



ENGINEERING STANDARDS & DRAWINGS

2025 Edition

**Planning Commission Approval &
Recommendation: 05/14/2025**

**Mountainous Planning Commission Approval &
Recommendation: 05/15/2025**

City Council Approval & Adoption: 06/10/2025



G R E A T E R S A L T L A K E

**Municipal Services
District**

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GENERAL PROVISIONS

Salt Lake County automatically adopts the latest revision of AASHTO “A Policy on Geometric Design of Highways and Streets” (Green Book), the Utah Manual on Uniform Traffic Control Devices (MUTCD), and APWA Manual of Standard Plans and Manual of Standard Specifications, with exceptions noted in this document.

EXCEPTIONS TO APWA STANDARDS

APWA Plan No./ Specification Section	Exception
215, 216, 221.1, 221.2, 225, 229.1 & 229.2	APWA Plan No's. 221.1 and 221.2 are acceptable for use. APWA Plan No's. 215, 216, 225, 229.1, and 229.2 are not acceptable for use unless otherwise authorized by the MSD Engineer.
221.1, 221.2	When adverse slopes, right-of-way limitations, or existing obstructions occur, MSD Engineering may authorize deviations from the APWA apron/slope geometry.
251	Bituminous Concrete (asphalt) T-Patch thickness is 6" minimum for both residential and non-residential streets.
255	Bituminous Concrete (asphalt) T-Patch thickness is 6" minimum for both residential and non-residential streets. 2" mill and overlay are not required if: • There is a known upcoming city Capital Improvement Project that will reconstruct or overlay the road within two (2) years.: • Pavement surface has not been constructed or milled and overlaid within the previous seven (7) years. • If length of T-patch is less than 300 feet and pavement surface has not been constructed or milled and overlaid within the previous three (3) years.
292	Steel tube is to be 12' x 2" x 2". Standard Plan 140 in this book applies in locations where sign is installed in concrete.
315.1, 315.2 & 316	Where APWA inlet plans refer to frame and grate per APWA Plan No. 308, contractor shall use Standard Plan 201 in this book, unless otherwise authorized by the MSD Engineer.
332	The use of pre-cast "knock-out" boxes in storm drain facilities may be authorized by the MSD Engineer, upon written request and provided the following conditions are met: a) All other requirements of APWA Plan 332 - Precast Box, are still met. b) Boxes shall have engineered design for AASHTO's HL-93 live load and shall be designed for lateral soil loads appropriate for the burial depth and conditions. c) The thickness of concrete collars where the pipe enters box at the knockout face shall extend 6" to 9" from the exterior face of the box and shall cover the entire side of the structure with no less than 12" concrete all the way around the pipe. Collars shall have a minimum of four (4) #4 dowels tying the collar to the precast box and include a #4 rebar ring or square tie around the pipe. d) Inspection and certification required on all precast boxes.
381	(Note 2A) - Use granular backfill borrow for common fill.
382	(Note 2B) - Use granular backfill borrow for common fill. (Note 3A) - Minimum trench width is to be Pipe O.D. + 24" or (Pipe O.D. x 1.25)+12", whichever is greater.
33 05 02	Public storm drain pipes and culverts shall be 15" dia.or greater RCP unless otherwise authorized by the MSD Engineer. Installation must follow manufacturer's direction. Provide a minimum amount of 1' cover over top of concrete pipes and 2' cover over the top of pipes of other materials unless approved otherwise by manufacturer and MSD Engineer. Corrugated metal pipe and vitrified clay pipe are not allowed.

Standard Details Table of Contents

SECTION 1 – ROADWAYS

General

Legend and Symbols	100
Abbreviations	101

Details

Roadway Section	110
Curb Ramps	135
Sign Post in Concrete	140
Sidewalk Obstruction Detail.....	150
Defective Concrete.....	155

Street Light Details

Arterial LED Street Light.....	160
Collector LED Street Light	161
Industrial LED Street Light.....	162
Residential LED Street Light	163

SECTION 2 – STORM DRAIN FACILITIES

Hardware

Curb Opening Fram and Grate	201
Ladder Rung	208

Drainage Facility Guidelines

Detention Basin Guidelines.....	300
Outlet Structure Guidelines	301

SECTION 3 – FLOOD CONTROL STANDARDS

Flood Control Minimum Requirements

Aerial Crossing.....	FC01
Storm Water Discharge.....	FC02
Horizontal Directional Drilling.....	FC03
Open Trench Utility Installation	FC04
Streambank Bioengineering.....	FC05
General Planting Plan.....	FC06

SYMBOL LEGEND						LINE LEGEND		
DESCRIPTION	EXIST.	PROP.	DESCRIPTION	EXIST.	PROP.	DESCRIPTION	EXISTING	PROPOSED
SANITARY SEWER			IRRIGATION			STORM DRAIN	SD	SD
CLEANOUT			IRRIGATION SHUT-OFF VALVE			SANITARY SEWER	SS	SS
SS MANHOLE			IRRIGATION CONTROL VALVE BOX			WATER	W	W
SS VALVE			IRRIGATION GATE			IRRIGATION	IRR	IRR
SS METER			NATURAL GAS			NATURAL GAS	G	G
SEWER STUB			NATURAL GAS			OVERHEAD POWER	DHE	DHE
STORM DRAIN			GAS METER			UNDERGROUND POWER	E	E
CATCH BASIN			GAS VALVE			OVERHEAD TELEPHONE	DHT	DHT
DRY WELL			GAS MANHOLE			UNDERGROUND TELEPHONE	T	T
SD CLEAN OUT BOX			SITE			FIBER OPTIC	FO	FO
FLARE END			BOLLARD			CABLE TELEVISION	CTV	CTV
COMMUNICATION			BOULDER			FENCE		
TELE. MANHOLE			DRINKING FOUNTAIN			MAJOR CONTOUR	4520	4520
TELE. PEDESTAL			FLAGPOLE			MINOR CONTOUR		
TELE. POLE			GATE			TOP OF BANK	TOB	TOB
TV PEDESTAL			MAIL BOX			TOE OF SLOPE	TOE	TOE
CABLE TV			PEDESTRIAN SIGNAL			PROPERTY LINE		
DOMESTIC WATER			SCHOOL SIGN			PROPERTY LINE (OPTIONAL)	P/L	P/L
FIRE HYDRANT			SIGN			RIGHT OF WAY	R/W	R/W
SPIGOT			SPOT ELEVATION			TEMPORARY EASEMENT	T/E	T/E
WATER MANHOLE			TREE (SHRUB)			PERMANENT EASEMENT	P/E	P/E
WATER METER			TREE			ROAD CENTERLINE		
WATER VALVE			TEST HOLE			ROAD ASPHALT		
YARD HYDRANT			WELL			ROAD GRAVEL	EG	EG
ELECTRIC			WELL (MONITORING)			CURB AND GUTTER		
ELEC. MANHOLE			CONCRETE FLATWORK			ATMS	ATMS	ATMS
ELEC. METER			ASPHALTIC CONCRETE			SAWCUT	SAW	SAW
ELEC. TRANS.			SURVEY			GRADING FILL LIMIT	FILL	FILL
JUNCTION BOX			CAP			GRADING CUT LIMIT	CUT	CUT
GUY WIRE			CTRL PT			DITCH/SWALE FLOWLINE		
POWER STUB								
POWER/UTILITY POLE								
STREET LIGHT								
STREET LIGHT WITH ARM								
TRAFFIC SIGNAL POLE								



LEGEND AND SYMBOLS

ABBREVIATIONS

ABBREV.	TERM
ALUM	ALUMINUM
APPROX.	APPROXIMATELY
ASSY	ASSEMBLY
∠	ANGLE
@	AT (MEASUREMENTS)
BC	BEGINNING OF CURVE
BFS	BEGIN FULL SUPER
BLDG	BUILDING
B.M.	BENCH MARK
BNC	BEGIN NORMAL CROWN
BNS	BEGIN NORMAL SHOULDER
BOA	BEGINNING OF ALIGNMENT
BP	BEGINNING OF PROFILE
BSC	BITUMINOUS SURFACE COURSE
BSW	BACK OF SIDEWALK
BVC	BEGIN VERTICAL CURVE
BVCE	BVC ELEVATION
BVCS	BVC STATION
B.W.	BOTH WAYS
C	CHANNEL (STRUCTURAL)
CJ	CONTROL JOINT
℄ or CL	CENTER LINE
CLR	CLEARANCE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CONC	CONCRETE
CONT	CONTINUOUS
CPLG	COUPLING
CTR	CENTER
CU FT	CUBIC FEET
CU YD	CUBIC YARD
DEG OR °	DEGREE
DET	DETAIL
DIA OR Ø	DIAMETER
D.I.P.	DUCTILE IRON PIPE
DIST	DISTRIBUTION
DWG	DRAWING
EA	EACH
EC	END OF CURVE
EFB	END FULL SUPER
ELB	ELBOW
ELEV OR EL	ELEVATION
ENC	END NORMAL CROWN
ENS	END NORMAL SHOULDER
EOA	END OF ALIGNMENT
EP	END OF ALIGNMENT
E.W.	EACH WAY
EXIST	EXISTING
EVC	END VERTICAL CURVE
EVCE	EVC ELEVATION
EVCS	EVC STATION

ABBREVIATIONS

ABBREV.	TERM
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FLG	FLANGE
FT OR '	FEET
FTG	FOOTING
GALV	GALVANIZED
GB	GRADE BREAK
GV	GATE VALVE
HORIZ	HORIZONTAL
HP	HIGH POINT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN. OR "	INCH
INV.	INVERT
K	CURVE COEFFICIENT
L	LEFT
LB	LINE BEGINNING
LB OR #	POUND
LF	LINEAL FEET
LN	LINEAL
LP	LOW POINT
MAX	MAXIMUM
MIN	MINIMUM
NO. OR #	NUMBER
O.C.	ON CENTER
OVERALL HP	OVERALL HIGH POINT
OVERALL LP	OVERALL LOW POINT
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PE	POLYETHYLENE
PI	TANGENT-TANGENT INTERSECT
PL OR ℄	PLATE OR PROPERTY LINE
PRC	POINT OF REVERSE CURVATURE
PT	END OF CURVE
PVC	POLYVINYL-CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS OR RIGHT
R&R	REMOVE & REPLACE
RC	REVERSE CROWN
RCP	REINFORCED CONCRETE PIPE
REM	REMOVE
REQ'D	REQUIRED
REV	REVISION
R/W OR ROW	RIGHT-OF-WAY
S	SLOPE

ABBREVIATIONS

ABBREV.	TERM
SBO	SHOULDER BREAKOVER
SPEC	SPECIFICATION
STA	STATION
STD	STANDARD
STL	STEEL
ST STL	STAINLESS STEEL
TBC	TOP BACK OF CURB
TFC	TOP FACE OF CONCRETE
TOB	TOP OF BANK
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOP	TOP OF PIPE
TOW	TOP OF WALL
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VCC	VERTICAL COMPOUND CURVE
VCCE	VCC ELEVATION
VCCS	VCC STATION
VRC	VERTICAL REVERSE CURVE
VRCE	VRC ELEVATION
VRCS	VRC STATION
W/	WITH
W/O	WITHOUT
W/REQ'D	WHERE REQUIRED



ABBREVIATIONS

STANDARD PLAN

101

SHEET 1 OF 1

REV. 2025-0

NOTES:

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications" addendums, and modifications thereto; and as directed by the MSD 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 (Aggregate Base Course). 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 13.19 (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 13.13 (Tack Coat).

ASPHALT CONCRETE: Unless otherwise approved in writing by the MSD Public Works Engineer or their designated representative, all roads shall be considered Road Class III and the bituminous concrete mix designator used shall correspond to the table on Sheet 2. 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.



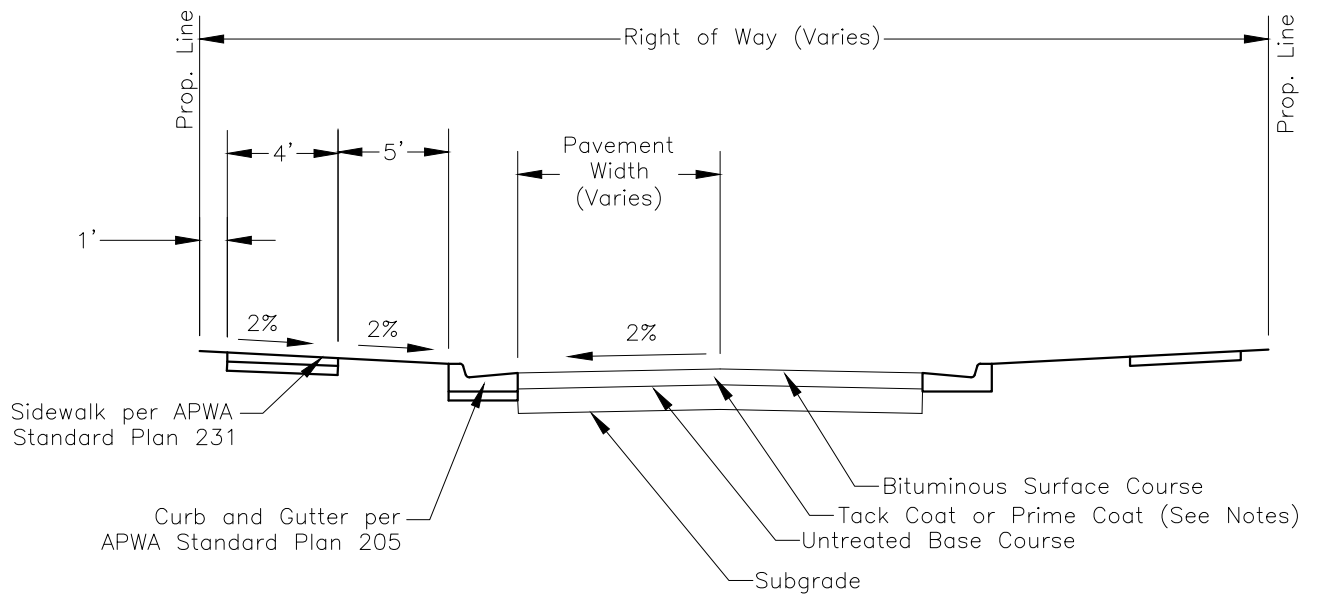
ROADWAY SECTION

STANDARD PLAN

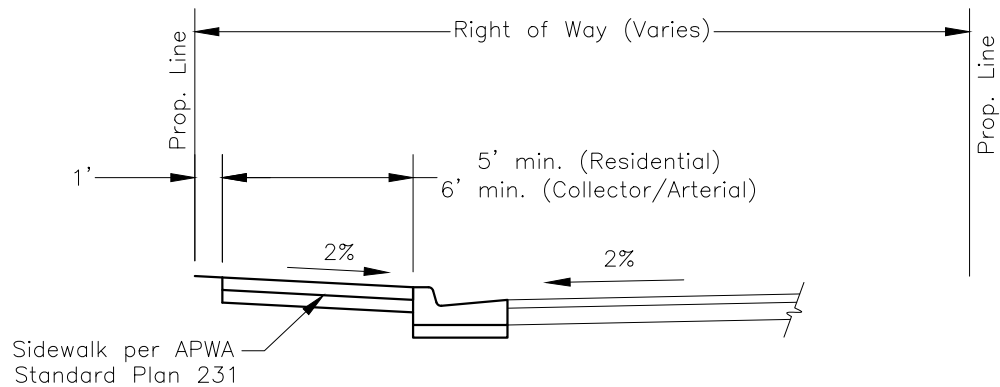
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SHEET 1 OF 2

REV. 2025-0



STANDARD CONFIGURATION



CONTIGUOUS SIDEWALK

BITUMINOUS CONCRETE MIX DESIGNATOR BY ROADWAY CLASSIFICATION	
ROADWAY CLASSIFICATIONS*	BITUMINOUS CONCRETE MIX DESIGN**
Local/Private – Collector (60')	PG58-28, DM-1/2, 50 Blow
Collector (80') – Arterial (106')	PG64-34, DM-1/2, 50 Blow
Canyon Roads Cat. 2-6	PG58-28, DM-1/2, 50 Blow
Canyon Roads Cat. 1	PG64-34, DM-1/2, 50 Blow

* See Section 14.12.100 of the municipal code for details.

** See APWA 32 12 05.



ROADWAY SECTION

STANDARD PLAN

110

SHEET 2 OF 2

REV. 2025-0

NOTES:

These Standard Drawings are intended to supplement all ADA and APWA guidelines and requirements. These drawings are for clarification, but do not alter, reduce or override any Federal ADA requirements.

Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications" addendums, and modifications thereto; and as directed by the MSD 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).

EXPANSION JOINT: Expansion joint shall be 1/2" 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 MSD approved materials list.

RAMPS: Length of any ramp not 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.



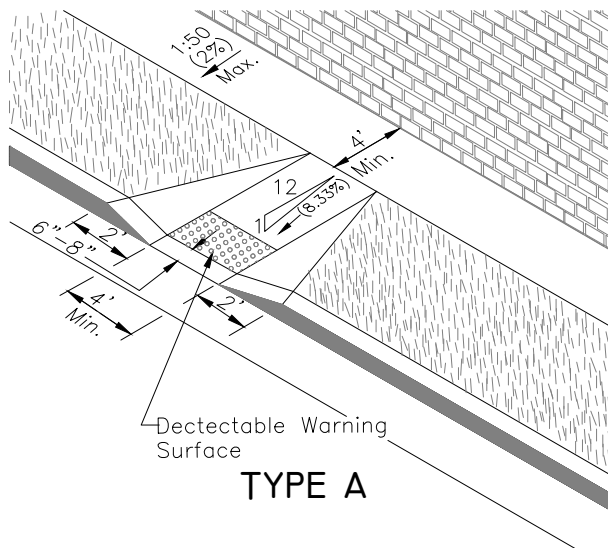
CURB RAMPS

STANDARD PLAN

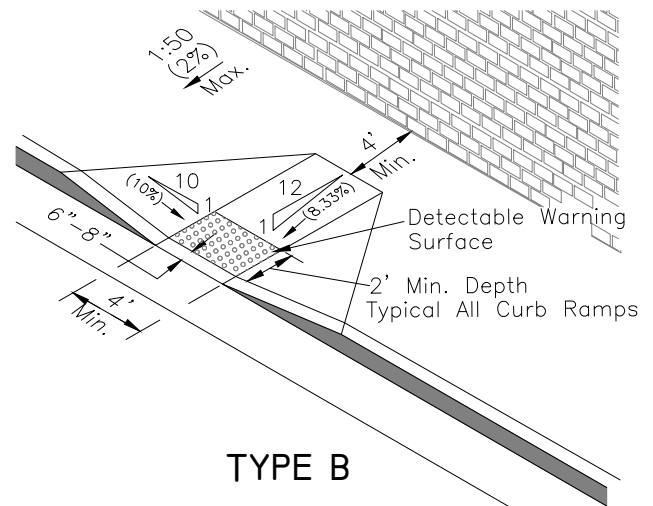
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SHEET 1 OF 6

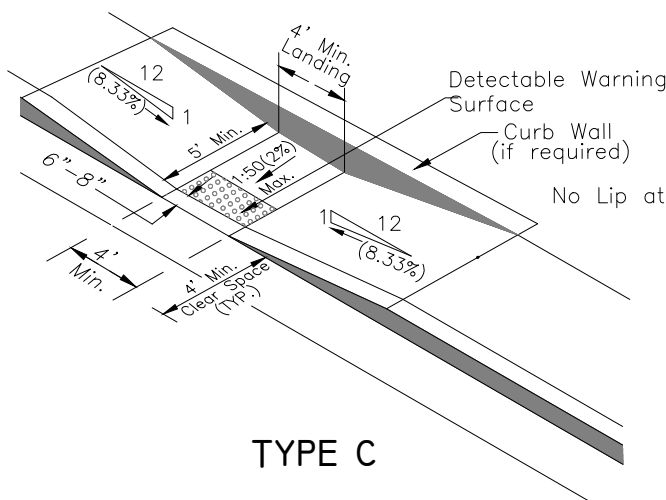
REV. 2025-0



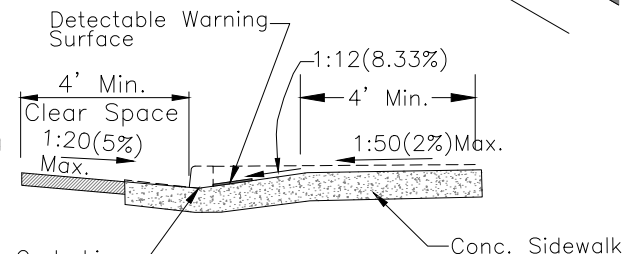
TYPE A



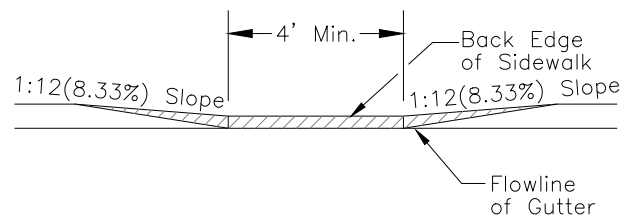
TYPE B



TYPE C



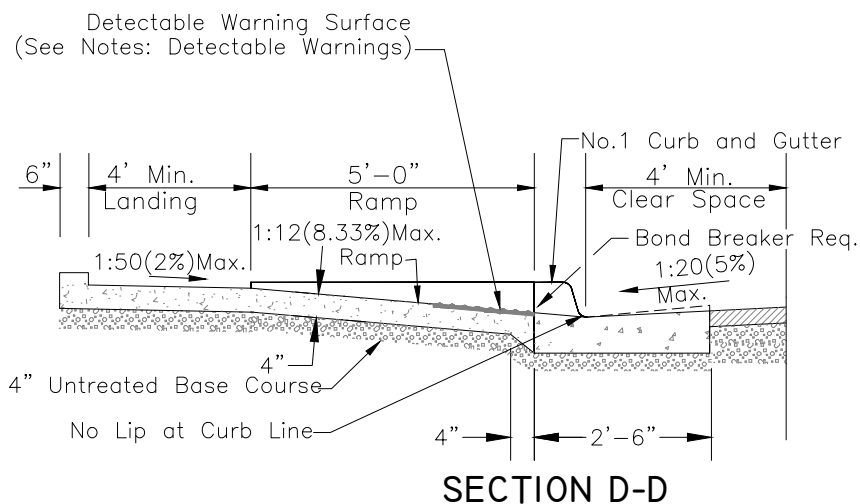
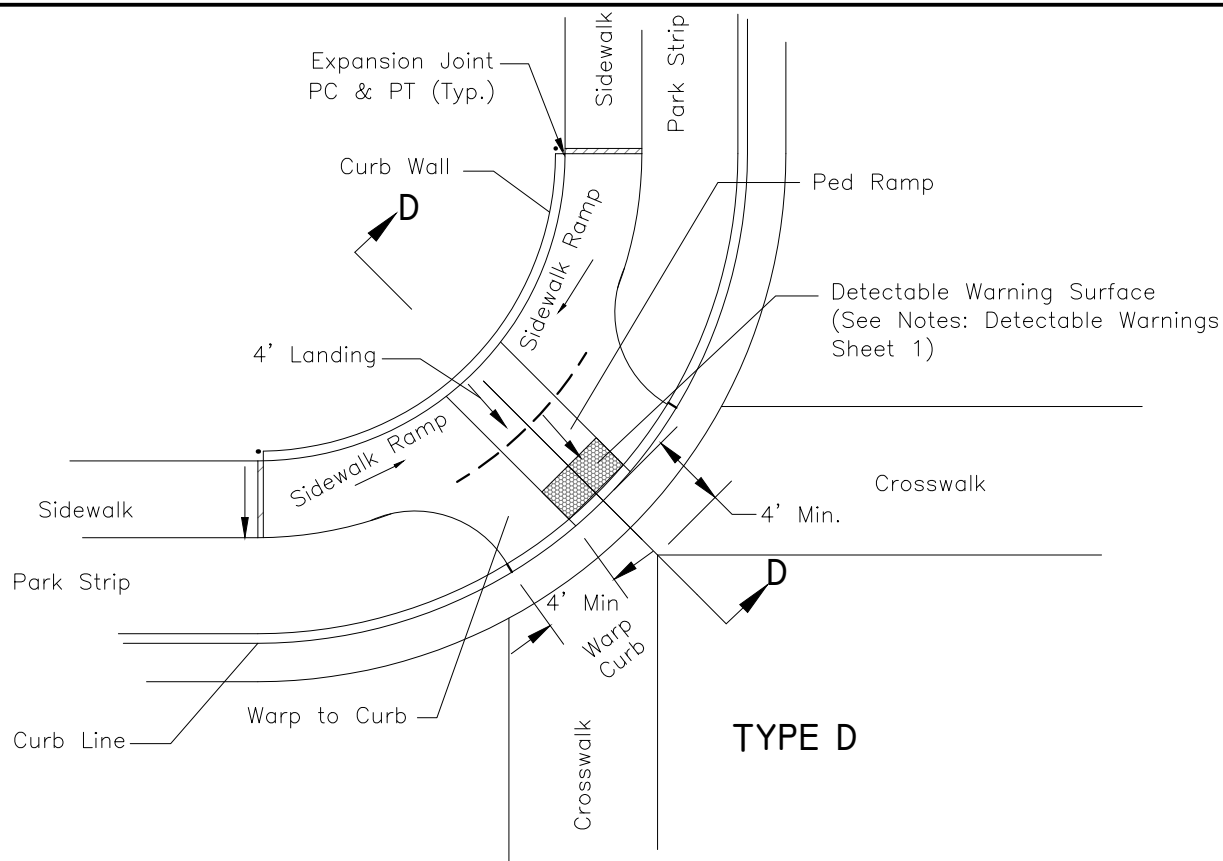
SECTION TYPE A & B



ELEVATION TYPE C

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.



NOTES:

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.



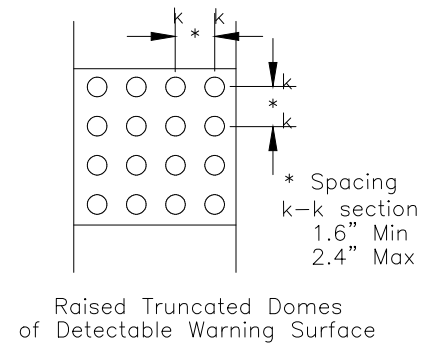
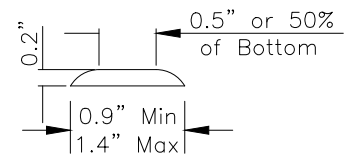
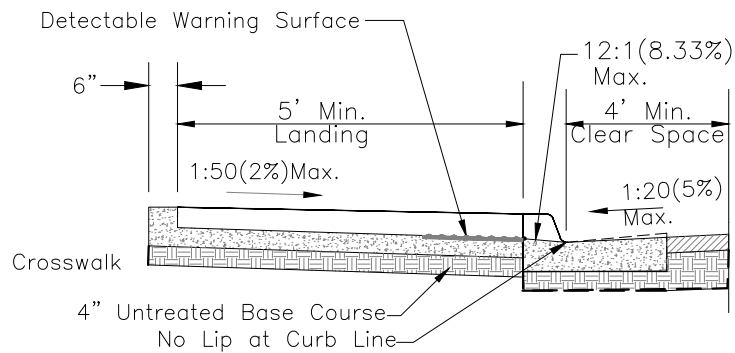
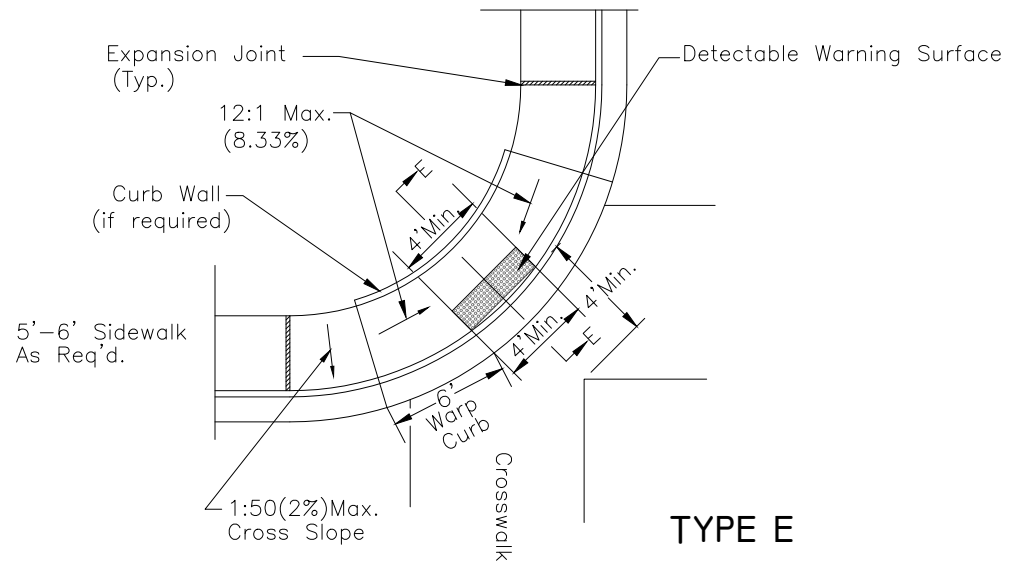
CURB RAMPS (RETROFIT ONLY)

STANDARD PLAN

135

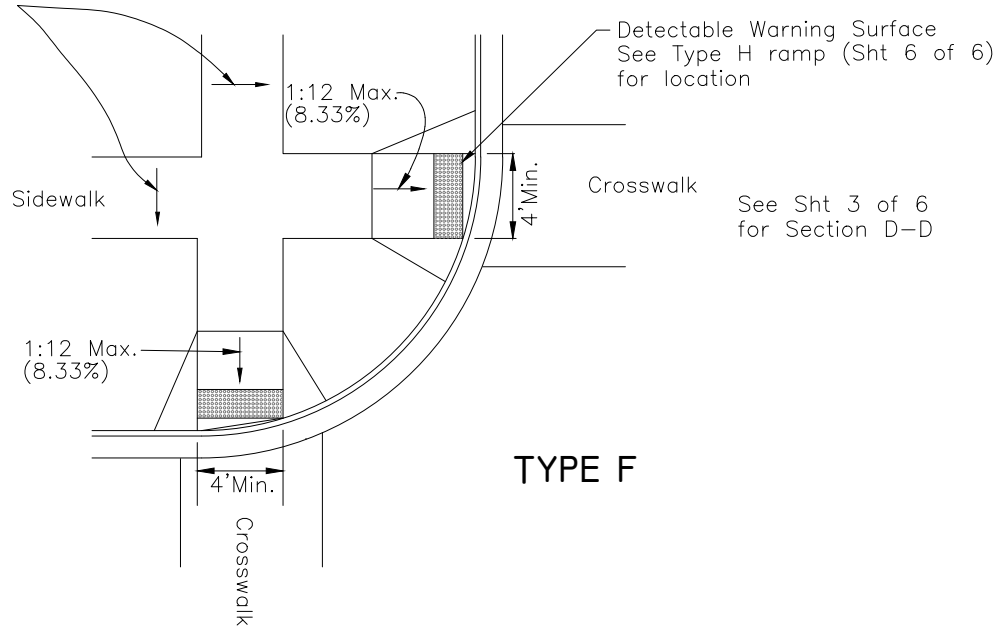
SHEET 3 OF 6

REV. 2025-0

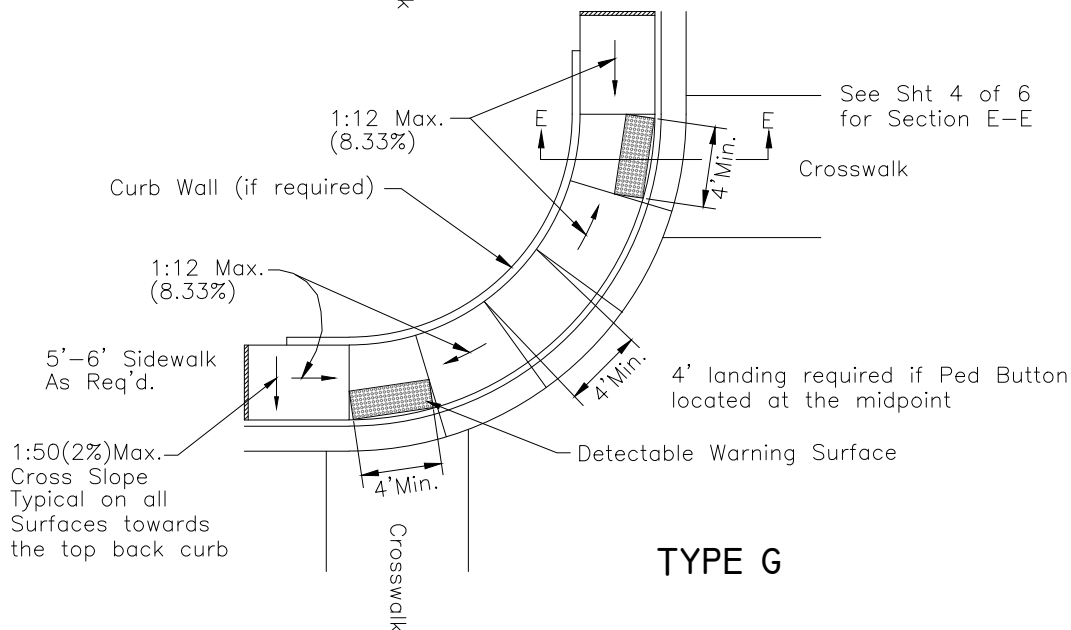


DETAIL 'A'

1:50(2%)Max.
Cross Slope



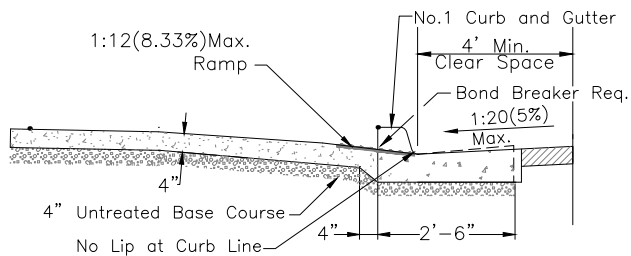
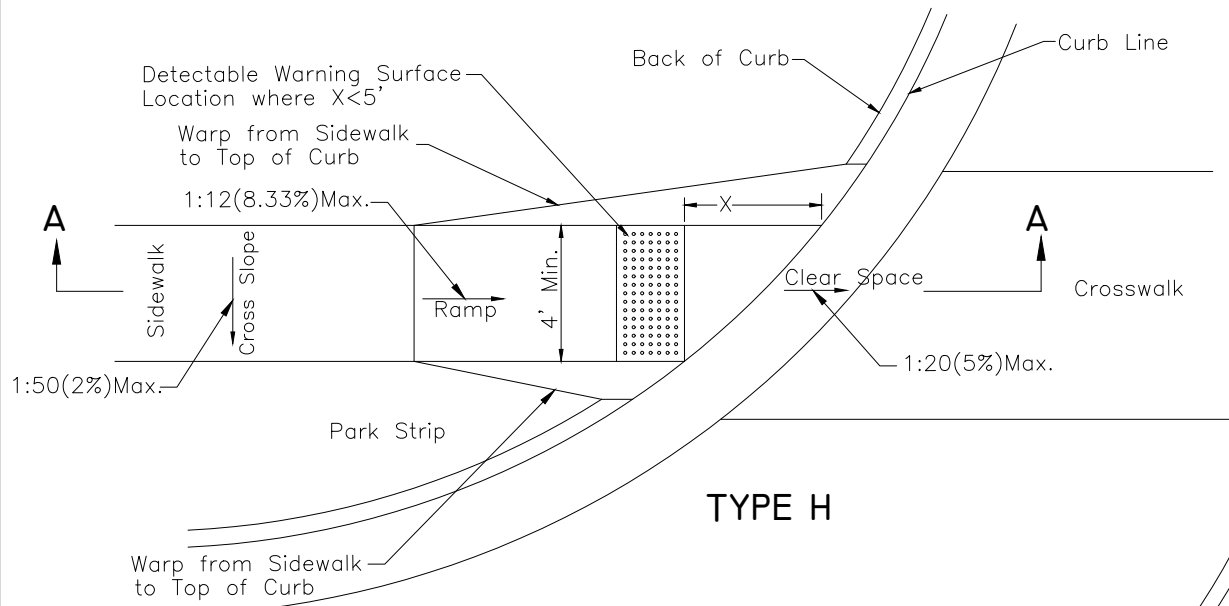
TYPE F



TYPE G

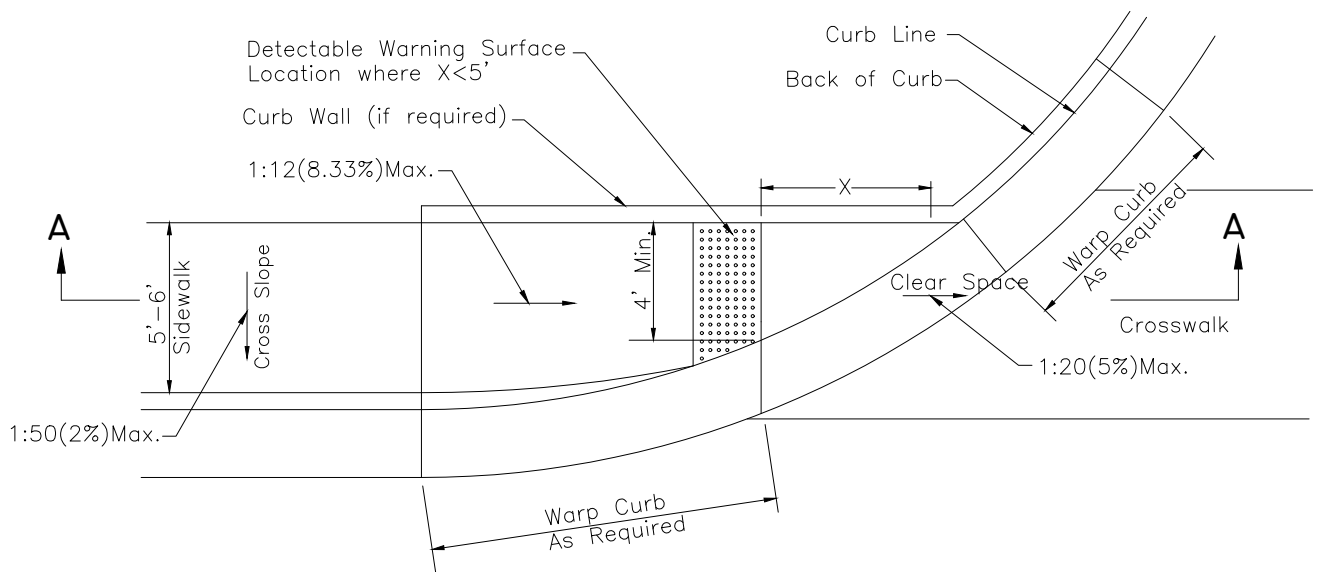
NOTES:

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.



SECTION A-A

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



TYPE J

NOTES:

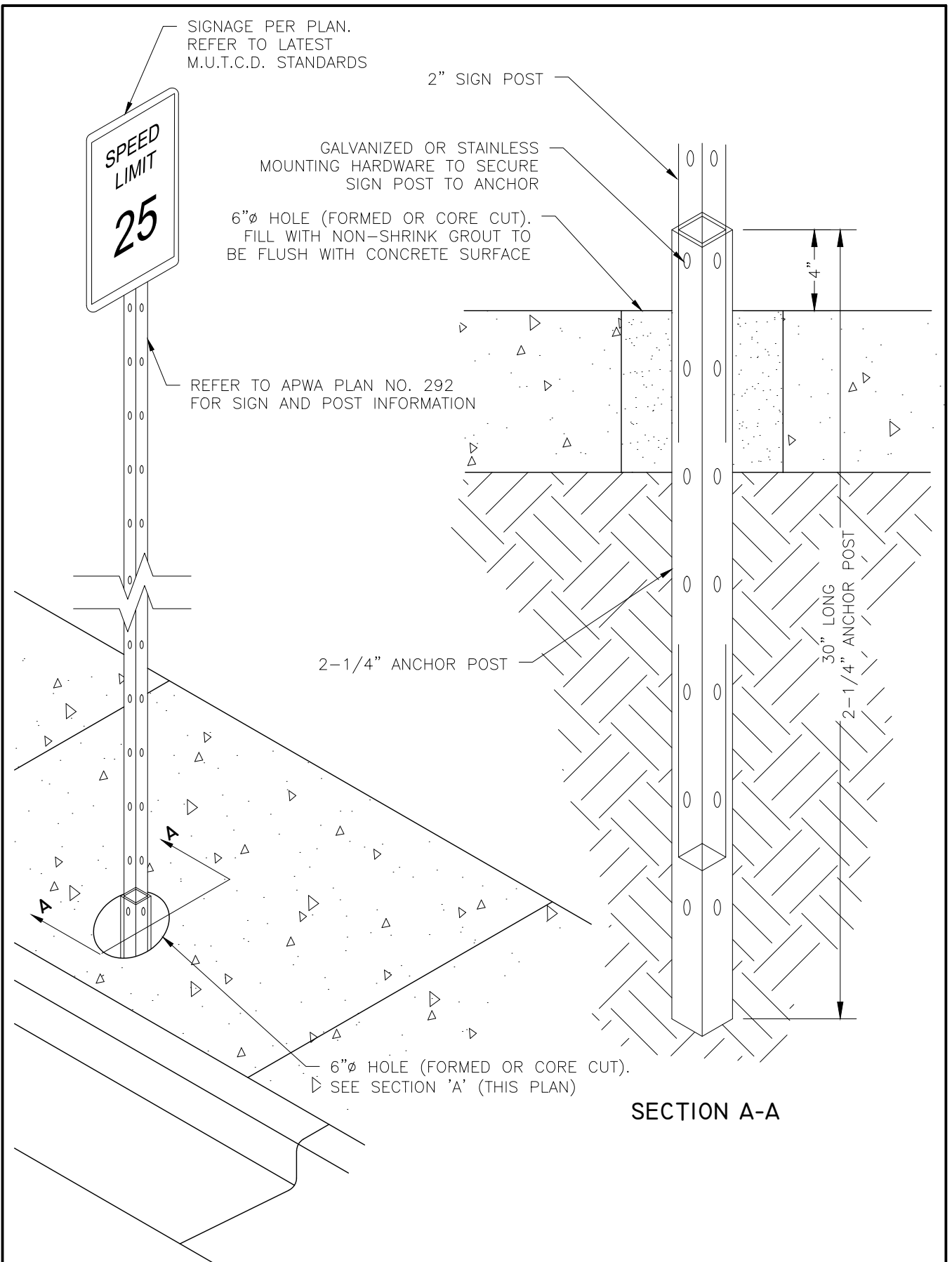
1. Get ENGINEER's approval of sign format and installation.
2. Bolts, Nuts, Washers, Accessories: Stainless or galvanized steel, APWA Section 05 05 23.
3. Install sign posts on corner selected by ENGINEER.
4. Install the edge of the sign 2 feet from the vertical extension of the back of curb as near as possible to the approach curb P.C. (point of curvature).



SIGN POST IN CONCRETE DETAIL

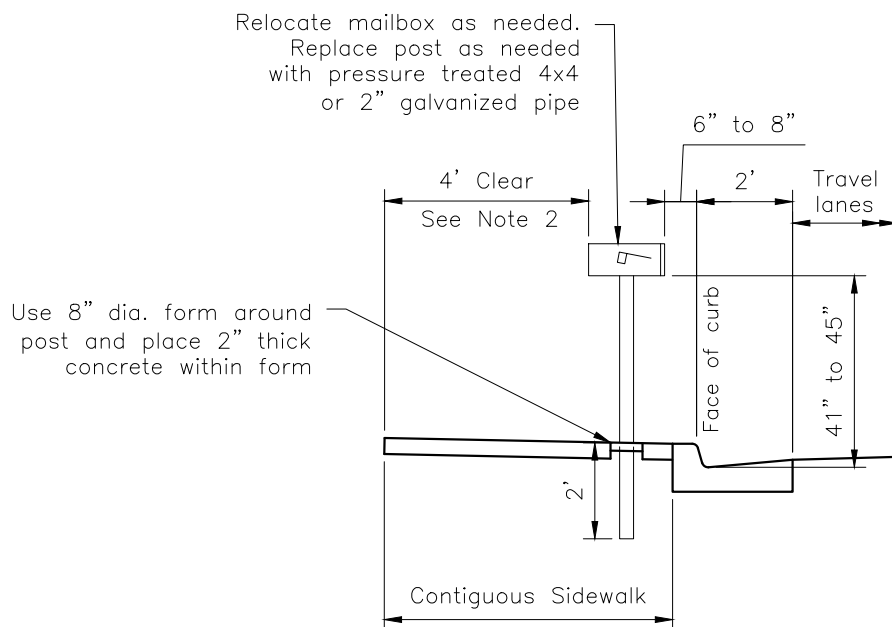
STANDARD PLAN
140
SHEET 1 OF 2

REV. 2025-0

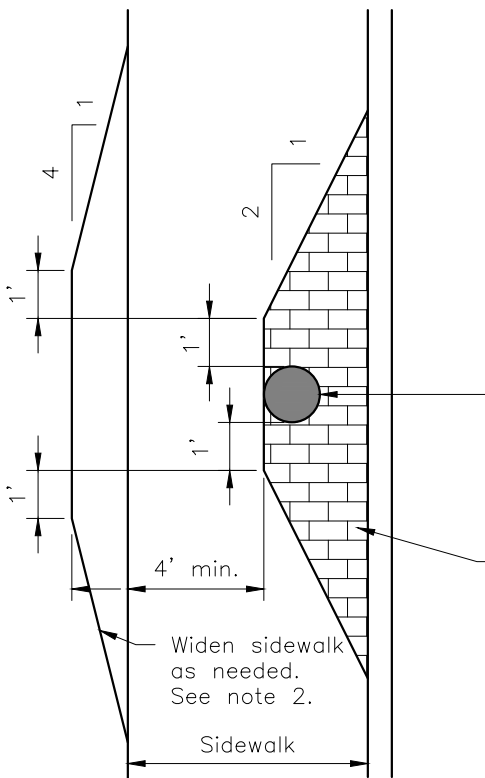


NOTES:

1. This detail has been developed to provide a location for utilities when sidewalk is placed contiguous with curb and gutter.
2. Minimum sidewalk clear width adjacent to obstruction shall be 4' unless otherwise approved by the MSD Engineer. Verify with the engineer that the appropriate right-of-way width exists where sidewalk must be widened around an obstruction.
3. Brick-stamped and colored concrete areas shall match the thickness of concrete and base course of the adjacent sidewalk.



MAILBOX RELOCATION



Brick-stamped concrete. See note 3.

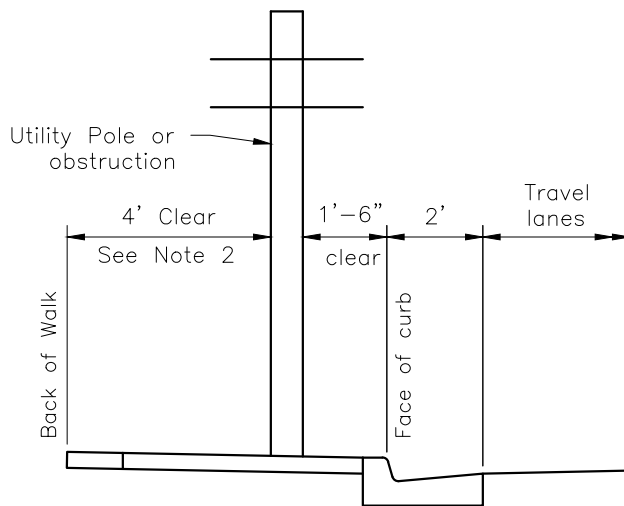
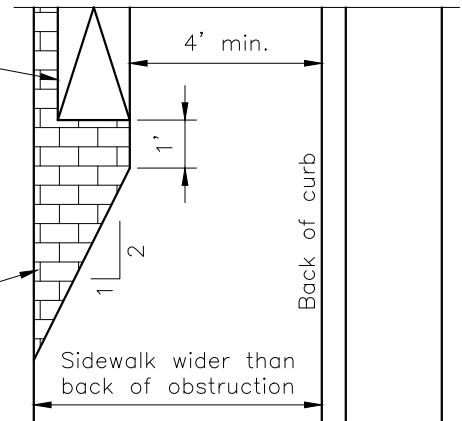
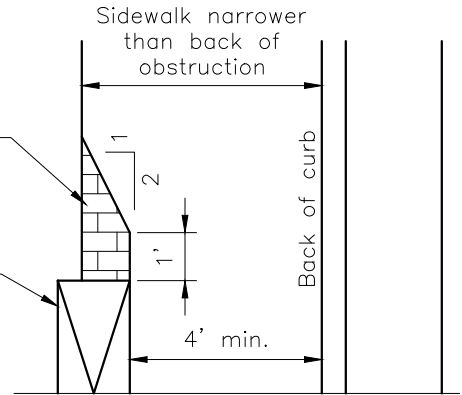
Utility box or obstruction

Utility Pole or obstruction

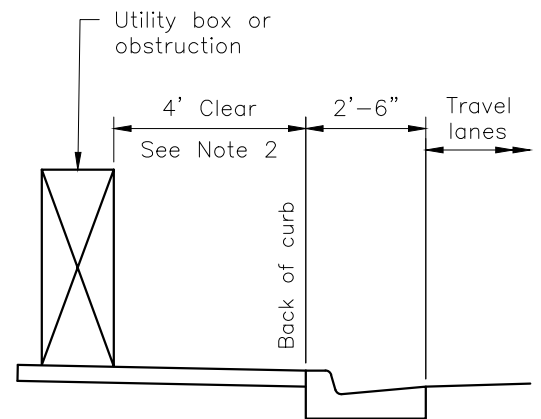
Utility box or obstruction

Brick-stamped concrete. See note 3.

Brick-stamped concrete. See note 3.



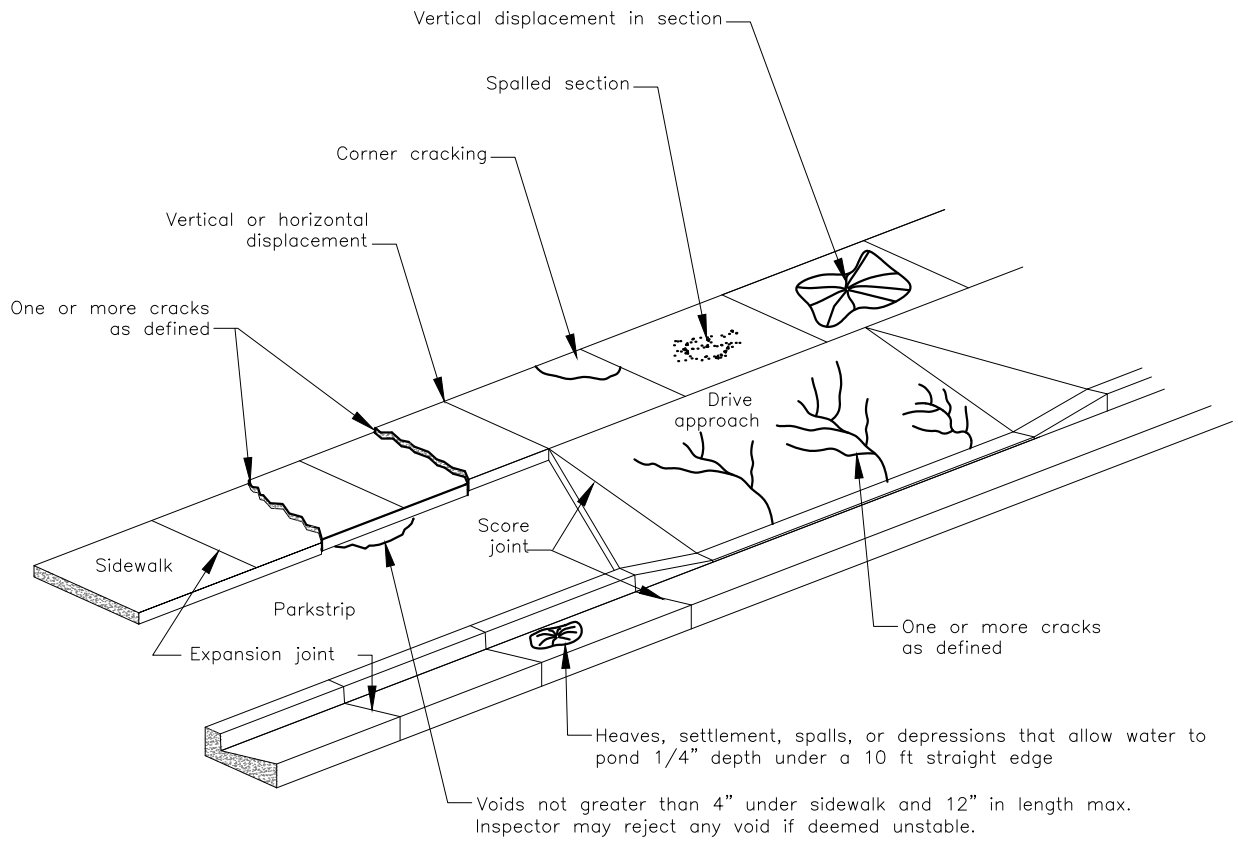
CURB-SIDE OBSTRUCTION

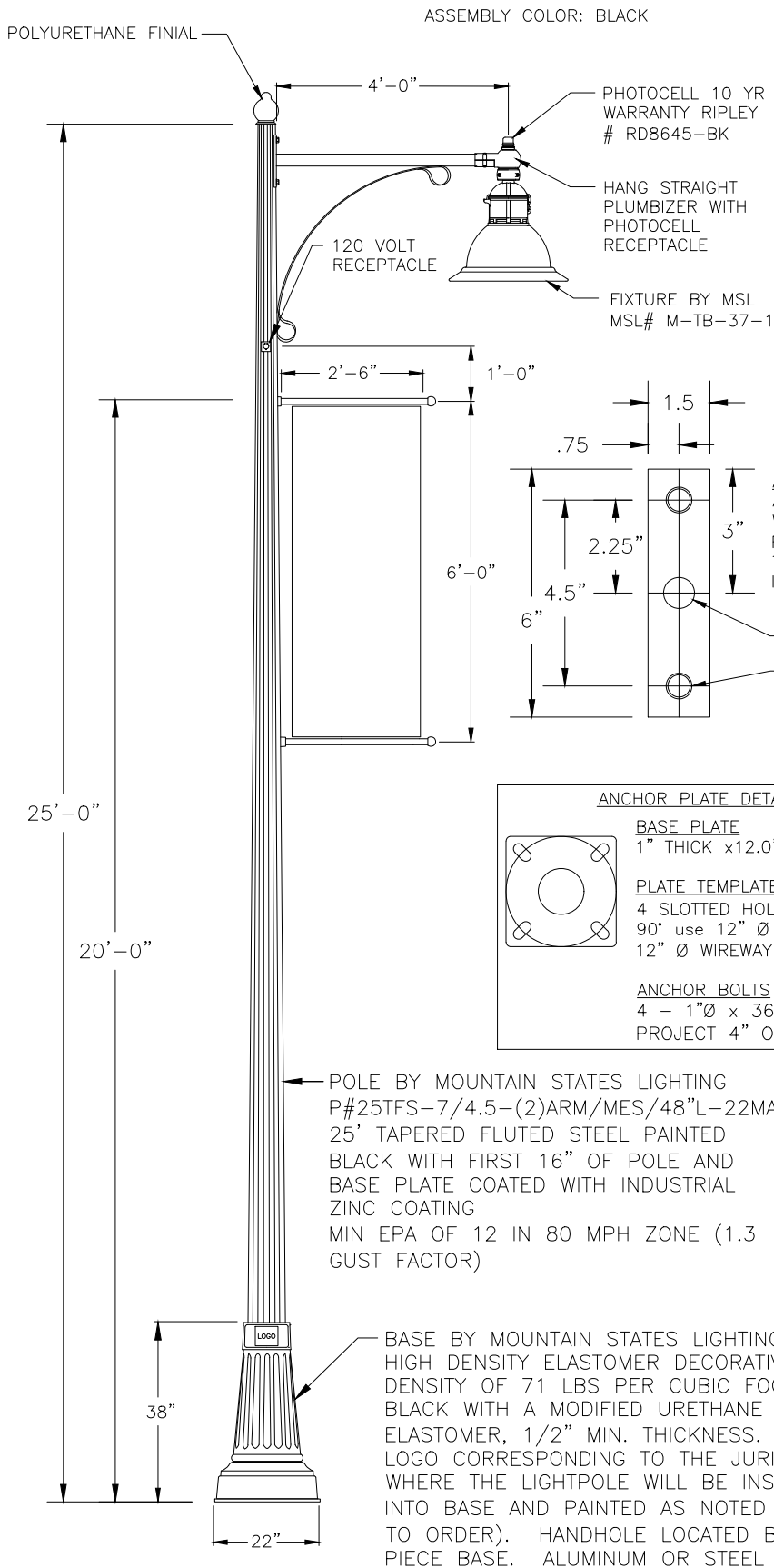


BACK-OF-WALK OBSTRUCTION

NOTES:

1. Concrete is considered defective if any component has one or more of the conditions shown on sheet 2. The MSD 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 performance 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 $\frac{1}{4}$ ".
5. Defective concrete resulting from spalls is defined as one of the following:
 - at time of performance bond release: any spalling.
 - concrete not under warranty: spalling covering more than 20% of a section.





Mountain States Lighting
609 Krista Court
Murray, Utah 84123
Phone 801-268-4879
Fax 801-605-9058

FIXTURE SPECIFICATIONS

CATALOG NO.: MSL# M-TB-37-1
OPTICAL SYSTEM: FLAT ARRAY W GLOBE
IES CLASS.: TYPE III
INPUT WATTAGE: 150W
SERIES: SOLID STATE LIGHTING
CCT: 3000K
LINE VOLTAGE: 120:277V
PAINT: TEXTURED BLACK
INCLUDES: TERMINAL BLOCK
WATTAGE SWITCH



ARTERIAL LED STREET LIGHT

STANDARD PLAN

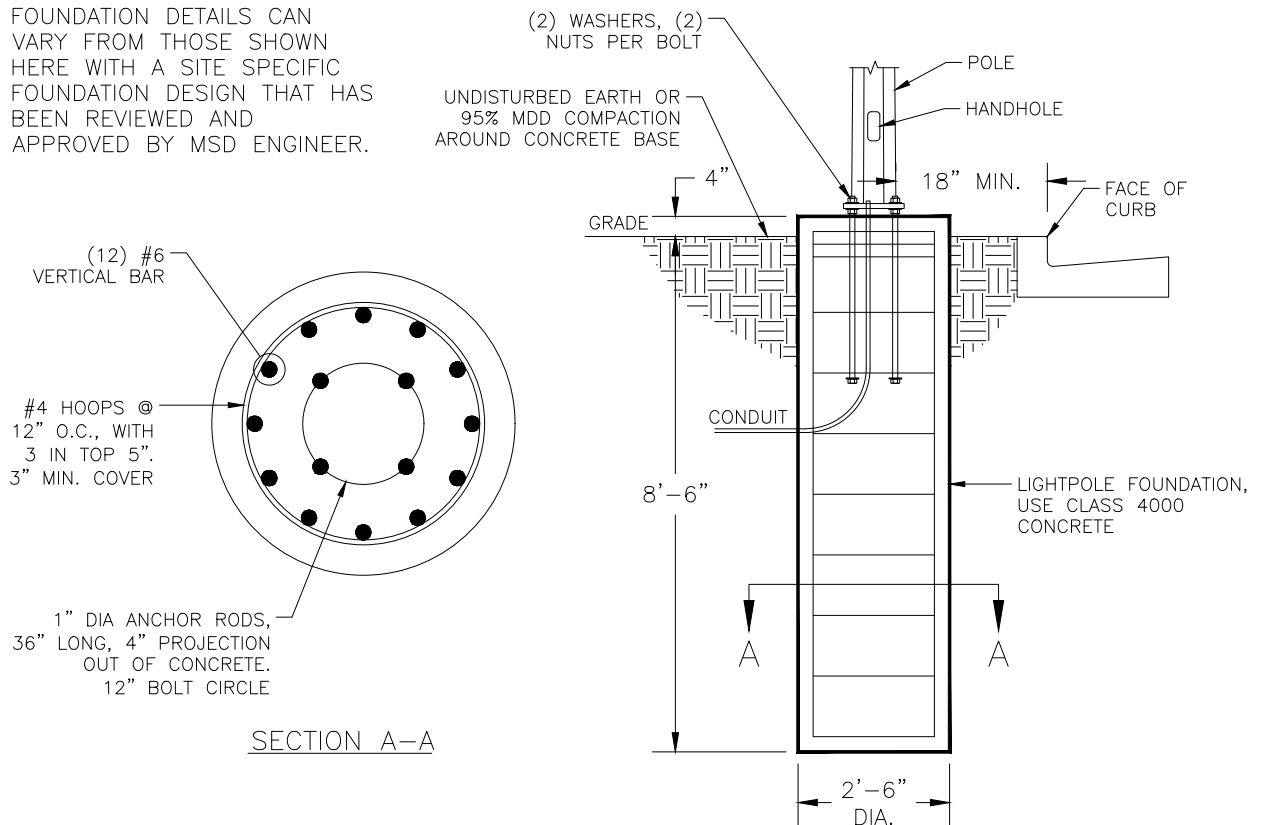
160

SHEET 1 OF 2

REV. 2025-0

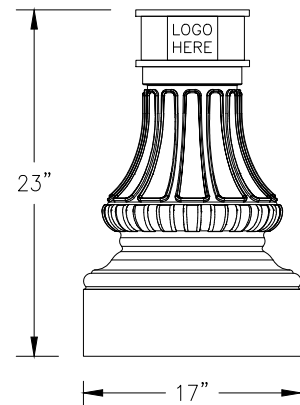
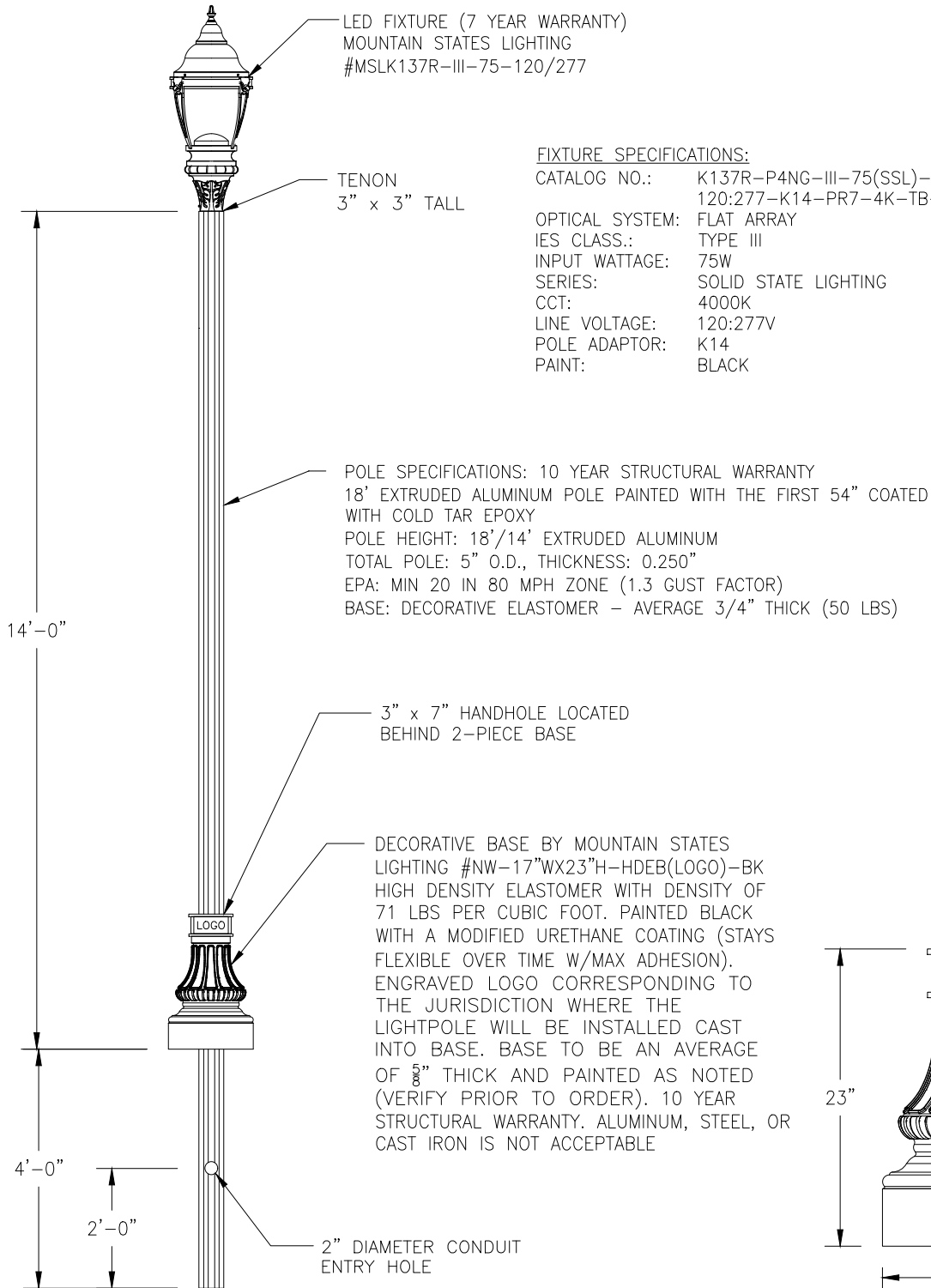
NOTES:

1. SEE STANDARD DRAWING 150 IN THIS DOCUMENT FOR PLACEMENT IN CONTIGUOUS SIDEWALK.
2. FOUNDATION DETAILS CAN VARY FROM THOSE SHOWN HERE WITH A SITE SPECIFIC FOUNDATION DESIGN THAT HAS BEEN REVIEWED AND APPROVED BY MSD ENGINEER.



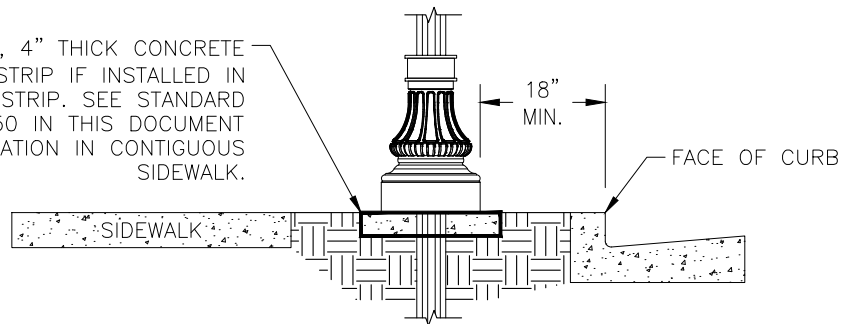
FOUNDATION DETAILS

ASSEMBLY COLOR: BLACK



DECORATIVE BASE DETAIL

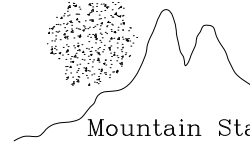
24" DIA., 4" THICK CONCRETE
BASE/MOW STRIP IF INSTALLED IN
PARK STRIP. SEE STANDARD
DRAWING 150 IN THIS DOCUMENT
FOR INSTALLATION IN CONTIGUOUS
SIDEWALK.



INSTALLATION DETAILS

ASSEMBLY COLOR: BLACK

MOUNTAIN STATES LIGHTING
PHOTOCELL #RD8645-BK
(10YR WARRANTY)



Mountain States Lighting
609 Krista Court
Murray, Utah 84123
Phone 801-268-4879
Fax 801-605-9058

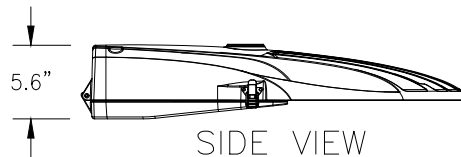
FIXTURE BY MSL
W/10YR WARRANTY
ESU-CA13M10042L-700

LUMINAIRE SPECIFICATIONS:

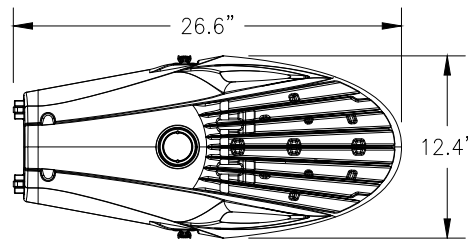
- 10 YEAR WARRANTY
- LOW COPPER DIE-CAST HOUSING & POWER DOORS. 3,000 HOURS SALT SPRAY TO ASTM D1654-08
- IP 66 ON LIGHT ENGINE CONSISTING OF 4000K CREE XP-G3 LEDS, >70 COLOR RENDERING INDEX (CRI) INJECTION MOLDED POLYCARBONATE OPTICS LENS EMBOSSED WITH THE LIGHT DISTRIBUTION TYPE
- PHILIPS ADVANCE CLASS 1 RATED DIMMING LED DRIVER OPERATES 120~277VAC(STANDARD), 50-60HZ. SPECIFIC DRIVE CURRENT >90% POWER FACTOR, <20% THD. (480V INPUT VOLTAGE AVAILABLE)
- OPERATING TEMPERATURE RANGE IS -40°F TO +130°F
- L70 @ 100,000 HRS. @25°C. DRIVER 100,000 HRS <65°F
- UL/ DLC LISTED. MANUFACTURED IN U.S.A. ROHS, VIBRATION TESTED TO ANSI 136.31 FOR BRIDGE APPLICATIONS
- UL 1598 & UL8750 STANDARDS
- ANSI C136.15 WATTAGE SMALL DECAL
- NEMA TWIST-LOCK RECEPTACLE
- BIRD GUARD
- ANSI C136.41 7-PIN DIMMING RECEPTACLE
- 20KVA SPD SURGE SUPPRESSION

FINISH:
BLACK

MOUNTING:
O.D. 1.6"~2.6"(STANDARD)



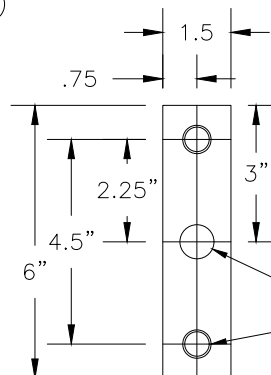
SIDE VIEW



TOP VIEW

ROADWAY LED FIXTURE DETAIL

POLE BY MOUNTAIN STATES LIGHTING
P#30TRTS-7/4.5-(1)ARM/60"L-BK
30' TAPERED SMOOTH STEEL
PAINTED BLACK
MIN EPA OF 12 IN 80 MPH ZONE
(1.3 GUST FACTOR)



ARM MOUNT DETAIL

ARM MOUNT PLATE WELDED ON
ARM SIDE WITH WIRE HOLE
CENTERED 6" DOWN FROM TOP OF
POLE. PLATES ARE 1" THICK
STEEL. ONE COVER PLATE IS
INCLUDED FOR SINGLE ARM
APPLICATIONS

3/4" DIAMETER WIRE ACCESS HOLE

5/8" x 11 UNC THREADED HOLE - 2 PLCS

3" X 5" HANDHOLE
WITH COVER

BOLT COVER COLOR
TO MATCH POLE



INDUSTRIAL LED STREET LIGHT

STANDARD PLAN

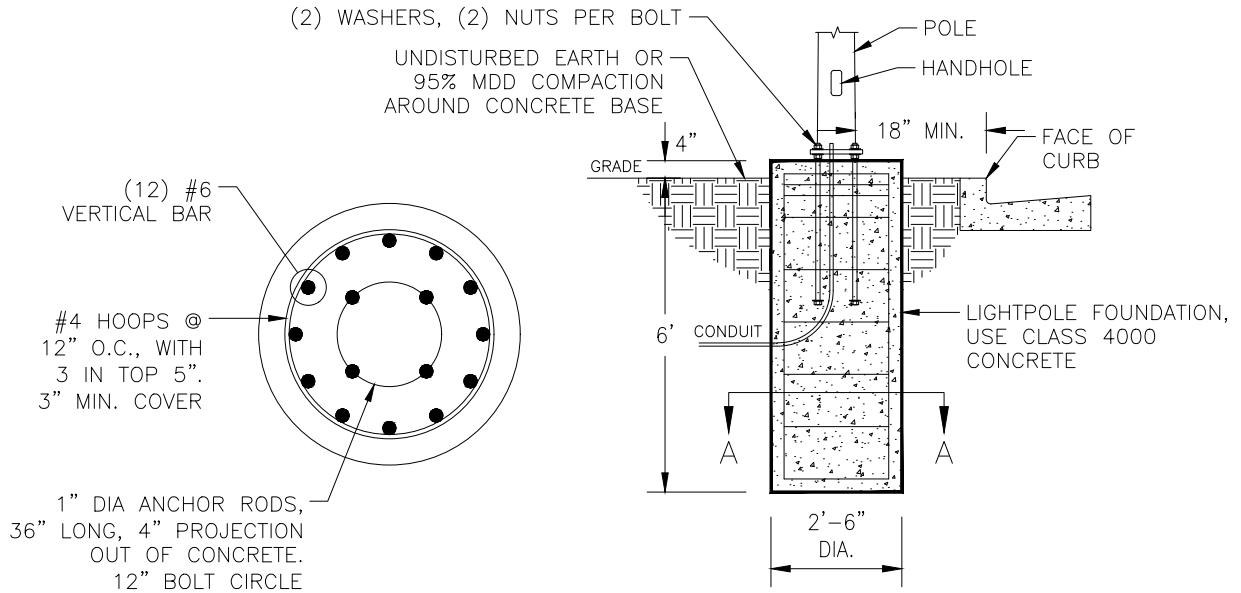
162

SHEET 1 OF 2

REV. 2025-0

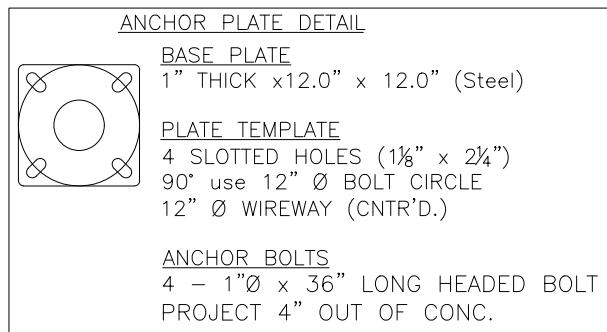
NOTES:

1. SEE STANDARD DRAWING 150 IN THIS DOCUMENT FOR PLACEMENT IN CONTIGUOUS SIDEWALK.
2. FOUNDATION DETAILS CAN VARY FROM THOSE SHOWN HERE WITH A SITE SPECIFIC FOUNDATION DESIGN THAT HAS BEEN REVIEWED AND APPROVED BY MSD ENGINEERING.

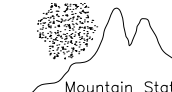


SECTION A-A

30' INDUSTRIAL POLE FOUNDATION DETAILS



ASSEMBLY COLOR: BLACK


Mountain States Lighting
609 Krista Court
Murray, Utah 84123
Phone 801-268-4879
Fax 801-605-9058

LED FIXTURE (7 YEAR WARRANTY)
MOUNTAIN STATES LIGHTING
#MSLK595-III-60-120/277

TENON
3" X 3" TALL

FIXTURE SPECIFICATIONS:

CATALOG NO.: K595-P4NL-III-60(SSL)-7030-
120:277-K14-PR7-3K-TB-BK-1-WS
OPTICAL SYSTEM: FLAT ARRAY
IES CLASS.: TYPE III
INPUT WATTAGE: 60W
SERIES: SOLID STATE LIGHTING
CCT: 3000K
LINE VOLTAGE: 120:277V
POLE ADAPTOR: K14
PAINT: BLACK

12'-0"

POLE SPECIFICATIONS: 10 YEAR STRUCTURAL WARRANTY
16' EXTRUDED ALUMINUM POLE PAINTED, WITH THE FIRST 54"
COATED WITH COLD TAR EPOXY
POLE HEIGHT: 16'/12' EXTRUDED ALUMINUM
TOTAL POLE: 5" O.D. THICKNESS: 0.250"
EPA: MIN 20 IN 80 MPH ZONE (1.3 GUST FACTOR)
BASE = DECORATIVE ELASTOMER - AVERAGE 3/4" THICK (50 LBS)

3" x 7" HANDHOLE LOCATED
BEHIND 2-PIECE BASE

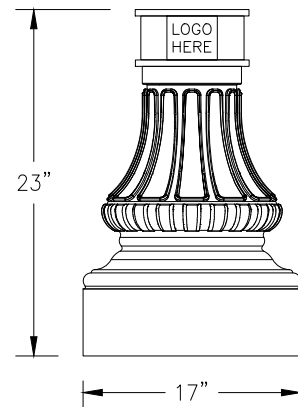
DECORATIVE BASE BY MOUNTAIN STATES LIGHTING #
NW-17"WX23"H-HDEB(LOGL)-BK HIGH DENSITY
ELASTOMER WITH DENSITY OF 71LBS PER CUBIC FOOT.
PAINTED BLACK WITH A MODIFIED URETHANE COATING
(STAYS FLEXIBLE OVER TIME W/MAX ADHESION)
ENGRAVED LOGO (VERIFY) BASE TO BE AN AVERAGE OF
5/8" THICK. (10 YEAR STRUCTURAL WARRANTY)
ALUMINUM, STEEL, OR CAST IRON IS NOT ACCEPTABLE

4'-0"

2'-0"

4'-6" COLD TAR EPOXY DIRECT
BURIAL PORTION OF POLE

WIRE ACCESS HOLE



DECORATIVE BASE DETAIL



RESIDENTIAL LED STREET LIGHT

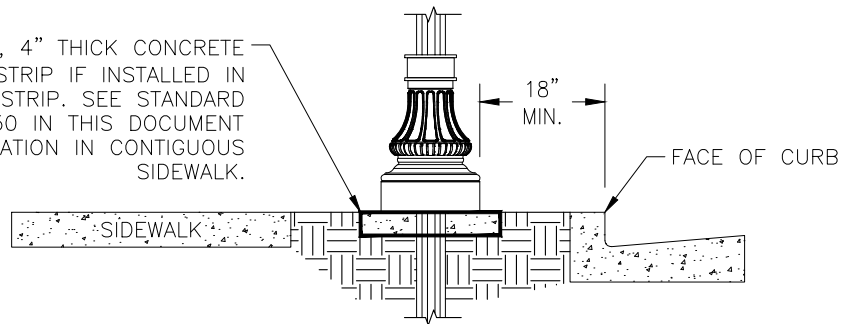
STANDARD PLAN

163

SHEET 1 OF 2

REV. 2025-0

24" DIA., 4" THICK CONCRETE
BASE/MOW STRIP IF INSTALLED IN
PARK STRIP. SEE STANDARD
DRAWING 150 IN THIS DOCUMENT
FOR INSTALLATION IN CONTIGUOUS
SIDEWALK.



INSTALLATION DETAILS

NOTES:

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

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

Use D&L Supply Co. I-3517 or approved equivalent.

All connecting hardware to be stainless steel.



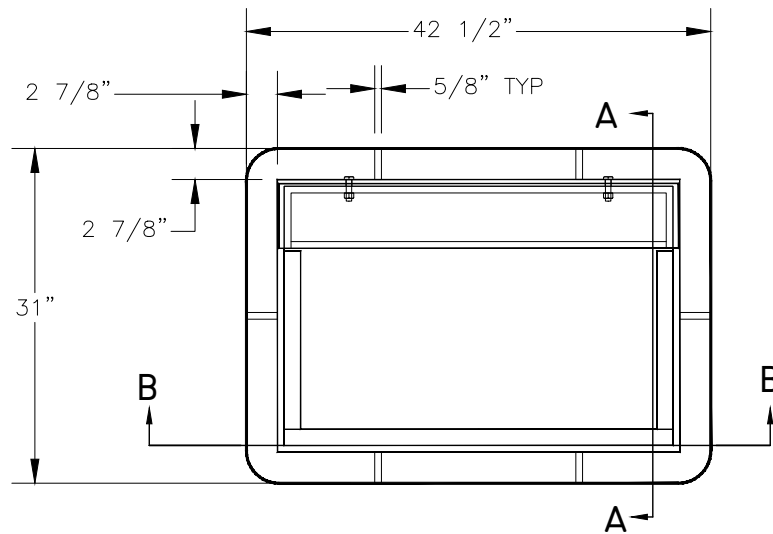
CURB OPENING FRAME AND GRATE

STANDARD PLAN

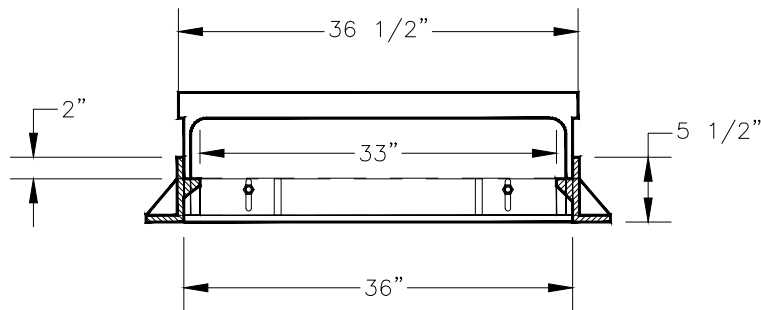
201

SHEET 1 OF 2

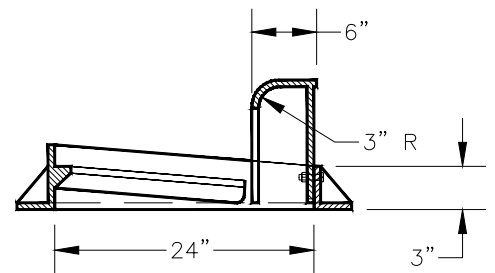
REV. 2025-0



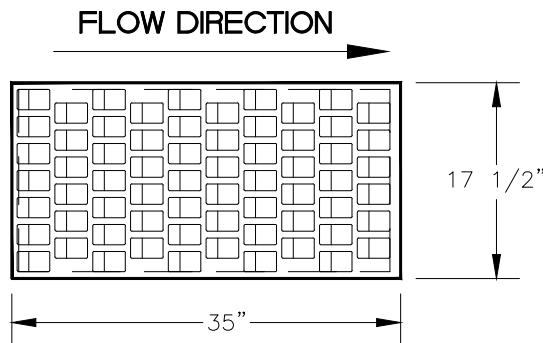
FRAME PLAN



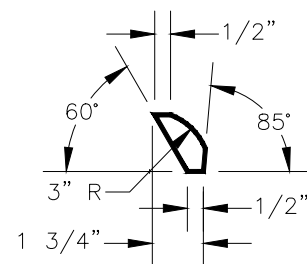
SECTION B-B



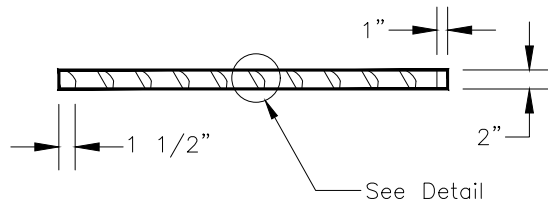
SECTION A-A



GRATE PLAN



DETAIL



CURB OPENING FRAME AND GRATE

STANDARD PLAN
201
SHEET 2 OF 2

REV. 2025-0

NOTES:

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

Ladder Rungs: Provide rungs in boxes over 4 feet deep, spaced 12" O.C. When measured from the floor of the box, place bottom rung 16" maximum above box floor. Place top rung within 3 feet of finish grade.

Follow all current OSHA requirements.

Align rungs with lid opening.

Rungs not required in boxes with concentric access.

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.

Use M.A. Industries PS1–PF 10" Manhole Single Face Step or approved product with similar materials and ratings with MSD Engineer approval.



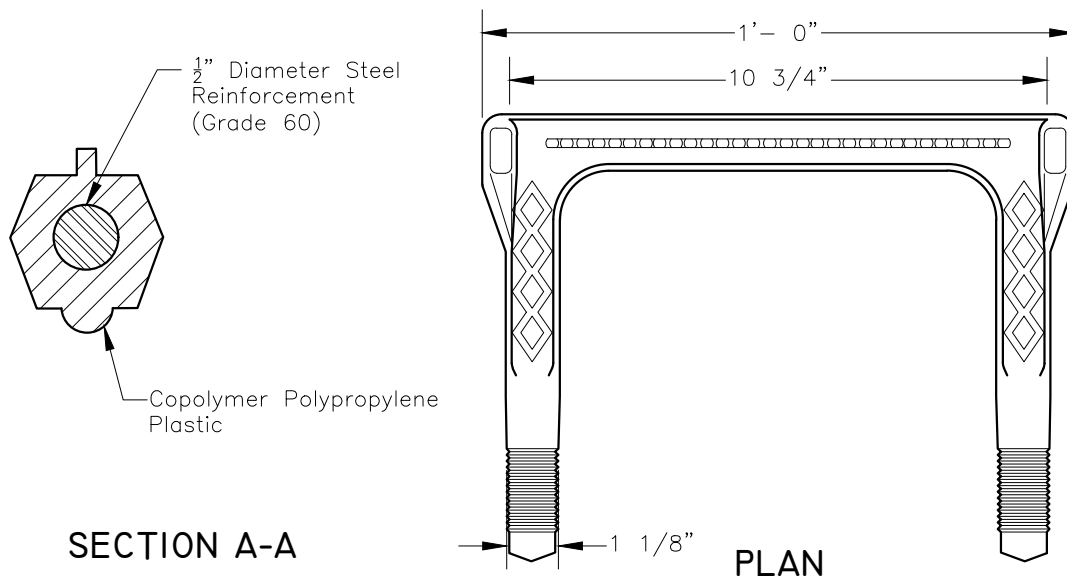
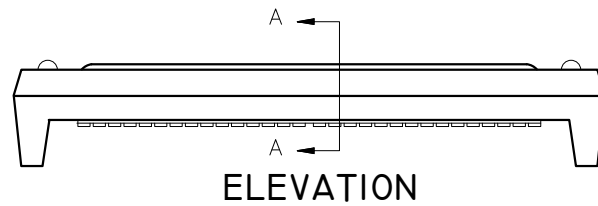
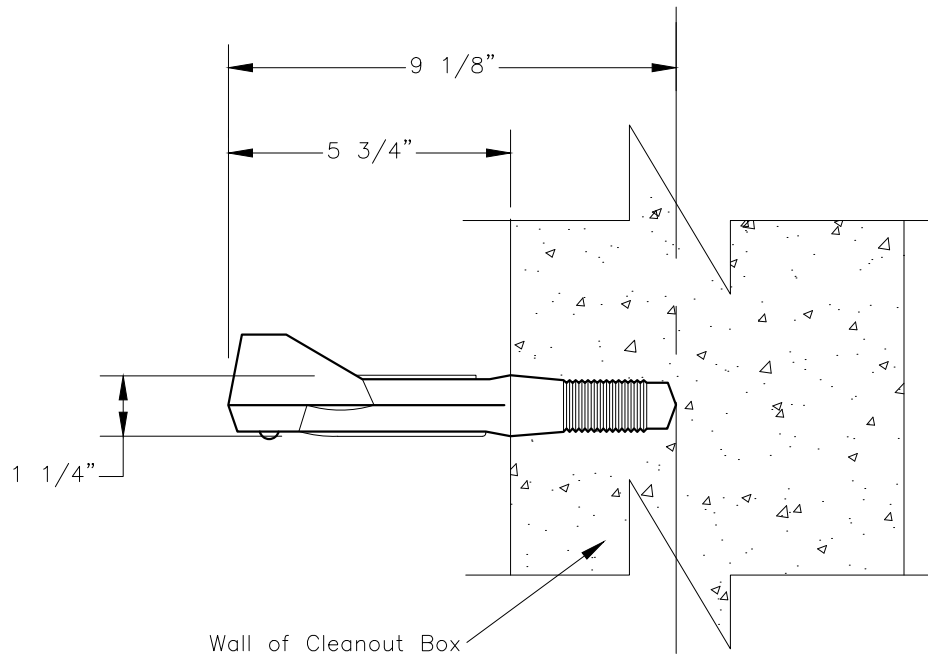
LADDER RUNG

STANDARD PLAN

208

SHEET 1 OF 2

REV. 2025-0



NOTES:

GENERAL DETENTION BASIN REQUIREMENTS:

- ① Side slopes shall be a maximum of 3:1.
- ② Sides and bottom of basin shall be rock lined. In special circumstances such as when the basin contains a park or playing field, the basin may be lined with grass, with approval of the MSD Engineer. For rock lining, use 2" rock with a minimum depth of 5" over separation fabric. If grass lined, the area must be adequately irrigated with a permanent pressurized irrigation system.
- ③ 1 foot of freeboard above the 10-year 24-hour storm event level or capacity for the 100-year 24-hour storm.
- ④ Concrete low flow pipe or channel preferred.

SECTION A. INLET AND OUTLET STRUCTURE REQUIREMENTS:

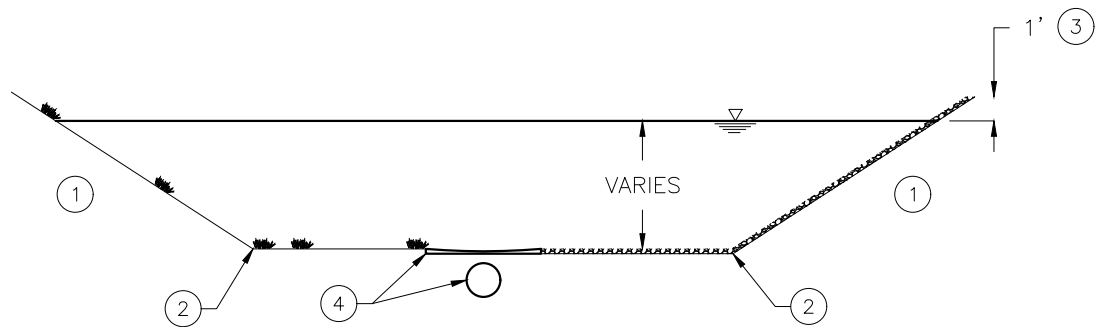
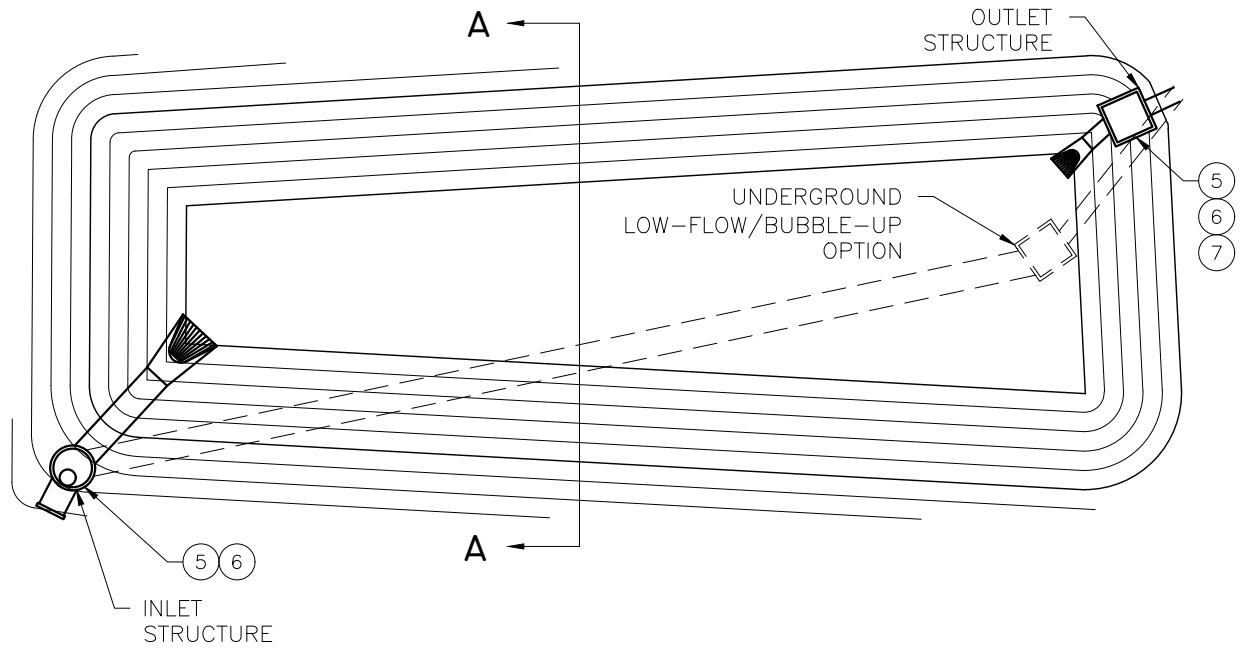
- ⑤ Outflow must be restricted per the code requirements.
- ⑥ Must include a concrete flared end section and locking grate, unless underground low-flow conveyance is utilized.
- ⑦ Pre-treatment required prior to outflow to approved facility, outlet structure must conform to Standard Detail 301 in this document or approved outlet structure.

SECTION B. REQUIREMENTS FOR ACCESSES TO ALL INLET/OUTLET STRUCTURES:

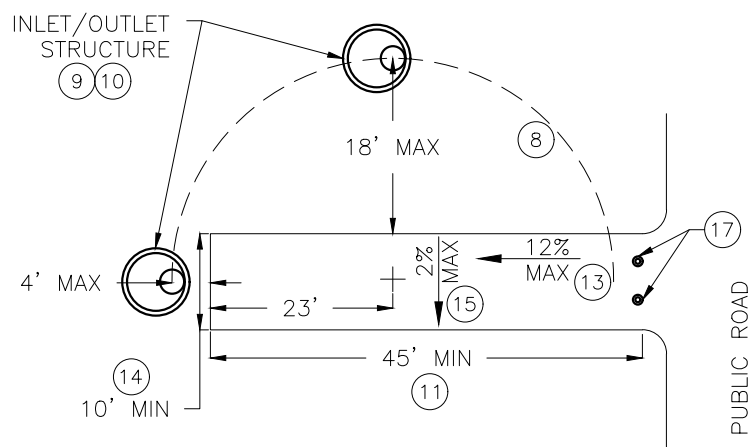
- ⑧ Must fall within the area of the arc (shown in the Accessible Road/Pad Detail), which is representative of the maintenance vehicles' reach.
- ⑨ No increase in elevation greater than 5' from surface of accessible road or pad.
- ⑩ No decrease in elevation greater than 35' from surface of accessible road or pad.
- ⑪ Must be a minimum of 45 feet in length from traveled way of connecting roadway if a detention pond specific access road or pad is utilized.

SECTION C. ACCESSIBLE ROAD/PAD REQUIREMENTS:

- ⑫ Must be easily accessible by maintenance vehicles.
- ⑬ Must not exceed a maximum longitudinal slope of 12%.
- ⑭ Must be at least 10' in width.
- ⑮ No cross-slope in excess of 2%.
- ⑯ Must be a minimum of 6" thick concrete.
- ⑰ Must have measures in place restricting public access (ex. bollards). If bollards are used, must be of stainless steel material.
- ⑱ Must comply with all other local, county, state, and federal requirements.



SECTION A-A - TYPICAL BASIN SECTION

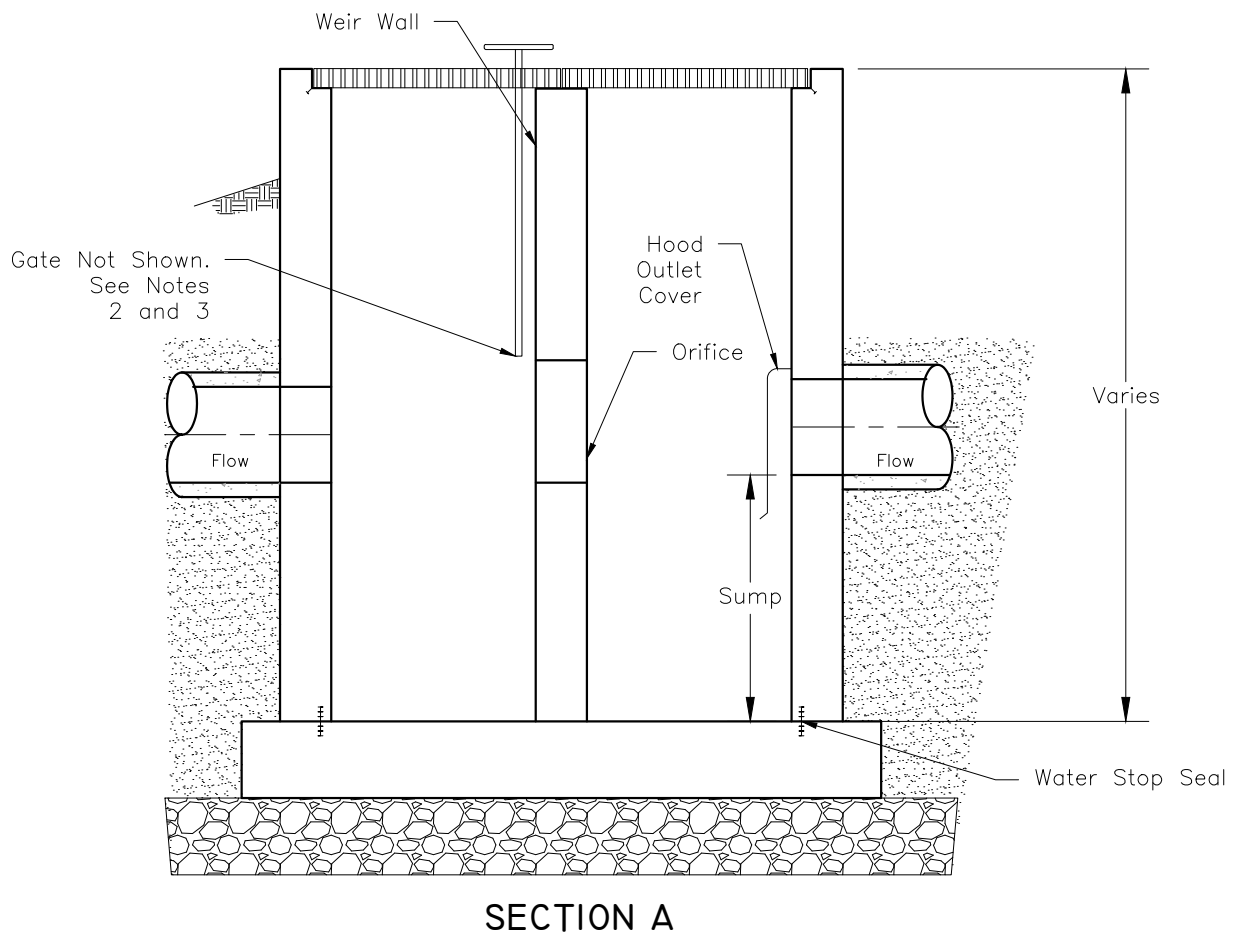
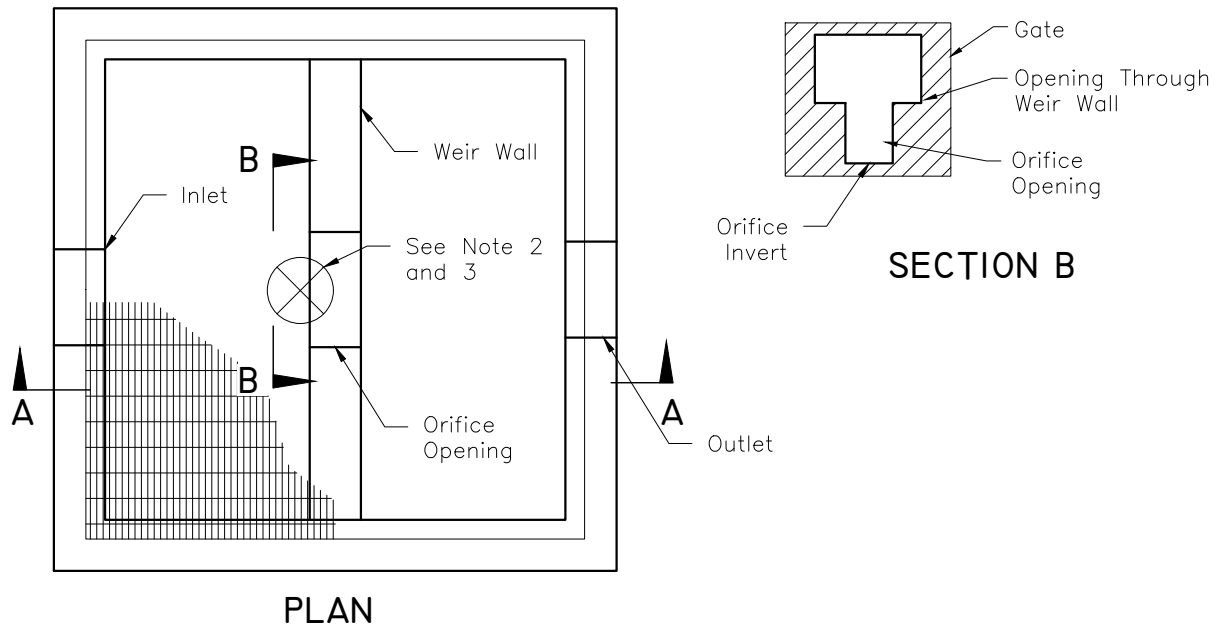


TYPICAL COUNTY ACCESSIBLE ROAD/PAD DETAIL

NOTES:

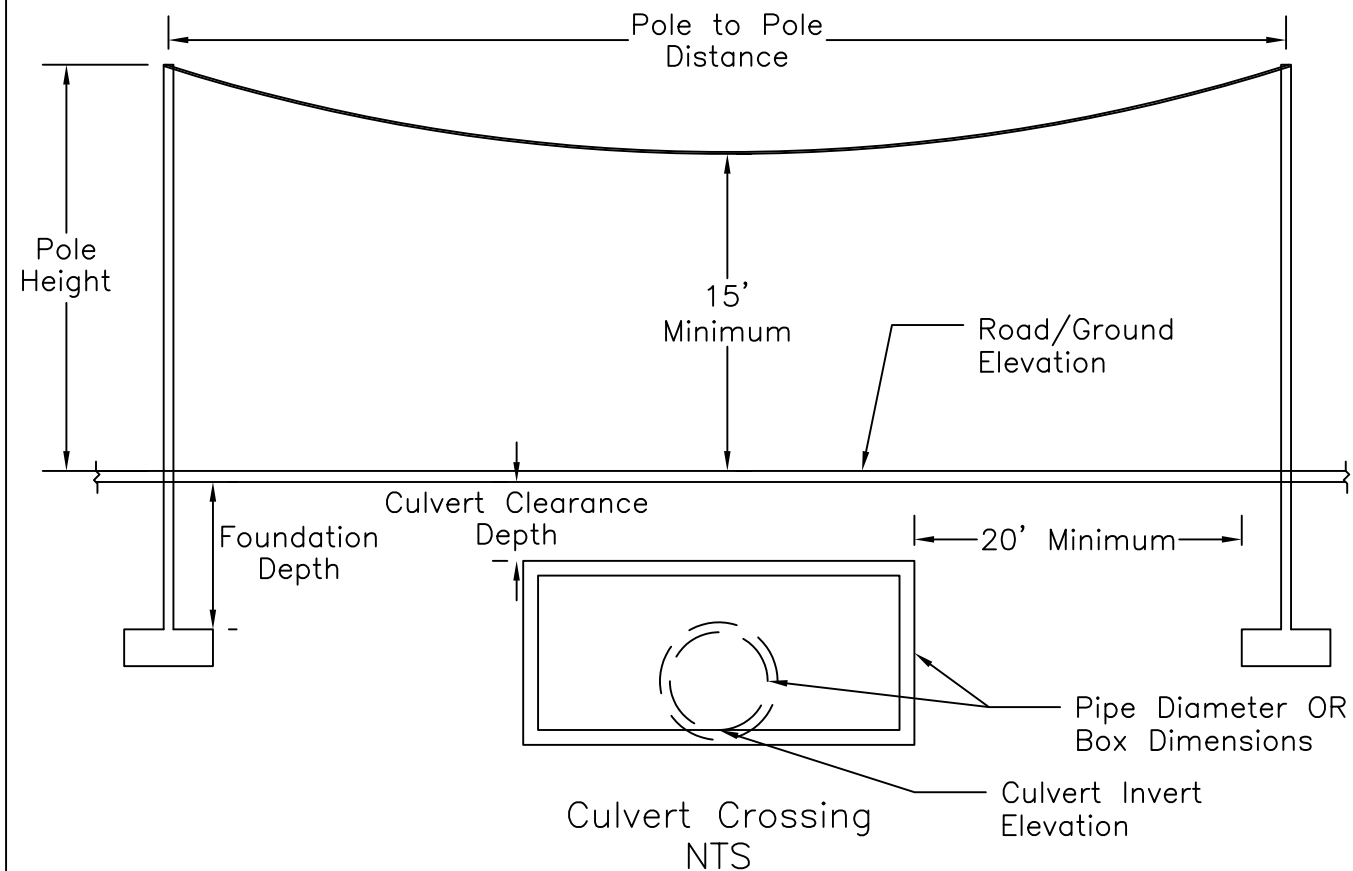
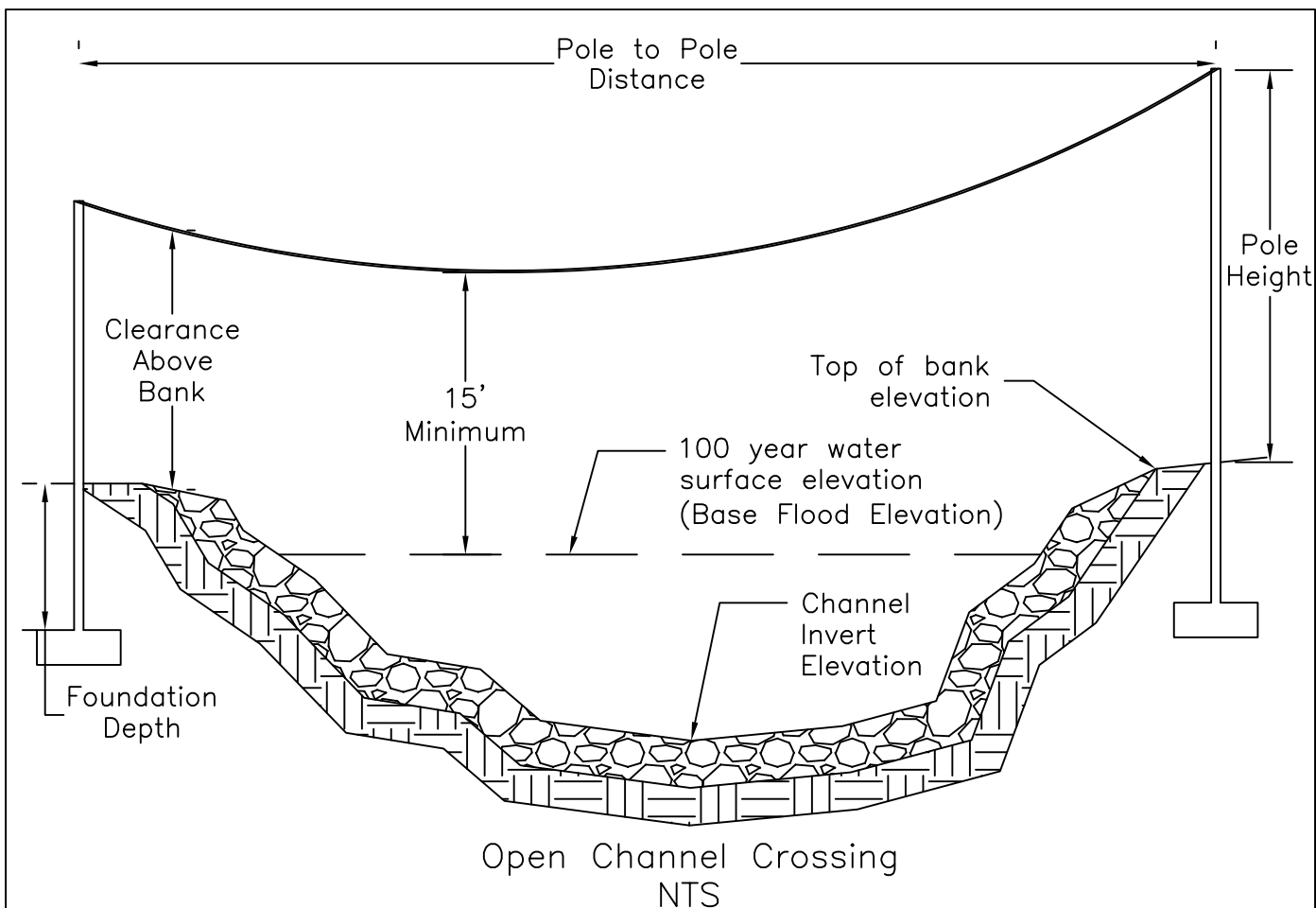
Materials, construction, and workmanship shall be in accordance with the current edition of "APWA Manual of Standard Specifications" addendums, and modifications thereto; and as directed by the MSD Engineer. Reference to specific sections of APWA does not limit requirements to that section.

1. Developer shall install lock and chain on handwheel. Lock to be supplied by SLCO Operations Department.
2. Provide gate with stop nut on stem to hold gate at 10" above invert of orifice or higher.
3. Golden Harvest slide gate with non-rising stem and handwheel, or approved equal. Cut grate as required for extension of frame.
4. The drawing on Sheet 2 is intended to be general in nature, but shows the overall conceptual requirements for the outlet structure, including box with weir wall, orifice, gate, hood, and grated top. The specific size of the components shall be designed for the specific application.



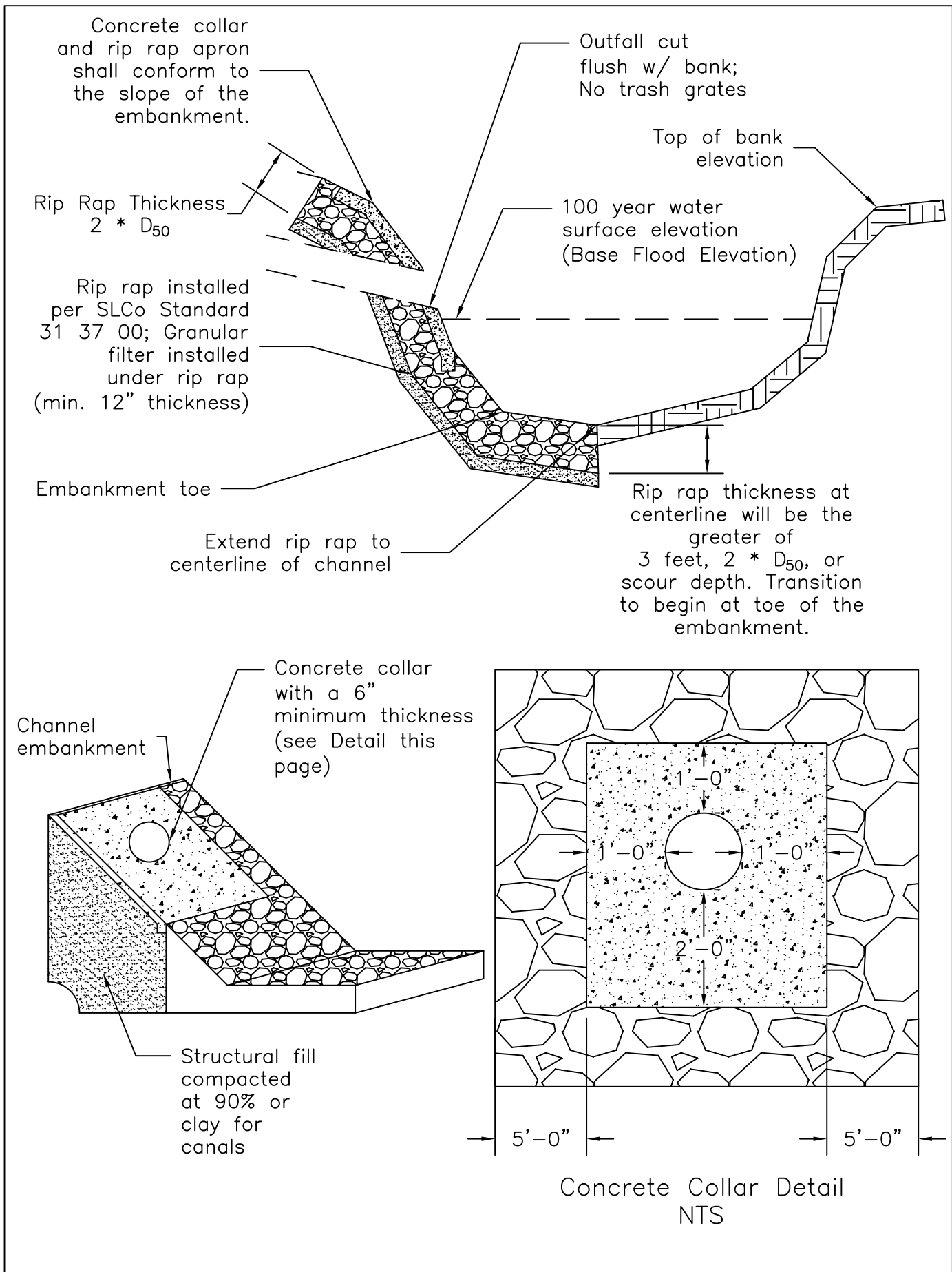
APPLICANT INSTRUCTIONS

1. Do not resubmit this detail with application. Please show the surveyed cross section at the crossing location.
2. Label all features of the crossing location, including the culvert diameter/dimensions, channel invert elevation, and the base flood elevation (BFE) of the waterway.
3. Label all features of the utilities, including the utility type/material, the pole height, pole foundation depth, pole to pole distance, horizontal distance from facility, and the vertical clearance above the top of bank/road/BFE.
4. Aerial crossings above roads managed by the Utah Department of Transportation or other municipalities need to adhere to clearance requirements of that agency/city. Aerial crossings above the Surplus Canal need to adhere to the requirements of the US Army Corps of Engineers (USACE). A separate Section 408 Permission will need to be obtained from USACE in addition to the FC Permit.
5. The drawing on Sheet 2 is intended to be general in nature, but shows the overall conceptual requirements for aerial crossings over flood control facilities.



APPLICANT INSTRUCTIONS

1. Do not resubmit this detail with application. Please show the surveyed cross section at the discharge location.
2. Submit calculations for the drainage area using the 100-year, 24-hour storm. The maximum allowable release rate (Q_{100}) shall be the most restrictive of the pre-development discharge rate OR 0.2 cfs/acre OR 0.02 cfs/acre as governed by Chapter 17.08.070 of the Salt Lake County Code of Ordinances.
3. Label base flood elevation, channel invert elevation, discharge pipe invert elevation, top of bank(s) elevation, pipe diameter, and pipe material.
4. If invert elevation of outfall is below the base flood elevation (BFE), a backflow prevention device must be installed.
5. Submit rip rap sizing calculations for the 100-year flows/velocities of the canal, creek, or river (applicant may need to determine 100-year flows/velocities if data is not available).
6. Storm water discharges into the Surplus Canal need to adhere to the requirements of the US Army Corps of Engineers (USACE). A separate Section 408 Permission will need to be obtained from USACE in addition to the FC Permit.
7. The drawing on Sheet 2 is intended to be general in nature, but shows the overall conceptual requirements for drainage outfalls into flood control facilities.



APPLICANT INSTRUCTIONS

1. Do not resubmit this detail with application. Please show surveyed cross section at the crossing location.
2. Label all features of the crossing location, including the waterway, top of bank elevation(s), culvert diameter/dimensions, channel invert elevation, and base flood elevation (BFE) of the waterway.
3. Label all features of the utilities, including the utility type/material, conduit diameter, clearance above culvert or clearance below channel, and distance/location of bore pits from culvert/channel
4. The drawing on Sheet 2 is intended to be general in nature, but shows the overall conceptual requirements for horizontal directional drilling. Applicant to confirm clearance depth below road surface with municipality. Horizontal directional drilling under the Surplus Canal needs to adhere to the requirements of the US Army Corps of Engineers (USACE). A separate Section 408 Permission will need to be obtained from the USACE in addition to the FC Permit.

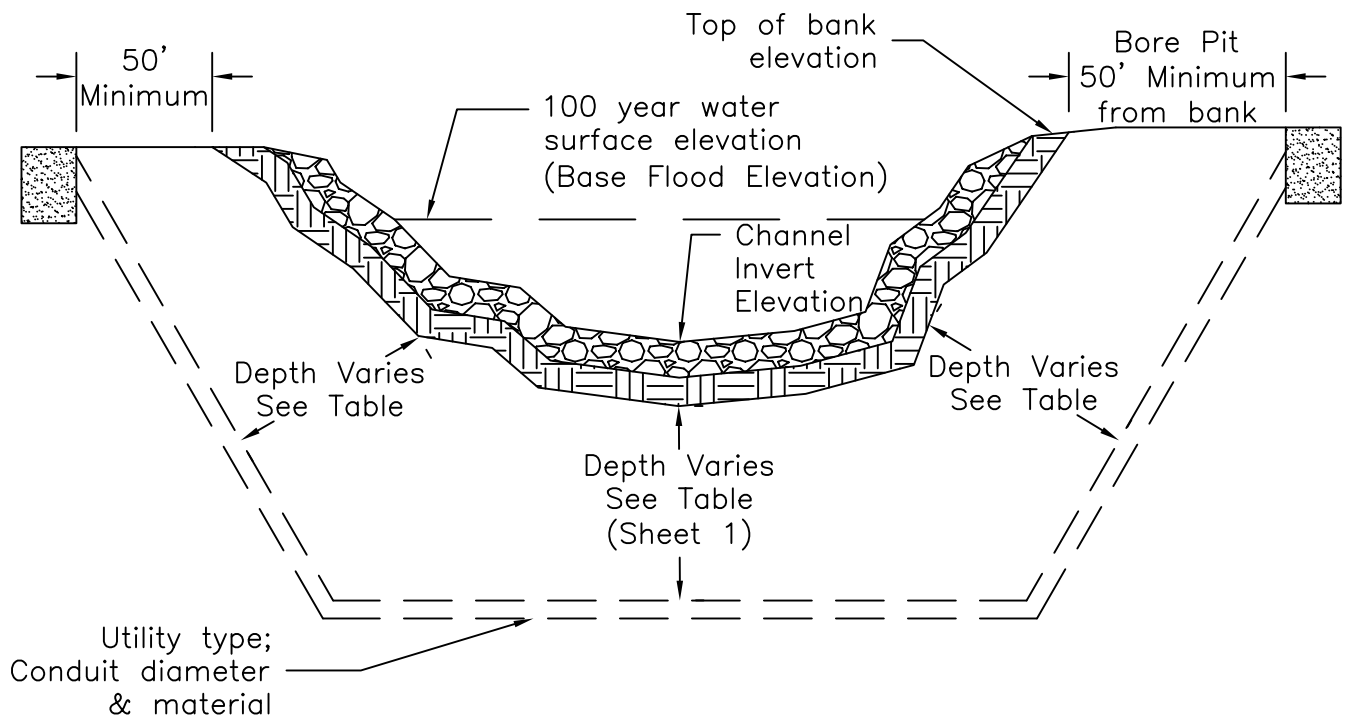
MINIMUM CLEARANCE REQUIRED		
FLOOD CONTROL FACILITY	DRY SEASON DEPTH	IRRIGATION SEASON DEPTH
Jordan & Salt Lake Canal	5'-0"	20'-0"
East Jordan Canal	5'-0"	20'-0"
North Jordan Canal	15'-0"	15'-0"
South Jordan Canal	5'-0"	5'-0"
Utah & Salt Lake Canal*	5'-0"	PROHIBITED
Utah Lake Distributing Canal	5'-0"	5'-0"
Riter Canal	5'-0"	5'-0"
Jordan River	15'-0"	15'-0"
Flood Control Creeks	5'-0"	5'-0"
Surplus Canal**	50'-0"	50'-0"
*The Utah & Salt Lake Canal requires a concrete apron from top of bank to top of bank. Contact canal company for more details.		
**Installation of utilities on the Surplus Canal is a minimum of 50 feet. More details and information will be required by the US Army Corps of Engineers		



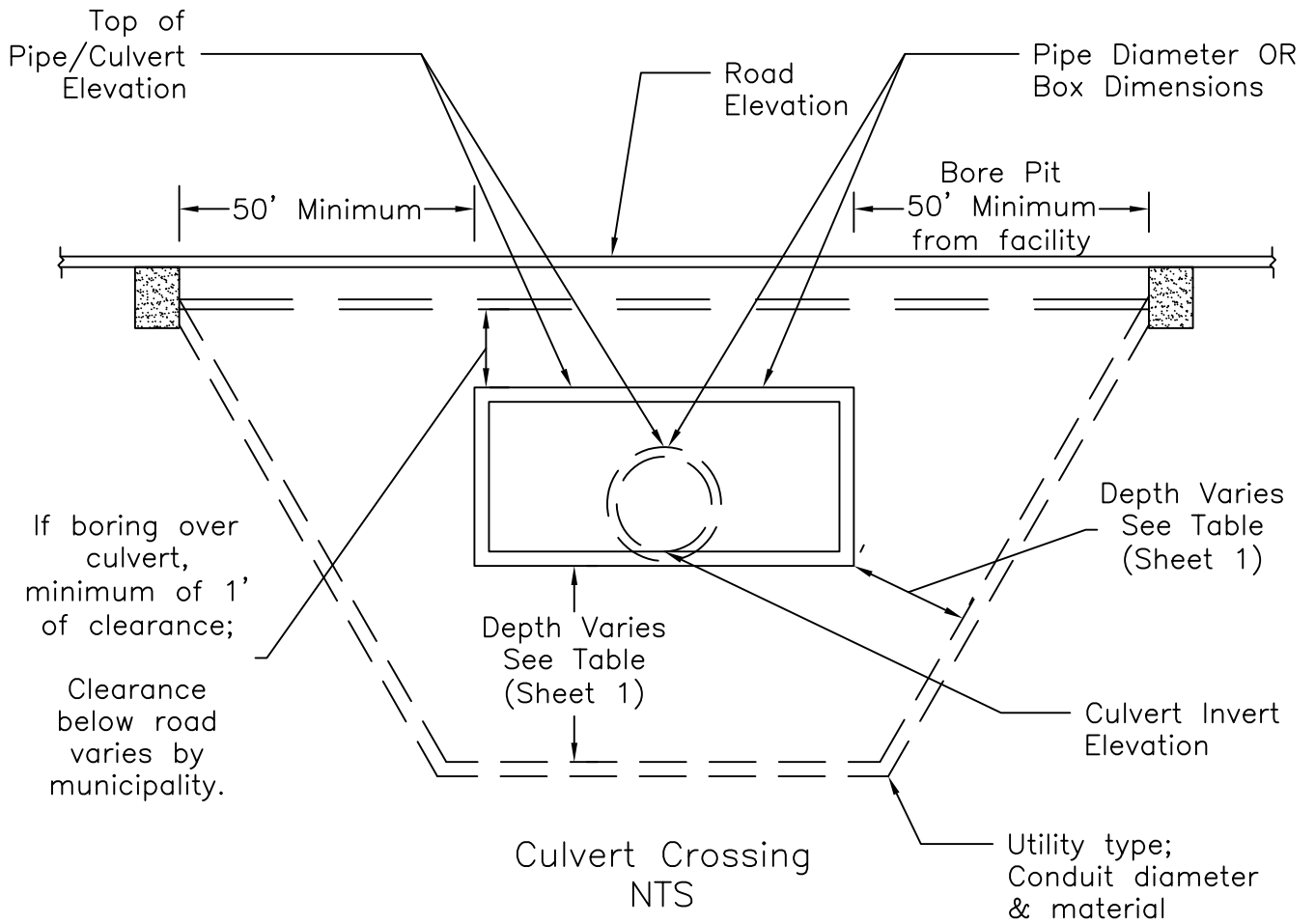
HORIZONTAL DIRECTIONAL DRILLING ON FLOOD CONTROL FACILITIES

STANDARD PLAN
FC 03
SHEET 1 OF 2

REV. 04-20-2025



Open Channel Crossing
NTS

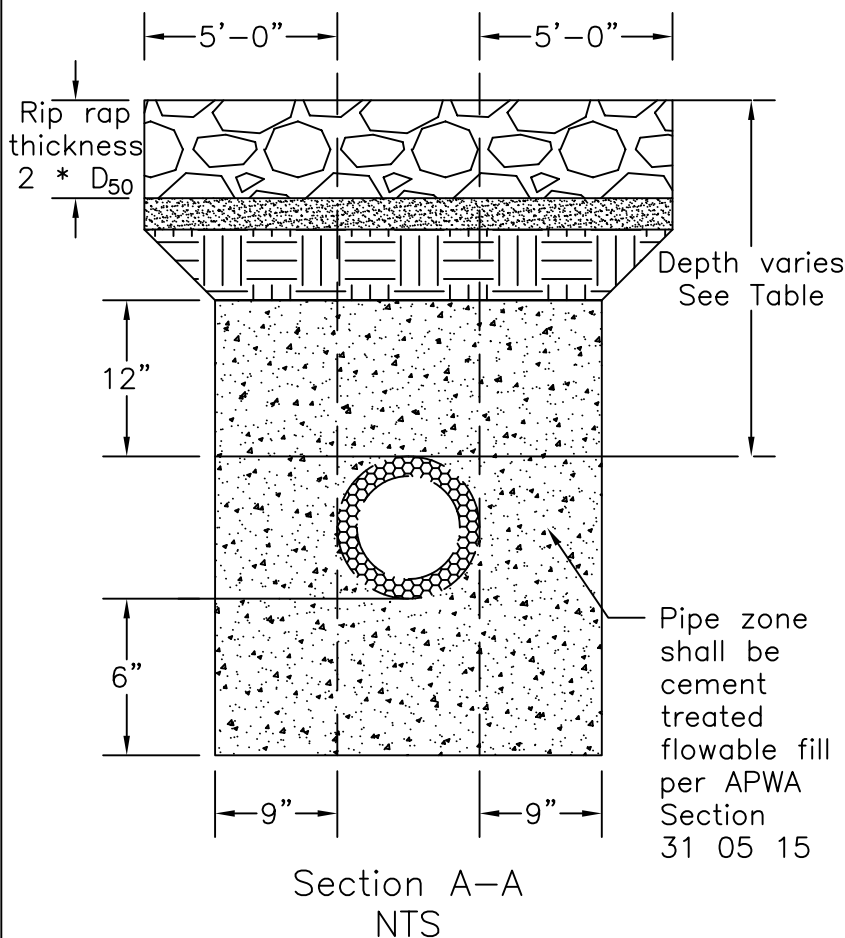
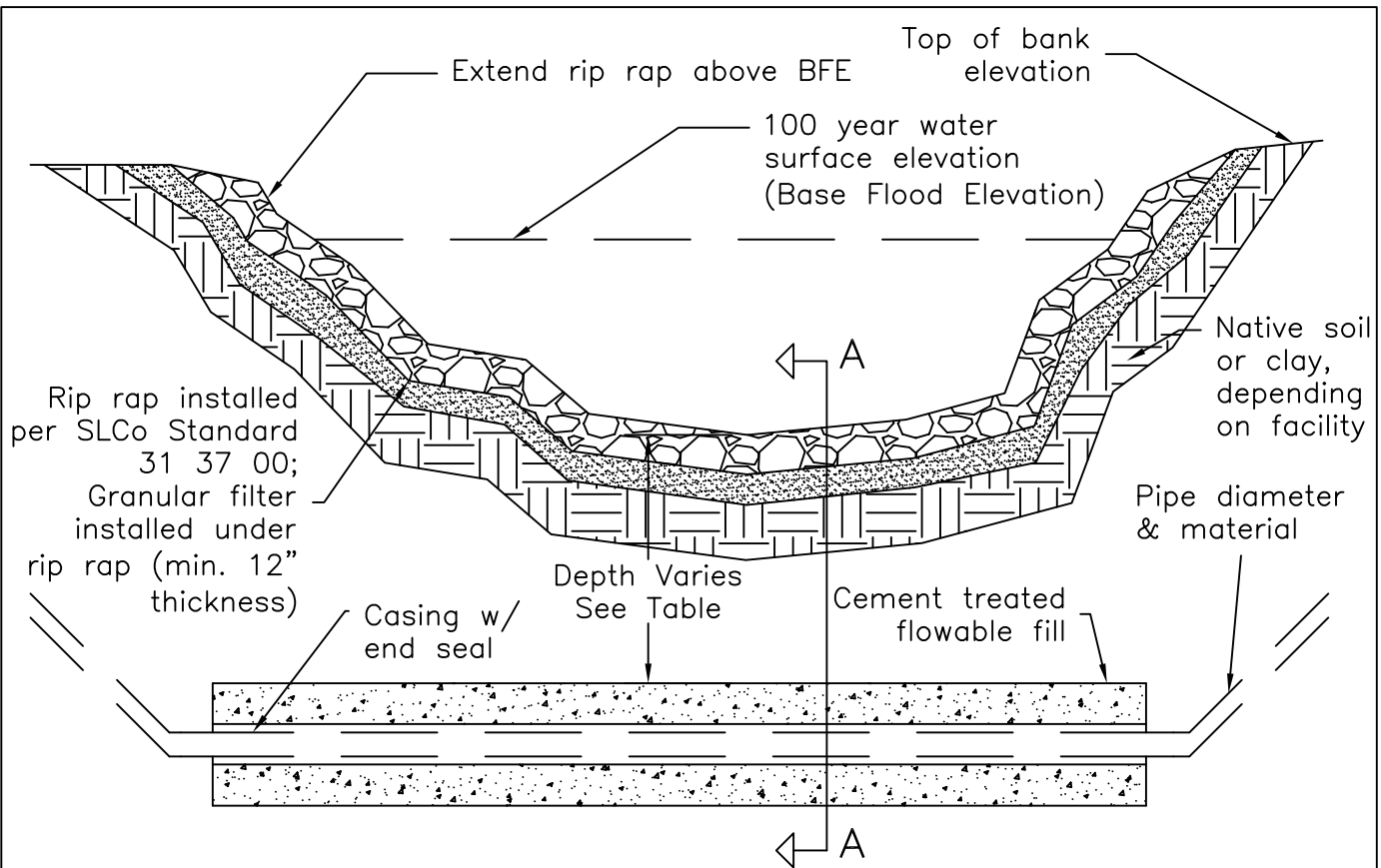


Culvert Crossing
NTS

APPLICANT INSTRUCTIONS

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

1. Do not resubmit this cross section with application. Please show existing and post installation cross section at crossing location.
2. Installation within a regulatory floodway must include a "No-Rise" certification and supporting analysis in accordance with 44 CFR 60.3(d)(3) – Floodway Requirement.
3. Label base flood elevation, channel invert elevation, top of bank(s) elevation, pipe diameter, and pipe material.
4. Submit rip rap sizing calculations for the 100-year flows/velocities of the canal, creek, or river.
5. The drawing on Sheet 2 is intended to be general in nature, but shows the overall conceptual requirements for the open trench utility installation.



MINIMUM CLEARANCE REQUIRED	
FLOOD CONTROL FACILITY	DRY SEASON DEPTH
Jordan & Salt Lake Canal	5'-0"
East Jordan Canal	5'-0"
North Jordan Canal	15'-0"
South Jordan Canal	5'-0"
Utah & Salt Lake Canal*	5'-0"
Utah Lake Distributing Canal	5'-0"
Ritter Canal	5'-0"
Jordan River	15'-0"
Flood Control Creeks	5'-0"
Surplus Canal**	50'-0"
*The Utah & Salt Lake Canal requires a concrete apron from top of bank to top of bank. Contact canal company for more details.	
**Installation of utilities on the Surplus Canal is a minimum of 50 feet. More details and information will be required by the US Army Corps of Engineers	
OPEN TRENCH UTILITY INSTALLATION ON CANALS IS PROHIBITED DURING IRRIGATION SEASON	

APPLICANT INSTRUCTIONS

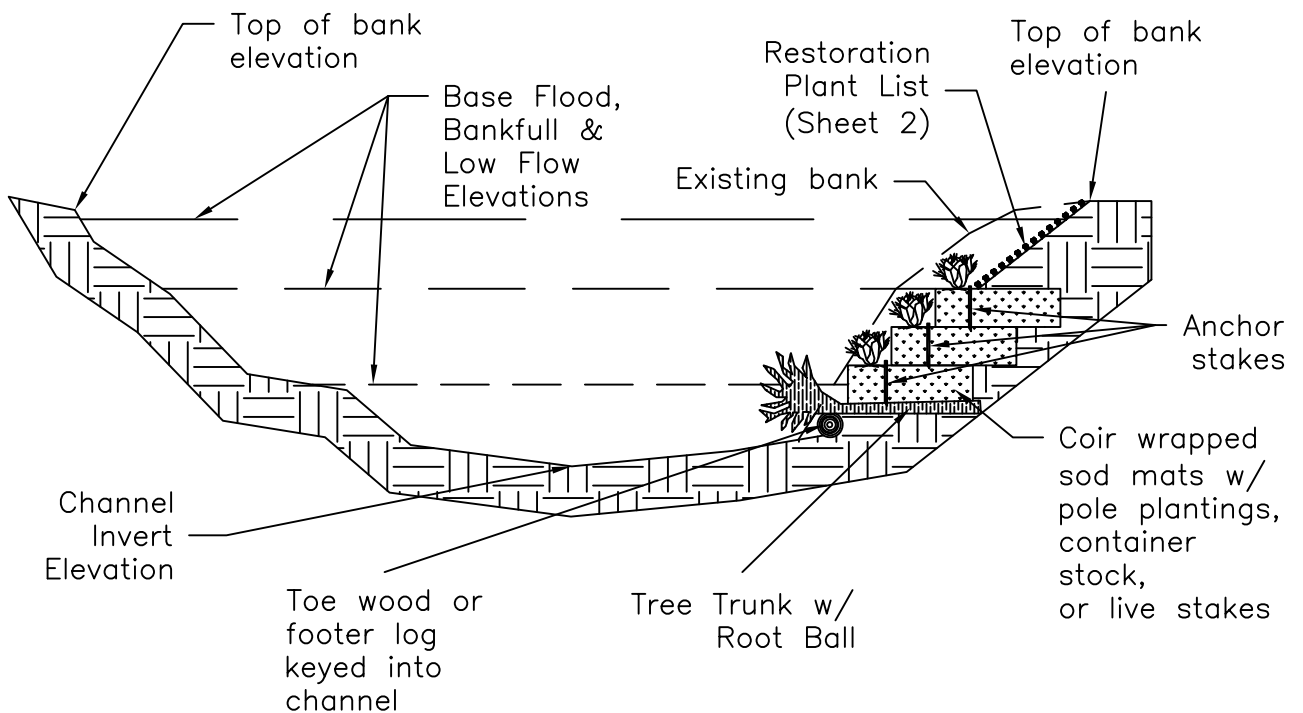
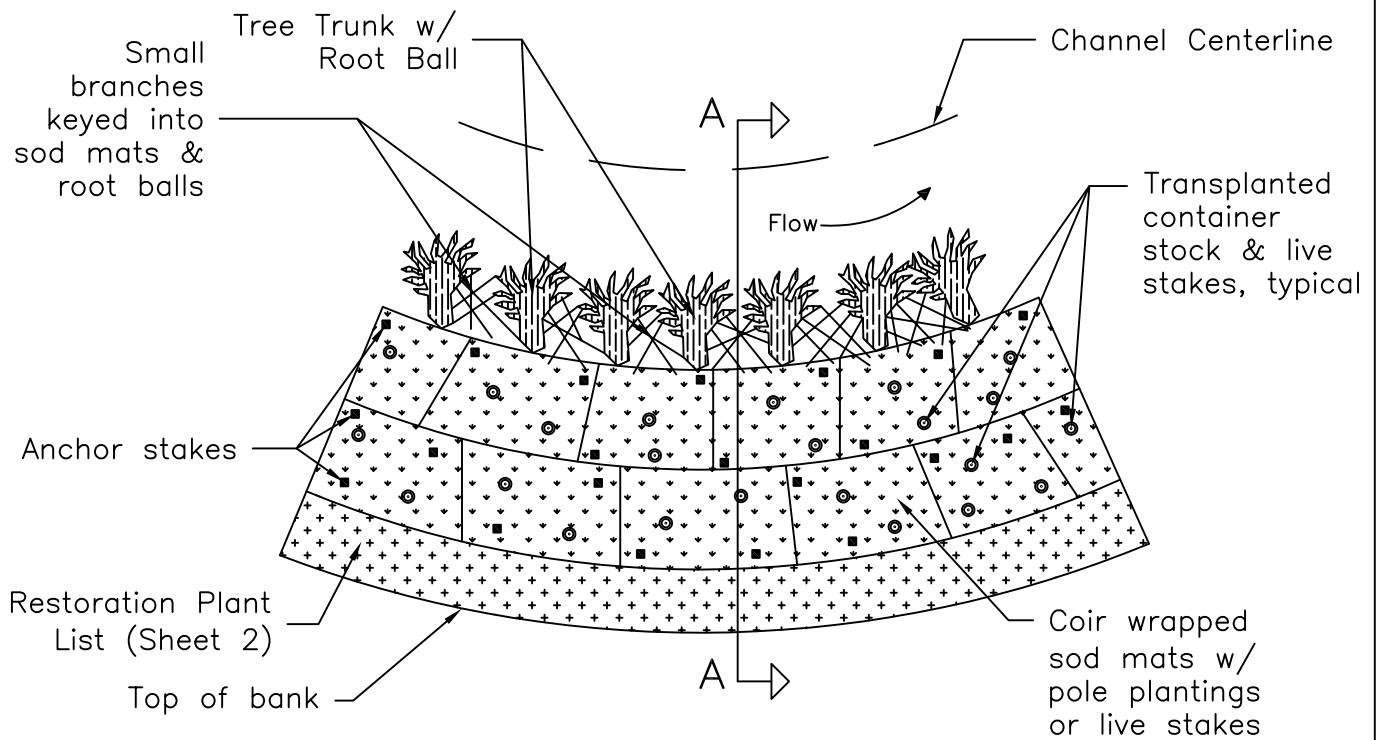
1. Do not resubmit this detail with application. Please show the surveyed cross section at the project location.
2. This stream bank repair/revetment is comprised of logs and other woody material constructed to restore the toe of a stream bank. Stacked, coir wrapped sod mats and transplanted container stock are used to prevent stream bank erosion.
3. Surveyed control points shall be required to establish that toe wood and sod mats are accurately installed as specified by the design engineer. Label base flood elevation, channel invert elevation, and top of bank(s) elevation.
4. Contractor shall use logs, trunks with roots, branches, and woody debris collected from on-site sources (such as material cut from project access). Material shall be used to construct the toe wood and root ball structures. Dimensions of suitable material shall be verified in the field.
5. The stream banks above the toe wood structures shall be formed from stacked, coir wrapped sod mats with live stakes or transplanted container stock that are similar to native vegetation within the project site. All plant species, including live stakes, container stock, and seed application should be in accordance with the Native Plant List that is outlined in the Salt Lake County Watershed Restoration & Planning Stream Care Guide.
6. Live stakes, if specified, shall be of the size specified by the field engineer and placed in accordance with the pattern and spacing designated by the designer. Additional information regarding live staking shall be added to the submitted detail or shown on a separate site plan and referenced herein. Live stakes shall be installed after the installation of toe wood, root balls, and coir wrapped sod mats.
7. As an option, twine as specified by the designer, may be used to secure the sod mats to the anchor stakes to prevent floatation of the sod mats during high flows prior to root establishment. If live stakes or container stock are not specified, other options may be used to secure the sod mats. The designer shall specify the materials, size, and spacing of live stakes or container stock and submit that planting list with the application.

APPLICANT INSTRUCTIONS (CONTINUED)

8. If the existing top of bank is higher than the bankfull stage additional stabilization activities above installation of the stacked coir wrapped sod mats shall be added to this detail or detailed separately in the site plan or referenced herein.
9. The drawing on Sheet 2 is intended to be general in nature, but shows the overall conceptual requirements for stream bank bioengineering on flood control facilities.

Restoration Plant List (Example)	
Asclepias speciosa	Showy Milkweed
Cleome serrulata	Rocky Mountain Bee Plant
Echinacea purpurea	Purple Cone Flower
Elymus glaucus	Blue Wild Rye
Gaillardia aristata	Indian Blanket Flower
Linum lewisii	Lewis' Blue Flax
Pascopyrum smithii	Western Wheat Grass
Penstemon strictus	Rocky Mountain Penstemon
Ratibida columnifera	Mexican Hat

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Section A-A
NTS

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APPLICANT INSTRUCTIONS

1. Do not resubmit this detail with the application. Please show the surveyed cross section at the project location. Additional information about plant species and methods of installation can be found in Salt Lake County Watershed Restoration & Planning Stream Care Guide (Stream Care Guide).
2. Plant materials shall be installed using a variety of methods as specified by the design engineer and may include one or more of the following:
 - 2.a. Seeding
 - 2.b. Plugs
 - 2.c. Containers
 - 2.d. Transplants (including wetland sod mats, live stakes, or division)
3. Read or consult tables on Sheet 3, NRCS Plant Guides, Stream Care Guide, or nursery/wholesaler specifications for species, full size at maturity, application rate, and/or spacing requirements for each installation method.
4. Depending upon local availability and cost, species substitutions may be acceptable. All substitutions (including pre-packaged seed mixes) shall be submitted to the County at least one week prior to the installation and shall be in accordance with the recommendations contained within the Stream Care Guide.
5. Seeds, live stakes, container stock, and transplants of native plant species shall be obtained from the local area or watershed. Plant materials may be harvested from local sites, reference reaches, or obtained from local nurseries. If materials are harvested by the contractor, positive identification of the species must be verified, documented, and approved by both the County and/or harvest site property owner. Any changes to the methods or materials need to be documented and approved by the County.
6. Plant materials shall be handled with care at all times including harvesting, packing, delivery, unloading, transporting to the project site, and installation. Plants shall be protected from disturbance from on-going construction activities after installation from with flagging, fencing, or notification to work crews.
7. The installation and maintenance of plantings, including but not limited to irrigation, weed control, and/or pest control is the responsibility of the applicant. Salt Lake County Flood Control is not responsible for landscape maintenance.
8. If stream bank stabilization (i.e., toe wood, boulders, brush mattresses, fascines, etc.) is being proposed in addition to planting, the design engineer shall provide those details with application.

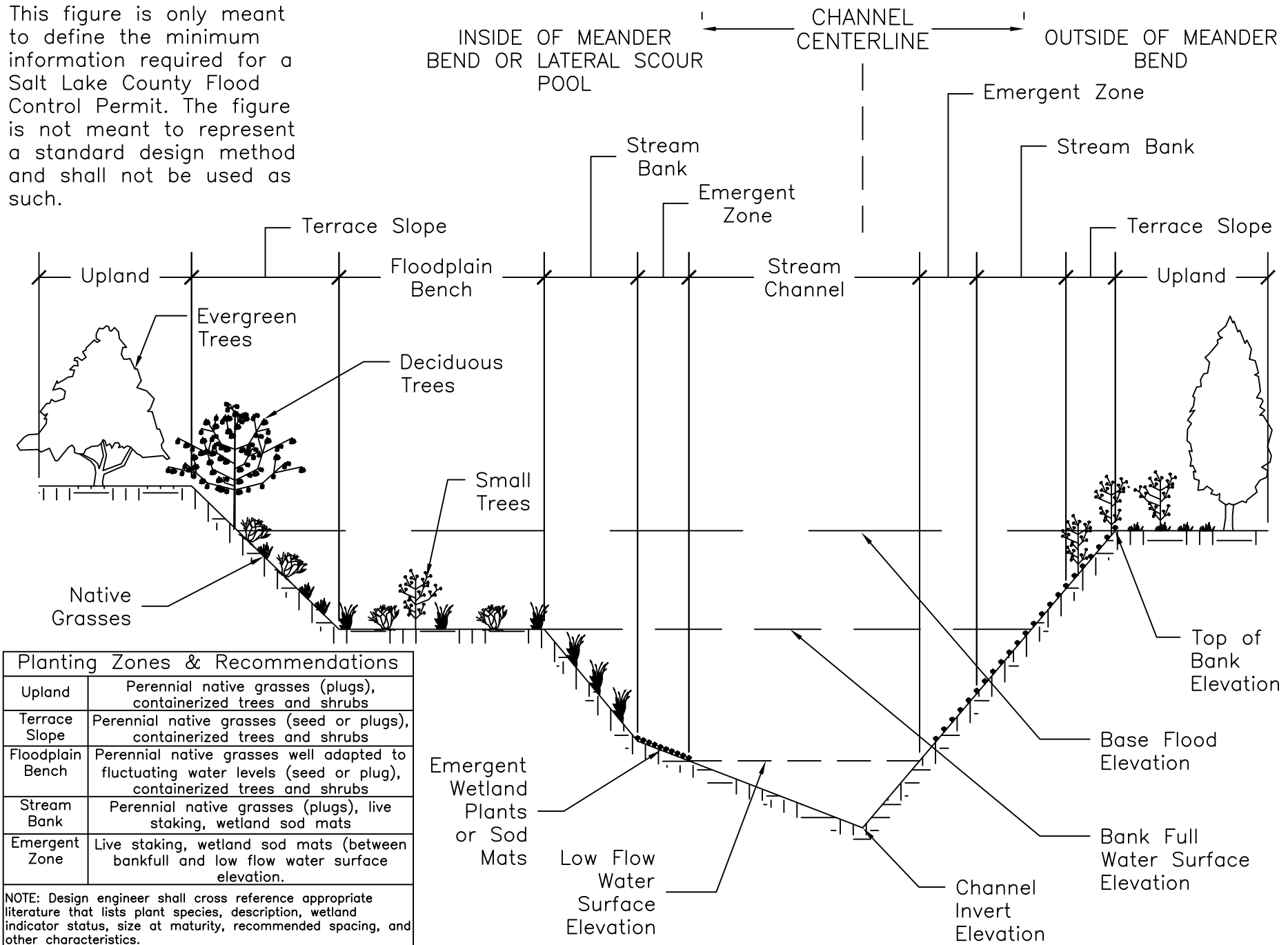


GENERAL PLANTING PLAN ON FLOOD CONTROL FACILITIES

STANDARD PLAN
FC 06
SHEET 1 OF 3

REV. 04-20-2025

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Example Trees and Shrubs

Species Name	Common Name	Wetland Indicator Status (USACE)	Size
<i>Populus angustifolia</i>	Narrow Leaf Cottonwood	FACW	5 Gallon
<i>Amelanchier alnifolia</i>	Saskatoon Service Berry	FACU	3 Gallon
<i>Crataegus douglasii</i>	Douglas Hawthorn	FAC	3 Gallon
<i>Cercocarpus ledifolius</i>	Curl-leaf Mountain Mahogany	UPL	5 Gallon
<i>Cornus sericea</i>	Red-osier Dogwood	FACW	3 Gallon, Live Stakes
<i>Rosa woodsii</i>	Woods Rose	FACU	3 Gallon, 1 Gallon
<i>Lonicera involucrata</i>	Twinberry Honeysuckle	FAC	1 Gallon, Live Stakes
<i>Ribes aureum</i>	Golden Currant	FAC	1 Gallon
<i>Salix amygdaloides</i>	Peach Leaf Willow	FACW	3 Gallon, Live Stakes

Example Grasses, Sedges, and Rushes

Species Name	Common Name	Wetland Indicator Status (USACE)	Application
<i>Aristida purpurea</i>	Purple Three Awn	UPL	Seed, Plugs
<i>Schoenoplectus acutus</i>	Hardstem Bulrush	OBL	Sod Mats
<i>Carex nebrascensis</i>	Nebraska Sedge	OBL	Plugs, Sod Mats
<i>Distichlis spicata</i>	Inland Saltgrass	FAC	Seed, Plugs
<i>Elymus glaucus</i>	Blue Wild Rye	FACU	Seed
<i>Juncus arcticus</i>	Baltic Rush	FACW	Plugs, Sod Mats
<i>Juncus torreyi</i>	Torrey's Rush	FACW	Plugs
<i>Pseudoroegneria spicata</i>	Blue Bunch Wheat Grass	UPL	Seed, Plugs
<i>Sporobolus airoides</i>	Alkali Sacaton	FAC	Seed, Plugs

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GENERAL PLANTING PLAN ON FLOOD CONTROL FACILITIES

STANDARD PLAN
FC 06
SHEET 3 OF 3

REV. 04-20-2025



ENGINEERING

STANDARDS & DRAWINGS



G R E A T E R S A L T L A K E

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