Springville Irrigation and Drainage Group

Design Standards and Standard Drawings

Sheet Index

Standard Drawings Disclaimer:

The Drawings Provided in These Standards Are Only Intended to Show the Type of Facility(ies) That Will Be Acceptable to the SIDG. 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 Applicant's Design Engineer, Who Will Stamp the Drawing, to Ensure that Each Project 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.

Springville Irrigation and Drainage Group
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DESIGNER: | ENGINEER | PROJECT LEADER
DRAFTSMAN: | DRAWN BY | PROJECT LEADER: | March 27, 2025
CHECKED: | CHECKED | PRINT DATE:
REVIEWED: | REVIEWED:

NO.	DATE	INITS.	REVISIONS DESCRIPTION

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

DESIGN STANDARDS AND STANDARD DRAWINGS
COVER SHEET

JOB NO. CU 000014

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LAYOUT: Cover

SHEET 1 OF 13

SPRINGVILLE AREA IRRIGATION AND DRAINAGE GROUP (SIDG) NOTES

GENERAL

CONTRACTOR MUST NOTIFY FRANSON CIVIL ENGINEERS AT LEAST 24 HOURS BEFORE CONSTRUCTION ON SIDG FACILITIES. CALL KYLE DEVANEY WITH FRANSON CIVIL ENGINEERS AT 801-756-0309. FAILURE TO DO SO MAY RESULT IN A $5,000 FINE.

- ☐ CONTACT INFORMATION FOR FRANSON CIVIL AND SIDG
  - KYLE DEVANEY, P.E., FRANSON CIVIL ENGINEERS, 801-756-0309
  - PATRICIA AYAA, FRANSON CIVIL ENGINEERS, 801-756-0309
  - ROGER HOWE, WATER MASTER, SIDG, 801-427-2240
- ☐ ALL CONSTRUCTION AFFECTING IRRIGATION FACILITIES AND WITHIN THE SIDG RIGHT-OF-WAY MUST BE DONE TO SIDG STANDARDS.
- ☐ WORK CANNOT INTERFERE WITH DELIVERY OF WATER. ALL CONSTRUCTION THAT IMPACTS IRRIGATION FACILITIES MUST BE COMPLETED BETWEEN OCTOBER 31ST AND APRIL 1ST.
- ☐ ALL BACKFILL MATERIALS SHALL BE COMPACTED TO A MINIMUM OF 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 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.
- ☐ APPLY WATERSTOP RX, SWELLSTOP, OR AN APPROVED EQUIVALENT TO ALL CONCRETE COLD JOINTS.
- ☐ PVC WATER STOP, OR EQUIVALENT, IS REQUIRED IN ALL JOINTS OF CAST-IN-PLACE CONCRETE TO PREVENT SEEPAGE BETWEEN THE SURFACES.
- ☐ FENCES DISTURBED DURING CONSTRUCTION ACTIVITIES MUST BE REPLACED AND RETURNED TO PRE-CONSTRUCTION CONDITIONS, OR BETTER.
- ☐ NEITHER SIDG NOR FRANSON CIVIL CAN VERIFY THE LOCATIONS OF UNDERGROUND FACILITIES. BLUE STAKES SHOULD ALWAYS BE CALLED BEFORE DIGGING (1-800-662-4111).
- ☐ 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.

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 MANHOLES SHOULD BE SEALED AND GROUTED.
- ☐ PIPES ENTERING A CLEANOUT BOX OR MANHOLE MUST BE SECURED IN PLACE WITH A CONCRETE COLLAR.

DRAIN LINES

- ☐ CLAY CUTOFFS ARE REQUIRED EVERY 250 FEET ON SEWER AND OTHER LINES THAT ARE DEEPER THAN DRAIN LINES TO PREVENT WATER FROM FOLLOWING THE PIPE TRENCH. CLAY CUTOFFS MUST BE 2 FEET LONG, KEYED INTO THE TRENCH WALLS 1 FOOT, SURROUNDING THE PIPE, AND AS HIGH AS THE DRAIN LINES.
- ☐ 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 LAND DRAIN PIPE(S) SHALL HAVE A MINIMUM ONE-FOOT VERTICAL CLEARANCE.
- ☐ PIPES OR OTHER UTILITIES RUNNING PARALLEL TO THE LAND DRAIN PIPE IN A SHARED EASEMENT SHALL BE PLACED A MINIMUM OF 5 FEET HORIZONTALLY DISTANCED FROM THE IRRIGATION PIPE.
- ☐ PIPES ENTERING AND EXITING A CLEANOUT BOX OR MANHOLE MUST BE SEALED AND GROUTED.
- ☐ PIPES ENTERING AND EXITING A CLEANOUT BOX OR MANHOLE MUST BE SECURED IN PLACE WITH A CONCRETE COLLAR.

IRRIGATION AND LAND DRAIN CLEANOUT 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.
- ☐ PIPES ENTERING BOXES AND MANHOLES SHOULD BE CONCRETED ON THE OUTSIDE AND GROUTED ON THE INSIDE.
- ☐ IRRIGATION/LAND DRAIN 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.

INLET AND OUTLET STRUCTURES

- ☐ CANAL FLOOR AND EMBANKMENT MATERIAL REMOVED FOR EXCAVATION SHALL BE REPLACED WITH 12_INCH MINIMUM THICKNESS OF 10^{-6} CM/SEC PERMEABILITY CLAY MATERIAL, COMPACTED TO 95% STANDARD PROCTOR DENSITY IN 6-INCH MAXIMUM LIFTS.
- ☐ CANAL EMBANKMENT SHALL BE SHAPED TO MATCH THE EXISTING CANAL PRISM.

STORMWATER DISCHARGE INTO CANAL

- ☐ ORIFICE PLATE MUST BE GALVANIZED STEEL OR ALUMINUM.
- ☐ CANAL FLOOR AND EMBANKMENT MATERIAL REMOVED FOR EXCAVATION SHALL BE REPLACED WITH 12_INCH MINIMUM THICKNESS OF 10^{-6} CM/SEC PERMEABILITY CLAY MATERIAL, COMPACTED TO 95% STANDARD PROCTOR DENSITY IN 6-INCH MAXIMUM LIFTS.
- ☐ CANAL EMBANKMENT SHALL BE SHAPED TO MATCH THE EXISTING CANAL PRISM

BOX AND PIPE CULVERTS

- ☐ CHANNEL 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.
- ☐ CHANNEL EMBANKMENT SHALL BE SHAPED TO MATCH THE EXISTING CHANNEL 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 SIDG.

BORING

- ☐ BORE PITS MUST BE PLACED COMPLETELY OUTSIDE THE CANAL RIGHT-OF-WAY.
- ☐ 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.
- ☐ BORE PIT COMPACTION SHALL BE A MINIMUM OF 95% STANDARD PROCTOR DENSITY.
- ☐ 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.
- ☐ 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.
- ☐ WATER LINE PIPE INSIDE THE CASING SHALL HAVE RESTRAINING JOINTS.
- ☐ THRUST BLOCKS ARE REQUIRED ON ALL BENDS FOR DIP, PVC, OR PIP WATER LINES.

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.
- ☐ BORE PITS MUST BE PLACED COMPLETELY OUTSIDE THE CANAL RIGHT-OF-WAY.
- ☐ 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.
- ☐ BORE PIT COMPACTION SHALL BE A MINIMUM OF 95% STANDARD PROCTOR DENSITY.

EASEMENTS

ADD THE FOLLOWING NOTE TO THE PLAT MAT

- ☐ NO TREES, SHRUBS, TELEPHONE BOXES, OR POWER BOXES ARE ALLOWED IN IRRIGATION COMPANY OR SPRINGVILLE DRAINAGE DISTRICT EASEMENTS.

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CHECKED: CHECKED | REVIEWED: REVIEWED

PROJECT LEADER: PROJECT LEADER | PRINT DATE: MARCH 27, 2025

REVISIONS

NO.	DATE	DESCRIPTION

DESIGNER: | ENGINEER | CHECKED:
DRAFTSMAN: | DRAWN BY | REVIEWED:

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

DESIGN STANDARDS AND STANDARD DRAWINGS
CANAL NOTES

JOB NO. CU.0000114

02-Canal Notes.dwg
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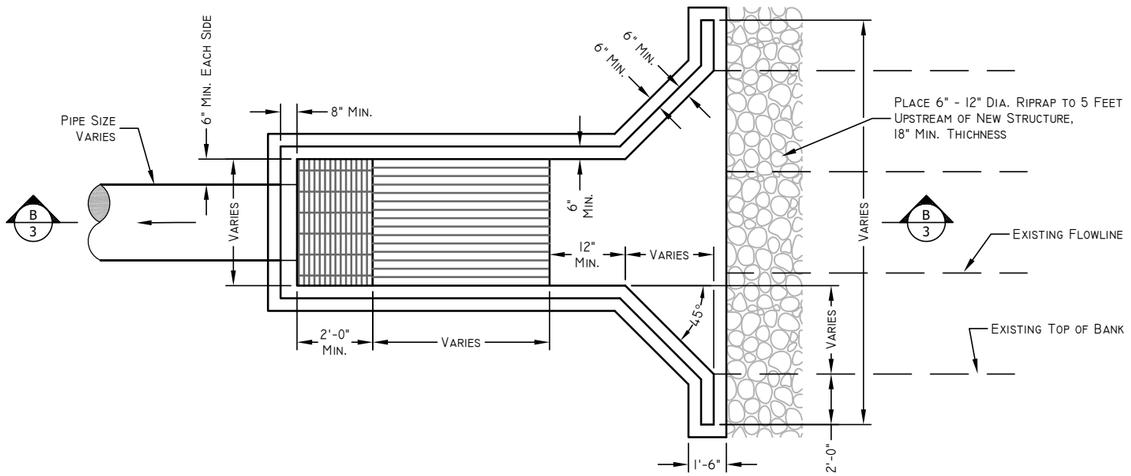
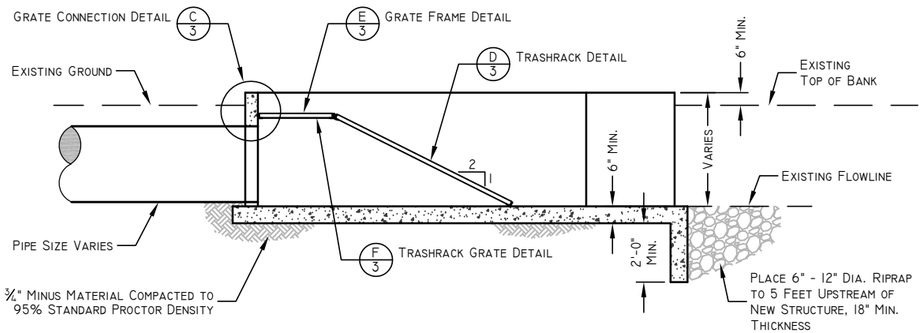
LAYOUT: Canal Notes

SHEET 2 OF 13



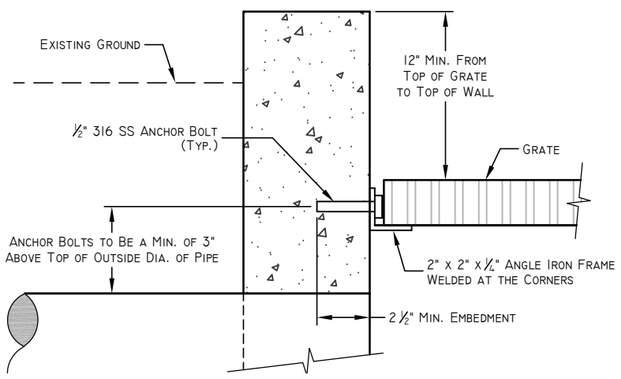
A INLET STRUCTURE PLAN (FOR FLOWS > 12 CFS)

NOT TO SCALE



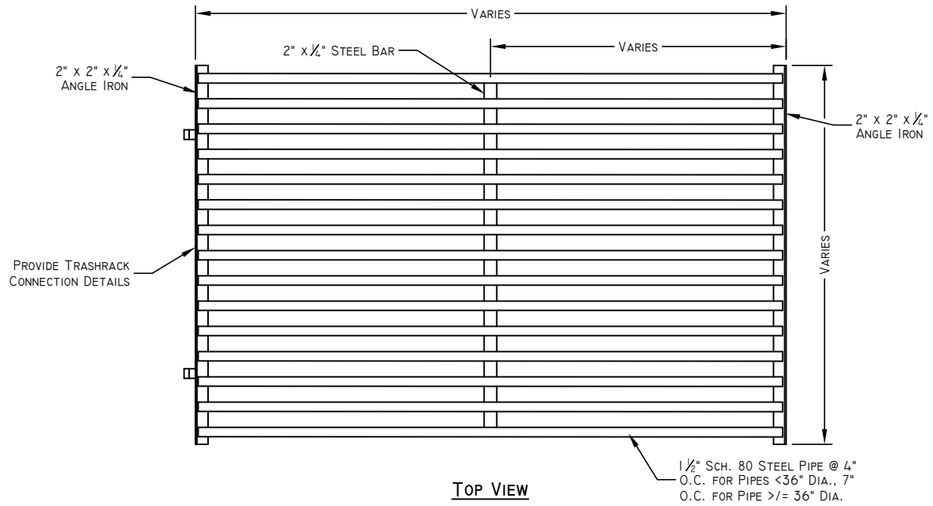
B INLET STRUCTURE PROFILE

NOT TO SCALE



C GRATE CONNECTION DETAIL

NOT TO SCALE



TOP VIEW

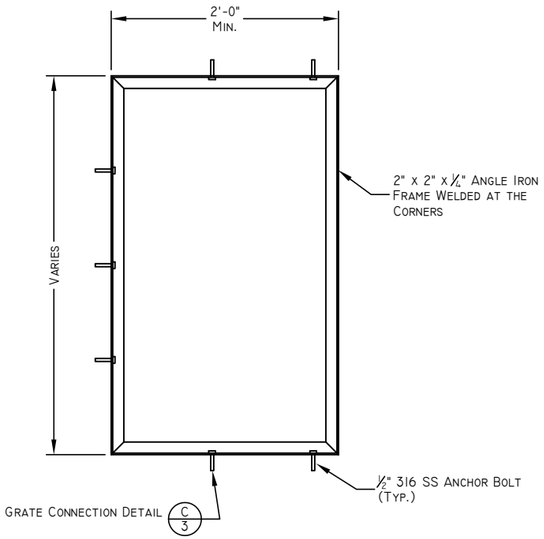
SIDE VIEW

D TRASHRACK DETAIL

NOT TO SCALE

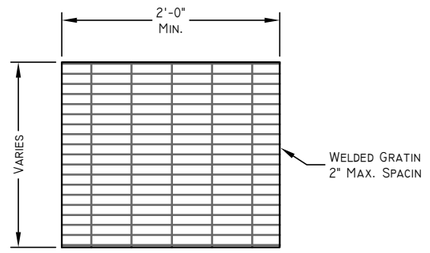
NOTES:

1. IF BOX IS CAST-IN-PLACE, A MINIMUM OF #4 REBAR TO BE PLACED AT 12-INCHES ON CENTER EACH WAY.
2. ALL PIPES GOING INTO BOX SHALL BE GROUTED AND WATERTIGHT.
3. ENTIRE TRASHRACK TO BE HOT DIPPED GALVANIZED.
4. ALL CONCRETE USED IN CONSTRUCTION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
5. THE CONCRETE MIX SHALL INCLUDE BETWEEN 5% AND 7% AIR ENTRAINMENT.



E GRATE FRAME DETAIL

NOT TO SCALE



F TRASHRACK GRATE DETAIL

NOT TO SCALE

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PROJECT LEADER
MARCH 27, 2025
PROJECT LEADER:
PRINT DATE:
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REVIEWED
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REVIEWED:
ENGINEER
DRAWN BY
DESIGNER:
DRAFTSMAN:

NO.	DATE	DESCRIPTION
		INITS.

REVISIONS

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

DESIGN STANDARDS AND STANDARD DRAWINGS CANAL TRASHRACK AND INLET STRUCTURE

JOB NO.
CU.0000114

03_SDs_Trashrack & Inlet Struct.dwg
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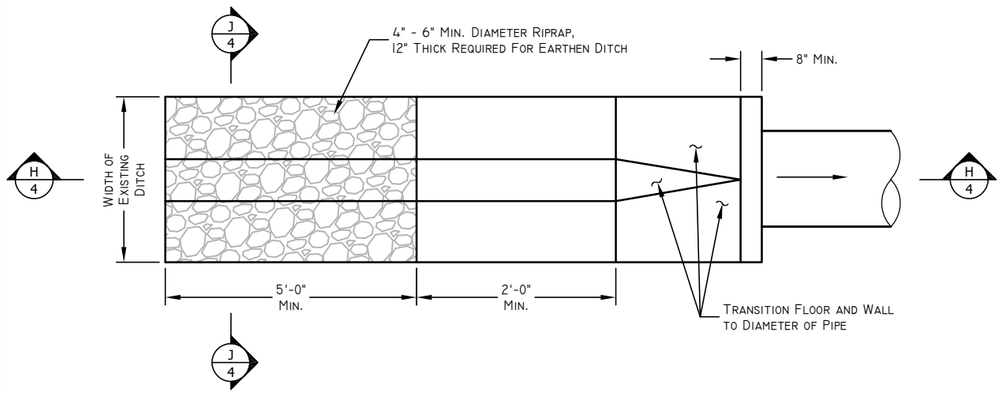
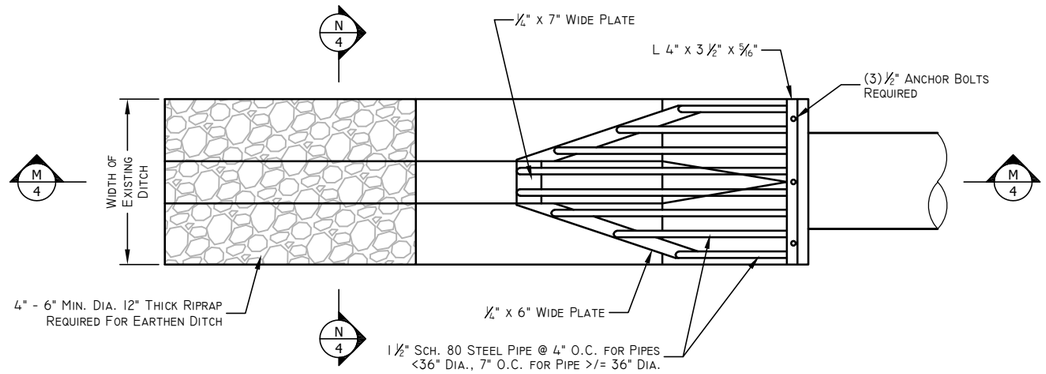
LAYOUT: Trashrack - Inlet Struct

SHEET
3 OF 13



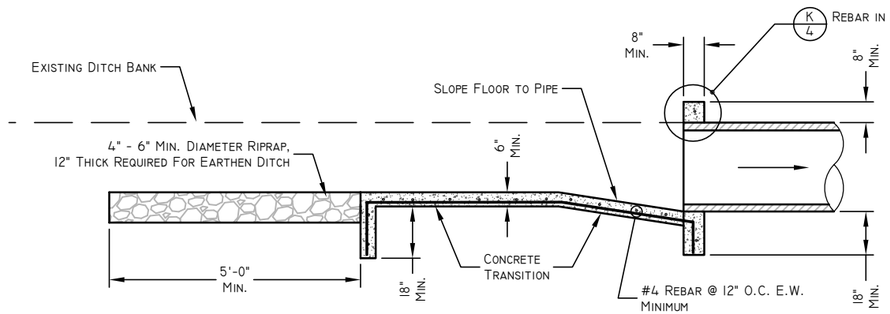
G Ditch Pipe Connection Plan (for Flows 12 cfs or Less)

Not To Scale



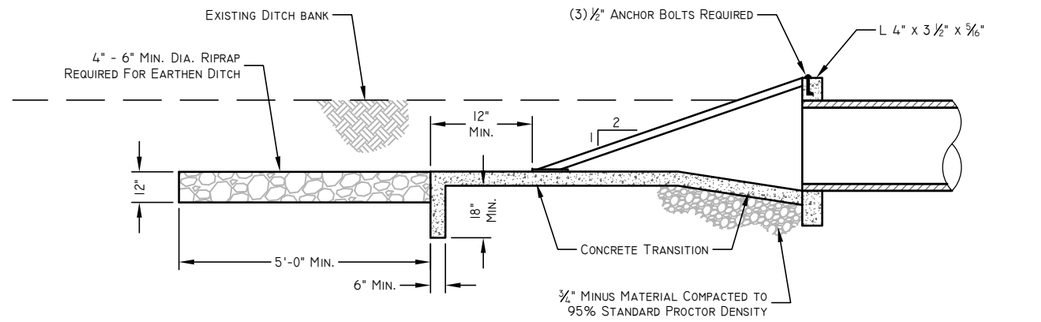
L Trashrack Plan

Not To Scale



H Ditch Pipe Connection Section

Not To Scale



M Trashrack Section

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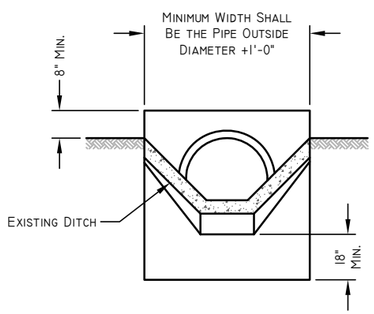

J Ditch Pipe Connection Section

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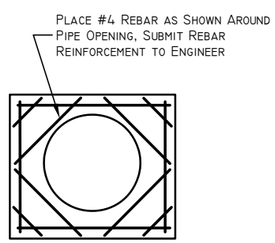
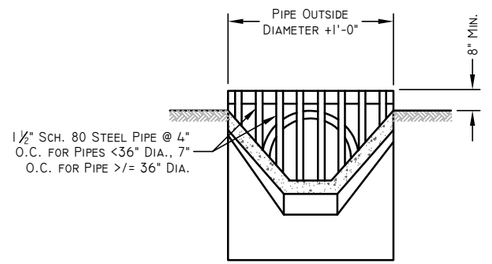


K Rebar in Headwall

Not To Scale

Notes:

1. If Box is Cast-in-Place, a Minimum of #4 Rebar to Be Placed at 12-Inches on Center Each Way.
2. All Pipes Going Into Box Shall Be Grouted and Watertight.
3. Submit to Engineer Final Dimensions of Rebar Reinforcement and Concrete Components.
4. All Concrete Used in Construction Shall Have a Minimum Compressive Strength of 4000 psi.
5. The Concrete Mix Shall Include Between 5% and 7% Air Entrainment.



N Trashrack Front Section

Not To Scale

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Designer:	Project Leader: March 27, 2025
Draftsman:	Print Date:
Engineer	Checked
Drawn By	Reviewed

No	Date	Revisions	Init's

Springville Irrigation and Drainage Group

Design Standards and Standard Drawings
Lateral Ditch to Pipe Transition & Struct.

Job No. 04_SDs_ Ditch to Pipe Transition.dwg
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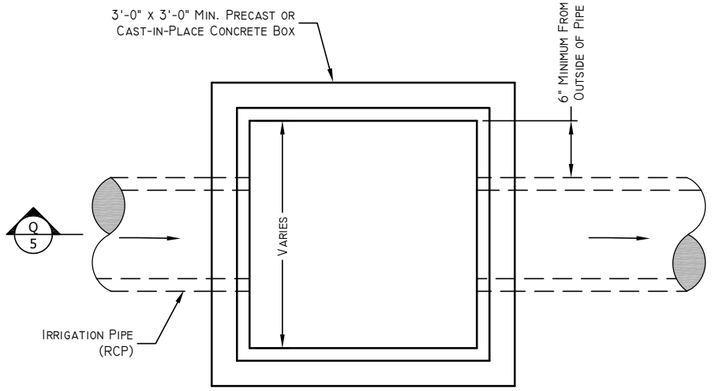
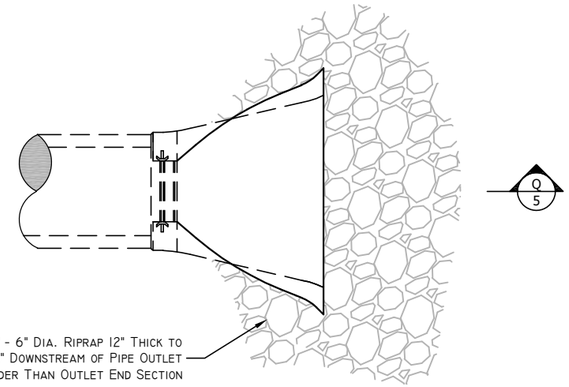
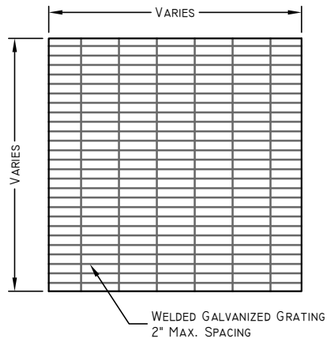
LAYOUT: Ditch to Pipe Transition

CU 000014

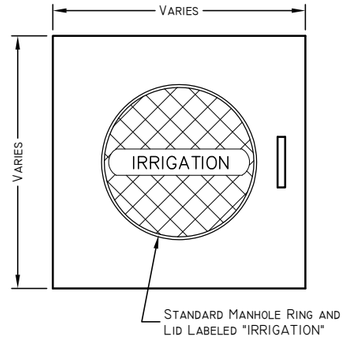




P Pipe Outlet Plan
Not To Scale



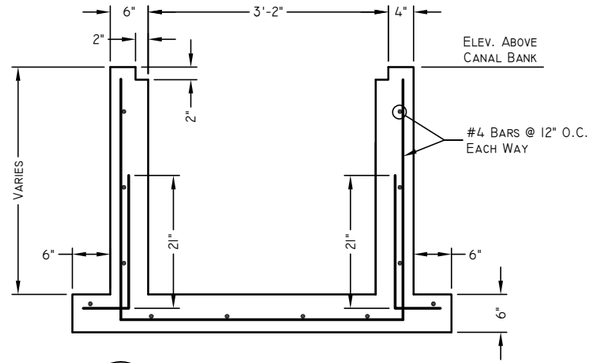
R Outlet Grate Detail
Not To Scale



S Solid Lid Detail
Not To Scale

Notes:

1. Details For Cast-in-Place Box, See T/5.
2. All Pipes Going Into Box Shall Be Grouted and Watertight.
3. Submit to Engineer Final Dimensions of Rebar Reinforcement and Concrete Components.
4. All Concrete Used in Construction Shall Have a Minimum Compressive Strength of 4000 psi.
5. The Concrete Mix Shall Include Between 5% and 7% Air Entrainment.
6. Knockout Boxes Are Not Allowed.



T Pumping Box Section
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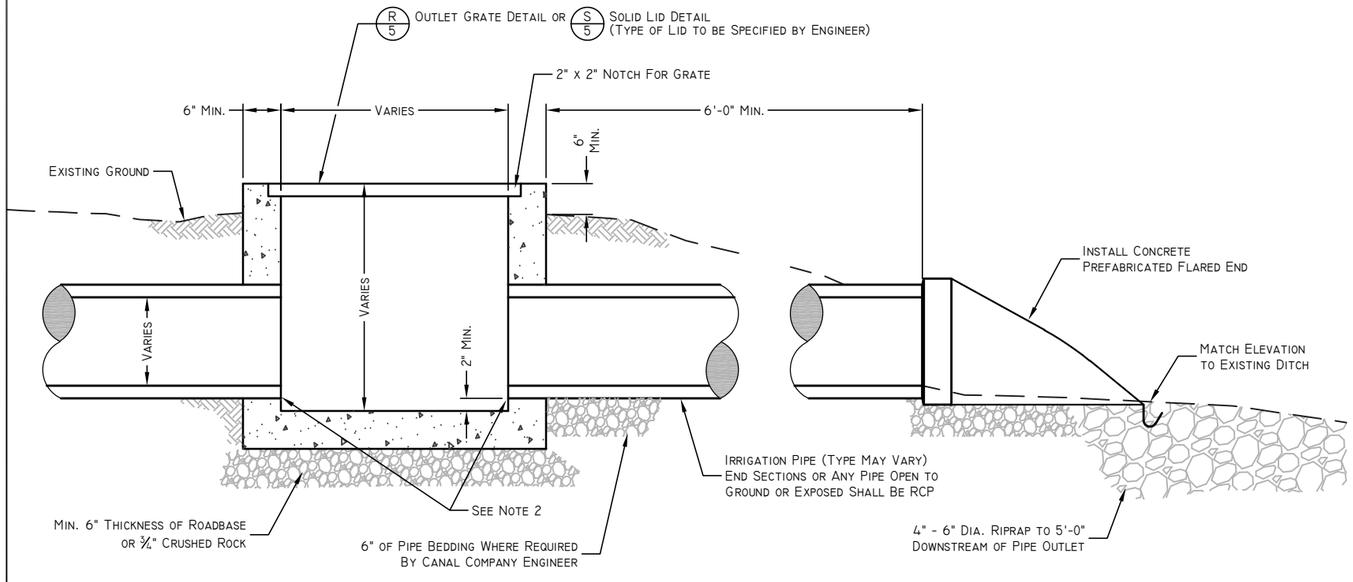

Q Pipe Outlet Profile
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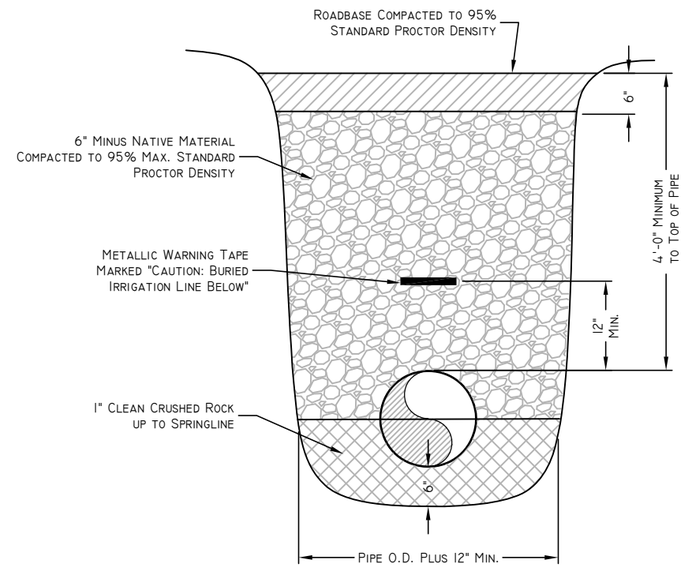

U Typical Trench Detail
Not To Scale

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REVIEWED:
DESIGNER: | ENGINEER
DRAFTSMAN: | DRAWN BY
NO. | DATE | INITS.

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

Design Standards and Standard Drawings
Pipe Outlet Transition and Structure

JOB NO.
CU 000014

05_SDs_Pipe Outlet Transition.dwg
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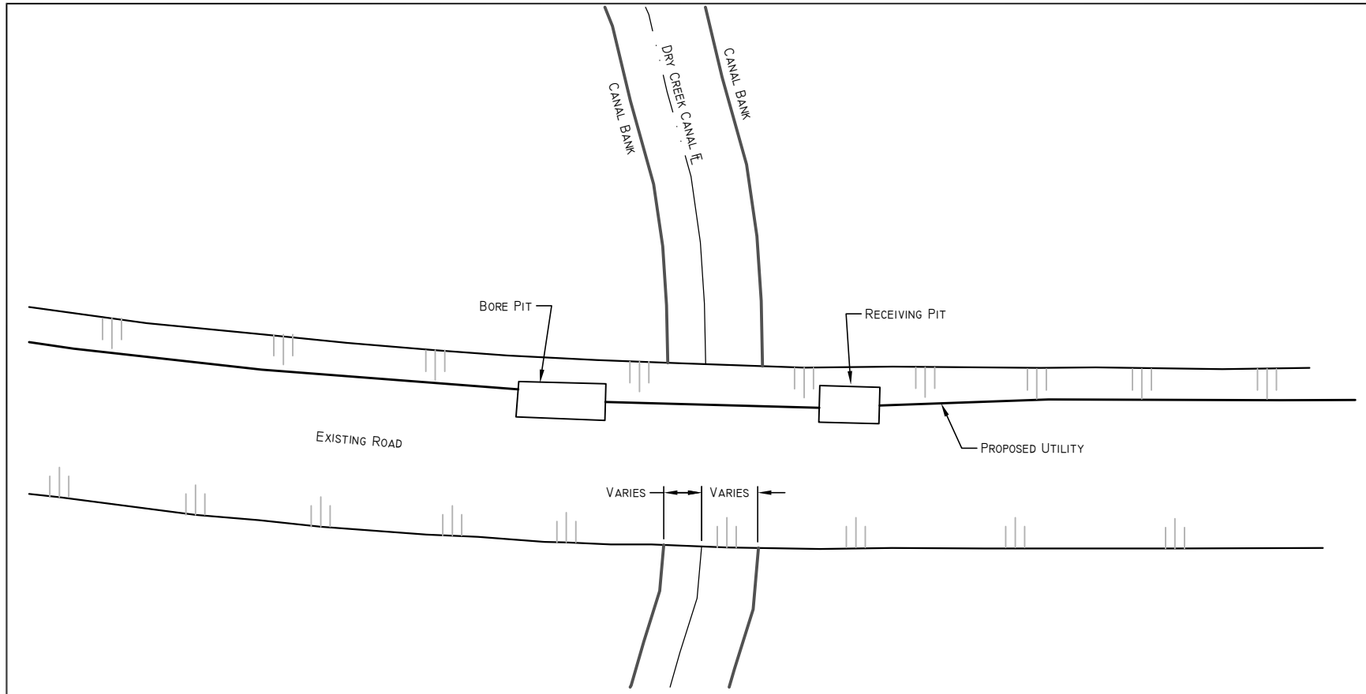
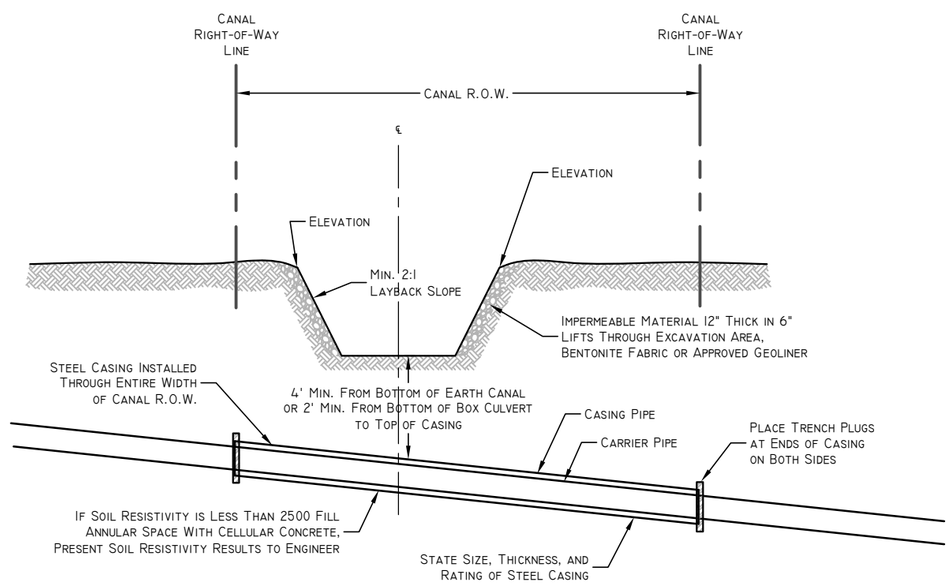
LAYOUT: Outlet Transition

SHEET
5 OF 13



V Canal Boring Plan

Not To Scale



W Canal Boring Section

Not To Scale

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 Thickness of 24 Inches. Plugs Shall Be a 10% Bentonite and 90% Clay Mixture.
3. Contractor Should Note Canals Are Sometimes Used For storm Drain and Will Collect Storm Water During and Following Rain, Snow, or Other Event Resulting in Water Being Discharged in the Storm Drain System.
4. Waterline Pipe Inside of Casing Shall Have Restraining Joints.
5. Thrust Blocks are Required on All Bends 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 or Canal Bottom.
7. Bore Pits Must Be Completely Placed Outside of the Canal Right-of-Way.
8. For Small Ditches and Pipe ≤ 36", the Canal ROW is 20 Feet Centered over the Pipe.
9. for Dry Creek and Large Canals, Canal ROW Extends 30 Feet from the Top of Banks, on Either Side of Canal.
10. for the Packard Drain and 4th South Drain,m the Canal ROW Extends 20Feet From the Top of Banks, on Each Side of Canal.

Table 1
Steel Casing Diameter

Diameter (Inches)	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

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Designer: | Engineer | Checked
Draftsman: | Drawn By | Reviewed
Project Leader | Project Leader
Print Date: March 27, 2025

No.	Date	Revisions	Init.

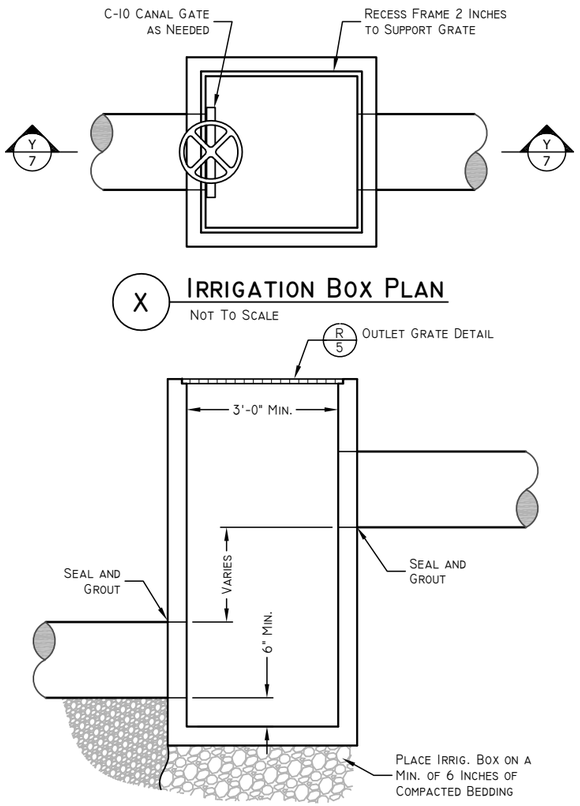
Springville Irrigation and Drainage Group

Design Standards and Standard Drawings
Canal Boring Plan and Section

Job No. CU. 0000114

06_SDs_ Canal Boring.dwg
O:\2005 SPRINGVILLE IC Reviews 2020\Drawings\Standard Drawings
LAYOUT: Boring Plan & Sect.

Sheet 6 of 13

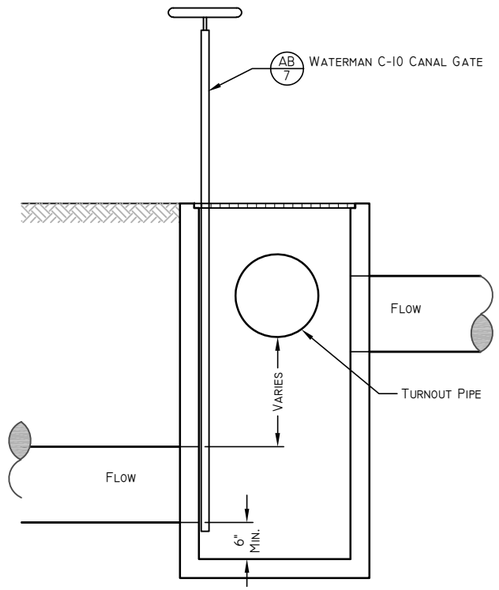


X **Irrigation Box Plan**
Not To Scale

Y **Irrigation Box Section**
Not To Scale

Table 1

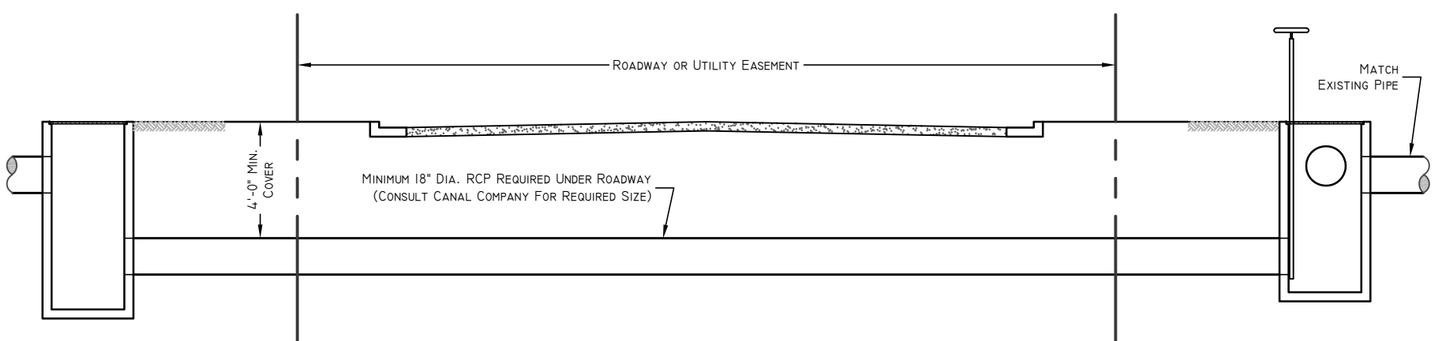
Minimum Pipe Slopes		
Pipe Drain Size	Min. Slope, ft/ft	Min. Slope, %
12"	0.002	.2%
15"	0.0015	.15%
18"	0.0012	.12%
24"	0.0008	.08%
30"	0.00058	.058%



Z **Bubble Up Turnout Box Section**
Not To Scale

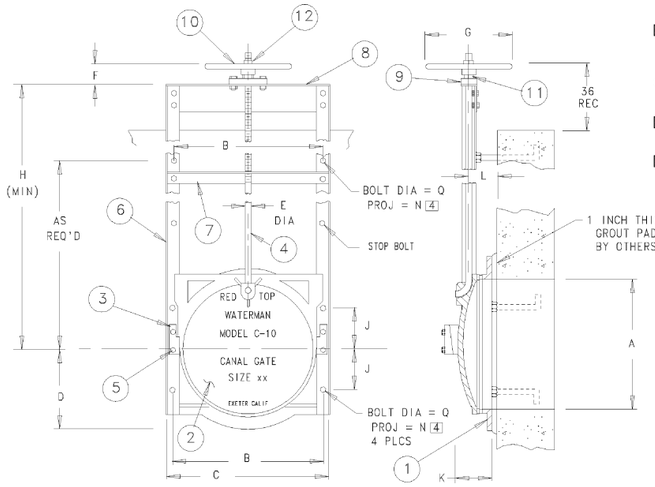
Notes:

1. If Box is Cast-in-Place, Minimum of #4 Rebar to Be Placed @ 12 Inches On Center, Each Way.
2. For Details For Cast-in-Place Box See (T 5).
3. All Pipes Into Box Shall Be Grouted and Watertight.
4. Submit to Engineer Final Dimensions of Rebar Reinforcement and Concrete Components.
5. For Minimum Pipe Slopes For Pipe Under Roadway, See Table I on Sheet 6.
6. Boxes May Be Precast or Cast-in-Place. Boxes Shall Have a Minimum Interior Width and Length of 3 Feet With #4 Rebar @ 12 Inches On Center. Boxes Must Be Submitted For Review.
7. Knockout Boxes Are Not Allowed.
8. Irrigation Boxes Shall Not Be Placed in Roadway.
9. All Pipe Placed in Roadway Must Be Class III RCP.
10. All Concrete Used in Construction Shall Have a Minimum Compressive Strength of 4000 psi.
11. The Concrete Mix Shall Include Between 5% and 7% Air Entrainment.

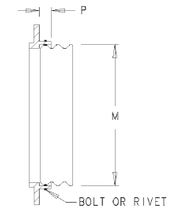


AA **Bubble Up Turnout Box Section**
Not To Scale

C-10 Canal Gate

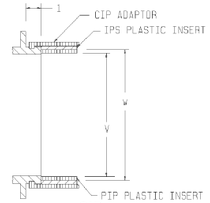


NOTES
1. TYPE 2 lubricated ball bearing lift used on 48" and larger gates.
2. Applies to spigotback gate only. Optional spigot, shown in separate detail.
3. All dimensions are also applicable for model CL-10 & CM-10 gates.
4. Add grout pad thickness to anchor bolt projection.
5. Type 3E 2:1 lift used,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



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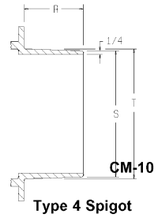

Type 4 Spigot

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	2⅛	10	24	3	3½	2⅝	7	3½	2¼	½	-	-	-	6.160	6.645
8	10	12	4⅞	⅞	2⅛	10	24	3	3¾	2½	9	3½	2¼	½	4	7 13/16	8	8.180	8.645
10	12	13⅞	6	⅞	2⅛	10	24	3½	3¾	2½	11	3½	2¼	½	3⅜	9⅞	10	10.220	10.770
12	14	15⅞	7	⅞	2⅛	10	24	4	3½	3	13	4	2¼	½	4	11⅞	12	12.270	12.780
14	16	17⅞	8	⅞	2⅛	10	27	4¾	3¾	3¼	15	4	2¼	½	-	-	-	-	-
15	17	18⅞	8⅞	⅞	2⅛	10	30	5	4½	3½	16	4	2⅛	½	4	14⅞	15	-	-
16	18¾	20⅝	9⅞	⅞	2⅛	10	32	5½	4½	3½	17	4½	2¼	⅝	-	-	-	-	-
18	21	22⅞	10½	1	3⅛	12	34	6	4½	4½	19	4½	2¼	⅝	4	17 13/16	18	-	-
20	23¼	25⅛	11¾	1	3⅛	12	38	7	4¾	4	21	4½	2¼	⅝	-	-	-	-	-
21	24	25⅞	12 5/16	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	48⅜	23⅝	1½	5	18	84	14	7	6	43	6	2½	¾	-	-	-	-	-
48	51¾	54⅜	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	55⅛	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	10⅝	8¾	73¼	8	3⅜	1	-	-	-	-	-

AB **Waterman C-10 Canal Gate**
Not To Scale

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Project Leader
March 27, 2025
Project Leader:
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Revisions
Description
Checked:
Reviewed:
Engineer
Drawn By
Designer:
Draftsman:
No.
Date
Init's.

Springville Irrigation and Drainage Group
Design Standards and Standard Drawings
Irrigation Bubble Up Box

Job No.
07_SDs_Irrigation Bubble Up Box.dwg
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CU 00008I4
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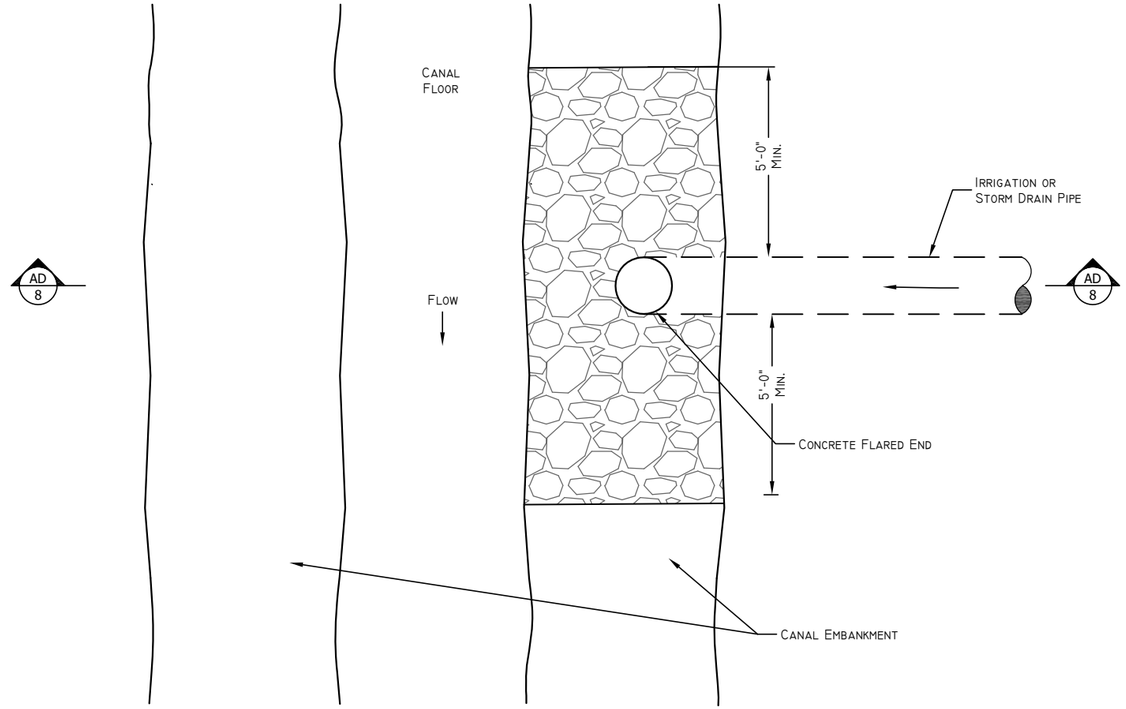
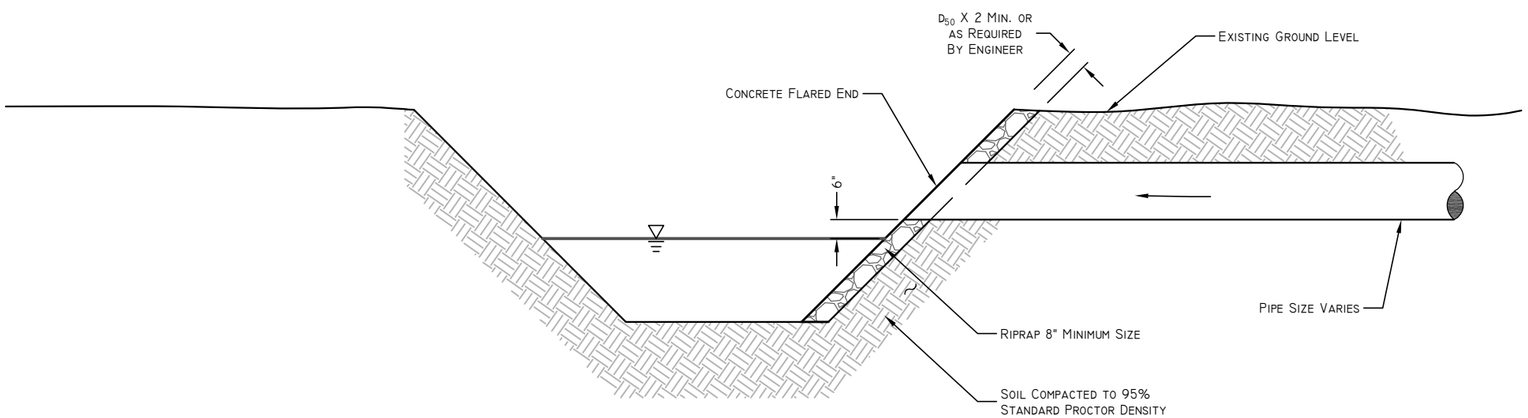


AC Pipe Discharge into Dry Creek or Large Canal

Not To Scale

Notes:

1. All Storm Drain Pipe Must Be Pre-Approved and Have Signed Agreement With All Parties.
2. Storm Drain Pipe Discharge May Be Subject to Pre-Treatment Regulations.
3. All Storm Drain Pipes Shall Be RCP.
4. Drawing is For Pipe Entering Canal at 90°, Other Dimensions May Apply For Varying Angles.
5. The Length of Concrete in Channel is 10 Feet Plus the Outer Diameter of the Discharge Pipe; 5 Feet on Each Side of Pipe
6. Flared End to be Flush with Riprap.



AD Pipe Discharge Section

Not To Scale

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DESCRIPTION
ENGINEER
DRAWN BY
DESIGNER:
DRAFTSMAN:
NO.
DATE
INITS.

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

Design Standards and Standard Drawings
Pipe Discharge into Dry Creek or Large Canal

JOB NO.
CU 00008I4

08_SDs_Pipe Inlet Details.dwg
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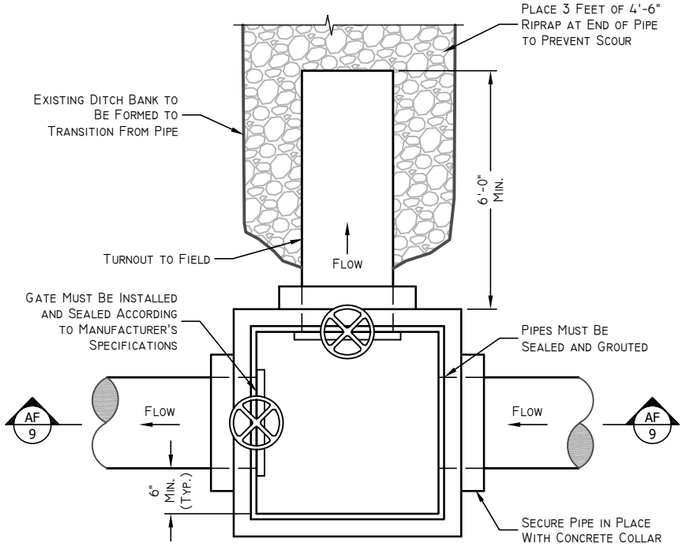
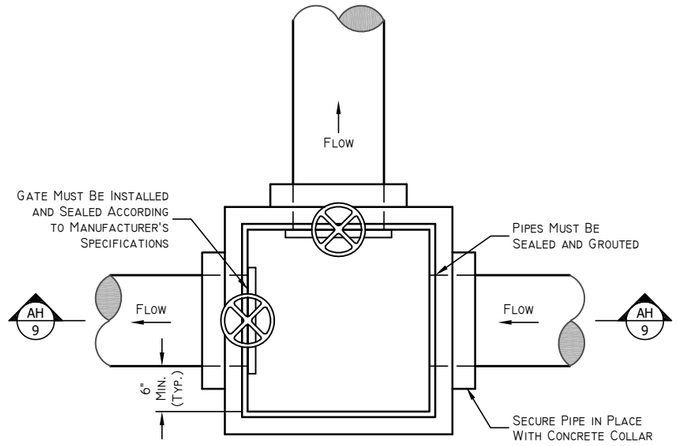
LAYOUT: Pipe Inlet

SHEET
8 OF 13



AE **TURNOUT BOX PLAN**
NOT TO SCALE



AG **DIVERSION BOX PLAN**
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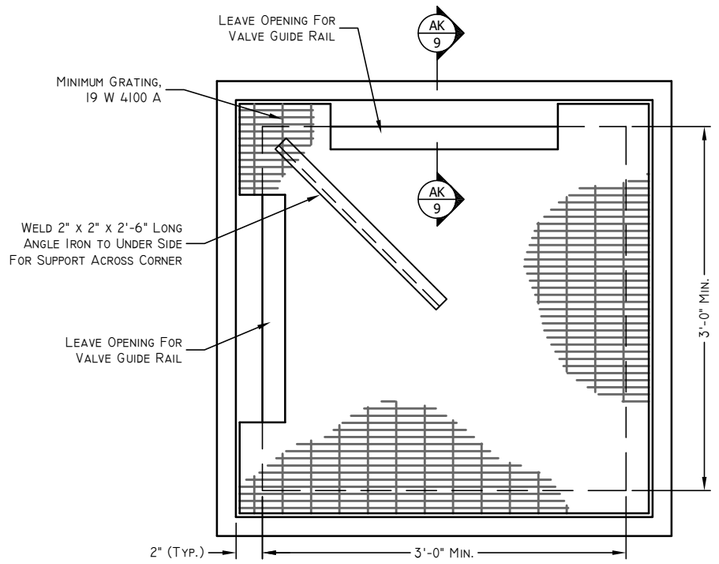
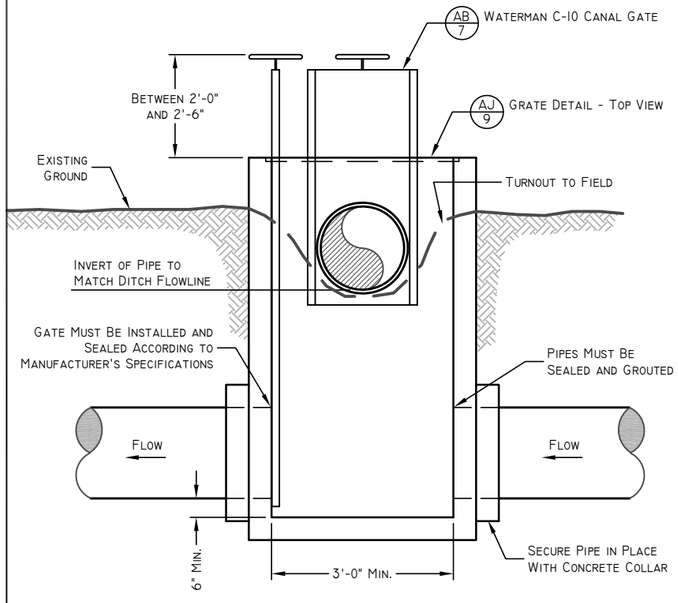


AJ **GRATE DETAIL - TOP VIEW**
NOT TO SCALE



AF **TURNOUT BOX SECTION**
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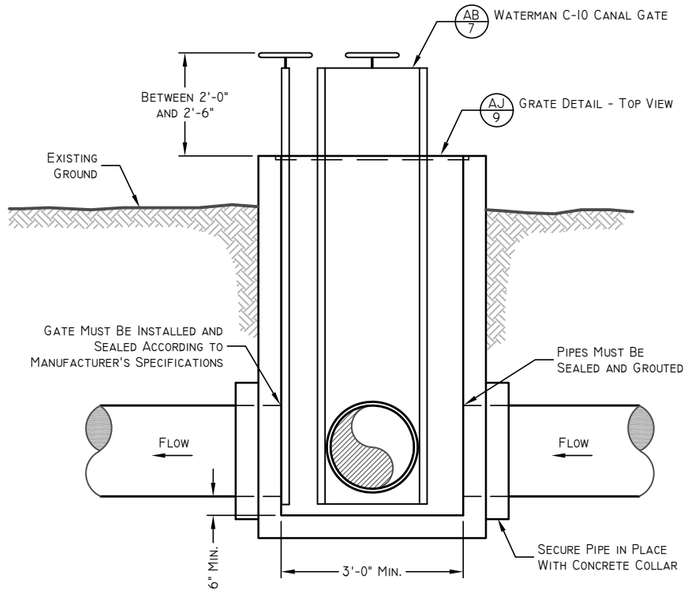

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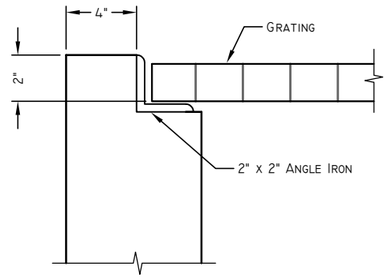

AK **WALL SECTION**
NOT TO SCALE

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 3 FEET WITH #4 REBAR @ 12 INCHES ON CENTER. BOXES MUST BE SUBMITTED FOR REVIEW.
3. TURNOUT BOXES AND DIVERSION BOXES SHALL NOT BE PLACED IN ROADWAY.
4. ALL CONCRETE USED IN CONSTRUCTION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
5. THE CONCRETE MIX SHALL INCLUDE BETWEEN 5% AND 7% AIR ENTRAINMENT.
6. KNOCKOUT BOXES ARE NOT ALLOWED.
7. ALL BOXES THAT CARRY STORM WATER MUST HAVE AN OVERFLOW TO BYPASS GATES DURING HIGH STORM FLOWS.

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ENGINEER | DRAWN BY | INITS.
DESIGNER: | DRAFTSMAN: | DATE | NO.

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

DESIGN STANDARDS AND STANDARD DRAWINGS
IRRIGATION TURNOUT AND DIVERSION BOX

JOB NO. CU 0000114
09_SDs_Irrig Turnout & Div. Box.dwg
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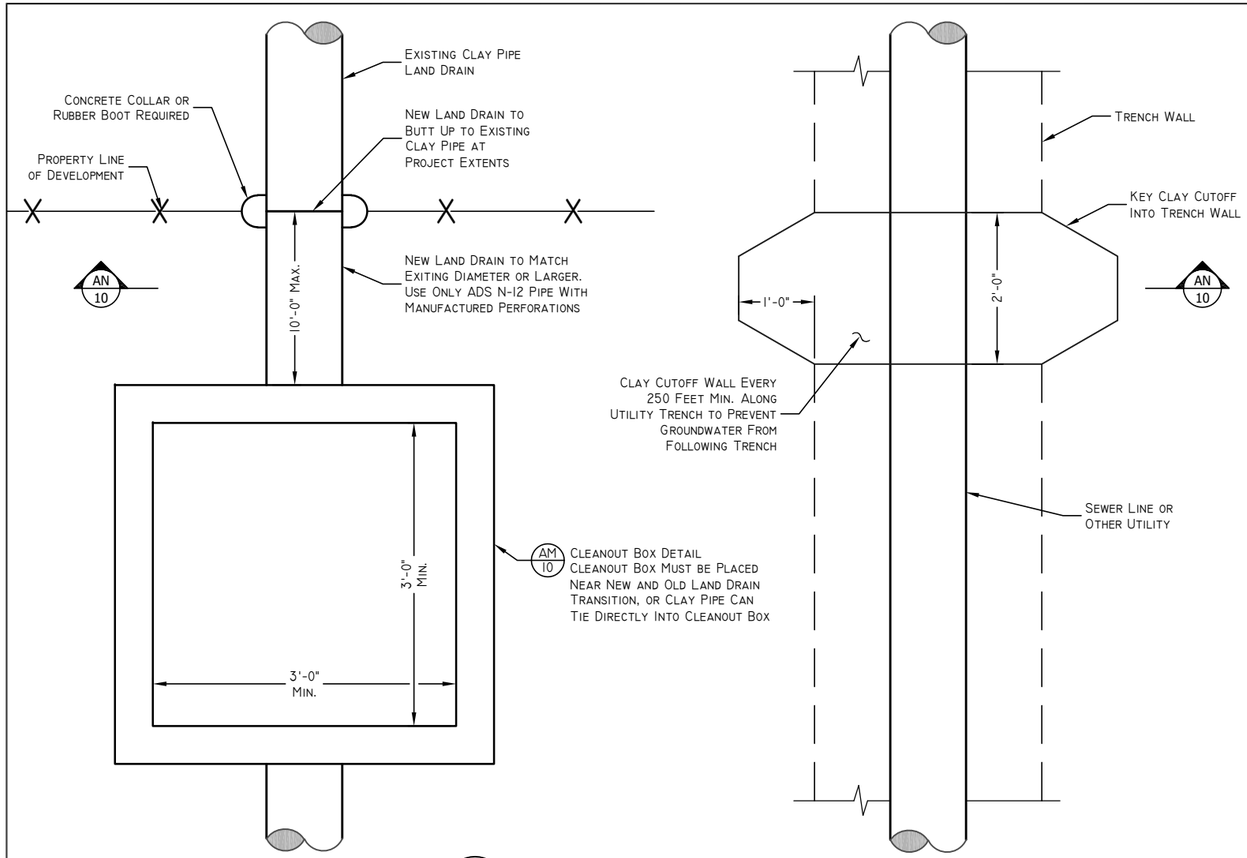
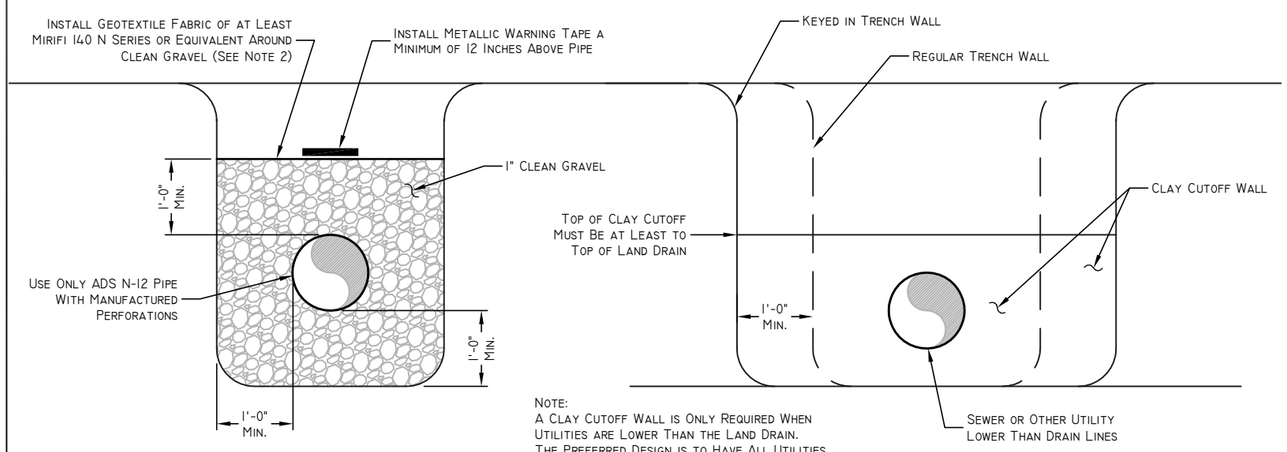
LAYOUT: Irrig. Turnout & Div. Box



AL LAND DRAIN DETAIL

NOT TO SCALE



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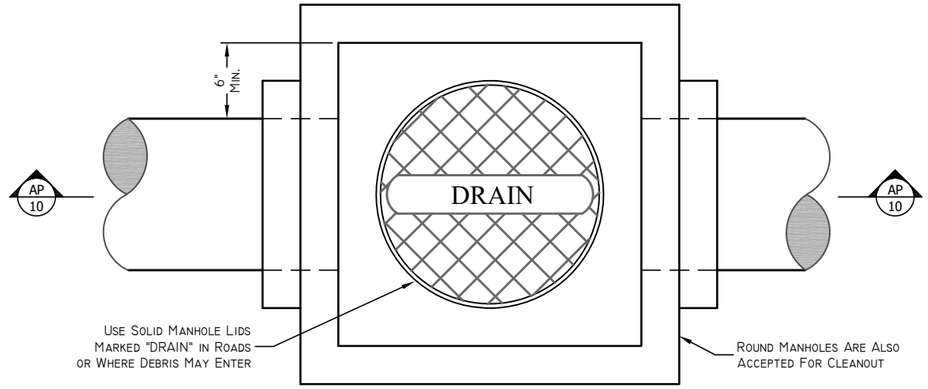

AM CLEANOUT BOX DETAIL

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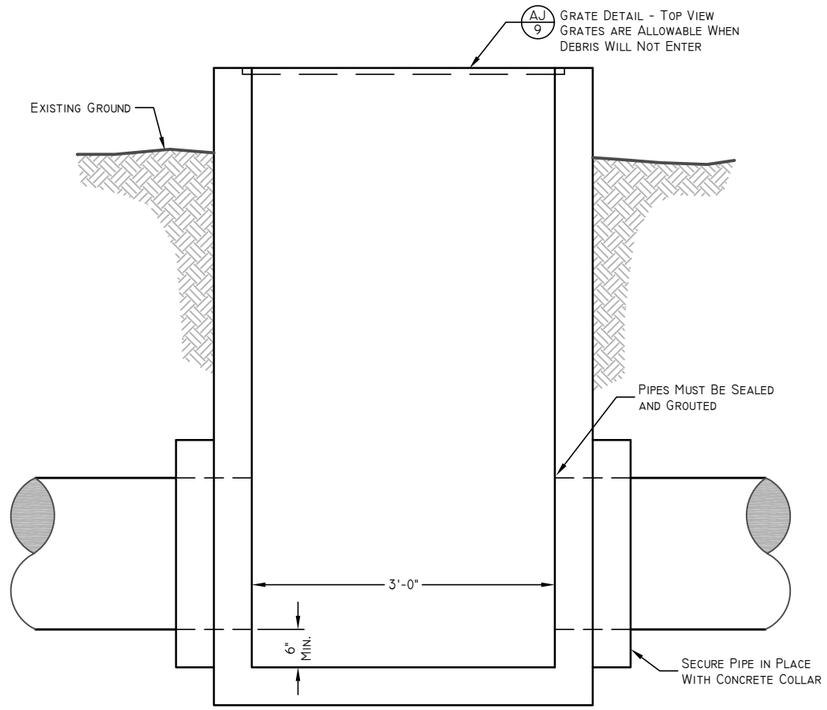

AP CLEANOUT BOX SECTION

NOT TO SCALE

NOTES:

1. LAND DRAINS TO BE 8 INCHES MINIMUM OR DIAMETER TO MATCH EXISTING DRAIN.

2. SUBMIT SOILS REPORT:
   - 2.1. IF NATIVE SOIL MATERIAL IS LESS THAN 20% FINES, A GEOTEXTILE FABRIC OF MIRIFI 140 N SERIES OR EQUIVALENT SHOULD BE WRAPPED AROUND THE 1" CLEAN CRUSHED GRAVEL
   - 2.2. IF 20% OR MORE FINES, THE GEOTEXTILE FABRIC ONLY NEEDS TO COVER THE TOP OF THE BACKFILLED 1" CLEAN CRUSHED GRAVEL ACROSS THE ENTIRE WIDTH OF TRENCH.

3. ALL BACKFILL MATERIALS TO BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY.

4. KNOCKOUT BOXES ARE NOT ALLOWED.

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DESIGNER: | DRAFTSMAN: | ENGINEER | DRAWN BY
NO. | DATE | INITS.

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

DESIGN STANDARDS AND STANDARD DRAWINGS
DRAIN LINE AND TYPICAL CLEANOUT BOX

JOB NO. | CU 00008114

10_SDs_Drain Line & Cleanout Box.dwg
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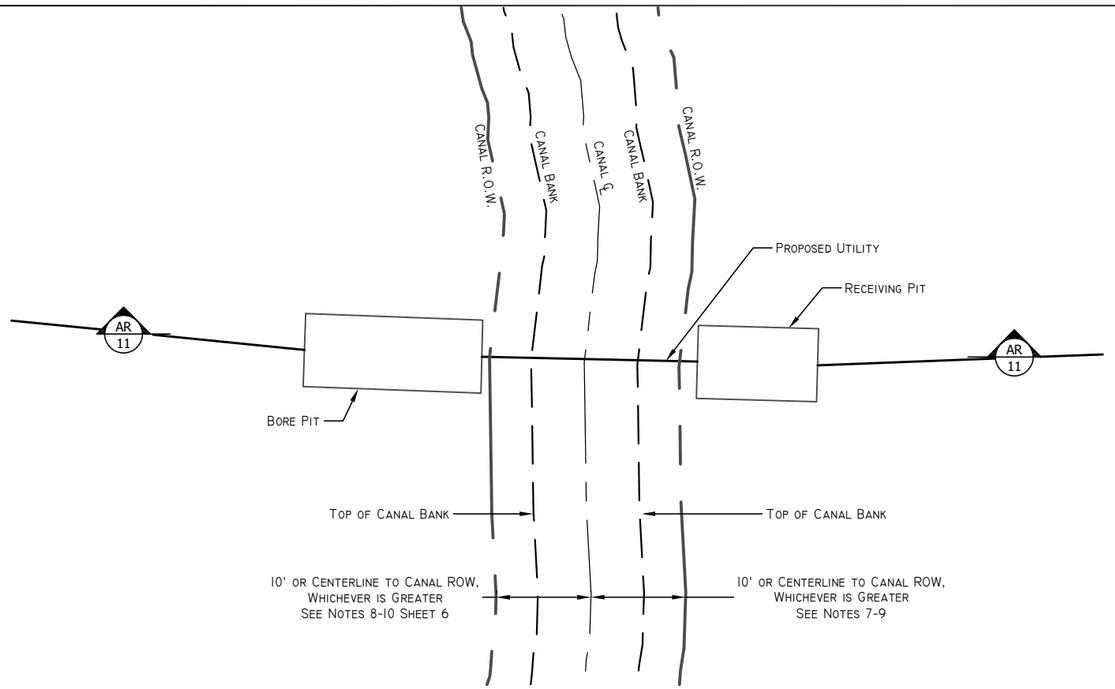
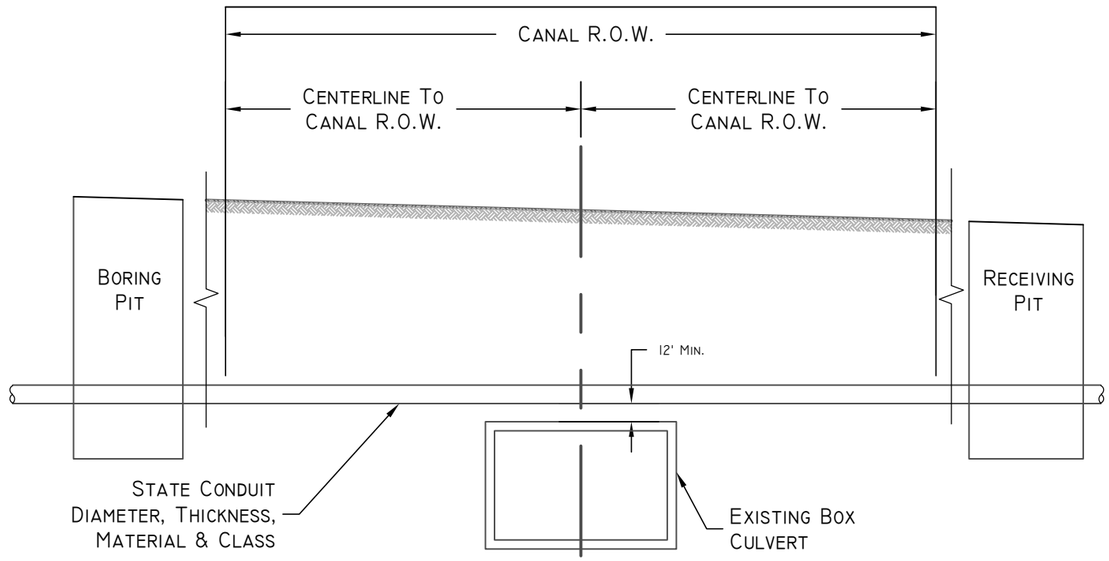
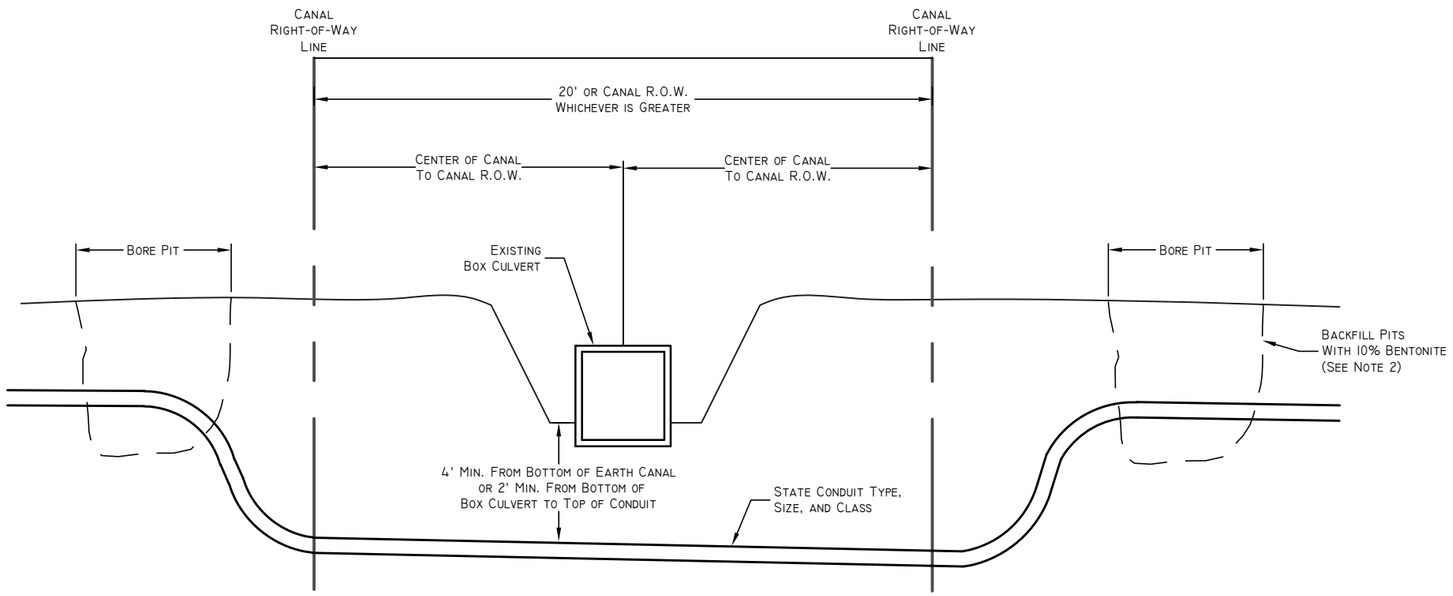
LAYOUT: Irrig. Turnout & Div. Box



AQ **DIRECTION DRILL OR MICROTRENCH**
NOT TO SCALE



AR **DIRECTIONAL DRILL OR MICROTRENCH ABOVE CANAL CROSS SECTION**
NOT TO SCALE



AR **DIRECTIONAL DRILL UNDER CANAL CROSS SECTION**
NOT TO SCALE

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 PLACED COMPLETELY OUTSIDE OF THE CANAL RIGHT-OF-WAY.
6. ABOVE CANAL CONDUIT/CABLES MUST BE A MINIMUM OF 1 FOOT ABOVE THE TOP OF CANAL
7. FOR SMALL DITCHES AND PIPE ≤ 36", THE CANAL ROW IS 20 FEET CENTERED OVER THE PIPE.
8. FOR DRY CREEK AND LARGE CANALS, CANAL ROW EXTENDS 30 FEET FROM THE TOP OF BANKS, ON EITHER SIDE OF CANAL.
9. FOR THE PACKARD DRAIN AND 4TH SOUTH DRAIN,M THE CANAL ROW EXTENDS 20FEET FROM THE TOP OF BANKS, ON EACH SIDE OF CANAL.

Springville Irrigation and Drainage Group
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REVISIONS
DESCRIPTION
ENGINEER
DRAWN BY
INITS.
DESIGNER:
DRAFTSMAN:
NO. DATE

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

DESIGN STANDARDS AND STANDARD DRAWINGS
DIRECTIONAL DRILLING AND MICROTENCHING DETAILS

JOB NO. CU 000114
11_SDs_Directional Drilling.dwg
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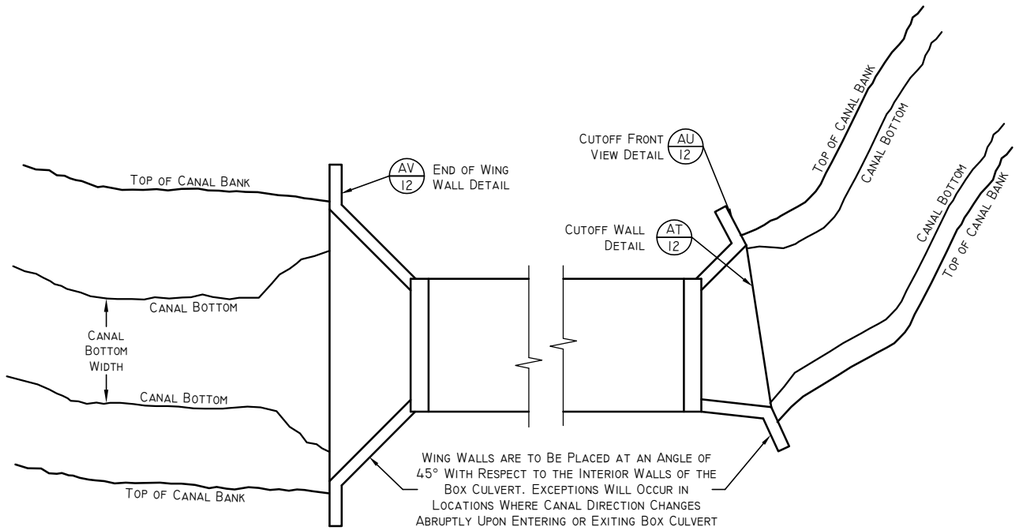
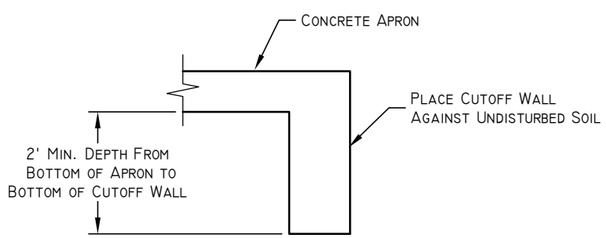
LAYOUT: Directional Drilling



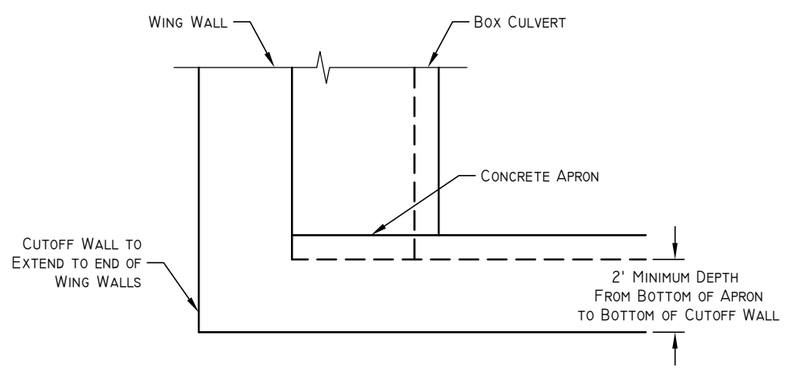
AS **Plan View of Box Culvert**
NTS

Notes:

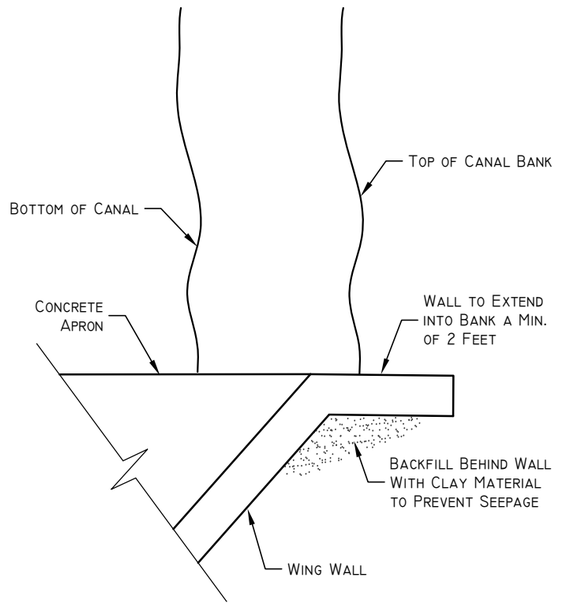
1. Box Culverts to Have a Minimum Height of 6 Feet.
2. Width of Box Culvert is to Match Existing Channel Bottom.
3. Riprap Shall be Appropriately Designed on Culvert Outlet.
4. All Backfill Materials to be Compacted to 95% Standard Proctor Density.
5. Cutoff Walls and Aprons Between Wing Walls are Required.
6. 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.
7. Drawings Submitted for Review are to Show Plan and Profile Views, Note Slope, Include Detail Indicating Rebar Size and Spacing, and State Traffic Loading.
8. Casings Must Have a Minimum of 2 Feet Between Top of Casing and Bottom of Box Culvert.
9. 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.



AT **Cutoff Wall Detail**
NTS



AU **Cutoff Front View Detail**
NTS



AV **End of Wing Wall Detail**
NTS

Springville Irrigation and Drainage Group
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NO.	DATE	INITS.	REVISIONS DESCRIPTION

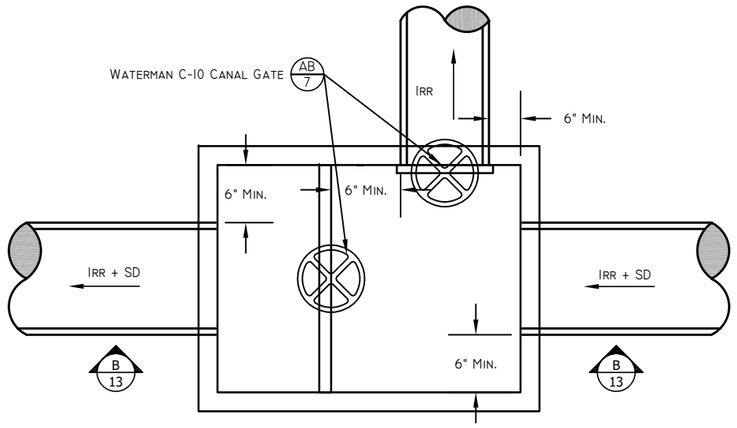
DESIGNER: | ENGINEER | CHECKED: | PROJECT LEADER
DRAFTSMAN: | DRAWN BY | REVIEWED: | PROJECT LEADER: | PRINT DATE: March 27, 2025

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

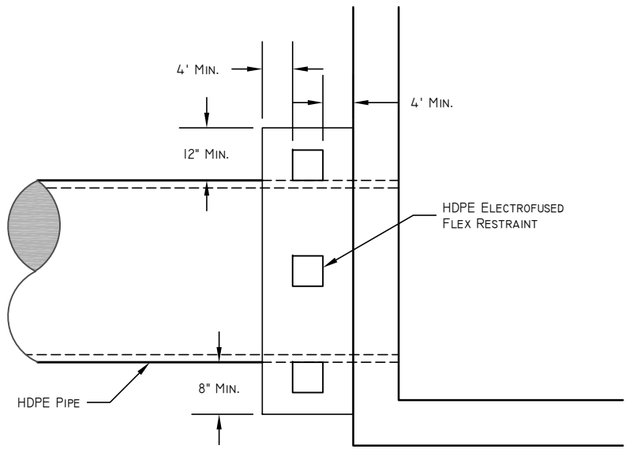
Design Standards and Standard Drawings
Box Culvert Details

JOB NO. CU 000114

12-SDs Box Culvert Details.dwg
O:\2000S SPRINGVILLE IC Reviews 2020\Drawings\Standard Drawings
LAYOUT: Details



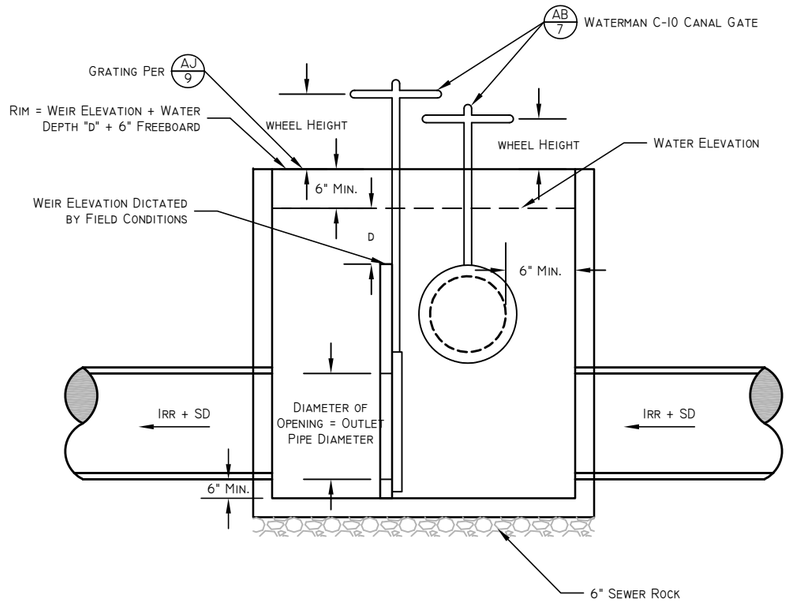
A — OVERFLOW BOX PLAN FOR IRRIGATION LINES CARRYING STORMWATER
NTS



3 — THRUST RESRAINT
NTS

PIPE DIA. (IN.)	# OF RESTRAINTS
≤ 24	3
≤ 36	4
≤ 42	5
>42	1 RESTRAINT FOR EVERY 20 INCHES OF PIPE CIRCUMFERENCE

* THRUST RESTRAINTS SHOULD BE SPACED EQUIDISTANT AROUND THE PIPE PERIMETER.



B — OVERFLOW BOX SECTION FOR IRRIGATION LINES CARRYING STORMWATER
NTS

NOTES:
1. CONFIGURATION AND ORIENTATION OF OVERLFOW BOX IS SUBJECT TO THE INSTRUCTION AND DIRECTION OF THE IRRIGATION COMPANY.
2. WEIR OPENING TO BE IN LINE WITH OUTLET PIPE.

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PROJECT LEADER: March 27, 2025
PROJECT LEADER:
PRINT DATE:

NO.	DATE	DESCRIPTION
		INITS.

DESIGNER: KYLE DEVANEY
DRAFTSMAN: MATT GURR
CHECKED:
REVIEWED:
REVISIONS

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP

DESIGN STANDARDS AND STANDARD DRAWINGS
OVERFLOW BOX AND THRUST RESTRAINTS

JOB NO. CU 000114
13_Overflow Box and Thrust Restraints.dwg
O:\20005 SPRINGVILLE IC Reviews 2020\Drawing\Standard Drawings
LAYOUT: Details

SHEET
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