Standard Plans for Municipal Construction

2008 Edition
CITY OF SEATTLE
2008 edition
STANDARD PLANS
FOR
MUNICIPAL CONSTRUCTION

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PREFACE

The 2008 edition City of Seattle Standard Plans for Municipal Construction (henceforth referred to as the “2008 Standard Plans”) have been prepared by Seattle Public Utilities in cooperation with Seattle Department of Transportation, Seattle Parks and Recreation, Department of Executive Administration, Seattle City Light, Seattle Center, and Fleets and Facilities.

The 2008 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 2008 Standard Plans are designed to be used in conjunction with the 2008 Standard Specifications for Road, Bridge and Municipal Construction (henceforth referred to as the “2008 Standard Specifications). Each individual 2008 Standard Plan has a reference to the applicable 2008 Standard Specifications section(s) located in the bottom left corner.

For the convenience of our users, 2008 Standard Plans that are new or have been revised from the 2005 edition Standard Plans are identified in the Table of Contents with a vertical bar along the left page margin, as well as bold type. 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 2008 Standard Specifications, and 3) a web version of this document, some mistakes and inconsistencies seem to defy detection until after publication. Should you discover errors in this document or inconsistencies between or among the versions, please bring them to our attention by contacting the City’s Construction Standards Engineer at the following web address: http://www.seattle.gov/util/Engineering/Standard_Plans&_Specs


My sincere thanks and appreciation to all those individuals in the many City Departments who participated in the effort of providing input, discussing, and reviewing this document, and to the many City Departments for agreeing on standardizing similar constructions. Additional thanks to Dean Huber of the Seattle Public Utilities Technical Resources section and his staff for drafting the individual 2008 Standard Plans and to the Seattle Public Utilities Information Technology section for preparing the web version of the 2008 Standard Plans.

The hardcopy version of this document is available at the Seattle Public Utilities Engineering Records Center located in the Seattle Municipal Tower, 700 Fifth Avenue, Suite 4700, Seattle, Washington 98104, 206-684-5132. The web version of the 2008 Standard Plans can be viewed and downloaded in pdf format at the web address listed above.

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 Contracting Agency and the Contractor.

Brian Patton, P.E.
Director
Engineering Services and Engineering Support Divisions
Seattle Public Utilities
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FROM ANOTHER DATUM TO NAVD88 CITY OF SEATTLE, ADD THE VALUE SHOWN.
FROM NAVD88 CITY OF SEATTLE TO ANOTHER DATUM, SUBTRACT THE VALUE SHOWN.

+18.60 LAKE WASHINGTON HIGH WATER (USACE PERMITS)
+16.75 LAKE WASHINGTON LOW WATER (USACE PERMITS)
+12.14 HIGHEST TIDE OBSERVED WATER LEVEL BY NOAA 1/27/83
+9.70 OLD, OBSOLETE CITY OF SEATTLE DATUM — SEE NOTE 2
+9.01 MEAN HIGHER HIGH WATER — SEE NOTE 1
+8.15 MEAN HIGH WATER — SEE NOTE 1
+4.32 MEAN TIDE LEVEL — SEE NOTE 1
+4.29 MEAN SEA LEVEL — SEE NOTE 1
+3.58 NGVD29, KING COUNTY, METRO DATUMS
(METRO DATUM ALSO EXPRESSED AS +103.58)
+0.49 MEAN LOW WATER
0.00 NAVD88 = APPROVED CITY OF SEATTLE DATUM
-2.35 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 1/14/1919

**NOTES**

1. THESE ELEVATIONS VARY ACCORDING TO TIDAL OBSERVATIONS FOR STATION ID 9447130, SEATTLE PUGET SOUND, BY NOAA USING THE 1983-2001 EPOCH.

2. THE OLD, OBSOLETE CITY OF SEATTLE DATUM VARIES BETWEEN 9.23 – 9.75 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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City of Seattle  NOT TO SCALE STANDARD SYMBOLS ELECTRICAL
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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)
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North Arrow horizontal: NORTHHOR

North Arrow vertical: NORTHVER
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City of Seattle | NOT TO SCALE | STANDARD SYMBOLS
PRIVATE UTILITIES
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<td>ESPRKHD</td>
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<tr>
<td>Irrigation Valve</td>
<td></td>
<td>.014</td>
<td></td>
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<td>EIRRGV</td>
</tr>
</tbody>
</table>
NOTES:
1. MEASUREMENT PER LINEAR FOOT. PIPE ENDING IN STRUCTURE MEASURED TO EITHER INSIDE FACE OR TO CENTERLINE OF STRUCTURE AS INDICATED, OR TO TEE OR WYE AS INDICATED.
2. TEE OR WYE INCLUDING PLUG — UNIT PRICE EACH
3. ALL PIPE SHALL BE MEASURED ON THE SLOPE ALONG THE CENTERLINE OF PIPE TO NEAREST 0.10 LF.
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 AND HAVE BITUMINOUS COATING APPLIED TO ALL FACES
3. **"** = FINISH
4. CASTINGS IN RIGID PAVEMENT SHALL HAVE REINFORCING STEEL IN THE PAVEMENT.

REF STD SPEC SEC 8-13

City of Seattle  NOT TO SCALE  MONUMENT FRAME & COVER
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

FOR CLEARSANCES, SEE STD PLAN NO 541a

NOTES:
1. SERVICE LATERALS OR APPURTENANCES:
   1'-0" 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 30'-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 OR CHANGING THE 10'-0" 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. INSTALLATION INCLUDES REMOVAL OF STAKES ONE YEAR AFTER INSTALLATION
2. SHAPE SOIL SURFACE TO PROVIDE 3" DIAMETER WATERING RING
3. TREE CLEARANCES 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 (Ω1' Slack)
6. ROOT BARRIER (18" VERTICAL X 6' MIN. LENGTH) SHALL BE REQUIRED ALONG EDGE OF TREE PITS ADJACENT TO ASPHALT SIDEWALK OR TRAIL SURFACES AND EDGE OF TREE PITS ADJACENT TO CONCRETE SIDEWALK IF STANDARD 2'-0' CLEARANCE BETWEEN TREE AND SIDEWALK CANNOT BE MET.

REF STD SPEC SEC 8-02

NOT TO SCALE

DECIDUOUS TREE PLANTING IN PLANTING STRIP
NOTES:
1. STAKE TREES PER STD PLAN NO 100c
2. ONE STAKE PER TREE ON WINDWARD SIDE;
   SECOND STAKE ON LEeward SIDE
3. SLOPES STEEPER THAN 2:1 MAY REQUIRE AN
   APPROVED EMBANKMENT STABILIZATION SYSTEM
   TO CREATE A LEVEL TREE PIT SUCH AS:
   - ROCK FACING
   - PRECAST CONCRETE WALL UNITS
   - TIMBER WALL
   - MANUFACTURED SLOPE RETENTION UNITS
4. CHAINLOCK TREE TIE, LOOP EACH TIE AROUND
   TREE LOOSELY TO PROVIDE 1" SLACK FOR
   DIAMETER GROWTH
5. SHAPE SOIL TO PROVIDE 3" DIAMETER OR
   ROOTBALL DIAMETER, WHICHEVER IS GREATER,
   WATERING RING
6. REMOVE ALL WIRE AND STRING. REMOVE TOP
   2/3 OF BURLAP.

REF STD SPEC SEC 8-02

City of Seattle
NOT TO SCALE
TREE & SHRUB PLANTING ON SLOPES
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 BURLAP FROM TOP
2/3 OF ROOTBALL.
REMOVE ALL WIRE & STRING

NATIVE BACKFILL SOIL
AMENDED WITH 25% (Φ1/3
CU YD) DECOMPOSED
ORGANIC MULCH
AMENDMENT FOR ENTIRE
TREE PIT AREA
(APPROXIMATELY ROOTBALL
DEPTH)

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

6'-0" MIN OR 2 TIMES ROOTBALL

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

SEE STD PLAN NO 100b
FOR PLANTING ON SLOPES

MIN. 1/3 HEIGHT (TOP)
OF TREE

MIN. 5'-0"

6'-0"

REF STD SPEC SEC 8-02

City of Seattle
NOT TO SCALE
CONIFEROUS TREE PLANTING
- 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
- Additional planting area preparation per drawings
- Remove container completely or remove burlap from top 2/3 of rootball, remove all wire and string
- Native backfill soil amended with 25% decomposed organic mulch amendment
- Undisturbed subgrade (provides firm base, so that rootball will not sink)
CONTINUOUS OUTER ROW AT X FEET ON CENTER. 2/3X FEET SETBACK FROM EDGE OF PLANTING BED WITH TRIANGULAR SPACING INSIDE BED (TYP)

AREA

FOR SPACING

ADJUSTMENT

EDGE OF PLANTING BED OR PAVEMENT

2/3X (TYP.)

X = RECOMMENDED SPACING
(SEE LANDSCAPE DETAIL ON DRAWING)

= ACTUAL PLANT LOCATIONS
**Standard Plan No. 113**

**Details at Tree Plan**

- **Quant Per 10'-0" LF Median**
  - Groundcover: 30
  - Shrub: 5

**End Cap Detail**

- **Perennial Type 1**: 4
- **Perennial Type 2**: 6
- **Perennial Type 3**: 5
- **Evergreen Groundcover Type 1**: 13
- **Evergreen Groundcover Type 2**: 12

**Typ Street Tree**

- 2'-2 1/2" Caliper
- Ø30'-0" OC

**Chainlock Tree Tie**

- Loop each tie around tree loosely to provide slack for diameter growth.

- **(2) 2" x 2.5" Lodgepole Pine Domeed Tree Stakes**
  - Ø8'-0" Length

**See Std Plan No. 100 for Supplemental Tree Planting Information**

**Elevation**

- Place 3' of planting soil & mix with subsoil before adding subsequent quantities of planting soil (IN 6' Lifts) compacted to 85%

- Native subgrade to be scarified to a depth of 6" prior to placement of fill, call for inspection before filling

**Soil Preparation Detail**

- **3" Bark Mulch**
- See Std Plan No. 110 & 111 for supplemental shrub and groundcover planting information

**Median Width**

- 10'-0" Preferred; 8'-0" Min

**Ref Standard Spec Sec 8-02**

City of Seattle: NOT TO SCALE, MEDIAN PLANTING
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
FINISH GRADE

10" (MIN) VALVE BOX W/ LOCKING LID

EXTENSIONS (AS REQUIRED)

2'-0" MIN

BRASS NIPPLES & FITTINGS (TYP)

SCH 40 ADAPTER

LINE SIZE GATE VALVE (SQ TOP)

BRASS NIPPLES & FITTINGS (TYP)

SCH 40 ADAPTER

MAINLINE

SCH 80 PVC COUPLING

SCH 80 PVC COUPLING

NOTE:
USE TEFLOM TAPE ON ALL THREADS FITTINGS

3' OF MINERAL AGGREGATE TYPE 4 OVER GEOTEXTILE FABRIC

GATE VALVE - 2 1/2" & LARGER

REF STD SPEC SEC 8-03

City of Seattle  NOT TO SCALE  IRRIGATION VALVES
NOTE:
USE TEFLOW 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. 5/8" x 10' 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

GROUNDRodLayout

City of Seattle

NOT TO SCALE

IRRIGATION CONTROLLER
PEDESTAL AND ENCLOSURE GROUNDING

REF STD SPEC SEC 8-03
NOTES:
1. NEMA JR RAINPROOF CABINET
2. NO. 12 GA PRE-GALVANIZED 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
   PRE-GALVANIZED METAL TREATED WITH COPPER SULFATE PRIOR TO PAINTING
9. ACTUAL CABINET DIMENSIONS ARE PROJECT SPECIFIC AND WILL BE SPECIFIED ON THE DRAWINGS.

REFERENCE:
- NOT TO SCALE
- IRRIGATION CONTROLLER CABINET

SECTION A-A

STANDARD PLAN NO 129

REV DATE: 2003
6'-0" HIGH
CHAIN LINK FENCE OR PLYWOOD BOX TO
ENCLOSE ENTIRE OPEN TREE PIT
(TYP EACH TREE PIT)

EXISTING TREE PIT

FACE OF CURB

TREE IN TREE PIT

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

TREE IN PLANTING STRIP—OPTION 1

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

FACE OF CURB

TREE IN PLANTING STRIP—OPTION 2

PAVED SURFACE MAINTAINED TO
PROTECT EXTENDED ROOTS OUTSIDE FENCE

REFERENCES

REF STD SPEC SEC 1-07.16(2)

City of Seattle

NOT TO SCALE

TREE PROTECTION
DURING CONSTRUCTION
FENCING/ROOT PROTECTION
Chain link fencing to be provided and maintained at drip line (unless otherwise approved by the engineer).

Engineer's approval required for use/access within Zone B. Permission for use/access requires surface protection for all unfenced, unpaved surfaces within Zone B.

* Surface Protection Measures
1. Mulch Layer, 6”-8” Depth
2. 3/4” Plywood
3. Steel Plates

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”-6” below grade or deeper.

Zone B (Drip Line)
1. Operation of heavy equipment and/or stockpiling of materials subject to engineer’s approval. Surface protection measures required.
2. Trenching allowed as follows:
   - Excavation by hand or with hand-driven trencher may be required.
   - Limit trench width; do not disturb Zone A, maintain 2/3 or more of Zone B in undisturbed condition.
3. Tunneling may be required for trenches deeper than 3”-6”.

Zone C (Feeder Root Zone)
1. Operation of heavy equipment and/or stockpiling of materials subject to engineer’s approval. Surface protection measures required.
2. Trenching with heavy equipment allowed as follows:
   - Minimize trench width.
   - Maintain 2/3 or more of Zone C in undisturbed condition.
<table>
<thead>
<tr>
<th>HEAVY EQUIPMENT OPERATION</th>
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<tbody>
<tr>
<td><strong>ROOT PROTECTION</strong></td>
</tr>
<tr>
<td>ALL NON-PAVED PLANTING STRIP SURFACES SUBJECT TO IMPACT (COMP ACTION) BY CONSTRUCTION ACTIVITY SHALL BE PROTECTED WITH 6&quot;-8&quot; MULCH LAYER OR 3/4&quot; PLYWOOD PANELS</td>
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<tr>
<td>PROVIDE WOOD PLANKING OR STEEL PANELS UNDER BACKHOE STABILIZERS PLACED ANYWHERE IN THE PLANTING STRIP [1-07.16(2)]</td>
</tr>
<tr>
<td>NO STORAGE OF MATERIALS OR EQUIPMENT IN THE PLANTING STRIP SHALL BE ALLOWED WITHOUT PROPER SURFACE PROTECTION AND WRITTEN AUTHORIZATION FROM THE ENGINEER</td>
</tr>
<tr>
<td>RETAIN EXISTING PAVING DURING CONSTRUCTION</td>
</tr>
<tr>
<td>SCHEDULE PAVEMENT REPLACEMENT TO MINIMIZE EXPOSURE OF SURFACE ROOTS TO DRYING, EQUIPMENT DAMAGE, COMP ACTION, ETC.</td>
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<tr>
<td>EXPOSURE FOR LONGER THAN 48 HOURS REQUIRES MULCH APPLICATION</td>
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<tr>
<th>CANOPY PROTECTION</th>
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<tr>
<td>OVERHEAD BRANCHING LIKELY TO BE DAMAGED BY EQUIPMENT OPERATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER WITH PREVENTIVE MEASURES (PRUNING OR TIE-BACK OF BRANCHES) APPROVED BY THE ENGINEER AND PROPERLY EXECUTED BEFORE COMMENCEMENT OF THE WORK</td>
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<thead>
<tr>
<th>TRUNK PROTECTION</th>
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<tbody>
<tr>
<td>PROTECT PER STD PLAN NO 132</td>
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</table>

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<tr>
<th>SIDEWALK RECONSTRUCTION</th>
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<tbody>
<tr>
<td>ROOT PRUNE ONLY AS APPROVED BY THE ENGINEER</td>
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<tr>
<td>MAINTAIN 2'-0&quot; MIN CLEARANCE FROM FLARE OF TRUNK WHEN SETTING FORMS.</td>
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<tr>
<th>TRENCH OR TUNNELING</th>
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<tr>
<td>SEE STD PLAN NO 133</td>
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</tbody>
</table>

**REF STD SPEC SEC 1-07.16(2)**
NOTES:
1. TYPE A MANHOLE DESIGNATES MANHOLES WITH PRECAST CONCENTRIC CONE SECTIONS.
2. TYPE B MANHOLE DESIGNATES MANHOLES WITH TOP SLABS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STANDARD PLAN NO 200a.
4. MAXIMUM DIMENSION FROM OUTSIDE MANHOLE WALL TO THE FIRST PIPE JOINT, THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
5. FOR TYPE A MANHOLE, LOCATE MANHOLE STEPS ON THE SIDE PERPENDICULAR TO THE DIRECTION OF THE FLOW IN THE CHANNEL.
6. FOR TYPE B MANHOLE, LOCATE MANHOLE STEPS OPPOSITE TO THE DOWNSTREAM OPENING.
7. TOTAL HEIGHT OF AN EXTENSION, MANHOLE FRAME AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
8. MANHOLE BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MANHOLES.
10. PRECAST MANHOLE COMPONENTS SHALL CONFORM TO ASTM C 479. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
NOTES:
1. MATERIAL: CONCRETE—CLASS AX
   REINFORCING STEEL—ASTM A 615 GR 60
2. TOP SLAB IS DESIGNED FOR 3'-0" MAX COVER
   BASE IS DESIGNED FOR 20'-0" MAX COVER
3. HEIGHT 8'-0" TO 12'-0"
   MIN. REQUIRED SOIL BEARING = 3300 LBS/50 FT
4. HEIGHT 12'-0" TO 20'-0"
   MIN. REQUIRED SOIL BEARING = 3800 LBS/50 FT
NOTES:
1. TYPE A MANHOLE DESIGNATES MANHOLES WITH PRECAST CONCENTRIC CONE SECTIONS.
2. TYPE B MANHOLE DESIGNATES MANHOLES WITH TOP SLABS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STANDARD PLAN NO 201b.
4. MAXIMUM DIMENSION FROM OUTSIDE MANHOLE WALL TO THE FIRST PIPE JOINT, THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
5. FOR TYPE A MANHOLE, LOCATE MANHOLE STEP ON THE SIDE PERPENDICULAR TO THE DIRECTION OF THE FLOW IN THE CHANNEL.
6. FOR TYPE B MANHOLE, LOCATE MANHOLE STEPS OPPOSITE TO THE DOWNSTREAM OPENING.
7. TOTAL HEIGHT OF AN EXTENSION, MANHOLE FRAME AND LEVELING BRICKS SHALL NOT EXCEED 2'-0".
8. MANHOLE BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MANHOLES.
10. PRECAST MANHOLE COMPONENTS SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.

HANDHOLDS, SEE STD PLAN NO 232

3/8" MORTAR LINING

LEVELING BRICKS OR CONCRETE COLLAR

MANHOLE FRAME & COVER, SEE STD PLAN NO 230

HANDHOLDS, SEE STD PLAN NO 232

2'-0" MAX SEE NOTE NO. 7

4'-0" TO 2'-0"

PRECAST CONCENTRIC CONE SECTION

4'-0" MIN CLR OPENING

1'-9" MIN CLR OPENING

2'-0" MIN

4'-0" MAX

41/2"

4'-5"

1'-6" MIN

2'-0" MAX

6"

6"

41/2"

MANHOLE STEP, SEE STD PLAN NO 232

4'-6"

2'-0"

6"

MANHOLE STEP, SEE STD PLAN NO 232

1'-11" MORTAR LINING

CHANNEL

MORTAR FILLET

SEPARATE CAST-IN-PLACE BASE

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

BASE DETAIL SECTION A-A

TYPE 9 MINERAL AGGREGATE W/ PORTLAND CEMENT FOR PRECAST BASE

SEPARATE CAST-IN-PLACE BASE

REF STD SPEC SEC 7-05

City of Seattle NOT TO SCALE TYPE 201 MANHOLE
STANDARD PLAN NO 201b

**NOTES:**
1. MATERIAL: CONCRETE—CLASS AX
   REINFORCING STEEL—ASTM A 615 GR 60
2. TOP SLAB IS DESIGNED FOR 3"-0" MAX COVER
   BASE IS DESIGNED FOR 20"-0" MAX COVER
3. HEIGHT 8'-0" TO 12'-0":
   MIN. REQUIRED SOIL BEARING = 3300 LBS/SQ FT
4. HEIGHT 12'-0" TO 20'-0":
   MIN. REQUIRED SOIL BEARING = 3800 LBS/SQ FT

**SECTION A-A**

* #4 HOOP TF
* #4 BF (TYP)
* #4 BF (TYP) 5'-0" BF 3'-0" 5'-0" BF 3'-0" 5'-0" BF

**TYPE 201 MH-TOP SLAB**

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**City of Seattle**

NOT TO SCALE

TYPE 201 MANHOLE
TOP & BOTTOM SLABS

---

REF STD SPEC SEC 7-05
NOTES:
1. MH 202 TYPE A DESIGNATES A MANHOLE TOP SLAB WITH A 4’-0”Dia. ACCESS.
2. MH 202 TYPE B DESIGNATES A MANHOLE TOP SLAB WITH A 2’-0”Dia. ACCESS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STANDARD PLAN NO 202a.
4. MAXIMUM DIMENSION FROM OUTSIDE MANHOLE WALL TO THE FIRST PIPE JOINT. THE GREATER OF 1’/2 INSIDE PIPE DIAMETER OR 1’-0”.
5. FOR TYPE A MANHOLE, LOCATE MANHOLE STEPS ON THE SIDE PERPENDICULAR TO THE DIRECTION OF THE FLOW IN THE CHANNEL.
6. FOR TYPE B MANHOLE, LOCATE MANHOLE STEPS OPPOSITE TO THE DOWNSTREAM OPENING.
7. TOTAL HEIGHT OF AN EXTENSION, MANHOLE FRAME & COVER AND LEVELING BRICKS SHALL NOT EXCEED 2’-2”.
8. MANHOLE BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MANHOLES.
9. THE MAXIMUM HOLE SIZE SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS THE MANHOLE WALL THICKNESS. THE MINIMUM HOLE SIZE SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 4 INCHES. MINIMUM DISTANCE BETWEEN HOLES IS 1’-0” INCHES.
10. PRECAST MANHOLE COMPONENTS SHALL CONFORM TO ASTM C 478. JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443.
NOTES:
1. MATERIAL: CONCRETE—CLASS AX
   REINFORCING STEEL—ASTM A 615 GR 60
2. TOP SLAB IS DESIGNED FOR 10'-0" MAX COVER
   FOR TYPE A AND 3'-0" MAX COVER FOR TYPE B
3. BASE IS DESIGNED FOR 20'-0" MAX COVER
4. HEIGHT 8'-0" TO 12'-0"
   MIN REQUIRED SOIL BEARING = 3300 LBS/SQ FT
5. HEIGHT 12'-0" TO 20'-0"
   MIN REQUIRED SOIL BEARING = 3800 LBS/SQ FT
NOTES:
1. TYPE A MH DESIGNATES A MH TOP SLAB WITH A 4"-0" DIA ACCESS.
2. TYPE B MH DESIGNATES A MH TOP SLAB WITH A 2'-0" DIA ACCESS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STD PLAN NO 203b.
4. MAX DIMENSION FROM OUTSIDE MH WALL TO THE FIRST PIPE FLEX JOINT. THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
5. TOTAL HEIGHT OF FRAME EXTENSIONS, MH FRAME AND COVER, AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
6. MH BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MHs.
7. MAX HOLE SIZE IS EQUAL TO THE Outside DIAMETER OF THE PIPE PLUS THE MH WALL THICKNESS. MIN DISTANCE BETWEEN HOLES IS 1'-0".
8. PRECAST MH COMPONENTS SHALL CONFORM TO ASTM C 478.

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
TYPE 203 MANHOLE
NOTES:
1. MATERIAL: CONCRETE—CLASS AX
   REINFORCING STEEL—ASTM A 615 GR 60
2. TOP SLAB IS DESIGNED FOR 10"-0" MAX COVER
   FOR TYPE A AND 2'-0" MAX COVER FOR TYPE B
3. BASE IS DESIGNED FOR 20'-0" MAX COVER
4. HEIGHT 8'-0" TO 12'-0":
   MIN REQUIRED SOIL BEARING = 3300 LBS/SQ FT
5. HEIGHT 12'-0" TO 20'-0":
   MIN REQUIRED SOIL BEARING = 3800 LBS/SQ FT
NOTES:
1. TYPE A MH DESIGNATES A MH TOP SLAB WITH A 4"-0' DIA ACCESS.
2. TYPE B MH DESIGNATES A MH TOP SLAB WITH A 2"-0' DIA ACCESS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STD PLAN NO 204.B.
4. MAX DIMENSION FROM OUTSIDE MH WALL TO THE FIRST PIPE JOINT. THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0'.
5. TOTAL HEIGHT OF FRAME EXTENSIONS, MH FRAME AND COVER, AND LEVELING BRICKS SHALL NOT EXCEED 2'-2'.

MH BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MHS.
6. MAX HOLE SIZE IS EQUAL TO THE OUTSIDE DIAMETER OF THE PIPE PLUS THE MH WALL THICKNESS. MIN DISTANCE BETWEEN HOLES IS 1'-0'.

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

1. MATERIAL: CONCRETE—CLASS AX
   REINFORCING STEEL—ASTM A 615 OR 60
2. TOP SLAB IS DESIGNED FOR 10'-0" MAX COVER
   FOR TYPE A AND 2'-0" MAX COVER FOR TYPE B
3. BASE IS DESIGNED FOR 20'-0" MAX COVER
4. HEIGHT 8'-0" TO 12'-0":
   MIN REQUIRED SOIL BEARING = 3300 LBS/SQ FT
5. HEIGHT 12'-0" TO 20'-0":
   MIN REQUIRED SOIL BEARING = 3600 LBS/SQ FT

**SECTION A-A**
- PRECAST BASE JOINT
- SEPARATE CAST- IN-PLACE OR SEPARATE PRECAST BASE
- REINFORCING STEEL (FOR SEPARATE BASE ONLY) 0.39 SQ IN/FT IN EACH DIRECTION
- TYPE 9 MINERAL AGGREGATE W/ PORTLAND CEMENT, 6" MIN DEPTH FOR PRECAST BASES ONLY

**SECTION B-B**
- TOP SLAB ONLY
- PRECAST BASE WITH INTEGRAL RISER
- REINFORCING STEEL (FOR PRECAST BASE WITH INTEGRAL RISER) 0.29 SQ IN/FT IN EACH DIRECTION

**TYPE A MH—TOP SLAB**
- 6-#5 BARS @ 4" EQUAL SPACES BF
- FAN #5 BARS @ 4" EQUAL SPACES BF
- #58F (TYP)
- #4 HOOP TF
- #4 HOOP TF

**TYPE B MH—TOP SLAB**
- 6-#5 BARS @ 4" EQUAL SPACES BF
- FAN #5 BARS @ 4" EQUAL SPACES BF
- #58F (TYP)
- #4 HOOP TF
- #4 HOOP TF

**REF STD SPEC SEC 7-05**

City of Seattle

NOT TO SCALE

TYPE 204 MANHOLE
TOP & BOTTOM SLABS
NOTES:
1. TYPE A MH DESIGNATES A MH TOP SLAB WITH A 4"-0" DIA ACCESS.
2. TYPE B MH DESIGNATES A MH TOP SLAB WITH A 2"-0" DIA ACCESS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STD PLAN NO 205b.
4. MAX DIMENSION FROM OUTSIDE MH WALL TO THE FIRST PIPE JOINT.
   THE GREATERT OF 1/2 INSIDE PIPE DIAMETER OR 1"-0".
5. TOTAL HEIGHT OF FRAME EXTENSIONS, MH FRAME AND COVER,
   AND LEVELING BRICKS SHALL NOT EXCEED 2"-2".
6. MH BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B
7. MAX HOLE SIZE IS EQUAL TO THE OUTSIDE DIAMETER OF THE
   PIPE PLUS THE MH WALL THICKNESS. MIN DISTANCE BETWEEN
   HOLES IS 1"-0".

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
TYPE 205 MANHOLE
NOTES:
1. MATERIAL: CONCRETE-CLASS AX REINFORCING STEEL-ASTM A 615 GR. 60
2. 10'-0" MAX FILL ON TOP SLAB - TYPE A
3. 2'-0" MAX FILL ON TOP SLAB - TYPE B
4. HEIGHT 8'-0" TO 12'-0": MIN REQUIRED SOIL BEARING = 3300 LBS/SQ FT
5. HEIGHT 12'-0" TO 22'-0": MIN REQUIRED SOIL BEARING = 3800 LBS/SQ FT

SECTION B-B
TOP SLAB ONLY

SECTION A-A

PRECAST BASE JOINT

SEPARATE CAST-PLACE OR SEPARATE PRECAST BASE
REINFORCING STEEL (FOR SEPARATE BASE ONLY) 0.75 SQ IN/FT IN EACH DIRECTION

END DETAILS BY CONTRACTOR & APPROVED BY ENGINEER

GROUT AS REQUIRED FOR UNIFORM BEARING ALL AROUND

NOT TO SCALE

TYPE 205 MANHOLE TOP & BOTTOM SLABS

REF STD SPEC SEC 7-05
NOTES:
1. TYPE A MH DESIGNATES A MH TOP SLAB WITH A 4"-0" DIA ACCESS. 6. MH BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MHS.
2. TYPE B MH DESIGNATES A MH TOP SLAB WITH A 2"-0" DIA ACCESS. 7. MAX HOLE SIZE IS EQUAL TO THE OUTSIDE DIAMETER OF THE PIPE PLUS THE MH WALL THICKNESS. MIN DISTANCE BETWEEN HOLES IS 1'-0".
3. TOP SLAB AND BASE SECTION DETAILS, SEE STD PLAN NO 206b.
4. MAX DIMENSION FROM OUTSIDE MH WALL TO THE FIRST PIPE JOINT, THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0" EXCEPT PVC AND CMP.
5. TOTAL HEIGHT OF FRAME EXTENSIONS, MH FRAME AND COVER, AND LEVELING BRICKS SHALL NOT EXCEED 2'-0".

REF STD SPEC SEC 7-05
NOTES:
1. MATERIAL: CONCRETE—CLASS AX
2. REINFORCING STEEL—ASTM A 615 OR 60
3. 10’-0” MAX FILL ON TOP SLAB = TYPE A
4. 21’-2” MAX FILL ON TOP SLAB = TYPE B
5. HEIGHT 8’-0” TO 12’-0”:
   MIN REQUIRED SOIL BEARING = 3300 LBS/SQ FT
6. HEIGHT 12’-0” TO 25’-0”:
   MIN REQUIRED SOIL BEARING = 3800 LBS/SQ FT
TRAVESRE BAR LENGTH VARY IN ACCORDANCE WITH PIPE SIZE. (SEE DRAWINGS)

4 #5 BARS 2'-3" LONG

NOTE:
REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A 615 GR 60 AND SHALL HAVE A MIN COVER OF 2"

SECTION B-B

A

SHALLOW OR STANDARD 2'-0" MANHOLE FRAME AND COVER SEE STD PLAN NO 230
LEVELING BRICK OR CONCRETE COLLAR

B

BASE WALL AND FOUNDATION SLAB Poured IN PLACE CONG CLASS AX

UNDISTURBED EARTH OR TYPE 2 MINERAL AGGREGATE COMPACTED TO 90%

SECTION A-A

B

A

SECTION THRU C

PIPE BEDDING MATERIAL

PIPE ID 2'-0" MIN TO 3'-6" MAX

8" ID PIPE

8" MIN
NOTES:
1. NEW MANHOLE STEPS AND HANDHOLDS SHALL BE INSTALLED AND LOCATED 1'-0" OC FROM THE FIRST EXISTING STEP IN THE MANHOLE AND SHALL MATCH THE EXISTING TYPE OF STEP. ANY SUBSTITUTIONS SHALL BE APPROVED BY THE ENGINEER. A MINIMUM 1'-9" CLEAR OPENING SHALL BE MAINTAINED.


3. FOR PAVEMENT DEPTH GREATER THAN 7", USE FRAME EXTENSION(S) AS SHOWN IN STANDARD PLAN NO 231 TO BRING THE COVER UP TO THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.

REF STD SPEC SEC 7-05

City of Seattle

NOT TO SCALE

REBUILD EXISTING BRICK MANHOLE
NOTES:
1. DESIGNATE LOCKING COVER AS TYPE 230L FOR USE IN NON-VEHICULAR TRAFFIC AREAS.
3. FOR RIGID PAVEMENT DEPTH GREATER THAN 7", USE FRAME EXTENSION(S) (STANDARD 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.
4. COVER THICKNESS IS MEASURED FROM THE BOTTOM OF THE PATTERN.
5. REFER TO SECTION 5-05 FOR OTHER REQUIREMENTS FOR REINFORCING BARS.
6. FRAMES SHALL BE MANUFACTURED FROM CAST IRON OR DUCTILE IRON.
7. COVERS SHALL BE MANUFACTURED FROM DUCTILE IRON.
SECTION OF FRAME EXTENSION

NOTES:
1. DIMENSION "A" REFER TO HEIGHT OF FRAME EXTENSION ABOVE MANHOLE FRAME
2. DIMENSIONS "B", "C" AND "D" SHALL MATCH THE MANHOLE FRAME AND COVER THAT THE FRAME EXTENSION TO BE USED ON
3. WHEN FRAME EXTENSIONS ARE USED ON A NEW MANHOLE FRAME AND COVER, THE FRAME EXTENSION SHALL BE PERMANENTLY ATTACHED TO THE MANHOLE FRAME AT THE FACTORY, NOT IN THE FIELD. APPROVAL OF ATTACHMENT METHOD IS REQUIRED
4. FRAME EXTENSIONS SHALL BE DUCTILE OR CAST IRON

REF STD SPEC SEC 7-20

City of Seattle
NOT TO SCALE
FRAME EXTENSIONS
1. Dimensions for the MH ladder and step are minimum requirements only.
2. Steps and handholds shall be installed at 1'-0" spacing. When the distance from the last (highest) step or handhold to the top of the MH frame exceeds 1'-0" and another step or handhold cannot be installed because of the location of the MH frame, a handhold shall be installed between the top 2 layers of brick.
3. If both steps and ladder are req’d in any MH, they shall be from the same manufacturer.

NOTE:
NOTES:
1. CONCRETE FOR DROP CONNECTION SUPPORT SHALL BE CL 5 (1½)
2. DUCTILE IRON PIPE SHALL BE ANSI/AWWA C151/A21.51 CL 50. DUCTILE IRON FITTINGS SHALL BE ANSI/AWWA C111/A21.11
3. BACKFILL AND COMPACT SPACE AROUND DROP CONNECTION WITH SELECTED MATERIAL OR TYPE 17 MINERAL AGGREGATE
4. DROP CONNECTIONS SHALL BE USED WHERE DROP IS NOT MORE THAN 20'-0"
5. ADDITIONAL PIPES MAY BE REQUIRED FOR DROP CONNECTION TO ENTER MANHOLE STRUCTURE (SEE DRAWINGS)

DUCTILE IRON OUTSIDE DROP CONNECTION

REFERENCES:
STD SPEC SEC 7-08
NOTE:

1. PROVIDE PIPE MANUFACTURER RECOMMENDATION FOR PIPE HANGER AND CONCRETE ANCHORAGE TO SPU FOR APPROVAL.
2. SIZE MH TO MEET MINIMUM INSIDE CLEARANCE.
3. CLEAN-OUT SHALL BE LOCATED OPPOSITE OF MH ACCESS.
4. DUCTILE IRON PIPE C151/A21.51 CL 50, DUCTILE IRON FITTINGS SHALL BE ANSI/AWWA B111/A21.11
5. PVC PIPE & ELBOW ASTM D 2241 CL200

INSIDE DROP
(10" DIAMETER PIPE MAXIMUM)
NOTES:
1. PIPE AND FITTINGS SHALL BE PVC PER ASTM D 3034 SDR 35
2. ALL PIPES AND FITTINGS ARE TO BE THE SAME DIAMETER,
   THE DIAMETER IS TO BE SPECIFIED ON THE PLANS
3. PVC TEE INSERTS SHALL BE BY "INSERT A TEE" OR EQUAL
   AND SHALL INCLUDE RUBBER SLEEVE, PVC ADAPTER HUB AND
   STAINLESS STEEL BAND. INSERT SHALL BE INSTALLED IN A
   CORE DRILLED HOLE PER MANUFACTURER'S INSTRUCTIONS.
   INSERT SHALL BE FLUSH WITH THE INSIDE WALL OF THE MAIN.
4. LOCATE EDGE OF CORE DRILLED HOLE 1"-0' MINIMUM FROM
   EXISTING PIPE JOINT AND 2"-0' FROM THE EDGE OF ANY
   EXISTING OR NEW CONNECTIONS
5. VERTICAL CONNECTION SHALL NOT BE USED UNLESS DEPTH
   FROM SURFACE TO TOP OF PIPE IS 20"-0' OR GREATER
6. VERTICAL CONNECTIONS ON MAINS OTHER THAN CONCRETE,
   CLAY OR BRICK CONSTRUCTION SHALL BE PER DRAWINGS
7. CONCRETE HAUNCHING IS TO BE CLASS 5 (1/2) CONCRETE

REF STD SPEC SEC 7-08 & 7-17
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. FRAME AND GRATE SHALL BE LOCATED OVER OUTLET TRAP

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SINGLE CIRCULAR CAGE 0.12 SQ IN/FT IN EACH DIRECTION

REINFORCING STEEL 0.15 SQ IN/FT IN EACH DIRECTION

FLOW LINE

OUTLET TRAP SEE STD PLAN NO 267

LEVELING BRICK

PRECAST TOP SLAB PER STD PLAN NO 243
TYPE 240A: UNIT R SLAB
TYPE 240B: UNIT P-48 SLAB
TYPE 240C: UNIT T SLAB
TYPE 240D: UNIT T SLAB

SECTION B-B

TYPE 9 MINERAL AGGREGATE W/ PORTLAND CEMENT 4" MIN

4'-0"  4'-8" MIN

FLOW LINE

PIPE FROM INLET

REINFORCING STEEL 0.15 SQ IN/FT IN EACH DIRECTION

NOT TO SCALE

TYPE 240 CATCH BASIN
NOTES:
1. THIS CATCH BASIN IS FOR INSTALLATIONS IN ALLEYS AND UNPAVED AREAS IN THE RIGHT-OF-WAY. ANY OTHER USE IN THE R/W WILL REQUIRE APPROVAL OF SPU.
2. FOR CURB DISCHARGE INSTALLATION SEE STD PLAN NO 241b.
3. INSTALL PER STD PLAN NO 261.
4. MATERIAL: CONCRETE CLASS AX.
   REINFORCING STEEL ASTM A615 GR60.
5. INLET INVERT EL. TO BE HIGHER THAN OUTLET INVERT EL.
NOTES:
1. CONCRETE: CLASS AX
2. REINFORCING STEEL: ASTM A615 GR 60

REF STD SPEC SEC 7-05

City of Seattle
NOT TO SCALE
PRECAST CATCH BASIN EXTENSION RISERS
SECTION A-A

SECTION B-B

SECTION C-C

NOTE:
INSTALL AND LOCATE PER STD PLAN NO 260

NOTE:
PROVIDE MINIMUM REINFORCING STEEL AS REQUIRED BY AASHTO.

REF STD SPEC SEC 7-05
NOTE:
PROVIDE MINIMUM REINFORCING STEEL AS REQUIRED BY AASHTO.
CB/INLET LOCATION AT CURB RETURNS

CB/INLET LOCATION NOT AT CURB RETURNS

DETAIL A

DETAIL B

SECTION C-C

SECTION D-D

NOTE
INLET/CB SHALL NOT BE PLACED IN CROSSWALKS OR IN FRONT OF WHEELCHAIR RAPS
Type 242A CB
(Type 250A Inlet Similar)
Note - Type 240C Grate

Type 242B CB
(Type 250B Inlet Similar)

Notes:
1. Type 242A.1 or B.1 Installation is Rotated 180° from Type 242A or 242B
2. A.1 is shown, B.1 is similar
3. A.1 or B.1 can only be used when specified on drawings

Type 242A.1 CB

Curb Detail (Plan View) for
Type 242B CB & Type 250B Inlet
TYPE A

MAX BEND SHALL BE 22 1/2" OR 1/16 BEND. USE OF 1/8 BEND REQUIRES APPROVAL BY SPU.

TYPE B

ROTATE BENDS AS REQ'D TO CLEAR EXISTING UTILITY.

SECTION C-C

SECTION D-D

NOTES:
1. CONNECTIONS SHALL MAINTAIN A MINIMUM OF 2% AND A MAXIMUM OF 50% GRADE.
2. TYPE A CONNECTION MAY BE USED UNDER THE FOLLOWING CIRCUMSTANCES:
   A. THE MAXIMUM OF 50% GRADE IS NOT EXCEEDED
   B. THERE IS NO INTERFERENCE WITH EXISTING OR PROPOSED UTILITIES

REF STD SPEC SEC 7-08

City of Seattle
NOT TO SCALE
TYPICAL CATCH BASIN CONNECTION
1" DIA HOLE FOR 3/4" DIA STD STEEL BOLT WITH LOCK WASHER & NUT

CURB INLET
SECTION A-A
PAD 1 1/2" X 3/4" X 1/8" THICK (8 REQ'D)
EMBOSSED ON GRATE
1" OPENING (TYP)

SECTION B-B
GRATE MATERIAL: DUCTILE IRON

SECTION C-C
3/4" NORMAL TO BAR
1/8" R (TYP)
1/2" NORMAL TO BAR
NOTES:
1. "TRAP TO BE MADE OF 22 GA (0.0336") SHEET METAL OR 18GA (0.05") 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
NOTES:
1. TYPE 267C TRAP TO BE USED WITH 8" ID OUTLET PIPE.
   TYPE 267D TRAP TO BE USED WITH 4" OR 8" ID OUTLET PIPE.
2. TRAP MAY BE CAST IRON ASTM A 48 CLASS 25 OR CAST STEEL
   ASTM A 27 GRADE 70–36
3. TRAP AND TRAP HOOK TO HAVE A BITUMINOUS COATING INSIDE AND OUT

TRAP HOOK
TRAP HOOKS MAY BE ROUND OR SQUARE IN CROSS-SECTION

TRAP INSTALLATION

REF STD SPEC SEC 7-05
TOP OF RESURFACED PAVING

TOP OF EXISTING PAVING

SHEET ASPHALT OR A WORKABLE MIX OF SAND AND EMULSIFIED ASPHALT OR 1:11/2 CEMENT MORTAR

TYPE 164 INLET EXISTING

SECTION B-B

FILL FRAME TO STD INLET GRATING BOTTOM OF FRAME AT OUTLET

BOTTOM OF FRAME AT CLOSED END

SECTION A-A

THS DIMENSIONS MAY BE CHANGED IF NECESSARY TO FIT EXISTING CASTINGS

REF STD SPEC SEC 9-05

City of Seattle | NOT TO SCALE | EXTENSION FOR INLET
FLOW CONTROL STRUCTURE & DETENTION PIPE

- Specific design information as indicated on construction drawings
- Note: Invert of detention pipe higher than invert of outlet pipe

REF STD SPEC SEC 7-16

City of Seattle

NOT TO SCALE

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

REF STD SPEC SEC 7-16

City of Seattle
NOT TO SCALE
DETENTION STRUCTURE END
PLATE DETAILS
NOTE:
FOR D1, D2, I, S, S1, N & W
VALUES AND GENERAL NOTES SEE
STD PLAN NO 271C

REF STD SPEC SEC 7-16

City of Seattle
NOT TO SCALE
DETENTION STRUCTURE END
PLATE DETAILS
| PIPE DIAMETER | END PLATE THICKNESS | STIFFENER TYPE & SIZE | STIFFENER SPACING | SIZE "W"
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**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.
3. DESIGNS SHALL BE USED ONLY FOR ALUMINUM CMP.

REF STD SPEC SEC 7-16
FLOW CONTROL STRUCTURE

NON-SHRINK GROUT

FLEXIBLE COUPLING

CAULK SPACE BETWEEN PVC ADAPTER AND PIPE STUB

PVC ADAPTER W/ DOUBLE GASKET AND ADHESIVE BONDED SAND FINISH ON EXTERIOR, MIN 7" LONG.

GASKET (TYP)

FLOW CONTROL STRUCTURE

CONNECTION & CONTROL DEVICE

DETAIL A

PIPE SUPPORT

DETAIL B

LADDER IRON

SEE STD PLAN NO 232

INTERMEDIATE MH'S MAY BE REQUIRED IF LENGTH IS GREATER THAN 400 FT.

ALLOWABLE OUTLET LOCATION

MAX. DIMENSION FROM OUTSIDE MH WALL TO FIRST PIPE JOINTS, TYP

GRADE

GALV CHAIN ATTACH NO LOWER THAN 1'-6" BELOW GRADE

OVERFLOW ELEV.

SUPPORT (2 REQ'D)

SEE DETAIL B

CONTROL DEVICE

SEE DETAIL A

TYPE 9 MNRL AGG W/ PORTLAND CEMENT

FLOW CONTROL STRUCTURE & DETENTION PIPE

CONCRETE OR DIP DETENTION PIPE (LENGTH, DIAMETER, CLASS)

DETENTION PIPE DIAMETER | FCS • (MH SIZE) | UPSTREAM • (MH SIZE)
------------------------|----------------|-------------------
18"                     | 201B           | 201A OR B
24"                     | 201B           | 201A OR B
30"                     | 202B           | 202B
36"                     | 202B           | 202B
48"                     | 203B           | 203B
60"                     | 204B           | 204B
72"                     | 205B           | 205B

*SPECIFIC DESIGN INFORMATION AS INDICATED ON CONSTRUCTION DRAWINGS

REF STD SPEC SEC 7-16

City of Seattle

NOT TO SCALE

FLOW CONTROL STRUCTURE (CONC OR DIP DETENTION PIPE)
PLAN

GRADE

TYPE 277A FRAME & COVER PER
STD PLAN NO 230
TYPE 277B FRAME & GRATE PER
STD PLAN NO 264

LEVELING BRICK
(USE GROUT FOR LESS THAN 4")

1'-0" MIN (12" CC)
1'-11" MIN (18" CC)

6' TO 12" SD TO MATCH CROWNS

TYPE 9 MINERAL AGGREGATE W/ PORTLAND CEMENT

NOTE - CONCRETE: CLASS AX

SECTION A-A

REF STD SPEC SEC 7-02 & 9-12.9

City of Seattle
NOT TO SCALE

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 GALV STEEL MEETING ASTM A 307 OR STAINLESS STEEL MEETING ASTM A 193

SECTION A-A

CORRUGATED FLANGE PLATE
NON-CORRUGATED PIPE 0.135" THICK OD SAME AS OD OF CONNECTION PIPE
ROMAC STYLE LS51 LIGHTWEIGHT REPAIR CLAMP OR APPROVED EQUAL 12" LONG

HOLE DIA SAME AS ID OF NON-CORRUGATED PIPE

23 MIN
NOTE:
USE ONLY FOR SIDE SEWER
AND SERVICE Drains

PLUG SHALL BE SEALED
IN SAME MANNER AS
MAIN SEWER JOINTS

CAST IRON FRAME & COVER

WYE OR 1/8 BEND
FOR PIPES LESS THAN 48" DIAMETER
(HELICAL OR ANNUAL)

REF STD SPEC SEC 7-16.2 & 9-05
TOP BAND

PIPE

GASKET

1/2" DIA BOLT

BOTTOM BAND

BAND

PIPE

GASKET

8" MIN: 22/3" X 1/2" CORRUGATIONS

9" MIN: 3" X 1" CORRUGATIONS

3/16" 1/2" (TYP)

HELICAL CORRUGATIONS SHOWN FOR CLARITY

L 2" X 2" X 3/16"

2'-1" ± (2'-0" NOMINAL)

FOR PIPES 48" DIAMETER & LARGER
(HELICAL OR ANNUAR)

REF STD SPEC SEC 7-16.2 & 9-05

CORRUGATED METAL PIPE COUPLING BANDS

City of Seattle
NOT TO SCALE
NOTES:
1. ALL HOUSE PLUMBING OUTLETS MUST BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED, EXCEPT TO A SEPARATE STORM DRAINAGE SYSTEM.
2. 2'-6" MIN DISTANCE FROM HOUSE, EXCEPT FOR SOIL PIPE CONNECTION.
3. 1'-0" MIN COVER OF PIPE.
4. 2'-0" MIN COVER AT PROPERTY LINE.
5. 5'-0" MIN COVER AT CURB LINE.
6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH BENDS OR WYES.
7. STANDARD 4" TO 6" INCREASER.
8. 6" SEWER PIPE: MIN SIZE IN STREET, AND ELSEWHERE AS DIRECTED. 2% MIN GRADE, 100% MAX.
9. 4" SEWER PIPE: MIN SIZE ON PROPERTY. 2% MIN GRADE, 100% (45°) MAX.
10. TEST "T" WITH PLUG
11. REMOVABLE PLUG.

A. CONSTRUCTION IN STREET MUST BE DONE BY A LICENSED SIDE SEWER CONTRACTOR.
B. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT SIDE SEWER ORDINANCES.
C. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTIONS OF PROPERTY AND DIMENSIONS A, B, C AND D THAT SHOW THE SIZE AND LOCATION OF THE HOUSE ARE REQUIRED FOR ISSUANCE OF THE PERMIT.
D. ORDINANCE 97016 APPLIES TO INSTALLATION OF SIDE SEWER.

REF STD SPEC SEC 7-18
TYPICAL TRENCH SECTION
(SEWER & STORM DRAIN)

NOTE:
FOR PAVEMENT REMOVAL
AND RESTORATION SEE
STD PLAN NO 404

REF STD SPEC SEC 7-17
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. FOR CLASS D BEDDING EXCAVATE FOR BELL

REF STD SPEC SEC 7-17
NOTES
1. EXCEPTIONS TO STD PLAN NO. 286 SHALL BE APPROVED BY SEATTLE PUBLIC UTILITIES, WATER QUALITY DIVISION.
2. "SEWER" INCLUDES SANITARY SEWER, COMBINED SEWER AND SIDE SEWER.
3. WHERE MINIMUM CLEARANCES CANNOT BE MET, SEWER SHALL BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS INCLUDING WATER MAIN PRESSURE TESTING REQUIREMENTS.
4. NO VERTICAL CLEARANCE REQUIRED.
5. IF MINIMUM VERTICAL SEPARATION CANNOT BE MET, WATER MAIN SHALL BE A STANDARD SINGLE 18"-0" NOMINAL LENGTH DUCTILE IRON WATER MAIN SECTION CENTERED AT THE POINT OF CROSSING.
6. SEWER SHALL HAVE ADEQUATE FOUNDATION SUPPORT TO PREVENT SETTLEMENT ON THE WATER MAIN AND TO PREVENT DEFLECTION OF WATER MAIN JOINTS.
7. CROSSINGS AT AN ANGLE BETWEEN 90° AND 45° MAY OCCUR BETWEEN 9'-0" AND 6'-0" OF WATER MAIN JOINT. FOR CROSSINGS LESS THAN 45°, SEE NOTE 1.
8. ORDINANCE 97016 APPLIES TO SIDE SEWERS. SEE STD SPEC SEC 1-07.17(2)A.

PARALLEL INSTALLATION

CROSSING WATER OVER SEWER

CROSSING WATER UNDER SEWER

REF STD SPEC SEC 1-07.17 & 7-11

City of Seattle | NOT TO SCALE | SEWER & WATER SPACING & CLEARANCES
NOTES:
1. ALL 1/4" STEEL & L3" x 2" x 1/2" 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. 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 WATERMANS 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.

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

REF STD SPEC SEC 7-11
**EXISTING PLUGGED TEE OR CROSS**

**NEW PLUGGED TEE OR CROSS**

**CONNECTIONS TO EXISTING TEE OR CROSS – PLAN VIEW**

**TABLE**

<table>
<thead>
<tr>
<th>Size 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**

(TAPPING SLEEVE & TAPPING VALVE)

**REF STD SPEC SEC 7-11**

FOR LEGEND AND NOTES SEE STD PLAN NO 300a

City of Seattle

NOT TO SCALE

CONNECTIONS TO EXISTING WATERMAINS
HYDRANT DETAIL

NOTES:

1. 5" 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 HIGGEE CUT
4. THE 21/2" 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 TO FACE CURB
8. RESTRAINT SHALL BE BY WEDGE RESTRAINT SYSTEM SUCH AS MEGALIC OR UNIFLANGE. SEE STD SPEC 9-30.5(5)

6" GATE VALVE FLG X MJ

1/2 CU YD MÉNÉRAL AGGREGATE TYPE 4

STL PLATE 3/8" X 12" X 12"

(2) 4" X 8" X 16" CONC BLOCK OR (1) 4" X 16" X 16" CONC BLOCK

WEDGE RESTRAINT GLAND

3'-O" MIN FROM CURB FACE OR EDGE OF TRAVELED ROADWAY

APPROXIMATE DISTANCE PER PLAN DRAWINGS

2'-6"

1"-O" MIN

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2'-6"
GENERAL 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
HYDRANT DETAIL

NOTES:
1. 6" HYDRANT CONNECTION PIPE SHALL BE DIP CL52
2. HYDRANT TEES SHALL BE SET HORIZONTALLY
3. THE THREADED NIPPLE ON THE 4" PUMPER NOZZLE SHALL BE EQUIPPED WITH THE BLUNT START OR HIGBEE CUT
4. THE 2½" 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 LUXILITE 43-616 CAT YELLOW
7. PUMPER PORT TO 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).

REF STD SPEC SEC 7-14

City of Seattle

NOT TO SCALE

TYPE 311 HYDRANT SETTING DETAIL
GENERAL NOTES:
1. WHERE WATERMAINS ARE INSTALLED WITH POLYETHYLENE 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 310c.

REF STD SPEC SEC 7-14

City of Seattle  NOT TO SCALE  TYPE 311 HYDRANT SETTING DETAIL
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

TRAFFIC ISLAND MARKER POST LAYOUT FOR
FIRE HYDRANTS IN PARKING AREAS

MARKER POST LAYOUT FOR
FIRE HYDRANTS IN PARKING AREAS
NOTES:
1. BROKEN CONCRETE SLABS SHALL HAVE MINIMUM DIMENSIONS OF 3’-0" x 1’-0" AND BE NO LESS THAN 3 1/2" THICK. BROKEN CONCRETE SIDEWALK IS ACCEPTABLE. THE FACE SIDE OF CONCRETE SLAB SHALL BE STRAIGHT. SEE STD. SPEC SEC 8-15.3(5)

2. ROCK FOR ROCK FACING SHALL COMPLY WITH STD. PLAN NO. 141 SEE STD. SPEC 2-08.3(5)

SECTION A-A

REF STD SPEC SEC 2-08, 7-14 & 8-15

City of Seattle
NOT TO SCALE
WALL REQUIREMENTS FOR HYDRANTS
LID, VALVE BOX

TOP SECTION, SEE SECTION A-A

OPERATING NUT EXTENSION

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

BASE SECTION
SEE SECTION A-A

PLASTIC FOAM RING
SEE STD PLAN NO 315b

GATE VALVE
(BTV INSTALLATION SIMILAR)

WATERMAIN

PLAN

SECTION A-A

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

REF STD SPEC SEC 7-12
NOTES:
1. FRAME AND COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS FOR DELIVERY
2. CASTINGS AND EXTENSIONS SHALL BE HOT-DIPPED IN ASPHALTIC VARNISH ROYSTON ROSKOTE #612XM OR 2 COATS OF MASTIC ROYSTON INSIDE AND OUT.
3. VALVE BOXES SHALL BE RICH #045: TOP SECTION, Lid AND BASE; OR OLYMPIC FOUNDRY: Lid #1906–33, 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

PLASTIC FOAM RING DETAIL

REF STD SPEC SEC 7-12 & 9-30

City of Seattle | NOT TO SCALE | CAST IRON VALVE BOX & OPERATING NUT EXTENSIONS
### Type A Blocking

For 11\(\frac{1}{4}\)" & 22\(\frac{1}{2}\)" Vertical Bends

<table>
<thead>
<tr>
<th>Pipe Size Nom. Dia.</th>
<th>VB</th>
<th>S</th>
<th>d</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot; 300</td>
<td>1(\frac{1}{4})</td>
<td>2</td>
<td>1/4</td>
<td>18</td>
</tr>
<tr>
<td>6&quot; 300</td>
<td>2(\frac{1}{4})</td>
<td>2</td>
<td>1/4</td>
<td>24</td>
</tr>
<tr>
<td>8&quot; 300</td>
<td>2(\frac{1}{4})</td>
<td>3</td>
<td>1/4</td>
<td>24</td>
</tr>
<tr>
<td>12&quot; 300</td>
<td>4</td>
<td>4</td>
<td></td>
<td>36</td>
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</table>

### Type B Blocking

For 45° Vertical Bends

<table>
<thead>
<tr>
<th>Pipe Size Nom. Dia.</th>
<th>VB</th>
<th>S</th>
<th>d</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot; 300</td>
<td>27</td>
<td>3</td>
<td>1/4</td>
<td>20</td>
</tr>
<tr>
<td>6&quot; 300</td>
<td>64</td>
<td>4</td>
<td></td>
<td>125</td>
</tr>
<tr>
<td>8&quot; 300</td>
<td>125</td>
<td>5</td>
<td>1</td>
<td>30</td>
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</tbody>
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For Notes see Std Plan No 330b

Ref Std Spec Sec 7-11

City of Seattle

Not to Scale

Watermain Thrust Blocking

Vertical 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 VERTICAL FITTINGS (POURED IN PLACE) SHALL BEAR AGAINST UNDISTURBED NATIVE GROUND.
3. ALL POURED THRUST BLOCKS SHALL BE BACKFILLED AFTER MIN. 1 DAY.
4. PRESSURE TESTING SHALL OCCUR AFTER CONCRETE HAS REACHED 1'c.
5. ALL BLOCKING SHALL BE CONCRETE CL 5 (11/2).
6. AFTER INSTALLATION, SHACKLE RODS & TURNBUCKLES SHALL BE CLEANED AND COATED WITH 2 COATS OF ASPHALTIC VARNISH, ROYSTON ROYKOTE #612M OR APPROVED EQUAL.
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
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 T°C.
4. ALL BLOCKING TO BE CONCRETE CL 5 (11/2). 
5. BLOCKING AGAINST FITTINGS SHALL BEAR AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT SHALL NOT COVER OR ENCLOSE BELL ENDS, JOINT BOLTS OR GLANDS. ACCESS TO BOLTS AND GLANDS SHALL BE PROVIDED.
6. ALL HORIZONTAL BLOCKING THRUST AREAS SHALL BE CENTERED ON PIPE.
7. WHERE POURED-IN-PLACE BLOCKING IS REQUIRED AT A POINT OF CONNECTION TO AN EXISTING WATERMAIN, THE BLOCKING SHALL BE INSTALLED PRIOR TO CONNECTION.
8. TEMPORARY BLOCKING, IF USED, SHALL BE APPROVED BY ENGINEER.

REF STD SPEC SEC 7-11

City of Seattle
NOT TO SCALE
WATERMAIN THRUST BLOCKING HORIZONTAL FITTINGS
FOR 4" WATERMAINS
4"X1 1/2 FTPT DUCTILE IRON, DOUBLE STRAPPED SADDLE (SEE STD PLAN NO 340b) W/ 1 1/2"X2" CORP STOP, BALL TYPE BRASS BODY MIPT X COMP

FOR LARGER THAN 4" WATERMAINS
DIRECT TAP 1/2"X2" CORP STOP, BALL TYPE BRASS BODY, AWWA X COMP

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

SEE NOTE ON STD PLAN NO 340b

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

UNDISTURBED GROUND

PLAN

2" IRON BODY GATE VALVE W/ 2" SQUARE OPERATING NUT
VALVE BOX SEE STD PLAN NO 315
1 CU FT GRAVEL MNRL AGG TYPE 9
2" GALV STEEL PIPE
2" PLASTIC FOAM MATERIAL SEE STD PLAN NO 315

2" TYPE K COPPER
2" PIPE CAP

ELEVATION

2" GALVANIZED ELBOW
2"X6" GALVANIZED NIPPLE
2" BRASS COUPLING MIPT X COMP

REF STD SPEC SEC 7-11

City of Seattle
NOT TO SCALE
2" BLOW OFF TYPE A NON TRAFFIC INSTALLATION

REV DATE: 2003
NOTE:
NOTES
1. Excavate for the bell to ensure uniform support for the pipe barrel
2. Special coated pipe requires Class B bedding

BEDDING MATERIAL
Class 0:
- Suitable native material
Class 8:
- For distribution watermain, mineral aggregate Type 6 or Type 7
- For transmission watermain, mineral aggregate Type 9
- Special bedding to be indicated on drawings

Pipe smaller than 15"
1.5' I.D. + 18'
15' & larger pipe
4-1" DIA HOLES
FRAME & COVER
SHALL BE
TESTED FOR
ACCURACY OF
FIT AND SHALL
BE MARKED IN
SETS FOR
DELIVERY

BOTTOM VIEW

6 SPACES @ 2x4'
(LETTERING AS REQUIRED)

TOP VIEW

BAR 3/4" Ø
R=7/8"

LIFTING HANDLE
(2 REQUIRED)

SECTION A--A

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

REF STD SPEC SEC 7-12

City of Seattle
NOT TO SCALE
TYPE 361 VALVE CHAMBER
FRAME & COVER
SLIP JOINT BOND CONNECTION

#2 AWG JOINT BOND CABLE

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

MECHANICAL JOINT BOND CONNECTION

#10 AWG JOINT BOND CABLE

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

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

THERMITE WELD CONNECTION

CONNECTION SEQUENCE:
1. REMOVE PIPE COATING TO BRIGHT & CLEAN METAL
2. STRIP INSULATION FROM TEST STATION WIRE, INSTALL ADAPTER SLEEVE
3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE
4. REMOVE SLAG AND ALLOW TO COOL
5. 16 OUNCE HAMMER TEST PER STD. SPEC SEC 7- 11.3(15)01
6. FINAL CONNECTION TO BE MADE WATERTIGHT WITH MASTIC COATING OR PREFORMED THERMITE WELD CAP

REF STD SPEC SEC 7-11
NOTE:
WIRE INSTALLATION PER
STD SPEC SEC 9-30.12(3)

#6 AWG, BLACK TEST STATION WIRE
#10 AWG, BLACK TEST STATION WIRE
#10 AWG, YELLOW
1 1/4" CONDUIT TO TEST STATION
SEE STD PLAN NO 360

THERMITE WELD CONNECTION
SEE STD PLAN NO 362

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

TERMINATE END
OF CONDUIT AS
CLOSE TO MAIN
AS POSSIBLE

EX WATERMAIN

NEW
EXISTING

#6 AWG, BLACK
#10 AWG, BLACK
THERMITE WELD CONNECTION
SEE STD PLAN NO 362

NEW
EXISTING

#6 AWG, BLACK
#10 AWG, BLACK
THERMITE WELD CONNECTION
SEE STD PLAN NO 362

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

INSULATING RUBBER BOOT
INSULATING COUPLING

INSULATING COUPLING 5—WIRE TEST STATION

TYPE E NEOPRENE
FACED PHENOLIC
INSULATING GASKET

PHENOLIC OR SPIRAL
WOUND MYLAR
INSULATING SLEEVE
(LENGTH OF SLEEVE
TO BE 1/16" LESS
THAN SPACING
BETWEEN STEEL
WASHERS)

PHENOLIC INSULATING
WASHER

STEEL WASHER

PETROLATUM TAPE
ENCLOSE ENTIRE
FLANGE ASSEMBLY

1" TYP

INSULATING FLANGE SECTION DETAIL

INSULATING FLANGE 5—WIRE TEST STATION

#6 AWG, BLACK
#10 AWG, BLACK
THERMITE WELD CONNECTION
SEE STD PLAN NO 362

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

INSULATING FLANGE
SEE SECTION DETAIL

#10 AWG, YELLOW
#10 AWG, WHITE
#6 AWG, WHITE
1 1/4" SCH 40 ELECTRICAL GRADE
PVC CONDUIT TO TEST STATION
SEE STD PLAN NO 360

EX WATERMAIN

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

NOT TO SCALE

ELECTROLYSIS TEST STATION
WIRE INSTALLATION DETAILS
* SEE RIGHT OF WAY IMPROVEMENT MANUAL FOR DIMENSIONS
** UNLESS OTHERWISE APPROVED BY SDOT.
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

NOTES:
1. CONC CL 6 (1½) UNLESS OTHERWISE SPECIFIED ON DRAWINGS
2. FOR JOINT DETAILS, SEE STD PLAN NO 405
3. 3 MILLION EASL'S UNLESS OTHERWISE SPECIFIED ON DRAWINGS
4. USE ASPHALT PG 64–22 UNLESS OTHERWISE SPECIFIED ON DRAWINGS

REF STD SPEC SEC 4-04, 5-04, 5-05 & 8-04
402A—CEMENT CONCRETE PAVEMENT ON CRUSHED ROCK

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

402D—HOT MIX ASPHALT ON CRUSHED ROCK BASE

NOTES:
1. PAVEMENT WIDTH AND THICKNESS AS SPECIFIED ON DRAWINGS
2. CONC CL 6.5 (11/2) UNLESS OTHERWISE SPECIFIED ON DRAWINGS
3. TIE BARS AND DOWELL BARS ARE REQUIRED FOR CEMENT CONCRETE PAVEMENT AND BASE (SEE STD PLAN NO 405)
4. FOR THICKENED EDGE AND JOINT DETAILS, SEE STD PLAN NO 405
5. 10 MILLION ESAL'S UNLESS OTHERWISE SPECIFIED ON DRAWINGS
6. USE ASPHALT PG 64-22 UNLESS OTHERWISE SPECIFIED ON DRAWINGS

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

City of Seattle
NOT TO SCALE
COMMERCIAL AND ARTERIAL PAVEMENT SECTIONS
Cement Concrete Alley Pavement

**403A—Cement Concrete Alley Pavement**

**403B—For Shallow Embankment Area**

**NOTES:**
1. When alley pavement is 16'-0" or wider, place construction joint type B per STD PLAN NO 405 along centerline of alley.
2. Conc. Cl. 6 (1/2)
3. Specific application of this standard plan shall consider ADA accessible route for entire alley.

REF STD SPEC SEC 5-05

City of Seattle | NOT TO SCALE | CEMENT CONCRETE ALLEY PAVEMENTS
**TYPICAL PATCH FOR RIGID PAVEMENT**

- **SAW CUT ASPHALT CONC (REMOVE LOOSENED AREAS)**
- **EXISTING ASPHALT PAVEMENT**
- **EXISTING RIGID BASE**
- **SAW CUT CONCRETE (5/8 TO 3/4)**
- **STEP EXCAVATION TO AVOID UNDERMINING EX PAVEMENT (TYP)**
- **TRENCH WIDTH**
- **COMPACT BACKFILL**
- **HMA (CL 5/8)**
- **CONC CLASS 6.5 (1/2) HES (CL 6.0 FOR RESIDENTIAL STREETS)**

**TYPICAL PATCH FOR FLEXIBLE PAVEMENT**

- **EXISTING OIL MAT**
- **EXISTING EARTH OR GRANULAR BASE**
- **COMPACT MINERAL AGGREGATE TYPE 2**
- **TRENCH WIDTH**
- **COMPACT BACKFILL**
- **HMA (CL 1/2)**
- **SAW CUT ASPHALT CONC**
- **EXISTING FLEXIBLE BASE**
- **STEP EXCAVATION TO AVOID UNDERMINING EX PAVEMENT (TYP)**

**NOTES**

- TRENCH WIDTH SHALL MEET THE MAX PAY TRENCH WIDTH AS CALLED OUT ON STD PLAN NOS 284 & 350
- **MIN WIDTH AND DEPTH OF RESTORATION SHALL BE INCREASED TO MEET THE REQUIREMENTS OF "STREET AND SIDEWALK PAVEMENT OPENING AND RESTORATION RULES"**
ASPHALT OVER RIGID BASE OF BRICK OR STONE BLOCK PAVEMENT

NOTES:
1. WHEN A STONE OR BRICK PAVEMENT IS OVERLAYED WITH HMA, THE STREET SURFACE PAVEMENT BECOMES AN ASPHALT CONC STREET OVER RIGID BASE
2. IF A STONE OR BRICK PAVEMENT IS NOT OVERLAYED, THE METHOD OF RESTORATION IS IN KIND

* MIN. TRENCH WIDTH SHALL MEET THE MAX PAY TRENCH WIDTH AS CALLED OUT ON STD PLAN NO. 264 & 350
** ACTUAL WIDTH AND DEPTH OF RESTORATION SHALL MEET REQUIREMENTS OF "STREET AND SIDEWALK PAVEMENT OPENING AND RESTORATION RULES"

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

City of Seattle  NOT TO SCALE  PAVEMENT PATCHING
NOTES:
1. WHERE REQUIRED AT LONGITUDINAL JOINTS, TIE BARS SHALL BE 5/8" X 2"-6" @ 3'-0", DEFORMED GRADE 40 OR BETTER, EPOXY COATED. WHERE REQUIRED AT TRANSVERSE JOINTS, DOWEL BARS SHALL BE SIZED AS SHOWN IN THE TABLE, SMOOTH ROUND GRADE 60 OR BETTER, EPOXY COATED AND GREASED.
2. LONGITUDINAL JOINT SPACING SHOULD NOT EXCEED 15'-6" (TO BACK OF CURB). TRANSVERSE JOINT SPACE SHALL NOT EXCEED 15'-0". THE AREA OF THE PANEL SHALL NOT EXCEED 225 SQUARE FEET.
3. JOINT OFFSETS AT RADIUS POINTS SHOULD BE AT LEAST 1'-0" LONG.
4. JOINT INTERSECTION ANGLES OF LESS THAN 60 DEGREES SHALL BE USED.
5. WHEN A JOINT IS CLOSER THAN 1'-0" TO A CASTING, THEN A MINOR ADJUSTMENT IN THE JOINT LOCATION SHOULD BE MADE BY SKEWING OR SHIFTING THE JOINT ALIGNMENT TO MEET THE CASTING AT 90° OR NORMAL TO THE CASTING.
6. WHERE POSSIBLE, LONGITUDINAL JOINTS SHOULD MATCH LANE MARKINGS.
7. LONGITUDINAL JOINTS ARE TO BE CONSTRUCTION JOINTS UNLESS PAVED BY MACHINE CAPABLE OF PLACING AND FINISHING CONCRETE FOR TWO OR MORE PANEL WIDTHS (IN WHICH CASE A CONTRACTION JOINT IS ALLOWED).
8. DOWEL BARS SHALL NOT BE PLACED WITHIN 1'-0" OF THE EDGE OF PAVEMENT OR A PARALLEL JOINT.

REF STD SPEC 5-05 & 6-02

City of Seattle | NOT TO SCALE | TYPES OF JOINTS FOR CONCRETE PAVEMENT
NOTES:
1. "H" SHALL BE 6" FROM FINISHED ROADWAY GRADE UNLESS OTHERWISE SHOWN ON DRAWINGS
2. GUTTER SHALL BE SLOPES THE SAME AS ADJACENT PAVEMENT OR 2% MIN, WHICHEVER IS GREATER.
3. SEE STD PLAN NO 411 FOR CURB DOWELS
CONTRACTION JOINT FOR CURB OR CURB & GUTTER

THROUGH JOINT FOR CURB OR CURB & GUTTER

DOWELS FOR DOWELLED CURB CONSTRUCTION

REF STD SPEC SEC 6-02 & 8-04

City of Seattle
NOT TO SCALE
CURB JOINTS & DOWELS
EXTRUDED ASPHALT CONCRETE CURB

EXTRUDED CEMENT CONCRETE CURB

NOTE:
ALTERNATELY, THE USE OF EPOXY BONDING AGENT,
IN PLACE OF #3 DEFORMED BARS, WILL BE ALLOWED.
STANDARD PLAN NO 413a

413C CURB PLAN

SECTION C-C

SECTION D-D

413C NOSING

SECTION B-B

SECTION A-A

INSTALLATION DETAIL FOR STRAIGHT 413C CURB
NOTE: INSTALL 8" #4 REBAR IN EVERY OTHER HOLE AND FILL HOLE WITH GROUT

SECTION E-E

REF STD SPEC SEC 8-07

City of Seattle | NOT TO SCALE | TRAFFIC CURB PRECAST CEMENT CONCRETE 3' AND 4' SECTIONS

REV DATE: 2005
8" STRAIGHT 413A CURB

413A RADIAL CURB

413 A RADIAL CURB

UNIT | RADIUS | CURB RETURN ANGLE RADIANS | MULTIPLE
--- | --- | --- | ---
R1 | 1" - 3" | 45.00° | 1
R2 | 1" - 10" | 59.00° | 2
R3 | 2" - 6" | 27.60° | 3
R4 | 5" - 6" | 11.275° | 4
R5 | 10" - 8" | 54.37° | 5

FOR RADIUS GREATER THAN 10" USE SEGMENTS OF STRAIGHT CURB

SECTION H-H
414 A BLOCK

414 C BLOCK

REF STD SPEC SEC 8-07

City of Seattle NOT TO SCALE BLOCK TRAFFIC CURBS PRECAST CEMENT CONCRETE
SEE STD PLAN NO 624 FOR CONC BLOCKOUTS

R=2'-0' TYP

1/2 THROUGH JOINT

1/2 GROOVES 1/4 DEEP (TYP)

PLANTING STRIP

SIDEWALK 5'-0" WIDE

PRIVATE LANDING VARIABLE WIDTH

SIDEWALK

PLANTING STRIP

SIDEWALK CONC CL 5(3/4)

COMPACTED SUBGRADE

CURB LINE

PAVING

NOTES:
1. WHEN PLANTING STRIP PAVEMENT IS APPROVED, JOINT MATERIAL WILL BE REQUIRED AT THE PERIMETER OF THE PLANTING STRIP PAVEMENT
2. WHEN EXISTING PARKING METERS ARE TO BE REMOVED FOR NEW SIDEWALK CONSTRUCTION, CONTACT SEATTLE DEPARTMENT OF TRANSPORTATION A MINIMUM OF 2 WORKING DAYS PRIOR TO SCHEDULED WORK TO COORDINATE REMOVAL OF METER HEADS

SECTION A-A

SECTION B-B

SECTION C-C

STANDARD PLAN NO 420

REV DATE: 2005

NOT TO SCALE

CONCRETE SIDEWALK DETAILS
NOTES:
1. "H" SHALL BE 6" FROM FINISHED GRADE UNLESS OTHERWISE SPECIFIED
2. VERTICAL BACKFACE OF CURB SHALL BE FORMED AGAINST NATIVE EARTH WHERE PRACTICAL, OTHERWISE BY BACKFORM LEFT IN PLACE

REF STD SPEC SEC 8-14

City of Seattle
NOT TO SCALE
SIDEWALK WITH MONOLITHIC CURB
NOTES:
1. TWO CURB RAMPS SHALL BE INSTALLED AT EACH CORNER UNLESS DIRECTED OTHERWISE BY SDOT. SEE STD PLAN NO 422b.
2. CURB RAMPS SHALL BE CONSTRUCTED WITH COMPANION RAMPS ON OPPOSITE SIDES OF THE STREET UNLESS DIRECTED OTHERWISE BY SDOT.
3. WHERE CURB IS INSTALLED AT A LOCATION WITH NO SIDEWALK, CURB SHALL BE DEPRESSED FOR FUTURE CURB RAMP INSTALLATION.
4. TYPE 422b CURB RAMP SHALL BE USED. HOWEVER IF NOT FEASIBLE, THEN TYPE 422b CURB RAMP MAY BE INSTALLED WITH THE APPROVAL OF SDOT.
5. NEW PAVEMENT SHALL BE BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT SHALL BE REMOVED AT THE FACE OF THE CURB.
6. MIN DISTANCE BETWEEN ADJACENT CURB RAMPS SHOULD BE 3'-0".
7. CURB RAMPS SHALL BE ISOLATED FROM ALL OTHER CONCRETE BY THROUGH JOINTS.
8. RAMPS SHALL HAVE A COARSE TEXTURED SURFACE OBTAINED WITH A 3/4" 9-11 FLATTENED EXPANDED METAL MESH BEING Pressed into the still fresh concrete. The long axis of the diamond pattern shall be aligned with the slope of the ramp.
9. ADDITIONAL SIDEWALK PAVING MAY BE NECESSARY IN THE PLANTING STRIP OR AT THE BACK OF SIDEWALK TO ACCOMODATE ACCESS TO THE RAMP. A MINIMUM 4'-0"x 4'-0" 2% GRADE LANDING SHALL BE PROVIDED AT THE TOP OF RAMP ON TYPE 422c.
10. THE SIDEWALK THICKENED EDGE SHALL BE CONTINUED THROUGH BOTH WINGS ON TYPE 422a AND BOTH RAMPS ON TYPE 422b. SEE STD. PLAN NO 420.
11. THE WINGS ON TYPE 422a SHALL HAVE A SLIGHTLY BRUSHED FINISH PARALLEL TO THE CURB.
12. MIN LATERAL CLEARANCE FROM INLETS, POLES, HYDRANTS AND OTHER ABOVE GROUND OBSTACLES SHALL BE 1'-0" MINIMUM FROM THE SCORED AND THE DETECTABLE WARNING PORTIONS OF THE CURB RAMP.
13. INLETS SHALL BE SO LOCATED THAT GUTTER FLOW DOES NOT FLOW PAST THE CURB RAMP.
15. CURB RAMP SHALL BE PERPENDICULAR TO THE CURB.

REF STD SPEC SEC 8-14

City of Seattle NOT TO SCALE CURB RAMP DETAILS
THE LANDING PORTION OF THE TYPE 422b CURB RAMP SHALL BE WHOLLY CONTAINED WITHIN THE MARKED CROSSING.
NOTE:
CONCRETE SHALL
BE 3000 PSI MIN
Φ28 DAYS. STEEL
TROWEL SURFACE
W/ BROOM FINISH

#4 BARS Φ1 1/8" OC EACH WAY
OR WWF 6X6-W29XW29

1" CROWN REQUIRED
AT SOME SITES
2" CLR(TYP)
FLUSH WITH ADJACENT
SURFACES ON ALL SIDES

SECTION A-A

1" CROWN REQUIRED
AT SOME SITES

SECTION B-B

REF STD SPEC SEC 8-14
TREE PIT DIMENSIONAL REQUIREMENTS:
- 24 SQ FT MIN TREE PIT SIZE
- 3'-6" MIN REQ'D BETWEEN TREE & FACE OF CURB
- 2'-0" MIN REQ'D BETWEEN TREE & CONC SIDEWALK
- 5'-0" MIN CONC WALKING SURFACE

NOTE:
INSTALLATIONS REQUIRING LESS THAN
STANDARD MIN CLEARANCES SHALL BE
ALLOWED ONLY WITH SPECIFIC APPROVAL
BY SEATTLE TRANSPORTATION

FOR ADDITIONAL SIDEWALK
SCORING REQUIREMENTS
SEE STD PLAN NO 420

REF STD SPEC SEC 8-02 & 8-14
NOTES:
1. CONCRETE SHALL BE CL 6 (1/2) OR
   CL 6 (3/4) AT CONTRACTOR'S OPTION
2. ON ARTERIAL STREETS WHERE TRAVELED LANE IS
   NEXT TO CURB, THIS DISTANCE SHALL BE 5'-0"
3. WHEN EXISTING PARKING METERS ARE TO BE
   REMOVED FOR NEW DRIVEWAY CONSTRUCTION, CONTACT
   SDOT A MINIMUM OF 2 WORKING
   DAYS PRIOR TO SCHEDULED WORK TO COORDINATE
   REMOVAL OF METER HEADS
4. REF STD PLAN NO 431 FOR CONCRETE DRIVEWAY
   PLACED WITH SIDEWALK CONSTRUCTION
5. THE RAMP SECTION CONCRETE SHALL HAVE A
   COARSE TEXTURED SURFACE OBTAINED BY A
   3/4" 9-11 FLATTENED EXPANDED METAL
   MESH BEING PRESSED INTO THE STILL FRESH
   CONCRETE. THE LONG AXIS OF THE DIAMOND
   PATTERN SHALL BE ALIGNED WITH THE SLOPE OF THE RAMP
6. DRIVEWAY WIDTH GREATER THAN 15'-0" SHALL HAVE A
   TRANSVERSE CONTRACTION JOINT AT OR NEAR CENTER
7. THIS DISTANCE IS 1'-0", HOWEVER ON
   ARTERIALS AND COMMERCIAL STREETS WHERE
   THE LANE OF TRAVEL IS ADJACENT TO
   CURB THIS DISTANCE SHALL BE 3'-6"
SECTION A–A

NOTES:
1. DRIVEWAY WIDTH GREATER THAN 15'-0" SHALL HAVE TRANSVERSE CONTRACTION JOINT AT ITS CENTER
2. DRIVEWAY CONCRETE SHALL BE CLASS 6(3/4) OR 6(1/2) AT CONTRACTOR'S OPTION
3. SIDEWALK CONCRETE SHALL BE CLASS 5(3/4)

REF STD SPEC SEC 8-14 & 8-19
NOTES:
1. FLIGHTS OF STAIRS SHOULD BE SHORT (MAX 20 STEPS PER FLIGHT BEFORE A LANDING IS REQUIRED)
2. AVOID FEWER THAN 2 STEPS 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 STEPS MUST HAVE SAME WIDTH AS STEPS AND A MIN LENGTH OF 4’-0”
6. FLIGHTS OF 4 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 OR 60
11. FOR FORMAL DRAINAGE PICK-UP SEE DETAIL B ON STD PLAN NO. 440b (THIS IS OPTIONAL AND MUST BE CALLED OUT ON DRAWINGS)
12. PIPE DIAMETERS SHOWN ARE “NOMINAL” DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL
13. CONCRETE CLASS C6(3/4)

REF STD SPEC SEC 8-18
NOTES:
1. CEMENT CONCRETE SHALL BE
   CL 6 (3/4) 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. STEPS WITH 4 OR MORE RISERS
   MUST INCLUDE HANDRAIL
   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 GRADE
3. PIPE MATERIAL SHALL CONFORM TO ASTM A53
4. REINFORCING STEEL ASTM A615 OR 60
5. IF THE CONCRETE WALK SLOPE IS 5% OR GREATER A GRIPPING HANDRAIL IS REQUIRED
6. PIPE DIAMETERS SHOWN ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL

SECTION A-A

OVER 6'-0" TO 9'-9" MAX
2" STD STEEL PIPE

OVER 6'-0" TO 9'-9" MAX
2" DOUBLE EXTRA STRONG STEEL PIPE POSTS

OVER 6'-0" TO 9'-9" MAX
2" EXTRA STRONG STEEL PIPE POSTS

SEE DETAIL C ON STD PLAN NO 443b TYPICAL AT RAIL ENDS
1 1/4" STD STEEL PIPE WELDED JOINTS

COLD JOINT WHEN NOT CONSTRUCTED INTEGRAL WITH CW (TYP)

SEE DETAIL A ON STD PLAN NO 443b

GRIPPING HANDRAIL (1" STD STEEL PIPE) SEE NOTE 5

CW - CONC CL 6 (3/4)

COMPACTED SUBGRADE

TOP OF GRIPPING RAIL SEE NOTE 5

CW WIDTH AS SPECIFIED

#4 U BAR 2%
#4 REINFORCING U BAR AT EACH POST
SEE DETAIL BELOW

4" Ø 16 GA GALV STEEL SLEEVE (TYP)
NON-SHRINK GROUT

MOUND FOR DRAINAGE

DETAIL A

3'-0"

U BAR DETAIL

€ 2" Ø DOUBLE EXTRA STRONG STEEL PIPE POST OR
€ 2" Ø EXTRA STRONG STEEL PIPE POST

€ 1 1/2" Ø STD STEEL PIPE & TOP OF GRIPPING HANDRAIL

1" Ø GRIPPING HANDRAIL (STD STEEL PIPE)
3/4" Ø STD STEEL PIPE

DETAIL B

€ 2" Ø DOUBLE EXTRA STRONG STEEL PIPE POST OR
€ 2" Ø EXTRA STRONG STEEL PIPE POST

€ 1 1/2" Ø STD STEEL PIPE & TOP OF GRIPPING HANDRAIL

1" Ø GRIPPING HANDRAIL (STD STEEL PIPE)
3/4" Ø STD STEEL PIPE

SECTION B-B

€ 2" Ø STD STEEL PIPE POST OR
€ 2" Ø EXTRA STRONG STEEL PIPE POST &
€ 1 1/2" Ø STD STEEL PIPE

1" Ø GRIPPING HANDRAIL (STD STEEL PIPE)

SECTION C-C

REF STD SPEC SEC 8-18

City of Seattle
NOT TO SCALE
STEEL PIPE RAILING FOR BIKE PATH
END CORNER & PULL POST
RAIL & BRACE
LINE POST

ROLL FORMED SECTIONS

MEMBER

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<th>TYPE</th>
<th>BRACE RAIL &amp; TOP RAIL</th>
<th>LINE &amp; BRACE POST</th>
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NOTES:
1. ALL CONCRETE POST BASES SHALL BE 10'-0" MINIMUM DIAMETER, CL 5 (1/2)
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 HEREBN 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 IN DRAINAGE

REF STD SPEC SEC 8-12

City of Seattle
NOT TO SCALE
CHAIN LINK FENCE
NOTES:
1. FENCE FABRIC SHALL BE SECURED TO GATE FRAMES
   WITH KNUCKLED SELVAGE ALONG TOP EDGE FOR
   TYPES 4 & 6 CHAIN LINK FENCE INSTALLATIONS
2. MINIMUM POST LENGTH:
   TYPES 1 & 3: 6' - 0"
   TYPES 4 & 6: 5' - 0"
3. CONCRETE OR GROUT AROUND POST AT GROUND LINE
   SHALL BE MOUNDED FOR DRAINAGE

REF STD SPEC SEC 8-12
NOTE:
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

TABLE
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<th>BRIDGE LENGTH</th>
<th>PLANK SIZE</th>
<th>NAIL SIZE</th>
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<tbody>
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<td>10'-0&quot; OR LESS</td>
<td>2&quot; x 12&quot;</td>
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<td>11'-0&quot; TO 14'-0&quot;</td>
<td>3&quot; x 12&quot;</td>
<td>40 PENNY</td>
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<td>15'-0&quot; TO 20'-0&quot;</td>
<td>4&quot; x 12&quot;</td>
<td>60 PENNY</td>
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LUMBER: DOUGLAS FIR #2 OR BETTER
POSTS & RAILS S4S
PLANKS - ROUGH
CONCRETE TONGUE & GROOVE BLOCK
NOTES:
1. TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE FURNISHED BY THE CITY
2. 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

SIGNAL CONTROLLER FOUNDATION—TYPES II & III
SEE STD PLAN NO 500b FOR CONDUIT LAYOUT

SIGNAL CONTROLLER CABEL—TYPES II & III

DIMENSION TYPE II TYPE III AUXILIARY
A 30' 44' 24' 
B 17'' 25 1/2' 22' 
C 38'' TO 52'' 50'' TO 58'' -
NOTE:
THIS IS A SCHEMATIC ONLY. BUILD PER DRAWINGS

REF STD SPEC SEC 9-31, 9-32, 9-33 & 9-34
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
   LINE 3 = BLUE
   NEUTRAL = WHITE
   GROUND = GREEN
3. BOND NEUTRAL TO GROUND AT ONLY
   ONE LOCATION

FOR CONDUIT RISER SEE STD PLAN NO 580

OVERHEAD SERVICE CONNECTION

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

City of Seattle  NOT TO SCALE  SIGNAL & LIGHTING
SERVICE CONNECTION & LIGHT POLE WIRING DETAIL
NOTES:
1. *SCL MAY REQUIRE NEUTRAL TO BE BONDED TO GROUND IN SCL SERVICE POINT.
2. BOND NEUTRAL TO GROUND AT ONLY ONE LOCATION.
TYPICAL SIGNAL FACES

12" HEAD

8" HEAD

8" HEAD W/ 12" BI-MODAL

RED
YELLOW
GREEN
GREEN/YELLOW

NOTE:
BACKPLATES HAVE BEEN OMITTED FROM VARIOUS VIEWS FOR CLARITY

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

SPAN WIRE

MOUNTING HEIGHT ABOVE GROUND
12" - 0" MIN
15" - 0" MAX

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

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

PEDESTAL TOP MOUNTING
FOR PEDESTAL SEE STD PLAN NO 524b

NOT TO SCALE

VEHICULAR SIGNAL MOUNTING
SUSPENDED SIGNAL MOUNTING DETAIL

WITHOUT EXTENSION

WITH EXTENSION
NOTES:
1. 3/8"X1 1/2" BOLT, 3/8" LOCK WASHER, 7/16"X1 1/2" WASHER
   4 OF EACH REQUIRED PER ASSEMBLY; ALL STAINLESS STEEL
2. MOUNTING SHALL BE AS FAR AS
   -ON METAL POLES THINNER THAN 7 GAUGE, USE 3/8"
      STAINLESS STEEL RIVNUTS.
   -ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP
      FOR 3/8" BOLT (STAINLESS STEEL RIVNUTS OPTIONAL).
   -ON POLES FILLED OR MADE WITH CONCRETE USE
      3/8"X2 1/2" MIN STUD BOLT ANCHORS, SLEEVE TYPE.
   -ON WOOD POLES USE 1 1/2"X2 1/2" LAG BOLTS.

REF STD SPEC SEC 8-31
NOTES:
1. BOLT AND WASHERS SHALL BE 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 WITH OR MADE FROM CONCRETE USE 3/8" X 2 1/2" STUD
     BOLT ANCHORS WITH HEX NUT
3. FOR STREET NAME SIGN PEDESTAL INSTALLATION, SEE STD PLAN NO 623

REF STD SPEC SEC 8-31
NOTE:
WRAP TOP OF ANCHOR BOLTS WITH CORROSION PROTECTION TAPE.
FOR WOOD POLE
USE 3/8" GALV THRU BOLT FOR
TOP HOLE & 3/8"X4" GALV LAG
BOLT & WASHER FOR BOTTOM HOLE

FOR METAL POLE
DRILL & TAP POLE FOR 3/8"X3/4"
STAINLESS STEEL BOLTS & WASHERS
--USE 3/8"X2 3/8" BOLT FOR 4" PIPE
PEDESTAL

DRILL HOLE FOR 3/4" NYLON
INSERT (TYP)

1/2" THREADED HUB
FOR WOOD POLE
MOUNTING

4 1/2"X2 3/4", DEEP
CAST ALUMINUM DEVICE
BOX

25/64" HOLE (2 PLACES)

3/4" NYLON INSERT

3/16" DRAIN HOLE

FRONT

BACK

NOTES:
1. MOLDED ONE-PIECE ALUMINUM
CONSTRUCTION
2. SIGNS SHALL BE FABRICATED FROM
BAKED-ON ENAMEL DIRECTLY ON BOTH
SIDES OF THE EXTRUSION

REF STD SPEC SEC 8-31

City of Seattle

NOT TO SCALE

PEDESTRIAN PUSHBUTTON &
MOUNTING
NOTES:
1. GROUND ALL PEDESTRIAN SIGNALS AND PUSHBUTTONS WITH GREEN INSULATED #8 COPPER WIRE
2. ALL STEEL HARDWARE SHALL BE HOT DIP GALV OR STAINLESS STEEL
DIPOLe LOOP DETECTORS

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

RETURN CUT

SAWCUT FOR WIRE LOOP

SAWCUT FOR WIRE LOOP

DIAGRAM PER DRAWINGS

DIAGRAM PER DRAWINGS

1/4"SAWCUT

SEE NOTE 1

FINE GRAIN SAND

LOOP WIRE (SEE LOOP SCHEDULE ON DRAWINGS FOR NUMBER OF TURNS)

SECTION A-A

PAVEMENT JOINT OR CRACK

PAVEMENT AREA

CUT A 1/2"WIDE SLOT 6"LONG ON EACH SIDE OF JOINT OR CRACK

WRAP ENDS AND ENTIRE LENGTH OF TUBING WITH TWO LAYERS OF ELECTRICAL TAPE TO PREVENT ASPHALT OR CONCRETE FROM ENTERING THE TUBING

5/16"ID X 1/8"WALL PURE GUM NATURAL TUBING MUST CLEAR JOINT OR CRACK BY A MINIMUM OF 6" EACH SIDE

NOTES:
1. FULL CUT AFTER VERTICAL PLACEMENT AND TESTING WITH HOT PAVING GRADE LIQUID ASPHALT ASTM D 312 TYPE III OR QUICK SETTING HIGH STRENGTH GROUT
2. SHARP EDGE TOOLS SHALL NOT BE USED IN PLACING CONDUCTORS IN SAW CUTS
3. 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
4. TAPE LOOP WIRE A MINIMUM OF 2 TURNS AT EACH CORNER
5. REMOVE SHARP CORNER EDGES IN SAW CUTS WHERE LOOP WIRE WILL BE BENT AROUND
6. PERFORM RESISTANCE AND CONTINUITY TESTS PRIOR TO SEALING LOOP WIRES
7. COIL 5"-0" OF LOOP WIRE IN HANDBOle

CURB/PAVEMENT ENTRANCE FOR DETECTOR LOOP WIRES

6" FOR CURB, 18" FOR CURB AND GUTTER

DRILL OR FORM HOLE LOOP WIRES RETURN CUT

RUN CONDUIT TO 2" UNDERNEATH FINAL PAVEMENT GRADE, PLUG CONDUIT END WITH DUCT SEAL.

STANDARD PLAN NO 530a

REF STD SPEC SEC 8-31, 9-32

City of Seattle

NOT TO SCALE

LOOP DETECTORS
DETECTOR LEAD-IN WIRE SPLICE DETAIL

NOTE:
SOLDER CONNECTION AFTER CRIMPING

SIGNAL CABLE SPLICE

AQUA-SEAL (BUTYL SEALANT) OR APPROVED EQUAL

ELECTRICIAN'S TAPE

WRAP WITH ADHESIVE SIDE OUTSIDE

ELECTRICIAN'S TAPE

ELECTRICIAN'S TAPE

TWIST BARE WIRE ENDS 7 TURNS

REF STD SPEC SEC 8-31
NOTE:
1. FOR STEEL MAST ARM POLE FOUNDATION SCHEDULE, SEE STD PLAN NO 562b

REF STD SPEC SEC 8-32, 6-02

City of Seattle
NOT TO SCALE
STRAIN POLE FOUNDATION DETAIL (TYPE T, V, X & Z)
**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>P</td>
<td>(CHEF, SEATTLE BASE)</td>
<td>100#/SF/FT</td>
<td>150#/SF/FT</td>
<td>SIZE</td>
</tr>
<tr>
<td>T</td>
<td>7 1/2&quot;</td>
<td>8&quot;</td>
<td>8 #7</td>
<td>8'-0&quot;</td>
<td>1 1/2&quot; DIA X 60&quot;</td>
</tr>
<tr>
<td>V</td>
<td>9&quot;</td>
<td>9&quot;</td>
<td>8 #8</td>
<td>9'-6&quot;</td>
<td>1 3/4&quot; DIA X 72&quot;</td>
</tr>
<tr>
<td>X</td>
<td>10&quot;</td>
<td>10&quot;</td>
<td>12 #8</td>
<td>12'-6&quot;</td>
<td>2&quot; DIA X 72&quot;</td>
</tr>
<tr>
<td>Z</td>
<td>11 1/2&quot;</td>
<td>11 1/2&quot;</td>
<td>12 #8</td>
<td>15'-0&quot;</td>
<td>2 1/2&quot; DIA X 72&quot;</td>
</tr>
</tbody>
</table>

* SEE STD. PLAN NO 542a

**POLE FOUNDATION NOTES**

1. CONCRETE STRENGTH SHALL BE CLASS AX AIR ENTRAINED, 3/4" MAX SIZE COARSE AGGREGATE.
4. ANCHOR PLATE: ASTM A36, HOT DIP GALVANIZED.
5. ALL REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM CLASS A615, GRADE 60.
6. ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED ASTM A153 INCLUDING NUTS & WASHERS (FULL LENGTH) WITH 18" OF THREADS ON TOP & 12" ON BOTTOM.
7. LATERAL BEARING IS BASED ON THE SOIL CLASSIFICATION USED IN THE 1997 UNIFORM BUILDING CODE UNDER TABLE 18-1-A.
8. TAPE THE TOP OF ANCHOR BOLTS WITH CORROSION PROTECTION TAPE PER STD SPEC 8-32.3(2)A PRIOR TO POURING CONCRETE.

**REF STD SPEC SEC 8-32**

City of Seattle | NOT TO SCALE | STRAIN POLE FOUNDATION SCHEDULE & NOTES (TYPE T,V,X & Z)
NOTES:
1. FOR POLE DIAMETER GREATER THAN 9½" BUT NOT MORE THAN 10"OD, A 10" COLLAR SHALL BE USED & THE FLUTES ON THE TOP OF THE COLLAR MAY HAVE TO BE GROUND OFF TO ALLOW A SNUG FIT AGAINST THE POLE.
2. FOR POLE DIAMETER GREATER THAN 10" BUT NOT MORE THAN 12½"OD, A 12½" COLLAR SHALL BE USED.
3. FOR POLE DIAMETER IN EXCESS OF 12½" BUT NOT MORE THAN 13½"OD, THE COLLAR SHALL NOT BE USED. SOME GRINDING MAY BE REQUIRED TO ALLOW THE TWO PIECE CAST BASE TO FIT SNUGLY AROUND THE POLE.
4. BASE SHALL BE EMBEDDED 11½" AT LOW POINT OF SIDEWALK GRADE.

REFER TO STANDARD PLAN ON 541b

<table>
<thead>
<tr>
<th>POLE TYPE</th>
<th>G</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>T</td>
<td>8½&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>V</td>
<td>6½&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>X</td>
<td>7&quot;</td>
<td>7½&quot;</td>
</tr>
<tr>
<td>Z</td>
<td>11½&quot;</td>
<td>11½&quot;</td>
</tr>
</tbody>
</table>

POLE MOUNTING & GROUT DETAIL

CHIEF SEATTLE BASE (CSB)

ANCHOR BOLT
3 THREAD PROJECTION ABOVE NUT
© ACCESS DOOR OF CHIEF SEATTLE BASE

COLD JOINT FOR TEMP 3"-0"X3"-0" SQ BLOCKOUT

TOP OF FOUNDATION

GROUT

INSTALL CONDUIT PER DRAWINGS

INSTALL 3/4" PVC DRAIN TUBE ON THE LOW SIDE TO A ROCK POCKET OUTSIDE FOUNDATION

POLE SHAFT

© POLE HANDHOLE

TOP OF SIDEWALK

ANCHOR BOLTS PER PLAN EACH BOLT SHALL HAVE 2 NUTS, 2 FLAT WASHERS AND 1 LOCK WASHER

City of Seattle

NOT TO SCALE

CHIEF SEATTLE BASE (CSB)
NOTES:
1. FOR TYPE "A" FOUNDATION ALIGN THE CHIEF SEATTLE BASE ACCESS COVER ON THE SAME SIDE WITH THE POLE HANDBOHE, AND CONDUITS.
2. INSTALL UFER GROUND IN FOUNDATION (SEE STD PLAN NO 524a)
NOTES:
1. BOLT CIRCLE-11½" TYP. (TRANSFORMER BASE-15" 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 A307 OR A576 WITH 12" THREADS ON TOP.
4. INSTALL UFER GROUND IN FOUNDATION (SEE STD PLAN NO 524a)
### HANDHOLE SCHEDULE

<table>
<thead>
<tr>
<th>HANDHOLE TYPE</th>
<th>TOP UNIT INSIDE DIMENSIONS</th>
<th>EXTENSION UNITS</th>
<th>COVER DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>W</td>
<td>H</td>
</tr>
<tr>
<td>1</td>
<td>19</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>28</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>24</td>
<td>VAR</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>36</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>6</td>
<td>42</td>
<td>42</td>
<td>38</td>
</tr>
<tr>
<td>GR/NH</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**NOTES:**

1. THE COVER SHALL HAVE 1/16" TO 1/8" CLEARANCE ON EACH EDGE WITHIN THE FRAME AFTER GALVANIZING.
2. THE GROUND ROG 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 TO THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.
6. A 4" LENGTH OF #8 THWN OR THIN 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 ROG.
7. ALL HANDHOLE COVERS AND FRAMES SHALL HAVE A NON-SKID SURFACE (SEE STD SPEC SEC 9-34.6).

### HANDHOLE INSTALLATION DETAIL

- ASPH OR CONC FINISH TO GRADE WITH 1/4" X 1/2" JOINT IN CONC AREA.
- PARKING STRIP OR PLANTING AREA.
- 6" WIDE X 3 1/2" DEEP CONCRETE COLLAR WHEN INSTALLED IN EARTH.
- CONDUIT PER DRAWINGS ALL COUPLING SHALL BE WATERTIGHT.
- GROUND ROG (PER DRAWINGS.
- 6" MIN MINERAL AGGREGATE TYPE 9.

### HANDHOLE TYPES

#### TYPE 1 & 2 HANDHOLE
- 6" MIN THICKNESS MINERAL AGG TYPE 9.
- TOP OF PAVEMENT.
- TYPE 23D FRAME & COVER (*ELECTRIC* CAST IN COVER).
- CONC MANHOLE ADJUSTMENT RINGS.
- MINERAL AGGREGATE TYPE 9.
- CONDUIT (PER DRAWINGS).
- GROUND ROG (PER DRAWINGS).

#### TYPE 3 HANDHOLE
- COVER SAME AS TYPE 5.
- 6" MIN THICKNESS MINERAL AGG TYPE 9.
- RISER.
- #3 BAR (TYPE).

#### TYPE 4 HANDHOLE
- TRAFFIC BEARING.
- FULL 180° OPEN.
- STEEL PLATE COVER (GALV) W/Locking Latch.
- (4) 3/4" DIA. LIFT INSERTS.
- RECESSED LIFT HANDLE.
- COVER.

#### TYPE 5 HANDHOLE
- 18"X18" KNOCKOUT 1 EACH END.
- OPTIONAL GALVANIZED PULLING IRON 1 EACH END.
- #3 BAR (TYPE).
- 6" DIA DRAIN HOLE (OPENED).
- 1 1/2" DIA GROUND ROG KNOCKOUTS.
- GALVANIZED "C" CHANNELS 18" LONG ON ALL SIDES.

---

**REF STD SPEC SEC 8-33**

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**City of Seattle**

**NOT TO SCALE**

**HANDHOLES**
SPRING ASSISTED STEEL PLATE COVER, GALV W/LOCKING LATCH

1 ½" DIA LIFT HOLES, 1 EACH SIDE
GALVANIZED "C" CHANNEL, 2' LONG, 1 EACH SIDE

(2) 2 ½" DIA GROUND ROD KNOCKOUTS
KNOCKOUT ALL SIDES (SEE KNOCKOUT DETAIL)
GALVANIZED PULLING IRON, 1 EACH SIDE
6" DIA DRAIN HOLE (OPENED)

(4) 4½" DIA KNOCKOUT, ALL SIDES
6" MIN MINERAL AGGREGATE TYPE 9

TYPE 6 HANDHOLE

CONCRETE COVER WITH "GROUND ROD" CAST IN COVER

8" DIA ROUND
4" DEPTH MINERAL AGGREGATE TYPE 9
GROUND ROD

GROUND ROD HANDHOLE (GRHH)
POLES SHALL BE MARKED (BRANDED) BY MANUFACTURER WITH THE FOLLOWING INFORMATION:
1. CLASS
2. LENGTH
3. MANUFACTURER
4. TYPE OF PRESERVATIVE

LENGTH OF POLE | *T* |
--- | --- |
20'-0" & 25'-0" | 5'-0" |
30'-0" | 5'-8" |
35'-0" & 40'-0" | 6'-0"

POLE SHALL BE DOUGLAS FIR OR WESTERN RED CEDAR CLASS 1

RAKE AT TOP OF POLE

<table>
<thead>
<tr>
<th>LENGTH (FT)</th>
<th>RAKE (IN. INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>18</td>
</tr>
<tr>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>40</td>
<td>22</td>
</tr>
</tbody>
</table>

DIRECTION OF RESULTANT HORIZONTAL FORCE

SOIL BANKED AND TAMPERED FOR FINISH GRADE WITHOUT SIDEWALK OR PAVEMENT

MINIMUM POLE KEY SHALL BE A CONCRETE BLOCK BEARING AGAINST UNDISTURBED EARTH IN THE DIRECTION OF THE FORCE RESULTANT WITH THE POLE CONTACTING THE KEY ON THE OPPOSITE SIDE

COMPACTED BACKFILL

WOOD POLE KEYING STANDARD

REF STD SPEC SEC 8-32 AND SCL CONSTRUCTION GUIDELINES D6-4
NOTES:
1. POLE AND MAST ARM DESIGN SHALL CONFORM TO "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS" (1994 EDITION)
2. EACH SIGNAL COUPLING LOCATION SHALL SUPPORT THE FOLLOWING:
   FOR 3 SECTION SIGNAL HEAD — WIND LOAD AREA = 9 SF
   DESIGN WEIGHT = 60 LBS.
   FOR 4 SECTION SIGNAL HEAD — WIND LOAD AREA = 12 SF
   DESIGN WEIGHT = 80 LBS.
3. THE POLE SHALL BE DESIGNED FOR A LUMINARE MOUNTED AT A NOMINAL 35° MOUNTING HEIGHT WITH A WIND LOAD AREA OF 1.2 SF AND A DESIGN WEIGHT OF 50 LBS. ANY PROPOSED SIGN SHALL BE ACCOMMODATED IN THE POLE DESIGN PER DRAWINGS. FOR BRACKET ARM DESIGN, SEE STANDARD PLAN NO 572. MAST ARM AND BRACKET ARM FLANGE PLATES SHALL HAVE ASTM A325 BOLTS W/LOCK WASHERS.
4. POLE SHAFT AND MAST ARM SHALL BE FABRICATED FROM THE FOLLOWING: ASTM A572 GRADE 50, 60 OR 65 OR ASTM A595 GRADE A OR B.
5. ALL PLATES & HANDHOLE REINFORCING RIM SHALL BE FABRICATED FROM ASTM A36.
POLE FOUNDATION NOTES
1. CONCRETE STRENGTH SHALL BE CLASS AX AIR ENTRAINMENT.
2. ANCHOR BOLTS SHALL HAVE Fy = 55 KSI MIN.
3. BOTTOM ANCHOR PLATE: ASTM A36, HOT DIP GALVANIZED.
4. ALL REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO
   ASTM CLASS 665, GRADE 60.
5. ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED ASTM A153 INCLUDING
   NUTS & WASHERS (FULL LENGTH) WITH A MINIMUM OF 16" OF THREADS
   ON TOP & 12" ON BOTTOM.
6. LATERAL BEARING IS BASED ON THE SOIL CLASSIFICATION USED
   IN THE 1997 UNIFORM BUILDING CODE UNDER TABLE 18-R-1A.
7. TAPE THE TOP OF ANCHOR BOLTS WITH CORROSION PROTECTION TAPE
   PER STD SPEC SEC 8-32.3(12) PRIOR TO POURING CONCRETE.
8. SEE STD PLAN NO 5411 FOR FOUNDATION DETAILS.

<table>
<thead>
<tr>
<th>MAST ARM SCHEDULE</th>
<th>POLE SCHEDULE</th>
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<tbody>
<tr>
<td>MAST ARM LENGTH</td>
<td>FLANGE PLATE</td>
</tr>
<tr>
<td></td>
<td>BOLT CIRCLE</td>
</tr>
<tr>
<td>15'-0&quot; TO 30'-0&quot;</td>
<td>11&quot;</td>
</tr>
<tr>
<td>31'-0&quot; TO 40'-0&quot;</td>
<td>12&quot;</td>
</tr>
<tr>
<td>41'-0&quot; TO 45'-0&quot;</td>
<td>13½&quot;</td>
</tr>
<tr>
<td>46'-0&quot; TO 60'-0&quot;</td>
<td>14&quot;</td>
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FOUNDATION SCHEDULE

<table>
<thead>
<tr>
<th>MAST ARM LENGTH</th>
<th>FOUNDATION DEPTH (LATERNAL BEARING)</th>
<th>ANCHOR BOLTS (FY=55 KSI MIN.)</th>
<th>VERTICAL REINFORCING</th>
<th>ANCHOR PLATE DIMENSIONS</th>
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<tr>
<td></td>
<td>15&quot;/8&quot;/5/7&quot;</td>
<td>16½&quot;/12½&quot;</td>
<td>8 #7</td>
<td>1½&quot; X 16&quot; X 16&quot;</td>
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<td>31&quot;/6&quot;/5/7&quot;</td>
<td>16½&quot;/12½&quot;</td>
<td>8 #7</td>
<td>1½&quot; X 16&quot; X 16&quot;</td>
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<tr>
<td></td>
<td>41&quot;/5&quot;/5/7&quot;</td>
<td>16½&quot;/12½&quot;</td>
<td>8 #7</td>
<td>1½&quot; X 16&quot; X 16&quot;</td>
</tr>
<tr>
<td></td>
<td>46&quot;/6&quot;/5/7&quot;</td>
<td>16½&quot;/12½&quot;</td>
<td>12 #8</td>
<td>1½&quot; X 16&quot; X 16&quot;</td>
</tr>
</tbody>
</table>

REF STD SPEC SEC 8-32
NOTE:
GROUT SHALL BE PREMIXED, NON-SHRINK AND NON-METALLIC

ANCHOR BOLT 3
THREAD PROJECTION
ABOVE NUT

HEX NUT

LOCK WASHER

FLAT WASHER

LEVELING NUT

GROUT 60°
SLOPE (TYP)

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

CONDUIT PER DRAWINGS

CUT DRAIN TUBE
FLUSH WITH GROUT
BOTH ENDS

1/2" PVC
DRAIN TUBE
LOW SIDE
(TYP)

POLE MOUNTING & GROUT DETAIL
(EXCEPT FOR POLES W/ CHIEF SEATTLE BASE
SEE STANDARD PLAN NO. 542c)

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

REF STD SPEC SEC 8-32

City of Seattle
NOT TO SCALE
MISCELLANEOUS STEEL
POLE DETAILS
NOTES:
1. ALL OUTLETS SHALL BE PLUGGED WITH THREADED INSERT PLUGS DURING SHIPMENT TO PREVENT DAMAGE TO THREADS
2. REMOVE BURRS AND SHARP EDGES TO PREVENT DAMAGE TO ELECTRICAL CABLE
3. SPLIT COUPLING SHALL EXTEND INTO THE POLE 1/2" MAX AS SHOWN

REF STD SPEC SEC 8-30 & 8-32
<table>
<thead>
<tr>
<th>POLE TYPE</th>
<th>DEAD LOAD MOMENT (kip-ft)</th>
<th>GROUND LINE</th>
<th>POLE BASE PLATE SIZE</th>
<th>BOLT CIRCLE DIA.</th>
<th>BOLT HOLE DIA.</th>
<th>ANCHOR BOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>51</td>
<td>12&quot;</td>
<td>1 1/4&quot; x 18&quot; x 18&quot;</td>
<td>1 1/4&quot; x 23&quot; x 23&quot;</td>
<td>18&quot;</td>
<td>2 1/16&quot; x 1 1/4&quot; DIA. x 72&quot;</td>
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<tr>
<td>X</td>
<td>93</td>
<td>14&quot;</td>
<td>2&quot; x 20&quot; x 20&quot;</td>
<td>2&quot; x 23&quot; x 23&quot;</td>
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<td>2 1/16&quot; DIA. x 72&quot;</td>
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<tr>
<td>Z</td>
<td>164</td>
<td>15&quot;</td>
<td></td>
<td>2 1/2&quot; x 23&quot; x 23&quot;</td>
<td>22&quot;</td>
<td>2 1/16&quot; DIA. x 72&quot;</td>
</tr>
</tbody>
</table>

**POLE NOTES**

1. The yield moment shall be 2X the dead load moment. The ultimate plastic moment shall be 2.5 X the dead load moment.

2. Pole shaft and reinforcing sleeve, ASTM A572 Grade 50, 60 or 65 (F_y = 50, 60 or 65 ksi respectively), or ASTM A595 Grade A or B (F_y = 55 or 60 ksi respectively).

3. Base plate and handhole reinforcing RM: ASTM A36 or ASTM A572 Grade 42. Base plate F_y > 0.65 pole shaft F_y. The base plate thickness may be reduced by 1/4" if ASTM A572 Grade 42 steel is used.

4. Reinforcing sleeve shall be fabricated from the same material type 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 plies 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 groundline.

POLE NOTES

1. The dead load moment at the groundline shall be 40 kip-ft. The yield moment shall be 2x dead load moment.


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. Pole 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 1/4" if ASTM A572 Grade 42 steel is used.

5. Pole shafts shall have no more than 2 longitudinal welds in each ply.

6. Minimum shaft wall thickness of each ply shall be 0.239" (3 gauge). The pole shall have a maximum of 2 plies.

7. Maximum silicon content in steel shall be 0.04%. See Std Spec Sec 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 the Std Spec Sec 9-33.2(2) with the dead load applied at 27" above groundline.

10. The poles shall be compact and must meet requirements in AASHTO Section 4, Table 1.4 1B (1).

---

**POLE BASE DETAIL**

**ALTERNATE POLE BASE DETAIL**

- Seal weld 1/8" x 45°
- Drill & tap HH frame for 2-1/4" 20 UNC, 3/4" long stainless steel screws
- 4" x 6 1/2" oval handhole w/ 12 gauge gasketed cover

---

Ref Std Spec Sec 8-32, 9-33

City of Seattle | NOT TO SCALE | TYPE T | STRAIN POLE DETAILS | TRAFFIC SIGNAL ONLY
ADJUSTABLE 4-WAY BAND

NOTES:
1. ASSEMBLY SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 20,000 LB.
2. ALL PARTS SHALL BE HOT DIP GALV PER ASTM A123.

REF STD SPEC SEC 8-31, 9-32
CONDUIT RISER (WITH STAND-OFF BRACKET*)

- WHEN THERE WILL BE ONLY ONE CONDUCT (11/2" OR SMALLER) ON THE POLE, ONE HOLE MALLEABLE IRON CLAMPS WITH 4" LAG SCREWS SHALL BE USED TO SECURE THE CONDUIT TO THE POLE IN LIEU OF THE STAND-OFF BRACKETS

NOTES:
1. ON POLES WITH EXISTING CONDUITS, NEW CONDUITS SHALL BE INSTALLED IN ACCORDANCE WITH THIS STANDARD PLAN.
2. RIGID STEEL CONDUIT SHALL BE GROUNDED JUST BELOW COUPLING, APPROXIMATELY 8'-0" TO 10'-0" ABOVE GROUND, AS SHOWN.
3. WHEN 2 OR MORE RIGID STEEL CONDUITS ARE INSTALLED ON ONE POLE, ONE CONDUIT SHALL BE GROUNDED AS SHOWN.
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.

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

City of Seattle
NOT TO SCALE
CONDUIT RISER
WOOD POLE INSTALLATION

EYE BOLT TO EXTEND 1/2" MIN TO 1" MAX BEYOND NUT AFTER INSTALLATION

METAL POLE INSTALLATION

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 BALL OF THE AUTOMATIC DEAD END

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

TONGUE CLEVIS

REF STD SPEC SEC 8-21
DRILL AND TAP MAST ARM
ALUMINUM CHANNEL
C3X2.07 X (LENGTH AS REQUIRED)
3/8" HEX HEAD BOLT WITH FLAT WASHER

DETAIL
3/4" WOOD SIGN

SIGN MOUNTING ON MAST ARM

STAINLESS STEEL SIGN BRACKET
3/4" STAINLESS STEEL BUCKLES & STRAPS

SIGN

5/16" BOLTS & NYLON WASHERS

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, DRILL AND TAP FOR 3/8" BOLT (STAINLESS STEEL RIVNUT OPTIONAL) ON POLES FILLED WITH OR MADE FROM CONCRETE, USE 3/8" X 2 1/2 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'-0" MIN
11'-3"

REF STD SPEC SEC 8-21

City of Seattle
NOT TO SCALE
STANDARD SIGN INSTALLATION
STEEL POLES
NOTE
ALL HARDWARE SHALL BE STAINLESS STEEL.

C3X2.1 EXTRUDED AL

3/16' HOLES

3/16' HOLE

3/16' HOLE

3/4' PLYWOOD SIGN

3 GAUGE MAST ARM

DRILL AND TAP (APPLY GALV REPAIR PAINT)

3/8' X 2' SS HEX HEAD BOLT W/ FLAT WASHER

3/4' PLYWOOD SIGN

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

REF STD SPEC SEC 8-21

SDS BRACKET FOR STEEL MAST ARM POLES

NOT TO SCALE

City of Seattle
NOTES:
1. WHEN INSTALLING BRACKET ONTO WOOD POLE, DRILL OUT THE TOP & BOTTOM TWO HOLE TO 3/16" FOR 1/4" DIA X 2 1/2" LONG BOLT WITH 1/2" ID X 1 1/2" OD FLAT WASHER. DRILL AND TAP POLE AS FOLLOWS: FOR STEEL POLES LESS THAN SEVEN (7) GAUGE USE 3/8" STAINLESS STEEL RIVNUTS; ON ALUMINUM POLES USE 3/8" ALUMINUM RIVNUTS. RIVNUTS OPTIONAL ON HEAVIER GAUGE STEEL POLES.
2. WHEN INSTALLING SIGN BOARD ONTO BRACKET, USE SIX (6) 3/8" DIA X 11/2" 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 riveted nuts on aluminum poles.

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

DETAIL A
3/8" DIA HOLE (TYP)
NOTES:
1. ON POLES FILLED WITH OR MADE FROM CONCRETE USE 5/16" X 2 1/2" M10 STUD BOLT ANCHORS WITH HEX NUT
2. FOR SIGNS OVER 2'-0" X 3'-0" USE STD PLAN NO 612. MOUNT SIGNS VERTICALLY ON STRAIN POLE WITH THREE (3) FASTENERS MIN
3. FOR DARK COLORED POLES PAINT BAND TO MATCH POLE
4. ALL HARDWARE TO BE STAINLESS STEEL.

REF STD SPEC SEC 8-21

City of Seattle NOT TO SCALE TRAFFIC SIGN MOUNTING ON METAL POLES
POST ANCHOR INSTALLATIONS

NOTES:
1. 5/16"x31/4" GALVANIZED OR PLATED LAG SCREW & 3/8"ID X 1"OD NYLON WASHER
2. CONTACT SEATTLE TRANSPORTATION (684-5087) FOR DETAILS REGARDING SIGN MESSAGE AND FOUNDATION
NOTE:
SIGN SHALL BE ATTACHED WITH TOP EDGE OF SIGN Flush WITH TOP OF SQUARE SECTION OF POST

¾" DRIVE RIVET (2 PER SIGN)

1'-0" MIN

3'-0"

CURB FACE

CW OR GROUND SURFACE

TS-10

(SEE STD PLAN 621b FOR POST ANCHOR DETAILS)

TS-5

(SEE STD PLAN 621b FOR POST ANCHOR DETAILS)
TS-5, TS-10, TS-12
PER DRAWINGS
(1) 3/8" GALV ANGLE BOLT
IN (2) ADJACENT HOLES
HILT KINK BOLT 3/8" x 3/4"
IN 3/8" HOLES
(1 EACH CORNER)
CONCRETE WALKWAY

SURFACE MOUNT

NOTE: 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.

TS-5, TS-10, TS-12
PER DRAWINGS
(1) 3/8" GALV ANGLE BOLT
IN (2) ADJACENT HOLES

3 HOE OVERLAP (TYP)
3" 12 GA

LIGHT DUTY ANCHOR

TS-5, TS-10, TS-12
PER DRAWINGS
(1) 3/8" GALV ANGLE BOLT
IN (2) ADJACENT HOLES

3 HOE OVERLAP
7 GA
NON-SHRINK GROUT BACKFILL
INTO ANCHOR

HEAVY DUTY ANCHOR

REF STD SPEC SEC 8-21

City of Seattle | NOT TO SCALE | WARNING AND REGULATORY SIGN POST ANCHOR INSTALLATIONS
NOTES:
1. SNS BLADE SHALL BE INSTALLED PARALLEL TO CORRESPONDING STREET
2. INSTALLATION OF SNS ON ANY OTHER METAL POLE SHALL REQUIRE REVIEW AND APPROVAL BY THE ENGINEER
3. SNS/SP RELOCATION: OLD CONCRETE SHALL BE REMOVED AND NEW CONCRETE BASE SHALL BE CONSTRUCTED
4. CITY OF SEATTLE SHALL FABRICATE SNS BLADES AND SUPPLY MOUNTING HARDWARE AT PROJECT OR CONTRACTOR EXPENSE

REF STD SPEC SEC 8-21
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
QWIK PUNCH TELESPAR STANDARD SIGN POST (TS-5, TS-10, TS-12)

NOTES:
1. SEE STD PLAN NO 620

REF STD SPEC SEC 8-21

City of Seattle
NOT TO SCALE
TRAFFIC SIGN POSTS
NOTES:
1. IN THE CASE WHERE ALL APPROACHES OF THE INTERSECTION ARE PRIMARILY AT THE SAME LEVEL WITH
   RESPECT TO GRADES (LESS THAN 3%) THE LOWER SET OF SIGNS SHALL FACE THE HIGHER TRAFFIC VOLUME STREET
2. IN THE CASE WHERE AN APPROACH HAS A GRADE LARGER THAN 3% THE HIGHER SIGNS WILL FACE THE STEEPEST
   APPROACH TO ALLOW BETTER SIGHT DISTANCE.
3. PLACE A MINIMUM OF THREE (3) REFLECTORS ON EACH AND EVERY SIDE OF POST OR PLACE THREE (3)
   HIGH INTENSITY REFLECTORIZED STRIPS COMPLETELY AROUND POST

REF STD SPEC SEC 8-21
METER POST CAP
(TO BE USED W/ SIGN INSTALLATION)

23/8" ID GALV STEEL CAP — SECURE FIT

METER POST
PRIME WITH "RUSTOLEUM" OR APPROVED EQUAL AND PAINT WITH TWO (2) COATS OF ALUMINUM

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

CUT OFF SQUARE PLAIN END — REAM

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

1/4" WEEP HOLE

SECTION A-A
SIGN INSTALLATION:
DRILL (2) 1/4" HOLES
USE SELF TAPPING SCREW
W/ 1" OD NYLON WASHER

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

ALUMINUM BASE CANOPY
SEE STD PLAN NO 627

NON-SHRINK CEMENT
GROUT

43/4" DIA CONC EXPANSION
ANCHORS

DRILL 1/2" HOLES IN CW
(4 PLACES)

FACE OF CONC CURB

3'-0"

3'-4"
NOTES:
1. POST TO BE PLUMB
2. NOTIFY SEATTLE TRANSPORTATION (684-5087) FOR REMOVAL OF EXISTING POSTS
3. WHEN NEW POSTS HAVE BEEN SET, NOTIFY SEATRAN TO REINSTALL METERS
4. A 2 1/2" NOM DIA 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
NOTES:
1. POST ANCHOR RIVETS SHALL BE 1½" 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 1/4 TO 1/2 TAPER ON THE GROUT EDGE. THE BOLT ANCHOR LENGTH SHALL BE ADJUSTED TO PROVIDE A MIN 3½ INCH EMBEDMENT THROUGH THE GROUT INTO THE EXISTING CONCRETE.

DIRECT BURIAL INSTALLATION

SIGN LOCATION DETAIL

SURFACE MOUNT INSTALLATION

REF STD SPEC SEC 8-21

City of Seattle

NOT TO SCALE

METRO BUS ZONE SIGN INSTALLATION

REV DATE: 2005
a = 5/8" ± 1/8"

b = 1/16" ± 1/16"

PLASTIC

4" ± 1/8"

LANE MARKER—TYPE 1

DIRECTION OF TRAFFIC

SECTION B-B

LANE MARKER—TYPE 2A
4" PRISMATIC REFLECTIVE MARKER

SECTION C-C

LANE MARKER—TYPE 2B

0.52 ±

2.3 ±

20°-30°

0.84 ±

4° ± 1/8"
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, L-5, 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))
TYPICAL LEFT TURN CHANNELIZATION
NUMBER OF LEGEND SETS REQUIRED BASED ON THE
LENGTH OF APPROACH LINES

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

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

LANE LENGTH LEGEND SETS
LESS THAN 50 FEET 1 SET (CENTERED BETWEEN BOTH ENDS OF LANE)
0 FEET-300 FEET 2 SETS
OVER 300 FEET 3 SETS (SECOND LEGEND LOCATED
MIDWAY BETWEEN FIRST AND LAST LEGENDS)
ADDITIONAL SETS SPACED AT APPROX 300 FT INTERVALS

LEGEND PLACEMENT
LEGENDS IN ADJACENT LANES
SHALL BE ALIGNED AS SHOWN

LEGEND COMBINATIONS
OBLIQUE LEFT & 90° LEFT LEGENDS AND
OBLIQUE RIGHT & 90° RIGHT LEGENDS
MAY BE COMBINED AS SHOWN
NOTES:
1. EXACT LOCATION OF CROSSWALK LINES AND STOP LINES SHALL BE DESIGNATED BY SEATTLE DEPARTMENT OF TRANSPORTATION
2. EXISTING CROSSWALKS IN CONFLICT WITH NEW OR REVISED CROSSWALKS SHALL BE REMOVED BY MACHINE GRINDING

TYPICAL PEDESTRIAN CROSSWALKS & STOP LINES
STOP LINE
1' - 4" WIDE AT STOP
SIGN LOCATIONS
2' - 0" WIDE AT SIGNALIZED LOCATIONS

TYPICAL LADDER PEDESTRIAN CROSSWALKS
* 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
STANDARD PLAN NO 720b

REV DATE: 2005

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

NOTE:
"T" = THERMOPLASTIC

L-22, L-22T
THROUGH ARROW

L-23
LEFT & THROUGH ARROWS

L-24
RIGHT & THROUGH ARROWS

REF STD SPEC SEC 8-22

City of Seattle
NOT TO SCALE
PAVEMENT MARKINGS
LEGENDS/SYMBOLS
NOTES:
1. "T" = THERMOPLASTIC
2. L-28AT INCLUDE BICYCLE SYMBOL AND ARROW

L-28AT

L-27T
PEDESTRIAN STYLE

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

REF STD SPEC SEC 8-22

City of Seattle | NOT TO SCALE | BICYCLIST & PEDESTRIAN SYMBOLS

REV DATE: 2005
3" TO 12" PER DRAWINGS
OR AS REQUIRED BY SDOT (TYP)

DIRECTION
OF TRAVEL

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

(1.5 x B) = H

L-9A, L-9AT
YIELD LINE
NOTES:
1. ALL ROUNDED CORNERS SHALL HAVE A 1" RADIUS
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 21/2".
3. WHEN CONSTRUCTION OF ALLEY PAVEMENT IS NOT PLACED INTEGRAL WITH SUPPORT WALL, SHEAR KEYS SHALL BE INSTALLED 1' - 8" ON CENTERS.
4. CONCRETE FOR SUPPORT WALL SHALL BE GL 6 (11/2) CEM. CONTENT.
5. REINFORCING STEEL ASTM A615 GR 60
6. VEHICULAR & PEDESTRIAN RAILING PER RIGHT OF WAY IMPROVEMENT MANUAL

REV STD SPEC SEC 5-05

City of Seattle

NOT TO SCALE

SUPPORT WALL
NOTES:
1. MATCH WALL THROUGH JOINTS WITH PAVEMENT THROUGH JOINTS. DISCONTINUE HORIZONTAL REINFORCEMENT AT JOINTS AND MAINTAIN 1½" CLEAR TO ALL REINFORCING AT JOINTS
2. CONC CL B (1½) FOR CURB WALL
3. MAX HEIGHT 4½" (MIN PAVEMENT WIDTH IS 12½" FOR WALLS HIGHER THAN 3½"
4. WHEN CONSTRUCTION OF WALL IS NOT PLACED INTEGRAL WITH ALLEY PAVEMENT, SHEAR KEY INDENTATIONS SPACED 1½"-6" OC SHALL BE INSTALLED IN THE PAVEMENT SLAB
5. REINF STEEL ASTM A615 GR 60
6. ANY RAILING ON TOP OF WALL PER RIGHT OF WAY IMPROVEMENT MANUAL
7. NON-WOVEN GEOTEXTILE TO BE MODERATE SURVIVABILITY, ANY CLASS PER TABLES 1 AND 2 STD SPEC 9-37

REF STD SPEC SEC 5-05

City of Seattle
NOT TO SCALE
CURB WALL