

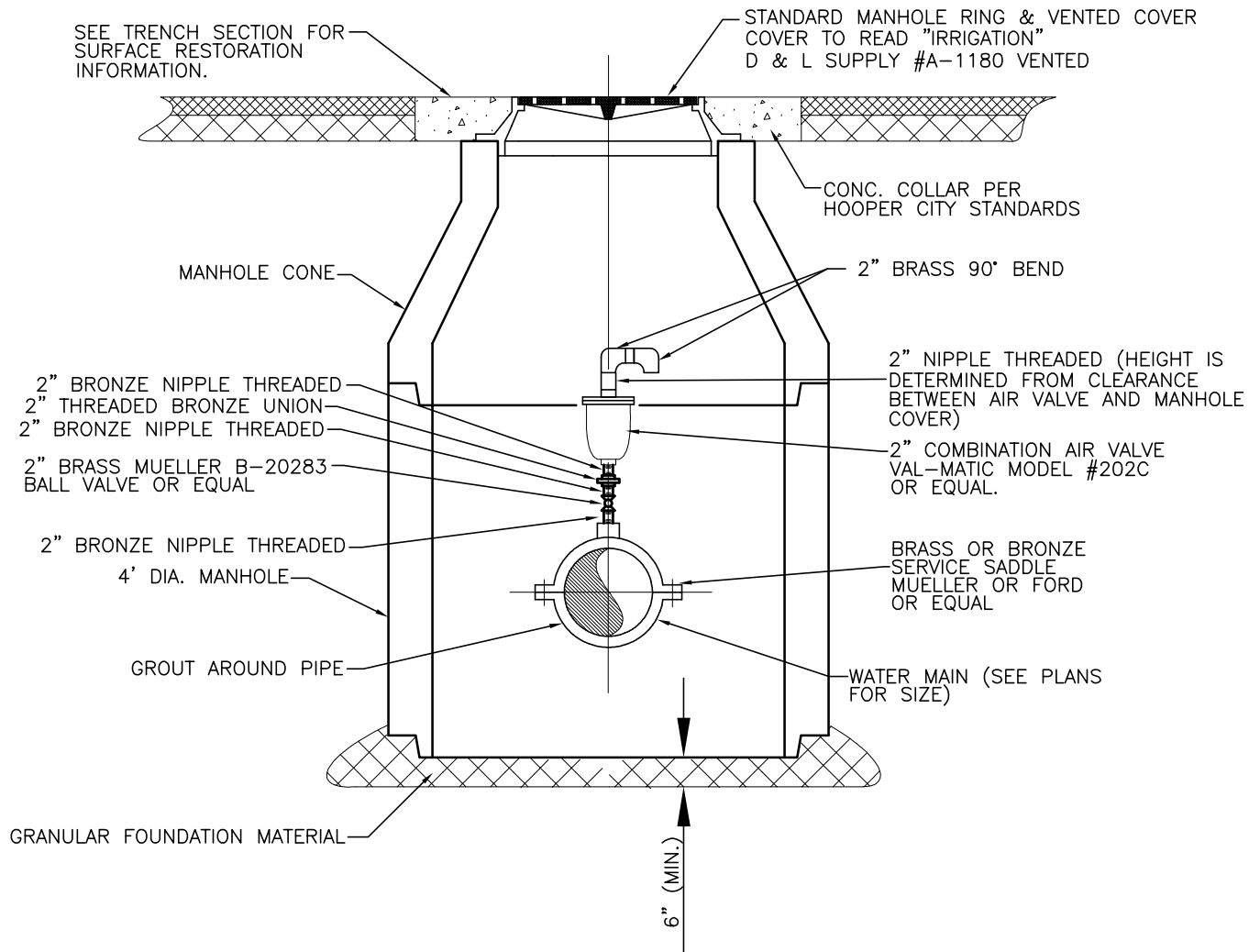
# HOOPER IRRIGATION COMPANY

## PRESSURE IRRIGATION STANDARDS AND SPECIFICATIONS

JULY 2003  
REVISED 2014, 2018



J·U·B ENGINEERS, INC.



## COMBINATION AIR-VAC DETAIL

N.T.S.

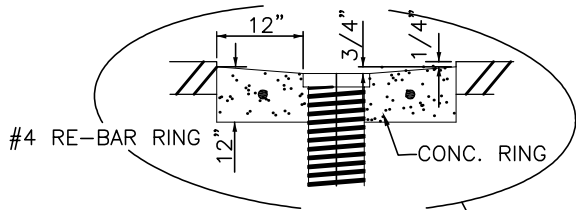
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REVISION			
NO.	DESCRIPTION	BY	APR., DATE



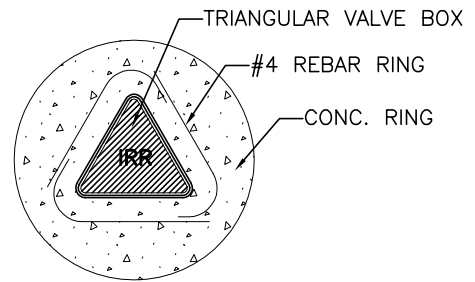
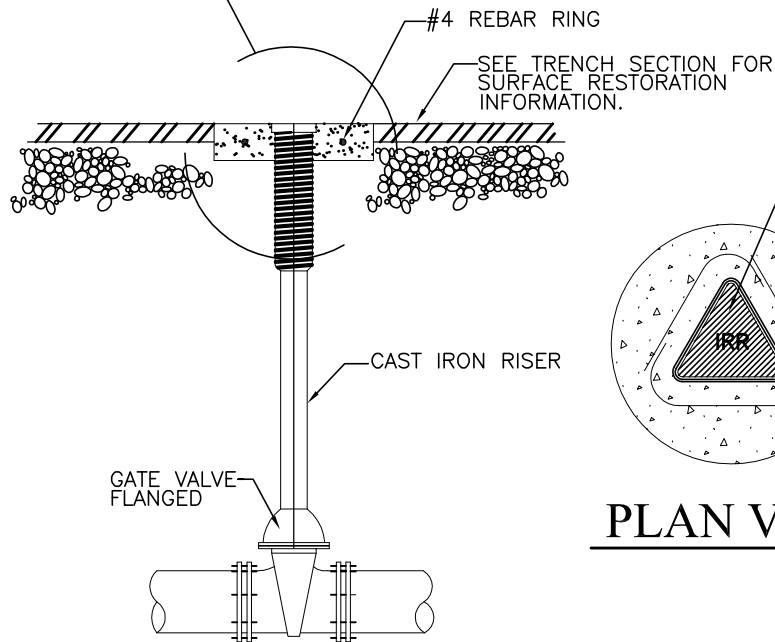
Hooper Irrigation Company  
Pressure Irrigation Standards

COMBINATION AIR-VAC DETAIL

SHEET	<b>PI-1</b>
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



NOTE: LID FOR SECONDARY WATER TO BE D&L SUPPLY M-9009, (OR EQUAL) STAMPED "IRR" OR "IRRIGATION"



PLAN VIEW

VALVE BOX CONCRETE COLLAR DETAIL

N.T.S.

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REVISION

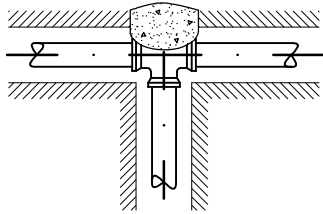
NO.	DESCRIPTION	BY	APR.	DATE



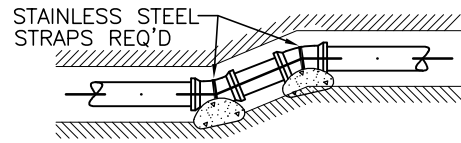
Hooper Irrigation Company  
Pressure Irrigation Standards

VALVE BOX CONCRETE COLLAR

SHEET	PI-2
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-

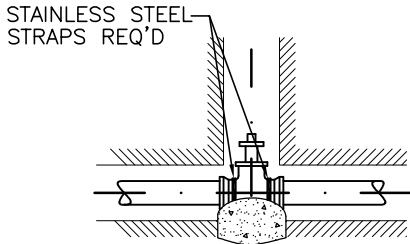


TEE



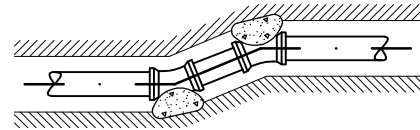
STAINLESS STEEL STRAPS REQ'D

VERTICAL APPLICATION  
45°, 22 1/2°, OR  
11 1/4° BEND

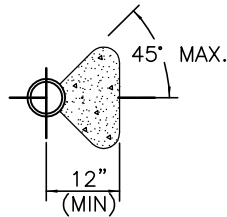


STAINLESS STEEL STRAPS REQ'D

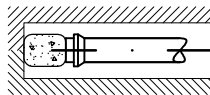
VALVE ANCHORS REQ'D  
FOR VALVES 12" OR LARGER



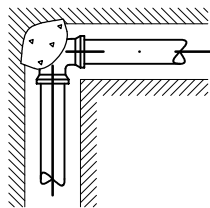
HORIZONTAL APPLICATION  
45°, 22 1/2°, OR  
11 1/4° BEND



TYPICAL SECTION  
THRU THRUST BLOCK



DEAD END



90° BEND

**DIMENSION TABLE**

THRUST BLOCK BEARING AREA IN SQ. FT. (SEE CONDITIONS BELOW)			
PIPE SIZE	CONDITION		
	90° BEND	OTHER BENDS	VALVES, TEES, DEAD ENDS
4	1.8	1.0	1.3
6	4.0	2.2	2.8
8	7.1	3.8	5.0
10	11.1	6.0	7.9
12	16.0	8.7	11.3
14	21.8	11.8	15.4
16	28.4	15.4	20.1
18	36.0	19.5	25.4
20	44.4	24.0	31.4
24	64.0	34.6	45.2
27	81.0	43.8	57.3
30	100.0	54.1	70.7
42	195.9	106.0	138.5
48	255.9	138.5	181.0

CONDITIONS:

LINE PRESSURE – 120 PSI  
 SOIL BEARING CAPACITY – 1500 PSF

NOTE: ALL FITTINGS SHALL BE WRAPPED WITH 12 MIL POLYETHYLENE PRIOR TO POURING THE CONCRETE THRUST BLOCK.

**THRUST BLOCKING**

N.T.S.

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REVISION

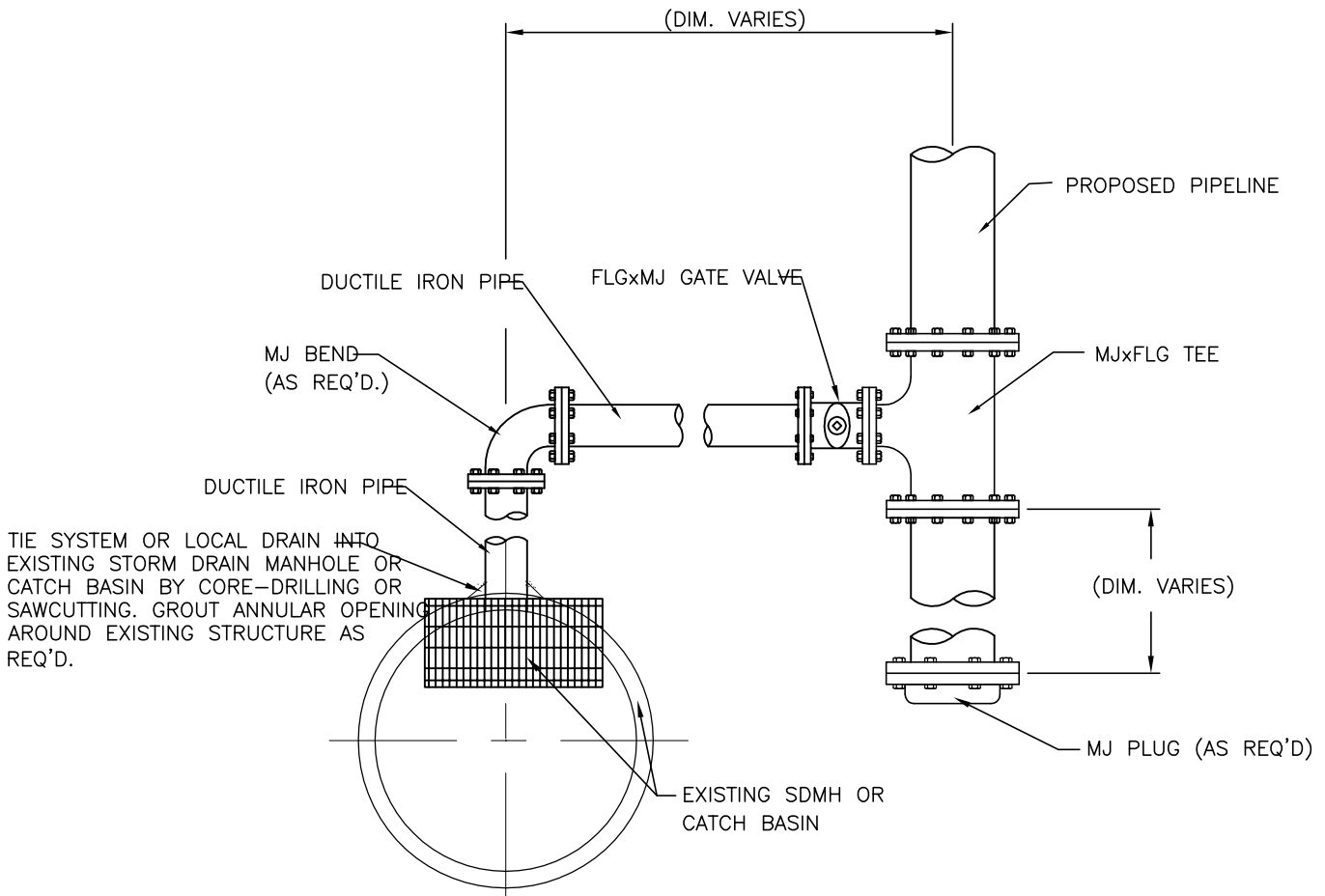
NO.	DESCRIPTION	BY	APR.	DATE



**Hooper Irrigation Company**  
**Pressure Irrigation Standards**

**THRUST BLOCKING DETAILS**

SHEET	<b>PI-3</b>
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



NOTE:  
 DRAIN SIZE TO BE APPROVED  
 BY COMPANY ENGINEER.

## LOCAL / SYSTEM DRAIN DETAIL

N.T.S.

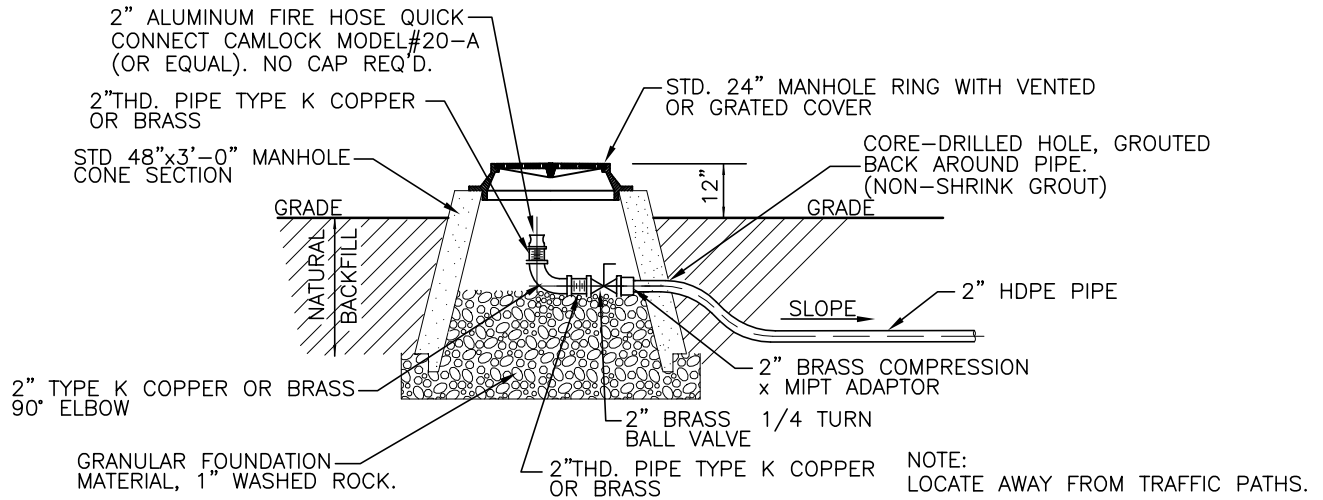
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REVISION			
△			
△			
△			
NO.	DESCRIPTION	BY	APR., DATE



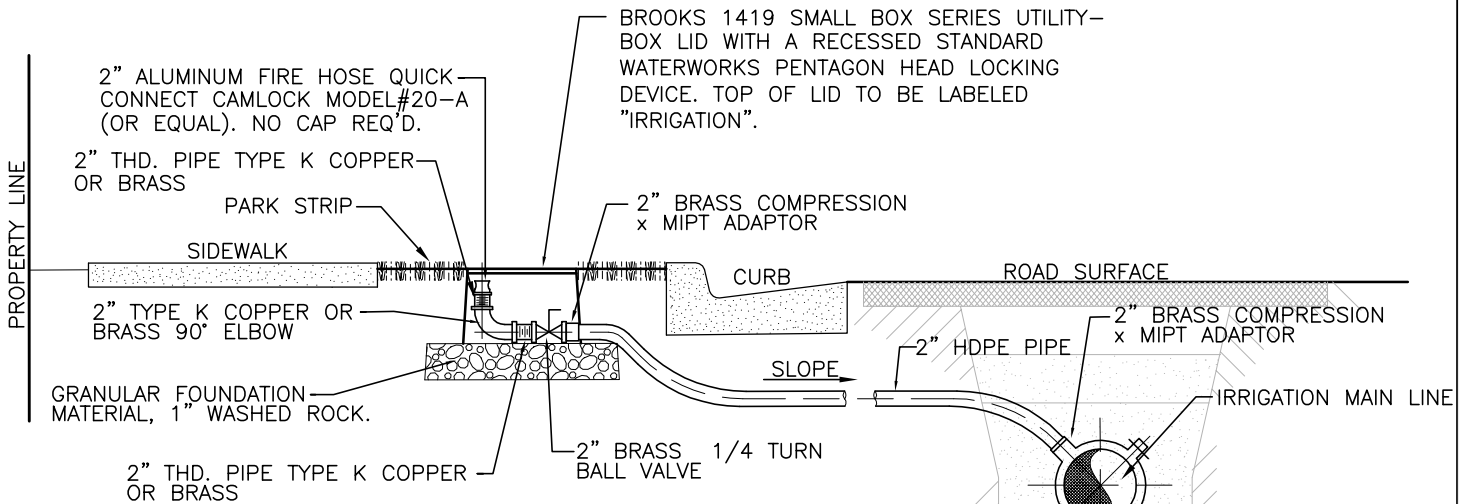
**Hooper Irrigation Company**  
**Pressure Irrigation Standards**

LOCAL/SYSTEM DRAIN DETAIL

SHEET	<b>PI-4</b>
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



## NO CURB & GUTTER



## SIDEWALK, CURB & GUTTER

- CONNECTION TO C900 PVC MAIN (4" THRU 10")  
 - 2" SERVICE SADDLE, MUELLER BOLTED  
 2 PC. BRONZE SERIES #H-13490  
 OR FORD BOLTED #S-90
- 2" CONNECTION TO DUCTILE IRON MAIN (12" & LARGER)  
 - 2" SERVICE SADDLE REQ'D., DOUBLE STRAP  
 BRONZE MUELLER SERIES #BR2B  
 OR BRASS FORD #202B

NOTE:  
 STAINLESS STEEL PIPE STIFFENERS  
 ARE REQUIRED TO BE USED ON ALL  
 CONNECTIONS ON POLY PIPE.

## AIR INLET & REMOVAL FACILITY

N.T.S.

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**REVISION**

NO.	DESCRIPTION	BY	APR.	DATE

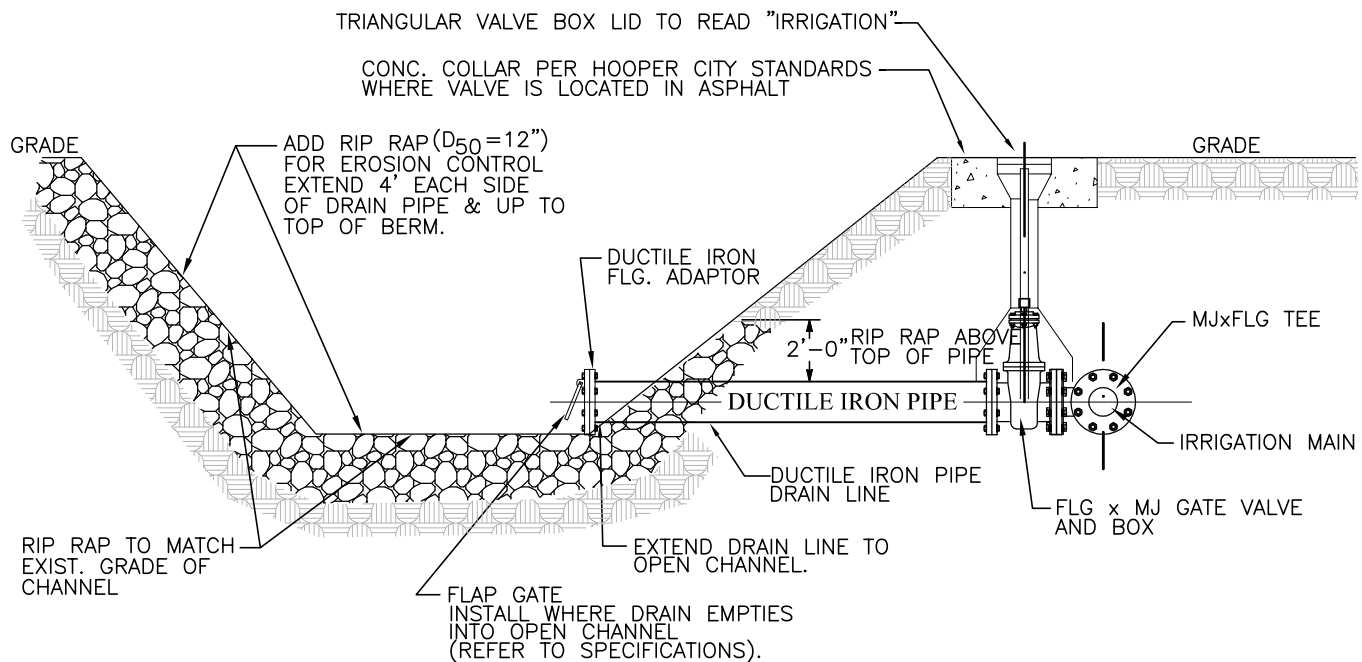


**Hooper Irrigation Company**  
**Pressure Irrigation Standards**

AIR INLET & REMOVAL FACILITY

SHEET **PI-5**

CAD DWG: detail01.dwg  
 PLOT SCALE: N/A  
 DATE: MAY 2003  
 DRAWN BY: D.STEELE  
 DESIGN BY: D.STEELE  
 CHECKED BY: TLA  
 SCALE: -



NOTE:  
DRAIN SIZE TO BE APPROVED  
BY COMPANY ENGINEER.

## OPEN CHANNEL DRAIN

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**REVISION**

NO.	DESCRIPTION	BY	APR.	DATE

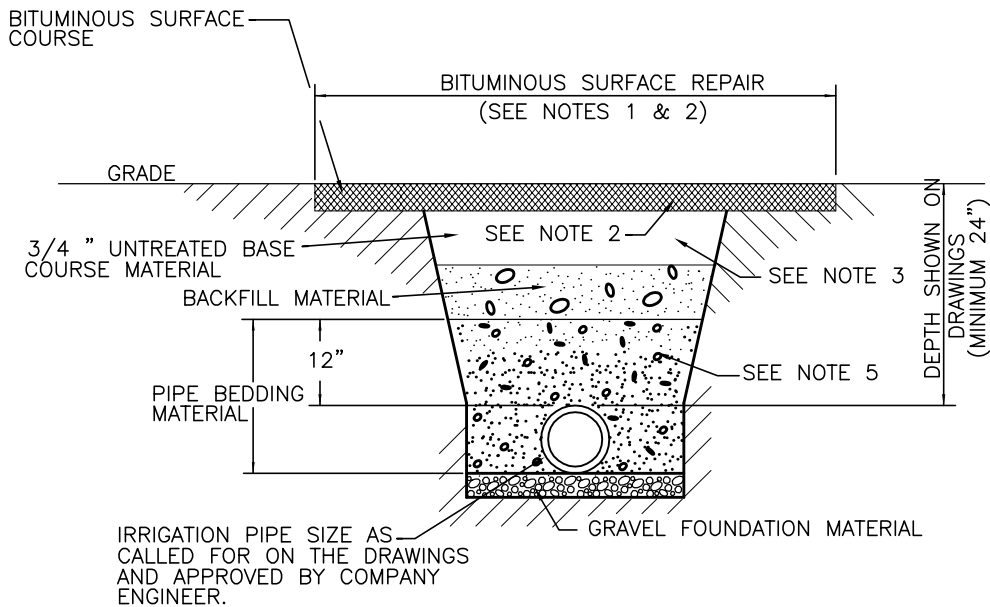


**Hooper Irrigation Company  
Pressure Irrigation Standards**

OPEN CHANNEL DRAIN

SHEET **PI-6**

CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



**NOTES:**

1. SAW CUT BITUMINOUS ASPHALT SURFACE 0.5' WIDER THAN TRENCH ON EACH SIDE FOR FINAL TRENCH REPAIR WHERE BITUMINOUS SURFACE EXISTS.
2. BITUMINOUS SURFACE IS TO BE 6" OR TO MATCH EXISTING THICKNESS, WHICHEVER IS GREATER FOR STATE ROADS & 4" FOR ALL OTHER ROADS.
3. 3/4" UNTREATED BASE COURSE MATERIAL IS TO BE 12" OR TO MATCH EXISTING THICKNESS, WHICHEVER IS GREATER.
4. SLOPE TRENCH SIDES TO MEET OSHA SAFETY REQUIREMENTS, (LATEST REV.)
5. SEE SPECIFICATIONS FOR GRADATION & COMPACTION REQUIREMENTS.
6. REFER TO U.D.O.T. STANDARDS FOR TRENCH SECTION DETAIL.

## BITUMINOUS SURFACE TRENCH SECTION

N.T.S.

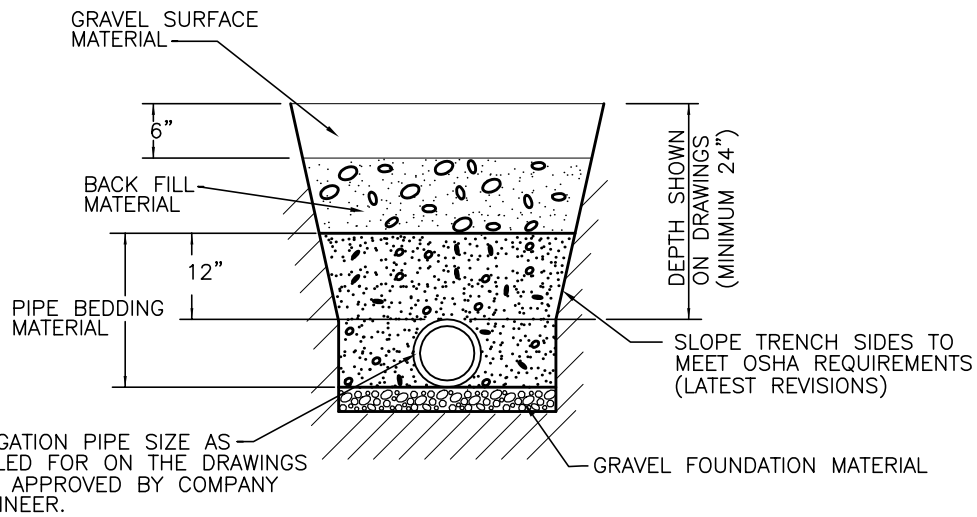
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REVISION			
NO.	DESCRIPTION	BY	APR. DATE



**Hooper Irrigation Company**  
**Pressure Irrigation Standards**  
 BITUMINOUS SURFACE  
 TRENCH SECTION

SHEET	<b>PI-7</b>
CAD DWG: detail01.dwg	
PLOT SCALE: N/A	
DATE: MAY 2003	
DRAWN BY: D.STEELE	
DESIGN BY: D.STEELE	
CHECKED BY: TLA	
SCALE: -	





NOTES:  
SEE SPECIFICATIONS FOR GRADATION  
& COMPACTION REQUIREMENTS.

## GRAVEL SURFACE TRENCH SECTION

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**REVISION**

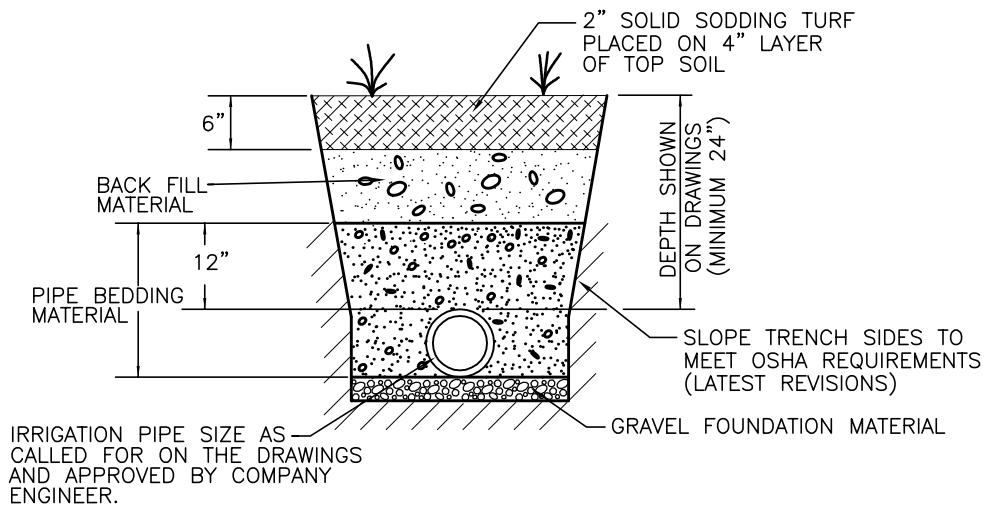
NO.	DESCRIPTION	BY	APR.	DATE



**Hooper Irrigation Company  
Pressure Irrigation Standards**

**GRAVEL SURFACE  
TRENCH SECTION**

SHEET	<b>PI-8</b>
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



NOTES:  
SEE SPECIFICATIONS FOR GRADATION & COMPACTION REQUIREMENTS.

## TURF SURFACE TRENCH SECTION

N.T.S.

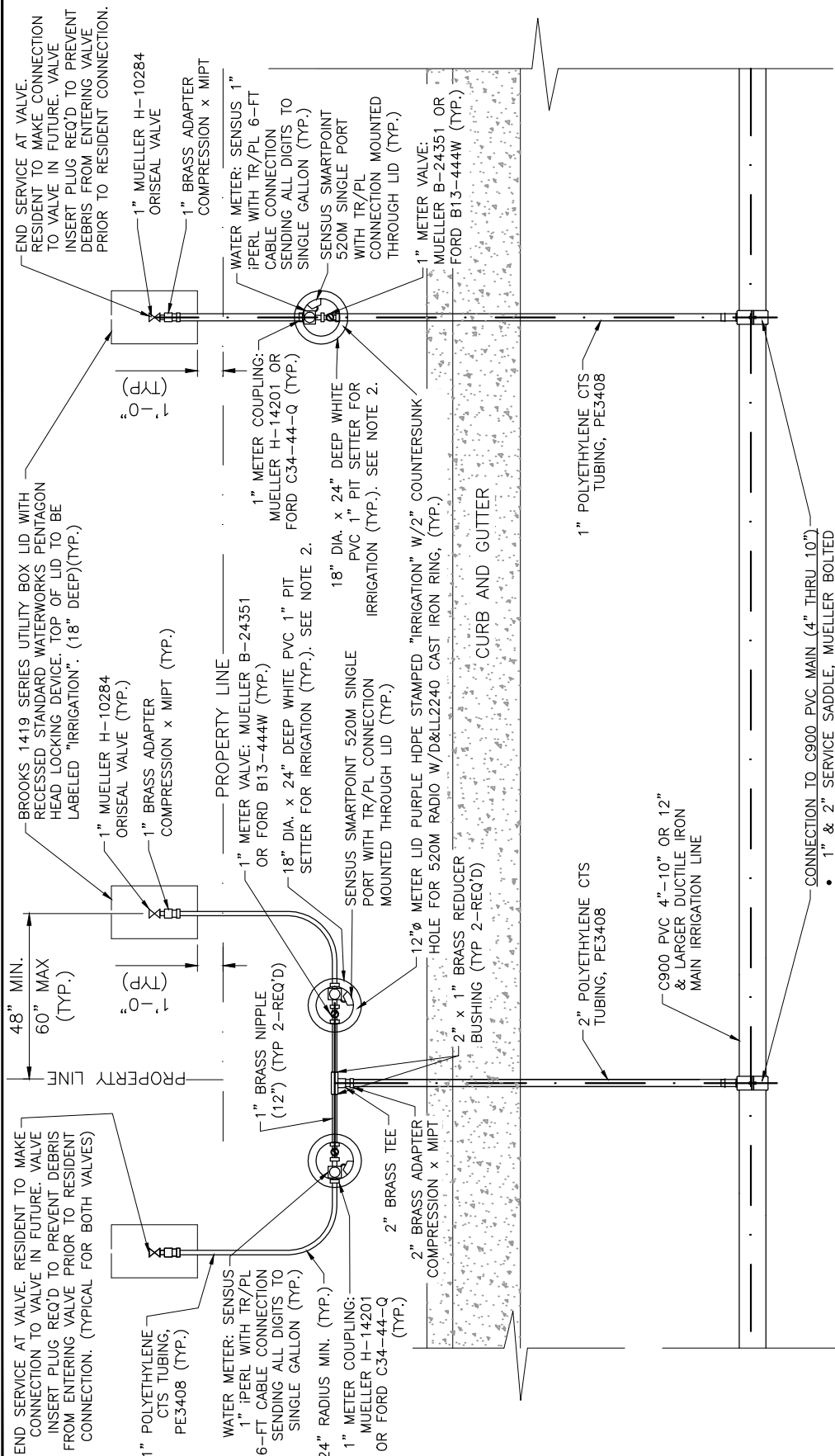
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REVISION			
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NO.	DESCRIPTION	BY	APR. DATE



Hooper Irrigation Company  
Pressure Irrigation Standards

TURF SURFACE  
TRENCH SECTION

SHEET	<b>PI-9</b>
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



**SINGLE SERVICE**

**DOUBLE SERVICE**

- NOTE:
1. STAINLESS STEEL PIPE STIFFENERS ARE REQUIRED TO BE USED ON ALL CONNECTIONS ON POLY PIPE.
  2. INSURE VALVE CONTROL NUT CAN BE SERVICED BY WRENCH WHEN POSITIONING UNDER ENCLOSURE LID
- CONNECTION TO C900 PVC MAIN (4" THRU 10")
- 1" & 2" SERVICE SADDLE; MUELLER BOLTED 2 PC. BRONZE SERIES #H-13490 OR FORD BOLTED #S-90
  - 1" DIRECT TAP CONNECTION TO DUCTILE IRON MAIN (12" & LARGER)
  - 1" CORPORATION STOPS SHALL BE USED TO CONNECT TO MAIN. ALL CORPORATION STOPS SHALL BE A BRASS ALLOY MUELLER 1500 SERIES OR A FORD #F1000-Q W/ CTS COMPRESSION OUTLET.
  - 2" CONNECTION TO DUCTILE IRON MAIN (12" & LARGER)
  - 2" SERVICE SADDLE REQ'D., DOUBLE STRAP BRONZE MUELLER SERIES #BR2B OR BRASS FORD #202B

**TYPICAL SERVICE CONNECTIONS**

N.T.S.

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NO.	DESCRIPTION	BY	APPR.	DATE
1	REV. DRAWING TO ADD CURB & GUTTER & CALLOUTS	DBS	TLA	12-15-0
2	REV. DRAWING TO ADD TWO BOXES ON DOUBLE SERVICE	JDM	GLS	5-15-14
3	REV. DRAWING TO ADD FLOW METERS ON ALL SERVICES	JDM	GLS	3-15-18
4	REV. DRAWING FOR IRRIGATION LID	JRH	GLS	2-7-19



Hooper Irrigation Company  
 Pressure Irrigation Standards

TYPICAL SERVICE  
 CONNECTION DETAIL

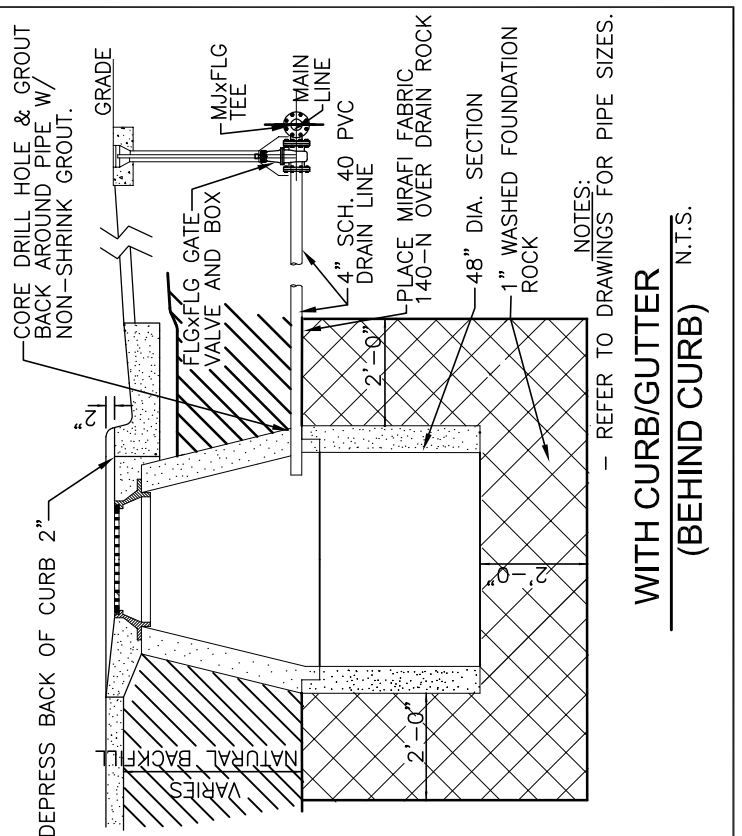
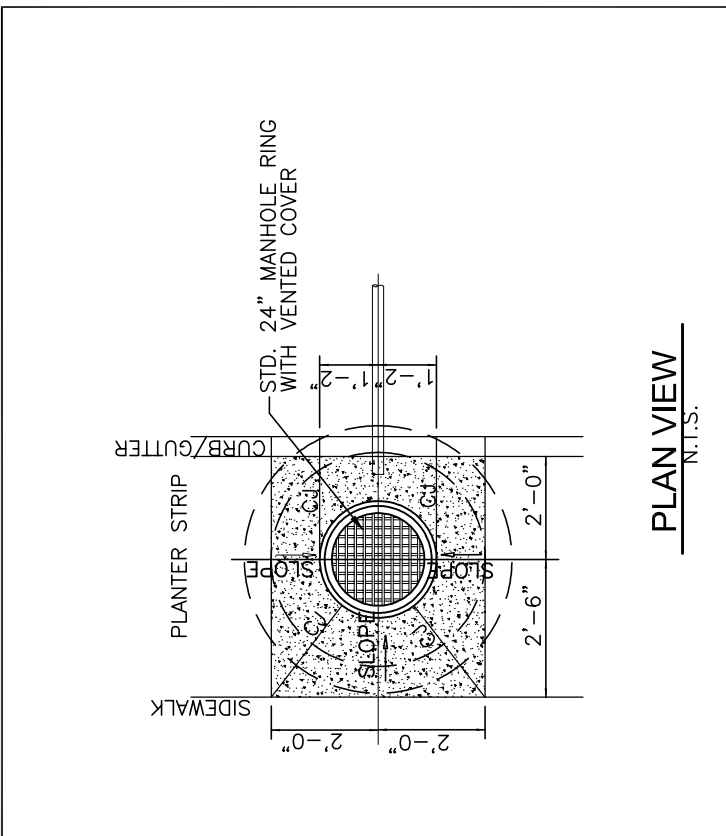
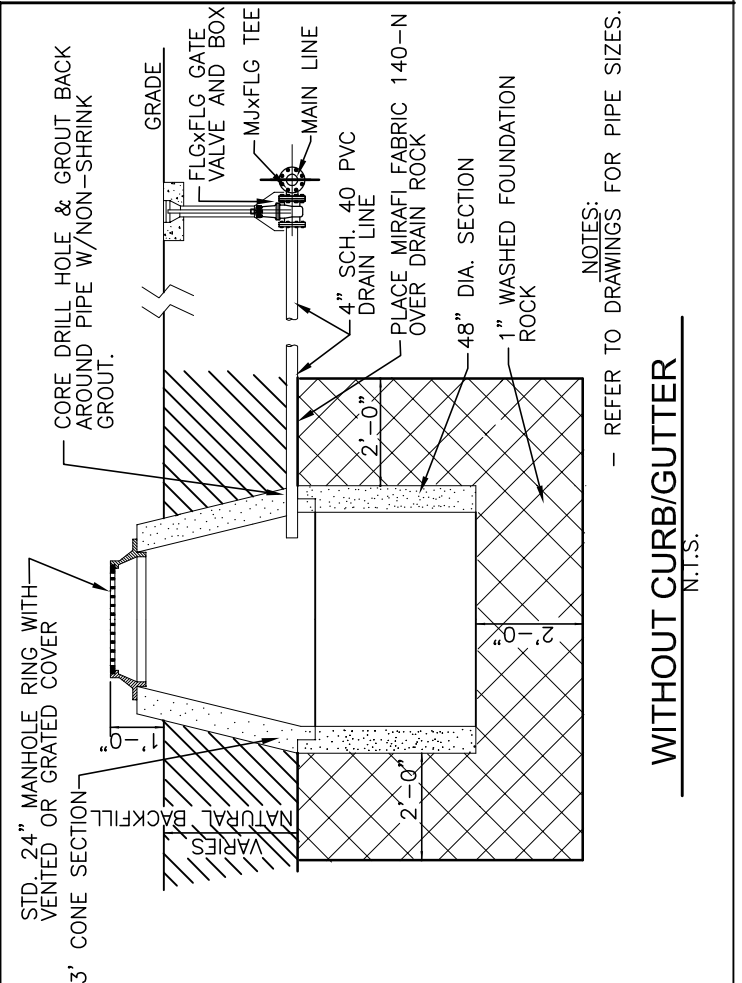
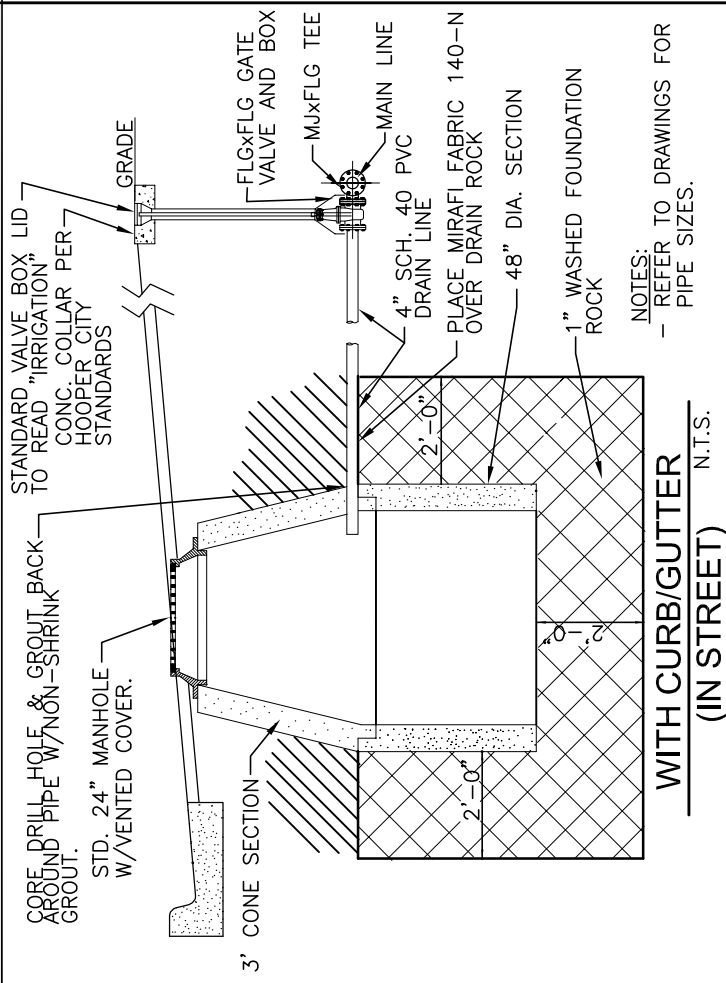
SHEET	PI-10
CAD DWG:	
PLOT SCALE:	N/A
DATE:	FEB 2019
DRAWN BY:	JRH
DESIGN BY:	
CHECKED BY:	GLS
SCALE:	-

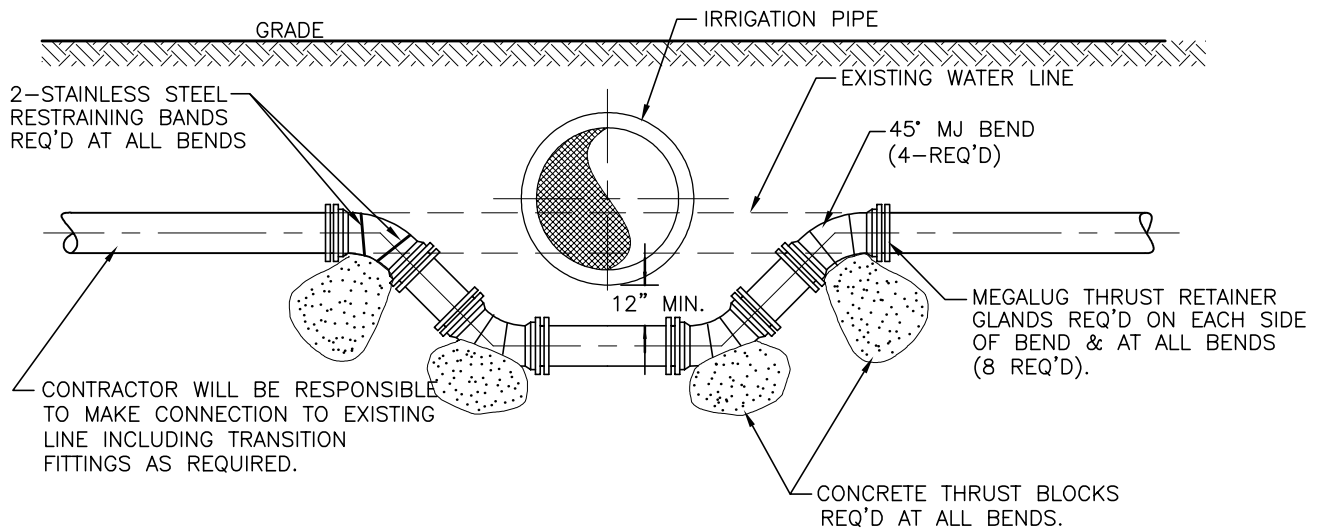
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NO.	DESCRIPTION	BY	APR. DATE



**Hooper Irrigation Company**  
**Pressure Irrigation Standards**  
 TYPICAL LOCAL DRAIN  
 W/SUMP DETAILS

SHEET	<b>PI-11</b>
CAD DWG:	det0101.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	DETAILS
CHECKED BY:	TLA
SCALE:	-





**NOTES:**

BEFORE RELOCATING AN EXISTING WATERLINE THE CONTRACTOR SHALL NOTIFY ALL AFFECTED BUSINESSES AND RESIDENTS 24 HOURS BEFORE CONSTRUCTION. THE CONTRACTOR MUST DEMONSTRATE TO THE CITY THAT ALL OF THE MATERIALS ARE ON HAND THAT MAY BE NEEDED BEFORE RELOCATING ANY WATERLINES. RELOCATION OF WATERLINES WILL NOT BE STARTED AFTER 10:00 A.M. THE CITY SHALL OPERATE ALL MAINLINE WATER VALVES AND THE CONTRACTOR MUST CONTACT THE CITY IF SERVICE IS REQUIRED.

**WATER LINE RELOCATION DETAIL**

N.T.S.

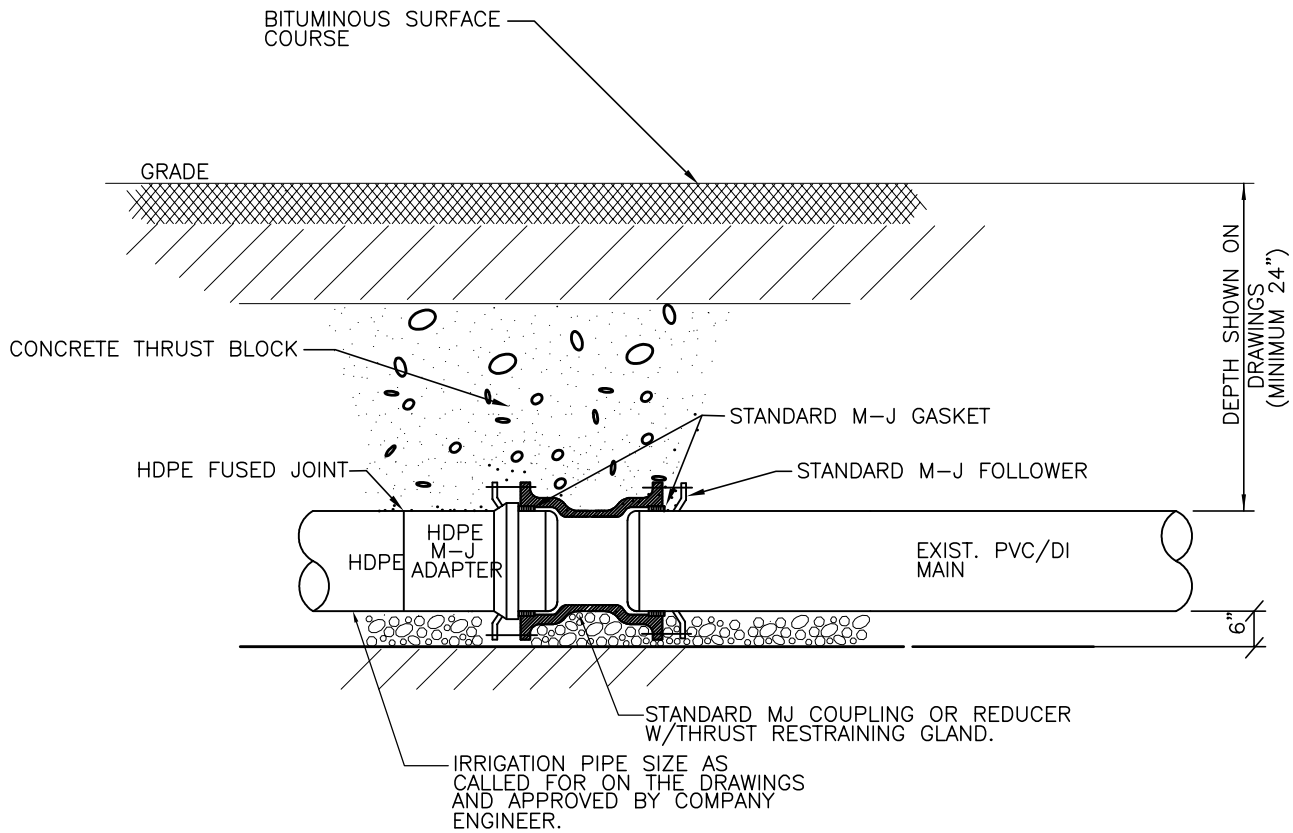
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REVISION			
△			
△			
△			
△			
NO.	DESCRIPTION	BY	APR. DATE



**Hooper Irrigation Company  
Pressure Irrigation Standards**

**WATERLINE  
RELOCATION DETAIL**

SHEET	<b>PI-12</b>
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



**NOTE:**

1. REFER TO SHEET # PI-7, 8 & 9 TRENCH DETAILS FOR BEDDING MATERIAL ETC...

2. ALL FITTINGS SHALL BE WRAPPED WITH 12 MIL POLYETHYLENE PRIOR TO POURING THE CONCRETE THRUST BLOCK.

## HDPE CONNECTION DETAIL

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**REVISION**

NO.	DESCRIPTION	BY	APR.	DATE

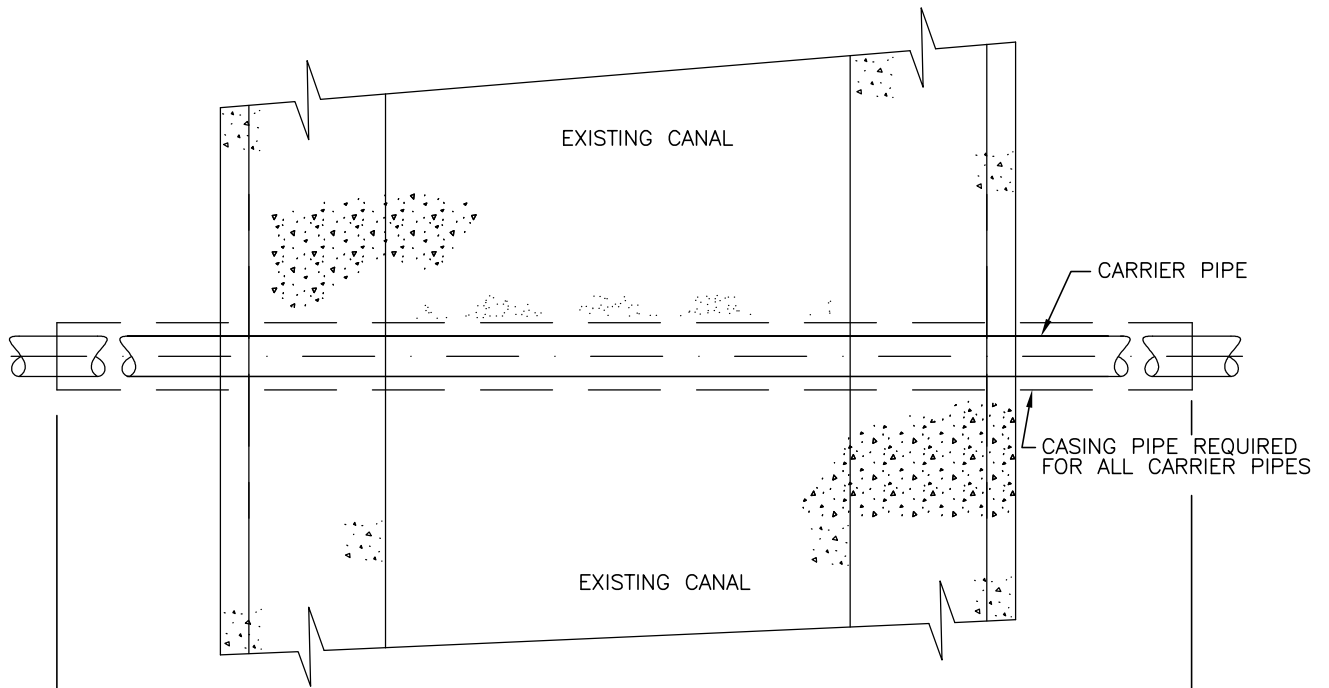


**Hooper Irrigation Company  
Pressure Irrigation Standards**

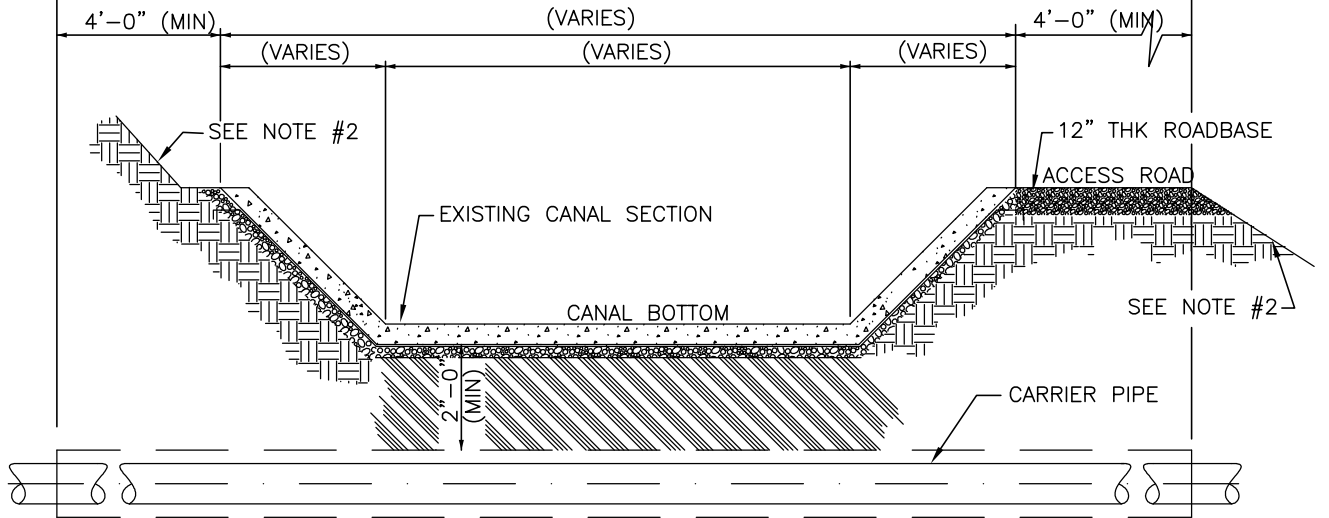
**HDPE  
CONNECTION DETAIL**

SHEET **PI-13**

CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	MAY 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



**PLAN VIEW**



**OPEN CONCRETE-LINED CHANNEL  
ELEVATION VIEW**

CASING PIPE: SIZE IS TO BE DETERMINED BASED ON CARRIER PIPE.  
MAT'L. TYPE: STEEL WELDED PIPE CASING (SEE DETAIL PI-17)

**NOTES:**

- 1) BEFORE CROSSING THE CANAL WITH A UTILITY THE CONTRACTOR SHALL OBTAIN WRITTEN AUTHORIZATION FROM HOOPER IRRIGATION COMPANY. THE CONTRACTOR MUST DEMONSTRATE TO HOOPER IRRIGATION COMPANY THAT ALL OF THE MATERIALS ARE ON HAND THAT MAY BE NEEDED BEFORE STARTING CONSTRUCTION ON IRRIGATION COMPANY PROPERTY OR EASEMENTS.
- 2) CONTRACTOR SHALL BE RESPONSIBLE FOR TOTAL RESTORATION OF THE CONSTRUCTION AREA, INCLUDING REVEGETATION & RESTORATION OF ACCESS ROADWAY

**TYPICAL CANAL CROSSING**

N.T.S.

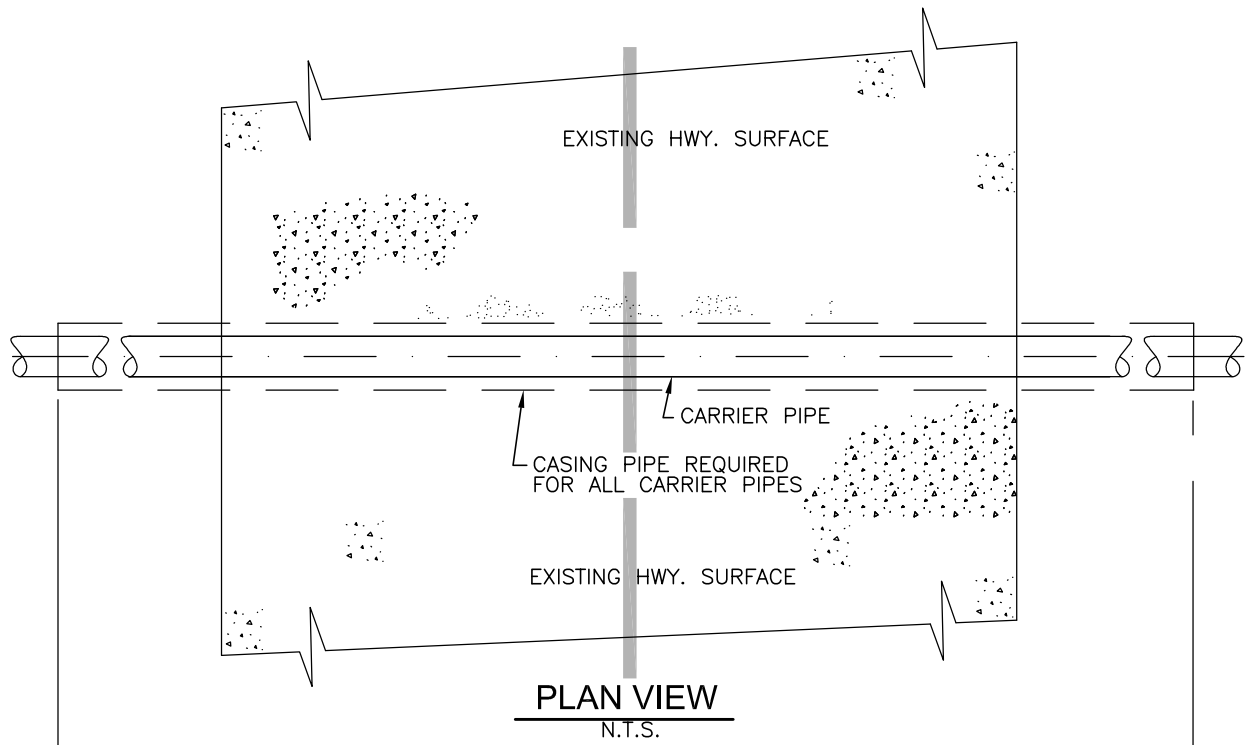
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REVISION			
NO.	DESCRIPTION	BY	APR. DATE



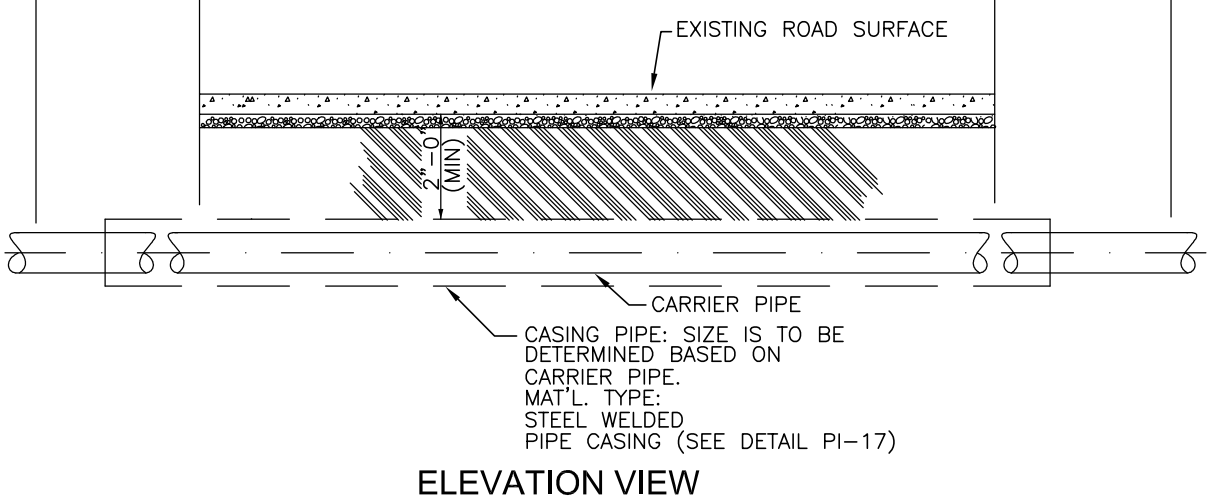
**Hooper Irrigation Company  
Pressure Irrigation Standards**

**TYPICAL CANAL  
CROSSING DETAIL**

SHEET	<b>PI-14</b>
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	JUNE 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



4'-0" (MIN) (ROAD WIDTH VARIES) 4'-0" (MIN)



CARRIER PIPE  
 CASING PIPE: SIZE IS TO BE DETERMINED BASED ON CARRIER PIPE.  
 MAT'L. TYPE: STEEL WELDED PIPE CASING (SEE DETAIL PI-17)

**NOTES:**

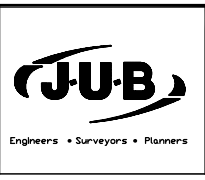
- 1) WORK TO BE PERFORMED WITHIN UDOT RIGHT-OF-WAYS SHALL BE DONE IN ACCORDANCE WITH DIVISION 19 OF SPECIFICATIONS.
- 2) CONTRACTOR SHALL BE RESPONSIBLE FOR TOTAL RESTORATION OF THE CONSTRUCTION AREA, INCLUDING REVEGETATION & RESTORATION OF ACCESS ROADWAY

**TYPICAL UDOT HWY. CROSSING**  
 N.T.S.

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**REVISION**

NO.	DESCRIPTION	BY	APR.	DATE



**Hooper Irrigation Company**  
**Pressure Irrigation Standards**

TYPICAL UDOT HWY.  
 CROSSING DETAIL

**SHEET PI-15**

CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	JUNE 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	-



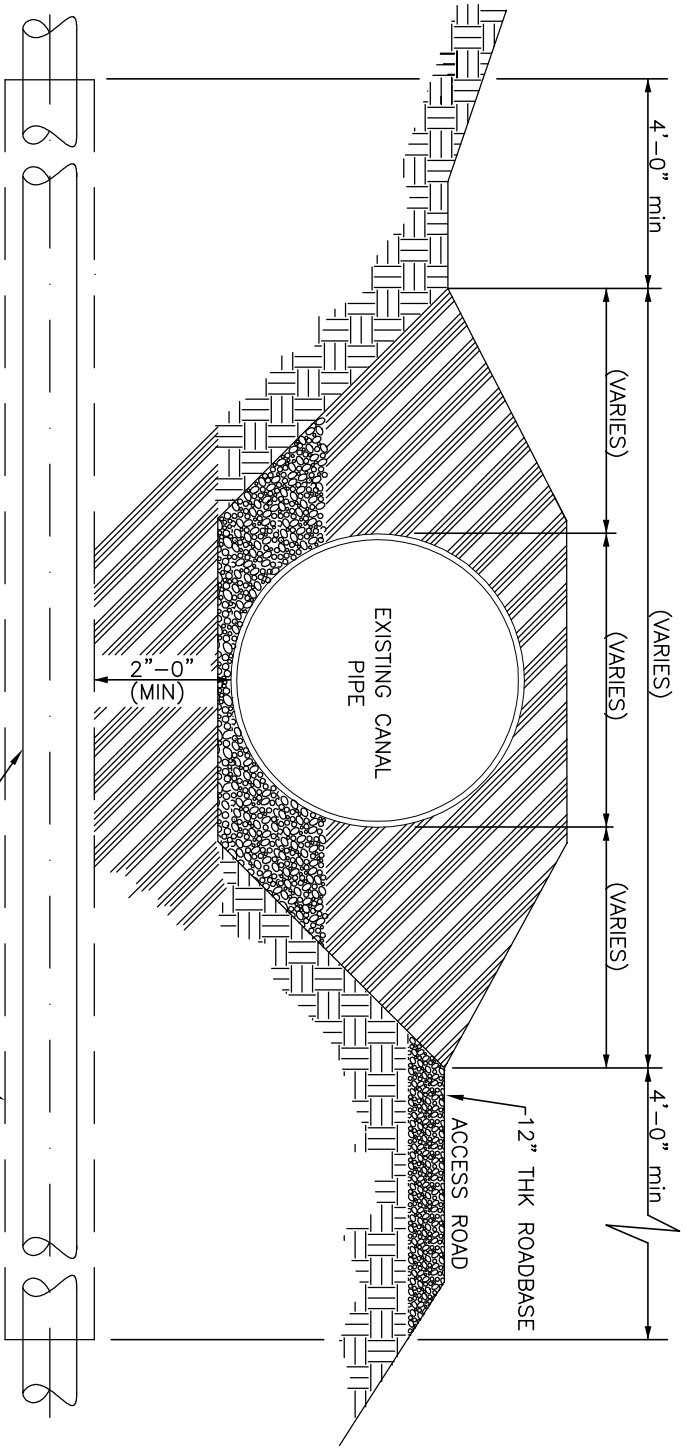
NO.	✓	✓	✓	✓	✓
DESCRIPTION	BY	APR.	DATE		

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Hooper Irrigation Company  
 Pressure Irrigation Standards  
 TYPICAL PIPED CANAL  
 CROSSING DETAIL

SHEET  
 PI-16  
 CAD DWG: detail01.dwg  
 PLOT SCALE: N/A  
 DATE: JUNE 2003  
 DRAWN BY: D.STEELE  
 DESIGN BY: D.STEELE  
 CHECKED BY: TLA  
 SCALE: -



ELEVATION VIEW

TYPICAL PIPED CANAL CROSSING

N.T.S.

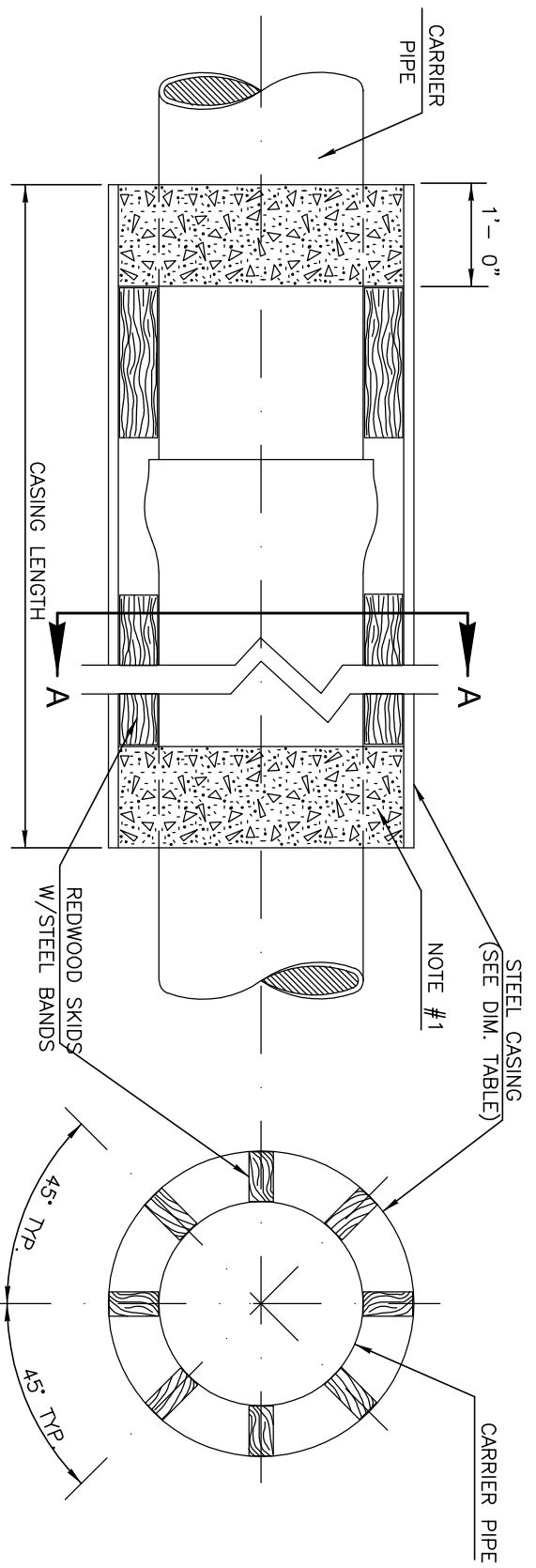
NO.	DESCRIPTION	BY	APR.	DATE



**Hooper Irrigation Company**  
**Pressure Irrigation Standards**  
**TYPICAL PIPE CASING**  
**DETAIL**

SHEET	PI-17
CAD DWG:	detail01.dwg
PLOT SCALE:	N/A
DATE:	JUNE 2003
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	TLA
SCALE:	—

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- NOTES:
1. ANNULAR SPACE AT ENDS OF STEEL CASING SHALL BE CONCRETE GROUTED.
  2. STEEL PIPE TO HAVE A MINIMUM YIELD STRENGTH OF 42,000 PSI.

**DIMENSION TABLE**

CARRIER PIPE	CASING STEEL PIPE		
DIAMETER (INCHES)	DIAMETER (INCHES)	MIN. WALL THK. W/PROTECTIVE COATING	MIN. WALL THK. W/OUT PROTECTIVE COATING
4" & UNDER	12" & UNDER	0.188"	0.188"
6" & 8"	14" & 16"	0.219"	0.312"
10"	18"	0.250"	0.312"
12"	20"	0.281"	0.375"
14"	22"	0.312"	0.375"
16"	24"	0.344"	0.438"
18"	26"	0.375"	0.438"
20" & 21"	28" & 30"	0.406"	0.500"
24"	32"	0.438"	0.500"
27"	34" & 36"	0.469"	0.562"
30"	38" , 40" , 42"	0.500"	0.562"

**PIPE CASING DETAIL**  
 N.T.S.