NOTES:

1. Concrete base shall be poured in place. Hand mixed concrete is prohibited. Concrete base need not be formed.

2. Notice to surveyors: any monument set in the City of Tacoma must bear the land surveyor number of the surveyor setting the monument. Monuments set as part of an approved plat are exempt.

3. The surveyor is to supply the City of Tacoma with a copy of the calculations used to determine all monument positions before the monuments are set.

4. Brass marker for City of Tacoma funded projects will be supplied by the City, all other brass markers to be supplied by the contractor.

5. Monument must be magnetically locatable.

6. Prior to removing or destroying a monument, the surveyor or engineer shall apply for a permit from the Department of Natural Resources in accordance with WAC 332-120.
CITY OF TACOMA
DEPARTMENT OF PUBLIC WORKS

NOTES:
1. This detail shall be used in unpaved areas only.
2. Prior to removing or destroying a monument, the surveyor or engineer shall apply for a permit from the Department of Natural Resources in accordance with WAC 332-120.
NOTE:
For trench crossings, curb and gutter shall be removed to a minimum 2' cut back over undisturbed soil. In all projects, any remaining sections of curb and gutter less than 5' in length between the project area and the nearest control joint shall also be removed and replaced. All joints shall be saw cut full depth prior to restoration and 3/8" expansion joint installed. Concrete finish shall match existing. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

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CEMENT CONCRETE CURB AND GUTTER AND ASPHALT WEDGE CURB

STANDARD PLAN NO.   SU-03
1. Sidewalks shall be designed and constructed in accordance with ADA Standards for Accessible Design, 28 CFR, Part 36 and as supplemented by the Public Right of Way Accessibility Guidelines (PROWAG).

2. When placing walk adjacent to existing curb and gutter, curb and gutter will be repaired as necessary before placing concrete forms for walk.

3. Staking is required where no curb is present.

4. Thickened edge shall be constructed using cement concrete on all radii. All other locations shall be backfilled and compacted.

5. Combination walk shall be 7' on all commercial sites and arterial streets. Combination walk shall be a minimum of 5'-6" on non arterial streets. Dimensions are from face of curb to back of walk.

6. All expansion joints shall be full depth with 3/8" premolded joint filler.

7. All joints shall be cleaned and edged. External edges shall be 1/2" radius. Internal joints shall be 1/4" radius.

8. All soft and yielding foundation material shall be removed and replaced with crushed surfacing top course (CSTC) per Section 9-03.9(3) of the WSDOT Standard Specifications.

9. All sidewalk shall be replaced to the nearest expansion or contraction joint. All joints shall be saw cut full depth prior to restoration and 3/8" expansion joint installed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

10. For sidewalks within the North Slope Historical District area per Standard Plan ND-NS01, see Standard Plan HD-NS03.
NOTES:

1. Sidewalks shall be designed and constructed in accordance with ADA standards for accessible design, 28 CFR, Part 35 and as supplemented by the public right of way accessibility guidelines (PROWAG). City of Tacoma prefers sidewalk cross slopes to be designed to a maximum of 1.5% and a minimum of 1.0%.

2. When placing walk adjacent to existing curb and gutter, curb and gutter will be repaired as necessary before placing concrete forms for walk per Right-of-Way Restoration Policy.

3. Staking is required where no curb is present. Combination walk shall be 7' min. on all commercial sites and arterial streets. Combination walk shall be a minimum of 5' on non arterial streets. Dimensions are from back of curb to back of walk. See contract plans for width and placement of sidewalk.

4. All expansion joints shall be full depth with 3/8" preformed joint filler.

5. All joints shall be cleaned and edged. External edges shall be 1/2" radius. Internal joints shall be 1/4" radius.

6. Subgrade preparation shall meet APWA GSP 2-06.3(3) Subgrade for Permeable Pavements.

7. Permeable ballast shall meet APWA GSP 4-04.2 Gravel Base and 9-03.9(2).Opt1 Pavement Ballast.

8. All soft and yielding foundation material shall be removed and replaced with ballast per APWA GSP 4-04.2 Gravel Base and 9-03.9(2).Opt1 Permeable Ballast.

9. Geotextile fabric may be required between native soils or amended soils and permeable ballast per the recommendation of the geotechnical professional. Geotextile shall be per WSDOT 9.32.2(1), Tables 1 and 2, nonwoven, moderate survivability.

10. For sidewalks within the North Slope Historic District area use Standard Plan ND-NS03. See Standard Plan HD-NS01 for North Slope Historic District site map.

11. For plan view refer to City of Tacoma Standard Plan SU-04.

12. Sidewalk with planter strip may slope in either direction.

13. Planting strip soils shall be per BMP L813 (see Std. Plan GSI-01), if applicable; or scarify or till subgrade to 3 inch depth. Place 3-inches of topsoil on surface and till into 5-inches of site soil. Install 3-inches of arborist wood chip mulch or as specified on plans. Topsoil layer with a minimum organic matter content of 10% dry weight in planting beds, and 5% in turf areas, and a pH from 6.0 to 8.0 or matching the pH of the original undisturbed soil.

14. All disturbed areas not covered with hard surfaces shall be stabilized by planting or mulching.

15. Where needed, adjust ballast in planting strip to accommodate plants. Keep permeable ballast a minimum 2 feet from trunk of trees.

16. Where ballasted sidewalk is installed adjacent to permeable roadway, the permeable ballast may extend from the sidewalk to the roadway section. See Std. Plan SU-31b.

17. Refer to Std. Plan SU-32 for subgrade terracing, as applicable.
NOTES:
1. See SU-04b(2) for Notes.
NOTES:

1. Sidewalks shall be designed and constructed in accordance with ADA standards for accessible design, 28 CFR, Part 35 and as supplemented by the public right of way accessibility guidelines (PROWAG). City of Tacoma prefers sidewalk cross slopes to be designed to a maximum of 1.5% and a minimum of 1.0%.

2. When placing walk adjacent to existing curb and gutter, curb and gutter will be repaired as necessary before placing concrete forms for walk per Right-of-Way Restoration Policy.

3. Staking is required where no curb is present.

4. Combination walk shall be 7' min. on all commercial sites and arterial streets. Combination walk shall be a minimum of 5' on non arterial streets. Dimensions are from back of curb to back of walk. See contract plans for width and placement of sidewalk.

5. All isolation joints shall be full depth with 3/8" premolded joint filler.

6. All joints shall be clean and edged. Joint edges shall be 1/2" radius.

7. Subgrade preparation shall meet APWA GSP 2-06.3(3) Subgrade for Permeable Pavements.

8. All soft and yielding foundation material shall be removed and replaced with ballast per APWA GSP 4-04.2 Gravel Base and 9-03.9(2).Opt1 Permeable Ballast.

9. Permeable ballast shall meet APWA GSP 4-04.2 Gravel Base and 9-03.9(2).Opt1 Permeable Ballast.

10. All pervious surfaces shall be vacuumed immediately after completion of sawcutting to prevent clogging per Std. Detail SU-14F.

11. Geotextile fabric may be required between native soils and permeable ballast per the recommendation of the geotechnical professional. Geotextile shall be per WSDOT 9.33.2(1) Tables 1 and 2, nonwoven, moderate survivability.

12. Planting strip soils shall be per BMP L613 (see Std. Plan GSI-01), if applicable; or scarify or till subgrade to 3 inch depth. Place 3 inches of topsoil on surface and till into 5-inches of site soil. Install 3-inches of arborist wood chip mulch or as specified on plans. Topsoil layer with a minimum organic matter content of 10% dry weight in planting beds, and 5% in turf areas, and a pH from 6.0 to 8.0 or matching the pH of the original undisturbed soil.

13. Where needed, adjust ballast in planting strip to accommodate plants. Keep permeable ballast a minimum 2 feet from trunk of trees.

14. For ballast deeper than curb, provide a geomembrane barrier per Std. Plan GSI-18 between permeable ballast and road section unless adjacent road is permeable.

15. All disturbed areas not covered with hard surfaces shall be stabilized by planting or mulching.

16. For sidewalks within the North Slope Historic District area, use Std. Plan HD-NS03. See Std. Plan HD-NS01 for North Slope Historic District site map.

17. Refer to Std. Plan SU-32 for subgrade terracing, as applicable.
GENERAL NOTES:

1. Provide a separate directional curb ramp for each marked or unmarked crosswalk. (Directional ramps are preferred over 45 degree ramps.) Curb ramp location shall be placed within the width of the associated crosswalk, or as shown on the Contract Plans. The ramp centerline shall be parallel to the direction of the crossing. Forty-five (45) degree ramps shall be installed only after approval by the City's ADA Coordinator and/or the Construction Division Manager.

2. Where "GRADE BREAK" is called out, the entire length of the grade break between the two adjacent surface planes shall be flush and perpendicular to the direction of travel. There shall be no vertical discontinuity between the base of ramp and gutter line.

3. Do not place gratings, junction boxes, access covers, or other appurtenances in front of the curb ramp or on any part of the curb ramp or landing. Placement on/in front of ramp flares is allowed.


5. See Standard Plan SU-04 for Cement Concrete Sidewalk Details. See Contract Plans for width and placement of sidewalk. A thickened edge shall be constructed to full depth of adjacent curb along entire curb radius.

6. For sidewalk ramps within the North Slope Historical District area, per Standard Plan HD-NS01, apply Lamp Black 1lb. per cubic yard of cement concrete or as required for discoloration in accordance with ASTM D209-81 Standard Specifications for Lamp Black pigment.

7. The curb ramp maximum running slope shall not require the ramp length to exceed 15 feet to avoid chasing the slope indefinitely when connecting to steep grades. When applying the 15 foot max. length, the running slope of the curb ramp shall be as flat as possible.

8. Curb ramp, landing and flares shall receive a broom finish, see Standard Specifications 8-14.

9. All curb ramp designs shall be stamped by a licensed Professional Engineer. If meeting the current design standards is not possible, ramps shall be constructed to the maximum extent feasible as indicated by an Engineer's note on the stamped drawings. Rationale supporting the design variance shall be provided by the Engineer and shall include a description of the scope of work, the site-specific factors affecting compliance, and the measures implemented to improve compliance.

10. Pedestrian traffic should be aligned to the receiving ramp. The receiving ramp shall be upgraded or replaced as required in the City's Curb Ramp Installation Matrix.

11. Consult the City's Curb Ramp Installation Matrix and the Street Restoration Policy for additional requirements.

12. Conduit for APS equipment shall be installed during curb ramp construction at all signalized intersections and at intersections where signalization is anticipated within the next 6 years. Coordinate with Public Works - Engineering, Traffic Section.

13. A Pedestrian Accessibility Control Plan shall be developed in conjunction with the project-specific Temporary Traffic Control Plan for all work in the ROW.

14. Pedestrian traffic shall NOT be directed behind the stop bar.

15. Ramp alignment should be consistent with crosswalk alignment.

16. Catch basins shall be located upstream of curb ramps for new construction or when performing storm sewer upgrades.

17. For constructability purposes, the City recommends designing to less than the maximum allowable slopes.

CITY OF TACOMA
DEPARTMENT OF PUBLIC WORKS

APPROVED FOR PUBLICATION

[Signature]
CITY ENGINEER

CURB RAMP DETAILS
GENERAL INFORMATION

STANDARD PLAN NO.  SU-05

DATE

Apr 2011
PERPENDICULAR CURB RAMP TYPE 'A'

NOTES:
SEE STANDARD PLAN SU-05 FOR REFERENCED NOTES

LEGEND:
--- SLOPE IN EITHER DIRECTION

DETAIL

SECTION A

ISOMETRIC VIEW

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DEPARTMENT OF PUBLIC WORKS

PERPENDICULAR CURB RAMP TYPE 'A'

STANDARD PLAN NO. SU-05A
NOTES:
SEE STANDARD PLAN SU-05 FOR REFERENCED NOTES

LEGEND:
--- SLOPE IN EITHER DIRECTION

SECTION A

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DEPARTMENT OF PUBLIC WORKS

PERPENDICULAR CURB RAMP
TYPE 'B'

STANDARD PLAN NO. SU-05B
NOTES:
SEE STANDARD PLAN SU-05 FOR REFERENCED NOTES.

LEGEND:
→ SLOPE IN EITHER DIRECTION

PLAN VIEW
PARALLEL CURB RAMP TYPE 'B'

SLOPE IN EITHER DIRECTION

SECTION A

SECTION B

ISOMETRIC VIEW

CITY OF TACOMA
DEPARTMENT OF PUBLIC WORKS

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PARALLEL CURB RAMP TYPE 'B'

CITY ENGINEER

STANDARD PLAN NO. SU-05E
NOTES:
1. The Detectable Warning Surface shall extend the full width of the curb ramp (exclusive of flares) or the landing.
2. The rows of truncated domes in a detectable Warning Surface shall be parallel with the direction of wheel chair travel.
4. If a curb is not present, place the Detectable Warning Surface at the edge of the pavement.
5. The Detectable Warning Pattern shall be installed using Vanguard ADA Systems, ADA Solutions, Armor-Tile, or approved equal. All detectable warning surface tiles shall be cast in place and shall not use anchors or bolts which make them removable. Concrete shall be blocked out as required for the installation of the Detectable Warning Pattern material.
6. The Detectable Warning Pattern area shall be yellow and shall match the color of Federal Standard 595a, color number 33538.

DETECTABLE WARNING SURFACE DETAIL

CITY OF TACOMA
DEPARTMENT OF PUBLIC WORKS

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DETECTABLE WARNING SURFACE DETAILS

STANDARD PLAN NO. SU-05G
R303.2.2 PARALLEL CURB RAMPS.

R303.2.2.1 RUNNING SLOPE.
The running slope shall be 2% maximum but shall not require the ramp length to exceed 15.0 feet.

R303.2.1.2 CROSS SLOPE.
The cross slope shall be 2% maximum.

R303.3.1 WIDTH.
The clear width of landings, blended transitions, and curb ramps, excluding flares, shall be 4.0 feet minimum.

R303.3.3 SURFACES.
Surfaces of curb ramps, blended transitions, and landings shall comply with R301 - Gratings, Access Covers, and Other Appurtenances shall not be located on curb ramps, landings, blended transitions and gutters within the pedestrian access route.

R303.3.2 DETECTABLE WARNINGS.
Detectable warning surfaces complying with R304 shall be provided, where a curb ramp, landing, or blended transition connects to a street.

R303.4.1 SIZE.
Detectable warning surfaces shall extend 24 in. minimum in the direction of travel and the full width of the curb ramp (exclusive of flares), the landing or, the blended transition.

R303.4.2 ALIGNMENT.
The rows of truncated domes in a detectable warning surface shall be aligned to be perpendicular or radial to the grade break between the ramp, landing, or blended transition and the street.

R303.4.3 GRADE BREAKS.
Grade breaks at the top and bottom of perpendicular curb ramps shall be perpendicular to the direction of ramp run. At least one end of the bottom grade break shall be at the back of curb. Grade breaks shall not be permitted on the surface of curb ramps, blended transitions, landings, and gutter areas within the pedestrian access route. Surface slopes that meet the grade breaks shall be flush.

CROSSWALK.

R303.5.2.2 CROSS SLOPE.
The cross slope at intersections shall be 2% maximum. The cross slope at mid-block crossings shall be permitted to be warped to meet street grade.

FOR INFORMATIONAL PURPOSES ONLY
DO NOT INCLUDE IN CONTRACT SPECIFICATIONS

PROWAG GUIDELINES
TYPICAL PARALLEL CURB RAMPS
DESIGN STANDARDS
STANDARD PLAN NO. SU-05J

NOTES:
1. Curb ramps shall be located, constructed or retrofitted in accordance with ADA standards for accessible design, 28 CFR, Part 36, as supplemented by the draft public works right of way accessibility guidelines (Prowag), the City of Tacoma standard plans and the City's curb ramp installation matrix.

2. Curb ramps for fire equipment shall be installed during curb ramp construction, at all signalized intersections and at intersections where signalization is anticipated within the next 5 years. Coordinate with public works - engineering, traffic section.

R303.22 Reference to Prowag Section, 2006 draft rule (Identified as current best practice in accessible pedestrian design under rhwa federal aid (044) regulation).

TAPER CURB

TRANSITION PANEL FROM RAMP TO EXISTING SIDEWALK (WHERE REQUIRED TO MATCH EXISTING SIDEWALK CROSS SLOPE). MAXIMUM GRADES ARE NOT SPECIFIED BY PROWAG. ADJUST LENGTH AS NEEDED TO PROVIDE SMOOTH TRANSITION. IF PROPOSED MATCH LINE LOCATION DOES NOT FALL ON AN EXISTING JOINT IN THE SECTION OF SIDEWALK TO REMAIN, THE EXISTING WALK SHALL BE REMOVED BACK TO THE NEXT JOINT (MINIMUM 2 FEET).
NOTES:

1. The clearance between the face of curb and any obstruction, except mail boxes, shall be a minimum of 1'-6". The front of a mail box shall be 6" to 8" from the face of curb.

2. A minimum clear width of 4' shall be provided for continuous passage around the obstruction.
NOTES:

1. Type 1 access shall be used at driveways where the planting strip width is 5' or greater.
2. Standard Concrete shall be a minimum compressive strength of 3,000 PSI.
3. All joints shall be cleaned & edged. External joints to the driveway shall be 1/2" radius. Internal joints to the driveway shall be 1/4" radius.
4. Driveways wider or narrower than shown on this plan require approval of the Director of Public Works.
5. Standard concrete driveway section shall be a brushed finish in a transverse direction to the center line of driveway.
6. Driveways wider than 20' require a center line expansion joint.
7. All expansion or isolation joints shall be full depth.
8. When trenching through a driveway access:
   8.a. If driveway is 20' or less in width, a full driveway replacement is required.
   8.b. If driveway is greater than 20' in width, a minimum 2' wide cut back over undisturbed soil is required and replacement shall extend to the nearest control joint.
9. All joints shall be cut full depth prior to restoration and 3/8" expansion joint installed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(3)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.
10. Transition panel from new access to sidewalk shall be a minimum of 5 feet.
11. For driveway entrances within the North Slope Historical District use Standard Plan HD-NS02. See Standard Plan HD-NS01 for map of Historical District area limits.
12. Permeable surface may be allowed for driveway entrances. Refer to Standard Plans PD-01 and PD-02 as applicable. Do not compact subgrade for permeable surfacing and refer to APWA GSP 2-06.3(3) Subgrade for Permeable Pavements. A soils report is required and modeling may be necessary per SWMM BMP L633.
15. A 1-1/4" Ø PVC Sch. 80 Conduit shall be installed as shown, per TMC 10.14.070. Conduit shall be buried 24 inches below finished grade.

STANDARD CONCRETE SECTION DETAIL A-A

NOTE: DESIGNED SECTION REQUIRED FOR PERMEABLE SURFACING. SEE NOTES 12 AND 13.

CITY OF TACOMA
CEMENT CONCRETE
ACCESS TYPE 1
STANDARD PLAN NO. SU-07
NOTES:
1. Type 2 access shall be used at driveways and alleys where the planting strip is less than 5' wide.
2. Standard Concrete shall be a minimum compressive strength of 3,000 PSI.
3. All joints shall be cleaned & edged. External joints to the driveway shall be 1/2" radius. Internal joints to the driveway shall be 1/4" radius.
4. Driveways wider or narrower than shown on this plan require approval of the Director of Public Works.
5. Standard concrete driveway section shall be a brushed finish in a transverse direction to the center line of driveway.
6. Driveways wider than 20' require a center line expansion joint.
7. All expansion or isolation joints shall be full depth.
8. a. If driveway is 20' or less in width, a driveway replacement is required.
   b. If driveway is greater than 20' in width, a minimum 2' wide cut back over undisturbed soil is required and replacement shall extend to the nearest control joint.
9. All joints shall be saw cut full depth prior to restoration and 3/8" expansion joint installed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.
10. Transition panel from new access to sidewalk shall be a minimum of 5'.
11. For driveway entrances within the North Slope Historical District area use per Standard Plan HD-NS02. See Standard Plan HD-NS01 for map of Historical District area limits.
12. Permeable surfacing may be allowed for driveway entrances. Refer to Standard Plans PD-01 and PD-02 as applicable. Do not compact subgrade for permeable surfacing and refer to APWA GSP 2-06.3(3) Subgrade for Permeable Pavements. A soils report is required and modeling may be necessary per SWMM BMP L633.
15. A 1-1/4" Ø PVC Sch. 80 Conduit shall be installed as shown with termini under the transition panel, per TMC 10.14.070. Conduit shall be buried 24 inches below finished grade.
16. Detectable Warning shall be placed at alley accesses if the ADT is greater than 700, the alley entrance is in the downtown area, if it is located near a high pedestrian volume area, or if there are sight distance concerns. The detectable warning pattern, if needed, shall be placed full width of the sidewalk in accordance with Standard Plan SU-05A.

STANDARD CONCRETE SECTION DETAIL A-A

NOTES: Designed section required for permeable surfacing. See Notes 12 and 13.
NOTES:
1. Type 3 access shall be used at alleys where the planting strip is 5' wide or greater.
2. Standard concrete shall be a minimum compressive strength of 3,000 PSI.
3. All joints shall be cleaned & edged. External joints to the access shall be 1/2" radius.
   Internal joints to the access shall be 1/4" radius.
4. Alley accesses wider than 14' require approval of the Director of Public Works.
5. Standard concrete access section shall be a brushed finish in a transverse direction to the center line of access.
6. Dependent upon cross slope of access and alley, additional drainage provisions may be required.
7. Concrete wings shall extend to front of walk.
8. When trenching through an alley access:
   8a. If access is 20' or less in width, an access replacement is required.
   8b. If access is greater than 20' in width, a minimum 2' wide cut back over undisturbed soil is required and replacement shall extend to the nearest control joint.
9. All joints shall be saw cut full depth prior to restoration and 3/8" expansion joint installed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.
10. Transition panel from new access to sidewalk shall be a minimum of 5'.
11. For alley accesses within the North Slope Historical District area use per Standard Plan HD-NS02.
15. A 1-1/4" Ø PVC Sch. 80 Conduit shall be installed as shown, per TNC 10.14.070. Conduit shall be buried 24 inches below finished grade.
16. Detectable Warning shall be placed at alley accesses if the ADT is greater than 700, the alley access is in the downtown area, if it is located near a high pedestrian volume area, or if there are sight distance concerns. The detectable warning pattern, if needed, shall be placed the full width of the sidewalk in accordance with Standard Plan SU-05A.

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**Standard Concrete Section Detail B-B**

- Break Point
- Alley Paving Width
- Slope to Low Side of Alley
- 1/2" Deep Contraction Joint

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**Standard Concrete Section Detail A-A**

- No. 6 Rebar
- 1/2" Lip with 1/2" R.
- 5/8" Expansion Joint
- 1" to 2% (Max)
- Standard Plan No. SU-09
NOTES:
1. For stairway handrail details, refer to Standard Plan No. SU-11.
2. Concrete shall be a minimum compressive strength of 3,000 PSI.
NOTE:
For cement concrete stairway details, refer to Standard Plan No. SU-10
1/2" GALVANIZED EYE BOLT W/ WASHER AND NUT. RECESS NUT AND PEE N BOLT THREADS.

1/8" MIN. THICKNESS GALVANIZED STEEL. INTERIOR SIDE DIMENSIONS 1/2" GREATER THAN POST DIMENSIONS.

CLASS 3000 CONCRETE

NOTES:
1. Timber shall be douglas fir, dense construction grade, and shall be pressure treated.
2. Steel tube shall conform to ASTM A53 or ASTM A53 Grade A.
4. All steel parts shall be galvanized.

REMovable BOLLARD

PAINT TOP 5" WHITE

8" x 8" S4S x 5'-6"

500# MIN. TEST GALVANIZED CHAIN ANCHORED IN CONCRETE

ANCHOR WITH 6" x 3/8" STEEL ROD

3" OD MIN. DRAIN PIPE

24"

1'-6"

1'-6"

2'-8"

2'-8"

3'-0"

1'-1/2"

1'-1/2"

2-1/2"

3-1/2"

3-1/2"

1" CHAMFER (4 SIDES)

3/4"

1 1/2"

8" x 8" S4S x 4'-0"

CITY OF TACOMA
DEPARTMENT OF PUBLIC WORKS

APPROVED FOR PUBLICATION

BOLLARD DETAILS

STANDARD PLAN NO. SU-12

CITY ENGINEER

DATE

12 JAN 2009
NOTES:
1. 4"x4"x8' wooden posts shall be western red cedar or pressure treated wood.
2. Hardware for mounting signs shall be hot dipped galvanized 5/16" x 2" hex head lag screws. The washers shall be USS F/W 5/16" zinc.
3. The end-of-road marker shall be one of the following:
   - a marker consisting of nine red retroreflectors with a minimum 3" diameter, mounted symmetrically on a red diamond panel 24 in. on a side (OM4-1)
   - a retroreflective red diamond panel 24 in. on a side (OM4-3).
4. Provide minimum of four posts as shown.
1. All pavement restoration work shall also meet the requirements of the City of Tacoma's Right of Way Restoration Policy. See Standard Plan SU-14D for any streets exempt from this policy.

2. Temporary Surface Restoration:
   Arterials, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).
   Residential and alleys: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either HMA or cold-mix asphalt. Temporary patches between October 1st and March 31st shall be made with HMA unless otherwise approved.

3. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

4. Where existing pavement defects are in close proximity to the new cut, the inspector may require additional pavement removal to eliminate the pavement defect.

5. The final cut edge of paved surfaces shall be smooth and straight, consistent with grinding or saw cutting devices. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

6. Final compaction of HMA shall be 91% of maximum density.
   - Isolated patches: Minimum 1 test per patch up to 150 square feet, and 1 test required every additional 300 square feet, thereafter.
   - Trench patches: 1 test every 150 linear feet of trench with a minimum of 2 tests per trench.

   Testing shall be performed by a certified independent testing laboratory or certified tester, as approved by the City's Construction Division. Tests shall be completed and reports identifying the project number submitted to the City Construction Division within 48 hours of test.

7. All joints between the new and original asphalt pavement shall be sealed with hot asphalt or asphalt emulsion and covered with dry paving sand before the asphalt solidifies. Existing surfaces shall be prepared in accordance with WSDOT Standard Specification 5-04.3(5)A prior to placing any new pavement surfaces.

8. Longitudinal construction joints shall only be located at the center or edge of affected lanes.
   Streets and courts 20 feet or less in width and all alleys are considered one-lane streets.
   Non-arterial streets and courts greater than 20 feet in width with no traffic channelization are considered two-lane streets with one-lane either side of the centerline of the street.
   Non-arterial streets greater than 32 feet in width with no traffic channelization may be considered three lane streets upon prior approval from the City Engineer on a case by case basis.

9. Transverse construction joints terminate at the edge of the 2' cut back.

10. For municipal capital improvement projects, cement concrete base pavement shall be in accordance with WSDOT Standard Specification 5-05 for cement concrete pavement. For non-municipal capital improvement projects, concrete shall be a minimum compressive strength of 4,000 PSI.

11. Dowel in accordance with WSDOT Standard Plan A-60.10-00 for arterials, industrial areas, and/or roads with bus traffic. For residential streets the dowel bars may be reduced to 1-inch in diameter. In lieu of dowels, full panel replacement is acceptable.
NOTES:

1. All pavement restoration work shall also meet the requirements of the City of Tacoma’s Right of Way Restoration Policy. See Standard Plan SU-14E for any streets exempt from this policy.

2. Temporary Surface Restoration:
   - Arterials, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).

   - Residentials and alleys: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either hot-mix asphalt or cold-mix asphalt.

   - Temporary patches between October 1st and March 31st shall be made with hot-mix asphalt unless otherwise approved.

3. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

4. Where existing pavement defects are in close proximity to the new cut, the inspector may require additional pavement removal to eliminate the pavement defect.

5. The final cut edge of paved surfaces shall be smooth and straight, consistent with grinding or saw cutting devices. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(9)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

6. Final compaction of HMA shall be 91% of maximum density.

   - Isolated patches: Minimum 1 test per patch up to 150 square feet, and 1 test required every additional 300 square feet, thereafter.

   - Trench patches: 1 test every 150 linear feet of trench with a minimum of 2 tests per trench.

   - Testing shall be performed by a certified independent testing laboratory or certified tester, as approved by the City’s Construction Division. Tests shall be completed and reports identifying the project number submitted to the City Construction Division within 48 hours of test.

7. All joints between the new and original asphalt pavement shall be sealed with hot asphalt or asphalt emulsion and covered with dry paving sand before the asphalt solidifies. Existing surfaces shall be prepared in accordance with WSDOT Standard Specification 5-04.3(5)A prior to placing any new pavement surfaces.

8. Longitudinal construction joints shall only be located at the center or edge of affected lanes.

   - Streets and courts 20 feet or less in width and all alleys are considered one-lane streets.

   - Non-arterial streets and courts greater than 20 feet in width with no traffic channelization are considered two-lane streets with one-lane either side of the centerline of the street.

   - Non-arterial streets greater than 32 feet in width with no traffic channelization may be considered three lane streets upon prior approval from the City Engineer on a case by case basis.

9. Transverse construction joints terminate at the edge of the 2' cut back.

10. For municipal capital improvement projects, cement concrete base pavement shall be in accordance with WSDOT Standard Specification 5-05 for cement concrete pavement. For non-municipal capital improvement projects, concrete shall be a minimum compressive strength of 4,000 PSI.
1. All pavement restoration work shall also meet the requirements of the City of Tacoma's Right of Way Restoration Policy.

2. Temporary Surface Restoration:
   Arterials, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).
   Residential and alleys: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either HMA or cold-mix asphalt. Temporary patches between October 1st and March 31st shall be made with HMA unless otherwise approved.

3. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

4. Where existing pavement defects are in close proximity to the new cut, the inspector may require additional pavement removal to eliminate the pavement defect.

5. The final cut edge of paved surfaces shall be smooth and straight, consistent with grinding or saw cutting devices. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

6. Permanent Panel Replacement:
   Arterials, industrial areas and/or roads with bus traffic: 100% panel replacement is required for all affected panels. Monolithic curbs will be poured at time of panel replacement.
   Residential and Alleys: Panels cut greater than ½ the panel length, width, or total area, including the 2-foot cut back, will require 100% panel replacement. Panels cut less than ½ the panel length, width, or total area, including the 2-foot cut back will require 50% panel replacement. Three-piece panels are not acceptable and will require 100% panel replacement.

7. For municipal capital improvement projects, cement concrete base pavement shall be in accordance with WSDOT Standard Specification 5-05 for cement concrete pavement. For non-municipal capital improvement projects, concrete shall be a minimum compressive strength of 4,000 PSI.

8. Dowel in accordance with WSDOT Standard Plan A-60.10-00 for arterials, industrial areas, and/or roads with bus traffic. In residential streets the dowel bars may be reduced to 1-inch in diameter. In lieu of dowels, full panel replacement is acceptable.
1. This Standard Plan shall only apply to streets that are exempt from the City of Tacoma’s Restoration Policy. See Standard Plan SU-14A for any streets not exempt from this policy.

2. Temporary Surface Restoration:
   - Arterials, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).
   - Residentials and alleys: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either HMA or cold-mix asphalt. Temporary patches between October 1st and March 31st shall be made with HMA unless otherwise approved.

3. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

4. Where existing pavement defects are in close proximity to the new cut, the inspector may require additional pavement removal to eliminate the pavement defect.

5. The final cut edge of paved surfaces shall be smooth and straight, consistent with grinding or saw cutting devices. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

6. Final compaction of HMA shall be 91% of maximum density. Testing shall be performed by a certified independent testing laboratory or certified tester, as approved by the City’s Construction Division. Tests shall be completed and reports identifying the project number submitted to the City Construction Division within 48 hours of test.

7. If remaining pavement adjacent to the patch is less than 3' wide, remove and replace to match existing pavement.

8. All joints between the new and original asphalt pavement shall be sealed with hot asphalt or asphalt emulsion and covered with dry paving sand before the asphalt solidifies. Existing surfaces shall be prepared in accordance with WSDOT Standard Specification 5-04.3(5)A prior to placing any new pavement surfaces.

9. For municipal capital improvement projects, cement concrete base pavement shall be in accordance with WSDOT Standard Specification 5-05 for cement concrete pavement. For non-municipal capital improvement projects, concrete shall be a minimum compressive strength of 4,000 PSI.

10. Dowel in accordance with WSDOT Standard Plan A-60.10-00 for arterials, industrial areas, and/or roads with bus traffic. For residential streets the dowel bars may be reduced to 1-inch in diameter. In lieu of dowels, full panel replacement is acceptable.
1. This Standard Plan shall only apply to streets that are exempt from the City of Tacoma's Restoration Policy. See Standard Plan SU-14B for any streets not exempt from this policy.

2. Temporary Surface Restoration:
   Arterials, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).
   Residential and alleys: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either hot-mix asphalt or cold-mix asphalt.
   Temporary patches between October 1st and March 31st shall be made with hot-mix asphalt unless otherwise approved.

3. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

4. Where existing pavement defects are in close proximity to the new cut, the inspector may require additional pavement removal to eliminate the pavement defect.

5. The final cut edge of paved surfaces shall be smooth and straight, consistent with grinding or saw cutting devices. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-06.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

6. Final compaction of HMA shall be 91% of maximum density.
   Testing shall be performed by a certified independent testing laboratory or certified tester, as approved by the City's Construction Division. Tests shall be completed and reports identifying the project number submitted to the City Construction Division within 48 hours of test.

7. All joints between the new and original asphalt pavement shall be sealed with hot asphalt or asphalt emulsion and covered with dry paving sand before the asphalt solidifies. Existing surfaces shall be prepared in accordance with WSDOT Standard Specification 5-04.3(5)A prior to placing any new pavement surfaces.

8. For municipal capital improvement projects, cement concrete base pavement shall be in accordance with WSDOT Standard Specification 5-05 for cement concrete pavement. For non-municipal capital improvement projects, concrete shall be a minimum compressive strength of 4,000 PSI.
1. To be used only where abutting surfaces are pervious concrete or as directed in writing by City of Tacoma. Permeable roads may be required to be patched in an alternate material as directed in writing by City of Tacoma.

2. All pavement restoration work shall also meet the requirements of the City of Tacoma’s Right of Way Restoration Policy.

3. Temporary Surface Restoration:
   Arterials, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).

   Residential and alleys: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either HMA or cold-mix asphalt. Temporary patches between October 1st and March 31st shall be made with HMA unless otherwise approved.

4. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

5. Where existing pavement defects are in close proximity to the new cut, the inspector may require additional pavement removal to eliminate the pavement defect.

6. The final cut edge of paved surfaces shall be smooth and straight, consistent with grinding or saw cutting devices. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces. Joint sealant shall not migrate beyond run-out areas.

7. All pervious surfaces shall be vacuumed immediately after completion of sawcutting to prevent clogging.

8. Permanent Panel Replacement:
   Arterials, industrial areas and/or roads with bus traffic: 100% panel replacement is required for all affected panels. Monolithic curbs will be poured at time of panel replacement.

   Residential and Alleys: Panels cut greater than ½ the panel length, width, or total area, including the 2-foot cut back, will require 100% panel replacement. Panels cut less than ½ the panel length, width, or total area, including the 2-foot cut back will require 50% panel replacement. Three-piece panels are not acceptable and will require 100% panel replacement.

9. Pervious concrete pavement mix shall be approved in writing by the City of Tacoma.

10. Where geotextile fabric or geomembrane liner exist under the permeable ballast, replace with same material. Additional width of excavation may be necessary to overlay fabric or liner. Where a liner is used to create a watertight barrier, repair per manufacturer’s specifications to maintain a watertight barrier.
1. All pavement restoration work shall also meet the requirements of the City of Tacoma’s Right of Way Restoration Policy. See Standard Plan SU-15B for any streets exempt from this policy.

2. Temporary Surface Restoration:
   Arterials, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).
   Residential and alleys: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either HMA or cold-mix asphalt. Temporary patches between October 1st and March 31st shall be made with HMA unless otherwise approved.

3. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

4. Where existing pavement defects are in close proximity to the new cut, the inspector may require additional pavement removal to eliminate the pavement defect.

5. The final cut edge of paved surfaces shall be smooth and straight, consistent with the surface preparation process. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

6. Final compaction of HMA shall be 91% of maximum density.
   - Isolated patches: Minimum 1 test per patch up to 150 square feet, and 1 test required every additional 300 square feet, thereafter.
   - Trench patches: 1 test every 150 linear feet of trench with a minimum of 2 tests per trench.

Testing shall be performed by a certified independent testing laboratory or certified tester, as approved by the City’s Construction Division. Tests shall be completed and reports identifying the project number submitted to the City Construction Division within 48 hours of test.

7. All joints between the new and original asphalt pavement shall be sealed with hot asphalt or asphalt emulsion and covered with dry paving sand before the asphalt solidifies. Existing surfaces shall be prepared in accordance with WSDOT Standard Specification 5-04.3(5)A prior to placing any new pavement surfaces.

8. Longitudinal construction joints shall only be located at the center or edge of affected lanes.

   Streets and courts 20 feet or less in width and all alleys are considered one-lane streets. Non-arterial streets and courts greater than 20 feet in width with no traffic channelization are considered two-lane streets with one-lane either side of the centerline of the street.
   Non-arterial streets greater than 32 feet in width with no traffic channelization may be considered three lane streets upon prior approval from the City Engineer.

9. Transverse construction joints terminate at the edge of the 2’ cut back.

10. HMA pavement shall not be placed over CDF until approved by the City.

---

**TABLE 1**

<table>
<thead>
<tr>
<th>PAVEMENT REPLACEMENT DEPTH IN CUT BACK ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MIN.</strong></td>
</tr>
<tr>
<td>ARTERIALS, INDUSTRIAL AREAS &amp; ROADS WITH BUS TRAFFIC</td>
</tr>
<tr>
<td>RESIDENTIALS AND ALLEYS</td>
</tr>
</tbody>
</table>

---

**CUT BACK ZONE**

**CONSTRUCTION JOINT, SEE NOTES 8 & 9**

**EXISTING ASPHALT OR OIL MAT PAVEMENT**

**CRUSHED SURFACING TOP COURSE (CSTC), MATCH EXISTING THICKNESS, 8" MIN**

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**APPROVED FOR PUBLICATION**

**TYPICAL PAVEMENT RESTORATION FOR ASPHALT CONCRETE/OIL MAT PAVEMENT**

**CITY OF TACOMA**

**DEPARTMENT OF PUBLIC WORKS**

**CITY ENGINEER**

**DATE**

**STANDARD PLAN NO.** SU-15A
1. This Standard Plan shall only apply to streets that are exempt from the City of Tacoma's Restoration Policy. See Standard Plan SU-15A for any streets not exempt from this policy.

2. Temporary Surface Restoration:
   - Arterials, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).
   - Residue: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either HMA or cold-mix asphalt. Temporary patches between October 1st and March 31st shall be made with HMA unless otherwise approved.

3. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

4. Where existing pavement defects are in close proximity to the new cut, the inspector may require additional pavement removal to eliminate the pavement defect.

5. The final cut edge of paved surfaces shall be smooth and straight, consistent with grinding or saw cutting devices. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-05.3(8)B for cement concrete surfaces and 5-04.3(5)C for asphalt concrete surfaces.

6. Final compaction of HMA shall be 91% of maximum density. Testing shall be performed by a certified independent testing laboratory or certificated tester, as approved by the City’s Construction Division. Tests shall be completed and reports identifying the project number submitted to the City Construction Division within 48 hours of test.

7. All joints between the new and original asphalt pavement shall be sealed with hot asphalt or asphalt emulsion and covered with dry paving sand before the asphalt solidifies. Existing surfaces shall be prepared in accordance with WSDOT Standard Specification 5-04.3(5)A prior to placing any new pavement surfaces.

8. HMA pavement shall not be placed over CDF until approved by the City.

9. If remaining pavement adjacent to the patch is less than 3’ wide, remove and replace with asphalt concrete pavement to match existing (minimum 2”).

### TABLE 1

<table>
<thead>
<tr>
<th></th>
<th>MIN.</th>
<th>MAX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterials, Industrial Areas &amp; Roads</td>
<td>MATCH EXISTING +1&quot;,</td>
<td>6&quot;</td>
</tr>
<tr>
<td>with Bus Traffic</td>
<td>OR 4&quot;, WHICHEVER IS GREATER</td>
<td></td>
</tr>
<tr>
<td>Residue</td>
<td>MATCH EXISTING +1&quot;,</td>
<td>4&quot;</td>
</tr>
<tr>
<td>OR 3&quot;, WHICHEVER IS GREATER</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Figure

- **CUT BACK ZONE**
- **SAWCUT**
- **HMA PAVEMENT CL. 1/2" PG 64-22. SEE TABLE 1**
- **CRUSHED SURFACING - TOP COURSE (CSTC) MATCH EXISTING THICKNESS, 8" MIN**
- **EXISTING ASPHALT OR OIL MAT PAVEMENT**
- **12" MIN. CUT BACK OVER UNDISTURBED SOIL**
NOTES:

1. To be used only where abutting surfaces are porous asphalt or as directed in writing by City of Tacoma. Permeable roads may be required to be patched in an alternate material as directed in writing by City of Tacoma.

2. All pavement restoration work shall also meet the requirements of the City of Tacoma’s Right of Way Restoration Policy. For any streets exempt from this policy, compliance with notes 8 and 9 is not required, compliance with note 12 is required.

3. Temporary Surface Restoration:
Arterial, industrial areas and/or roads with bus traffic: Temporary patches shall be compacted and leveled to a minimum of 3-inches of hot-mix asphalt (HMA).
Residential areas: Temporary patches shall be compacted and leveled to a minimum of 2-inches of either HMA or cold-mix asphalt. Temporary patches between October 1st and March 31st shall be made with HMA unless otherwise approved.

4. All permanent final patches shall be rectangular in shape and constructed parallel and perpendicular to the road centerline.

5. Where existing pavement defects are in close proximity to the new cut, the City Inspector may require additional pavement removal to eliminate the pavement defect.

6. The final cut edge of paved surfaces shall be smooth and straight; consistent with grinding or saw cutting devices. No jagged, broken or undermined edges are allowed. Cutting wheel run-out beyond the limits of the opening shall be filled in accordance with WSDOT Standard Specification 5-04.3(5)C for asphalt concrete surfaces. Joint sealant shall not migrate beyond run-out areas.

7. Final compaction of porous HMA shall meet APWA GSP 5-04.3(10)A General.

Isolated patches: Minimum 1 test per patch up to 150 square feet, and 1 test required every additional 300 square feet, thereafter.

Trench patches: 1 test every 150 linear feet of trench with a minimum of 2 tests per trench.

Testing shall be performed by a certified independent testing laboratory or certified tester, as approved by the City’s Inspector. Tests shall be completed and reports identifying the project number submitted to the City’s Inspector within 48 hours of test.

8. Longitudinal construction joints shall only be located at the center or edge of affected lanes.

Roadways 20 feet or less in width and all alleys are considered one-lane streets. Non-arterial roadways greater than 20 feet in width with no traffic channelization are considered two-lane streets with one lane either side of the centerline of the street.

Non-arterial streets greater than 32 feet in width with no traffic channelization may be considered three lane streets upon prior approval from the City Engineer.

9. Transverse construction joints terminate at the edge of the 2’ cut back.

10. Porous HMA and Asphalt Treated Permeable Base (ATPB) pavement shall not be placed over CDF until approved by the City.

11. Where geotextile fabric or geomembrane liner exist under the permeable ballast, replace with same material. Additional width of excavation may be necessary to overlay fabric or liner. Where a liner is used to create a watertight barrier, repair per manufacturer’s specifications and to maintain a watertight barrier.

12. If remaining pavement adjacent to the patch is less than 3’ wide, remove and replace asphalt concrete pavement to match existing (minimum 2”). This note only applies to roads not subject to the City of Tacoma’s Restoration Policy.

13. All pervious surfaces shall be vacuumed immediately after completion of sawcutting to prevent clogging.

### TABLE 1

<table>
<thead>
<tr>
<th>ARTERIALS &amp; INDUSTRIAL AREAS</th>
<th>PER WRITTEN AUTHORIZATION ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESIDENTIALS AND ALLEYS</td>
<td>MATCH EXISTING, OR 2” POROUS HMA OVER 3” ATPB, WHICHEVER IS GREATER</td>
</tr>
</tbody>
</table>

![Diagram of pavement replacement depth in cut back zone]

**CITY OF TACOMA**

**TYPICAL PAVEMENT RESTORATION FOR POROUS ASPHALT PAVEMENT**

**STANDARD PLAN NO.** SU-15C
NOTES:
1. Provide uniform support under barrel.
2. Hand tamp under haunches.
3. Trench width shall be as specified in Section 2-09.4 of the WSDOT Standard Specifications.
4. See WSDOT Standard Specification Section 9-03.12(2) for material requirements on "Pipe Zone Backfill" and for "Backfill Above Pipe Zone."
5. All trenches shall be compacted in accordance with SU-28.
NOTES:

1. For details showing grade ring, ladder, steps, handholds and top slabs, see Standard Plan No. SU-21.
2. Non-reinforced concrete in channel and shelf shall be Class 3000. All precast concrete shall be Class 4000.
3. Rubber gaskets shall be used in tongue and groove joints of pre-cast sections.
4. A flexible pipe-to-manhole connector shall be employed in all connections of rigid and flexible pipes to new precast concrete manholes. The connector shall be "Kor-N-Seal" with "Wedge Korband" manufactured by NPC, Inc., or approved equal.
5. Base reinforcing steel shall be per manufacturer’s recommendation.

<table>
<thead>
<tr>
<th>MANHOLE DIMENSION TABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSIDE DIAMETER</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>48&quot;</td>
</tr>
<tr>
<td>54&quot;</td>
</tr>
<tr>
<td>60&quot;</td>
</tr>
</tbody>
</table>

SEPARATE PRECAST BASE

SEPARATE CAST IN PLACE BASE

INDEX OF MANHOLE TYPE 1

48", 54" AND 60"
NOTES:
1. For details showing grade ring, ladder, steps, handholds and top slabs, see Standard Plan No. SU-21.
2. Non-reinforced concrete in channel and shelf shall be Class 3000. All precast concrete shall be Class 4000.
3. Rubber gaskets shall be used in tongue and groove joints of pre-cast sections.
4. A flexible pipe-to-manhole connector shall be employed in all connections of rigid and flexible pipes to new precast concrete manholes. The connector shall be "Kor-N-Seal" with "Wedge Korband" manufactured by NPC, Inc., or approved equal.
5. Base reinforcing steel shall be per manufacturer's recommendation.

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</tr>
</thead>
<tbody>
<tr>
<td>INSIDE DIAMETER</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>72&quot;</td>
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<tr>
<td>84&quot;</td>
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<tr>
<td>96&quot;</td>
</tr>
<tr>
<td>108&quot;</td>
</tr>
<tr>
<td>120&quot;</td>
</tr>
</tbody>
</table>

CITY OF TACOMA
DEPARTMENT OF PUBLIC WORKS

APPROVED FOR PUBLICATION

MANHOLE-TYPE 2
72" AND GREATER

STANDARD PLAN NO. SU-18
NOTES:
1. For details showing grade ring and top slabs, see Standard Plan No. SU-21.
2. Non-reinforced concrete in channel and shelf shall be Class 3000. All precast concrete shall be Class 4000.
3. Rubber gaskets shall be used in tongue and groove joints of pre-cast sections.
4. A flexible pipe-to-manhole connector shall be employed in all connections of rigid and flexible pipes to new precast concrete manholes. The connector shall be "Kor-N-Seal" with "Wedge Korband" manufactured by NPC, Inc., or approved equal.
5. Manholes shall have the access hole centered over the channel on the upstream side of the manhole.
6. Base reinforcing steel shall be per manufacturer's recommendation.

MANHOLE DIMENSION TABLE

<table>
<thead>
<tr>
<th>INSIDE DIAMETER</th>
<th>MINIMUM WALL THICKNESS</th>
<th>MINIMUM BASE THICKNESS</th>
<th>MAXIMUM HOLE SIZE</th>
<th>MINIMUM DISTANCE BETWEEN HOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>48&quot;</td>
<td>4&quot;</td>
<td>6&quot;</td>
<td>36&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>54&quot;</td>
<td>4 1/2&quot;</td>
<td>8&quot;</td>
<td>42&quot;</td>
<td>8&quot;</td>
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<td>120&quot;</td>
<td>11&quot;</td>
<td>12&quot;</td>
<td>48&quot;</td>
<td>12&quot;</td>
</tr>
</tbody>
</table>
NOTES:

1. Existing pipe shall be supported at all times.
2. No weight of the precast unit shall bear on the existing pipe.
3. Concrete for cast-in-place base shall be Class 4000.
4. Cast-in-place base shall be poured to encase the precast unit.
5. Precast manhole section shall be installed in accordance with the Standard Plan for the specified manhole size and type.
6. Additional manhole sections shall not be installed until concrete base has set for 12 hours.
7. The existing main shall be left in place and the top portion of the main shall be removed. The bottom portion shall be tied in as the channel of the new manhole.
8. Grout all openings to ensure water tight structure.
96" FLAT SLAB TOP
20" x 24", 24" DIA, 48" DIA
or 54" DIA HOLE
2" (TYP)
12"
1" MIN
2 1/2" MAX

72" FLAT SLAB TOP
20" x 24", 24" DIA, 48" DIA
or 54" DIA HOLE
2" (TYP)
8"
1" MIN
2 1/2" MAX

48", 54" OR 60" FLAT SLAB TOP
20" x 24" OR 24" DIA HOLE
2" (TYP)
8"
1" MIN
2 1/2" MAX

#6 BARS AT 7" SPACING

#5 BARS AT 6" SPACING

#4 BARS AT 6" SPACING

ONE #3 BAR HOOP FOR 6"
TWO #3 BAR HOOP FOR 12"

RECTANGULAR ADJUSTMENT SECTION

CIRCULAR ADJUSTMENT SECTION

CONCENTRIC CONE SECTION

NOTE:
As an acceptable alternate to rebar, wire mesh having a minimum area of 0.12 square inches per foot may be used for adjustment sections.
NOTES:
1. Covers shall have the word "SANITARY" in 2 inch raised letters when used with sanitary sewer installations, or "STORM" when installed with storm sewers. All covers shall have the words "CITY OF TACOMA" in 1-1/2 inch raised letters and the words "CONFINED SPACE" in 1-inch raised letters.
2. Lids must be interchangeable, any lid shall fit any and all frames.
3. Frame and cover shall be designed for H-20 loading.
4. Frame shall be grey-iron conforming to the requirements of AASHTO M 105, grade 30B.
5. Covers shall be ductile iron conforming to ASTM A 536, grade 80-55-06.
6. Per WSDOT Standard Specification 9-05.15, metal castings shall not be tipped, painted, welded, plugged, or repaired.
NOTES:
1. Romac style "CB" sewer saddle or approved equal.
2. Core drill sewer main.
3. Portions of the City's sanitary sewer system have been lined. If a lined pipe is encountered during connection of the new side sewer, the Construction Division shall be contacted at (253) 591-5760 for further instructions.
4. Sewer laterals shall not extend beyond the interior wall of the sanitary sewer main.
CAST IRON FRAME AND COVER, SEE DETAIL MATCH EXISTING GRADE

6" PVC PIPE CLEANOUT RISER

12" Ø PVC PIPE, SDR 35

CEMENT CONCRETE COLLAR

6" 45° BEND

WEDGE CURB

ALLEY

CLEANOUT

TYPICAL ALLEY SECTION

CURB & GUTTER

PLANTING STRIP

SIDEWALK

CLEANOUT

TYPICAL SIDEWALK SECTION

CURB & GUTTER

SIDEWALK

CLEANOUT

TYPICAL COMBINATION SIDEWALK SECTION

NOTE:
When no curb and gutter or sidewalk exist, locate cleanout in future planting strip.

FRAME AND COVER DETAIL
NOT TO SCALE

10"
9"
8 3/4"
5 3/4"
4 5/8"
8"
15 1/4"
7/8" HOLE

CLEANOUT DETAIL
NOT TO SCALE

SEE STANDARD BEDDING DETAIL

TO MAIN
SIDE SEWER

STANDARD CLEANOUT LOCATION
NOT TO SCALE
PROGRESSION OF WORK

PRIOR TO EXCAVATING OR RESURFACING:
Contractor shall:
Remove frame and risers to a depth 8-inches below subgrade.
Install steel protective plate in accordance with Detail A.
Reference the location of the utility structure.

CONSTRUCTION OF SURFACING:
Gravel surfacing:
Install base materials and gravel over protective steel plate.

Asphalt surfacing:
Install base materials and asphalt over protective steel plate.

Concrete surfacing:
Adjust frame and grate to final grade prior to placing concrete surfacing.

UPON COMPLETION OF SURFACING:
The asphalt concrete pavement or gravel surfacing shall be removed in a neat circle in accordance with Detail B.
The location of the asphalt or gravel removal shall be based upon the reference location established by the Contractor.
Crushed surfacing and base materials shall be removed and disposed of to allow the removal of the steel protective plate.
The structure shall be adjusted to finish grade utilizing the same methods of construction as specified for new construction in Section 7-05.
For hot mix asphalt, the area shall then be backfilled with Class 3000 cement concrete to an elevation of 3 to 4 inches below the finished pavement surface. 24-hours after placing the concrete, HMA pavement Cl. 3/8" PG 64-22 shall be placed in accordance with Standard Plan No. SU-15.
For non-paved surfaces, the area shall be backfilled with Class 3000 cement concrete to an elevation of 3 to 4 inches below the top of the casting and then backfilled with crushed surfacing top course and compacted.

NOTE:
All general provisions, construction and warranty requirements of the Right of Way Restoration Policy will be followed.
**ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.C.</td>
<td>Face of Curb</td>
</tr>
<tr>
<td>C.G.</td>
<td>Curb Grade</td>
</tr>
<tr>
<td>F.L.</td>
<td>Flow Line</td>
</tr>
<tr>
<td>F.WALL</td>
<td>Face of Wall</td>
</tr>
<tr>
<td>SH.GR.</td>
<td>Shoulder Grade</td>
</tr>
<tr>
<td>C.B.</td>
<td>Catch Basin</td>
</tr>
<tr>
<td>M.H.</td>
<td>Manhole</td>
</tr>
<tr>
<td>L.H.</td>
<td>Lamp Hole</td>
</tr>
<tr>
<td>S.G.</td>
<td>Subgrade</td>
</tr>
<tr>
<td>B.G.</td>
<td>Ballast Grade</td>
</tr>
<tr>
<td>C.R.R.G.</td>
<td>Crushed Rock Grade</td>
</tr>
<tr>
<td>P.C.</td>
<td>Point of Curvature</td>
</tr>
<tr>
<td>P.T.</td>
<td>Point of Tangency</td>
</tr>
<tr>
<td>V.G.</td>
<td>Vertical Curve</td>
</tr>
<tr>
<td>E.P.</td>
<td>Edge of Paving</td>
</tr>
</tbody>
</table>

* Designates distance from guard stake to grade or line hub. (Optional)

**STAKES SHALL HAVE STATIONS ON BACK SIDE**

- **LINE POINTS**
- **GUTTER GRADE**
- **GRADE POINTS**

**LINE & GRADE POINTS FOR WALKS - WHICHEVER SIDE IS STAKED**

**SLOPE STAKES**

**CURBS**

**ALLEY SLABS**

**WALKS**

**SEWERS**

**WALLS**

**SIDE OR BACK**

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**CITY OF TACOMA**
**DEPARTMENT OF PUBLIC WORKS**

**APPROVED FOR PUBLICATION**

**STANDARD PROCEDURE FOR MARKING CONSTRUCTION STAKES**

**STANDARD PLAN NO.** SU-26
NOTES:
1. The existing pavement shall be cut full depth with an eight inch diameter core drill. The subbase material shall be removed using a vacuum excavator, keeping the excavation as minimal as possible.
2. Backfill the excavation with a six inch cushion of crushed rock over the utility then place the remaining void with CDF or compacted CSTC.
3. For asphalt concrete streets, repair the cored pavement section with HMA Class ½" PG 64-22 and seal the joint.
4. For cement concrete pavement streets, replace the cored section with Class 6000 cement concrete.
5. If excavation is larger than 8" core, restoration shall comply with the Right of Way Restoration Policy.
## Compaction Testing Requirements

<table>
<thead>
<tr>
<th>Depth</th>
<th>Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface (Below HMA)</td>
<td>N/A</td>
</tr>
<tr>
<td>1 to 4 feet (or min 18 in.</td>
<td>1 every 12 inches</td>
</tr>
<tr>
<td>above pipe)</td>
<td></td>
</tr>
<tr>
<td>&gt; 4 feet to bottom of</td>
<td>No specific requirement - may be required by COT</td>
</tr>
<tr>
<td>trench</td>
<td>inspector for verification of compaction</td>
</tr>
</tbody>
</table>

**A.** Testing shall be performed by a certified independent testing laboratory or a certified tester as approved by the City's Construction Division. The cost of testing is the responsibility of the permittee. Tests shall be completed and reports identifying the project number submitted to the construction division within 48 hours of tests.

**B.** Only one compaction test will be required for multiple trenches within a 150 SF area. Provided compaction procedures are the same.

**C.** Each lift shall be compacted to 95% modified proctor density, as verified by compaction testing, before proceeding to the next lift. COT inspector may require excavation and removal of soil where compaction is in question.

**Notes:**

1. Compact backfill material in max. 12 in. lifts. Compact backfill material to 95% max. modified proctor density (ASTM 1557) except directly over pipe, hand tamp only.
2. Native backfill will require laboratory testing to determine max. modified proctor density. Imported backfill will require submittal of proctor test results from supplier.
3. See WSDOT Standard Specification Section 2-09.3(1)E material requirements on "Controlled Density Fill" (CDF). CDF may be used for trenches less than 24 in. wide or as approved by the City Engineer. CDF shall be vibrated/compacted.
NOTES:
1. For new pervious concrete sidewalk, place joint directly over centerline of pipe. When placing pipe under existing pervious sidewalk, restoration with impervious concrete will be allowed.
2. No mesh reinforcement to be used for pervious sidewalks.
3. Storm pipe shall be per the City Stormwater Management Manual Volume 3 for pipes within the right-of-way.

REVIEWED BY
PUBLIC WORKS
TACOMA POWER

ENVIRONMENTAL SERVICES
TACOMA WATER

APPROVED FOR PUBLICATION
CITY ENGINEER
4/4/12

STANDARD PLAN NO.  SU-29
NOTES
1. For new pervious concrete sidewalk, place joint directly over centerline of pipe. When placing pipe under existing pervious sidewalk, restoration with impervious concrete will be allowed.
2. No mesh reinforcement shall be used in pervious sidewalks.
3. Storm pipe material shall be ductile iron per the City Stormwater Management Manual Volume 3, for pipes within the Right-of-Way.
NOTES:

1. Permeable ballast shall meet APWA GSP 4-04.2 Gravel Base and 9-03.9(2) Permeable Ballast Opt.1 and shall be installed per APWA GSP 4-04.3(5) Shaping and Compaction.

2. Minimum surface longitudinal slope shall be 0.5%.

3. Geomembrane barrier shall provide an impermeable barrier between standard and permeable section. Geomembrane may also be required at the shoulder side of the road. It shall be installed 1" below finished grade of surfacing, as shown. Alternatively, the liner shall fold over the permeable ballast a minimum of 6". Geomembrane barrier seams shall overlap at least 18".

4. Geomembrane barrier shall extend the length of the permeable section when adjacent to standard pavement. See Std. Plan GSI-18.

5. Geotextile to be provided when recommended by geotechnical professional and shall be required when fines in native subgrade exceed 7% on the #200 sieve.

6. Geotextile for separation per WSDOT 9.33.2(1), woven, Table 3 and installed per WSDOT 2-12.3(1).

7. Permeable pavement surfacing shall meet APWA GSP 5-04.3 Construction Requirements Porous Asphalt (PHMA/PWMA) Acceptance Infiltration Test for porous asphalt or 5-06.3(6) A Infiltration Rate of the Placed Pavement for pervious concrete.

8. Permeable ballast may be extended under curb and sidewalk when approved, see Std. Plan SU-31b.
NOTES:
1. Permeable ballast shall meet APWA GSP 4-04.2 Gravel Base and 9-03.9(2) Permeable Ballast Opt1 and shall be installed per APWA GSP 4-04.3(5) Shaping and Compaction.
2. Minimum surface longitudinal slope shall be 0.5%.
3. Geomembrane barrier shall provide an impermeable barrier between standard and permeable section. Geomembrane may also be required at the shoulder side of the road. It shall be installed 1" below finished grade of surfacing, as shown. Alternatively, the liner shall fold over the permeable ballast a minimum of 6". Geomembrane barrier seams shall overlap at least 18" or per manufacturer's recommendations. Geomembrane barrier shall extend the length of the permeable section when adjacent to standard pavement. See Std. Plan GSI-18.
4. Geotextile to be provided when recommended by geotechnical professional and shall be required when fines in native subgrade exceed 7% on the #200 sieve.
5. Geotextile for separation per WSDOT 9.33.2(1), woven, Table 3 and installed per WSDOT 2-12.3(1). Geotextile under sidewalk may be same as under road or WSDOT 9.33.2(1), Tables 1 and 2, nonwoven, moderate survivability.
6. See Std. Plan PD-01 for minimum pavement section.
7. Planting strip soils shall be per BMP L613 (see Std. Plan GSI-01), if applicable; or scarify or till subgrade to 3-inch depth; place 3-inches of topsoil on surface and till into 5-inches of site soil. Install 3-inches of arborist wood chip mulch or as specified on plans. Topsoil layer with a minimum organic matter content of 10% dry weight in planting beds, and 5% in turf areas, and a pH from 6.0 to 8.0 or matching the pH of the original undisturbed soil.
8. Permeable pavement surfacing shall meet APWA GSP 5-04.3 Construction Requirements Porous Asphalt (PAWAP/WMA) Acceptance Infiltration Test for porous asphalt or 5-06.3(6) A Infiltration Rate of the Placed Pavement for pervious concrete.
9. Permeable ballast may be extended under curb and sidewalk when approved.
1. Permeable ballast shall meet APWA GSP 4-04.2 Gravel Base and 9-03.9(2) Permeable Ballast Opt I and shall be installed per APWA GSP 4-04.3(5) Shaping and Compaction.
2. Minimum surface longitudinal slope shall be 0.5%.
3. Geomembrane barrier shall provide an impermeable barrier between standard and permeable section. Geomembrane may also be required at the shoulder side of the road. It shall be installed 1" below finished grade of surfacing, as shown. Alternatively, the liner shall fold over the permeable ballast a minimum of 6". Geomembrane barrier seams shall overlap at least 18" or per manufacturer's recommendations. Geomembrane barrier shall extend the length of the permeable section when adjacent to standard pavement. See Std. Plan GSI-18.
4. Geotextile to be provided when recommended by geotechnical professional and shall be required when fines in native subgrade exceed 7% on the #200 sieve.
5. Geotextile for separation per WSDOT 9.33.2(1), woven, Table 3 and installed per WSDOT 2-12.3(1). Geotextile under sidewalk may be same as under road or WSDOT 9.33.2(1), Tables 1 and 2, nonwoven, moderate survivability.
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8. Permeable pavement surfacing shall meet APWA GSP 5-04.3 Construction Requirements Porous Asphalt (PHMA/PWMA) Acceptance Infiltration Test for porous asphalt or 5-06.3(6)A Infiltration Rate of the Placed Pavement for pervious concrete.
9. Permeable ballast may be extended under curb and sidewalk when approved, see Std. Plan SU-31b.

NOTES:
NOTES:
1. For finish grade no steeper than 10%.
2. Geotextile to be provided between native soil and permeable ballast when recommended by geotechnical professional and shall be required when fines in native subgrade exceed 7% on the #200 sieve.
3. Geotextile for separation under roadways shall be per WSDOT 9.33.2(1), woven, Table 3 and installed per WSDOT 2-12.3(1). Geotextile under sidewalk may be same as under road or WSDOT 9.33.2(1), Tables 1 and 2, nonwoven, moderate survivability.
4. See Std. Plans SU-31a, b and c for permeable roadway sections.
NOTES:
1. Location on mains per plan sheet.
2. Review design with the City for utilities greater than 36 inches in diameter.
3. For service lines, install trench dams at approximate back of walk where utility services are installed beyond the permeable ballast section.
4. Ductile iron pipe shall be encased in a polyethylene sleeve, meeting the requirements of American Waterworks Association (AWWA).
NOTES:
1. Surface mounting of sign posts, especially within traffic islands or medians, is only allowable with special authorization from the city's traffic engineering group. (Exception: Surface mounting of flexible post object markers within islands or medians is permitted).
2. If finished ground line is a hard surface, then compacted native backfill material shall be concrete with the top of foundation being smooth, dense, and uniform to finished ground line.

SIGN SUPPORT DETAIL FOR STEEL SIGN POST

BASE PLATE DETAIL FOR STEEL SIGN POST SURFACE MOUNTING (SEE NOTE 1)
NOTES:

1. Barricades shall meet the design criteria of MUTCD section 6F.68 for a Type 3 barricade, except that the colors of the stripes shall be retroreflective (Type IV or better) white and retroreflective (Type IV or better) red.

2. Barricade section shall extend to limits of the roadway surface relying on the least number of posts while still providing equidistant-spacing in accordance with the above detail.

3. Sign sheet shall be bolted to (or integral to) the cross member using 5/8-inch galvanized bolts with fender washers. Securing hardware shall not consist of or include nails, lag bolts, or screws.

4. Panel material shall be high density polyethylene (HDPE), or approved equivalent such as #2 or better Douglas Fir (Untreated).

CITY OF TACOMA
PERMANENT ROADWAY TERMINUS
TYPE 3 BARRICADE
STANDARD PLAN NO. SU-35