Utah Lake Distributing Company (Saratoga Branch)

Design Standards and Standard Drawings

Sheet Index

Standard Drawings Disclaimer:

The Drawings Provided in These Standards are Only Intended to Show the Type of Facilities That Will be Acceptable to ULDC. These Are Not Intended to be Used Directly in the Design of Facilities as Each Encroachment/Crossing Has its Own Unique Circumstance, Dimensions, Design Criteria, etc. It is the Responsibility of the Design Engineer, Who Will Stamp the Drawing, to Ensure that Each Crossing is Designed Properly.

By Using Any Details in These Drawings, You Acknowledge That You Have Verified the Standard Drawing Detail is Adequate for Incorporating into Your Design. Franson Civil Engineers Will Not be Held Liable for any Use of These Drawings. Contact Kyle Devaney from Franson Civil Engineers for any Questions Regarding These Standard Drawings.

Utah Lake Distributing Company

DESIGNER: Vince Hogge
DRAFTSMAN: Matt Gunn
CHECKED:
REVIEWED:
PROJECT LEADER:
PRINT DATE: March 5, 2025

REVISIONS

NO.	DATE	INITS.	DESCRIPTION
1	June 2010	EA	Updated
2	January 2018	MG, VH	Updated
3	December 2024	PA, MG	Updated

Utah Lake Distributing Company
Standard Drawings
Cover and Sheet Index

JOB NO. CU.0110
01-ULDC Cover Sheet.dwg
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LAYOUT: Cover

SHEET 1 OF 13

UTAH LAKE DISTRIBUTING COMPANY (ULDC-SARATOGA) CANAL NOTES

ULDC NOTES

- ☐ Notification must be given at least 24 hours prior to the beginning of construction work and re-notification of re-commencement of work following any cessation of work for more than 4 (four) days. Call Kyle DeVaney and the canal water master. Failure to do so may result in a $5,000 fine.
- ☐ Contact information for Franson Civil and ULDC:
  - o Kyle DeVaney, P.E., Franson Civil Engineers, 801-756-0309
  - o Patricia Ayaa, Franson Civil Engineers, 801-756-0309
  - o Greg Allred, President, Utah Lake Distributing Company
  - o Travis Calton, Water Master, ULDC Saratoga Canal, 801-420-5783
- ☐ Any changes in design drawings after the encroachment agreement has been executed must be reviewed and accepted by Franson Civil Engineers and Utah Lake Distributing Company.
- ☐ Work cannot interfere with delivery of water. Construction within canal corridors that impacts the canal or operation & maintenance road (O&M road) must be completed between October 15 and April 1.
- ☐ All construction within the canal corridor must be completed to Utah Lake Distributing Company standards.
- ☐ If disturbed, the canal O&M road shall be reinstalled following construction. O&M road must be available for use by canal personnel no later than April 1.
  - o The O&M road shall be graded at a 2% slope away from the canal.
  - o After placing and compacting native material, place a minimum of two inches of compacted roadbase on road surface. Compaction shall be 95% standard Proctor density.
- ☐ Stormwater runoff enters the canal during storm events or at other unexpected times. It is the responsibility of the Contractor to protect the work site. Any damage to the canal corridor caused by construction activities will be the responsibility of the Contractor.
- ☐ Neither ULDC nor Franson Civil can verify the locations of underground facilities. Blue Stakes should always be called before digging (1-800-662-4111).
- ☐ If disturbed, the canal O&M road shall be reinstalled following construction. O&M road must be available for use by canal personnel no later than April 1.
  - o The O&M road shall be graded at a 2% slope away from the canal.
  - o After placing and compacting native material, place a minimum of two inches of compacted roadbase on road surface. Compaction shall be 95% standard Proctor density.
- ☐ Applicant is required to perform compaction testing at the Applicant's cost. If requested, compaction test results shall be submitted to Franson Civil Engineers. All failed material shall be removed and compacted to specifications. Testing must be performed by a licensed soils lab.
- ☐ All backfill materials placed within the canal right-of-way shall be compacted to a minimum of 95% standard Proctor density.
- ☐ All concrete used in the construction shall have a minimum compressive strength of 4,000 psi. The concrete mix shall include between 5% and 7% air entrainment.
- ☐ If cast-in-place concrete is placed next to pre-cast concrete, Waterstop RX, Swellstop, or an approved equivalent shall be placed to prevent seepage between the surfaces.
- ☐ PVC water stop, or equivalent, is required in all joints of cast-in-place concrete.

BORING

- ☐ Contractor to notify Kyle DeVaney of Franson Civil Engineers when trench plugs are installed. Verification of trench plug completion must be performed by Franson Civil Engineers before backfilling. Kyle can be reached at 801-756-0309.
- ☐ Trench plugs are to be placed at each end of the casing.
- ☐ Trench plugs are to extend the width of trench, 12 inches above and below casing pipes, and with a thickness of 24 inches.
- ☐ Trench plugs shall be 10% bentonite and 90% clay mixture. At least 40% of the backfill material must pass a No. 200 U.S. standard sieve prior to adding bentonite powder. The backfill material shall then be amended by adding and thoroughly mixing commercial bentonite powder with the backfill material at a ratio of one-part bentonite to nine parts backfill material. Impermeable flowable fill is an acceptable alternative.
- ☐ Bore pit compaction shall be 95% standard Proctor density.
- ☐ Fill bore pits with a mixture of native material and 10% bentonite powder to create a seal that will prevent water from following the new conduit.
- ☐ Silt collects at the bottom of the canal. The installation of the concrete liner shall match the bottom of the canal and not the current silt layer.
- ☐ Rebar for the canal liner shall be a minimum of #4 bar at 12 inches on center.
- ☐ A two-foot-deep concrete cutoff wall is required on both ends of the concrete liner.

DIRECTIONAL DRILLING AND MICROTRENCHING

- ☐ Work cannot interfere with delivery of water. Installation activities may take place at any time provided ULDC's access to operation, maintenance, and replacement of irrigation facilities is not impacted.
- ☐ It is the responsibility of the Contractor to protect the work site. Any damage to the canal corridor caused by construction activities will be the responsibility of the Contractor.
- ☐ Bore pit compaction shall be a minimum of 95% standard Proctor density.
- ☐ Fill bore pits with a mixture of native material and 10% bentonite powder to create a seal that will prevent water from following the new conduit.

OPEN CUT OF CANAL

Add the following notes to plans under heading "ULDC Canal Notes"

- ☐ Contractor to notify Kyle DeVaney of Franson Civil Engineers when trench plugs are installed. Verification of trench plug completion must be performed by Franson Civil Engineers before backfilling. Kyle can be reached at 801-756-0309.
- ☐ Trench plugs are to be placed at each end of the casing.
- ☐ Trench plugs are to extend the width of trench, 12 inches above and below casing pipes, and with a thickness of 24 inches.
- ☐ Trench plugs shall be a 10% bentonite and 90% clay mixture. At least 40% of the backfill material must pass a No. 200 U.S. standard sieve prior to adding bentonite powder. The backfill material shall then be amended by adding and thoroughly mixing commercial bentonite powder with the backfill material at a ratio of one-part bentonite to nine parts backfill material. Impermeable flowable fill is an acceptable alternative.
- ☐ Canal embankment shall be shaped to match the existing canal prism.
- ☐ Silt collects at the bottom of the canal. The installation of the concrete liner shall match the bottom of the canal and not the current silt layer.
- ☐ Rebar for the canal liner shall be a minimum of #4 bar at 12 inches on center.
- ☐ A two-foot-deep concrete cutoff wall is required on both ends of the concrete liner.

Add the following notes to plans under heading "ULDC Canal Notes" if canal is earthen

- ☐ The canal floor and embankment material removed for excavation (excluding under concrete liner) shall be replaced with a 12-inch minimum thickness of 10^{-6} cm/sec permeability clay material, in 6-inch maximum lifts.
- ☐ All replaced materials shall be compacted to 95% standard Proctor density.
- ☐ The trench through the canal may be cut as little as ¼ horizontal to 1 vertical.

Add the following notes to plans under heading "ULDC Canal Notes" if canal is concrete-lined

- ☐ The existing concrete section must be sawcut to give a clean edge for the replacement section.
- ☐ The trench through the canal may be cut as little as ¼ horizontal to 1 vertical to minimize the amount of concrete liner that needs to be removed. It is the responsibility of the Contractor to verify that compaction will not be affected.
- ☐ Embankment material shall be compacted to a minimum of 95% standard Proctor density. Native material may be used.

BOX AND PIPE CULVERTS

- ☐ Canal floor and embankment material removed for excavation (between apron and undisturbed canal) shall be replaced with a 12_inch minimum thickness of 10^{-6} cm/sec permeability clay material in 6-inch maximum lifts.
- ☐ Compaction around the box culverts to meet manufacturer requirements or a minimum of 95% standard Proctor density.
- ☐ Canal embankment shall be shaped to match the existing canal prism.
- ☐ Open-cut trenches for the cutoff walls shall be cut at a minimum of 2 horizontal to 1 vertical so that backfill can be properly compacted.
- ☐ If extending an existing box culvert, Waterstop RX, Swellstop, or an approved equivalent, shall be placed between the old culvert and the new culvert to prevent seepage. Mastic is not acceptable.
- ☐ Conduits shown on these drawings do not give permission for the conduit to be occupied by an entity other than the original Applicant. Each entity crossing the canal must apply for, and receive, an encroachment agreement from the Utah Lake Distributing Company.
- ☐ Signs must be placed at each entrance to the canal O&M road that state:
  - o No Trespassing. Warning: Canal Maintenance Road, Authorized Personnel Only. No Swimming or Tubing.

PIPES

- ☐ Contractor must document all new pipes by video camera after installation and backfill. Any problems with joints, levels, slopes, etc. discovered by the video technicians must be repaired. A digital copy of the video must be submitted to Franson Civil Engineers.
- ☐ Prior to backfilling of pipes, the contractor must notify Kyle DeVaney of Franson Civil Engineers so a GPS survey of the location and elevation of the installed pipelines can be performed.
- ☐ Pipes crossing perpendicularly over or under the irrigation pipe(s) shall have a minimum one-foot vertical clearance.
- ☐ Pipes or other utilities running parallel to the irrigation pipe in a shared easement shall be placed a minimum of 5 feet horizontally distanced from the irrigation pipe.
- ☐ Pipes entering or exiting a cleanout box or manhole should be sealed and grouted.
- ☐ Pipes entering a cleanout box or manhole must be secured in place with a concrete collar.

IRRIGATION BOXES AND MANHOLES

- ☐ Knock out boxes and manholes are not allowed. All boxes and manholes shall be pre-cast with cored openings for the pipes or shall be cast-in-place.
- ☐ Irrigation boxes and manholes shall not be buried. They shall extend to the surface of the final grade. Any existing boxes and manholes that will not extend to the final grade surface shall be extended to match the final grade. If the box has gates, the box shall extend 6 inches above the ground surface.

TURNOUT/WEIR

- ☐ Compaction of all replaced embankment material shall be impermeable material, meeting a standard Proctor density of 95%.
- ☐ A trench plug is required behind the head wall. Trench plug to be placed in location shown for width of trench, 12 inches above and below the pipe, and a thickness of 24 inches.
- ☐ Trench plugs shall be a 10% bentonite and 90% clay mixture. At least 40% of the backfill material must pass a No. 200 U.S. standard sieve prior to adding bentonite powder. The backfill material shall then be amended by adding and thoroughly mixing commercial bentonite powder with the backfill material at a ratio of one part bentonite to nine parts backfill material. Impermeable flowable fill is an acceptable alternative.

EASEMENTS

- ☐ Add a note to the drawings, stating: "No foliage, structures, or other unauthorized improvements are allowed in Utah Lake Distributing Company corridors."

Utah Lake Distributing Company

DESIGNED: Vince Hogge | CHECKED: | PROJECT LEADER:
DRAFTSMAN: MG, CR | REVIEWED: | PRINT DATE: March 5, 2025

NO.	DATE	INITS.	REVISIONS DESCRIPTION
1	JUNE 2010	EA	UPDATED
2	JANUARY 2018	MG, VH	UPDATED
3	DECEMBER 2024	PA, MG	UPDATED

Utah Lake Distributing Company

STANDARD DRAWINGS
ULDC CANAL NOTES

JOB NO. CU 0110

02-Canal Notes.dwg
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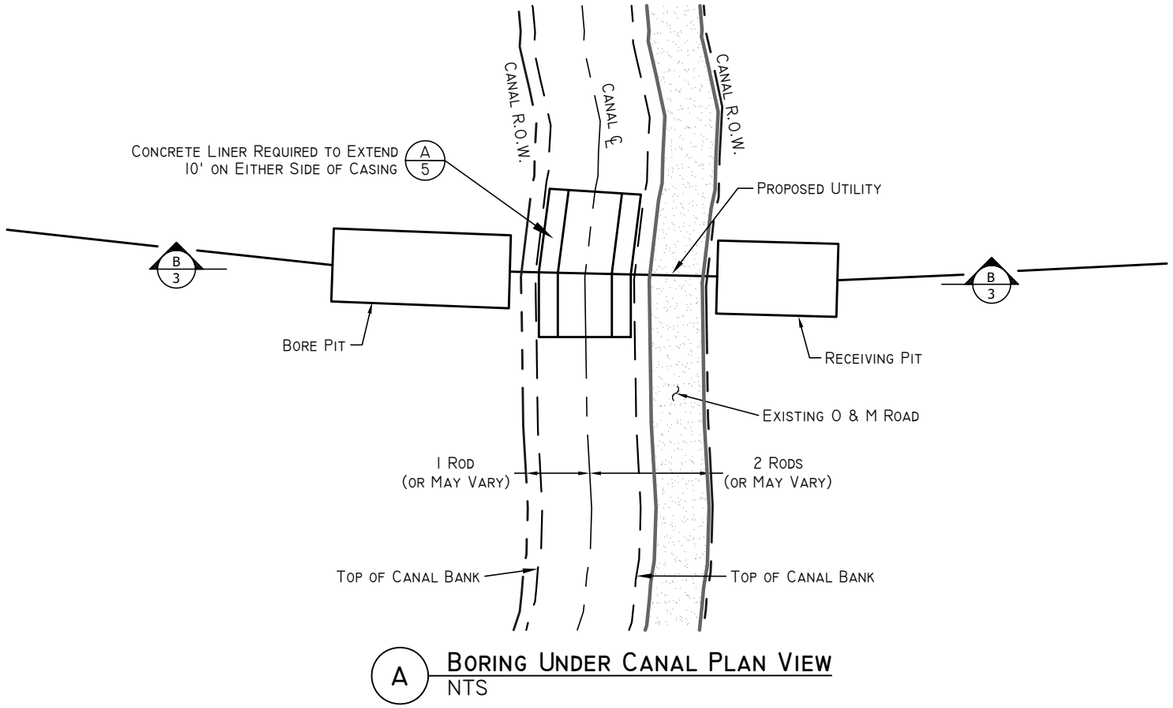
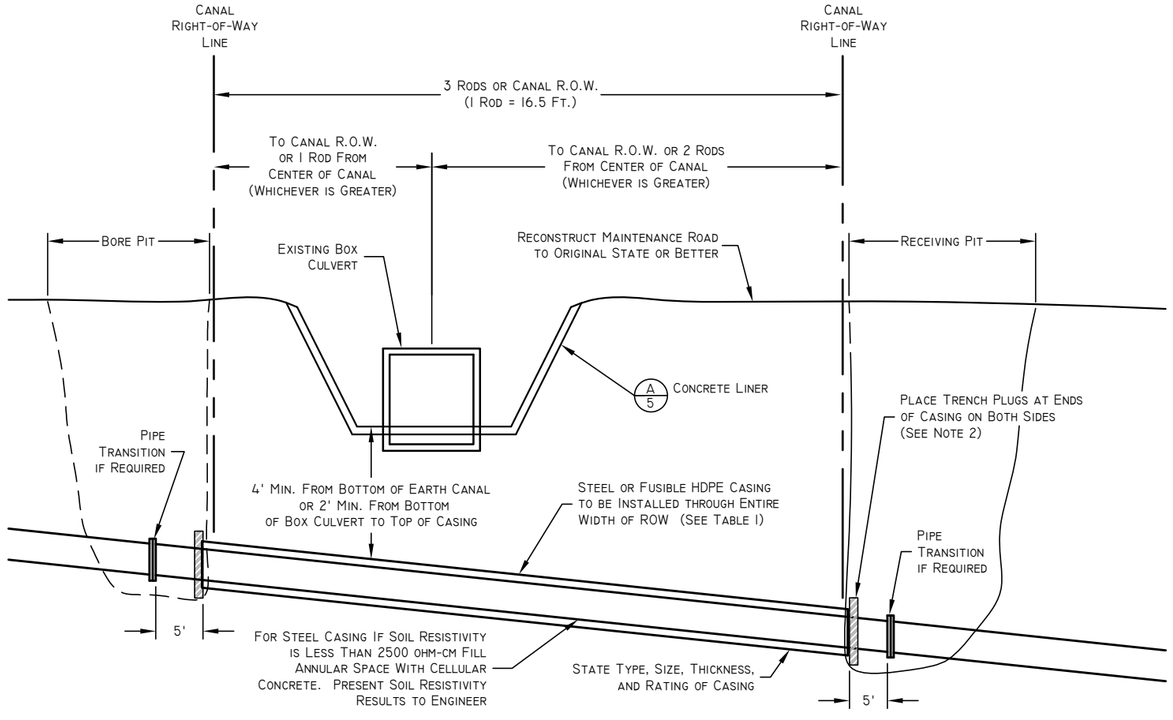
LAYOUT: ULDC Canal Notes

SHEET 2 OF 13



A **BORING UNDER CANAL PLAN VIEW**
NTS



B **BORE CASING CROSS SECTION**
NTS

NOTES:

1. BORE PIT COMPACTION TO BE 95% STANDARD PROCTOR DENSITY.
2. TRENCH PLUGS ARE TO BE PLACED IN LOCATIONS SHOWN ON BOTH SIDES FOR WIDTH OF TRENCH AND 12 INCHES ABOVE AND BELOW CASING PIPES AND A MINIMUM THICKNESS OF 24 INCHES. PLUGS SHALL BE A 10% BENTONITE AND 90% CLAY MIXTURE, OR SHALL BE A FLOWABLE FILL CONCRETE.
3. STORMWATER RUNOFF ENTERS THE CANAL DURING STORM EVENTS OR AT OTHER UNEXPECTED TIMES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT THE WORK SITE.
4. WATERLINE PIPE INSIDE OF CASING SHALL HAVE RESTRAINING JOINTS.
5. THRUST BLOCKS ARE REQUIRED ON ALL BENDS AND TEES FOR DIP, PVC, OR PIP WATERLINES.
6. CASING MUST BE A MINIMUM OF 2 FEET BELOW THE BOTTOM OF THE EXISTING CANAL BOX CULVERT OR 4 FEET BELOW EARTHEN CANAL BOTTOM.
7. BORE PITS MUST BE COMPLETELY PLACED OUTSIDE OF THE CANAL RIGHT-OF-WAY. CANAL RIGHT-OF-WAY IS GENERALLY 1-ROD ON THE UPHILL SIDE AND 2-RODS ON THE DOWNHILL SIDE FROM THE CENTER OF THE CANAL. R.O.W. DIMENSIONS MAY BE GREATER IN SOME AREAS.
8. CARRIER PIPE SHALL HAVE ADEQUATE CASING SPACERS.
9. CONCRETE LINER SHALL EXTEND 5 FEET ON EITHER SIDE OF CASING PIPE.

TABLE 1
STEEL CASING THICKNESS

DIAMETER (INCHES)	MINIMUM WALL THICKNESS (INCHES)
12"	0.188"
14" - 16"	0.312"
18"	0.312"
20" - 22"	0.375"
24" - 26"	0.438"
28" - 32"	0.500"
34" - 36"	0.562"
38" - 42"	0.562"

UTAH LAKE DISTRIBUTING COMPANY

STANDARD DRAWINGS
CANAL BORING DETAILS

DESIGNED: VINCE HOGGE
DRAFTSMAN: MATT GUPR
CHECKED:
REVIEWED:
PROJECT LEADER
PROJECT LEADER:
PRINT DATE: MARCH 5, 2025

NO.	DATE	INITS.	REVISIONS DESCRIPTION
1	JUNE 2010	EA	UPDATED
2	JANUARY 2018	MG, VH	UPDATED
3	DECEMBER 2024	PA, MG	UPDATED

JOB NO. CU.0110

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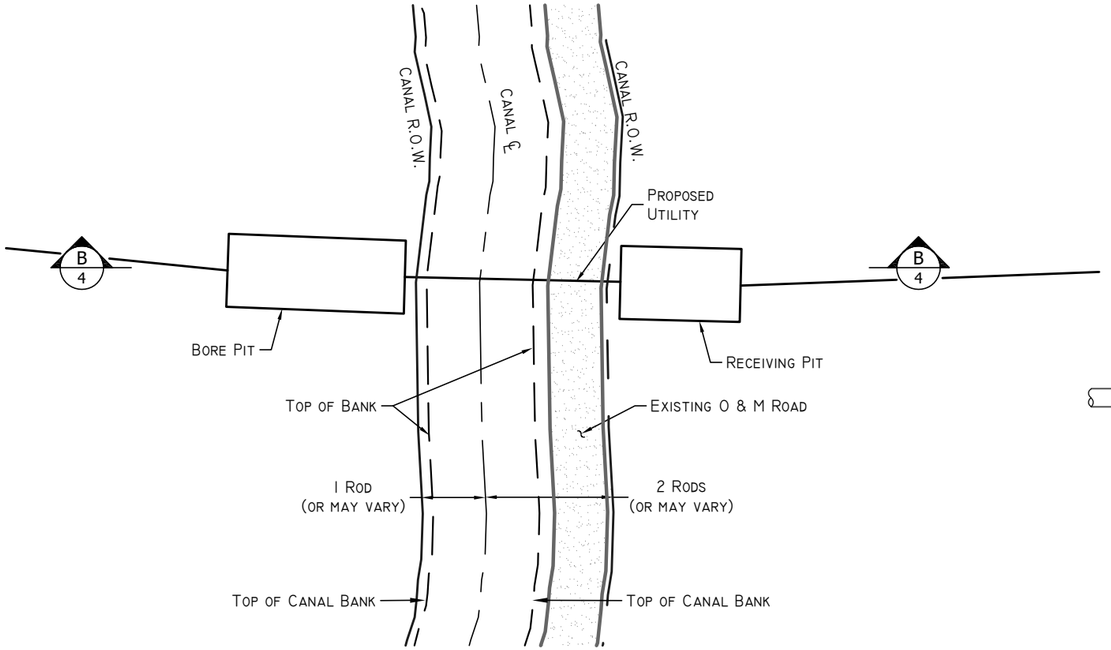
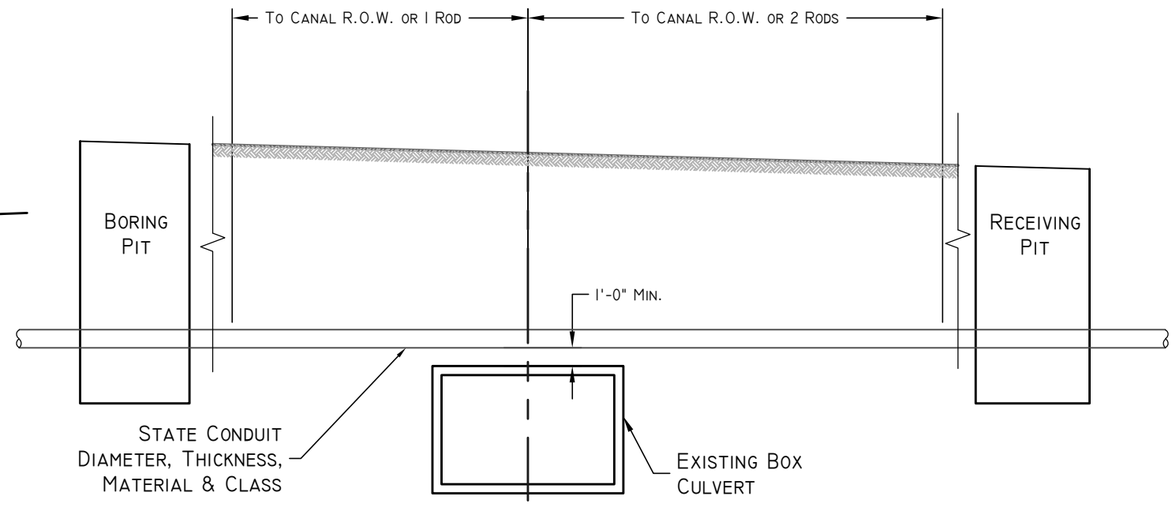
LAYOUT: Boring Details

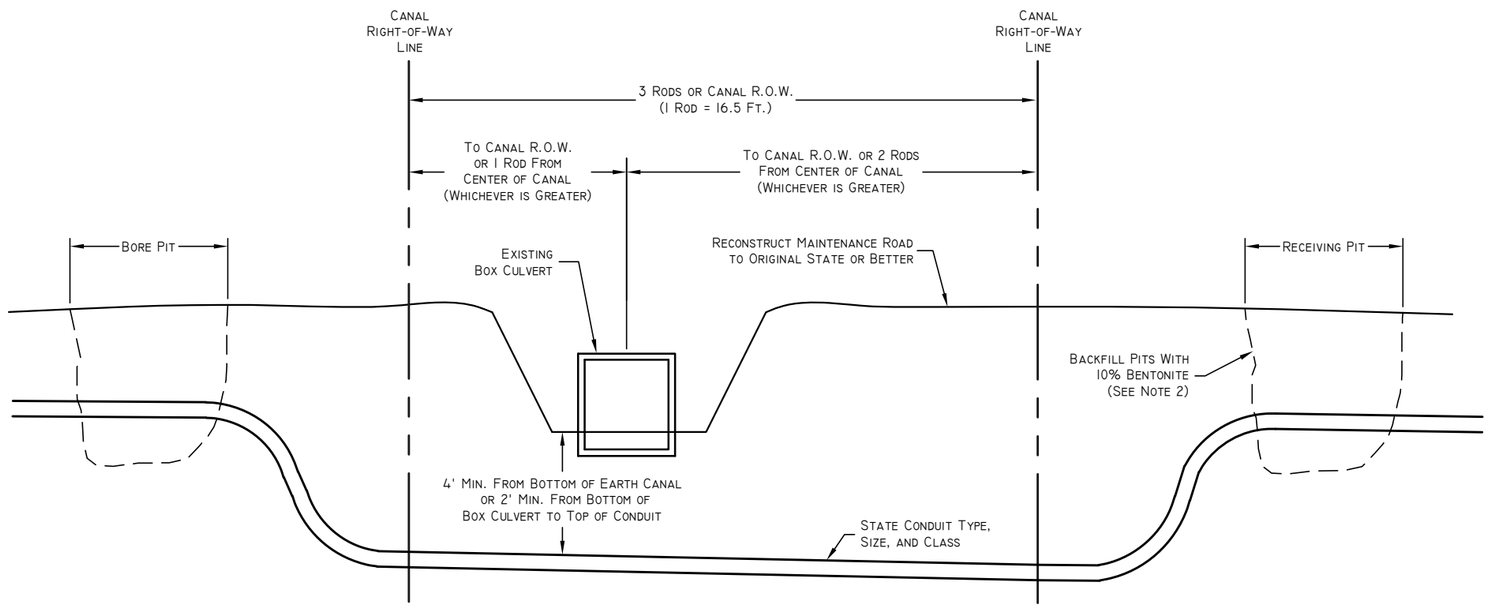
SHEET 3 OF 13



A DIRECTIONAL DRILLL/MICROTRENCH
NTS



B DIRECTIONAL DRILL OR MICROTRENCH ABOVE CANAL CROSS SECTION
NTS



B DIRECTIONAL DRILL UNDER CANEL CROSS SECTION
NTS

NOTES:

1. BORE PIT COMPACTION TO BE 95% STANDARD PROCTOR DENSITY.
2. FILL BORE PITS WITH A MIXTURE OF NATIVE MATERIAL AND 10% BENTONITE POWDER TO CREATE A SEAL THAT WILL PREVENT WATER FROM FOLLOWING THE NEW CONDUIT.
3. STORMWATER RUNOFF ENTERS THE CANAL DURING STORM EVENTS OR AT OTHER UNEXPECTED TIMES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT THE WORK SITE.
4. CONDUIT MUST BE A MINIMUM OF 2 FEET BELOW THE BOTTOM OF THE EXISTING CANAL BOX CULVERT OR 4 FEET BELOW EARTHEN CANAL BOTTOM.
5. BORE PITS MUST BE COMPLETELY PLACED OUTSIDE OF THE CANAL RIGHT-OF-WAY. CANAL RIGHT-OF-WAY IS GENERALLY 1 ROD ON THE UPHILL SIDE AND 2 RODS ON THE DOWNHILL SIDE FROM THE CENTER OF THE CANAL. ROW DIMENSIONS MAY BE GREATER IN SOME AREAS.
6. ABOVE CANAL CONDUITS/CABLES MUST BE A MINIMUM OF 1 FOOT ABOVE THE TOP OF THE CANAL.

UTAH LAKE
DISTRIBUTING COMPANY

DESIGNED: VINCE HOGGE
DRAFTSMAN: MATT GUNN
CHECKED:
REVIEWED:

NO.	DATE	INITS.	REVISIONS DESCRIPTION
1	JANUARY 2018	MG, VH	UPDATED
2	DECEMBER 2024	PA, MG	UPDATED

PROJECT LEADER
PROJECT LEADER:
PRINT DATE: MARCH 5, 2025
CHECKED
REVIEWED

UTAH LAKE DISTRIBUTING COMPANY

STANDARD DRAWINGS
DIRECTIONAL DRILLING AND MICROTRENCHING DETAILS

JOB NO. CU 0110
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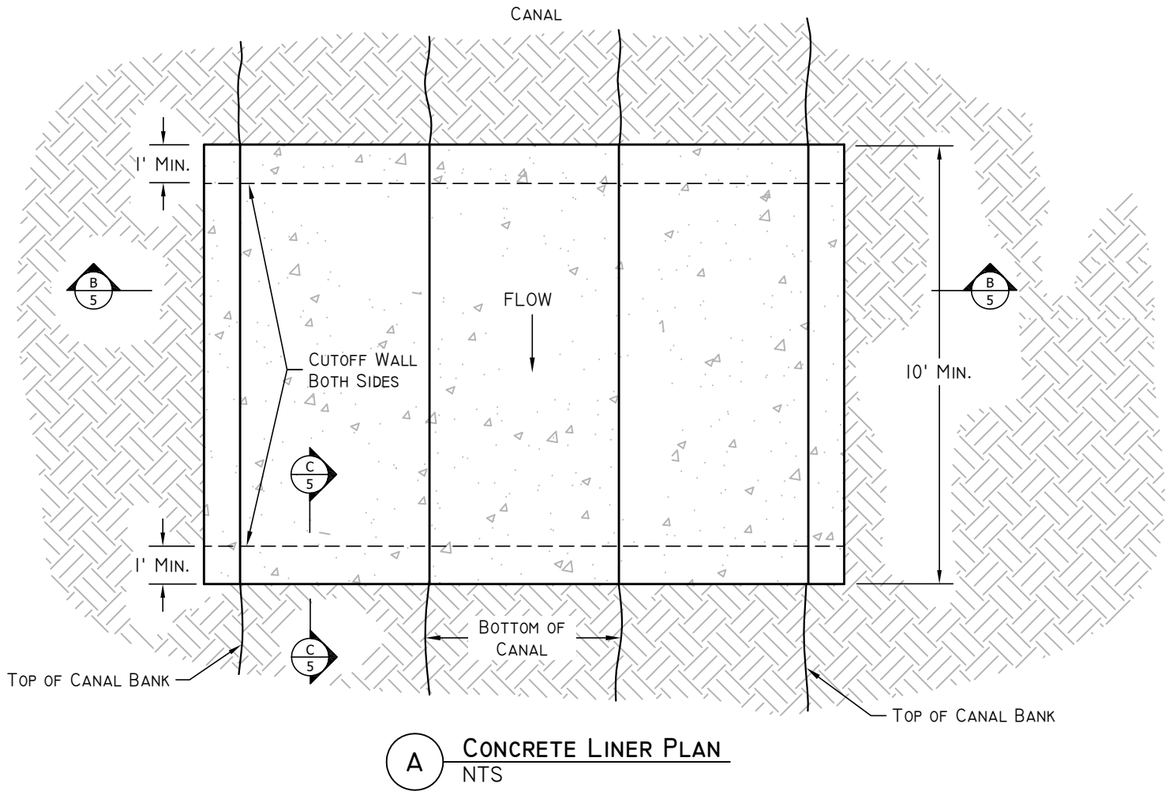
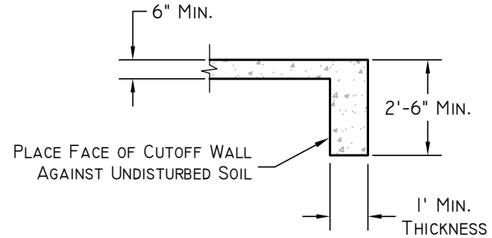
LAYOUT: Details

SHEET
4 OF 13

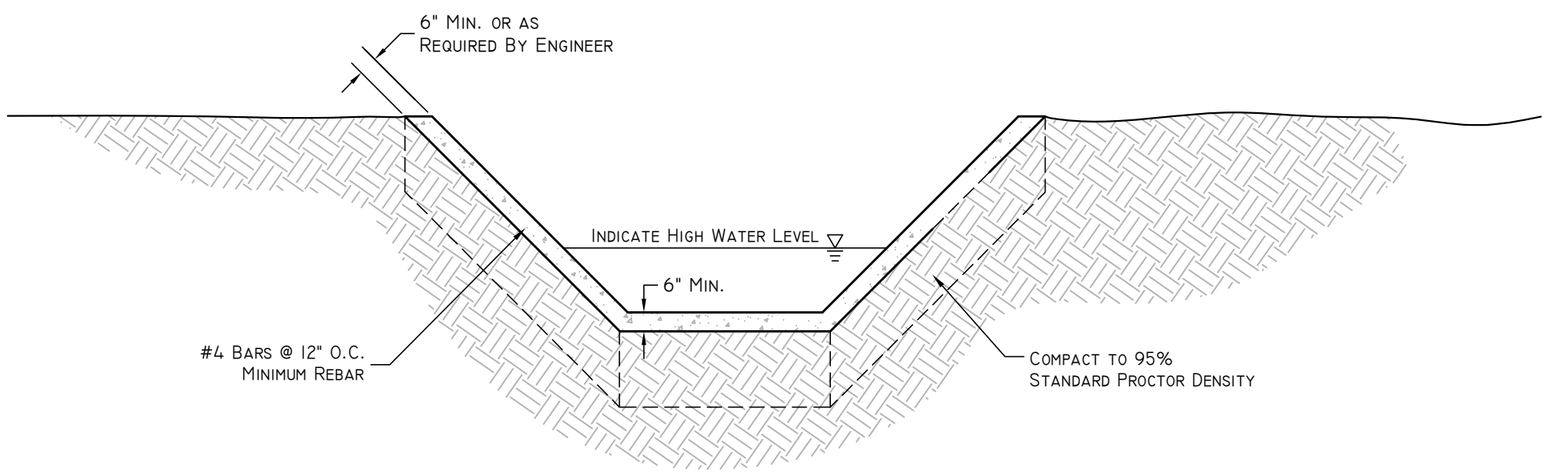


A CONCRETE LINER PLAN
NTS



NOTE:
ENGINEER TO DETERMINE REBAR SIZE
AND SPACING IN CUTOFF WALL.

C CUTOFF WALL CROSS SECTION
NTS



B CONCRETE LINER CROSS SECTION
NTS

UTAH LAKE
DISTRIBUTING COMPANY

DESIGNER:	VINCE HOGGE
DRAFTSMAN:	MATT GUMP
PROJECT LEADER:	PROJECT LEADER
PRINT DATE:	MARCH 5, 2025
CHECKED:	CHECKED
REVIEWED:	REVIEWED

NO.	DATE	INITS.	REVISIONS DESCRIPTION
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UTAH LAKE DISTRIBUTING COMPANY
STANDARD DRAWINGS
CONCRETE LINER

JOB NO. CU.0110

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LAYOUT: Details

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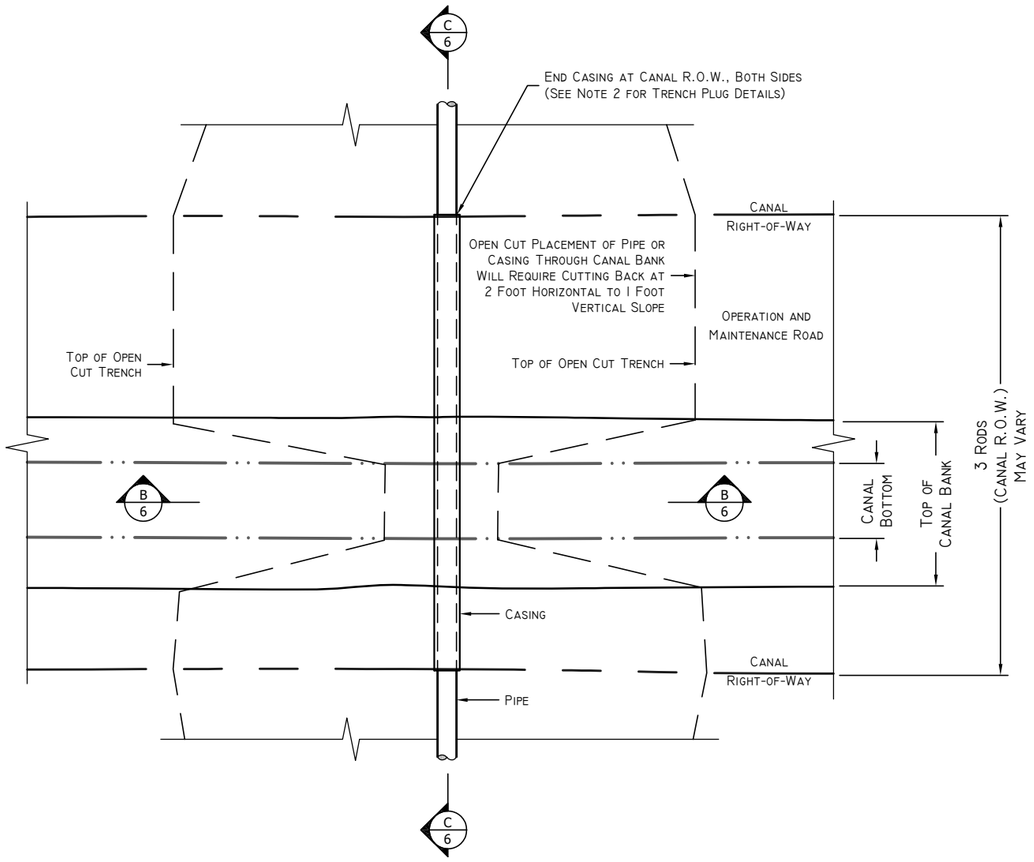
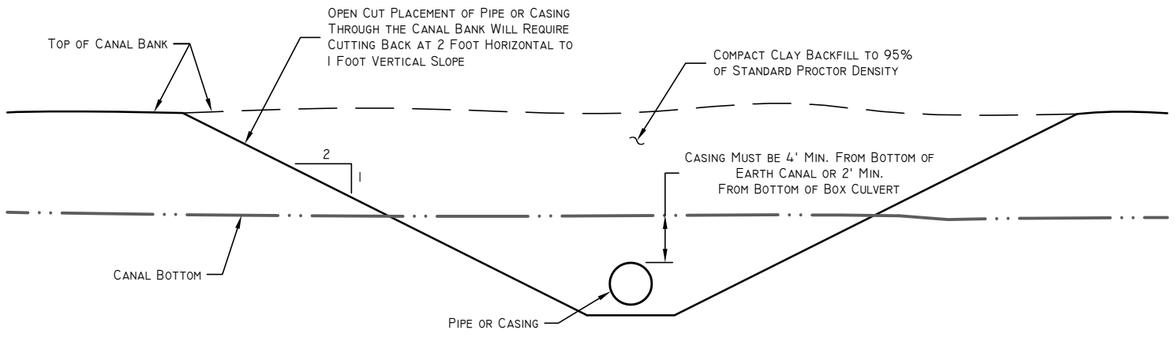
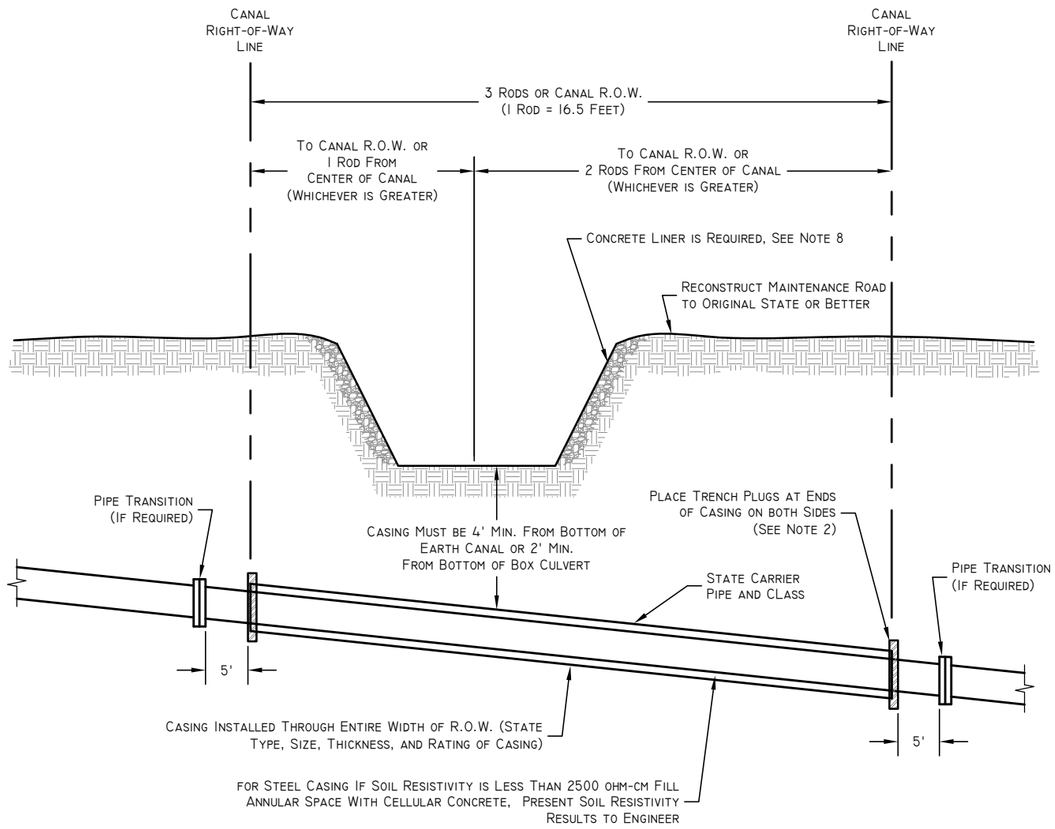
5 OF 13



A Open Cut Plan View
NTS



B Open Cut Canal Crossing Cross Section
NTS



C Open Cut Canal Crossing Profile
NTS

Table 1
Steel Casing Thickness

Diameter (Inches)	Minimum Wall Thickness (Inches)
12"	0.188"
14" - 16"	0.312"
18"	0.312"
20" - 22"	0.375"
24" - 26"	0.438"
28" - 32"	0.500"
34" - 36"	0.562"
38" - 42"	0.562"

Notes:

1. Removal and Replacement of Canal Floor and Banks Will Require Testing and Proctors By a Licensed Soils Lab. Compaction to Be 95% Standard Proctor Density.
2. Trench Plugs are to Be Placed in Locations Shown on Both Sides For Width of Trench and 12 Inches Above and Below Casing Pipes and a Minimum Thickness of 24 Inches. Plugs Shall Be a 10% Bentonite and 90% Clay Mixture, or Shall be A Flowable Fill Concrete.
3. Storm Water Runoff Enters the Canal During Storm Events or at Other Unexpected Times. It is the Responsibility of the Contractor to Protect the Work Site.
4. Waterline Pipe Inside of Casing Shall Have Restraining Joints.
5. Thrust Blocks are Required on All Bends and Tees For DIP, PVC, or PIP Waterlines.
6. Casing Must be 4' Min. From Bottom of Earth Canal or 2' Min. From Bottom of Box Culvert.
7. Canal Right-of-Way is Generally 1-Rod on the Uphill Side and 2-Rods on the Downhill Side From the Center of the Canal. R.O.W. Dimensions May Be Greater in Some Areas.
8. Concrete Liner is to be Installed in the Canal Extending 5 Feet Past the Extents of Canal Disturbance see Detail. (A/5) for Concrete Liner Details.
9. Carrier Pipe Shall Have Adequate Casing Spacers.

Utah Lake
Distributing Company

Designed:	Vince Hogge
Drafted:	Matt Gunn
Project Leader	
Project Leader:	
Print Date:	March 5, 2025
Checked	
Reviewed	
Checked:	
Reviewed:	

No.	Date	Init.	Description
1	June 2010	EA	Updated
2	January 2018	MG, VH	Updated
3	December 2024	PA, MG	Updated

Utah Lake Distributing Company

Standard Drawings
Open Cut Details

Job No. CU 010

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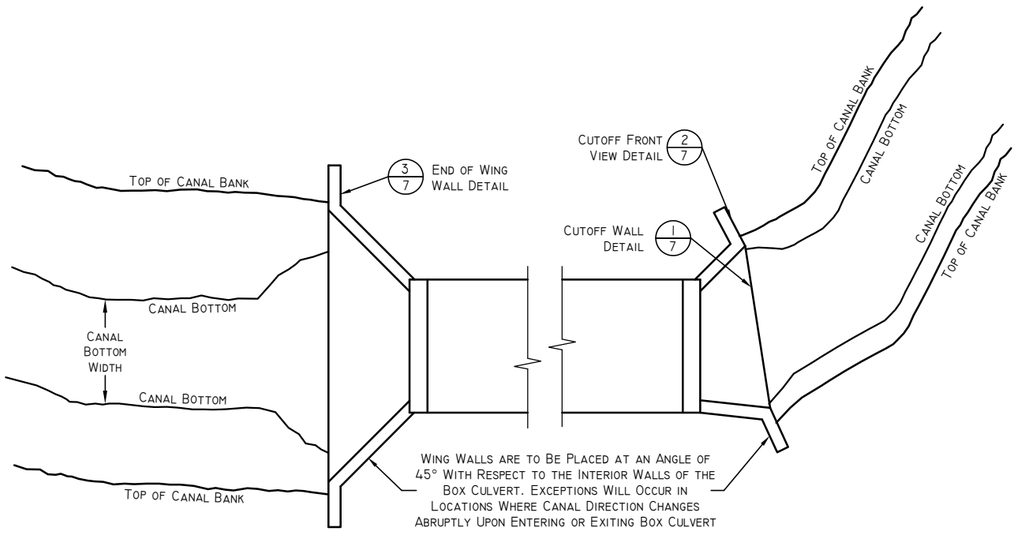
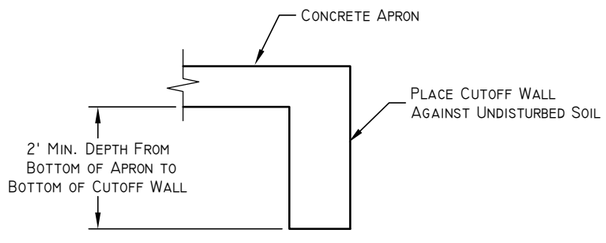
LAYOUT: Details



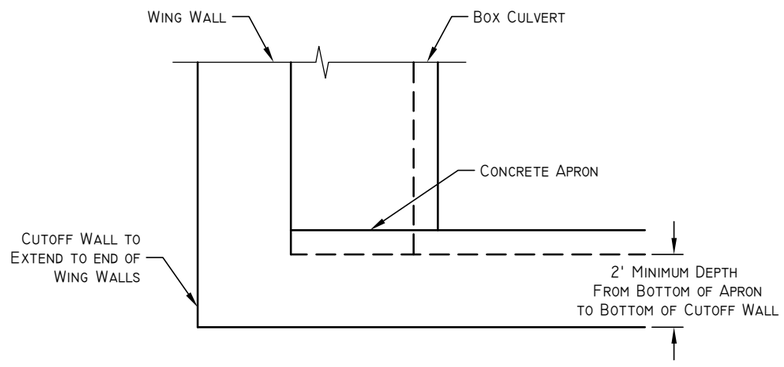
A **Plan View of Box Culvert**
NTS

Notes:

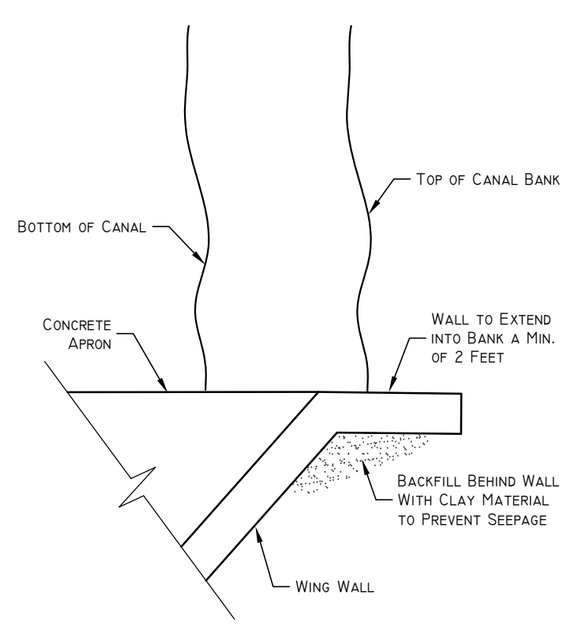
1. Box Culverts to Have a Minimum Height of 6 Feet.
2. Width of Box Culvert is to Match Existing Channel Bottom.
3. No Riprap Allowed in the Canal.
4. Access to Canal Operation and Maintenance Road Shall be Installed with Curb Cuts at Drive Approaches and Thickened Concrete at Sidewalks.
5. Cutoff Walls and Aprons Between Wing Walls are Required.
6. End of Wing Wall Shall Not Interfere with Operation and Maintenance Road.
7. 6 Foot Chain Link Fence or 4 Foot Parapet Wall is Required on All Box Culverts that Carry Pedestrian Traffic. Exceptions may Occur Where Local Ordinances Note Otherwise and Upon Approval by Canal Company.
8. Drawings Submitted for Review are to Show Plan and Profile Views, Note Slope, Include Detail Indicating Rebar Size and Spacing, and State Traffic Loading.
9. Casings Must Have a Minimum of 2 Feet Between Top of Casing and Bottom of Box Culvert.
10. All Concrete Used in Construction Shall Have a Minimum Compressive Strength of 4,000 psi. The Concrete Mix Shall Include Between 5% and 7% air Entrainment.
11. All Backfill Materials Shall be Compacted to a Minimum of 95% Standard Proctor Density.



1 **Cutoff Wall Detail**
NTS



2 **Cutoff Front View Detail**
NTS



3 **End of Wing Wall Detail**
NTS

Utah Lake Distributing Company

DESIGNER:	Vince Hogge
DRAFTSMAN:	Matt Gunn
CHECKED:	Checked
REVIEWED:	Reviewed
PROJECT LEADER:	Project Leader
PROJECT LEADER:	
PRINT DATE:	March 5, 2025

NO.	DATE	INITS.	DESCRIPTION
1	June 2010	EA	Updated
2	January 2018	MG, VH	Updated
3	December 2024	PA, MG	Updated

REVISIONS

UTAH LAKE DISTRIBUTING COMPANY

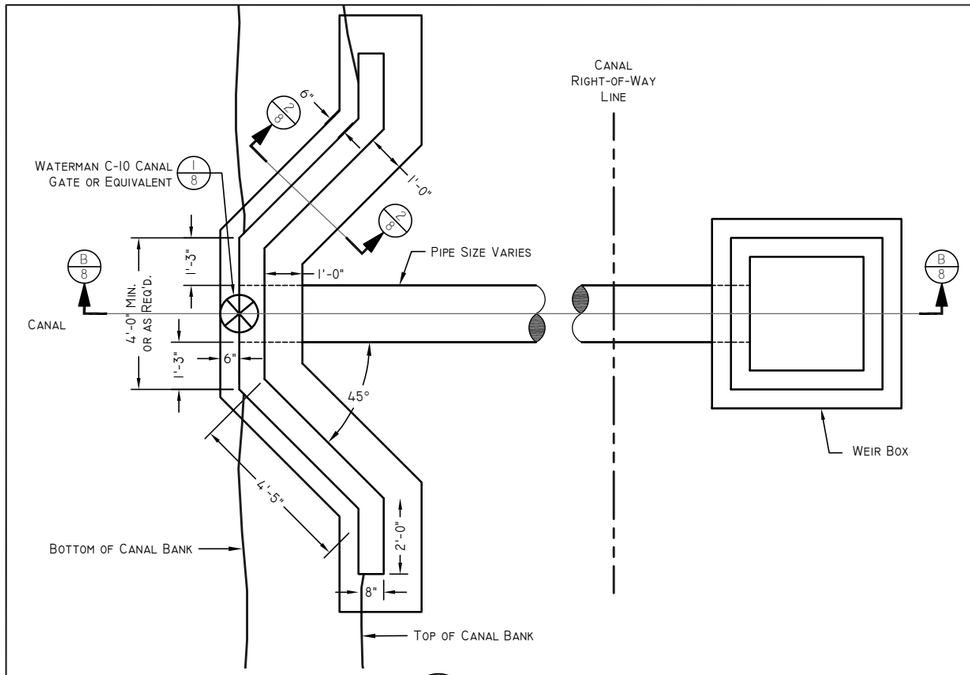
Standard Drawings
Box Culvert Details

JOB NO. CU.0110

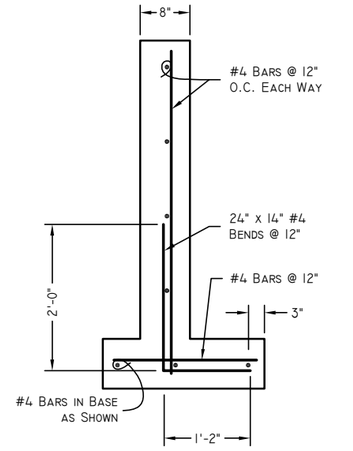
07-ULDC Box Culvert Details.dwg
O:\20002 ULDC Saratoga Reviews 2020\Standard Dwgs

LAYOUT: Details

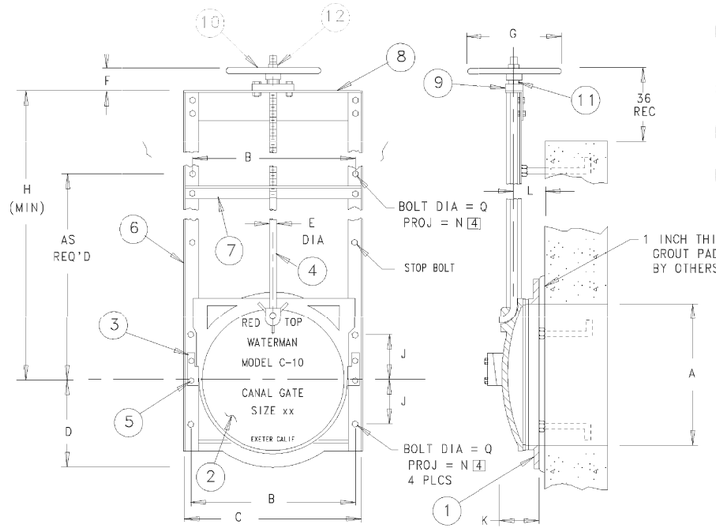
SHEET 7 OF 13



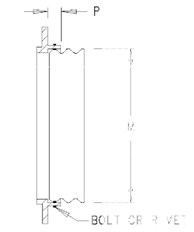
A Weir Plan
NTS



2 Minimum Rebar Detail
NTS

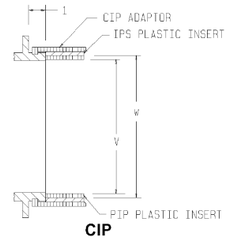


NOTES
1. TYPE 2 lubricated ball bearing lift used on 48" and larger gates.
2. Applies to spigotback gate only. Optional spigot, shown in separate detail.
3. All dimensions are also applicable for model CL-10 & CM-10 gates.
4. Add grout pad thickness to anchor bolt projection.
5. Type 3E 2:1 lift used mounted to dual headrail.

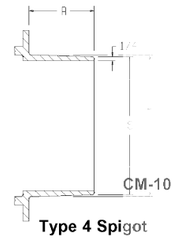


Corrugated Pipe Attached to Spigot Back Frame

PARTS LIST		
No.	Name	Qty.
1	Frame	1
2	Cover	1
3	Wedge (Right & Left)	1 ea.
4	Stem	1
5	Wedge Bolts	4
6	Guide Rail	2
7	Stem Support	A/R
8	Head Rail	1
9	Lift Collar	1
10	Handwheel	1
11	Lift Nut	1
12	Limit Nut	1



CIP



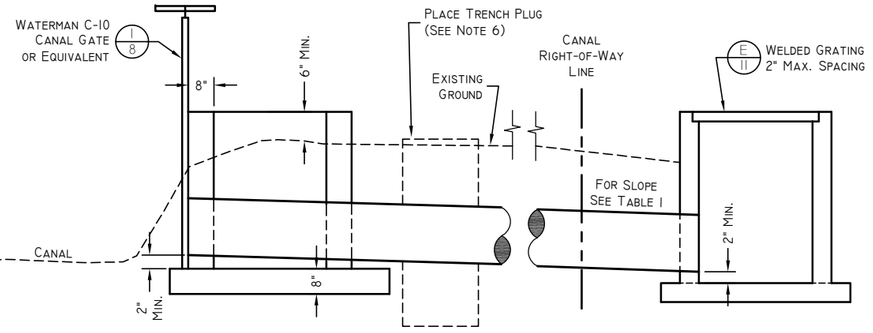
Type 4 Spigot

A	B	C	D	E	F	G	H	J	K	L	M [2]	N	P [2]	Q	R	S	T	V	W
6	8	9⅞	4	⅞	2⅞	10	24	3	3½	2⅝	7	3½	2¼	½	-	-	-	6.160	6.645
8	10	12	4⅞	⅞	2⅞	10	24	3	3¾	2½	9	3½	2¼	½	4	7¹³⁄₁₆	8	8.180	8.645
10	12	13⅞	6	⅞	2⅞	10	24	3½	3¾	2½	11	3½	2¼	½	3⅜	9⅞	10	10.220	10.770
12	14	15⅞	7	⅞	2⅞	10	24	4	3½	3	13	4	2¼	½	4	11⅞	12	12.270	12.780
14	16	17¼	8	¾	2¼	10	27	4¾	3¾	3¼	15	4	2¼	½	-	-	-	-	-
15	17	18⅛	8⅛	⅞	2⅞	10	30	5	4½	3½	16	4	2⅛	½	4	14⅛	15	-	-
16	18¾	20⅝	9⅛	⅞	2⅞	10	32	5½	4½	3½	17	4½	2¼	⅝	-	-	-	-	-
18	21	22⅞	10½	1	3⅛	12	34	6	4½	4¼	19	4½	2¼	⅝	4	17¹³⁄₁₆	18	-	-
20	23¼	25⅛	11¾	1	3⅛	12	38	7	4¾	4	21	4½	2¼	⅝	-	-	-	-	-
21	24	25⅞	12⅝	1	3⅛	12	40	7	4¾	4	22	4½	2¼	⅝	-	-	-	-	-
24	27¼	29⅛	13⅞	1	3⅛	12	44	8	5¾	4⅛	25	4½	2¼	⅝	-	-	-	-	-
30	33¾	36⅛	17⅜	1⅛	4	15	54	10	6	4½	31	6	2¼	¾	-	-	-	-	-
36	39¾	42⅛	20½	1⅛	4	15	62	12	6¼	5⅜	37	6	2⅛	¾	-	-	-	-	-
42	45¾	48⅛	23⅝	1½	5	18	84	14	7	6	43	6	2½	¾	-	-	-	-	-
48	51¾	54⅛	26¾	1½	6	24 [1]	90	16	7⅜	6⅛	49⅛	6	2½	¾	-	-	-	-	-
54	58½	61½	30	2	6	30 [1]	100	18	7⅞	6½	55½	7	3	1	-	-	-	-	-
60	65	68	34	2	6	30 [1]	102	20	8⅛	7⅛	61⅛	8	3¼	1	-	-	-	-	-
72	77½	80¼	41	2	13	[5]	121	25½	10⅜	8¾	73¼	8	3⅜	1	-	-	-	-	-

GATE DIMENSIONS IN INCHES

I Waterman C-10 Canal Gate
NTS

Note: Detail I Information Taken From Waterman USA Website.



B Weir Section
NTS

Table 1

Minimum Pipe Slopes		
Pipe Size	Min. Slope, ft/ft	Min. Slope, %
12"	0.002	.2%
15"	0.0015	.15%
18"	0.0012	.12%
24"	0.0008	.08%
30"	0.00058	.058%

Notes:

1. Lid Details For Box Shown on Sheet E/11
2. Box Not to be Placed in Driveways, Roads, or Other Traffic Areas.
3. All Pipes In Boxes Shall Be Grouted and Watertight.
4. Box Wall Thickness and Reinforcement are Dependent on Site Conditions and Depth. Minimum Size as Shown.
5. Dimensions Shown on Walls and Boxes are Minimum Size. Specific Site Conditions of Boxes and Walls May Require Additional Thickness or Width.
6. Trench Plug to be Placed in Location Shown for Width of Trench and 12 Inches Above and Below Pipe and a thickness of 24 Inches. Plugs Shall be a 10% Bentonite and 90% Clay Mixture, or a Flowable Fill Concrete.
7. All New Turnouts to Include a Check Structure, See Sheet A/12
8. the Invert of the Turnout Pipe Shall MAtch the Bottom of the Canal and Not the Current Silt Layer.

Utah Lake Distributing Company

DESIGNED: Vince Hogge
DRAFTSMAN: Matt Gunn
CHECKED:
REVIEWED:

NO.	DATE	INITS.	REVISIONS DESCRIPTION
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3	DECEMBER 2024	PA, MG	UPDATED

PROJECT LEADER: MARCH 5, 2025
PROJECT LEADER:
PRINT DATE:
CHECKED
REVIEWED

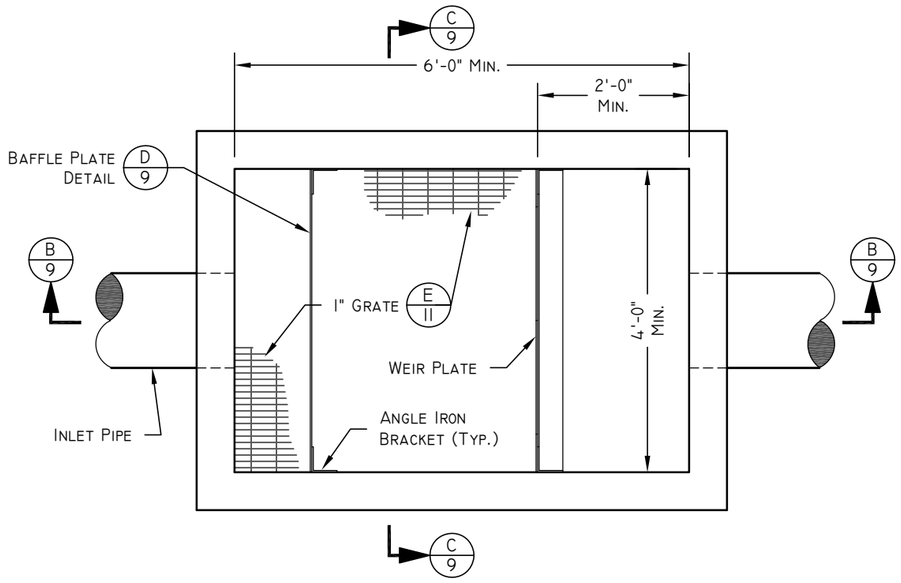
Standard Drawings
Weir Turnout Gate

JOB NO. CU 0110

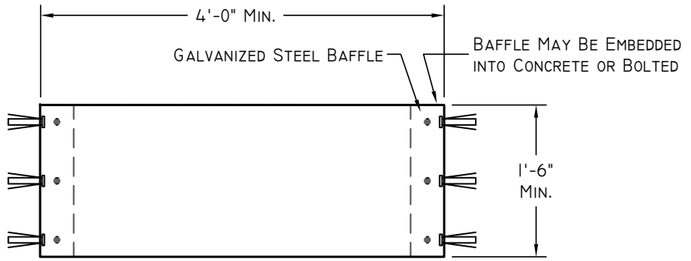
08-ULDC Weir Turnout Gate.dwg
O:\20002 ULDC Saratoga Reviews 2020\Standard Dwgs

LAYOUT: Details

SHEET 8 OF 13



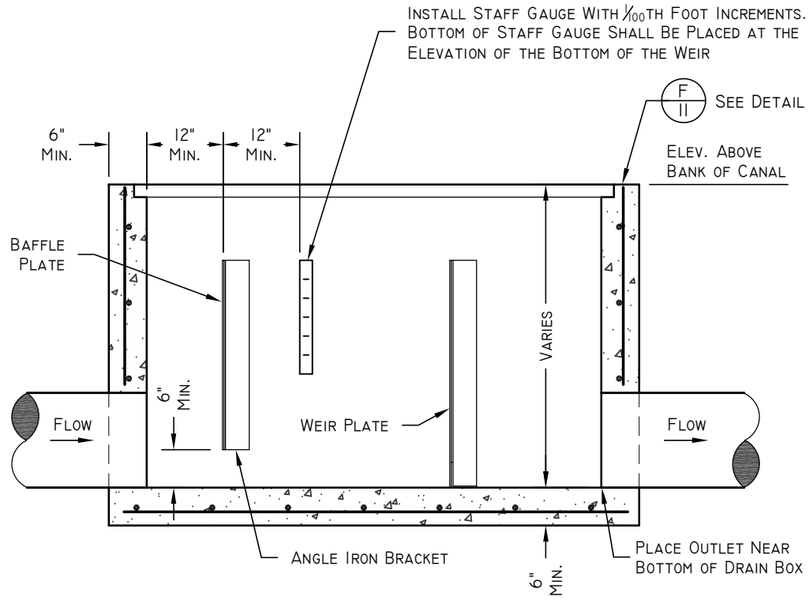
A **PLAN VIEW**
NTS



D **BAFFLE PLATE DETAIL**
NTS

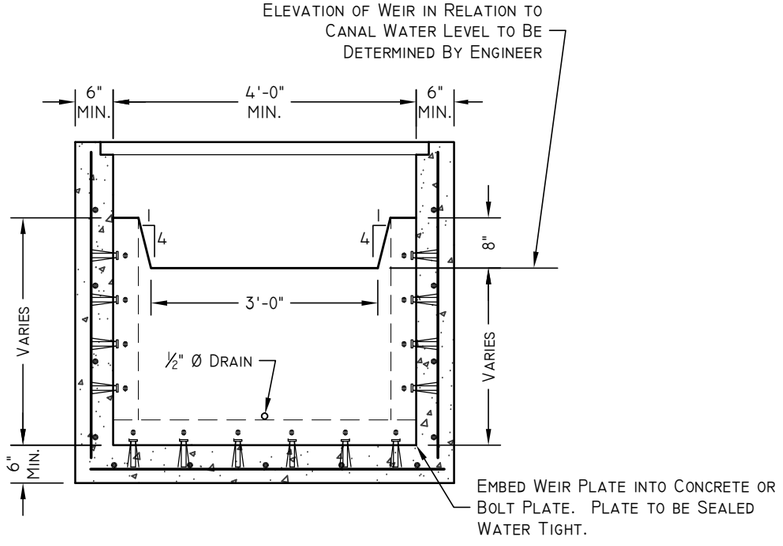
TABLE 1
$Q=3.367\ LH^{3/2}$ @ L=3

H (FT.)	Q (CFS)
0.2	0.90
0.3	1.66
0.4	2.56
0.5	3.57
0.6	4.69
0.66	5.42



B **INLET AND OUTLET CROSS SECTION**
NTS

NOTE: THIS WEIR IS SHOWN AS AN EXAMPLE. THE EXACT WEIR DIMENSIONS & FLOW TABLE TO BE DETERMINED BY APPLICANTS ENGINEER.



C **WEIR SECTION**
NTS

NOTES:

1. IF BOX IS CAST IN PLACE REBAR TO BE PLACED AT 12 INCHES O.C. E.W. MINIMUM.
2. DETAILS FOR CAST IN PLACE BOX SEE C/11.
3. ALL PIPES IN BOX SHALL BE GROUTED AND WATERTIGHT.
4. SUBMIT TO CANAL COMPANY ENGINEER FOR REVIEW ON FINAL DIMENSIONS ON REBAR REINFORCEMENT AND CONCRETE COMPONENTS.
5. GRATE TO BE GALVANIZED.

UTAH LAKE
DISTRIBUTING COMPANY

CHECKED: | PROJECT LEADER:
REVIEWED: | CHECKED | PRINT DATE: MARCH 5, 2025
REVISIONS | REVIEWED

NO.	DATE	INITS:	DESCRIPTION
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3	DECEMBER 2024	PA, MG	UPDATED

DESIGNER: VINCE HOGGE
DRAFTSMAN: MATT GUMM

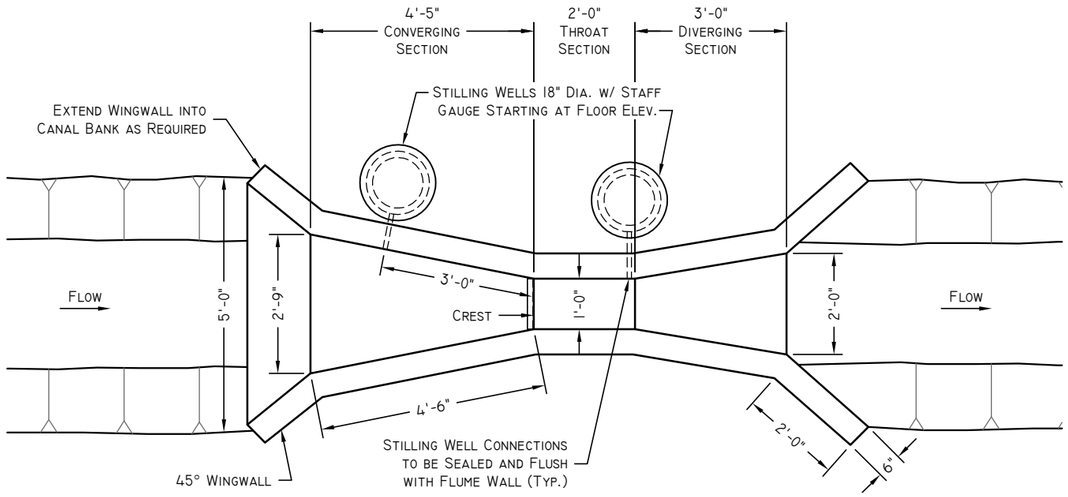
UTAH LAKE DISTRIBUTING COMPANY

STANDARD DRAWINGS
3-FT CIPOLLETTI WEIR

JOB NO. CU.0110

09-ULDC 3-Ft Cipolletti Weir.dwg
C:\20002 ULDC Saratoga Reviews 2020\Standard Dwgs
LAYOUT: Details

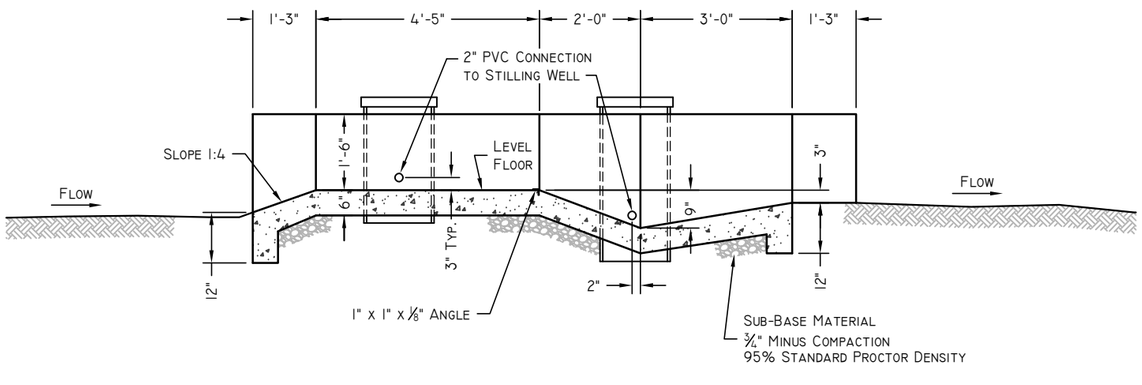
SHEET
9 OF 13



A **FLUME PLAN VIEW**
NTS

NOTES:

1. REINFORCING TO BE MINIMUM OF #4 REBAR @ 12 INCHES ON CENTER, EACH WAY WITH 20 INCH MINIMUM SPLICE LENGTH.
2. APPLICANT TO SUBMIT ACTUAL PLANS AND MATERIAL OF FLUME PRIOR TO CONSTRUCTION.



B **FLUME PROFILE VIEW**
NTS

TABLE 1

HEAD-FLOW RELATIONSHIP FOR CONCRETE FLUME

HEAD H_a (FEET)	FLOW Q (CFS)	HEAD H_a (FEET)	FLOW Q (CFS)	HEAD H_a (FEET)	FLOW Q (CFS)	HEAD H_a (FEET)	FLOW Q (CFS)	HEAD H_a (FEET)	FLOW Q (CFS)	HEAD H_a (FEET)	FLOW Q (CFS)
0.20	0.35	0.42	1.07	0.64	2.03	0.86	3.18	1.08	4.50	1.30	5.96
0.21	0.37	0.43	1.11	0.65	2.08	0.87	3.24	1.09	4.56	1.31	6.03
0.22	0.40	0.44	1.15	0.66	2.13	0.88	3.29	1.10	4.62	1.32	6.10
0.23	0.43	0.45	1.19	0.67	2.18	0.89	3.35	1.11	4.68	1.33	6.18
0.24	0.46	0.46	1.23	0.68	2.23	0.90	3.41	1.12	4.75	1.34	6.25
0.25	0.49	0.47	1.27	0.69	2.28	0.91	3.46	1.13	4.82	1.35	6.32
0.26	0.51	0.48	1.31	0.70	2.33	0.92	3.52	1.14	4.88	1.36	6.39
0.27	0.54	0.49	1.35	0.71	2.38	0.93	3.58	1.15	4.94	1.37	6.46
0.28	0.58	0.50	1.39	0.72	2.43	0.94	3.64	1.16	5.01	1.38	6.53
0.29	0.61	0.51	1.44	0.73	2.48	0.95	3.70	1.17	5.08	1.39	6.60
0.30	0.64	0.52	1.48	0.74	2.53	0.96	3.76	1.18	5.15	1.40	6.68
0.31	0.68	0.53	1.52	0.75	2.58	0.97	3.82	1.19	5.21	1.41	6.75
0.32	0.71	0.54	1.57	0.76	2.63	0.98	3.88	1.20	5.28	1.42	6.82
0.33	0.74	0.55	1.62	0.77	2.68	0.99	3.94	1.21	5.34	1.43	6.89
0.34	0.77	0.56	1.66	0.78	2.74	1.00	4.00	1.22	5.41	1.44	6.97
0.35	0.80	0.57	1.70	0.79	2.80	1.01	4.06	1.23	5.48	1.45	7.04
0.36	0.84	0.58	1.75	0.80	2.85	1.02	4.12	1.24	5.55	1.46	7.12
0.37	0.88	0.59	1.80	0.81	2.90	1.03	4.18	1.25	5.62	1.47	7.19
0.38	0.92	0.60	1.84	0.82	2.96	1.04	4.25	1.26	5.69	1.48	7.26
0.39	0.95	0.61	1.88	0.83	3.02	1.05	4.31	1.27	5.76	1.49	7.34
0.40	0.99	0.62	1.93	0.80	3.07	1.06	4.37	1.28	5.82	1.50	7.41
0.41	1.03	0.63	1.98	0.85	3.12	1.07	4.43	1.29	5.89		

NOTE: THIS FLUME IS SHOWN AS AN EXAMPLE. THE EXACT FLUME DIMENSIONS & FLOW TABLE TO BE DETERMINED BY APPLICANTS ENGINEER.

UTAH LAKE DISTRIBUTING COMPANY

DESIGNED: VINCE HOGGE
DRAFTSMAN: MATT GUMP
CHECKED:
REVIEWED:
PROJECT LEADER:
PROJECT LEADER: MARCH 5, 2025

NO.	DATE	INITS.	REVISIONS DESCRIPTION
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3	DECEMBER 2024	PA, MG	UPDATED

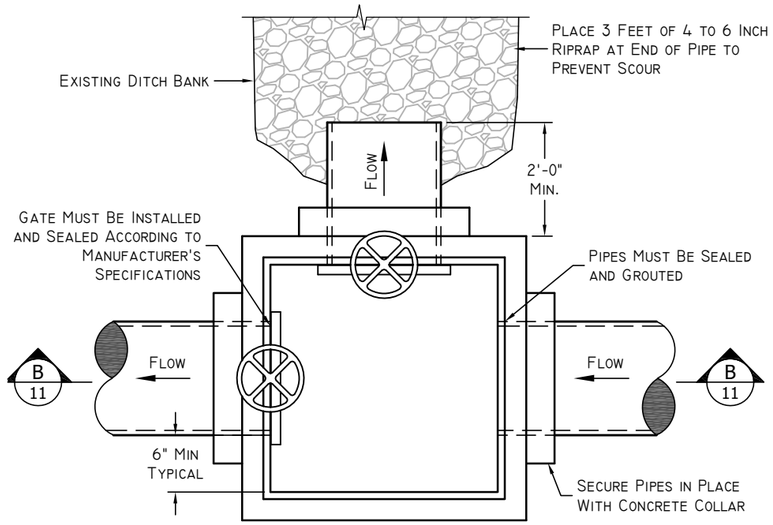
UTAH LAKE DISTRIBUTING COMPANY

STANDARD DRAWINGS
1-FT PARSHALL FLUME

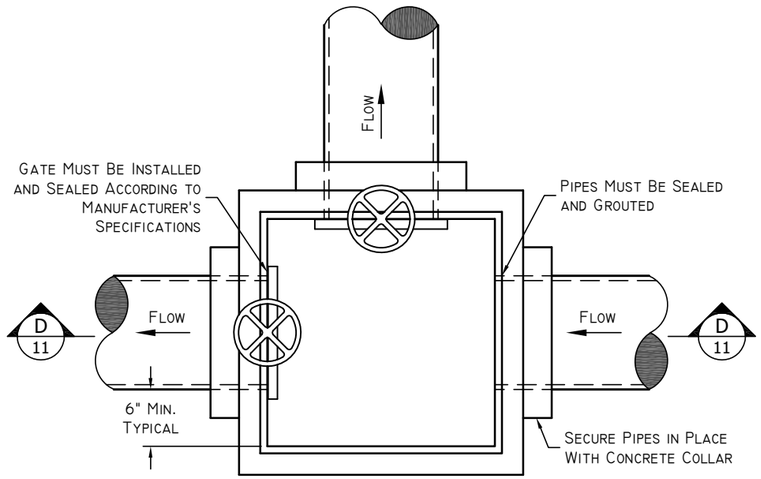
JOB NO. CU 0110

10-ULDC 1-Ft Parshall Flume.dwg
O:\20002 ULDC Saratoga Reviews 2020\Standard Dwgs
LAYOUT: Details

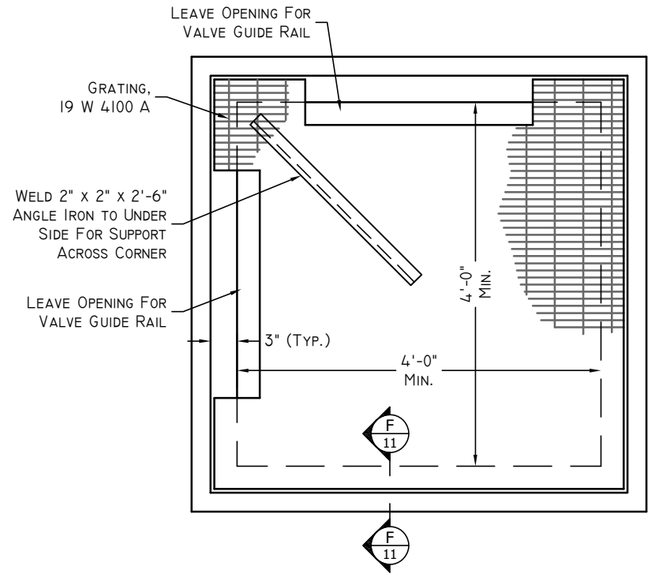
SHEET 10 OF 13



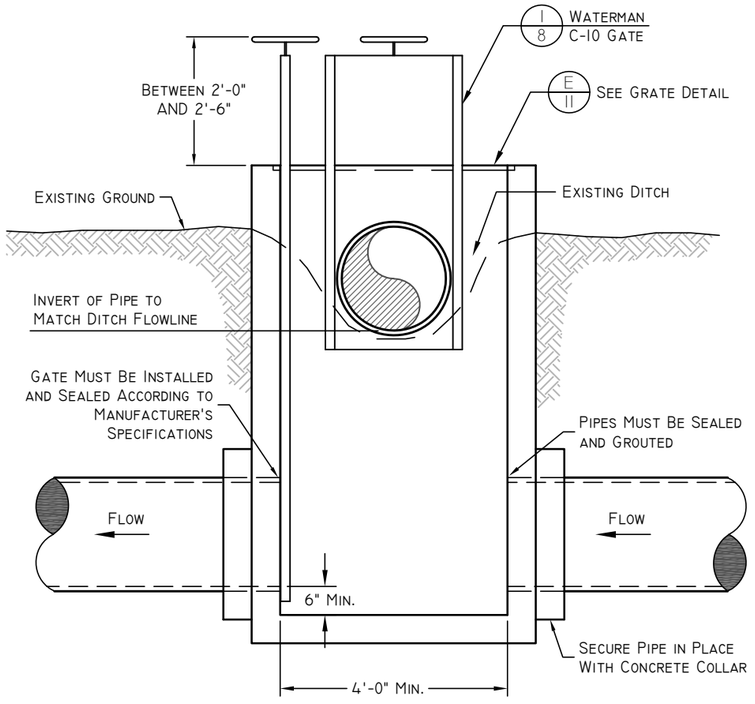
A **Turnout Box Plan**
NTS



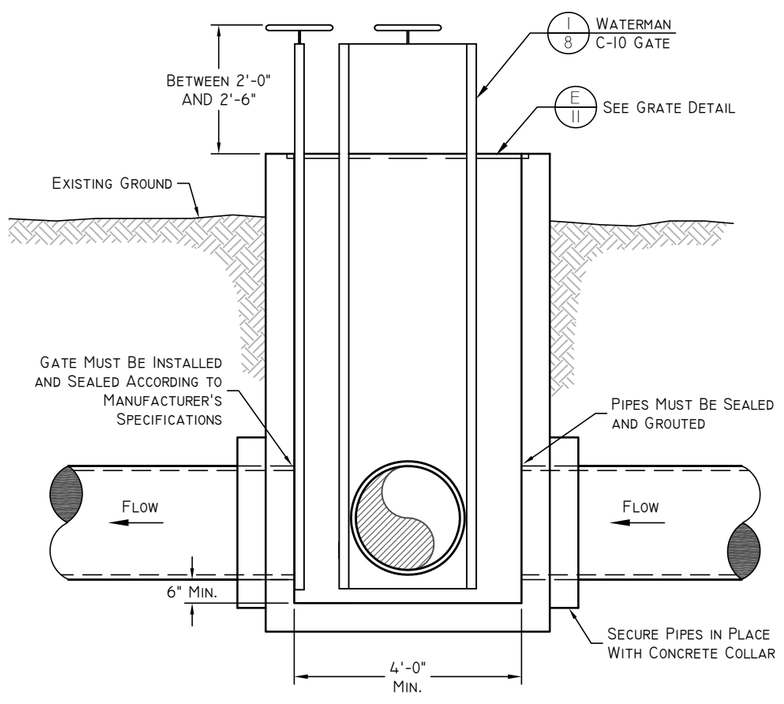
C **Diversion Box**
NTS



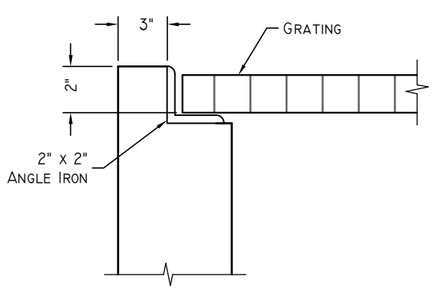
E **Grate Detail - Top View**
NTS



B **Turnout Box Section**
NTS



D **Diversion Box Section**
NTS



F **Grating Lip Section**
NTS

Notes:

1. All Pipes into Box Shall Be Grouted and Watertight With Concrete Collar.
2. Boxes May Be Precast or Cast in Place. Boxes Shall Have a Minimum Interior Width and Length of 4' With Minimum of #4 Rebar @ 12" O.C. Boxes Must Be Submitted For Review.
3. Turnout and Diversion Boxes Shall Not Be Placed In Roadway.
4. Grate to be Galvanized.

Utah Lake Distributing Company

DESIGNED: Vince Hogge
DRAFTSMAN: Matt Gunn
CHECKED:
REVIEWED:

NO.	DATE	INITS.	REVISIONS DESCRIPTION
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2	JANUARY 2018	MG, VH	UPDATED
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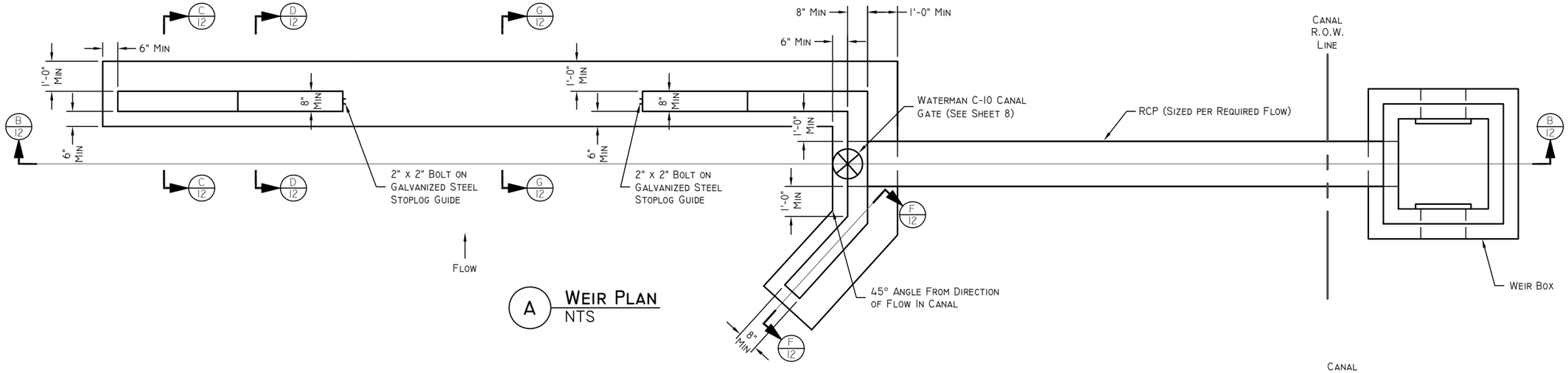
PROJECT LEADER:
PROJECT LEADER: CHECKED
PRINT DATE: MARCH 5, 2025 REVIEWED

Standard Drawings
Irrigation Turnout and Diversion Box

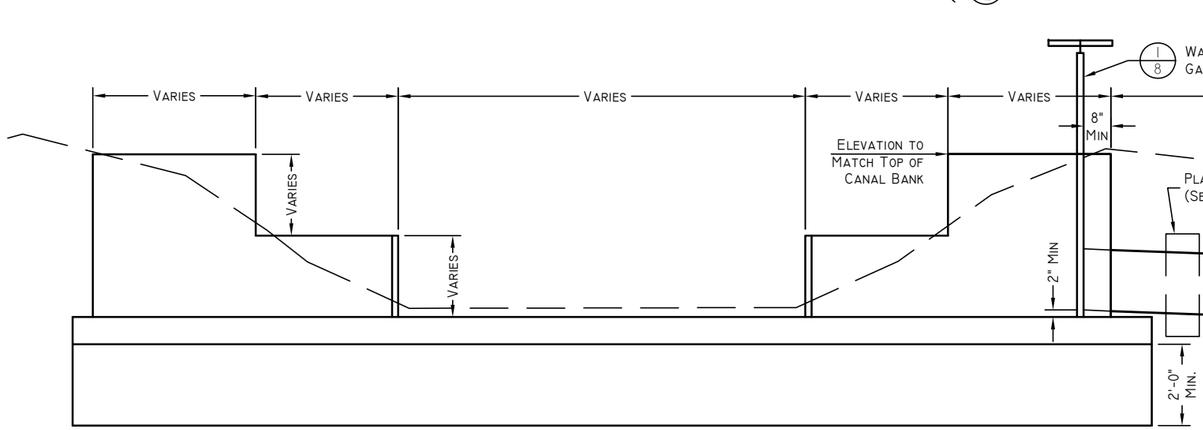
JOB NO. CU.0110

11-ULDC Irrig Turnout Diversion Box.dwg
O:\2002 ULDC Saratoga Reviews 2020\Standard Dwgs
LAYOUT: Details

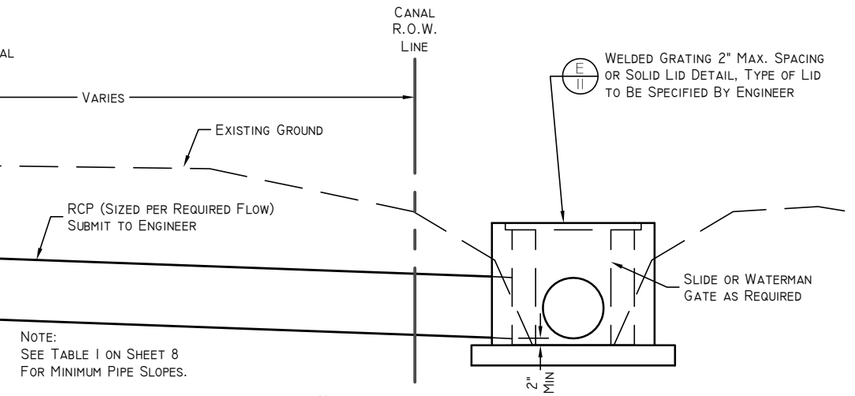
SHEET 11 OF 13

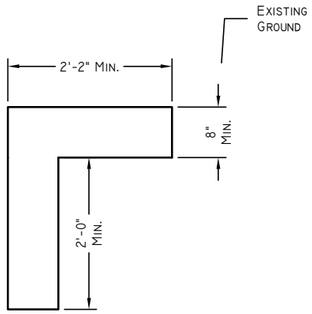


A Weir Plan
NTS

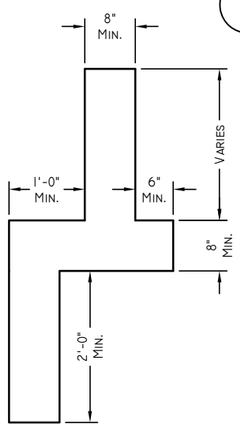


B Weir Profile
NTS

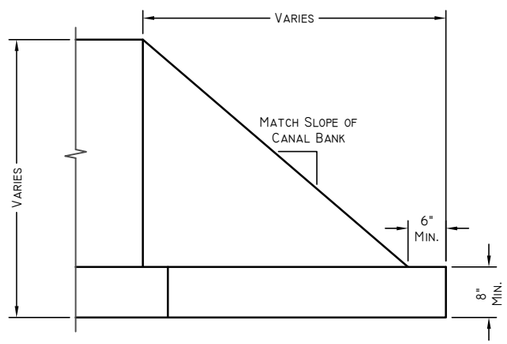




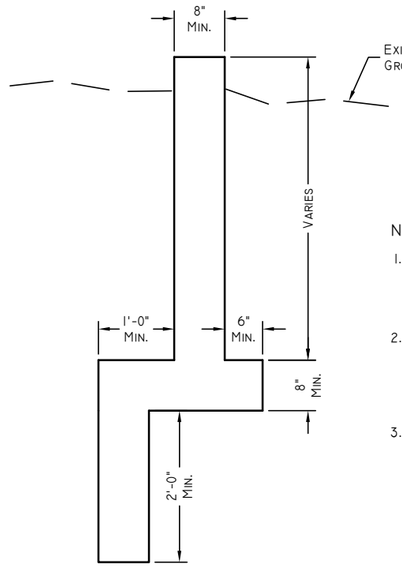
G Footing Between Weir Walls - Detail
NTS



D Short Weir Wall Section
NTS



F Wingwall Detail
NTS



C Tall Weir Wall Section
NTS

Notes:

1. Minimum of #4 Rebar @ 12 inches O.C. E.W. in Box and Check Structure. Final Dimensions and Reinforcement Must Be Submitted and Reviewed By Company Engineer.
2. Trench Plug to Be Placed in Location Shown For Width of Trench and 12 inches Above and Below Pipe and a thickness of 24 inches. Plugs Shall Be a 10% Bentonite and 90% Clay Mixture. or a Flowable Fill Concrete.
3. All Backfill Material in Canal R.O.W. to be Compacted to 95% Standard Proctor Density.

Utah Lake Distributing Company

DESIGNER: Vince Hogge
DRAFTSMAN: Matt Gurr
CHECKED:
REVIEWED:
PROJECT LEADER
PROJECT LEADER:
PRINT DATE: March 5, 2025

NO.	DATE	INITS.	REVISIONS DESCRIPTION
1	JUNE 2010	EA	UPDATED
2	JANUARY 2018	MG, VH	UPDATED
3	DECEMBER 2024	PA, MG	UPDATED

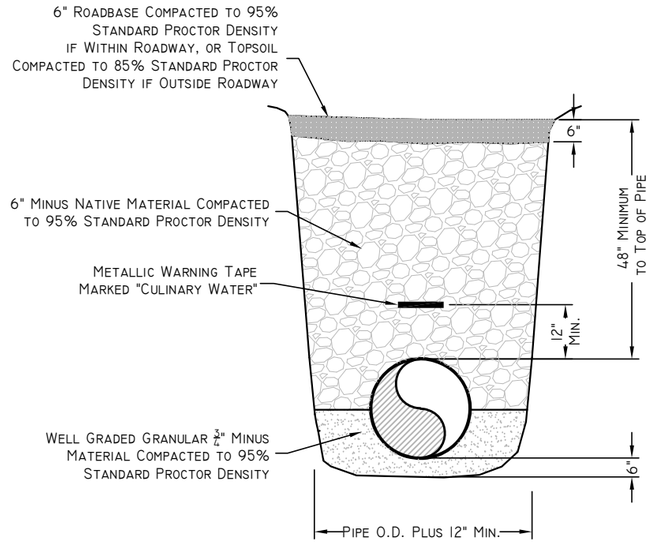
Utah Lake Distributing Company

Standard Drawings
Check Structure and Turnout

JOB NO. CU.0110

12-ULDC Check Structure & Turnout.dwg
O:\2002 ULDC Strategy Reviews 2020\Standard Dwgs
LAYOUT: Details

SHEET 12 OF 13



A **Trench Detail**
NTS

Utah Lake
Distributing Company

DESIGNED:	Vince Hogge	CHECKED:	PROJECT LEADER
DRAFTSMAN:	Matt Gunn	REVIEWED:	PRINT DATE: March 5, 2025

REVISIONS

NO.	DATE	INITS.	DESCRIPTION
1	June 2010	EA	Updated
2	January 2018	MG, VH	Updated

Utah Lake Distributing Company

Standard Drawings
Trench Detail

JOB NO. CU 0110

13-Trench Detail.dwg
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LAYOUT: Trench Detail

SHEET 13 OF 13