Note to Users:
Amendments to the 2020 Edition Standards, when available, can be found on-line at the following URL:

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PREFACE

The 2020 Edition City of Seattle Standard Plans for Municipal Construction (2020 Standard Plans) have been prepared by Seattle Public Utilities in cooperation with the Department of Finance and Administrative Services, Seattle Department of Transportation, Seattle Parks and Recreation, Seattle City Light, and the Seattle Center. These Plans have been coordinated with the 2020 Edition City of Seattle Standard Specifications for Road, Bridge, and Municipal Construction.

The 2020 Standard Plans apply whenever any public or private construction is performed within the Rights-of-Way of the City of Seattle, including work performed by private parties at their own expense under authority granted by ordinance of the City Council or by permit from the Seattle Department of Transportation’s Street Use section.

For the convenience of our users, the table of contents entries shown in **BOLD TEXT** with a vertical line in the margin (as shown here) indicate where 2020 Editions Standard Plans were revised from the corresponding 2017 Edition Standard Plans. A revision date, located in the upper right corner of each Standard Plan, also indicates when Standard Plans are new or recently revised.

Our sincere thanks and appreciation to all who participated in the effort of producing this 2020 Edition of our Standard Plans, and to the many other City personnel who provided review and submitted comments.

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

**Department of Financial and Administrative Services:** Liz Alzeer, Mark Nakagawara, Pam Honma, and City Contracting Staff.

**Seattle Public Utilities:** Charles Oppelt, Pat Schreibe, Kathy Laughlin, Steve Colony, Rene Malacon, Steve Read, Jason Miller, Mark Fredrickson, and Aziz Alfi.

**Seattle Department of Transportation:** Abner Gallardo, Erich Ellis, Jeff Curtis, Scott Hart, Yuling Teo, Stephen Wilson, Shane Dewald, Amy Yamabe, Ross McFarland, Ben Hansen, Lok Chan, Marvin Meischke, Mike Shaw, Mario Macias, Ainalem Molla, Carter Danne, Brian Forsythe, and James Clark.

**Seattle Parks and Recreation:** Scott Stevens, Rebecca Rufin, R. Frank Robinson, and Narinna Kay

**Seattle City Light:** Minyoung Her, Michael Danielsen, Mike Nordin, Yaochiem Chao, Stan Eng, Jade Mott, Stephen Crume, and Kelly Davidson

**Seattle Center:** Diane Hilmo and Stephen Levengood

The hardcopy version of this document is available at the Department of Finance and Administrative Services Treasury Services cashier counter located in the Seattle Municipal Tower, 700 Fifth Avenue, Suite 4200, Seattle, Washington 98104, 206-684-5214. The 2020 Standard Plans may also be ordered on-line from the website listed below. Additional features on the website include an archive of previous editions of our Standards dating back to 1910, CAD files of our Standard Plans, and proposed amendments to this edition (including pdf redline markups showing what has changed).


Despite considerable efforts to produce a completely error-free document, minor errors will inevitably be included in this 2020 Edition of our Standard Plans. If you discover errors in this document, please alert us by sending an email to the City’s Construction Standards Engineer at City_Standards_Engineer@Seattle.gov.

If conflicts are discovered between this copy of the 2020 Standard Plans and any version of the 2020 Standard Specifications, the current edition of the 2020 Standard Specifications takes precedence.

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

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<td>Bike Lane Pavement Marking at Driveway</td>
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## 800 Structures

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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

**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.
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.

+12.14 HIGHEST TIDE OBSERVED WATER LEVEL BY NOAA 1/27/83

+9.7 ± OLD, OBSOLETE CITY OF SEATTLE DATUM = SEE NOTE 2
+9.02 MEAN HIGHER HIGH WATER = SEE NOTE 1
+8.15 MEAN HIGH WATER = SEE NOTE 1

+4.32 MEAN TIDE LEVEL = SEE NOTE 1
+4.30 MEAN SEA LEVEL = SEE NOTE 1
+3.58 NAVD29, KING COUNTY, METRO DATUMS
(METRO DATUM ALSO EXPRESSED AS +103.98)

+3.49 MEAN LOW WATER
0.00 NAVD88 = CURRENT CITY OF SEATTLE DATUM

-2.34 MEAN LOWER LOW WATER (83-01 EPOCH) = SEE NOTE 1
-3.25 LAKE WASHINGTON MEAN LOWER LOW WATER (USACE PERMITS)

-7.38 LOWEST OBSERVED WATER LEVEL BY NOAA 1/04/1916

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.
<table>
<thead>
<tr>
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**Abbreviations used in the document:**
- 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
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- DCVA: Double Check Valve Assembly
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- EMH: Electrical Maintenance Hole
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- 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
- FABC: 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
- FIP: Female Iron Pipe Thread
- FL: Flow Line
- FLG: Flange
- FLP: Floor
- FLT: Flat Bar
- FM: Force Main
- FO: Fiber Optics
- FO: Fiber Optics
- FS: Far Side
- FT: Feet
- FTB: Fluidized Thermal Backfill
- FTC: Footing
- G: Gas
- G REG: Gas Regulator
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**REFERENCE:**

City of Seattle

NOT TO SCALE

ABBREVIATIONS

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**REFERENCE:** Standard Plans for Municipal Construction, City of Seattle 2020 Edition
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ITEM

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)
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SIGNALIZATION

- Vehicle & Pedestrian Signal Head
  (?=Identification Number)

- Traffic Sign (?=Identification Number)

- Cable Runs
  (?=Run Number per Wiring Schedule)

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

- Construction Item
  (?=Identification Number per Signalization Plan)

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

CHANNELIZATION & SIGNAGE

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

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

- Relocate Signage
  (?=Signage Identified on Plan)
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**City of Seattle**  NOT TO SCALE  STANDARD SYMBOLS PAVING

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<tr>
<td>Maintenance Holes</td>
<td><img src="image1" alt="Diagram" /></td>
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<tr>
<td>Inlet Type 250A</td>
<td></td>
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<tr>
<td>Inlet Type 250B</td>
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<tr>
<td>Inlet Type 252</td>
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<td>Inlet Type 268</td>
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<tr>
<td>Catch Basin round inlet top</td>
<td><img src="image3" alt="Diagram" /></td>
<td><img src="image4" alt="Diagram" /></td>
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<tr>
<td>Private CB &amp; Inlet</td>
<td><img src="image5" alt="Diagram" /></td>
<td><img src="image6" alt="Diagram" /></td>
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<tr>
<td>Catch Basin Type 151 (pre 1985)</td>
<td><img src="image7" alt="Diagram" /></td>
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<tr>
<td>Catch Basin Type 240A</td>
<td><img src="image9" alt="Diagram" /></td>
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<tr>
<td>Catch Basin Type 240B</td>
<td><img src="image11" alt="Diagram" /></td>
<td><img src="image12" alt="Diagram" /></td>
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<tr>
<td>Catch Basin Type 240C</td>
<td><img src="image13" alt="Diagram" /></td>
<td><img src="image14" alt="Diagram" /></td>
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<tr>
<td>Catch Basin Type 240D</td>
<td><img src="image15" alt="Diagram" /></td>
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<tr>
<td>Catch Basin Type 241</td>
<td><img src="image17" alt="Diagram" /></td>
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<tr>
<td>Catch Basin Type 242A</td>
<td><img src="image19" alt="Diagram" /></td>
<td><img src="image20" alt="Diagram" /></td>
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<tr>
<td>Catch Basin Type 242B</td>
<td><img src="image21" alt="Diagram" /></td>
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<tr>
<td>Junction Box Type 277A</td>
<td><img src="image23" alt="Diagram" /></td>
<td><img src="image24" alt="Diagram" /></td>
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<tr>
<td>Junction Box Type 277B</td>
<td><img src="image25" alt="Diagram" /></td>
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<tr>
<td>Area Drain</td>
<td><img src="image27" alt="Diagram" /></td>
<td><img src="image28" alt="Diagram" /></td>
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<td>ITEM</td>
<td>EXISTING</td>
<td>PROPOSED</td>
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<tr>
<td>Sand Box</td>
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<td>Clean Out</td>
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<tr>
<td>Concrete Culvert</td>
<td>12”CC</td>
<td>12”CC</td>
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<tr>
<td>Pipe Sewer Combined &lt;1'-0&quot;Dia</td>
<td>8”PS</td>
<td>8”PS</td>
</tr>
<tr>
<td>Pipe Sewer Combined ≥1'-0&quot;Dia</td>
<td>24”PS</td>
<td>24”PS</td>
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<tr>
<td>Side Sewer Combined</td>
<td>6”SS</td>
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<tr>
<td>Pipe Sewer Sanitary &lt;1'-0&quot;Dia</td>
<td>8”PSS</td>
<td>8”PSS</td>
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<tr>
<td>Pipe Sewer Sanitary ≥1'-0&quot;Dia</td>
<td>24”PSS</td>
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<td>Side Sewer Sanitary</td>
<td>6”SSS</td>
<td>6”SSS</td>
</tr>
<tr>
<td>Pipe Storm Drain &lt;1'-0&quot;Dia</td>
<td>8”PSD</td>
<td>8”PSD</td>
</tr>
<tr>
<td>Pipe Storm Drain ≥1'-0&quot;Dia</td>
<td>24”PSD</td>
<td>24”PSD</td>
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<tr>
<td>ITEM</td>
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<td>Service Drain</td>
<td>8”SD</td>
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<td>Inlet &amp; CB Connection</td>
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<td>8”</td>
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<td>Open Ended Pipe</td>
<td>8”PSD</td>
<td>8”PSD</td>
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<tr>
<td>Bench Mark (found or set)</td>
<td><img src="image1" alt="image" /></td>
<td><img src="image2" alt="image" /></td>
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<tr>
<td>Brass Plug/Cap (found or set)</td>
<td><img src="image3" alt="image" /></td>
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<tr>
<td>Hub/Tack (found or set)</td>
<td><img src="image5" alt="image" /></td>
<td><img src="image6" alt="image" /></td>
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<tr>
<td>Monument in Case (found or set)</td>
<td><img src="image7" alt="image" /></td>
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<tr>
<td>Conc. Mon. (found or set)</td>
<td><img src="image9" alt="image" /></td>
<td><img src="image10" alt="image" /></td>
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<tr>
<td>Section Corner (found or set)</td>
<td><img src="image11" alt="image" /></td>
<td><img src="image12" alt="image" /></td>
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<tr>
<td>Quarter Corner (found or set)</td>
<td><img src="image13" alt="image" /></td>
<td><img src="image14" alt="image" /></td>
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<tr>
<td>Section Corner (calculated)</td>
<td><img src="image15" alt="image" /></td>
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<tr>
<td>Quarter Corner (calculated)</td>
<td><img src="image17" alt="image" /></td>
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<tr>
<td>Rebar/Cap, Pipe/Cap Rebar, Iron Pipe (found or set)</td>
<td><img src="image19" alt="image" /></td>
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<tr>
<td>Tack/Lead, Tack PK Nail, Spike (found or set)</td>
<td><img src="image21" alt="image" /></td>
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<tr>
<td>Brass Plug/Cap (not found)</td>
<td><img src="image25" alt="image" /></td>
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<td>MiC. (not found)</td>
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<td>Conc. Mon. (not found)</td>
<td><img src="image29" alt="image" /></td>
<td><img src="image30" alt="image" /></td>
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<tr>
<td>Rebar/Cap, Pipe/Cap Rebar, Iron Pipe (not found)</td>
<td><img src="image31" alt="image" /></td>
<td><img src="image32" alt="image" /></td>
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<td>Tack/Lead, Tack PK Nail, Spike (not found)</td>
<td><img src="image33" alt="image" /></td>
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<td>Survey Shot Point</td>
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<td>Center Line</td>
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<td>Temp Const Easement Line</td>
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<td>Vacated Street or Alley</td>
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<td>State Highway Limited Access Line</td>
<td>STATE LAL</td>
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<td>Chain Link Fence</td>
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<td>Riprap</td>
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<td>Trees</td>
<td></td>
<td>PER DRAWINGS</td>
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</tbody>
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**REF STD SPEC SEC**

**City of Seattle** | **NOT TO SCALE** | **STANDARD SYMBOLS**

**TOPOGRAPHIC & MISC**
ITEM | EXISTING | PROPOSED
--- | --- | ---
Shrub or Bush |  |  
Ground, Grade Line |  |  
Grade (arrow downhill) | 5.6% | 5.6% 
Rail Road Tracks |  |  
City Limits | CITY OF SEATTLE | KING COUNTY | SLOPE LINE 
Slope Line |  |  
Contours | 246 | 246 
Slope Angle Horiz:Vert |  |  
Vertical Curve | V | C | V | C 
Depression |  |  
Stump |  |  
Top of Cut Toe of Fill |  |  
Dimension Line |  |  
Match Line |  |  
Test Hole & Number (test boring) | (TH) TH-7 | (TH) TH-7 
Bench Mark | (BM) | (BM)
<table>
<thead>
<tr>
<th>ITEM</th>
<th>EXISTING</th>
<th>PROPOSED</th>
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<tbody>
<tr>
<td>Monitor Well</td>
<td></td>
<td>MW</td>
</tr>
<tr>
<td>Street Name Sign</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Traffic Sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US Mail Box</td>
<td>US</td>
<td></td>
</tr>
<tr>
<td>Private Mail Box</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bollard</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>Posts</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Parking Meter &amp; Pay Station</td>
<td>1</td>
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<tr>
<td>Rectangular Casting</td>
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<td>[ ]</td>
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<tr>
<td>Circular Casting</td>
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<td>[ ]</td>
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<tr>
<td>Column</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Jersey Barrier &amp; Eco Block</td>
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<td></td>
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<tr>
<td>Tree Pit</td>
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<td>North Arrow horizontal</td>
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<td>North Arrow vertical</td>
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REF STD SPEC SEC

City of Seattle | NOT TO SCALE | STANDARD SYMBOLS
TOPOGRAPHIC & MISC

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<th>ITEM</th>
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<td>Telephone Conduit</td>
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<td>Telephone Duct</td>
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<tr>
<td>Telephone Enclosure</td>
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<td>Telephone Maintenance Hole</td>
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<td>Telephone Pole</td>
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<td>Telephone Handhole</td>
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<tr>
<td>Television Cable (direct Burial)</td>
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<td>Television Handhole</td>
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<td>Telegraph Maintenance Hole</td>
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<td>Steam Vault</td>
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<td>Gas Main &lt;1'-0&quot;Dia</td>
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<td>Gas Main ≥1'-0&quot;Dia</td>
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<td>Gas Valve</td>
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<td>Gas Meter</td>
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<td>Gas Regulator</td>
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<td>Petroleum or Oil</td>
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<td>Abandon(ed)</td>
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REF STD SPEC SEC

City of Seattle | NOT TO SCALE | STANDARD SYMBOLS
PRIVATE UTILITIES

ITEM

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

EXISTING

PROPOSED

8”W
8”
24”W
36”W
8”–11½”HBorVB
8”–22½”HBorVB
8”–45°HBorVB
8”–90°HBorVB
8”X8”X6”X6”CR
8”X8”X6”T
or

REF STD SPEC SEC

City of Seattle
NOT TO SCALE
STANDARD SYMBOLS
WATER

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<td>6&quot; &amp; Larger Domestic Service</td>
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<tr>
<td>3&quot; &amp; 4&quot; Domestic Service</td>
<td>![DS]</td>
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<td>4&quot; &amp; Larger Fire Service</td>
<td>![DC]</td>
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<td>2&quot; &amp; Smaller Water Service</td>
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<td>Valve Box</td>
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<td>![4&quot;GV W/VBOX]</td>
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<td>Gate Valve</td>
<td>![x]</td>
<td>![8&quot;GV W/CH]</td>
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<tr>
<td>Gate Valve w/ Chamber</td>
<td>![x]</td>
<td>![16&quot;GV W/VCH]</td>
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<td>Gate Valve w/ Vault Chamber</td>
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<td>Reducer</td>
<td>![8&quot;W]</td>
<td>![8&quot;X4&quot;RED]</td>
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<td>Air Valve</td>
<td>![o]</td>
<td>![1½&quot;BO]</td>
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<td>Blowoff</td>
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<td>Fire Standpipe</td>
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<td>ITEM</td>
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<td>Water Test Station</td>
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<td>Sprinkler Head</td>
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<td>Irrigation Valve</td>
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</tr>
<tr>
<td>Concrete Blocking</td>
<td>![Existing Icon]</td>
<td>![Proposed Icon]</td>
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</table>
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.
NOTES:
1. MONUMENT CASE TO BE INSTALLED BY CONTRACTOR.
2. BASE TO BE PLACED ON A WELL COMPACTED FOUNDATION.
3. FRAME AND COVER MUST BE TESTED FOR ACCURACY OF FIT AND MUST BE
   MARKED IN SETS FOR DELIVERY.
4. FRAME AND COVER MUST BE CAST IRON AND HAVE COATING APPLIED TO ALL
   FACES.
5. CASTINGS IN RIGID PAVEMENT MUST HAVE REINFORCING STEEL IN THE
   PAVEMENT.
6. USE LOCKING COVER IN R/W. DRILL AND TAP, APPLY ANTI-SEIZE COATING
   AND BOLT DOWN WITH 3/8" S.S. ALLEN-HEAD BOLTS - 2 PLACES.

RISER RING DIMENSIONS

<table>
<thead>
<tr>
<th>A (SIZE)</th>
<th>1 1/8&quot;</th>
<th>2&quot;</th>
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RISER RING SECTION

CASE SECTION

COVER SECTION

REF STD SPEC SEC 8-13

City of Seattle
NOT TO SCALE
MONUMENT FRAME & COVER

NOTES:
1. FRAME AND COVER MUST BE TESTED FOR ACCURACY OF
   FIT AND MUST BE MARKED IN SETS FOR DELIVERY
2. FRAME AND COVER SHALL BE CAST IRON
3. "F"=FINISH
4. CASTINGS IN RIGID PAVEMENT MUST HAVE REINFORCING
   STEEL IN THE PAVEMENT.
MONUMENT FRAME & COVER. SEE STD PLANS NO 020a & 020b

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

ALUMINUM CAP, SEE CAP DETAILS A & B

ALUMINUM RIVET (TYP)

MINERAL AGGREGATE TYPE 1, TYPE 1G IS NOT ACCEPTABLE

BERNTSEN A130 OR SURV-KAP
FRM-3/8-33D ALUMINUM STANDARD MONUMENT OR APPROVED EQUIVALENT

ALUMINUM RIVET (TYP)

MAGNET IN ALUMINUM BASE

SECTION A—A FROM STD PLAN NO 020a

CITY OF SEATTLE
SURVEY MONUMENT

P.L.S. LICENSE NO

CAP DETAIL A
CAP LAYOUT FOR COS CAPITAL PROJECTS

CAP DETAIL B
CAP LAYOUT FOR PRIVATE DEVELOPMENT PROJECTS

REF STD SPEC SEC 8-13
NOTES:
1. STABILIZED ACCESS MUST BE USED IN ALL AREAS OF THE SITE WITH VEHICLE TRAFFIC AND PARKING, INCLUDING PLANTING STRIPS.
2. SEE SECTION 5-37.2 (TABLE 3) FOR GEOTEXTILE REQUIREMENTS. GEOTEXTILE MODIFICATIONS BASED ON SPECIFIC PROJECT SITE CONDITIONS MAY BE APPROVED BY THE ENGINEER.
3. STABILIZED CONSTRUCTION ENTRANCES ON SEATTLE PARKS & RECREATION PROPERTY ARE LIMITED TO A MAXIMUM WIDTH OF 10 FEET UNLESS DIRECTED OTHERWISE.

REF STD SPEC SEC 8-01

City of Seattle

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 (18") SLACK.
6. ROOT BARRIER REQUIRED ALONG EDGE OF ROADWAY, CURB, DRIVEWAY, TRAIL, SIDEWALK, OR OTHER STRUCTURES WHERE FOOTBALL IS WITHIN TWO FEET; PLACE VERTICAL ROOT BARRIER AS SHOWN IN STANDARD PLANS NO 424A OR 424B, INSTALL ROOT BARRIERS FOR NEWLY PLANTED TREES ONLY.

STAKE TREE WITH (2) TREATED 2" LOOPPOLE PINE TWEELED TREE STAKES (6'-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 (TAPEERED AT TRUNK)

MULCH TREE PIT MIN 2'-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 OP PAVEMENT/SIDEWALK/ETC. PLACE PRIOR TO PLACEMENT
OF NEW SIDEWALK OR CURB TO PREVENT UNDERMINING.

SEE STD SPEC SECTION 8-02.005, AS APPROVED BY ENGINEER.

REMOVE ALL WIRE, STRINGS, AND OTHER NON-BURLAP MATERIAL; AND REMOVE BURLAP FROM TOP 1/3 OF ROOTBALL MINIMUM, REMOVE ENTIRELY WHEN DIRECTED BY THE ENGINEER.

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

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

2" TO 2-1/2" CAUVER 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 = FOOTBALL DEPTH (MEASURE BEFORE DIGGING TO AVOID OVEREXCAVATION).

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

UNDISTURBED SUBGRADE (PROVIDES FIRM BASE SO THAT FOOTBALL WILL NOT SINK.)
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. Chain lock 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 all wire, strings and other non-burlap material; and remove burlap from top 1/2 of rootball.

REF STD SPEC SEC 8-02

City of Seattle

NOT TO SCALE

TREE & SHRUB PLANTING ON SLOPES

TREE PLANTING ELEVATION VIEW

TREE PLANTING PLAN VIEW

18" ROOT BARRIER TYP

SIDEWALK EDGE

PLANTING STRIP

FACE OF CURB

5'-0" MIN MULCHED TREE PIT TYP

6" DEEP SCARIFIED SUBGRADE

TREE SPACING PER PLAN & FILED APPROVAL BY THE ENGINEER

PLANTING STRIP GRASS OR PLANTED/MULCHED

REF STD SPEC SEC 8-02

PLASTIC LOCK-TIE OR RUBBER HOSE TREE TIE, SET LOOSE TO ALLOW FOR DIAMETER GROWTH

2" x 6"-0" LENGTH LODGEPOLE PINE TREE STAKE

MIN 2"-3" OF MULCH

3"-4" HIGH WATERING RING

FINISH GRADE

REMOVE ALL WIRE, STRINGS, AND OTHER NON-BURLAP MATERIAL AND REMOVE BURLAP FROM TOP 1/3 OF ROOTBALL

SEE STD SPEC SECTION 8-02.3(6)A.

UNDISTURBED SUBGRADE (PROVIDES Firm Base So That Rootball Will Not Sink)

6'-0" MIN OR 2 TIMES ROOTBALL

6'-0" DIA. MULCH AREA CLEAR OF GRASS, WEEDS, ETC. TO REDUCE COMPETITION DURING ESTABLISHMENT

SET ROOT CROWN AT OR 1" ABOVE FINISH GRADE

MIN 1/3 HEIGHT

(min) AREA

SEE STD PLAN NO 1006 FOR PLANTING ON SLOPES

REF STD SPEC SEC 8-02
B&B or containerized shrub (typ)
Set all plants at nursery level (typ)
Min 2"-3" of mulch
Shrub planting pit preparation = rootball depth & width plus 1'-0"
additional all sides
Finish grade

See Std Plan No 142 - soil amendment & depth
Remove all wire, strings, and other non-burlap material and remove burlap from top ½ of rootball
See Std Spec Sec 8-02.3(6)c.
Undisturbed subgrade (provides firm base so that rootball will not sink)

Rootball + 1'-0" min all sides
TYPICAL GROUND COVER
PLANTED AT NURSERY LEVEL

MIN 2" MULCH
FINISH GRADE

MIN 6" DEPTH

SPACING VARI RES
SEE LANDSCAPE DRAWING

SCARIFIED SUBGRADE

SEE STD PLAN NO 142 -
SOIL AMENDMENT & DEPTH

REF STD SPEC SEC 8-02

City of Seattle
NOT TO SCALE
GROUND COVER PLANTING

CONTINUOUS OUTER ROW AT X FEET ON CENTER. 2/3X FEET SETBACK FROM EDGE OF PLANTING BED WITH TRIANGULAR SPACING INSIDE BED (TYP)

AREA
FOR SPACING
ADJUSTMENT

2/3X OR 8" MIN. WHICHEVER IS GREATER (TYP)

X = RECOMMENDED SPACING (SEE LANDSCAPE DETAIL ON DRAWING)

☑️ = ACTUAL PLANT LOCATIONS

REF STD SPEC SEC 8-02
ABOVE GROUND HOSE BIB

1 1/4" LOOSE KEY STRAIGHT NOSED HOSE BIB W/ VACUUM BREAKER

(2) STAINLESS STEEL CLAMPS AROUND REBAR & RISER

1/2" GALV STEEL RISER

PVC TRIPLE SWING JOINTS

PVC PIPE TO GATE VALVE & METER

BELOW GROUND HOSE BIB

1 1/4" GALV THREAD U-BOLT W/ NUTS & WASHERS (TYP)

BRACE DETAIL - PLAN VIEW

FINISH GRADE

10" (MIN) VALVE BOX W/ LOCKING LID

BRASS QUICK COUPLER VALVE

1 1/2" LONG 1" SCH 80 PVC

3" OF MINERAL AGGREGATE TYPE 4 OVER GEOTEXTILE

SCH 40 PVC GALVANIZED TRIPLE SWING JOINT ASSEMBLY W/ BRASS UNIONS

SCH 40 PVC MAINLINE

ELEVATION VIEW

QUICK COUPLER VALVE

TURF OR BED AREAS

HOSE BIB ASSEMBLY AND QUICK COUPLER VALVE

REF STD SPEC SEC 8-03

City of Seattle

NOT TO SCALE

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

REFERENCES:
STD SPEC SEC 8-03

City of Seattle
NOT TO SCALE
IRRIGATION VALVES
FINISH GRADE

10" (MIN) VALVE BOX W/ LOCKING LID

EXTENSIONS (AS REQUIRED)

LINE SIZE GATE VALVE (SQ TOP)

BRASS NIPPLES & FITTINGS (TYP)

SCH 40 ADAPTER

SCH 80 PVC COUPLING

3" OF MINERAL AGGREGATE TYPE 4 OVER GEOTEXTILE FABRIC

GATE VALVE - 2 1/2" & LARGER

NOTES:
USE TEFLOM TAPE ON ALL THREADED FITTINGS
NOTE:
1. USE TEFLOM TAPE ON ALL THREADED FITTINGS
2. DETECTABLE MARKING TAPE COLOR PER STANDARD SPECIFICATIONS SECTION 9-15.11 FOR POTABLE OR NON-POTABLE WATER
LEGEND
1. CONTROLLER
2. #10 AWG SOLID BARE COPPER WIRE FROM GROUNDING ROD TO CONTROLLER MAKE WIRE AS SHORT AS POSSIBLE.
3. COVER GROUNDING ROD WITH 10" ROUND VALVE BOX.
4. 3/8"X10'-0" COPPER CLAD GROUNDING ROD. INSTALL 3 RODS IN SOIL IN A TRIANGULAR PATTERN, SPACES 8'-0" MIN APART. GROUNDING GRID TO HAVE A RESISTANCE OF 10 OHMS OR LESS.
5. #10 AWG BARE COPPER WIRE BETWEEN GROUNDING RODS.
6. BRASS WIRE CLAMP. USE SEPARATE CLAMP FOR EACH WIRE.
7. FINISH GRADE.

GROUND ROD LAYOUT

GROUND ROD ASSEMBLY
100 LANDSCAPE PLANTING

LATERAL LINE

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 SR 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

SLIDE BAR & LOCKING DEVICE
FOR CONDUIT & WIRES
CLASS 3000 CONCRETE
GROUND ROD & WIRE (PER CODE) SEE STD PLAN NO 127

8" MIN SLOPE TO DRAIN TYP ALL SIDES

REF STD SPEC SEC 8-03

NOTE:
Consider traffic turning visibility and pedestrian visibility when selecting fence height; typically shorter fencing around tree pits between sidewalk and roadway is desired.

4'-6" to 6'-0" high chain link fence to enclose entire open tree pit (typ each tree pit)

EXISTING TREE PIT

FACE OF CURB

TREE IN TREE PIT

SIDEWALK EDGE

PLANTING STRIP

FACE OF CURB

4'-6" to 6'-0" high chain link fence to enclose entire open tree pit (typ each tree pit)

TREE IN PLANTING STRIP—OPTION 1

SIDEWALK EDGE

PLANTING STRIP

FACE OF CURB

4'-6" to 6'-0" high chain link fence protects entire planting strip

TREE IN PLANTING STRIP—OPTION 2

REF STD SPEC SEC 1-07, 16(2), 8-01

City of Seattle

NOT TO SCALE

TREE PROTECTION DURING CONSTRUCTION

NOTES:
1. REUSABLE TEMPORARY PROTECTION FENCING USED TO PROTECT TREES IN TREE PITS MUST SURROUND THE ENTIRE UNEPAVED TREE PIT AREA AND BE ANCHORED AND MAINTAINED IN A STABLE UPRIGHT CONDITION. SEE SECTION 8-01.3(2)b.

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

TRENCHING/EXCAVATION

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

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

NOTE:
A TREE, VEGETATION, AND SOIL PROTECTION PLAN (TVSPP) IS REQUIRED FOR ALL PROJECTS.
APPROVAL OF PLAN REQUIRED PRIOR TO MOBILIZATION.
SEE SECTION 8-01.
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) 1 inch 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.
REINFORCING STEEL "A"
MIN. 0.10 IN/FT, TOP FACE, IN EACH DIRECTION

<table>
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<tr>
<th></th>
<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
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<tbody>
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<td>40' MAX</td>
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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 = 2,000 LBS/SQ FT.
4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 5 IN. MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
TYPE 204a MAINTENANCE HOLE

REF STD SPEC SEC 7-05

City of Seattle

NOT TO SCALE

TYPE 204b MAINTENANCE HOLE

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/50 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.

REF STD SPEC SEC 7-05
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.

REF STD SPEC SEC 7-05

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
TYPE 206a MAINTENANCE HOLE

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
TYPE 206b MAINTENANCE HOLE

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 441.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/50 FT
4. MAX HOLE SIZE MUST BE 00 OF PIPE PLUS 3 IN. MIN HOLE SIZE MUST BE 00 OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.

REF STD SPEC SEC 7-05

City of Seattle

200 SEWER-DRAINAGE APPURTEINANCES

HANDHOLDS ORIENTED VERTICALLY, BOTH SIDES OF MH. 4" ABOVE SHELF
LOCATION OF MH LADDER FOR TYPE B MAINTENANCE HOLE.

PLAN VIEW (TOP REMOVED)

TOP SLAB REINFORCEMENT

NOTES:
1. MATERIAL: CONCRETE-CLASS 4000; REINFORCING STEEL-ASTM A615 GRADE 60.
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 IN. MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.

REINFORCING STEEL "A"
MIN. 50 IN/FT, TOP FACE, IN EACH DIRECTION

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<td>40&quot; MAX</td>
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City of Seattle

NOT TO SCALE

TYPE 207b MAINTENANCE HOLE
REINFORCING STEEL "A"
MIN. SQ IN/FT, TOP FACE IN EACH DIRECTION

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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 BENDING = 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".

REFERENCES:
1. REF STD SPEC SEC 7-05
2. CITY OF SEATTLE STANDARD PLANS NO. 208a
3. cast-in-place base
4. precast base
5. type 9 mineral aggregate
6. Portland cement for
   precast base
7. precast base with integral riser
**200 SEWER-DRAINAGE APPURTEYNces**

**STANDARD PLAN NO 210b**

**REINFORCING STEEL "A"**

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<tr>
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<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
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<tbody>
<tr>
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<td>40' MAX</td>
<td>0.81</td>
<td>0.70</td>
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</table>

**PLAN VIEW (TOP REMOVED)**

- Extended 1/4 of sewer intersect at 1/4 of MH.
- Location of MH ladder for Type B maintenance hole.
- The greater of 1/4 inside pipe diameter or 1'-0" (typ).

**LEVELING BRICKS OR CONCRETE COLLAR**

**HANDHOLDS**

- See STD Plans No 232a & 232b

**SECTION A-A**

- Mortar fillet
- Cast-in-place base
- Undisturbed earth or Type 2 mineral aggregate 4" min. thickness for cast-in-place base section.
- Reinforcing steel @ 3" see table
- Type 9 mineral aggregate w/ Portland cement for precast base or precast base with integral riser

**TOP SLAB REINFORCEMENT**

- Fan 5 #6 bars @ 4 equal spaces BF
- 3 #6@5" BF (cut as required)
- 2\(\) CLR (typ)
- 1'-0" BF

**NOTES:**

1. Material: Concrete—Class 4000
   Reinforcing Steel—ASTM A615 Grade 60 Min.
   Channel and shelf material: Concrete Class 3000.
2. Precast maintenance hole components must conform to ASTM C 478. Joints between precast components must be rubber gasketed conforming to ASTM C 443.
3. Minimum required soil bearing = 3,000 LBS/SQ FT
4. Max hole size must be OD of pipe plus 11". Min hole size must be OD of pipe plus 3". Min distance between holes is 12".

**REF STD SPEC SEC 7-05**

City of Seattle

NOT TO SCALE

TYPE 210b MAINTENANCE HOLE

**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/50 FT**

4. **MAX HOLE SIZE MUST BE 00 OF PIPE PLUS 12”**
   **MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3”**
   **MIN DISTANCE BETWEEN HOLES IS 12”**

**REFERENCES:**

- **200 SEWER-DRAINAGE APPURTENANCES**
- **STANDARD PLAN NO 211a**
- **REF STD SPEC SEC 7-05**

**CITY OF SEATTLE**

**NOT TO SCALE**

**TYPE 211a MAINTENANCE HOLE**

**2020 Edition City of Seattle Standard Plans for Municipal Construction**
**REINFORCING STEEL "A"**

**PLAN VIEW (TOP REMOVED)**

- MAINTENANCE HOLE FRAME & COVER. SEE STD PLAN NO 230
- LEVELING BRICKS OR CONCRETE COLLAR
- HANDHOLDS. SEE STD PLANS NO 232a & 232b

**SECTION A-A**

- UNDISTURBED EARTH OR TYPE 2 MINERAL AGGREGATE 4 MIN THICKNESS FOR CAST-IN-PLACE BASE SECTION
- REINFORCING STEEL "A" SEE TABLE
- TYPE 9 MINERAL AGGREGATE W/ PORTLAND CEMENT FOR PRECAST BASE OR PRECAST BASE WITH INTEGRAL RISER

**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/50 FT

4. MAX HOLE SIZE MUST BE OD OF PIPE PLUS 12". MIN HOLE SIZE MUST BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

**REF STD SPEC SEC 7-05**

City of Seattle

NOT TO SCALE  

**REINFORCING STEEL "A"**

MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION

<table>
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<tr>
<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
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<td>30' MAX</td>
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**REINFORCING STEEL "H"**

MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION

<table>
<thead>
<tr>
<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>20' MAX</td>
<td>0.72</td>
</tr>
<tr>
<td>30' MAX</td>
<td>0.96</td>
</tr>
<tr>
<td>40' MAX</td>
<td>1.20</td>
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</tbody>
</table>

**NOTES:**
1. MATERIAL: CONCRETE—CLASS 4000
   REINFORCING STEEL—ASTM A615 GR. 60 MIN
   CHANNEL AND SHELF MATERIAL: CONCRETE
   CLASS 3000.
2. PRECAST MAINTENANCE HOLE COMPONENTS
   MUST CONFORM TO ASTM C 476. 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
   1 3/4". MIN HOLE SIZE MUST BE OD OF PIPE
   PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

**SECTION A-A**

- Undisturbed earth or type 2 mineral aggregate 4" min
- Thickness for cast-in-place base section
- Reinforcing steel "A" see table
- Type 9 mineral aggregate w/ Portland cement for
  precast base or precast base with integral rber

**TOP SLAB REINFORCEMENT**

- #4 steel@ 5" BF (cut as req'd)
- 3#6 @ 5" BF
- 15#6 @ 5" BF

**REFERENCES:**
- STD SPEC SEC 7-05
- STD PLANS NO 232a & 232b
- STD PLANS NO 230
- STD PLAN NO 235

---

City of Seattle

FLEXIBLE JOINT FOR VCP CONNECTION TO MAINTENANCE HOLES

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

REF STD SPEC SEC 7-05
NEW TYPE 230 FRAME & COVER
NEW PAVEMENT GRADE

REMOVE EXISTING 1'-6" DIAMETER FRAME & COVER

REBUILD MH WITH NEW RADIAL BRICKS IN A RUNNING BOND PATTERN WITH 3" MIN TO 3" MAX. GROUT SO THAT NEW FRAME AND COVER IS AT THE NEW PAVEMENT GRADE.

NEW MH HANDHOLD SEE STD PLANS NO 232a & 232b
NEW MH STEP SEE STD PLANS NO 232a & 232b

REMOVE EXISTING MH BRICKS SO THAT ID OF MH IS 2'-6"
REPLACE EXISTING STEPS OR LADDER TO SHELF EXISTING BRICK MAINTENANCE HOLE

1'-9" MIN CLR OPENING

3" HANDHOLD
2'-6"Dia

RUNNING BOND PATTERN
GROUT BETWEEN ALL BRICKS

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
REBUILD EXISTING BRICK MAINTENANCE HOLE

NOTES:
1. DESIGNATE LOCKING COVER AS TYPE 230L FOR USE IN NON-VEHICULAR TRAFFIC AREAS.
2. COVER THICKNESS IS MEASURED FROM THE BOTTOM OF THE PATTERN.
3. FRAMES MUST BE MANUFACTURED FROM CAST IRON OR DUCTILE IRON.
4. COVERS MUST BE MANUFACTURED FROM DUCTILE IRON.

REF STD SPEC SEC 7-05, 9-12
"SEWER" OR "DRAIN", AS APPLICABLE, 3" RAISED LETTERS TO BE ½" WIDE AND RAISED ¾" ABOVE SURFACE OF COVER.

1¾" X 1½" LIFT HOLES 2 PLACES.

BOTTOM VIEW

TOP VIEW

SECTION A—A
f=MACHINED FINISH

REF STD SPEC SEC 7-05, 7-20
NOTES:
1. MATERIAL - STEEL REINFORCED POLYPROPYLENE
2. DIMENSIONS FOR THE MH LADDER AND STEP ARE MINIMUM REQUIREMENTS ONLY.
3. WHEN THE DISTANCE FROM THE LAST (HIGHEST) STEP OR HANDHOLD TO THE TOP OF THE MH FRAME EXCEEDS 1'-6", A HANDHOLD MUST BE INSTALLED MID-WAY IN THE LEVELING BRICK OR COLLAR.
4. EITHER STEPS, LADDERS OR A COMBINATION OF THE TWO CAN BE USED. IF BOTH STEPS AND LADDERS ARE USED IN ANY MH, THEY MUST BE FROM THE SAME MANUFACTURER.
5. A VERTICAL HANDHOLD MUST BE INSTALLED 4'-0" ABOVE THE SHELF WHEN INDICATED IN MH PLAN VIEW.
24" HIGH CONCENTRIC CONE

18" HIGH CONCENTRIC CONE

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.

MH WITH PRECAST TOP SLAB
NOTES:
1. CONCRETE FOR DROP CONNECTION SUPPORT MUST BE CL 3000.
2. DUCTILE IRON PIPE MUST BE ANSI/AWWA C151/121.51 CL 50. DUCTILE IRON FITTINGS MUST BE ANSI/AWWA C111/121.11
3. DROP CONNECTIONS MUST BE USED WHERE DROP IS NOT MORE THAN 20'-0".

DUCTILE IRON OUTSIDE DROP CONNECTION

CONCRETE CL 3000 BLOCK POUR ED IN PLACE
MJ X MJ DP 90° BEND
MJ X PE DP 90° BEND
POUR TO UNDISTURBED EARTH OR COMPACTED SUBGRADE

TYPICAL VH BASE CONSTRUCTION
STAINLESS STEEL BOLTS & NUTS MUST CONFORM TO ASTM F 593

MJ DIP CROSS
COUPLING
10% MAX
8" MIN
6" MIN

REDUCER, IF REQD
CLEAN-OUT PER STD PLAN 280

1/2 BUND FLANGE AS DAM FOR INCOMING PIPE SLOPE <5% FULL BUND FLANGE FOR INCOMING SLOPE ≥5%
NOTES:
1. PROVIDE PIPE MANUFACTURER RECOMMENDATION FOR PIPE HANGER AND CONCRETE ANCHORAGE TO SPU FOR APPROVAL.
2. SIZE MH TO MEET MINIMUM INSIDE CLEARANCE.
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.

INSIDE DROP
(16" DIAMETER PIPE MAXIMUM)
NOTES:
1. PIPE AND FITTINGS MUST BE PVC PER ASTM D 3034 SDR 35.
2. CONCRETE HAUNCHING IS TO BE CLASS 3000 CONCRETE.
MINERAL AGGREGATE
TYPE 2 CRUSHED ROCK

2'-6" X 2'-6" CONC PAD
MIN FOR ASPH STREETS

FRAME & COVER SEE
STD PLAN NO 280

DIP 8" LONG 1"-0"DIA FOR 8" VERT CONNECTION
10"DIA FOR 6" VERT CONNECTION
FIBER JOINT PACKING
6" OR 8" PVC 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.

6" OR 8" DI PIPE

DI BEND
DI PIPE
6" OR 8" DI CONNECTION
WYE

2'-0"±

6" OR 8" DI PIPE
CONNECTION TO EITHER
DETAIL A OR B

6" OR 8" DI PIPE
MECHANICAL JOINT

MANUFACTURED
DI TEE

DETAIL A
FOR VERTICAL CONNECTIONS TO
NEW DI MAIN

6" OR 8" DI PIPE
MECHANICAL JOINT

FABRICATED STEEL
TAPPING SLEEVE

NEW DI MAIN

DETAIL B
FOR VERTICAL CONNECTIONS TO
EXISTING DI MAIN

REF STD SPEC SEC 7-08, 7-17

NOT TO SCALE

6" OR 8" VERTICAL CONNECTION
TO DUCTILE IRON PIPE

TABLE 1

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<th>Size</th>
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<td>12&quot;</td>
<td>1&quot;-3&quot; Min</td>
<td>2&quot;-0&quot; Max</td>
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</tbody>
</table>

SECTION A-A

LEVELING BRICK OR PRECAST RISER

PRECAST TOP SLAB PER STD PLAN NO 243a
- TYPE 240A: UNIT R SLAB
- TYPE 240B: UNIT P-40 SLAB
- TYPE 240C: UNIT T SLAB
- TYPE 240D: UNIT T SLAB

FLOW LINE

OUTLET TRAP SEE STD PLAN NO 267

SINGLE CIRCULAR CAGE 0.12 SQ IN/LF IN EACH DIRECTION

REINFORCING STEEL 0.15 SQ IN/LF IN EACH DIRECTION

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.

SECTION B-B

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<th>CASTING</th>
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<td>PER STD PLAN 230</td>
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<td>240B</td>
<td>PER STD PLAN 264</td>
</tr>
<tr>
<td>240C</td>
<td>PER STD PLAN 262</td>
</tr>
<tr>
<td>240D</td>
<td>PER STD PLAN 263A</td>
</tr>
</tbody>
</table>

REF STD SPEC SEC 7-05

City of Seattle
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 1/4 TO 1/2 GROUT IN BETWEEN BRICKS.

SECTION A–A

FRAME & GRATE PER STD PLAN NO 264
LEVELING BRICK OR PRECAST RISER

SECTION B–B

FLOW LINE
OUTLET TRAP SEE STD PLAN NO 267

8” MAX PIPE CONNECTION TO APPROVED OUTLET

4” MAX
1’–0” MAX
8” MIN
1’–0” MAX

4” MIN
1’–0” MAX

4” MIN
4” MIN

TYPE 9 MINERAL AGGREGATE W/ PORTLAND CEMENT

PRECAST BASE

REF STD SPEC SEC 7-05

City of Seattle NOT TO SCALE TYPE 241 CATCH BASIN

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 ⅓ TO ⅔
GROUT IN BETWEEN BRICKS.
UNIT P-48
SECTION A-A

UNIT T
SECTION A-A

UNIT R
SECTION A-A

JOINT GASKET
CONFORMS TO
ASTM C 443

FAN 5-#4
@ 4 EQUAL SPACES (BF)

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

#4 HOOP TF
#6 BF (TYP)

#4 HOOP
#6 BF (TYP)

#4 HOOP TF
#6 BF (TYP)

#4 HOOP
#6 BF (TYP)

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
200 SEWER-DRAINAGE APPURTEYNANCES

ALTERNATE OUTLET LOCATION

FRAME & GRATE SEE
STD PLAN NO. 264

LEVELING BRICKS OR PRECAST RISER AS REQ'D 1'-0" MAX

6" OR 8" DIA OUTLET PIPE
AS NOTED ON DRAWINGS

GROUT BOTTOM
AFTER INSTALLATION

SLOPE TO
DRAIN

TYPE 9 MINERAL
AGGREGATE W/ PORTLAND CEMENT

SECTION A-A

2'-6"

4" MIN

2'-6"

4" MIN

4" MIN

4" MIN

2'-6"

4" MIN

4" MIN

4" MIN

4" MIN

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.

REFERENCE: STD SPEC SEC 7-05
CURB DETAIL (PLAN VIEW) FOR
TYPE 240D & 242C CB & TYPE 250B INLET

TYPE 240C CB

TYPE 242A CB

260c

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

REF STD SPEC SEC 7-05
NOTES:
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 90° BEND, USE OF 90° 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

1" DIA SLOT FOR 3/4" DIA STD STEEL BOLT WITH LOCK WASHER AND NUT

SECTION A-A

Curb Inlet

Non-Skid Surface Per Std
Spec Section I-07.1(3)
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 1½" X ¾" X ¾" THICK (8 OPTIONAL)
- EMBOSSED ON GRATE
- 1" OPENING (TYP)

SECTION B-B
- ¾" NORMAL TO BAR
- ½" (TYP)
- ¾" (TYP)

SECTION C-C
- ½" NORMAL TO BAR
- ⅛" (TYP)
SECTION A—A

SECTION B—B

VANE DETAIL

END DETAIL

REF STD SPEC SEC 7-05
NOTES:
1. OPEN AREA = 100 SQUARE INCHES.
2. SEE STD PLAN NO 265 FOR VANE AND END DETAIL.
3. STD PLAN NO 266 DIMENSIONS GOVERN ON END DETAIL.
4. REPLACEMENT VANED GRATE FOR TYPE 164 INLET FRAMES.

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

City of Seattle
NOT TO SCALE
TYPE 266 REPLACEMENT VANED GRATE

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

SECTION A—A

REF STD SPEC SEC 9-12
NOTES:

1. GRATE MATERIAL: DUCTILE IRON
2. FRAME PER STD PLAN NO 264
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 PIPE DETENTION). ONLY MANUFACTURERS 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 MH WILL BE REQUIRED FOR DETENTION PIPE LENGTHS GREATER THAN 150 FT.
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

<table>
<thead>
<tr>
<th>DETENTION PIPE DIAMETER</th>
<th>FLOW CONTROL STRUCTURE* (MH SIZE)</th>
<th>UPSTREAM** (MH SIZE)</th>
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<td>18&quot;</td>
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<td>210b</td>
<td>210b</td>
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</table>

*SPECIFIC DESIGN INFORMATION AS INDICATED ON CONSTRUCTION DRAWINGS
**SIZE OF UPSTREAM MH MUST BE ADJUSTED FOR ALTERNATIVE PIPE MATERIAL

REF STD SPEC SEC 7-16

City of Seattle

FLOW CONTROL STRUCTURE WITH DETENTION PIPE
FLOW CONTROL STRUCTURE & 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 CLIMB DOWN SPACE IS CLEAR OF RISER AND CLEAN OUT GATE
5.2. 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

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

SECTION A–A

SECTION B–B

TYPE A

SECTION A–A

SECTION B–B

TYPE B

REF STD SPEC SEC 7-16

City of Seattle
NOT TO SCALE

CMP DETENTION STRUCTURE
END PLATE DETAILS
TYPES A & B

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

SECTION A–A

TYPE C

SECTION B–B

DETAIL A

DETAIL B
FLAT STIFFENER

DETAIL C

DETAIL D

DETAIL E

REF STD SPEC SEC 7-16

City of Seattle

NOT TO SCALE

CMP DETENTION STRUCTURE
END PLATE DETAILS
TYPE C

### PIPE APPURTENANCES

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>END PLATE THICKNESS</th>
<th>STIFFENER TYPE &amp; SIZE</th>
<th>STIFFENER SPACING</th>
<th>SIZE W</th>
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<td>¾&quot;</td>
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<tr>
<td>48&quot;</td>
<td>–</td>
<td>–</td>
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</table>

**NOTES:**
1. 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.
2. End plate material: Aluminum 6061-T6.
3. Designs must be used only for Aluminum CMP.

---

**REF STD SPEC SEC 7-16**

**City of Seattle**

NOT TO SCALE

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

CONNECTION & CONTROL DEVICE FOR ROW USE

CONNECTION & CONTROL DEVICE FOR PRIVATE SYSTEM
FRAME & COVER PER STD PLAN NO 250
GRADE
2'-6" X 2'-6" X 1'-0" CONC PAD
1'-0" DIA DIP, 12" LONG
FIBER JOINT PACKING
6" MINERAL AGGREGATE TYPE 2

8" PVC ASTM D3034 SDR 35
8" CMP TEE & FLEXIBLE COUPLING
SEE STD PLAN NO 279

END PLATE
1'-6"

CMP DETENTION PIPE

REF STD SPEC SEC 7-19, 7-16.2

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

COVER PATTERN

LOCKING FRAME & COVER

GRADE

2'-6" X 2'-6" X 1'-0"
CONC PAD

12"DIA DIP, 12" LONG
FIBER JOINT PACKING

6" MINERAL AGGREGATE
TYPE 2

NOTE:
LOCKING FRAME & COVER IS OPTIONAL ON PRIVATE PROPERTY.

CAST IRON FRAME & COVER

2" RAISED LETTERS

⅜" RAISE, ⅛" WIDE BORDER

10"
9"
8⅜"
7⅞"
7⅝" 7⅜"
6⅜" 6⅝"
5⅞" 6⅞"
5¾" 6¾"
5⅜" 6⅜"

1/8 BEND

PLUG MUST BE SEALED IN SAME MANNER AS MAIN SEWER JOINTS

WYE OR 1/8 BEND

DRILL AND TAP FOR LOCKING AS REQUIRED, APPLY ANTI-SEIZE COATING AND BOLT DOWN WITH ⅜"S.S. ALLEN-HEAD BOLTS - 2 PLACES

REF STD SPEC SEC 7-19

City of Seattle
NOT TO SCALE
8" CLEAN-OUT

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

A. CONSTRUCTION IN STREET MUST BE DONE BY A REGISTERED SIDE SEWER CONTRACTOR.
B. ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH THE CURRENT SIDE SEWER ORDINANCE.
**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 ENCASEMENT FOR FULL TRENCH WIDTH.

**REFERENCES:**
- STD SPEC SEC 2-10.2, 7-17
- PIPE BEDDING
- SEWER-STORM DRAIN

**City of Seattle**

NOTES:
1. EXCEPTIONS TO STD PLAN NO 286 MUST BE APPROVED BY SEATTLE PUBLIC UTILITIES, WATER QUALITY DIVISION.
2. "SEWER" INCLUDES SANITARY SEWER, COMBINED SEWER AND SIDE SEWER.
3. WHERE MINIMUM CLEARANCES CANNOT BE MET, SEWER 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
NOTES:
1. ALL ⅜" STEEL & L3" X 2" X ⅝" TO BE A-36.
2. 6" PIPE TO BE STANDARD WEIGHT STEEL.
3. AFTER FABRICATION, DRAIN ASSEMBLY TO BE HOT DIP GALVANIZED.
4. VANED GRATE TO BE PER STD PLAN NO 265.

REF STD SPEC SEC 6-01, 7-05
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)
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 SHOULDER OR PAVED AREAS MUST BE UNDISTURBED NATIVE SOIL OR APPROVED FILL COMPACTED TO 92% 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
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 7-21.1(2B) IN THE AREA SUBJECT TO TEMPORARY PONDING BEFORE BIORETENTION SOIL INSTALLATION.
4. 12" MIN OR 18" MIN IF WATER QUALITY TREATMENT IS REQUIRED PER STORMWATER CODE REQUIREMENT.
5. CELL MUST BE PLANTED PER APPROVED LANDSCAPE PLAN.
6. SOIL UNDER SHOULDERS OR PAVED AREAS MUST BE UNDISTURBED NATIVE SOIL OR APPROVED SOIL COMPACTED TO 95% DENSITY.
7. FACE OF CURB TO TOP OF SLOPE MUST BE MIN 2'-0" FOR NON-MAJOR ARTERIAL STREET, MIN 4'-0" FOR MAJOR ARTERIAL STREET.
8. PROVIDE MIN ONE INCH GAP BETWEEN TOP OF WALKS, CURBS, PAVEMENTS AND DRIVEWAYS AND TOP OF ARBORIST WOODCHIP MULCH.

REF STD SPEC SEC 7-21

City of Seattle

NOT TO SCALE

INfiltrating Bioretention
With sloped Sides
& under drain

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

REF STD SPEC SEC 7-21

City of Seattle

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

City of Seattle

NOT TO SCALE

VEGETATED CONVEYANCE SWALE
(NOT FOR WATER QUALITY TREATMENT)
NOTES:
1. DRAIN CURB CUT MUST NOT BE LOCATED WITHIN CONCRETE ROAD PANEL JUNCT.

SECTION A-A

EXIST CONCRETE PAVEMENT OR STD 4108 GUTTER PER STD PLAN NO 410

SECTION B-B

CUTTER DEPRESSION - GRIND PANEL TO DIRECT STORMWATER TO CURB CUT

MATCH EXIST
GRIND TO FORM CURB DEPRESSION

STREAMBED AGGREGATE TYPE 4, 10" WIDE ON EACH SIDE OF PAD

CONC CURB MATCH EXIST CURB AND PAVEMENT LINE

EXIST CONCRETE PAVEMENT OR STD 4108 GUTTER PER STD PLAN NO 410

REF STD SPEC SEC 7-21, 9-03

City of Seattle
NOT TO SCALE
DRAIN CURB CUT TYPE 2

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

300 WATERMAIN APPURTEYNANCES

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. (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
△ CLEAN & DISINFECTED POTABLE WATER HOSE ONLY. SIZE FLUSHING RISER PER TABLE IN STD SPEC SEC 7-11.3(12)
△ HYDRANT PERMIT REQUIRED
△ CHECK WITH SEWER UTILITY BEFORE DISCHARGE TO SEWERS
△ 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.
△ 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.
△ INSTALLED BY CONTRACTOR
△ CONNECTION PIPE: CONTRACTOR FURNISHED, INSTALLED BY SPU
△ WATERMAIN WITH PLAIN ENDS
△ MECHANICAL JOINT SLEEVE WITH SPACER CUT TO FIT GAP, FURNISHED AND INSERTED AT TIME OF CONNECTION BY SPU
△ TAPPING SLEEVE & TAPPING VALVE FURNISHED AND INSTALLED BY SPU
△ APPLIES TO PIPES 4" THROUGH 12" ALL LARGER SIZES TO BE ADDRESSED ON DRAWINGS
△ 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 WATERMAINS

TABLE

<table>
<thead>
<tr>
<th>SIZE WATERMAIN</th>
<th>L1</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot; thru 10&quot;</td>
<td>10'-0&quot;</td>
<td>14'-0&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>12'-0&quot;</td>
<td>16'-0&quot;</td>
</tr>
<tr>
<td>LARGER THAN 12&quot;</td>
<td>PER DRAWINGS</td>
<td></td>
</tr>
</tbody>
</table>

NOTE:
- ☑ SEE STD PLAN NO 300a FOR LEGEND

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

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

REF STD SPEC SEC 7-11

City of Seattle

NOT TO SCALE

CONNECTIONS TO EXISTING WATERMAINS

300 WATERMAIN APPURTENANCES

FINISH GRADE

EXISTING PLUGGED TEE OR CROSS

NEW PLUGGED TEE OR CROSS

CONTRACTOR MUST
INSTALL CONCRETE
BLOCKING, IF NONE
EXIST, PER STD PLAN
NO 331

EXISTING TEE
OR CROSS

NEW WATERMAIN SEE
DETAIL 1 STD PLAN 300c

10'-0" MIN

14'-0" MAX

CONTRACTOR MUST VERIFY TYPE OF JOINT
FOUND WITHDRAWINGS: MJ, LEAD, ETC. IF
FOUND DIFFERENT, NOTIFY THE ENGINEER.

CONNECTIONS TO EXISTING TEE OR CROSS — PLAN VIEW

NOTE:

X) — SEE STD PLAN NO 300a FOR LEGEND

<table>
<thead>
<tr>
<th>SIZE OF WATERMAIN</th>
<th>DISTURBANCE ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP TO &amp; INCLUDING 10&quot;</td>
<td>10'-0&quot;</td>
</tr>
</tbody>
</table>
| OVER 10" | 12'-0"

* SPU MAY INCREASE DISTURBANCE ZONE.
SEE CONTRACT DOCUMENTS

CONNECTIONS TO EXISTING MAIN, NO TEE OR CROSS — PLAN VIEW

(TAPPING SLEEVE & TAPPING VALVE)

NEW WATERMAIN SEE
DETAIL 1 STD PLAN 300c

8'-0" MIN

14'-0" MAX

CONTRACTOR MUST
INSTALL CONCRETE
BLOCKING, IF NONE
EXIST, PER STD
PLAN NO 331

DISTURBANCE
ZONE (VHP)
SEE TABLE

TABLE

City of Seattle
NOT TO SCALE
CONNECTIONS TO EXISTING WATERMAINS

300 WATERMAIN APPURTEYNCES

BREAKEWAY BOLTS AND
BREAKEWAY OPERATING
ROD COUPLING

CONCRETE SHEAR
BLOCK 3'-6"x3'-6"x6" #8 BAR ALL AROUND

MOUNT HYDRANT PLUMB

COMPLETELY SURROUND
HYDRANT FULL DEPTH
OF CONCRETE WITH #8
JOINT MATERIAL BEFORE
PLACING CONCRETE

HYDRANT EXTENSION
IF REQ'D

HYDRANT BLEEDER
ASSEMBLY, 3/4" COPPER
TUBING, TYPE K. SEE STD
SPEC SEC 9-30.4(11)

TAR PAPER

1' - 0" MIN

1' - 0" MIN

1/2 CU YD MINERAL
AGGREGATE TYPE 4

HYDRANT 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 HIGHEE CUT.
4. THE 2½" 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
   CLANDS 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 43-516 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

City of Seattle
NOT TO SCALE

TYPE 310 HYDRANT SETTING
DETAIL

NOTES:
1. WHERE WATERMAINS ARE INSTALLED WITH POLYETHYLENE ENCASMENT 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 310n.

REF STD SPEC SEC 7-14

City of Seattle
NOT TO SCALE
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 21/2" 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 ROXKOTE 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).
GENERAL NOTES:
1. WHERE WATERMains ARE INSTALLED WITH POLYETHYLENE ENCASEMENT OR TAPE COATINGS, THE HYDRANT BARREL AND VALVE MUST BE SIMILARLY ENCASED, COATED AND/OR JOINTS BONDED. WHERE WATERMAIN IS THERMOPLASTIC COATED, THE HYDRANT BARREL MUST BE TAPE COATED.
2. WHERE 6" GATE VALVE IS TO BE LOCATED WITHIN A PARKING-PERMITTED AREA, A SECOND 6" GATE VALVE MUST BE INSTALLED AT THE HYDRANT ASSEMBLY PER STD PLAN NO 310a.
Traffic Island Marker Post Layout for Fire Hydrants in Parking Areas

NOTE:
Layout of marker post must be verified first with SPU and SDOT

Concrete Shear Block See Std Plans No 310a & 311a

2" Island Surface Material Over 4" compacted mineral aggregate Type Z to match surrounding pavement material and be flush with top of curb

Fixed Bollard, See Std Plan No 465 (Typ)

Extruded Curb Material to match ex pavement material, See Std Spec Sec 8-06

Reference standard spec section 7-14

City of Seattle

NOT TO SCALE

FIRE HYDRANT MARKER LAYOUT
NOTE:
ROCK FOR ROCK FACING MUST COMPLY WITH STD PLAN NO 141

SECTION A-A

REF STD SPEC SEC 2-13

WALL REQUIREMENTS FOR HYDRANTS
NOTES:
1. NO PARKING ZONE WITHIN 15'-0" RADIUS OF FIRE HYDRANT.
2. MIN DISTANCE FROM BACK FACE OF HYDRANT TO FRONT EDGE OF CONCRETE WALK MUST BE 2'-0".
3. MARKER MUST BE 6" OFFSET FROM CENTER OF ROADWAY IF CENTERLINE IS NOT STRIPED, OR 6" OFF STRIPED CENTERLINE. WHERE MEDIAN OR TWO-WAY LEFT TURN LANES EXIST, MARKER MUST BE INSTALLED WITH 6" OFFSET FROM THE LANE LINE CLOSEST TO THE HYDRANT.

INSTALL BLUE TYPE 2A LANE MARKER ADJACENT TO FIRE HYDRANTS. SEE NOTE 3 (TYP).

DETAIL A
HYDRANT NEAR CURB RAMP

REF STD SPEC SEC 7-14, 8-08

City of Seattle
NOT TO SCALE
FIRE HYDRANT LOCATIONS & CLEARANCES

NOTES:
1. Union point 2’ outside vault or 2’ from property line.
2. 5’ clearance from new trees or clear of drip line for existing trees.
3. 5’ clear from poles.
4. 2’ clear from edge of driveway or ADA ramp.
5. Water service not to be installed in driveway, behind ADA ramp, or street corner.
6. Side sewer horizontal clearance 10’ for cast iron water pipe or 5’ for ductile iron water pipe.
7. Side sewer vertical clearance 1.5’ min.
8. Vault horizontal clearance 12” min from other utilities, unless otherwise noted in std specs.
9. Vertical clearance 12” min for all other utility crossings unless otherwise noted in std specs.

SEE STD PLAN NO. 00334 FOR TYPICAL WATER SERVICE VAULTS

REF STD SPEC SEC 1-07.17(2)
LID, VALVE BOX

PAVEMENT

TOP SECTION, SEE SECTION A-A

OPERATING NUT EXTENSION

EXTENSION PIECE WHEN REQUIRED INSTALLED BETWEEN TOP & BASE SECTION

BASE SECTION, SEE SECTION A-A

PLASTIC FOAM RING

SEE STD PLAN NO. 315b

GATE VALVE (BFV INSTALLATION SIMILAR)

WATERMAIN

VALVE BOX ASSEMBLY

TYPICAL SETTING DETAIL

NOTE:

VALVE BOX FOR USE ON 12" OR SMALLER VALVE INSTALLATIONS

REF STD SPEC SEC 7-12

City of Seattle

NOT TO SCALE

CAST IRON VALVE BOX & OPERATING NUT EXTENSION

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 ROBKE #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 #1928–33, 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

REF STD SPEC SEC 7-12, 9-30

City of Seattle NOT TO SCALE CAST IRON VALVE BOX & OPERATING NUT EXTENSION

NOTES:
1. COMBINATION AIR RELEASE AND VACUUM VALVE MUST BE A 2" SIZE MINIMUM UNLESS OTHERWISE SHOWN IN THE PLANS.
2. FOR 1" COMBINATION VALVE, INSTALL 2" X 1" REDUCER BETWEEN GATE VALVE AND UNION.
3. TEE MUST BE 2"X2"X1/2" WITH 1" CORP STOP FOR 2" COMBINATION VALVE. TEE MUST BE 2"X2"X3/4" WITH 3/4" CORP STOP FOR 1" COMBINATION VALVE.
4. SET METER BOX WITHIN CITY ROW, FLUSH WITH SIDEWALK OR CURB ELEVATION IF LOCATED IN LAWN AREAS. SET METER BOX APPROXIMATELY 2" ABOVE FINISHED GRADE IF IN LANDSCAPED AREA.
### Type A Blocking for 11\(\frac{3}{4}\)" & 22\(\frac{1}{2}\)" Vertical Bends

<table>
<thead>
<tr>
<th>Pipe Size Nom Dia</th>
<th>Test Pressure psi</th>
<th>Vertical Bend Degrees</th>
<th>No. of Cuts of Conic Blocking</th>
<th>Dia of Shackles Rods (2) Inches</th>
<th>Depth of Rods in Concrete Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>300</td>
<td>11(\frac{3}{4})</td>
<td>8</td>
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<tr>
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<td>11(\frac{3}{4})</td>
<td>12</td>
<td>(\frac{3}{4})</td>
<td>24</td>
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<tr>
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<td></td>
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<td>22(\frac{1}{2})</td>
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</tr>
<tr>
<td></td>
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<td>16</td>
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<td></td>
<td></td>
<td>22(\frac{1}{2})</td>
<td>30</td>
<td>36</td>
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</table>

### Type B Blocking for 45° Vertical Bends

<table>
<thead>
<tr>
<th>Pipe Size Nom Dia</th>
<th>Test Pressure psi</th>
<th>Vertical Bend Degrees</th>
<th>No. of Cuts of Conic Blocking</th>
<th>Dia of Shackles Rods (2) Inches</th>
<th>Depth of Rods in Concrete Inches</th>
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<tbody>
<tr>
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<td>45</td>
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<td>45</td>
<td>125</td>
<td>6</td>
<td>30</td>
</tr>
</tbody>
</table>

For Notes See Std Plan No 330b

---

**City of Seattle**

NOT TO SCALE

WATERMAIN THRUST BLOCKING VERTICAL FITTINGS

### Type "C" Blocking for 11/4", 221/2", 45° and 90° Vertical Bends

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Firm Silty Sand</th>
<th>Compact Sand</th>
<th>Compact Sand &amp; Gravel</th>
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</thead>
<tbody>
<tr>
<td>Fitting</td>
<td>90° Bend</td>
<td>45° &amp; 221/2° Bend &amp; Dead End</td>
<td>90° Bend &amp; 221/2° Bend</td>
</tr>
<tr>
<td>4&quot;</td>
<td>5.8</td>
<td>1.7</td>
<td>2.9</td>
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<tr>
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<td>6.7</td>
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<tr>
<td>12&quot;</td>
<td>53.0</td>
<td>15.0</td>
<td>26.5</td>
</tr>
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</table>

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 (8000).
5. After installation, shackle rods & turnbuckles must be cleaned and coated with 2 coats of asphaltic varnish. Roxton Roykote #812M or approved equal.
6. Shackle rods must be fusion bonded epoxy coated round mild steel, ASTM A36, 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.

REF STD SPEC SEC 7-11

City of Seattle

WATERMAIN THRUST BLOCKING VERTICAL FITTINGS
THRUST BLOCK AREA IN SQUARE FEET (SEE STD PLAN NO 331B)

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>SOIL</th>
<th>FIRM SILT OR FIRM SILTY SAND</th>
<th>COMPACT SAND</th>
<th>COMPACT SAND &amp; GRAVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FIRM</td>
<td>90° BEND</td>
<td>11 1/2° &amp; 22 1/2° BEND</td>
<td>90° BEND</td>
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<tr>
<td>4&quot;</td>
<td>7.0</td>
<td>4.2</td>
<td>1.7</td>
<td>2.9</td>
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<tr>
<td>6&quot;</td>
<td>13.3</td>
<td>9.4</td>
<td>3.8</td>
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<td>23.3</td>
<td>16.7</td>
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<td>12&quot;</td>
<td>53.0</td>
<td>37.5</td>
<td>15.0</td>
<td>26.5</td>
</tr>
</tbody>
</table>

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
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 BEA against undisturbed native ground.
3. ALL POURED THRUST BLOCKS MUST BE BACKFILLED AFTER MIN. 1 DAY. PRESSURE TESTING MUST OCCUR AFTER CONCRETE HAS REACHED 75%.
4. ALL BLOCKING TO BE CONCRETE C3000.
5. BLOCKING AGAINST FITTINGS MUST BEA AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT MUST NOT COVER OR ENCLOSURE BELL ENDS, JOINT BOLTS OR GLANDS. ACCESS TO BOLTS AND GLANDS MUST BE PROVIDED.
6. ALL HORIZONTAL BLOCKING THRUST AREAS MUST BE CENTERED ON PIPE.
7. WHERE POURED-IN-PLACE BLOCKING IS REQUIRED AT A POINT OF CONNECTION TO AN EXISTING WATERMAIN, THE BLOCKING MUST BE INSTALLED PRIOR TO CONNECTION.
8. TEMPORARY BLOCKING, IF USED, MUST BE APPROVED BY ENGINEER.

REF STD SPEC SEC 7-11

WATERMAIN THRUST BLOCKING HORIZONTAL FITTINGS

City of Seattle

FOR 4" TO 8" WATERMAINS, INSTALL A DUCTILE IRON TEE WITH A 4" BRANCH AND A BLIND (FLG) OR PLUG (M/J). FOR 12" WATERMAINS, INSTALL A DUCTILE IRON TEE WITH A 6" BRANCH AND A BLIND (FLG) OR PLUG (M/J). AFTER PRESSURE TEST, AND PRIOR TO FLUSHING AND BACTERIOLOGICAL SAMPLING, REMOVE BLIND OR PLUG AND INSTALL BLIND OR PLUG WITH A 1/2" NPT THREADED HOLE DRILLED INTO THE 4" OR 6" BLIND OR PLUG. INSERT A 1/2" X 2" CORP STOP PER NOTE. ATTACH 2" BLOW OFF PIPE TO CORP AND FLUSH AND SAMPLE ALL PIPE.

MECHANICAL JOINT CAP OR PLUG

CONC BLOCKING PER STD PLAN NO 331

UNDISTURBED GROUND

STANDARD BOX AND LID
OLYMPIC FOUNDRY TYPE SM29 TO BE LOCATED IN THE FIELD BY THE ENGINEER

PLAN

ELEVATION

2" BLOW OFF TYPE A
NON TRAFFIC INSTALLATION
For 4" to 8" water mains, install a ductile iron tee with a 4" branch and a blind (FLG) or plug (MU).
For 12" water mains, install a ductile iron tee with a 6" branch and a blind (FLG) or plug (MU). After pressure test, and prior to flushing and bacteriological sampling, remove blind or plug and install blind or plug with a 1½" lift threaded hole drilled into the 4" or 6" blind or plug. Insert a 1½" x 2" core stop per note. Attach 2" blow-off pipe to comp and flush and sample all pipe.

Plan

Type 361S Frame & Cover

Mechanical joint cap or plug

⅝" Steel plate

Concrete blocking per STD PLAN NO 331

Undisturbed ground

Elevation

NOTE:
1½"x2" Comp stop, ball type brass body AWWA x comp.
Where coated ductile iron pipe is used, the mechanical joint cap and comp must be wax taped per 7-11.3(8)x and 9-30.1(4)f.

Ref STD SPEC SEC 7-11

City of Seattle

BEDDING MATERIAL

CLASS B:
- FOR DISTRIBUTION WATERMAIN, MINERAL AGGREGATE PER STD SPEC 9-03.16 TYPE 6 OR TYPE 7
- FOR TRANSMISSION WATERMAIN, MINERAL AGGREGATE PER STD SPEC 9-03.16 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 ENCAPSULATION FOR FULL TRENCH WIDTH.
3. FLUIDIZED THERMAL BEDDING PER SCC MATERIAL STANDARD 7150.00

REF STD SPEC SEC 7-11, 9-03.16
FRAME & COVER MUST BE TESTED FOR ACCURACY OF FIT AND MUST BE MARKED IN SETS FOR DELIVERY.

BOTTOM VIEW

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

TOP VIEW

6 SPACES @ 2-1/4"

LETTERING AS REQUIRED

SECTION A-A

TYPE 361
H = 9-1/4"

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

f= MACHINED FINISH

City of Seattle
NOT TO SCALE
TYPE 361b VALVE CHAMBER
FRAME & COVER IN PEDESTRIAN PATHWAYS

300 WATERMAIN APPURTENANCES

STANDARD PLAN NO 361c

REV DATE: SEP 2019

BOTTOM VIEW

TOP VIEW

LETTERS TO BE 3⁄8" WIDE
AND RAISED 3⁄8" ABOVE
SURFACE OF COVER

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

SLIP JOINT BOND CONNECTION

THERMITE WELD CONNECTION (TYP) WITH THERMITE WELD CAP OR MASTIC TAPE COATING (TYP)

#2 AWG JOINT BOND CABLE

MECHANICAL JOINT BOND CONNECTION

THERMITE WELD CAP OR MASTIC MOLD TO FIT OVER THERMITE WELD & FOLLOWER RING

#8 AWG JOINT BOND CABLE

THERMITE WELD CONNECTION (TYP) WITH THERMITE WELD CAP OR MASTIC TAPE COATING (TYP)

#2 AWG JOINT BOND CABLE

VALVE JOINT BOND CONNECTION

THERMITE WELD CAP OR MASTIC MOLD TO FIT OVER THERMITE WELD & FOLLOWER RING

#8 AWG JOINT BOND CABLE

THERMITE WELD CONNECTION (TYP) WITH THERMITE WELD CAP OR MASTIC TAPE COATING (TYP)

#2 AWG JOINT BOND CABLE

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.

CONNECTION SEQUENCE:
1. REMOVE PIPE COATING TO BRIGHT & CLEAN METAL
2. STRIP INSULATION FROM TEST STATION 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) D'
6. FINAL CONNECTION TO BE MADE WATER-TIGHT WITH MASTIC COATING OR PREFORMED THERMITE WELD CAP

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

THERMITE WELD CONNECTION. SEE STD PLAN NO 362.

PRE-PACKAGED ANODE PLACED AT INVERT OF PIPE. MINIMUM 2' HORIZONTAL SEPARATION.

#8 AWG, BLACK WIRE, OR APPROVED EQUAL LENGTH AS NECESSARY.

DI OR CI WATERMAIN

THERMITE WELD CONNECTION. SEE STD PLAN NO 362.

DI OR CI WATERMAIN

#8 AWG, BLACK WIRE, OR APPROVED EQUAL LENGTH AS NECESSARY.

DI OR CI WATERMAIN

ANODES INSTALLED ON EXISTING PIPE MUST BE BY VACUUM EXCAVATION

TYPICAL SINGLE
VERTICAL ANODE INSTALLATION

NOTES:
1. SPUR 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

SACRIFICIAL ANODE BONDED TO PIPE INSTALLATION DETAILS

Electrolysis Test Station, see Std Plan No 360 and detail A this sheet.

Thermweld Connection, see Std Plan No 362 (Typ).

Anode (Typ), pre-packaged anode must be required for horizontal anode installation. Bare or pre-packaged anode will be allowed for vertical anode installation. See Note 2.

DI or CI Watermain, see Std Plan No 364 for separation requirements.

Install 1/4" SCH 40 electrical grade PVC conduit from nearest anode to test station, see Std Plan No 360.

#12 AWG, black solid wire, or approved equal length as necessary (Typ).

Zinc Reference Cell, see Std Plan No 363.

DI or CI Watermain

Anodes placed at invert of pipe (Typ).

 SECTION A-A

Elevation View

Number of terminals equals number of test wires plus 1.

1/8" mounting holes locations determined by test box size & manufacturer (Typ).

1/4"-20 nickel-plated brass nut.

Nickel-plated brass cut washer.

Nickel-plated brass lockwasher.

1/4"-20 nickel-plated brass bolt.

Terminal Board, Detail A

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 17 lb 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

Sacificial 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.
401A—CEMENT CONCRETE PAVEMENT WITH INTEGRAL CURB

401B—CEMENT CONCRETE PAVEMENT WITH EXISTING CURB & GUTTER

401C—HOT MIX ASPHALT ON CEMENT CONCRETE BASE

401D—HOT MIX ASPHALT OVER CRUSHED ROCK BASE

HMA DESIGN CRITERIA:
1. 3 MILLION ESAL'S UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS
2. ASPHALT PC 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 3") WHEN REPLACING BITUMINOUS SURFACE TREATED RESIDENTIAL STREETS OR 2" HMA (CL 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

ROADWAY CEMENT
CONCRETE PAVEMENT
(THICKNESS AS SPECIFIED
IN CONTRACT DOCUMENTS)

SEE STD PLAN
TYPE 410c CURB

6" MNRL AGG TYPE 2
(COMPACTED AS SPECIFIED
IN CONTRACT DOCUMENTS)

COMPACTED SUBGRADE

402A—ROADWAY CONCRETE PAVEMENT ON CRUSHED ROCK

ROADWAY CEMENT
CONCRETE PAVEMENT
(THICKNESS AS SPECIFIED
IN CONTRACT DOCUMENTS)

SEE STD PLAN
TYPE 410c CURB

2" HMA (CL ¾")

6" MNRL AGG TYPE 2
(COMPACTED AS SPECIFIED
IN CONTRACT DOCUMENTS)

COMPACTED SUBGRADE

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

HMA (CL 1") THICKNESS AS
SPECIFIED IN CONTRACT DOCUMENTS

SEE STD PLAN
TYPE 410b CURB & GUTTER

2" HMA (CL ¾")

6" MNRL AGG TYPE 2
(COMPACTED AS SPECIFIED
IN CONTRACT DOCUMENTS)

COMPACTED SUBGRADE

402C—HOT MIX ASPHALT ON CRUSHED ROCK BASE

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

HMA DESIGN CRITERIA:
1. 10 MILLION ESAL'S UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS.
2. ASPHALT PG 68-22 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
CEMENT CONCRETE ALLEY PAVEMENT 403B—FOR SHALLOW EMBANKMENT AREA

NOTES:
1. WHEN ALLEY PAVEMENT IS 16'-0" OR WIDER PLACE CONSTRUCTION JOINT WITH TIE BAR PER STD PLAN NO 405 ALONG CENTERLINE OF ALLEY.
2. FOR ADA ACCESSIBLE ACCESS TO ENTRY IN ALLEY CONSIDER ALTERNATIVE DESIGN; SUBJECT TO APPROVAL BY THE ENGINEER.
3. 8" OR AS SHOWN IN CONTRACT OR APPROVAL BY THE ENGINEER.
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 PERMEABLE CONCRETE ALLEYS, CONSTRUCTION JOINTS MUST NOT EXCEED 12 FT. FOR PAVEMENT THICKNESS OF 9 IN. OR LESS, FOR THICKER PAVEMENT, CONSTRUCTION JOINTS MAY BE 15 FT.

PERVIOUS CONCRETE PAVEMENT

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

ROADWAY CEMENT CONCRETE ALLEY PAVEMENTS
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 4044, 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
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

*TYPICALLY 0/4
NOTES
1. INSTALL TIE BARS ALONG LONGITUDINAL JOINT BETWEEN FULL PANEL REPLACEMENT AND EXIST CEMENT CONC PAVEMENT. TIE BARS ARE NOT INSTALLED BETWEEN CEMENT CONC PAVEMENT AND HOT MIX ASPHALT SHOULDERS.
2. TIE BARS AND DOWELS ARE NOT REQUIRED:
   2.1. WHEN INDICATED ON THE DRAWINGS BY "NO TIE BARS" OR "NO DOWEL BARS".
   2.2. WHEN EXISTING PAVEMENT IS 8" OR LESS OR WHEN THE ENGINEER DETERMINES THE EXISTING CONC NOT TO BE COMPETENT.
3. DO NOT PLACE LONGITUDINAL JOINTS OR SKEWED JOINTS WITHIN BIKE LANES.
4. WHEN PAVING ADJACENT TO EXISTING PANELS, THE NEW TRANSVERSE JOINTS MUST BE PLACED TO MATCH JOINT LOCATIONS OF THE EXISTING ADJACENT PAVEMENT UNLESS OTHERWISE DIRECTED BY THE ENGINEER. SEE STD PLAN NO 405C FOR MAXIMUM TRANSVERSE JOINT SPACING.

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

REF STD SPEC SEC 5-05

City of Seattle

NOT TO SCALE

ROADWAY CONCRETE PAVEMENT REPAIR

SECTION A—A
Dowel Bar Detail

SECTION B—B
Tie Bar Detail

Without Tie Bar or Dowel
Use only when shown in contract or approved by the engineer.
NOTES:
1. DO NOT PLACE LONGITUDINAL JOINTS OR SKEWED JOINTS WITHIN BIKE LINES.
2. WHEN A JOINT IS WITHIN 18 INCHES OF A CASTING JOINTS SHOULD BE SKEWED TO MEET THE CASTING AT 90 DEGREES UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR SHOWN ON THE DRAWINGS.
3. SEE STD PLAN NO 406 OR DRAWINGS FOR REBAR DETAIL AROUND CASTING 18 INCHES OR GREATER FROM JOINTS.
4. DOWEL BARS MUST NOT BE PLACED WITHIN 15 INCHES OF THE EDGE OF PAVEMENT OR A PARALLEL JOINT.
5. DOWEL BARS NOT REQUIRED FOR RESIDENTIAL PAVEMENT SECTIONS. SEE STD PLAN NO 401.

<table>
<thead>
<tr>
<th>DEPTH (D) OF RDWY CEM. CONC</th>
<th>DOWEL BAR SIZE (Dia #)</th>
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<tbody>
<tr>
<td>6&quot;&lt;D&lt;9&quot;</td>
<td>1&quot;X18&quot;</td>
</tr>
<tr>
<td>9&quot;&lt;D&lt;11&quot;</td>
<td>1 5/8&quot;X18&quot;</td>
</tr>
<tr>
<td>11&quot;&lt;D</td>
<td>1 5/8&quot;X18&quot;</td>
</tr>
</tbody>
</table>

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

TIE BAR - 5/8" BARX30" ON 36" CENTERS

LONGITUDINAL CONSTRUCTION JOINT

SECTION VIEW

DRILL AND GROUT (WHEN APPLICABLE)

TIE BAR - 5/8" BARX30" ON 36" CENTERS

SECTION VIEW

LONGITUDINAL CONSTRUCTION JOINT

SECTION VIEW

TIE BAR - 5/8" BARX30" ON 36" CENTERS

SECTION VIEW

LONGITUDINAL CONSTRUCTION JOINT

SECTION VIEW

TRANSVERSE CONSTRUCTION JOINT

Sawed joint width 1/8"MIN. 1/8"MAX. WITH JOINT SEALANT OR 1/8" PREMOLDED JOINT FILLER

TIE BAR - 5/8" BARX30" ON 36" CENTERS

TRANSVERSE CONSTRUCTION JOINT

DOWEL BAR ON 12" CENTER

TIE BAR - 5/8" BARX30" ON 36" CENTERS

TRANSVERSE CONSTRUCTION JOINT

DOWEL BAR ON 12" CENTER

REF STD SPEC SEC 5-05

City of Seattle | NOT TO SCALE | ROADWAY CONCRETE PAVEMENT JOINTS

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

COAT ENTIRE DOWEL WITH APPROVED BOND BREAKER
Dowel Bar

EXPANSION CAP ON ALTERNATION FREE ENDS. OPPOSITE FIXED ENDS DO NOT TAP EXPANSION CAPS ONTO DOWELS
CORROSION RESISTANT EPOXY COATING

KEYWAY DETAIL
LONGITUDINAL JOINT WITH KEYWAY
(OPTIONAL FOR 29 INCHES ONLY)

NOTE:
USE OF OPTIONAL KEYWAY MAY BE REVOKED BY THE ENGINEER AT ANYTIME DUE TO QUALITY CONTROL ISSUES WITH MAINTAINING PLACEMENT REQUIREMENTS WITHIN ± 3/8 INCH VERTICALLY.
NOTES:
1. Place wire mesh at ½ 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 2½ inches of any cement concrete surface or joint.
400 STREET PAVING & APPURTEINANCES

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

CONTRACTION JOINT FOR CURB OR CURB & GUTTER

SECTION A-A

THROUGH JOINT FOR CURB OR CURB & GUTTER

SECTION B-B

#3 (2'-8") EPOXY COATED REINFORCING BARS @ 2'-4" O.C.

TOP OF PROPOSED CURB

COLD JOINT

COMPACTED SUBGRADE

CURB DOWEL ON NEW PAVEMENT

DRILL 3/4" MIN DIA HOLES FILL WITH EPOXY GROUT (TYPE I OR IV EPOXY PER SEC 9-26)

#3 EPOXY COATED REINFORCING BARS

CURB DOWEL PINS ON EXISTING PAVEMENT

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

REF STD SPEC SEC 8-04
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

400 STREET PAVING & APPURTEYNANCES

**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**

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

REF STD SPEC SEC 8-07

City of Seattle

8" STRAIGHT BLOCK CURB
(SINGLE SLOPED)

RADIAL CURB

<table>
<thead>
<tr>
<th>UNIT</th>
<th>RADIUS</th>
<th>CURB RETURN ANGLE(°)</th>
<th>MULTIPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>1'-3&quot;</td>
<td>45°00'</td>
<td>1</td>
</tr>
<tr>
<td>R2</td>
<td>1'-10&quot;</td>
<td>30°00'</td>
<td>2</td>
</tr>
<tr>
<td>R3</td>
<td>2'-6&quot;</td>
<td>22°30'</td>
<td>11</td>
</tr>
<tr>
<td>R4</td>
<td>5'-0&quot;</td>
<td>11°27.54'</td>
<td>10</td>
</tr>
<tr>
<td>R5</td>
<td>10'-0&quot;</td>
<td>5°43.77'</td>
<td>3</td>
</tr>
</tbody>
</table>

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

RADIUS CURB TABLE

8" STRAIGHT BLOCK CURB
(DUAL SLOPED)

8" BLOCK AND RADIAL TRAFFIC CURB

400 STREET PAVING & APPURTEINANCES

STANDARD PLAN NO 415

REV DATE: AUG 2014

TYPICAL TRAFFIC CIRCLE

TYPICAL TRAFFIC CIRCLE REFLECTOR LAYOUT

PLANT MATERIAL

OBJECT MARKER, SIGN
CODE, W-81 (P4-10)
SEE STD PLAN NO 626

(3) #3 CURB DOWELS
(TYP BETWEEN JOINTS)

THROUGH JOINTS
USE 4 FOR <20'-0" Dia
USE 8 FOR >20'-0" Dia

(2) #3 BARS (TYP
BETWEEN JOINTS)

LANE MARKERS, TYPE
2B SEE REFLECTOR
LAYOUT DIAGRAM RIGHT

CEMENT CONCRETE
MOUNTABLE CURB

5"

CEMENT CONCRETE
MOUNTABLE CURB

CEMENT CONCRETE
MOUNTABLE CURB (DOWELED)

LANE MARKER TYPE 2B
(SEE STD PLAN NO 700)

EX. CONC
PAVEMENT

CEMENT CONCRETE
MOUNTABLE CURB

#3 BARS

#3 CURB DOWEL

NEW CONCRETE
PAVEMENT

TYPE 401A

SEE TYP SECTION ABOVE FOR DIMENSIONS

TYPICAL SECTIONS

NOTE:
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

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

City of Seattle

NOT TO SCALE

TRAFFIC CIRCLE DETAILS

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 WIND 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.
NOTE:
"H" MUST BE 6" FROM FINISHED ROADWAY GRADE UNLESS OTHERWISE SPECIFIED.
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". If the landing is limited at the back-of-side walk 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.
3. Wings must have a maximum slope of 10%. Wings must have a brushed finish parallel to the curb. The concrete walk thinned edge along the curb must continue through each wing.
4. Ramp surface must have a heavy broom brushed surface parallel to the curb.
5. Refer to details 422K and 422L for general notes and typical sections.
6. Ramp width must be 5'-0" minimum when side curb is used on both sides instead of wings.

\[ \text{2\% max} = \text{max slope in either direction} \]
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 LANDING MUST BE A MINIMUM OF 0.5% IN ANY ONE DIRECTION AND MUST NOT EXCEED 2% IN ANY DIRECTION. UPGRADE LANDINGS AT THE TOP OF THE CURB RAMP MUST MATCH THE FULL WIDTH OF THE RAMP AND MUST HAVE A MINIMUM DEPTH OF 4'-0" 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, MEASURED PARALLEL TO THE RUN OF THE CURB RAMP.
4. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED SURFACE RADIAL/PERPENDICULAR TO THE CURB.
5. REFER TO DETAILS 422K AND 422L FOR GENERAL NOTES AND TYPICAL SECTIONS.

2% MAX = MAX SLOPE IN EITHER DIRECTION

PAY LIMIT

PARALLEL CURB RAMPS (TYPE 422B)

422B CURB RAMP LOCATIONS

REF STD SPEC SEC 8-14
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 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". 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.
3. RADIAL TILE MUST BE USED, CUTTING OR ALTERING DETECTABLE WARNING SURFACES MUST BE FIRST APPROVED BY THE ENGINEER.
4. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED SURFACE.
5. REFER TO DETAILS 422K AND 422L FOR GENERAL NOTES AND TYPICAL SECTIONS.

2% MAX = MAX SLOPE IN EITHER DIRECTION

PAY LIMITS

422C CURB RAMP
LOCATIONS

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". 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.
3. 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.
4. 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.
5. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED FINISH PERPENDICULAR TO THE PATH OF TRAVEL.
6. REFER TO DETAILS 422K AND 422I FOR GENERAL NOTES AND TYPICAL SECTIONS.

PAY LIMITS
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". IF THE LANDING IS LIMITED AT THE BACK-OFF-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.
3. 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.
4. WHERE THE SETBACK FROM THE BOTTOM OF THE CURB RAMP TO THE BACK OF CURB LIVES 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.
5. 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.
6. STRAIGHT SECTIONS OF DETECTABLE WARNING SURFACE IS PERMITTED AS AN ALTERNATE. IF USED, THERE MUST BE 2' MAXIMUM FROM THE DETECTABLE WARNING SURFACE TO THE BACK OF CURB AT ANY POINT.
7. RAMP SURFACE MUST HAVE A HEAVY BROOM BRUSHED FINISH PERPENDICULAR TO THE PATH OF TRAVEL.
8. REFER TO DETAIL 422K AND 422L FOR GENERAL NOTES AND TYPICAL SECTIONS.

2% MAX = MAX SLOPE IN EITHER DIRECTION
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". IF THE LANDING IS LIMITED AT THE BACK-OF-SIDEWALK BY A PERMANENT VERTICAL BARRIER, THE DEPTH OF THE TURNING SPACE MUST BE 6'-0" MINIMUM, MEASURED PARALLEL TO THE RUN OF THE CURB RAMP.
3. 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 RAMPS.
4. WINGS MUST HAVE A MAXIMUM SLOPE OF 10%. WINGS MUST HAVE A BRUSHED FINISH PARALLEL TO THE CURB. THE CONCRETE MUST BE 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.

SHARED DIAGONAL PERPENDICULAR CURB RAMP
(TYPE 422F)

PAY LIMITS

422H CURB RAMP LOCATIONS

REF STD SPEC SEC 8-14
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" (5'-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.

Pay Limits

Sawcut if existing pavement (typ) provide bond breaker (unless asphalt surfacing)

Scoreline (typ)

Scoreline (typ)

Section G-G

Curb monolithic with ramp. New pavement blocked out full depth. Existing pavement removed at face of curb.

Pay Limits

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 CUT-THROUGH OR ACCESS MAY BE PROVIDED USING STANDARD CURB RAMP DETAILS.
3. AT PEDESTRIAN REFUGE ISLANDS, DETECTABLE WARNING IS 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" x 4'-0" DEPTH CLEAR SPACE FOR ACCESS FROM THE CHANNELIZING ISLAND OR PEDESTRIAN REFUGE ISLAND FOR EACH CROSSWALK.

SECTION H-H

ROADWAY CURB (TYP)

SIDEWALK

ROADWAY CURB (TYP)

ISLAND CUT-THROUGHS
(TYPE 422H)

REF STD SPEC SEC 8-14

City of Seattle
NOT TO SCALE
CURB RAMP DETAILS
1. Two curb ramps must be installed at each corner unless otherwise directed by engineer. Shared diagonal perpendicular ramps must not be installed unless all other design options are unable to be constructed due to existing site constraints.

2. Curb ramps must be as closely aligned with the sidewalk and the pedestrian street crossing as possible.

3. Curb ramp must be constructed on opposite side of the roadway where no ramp is provided unless otherwise directed by engineer.

4. Ramps must typically have a maximum running slope of 8.3% and a minimum width of 4’-0” unless otherwise directed by engineer. The cross slope of ramps must be a maximum of 2%. Curb ramps are not required to exceed a length of 15 feet unless otherwise directed by engineer.

5. Grade breaks at the top and the bottom of curb ramp runs must be perpendicular to the path of travel. Curb ramp runs are defined by running slopes that exceed 5% but are no more than 8.3%. Surfaces abutting at curb ramp grade breaks must be flush.

6. Areas adjacent to curb ramps 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 is not required but may be used at the sides or backs of curb ramps or curb ramp landings where the adjacent surface is landscaped or otherwise not usable by pedestrians.

7. The counter slope of the gutter or the street at the bottom of curb ramp runs must be 5% maximum. If turning or change of orientation is required within the pedestrian crossing at the bottom of curb ramp runs, the slope must be 2% maximum in any direction for a minimum 4’-0” width x 4’-0” depth measured from the ramp bottom grade break.

8. Curb ramps 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 2’-0” space, extending from the ramp lower grade break, that falls wholly within the legal crosswalk, marked or unmarked, and outside the parallel vehicular traffic lane.

9. A 4’-0” minimum width unobstructed pedestrian access route must be provided from each curb ramp, blended transition, of flush transition to the legal crosswalk that is served, marked or unmarked, and located outside the parallel vertical traffic lane.

10. Detectable warning must be provided at curb ramps and at locations where the sidewalk and roadway are flush. The detectable warning surface must have a truncated dome pattern as shown, with a maximum 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 the detectable warning surface is placed at curb radii.

11. Detectable warning color must be "FEDERAL SAFETY YELLOW", unless otherwise directed by engineer.

12. Detectable warning surfaces should generally not be cut or altered to fit unless there is no alternative available. If required, cut or alter the detectable warning surface per the manufacturer’s directions. Detectable warning surfaces placed at curb radii must match the curb radii without gaps or inconsistencies in placement.

13. Avoid locating handrails, utility castings, or any other surface obstructions in the curb ramp runs (s) or landing(s). If necessary due to existing constraints, handrails, 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 level. Gaps between surfaces or grating may not exceed 1/8”. Surfaces must be firm, stable, and slip resistant.

14. Handrails, utility castings, or other surface obstructions must not reduce the required depth of detectable warning.

15. Poles, hydrants and other above ground obstructions must have a minimum lateral clearance of 1’-0” from ramp run(s) or landing(s).

16. All changes in level across joints must be flush. Any difference in elevation of 3/16 inch or greater must be repaired or replaced.

17. Curb ramps are designed to ensure that water does not accumulate on ramp surfaces. 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 ramps 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 ramps running slopes be designed to 7.5% max. and curb ramp landings be designed to 1.0% max. to allow for a limited margin of error during construction.

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**City of Seattle**

**NOT TO SCALE**

**CURB RAMP DETAILS**

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**2020 Edition City of Seattle Standard Plans for Municipal Construction**
NOTES:
1. SEE STD PLAN 420 FOR CW SCORING DETAILS.
2. INSTALL ROOT BARRIER PER STANDARD PLAN NO 100a.
3. WHEN INSTALLING NEW TREE PITS IN EXISTING SIDEWALK, REMOVE SIDEWALK TO FULL PANEL WIDTH. INSTALL TREE PIT AS SHOWN ON THIS DETAIL.
PROFILE OF STREET PAVING & APPURTEINANCES

STANDARD PLAN NO. 424b

REV DATE: MAY 2019

FOR ADDITIONAL SIDEWALK SCORING REQUIREMENTS
SEE STD PLAN NO 420

TYPE C

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

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

REF STD SPEC SEC 8-02, 8-14

City of Seattle  NOT TO SCALE  TREE PIT DETAIL

NOTES:
1. Depths shown for pavement sections are compacted depth.
2. Sidewalk depth at driveway to match driveway pavement depth.
3. Depth of porous cement concrete for driveways must be 8" min.
4. 6% max. porous cement concrete profile grade.
5. Where porous concrete is shown on plans for alley, porous concrete must be 8" with 3" aggregate discharge subbase.
6. Apply separation geotextile sec. 9-37, on bottom and sides. Extend geotextile above porous 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 porous concrete sidewalks must be placed at a maximum of 15 ft on center spacing.
NOTES:
1. TYPE 430A MUST BE USED UNLESS OTHERWISE DIRECTED BY ENGINEER. USE OF DRIVEWAY TYPE 430B IS SUBJECT TO ENGINEER'S APPROVAL.
2. DRIVEWAYS MUST BE NON—ROADWAY CEM. CONC. HIGH STRENGTH.
3. WIDTH MUST BE 2’-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 430.
8. RAMP MUST HAVE A MAXIMUM SLOPE OF 6.3% AND A MINIMUM WIDTH OF 6’-0".
9. ALL SLOPE GRADES MUST BE MEASURED OFF THE HORIZON-LINE IF EXISTING SITE CONDITIONS CONFICT WITH OBTAINED GRADES SHOWN, THE CONTRACTOR MUST MAKE MINIMUM ADJUSTMENTS TO THE GRADES TO ACCOMMODATE EXISTING SITE CONDITIONS, ADJUSTMENTS ARE SUBJECT TO ENGINEER APPROVAL.
11. CONCRETE SIDEWALK OUTSIDE OF THE DRIVEWAY CROSSING MAY BE PERVEROUS.
12. PROTECT ADJACENT PANELS FROM DAMAGE DUE TO UNDERMINING DURING EXCAVATION & PLACEMENT OF SUBGRADE. SEE SPEC SECTION 1-07.13.

REF STD SPEC SEC 8-19

City of Seattle
NOT TO SCALE
TYPE 430A & 430B DRIVEWAYS

NOTES:
1. DRIVEWAY WIDTH GREATER THAN 15'-0" AND LESS THAN OR EQUAL TO 30' MUST HAVE TRANSVERSE CONSTRUCTION JOINTS AT IT'S CENTER.
2. DRIVEWAY GREATER THAN 30'-0" REQUIRE SDOT APPROVAL AND MUST HAVE TRANSVERSE CONTRACTION JOINTS EVENLY PLACED SO THE DISTANCE BETWEEN CONTRACTION JOINTS, OR BETWEEN THE EDGE THROUGH JOINTS AND CONTRACTION JOINTS IS NOT GREATER THAN 15'-0".
3. PROVIDE SCORE LINES PER STD PLAN NO 420 AND THE DRAWINGS.
4. THE SURFACE MUST BE BRUSHED IN THE TRANSVERSE DIRECTION IN RELATION TO THE CENTERLINE OF THE DRIVEWAY OR ALLEY WITH A FIBER HAIR BRUSH OR OTHER APPROVED BRUSH TYPE.
5. PROTECT ADJACENT PANELS FROM DAMAGE DUE TO UNDERMINING DURING EXCAVATION & PLACEMENT OF SUBGRADE, SEE SPEC SECTION 1-07.13.

REF STD SPEC SEC 8-14, 8-19

City of Seattle
NOT TO SCALE
CEMENT CONCRETE DRIVEWAY PLACED WITH CEMENT CONCRETE SIDEWALK

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

NOTES:
1. FOR CURB RAMP AND DETECTABLE WARNING DETAILS SEE STANDARD PLAN NO 422 (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 1/8 INCH.
8. ALL SLOPE GRADATIONS 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

NOTES:
1. SPEED HUMP MUST BE HMA CL 3/4"
2. CHEVRON SYMBOL PER STD PLAN NO 728A
3. TOLERANCE AT CENTER IS 3/4"
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

REF STD SPEC SEC 5-04

City of Seattle
NOT TO SCALE
SPEED HUMP

NOTES:
1. CUSHION MUST BE HMA CL 3'.
2. CHEVRON SYMBOL PER STD PLAN NO 728A
3. TRIANGLE SYMBOL PER STD PLAN NO 728B
4. TOLERANCE AT CENTER IS 3/4''
5. PARABOLIC SHAPE MUST BE MAINTAINED
NOTES:
1. FLIGHTS OF STAIRS MUST HAVE MAX VERTICAL RISE OF 12" BEFORE A LANDING.
2. AVOID FEWER THAN 2 RISERS PER FLIGHT.
3. STEPS IN FLIGHT MUST HAVE UNIFORM TREAD RUNS AND UNIFORM RISER HEIGHTS WITH TOLERANCE OF ±3/8".
4. TREADS MUST BE 11" MIN, 12" MAX. RISERS MUST BE 5" MIN, 7" MAX.
5. LANDING BETWEEN FLIGHTS MUST HAVE SAME WIDTH AS STEPS AND A MIN LENGTH OF 4'-0".
6. STAIRWAYS WITH 1 OR MORE RISERS MUST HAVE HANDRAILS ON BOTH SIDES.
7. HANDRAILS MUST BE CONTINUOUS ACROSS LANDINGS BETWEEN FLIGHTS OF STEPS.
8. ALL STEEL MUST BE HOT DIPPED GALVANIZED.
10. REINFORCING STEEL MUST BE ASTM A615 OR 60.
11. FOR FORMAL DRAINAGE PICK-UP SEE DETAIL B ON STD PLAN NO 440b (THIS IS OPTIONAL AND MUST BE CALLED OUT ON DRAWINGS).
12. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
14. LANDINGS MUST BE 0.5 MIN FOR A MIN LENGTH OF 4', ADJACENT SIDEWALK MAY BE PART OF LANDING IF SLOPE CRITERIA AND SETBACKS FROM HANDRAILS ARE MET.
15. TREAD SURFACE MUST HAVE GROOVES AT THE NOSE FOR TRACTION.
16. IF LANDING IS ELEVATED, LANDING MUST HAVE VERTICAL RAILING PER RIGHT OF WAY IMPROVEMENT MANUAL.
17. STAIRWAYS DEVIATING FROM STANDARD PLAN TO ACCOMMODATE BICYCLE FEATURES MAY BE USED PER STD PLAN NO 440c OR 440d.
18. DIMENSION FROM THE BOTTOM LANDING RAIL TO THE NOSE OF THE TREAD MUST BE 12" MIN + 1 TREAD LENGTH.
19. HANDRAIL GRIPPING SURFACE AND ADJACENT SURFACES AND MUST HAVE ROUNDED EDGES.
20. BOTTOM HANDRAIL EXTENSION MUST EXTEND ONE TREAD LENGTH MINIMUM PARALLEL TO THE SLOPE OF THE STAIR BEYOND BOTTOM STAIR NOISING.
21. TOP HANDRAIL EXTENSION MUST EXTEND HORIZONTALLY ABOVE LANDING 12" MINIMUM BEYOND TOP STAIR NOISING.
22. REBAR SIZING AND SPACING MAY CHANGE FOR WIDER OR NARROWER STAIRWAYS.
24. VENT HOLES IN KIND SECTIONS OR IN SIMILAR SECTIONS MUST BE 3/8" IN DIA.
25. ENDS MUST BE LEFT COMPLETELY CLOSED BY THE PREVENTS FULL OPENINGS ON ENDS OF HORIZONTAL RAILS AND VERTICAL LEGS MUST BE GALVANIZED SEPARATELY AND ATTACHED AFTER GALVANIZING.

REF STD SPEC SEC 8-18

CEMENT CONCRETE STAIRWAY & HANDRAIL

City of Seattle NOT TO SCALE
NOTES:
1. REFER TO STANDARD PLAN NO. 440a AND 440b FOR ADDITIONAL NOTES, DETAILS & DIMENSIONS.
2. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
3. FIELD WELDED AND GROUND SURFACES MUST BE CLEANED AND COATED WITH ZINC SPRAY TO A MIN. OF 3 MILS, DRY PAINT THICKNESS.
4. DIMENSIONS SHOWN ON ONE SIDE OF THE SECTION VIEW ARE TYPICAL TO THE OTHER SIDE, UNLESS NOTED OTHERWISE.
5. DISTANCE BETWEEN HANDGRIp SUPPORTS MUST NOT EXCEED 6'.
6. BIKE RUNNEL SLAB THICKNESS VARIES WITH STEP RISER HEIGHT, MIN. 10.5", MAX. 12.5".
7. RUNNEL LIP HEIGHT 1.5" ABOVE STEP NOSING AND LANDING.
8. LANDINGS THAT INTERSECT OTHER STAIRS OR WALKS MUST BE AT LEAST 6' LONG TO ALLOW FOR A 4' CLEAR AREA WITHOUT RUNNEL & RAIL.
9. STAMP CONCRETE AT TOP AND BOTTOM OF RUNNEL. SEE CONCRETE STAMP DETAIL.
10. RUNNEL LOCATION RAIL MAY 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 PASSENGER, 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 INTERFERENCE WITH MOVEMENT.
13. EXTERNAL VENT HOLES MUST BE AS CLOSE TO THE WELD AS POSSIBLE AND MUST BE 25% THE SIZE OF THE OD. OF THE PIPE, BUT NOT LESS THAN ¼" IN DIA.
14. VENT HOLES IN END SECTIONS OR IN SIMILAR SECTIONS MUST BE 1¼" 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.
NOTES:
1. CEMENT CONCRETE MUST BE CL 3000 TROWEL FINISH
2. NUMBER OF STEPS MUST SUIT INDIVIDUAL CONDITIONS WITH UNIFORM TREAD AND RISER DIMENSIONS AS FOLLOWS:
   TREADS MUST BE 11" MIN - 10" MAX
   RISERS MUST BE 6" MIN - 7" MAX
3. STEP WIDTH MUST MATCH WIDTH OF EXISTING WALK, BUT MUST BE NO LESS THAN 2'-6" WIDE
4. STAIRWAYS WITH 1 OR MORE RISERS MUST INCLUDE A HANDRAIL ON BOTH SIDES, SEE STD PLAN NO 440
5. REINFORCING STEEL ASTM A 615 GR60
6. TREAD SLOPES OUTWARD @1%
NOTE:
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 OR 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 RAMPS.
6. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.

SECTION A-A
MOUND FOR DRAINAGE (TYP)
#4 REINFORCING U BAR AT EACH POST SEE DETAIL BELOW
4" 16GA GALV STEEL SLEEVE (TYP)
NON-SHRINK GROUT

DETAIL A

SECTION B-B

DETAIL C

SECTION C-C

DETAIL D

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.
6. GRIPPING HANDRAILS ON RAMPS (SLOPE EXCEEDS 5%) MUST EXTEND HORIZONTALLY A MINIMUM OF 12" BEYOND TOP AND BOTTOM OF RAMP RUNS.
7. PIPE DIAMETERS SHOWN CORRESPOND TO PIPE "SHAPE" AS DEFINED IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
8. PLACE EXPANSION GAP AT EVERY OTHER PANEL.
9. "DETAIL C" IS FOR EXISTING CONCRETE STRUCTURE CONNECTION ONLY. ANCHOR BOLTS MUST BE DESIGNED PER AASHTO CODE.
**ROLL FORMED SECTIONS**

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<th>ROUND</th>
<th>H-COLUMN</th>
<th>ROLL FORMED</th>
<th>ROUND</th>
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<td>WEIGHT PER FT POUNDS</td>
<td>SIZE INCHES</td>
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**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 TENSO WIRE MUST BE PLACED WITHIN THE LIMITS OF THE FIRST FULL FABRIC WEAVE.
4. THE ILLUSTRATIVE DETAIL SHOWN HEREIN 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 MOUNTED 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'-6''
   TYPES 4&6: 9'-6''
3. CONCRETE OR GROUT AROUND POST AT GROUND LINE MUST BE MOUNDED FOR DRAINAGE.
NOTES:
1. IF THE SLOPE OF THE TEMPORARY CROSSING IS 5% OR GREATER, A GRIPPY 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.

SECTION A-A
* UNLESS APPROVED BY SEATTLE DEPARTMENT OF TRANSPORTATION

<table>
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<tr>
<th>BRIDGE LENGTH</th>
<th>PLANK SIZE</th>
<th>NAIL SIZE</th>
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<td>10'-0&quot; OR LESS</td>
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<td>11'-0&quot; TO 14'-0&quot;</td>
<td>3&quot;x12&quot;</td>
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<td>15'-0&quot; TO 20'-0&quot;</td>
<td>4&quot;x12&quot;</td>
<td>60 PENNY</td>
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LUMBER: DOUGLAS FIR #2 OR BETTER
POST & NAILS S4S
PLANKS - ROUGH

REF STD SPEC SEC 1-07.23

City of Seattle
NOT TO SCALE
TEMPORARY PEDESTRIAN WALKWAY

CONCRETE TONGUE & GROOVE BLOCK
STEEL PIPE, 6" NOM. SCH 80, FILLED WITH CL 3000 CONC. PAINT FEDERAL SAFETY YELLOW, SEE FEDERAL PAINT STANDARD.

CONC CL 3000

SLOPE CONCRETE FOR DRAINAGE

2"X3/8" JOINT MATERIAL

CHAMFER (TYP.)

ASPH MNRL AGG TYPE 2

CW

MNRL AGG TYPE 2

1'-8"
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).

<table>
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<th>DIMENSION</th>
<th>TYPE II</th>
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<tr>
<td>B</td>
<td>17&quot;</td>
<td>25 1/2&quot;</td>
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<tr>
<td>C</td>
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<td>50&quot; TO 58&quot;</td>
<td>64 1/4&quot; TO 67 1/2&quot;</td>
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SIGNAL CONTROLLER CABINET—TYPES II, III, VI

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

REF STD SPEC SEC 8-31, 8-32
CONDUIT LAYOUT — TYPE II SIGNAL CONTROLLER FOUNDATION

CONDUIT LAYOUT — TYPE III/VI SIGNAL CONTROLLER FOUNDATION

REF STD SPEC SEC 8-31, 8-32
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 silicone 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" x 12" copper clad with ground rod clamp. A second ground must be installed a minimum 8' away in a ground rod handhole at per City of Seattle standard plan No. 5506, 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)
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

CABINET WIDTH 6"

3/4" DIAMETER DRAIN TUBE TO LOW SIDE OF FINISHED GRADE

CONDUIT TO SCL CABINET POWER POINT & CONDUIT(S) TO HANDBOHE (SEE PLANS)

MIN ONE 2" CONDUIT TO HANDBOLE (SEE PLANS)

GROUND ROD 3/4"X12" COPPER-CLAD WITH GROUND CLAMP. A SECOND GROUND ROD MUST BE INSTALLED A MINIMUM 8" AWAY IN A GROUND ROD HANDBOLE AS PER CITY OF SEATTLE STANDARD PLAN NO. 5506. COORDINATE WITH ELECTRICAL INSPECTOR FOR LOCATION, INSTALL #4 AWG COPPER GROUND WIRE BETWEEN CABINET FOUNDATION AND GROUND ROD HANDBOLE.

ANCHOR BOLT TYPE, SIZE AND LOCATION (SEE NOTE 2)

PEDESTAL MOUNTING HOLES (SEE NOTE 2)

ANCHOR BOLT TYPE, SIZE AND LOCATION (SEE NOTE 1)

CONCRETE MAINTENANCE PAD (SEE NOTE 5)

TOP VIEW

JOINT SIGNAL CONTROLLER/SERVICE CABINET FOUNDATION DETAIL
NOT TO SCALE

REF STD SPEC SEC 8-31, 8-32

City of Seattle
NOT TO SCALE

JOINT SIGNAL CONTROLLER/ SERVICE CABINET FOUNDATION DETAIL

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

MAST ARM MOUNTING
SEE NOTE 1

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

SIGNAL HANGER DETAIL

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

 PEDESTAL TOP MOUNTING
FOR PEDESTAL SEE STD PLAN NO 524

SPAN MOUNTING

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

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

BRONZE ELEVATOR PLUMBING W/ STAINLESS
STEEL THROUGH BOLT

BRONZE OFFSET SLIP FITTER COLLAR W/
STAINLESS STEEL SET SCREWS

MOUNTING HEIGHT ABOVE FINISHED
GRADE
12'-0" MIN
15'-0" MAX

SPAN WIRE

SIGNAL CABLE DRIP LOOP (COIL 3'-0")

SEE SIGNAL HANGER DETAIL
ABOVE LEFT

ENTRY HOLE MUST BE PLUGGED W/
APPROVED FITTING

REF STD SPEC SEC 8-31
BRONZE WIRE ENTRANCE
HANGER W/ INSULATING BUSHING

1½" PIPE COUPLING

DRILL & TAP ONE WALL OF THE
PIPE & COUPLER FOR (2) ¾"
X ¾" STAINLESS STEEL BOLTS

1½" PIPE NIPPLE SIZED TO GAIN
MOUNTING HEIGHT AND TO LEVEL
ALL RED HEAD SECTIONS

LOCK NUT WITH LOCKING SCREW

SIGNAL HOUSING

NEOPRENE SEAL
STAINLESS STEEL WASHER
LOCK NUT
COTTER KEY

WITHOUT EXTENSION
WITH EXTENSION

SUSPENDED SIGNAL MOUNTING DETAIL
NOTES:
1. \( \frac{3}{8}" \times 1\frac{1}{2}" \) BOLT, \( \frac{3}{8}" \) LOCK WASHER, \( \frac{3}{8}" \times 1\frac{1}{4}" \) WASHER 4 OF EACH REQUIRED PER ASSEMBLY; ALL STAINLESS STEEL.
2. MOUNTING MUST BE AS FOLLOWS:
   - ON METAL POLES THINNER THAN 7 GAUGE, USE \( \frac{3}{8}" \) STAINLESS STEEL RIVNUTS.
   - ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR \( \frac{3}{8}" \) BOLT (STAINLESS STEEL RIVNUTS OPTIONAL).
   - ON POLES FILLED OR MADE WITH CONCRETE USE \( \frac{3}{8}" \times 2\frac{1}{2}" \) MIN STUD BOLT ANCHORS, SLEEVE TYPE.
   - ON WOOD POLES USE \( 1\frac{1}{2}" \times 2\frac{1}{2}" \) LAG BOLTS.
NOTES:
1. BOLT AND WASHERS MUST BE STAINLESS STEEL PER ASTM A 563 DH AND ASTM F 436
2. MOUNTING MUST BE AS FOLLOWS:
   a. ON METAL POLES THINNER THAN 7 GAUGE, USE 3/16" STAINLESS STEEL RIVETS
   b. ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR 3/8" BOLT (STAINLESS STEEL RIVETS OPTIONAL)
   c. ON POLES FILLED WITH OR MADE FROM CONCRETE USE 3/8" X 2 1/2" STUD BOLT ANCHORS WITH HEX NUT
3. FOR STREET NAME SIGN PEDESTAL INSTALLATION, SEE STD PLAN NO 623

FINISHED GRADE

PEDESTAL MOUNT

REF STD SPEC SEC 8-31
NOTE:
WRAP TOP OF ANCHOR BOLTS WITH CORROSION PROTECTION TAPE

1" CHAMFER (TYP)

1'-6"

2" PIPE CAP GALV

CENTER OF PUSHBUTTON

2" SCH 40 STL PIPE GALV

PEDESTRIAN PUSHBUTTON & MOUNTING PER STD PLAN NO 522a and 522b

2" STANDARD IRON PIPE FLANGE W/ 7/8" BOLT CIRCLE

(4) 3/8" X 12" ANCHOR BOLTS @ 4 1/2" BOLT CIRCLE W/ 2 NUTS AND 2 WASHERS PER EACH BOLT

TOP OF SIDEWALK

TOP OF FOUNDATION

COLD JOINT

1" SCH 80 PVC

1'-0"

ROUND OR SQUARE

SIDEWALK REMOVAL & RESTORATION LIMITS

PEDESTRIAN PUSHBUTTON POST FOUNDATION CLASS 3000 CONCRETE

REF STD SPEC SEC 8-31, 8-32

City of Seattle

NOT TO SCALE
1/4-20 X 3/8" LONG STAINLESS STEEL SCREW

1/4-20 STAINLESS STEEL BOLT WITH WASHER & LOCK WASHER

NOTES:
1. PUSHBUTTON MUST HAVE DIRECTIONAL ARROW AS SPECIFIED ON THE PLANS.
2. INSTALLATION OF TWO PEDESTRIAN PUSHBUTTON ASSEMBLIES MUST BE ON A 4" 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
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" 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.
**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 SHAVES TALLER THAN 10'.

---

**PEDESTAL MOUNTING DETAIL**

- **4" PIPE**
- **SET BOLT**
- **THREAD FOR 4" PIPE**
- **ANCHOR BOLT**
- **HEX NUT**
- **LOCK WASHER**
- **FLAT WASHER**
- **LEVELING NUT**
- **GROUNDING LUG**
- **3 THREAD PROJECTION ABOVE NUT**
- **HEX NUT**
- **WRAP WITH TAPE TO SEAL GROUT**
- **FOR GROUT DETAIL SEE STD PLAN NO 563**
- **2" PLASTIC DRAIN TUBE ON LOW SIDE OF FINISH GRADE**
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 TOWARDS 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.
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
**DIPOLe LOOP DETECTOR**

**QUADRIPOLe LOOP DETECTOR**

*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 DIPOLE**

**BICYCLE QUADRIPOLe**

**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.

**SECTION A-A**

**STANDARD LOOP SPACING**

**REF STD SPEC SEC 8-31**

NON-INSULATED SOLDERED BARREL CONNECTOR
(OFFSET THESE CONNECTORS AS SHOWN)

DRAIN WIRE (CUT OFF)

LEAD-IN CABLE TO DETECTOR AMPLIFIER

FOIL SHIELD (CUT OFF)

3M 2210 VINYL MASTIC

WRAP WITH 3M SUPER 88 ELECTRICIAN'S TAPE

TO LOOP IN STREET

1" MIN

DETECTOR LEAD-IN WIRE SPLICE DETAIL

NOTE:
SOLDER CONNECTION AFTER CRIMPING

REF STD SPEC SEC 8-31
SPIRAL TERMINATION DETAIL

SPIRAL WELDED LAP SPlice DETAIL

SPIRAL LAP SPlice DETAIL
PERMISSIBLE BELOW ANCHOR BOLTS

REFERENCES:
- REF STD SPEC SEC 8-32, 6-02
### FOUNDATION SCHEDULE

<table>
<thead>
<tr>
<th>POLE TYPE</th>
<th>PROJECTION</th>
<th>ANCHOR BOLTS (TOTAL 4 PER POLE)</th>
<th>ANCHOR PLATE DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>p</td>
<td>Bolt Circle Dia.</td>
<td>BOLT CIRCLE DIA SIZE</td>
</tr>
<tr>
<td>T</td>
<td>7/8&quot;</td>
<td>1-1/2&quot; DIA X 60&quot;</td>
<td>1-1/4&quot; 3/8&quot; X 16&quot; X 16&quot;</td>
</tr>
<tr>
<td>V</td>
<td>9&quot;</td>
<td>1-1/4&quot; DIA X 72&quot;</td>
<td>1&quot; 3/8&quot; X 16&quot; X 16&quot;</td>
</tr>
<tr>
<td>X</td>
<td>10&quot;</td>
<td>2&quot; DIA X 72&quot;</td>
<td>2-1/2&quot; 3/8&quot; X 18&quot; X 18&quot;</td>
</tr>
<tr>
<td>Z</td>
<td>11-1/2&quot;</td>
<td>2-1/2&quot; DIA X 72&quot;</td>
<td>2-3/4&quot; 3/8&quot; X 20&quot; X 20&quot;</td>
</tr>
</tbody>
</table>

Foundation plan, where pole type other than noted above is required, refer to plans for anchor bolts and anchor plate dimensions.

---

**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.
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(2A) prior to pouring concrete.
7. Foundation depth, reinforcement, and anchor bolts must be in conformance with "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" (6TH EDITION, 2013). Design basic wind speed is 85 MPH and recurrence interval/design life is 50 years.

---

REF STD SPEC SEC 8-32

City of Seattle NOT TO SCALE STRAIN POLE FOUNDATION SCHEDULE & NOTES (TYPE T, V, X & Z)
NOTES:
1. BOLT CIRCLE: 11½" TYP
2. SEE SCL CONSTRUCTION STANDARD 1716.34 FOR POLE MOUNTING AND GROUT DETAIL
3. ANCHOR BOLTS MUST BE HOT DIP GALVANIZED ASTM A153 OR F2329, FULL LENGTH AND FABRICATED FROM ASTM F1954 OR A576 WITH 12" THREADS ON TOP
NOTES:
1. BOLT CIRCLE: 9" TYP
2. SEE SCL CONSTRUCTION STANDARD 1715.34 FOR POLE MOUNTING AND GROUT DETAIL.
3. 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.
4. SEE SCL MATERIAL STANDARD 5756.09 FOR POLES.
5. SEE SCL CONSTRUCTION STANDARD 1716.07 FOR STREETLIGHT HANDEP AND CONDUIT REQUIREMENTS.

REF STD SPEC SEC 8-32

NOTES:
1. THE COVER MUST HAVE $\frac{3}{8}''$ TO $\frac{3}{4}''$ CLEARANCE ON EACH EDGE WITHIN THE FRAME AFTER GALVANIZING.
2. THE GROUND ROD MUST EXTEND 4'' ABOVE THE BOTTOM OF THE HANDHOLE OR MINERAL AGGREGATE.
3. TYPE 1, 2, 3, 5 & 6 HANDHOLE COVERS MUST HAVE "SDOT" OR "SL" ON THEM, AS APPROPRIATE.
4. TYPE 4 HANDHOLE MUST BE INSTALLED IN ROADWAYS, PARKING LOTS, ETC.
5. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSIONS (SEE STD PLAN NO 231) TO BRING THE COVER UP THE THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
6. A 4' LENGTH OF #6 THINN or THINN 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.

HANDHOLE INSTALLATION DETAIL

FULL 180° OPEN
STEEL PLATE COVER (GALV) W/LOCKING LATCH
(4) $\frac{3}{4}''$ LIFT INSERTS
RECESSED LIFT HANDLE
COVER

18'' X 18'' KNOCKOUT 1 EACH END
OPTIONAL GALV PULLING IRON 1 EACH END
6'' DRAIN HOLE (OPENED)

TYPE 1 & 2 HANDHOLE

TOP unit INSIDE DIMENSION EXTENSION COVER DIMENSIONS
<table>
<thead>
<tr>
<th>HANDHOLE TYPE</th>
<th>L</th>
<th>W</th>
<th>H</th>
<th>H</th>
<th>L</th>
<th>W</th>
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<tr>
<td>1</td>
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<td>2</td>
<td>26''</td>
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<td>12''</td>
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<td>3</td>
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<td>12''</td>
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<td>35''</td>
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<td>4</td>
<td>24''</td>
<td>VAR</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>36''</td>
<td>24''</td>
<td>32''</td>
<td>NA</td>
<td>35''</td>
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<td>6</td>
<td>42''</td>
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<td>30''</td>
<td>NA</td>
<td>33 1/2''</td>
<td>33 1/2''</td>
</tr>
<tr>
<td>ORHH</td>
<td>8''</td>
<td>8''</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

TYPE 3 HANDHOLE
(COVER SAME AS TYPE 5)

TYPE 4 HANDHOLE
TRAFFIC BEARING

TYPE 5 HANDHOLE

TYPE 6 HANDHOLE

CONCRETE COVER WITH "GROUND ROD" CAT IN COVER

8" ROUND

4" DEPTH MINERAL AGGREGATE TYPE 9

GROUND ROD

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)

GROUND ROD HANDHOLE (GRHH)

REF STD SPEC SEC 8-33

City of Seattle NOT TO SCALE HANDHOLES

NOTES:
2. ALL NON-DELIBERATE TRAFFIC PULL BOXES MUST COMPLY WITH ALL TEST PROVISIONS OF ANSI/SCETE 77.2012 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY", & MUST MEET THE TIER 22 APPLICATION. MARKINGS SHOWING THE TIER 22 RATING MUST BE LABELLED OR STENCILLED 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/SCETE 77, TO THE 68WF, MEETING ALL TEST PROVISION OF THE LATEST REVISION OF ANSI/SCETE 77.
5. PULL SLOTS MUST BE RATED FOR MINIMUM PULL OUT OF 3000 POUNDS.
6. TYPE 4 HANDHOLE MUST BE INSTALLED IN ROADWAY PARKING LOTS, ETC. ALL COVERS MUST BE COMPLETE WITH A MOLDED LOGO, MANUFACTURE'S NAME & TIER RATING LOGO (NO GLUE IN LOGO). LOGO MUST READ "SDT" 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 BRIDGE THE COVER UP TO THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
9. A 4" LENGTH OF #6 THINN COPPER WIRE MUST BE SECURED FROM THE HANDHOLE COVER TO THE FRAME, WITH A 4-0" LENGTH FROM FRAME THAT CAN BE HOOKED 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.

HANDBOLE SCHEDULE

<table>
<thead>
<tr>
<th>HANDHOLE TYPE</th>
<th>TOP UNIT INSIDE DIMENSION</th>
<th>EXTENSION UNIT(S)</th>
<th>COVER DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>W</td>
<td>H</td>
</tr>
<tr>
<td>1</td>
<td>24&quot;</td>
<td>13&quot;</td>
<td>12&quot;</td>
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<tr>
<td>2</td>
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</tr>
<tr>
<td>6</td>
<td>48&quot;</td>
<td>48&quot;</td>
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</tr>
</tbody>
</table>

GRHH 8" VAR NA

TYPE 3 HANDHOLE
(COVER SAME AS TYPE 5)

<table>
<thead>
<tr>
<th>3/8-7 X 4  [102] LONG S.S. HEX HEAD AUGER BOLT 2 PLACES</th>
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</thead>
</table>

TYPE 1 & 2 HANDHOLE

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>SKID RESISTANT SURFACE MS-86</td>
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TYPE 5 HANDHOLE

<table>
<thead>
<tr>
<th>6&quot; X 18&quot; KNOCKOUT 2 EACH END</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot; X 12&quot; KNOCKOUT 1 EACH SIDE</td>
</tr>
</tbody>
</table>

NOTES:
1. FOR DETAILS NOT SHOWN, SEE STD PLAN NO 550a
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
NOTE:
POLE AND MAST ARM DESIGN MUST CONFORM TO "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.

SEE FOUNDATION SCHEDULE, STD PLAN NO 562b AND FOUNDATION DETAIL, STD PLAN NO 541a

REF STD SPEC SEC 8-32

City of Seattle
NOT TO SCALE
STEEL MAST ARM POLE

POLE FOUNDATION NOTES
1. CONCRETE MUST BE CLASS 4000P.
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 A705, 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 541G FOR FOUNDATION DETAILS.
8. FOUNDATION DEPTH, REINFORCEMENT AND ANCHOR BOLTS MUST BE IN CONFORMANCE WITH "ASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS" (6TH EDITION, 2013). DESIGN BASIC WIND SPEED IS 85 MPH AND RECURRENCE INTERVAL/DESIGN LIFE IS 50 YEARS.

FOUNDATION SCHEDULE

<table>
<thead>
<tr>
<th>MAST ARM LENGTH</th>
<th>ANCHOR BOLTS</th>
<th>ANCHOR PLATE DIMENSIONS</th>
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<tbody>
<tr>
<td></td>
<td>PROJECTION &quot;T&quot;</td>
<td>BOLT CIRCLE &quot;A&quot;</td>
</tr>
<tr>
<td>15'-0&quot; to 30'-0&quot;</td>
<td>7/8&quot;</td>
<td>1-13/16&quot;</td>
</tr>
<tr>
<td>31'-0&quot; to 40'-0&quot;</td>
<td>9&quot;</td>
<td>1-1/8&quot;</td>
</tr>
<tr>
<td>41'-0&quot; to 45'-0&quot;</td>
<td>9&quot;</td>
<td>18&quot;</td>
</tr>
<tr>
<td>46'-0&quot; to 60'-0&quot;</td>
<td>10&quot;</td>
<td>20&quot;</td>
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</tbody>
</table>

FOUNDATION DEPTH MUST BE PER PLANS.

REF STD SPEC SEC 8-32

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


City of Seattle

NOT TO SCALE
NOTES:
1. ALL OUTLETS MUST BE PLUGGED WITH THREAD-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 3/4" MAX AS SHOWN.

REF STD SPEC SEC 8-30, 8-32

City of Seattle

NOT TO SCALE

MISCELLANEOUS STEEL POLE DETAILS

1/2" x 4" NIPPLE
(UNLESS OTHERWISE
NOTED)

CHANNEL DRILLED 1/2"
OVERSIZE OF NIPPLE

CABINET WALL DRILLED
1/2" OVERSIZE OF NIPPLE

1/2"-13 NC X 2 1/2" SS
HEX HEAD BOLT

SEALING LOCKNUT

EXISTING POLE DRILLED 50
BUSHING WILL PASS THROUGH

END BUSHING

NOTE:
NEW POLE 2-7/8"dia COUPLING
TO BE FABRICATED & INSTALLED
BEFORE GALLVANIZING

WIREWAY ISOMETRIC DETAIL

METAL POLE

6X8.2 LB/FT CHANNEL

CABINET

6" DRAIN HOLE

H/A

1/2"-13 NC X 2 1/2" SS
HEX HEAD BOLT, LOCK
WASHERS, DRILL AND TAP POLE
TO ACCEPT

WIREWAY
EXISTING POLE-1 1/2"dia
NEW POLE-2 7/8"dia (PRE-INSTALLED)
(SEE DETAIL THIS SHEET)

METAL POLE

6X8.2 LB/FT CHANNEL

CABINET

PLAN

SECTION A-A

REF STD SPEC SEC 8-32

City of Seattle
TERMINAL CABINET
POLE MOUNTING

NOT TO SCALE

## Pole Schedule

<table>
<thead>
<tr>
<th>Pole Type</th>
<th>Ground Line Dia &quot;A&quot;</th>
<th>Pole Base Plate Size</th>
<th>Bolt Circle Dia &quot;A&quot;</th>
<th>Bolt Hole</th>
<th>Anchor Bolts</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Std</td>
<td>CSB</td>
<td>Std</td>
<td>CSB</td>
<td>Std</td>
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<tr>
<td>V</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>1(\frac{3}{4})&quot;x18&quot;x18&quot;</td>
<td>1(\frac{3}{4})&quot;x23&quot;x23&quot;</td>
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<td>15&quot;</td>
<td>--</td>
<td>2(\frac{1}{2})&quot;x23&quot;x23&quot;</td>
<td>--</td>
<td>22&quot;</td>
</tr>
</tbody>
</table>

**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 \(\frac{1}{4}\)" if ASTM A572 Grade 42 steel is used.
3. Reinforcing sleeve must be fabricated from the same material and yield strength as the pole shaft.
4. Pole shafts must have no more than two longitudinal welds in each ply.
5. Minimum shaft wall thickness of each ply must be 0.235" (3 gauge). Pole must have a maximum of two plies not including the \(\frac{1}{4}\)" reinforcing sleeve.
6. Maximum silicon content in steel must be 0.04%. See STD SPEC Section 9-33.1(3) for general galvanizing requirements.
7. Pole diameter for 12 or more sided poles must be measured from the point to point dimension.
8. Poles must meet deflection criteria stated in STD SPEC Section 9-33.2(2) with the dead load applied at 25" above ground line.

REF STD SPEC SEC 8-32, 9-33

City of Seattle | NOT TO SCALE | STRAIN POLE DETAILS (TYPE V, X, & Z POLES)
NOTES:
1. POLE STRENGTH MUST MEET REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (6TH EDITION, 2013). DESIGN WIND SPEED IS 85 MPH AND RECURRENCE INTERVAL/DESIGN LIFE IS 50 YEARS.
2. POLE SHAFT: ASTM A572 GRADE 50, 60 OR 65 (Fy=50, 60 OR 65 KSI RESPECTIVELY), OR ASTM A595 GRADE A OR B (Fy=65 OR 60 KSI RESPECTIVELY).
3. BASE PLATE AND HANDHOLE REINFORCING RING: ASTM A36 OR ASTM A572 GRADE 42.
4. POLE SHAFTS MUST HAVE NO MORE THAN TWO LONGITUDINAL WELDS IN EACH PLY.
5. MINIMUM SHIFT 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 SIZED 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 1B1.)

ALTERNATE POLE BASE DETAIL

POLE BASE DETAIL

REF STD SPEC SEC 8-32, 9-33

Type T Strain Pole Details
Traffic Signal Only
500 SIGNALIZATION-LIGHTING

STANDARD PLAN NO 572

REV DATE: AUG 2014

BRACKET ARM
EXTENSION 2" STD PIPE (SCH 40)
END 0.14"/FT TAPER

1/16"

13/16" HOLE
FOR 3/4" BOLT
(3 PLACES)

1"DIA HOLE
(BEVEL EDGES)

3/4"PLATE

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

BRACKET ARM FLANGE PLATE

STEEL STREET LIGHT POLE

4"X6/8" OVAL
HANDHOLE WITH
REMOVABLE
GASKETED COVER

8½" MAX POLE
GROUND LINE
DIAMETER

(4)1"X36"X4" ANCHOR
BOLTS (SEE STD.
PLAN NO 543 FOR
POLE FOUNDATION)

FOR POLE MOUNTING AND
GROUT DETAIL SEE STD
PLAN NO 563a

STEEL STREET LIGHT POLE

1" THICK PLATE

1/16" HOLE
(TYP)

2"R (TYP)

CURB LINE

90°

1/8" BOLT
CIRCLE

FESTOON OUTLET
ID PLATE & HH

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

POLE BASE PLATE

2' THRU 10' BRACKET ARMS

<table>
<thead>
<tr>
<th>NOM SPAN</th>
<th>H&quot;</th>
<th>BEND RADIUS</th>
<th>TUBE REQUIREMENT</th>
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<tbody>
<tr>
<td>2&quot;</td>
<td>5/8&quot;</td>
<td>-</td>
<td>2&quot; STD PIPE</td>
</tr>
<tr>
<td>4&quot;</td>
<td>12&quot;</td>
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<td>11 GAUGE</td>
</tr>
<tr>
<td>10&quot;</td>
<td>30&quot;</td>
<td>15&quot;</td>
<td>11 GAUGE</td>
</tr>
</tbody>
</table>

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

* 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.

City of Seattle

NOT TO SCALE

CONDUIT RISER (WITH STAND-OFF BRACKET*)

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

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

REF STD SPEC SEC 8-33
WOOD POLE INSTALLATION

METAL POLE INSTALLATION

BULL RING INSTALLATION

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
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.
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 POLES 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" x 2½" MIN STUDBOLT ANCHORS WITH HEX NUT.
3. FOR SIGN FEATURE, CONTACT TRAFFIC ENGINEER.

REF STD SPEC SEC 8-21
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 RH NUTS ON ALUMINUM POLES

REF STD SPEC SEC 8-21

City of Seattle
NOT TO SCALE
SNS BRACKET FOR STEEL POLES

NOTES:
1. ON POLES FILLED WITH OR MADE FROM CONCRETE USE 5/16"X2½" 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)(b) FOR STREET DESIGNATION SIGNS.
3. FOR DARK COLORED POLES PAINT BAND TO MATCH POLE
4. ALL HARDWARE TO BE STAINLESS STEEL

REFERENCES
STD SPEC SEC 8-21

City of Seattle
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 3/4" 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
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.

TS-10
(SEE STD PLAN NO 621b FOR POST ANCHOR DETAILS)

TS-5
(SEE STD PLAN NO 621b FOR POST ANCHOR DETAILS)

REF STD SPEC SEC 8-21
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
NOTES:
1. SNS BLADE MUST BE INSTALLED PARALLEL TO CORRESPONDING STREET
2. INSTALLATION OF SNS ON ANY OTHER METAL POLE MUST REQUIRE REVIEW AND APPROVAL BY THE ENGINEER
3. SNS/SP RELOCATION: OLD CONCRETE MUST BE REMOVED AND NEW CONCRETE BASE MUST BE CONSTRUCTED
4. ALL STREET NAME SIGNS WILL BE FURNISHED BY THE CITY OF SEATTLE AT PROJECT OR PERMITEE’S EXPENSE

REF STD SPEC SEC 8-21

City of Seattle

NOT TO SCALE

STREET NAME SIGN INSTALLATION

NOTES:
1. CAP MUST BE MADE OF THE SAME MATERIAL AS THE SURROUNDING PAVED SURFACE AND MUST BE MOUNTED 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
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-FLUORESCENT YELLOW GREEN, Y-FHWA YELLOW.

REF STD SPEC SEC 8-21
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

City of Seattle
NOT TO SCALE
OBJECT MARKER INSTALLATION IN TRAFFIC CIRCLE
NOTES:
1. POST ANCHOR RIVETS MUST BE 1½" ABOVE GROUND LEVEL
2. ATTACHMENT BRACKETS MUST FACE AWAY FROM STREET AS WHEN POST IS LOCATED 3'-0" FROM EDGE OF CURB. ATTACHMENT BRACKETS MUST FACE TOWARDS STREET (TS) WHEN POST IS LOCATED AT BACK SIDE OF SIDEWALK
3. FOR POST RELOCATIONS, OLD CONCRETE MUST BE REMOVED FROM POST
4. ALL SIGNS, STRUCTURES AND HARDWARE PROVIDED BY METRO EXCEPT WHERE NOTED OTHERWISE ON THIS STD PLAN
5. WHERE SURFACE MOUNTED BUS ZONE SIGNS ARE REQUIRED ON SLOPED SIDEWALK, THE CONTRACTOR MUST PLUMB THE POST BY BUILDING A NON-SHRINK GROUT PAD UNDER PEDESTAL ASSEMBLY WITH SMOOTH 1H TO 1V TAPER ON THE GROUT EDGE. THE BOLT ANCHOR LENGTH MUST BE ADJUSTED TO PROVIDE A MIN 3½" EMBEDMENT THROUGH THE GROUT INTO THE EXISTING CONCRETE

DIRECT BURIAL INSTALLATION

POST ANCHOR DETAIL

SURFACE MOUNT INSTALLATION

REF STD SPEC SEC 8-21

City of Seattle
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.

SURFACE MOUNT ON SIDEWALK OR USE HEAVY DUTY ANCHOR FOR NON-CONCRETE INSTALLATION PER STD PLAN NO 621b.

TS-10 RED POWDERCOATED TELESPAR, SEE STD PLAN NO 621a.
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

### TYPICAL TURN LANE CHANNELIZATION

Number of legend sets required based on the length of approach lines:

<table>
<thead>
<tr>
<th>Approach Length</th>
<th>Legend Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50 feet</td>
<td>1 set at X-walk end of pocket</td>
</tr>
<tr>
<td>50 feet to 120 feet</td>
<td>2 sets</td>
</tr>
<tr>
<td>125 feet to 300 feet</td>
<td>3 sets (Second legend located midway between first and last legends)</td>
</tr>
<tr>
<td>Over 300 feet</td>
<td>Additional sets spaced at approx 100 ft intervals between first and last sets</td>
</tr>
</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>Approach Length</th>
<th>Legend Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50 feet</td>
<td>1 set at X-walk end of pocket</td>
</tr>
<tr>
<td>50 feet to 300 feet</td>
<td>2 sets</td>
</tr>
<tr>
<td>Over 300 feet</td>
<td>3 sets (Second legend located midway between first and last legends) Additional sets spaced at approx 300 ft intervals</td>
</tr>
</tbody>
</table>

**Note:**
- Line callouts are identified & described in STD SPEC Sec 8-22.
ALIGN TAILS OF APPROACH LANE ARROWS. NOTE: THE 10' OFFSET FROM THE END OF THE LANE OR THE STOP BAR SHOULD BE ESTABLISHED BY THE SHORTEST ARROW ON THE APPROACH AND LONGER ARROWS MAY ENCOERD UPON THE 10' OFFSET FROM THE END OF THE LANE TO OBTAIN ALIGNMENT WITH THE TAIL END OF SHORTER ARROWS WHEN PRESENT.

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

**TABLE A**

<table>
<thead>
<tr>
<th>POSTED OR 85TH-PERCENTILE SPEED</th>
<th>MAX</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 MPH</td>
<td>225 FT</td>
<td>75 FT</td>
</tr>
<tr>
<td>25 MPH</td>
<td>325 FT</td>
<td>115 FT</td>
</tr>
<tr>
<td>30 MPH</td>
<td>450 FT</td>
<td>165 FT</td>
</tr>
<tr>
<td>35 MPH</td>
<td>565 FT</td>
<td>225 FT</td>
</tr>
<tr>
<td>40 MPH</td>
<td>670 FT</td>
<td>295 FT</td>
</tr>
<tr>
<td>45 MPH</td>
<td>775 FT</td>
<td>375 FT</td>
</tr>
</tbody>
</table>

**TYPICAL LEGEND AND SYMBOL INSTALLATION DETAILS**

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

**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
(Typ) Install Type 2A lane markers in between 4" yellow lines.

L--/4YD

L--/4WS

L--/4Y2

(L--/4W2)

Do not install lane markers within pedestrian crosswalk area (see Std Plan No 712).

Ref Std Spec Sec 8-22

City of Seattle

Not to Scale

Typical Intersection Guideline Channelization
MIN 6" GAP BETWEEN BARRIER LINE AND EDGE OF CROSSWALK, TYP.

6'-0" DISTANCE TO CENTER OF PAINT LINES

(L-#/8WS)
TYPICAL CROSSWALK WITH
UPSTREAM CHANNELIZATION
(SHOWING CURB RAMPS & STOP LINE PLACEMENT)

NOTES:
1. "LADDER ST-LE" CROSSWALK MUST BE USED IN MOST APPLICATIONS. "TRANSVERSE LINE" CROSSWALK (L—_XWK, L—_XWK2) MAY ONLY BE USED WITH APPROVAL OF ENGINEER.
2. LOWER LANDING OF CURB RAMP MUST FALL WHOLLY WITHIN CROSSWALK LINES. SEE STANDARD PLAN NO 422k.
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 & STOP
LINE INSTALLATION DETAILS

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

REF STD SPEC SEC 8-22
C- /W
PASSENGER LOAD ZONE, ETC
(WHITE)

C- /R
TOW-AWAY ZONE
(RED)

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

3'-0"  4'-0"  3'-0"
RED  YELLOW  RED
(10'-0" MAX)

3'-0"  4'-0"  3'-0"
RED  YELLOW  RED

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

3'-0"  4'-0"  3'-0"
RED  YELLOW  RED
3'-0"  4'-0"  3'-0"
RED  YELLOW  RED

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

3'-0"  4'-0"  3'-0"
RED  YELLOW  RED
3'-0"  4'-0"  3'-0"
RED  YELLOW  RED
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

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 ANGULATING OF THE PARKING SPACES.
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
700 PAVEMENT MARKINGS

STANDARD PLAN NO: 721

REV DATE: JUL 2019

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

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
3” TO 12” PER DRAWINGS
OR AS REQUIRED BY SDOT (TYP)

DIRECTION
OF TRAVEL

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

City of Seattle
NOT TO SCALE
PAVEMENT MARKINGS
LEGENDS
740A
INTERNATIONAL SYMBOL OF ACCESSIBILITY

REF STD SPEC SEC 8-22

City of Seattle  NOT TO SCALE  INTERNATIONAL SYMBOL OF ACCESSIBILITY

741A
PEDESTRIAN SYMBOL

REF STD SPEC SEC 8-22
NOTES:
FHWA APPROVED RED COLOR FOR BUS LAKES
MUST BE USED WITH THERMOPLASTIC OR MMA.

750
RED BUS LANE MARKINGS
772
BICYCLE DETECTOR SYMBOL

NOTE:
SEE STD PLAN NO 530b FOR PLACEMENT
700 PAVEMENT MARKINGS

STANDARD PLAN NO 773

REF STD SPEC SEC 8-22

City of Seattle

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
700 PAVEMENT MARKINGS

WHITE PAVEMENT MARKING

GREEN PAVEMENT MARKING

SEE NOTE 1 FOR SPACING WHEN NOT ADJACENT TO CROSSWALK BARS

780A
ONE-WAY CROSS BIKE LAYOUT

780B
TWO-WAY CROSS BIKE LAYOUT

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, CROSS BIKE 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 CROSS BIKE WIDTH MUST BE SIZED TO THE NARROWER OF THE TWO FACILITIES.

REF STD SPEC SEC 8-22

City of Seattle
NOT TO SCALE
CROSS BIKE PAVEMENT MARKING

DRIVEWAY CROSSING LAYOUT

NOTES:
1. DRIVEWAY CROSSING MATERIAL MUST BE MMA OR PRE-FORMED THERMOPLASTIC
2. MATCH DRIVEWAY APRON IF WIDER THAN 20'-0"
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 2½".
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.

REF STD SPEC SEC 8-17, 8-19

City of Seattle

NOT TO SCALE

SUPPORT WALL

NOTES:
1. MATCH WALL THROUGH JOINTS WITH PAVEMENT THROUGH JOINTS. DISCONTINUE HORIZONTAL REINFORCEMENT AT JOINTS AND MAINTAIN 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 OF SPEC SEC 8-17.
8. ALLEY THICKNESS PER STANDARD PLAN NO 403.