

BENTON IRRIGATION DISTRICT

IRRIGATION SYSTEM IMPROVEMENTS

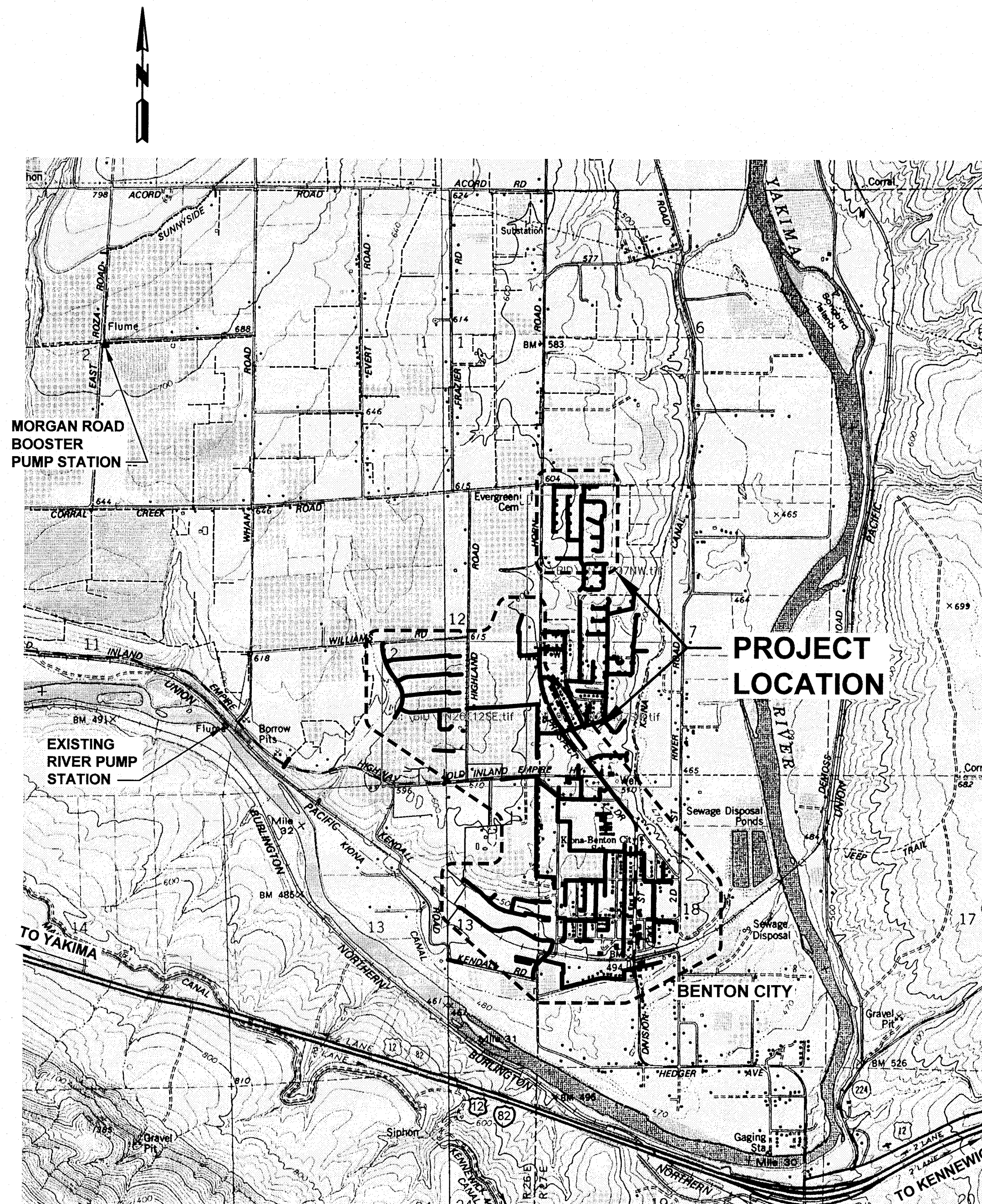
PHASE 3B

2012



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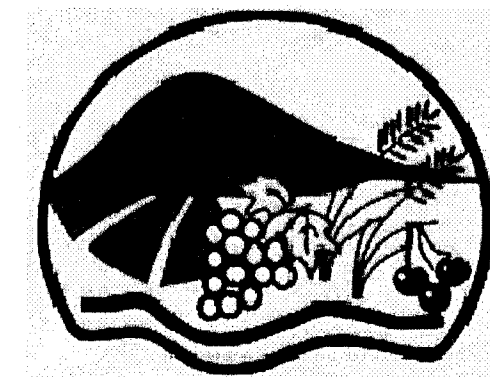


VICINITY MAP
NTS

RECORD DRAWINGS

JUNE 10, 2013

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DISTRICT BOARD OF DIRECTORS

ROBERT BUOY
DIRK MARTIN
DON REDDOUT



SIGNED 06-10-13
RECORD DRAWING

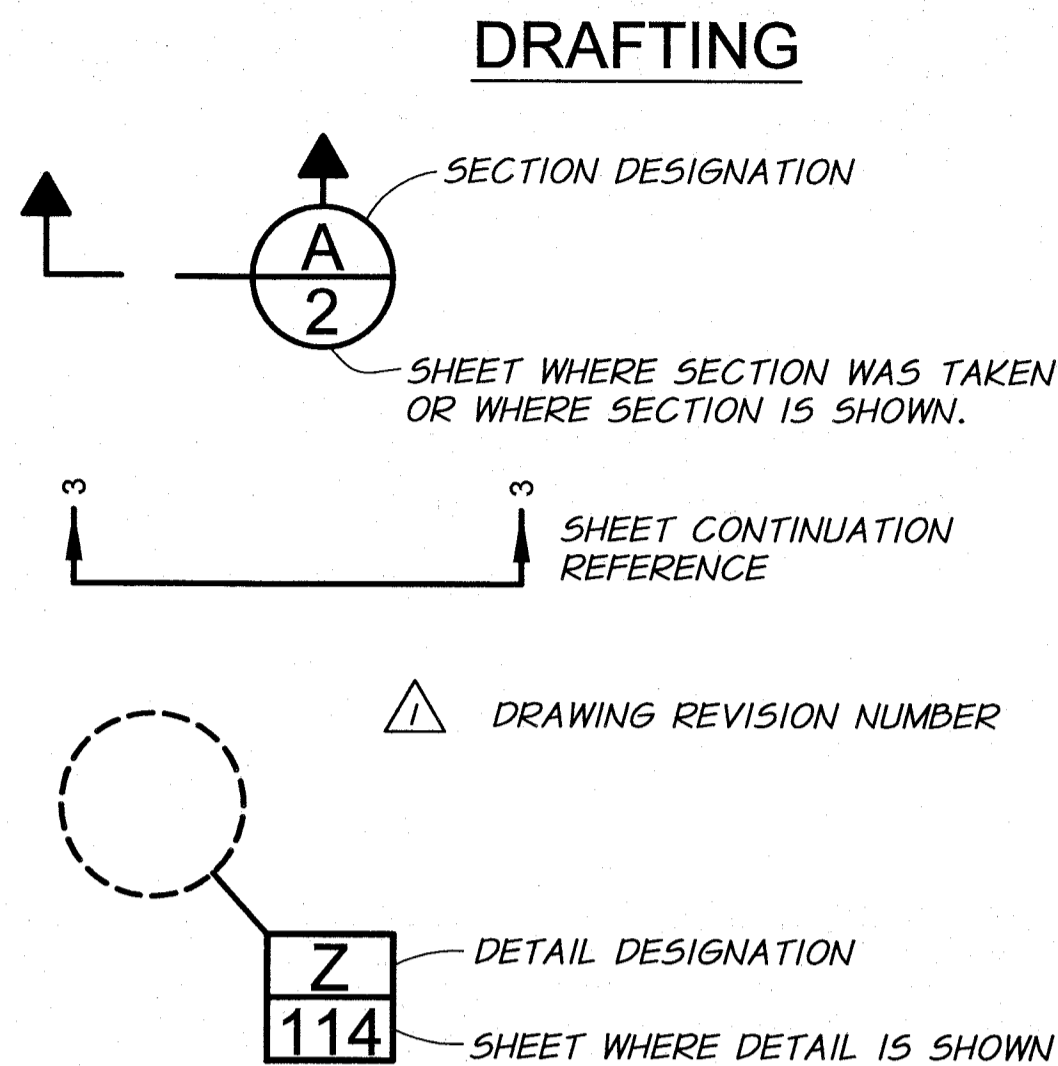
ap anderson perry & associates, inc.

engineering • surveying • natural resources
1901 N. Fir Street - La Grande, OR 97850 Ph: (541)963-8309 Fax: (541)963-5456
LA GRANDE, OR. WALLA WALLA, WA.

PLAN LEGEND

IRRIGATION	
EXISTING	PROPOSED
IRRIGATION LINE — IRR —	6" PVC —
VALVE — X —	— X —
CAP — C —	— C —
COUPLING — —	— —
REDUCER — ▷ —	— ▷ —
AIR/VAC VALVE — ↑ —	— ↑ —
BLOW OFF ASSEMBLY	— ● —
SERVICE	— ⊗ —
IRRIGATION CONTROL STRUCTURE — IRR — □ — IRR —	
SPRINKLER HEAD	— ☀ —

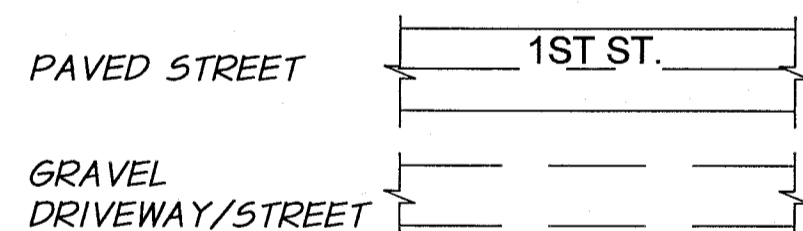
SITE SURVEY	
EXISTING	
INDEX CONTOUR — 750 —	
INTERMEDIATE CONTOUR — 749 —	
CENTERLINE — — — —	
PROPERTY LINE/EASEMENT — - - - -	
SECTION LINE — — — —	
CULVERT — [- - - -] —	
BENCH MARK — ⊕ —	
MONUMENT — △ —	
CONTROL POINT — ⊙ —	
TEST PIT (SEE CONTRACT DOCUMENT APPENDIX FOR LOGS) — TP-14 —	
SPOT ELEVATION — 592.3 —	



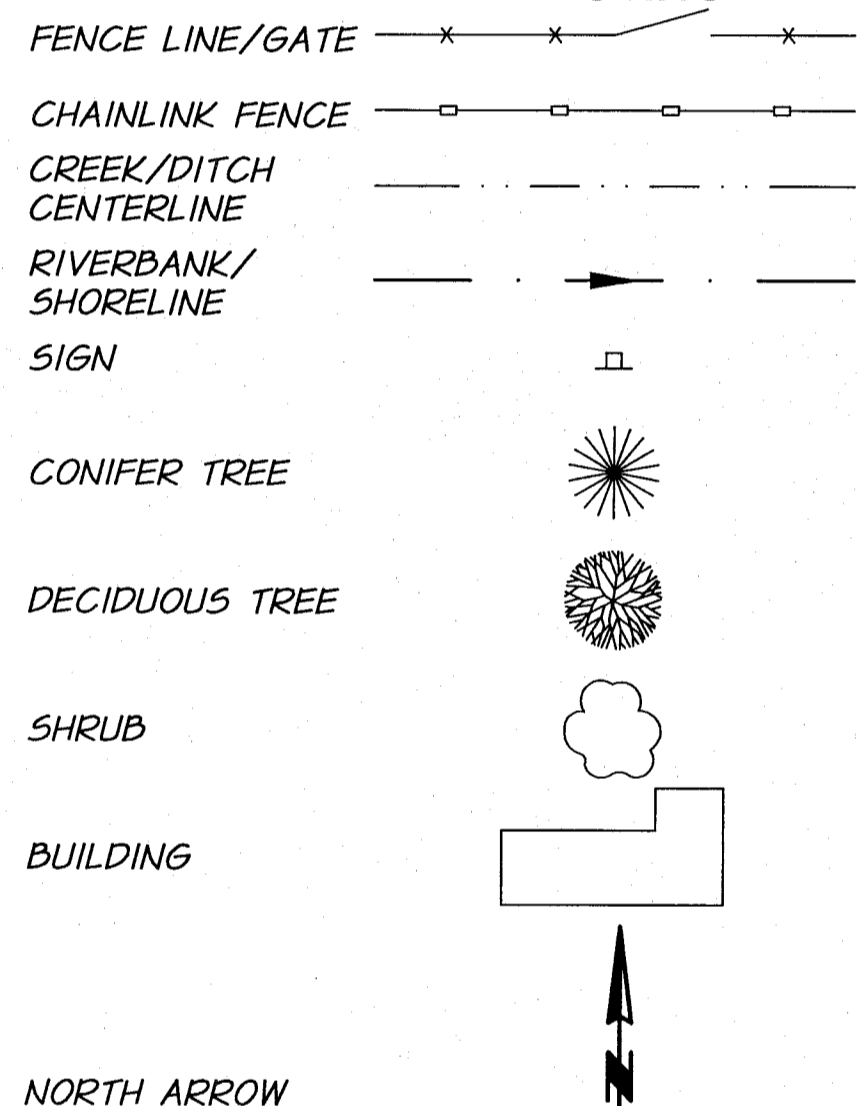
MISCELLANEOUS UTILITIES

EXISTING	
WATER LINE — W — — — — W —	
BURIED POWER — P — P — P —	
OVERHEAD POWER — OHP — OHP —	
BURIED TELEPHONE — UT —	
FIBER OPTIC — FO —	
GAS SERVICE — G — G —	
SIGNAL CABLE IN CONDUIT — SC —	
UTILITY POLE — ○ —	
GUY WIRE — — — —	
TELEPHONE RISER — ◇ —	
STREET LIGHT — ☀ —	

STREET AND CURB



GENERAL EXISTING



ESTIMATED QUANTITIES FOR ROCK EXCAVATION

PHASE 3B: ±100 CUBIC YARDS

NOTE:
REFER TO THE SPECIFICATIONS FOR DESCRIPTION OF ROCK EXCAVATION. THE QUANTITIES SHOWN ARE ESTIMATES PREPARED BY THE ENGINEER AND ARE BASED UPON FIELD SURVEY DATA PERFORMED BY THE ENGINEER, AND THE IMPROVEMENTS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL MAKE HIS OWN DETERMINATION OF THE ACTUAL QUANTITIES TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS AND AS SPECIFIED FOR PREPARING HIS BID FOR THE PROJECT.

SERVICE LINE SIZE (INCHES)	DOLE CONTROL VALVE SIZE (INCHES)	DOLE CONTROL VALVE FLOW RATE (GPM)	CALCULATED REQUIRED FLOW (GPM)	PRV SIZE (INCHES) OR CONTROL TYPE FOR LARGER SERVICES:
1.5	1	6	5.82	FCV = FLOW CONTROL VALVE
2	2	12	11.64	PRV/FCV = PRESSURE REDUCING AND FLOW CONTROL VALVE
3	3	18	17.46	
4	4	24	23.28	
6	6	36	34.92	
8	8	48	46.56	
10	10	60	58.20	

NOTE:
A BLANK DOLE CONTROL VALVE SIZE AND FLOW FIELD INDICATES A FLOWMETER USED. A BLANK PRV SIZE FIELD INDICATES NO PRV VALVE REQUIRED.

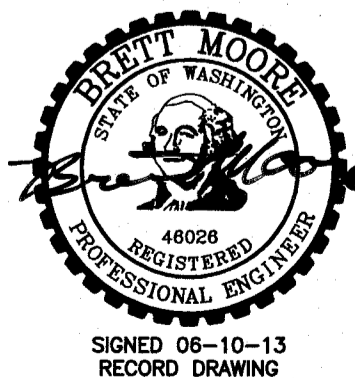
RS	STANDARD RESIDENTIAL SERVICE. LINE SIZE IS 1.0 INCH, DOLE CONTROL VALVE SIZE IS 1.0 INCH WITH 6 GPM FLOW RATE. CALCULATED REQUIRED FLOW IS 5.82 GPM.
RST	STANDARD RESIDENTIAL SERVICE AS DESCRIBED ABOVE WITH TRAFFIC RATED BOX AND LID.
RS 12	STANDARD RESIDENTIAL SERVICE AS DESCRIBED ABOVE WITH FLOW RATE GREATER THAN 6 GPM.
	DOLE CONTROL VALVE FLOW RATE

CONSTRUCTION NOTES ADDED BY ADDENDUM NO. 1

- CONCRETE RESTORATION ALONG PIPELINE ALIGNMENTS IS NOT NOTED ON THE DRAWINGS, BUT MUST BE PROVIDED AS REQUIRED TO REPLACE EXISTING CONCRETE DISTURBED BY CONSTRUCTION ACTIVITIES.
- IN LOCATIONS WHERE EXISTING SERVICES ARE REMOVED AND REPLACED WITH NE RS SERVICE, THE CONNECTION TO EXISTING PIPELINE AND/OR SERVICE WILL BE COMPLETED AS DIRECTED BY THE ENGINEER WITH PIPE AND FITTINGS AS REQUIRED. THE DETERMINATION OF THE WORK REQUIRED WILL OCCUR AFTER THE EXISTING SYSTEM IS EXCAVATED AND EXPOSED FOR INSPECTION.

CONSTRUCTION NOTES

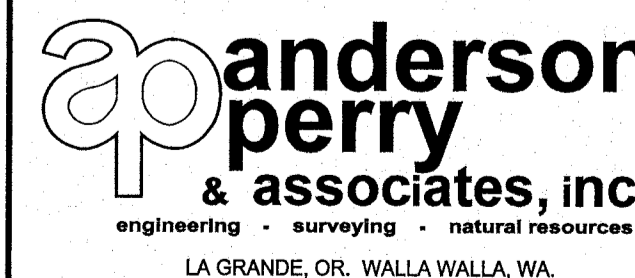
- ALL ASPHALT RESTORATION REQUIRED WITHIN AREAS NOT SPECIFIED FOR ASPHALT RESTORATION SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE AND AT NO COST TO THE OWNER.
- REMOVE EXISTING DRAINAGE CULVERTS TO CONSTRUCT IRRIGATION LINE. EXISTING CULVERTS TO BE REINSTALLED AFTER PIPELINE INSTALLATION IS COMPLETED. CULVERTS DAMAGED BY CONSTRUCTION TO BE REPLACED WITH NEW SAME TYPE AND SIZE AT CONTRACTOR'S EXPENSE AND AT NO COST TO THE OWNER UNLESS THE CULVERT AGE AND CONDITION ENSUED THE DAMAGE AS DETERMINED BY THE ENGINEER. THE ENGINEER MAY REQUIRE REPLACEMENT OF CULVERTS DUE TO AGE OF CULVERT AND EXISTING CONDITION. REPLACEMENT REQUIRED BY THE ENGINEER SHALL BE PAID UNDER THE "CULVERT REPLACEMENT" BID ITEM AND MUST HAVE PRIOR APPROVAL BEFORE REPLACEMENT.
- MAILBOXES, SIGNS, ETC., IN CONFLICT WITH WORK SHALL BE TEMPORARILY RELOCATED, AS REQUIRED BY THE ENGINEER, AND REINSTALLED TO THE ORIGINAL LOCATION AFTER THE IRRIGATION LINE IS CONSTRUCTED, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. DAMAGED MAILBOXES, SIGNS, POSTS, ETC., CAUSED BY THE CONSTRUCTION SHALL BE REPLACED WITH NEW LIKE KIND AS REQUIRED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE AND AT NO COST TO THE OWNER UNLESS THE AGE AND CONDITION ENSUED THE DAMAGE AS DETERMINED BY THE ENGINEER. THE ENGINEER MAY REQUIRE REPLACEMENT OF POST DUE TO AGE OF POST AND EXISTING CONDITION. REPLACEMENT REQUIRED BY THE ENGINEER SHALL BE PAID UNDER THE "POST REPLACEMENT" BID ITEM.
- REMOVE EXISTING FENCING TO CONSTRUCT IRRIGATION LINES AS REQUIRED. EXISTING FENCING TO BE REINSTALLED TO THE SATISFACTION OF THE PROPERTY OWNERS AFTER PIPELINE INSTALLATION IS COMPLETED. FENCING DAMAGED BY CONSTRUCTION TO BE REPLACED WITH NEW SAME TYPE AND SIZE TO THE SATISFACTION OF THE PROPERTY OWNERS AT CONTRACTOR'S EXPENSE AND AT NO COST TO THE OWNER.
- LOCATION FOR ALL SERVICES, AIR/VAC VALVES AND BLOW OFF ASSEMBLIES TO BE FIELD VERIFIED WITH THE ENGINEER PRIOR TO CONSTRUCTION. LOW POINTS ON MAIN LINES AND HIGH POINTS ON MAIN LINES SHOWN ON THE DRAWINGS ARE APPROXIMATE. CONSTRUCT BLOW OFFS AND AIR/VAC VALVES AT CONSTRUCTED LOW POINTS AND HIGH POINTS, RESPECTIVELY.
- FOR IRRIGATION LINE CONSTRUCTION DIRECTLY ADJACENT TO ORCHARDS, THE CONTRACTOR SHALL PROTECT ORCHARD LIMBS FROM DAMAGE AS REQUIRED DURING CONSTRUCTION. COMPENSATION FOR DAMAGED TREES AND/OR LIMBS CAUSED BY THE CONTRACTOR SHALL BE AT THE CONTRACTOR'S EXPENSE AND AT NO COST TO THE OWNER. SEE TECHNICAL SPECIFICATION FOR DETAIL.
- FRONTIER UNDERGROUND FIBER OPTIC LINES ARE LOCATED WITHIN THE PROJECT. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH FRONTIER PRIOR TO CONSTRUCTION. FOR NEW IRRIGATION LINES THAT WILL CROSS FIBER OPTIC LINES, THE NEW IRRIGATION LINES SHALL BE INSTALLED UNDERNEATH THE FIBER OPTIC LINES, MAINTAINING A MINIMUM OF 12 INCHES CLEARANCE. ADJUSTMENTS TO THE IRRIGATION LINE VERTICAL GRADE MAY BE REQUIRED, INCLUDING FITTINGS AS REQUIRED. THIS ADJUSTMENT SHALL BE INCIDENTAL TO THE WORK.
- EXISTING GROUND ELEVATIONS SHOWN ON THE PROFILES ARE APPROXIMATE AND MAY VARY FROM ACTUAL EXISTING GROUND ELEVATIONS ENCOUNTERED DURING CONSTRUCTION. THERE SHALL BE NO ADDITIONAL PAYMENT MADE TO THE CONTRACTOR FOR EXCAVATION AND BACKFILL VARIATIONS CAUSED BY ELEVATION OF EXISTING GROUND DIFFERENCES FROM WHAT IS SHOWN ON THE DRAWINGS.
- BOTH HORIZONTAL DEFLECTIONS AND CHANGES OF VERTICAL GRADE ARE SHOWN ON THE DRAWINGS. IN SOME LOCATIONS FITTINGS ARE CALLED FOR ON THE DRAWINGS AT HORIZONTAL DEFLECTIONS AND CHANGES IN VERTICAL GRADE, BUT NOT AT ALL LOCATIONS THAT MAY REQUIRE FITTINGS. IF PIPE JOINT DEFLECTION OR BENDING THE PIPE AS DESCRIBED AND ALLOWED IN THE TECHNICAL SPECIFICATIONS DOES NOT MAINTAIN ALIGNMENT OR GRADE, FITTINGS SHALL BE USED WITH APPROPRIATE THRUST BLOCKING AND SHALL BE INCIDENTAL TO THE PIPELINE WORK. ADDITIONALLY, THE CONTRACTOR SHALL MAINTAIN THE 2.5-FOOT MINIMUM COVER OVER THE TOP OF PIPE DURING CONSTRUCTION FOR ALL AREAS EXCEPT DITCH LINES AND ROAD CROSSINGS. MINIMUM COVER FOR DITCH LINES AND ROAD CROSSINGS SHALL BE 3 FEET, UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL PERFORM EXPLORATORY WORK PRIOR TO CONSTRUCTION INCLUDING POTHOLES OF UTILITIES SUCH AS TELEPHONE, FIBER OPTIC, ELECTRICAL, WATER, ETC., AND IRRIGATION MAINS AND SERVICE LINES THAT LAY ADJACENT TO OR CROSS THE IMPROVEMENTS TO BE CONSTRUCTED. THIS WORK SHALL BE PERFORMED IN ORDER TO ACCURATELY LOCATE AND DETERMINE SIZES OF THE LINES AND TO DETERMINE ANY CONFLICTS THAT MAY EXIST THAT WILL REQUIRE ADJUSTMENT OF UTILITIES, COORDINATION WITH UTILITIES, OR ADJUSTMENT OF IMPROVEMENTS. SEE THE TECHNICAL SPECIFICATIONS FOR ADDITIONAL DETAILS. PAYMENT FOR EXPLORATORY WORK SHALL BE PAID UNDER THE BID ITEM "POTHOLES."
- THRUST BLOCKING REQUIRED FOR ALL TEES AND ELBOWS 11-1/4 DEGREES OR GREATER FOR PIPE SIZES 3-INCH OR GREATER.
- THE CONTRACTOR'S WORK SHALL BE LIMITED TO THE WIDTH OF THE IRRIGATION EASEMENT PLUS ANY ADDITIONAL TEMPORARY EASEMENT PROVIDED AND COUNTY ROAD RIGHT-OF-WAY AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS. SEE THE TECHNICAL SPECIFICATIONS FOR DETAILS.
- SMUDGE POTS AND ACCESSORIES ADJACENT TO ORCHARDS SHALL BE MOVED BY PROPERTY OWNER PRIOR TO CONSTRUCTION.
- ALL GALVANIZED BURIED PIPE SHALL BE TAPE WRAPPED PER TECHNICAL SPECIFICATIONS.



RECORD DRAWING		BY	B.M.	DATE	4/13	HORIZ. SCALE	NONE	VERT. SCALE	
DESIGNED BY	M. OWENS	JOB NUMBER	1199-336	DATE	2012	ACAD FILE	LEGEND-Ph3B.dwg		
DRAWN BY	D. CHRISTMAN	COPYRIGHT 2012 BY ANDERSON-PERRY & ASSOC., INC.							
REVIEWED BY	B. MOORE								

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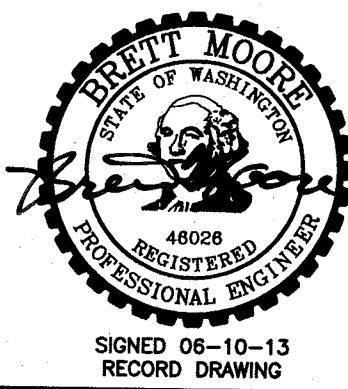
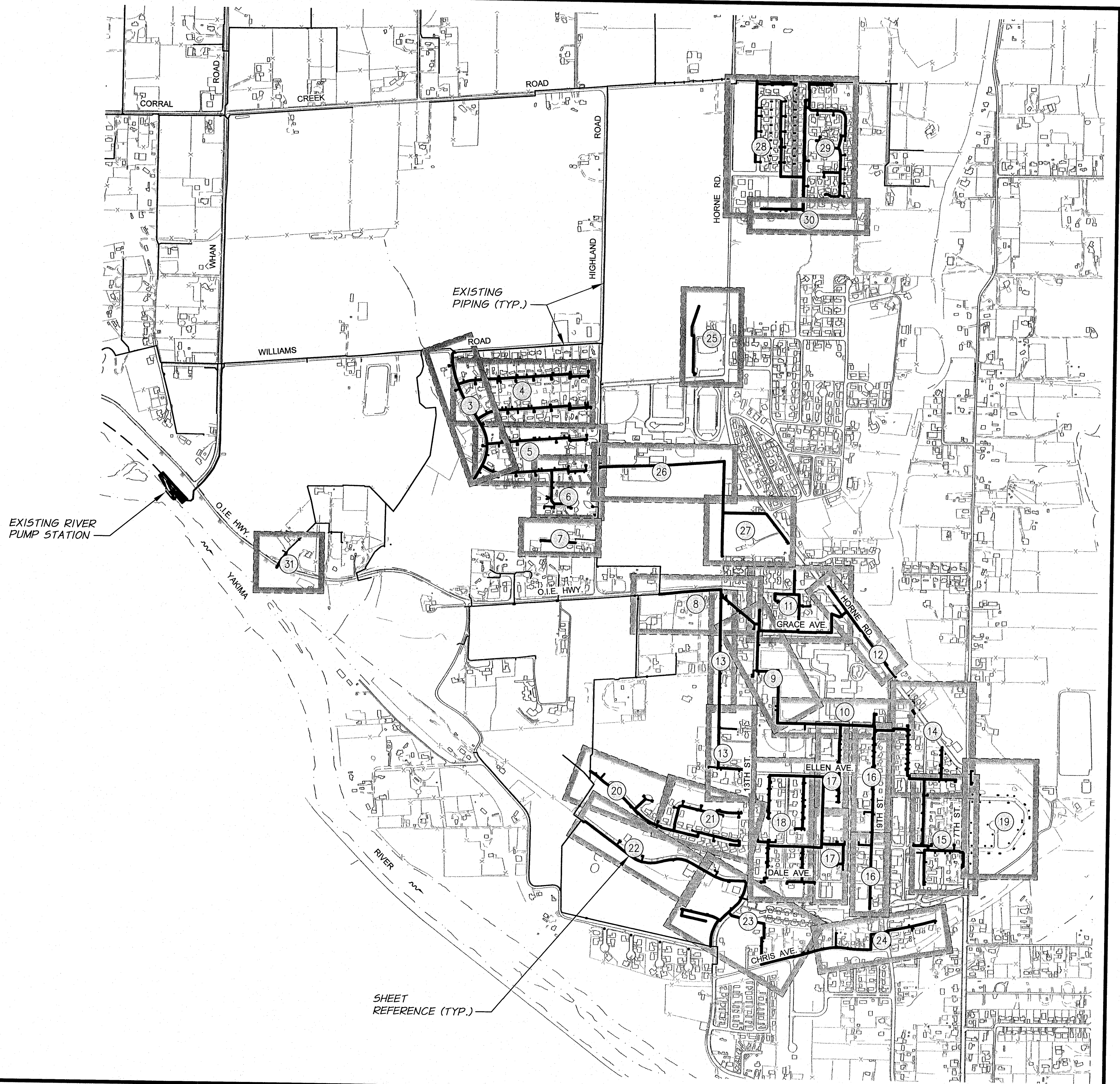


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

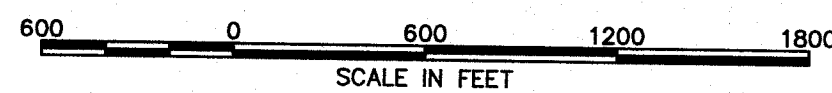
LEGEND, NOTES, AND QUANTITIES

SHEET

1

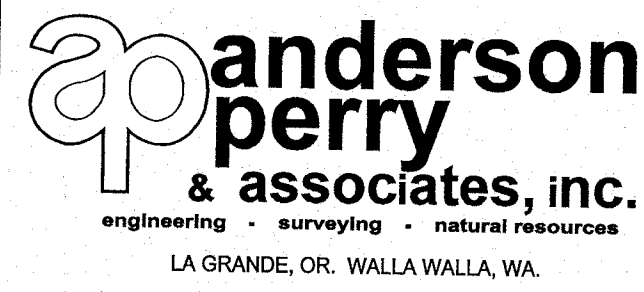


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RECORD DRAWINGS
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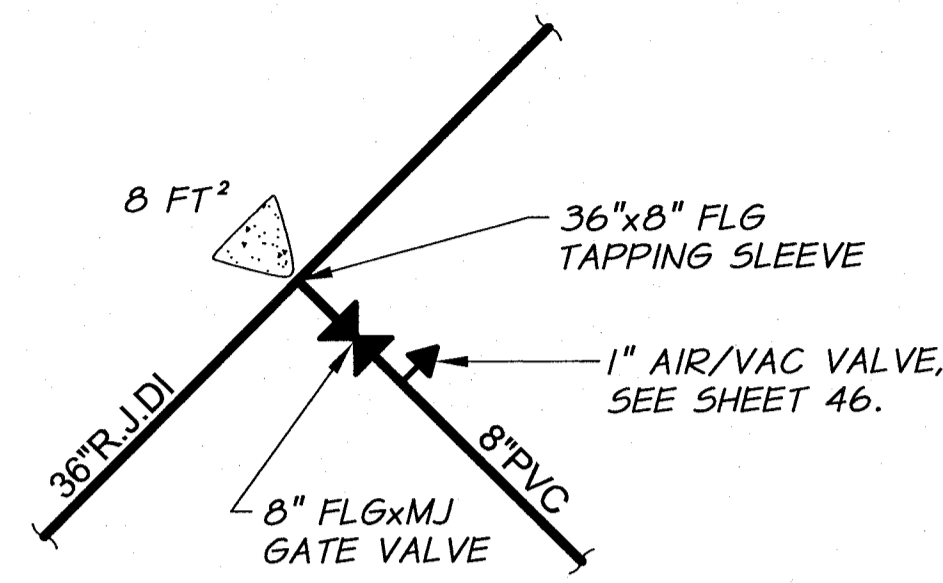
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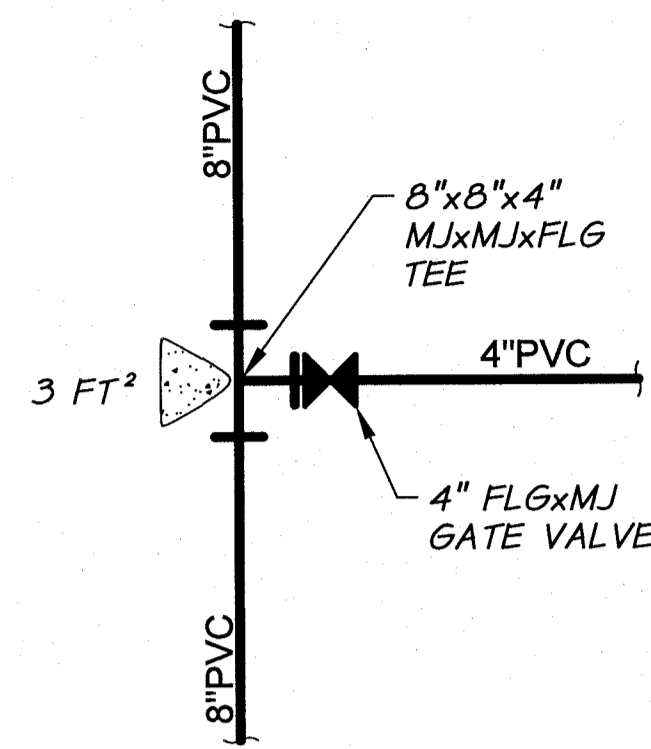
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
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SHEET INDEX

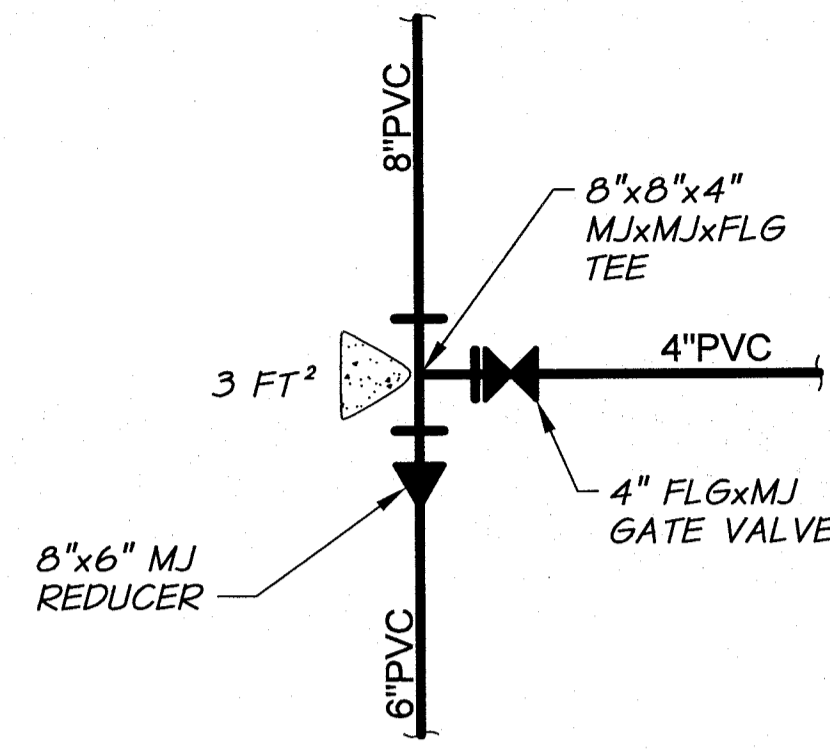
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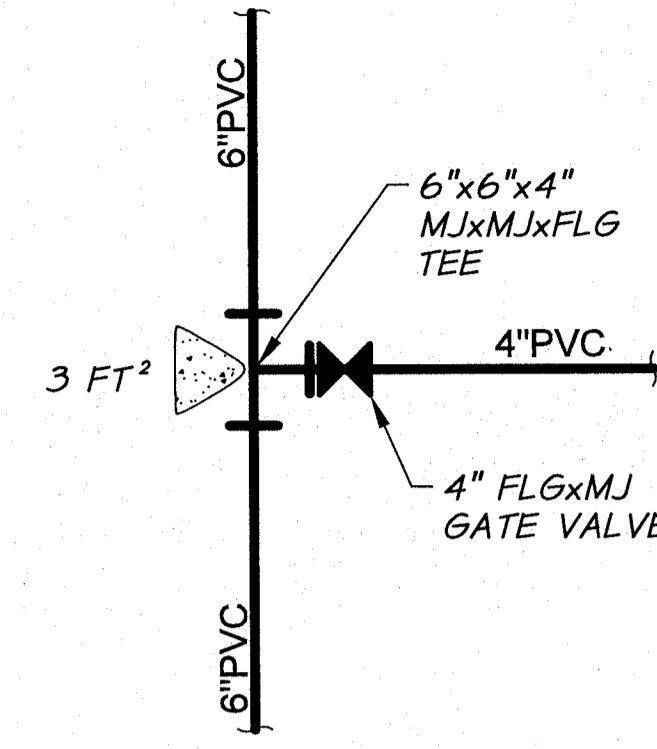
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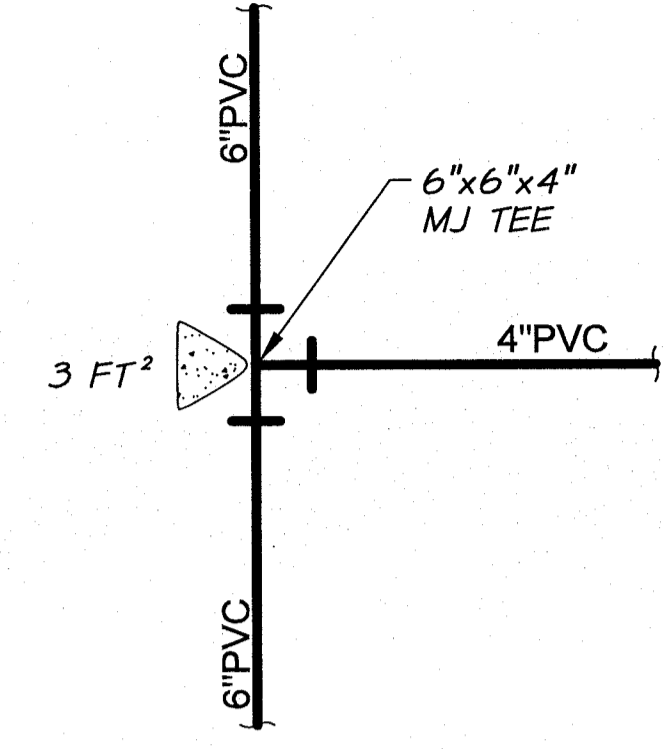
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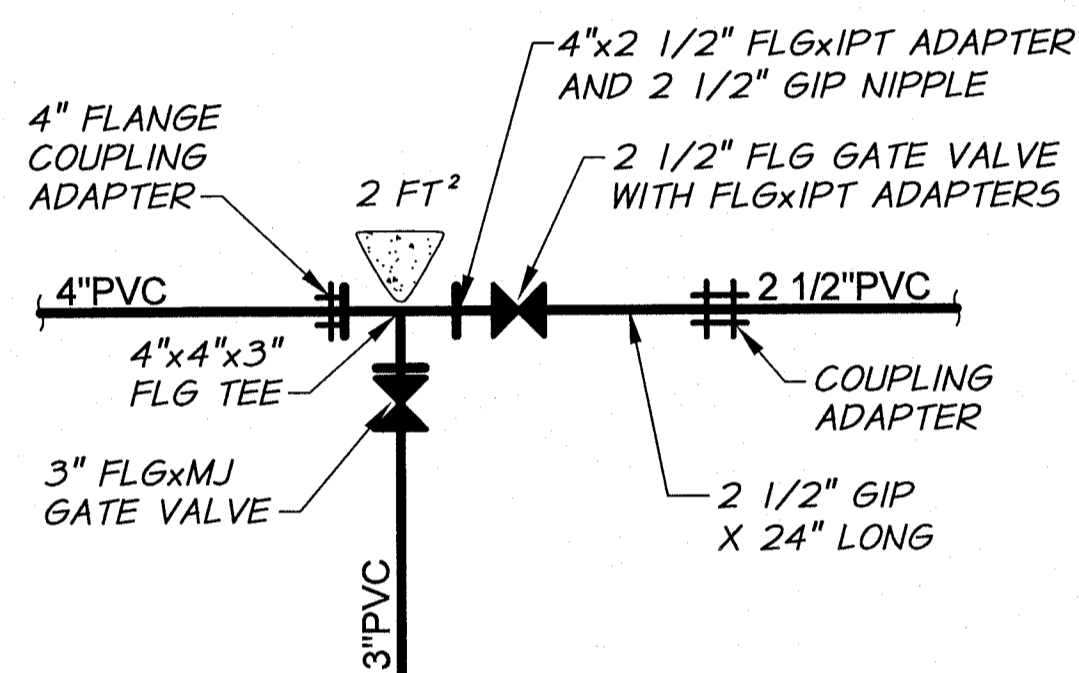
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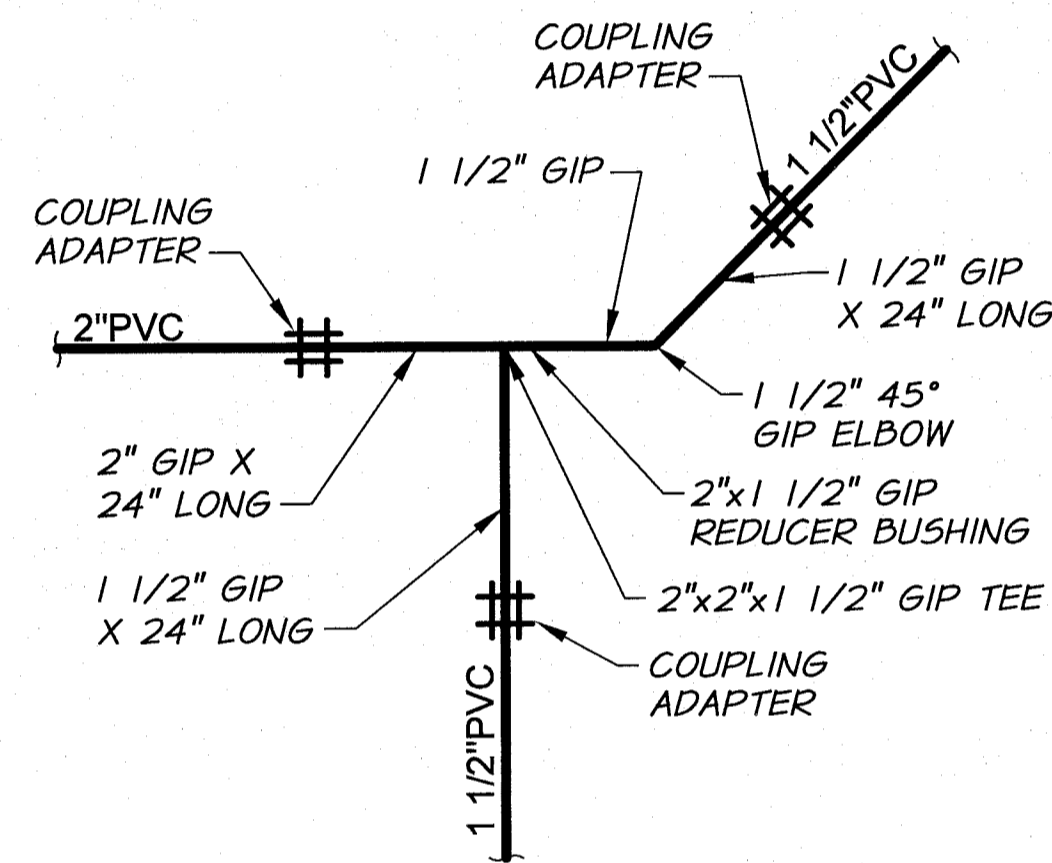
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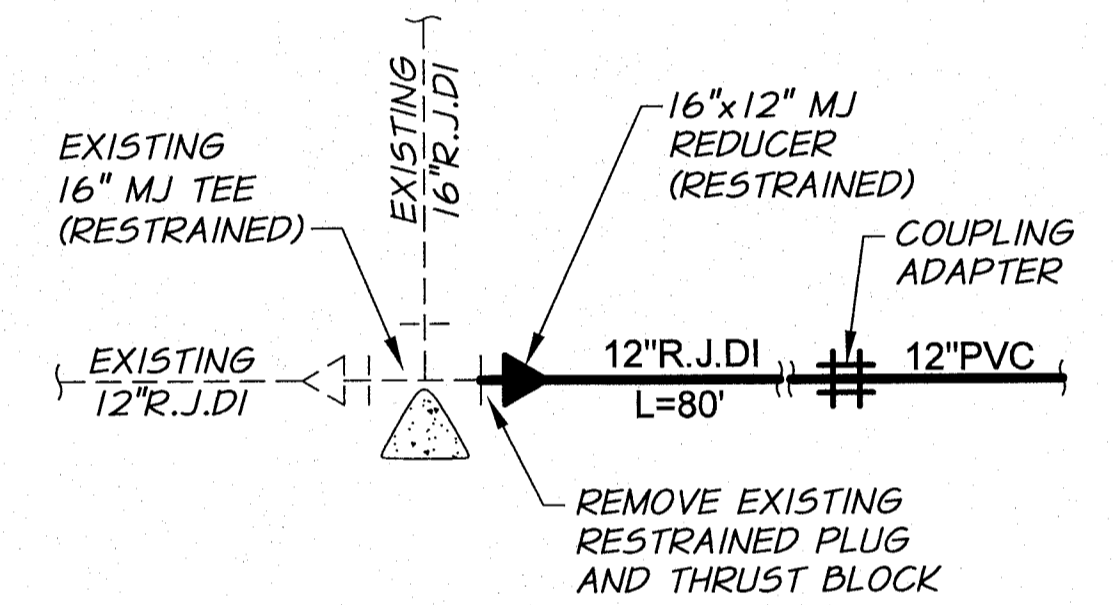
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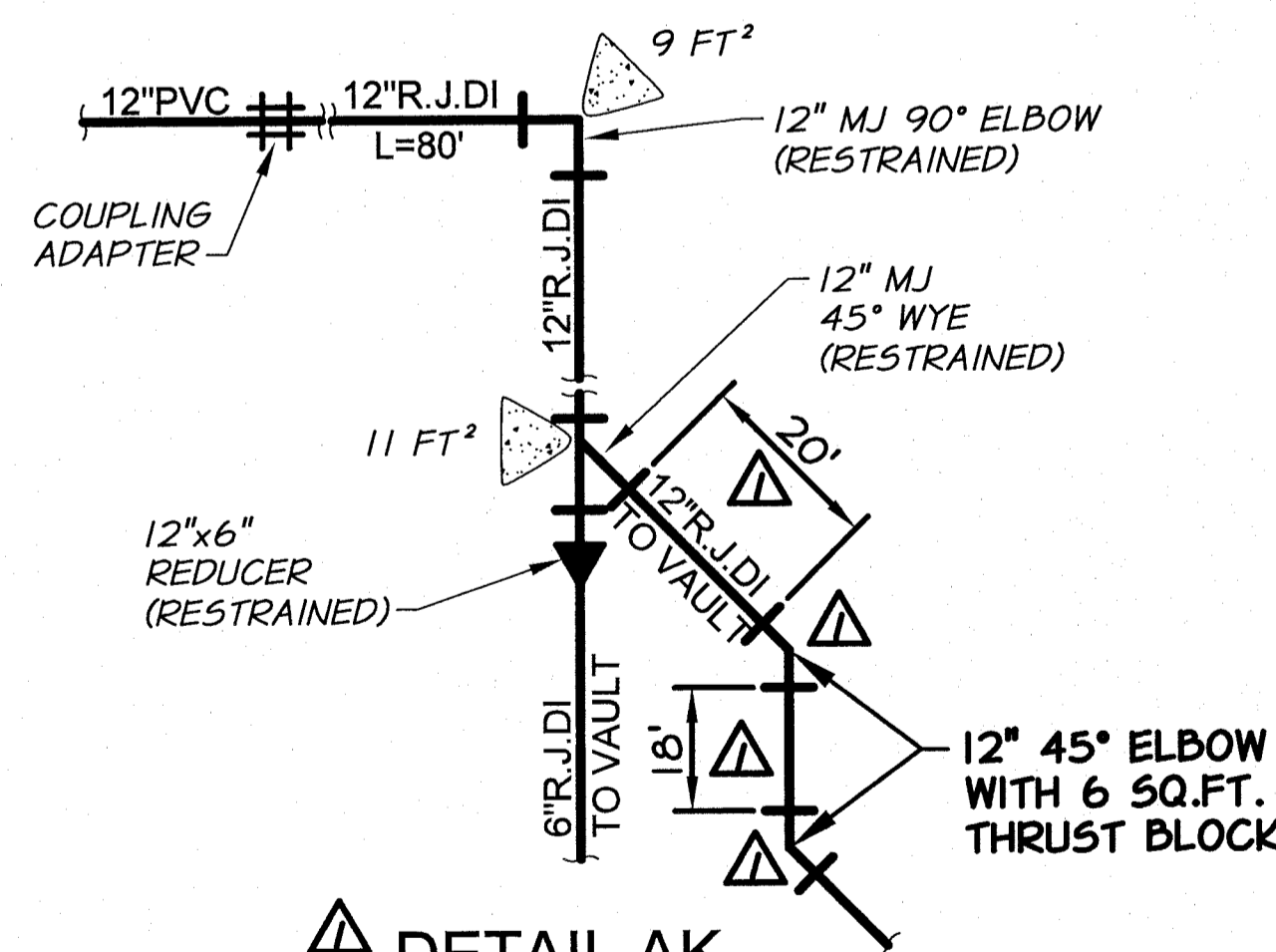
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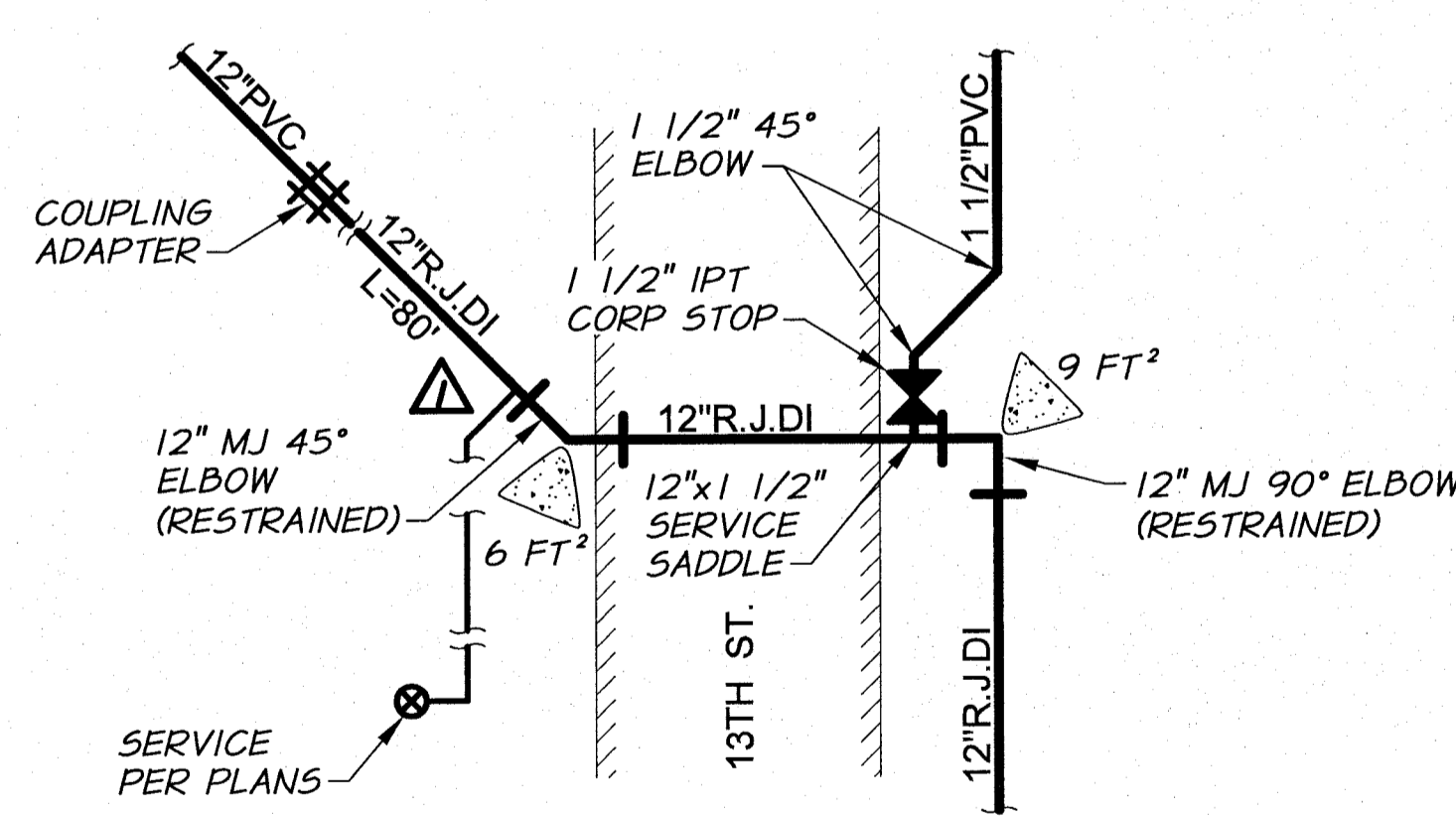
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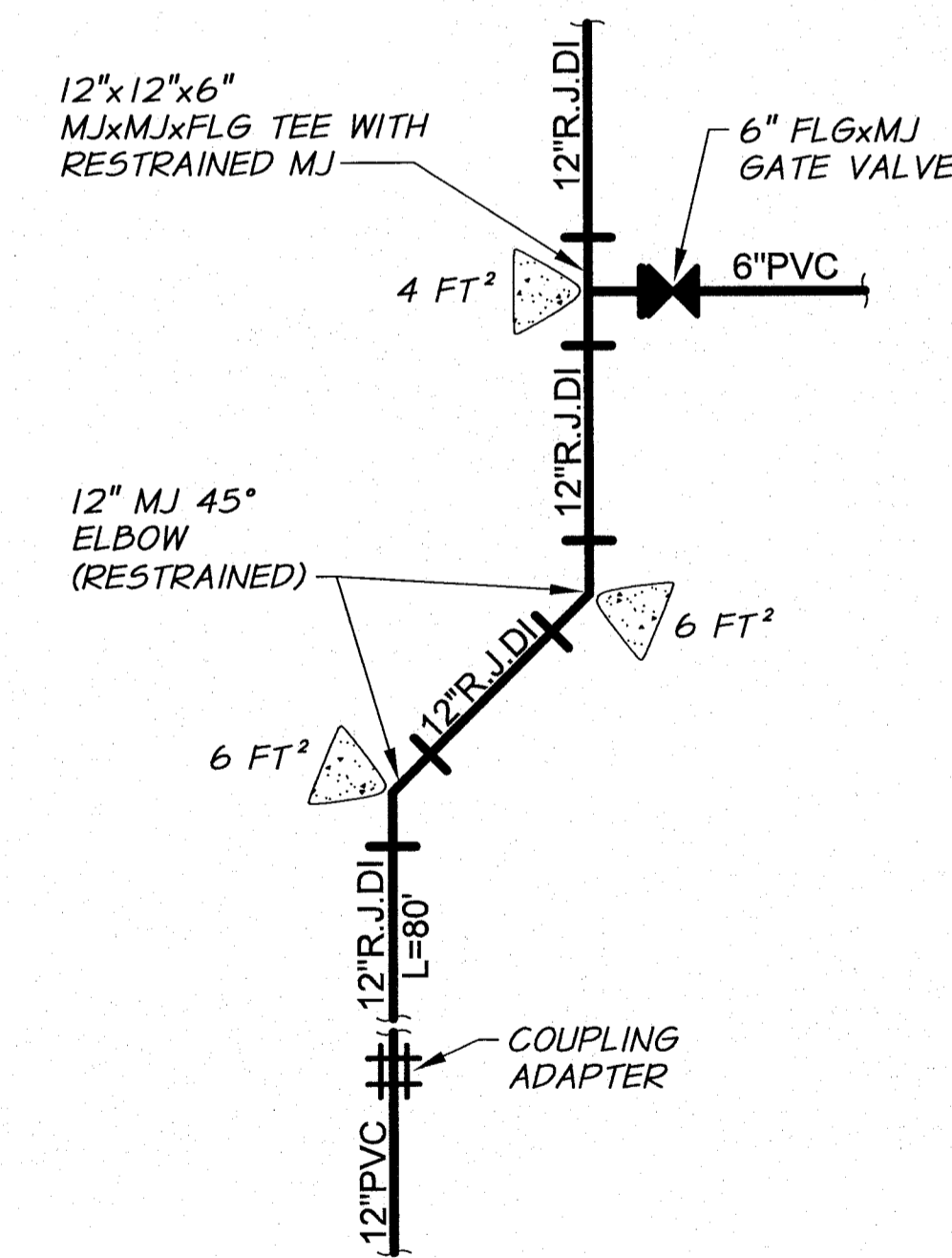
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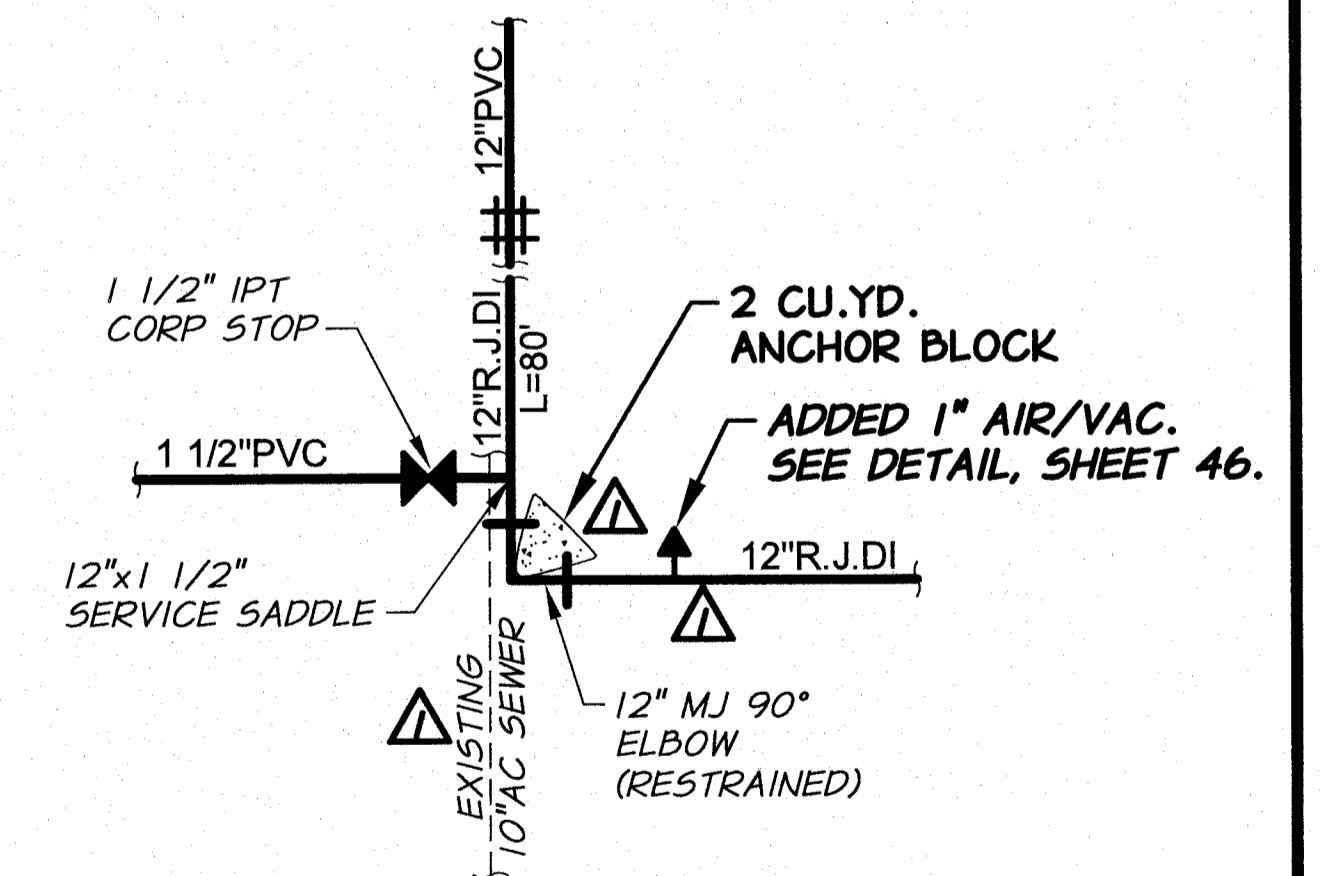
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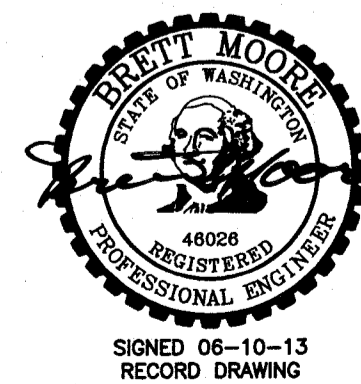
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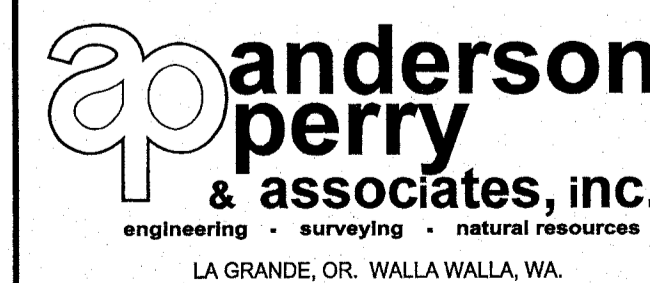
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REVIEWED BY	B. MOORE	JOB NUMBER	1199-336
		ACAD FILE	PipeConnDets-Ph3B.dwg
		DATE	2012
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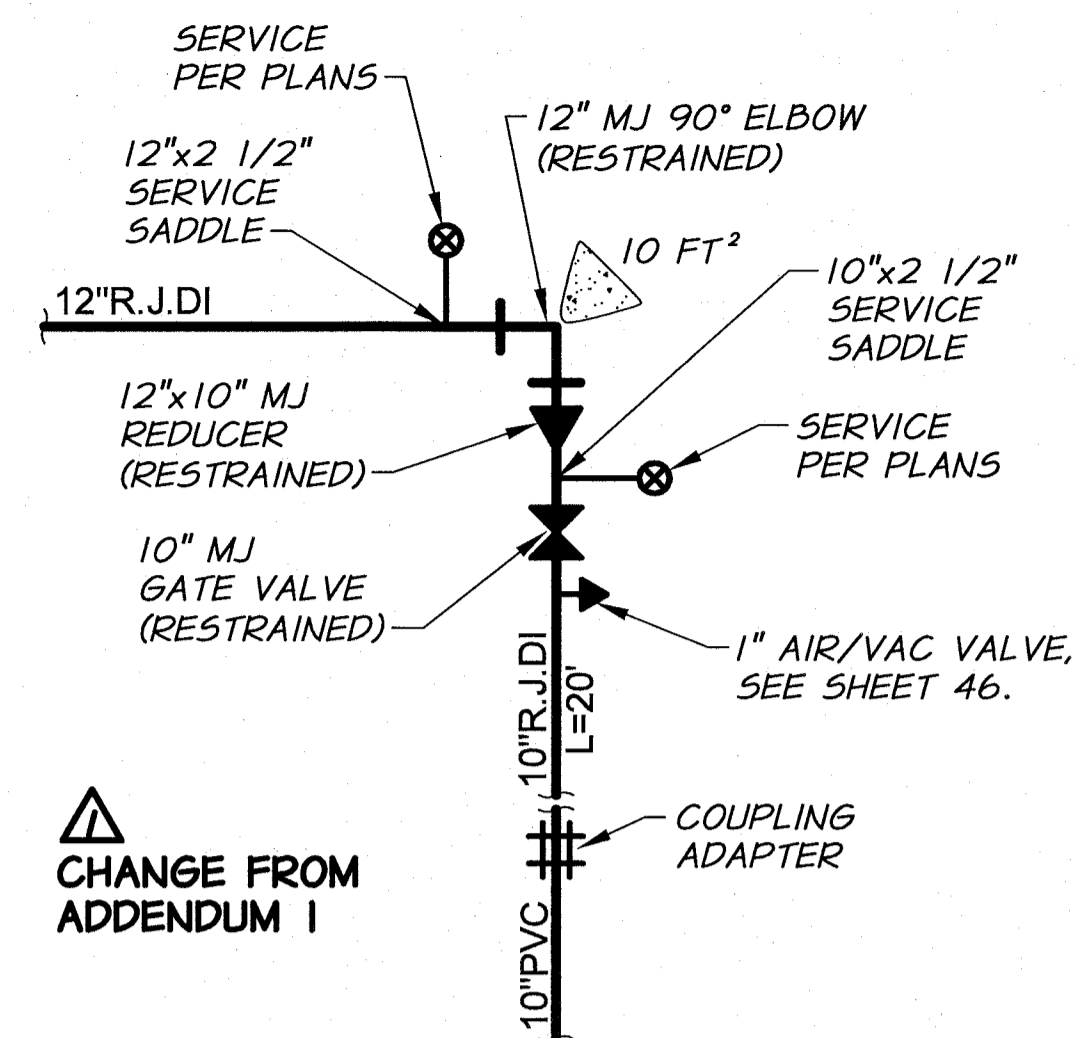
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

PIPE CONNECTION DETAILS I

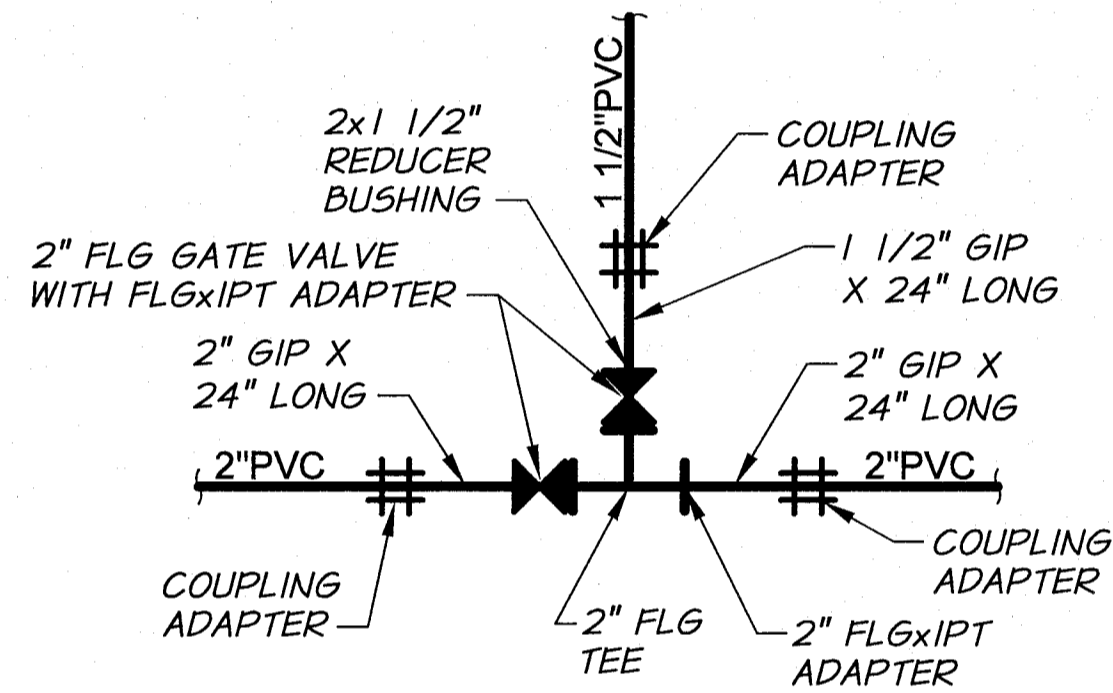
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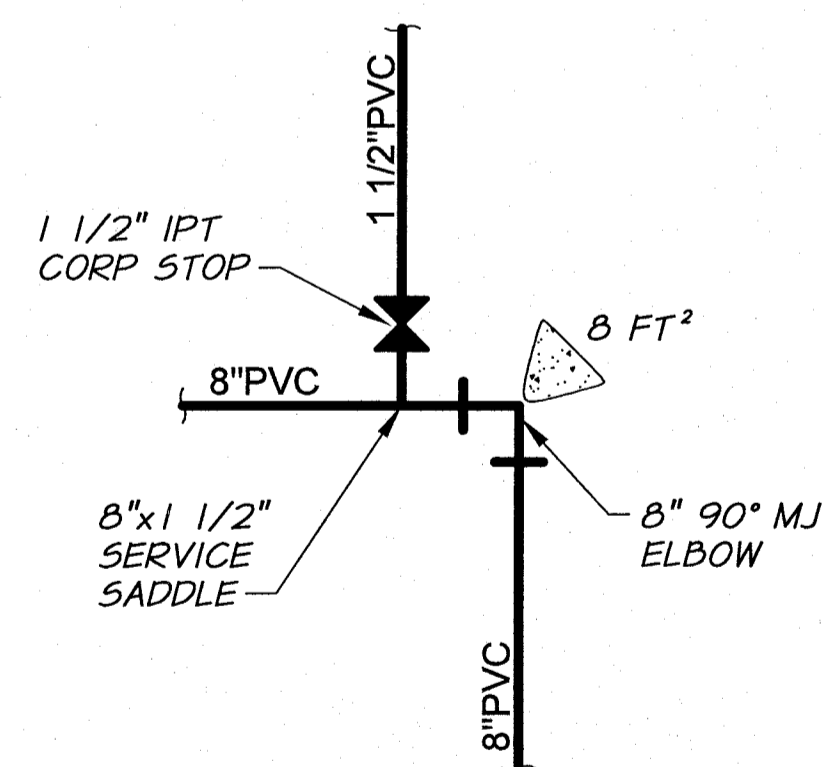
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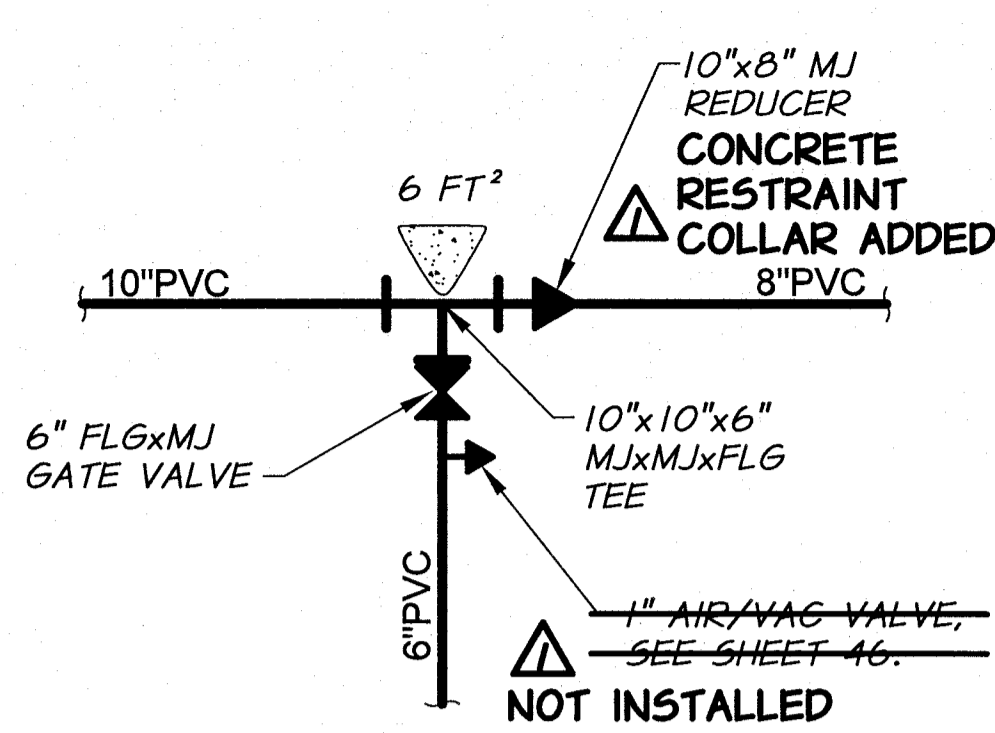
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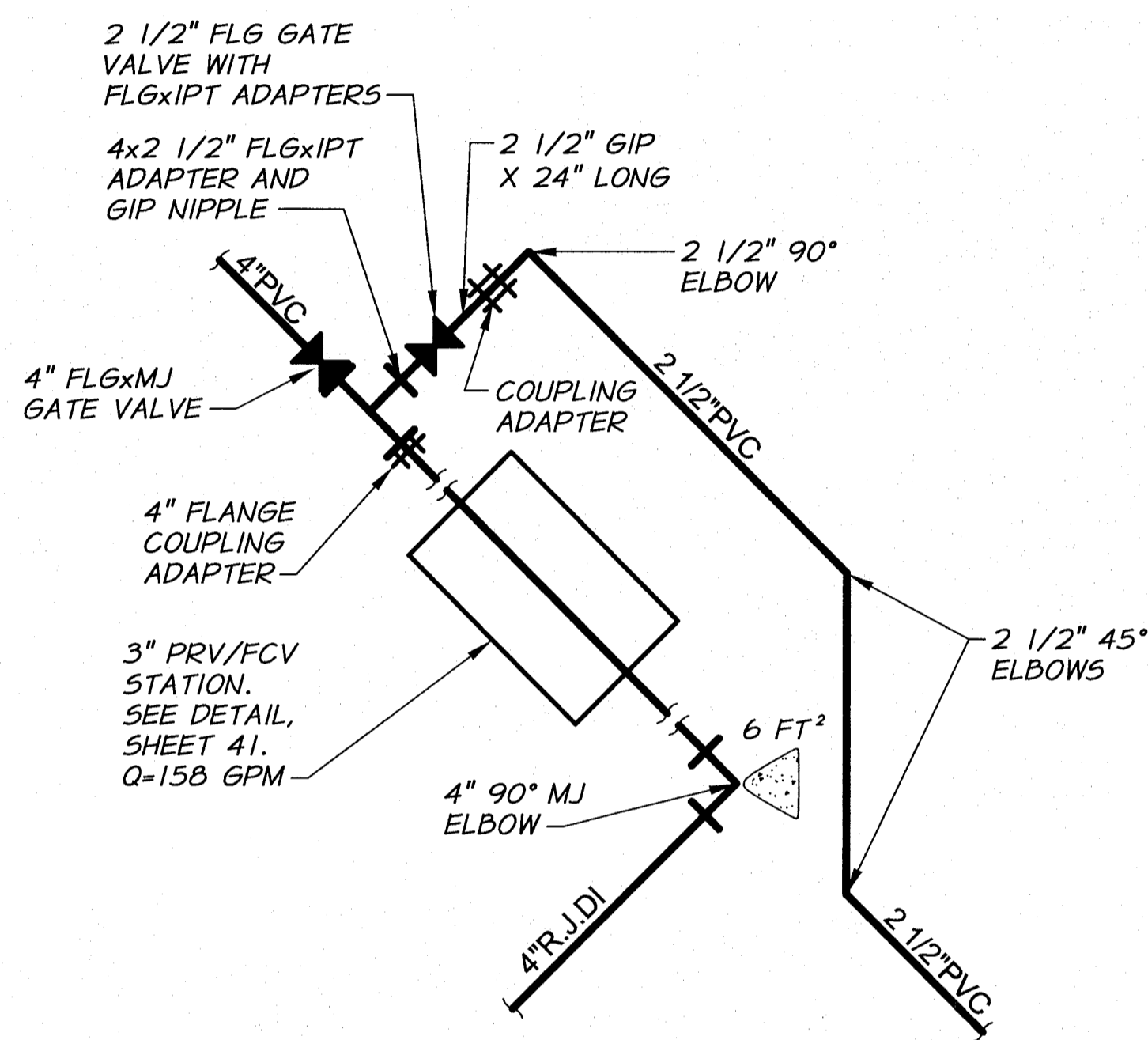
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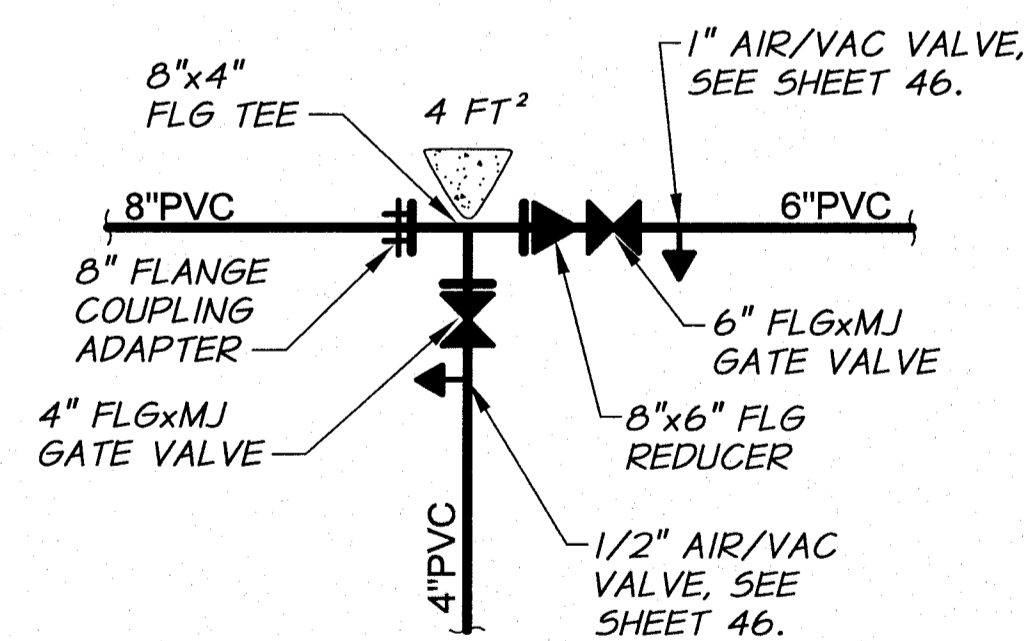
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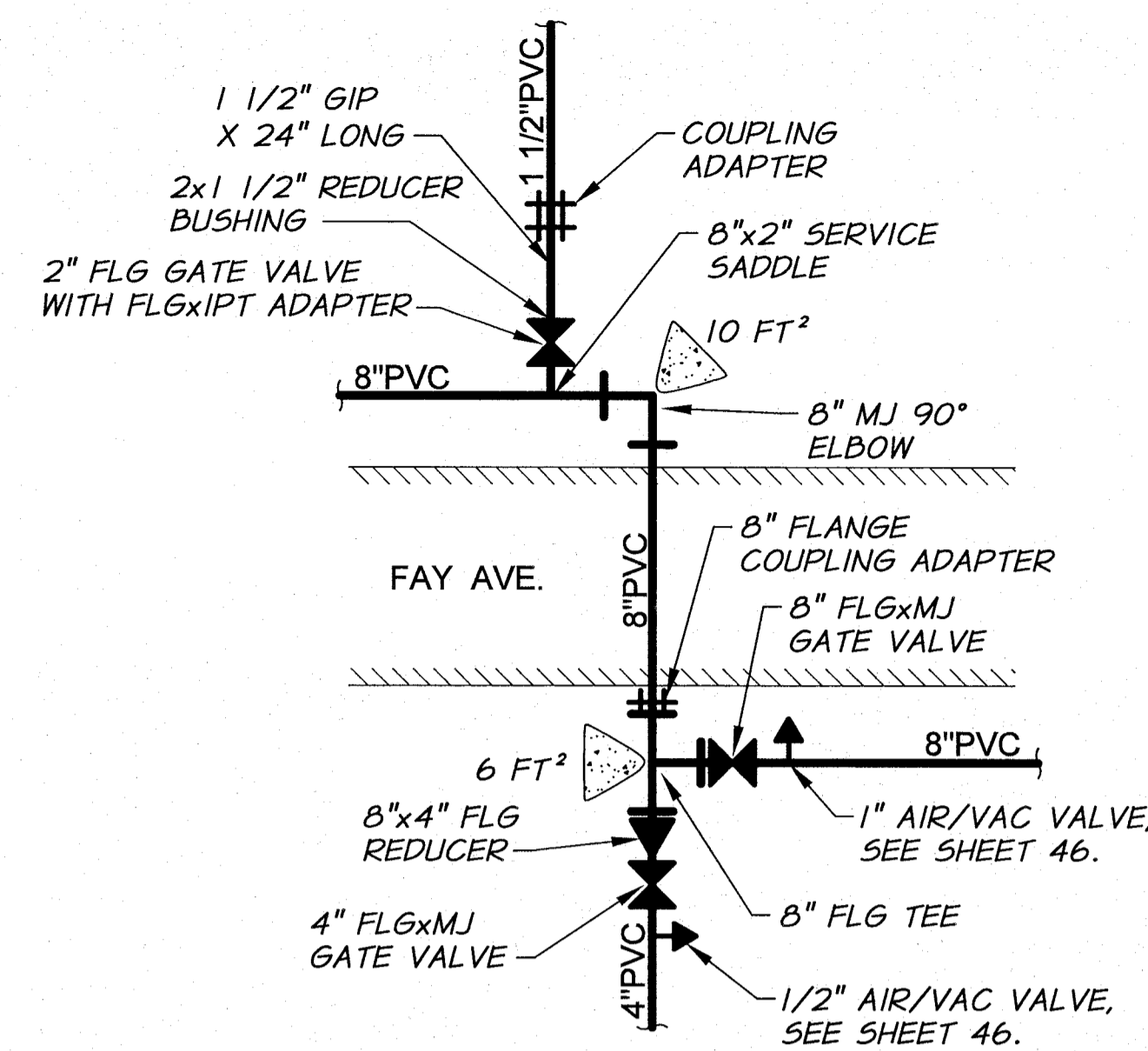
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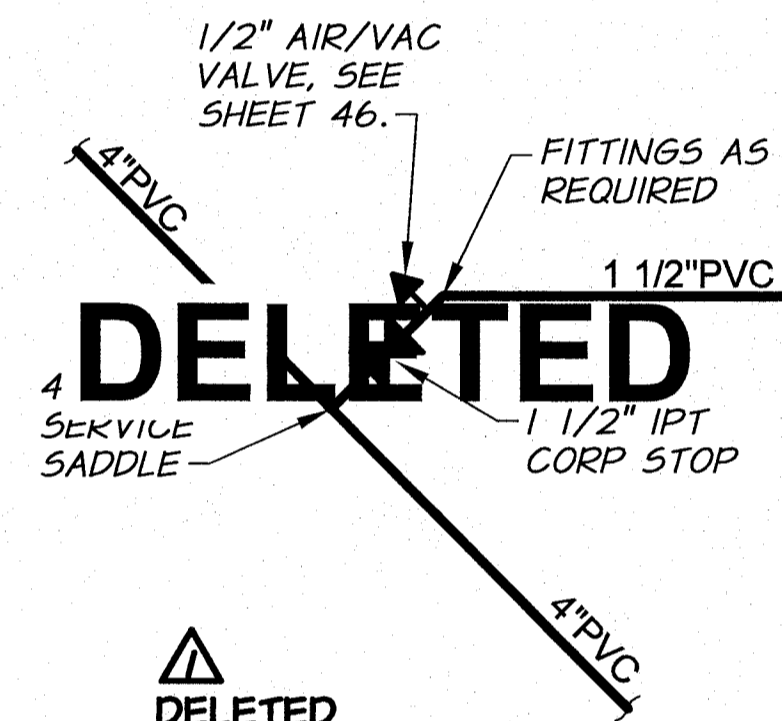
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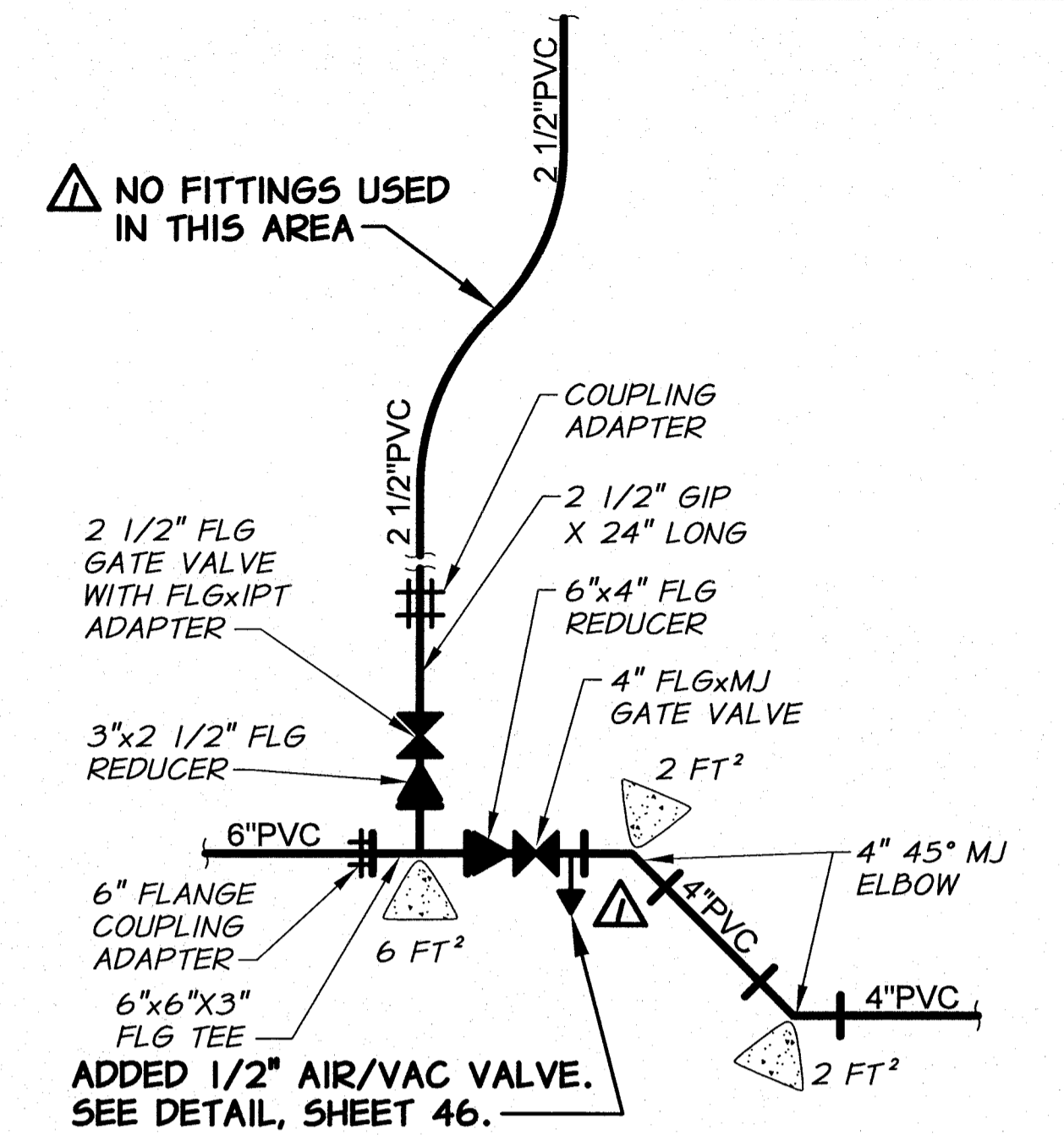
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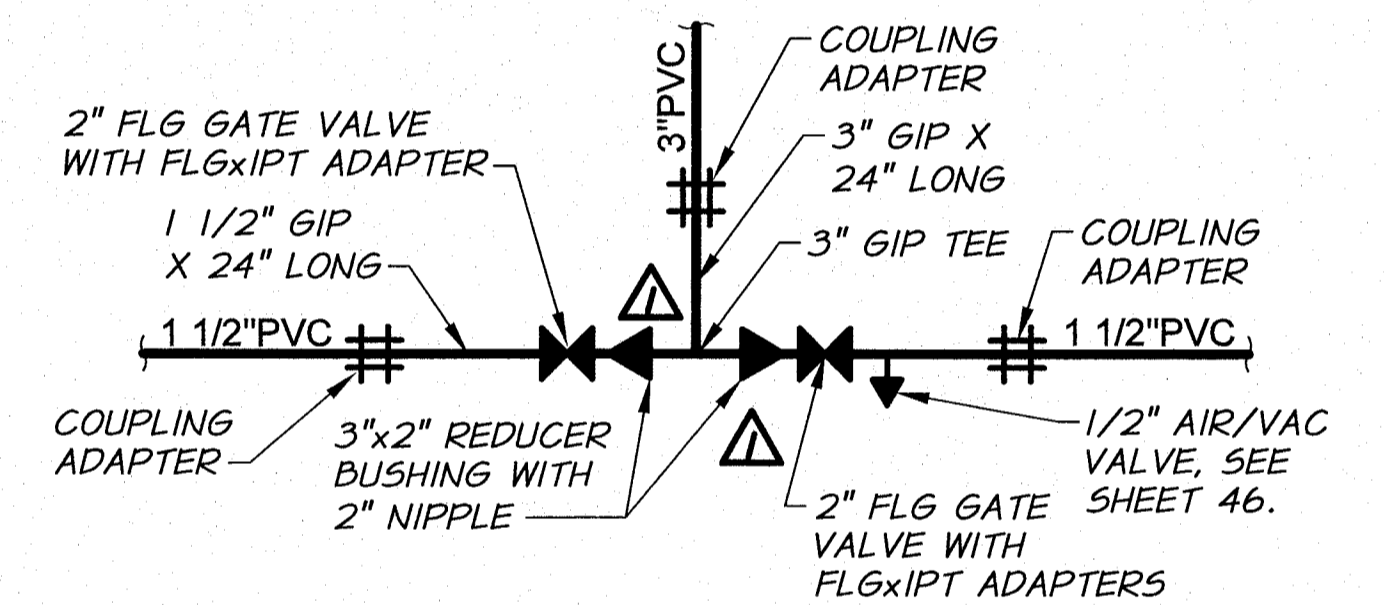
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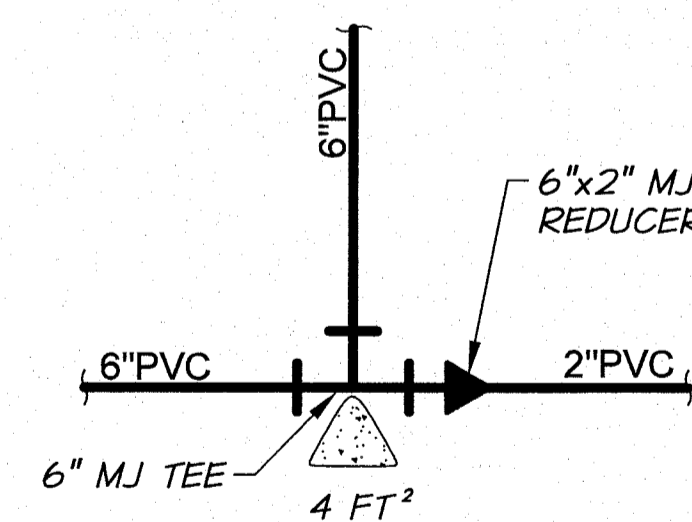
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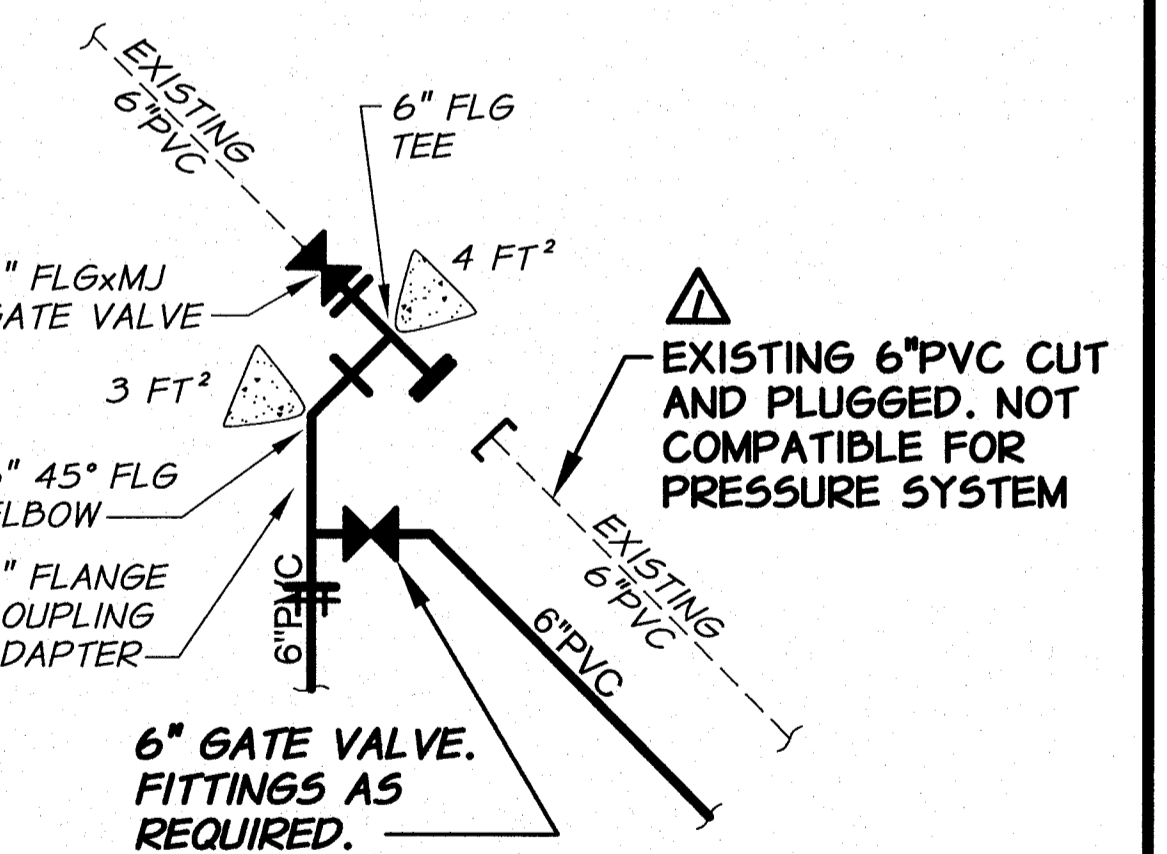
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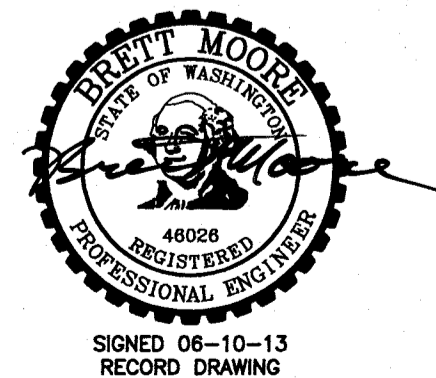
DETAIL AW
REFERENCE SHEET: 13



DETAIL AZ
REFERENCE SHEET: 14



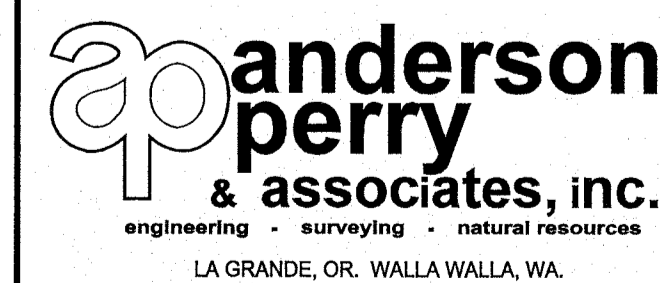
DETAIL BA
REFERENCE SHEET: 14



RECORD DRAWING		BY	B.M.	DATE	5/13
DESIGNED BY	M. OWENS	HORIZ. SCALE	NONE	VERT. SCALE	
DRAWN BY	D. CHRISTMAN	JOB NUMBER	1199-336	DATE	2012
REVIEWED BY	B. MOORE	ACAD FILE	PipeConnDets-Ph3B.dwg		
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JUNE 10, 2013

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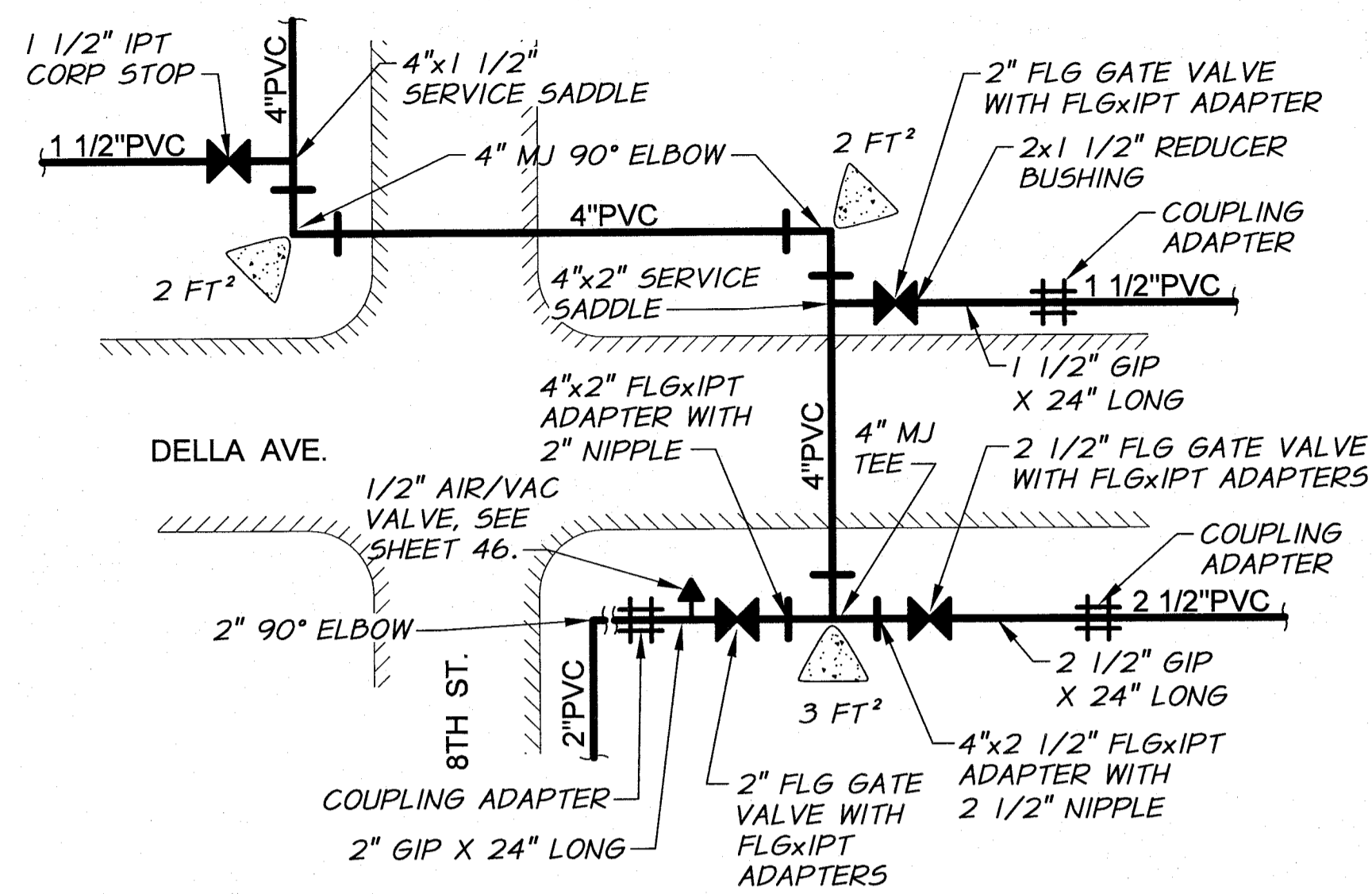
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

PIPE CONNECTION DETAILS II

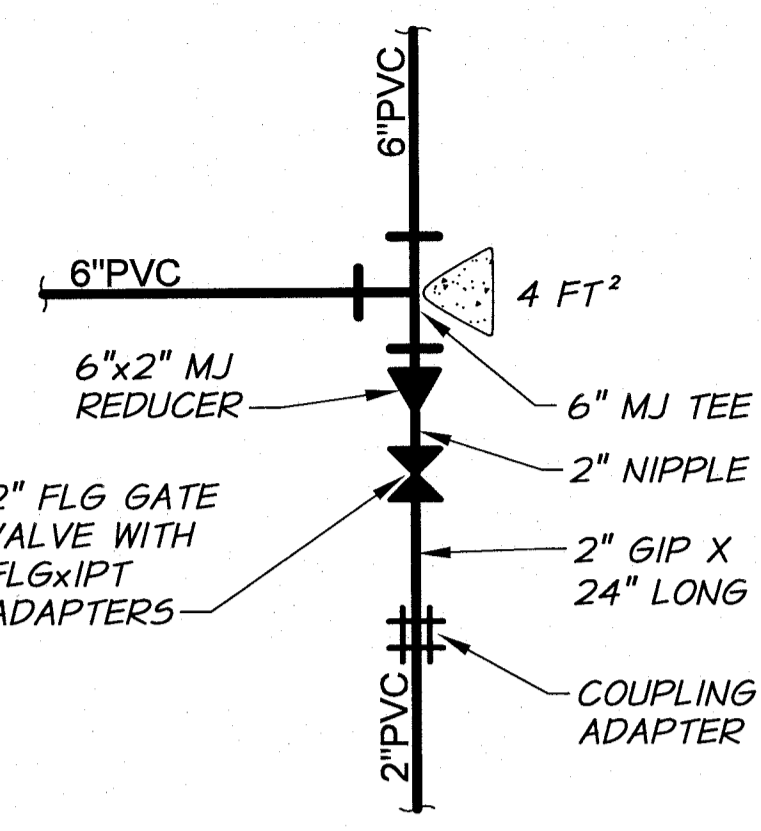
SHEET

33

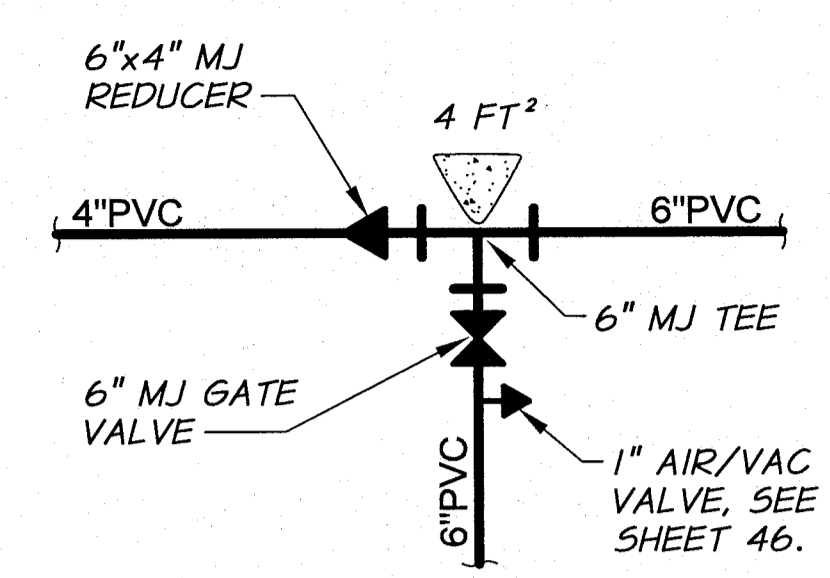
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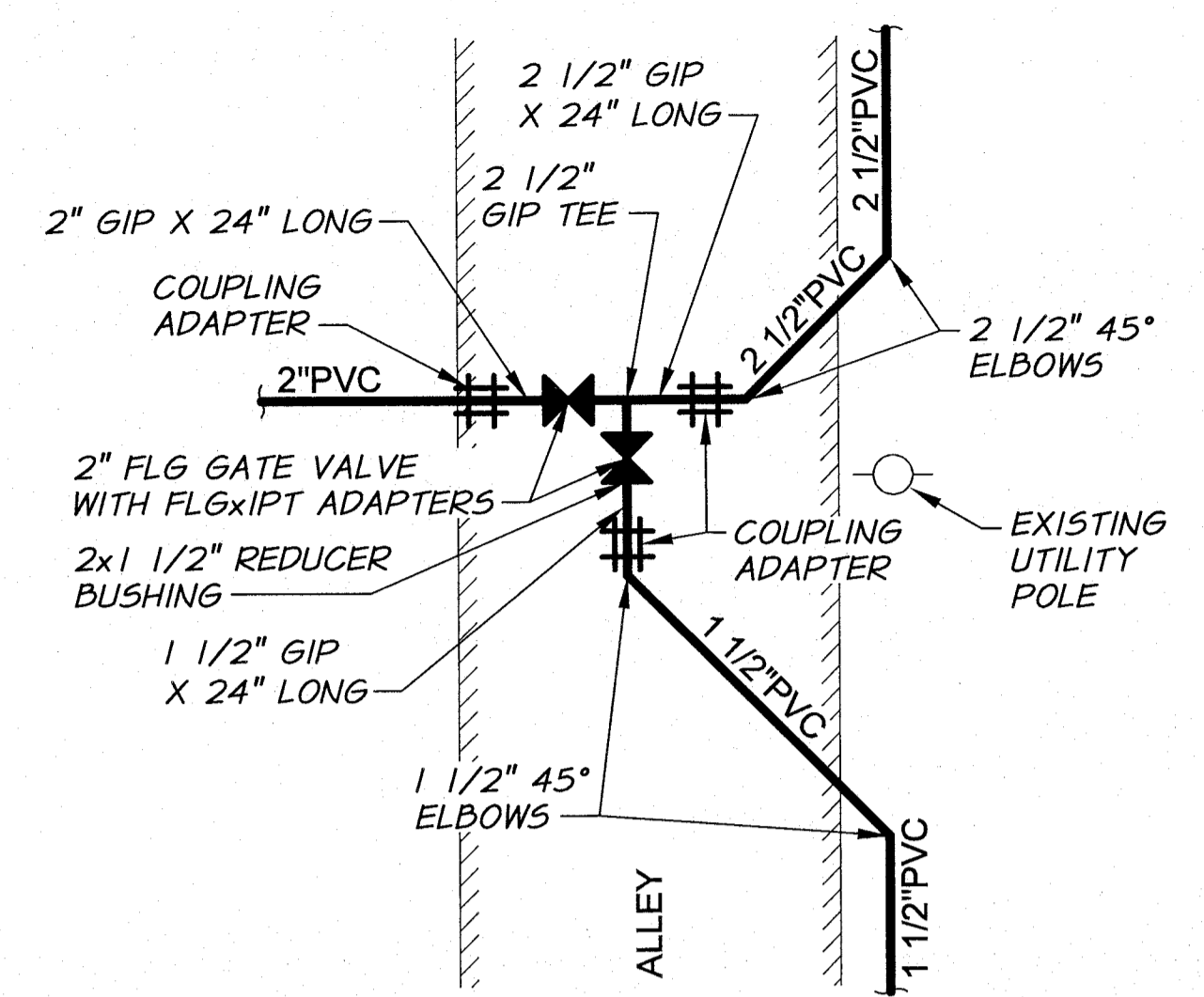
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REFERENCE SHEET: 15



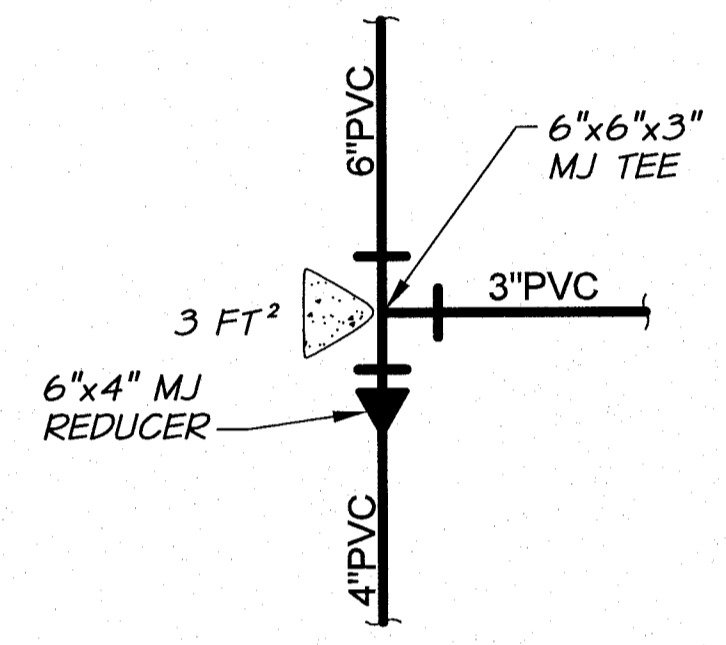
DETAIL BC
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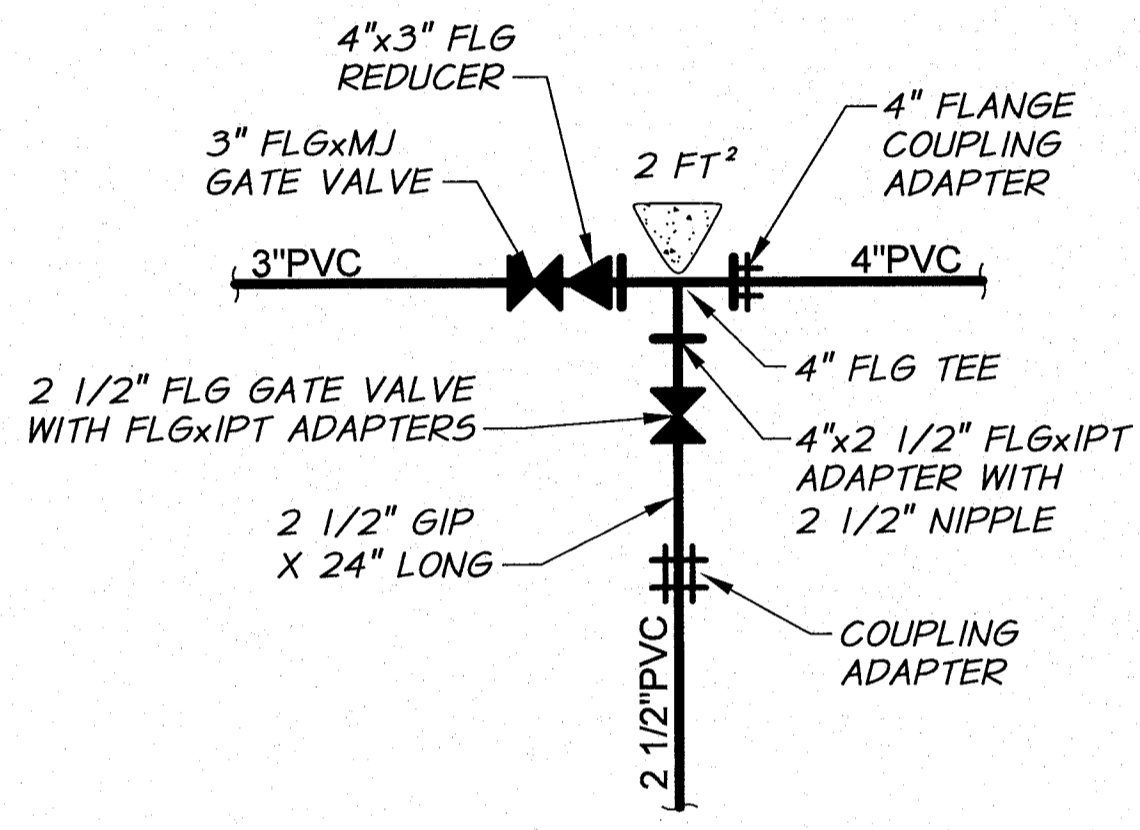
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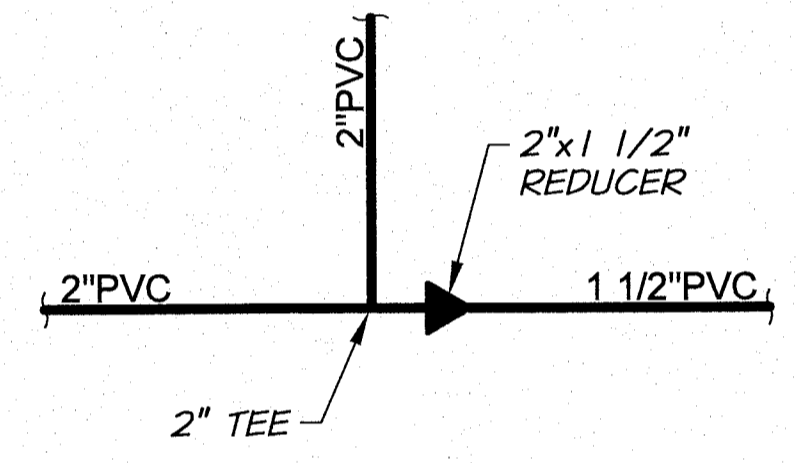
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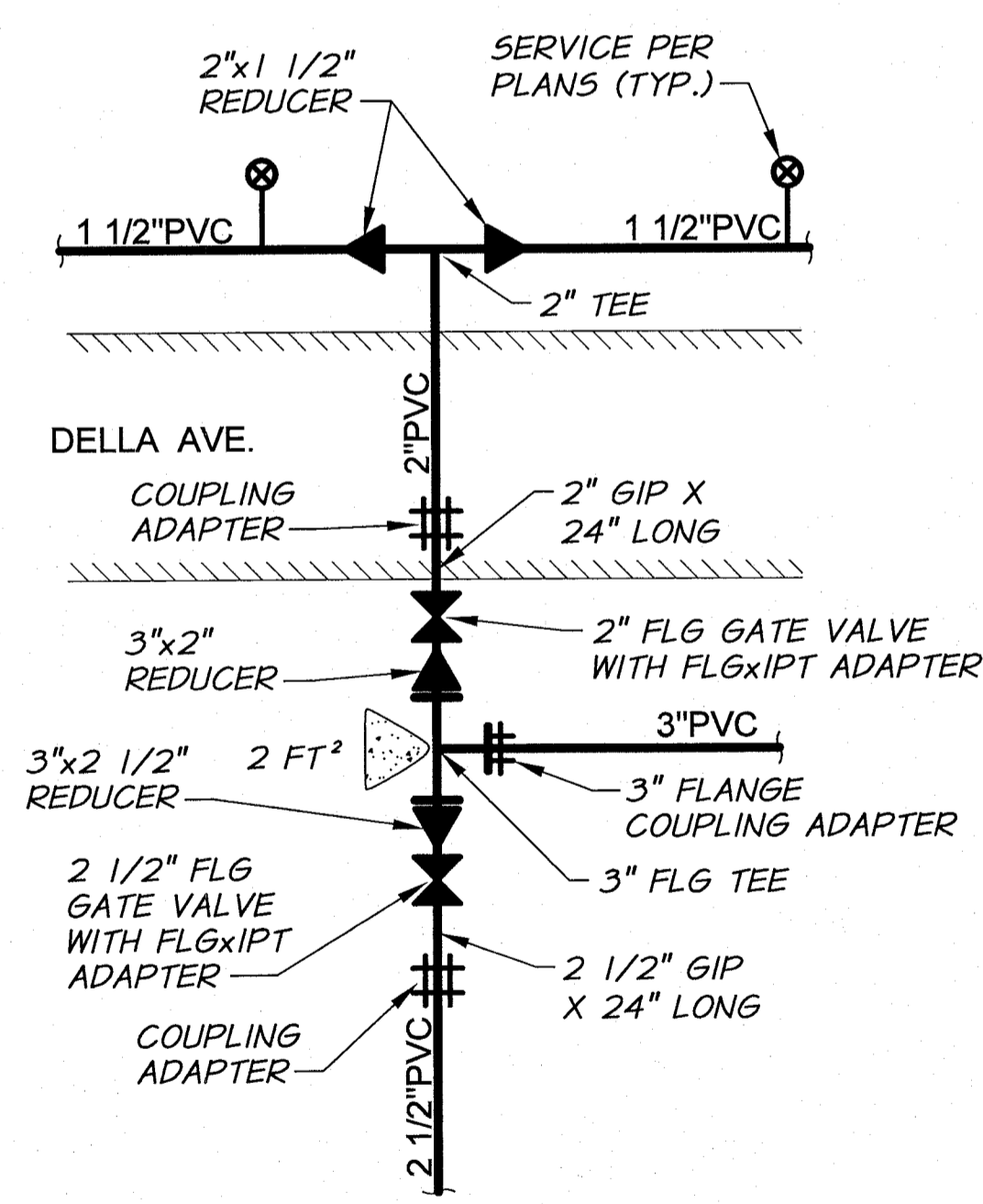
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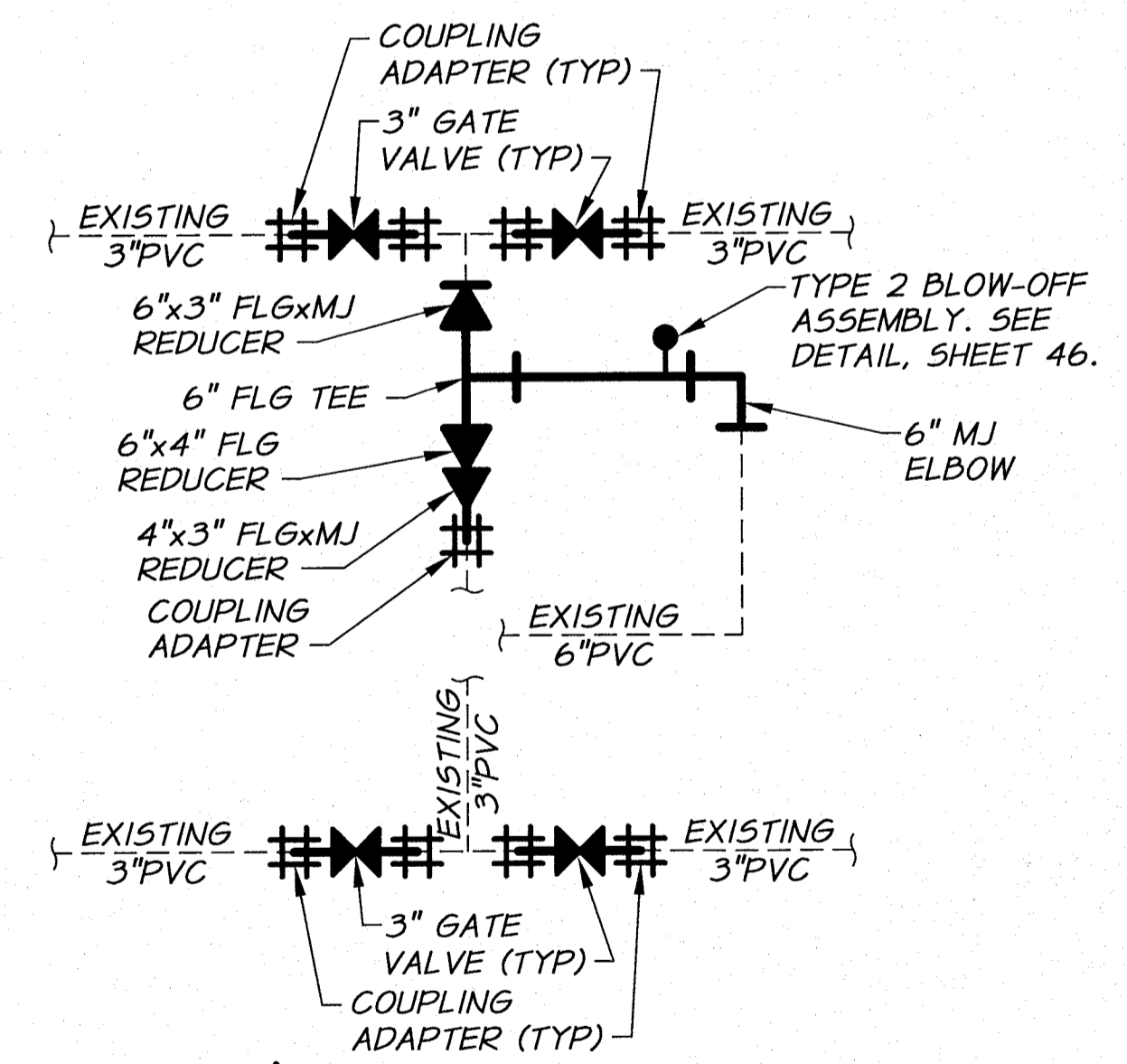
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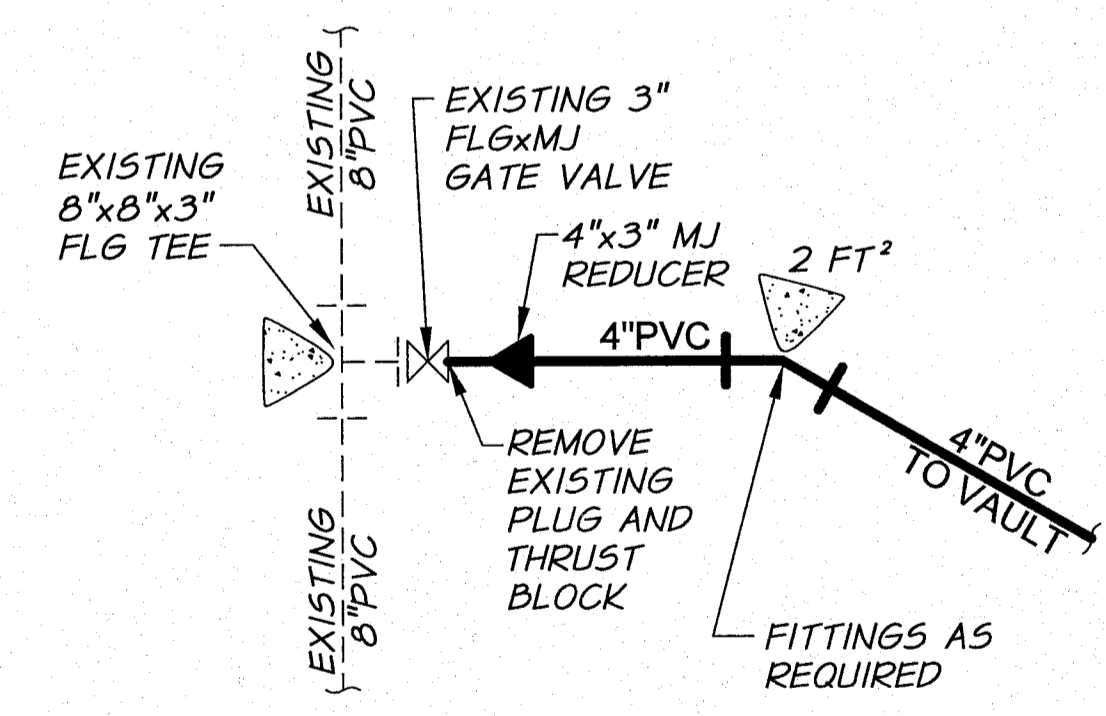
DETAIL BJ
REFERENCE SHEET: 18



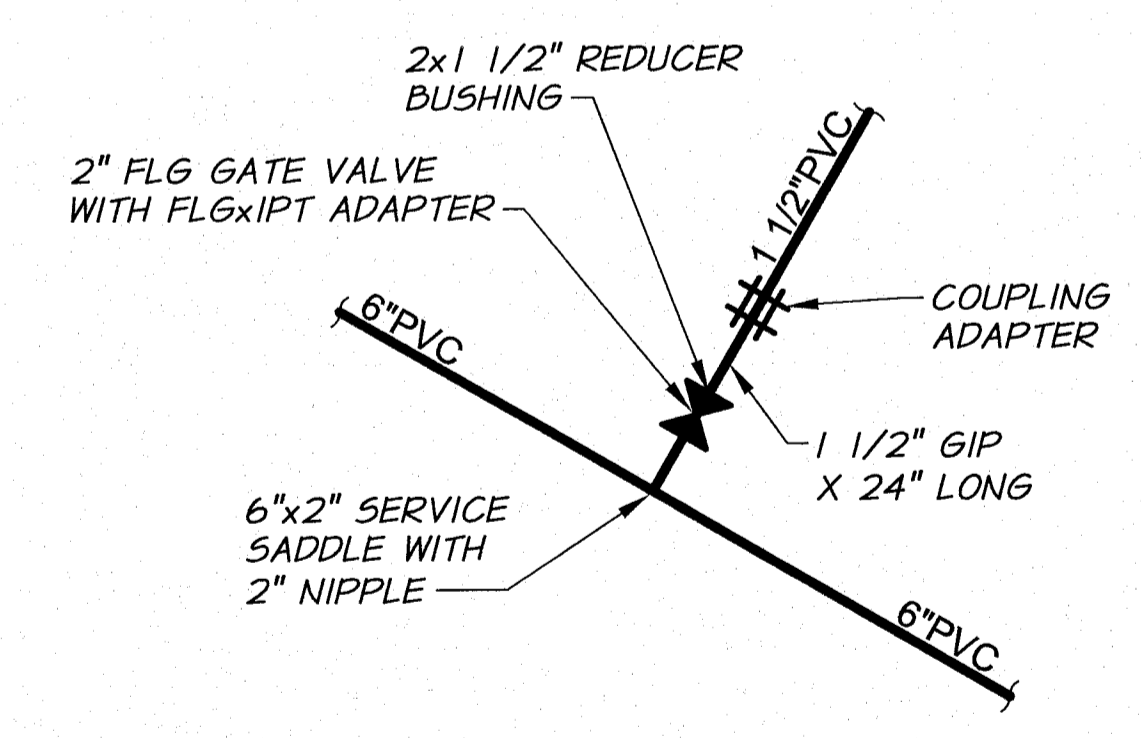
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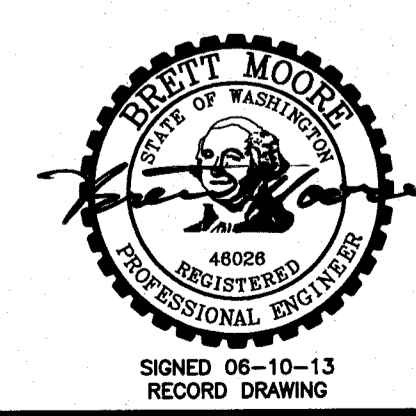
DETAIL BL
REFERENCE SHEET: 19



DETAIL BM
REFERENCE SHEET: 20

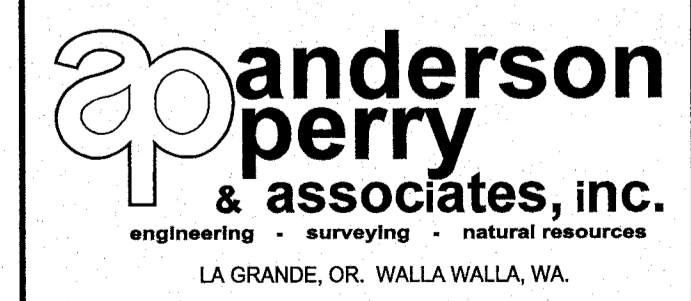


DETAIL BN
REFERENCE SHEET: 20

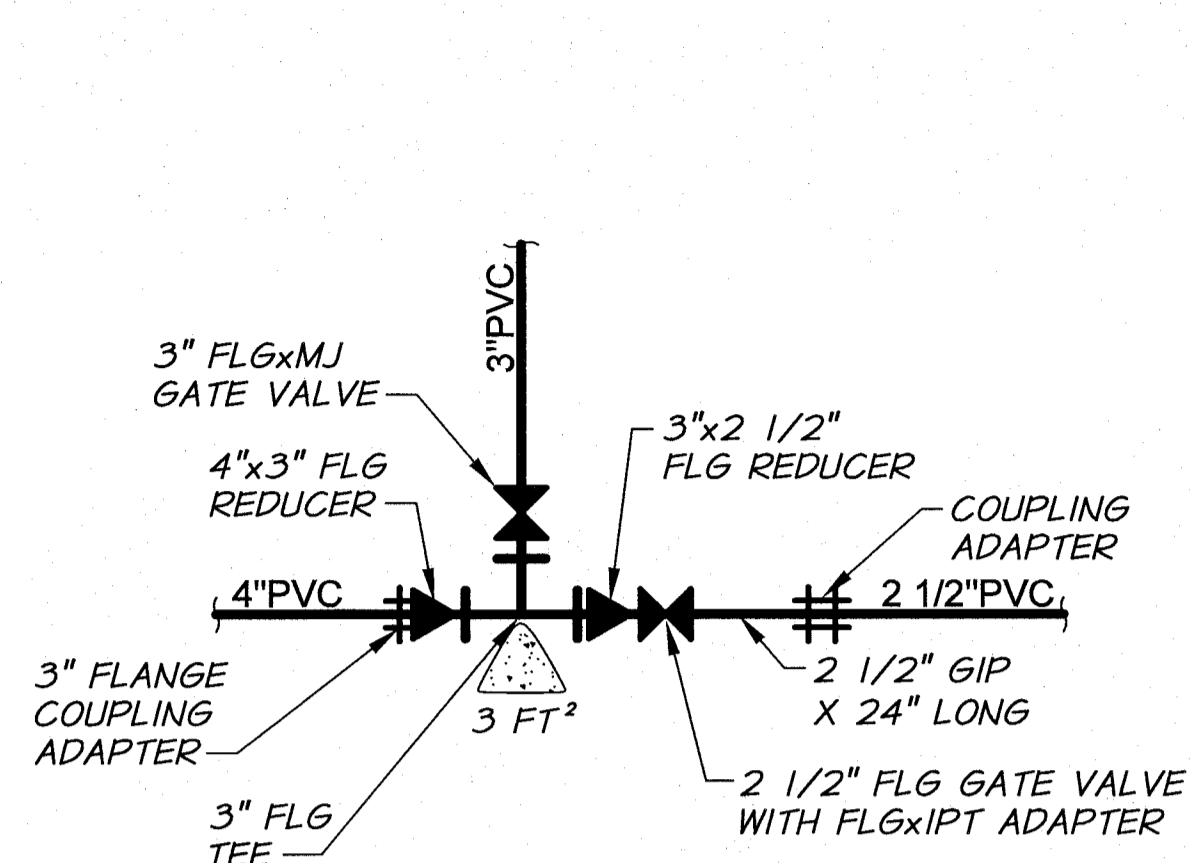


RECORD DRAWING		BY	B.M.	DATE	5/13
DESIGNED BY	M. OWENS	HORIZ. SCALE	NONE	VERT. SCALE	
DRAWN BY	D. CHRISTMAN	JOB NUMBER	1199-336	DATE	2012
REVIEWED BY	B. MOORE	ACAD FILE	PipeConnDets-Ph3B.dwg		
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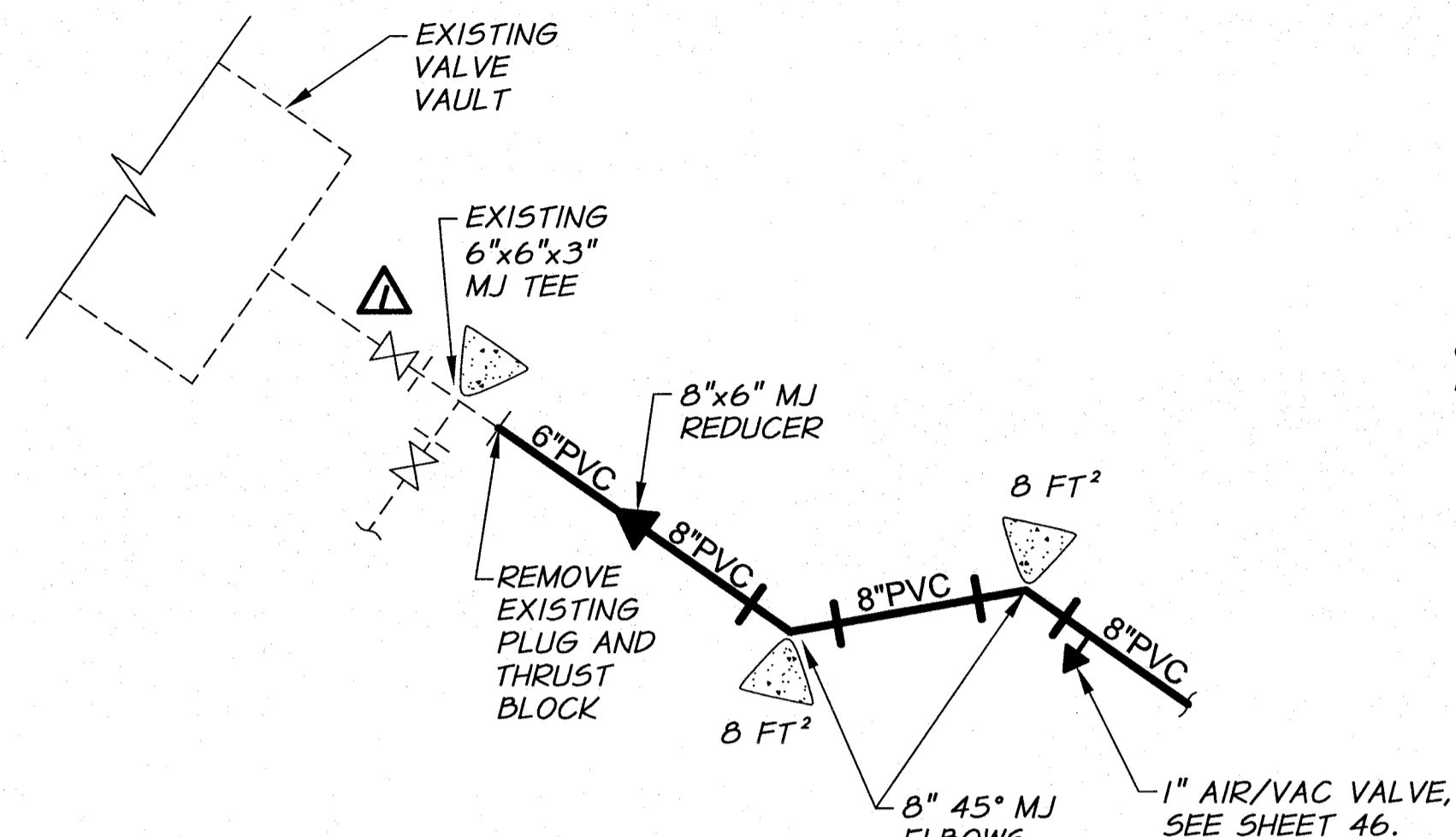
RECORD DRAWINGS
JUNE 10, 2013
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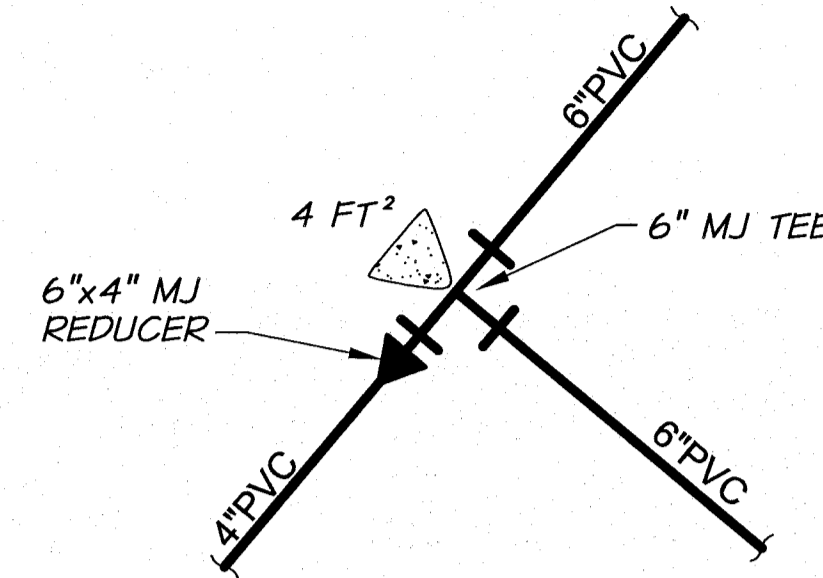
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B
PIPE CONNECTION DETAILS III



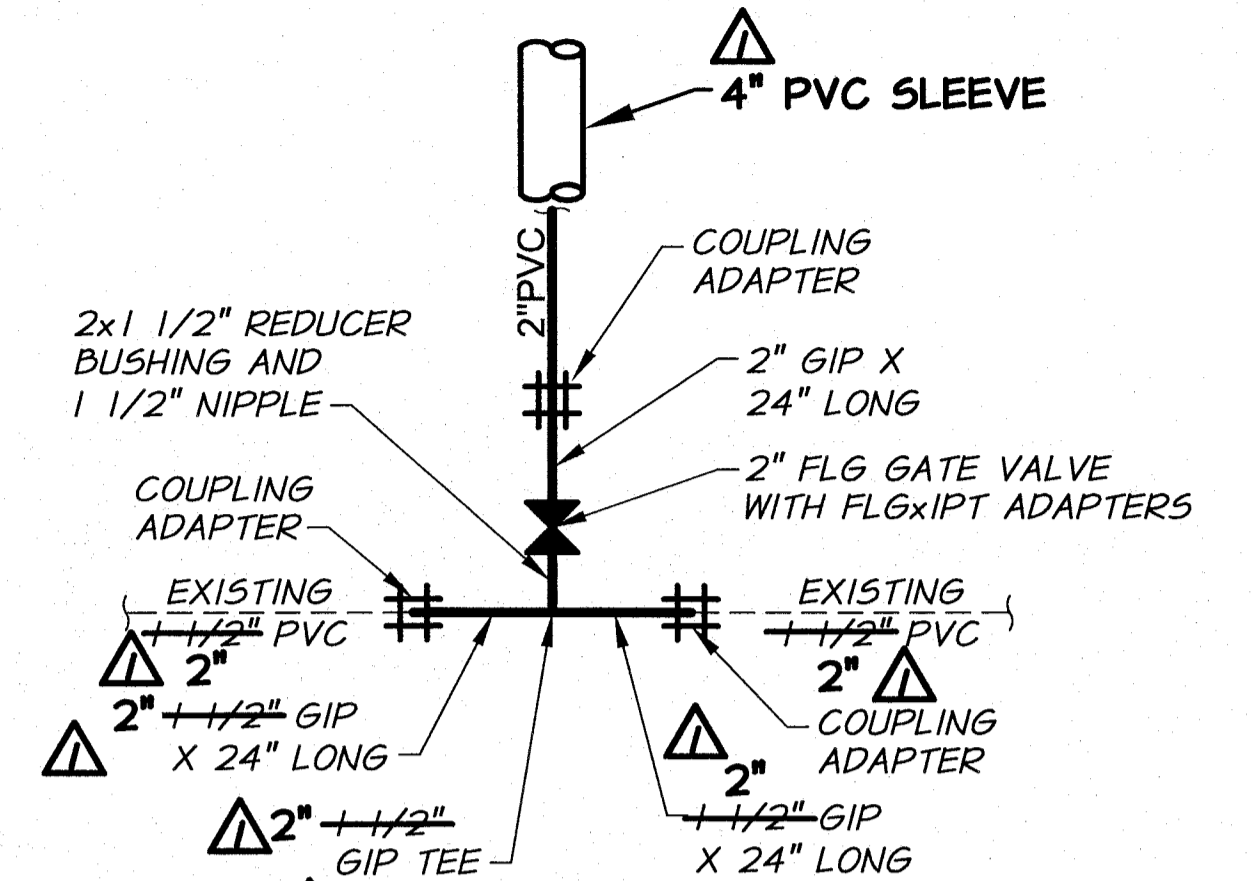
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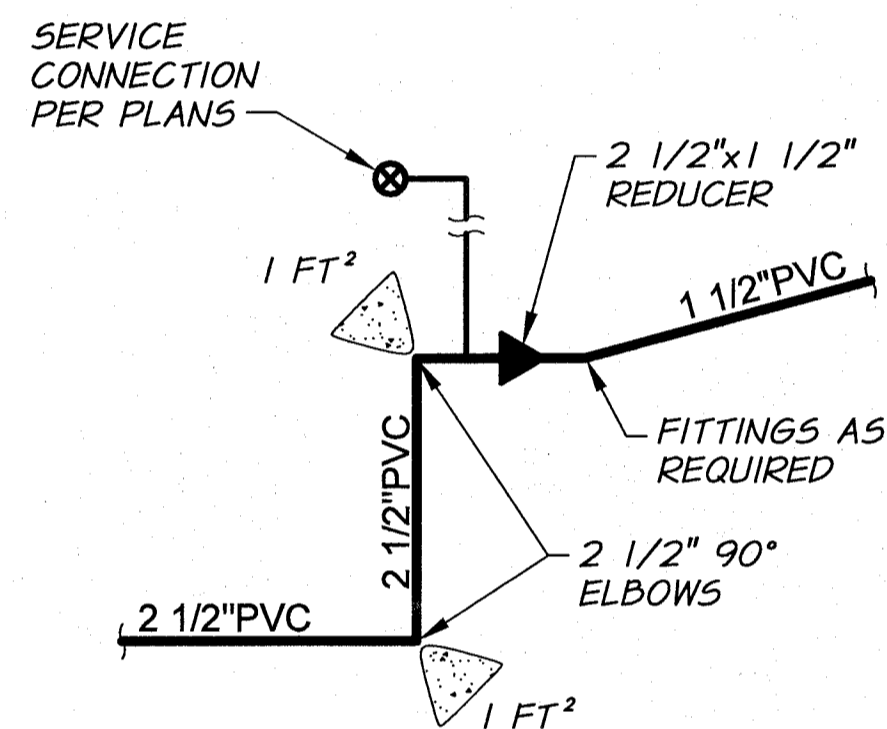
DETAIL BQ
REFERENCE SHEET: 22



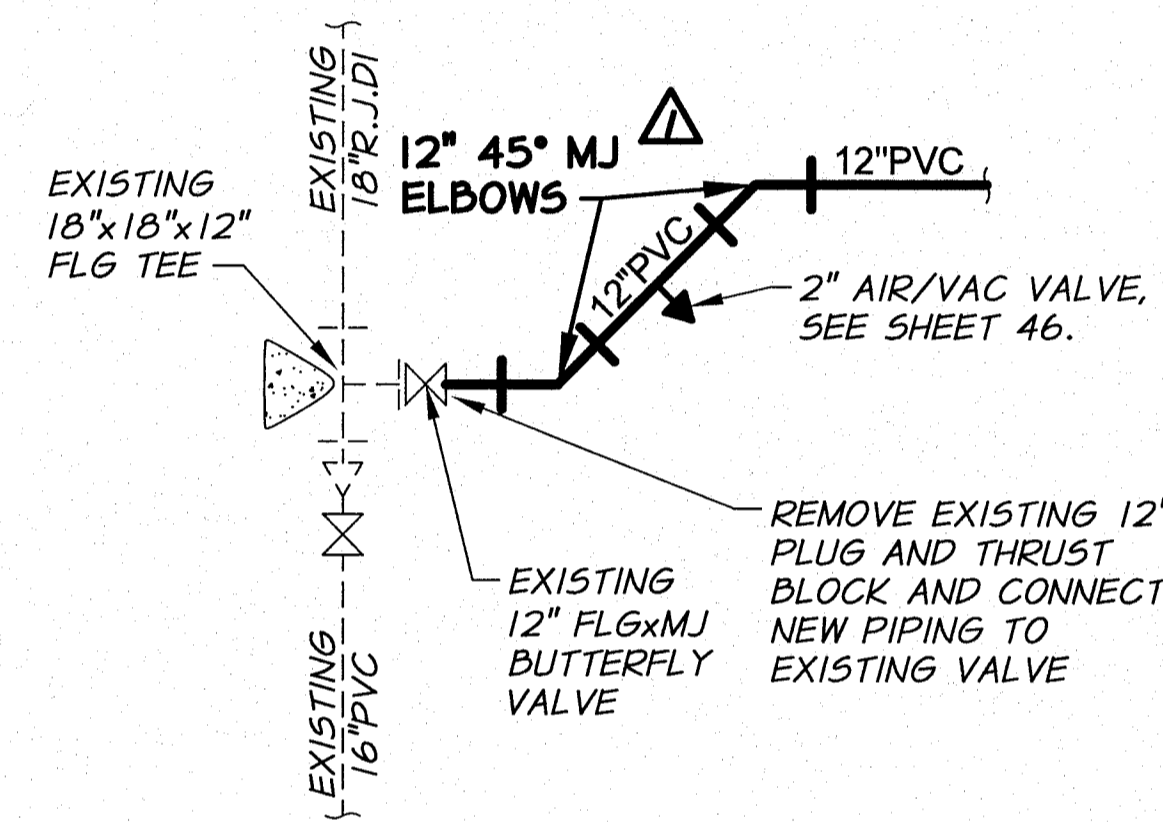
DETAIL BR
REFERENCE SHEET: 23



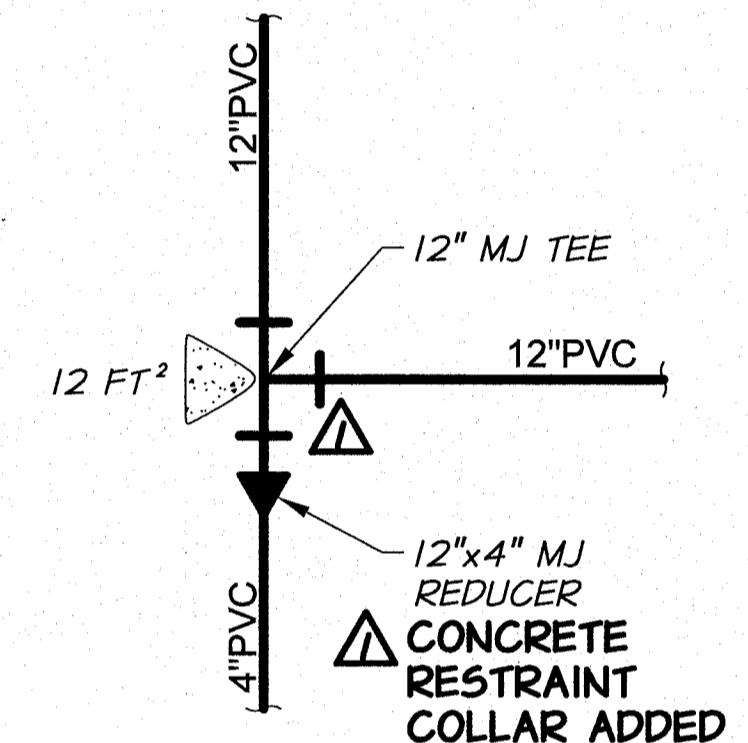
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REFERENCE SHEET: 23



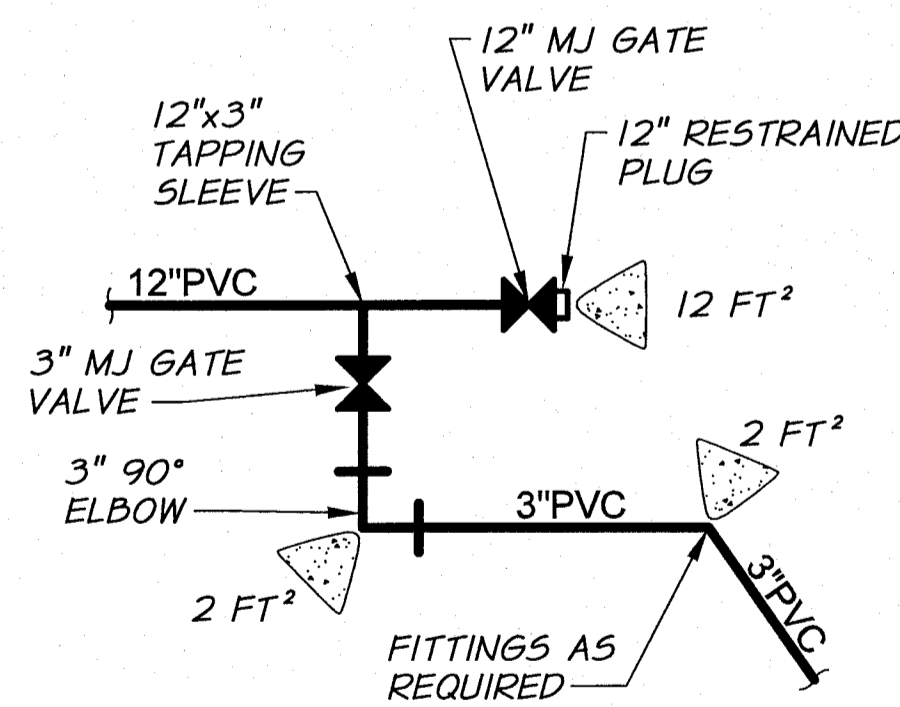
DETAIL BT
REFERENCE SHEET: 24



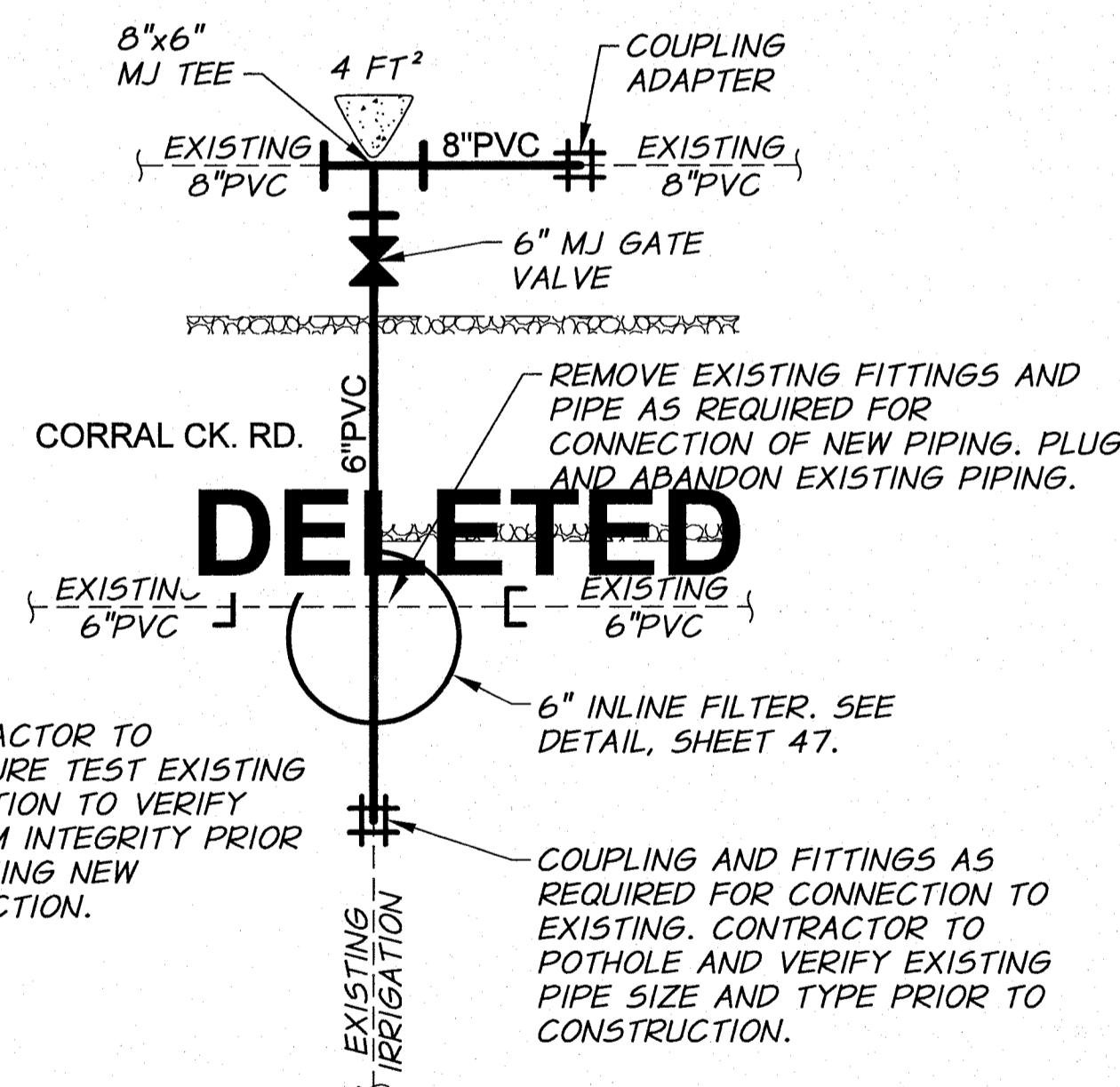
DETAIL BV
REFERENCE SHEET: 26



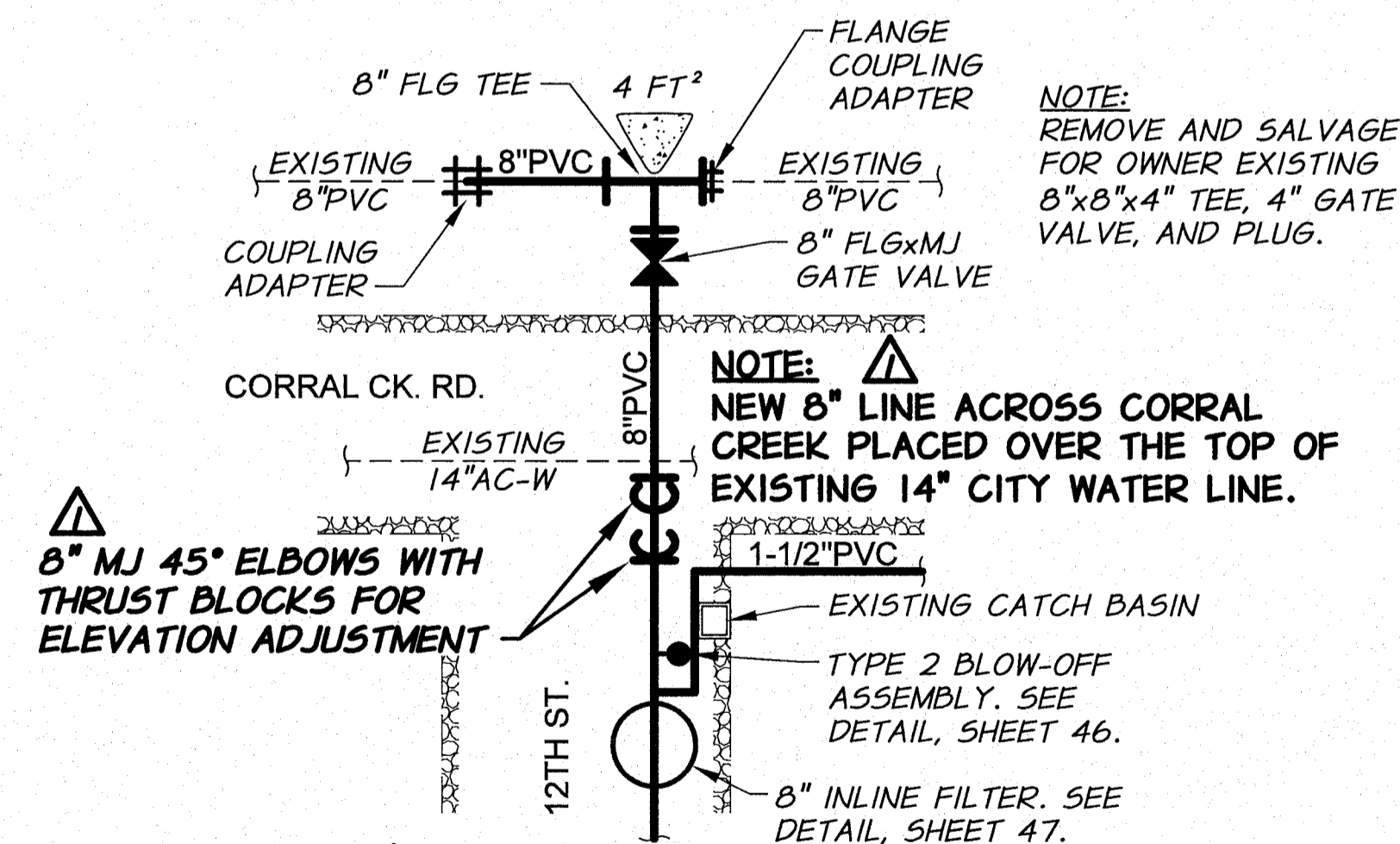
DETAIL BW
REFERENCE SHEET: 27



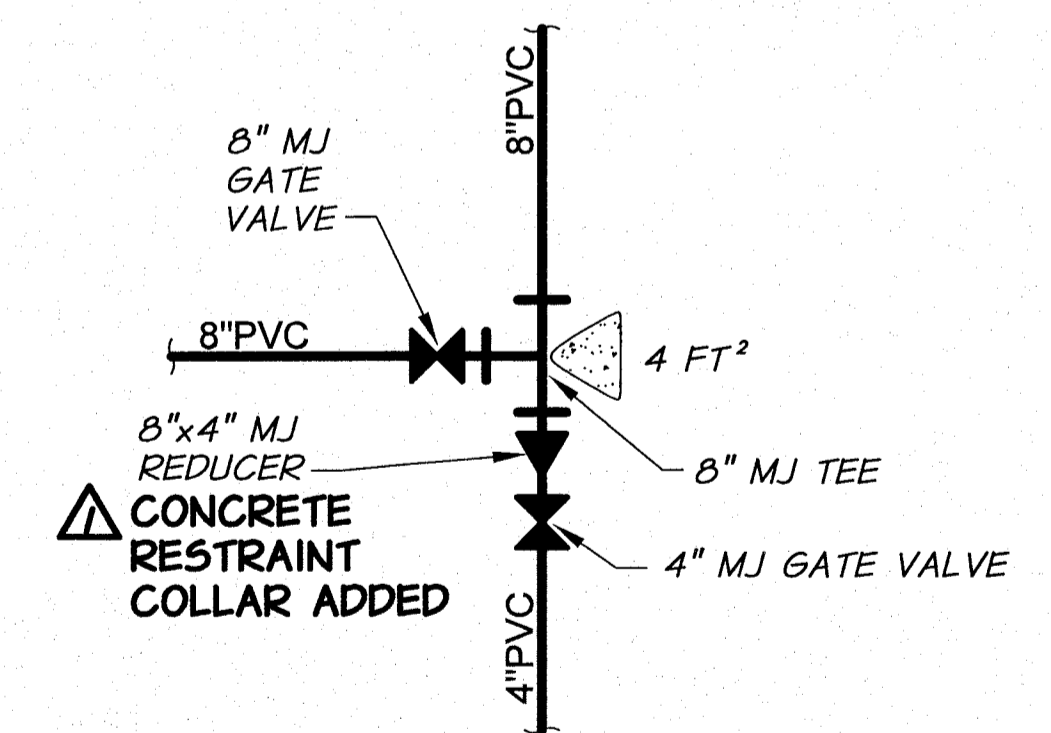
DETAIL BX
REFERENCE SHEET: 27



DETAIL BY
REFERENCE SHEET: 28



DETAIL BZ
REFERENCE SHEET: A29



DETAIL CA
REFERENCE SHEET: A29

DELETED

CORRAL CK. RD.

REMOVE EXISTING FITTINGS AND PIPE AS REQUIRED FOR CONNECTION OF NEW PIPING. PLUG AND ABANDON EXISTING PIPING.

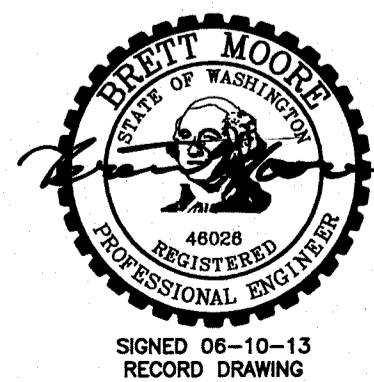
6" INLINE FILTER. SEE DETAIL, SHEET 47.

COUPLING AND FITTINGS AS REQUIRED FOR CONNECTION TO EXISTING. CONTRACTOR TO POT HOLE AND VERIFY EXISTING PIPE SIZE AND TYPE PRIOR TO CONSTRUCTION.

EXISTING IRRIGATION

NOTE: CONTRACTOR TO PRESSURE TEST EXISTING IRRIGATION TO VERIFY SYSTEM INTEGRITY PRIOR TO MAKING NEW CONNECTION.

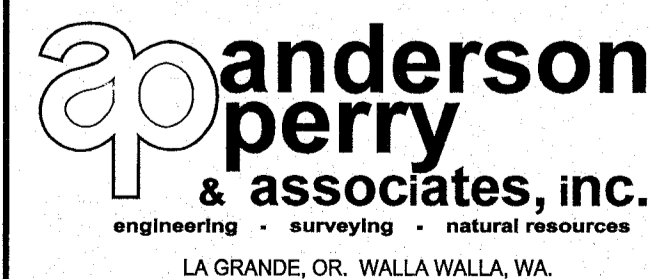
DETAIL NOT USED. REFER TO "DETAIL RR" ON SHEET A28.



RECORD DRAWING		B.M.	5/13
DESIGNED BY	M. OWENS	HORIZ. SCALE	NONE
DRAWN BY	D. CHRISTMAN	VERT. SCALE	
REVIEWED BY	B. MOORE	JOB NUMBER	1199-336
		DATE	2012
		ACAD FILE	PipeConnDets-Ph3B.dwg
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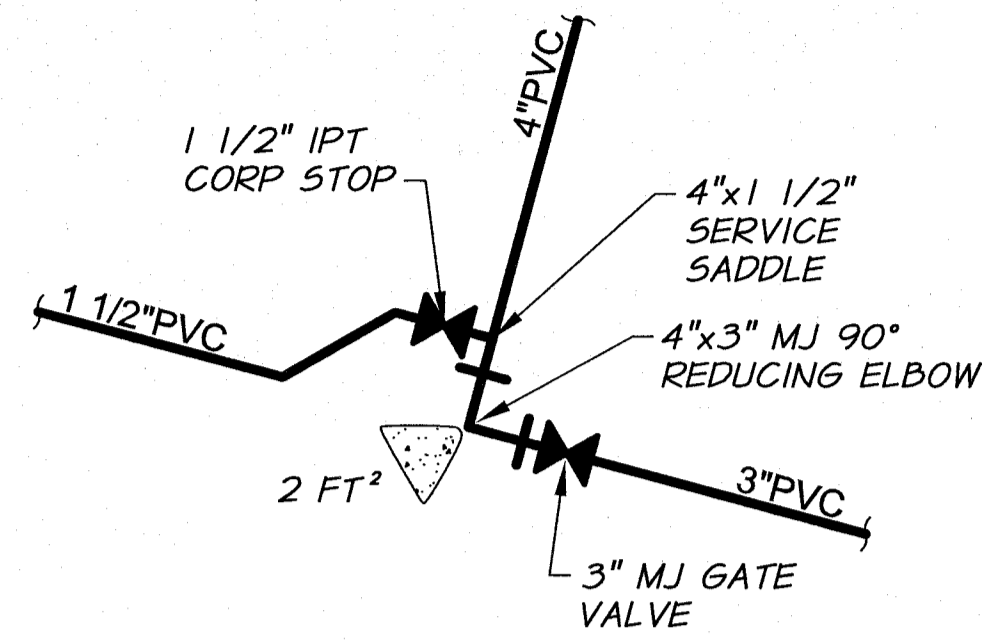
RECORD DRAWINGS
JUNE 10, 2013

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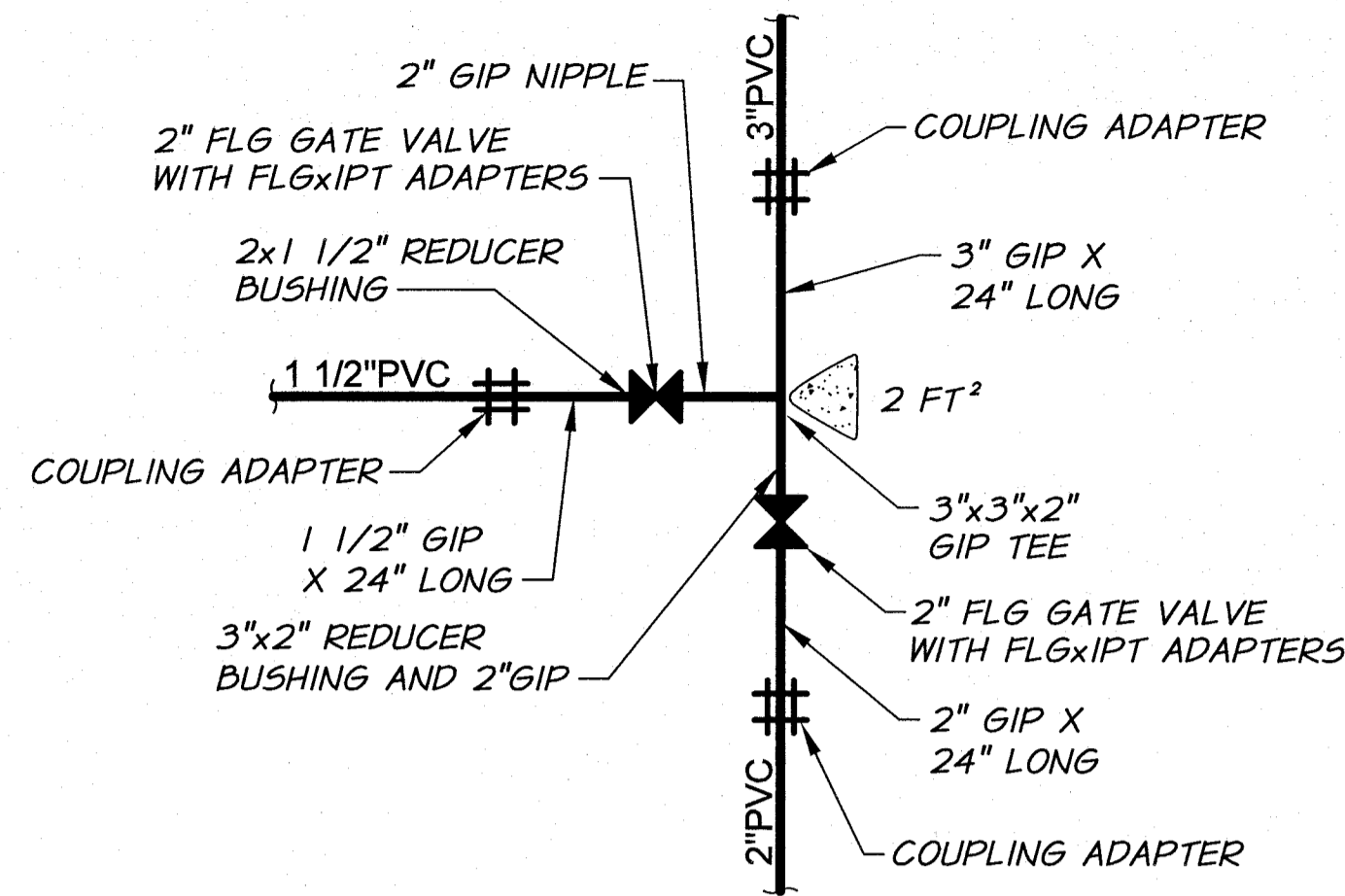


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

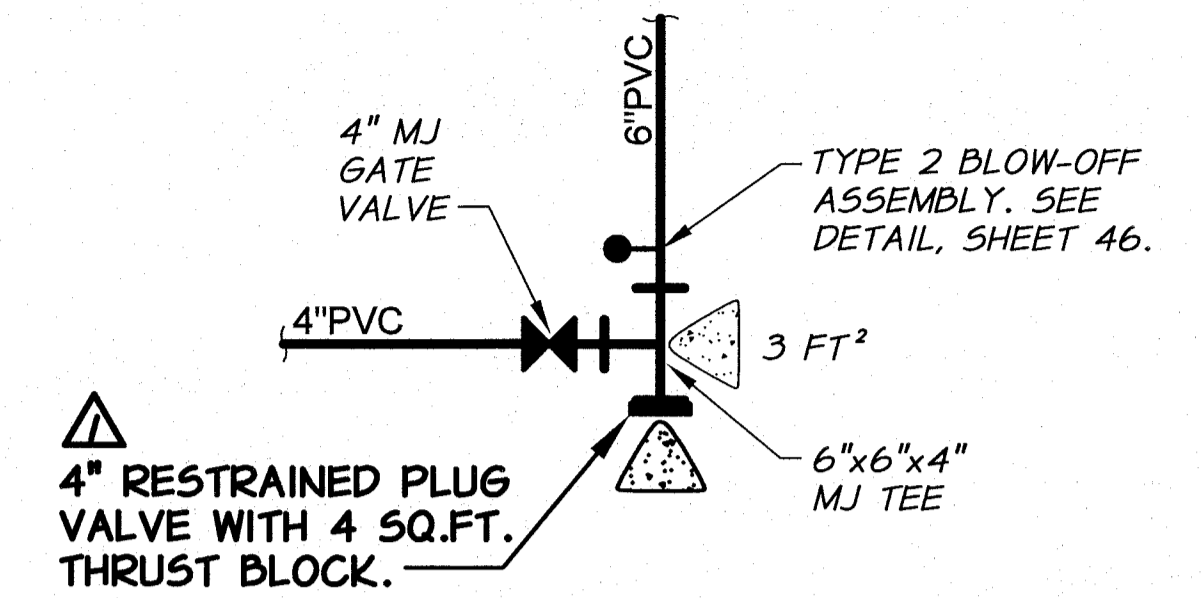
PIPE CONNECTION DETAILS IV



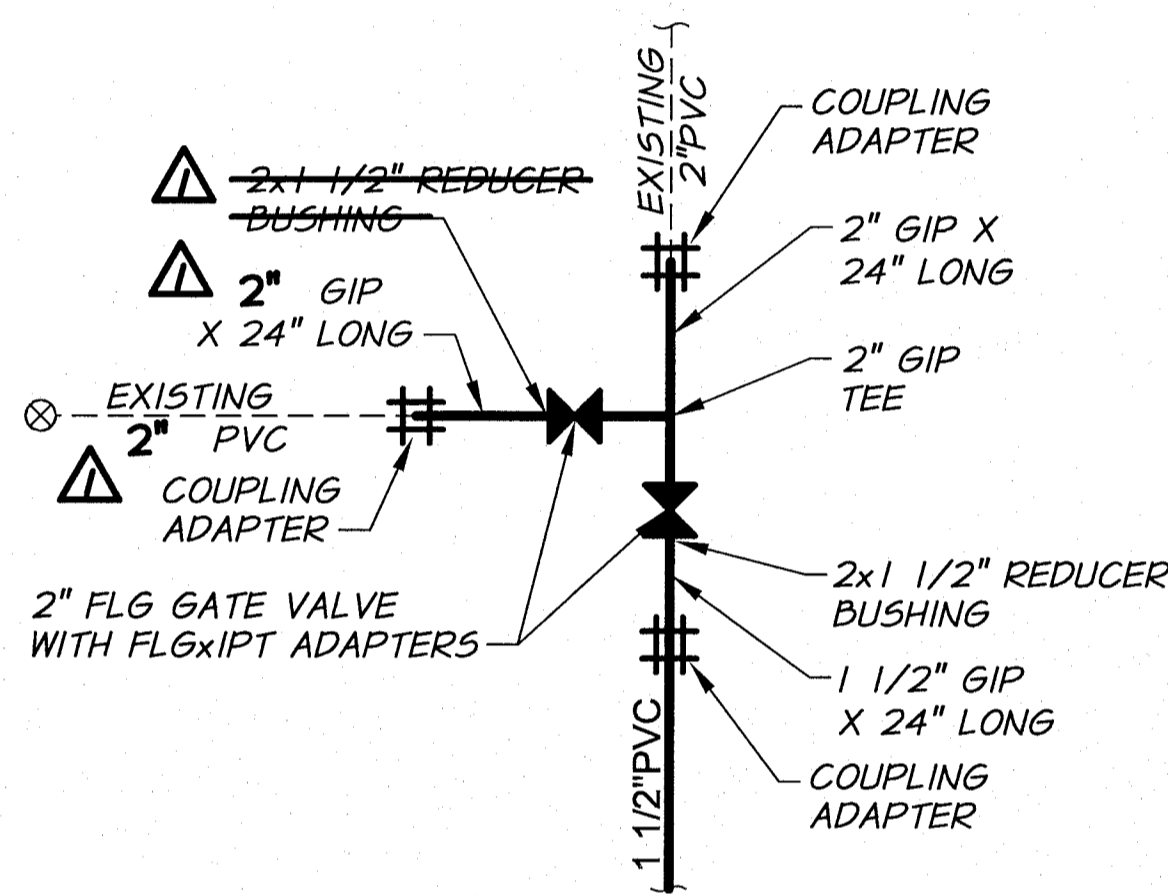
DETAIL CB
REFERENCE SHEET: A29



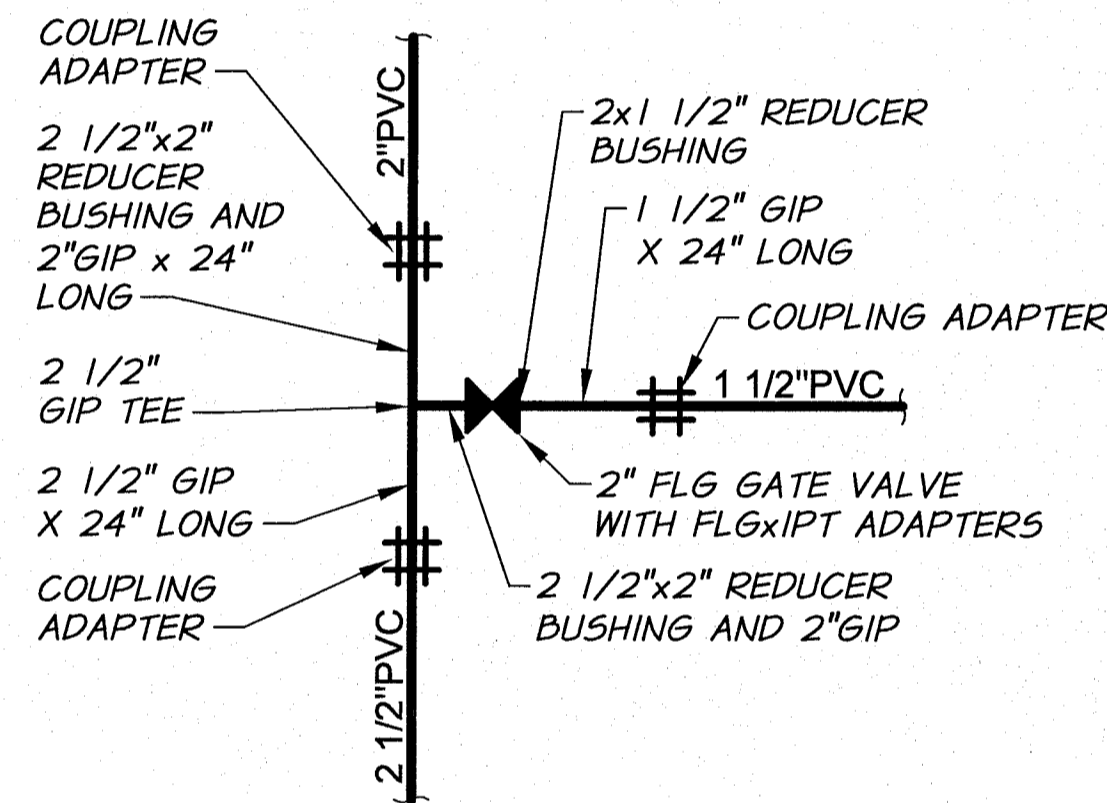
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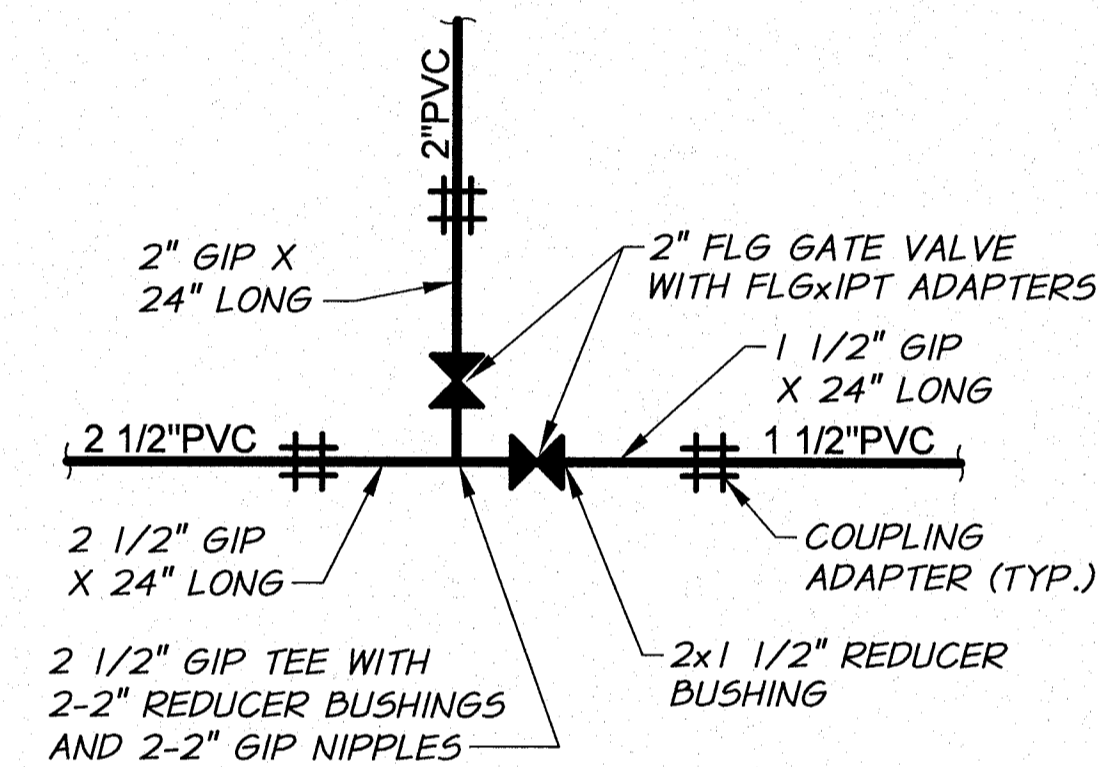
DETAIL CE
REFERENCE SHEET: A29, 30



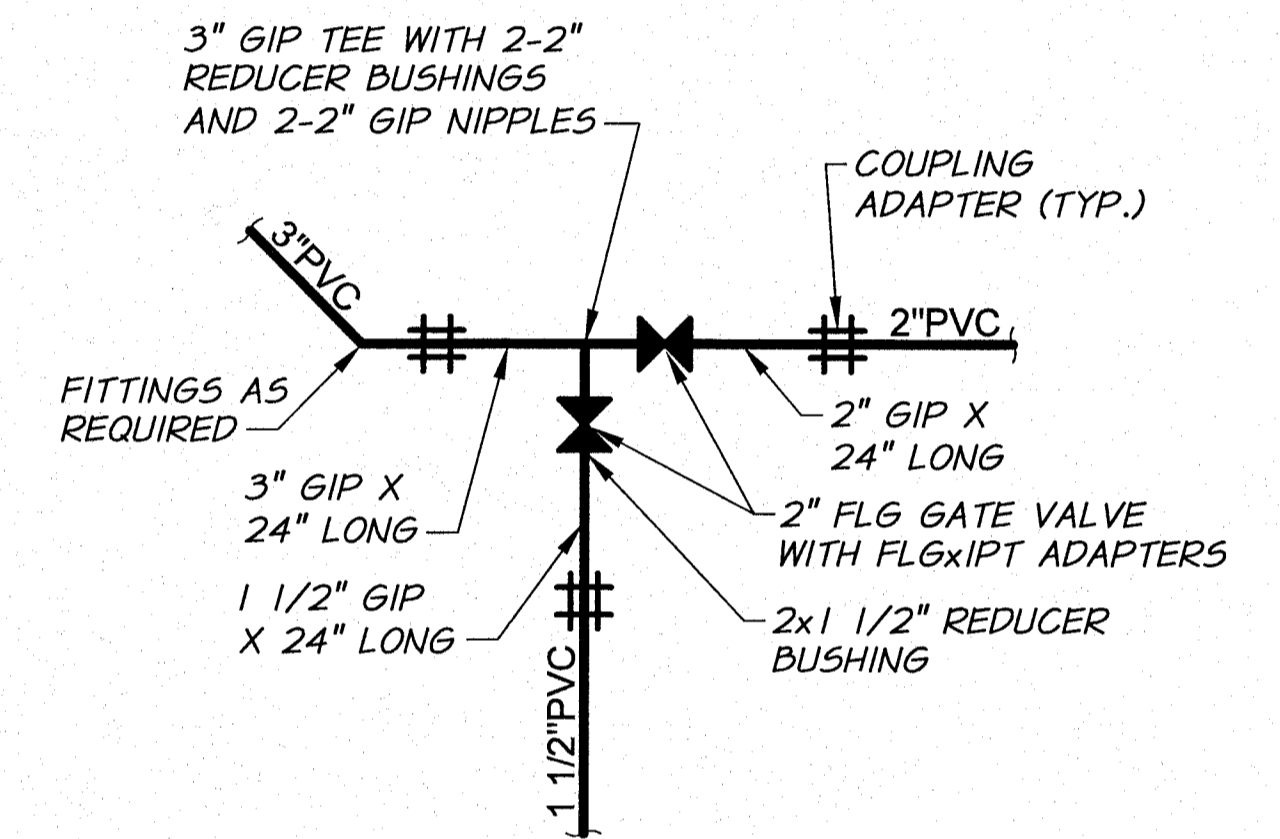
DETAIL CF
REFERENCE SHEET: 31



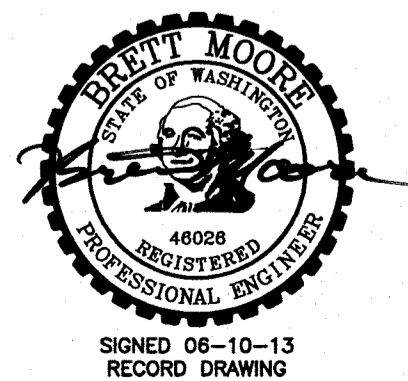
DETAIL CG
REFERENCE SHEET: 11



DETAIL CH
REFERENCE SHEET: 15



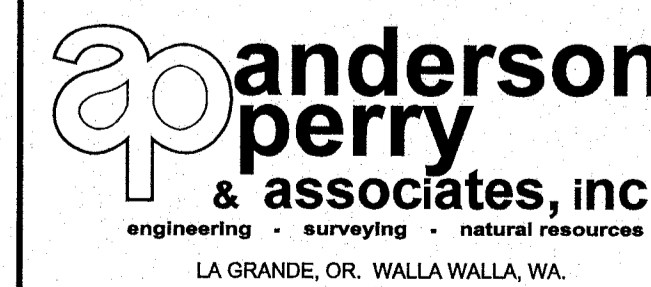
DETAIL CJ
REFERENCE SHEET: 6



RECORD DRAWING		BY	B.M.	DATE	5/13
DESIGNED BY	M. OWENS	HORIZ. SCALE	NONE	VERT. SCALE	
DRAWN BY	D. CHRISTMAN	JOB NUMBER	1199-336	DATE	2012
REVIEWED BY	B. MOORE	ACAD FILE	PipeConnDets-Ph3B.dwg		
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RECORD DRAWINGS
JUNE 10, 2013

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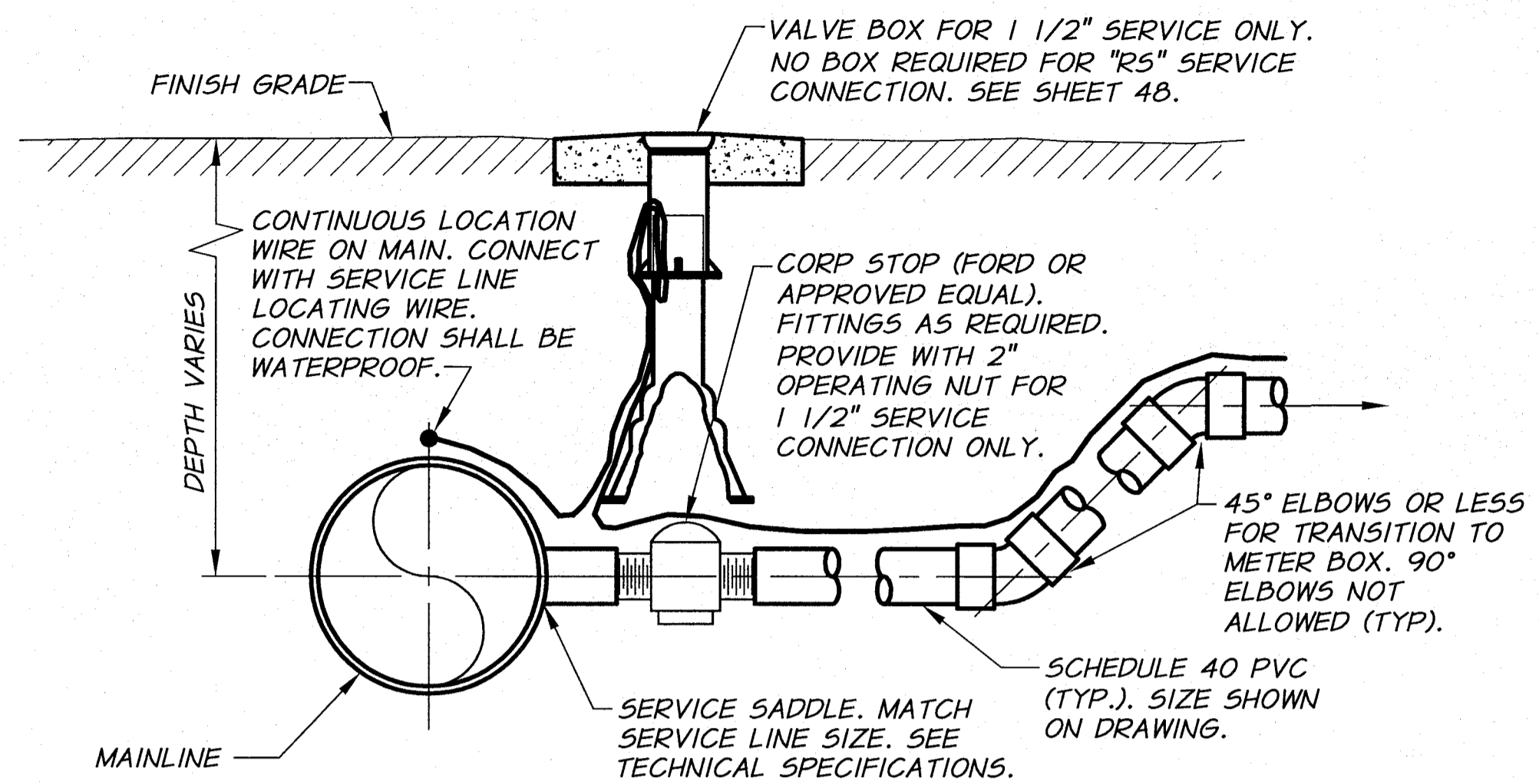
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

PIPE CONNECTION DETAILS V

SHEET

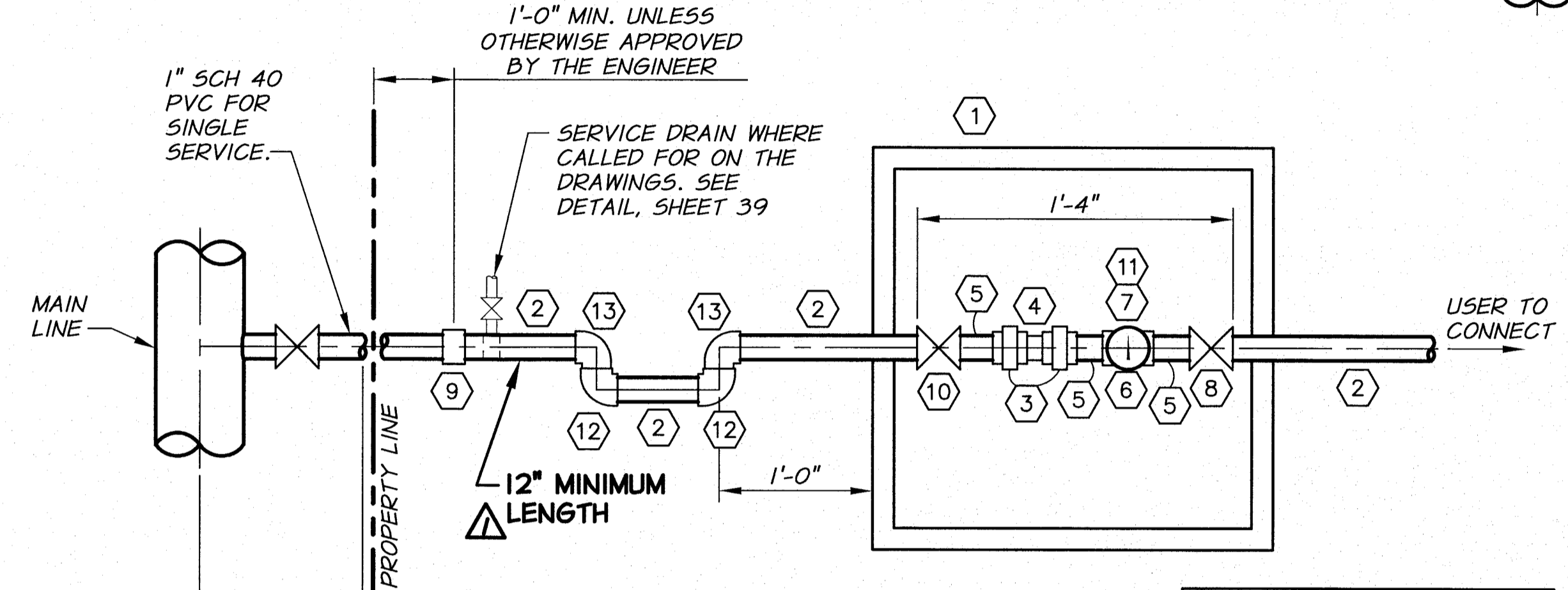
36

ARCHIVED



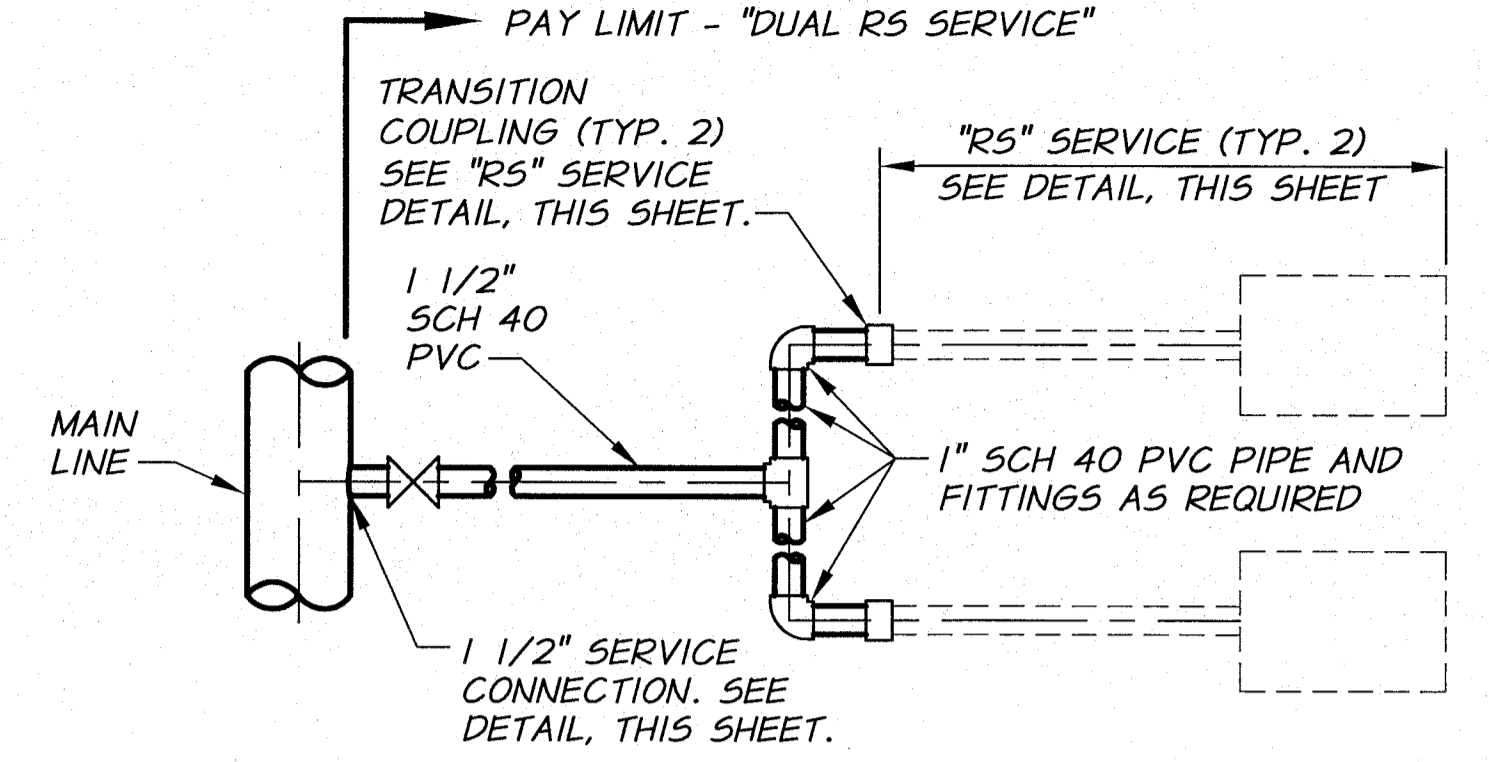
NOTE:
COORDINATE THE LOCATION OF SERVICE LINE CONNECTION WITH B.I.D. PRIOR TO CONSTRUCTION AND INSTALLATION.

MAIN LINE SERVICE CONNECTION
FOR "RS" AND 1 1/2" SERVICE
N.T.S.



PLAN

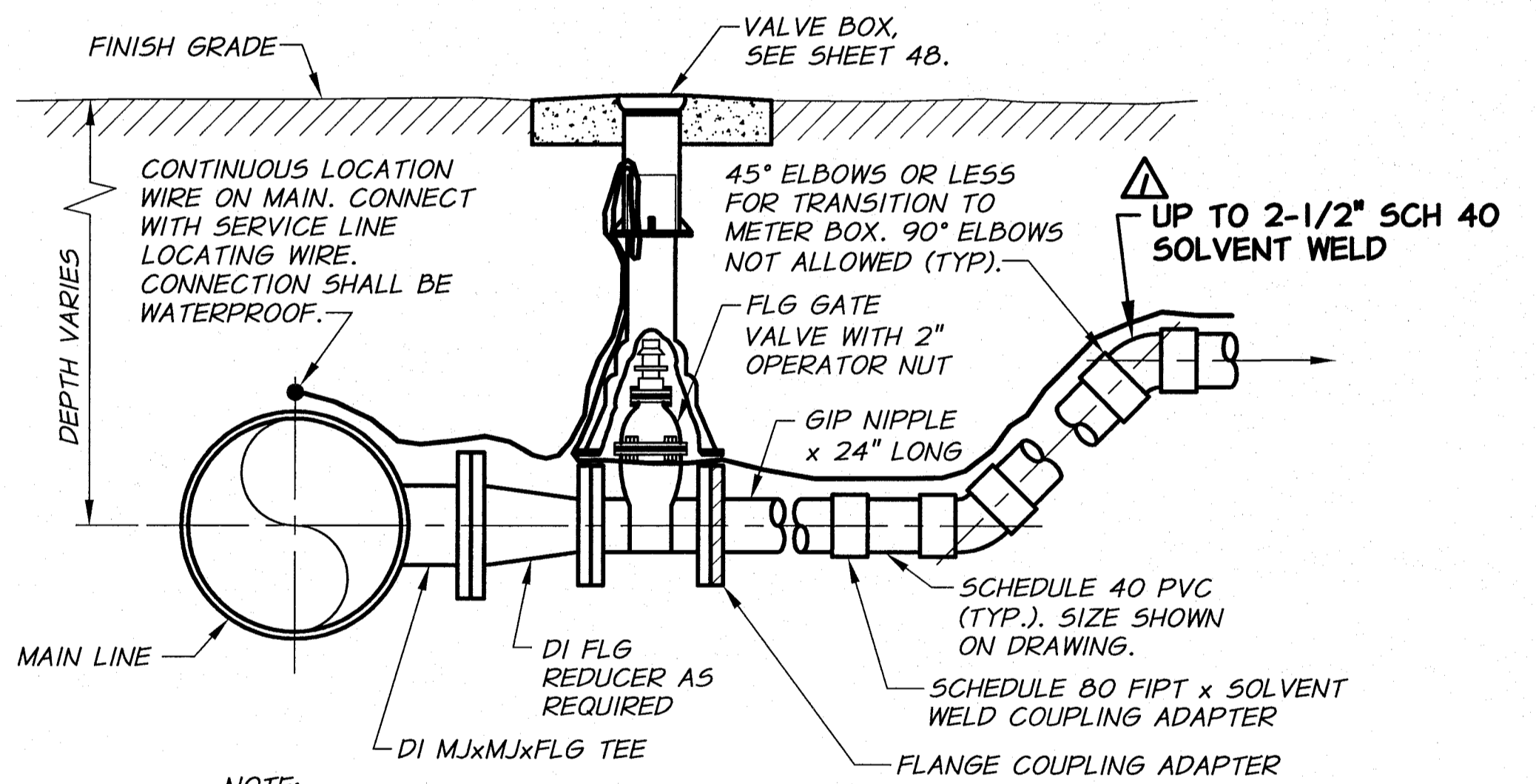
NOTE:
THREAD CLEARANCE SHALL BE 3/8" MINIMUM. OVER TIGHTENED FITTINGS WILL BE REJECTED AND PIPING ASSEMBLY REASSEMBLED TO MEET REQUIREMENTS. SEE SPECIFICATIONS FOR MORE DETAILS.



DUAL "RS" SERVICE DETAIL
N.T.S.

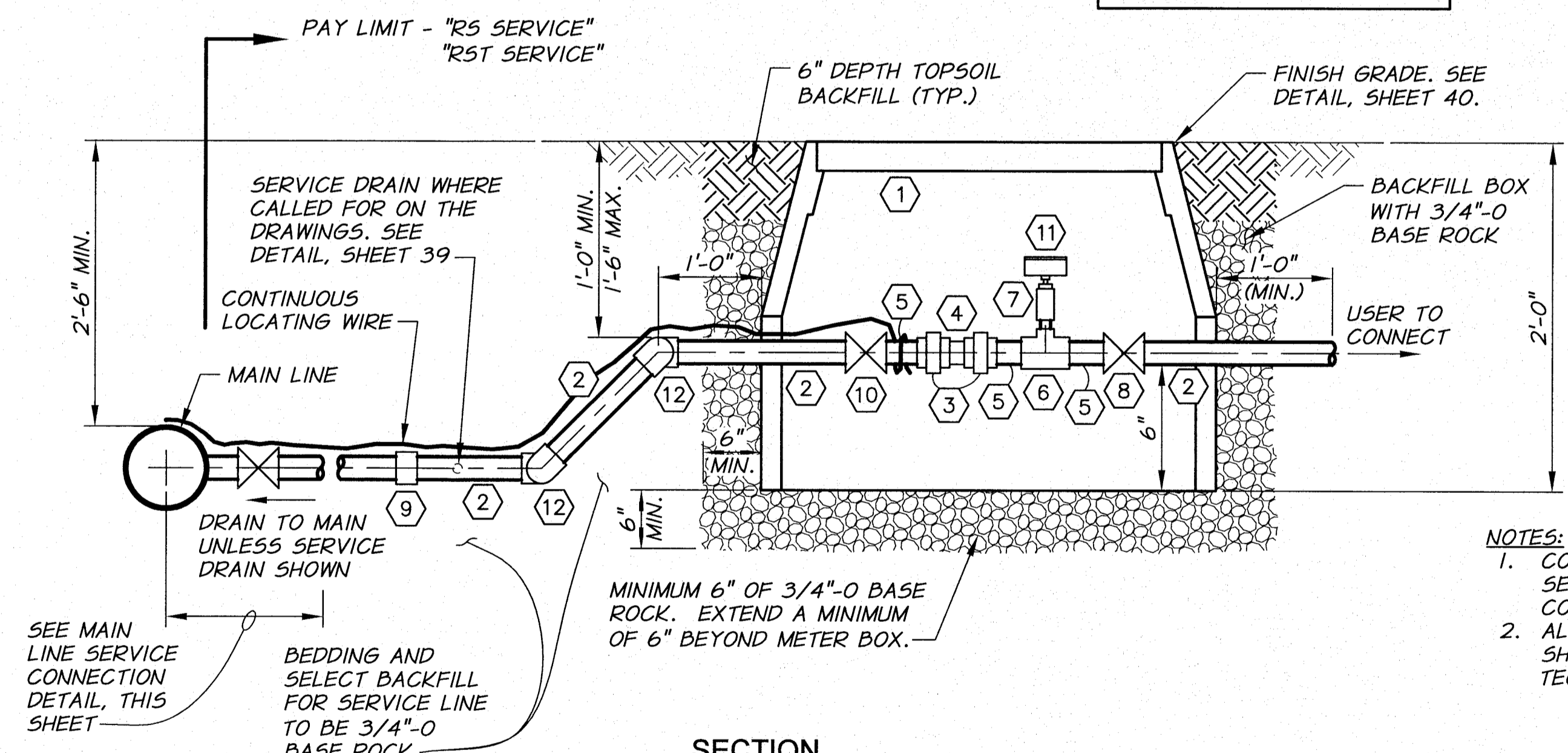
SERVICE FITTING SCHEDULE

- 1 RAVEN PRODUCTS RECTANGULAR HDPE METER BOX, MODEL NO. RMB 17x30-12 (2 EA. 5" STACKED TO 24" HEIGHT) WITH POLY LID FOR "RS" SERVICES, AND H-20 LOAD RATED LID FOR "RST" SERVICES.
- 2 1" SCH. 40 G.I.P. PIPE
- 3 1" G.I.P. UNION
- 4 1" DOLE FLOW CONTROL VALVE. SIZE AS SHOWN ON PLANS. INSTALL WITH FLOW RATE LABEL FACING UPWARDS AND NO WRENCH MARKS ON VALVE.
- 5 1" THREADED SCH. 40 G.I.P. SPOOL, LENGTH AS REQUIRED.
- 6 1"x3/4" G.I.P. TEE
- 7 3/4" THREADED BRASS BALL VALVE WITH 3/4"x1/4" BUSHING AND BRASS QUICK COUPLING PLUG (UNVALVED)
- 8 CORP STOP GATE VALVE
- 9 SCH80 PVC TRANSITION COUPLING AND FITTINGS AS REQ'D. FEMALE CONNECTION TO GIP.
- 10 CORP STOP WITH PADLOCK WING
- 11 BRASS MALE QUICK COUPLING WITH 1/2" BALL VALVE. ORIENT COUPLING SO THAT WHEN INSTALLED, OWNER SUPPLIED, GAUGE IS VIEWABLE FROM ACCESS OPENING.
- 12 1" 90° GIP ELBOW
- 13 1" 90° GIP STREET ELBOW



NOTE:
COORDINATE THE LOCATION OF SERVICE LINE CONNECTION WITH B.I.D. PRIOR TO CONSTRUCTION AND INSTALLATION.

MAIN LINE SERVICE CONNECTION
FOR 2", 2 1/2", AND 3" SERVICE
N.T.S.



SECTION

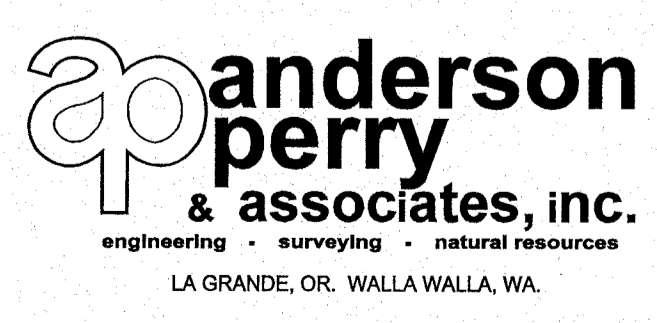
NOTES:
1. COORDINATE THE LOCATION OF SERVICE BOX WITH B.I.D. PRIOR TO CONSTRUCTION AND INSTALLATION.
2. ALL BURIED GALVANIZED PIPE SHALL BE TAPE WRAPPED PER TECHNICAL SPECIFICATIONS.

TYPICAL "RS" AND "RST" SERVICE DETAIL
N.T.S.

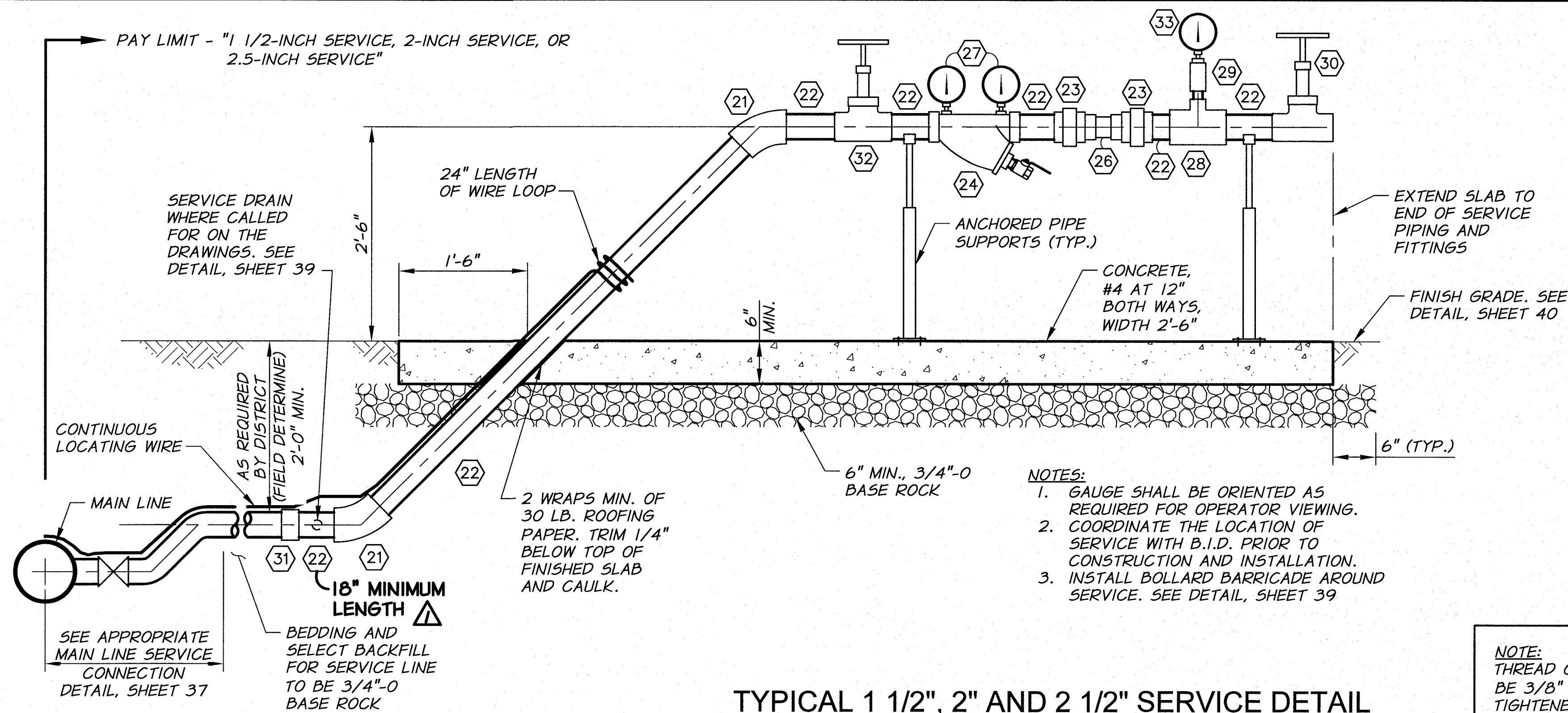


RECORD DRAWING		B.M. 5/13		JOB NUMBER 1199-336		DATE 2012	
DESIGNED BY M. OWENS	DATE	HORIZ. SCALE NONE	VERT. SCALE	ACAD FILE: ServiceDets-Ph3B.dwg	COPYRIGHT 2012 BY ANDERSON-PERRY & ASSOC., INC.		
DRAWN BY D. CHRISTMAN							
REVIEWED BY B. MOORE							

RECORD DRAWINGS
JUNE 10, 2013
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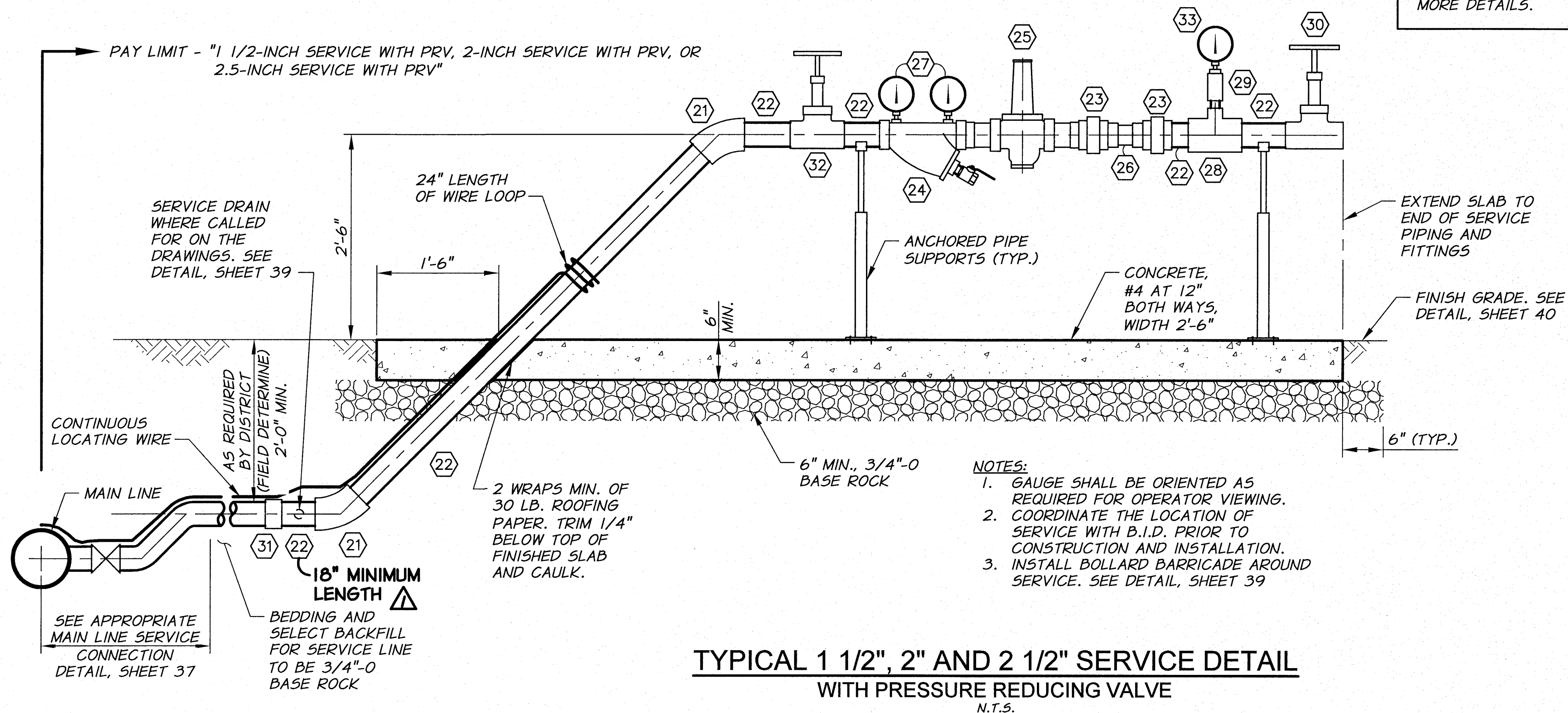


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B
SERVICE DETAILS I



TYPICAL 1 1/2", 2" AND 2 1/2" SERVICE DETAIL
WITHOUT PRESSURE REDUCING VALVE
N.T.S.

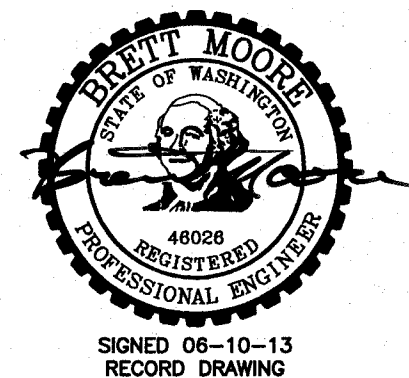
NOTE:
THREAD CLEARANCE SHALL BE 3/8" MINIMUM. OVER TIGHTENED FITTINGS WILL BE REJECTED AND PIPING ASSEMBLY REASSEMBLED TO MEET REQUIREMENTS. SEE SPECIFICATIONS FOR MORE DETAILS.



TYPICAL 1 1/2", 2" AND 2 1/2" SERVICE DETAIL
WITH PRESSURE REDUCING VALVE
N.T.S.

SERVICE FITTING SCHEDULE

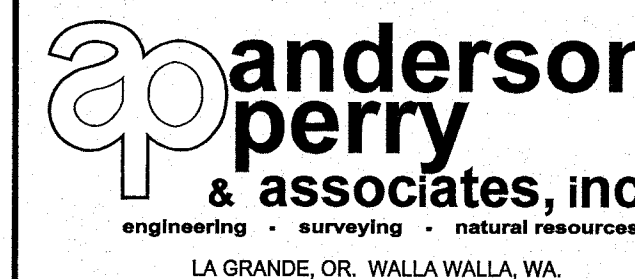
- (21) G.I.P. 45° ELBOW
- (22) SCH. 40 G.I.P. PIPE
- (23) G.I.P. UNION OR G.I.P. REDUCING UNION AS REQUIRED
- (24) SONNITAG ALUMINUM Y-FILTER WITH 10 MESH FILTER SCREEN FOR SERVICE WITHOUT PRV, AND 40 MESH FILTER SCREEN FOR SERVICE WITH PRV. 1 1/4" FOR 1 1/2" SERVICE, 2" FOR 2" SERVICE, 3" FOR 2.5" SERVICE (UNLESS OTHERWISE SPECIFIED), WITH FITTINGS AS REQUIRED
- (25) GLA-VAL 990 PRESSURE REDUCING VALVE WITH BUSHINGS AS REQUIRED. SIZE AS SHOWN ON PLANS. SEE TECHNICAL SPECIFICATIONS FOR DETAILS.
- (26) DOLE FLOW CONTROL VALVE. SIZE AS SHOWN ON PLANS. INSTALL WITH FLOW RATE LABEL FACING UPWARDS AND NO WRENCH MARKS ON VALVE.
- (27) 4" 55 GLYCERIN FILLED PRESSURE GAUGE, FITTINGS AS REQUIRED
- (28) SIZE x 3/4" G.I.P. TEE
- (29) 3/4" THREADED BRASS BALL VALVE WITH 3/4"x1/4" BUSHING AND BRASS QUICK COUPLING PLUG (UNVALVED)
- (30) BRASS THREADED GATE VALVE
- (31) SCH 80 PVC TRANSITION COUPLING AND FITTINGS AS REQ'D. FEMALE CONNECTION TO GIP.
- (32) LOCKING THREADED BRASS GATE VALVE WITH BUSHINGS AS REQ'D. USE 1 1/2" VALVE FOR 1 1/2" SERVICE, USE 2" VALVE FOR 2" OR 2 1/2" SERVICE
- (33) BRASS QUICK COUPLING SOCKET (UNVALVED) GAUGE BY OWNER.



RECORD DRAWING		BY	B.M.	5/13	DATE	HORIZ. SCALE	NONE	VERT. SCALE	
DESIGNED BY	M. OWENS					JOB NUMBER	1199-336	DATE	2012
DRAWN BY	D. CHRISTMAN					ACAD FILE	ServiceDets-Ph3B.dwg		
REVIEWED BY	B. MOORE					COPYRIGHT 2012 BY ANDERSON-PERRY & ASSOC., INC.			

RECORD DRAWINGS
JUNE 10, 2013

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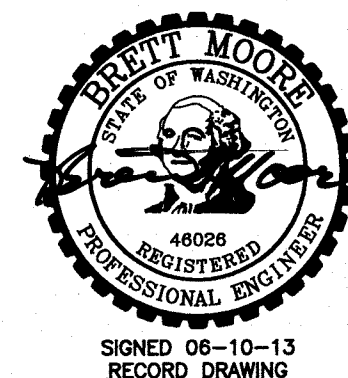
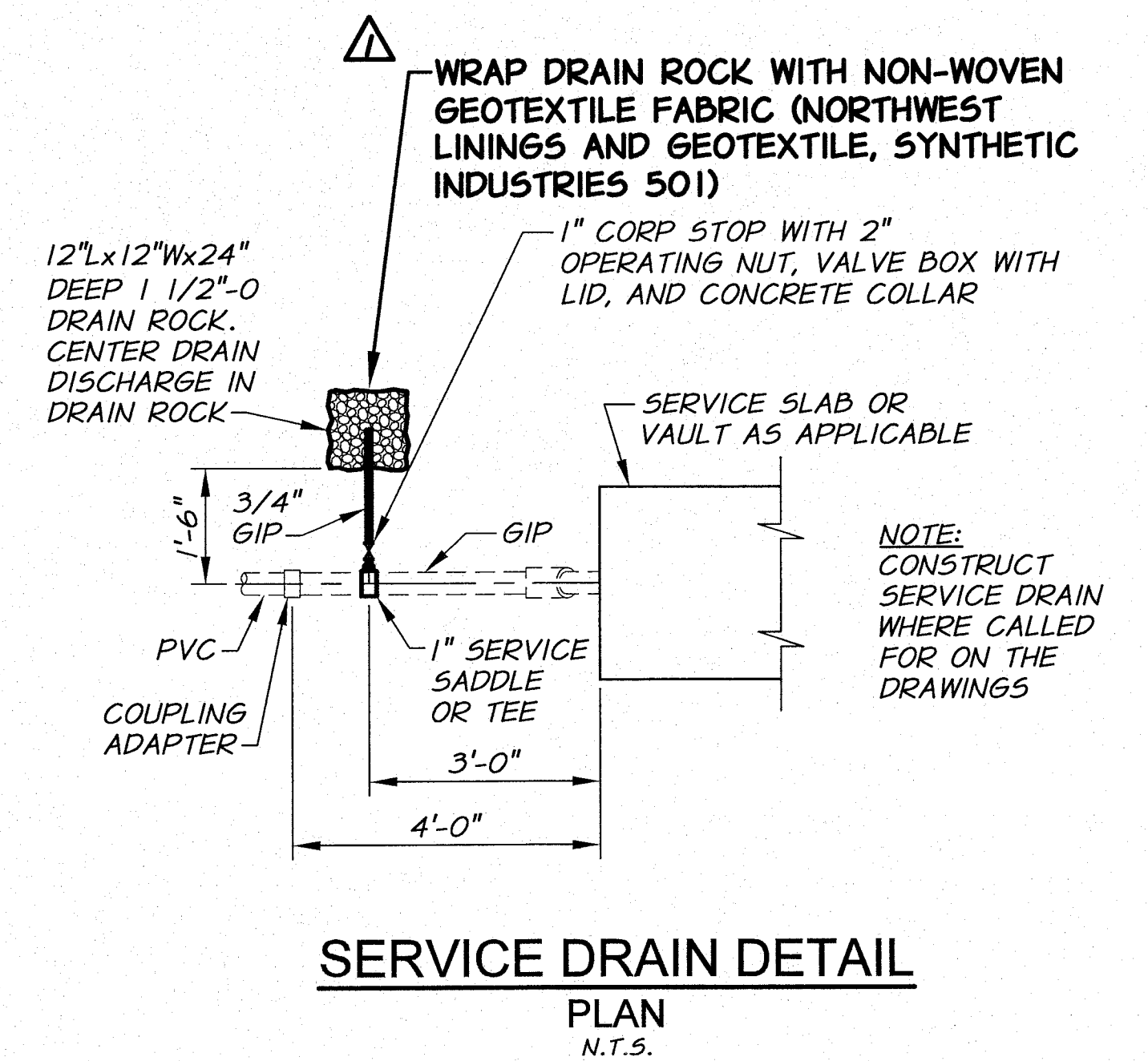
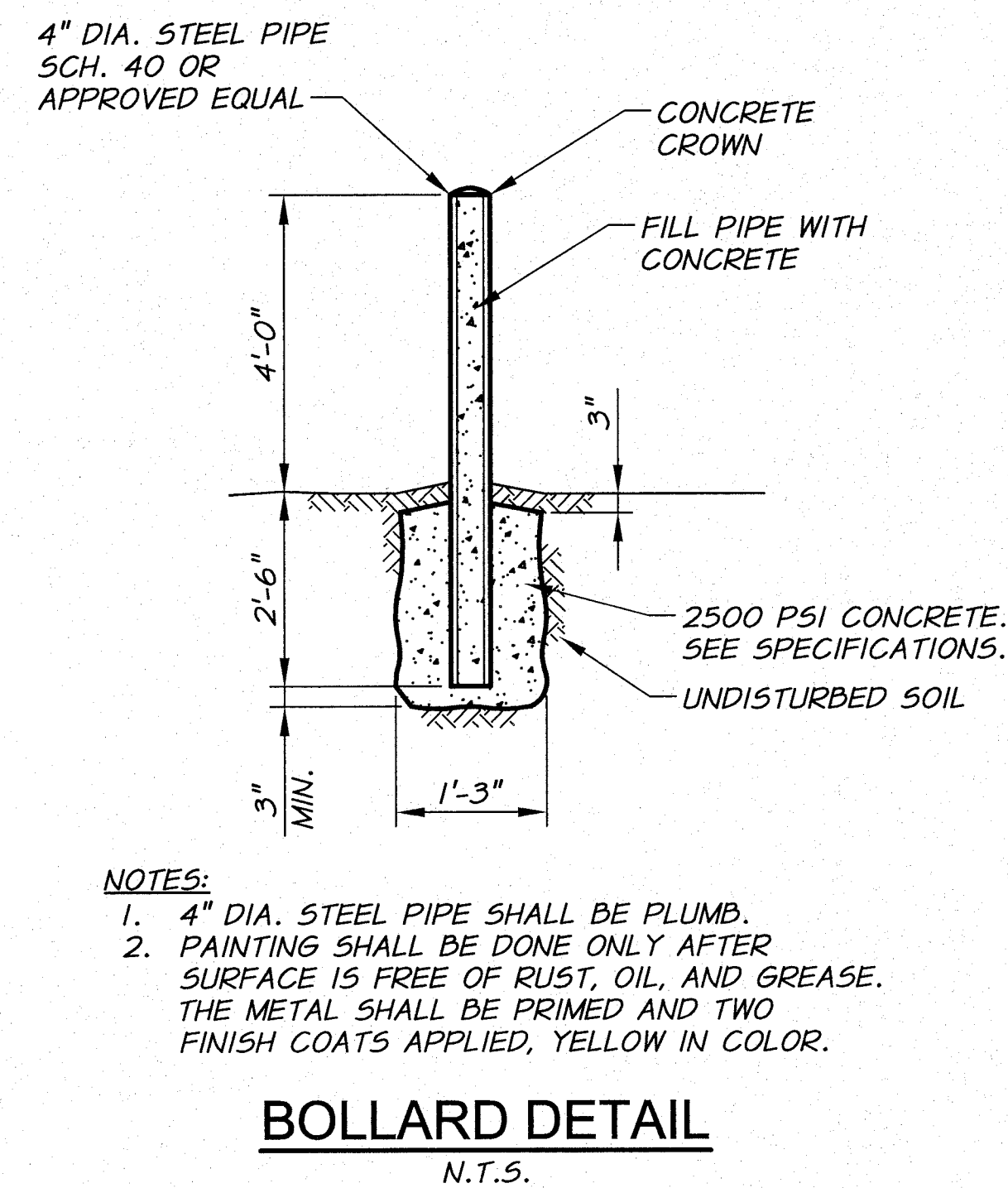
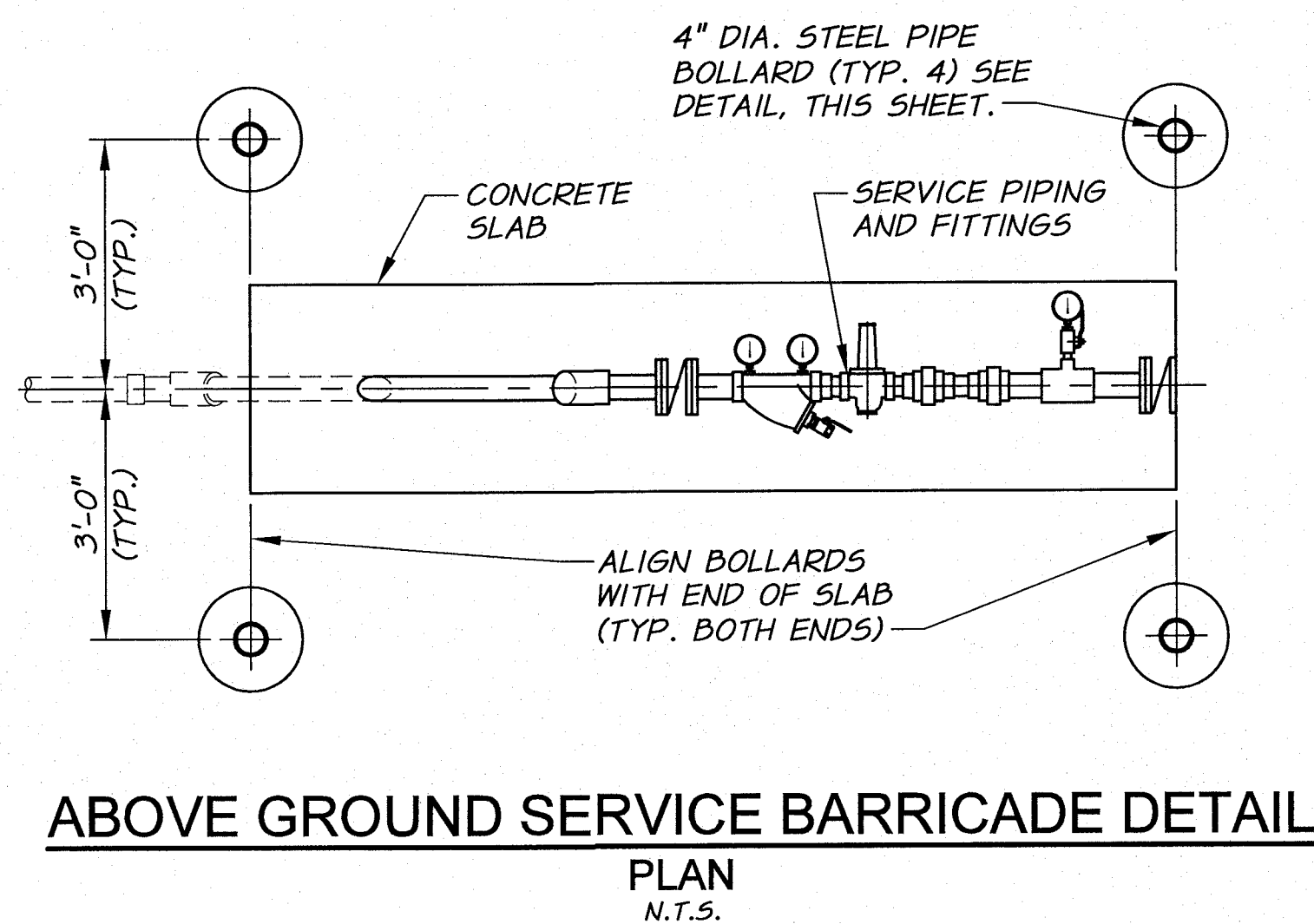
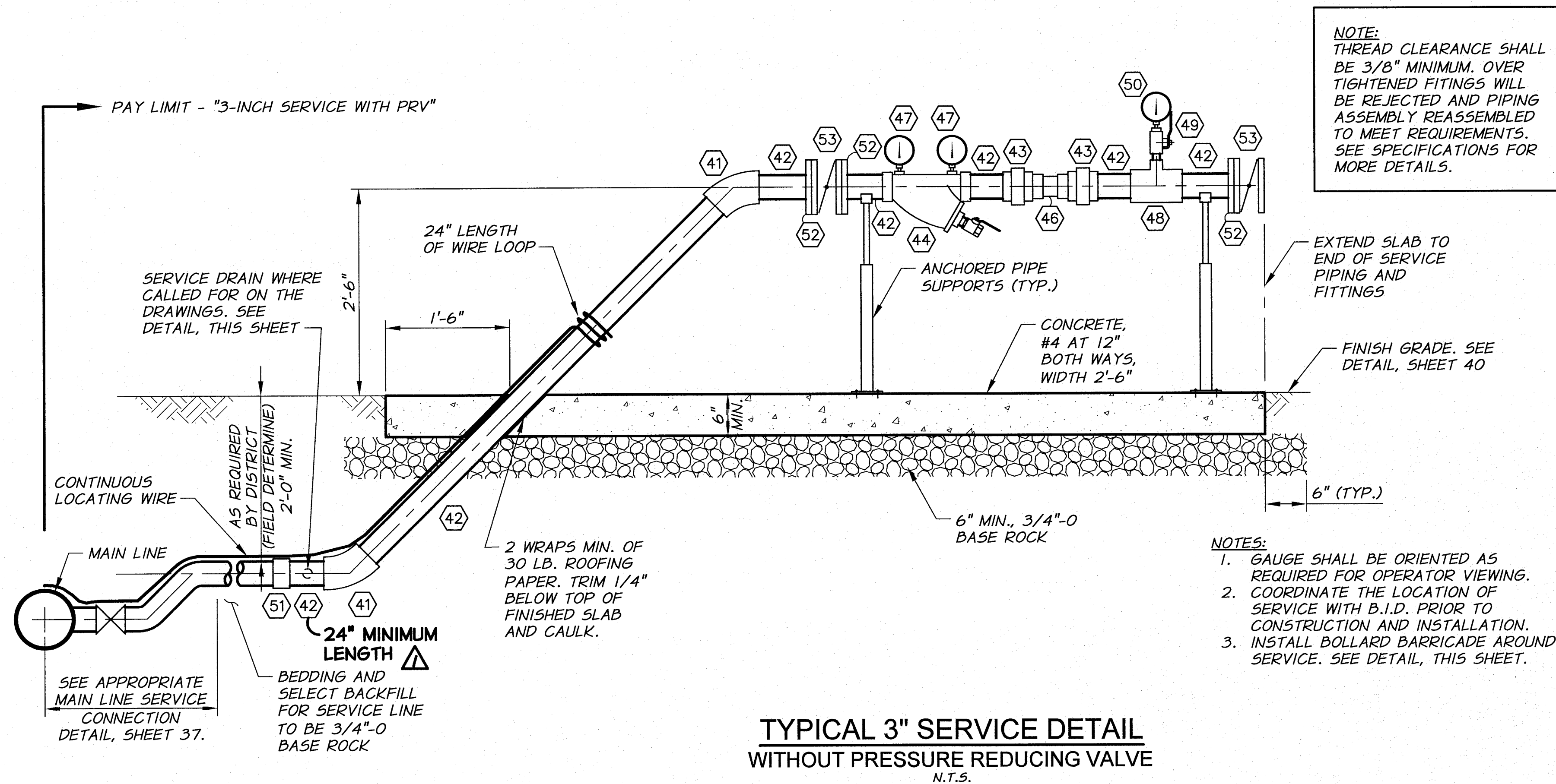


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

SERVICE DETAILS II

SHEET

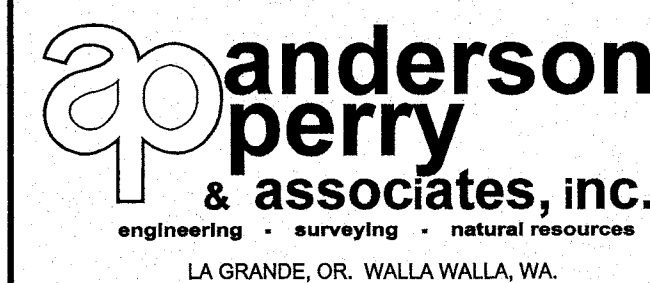
38



RECORD DRAWING		BY	B.M.	DATE	5/13
DESIGNED BY	M. OWENS	HORIZ. SCALE	NONE	VERT. SCALE	
DRAWN BY	D. CHRISTMAN	JOB NUMBER	1199-336	DATE	2012
REVIEWED BY	B. MOORE	ACAD FILE	ServiceDets-Ph3B.dwg		
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RECORD DRAWINGS
JUNE 10, 2013

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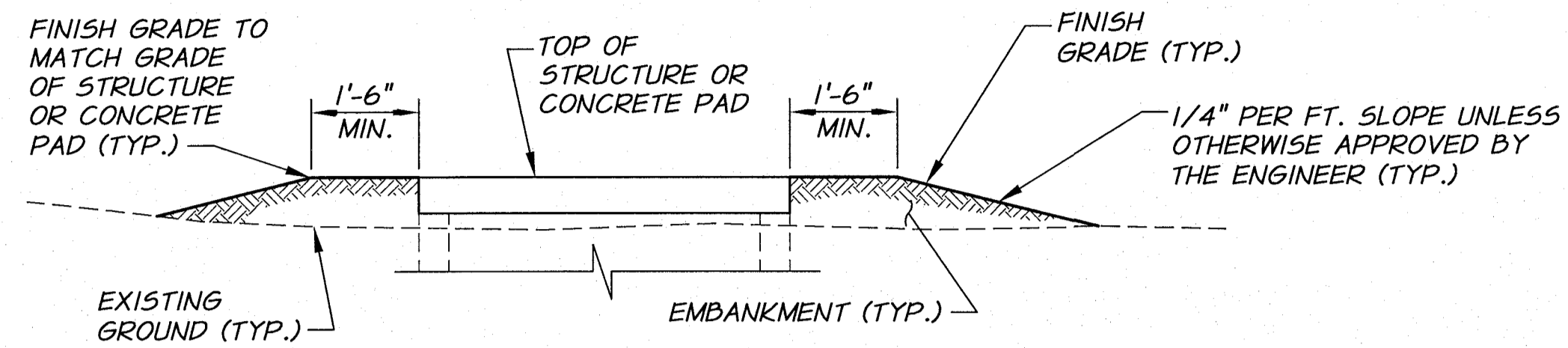


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

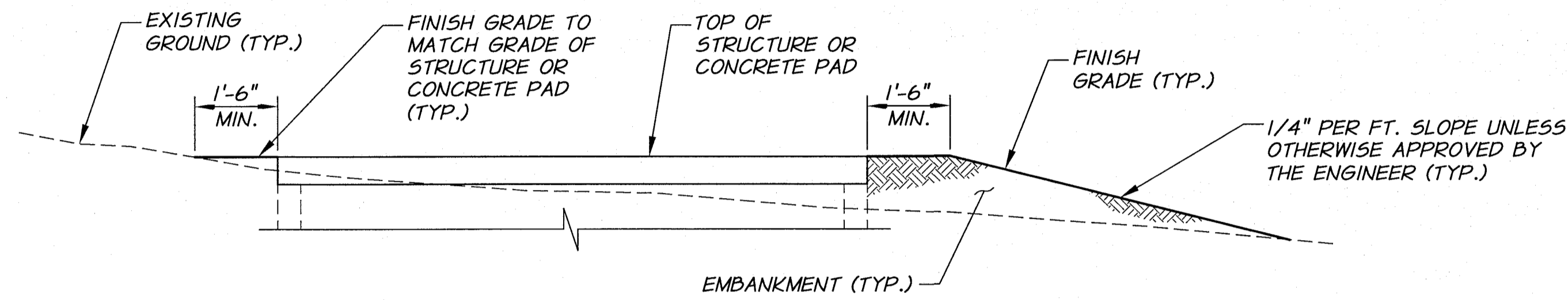
SERVICE DETAILS III

SHEET

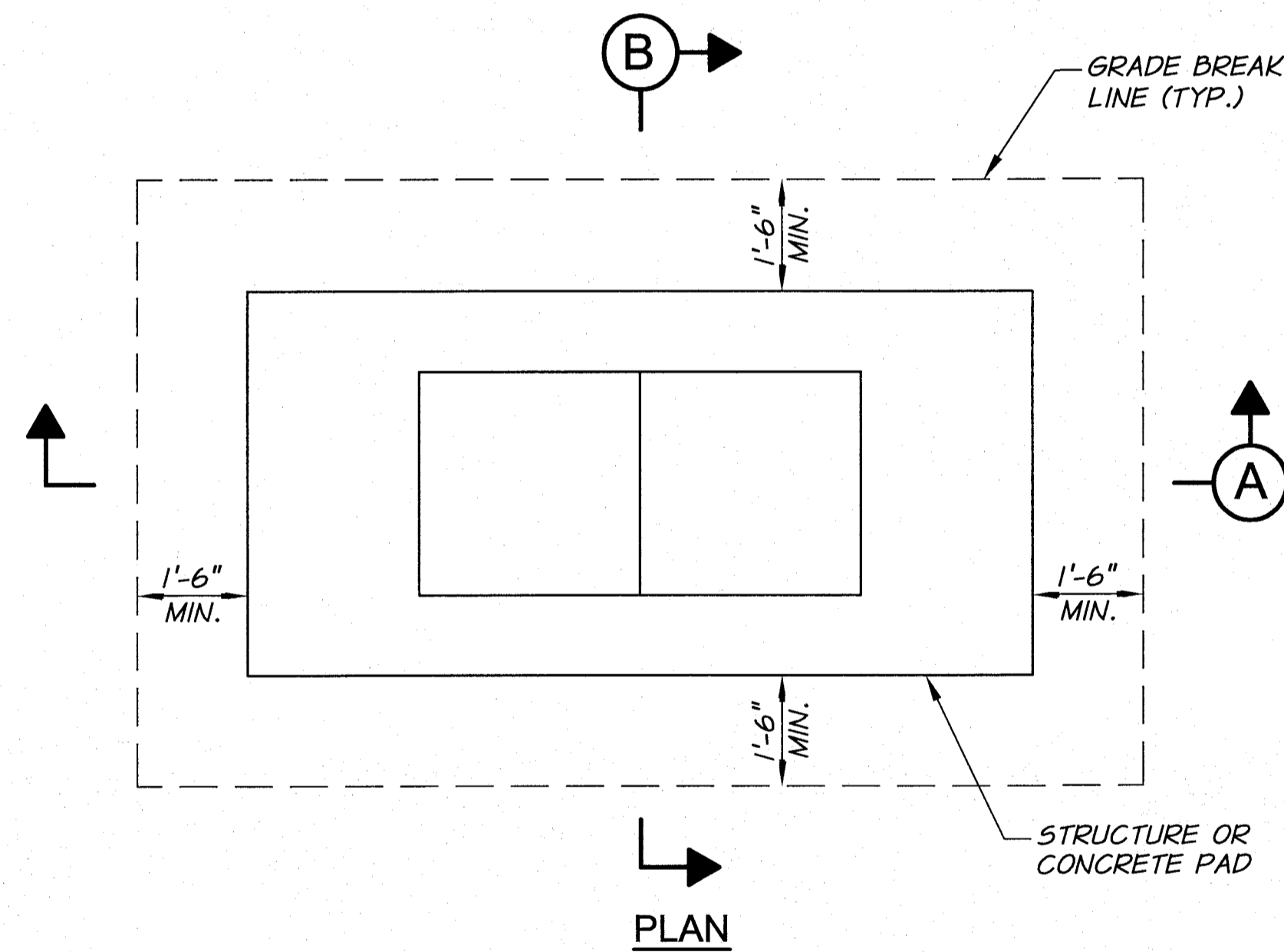
39



SECTION B



SECTION A

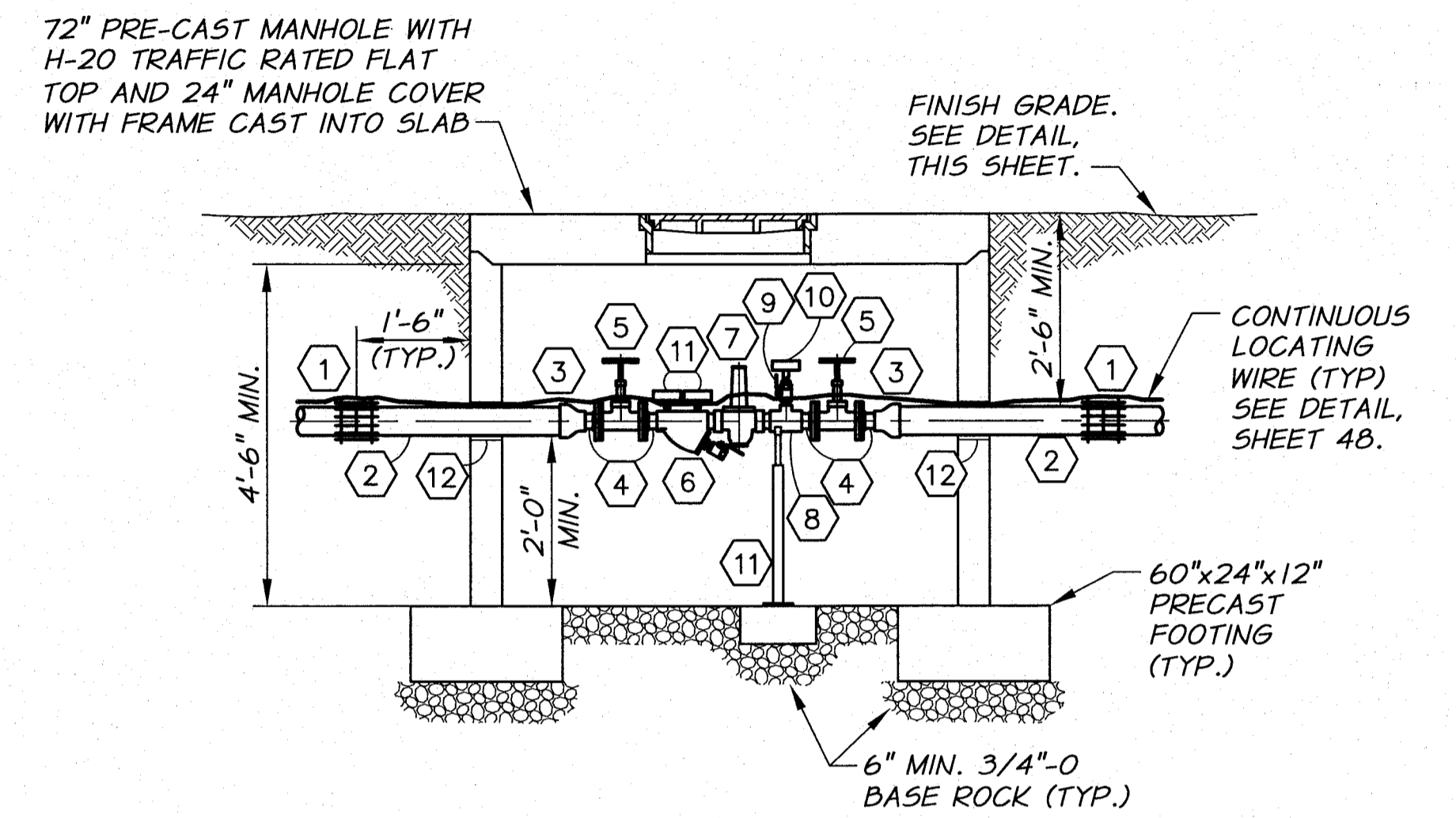


GRADING DETAIL
N.T.S.

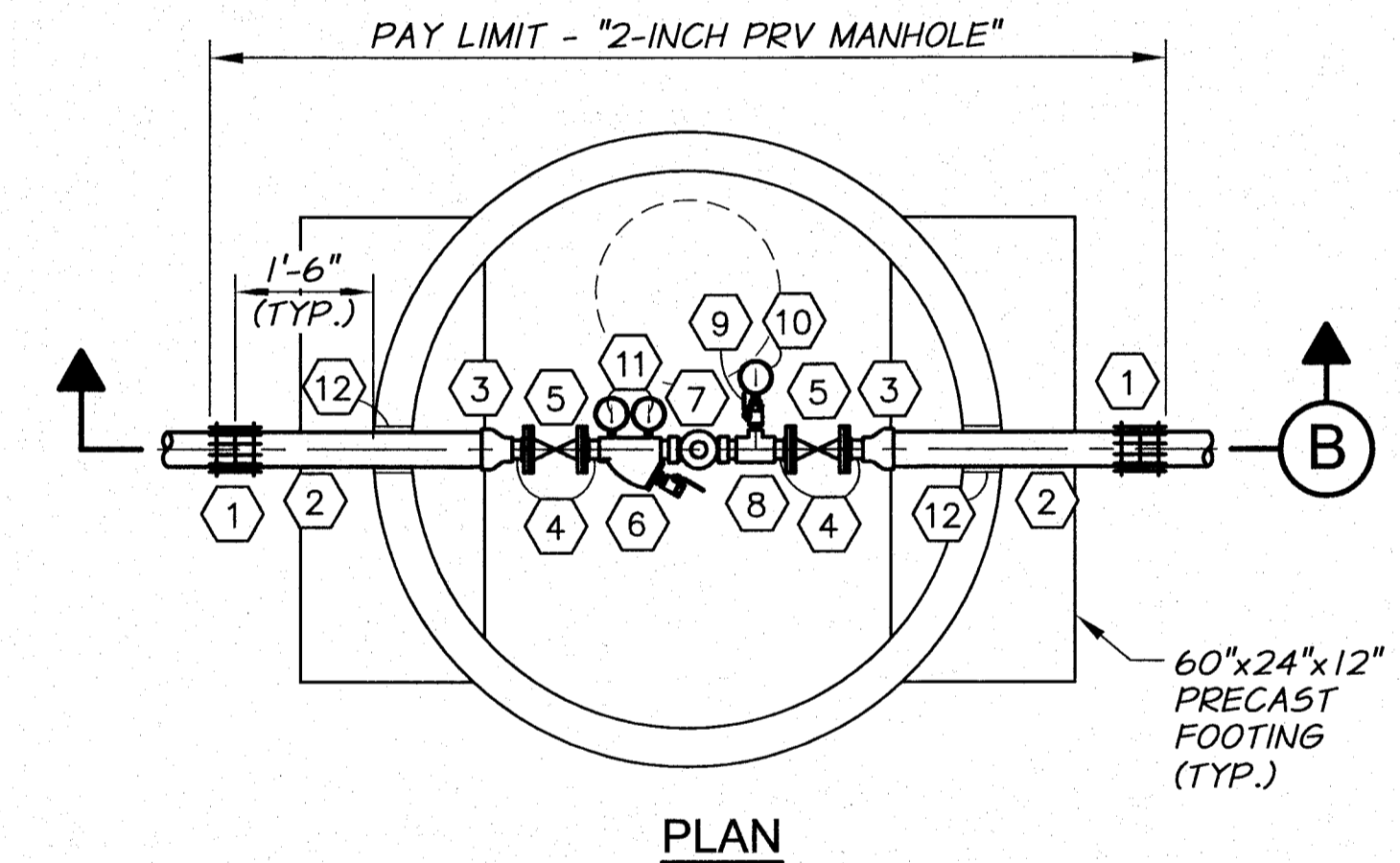
FITTING SCHEDULE

- ① TRANSITION COUPLING
- ② GIP, SIZE AS SHOWN ON PLANS
- ③ THREADED GIP REDUCER WHERE REQUIRED
- ④ 2" THREADED GIP
- ⑤ 2" FLG GATE VALVE WITH FLGxFIPT ADAPTOR FLANGES
- ⑥ SONNTAG ALUMINUM Y FILTER WITH 3/32 SCREEN
- ⑦ 2" THREADED PRESSURE REDUCING VALVE, CLA-VAL 990
- ⑧ 2"x3/4" THREADED GIP TEE
- ⑨ 3/4" THREADED BRASS BALL VALVE WITH 3/4"x1/4" NPT BUSHING AND QUICK COUPLING
- ⑩ 4" 55 GLYCERIN FILLED PRESSURE GAUGE WITH FITTINGS AS REQUIRED. ORIENT GAUGE SO THAT FACE IS CLEARLY VISIBLE FROM VAULT ACCESS OPENING.
- ⑪ PIPE SUPPORT. SEE DETAIL, SHEET 45.
- ⑫ SEAL PIPE PENETRATIONS WATERTIGHT WITH NON-SHRINK GROUT

NOTE:
THREAD CLEARANCE SHALL BE 3/8" MINIMUM. OVER TIGHTENED FITTINGS WILL BE REJECTED AND PIPING ASSEMBLY REASSEMBLED TO MEET REQUIREMENTS. SEE SPECIFICATIONS FOR MORE DETAILS.



SECTION B



PLAN

- NOTES:
1. SET FRAME AND COVER TO GRADE AND PROVIDE GRADE RINGS AS REQUIRED.
 2. PIPE SUPPORTS TO BE SIZED APPROPRIATELY FOR PIPE AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 3. ALL WORK SHOWN IN THIS DETAIL, INCLUDING ANY REQUIRED SURFACE RESTORATION, SHALL BE INCLUDED IN THE "2-INCH PRV MANHOLE" PAY ITEM.

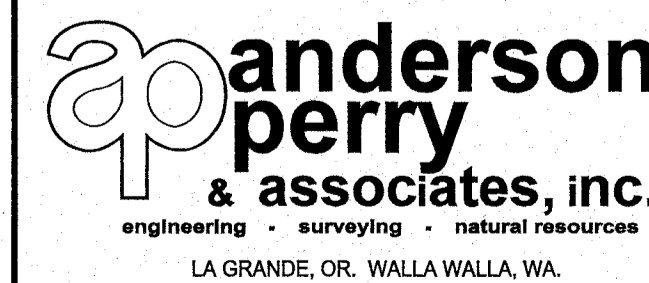
2" PRESSURE REDUCING VALVE MANHOLE DETAIL
N.T.S.



REVISION	BY	DATE	HORIZ. SCALE	VERT. SCALE
DESIGNED BY	M. OWENS		NONE	
DRAWN BY	D. CHRISTMAN		JOB NUMBER	1199-336
REVIEWED BY	B. MOORE		DATE	2012
			ACAD FILE	VaultDets-PH3B.dwg
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RECORD DRAWINGS
JUNE 10, 2013

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BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

CONTROL VALVE DETAILS I

SHEET

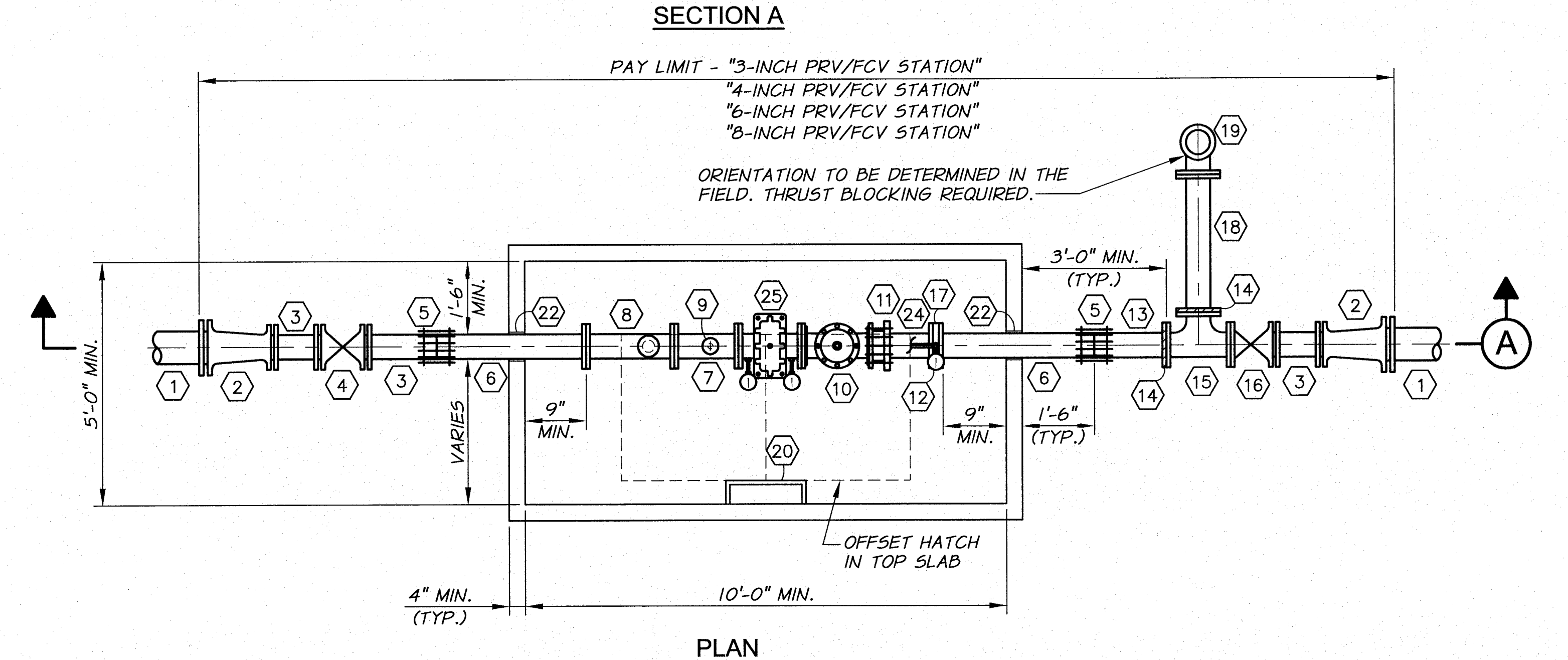
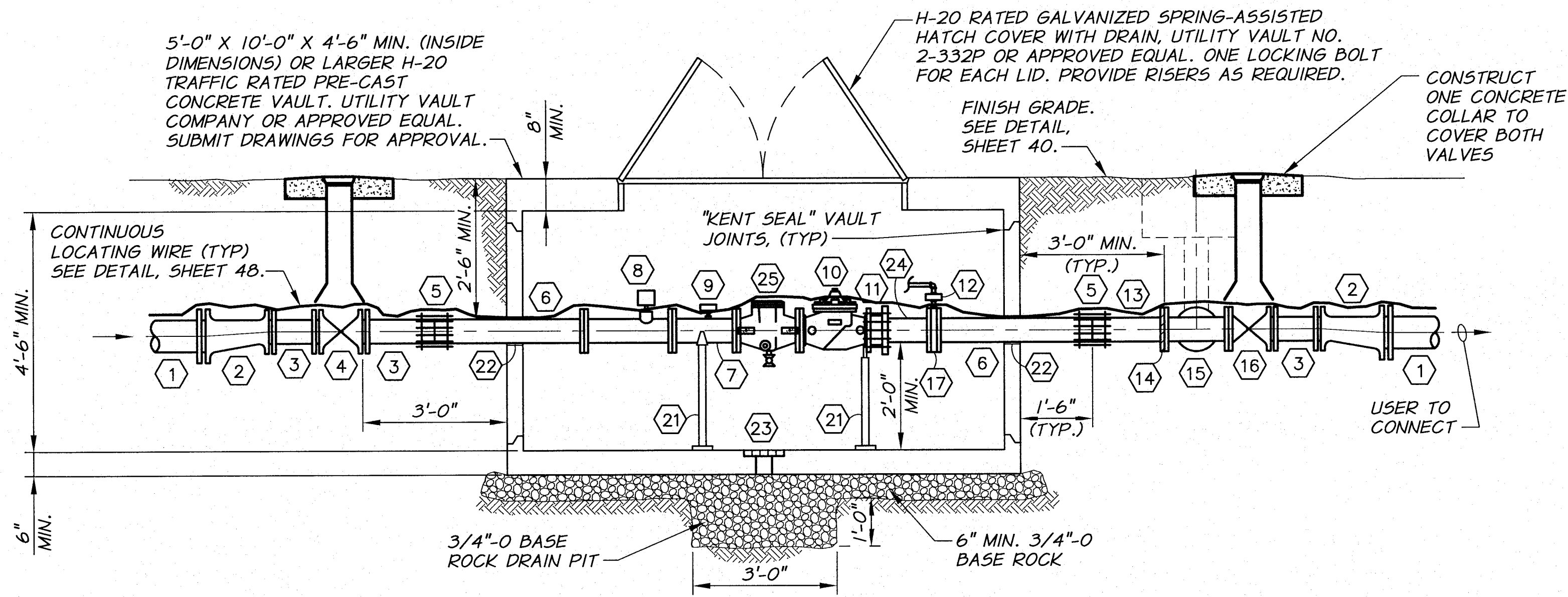
40

ARCHIVED

FITTING SCHEDULE

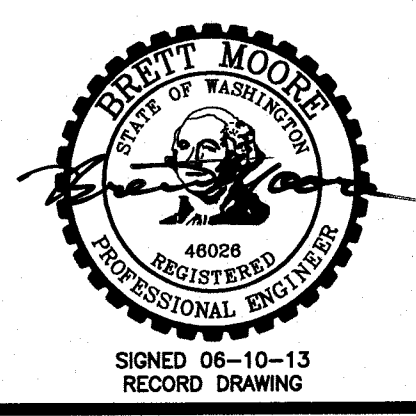
- 1 MAIN OR SERVICE LINE PIPING
- 2 MJ REDUCER
- 3 CLASS 200 PVC PIPING (SAME SIZE AS CONTROL VALVE)
- 4 MJ GATE VALVE WITH VALVE BOX. SEE DETAIL, SHEET 48.
- 5 COUPLING
- 6 FLG X PE D.I. SPOOL, LENGTH AS REQUIRED (SAME SIZE AS CONTROL VALVE)
- 7 FLG DI SPOOL X 1'-4" LG.
- 8 McCROMETER FLOWMETER MODEL MW500 (SIZE SAME AS CONTROL VALVE)
- 9 3/4" TAPPING SADDLE WITH 3/4" THREADED BRASS BALL VALVE, 3/4"x1/4" BUSHING, AND BRASS QUICK COUPLING PLUG (UNVALVED)
- 10 CLA-VAL 49-01 COMBINATION FLOW CONTROL AND PRESSURE REDUCING VALVE, TYPE AS SHOWN ON PLANS. SEE TABLE 1, THIS SHEET, AND SPECIFICATIONS FOR DETAILS.
- 11 RESTRAINED FLANGE COUPLING ADAPTER
- 12 1/4" THREADED BRASS BALL VALVE, 4" 55 GLYCERIN FILLED PRESSURE GAUGE, AND FITTINGS AS REQUIRED ON ORIFICE PILOT PIPING. ORIENT GAUGE SO THAT THE FACE IS CLEARLY VISIBLE FROM VAULT ACCESS OPENING.
- 13 PE DI SPOOL LENGTH AS REQUIRED (SAME SIZE AS CONTROL VALVE)
- 14 FLANGE COUPLING ADAPTER AND FITTINGS AS REQUIRED
- 15 FLG SIZE x SIZE x SIZE TEE, BRANCH NOT TO EXCEED 6"
- 16 FLG x MJ GATE VALVE WITH VALVE BOX. SEE DETAIL, SHEET 48.
- 17 ORIFICE PLATE. ORIENT SENSING PORT TO THE SIDE OF THE PIPE LINE.
- 18 FLG x PE SPOOL, LENGTH AS REQUIRED, FITTINGS AS REQUIRED
- 19 MAINGUARD BLOW-OFF #7600 (SEE TABLE 1, THIS SHEET). ENCLOSURE TO BE CARSON INDUSTRIES MODEL H2436 TRAFFIC BEARING VAULT AND LID WITH EXTENSIONS AS REQUIRED.
- 20 OSHA APPROVED GALVANIZED STEEL LADDER WITH 4 FOOT REMOVABLE EXTENSION
- 21 PIPE SUPPORT. SEE TYPICAL PIPE SUPPORT DETAIL SHEET 45.
- 22 SEAL PIPE PENETRATIONS WATERTIGHT WITH NON-SHRINK GROUT
- 23 BRASS GRATED DRAIN WITH KNOCKOUT HOLE FOR DRAIN PIPE. DO NOT PROVIDE DRAIN IN HIGH GROUND WATER AREA.
- 24 FLG x PE DI SPOOL x 15" LONG (SAME SIZE AS CONTROL VALVE)
- 25 CLA-VAL H-STYLE STRAINER MODEL X43H STANDARD 10 MESH SCREEN WITH 1/4" BALL VALVE ON DRAIN. DRILL AND TAP UPSTREAM AND DOWNSTREAM BOSSES 1/4" FIPT. INSTALL 2 EA. 4" 55 GLYCERIN FILLED PRESSURE GAUGE, 0-100 PSI WITH 2 PSI GRADUATIONS. ORIENT GAUGE SO THAT THE FACE IS CLEARLY VISIBLE FROM VAULT ACCESS OPENING. 200
▲

TABLE 1				
STATION SIZE	CONTROL VALVE SIZE	BLOW-OFF INLET	BLOW-OFF OUTLET	GATE VALVE SIZE
3-INCH	3"	4"	4"	3"
4-INCH	4"	4"	4"	4"
6-INCH	6"	6"	4"	6"
8-INCH	8"	6"	4"	8"



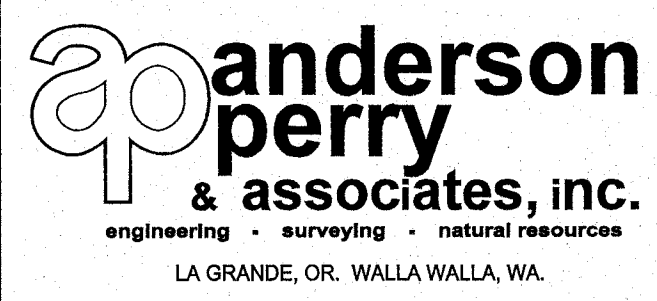
- NOTES:**
1. PIPING SIZE TO MATCH CONTROL VALVE SIZE UNLESS OTHERWISE NOTED.
 2. SET FRAME AND COVER TO GRADE AND PROVIDE GRADE RINGS AS REQUIRED.
 3. PIPE SUPPORTS TO BE SIZED APPROPRIATELY FOR PIPE AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 4. ALL WORK SHOWN IN THIS DETAIL, INCLUDING ANY REQUIRED SURFACE RESTORATION, SHALL BE INCLUDED IN THE "X-INCH PRV/FCV STATION" PAY ITEM.

3", 4", 6", AND 8" PRV/FCV STATION DETAIL
N.T.S.

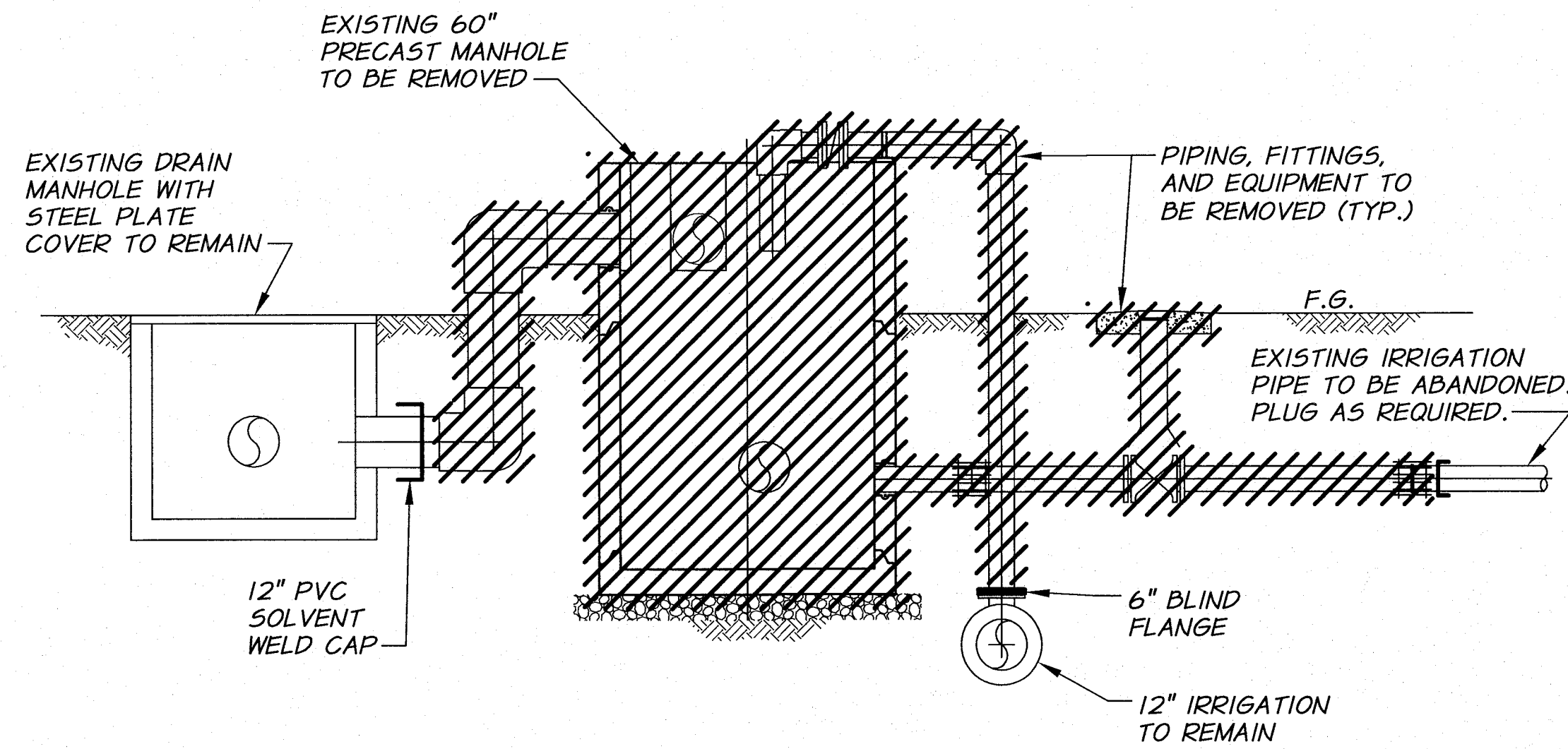


RECORD DRAWING		B.M. 5/13	
DESIGNED BY	M. OWENS	HORIZ. SCALE	1/2" = 1'-0"
DRAWN BY	D. CHRISTMAN	VERT. SCALE	
REVIEWED BY	B. MOORE	JOB NUMBER	1199-336
		ACAD FILE	VaultDets-PH3B.dwg
		DATE	2012
		COPYRIGHT 2012 BY ANDERSON-PERRY & ASSOC., INC.	

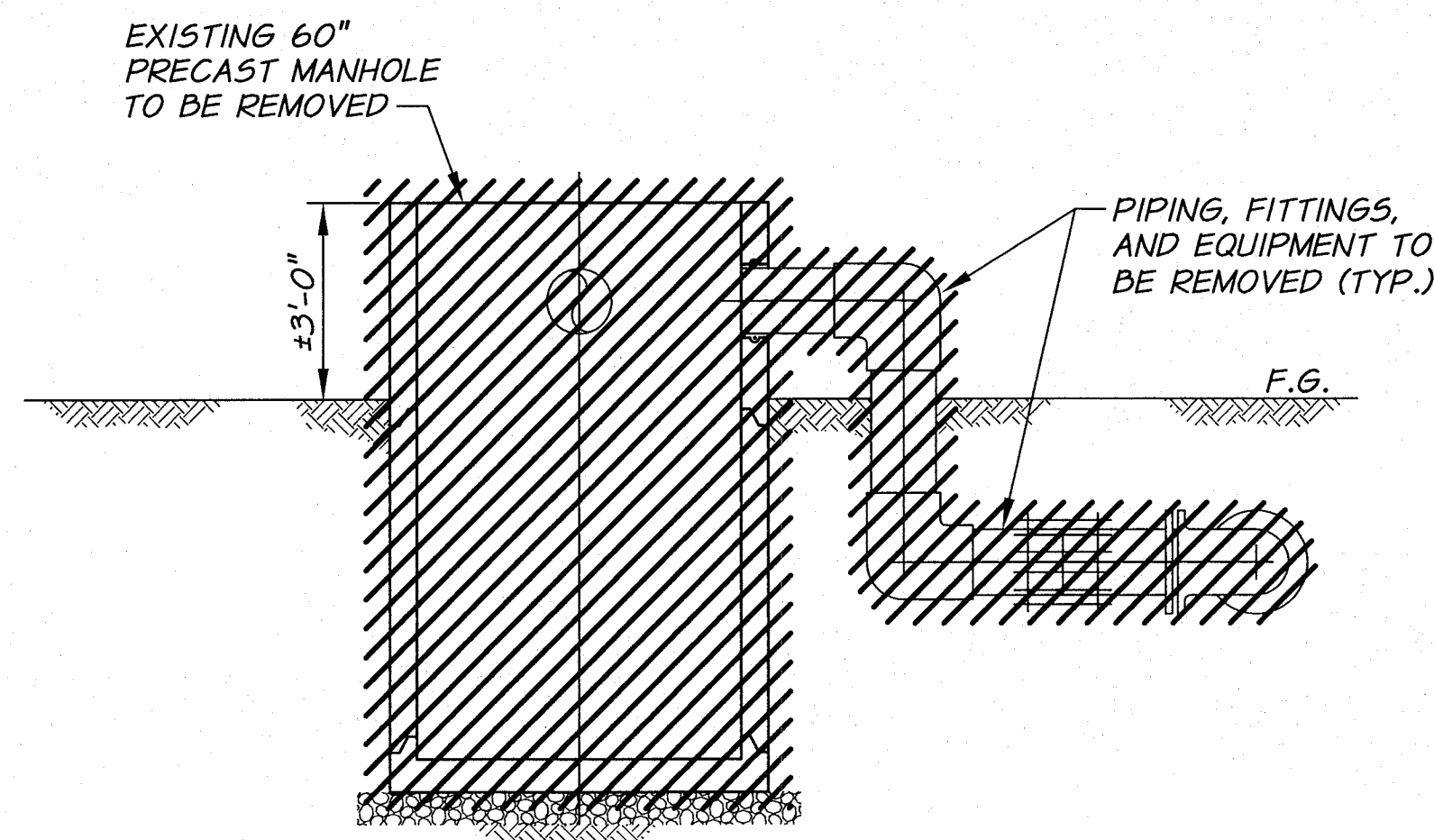
RECORD DRAWINGS
JUNE 10, 2013
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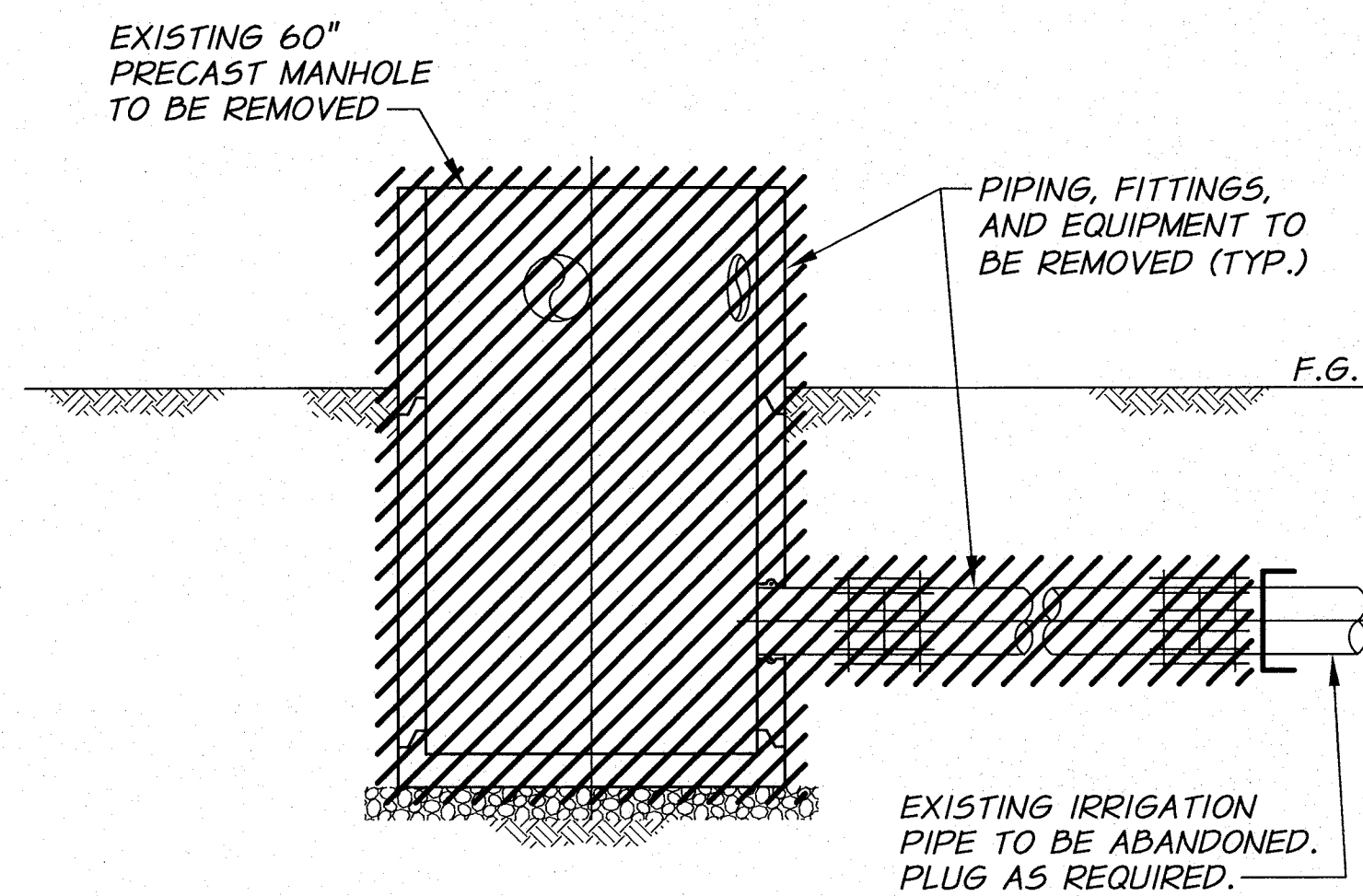
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B
CONTROL VALVE DETAILS II



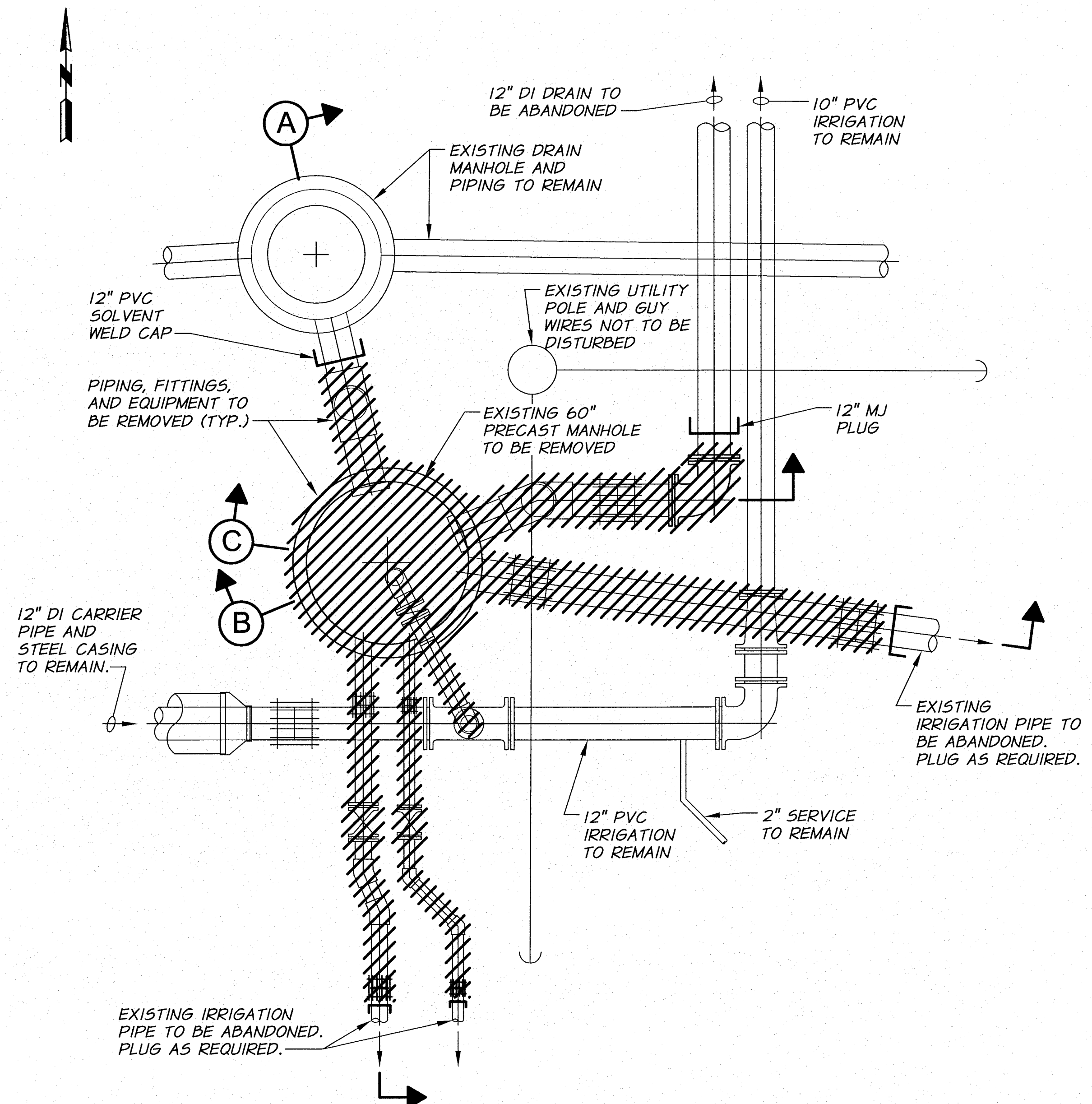
SECTION A
3/8"=1'-0"



SECTION B
3/8"=1'-0"



SECTION C
3/8"=1'-0"

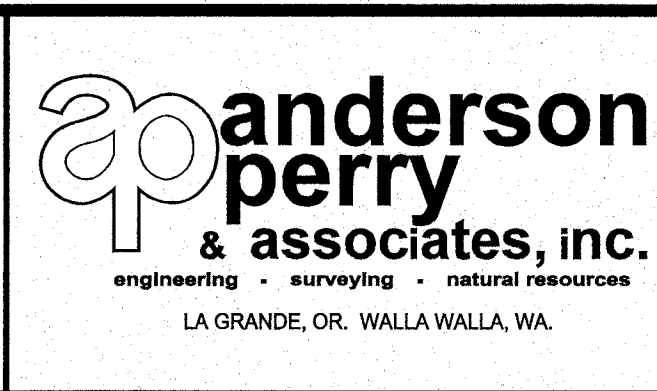


PLAN
3/8"=1'-0"



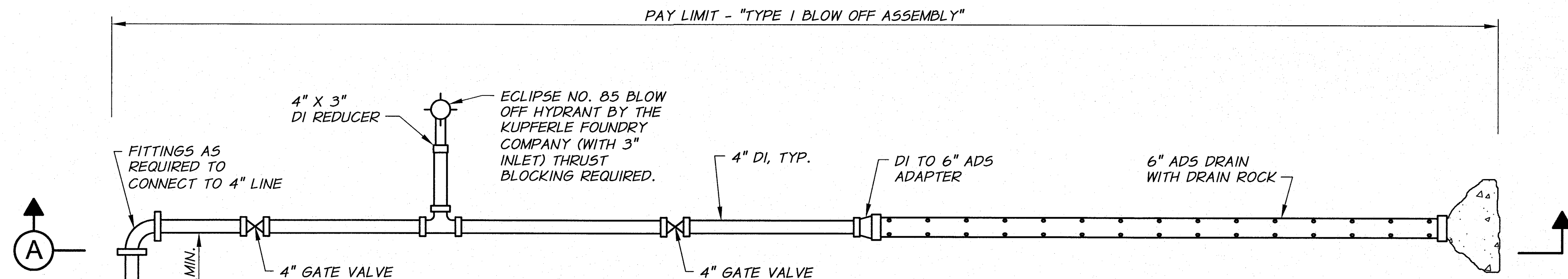
REVISION	BY	DATE	HORIZ. SCALE 3/8"=1'-0"	VERT. SCALE
DESIGNED BY M. OWENS			JOB NUMBER 1199-336	DATE 2012
DRAWN BY D. CHRISTMAN			ACAD FILE ServiceStructDemo.dwg	
REVIEWED BY B. MOORE			COPYRIGHT 2012 BY ANDERSON-PERRY & ASSOC., INC.	

RECORD DRAWINGS
THIS DRAWING HAS BEEN REDUCED TO RECORD DRAWING SCALE. ADJUST SCALE ACCORDINGLY. JUNE 10, 2013
BARS SCALE SHOWN IS ACCURATE.
In part, on the basis of information compiled and furnished by others. They may contain some discrepancies and omissions, and do not necessarily represent "exact" field conditions. The Owner and the Engineer accept no responsibility for their accuracy.

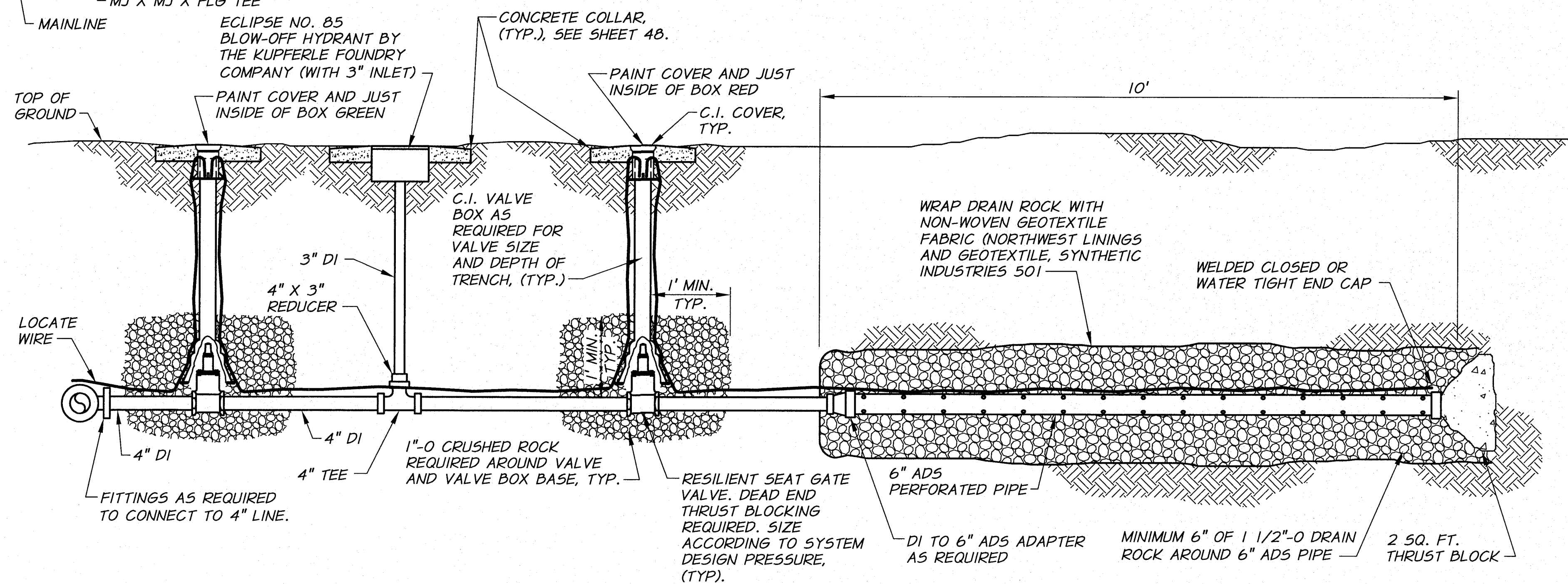


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B
TEMPORARY SERVICE STRUCTURE REMOVAL DETAILS

SHEET
44

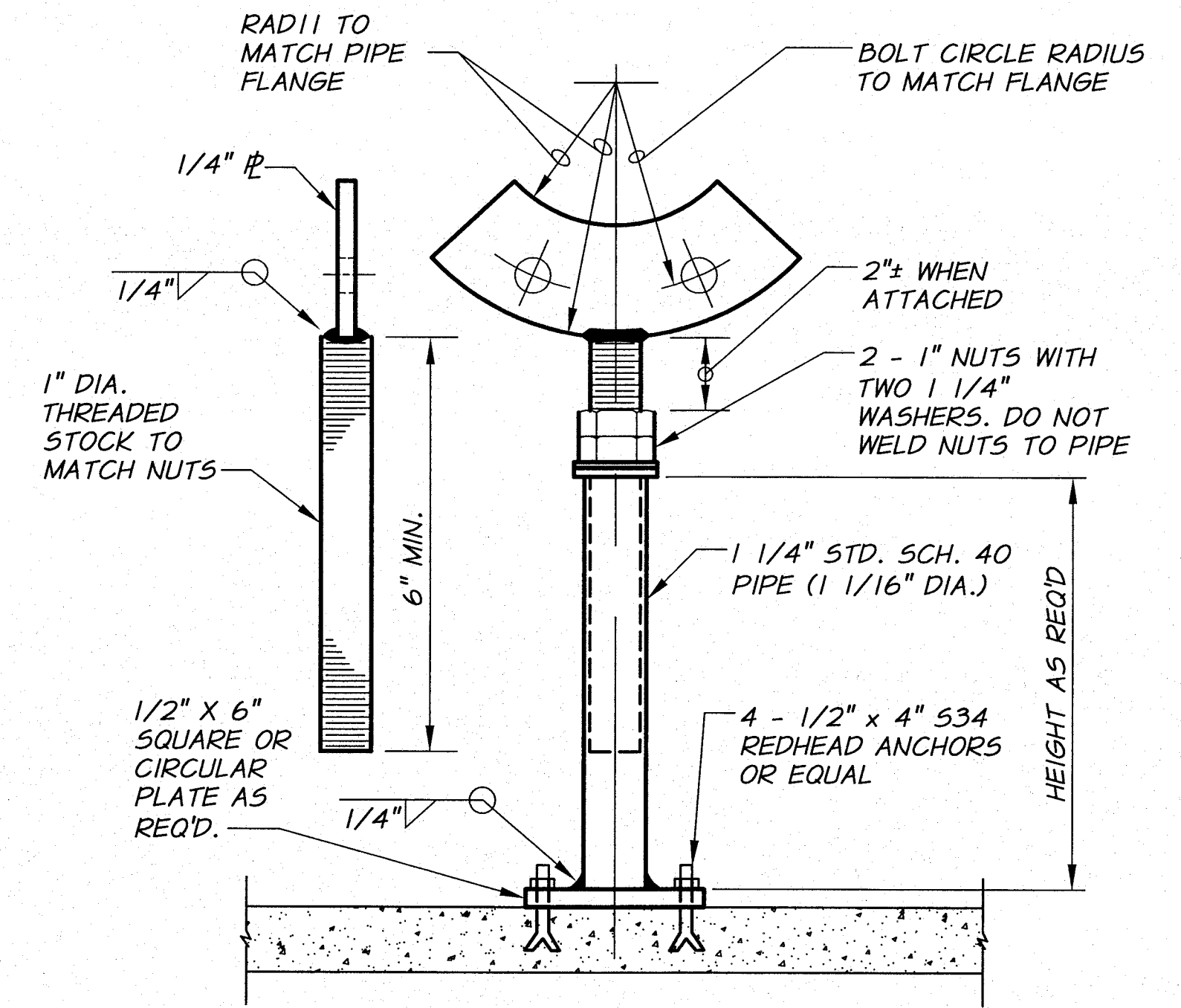


PLAN



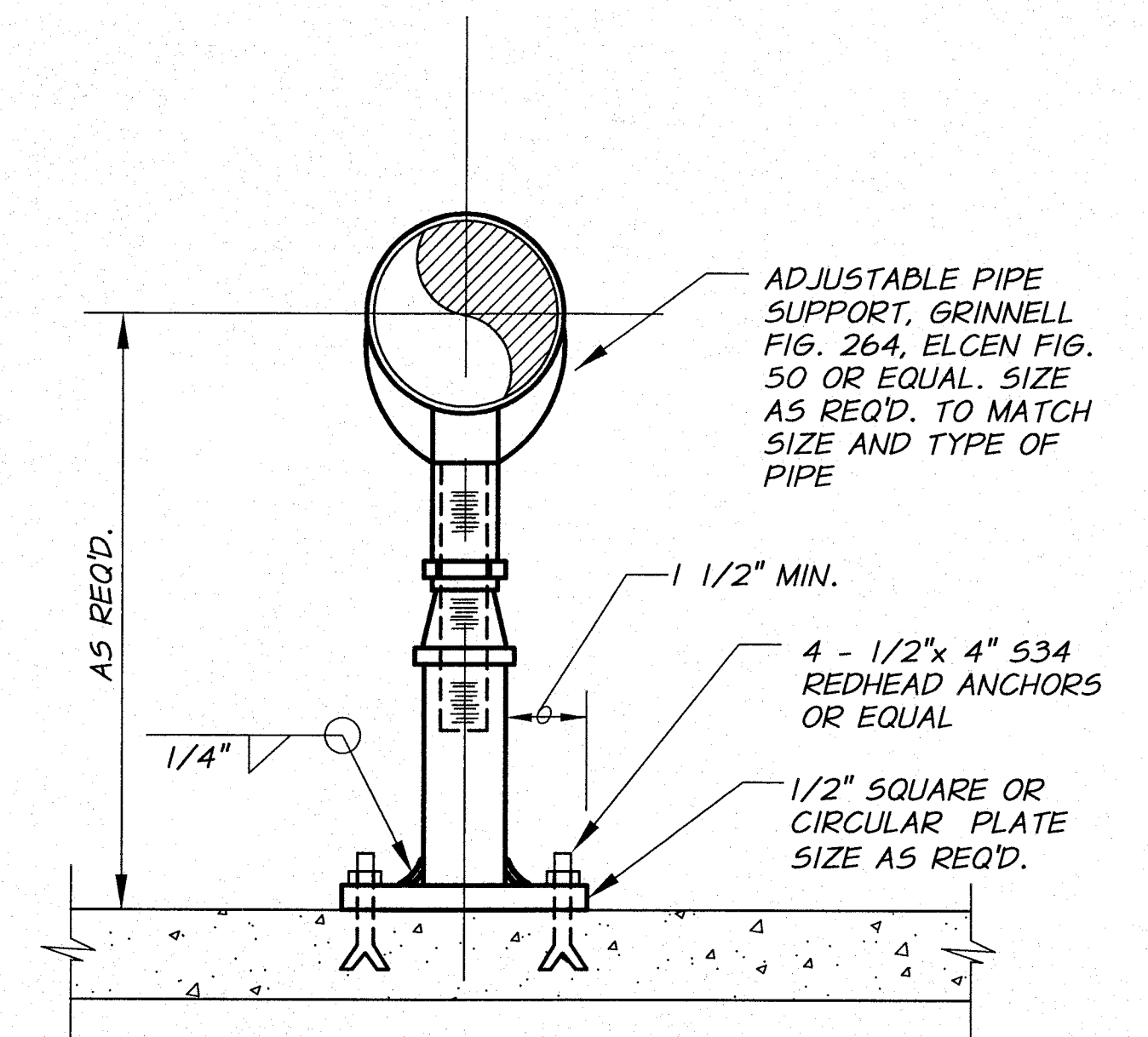
SECTION A
TYPE 1 BLOW-OFF ASSEMBLY DETAIL
N.T.S.

NOTE:
BLOW-OFF TO BE FIELD
LOCATED BY THE ENGINEER
PRIOR TO CONSTRUCTION
(INCLUDING ORIENTATION).



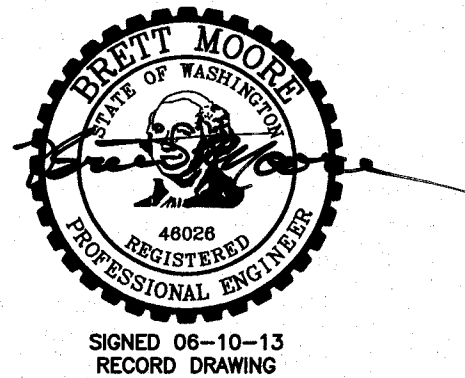
PIPE SUPPORT DETAIL

N.T.S.



PIPE SUPPORT DETAIL

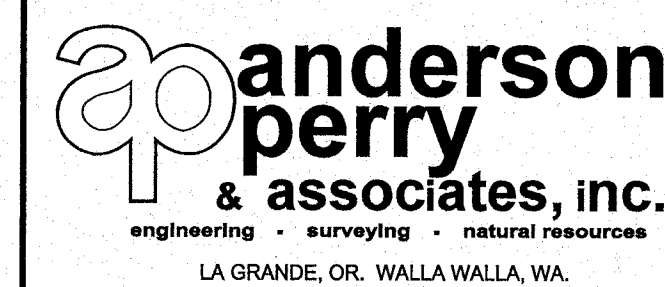
N.T.S.



REVISION	BY	DATE	HORIZ. SCALE	NONE	VERT. SCALE
DESIGNED BY	M. OWENS		JOB NUMBER	1199-336	DATE
DRAWN BY	D. CHRISTMAN		ACAD FILE:	lrrgDets-PH3B.dwg	
REVIEWED BY	B. MOORE		COPYRIGHT 2012 BY ANDERSON-PERRY & ASSOC., INC.		

RECORD DRAWINGS
JUNE 10, 2013

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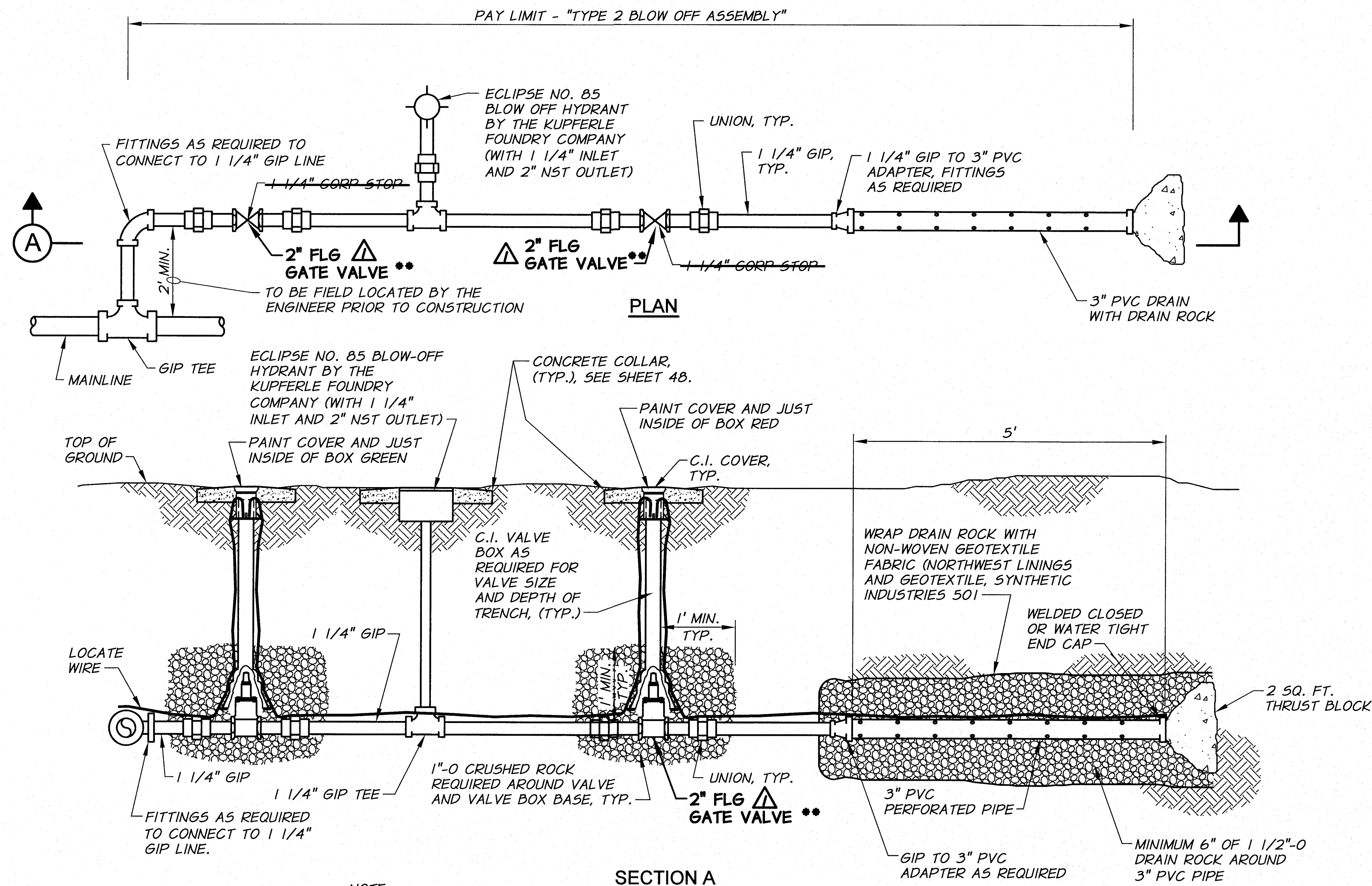


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

MISCELLANEOUS DETAILS I

SHEET

45



NOTE:
BLOW-OFF TO BE FIELD
LOCATED BY THE ENGINEER
PRIOR TO CONSTRUCTION
(INCLUDING ORIENTATION).

TYPE 2 BLOW-OFF ASSEMBLY DETAIL

N.T.S.

△
** 2" FLG GATE VALVE WITH FLGxFIPT
ADAPTER AND REDUCER BUSHINGS

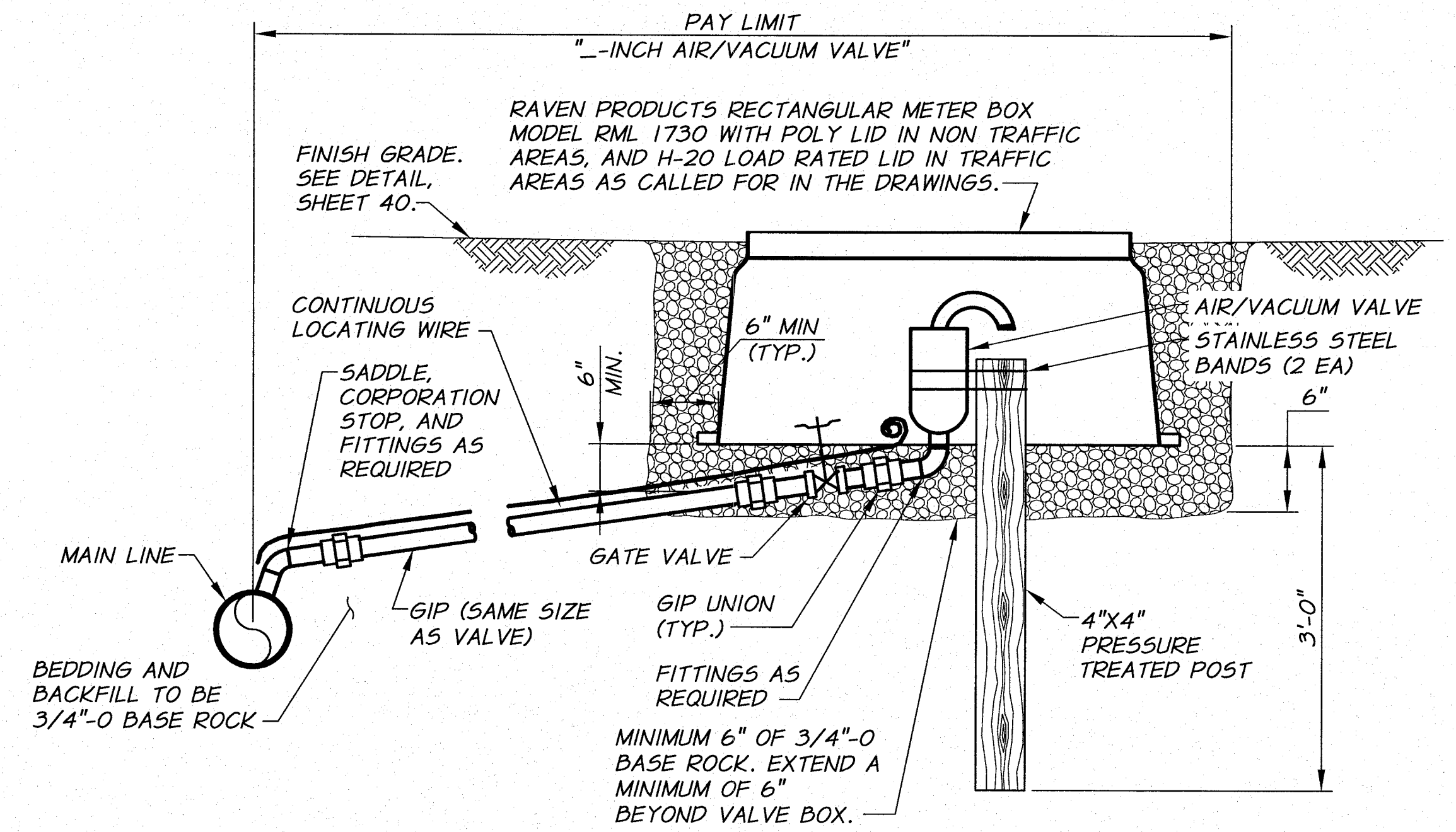


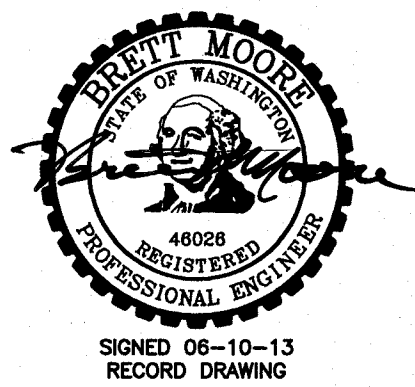
TABLE 1

AIR/VAC SIZE	NO. OF HOLES	HOLE DIAMETER
2"	5	1"
1"	2	1"
1/2"	1	1"

NOTES:
1. BOX TO BE FIELD LOCATED BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL DRILL HOLES INTO THE BOX LID ACCORDING TO TABLE 1, THIS SHEET. LOCATION OF DRILL HOLES SHALL BE AS DESIGNATED BY THE ENGINEER.

AIR / VACUUM VALVE

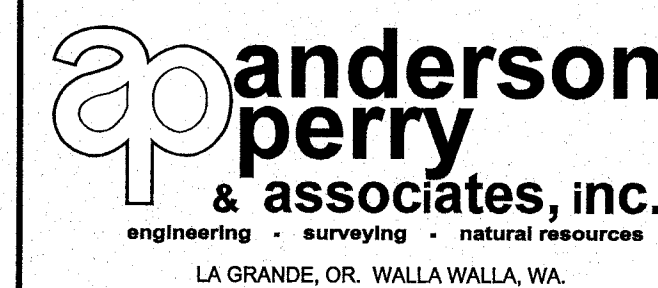
N.T.S.



REVISION	BY	DATE	HORIZ. SCALE	VERT. SCALE
△ RECORD DRAWING	B.M.	5/13	NONE	
DESIGNED BY	M. OWENS		JOB NUMBER	1199-336
DRAWN BY	D. CHRISTMAN		DATE	2012
REVIEWED BY	B. MOORE		ACAD FILE:	lrrgDets-PH3B.dwg
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RECORD DRAWINGS
JUNE 10, 2013

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BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

MISCELLANEOUS DETAILS II

SHEET

46

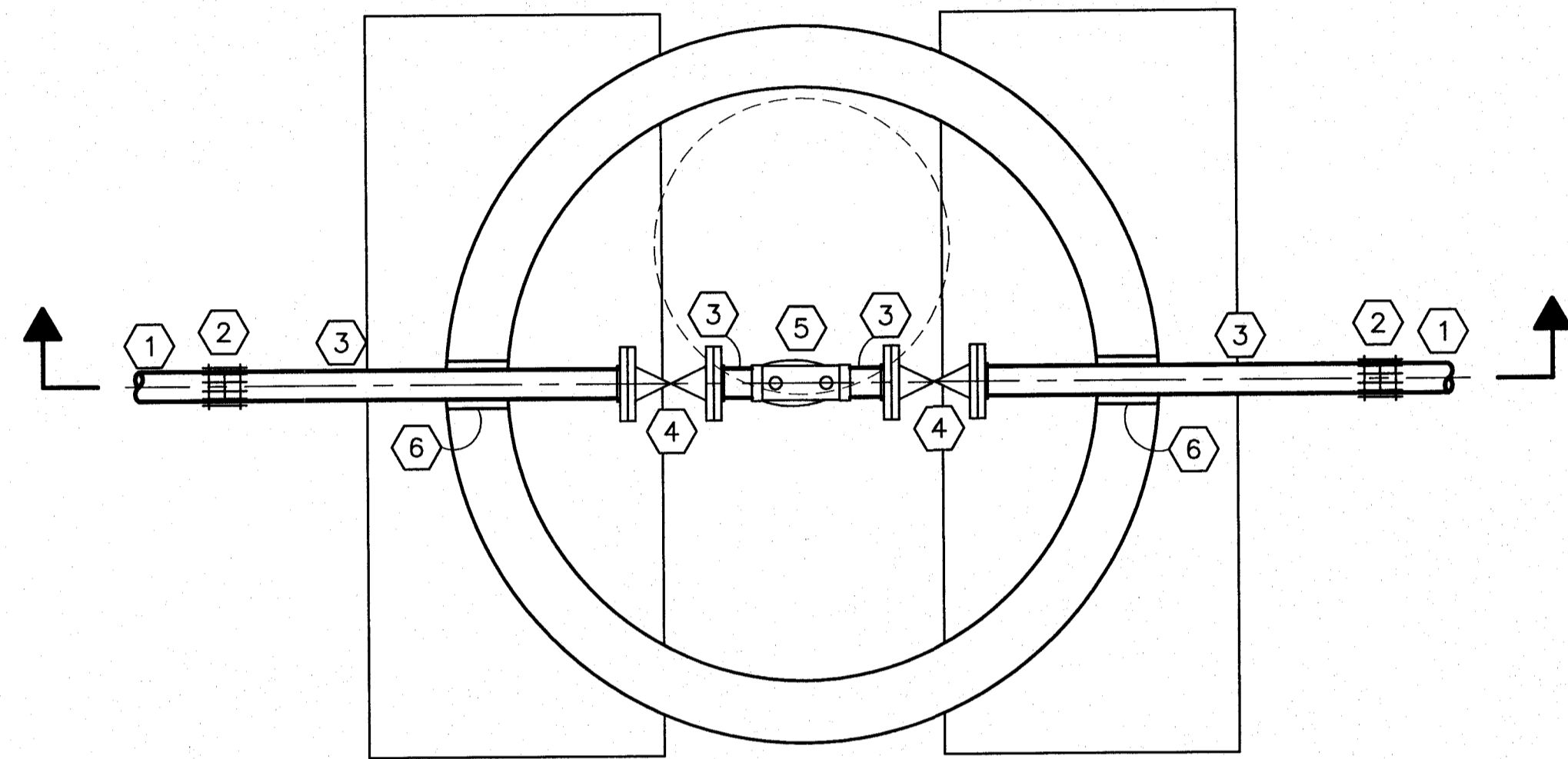
FITTING SCHEDULE

- ① PVC PIPE AS SHOWN ON PLANS
- ② SCH 80 PVC TRANSITION COUPLING AND FITTINGS AS REQUIRED. FEMALE CONNECTION TO GIP.
- ③ SCH 40 GIP
- ④ FLG GATE VALVE WITH HANDWHEEL OPERATOR AND RAISED FACE FLGxPIPT ADAPTORS AND RING GASKETS
- ⑤ SONNTAG ALUMINUM Y-FILTER WITH 10 MESH FILTER SCREEN
- ⑥ SEAL PIPE PENETRATIONS WITH NON-SHRINK GROUT

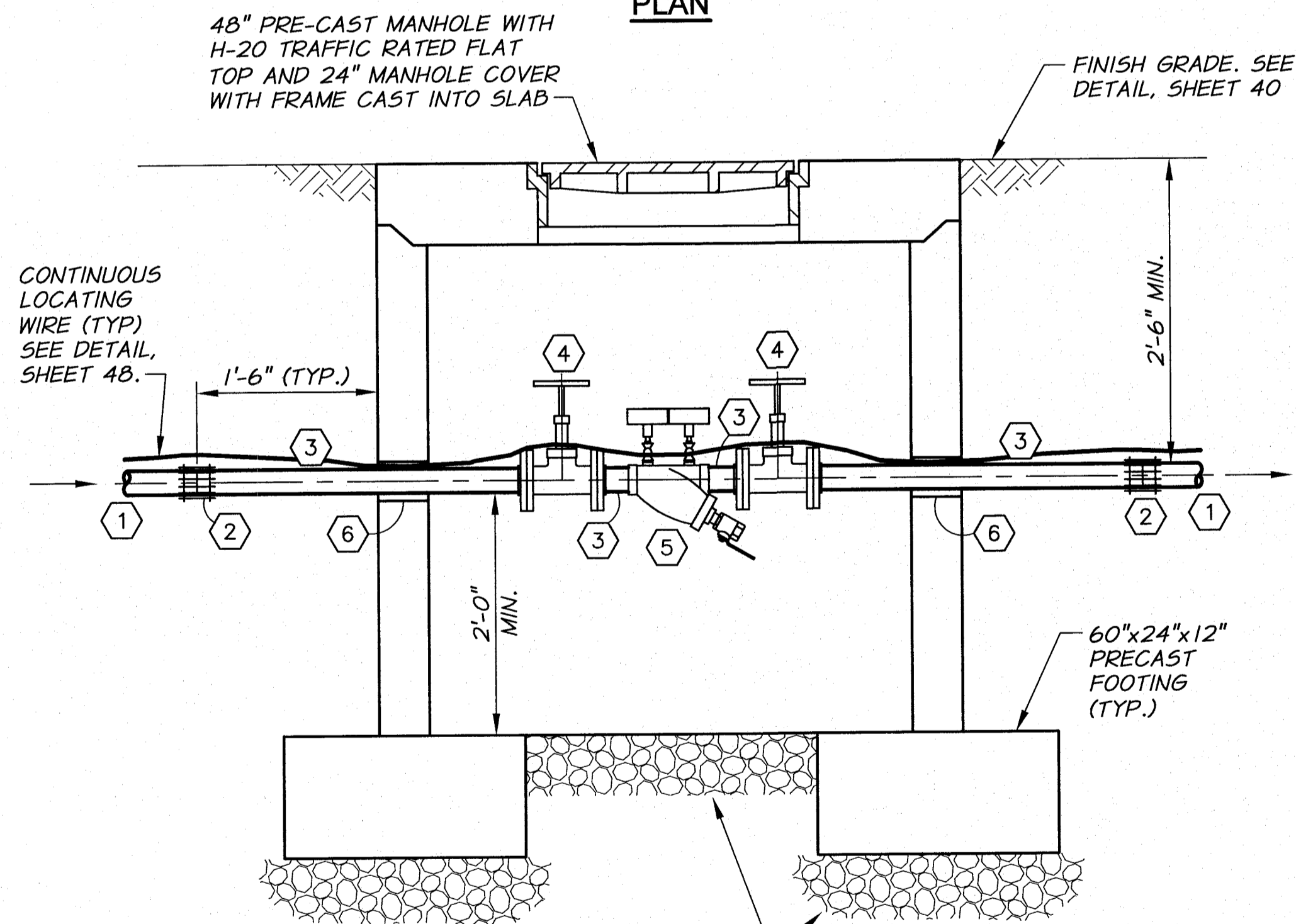
NOTE:
 THREAD CLEARANCE SHALL BE 3/8" MINIMUM. OVER TIGHTENED FITTINGS WILL BE REJECTED AND PIPING ASSEMBLY REASSEMBLED TO MEET REQUIREMENTS. SEE SPECIFICATIONS FOR MORE DETAILS.

FITTING SCHEDULE

- ①① PVC PIPE AS SHOWN ON PLANS
- ①② TRANSITION COUPLING
- ①③ DI RAISED FACE FLGxPE SPOOL WITH RING GASKETS
- ①④ BUTTERFLY VALVE WITH WHEEL OPERATOR AND POSITION INDICATOR
- ⚠ ①⑤ CLA-VAL H-STYLE STRAINER MODEL X43H ANSI CLASS 150 STANDARD 10 MESH SCREEN WITH 1 1/4" BALL VALVE ON DRAIN. DRILL AND TAP UPSTREAM AND DOWNSTREAM BOSSES 1/4" FIPT. INSTALL 2 EA. 4" 55 GLYCERIN FILLED PRESSURE GAUGE, 0-200 PSI WITH 2 PSI GRADUATIONS. ORIENT GAUGE SO THAT THE FACE IS CLEARLY VISIBLE FROM VAULT ACCESS OPENING.
- ①⑥ SEAL PIPE PENETRATIONS WITH NON-SHRINK GROUT



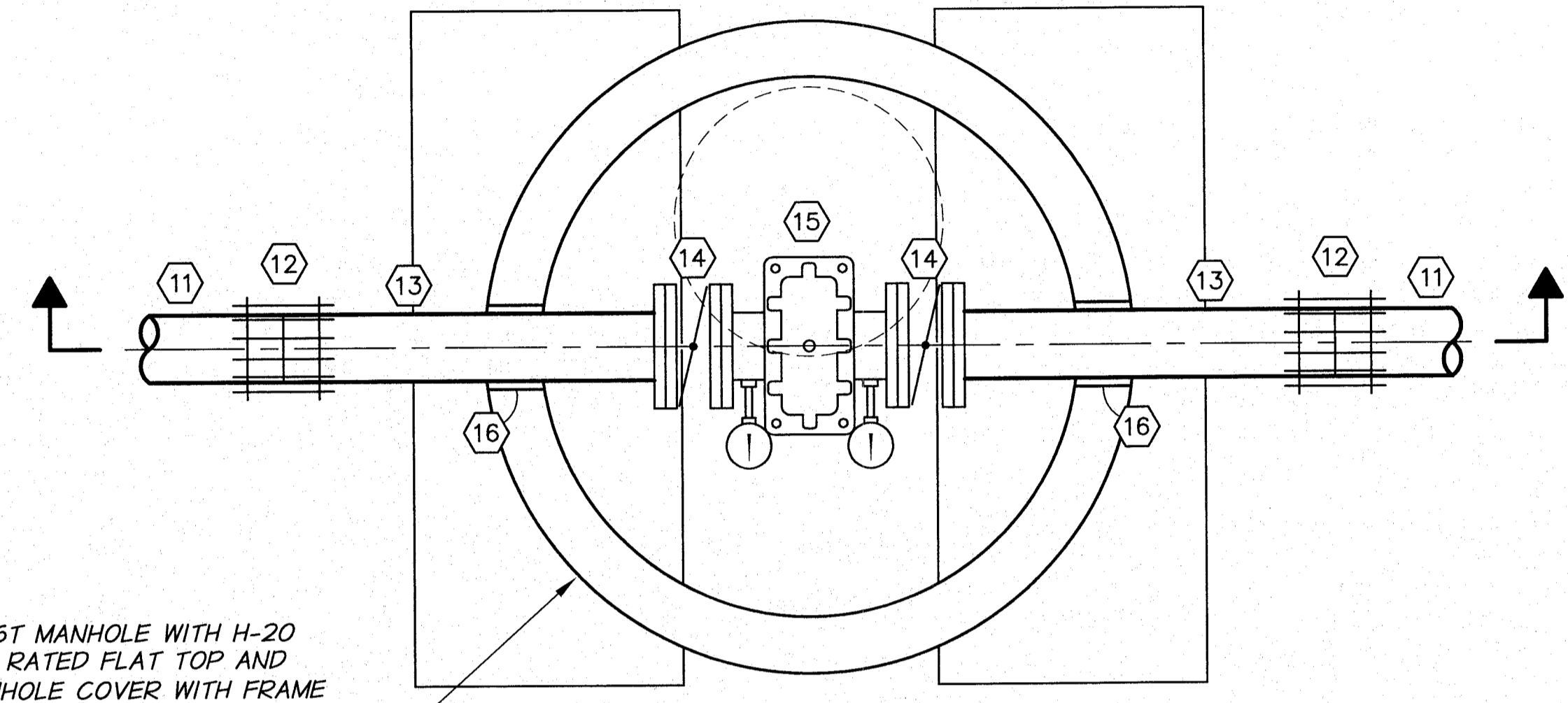
PLAN



SECTION

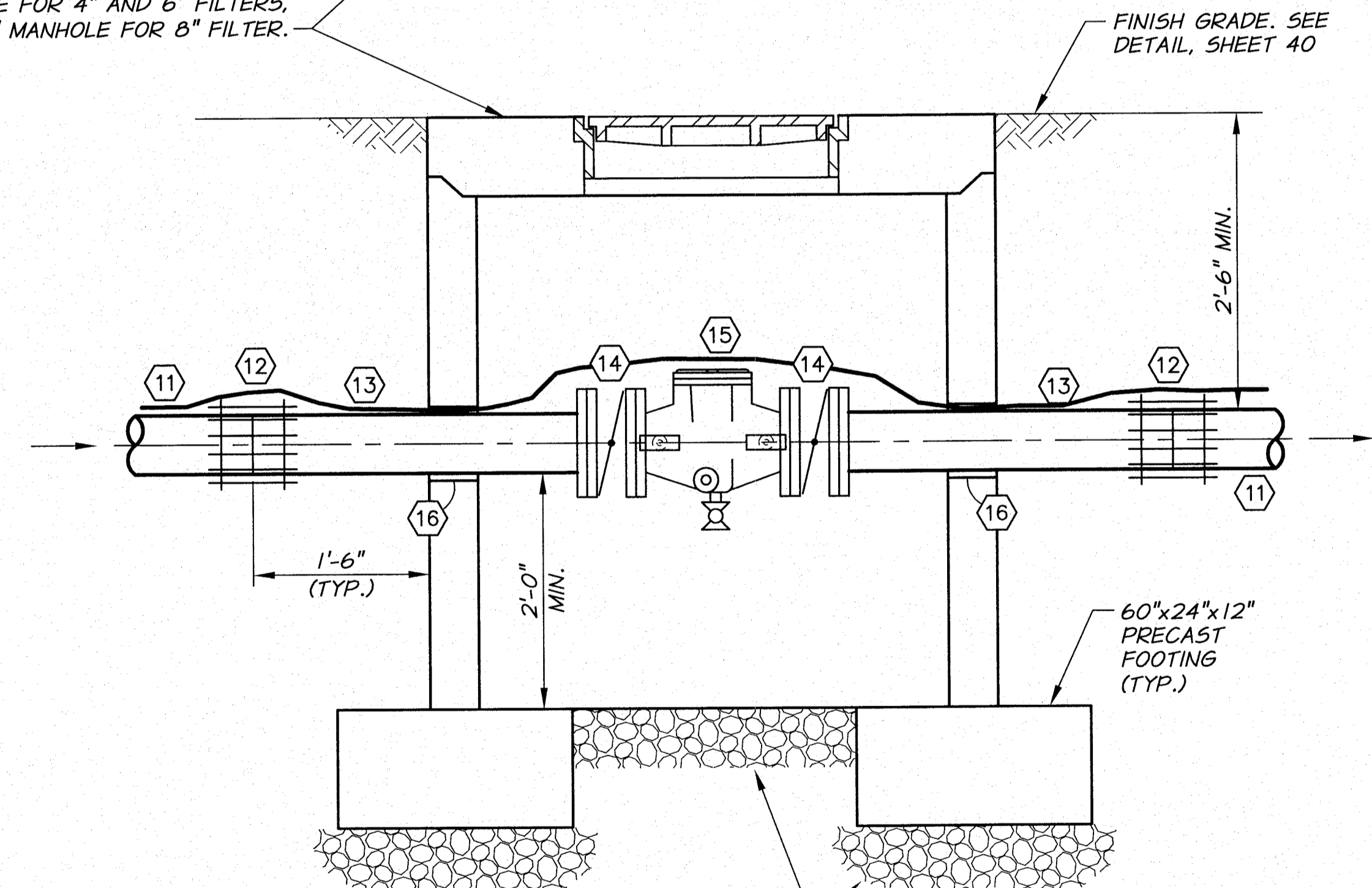
TYPICAL 2" AND 3" IN-LINE FILTER MANHOLE DETAIL

N.T.S.



PLAN

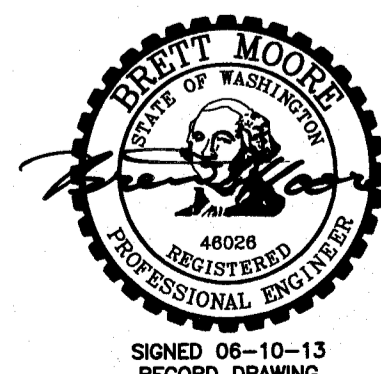
PRE-CAST MANHOLE WITH H-20 TRAFFIC RATED FLAT TOP AND 24" MANHOLE COVER WITH FRAME CAST INTO SLAB. USE 48" MANHOLE FOR 4" AND 6" FILTERS. USE 60" MANHOLE FOR 8" FILTER.



SECTION

TYPICAL 4", 6", AND 8" IN-LINE FILTER MANHOLE DETAIL

N.T.S.

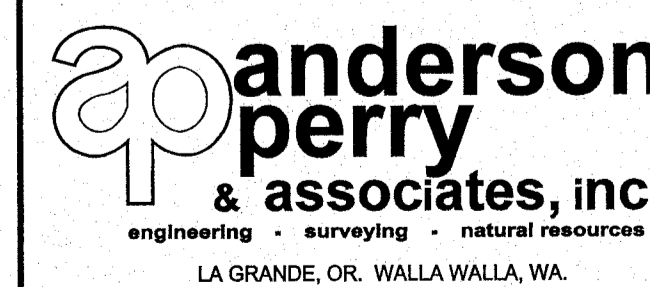


SIGNED 06-10-13
 RECORD DRAWING

RECORD DRAWING		B.M. 5/13	
DESIGNED BY	M. OWENS	HORIZ. SCALE	NONE
DRAWN BY	D. CHRISTMAN	DATE	2012
REVIEWED BY	B. MOORE	JOB NUMBER	1199-336
		ACAD FILE	IrrgDets-PH3B.dwg
		COPYRIGHT 2012 BY ANDERSON-PERRY & ASSOC., INC.	

RECORD DRAWINGS
 JUNE 10, 2013

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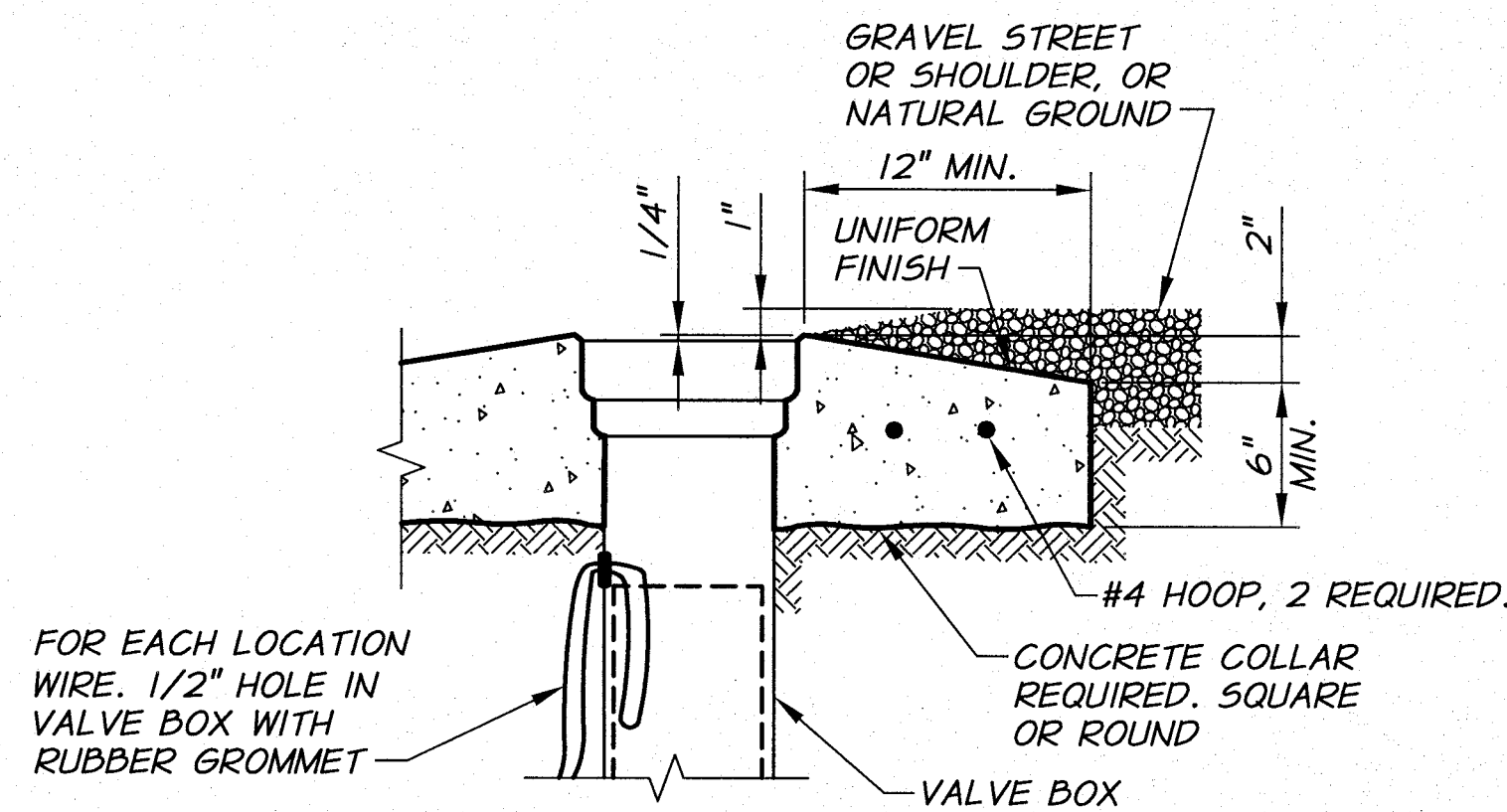


BENTON IRRIGATION DISTRICT
 IRRIGATION SYSTEM IMPROVEMENTS
 PHASE 3B

MISCELLANEOUS DETAILS III

SHEET

47



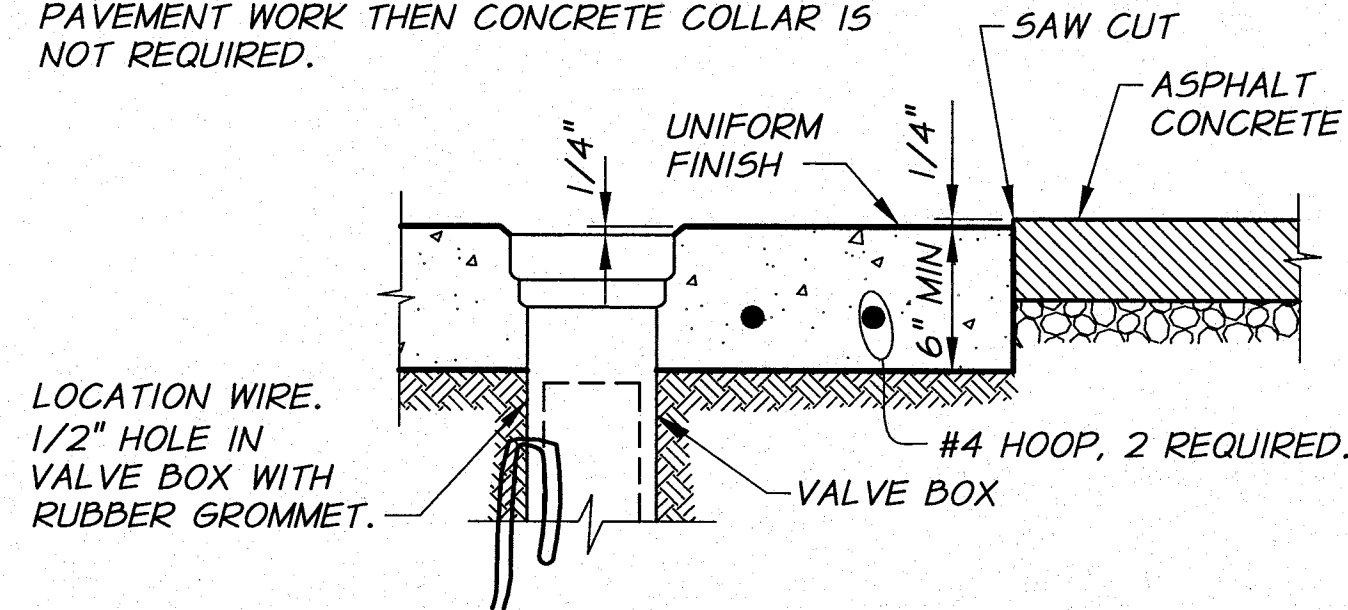
- FOR EACH LOCATION WIRE. 1/2\"/>

REQUIREMENTS FOR CONCRETE COLLARS:

 1. CONCRETE: 3/4\", 7 SACK, 4000 PSI AT 28 DAYS, 2\"/>
 - 2. COLLAR TO BE FORMED AND UNIFORMLY ROUND.
 - 3. SMOOTH BROOMED FINISH REQUIRED.
 - 4. APPLY CONCRETE CURING COMPOUND.
 - 5. PROTECT FROM TRAFFIC FOR 4 DAYS MIN.

CONCRETE COLLAR DETAIL
IN GRAVEL STREETS OR NATURAL GROUND
N.T.S.

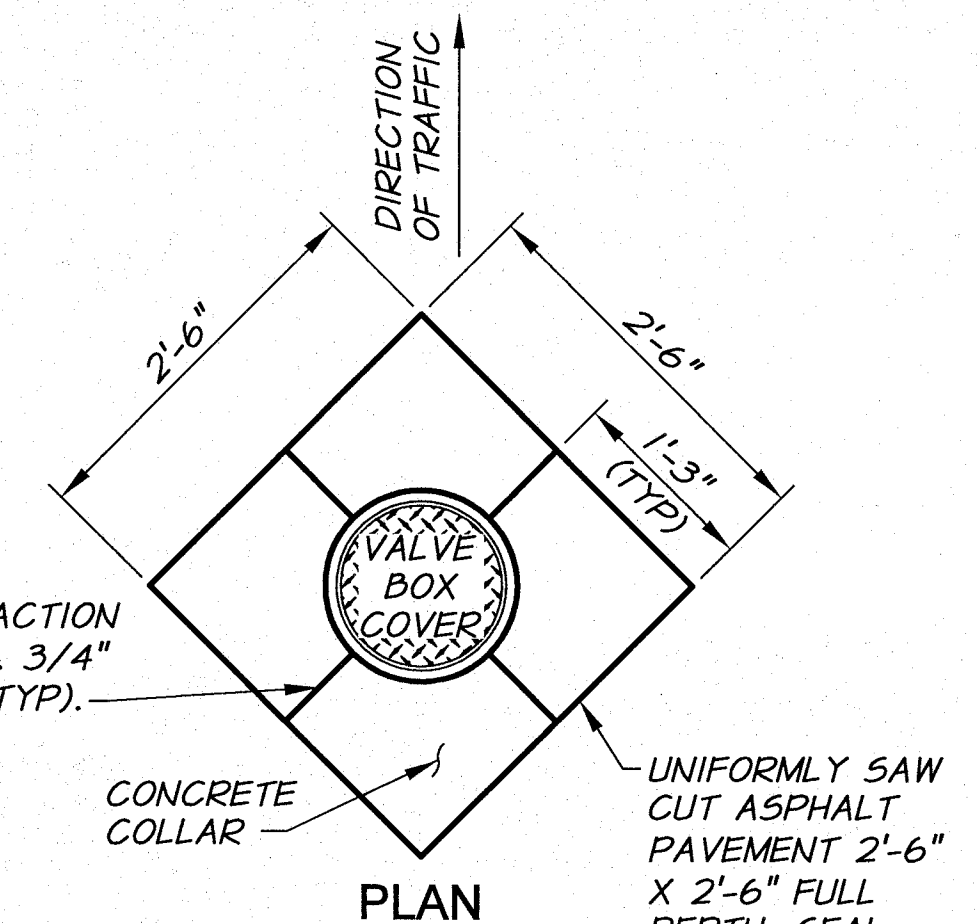
NOTE:
CONCRETE COLLAR REQUIRED IF VALVE BOX GRADE IS ADJUSTED AFTER ASPHALT PAVEMENT WORK IS PERFORMED. IF GRADE ADJUSTMENT OCCURS PRIOR TO ASPHALT PAVEMENT WORK THEN CONCRETE COLLAR IS NOT REQUIRED.



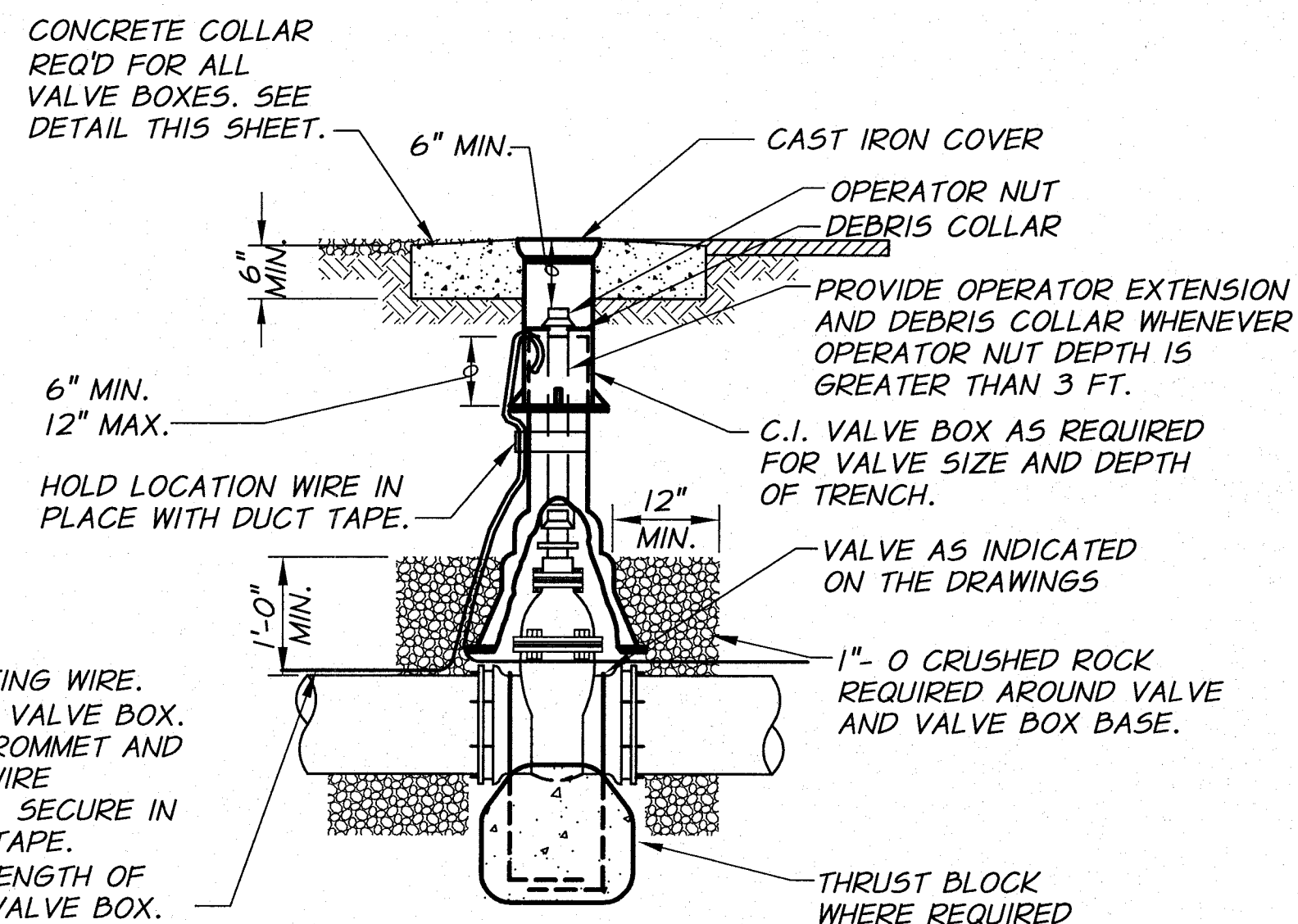
TYPICAL SECTION

- REQUIREMENTS FOR CONCRETE COLLARS:
1. CONCRETE: 3/4\", 7 SACK, 4000 PSI AT 28 DAYS, 2\"/>
 - 2. SMOOTH BROOMED FINISH REQUIRED.
 - 3. APPLY CONCRETE CURING COMPOUND.
 - 4. PROTECT FROM TRAFFIC FOR 4 DAYS MINIMUM.

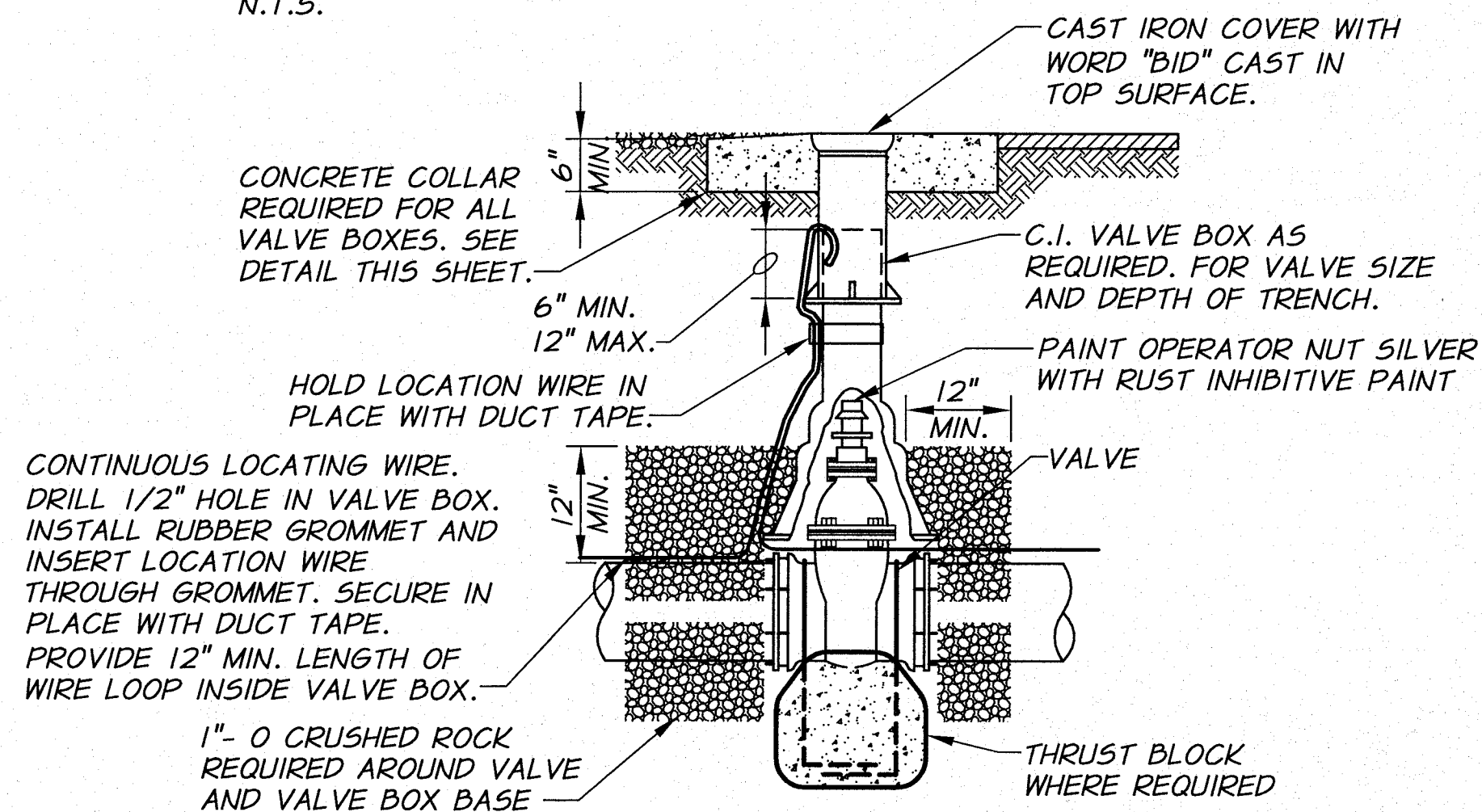
VALVE BOX CONCRETE COLLAR DETAIL
IN ASPHALT PAVEMENT
N.T.S.



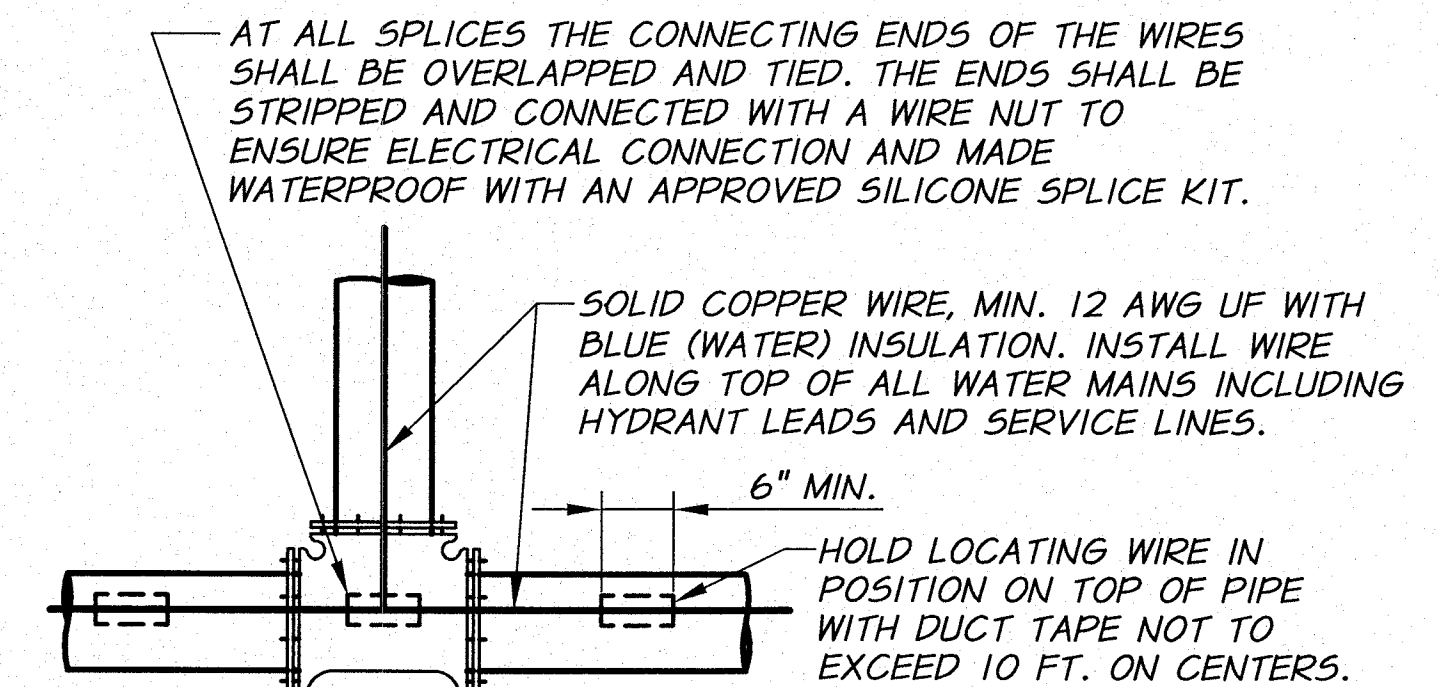
PLAN



VALVE BOX EXTENSION DETAIL
N.T.S.

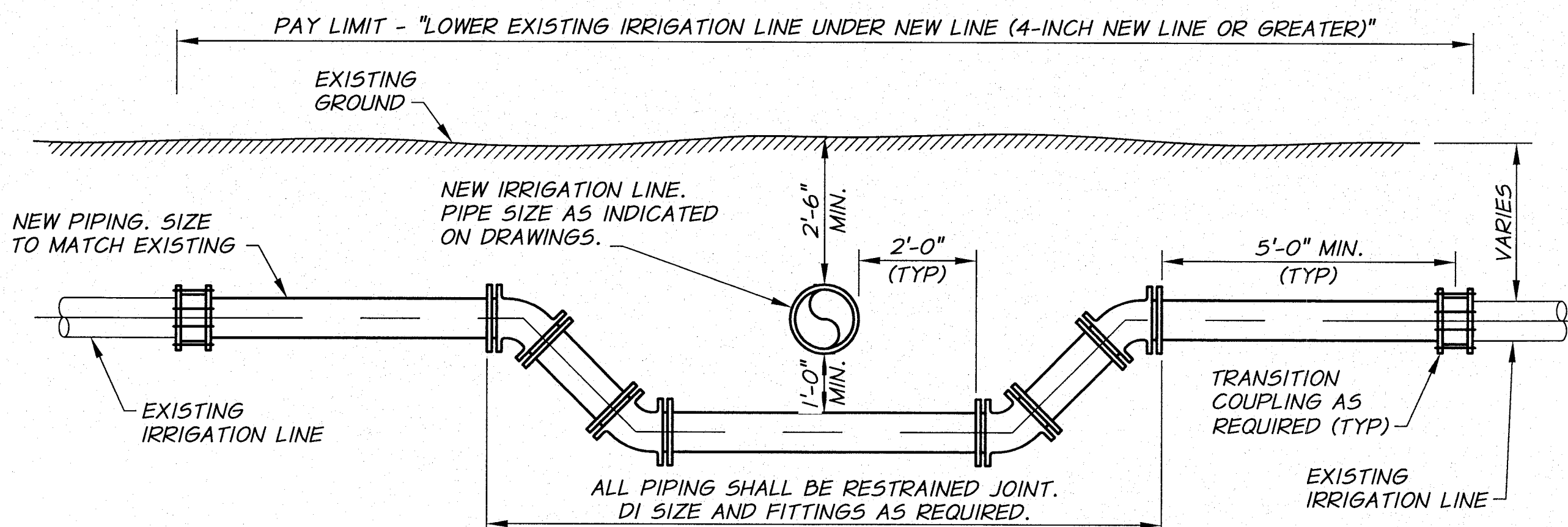


VALVE BOX DETAIL
N.T.S.



CONTINUOUS LOCATING WIRE DETAIL
N.T.S.

CONTINUOUS LOCATING WIRE. DRILL 1/2\"/>



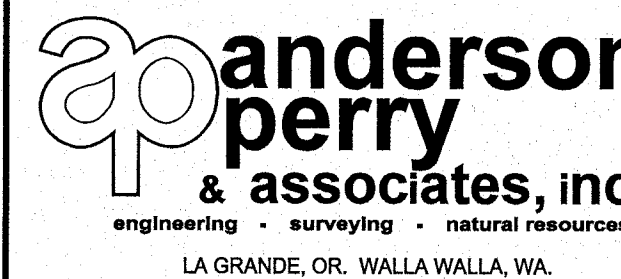
LOWER EXISTING IRRIGATION LINE UNDER NEW SECTION
N.T.S.



DESIGNED BY	M. OWENS	BY		DATE		HORIZ. SCALE	NONE	VERT. SCALE	
DRAWN BY	D. CHRISTMAN					JOB NUMBER	1199-336	DATE	2012
REVIEWED BY	B. MOORE					ACAD FILE:	lrrgDets2-PH3B.dwg		
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RECORD DRAWINGS

JUNE 10, 2013
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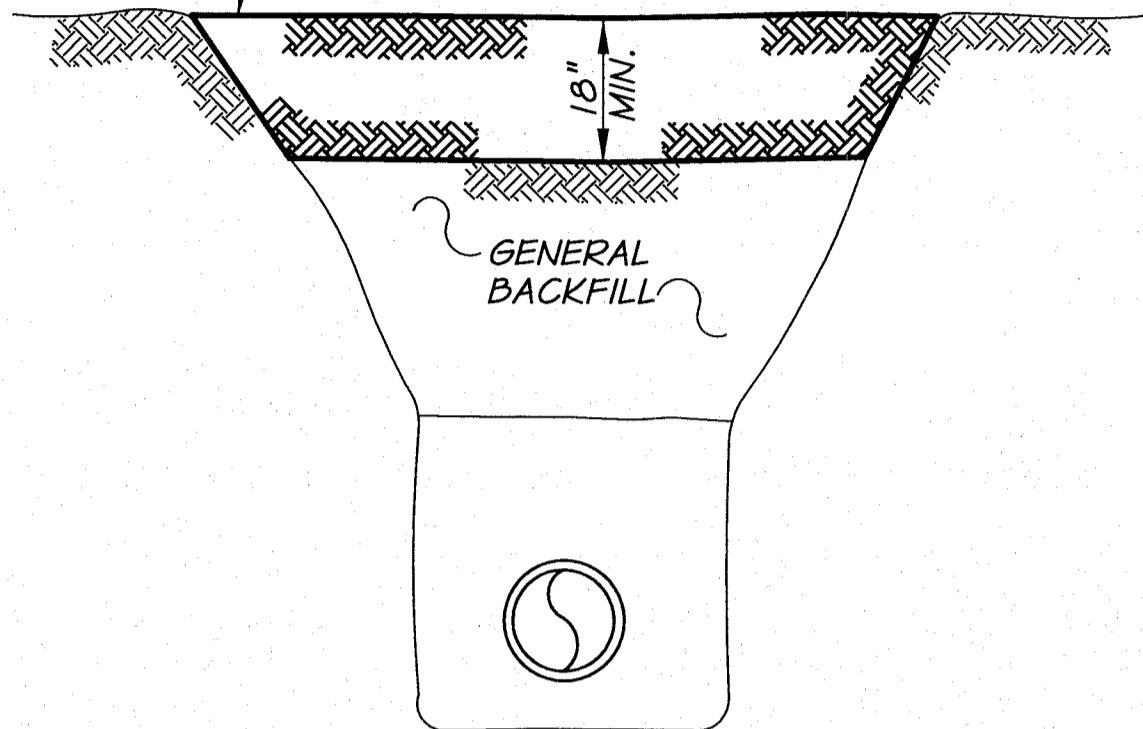
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B

MISCELLANEOUS DETAILS IV

SHEET

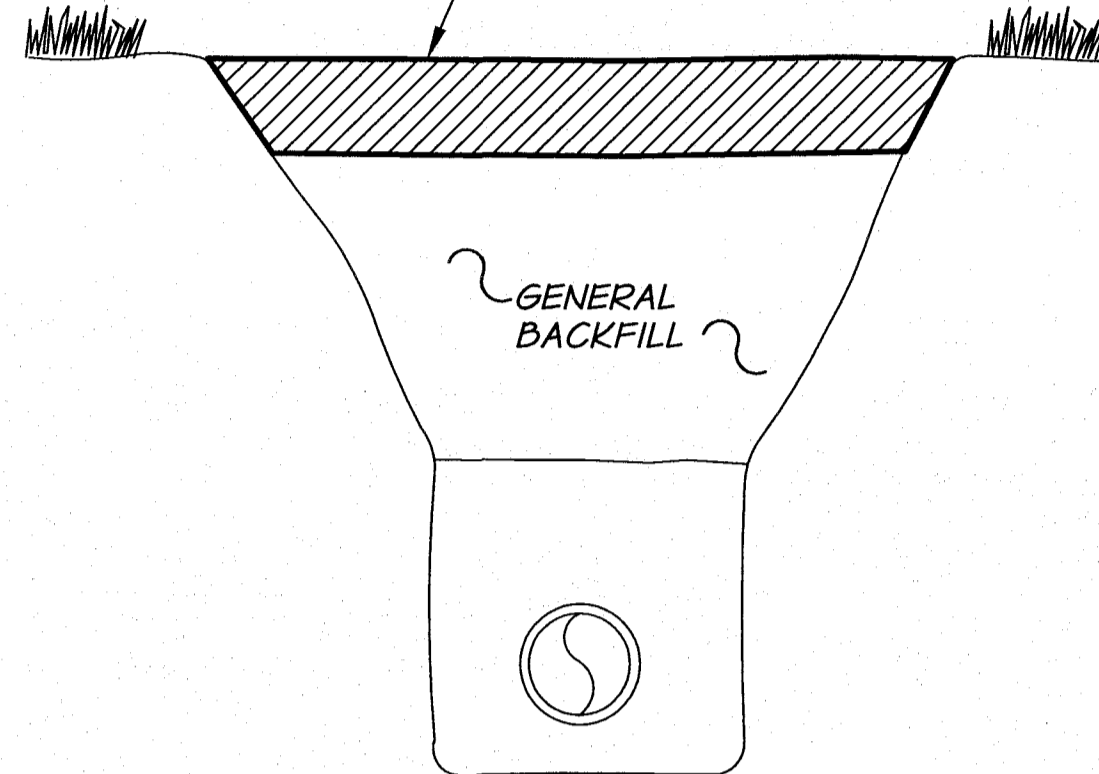
48

THE TOP 18" OF TOPSOIL IN THE EXCAVATION AREA SHALL BE REMOVED AND STOCKPILED AT A SEPARATE LOCATION FROM GENERAL TRENCH EXCAVATION. THIS TOPSOIL SHALL NOT BE MIXED OR CONTAMINATED WITH ANY OTHER MATERIAL. UPON COMPLETION OF THE TRENCH BACKFILL, AND AFTER ALL ROCKS AND UNSUITABLE MATERIAL HAVE BEEN REMOVED FROM WORK AREA, THE TOPSOIL SHALL BE REPLACED AND GRADED TO MATCH EXISTING GROUND. THE DISTURBED AREA SHALL THEN BE HYDROSEED ACCORDING TO HYDROSEED RESTORATION.



TRENCH RESTORATION
AGRICULTURAL AREAS
N.T.S.

REMOVE DEBRIS AND ROCK WHICH ARE NOT TYPICAL TO THE AREA. REPLACE TOPSOIL EQUAL TO EXISTING OR 6" WHICH EVER IS GREATER. RAKE AND SHAPE TO MATCH EXISTING. HYDROSEED PER HYDROSEED RESTORATION. REPLACE ALL SHRUBS AND SURFACE MATERIALS TO PRE-EXISTING CONDITIONS.



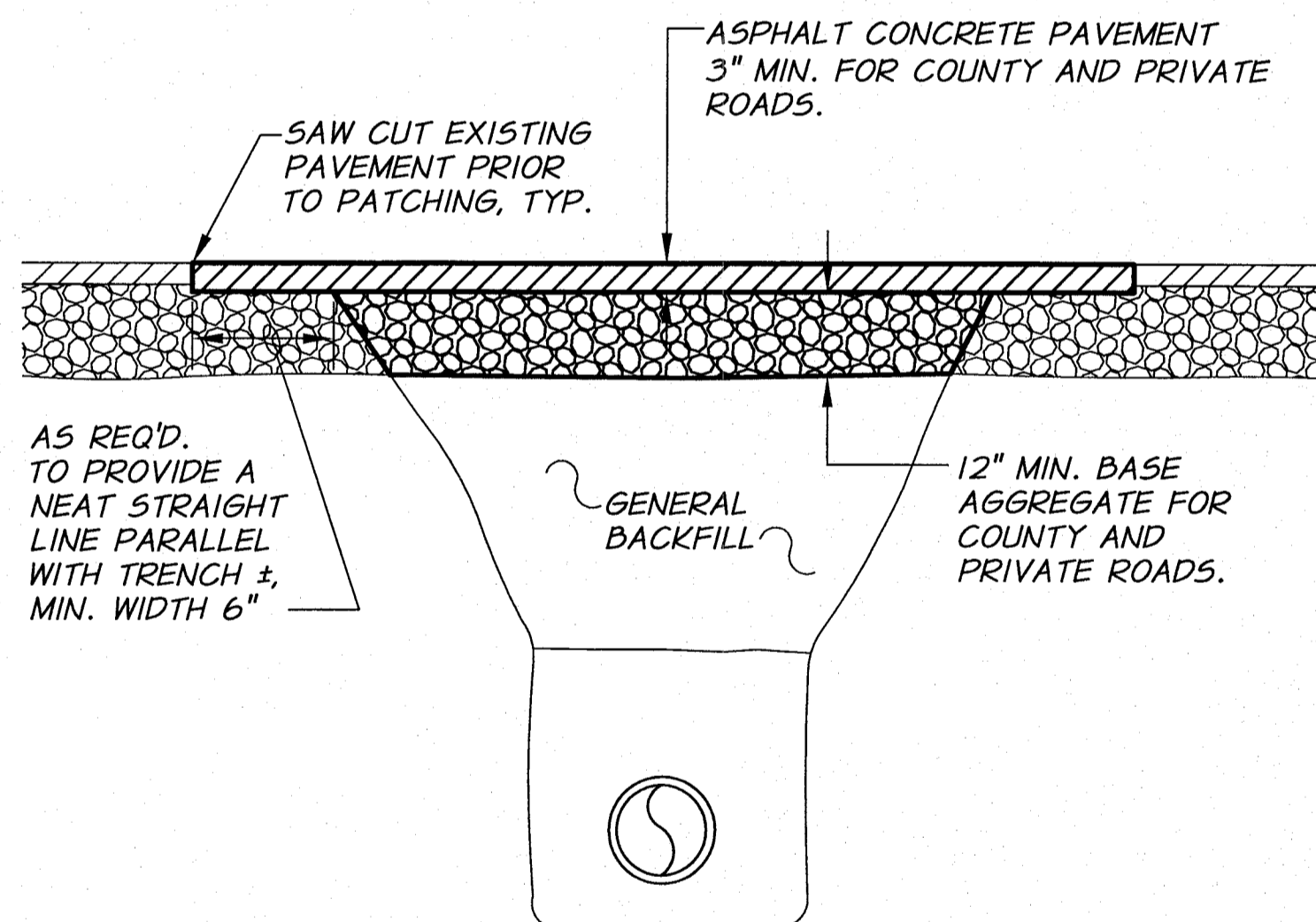
TRENCH RESTORATION
LAWNS & LANDSCAPED AREAS
N.T.S.

MULTIPLE INSTALLATIONS (ALL SHAPES)

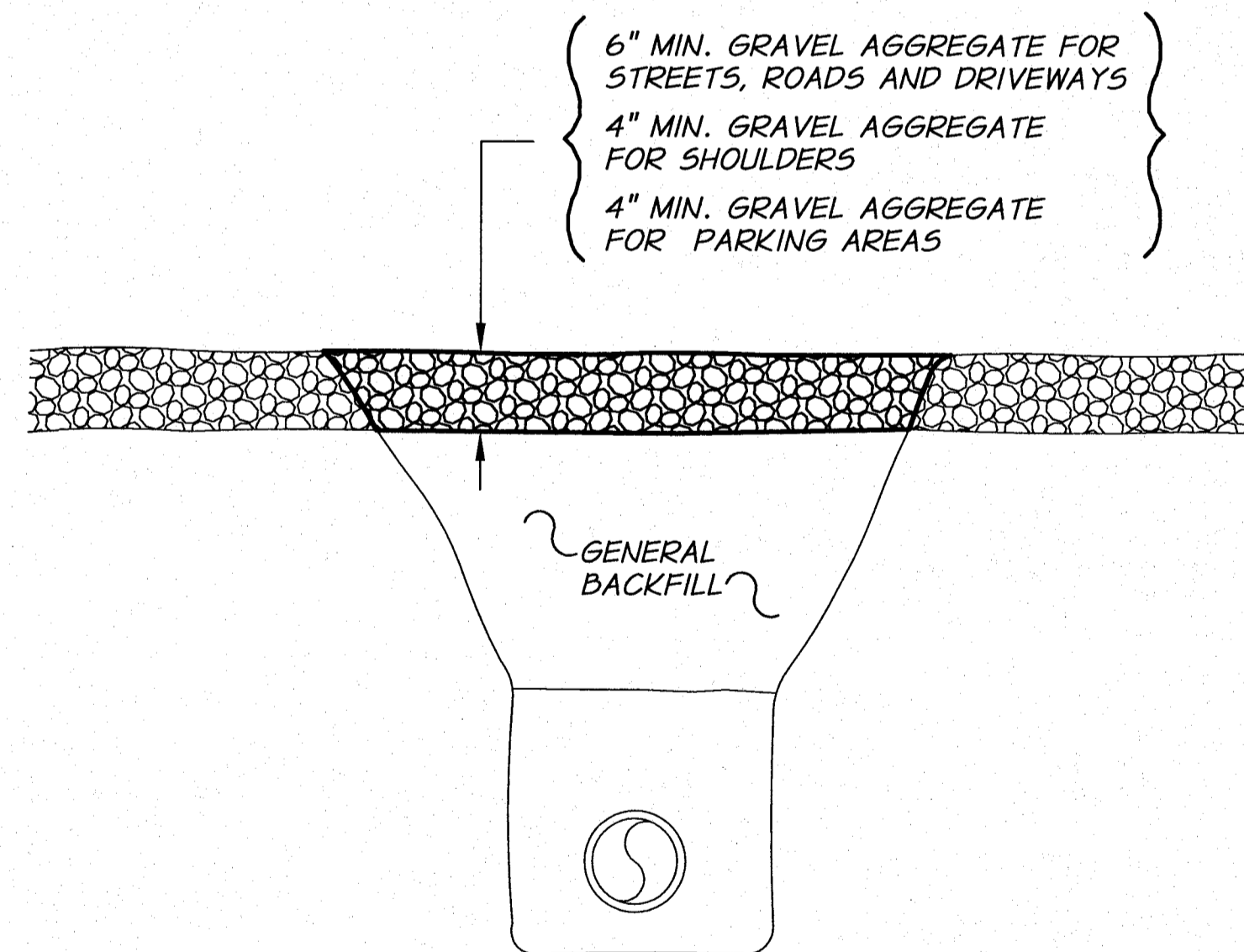
DIAMETER	MIN. SPACE BETWEEN PIPE
UP TO 18"	18"

NOTES
1. SURFACING OF PAVED AREAS SHALL COMPLY WITH STREET CUT STANDARD DRAWING.

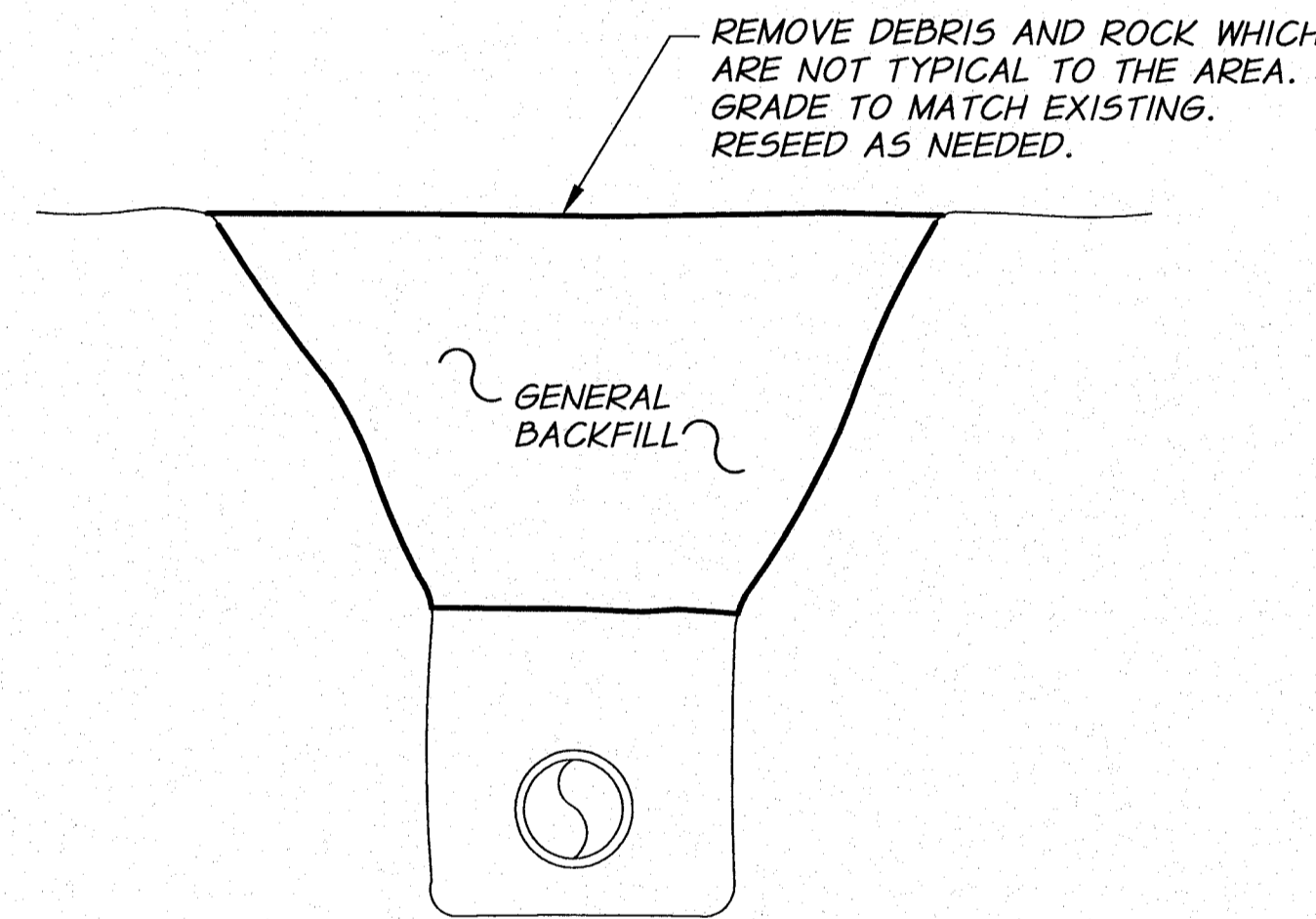
TRENCH BACKFILL AND BEDDING TABLE			
	ASPHALT SURFACE RESTORATION	GRAVEL STREETS, ROADWAYS, SHOULDERS AND PARKING AREAS	GENERAL / HYDROSEED RESTORATION AREAS
SURFACE	SURFACING MATCHING EXISTING	3/4"-0 GRAVEL AGGREGATE (FOR THICKNESS SEE DETAIL THIS SHEET)	TOPSOIL OR AS DIRECTED
BASE MATERIAL UNDER SURFACE	3/4"-0 BASE ROCK	GENERAL BACKFILL	TOPSOIL OR AS DIRECTED
GENERAL BACKFILL	3/4"-0 BASE ROCK	GENERAL BACKFILL	GENERAL BACKFILL
SELECT BACKFILL	3/4"-0 BASE ROCK	3/4"-0 BASE ROCK	3/4"-0 BASE ROCK
BEDDING	3/4"-0 BASE ROCK	3/4"-0 BASE ROCK	3/4"-0 BASE ROCK



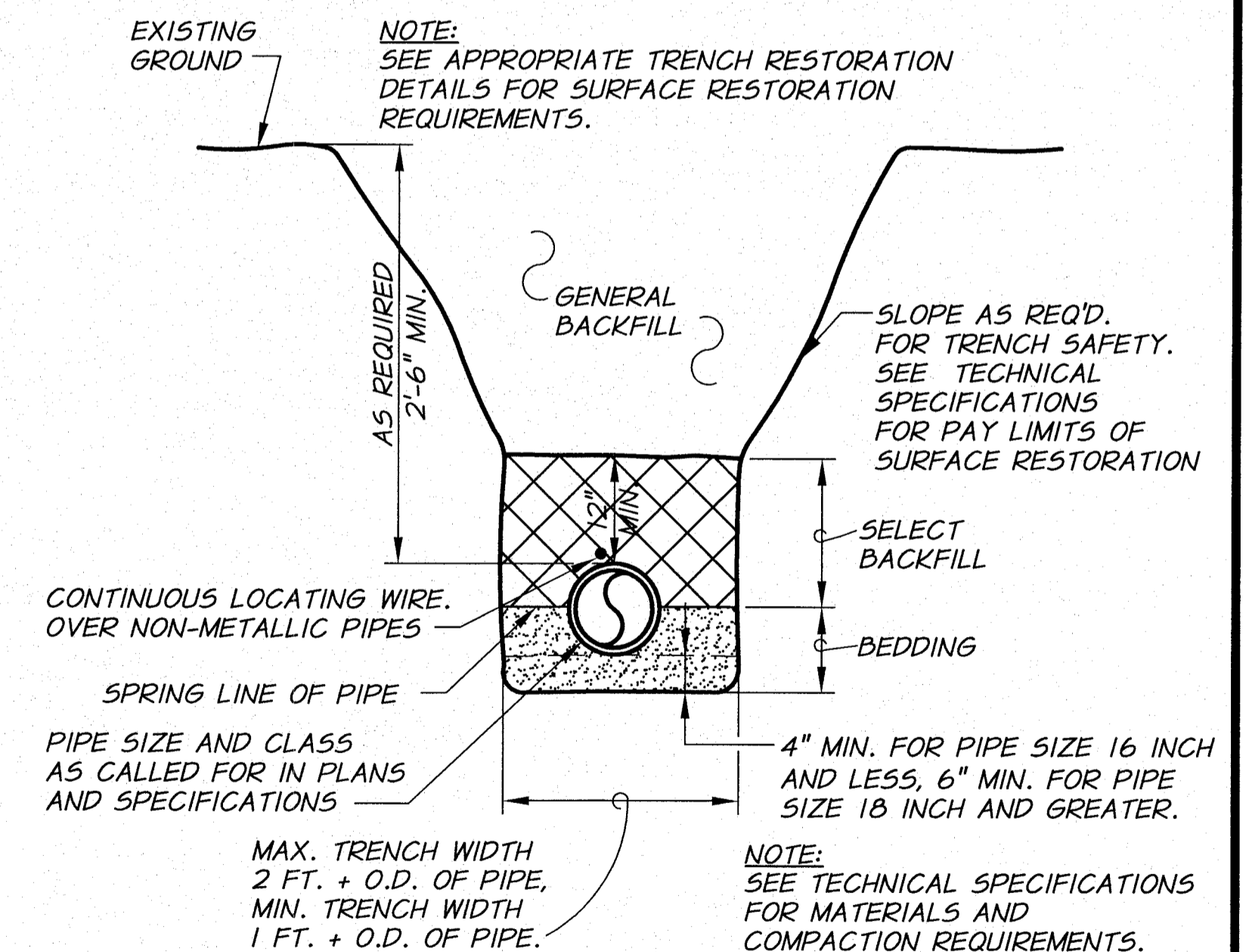
TRENCH RESTORATION
PAVED STREETS AND ROADWAYS
("ASPHALT SURFACE RESTORATION" PAY ITEM)
N.T.S.



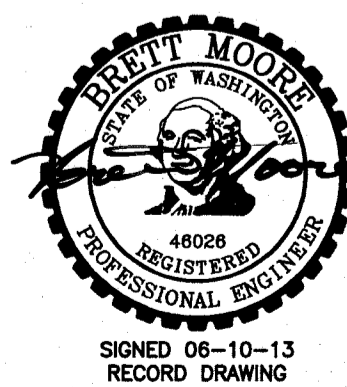
TRENCH RESTORATION
GRAVEL STREETS, ROADWAYS, SHOULDERS, AND PARKING AREAS
("GRAVEL SURFACE RESTORATION" PAY ITEM)
N.T.S.



TRENCH RESTORATION
GENERAL AREAS
N.T.S.

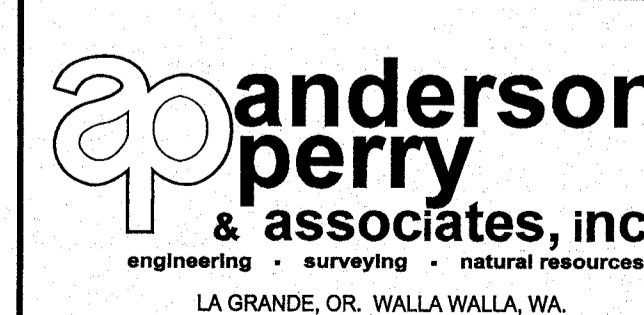


TRENCH EXCAVATION AND BACKFILL
N.T.S.



REVISION	BY	DATE	HORZ. SCALE	VERT. SCALE
DESIGNED BY	M. OWENS		NONE	2012
DRAWN BY	D. CHRISTMAN		JOB NUMBER	1199-336
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BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 3B
TRENCH DETAILS

SHEET

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THRUST BLOCK NOTES

- THRUST BLOCKS SHALL BE REQUIRED AT THE FOLLOWING LOCATIONS:
 - ALL CHANGES IN DIRECTION.
 - ALL DEAD-ENDS.
 - ALL VALVES 8-INCHES AND LARGER SHALL BE SIZE FOR CLOSED CONDITION EXCEPTIONS:
 - WHEN RESTRAINED JOINT PIPE IS USED ON BOTH SIDES OF VALVE.
 - WHEN VALVE IS RESTRAINED JOINT CONNECTED TO A FITTING WHICH HAS APPROPRIATE THRUST BLOCKING.
 - AT LOCATIONS SPECIFICALLY CALLED OUT ON THE DRAWINGS.
 - AT TEMPORARY DEAD ENDS DURING PIPE INSTALLATIONS AS REQUIRED FOR TEMPORARY PRESSURE TESTING.
 - AT OTHER LOCATIONS REQUIRED BY THE ENGINEER.
- THRUST BLOCKS SHALL BE SIZED AS REQUIRED BY SOIL CONDITIONS AND DESIGN PRESSURE.
- PLACE CONCRETE AGAINST UNDISTURBED TRENCH WALL.
- CONCRETE SHALL BE 2,500 PSI MINIMUM.
- ALL CONCRETE SHALL BE PLACED SO THAT PIPE, FITTING JOINTS, BOLTS AND NUTS, ETC., WILL BE ACCESSIBLE FOR REPAIRS.
- PLACE ONE LAYER OF VISQUEEN BETWEEN FITTING AND CONCRETE TO FACILITATE FUTURE REMOVAL OF THRUST BLOCK IF REQUIRED.
- ANCHOR RODS SHALL BE 3/4" DIAMETER GALVANIZED STEEL RODS OR #6 EPOXY COATED REINFORCEMENT BAR, AASHTO M284, HAVING AN 18" MINIMUM EMBEDMENT IN CONCRETE.
- IF THE REQUIRED BEARING AREA IS LESS THAN 1 SQUARE FOOT, A THRUST BLOCK SHALL NOT BE REQUIRED.
- WHERE THRUST BLOCK IS NOT DESIGNATED, ALL THRUST BLOCKS SHALL BE SIZED PER THE PRESSURES SHOWN IN THE TECHNICAL SPECIFICATIONS, UNLESS OTHERWISE NOTED.

DETERMINATION OF THRUST BLOCK BEARING AREA

NOTE: WHEN THRUST BLOCK BEARING AREA IS NOT SPECIFIED ON THE PLANS OR DETERMINED BY THE ENGINEER, THE FOLLOWING PROCEDURE SHALL BE USED TO DETERMINE THE REQUIRED BEARING AREA.

- DETERMINE THRUST (T) FOR TYPE OF FITTING OR JOINT AND SIZE OF PIPE FROM TABLE NO. 1 OR TABLE NO. 3.
- DETERMINE BEARING CAPACITY (B) OF SOIL FROM TABLE NO. 2.
- DETERMINE REQUIRED BEARING AREA (A) AS FOLLOWS:
 $A = T - B$

EXAMPLE: DESIGN PRESSURE = 175 PSI
 PIPE = 12"
 FITTING = TEE
 SOIL - SANDY GRAVEL

FROM TABLE NO. 1: T = 15,050 LB.
 FROM TABLE NO. 2: B = 3000 LB/SQ.FT.
 $A = \frac{15,050}{3,000} \times 1.75 = 8.8 \text{ SQ.FT.} = 9 \text{ SQ.FT. (ROUND UP TO NEAREST 3,000 WHOLE SQ.FT.)}$

TABLE NO. 1
THRUST AT FITTINGS IN POUNDS AT 100 PSI OF PRESSURE

PIPE SIZE	TEES AND DEAD ENDS	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	1,680	2,310	1,290	660	340
6"	3,770	5,320	2,890	1,480	750
8"	6,690	9,460	5,120	2,620	1,320
10"	10,440	14,780	8,010	4,090	2,050
12"	15,050	21,280	11,520	5,880	2,960
14"	20,490	28,960	15,680	8,000	4,020
16"	26,750	37,830	20,470	10,440	5,260
18"	33,850	47,870	25,910	13,210	6,640
20"	41,790	59,090	31,980	16,310	8,190
24"	60,170	85,100	46,060	23,490	11,800

NOTE: FOR WATER PRESSURES DIFFERENT THAN 100 PSI, MULTIPLY THRUST FOUND IN TABLE NO. 1 BY REQUIRED PROPORTION.
 EXAMPLE: DESIGN PRESSURE = 175 PSI.
 MULTIPLY VALUE IN TABLE BY 1.75

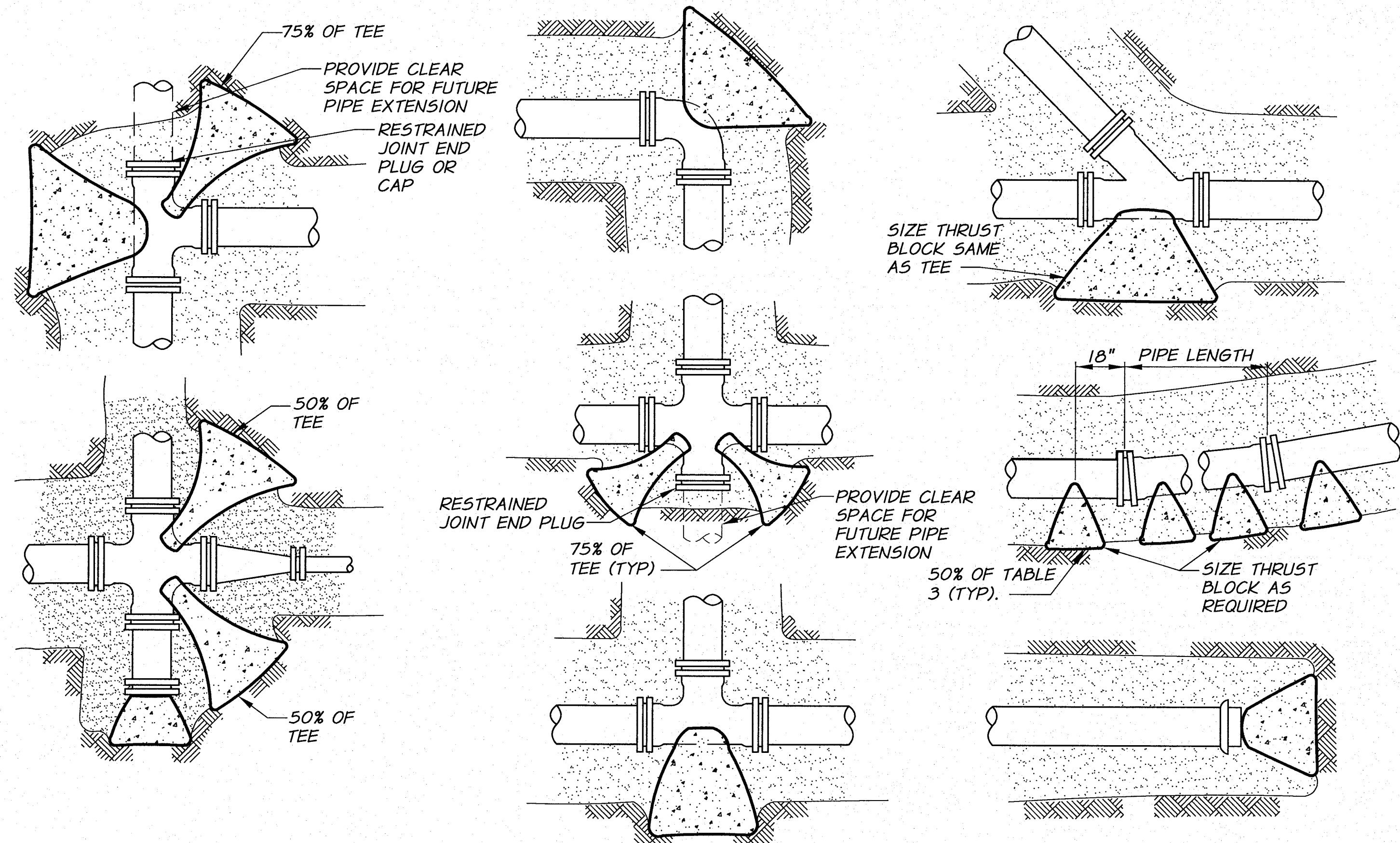
TABLE NO. 2

SOIL	SAFE BEARING LOAD LB/SQ.FT.
SOFT CLAY	500
SILT	1,000
SAND	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED WITH CLAY	4,000
HARD CLAY	4,000

TABLE NO. 3

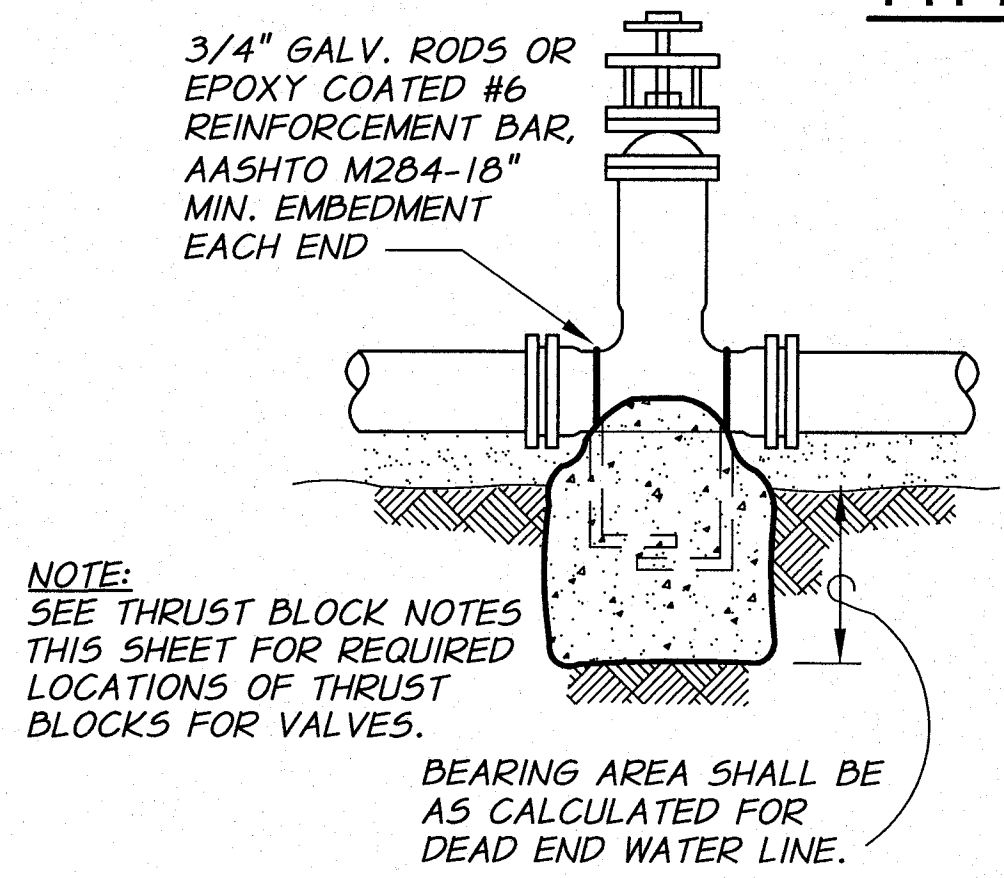
SIDE THRUST PER 100 LB./SQ.IN. PRESSURE PER DEGREE OF DEFLECTION			
PIPE SIZE	SIDE THRUST-LB	PIPE SIZE	SIDE THRUST-LB
4"	N/A	14"	360
6"	N/A	16"	470
8"	N/A	18"	600
10"	190	20"	730
12"	270	24"	1,050

MULTIPLY THRUST BY DEGREE OF DEFLECTION TO OBTAIN TOTAL THRUST



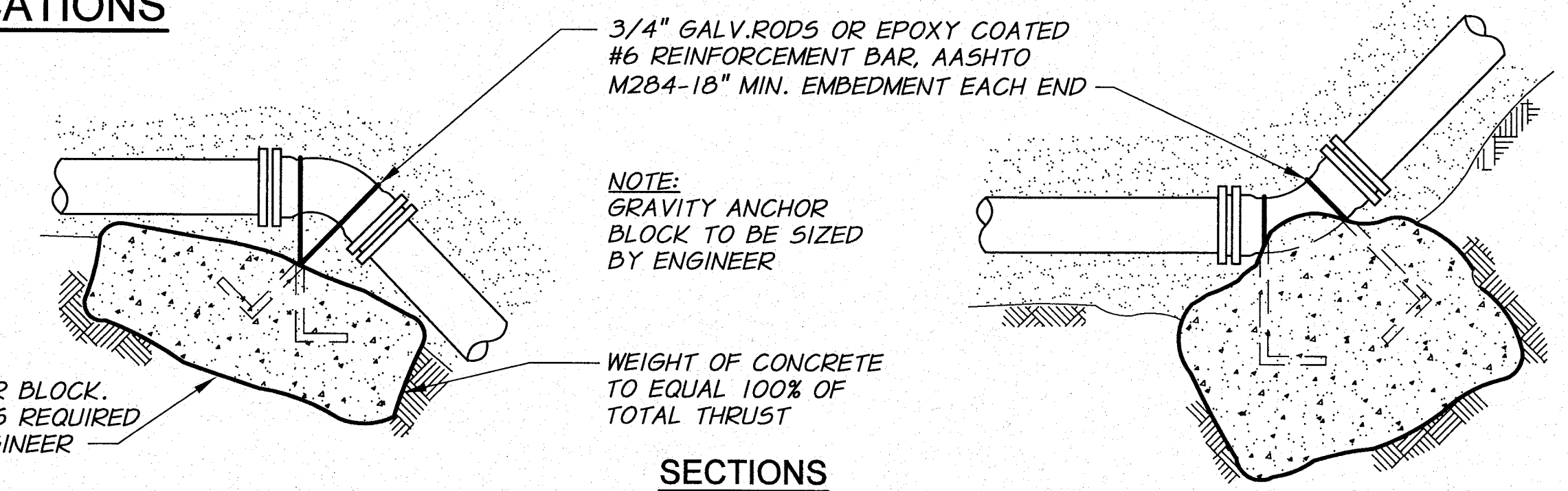
TYPICAL THRUST BLOCK LOCATIONS

PLAN VIEWS

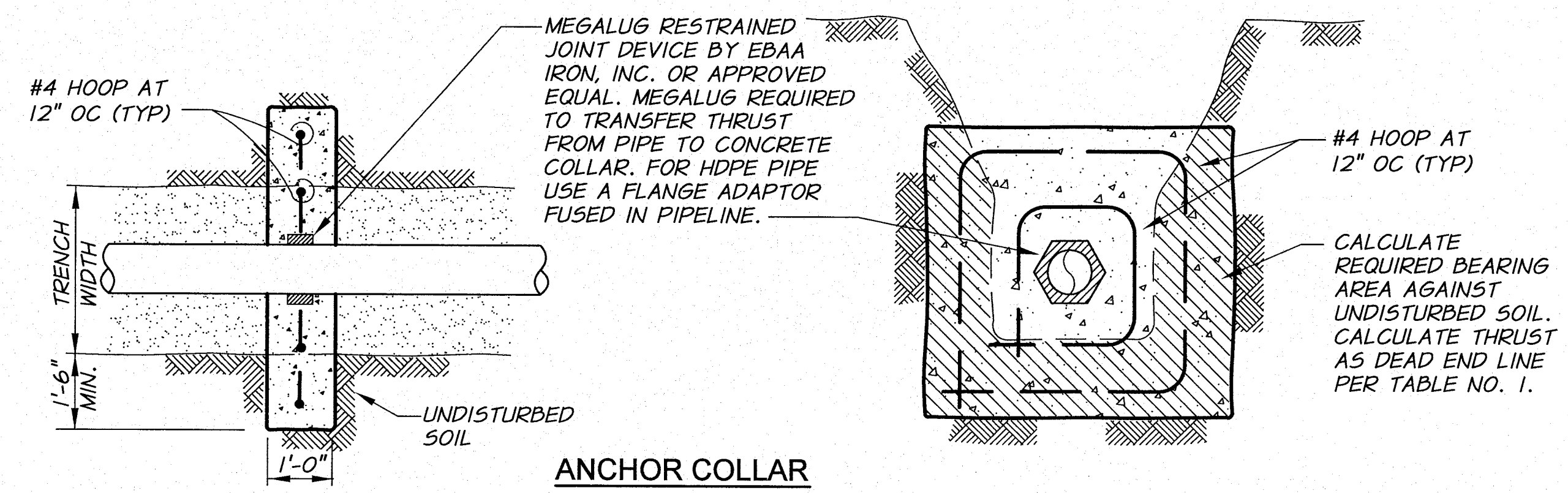


TYPICAL VALVE THRUST BLOCK

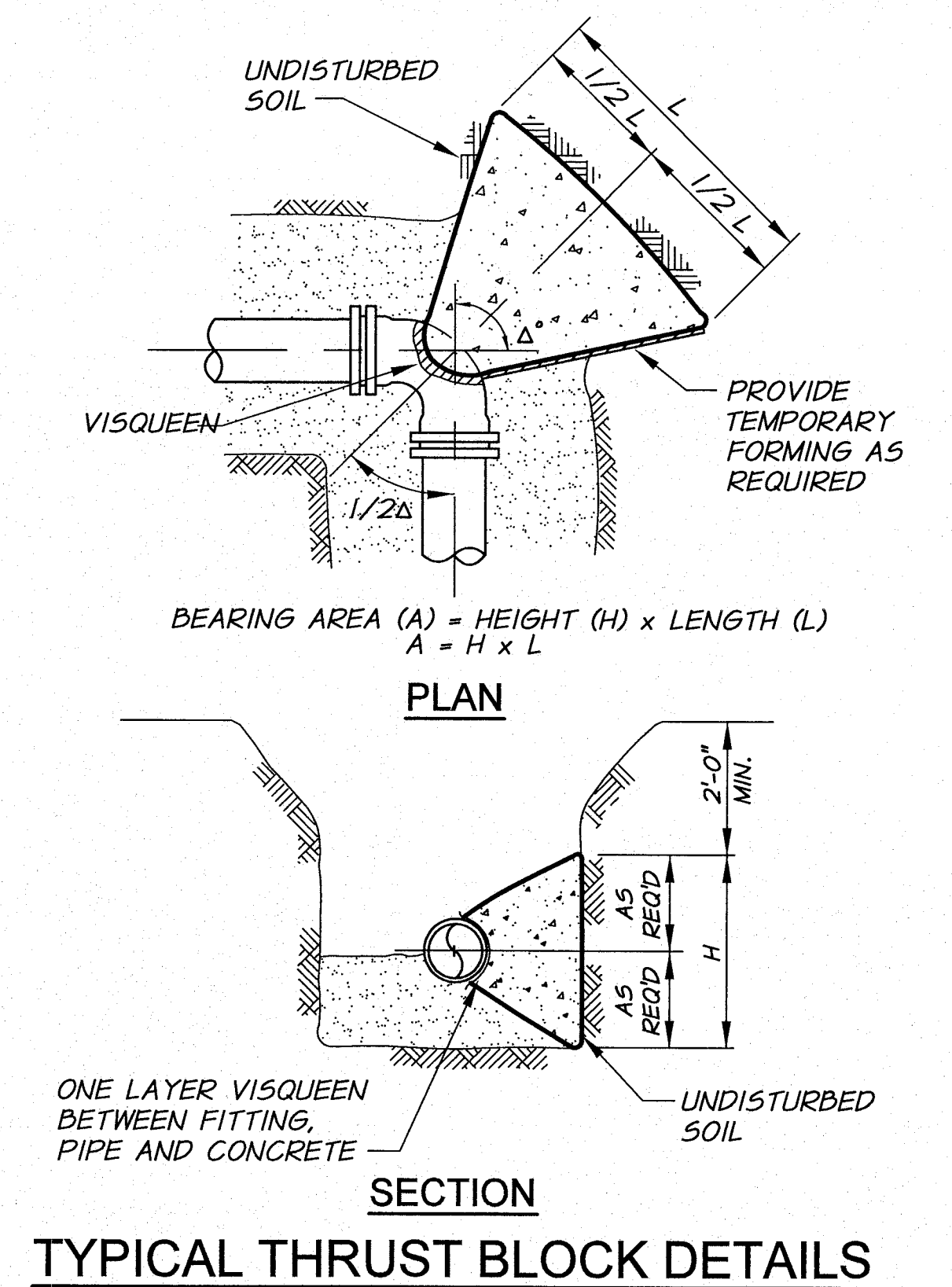
NOTE: NOT REQUIRED FOR VALVES WITH FLANGED CONNECTION TO TEE WITH THRUST BLOCK.



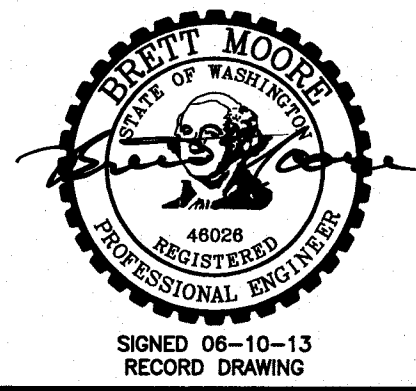
SECTIONS



TYPICAL ANCHOR COLLARS

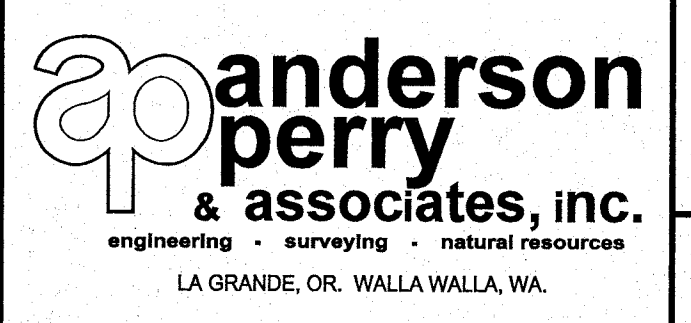


TYPICAL THRUST BLOCK DETAILS



DESIGNED BY M. OWENS	BY	DATE	HORIZ. SCALE NONE	VERT. SCALE
DRAWN BY D. CHRISTMAN			JOB NUMBER 1199-336	DATE 2012
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BENTON IRRIGATION DISTRICT
 IRRIGATION SYSTEM IMPROVEMENTS
 PHASE 3B

THRUST BLOCK DETAILS

SHEET
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