

Springville Irrigation and Drainage Group

Design Standards and Standard Drawings

Sheet Index

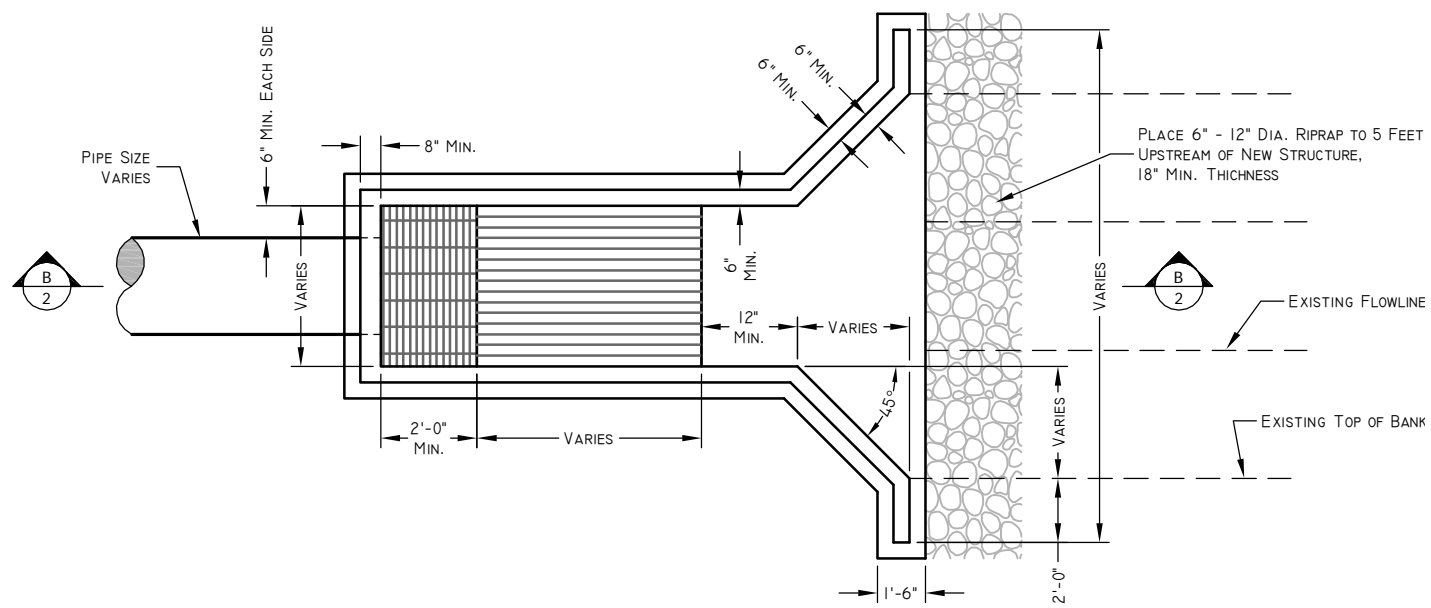
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STANDARD DRAWINGS DISCLAIMER:

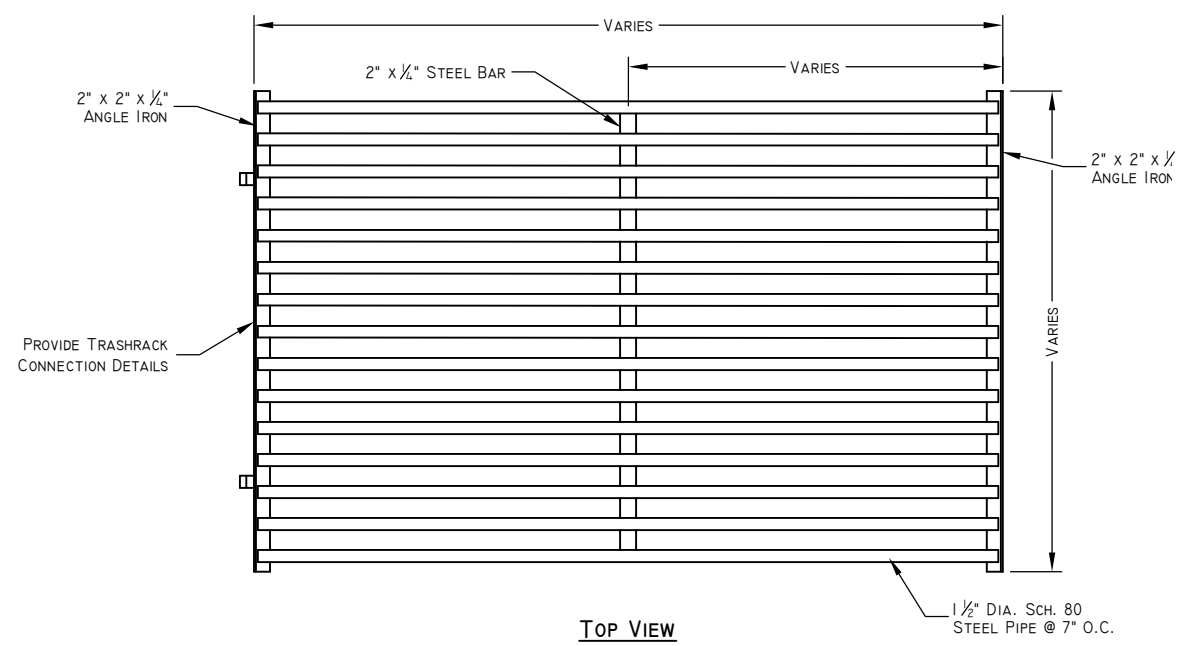
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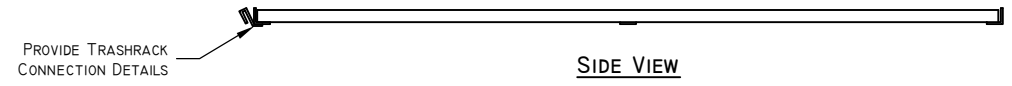
SPRINGVILLE IRRIGATION AND DRAINAGE GROUP DESIGN STANDARDS AND STANDARD DRAWINGS COVER SHEET <small>01_SDs_Cover Sheet.dwg W:\Franson\Projects\UT\Canna\Springville Reviews\Drawings\Standard Drawings</small>		PROJECT LEADER: JUL 19, 2016		Springville Irrigation and Drainage Group P.O. Box 745 Springville, UT 84663 T 801.401.7000 F 801.401.7000
		PROJECT LEADER: PRINT DATE:	CHECKED: REVIEWED:	
DESIGNER: DRAFTER:	ENGINEER: DRAWN BY:	NO. DATE	INTS.	DISCUSSION
SHEET 1 OF 10				



A INLET STRUCTURE PLAN
NOT TO SCALE

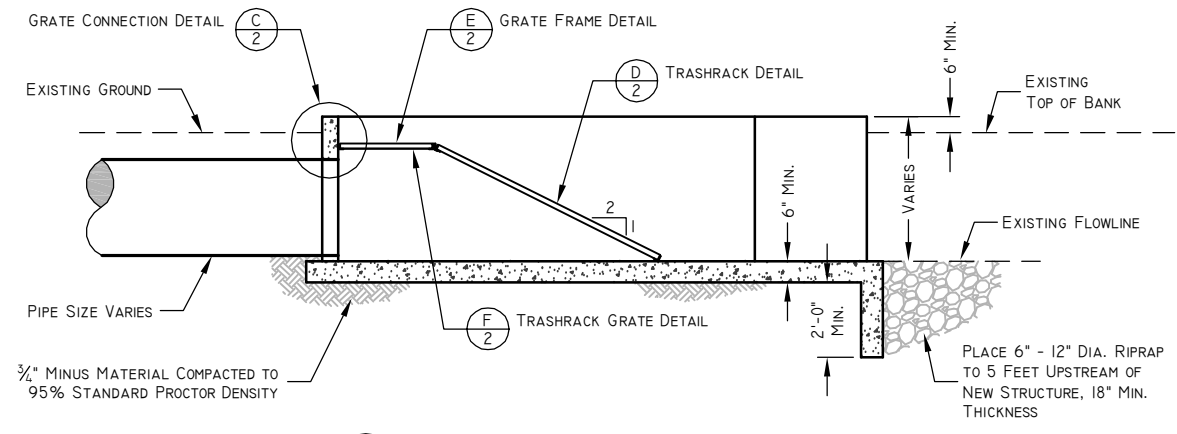


D TRASHRACK DETAIL
NOT TO SCALE



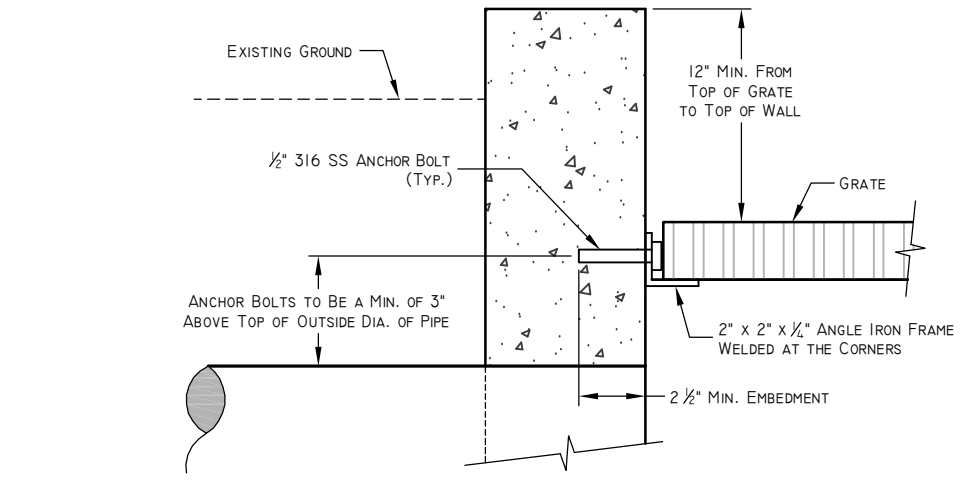
TOP VIEW

SIDE VIEW

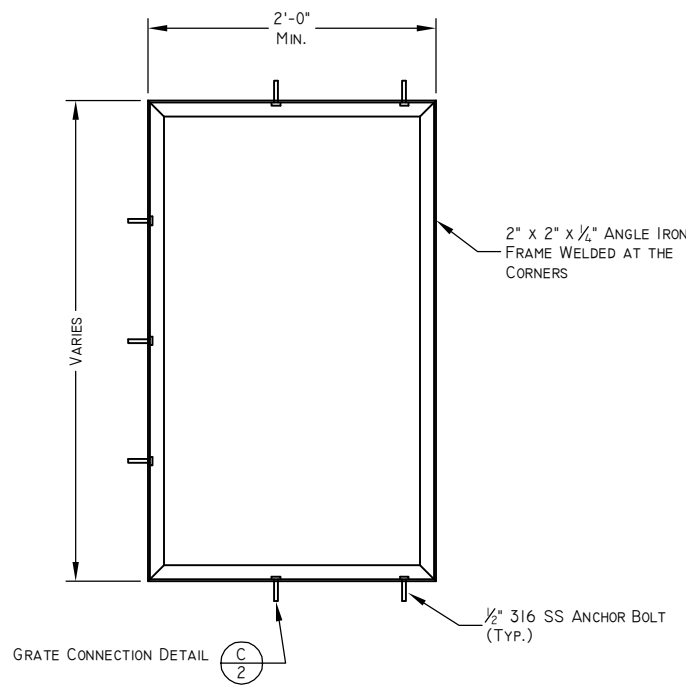


B INLET STRUCTURE PROFILE
NOT TO SCALE

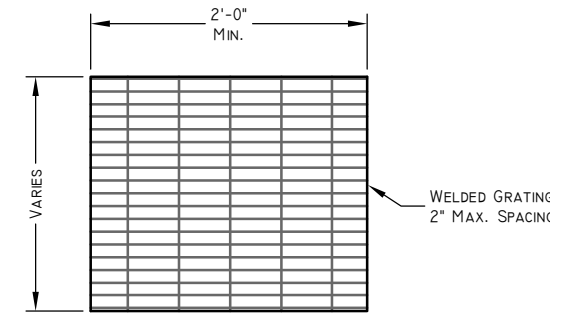
- NOTES:**
1. IF BOX IS CAST-IN-PLACE, A MINIMUM OF #4 REBAR TO BE PLACED AT 12-INCHES ON CENTER EACH WAY.
 2. ALL PIPES GOING INTO BOX SHALL BE GROUTED AND WATERTIGHT.
 3. ENTIRE TRASHRACK TO BE HOT DIPPED GALVANIZED.
 4. ALL CONCRETE USED IN CONSTRUCTION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF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



C GRATE CONNECTION DETAIL
NOT TO SCALE

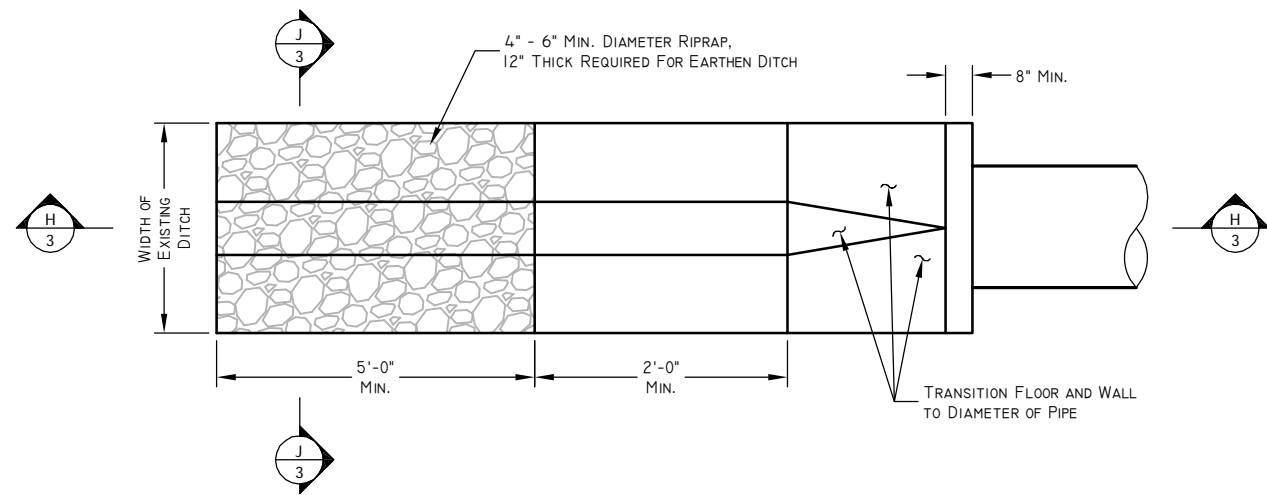


E GRATE FRAME DETAIL
NOT TO SCALE

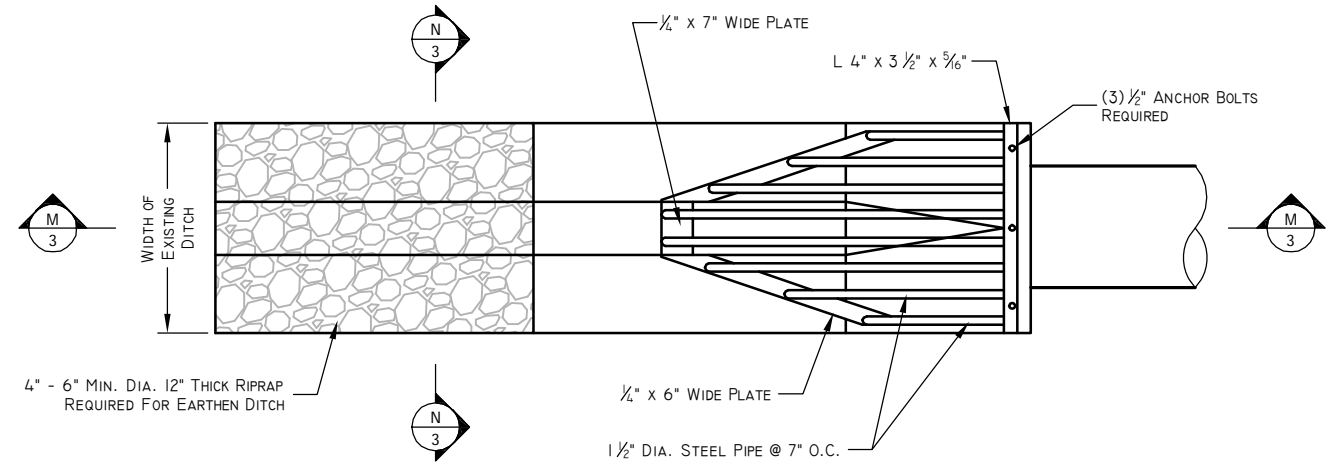


F TRASHRACK GRATE DETAIL
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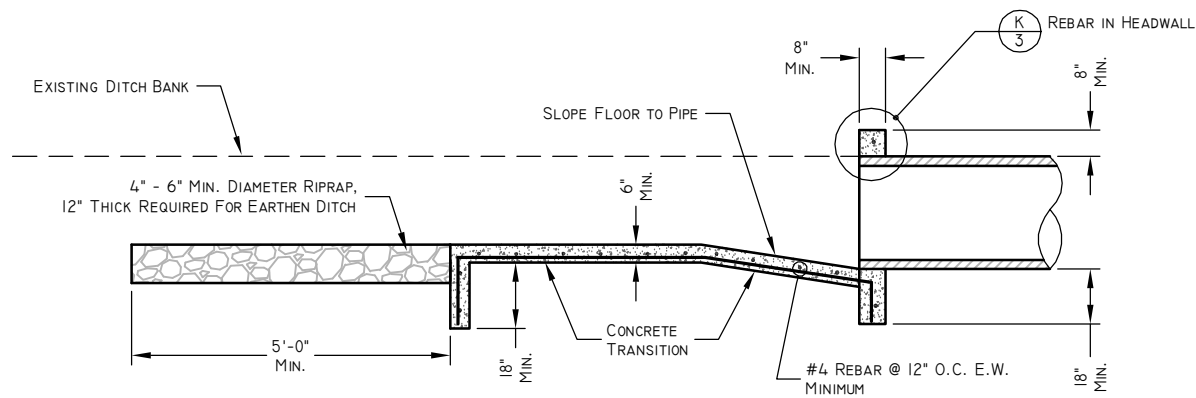
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DESIGNER:	DRAWINGMAN:	
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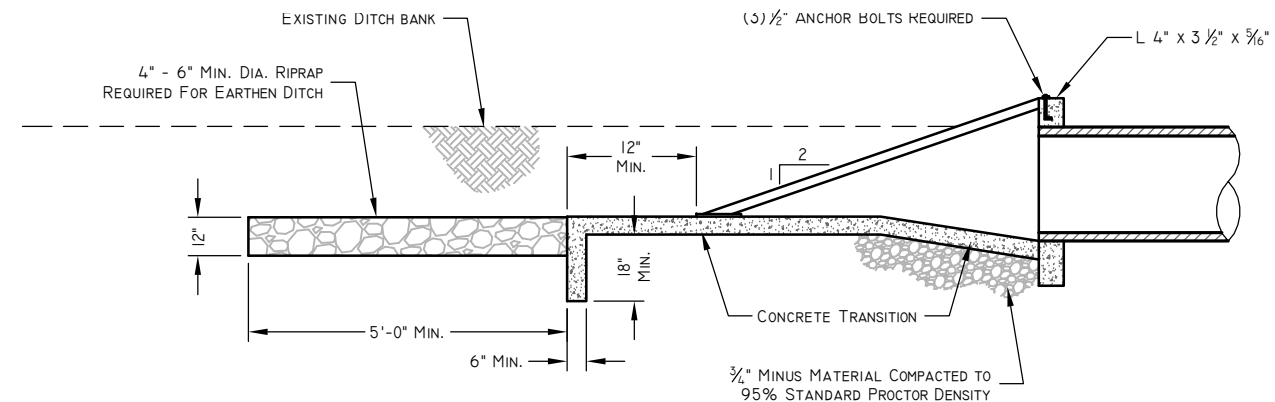
G DITCH PIPE CONNECTION PLAN
NOT TO SCALE



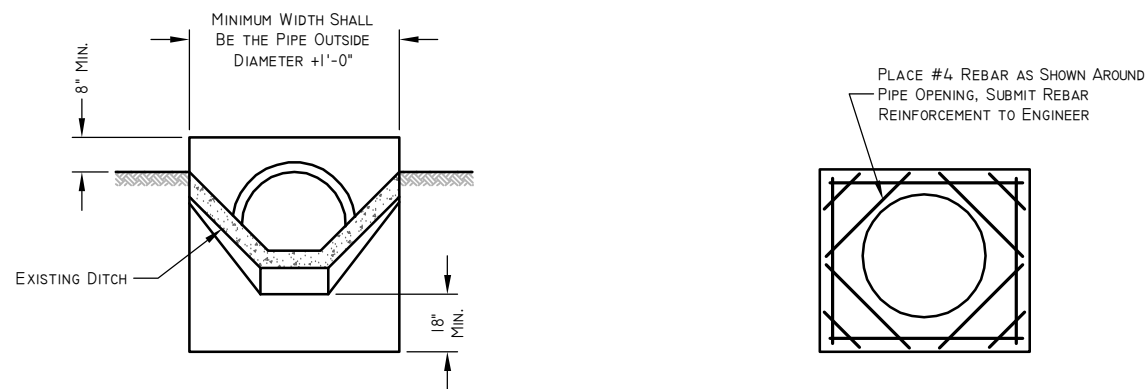
L TRASHRACK PLAN
NOT TO SCALE



H DITCH PIPE CONNECTION SECTION
NOT TO SCALE



M TRASHRACK SECTION
NOT TO SCALE

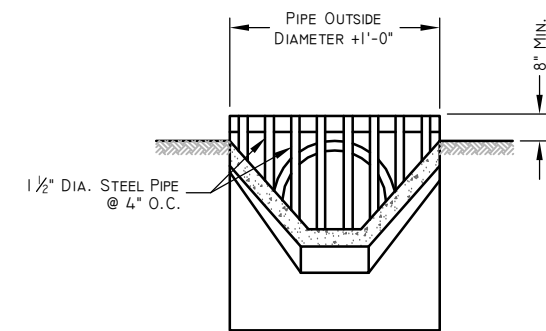


J DITCH PIPE CONNECTION SECTION
NOT TO SCALE

K REBAR IN HEADWALL
NOT TO SCALE

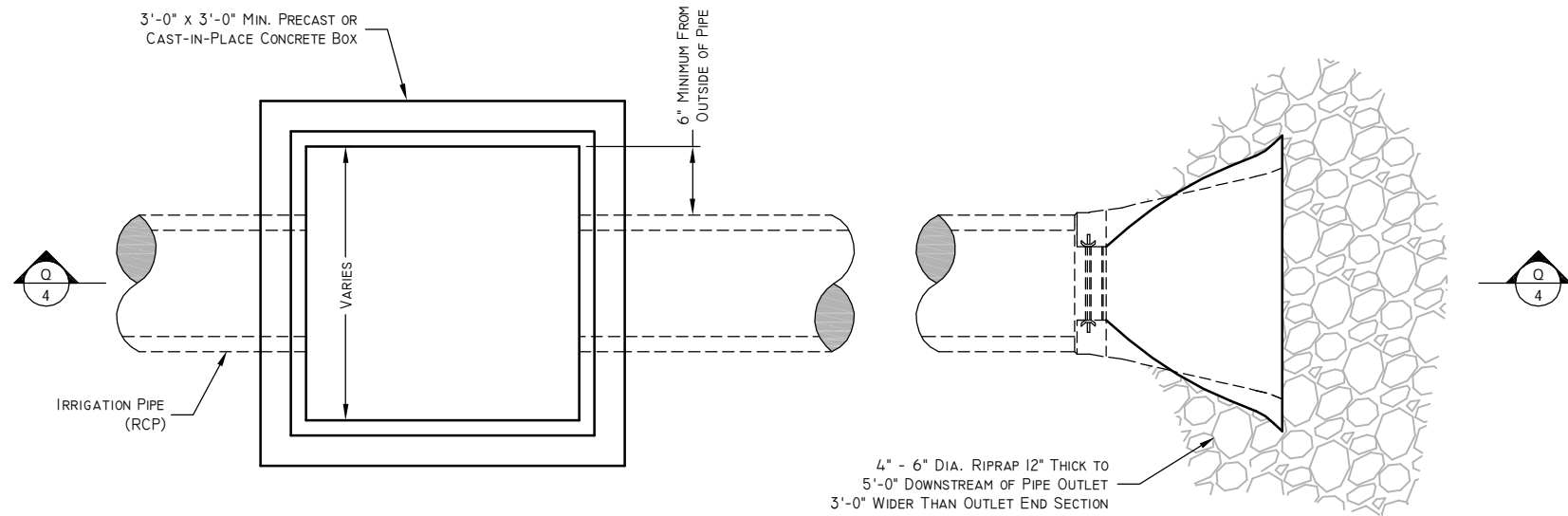
NOTES:

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.

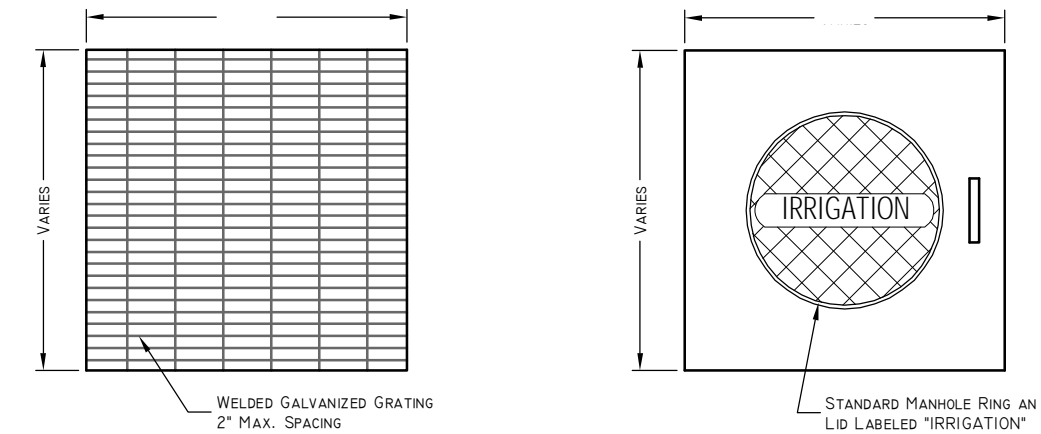


N TRASHRACK FRONT SECTION
NOT TO SCALE

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					DATE
					INTS.
					DISCUSSION



P PIPE OUTLET PLAN
NOT TO SCALE

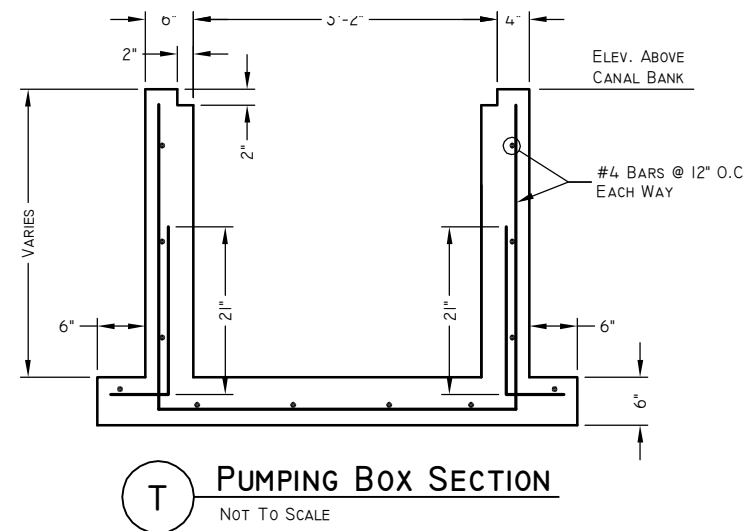


R OUTLET GRATE DETAIL
NOT TO SCALE

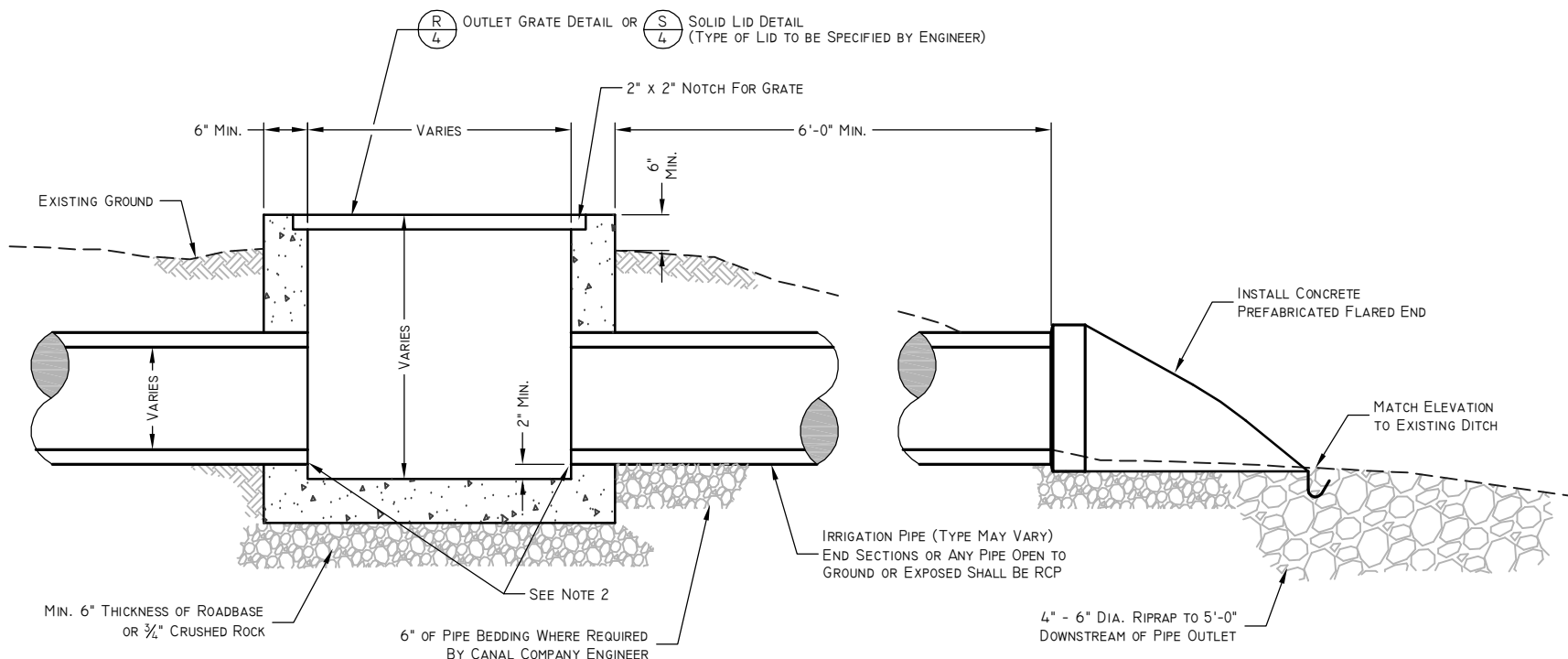
S SOLID LID DETAIL
NOT TO SCALE

NOTES:

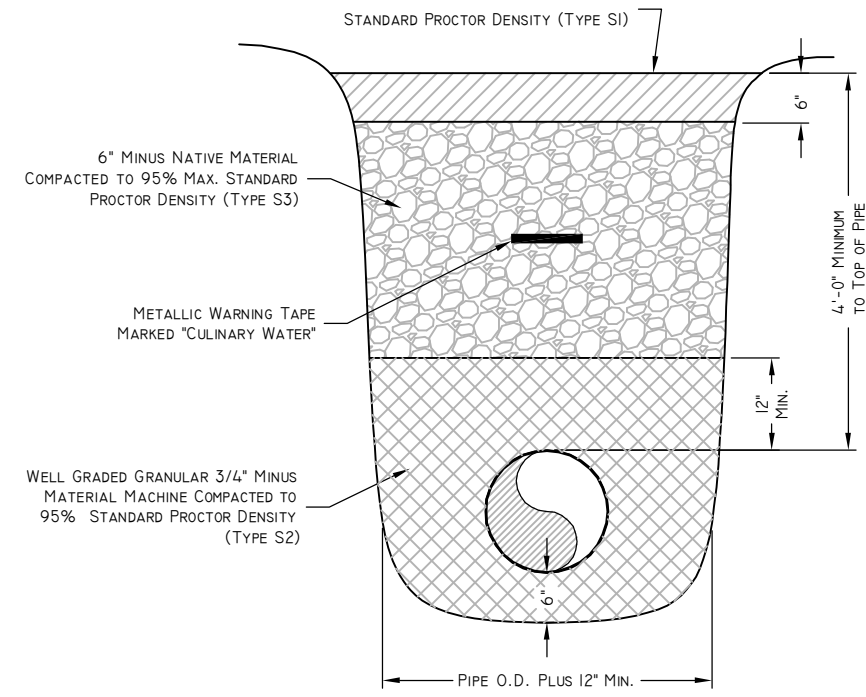
1. DETAILS FOR CAST-IN-PLACE BOX, SEE (T) 4
2. ALL PIPES GOING INTO BOX SHALL BE GROUTED AND WATERTIGHT.
3. SUBMIT TO ENGINEER FINAL DIMENSIONS OF REBAR REINFORCEMENT AND CONCRETE COMPONENTS.
4. ALL CONCRETE USED IN CONSTRUCTION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
5. THE CONCRETE MIX SHALL INCLUDE BETWEEN 5% AND 7% AIR ENTRAINMENT.
6. KNOCKOUT BOXES ARE NOT ALLOWED.



T PUMPING BOX SECTION
NOT TO SCALE



Q PIPE OUTLET PROFILE
NOT TO SCALE



U TYPICAL TRENCH DETAIL
NOT TO SCALE

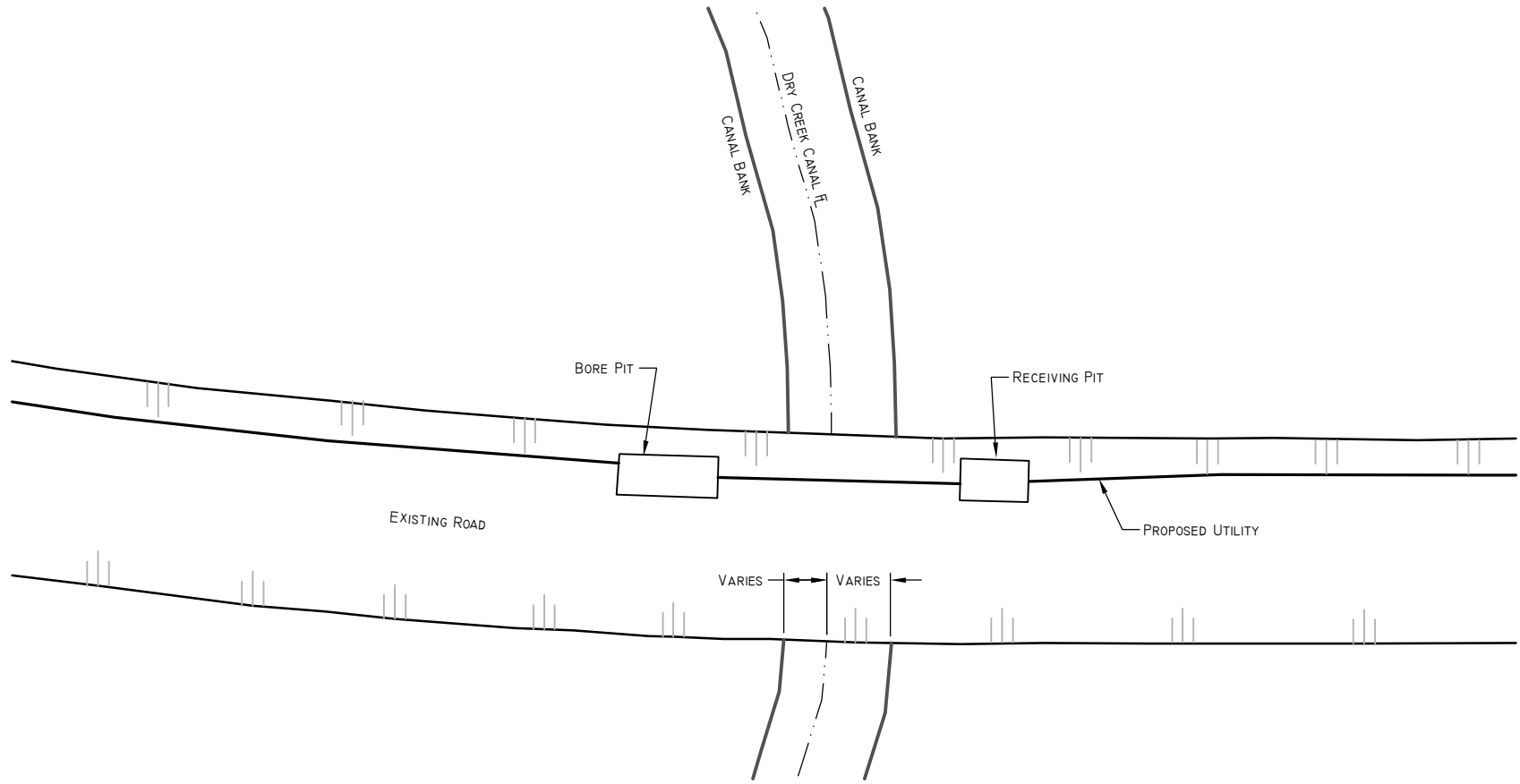
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NO.	DATE:	REVISIONS:	DATE:
		DISCUSSION:	

SPRINGVILLE IRRIGATION AND DRAINAGE GROUP
DESIGN STANDARDS AND STANDARD DRAWINGS
PIPE OUTLET TRANSITION AND STRUCTURE

04_SDs_Pipe Outlet Transition.dwg
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JOB NO.

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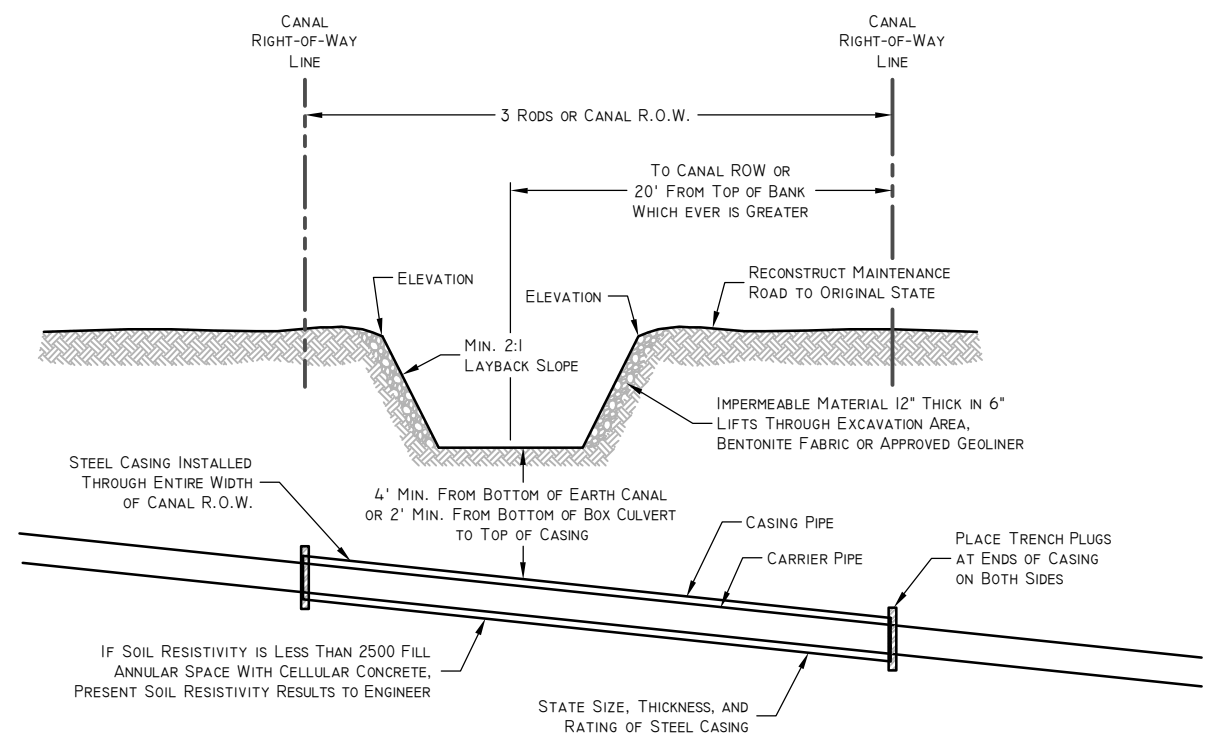


V CANAL BORING PLAN
NOT TO SCALE

- 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 INCHES BELOW THE INVERT OF THE EXISTING CANAL BOX CULVERT OR 4 INCHES BELOW EARTHEN OR CANAL BOTTOM.
 7. BORE PITS MUST BE COMPLETELY PLACED OUTSIDE OF THE CANAL RIGHT-OF-WAY.

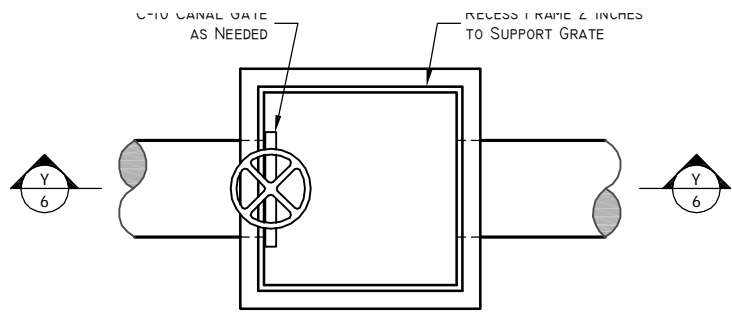
**TABLE I
CASING DIAMETER**

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

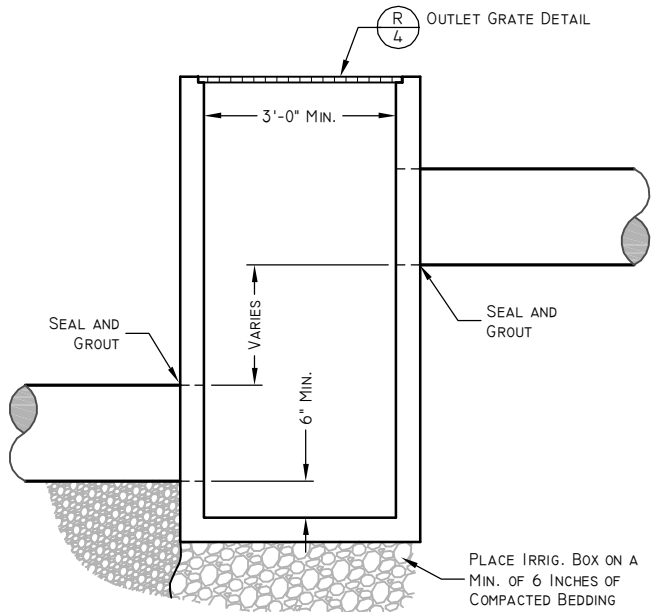


W CANAL BORING SECTION
NOT TO SCALE

DISCUSSION	NO.	DATE	INITS.



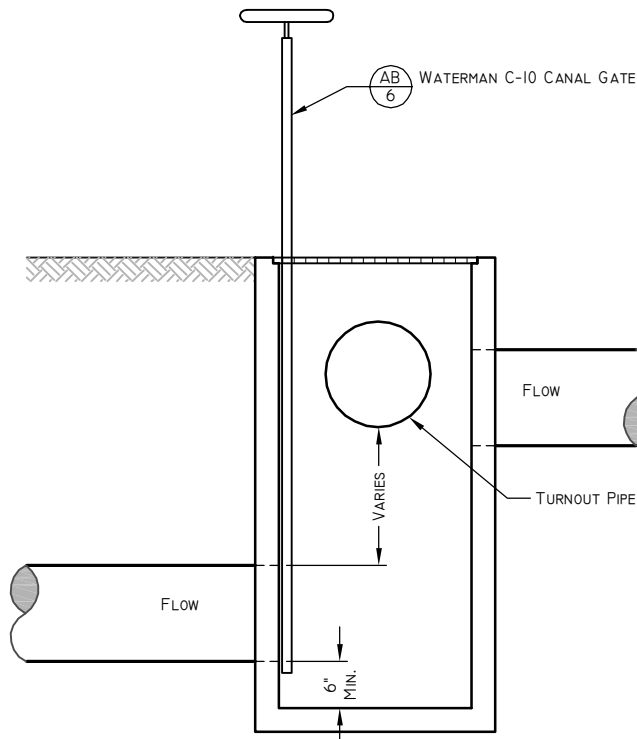
X IRRIGATION BOX PLAN
NOT TO SCALE



Y IRRIGATION BOX SECTION
NOT TO SCALE

TABLE I

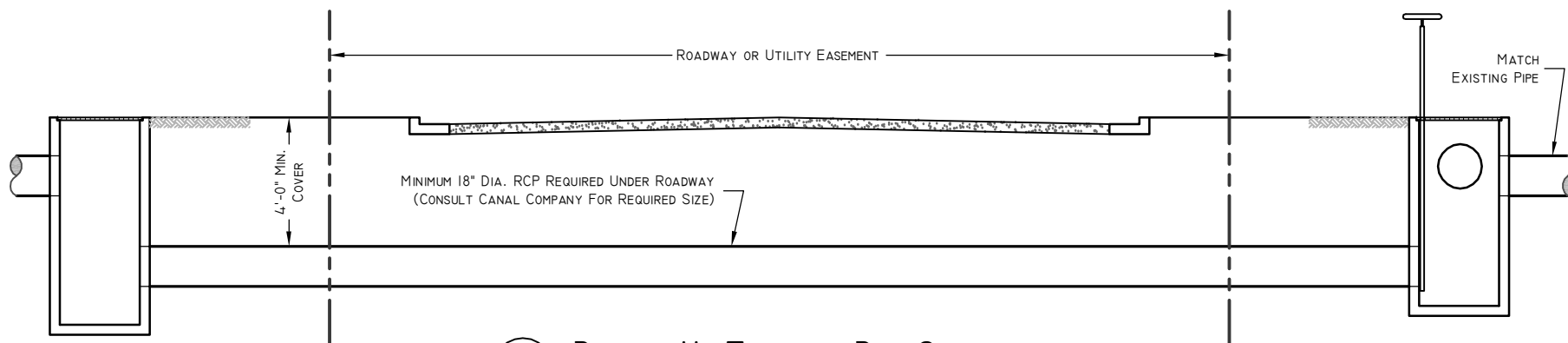
MINIMUM PIPE SLOPES		
PIPE DRAIN SIZE	MIN. SLOPE, FT/FT	MIN. SLOPE, %
12"	0.002	.2%
15"	0.0015	.15%
18"	0.0012	.12%
24"	0.0008	.08%
30"	0.00058	.058%



Z BUBBLE UP TURNOUT BOX SECTION
NOT TO SCALE

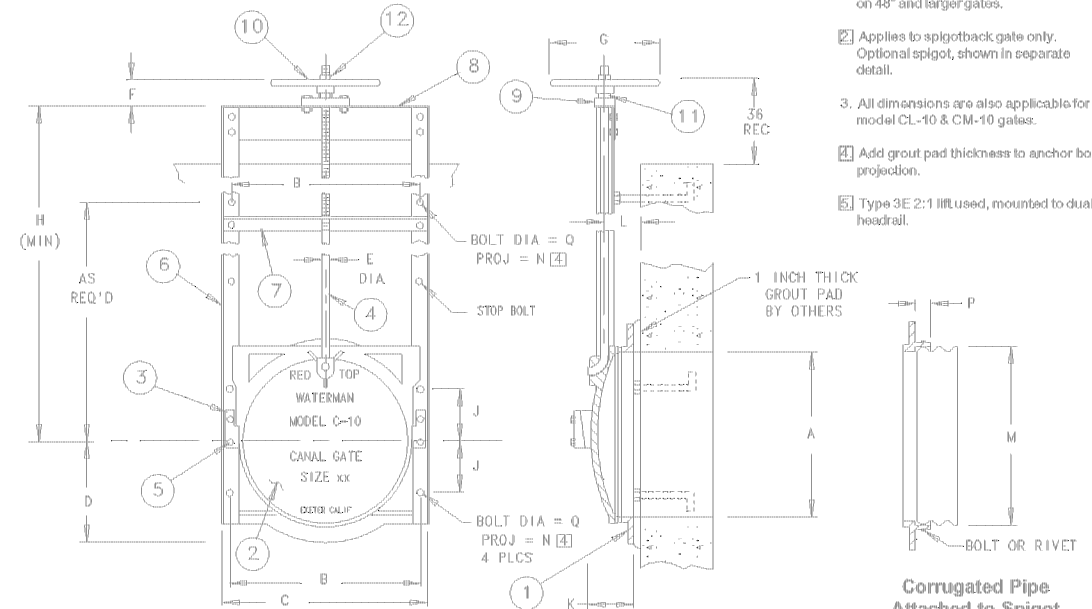
NOTES:

- IF BOX IS CAST-IN-PLACE, MINIMUM OF #4 REBAR TO BE PLACED @ 12 INCHES ON CENTER, EACH WAY.
- FOR DETAILS FOR CAST-IN-PLACE BOX SEE T/4
- ALL PIPES INTO BOX SHALL BE GROUTED AND WATERTIGHT.
- SUBMIT TO ENGINEER FINAL DIMENSIONS OF REBAR REINFORCEMENT AND CONCRETE COMPONENTS.
- FOR MINIMUM PIPE SLOPES FOR PIPE UNDER ROADWAY, SEE TABLE I ON SHEET 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.
- KNOCKOUT BOXES ARE NOT ALLOWED.
- IRRIGATION BOXES SHALL NOT BE PLACED IN ROADWAY.
- ALL PIPE PLACED IN ROADWAY MUST BE CLASS III RCP.
- ALL CONCRETE USED IN CONSTRUCTION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
- THE CONCRETE MIX SHALL INCLUDE BETWEEN 5% AND 7% AIR ENTRAINMENT.



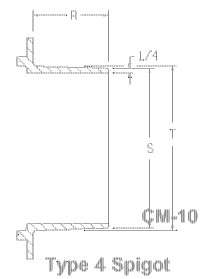
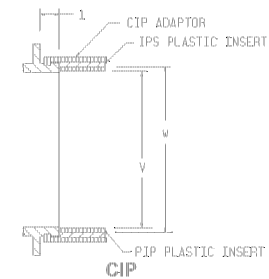
AA BUBBLE UP TURNOUT BOX SECTION
NOT TO SCALE

C-10 CANAL GATE



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

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



A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W
6	8	9%	4	3/4	2%	10	24	3	3 1/2	2%	7	3 1/2	2 1/4	1/2	-	-	-	6.160	6.645
8	10	12	4%	3/4	2%	10	24	3	3 3/4	2%	9	3 1/2	2 1/4	3/4	4	7 3/4	8	8.180	8.645
10	12	13%	6	3/4	2%	10	24	3 1/2	3 3/4	2%	11	3 1/2	2 1/4	3/4	3 3/4	9%	10	10.220	10.770
12	14	15 1/4	7	3/4	2%	10	24	4	3 1/2	3	18	4	2 1/4	1/2	4	11 1/4	12	12.270	12.780
14	16	17%	8	3/4	2%	10	27	4 1/4	3 3/4	3 1/4	15	4	2 1/4	3/4	-	-	-	-	-
15	17	18%	8%	3/4	2%	10	30	5	4 1/2	3 1/2	16	4	2 1/4	3/4	4	14%	15	-	-
16	18%	20%	9%	3/4	2%	10	32	5 1/2	4 1/4	3 1/2	17	4 1/4	2 1/4	3/4	-	-	-	-	-
18	21	22%	10%	1	3/4	12	34	6	4 1/2	4 1/4	19	4 1/4	2 1/4	3/4	4	17 3/4	18	-	-
20	23%	25%	11%	1	3/4	12	38	7	4 1/4	4	21	4 1/4	2 1/4	3/4	-	-	-	-	-
21	24	25 1/4	12%	1	3/4	12	40	7	4 1/4	4	22	4 1/4	2 1/4	3/4	-	-	-	-	-
24	27%	29%	13%	1	3/4	12	44	8	5 1/4	4 1/4	25	4 1/4	2 1/4	3/4	-	-	-	-	-
30	33%	36%	17%	1 1/4	4	15	54	10	6	4 1/4	31	6	2 1/4	3/4	-	-	-	-	-
36	39%	42%	20%	1 1/4	4	15	62	12	6 1/4	5 1/4	37	6	2 1/4	3/4	-	-	-	-	-
42	45%	48%	23%	1 1/4	5	18	84	14	7	6	43	6	2 1/4	3/4	-	-	-	-	-
48	51%	54%	26%	1 1/4	6	24	110	16	7 1/4	6 1/4	49	6	2 1/4	3/4	-	-	-	-	-
54	56%	61%	30	2	6	30	140	18	7 3/4	6 3/4	55 1/4	7	3	1	-	-	-	-	-
60	65	68	34	2	6	30	160	20	8 1/4	7 1/4	61 1/4	8	3 1/4	1	-	-	-	-	-
72	77%	80%	41	2	10	5	210	25 1/4	10%	8 3/4	73 1/4	8	3 3/4	1	-	-	-	-	-

GATE DIMENSIONS IN INCHES

AB WATERMAN C-10 CANAL GATE
NOT TO SCALE

Springville Irrigation and Drainage Group

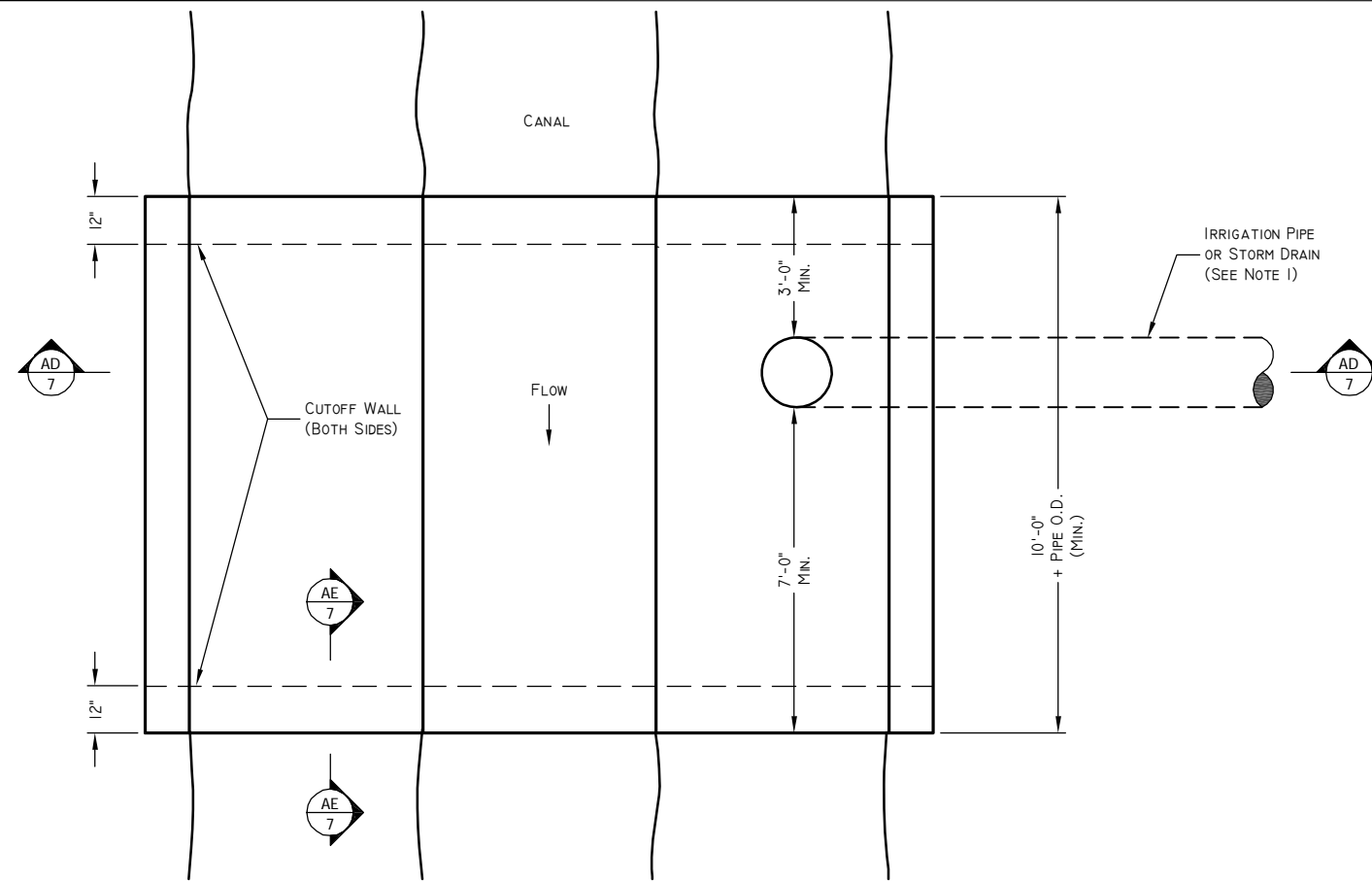
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PROJECT LEADER	PROJECT DATE	CHECKED	REVIEWED	REVISIONS	DISCUSSION

DESIGN STANDARDS AND STANDARD DRAWINGS
IRRIGATION BUBBLE UP BOX

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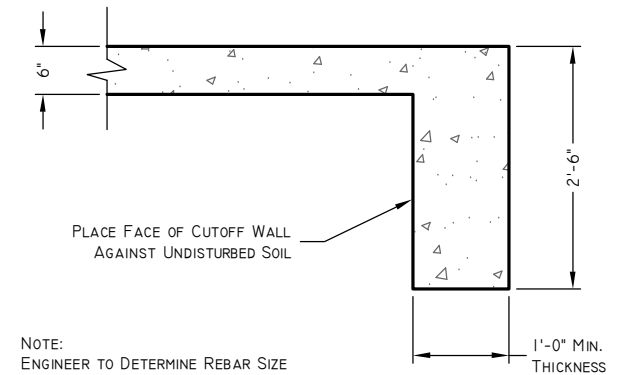
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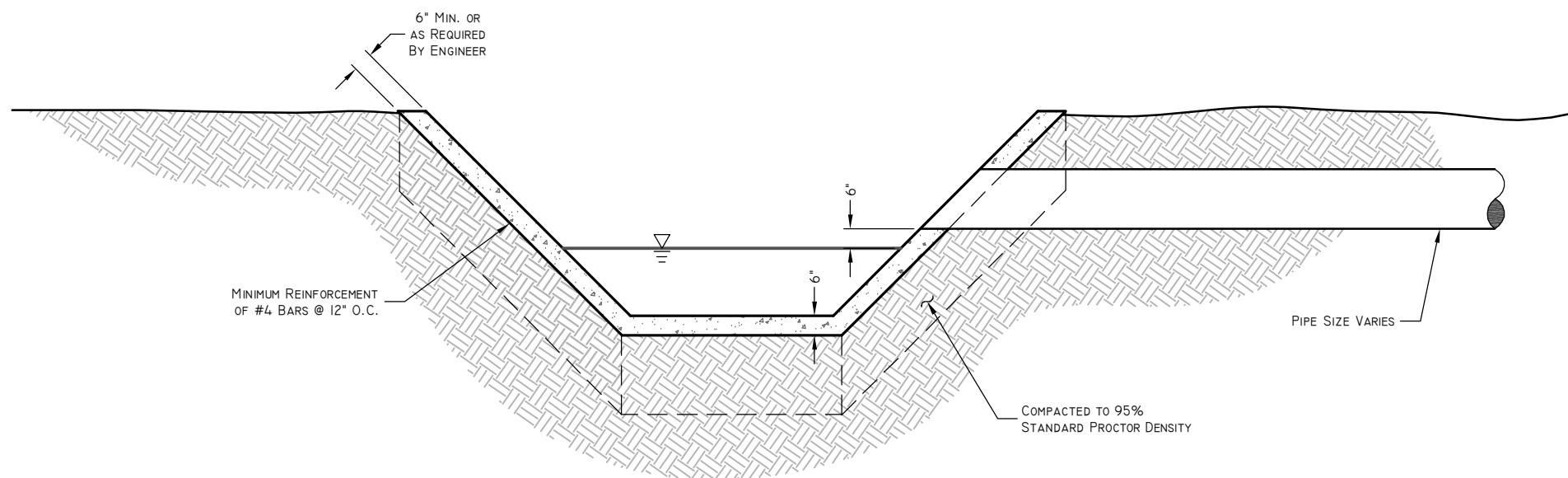
AC PIPE INLET PLAN
NOT TO SCALE

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.
6. PIPE TO BE CUT FLUSH WITH CONCRETE.



AE CUTOFF WALL DETAIL
NOT TO SCALE

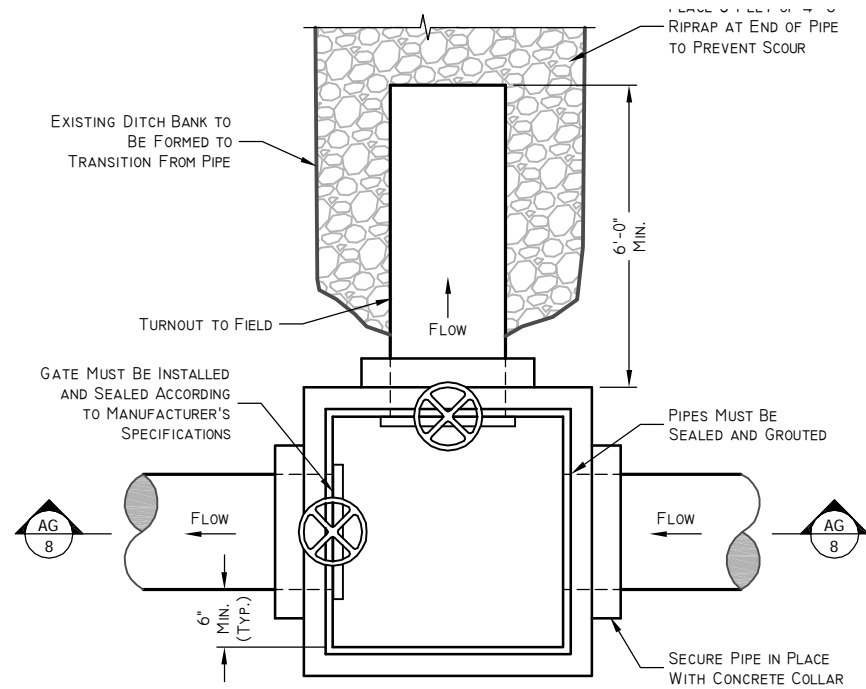


AD PIPE INLET SECTION
NOT TO SCALE

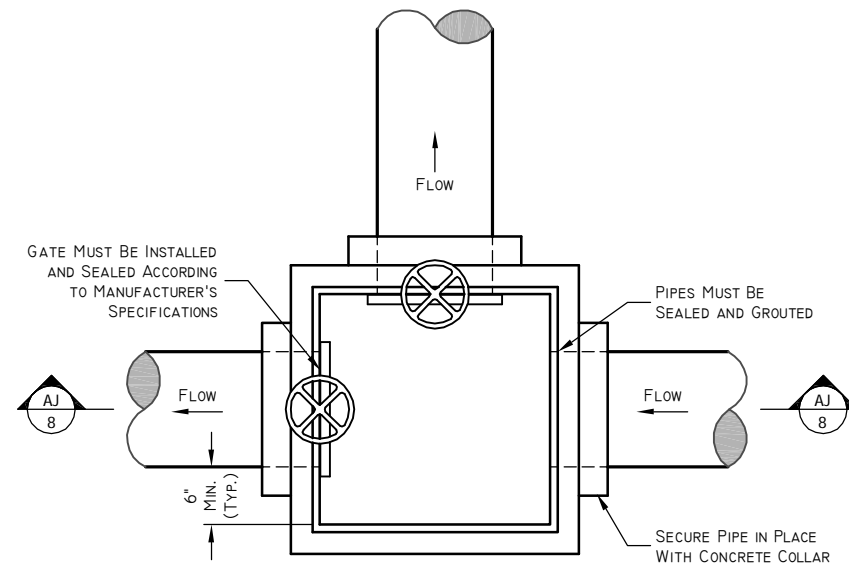
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Drainage Group
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DRAFTSMAN:	DRAWN BY:	REVIEWED:	PRINT DATE:
NO.	DATE:	REVISIONS:	DISCUSSION:

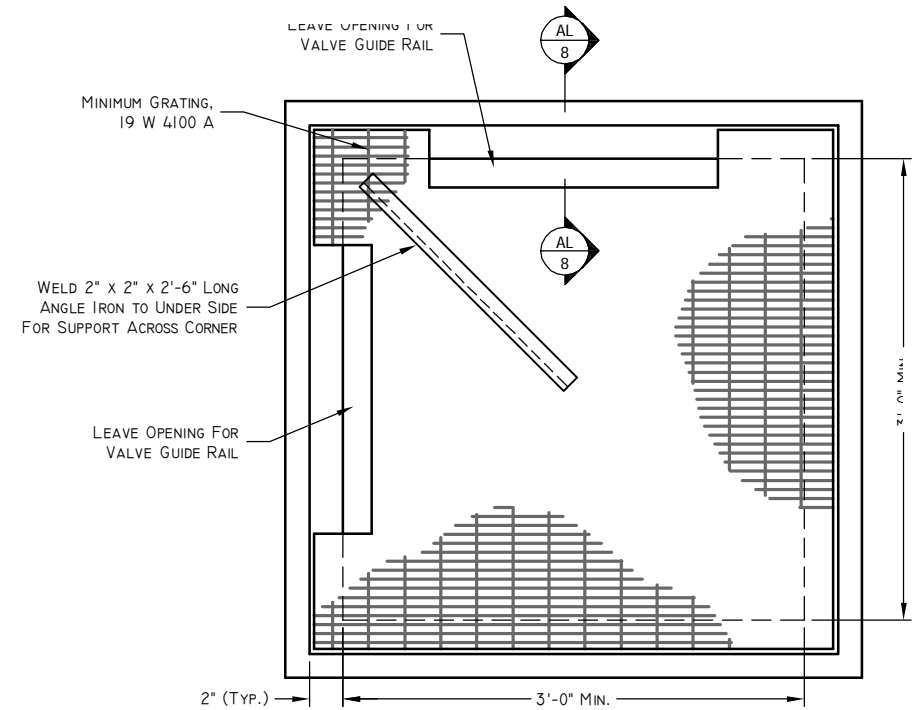
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DESIGN STANDARDS AND STANDARD DRAWINGS
PIPE INLET DETAILS
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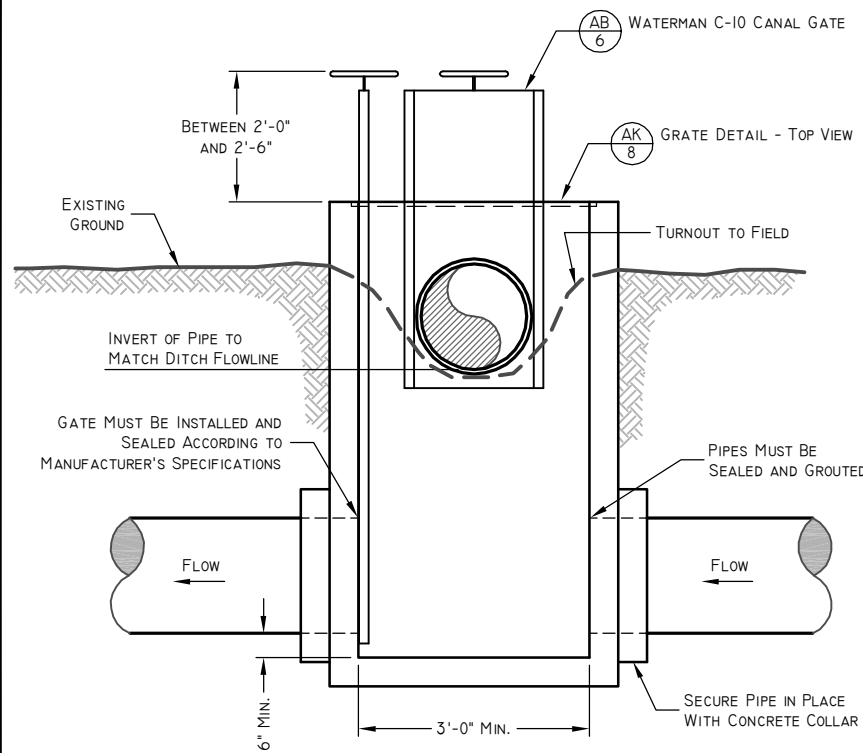
AF TURNOUT BOX PLAN
NOT TO SCALE



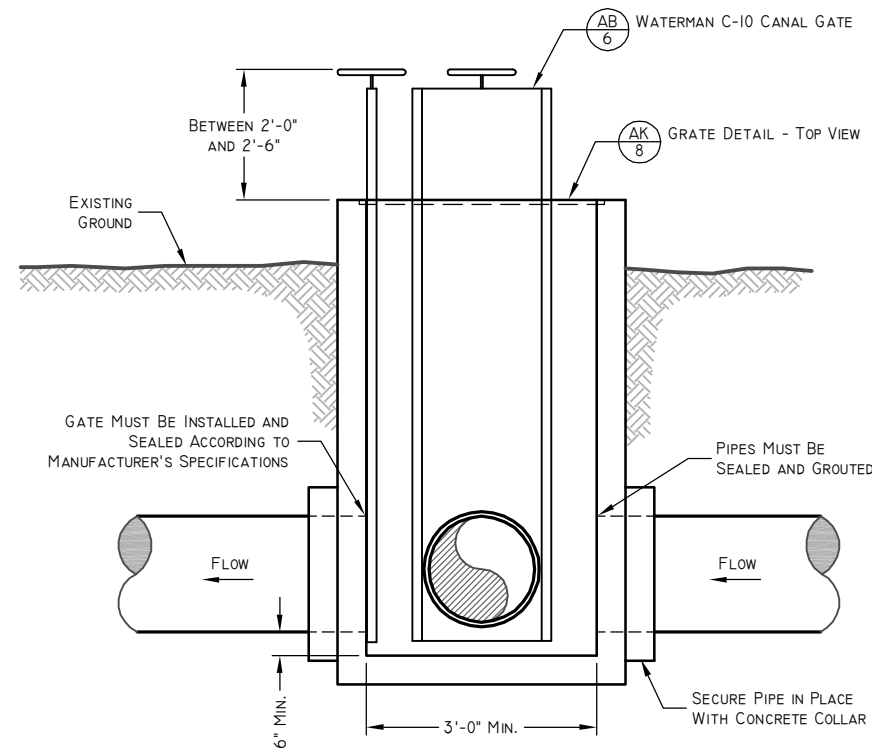
AH DIVERSION BOX PLAN
NOT TO SCALE



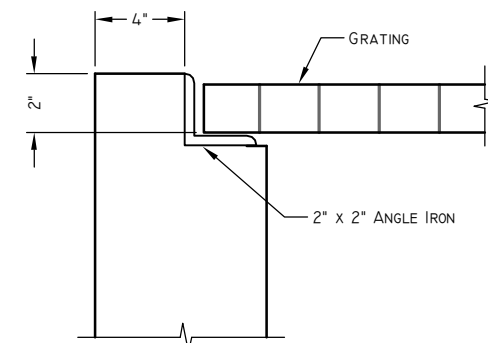
AK GRATE DETAIL - TOP VIEW
NOT TO SCALE



AG TURNOUT BOX SECTION
NOT TO SCALE



AJ DIVERSION BOX SECTION
NOT TO SCALE

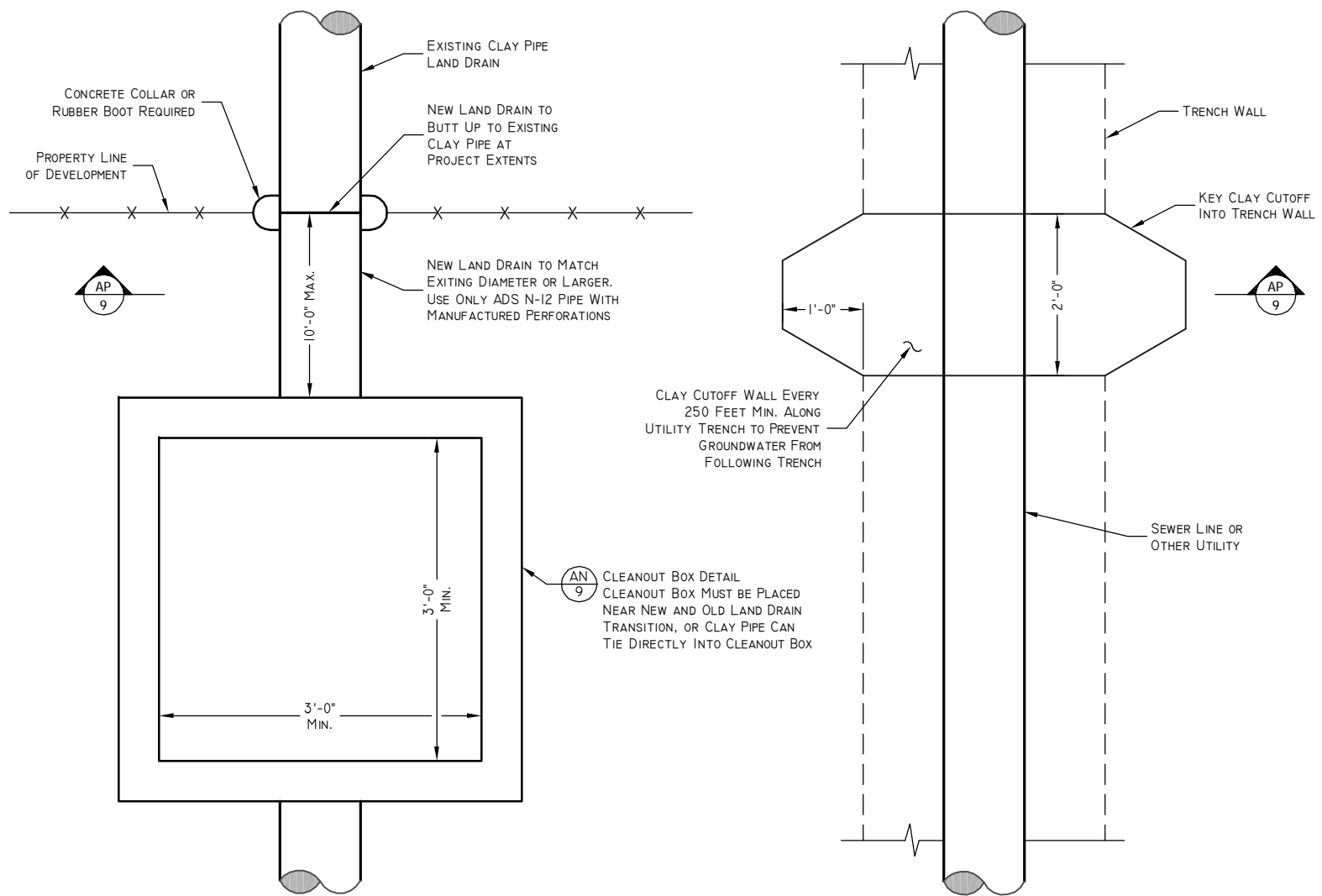


AL WALL SECTION
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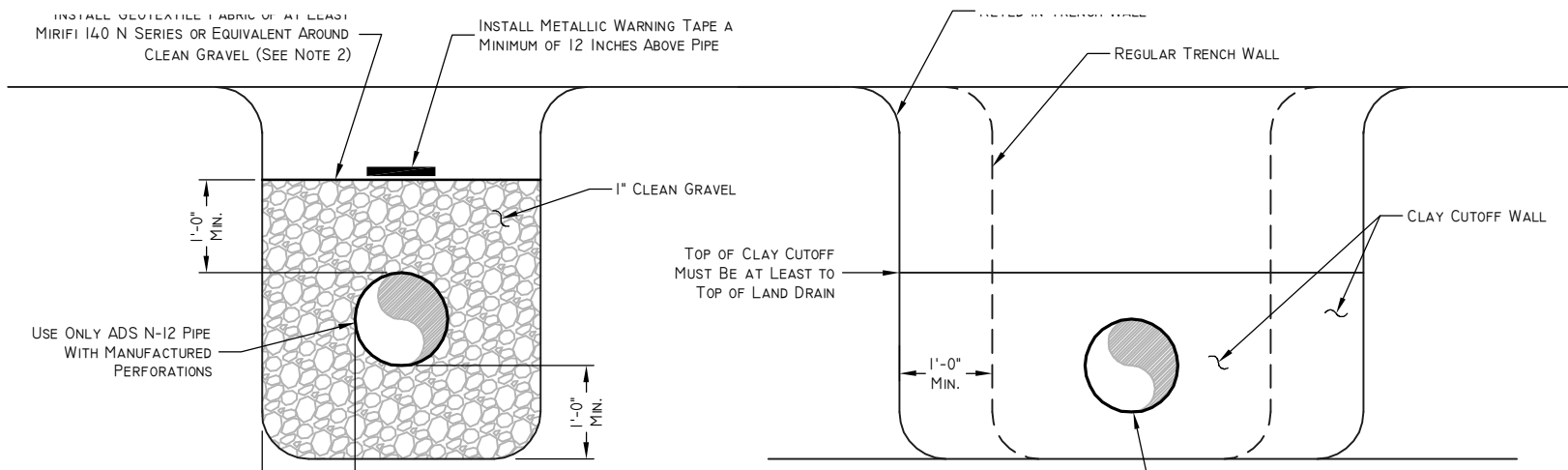
NOTES:

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.

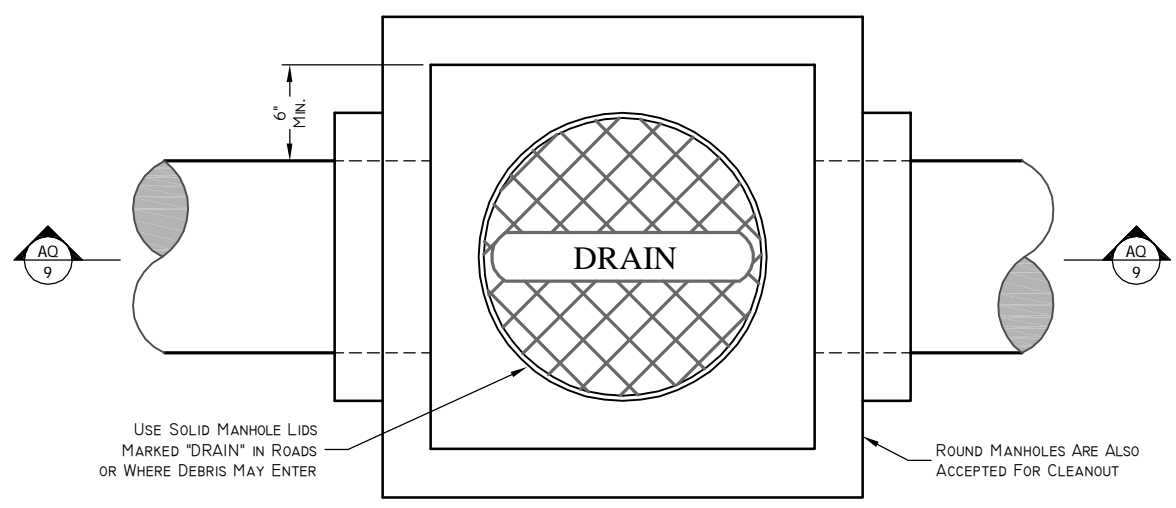
PROJECT LEADER	PROJECT DATE	DISCUSSION
JUL 19, 2016		
CHECKED	REVIEWED	REVISIONS
ENGINEER	DRAWN BY	INTS.
DESIGNER	DRAFTSMAN	NO.
DATE		



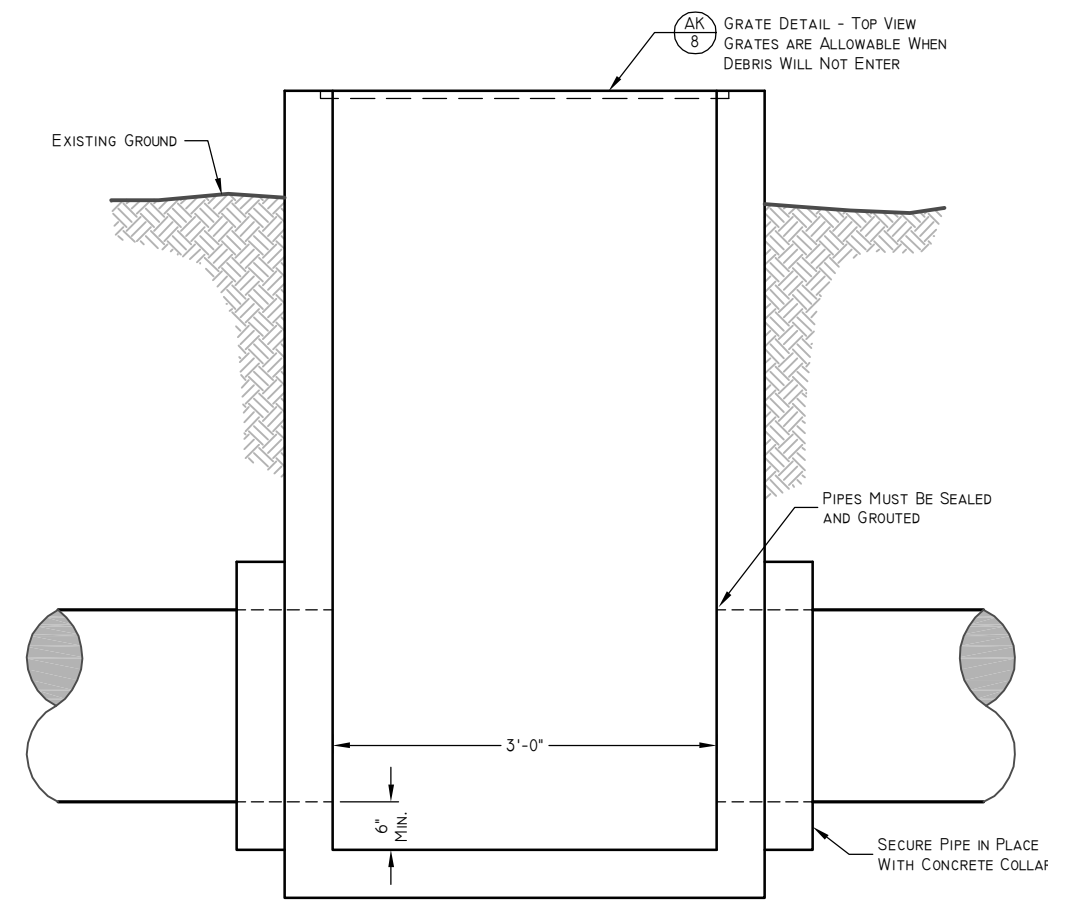
AM LAND DRAIN DETAIL
NOT TO SCALE



AP LAND DRAIN SECTION
NOT TO SCALE



AN CLEANOUT BOX DETAIL
NOT TO SCALE



AQ CLEANOUT BOX SECTION
NOT TO SCALE

- NOTES:**
1. LAND DRAINS TO BE 8 INCHES MINIMUM OR DIAMETER TO MATCH EXISTING DRAIN.
 2. IN AREAS WITH CLAY SOILS, SIDG TO PERFORM A TEST WITH GEOTEXTILE FABRIC TO DETERMINE IF IT CAN BE LEFT OFF OF BOTTOM AND SIDES OF GRAVEL ENVELOPE.
 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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PROJECT LEADER	PRINT DATE	CHECKED	REVIEWED	ENGINEER	DRAWN BY	NO.	DATE	DISCUSSION

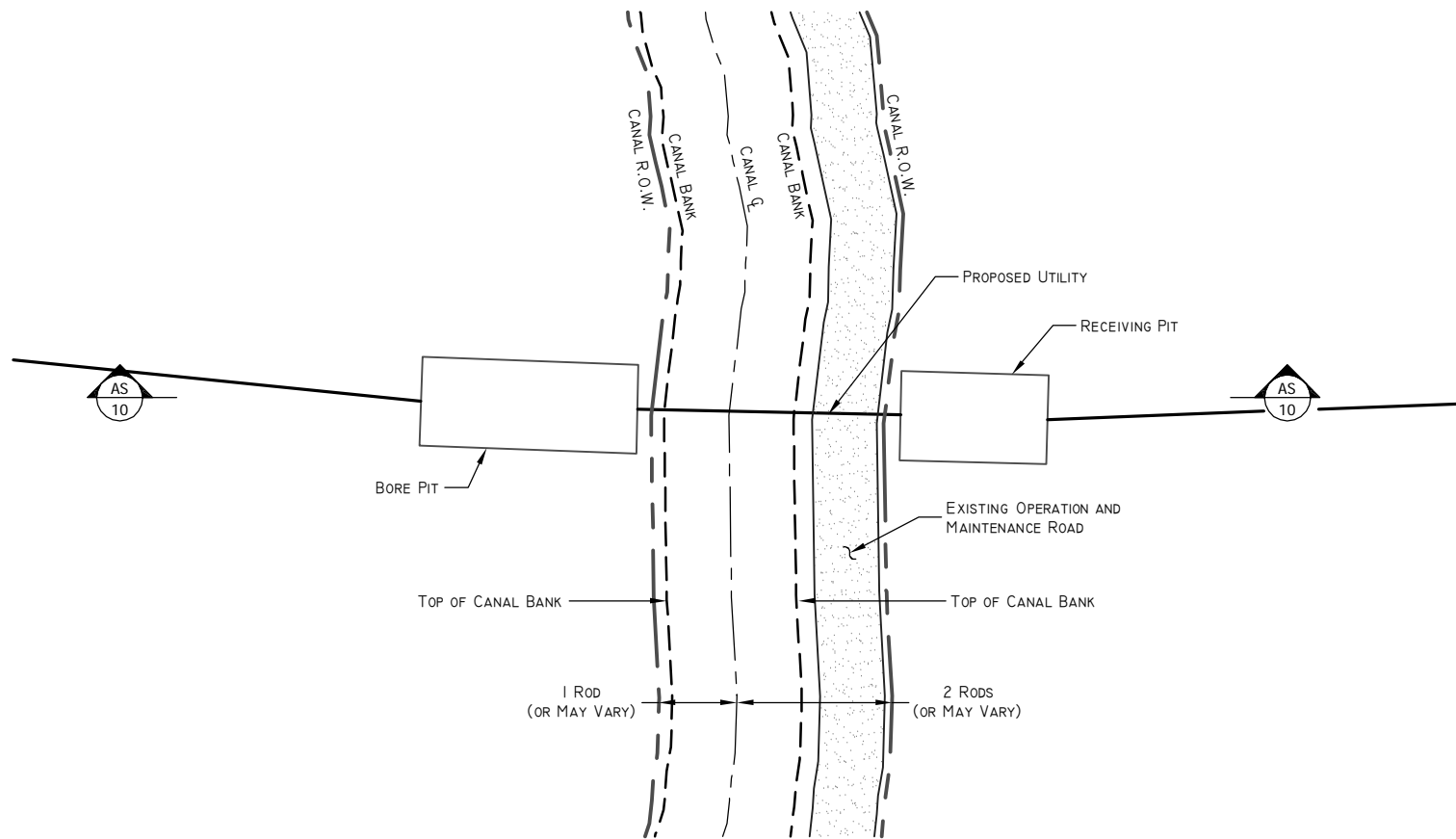
DESIGN STANDARDS AND STANDARD DRAWINGS

DRAIN LINE AND TYPICAL CLEANOUT BOX

09_SDs_Drain Line & Cleanout Box.dwg
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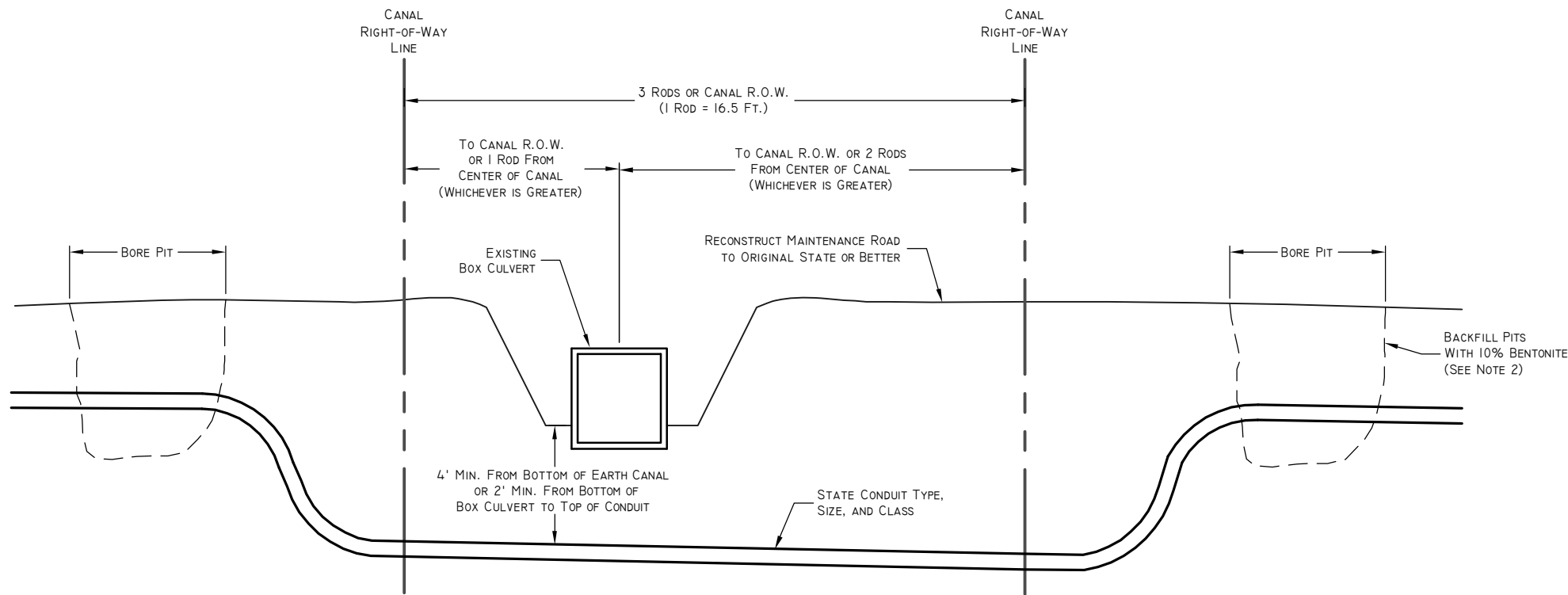
JOB NO.

SHEET **9** OF **10**



AR DIRECTIONAL DRILL UNDER CANAL
NOT TO SCALE

- NOTES:**
1. BORE PIT COMPACTION TO BE 92% MODIFIED 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. CANAL RIGHT-OF-WAY IS GENERALLY 1 ROD ON THE UPHILL SIDE AND 2 RODS ON THE DOWNHILL SIDE. RIGHT-OF-WAY DIMENSIONS MAY BE GREATER IN SOME AREAS.



AS DIRECTIONAL DRILL CROSS SECTION
NOT TO SCALE

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NO.	DATE	INTS.	DESCRIPTION

DESIGN STANDARDS AND STANDARD DRAWINGS
DIRECTIONAL DRILLING PLAN AND SECTION
JOB NO.
10 SDs_DirectionalDrilling.dwg
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