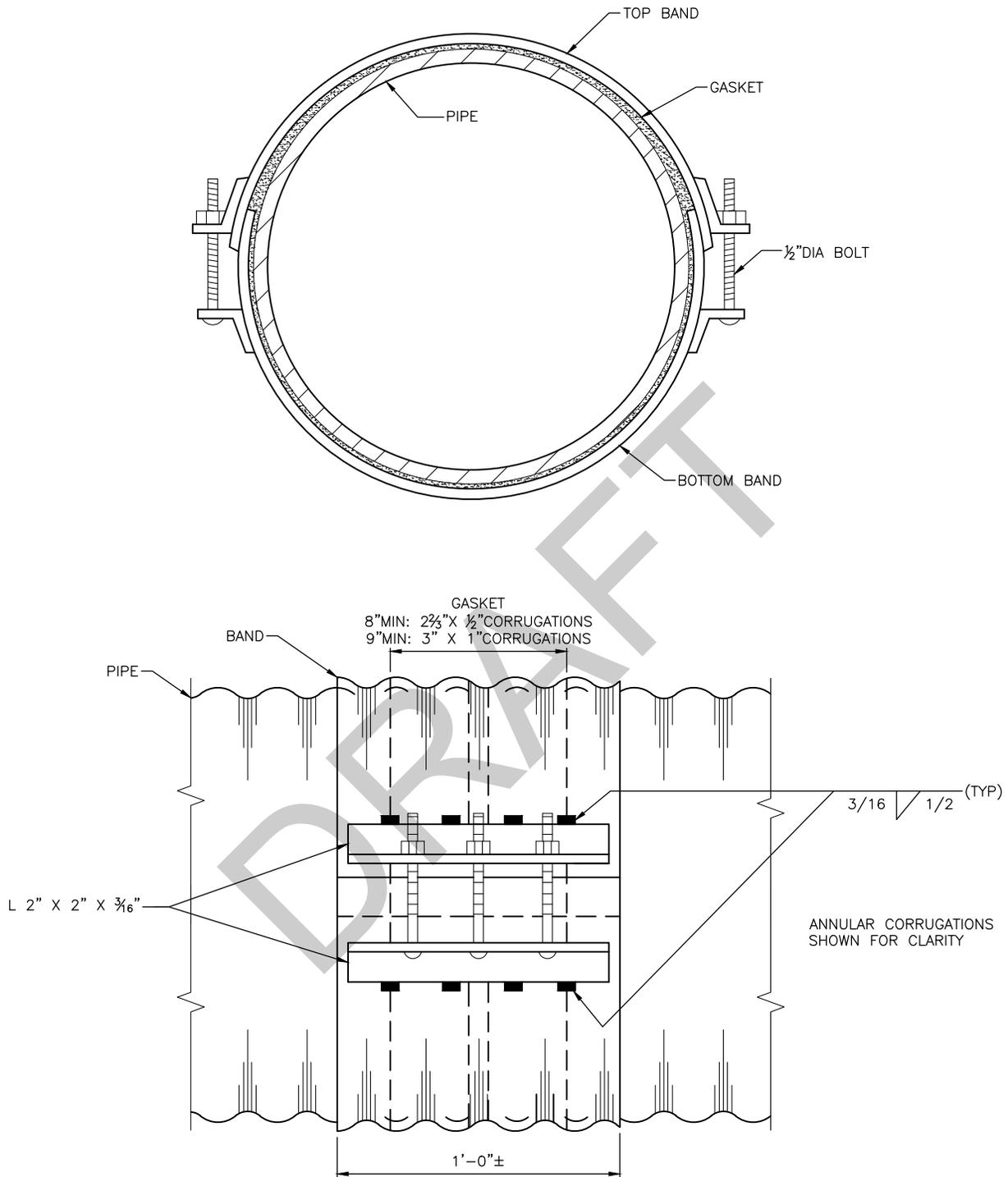
REF STD SPEC SEC 7-19



City of Seattle

NOT TO SCALE

**BIORETENTION UNDER DRAIN
 CLEAN-OUT AND
 OBSERVATION PORT**



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

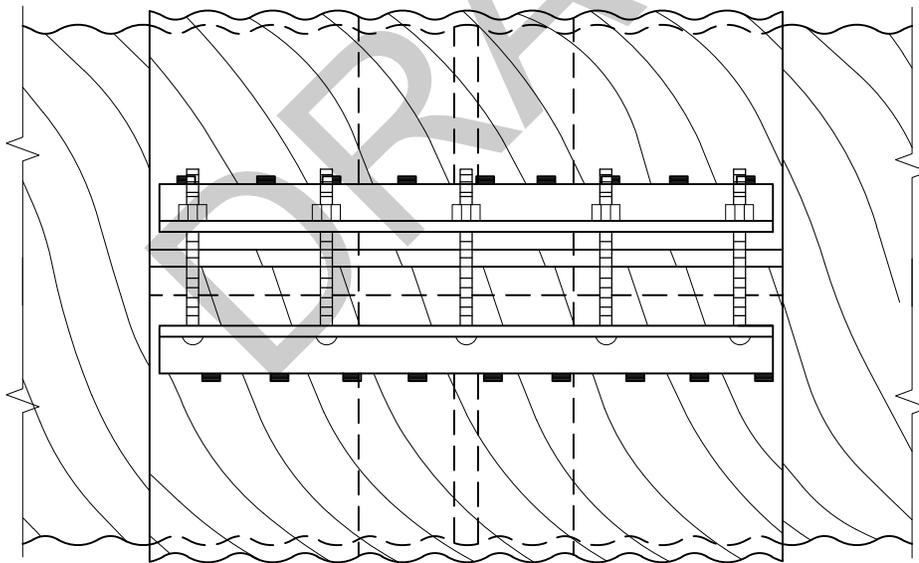
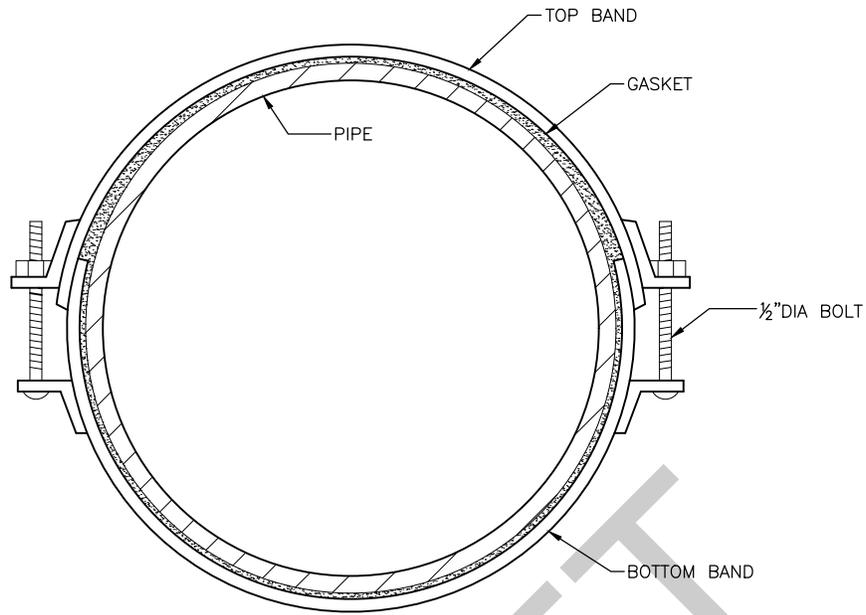
REF STD SPEC SEC 7-16.2, 9-05



City of Seattle

NOT TO SCALE

**CORRUGATED METAL
PIPE COUPLING BANDS**



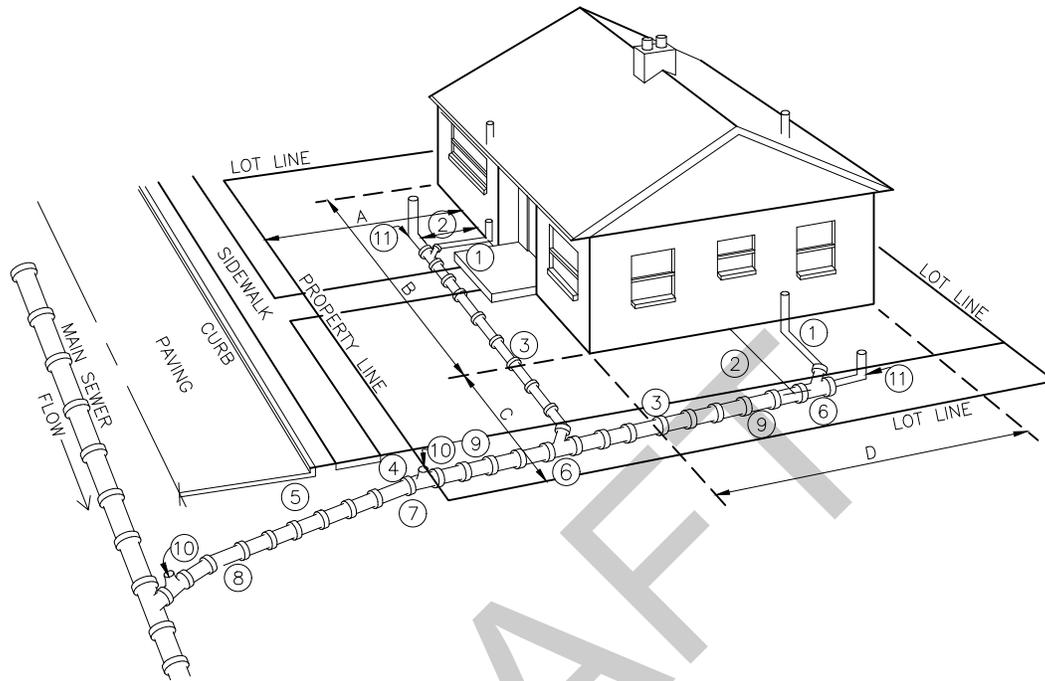
REF STD SPEC SEC 7-16.2, 9-05



City of Seattle

NOT TO SCALE

**CORRUGATED METAL
PIPE COUPLING BANDS**



NOTES:

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

DIMENSIONS:

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

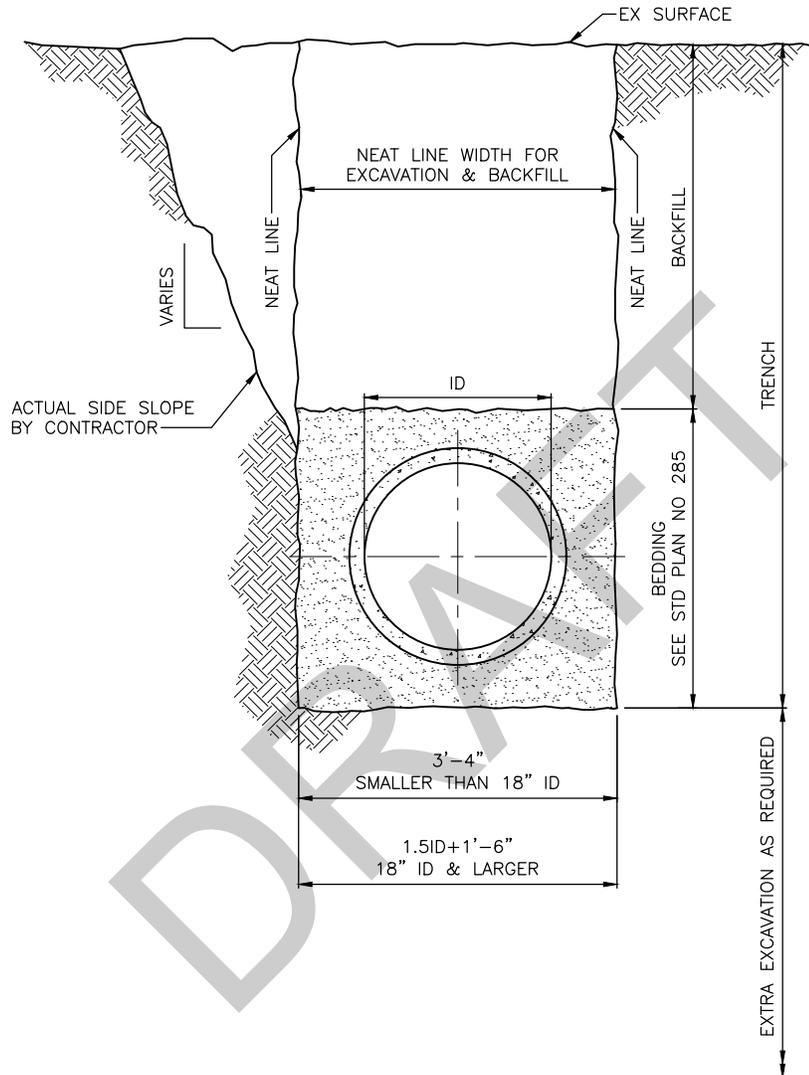
REF STD SPEC SEC 7-18



City of Seattle

NOT TO SCALE

SIDE SEWER INSTALLATION



REF STD SPEC SEC 2-07, 7-17

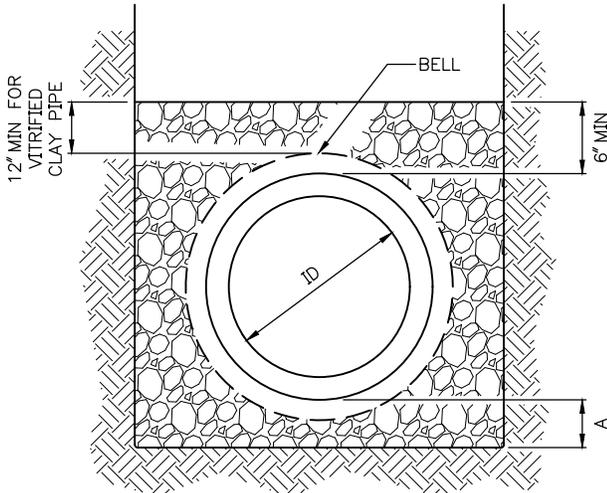


City of Seattle

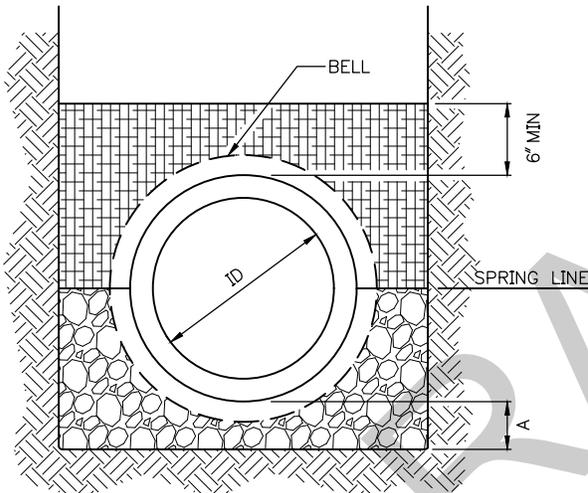
NOT TO SCALE

TYPICAL TRENCH DETAIL
FOR SEWER & STORM DRAIN

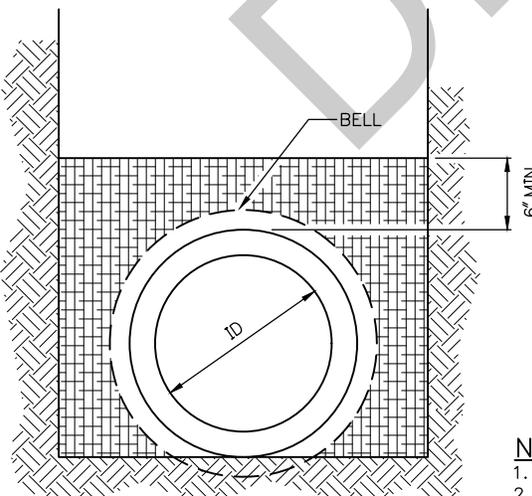
REV DATE: DEC 2019



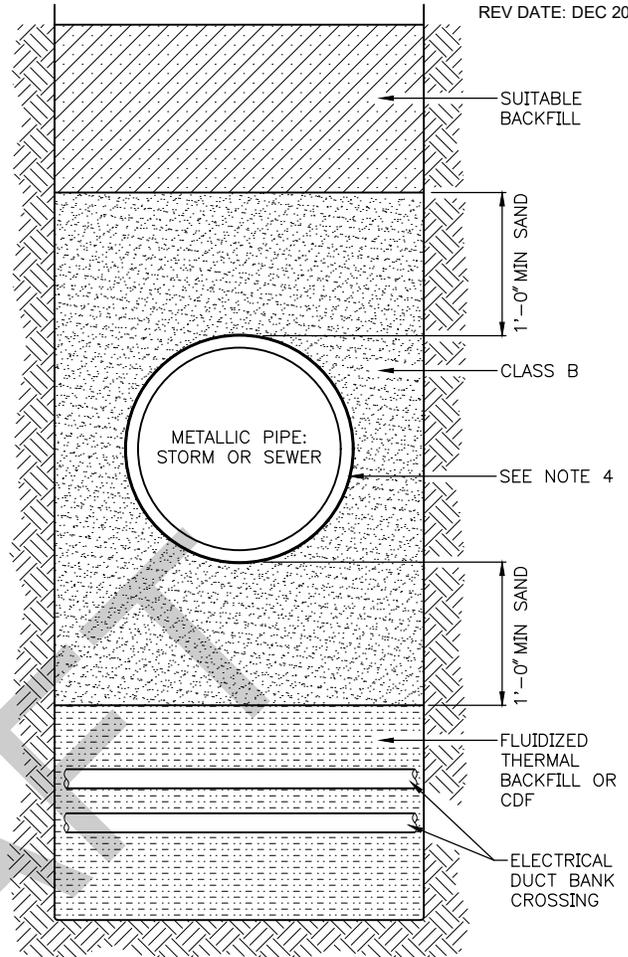
CLASS B BEDDING



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 9-03.14 TYPE 9 FOR DUCTILE IRON WHEN APPLICABLE OR CONCRETE PIPE TYPE 22 FOR VITRIFIED CLAY AND FLEXIBLE PIPE
-  SELECTED NATIVE MATERIAL PER STD SPEC 2-10.2(1)
-  SUITABLE BACKFILL
-  FLUIDIZED THERMAL BACKFILL PER SCL MATERIAL STD 7150.00 OR CDF (SEE CONTRACT DRAWINGS)
-  MINERAL AGGREGATE PER STD SPEC 9-03.14, TYPE 6 OR TYPE 7

NOTES:

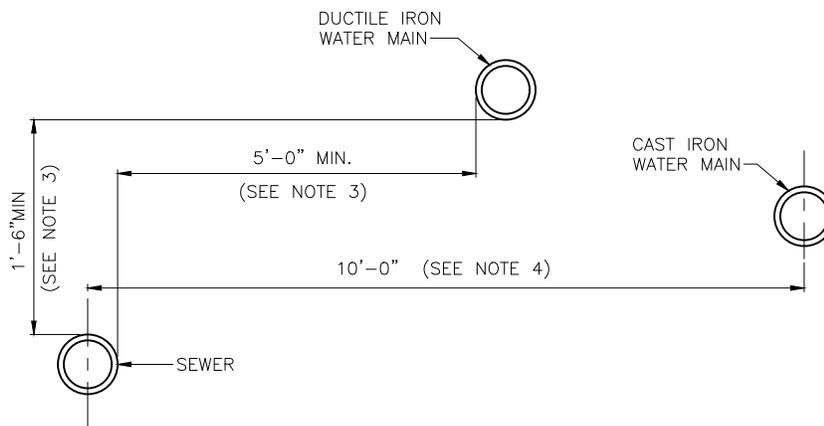
1. FOR TRENCH WIDTH SEE STD PLAN NO 284
2. A=4' WHEN ID IS LESS THAN 2'-6", A=6" WHEN ID IS 2'-6" OR MORE.
3. UNIFORMLY SUPPORT PIPE BARREL. EXCAVATE HOLES FOR BELLS AND COUPLING.
4. FOR FLUIDIZED THERMAL BACKFILL (FTB) OR CDF CROSSINGS OF METALLIC PIPE, WRAP METALLIC PIPE IN 8 MIL POLYETHYLENE ENCASUREMENT FOR FULL TRENCH WIDTH.

REF STD SPEC SEC 2-10.2, 7-17

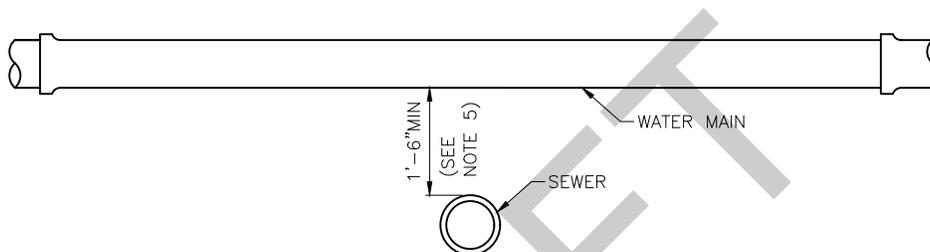


City of Seattle

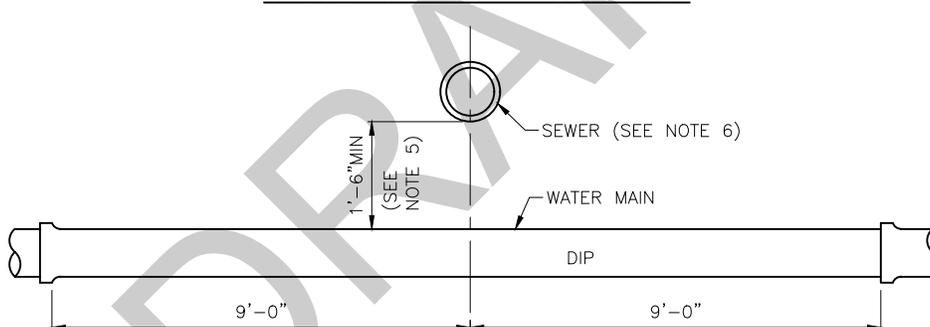
SEWER/STORM DRAIN



PARALLEL INSTALLATION



CROSSING WATER OVER SEWER



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

CROSSING WATER UNDER SEWER

NOTES:

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

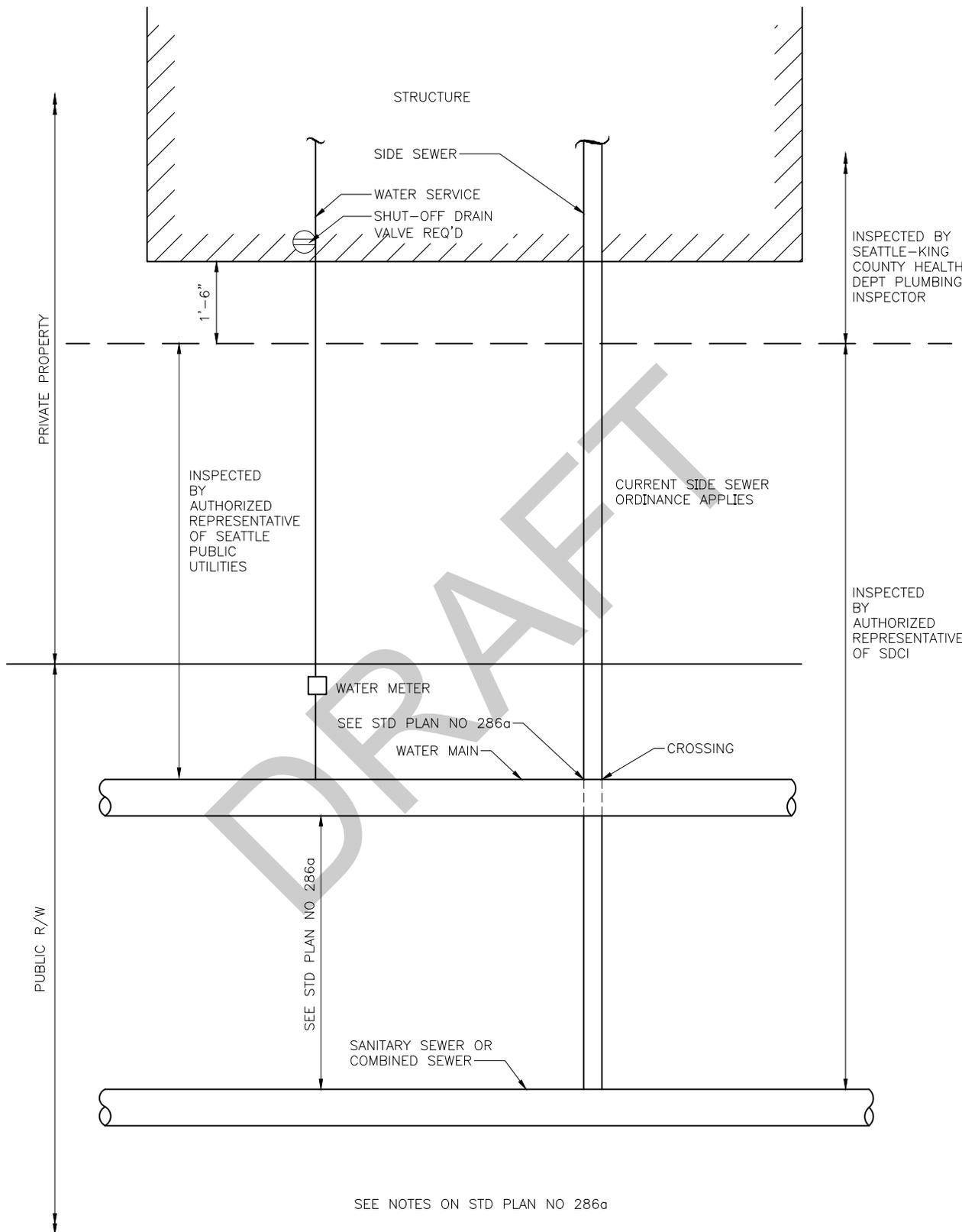
REF STD SPEC SEC 1-07.17, 7-11



City of Seattle

NOT TO SCALE

SEWER & WATER
SPACING & CLEARANCES



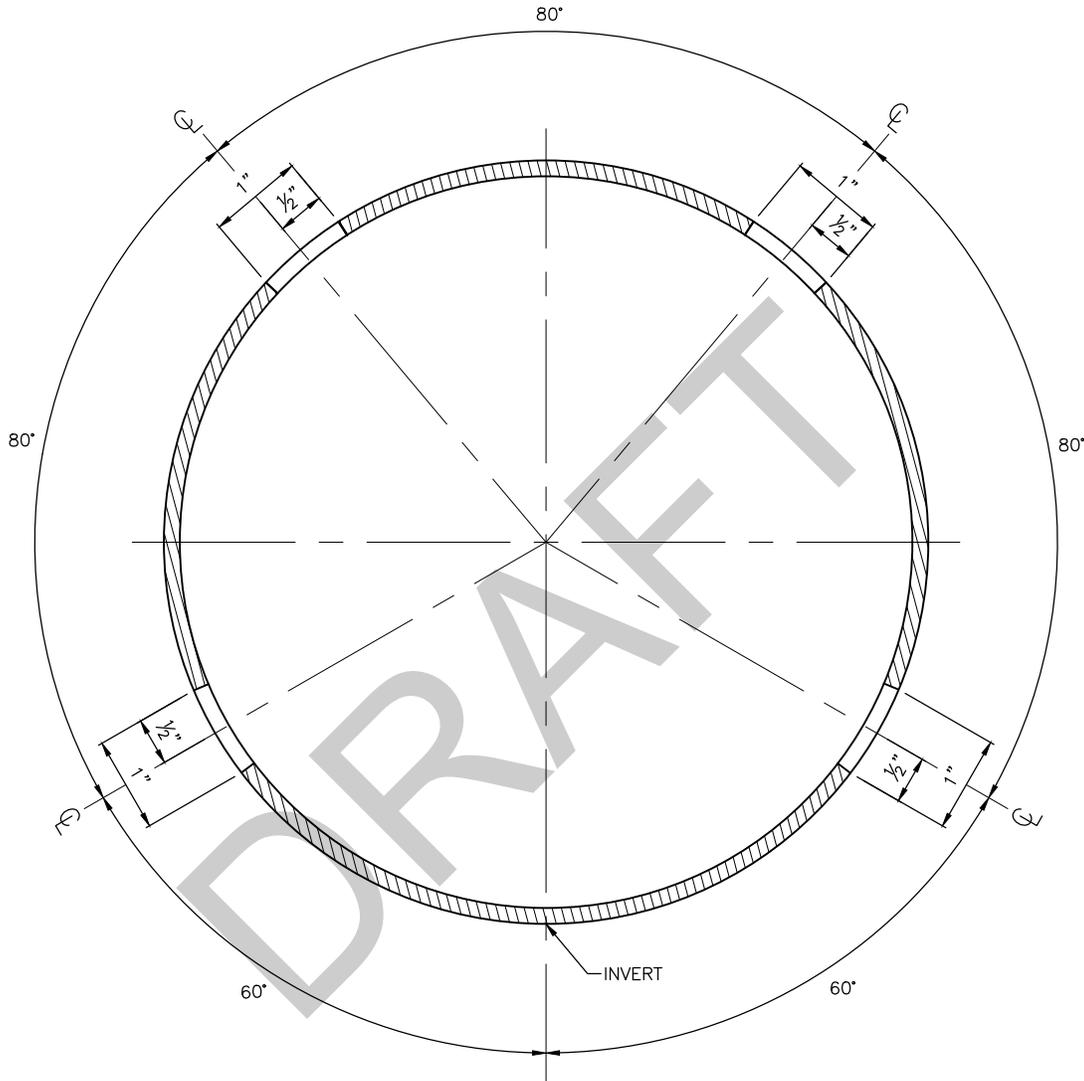
REF STD SPEC SEC 1-07.17, DIV 7



City of Seattle

NOT TO SCALE

SEWER & WATER
SPACING & CLEARANCES



NOTES:

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

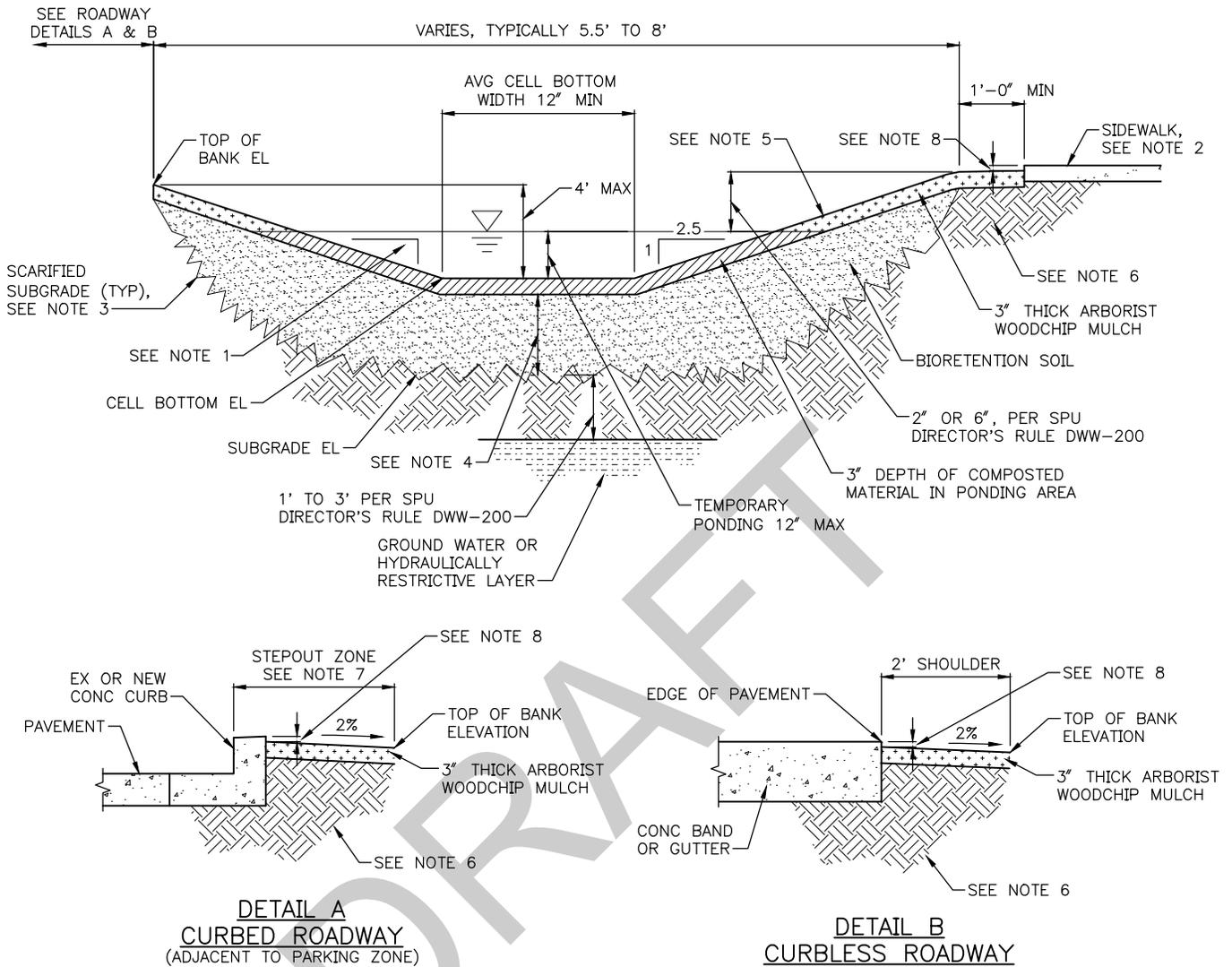
REF STD SPEC SEC 9-05.4(1)



City of Seattle

NOT TO SCALE

PVC SUBSURFACE DRAIN PIPE



NOTES:

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

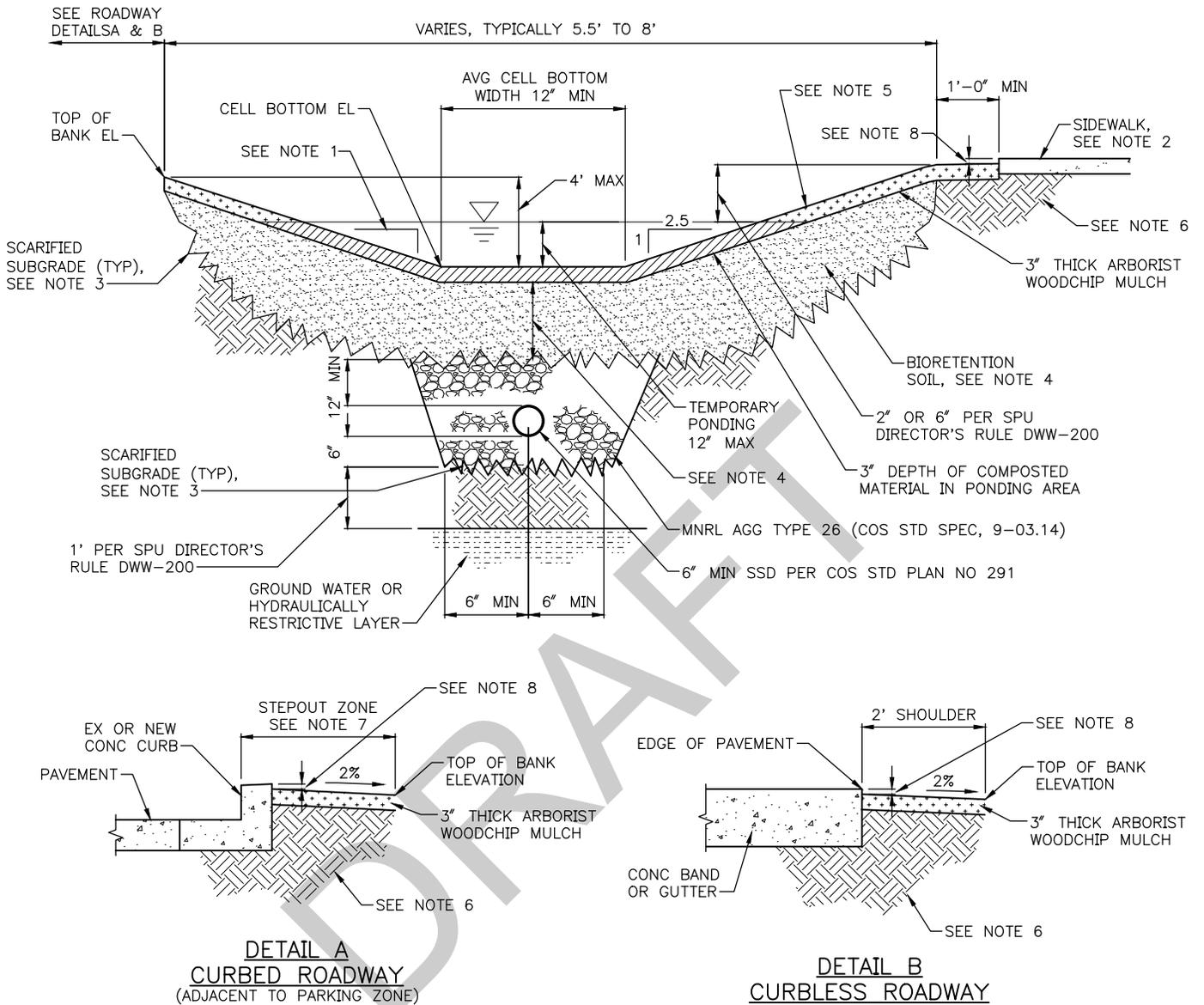
REF STD SPEC SEC 7-21



City of Seattle

NOT TO SCALE

INFILTRATING BIORETENTION WITH SLOPED SIDES



NOTES:

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

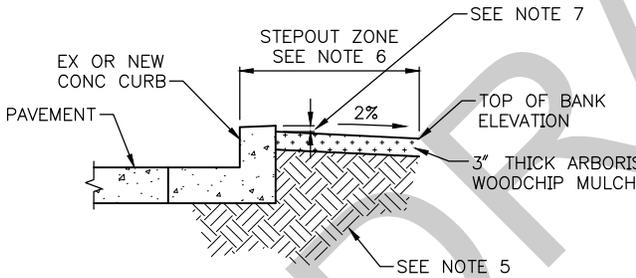
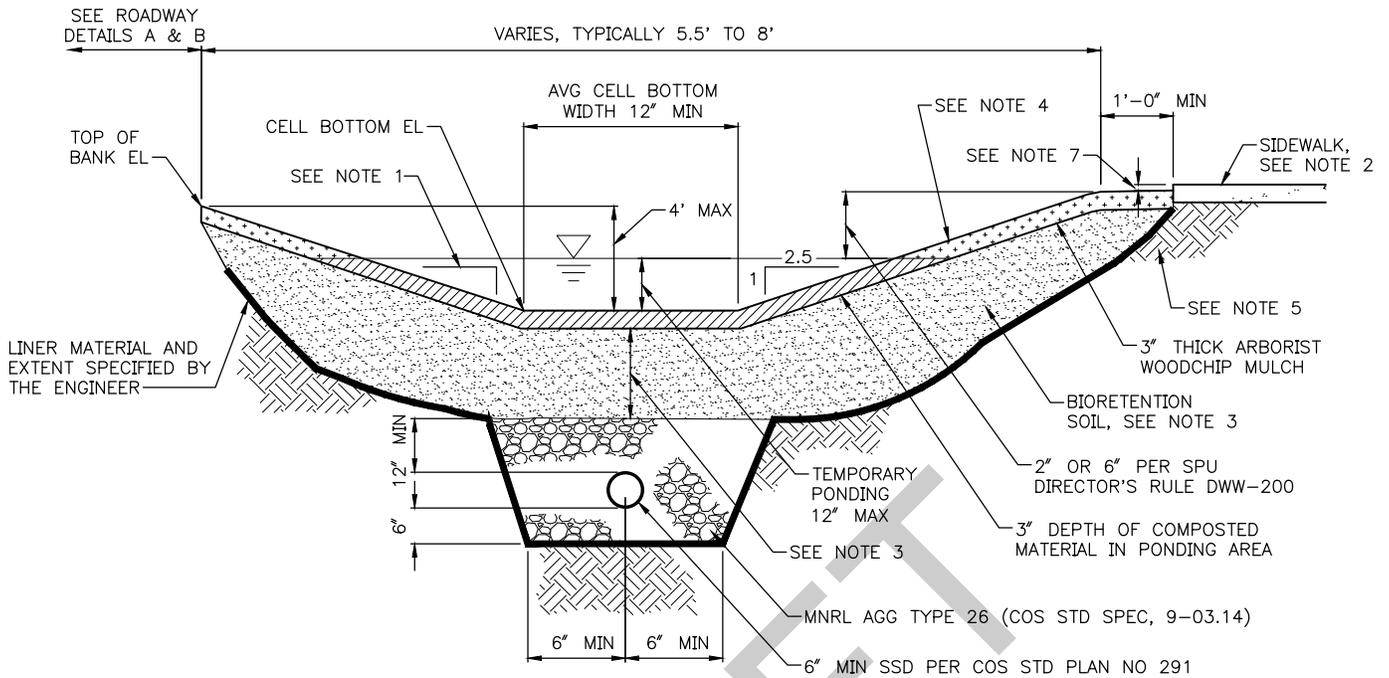
REF STD SPEC SEC 7-21



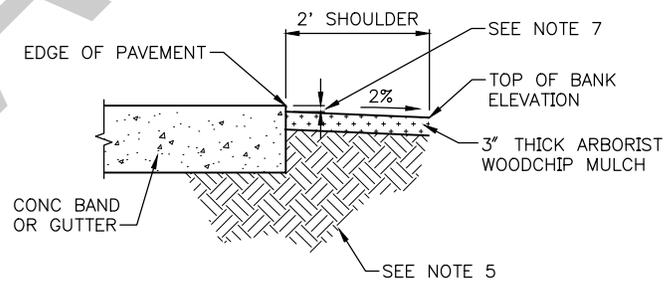
City of Seattle

NOT TO SCALE

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



DETAIL A
CURBED ROADWAY
(ADJACENT TO PARKING ZONE)



DETAIL B
CURBLESS ROADWAY

NOTES:

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

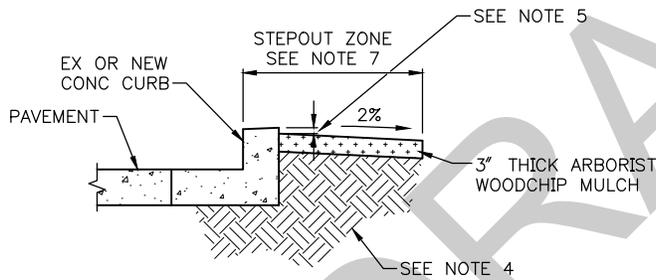
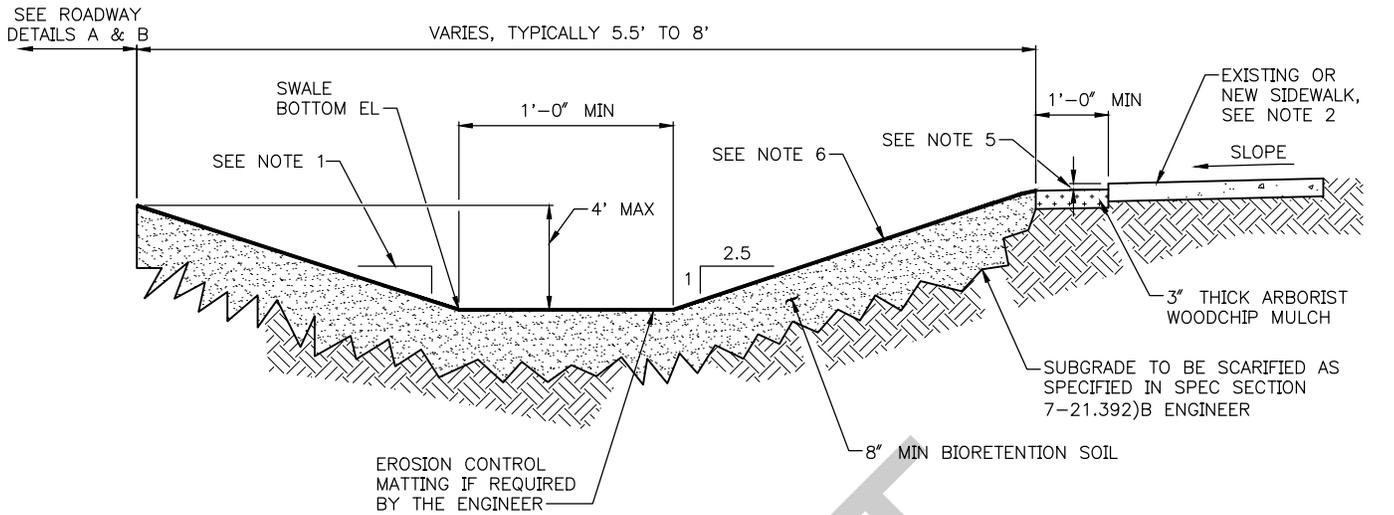
REF STD SPEC SEC 7-21



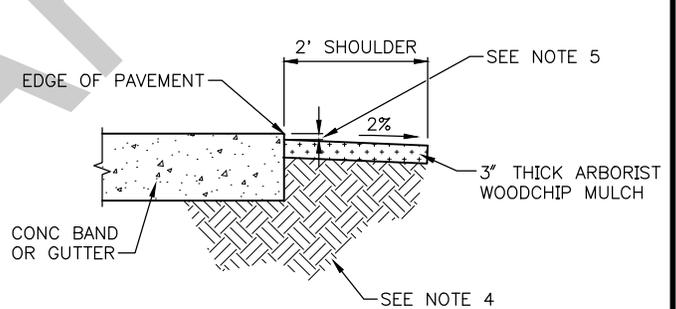
City of Seattle

NOT TO SCALE

**NON-INFILTRATING BIORETENTION
WITH SLOPED SLIDES
& UNDER DRAIN**



DETAIL A
CURBED ROADWAY
(ADJACENT TO PARKING ZONE)



DETAIL B
CURBLESS ROADWAY

NOTES:

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

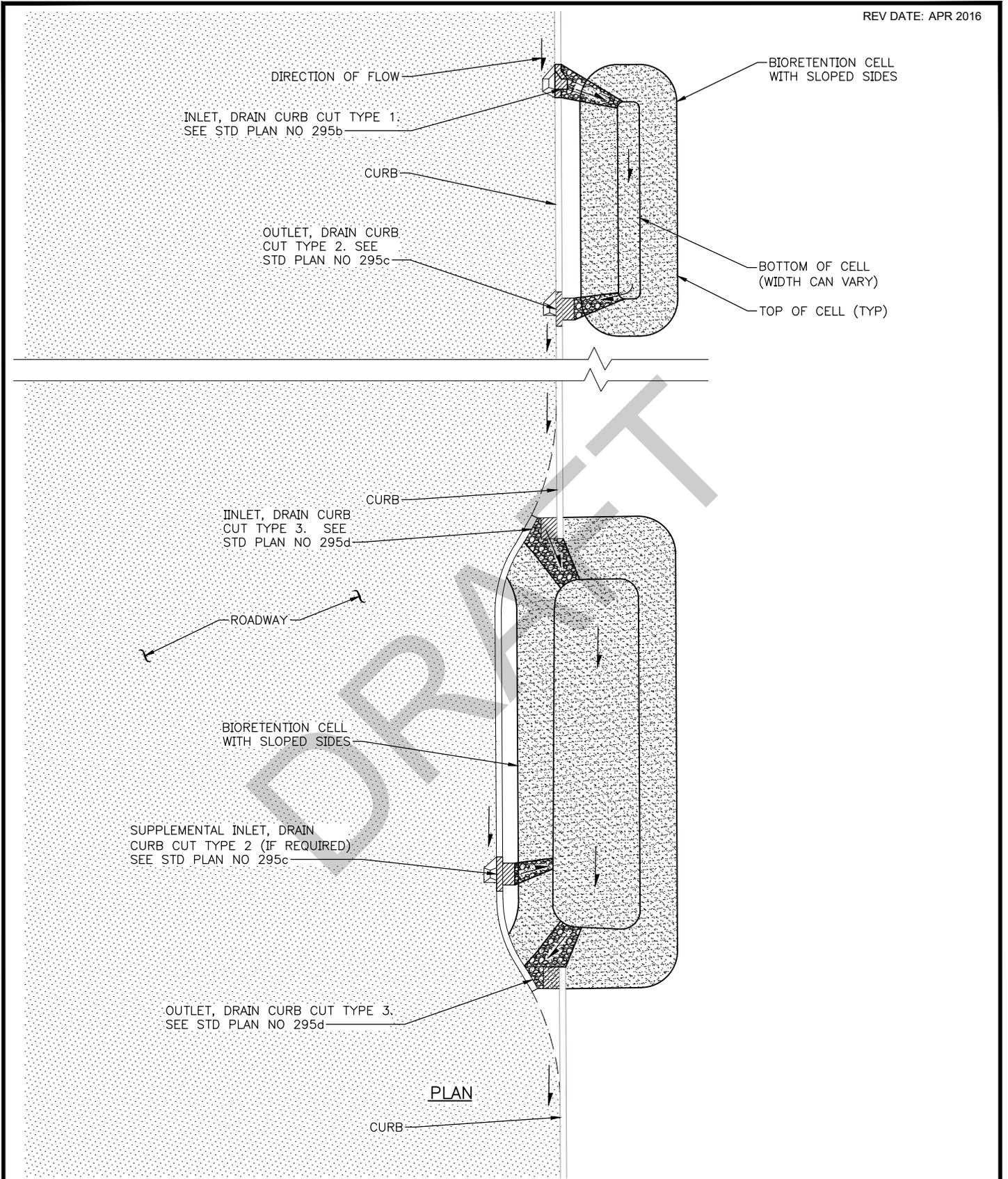
REF STD SPEC SEC 7-21



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NOT TO SCALE

VEGETATED CONVEYANCE SWALE
(NOT FOR WATER QUALITY TREATMENT)



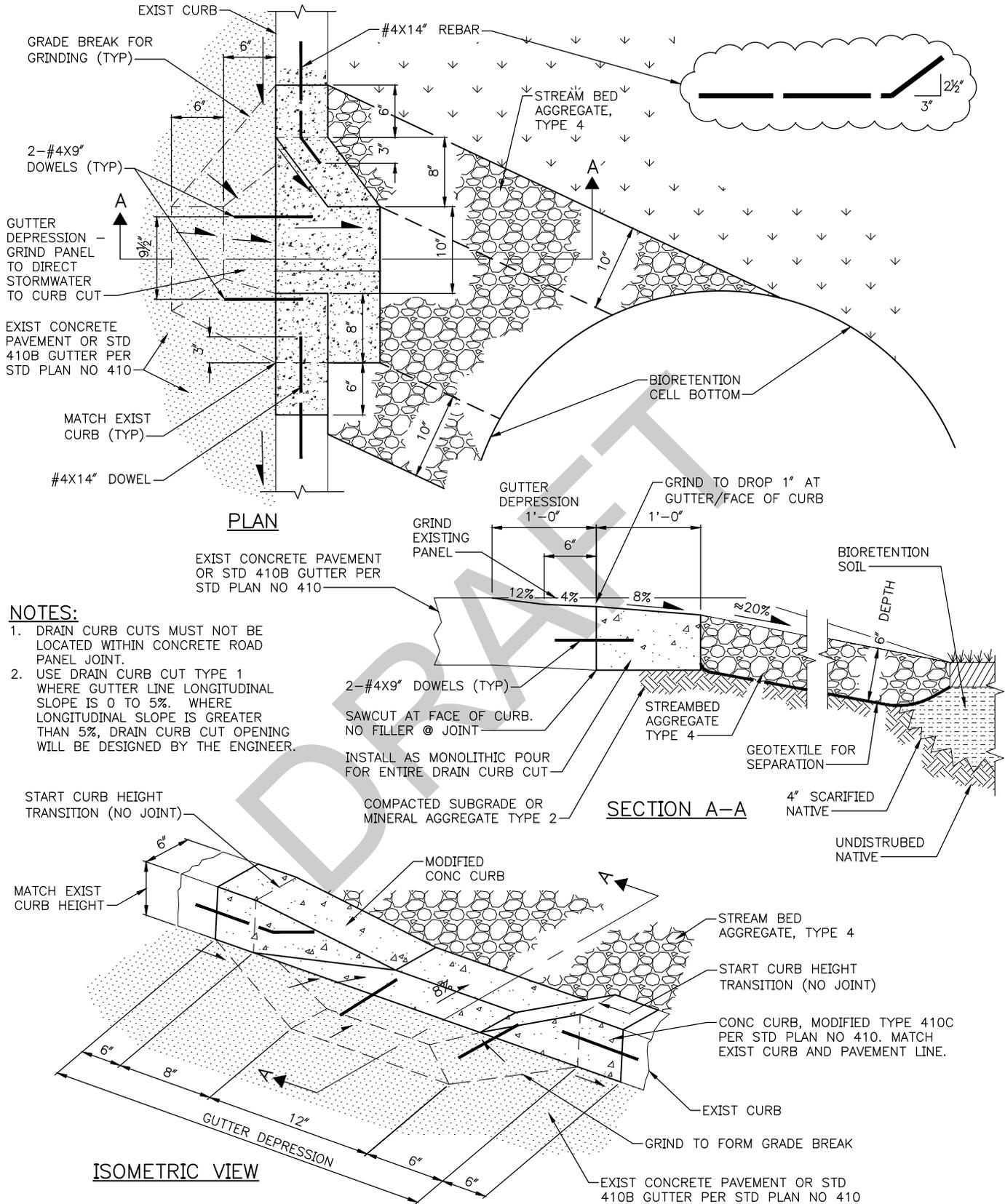
REF STD SPEC SEC 7-21, 9-03



City of Seattle

NOT TO SCALE

TYPICAL DRAIN CURB CUT LOCATION FOR BIORETENTION WITH SLOPED SIDES



NOTES:

1. DRAIN CURB CUTS MUST NOT BE LOCATED WITHIN CONCRETE ROAD PANEL JOINT.
2. USE DRAIN CURB CUT TYPE 1 WHERE GUTTER LINE LONGITUDINAL SLOPE IS 0 TO 5%. WHERE LONGITUDINAL SLOPE IS GREATER THAN 5%, DRAIN CURB CUT OPENING WILL BE DESIGNED BY THE ENGINEER.

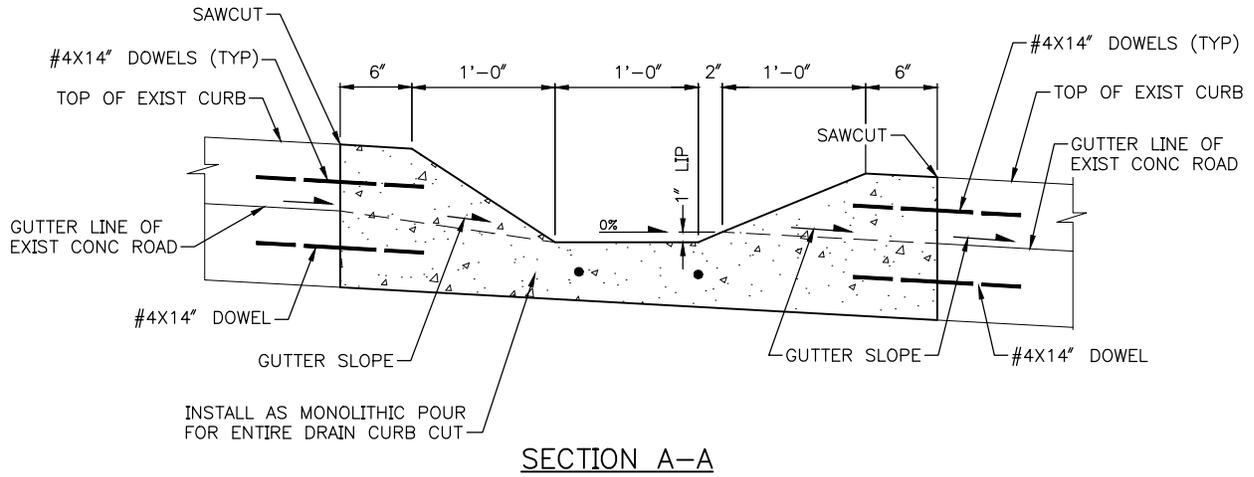
REF STD SPEC SEC 7-21, 9-03



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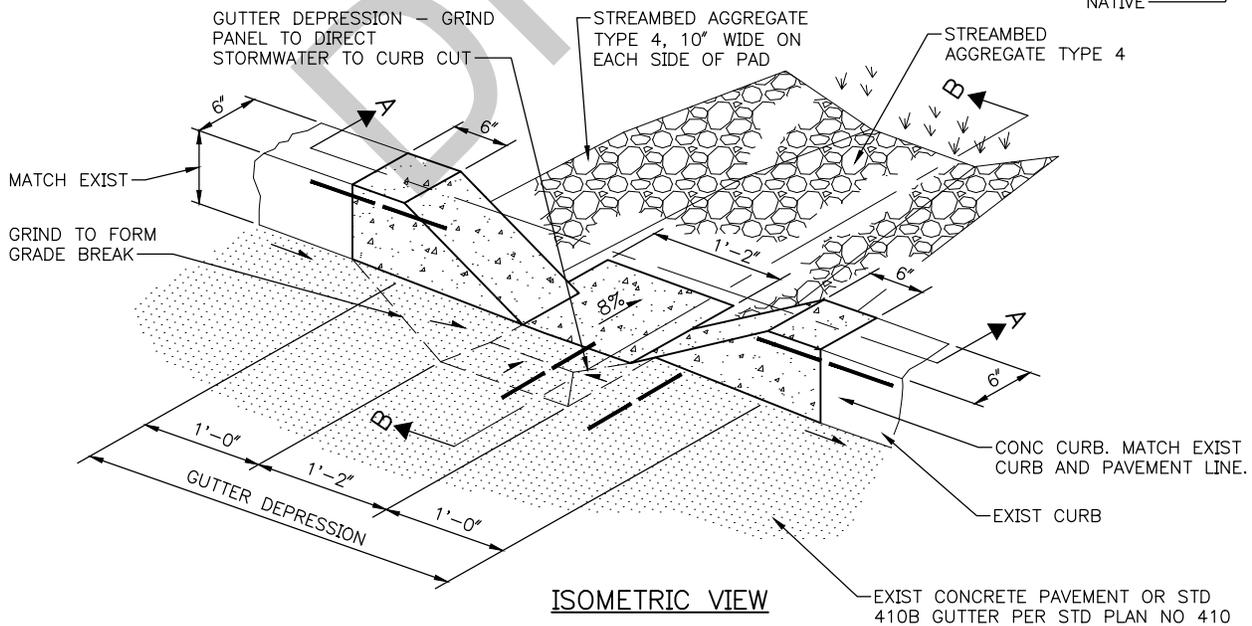
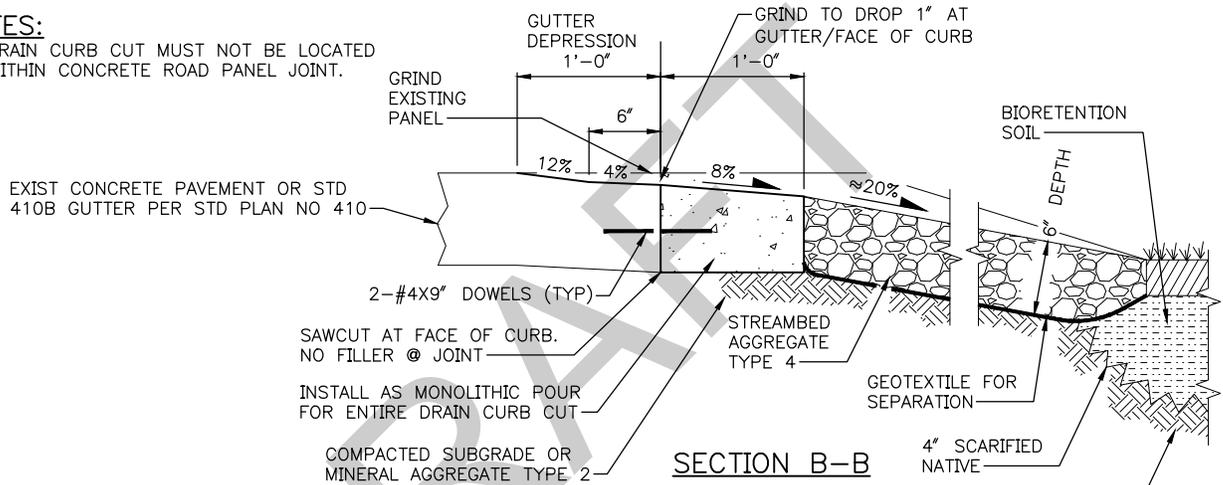
NOT TO SCALE

DRAIN CURB CUT TYPE 1



NOTES:

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



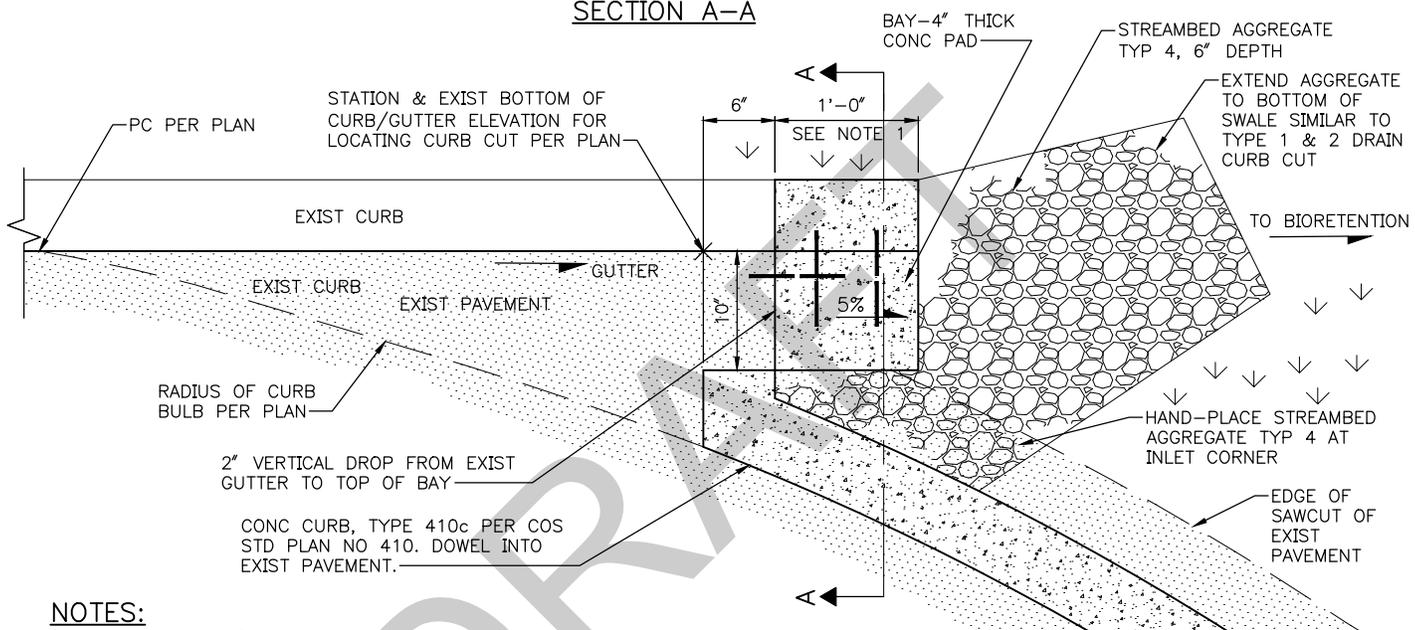
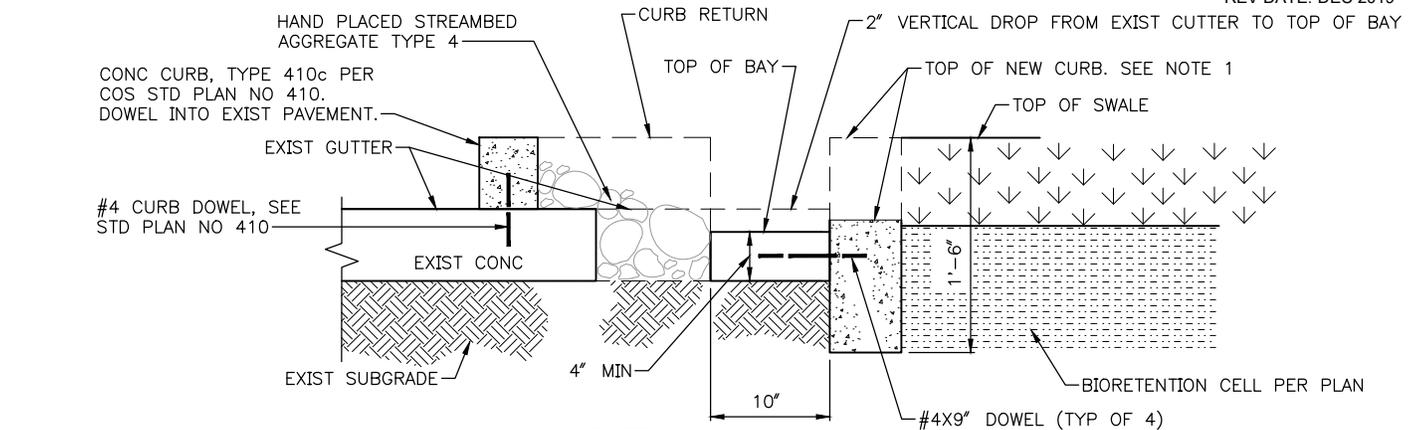
REF STD SPEC SEC 7-21, 9-03



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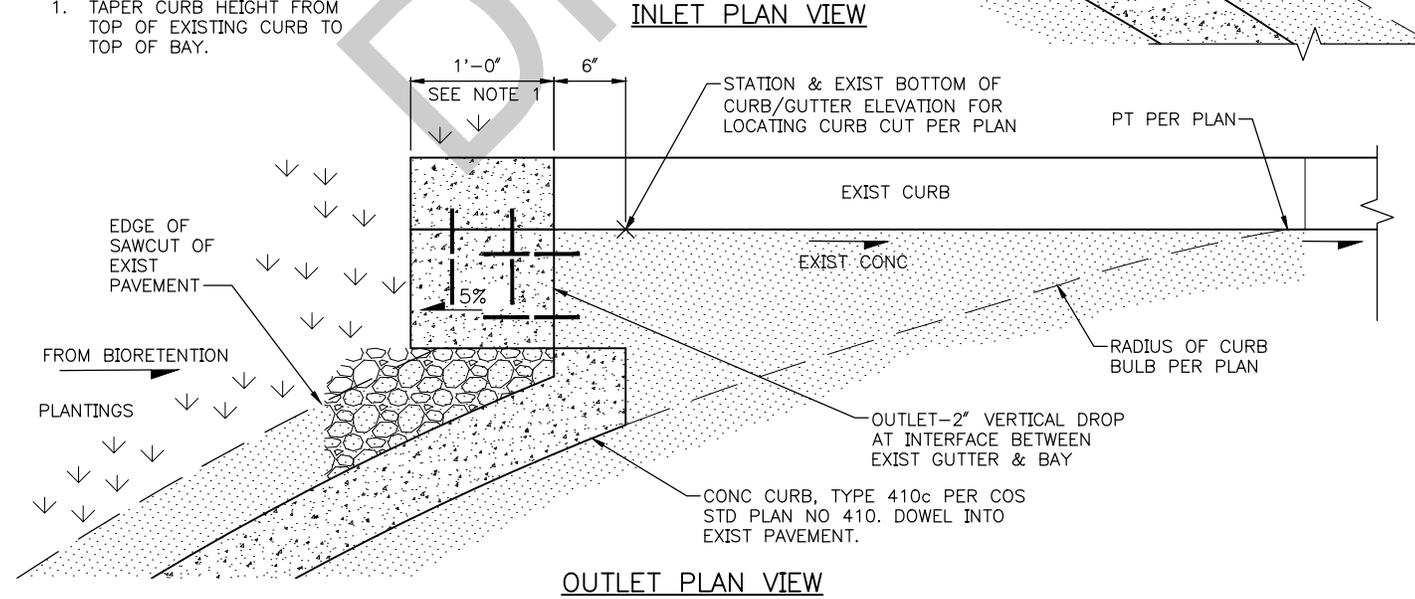
NOT TO SCALE

DRAIN CURB CUT TYPE 2



NOTES:

1. TAPER CURB HEIGHT FROM TOP OF EXISTING CURB TO TOP OF BAY.



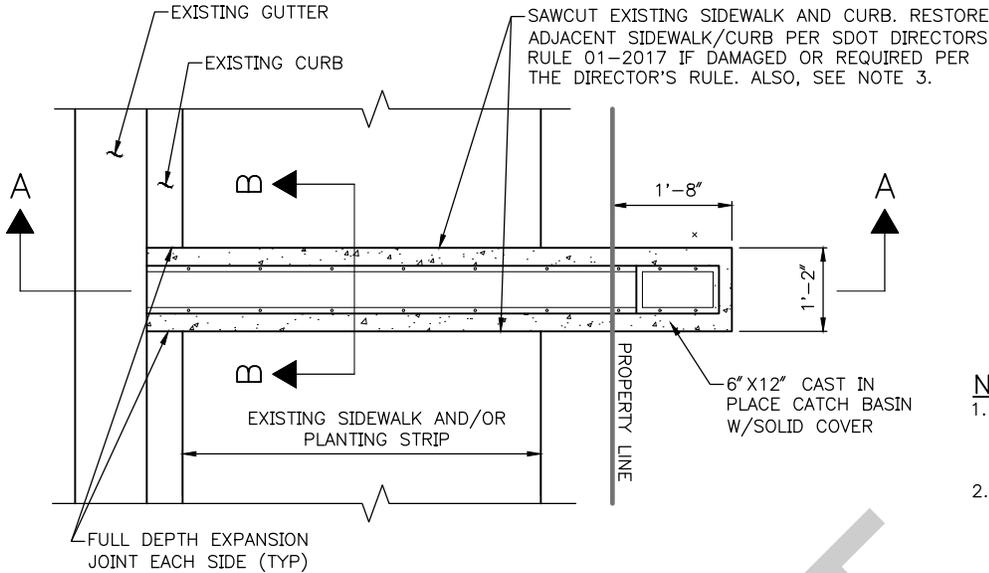
REF STD SPEC SEC 7-21, 9-03



City of Seattle

NOT TO SCALE

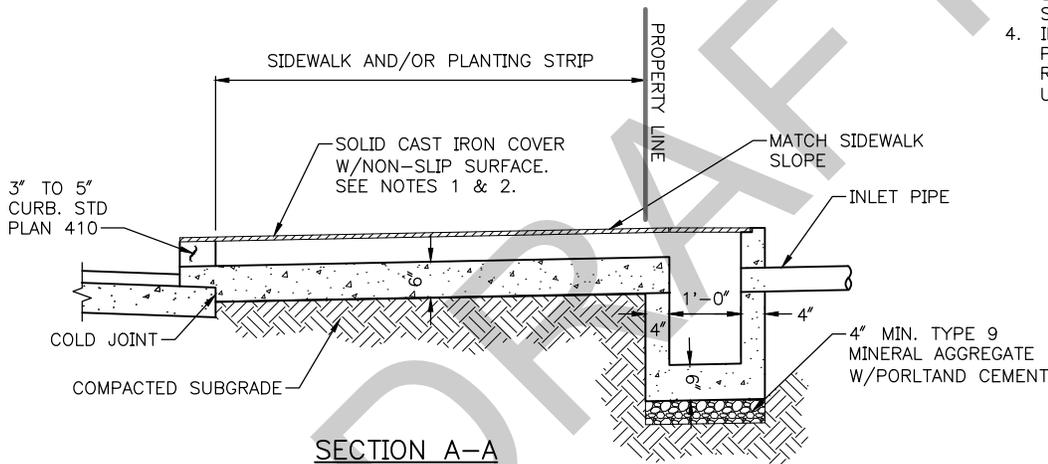
DRAIN CURB CUT TYPE 3



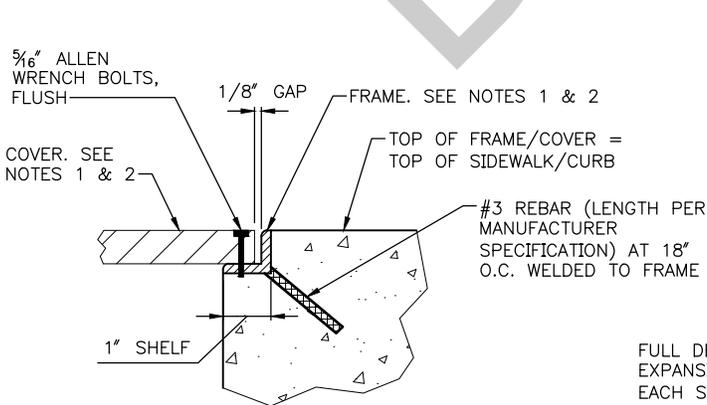
PLAN VIEW

NOTES:

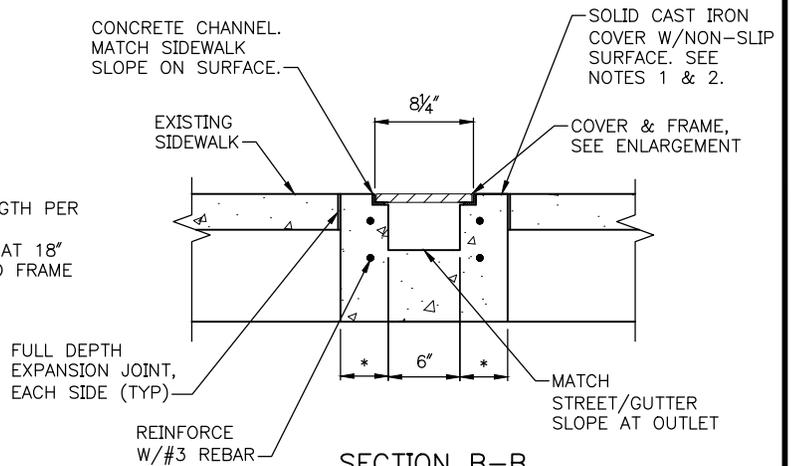
1. FRAME & COVER MUST HAVE NON-SKID/NON-SLIP SURFACE PER STD SPEC 9-34.6. SCL MATERIAL STD 7203.10.
2. FRAME & COVER TO BE URBAN ACCESSORIES TRENCH DRAIN FRAME WITH SOLID CAST IRON COVER OR APPROVED EQUAL. (TRENCH WIDTH=6", SOLID GRATE/COVER WIDTH=7 7/8", FRAME WIDTH=8 3/8")
3. CURB WEEP CHANNEL BOX JOINT SHALL BE 2' MIN FROM ADJACENT SIDEWALK JOINTS.
4. IN ADDITION TO THE SIDE SEWER PERMITS, USE OF THIS DETAIL REQUIRES AN SDOT LONG TERM USE PERMIT (ANNUAL PERMIT).



SECTION A-A



COVER & FRAME ENLARGEMENT



SECTION B-B

*6" EACH SIDE OR PER MANUFACTURER SPECIFICATION (4" MIN)

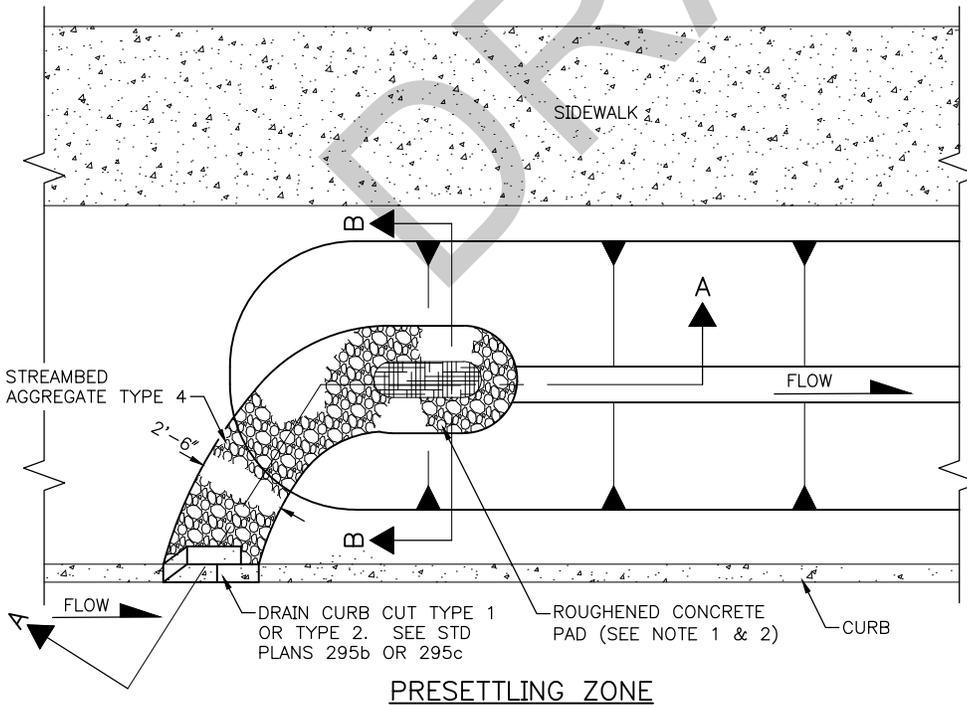
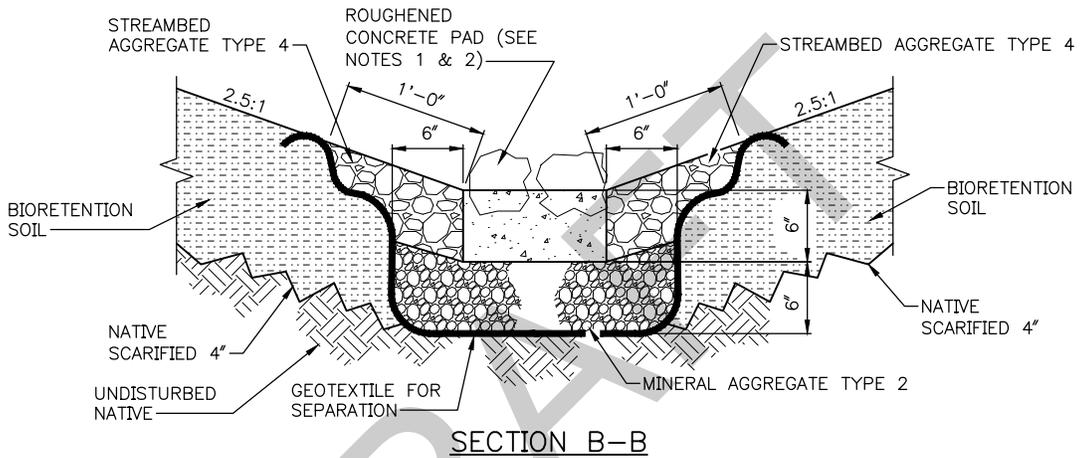
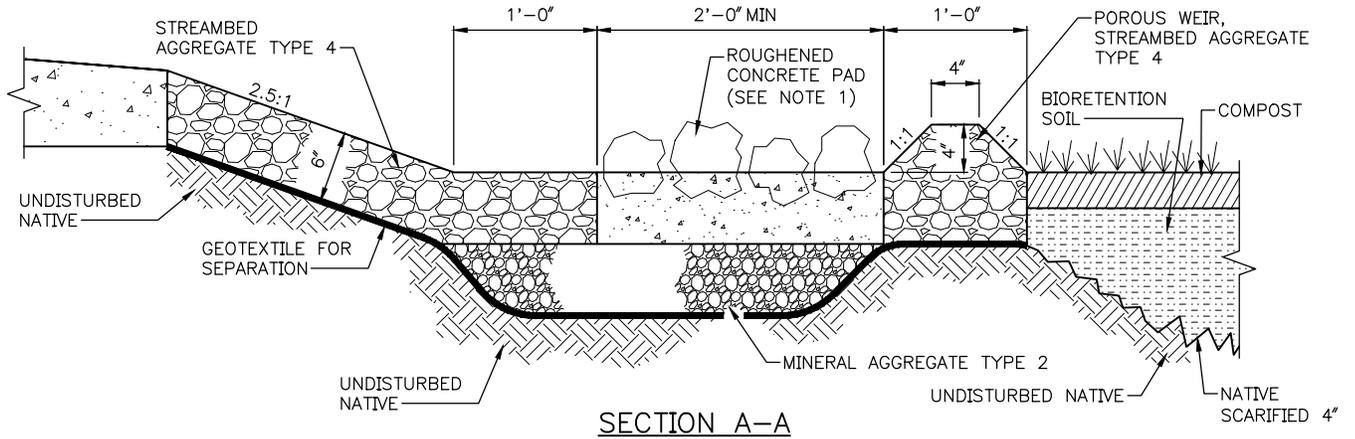
REF STD SPEC SEC 1-07.1(3)



City of Seattle

NOT TO SCALE

CURB WEEP CHANNEL BOX



NOTES:

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

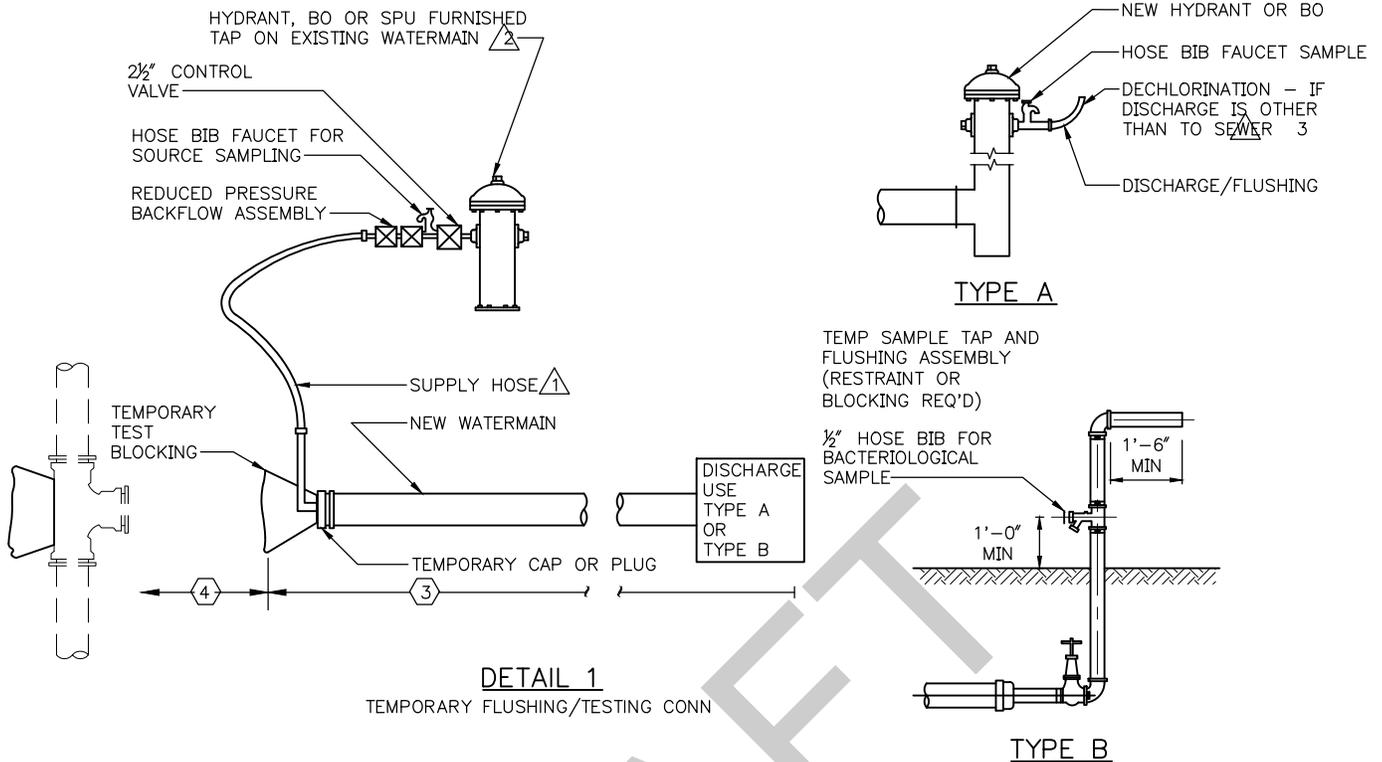
REF STD SPEC SEC 7-21, 9-03



City of Seattle

NOT TO SCALE

PRESETTLING ZONE



NOTES:

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

LEGEND

- ① CLEAN & DISINFECTED POTABLE WATER HOSE ONLY. SIZE FLUSHING RISER PER TABLE IN STD SPEC SEC 7-11.3(12)
- ② HYDRANT PERMIT REQUIRED
- ③ CHECK WITH SEWER UTILITY BEFORE DISCHARGE TO SEWERS
- 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 MUST 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



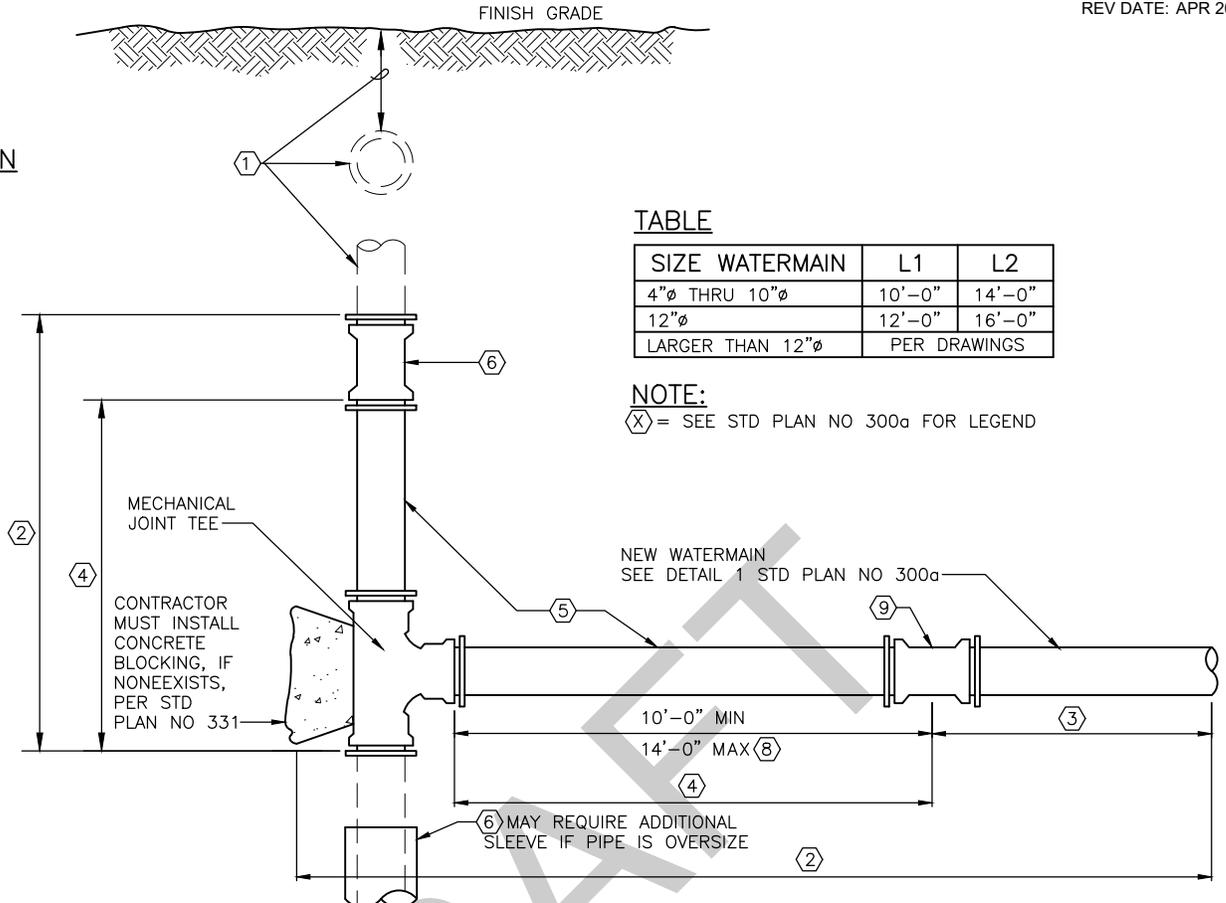
City of Seattle

NOT TO SCALE

CONNECTIONS TO EXISTING WATERMANS

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	

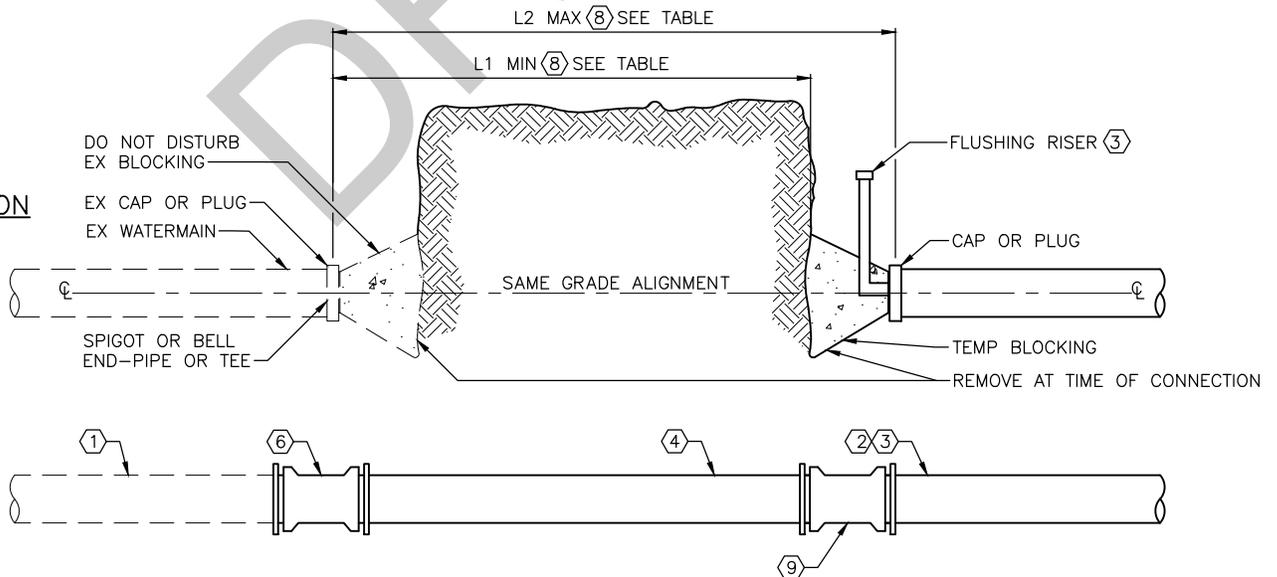
NOTE:

(X) = SEE STD PLAN NO 300a FOR LEGEND

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

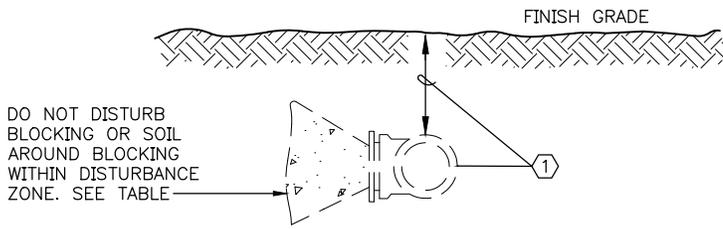
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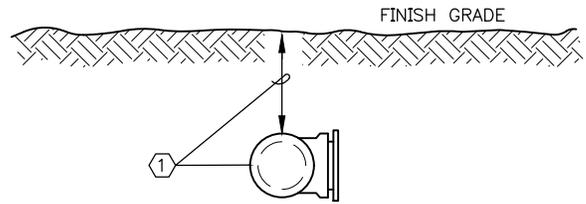
City of Seattle

NOT TO SCALE

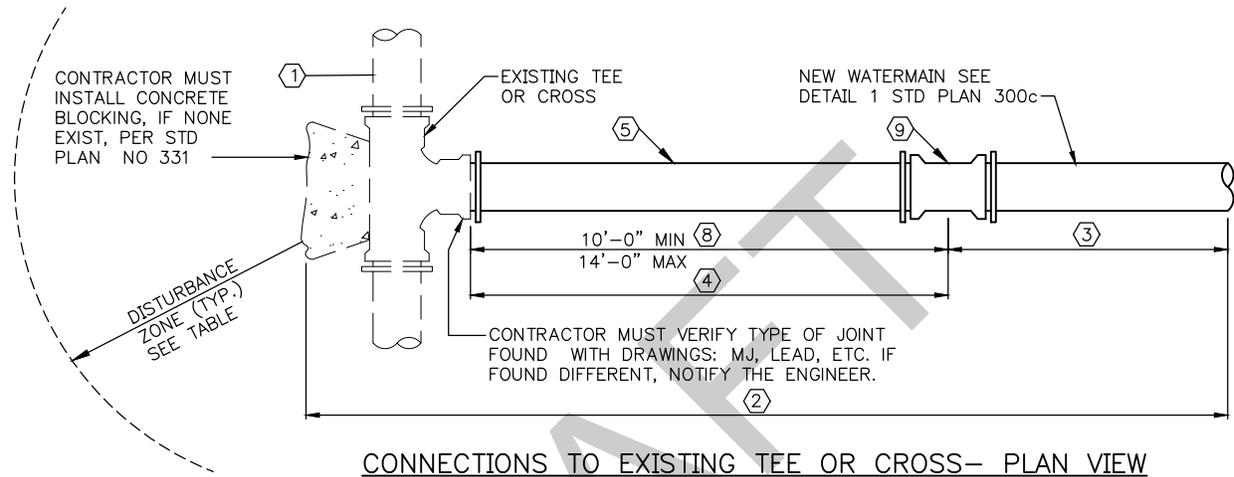
CONNECTIONS TO EXISTING WATERMAINS



EXISTING PLUGGED TEE OR CROSS



NEW PLUGGED TEE OR CROSS



CONNECTIONS TO EXISTING TEE OR CROSS- PLAN VIEW

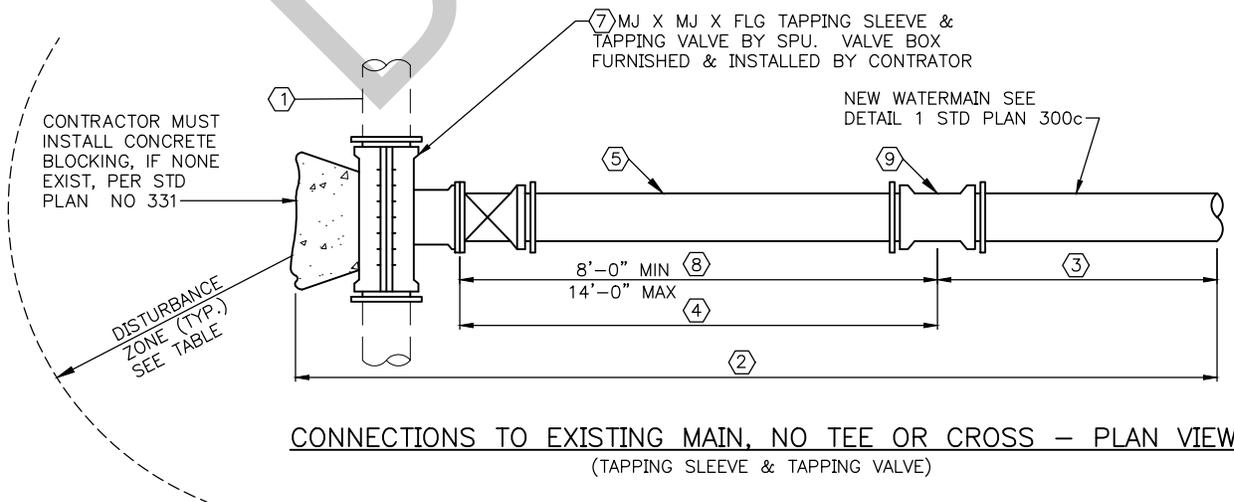
NOTE:

(X) = SEE STD PLAN NO 300a FOR LEGEND

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)

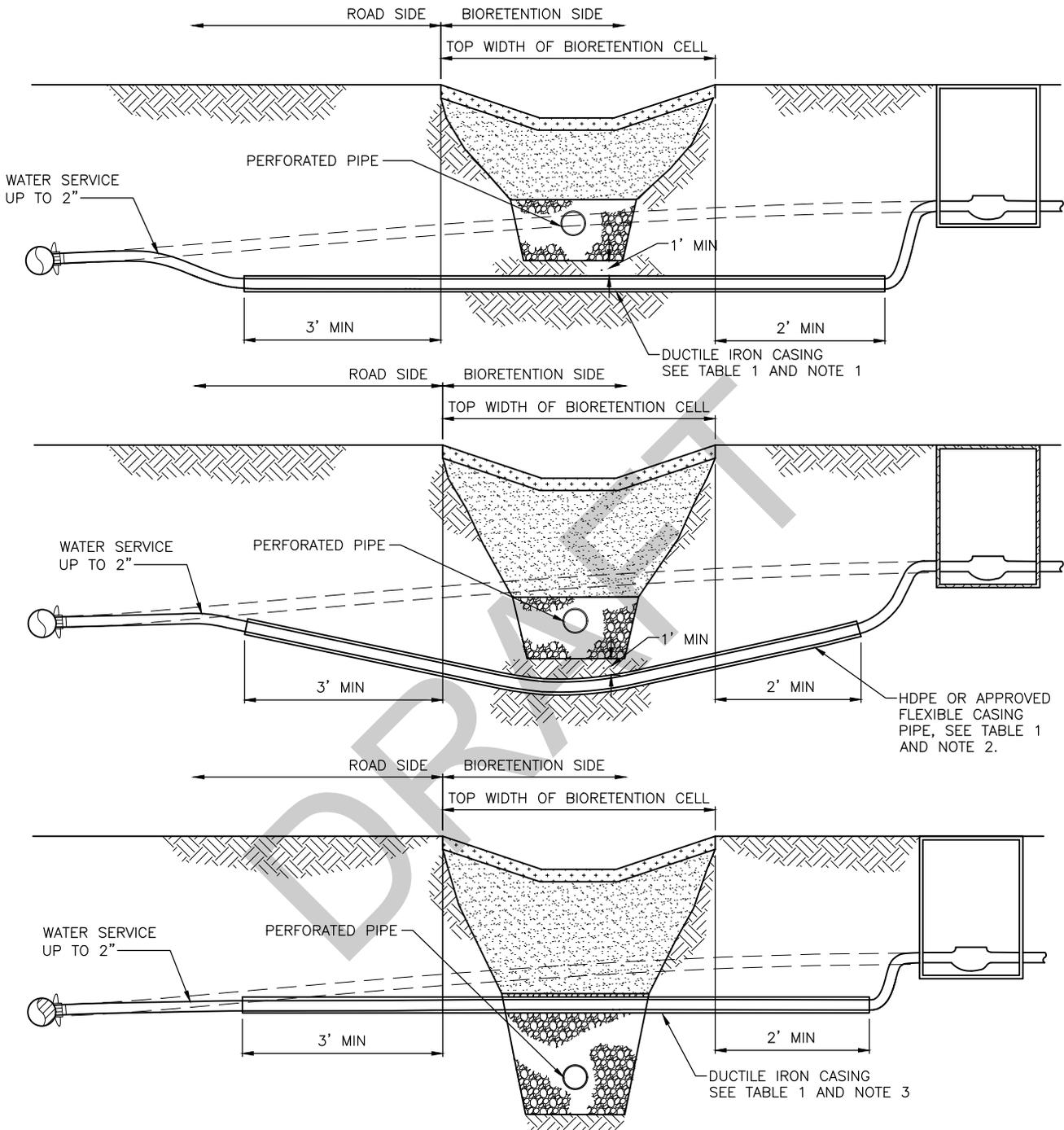
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

CONNECTIONS TO EXISTING WATERMAINS



NOTES:

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

TABLE 1
CASING SIZE

WATER SERVICE Ø	CASING Ø
3/4"	2"
1.5"	2"
2"	3"

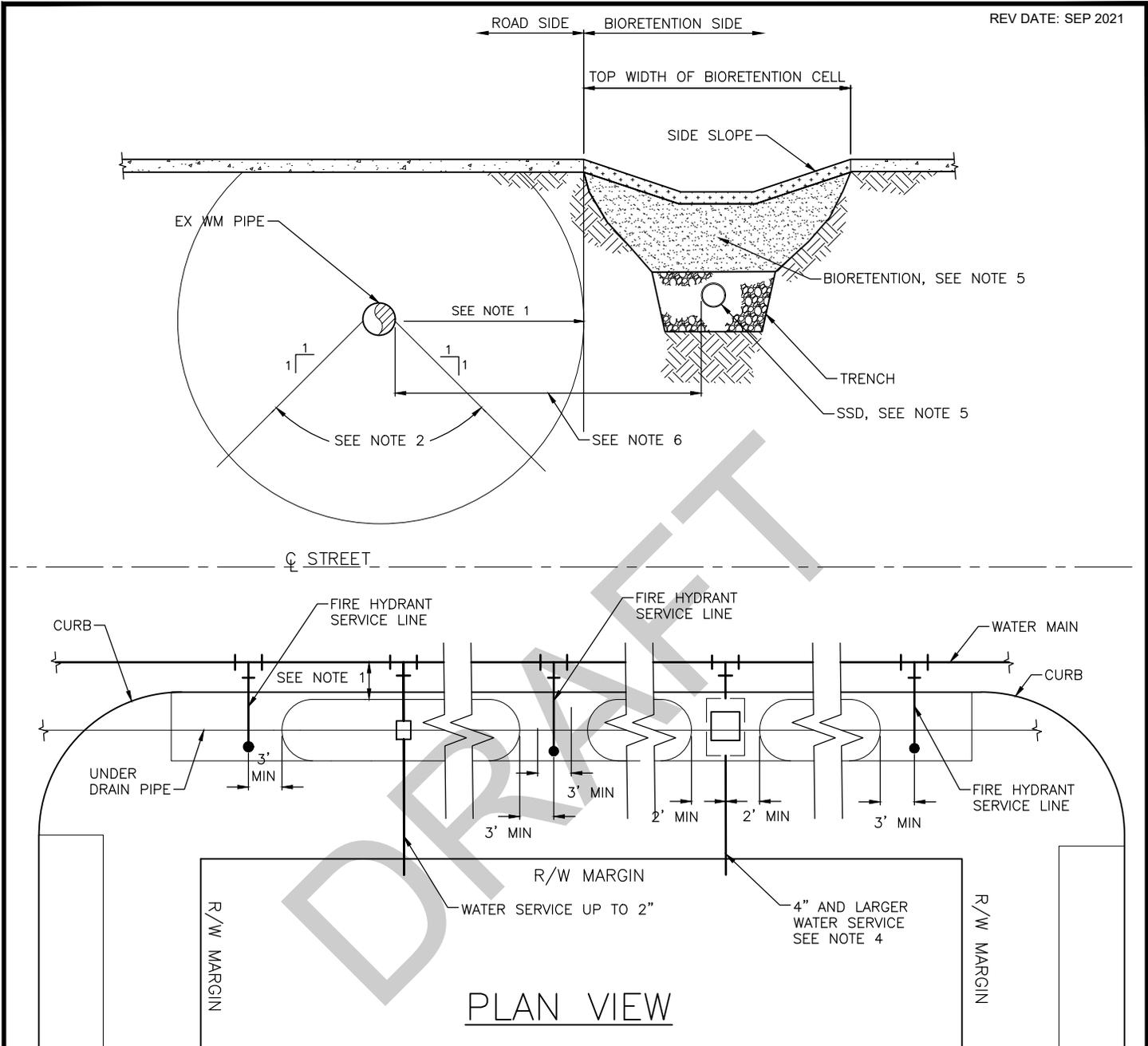
REF STD SPEC SEC 1-07.17



City of Seattle

NOT TO SCALE

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



NOTES:

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

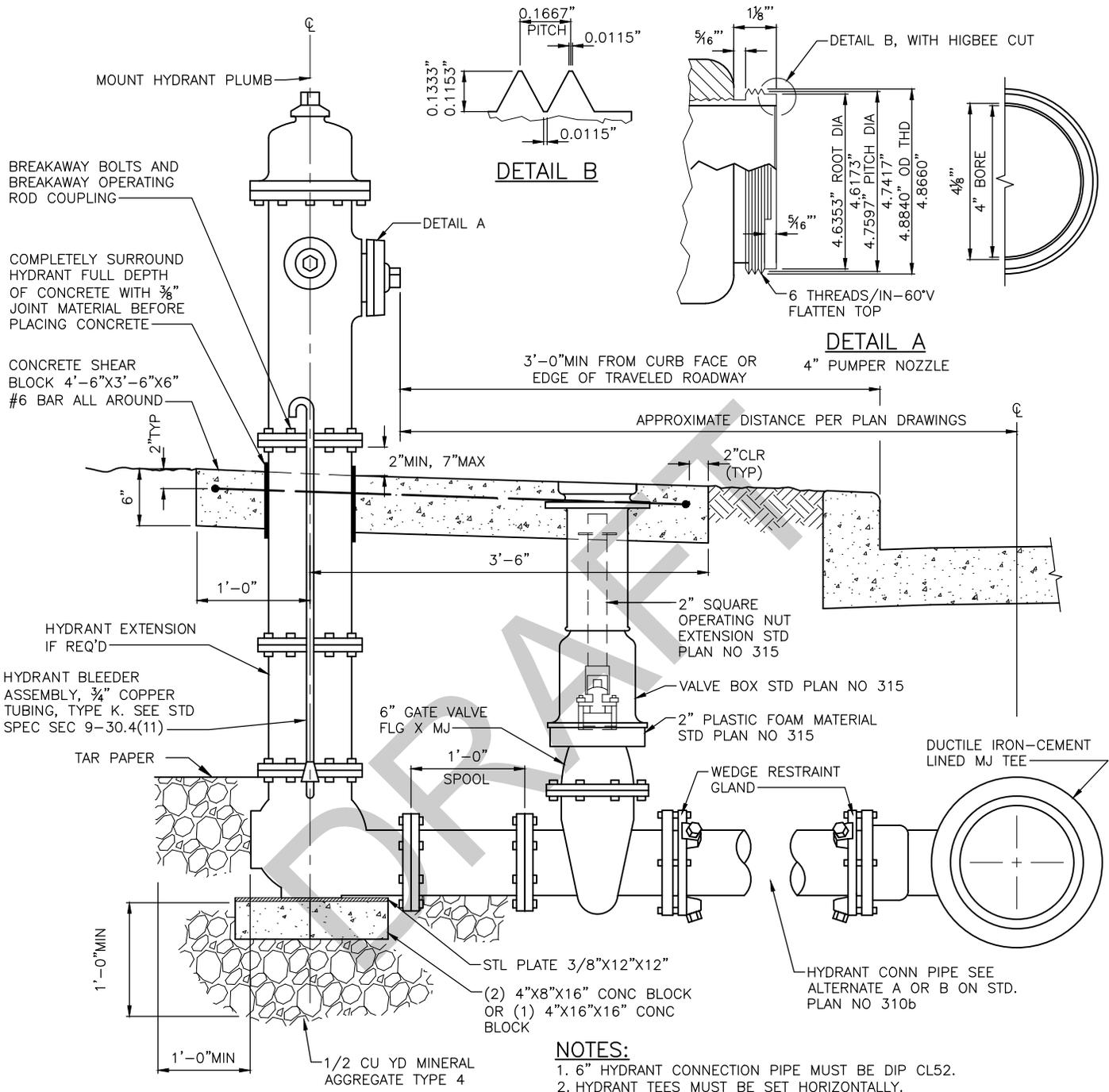
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NOT TO SCALE

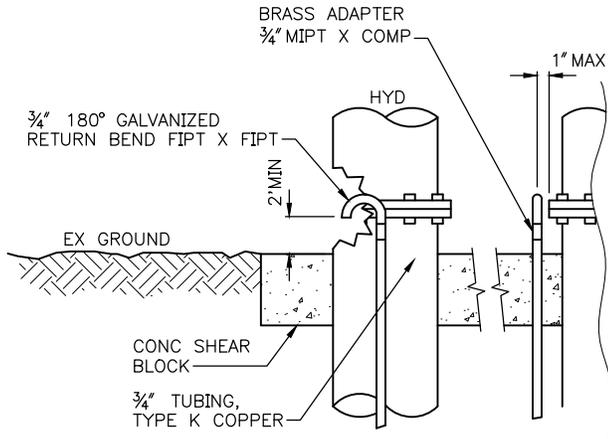
**WATERMAIN SETBACK
REQUIREMENT FOR C.I. LEAD
JOINT AND D.I. SLIP JOINT PIPE**



- NOTES:**
1. 6" HYDRANT CONNECTION PIPE MUST BE DIP CL52.
 2. HYDRANT TEES MUST BE SET HORIZONTALLY.
 3. THE THREADED NIPPLE ON THE 4" PUMPER NOZZLE MUST BE EQUIPPED WITH THE BLUNT START OR HIGBEE CUT.
 4. THE 2 1/2" NIPPLES MUST BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION BULLETIN NO 194 DATED 1974.
 5. AFTER INSTALLATION, ALL SHACKLE BOLTS, NUTS, MECHANICAL JOINT GLANDS AND SHACKLE RODS MUST BE CLEANED AND COATED WITH TWO COATS OF ROYSTON R28 MASTIC.
 6. AFTER BACKFILLING, THE OUTSIDE OF THE HYDRANT (ABOVE THE GROUND LINE) MUST BE THOROUGHLY CLEANED AND PAINTED WITH TWO COATS OF KELLY-MOORE LUXLITE 43-616 CAT YELLOW.
 7. PUMPER PORT MUST FACE CURB.
 8. RESTRAINT MUST BE BY WEDGE RESTRAINT SYSTEM SUCH AS MEGALUG OR UNIFLANGE. SEE STD SPEC 9-30.4(5).

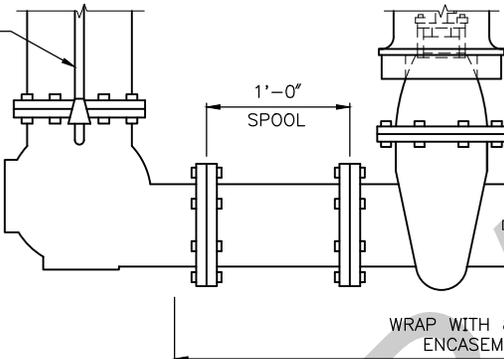
REF STD SPEC SEC 7-14

<p>City of Seattle</p>	<p>NOT TO SCALE</p>	<p>TYPE 310 HYDRANT SETTING DETAIL</p>
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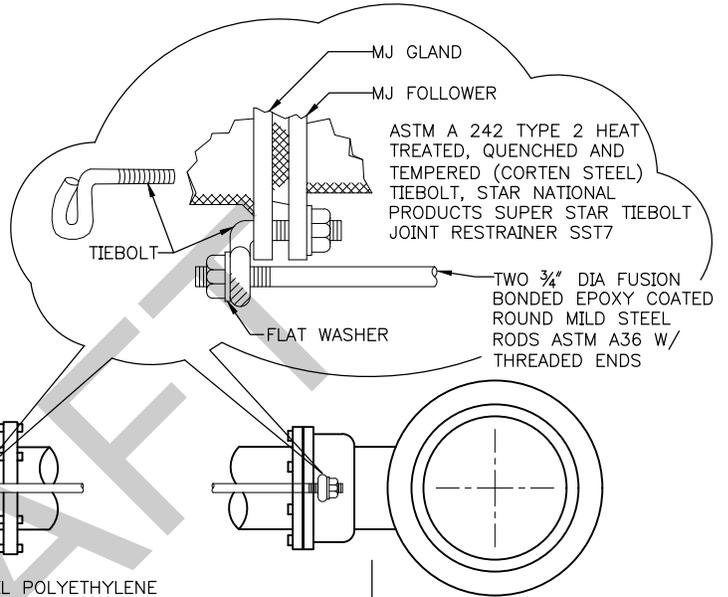


DETAIL A
HYDRANT BLEEDER

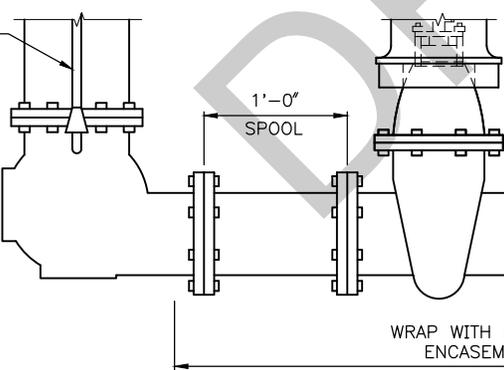
HYDRANT BLEEDER, SEE DETAIL A
SEE GENERAL NOTES BELOW



ALTERNATE A
TIEBOLT RESTRAINT



HYDRANT BLEEDER, SEE DETAIL A
SEE GENERAL NOTES BELOW



ALTERNATE B

MECHANICAL JOINT W/ WEDGE RESTRAINT GLANDS

NOTES:

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

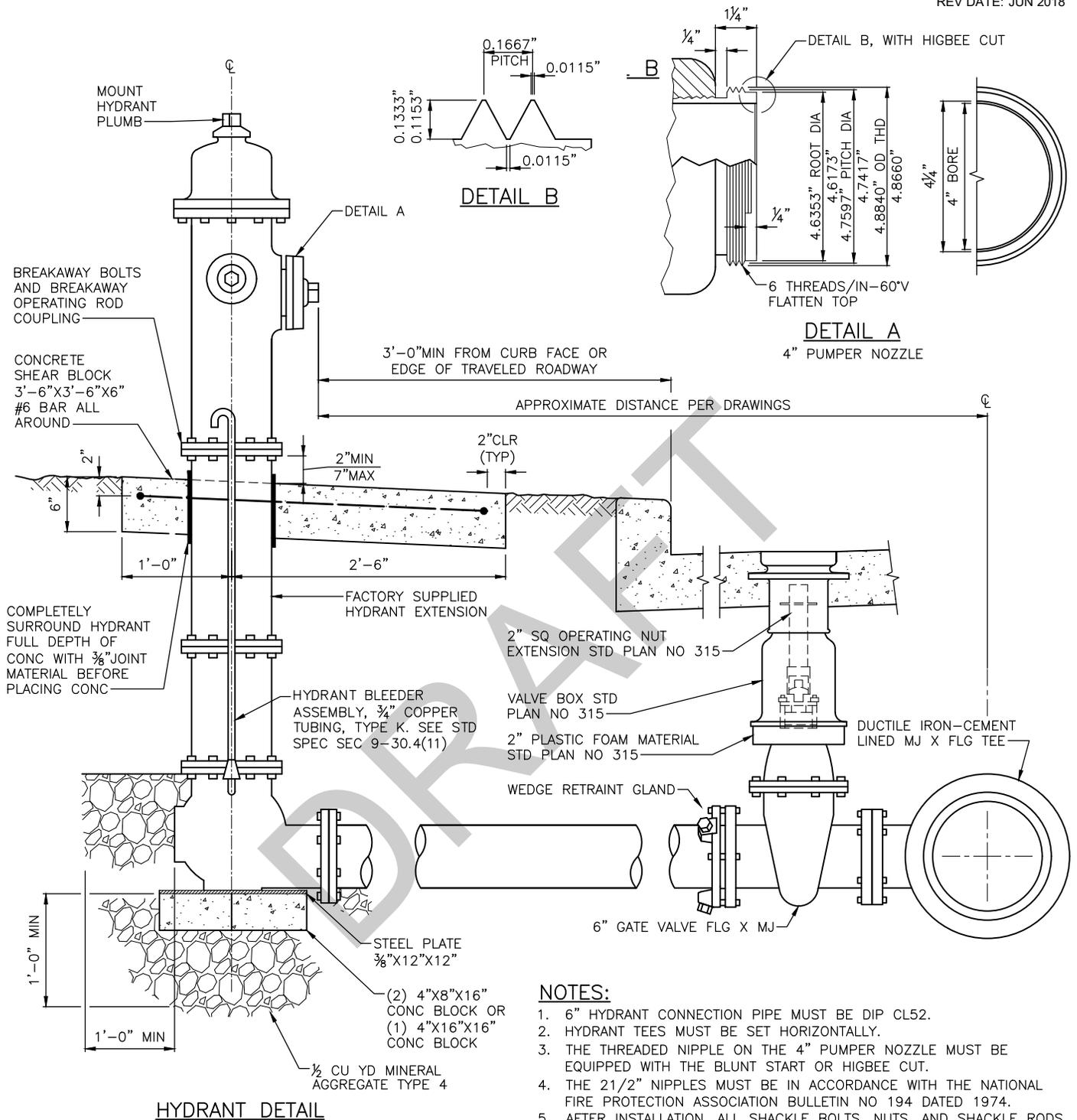
REF STD SPEC SEC 7-14



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**TYPE 310 HYDRANT SETTING
DETAIL**



NOTES:

1. 6" HYDRANT CONNECTION PIPE MUST BE DIP CL52.
2. HYDRANT TEES MUST BE SET HORIZONTALLY.
3. THE THREADED NIPPLE ON THE 4" PUMPER NOZZLE MUST BE EQUIPPED WITH THE BLUNT START OR HIGBEE CUT.
4. THE 2 1/2" NIPPLES MUST BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION BULLETIN NO 194 DATED 1974.
5. AFTER INSTALLATION, ALL SHACKLE BOLTS, NUTS, AND SHACKLE RODS MUST BE CLEANED AND COATED WITH TWO COATS OF ASPHALT, ROYSTON ROSKOTE R28.
6. AFTER BACKFILLING, THE OUTSIDE OF THE HYDRANT (ABOVE THE GROUND LINE) MUST BE THOROUGHLY CLEANED AND PAINTED WITH TWO COATS OF KELLY-MOORE 6130-516 CAT YELLOW.
7. PUMPER PORT MUST FACE CURB.
8. RESTRAINT MUST BE BY WEDGE RESTRAINT SYSTEM USCH AS MEGALUG OR UNIFLANGE. SEE STD SPEC SEC 9-30.4(5).

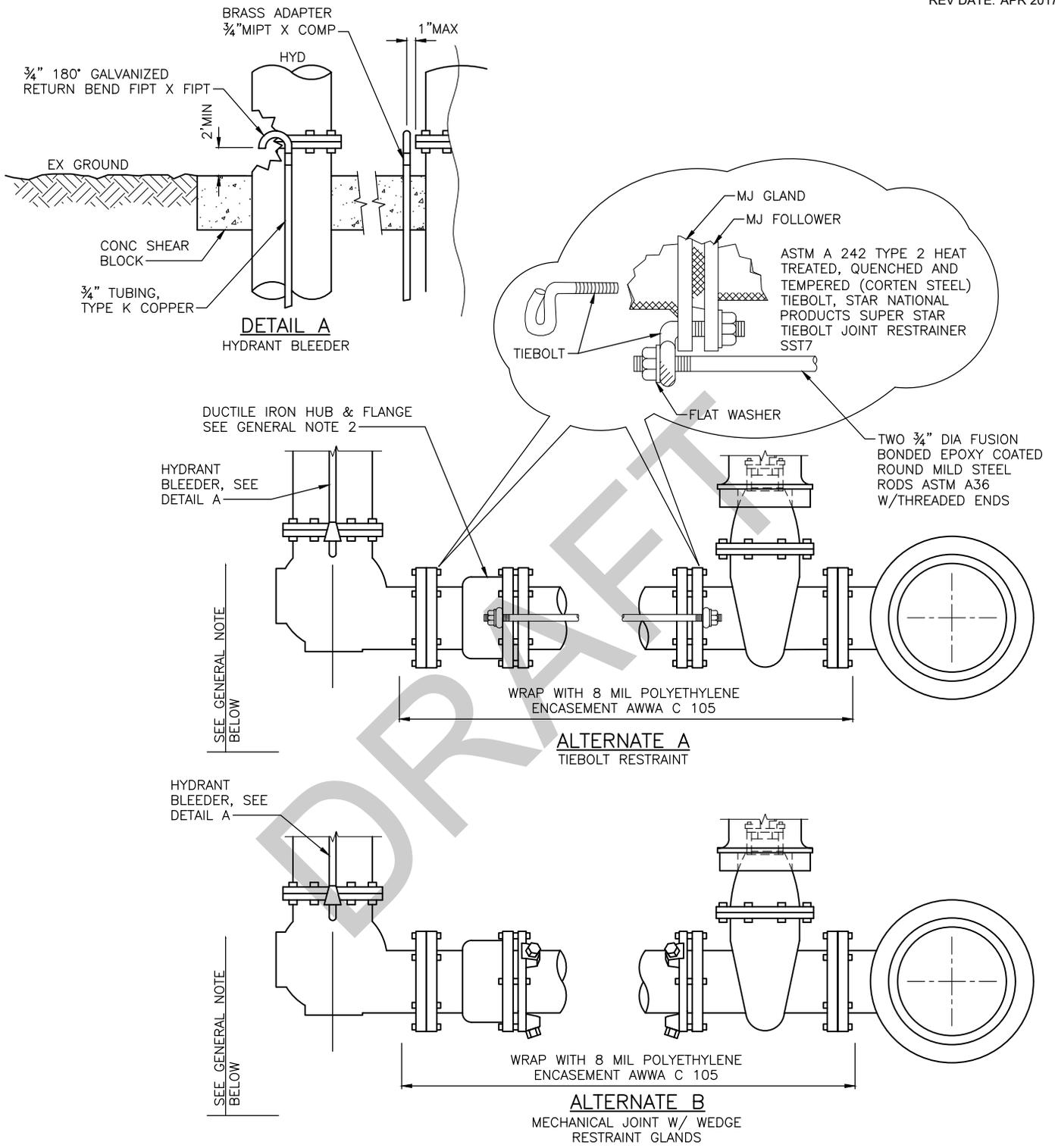
REF STD SPEC SEC 7-14



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TYPE 311 HYDRANT SETTING DETAIL



GENERAL NOTES:

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

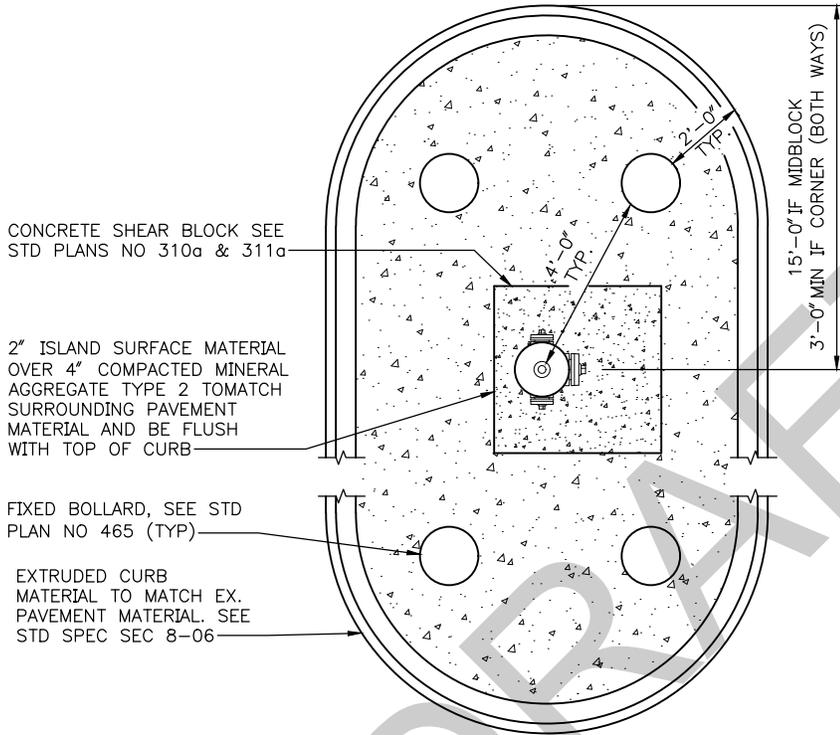
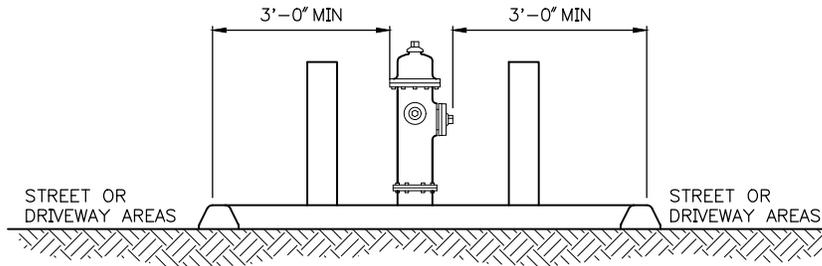
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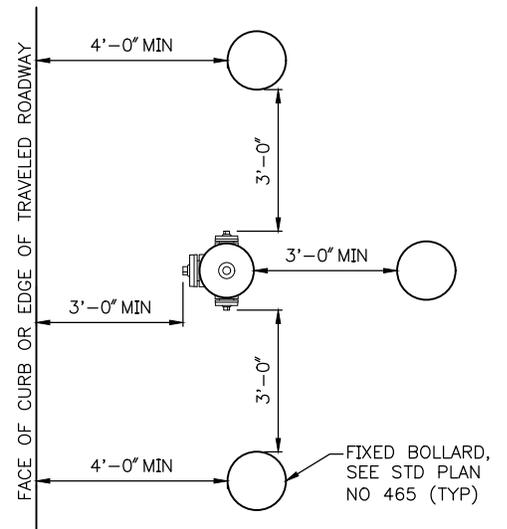
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**TYPE 311 HYDRANT SETTING
DETAIL**



TRAFFIC ISLAND MARKER POST LAYOUT FOR FIRE HYDRANTS IN PARKING AREAS

NOTE:
LAYOUT OF MARKER POST MUST BE VERIFIED FIRST WITH SPU AND SDOT



MARKER POST LAYOUT FOR FIRE HYDRANTS IN PARKING AREAS

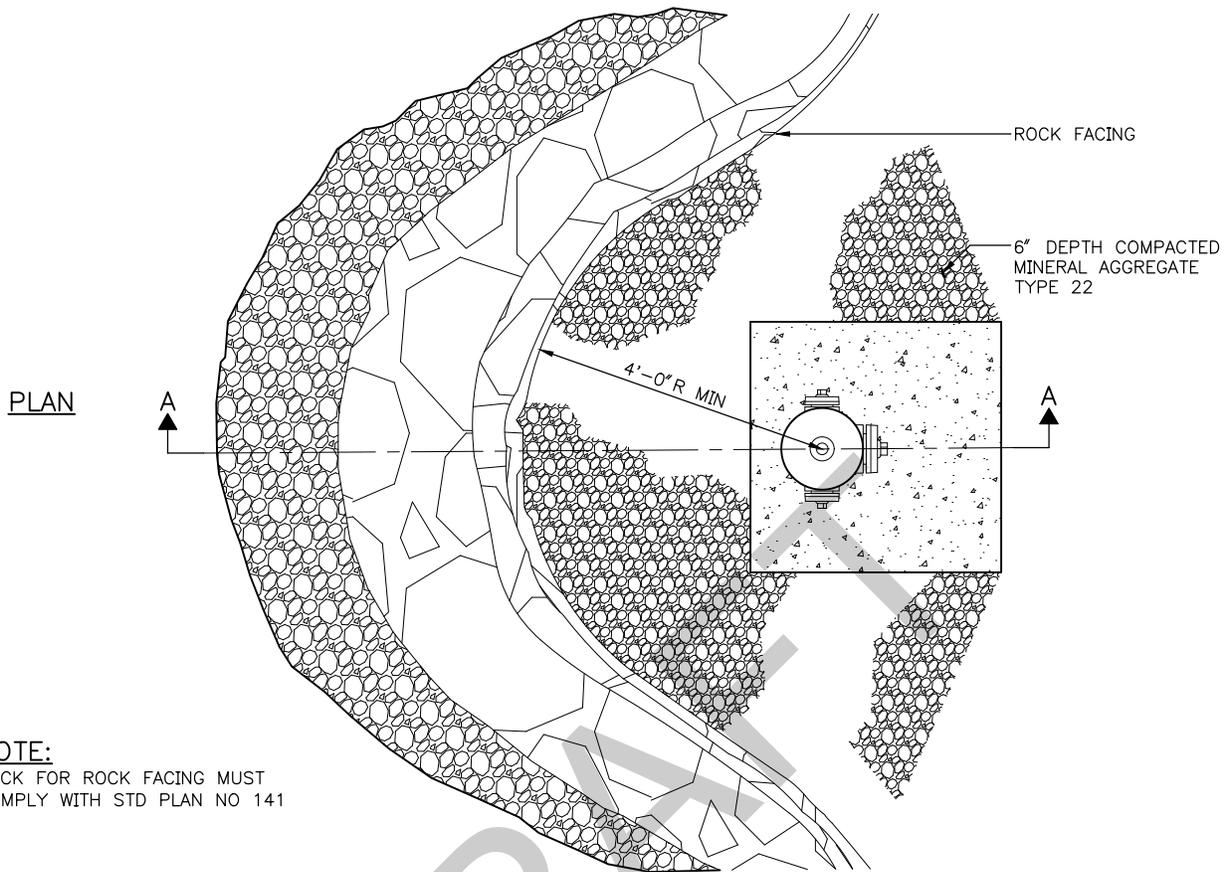
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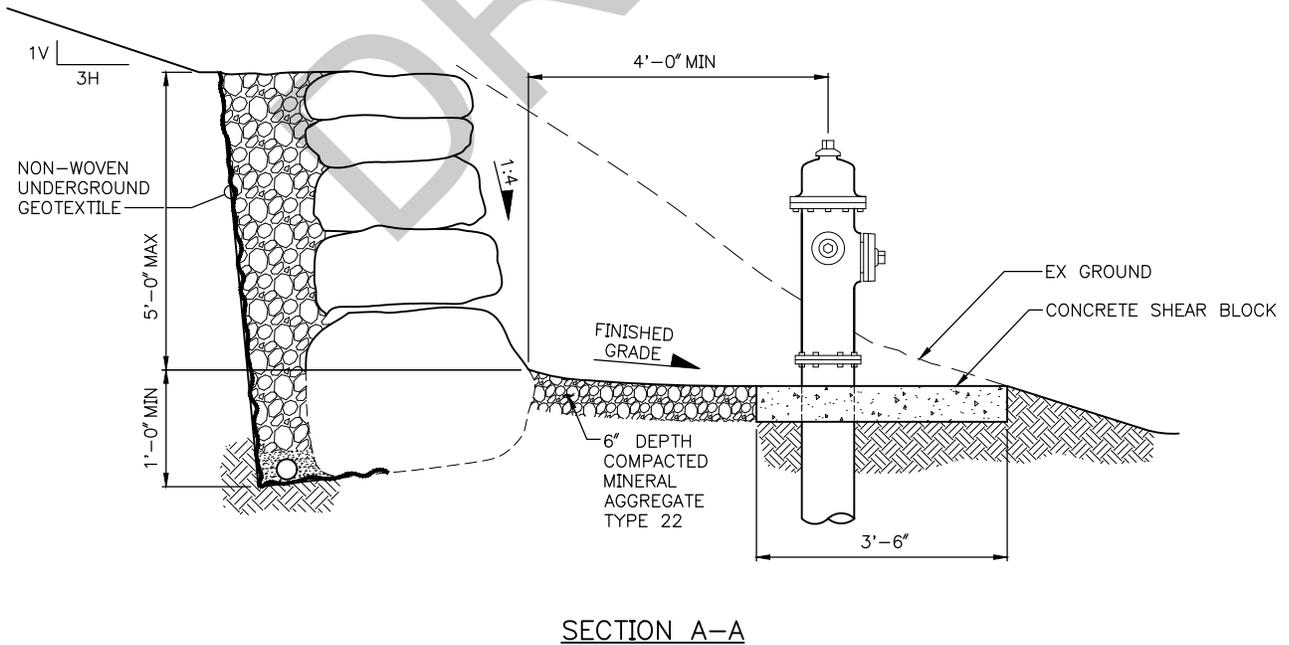
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FIRE HYDRANT MARKER LAYOUT



NOTE:
ROCK FOR ROCK FACING MUST COMPLY WITH STD PLAN NO 141



REF STD SPEC SEC 2-13



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WALL REQUIREMENTS FOR HYDRANTS

NOTES:

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

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

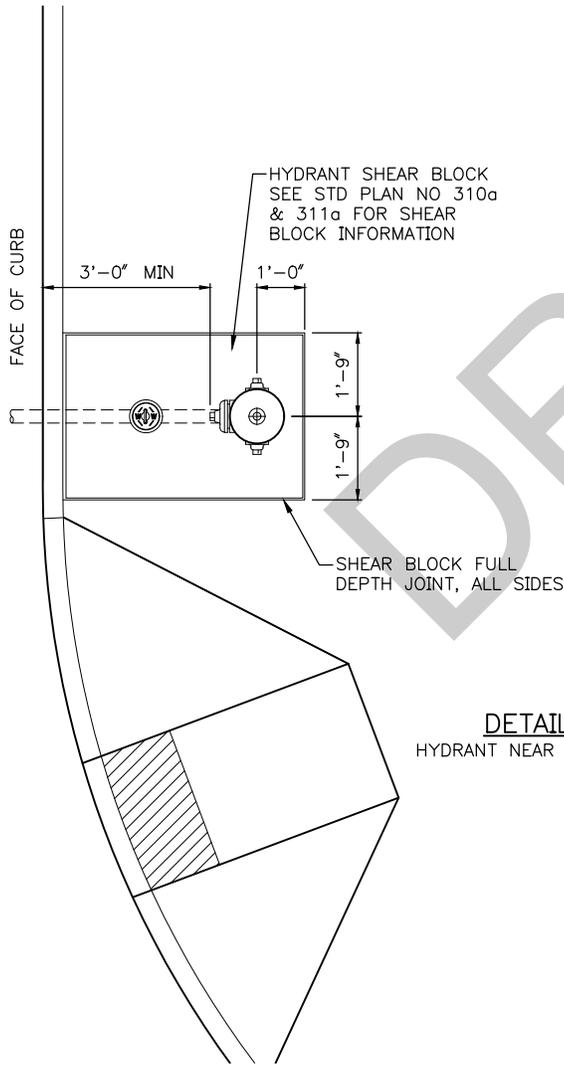
CURB OR EDGE OF TRAVELED PORTION OF ROADWAY

R/W MARGIN

5'-0" MIN
15'-0" STD



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



DETAIL A
HYDRANT NEAR CURB RAMP



10'-0" STD N OR E

Q STREET



R/W MARGIN

LOT LINE

SIDE SEWER

5'-0" STD

R/W MARGIN

SEE DETAIL A

REF STD SPEC SEC 7-14, 8-08



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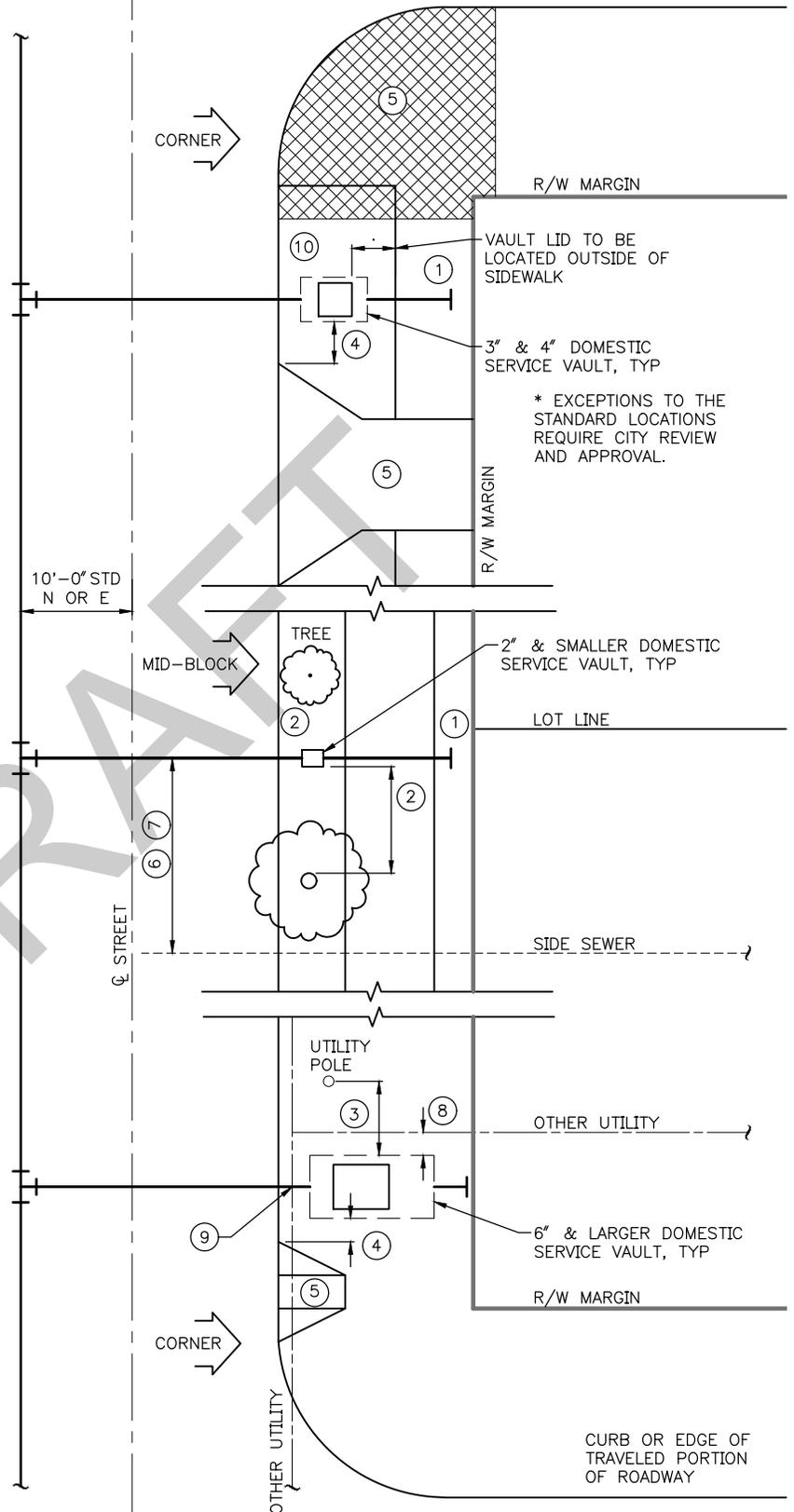
NOT TO SCALE

FIRE HYDRANT LOCATIONS & CLEARANCES

NOTES:

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

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



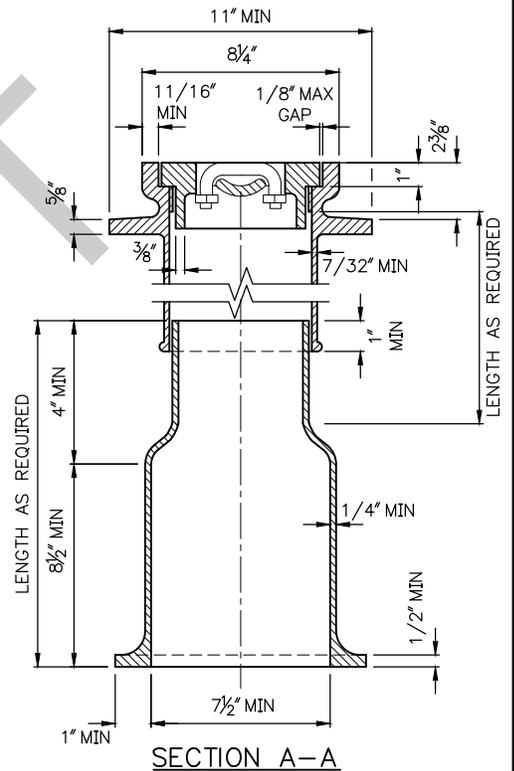
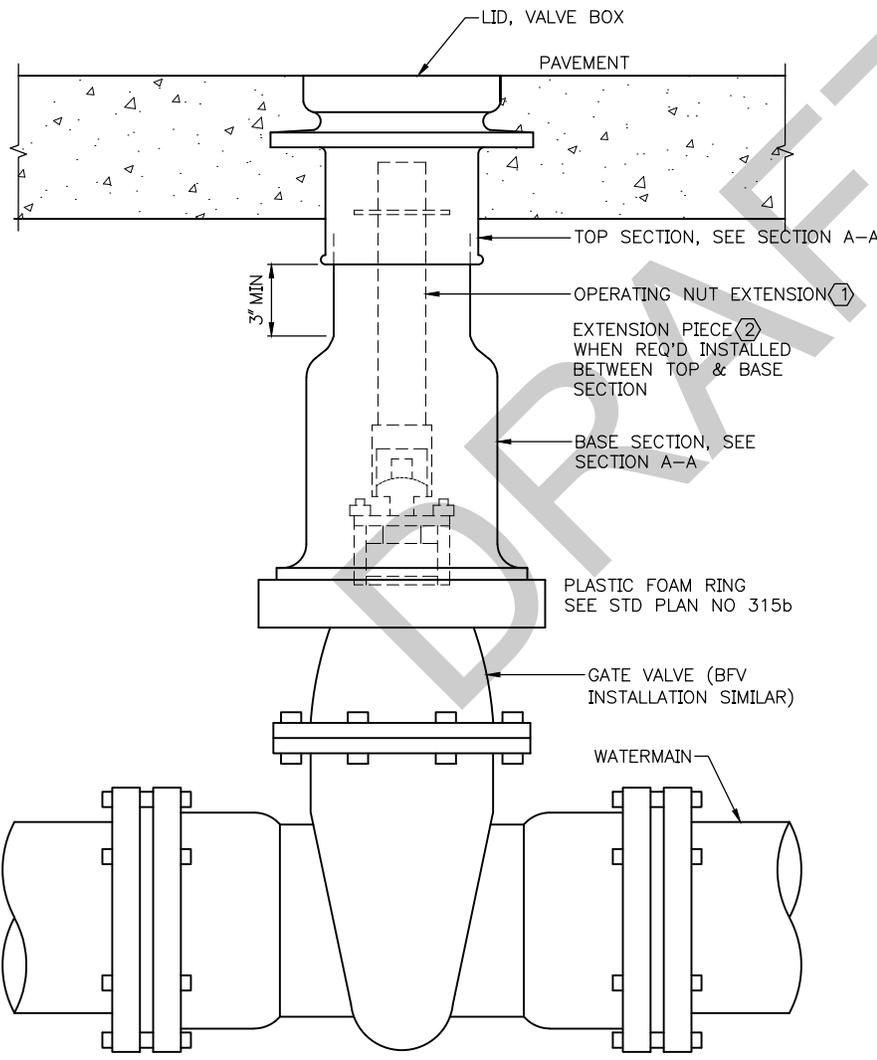
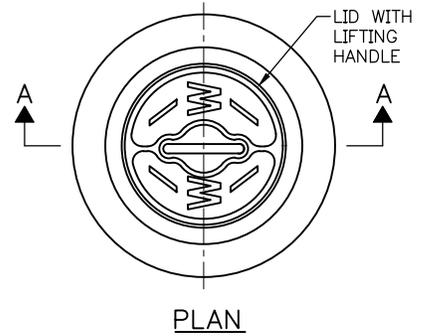
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City of Seattle

NOT TO SCALE

CLEARANCES FOR TYPICAL WATER SERVICE VAULTS



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

VALVE BOX ASSEMBLY
TYPICAL SETTING DETAIL

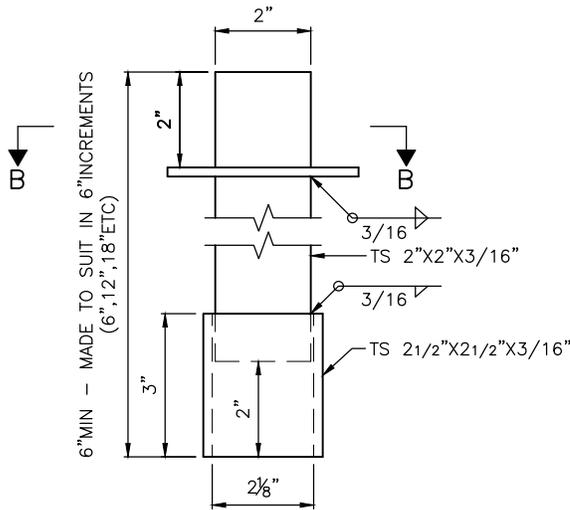
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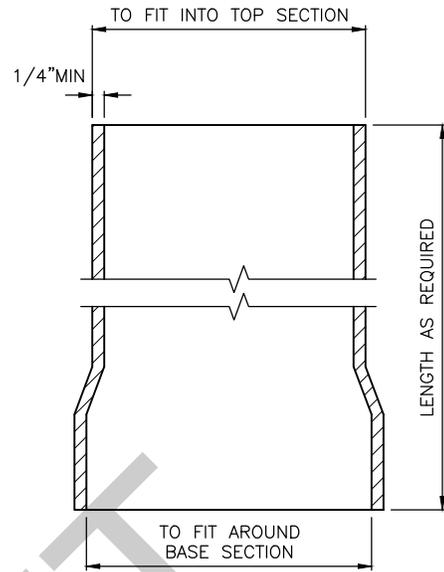
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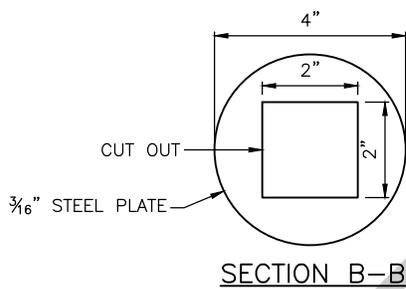
CAST IRON VALVE BOX & OPERATING NUT EXTENSION



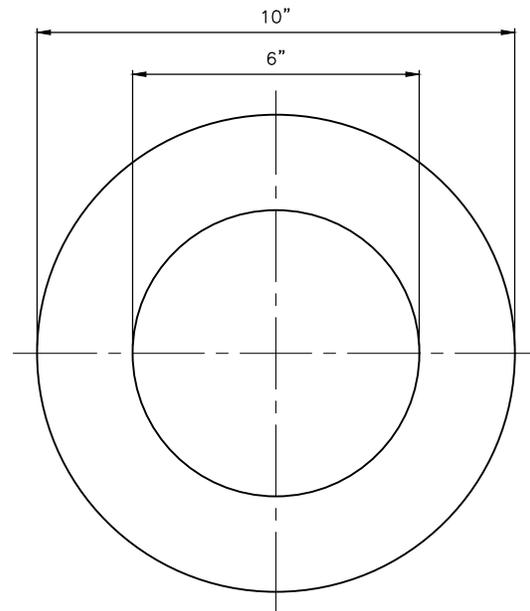
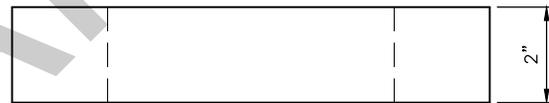
OPERATING NUT EXTENSION DETAIL 1



EXTENSION PIECE 2 WHEN REQUIRED



SECTION B-B



PLASTIC FOAM RING DETAIL

NOTES:

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

LEGEND:

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

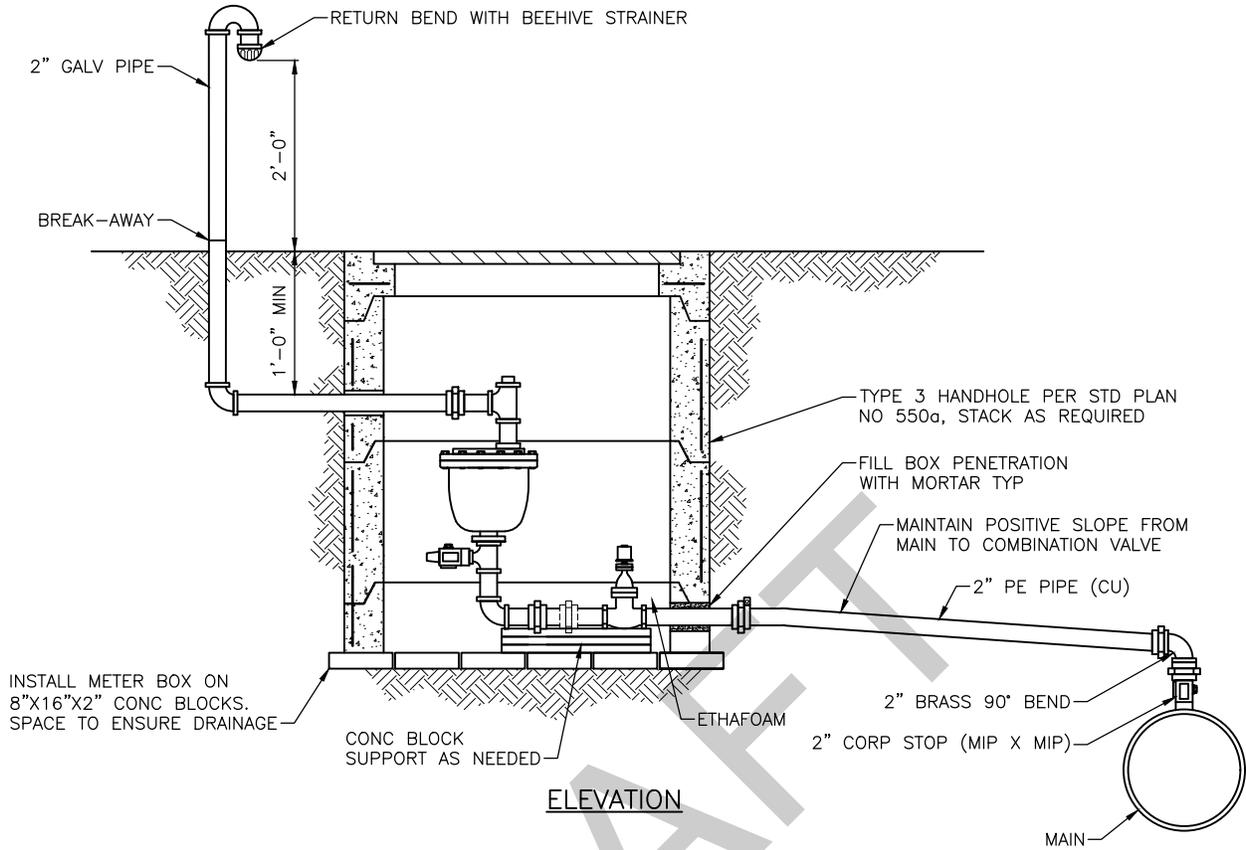
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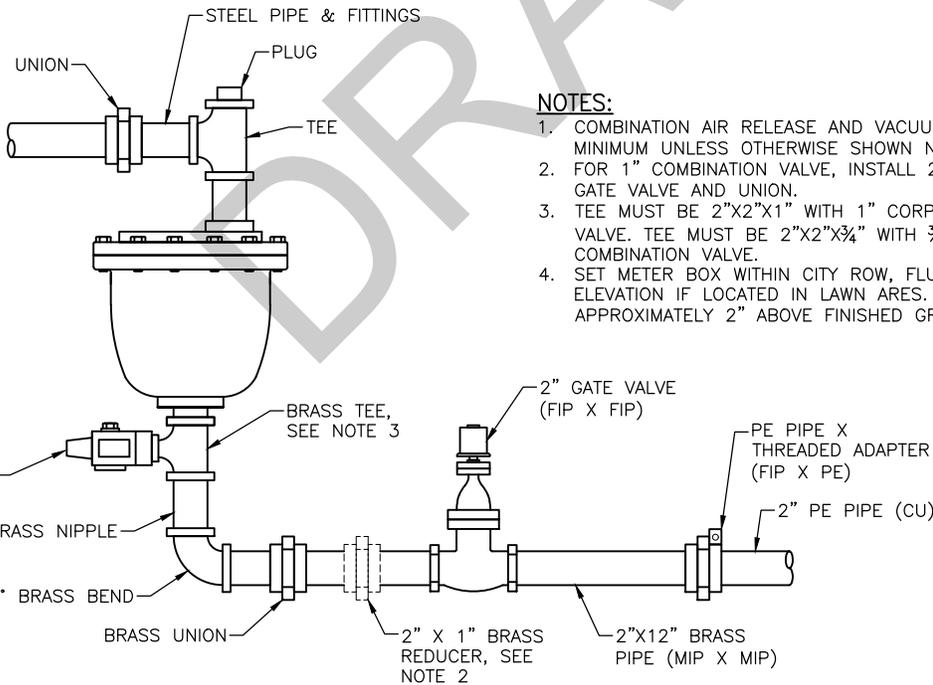
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NOT TO SCALE

CAST IRON VALVE BOX & OPERATING NUT EXTENSION



ELEVATION



VALVE ASSEMBLY DETAIL

NOTES:

1. COMBINATION AIR RELEASE AND VACUUM VALVE MUST BE A 2" SIZE MINIMUM UNLESS OTHERWISE SHOWN N THE PLANS.
2. FOR 1" COMBINATION VALVE, INSTALL 2" X 1" REDUCER BETWEEN GATE VALVE AND UNION.
3. TEE MUST BE 2"X2"X1" WITH 1" CORP STOP FOR 2" COMBINATION VALVE. TEE MUST BE 2"X2"X¾" WITH ¾" CORP STOP FOR 1" COMBINATION VALVE.
4. SET METER BOX WITHIN CITY ROW, FLUSH WITH SIDEWALK OR CURB ELEVATION IF LOCATED IN LAWN ARES. SET METER BOX APPROXIMATELY 2" ABOVE FINISHED GRADE IF IN LANDSCAPED AREA.

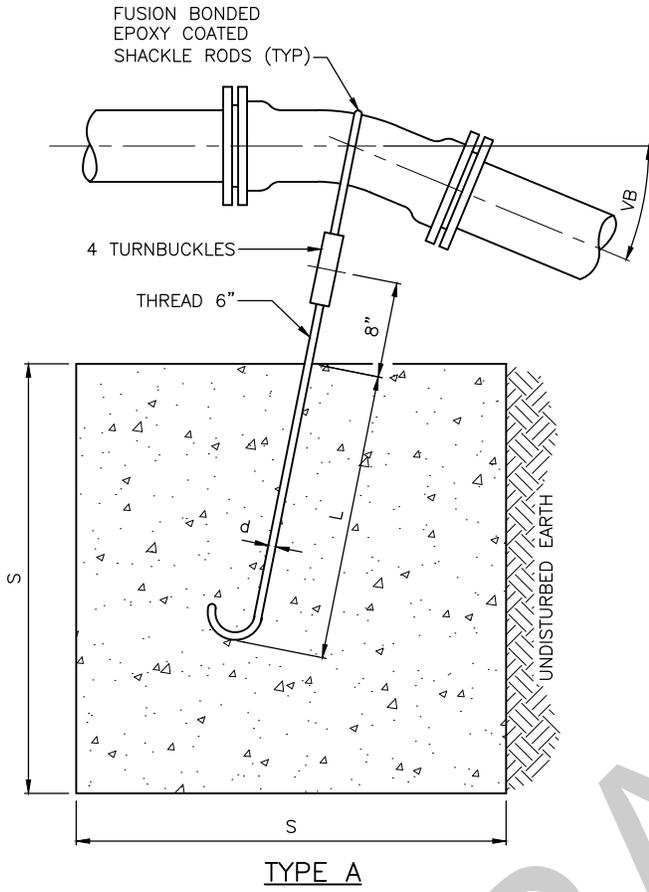
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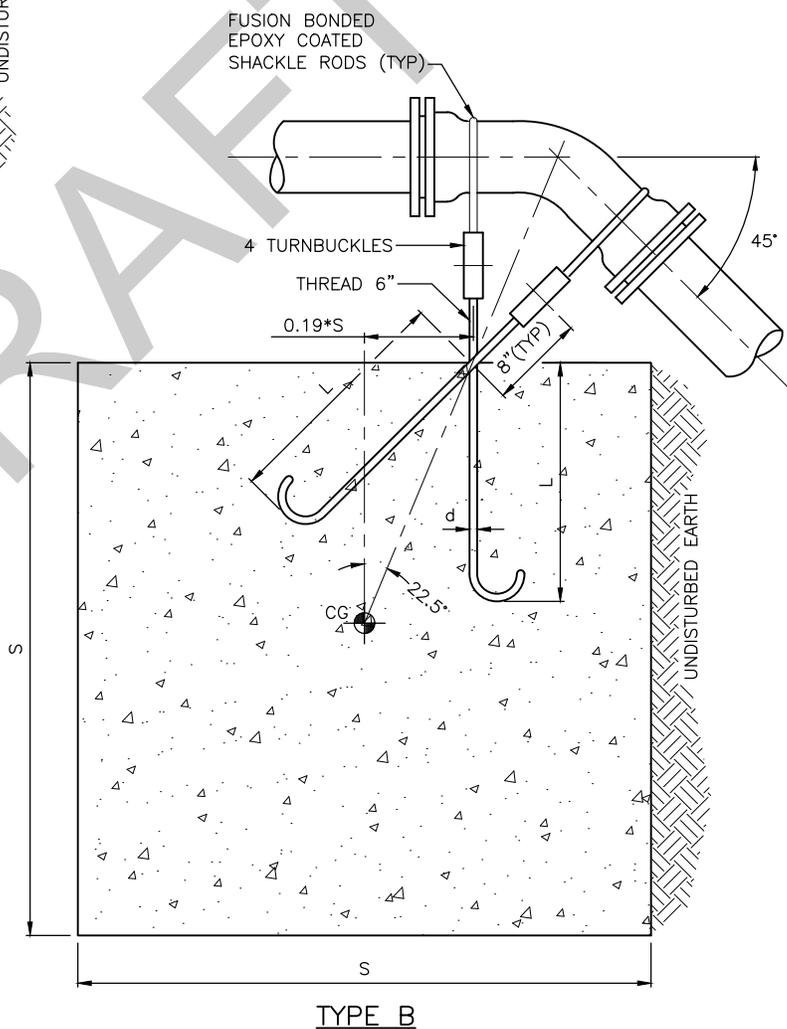
NOT TO SCALE

AIR RELEASE
AIR VACUUM VALVE



TYPE A BLOCKING FOR 11¼° & 22½° VERTICAL BENDS

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



TYPE B BLOCKING FOR 45° VERTICAL BENDS

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

FOR NOTES SEE STD PLAN NO 330b

TYPE B

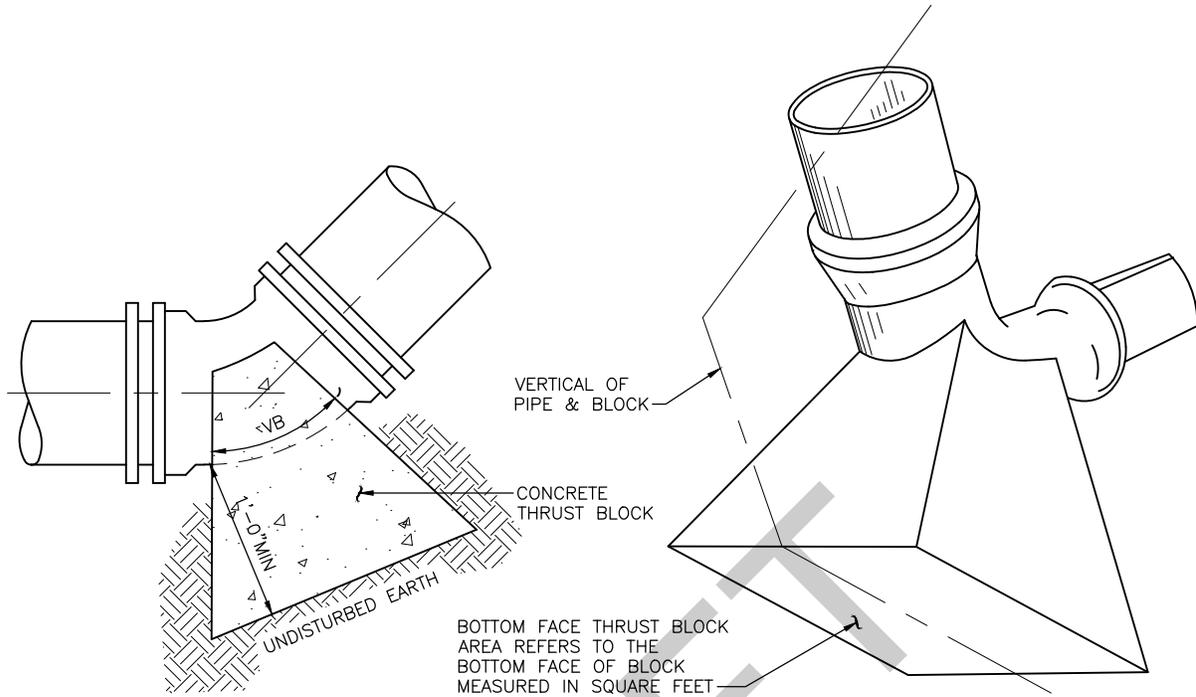
REF STD SPEC SEC 7-11



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WATERMAIN THRUST BLOCKING VERTICAL FITTINGS



TYPE C

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

NOTES:

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

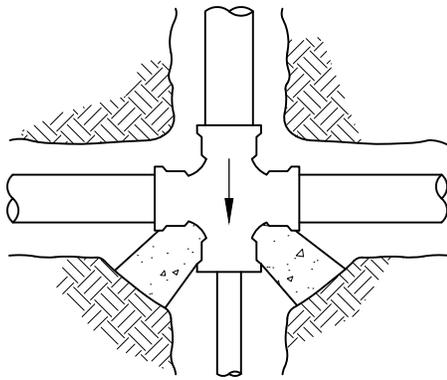
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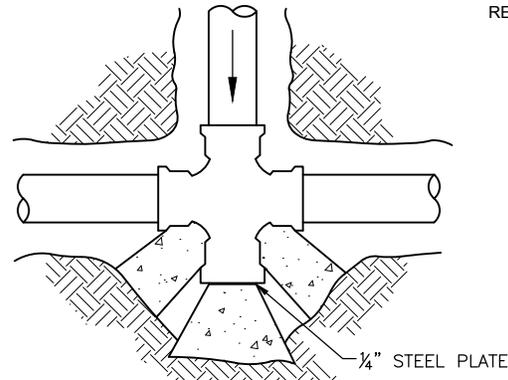
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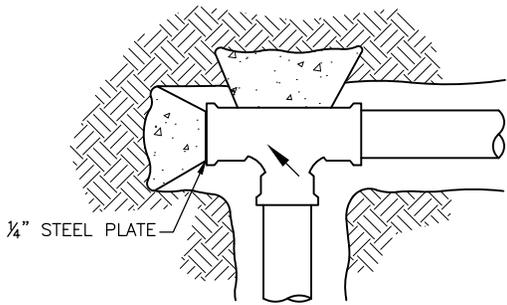
**WATERMAIN THRUST BLOCKING
VERTICAL FITTINGS**



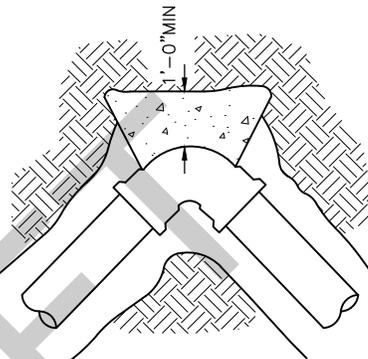
UNBALANCED CROSS



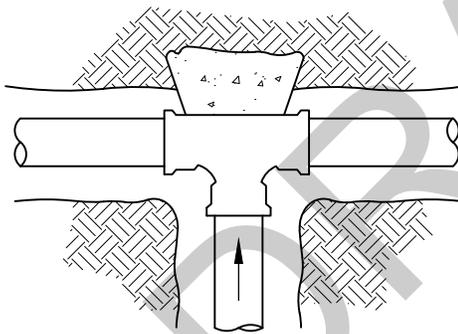
CROSS WITH PLUG



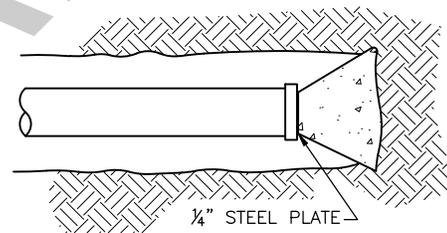
PLUGGED TEE



HORIZONTAL BEND



TEE



PIPE & CAP

THRUST BLOCK AREA IN SQUARE FEET (SEE STD PLAN NO 331B)													
PIPE SIZE	FITTING	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
4"		7.0	4.2	4.2	1.7	2.9	2.1	2.1	1.0	2.2	1.6	1.6	1.0
6"		13.3	9.4	9.4	3.8	6.7	4.7	4.7	1.9	5.0	3.5	3.5	1.4
8"		23.3	16.7	16.7	6.7	11.7	8.4	8.4	3.4	8.8	6.3	6.3	2.5
12"		53.0	37.5	37.5	15.0	26.5	18.8	18.8	7.5	20.0	14.0	14.0	5.6

AREAS CALCULATED ON 300 PSI TEST PRESSURE AND 3'-0" MIN COVER OVER WATERMAIN

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

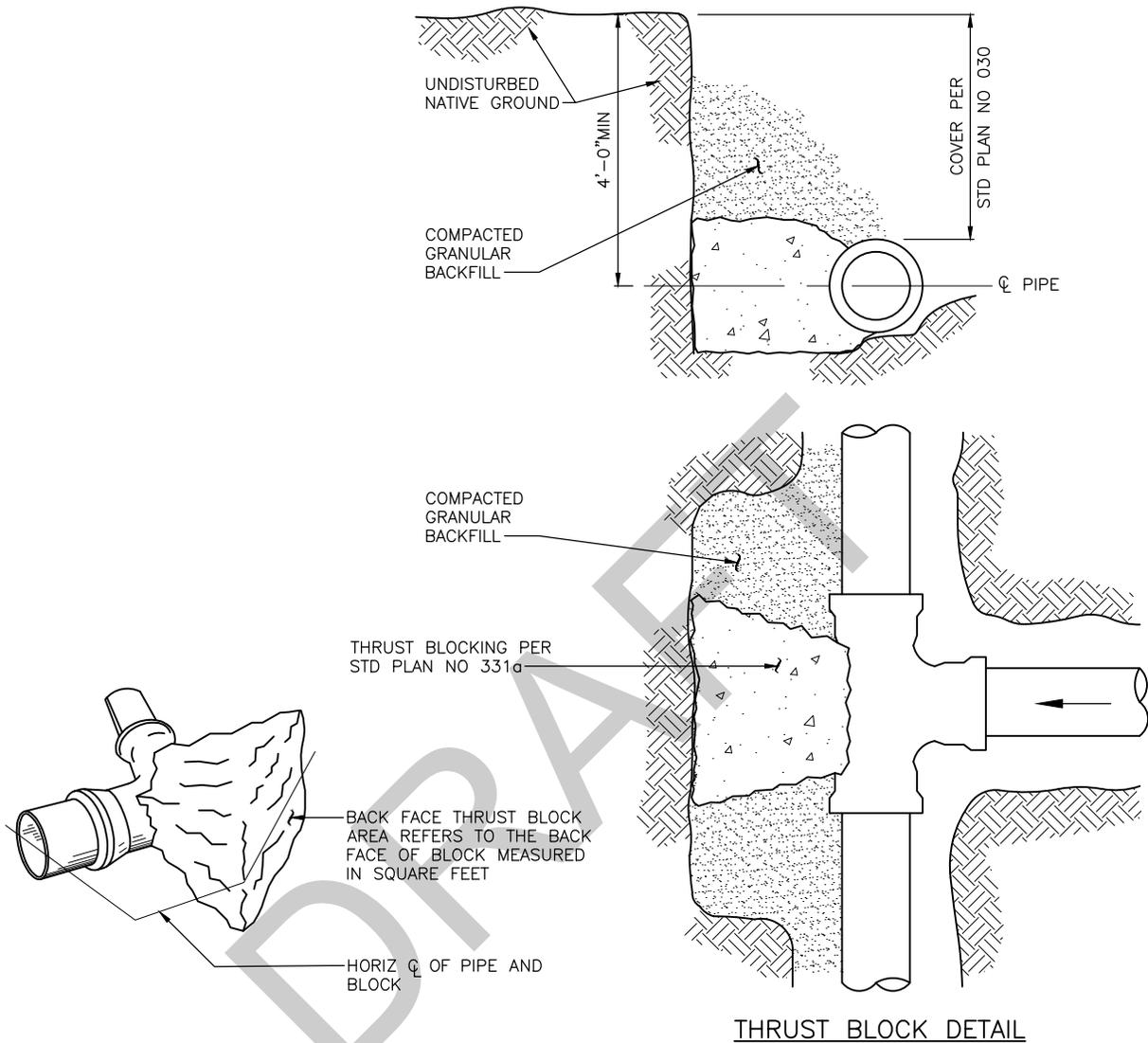
REF STD SPEC SEC 7-11



City of Seattle

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WATERMAIN THRUST BLOCKING
HORIZONTAL FITTINGS



NOTES:

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

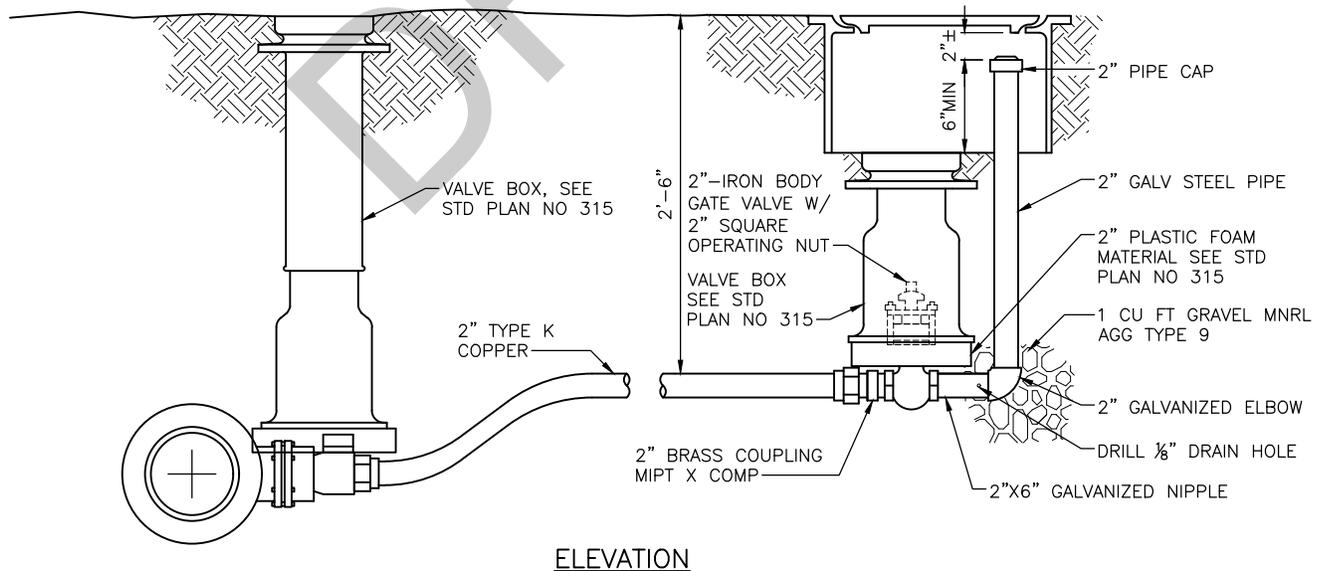
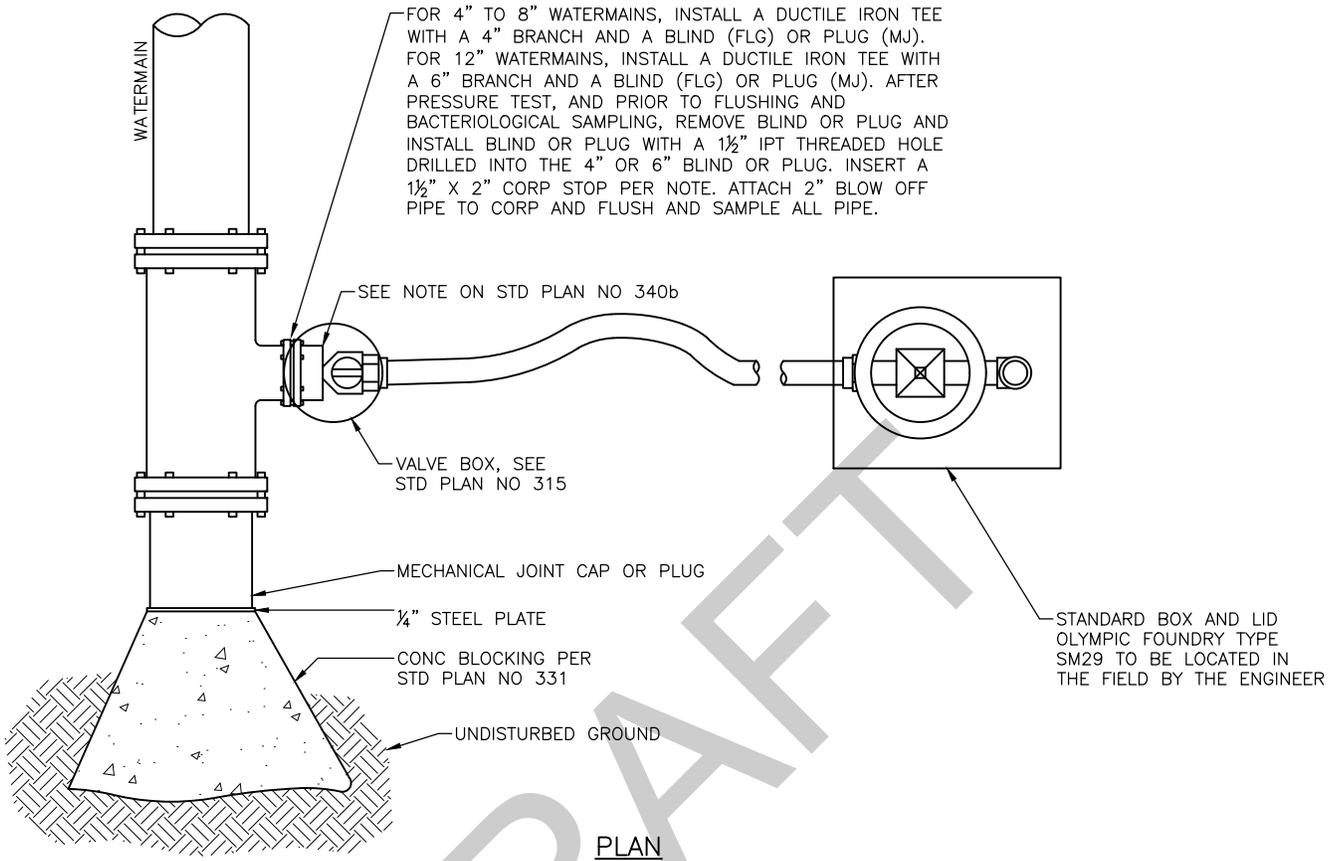
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**WATERMAIN THRUST BLOCKING
HORIZONTAL FITTINGS**



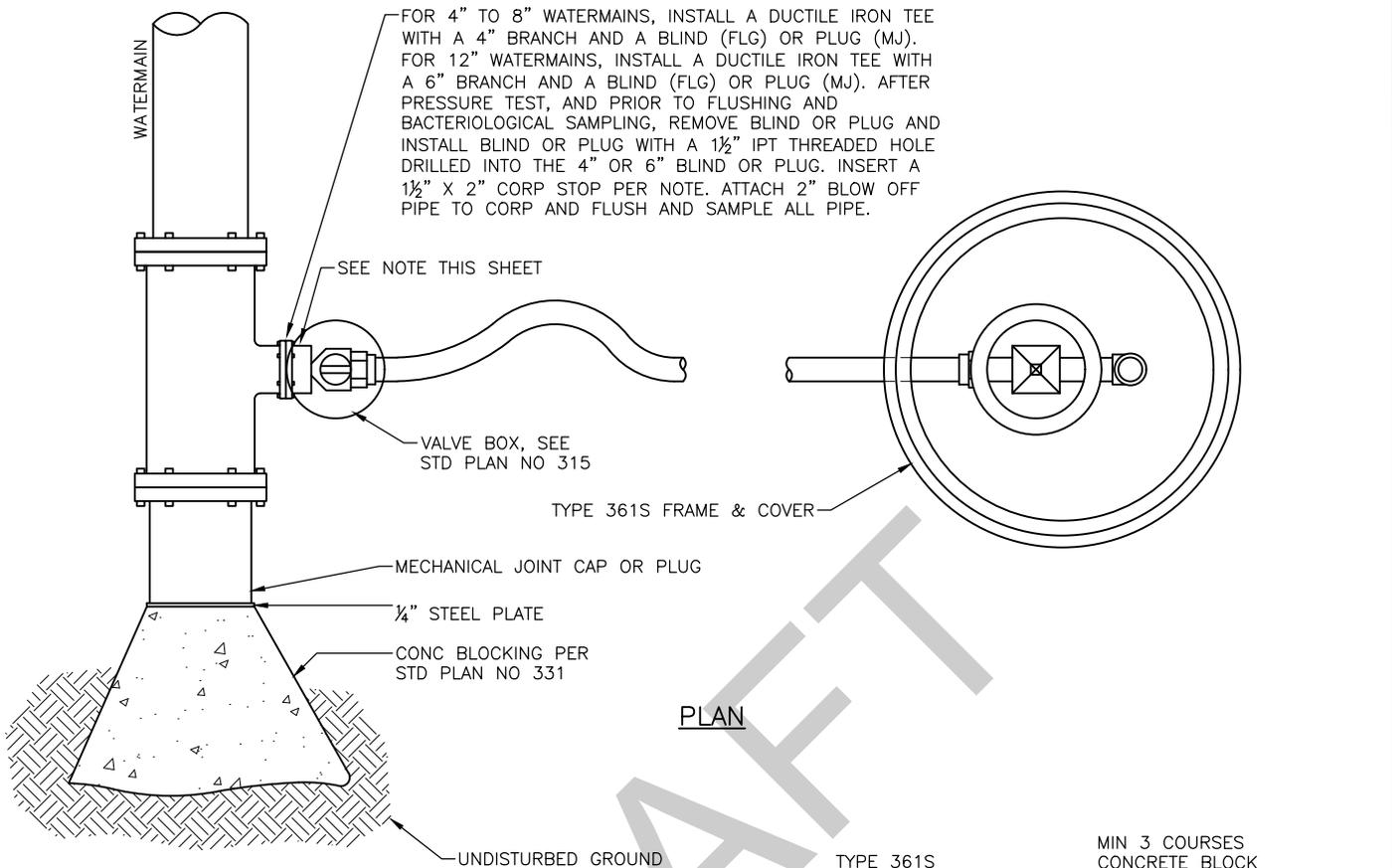
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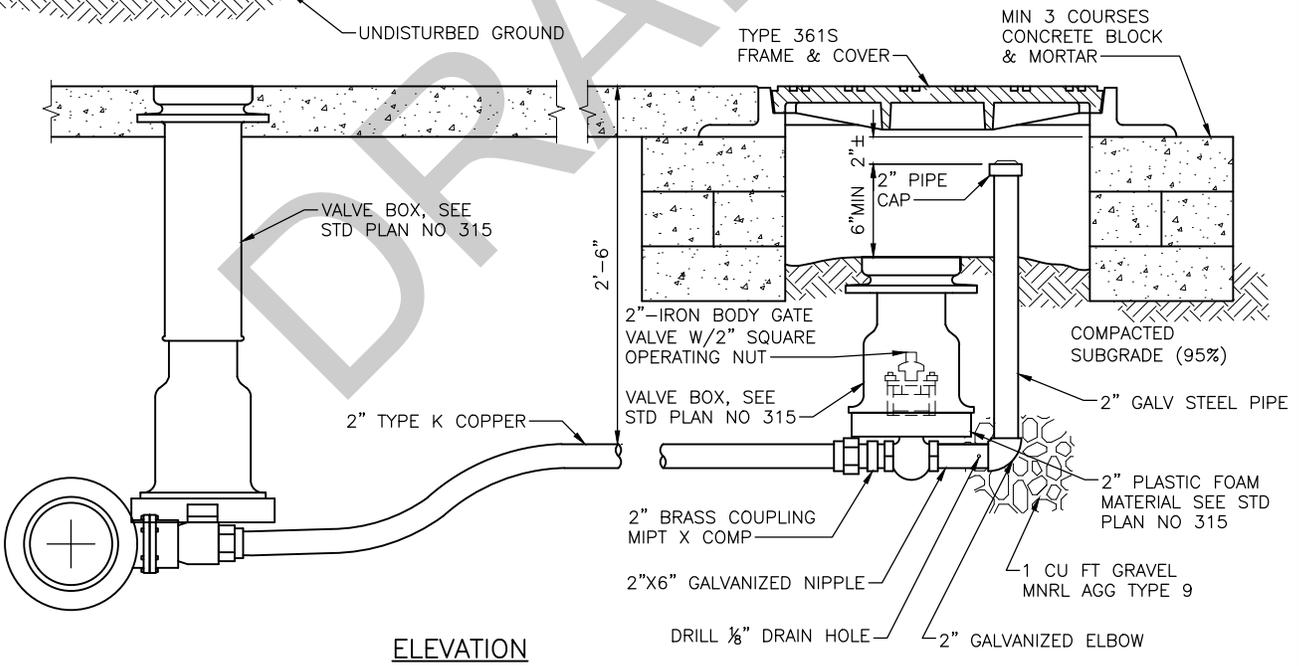
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NOT TO SCALE

2" BLOW OFF TYPE A
NON TRAFFIC INSTALLATION



PLAN



ELEVATION

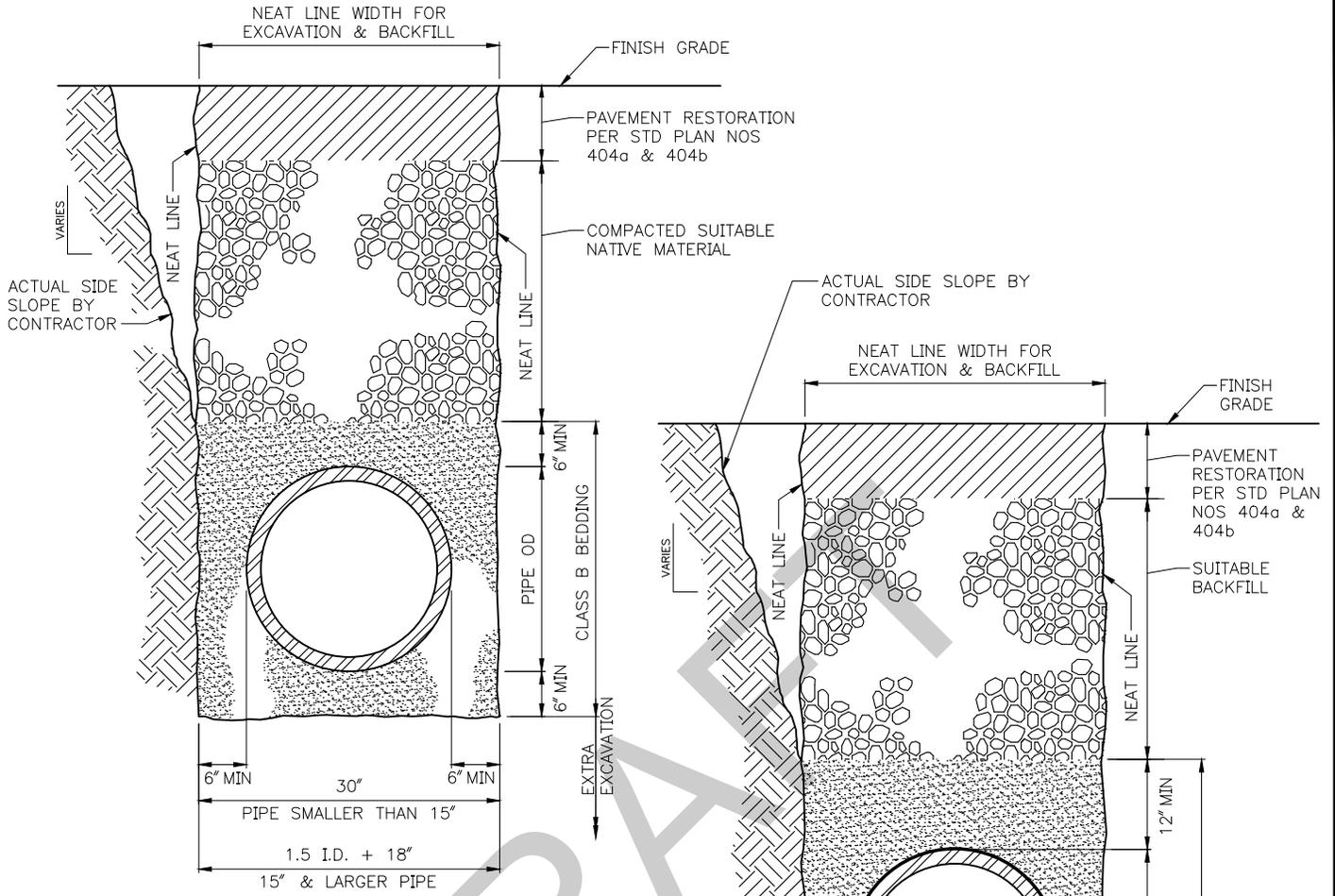
NOTE:
 1 1/2" X 2" CORP STOP, BALL TYPE BRASS BODY AWWA X CORP.
 WHERE COATED DUCTILE IRON PIPE IS USED, THE MECHANICAL JOINT
 CAP AND CORP MUST BE WAX TAPED PER 7-11.3(8)A AND 9-30.1(4)F.

REF STD SPEC SEC 7-11



NOT TO SCALE

2" BLOW OFF DETAIL TYPE B
 TRAFFIC INSTALLATION



TYPICAL BEDDING

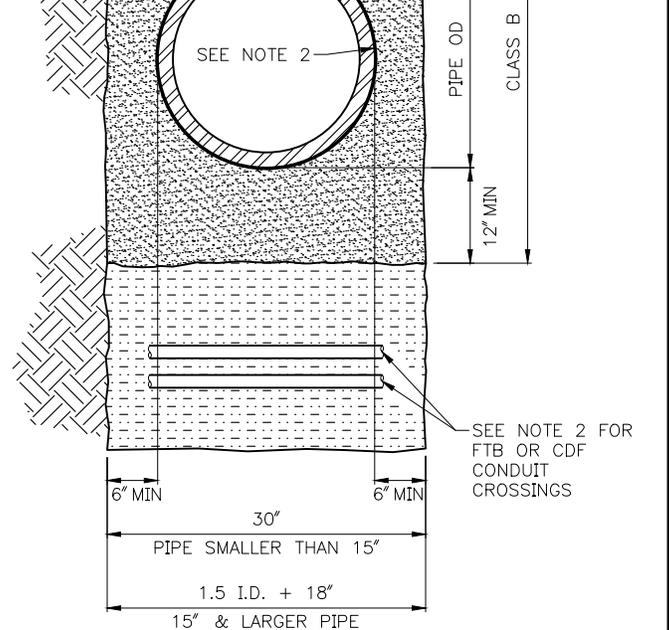
BEDDING MATERIAL

CLASS B:

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

NOTES:

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



BEDDING AT TRENCH CROSSING

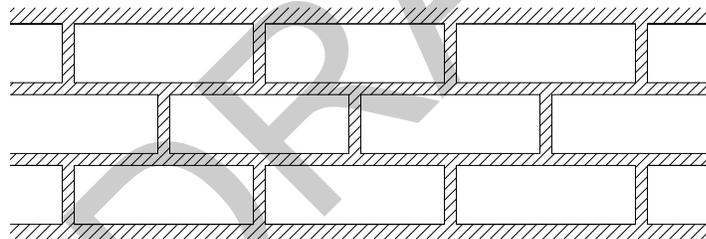
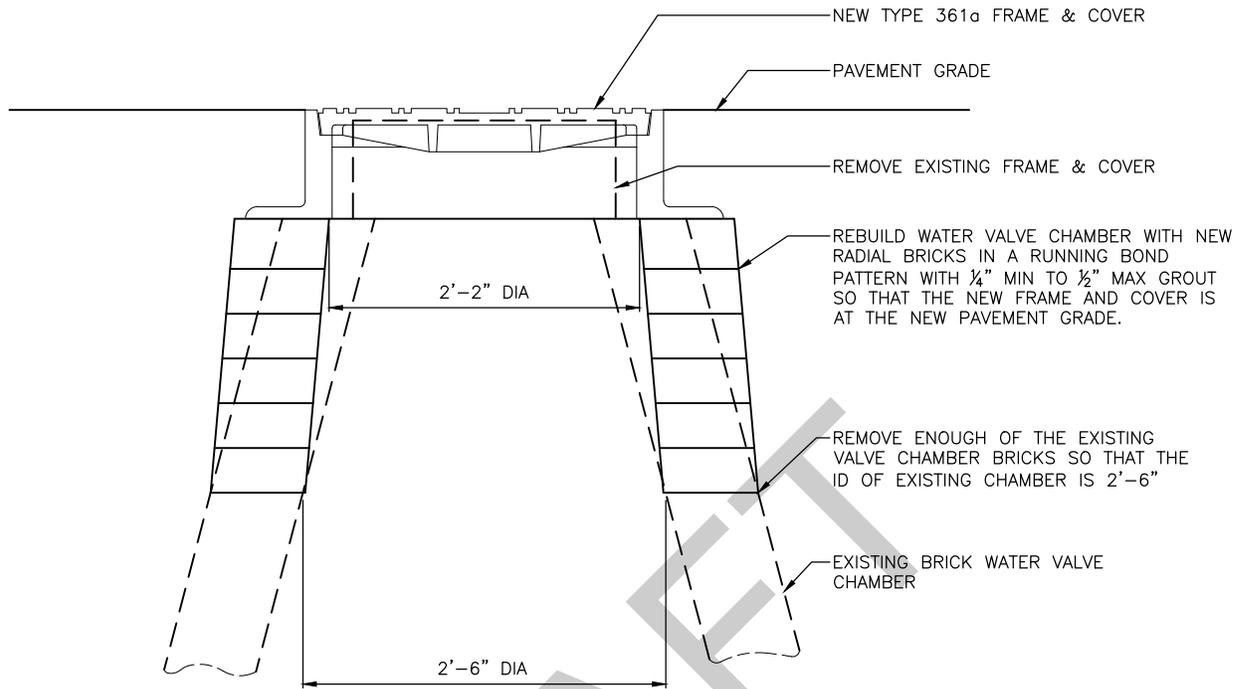
REF STD SPEC SEC 7-11



City of Seattle

NOT TO SCALE

WATERMAIN TRENCH AND BEDDING



RUNNING BOND PATTERN
GROUT BETWEEN ALL BRICKS

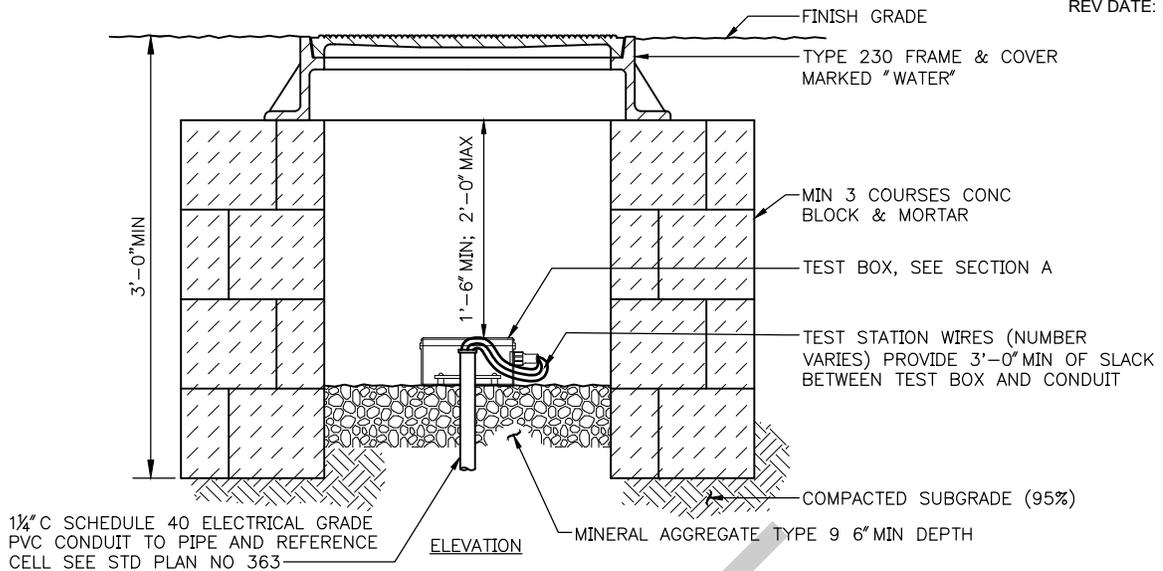
REF STD SPEC SEC 7-20



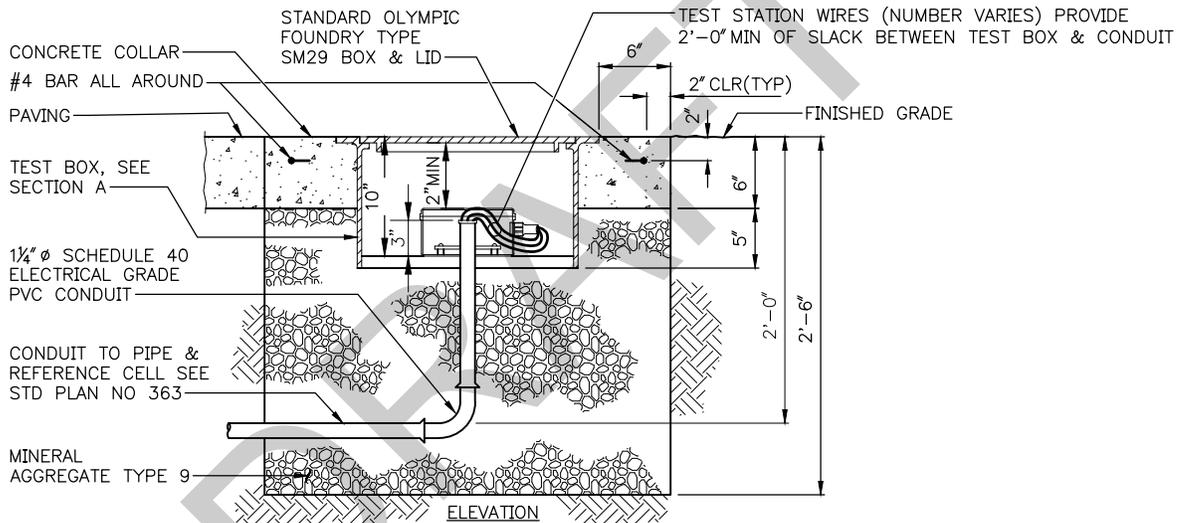
City of Seattle

NOT TO SCALE

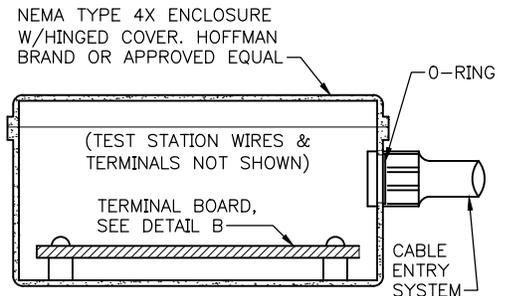
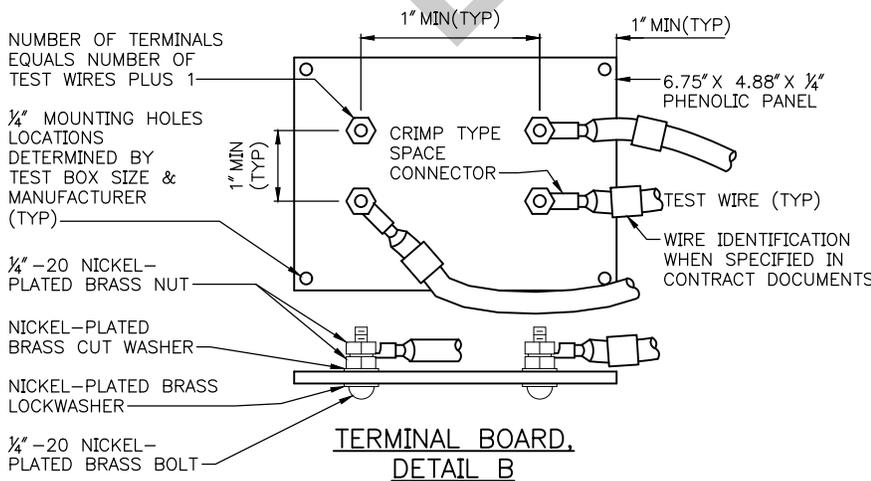
**REBUILD EXISTING
BRICK WATER VALVE CHAMBER**



ELECTROLYSIS TEST STATION – TRAFFIC AREA



ELECTROLYSIS TEST STATION – NON-TRAFFIC AREA



TEST BOX, SECTION A

REF STD SPEC SEC 7-11

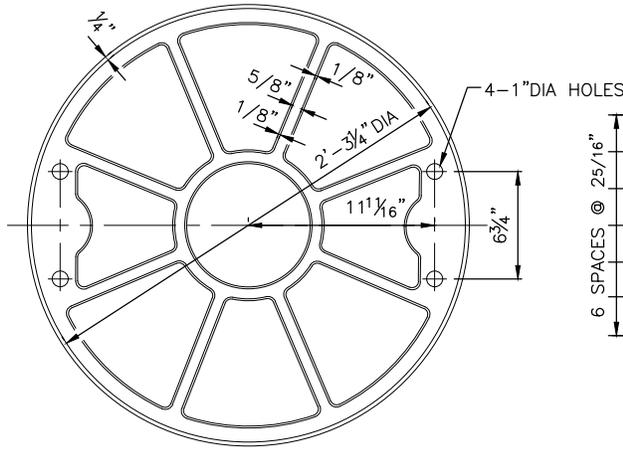


City of Seattle

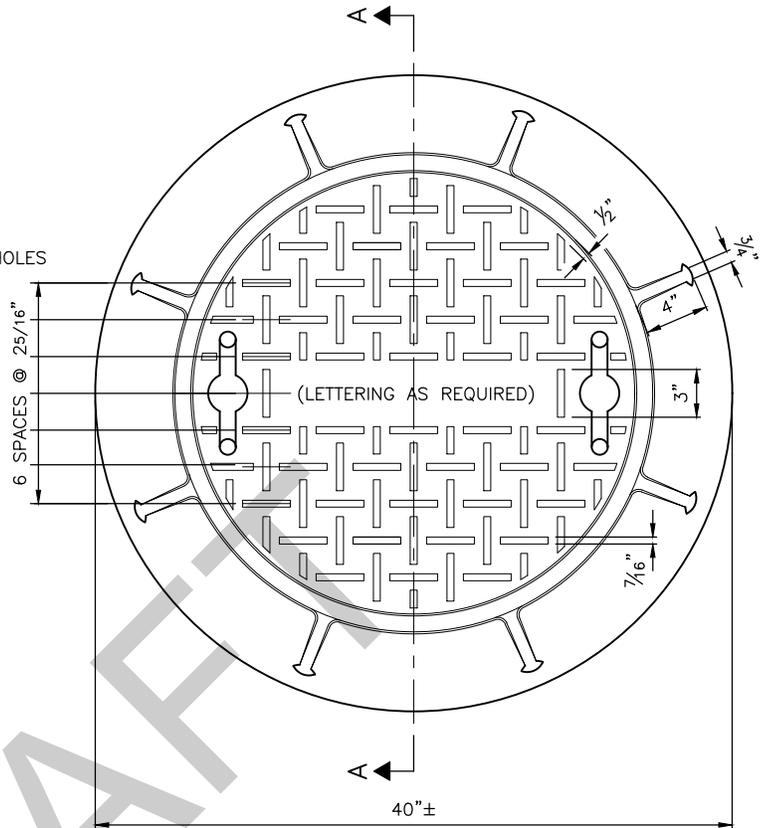
NOT TO SCALE

WATERMAIN ELECTROLYSIS TEST STATION

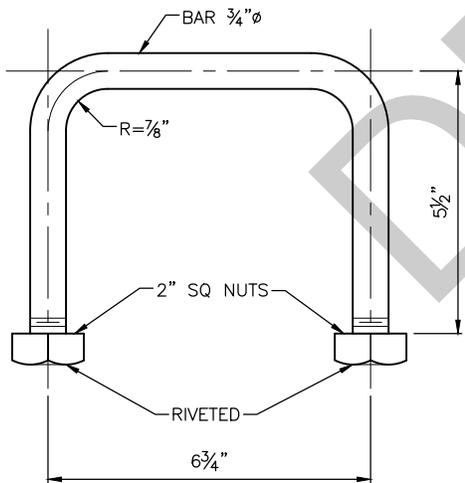
FRAME & COVER MUST BE TESTED FOR ACCURACY OF FIT AND MUST BE MARKED IN SETS FOR DELIVERY



BOTTOM VIEW

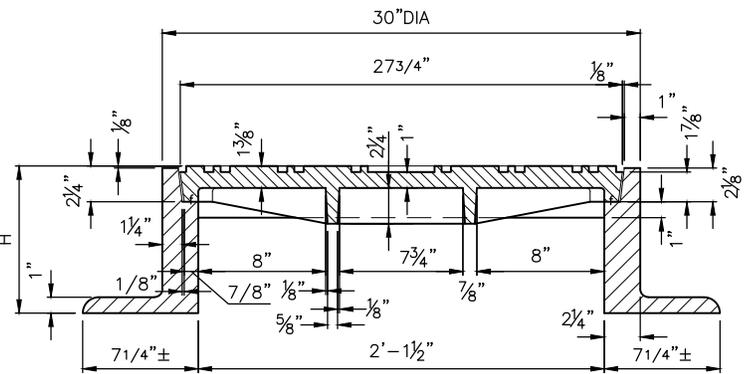


TOP VIEW



LIFTING HANDLE
(2 REQUIRED)

TYPE 361
H=91/4"
DESIGNATE SHALLOW FRAME AS TYPE 361S
H=41/4"
f=MACHINED FINISH



SECTION A-A

REF STD SPEC SEC 7-12

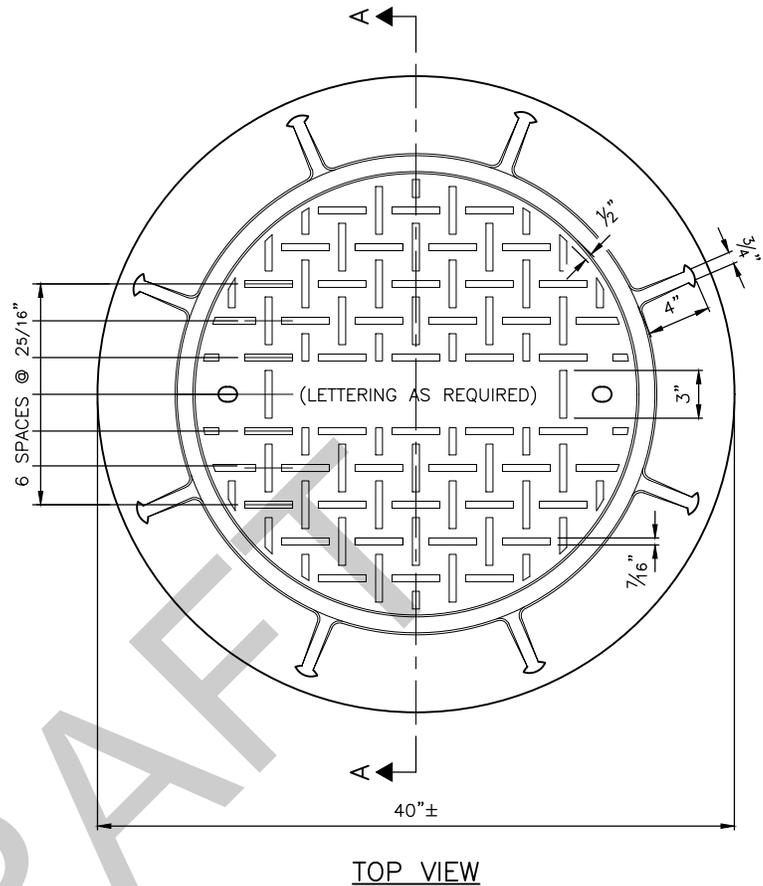
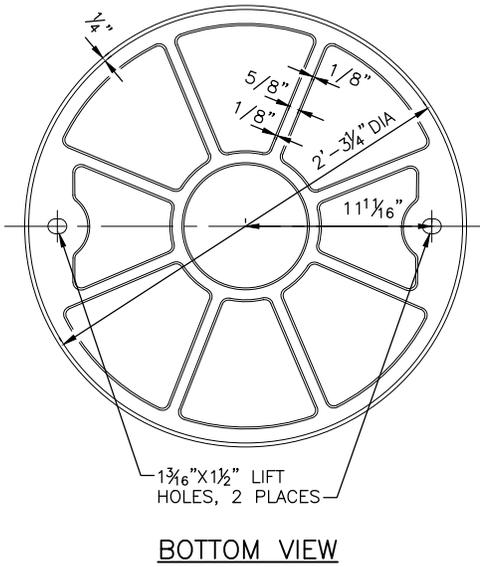


City of Seattle

NOT TO SCALE

TYPE 361a VALVE CHAMBER
FRAME & COVER IN
VEHICULAR TRAVELWAYS

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

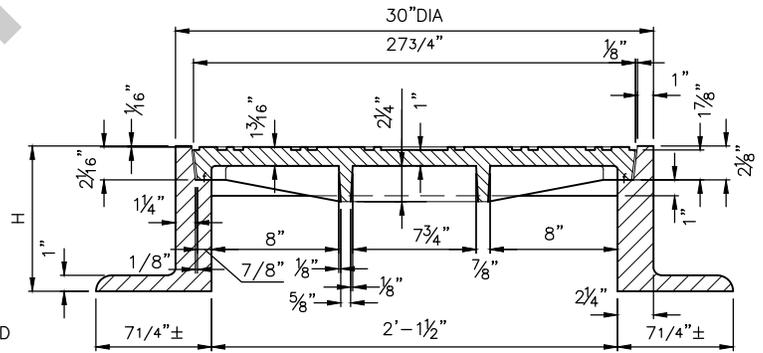


DRAFT

TYPE 361
H=9 1/4"

DESIGNATE SHALLOW FRAME AS TYPE 361S
H=4 1/4"

f=MACHINED FINISH



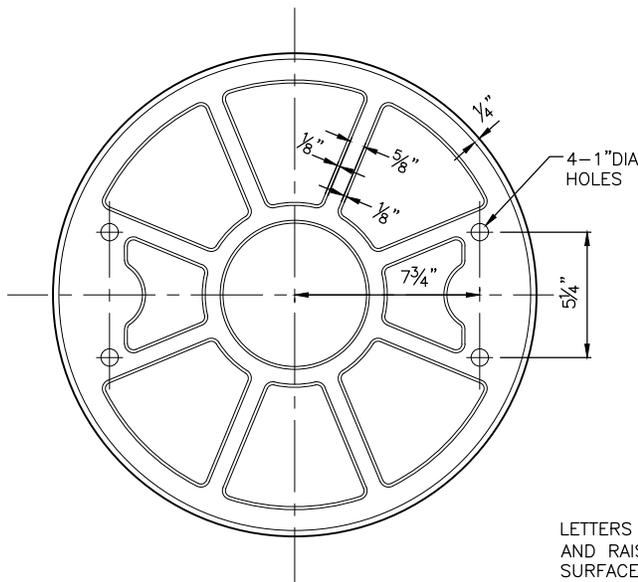
REF STD SPEC SEC 7-12



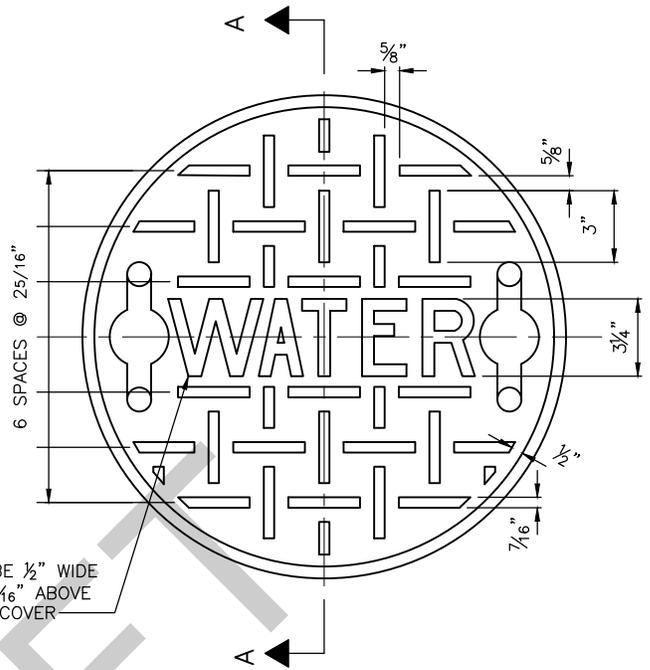
City of Seattle

NOT TO SCALE

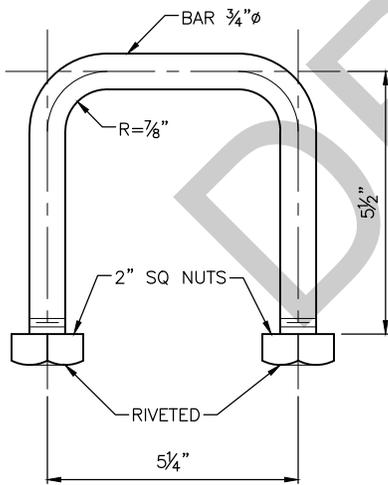
**TYPE 361b VALVE CHAMBER
FRAME & COVER IN
PEDESTRIAN PATHWAYS**



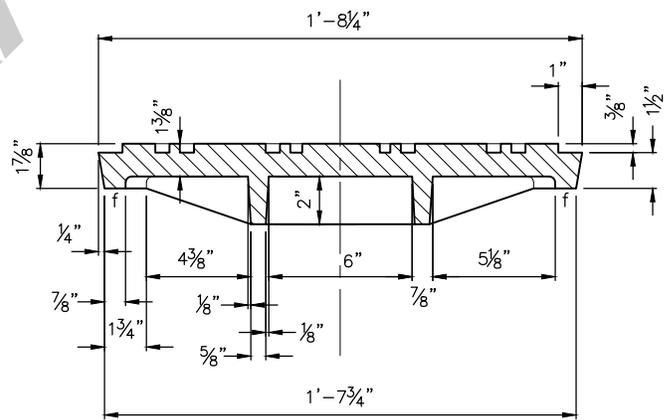
BOTTOM VIEW



TOP VIEW



LIFTING HANDLE
(2 REQUIRED)



SECTION A-A

f=MACHINED FINISH

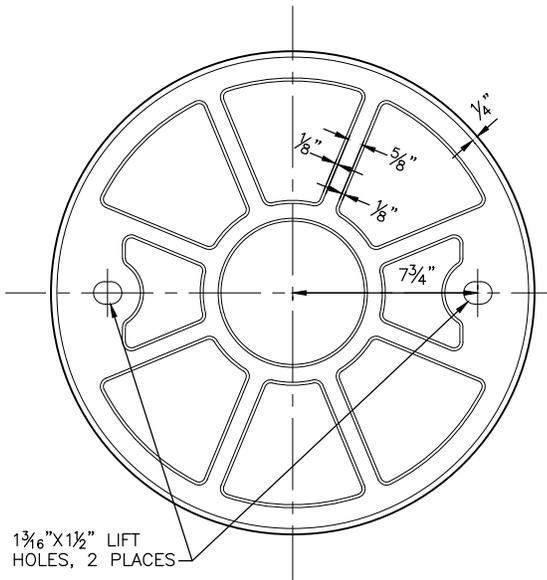
REF STD SPEC SEC 7-12, 7-20



City of Seattle

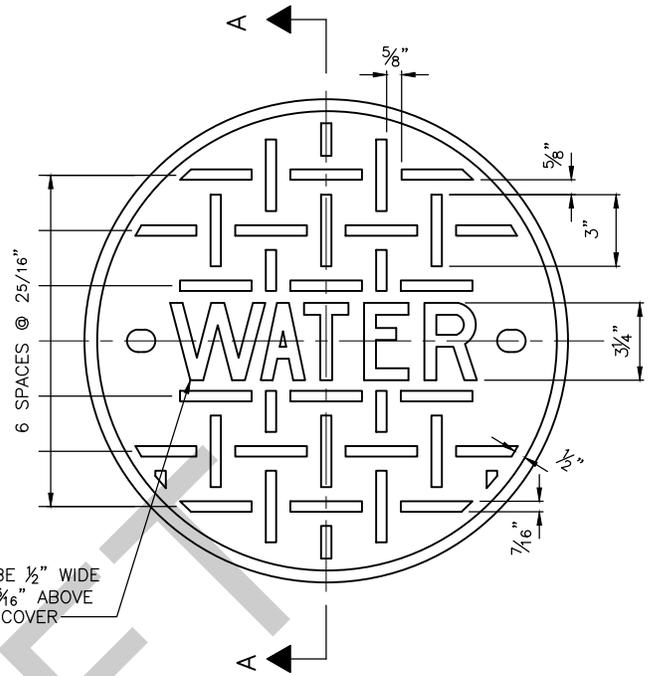
NOT TO SCALE

**TYPE 361c WATER VALVE
REPLACEMENT COVER IN
VEHICULAR TRAVELWAYS**



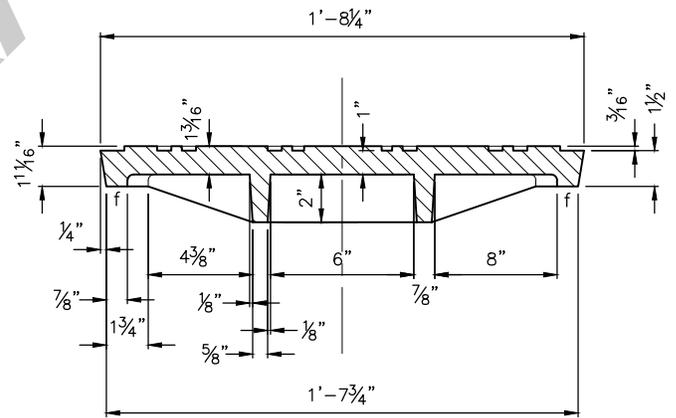
1 3/8" X 1 1/2" LIFT HOLES, 2 PLACES

BOTTOM VIEW



LETTERS TO BE 1/2" WIDE AND RAISED 3/16" ABOVE SURFACE OF COVER

TOP VIEW



SECTION A-A

f=MACHINED FINISH

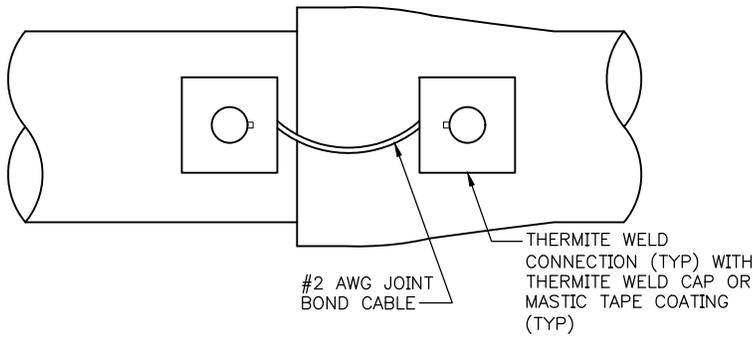
REF STD SPEC SEC 7-12, 7-20



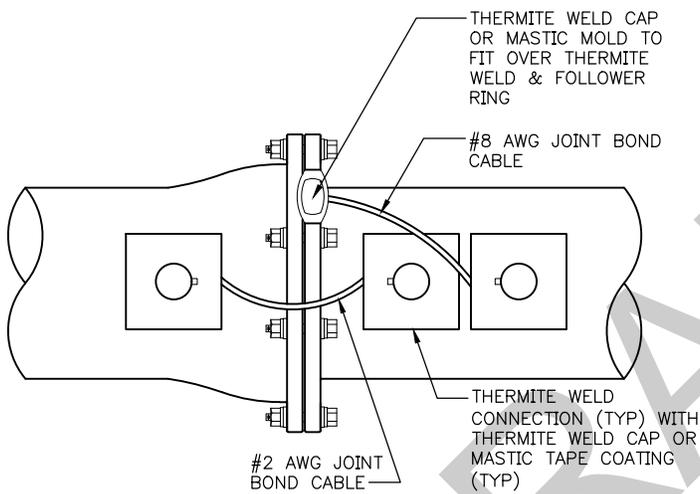
City of Seattle

NOT TO SCALE

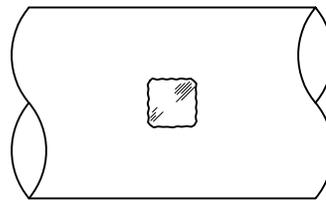
TYPE 361d WATER VALVE REPLACEMENT COVER IN PEDESTRIAN PATHWAYS



SLIP JOINT BOND CONNECTION



MECHANICAL JOINT BOND CONNECTION

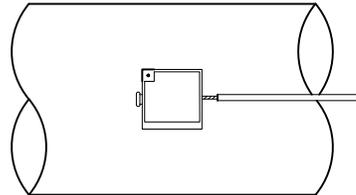


CONNECTION SEQUENCE:

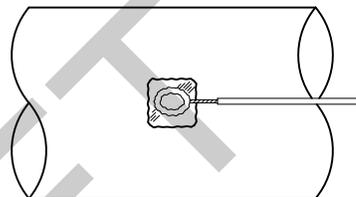
1. REMOVE PIPE COATING TO BRIGHT & CLEAN METAL



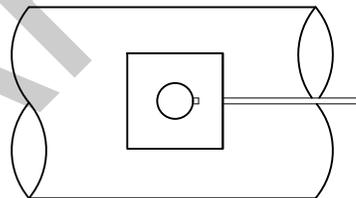
2. STRIP INSULATION FROM TEST STION WIRE, INSTALL ADAPTER SLEEVE



3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE



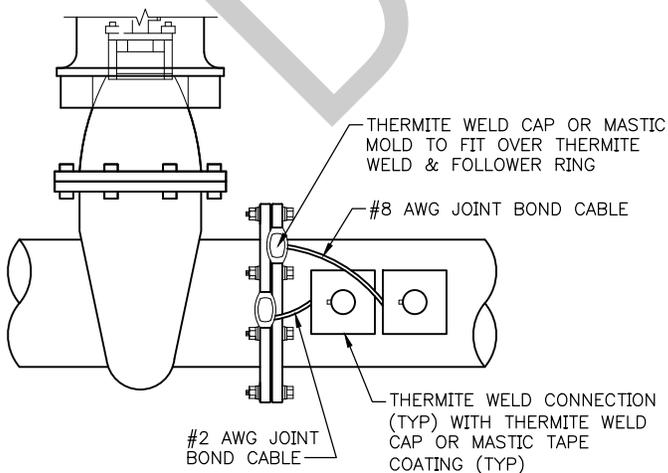
4. REMOVE SLAG AND ALLOW TO COOL



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



VALVE JOINT BOND CONNECTION

NOTES:

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

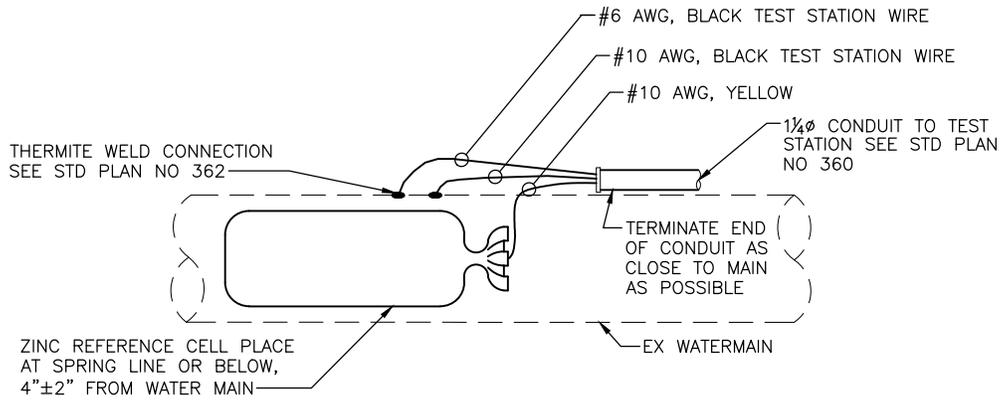
REF STD SPEC SEC 7-11



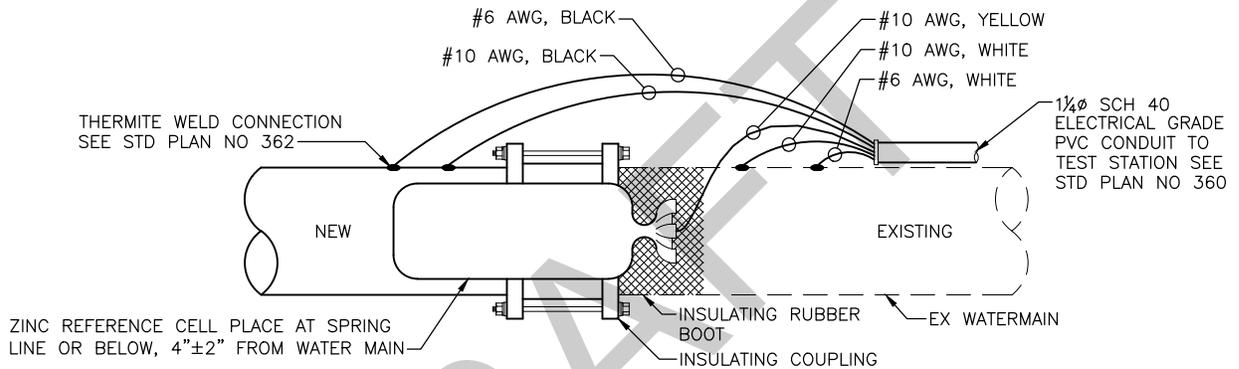
City of Seattle

NOT TO SCALE

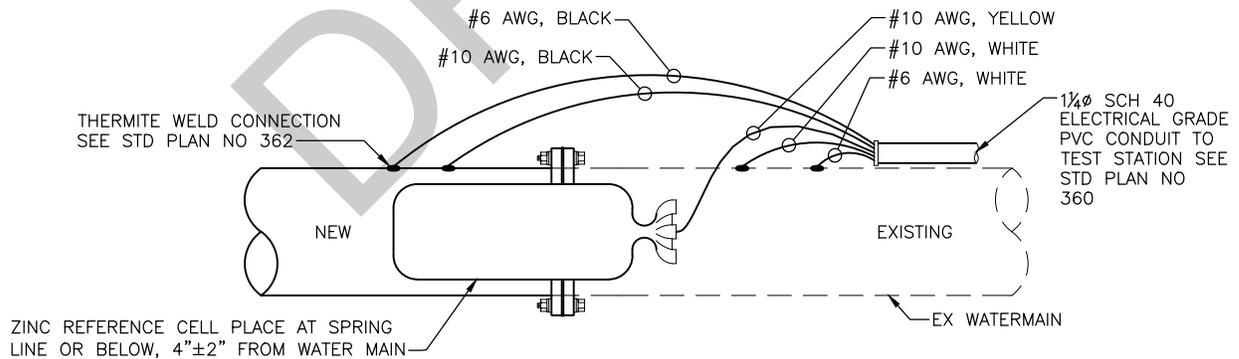
JOINT BONDING FOR DIP WATERMAINS & JOINT BONDING DETAIL



STANDARD 3-WIRE TEST STATION



INSULATING COUPLING 5-WIRE TEST STATION



INSULATING FLANGE 5-WIRE TEST STATION

NOTE:

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

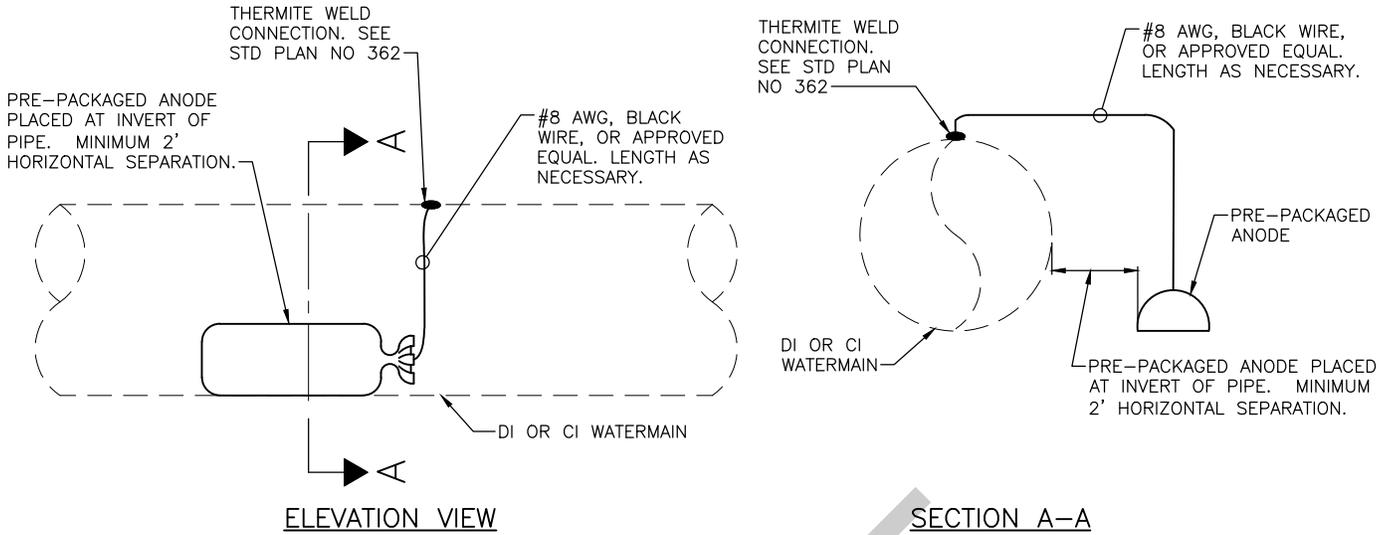
REF STD SPEC SEC 7-11.3(15), 9-30.12



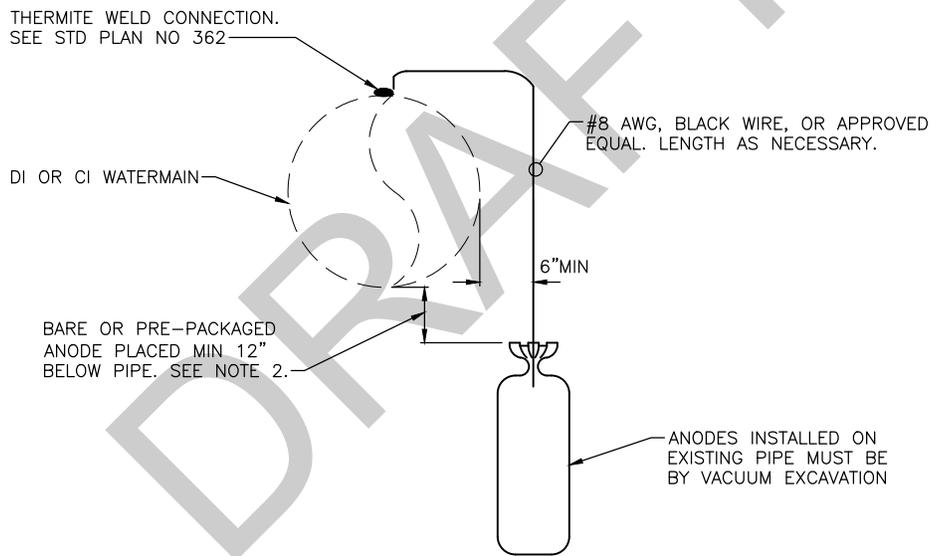
City of Seattle

NOT TO SCALE

**ELECTROLYSIS TEST STATION
 WIRE INSTALLATION DETAILS**



TYPICAL SINGLE HORIZONTAL ANODE INSTALLATION



TYPICAL SINGLE VERTICAL ANODE INSTALLATION

NOTES:

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

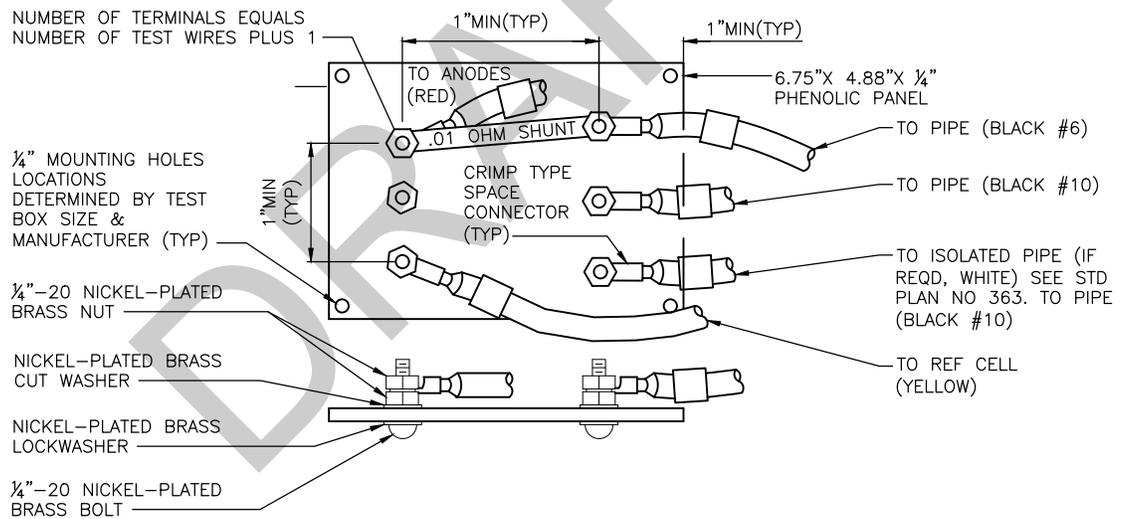
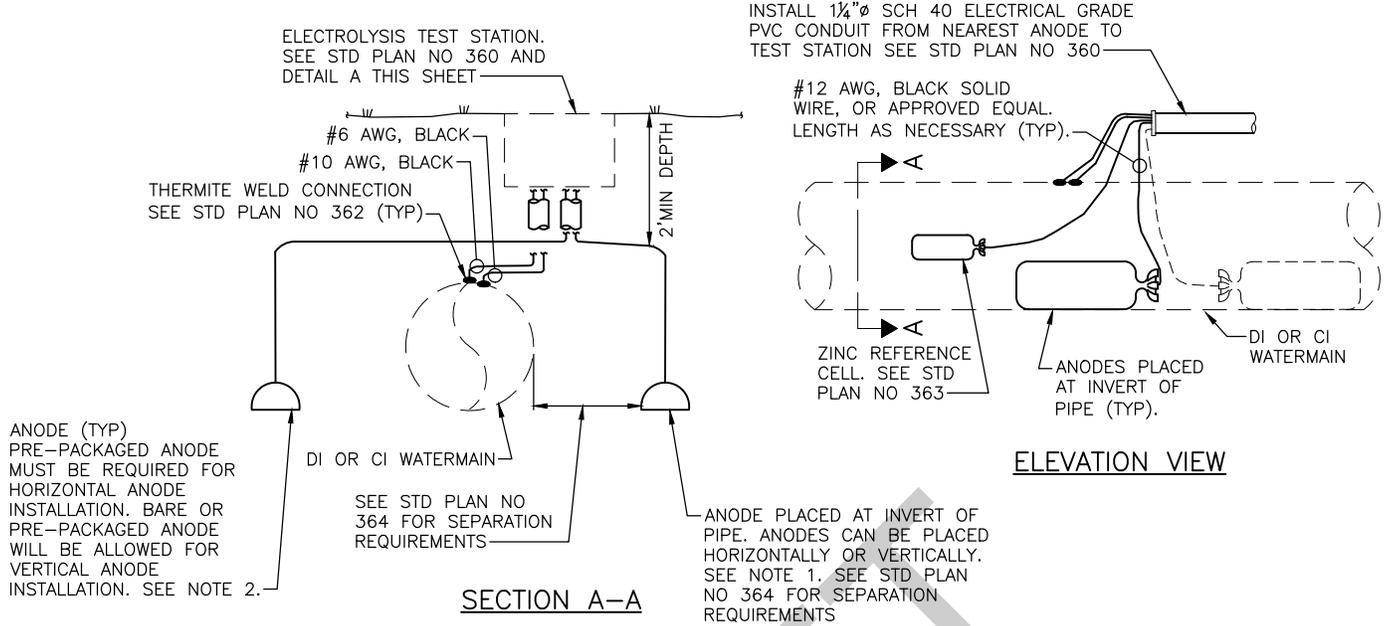
REF STD SPEC SEC 7-11, 9-30



City of Seattle

NOT TO SCALE

SACRIFICIAL ANODE BONDED TO PIPE INSTALLATION DETAILS



NOTES:

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

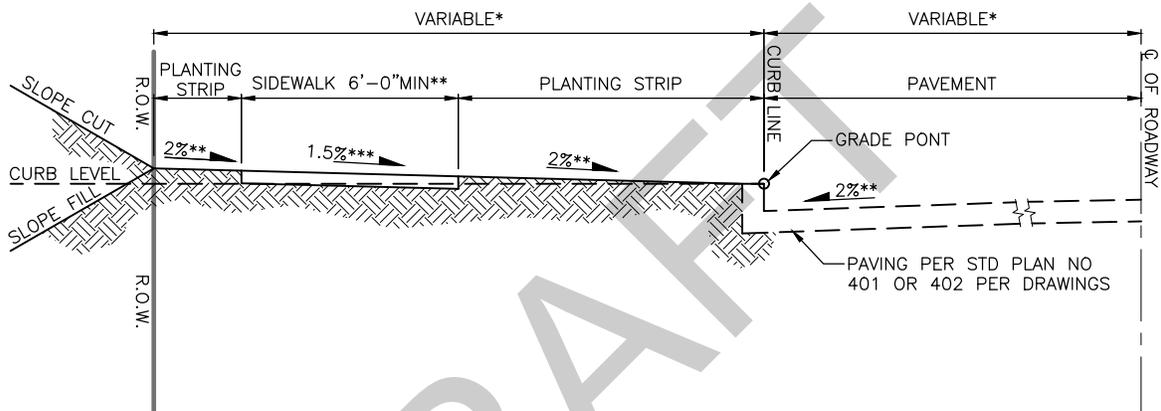
REF STD SPEC SEC 7-11, 9-30



City of Seattle

NOT TO SCALE

**SACRIFICIAL ANODE INSTALLATION
DETAILS - MULTIPLE ANODES
CONNECTED AT TEST STATION**



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

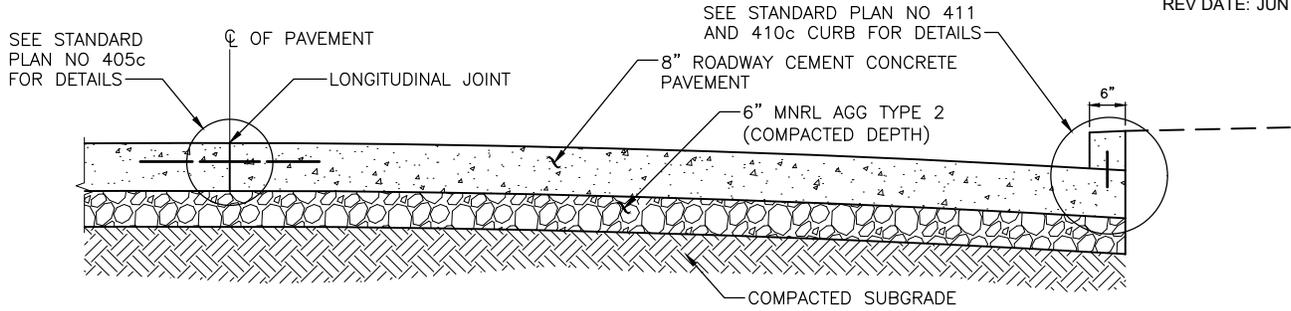
REF STD SPEC SEC 2-04



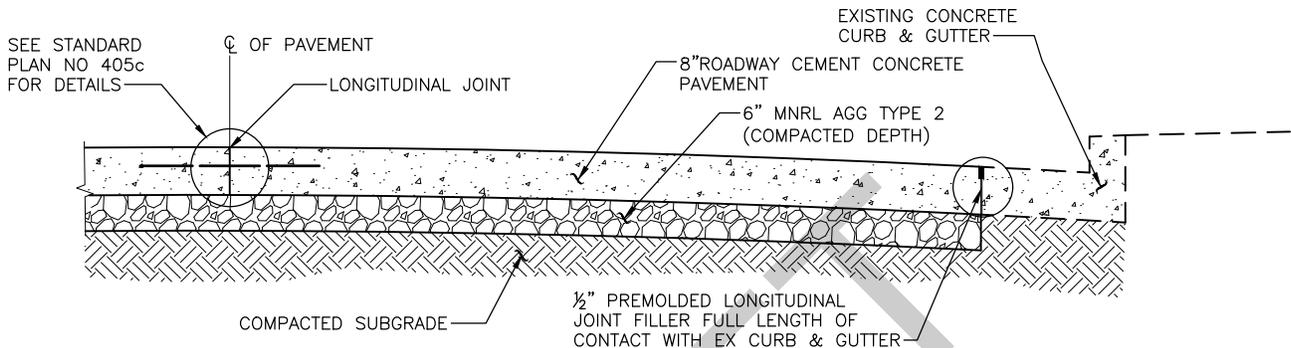
City of Seattle

NOT TO SCALE

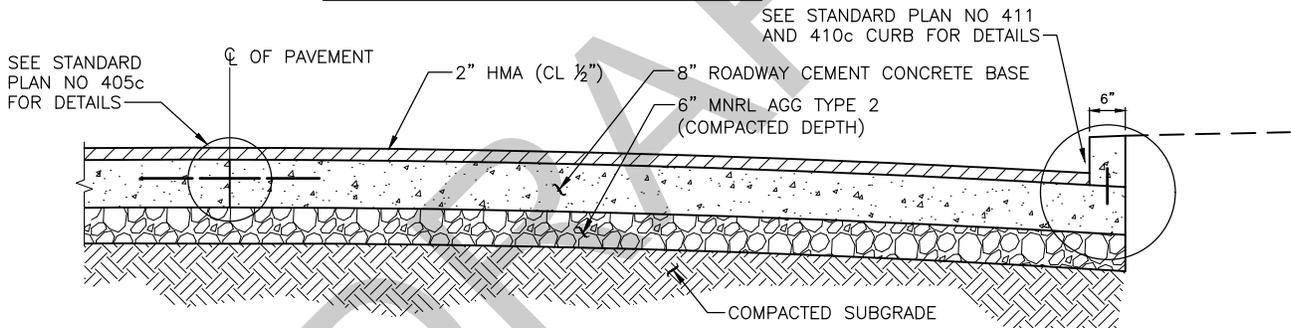
HALF SECTION, GRADING



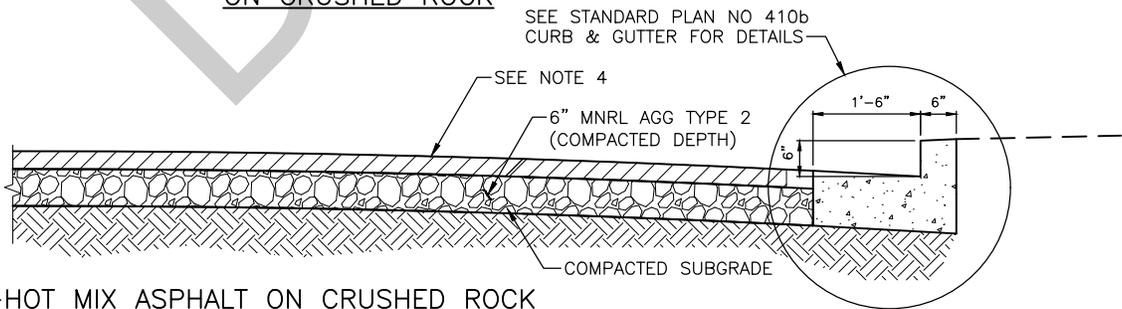
401A—ROADWAY CEMENT CONCRETE PAVEMENT ON CRUSHED ROCK



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



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



401D—HOT MIX ASPHALT ON CRUSHED ROCK

HMA DESIGN CRITERIA:

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

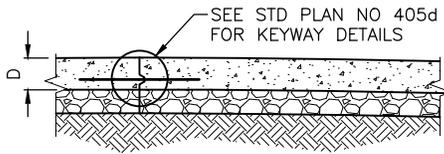
REF STD SPEC SEC 4-04, 5-04, 5-05, 8-04



City of Seattle

NOT TO SCALE

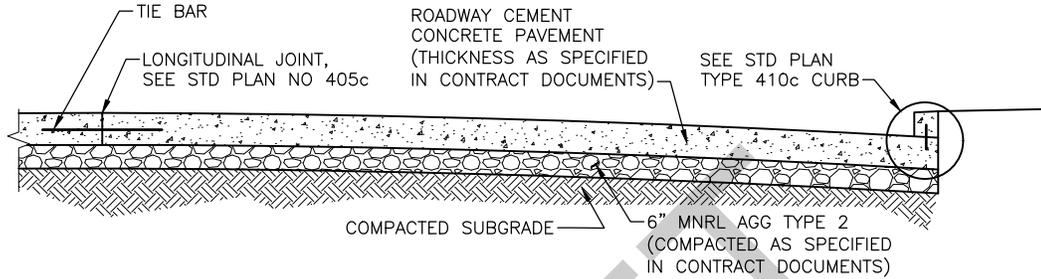
RESIDENTIAL PAVEMENT SECTIONS



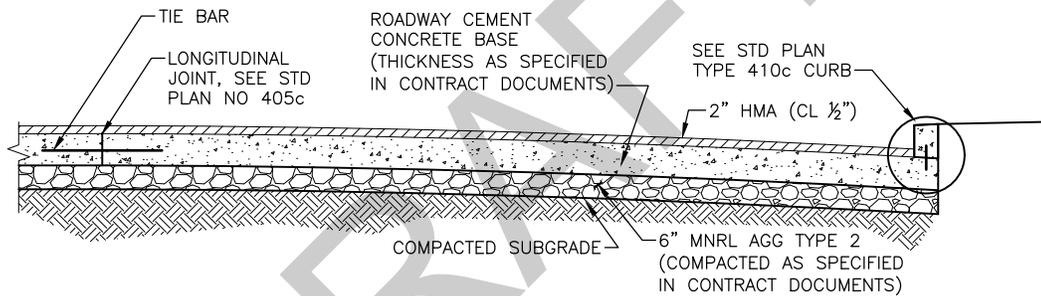
OPTIONAL KEYWAY
FOR LONGITUDINAL JOINT

NOTES:

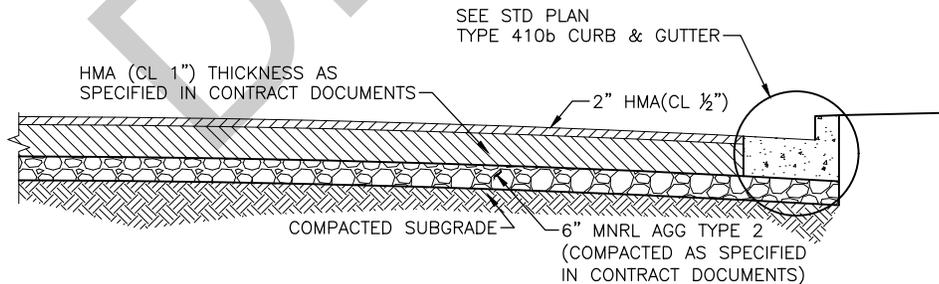
IF CONC THICKNESS IS 9 INCH OR GREATER
OPTIONAL KEYWAY MAY BE USED SEE STD PLANS
NO 405c & 405d FOR DETAILS



402A—ROADWAY CEMENT CONCRETE PAVEMENT ON CRUSHED ROCK



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



402C—HOT MIX ASPHALT ON CRUSHED ROCK

HMA DESIGN CRITERIA:

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

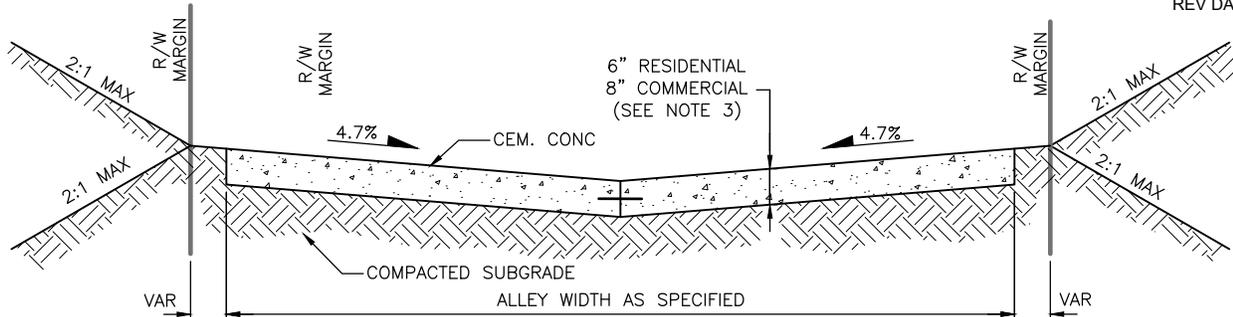
REF STD SPEC SEC 4-04, 5-04, 5-05, 8-04



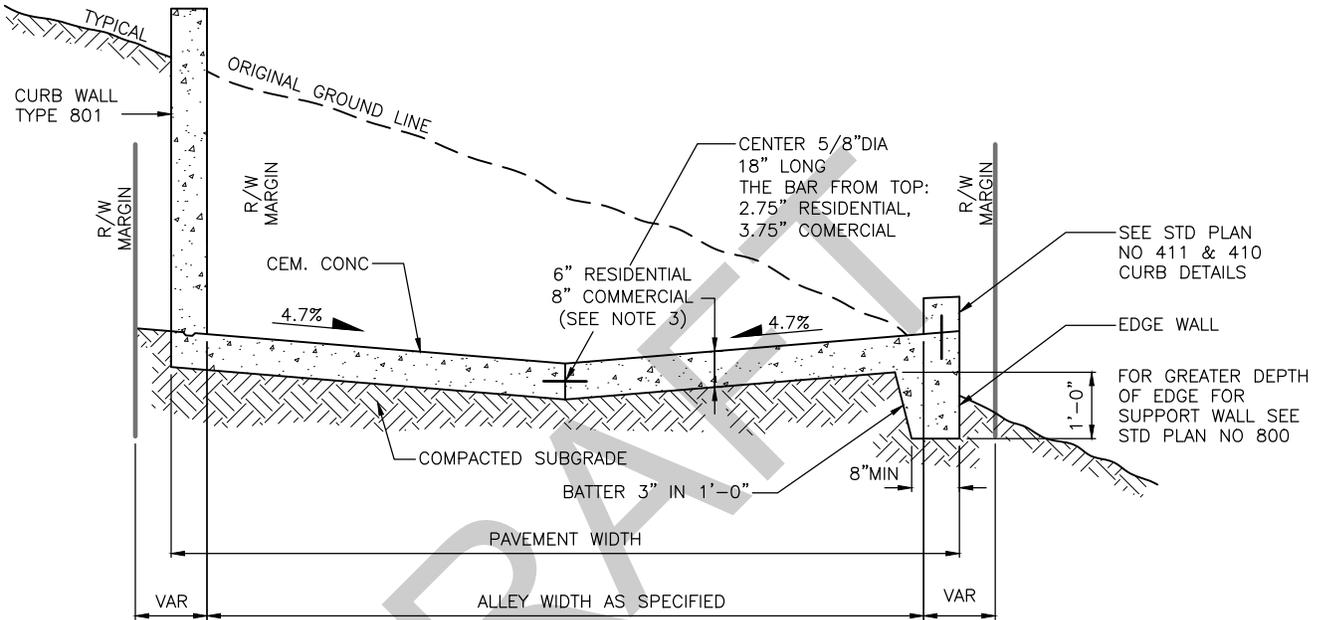
City of Seattle

NOT TO SCALE

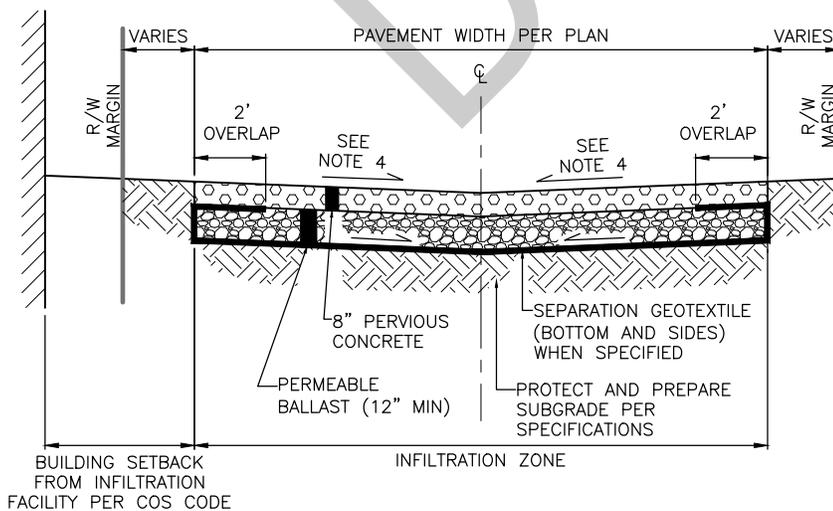
**COMMERCIAL AND
ARTERIAL PAVEMENT
SECTIONS**



CONCRETE ALLEY PAVEMENT



CEMENT CONCRETE ALLEY PAVEMENT 403B-FOR SHALLOW EMBANKMENT AREA



PERVIOUS CONCRETE PAVEMENT

NOTES:

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

REF STD SPEC SEC 5-06, 8-17, 8-19



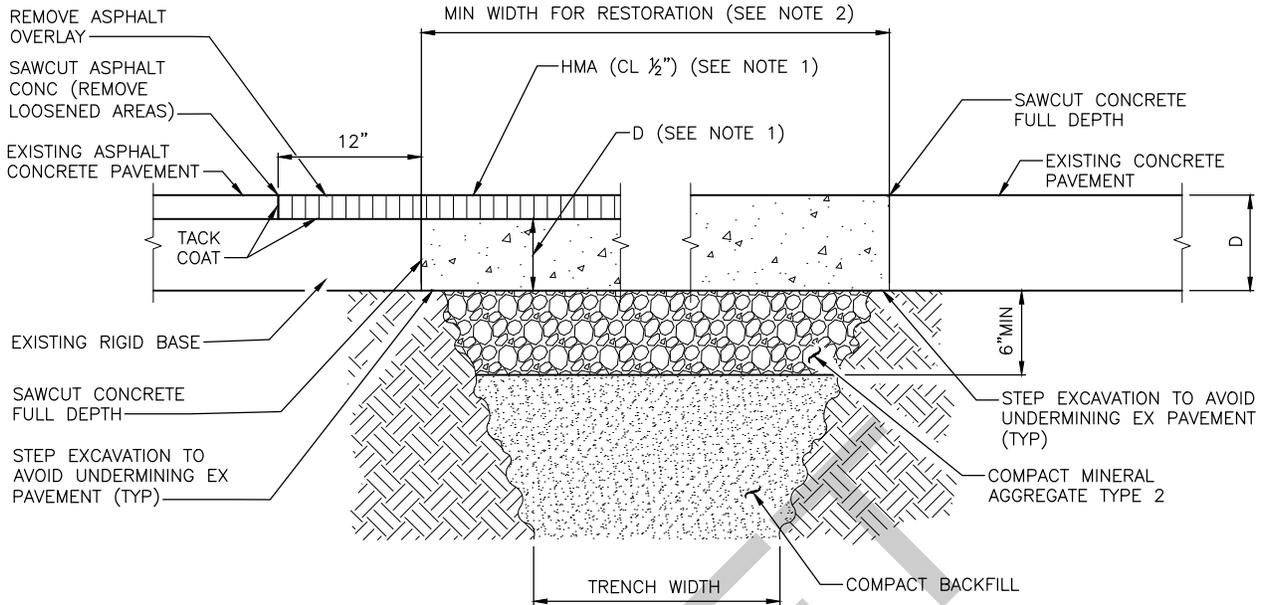
City of Seattle

NOT TO SCALE

ROADWAY CEMENT CONCRETE ALLEY PAVEMENTS

HALF SECTION

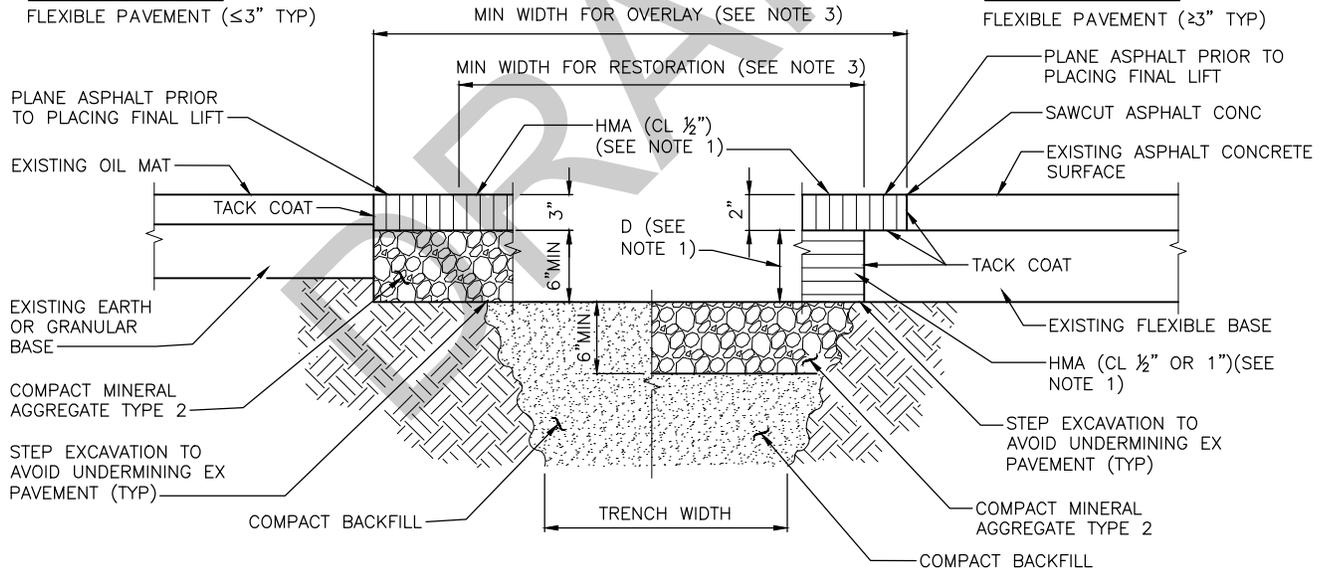
RIGID PAVEMENT WITH ASPHALT CONCRETE SURFACE



TYPICAL PATCH FOR RIGID PAVEMENT

HALF SECTION

FLEXIBLE PAVEMENT (≤3" TYP)



TYPICAL PATCH FOR FLEXIBLE PAVEMENT

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

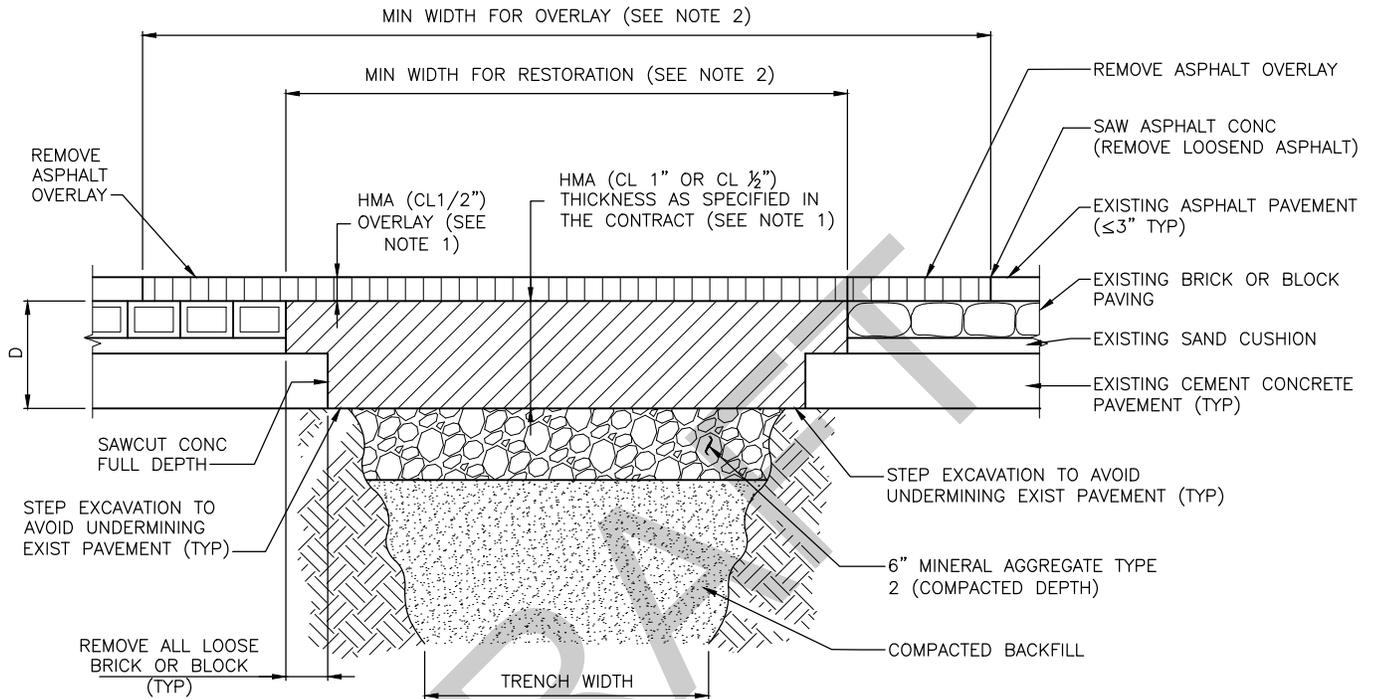
REF STD SPEC SEC 2-02, 5-04, 5-05



City of Seattle

NOT TO SCALE

PAVEMENT PATCHING



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

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

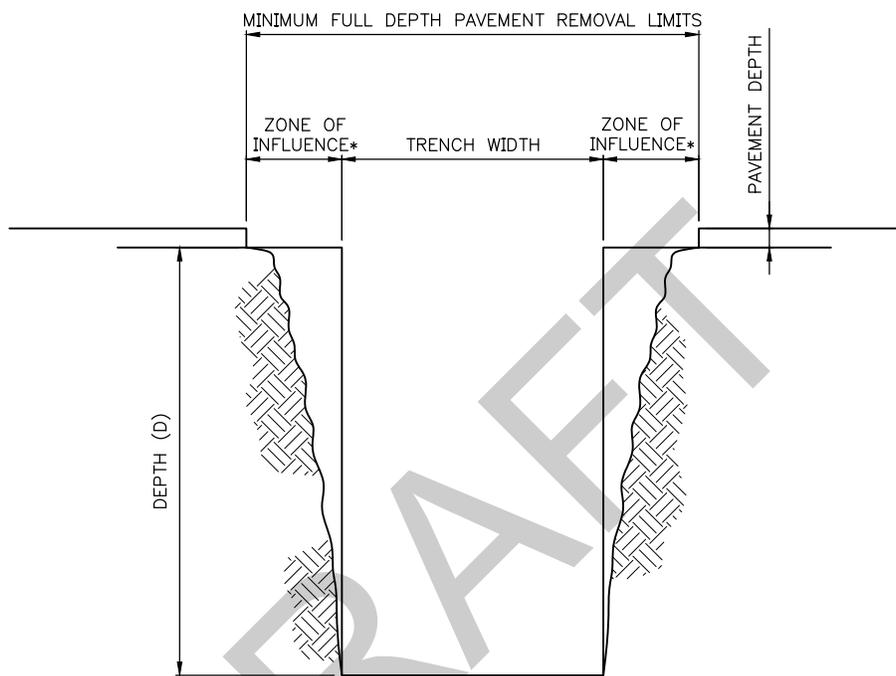
REF STD SPEC SEC 2-02, 5-04, 5-05



City of Seattle

NOT TO SCALE

PAVEMENT PATCHING



*TYPICALLY D/4

NOTES:

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

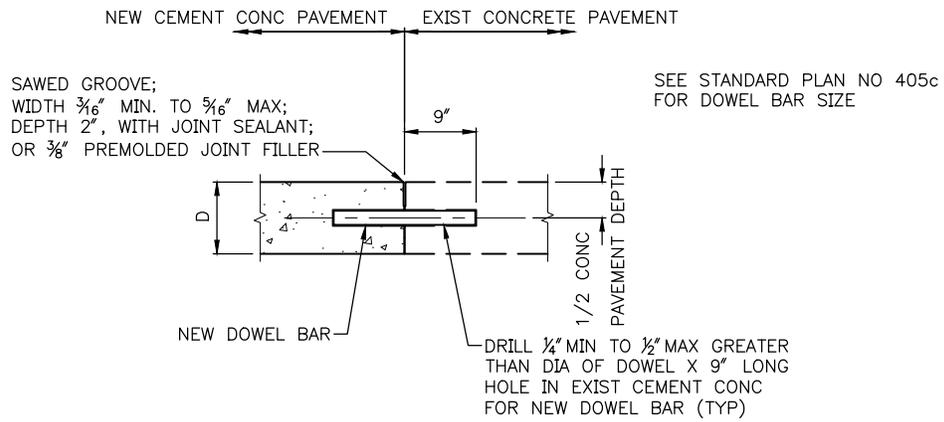
REF STD SPEC SEC 2-02, 2-04



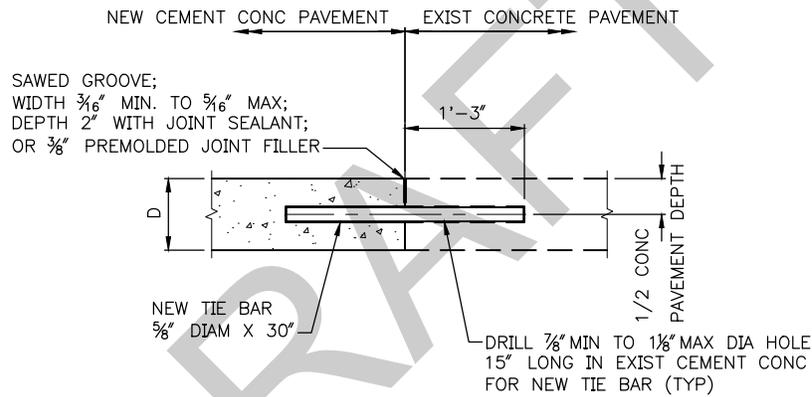
City of Seattle

NOT TO SCALE

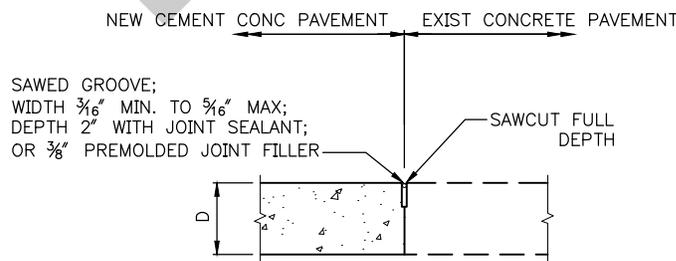
PAVEMENT OPENING
ZONE OF INFLUENCE



SECTION A-A
DOWEL BAR DETAIL



SECTION B-B
TIE BAR DETAIL



WITHOUT TIE BAR OR DOWEL

USE ONLY WHEN SHOWN IN
CONTRACT OR APPROVED BY
THE ENGINEER

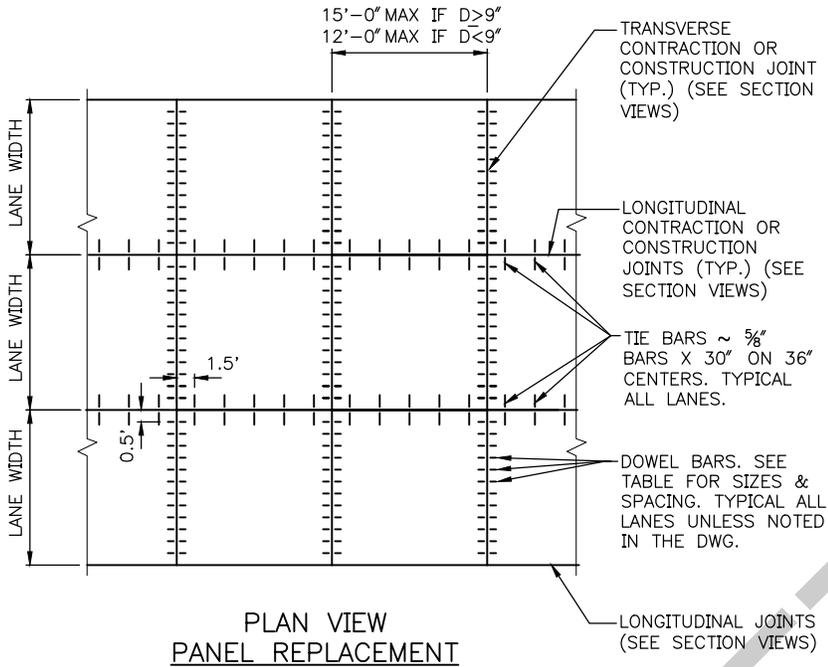
REF STD SPEC SEC 5-05



City of Seattle

NOT TO SCALE

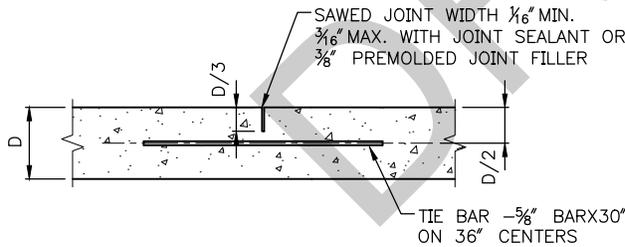
PAVEMENT REPAIR
DOWEL BAR AND
TIE BAR DETAILS



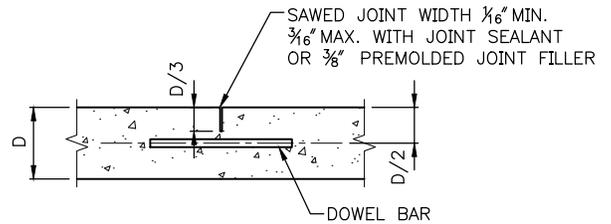
NOTES:

- 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 MUST NOT BE PLACED WITHIN 15 INCHES OF THE EDGE OF PAVEMENT OR A PARALLEL JOINT.
- DOWEL BARS NOT REQUIRED FOR RESIDENTIAL PAVEMENT SECTIONS. SEE STD PLAN NO 401.

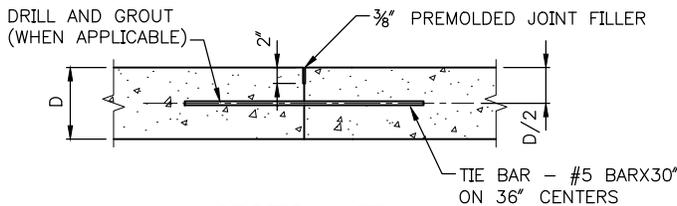
DEPTH (D) OF RDWY CEM. CONC	SOLID STEEL DOWEL BAR SIZE OUTSIDE DIAMETER (OD) X LENGTH (L) @ ON CENTER (OC)	TUBULAR DOWEL BAR SIZE OUTSIDE DIAMETER (OD), WALL THICKNESS X LENGTH (L) @ ON CENTER (OC)
6" ≤ D < 9"	1.00" OD X 18" L @ 12" OC	1.375" OD, 0.120: MIN X 18" L @ 12" OC
9" ≤ D < 11"	1.25" OD X 18"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



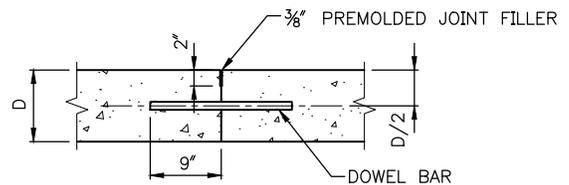
**SECTION VIEW
LONGITUDINAL CONTRACTION JOINT**



**SECTION VIEW
TRANSVERSE CONTRACTION JOINT**



**SECTION VIEW
LONGITUDINAL CONSTRUCTION JOINT**



**SECTION VIEW
TRANSVERSE CONSTRUCTION JOINT**

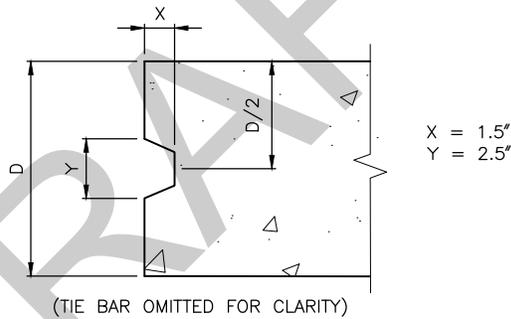
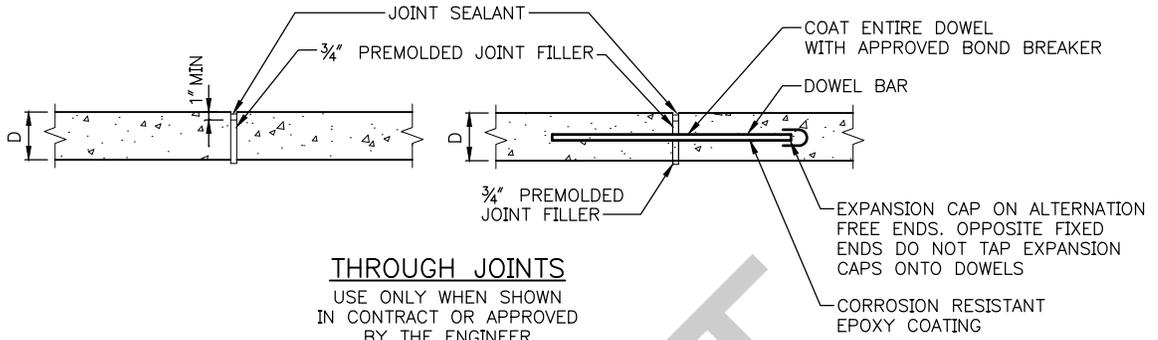
REF STD SPEC SEC 5-05



City of Seattle

NOT TO SCALE

ROADWAY CONCRETE PAVEMENT JOINTS



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

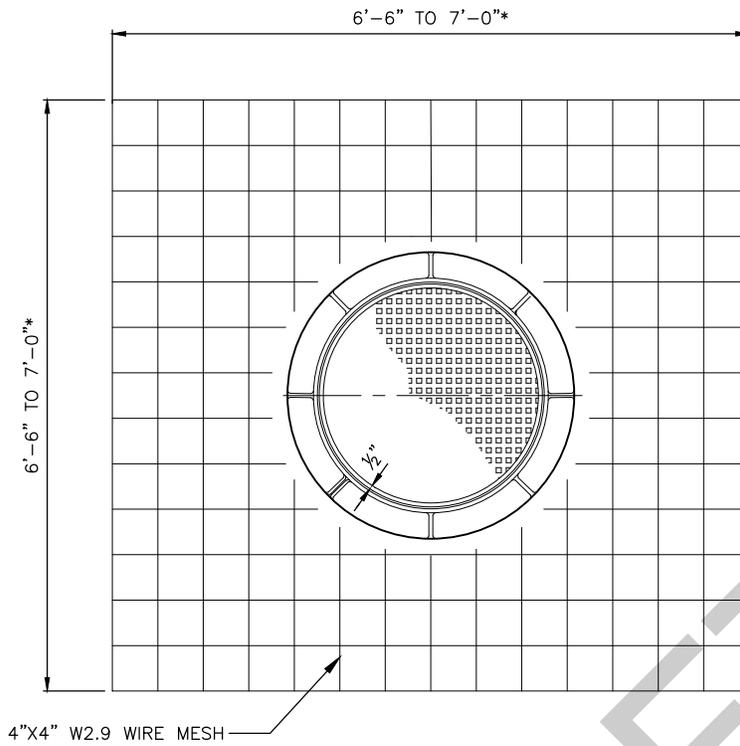
REF STD SPEC SEC 5-05



City of Seattle

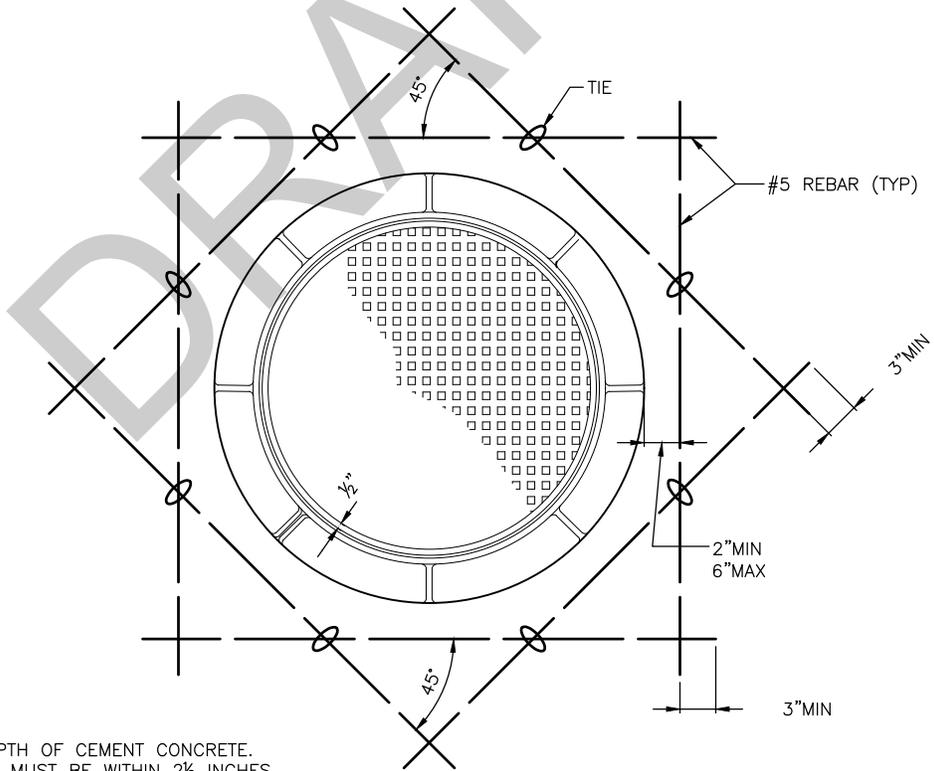
NOT TO SCALE

**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 MUST BE ADJUSTED WHERE PAVEMENT JOINTS ARE ENCOUNTERED.
3. NO REINFORCING STEEL MUST BE WITHIN 2 1/2 INCHES (3 INCHES DESIRED) OF ANY CEMENT CONCRETE SURFACE OR JOINT.



NOTES:

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

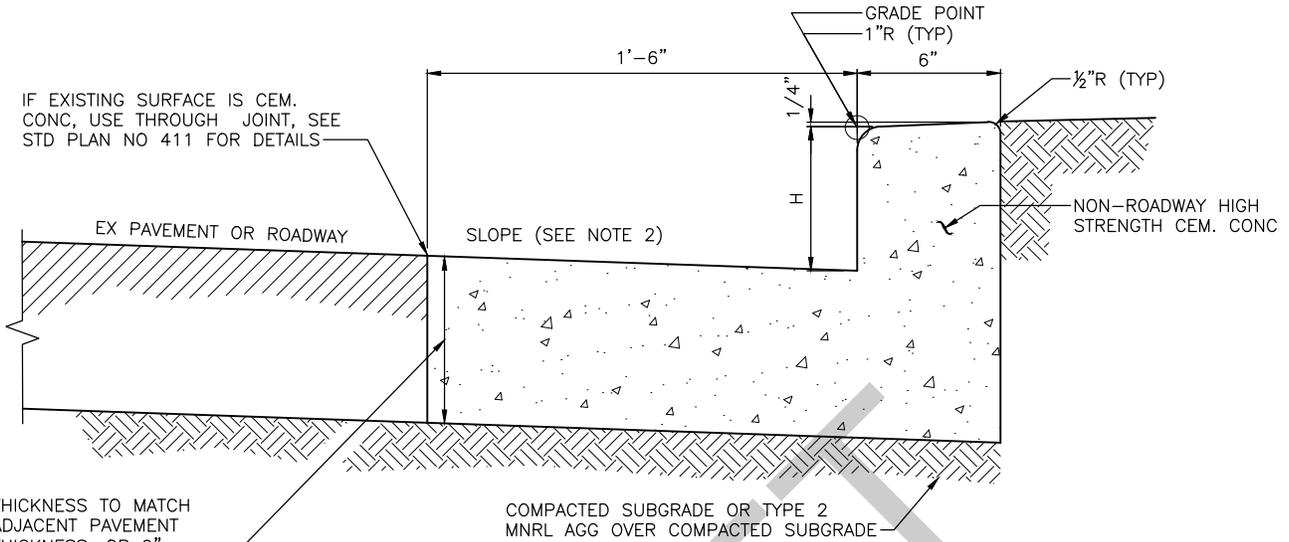
REF STD SPEC SEC 5-05



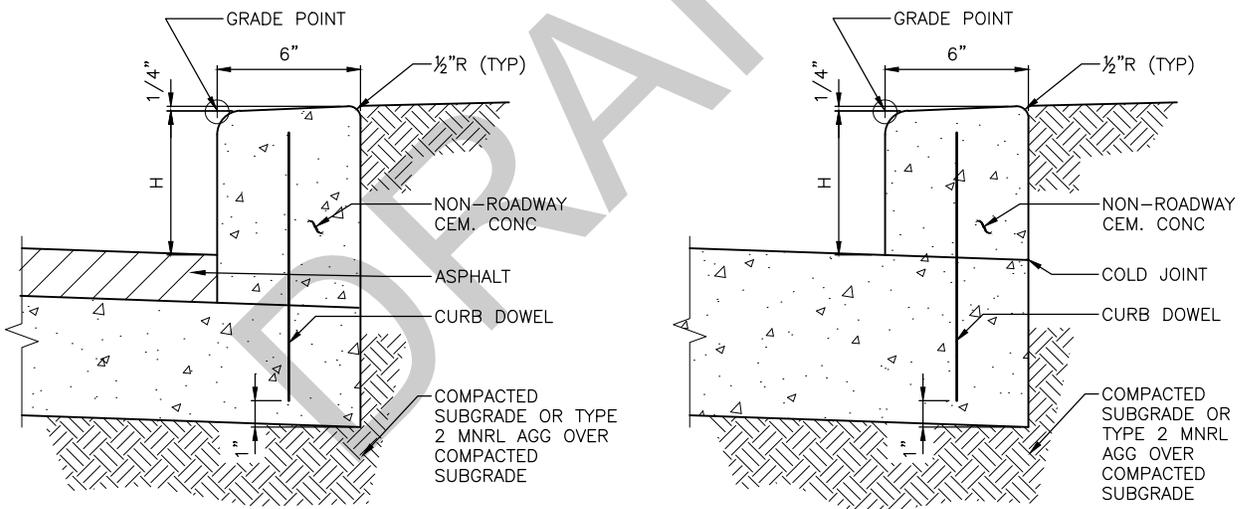
City of Seattle

NOT TO SCALE

**FRAME & COVER CEMENT
CONCRETE REINFORCEMENT
DETAIL**



410B CURB & GUTTER



410C CURB

NOTES:

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

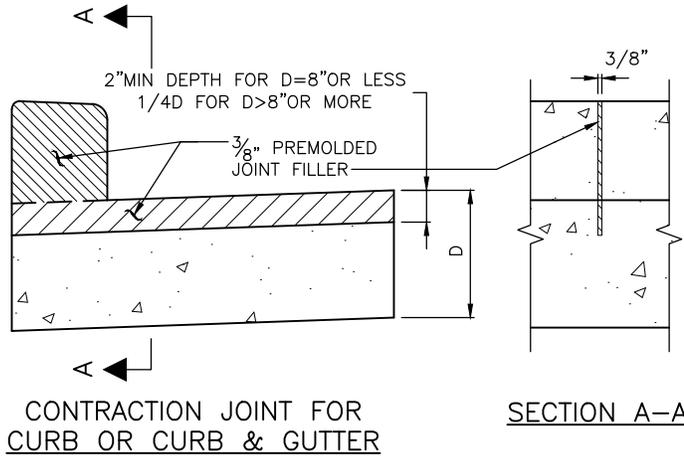
REF STD SPEC SEC 8-04



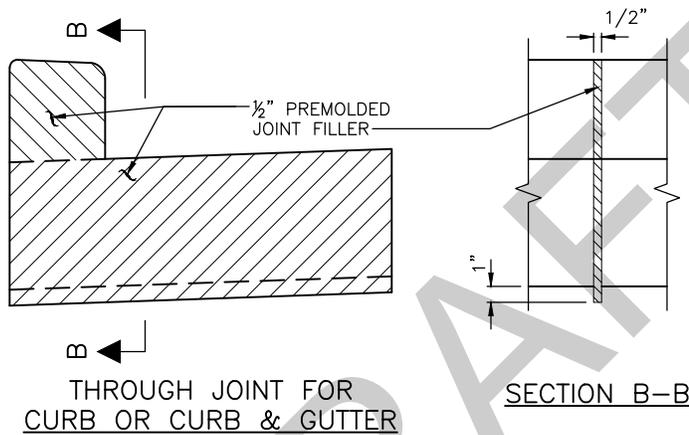
City of Seattle

NOT TO SCALE

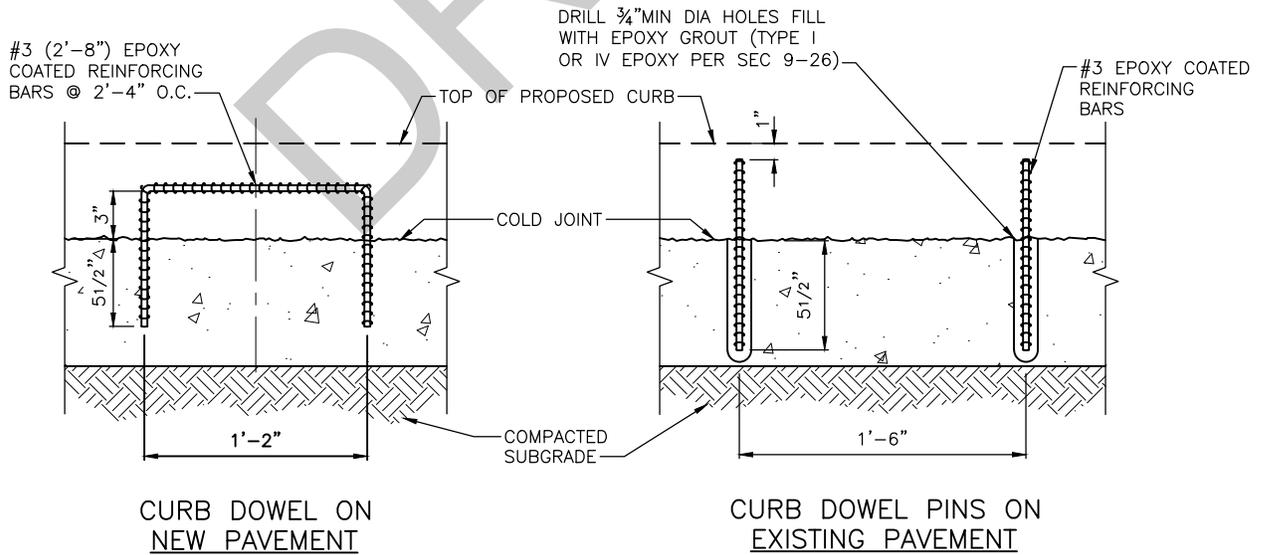
TYPE 410 CURB



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



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



DOWELS FOR DOWELLED CURB CONSTRUCTION

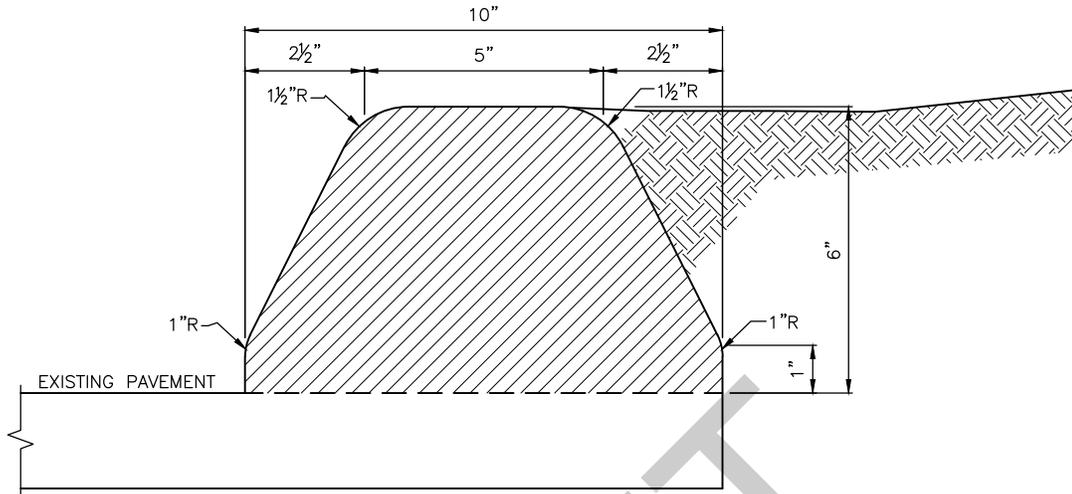
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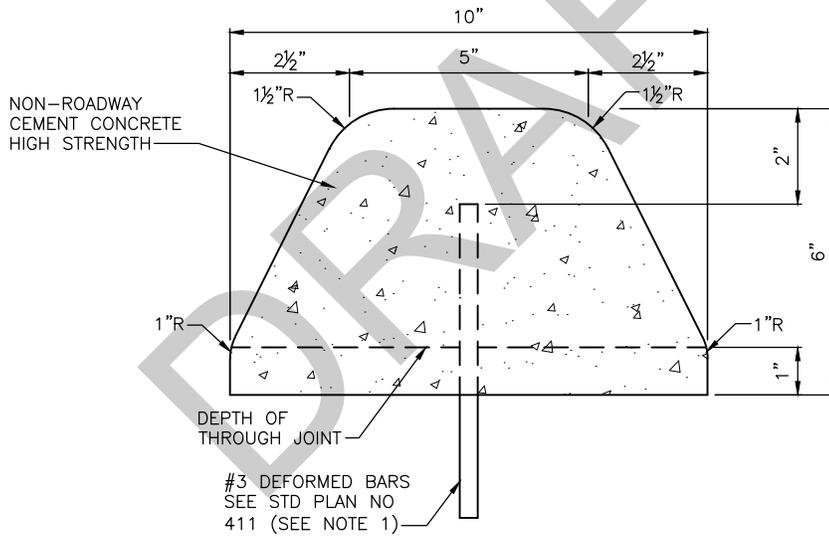
City of Seattle

NOT TO SCALE

CURB JOINTS & DOWELS



EXTRUDED ASPHALT CONCRETE CURB



EXTRUDED CEMENT CONCRETE CURB

NOTE:

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

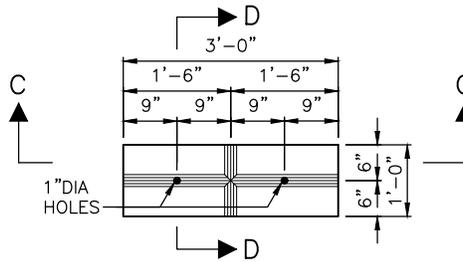
REF STD SPEC SEC 8-06



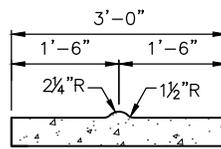
City of Seattle

NOT TO SCALE

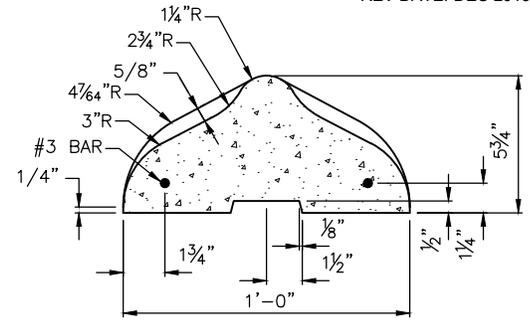
EXTRUDED CURB



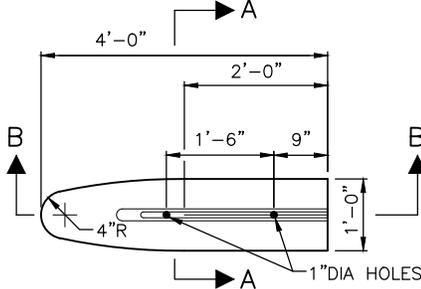
CURB PLAN



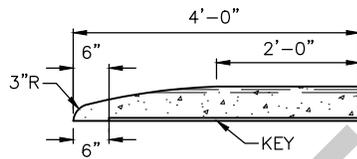
SECTION C-C



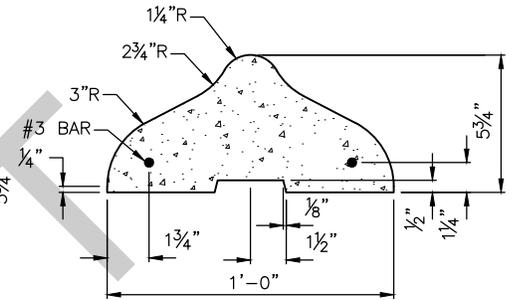
SECTION D-D



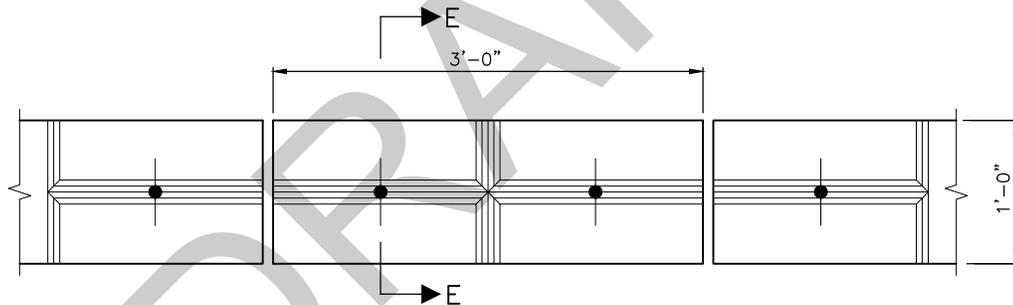
NOSING



SECTION B-B



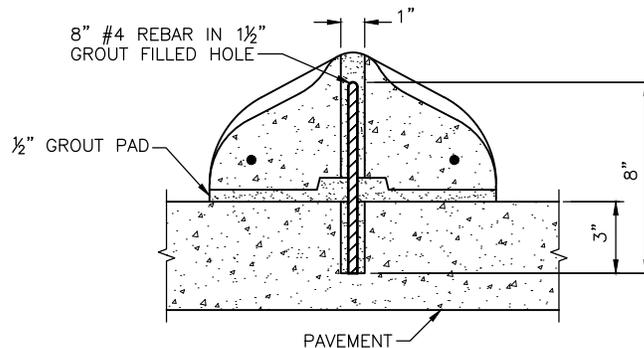
SECTION A-A



INSTALLATION DETAIL FOR STRAIGHT PRECAST TRAFFIC CURB

NOTE:

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



SECTION E-E

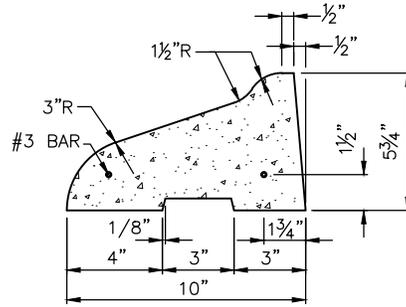
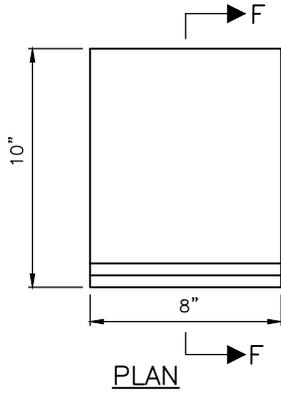
REF STD SPEC SEC 8-07



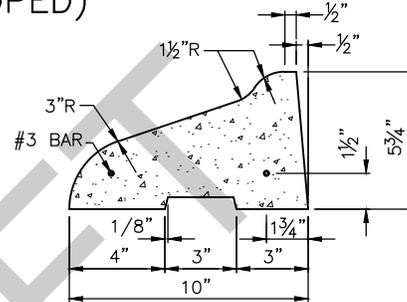
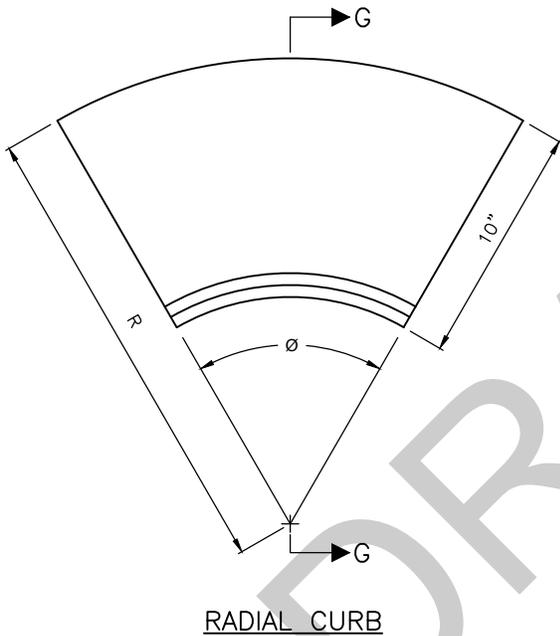
City of Seattle

NOT TO SCALE

3' PRECAST TRAFFIC CURB
(DUAL SLOPED)



8" STRAIGHT BLOCK CURB
(SINGLE SLOPED)



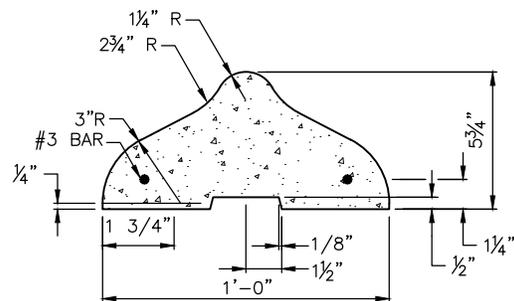
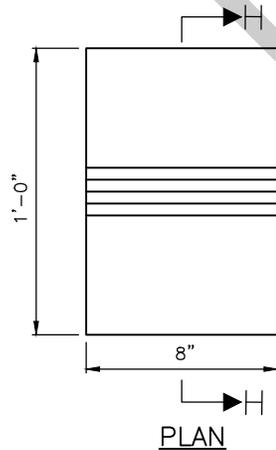
SECTION G-G

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

RADIUS CURB TABLE



SECTION H-H

8" STRAIGHT BLOCK CURB
(DUAL SLOPED)

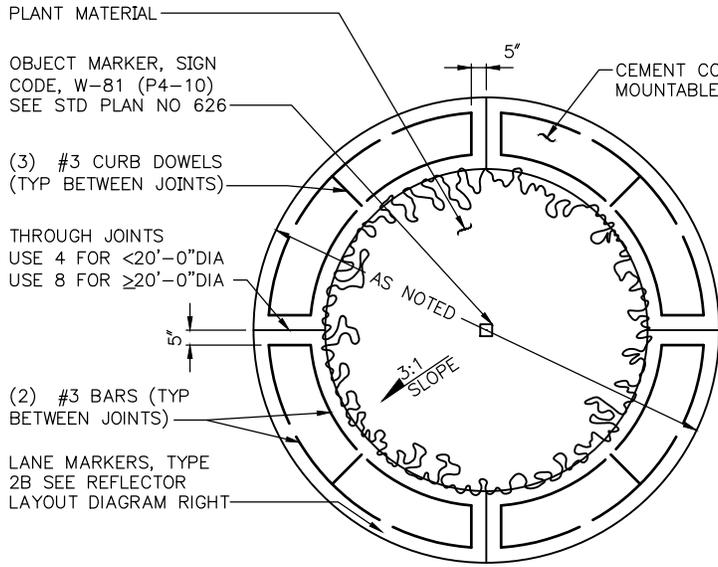
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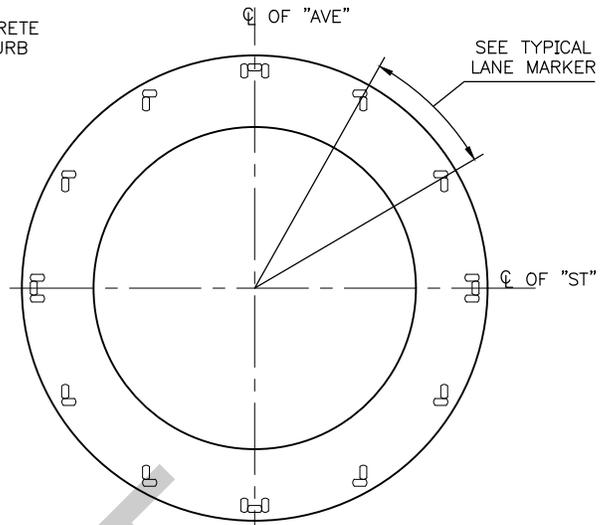
City of Seattle

NOT TO SCALE

8" BLOCK AND RADIAL TRAFFIC CURB



TYPICAL TRAFFIC CIRCLE

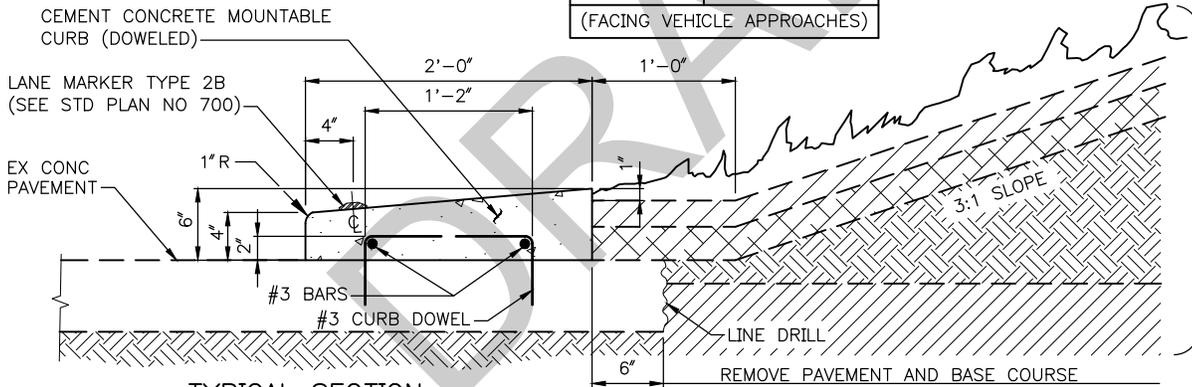


TRAFFIC CIRCLE REFLECTOR LAYOUT

SPACING CHART

DIAMETER OF CIRCLE	DEGREE OF SPACING
≤12'-0"	EVERY 45°
≤20'-0"	EVERY 30°
>20'-0"	EVERY 22 1/2°

(FACING VEHICLE APPROACHES)

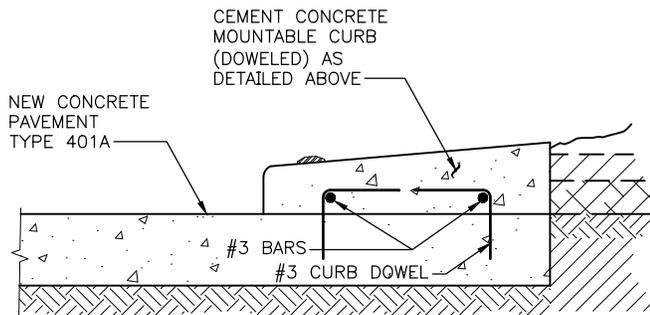


TYPICAL SECTION

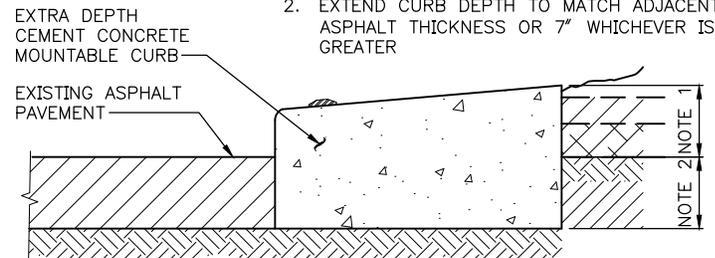
REMOVE PAVEMENT AND BASE COURSE THOROUGHLY LOOSEN SUBSOIL TO 6" DEPTH (AFTER COMPLETE REMOVAL OF ALL PAVEMENT AND BASE MATERIAL)

NOTES:

1. DIMENSIONS ABOVE PAVEMENT EXTENSION TO MATCH SECTION DETAILED ELSEWHERE ON THIS STD PLAN
2. EXTEND CURB DEPTH TO MATCH ADJACENT ASPHALT THICKNESS OR 7" WHICHEVER IS GREATER



SEE TYP SECTION ABOVE FOR DIMENSIONS



TYPICAL SECTIONS

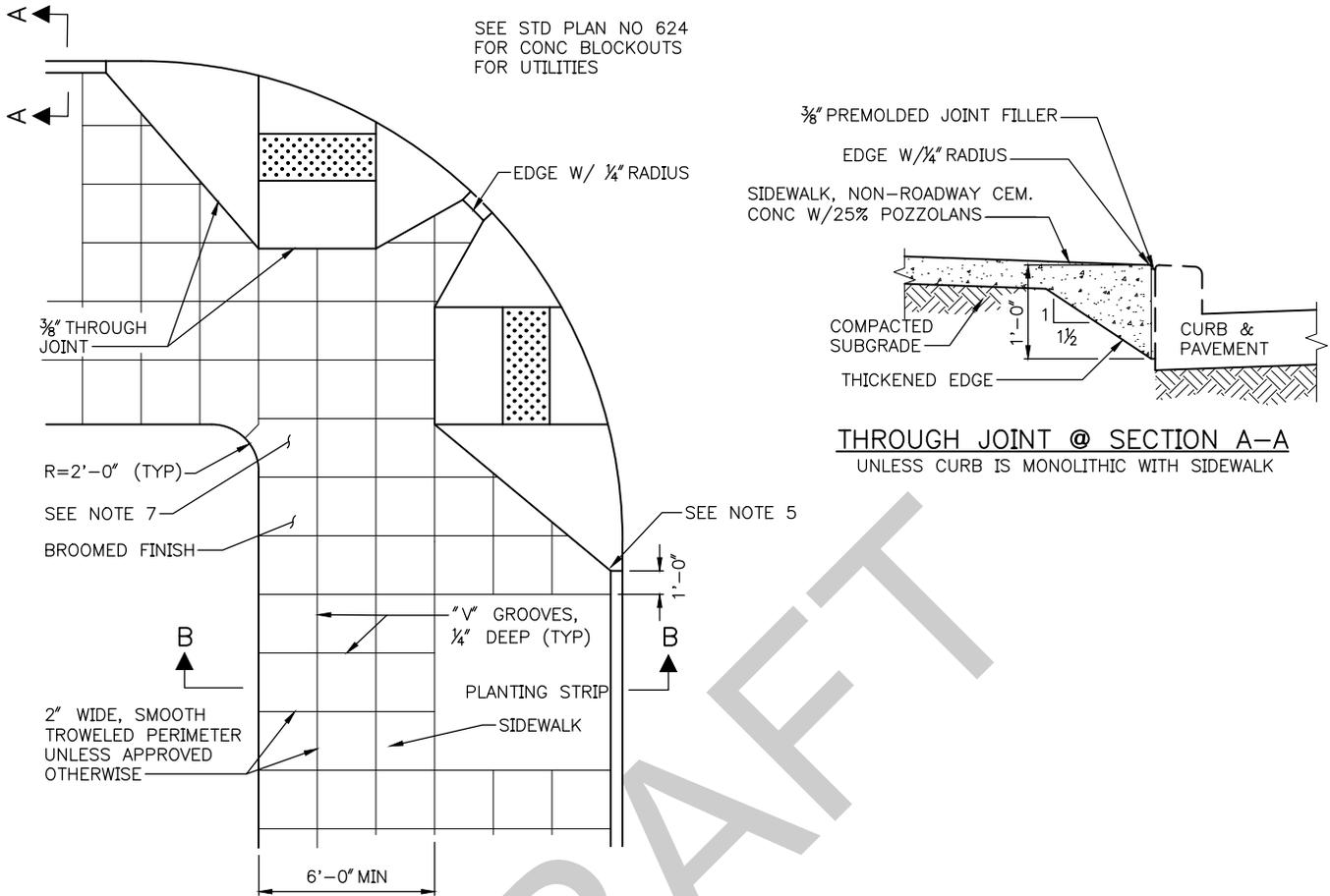
REF STD SPEC SEC 8-02, 8-04, 8-08



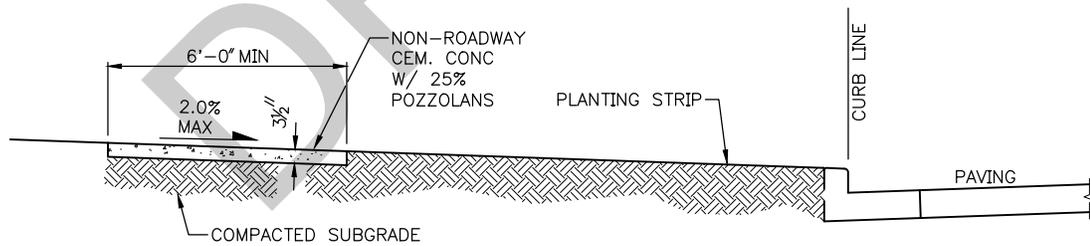
City of Seattle

NOT TO SCALE

TRAFFIC CIRCLE DETAILS



TYPICAL SIDEWALK & CURB RAMP DETAIL



SECTION B-B

NOTES:

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

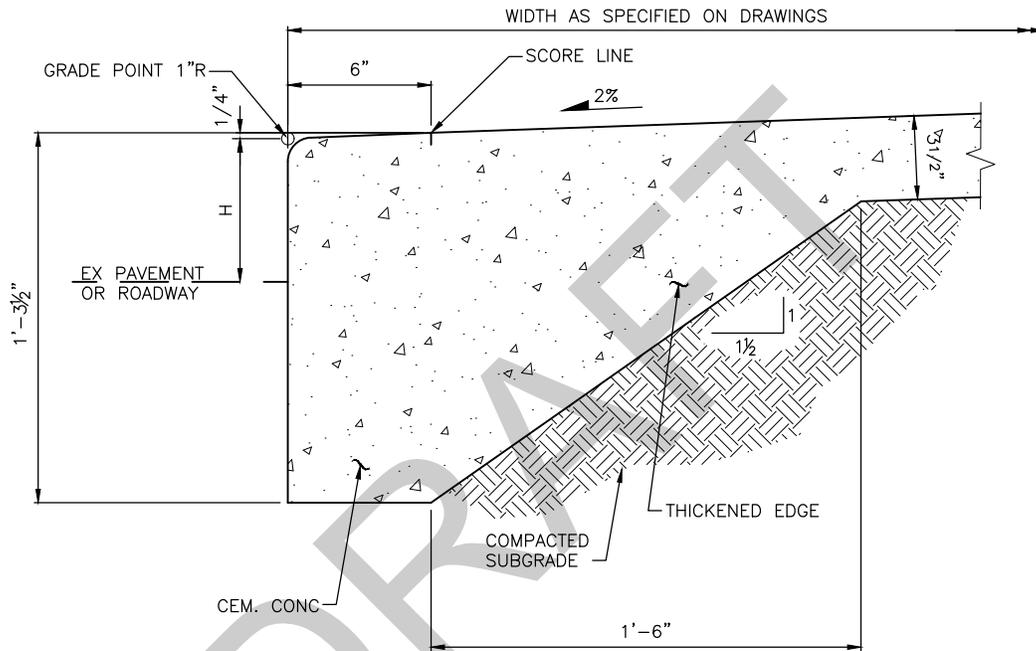
REF STD SPEC SEC 8-14



City of Seattle

NOT TO SCALE

CONCRETE SIDEWALK DETAILS



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

REF STD SPEC SEC 8-14



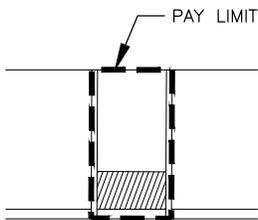
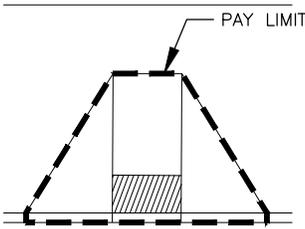
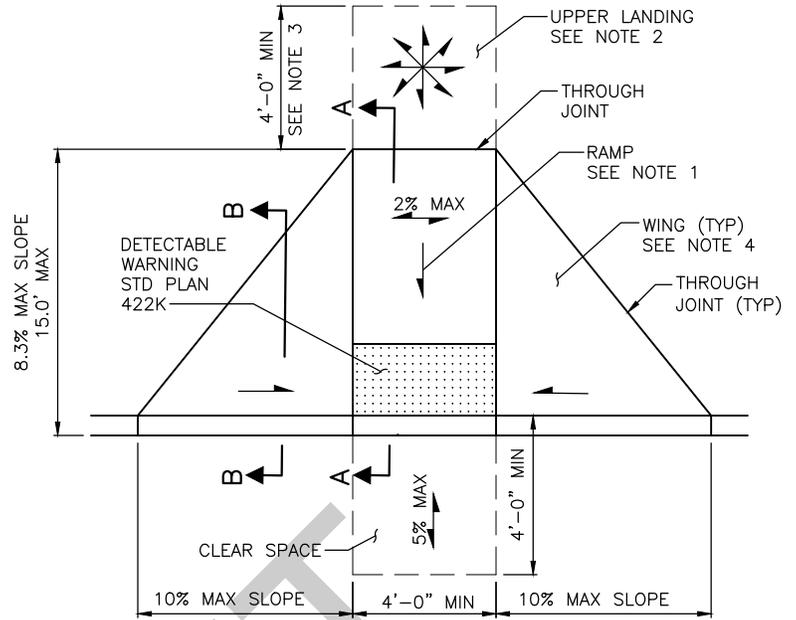
City of Seattle

NOT TO SCALE

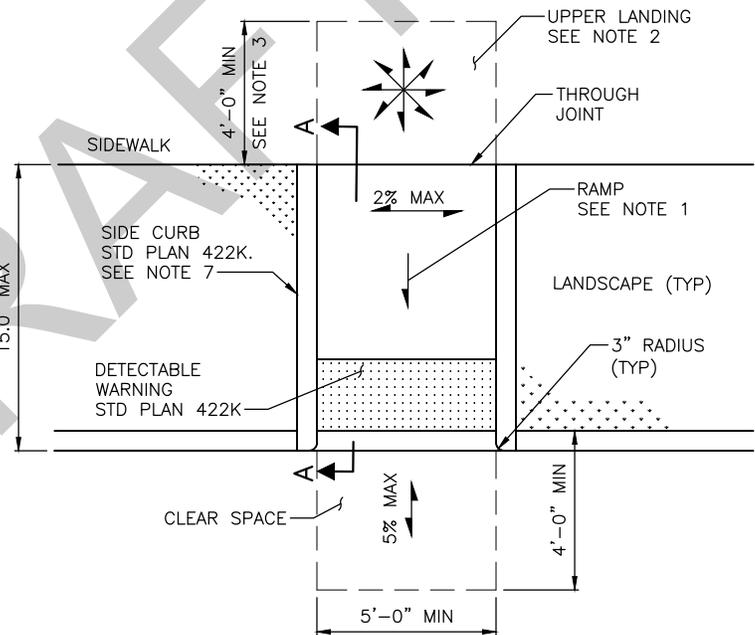
SIDEWALK WITH
 MONOLITHIC CURB

NOTES:

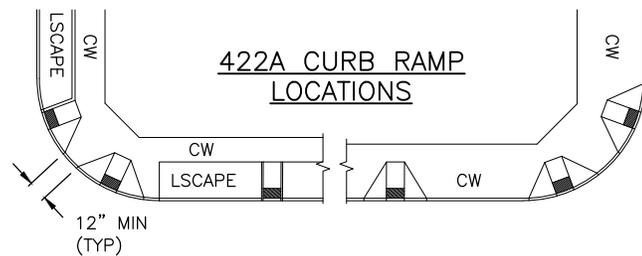
1. RAMP CENTERLINE MUST BE RADIAL/PERPENDICULAR TO THE ALIGNMENT OF THE FACE OF CURB.
2. THE SLOPE ON THE LANDING MUST BE A MINIMUM OF 0.5% IN ANY ONE DIRECTION AND MUST NOT EXCEED 2% IN ANY DIRECTION. UPPER LANDING AT THE TOP OF THE CURB RAMP MUST MATCH THE FULL WIDTH OF THE RAMP AND MUST HAVE A MINIMUM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



PAY LIMITS



PERPENDICULAR CURB RAMPS
(TYPE 422A)



REF STD SPEC SEC 8-14



City of Seattle

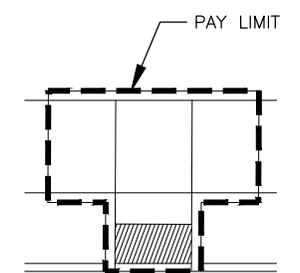
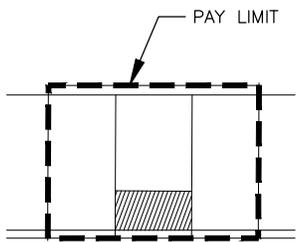
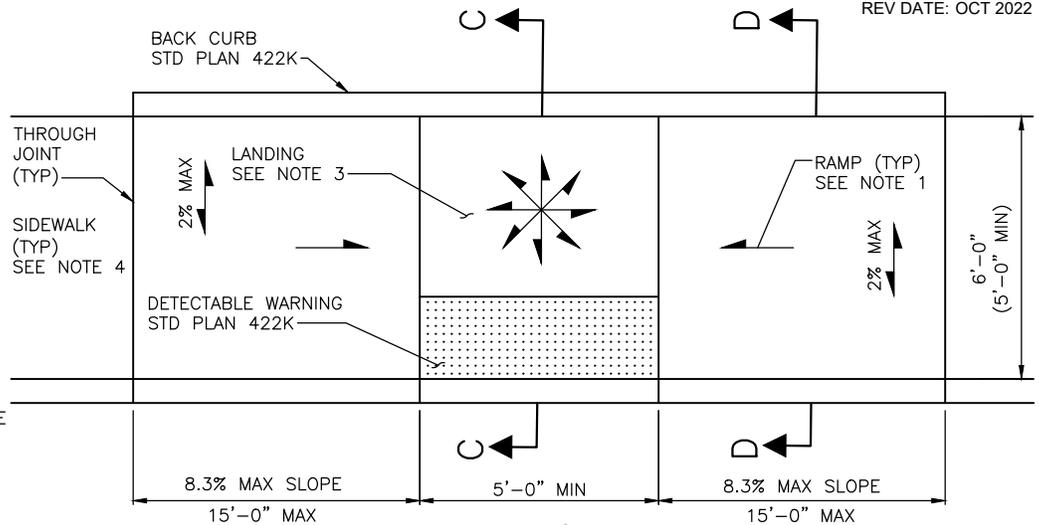
NOT TO SCALE

CURB RAMP DETAILS

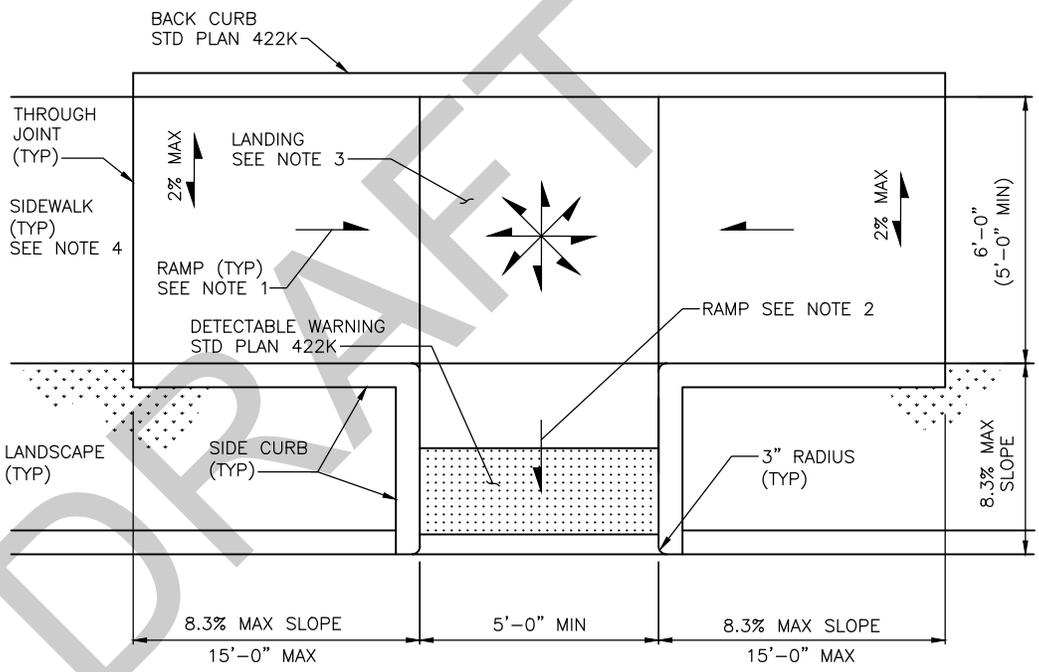
NOTES:

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

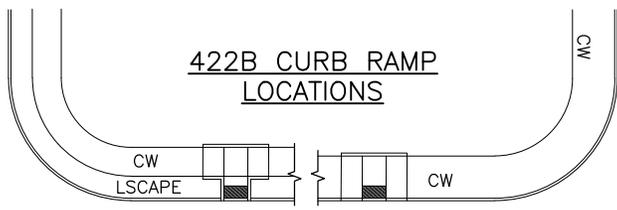
2% MAX = MAX SLOPE IN EITHER DIRECTION



PAY LIMITS



PARALLEL CURB RAMPS
(TYPE 422B)



REF STD SPEC SEC 8-14



City of Seattle

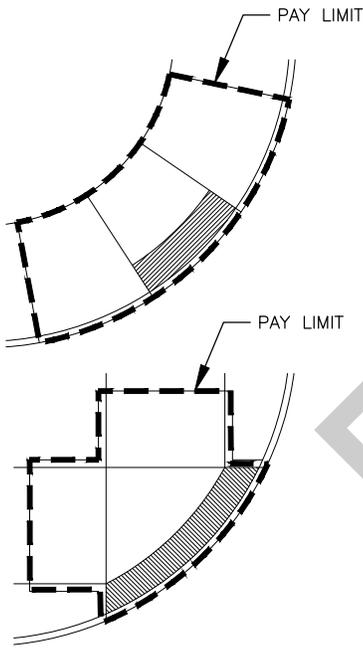
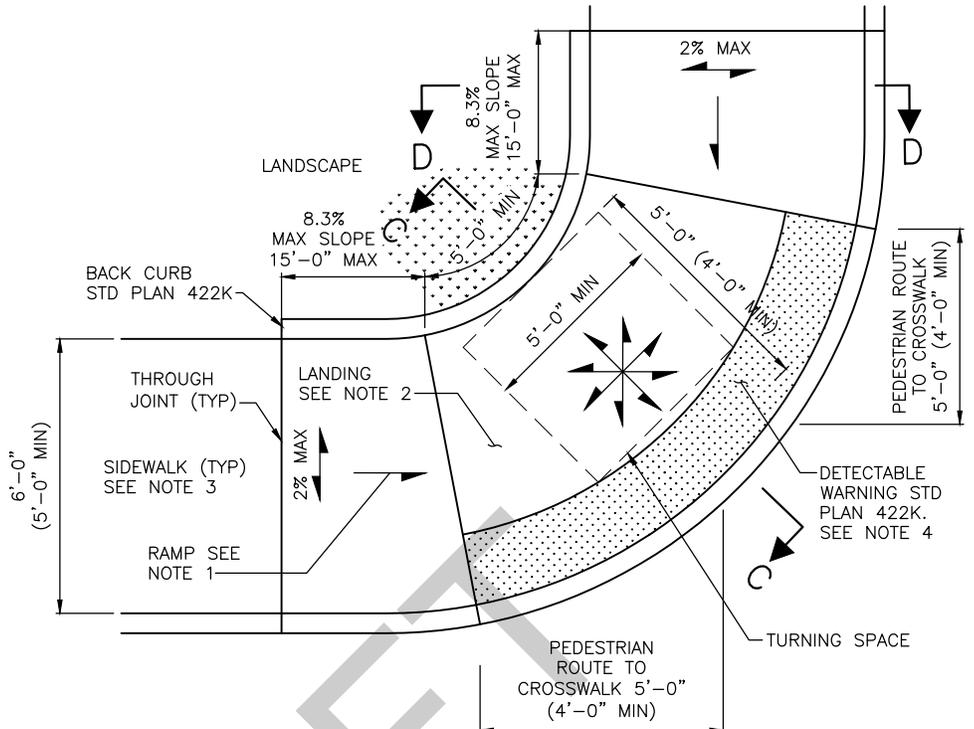
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CURB RAMP DETAILS

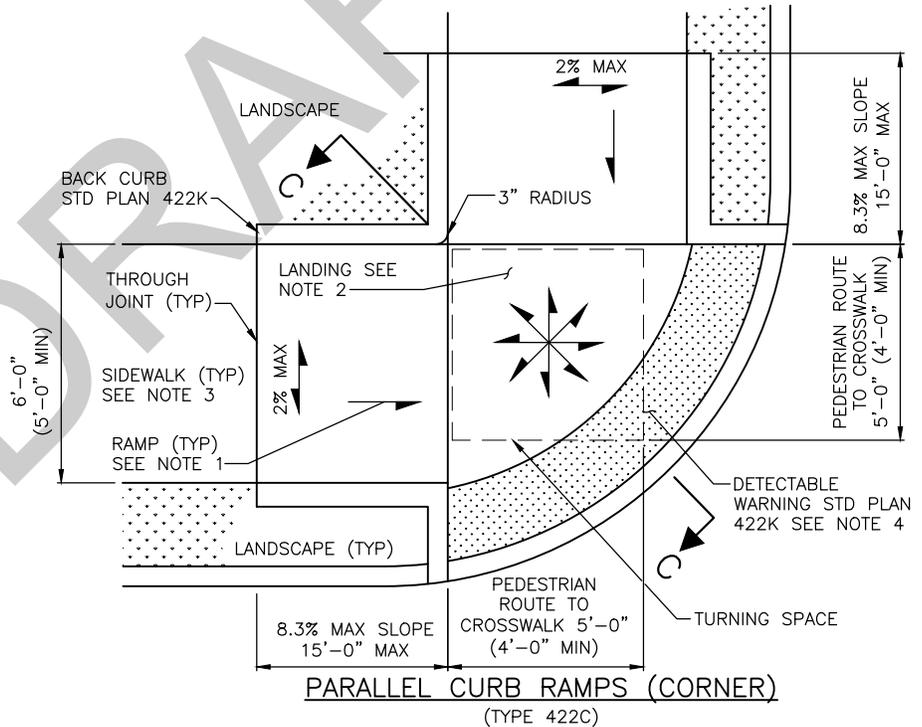
NOTES:

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

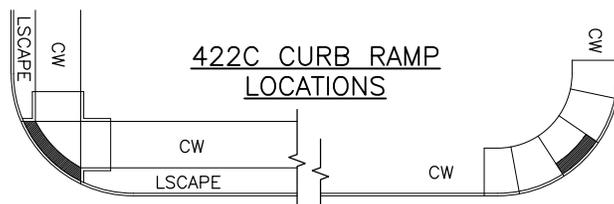
2% MAX
 = MAX SLOPE IN EITHER DIRECTION



PAY LIMITS



PARALLEL CURB RAMPS (CORNER)
 (TYPE 422C)



422C CURB RAMP LOCATIONS

REF STD SPEC SEC 8-14



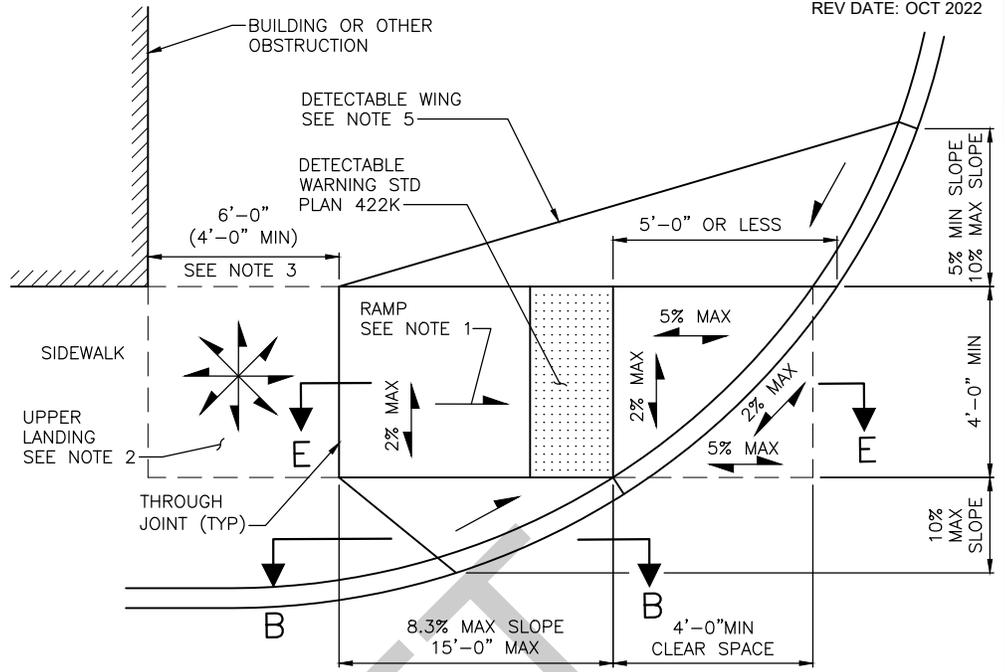
City of Seattle

NOT TO SCALE

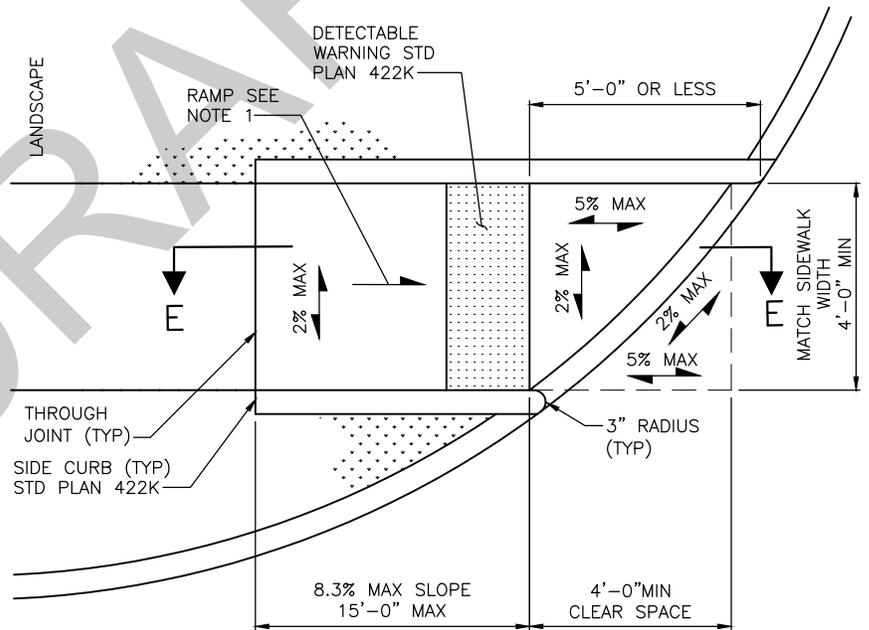
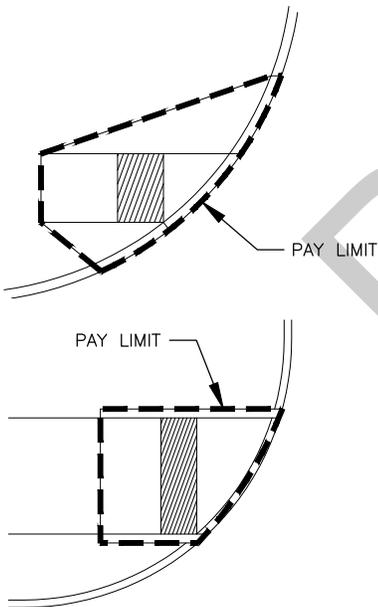
CURB RAMP DETAILS

NOTES:

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

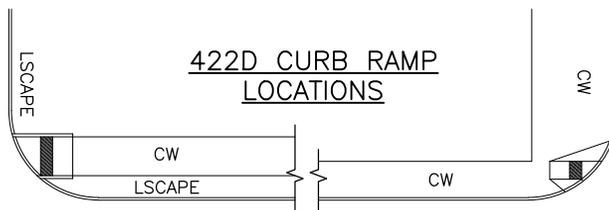


2% MAX
 ← → = MAX SLOPE IN EITHER DIRECTION



DIRECTIONAL CURB RAMPS
(TYPE 422D)

PAY LIMITS



REF STD SPEC SEC 8-14



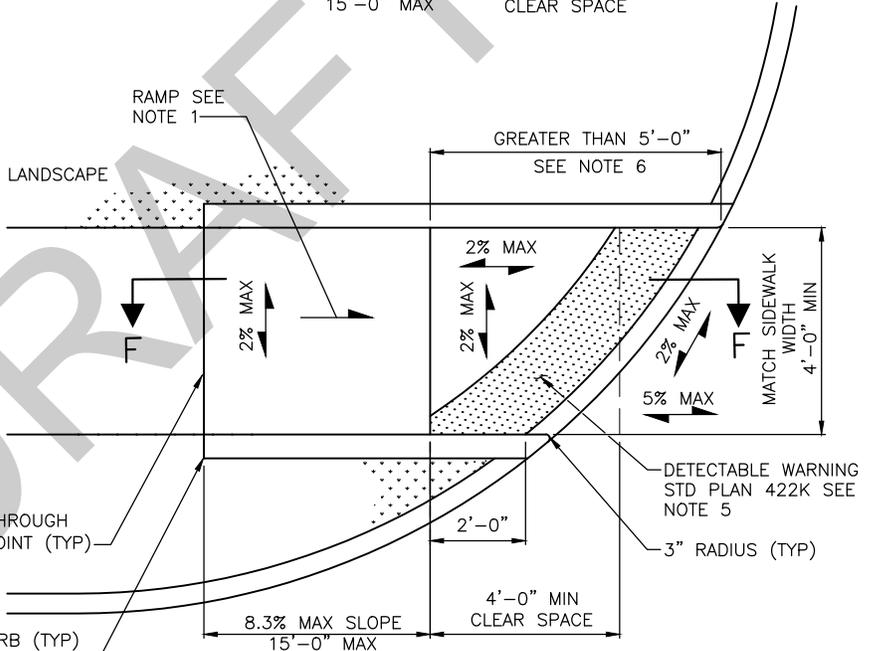
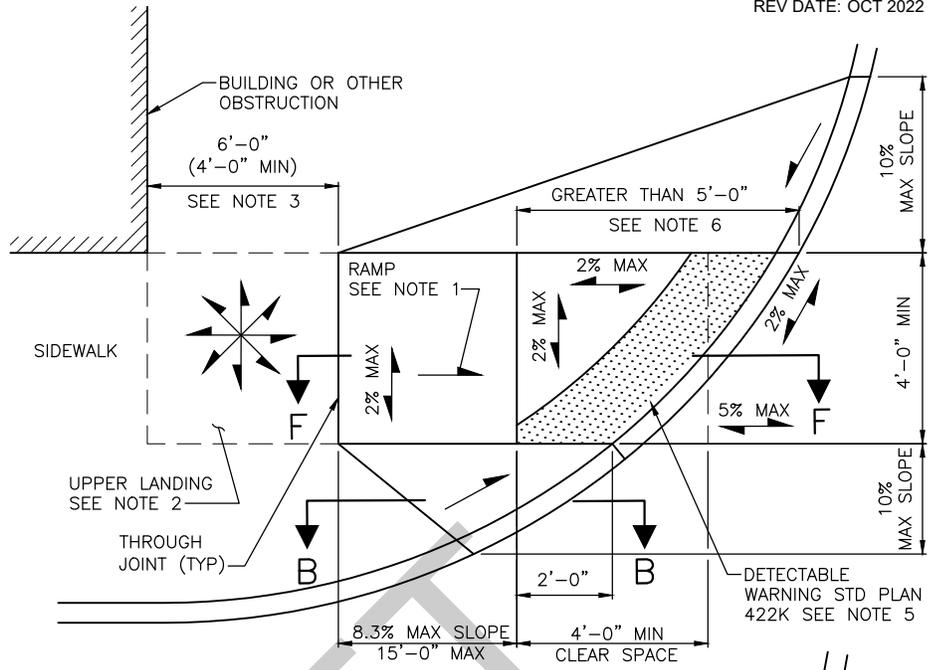
City of Seattle

NOT TO SCALE

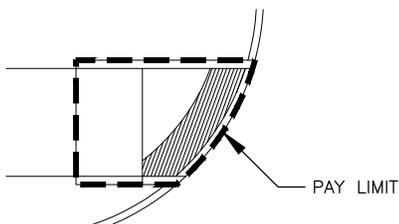
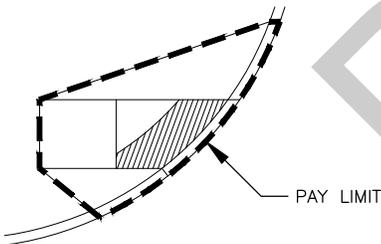
CURB RAMP DETAILS

NOTES:

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

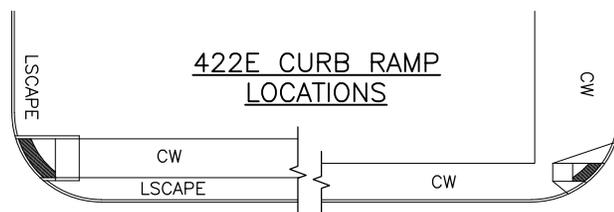


2% MAX
= MAX SLOPE IN EITHER DIRECTION



PAY LIMITS

DIRECTIONAL CURB RAMPS
(TYPE 422E)



REF STD SPEC SEC 8-14



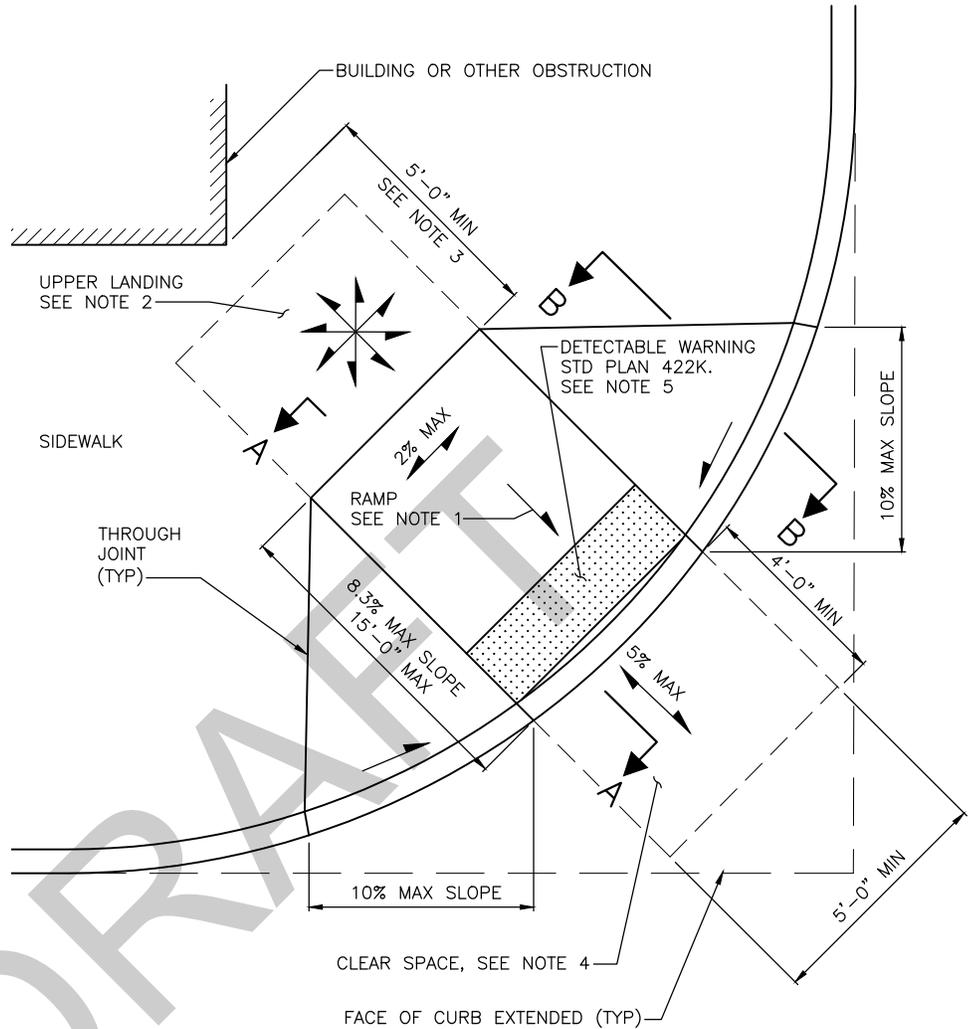
City of Seattle

NOT TO SCALE

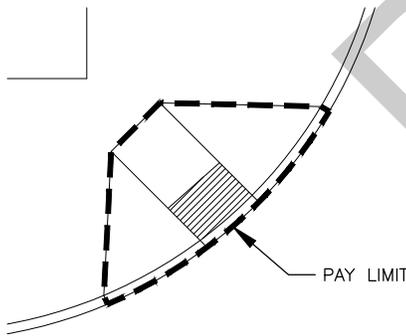
CURB RAMP DETAILS

NOTES:

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

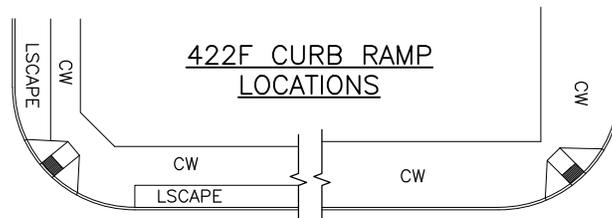


2% MAX
 ← → = MAX SLOPE IN EITHER DIRECTION



PAY LIMITS

SHARED DIAGONAL PERPENDICULAR CURB RAMP
 (TYPE 422F)



422F CURB RAMP LOCATIONS

REF STD SPEC SEC 8-14



City of Seattle

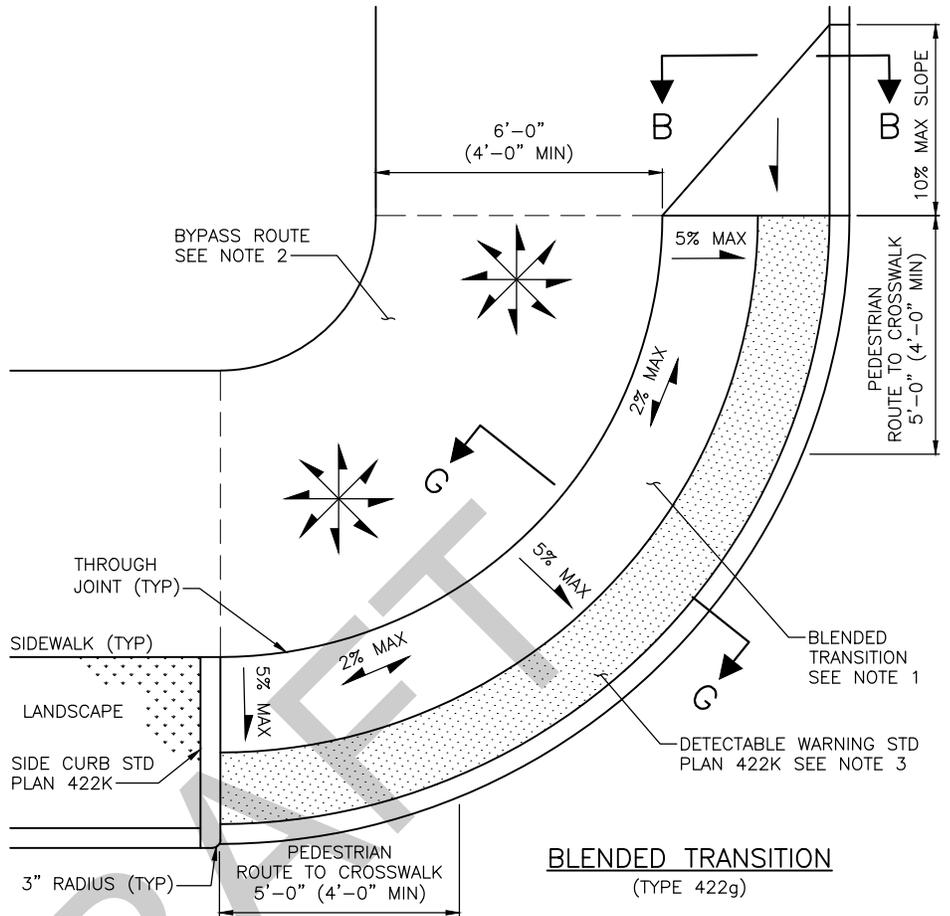
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CURB RAMP DETAILS

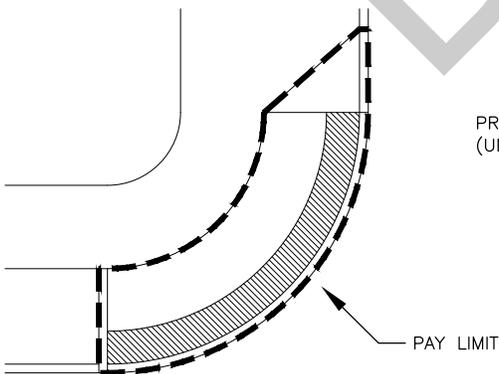
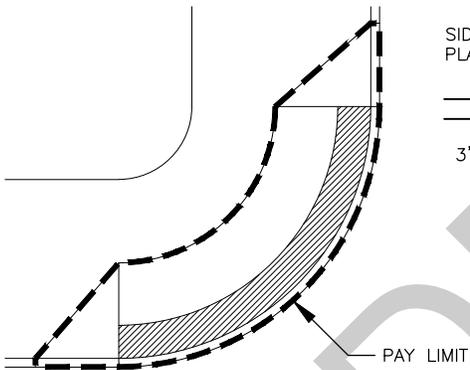
NOTES:

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

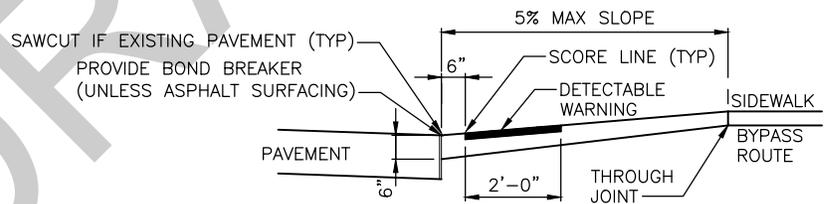
2% MAX
 = MAX SLOPE IN EITHER DIRECTION



BLENDED TRANSITION
(TYPE 422g)

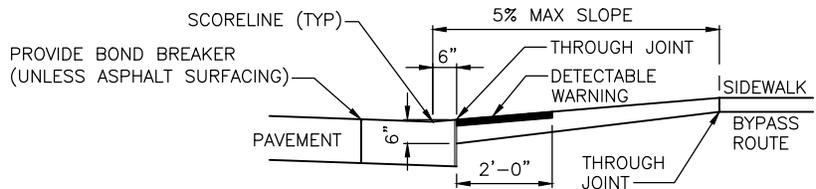


PAY LIMITS



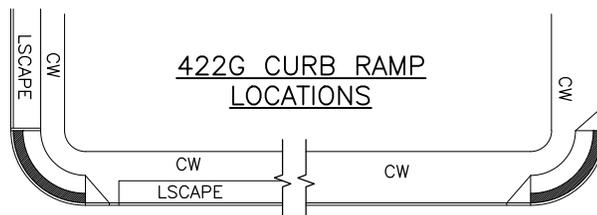
SECTION G-G

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



SECTION G-G

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.



REF STD SPEC SEC 8-14



City of Seattle

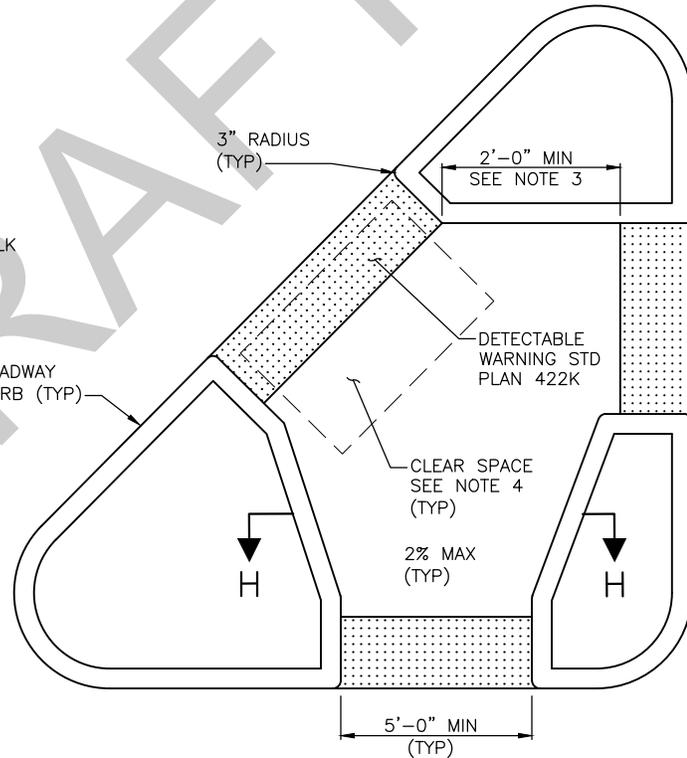
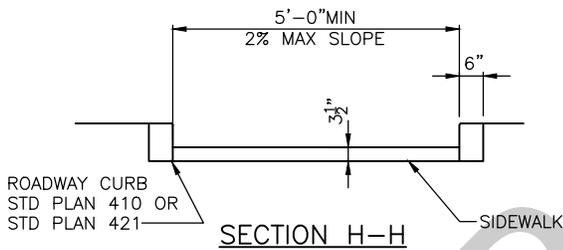
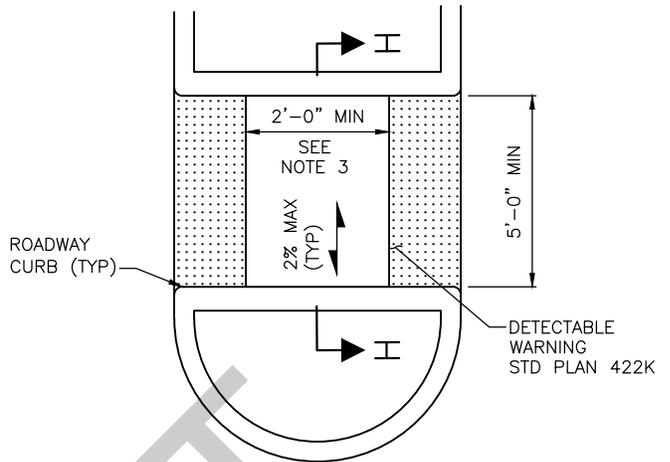
NOT TO SCALE

CURB RAMP DETAILS

NOTES:

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

2% MAX
 MAX SLOPE IN EITHER DIRECTION



ISLAND CUT-THROUGHS
 (TYPE 422H)

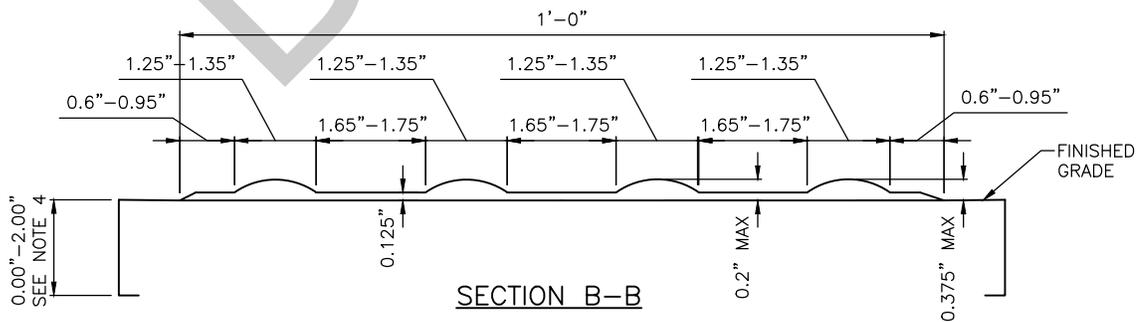
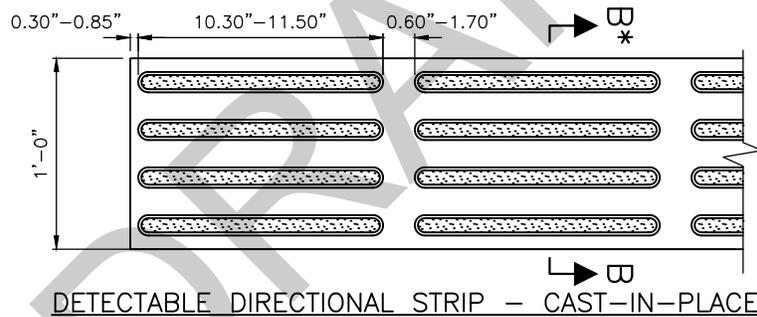
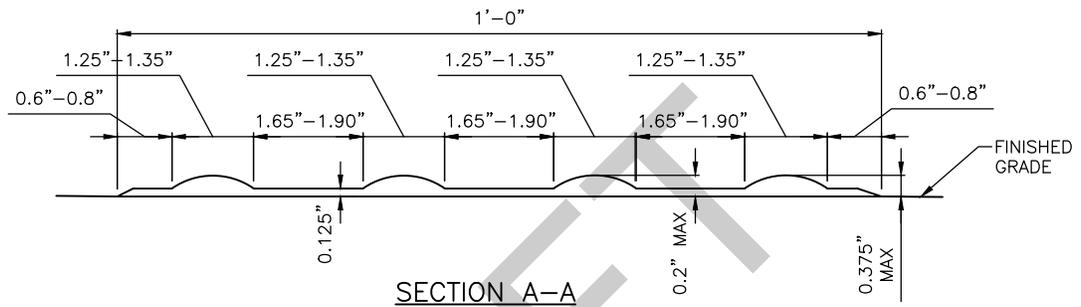
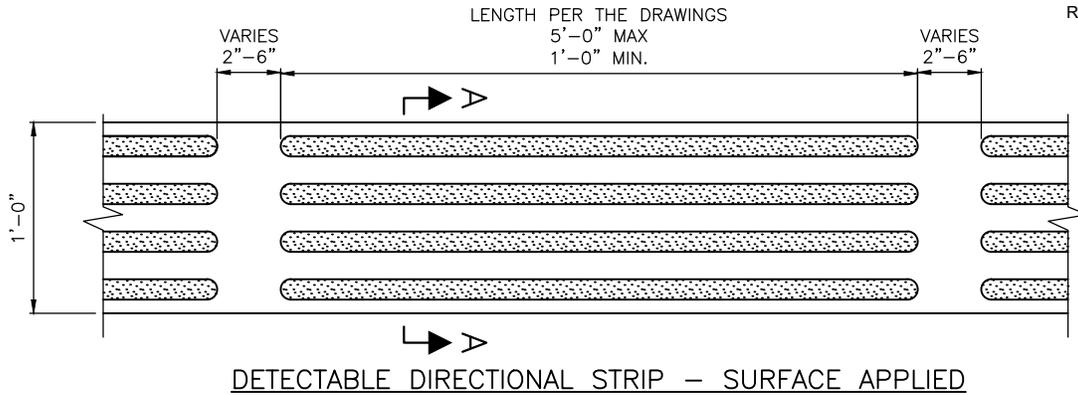
REF STD SPEC SEC 8-14



City of Seattle

NOT TO SCALE

CURB RAMP DETAILS



NOTES:

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

REF STD SPEC SEC 8-14, 9-36



City of Seattle

NOT TO SCALE

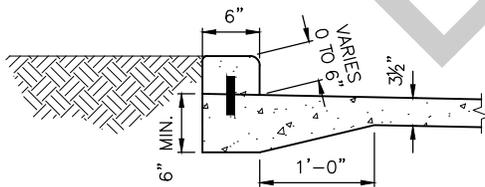
DETECTABLE DIRECTIONAL STRIP

CURB RAMP GENERAL NOTES:

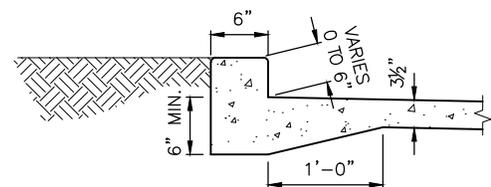
- TWO CURB RAMP MUST BE INSTALLED AT EACH CORNER UNLESS OTHERWISE DIRECTED BY ENGINEER. SHARED DIAGONAL PERPENDICULAR RAMP MUST NOT BE INSTALLED UNLESS ALL OTHER DESIGN OPTIONS ARE UNABLE TO BE CONSTRUCTED DUE TO EXISTING SITE CONSTRAINTS.
- CURB RAMP MUST BE AS CLOSELY ALIGNED WITH THE SIDEWALK AND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

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

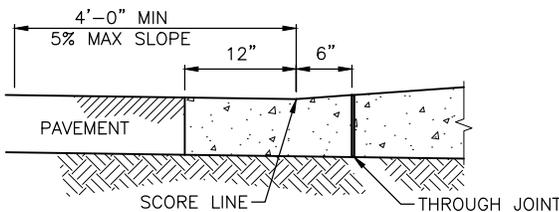
** IT IS RECOMMENDED THAT CURB RAMP RUNNING SLOPES BE DESIGNED TO 7.5% MAX. AND CURB RAMP LANDINGS BE DESIGNED TO 1.5% MAX TO ALLOW FOR A LIMITED MARGIN OF ERROR DURING CONSTRUCTION.



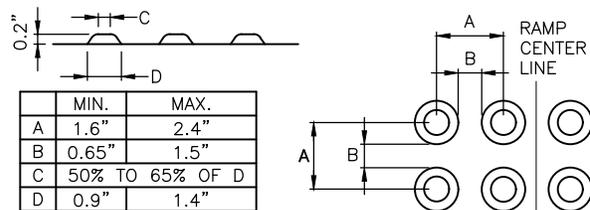
SIDE/BACK CURB - DOWELED



SIDE/BACK CURB - MONOLITHIC



DEPRESSED CURB AND GUTTER DETAIL



DETECTABLE WARNING TRUNCATED DOMES PATTERN

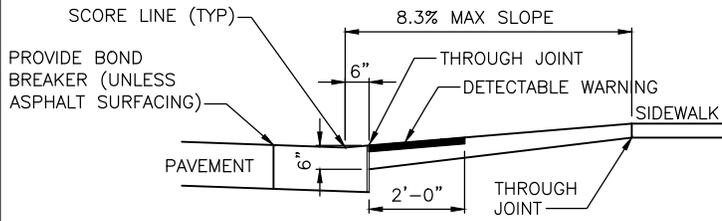
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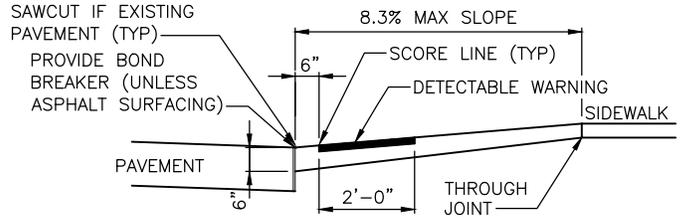
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CURB RAMP DETAILS



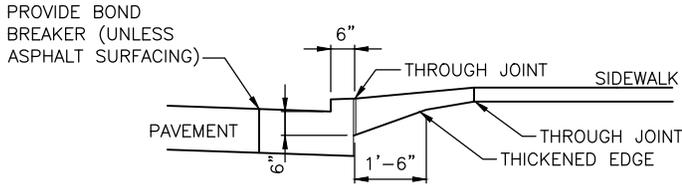
SECTION A-A

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.

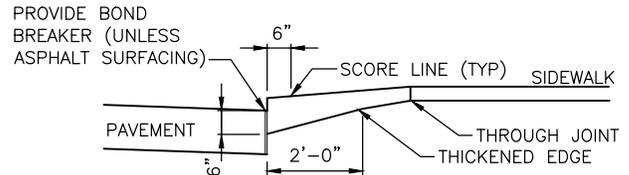


SECTION A-A

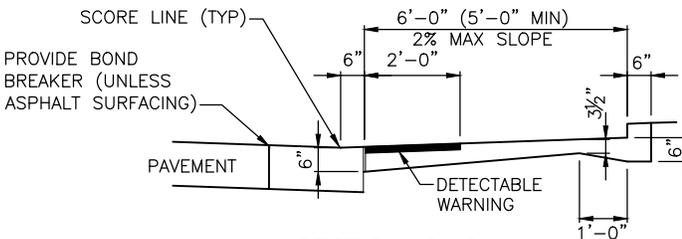
CURB MONOLITHIC WITH RAMP. NEW PAVEMENT BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT REMOVED AT FACE OF CURB



SECTION B-B

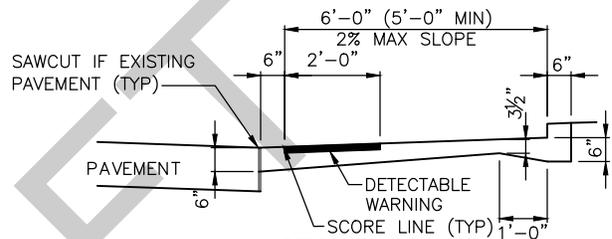


SECTION B-B



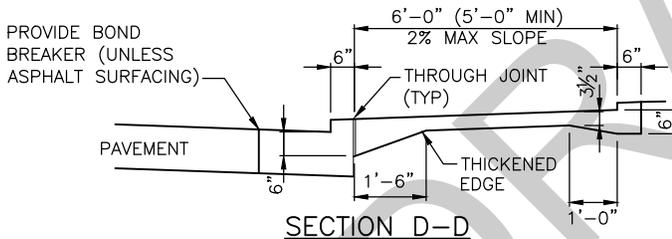
SECTION C-C

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.

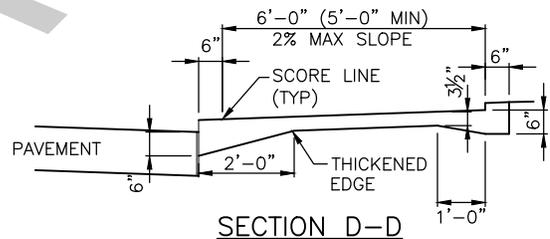


SECTION C-C

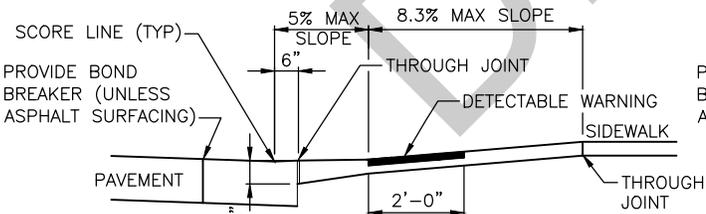
CURB MONOLITHIC WITH RAMP. NEW PAVEMENT BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT REMOVED AT FACE OF CURB



SECTION D-D

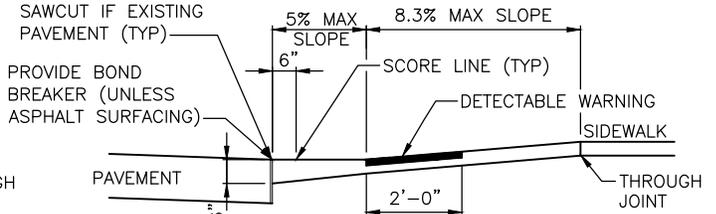


SECTION D-D



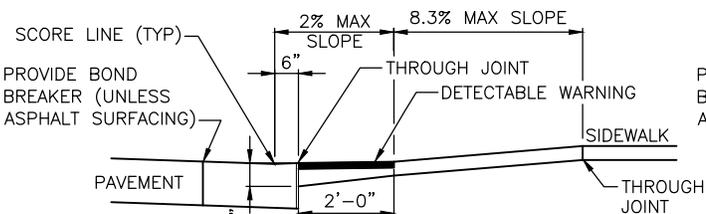
SECTION E-E

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP.



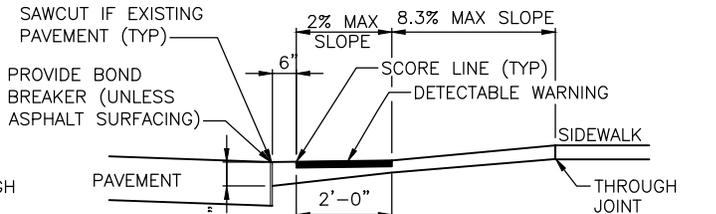
SECTION E-E

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



SECTION F-F

DEPRESSED CURB & GUTTER SEPARATE FROM RAMP



SECTION F-F

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

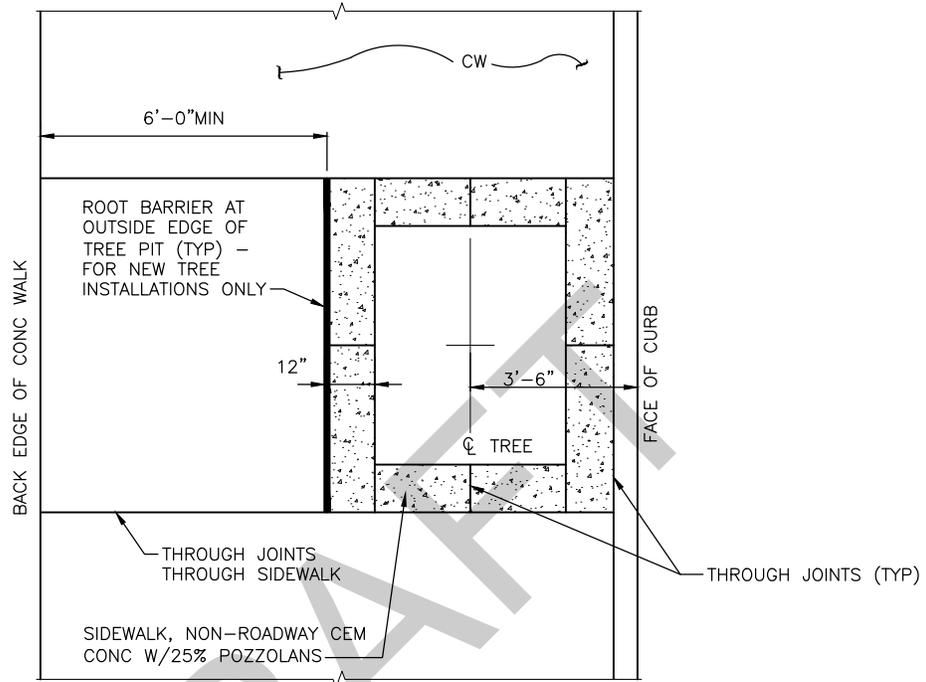
REF STD SPEC SEC 8-14



City of Seattle

NOT TO SCALE

CURB RAMP SECTIONS



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

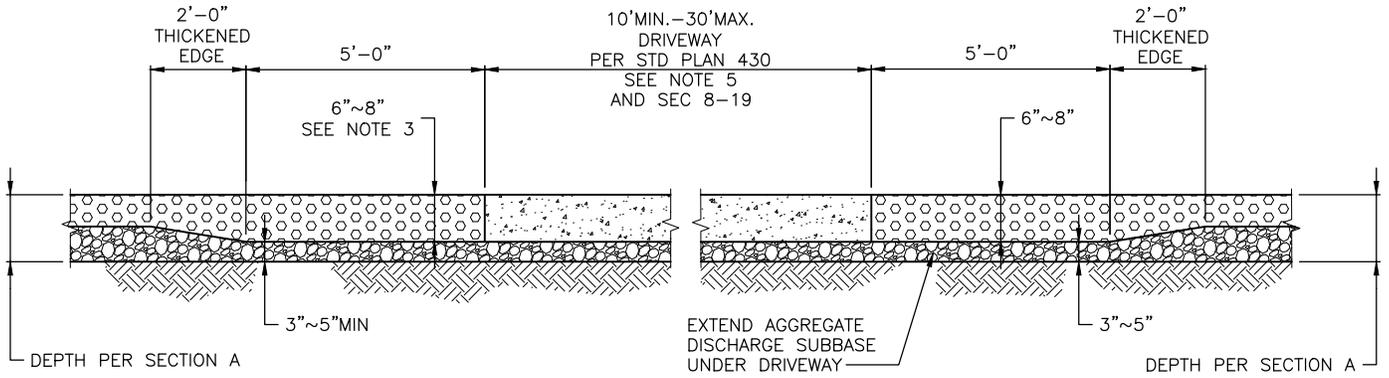
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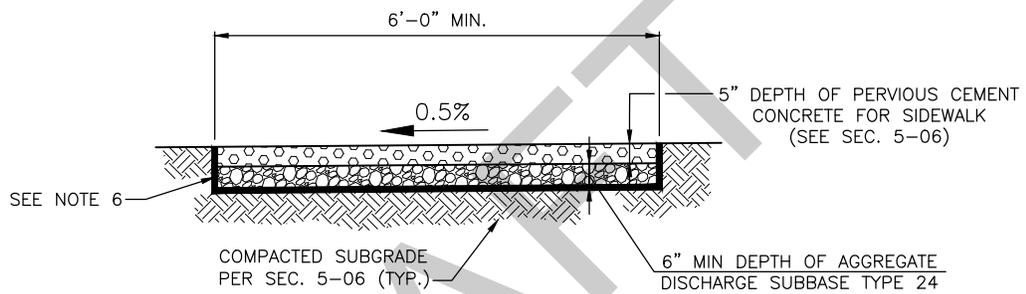
City of Seattle

NOT TO SCALE

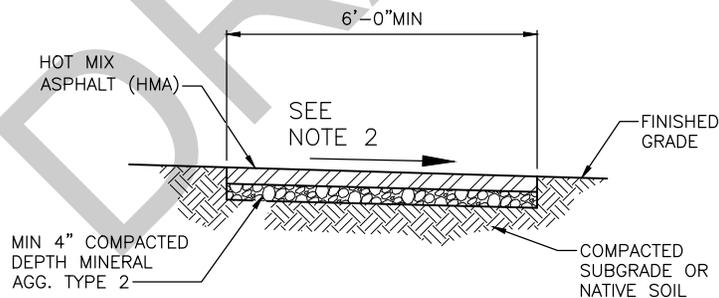
TREE PIT DETAIL



PERVIOUS CONC CEM SIDEWALK DEPTH TRANSITION AT DRIVEWAYS PROFILE VIEW



PERVIOUS CONC SECTION A



HOT MIX ASPHALT PAVEMENT SIDEWALK SECTION

NOTES:

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

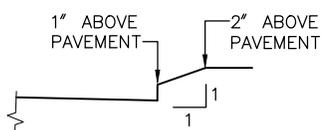
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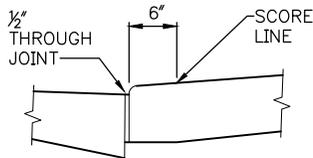
City of Seattle

NOT TO SCALE

ALTERNATIVE WALKWAYS

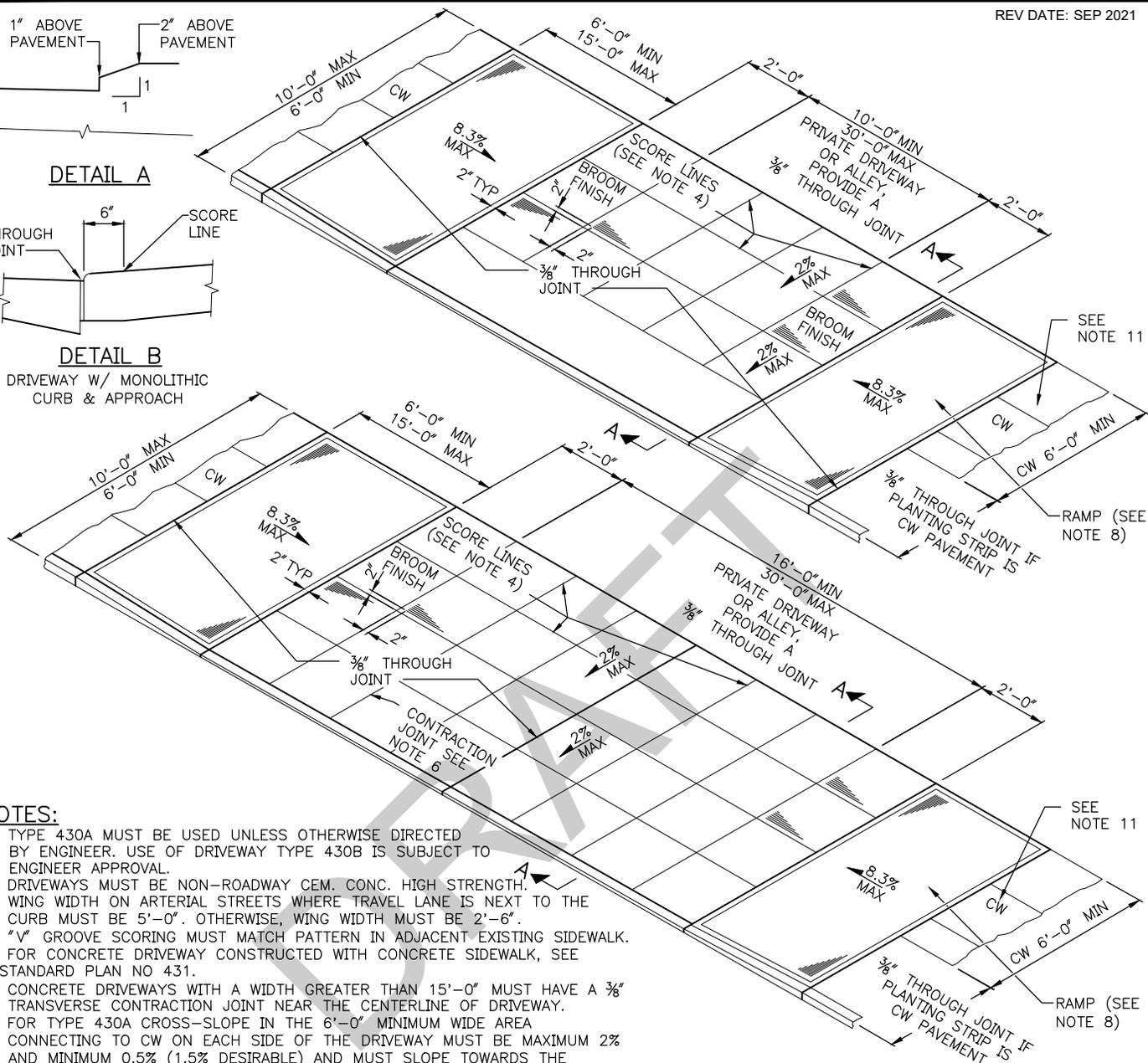


DETAIL A



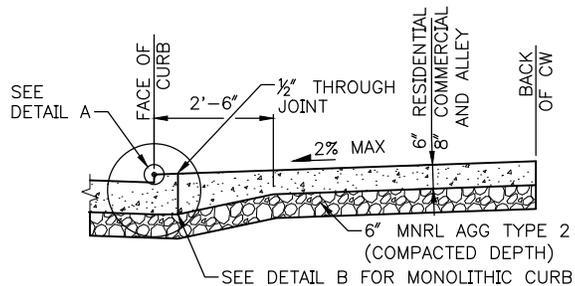
DETAIL B

DRIVEWAY W/ MONOLITHIC CURB & APPROACH



NOTES:

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



SECTION A-A

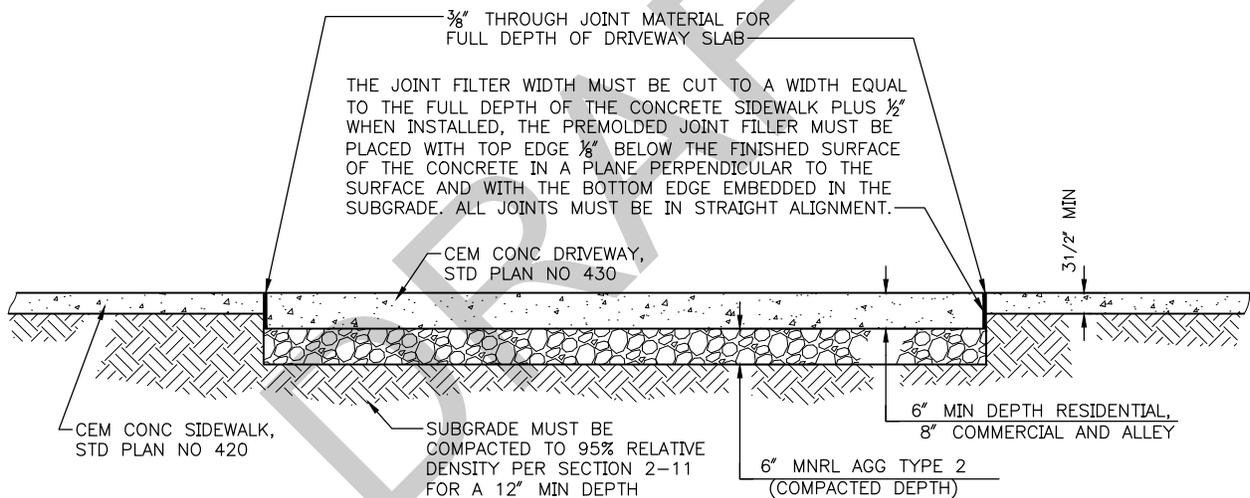
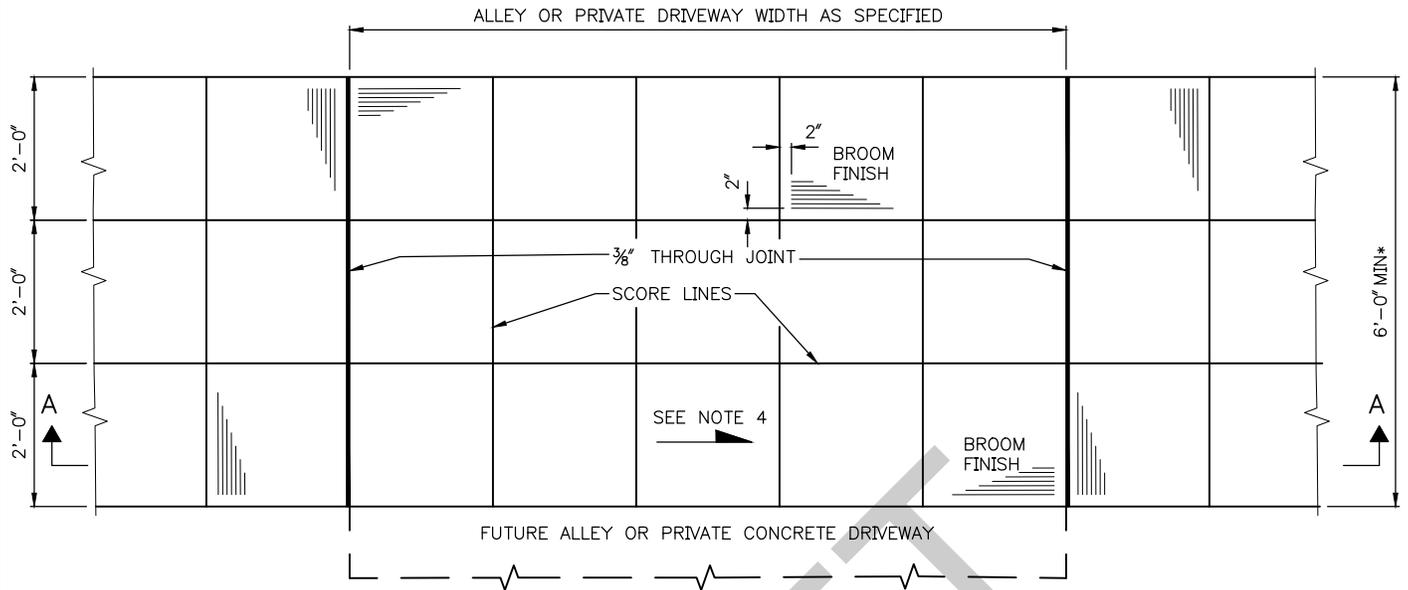
REF STD SPEC SEC 8-19



City of Seattle

NOT TO SCALE

TYPE 430B DRIVEWAY



SECTION A-A

* UNLESS OTHERWISE APPROVED

NOTES:

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

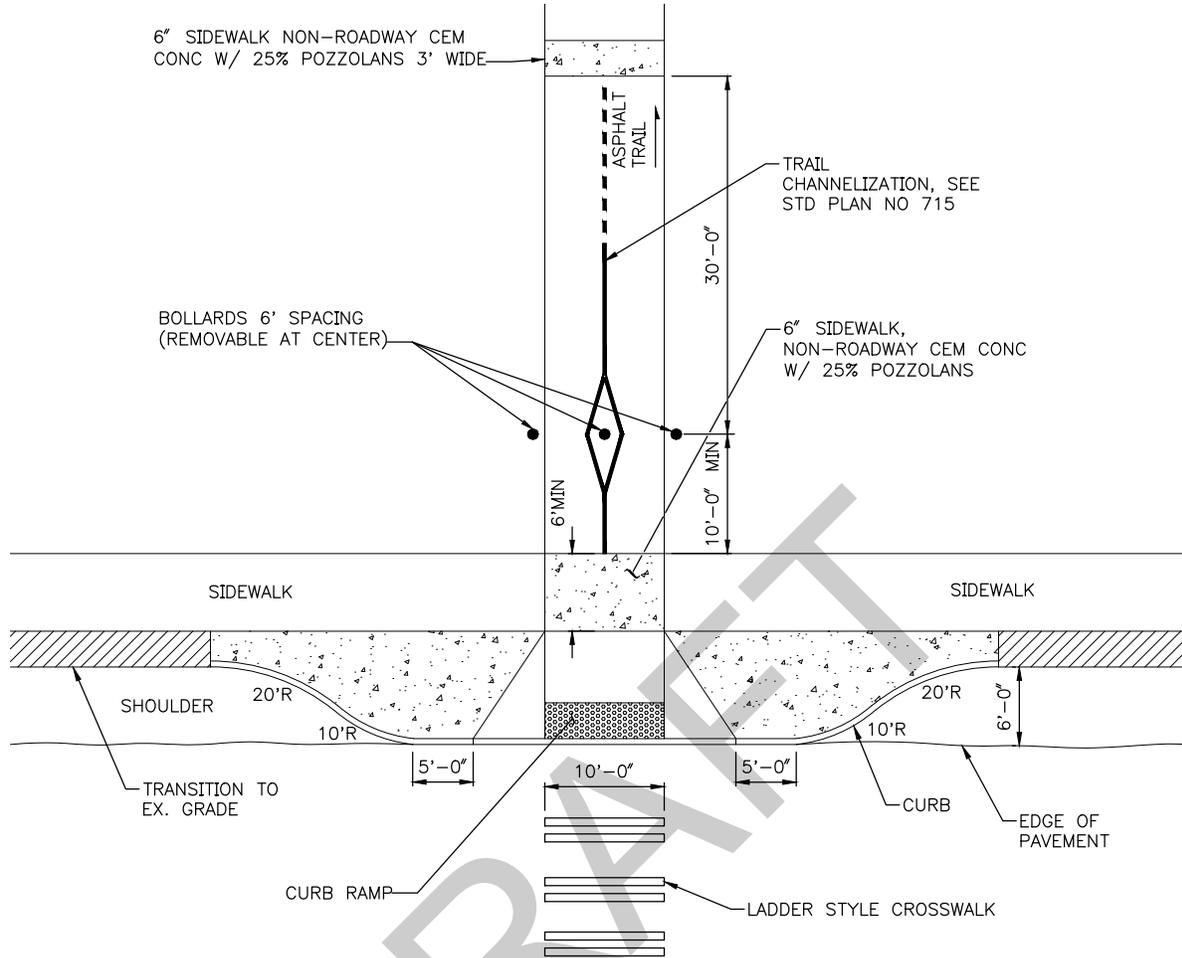
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City of Seattle

NOT TO SCALE

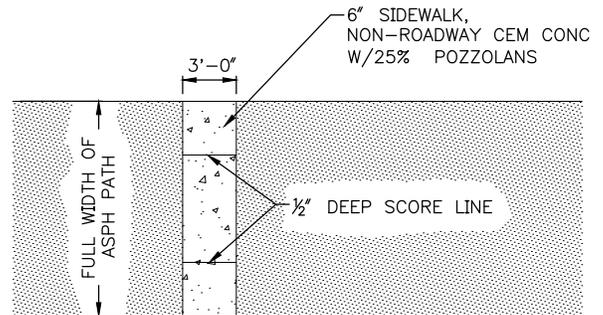
**CEMENT CONCRETE DRIVEWAY
PLACED WITH CEMENT
CONCRETE SIDEWALK**



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

NOTES:

1. FOR CURB RAMP AND DETECTABLE WARNING DETAILS SEE STANDARD PLAN NO 422 (SERIES).
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 MUST BE FLUSH WITH A MAXIMUM DIFFERENCE IN ELEVATION OF $\frac{3}{16}$ INCH.
8. ALL SLOPE GRADES MUST BE MEASURED OFF THE HORIZON-LINE. IF EXISTING SITE CONDITIONS CONFLICT WITH OBTAINING GRADES SHOWN, THE CONTRACTOR MUST MAKE MINIMUM ADJUSTMENTS TO THE GRADES TO ACCOMMODATE EXISTING SITE CONDITIONS, ADJUSTMENTS ARE SUBJECT TO APPROVAL BY THE ENGINEER.
9. ALL CEMENT CONCRETE WARNING PADS MUST BE BRUSHED FINISHED AND "V" GROOVED TO MATCH PATTERN IN ADJACENT OR NEARBY SIDEWALKS.



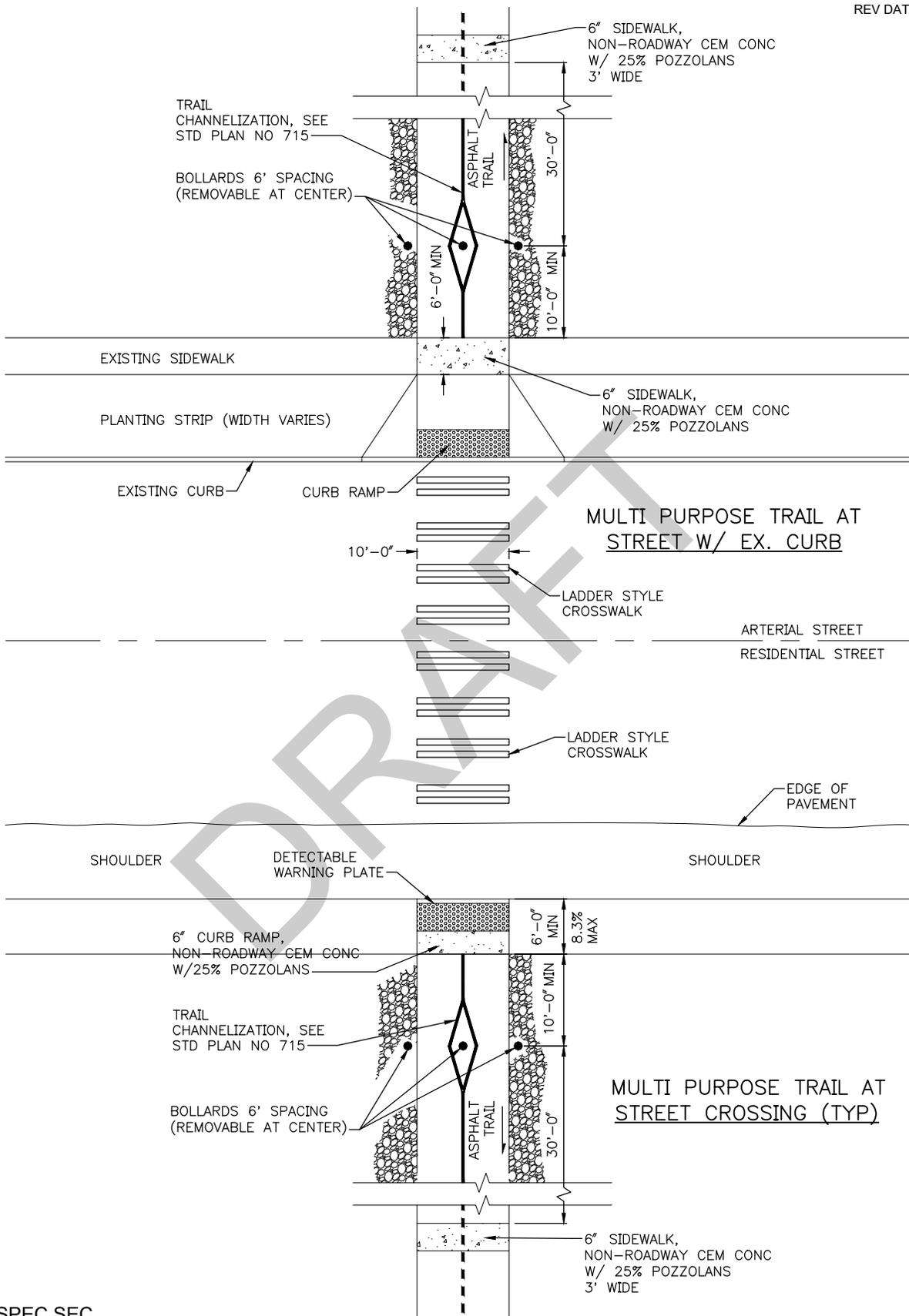
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

MULTI-PURPOSE TRAIL
AT STREET CROSSING



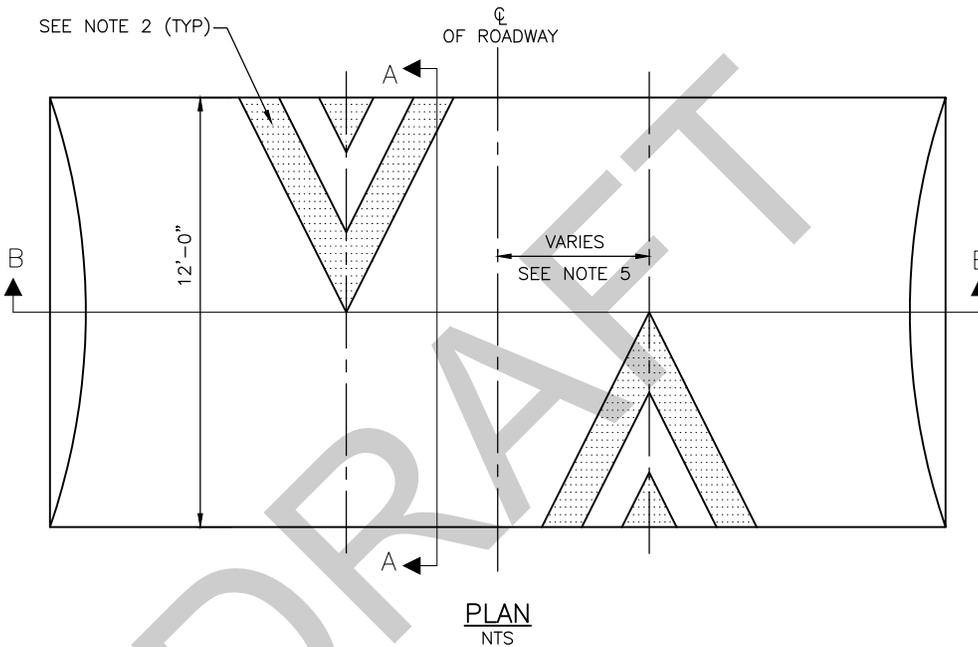
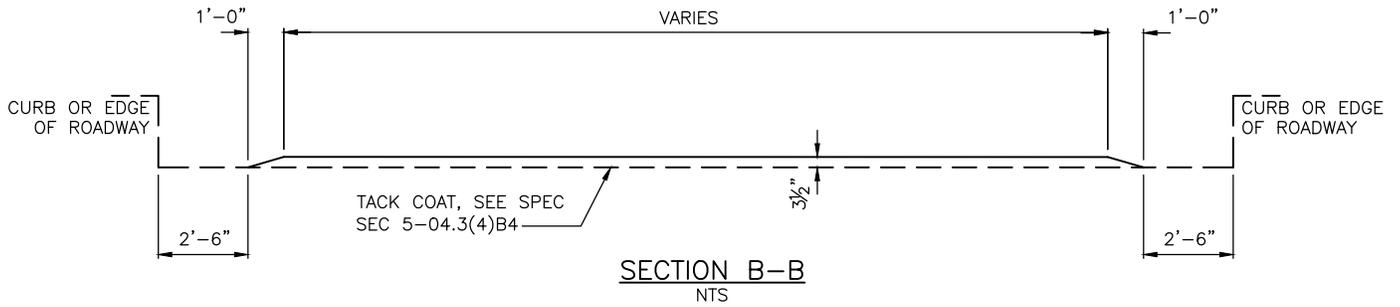
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City of Seattle

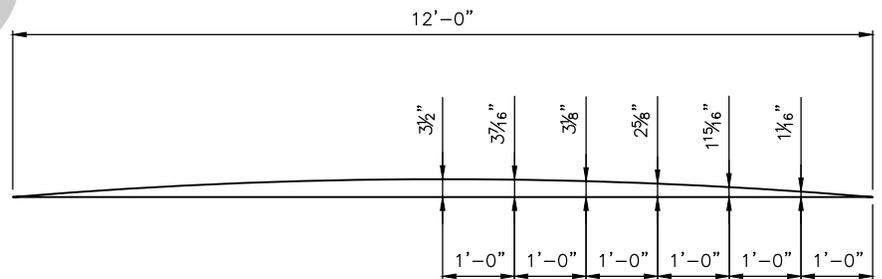
NOT TO SCALE

MULTI-PURPOSE TRAIL AT STREET CROSSING



NOTES:

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



SECTION A-A
NTS

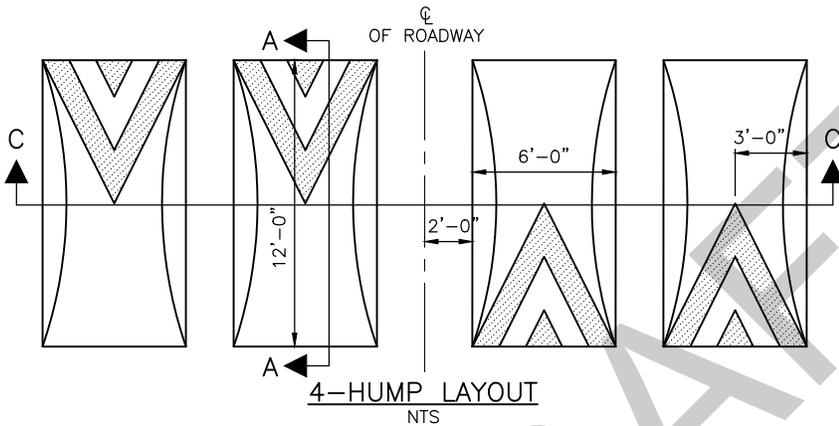
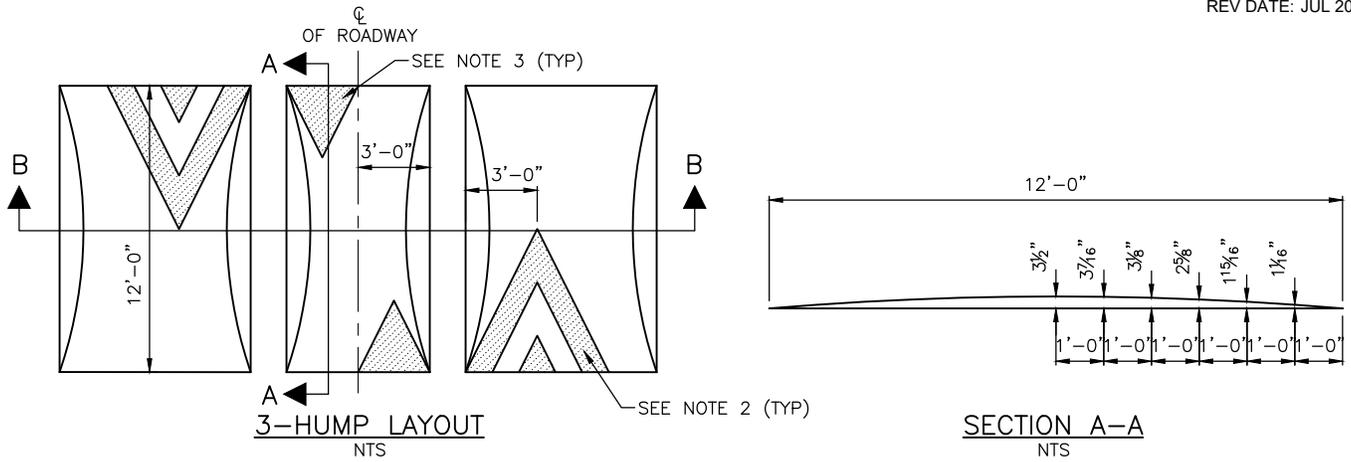
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City of Seattle

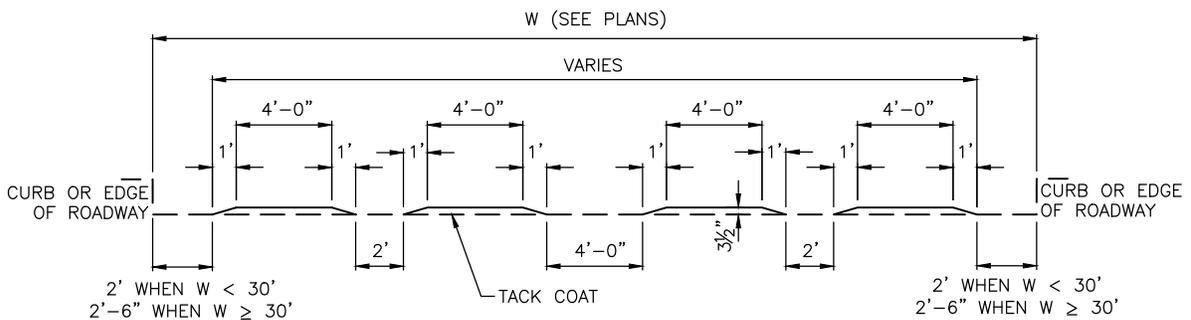
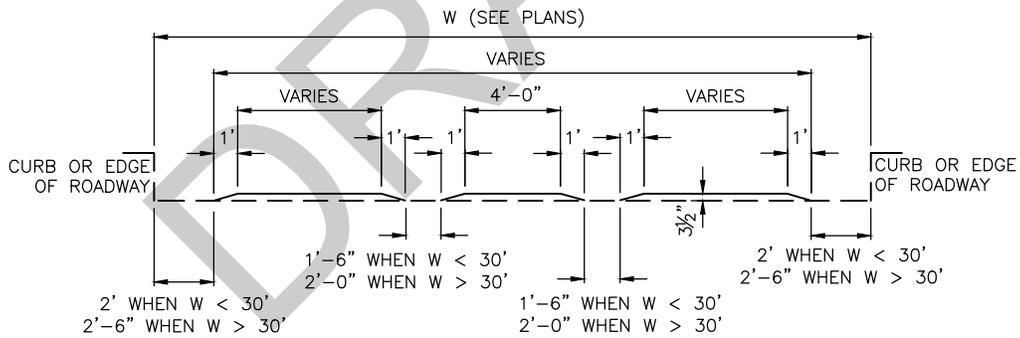
NOT TO SCALE

SPEED HUMP



NOTES:

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



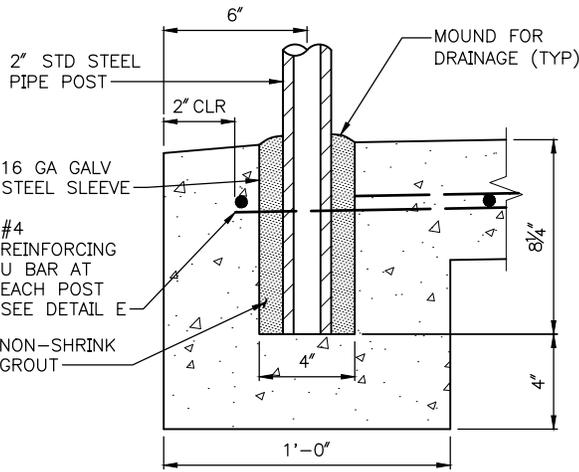
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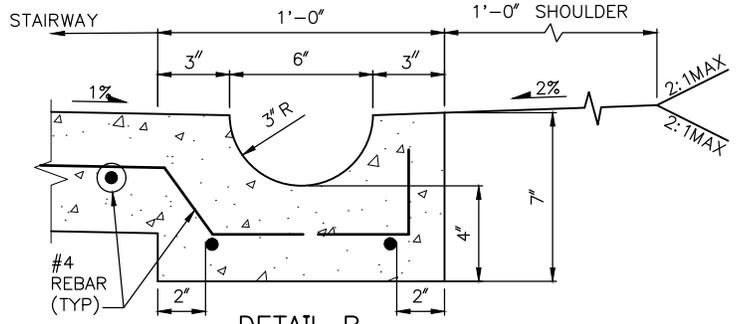
City of Seattle

NOT TO SCALE

SPEED CUSHION

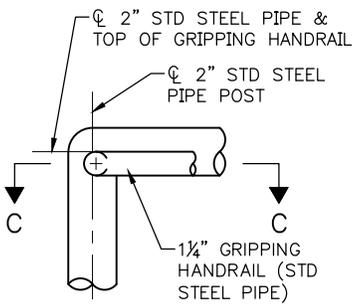


DETAIL A

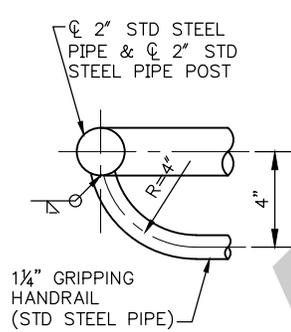


DETAIL B

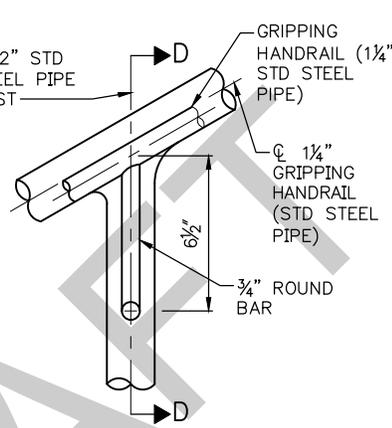
SEE NOTE 11 ON STD PLAN NO 440a



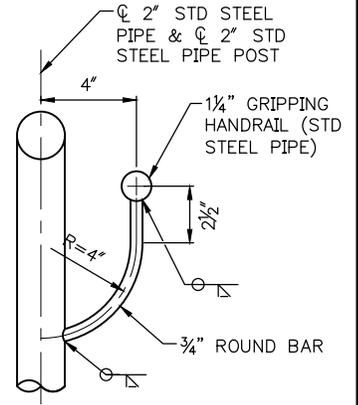
DETAIL C
HAND GRIP TERMINATION



SECTION C-C



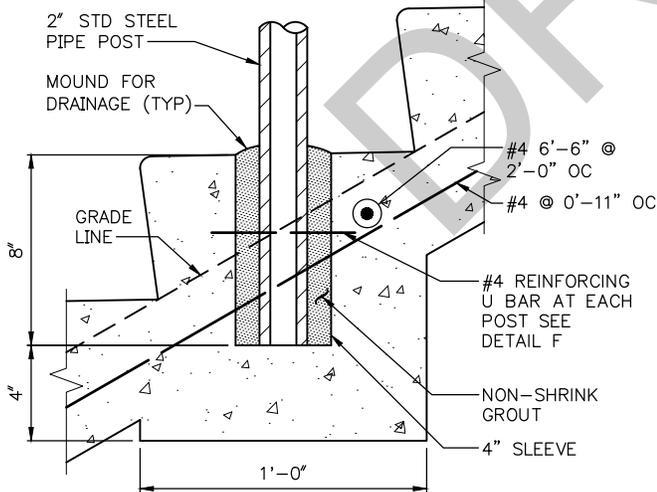
DETAIL D



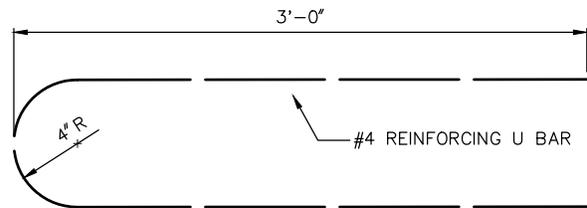
SECTION D-D

NOTE:

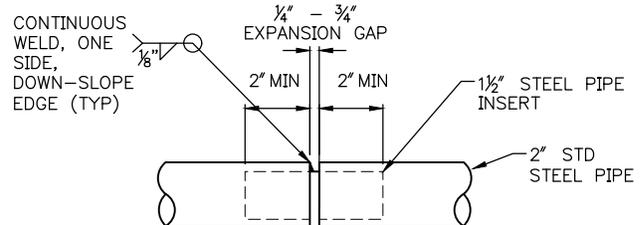
PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.



DETAIL E



DETAIL F



DETAIL G
SLIP JOINT

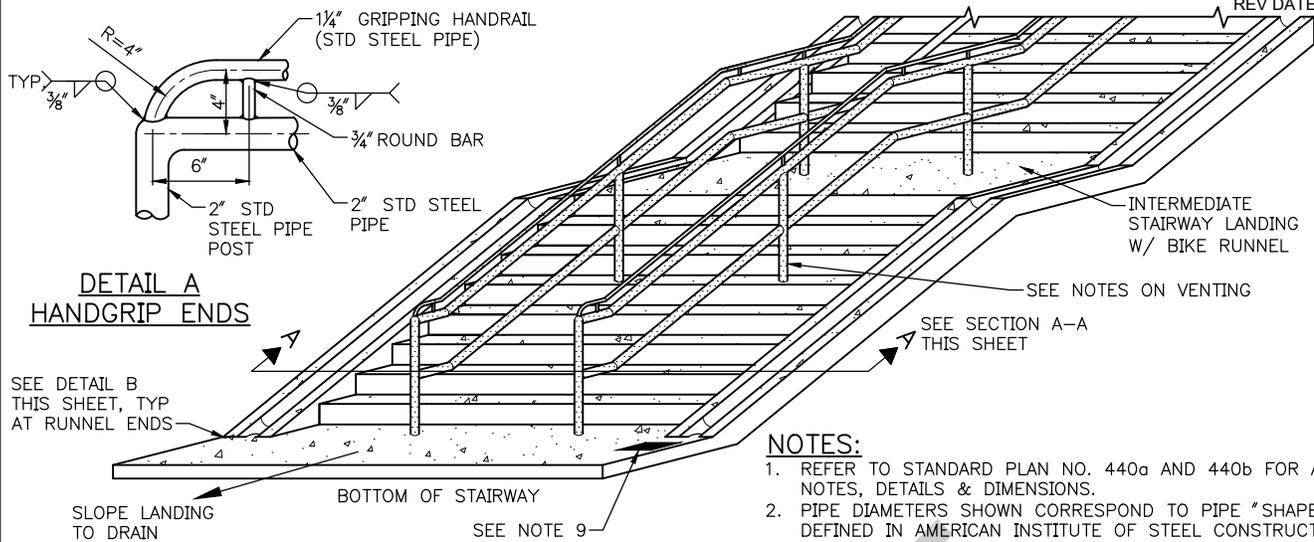
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City of Seattle

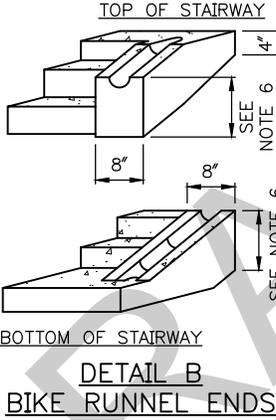
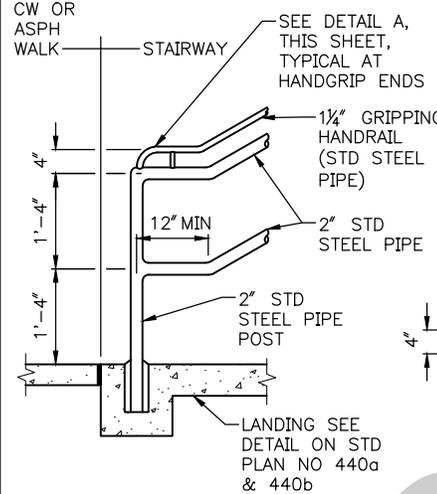
NOT TO SCALE

CEMENT CONCRETE
STAIRWAY & HANDRAIL



**DETAIL A
HANDGRIP ENDS**

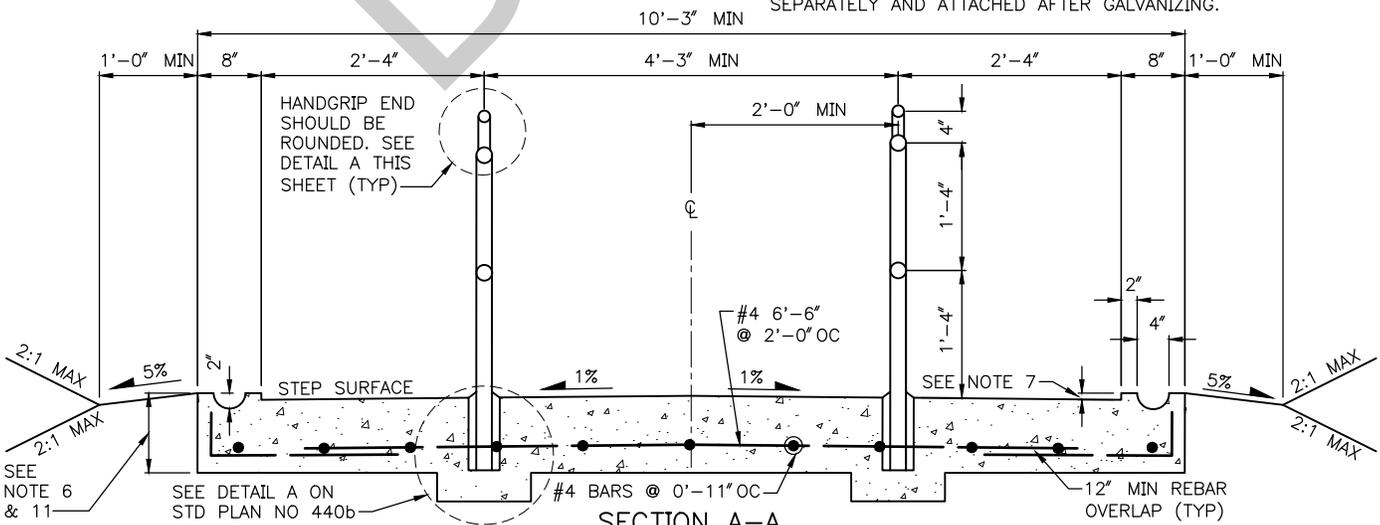
SEE DETAIL B
THIS SHEET, TYP
AT RUNNEL ENDS



**DETAIL B
BIKE RUNNEL ENDS**

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

RAIL ENDS DETAIL



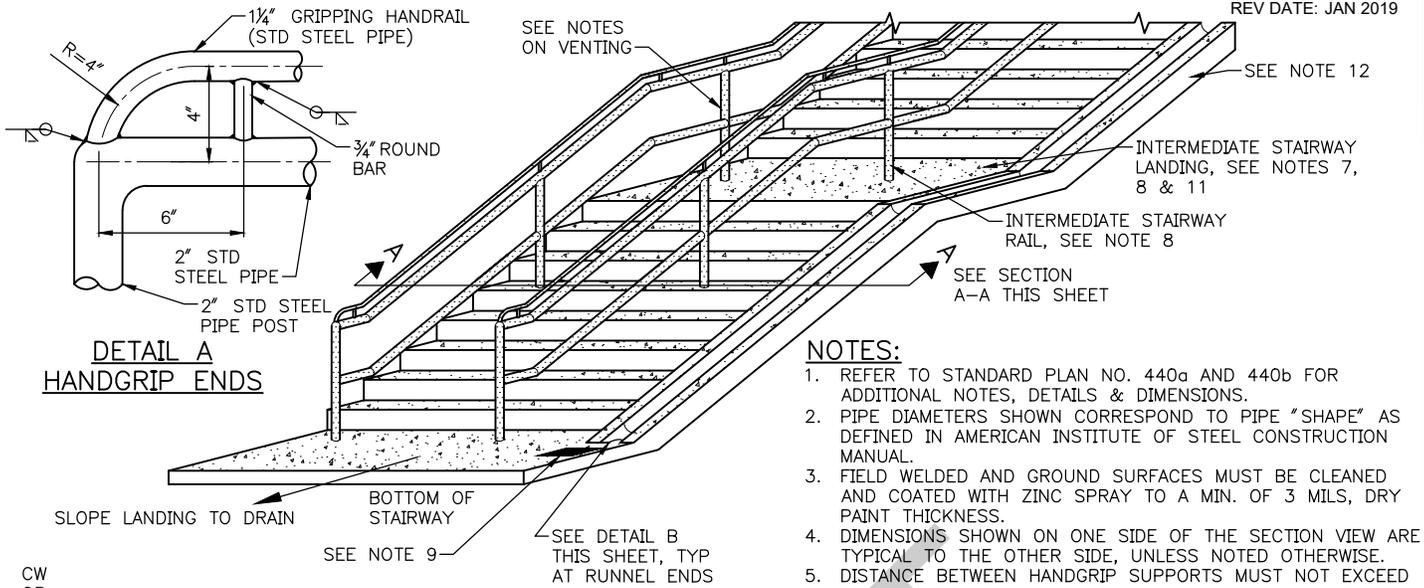
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City of Seattle

NOT TO SCALE

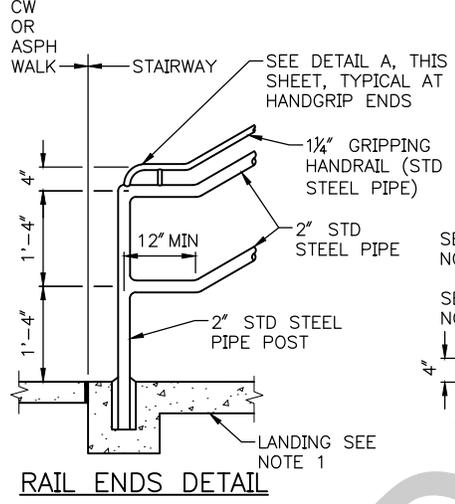
**CEMENT CONCRETE
STAIRWAY & BIKE RUNNEL**



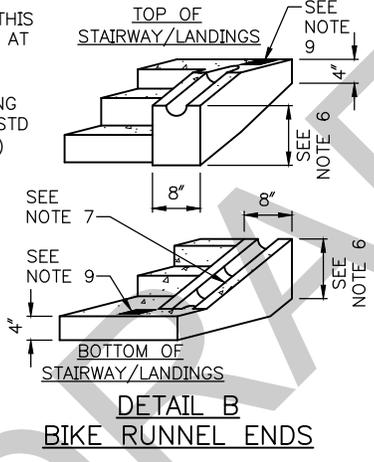
**DETAIL A
HANDGRIP ENDS**

NOTES:

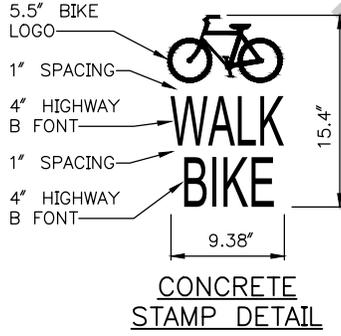
1. REFER TO STANDARD PLAN NO. 440a AND 440b FOR ADDITIONAL NOTES, DETAILS & DIMENSIONS.
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3. FIELD WELDED AND GROUND SURFACES MUST BE CLEANED AND COATED WITH ZINC SPRAY TO A MIN. OF 3 MILS, DRY PAINT THICKNESS.
4. DIMENSIONS SHOWN ON ONE SIDE OF THE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



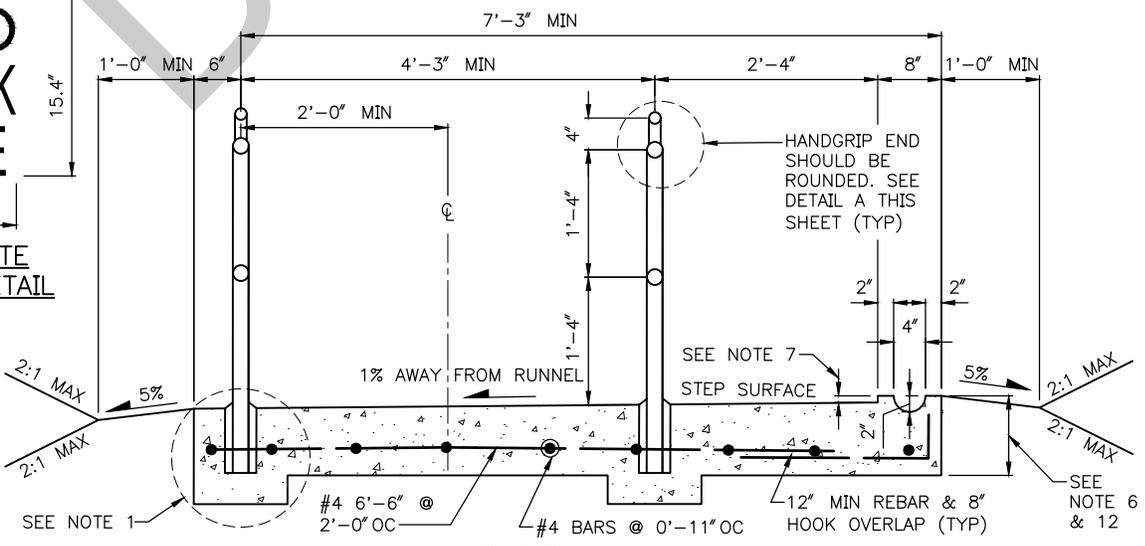
RAIL ENDS DETAIL



**DETAIL B
BIKE RUNNEL ENDS**



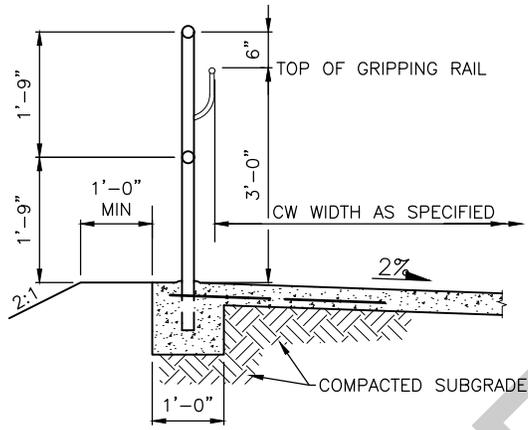
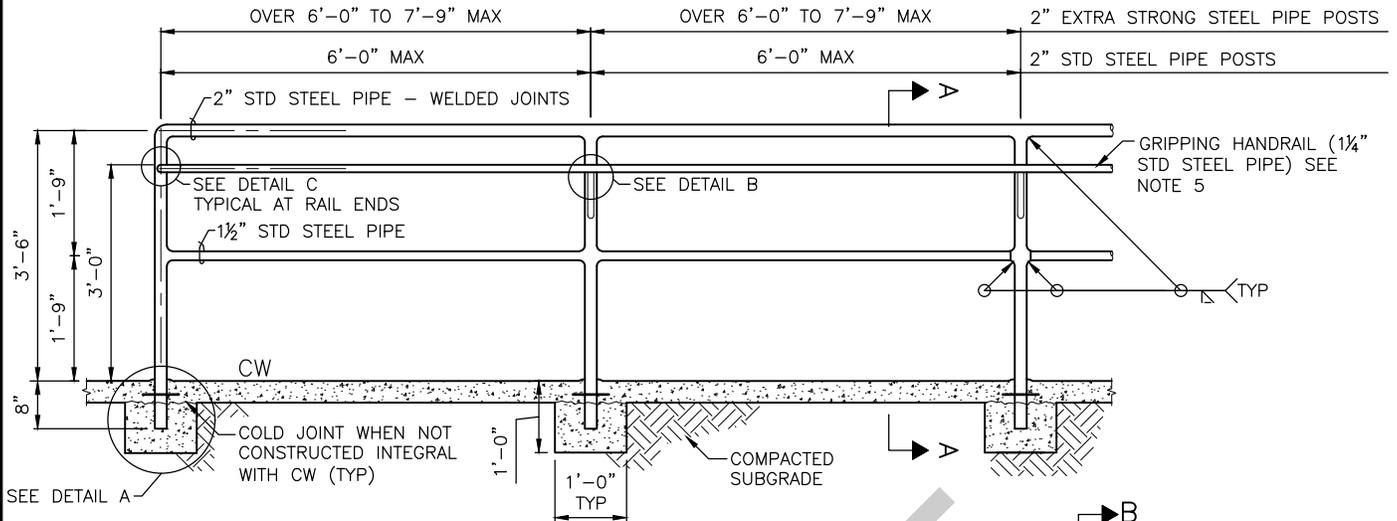
**CONCRETE
STAMP DETAIL**



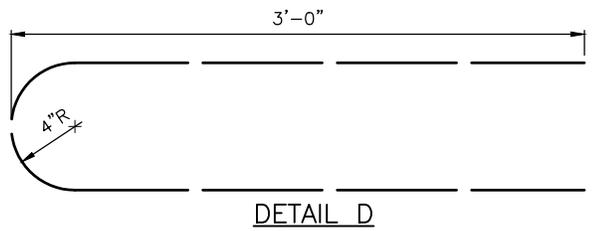
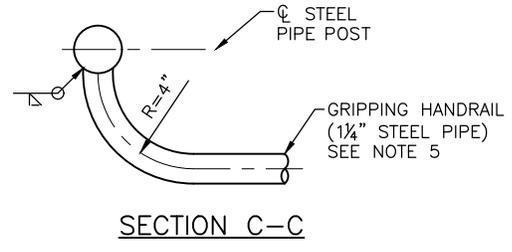
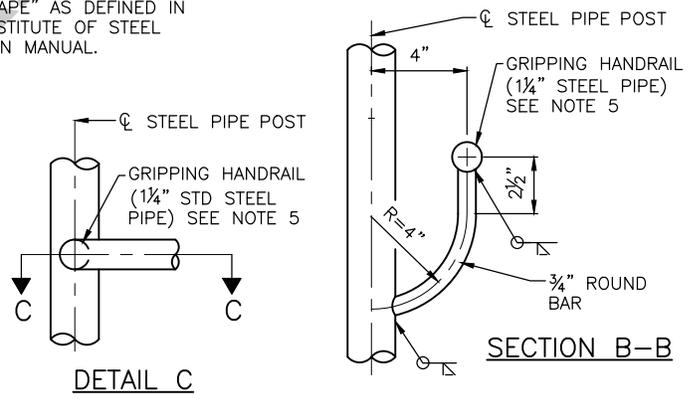
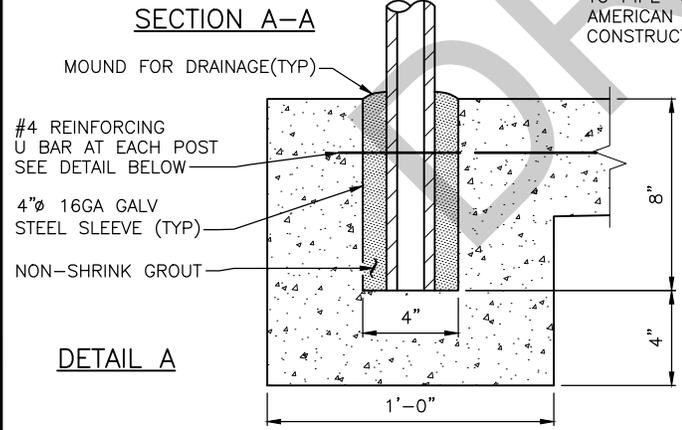
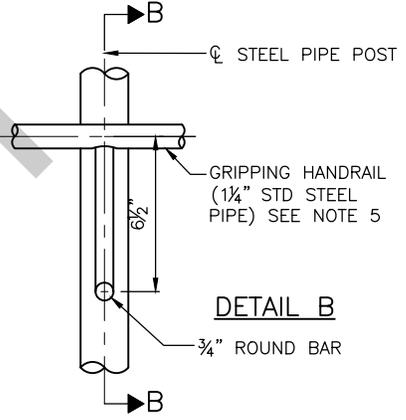
SECTION A-A

REF STD SPEC SEC 8-18

 <p>City of Seattle</p>	<p>NOT TO SCALE</p>	<p>CEMENT CONCRETE STAIRWAY & SINGLE BIKE RUNNEL</p>
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- NOTES:**
1. RAILING MUST BE HOT DIP GALVANIZED AFTER FABRICATION.
 2. ALL POSTS MUST BE PLUMB AND RAILS PARALLEL TO THE GROUND.
 3. PIPE MATERIAL MUST CONFORM TO ASTM A 53.
 4. REINFORCING STEEL ASTM A 706 GR 60.
 5. IF THE CONCRETE WALK SLOPE IS 5% OR GREATER A GRIPPING HANDRAIL IS REQUIRED. GRIPPING HANDRAILS ON RAMPS (SLOPE EXCEEDS 5%) MUST EXTEND HORIZONTALLY A MINIMUM OF 12" BEYOND TOP AND BOTTOM OF RAMP RUNS.
 6. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.



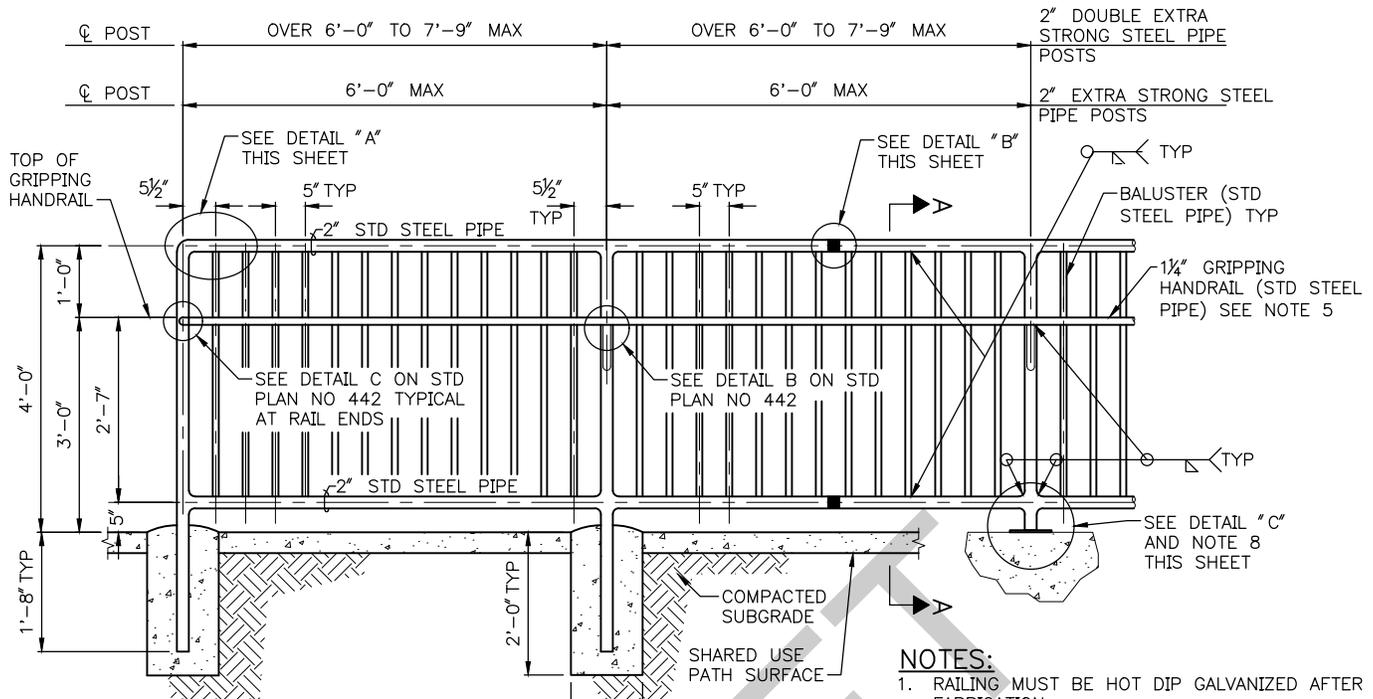
REF STD SPEC SEC 8-14, 8-18



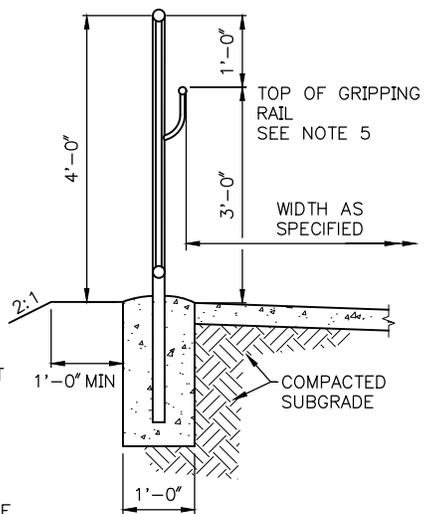
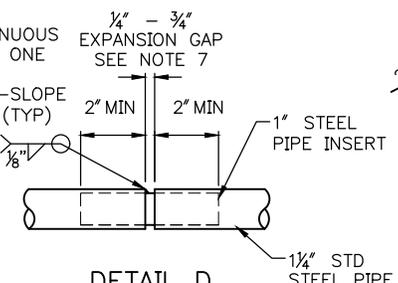
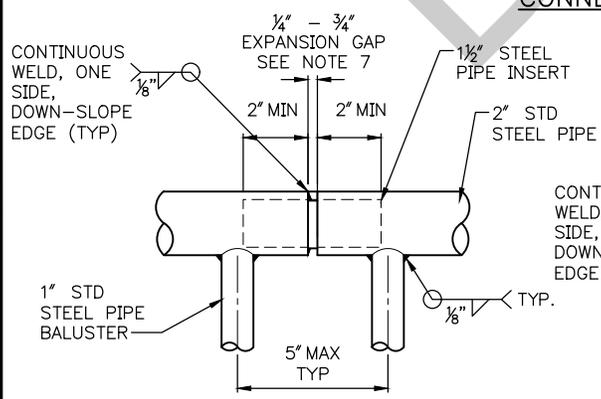
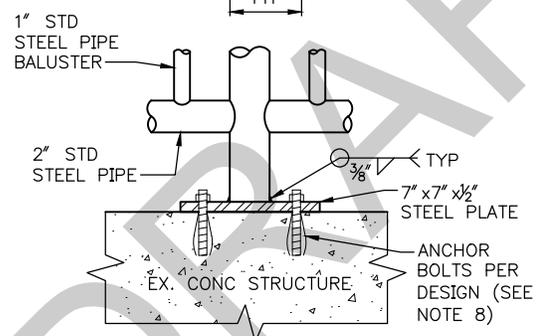
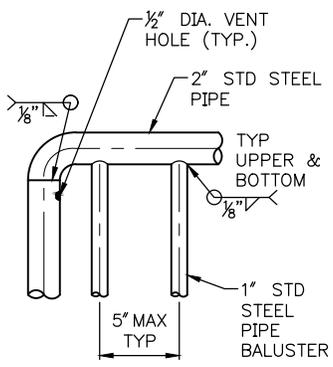
City of Seattle

NOT TO SCALE

STEEL PIPE HANDRAIL



- NOTES:**
1. RAILING MUST BE HOT DIP GALVANIZED AFTER FABRICATION.
 2. ALL POSTS AND BALUSTERS MUST BE PLUMB AND RAILS PARALLEL TO GRADE.
 3. PIPE MATERIAL MUST 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. GRIPPING HANDRAILS ON RAMPS (SLOPE EXCEEDS 5%) MUST EXTEND HORIZONTALLY A MINIMUM OF 12" BEYOND TOP AND BOTTOM OF RAMP RUNS.
 6. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
 7. PLACE EXPANSION GAP AT EVERY OTHER PANEL.
 8. "DETAIL C" IS FOR EXISTING CONCRETE STRUCTURE CONNECTION ONLY. ANCHOR BOLTS MUST BE DESIGNED PER AASHTO CODE.



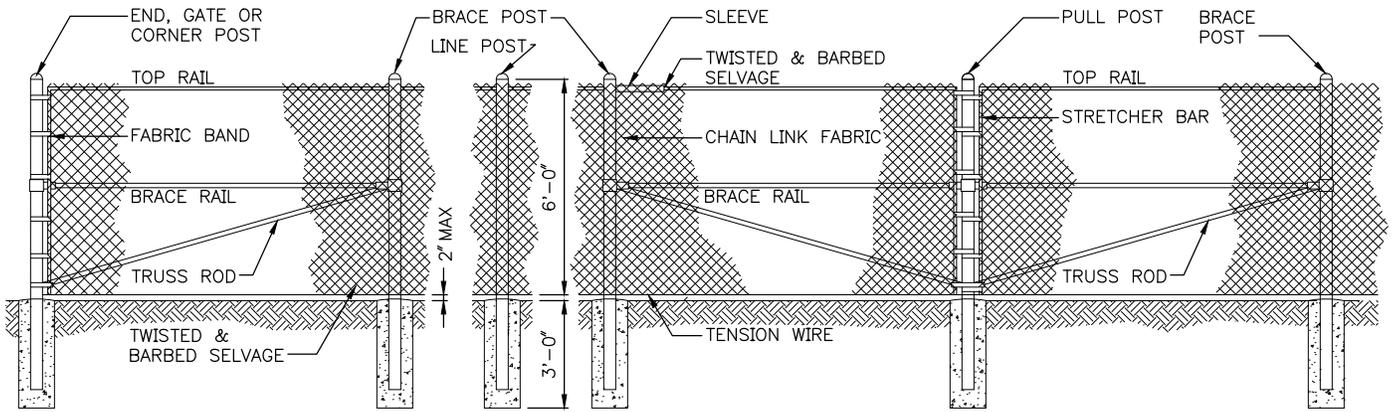
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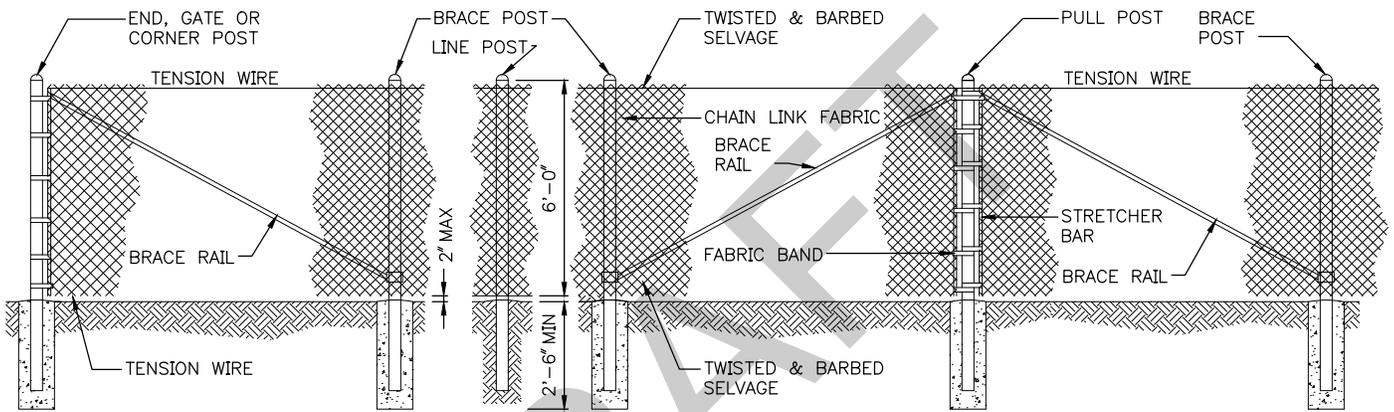
City of Seattle

NOT TO SCALE

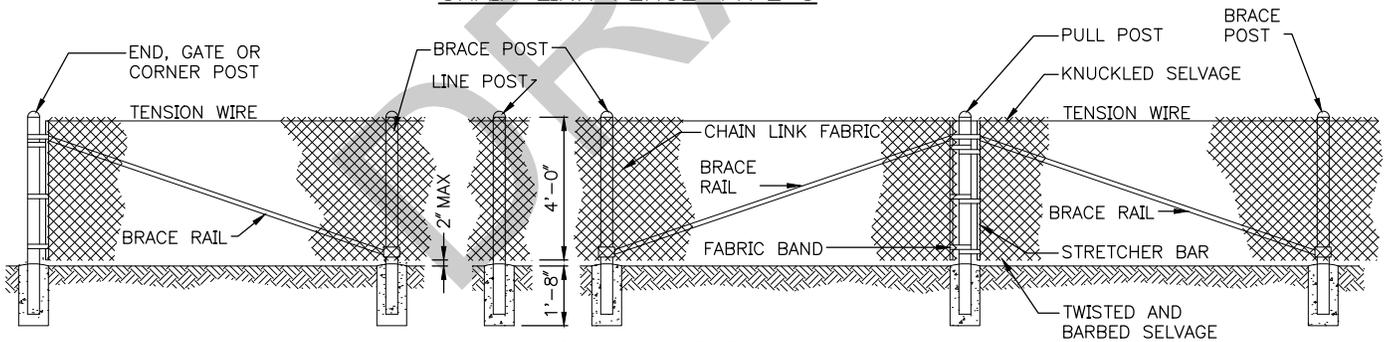
PEDESTRIAN RAILING



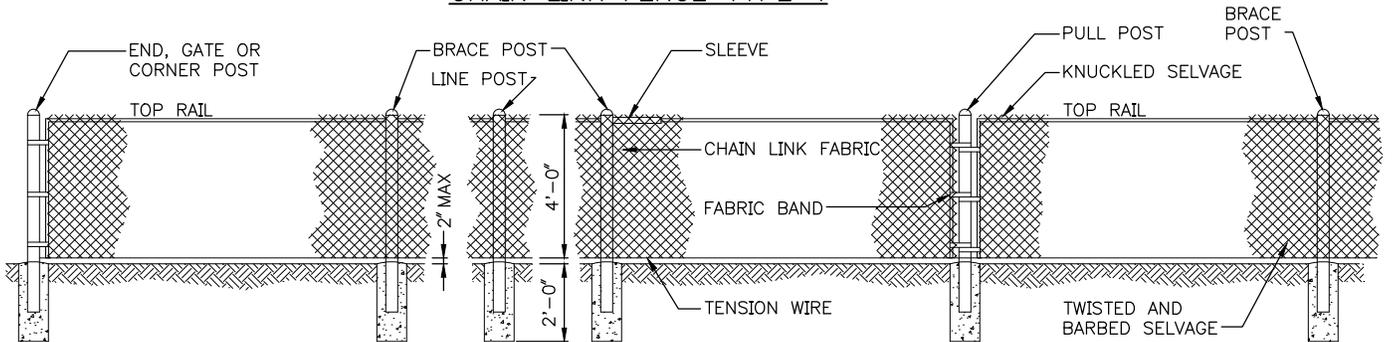
CHAIN LINK FENCE TYPE 1



CHAIN LINK FENCE TYPE 3



CHAIN LINK FENCE TYPE 4



CHAIN LINK FENCE TYPE 6

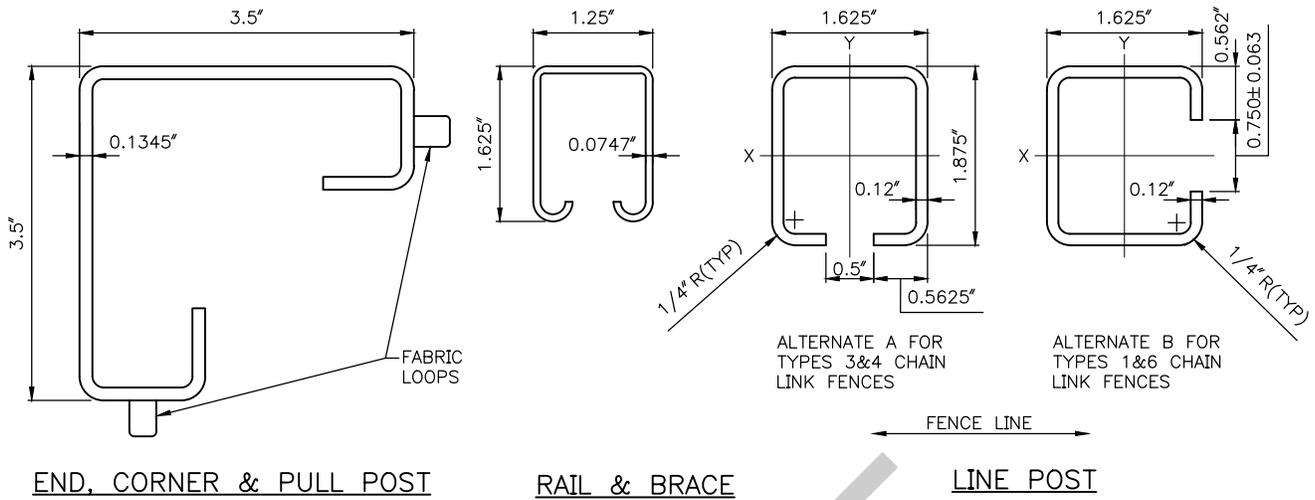
REF STD SPEC SEC 8-12



City of Seattle

NOT TO SCALE

CHAIN LINK FENCE



ROLL FORMED SECTIONS

MEMBER

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

MEMBER

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

NOTES:

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

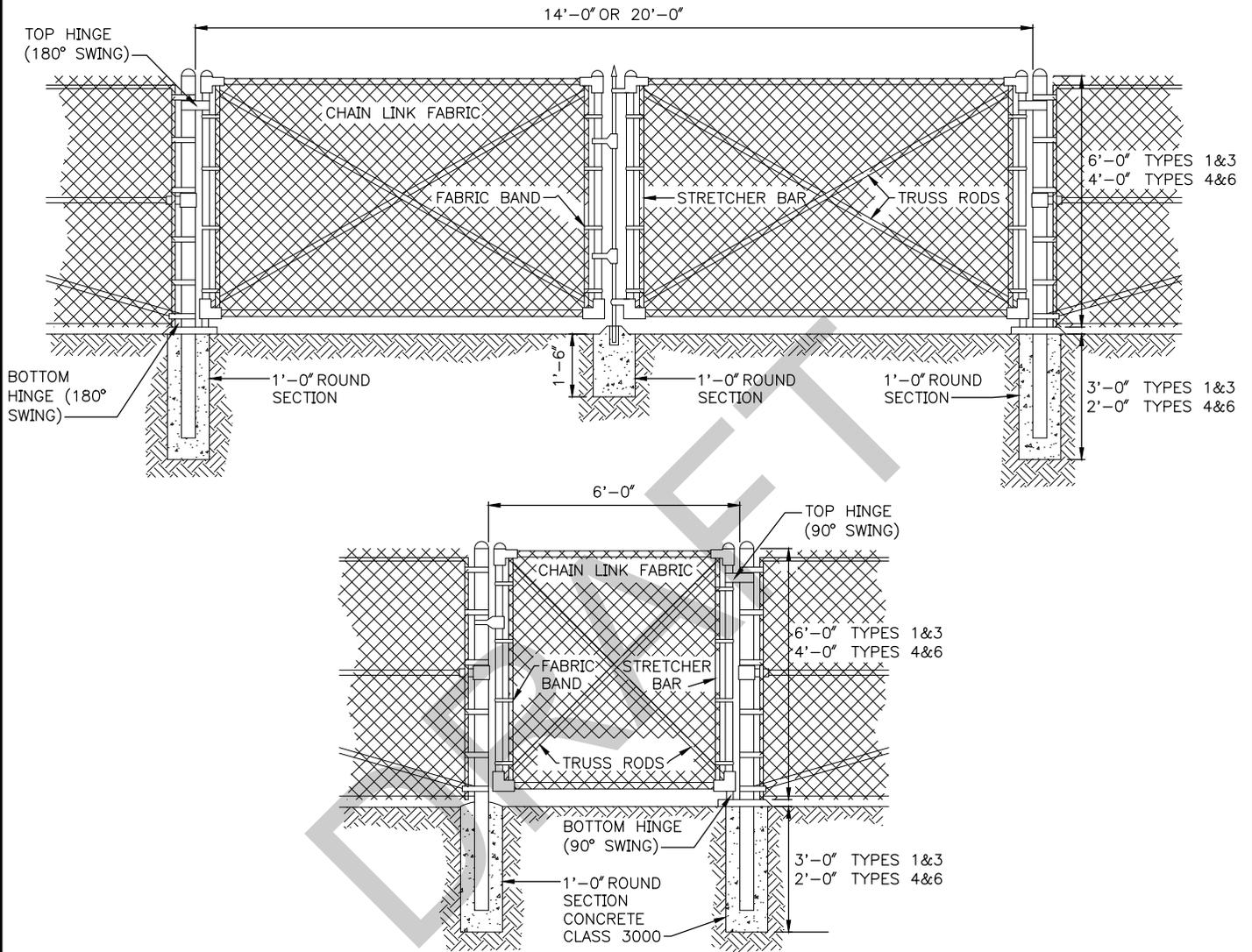
REF STD SPEC SEC 8-12



City of Seattle

NOT TO SCALE

CHAIN LINK FENCE



NOTES:

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

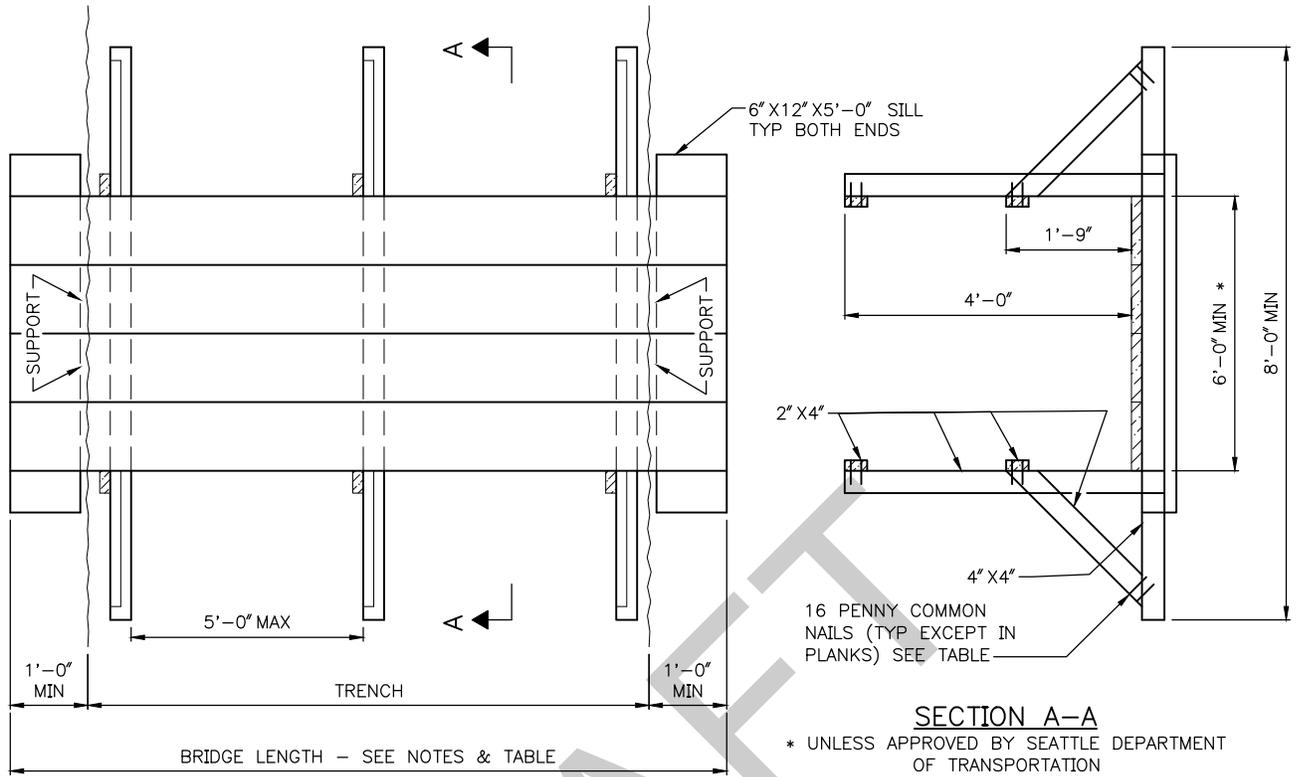
REF STD SPEC SEC 8-12



City of Seattle

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CHAIN LINK GATES

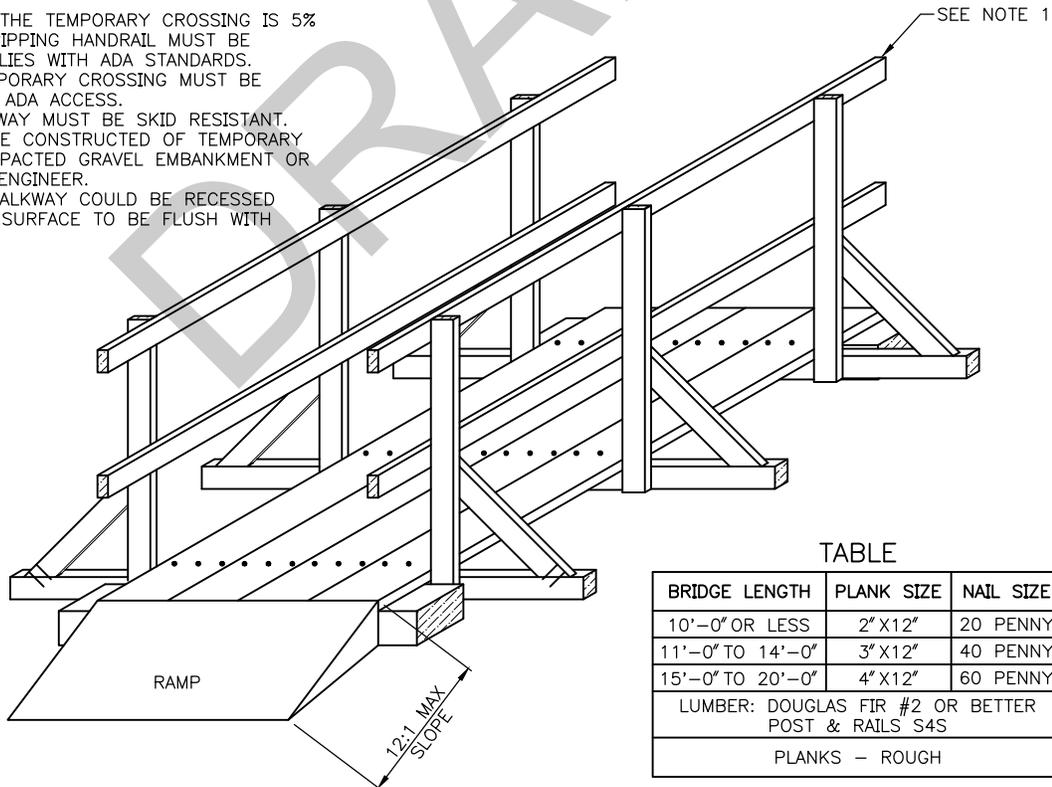


SECTION A-A

* UNLESS APPROVED BY SEATTLE DEPARTMENT OF TRANSPORTATION

NOTES:

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



TABLE

BRIDGE LENGTH	PLANK SIZE	NAIL SIZE
10'-0" OR LESS	2" X 12"	20 PENNY
11'-0" TO 14'-0"	3" X 12"	40 PENNY
15'-0" TO 20'-0"	4" X 12"	60 PENNY
LUMBER: DOUGLAS FIR #2 OR BETTER POST & RAILS S4S		
PLANKS - ROUGH		

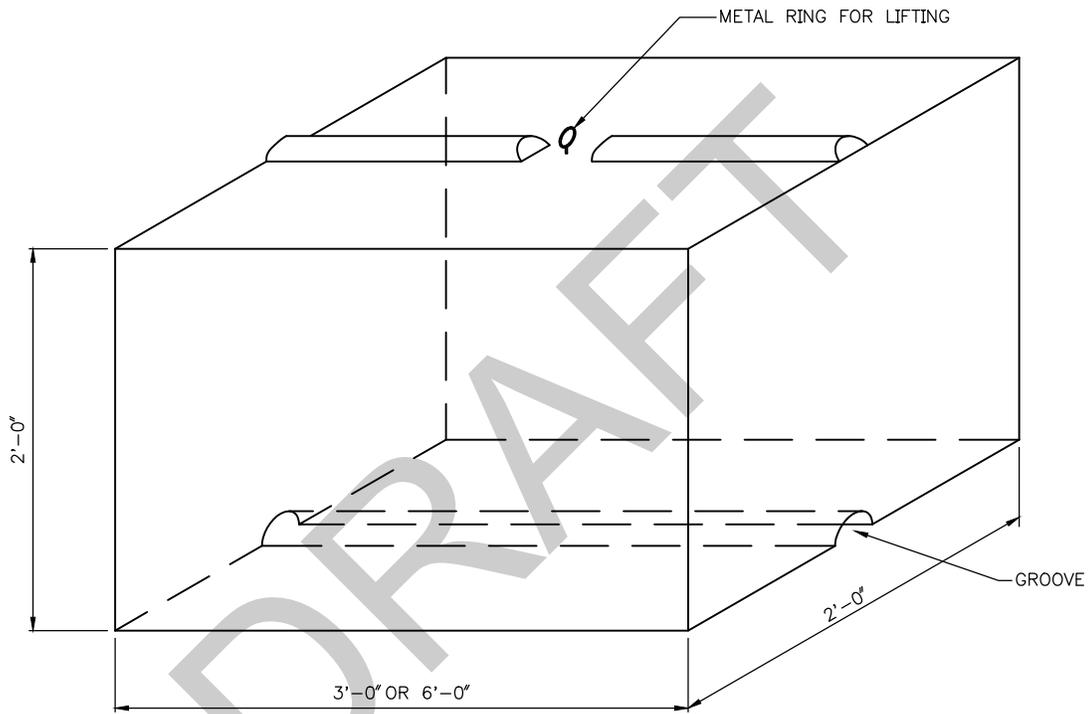
REF STD SPEC SEC 1-07.23



City of Seattle

NOT TO SCALE

TEMPORARY PEDESTRIAN WALKWAY



CONCRETE TONGUE & GROOVE BLOCK

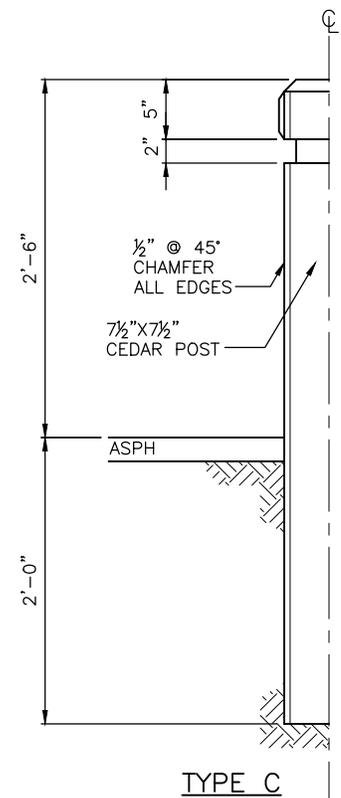
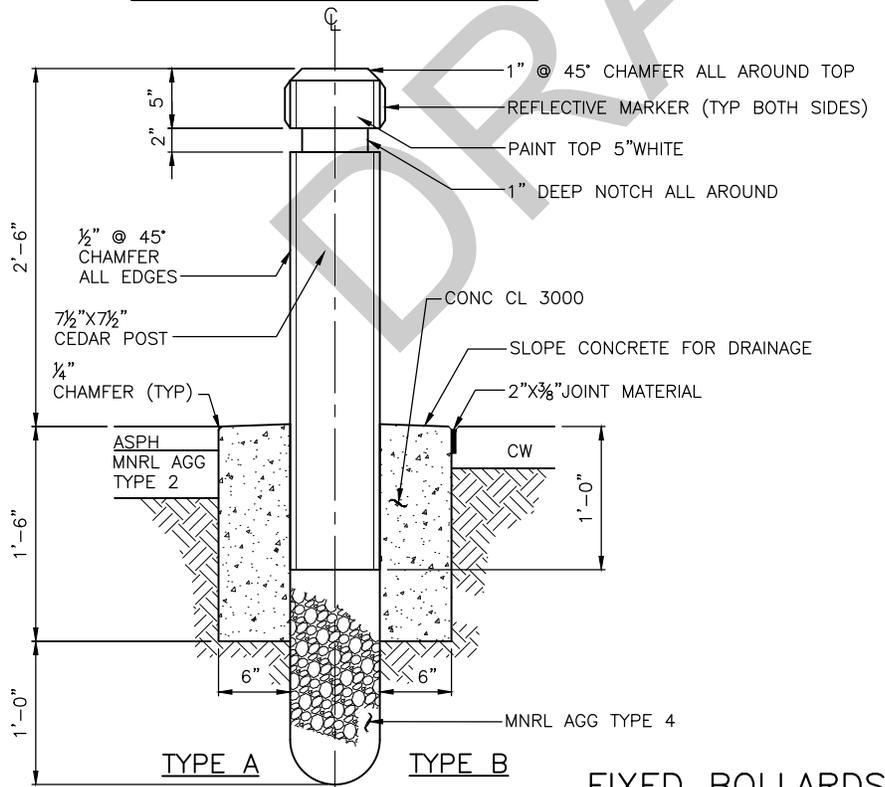
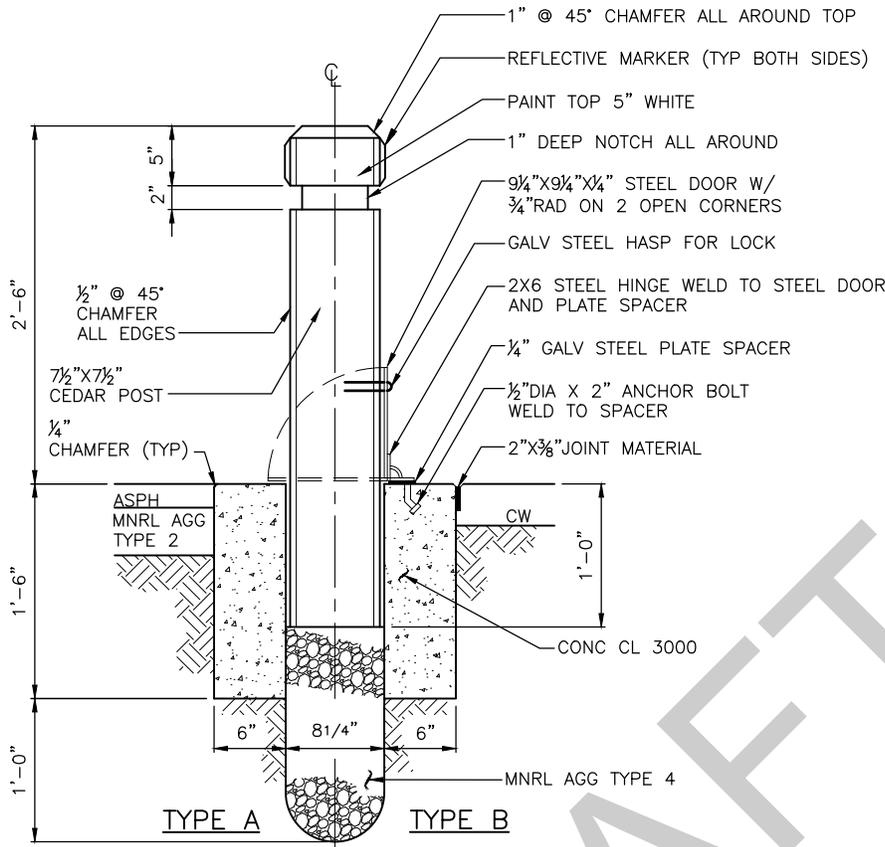
REF STD SPEC SEC



City of Seattle

NOT TO SCALE

ECOLOGY BLOCK, CONCRETE



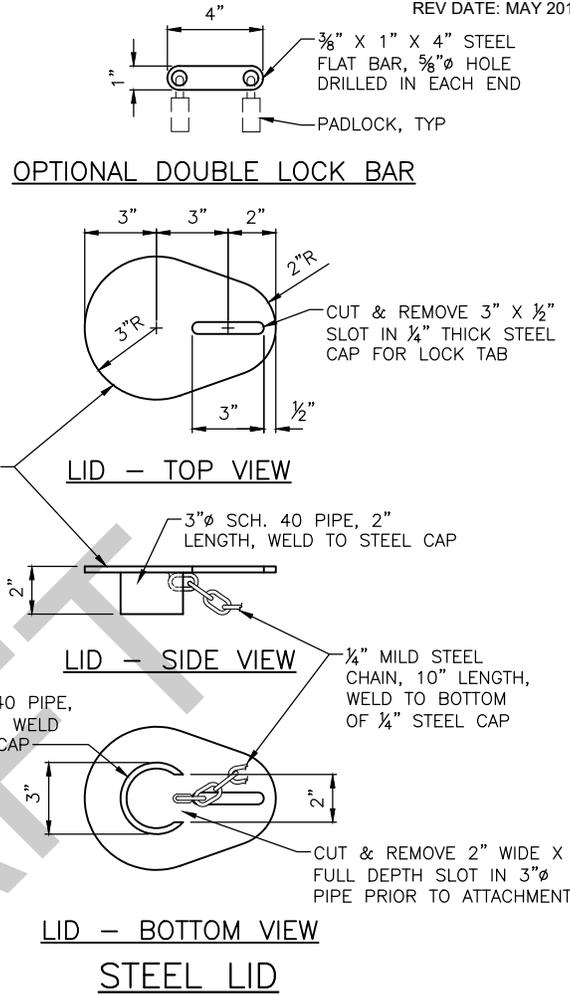
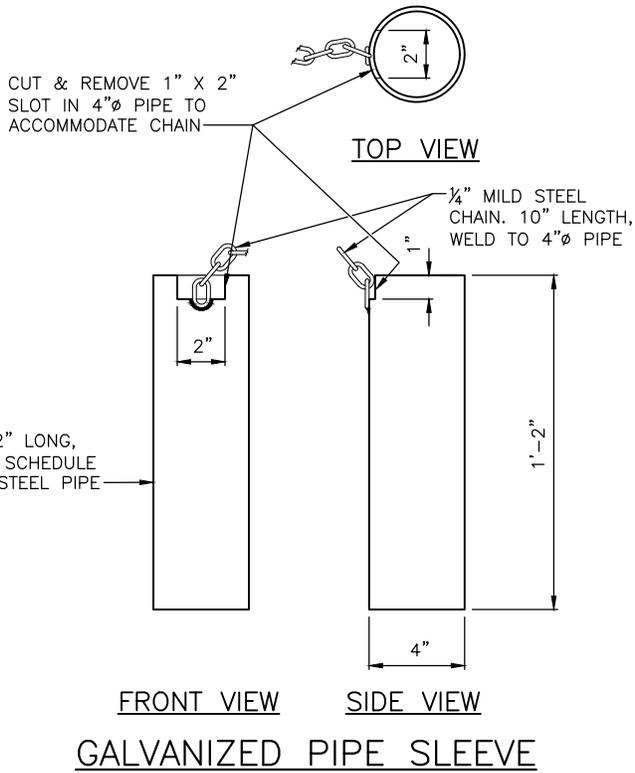
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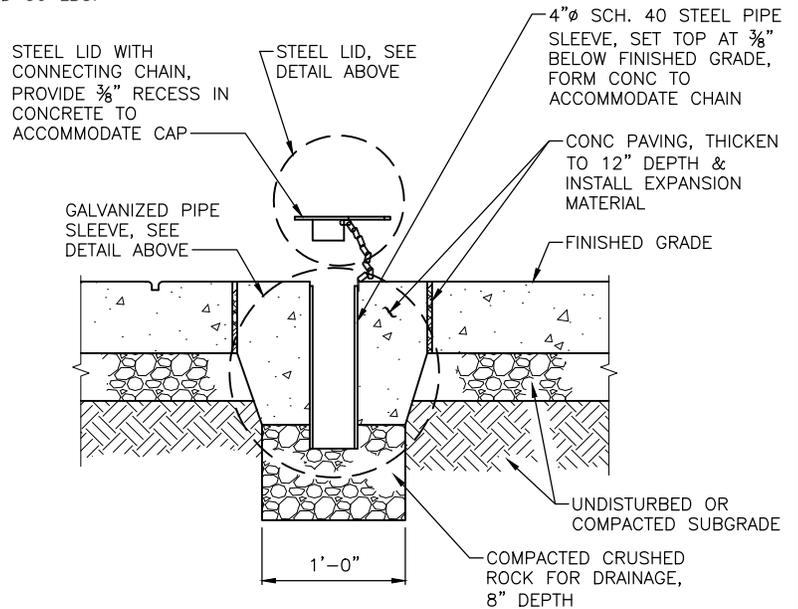
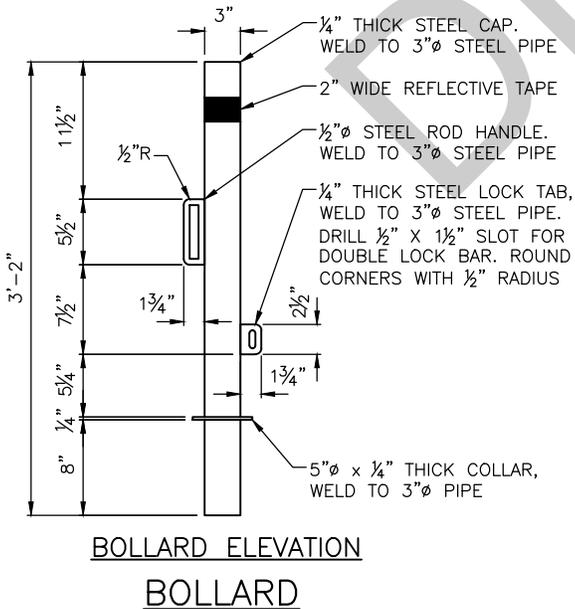
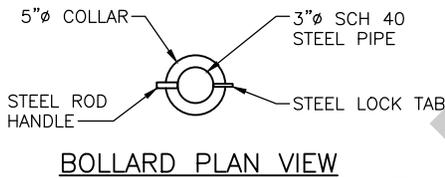
City of Seattle

NOT TO SCALE

FIXED & REMOVABLE WOOD BOLLARD



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



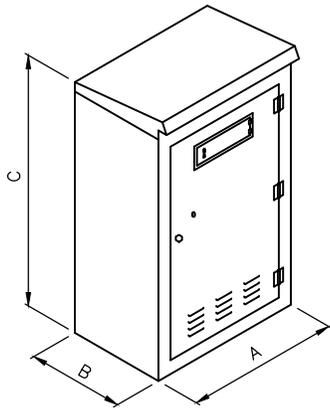
REF STD SPEC SEC 8-02



City of Seattle

NOT TO SCALE

REMOVABLE STEEL BOLLARD

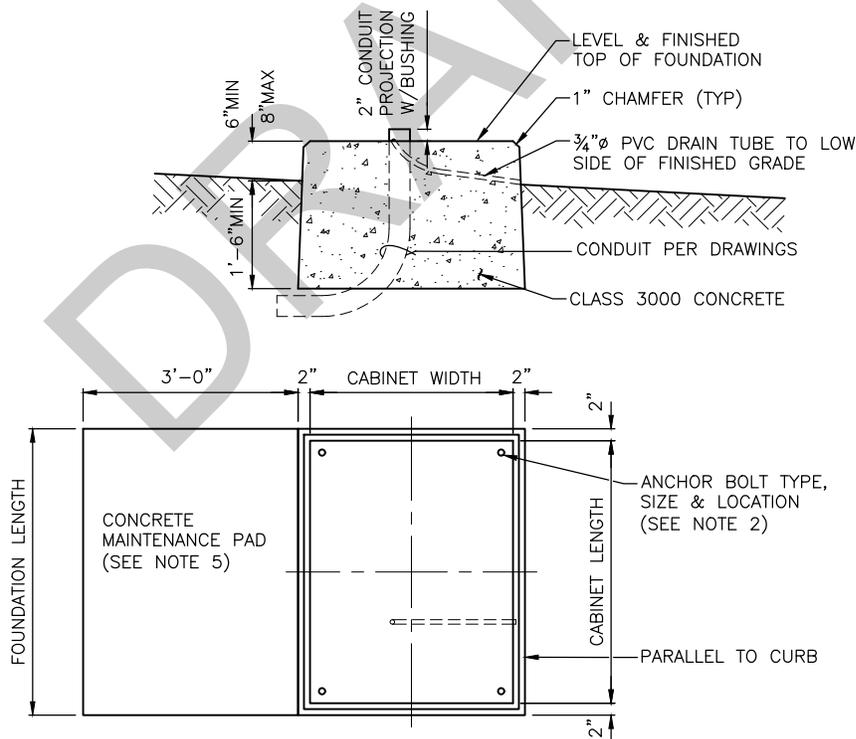


NOTES:

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

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

SIGNAL CONTROLLER CABINET—TYPES II, III, VI



SIGNAL CONTROLLER FOUNDATION
SEE STD PLANS NO 500b & 500c FOR CONDUIT LAYOUT

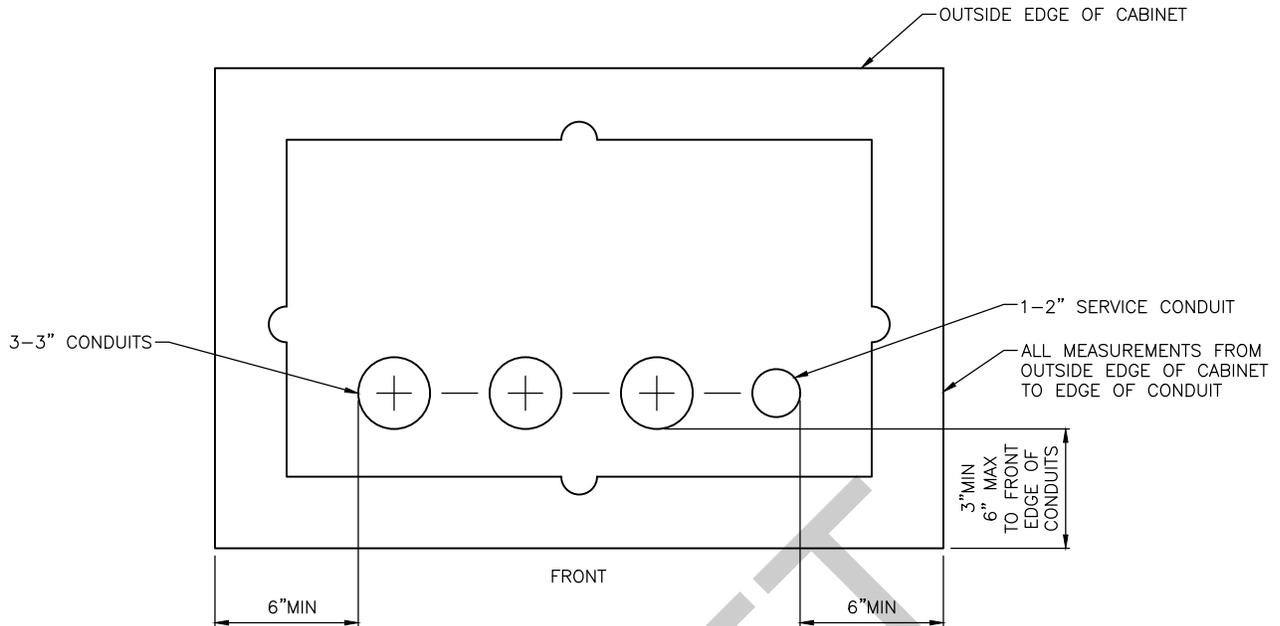
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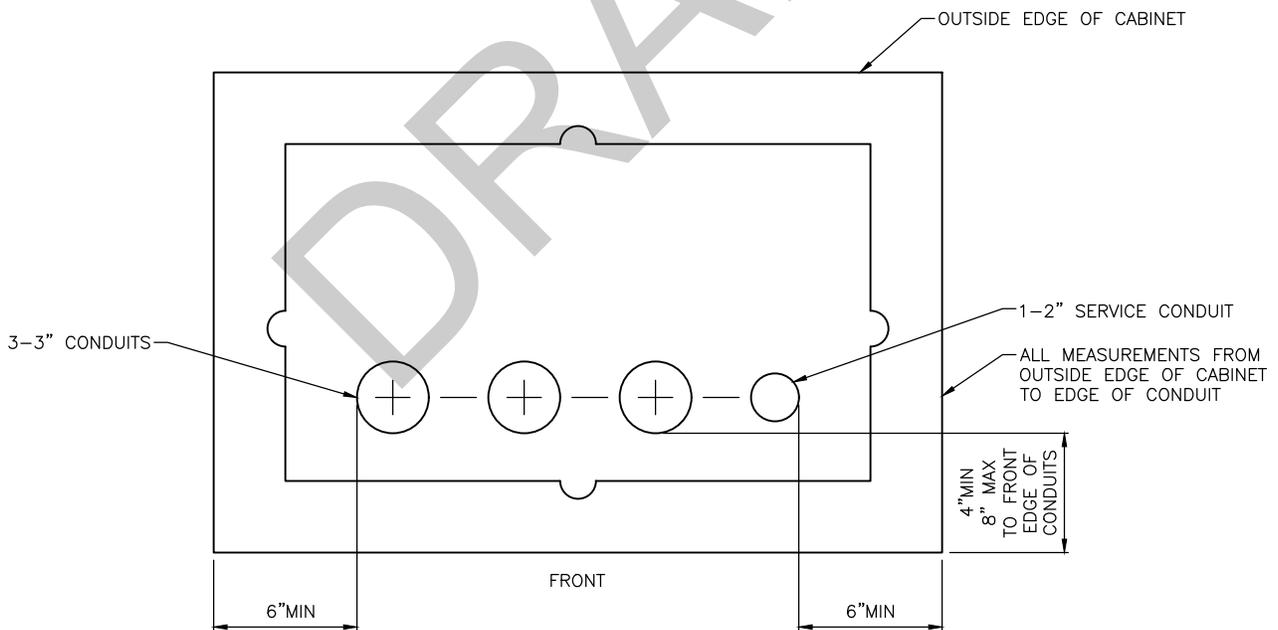
City of Seattle

NOT TO SCALE

**SIGNAL CONTROLLER
CABINET & FOUNDATION**



CONDUIT LAYOUT - TYPE II SIGNAL CONTROLLER FOUNDATION



CONDUIT LAYOUT - TYPE III/VI SIGNAL CONTROLLER FOUNDATION

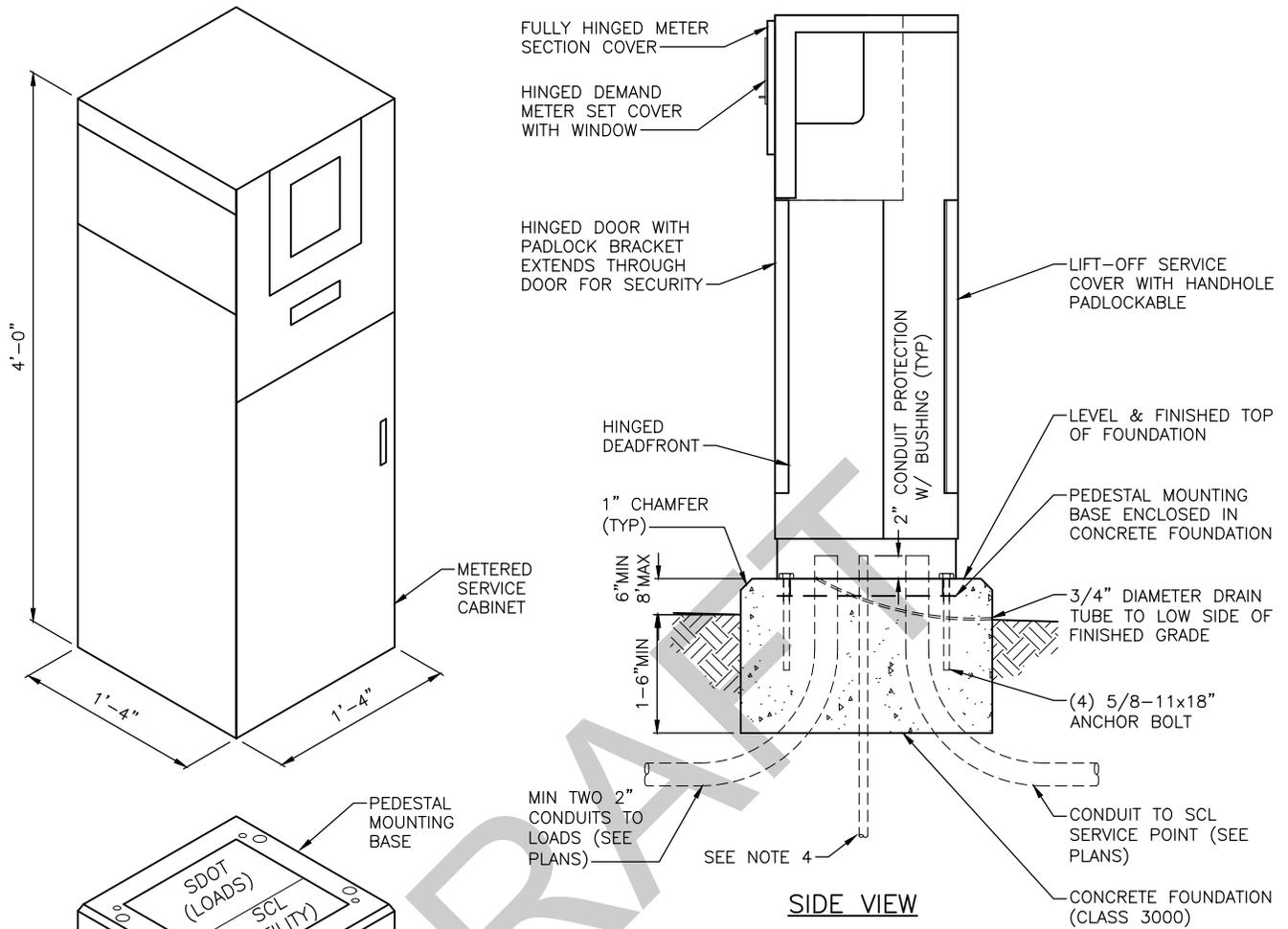
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City of Seattle

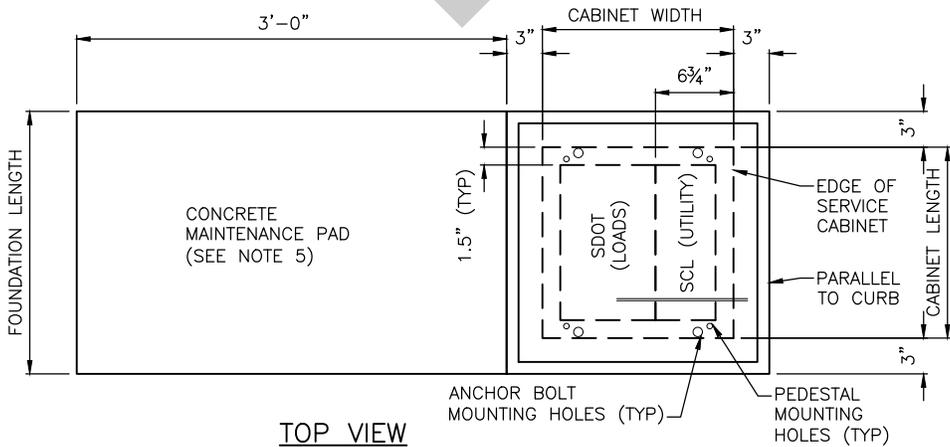
NOT TO SCALE

SIGNAL CONTROLLER FOUNDATION CONDUIT LAYOUT



ISOMETRIC VIEW

SIDE VIEW



TOP VIEW

NOTES:

1. 36" MINIMUM CLEARANCE MUST BE REQUIRED IN FRONT OF BOTH FRONT AND BACK CABINET DOOR.
2. SEAL CABINET TO FOUNDATION WITH GREY OR CLEAR SILICON TO PREVENT MOISTURE FROM ENTERING THE CABINET.
3. EXACT SERVICE CABINET DIMENSIONS, ANCHOR BOLT LOCATIONS AND PEDESTAL MOUNTING HOLES MUST BE PROVIDED BY THE MANUFACTURER.
4. GROUND ROD 3/4"x120" COPPER CLAD WITH GROUND ROD CLAMP. A SECOND GROUND MUST 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 GROUND WIRE BETWEEN CABINET FOUNDATION AND GROUND ROD HANDHOLE
5. CABINET FOUNDATIONS INSTALLED IN A LANDSCAPE AREA MUST INCLUDE A CONCRETE SIDEWALK MAINTENANCE PAD ON THE SDOT DOOR SIDE OF THE FOUNDATION, SEE STD SPEC SEC 8-32.3(2)B

REF STD SPEC SEC 8-31, 8-32



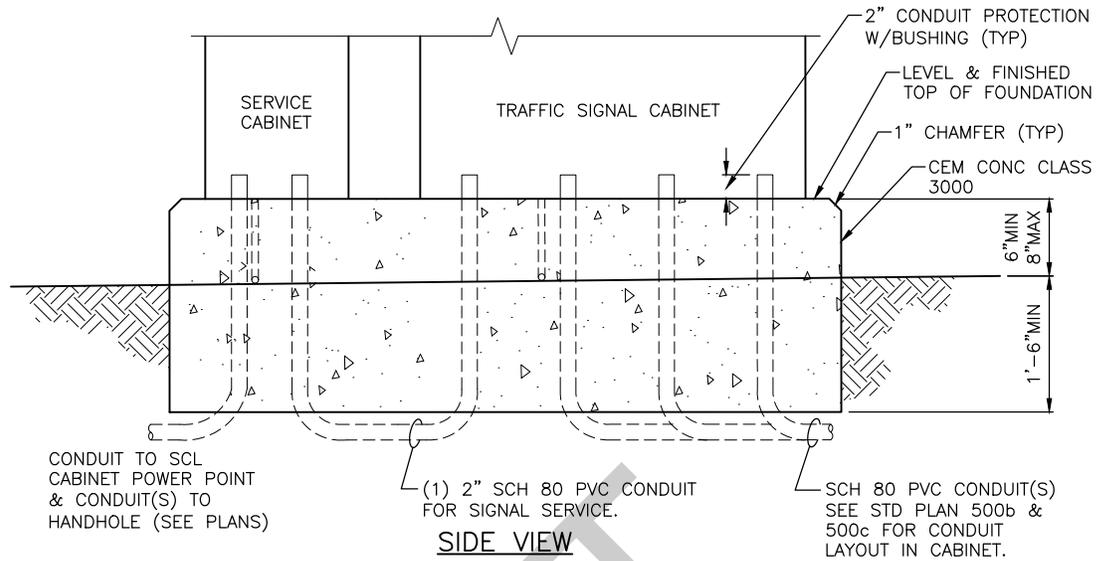
City of Seattle

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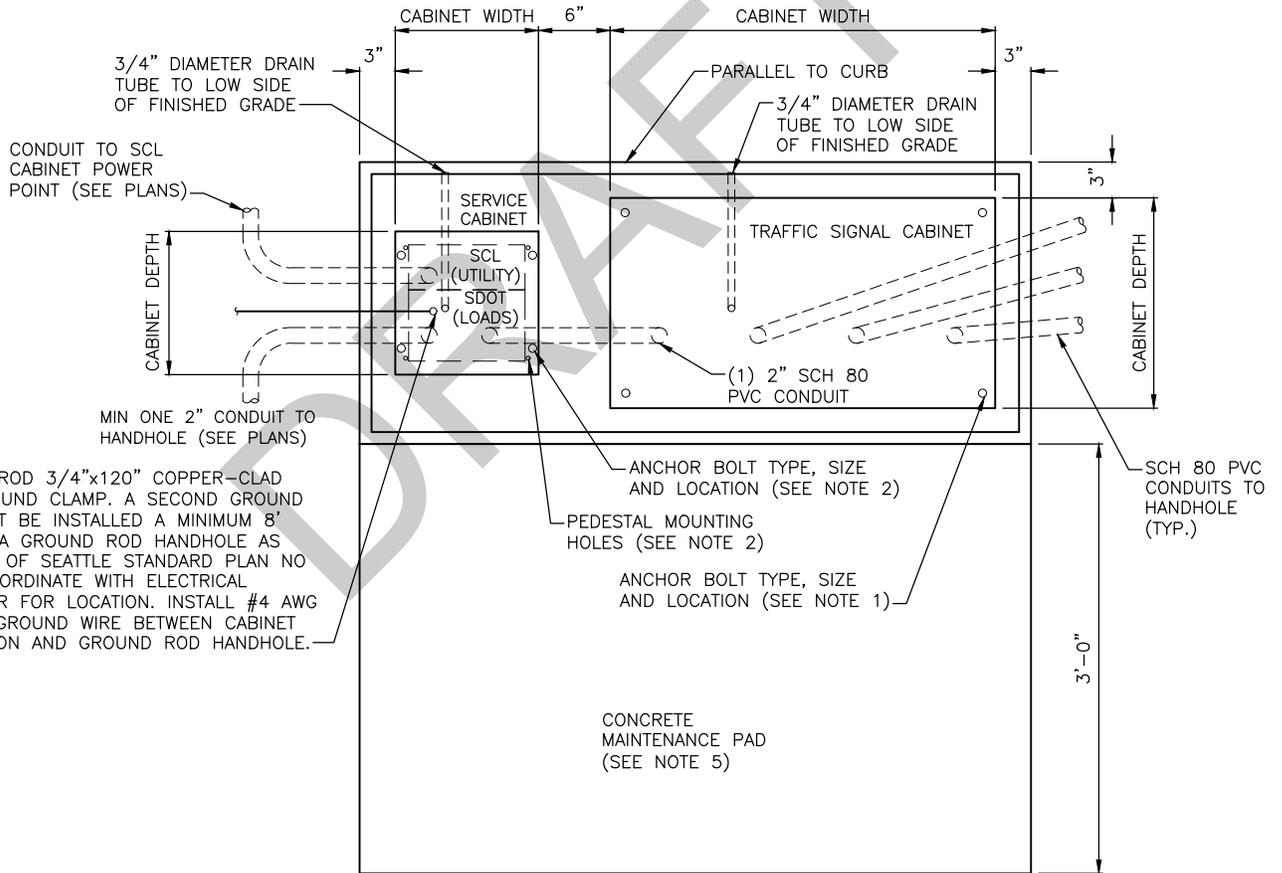
SERVICE CABINET FOUNDATION DETAIL

NOTES:

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



SIDE VIEW



TOP VIEW

JOINT SIGNAL CONTROLLER/SERVICE CABINET FOUNDATION DETAIL

NOT TO SCALE

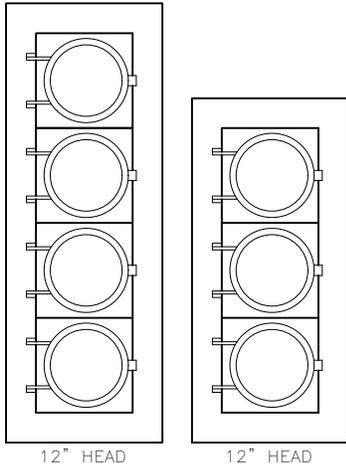
REF STD SPEC SEC 8-31, 8-32



City of Seattle

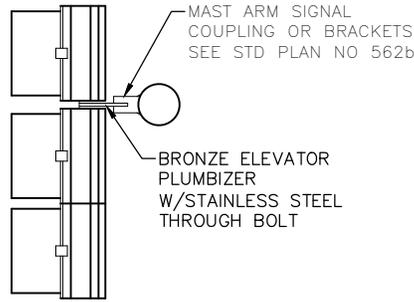
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**JOINT SIGNAL CONTROLLER/
SERVICE CABINET
FOUNDATION DETAIL**



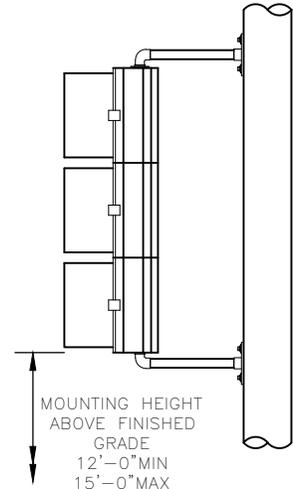
TYPICAL SIGNAL FACES

W/ TUNNEL VISORS & 5" BACKPLATE (LOUVERED)
1" YELLOW, DIAMOND GRADE RETRO REFLECTIVE TAPE



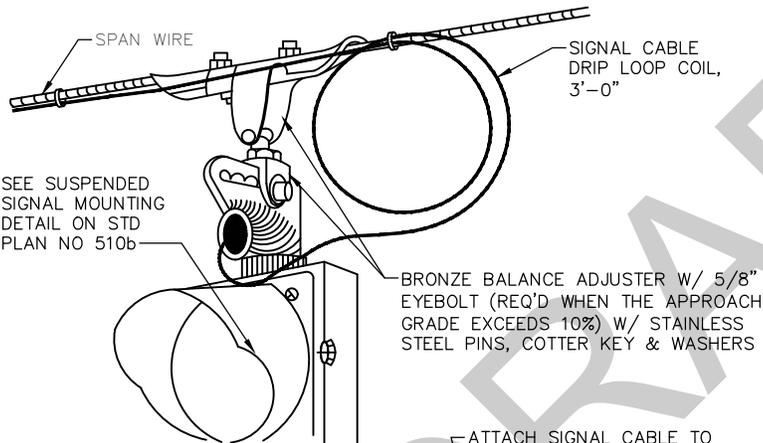
MAST ARM MOUNTING USING COUPLING OR BRACKET

SEE NOTE 1



BRACKET MOUNTING FOR POLE MOUNTED

FOR SIGNAL HEAD BRACKET ASSEMBLY
SEE STD PLAN NO 511

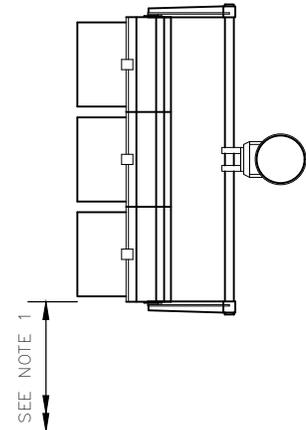


SIGNAL HANGER DETAIL

SEE SUSPENDED SIGNAL MOUNTING DETAIL ON STD PLAN NO 510b

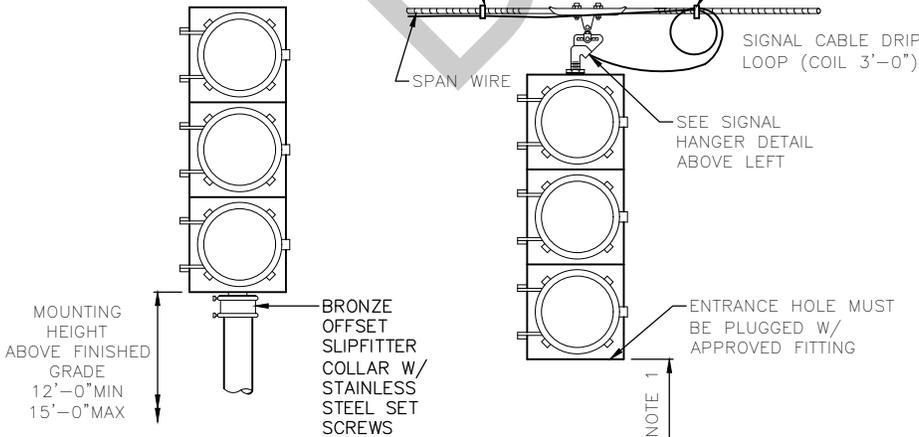
BRONZE BALANCE ADJUSTER W/ 5/8" EYEBOLT (REQ'D WHEN THE APPROACH GRADE EXCEEDS 10%) W/ STAINLESS STEEL PINS, COTTER KEY & WASHERS

ATTACH SIGNAL CABLE TO SPAN WIRE WITH FRICTION TAPE OR UV RATED CABLE TIE WRAPS AND TRIM ENDS



BRACKET MOUNTING FOR MAST ARM MOUNTED

FOR SIGNAL HEAD BRACKET ASSEMBLY
SEE STD PLAN NO 526b



PEDESTAL TOP MOUNTING

FOR PEDESTAL SEE STD PLAN NO 524

SPAN MOUNTING

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

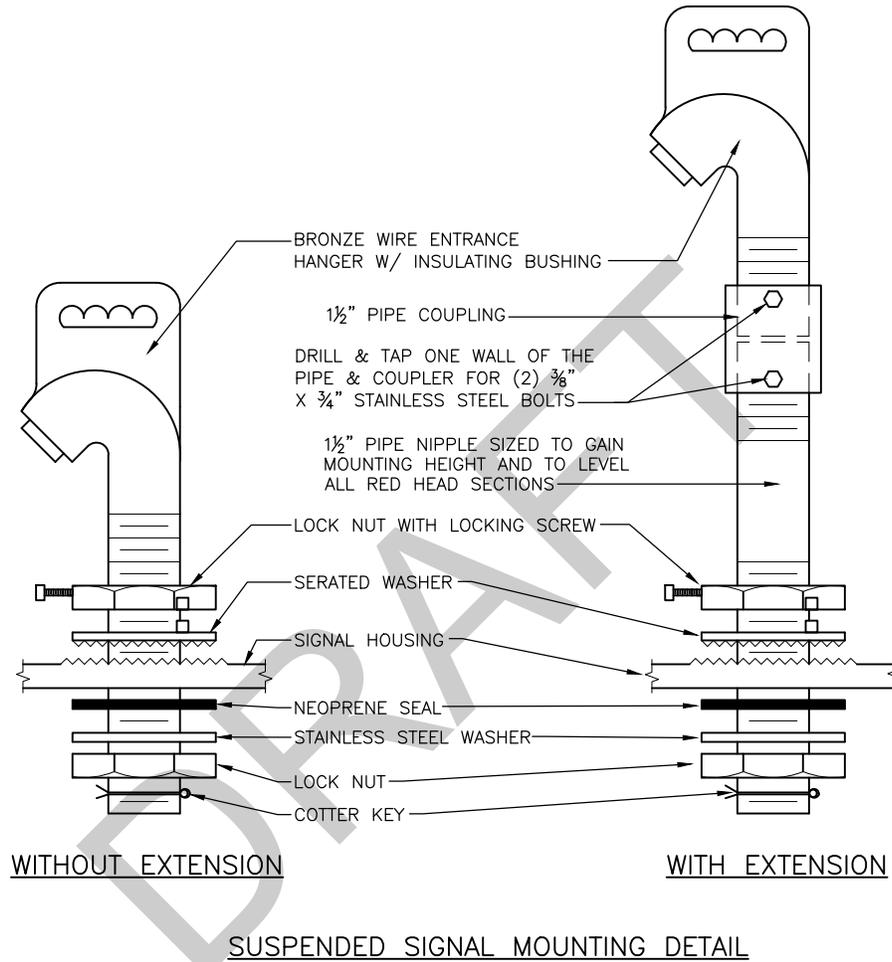
REF STD SPEC SEC 8-31



City of Seattle

NOT TO SCALE

VEHICULAR SIGNAL MOUNTING



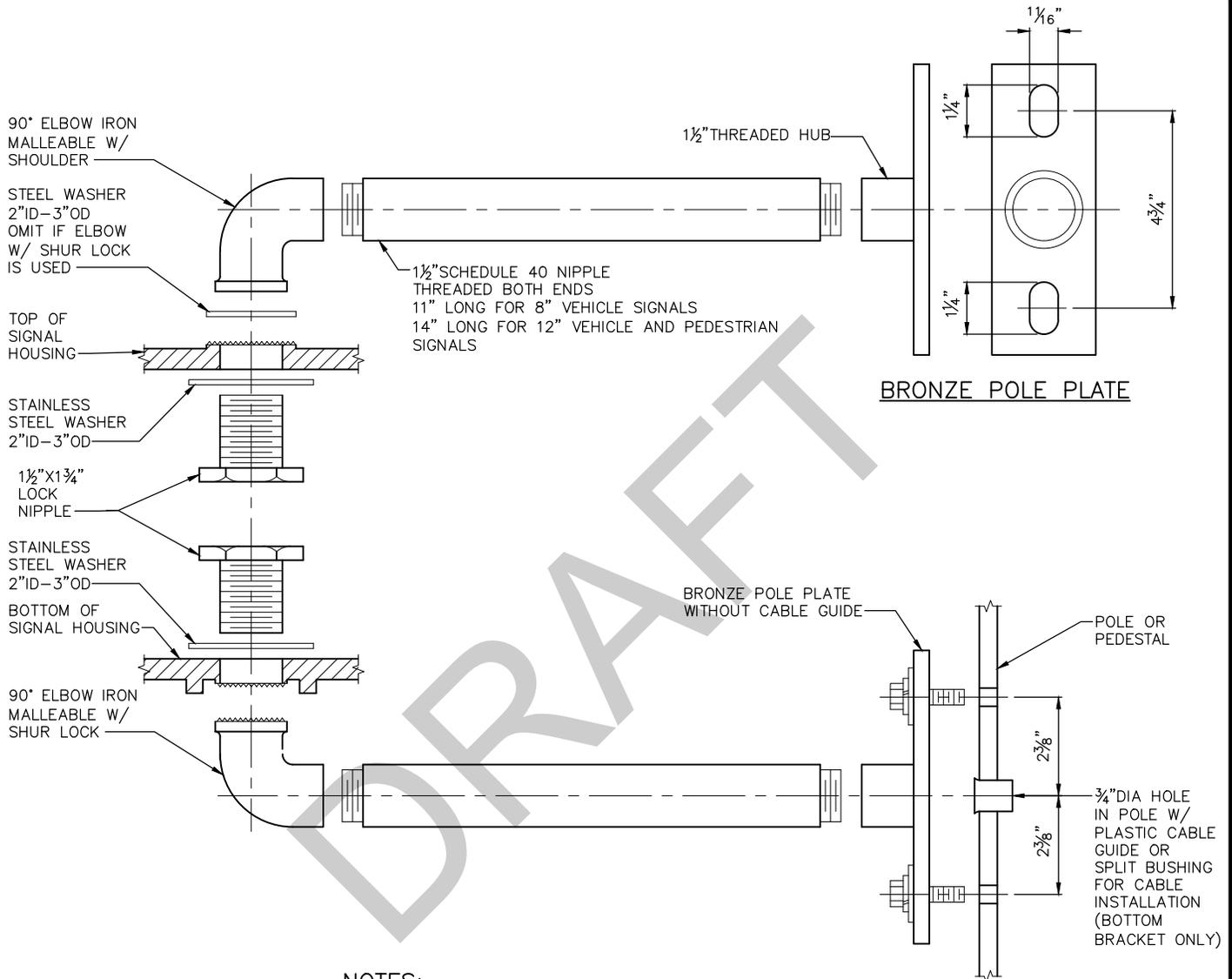
REF STD SPEC SEC 8-31



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 MUST BE AS FOLLOWS:
 - ON METAL POLES THINNER THAN 7 GAUGE, USE 3/8" STAINLESS STEEL RIVNUTS.
 - ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR 3/8" BOLT (STAINLESS STEEL RIVNUTS OPTIONAL).
 - ON POLES FILLED 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.

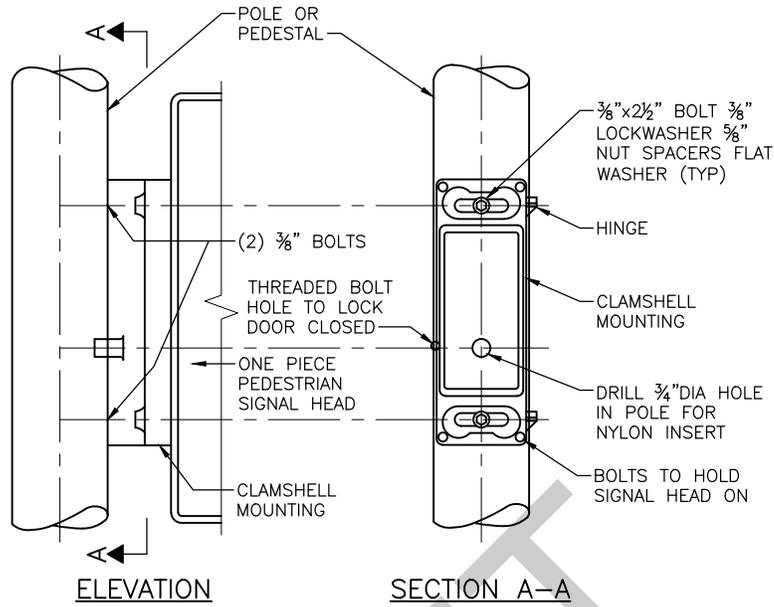
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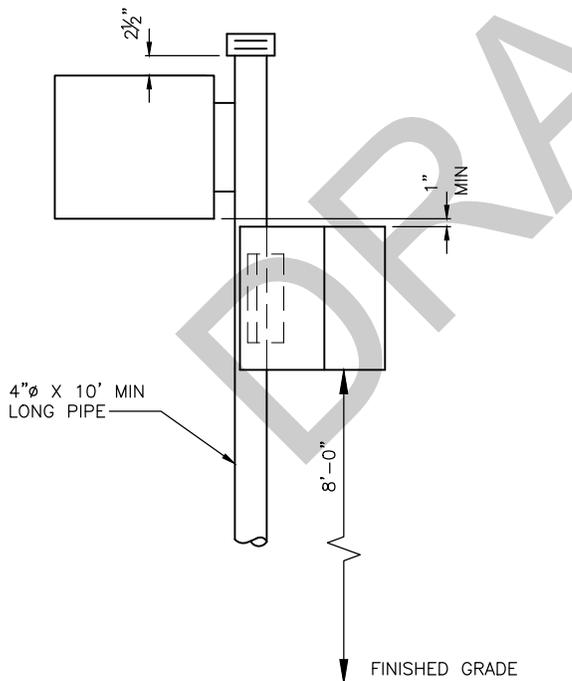
City of Seattle

NOT TO SCALE

SIGNAL HEAD BRACKET ASSEMBLY



METAL POLE MOUNT



PEDESTAL MOUNT

NOTES:

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

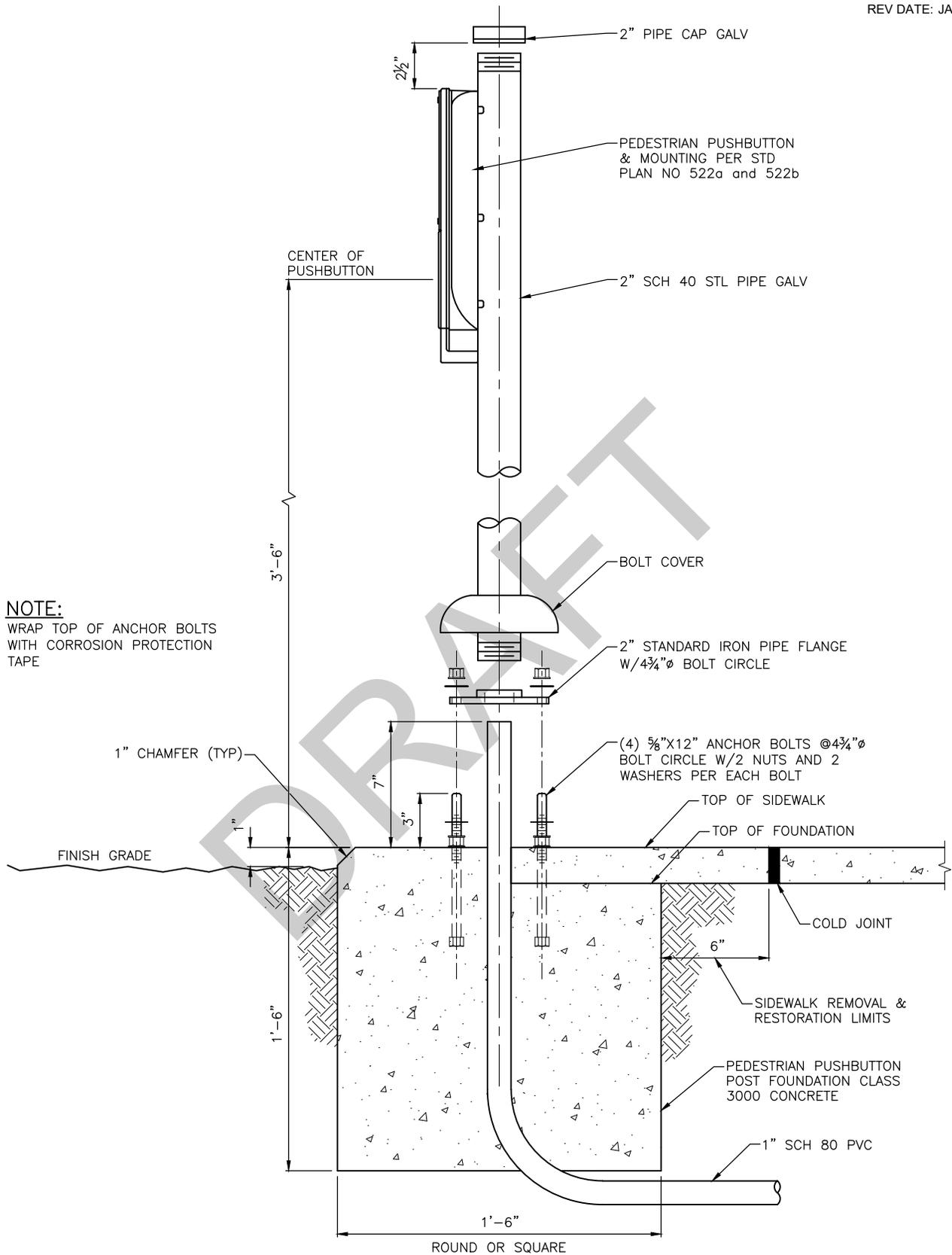
REF STD SPEC SEC 8-31



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NOT TO SCALE

PEDESTRIAN SIGNAL
CLAMSHELL MOUNTING



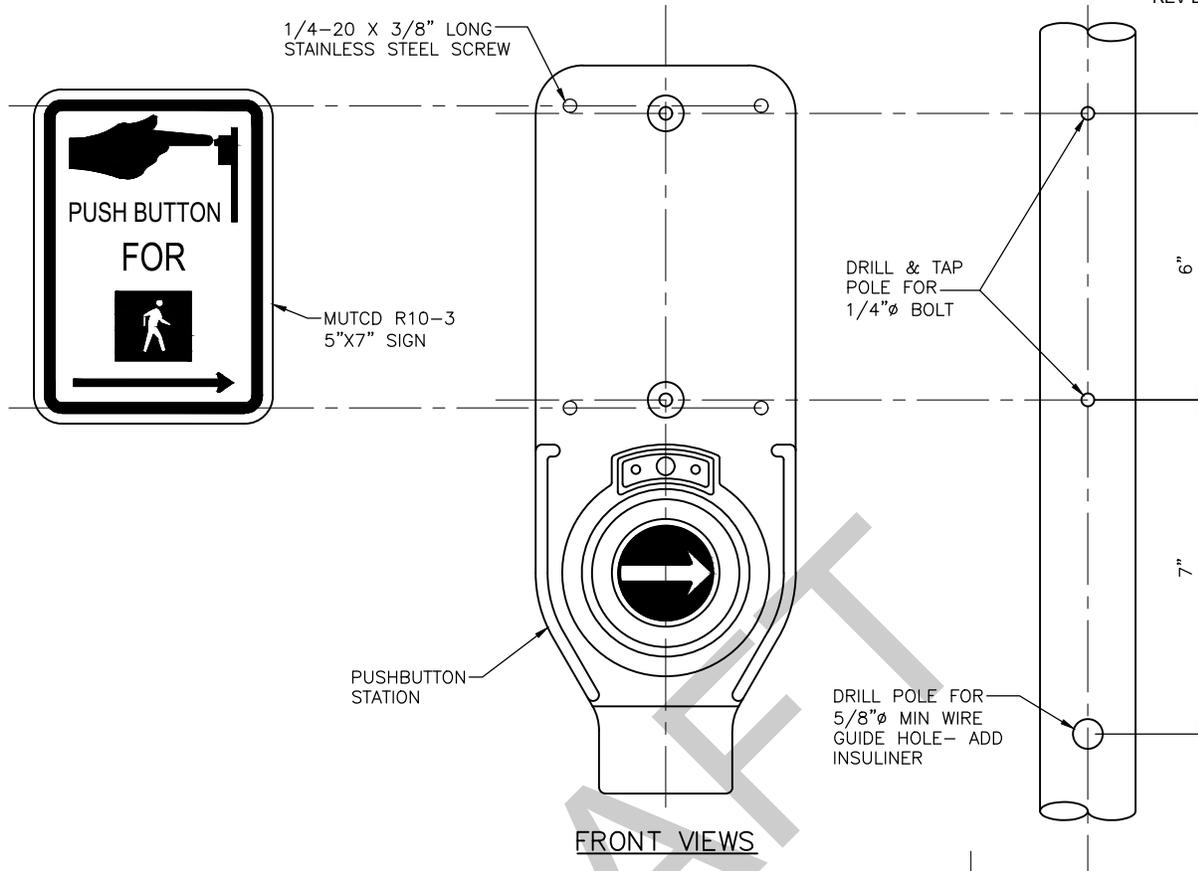
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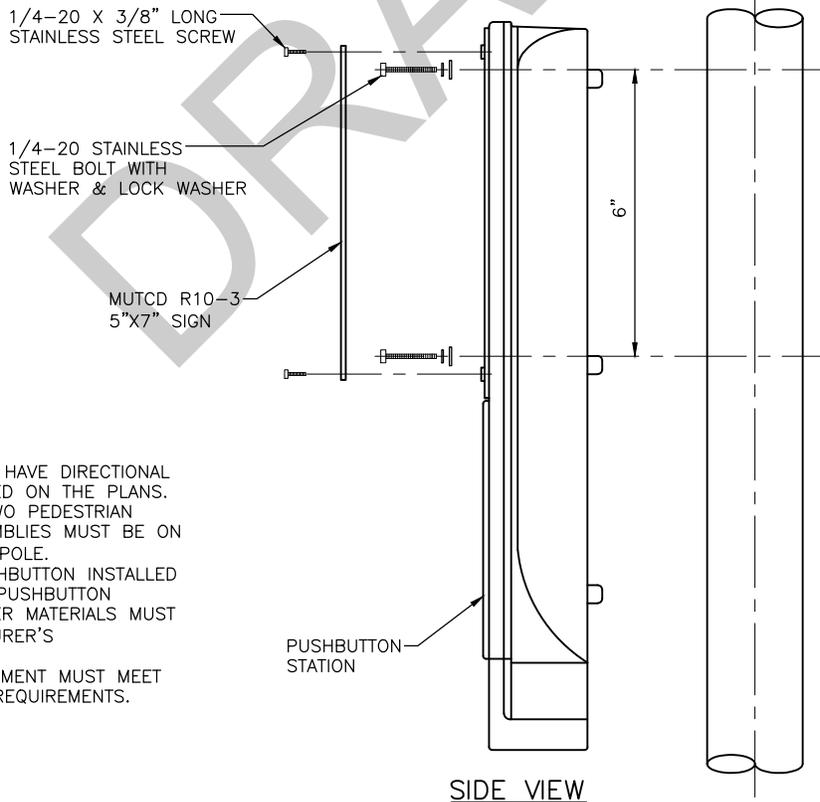
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NOT TO SCALE

PEDESTRIAN PUSHBUTTON
POST & FOUNDATION



FRONT VIEWS



SIDE VIEW

NOTES:

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

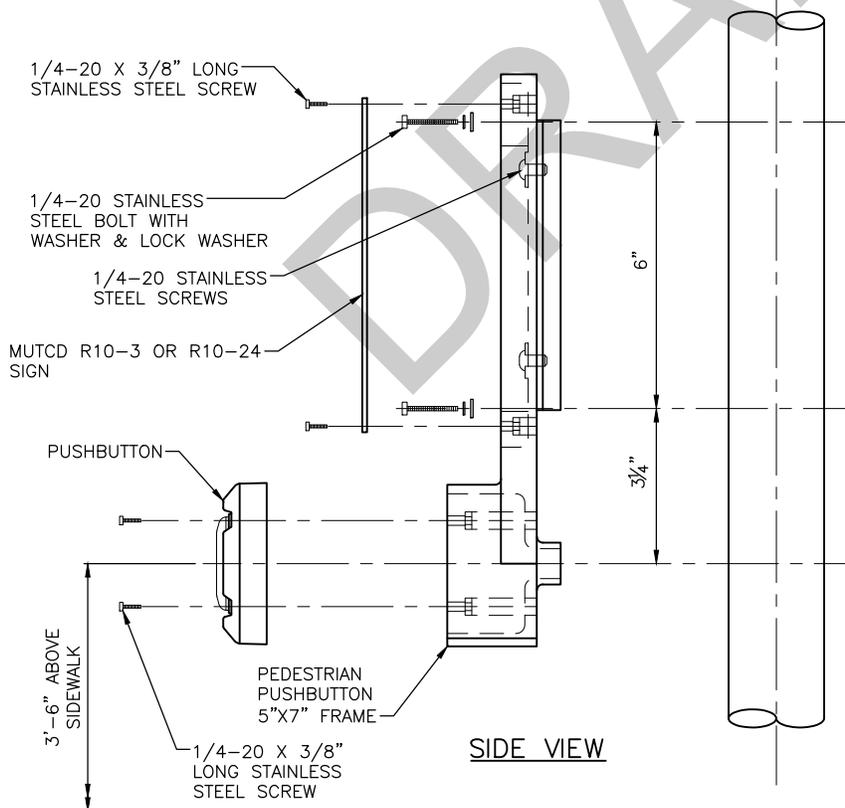
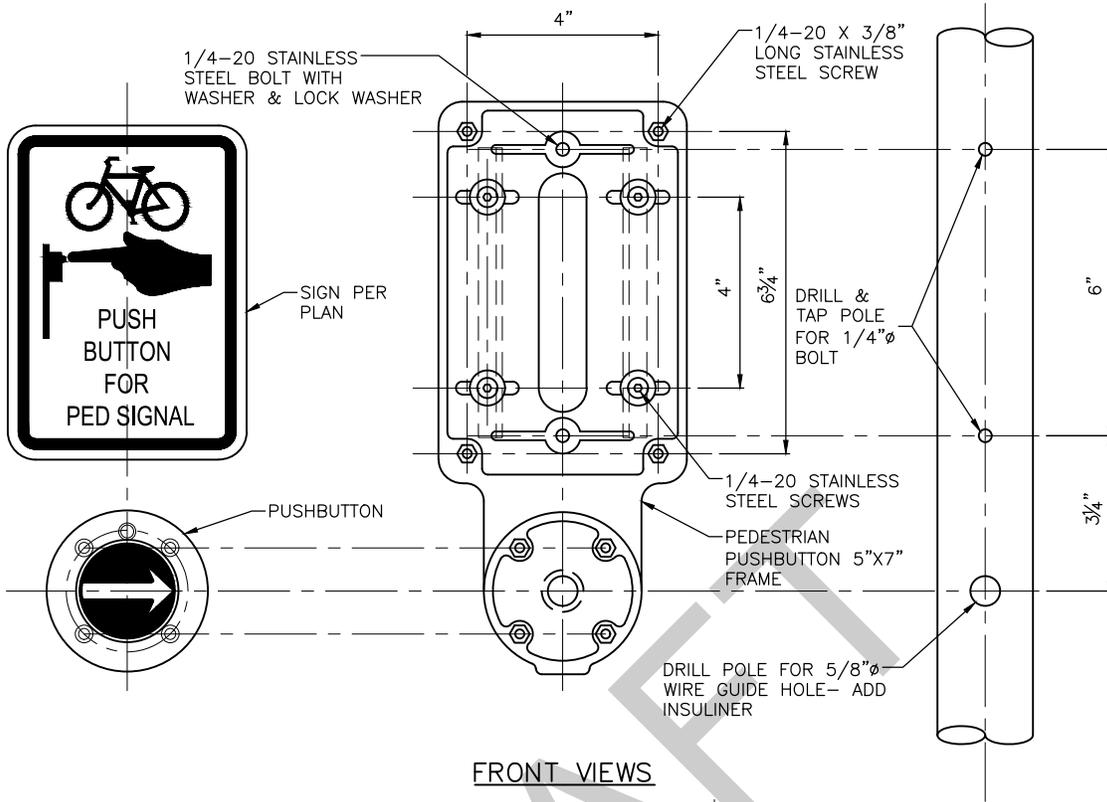
REF STD SPEC SEC 8-31



City of Seattle

NOT TO SCALE

ACCESSIBLE PEDESTRIAN
SIGNAL (APS)
PED. PUSHBUTTON ASSEM.



NOTES:

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

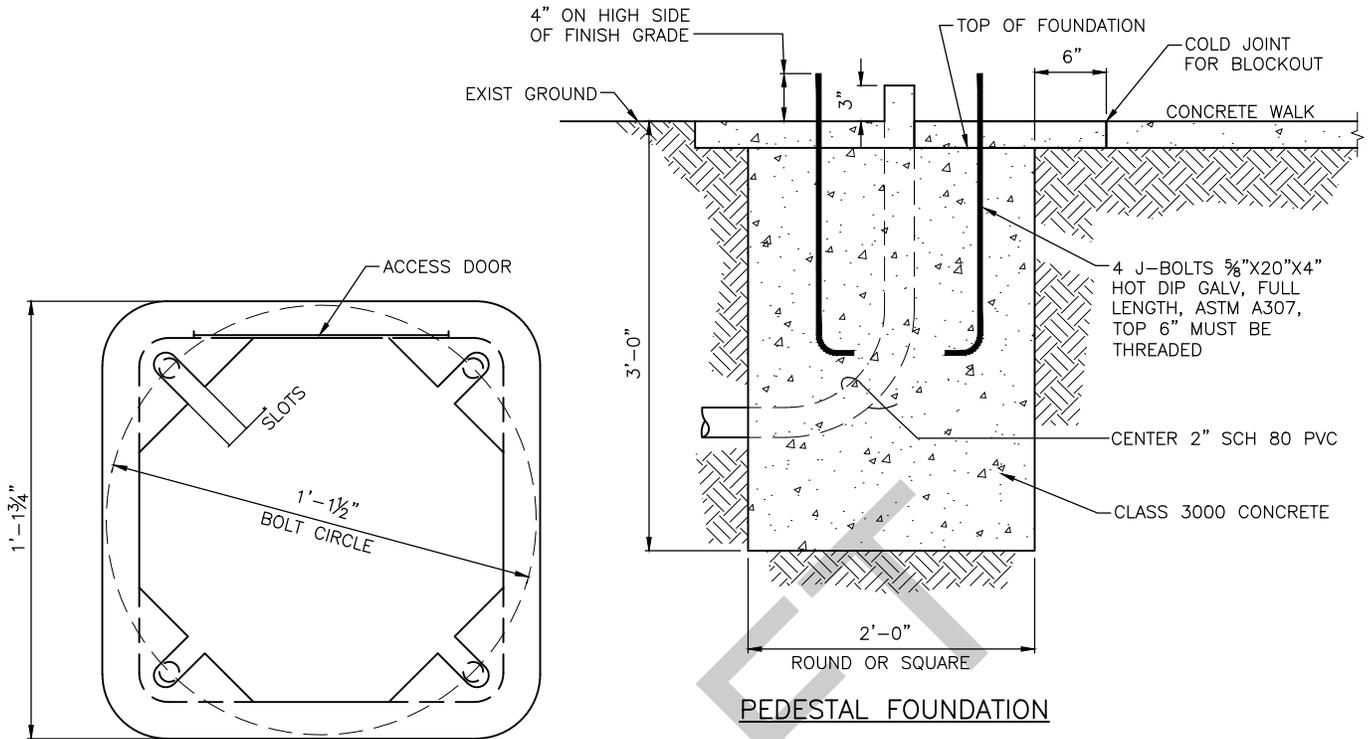
REF STD SPEC SEC 8-31



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BICYCLE PUSHBUTTON ASSEMBLY

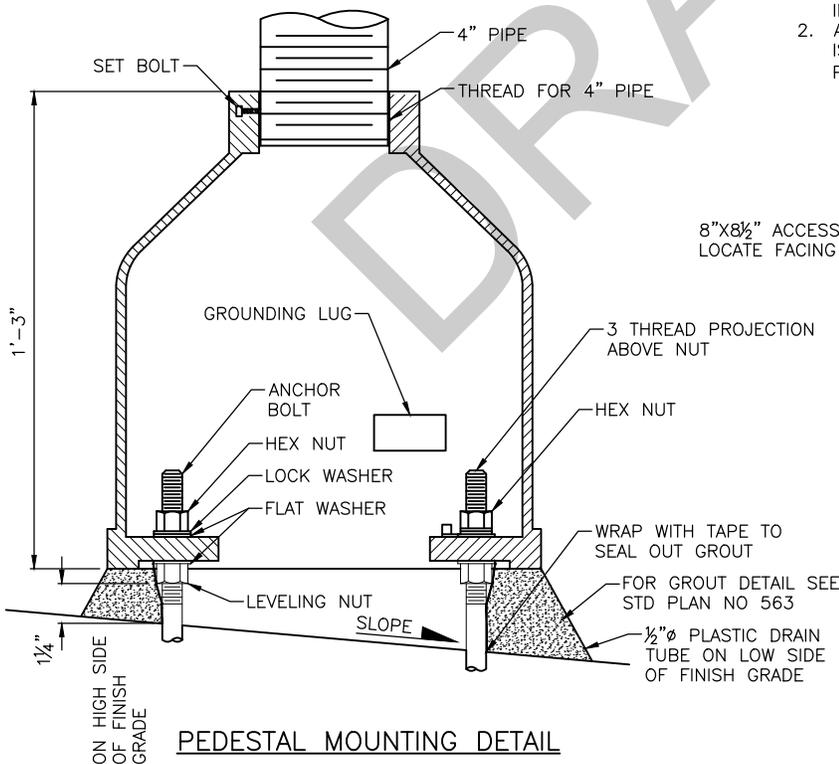


BOTTOM VIEW

PEDESTAL FOUNDATION

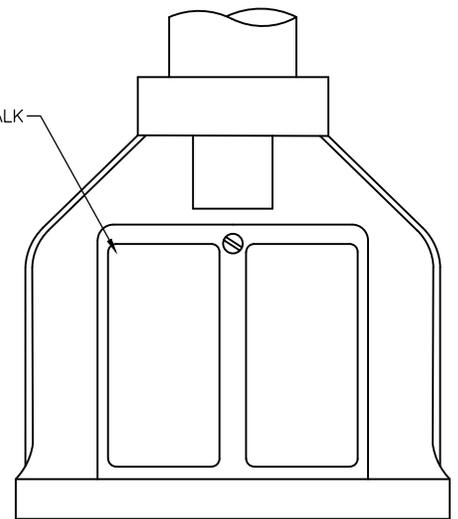
NOTES:

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



PEDESTAL MOUNTING DETAIL

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



SQUARE BASE PEDESTAL

REF STD SPEC SEC 8-32



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PEDESTAL & FOUNDATION

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

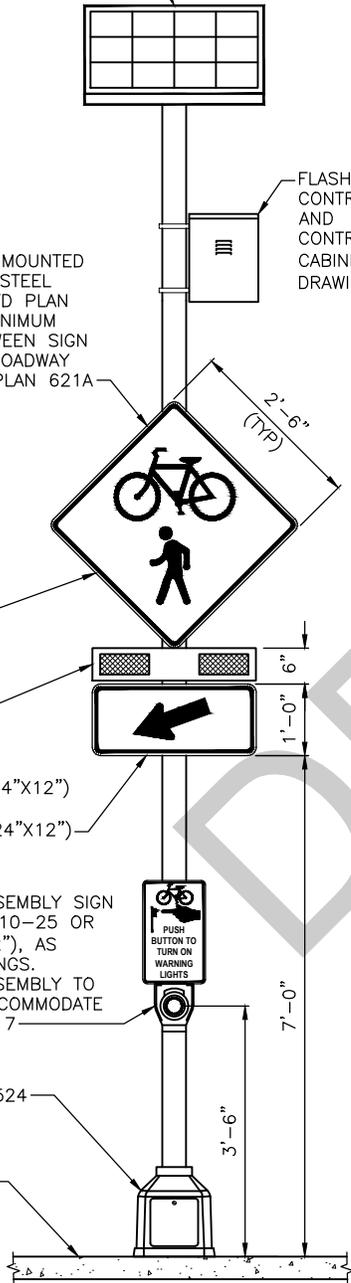
SIGNS MUST BE MOUNTED WITH STAINLESS STEEL BRACKET PER STD PLAN 616. PROVIDE MINIMUM CLEARANCE BETWEEN SIGN AND CURB OR ROADWAY EDGE PER STD PLAN 621A

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

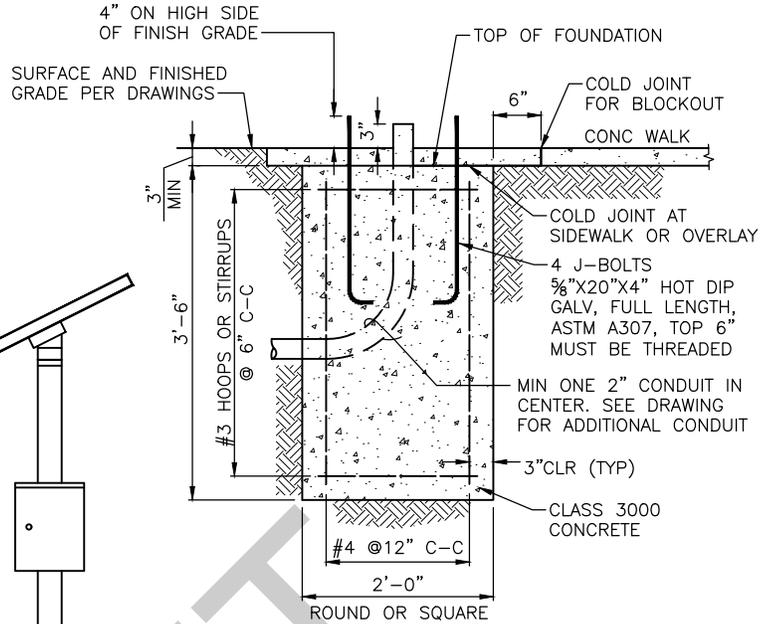
PUSHBUTTON ASSEMBLY SIGN TO BE EITHER R10-25 OR R10-25C (9"x12"), AS NOTED IN DRAWINGS. PUSHBUTTON ASSEMBLY TO BE SIZED TO ACCOMMODATE SIGN. SEE NOTE 7

PEDESTAL POLE PER STD PLAN 524

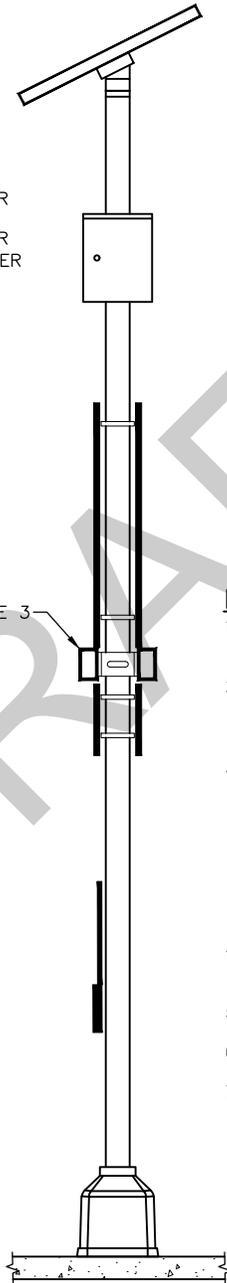
SURFACE AND FINISHED GRADE PER DRAWINGS



RECTANGULAR RAPID FLASHING BEACON



RRFB FOUNDATION



SIDE VIEW

NOTES:

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

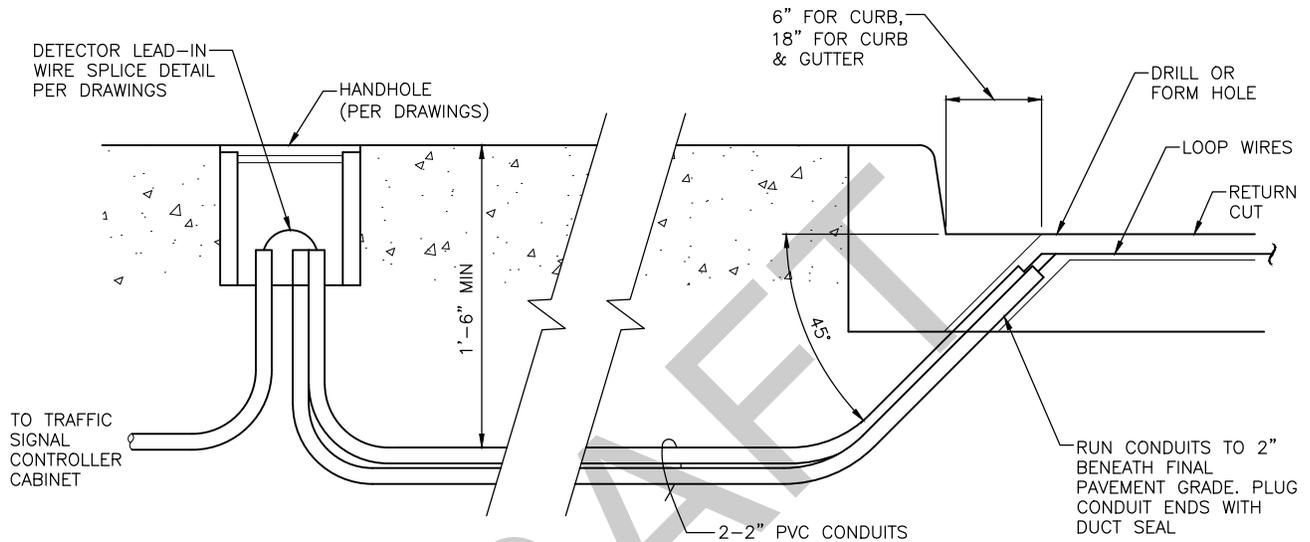
REF STD SPEC SEC



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RECTANGULAR RAPID FLASHING BEACON



CURB/PAVEMENT ENTRANCE FOR DETECTOR LOOP WIRES

NOTES:

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

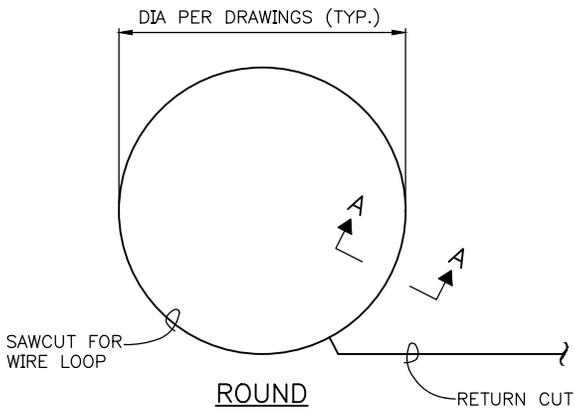
REF STD SPEC SEC 8-31



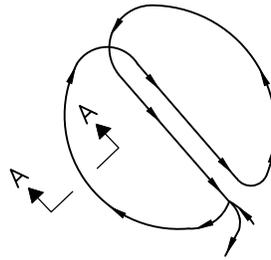
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NOT TO SCALE

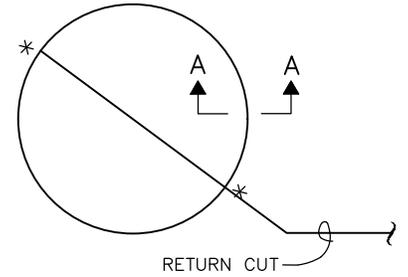
DETECTOR LOOP LEAD-IN



DIPOLE LOOP DETECTOR

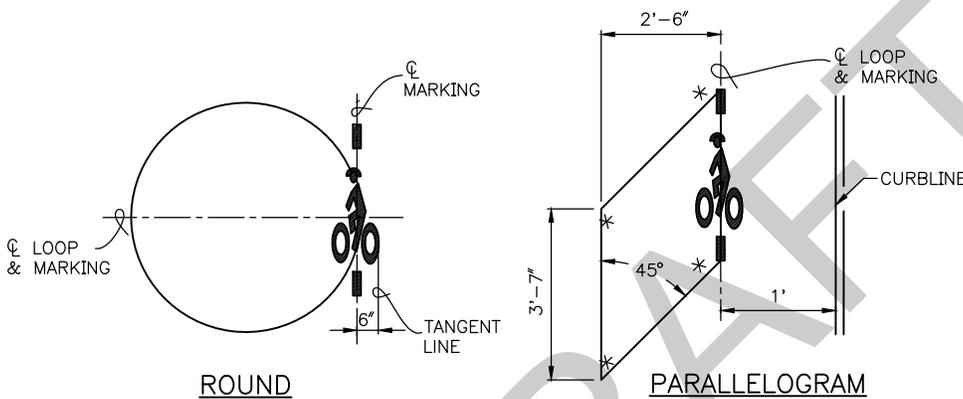


WINDING
DETAIL



ROUND

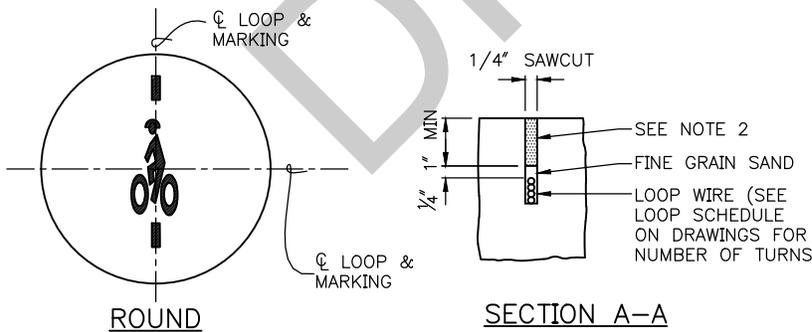
QUADRIPOLE LOOP DETECTOR



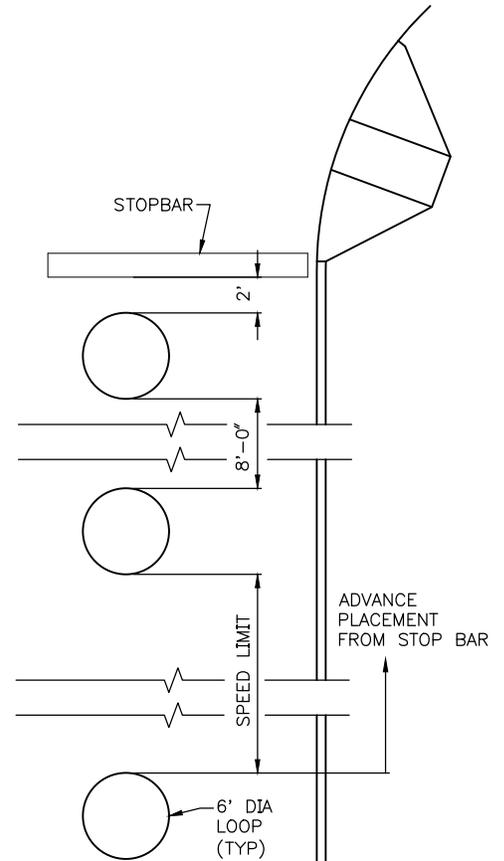
BICYCLE DIPOLE

***NOTE:**

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



BICYCLE QUADRIPOLE



STANDARD LOOP SPACING

NOTES:

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

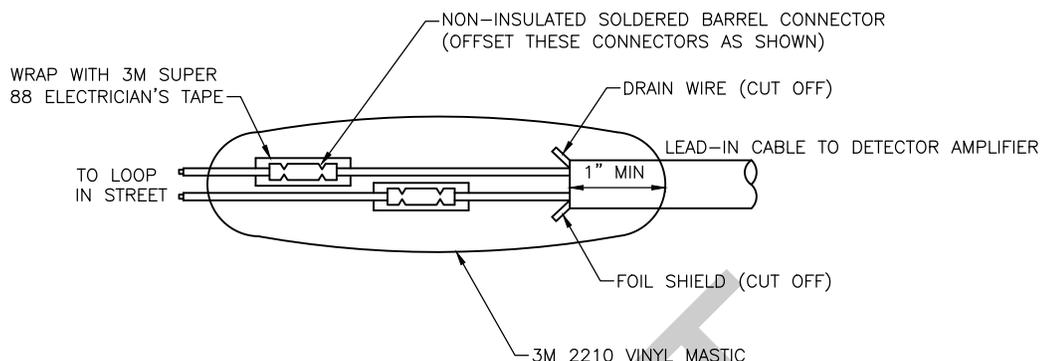
REF STD SPEC SEC 8-31



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DETECTOR LOOP DETAILS



DETECTOR LEAD-IN WIRE SPLICE DETAIL

NOTE:
SOLDER CONNECTION AFTER CRIMPING

DRAFT

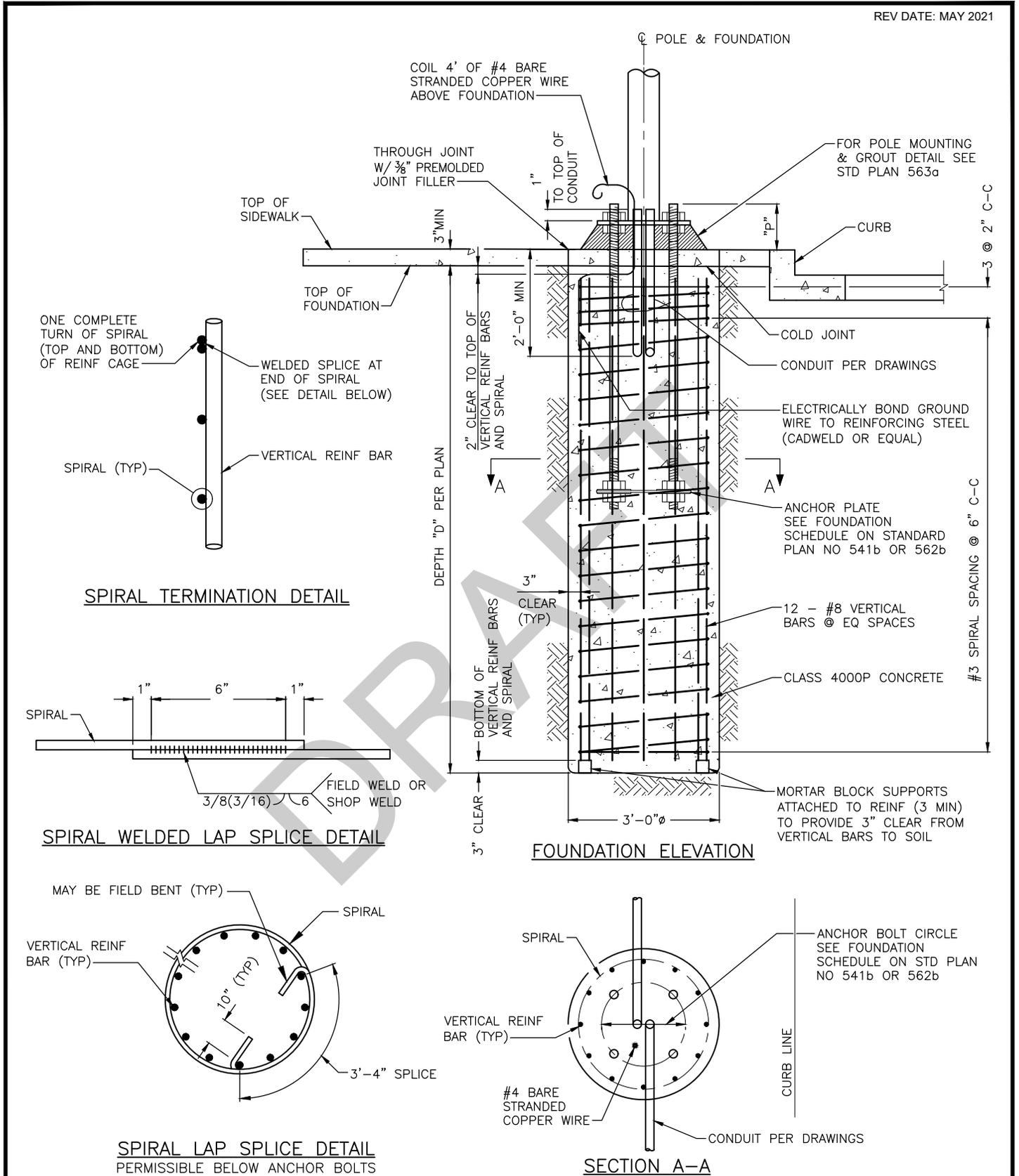
REF STD SPEC SEC 8-31



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DETECTOR LOOP WIRE &
SIGNAL CABLE SPLICE



REF STD SPEC SEC 8-32, 6-02



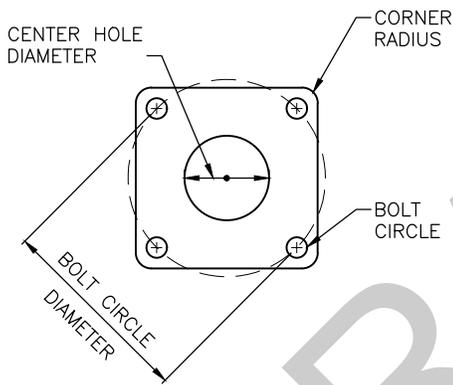
City of Seattle

NOT TO SCALE

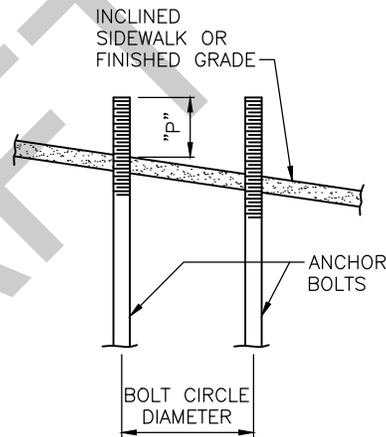
TRAFFIC SIGNAL POLE
FOUNDATION DETAIL

FOUNDATION SCHEDULE							
POLE TYPE	PROJECTION	ANCHOR BOLTS (TOTAL 4 PER POLE)	ANCHOR PLATE DIMENSIONS				
	P		BOLT CIRCLE DIA	SIZE	BOLT HOLE	CENTER HOLE	CORNER RADIUS
T	7½"	1½" DIA X 60"	14½"	¾" X 16" X 16"	1½"	10"	1½"
V	9"	1¾" DIA X 72"	18"	¾" X 16" X 16"	1½"	12½"	1½"
X	10"	2" DIA X 72"	20"	¾" X 18" X 18"	2½"	14"	2"
Z	11½"	2½" DIA X 72"	22"	½" X 20" X 20"	2½"	15"	2¼"

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



ANCHOR PLATE



INCLINED CONDITION

NOTES:

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

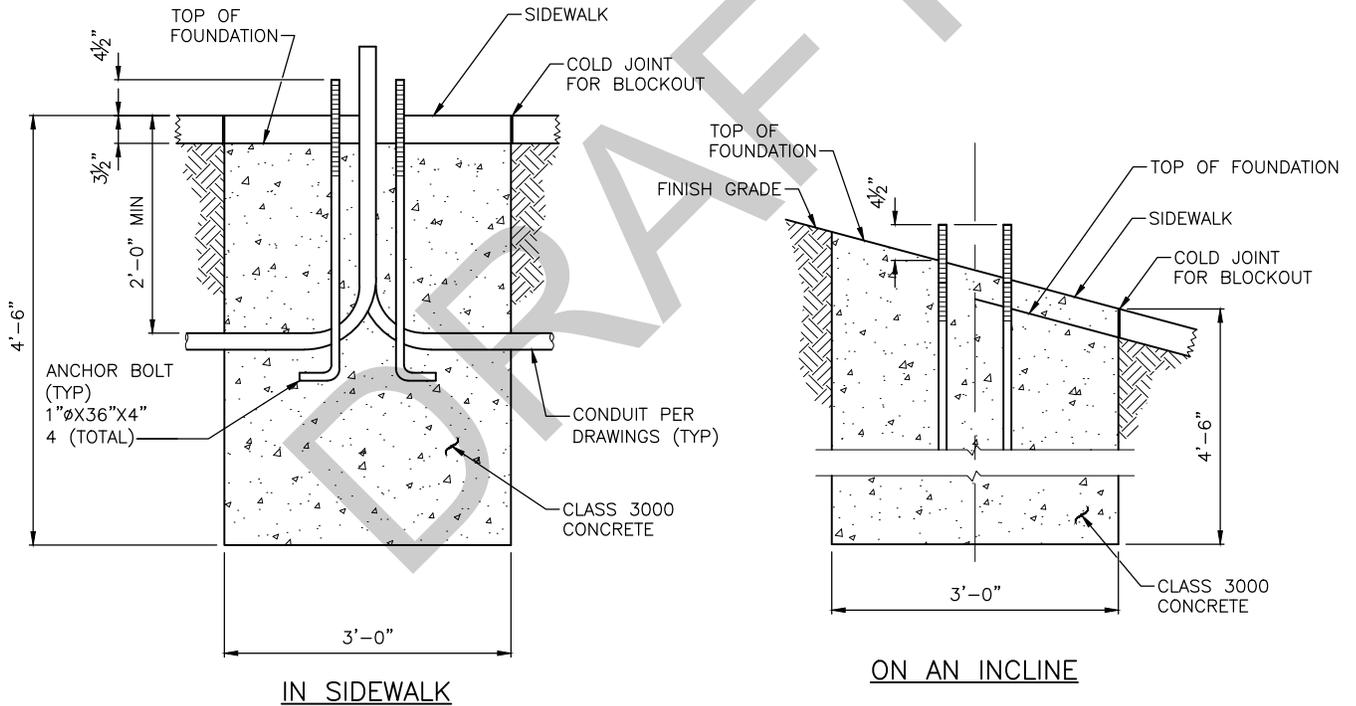
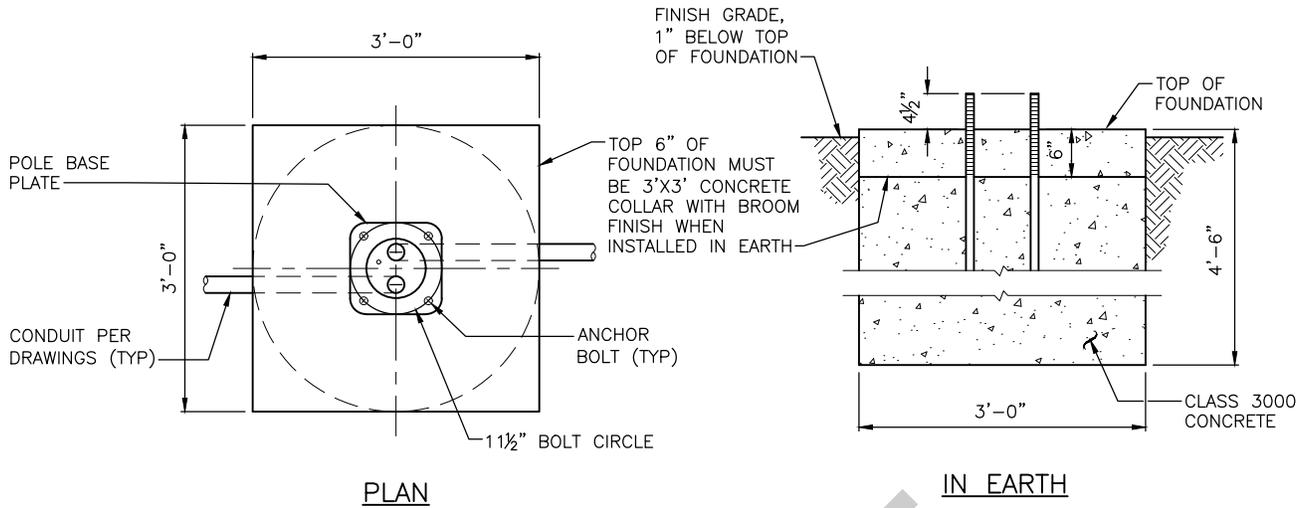
REF STD SPEC SEC 8-32



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NOT TO SCALE

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



NOTES:

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

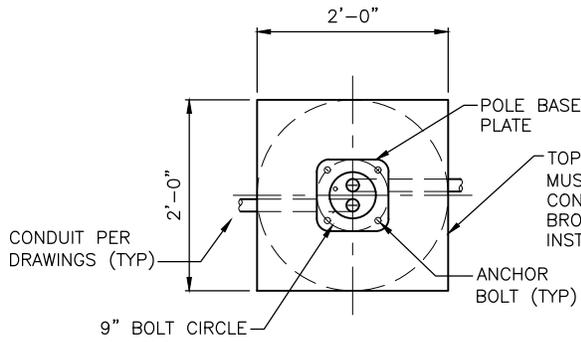
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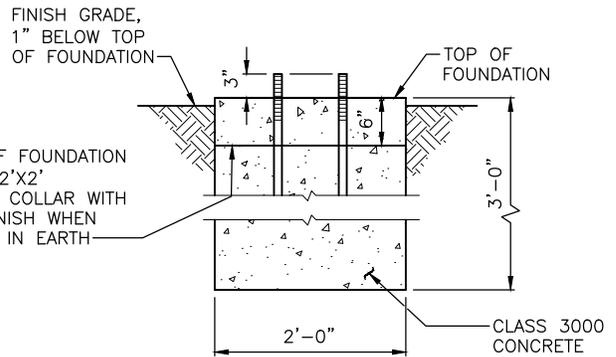
City of Seattle

NOT TO SCALE

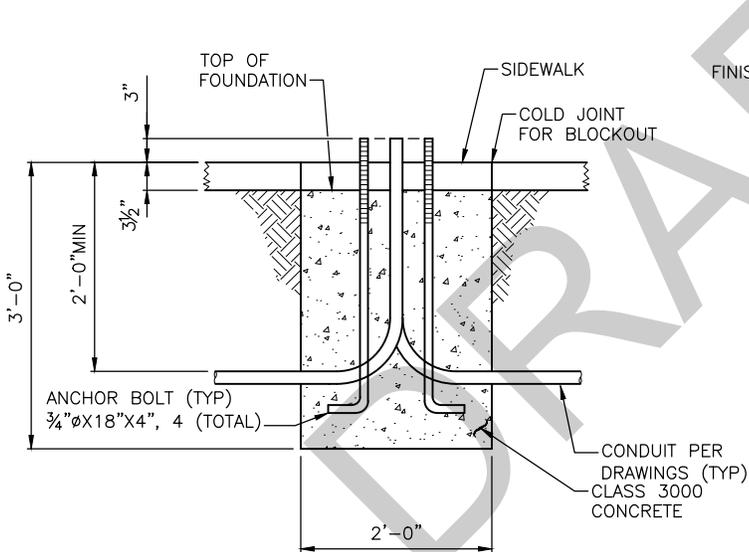
STREET LIGHT
POLE FOUNDATIONS



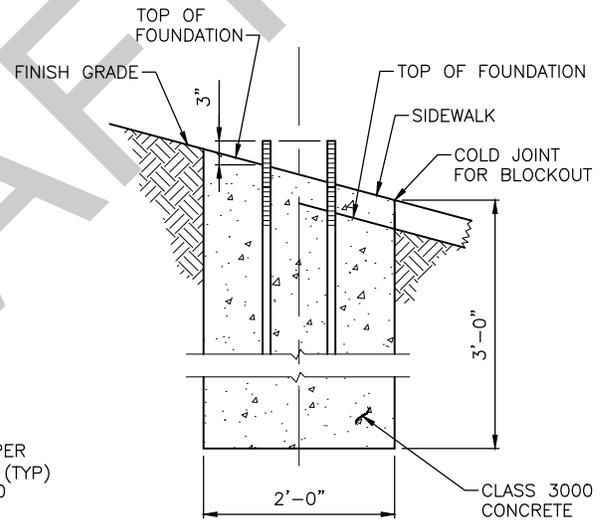
PLAN



IN EARTH



IN SIDEWALK



ON AN INCLINE

NOTES:

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

REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

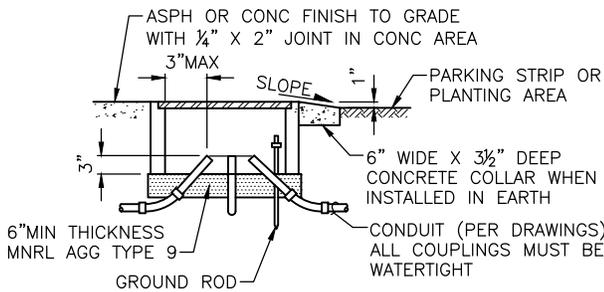
**PEDESTRIAN STREET LIGHT
POLE FOUNDATIONS**

NOTES:

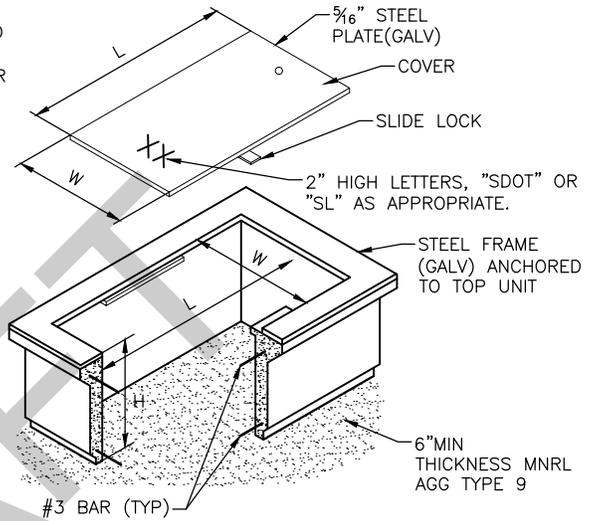
1. THE COVER MUST HAVE 1/16" TO 1/8" CLEARANCE ON EACH EDGE WITHIN THE FRAME AFTER GALVANIZING.
2. THE GROUND ROD MUST EXTEND 4" ABOVE THE BOTTOM OF THE HANDHOLE OR MINERAL AGGREGATE.
3. TYPE 1, 2, 3, 5 & 6 HANDHOLE COVERS MUST HAVE "SDOT" OR "SL" ON THEM, AS APPROPRIATE.
4. TYPE 4 HANDHOLE MUST BE INSTALLED IN ROADWAYS, PARKING LOTS, ETC.
5. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSIONS (SEE STD PLAN NO 231) TO BRING THE COVER UP TO THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
6. A 4' LENGTH OF #6 THWN OR THHN COPPER WIRE MUST BE SECURED FROM THE HANDHOLE COVER TO THE FRAME. BOND FROM FRAME LID, AND LID TO GROUND ROD.
7. ALL HANDHOLE COVERS AND FRAMES MUST HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)
8. ALL HANDHOLES MUST HAVE A LOAD RATING OF H20.
9. GROUND ROD REQUIRED IN ALL STREETLIGHT HANDHOLES PER SCL CONSTR STD 1714.50
10. SEE SCL CONSTRUCTION STANDARD 1716.07 & SCL MATERIAL STD 7203.10 FOR STREETLIGHT HANDHOLE AND CONDUIT REQUIREMENTS.
11. ALL SHRUBBERY AND FOLIAGE MUST BE PLANTED A MINIMUM OF 2' FROM SCL STRUCTURE PER SCL CONSTRUCTION STANDARD 0214.00

HANDHOLE SCHEDULE

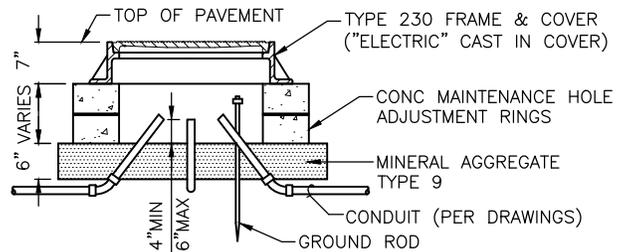
HANDHOLE TYPE	TOP UNIT INSIDE DIMENSION			EXTENSION UNIT(E) H	COVER DIMENSIONS	
	L	W	H		L	W
1	22"	17"	12"	12"	17 3/4"	12 3/4"
2	33"	22"	12"	12"	27 3/4"	16 3/4"
3	36"	24"	12"	12"	35"	24"
4	24"Ø		VAR	NA	NA	NA
5	36"	24"	32"	NA	35"	24"
6	42"	42"	38 1/2"	NA	33 1/2"	33 3/4"
GRHH	8"Ø			NA		



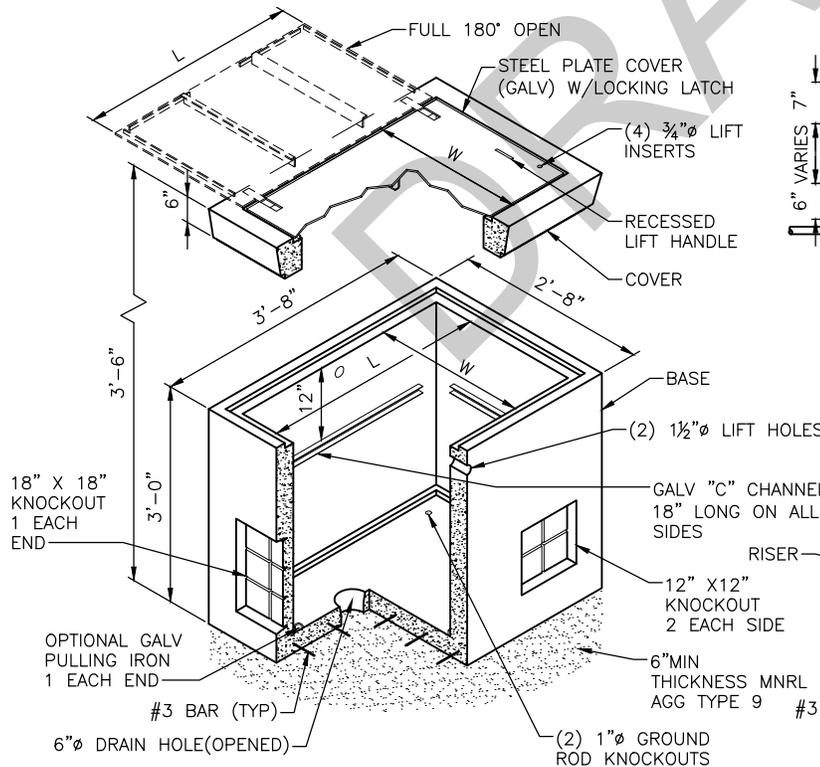
HANDHOLE INSTALLATION DETAIL



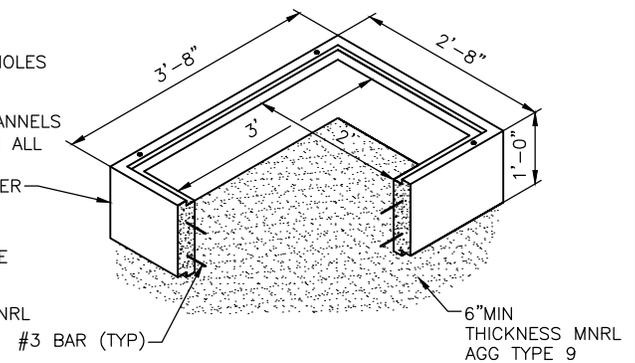
TYPE 1 & 2 HANDHOLE



**TYPE 4 HANDHOLE
TRAFFIC BEARING**



TYPE 5 HANDHOLE



**TYPE 3 HANDHOLE
(COVER SAME AS TYPE 5)**

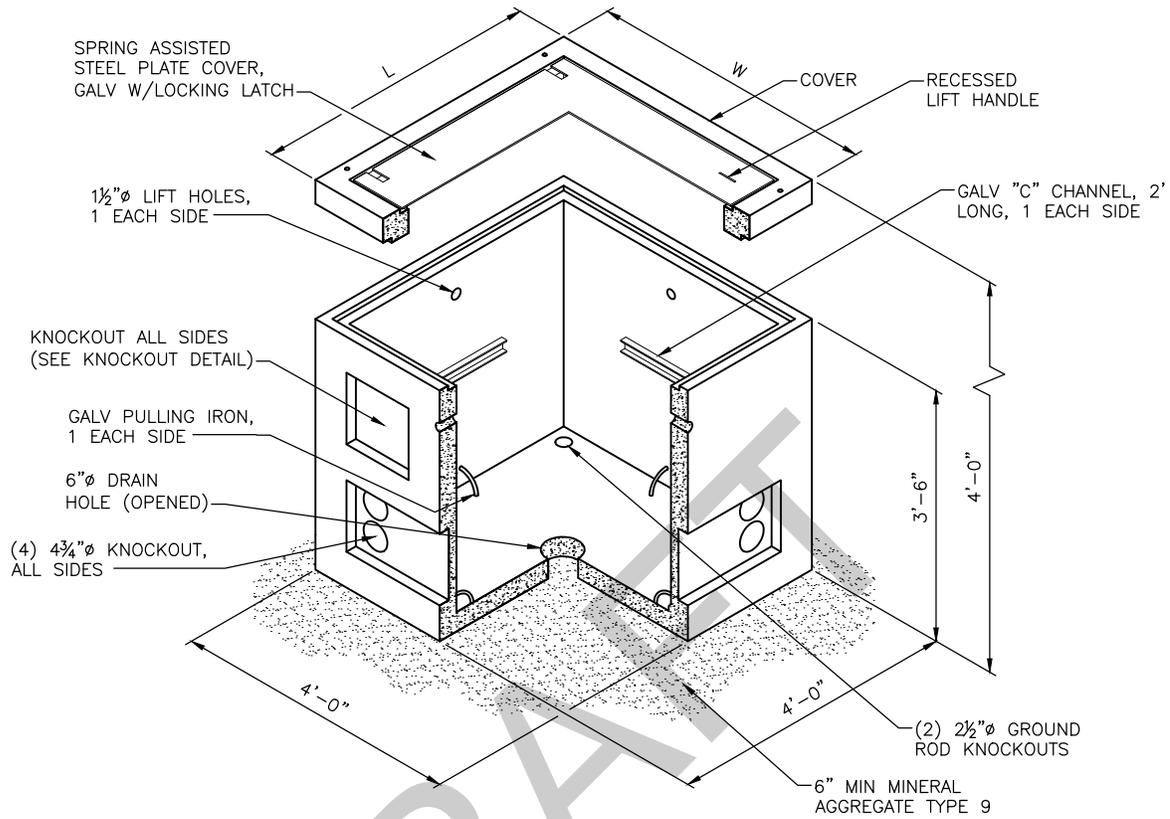
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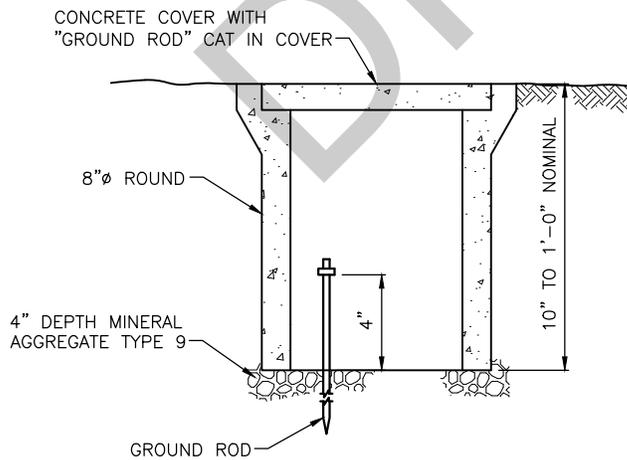
City of Seattle

NOT TO SCALE

HANDHOLES



TYPE 6 HANDHOLE



GROUND ROD HANDHOLE (GRHH)

NOTES:

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

REF STD SPEC SEC 8-33



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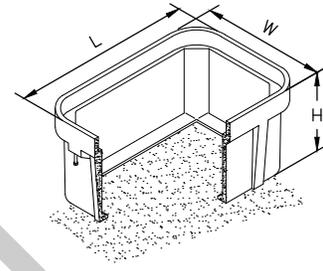
HANDHOLES

NOTES:

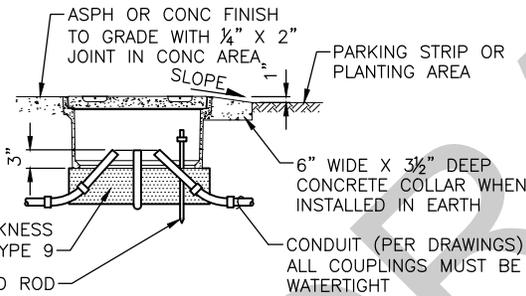
1. ALL NON-DELIBERATE TRAFFIC PULL BOX COVERS MUST COMPLY WITH ALL TEST PROVISIONS OF ANSI/SCTE 77 2010 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY", & MUST MEET THE TIER 15 APPLICATION. MARKING SHOWING THE TIER 15 RATING MUST BE EMBOSSED IN THE TOP SURFACE OF THE COVER.
2. ALL NON-DELIBERATE 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 MUST BE INSTALLED IN ROADWAYS PARKING LOTS, ETC. ALL COVERS MUST BE COMPLETE WITH A MOLDED LOGO, MANUFACTURES NAME & TIER RATING LOGO (NO GLUE IN LOGO). LOGO MUST READ "SDOT" OR "SL" UNLESS STATED OTHERWISE BY THE CITY OF SEATTLE.
7. THE GROUND ROD MUST EXTEND 4" ABOVE THE BOTTOM OF THE HANDHOLE OR MINERAL AGGREGATE.
8. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSIONS (SEE STD PLAN NO 231) TO BRING THE COVER UP THE THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
9. A 4' LENGTH OF #6 THWN OR THHN COPPER WIRE MUST BE SECURED FROM THE HANDHOLE COVER TO THE FRAME. WITH A 4'-0" LENGTH FROM FRAME THAT CAN BE HOOKED UP TO A GROUND ROD.
10. ALL HANDHOLE COVERS AND FRAMES MUST HAVE A NON-SKID SURFACE (SCL MATERIAL STANDARD 7203.10)
11. SEE SCL CONSTRUCTION STANDARD 1716.07 FOR STREET HANDHOLE AND CONDUIT REQUIREMENTS.

HANDHOLE SCHEDULE

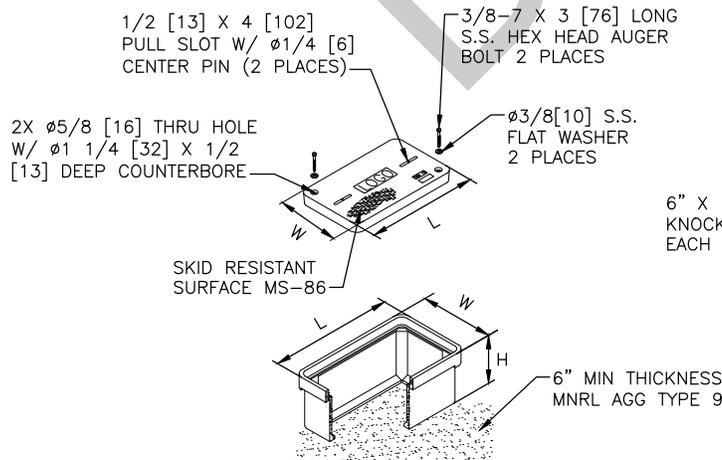
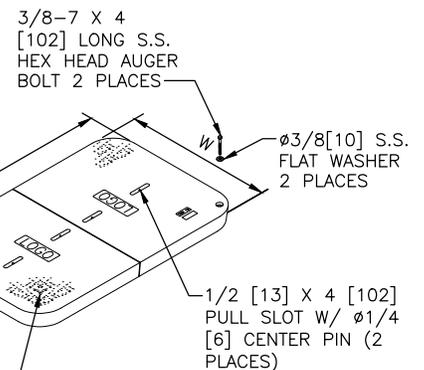
HANDHOLE TYPE	TOP UNIT INSIDE DIMENSION			EXTENSION UNIT(E) H	COVER DIMENSIONS	
	L	W	H		L	W
1	24"	13"	12"	12"	24"	13"
2	30"	17"	12"	12"	30"	17"
3	36"	24"	18"	12"	36"	24"
4	24"Ø	VAR		NA	NA	NA
5	30"	48"	36"	NA	30"	48"
6	48"	48"	48"	NA	48"	48"
GRHH	8"Ø			NA		



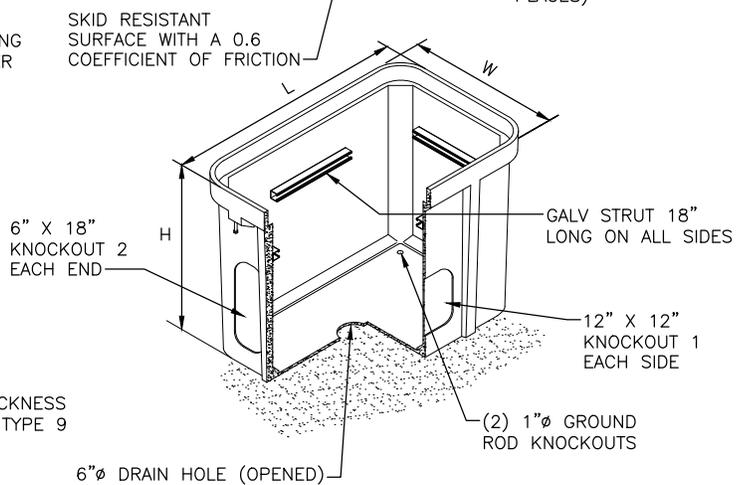
TYPE 3 HANDHOLE
(COVER SAME AS TYPE 5)



HANDHOLE INSTALLATION DETAIL



TYPE 1 & 2 HANDHOLE



TYPE 5 HANDHOLE

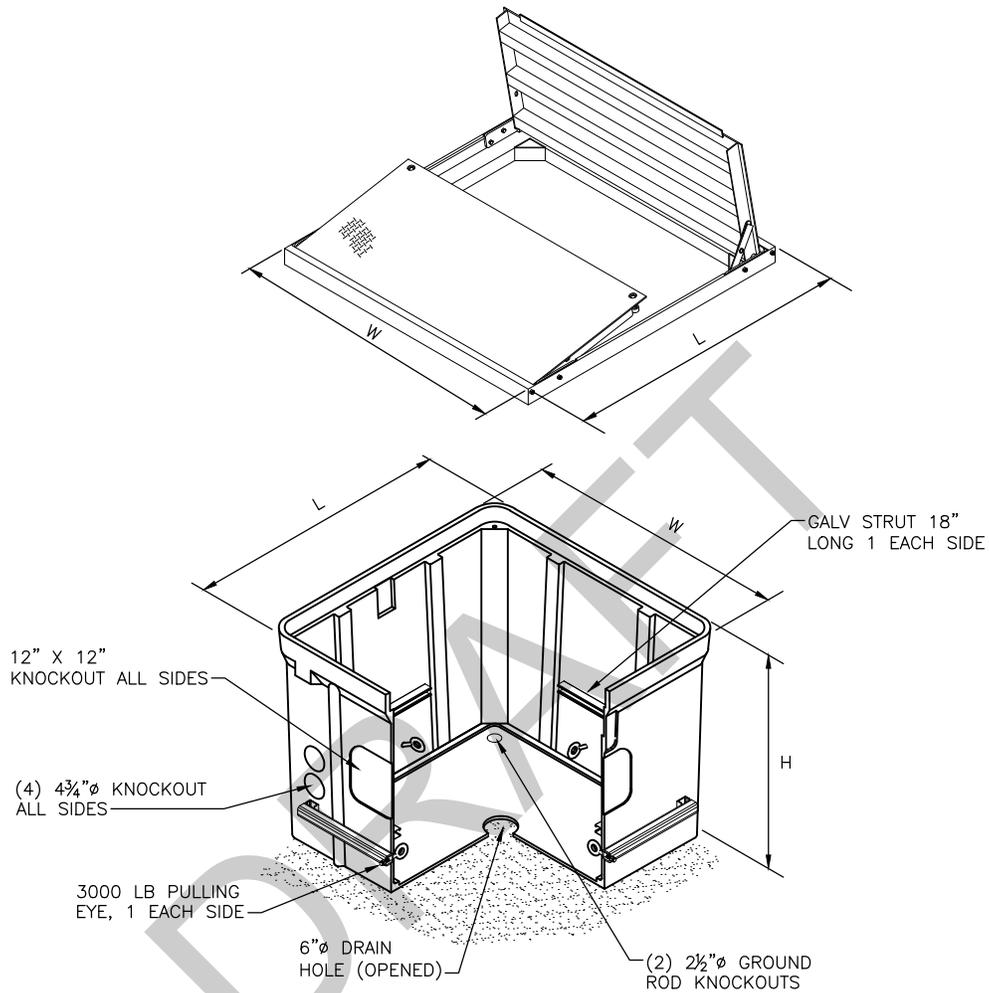
REF STD SPEC SEC 8-33



City of Seattle

NOT TO SCALE

POLYMER CONCRETE HANDHOLES



TYPE 6 HANDHOLE

NOTES:

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

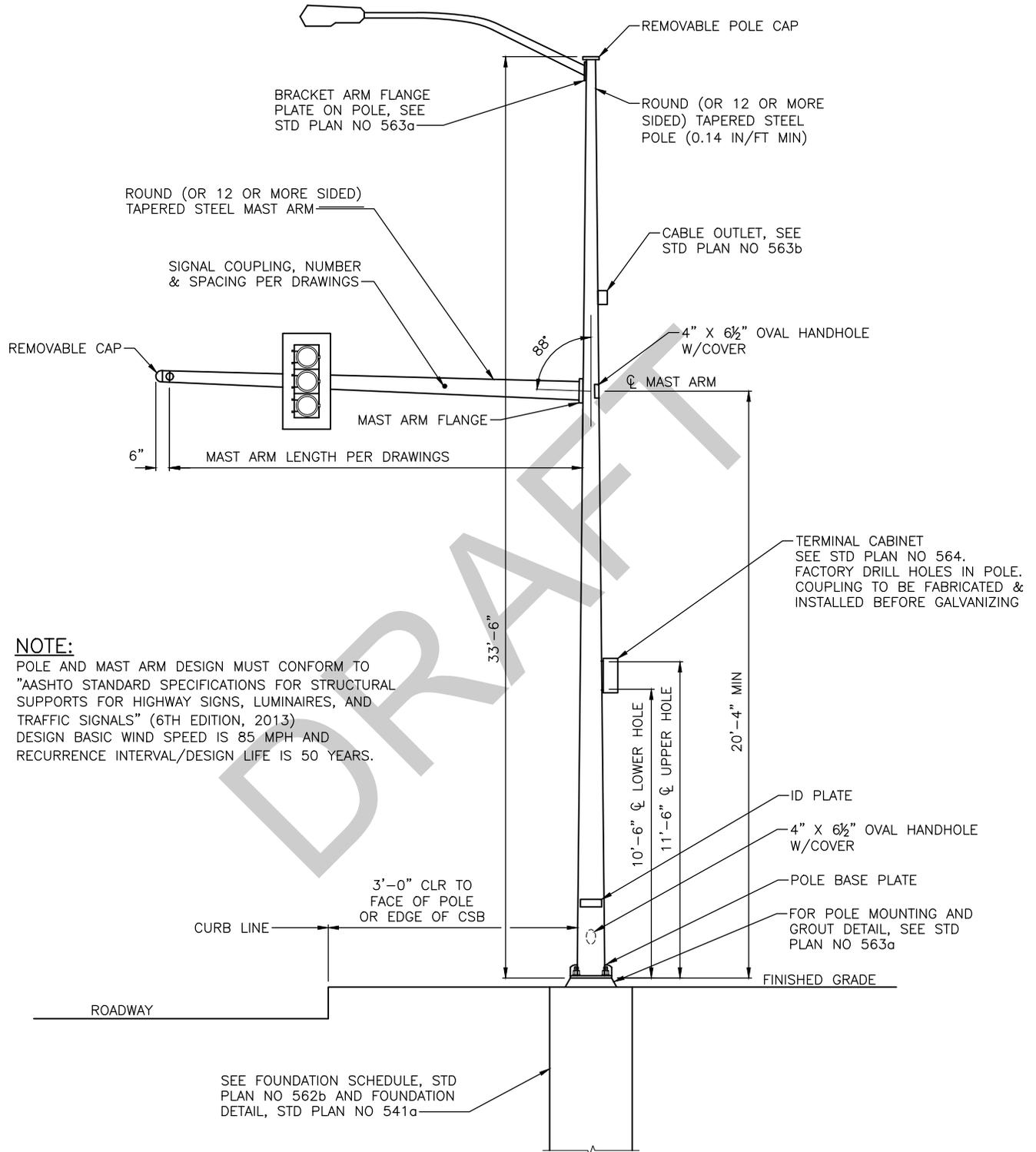
REF STD SPEC SEC 8-33



City of Seattle

NOT TO SCALE

**POLYMER CONCRETE
HANDHOLES**



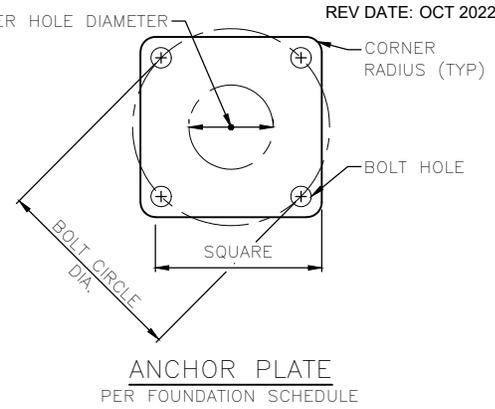
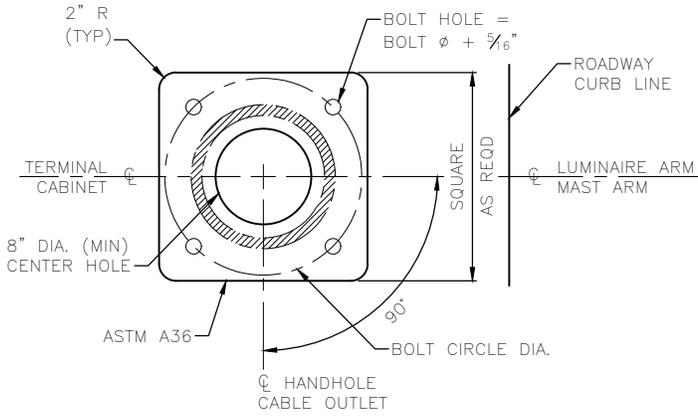
REF STD SPEC SEC 8-32



City of Seattle

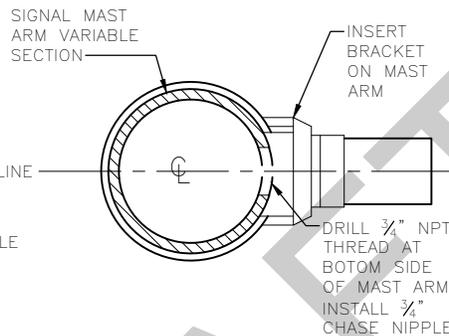
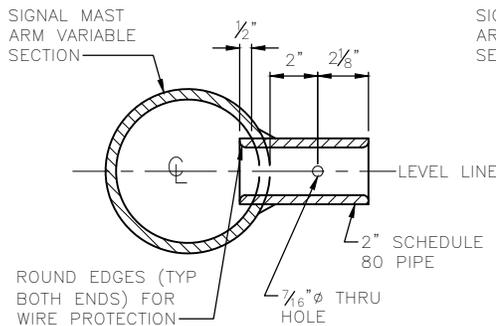
NOT TO SCALE

STEEL MAST ARM POLE



POLE BASE PLATE

ANCHOR PLATE
PER FOUNDATION SCHEDULE

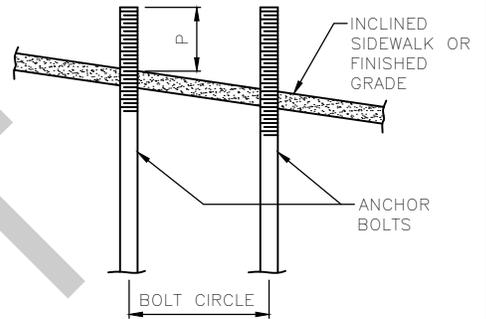


SIGNAL COUPLING

COUPLING TO BE FABRICATED & INSTALLED BEFORE GALVANIZING

SIGNAL BRACKET

TO BE DRILLED & TAPPED IN THE FIELD



INCLINED CONDITION

POLE FOUNDATION NOTES

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

POLE SCHEDULE			
MAST ARM LENGTH	POLE BASE PLATE		
	SQUARE	BOLT CIRCLE 'A'	BOLT HOLE
15'-0" TO 30'-0"	16" X 16"	14 1/2"	1 1/8"
31'-0" TO 40'-0"	18" X 18"	16 1/2"	2 1/8"
41'-0" TO 45'-0"	18" X 18"	18"	2 1/8"
46'-0" TO 60'-0"	20" X 20"	20"	2 3/8"

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

FOUNDATION DEPTH MUST BE PER PLANS.

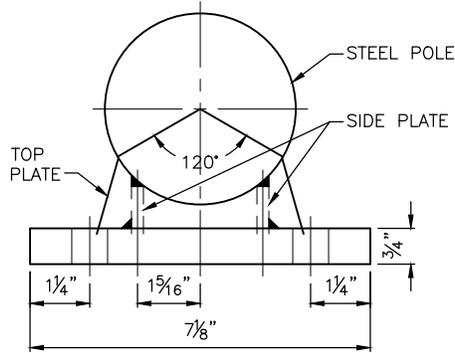
REF STD SPEC SEC 8-31, 8-32



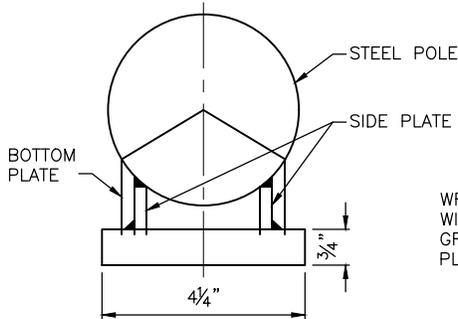
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NOT TO SCALE

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

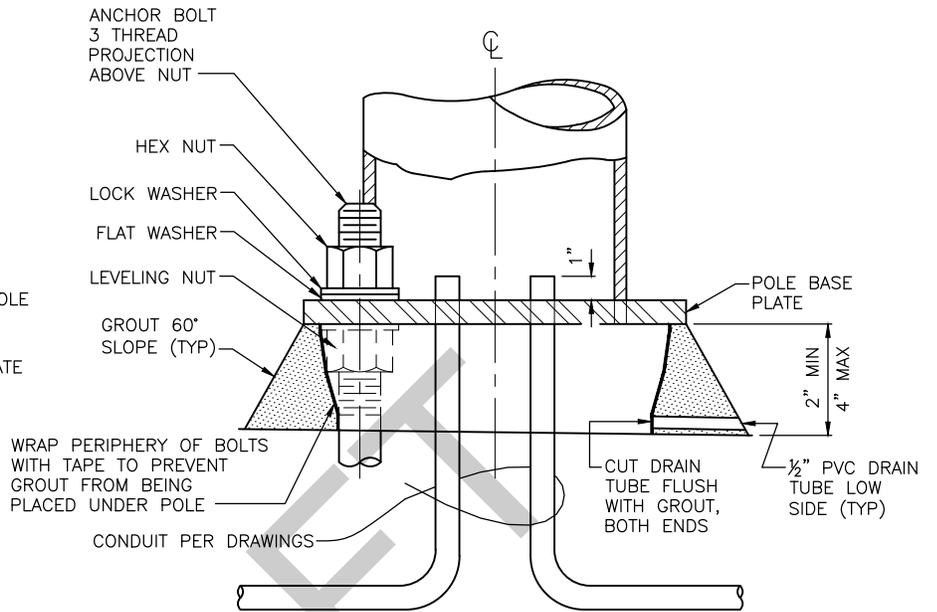


SECTION A-A



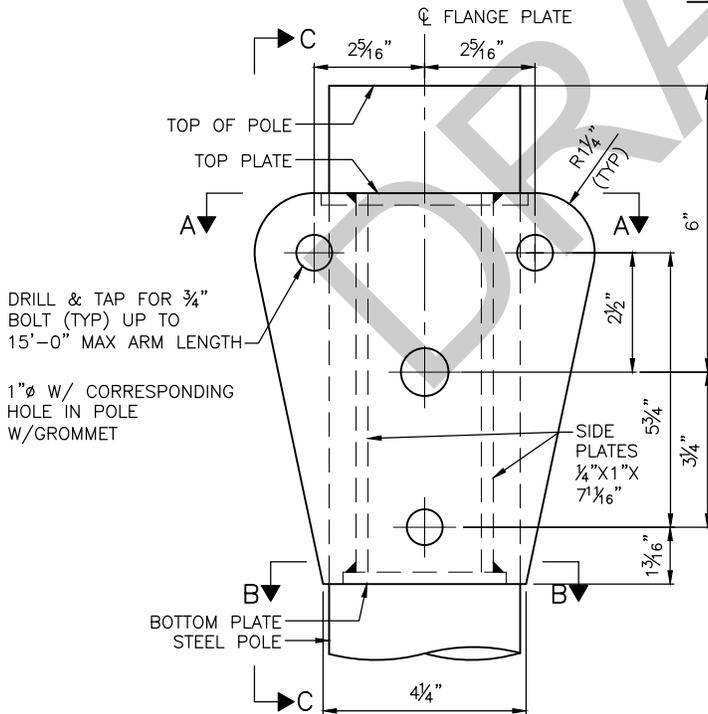
SECTION B-B

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

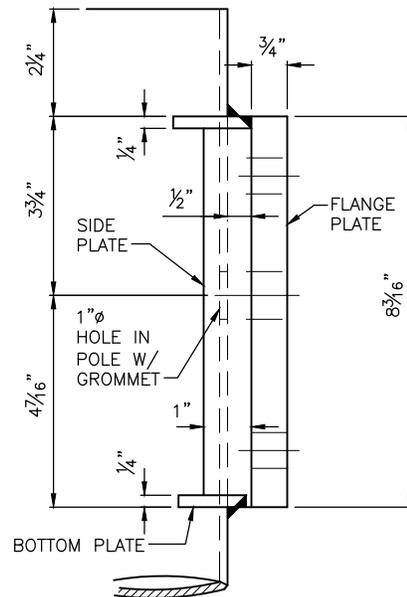


POLE MOUNTING & GROUT DETAIL

(EXCEPT FOR POLES W/CHIEF SEATTLE BASE)



BRACKET ARM FLANGE PLATE ON POLE



SECTION C-C

STRUCTURAL CARBON STEEL PLATES
MUST BE ASTM A36

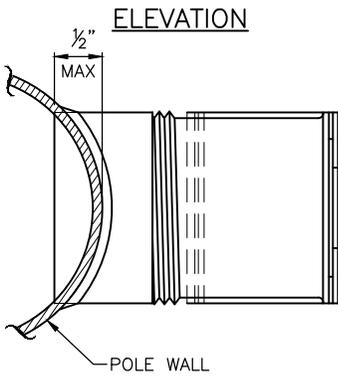
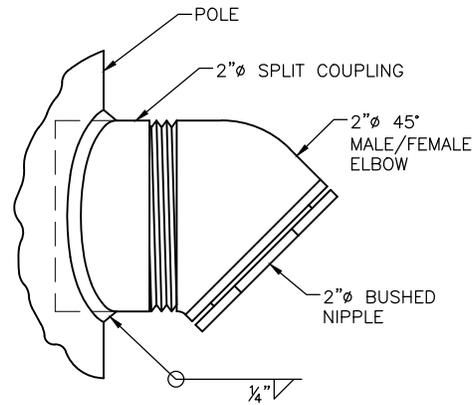
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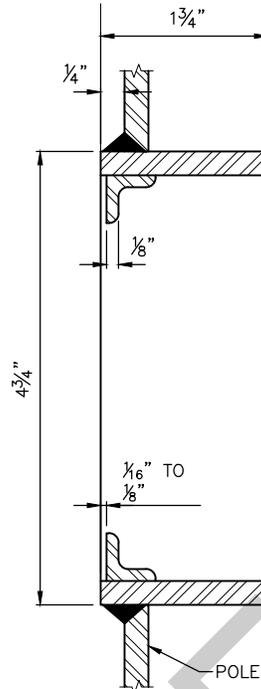
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NOT TO SCALE

MISCELLANEOUS STEEL
POLE DETAILS

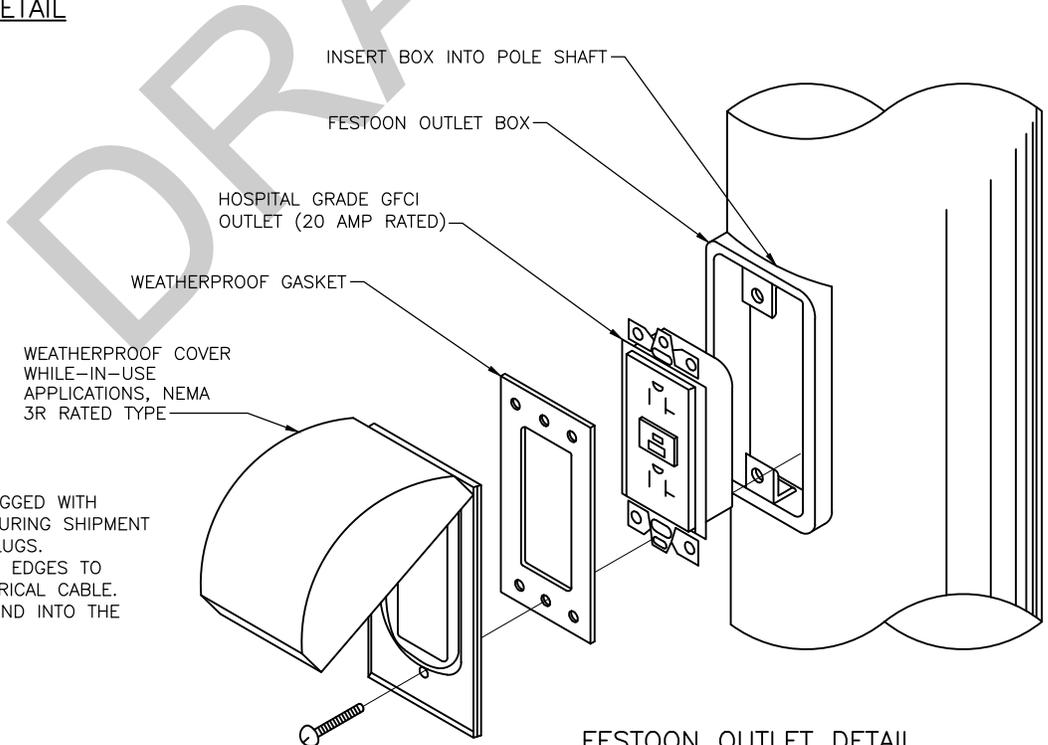
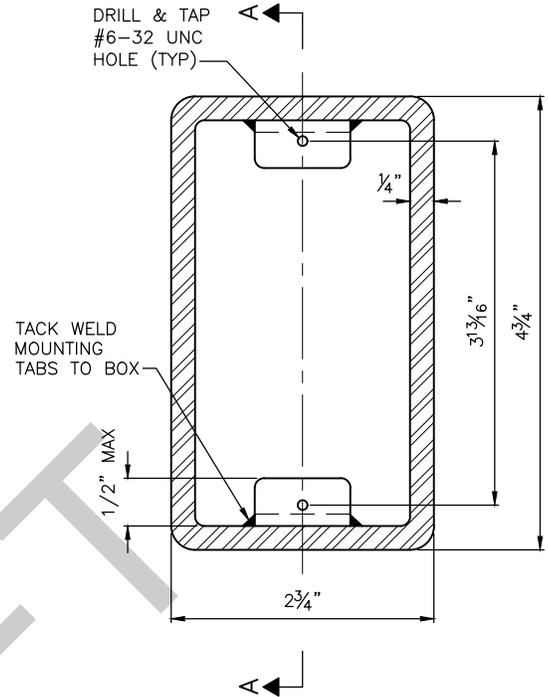


CABLE OUTLET DETAIL



SECTION A-A

FESTOON OUTLET BOX



FESTOON OUTLET DETAIL (METAL POLES)

NOTES:

1. ALL OUTLETS MUST BE PLUGGED WITH THREADED INSERT PLUGS DURING SHIPMENT TO PREVENT DAMAGE TO PLUGS.
2. REMOVE BURRS AND SHARP EDGES TO PREVENT DAMAGE TO ELECTRICAL CABLE.
3. SPLIT COUPLING MUST EXTEND INTO THE POLE ½" MAX AS SHOWN.

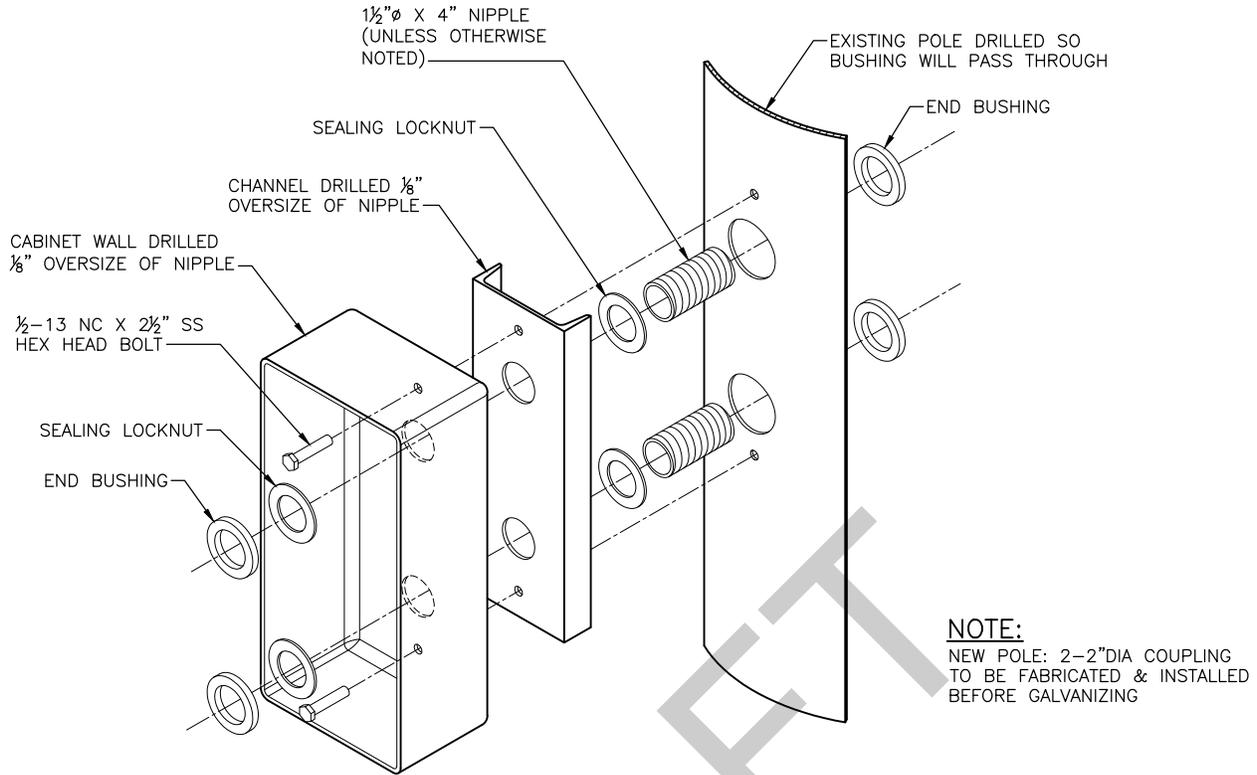
REF STD SPEC SEC 8-30, 8-32



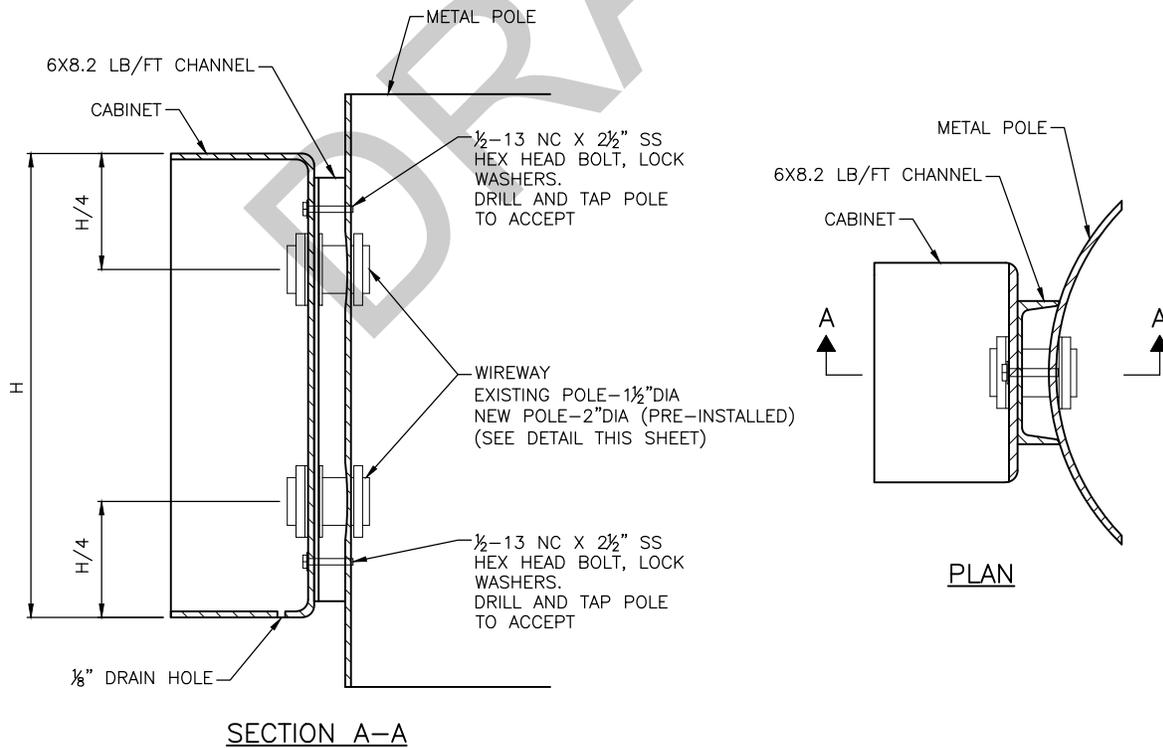
City of Seattle

NOT TO SCALE

MISCELLANEOUS STEEL POLE DETAILS



WIREWAY ISOMETRIC DETAIL



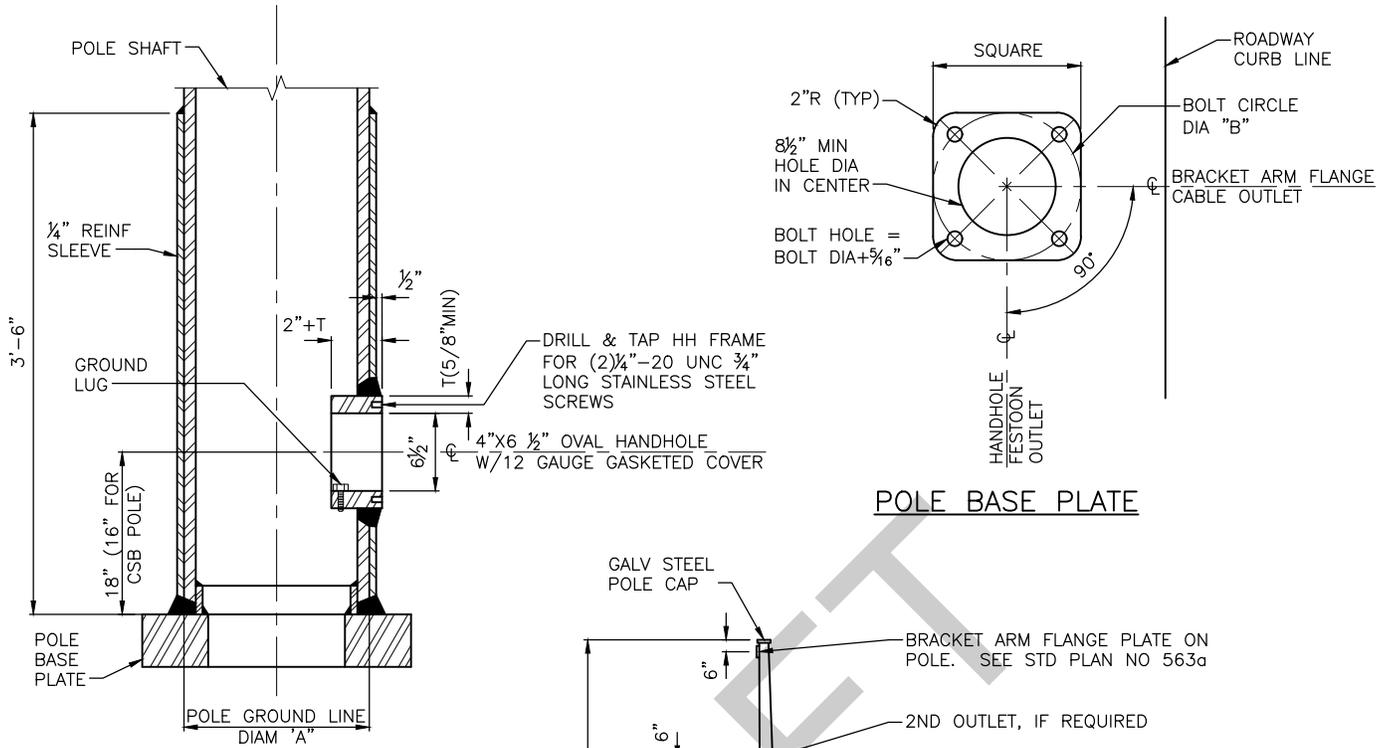
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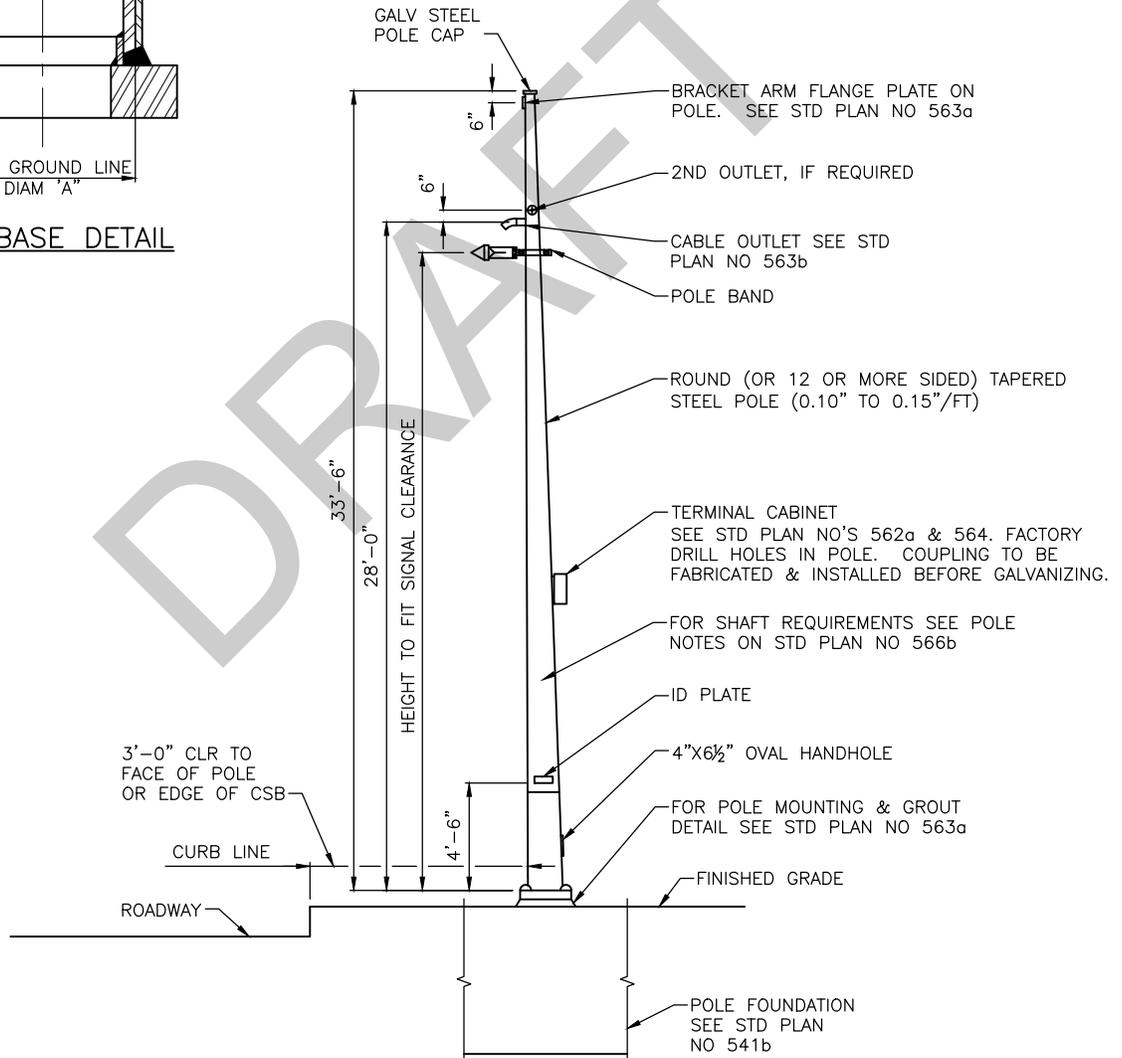
NOT TO SCALE

TERMINAL CABINET
POLE MOUNTING



POLE BASE DETAIL

POLE BASE PLATE



STRAIN POLE

REF STD SPEC SEC 8-32



City of Seattle

NOT TO SCALE

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

POLE TYPE	POLE SCHEDULE						
	GROUND LINE DIA "A"		POLE BASE PLATE SIZE		BOLT CIRCLE DIA "B"	BOLT HOLE	ANCHOR BOLTS
	STD	CSB	STD	CSB			
V	12"	12"	1¾"X18"X18"	1¾"X23"X23"	18"	2¼"	1¾"DIA X 72"
X	14"	12½"	2"X20"X20"	2"X23"X23"	20"	2⅝"	2"DIA X 72"
Z	15"	--	2½"X23"X23"	--	22"	2⅜"	2½"DIA X 72"

NOTES:

1. POLE SHAFT AND REINFORCING SLEEVE: ASTM A572 GRADE 50, 60 OR 65 (Fy=50, 60 OR 65 KSI RESPECTIVELY) OR ASTM A595 GRADE A OR B (Fy=55 OR 60 KSI RESPECTIVELY).
2. BASE PLATE AND HANDHOLE REINFORCING RIM: ASTM A36 OR ASTM A572 GRADE 42. BASE PLATE Fy≥0.65 POLE SHAFT Fy THE BASE PLATE THICKNESS MAY BE REDUCED BY ¼" IF ASTM A572 GRADE 42 STEEL IS USED.
3. REINFORCING SLEEVE MUST BE FABRICATED FROM THE SAME MATERIAL AND YIELD STRENGTH AS THE POLE SHAFT.
4. POLE SHAFTS MUST HAVE NO MORE THAN TWO LONGITUDINAL WELDS IN EACH PLY.
5. MINIMUM SHAFT WALL THICKNESS OF EACH PLY MUST BE 0.239" (3 GAUGE). POLE MUST HAVE A MAXIMUM OF TWO PLYS NOT INCLUDING THE ¼" REINFORCING SLEEVE.
6. MAXIMUM SILICON CONTENT IN STEEL MUST BE 0.04%. SEE STD SPEC SECTION 9-33.1(3) FOR GENERAL GALVANIZING REQUIREMENTS.
7. POLE DIAMETER FOR 12 OR MORE SIDED POLES MUST BE MEASURED FROM THE POINT TO POINT DIMENSION.
8. POLES MUST MEET DEFLECTION CRITERIA STATED IN STD SPEC SECTION 9-33.2(2) WITH THE DEAD LOAD APPLIED AT 25' ABOVE GROUND LINE.
9. POLE STRENGTH MUST MEET REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (6TH EDITION, 2013). DESIGN WIND SPEED IS 85 MPH AND RECURRENCE INTERVAL/DESIGN LIFE IS 50 YEARS.

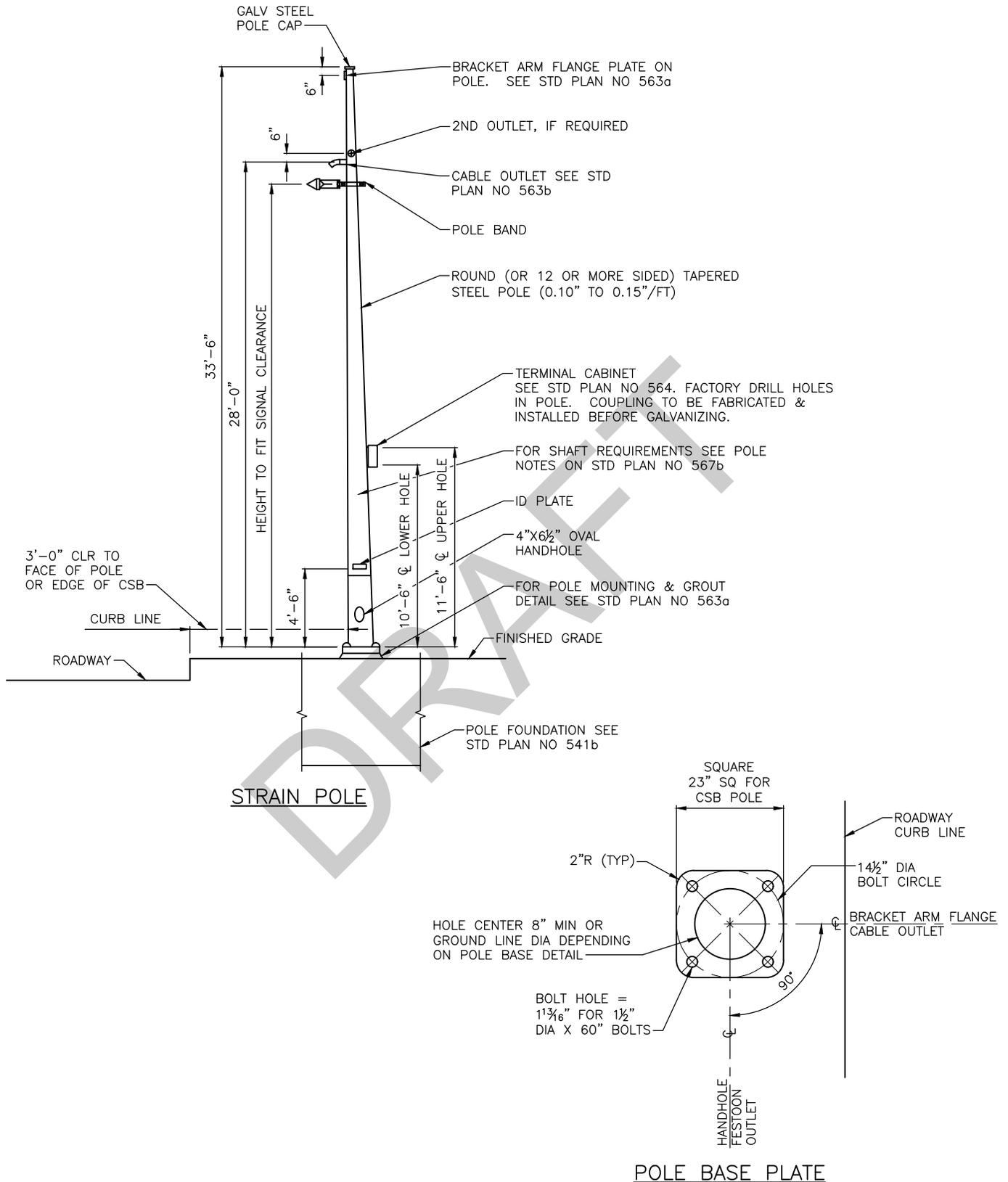
REF STD SPEC SEC 8-32, 9-33



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



REF STD SPEC SEC 8-32



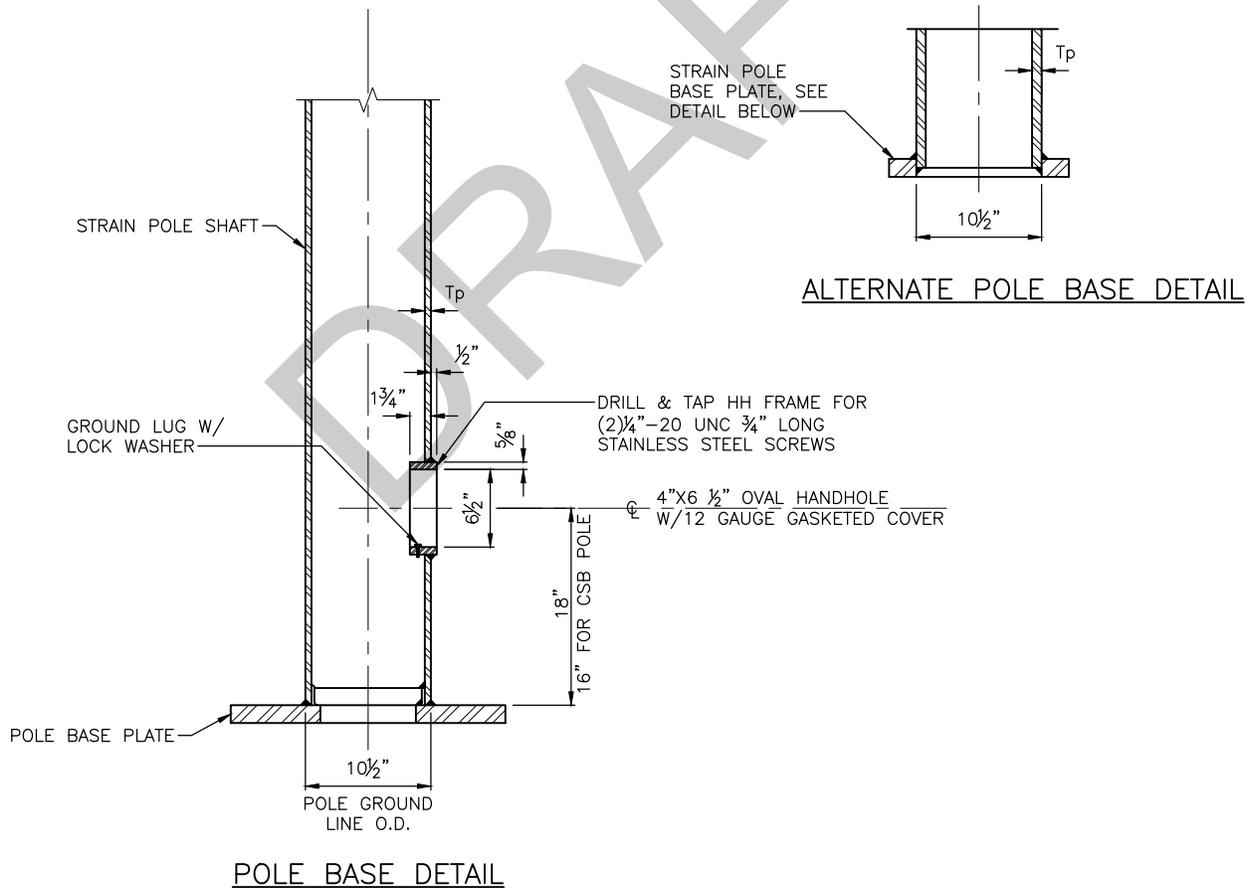
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TYPE T STRAIN POLE DETAILS
TRAFFIC SIGNAL ONLY

NOTES:

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



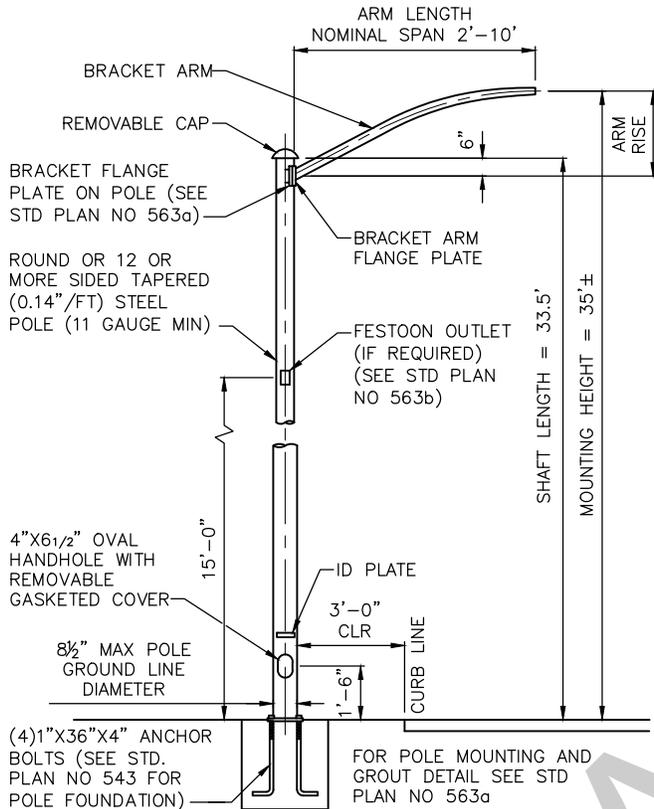
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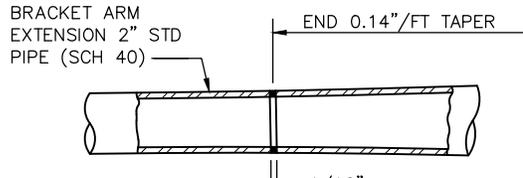
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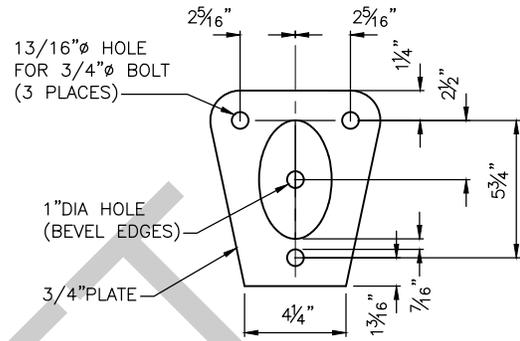
**TYPE T STRAIN POLE DETAILS
TRAFFIC SIGNAL ONLY**



STEEL STREET LIGHT POLE

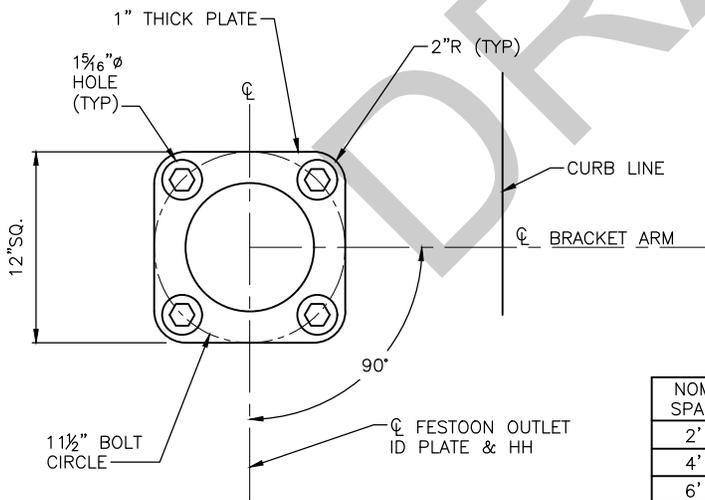


BRACKET ARM EXTENSION
IF REQUIRED

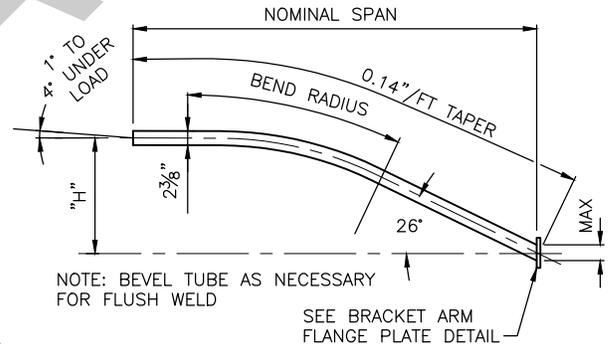


NOTE:
FLANGE DIMENSIONS AND HOLE LOCATIONS
MUST MATCH THOSE ON FLANGE PLATE ON
POLE (SEE STD PLAN NO 563a)

BRACKET ARM FLANGE PLATE



POLE BASE 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:

- 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.

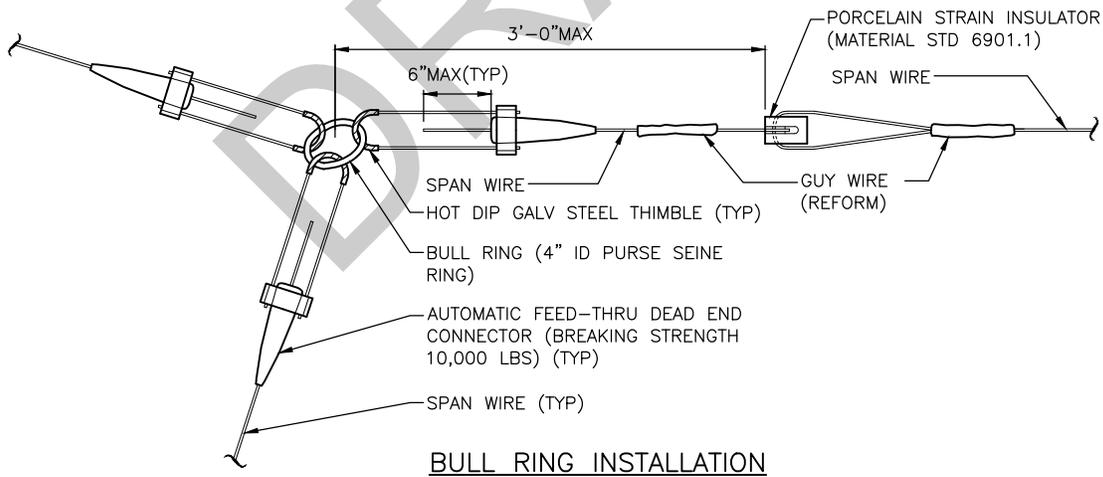
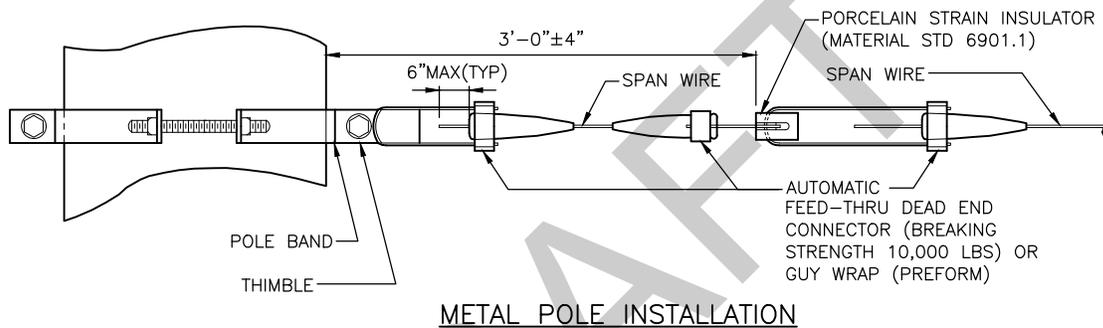
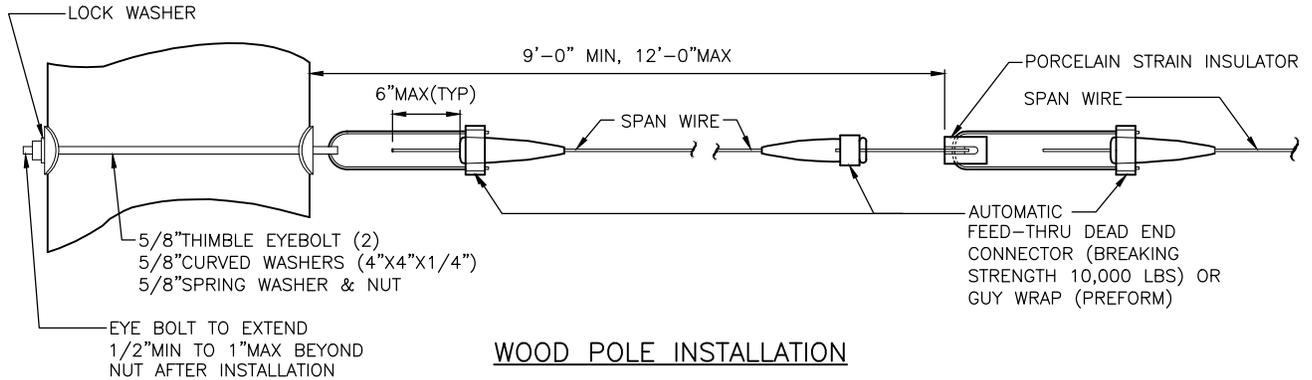
REF STD SPEC SEC 8-32



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NOT TO SCALE

STEEL STREET LIGHT POLE
WITH BRACKET ARM



NOTES:

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

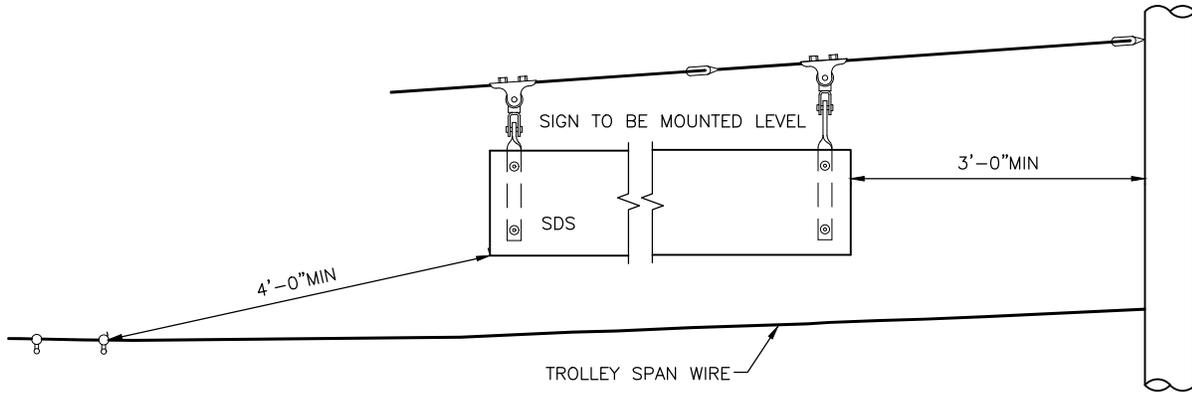
REF STD SPEC SEC 8-21, SCL MATERIAL STANDARD 6901.1



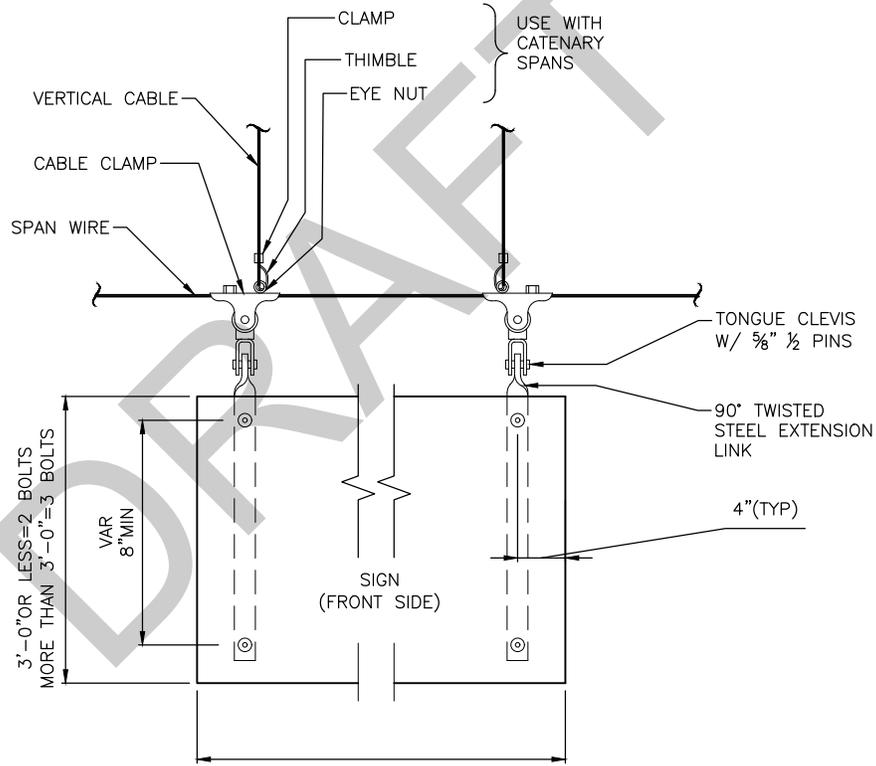
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SPAN WIRE INSTALLATION



STREET DESIGNATION SIGN



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

SPAN WIRE MOUNTED SIGN

NOTES:

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

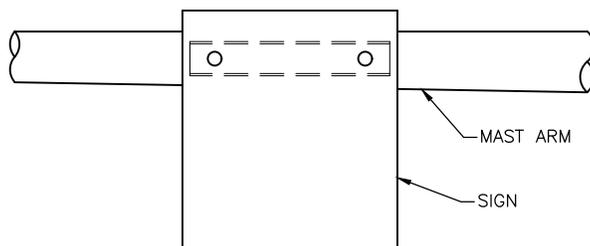
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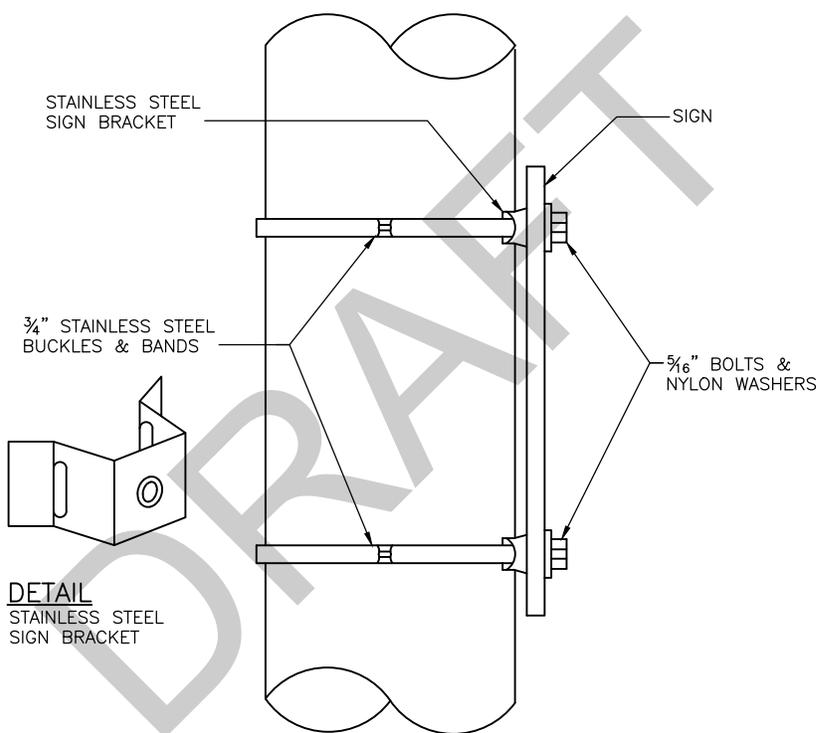
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NOT TO SCALE

**OVERHEAD SIGNS
SPANWIRE MOUNTED**



SIGN MOUNTING ON MAST ARM



TEMPORARY SIGN MOUNTING ON METAL POLE

NOTES:

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

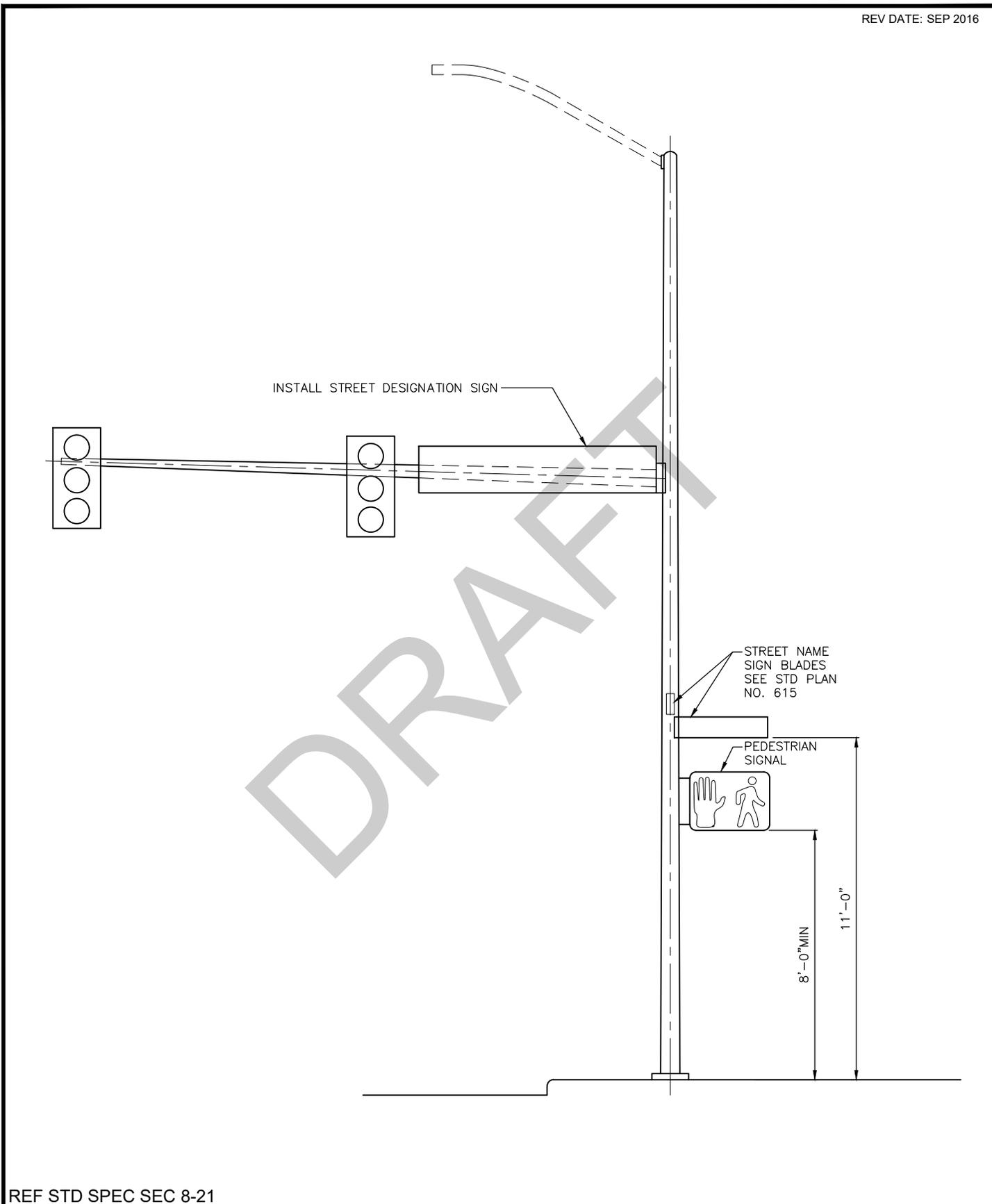
REF STD SPEC SEC 8-21



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



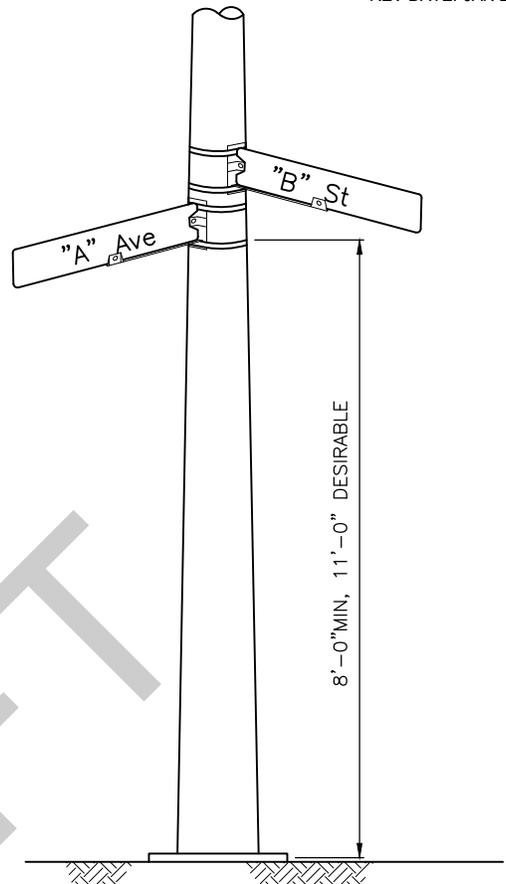
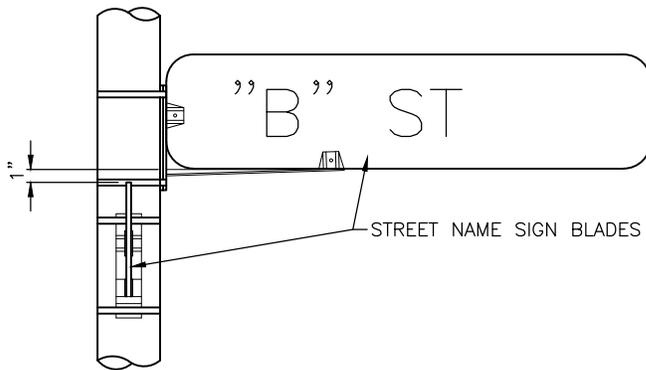
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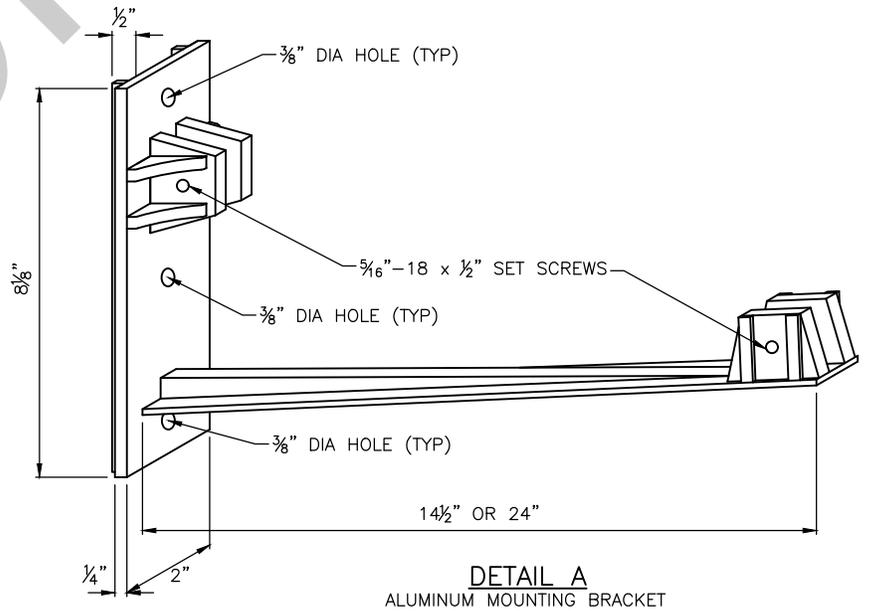
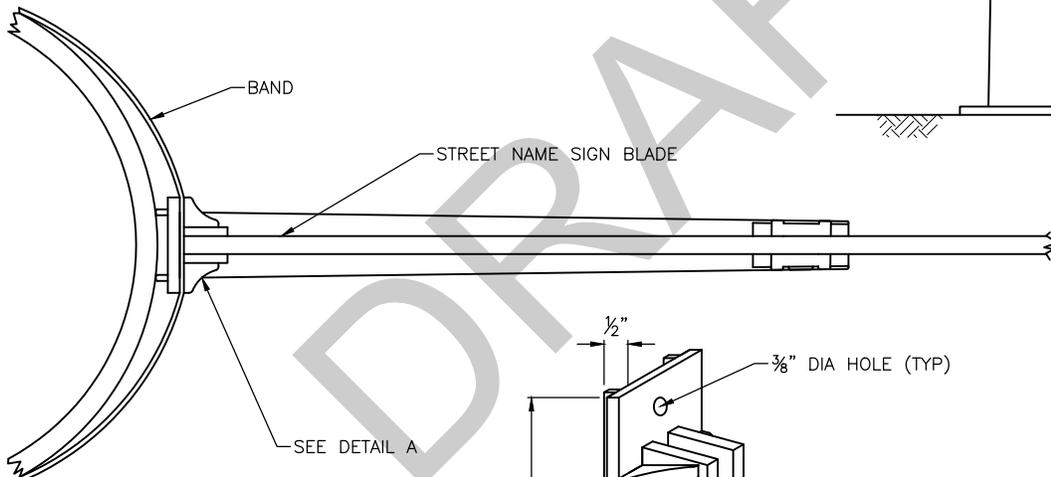
NOT TO SCALE

STANDARD SIGN INSTALLATION
STEEL POLES



NOTES:

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



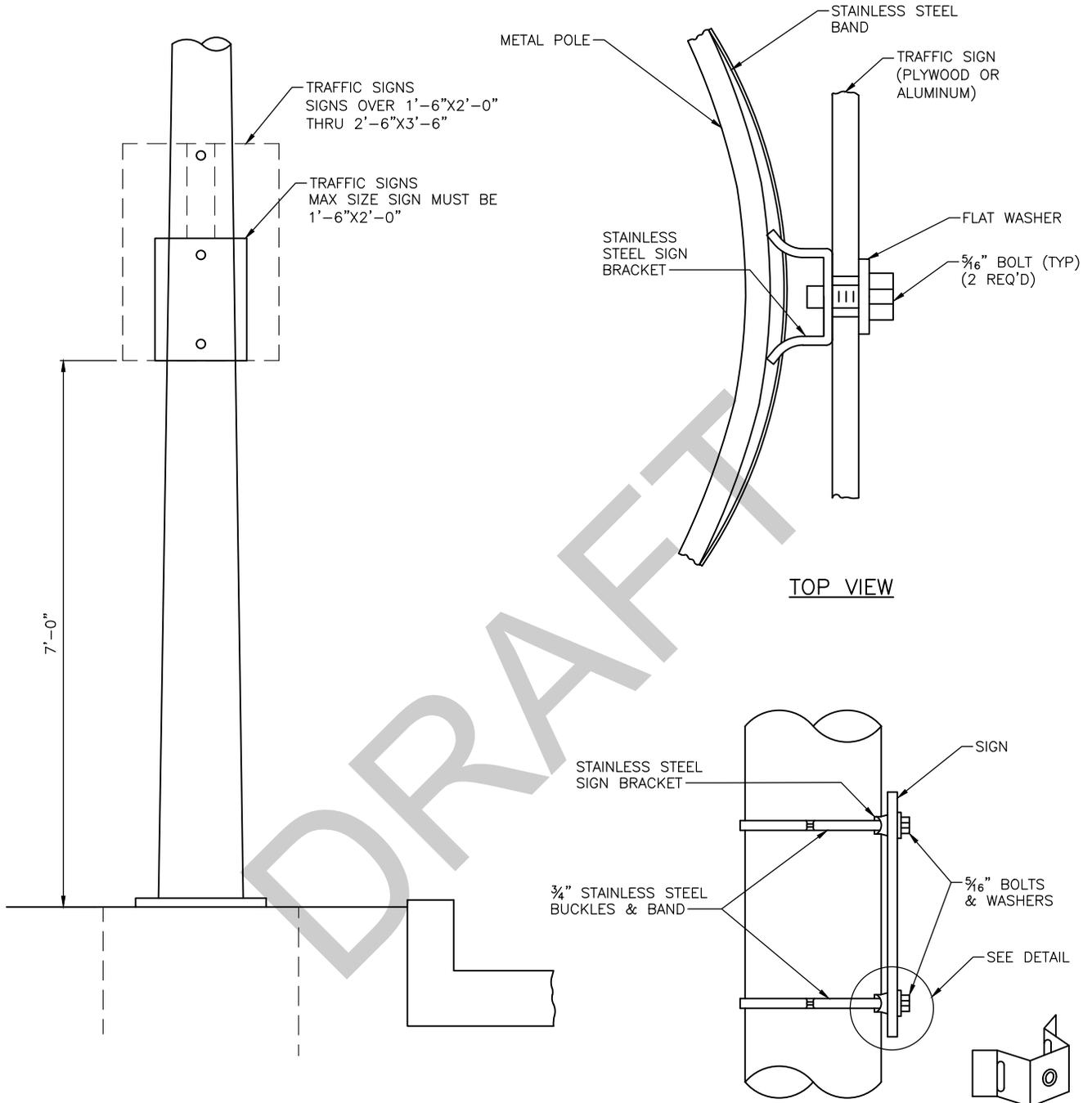
REF STD SPEC SEC 8-21



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NOT TO SCALE

SNS BRACKET FOR STEEL POLES



NOTES:

1. ON POLES FILLED WITH OR MADE FROM CONCRETE USE 5/16"x2 1/2" MIN STUD BOLT ANCHORS WITH HEX NUT
2. FOR SIGNS OVER 2'-6"X3'-6" MOUNT SIGNS USING SIGN BRACKETS AS SPECIFIED IN SECTION 8-21.3(1)B3 FOR STREET DESIGNATION SIGNS.
3. FOR DARK COLORED POLES PAINT BAND TO MATCH POLE
4. ALL HARDWARE TO BE STAINLESS STEEL.

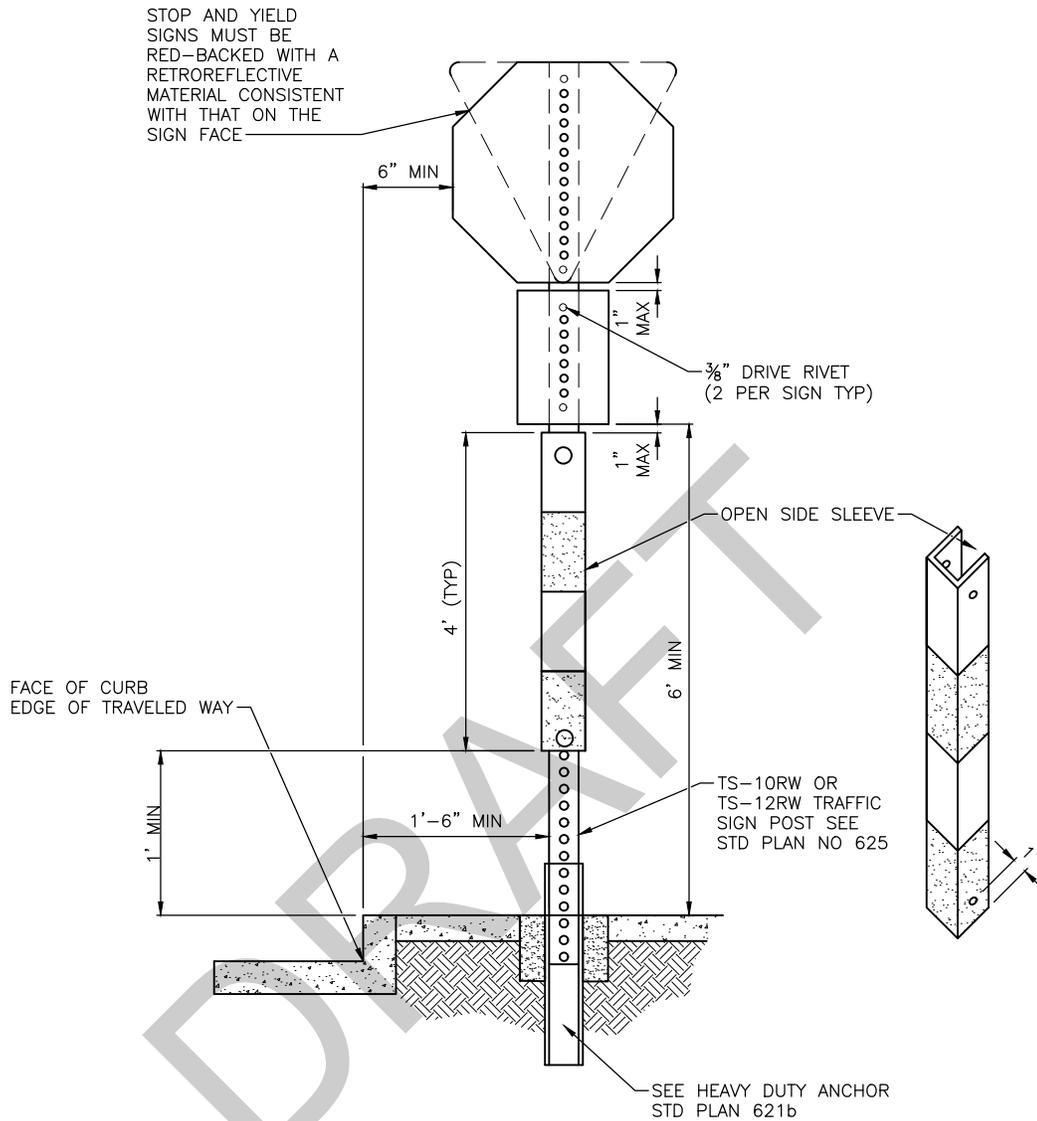
REF STD SPEC SEC 8-21



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NOT TO SCALE

TRAFFIC SIGN MOUNTING
ON METAL POLES



POST ANCHOR INSTALLATIONS

NOTE:

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

REF STD SPEC SEC 8-21



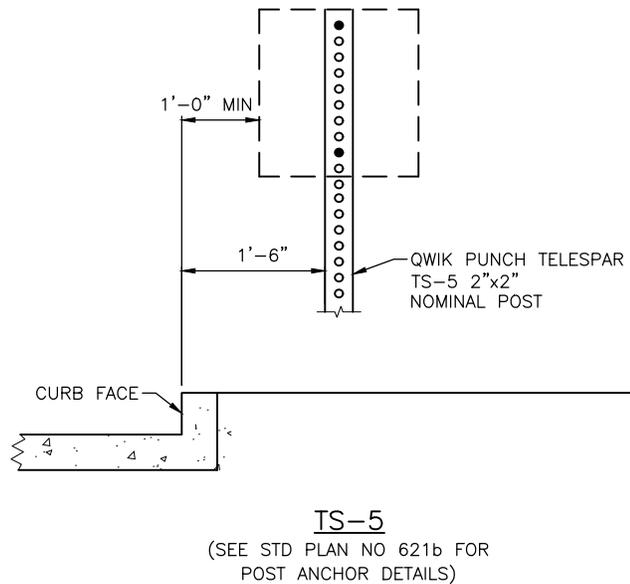
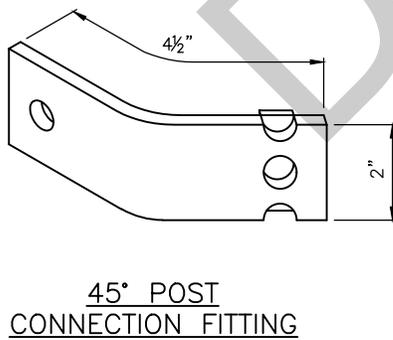
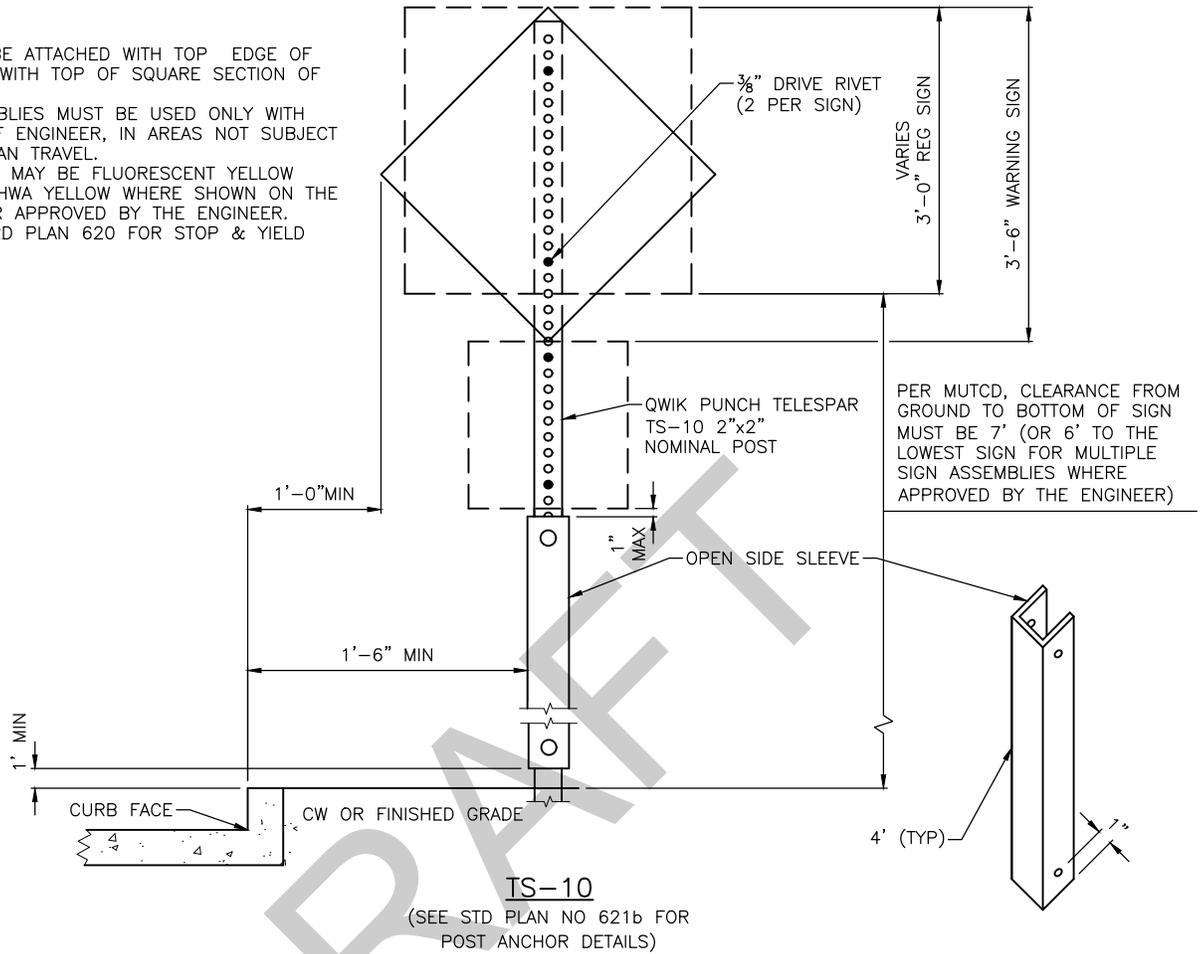
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NOT TO SCALE

STOP AND YIELD SIGN POST AND ANCHOR INSTALLATION

NOTES:

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



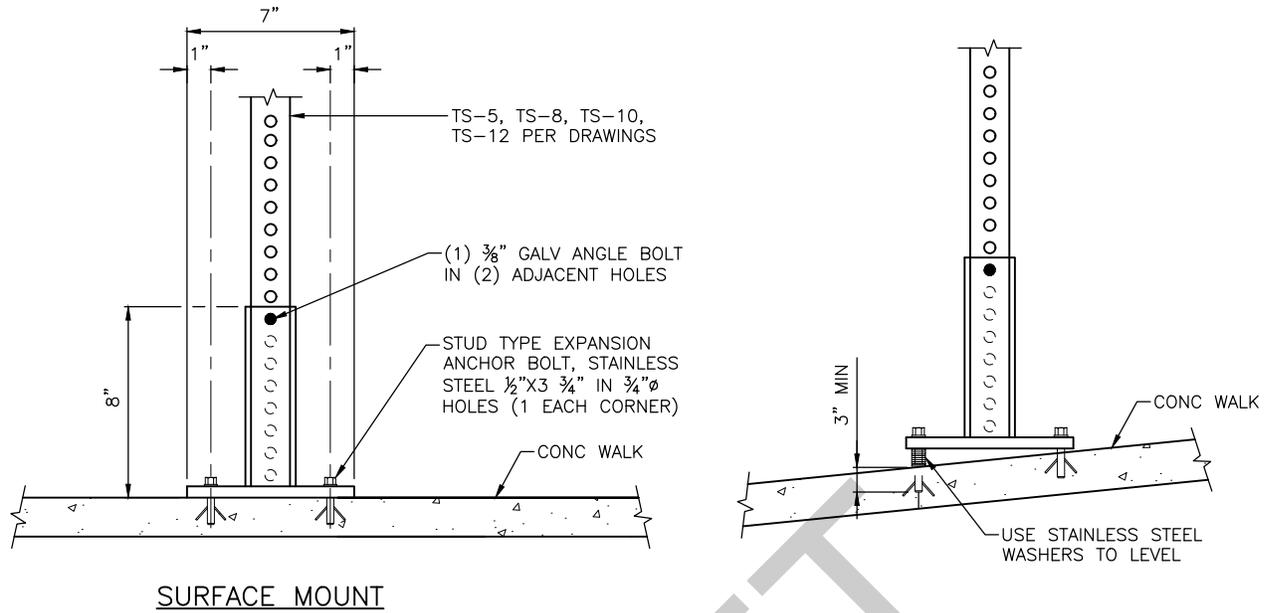
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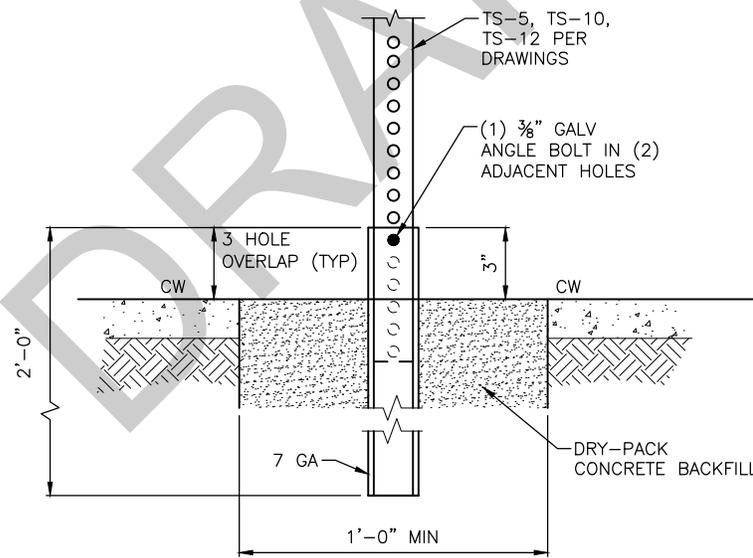
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NOT TO SCALE

WARNING AND REGULATORY SIGN POST



SURFACE MOUNT



HEAVY DUTY ANCHOR

NOTES:

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

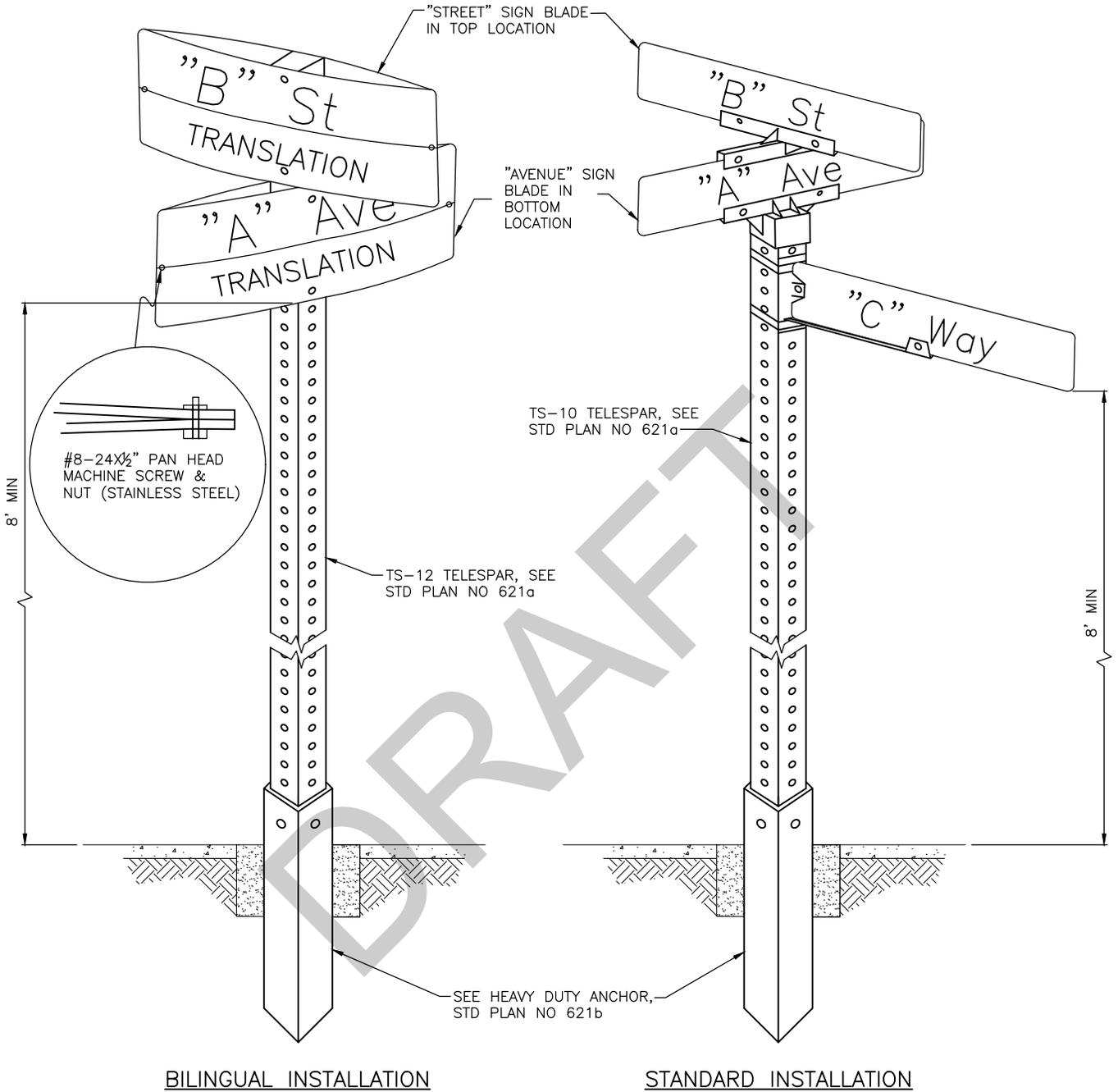
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

**WARNING AND REGULATORY
SIGN POST ANCHOR
INSTALLATIONS**



NOTES:

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

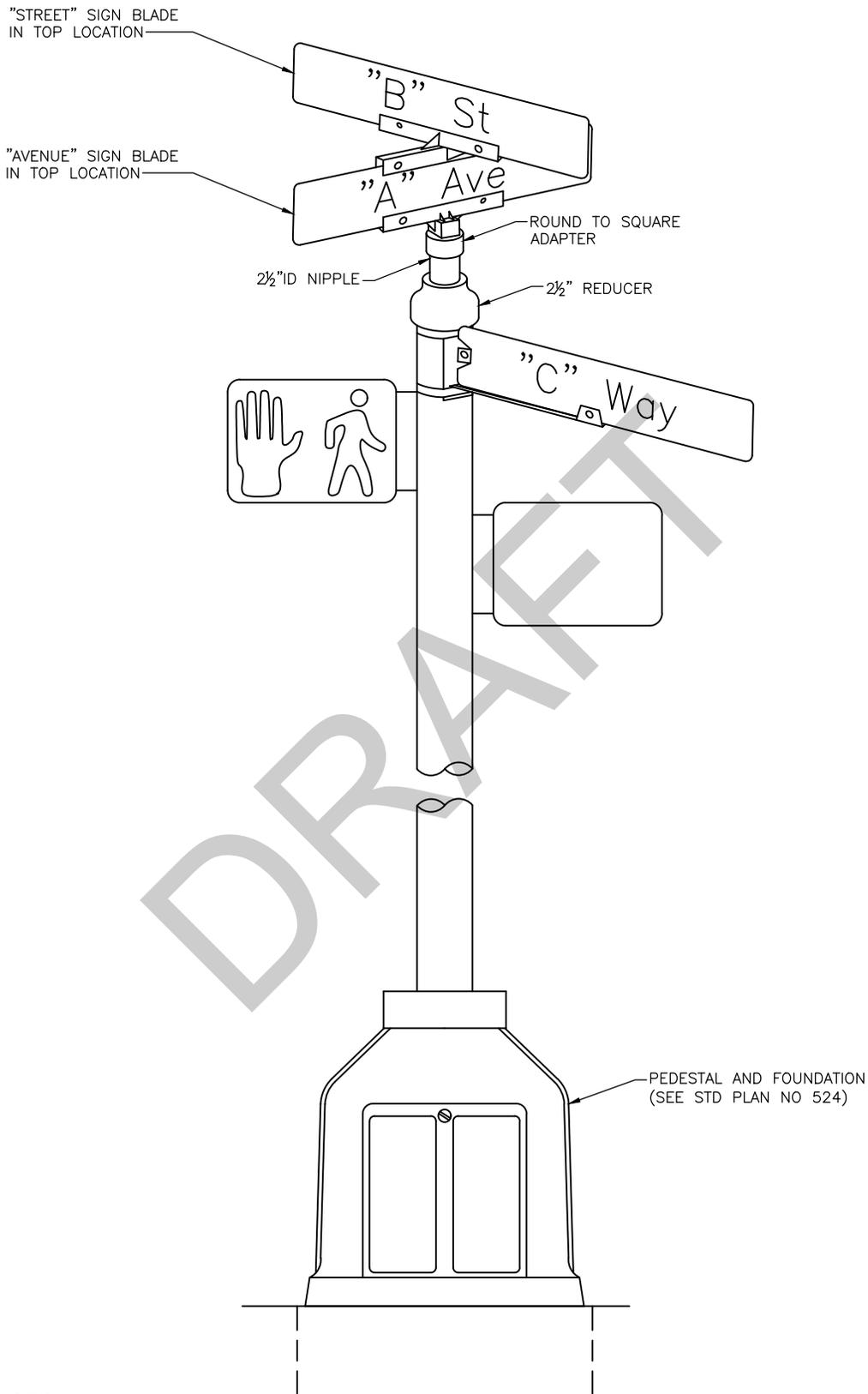
REF STD SPEC SEC 8-21



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**STREET NAME SIGN
INSTALLATION**



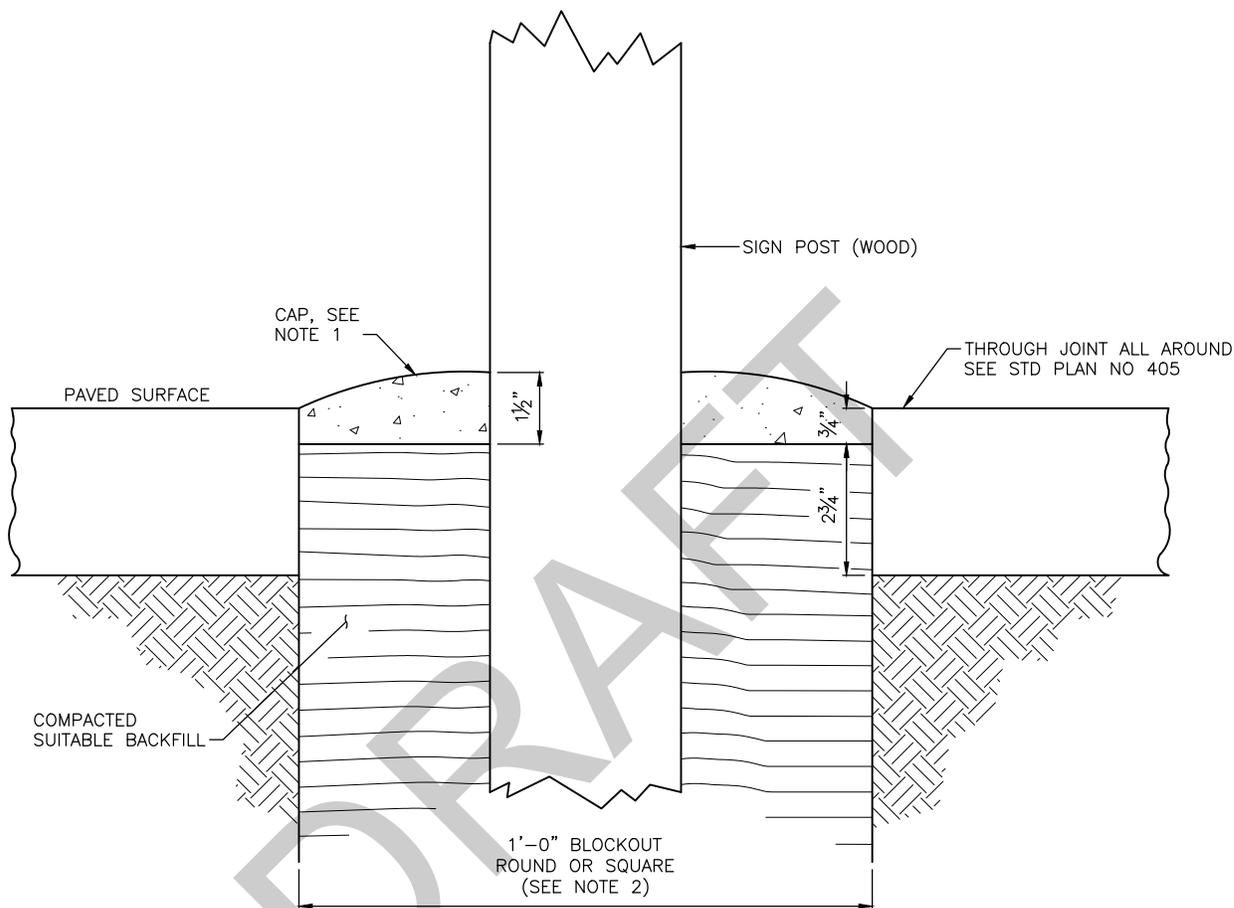
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

STREET NAME SIGN
PEDESTAL INSTALLATION



NOTES:

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

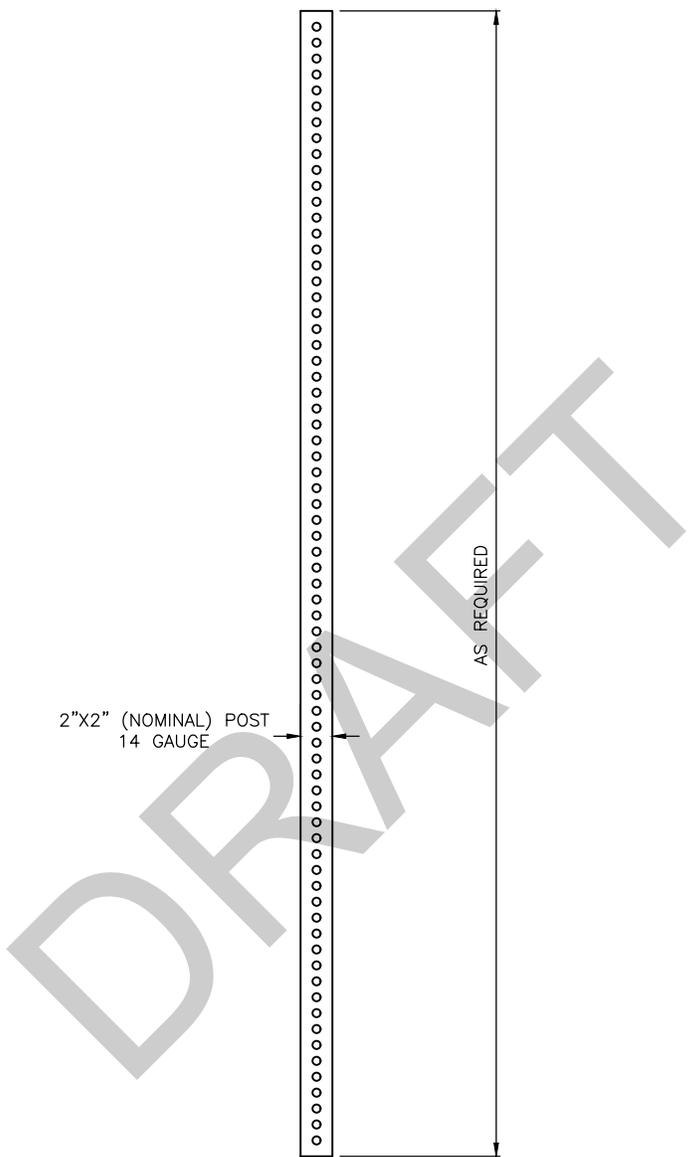
REF STD SPEC SEC 8-21



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POST CAP



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

NOTES:

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

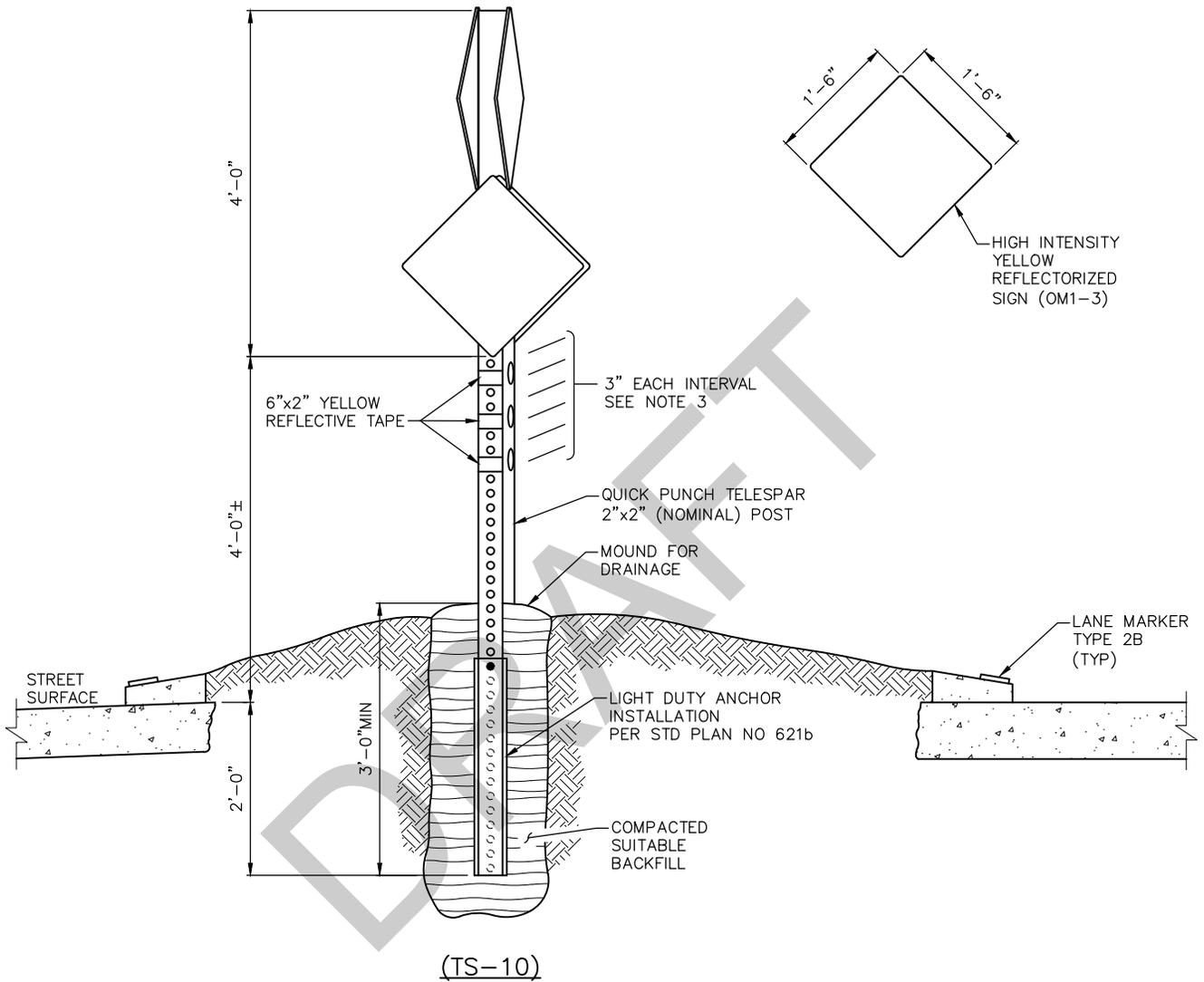
REF STD SPEC SEC 8-21



City of Seattle

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TRAFFIC SIGN POSTS



NOTES:

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

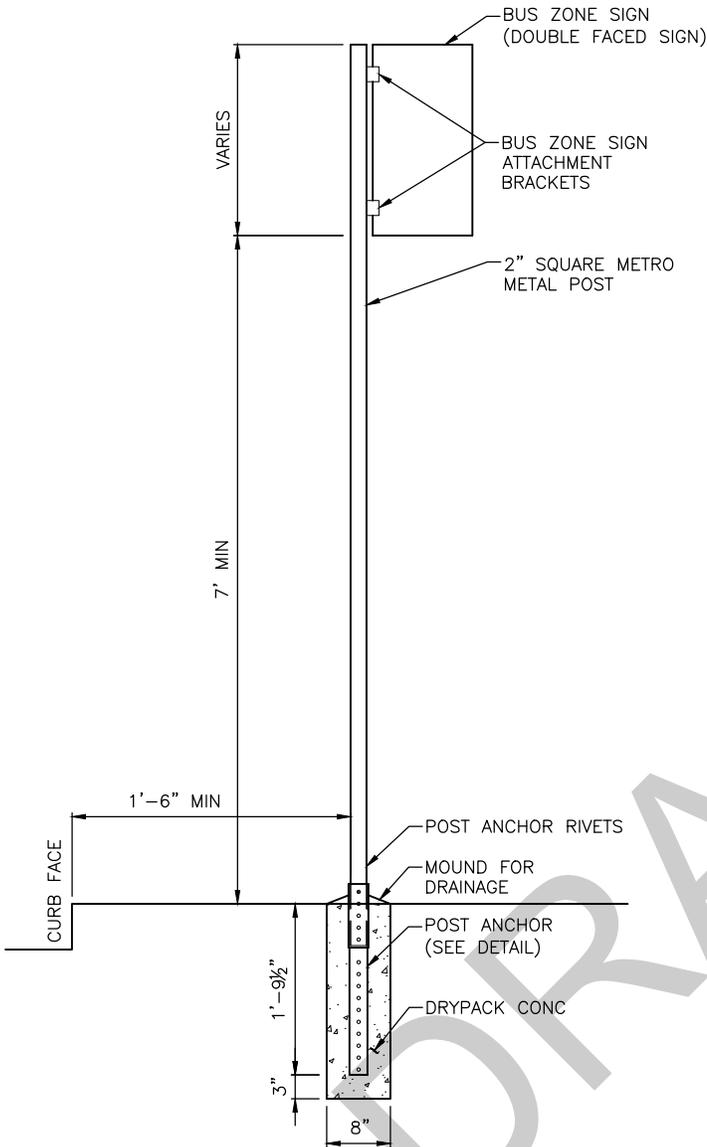
REF STD SPEC SEC 8-21



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NOT TO SCALE

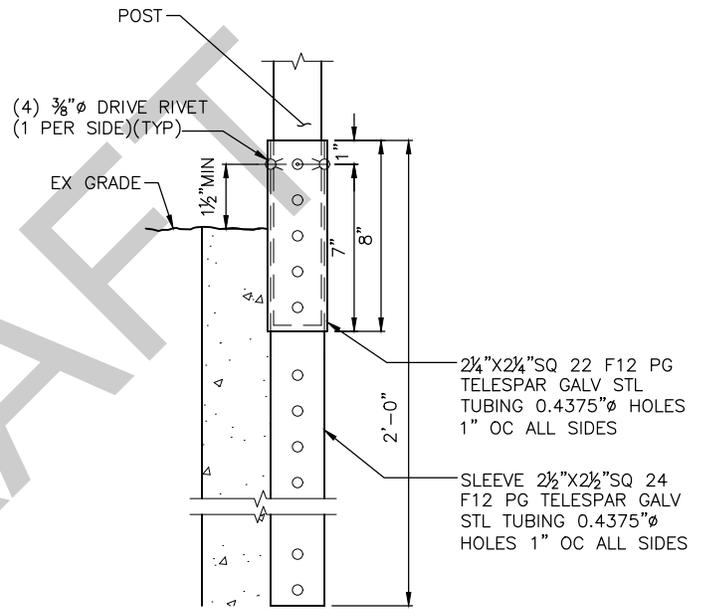
**OBJECT MARKER INSTALLATION
IN TRAFFIC CIRCLE**



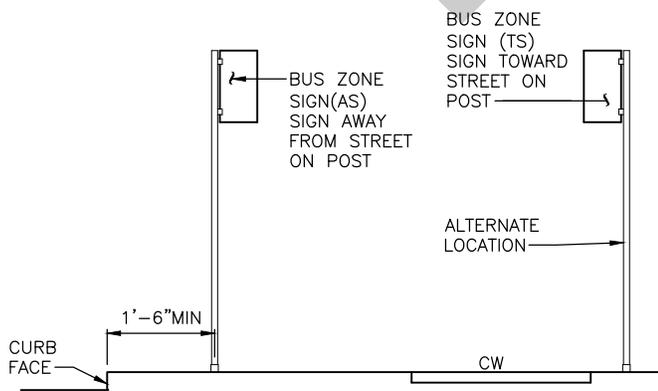
DIRECT BURIAL INSTALLATION

NOTES:

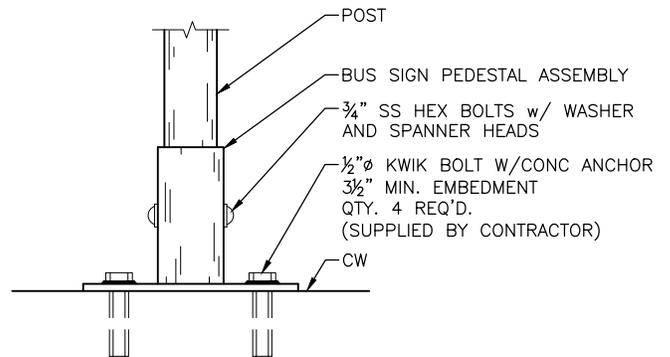
1. POST ANCHOR RIVETS MUST BE 1 1/2" ABOVE GROUND LEVEL
2. ATTACHMENT BRACKETS MUST FACE AWAY FROM STREET AS WHEN POST IS LOCATED 3'-0" FROM EDGE OF CURB. ATTACHMENT BRACKETS MUST FACE TOWARDS STREET (TS) WHEN POST IS LOCATED AT BACK SIDE OF SIDEWALK
3. FOR POST RELOCATIONS, OLD CONCRETE MUST BE REMOVED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



POST ANCHOR DETAIL



SIGN LOCATION DETAIL



SURFACE MOUNT INSTALLATION

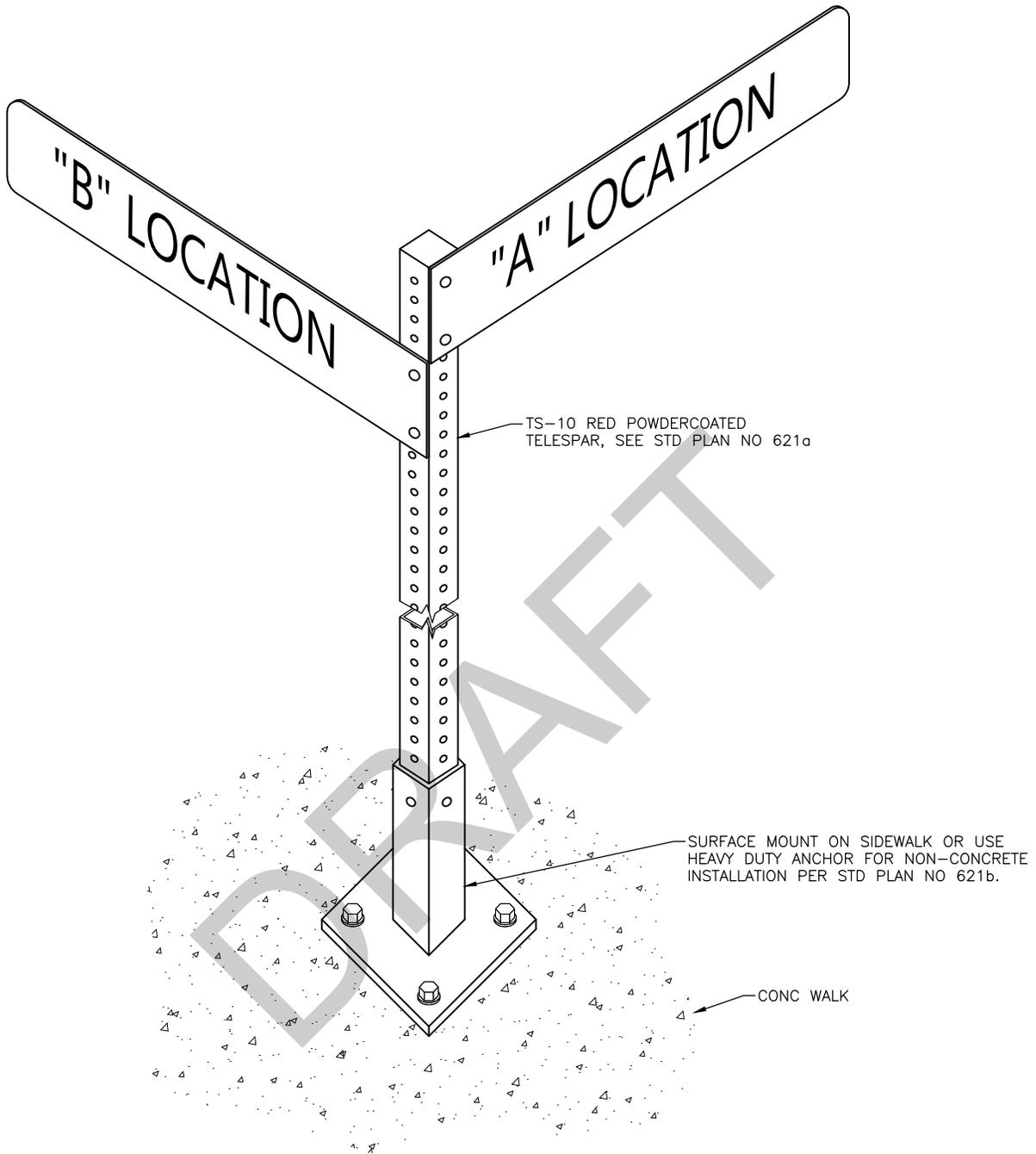
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

METRO BUS ZONE SIGN INSTALLATION



NOTES:

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

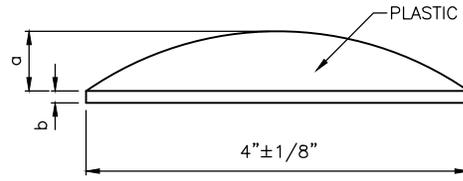
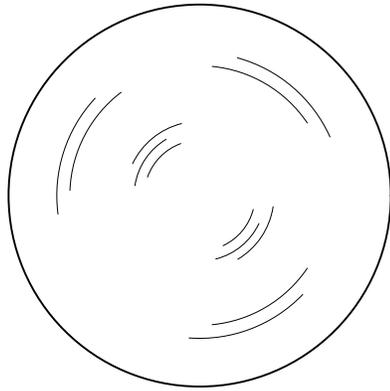
REF STD SPEC SEC 8-21



City of Seattle

NOT TO SCALE

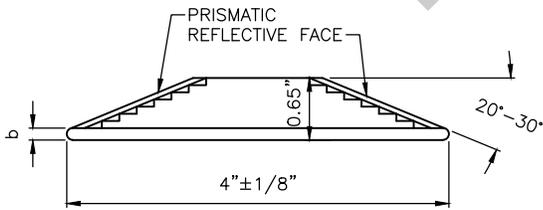
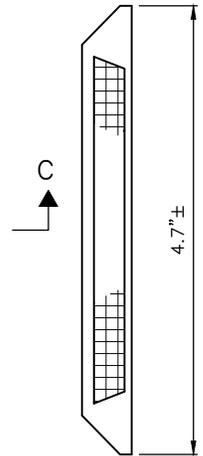
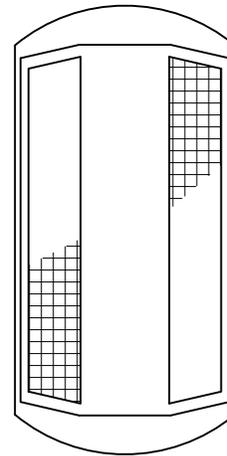
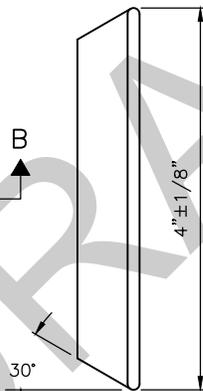
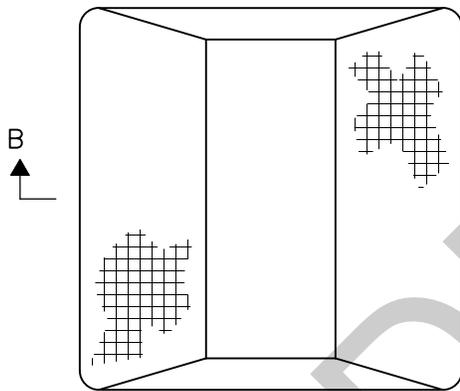
PEDESTRIAN
WAYFINDING SIGN



LANE MARKER-TYPE 1

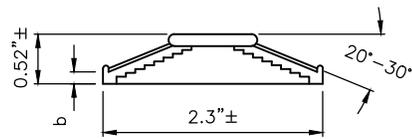
$a = 5/8'' \pm 1/8''$
 $b = 1/8'' \pm 1/16''$

← DIRECTION OF TRAFFIC



SECTION B-B

LANE MARKER-TYPE 2A
 4" PRISMATIC REFLECTIVE MARKER



SECTION C-C

LANE MARKER-TYPE 2B

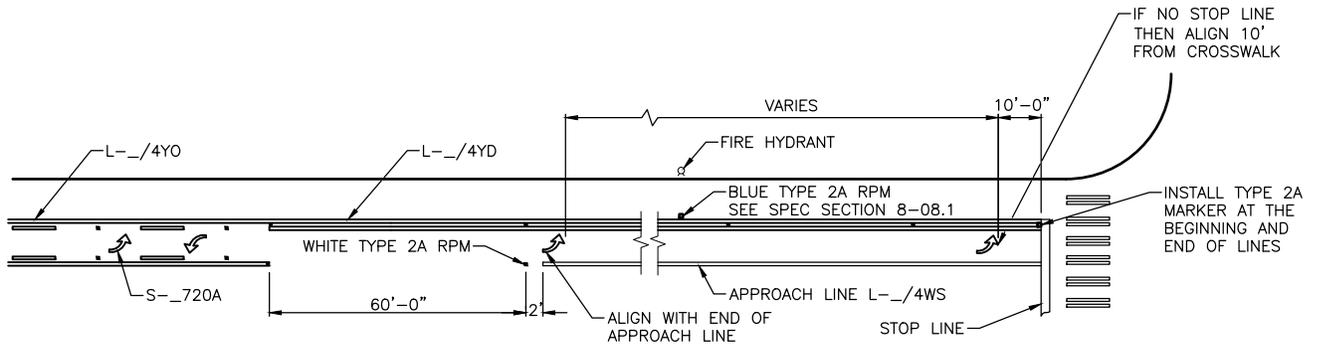
REF STD SPEC SEC 8-08



City of Seattle

NOT TO SCALE

TRAFFIC BUTTONS &
 LANE MARKERS



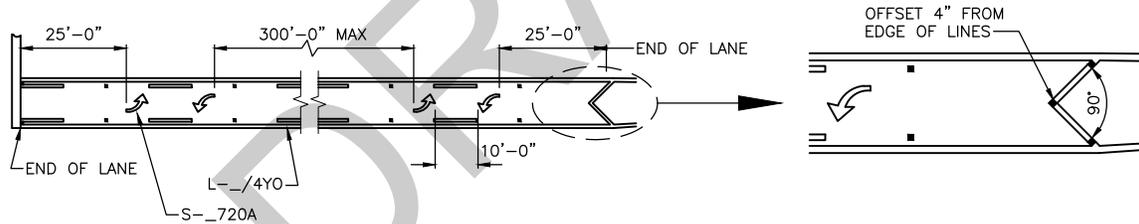
TYPICAL TURN LANE CHANNELIZATION

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

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

NOTES:

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



TYPICAL TWO WAY LEFT TURN LANE CHANNELIZATION

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

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

NOTE:

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

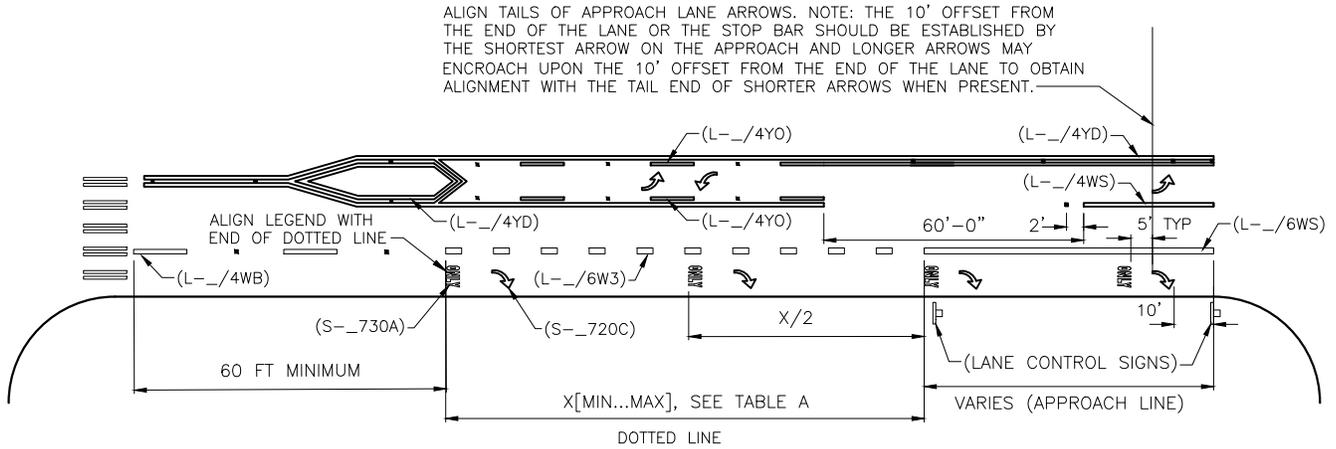
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

TYPICAL TURN LANE CHANNELIZATION AND LEGEND PLACEMENT



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

TABLE A

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

TYPICAL LEGEND AND SYMBOL INSTALLATION DETAILS

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

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

REF STD SPEC SEC 8-22

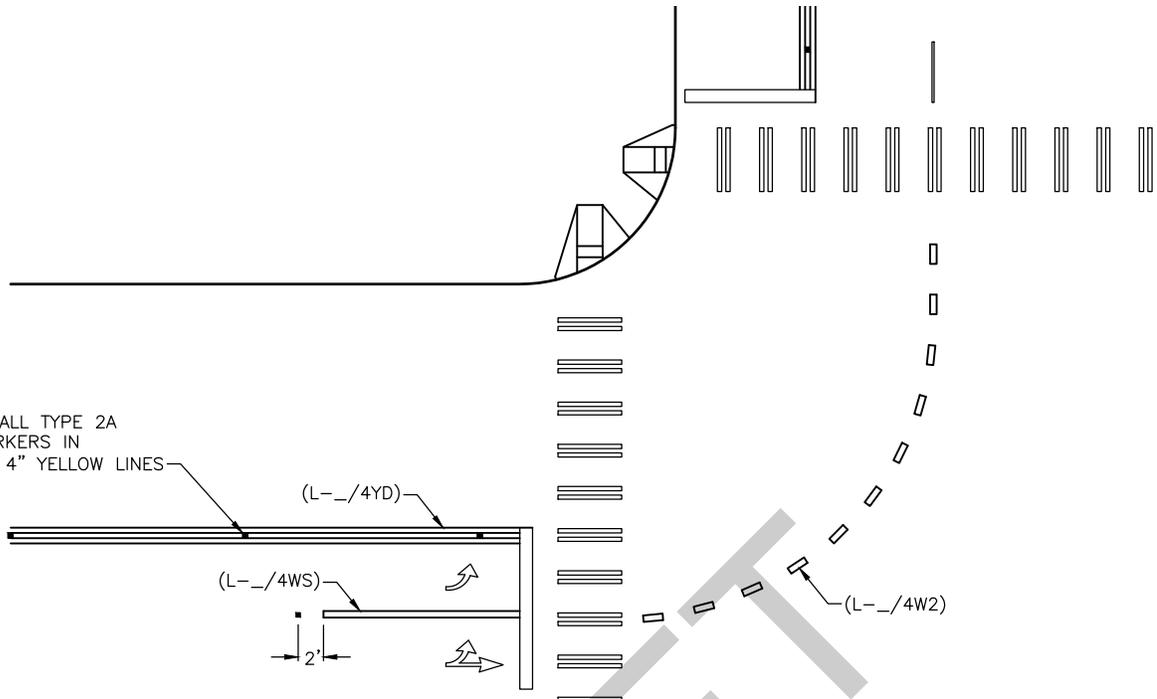


City of Seattle

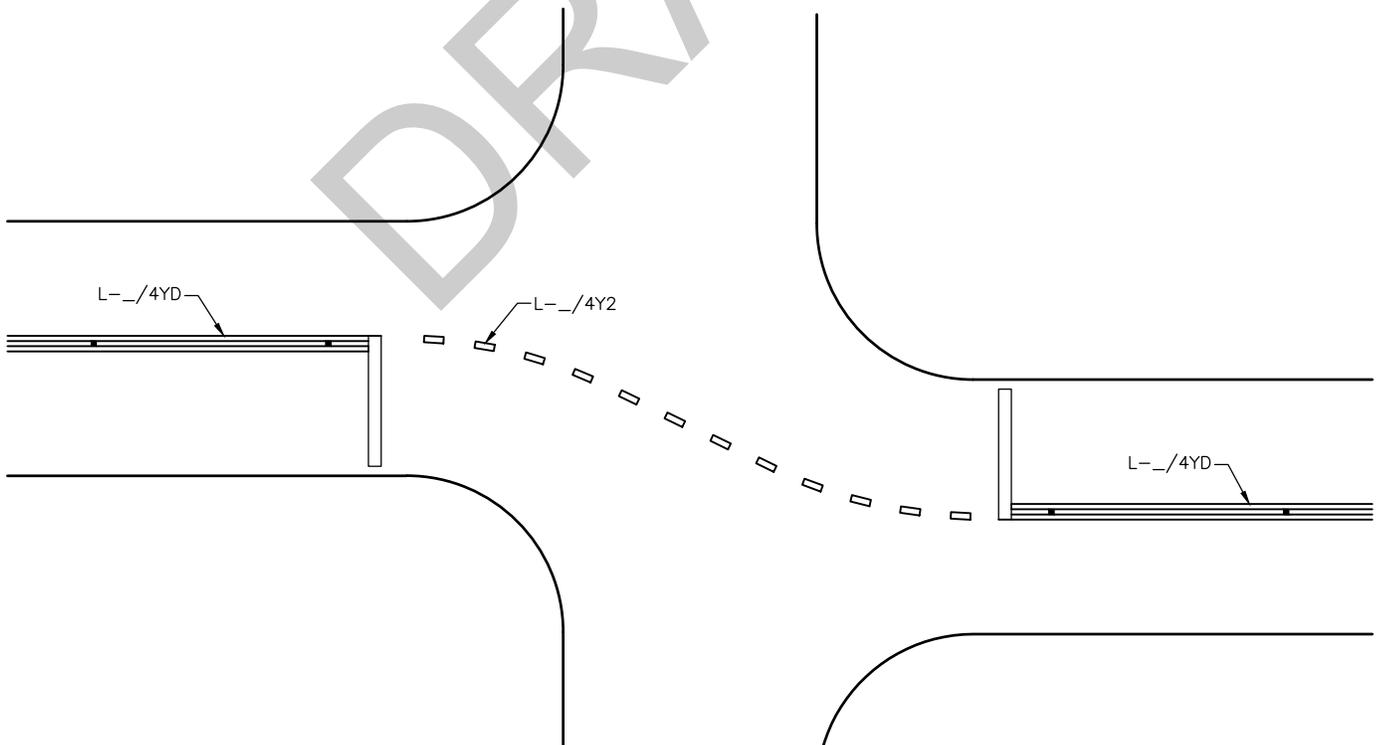
NOT TO SCALE

TYPICAL LANE DROP
 CHANNELIZATION AND
 LEGEND PLACEMENT

(TYP)INSTALL TYPE 2A
LANE MARKERS IN
BETWEEN 4" YELLOW LINES



DO NOT INSTALL LANE MARKERS
WITHIN PEDESTRIAN CROSSWALK
AREA (SEE STD PLAN NO 712)



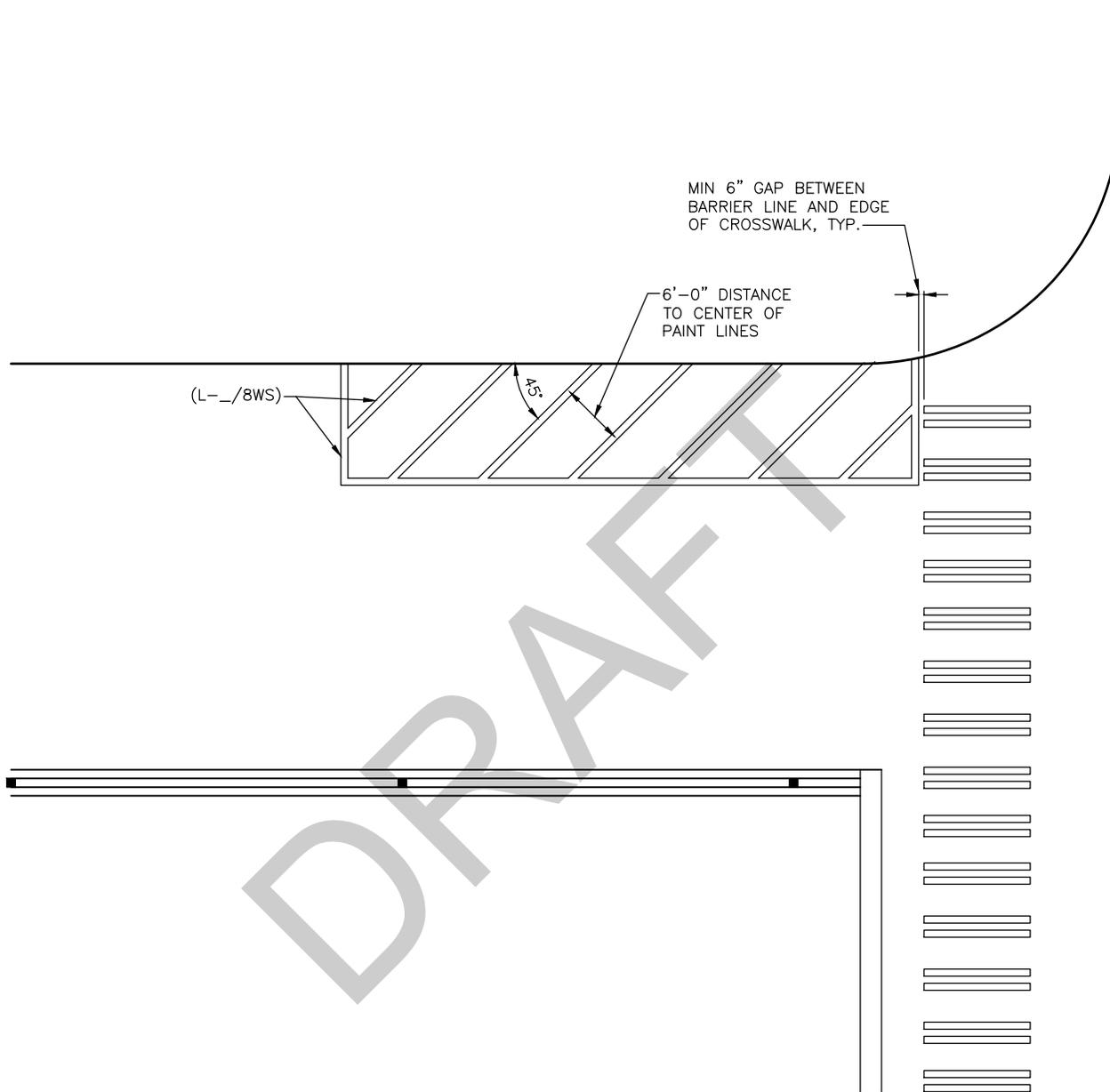
REF STD SPEC SEC 8-22



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NOT TO SCALE

TYPICAL INTERSECTION
GUIDELINE CHANNELIZATION



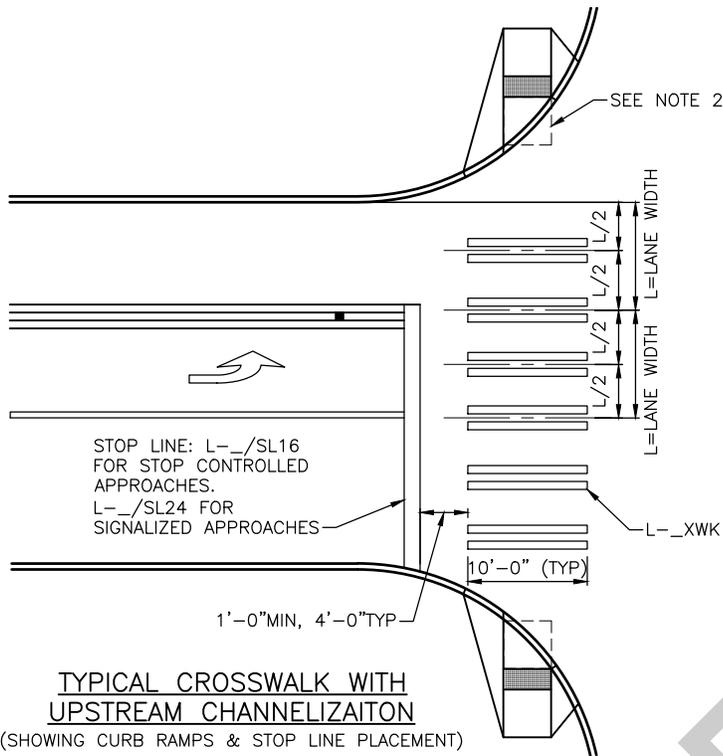
REF STD SPEC SEC 8-22



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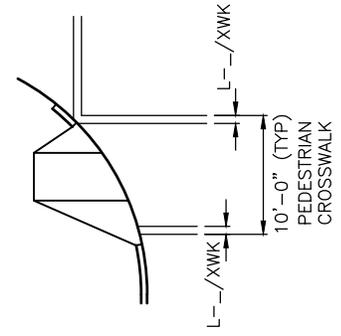
NOT TO SCALE

TYPICAL WHITE BARRIER
AREA CHANNELIZATION



TYPICAL CROSSWALK WITH UPSTREAM CHANNELIZATION

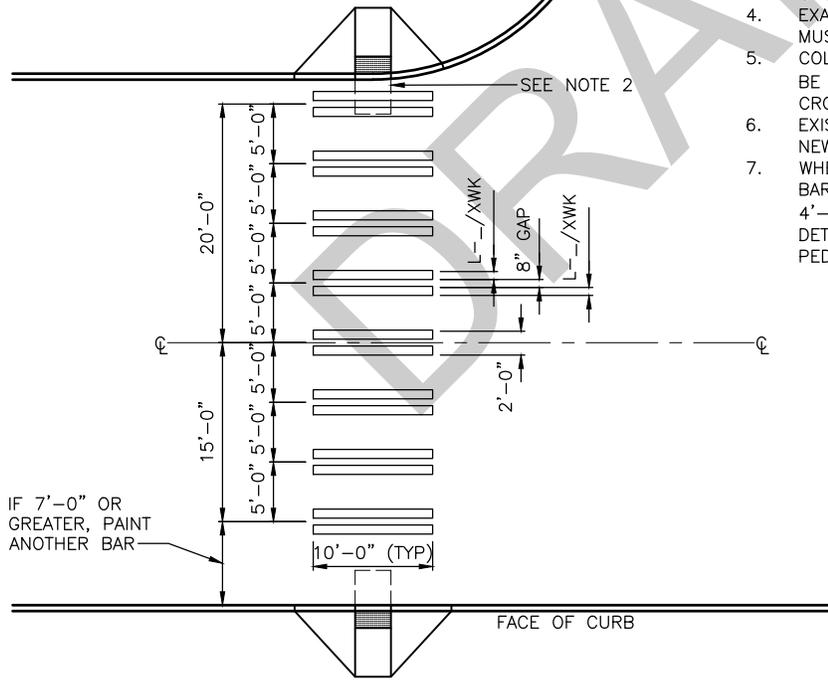
(SHOWING CURB RAMPS & STOP LINE PLACEMENT)



TYPICAL TRANSVERSE LINE CROSSWALK

NOTES:

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



TYPICAL CROSSWALK WITHOUT UPSTREAM CHANNELIZATION

(SHOWING CURB RAMPS & STOP LINE PLACEMENT)

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

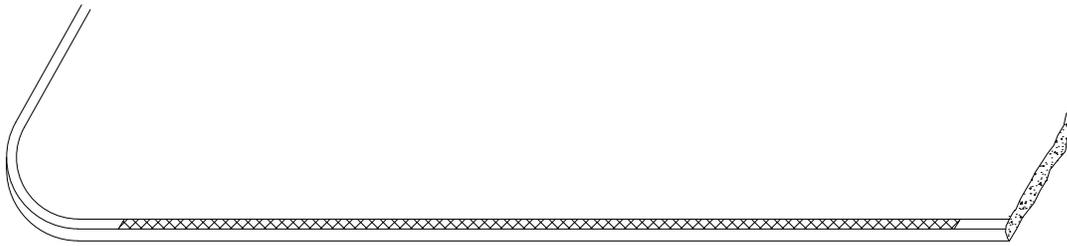
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City of Seattle

NOT TO SCALE

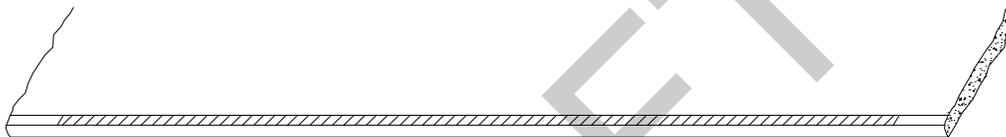
TYPICAL CROSSWALK & STOP LINE INSTALLATION DETAILS



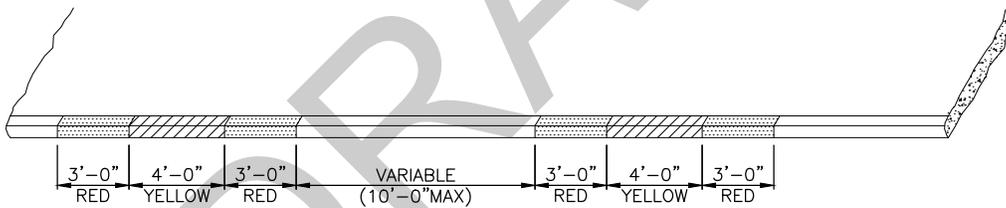
C- /W
PASSENGER LOAD ZONE, ETC
(WHITE)



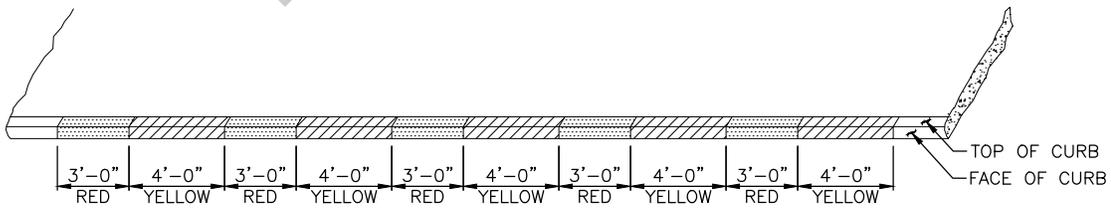
C- /R
TOW-AWAY ZONE
(RED)



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



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



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

NOTES:

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

REF STD SPEC SEC 8-22

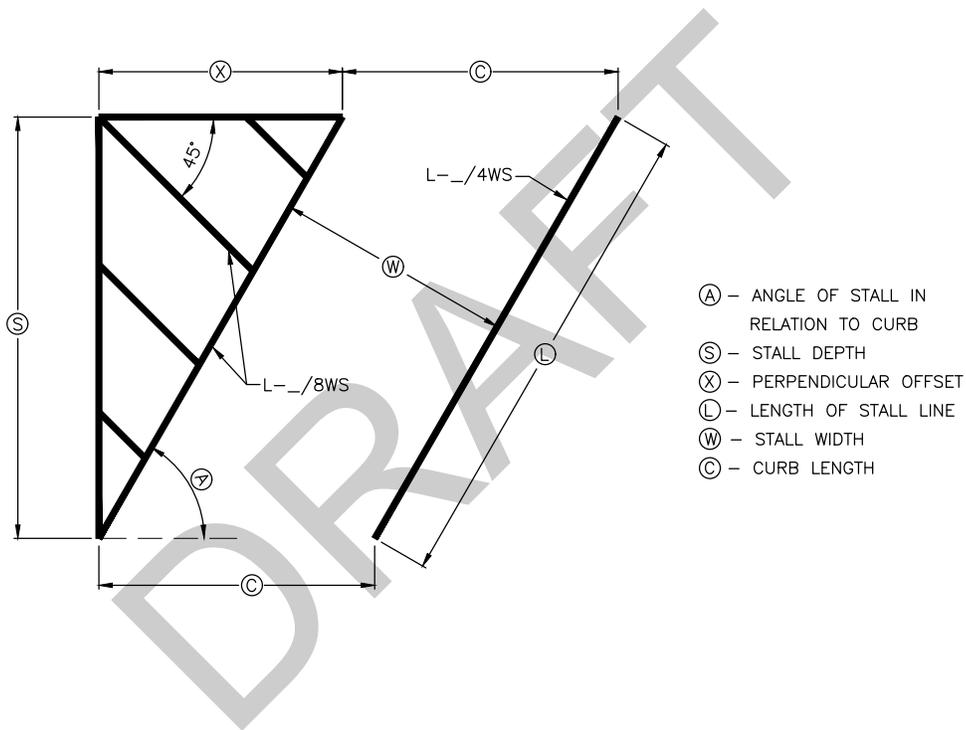


City of Seattle

NOT TO SCALE

CURB MARKING DETAILS

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



NOTES:

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

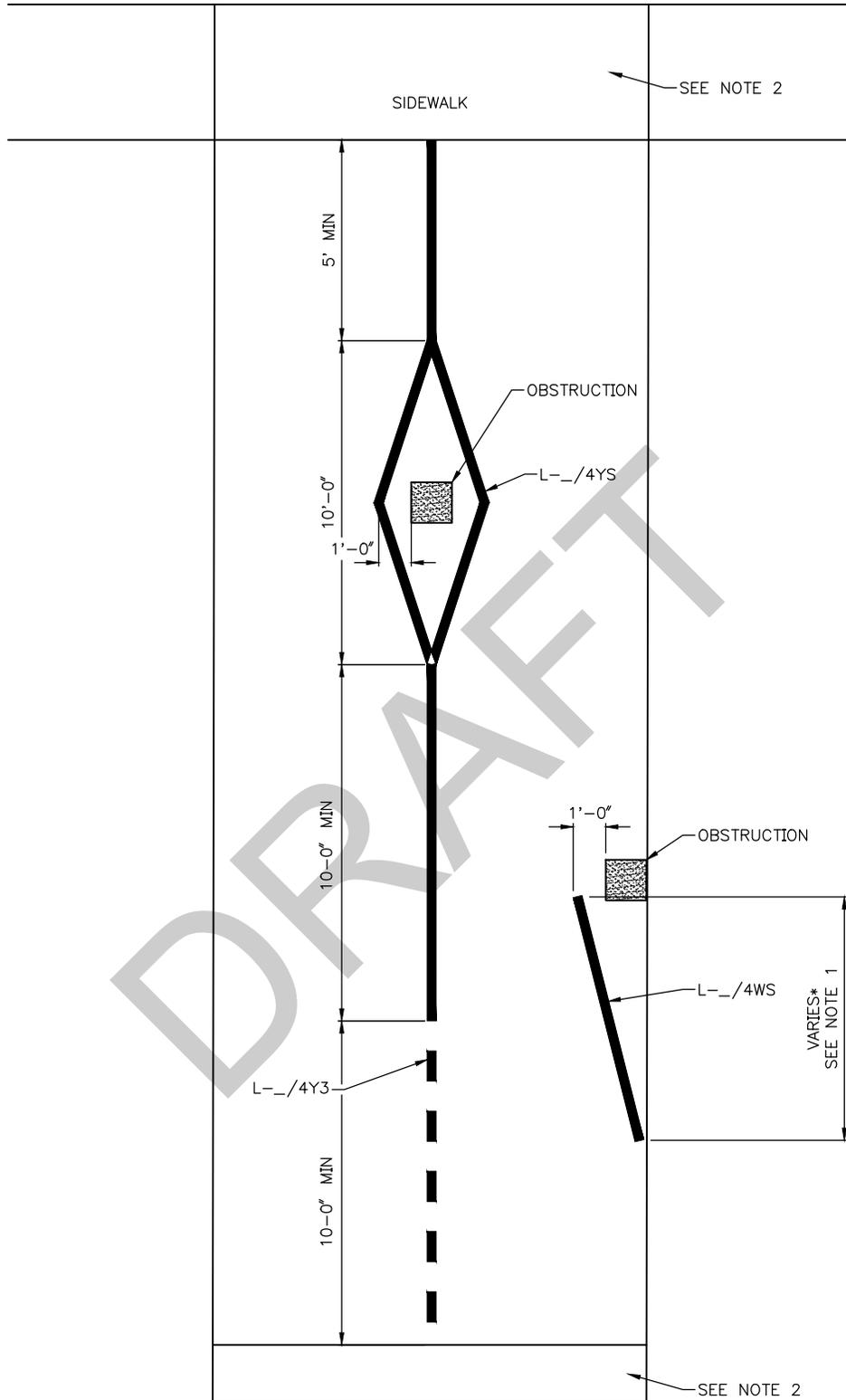
REF STD SPEC SEC 8-22



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NOT TO SCALE

TYPICAL ANGLED PARKING STALL CHANNELIZATION



NOTE:

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

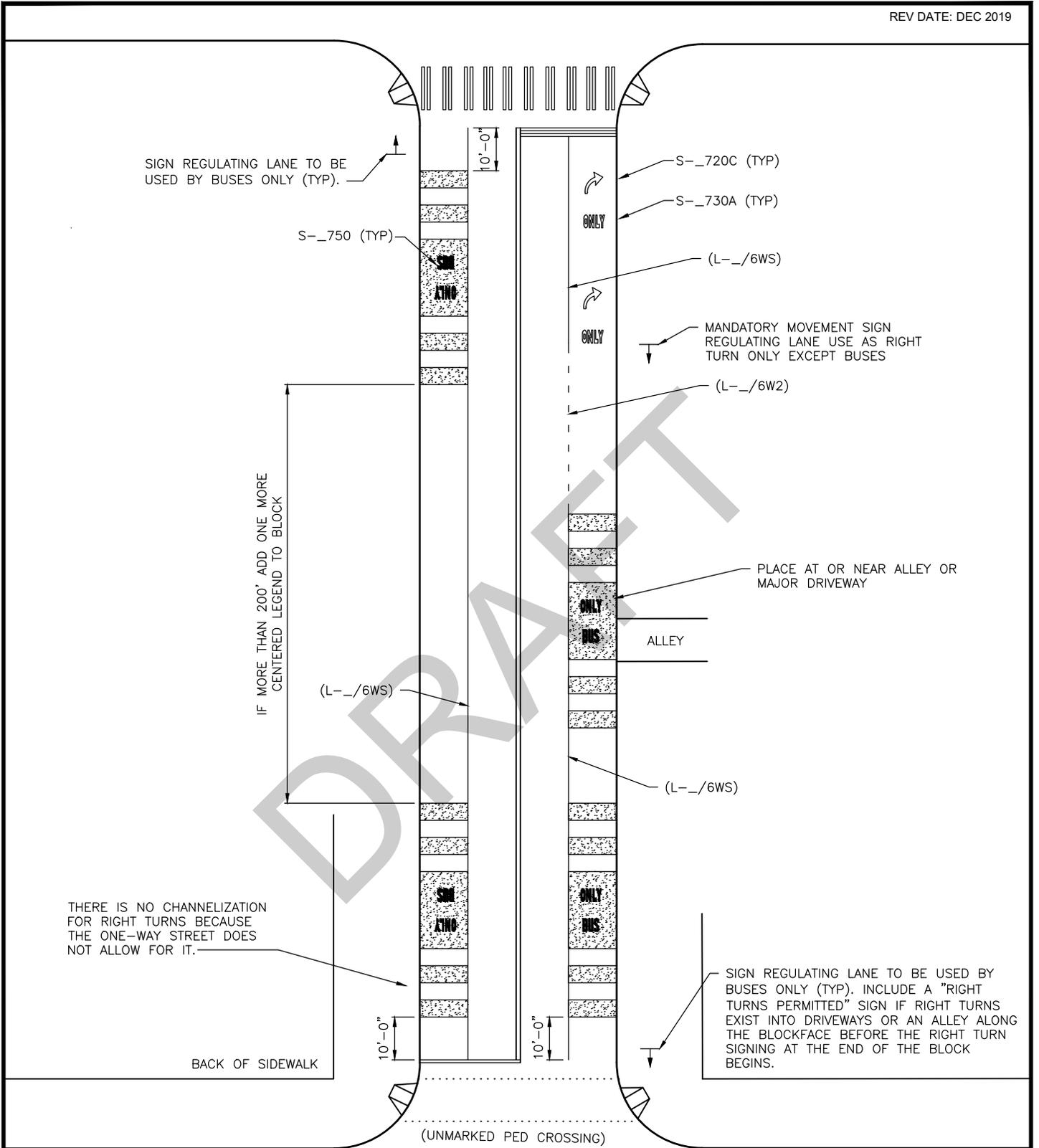
REF STD SPEC SEC 8-22



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**TRAIL OBSTRUCTION
CHANNELIZATION**



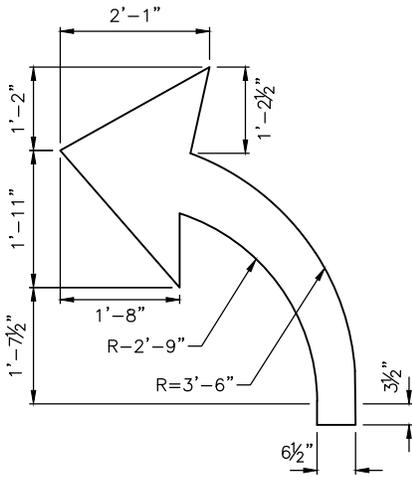
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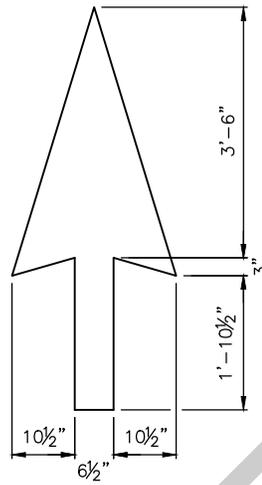
City of Seattle

NOT TO SCALE

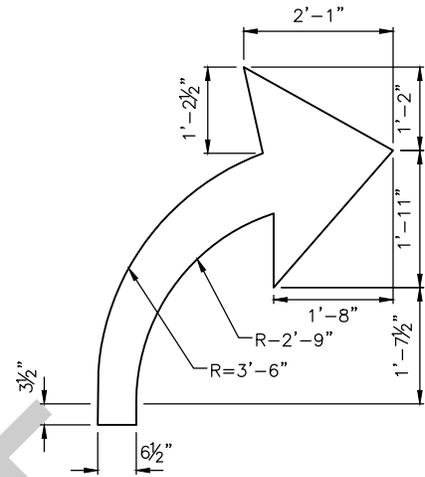
TYPICAL CURBSIDE RED BUS LANE LAYOUT



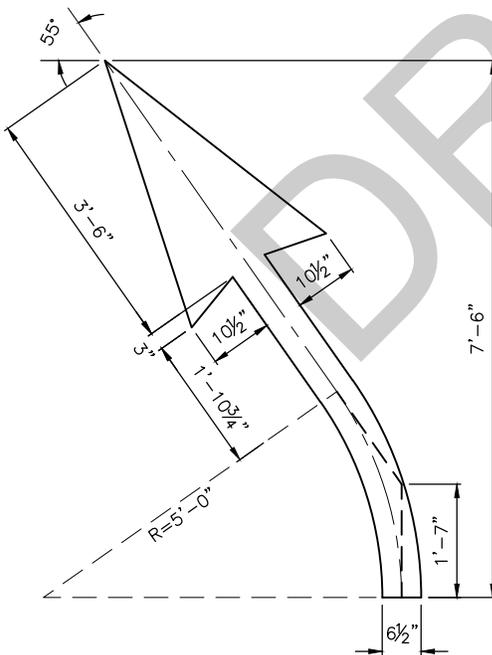
720A
LEFT ARROW



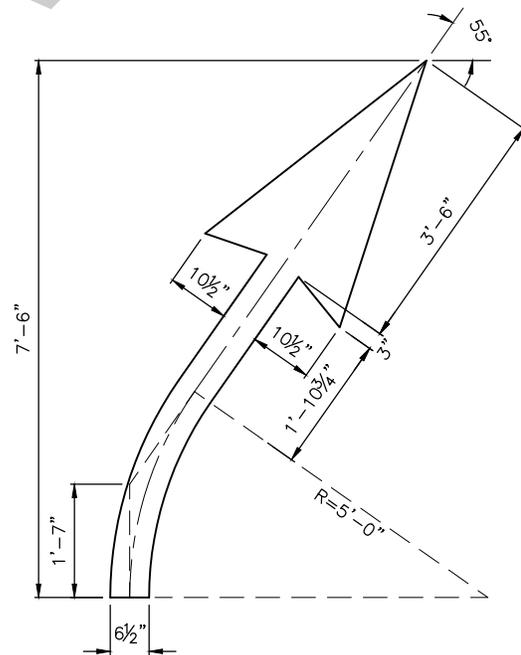
720B
THROUGH ARROW



720C
RIGHT ARROW



720D
OBLIQUE LEFT ARROW



720E
OBLIQUE RIGHT ARROW

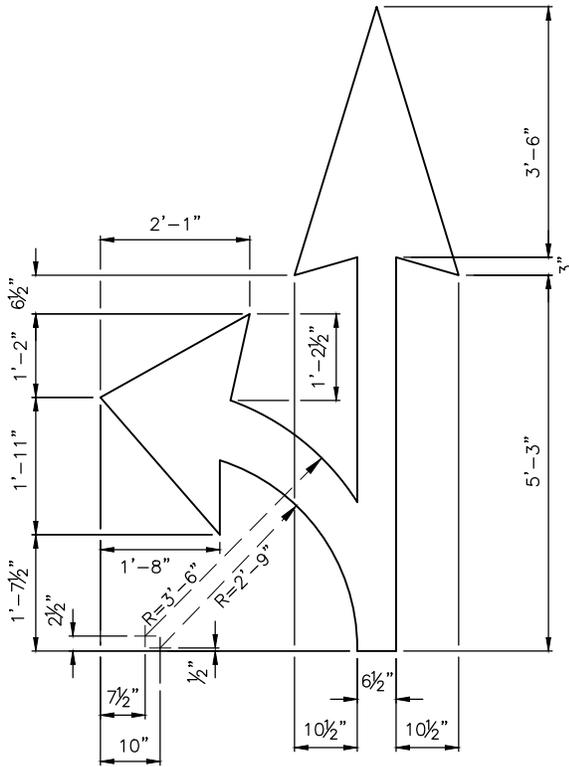
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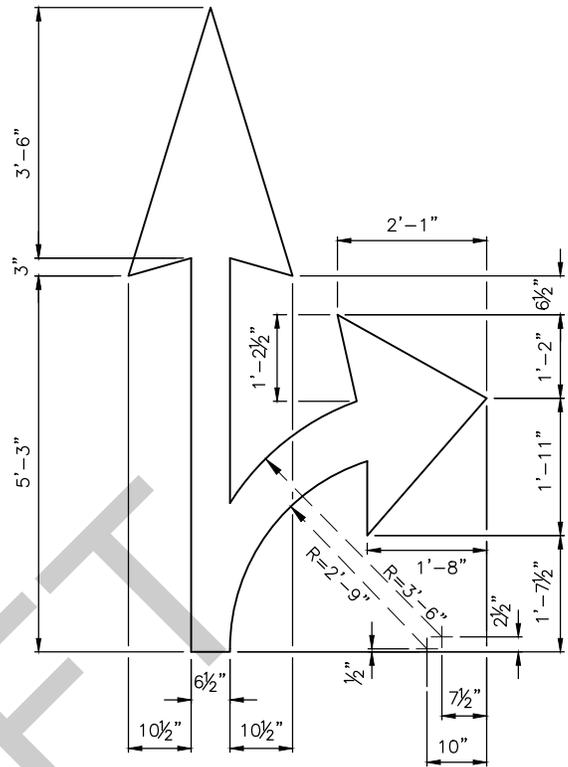
City of Seattle

NOT TO SCALE

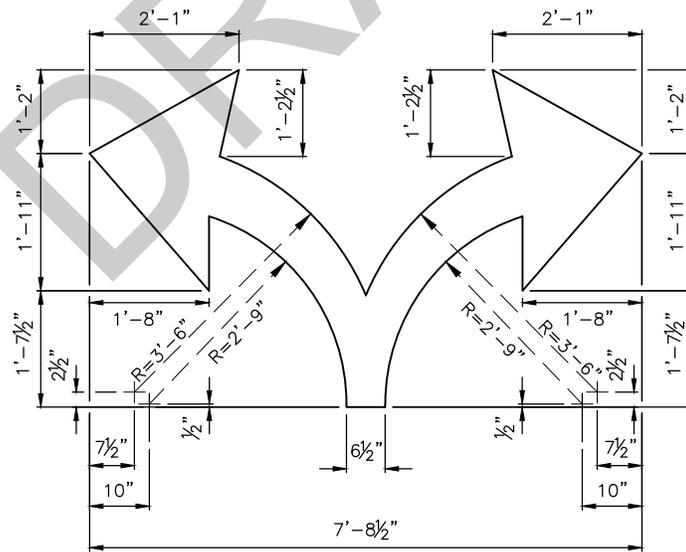
**MANDATORY MOVEMENT
ARROWS**



721A
LEFT & THROUGH ARROWS



721B
RIGHT & THROUGH ARROWS



721C
LEFT & RIGHT ARROWS

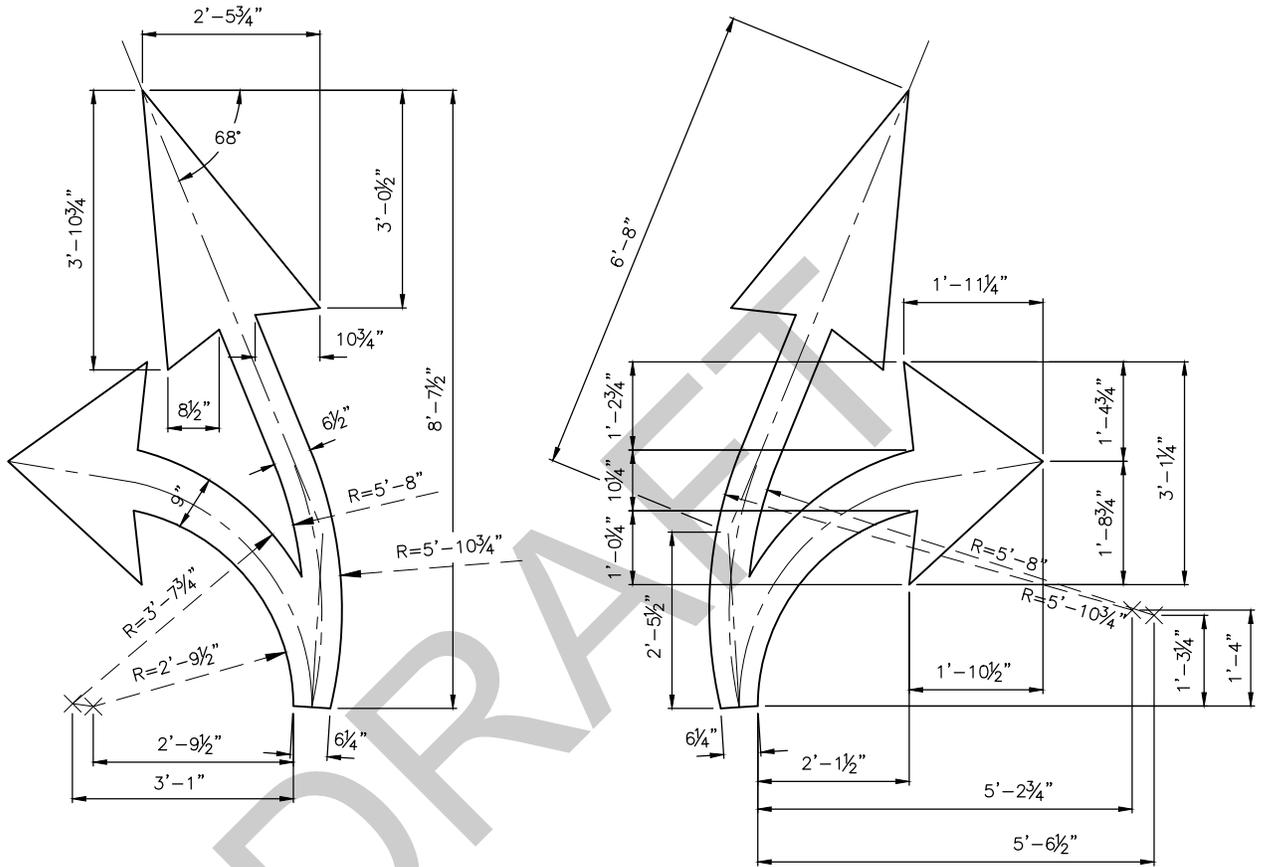
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

OPTIONAL MOVEMENT
ARROWS



722A
LEFT & OBLIQUE LEFT ARROW

722B
RIGHT & OBLIQUE RIGHT ARROW

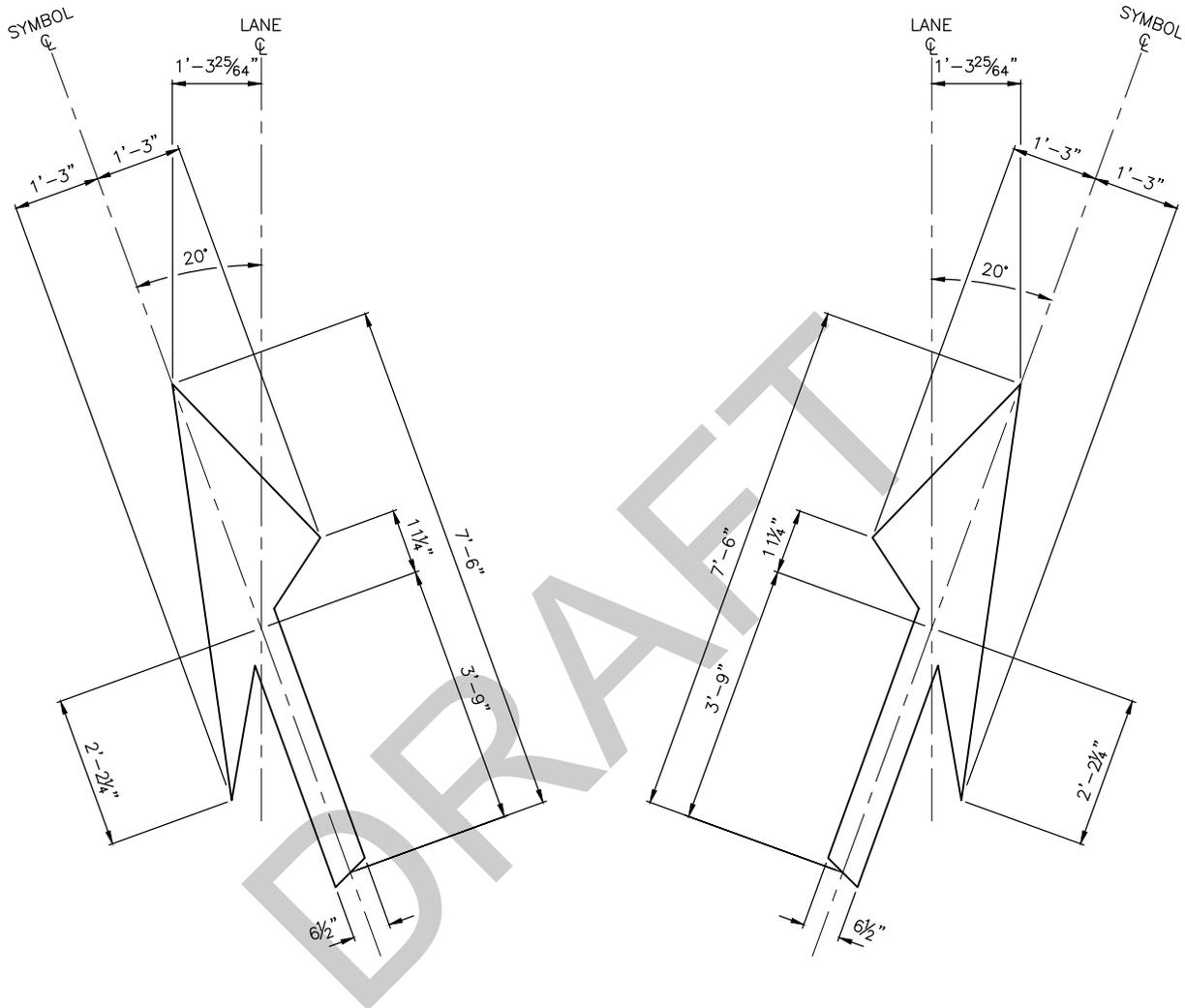
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

OPTIONAL MOVMENT ARROWS
WITH OBLIQUE ARROWS



723A
LEFT MERGE/LANE REDUCTION ARROWS

723B
RIGHT MERGE/LANE REDUCTION ARROWS

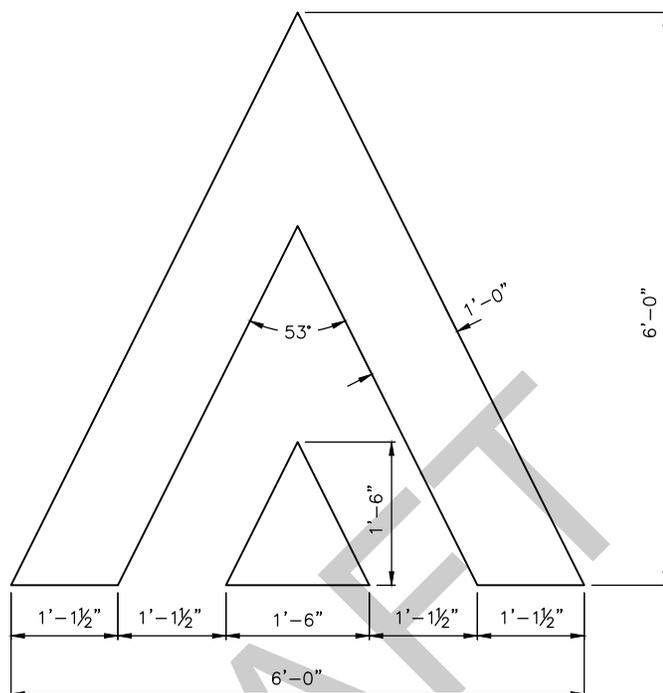
REF STD SPEC SEC 8-22



City of Seattle

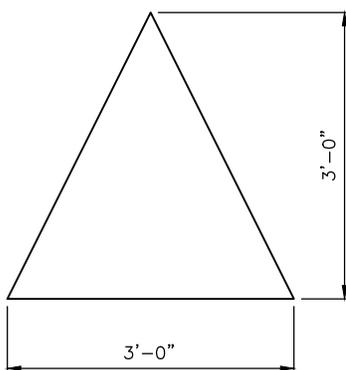
NOT TO SCALE

MERGE ARROWS



728A
CHEVRON WITH TRIANGLE

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



728B
CENTER CUSHION TRIANGLE

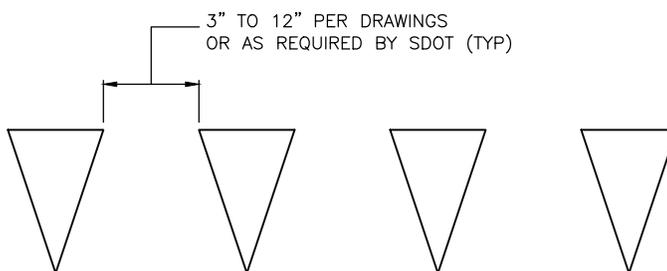
REF STD SPEC SEC 8-22



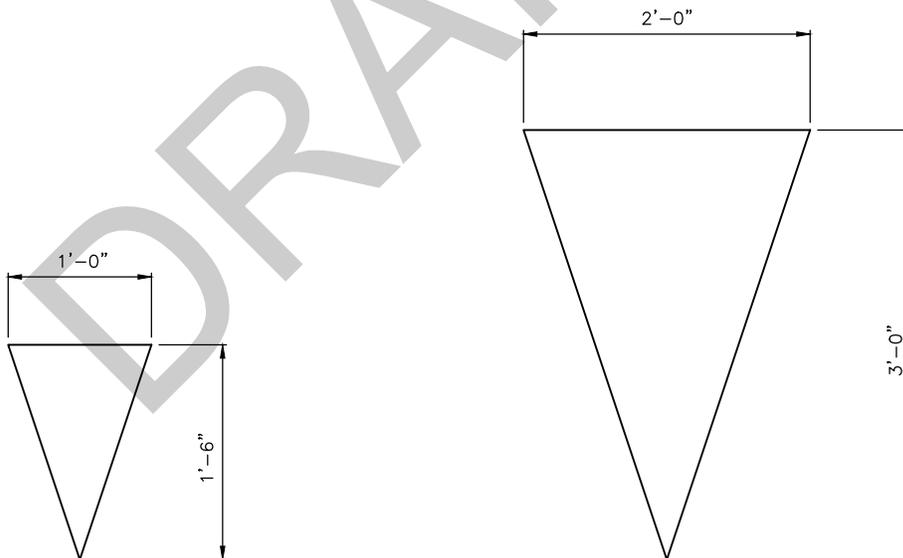
City of Seattle

NOT TO SCALE

SPEED HUMP &
SPEED CUSHION SYMBOL



YIELD LINE LAYOUT



729A
YIELD LINE WITH 18" TALL TRIANGLES

729B
YIELD LINE WITH 36" TALL TRIANGLES

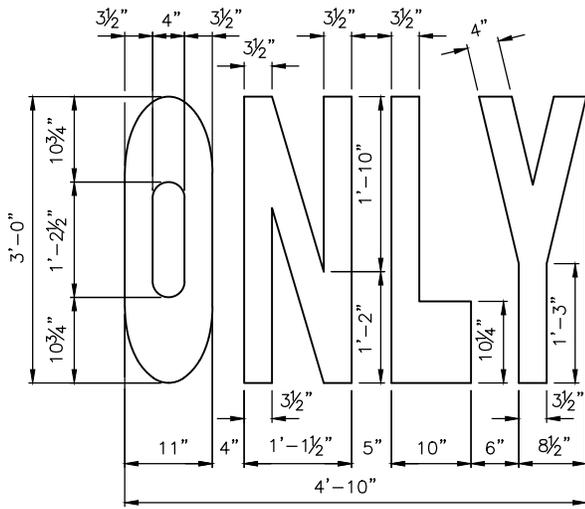
REF STD SPEC SEC 8-22



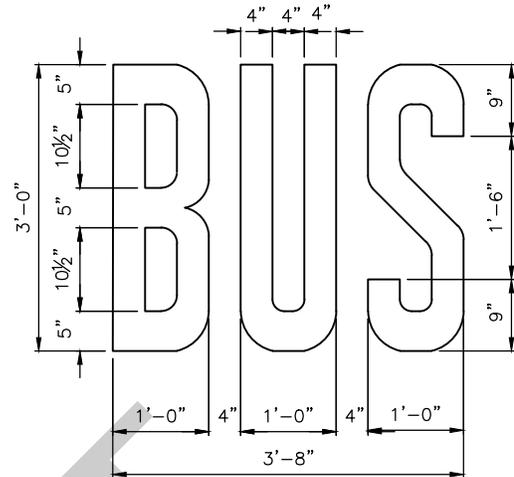
City of Seattle

NOT TO SCALE

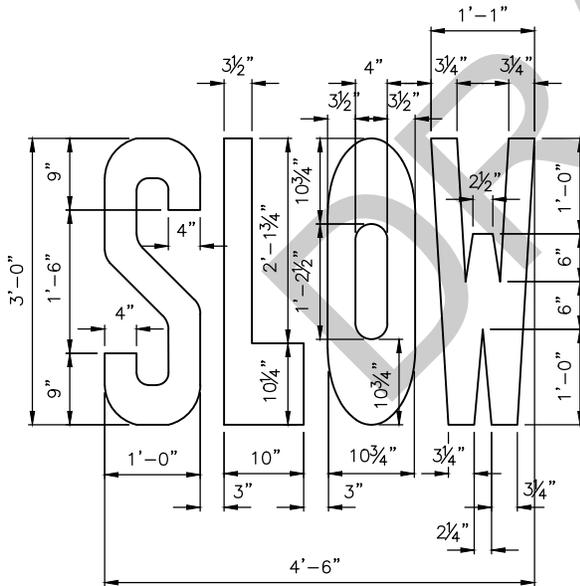
YIELD LINE LAYOUT &
YIELD LINE TRIANGLE SYMBOLS



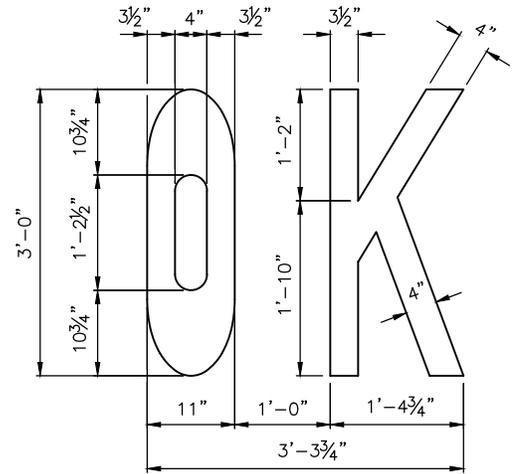
730A
"ONLY" LEGEND



730B
"BUS" LEGEND



730C
"SLOW" LEGEND



730D
"OK" LEGEND

NOTE:
THIS SYMBOL MAY BE RESIZED FOR BIKE FACILITIES

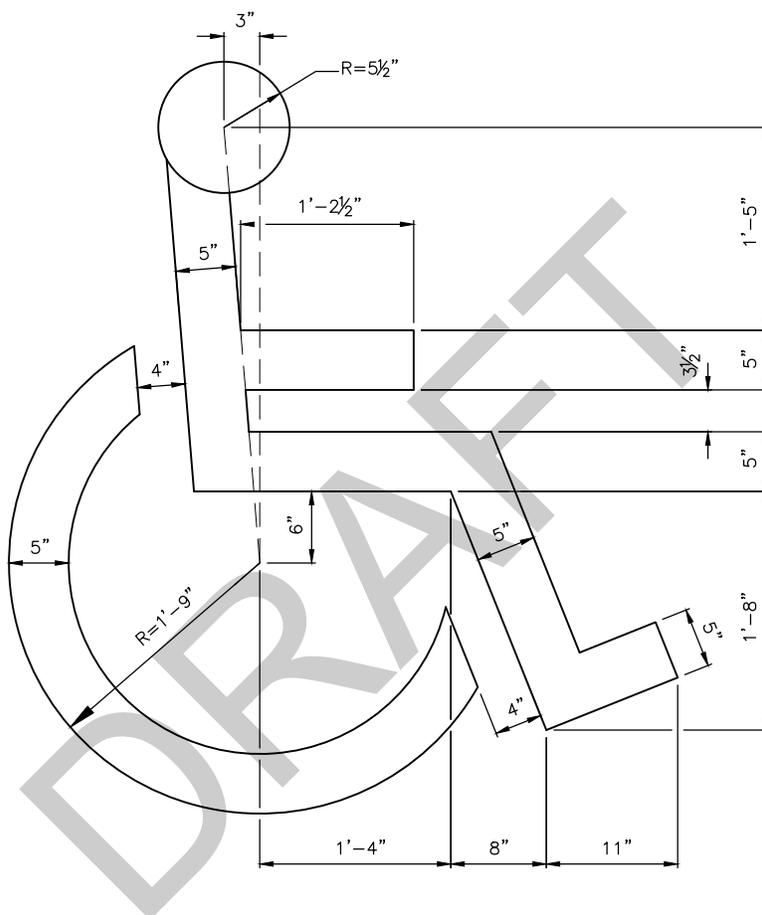
REF STD SPEC SEC 8-22



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NOT TO SCALE

PAVEMENT MARKINGS
LEGENDS



740A
INTERNATIONAL SYMBOL OF ACCESSIBILITY

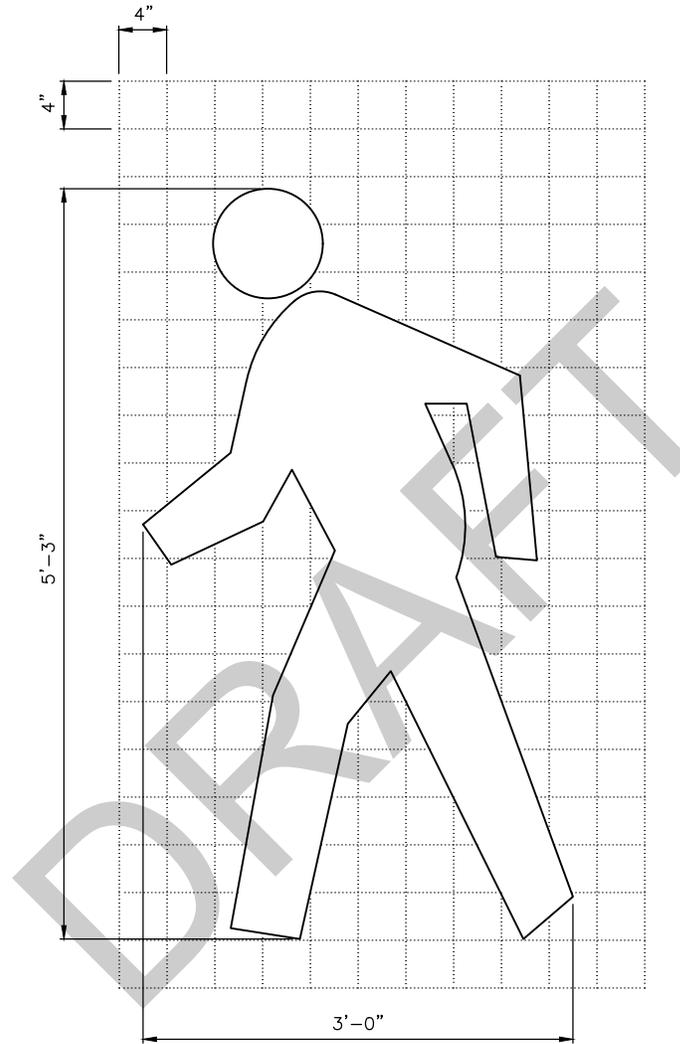
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

INTERNATIONAL SYMBOL
OF ACCESSIBILITY



741A
PEDESTRIAN SYMBOL

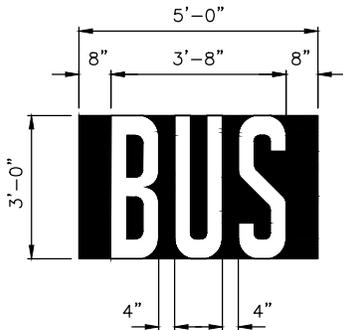
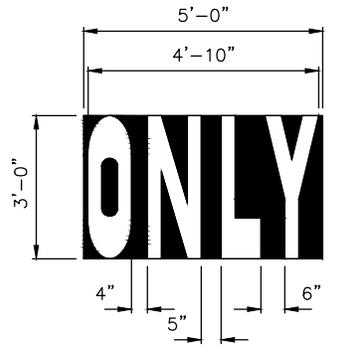
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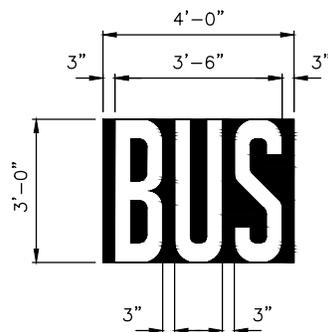
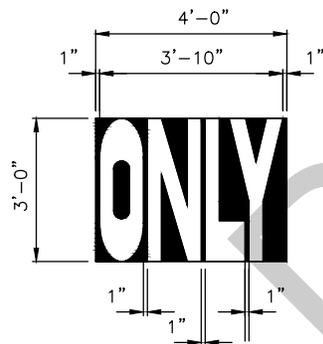
City of Seattle

NOT TO SCALE

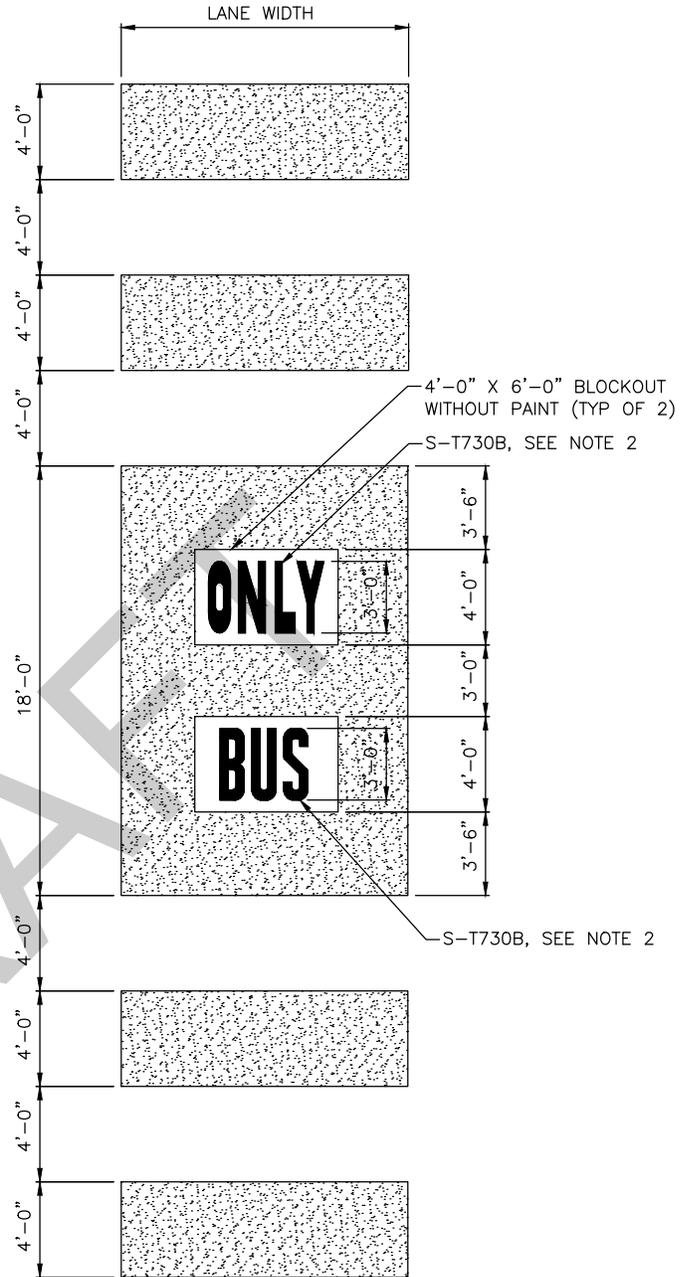
PEDESTRIAN SYMBOL



DETAIL A



DETAIL B



NOTES:

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

750
RED BUS LANE MARKINGS

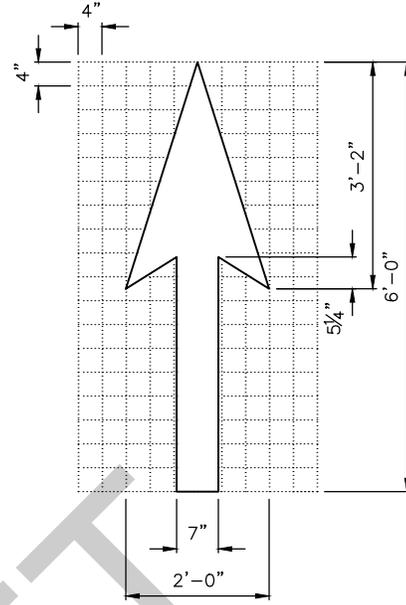
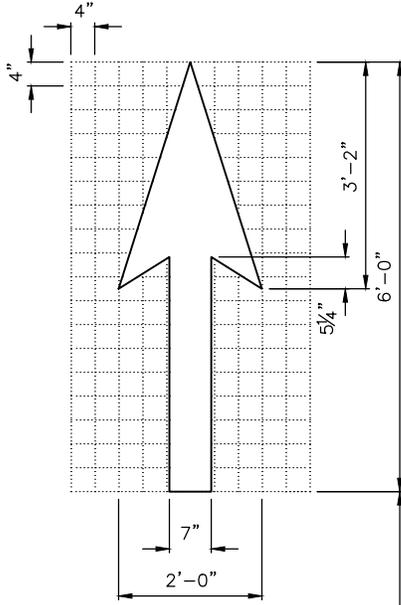
REF STD SPEC SEC 8-22



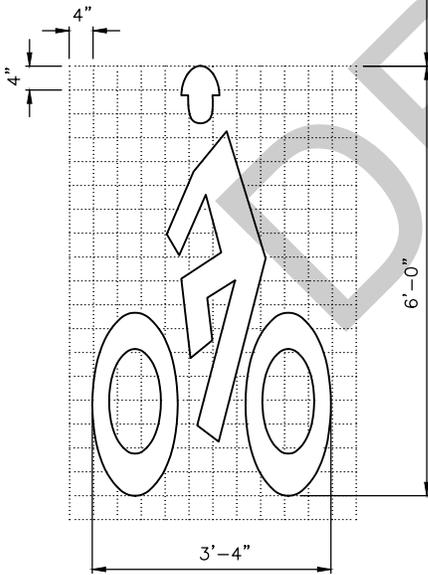
City of Seattle

NOT TO SCALE

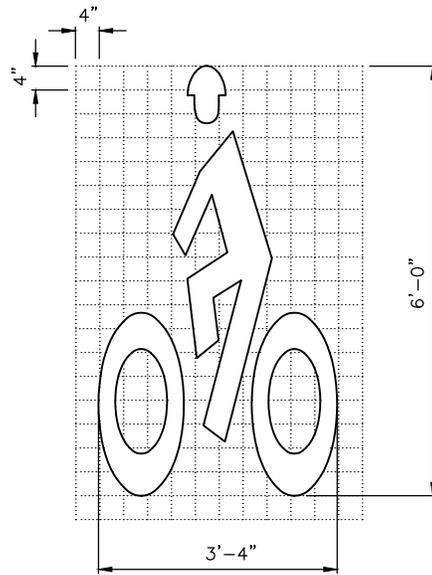
RED BUS LANE MARKINGS



770B
BICYCLE LANE THROUGH ARROW



770A
HELMETED BICYCLIST SYMBOL WITH ARROW



770C
HELMETED BICYCLIST SYMBOL

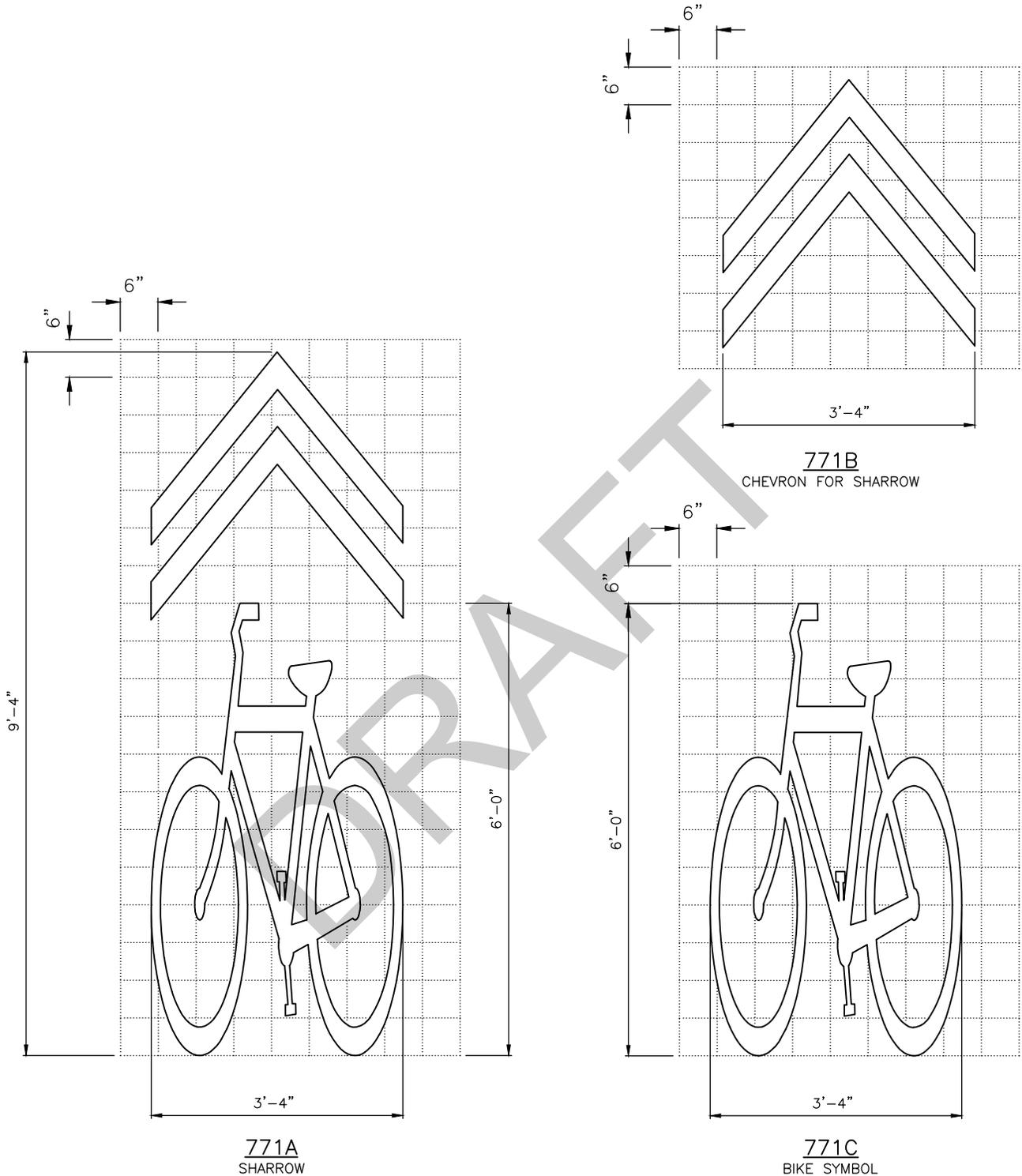
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

HELMETED BICYCLIST SYMBOL
WITH ARROW



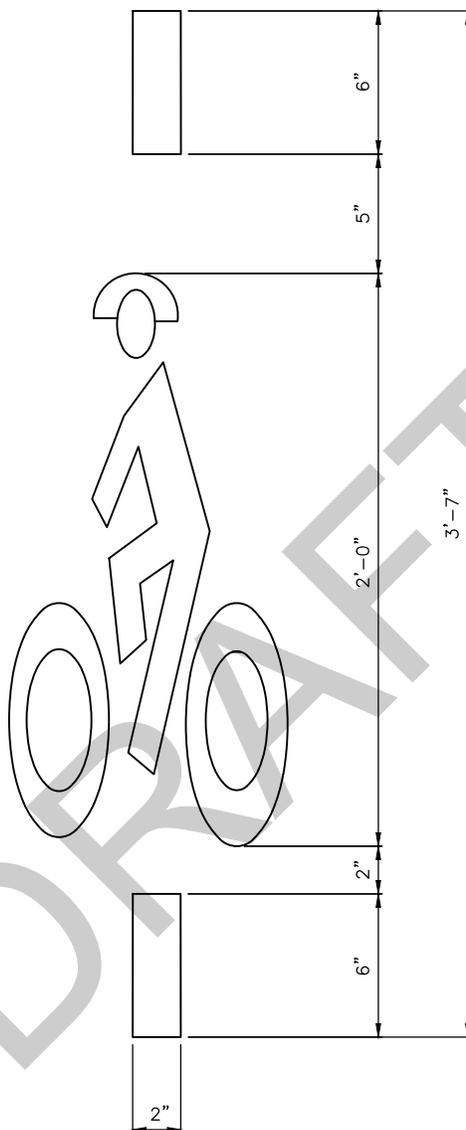
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

SHARROW & BIKE SYMBOLS



772
BICYCLE DETECTOR SYMBOL

NOTE:
SEE STD PLAN NO 530b FOR PLACEMENT

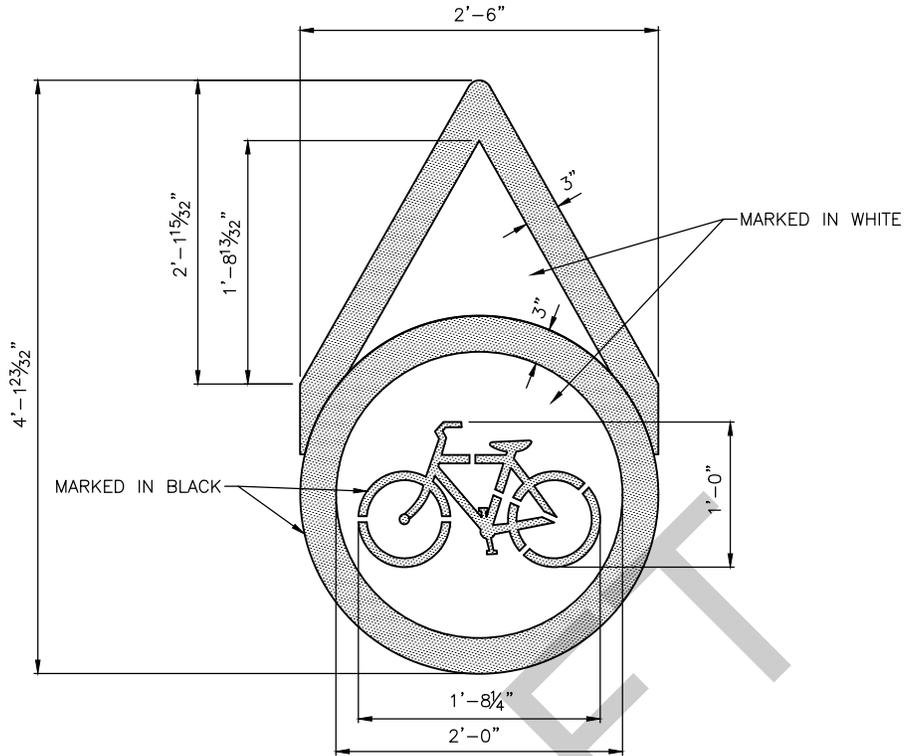
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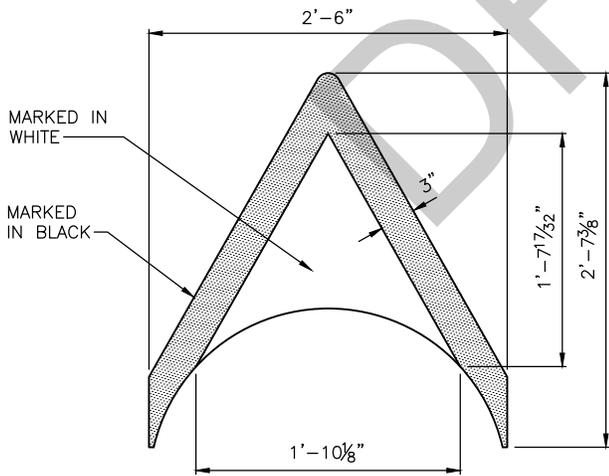
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NOT TO SCALE

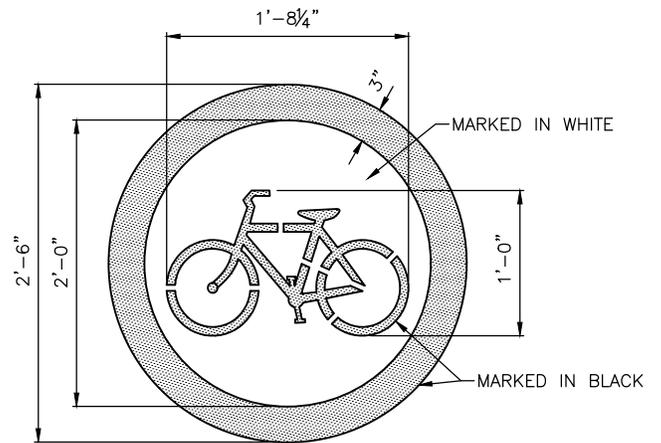
BICYCLE DETECTOR
SYMBOL



773A
BIKE DOT SYMBOL WITH ARROW



773B
BIKE DOT ARROW



773C
BIKE DOT SYMBOL

REF STD SPEC SEC 8-22

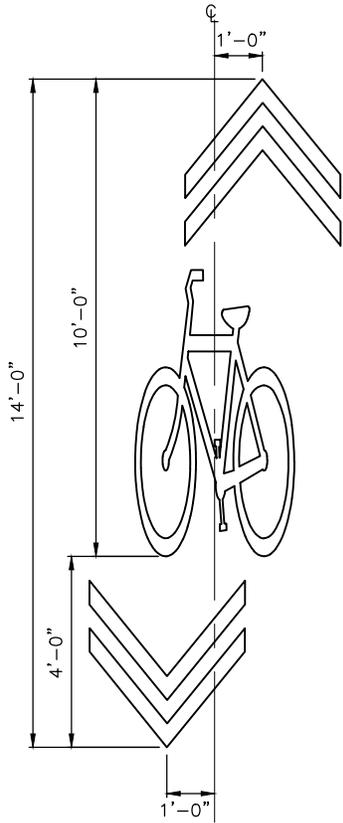


City of Seattle

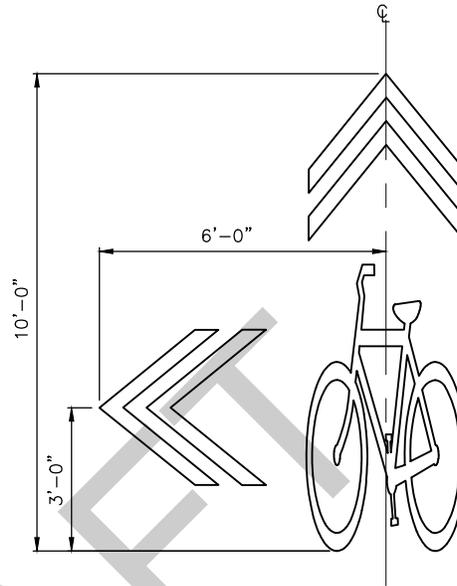
NOT TO SCALE

BIKE DOT SYMBOL
WITH ARROW

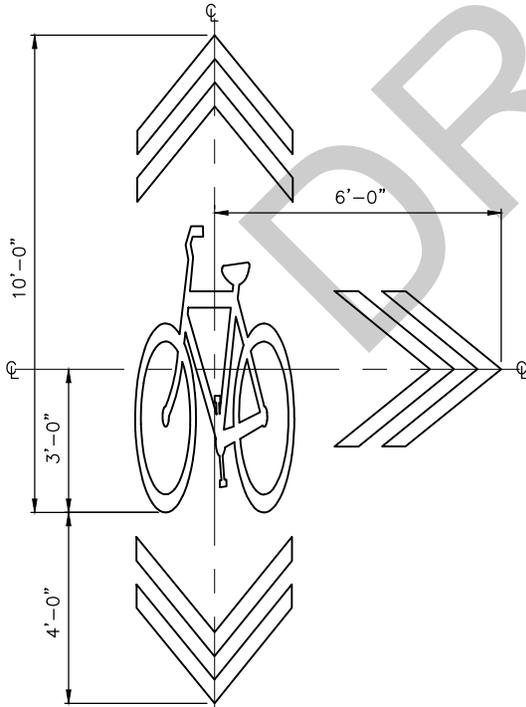
NOTE:
SEE STD PLAN NO 771 FOR SYMBOL DIMENSIONS.



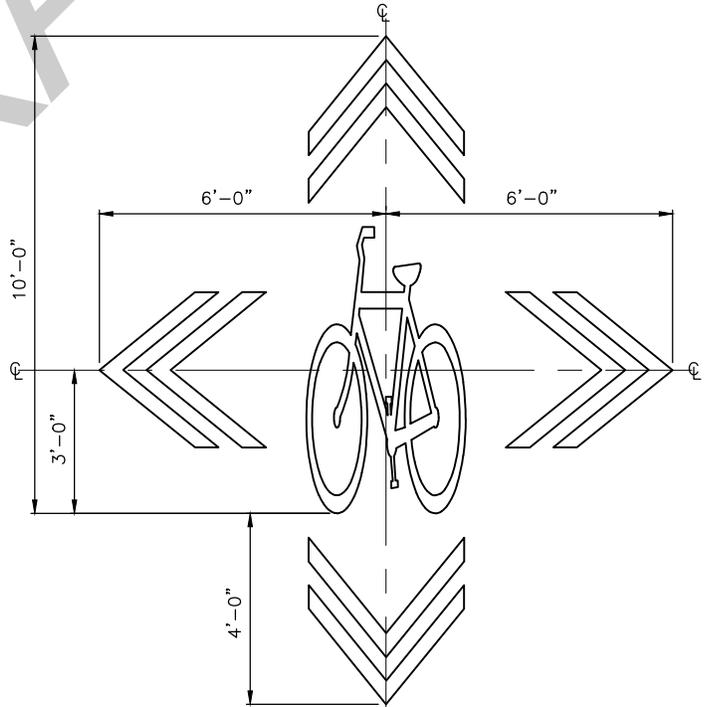
774A
GREENWAY THROUGH SYMBOL



774B
GREENWAY ROUTE TURNS SYMBOL



774C
GREENWAY THREE-ROUTE SYMBOL



774D
GREENWAY FOUR-ROUTE SYMBOL

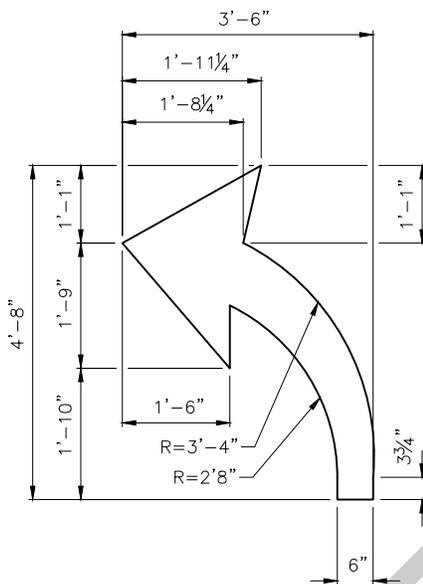
REF STD SPEC SEC 8-22



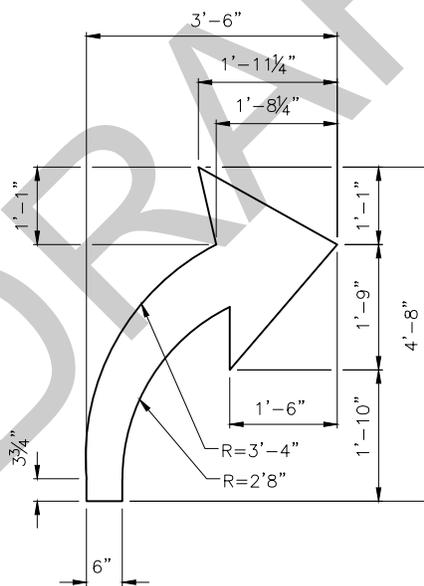
City of Seattle

NOT TO SCALE

GREENWAY MARKINGS



775A
NARROW BIKE LANE
LEFT ARROW



775B
NARROW BIKE LANE
RIGHT ARROW

NOTES:

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

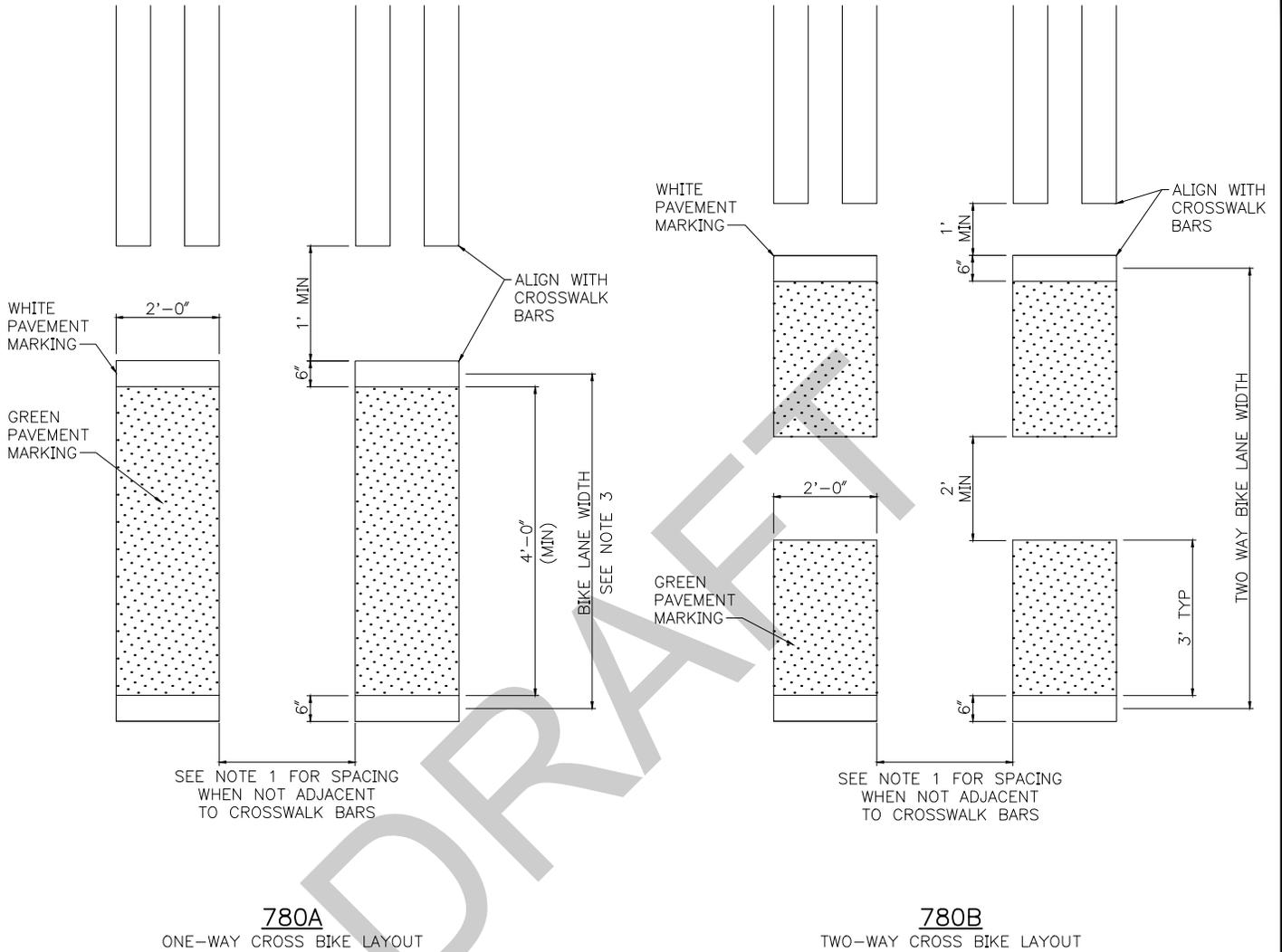
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

**NARROW BIKE LANE
TURN ARROW SYMBOLS**



NOTES:

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

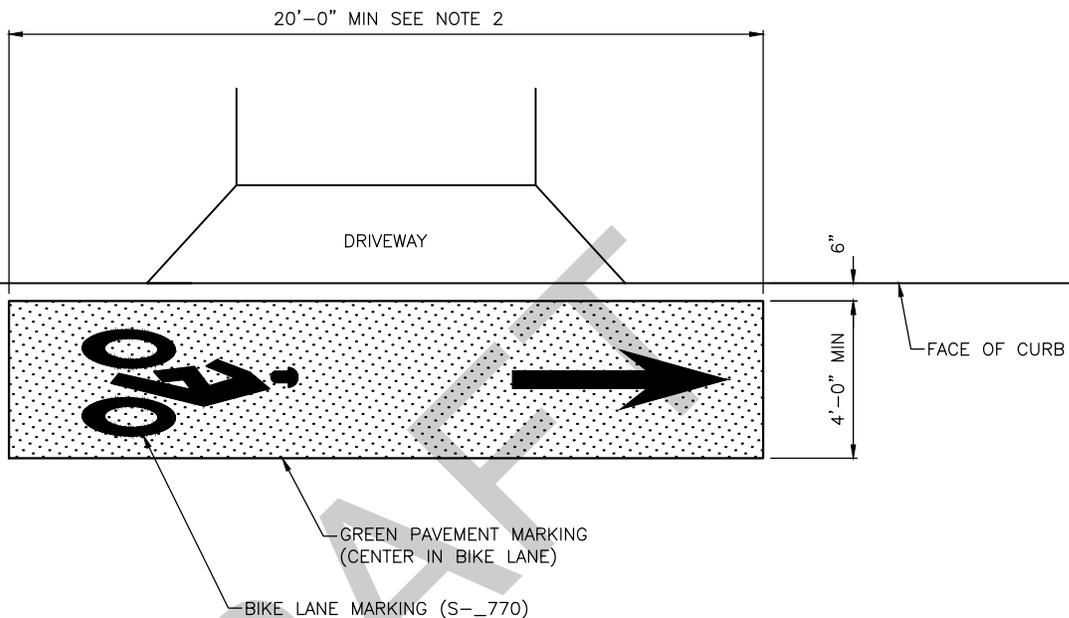
REF STD SPEC SEC 8-22



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NOT TO SCALE

**CROSS BIKE
PAVEMENT MARKING**



DRIVEWAY CROSSING LAYOUT

NOTES:

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

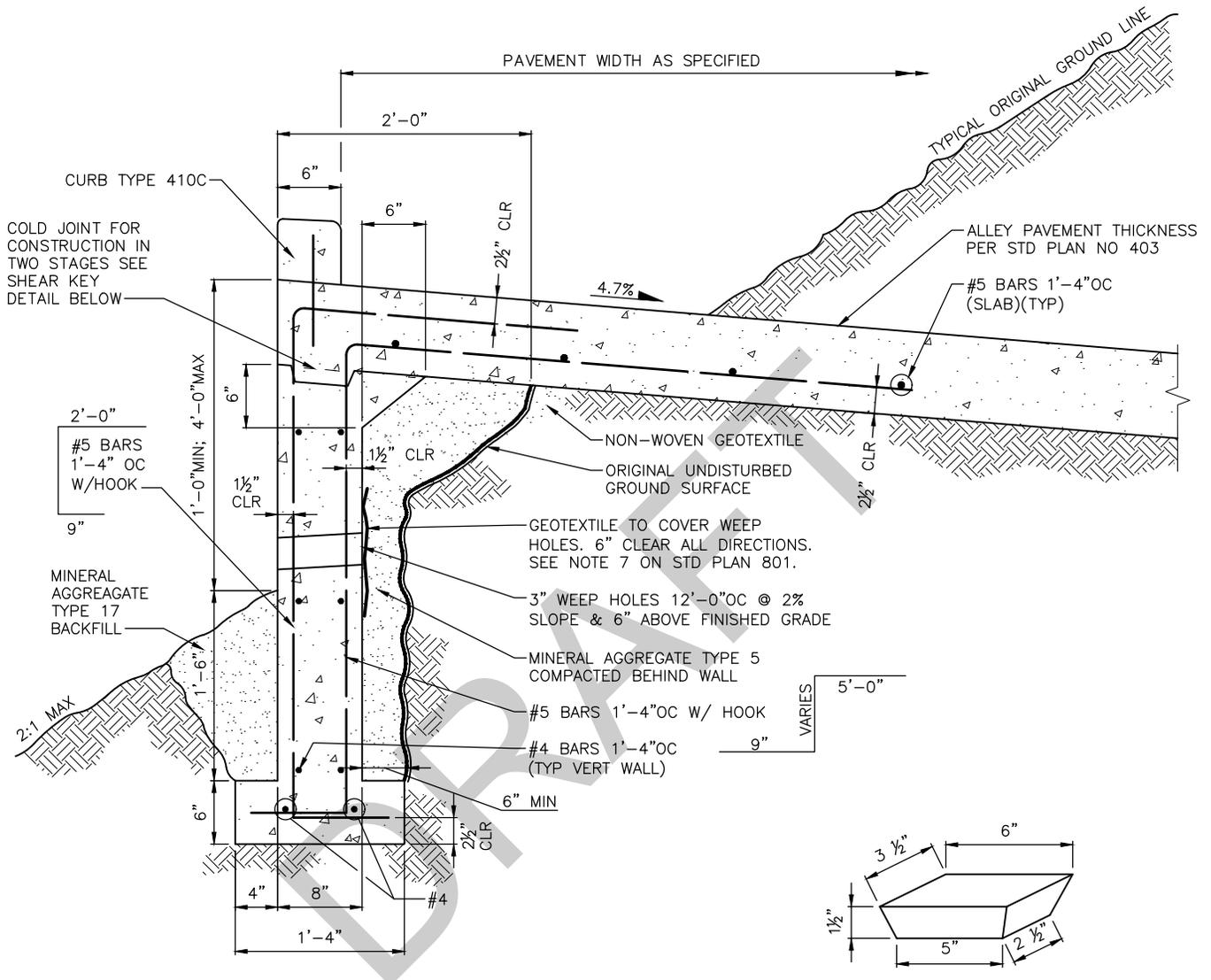
REF STD SPEC SEC 8-22



City of Seattle

NOT TO SCALE

BIKE LANE PAVEMENT MARKING AT DRIVEWAY



NOTES:

1. 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 MUST BE 2 1/2"
3. WHEN CONSTRUCTION OF ALLEY PAVEMENT IS NOT PLACED INTEGRAL WITH SUPPORT WALL, SHEAR KEYS MUST BE INSTALLED 1'-6" ON CENTERS
4. CONCRETE FOR SUPPORT WALL MUST BE CLASS 4000
5. REINFORCING STEEL ASTM A706 (AASHTO M 31 GRADE 60)
6. VEHICULAR & PEDESTRIAN RAILING PER RIGHT OF WAY IMPROVEMENT MANUAL

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

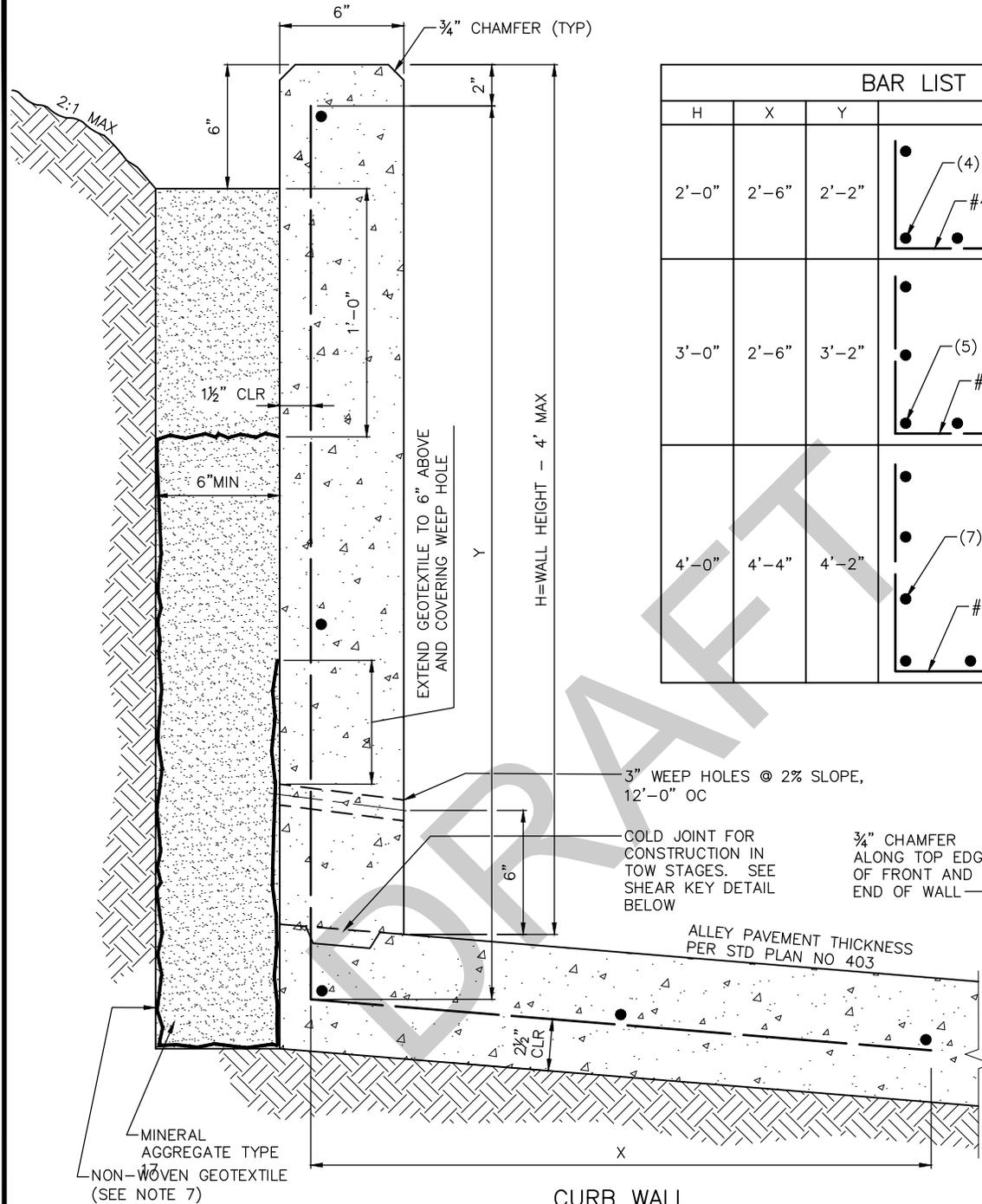
REF STD SPEC SEC 8-17, 8-19



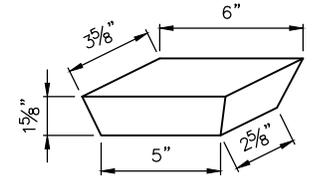
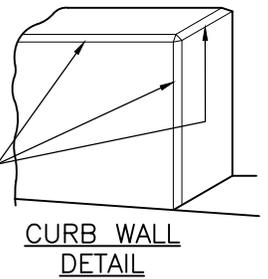
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NOT TO SCALE

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"	



- 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 MUST 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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NOT TO SCALE

CURB WALL