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CITY OF SEATTLE

2014 edition

STANDARD PLANS

FOR

MUNICIPAL CONSTRUCTION

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PREFACE

The 2014 Edition City of Seattle Standard Plans for Municipal Construction (henceforth referred to as the “2014 Standard Plans”) have been prepared by Seattle Public Utilities in cooperation with the Department of Finance and Administrative Services, Seattle Department of Transportation, Seattle Parks and Recreation, Seattle City Light, and the Seattle Center. These Plans have been coordinated with the 2014 Edition City of Seattle Standard Specifications.

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

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

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


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

Our sincere thanks and appreciation to all the individuals who participated in the effort of producing the 2014 Edition of our Standard Plans, and to the many other City personnel who provided review and submitted comments.

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

Department of Financial and Administrative Services: Maura Donoghue, Aleanna Kondelis and Nancy Locke


Seattle Parks and Recreation: Rebecca Rufin, R. Frank Robinson and Joe Neiford

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

Seattle Center: Bonnie Pendergrass and Beth Duncan

The hardcopy version of this document is available at the Department of Finance and Administrative Services Treasury Services cashier counter located in the Seattle Municipal Tower, 700 Fifth Avenue, Suite 4200, Seattle, Washington 98104, 206-684-5214. The 2014 Standard Plans may also be ordered on-line from the web address listed above. Additional new features on the website include; an archive of previous editions of our Standards dating back to 1910, CAD files of our Standard Plans and proposed amendments to this edition (including pdf redline markups showing what has changed).

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

Randy Earlywine, P.E.  Dean Huber  Henry Chen, P.E.
City Construction Standards Engineer  CAD Technology Program Manager  Director
Construction Management Division  Eng. and Tech. Services Division  Eng. and Tech. Services Division
Seattle Public Utilities  Seattle Public Utilities  Seattle Public Utilities
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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

+9.74 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 +103.58)

+0.49 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.
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<td>Automatic Control Valve</td>
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<td>ACP</td>
<td>Asphalt Concrete Pavement</td>
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<td>Americans with Disabilities Act</td>
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**Abbreviations Reference**

City of Seattle

NOT TO SCALE

ABBREVIATIONS

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**Abbreviations Reference:**

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**Abbreviations Reference:**

City of Seattle Standard Plans for Municipal Construction

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City of Seattle | NOT TO SCALE | ABBREVIATIONS

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<td>Pedestrian Push Button</td>
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<td>!PPB</td>
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<tr>
<td>Illuminated Sign</td>
<td>□</td>
<td>□</td>
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<tr>
<td>Junction Box</td>
<td>[</td>
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<tr>
<td>Handhole</td>
<td>■EHH</td>
<td>HH</td>
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<td>Traffic Control Handhole</td>
<td>■TCHH</td>
<td>TCHH</td>
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<td>Street Light Handhole</td>
<td>■SLHH</td>
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<td>Ground Rod Handhole</td>
<td>■GRHH</td>
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<tr>
<td>Fire Alarm Handhole</td>
<td>■FAHH</td>
<td>FAHH</td>
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</table>
SIGNALIZATION

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

- Illuminated Traffic Sign
  (?=Identification Number)

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

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

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


CHANNELIZATION & SIGNAGE

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

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

- Relocate Signage
  (?=Signage Identified on Plan)
<table>
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<tr>
<th>ITEM</th>
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<tr>
<td>Cement Concrete Pavement</td>
<td>6&quot;CONC</td>
<td>6&quot;CONC PAV</td>
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<tr>
<td>Asphalt Concrete Pavement</td>
<td>2&quot;ASPH/6&quot;CONC</td>
<td>8&quot;-402B PAV</td>
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<tr>
<td>Asphalt Concrete Surfacing</td>
<td>2&quot;ASPH</td>
<td>2&quot;ASPH</td>
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<tr>
<td>Curb</td>
<td></td>
<td>TYPE 410C CURB</td>
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<tr>
<td>Cement Concrete Walk</td>
<td>CW</td>
<td>CW</td>
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<tr>
<td>Curb Ramp</td>
<td></td>
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<tr>
<td>Conc Dwy</td>
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<tr>
<td>Cement Concrete Bike Way</td>
<td>3&quot;CBW</td>
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<tr>
<td>Asphalt Concrete Bike Way</td>
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<tr>
<td>Grading</td>
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REF STD SPEC SEC

City of Seattle | NOT TO SCALE | STANDARD SYMBOLS

PAVING

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<td>Inlet Type 268</td>
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<tr>
<td>Catch Basin round inlet top</td>
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<td>Private CB &amp; Inlet</td>
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<tr>
<td>Catch Basin Type 151 (pre 1985)</td>
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<tr>
<td>Catch Basin Type 240A</td>
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<tr>
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<td>Catch Basin Type 240C</td>
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<td>Pipe Sewer</td>
<td><img src="image" alt="Pipe Sewer" /></td>
<td><img src="image" alt="Pipe Sewer" /></td>
</tr>
<tr>
<td>Combined &lt;1'-0&quot;Dia</td>
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<tr>
<td>Combined ≥1'-0&quot;Dia</td>
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<td>Pipe Sewer Sanitary</td>
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REF STD SPEC SEC

City of Seattle | NOT TO SCALE | STANDARD SYMBOLS
SEWER & DRAINAGE

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<tr>
<td>Brass Plug/Cap (found or set)</td>
<td>+</td>
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</tr>
<tr>
<td>Hub/Tack (found or set)</td>
<td></td>
<td>□</td>
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<tr>
<td>Monument in Case (found or set)</td>
<td></td>
<td>◀</td>
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<tr>
<td>Conc. Mon. (found or set)</td>
<td></td>
<td>◀</td>
</tr>
<tr>
<td>Rebar/Cap, Pipe/Cap Rebar, Iron Pipe (found or set)</td>
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<tr>
<td>Tack/Lead, Tack PK Nail, Spike (found or set)</td>
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<td>×</td>
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<td>Bench Mark (not found)</td>
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<td>◀</td>
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<td>Brass Plug/Cap (not found)</td>
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<tr>
<td>Tack/Lead, Tack PK Nail, Spike (not found)</td>
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<td>Survey Line</td>
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<td>Right of Way Line</td>
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REF STD SPEC SEC

City of Seattle

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<td>(TB) TH-7</td>
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REF STD SPEC SEC

City of Seattle NOT TO SCALE STANDARD SYMBOLS TOPOGRAPHIC & MISC

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</tr>
<tr>
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<td>![6&quot;STM 14&quot;x14&quot;LOG]</td>
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<tr>
<td>Watermain &lt;1'-0&quot;Dia</td>
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<tr>
<td>Watermain ≥1'-0&quot;Dia</td>
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<tr>
<td>11 1/4° Bend w/ Conc Blocking</td>
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<td>8”-11 1/4&quot;HBorVB</td>
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<td>22 1/2° Bend</td>
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<td>8”-45°HBorVB</td>
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<td>8&quot;X8&quot;X6”T</td>
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<tr>
<td>Pipe Sleeve</td>
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<tr>
<td>Plug w/ Conc Blocking</td>
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<tr>
<td>Hydrant</td>
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<tr>
<td>Gate Valve</td>
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<td>Gate Valve w/ Chamber</td>
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<tr>
<td>Gate Valve w/ Vault Chamber</td>
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<tr>
<td>Reducer</td>
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STANDARD SYMBOLS
WATER

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<td>Fire Standpipe</td>
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<td>Irrigation Valve</td>
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<td>Plug Valve</td>
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<td>Resilient Seal Gate Valve</td>
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<td>Concrete Blocking</td>
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<tr>
<td>Pipe Sleeve</td>
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NOTES:

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

REF STD SPEC SEC 7
NOTES:
1. MONUMENT CASE TO BE INSTALLED BY CONTRACTOR.
2. BASE TO BE PLACED ON A WELL COMPACTED FOUNDATION.
3. FRAME AND COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS FOR DELIVERY.
4. FRAME AND COVER SHALL BE CAST IRON AND HAVE COATING APPLIED TO ALL FACES.
5. CASTINGS IN RIGID PAVEMENT SHALL HAVE REINFORCING STEEL IN THE PAVEMENT.
6. USE LOCKING COVER IN R/W, DRILL AND TAP, APPLY ANTI-SEIZE COATING AND BOLT DOWN WITH 3/8" S.S. ALLEN-HEAD BOLTS -2 PLACES.

RISER RING DIMENSIONS

<table>
<thead>
<tr>
<th>A (SIZE)</th>
<th>1/2&quot;</th>
<th>2&quot;</th>
<th>3&quot;</th>
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<tbody>
<tr>
<td>1'-3&quot;</td>
<td>10½&quot;</td>
<td>9½&quot;</td>
<td>8&quot;</td>
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</table>

SECTION A-A

CASE SECTION

RISER RING SECTION

CONC

SOIL

GROUT

2"OD GALVANIZED STEEL PIPE (NOTE 4)

2" (MIN) BRASS DISK

10"
NOTES:
1. FRAME AND COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS FOR DELIVERY
2. FRAME AND COVER SHALL BE CAST IRON
3. "*"=FINISH
4. CASTINGS IN RIGID PAVEMENT SHALL HAVE REINFORCING STEEL IN THE PAVEMENT.
MINIMUM TREE CLEARANCES

CENTERLINE OF TREE TO CENTERLINE OF:
- 30'-0" TO EXTENSION OF CROSS STREET CURB (AT INTERSECTION)
- 20'-0" TO UTILITY POLE (WITH OR WITHOUT LIGHT)
- 10'-0" TO PAVEMENT EDGE (NO EXISTING CURB)
- 5'-0" TO UNDERGROUND FACILITY (EXCEPT AS NOTED OTHERWISE)

CENTERLINE OF TREE TO EDGE OF:
- 7'-0" TO DRIVEWAY OR ALLEY
- 3'-6" TO FACE OF CURB
- 2'-0" TO EDGE OF SIDEWALK

EDGE OF TREE TO EDGE OF:
- 5'-0" TO FIRE HYDRANT, HYDRANT BRANCH, WATER METER, WATER SERVICE, WATER MAIN AND WATER BLOW OFF
- 5'-0" TO CD, INLETS, OTHER DRAINAGE STRUCTURES, MANHOLES, SEWER, STORM DRAIN OR SERVICE CONNECTIONS.

FOR CLEARANCES, SEE STD PLAN NO 541a

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

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

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

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

SIDEWALK

18" ROOTBARRIER AT SIDEWALK.

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

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

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

REMOVE ALL WIRE, STRINGS, AND OTHER NON-BURLAP MATERIAL; AND REMOVE BURLAP FROM TOP ¾ OF ROOTBALL MINIMUM. REMOVE COMPLETELY WHEN DIRECTED BY THE ENGINEER.

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

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

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

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

24" ROOTBARRIER AT CURB WHEN SHOWN ON THE DRAWINGS.

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

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

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

UNDISTURBED SUBGRADE (PROVIDES FIRM BASE SO THAT ROOTBALL WILL NOT SINK.)
NOTES:
1. STAKE TREES PER STD PLAN NO 100a.
2. ONE STAKE PER TREE ON WINDWARD SIDE, SECOND STAKE ON LEEWARD SIDE.
3. SLOPES STEEPER THAN 2:1 MAY REQUIRE AN APPROVED EMBANKMENT STABILIZATION SYSTEM TO CREATE A LEVEL TREE PIT SUCH AS:
   - Rock Facing
   - Precast Concrete Wall Units
   - Timber Wall
   - Manufactured Slope Retention Units
4. CHAINLOCK TREE TIE. LOOP EACH TIE AROUND TREE LOOSELY TO PROVIDE 1" SLACK FOR DIAMETER GROWTH.
5. SHAPE SOIL TO PROVIDE 3" DIAMETER OR ROOTBALL DIAMETER, WHICHERVER IS GREATER, WATERING RING.
6. REMOVE ALL WIRE, STRINGS AND OTHER NON-BURLAP MATERIAL; AND REMOVE BURLAP FROM TOP 1/3 OF ROOTBALL.

REF STD SPEC SEC 8-02

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

2" X 8'-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 ⅔ OF ROOTBALL.

SEE STD SPEC SECTION 8-02.3(4)(B).

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 OF TREE (T)

6'-0" MIN OR 2 TIMES ROOTBALL
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 3/5 OF ROOTBALL

REUSED AND AMENDED SITE SOIL

UNDISTURBED SUBGRADE (PROVIDES FIRM BASE SO THAT ROOTBALL WILL NOT SINK)
GROUND COVER PLANTING

- Typical ground cover planted at nursery level
- Min 2" mulch
- Finish grade
- Min 6" depth
- Scarified subgrade

See Std Plan No. 142 - Soil Amendment & Depth

See landscape drawing

Spacing varies

Ref Std Spec Sec 8-02

City of Seattle

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

EDGE OF PLANTING BED OR PAVEMENT

2/3X (TYP)

X = RECOMMENDED SPACING
(SEE LANDSCAPE DETAIL ON DRAWING)

+ = ACTUAL PLANT LOCATIONS

REF STD SPEC SEC 9-14

City of Seattle  NOT TO SCALE  PLANTING PATTERN

100 LANDSCAPE PLANTING

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

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

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

SEE STD PLAN NO 100 FOR SUPPLEMENTAL TREE PLANTING INFORMATION

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

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

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

3" ARBORIST WOOD CHIP MULCH

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

END CAP DETAIL

QUANT PER END CAP
- PERENNIAL TYPE 1 4
- PERENNIAL TYPE 2 6
- PERENNIAL TYPE 3 5
- EVERGREEN GROUNDCOVER TYPE 1 13
- EVERGREEN GROUNDCOVER TYPE 2 12

QUANT PER 10'-0"LF MEDIAN
- GROUNDCOVER 30
- SHRUB 5

DETAIL AT TREE PLAN

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

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

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

3" ARBORIST WOOD CHIP MULCH

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

MEDIAN PLANTING

REF STD SPEC SEC 8-02

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

AUTOMATIC CONTROL VALVE

MANUAL DRAIN VALVE

REF STD SPEC SEC 8-03
SPARE WIRE FROM DOUBLE CHECK ASSEMBLY

MASTER VALVE

PVC ADAPTER W/ SCH 80 COUPLING

VALVE BOX W/ LOCKING LD

WATERTIGHT SPLICES

MASTER VALVE

UNION (2 PLACES)

PVC BRASS

BRASS SCH 40 PVC

GATE VALVE – 2 1/2" & LARGER

NOTES:
USE TEFLOM TAPE ON ALL THREADED FITTINGS

REF STD SPEC SEC 8-03
NOTE:
USE TEFLOM TAPE ON ALL THREADED FITTINGS
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" X 10'-0" COPPER CLAD GROUNDING ROD. INSTALL 3 RODS IN SOIL IN A TRIANGULAR PATTERN, SPACES 8'-0" MIN APART. GROUNDING GRID TO HAVE A RESISTANCE OF 10 OHMS OR LESS
5. #10 AWG BARE COPPER WIRE BETWEEN GROUNDING RODS
6. BRASS WIRE CLAMP. USE SEPARATE CLAMP FOR EACH WIRE
7. FINISH GRADE

GROUND ROD LAYOUT

IRRIGATION CONTROLLER PEDESTAL AND ENCLOSURE GROUNDING

100 LANDSCAPE PLANTING

STANDARD PLAN NO 127

REV DATE: 2003

City of Seattle

CLEAN, COMPACTED, SUITABLE NATIVE BACKFILL

DETECT-A-TAPE (PURPLE) NON-POTABLE 6" ABOVE PIPE

PVC MAIN LINE

BUNDLE CONTROLLER WIRES UNDER MAIN LINE & OPPOSITE SIDE FROM SWING JOINTS (WHEN LATERAL & MAIN SHARE TRENCH)

DO NOT TAPE BUNDLED WIRES TO MAIN LINE

SLEEVE TRENCHING

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

PVC LATERAL LINE

CLEAN, COMPACTED, SUITABLE BACKFILL

DETECT-A-TAPE (PURPLE) 6" ABOVE PIPE

PVC TRIPLE SWING JOINT & HEAD

DETECT-A-TAPE (PURPLE) 6" ABOVE PIPE

CLEAN COMPACTION SUITABLE BACKFILL EXCEPT AT SWING HEAD/JOINT LOCATIONS WHERE ALL BACKFILL SHALL BE MINERAL AGGREGATE TYPE 6 OR 7 TO MIN. 6" ALL DIRECTIONS INCLUDING 6" BELOW.

PVC LATERAL LINE

POWER SUPPLY TRENCH

6" WIDE TRENCH (OR AS REQUIRED TO ALLOW ADEQUATE COMPACTION OF BACKFILL)

FINISH GRADE

FINISH GRADE

ALL BACKFILL SHALL BE MINERAL AGGREGATE TYPE 2

DETECT-A-TAPE (PURPLE) N.P. 4" ABOVE SLEEVE

PVC SLEEVE WITH MAIN OR LATERAL LINES OR CONTROLLER WIRES

6" WIDE TRENCH (OR AS REQUIRED TO ALLOW ADEQUATE COMPACTION OF BACKFILL)

FINISH GRADE

FINISH GRADE

CLEAN, COMPACTED, SUITABLE NATIVE BACKFILL

DETECT-A-TAPE (PURPLE) 6" ABOVE PIPE

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

4'-6" TO 6'-0" HIGH CHAIN LINK FENCE TO ENCLOSE ENTIRE OPEN TREE PIT (TYP EACH TREE PIT)

FACE OF CURB

SIDEWALK EDGE

PLANTING STRIP

TREE IN PLANTING STRIP—OPTION 1

4'-6" TO 6'-0" HIGH CHAIN LINK FENCE PROTECTS ENTIRE PLANTING STRIP

FACE OF CURB

SIDEWALK EDGE

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

TYPICAL TREE GUARD RAIL

EXISTING TREE & VEGETATION
1½" PVC (TYP)
VARIES (4'-0" MIN EACH SIDE)
EXISTING TREE PIT

FACE OF CURB

TYPICAL PANEL

EXISTING TREE & VEGETATION

1½" PVC (TYP)
VARIES (4'-0" MIN EACH SIDE)
EXISTING TREE PIT

NYLON ZIP TIES 12"
MIN @ 1'-6" SPACING
TIE CONNECTIONS (TYP)
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.
EXISTING OR NEW GRADE (VARIABLE)

1'-0" MIN
2'-0" DESIRABLE

EXISTING OR NEW GRADE (VARIABLE)

1'-0" MIN
2'-0" DESIRABLE

VARIABLE SLOPE (EXISTING OR AS DESIGNED)

REF STD SPEC SEC 2-04
NO TRAFFIC SURCHARGE IN THIS AREA

MAX SLOPE OF SOIL SURCHARGE

12" MIN

NON WOVEN UNDERGROUND GEOTEXTILE

UNDISTURBED SOIL

BACKFILL 2"-4" QUARRY SPALL

6" SUBSURFACE DRAIN PIPE PER STD PLAN NO 291, BED IN MINERAL AGGREGATE TYPE 22, BEDDING SHALL PROVIDE MIN 3" COVER ALL AROUND, OUTLET TO APPROVED DISCHARGE POINT, SURFACE DITCH, CURB ABOVE INLET, SEPARATE CB WITH NO ROADWAY DRAINAGE.

SECTION

EXISTING OR PROPOSED GRADE

DEPTH OF BASE (d)

FOUNDATION TO BE DESIGNED TO PROVIDE A MIN OF SOIL BEARING PRESSURE OF 2000 PSF

ELEVATION

MINIMUM ROCK

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<tr>
<td>(h)</td>
<td>(d)</td>
<td>SIZE(BASE)</td>
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<td>2 FEET</td>
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<td>2-MAN</td>
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<tr>
<td>4 FEET</td>
<td>6 INCHES</td>
<td>3-MAN</td>
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<tr>
<td>6 FEET</td>
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<td>4-MAN</td>
</tr>
<tr>
<td>8 FEET</td>
<td>12 INCHES</td>
<td>5-MAN</td>
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θ = 14' ± 11'

REF STD SPEC SEC 2-13

City of Seattle

NOT TO SCALE

ROCK FACING

NOTES:

1. ALL SOIL AREAS DISTURBED OR COMPACTED DURING CONSTRUCTION, AND NOT COVERED BY BUILDINGS OR PAVEMENT, SHALL BE AMENDED WITH COMPOST AS DESCRIBED BELOW.

2. SUBSOIL SHOULD BE SCARIFIED (LOOSENED) 4 INCHES BELOW AMENDED LAYER, TO PRODUCE 12-INCH DEPTH OF UN-COMPACTED SOIL, EXCEPT WHERE SCARIFICATION WOULD DAMAGE TREE ROOTS OR AS DETERMINED BY THE ENGINEER.

3. COMPOST SHALL BE TILLED IN TO 8 INCH DEPTH INTO EXISTING SOIL, OR PLACE 8 INCHES OF COMPOST-AMENDED SOIL, PER SOIL SPECIFICATION.

4. TURF AREAS SHALL RECEIVE 1.75 INCHES OF COMPOST TILLED IN TO 8-INCH DEPTH, OR MAY SUBSTITUTE 8" OF IMPORTED SOIL CONTAINING 20-25% COMPOST BY VOLUME. THEN PLANT GRASS SEED OR SOD PER SPECIFICATION.

5. PLANTING BEDS SHALL RECEIVE 3 INCHES OF COMPOST TILLED IN TO 8-INCH DEPTH, OR MAY SUBSTITUTE 8" OF IMPORTED SOIL CONTAINING 35-40% COMPOST BY VOLUME. MULCH AFTER PLANTING, WITH 2-4 INCHES OF ARBORIST WOOD CHIP MULCH OR APPROVED EQUAL.

6. SETBACKS: TO PREVENT UNEVEN SETTLING, DO NOT COMPOST-AMEND SOILS WITHIN 3 FEET OF UTILITY INFRASTRUCTURES (POLES, VAULTS, METERS ETC.), WITHIN ONE FOOT OF PAVEMENT EDGE, CURBS AND SIDEWALKS SOIL SHOULD BE COMPACTED TO APPROXIMATELY 90% PROCTOR TO ENSURE A FIRM SURFACE.
REINFORCING STEEL "A"

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<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
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<tbody>
<tr>
<td>20' MAX</td>
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<td>30' MAX</td>
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</tr>
<tr>
<td>40' MAX</td>
<td>0.36</td>
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</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th></th>
<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>20' MAX</td>
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<tr>
<td>30' MAX</td>
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</tr>
<tr>
<td>40' MAX</td>
<td>0.36</td>
<td>0.25</td>
</tr>
</tbody>
</table>

NOTES:

1. MATERIALS: CONCRETE-CLASS 4000; REINFORCING STEEL-ASTM A615 GRADE 60 MIN; CHANNEL AND SHELF MATERIAL-CONCRETE CLASS 3000.

2. PRECAST MAINTENANCE HOLE COMPONENTS SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.

3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT.

4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 5 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.
**REINFORCING STEEL "A"**

<table>
<thead>
<tr>
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<tr>
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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 SHALL CONFORM TO ASTM C 478.**
   JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.

3. **MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT.**

4. **MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 6 IN.**
   **MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN.**
   **MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.**

**SECTION B-B**

- **LEVELING BRICKS OR CONCRETE COLLAR**
- **4'-6" TO 2'-0"
- **PRECAST CONCENTRIC CONE SECTION SHOWN**
- **MH LADDER SEE STD PLANS NO 232a & 232b**
- **3/8" SMOOTH MORTAR LINING**

**BASE DETAIL**

- **SECTION A-A**
- **REINFORCING STEEL "A" SEE TABLE**
- **BASE DETAIL**
- **TYPE 9 MINERAL AGGREGATE W/ PORTLAND CEMENT FOR PRECAST BASE OR PRECAST BASE WITH INTEGRAL RISER**

**UNDISTURBED EARTH OR TYPE 2 MINERAL AGGREGATE 4" MIN THICKNESS FOR CAST-IN-PLACE BASE SECTION**

---

**REFERENCES:**

- **STD SPEC SEC 7-05**
- **REF STD SPEC SEC 7-05**

**City of Seattle**

**NOT TO SCALE**

**TYPE 204.5a MAINTENANCE HOLE**

**2014 Edition City of Seattle Standard Plans for Municipal Construction**
200 SEWER-DRAINAGE APPURTENANCES

**PLAN VIEW** (TOP REMOVED)

- **SLOPE 1/4:1' - 0"**
- **CHANNEL**
- **LOCATION OF MIN LADDER FOR TYPE 3 MAINTENANCE HOLE**
- **FLOW DIRECTION**
- **EXTENDED Q'S OF SEWER PIPES INTERSECT AT 6" OF MAINTENANCE HOLE**

**TOP SLAB REINFORCEMENT**

- **LEVELING BRICKS OR CONCRETE COLLAR**
- **SEE TOP SLAB REINFORCEMENT**
- **#4 (BF)**
- **2'-0"**
- **4'-6"**
- **5" MIN**

**REFINING STEEL "A"**

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

<table>
<thead>
<tr>
<th></th>
<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>20' MAX</td>
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<td>30' MAX</td>
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<tr>
<td>40' MAX</td>
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<td>0.31</td>
</tr>
</tbody>
</table>

**NOTES:**

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

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

<table>
<thead>
<tr>
<th>MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECAST BASE</td>
</tr>
<tr>
<td>------------------</td>
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<tr>
<td>20' MAX</td>
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<tr>
<td>30' MAX</td>
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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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 8 IN.
FLOW DIRECTION

PLANE VIEW

LOCATION OF MH LADDER FOR TYPE A MAINTENANCE HOLE

MAINTENANCE HOLE FRAME & COVER.
SEE STD PLAN NO 230

HANDHOLDS.
SEE STD PLANS NO 232a & 232b

LEVELING BRICKS OR CONCRETE COLLAR

MH LADDER SEE STD PLANS NO 232a & 232b

NOTES:

1. MATERIALS: CONCRETE-CLASS 4000;
REINFORCING STEEL-ASTM A615 GRADE 60 MIN;
CHANNEL AND SHELF MATERIAL - CONCRETE CLASS 3000.

2. PRECAST MAINTENANCE HOLE COMPONENTS SHALL CONFORM TO ASTM C 478.
JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.

3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT

4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 7 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN.
MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.
SLOPE \( \frac{1}{4} \)": 1'-0" (TYP)

LOCATION OF MH LADDER FOR TYPE B MAINTENANCE HOLE.

CHANNEL & SHELF

THE GREATER OF \( \frac{1}{2} \) INSIDE PIPE DIAMETER OR 1'-0" (TYP)

FLOW DIRECTION

EXTENDED G'S OF SEWER PIPES INTERSECT AT \( \frac{1}{4} \)" OF MAINTENANCE HOLE

PLAN VIEW (TOP REMOVED)

REINFORCING STEEL "A"

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

<table>
<thead>
<tr>
<th></th>
<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
</tr>
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<tbody>
<tr>
<td>20' MAX</td>
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<tr>
<td>40' MAX</td>
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<td>0.41</td>
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</table>

REF STD SPEC SEC 7-05

NOT TO SCALE

TYPE 206b MAINTENANCE HOLE

**EXTENDED & OF SEWER INTERSECT AT Q OF MH**

**FLOW DIRECTION**

**SLOPE: 2° 40' (TYP)**

**THE GREATER OF A PIPE DIAMETER OR 1'-0" (TYP)**

**LOCATION OF MH LADDER FOR TYPE A MAINTENANCE HOLE.**

**PLAN VIEW** (TOP REMOVED)

**MAINTENANCE HOLE FRAME & COVER.**SEE STD PLANS NO 230

**2'-0"**

**HANDHOLDS.** SEE STD PLANS NO 232a & 232b

**LEVELING BRICKS OR CONCRETE COLLAR**

**4'-0" TO 2'-0"**

**CONE SECTION**

**MH LADDER SEE STD PLANS NO 232a & 232b**

**THE GREATER OF A PIPE DIAMETER OR 1'-0" (TYP)**

**FAN #6 BARS @4 EQ SPA BF (TYP)**

**TOP SLAB REINFORCEMENT**

**NOTES:**

1. MATERIALS: CONCRETE-CLASS 4000; REINFORCING STEEL-ASTM A615 GRADE 60 MIN; CHANNEL AND SHELF MATERIAL - CONCRETE CLASS 3000.
2. PRECAST MAINTENANCE HOLE COMPONENTS SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT.
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 6 IN. MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE BETWEEN HOLES IS 12 IN.
NOTES:
1. MATERIAL: CONCRETE—CLASS 4000;
   REINFORCING STEEL—ASTM A615 GRADE 60
   MINERAL AGGREGATE—CONCRETE CLASS 3000.
2. PRECAST MAINTENANCE HOLE COMPONENTS
   SHALL CONFORM TO ASTM C 478. JOINTS
   BETWEEN PRECAST COMPONENTS SHALL BE
   RUBBER GASKETED CONFORMING TO ASTM C
   445.
3. MINIMUM REQUIRED SOIL BEARING = 3,000
   LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE
   PLUS 8 IN. MIN HOLE SIZE SHALL BE OD
   OF PIPE PLUS 3 IN. MIN CLEAR DISTANCE
   BETWEEN HOLES IS 12 IN.
REINFORCING STEEL "A"

<table>
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<tbody>
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<td>40' MAX</td>
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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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 9". MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

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


REFERENCES:

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

NOTES:

1. CAST-IN-PLACE BASE SECTION
2. TYPE B MINERAL AGGREGATE W/ PORTLAND CEMENT FOR PRECAST BASE OR PRECAST BASE WITH INTEGRAL RISER

REINFORCING STEEL "A"

<table>
<thead>
<tr>
<th>MIN. SQ IN/FT, TOP FACE, IN EACH DIRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECAST BASE</td>
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<tr>
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<td>30' MAX</td>
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<tr>
<td>40' MAX</td>
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</table>

REF STD SPEC SEC 7-05

REINFORCING STEEL "A"

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

<table>
<thead>
<tr>
<th>PRECAST BASE</th>
<th>CAST-IN-PLACE BASE</th>
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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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT.
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 10" MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3" MIN DISTANCE BETWEEN HOLES IS 12".
**REINFORCING STEEL "A"**

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

<table>
<thead>
<tr>
<th></th>
<th>PRECAST BASE</th>
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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 SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.

3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT

4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 10". MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

REF STD SPEC SEC 7-05

City of Seattle

NOT TO SCALE

TYPE 209b MAINTENANCE HOLE

**REINFORCING STEEL "A"**

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

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

**NOTES:**

1. MATERIAL: CONCRETE CLASS 4000
   REINFORCING STEEL ASTM A615 GRADE 60 MIN.
   CHANNEL AND SHELF MATERIAL CONCRETE CLASS 3000.

2. PRECAST MAINTENANCE HOLE COMPONENTS
   SHALL CONFORM TO ASTM C 478.
   JOINTS BETWEEN PRECAST COMPONENTS SHALL BE
   RUBBER GASKETED CONFORMING TO ASTM C 443.

3. MINIMUM REQUIRED SOIL BEARING = 3,000
   LBS/SQ FT.

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

**TOP SLAB REINFORCEMENT**

**REFERENCES:**

- STD SPEC SEC 7-05
- STD PLANS NO 230a & 230b
- STD PLANS NO 232a & 232b
- CITY OF SEATTLE STANDARD PLANS FOR MUNICIPAL CONSTRUCTION

City of Seattle

NOT TO SCALE

TYPE 210a MAINTENANCE HOLE
REINFORCING STEEL "A"
MIN. SQ IN/FT. TOP FACE, IN EACH DIRECTION

<table>
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<td>30' MAX</td>
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<td>40' MAX</td>
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NOTES:
1. MATERIAL: CONCRETE - CLASS 3000
   REINFORCING STEEL - ASTM A615 GRADE 60 MIN
   CHANNEL AND SHELF MATERIAL: CONCRETE CLASS 3000.
2. PRECAST MAINTENANCE HOLE COMPONENTS SHALL CONFORM TO ASTM C 478.
   JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/SQ FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 11".
   MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3".
   MIN DISTANCE BETWEEN HOLES IS 12".

TYPE 210b MAINTENANCE HOLE
ENLARGED "H" OF SEWER INTERSECT AT Q OF MH

PLAN VIEW (TOP REMOVED)

HANDHOLDS. SEE STD PLANS NO 230a & 230b

LEVELING BRICKS OR CONCRETE COLLAR

4'-0" TO 2'-0"

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

REINFORCING STEEL "A"  4-#7 BF (CUT AS REQ'D)

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

PRECAST BASE CAST-IN-PLACE BASE

REINFORCEMENT STEEL "A"

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

PRECAST BASE CAST-IN-PLACE BASE

NOTES:

1. MATERIAL: CONCRETE-CLASS 4000

REINFORCING STEEL-ASTM A615 GRADE 60 MIN

CHANNEL AND SHELF MATERIAL: CONCRETE

CLASS 3000.

2. PRECAST MAINTENANCE HOLE COMPONENTS

SHALL CONFORM TO ASTM C 478. JOINTS

BETWEEN PRECAST COMPONENTS SHALL BE

RUBBER GASKETED CONFORMING TO ASTM C

443.

3. MINIMUM REQUIRED SOIL BEARING = 3,000

LBS/SQ FT

4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS

12", MIN HOLE SIZE SHALL BE OD OF PIPE

PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

REF STD SPEC SEC 7-05

City of Seattle  NOT TO SCALE  TYPE 211a 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
   SHALL CONFORM TO ASTM C 478. JOINTS
   BETWEEN PRECAST COMPONENTS SHALL BE
   RUBBER GASKETED CONFORMING TO ASTM C
   443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000
   LBS/SO FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS
   12". MIN HOLE SIZE SHALL BE OD OF PIPE
   PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".

REF STD SPEC SEC 7-05

City of Seattle  NOT TO SCALE  TYPE 211b MAINTENANCE HOLE

REINFORCING STEEL "A"

MIN. SO 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>
</tr>
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<tbody>
<tr>
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<td>30' MAX</td>
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</tr>
<tr>
<td>40' MAX</td>
<td>1.56</td>
<td>1.37</td>
</tr>
</tbody>
</table>

5-#7 @ 6" BF (CUT AS REQ'D)

3" 17-#7 @ 6" BF

FAN 5#7 BARS @ 4 EQUAL SPACES BF

#7 BF (TYP)

NOTES:
1. MATERIAL: CONCRETE-CLASS 4000
   REINFORCING STEEL-ASTM A615 GRADE 60 MIN CHANNEL AND SHELF MATERIAL: CONCRETE CLASS 3000
2. PRECAST MAINTENANCE HOLE COMPONENTS SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
3. MINIMUM REQUIRED SOIL BEARING = 3,000 LBS/90 FT
4. MAX HOLE SIZE SHALL BE OD OF PIPE PLUS 13". MIN HOLE SIZE SHALL BE OD OF PIPE PLUS 3". MIN DISTANCE BETWEEN HOLES IS 12".
Extended % of sewer intersect at % of MH

Location of MH ladder for type B maintenance hole

Flow direction

Plan view (top removed)

Maintenance hole frame & cover. See std plan no 230

Leveling bricks or concrete collar

% smooth mortar lining

Handholds. See std plans no 232a & 232b

Reinforcing steel "A" see table

Type B

Section A-A

NOTES:
1. Material: Concrete-class 4000
   Reinforcing steel-asm a615 grade 60 min
   Channel and shelf material concrete class 3000.
2. Precast maintenance hole components
   Shall conform to astm c 478. Joints
   Between precast components shall be
   Rubber gasketed conforming to astm c
   443.
3. Minimum required soil bearing = 3,000
   Lb/sq ft
4. Max hole size shall be od of pipe plus
   13". Min hole size shall be od of pipe
   plus 3". Min distance between holes is 12".

Reinforcing Steel "A"

Min. sq in/ft, top face, in each direction

<table>
<thead>
<tr>
<th></th>
<th>Precast Base</th>
<th>Cast-in-place Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>20' Max</td>
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</tr>
<tr>
<td>30' Max</td>
<td>1.09</td>
<td>0.96</td>
</tr>
<tr>
<td>40' Max</td>
<td>1.36</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Ref std spec 7-05

City of Seattle

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 1/4" MIN TO 1/2" 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

NEW 1/4" MORTAR LINING SEE NOTE 4
3" HANDHOLD
2'-6" DIA
1'-9" MIN CLR OPENING
26" DIA

RUNNING BOND PATTERN
GROUT BETWEEN ALL BRICKS

REF STD SPEC SEC 7-05

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

SECTION A-A

REF STD SPEC SEC 7-05, 9-12
NOTES:
1. MATERIAL - STEEL REINFORCED POLYPROPYLENE
2. DIMENSIONS FOR THE MH LADDER AND STEP ARE MINIMUM REQUIREMENTS ONLY.
3. WHEN THE DISTANCE FROM THE LAST (HIGHEST) STEP OR HANDHOLD TO THE TOP OF THE MH FRAME EXCEEDS 1'-6", A HANDHOLD SHALL BE INSTALLED MID-WAY IN THE LEVELING BRICK OR COLLAR.
4. EITHER STEPS, LADDERS OR A COMBINATION OF THE TWO CAN BE USED. IF BOTH STEPS AND LADDERS ARE USED IN ANY MH, THEY SHALL BE FROM THE SAME MANUFACTURER.
5. A VERTICAL HANDHOLD SHALL BE INSTALLED 4'-0" ABOVE THE SHELF WHEN INDICATED IN MH PLAN VIEW.
NOTES:
1. MATERIAL – STEEL REINFORCED POLYPROPYLENE.
2. DIMENSIONS FOR THE MH LADDER AND STEP ARE MINIMUM REQUIREMENTS ONLY.
3. WHEN THE DISTANCE FROM THE LAST (HIGHEST) STEP OR HANDHOLD TO THE TOP OF THE MH FRAME EXCEEDS 1'-6, A HANDHOLD SHALL BE INSTALLED MID-WAY IN THE LEVELING BRICK OR COLLAR.
4. EITHER STEPS, LADDERS OR A COMBINATION OF THE TWO CAN BE USED. IF BOTH STEPS AND LADDERS ARE USED IN ANY MH, THEY SHALL BE FROM THE SAME MANUFACTURER.
5. STEP ON OPPOSITE SIDE OF MH SHALL BE PLACED MID-WAY BETWEEN STEPS ON OPPOSING SIDE.

MH WITH PRECAST TOP SLAB

NOTES:
1. CONCRETE FOR DROP CONNECTION SUPPORT SHALL BE CL 3000.
3. DROP CONNECTIONS SHALL BE USED WHERE DROP IS NOT MORE THAN 20'-0".
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 SHALL BE ASTM D 2241 CL200 OR ASTM 1785 SCH 40.
5. CLEAN-OUT SHALL BE LOCATED AS APPROVED BY SPU.

INSIDE DROP
(18" DIAMETER PIPE MAXIMUM)
NOTES:

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

DETAIL A
FOR MAIN 3'-0" DIA OR SMALLER

DETAIL B
FOR MAIN 3'-6" DIA OR LARGER

REF STD SPEC SEC 7-08 & 7-17

City of Seattle
NOT TO SCALE
6" OR 8" VERTICAL CONNECTION

TABLE 1

<table>
<thead>
<tr>
<th>CB</th>
<th>CASTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE</td>
<td>FRAME</td>
</tr>
<tr>
<td>240A</td>
<td>PER STD PLAN 230</td>
</tr>
<tr>
<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 263</td>
</tr>
</tbody>
</table>

NOTES:
1. FRAME & GRATE OR FRAME & COVER SHALL BE LOCATED OVER TRAP.
2. INVERT OF INLET PIPE SHALL BE 2" MIN ABOVE INVERT OF OUTLET PIPE.
3. SEE STD PLAN 261 FOR ALLOWABLE OUTLET LOCATIONS.
NOTES:
1. THIS CATCH BASIN IS FOR INSTALLATIONS IN ALLEYS AND UNPAVED AREAS IN THE RIGHT-OF-WAY. ANY OTHER USE IN THE R/W WILL REQUIRE THE APPROVAL OF SPU.
2. FOR CURB DISCHARGE INSTALLATION SEE STD PLAN NO 241b.
3. INSTALL PER STD PLAN NO 261.
4. MATERIAL CONCRETE CLASS 4000 REINFORCING STEEL ASTM A615 GR60.
5. INLET INVERT EL TO BE HIGHER THAN OUTLET INVERT EL.
6. USE OF LEVELING BRICKS SHALL BE RUNNING BOND PATTERN WITH ¼ TO ½ GROUT IN BETWEEN BRICKS.
NOTES:
1. MATERIAL: CONCRETE: CLASS 4000
   REINFORCING STEEL: ASTM A 615 GR 60
2. INSTALL & LOCATE PER STD PLANS NO 260 & 261
3. OUTLET TRAP TO BE LOCATED DIRECTLY BELOW FRAME AND GRATE
4. USE OF LEVELING BRICKS SHALL BE RUNNING BOND PATTERN WITH 3/4 TO 1/2 GROUT IN BETWEEN BRICKS.

CB | CASTING
---|--------
A  | NO 262
B  | NO 263

REF STD SPEC SEC 7-05
NOTES:
1. CONCRETE: CLASS 4000
2. REINFORCING STEEL: ASTM A615 GR 60

REF STD SPEC SEC 7-05
SECTION A-A

PLAN VIEW

SECTION B-B
TYPE A ONLY

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
TYPE 250 INLET

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
SLOPE TO DRAIN
GROUT BOTTOM
AFTER INSTALLATION
TYPE 9 MINERAL
AGGREGATE W/ PORTLAND
CEMENT

PLAN

SECTION A--A

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
TYPE 252 INLET
NOTES:
1. CB INLET GRATES SHALL NOT BE PLACED IN CROSSWALKS.
2. CB INLETS SHALL NOT BE PLACED IN CURB RAMP LANDINGS.
NOTES:
2. TYPE B CONNECTIONS SHALL BE USED WITH CB TYPES 240C, 240D, 242A AND 242B.
3. CONNECTIONS SHALL MAINTAIN A MINIMUM OF 2% AND A MAXIMUM OF 100% GRADE.
4. MAX BEND SHALL BE 22° OR 45° BEND. USE OF 45° 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

2.00 SEWER-DRAINAGE APPURTEYNES

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

EMBOSSED ON GRATE
1" OPENING (TYP).

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

SECTION B-B

SECTION C-C

1/2" NORMAL TO BAR
1/2" R (TYP)

3/4" NORMAL TO BAR
200 SEWER-DRAINAGE APPURTEYNANCES

STANDARD PLAN NO 265

SECTION A-A

SECTION B-B

VANE DETAIL

END DETAIL

EMBOSSED ON GRATE

DUCTILE IRON

NOT TO SCALE

VANED GRATE

City of Seattle

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

REF STD SPEC SEC 7-20.3(7), 9-12
NOTES:
1. TRAP TO BE MADE OF 22 GA SHEET METAL OR 16 GA ALUMINUM
2. ALL JOINTS TO BE SEAMED AND SOLDERED, OR WELDED
3. ALL LONGITUDINAL JOINTS TO BE RIVETED OR WELDED
4. DIAMETER "D" IS NOMINAL DIAMETER OF OUTLET PIPE
5. LIFT HANDLE SHALL BE WELDED TO OUTSIDE OF TRAP (1" WIDE X 0.1" THICK)
**Top of Resurfaced Paving**

**Top of Existing Paving**

**Sheet Asphalt or a Workable Mix of Sand and Emulsified Asphalt or 1:1.5 Cement Mortar**

**Type 164 Inlet Existing**

**Section B-B**

**Bottom of Frame at Outlet**

**Bottom of Frame at Closed End**

**1'-1.5"**

**This dimension may be changed if necessary to fit existing castings**

**References:**
- STD SPEC SEC 9-05
- City of Seattle Standard Plans for Municipal Construction
NOTES:
1. GRATE MATERIAL: DUCTILE IRON
2. FRAME PER STD PLAN NO 264
NOTES:

1. DETENTION PIPE MATERIAL SHALL BE AS SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS. MATERIALS THAT MAY BE APPROVED FOR USE IN THE ROW INCLUDE:
   - DUCTILE IRON PIPE (DIP)
   - REINFORCED CONCRETE PIPE (RCP)
   - POLYPROPYLENE PIPE (PP DETENTION)
   - STEEL REINFORCED POLYETHYLENE PIPE (STL REINF PE DETENTION). ONLY MANUFACTURER SUPPLIED TEES SHALL BE USED FOR CONNECTIONS.

2. BEDDING FOR DETENTION PIPE SHALL BE BONDED IN MINERAL AGGREGATE TYPE 9. FLEXIBLE PIPE SHALL BE BONDED IN MINERAL AGGREGATE TYPE 22.

3. INTERMEDIATE MHS WILL BE REQUIRED FOR DETENTION PIPE LENGTHS GREATER THAN 350LF.

4. OUTLET PIPE SHALL CONNECT TO MH ON MAINLINE.

5. STRUCTURE DESIGN SHALL BE MODIFIED FOR PRIVATE SYSTEM WITH EXCLUSION OF SHEAR GATE.

6. ROTATE ELBOW RESTRICTOR CLEAR OF ACCESS OPENING.

7. FRAME LADDER AND STEPS OFFSET:
   7.1. CLEAN OUT IS VISIBLE FROM TOP
   7.2. CLIMB DOWN SPACE IS CLEAR OF RISER AND CLEAN OUT GATE
   7.3. MH OPENING SHALL NOT BE PLACED DIRECTLY OVER THE TOP OF INLET PIPE

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

---

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

*SPECIFIC DESIGN INFORMATION AS INDICATED ON CONSTRUCTION DRAWINGS

---

City of Seattle

LADDER. SEE STD PLANS NO 233a & 232b

1'-0" MIN CLEARANCE BETWEEN LADDER AND FLOW CONTROL STRUCTURE

CONNECTION AND CONTROL DEVICE (SEE STD PLAN NO 272a)

OUTLET PIPE

ANGLE ELBOW AS NECESSARY. SEE NOTE 3

ALLOWABLE OUTLET LOCATION

8" VERTICAL CLEANOUT IF SPECIFIED ON DRAWINGS

JOINT W/ COUPLER

END PLATE TYPE A OR B PER STD PLAN NO 271b

END CAP DETAIL

(WHEN REQUIRED)

FRAME & COVER PER STD PLAN NO 230

GRADE

OVERFLOW ELEV.

V-NOTCH WER AS NEEDED

SUPPORT(2 REQ'D) SEE STD PLAN NO 272a

ORIFICE AS NEEDED

CONTROL DEVICE SEE STD PLAN NO 272a

TYPE B MNRL AGG W/ PORTLAND CEMENT

FLOW CONTROL STRUCTURE & DETENTION PIPE

CMP

NOTES:

1. INVERT OF DETENTION PIPE TO BE HIGHER THAN INVERT OF OUTLET PIPE

2. SPECIFIC DESIGN INFORMATION WILL BE INDICATED ON ACTUAL CONSTRUCTION DRAWINGS

3. ROTATE ELBOW RESTRICTOR CLEAR OF ACCESS OPENING

4. FOR ALTERNATIVE PIPE MATERIALS, REFER TO STD PLAN NO 270

5. FRAME LADDER AND STEPS OFFSET:
   5.1. CLEAN OUT IS VISIBLE FROM TOP
   5.2. CLIMB DOWN SPACE IS CLEAR OF RISER AND CLEAN OUT GATE
   5.3. MH OPENING SHALL NOT BE PLACED DIRECTLY OVER THE TOP OF INLET PIPE

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 A–A

SECTION B–B

SECTION B–B

TYPE A

TYPE B

CMP DETENTION STRUCTURE
END PLATE DETAILS
TYPES A & B

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>END PLATE THICKNESS</th>
<th>STIFFENER TYPE &amp; SIZE</th>
<th>STIFFENER SPACING</th>
<th>SIZE</th>
</tr>
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<tbody>
<tr>
<td>D1</td>
<td>D2</td>
<td>D3</td>
<td>t</td>
<td>S1</td>
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<tr>
<td><strong>TYPE A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot;</td>
<td>–</td>
<td>–</td>
<td>⅛&quot;</td>
<td>FLAT 2½&quot; x ¾&quot;</td>
</tr>
<tr>
<td>36&quot;</td>
<td>–</td>
<td>–</td>
<td>⅛&quot;</td>
<td>FLAT 3&quot; x ¾&quot;</td>
</tr>
<tr>
<td>48&quot;</td>
<td>–</td>
<td>–</td>
<td>⅛&quot;</td>
<td>FLAT 4½&quot; x ¾&quot;</td>
</tr>
<tr>
<td>60&quot;</td>
<td>–</td>
<td>–</td>
<td>⅝&quot;</td>
<td>L 2½&quot; x 2&quot; x ¾&quot;</td>
</tr>
</tbody>
</table>
| 72" | – | – | ⅝" | L 3" x 3" x ¾" | 6" | 10" | 6 | ¾"
| **TYPE B** | | | | | | | |
| 30" | – | – | ¾" | FLAT 2½" x ¾" | 5½" | 5½" | 3 | ⅝" |
| 36" | – | – | ¾" | FLAT 3" x ¾" | 6" | 6" | 4 | ⅝" |
| 48" | – | – | ¾" | FLAT 4½" x ¾" | 8" | 8" | 4 | ⅝" |
| 60" | – | – | ¾" | FLAT 5½" x ¾" | 10" | 10" | 4 | ¾" |
| 72" | – | – | ¾" | FLAT 6½" x ¾" | 12" | 12" | 5 | ¾"
| **TYPE C** | | | | | | | |
| 48" | 30" | – | ¾" | FLAT 4½" x ¾" | 2" | 8" | 1 | ⅝" |
| 60" | 36" | – | ¾" | L 2½" x 2" x ¾" | 2" | 7" | 2 | ¾" |
| 72" | 36" | – | ¾" | L 2" x 3" x ¾" | 3" | 6½" | 3 | ¾"

**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 SHALL 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 SHALL BE SCHEDULE 40, PER ASTM 1785.

2. CONSTRUCTION DRAWINGS SHALL PROVIDE ELEVATION AND DIAMETER FOR ORIFICE 1 AND ORIFICE 2 AND DIMENSIONS AND ELEVATION FOR THE BOTTOM OF THE V-NOTCH WEIR AND ELEVATION FOR OVERFLOW.

3. FIELD CHANGES TO DETENTION PIPE INVERT AND SLOPE REQUIRE CONFIRMATION FROM THE ENGINEER OF RECORD THAT THE CONSTRUCTION DRAWING ELEVATIONS FOR THE FLOW CONTROL DEVICE ASSEMBLY STILL MEET THE DESIGN REQUIREMENTS.
STANDARD PLAN NO 272b
REV DATE: SEPT 2013

TOP VIEW

STAINLESS STEEL TENSION WASHER
PVC COTTER PIN
8
TOP VIEW
CROSS

SHOP DRILL 1/4" HOLE
STAINLESS STEEL PIN
PRESS FIT
STAINLESS STEEL PIN
FIELD DRILL

1/8" SS CABLE, TIE TO MH STEP
1" PVC SCHEDULE 40 MIN, ASTM 1785 SCH 40 LENGTH AS REQUIRED TO BE 6" BELOW TOP OF CONCRETE STRUCTURE. ALL FITTINGS SHALL BE SOLVENT WELDED
1/2" SS BOLT

LIFT HANDLE

SIDE VIEW

PVC SHEAR GATE
FOR USE IN ROW ONLY

DIA A B* C*
4" 4 8" 2"
6" 8" 10" 2 6"
8" 8 12" 3"
10" 10 14" 3"
12" 12 16" 3"

*MINIMUM

DIA = OUTLET PIPE DIAMETER

FRONT VIEW

REF STD SPEC SEC 7-16

City of Seattle
NOT TO SCALE

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

1'-0" MAX (TYP)

6" TO 12" SD

A

PLAN

SECTION A--A

NOT TO SCALE

City of Seattle

TYPE 277 JUNCTION BOX & INSTALLATION

**NOTES:**

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

**NOTE:**

USE ALTERNATIVE NO 1 IF PIPE CONDITION PROHIBITS WELDING

---

**SECTION A-A**

CORRUGATED FLANGE PLATE 0.105" THICK

NON-CORRUGATED PIPE

3/8" DIA BOLT HOLES 3/8" DIA

BOLTS, BOLT HEADS ON INSIDE OF PIPE

ALTERNATIVE NO 1

**SECTION B-B**

CORRUGATED FLANGE PLATE

1/8" NEOPRENE SEAL

NON-CORRUGATED 0.135" THICK OD SAME AS OD OF CONNECTION PIPE

CLEAN & PREPARE WELD AREA

**NOTE:**

USE ALTERNATIVE NO 1 IF PIPE CONDITION PROHIBITS WELDING

---

**ROMAC STYLE LSS1 LIGHTWEIGHT REPAIR CLAMP OR APPROVED EQUAL 12" LONG**
NOTE:
USE LOCKING CLEAN-OUT IN ROW.
DRILL AND TAP, APPLY ANTI-SEIZE COATING AND BOLT DOWN WITH 3/8" S.S. ALLEN-HEAD BOLTS – 2 PLACES.

CAST IRON FRAME & COVER

FRAME & COVER PER STD PLAN NO 280

2' x 2' x 1' CONC PAD

12" DIA DIP, 12" LONG

FIBER JOINT PACKING

6" MINERAL AGGREGATE TYPE 2

NOTE:
DRILL AND TAP FOR LOCKING AS REQUIRED

1/8 BEND

PLUG SHALL BE SEALED IN SAME MANNER AS MAIN SEWER JOINTS

8" CLEAN-OUT

REF STD SPEC SEC 7-19
200 SEWER-DRAINAGE APPURTEYNANCES

STANDARD PLAN NO 281

REV DATE: AUG 2013

REMOVABLE PVC CAP (DO NOT GLUE) ---

MAX PONDING DEPTH PER DESIGN

PVC TOP

LOCKING CAST IRON TOP

NOTE:
USE LOCKING CLEAN-OUT IN CONCRETE WALK AREAS.
DRILL AND TAP, APPLY ANTI-SEIZE COATING AND BOLT DOWN WITH 1/4" S.S. ALLEN-HEAD BOLTS -2 PLACES.

2" RAISED LETTERS

1/4" RAISE, 1/2" WIDE BORDER

LOCKING CAST IRON TOP

NOTE:
USE LOCKING CLEAN-OUT IN CONCRETE WALK AREAS.
DRILL AND TAP, APPLY ANTI-SEIZE COATING AND BOLT DOWN WITH 1/4" S.S. ALLEN-HEAD BOLTS -2 PLACES.

COVER PATTERN DETAIL

CAST IRON FRAME & COVER

NOTE:
MINIMUM DIAMETER = 6"

PVC SLOTTED PER STD PLAN NO 291

PVC TWO-WAY CLEAN-OUT

PVC SLOTTED PER STD PLAN NO 291

200 SEWER-DRAINAGE APPURTEINANCES

STANDARD PLAN NO 282a

TOP BAND

GASKET

BOTTOM BAND

PIPE

FOR PIPES LESS THAN 48" DIAMETER

(HELICAL OR ANNULAR)

REF STD SPEC SEC 7-16.2 & 9-05

City of Seattle

NOT TO SCALE

CORRUGATED METAL PIPE COUPLING BANDS

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

A. CONSTRUCTION IN STREET SHALL BE DONE BY A REGISTERED SIDE SEWER CONTRACTOR.
B. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT SIDE SEWER ORDINANCE.
### Class B Bedding

- **Bell**
- **6" Min.**

### Class C Bedding

- **Bell**
- **6" Min.**
- **Spring Line**

### Class D Bedding

- **Bell**
- **6" Min.**

---

**Sand Bedding at Trench Crossing of Metal Pipe**

- At metallic pipe crossing of fluidized thermal backfill or CDF conduit crossings.

- **Mineral aggregate per Std Spec 9-03.16**
- **Type 9 for ductile iron when applicable or concrete pipe Type 22 for vitrified clay and flexible pipe.**
- **Selected native material**
- **Suitable backfill**
- **Fluidized thermal backfill or CDF**
- **Class B sand**

---

**Notes:**

1. For trench width see std plan no 284.
2. A=4"when ID is less than 2'-6", A=6"when ID is 2'-6"or more.
3. Uniformly support pipe barrel, excavate holes for bells and coupling.

---

**Ref Std Spec Sec 7-11,7-17**

---

**City of Seattle**

---

**Not to Scale**

---

**Pipe Bedding**

---

**Sewer/Storm Drain**

---

**2014 Edition City of Seattle Standard Plans for Municipal Construction**
NOTES:
1. EXCEPTIONS TO STD PLAN NO 286 SHALL BE APPROVED BY SEATTLE PUBLIC UTILITY, WATER QUALITY DIVISION.
2. "SEWER" INCLUDES SANITARY SEWER, COMBINED SEWER AND SIDE SEWER.
3. WHERE MINIMUM CLEARANCES CANNOT BE MET, SEWER SHALL BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS INCLUDING WATER MAIN PRESSURE TESTING REQUIREMENTS.
4. NO VERTICAL CLEARANCE REQUIRED.
5. IF MINIMUM VERTICAL SEPARATION CANNOT BE MET, WATER MAIN SHALL BE A STANDARD SINGLE 18'-0" NOMINAL LENGTH DUCTILE IRON WATER MAIN SECTION CENTERED AT THE POINT OF CROSSING.
6. SEWER SHALL HAVE ADEQUATE FOUNDATION SUPPORT TO PREVENT SETTLEMENT ON THE WATER MAIN AND TO PREVENT DEFLECTION OF WATER MAIN JOINTS.
7. CROSSINGS AT AN ANGLE BETWEEN 90" AND 45" MAY OCCUR BETWEEN 9'-0" AND 6'-0" OF WATER MAIN JOINT. FOR CROSSINGS LESS THAN 45', SEE NOTE 1.
NOTES:
1. ALL ¾" STEEL & L3" x 2½" 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 & 6-02
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.
300 WATERMAIN APPURTENANCES

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

LEGEND
△ 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
1. CONTRACTOR TO DETERMINE ALIGNMENT, GRADE AND OUTSIDE DIAMETER OF EXISTING PIPE PRIOR TO INSTALLING NEW WATERMAIN. ENGINEER TO DETERMINE OUTSIDE DIAMETER OF EXISTING PIPE WHEN CONTRACTOR EXCAVATES TO DETERMINE ALIGNMENT & GRADE.
2. ALL EXCAVATION, PIPE, FITTINGS (EXCEPT AS NOTED BELOW), OTHER MATERIAL, BEDDING, BACKFILL, COMPACTION & STREET RESTORATION BY CONTRACTOR. ALL MATERIALS SHALL BE ON JOB SITE PRIOR TO SHUTDOWN OF EXISTING MAIN.
3. INSTALLED BY CONTRACTOR
4. CONNECTION PIPE: CONTRACTOR FURNISHED, INSTALLED BY SPU
5. WATERMAIN WITH PLAIN ENDS
6. MECHANICAL JOINT SLEEVE WITH SPACER CUT TO FIT GAP, FURNISHED AND INSERTED AT TIME OF CONNECTION BY SPU
7. TAPPING SLEEVE & TAPPING VALVE FURNISHED AND INSTALLED BY SPU
8. APPLIES TO PIPES 4" THROUGH 12" ALL LARGER SIZES TO BE ADDRESSED ON DRAWINGS
9. MECHANICAL JOINT SLEEVE, FURNISHED BY CONTRACTOR AND INSTALLED BY SPU, SPACERS BY SPU WHERE REQUIRED

REF STD SPEC SEC 7-11

City of Seattle
NOT TO SCALE
CONNECTIONS TO EXISTING WATERMAINS

CONNECTIONS TO EXISTING MAIN, WITH A NEW TEE OR CROSS

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

REF STD SPEC SEC 7-11

City of Seattle

CONNECTIONS TO EXISTING WATERMAINS

CONNECTIONS TO EXISTING TEE OR CROSS – PLAN VIEW

TABLE

<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>
<tr>
<td>OVER 10&quot;</td>
<td>12'-0&quot;</td>
</tr>
</tbody>
</table>

* SPU MAY INCREASE DISTURBANCE ZONE. SEE CONTRACT DOCUMENTS

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

New Watermain see Detail 1 STD PLAN 300C

Contractor shall install concrete blocking, if none exist, per STD PLAN NO 331

Disturbance Zone (typ.) see table

New Watermain see DETAIL 1 STD PLAN 300C

Connections to existing main, no tee or cross – Plan View (Tapping Sleeve & Tapping Valve)

Contractor shall verify type of joint found with drawings: MJ, lead, etc. If found different, notify the Engineer.

City of Seattle

NOT TO SCALE

CONNECTIONS TO EXISTING WATERMAINS

NOTES:
1. 6" HYDRANT CONNECTION PIPE SHALL BE DIP CL52.
2. HYDRANT TEES SHALL BE SET HORIZONTALLY.
3. THE THREADED NIPPLE ON THE 4" PUMPER NOZZLE SHALL BE EQUIPPED WITH THE BLUNT SALT OR HIGBEE CUT.
4. THE 2½" NIPPLES SHALL BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION BULLETIN NO 194 DATED 1974.
5. AFTER INSTALLATION, ALL SHACKLE BOLTS, NUTS, MECHANICAL joint GLANDS AND SHACKLE RODS SHALL BE CLEANED AND COATED WITH TWO COATS OF ROYSTON R28 MASTIC.
6. AFTER BACKFILLING, THE OUTSIDE OF THE HYDRANT (ABOVE THE GROUND LINE) SHALL BE THOROUGHLY CLEANED AND PAINTED WITH TWO COATS OF KELLY-MOORE LUXLITE 43-616 CAT YELLOW.
7. PUMPER PORT SHALL FACE CURB.
8. RESTRAINT SHALL BE BY WEDGE RESTRAINT SYSTEM SUCH AS MEGALUG OR UNIFLANGE. SEE STD SPEC 9-30.5(5).
9. CONTRACTOR SHALL REMOVE TEMPORARY PIPE PLUGS FROM THE DRAIN VALVE OUTLET BEFORE BACKFILLING THE EXCAVATION.
NOTES:
1. WHERE WATERMAINS ARE INSTALLED WITH POLYETHYLENE ENCASMENT OR TAPE COATINGS, THE HYDRANT BARREL AND VALVE SHALL BE SIMILARLY ENCASED, COATED AND/OR JOINTS BONDED. WHERE WATERMAIN IS THERMOPLASTIC COATED, THE HYDRANT BARREL SHALL BE TAPE COATED.
2. WHERE 6" GATE VALVE IS TO BE LOCATED WITHIN A PARKING-PERMITTED AREA, A SECOND 6" GATE VALVE SHALL BE INSTALLED AT THE HYDRANT ASSEMBLY PER STD PLAN NO 310a.

REF STD SPEC SEC 7-14

City of Seattle

NOT TO SCALE

TYPE 310 HYDRANT SETTING DETAIL

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

1. WHERE WATERMAINS ARE INSTALLED WITH POLYETHYLENE ENCASEMENT OR TAPE COATINGS, THE HYDRANT BARREL AND VALVE SHALL BE SIMILARLY ENCASED, COATED AND/OR JOINTS BONDED. WHERE WATERMAIN IS THERMOPLASTIC COATED, THE HYDRANT BARREL SHALL BE TAPE COATED.

2. WHERE 6" GATE VALVE IS TO BE LOCATED WITHIN A PARKING-PERMITTED AREA, A SECOND 6" GATE VALVE SHALL BE INSTALLED AT THE HYDRANT ASSEMBLY PER STD Plan NO 310a;

ALTERNATE A
TIEBOLT RESTRAINT

ALTERNATE B
MECHANICAL JOINT W/ WEDGE RESTRAINT GLANDS

REF STD SPEC SEC 7-14

CONCRETE SHEAR BLOCK SEE STD PLANS NO 310a & 311a

2" ISLAND SURFACE MATERIAL OVER 4" COMPACTED MINERAL AGGREGATE TYPE 2. MATCH SURROUNDING PAVEMENT MATERIAL AND BE FLUSH WITH TOP OF CURB

EXTRUDED CURB MATERIAL TO MATCH EX. PAVEMENT MATERIAL. SEE STD SPEC SEC 8-06

MARKER POST (TYP)

TRAFFIC ISLAND MARKER POST LAYOUT FOR FIRE HYDRANTS IN PARKING AREAS

NOTES:
1. LAYOUT OF MARKER POST SHALL BE VERIFIED FIRST WITH SPU AND SDOT
2. MARKER POST WITH HIGH INTENSITY REFLECTORIZED BANDS PROVIDED BY SPU

MARKER POST LAYOUT FOR FIRE HYDRANTS IN PARKING AREAS

REF STD SPEC SEC 7-14
NOTE:
1. ROCK FOR ROCK FACING SHALL COMPLY WITH STD PLAN NO 141

SECTION A-A

REF STD SPEC SEC 2-13

WALL REQUIREMENTS FOR HYDRANTS

City of Seattle

NOT TO SCALE

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

- EXPANSION JOINT
- TREE
- SIDE SEWER
- UTILITY POLE, GUARD POST, BUILDING WALL OR ANY OTHER FIXED STRUCTURE
- 3'-0" MIN (TYP)
- OTHERWISE EASEMENT IS REQUIRED
- 10'-0" STD N OR E

DETAIL A
HYDRANT NEAR CURB RAMP

REF STD SPEC SEC 7-14

City of Seattle
NOT TO SCALE

FIRE HYDRANT LOCATIONS & CLEARANCES

NOTES:

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

TYPES OF WATER SERVICES

- 6" & Larger Domestic Service (DS) 6'x9' Vault NCVP#
- 3" & 4" Domestic Service (DS) 5'x7' Vault NCVP#
- 4" & Larger Fire Services (DC Detector Check) 4'x4' Area (Typ Direct Bury) NCVP#
- 2" & Smaller Water Service Installed in 1.5'x2' Meter Box MB#

EXCEPTIONS TO THE STANDARD LOCATIONS REQUIRE CITY REVIEW AND APPROVAL.

REF STD SPEC SEC 1-07.17(2)

LID, VALVE BOX

P AVEMENT

TOP SECTION, SEE SECTION A-A

OPERATING NUT EXTENSION

EXTENSION PIECE (2)
WHEN REQ'D INSTALLED
BETWEEN TOP & BASE
SECTION

BASE SECTION, SEE
SECTION A-A

PLASTIC FOAM RING
SEE STD PLAN No 315b

GATE VALVE
(BFV INSTALLATION SIMI)

WATERMAIN

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

V ALVE BOX ASSEMBLY
TYPICAL SETTING DETAIL

REF STD SPEC SEC 7-12

CAST IRON VALVE BOX &
OPERATING NUT EXTENSION

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

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

REF STD SPEC SEC 7-12 & 9-30
**300 WATERMAIN APPURTEINANCES**

**STANDARD PLAN NO 330a**

**FUSION BONDED EPOXY COATED SHACKLE RODS (TYP)**

**TYPE A BLOCKING FOR 1 1/4" & 22 1/2" VERTICAL BENDS**

<table>
<thead>
<tr>
<th>PIPE SIZE NOM DIAM INCHES</th>
<th>TEST PRESSURE PSI</th>
<th>VERTICAL BEND DEGREES</th>
<th>NO. OF CUFT OF CONC BLOCKING</th>
<th>DIA OF SHACKLE RODS (2) INCHES</th>
<th>DEPTH OF RODS IN CONCRETE INCHES</th>
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<tbody>
<tr>
<td>4&quot;</td>
<td>300</td>
<td>1 1/4</td>
<td>8</td>
<td>2</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22 1/2</td>
</tr>
<tr>
<td>6&quot;</td>
<td>300</td>
<td>1 1/4</td>
<td>12</td>
<td>2</td>
<td>3/4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22 1/2</td>
</tr>
<tr>
<td>8&quot;</td>
<td>300</td>
<td>1 1/4</td>
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<td>3/4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22 1/2</td>
</tr>
<tr>
<td>12&quot;</td>
<td>300</td>
<td>1 1/4</td>
<td>64</td>
<td>4</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22 1/2</td>
</tr>
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</table>

**TYPE B BLOCKING FOR 45° VERTICAL BENDS**

<table>
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<tr>
<th>PIPE SIZE NOM DIAM INCHES</th>
<th>TEST PRESSURE PSI</th>
<th>VERTICAL BEND DEGREES</th>
<th>NO. OF CUFT OF CONC BLOCKING</th>
<th>DIA OF SHACKLE RODS (2) INCHES</th>
<th>DEPTH OF RO DS IN CONCRETE INCHES</th>
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<tbody>
<tr>
<td>4&quot;</td>
<td>300</td>
<td>45</td>
<td>27</td>
<td>3</td>
<td>3/4</td>
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<td>20</td>
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<tr>
<td>8&quot;</td>
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<td>125</td>
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<td>1 3/4</td>
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<td>12&quot;</td>
<td>300</td>
<td>45</td>
<td>216</td>
<td>6</td>
<td>1</td>
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</tbody>
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**FOR NOTES SEE STD PLAN NO 330b**

**WATERMAIN THRUST BLOCKING VERTICAL FITTINGS**

**City of Seattle** Not to Scale

VERTICAL OF PIPE & BLOCK

CONCRETE THRUST BLOCK

BOTTOM FACE THRUST BLOCK AREA REFERS TO THE BOTTOM FACE OF BLOCK MEASURED IN SQUARE FEET

TYPE "C"

| TYPE "C" BLOCKING FOR 11\(\frac{3}{4}\), 22\(\frac{1}{2}\), 45° AND 90° VERTICAL BENDS |
|---------------------------------|---------------------------------|---------------------------------|
| THRUST BLOCK AREA IN SQUARE FEET |
| SOIL | FIRM SILT OR FIRM SILTY SAND | COMPACT SAND | COMPACT SAND & GRAVEL |
| Fitting | 90° Bend | 45° Bend & Dead End | 11\(\frac{3}{4}\)° & 22\(\frac{1}{2}\)° Bend | 90° Bend | 45° Bend & Dead End | 11\(\frac{3}{4}\)° & 22\(\frac{1}{2}\)° Bend |
| W | H | L |
| 4'' | 5.8 | 4.2 | 1.7 |
| 6'' | 13.3 | 9.4 | 3.8 |
| 8'' | 23.3 | 16.7 | 6.7 |
| 12'' | 53.0 | 37.5 | 15.0 |

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

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

REF STD SPEC SEC 7-11

City of Seattle
NOT TO SCALE
WATERMAIN THRUST BLOCKING VERTICAL FITTINGS

300 WATERMAIN APPURTEANES

UNBALANCED CROSS

CROSS WITH PLUG

PLUGGED TEE

HORIZONTAL BEND

TEE

PIPE & CAP

THRUST BLOCK AREA IN SQUARE FEET (SEE STD PLAN NO 331B)

<table>
<thead>
<tr>
<th>SOIL</th>
<th>FIRM SILT OR FIRM SILTY SAND</th>
<th>COMPACT SAND</th>
<th>COMPACT SAND &amp; GRAVEL</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>90° BEND</td>
<td>TEE</td>
<td>45° BEND CAP OR PLUG</td>
</tr>
<tr>
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<td>7.0</td>
<td>4.2</td>
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</tr>
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<td>6&quot;</td>
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<td>9.4</td>
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<tr>
<td>12&quot;</td>
<td>53.0</td>
<td>37.5</td>
<td>37.5</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.

REF STD SPEC SEC 7-11

City of Seattle

NOT TO SCALE

WATERMAIN THRUST BLOCKING
HORIZONTAL FITTINGS

NOTES:
1. LOCATION AND SIZE OF BLOCKING FOR PIPE LARGER THAN 12" DIAMETER AND FOR SOIL TYPES DIFFERENT THAN SHOWN SHALL BE DETERMINED BY THE ENGINEER.
2. ALL BLOCKING FOR HORIZONTAL FITTINGS (POURED IN PLACE) SHALL BEAR AGAINST UNDISTURBED NATIVE GROUND.
3. ALL POURED THRUST BLOCKS SHALL BE BACKFILLED AFTER MIN. 1 DAY. PRESSURE TESTING SHALL OCCUR AFTER CONCRETE HAS REACHED Fc.
4. ALL BLOCKING TO BE CONCRETE CL 3000.
5. BLOCKING AGAINST FITTINGS SHALL BEAR AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT SHALL NOT COVER OR ENCLOSE BELL ENDS, JOINT BOLTS OR GLANDS. ACCESS TO BOLTS AND GLANDS SHALL BE PROVIDED.
6. ALL HORIZONTAL BLOCKING THRUST AREAS SHALL BE CENTERED ON PIPE.
7. WHERE POURED-IN-PLACE BLOCKING IS REQUIRED AT A POINT OF CONNECTION TO AN EXISTING WATERMAIN, THE BLOCKING SHALL BE INSTALLED PRIOR TO CONNECTION.
8. TEMPORARY BLOCKING, IF USED, SHALL BE APPROVED BY ENGINEER.
FOR 4" WATERMAINS 4"X1½" FIPT DUCTILE IRON, DOUBLE STRAPPED SADDLE (SEE STD PLAN NO 3406) W/ 1½"X2" CORP STOP, BALL TYPE BRASS BODY MIPT X COMP

FOR LARGER THAN 4" WATERMAINS DIRECT TAP 1½"X2" CORP STOP, BALL TYPE BRASS BODY, AWWA X CORP

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

MECHANICAL JOINT CAP OR PLUG
1/4" STEEL PLATE
CONC BLOCKING PER STD PLAN NO 331

UNDISTURBED GROUND

PLAN

2" GALV STEEL PIPE
2" PLASTIC FOAM MATERIAL SEE STD PLAN NO 315
1 CU FT GRAVEL MNRL AGG TYPE 9
2" GALVANIZED ELBOW DRILL 1/8"DRAIN HOLE
2"X6" GALVANIZED NIPPLE
2" BRASS COUPLING MIPT X COMP

ELEVATION

REF STD SPEC SEC 7-11
FOR 4" WATERMAINS
4"x1½" FIPT DUCTILE IRON,
DOUBLE STRAPPED SADDLE
W/ 1½"x2" CORP STOP, BALL TYPE
BRASS BODY MIPT X COMP

FOR LARGER THAN 4" WATERMAINS
DIRECT TAP (SEE STD PLAN NO 340a)
1½"x2" CORP STOP, BALL TYPE
BRASS BODY, AWWA X CORP

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

REF STD SPEC SEC 7-11

City of Seattle NOT TO SCALE 2" BLOW OFF DETAIL TYPE B TRAFFIC INSTALLATION

BEDDING MATERIAL

CLASS B:
- FOR DISTRIBUTION WATERMAIN, MINERAL AGGREGATE TYPE 6 OR TYPE 7
- FOR TRANSMISSION WATERMAIN, MINERAL AGGREGATE TYPE 9
- SPECIAL BEDDING TO BE INDICATED ON DRAWINGS

NOTES:
1. EXCAVATE FOR THE BELL TO ENSURE UNIFORM SUPPORT FOR THE PIPE BARREL
2. FOR FLUIDIZED THERMAL BACKFILL (FTB) OR CDF CROSSINGS OF METALLIC PIPE, INCREASE CLASS B SAND DEPTH & COVER TO 12" MIN & ENCASE METALLIC PIPE IN 8 MIL POLYETHYLENE ENCASMENT FOR FULL TRENCH WIDTH
300 WATERMAIN APPURTENANCES

ELEVATION

MIN 3 COURSES CONCRETE BLOCK & MORTAR
TEST BOX, SEE SECTION A

TEST STATION WIRES (NUMBER VARIES) PROVIDE 3'-0" MIN OF SLACK BETWEEN TEST BOX AND CONDUIT

1" ELECTRICAL GRADE PVC CONDUIT TO PIPE AND REFERENCE CELL SEE STD PLAN NO 363

MINERAL AGGREGATE TYPE 9 - 6" MIN DEPTH

ELECTROLYSIS TEST STATION - TRAFFIC AREA

STANDARD OLYMPIC FOUNDRY TYPE SM29 BOX & LID
CONCRETE COLLAR
#4 BAR ALL AROUND

TEST BOX, SEE SECTION A

1" ELECTRICAL GRADE PVC CONDUIT TO PIPE & REFERENCE CELL SEE STD PLAN NO 363

MINERAL AGGREGATE TYPE 9

ELEVATION

ELECTROLYSIS TEST STATION - NON-TRAFFIC AREA

NUMBER OF TERMINALS EQUALS NUMBER OF TEST WIRES PLUS 1

CRIMP TYPE SPACER CONNECTOR

TEST WIRED IDENTIFICATION WHEN SPECIFIED IN CONTRACT DOCUMENTS

TERMINAL BOARD, DETAIL B

TEST BOX, SECTION A

CABLE ENTRY SYSTEM

TERMINAL BOARD, SEE DETAIL B

NEMA TYPE 4X ENCLOSURE WITH HINGED COVER, HOFFMANN BRAND OR APPROVED EQUAL

REF STD SPEC SEC 7-11

City of Seattle

NOT TO SCALE

WATERMAIN ELECTROLYSIS TEST STATION

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

BOTTOM VIEW

TOP VIEW

SECTION A-A

LIFTING HANDLE
(2 REQUIRED)

REF STD SPEC SEC 7-12

City of Seattle

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 THERMITE WELD CAP OPENING AWAY OR MASTIC MOLD TO FROM OPERATOR FIT OVER THERMITE WELD & FOLLOWER RING AND IGNITE
4. REMOVE SLAG AND ALLOW TO COOL
5. 16 OUNCE HAMMER TEST PER STD. SPEC SEC 7-11.3(15)(3)
6. FINAL CONNECTION TO BE MADE WATERTIGHT WITH MASTIC COATING OR PREFORMED THERMITE WELD CAP
#6 AWG, BLACK TEST STATION WIRE
#10 AWG, BLACK TEST STATION WIRE
#10 AWG, YELLOW

1½" SCH 40 ELECTRICAL GRADE PVC CONDUIT TO TEST STATION SEE STD PLAN NO 360

TERMINATE END OF CONDUIT AS CLOSE TO MAIN AS POSSIBLE

ZINC REFERENCE CELL PLACE AT SPRING LINE OR BELOW, 4"±2" FROM WATER MAIN

EX WATERMAIN

STANDARD 3-WIRE TEST STATION

#6 AWG, BLACK
#10 AWG, BLACK

THERMITE WELD CONNECTION
SEE STD PLAN NO 362

EXISTING

NEW

ZINC REFERENCE CELL PLACE AT SPRING LINE OR BELOW, 4"±2" FROM WATER MAIN

EX WATERMAIN

INSULATING COUPLING 5-WIRE TEST STATION

#6 AWG, BLACK
#10 AWG, BLACK

THERMITE WELD CONNECTION
SEE STD PLAN NO 362

EXISTING

NEW

ZINC REFERENCE CELL PLACE AT SPRING LINE OR BELOW, 4"±2" FROM WATER MAIN

EX WATERMAIN

INSULATING FLANGE 5-WIRE TEST STATION

#10 AWG, YELLOW
#10 AWG, WHITE
#6 AWG, WHITE

THERMITE WELD CONNECTION
SEE STD PLAN NO 362

EXISTING

NEW

ZINC REFERENCE CELL PLACE AT SPRING LINE OR BELOW, 4"±2" FROM WATER MAIN

EX WATERMAIN

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

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

City of Seattle

NOT TO SCALE

ELECTROLYSIS TEST STATION
WIRE INSTALLATION DETAILS

* SEE RIGHT OF WAY IMPROVEMENT MANUAL FOR DIMENSIONS.
** UNLESS OTHERWISE APPROVED BY THE ENGINEER.
*** MAXIMUM 2%, MINIMUM 0.5%; USE 2% UNLESS OTHERWISE SHOWN IN CONTRACT OR APPROVED BY THE ENGINEER.
401A—CEMENT CONCRETE PAVEMENT WITH INTEGRAL CURB

401B—CEMENT CONCRETE PAVEMENT WITH EXISTING CURB & GUTTER

401C—HOT MIX ASPHALT ON CEMENT CONCRETE BASE

401D—HOT MIX ASPHALT OVER CRUSHED ROCK BASE

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

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

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

OPTIONAL KEYWAY
FOR LONGITUDINAL JOINT

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

SEE STD PLAN
TYPE 410c CURB

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

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

2" HMA (CL 1")

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

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

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

402A—ROADWAY CONCRETE PAVEMENT ON CRUSHED ROCK

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

402C—HOT MIX ASPHALT ON CRUSHED ROCK BASE

REF STD SPEC SEC 4-04, 5-04, 5-05 & 8-04
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. BATTER OR AS SHOWN IN CONTRACT OR APPROVAL BY THE ENGINEER.

REFERENCES:
STD SPEC SEC 8-17, 8-19
**HALF SECTION**
RIGID PAVEMENT WITH ASPHALT CONCRETE SURFACE

- REMOVE ASPHALT OVERLAY
- SAWCUT ASPHALT CONC (REMOVE LOOSENED AREAS)
- EXISTING ASPHALT CONCRETE PAVEMENT

**MIN WIDTH FOR RESTORATION**

- HMA (CL 3/4") **
- CEM. CONC SHALL BE THICKNESS GREATER OF "3" OR 9 INCHES

**HALF SECTION**
CEMENT CONCRETE PAVEMENT

- SAWCUT CONCRETE FULL DEPTH
- EXISTING CONCRETE PAVEMENT

**TYPICAL PATCH FOR RIGID PAVEMENT**

- SAWCUT CONCRETE FULL DEPTH
- STEP EXCAVATION TO AVOID UNDERMINING EX PAVEMENT (TYP)

**TYPICAL PATCH FOR FLEXIBLE PAVEMENT**

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

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

City of Seattle

**MIN WIDTH FOR RESTORATION**

- **HMA (CL 1/2") REPLACEMENT PATCH MATCH EXISTING THICKNESS**
- **ROADWAY CEM. CONC SHALL BE THICKNESS GREATER OF "D" OR 9 INCHES**

- **REMOVE ASPHALT OVERLAY**
- **SAW ASPHALT CONC (REMOVE LOOSEND ASPHALT)**
- **EXISTING ASPHALT PAVEMENT (≤3" TYP)**
- **EXISTING BRICK OR BLOCK PAVING**
- **EXISTING SAND CUSHION**
- **EXISTING CEMENT CONCRETE PAVEMENT (TYP)**

**ASPHALT OVER RIGID BASE OF BRICK OR STONE BLOCK PAVEMENT**

**HALF SECTION**

- **TRENCH WIDTH**
- **STEP EXCAVATION TO AVOID UNDERMINING EXIST PAVEMENT (TYP)**
- **6" MINERAL AGGREGATE TYPE 2 (COMPACTED DEPTH)**
- **COMPACTED BACKFILL**

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

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

City of Seattle
NOT TO SCALE
PAVEMENT PATCHING
NOTES:
1. DUE TO POTENTIAL LOSS OF SOIL STRENGTH IN AREAS ADJACENT TO TRENCH OPENINGS, PAVEMENT REMOVAL SHALL BE WIDENED TO INCLUDE THE ZONE OF INFLUENCE.
2. SEE STREET AND SIDEWALK PAVEMENT OPENING AND RESTORATION RULES FOR MORE INFORMATION ON PAVEMENT OPENINGS ZONE OF INFLUENCE.
   HTTP://WWW.SEATTLE.GOV/TRANSPORTATION/STUSE_PAVEMENTOPEN.HTM

MINIMUM FULL DEPTH PAVEMENT REMOVAL LIMITS
ZONE OF INFLUENCE* TRENCH WIDTH ZONE OF INFLUENCE*
PAVEMENT DEPTH

*TYPICALLY D/4

REF STD SPEC SEC 2-02, 2-04

City of Seattle
NOT TO SCALE
PAVEMENT OPENING ZONE OF INFLUENCE

1. Install tie bars along longitudinal joint between full panel replacement and exist cement conc pavement. Tie bars are not installed between cement conc pavement and hot mix asphalt shoulders.
2. Tie bars and dowels are not required.
   2.1. When indicated on the drawings by "no tie bars" or "no dowel bars".
   2.2. When existing pavement is less than a thickness of 8" or when the engineer determines the existing conc not to be competent.
3. Do not place longitudinal joints or skewed joints within bike lanes.
4. When paving adjacent to existing panels, the new transverse joints shall be placed to match joint locations of the existing adjacent pavement unless otherwise directed by the engineer. See std plan no 405c for maximum transverse joint spacing.

A* See section A-A Standard Plan 405a
B* See section B-B Standard Plan 405b

NOT TO SCALE

ROADWAY CONCRETE PAVEMENT REPAIR

REF STD SPEC SEC 5-05

City of Seattle

NEW CEMENT CONC PAVEMENT
EXIST CONCRETE PAVEMENT

SAWED GROOVE:
WIDTH \( \frac{3}{8} \)" MIN. TO \( \frac{3}{4} \)" MAX;
DEPTH 2", WITH JOINT SEALANT;
OR \( \frac{3}{8} \)" PREMOLDED JOINT FILLER

SECTION A-A
DOWEL BAR DETAIL

NEW CEMENT CONC PAVEMENT
EXIST CONCRETE PAVEMENT

SAWED GROOVE:
WIDTH \( \frac{3}{8} \)" MIN. TO \( \frac{3}{4} \)" MAX;
DEPTH 2" WITH JOINT SEALANT;
OR \( \frac{3}{8} \)" PREMOLDED JOINT FILLER

SECTION B-B
TIE BAR DETAIL

SAWED GROOVE:
WIDTH \( \frac{3}{8} \)" MIN. TO \( \frac{3}{4} \)" MAX;
DEPTH 2" WITH JOINT SEALANT;
OR \( \frac{3}{8} \)" PREMOLDED JOINT FILLER

SAWCUT FULL DEPTH

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 LANES.
2. WHEN A JOINT IS WITHIN 18 INCHES OF A CASTING JOINTS SHOULD BE SKEWED TO MEET THE CASTING AT 90 DEGREES UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR SHOWN ON THE DRAWINGS.
3. SEE STD PLAN NO 405 OR DRAWINGS FOR REBAR DETAIL AROUND CASTING 18 INCHES OR GREATER FROM JOINTS.
4. DOWEL BARS SHALL NOT BE PLACED WITHIN 15 INCHES OF THE EDGE OF PAVEMENT OR A PARALLEL JOINT.

<table>
<thead>
<tr>
<th>DEPTH (D) OF ROADWAY CEMENT</th>
<th>DOWEL BAR SIZE (DIA #)</th>
</tr>
</thead>
<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>3/4&quot;X18&quot;</td>
</tr>
<tr>
<td>11&quot;&lt;D</td>
<td>3/4&quot;X18&quot;</td>
</tr>
</tbody>
</table>
THROUGH JOINTS
Use only when shown in contract or approved by the engineer.

EXPANSION CAP ON ALTERNATION FREE ENDS. OPPOSITE FIXED ENDS DO NOT TAP EXPANSION CAPS ONTO DOWELS.

CORROSION RESISTANT EPOXY COATING

COAT ENTIRE DOWEL WITH APPROVED BOND BREAKER

DOWEL BAR

3/4" PREMOLDED JOINT FILLER

THROUGH JOINTS

NOTE:
Use of optional keyway may be revoked by the engineer at anytime due to quality control issues with maintaining placement requirements within ±1/8 inch vertically.

KEYWAY DETAIL
LONGITUDINAL JOINT WITH KEYWAY
(Optional for 29 inches only)

X = 1.5"
Y = 2.5"

(TIE BAR OMITTED FOR CLARITY)

REF STD SPEC SEC 5-05

City of Seattle
NOT TO SCALE

THROUGH JOINTS AND OPTIONAL KEYWAYS FOR CEMENT CONCRETE ROADWAY

NOTES:
1. PLACE WIRE MESH AT ⅜ DEPTH OF CEMENT CONCRETE.
2. THE DIMENSIONS OF THE MESH SHALL BE ADJUSTED WHERE PAVEMENT JOINTS ARE ENCOUNTERED.
3. NO REINFORCING STEEL SHALL BE WITHIN 2½ INCHES OF ANY CEMENT CONCRETE SURFACE OR JOINT.

REF STD SPEC SEC 5-05
IF EXISTING SURFACE IS CEM. CONC, USE THROUGH JOINT, SEE STD PLAN NO 411 FOR DETAILS...

SLOPE (SEE NOTE 2)

COMPACTED SUBGRADE OR TYPE 2 MNRL AGG OVER COMPACTED SUBGRADE

410B CURB & GUTTER

GRADE POINT

6"

1/4"

COMPACTED SUBGRADE OR TYPE 2 MNRL AGG OVER COMPACTED SUBGRADE

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

REF STD SPEC SEC 8-04

Type 410 Curb

2" MIN DEPTH FOR D=8" OR LESS
1/40 FOR D>8" OR MORE

CONTRACTION JOINT FOR CURB OR CURB & GUTTER

THROUGH JOINT FOR CURB OR CURB & GUTTER

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

SECTION A-A

SECTION B-B

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

DRILL ¾" MIN DIA HOLES FILL WITH EPOXY GROUT (TYPE I OR IV EPOXY PER SEC 9-26)

CURB DOWEL ON NEW PAVEMENT

CURB DOWEL PINS ON EXISTING PAVEMENT

DOWELS FOR DOWELLED CURB CONSTRUCTION

REF STD SPEC SEC 8-04

City of Seattle NOT TO SCALE CURB JOINTS & DOWELS

EXISTING PAVEMENT

EXTRUDED ASPHALT CONCRETE CURB

EXTRUDED CEMENT CONCRETE CURB

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

REF STD SPEC SEC 8-06

City of Seattle NOT TO SCALE EXTRUDED CURB

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

8” #4 REBAR IN 1½”
GROUT FILLED HOLE

1⁄8” GROUT PAD

PAVEMENT
8" STRAIGHT BLOCK CURB
(SINGLE SLOPED)

SECTION F–F

SECTION G–G

RADIAL CURB

RADII CURB TABLE

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

RADIUS CURB TABLE

SECTION H–H

8" STRAIGHT BLOCK CURB
(DUAL SLOPED)

City of Seattle
NOT TO SCALE

8" BLOCK AND RADIAL TRAFFIC CURB

**NOTES:**

1. $\frac{3}{16}$" THROUGH AND CONTRACTION JOINTS SHALL BE LOCATED AS REQUIRED BY SECTION B-14.3(6).
2. "$V$" GROOVE SCORING SHALL MATCH PATTERN IN ADJACENT EXISTING SIDEWALK OR SHALL BE A 2" SQUARE SCORING PATTERN UNLESS OTHERWISE APPROVED BY THE ENGINEER.
3. FOR CURB RAMPS, SEE STANDARD PLAN NO 422.
4. FOR TREE PITS, SEE STANDARD PLAN NO 424.
5. 12" MINIMUM BETWEEN EDGE OF RAMP WING AND PLANTING STRIP IS DESIRABLE.
6. ALL SIDEWALK SHALL BE NON-ROADWAY CEM. CONC W/ 25% POZZOLANS.

**SECTION B-B**

**TYPICAL SIDEWALK & CURB RAMP DETAIL**

SEE NOTE 5

SEE STD PLAN NO 624 FOR CONC BLOCKOUTS FOR UTILITIES

$\frac{3}{16}$" PREMOLDED JOINT FILLER

EDGE W/ $\frac{3}{16}$" RADIUS

SIDEWALK, NON-ROADWAY CEM. CONC W/ 25% POZZOLANS

COMPACTED SUBGRADE

THICKENED EDGE

THROUGH JOINT @ SECTION A-A

UNLESS CURB IS MONOLITHIC WITH SIDEWALK

6'-0" MIN

2" Wide, smooth troweled perimeter UNLESS APPROVED OTHERWISE

"V" GROOVES $\frac{3}{16}$" Deep (Typ)

PLANTING STRIP

SIDEWALK

BROOMED FINISH

R=2'-0" (Typ)

$\frac{3}{16}$" THROUGH JOINT

COMPACTED SUBGRADE

NOTE:
"H" SHALL BE 6" FROM FINISHED ROADWAY
GRADE UNLESS OTHERWISE SPECIFIED
NOTES:
1. TYPE 422A PERPENDICULAR CURB RAMP SHALL BE USED UNLESS OTHERWISE DIRECTED BY ENGINEER.
2. TWO CURB RAMPS SHALL BE INSTALLED AT EACH CORNER UNLESS OTHERWISE DIRECTED BY ENGINEER. RECOMMENDED MINIMUM DISTANCE BETWEEN TWO ADJACENT CURB RAMPS SHALL BE 3'-0". WHERE SPACE IS RESTRICTED THE MINIMUM DISTANCE BETWEEN TWO ADJACENT CURB RAMPS MAY BE REDUCED TO 1'-0".
3. CURB RAMP SHALL BE CONSTRUCTED WITH COMPANION RAMP ON OPPOSITE SIDE OF THE ROADWAY UNLESS OTHERWISE DIRECTED BY ENGINEER.
4. RAMP CENTERLINE SHALL BE RADIAL/PERPENDICULAR TO THE ALIGNMENT OF THE FACE OF CURB. RAMP SHALL HAVE A MAXIMUM SLOPE 12H:1V. AND A MINIMUM WIDTH OF 4'-0". THE CROSS SLOPE OF THE RAMP SHALL BE MAXIMUM OF 50H:1V. RAMP SURFACE SHALL HAVE A HEAVY BROOM BRUSHED SURFACE PARALLEL TO THE CURB. MAXIMUM RAMP LENGTH SHALL BE 15 FEET.
5. DETECTABLE WARNING SHALL HAVE A TRUNCATED DOME PATTERN AS SHOWN, A MINIMUM WIDTH OF 2'-0" AND SHALL BE PLACED AT THE RAMP BOTTOM STARTING AT THE BACK OF CURB. DETECTABLE WARNING COLOR SHALL BE "FEDERAL SAFETY YELLOW", UNLESS OTHERWISE DIRECTED.
6. UPPER LANDING SHALL BE FULL WIDTH OF THE RAMP AND SHALL HAVE A MINIMUM DEPTH OF 4'-0", SLOPE ON THE UPPER LANDING SHALL BE BETWEEN 0.5% AND 2% AVOID PLACING HANDHOLES, UTILITY CASTINGS OR OTHER OBSTRUCTIONS IN THE UPPER LANDING.
7. LOWER LANDING SHALL BE FULL WIDTH OF THE RAMP AND SHALL EXTEND A MINIMUM 4'-0" BEYOND DETECTABLE WARNING. THE LOWER LANDING SHALL BE THE WIDTH OF THE RAMP AND FALL WHOLLY WITHIN THE LEGAL CROSSWALK MARKED OR UNMARKED. SLOPE ON THE LOWER LANDING SHALL BE BETWEEN 0.5% AND 2% GUTTER FLOW LINE SHALL BE SURVEYED BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ENSURE PONDING OF WATER SHALL NOT OCCUR ON THE LOWER LANDING.
8. WINGS SHALL HAVE A MAXIMUM SLOPE OF 10H:1V. IF UPPER LANDING HAS A DEPTH LESS THAN 4'-0", THE MAXIMUM SLOPE FOR THE WINGS SHALL BE 12H:1V. WINGS SHALL HAVE A BRUSHED FINISH PARALLEL TO THE CURB. THE CONCRETE WALK THICKENED EDGE ALONG THE CURB SHALL CONTINUE THROUGH EACH WING.
9. POLES, HYDRANTS AND OTHER ABOVE GROUND OBSTRUCTIONS SHALL HAVE A MINIMUM LATERAL CLEARANCE OF 1'-0" FROM THE UPPER LANDING AND RAMP SURFACE.
10. ALL CHANGES IN LEVEL ACROSS JOINTS SHALL BE FLUSH. ANY DIFFERENCE IN ELEVATION OF 1/8 INCH OR GREATER SHALL BE REPAIRED OR REPLACED.
11. ALL SLOPE GRADES SHALL BE MEASURED OFF THE HORIZON-LINE. IF EXISTING SITE CONDITIONS CONFLICT WITH OBTAINING GRADES SHOWN, THE DESIGNER / CONTRACTOR SHALL MAKE MINIMUM ADJUSTMENTS TO THE GRADES SHOWN TO MEET EXISTING SITE CONDITIONS; ADJUSTMENTS ARE SUBJECT TO ENGINEER APPROVAL.

REF STD SPEC SEC 8-14

City of Seattle NOT TO SCALE CURB RAMP DETAILS

RAMP SURFACE SHALL HAVE A HEAVY BROOM BRUSHED SURFACE PERPENDICULAR TO CURB.

FOR SCORING, SEE STANDARD PLAN NO 420

DETECTABLE WARNING (SEE STD PLAN 422a FOR DETAILS)

THROUGH JOINT - cw

RAMP SURFACE SHALL HAVE A HEAVY BROOM BRUSHED SURFACE PERPENDICULAR TO CURB.

FOR SCORING, SEE STANDARD PLAN NO 420

DETECTABLE WARNING (SEE STD PLAN 422a FOR DETAILS)

THROUGH JOINT - cw

PROVIDE BOND BREAKER WHEN ADJACENT TO CONC PANELS

PARALLEL CURB RAMPS
(TYPE 422b)

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

SECTION B-B WITH CURB & GUTTER

SECTION B-B WITH CURB & GUTTER

SECTION A-A NON CURB & GUTTER

SECTION A-A NON CURB & GUTTER

SECTION A-A CURB MONOLITHIC WITH RAMP

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

SEE NOTE 5

SCORE LINE (TYP) 2% MAX

DETECTABLE WARNING

NOTE 5

SECTION B-B

Curved Ramps Locations

Notes:
1. For Detectable Warning Plate/Truncated Domes Details, see Standard Plan No 422a.
2. For Notes and Details Not Shown, see Standard Plan No 422a.
NOTES:
1. SEE STD PLAN 420 FOR CW SCORING DETAILS.
2. INSTALL ROOT BARRIER PER STANDARD PLAN NO 100a.

REF STD SPEC SEC 8-02 & 8-14

City of Seattle

NOT TO SCALE

EXPANDABLE TREE PIT DETAIL

ROOT BARRIER AT OUTSIDE EDGE OF TREE PIT (TYP) – FOR NEW TREE INSTALLATIONS ONLY

OUTSIDE EDGE OF CONC.

THROUGH JOINTS THROUGH SIDEWALK

SIDEWALK, NON-ROADWAY CONC.
CONC W/25% POZZOLANS

FOR ADDITIONAL SIDEWALK SCORING REQUIREMENTS
SEE STD PLAN NO 420

TYPE C

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

NOTES:
1. INSTALLATIONS REQUIRING LESS THAN STANDARD MIN CLEARANCES
   SHALL BE ALLOWED ONLY WITH APPROVAL BY THE ENGINEER.
2. INSTALL ROOT BARRIER AS NOTED. SEE STANDARD PLAN NO 100a.
3. SEE STD PLAN NO 420 FOR CW SCORING DETAILS.
PERVIOUS CONC CEM SIDEWALK DEPTH
TRANSITION AT DRIVEWAYS PROFILE VIEW

NOTES:
1. DEPTHS SHOWN FOR PAVEMENT SECTIONS ARE COMPACTED DEPTH.
2. SIDEWALK DEPTH AT DRIVEWAY TO MATCH DRIVEWAY PAVEMENT DEPTH.
3. DEPTH OF POROUS CEMENT CONCRETE FOR DRIVEWAYS SHALL BE 8" MIN.
4. 5% MAX. POROUS CEMENT CONCRETE PROFILE GRADE.

HOT MIX ASPHALT PAVEMENT SIDEWALK SECTION
CONCRETE PAVER SIDEWALK SECTION

REF STD SPEC SEC 5-04, 5-06
NOTES:

1. TYPE 430A SHALL BE USED UNLESS OTHERWISE DIRECTED BY ENGINEER. USE OF DRIVEWAY TYPE 430B IS SUBJECT TO ENGINEER APPROVAL.

2. DRIVEWAYS SHALL BE NON-ROADWAY CEM. CONC. HIGH STRENGTH.

3. WING WIDTH ON ARTERIAL STREETS WHERE TRAVEL LANE IS NEXT TO THE CURB SHALL BE 5'-0", OTHERWISE, WING WIDTH SHALL BE 2'-6".

4. "V" GROOVE SCORING SHALL MATCH PATTERN IN ADJACENT EXISTING SIDEWALK.

5. FOR CONCRETE DRIVEWAY CONSTRUCTED WITH CONCRETE SIDEWALK, SEE STANDARD PLAN NO 431.

6. CONCRETE DRIVEWAYS WITH A WIDTH GREATER THAN 15'-0" SHALL HAVE A 3/8" TRANSVERSE CONTRACTION JOINT NEAR THE CENTERLINE OF DRIVEWAY. SEE DETAIL SECTION C-C STANDARD PLAN NO 420.

7. FOR TYPE 430A SLOPE IN THE 6'-0" MINIMUM WIDE AREA CONNECTING TO CW ON EACH SIDE OF THE DRIVEWAY SHALL BE MAXIMUM 2% AND MINIMUM 0.5%. FOR TYPE 430B, SLOPE OF THE DRIVEWAY BETWEEN THE TWO RAMP SECTIONS SHALL BE MAXIMUM 2% AND MINIMUM 0.5%. DRIVEWAY ON THE PRIVATE SIDE OF THE CW MAY BE SLOPED AS NEEDED TO MATCH EXISTING SITE CONDITIONS.

8. RAMP SHALL HAVE A MAXIMUM SLOPE 12H:1V. AND A MINIMUM WIDTH OF 6'-0". THE CROSS SLOPE OF THE RAMP SHALL BE MAXIMUM OF 50H:1V. RAMP SURFACE SHALL HAVE A HEAVY BROOM BRUSHED SURFACE PERPENDICULAR TO THE CURB.

9. ALL CHANGES IN LEVEL ACROSS JOINTS SHALL BE FLUSH WITH A MAXIMUM DIFFERENCE IN ELEVATION OF 3/4 INCH.

10. ALL SLOPE GRADES SHALL BE MEASURED OFF THE HORIZON-LINE. IF EXISTING SITE CONDITIONS CONFLICT WITH OBTAINING GRADES SHOWN, THE CONTRACTOR SHALL MAKE MINIMUM ADJUSTMENTS TO THE GRADES TO ACCOMMODATE EXISTING SITE CONDITIONS, ADJUSTMENTS ARE SUBJECT TO ENGINEER APPROVAL.
NOTES:
1. DRIVEWAY WIDTH GREATER THAN 15'-0" AND LESS THAN OR EQUAL TO 30'
   SHALL HAVE TRANSVERSE CONSTRUCTION JOINTS AT ITS CENTER.
2. DRIVEWAY GREATER THAN 30'-0" REQUIRES SDOT APPROVAL AND SHALL
   HAVE TRANSVERSE CONTRACTION JOINTS EVENLY PLACED SO THE DISTANCE
   BETWEEN CONTRACTION JOINTS, OR BETWEEN THE EDGE THROUGH JOINTS
   AND CONTRACTION JOINTS IS NOT GREATER THAN 15'-0".
3. PROVIDE SCORE LINES PER STD PLAN NO 420 AND THE DRAWINGS.

REF STD SPEC SEC 8-14 & 8-19

City of Seattle

NOT TO SCALE

CEMENT CONCRETE DRIVEWAY
PLACED WITH CEMENT
CONCRETE SIDEWALK

6" SIDEWALK, NON-ROADWAY CEM CONC W/ 25% POZZOLANS

BOLLARDS 6' SPACING (REMOVABLE AT CENTER)

DETECTABLE WARNING PLATE

SIDEWALK

SHOULDER 20' R

TRANSITION TO EX. GRADE

6" CURB RAMP, NON-ROADWAY CEM CONC W/25% POZZOLANS

CEM CONCRETE CURB AND LANDING

CURB

EDGE OF PAVEMENT

LADDER STYLE CROSSWALK

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

NOTES:
1. FOR CURB RAMP AND DETECTABLE WARNING DETAILS SEE STANDARD PLAN NO 422.
2. FOR CROSSWALK DETAILS SEE STANDARD PLAN NO 712.
3. FOR BOLLARD DETAIL SEE STANDARD PLAN NO 463.
4. ASPHALT TRAIL CROSS SLOPE MINIMUM 1%, MAXIMUM 2%.
5. CEMENT CONCRETE WARNING PAD THICKNESS TO MATCH ASPHALT THICKNESS OR MINIMUM 6" THICK WHICHERVER IS GREATER.
6. CRUSHED ROCK ON EDGE OF TRAIL AS NEEDED TO DISBURSE DRAINAGE FLOW.
7. ALL CHANGES IN LEVEL ACROSS JOINTS SHALL BE FLUSH WITH A MAXIMUM DIFFERENCE IN ELEVATION OF 3/16" INCH.
8. ALL SLOPE GRADES SHALL BE MEASURED OFF THE HORIZON-LINE IF EXISTING SITE CONDITIONS CONFLICT WITH OBTAINING GRADES SHOWN, THE CONTRACTOR SHALL MAKE MINIMUM ADJUSTMENTS TO THE GRADES TO ACCOMMODATE EXISTING SITE CONDITIONS. ADJUSTMENTS ARE SUBJECT TO APPROVAL BY THE ENGINEER.
9. ALL CEMENT CONCRETE WARNING PADS SHALL BE BRUSHED FINISHED AND "V" GROOVED TO MATCH PATTERN IN ADJACENT OR NEARBY SIDEWALKS.
NOTES:
1. FLIGHTS OF STAIRS SHALL HAVE MAX VERTICAL RISE OF 12' BEFORE A LANDING.
2. AVOID FEWER THAN 2 RISERS PER FLIGHT.
3. STEPS IN FLIGHT MUST HAVE UNIFORM TREAD RUNS AND UNIFORM RISER HEIGHTS WITH TOLERANCE OF ±3/8".
4. TREADS SHALL BE 11" MIN, 12" MAX. RISERS SHALL BE 5" MIN, 7" MAX.
5. LANDINGS BETWEEN FLIGHTS OF RISERS MUST HAVE SAME WIDTH AS STEPS AND A MIN LENGTH OF 4'-0".
6. FLIGHTS OF 2' OR MORE STEPS SHALL HAVE HANDRAILS ON BOTH SIDES.
7. HANDRAILS SHALL BE CONTINUOUS ACROSS LANDINGS BETWEEN FLIGHTS OF STEPS.
8. HANDRAILS SHALL BE GALVANIZED AFTER FABRICATION.
9. PIPE MATERIAL SHALL BE ASTM A53.
10. REINFORCING STEEL SHALL BE ASTM A615 GR 60.
11. FOR FORMAL DRAINAGE PICK-UP SEE DETAIL B ON STD PLAN NO 440b (THIS IS OPTIONAL AND MUST BE CALLED OUT ON DRAWINGS).
12. PIPE DIAMETERS SHOWN ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
13. CONCRETE CLASS CL3000.
14. LANDINGS SHALL BE 0.500 MIN FOR A MIN OF 4', ADJACENT SIDE WALK MAY BE PART OF LANDING IF SLOPE CRITERIA AND SETBACKS FROM HANDRAILS ARE MET.
15. TREAD SURFACE SHALL HAVE GROOVES AT THE NOSE FOR TRACTION.
16. IF LANDING IS ELEVATED, LANDING SHALL HAVE GUARDRAIL.
17. STAIRWAYS DEVIATING FROM STANDARD PLAN TO ACCOMMODATE BICYCLE FEATURES MAY BE USED UPON REVIEW.
18. BOTTOM LAND Dimensions FROM THE RAILING TO THE NOSE OF THE TREAD SHALL BE 2'-0" MIN + 1 TREAD WIDTH.

REF STD SPEC SEC 8-18

City of Seattle
NOT TO SCALE
CEMENT CONCRETE
STAIRWAY & HANDRAIL

400 STREET PAVING & APPURTENANCES

STANDARD PLAN NO 440b

REV DATE: DEC 2010

DETAIL A

2½" STD STEEL PIPE

16 GA GALV STEEL SLEEVE

#4 REINFORCING U BAR AT EACH POST

SEE DETAIL E

NON-SHRINK GROUT

MOUND FOR DRAINAGE (TYP)

1'-0"

DETAIL B

STAIRWAY

1'-0"

1'-0" SHOULDER

#4 REBAR (TYP)

DETAIL C

SECTION C-C

DETAIL D

SECTION D-D

DETAIL F

CEMENT CONCRETE

STAIRWAY & HANDRAIL

REF STD SPEC SEC 8-18
NOTES:
1. CEMENT CONCRETE SHALL BE CL 3000 TROWEL FINISH
2. NUMBER OF STEPS SHALL SUIT INDIVIDUAL CONDITIONS WITH UNIFORM TREAD AND RISER DIMENSIONS AS FOLLOWS:
   TREADS SHALL BE 11"MIN - 1'-0"MAX
   RISERS SHALL BE 5"MIN - 7"MAX
3. STEP WIDTH SHALL MATCH WIDTH OF EXISTING WALK, BUT SHALL BE NO LESS THAN 2'-6"WIDE
4. ALL STAIRWAYS WITH 2 OR MORE STEPS SHALL INCLUDE A HANDRAIL ON BOTH SIDES, SEE STD PLAN NO 440
5. REINFORCING STEEL ASTM A 615 GR60
6. TREAD SLOPES OUTWARD 1%
NOTES:
1. RAILING SHALL BE HOT DIP GALVANIZED AFTER FABRICATION
2. ALL POSTS SHALL BE PLUMB AND RAILS PARALLEL TO THE GROUND
3. PIPE MATERIAL SHALL CONFORM TO ASTM A 53
4. REINFORCING STEEL ASTM A 706 OR 80
5. IF THE CONCRETE WALK SLOPE IS 5% OR GREATER A GRIPPING HANDRAIL IS REQUIRED
6. PIPE DIAMETERS SHOWN ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL
NOTES:
1. RAILING SHALL BE HOT DIP GALVANIZED AFTER FABRICATION
2. ALL POSTS AND BALUSTERS SHALL BE PLUMB AND RAILS PARALLEL TO GRADE
3. PIPE MATERIAL SHALL CONFORM TO ASTM A53
4. REINFORCING STEEL ASTM A706 OR BD
5. IF THE CONCRETE WALK SLOPE IS 5% OR GREATER A GRIPPING HANDRAIL IS REQUIRED
6. PIPE DIAMETERS SHOWN ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL
**NOTES:**

1. ALL CONCRETE POST BASES SHALL BE 10" MINIMUM DIAMETER, CL3000
2. POSTS SHALL BE SPACED AT 10'-0" MAXIMUM INTERVALS UNLESS OTHERWISE DIRECTED BY THE ENGINEER
3. TOP OR BOTTOM TENSION WIRES SHALL BE PLACED WITHIN THE LIMITS OF THE FIRST FULL FABRIC WEAVE
4. THE ILLUSTRATIVE DETAIL SHOWN HEREON SHALL 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 SHALL BE MOUNDED FOR DRAINAGE

**REF STD SPEC SEC 8-12**

City of Seattle

NOT TO SCALE

CHAIN LINK FENCE

1. Fence fabric shall be secured to gate frames with knuckled selvage along top edge for Types 4&6 chain link fence installations.
2. Minimum post length:
   - Types 1&3: 8'-8".
   - Types 4&6: 5'-6".
3. Concrete or grout around post at ground line shall be mounded for drainage.

NOTES:

REF STD SPEC SEC 8-12
NOTES:
1. IF THE SLOPE OF THE TEMPORARY CROSSING IS 5% OR GREATER, A GRIPPING HANDRAIL SHALL BE ADDED THAT COMPLIES WITH ADA STANDARDS.
2. ENDS OF THE TEMPORARY CROSSING SHALL BE SLOPED TO ALLOW ADA ACCESS.
3. SURFACE OF WALKWAY SHALL BE SKID RESISTANT.
4. THE RAMP SHALL BE CONSTRUCTED OF TEMPORARY PAVEMENT OR COMPACTED GRAVEL EMBANKMENT OR AS APPROVED BY ENGINEER.
5. THE TEMPORARY WALKWAY COULD BE RECESSED FOR THE WALKING SURFACE TO BE FLUSH WITH ADJOINING GRADE.

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

TABLE

<table>
<thead>
<tr>
<th>BRIDGE LENGTH</th>
<th>PLANK SIZE</th>
<th>NAIL SIZE</th>
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<tbody>
<tr>
<td>10'-0&quot; OR LESS</td>
<td>2&quot;X12&quot;</td>
<td>20 PENNY</td>
</tr>
<tr>
<td>11'-0&quot; TO 14'-0&quot;</td>
<td>3&quot;X12&quot;</td>
<td>40 PENNY</td>
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<tr>
<td>15'-0&quot; TO 20'-0&quot;</td>
<td>4&quot;X12&quot;</td>
<td>60 PENNY</td>
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<tr>
<td>LUMBER: DOUGLAS FIR #2 OR BETTER</td>
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<tr>
<td>POST &amp; RAILS S4S</td>
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<tr>
<td>PLANKS: ROUGH</td>
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</table>

REF STD SPEC SEC 1-07.23

City of Seattle
NOT TO SCALE
TEMPORARY PEDESTRIAN WALKWAY
CONCRETE TONGUE & GROOVE BLOCK

METAL RING FOR LIFTING

3'-0" OR 6'-0"

2'-0"
400 STREET PAVING & APPURTENANCES

STANDARD PLAN NO 463

REV DATE: 2003

REMovable BOLLARDS

1" @ 45' CHAMFER ALL AROUND TOP
1" DEEP NOTCH ALL AROUND

1/2" CHAMFER all Edges

7/8" X 7/8" CEDAR POST

1/4" CHAMFER (TYP)

TYPE A

TYPE B

2"-6"

1-6"

1-0"

CONC CL 3000

1" REFLECTIVE MARKER (TYP BOTH SIDES)

PAINT TOP 5" WHITE

GALV STEEL HASP FOR LOCK

2X6 STEEL HINGE WELD TO STEEL DOOR AND PLATE SPACER

1/4" GALV STEEL PLATE SPACER

1/2" DIA X 2" ANCHOR BOLT WELD TO SPACER

2"X9/16" JOINT MATERIAL

1/2" @ 45' CHAMFER ALL AROUND TOP

TYPE C

TYPE A

TYPE B

2"-6"

1-6"

1-0"

2-6"

1-6"

1-0"

SLOPE CONCRETE FOR DRAINAGE

2"X9/16" JOINT MATERIAL

ASPH

MNRL AGG TYPE 4

GALV STEEL PLATE SPACER

GALV STEEL HASP FOR LOCK

2-#4 HORIZ TOP & BOTTOM
2-#4 VERT PER SIDE
2" MIN CLR BETWEEN REBAR & CONCRETE SURFACE

MNRL AGG TYPE 4

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

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>TYPE III</th>
<th>TYPE VI</th>
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<tbody>
<tr>
<td>A</td>
<td>30&quot;</td>
<td>44&quot;</td>
</tr>
<tr>
<td>B</td>
<td>17&quot;</td>
<td>25½&quot;</td>
</tr>
<tr>
<td>C</td>
<td>38&quot; TO 52&quot;</td>
<td>50&quot; TO 58&quot;</td>
</tr>
</tbody>
</table>

SIGNAL CONTROLLER CABINET—TYPES II, III, VI

LEVEL & FINISHED TOP OF FOUNDATION
¾" PVC DRAIN TUBE TO LOW SIDE OF FINISHED GRADE
CONDUIT PER DRAWINGS
CLASS 3000 CONCRETE

ANCHOR BOLT TYPE, SIZE & LOCATION (SEE NOTE 2)
PARALLEL TO CURB

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

REF STD SPEC SEC 8-31 & 8-32

City of Seattle

SIGNAL CONTROLLER FOUNDATION CONDUIT LAYOUT

NOTE:
ANCHOR BOLT SPACING PROVIDED BY MANUFACTURER.

ANCHOR BOLT MOUNTING HOLES (TYP)
PEDESTAL MOUNTING HOLES (TYP)

EDGE OF SERVICE CABINET

3'-0" MIN CLEARANCE
1'-4"
3'-0" MIN CLEARANCE

GROUND ROD 3/4"x120" COPPER WITH GROUND CLAMP. A SECOND GROUND SHALL BE INSTALLED A MINIMUM 8' AWAY IN A GROUND ROD HANDHOLE AS PER CITY OF SEATTLE STANDARD PLAN NO 551b. COORDINATE WITH ELECTRICAL INSPECTOR FOR LOCATION. INSTALL #4 AWG COPPER-CLAD GROUND WIRE BETWEEN CABINET FOUNDATION AND GROUND ROD HANDHOLE.
NOTES:
1. EXACT TRAFFIC SIGNAL CABINET DIMENSIONS AND ANCHOR BOLT LOCATIONS SHALL BE PROVIDED BY THE SIGNAL SHOP.
2. TRAFFIC SIGNAL CABINET SHALL BE INSTALLED WITH DOOR ON SIDEWALK SIDE OF FOUNDATION.
3. SEAL CABINETS TO FOUNDATION WITH GREY OR CLEAR SILICONE TO PREVENT MOISTURE FROM ENTERING THE CABINET.
4. EXACT SERVICE CABINET DIMENSIONS AND ANCHOR BOLT LOCATIONS SHALL BE PROVIDED BY THE MANUFACTURER.
NOTES:
1. FOR METAL POLES WITH ONLY OVERHEAD ACCESS, CONDUCTORS SHALL ENTER POLE THROUGH CABLE OUTLETS.
2. CONDUCTORS SHALL BE CONTINUOUSLY COLOR CODED
   LINE 1 = BLACK
   LINE 2 = RED
   NEUTRAL = WHITE
   GROUND = GREEN
3. BOND NEUTRAL TO GROUND AT ONLY ONE LOCATION
4. SERVICE SHALL BE 1 PHASE 3 WIRE 120/240V OR 120/208V (IN SCL NETWORK)

OVERHEAD SERVICE CONNECTION

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

NOTE:
Bond neutral to ground at only one location

REF STD SPEC SEC 8-30 & 8-31

City of Seattle | NOT TO SCALE | SIGNAL SERVICE CONNECTION WIRING DETAIL

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

OVERHEAD SERVICE CONNECTION

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

City of Seattle
NOT TO SCALE
LIGHTING SERVICE CONNECTION & LIGHT POLE WIRING DETAIL

UNDERGROUND SERVICE CONNECTION

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

REF STD SPEC SEC 8-30 & 8-31
**Typical Signal Faces**

W/ Tunnel Visors & 5" Backplate (Louvers)

**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

**Signal Hanger Detail**

**Bracket Mounting**

For Signal Head Bracket Assembly See Std Plan No 511

**Pedestal Top Mounting**

For Pedestal See Std Plan No 524

**City of Seattle**

**NOT TO SCALE**

**VEHICULAR SIGNAL MOUNTING**

SUSPENDED SIGNAL MOUNTING DETAIL

- BRONZE WIRE ENTRANCE
- HANGER W/ INSULATING BUSHING
- 1½" PIPE COUPLING
- DRILL & TAP ONE WALL OF THE PIPE & COUPLER FOR (2) ¾" X ⅜" STAINLESS STEEL BOLTS
- 1½" PIPE NIPPLE SIZED TO GAIN MOUNTING HEIGHT AND TO LEVEL ALL RED HEAD SECTIONS
- LOCK NUT WITH LOCKING SCREW
- SERATED WASHER
- SIGNAL HOUSING
- NEOPRENE SEAL
- STAINLESS STEEL WASHER
- LOCK NUT
- COTTER KEY

WITHOUT EXTENSION WITH EXTENSION

REF STD SPEC SEC 8-31

City of Seattle NOT TO SCALE VEHICULAR SIGNAL MOUNTING

NOTES:
1. 3/8" x 12" BOLT, 3/8" LOCK WASHER, 3/4" x 13/64" WASHER 4 OF EACH REQUIRED PER ASSEMBLY. ALL STAINLESS STEEL.
2. MOUNTING SHALL BE AS FOLLOWS:
   - ON METAL POLES THINNER THAN 7 GAUGE, USE 3/8" STAINLESS STEEL RIVNUTS.
   - ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR 3/8" BOLT (STAINLESS STEEL RIVNUTS OPTIONAL).
   - ON POLES FILLED OR MADE WITH CONCRETE USE 3/8" x 2" MIN STUD BOLT ANCHORS, SLEEVE TYPE.
   - ON WOOD POLES USE 11/2" x 2 1/2" LAG BOLTS.
NOTES:
1. BOLT AND WASHERS SHALL BE STAINLESS STEEL PER ASTM A 563 DH AND ASTM F 436.
2. MOUNTING SHALL BE AS FOLLOWS:
   - ON METAL POLES THINNER THAN 7 GAUGE, USE 3/8" STAINLESS STEEL RIVNUTS
   - ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR 3/4" BOLT (STAINLESS STEEL RIVNUTS OPTIONAL)
   - ON POLES FILLED WITH OR MADE FROM CONCRETE USE 3/8"x2 1/2" STUD BOLT ANCHORS WITH HEX NUT
3. FOR STREET NAME SIGN PEDESTAL INSTALLATION, SEE STD PLAN NO 623

REF STD SPEC SEC 8-31

City of Seattle
NOTE:
WRAP TOP OF ANCHOR BOLTS WITH CORROSION PROTECTION TAPE
NOTES:
1. PUSHBUTTON SHALL HAVE DIRECTIONAL ARROW AS SPECIFIED ON THE PLANS.
2. INSTALLATION OF TWO PEDESTRIAN PUSHBUTTON ASSEMBLIES SHALL REQUIRE A MOUNTING ADAPTER.
NOTES:
1. PUSHBUTTON SHALL HAVE DIRECTIONAL ARROW AS SPECIFIED ON THE PLANS.
2. INSTALLATION OF TWO PEDESTRIAN PUSHBUTTON ASSEMBLIES SHALL REQUIRE A MOUNTING ADAPTER.
BOTTOM VIEW

PEDESTAL FOUNDATION
*UPER GROUND ONLY INSTALLED ON LIGHT POLE FOUNDATIONS

4" PIPE
THREADED FOR 4" PIPE

3 THREAD PROJECTION ABOVE NUT

ANCHOR BOLT
HEX NUT
LOCK WASHER
FLAT WASHER
LEVELING NUT
SLOPE

8"X8½" ACCESS DOOR LOCATE FACING SIDEWALK

SQUARE BASE PEDESTAL

PEDESTAL MOUNTING DETAIL

REF STD SPEC SEC 8-32

City of Seattle | NOT TO SCALE | PEDESTAL & FOUNDATION

Curb/Pavement Entrance for Detector Loop Wires

Notes:
1. Sharp edge tools shall not be used in placing conductors in saw cuts.
2. Each pair of loop wires in the return cut shall be twisted a minimum of 3 turns per foot and may share common return cuts with other twisted pairs.
3. Tape loop wire a minimum of 2 turns at each corner.
4. Remove sharp corner edges in saw cuts where loop wire will be bent around.
5. Perform resistance and continuity tests prior to sealing loop wires.
6. Coil 5'-0" of loop wire in handhole.

Ref: Std Spec Sec 8-31
**DIPOLe 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.

**QUAdRIPOLE LOOP DETECTOR**

**NOTES:**
1. SEE STD PLAN NO. 725 FOR BICYCLE DETECTOR PAVEMENT MARKER DETAIL.
2. FILL CUT AFTER VERTICAL PLACEMENT AND TESTING WITH HOT PAVING GRADE LIQUID ASPHALT ASTM D 312 TYPE III OR QUICK SETTING HIGH STRENGTH GROUT.

**BICYCLE DIPOLE**

**BICYCLE QUADRIPOLE**

**SECTION A-A**

**REF STD SPEC SEC 8-31**

City of Seattle  NOT TO SCALE  BICYCLE DETECTOR PAVEMENT MARKING LOCATIONS ON DETECTOR LOOPS

NOTE:
SOLDER CONNECTION AFTER CRIMPING

TWIST BARE WIRE ENDS 7 TURNS

ELECTRICIAN'S TAPE

ELECTRICIAN'S TAPE, WRAP WITH ADHESIVE SIDE OUTSIDE

ELECTRICIAN'S TAPE

SIGNAL CABLES

SIGNAL CABLE SPLICE
COIL 4' OF #4 BARE STRANDED COPPER WIRE ABOVE FOUNDATION

FOR POLE MOUNTING & GROUT DETAIL SEE STD PLAN 562a

SECTION A-A

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

PLAN VIEW

STRAIN POLE FOUNDATION IN SIDEWALK
## FOUNDATION SCHEDULE

<table>
<thead>
<tr>
<th>POLE TYPE</th>
<th>PROJECTION</th>
<th>VERTICAL REINFORCING</th>
<th>DEPTH (LATERAL BEARING)</th>
<th>ANCHOR BOLTS (TOTAL 4 PER POLE)</th>
<th>ANCHOR PLATE DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>100#/SF/FT</td>
<td>150#/SF/FT</td>
<td>1½” DIA X 60”</td>
<td>SIZE</td>
</tr>
<tr>
<td>T</td>
<td>7½”</td>
<td>10 #8</td>
<td>8’-0”</td>
<td>7’-6”</td>
<td>½” X 16” X 16”</td>
</tr>
<tr>
<td>V</td>
<td>9”</td>
<td>10 #8</td>
<td>9’-6”</td>
<td>8’-6”</td>
<td>1¼” DIA X 72”</td>
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<tr>
<td>X</td>
<td>10”</td>
<td>12 #8</td>
<td>12’-6”</td>
<td>10’-6”</td>
<td>2” DIA X 72”</td>
</tr>
<tr>
<td>Z</td>
<td>11½”</td>
<td>12 #8</td>
<td>15’-0”</td>
<td>13’-0”</td>
<td>2½” DIA X 72”</td>
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</tbody>
</table>

### ANCHOR PLATE

- **BOLT CIRCLE DIAMETER**
- **CENTER HOLE DIAMETER**
- **CORNER RADIUS**
- **INCULDED SIDEWALK OR FINISHED GRADE**
- **ANCHOR BOLTS**

### INCLINED CONDITION

#### NOTES:
1. CONCRETE STRENGTH SHALL BE CLASS 4000, 3/4” MAX SIZE COARSE AGGREGATE.
3. ANCHOR PLATE: ASTM A36, HOT DIP GALVANIZED.
4. ALL REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM CLASS A705, GRADE 60.
5. ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED ASTM A153 INCLUDING NUTS & WASHERS (FULL LENGTH) WITH 18” OF THREADS ON TOP & 12” ON BOTTOM.
6. TAPE THE TOP OF ANCHOR BOLTS WITH CORROSION PROTECTION TAPE PER STD SPEC SEC 8-32.3(2)A PRIOR TO POURING CONCRETE.

---

**City of Seattle**

**NOT TO SCALE**

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

CONDUIT NOT SHOWN

CONDUIT PER DRAWINGS (TYP)

1 1/2" BOLT CIRCLE

PLAN

FINISH GRADE

POLE BASE PLATE

ANCHOR BOLT (TYP)

IN_EARTH

CONCRETE

CLASS 3000

CONDUIT NOT SHOWN

TOP OF FOUNDATION

FINISH GRADE

POLE BASE PLATE

ANCHOR BOLT (TYP)

IN SIDEWALK

CONCRETE

CLASS 3000

COLD JOINT FOR BLOCKOUT

SIDEWALK

CONDUIT PER DRAWINGS (TYP)

TOP OF FOUNDATION

CONDUIT NOT SHOWN

SIDEWALK

CONCRETE

CLASS 3000

COLD JOINT FOR BLOCKOUT

TOP OF FOUNDATION

FINISH GRADE

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

REF STD SPEC SEC 8-32

City of Seattle | NOT TO SCALE | STREET LIGHT POLE FOUNDATIONS

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

REF STD SPEC SEC 8-32

City of Seattle
NOT TO SCALE
PEDESTRIAN STREET LIGHT POLE FOUNDATIONS

NOTES:
1. THE COVER SHALL HAVE \( \frac{3}{4}'' \) TO \( \frac{5}{8}'' \) CLEARANCE ON EACH EDGE WITHIN THE FRAME AFTER GALVANIZING.
2. THE GROUND ROD SHALL EXTEND 4'' ABOVE THE BOTTOM OF THE HANDHOLE OR MINERAL AGGREGATE.
3. TYPE 1, 2, 3, 5 & 6 HANDHOLE COVERS SHALL HAVE "TC" AND/OR "SL" ON THEM, AS APPROPRIATE.
4. TYPE 4 HANDHOLE SHALL BE INSTALLED IN ROADWAYS, PARKING LOTS, ETC.
5. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSIONS (SEE STD PLAN NO 231) TO BRING THE COVER UP THE THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
6. A 4' LENGTH OF #6 THWN OR THHN COPPER WIRE SHALL BE SECURED FROM THE HANDHOLE COVER TO THE FRAME. WITH A 4'-0" LENGTH FROM FRAME THAT CAN BE HOOKED UP TO A GROUND ROD.
7. ALL HANDHOLE COVERS AND FRAMES SHALL HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 8-34.6)
8. ALL HANDHOLES SHALL HAVE A LOAD RATING OF H20.
9. GROUND ROD REQUIRED IN ALL STREETLIGHT HANDHOLES PER SCL CONSTR STD 1710.50

HANDHOLE SCHEDULE

<table>
<thead>
<tr>
<th>HANDHOLE TYPE</th>
<th>TOP UNIT INSIDE DIMENSION</th>
<th>EXTENSION UNIT(E)</th>
<th>COVER DIMENSIONS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>W</td>
<td>H</td>
</tr>
<tr>
<td>1</td>
<td>15&quot;</td>
<td>14&quot;</td>
<td>12&quot;</td>
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</tr>
<tr>
<td>6</td>
<td>42&quot;</td>
<td>42&quot;</td>
<td>38&quot;</td>
</tr>
</tbody>
</table>

Handhole Cover

- STEEL PLATE (GALV)
- COVER
- SLIDE LOCK
- "TC/L", "SL/TC"
- STEEL FRAME (GALV) ANCHORED TO TOP UNIT

Handhole Installation Detail

- ASPH OR CONC FINISH TO GRADE WITH \( \frac{3}{4}'' \) X 2" JOINT IN CONC AREA
- PARKING STRIP OR PLANTING AREA
- 5" WIDE X 3\( \frac{3}{4}'' \) DEEP CONCRETE COLLAR WHEN INSTALLED IN EARTH
- CONDUIT (PER DRAWINGS)
- ALL COUPLINGS SHALL BE WATERPROOF
- GROUND ROD

Type 1 & 2 Handhole

- FULL 180° OPEN
- STEEL PLATE COVER (GALV) W/LOCKING LATCH
- RECESSED LIFT HANDLE
- COVER
- BASE
- (2) 1 1/4" LIFT HOLES
- GALV "C" CHANNELS 18" LONG ON ALL SIDES
- RISER
- 6" DRAIN HOLE (OPENED)
- Optional Galv Fulling Iron 1 EACH END

Type 4 Handhole

- TRAFFIC BEARING
- #3 BAR (TYP)
- TYPE 230 FRAME & COVER ("ELECTRIC" CAST IN COVER)
- CONC MAINTENANCE HOLE ADJUSTMENT RINGS
- MINERAL AGGREGATE TYPE 9
- CONDUIT (PER DRAWINGS)
- GROUND ROD

Type 3 Handhole

- COVER SAME AS TYPE 5
- TYPE 3 HANDHOLE
- 6" DRAIN HOLE (OPENED)
- #3 BAR (TYP)

Type 5 Handhole

- 6" DRAIN HOLE (OPENED)
- #3 BAR (TYP)
- 1 1/4" GROUND ROD KNOCKOUTS

Handholes

City of Seattle

NOT TO SCALE

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

CITY OF SEATTLE

NOTES:
2. ALL NON-DELIBERATE TRAFFIC PULL BOXES MUST COMPLY WITH ALL TEST PROVISIONS OF ANSI/SCTE 77 2012 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY", & MUST MEET THE TIER 22 APPLICATION. MARKINGS SHOWING THE TIER 22 RATING MUST BE LABELED OR STENCILED ON THE INSIDE & OUTSIDE OF THE BOX.
3. ALL NON-DELIBERATE TRAFFIC PULL BOXES & COVERS MUST BE MADE OF POLYMER CONCRETE WITH FIBERGLASS REINFORCEMENT. THE BOX MUST HAVE CONTINUOUS FIBERGLASS CLOTH REINFORCEMENT ON THE INSIDE & OUTSIDE PERIMETERS. THE COVER MUST HAVE A MINIMUM OF TWO LAYERS OF FIBERGLASS CLOTH REINFORCEMENT.
4. ALL NON-DELIBERATE TRAFFIC PULL BOXES & COVERS MUST BE TESTED & CERTIFIED, MEETING ALL TEST PROVISIONS ON THE ANSI/SCTE 77, TO THE 6"WF, MEETING ALL TEST PROVISION OF THE LATEST REVISION OF ANSI/SCTE 77.
5. PULL SLOTS MUST BE RATED FOR MINIMUM PULL OUT OF 3,000 POUNDS.
6. TYPE 4 HANDHOLE SHALL BE INSTALLED IN ROADWAYS PARKING LOTS, ETC. ALL COVERS MUST BE COMPLETE WITH A MOLDED LOGO, MANUFACTURER'S NAME & TIER RATING LOGO (NO GLUE IN LOGO). LOGO SHALL READ "TC" AND/OR "SL" UNLESS STATED OTHERWISE BY THE CITY OF SEATTLE.
7. THE GROUND ROD SHALL EXTEND 4" ABOVE THE BOTTOM OF THE HANDHOLE OR MINERAL AGGREGATE.
8. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSIONS (SEE STD PLAN NO 231) TO BRING THE COVER UP TO THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
9. A 4" LENGTH OF #6 THIN OR THIN COPPER WIRE SHALL BE SECURED FROM THE HANDHOLE COVER TO THE FRAME WITH A 4"-O" LENGTH FROM FRAME THAT CAN BE SECURED TO A GROUND ROD.
10. ALL HANDHOLE COVERS AND FRAMES SHALL HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34,6)

HANDHOLE INSTALLATION DETAIL


3/8-7 X 3 [76] LONG S.S. HEX HEAD AUGER BOLT 2 PLACES
3/8-7 X 4 [102] LONG S.S. HEX HEAD AUGER BOLT 2 PLACES


6" MIN THICKNESS MNRL AGG TYPE 9

REF STD SPEC SEC 8-33

POLYMER CONCRETE HANDHOLES

City of Seattle

NOT TO SCALE
NOTES:
1. FOR DETAILS NOT SHOWN, SEE STD PLAN NO 550b
2. ALL HANDHOLE COVERS AND FRAMES SHALL HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6)
NOTE:
POLE AND MAST ARM DESIGN SHALL CONFORM TO
"AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL
SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND
TRAFFIC SIGNALS" (CURRENT EDITION)
**POLE BASE PLATE**

**ANCHOR PLATE**

**POLE FOUNDATION NOTES**

1. Concrete strength shall be Class 4000 Air Entrained.
4. All reinforcing bars shall be deformed billet steel conforming to ASTM Class A706, Grade 60.
5. Anchor bolts shall be hot dip galvanized ASTM A153 including nuts & washers (full length) with a minimum of 18" of threads on top & 12" on bottom.
6. Tape the top of anchor bolts with corrosion protection tape per Std Spec Sec 8-32.3(2)A prior to pouring concrete.
7. See Std Plan No 541a for foundation details.

---

**FOUNDATION SCHEDULE**

<table>
<thead>
<tr>
<th>MAST ARM LENGTH</th>
<th>FOUNDATION DEPTH (LATERAL BEARING)</th>
<th>ANCHOR BOLTS (FY = 55 KSI MIN.)</th>
<th>VERTICAL REINFORCING</th>
<th>ANCHOR PLATE DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150#SF/FT 100#SF/FT</td>
<td>PROJECTION</td>
<td>BOLT CIRCLE DIA</td>
<td>SIZE (H HOOK)</td>
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<tr>
<td>15'-0&quot; to 30'-0&quot;</td>
<td>7'-6&quot; 8'-0&quot;</td>
<td>7'-6&quot; 14'-5&quot;</td>
<td>1/2&quot; X 60&quot;</td>
<td>10 #8</td>
</tr>
<tr>
<td>31'-0&quot; to 40'-0&quot;</td>
<td>6'-6&quot; 9'-6&quot;</td>
<td>9&quot;</td>
<td>16'-5&quot;</td>
<td>1/2&quot; X 72&quot;</td>
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<tr>
<td>41'-0&quot; to 45'-0&quot;</td>
<td>8'-6&quot; 9'-6&quot;</td>
<td>9&quot;</td>
<td>16&quot;</td>
<td>1/2&quot; X 72&quot;</td>
</tr>
<tr>
<td>46'-0&quot; to 60'-0&quot;</td>
<td>10'-6&quot; 12'-6&quot;</td>
<td>10&quot;</td>
<td>20&quot;</td>
<td>2&quot; X 72&quot;</td>
</tr>
</tbody>
</table>

**POLE SCHEDULE**

**MAST ARM SCHEDULE**

<table>
<thead>
<tr>
<th>MAST ARM LENGTH</th>
<th>FLANGE PLATE</th>
<th>POLE BASE PLATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BOLT CIRCLE DIA</td>
<td>THREADED BOLT DIA</td>
</tr>
<tr>
<td>15'-0&quot; to 30'-0&quot;</td>
<td>11&quot;</td>
<td>1&quot;-BNC</td>
</tr>
<tr>
<td>31'-0&quot; to 40'-0&quot;</td>
<td>12&quot;</td>
<td>1/2&quot;-7NC</td>
</tr>
<tr>
<td>41'-0&quot; to 45'-0&quot;</td>
<td>13&quot;</td>
<td>1&quot;-7NC</td>
</tr>
<tr>
<td>46'-0&quot; to 60'-0&quot;</td>
<td>14&quot;</td>
<td>1/2&quot;-6NC</td>
</tr>
</tbody>
</table>

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City of Seattle

NOT TO SCALE

STEEL MAST ARM POLE FOUNDATION SCHEDULE & DETAIL

W/O METRO TROLLEY LOADS

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

CONDUCT PER DRAWINGS

CUT DRAIN TUBE FLUSH WITH GROUT, BOTH ENDS

WRAP PERIPHERY OF BOLTS WITH TAPE TO PREVENT GROUT FROM BEING PLACED UNDER POLE

DRILL & TAP FOR 3/4" BOLT (TYP) UP TO 15'-0" MAX ARM LENGTH

1" HOLE IN POLE W/ GROMMET

1 1/4" STEEL POLE DETAILS

MICHELLE'S CARBON STEEL PLATES SHALL BE ASTM A36

BRACKET ARM FLANGE PLATE ON POLE

SECTION A-A

SECTION B-B

SECTION C-C

POLE MOUNTING & GROUT DETAIL
(EXCEPT FOR POLES W/CHIEF SEATTLE BASE

REF STD SPEC SEC 8-32

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

REF STD SPEC SEC 8-30 & 8-32

City of Seattle

MISCELLANEOUS STEEL POLE DETAILS

2" x 4" NIPPLE (UNLESS OTHERWISE NOTED)

SEALING LOCKNUT

CHANNEL DRILLED 3/8" OVERSIZE OF NIPPLE

CABINET WALL DRILLED 3/8" OVERSIZE OF NIPPLE

3/16-13 NC X 2 1/2" SS HEX HEAD BOLT

SEALING LOCKNUT

END BUSHING

POLE DRILLED SO BUSHING WILL PASS THROUGH

6X8.2 LB/FT CHANNEL

CABINET

6X8.2 LB/FT CHANNEL

CABINET

WIREWAY

SEE DETAIL THIS SHEET

SECTION A-A

3/8" DRAIN HOLE

6X8.2 LB/FT CHANNEL

CABINET

METAL POLE

3/16-13 NC X 2 1/2" SS HEX HEAD BOLT, Lock Washers, Drill and Tap Pole to Accept

POLE BASE DETAIL

- 1/4" REINF SLEEVE
- GROUND LUG
- 2"+T
- 4"X6 1/2" OVAL HANDHOLE W/7/2 GAUGE GASKETED COVER
- POLE CAP
- BRACKET ARM FLANGE PLATE ON POLE SEE STD PLAN NO 563a
- POLE BAND
- ROUND (OR 12 OR MORE SIDED) TAPERED STEEL POLE (0.10" TO 0.15"/FT)
- FESTOON OUTLET, IF REQUIRED
- FOR SHAFT REQUIREMENTS SEE POLE NOTES ON STD PLAN NO 566b
- ID PLATE
- 4"X6 1/2" OVAL HANDHOLE
- FOR POLE MOUNTING & GROUT DETAIL SEE STD PLAN NO 563a
- FINISHED GRADE
- POLE FOUNDATION SEE STD PLAN NO 541a

REF STD SPEC SEC 8-32

City of Seattle
NOT TO SCALE

STRAIN POLE DETAILS (TYPE V, X & Z POLES)
<table>
<thead>
<tr>
<th>POLE TYPE</th>
<th>DEAD LOAD MOMENT KIP-FT (AT GROUND LINE)</th>
<th>POLE SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GROUND LINE DIA &quot;A&quot;</td>
<td>POLE BASE PLATE SIZE</td>
</tr>
<tr>
<td></td>
<td>STD</td>
<td>CSB</td>
</tr>
<tr>
<td>V</td>
<td>51</td>
<td>12&quot;</td>
</tr>
<tr>
<td>X</td>
<td>93</td>
<td>14&quot;</td>
</tr>
<tr>
<td>Z</td>
<td>164</td>
<td>15&quot;</td>
</tr>
</tbody>
</table>

NOTES:
1. THE YIELD MOMENT SHALL BE 2X THE DEAD LOAD MOMENT. THE ULTIMATE PLASTIC MOMENT SHALL BE 2.5X THE DEAD LOAD MOMENT.
2. POLE SHAFT AND REINFORCING SLEEVE: ASTM A572 GRADE 50, 60 OR 65 (Fy=50, 60 OR 65 KSI RESPECTIVELY) OR ASTM A595 GRADE A OR B (Fy=90 OR 60 KSI RESPECTIVELY).
3. BASE PLATE AND HANDHOLE REINFORCING RIM: ASTM A36 OR ASTM A572 GRADE 42. BASE PLATE Fy=20.65 POLE SHAFT Fy THE BASE PLATE THICKNESS MAY BE REDUCED BY 1/8" IF ASTM A572 GRADE 42 STEEL IS USED.
4. REINFORCING SLEEVE SHALL BE FABRICATED FROM THE SAME MATERIAL AND YIELD STRENGTH AS THE POLE SHAFT.
5. POLE SHAFTS SHALL HAVE NO MORE THAN TWO LONGITUDINAL WELDS IN EACH PLY.
6. MINIMUM SHAFT WALL THICKNESS OF EACH PLY SHALL BE 0.239" (3 GAUGE). POLE SHALL HAVE A MAXIMUM OF TWO PLYS NOT INCLUDING THE 1/4" REINFORCING SLEEVE.
7. MAXIMUM SILICON CONTENT IN STEEL SHALL BE 0.04%. SEE STD SPEC SECTION 9-33.1(3) FOR GENERAL GALVANIZING REQUIREMENTS.
8. POLE DIAMETER FOR 12 OR MORE SIDED POLES SHALL BE MEASURED FROM THE POINT TO POINT DIMENSION.
9. POLES SHALL MEET DEFLECTION CRITERIA STATED IN STD SPEC SECTION 9-33.2(2) WITH THE DEAD LOAD APPLIED AT 25' ABOVE GROUND LINE.
10. POLE STRENGTH SHALL MEET REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (CURRENT EDITION).

REF STD SPEC SEC 8-32, 9-33

City of Seattle | NOT TO SCALE | STRAIN POLE DETAILS (TYPE V, X, Z POLES)

GALV STEEL POLE CAP

BRACKET ARM FLANGE PLATE ON POLE. SEE STD PLAN NO 563a

2ND OUTLET, IF REQUIRED

CABLE OUTLET SEE STD PLAN NO 563b

POLE BAND

ROUND (OR 12 OR MORE SIDED) TAPERED STEEL POLE (0.10" TO 0.15"/FT)

FESTOON OUTLET, IF REQUIRED

FOR SHAFT REQUIREMENTS SEE POLE NOTES ON STD PLAN NO 567b

ID PLATE

4"X6" OVAL HANDHOLE

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

FINISHED GRADE

POLE FOUNDATION SEE STD PLAN NO 541

ROADWAY CURB LINE
3' CLEAR
ROADWAY

GALV STEEL POLE CAP

SQUARE 23" SQ FOR CSB POLE

2"R (TYP)

HOLE CENTER 8" MIN OR GROUND LINE DIA DEPENDING ON POLE BASE DETAIL

BOLT HOLE = 1 3/4" FOR 1 1/2" DIA X 60" BOLTS

POLE BASE PLATE

POLE FOUNDATION SEE STD PLAN NO 541

ROADWAY CURB LINE
140" DIA BOLT CIRCLE

HOLE CENTER 8" MIN OR GROUND LINE DIA DEPENDING ON POLE BASE DETAIL

BOLT HOLE = 1 3/4" FOR 1 1/2" DIA X 60" BOLTS
NOTES:
1. THE DEAD LOAD MOMENT AT THE GROUNDLINE SHALL BE 40 KIP-FT. THE YIELD MOMENT SHALL BE 2X DEAD LOAD MOMENT.
2. POLE STRENGTH SHALL MEET REQUIREMENTS OF AASHO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (CURRENT EDITION).
3. POLE SHAFT: ASTM A572 GRADE 50, 60 OR 65 (Fy=50, 60 OR 65 KSI RESPECTIVELY), OR ASTM A595 GRADE A OR B (Fy=55 OR 60 KSI RESPECTIVELY)
4. BASE PLATE AND HANDHOLE REINFORCING RIM: ASTM A36 OR ASTM A572 GRADE 42. BASE PLATE Fy=20.65 POLE SHAFT FY THE BASE PLATE THICKNESS MAY BE REDUCED BY 1/8" IF ASTM A572 GRADE 42 STEEL IS USED.
5. POLE SHAFTS SHALL HAVE NO MORE THAN TWO LONGITUDINAL WELDS IN EACH PLY.
6. MINIMUM SHAFT WALL THICKNESS OF EACH PLY SHALL BE 0.239" (3 GAUGE). POLE SHALL HAVE A MAXIMUM OF TWO PLYS.
7. MAXIMUM SILICON CONTENT IN STEEL SHALL BE 0.04%. SEE STD SPEC SECTION 9-33.1(3) FOR GENERAL GALVANIZING REQUIREMENTS.
8. POLE DIAMETER FOR 12 OR MORE SIDEDpoles SHALL BE MEASURED FROM THE POINT TO POINT DIMENSION.
9. POLES SHALL MEET DEFLECTION CRITERIA STATED IN STD SPEC SECTION 9-33.2(2) WITH THE DEAD LOAD APPLIED AT 27' ABOVE GROUND LINE.
10. THE POLES SHALL BE COMPACT AND MUST MEET THE REQUIREMENTS IN AASHTO SECTION 4, TABLE 1.4.1B(1).

REFERENCE

REF STD SPEC SEC 8-32, 9-33

City of Seattle

NOT TO SCALE

TYPE T STRAIN POLE DETAILS
TRAFFIC SIGNAL ONLY

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

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

REF STD SPEC SEC 8-32
CONDUIT RISER (WITH STAND-OFF BRACKET*)

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

REF STD SPEC SEC 8-33, SCL CONSTRUCTION GUIDELINES U 7-10
NOTES:
1. ALL STEEL HARDWARE TO BE HOT DIP GALVANIZED OR STAINLESS STEEL UNLESS OTHERWISE STIPULATED IN THE DRAWINGS.
2. SPAN WIRE SHALL BE ALUMINUM COATED STEEL.
3. SPREAD THIMBLE TO FIT THE BAIL OF THE AUTOMATIC DEAD END.

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

City of Seattle

NOT TO SCALE

SPAN WIRE INSTALLATION
STREET DESIGNATION SIGN

SPAN WIRE MOUNTED SIGN

NOTES:
1. ALL HARDWARE SHALL BE STAINLESS STEEL. OTHER THAN HARDWARE SHALL BE HOT DIP GALVANIZED.
2. NEOPRENE GASKETS SHALL NOT BE USED FOR SPAN WIRE OR AERIAL CONNECTIONS.
SIGN MOUNTING ON MAST ARM

DETAIL
STAINLESS STEEL SIGN BRACKET

TEMPORARY SIGN MOUNTING ON METAL POLE

NOTES:
1. EXCEPT AS NOTED OTHERWISE, ALL HARDWARE SHALL BE STAINLESS STEEL.
2. MOUNTING OF TRAFFIC SIGNS SHALL BE AS FOLLOWS: ON METAL POLE THINNER THAN 7 GAUGE, USE 3/8" STAINLESS STEEL RIVNUTS ON METAL POLES 7 GAUGE OR THICKER, FOR 3/8" BOLT (STAINLESS STEEL RIV/NUT OPTIONAL) ON POLES FILLED WITH OR MADE FROM CONCRETE, USE 3/8"X21/2"MIN STUD BOLT ANCHORS WITH HEX NUT.
3. FOR SIGN FEATURE, CONTACT TRAFFIC ENGINEER.
INSTALL STREET DESIGNATION SIGN
SEE SDS MAST ARM BRACKET, STD
PLAN NO. 612.

STREET NAME
SIGN BLADES
SEE STD PLAN
NO. 615

PEDESTRIAN
SIGNAL

8'-6" MIN
11'-0"

REF STD SPEC SEC 8-21

STANDARD SIGN INSTALLATION
STEEL POLES

City of Seattle

NOTE:
ALL HARDWARE SHALL BE STAINLESS STEEL.

SDS SHALL BE LEVEL
SIGN TO BE FLUSH AGAINST MAST ARM BRACKET
METAL POLE

C3X2.1

ALUMINUM SIGN
3 GAUGE MAST ARM
DRILL AND TAP (APPLY GALV REPAIR PAINT)
3/8"X3" SS HEX HEAD BOLT W/ FLAT WASHER

CITY OF SEATTLE
NOT TO SCALE
SDS BRACKET FOR STEEL MAST ARM POLES

NOTES:

1. WHEN INSTALLING BRACKET ONTO WOOD POLE DRILL OUT THE TOP & BOTTOM TWO HOLE TO \( \frac{3}{16} \)" FOR \( \frac{3}{8}\)"DIA X 2\( \frac{1}{2} \)" LONG BOLT WITH \( \frac{3}{4}\)ID X 1\( \frac{1}{4} \)" FLAT WASHER. DRILL AND TAP POLE AS FOLLOWS: FOR STEEL POLES LESS THAN SEVEN (7) GAUGE USE \( \frac{3}{8}\)" STAINLESS STEEL RIVNUTS; ON ALUMINUM POLES USE \( \frac{3}{8}\)" ALUMINUM RIVNUTS. RIVNUTS OPTIONAL ON HEAVIER GAUGE STEEL POLES.

2. WHEN INSTALLING SIGN BOARD ONTO BRACKET, USE SIX (6) \( \frac{3}{8}\)"DIA X 1\( \frac{1}{2} \)" LONG BOLT WITH FLAT WASHER, LOCK WASHER & NUT.

3. BRACKET TO BE STEEL, PAINTED INTERNATIONAL GREEN.

4. ALL BOLTS, NUTS AND STEEL WASHERS TO BE STAINLESS STEEL, EXCEPT FOR ALUMINUM RIVNUT ON ALUMINUM POLE.

REF STD SPEC SEC 8-21
NOTES:
1. STAGGER SNS BLADES WITH THE "AVENUE" DESIGNATION BLADE BELOW THE "STREET" DESIGNATION BLADE.
2. SNS SHALL BE INSTALLED PARALLEL TO CORRESPONDING STREET.
3. ALL NUTS, BOLTS & WASHERS TO BE STAINLESS STEEL EXCEPT ALUMINUM RIV NUTS ON ALUMINUM POLES.

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

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

METAL POLE

TRAFFIC SIGNS
SIGNS OVER 1'-6"X2'-0" THRU 2'-6"X3'-6"

TRAFFIC SIGNS MAX SIZE SIGN SHALL BE 1'-6"X2'-0"

STAINLESS STEEL SIGN BRACKET

STAINLESS STEEL BAND

TRAFFIC SIGN (PLYWOOD OR ALUMINUM)

FLAT WASHER

3/8" BOLT (TYP) (2 REQ'D)

SIDE VIEW

DETAIL STAINLESS STEEL SIGN BRACKET

TOP VIEW

3/4" STAINLESS STEEL BUCKLES & BAND

9/16" BOLTS & WASHERS

SEE DETAIL

STAINLESS STEEL SIGN BRACKET

REFERENCE

STANDARD PLAN NO 616

REV DATE: AUG 2010
NOTE:
CONTACT SEATTLE DEPARTMENT OF TRANSPORTATION (684-5087) FOR DETAILS REGARDING SIGN MESSAGE AND FOUNDATION.

POST ANCHOR INSTALLATIONS

NOTE:
CONTACT SEATTLE DEPARTMENT OF TRANSPORTATION (684-5087) FOR DETAILS REGARDING SIGN MESSAGE AND FOUNDATION.
PER MUTCD, CLEARANCE FROM GROUND TO BOTTOM OF SIGN SHALL BE 7\" (OR 6' TO THE LOWEST SIGN FOR MULTIPLE SIGN ASSEMBLIES WHERE APPROVED BY THE ENGINEER)

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

LIGHT DUTY ANCHOR

HEAVY DUTY ANCHOR

NOTES:
1. FOR UNLEVEL SIDEWALKS INSERT WASHERS AS SPACERS BETWEEN PLATE AND SIDEWALK. GROUT ALL SPACE AS SHOWN. IF BOLT CANNOT PENETRATE SIDEWALK AT LEAST 2", CONTACT THE ENGINEER.
2. USE CONCRETE FOOTINGS FOR ALL SIGNS LARGER THAN 96 SQUARE INCHES.
NOTES:
1. SNS BLADE SHALL BE INSTALLED PARALLEL TO CORRESPONDING STREET
2. INSTALLATION OF SNS ON ANY OTHER METAL POLE SHALL REQUIRE REVIEW AND APPROVAL BY THE ENGINEER
3. SNS/SP RELOCATION: OLD CONCRETE SHALL BE REMOVED AND NEW CONCRETE BASE SHALL BE CONSTRUCTED
4. CITY OF SEATTLE SHALL FABRICATE SNS BLADES AND SUPPLY MOUNTING HARDWARE AT PROJECT OR CONTRACTOR EXPENSE

REF STD SPEC SEC 8-21

City of Seattle
NOT TO SCALE
STREET NAME SIGN INSTALLATION

Street Name Sign Pedestal Installation

Parameters:
- "Street" sign blade in top location
- "Avenue" sign blade in bottom location
- #8-24 x 3/4" Pan Head Machine Screw & Nut (Stainless Steel)
- 2 1/2" ID Nipple
- 2 1/2" Reducer

Details:
- Pedestal and Foundation (See Std Plan No 524)

Reference:
REF STD SPEC SEC 8-21

City of Seattle

NOT TO SCALE

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

REF STD SPEC SEC 8-21
2"x2" (NOMINAL) POST
14 GAUGE

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

NOTES:
1. SEE STD PLANS NO 620 & 621
NOTES:
1. In the case where all approaches of the intersection are primarily at the same level with respect to grades (less than 3%) the lower set of signs shall face the higher traffic volume street.
2. In the case where an approach has a grade larger than 3% the higher signs will face the steepest approach to allow better sight distance.
3. Place a minimum of three (3) reflectors on each and every side of post or place three (3) high intensity reflectorized strips completely around post.

REF STD SPEC SEC 8-21

City of Seattle NOT TO SCALE OBJECT MARKER INSTALLATION IN TRAFFIC CIRCLE

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

2¾" ID GALV STEEL CAP - SECURE FIT

¾" HOLES (4 PLACES)

½" TRIM 4 CORNERS

4¾" DIA BOLT CIRCLE

METER POST
PRIME WITH EPOXY ZINC PHOSPHATE PRIMER.
PAINI WITH TWO (2) COATS OF POLYURETHANE
PAINT, ALUMINUM COLOR

CUT OFF SQUARE PLAIN END - REAM

2" NOM DIA
ASTM A 53
SCHED 40 GALV
STD. STEEL PIPE

¾" WEEF HOLE

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

½" STL PLATE

SECTION A-A

REF STD SPEC SEC 8-21

City of Seattle
NOT TO SCALE

PARKING METER POST & ACCESSORIES

GALV STEEL CAP - SEE
STD PLAN NO 627

SIGN INSTALLATION: DRILL (2) 3/8" HOLES USE SELF TAPPING SCREW
W/ 1" O.D. NYLON WASHER

2" NOM DIAM ASTM A 53 SCHED 40 GALV STD STEEL PIPE

ALUMINUM BASE CANOPY
SEE STD PLAN NO 627

NON-SHRINK CEMENT GROUT

4 3/4" DIA CONC EXPANSION ANCHORS

DRILL 1/2" HOLES IN CONCRETE (4 PLACES)
NOTES:
1. POST TO BE PLUMB
2. NOTIFY SEATTLE DEPARTMENT OF TRANSPORTATION (684-5087) FOR REMOVAL OF EXISTING POSTS
3. WHEN NEW POSTS HAVE BEEN SET, NOTIFY SDOT TO REINSTALL METERS
4. A 2 1/2" NOM DIAM ASTM A 53 GALV STD STEEL PIPE SHALL BE FITTED OVER THE 2" PIPE FULL LENGTH. ENDS OF SLEEVE PIPE TO BE GROUND SMOOTH AND FREE OF BURRS

REF STD SPEC SEC 8-21

City of Seattle
NOT TO SCALE
DIRECT BURIAL METER POST INSTALLATION DETAIL

NOTES:
1. POST ANCHOR RIVETS SHALL BE 1/2" ABOVE GROUND LEVEL.
2. ATTACHMENT BRACKETS SHALL FACE AWAY FROM STREET AS 
   WHEN POST IS LOCATED 3'-0" FROM EDGE OF CURB. 
   ATTACHMENT BRACKETS SHALL FACE TOWARDS STREET (TS) 
   WHEN POST IS LOCATED AT BACK SIDE OF SIDEWALK.
3. FOR POST RELOCATIONS, OLD CONCRETE SHALL BE REMOVED 
   FROM POST.
4. ALL SIGNS, STRUCTURES AND HARDWARE PROVIDED BY METRO 
   EXCEPT WHERE NOTED OTHERWISE ON THIS STD PLAN.
5. WHERE SURFACE MOUNTED BUS ZONE SIGNS ARE REQUIRED ON 
   SLOPED SIDEWALK, THE CONTRACTOR SHALL PLUMB THE POST 
   BY BUILDING A NON-SHRINK GROUT PAD UNDER PEDESTAL 
   ASSEMBLY WITH SMOOTH 1H TO 1V TAPER ON THE GROUT 
   EDGE. THE BOLT ANCHOR LENGTH SHALL BE ADJUSTED 
   TO PROVIDE A MIN 3/8" EMBEDMENT THROUGH THE 
   EXISTING CONCRETE.

DIRECT BURIAL INSTALLATION

SURFACE MOUNT INSTALLATION
LANE MARKER—TYPE 1

SECTION B—B
LANE MARKER—TYPE 2A
4" PRISMATIC REFLECTIVE MARKER

SECTION C—C
LANE MARKER—TYPE 2B

a=5/8"±1/8"
b=1/8"±1/16"
TYPICAL TYPE 1 TRAFFIC BUTTON (4") INSTALLATION DETAILS

Traffic buttons shall be installed to conform with type of pavement marking (designated as L-1, L-4, etc.) and are to be arranged and spaced as shown on this drawing. Color of traffic buttons is to match color or pavement markings. Traffic buttons shall be installed prior to any paint line installation. Existing channelization in conflict with new or revised channelization shall be removed (see STD SPEC SEC 2-02.3(3)J).

REF STD SPEC SEC 8-22

City of Seattle

NOT TO SCALE

TYPICAL LEFT TURN CHANNELIZATION AND LEGEND PLACEMENT
**TYPICAL LEFT TURN CHANNELIZATION**

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

<table>
<thead>
<tr>
<th>Approach Line 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 - 120 feet</td>
<td>2 sets</td>
</tr>
<tr>
<td>125 feet - 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>

**TYPICAL TWO WAY LEFT TURN LANES**

Number of legend sets required based on the length of typical two way left turn lanes:

<table>
<thead>
<tr>
<th>Lane Length</th>
<th>Legend Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50 feet</td>
<td>1 set (centered between both ends of lane)</td>
</tr>
<tr>
<td>60 feet - 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>

**Legend Placement**

Legends in adjacent lanes shall be aligned as shown.

Legends shall be centered within the lane to which they apply, as shown.

**Legend Combinations**

Oblique left & 90° left legends and oblique right & 90° right legends may be combined as shown.
TYPICAL TRANSVERSE LINE CROSSWALK
(SHOWING CURB RAMPS & STOP LINE PLACEMENT)

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

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

REF STD SPEC SEC 8-22
L-10
PASSENGER LOAD ZONE, ETC
(WHITE)

L-11
TOW-AWAY ZONE
(RED)

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

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

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

REF STD SPEC SEC 8-22

City of Seattle
NOT TO SCALE
CURB SPACE MARKING DETAILS

NOTE:
"T" = THERMOPLASTIC

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

L-22, L-22T
THROUGH ARROW

REF STD SPEC SEC 8-22

City of Seattle
NOT TO SCALE
PAVEMENT MARKINGS
LEGENDS/SYMBOLS

1-25, 1-25T
"ONLY" LEGEND

L-26, L-26T
"OK" LEGEND

L-29, L-29T
DISABLED PERSON SYMBOL

L-35, L-35T
"SCHOOL" LEGEND

NOTE: T = THERMOPlastic
NOTES:
1. 'T' = THERMOPLASTIC
2. L-28AT INCLUDES BICYCLE SYMBOL AND ARROW

2'-6"

4"

3'-0"

L-28AT

3'-0"

L-28T

PEDESTRIAN STYLE

3'-0"

L-28T

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

REF STD SPEC SEC 8-22

City of Seattle

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

\[
\begin{align*}
3 \times B &= H \\
(1.5 \times B) &= H
\end{align*}
\]

\( B = \text{BASE WIDTH (12" OR 24" TYPICALLY)} \)
\( H = \text{HEIGHT (18" OR 36" TYPICALLY)} \)

\( \text{DIRECTION OF TRAVEL} \)

\( \text{YIELD LINE} \)
NOTES:
ALL ROUNDED CORNERS SHALL HAVE
A 1" RADIUS

L—28BT
SHARROW

REF STD SPEC SEC 8-22
NOTES:
SEE STD PLAN NO 5306 FOR PLACEMENT
NOTES:
1. BASE OF SUPPORT WALL TO BE BEARING ON COMPACTED SUITABLE MATERIAL
2. BACK FORM FOR SUPPORT WALL MAY BE OMITTED AND CONCRETE PLACED AGAINST NATIVE EARTH WHEN GROUND CONDITIONS PERMIT. CLEARANCE TO REINF STEEL IN BACK FACE SHALL BE 2".
3. WHEN CONSTRUCTION OF ALLEY PAVEMENT IS NOT PLACED INTEGRAL WITH SUPPORT WALL, SHEAR KEYS SHALL BE INSTALLED 1"-6" ON CENTERS.
4. CONCRETE FOR SUPPORT WALL SHALL BE CLASS 4000.
5. REINFORCING STEEL ASTM A706 (AASHTO M31 GRADE 60).
6. VEHICULAR & PEDESTRIAN RAILING PER RIGHT OF WAY IMPROVEMENT MANUAL.

Pavement width as specified.

Cold joint for construction in two stages. See shear key detail below.
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 SHALL BE INSTALLED IN THE PAVEMENT SLAB
5. REINF STEEL ASTM A706 (AASHTO M 31 GRADE 60)
6. ANY RAILING ON TOP OF WALL IN RIGHT-OF-WAY IMPROVEMENT MANUAL
7. NON-WOVEN GEOTEXTILE TO BE MODERATE SURVIVABILITY, ANY CLASS PER TABLES 1 AND 2 STD SPEC SEC 9-37
8. ALLEY THICKNESS PER STANDARD PLAN NO 403