STANDARD PLANS
FOR
PUBLIC WORKS CONSTRUCTION

SALT LAKE COUNTY

DEPARTMENT OF PUBLIC WORKS
2011

Revised: 08/10/2015
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SECTION 1

ROADWAYS
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Salt Lake County Public Works Engineer. Reference to specific sections of APWA does not limit requirements to that section.

SUBGRADE: See APWA Section 32 05 10 (Backfilling Roadways) for preparation and proof rolling of roadway, curb and gutter, and sidewalk.

UNTREATED BASE COURSE: Shall be Grade 1 as per APWA Section 32 11 23 (Crushed Aggregate Base). Place fill in no greater than 6 inch lifts after compaction as per APWA Section 32 05 10 (Backfilling Roadways). Compact to no less than 95% relative density based on the Modified Proctor Density as per APWA Section 31 23 26 (Compaction).

PRIME COAT: Prime coat, as directed by the engineer, on untreated base course before placing asphalt. See APWA Section 32 12 13 (Prime Coat).

TACK COAT: Grade SS–1, CSS–1, or CSS–1h emulsified asphalt shall be applied to existing asphalt concrete or portland cement concrete surfaces prior to placing asphalt concrete pavement as per APWA Section 32 12 14 (Tack Coat).

ASPHALT CONCRETE: Aggregate grading shall conform to Dense Grade DM–3/4 or DM–1/2 as per APWA Section 32 12 05 (Asphalt Concrete), unless specified otherwise. Dense Grade DM–1/2 shall be limited to asphalt tie-ins and driveways. Asphalt Cement shall be AC–20 unless otherwise specified and/or approved by the Salt Lake County Public Works Engineer or designated representative. Minimum allowed roadway section – 3 inches asphalt concrete on 8 inches untreated base course. Thicker sections required for collectors, minor arterials, and roadways with heavy truck traffic. Construct road mix bituminous surface course only when air temperature in the shade and road bed temperature are greater than 50 degrees.
STANDARD CONFIGURATION

ROADWAY SECTION / BIKE LANE
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer. Reference to specific sections of APWA does not limit requirements to that section.

SIDEWALK WIDTH: Sidewalks placed contiguous to the curb and gutter shall be a minimum of 6 feet in width for a street classification of collector or higher. Contiguous sidewalks in residential areas shall be 5 feet in width.


CURB RETURN RADIUS: Curb return radius at the intersection of a residential street with a higher classification roadway may be greater than 25 feet when significant truck traffic exists, or at the direction of the Public Works Engineer or designated representative.

COLLECTOR AND ARTERIAL ROADWAYS: Dimensions for collector and arterial roadways can be found in the Standards for Roadway Development Chapter 14.12, Salt Lake County Ordinances and in the AASHTO Guidelines.
RESIDENTIAL STREET INTERSECTION

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APPROVED 1/1/11
SHEET 2 OF 2

R = 25'(7620 mm) (See Note: CURB) (RETURN RADIUS)

Slope

PROPERTY LINE

Sidewalk

Park Strip

Slope

No. 1 Curb and Gutter

Waterway Transition

Construction Joint with keyway (Typ.)

Waterway where required

Expansion Joint (Typ.)

Curb ramp required at all corners where sidewalk is installed. (Typ.)

See Standard Plan 135

Control Elev. at points on 1/4 Δ's at top back of curb (Typ.)

Slope

12" 300 mm

4'-0" 1220 mm

5'-0" 1570 mm

2'-0" 610 mm

760 mm

Varies

Q

Varies
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer. Reference to specific sections of APWA does not limit requirements to that section.

SUBGRADE: See APWA Section 32 05 10 (Backfilling Roadways) for preparation and proof rolling of roadway, curb and gutter, and sidewalk.

UNTREATED BASE COURSE: Shall be Grade 1 as per APWA Section 32 11 23 (Crushed Aggregate Base). Place fill in no greater than 6 inch lifts as per APWA Section 32 05 10 (Backfilling Roadways). Compact to no less than 95% relative density based on the Modified Proctor Density as required in APWA Section 31 23 26 (Compaction).

REINFORCING STEEL: All reinforcing steel shall be grade 60 uncoated as per APWA Section 03 20 00 (Concrete Reinforcing).

COVER: All steel shall have a minimum of 2" (50mm) cover, except bottom of slab steel, which shall have 3" (75mm) minimum cover.

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15 %.

EXPANSION JOINT: Expansion joint shall be 1/2" (15 mm) thick preformed expansion joint filler F1—bituminous mastic as per APWA Section 32 13 73 (Concrete Paving Joint Sealants) at each interface between the curb and gutter and the waterway transition.

KEYWAY: Keyway required at construction joints, as shown.
CONSTRUCTION JOINT WITH KEYWAY

Curb and Gutter to be placed monolithically with waterway

WATERWAY TRANSITION

4" (100 mm) Untreated Base Course

AREA = 2.764 sq. ft. (0.2568 sq. m)

4 #4's (4 -13M ) Equally Spaced

WATERWAY
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer. Reference to specific sections of APWA does not limit requirements to that section.

SUBGRADE: See APWA Section 32 05 10 (Backfilling Roadways) for preparation and proof rolling of roadway, curb and gutter, and sidewalk.

UNTREATED BASE COURSE: Shall be Grade 1 as per APWA Section 32 11 23 (Crushed Aggregate Base). Place fill in no greater than 6 inch lifts as per APWA Section 32 05 10 (Backfilling Roadways). Compact to no less than 95% relative density based on the Modified Proctor Density as required in APWA Section 31 23 26 (Compaction).

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

EXPANSION JOINT: Expansion joint shall be 1/2" (15 mm) thick preformed expansion joint filler F1—bituminous mastic as per APWA Section 32 13 73 (Concrete Paving Joint Sealants) at each interface as shown.

Sidewalk and curb and gutter within driveway limits shall be considered incidental to flared drive approach cost.

DRIVEWAY APRONS WITH SIDEWALK CONTIGUOUS TO THE CURB: Where the pedestrian access route crosses the driveway apron, the maximum cross slope for the 4-foot wide projection of the sidewalk across the apron shall be 2%. This may be accomplished by the following:

a. The apron transition shown in Detail A of Standard Plan 125 (Sheet 2 of 2) may be used.

b. Other approaches may be considered by submittal to the Salt Lake County Public Works Engineer for approval.

DRIVEWAY THICKNESS STANDARDS:

Concrete Drive Approach
Min. 5" Thick For Residential Use Only
Min. 7" Thick For Commercial Or Industrial
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer. Reference to specific sections of APWA does not limit requirements to that section.

SUBGRADE: See APWA Section 32 05 10 (Backfilling Roadways) for preparation and proof rolling of roadway, curb and gutter, and sidewalk.

UNTREATED BASE COURSE: Shall be Grade 1 as per APWA Section 32 11 23 (Crushed Aggregate Base). Place fill in no greater than 6 inch lifts as per APWA Section 32 05 10 (Backfilling Roadways). Compact to no less than 95% relative density based on the Modified Proctor Density as required in APWA Section 31 23 26 (Compaction).

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4” (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

EXPANSION JOINT: Expansion Joint shall be 1/2” (15 mm) thick preformed expansion joint filler F1—bituminous mastic as per APWA Section 32 13 73 (Concrete Paving Joint Sealants) at each interface as shown.

GENERAL:

Driveway slab may be built monolithic with curb and gutter or separate, as shown.

Sidewalk and curb and gutter within driveway limits shall be considered incidental to open drive approach cost.

Existing curb and gutter and sidewalk shall be removed to the nearest joint before constructing new drive approach.
PLAN

Concrete Drive Approach
- Min. 6" (150 mm) Thick for residential use only
- Min. 7" (180 mm) Thick for commercial or industrial

Sidewalk

See Detail A

SECTION A–A

No. 1 Curb and Gutter

1 1/2" (40 mm)

6" (150 mm)

R = 1" (Typ.)

8" (200 mm)

6" (150 mm)

Untreated Base Course (Entire Drive Approach)

DETAIL A

OPEN DRIVE APPROACH
(FOR REPLACEMENT ONLY)

SALT LAKE COUNTY

STANDARD PLAN
130

APPROVED 1/1/11

SHEET 2 OF 2
NOTES:
Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer. Reference to specific sections of APWA does not limit requirements to that section.

SUBGRADE: See APWA Section 32 05 10 (Backfilling Roadways) for preparation and proof rolling of roadway, curb and gutter, and sidewalk.

UNTREATED BASE COURSE: Shall be Grade 1 as per APWA Section 32 11 23 (Crushed Aggregate Base). Place fill in no greater than 6 inch lifts as per APWA Section 32 05 10 (Backfilling Roadways). Compact to no less than 95% relative density based on the Modified Proctor Density as required in APWA Section 31 23 26 (Compaction).

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

EXPANSION JOINT: Expansion joint shall be 1/2" (15 mm) thick preformed expansion joint filler F1—bituminous mastic as per APWA Section 32 13 73 (Concrete Paving Joint Sealants) at each interface as shown.

DETECTABLE WARNINGS: Locate raised truncated domes so that the edge nearest the curb line is within 6 to 8 inches from the curb line excluding Curb Ramp Types H, and I where X < 5 feet (see sheet 6 of 6). Provide 2-foot of truncated dome pattern at the lower end of all curb ramps extending the full width of the curb ramp. See typical dimensions on Type B Curb Ramp. Detectable warnings shall contrast visually with adjoining surfaces, either light—on—dark, or dark—on—light. Glued or surface applied domes are not acceptable for new construction. Stamped domes are not allowed under any conditions. Truncated dome materials shall be selected from the County approved materials list.

RAMPS: Length of any ramp not required to exceed 15 feet. Ramp shown are examples only, site specific ramps may require modification and additional features to comply with current Federal ADA Guidelines.

REVISED JULY 9, 2007
STANDARD PLAN 135
CURB RAMPS
SALT LAKE COUNTY
APPROVED 1/1/11
SHEET 1 OF 6
NOTES:

1. TYPE A
   The entire ramp slope is achieved outside the sidewalk section. A concrete warped curb section shall begin 2' from edge of detectable warning surface.

2. TYPE B
   Provide at least 4' of sidewalk width beyond the ramp.

3. TYPE C
   Use this type of ramp when there is insufficient width to accommodate TYPE B curb ramp.

4. No pull box, utility vault, utility pole, manhole or similar appurtenance shall be located within the sidewalk ramp area.

5. It is desirable to locate all drain inlets out of sidewalk ramp area. Use of drain inlet within ramp area requires special design of inlets.

6. See Detail 'A' (sheet 4 of 6) for raised truncated dome detail on detectable warning surface.

7. Maximum cross slope of adjoining gutters and road surface immediately adjacent to the curb ramp, or accessible route, shall not exceed 1:20(5%).

8. Running and cross slope at midblock crossings shall be permitted to be warped to meet street or highway grade.
Expansion Joint
PC & PT (Typ.)

Curb Wall

4' Landing

Sidewalk Ramp

5' Park Strip

Curb Line

Warp to Curb

Crosswalk

Detectable Warning Surface
(See Notes: Detectable Warnings Sheet 1)

SECTION D-D

Landing: Cross Slope: 1:50(2%) Max. Towards The Street.

Ped Ramp Slope: 1:12(8.3%) Max.

Sidewalk Ramp: 1" Rise Required Length May Vary
Slope May Vary, But 1:12(8.3%) Max.

Sidewalk: Cross Slope 1:50(2%) Max. Towards
The Street.

Curb Wall: 6" Wide As Needed.

CURB RAMPS

SALT LAKE COUNTY

STANDARD PLAN

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SHEET 3 OF 6
NOTE:
1. Provide detectable warning surface for full width of ramp, min. 4’ width.
2. Detectable warning surface is required wherever curb is absent.
3. When detectable warning surface is cut, grind remaining portion of any cut domes. Seal all cut panel edges to prevent water damage.
4. Locate curb cut within crosswalk.
Detectable Warning Surface
Location where X<5'
Warp from Sidewalk to Top of Curb
1:12(8.33%)Max.

SECTION A-A

REQUIRED DETECTABLE WARNING SURFACE
LOCATION WHERE X>5' FOR TYPE H & TYPE I

Detectable Warning Surface
Location where X<5'
Curb Wall (if required)
1:12(8.33%)Max.

TYPE I

REVISED JULY 11, 2007

CURB RAMPS

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STANDARD PLAN
135

APPROVED 1/1/11
SHEET 6 OF 6
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer. Reference to specific sections of APWA does not limit requirements to that section.

SUBGRADE: See APWA Section 32 05 10 (Backfilling Roadways) for preparation and proof rolling of roadway, curb and gutter, and sidewalk.

UNTREATED BASE COURSE: Shall be Grade 1 as per APWA Section 32 11 23 (Crushed Aggregate Base). Place fill in no greater than 6 inch lifts as per APWA Section 32 05 10 (Backfilling Roadways). Compact to no less than 95% relative density based on the Modified Proctor Density Method D as required in APWA Section 31 23 26 (Compaction).

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04. Allowable slump shall not exceed 4” (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

EXPANSION JOINT: Expansion Joint shall be 1/2 inch thick (15 mm) preformed expansion joint filler F1—bituminous mastic as per APWA Section 32 13 73 (Concrete Paving Joint Sealents) at spacing shown.
NO. 1 CURB AND GUTTER

NO. 2 CURB AND GUTTER

NO. 3 CURB AND GUTTER

NO. 4 CURB AND GUTTER

(ROLL GUTTER REPLACEMENT ONLY)

CURB AND GUTTER JOINT DETAIL

Expansion Joint

Contraction Joints Made By Inserting 1/8" (3 mm)
Thick Iron Plates to a Depth of 3" (80 mm)
At 10'-12' (3050 mm–3660 mm) Intervals
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer. Reference to specific sections of APWA does not limit requirements to that section.

SUBGRADE: See APWA Section 32 05 10 (Backfilling Roadways) for preparation and proof rolling of roadway, curb and gutter, and sidewalk.

UNTREATED BASE COURSE: Shall be Grade 1 as per APWA Section 32 11 23 (Crushed Aggregate Base). Place fill in no greater than 6 inch lifts as per APWA Section 32 05 10 (Backfilling Roadways). Compact to no less than 95% relative density based on the Modified Proctor Density as required in APWA Section 31 23 26 (Compaction).

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

EXPANSION JOINT: Provide 1/2" (15 mm) thick preformed expansion joint filler F1-bituminous mastic as per APWA Section 32 13 73 (Concrete Paving Joint Sealants) at a minimum of 40 feet (12 m) and a maximum of 60 feet (18 m) intervals.

CONTRACTION JOINT: Score lines shall be placed to create square panels in sidewalk. (When contiguous sidewalk is constructed, score lines shall align with curb score lines, with an additional sidewalk score line between curb score lines to provide a maximum of 6' spacing.)

CURB WALL: Shall have a 3/4 inch vertical chamfered joint at 12 feet (3660 mm) spacing. Exposed surface of wall is to have a smooth finish free from irregularities.

SIDEWALK WIDTH: See Plan Sheets or Standard Plan 115.

TRIP HAZARD: Changes in elevation greater than \( \frac{1}{4} \) shall be beveled with a slope no greater than 2H:1V.
NOTES:

1. This detail has been developed to provide a location for utilities when sidewalk is placed contiguous with curb and gutter.

2. Sidewalk shall be 4’ unless otherwise approved by the Public Works Engineer.

3. Brick-stamped and colored concrete shall match the thickness of concrete and base course as the adjacent sidewalk.
For 5’ Sidewalk

2' - 2"

Utility box or obstruction

For 6’ Sidewalk

4’ Sidewalk

1’ - 6”

Travel lanes

Utility Pole

Right of way

SALT LAKE COUNTY

UTILITY LOCATION DETAIL

UTILITY POLE

ABOVE-GROUND UTILITY BOX

STANDARD PLAN

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SHEET 2 OF 2
NOTES:

1. Concrete is considered defective if any component has one or more of the conditions shown on sheet 2. County may require section replacement for any latent defects not described.

2. Defective concrete resulting from an individual crack is defined as having at least one of the following:
   - horizontal separation wide enough to insert a dime
   - vertical displacement resulting from crack
   - spalling, spidering, or chipping of crack

3. Defective concrete resulting from multiple cracks is defined as having at least one of the following:
   - one section with multiple cracks where both ends of crack link with slab edge, joint, or another crack.
   - adjacent sections with one or more cracks where both ends of crack link with slab edge, joint, or another crack.

4. Defective concrete resulting from vertical displacement is defined as one of the following:
   - at time of preformance bond release: any vertical displacement at construction joint or expansion joint.
   - concrete not under warranty: vertical displacement at construction joint or expansion joint greater than \( \frac{1}{8} \)".

5. Defective concrete resulting from spalls is defined as one of the following:
   - at time of preformance bond release: any spalling.
   - concrete not under warranty: spalling covering more than 20% of a section.
VERTICAL OR HORIZONTAL DISPLACEMENT

ONE OR MORE CRACKS AS DEFINED

SIDEWALK

PARKSTRIP

EXPANSION JOINT

SCORE JOINT

CORNER CRACKING

VERTICAL DISPLACEMENT IN SECTION

SPALLED SECTION

HEAVES, SETTLEMENT, SPALLS, OR DEPRESSIONS THAT ALLOW WATER TO POND 1/4" DEPTH UNDER A 10 FT STRAIGHT EDGE

VOIDS NOT GREATER THAN 4" UNDER SIDEWALK AND 12" IN LENGTH MAX. INSPECTOR MAY REJECT ANY VOID IF DEEMED UNSTABLE.
SECTION 2

STORM DRAIN FACILITIES
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of “APWA Manual of Standard Specifications 2007 Edition,” addendums, and modifications thereto; and as directed by the Public Works Engineer.

Cast Iron to conform to ASTM A–48, Class 35B H–20 wheel loading.
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

Cast Iron to conform to ASTM A–48, Class 35B H–20 wheel loading.
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

Cast Iron to conform to ASTM A-48, Class 35B H-20 wheel loading.

The words "STORM DRAIN" shall be cast into the lid as shown.
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

Cast Iron to conform to ASTM A-48, Class 35B H-20 wheel loading.

The words "STORM DRAIN" shall be cast into the lid as shown.
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

Ladder rungs shall be copolymer polypropylene plastic coating over a \( \frac{1}{2} \) inch steel bar.

Steel bar shall conform to ASTM 615 Grade 60.
LADDER RUNG

SALT LAKE COUNTY

STANDARD PLAN

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APPROVED 1/1/11

SHEET 2 OF 2
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

REINFORCING STEEL: All reinforcing steel shall be grade 60 as per APWA Section 03 20 00 (Concrete Reinforcing). All reinforcing steel shall be centered in the walls and slabs, with a minimum of 2" cover. Steel shall be cut to maintain 2" clear around pipe opening. A1 bars required at all corners, vertical and horizontal at same size and spacing as wall steel.

PIPE: Pipe sizes and locations are as shown on plan and profile sheets, including flow-line elevations.


GROUT: Grout shall be cement based shrinkage resistant grout as per APWA 03 61 00 (Cementitious Grouting).

FORMING: Forming both sides of walls required.


BACKFILL: Granular backfill borrow shall conform to APWA 31 05 13 (Common Fill) and installed in accordance with APWA 31 23 23 (Backfilling For Structures) and compacted to 95% required all sides.

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

DEPTH OF INLET: Depth of inlet can be extended to 12 feet (3660 mm) by permission of the Public Works Engineer.

WATER TABLE: No additional requirements when constructing in locations with high water table.
CURB INLET WITH GRATE

PLAN

A1 Bar (Typ.)

Provide 2" vert. drop from the gutter flow line to top of grate (typical both sides)

SECTION A-A

#5 @ 12" O.C.
16M @ 300 mm O.C.
(Typical Vertical Steel all four walls)

#5 @ 12" O.C.
(16M @ 300 mm O.C.)
(Typ. Horiz. Steel – all four walls)

4 additional #5 bars req. Extend into wall and floor slab as shown. (Typ. all pipes)

SECTION B-B

2" vert. drop

A1 Bar
(#5@12" O.C.)

Outer pipe wall may not extend into adjacent box wall

A1 BAR

6' Max.
(1830 mm Max.)

2'-0"
(610 mm)

8"(typ.)
(200 mm)

20"
(510 mm)

8"
(200 mm)

CURB INLET WITH GRATE

SALT LAKE COUNTY

SINGLE
APPROVED 1/1/11

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SHEET 2 OF 2
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

REINFORCING STEEL: All reinforcing steel shall be grade 60 as per APWA Section 03 20 00 (Concrete Reinforcing). All reinforcing steel shall be centered in the walls and slabs, with a minimum 2" cover. Steel shall be cut to maintain 2" clear around pipe opening. A1 bars required at all corners, vertical and horizontal at same size and spacing as wall steel.

PIPE: Pipe sizes and locations are as shown on plan and profile sheets, including flow-line elevations.


GROUT: Grout shall be cement based shrinkage resistant grout as per APWA 03 61 00 (Cementitious Grouting).

FORMING: Forming both sides of walls required.

FRAME AND GRATE: See Standard Plan 201 for Frame and Grate Detail. Double frame and grate consists of two single frames and grates with interior flange removed from frame.

BACKFILL: Granular backfill borrow (Common Fill) in accordance with APWA 31 23 23 (Backfilling For Structures) and compacted to 95% required all sides.

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04. Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement by weight is 15%.

WATER TABLE: Reinforcing steel shall be increased to #5 @9" O.C. (walls) in locations with high water table.
Provide 2' vert. drop from the gutter flow line to top of grate (typ. both sides)

#5 @ 12" O.C.
16M @ 300 mm O.C.
(Typical Vertical Steel)
(All four walls)

#5 @ 12" O.C.
16M @ 300 mm O.C.
(Typ. Horiz. Steel)
(All four walls)

SECTION A-A

2" vert. drop

6' Max.
(1830 mm)

8" (200 mm)

2'-0" (610 mm)

8" (typ.)
(200 mm)

A1 BAR
(#5 @ 12" O.C.)

Outer pipe wall may not extend into adjacent box wall

SECTION B-B

#5 @ 12" O.C.
16M @ 300 mm O.C.
(Slab Steel – Both Ways)

CURB INLET WITH GRATE
DOUBLE

SALT LAKE COUNTY

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APPROVED 1/1/11

SHEET 2 OF 2
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

REINFORCING STEEL: All reinforcing steel shall be grade 60 as per APWA Section 03 20 00 (Concrete Reinforcing). All reinforcing steel shall be centered in the walls and slabs. Steel shall be cut to maintain 2” clear around pipe opening. A1 bars required at all corners, vertical and horizontal, at the same size and spacing as wall steel.

PIPE: Pipe sizes and locations are as shown on plan and profile sheets, including flow-line elevations.


GROUT: Grout shall be cement based shrinkage resistant grout as per APWA 03 61 00 (Cementitious Grouting).

FORMING: Forming both sides of walls required.


BACKFILL: Granular backfill borrow shall conform to APWA 31 05 13 (Common Fill) and installed in accordance with APWA 31 23 23 (Backfilling For Structures) and compacted to 95% required all sides.

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4” (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement by weight is 15%.

DEPTH OF INLET: Depth of inlet may be extended to 8 feet (2440 mm) by permission of the Public Works Engineer.

WATER TABLE: No additional requirements when constructing in locations with high water table.

LIMITATIONS: The Grate Inlet is for use with No. 2, 3, or 4 Curb and Gutter or locations with no curb and gutter.
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

REINFORCING STEEL: All reinforcing steel shall be grade 60 as per APWA Section 03 20 00 (Concrete Reinforcing). All reinforcing steel shall be centered in the walls and slabs. Steel shall be cut to maintain 2” clear around pipe opening. A1 bars required at all corners, vertical and horizontal, at same size and spacing as wall steel.

PIPE: Pipe sizes and locations are as shown on plan and profile sheets, including flow-line elevations.


GROUT: Grout shall be cement based shrinkage resistant grout as per APWA 03 61 00 (Cementitious Grouting).

FORMING: Forming both sides of walls required.


BACKFILL: Granular backfill borrow shall conform to APWA 31 05 13 (Common Fill) and installed in accordance with APWA 31 23 23 (Backfilling For Structures) and compacted to 95% required all sides.

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4” (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

WATER TABLE: Wall thickness must be increased to 10” and steel spacing must be decreased to #5 @ 6” O.C. when constructing in locations with high water table.

LIMITATIONS: The grate inlet is for use with No. 2, 3, or 4 Curb and Gutter or locations with no curb and gutter.
PLAN VIEW

5'-0" (1520 mm) 9'-5 3/4" (2890 mm) 5'-0"

(1520 mm) Transition No. 2, 3, or 4 Curb and Gutter to top of grate

A1 Bar

#5 @ 9" O.C. 16M @ 230 mm (Typ. Vert. Steel) (All four walls)

#5 @ 9" O.C. 16M @ 230 mm (Typ. Horiz. Steel) (All four walls)

4 additional #5 bars req. Extend into wall and floor slab as shown. (Typ. all pipes)

SECTION A-A

No. 2, 3, or 4 Curb and Gutter

4" (100 mm)

8" (typ.) (200 mm)

A1 Bar

SECTION B-B

8" (200 mm)

8" (200 mm)

GRATE INLET

DOUBLE

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SHEET 2 OF 2
NOTES:
Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addenda, and modifications thereto; and as directed by the Public Works Engineer.

REINFORCING STEEL: All reinforcing steel shall be grade 60 as per APWA Section 03 20 00 (Concrete Reinforcing). All reinforcing steel shall be centered in the walls and slabs with a minimum 2" cover. Steel shall be cut to maintain 2" clear around pipe and lid opening. A1 bars required at all corners, vertical and horizontal. A1 bars connecting two walls shall match wall steel size and spacing. A1 bars connecting walls to top slab shall match slab steel size and spacing.

PIPE: Pipe sizes and locations are as shown on plan and profile sheets, including flow-line elevations.


GROUT: Grout shall be cement based shrinkage resistant grout as per APWA 03 61 00 (Cementitious Grouting).

FORMING: Forming both sides of walls required.

FRAME AND LID: See Standard Plan 203 or 204 for Frame and Lid Detail.

LADDER RUNGS: Ladder rungs to be placed in boxes greater than 4 feet deep. See Standard Plan 208 for Detail. Ladder rungs shall be aligned with access opening.

BACKFILL: Granular backfill borrow shall conform to APWA 31 05 13 (Common Fill) and installed in accordance with APWA 31 23 23 (Backfilling For Structures) and compacted to 95% required all sides.

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement by weight is 15%.

WATER TABLE: Wall thickness or steel requirement must be increased when constructing in locations with high water table. See table below for additional requirements.

<table>
<thead>
<tr>
<th>BOX WALL THICKNESS &amp; STEEL REQUIREMENTS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX. BOX WIDTH</td>
</tr>
<tr>
<td>MAX. BOX DEPTH</td>
</tr>
<tr>
<td>WALL THICKNESS</td>
</tr>
<tr>
<td>WALL STEEL (VERT. &amp; HORIZ.)</td>
</tr>
</tbody>
</table>

MODIFICATION FOR HIGH WATER TABLE

| WALL THICKNESS  | 8" | 10" | 16" | 12" |
| WALL STEEL (VERT. & HORIZ.)  | #5 @9" O.C. | #5 @6" O.C. | #5 @6" O.C. | #7 @6" O.C. |

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SHEET 1 OF 2
2 additional bars each side of opening
(Min. bar spacing 3" O.C.)

4 additional diagonal 39" long #5 bars
(990 mm long 16M bars)

Typical top slab steel

PLAN VIEW

SECTION A-A

4 additional bars req. around pipe
(Match Wall Steel)

Wall Steel (See Table)

Wall Thickness (See Table)

Pipe Diam./2 (Min.)

Provide Formed Concrete Invert

A1 Bar

6" Min.
150 mm

4" (Typ.)
100 mm

Ladder Rungs @ 12" O.C.
(300 mm)

A1 Bar

8" (200 mm)

A1 Bar

#5 @12" O.C.
(16M @ 300mm)

20"

A1 Bar
All Sides
(See Notes for size and spacing)

Depth Varies for Elev.
See Table for Max. Depths

See Plans for Elev.

Varies (all sides)
Min. Width 3'-0"

See Table

Concrete Invert

STANDARD PLAN
CLEANOUT
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SALT LAKE COUNTY
APPROVED 1/1/11
SHEET 2 OF 2
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

REINFORCING STEEL: All reinforcing steel shall be grade 60 as per APWA Section 03 20 00 (Concrete Reinforcing). All reinforcing steel shall be centered in the walls and slabs, with a 2" minimum cover. Steel shall be cut to maintain 2" clear around pipe and lid opening. A1 bars required at all corners, vertical and horizontal. A1 bars connecting two walls shall match wall steel size and spacing. A1 bars connecting walls to top slab shall match slab steel size and spacing.

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GROUT: Grout shall be cement based shrinkage resistant grout as per APWA 03 61 00 (Cementitious Grouting).

FORMING: Forming both sides of walls required.

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LADDER RUNGS: Ladder rungs to be placed in boxes greater than 4 feet deep. See Standard Plan 208 for Detail. Ladder rungs shall be aligned with access opening.

BACKFILL: Granular backfill borrow shall conform to APWA 31 05 13 (Common Fill) and installed in accordance with APWA 31 23 23 (Backfilling For Structures) and compacted to 95% required all sides.

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04 (Concrete). Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

WATER TABLE: Wall thickness or steel requirement must be increased when constructing in locations with high water table. See table below for additional requirements.

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<tr>
<td>MAX. BOX DEPTH</td>
<td>6'</td>
</tr>
<tr>
<td>WALL THICKNESS</td>
<td>6&quot;</td>
</tr>
<tr>
<td>WALL STEEL (VERT. &amp; HORIZ.)</td>
<td>#5 @ 9&quot; O.C.</td>
</tr>
</tbody>
</table>

MODIFICATION FOR HIGH WATER TABLE

| WALL THICKNESS | 6" | 8" | 12" |
| WALL STEEL (VERT. & HORIZ.) | #5 @ 6" O.C. | #5 @ 6" O.C. | #5 @ 6" O.C. |

SALT LAKE COUNTY

CLEANOUT

WITH CURB INLET & GRATE

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SHEET 1 OF 2
NOTES:
Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

REINFORCING STEEL: All reinforcing steel shall be grade 60 as per APWA Section 03 20 00 (Concrete Reinforcing). All reinforcing steel shall be centered in the walls and slabs, with a minimum 2" cover. Steel shall be cut to maintain 2" clear around pipe and lid opening. A1 bars required at all corners, vertical and horizontal. A1 bars connecting two walls shall match wall steel size and spacing. A1 bars connecting walls to top slab shall match slab steel size and spacing.

PIPE: Pipe sizes and locations are as shown on plan and profile sheets, including flow-line elevations.


GROUT: Grout shall be cement based shrinkage resistant grout as per APWA 03 61 00 (Cementitious Grouting).

FORMING: Forming both sides of walls required.

FRAME AND LID: See Standard Plan 203 or 204 for Frame and Lid Detail.


LADDER RUNGS: Ladder rungs to be placed in boxes greater than 4 feet deep. Ladder rungs must be aligned with access opening. See Standard Plan 208 for Detail.

BACKFILL: Granular backfill borrow shall conform to APWA 31 05 13 (Common Fill) and installed in accordance with APWA 31 23 23 (Backfilling For Structures) and compacted to 95% required all sides.

CONCRETE: Concrete shall be Class 4000 as per APWA 03 30 04. (Concrete) Allowable slump shall not exceed 4" (100mm).

FLY ASH: Fly ash is allowed as a portland cement replacement. Maximum percentage replacement on a weight basis is 15%.

WATER TABLE: Wall thickness or steel requirement must be increased when constructing in locations with high water table. See table below for additional requirements.

LIMITATIONS: Cleanout with grate is for use with No. 2, 3 or 4 curb and gutter only.

<table>
<thead>
<tr>
<th>BOX WALL THICKNESS &amp; STEEL REQUIREMENTS:</th>
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<tbody>
<tr>
<td>MAX. BOX DEPTH</td>
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<tr>
<td>WALL THICKNESS</td>
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<td>WALL STEEL (VERT. &amp; HORIZ.)</td>
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<tr>
<td>WALL THICKNESS</td>
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<tr>
<td>WALL STEEL (VERT. &amp; HORIZ.)</td>
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</table>

SALT LAKE COUNTY

CLEANOUT WITH GRATE

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SHEET 1 OF 2
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

All precast concrete shall conform to APWA Section 03 40 00 (Precast Concrete).

SHOP DRAWINGS: Prepare and submit shop drawings under the seal of a professional engineer as per APWA Section 03 40 00 (Precast Concrete). Manufactures may submit designs that deviate from the standard plans. The submitted designs must meet HS20 loading and be approved by the Public Works Engineer.

LIFTING HOLES: Two lifting holes are required for boxes weighing less than 40,000 pounds. Boxes weighing more than 40,000 pounds require four lifting holes and may only be used with permission of the Salt Lake County Public Works Engineer. Lifting holes shall be two inches in diameter and be located at least twelve inches below the top of the box. Lifting holes shall be placed so that the two inch minimum cover on steel is maintained. Lifting holes shall be filled with a Cement Based Shrinkage Resistant Grout as per APWA 03 61 00 (Cementitious Grouting).

LEVELING COURSE: A six inch thick leveling course consisting of granular backfill borrow is required and shall conform to APWA 31 05 13 (Common Fill) and installed in accordance with APWA 31 23 23 (Backfilling For Structures) and compacted to 95% required all sides.

FORMING OF PIPE OPENINGS: All pipe opening shall be formed or cored by manufacturer.

GROUTING AROUND PIPE OPENINGS: Grout required around all pipe openings with cement based shrinkage resistant grout as per APWA 03 61 00 (Cementitious Grout).

MINIMUM EXCAVATION WIDTH: Minimum excavation width shall be outer box dimension plus three feet each side.

INSPECTION: Inspection and certification required on all precast boxes. Inspectors must be on the Salt Lake County approved list of third party inspectors.
NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications 2007 Edition," addendums, and modifications thereto; and as directed by the Public Works Engineer.

PIPE: Pipe sizes and locations are as shown on plan and profile sheets, including flow-line elevations.

BACKFILLING TRENCHES: Granular backfill borrow (Common Fill) in accordance with APWA Section 33 05 20 (Backfilling Trenches) and meeting AASHTO M 145 A−1—a requirement
   1. Non−plastic and well graded material.
   2. Maximum aggregate size is 1 ½ inches for plastic pipe, 2 inches for all other pipes.
   3. compacted to 95% required all sides.

PIPE COVER: Pipe cover for all pipes shall be 2 feet minimum, as per APWA Section 33 41 00 (Storm Drainage Systems). Cover for Reinforced Concrete Pipe may be reduced to 1 foot with approval of the Public Works Engineer.

PEA GRAVEL: Pea gravel is not allowed in any part of the trench.

SLOPES AND SHORING: All aspects of trench excavation shall conform to current OSHA requirements.

STABILIZATION ROCK: Stabilization rock shall conform follows gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>95–100</td>
</tr>
<tr>
<td>1−1/2”</td>
<td>60–70</td>
</tr>
<tr>
<td>1”</td>
<td>40–50</td>
</tr>
<tr>
<td>1/2”</td>
<td>4–6</td>
</tr>
</tbody>
</table>
All edges and surfaces shall be cleaned and tack coated in accordance with APWA Specifications.

Sawcut existing pavement

Bituminous surface course to match existing thickness (3" Min.)

Untreated Base Course to match existing thickness (8" Min.)

Compacted Granular Backfill Borrow (See Notes)

Pipe Zone

Undisturbed Soil

Pipe O.D.

D (Min.) Bed Layer

Stabilization Rock

Trench Width

Width Varies
Min. Width is greater of Pipe O.D. +24" or (Pipe O.D. x 1.25) + 12"

DEPTH OF BEDDING MATERIAL BELOW PIPE

<table>
<thead>
<tr>
<th>INSIDE DIA. OF PIPE</th>
<th>D (MIN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60&quot; OR SMALLER</td>
<td>4&quot;</td>
</tr>
<tr>
<td>66&quot; AND LARGER</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

TRENCH SECTION

REvised 7/1/15

SALT LAKE COUNTY

STANDARD PLAN

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