

HAIGHTS CREEK IRRIGATION COMPANY

DEVELOPMENT STANDARDS AND SPECIFICATIONS



Adopted by the
Hights Creek Irrigation Company Board
June 11, 2015
(rev. 4/12/17)



J·U·B ENGINEERS, INC.



THE
LANGDON
GROUP
a J·U·B Company



GATEWAY
MAPPING
INC.
a J·U·B Company

OTHER J·U·B COMPANIES

SECTION 1 - DEVELOPMENT PROCEDURES

1.01 Preliminary Plat

Developer shall submit three copies of the development for approval and pay the application fees as outlined in the Application for Service. Water users must own the required number of shares of stock in the Haight's Creek Irrigation Company (HCIC) (3 acre-feet per acre; 0.4 acre-feet minimum).

1.02 Construction

Materials shall not be ordered until drawings have been approved by the Haight's Creek engineer and the connection fee and transfer fees have been paid. No construction shall be started until the Haight's Creek water master has been notified. Backfilling shall only occur after the work has been inspected and approved by the Haight's Creek water master.

1.03 Final Plat

After completion of the work, two copies of record drawings shall be submitted to HCIC and to the city involved showing any changes made during the construction. Location of valves and main lines shall be identified on record drawings by measurements from lot corners and from curb or property lines respectively.

1.04 Warranty and Miscellaneous Items

The materials and construction work (including backfill compaction) shall be guaranteed for a period of two full irrigation seasons by the subdivider. After the system extension has performed adequately for this period of time it shall become the property of and be accepted for future maintenance by HCIC.

SECTION 2 - TECHNICAL SPECIFICATIONS

2.01 Design and Installation Parameters

The following general guidelines shall be followed in the design and construction of secondary water lines for the HCIC.

1. All lines and service laterals shall be sloped to drain. Each line must be provided with means of draining the line. All drains must be reviewed and approved by HCIC. Lines may be drained by connection to a lower line that has an adequate drain. If this is not possible a new drain must be installed.
2. All lines must have a minimum of 24-inches of cover or as required by the pipe manufacturer. Because the lines must grade to drain there will be many lines or portions of lines that will require more than 24-inches of cover. As-constructed or record drawings should indicate approximate depth at regular intervals along the line.
3. All lines must provide for the discharge of trapped air during the filling process and the introduction of air into the system during draining. The type and location of air and removal facilities shall be approved by HCIC.
4. Service laterals shall be installed at property corners and double services shall be installed whenever possible. The meter enclosure shall be installed in the park strip and the service lateral stubbed under the sidewalk to the control valve box located just beyond the property line. Lots up to one-half acre shall be served by a 1-inch line and lots from one-half to one acre shall be served by a 1 1/2 (1.5) inch line. Parcels larger than one acre shall be considered on a case by case basis.

2.02 Preconstruction Conference:

Following approval but prior to commencement of work at the site, the Contractor shall meet with Haight's Creek at the site for a walk-through and furnish the following items:

1. An outline showing the sequences of construction of principal items of work. The outline shall show the beginning and ending dates of the major items of work at the site.
2. A list of names, titles, addresses, and telephone numbers of the Contractor's responsible personnel, indicating those who may be reached outside normal working hours.
3. A list of Subcontractors and materials suppliers.

Other items may be discussed at this pre-construction conference as determined by the parties.

2.03 Codes and Standards:

Where codes and standards are referred to they shall be current, approved copies. It shall be the supplier of any material on this work to submit evidence, if requested, that his material is in compliance with the applicable codes and standards.

2.04 Excavation and Backfill:

Excavation and backfill within roadways shall conform to applicable standards of Kaysville City, Fruit Heights City, Davis County, or the State of Utah. All backfill within city, county, or state roadways shall be mechanically compacted in 8" maximum layers to 95% of USBR Proctor unless specified otherwise by the roadway owner.

2.05 Approach to Work:

The work must proceed in a systematic way with a minimum of inconvenience to the public. The Contractor will confine his operations to as small a length of work per crew as feasible.

Each pressure irrigation line on the drawings must be flushed, and tested in accordance with American Water Works Association (AWWA) Standard C605, and ready to be placed into service prior to the placement of any final road surfacing (asphalt).

The Contractor shall be responsible to obtain all necessary permits and to comply with all applicable ordinances of the city where the work is being performed.

2.06 Notification of Customers:

In the event that the service will be interrupted to pressure irrigation customers they must be notified at least 24 hours in advance.

2.07 Weather Conditions:

In the event of temporary suspension of work, or during inclement weather, the Contractor will, and will cause his subcontractors to protect carefully his and their work materials against damage or injury from the weather including extended exposure of PVC pipe to sunlight. If, in the opinion of Haight's Creek, any work or materials have been damaged or injured by reason of failure on the part of the Contractor (or any of his subcontractors) to so protect his work, such materials shall be removed and replaced at the expense of the Contractor.

SECTION 3 -SUMMARY OF MATERIALS SPECIFICATIONS

3.01 Distribution System Pipe

For sizes 4-inch through 12-inch:

C900 PVC, DR18, 150 psi working pressure conforming to AWWA C900, colored purple.

If specific conditions require:

Ductile iron pipe, pressure class 350, conforming to AWWA C151, or

Polyethylene pipe, PE 3408, DR 9, Pressure Class 200, conforming to AWWA C906.

For 14-inch and larger:

C905 PVC, DR-18, 150 psi working pressure conforming to AWWA C905, colored purple.

If specific conditions require:

Ductile iron pipe, pressure class 250, conforming to AWWA C151, or

Polyethylene pipe, PE 3408, DR 9, Pressure Class 200, conforming to AWWA C906.

3.02 Magnetic Locator Tape

All distribution pipe and service laterals shall include a 3-inch magnetic locator tape installed in the pipeline trench a minimum of 12-inches above the pipe or lateral.

Identification tape shall be prepared with white or black printing on a purple field, color Pantone 512C, having the words:

CAUTION: NONPOTABLE WATER - DO NOT DRINK

3.03 Tracer Wire

All distribution system pipe shall be installed with direct burial #12 AWG tracer wire with 30 mil HDPE jacket. The tracer wire shall be attached to the top of the

waterline and shall be terminated and accessible at all valve boxes and air/vac structures.

3.04 Distribution System Valves

For sizes 4-inch through 10-inch: Resilient seated gate valves. Must conform to AWWA C-509.

For sizes 12-inch and larger: Butterfly valves. Must conform to AWWA standard C-504, Class 150-B

Valve boxes shall be Tyler 6855 Series, two piece, cast iron, slip type, 5 ¼ inch shaft with drop lid. Lid shall be marked "Irrigation", or "Irr".

3.05 Air-Vacuum Valves

Minimum size 1-inch. APCO Air/Vacuum Valve, Model 142. Other sizes, as required, shall be APCO 140 series. Air/vacuum valves shall be located in a manhole in accordance to Haight's Creek standard drawings.

3.06 Service Saddles

Service saddles shall be of ductile iron construction with stainless steel bands and bolts and shall be a Ford FS101, Mueller DR1S, or Romac 101NS.

3.07 Service Laterals

Polyethylene CTS, PE 3408, DR 9, Pressure Class 200, conforming to AWWA C901, colored purple. Lateral sizing shall be based on the following table.

Acres Served *	PE Nom. Tubing Outside Dia.
0-0.5	1"
0.6-1.2	1 ½"
1.3-2.75	2"
2.8-5.0	Consult HCIC Engineer

*Dual services require a minimum of 1 ½" service.

3.08 Meter Valve

1" meter valves shall be Ford B13-444W, or Mueller B-24351; larger sizes by approval of Hights Creek Engineer.

3.09 Water Meter

Water meters are required as specified by HCIC for the particular installation and shall report instantaneous flow in gallons per minute. Water meters for 1" service laterals shall be 1" Sensus i-PERL water meters. No "or equal" products will be allowed. Water meters for larger connections shall be approved by the Hights Creek Engineer.

3.10 AMR Transmitters

Each meter shall be fitted with an AMR transmitter with integral connector. The transmitter shall be mounted to the underside of the enclosure lid as shown in the standard drawings. The AMR transmitter shall be an Itron 100W, model # ERW-1300-202. No "or equal" products will be allowed.

3.11 Meter Enclosure

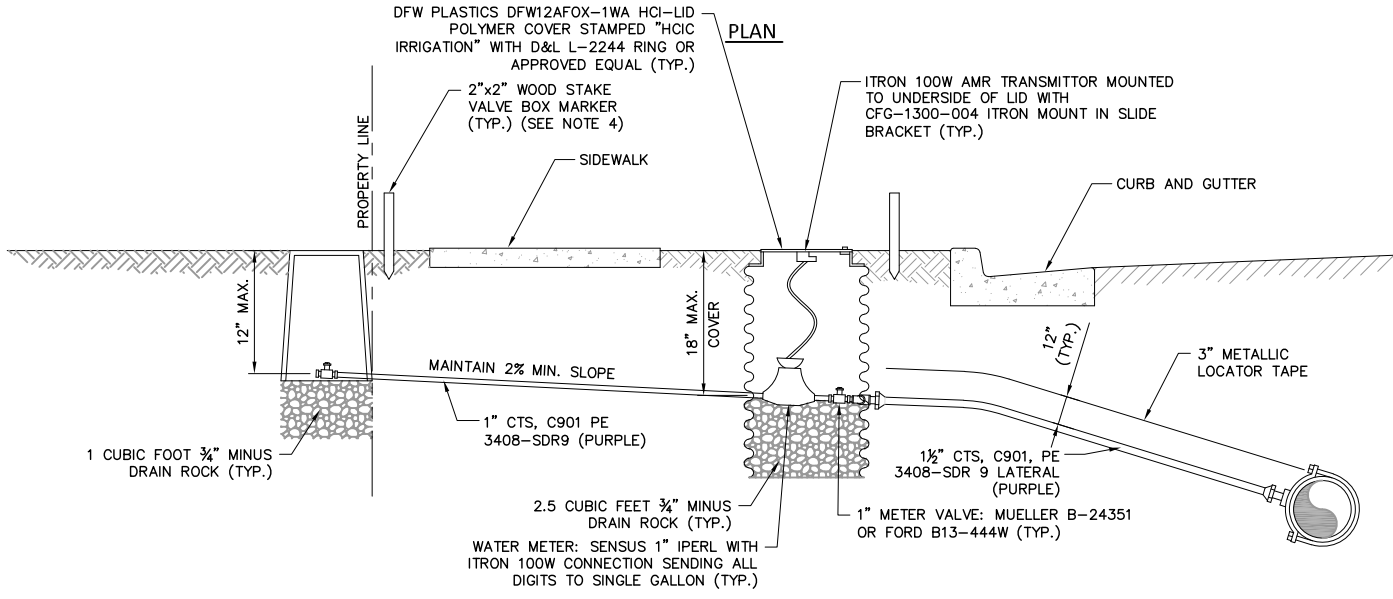
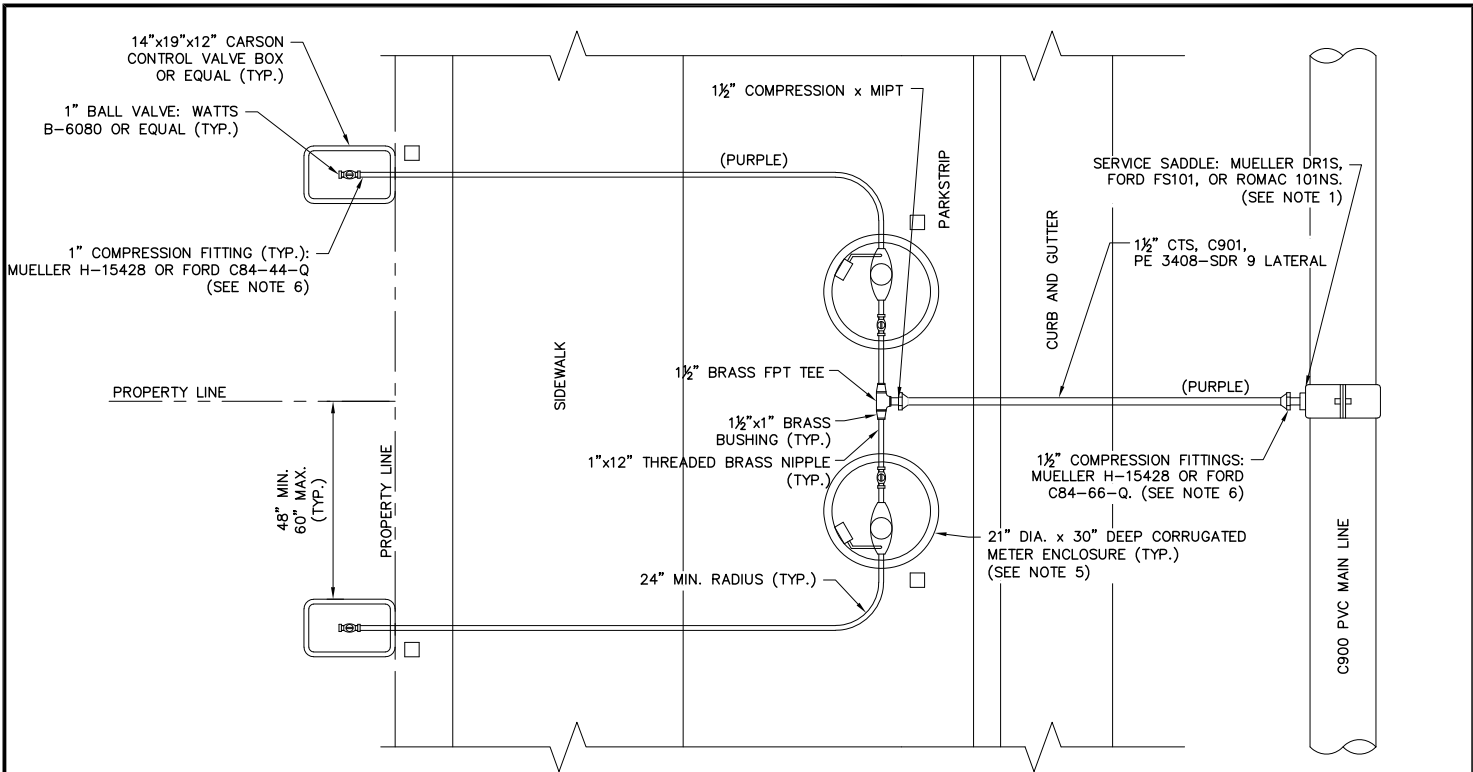
1" meters shall be housed in a corrugated 21" diameter by 30" deep enclosure with a DFW Plastics DFW12AFOX-1WA HCI-LID polymer polymer cover stamped "HCIC Irrigation" and be provided with a D&L L-2244 ring or approved equal.

3.12 Control Valve

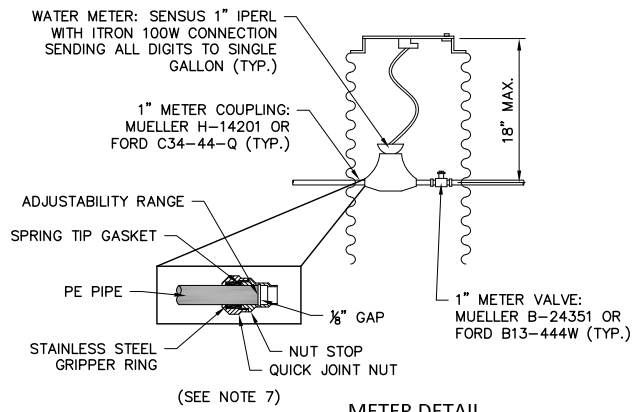
A control valve shall be provided. 1" control valves shall be a Watts B-6080 ball valve or approved equal.

3.13 Control Valve Box

The control valve box shall be approximately 14" x 18" x 12" and shall be marked "Sprinkler" or "Irrigation". The control valve box shall be set so that the elevation of the top of the box is equal to that of the curb or sidewalk. Valve boxes shall be as manufactured by Carson, or approved equal.



PROFILE



- NOTES:
- CONSULT HCIC ENGINEER FOR MAINLINE PIPE SIZES GREATER THAN 12" OR FOR MAINLINE PIPE MATERIAL OTHER THAN C900 PVC. HOT TAPPING NOT ALLOWED.
 - METER & ENCLOSURE SHALL BE LOCATED BEHIND CURB WITHIN STREET R.O.W. OR PUBLIC UTILITY EASEMENT IF NO CURB OR GUTTER EXISTS.
 - VALVE & METER ENCLOSURE LIDS SHALL BE STAMPED "HCIC IRRIGATION".
 - VALVE BOX MARKERS MUST BE SET ADJACENT TO EVERY VALVE & METER.
 - INSURE VALVE CONTROL NUT CAN BE SERVICED BY WRENCH WHEN POSITIONING UNDER ENCLOSURE LID.
 - ALL COMPRESSION-TYPE CONNECTIONS REQUIRE STAINLESS STEEL INSERT STIFFENERS.
 - THE TUBING SHOULD BE INSERTED INTO THE FITTING SO THAT THE END OF THE TUBING IS WELL PAST THE RUBBER GASKET AND AT LEAST 1/8" FROM THE BOTTOM OF THE SOCKET.
 - ALL WORK SHALL BE INSPECTED & APPROVED BY HCIC INSPECTOR PRIOR TO BACKFILL. ALL INSPECTIONS SHALL BE COORDINATED 24 HOURS IN ADVANCE.

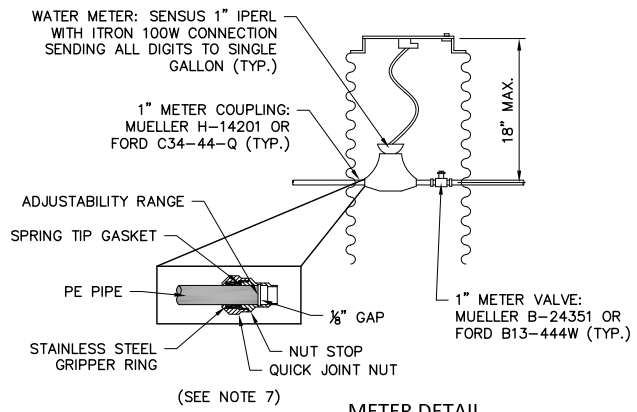
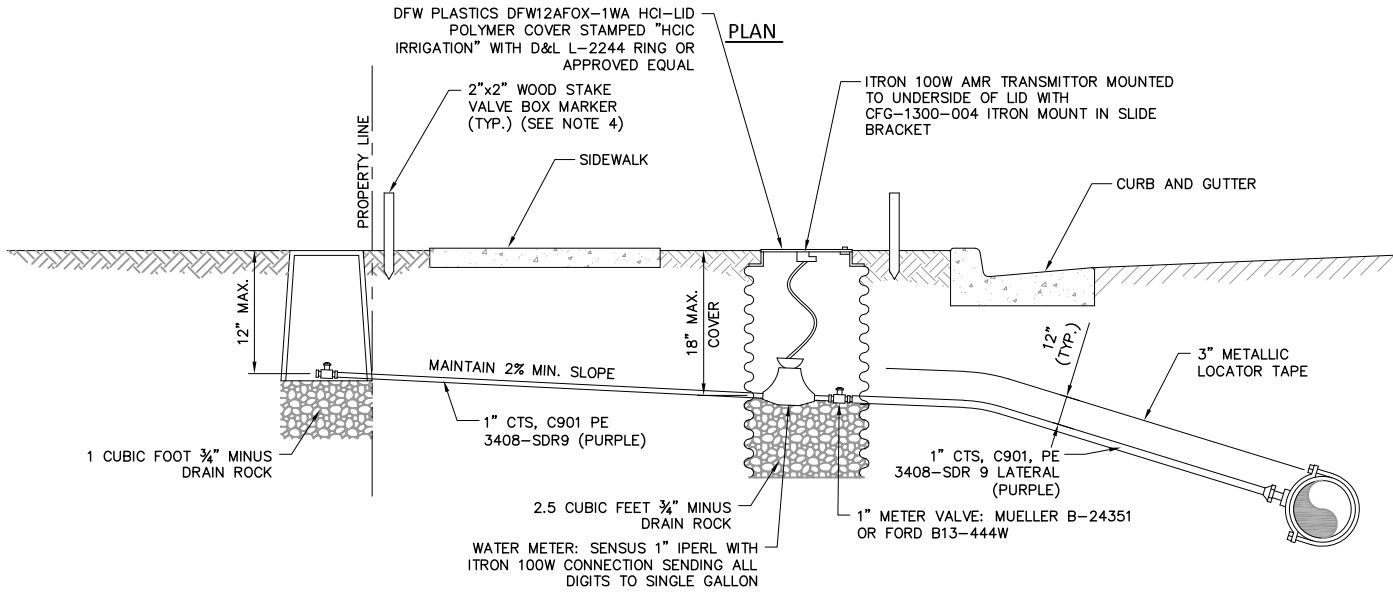
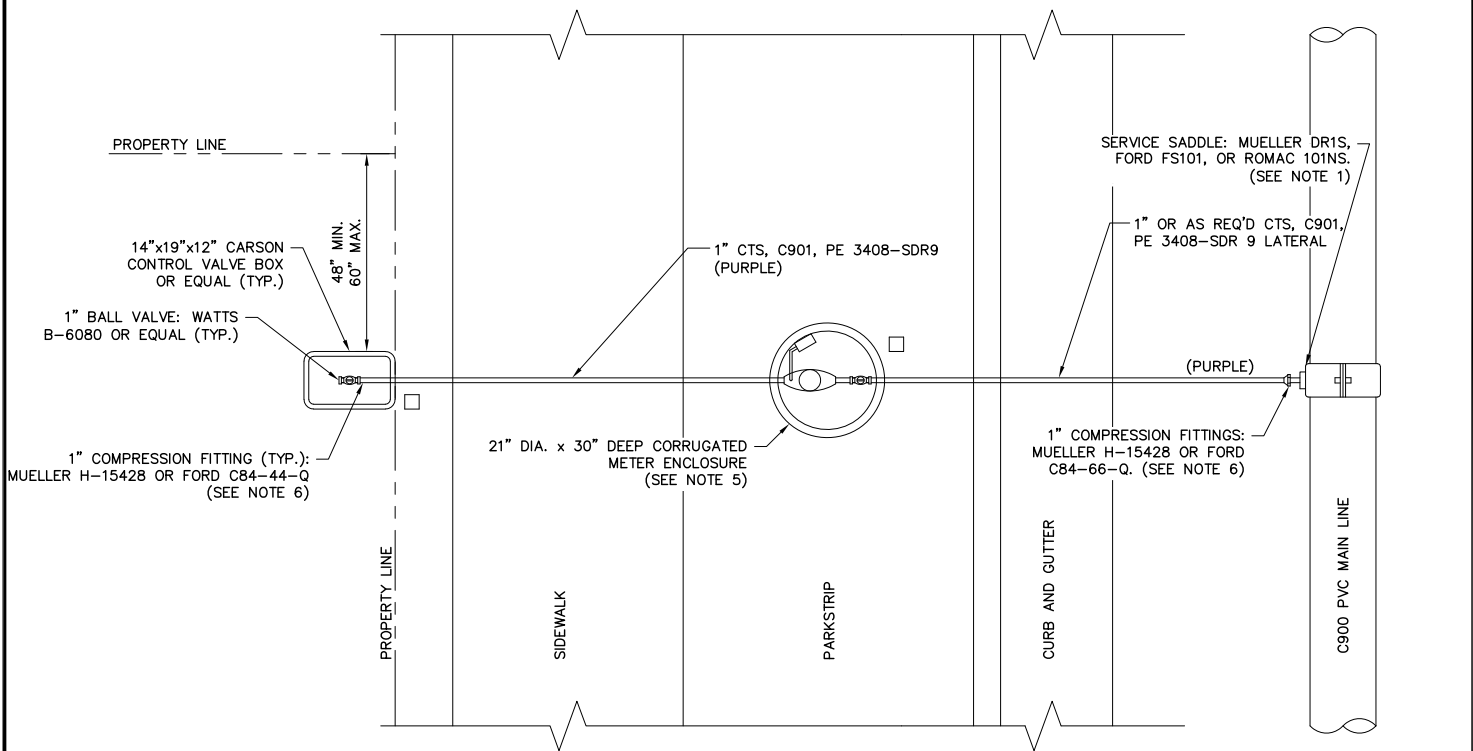
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REVISION			
NO.	DESCRIPTION	BY	APR. DATE



Haight's Creek Irrigation Co.
Pressure Irrigation Standards

TYPICAL DOUBLE SERVICE CONNECTION DETAIL

SHEET	D-1
CAD DWG:	Std_Details.dwg
PLOT SCALE:	N/A
DATE:	JUN 2015
DRAWN BY:	JTB
DESIGN BY:	BRN
CHECKED BY:	BRD
SCALE:	-



- NOTES:**
1. CONSULT HCIC ENGINEER FOR MAINLINE PIPE SIZES GREATER THAN 12" OR FOR MAINLINE PIPE MATERIAL OTHER THAN C900 PVC. HOT TAPPING NOT ALLOWED.
 2. METER & ENCLOSURE SHALL BE LOCATED BEHIND CURB WITHIN STREET R.O.W. OR PUBLIC UTILITY EASEMENT IF NO CURB OR GUTTER EXISTS.
 3. VALVE & METER ENCLOSURE LIDS SHALL BE STAMPED "HCIC IRRIGATION".
 4. VALVE BOX MARKERS MUST BE SET ADJACENT TO EVERY VALVE & METER.
 5. INSURE VALVE CONTROL NUT CAN BE SERVICED BY WRENCH WHEN POSITIONING UNDER ENCLOSURE LID.
 6. ALL COMPRESSION-TYPE CONNECTIONS REQUIRE STAINLESS STEEL INSERT STIFFENERS.
 7. THE TUBING SHOULD BE INSERTED INTO THE FITTING SO THAT THE END OF THE TUBING IS WELL PAST THE RUBBER GASKET AND AT LEAST 1/8" FROM THE BOTTOM OF THE SOCKET.
 8. ALL WORK SHALL BE INSPECTED & APPROVED BY HCIC INSPECTOR PRIOR TO BACKFILL. ALL INSPECTIONS SHALL BE COORDINATED 24 HOURS IN ADVANCE.

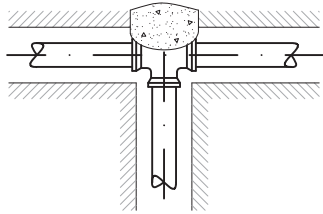
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REVISION			
NO.	DESCRIPTION	BY	APR. DATE



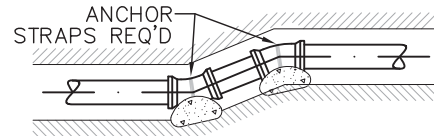
Haight's Creek Irrigation Co.
Pressure Irrigation Standards

TYPICAL SINGLE SERVICE CONNECTION DETAIL

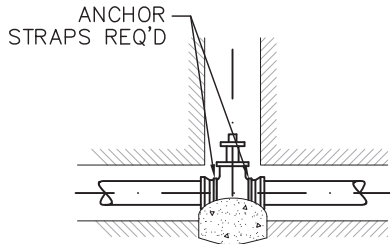
SHEET D-2	CAD DWG: Std_Details.dwg
PLOT SCALE: N/A	DATE: JUN 2015
DESIGN BY: JTB	CHECKED BY: BRD
SCALE: -	



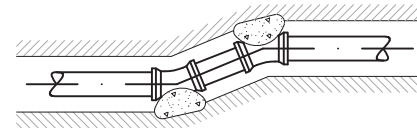
TEE



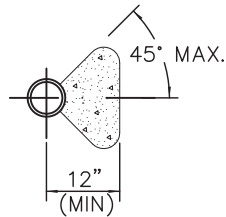
VERTICAL APPLICATION
45°, 22 1/2°, OR
11 1/4° BEND



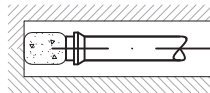
VALVE ANCHORS REQ'D
FOR VALVES 12" OR LARGER



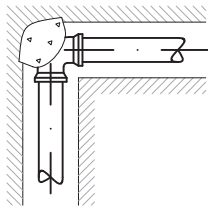
HORIZONTAL APPLICATION
45°, 22 1/2°, OR
11 1/4° BEND



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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NO.	DESCRIPTION	BY	APR.	DATE



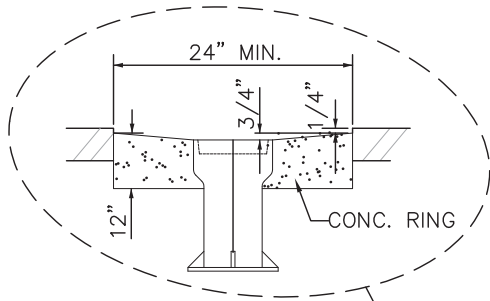
Engineers • Surveyors • Planners

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Pressure Irrigation Standards

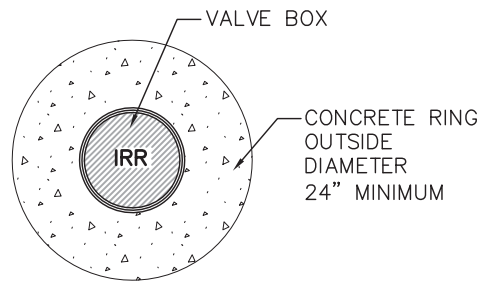
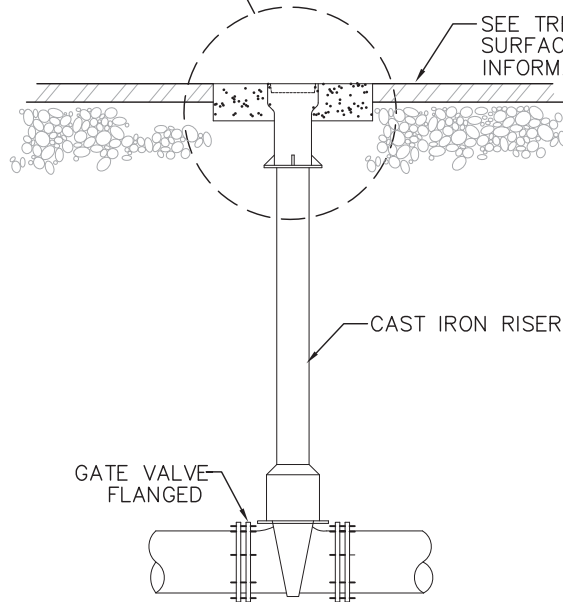
THRUST BLOCKING DETAILS

SHEET **D-3**

CAD DWG:Std_Details.dwg
PLOT SCALE: N/A
DATE: NOV 2012
DRAWN BY: D.STEELE
DESIGN BY: D.STEELE
CHECKED BY: TLA
SCALE: -



NOTE: LID FOR SECONDARY WATER TO BE TYLER 6855 SERIES, (OR EQUAL) STAMPED "IRR" OR "IRRIGATION"



PLAN VIEW

VALVE BOX CONCRETE COLLAR DETAIL

N.T.S.

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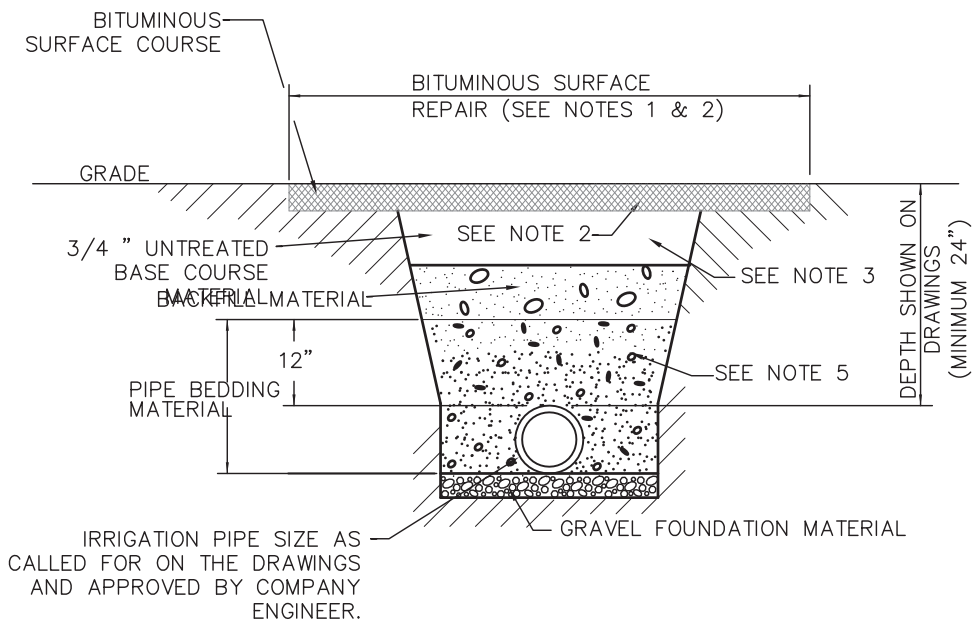
NO.	DESCRIPTION	BY	APR.	DATE



Haight's Creek Irrigation Co.
Pressure Irrigation Standards

VALVE BOX CONCRETE COLLAR

SHEET	D-4
CAD DWG:	Std_Details.dwg
PLOT SCALE:	N/A
DATE:	NOV 2012
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.

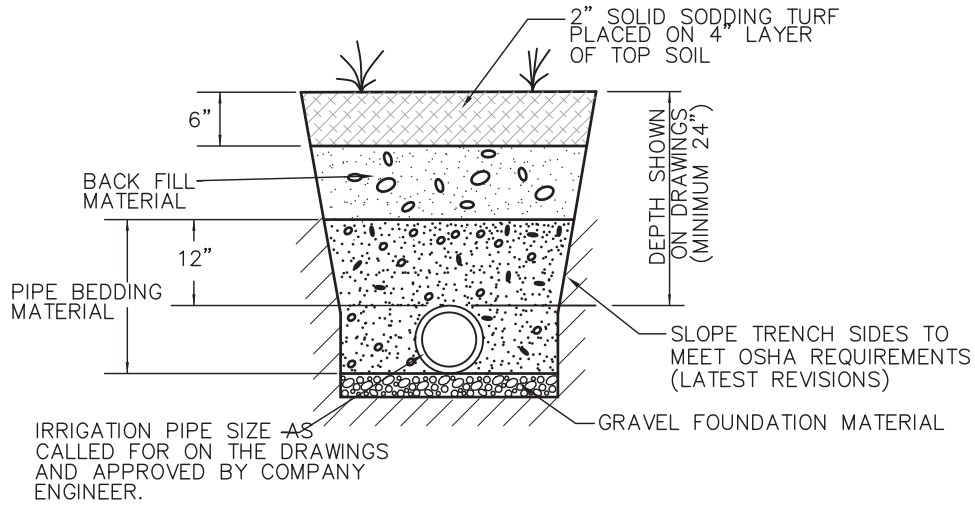
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**Haight's Creek Irrigation Co.
Pressure Irrigation Standards**

**BITUMINOUS SURFACE
TRENCH SECTION**

SHEET	D-5
CAD DWG:Std_Details.dwg	
PLOT SCALE: N/A	
DATE: NOV 2012	
DRAWN BY: D.STEELE	
DESIGN BY: D.STEELE	
CHECKED BY: TLA	
SCALE: -	

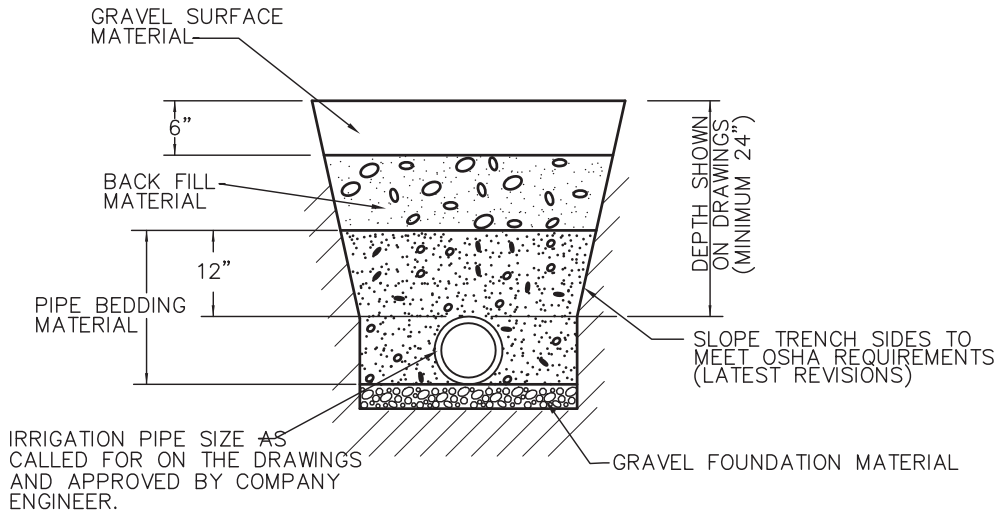


NOTES:

SEE SPECIFICATIONS FOR GRADATION
& COMPACTION REQUIREMENTS.

TURF SURFACE TRENCH SECTION

N.T.S.



NOTES:

SEE SPECIFICATIONS FOR GRADATION
& COMPACTION REQUIREMENTS.

GRAVEL SURFACE TRENCH SECTION

N.T.S.

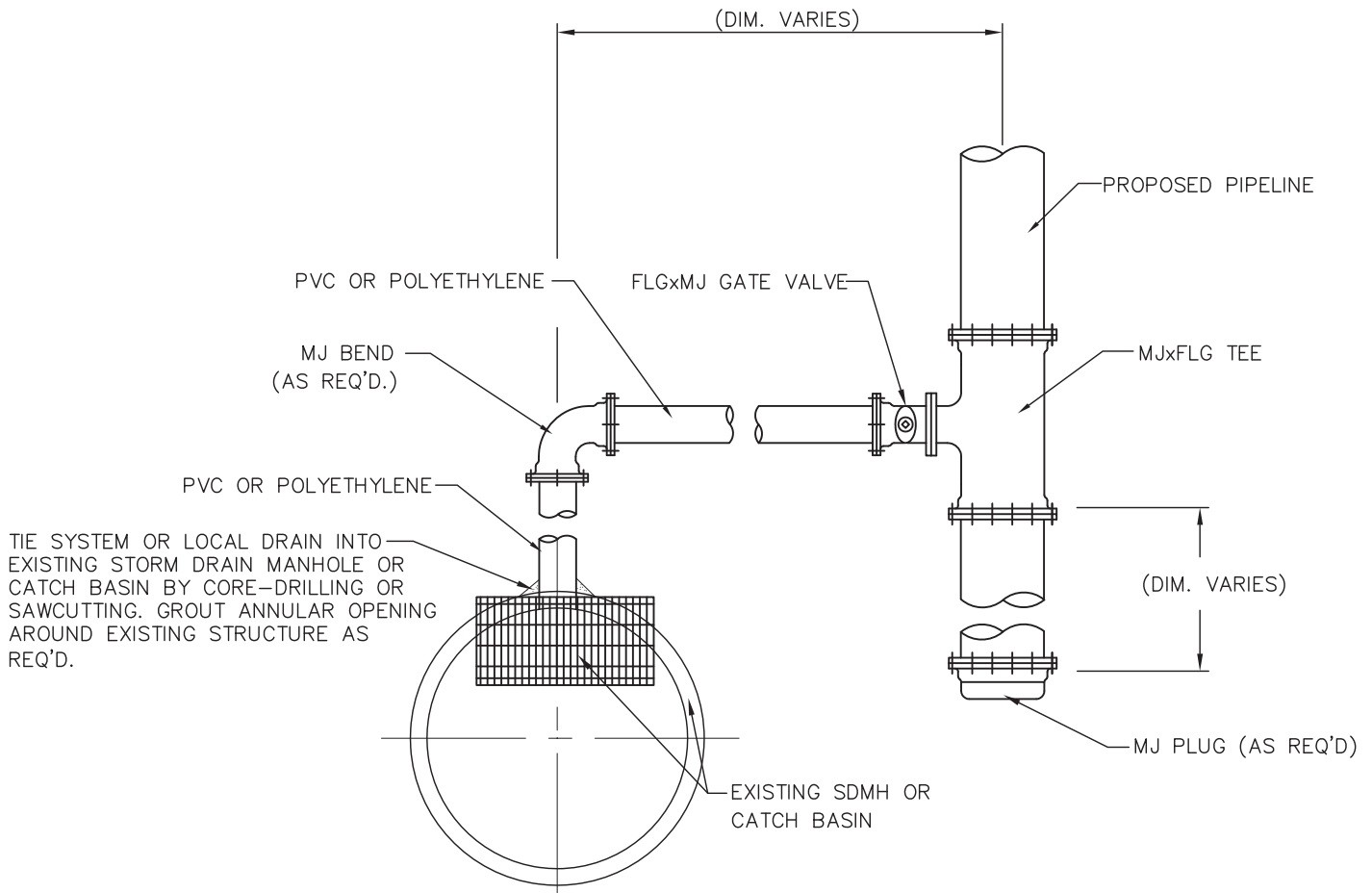
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NO.	DESCRIPTION	BY	APR., DATE



Haight's Creek Irrigation Co.
Pressure Irrigation Standards

GRAVEL & TURF SURFACE
TRENCH SECTION

SHEET	D-6
CAD DWG: Std_Details.dwg	
PLOT SCALE: N/A	
DATE: NOV 2012	
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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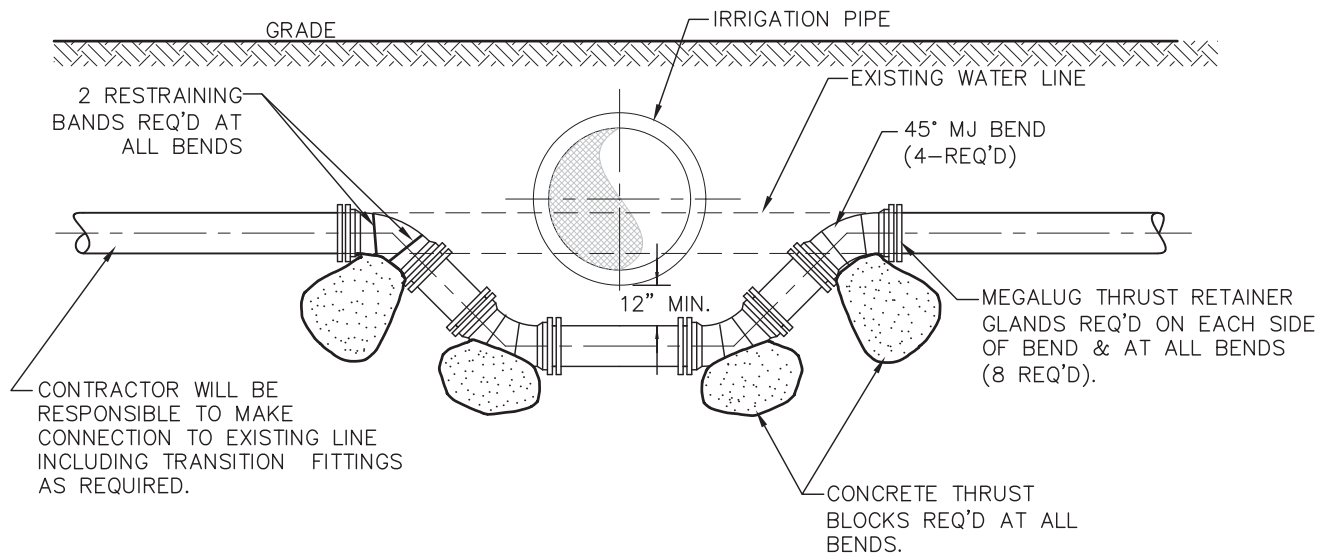
NO.	DESCRIPTION	BY	APR.	DATE



Haight's Creek Irrigation Co.
Pressure Irrigation Standards

LOCAL/SYSTEM DRAIN DETAIL

SHEET	D-7
CAD DWG:	Std_Details.dwg
PLOT SCALE:	N/A
DATE:	NOV 2012
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	BRD
SCALE:	-



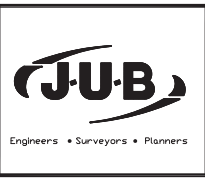
CONTRACTOR WILL BE RESPONSIBLE TO MAKE CONNECTION TO EXISTING LINE INCLUDING TRANSITION FITTINGS AS REQUIRED.

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.

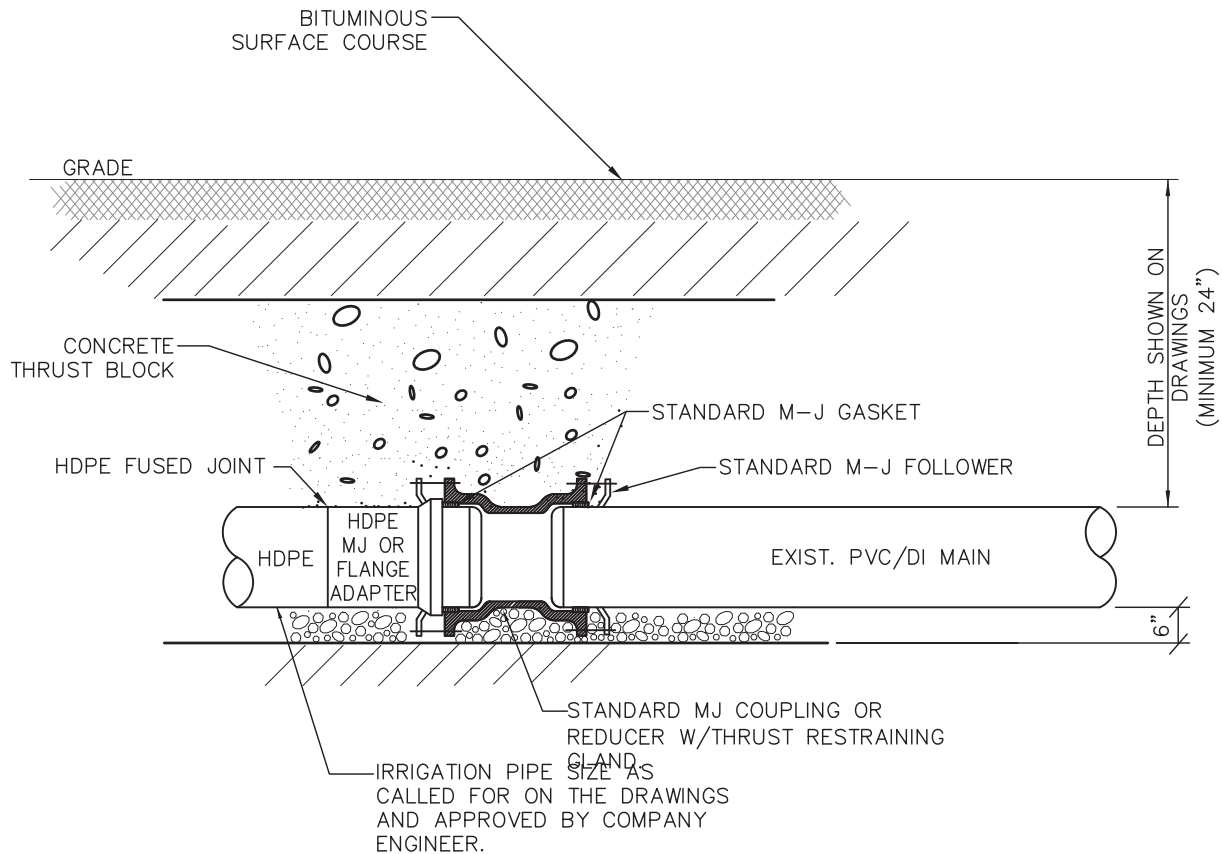
WATER LINE RELOCATION DETAIL
N.T.S.

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NO.	DESCRIPTION	BY	APR., DATE



Haight's Creek Irrigation Co.
Pressure Irrigation Standards
WATERLINE
RELOCATION DETAIL

SHEET	D-8
CAD DWG:	Std_Details.dwg
PLOT SCALE:	N/A
DATE:	NOV 2012
DRAWN BY:	D.STEELE
DESIGN BY:	D.STEELE
CHECKED BY:	BRD
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

N.T.S.

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NO.	DESCRIPTION	BY	APR., DATE



Haight's Creek Irrigation Co.
Pressure Irrigation Standards

HDPE
CONNECTION DETAIL

SHEET	D-9
CAD DWG: Std_Details.dwg	
PLOT SCALE: N/A	
DATE: NOV 2012	
DRAWN BY: D.STEELE	
DESIGN BY: D.STEELE	
CHECKED BY: TLA	
SCALE: -	

STANDARD MANHOLE RING & VENTED COVER
 W/ (4) 3/4" VENT HOLES. COVER TO READ
 "IRRIGATION". D&L SUPPLY A-1180-12

LENGTH AS REQ'D TO
 CLEAR VALVE BODY

PLACE #14 MESH CORROSION
 RESISTANT SCREEN ON END
 OF VENT PIPE

APCO AIR/VAC MODEL 142

1" 1/4 TURN BALL VALVE

1" COUPLING, THREADED

1" GALV. NIPPLE
 (TYP.)

1" PVC SxS 90° BEND
 (TYP. 2)

1" PVC SxMIPT ADAPTER

BRASS SERVICE SADDLE

12"
 ROCK BEDDING
 1" MAX. SIZE

4'-0"

AIR/VAC DETAIL

N.T.S.

REUSE OF DRAWINGS

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REVISION

NO.	DESCRIPTION	BY	APR.	DATE



Engineers • Surveyors • Planners

Haight's Creek Irrigation Co.
 Pressure Irrigation Standards

AIR/VAC DETAIL

SHEET **D-10**

CAD DWG: Std_Details.dwg
 PLOT SCALE: N/A
 DATE: NOV 2012
 DRAWN BY: JDM
 DESIGN BY: BRN
 CHECKED BY: BRN
 SCALE: -