City Of Seattle

STANDARD

PLANS

for

Municipal Public Works

Construction

1991

Twelfth Edition
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STANDARD PLAN NUMBERING SYSTEM

A standard plan number with a capital letter, such as type 201.1A(667). Includes a type of

Standard Plan No. 201.1a

Revision number

Standard plan page number
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<tr>
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<td>8x8x6x6Cr</td>
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</tr>
<tr>
<td>Tee</td>
<td></td>
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*Draw to Actual Size  ○ Format Stock Number*

### Electrical

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## WATER

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<tr>
<td>Cross</td>
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<tr>
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<td>Plug w/Conc Blocking</td>
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<td>or</td>
<td>1</td>
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*Draw to Actual Size  
1 Formatt Stock Number

## ELECTRICAL

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<th>CONSTRUCT</th>
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<tr>
<td>Utility Wood Pole w/(MV/L)</td>
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<td>(HPS)</td>
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<td>City Wood Pole w/(MV/L)</td>
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### Electrical

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<th>Remarks</th>
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<td>Traffic Signal Mast Arm &amp; Pole w/ Luminaire</td>
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<td>Non-Illuminated Sign</td>
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<tr>
<td>Traffic Signal on Span Wire</td>
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<td>Multi-Directional Traffic Signal on Span Wire</td>
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<tr>
<td>*Electrical Vault</td>
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<td>00</td>
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*Draw To Actual Size*

### Electrical

<table>
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<td>Combined Electrical &amp; Telephone Duct</td>
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<td>*Traffic Control Handhole</td>
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<td>*Street Light Handhole</td>
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<td>*Ground Rod Handhole</td>
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<td>GRHH</td>
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*Draw to Actual Size*
<table>
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<tr>
<th>ITEM</th>
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<th>CONSTRUCT SIZE</th>
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<td>0</td>
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<td>0</td>
<td></td>
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<tr>
<td>TELEPHONE DUCT</td>
<td>øX ø X TD</td>
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<td>0</td>
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<td>GAS REGULATOR</td>
<td>6'' Reg</td>
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*Draw To Actual Size*

**SIGNALIZATION IDENTIFICATION SYMBOLS**

- ◇ 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)

Payment Shall Be Made For:
1. Pipe "A", "B", or "C" - Per Linear Foot.
2. Taps or Wyes, excluding plugs: Unit Price Each.
3. Catch Basin connection "D" and inlet connection "E" - Per Linear Foot.

Note:
All Pipe shall be measured on the slope along the ζ of Pipe.
Distance (X) as specified on the plans.
Standard Plan No. 131

Dimensional Requirements
- 24 sq. ft. minimum tree grate size
- 3"-0" min. relief between tree grate & face of curb
- 2'-0" min. relief between tree grate & sidewalk or curb
- 5'-0" min. curb working surface
- 12" min. center grate opening

Ret. Std. Sec. 6-02
City of Seattle
Department of Engineering
Tree Grate

Scale 1/2" = 1'-0"

Standard Plan No. 140

Existing or New 1 Grade Horizontals

Future 2 DEPOT

Ret. Std. Sec. 2-03
City of Seattle
Department of Engineering
Slope Rounding
**Standard Plan No. 208**

- **New Type 2301 Ring & Cover**
- **New Pavement Grade**
- **Remove Existing 18" Diameter Ring and Cover**
- **New MH Handhole**
  - See Std Plan No. 231
- **New MH Step**
  - See Std Plan No. 231
- **Remove Existing MH Bricks so that I.D. of MH is 30"**
- **Ex MH Step**
- **Existing Brick Manhole**

**NOTE:**
New manhole steps and handholds shall be installed and located 12" OC from the first existing step in the manhole. A minimum 21" clear opening shall be maintained.

For pavement depth 7", the ring and cover shall be constructed to the finished grade of the pavement. Reinforcement shall be placed around the casting at mid-point between the finished grade of the pavement and the top of the flange. 

**Rebuild MH w/ New Bricks on Top**

- **New Pavement Grade**
- **Remove Existing 18" Diameter Ring and Cover**
- **New MH Handhole**
  - See Std Plan No. 231
- **New MH Step**
  - See Std Plan No. 231
- **Remove Existing MH Bricks so that I.D. of MH is 30"**
- **Ex MH Step**
- **Existing Brick Manhole**

**NOTE:**
New manhole steps and handholds shall be installed and located 12" OC from the first existing step in the manhole. A minimum 21" clear opening shall be maintained.

For pavement depth 7", the ring and cover shall be constructed to the finished grade of the pavement. Reinforcement shall be placed around the casting at mid-point between the finished grade of the pavement and the top of the flange. 

**Bolt on Corn Type Locking Device**

- **Section AA**
- **Top of Pattern and Letters**
- **Cover Detail Pattern**

**NOTES:**
1. Designate locking cover as 208.
2. For pavement depth 7", the ring and cover shall be constructed to the finished grade of the pavement. Reinforcement shall be placed around the flange at mid-point between the finished grade of the pavement and the top of the flange. 
3. Cover thickness is measured from the bottom or pattern.
4. Refer to Section 5-05 for other requirements for reinforcing bars.
5. Covers shall be manufactured from ductile iron.
Section of Ring Extension

Notes
1. Dimension "A" refers to height of ring extension above the manhole ring.
2. When ring extensions are used on a new manhole ring and cover, the ring extension shall be permanently attached to the manhole ring at the factory, not in the field. Approval of attachment method is required.
3. Ring extensions shall be ductile or cast iron.

Ref. Std. Spec. Sec. 7-05

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Ring Extensions

Manhole Ladder
Step, and Handhold

Note:
Steps and Prefabricated ladders shall be galvanized after fabrication.

Ref. Std. Spec. Sec. 7-20-9-12

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Ring Extensions

Standard Plan No. 2311

Standard Plan No. 2321

Note:

Legs may be parallel or approximately made at option of manufacturer except that all steps in any Min. ladder shall be similar.
Standard Plan No. 261

Type "A"

Type "B"

Section "C-C"

Section "D-D"

Notes:
1. Connections shall maintain a minimum of 2% and a maximum of 50% grade.
2. Type "H" 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.

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Typical Catch Basin Connection

Not to Scale

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Inlet Frame Type 262
Grate Material: Ductile Iron

Ref. Std. Spec. Sec. 7-05, 9-05

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Vaned Grate
Type A: For use with Outlet Pipe which Slopess 10% or Less

Type B: For use with Outlet Pipe which Slopess More than 10%
Standard Plan No. 271b

Note: For D1, D2, D3, S1, S2, N & W
Values and general notes, see Standard Plan No. 271c.

Type C

Section AA

Section B-B

Detail A

Detail B - Flat Stiffener

Detail C - Non-Corroded Pipe

Detail D

Detail E

Plan Diameter | End Plate Thickness | Stiffener Type & Size | Stiffener Spacing | Size W
---|---|---|---|---
30" | 1" | Flat 3/4 x 1" | 6" 6" 3 | 34W
36" | 1" | Flat 3/4 x 1" | 6" 6" 3 | 34W
48" | 1" | Flat 3/4 x 1" | 6" 6" 3 | 34W
72" | 3/4" | L 2 3/4 x 3/4 | 10" 10" 4 | 1/4"

Type B

30" | 1/4" | Flat 3/4 x 1" | 5 5 3 | 34W
36" | 1/4" | Flat 3/4 x 1" | 6" 6" 3 | 34W
48" | 1/4" | Flat 3/4 x 1" | 6" 6" 3 | 34W
72" | 1/4" | L 2 3/4 x 3/4 | 10" 10" 4 | 1/4"

Type C

48" | 30" | Flat 4/8 x 1" | 2" 8" 1 | 34W
60" | 30" | L 2 3/4 x 3/4 | 2" 7" 2 | 34W
72" | 30" | L 2 3/4 x 3/4 | 3 1/4 3 | 1/4"

Notes:
1. Designs valid for pipes installed with crown of pipe above ground. Minimum water surcharge 3 ft above crown of pipe.
2. End Plate Material - Aluminum 6001-T6
3. Design shall be used only for Aluminum CPM.
Standard Plan No. 280

Cast Iron Frame and Cover

Top Band

Pipe

1/2" Dia bolt

Bottom Band

Gasket:
8" min. 2 2/3" x 1/2" corrugations
9" min. 3" x 1" corrugations

Band
Pipe

L 2" x 2" x 3/16"

3/16" 1/2"

Annular corrugations
shown for clarity.

(Helical or Annular)
For Pipes Less Than 48" Diameter

Ref. Std. Spec. Sec. 7-19

Do Not Scale

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

8" Clean-out

Corrugated Metal
Pipe Coupling Bands
Top Band

Pipe

1/2" Dia bolt

Bottom Band

Gasket:
8" min. - 2 2/3"x1/2" corrugations
9" min. - 3"x1" corrugations

Band

Pipe

L 2" x 2" x 3/16"

3/16"/1/2

Helical corrugations shown for clarity.

25"+ (24" nominal)

(Helical or Annular)

For Pipes 48" Diameter and Larger

Do Not Scale

Complete legal description of property and dimensions A, B, C, and D that show the size and location of the house are mandatory for issuance of permit.

1. All house plumbing outlets must be connected to the sewer.
2. No downspouts or storm drainage may be connected, except to a separate storm drainage system.
3. 30" min. distance from house, except for soil pipe connection.
4. 30" min. coverage at property line.
5. 60" min. coverage at curb line.
6. Lay pipe on straight line between bands. Make all changes in grade on line with 1/2 bend or ease. 90° change with ease and 1/2 bend.
7. Standard 4" to 8" increments.
8. 8" sewer pipe-min size in street, and elsewhere as directed.
9. sewer pipe - min size on property. 3% min grade, 100% (45°) max.
10. Test "T" with plug
12. Construction in street must be done by a registered sewer contractor.
13. All construction shall be in accordance with current street sewer ordinance.
14. All construction requires a permit and payment of fee. Complete legal description of property and dimensions A, B, C, and D that show the size and location of the house are mandatory for issuance of the permit.

Ref. Std. Spec. Sec. 7-18

Do Not Scale
Typical Trench Section (Waterman)
Ref Std Spec Sec 7-10

Note: For Pavement Removal and Restoration, See Std Plan 404a

Typical Trench Section (Sewer)
Ref Std Spec Sec 7-17

Min. Pipe Watts for Waterproofing Bead(s) Above Top of Pipe

Actual Side Slope by Contractor

Min. Pipe Watts for Waterproofing Bead(s) Above Top of Pipe

Actual Side Slope by Contractor

Class 'A' Bedding
(Concrete Bedding)

Class 'B' Bedding

Class 'C' Bedding

Class 'D' Bedding

Mineral Aggregate Per Std Spec Sec 403a
Type 2 for flexible pipe

Concrete Class 4 H3 (Min)
4 Sack Min (77 lb. Aggregate)

Selected Native Material

NOTES:
1. For Trench Width, See Std. Plan 284.
2. When "D" is less than 30 "D" is 30 "or more.
3. For Class "B" Bedding, Excavate for Bell.
4. For Class "B" Bedding for Water Mains, See Special Provisions.

Ref Std Spec Sec 7-17.

Do Not Score

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Pipe Bedding
Ductile iron watermen

Cast iron watermen

Sanitary or Combined Sewer

If minimum vertical separations cannot be met, watermen must be ductile iron pipe.

CROSSING WATER OVER SEWER

Sanitary or Combined Sewer

Watermen

Standard 183 Nominal Length centered at the point of crossing

Provide adequate structural support for the sewer to prevent excessive deflection of joints and setting-on and breaking the watermen.

CROSSING WATER UNDER SEWER

NOTES:
1. Exceptions to the above must be approved by the Seattle Water Department, Water Quality Division.
2. Orphanage 8406 applies to installation of Sewer Sockets relative to the location of watermen and water services.

Spacing & Clearances Between Sewers & Watermen

Do not scale

Sewer & Water Spacing & Clearances
Where watermills are installed with polyethylene encasement or tape coatings, the hydrant barrel and valve shall be similarly incased or coated.

**NOTES**

To be cost of Ductile iron in conformance with ASTM specs A536- class B60-93-05. After cleaning, the casing shall be hot dipped in asphaltic varnish, Royenitas #6120X or approved equal. Tolerances per CIPRA handbook.

**DETAIL C** — 6" Mechanical Joint Gland, w/tags

6" Hydrant connection pipe shall be DIP, CL25, Hydrant tees shall be set horizontally. The threaded nozzles on the 6" pumper nozzle shall be equipped with the dust cap or ingate cut. The 2 ½" nozzles shall be in accordance with the National Fire Protection Association Bulletin 1911, dated 1974.

After installation, all shackles, bolts, nuts, mechanical joint glands, and chucking nuts shall be cleaned and coated with two coats of asphalt, Royenitas #6120X or approved equal. After backfilling, the outside of the hydrant (above the ground line) shall be thoroughly cleaned and painted, with one coat of hydrant paint — Forrester Paint Co., #0255 or approved equal. Pumpers part to face stuck or as directed by the engineer.
The broken concrete slabs shall be a minimum of 3 1/2 inches in thickness and not less than 3" x 3" in size. The slabs shall be set in two layers of the same thickness, and the exposed faces shall be as smooth as the shape and size of the slabs will permit.

The rebar rock shall be sound, quarried rock, durable, free of cracks, and the source of rock shall be approved by the engineer before placement.

Concrete Slab, or rockery rock
See notes above

Plan View

Section A-A

WALL FOR HYDRANTS

Ref Std Spec Sec. 7.14
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Wall Requirements for Hydrants

Ref Std Spec Sec. 7.14
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Fire Hydrant Locations & Clearances
NOTES

Frame and cover shall be tested for accuracy of fit and shall be marked in sets for delivery.

Castings and extensions shall be hot-dipped in asphaltic varnish, Royson Roskot # 622 XM or approved equal.

Valve Boxes shall be Richardson # 045, top section, lid, and base ; or Olympic Foundry - lid # 1008-38, top section # 1106-33, base section # 1001-33 or approved equal.

All castings shall be ductile or grey cast iron.

1. An Operating Nut Extension shall be installed where the ground surface is more than 30" 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 a minimum of 6 inches.

2. Extension pieces (when used) shall conform to minimum thickness requirements and shall fit into the top section and over the bottom section.

Ref: Std Spec Sec. 7-12, 9-30
Notes

Location and size of blocking for pipe larger than 12" and for soil types different than shown shall be determined by the engineer.

All blocking for vertical fittings (poured in place) shall bear against undisturbed native ground.

All poured thrust blocks shall be in place and sufficient time shall be allowed for the concrete to cure and trench shall be backfilled and compacted prior to pressure testing.

All blocking to be concrete C15 (1.5lb) after installation, shackle rods & turnbuckles shall be cleaned and coated with 2 coats of asphalt varnish, Rustolium #612XM or approved equal.

Shackle rods shall be round mild steel, ASTM A-36 with threads on ends only.

Blocking against fittings shall bear against the greatest fitting surface area possible, but shall not cover or enclose bell ends, joint bolts or glands.
Notes
Location and size of blocking for pipe larger than 12" and for soil types different than shown shall be determined by the Engineer.

All blocking for horizontal fittings (poured in place) shall bear against undisturbed native ground.

All poured Thrust Blocks shall be in place and sufficient time shall be allowed for the concrete to cure and trench shall be backfilled and compacted prior to pressure testing.

All blocking to be concrete C15 (1:1.5:3)

Blocking against fittings shall be against the greatest fitting surface area possible, but shall not cover or enclose bell ends, joint bolts or girds.

All horizontal blocking thrust areas shall be centered on pipe.

Where poured-in-place blocking is required at a point of connection to an existing watermain, the blocking shall be installed prior to connection and space between fitting and blocking grouted, similar to Ecology Block detail.

Temporary blocking, if used, shall be approved by the Engineer.

Ecology Blocks, per Standard Plan 460 may be used in lieu of poured-in-place blocking for fittings in shaded portion of table.
401A - Cement Concrete Pavement with Integral Curb

401B - Cement Concrete Pavement with Existing Curb & Gutter

401C - Asphalt Concrete on Cement Concrete Base

401D - Asphalt Concrete on Crushed Rock Base

NOTE
Concrete C (40B) unless otherwise specified on plan.

Ref. Std. Spec. Sec. 5-D4, 5-D5, B-D4.
Do Not Scale
403A - Cement Concrete Alley Pavement

Cement Concrete Alley Pavement
403B - For Shallow Embankment Area

Note:
When alley pavement is 18' or wider, place contraction joint along centerline

Ref Std Sec 5-06

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Cement Concrete Alley Pavements
Refer Std. Spec. Sec. 2-02

Asphalt over Rigid Base of Brick or Stone Block Pavement

Notes:
1. When a Stone or Brick Pavement is Overlaid with Asphalt, the Street Surface Pavement becomes an Asphalt Street over Rigid Base.
2. If a Stone or Brick Pavement is Not Overlaid, the Method of Restoration is as in Kind.
3. Refer to Standard Plan No. 404b, the BMcP "Street and Sidewalk Pavement Opening and Restoration Rules", and the Spec for Applicable Details & Requirements.

For Concrete Pavement

1. When required at longitudinal joints, tie bars shall be 1/2" x 30° x 36", deformed round grade 60 or better, epoxy coated, where required at transverse joints, dowel bars shall be sized as shown in the table to right, smooth round grade 60 or better, epoxy coated and greased.
2. Longitudinal joint spacing should not exceed 150 feet back of curb. Transverse joint spacing shall not exceed 150 feet at the rear of the curb and shall not exceed 250 square feet.
3. Joint offsets at radius points should be at least 1.5" long.
4. Joint intersection angles of less than 60 degrees should be avoided.
5. When a joint is closer than 1" to a casting, then a minor adjustment in the joint location should be made by reaming or shifting the joint alignment to meet the casting at 90 degrees or normal to the casting.
6. Where possible, longitudinal joints should match lane lines.
7. Longitudinal joints are to be construction joints unless paved by a machine capable of placing and finishing concrete for two or more lane widths, in which case the contraction joint can be used.
8. As a minimum, projects must include intersection joint layouts.
Extruded Asphalt Concrete Curb

Extruded Cement Concrete Curb

* Alternately, the use of epoxy bonding agents, in place of #3 deformed bars, shall be allowed. Type of epoxy bonding agent and method of construction shall be approved by the Engineer.

---

Ref. Std. Spec. Sec. 8-06

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Extruded Curb

---

Ref. Std. Spec. Sec. 8-07

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Traffic Curb
Precast Cement Concrete
Section A-A

1. Sidewalk paving in the planting strip or at the back of the sidewalk shall be installed so as to be accessible to CM landing and provide a flat landing area at the top of the ramp 1/4 x 4 ft. wide.

2. The curb ramp shall not be poured integral with the sidewalk or pavement and shall be isolated by use of joint material on all sides.

3. The sidewalks thickened edge shall be continued through the wing of the curb ramp.

4. The curb ramp section concrete shall have a coarse textured surface obtained by 2-1/2 X 11 flattened expanded metal mesh being pressed into the still fresh concrete.

5. Minimum distance between adjacent curb ramps shall be 6 feet.

6. Inlets shall be so located that runoffs will not flow past the curb ramp.

Section B-B

1. Section B-B INSTALL IN EXISTING PAVED AREAS

Curb nonolithic with ramp curbing paver removed at base of curb.

See Section B-B Above

Landing area See note 1

Note:

1. All signalized intersections and 4-way stop intersections shall be treated as arterials. For signalized intersections, the curb ramp shall be the minor arterial. For 4-way stop intersections, the major arterial shall be treated as a non-arterial and only one ramp shall face the minor street.

2. Curb ramps shall be installed on the opposite side of the street from any ramp being constructed.

3. Curb ramps shall be depressed for future curb ramps where curbs are installed with no sidewalks.

4. Designer/Installer shall locate curb ramp in priority 1 location. If not feasible, then all alternate location shall be chased, in descending order 175 1/B Pipeline


Ref. Std Spec. Sec. B-14

Curb Ramp Location Priorities

Arterial Intersections

<table>
<thead>
<tr>
<th>Priority</th>
<th>Arterial Street</th>
<th>Non-Arterial Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CW</td>
<td>CW</td>
</tr>
<tr>
<td>2</td>
<td>CW</td>
<td>CW</td>
</tr>
<tr>
<td>3</td>
<td>CW</td>
<td>CW</td>
</tr>
<tr>
<td>4</td>
<td>CW</td>
<td>CW</td>
</tr>
</tbody>
</table>

Note:

CM = Concrete Mix

Cement Mix

Cement Mix

Cement Mix

Cement Mix

Cement Mix
Standard Plan No. 423

Type B

Note: Concrete shall be 3000 psi, max. 80 days, Steel, Trowel Surface w/ broom finish.

Type A

Section A-A

Section B-B

Ref. Std Spec. Sec. B-14

City of Seattle Department of Engineering

Bus Shelter Footing

Standard Plan No. 4301

Type 430A

Type 430B

Type 430 Driveway

Detail A

Detail B

NOTES
1. Concrete shall be C16 (150) or C16 (120) at Contractor's option.
2. On arterial streets where travel lane is less than curb, this distance shall be 5'-0".
3. When existing parking meters are to be removed for new driveway construction, contact Transportation Division a minimum of 2 working days prior to scheduled work to coordinate removal of meter heads.
4. Reference standard plan No. 431 for concrete driveway placed with sidewalk construction.

Ref. Std Spec. Sec. B-19

City of Seattle Department of Engineering
Driveway width greater than 16' shall have Transverse Construction Joint at its center.
Concrete shall be Class 634 or Cl. 63(1/2) at contractor's option.
**Standard Plan No. 4411**

**PLAN**

- 2"-0" gage
- 12'-0" gage
- 2" clearance
- #4 bars equally spaced @ 12"
- C/C Max Spacing

**ELEVATION**

- 12'-0" gage
- #4 bars equally spaced @ 12"
- C/C Max Spacing
- Private walk or landing
- Through joint
- Slip to drain
- Private walk or landing

**Notes:**
1. Cement concrete shall be class D (D4) trowel finish.
2. Number of steps shall suit individual conditions, with tread and riser dimensions as follows:
   - Tread: 9" Min
   - Riser: 4" Max
   - Spacing: 6"-8" Max
3. Step width shall match width of landing, but shall be no less than 30" wide.
4. Steps with more than 4 steps must include handrail. See Standard Plan No. 440.
5. Reinforcing steel: ASTM A615, Grade 60
6. Tread slopes: Outward 1%.

---

**Standard Plan No. 4421**

**Over 6'-0"**
- Steel pipe posts
- 2"-0" dia.
- 10'-0" max
- 6'-0" max
- 2"-0" dia.

**Over 6'-0"**
- Steel pipe posts
- 10'-0" max
- 6'-0" max
- 2"-0" dia.

**Notes:**
1. Railing shall be Hot Dip Galvanized steel fabrication.
2. All parts shall be Plumb and Parallel to Grade.
3. Pipe Material shall Conform to ASTM A53.
4. Reinforcing Steel: ASTM A615, Grade 60

---

**Steel Pipe Handrail**

**Notes:**
1. All reinforcing U-Bars cut to length.
2. Post set below.
3. 3/8" Dia. Sleeve
4. Non-Shrink Grout

---

**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**

**Cement Concrete Steps**

**Do Not Scale**

**Ref. Std. Spec. Sec. 8-18.**

---

**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**

**Steel Pipe Handrail**

**Do Not Scale**

**Ref. Std. Spec. Sec. 8-18.**
### Roll Formed Sections

<table>
<thead>
<tr>
<th>Member</th>
<th>Brace Roll &amp; Top Roll</th>
<th>Line &amp; Brace Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round</td>
<td>H-Coupler</td>
<td>Roll Formed</td>
</tr>
<tr>
<td>U1 Height (in.)</td>
<td>Width (in.)</td>
<td>Thickness (in.)</td>
</tr>
<tr>
<td>1 114</td>
<td>2.27</td>
<td>125x1.52</td>
</tr>
<tr>
<td>2 114</td>
<td>2.27</td>
<td>125x1.52</td>
</tr>
<tr>
<td>3 114</td>
<td>2.27</td>
<td>125x1.52</td>
</tr>
<tr>
<td>4 114</td>
<td>2.27</td>
<td>125x1.52</td>
</tr>
</tbody>
</table>

### Notes:
1. All concrete post bases shall be 10" minimum diameter. (Class 5791)
2. Posts shall be spaced at 9'-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 rail line.
4. The illustrative details shown herein shall not be construed as limiting to hardware design or post selection for any particular fence type.

---

### Chain Link Fence

- CITY OF SEATTLE
- DEPARTMENT OF ENGINEERING

### Chain Link Gates

- CITY OF SEATTLE
- DEPARTMENT OF ENGINEERING
Standard Plan No 5001

**Pedestal Foundation**

- Bolt Projection 4”
- Bolt Circle 6”
- Align Bolts, Perforate to Curb and or Sidewalk
- Top of Foundation
- Earth or Soil

**Cabinet (Typ)**

- 4 1/2" Rainwater Collector (Stainless Steel Splay Per Cabinet)
- Cabinet (Typ) Per Cabinet
- Top of Cabinet
- Cabinet
- Pedestal Foundation

**Mounting Detail**

- Conduct Zone
- Pedestal to Curb
- Type I Cabinet
- Type I & II Cabinet

**Signal Controller Cabinet (Type I & II)**

- Cabinet Dimension

<table>
<thead>
<tr>
<th>Nominal Dimension</th>
<th>Type I</th>
<th>Type II</th>
<th>Type III</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 12” to 24”</td>
<td>24” to 36”</td>
<td>36” to 48”</td>
<td>48” to 60”</td>
</tr>
<tr>
<td>B 18” to 30”</td>
<td>30” to 42”</td>
<td>42” to 54”</td>
<td>54” to 66”</td>
</tr>
<tr>
<td>C 24” to 48”</td>
<td>36” to 56”</td>
<td>48” to 72”</td>
<td>60” to 84”</td>
</tr>
</tbody>
</table>

**Notes:**

- Conduit should enter both as indicated by manufacturer’s template or cabinet detail.
- Wrap top of anchor bolts with corrosion protection tape per spec indication.
- Insert cabinet on sidewalk side of foundation.
- Cabinets are shown disassembled. Actual assembled cabinets are to be mounted on foundation with grey or clear silicon between cabinet and foundation.
- The cabinet shall be NEMA 3R rated.

**Ref Std Spec Sec 8-31**

CITY OF SEATTLE DEPARTMENT OF ENGINEERING

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**Type A**

(1) **Note:**
Bolt Pattern must be Diamond Shape to Curb. Conduit is outside Bolt Circle.

**Type B**

(2) **Note:**
To be used for Concrete Filled Pole. Bolts are Parallel to Curb. Conduit is inside Bolt Circle.

Notes:
1. For Type 'A' Foundations, align the Bronze Base Access Cover on the same side with the Pole Handhole and Conduits.
2. Tape Top of Anchor Bolts with Corrosion Protection Tape per Spec.
3. For Type 'A' Poles, the top 3/4" shall be formed into a Square and poured prior to setting the Pole.
4. For Type 'B' Poles, the top 5/8" shall be formed into a Square and Poured after setting the Pole.

Ref Std. Spec. Sec. B-32
**Strain Pole Details**

- **Traffic Signal Only**

---

**Standard Plan No. 567a**

- **Alternate Strain Pole Base Detail**
- **Strain Pole Base Plate Detail**

---

**Standard Plan No. 567b**

- **Pole Notes**

1. See Section 8-34 of Standard Specifications.
2. Column Load moment of the concrete base shall be 40 Kip ft. The yield moment shall be 2 x column load moment.
4. Pole shafts: ASTM A36 grade 36 or 50 ksi, or ASTM A572 grade 50 or 60 ksi respectively. Or ASTM A502 grade 60 or 70 ksi respectively.
5. Base Plate and hardware reinforcing: ASTM A490 or ASTM A572 grade 50. Base plate Fy = 0.75 pole shaft Fy. The base plate thickness may be reduced by 0.1 if ASTM A572 grade 50 steel is used.
6. Pole shall be no more than 2 longitudinal welds in each ply.
7. Minimum wall thickness of each ply shall be 0.299 inches. The pole shall have a minimum of 2 plies.
8. Maximum silicon content in steel shall be 0.04%. See Section 9-33.1 (1) of the Standard Specifications for general galvanizing requirements.
9. Pole diameter for 12 or more sided poles shall be measured from the flat to flat dimension.
10. Poles shall meet deflection criteria stated in the Standard Specifications Section 8-33.2.5 for dead loads applied at 27 feet above groundline.

---

The pole shall be connected and meet requirements in AASHTO Section 4, Table 14.18 (1).

---

**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**

**Type T Strain Pole Details Traffic Signal Only**
Adjustable 1-Way Guy Clamp

1-Way Guy Clamp

Adjustable 4-Way Guy Clamp

Luminaire Bracket Arm

Section B-B

Nominal Arm Length

Nominal

12'

15'

5

14'-6"
Standard Plan No. 5731

Notes:
1. Ground the bracket arm to the telephone messenger (where present)
   if it has less than the following clearances:
   20" above or 24" below telephone wires
   12" from telephone cables or terminals.

2. Arm to be 90 degrees to curb unless otherwise noted on plan.

3. The actual service connection to existing power shall be made
   by others and the contractor shall install all wire attached to
   the pole at the service point. Use milking when the distance from the thru bolt to the service
   connection is over 12".

4. Bolt projection on item No. 5 shall be no more than 3 threads.

Luminaire and Bracket
(For Wood Poles Only)

Flexible Boll
(Material Size 5013.3)

Wedge Clamp

Neutral Messenger (See Note 3)
Neutral

Hot Secondary

Bolt Connector (See Note 3)

Secondary Service Attachment

Standard Plan No. 5801

Notes:
1. On poles with existing conduits, new conduits shall be
   installed in accordance with this specification.
2. Rigid steel conduit shall be grounded just below coupling,
   approximately 6" to 10" above ground, as shown.
3. When 2 or more rigid steel conduits are installed on one
   pole, the ground wire shall be installed as shown. The conduit
   supports & struts shall be made of 3/16" steel type 2 or
   greater, as shown, and bolted to the pole. The ground wire
   shall be continuous and shall not be insulated. The ground
   wire shall be run vertically to the ground from the base of the
   pole, as shown.
4. The ground wire shall be run vertically to the ground from the base of the pole, as shown.
5. The ground wire shall be continuous and shall not be insulated. The ground wire shall be run vertically to the ground from the base of the pole, as shown.
6. All steel hardware shall be hot dipped galvanized after
   fabrication per ASTM A423.
7. Conduit clamp spacing shall be per the NEC with a
   minimum of one clamp per 10' length of conduit.
8. Where PVC coated RIG conduit is specified it shall be straped of
   PVC coating to resist the grounding clamp, then finished with
   approved PVC terminal compound to cover all exposed metal.

Conduit Riser (with Stand-Off Bracket)

Conduit Ground
Clamp Detail
Notes:
1. A single conduit smaller than 2" with conductors of less than 750 volts or wires, shall be spaced out from the pole face to the curb or center line of the pole straw. See figure 1 above.

Notes:
1. A single conduit 2" & larger or one with conductors of 750 volts or more, shall be spaced out from the pole face to the curb & the center line of the pole straw. See figure 1 above.
2. When 2 conductors are installed, they shall be spaced out 4½" from the face of pole & separate 2", providing a clear space of 2" on each side of the wire of pole straw. See figure 2 above.
3. If more than 2 conductors are installed, they shall be installed as in figure 3. If 2 voltages are involved, the higher voltage shall be placed next to the pole.

Bracket Notes:
1. Bracket and all of the configuration and dimensions shown, except of roughness of metal surface and edges.
2. Bracket rear shall be made of cold-rolled steel strip, 16 gauge, in accordance with ASME A203.
3. Insulation of bracket with space shall be of the first order position only on pole (see standard bracket without the front of this sheet).
4. Wood to be used a 3½" to 4½":
5. Brackets to be 1½" to 3½" deep from front of back of pole.
6. Stamped on bracket detail as shown.

Secondary Spool Insulator Bracket

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Standard</th>
<th>Material</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bracket Insulator</td>
<td>560-1</td>
<td>Insulator</td>
<td>Insulator shall be of the same type as the Bracket Arm.</td>
</tr>
<tr>
<td>3</td>
<td>Wood, 2&quot; wide</td>
<td>564-1</td>
<td>Wood</td>
<td>Wood material shall be treated.</td>
</tr>
<tr>
<td>6</td>
<td>Wood, 2½&quot; x 2½&quot;</td>
<td>564-1</td>
<td>Wood</td>
<td>Wood material shall be treated.</td>
</tr>
</tbody>
</table>

Angle Type
(for Construction to Another Pole)

Clevis Type
(for Dead-End Construction)

Ref. Spec. Sec. B-30

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Insulator Brackets
Note: Install Street Designation Sign (see SDG-1 Bracket, Std Plan 612.1)

Sign Mounting on Signal Backplate

Screw Wood Sign

Aluminum Channel
C 2.5 X 8.0 (Length as required)

3/8 X 7 Bolt with countersunk head
Bolt head shall be flush with the sign face. Cover bolt head with the
sign face.

Sign Mounting on Most Arm

Stainless Steel Sign Bracket

Stainless Steel Pole and Straps

Mast Arm

Drill and tap mast arm

Sign Mounting on Metal Pole

Temporary Sign Mounting on Metal Pole

Notes:
1. Bolts shall be stainless steel.
2. Mounting of traffic signs shall be as follows:
   On metal poles thinner than 7 gauge, use 3/8" stainless steel nuts.
   On metal poles 7 gauge or thicker drill and tap for 3/8" bolt.
   (Stainless steel 1 nuts optional)
   On poles fixed with or made from concrete, use 3/4" x 2 1/2"
   Stainless steel anchor with hex nut.
3. For Sign Feature contact Traffic Engineer.

Sign Mounting on Bottom of Signal

5/8 X 3/4" Bolt
Aluminum Bracket
2.5 X 7 X 8 (Height as required)

Ref. Std. Spec. Sec. 8-21

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Sign Installation
(Non-Spanwire Mounting)

Standard Plan No. 601.1

Standard Plan No. 610.1

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Standard Sign Installation
Steel Poles
Notes:
1. Screw Head shall be flush with the sign face.
2. Cover screw head to match sign face.

Ref. Std. Spec. Sec. B-21
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
SDS Bracket for Steel Mast Arm Poles

C. 3x21
Extruded Al

L 3x1/2 Type

36" Dis Holes
4 Pieces See Note #2

3/8" Hole

3/4" Plywood Sign

3/8" x 3" Flathead Machine Screw (Anodized or Cadmium Plated)

3 Gauge Mast Arm

Drill & Tap
(Apply Galv. Repairs Points)

Ref. Std. Spec. Sec. B-21
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
SDS Bracket for Steel Strain Poles
Notes:
1. When installing bracket onto Wood Pole Use Two 3/8" x 8" Long Bolt (4d Metal Hot Dip Galvanized or Stainless Steel with 1/4" x 2" x 2" x 1/4" O.D. Steel Washer, Drill Through Pole and install 1/4" x 8" Steel Bolt and Nut."
2. When installing Sign Board onto Bracket, Use Six 3/8" x 2" Long Flathead Machine Screws with Lockwasher. Use 1/2" Plated Washer under the head of each Bolt. Screw Head shall be flush with the Sign Face. Cover Screw Head to Match the Sign Face.
3. Bracket to be Aluminum, Painted International Green.
4. All Bolt, Nut, and Steel Washer to be Stainless Steel.

For Steel Poles Less Than Seven (7) Gauge
Use 3/8" Stainless Steel Bolts
(Bolts Optional on Heavier Gauge Steel Poles.)
Ref. Std. Spec. Sec. 8-21

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Street Name Sign Pedestal Installation

Ref. Std. Spec. Sec. 8-21

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Post Cap

Notes:
1. Cap shall be made of the same material as the surrounding paved surface.
2. Blockouts shall be provided for post locations where new concrete pavered sidewalk, roadway, etc. is being installed.
3. Where post is being installed in an existing paved area, hole in paved surface shall not exceed 1/4" nominal diameter.
Note:
1. Paint Red Stripes On All Four Sides For "STOP" Sign Installation. One Side Only For "YIELD" Sign Installations.
2. For "YIELD" Sign Installation, Striped Side Shall Be Facing Approaching Traffic.
3. Refer to Standard Plan No. 620.1

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 will face the higher volume street.
2. In the case where an approach has a grade larger than 3%, the higher signs will face the approach with the highest grade to allow better sight distance.
3. Place three (3) or four (4) (3" × 3") yellow reflectorized strips on the 4 post faces.
Standard Plan No. 629

Notes:
1. Post Anchor Rivets shall be 1½" above ground level.
2. Attachment Brackets shall face away from street as when Post is located 2 feet from edge of curb. Attachment bracket shall face towards street (T) when Post is located at back side of sidewalk.
3. For Post relocations, old concrete shall be removed from Post, and new installation shall follow details per this sheet.

Ref. Std. Spec. Sec. B-21

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City of Seattle Department of Engineering

Direct Burial Meter Post Installation Detail

NTS

Standard Plan No. 630

Notes:
1. Post Anchor Rivets shall be 1½" above ground level.
2. Attachment Brackets shall face away from street as when Post is located 2 feet from edge of curb. Attachment bracket shall face towards street (T) when Post is located at back side of sidewalk.
3. For Post relocations, old concrete shall be removed from Post, and new installation shall follow details per this sheet.

Sign Location Detail

Post Anchor Detail

City of Seattle Department of Engineering

Metro Bus Zone Sign Installation

213
Typical Left Turn Channelization

Number of Legend Sets Required Based on the Length of Approach Lines:

<table>
<thead>
<tr>
<th>Approach Line Length</th>
<th>Legend Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less Than 500 ft.</td>
<td>1 set (centered between both ends of lane)</td>
</tr>
<tr>
<td>500 ft. - 1,200 ft.</td>
<td>2 sets</td>
</tr>
<tr>
<td>1,200 ft. - 2,000 ft.</td>
<td>3 sets (second legend located midway between first and last legends)</td>
</tr>
<tr>
<td>Over 2,000 ft.</td>
<td>Additional sets spaced at approximate 1000 ft. intervals between first and last sets</td>
</tr>
</tbody>
</table>

Legend Placement

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

Legend Combinations

Legends in adjacent lanes shall be aligned as shown.

TYPICAL PEDESTRIAN CROSSWALKS & STOP LINES

Note:
1. Exact location of Crosswalk lines and stop lines shall be designated by the engineer.
2. Existing crosswalks in conflict with new or revised crosswalks shall be removed by machine grading.

TYPICAL CROSSWALK & STOP LINE INSTALLATION DETAILS

Ref. Std. Spec. Sec. E-22
Standard Plan No. 722

Notes:
1. Base of Support Wall to be bearing on firm undisturbed earth.
2. Back form for Support Wall may be omitted and concrete placed against native earth when ground conditions permit.
3. When construction of alley pavement is not integral with Support Wall, Shear Keys shall be installed 16" on centers.
4. Concrete for Support Wall shall be Class 6(10).
5. Reinforcing steel ASTM A615, Grade 60.

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
Support Wall

Notes:
Beveled backs for forming Shear Key in wall section to be made from standard 2½x4½x½" wood or other suitable material.
(See Note 3.)
Notes:
2. Conc Class 6112 For Curb Wall
3. Mix Height 4 (Min Pavement width is 12" for Walls higher than 3"
4. Back Form for Curb Wall may be omitted and Conc placed against Native Earth when ground conditions permit.
5. When construction of Wall is not integral with Alley Pavement, Shear key indentations spaced 18" O.C. shall be installed in the Pavement Slab.
6. Rein. steel, ASTM A 615, Gr 60.

Ref Std Spec Sec 5-05