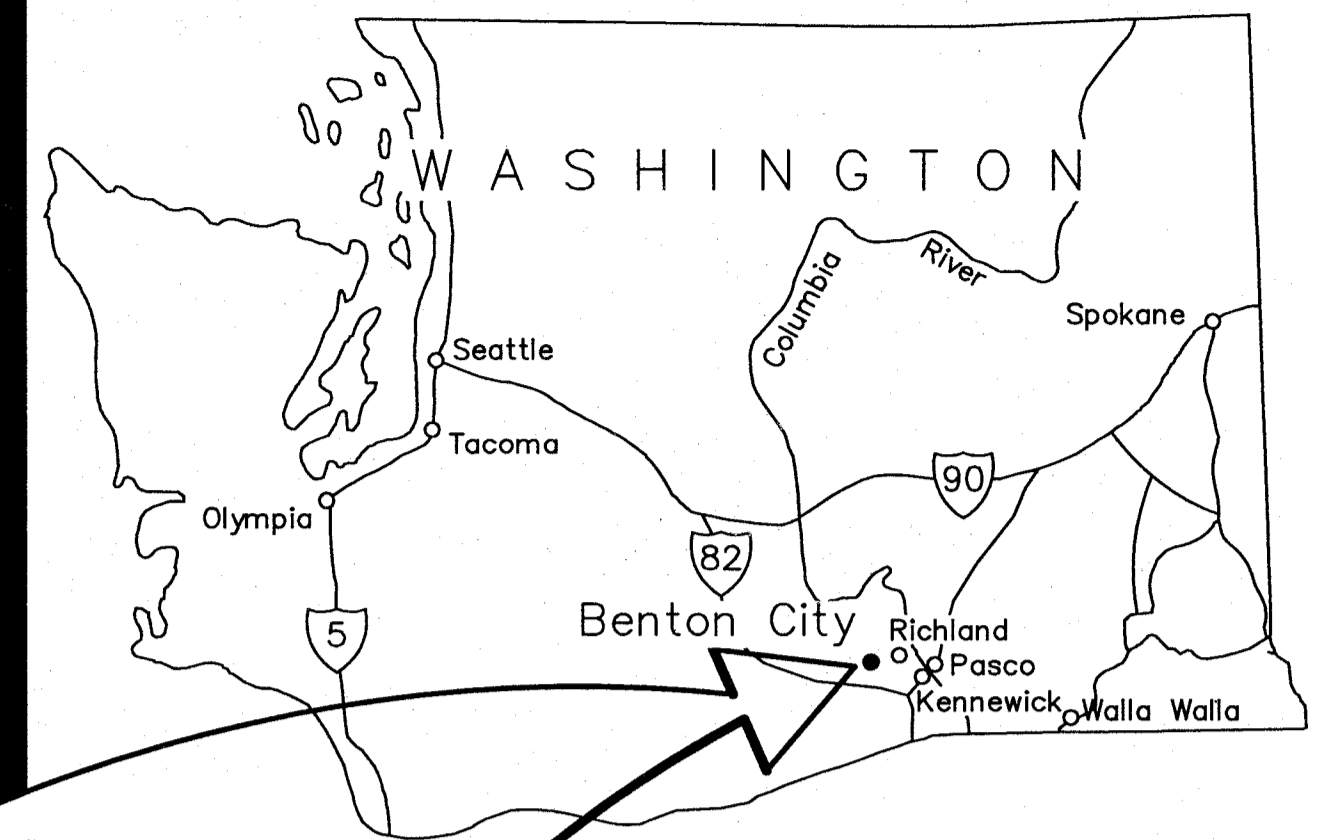


BENTON IRRIGATION DISTRICT

IRRIGATION SYSTEM IMPROVEMENTS

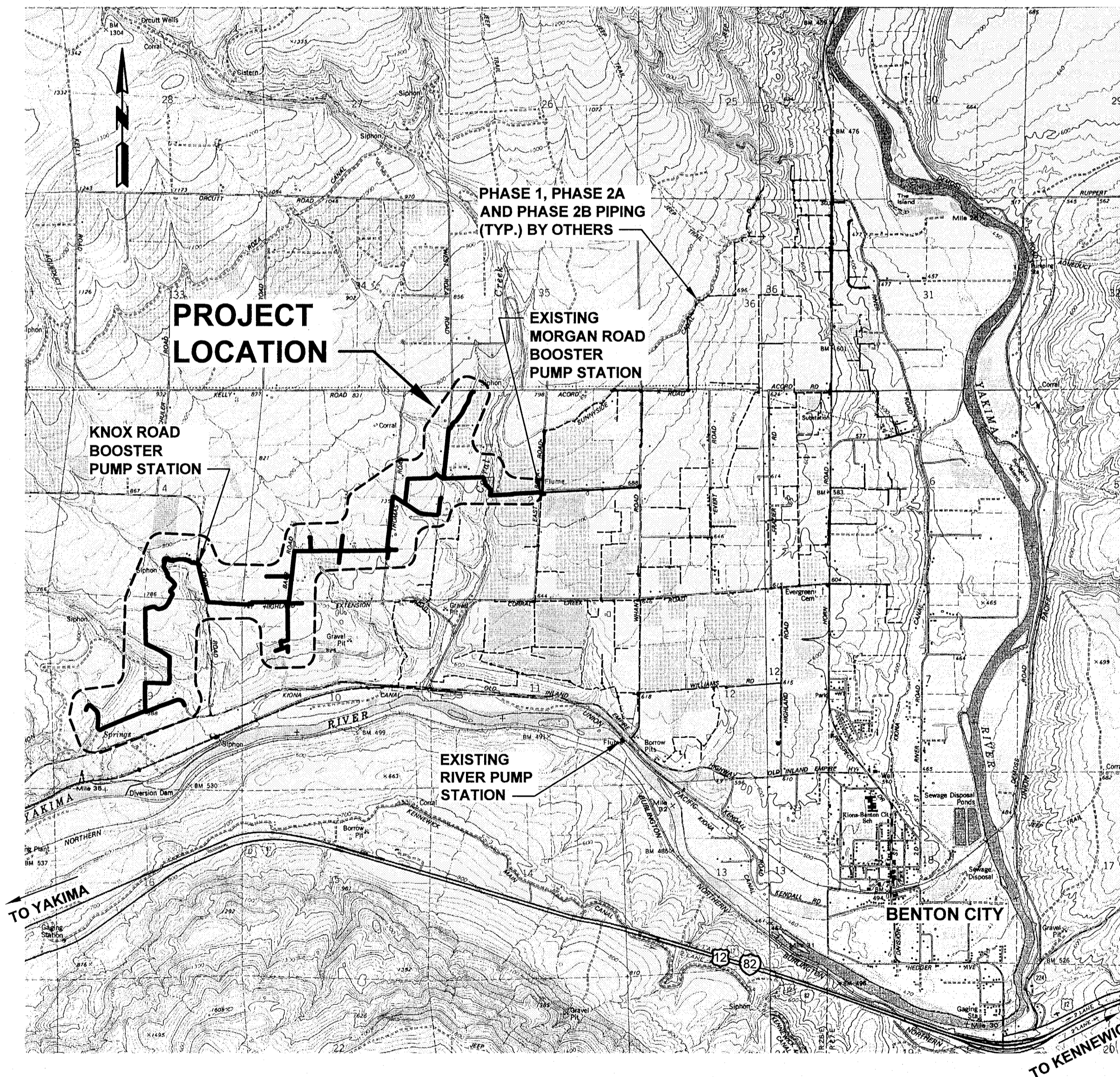
PHASE 2C

2011



INDEX

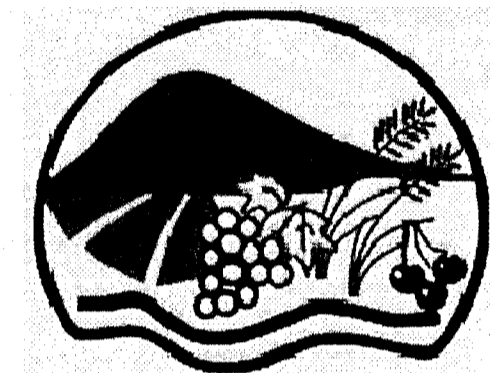
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VICINITY MAP
NTS

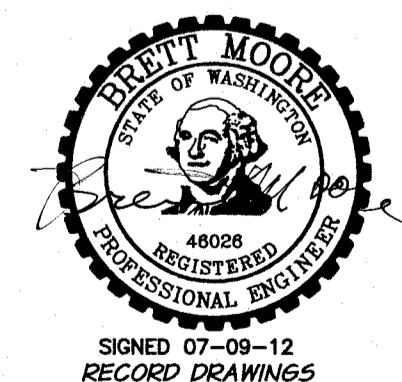
RECORD DRAWINGS

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DISTRICT BOARD OF DIRECTORS

MELISSA GLODO
ROBERT BUOY
DIRK MARTIN



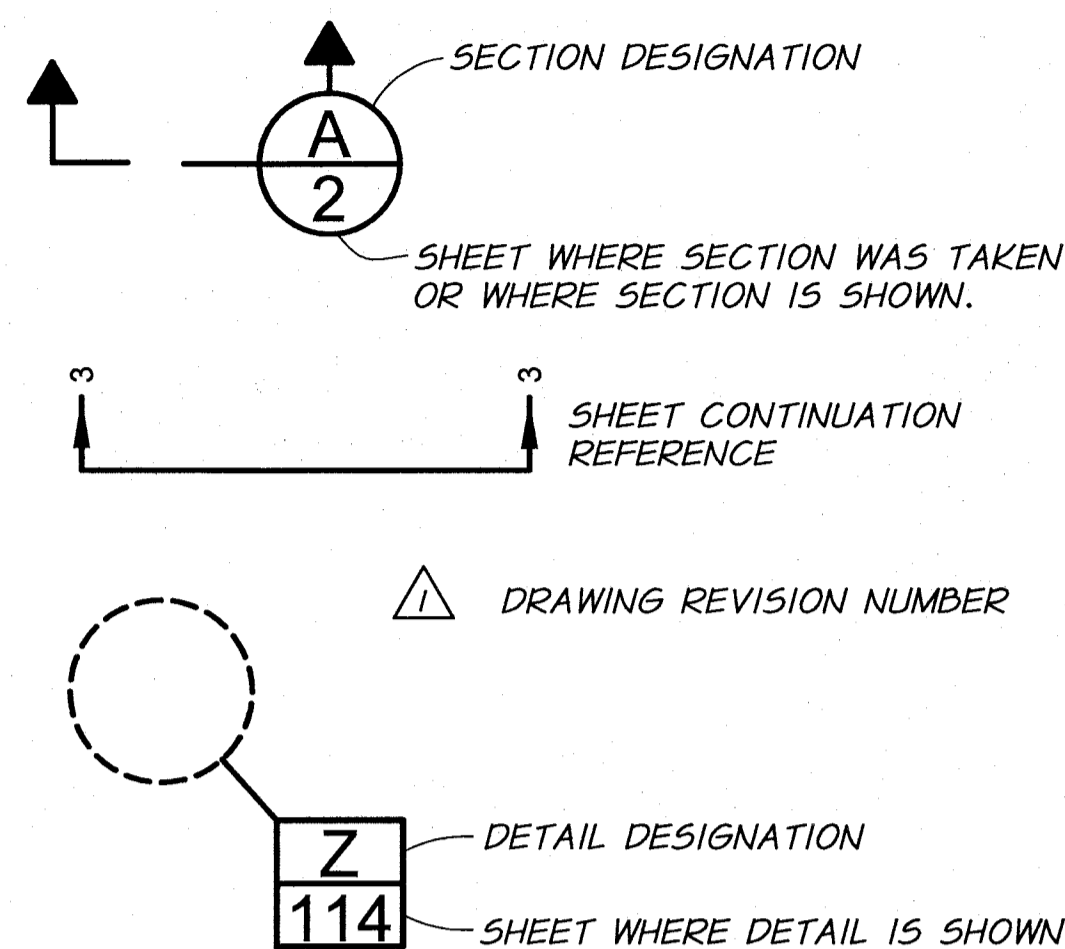
ap anderson perry & associates, inc.
engineering • surveying • natural resources
1901 N. Fir Street - La Grande, OR 97850 Ph: (541)963-8309 Fax: (541)963-5456
LA GRANDE, OR WALLA WALLA, WA

PLAN LEGEND

IRRIGATION	
EXISTING	PROPOSED
IRRIGATION LINE — IRR —	6" PVC —
VALVE	⊠
CAP	⌈
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 X

DRAFTING



1.5	SERVICE LINE SIZE (INCHES)
3	DOLE CONTROL VALVE SIZE (INCHES)
3.03	DOLE CONTROL VALVE FLOW RATE (GPM)
1.5	CALCULATED REQUIRED FLOW (GPM)
	PRV SIZE (INCHES) OR CONTROL TYPE FOR LARGER SERVICES:
FCV	FLOW CONTROL VALVE
PRV/FCV	PRESSURE REDUCING AND FLOW CONTROL VALVE

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

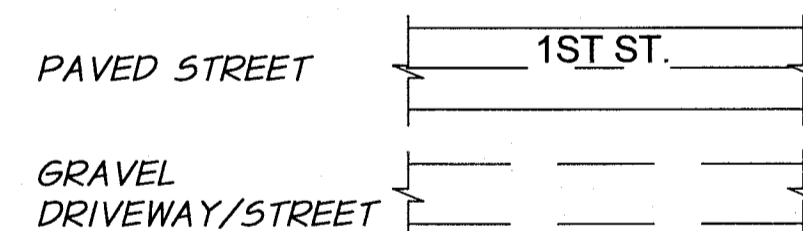
MISCELLANEOUS UTILITIES

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	☀

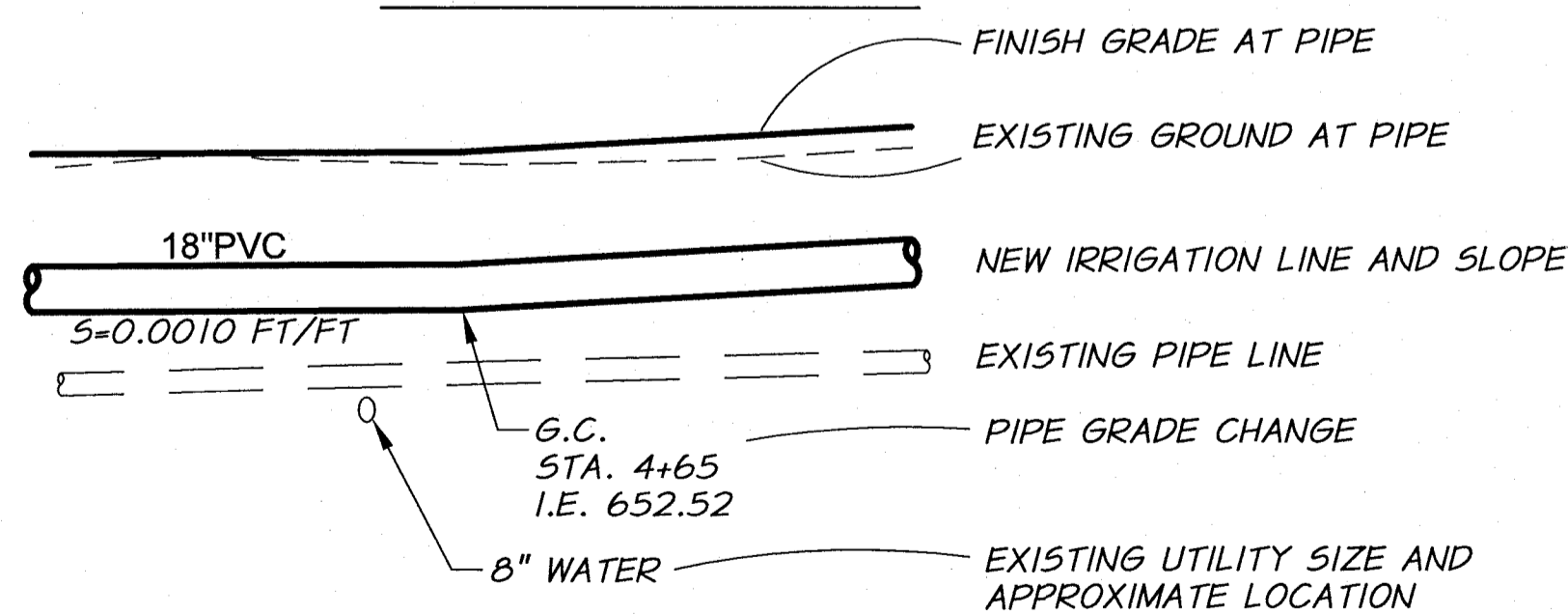
GENERAL

EXISTING	
FENCE LINE/GATE	— * — * — * —
CHAINLINK FENCE	— □ — □ — □ —
CREEK/DITCH CENTERLINE	— — — — —
RIVERBANK/ShORELINE	— — — — —
SIGN	⊠
CONIFER TREE	☀
DECIDUOUS TREE	☀
SHRUB	☀
BUILDING	⊠

STREET AND CURB



PROFILE LEGEND



ESTIMATED QUANTITIES FOR ROCK EXCAVATION

PHASE 2C: ±2,600 CUBIC YARDS

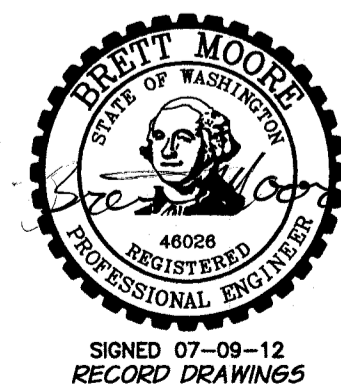
NOTE:
REFER TO THE SPECIFICATIONS FOR DESCRIPTION OF ROCK EXCAVATION. THE QUANTITIES SHOWN ARE ESTIMATES PREPARED BY THE ENGINEER AND ARE BASED UPON FIELD SURVEY DATA PERFORMED BY THE ENGINEER, AND THE IMPROVEMENTS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL MAKE HIS OWN DETERMINATION OF THE ACTUAL QUANTITIES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

TEST PIT NOTES

- THE TEST PIT LOCATIONS ARE SHOWN ON THE DRAWINGS AND THE TEST PIT LOGS ARE PROVIDED IN THE APPENDIX OF THE SPECIFICATIONS.
- THE SOIL DATA, ROCK DATA, AND GROUND WATER CONDITIONS WHEN SHOWN ON THE DRAWINGS AND LOGS ARE PROVIDED SOLELY FOR THE CONTRACTOR'S INFORMATION. SUCH DATA IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS WITH RESPECT TO THE ACTUAL SUBSURFACE CONDITIONS. INFORMATION SHOWN SHALL NOT RELIEVE THE CONTRACTOR FROM MAKING SUCH ADDITIONAL INVESTIGATIONS AS HE MAY ELECT TO FAMILIARIZE HIMSELF WITH THE ACTUAL CONDITIONS TO BE ENCOUNTERED IN EXECUTING THE WORK AND PREPARING HIS BID FOR THE PROJECT.
- 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.

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.
- 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 POTHOLING 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 "POTHOLING."

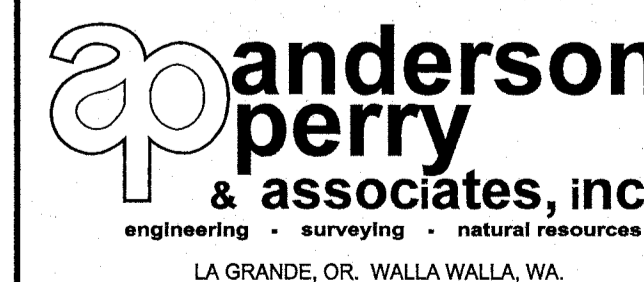


SIGNED 07-29-12
RECORD DRAWINGS

REVISION	BY	DATE	HORIZ. SCALE	VERT. SCALE
DESIGNED BY R. HARRIS			NONE	
DRAWN BY D. CHRISTMAN			1199-336	2011
REVIEWED BY B. MOORE			LEGEND-Ph2C.dwg	
XREFs: TB-BID.dwg				
ACAD FILE: LEGEND-Ph2C.dwg				
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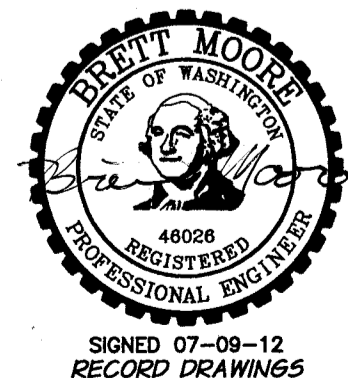
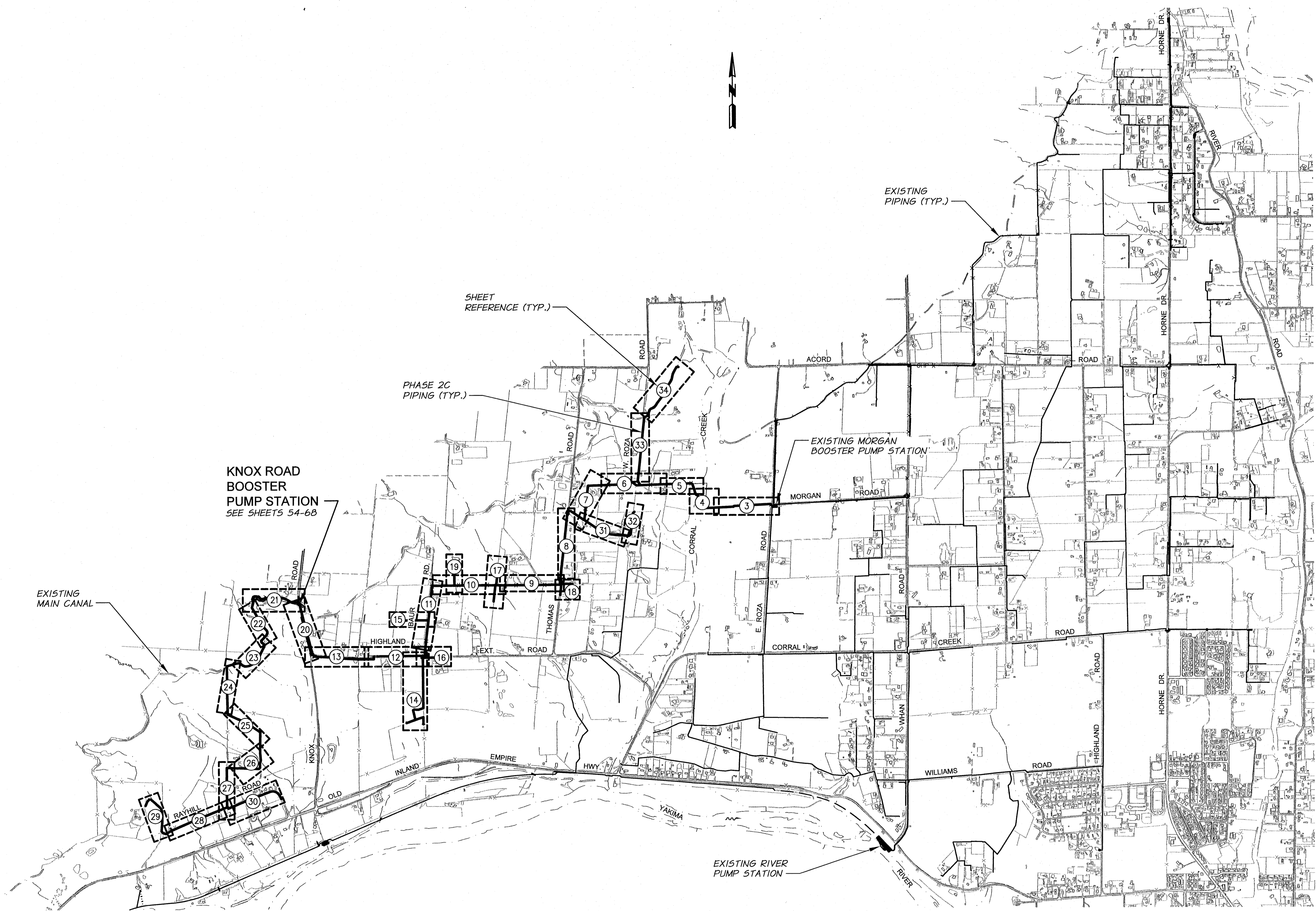


BENTON IRRIGATION DISTRICT IRRIGATION SYSTEM IMPROVEMENTS PHASE 2C

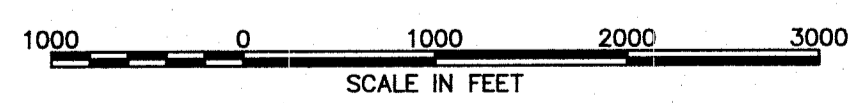
LEGEND, NOTES, AND QUANTITIES

SHEET

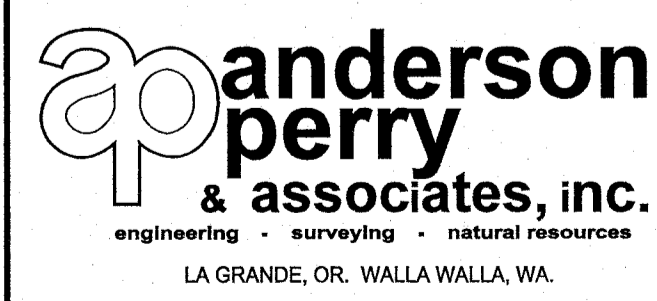
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REVISION		BY	DATE	HORIZ. SCALE 1"=1000'		VERT. SCALE	
DESIGNED BY R. HARRIS		XREFS: TB-BID.dwg		JOB NUMBER 1199-336		DATE 2011	
DRAWN BY D. CHRISTMAN				ACAD FILE SheetIndexPH2C.dwg			
REVIEWED BY B. MOORE				COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.			

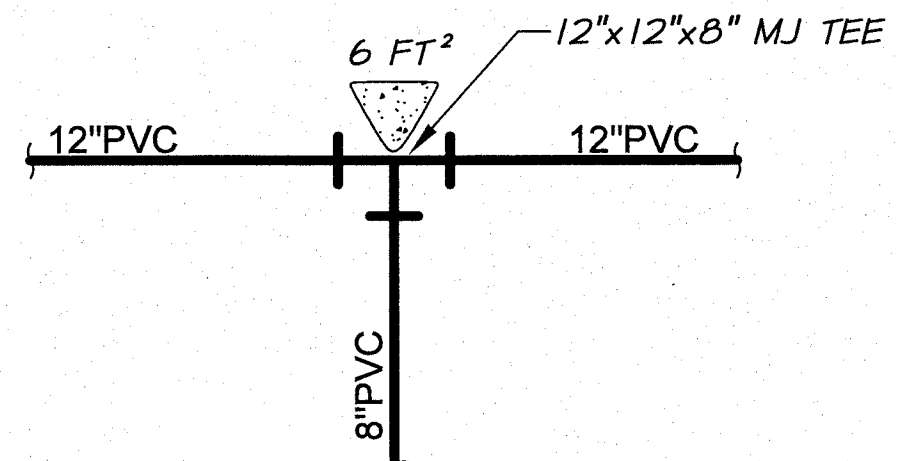


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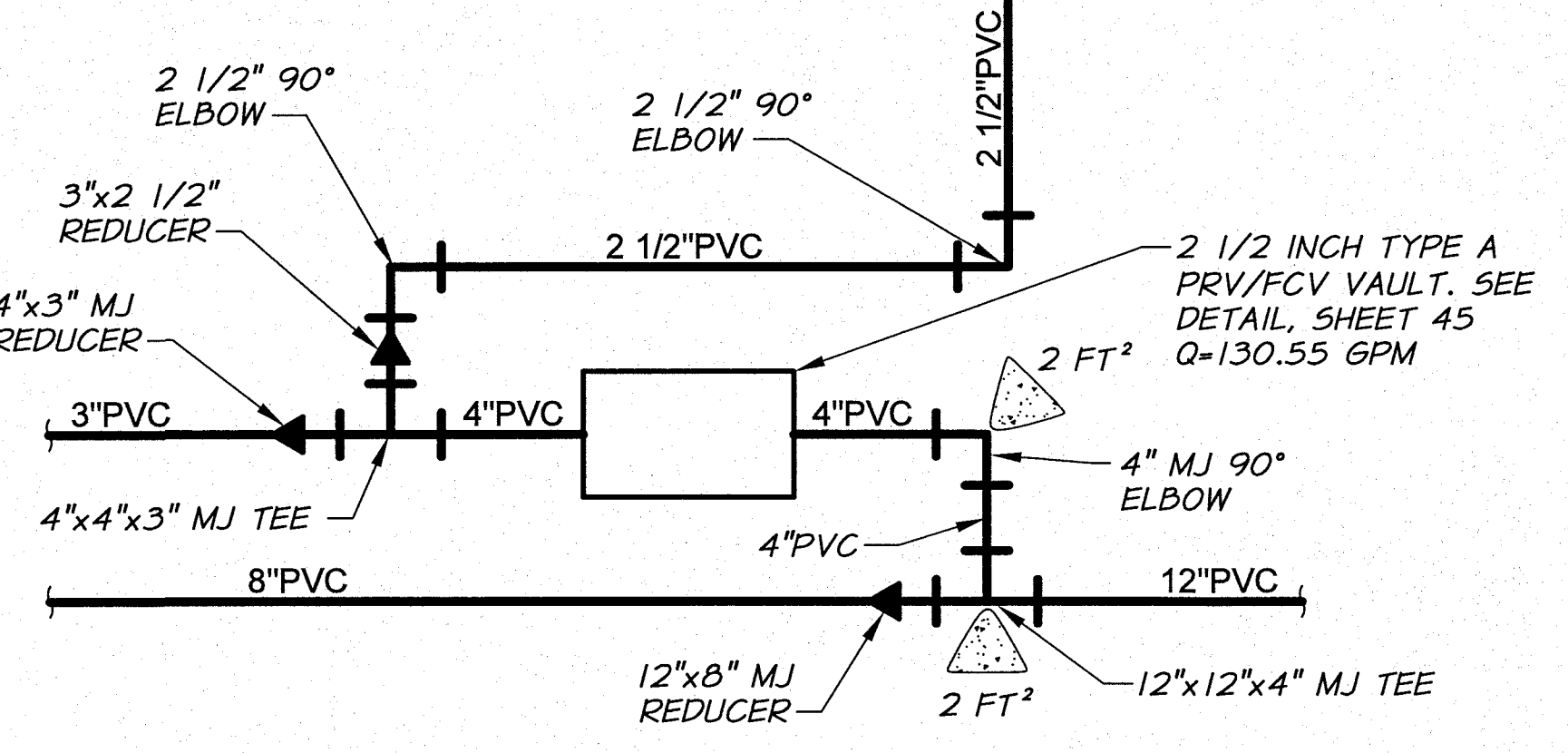


BENTON IRRIGATION DISTRICT
 IRRIGATION SYSTEM IMPROVEMENTS
 PHASE 2C
 SHEET INDEX

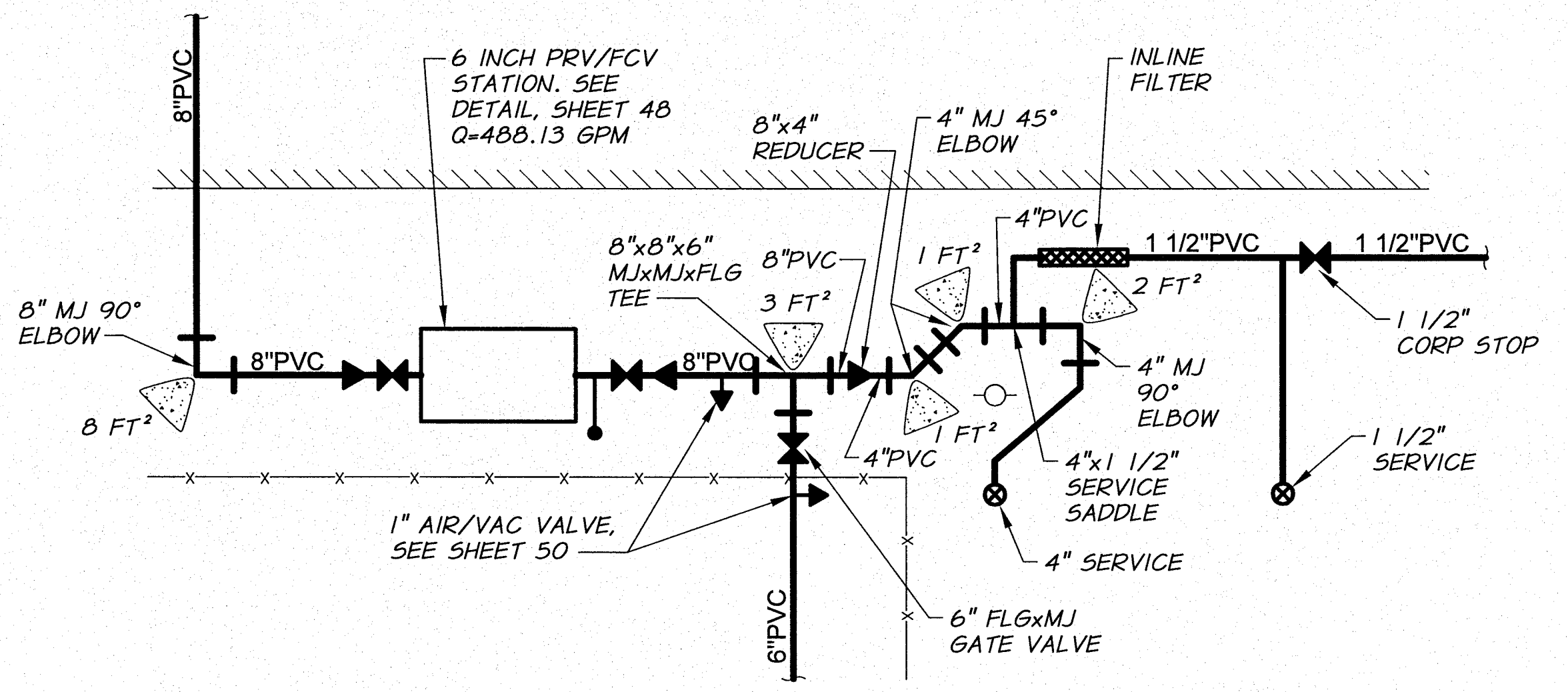
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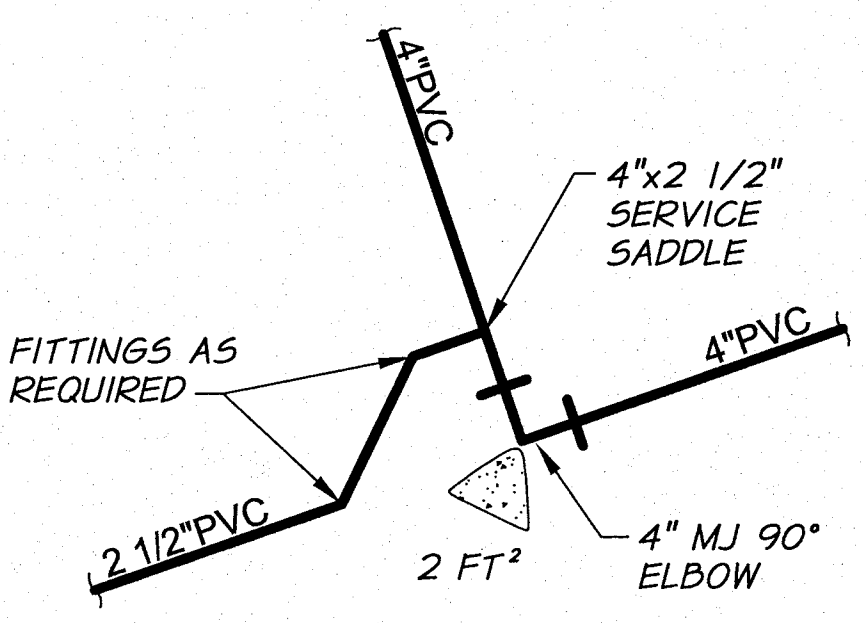
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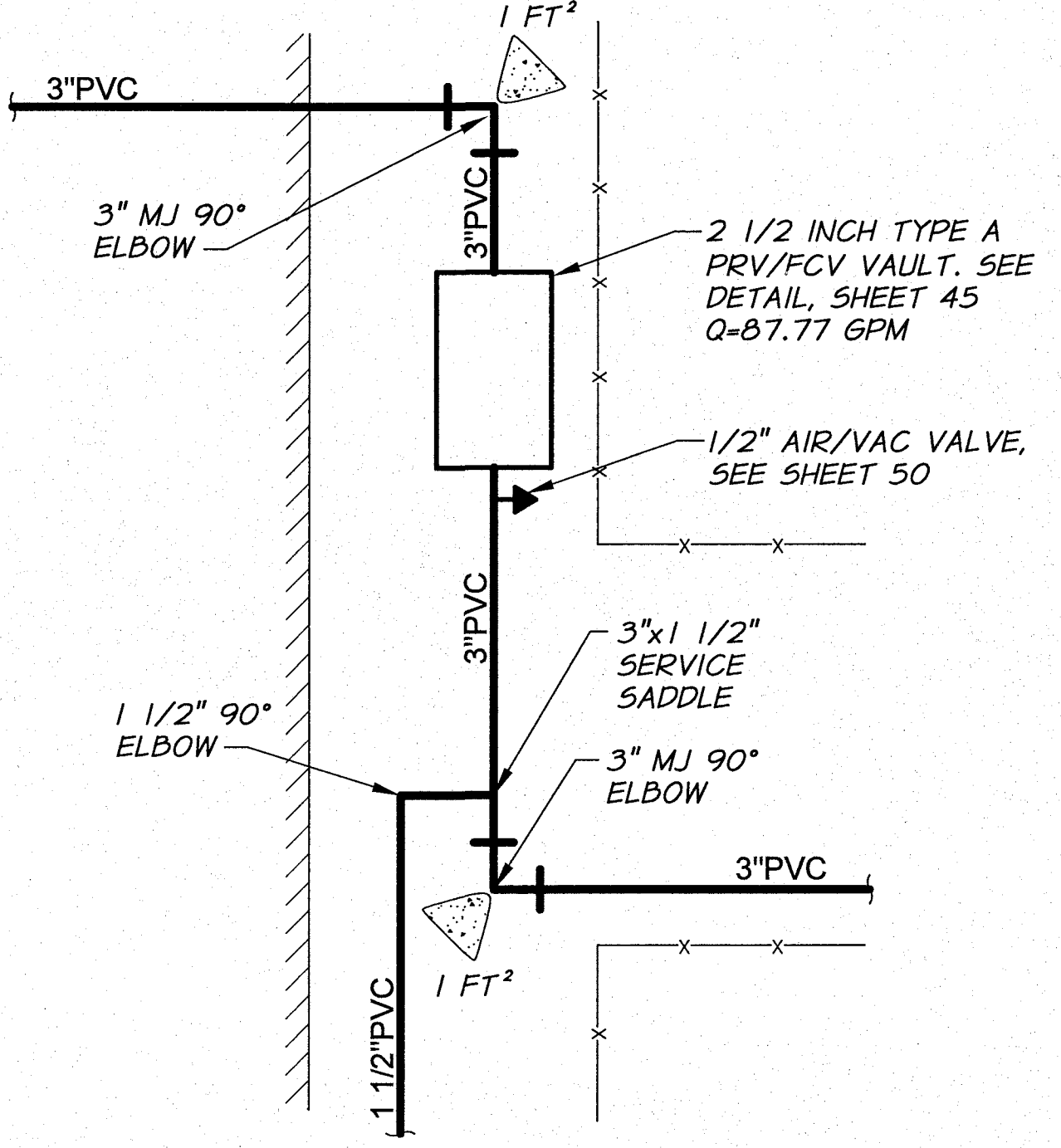
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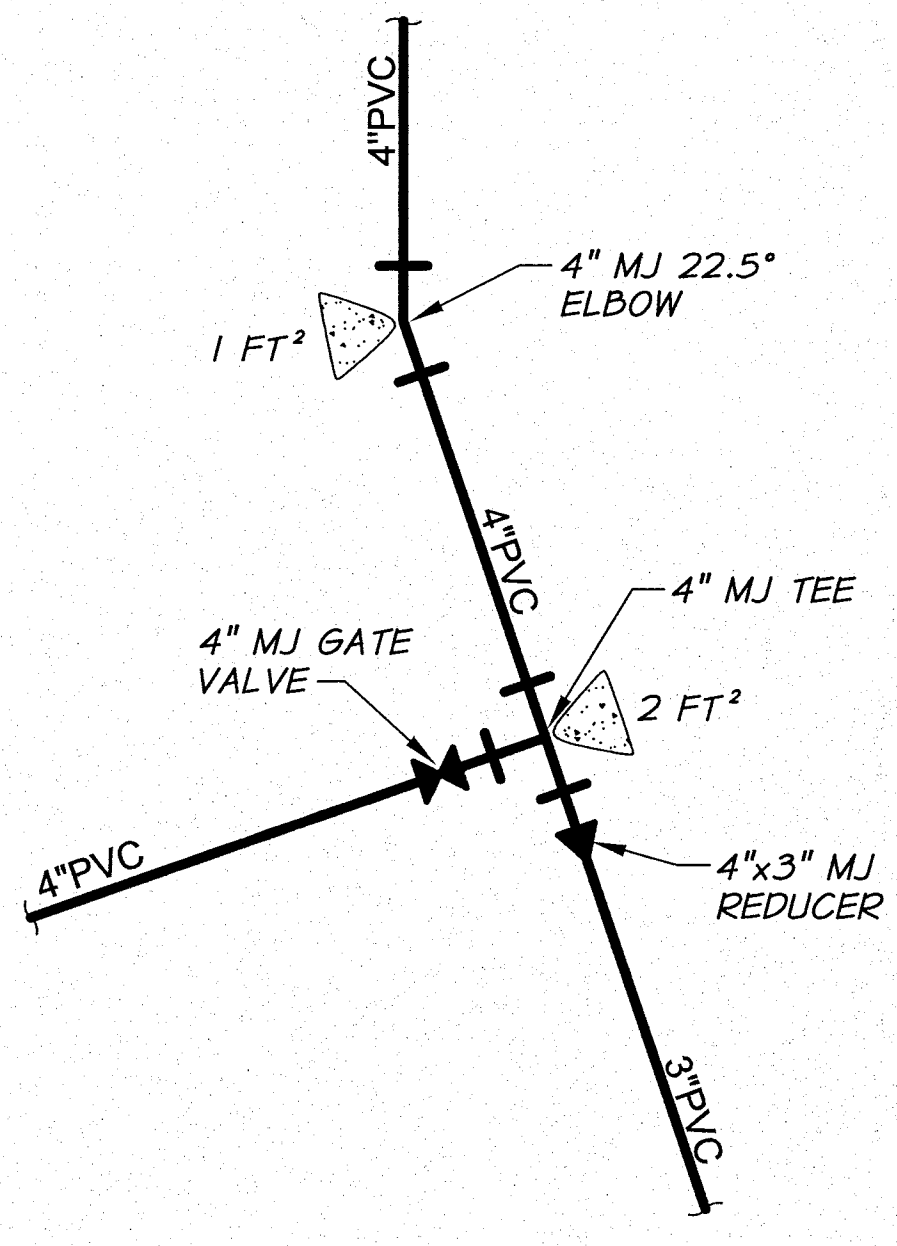
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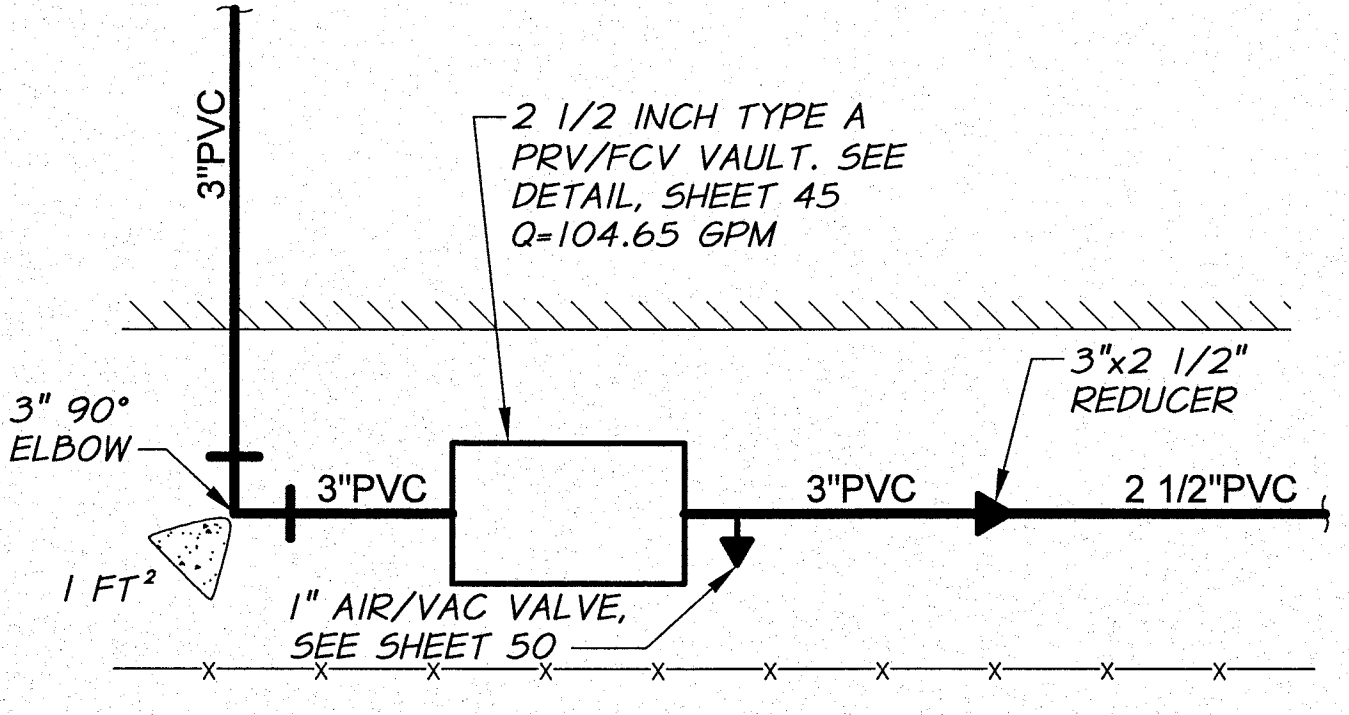
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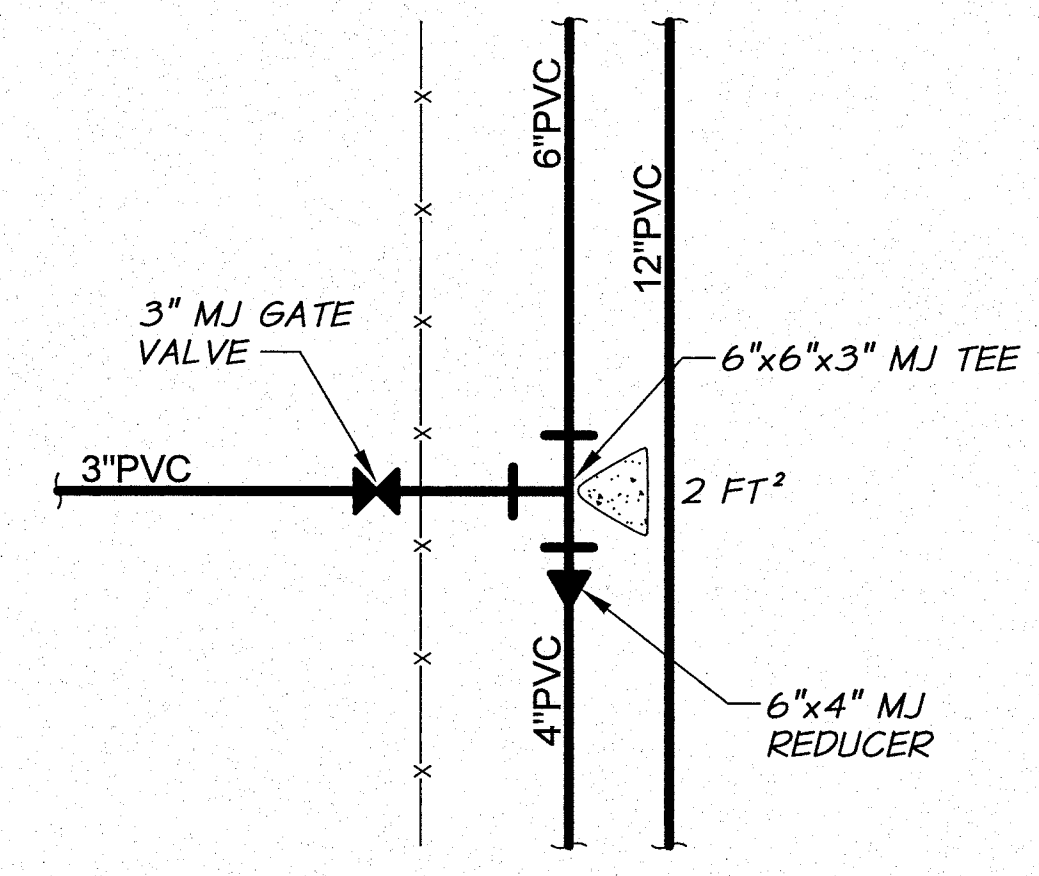
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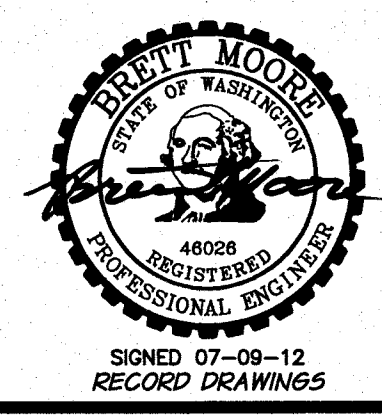
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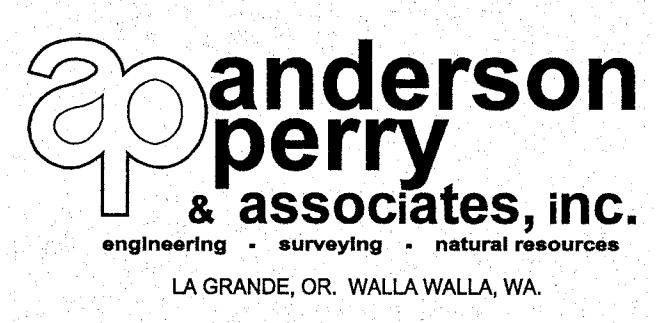


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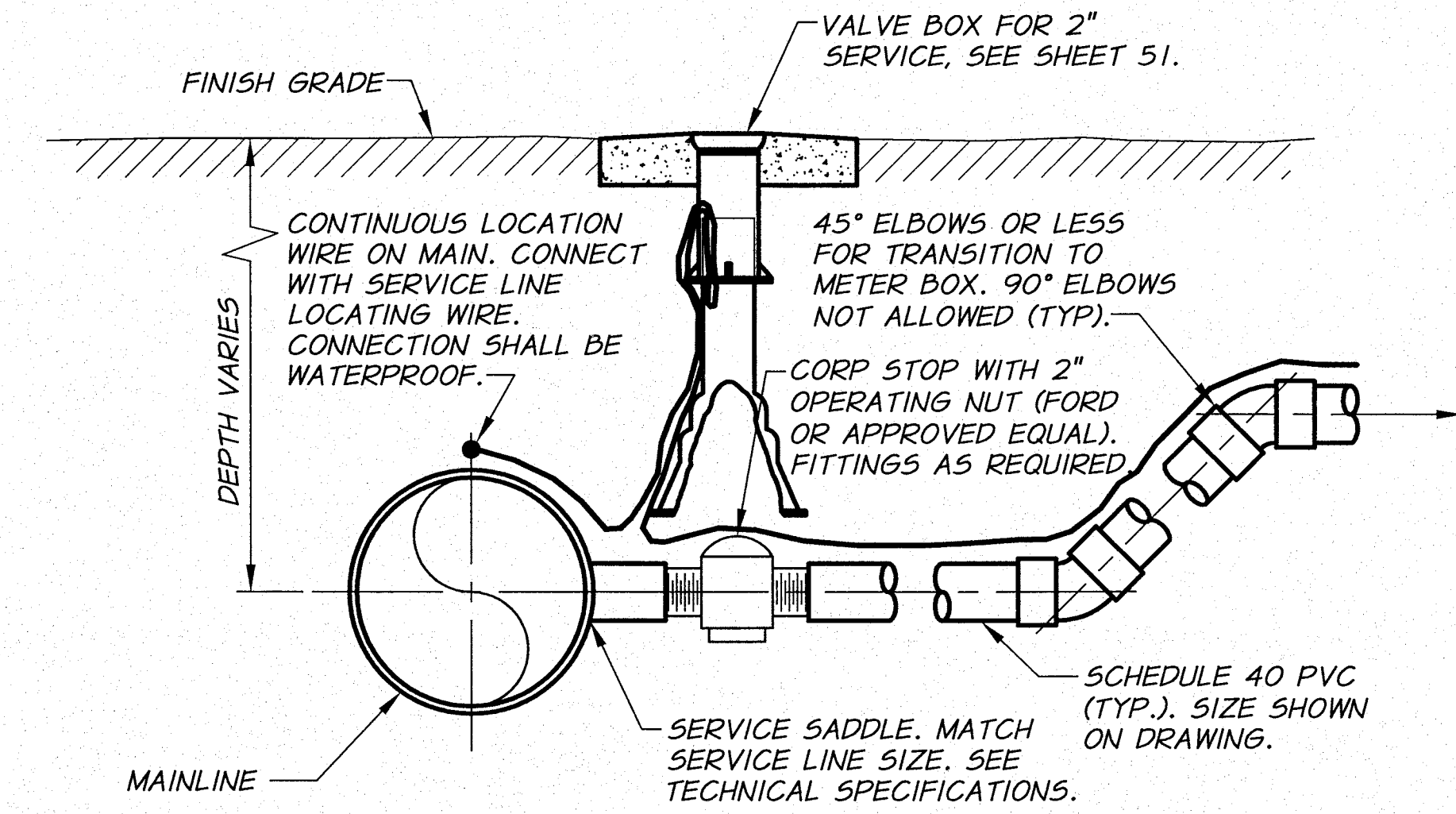


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DESIGNED BY	R. HARRIS	XREFS:	TB-BID.dwg	JOB NUMBER	1199-336	DATE	2011
DRAWN BY	D. CHRISTMAN	ACAD FILE:	PipeConnDets-Ph2C.dwg	COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.			
REVIEWED BY	B. MOORE						

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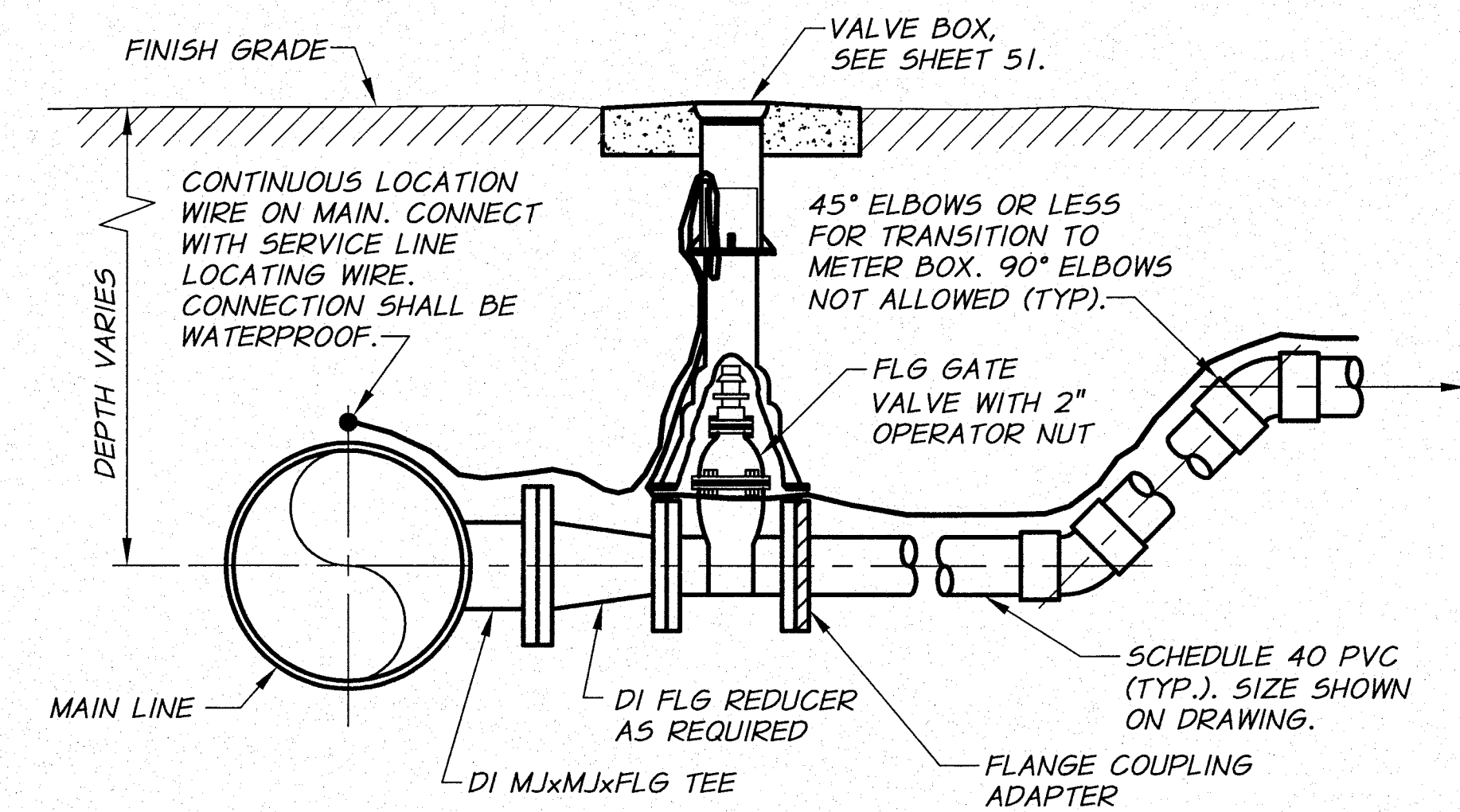


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C
PIPE CONNECTION DETAILS II



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

MAIN LINE SERVICE CONNECTION
FOR 1.5" AND 2" SERVICE
N.T.S.



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

MAIN LINE SERVICE CONNECTION
FOR 2.5" AND 3" SERVICE
N.T.S.

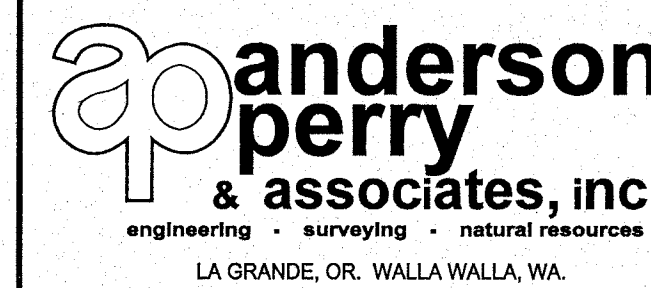


SIGNED 07-09-12
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DESIGNED BY	R. HARRIS	XREFS: TB-BID.dwg	JOB NUMBER	1199-336	DATE
DRAWN BY	D. CHRISTMAN		ACAD FILE:	ServiceDets-Ph2C.dwg	
REVIEWED BY	B. MOORE		COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.		

RECORD DRAWINGS

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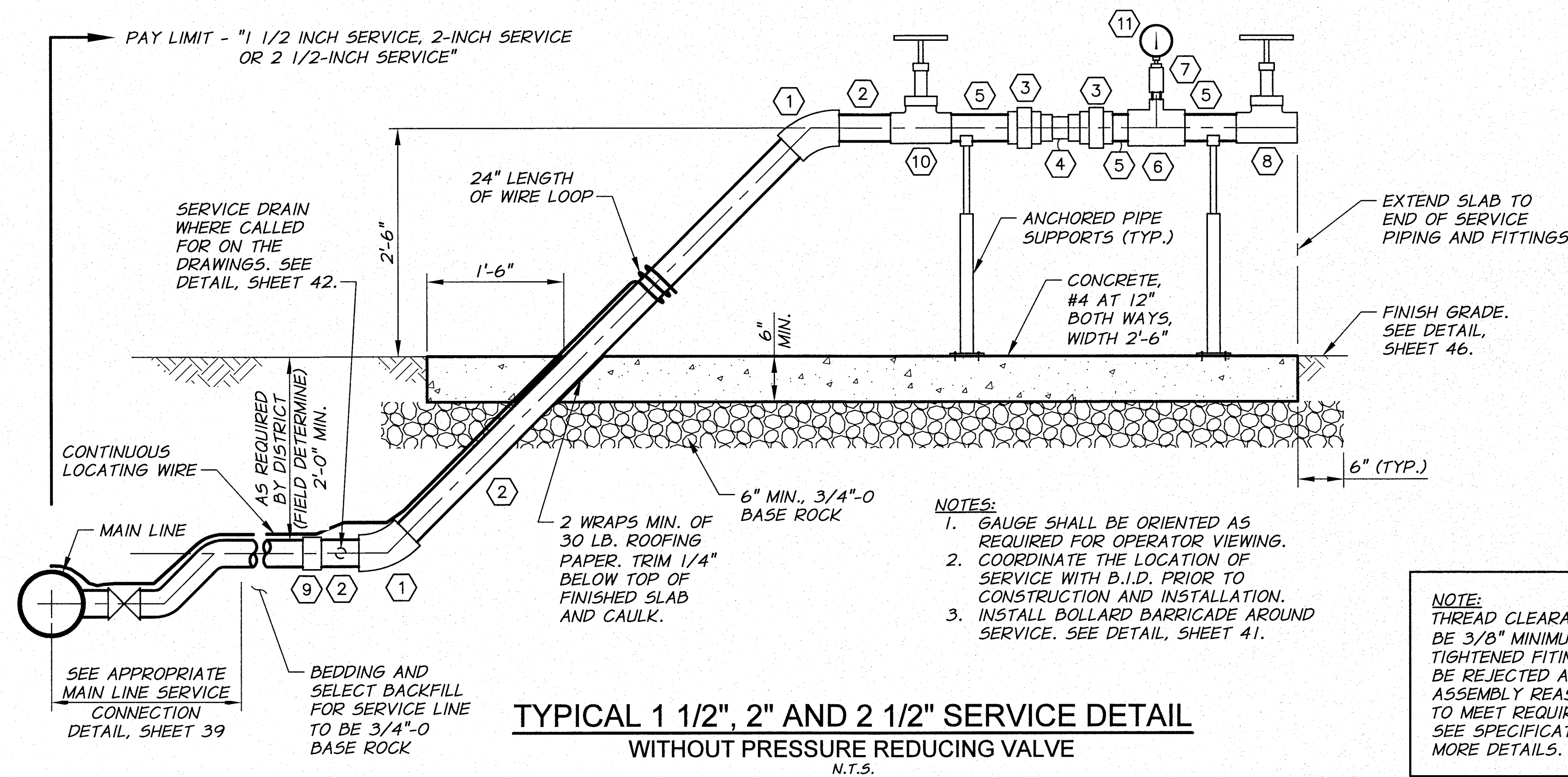
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C

SERVICE DETAILS I

SHEET

39

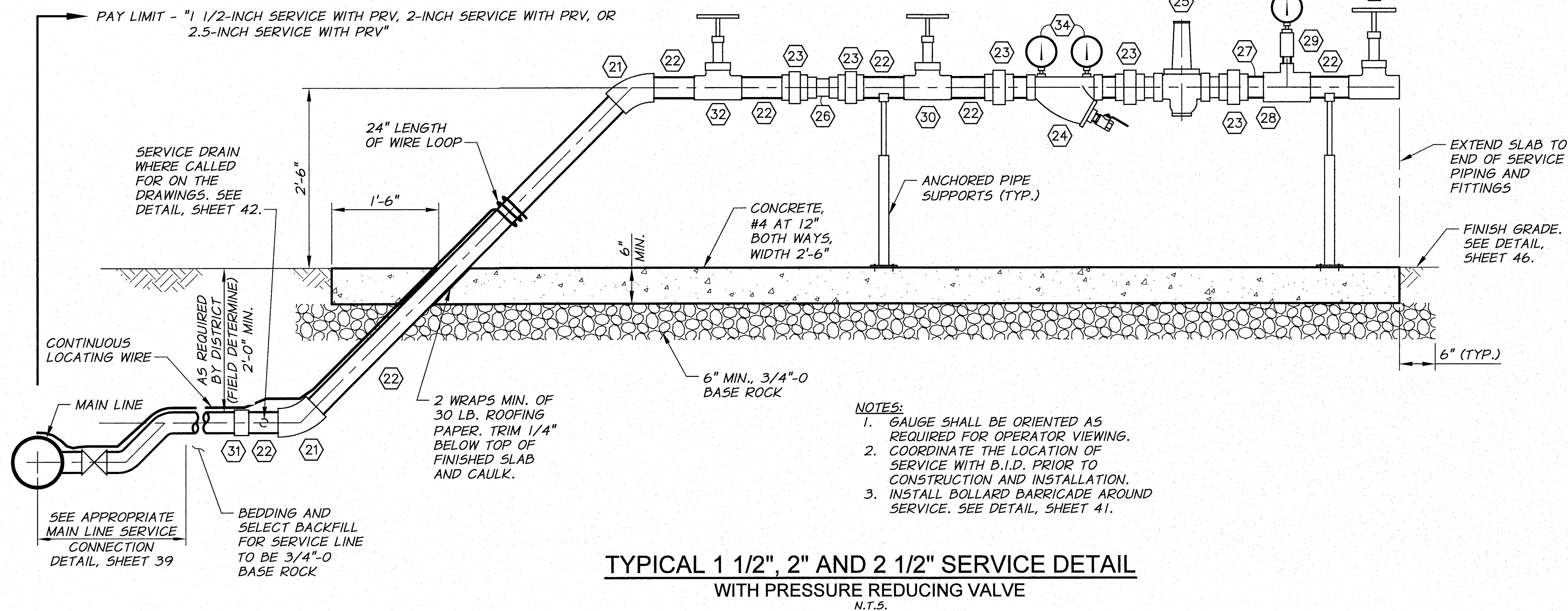
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TYPICAL 1 1/2", 2" AND 2 1/2" SERVICE DETAIL
WITHOUT PRESSURE REDUCING VALVE
N.T.S.

SERVICE FITTING SCHEDULE

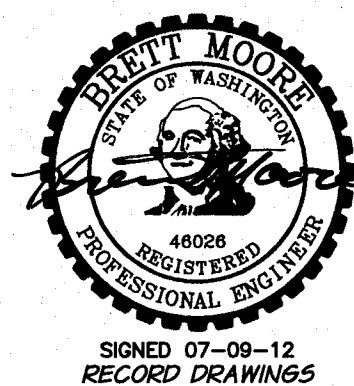
- ① G.I.P. 45° ELBOW
- ② SCH. 40 G.I.P. PIPE
- ③ G.I.P. UNION
- ④ DOLE FLOW CONTROL VALVE. SIZE AS SHOWN ON PLANS. INSTALL WITH FLOW RATE LABEL FACING UPWARDS AND NO WRENCH MARKS ON VALVE.
- ⑤ THREADED SCH. 40 G.I.P. SPOOL, LENGTH AS REQUIRED.
- ⑥ SIZE x 3/4" G.I.P. TEE
- ⑦ 3/4" THREADED BRASS BALL VALVE WITH 3/4"x1/4" BUSHING AND BRASS QUICK COUPLING PLUG (UNVALVED)
- ⑧ BRASS THREADED GATE VALVE
- ⑨ SCH 80 PVC TRANSITION COUPLING AND FITTINGS AS REQ'D. FEMALE CONNECTION TO GIP.
- ⑩ 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
- ⑪ BRASS QUICK COUPLING SOCKET (UNVALVED). GAUGE BY OWNER



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

SERVICE FITTING SCHEDULE

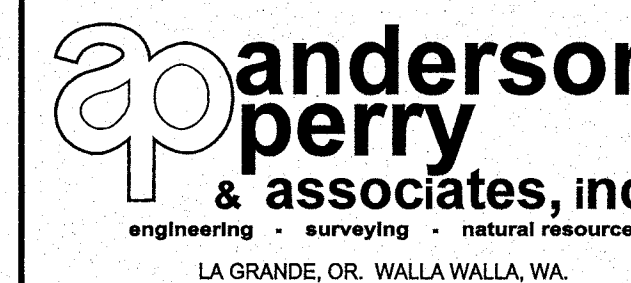
- ②1 G.I.P. 45° ELBOW
- ②2 SCH. 40 G.I.P. PIPE
- ②3 G.I.P. UNION OR G.I.P. REDUCING UNION AS REQUIRED
- ②4 SONNTAG ALUMINUM Y-FILTER WITH 40 MESH FILTER SCREEN. 1 1/4" FOR 1 1/2" SERVICE, 2" FOR 2" SERVICE, 3" FOR 2.5" SERVICE WITH FITTINGS AS REQUIRED
- ②5 CLA-VAL 990 PRESSURE REDUCING VALVE. SIZE AS 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 SCH. 40 G.I.P. SPOOL
- 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.
- ③4 4" 55 GLYCERIN FILLED PRESSURE GAUGE, FITTINGS AS REQUIRED



DESIGNED BY	R. HARRIS	XREFS:	TB-BID.dwg
DRAWN BY	D. CHRISTMAN	JOB NUMBER	1199-336
REVIEWED BY	B. MOORE	ACAD FILE	ServiceDets-Ph2C.dwg
DATE: 2011			
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RECORD DRAWINGS

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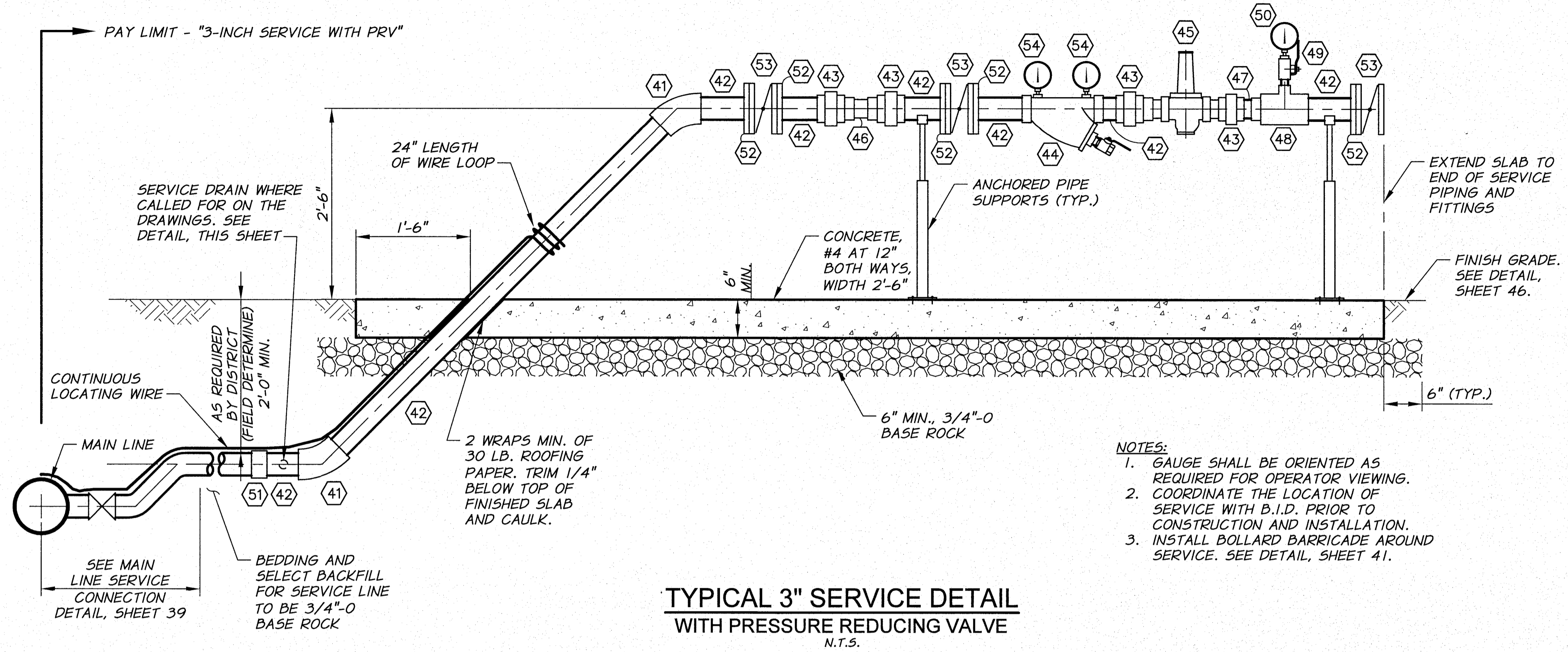
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C

SERVICE DETAILS II

SHEET

40

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.

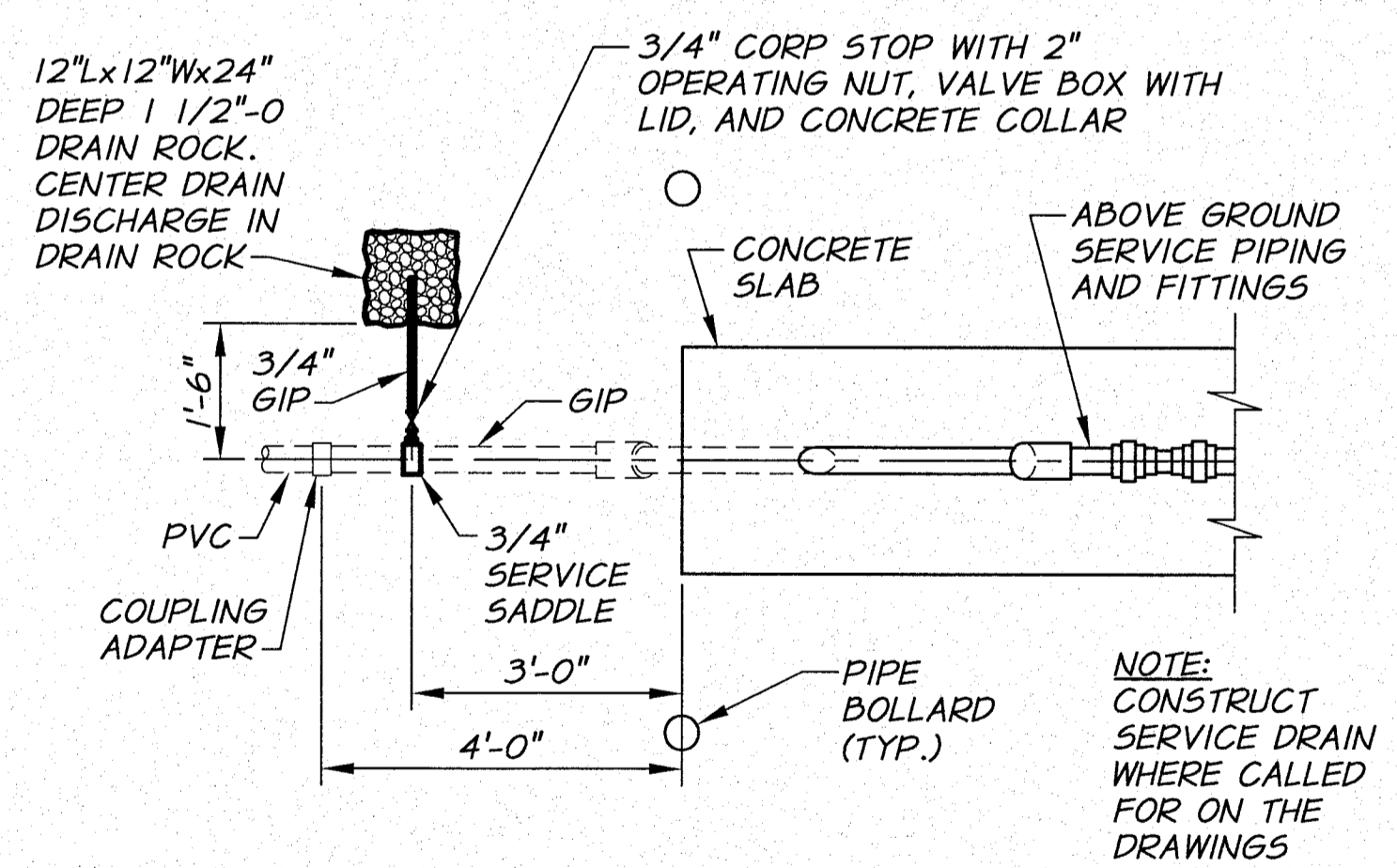


TYPICAL 3" SERVICE DETAIL
 WITH PRESSURE REDUCING VALVE
 N.T.S.

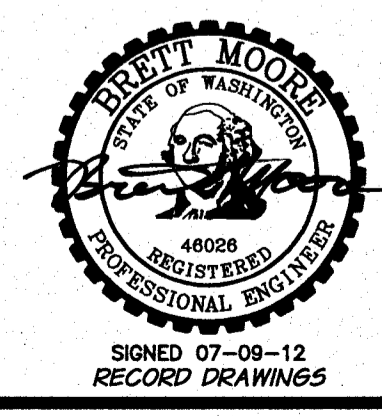
SERVICE FITTING SCHEDULE

41	G.I.P. 45° ELBOW
42	SCH. 40 G.I.P. PIPE
43	G.I.P. UNION OR G.I.P. REDUCING UNION AS REQUIRED
44	3" SONNITAG ALUMINUM Y-FILTER WITH 40 MESH FILTER SCREEN
45	CLA-VAL 990 PRESSURE REDUCING VALVE. SIZE AS SHOWN ON PLANS. SEE TECHNICAL SPECIFICATIONS FOR DETAILS.
46	DOLE FLOW CONTROL VALVE. SIZE AS SHOWN ON PLANS. INSTALL WITH FLOW RATE LABEL FACING UPWARDS AND NO WRENCH MARKS ON VALVE.
47	SCH. 40 G.I.P. SPOOL
48	3"x3/4" G.I.P. TEE
49	3/4" THREADED BRASS BALL VALVE WITH 3/4"x1/4" BUSHING AND BRASS QUICK COUPLING PLUG (UNVALVED)
50	BRASS QUICK COUPLING SOCKET (UNVALVED) GAUGE BY OWNER
51	SCH 80 PVC TRANSITION COUPLING AND FITTINGS AS REQ'D. FEMALE CONNECTION TO GIP.
52	FLANGE ADAPTER
53	3" FLG BUTTERFLY VALVE WITH WHEEL OPERATOR AND POSITION INDICATOR
54	4" 55 GLYCERIN FILLED PRESSURE GAUGE. FITTINGS AS REQUIRED.

- NOTES:**
1. GAUGE SHALL BE ORIENTED AS REQUIRED FOR OPERATOR VIEWING.
 2. COORDINATE THE LOCATION OF SERVICE WITH B.I.D. PRIOR TO CONSTRUCTION AND INSTALLATION.
 3. INSTALL BOLLARD BARRICADE AROUND SERVICE. SEE DETAIL, SHEET 41.

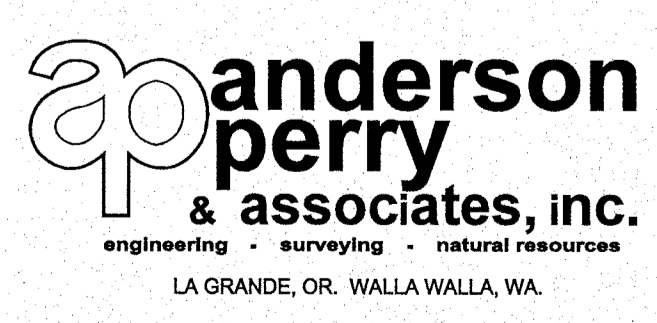


SERVICE DRAIN DETAIL
 PLAN
 N.T.S.



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DRAWN BY	D. CHRISTMAN	ACAD FILE:	ServiceDets-Ph2C.dwg
REVIEWED BY	B. MOORE	COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.	

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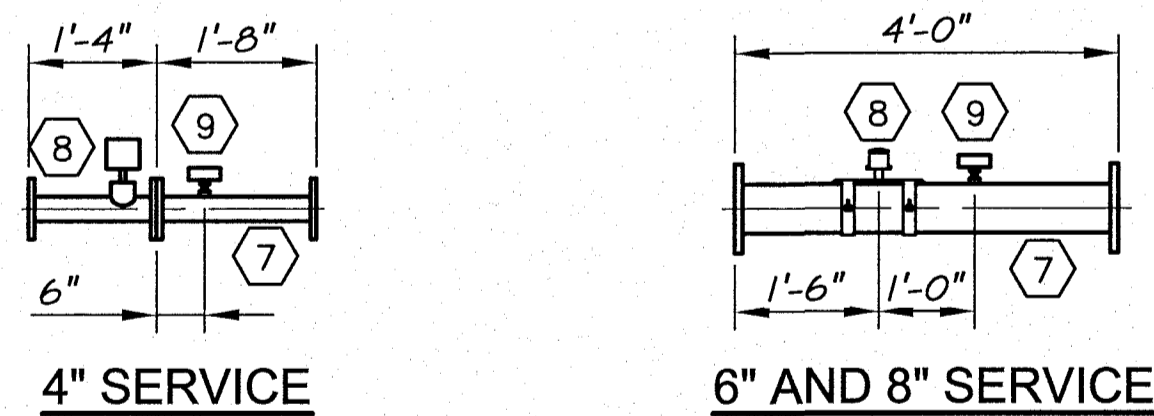


BENTON IRRIGATION DISTRICT
 IRRIGATION SYSTEM IMPROVEMENTS
 PHASE 2C
 SERVICE DETAILS IV

FITTING SCHEDULE

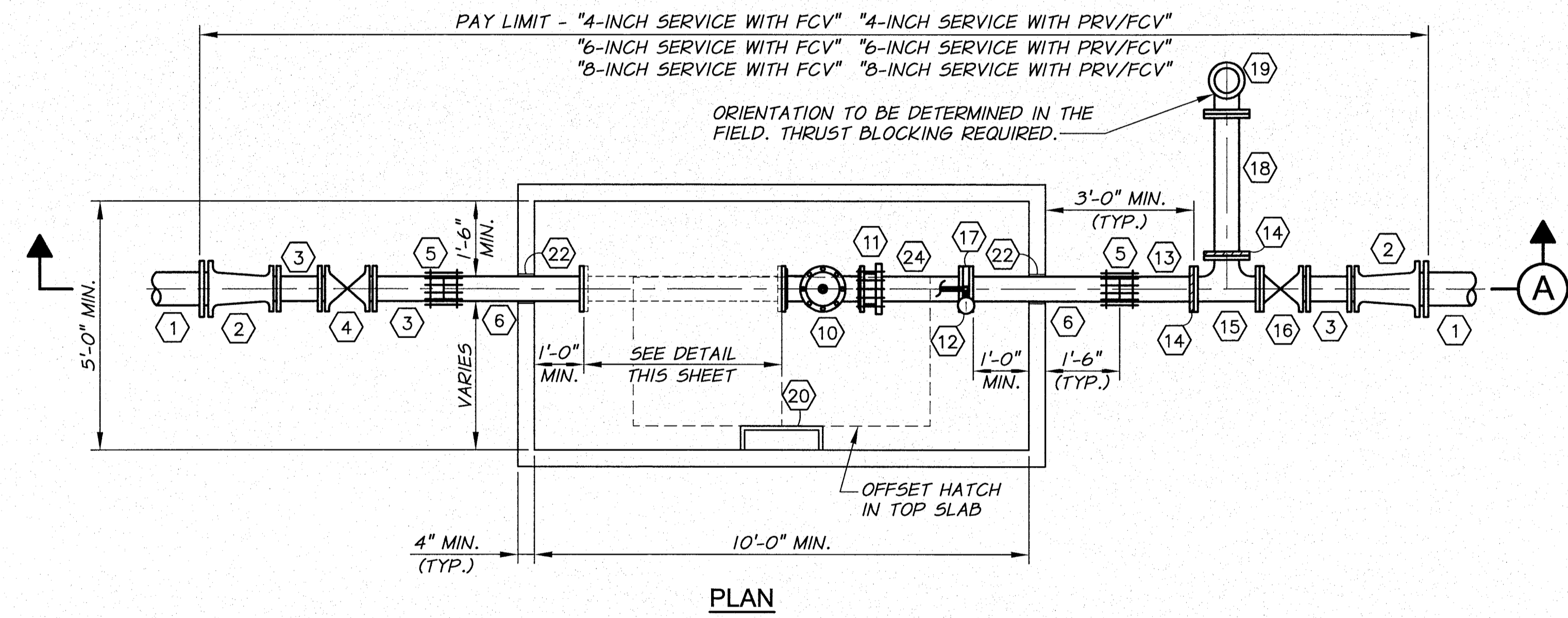
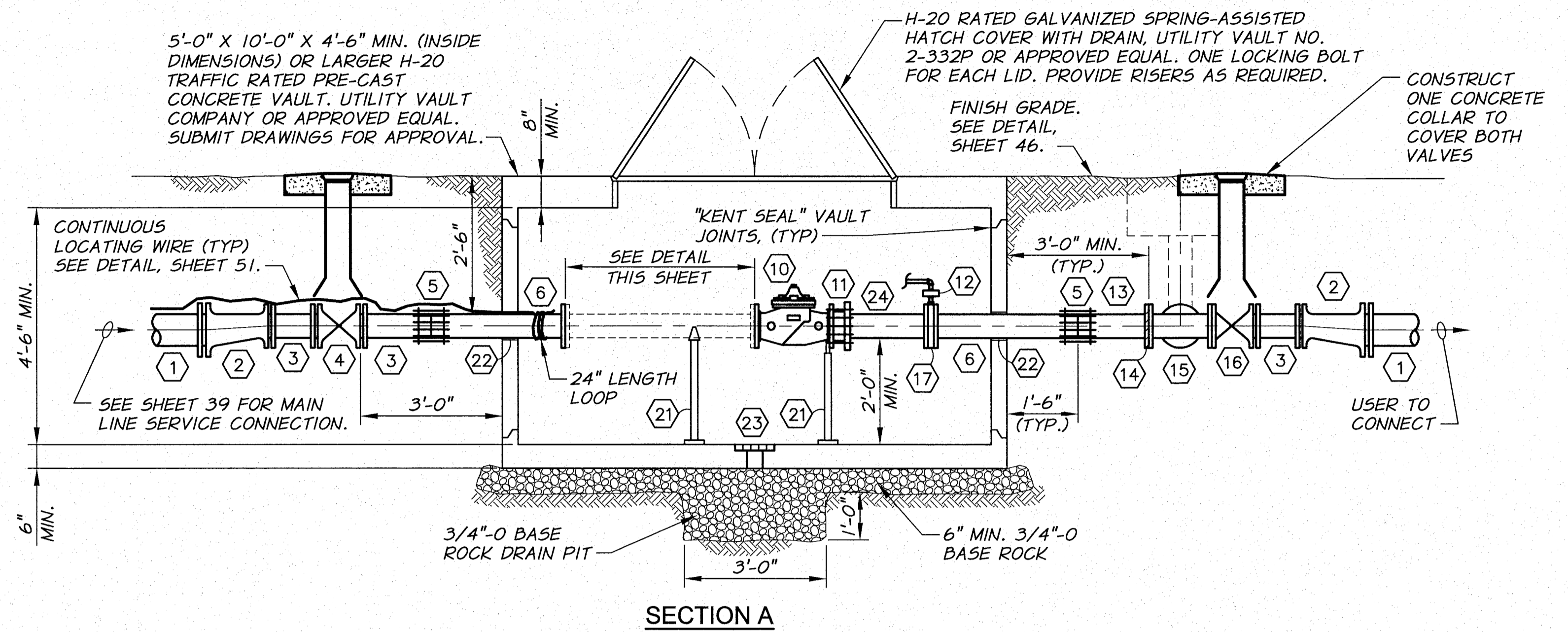
- 1 SERVICE LINE PVC PIPING
- 2 MJ ECCENTRIC REDUCER
- 3 CLASS 200 PVC PIPING (SAME SIZE AS CONTROL VALVE)
- 4 MJ GATE VALVE WITH VALVE BOX. SEE DETAIL, SHEET 6.
- 5 COUPLING
- 6 FLG X PE D.I. SPOOL, LENGTH AS REQUIRED (SAME SIZE AS CONTROL VALVE)
- 7 FOR 4" SERVICE: 3" FLG DI SPOOL X 1'-8" LG. FOR 6" SERVICE: 4" FLG GIP SPOOL X 4'-0" LG. FOR 8" SERVICE: 6" FLG DI SPOOL X 4'-0" LG.
- 8 FOR 4" SERVICE: 3" MICROMETER FLOWMETER MODEL MWS00 FOR 6" SERVICE: 4" MICROMETER FLOWMETER MODEL LP22 FOR 8" SERVICE: 6" MICROMETER FLOWMETER MODEL LP32
- 9 FOR PRV/FCV SERVICE ONLY: 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 40-01 FLOW CONTROL OR 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 BRASS QUICK COUPLING PLUG (UNVALVED) AND FITTINGS AS REQUIRED ON ORIFICE PILOT PIPING. PROVIDE ADDITIONAL ISOLATION VALVE.
- 13 PE DI SPOOL LENGTH AS REQUIRED (SAME SIZE AS CONTROL VALVE)
- 14 FLANGE COUPLING ADAPTER AND FITTINGS AS REQUIRED
- 15 FLG SIZExSIZExSIZE TEE, BRANCH NOT TO EXCEED 6"
- 16 FLGxMJ GATE VALVE WITH VALVE BOX. SEE DETAIL, SHEET 51.
- 17 ORIFICE PLATE
- 18 FLGxPE 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 49.
- 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 2 FT. LONG (SAME SIZE AS CONTROL VALVE)

SERVICE SIZE	CONTROL VALVE SIZE	BLOW-OFF INLET	BLOW-OFF OUTLET	GATE VALVE SIZE
4-INCH	3"	4"	4"	3"
6-INCH	4"	4"	4"	4"
8-INCH	6"	6"	4"	6"



FLOWMETER PIPING DETAIL

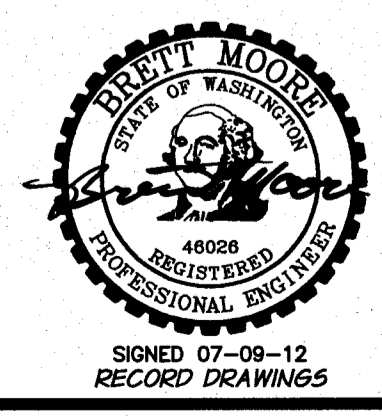
N.T.S.



- 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 " _ -INCH SERVICE FCV" OR THE " _ -INCH SERVICE PRV/FCV" PAY ITEM.

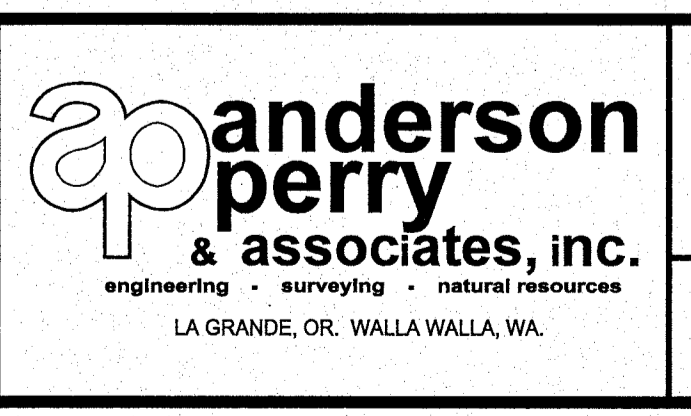
4", 6", AND 8" SERVICE WITH PRV/FCV OR FCV DETAIL

N.T.S.



REVISION	BY	DATE	HORIZ. SCALE 1/2" = 1'-0"	VERT. SCALE
DESIGNED BY R. HARRIS			JOB NUMBER 1199-336	DATE 2011
DRAWN BY D. CHRISTMAN			ACAD FILE: VaultDets-PH2C.dwg	
REVIEWED BY B. MOORE			COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.	

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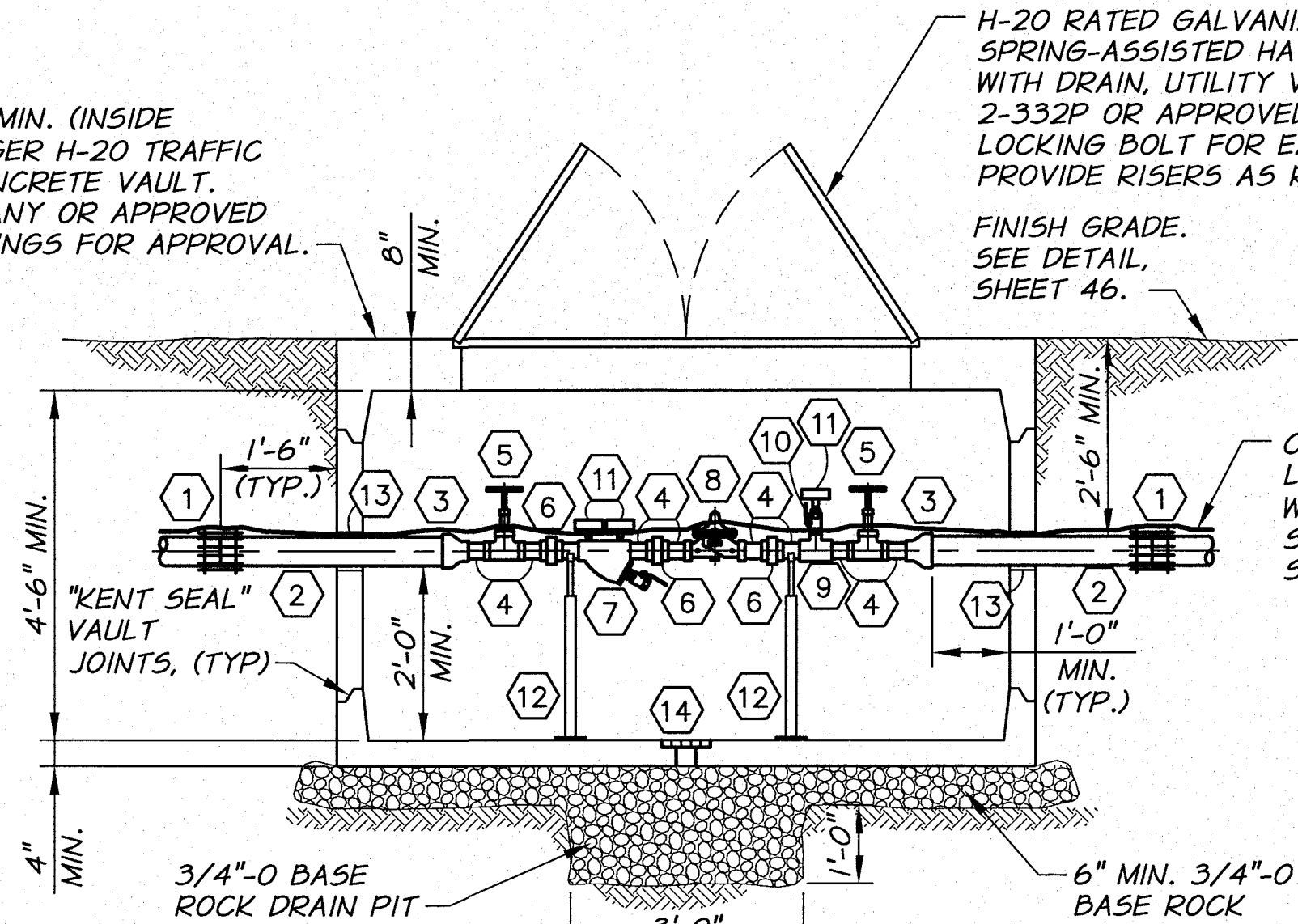
BENTON IRRIGATION DISTRICT
 IRRIGATION SYSTEM IMPROVEMENTS
 PHASE 2C
 SERVICE DETAILS V

4'-0" X 8'-6" X 4'-6" MIN. (INSIDE DIMENSIONS) OR LARGER H-20 TRAFFIC RATED PRE-CAST CONCRETE VAULT. UTILITY VAULT COMPANY OR APPROVED EQUAL. SUBMIT DRAWINGS FOR APPROVAL.

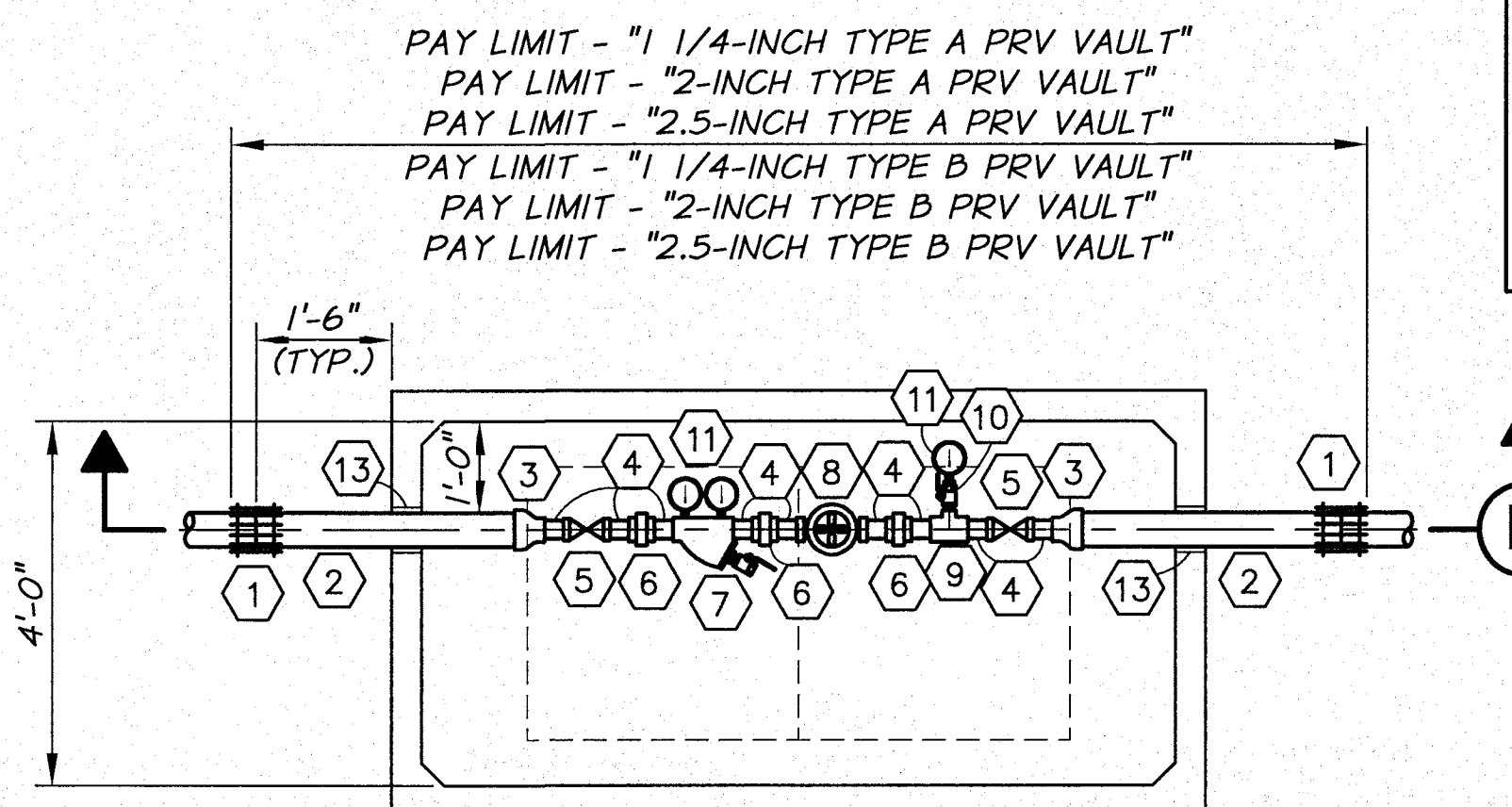
H-20 RATED GALVANIZED SPRING-ASSISTED HATCH COVER WITH DRAIN, UTILITY VAULT NO. 2-332P OR APPROVED EQUAL. ONE LOCKING BOLT FOR EACH LID. PROVIDE RISERS AS REQUIRED.

FINISH GRADE. SEE DETAIL, SHEET 46.

CONTINUOUS LOCATING WIRE (TYP) SEE DETAIL, SHEET 51.



SECTION B



PLAN

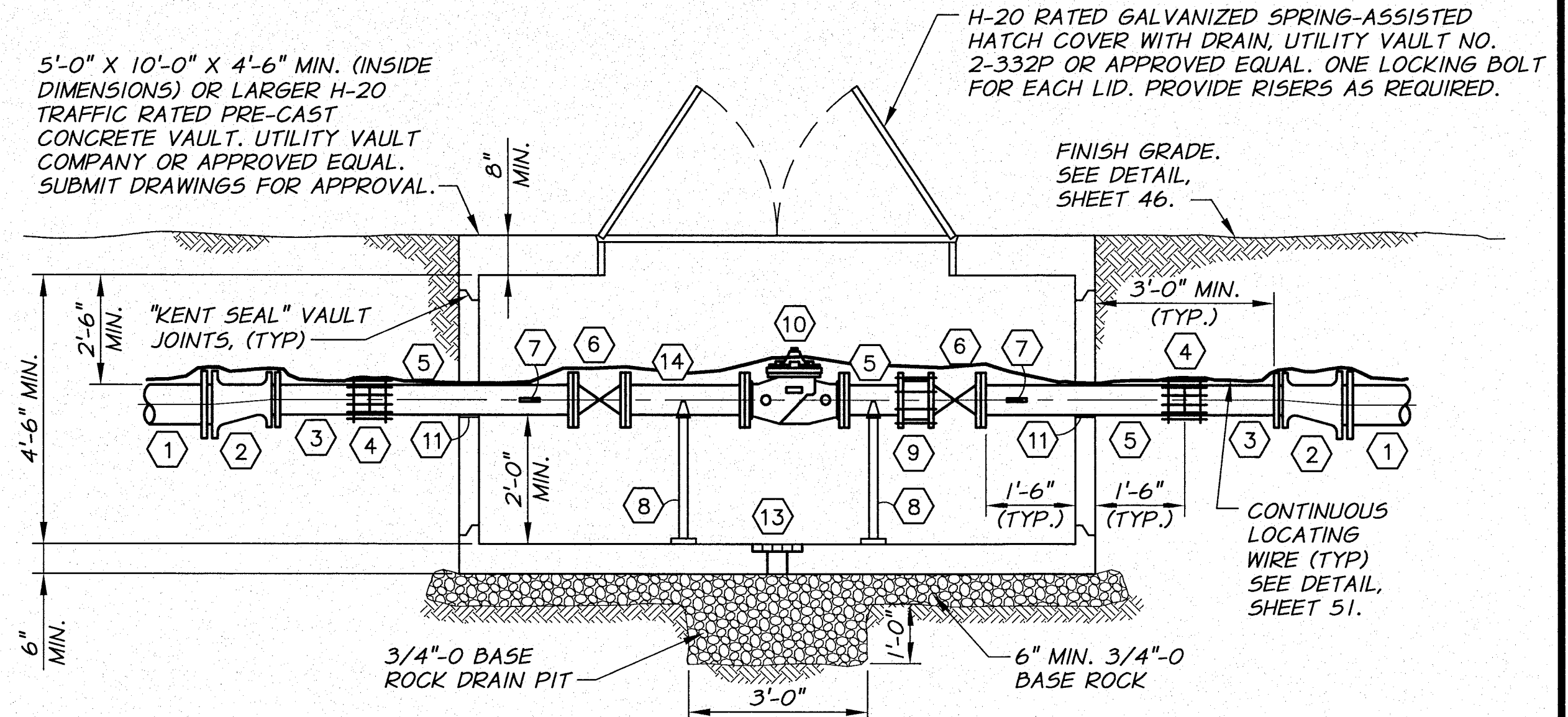
FITTING SCHEDULE

- 1 TRANSITION COUPLING
- 2 GIP, SIZE AS SHOWN ON PLANS
- 3 THREADED GIP REDUCER WHERE REQUIRED
- 4 1 1/4", 2", OR 2 1/2" THREADED GIP
- 5 BRASS THREADED GATE VALVE
- 6 GIP UNION
- 7 SONNTAG ALUMINUM Y FILTER WITH 3/32 SCREEN
- 8 1 1/4", 2", OR 2 1/2" THREADED PRESSURE REDUCING VALVE, CLA-VAL 90-01 FOR TYPE A. 1 1/4", 2", OR 2 1/2" THREADED PRESSURE REDUCING VALVE, CLA-VAL 990 FOR TYPE B.
- 9 SIZE x 3/4" THREADED GIP TEE
- 10 3/4" THREADED BRASS BALL VALVE WITH 3/4"x1/4" NPT BUSHING AND QUICK COUPLING
- 11 4" S.S. GLYCERIN FILLED PRESSURE GAUGE WITH FITTINGS AS REQUIRED. ORIENT GAUGE SO THAT FACE IS CLEARLY VISIBLE FROM VAULT ACCESS OPENING.
- 12 PIPE SUPPORT. SEE DETAIL, SHEET 49.
- 13 SEAL PIPE PENETRATIONS WATERTIGHT WITH NON-SHRINK GROUT
- 14 BRASS GRATED DRAIN WITH KNOCKOUT HOLE FOR DRAIN PIPE. DO NOT PROVIDE DRAIN IN HIGH GROUND WATER AREA.

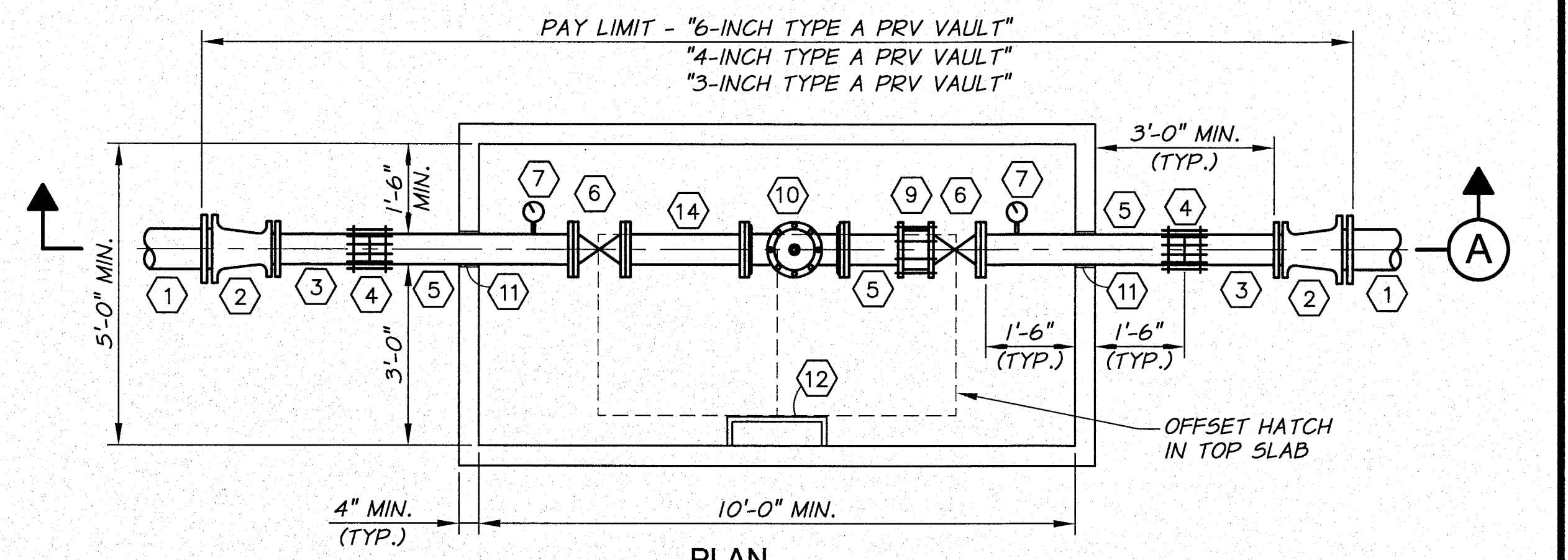
- NOTES:**
1. SET FRAME AND COVER TO GRADE AND PROVIDE GRADE RINGS AS REQUIRED.
 2. PIPE SUPPORTS TO BE SIZED APPROPRIATELY FOR PIPE AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 3. ALL WORK SHOWN IN THIS DETAIL, INCLUDING ANY REQUIRED SURFACE RESTORATION, SHALL BE INCLUDED IN THE "1/4-INCH TYPE A OR B PRESSURE REDUCING VALVE" PAY ITEM.

1 1/4", 2", AND 2 1/2" PRESSURE REDUCING VALVE VAULT DETAIL

TYPE A OR TYPE B
N.T.S.



SECTION A



PLAN

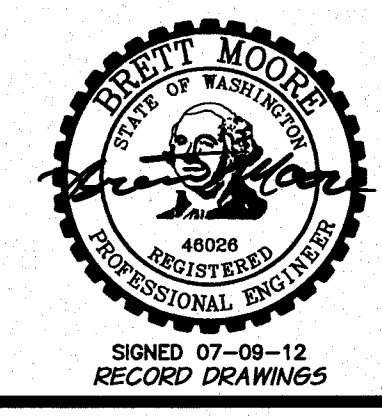
- NOTES:**
1. PIPING SIZE TO MATCH CONTROL VALVE SIZE UNLESS OTHERWISE NOTED.
 2. SET FRAME AND COVER TO GRADE AND PROVIDE GRADE RINGS AS REQUIRED.
 3. PIPE SUPPORTS TO BE SIZED APPROPRIATELY FOR PIPE AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 4. ALL WORK SHOWN IN THIS DETAIL, INCLUDING ANY REQUIRED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

FITTING SCHEDULE

- 1 PVC PIPING, SIZE PER MAIN LINE
- 2 MJ ECCENTRIC REDUCER
- 3 PE D.I. SPOOL, LENGTH AS REQUIRED
- 4 COUPLING
- 5 FLG X PE D.I. SPOOL, LENGTH AS REQUIRED
- 6 FLG GATE VALVE WITH HANDWHEEL OPERATOR
- 7 4" S.S. PRESSURE GAUGE, GLYCERIN FILLED, 0-150 P.S.I. WITH 2 P.S.I. GRADUATIONS, ISOLATION VALVE AND FITTINGS AS REQUIRED. TAP D.I. PIPE AS REQUIRED. ORIENT GAUGE SO THAT FACE IS CLEARLY VISIBLE FROM VAULT ACCESS OPENING.
- 8 PIPE SUPPORT. SEE TYPICAL PIPE SUPPORT DETAIL SHEET 49.
- 9 RESTRAINED FLANGE COUPLING ADAPTER
- 10 FLG PRESSURE REDUCING VALVE, CLA-VAL MODEL 90-01 FLANGED, OR APPROVED EQUAL.
- 11 SEAL PIPE PENETRATIONS WATERTIGHT WITH NON-SHRINK GROUT
- 12 OSHA APPROVED GALVANIZED STEEL LADDER WITH 4 FOOT REMOVABLE EXTENSION
- 13 BRASS GRATED DRAIN WITH KNOCKOUT HOLE FOR DRAIN PIPE. DO NOT PROVIDE DRAIN IN HIGH GROUND WATER AREAS.
- 14 FLG DI SPOOL X 2 FT. LONG

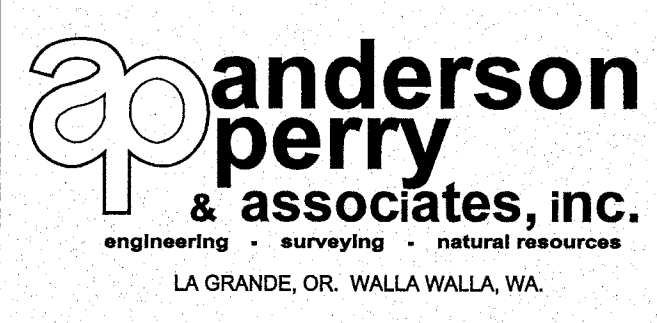
3", 4", AND 6" TYPE A PRESSURE REDUCING VALVE VAULT DETAIL

N.T.S.



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REVIEWED BY	B. MOORE						

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BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C
VALVE VAULT DETAILS I

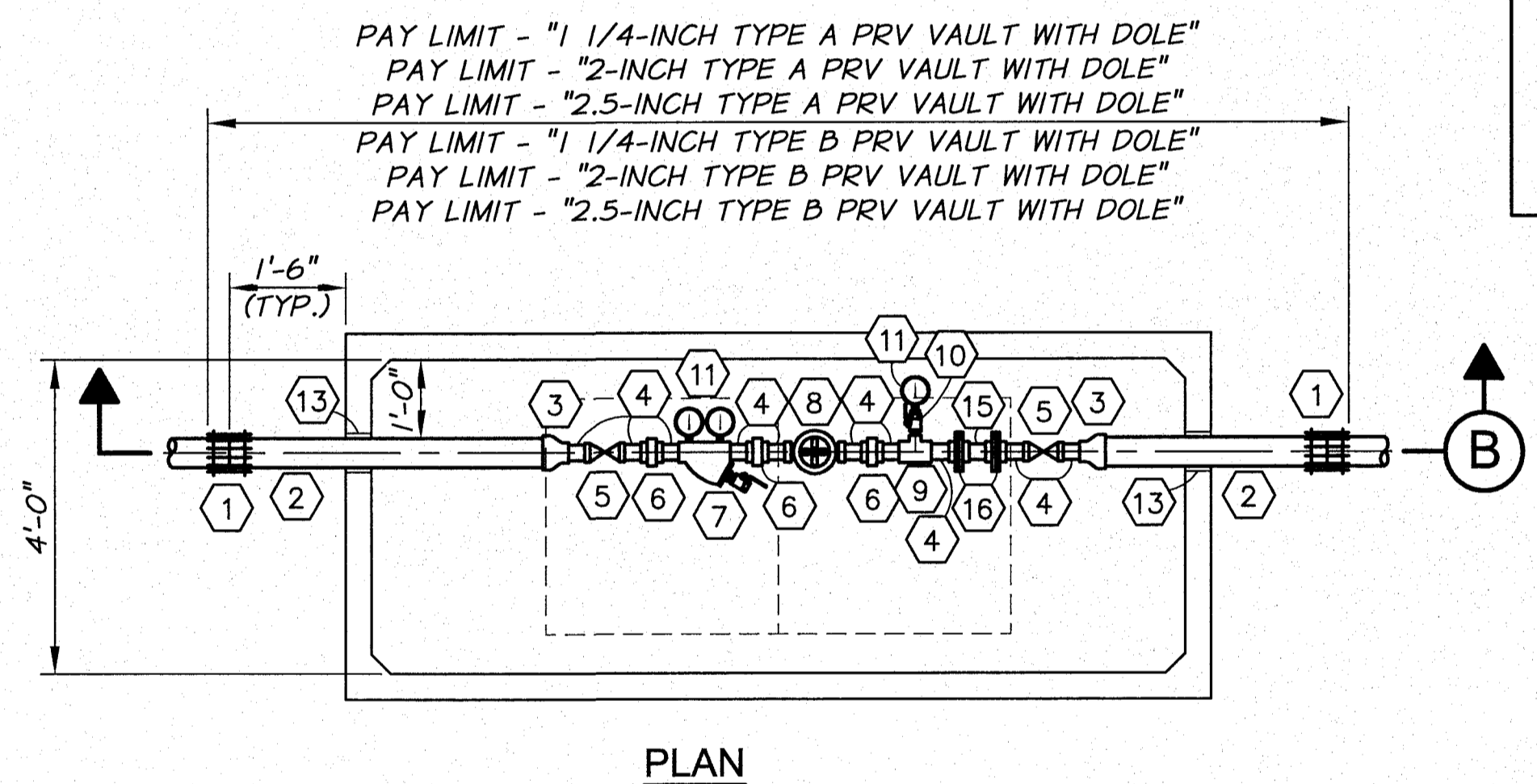
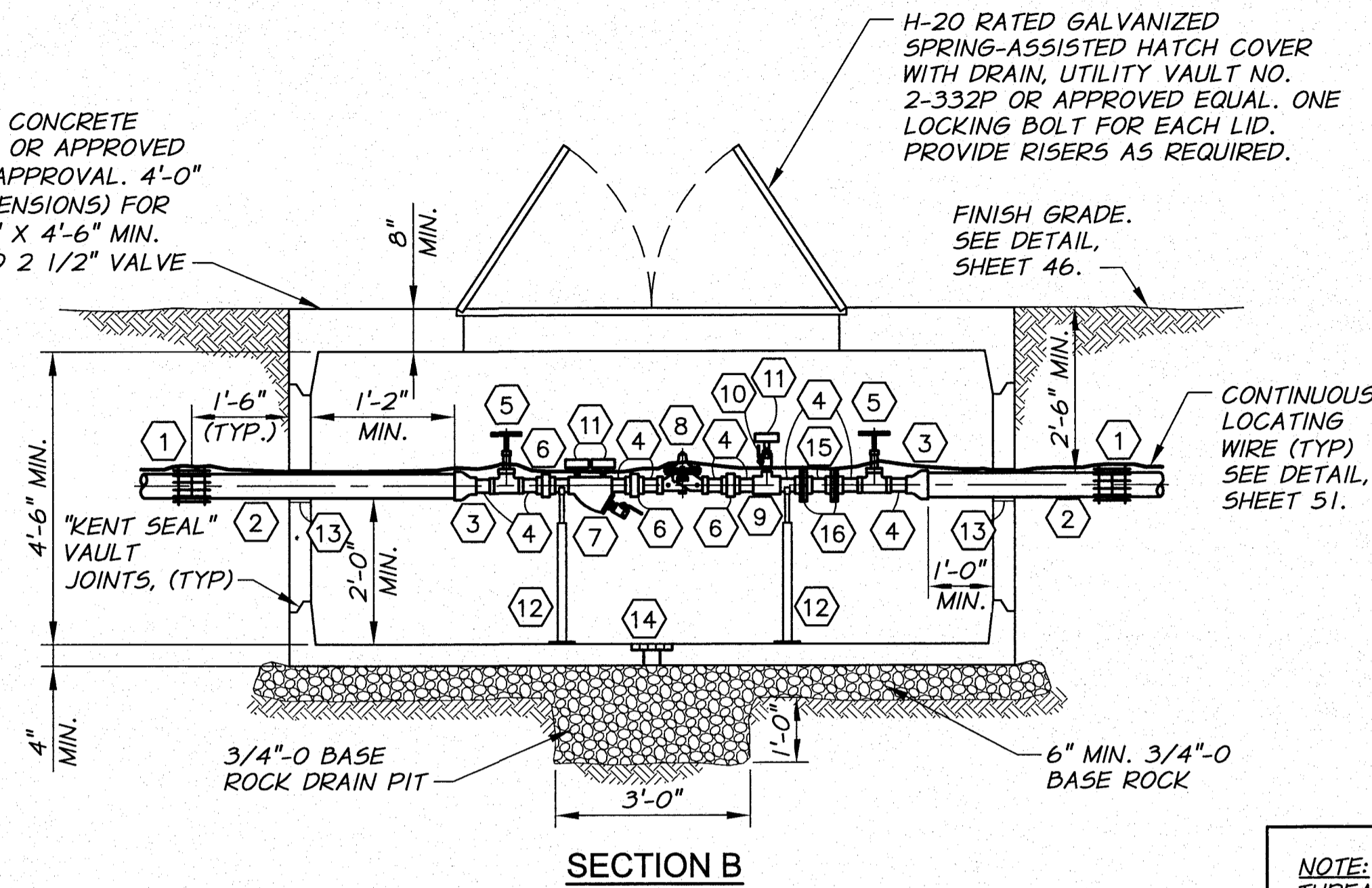
H-20 TRAFFIC RATED PRE-CAST CONCRETE VAULT. UTILITY VAULT COMPANY OR APPROVED EQUAL. SUBMIT DRAWINGS FOR APPROVAL. 4'-0" X 8'-6" X 4'-6" MIN. (INSIDE DIMENSIONS) FOR 1 1/4" VALVE AND 4'-0" X 10'-6" X 4'-6" MIN. (INSIDE DIMENSIONS) FOR 2" AND 2 1/2" VALVE

H-20 RATED GALVANIZED SPRING-ASSISTED HATCH COVER WITH DRAIN. UTILITY VAULT NO. 2-332P OR APPROVED EQUAL. ONE LOCKING BOLT FOR EACH LID. PROVIDE RISERS AS REQUIRED.

FINISH GRADE. SEE DETAIL, SHEET 46.

FITTING SCHEDULE

- 1 TRANSITION COUPLING
- 2 GIP, SIZE AS SHOWN ON PLANS
- 3 THREADED GIP REDUCER WHERE REQUIRED
- 4 1 1/4", 2", OR 2 1/2" THREADED GIP
- 5 BRASS THREADED GATE VALVE
- 6 GIP UNION
- 7 SONNTAG ALUMINUM Y FILTER WITH 3/32 SCREEN
- 8 1 1/4", 2", OR 2 1/2" THREADED PRESSURE REDUCING VALVE, CLA-VAL 90-01 FOR TYPE A, 1 1/4", 2", OR 2 1/2" THREADED PRESSURE REDUCING VALVE, CLA-VAL 990 FOR TYPE B.
- 9 SIZE x 3/4" THREADED GIP TEE
- 10 3/4" THREADED BRASS BALL VALVE WITH 3/4"x1/4" NPT BUSHING AND QUICK COUPLING
- 11 4" 55 GLYCERIN FILLED PRESSURE GAUGE WITH FITTINGS AS REQUIRED. ORIENT GAUGE SO THAT FACE IS CLEARLY VISIBLE FROM VAULT ACCESS OPENING.
- 12 PIPE SUPPORT. SEE DETAIL, SHEET 49.
- 13 SEAL PIPE PENETRATIONS WATERTIGHT WITH NON-SHRINK GROUT
- 14 BRASS GRATED DRAIN WITH KNOCKOUT HOLE FOR DRAIN PIPE. DO NOT PROVIDE DRAIN IN HIGH GROUND WATER AREA.
- 15 DOLE FLOW CONTROL VALVE. SIZE AS SHOWN ON PLANS
- 16 THREADED RAISED FACE FLANGE WITH GASKET MATCHING FACE OF FLANGE. 4 EA. STAINLESS STEEL BOLTS AND NUTS. BOLT LENGTH AS REQUIRED TO PASS THROUGH ALL FLANGES.



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 "1/2-INCH TYPE A OR B PRV VAULT WITH DOLE" PAY ITEM.

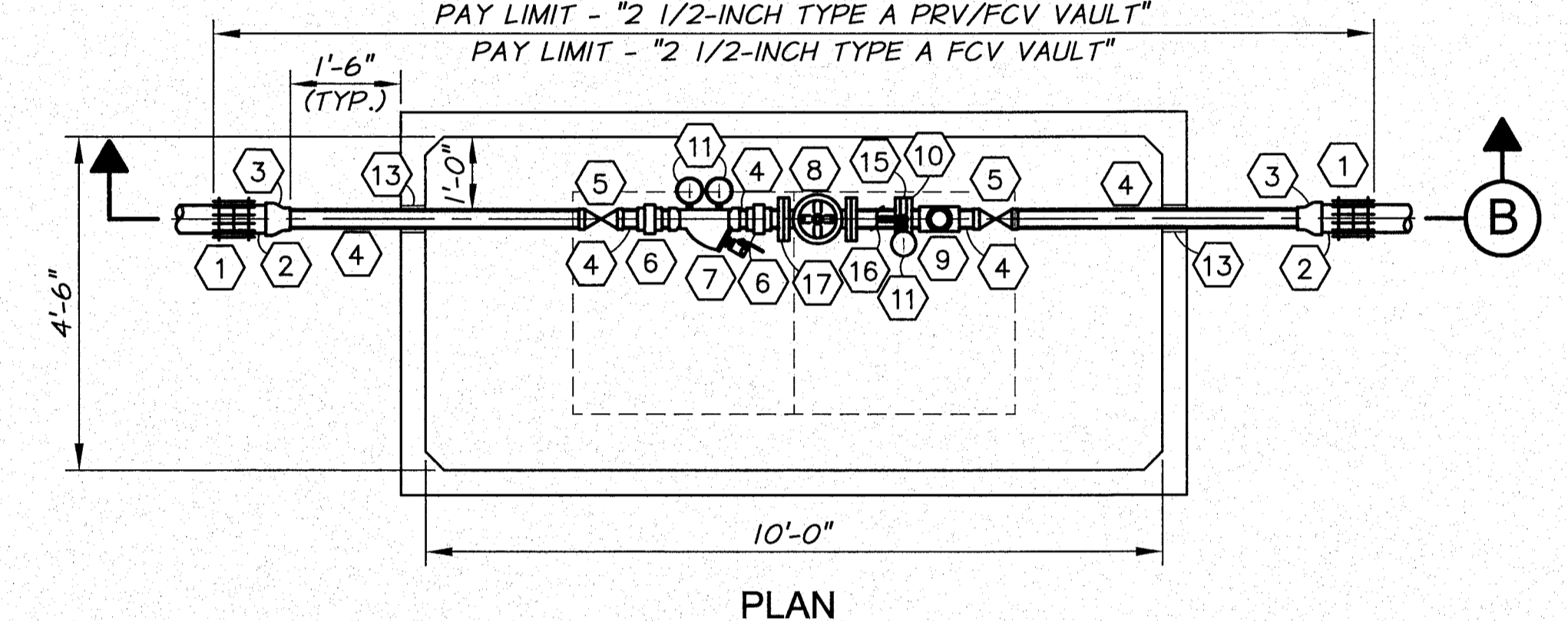
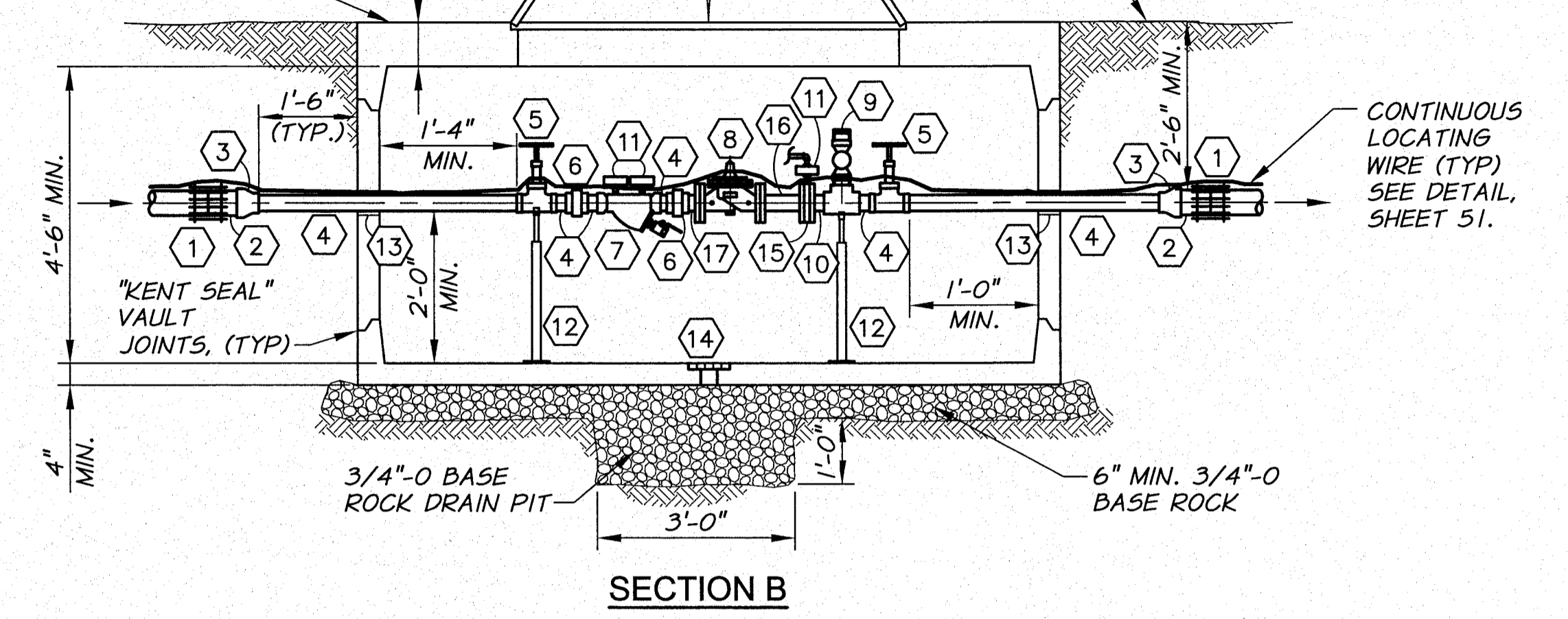
1 1/4", 2", AND 2 1/2" PRV VAULT WITH DOLE FCV DETAIL

TYPE A OR TYPE B
N.T.S.

H-20 TRAFFIC RATED PRE-CAST CONCRETE VAULT. UTILITY VAULT COMPANY OR APPROVED EQUAL. SUBMIT DRAWINGS FOR APPROVAL. 4'-6" X 10'-0" X 4'-6" MIN. (INSIDE DIMENSIONS)

H-20 RATED GALVANIZED SPRING-ASSISTED HATCH COVER WITH DRAIN. UTILITY VAULT NO. 2-332P OR APPROVED EQUAL. ONE LOCKING BOLT FOR EACH LID. PROVIDE RISERS AS REQUIRED.

FINISH GRADE. SEE DETAIL, SHEET 46.



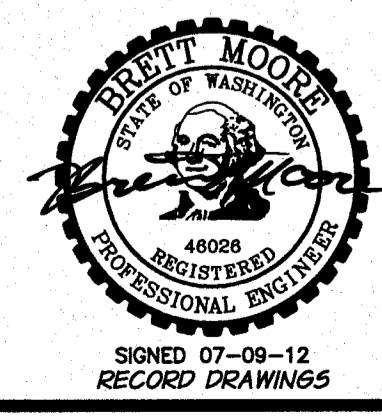
NOTES:
 1. SET FRAME AND COVER TO GRADE AND PROVIDE GRADE RINGS AS REQUIRED.
 2. PIPE SUPPORTS TO BE SIZED APPROPRIATELY FOR PIPE AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 3. ALL WORK SHOWN IN THIS DETAIL, INCLUDING ANY REQUIRED SURFACE RESTORATION, SHALL BE INCLUDED IN THE PAY ITEM.

FITTING SCHEDULE

- 1 TRANSITION COUPLING
- 2 GIP, SIZE AS SHOWN ON PLANS
- 3 THREADED GIP REDUCER WHERE REQUIRED
- 4 2 1/2" THREADED GIP
- 5 BRASS THREADED GATE VALVE
- 6 GIP UNION AND BUSHINGS AS REQUIRED
- 7 3" SONNTAG ALUMINUM Y FILTER WITH 3/32 SCREEN, FITTINGS AS REQUIRED
- 8 2 1/2" FLANGED PRESSURE REDUCING/FLOW CONTROL VALVE, CLA-VAL MODEL 496-01AB. FOR FLOW CONTROL ONLY, USE CLA-VAL MODEL 406-01AB.
- 9 THREADED 2 1/2" GIP TEE WITH BALL VALVE, GIP, AND CAM-LOCK ADAPTER AND CAP
- 10 RAISED FACE FLANGE X THREADED GIP SPOOL
- 11 4" 55 GLYCERIN FILLED PRESSURE GAUGE AND ISOLATION VALVE WITH FITTINGS AS REQUIRED ON ORIFICE PILOT PIPING. ORIENT GAUGE SO THAT FACE IS CLEARLY VISIBLE FROM VAULT ACCESS OPENING.
- 12 PIPE SUPPORT. SEE DETAIL, SHEET 49.
- 13 SEAL PIPE PENETRATIONS WATERTIGHT WITH NON-SHRINK GROUT
- 14 BRASS GRATED DRAIN WITH KNOCKOUT HOLE FOR DRAIN PIPE. DO NOT PROVIDE DRAIN IN HIGH GROUND WATER AREA.
- 15 ORIFICE PLATE
- 16 FLG X RAISED FACE FLG GIP SPOOL X 8" LG.
- 17 FLG X THREADED GIP SPOOL

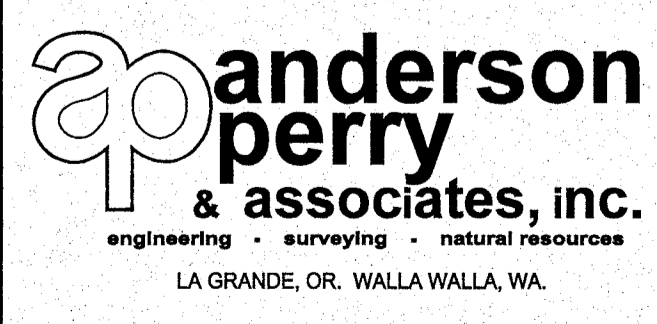
2 1/2" TYPE A PRV/FCV AND FCV VAULT DETAIL

N.T.S.

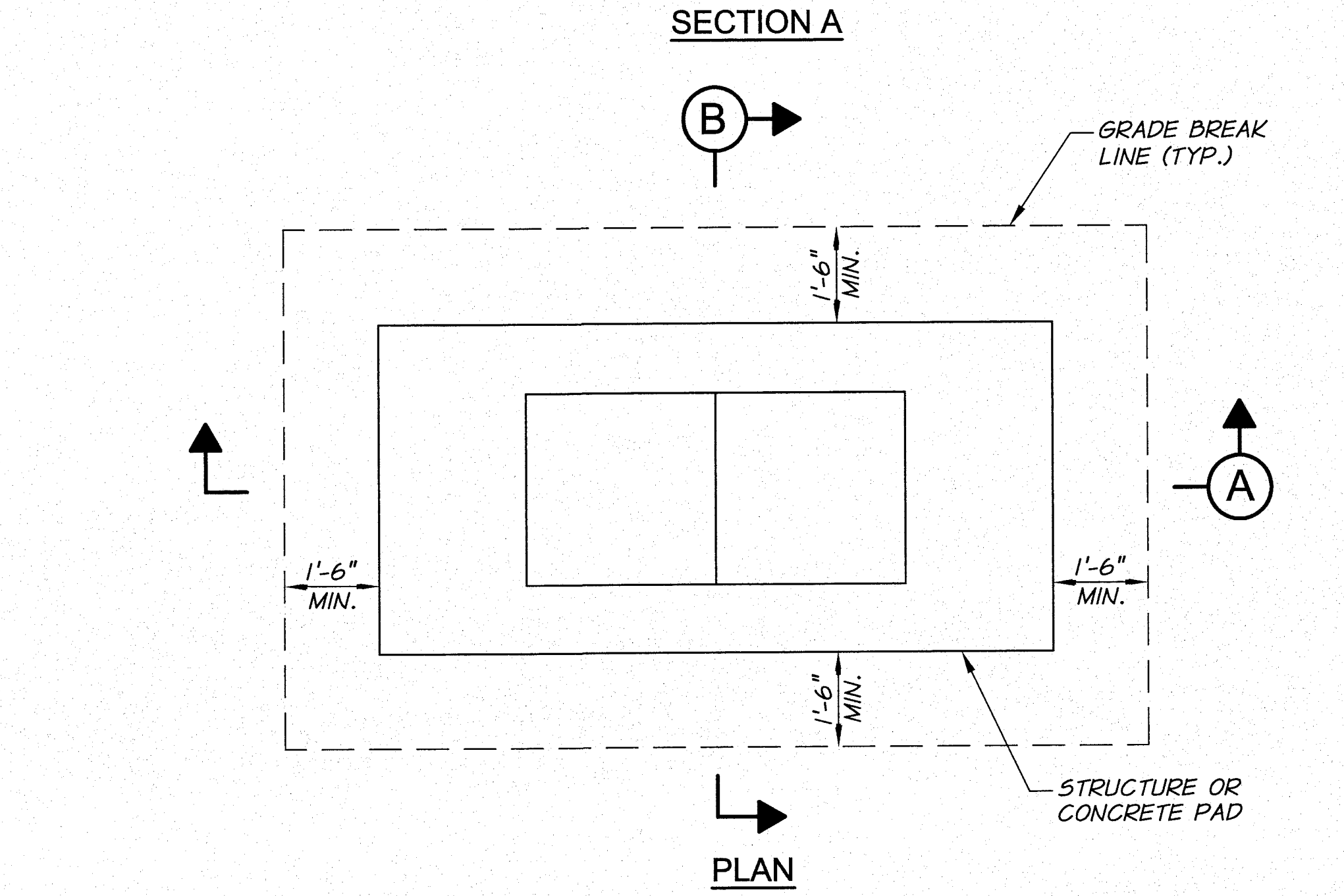
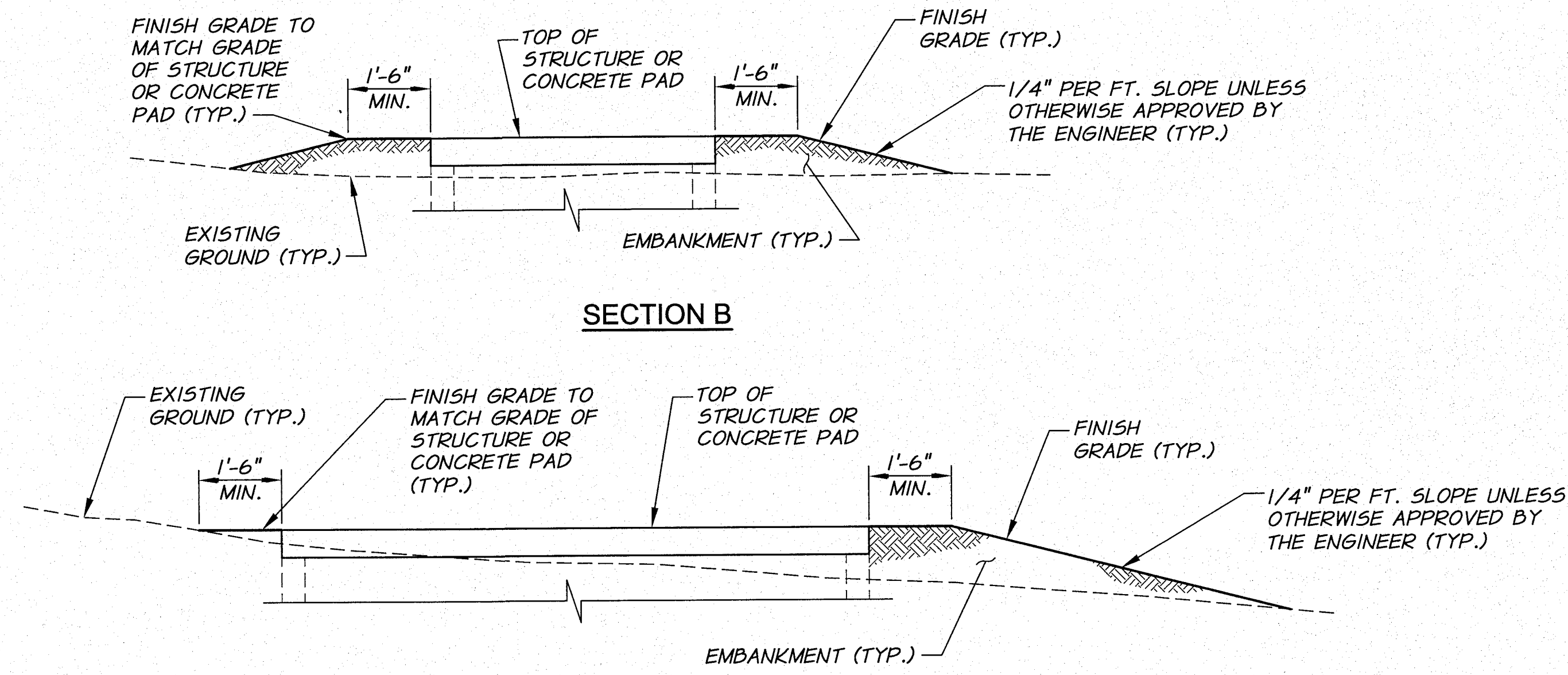


DESIGNED BY	R. HARRIS	XREFS:	TB-BID.dwg
DRAWN BY	D. CHRISTMAN	ACAD FILE:	VaultDets-PH2C.dwg
REVIEWED BY	B. MOORE	COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.	

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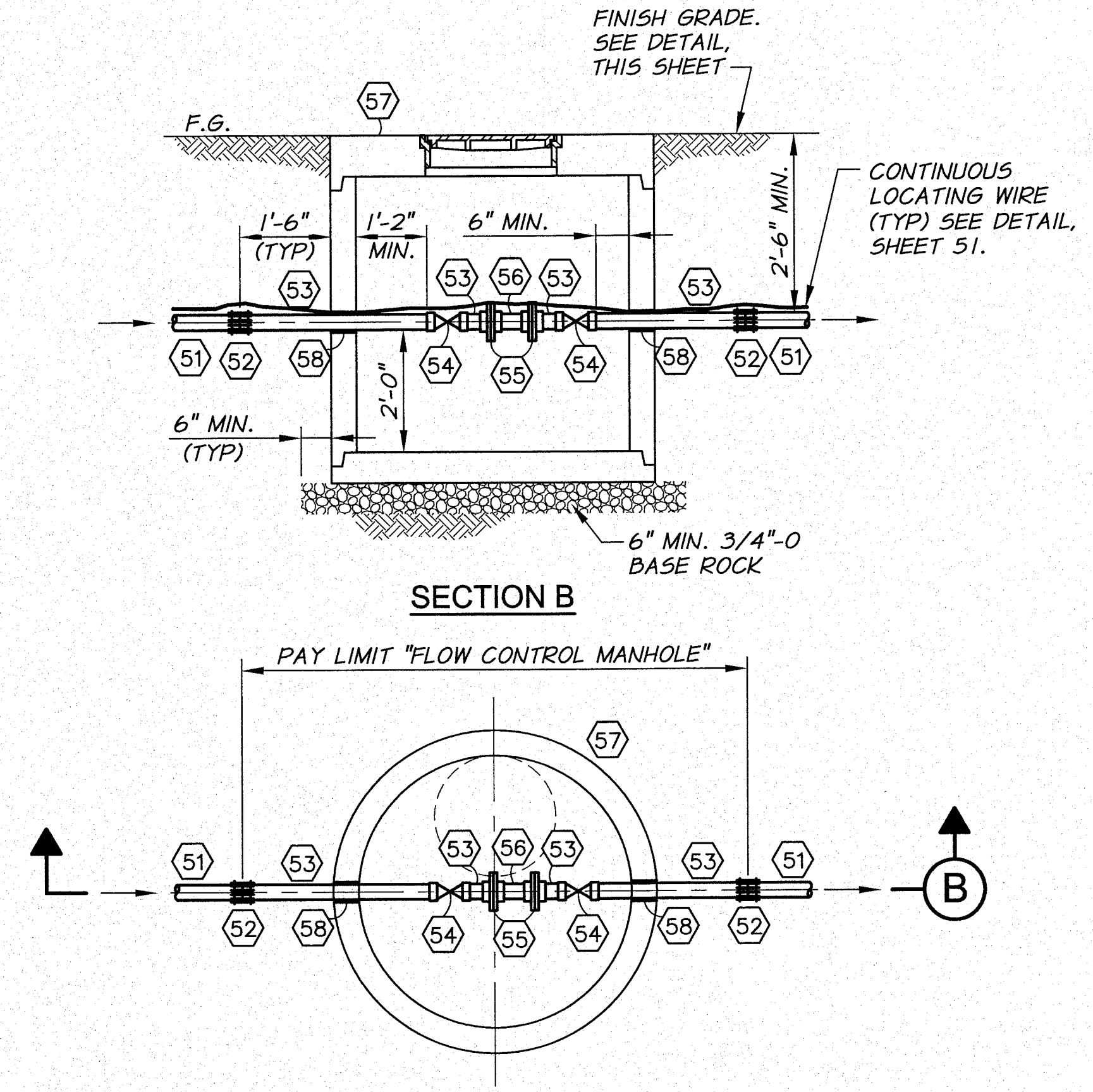
BENTON IRRIGATION DISTRICT
 IRRIGATION SYSTEM IMPROVEMENTS
 PHASE 2C
 VALVE VAULT DETAILS II



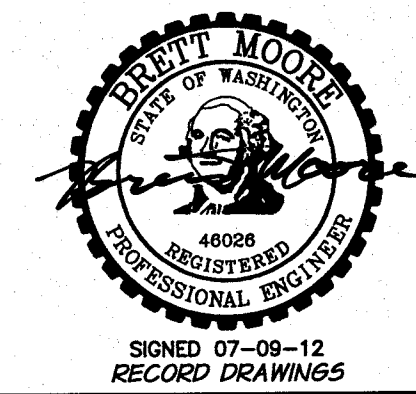
GRADING DETAIL
N.T.S.

FITTING SCHEDULE

- (51) PVC MAIN PIPING
- (52) COUPLING ADAPTER
- (53) 6IP. SIZE OF MAIN
- (54) BRASS THREADED GATE VALVE
- (55) THREADED RAISED FACE FLANGE WITH GASKET MATCHING FACE OF FLANGE. 4 EA. STAINLESS STEEL BOLTS AND NUTS. BOLT LENGTH AS REQUIRED TO PASS THROUGH ALL FLANGES.
- (56) DOLE FLOW CONTROL VALVE, SIZE SPECIFIED ON DRAWINGS
- (57) 54" PRECAST MANHOLE WITH H2O TRAFFIC RATED FLAT TOP AND 24" MANHOLE COVER WITH FRAME CAST INTO SLAB
- (58) SEAL PIPE PENETRATIONS WATERTIGHT WITH NON-SHRINK GROUT

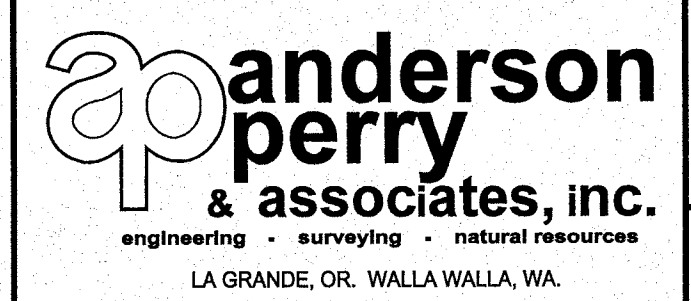


FLOW CONTROL MANHOLE DETAIL
N.T.S.



REVISION	BY	DATE	HORIZ. SCALE NONE	VERT. SCALE
DESIGNED BY R. HARRIS	XREFS: TB-BID.dwg		JOB NUMBER 1199-336	DATE 2011
DRAWN BY D. CHRISTMAN			ACAD FILE VaultDets-PH2C.dwg	
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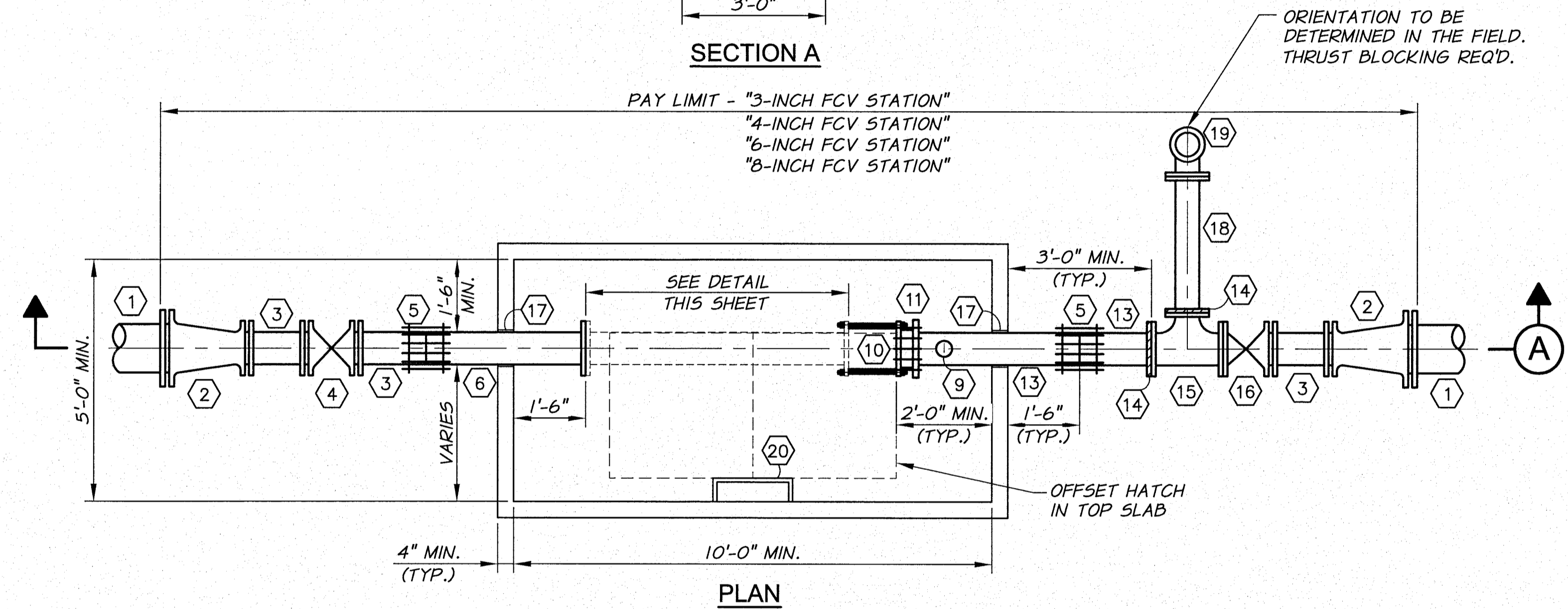
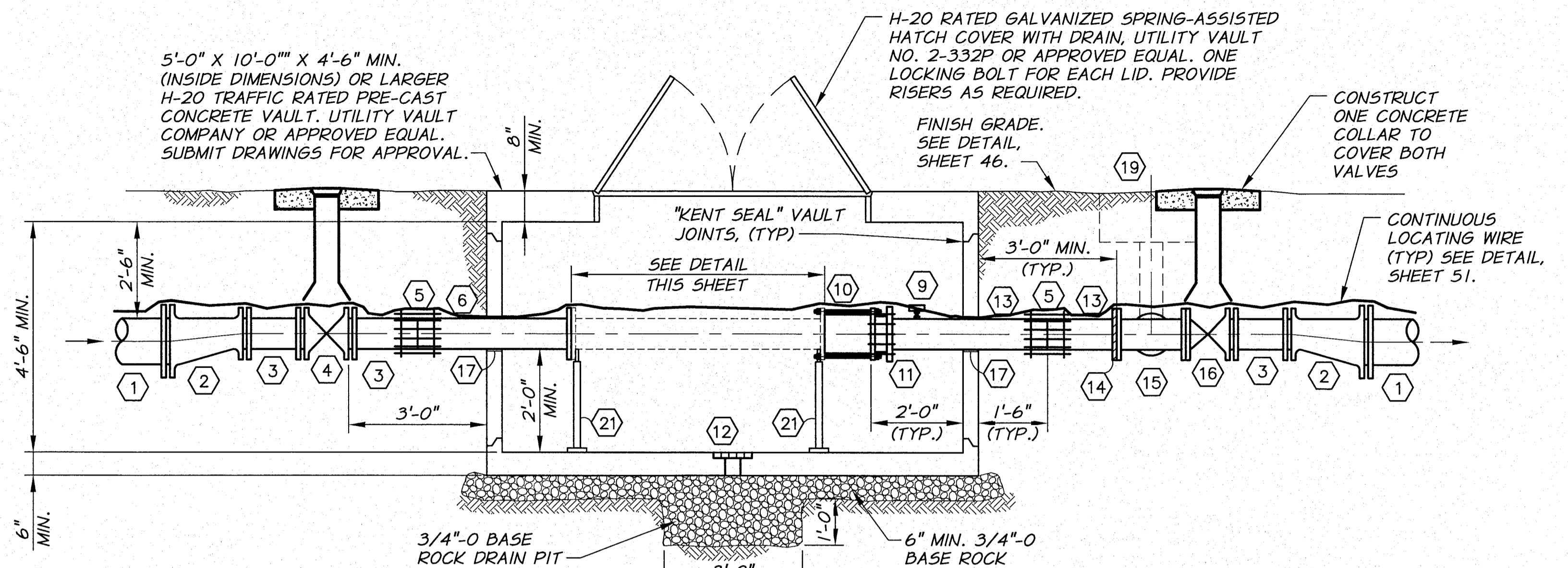
RECORD DRAWINGS
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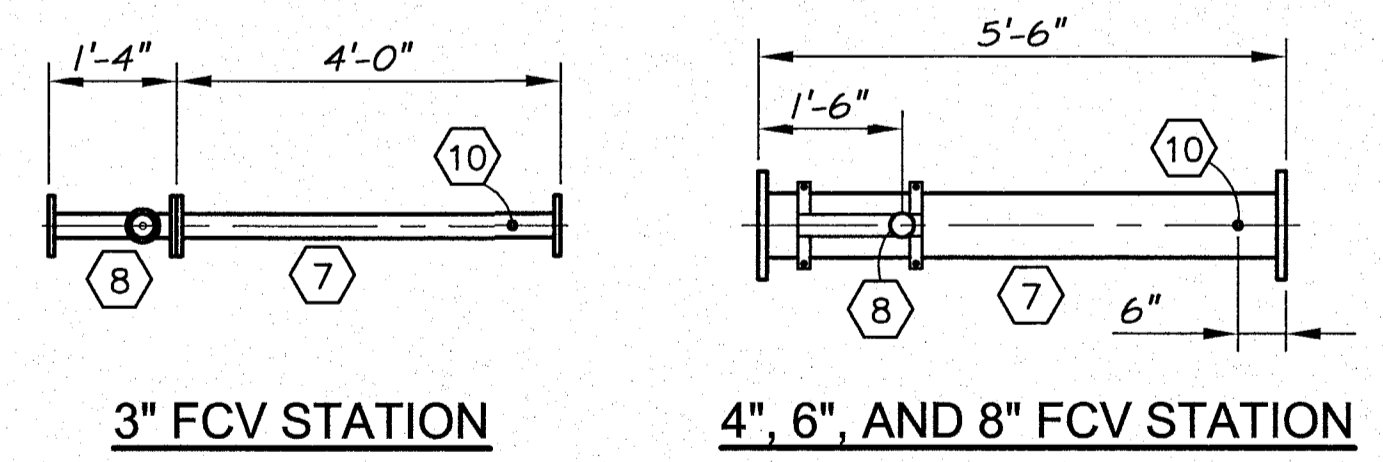
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C
VALVE VAULT DETAILS III

FITTING SCHEDULE

- ① PVC PIPING, SIZE PER MAIN LINE
- ② MJ ECCENTRIC REDUCER
- ③ PVC PIPING (SAME SIZE AS CONTROL VALVE)
- ④ MJ GATE VALVE WITH VALVE BOX. SEE DETAIL, SHEET 51.
- ⑤ COUPLING
- ⑥ FLG X PE D.I. SPOOL, LENGTH AS REQUIRED (SAME SIZE AS CONTROL VALVE)
- ⑦ FOR 3" STATION: FLG DI SPOOL x 4'-0" LONG
FOR 4" STATION: FLG GIP SPOOL x 5'-6" LONG
FOR 6" AND 8" STATIONS: FLG DI SPOOL x 5'-6" LONG
- ⑧ FOR 3" STATION: MICROMETER FLOWMETER MODEL MW500
FOR 4" STATION: MICROMETER FLOWMETER MODEL LP22
FOR 6" AND 8" STATION: MICROMETER FLOWMETER MODEL LP32
- ⑨ 3/4" TAPPING SADDLE WITH 3/4" THREADED BRASS BALL VALVE, 3/4"x1/4" BUSHING, AND BRASS QUICK COUPLING PLUG (UNVALVED)
- ⑩ WAFER STYLE 800 SERIES NELSON FLOW CONTROL VALVE. SEE SPECIFICATIONS FOR DETAILS. PROVIDE LONG BOLTS FOR FLANGES AS REQUIRED. LOCATE PADDLE 6" UPSTREAM OF VALVE. 1-INCH TAPPING SADDLE REQUIRED.
- ⑪ RESTRAINED FLANGE COUPLING ADAPTER
- ⑫ BRASS GRATED DRAIN WITH KNOCKOUT HOLE FOR DRAIN PIPE. DO NOT PROVIDE DRAIN IN HIGH GROUND WATER AREA.
- ⑬ PE DI SPOOL LENGTH AS REQUIRED (SAME SIZE AS CONTROL VALVE)
- ⑭ FLANGE COUPLING ADAPTER
- ⑮ FLG SIZExSIZExSIZE TEE, BRANCH NOT TO EXCEED 6"
- ⑯ FLGxMJ GATE VALVE WITH VALVE BOX. SEE DETAIL, SHEET 51.
- ⑰ SEAL PIPE PENETRATIONS WATERTIGHT WITH NON-SHRINK GROUT
- ⑱ FLGxPE SPOOL, LENGTH AS REQUIRED, FITTINGS AS REQUIRED
- ⑲ MAINGUARD BLOW-OFF #7600 FOR 4-INCH, 6-INCH AND 8-INCH CONTROL VALVE STATIONS. ECLIPSE NO. 85 BLOW-OFF HYDRANT FOR 3-INCH CONTROL VALVE STATIONS (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 49.



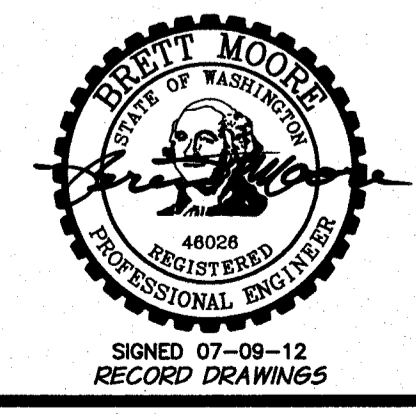
- NOTES:**
1. PIPING SIZE TO MATCH CONTROL VALVE SIZE UNLESS OTHERWISE NOTED.
 2. SET FRAME AND COVER TO GRADE AND PROVIDE GRADE RINGS AS REQUIRED.
 3. PIPE SUPPORTS TO BE SIZED APPROPRIATELY FOR PIPE AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 4. ALL WORK SHOWN IN THIS DETAIL, INCLUDING ANY REQUIRED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



FLOWMETER PIPING DETAIL
N.T.S.

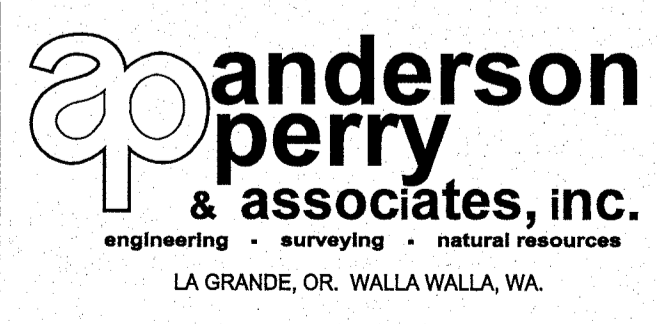
CONTROL VALVE SIZE	BLOW-OFF TYPE	INLET	OUTLET
3-INCH	ECLIPSE NO. 85 BLOW-OFF HYDRANT	3"	2 1/2 NST
4-INCH	MAINGUARD BLOW-OFF #7600	4"	4"
6-INCH	MAINGUARD BLOW-OFF #7600	6"	4"
8-INCH	MAINGUARD BLOW-OFF #7600	6"	4"

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



DESIGNED BY R. HARRIS	DATE	HORIZ. SCALE NONE	VERT. SCALE
DRAWN BY D. CHRISTMAN	DATE 2011	JOB NUMBER 1199-336	DATE
REVIEWED BY B. MOORE		ACAD FILE VaultDets-PH2C.dwg	
XREFS: TB-BID.dwg			
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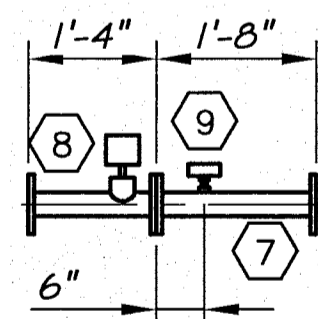


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C
VALVE STATION DETAILS I

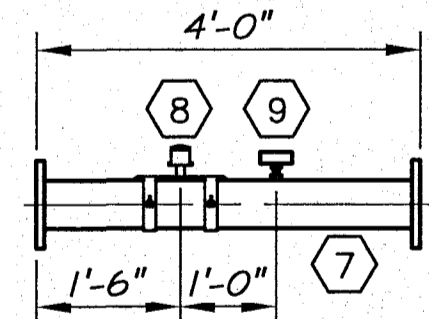
FITTING SCHEDULE

- ① SERVICE LINE PVC PIPING
- ② MJ ECCENTRIC REDUCER
- ③ CLASS 200 PVC PIPING (SAME SIZE AS CONTROL VALVE)
- ④ MJ GATE VALVE WITH VALVE BOX. SEE DETAIL, SHEET 51.
- ⑤ COUPLING
- ⑥ FLG X PE D.I. SPOOL, LENGTH AS REQUIRED (SAME SIZE AS CONTROL VALVE)
- ⑦ FOR 3" STATION: 3" FLG DI SPOOL X 1'-8" LG.
FOR 4" STATION: 4" FLG GIP SPOOL X 4'-0" LG.
FOR 6" STATION: 6" FLG DI SPOOL X 4'-0" LG.
FOR 8" STATION: 8" FLG DI SPOOL X 4'-0" LG.
- ⑧ FOR 3" STATION: 3" MICROMETER FLOWMETER MODEL MW500
FOR 4" STATION: 4" MICROMETER FLOWMETER MODEL LP22
FOR 6" STATION: 6" MICROMETER FLOWMETER MODEL LP32
FOR 8" STATION: 8" MICROMETER FLOWMETER MODEL LP32
- ⑨ FOR PRV/FCV SERVICE ONLY: 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 40-01 FLOW CONTROL OR 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 BRASS QUICK COUPLING PLUG (UNVALVED) AND FITTINGS AS REQUIRED ON ORIFICE PILOT PIPING. PROVIDE ADDITIONAL ISOLATION VALVE.
- 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 51.
- ⑰ ORIFICE PLATE
- 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 49.
- 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 2 FT. LONG (SAME SIZE AS CONTROL VALVE)

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"



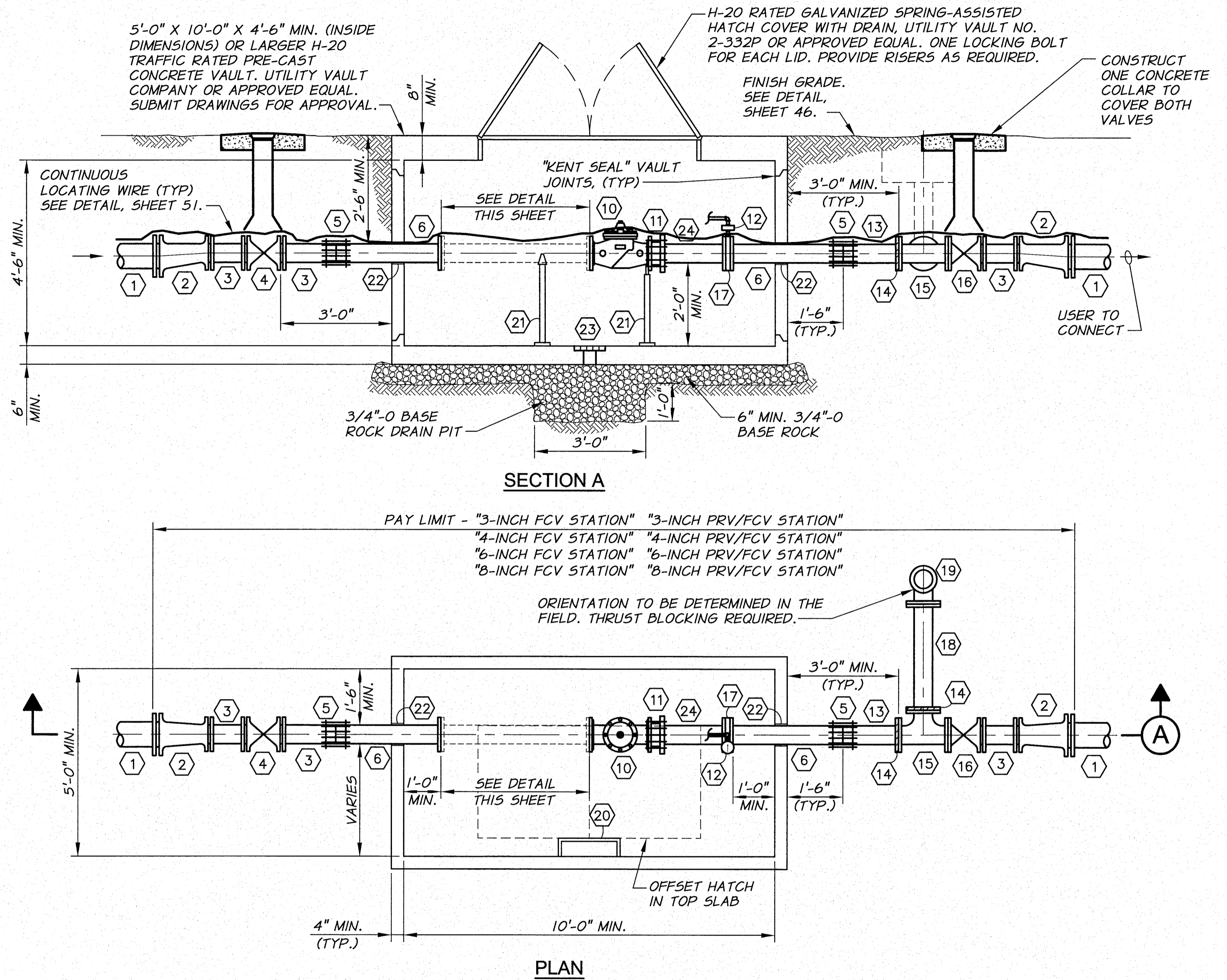
4" SERVICE



6" AND 8" SERVICE

FLOWMETER PIPING DETAIL

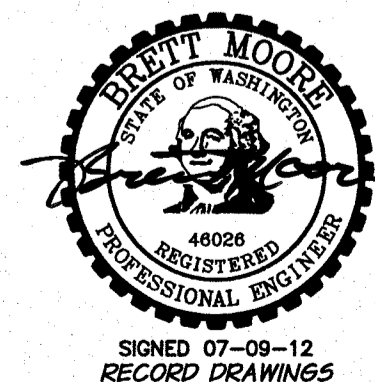
N.T.S.



- 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 "--INCH FCV STATION" OR THE "--INCH PRV/FCV STATION" PAY ITEM.

3", 4", 6", AND 8" FCV AND PRV/FCV STATION DETAIL

N.T.S.

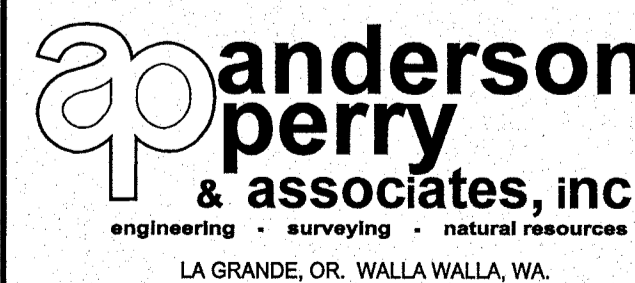


SIGNED 07-09-12
RECORD DRAWINGS

REVISION	BY	DATE	HORIZ. SCALE 1/2"=1'-0"	VERT. SCALE
DESIGNED BY R. HARRIS			JOB NUMBER 1199-336	DATE 2011
DRAWN BY D. CHRISTMAN			ACAD FILE: VaultDets-PH2C.dwg	
REVIEWED BY B. MOORE			COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.	

RECORD DRAWINGS

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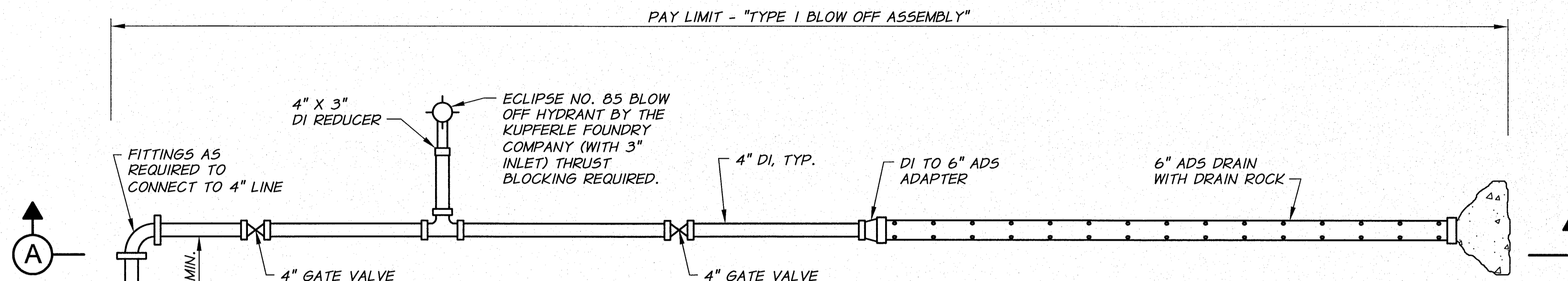
**BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C**

VALVE STATION DETAILS II

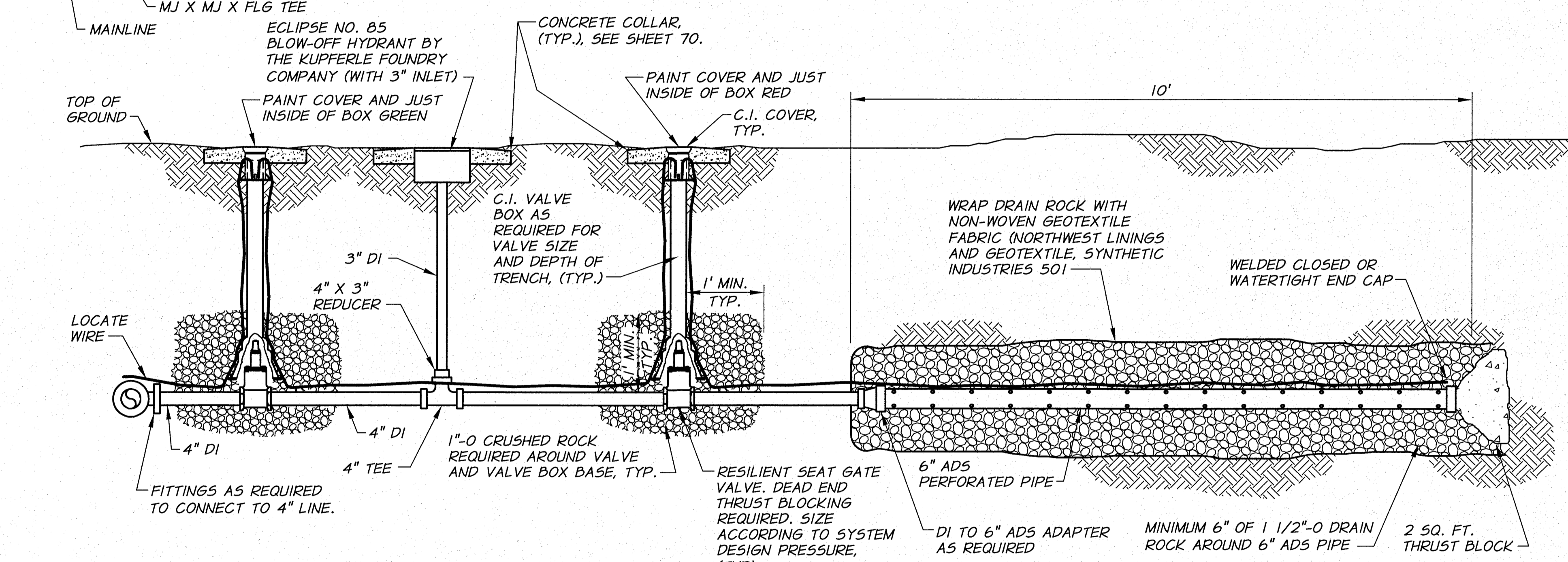
SHEET

48

ARCHIVED

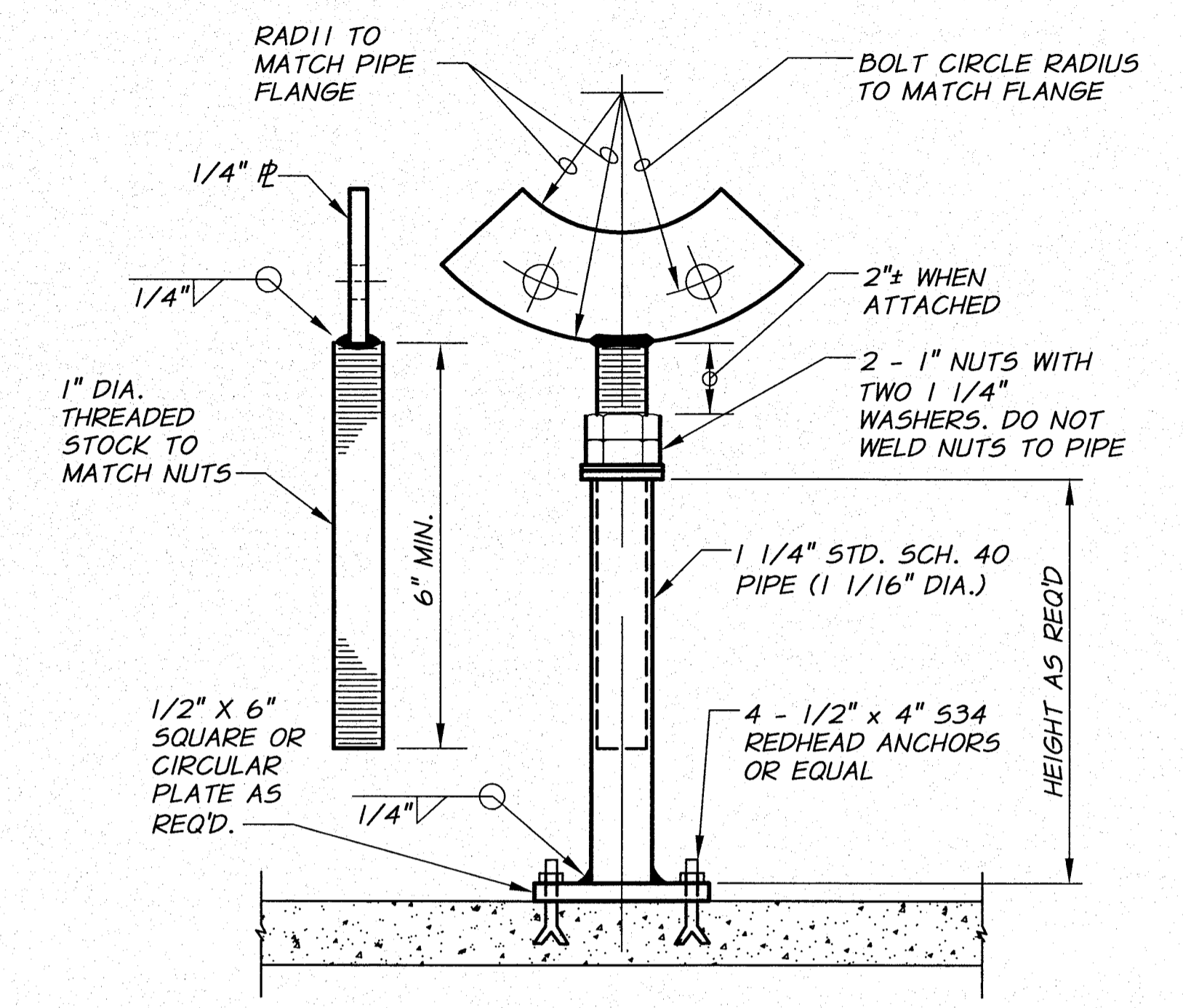


PLAN

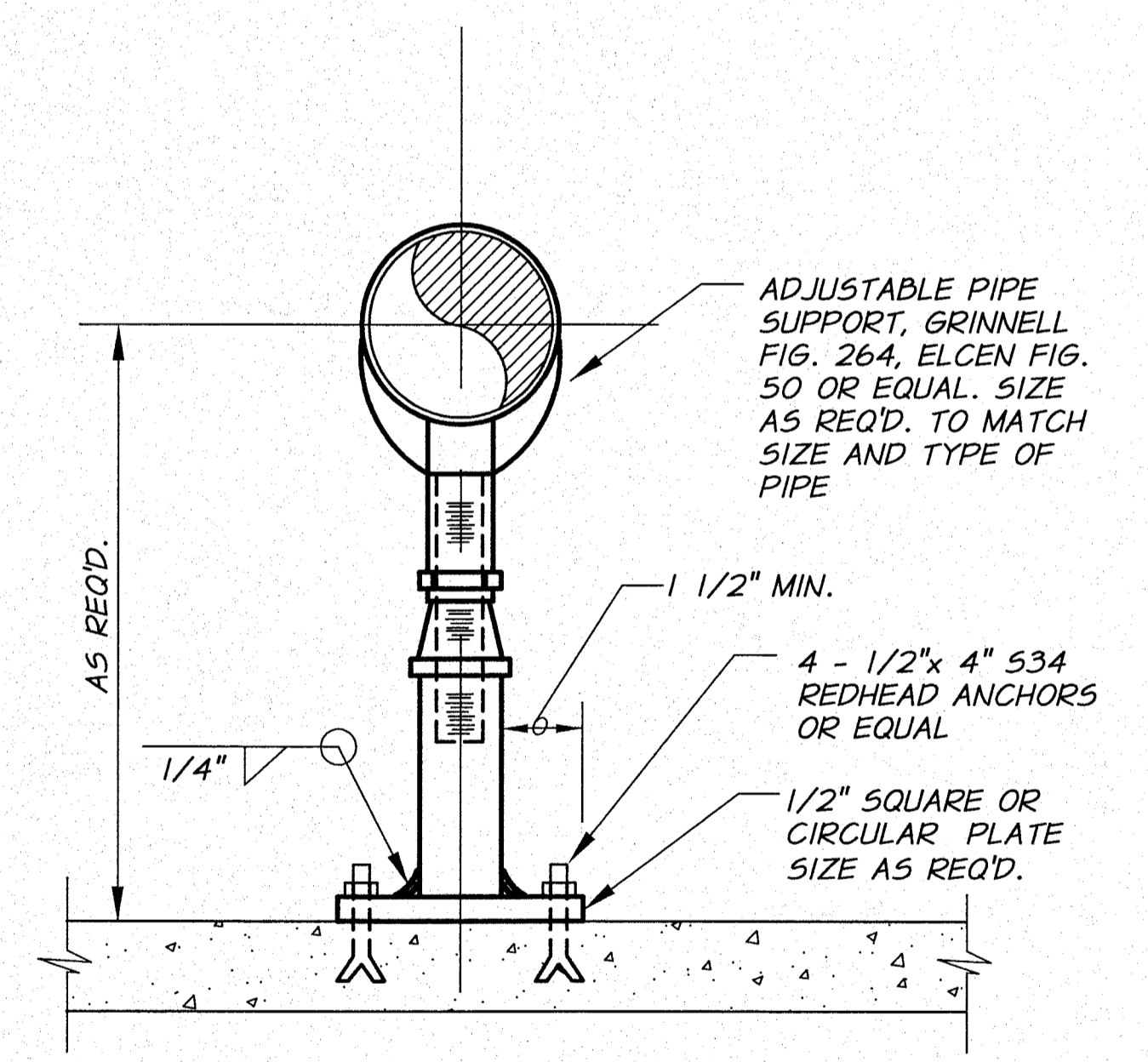


SECTION A
TYPE 1 BLOW-OFF ASSEMBLY DETAIL
N.T.S.

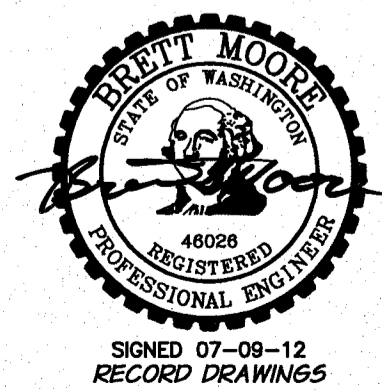
NOTE:
BLOW-OFF TO BE FIELD
LOCATED BY THE ENGINEER
PRIOR TO CONSTRUCTION
(INCLUDING ORIENTATION).



PIPE SUPPORT DETAIL
N.T.S.

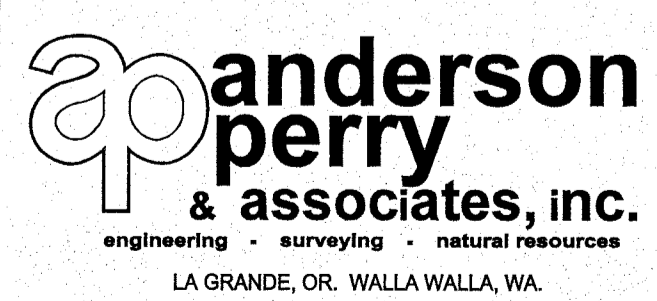


PIPE SUPPORT DETAIL
N.T.S.

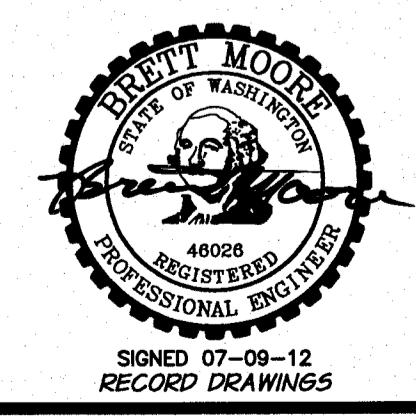
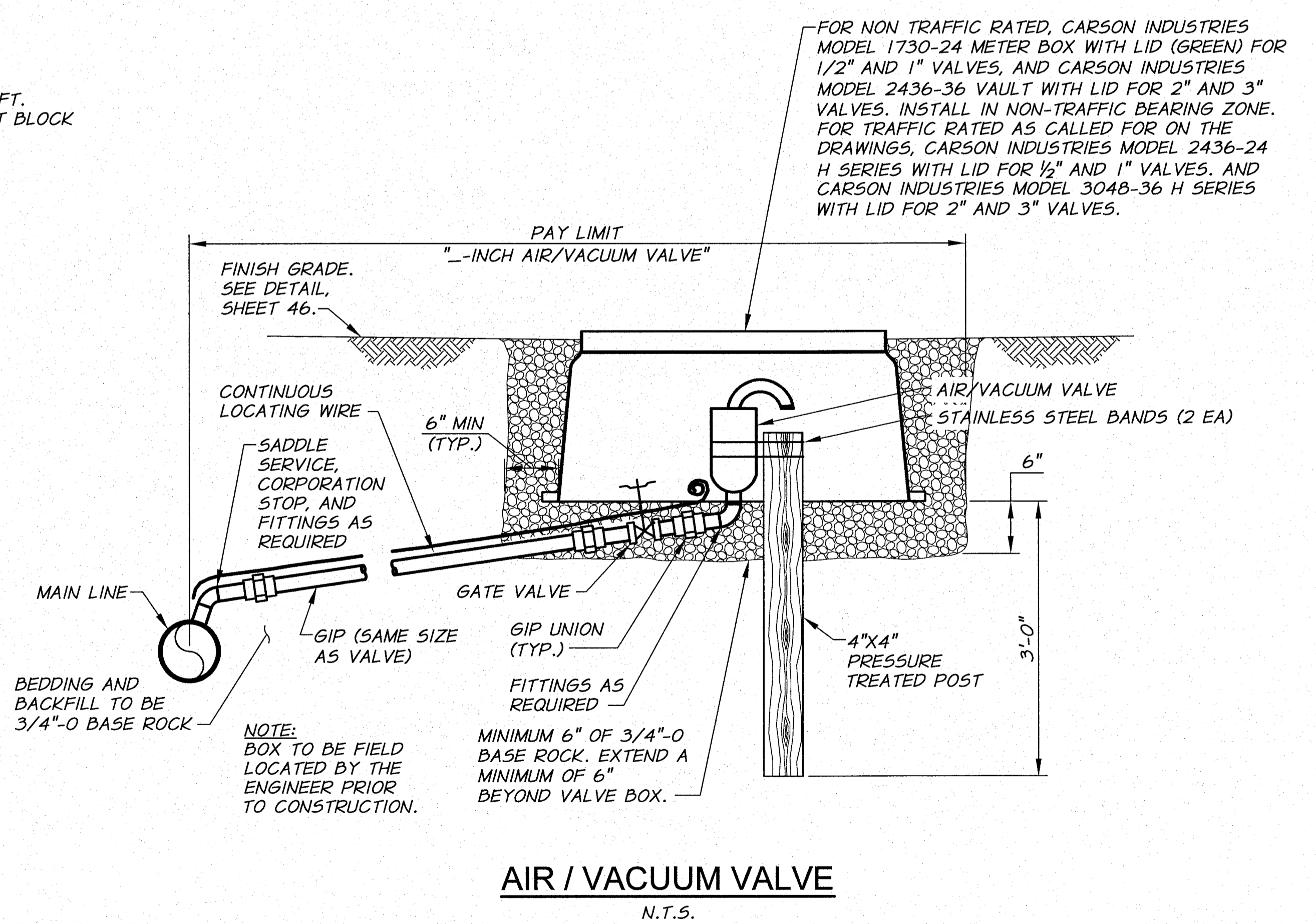
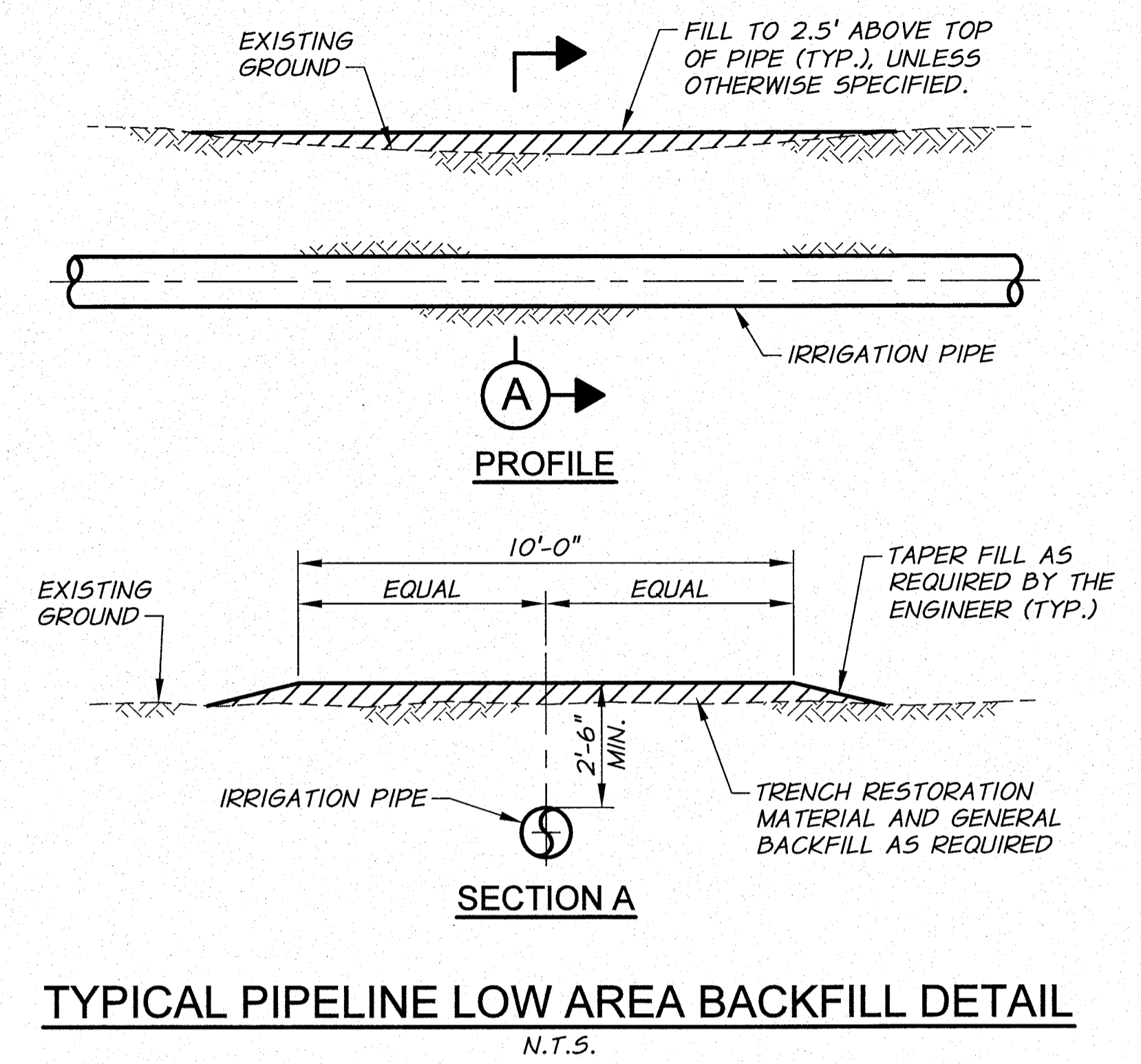
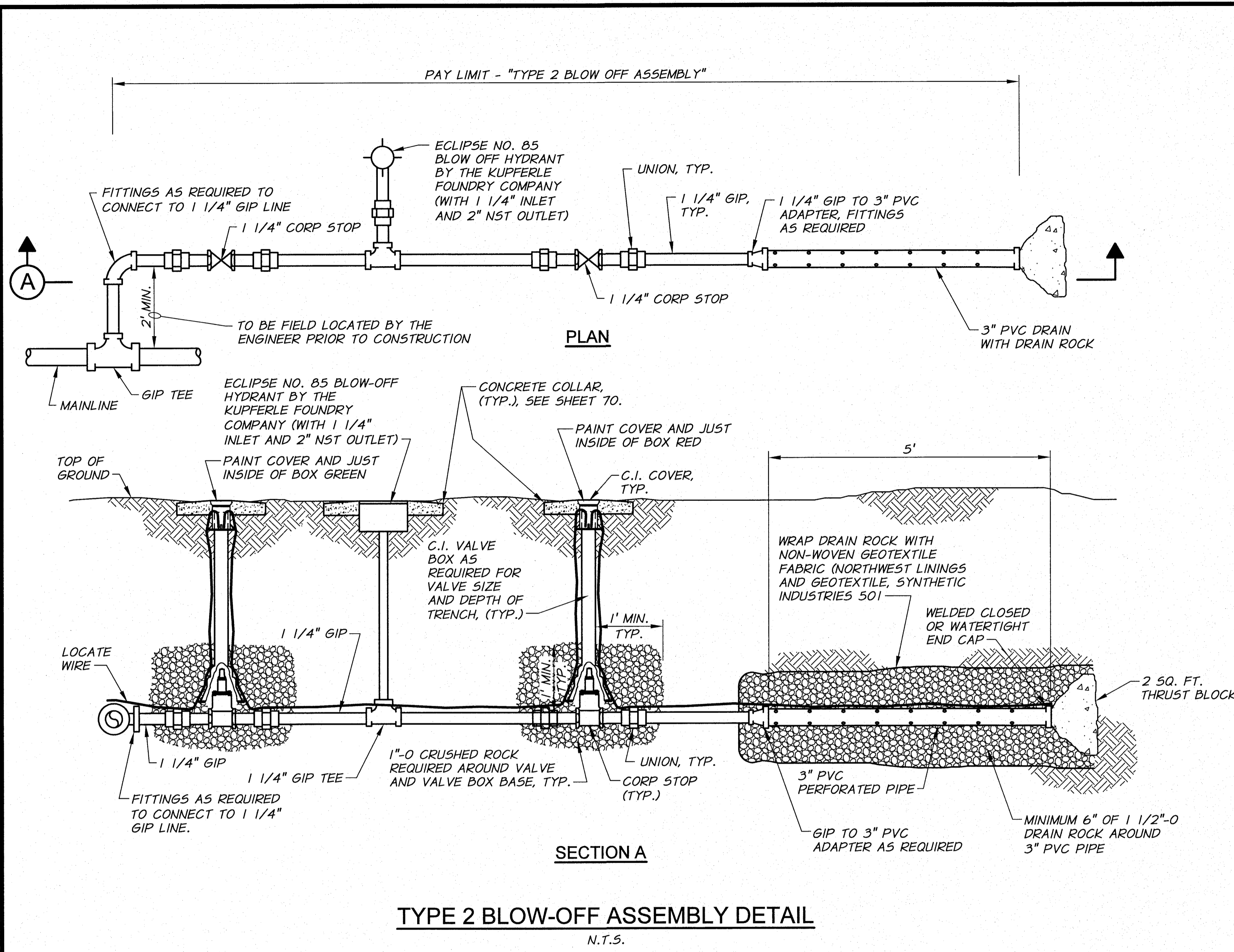


DESIGNED BY	R. HARRIS	DATE	2011
DRAWN BY	D. CHRISTMAN	ACAD FILE	lrrgDets-PH2C.dwg
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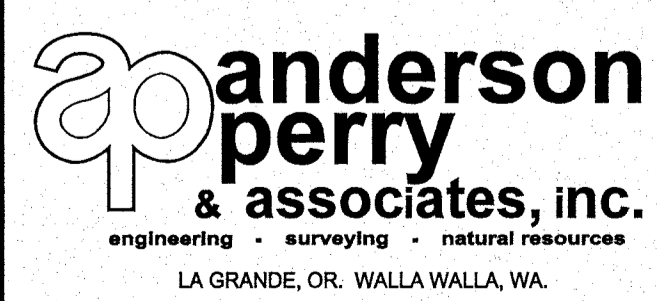


BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C
MISCELLANEOUS DETAILS I

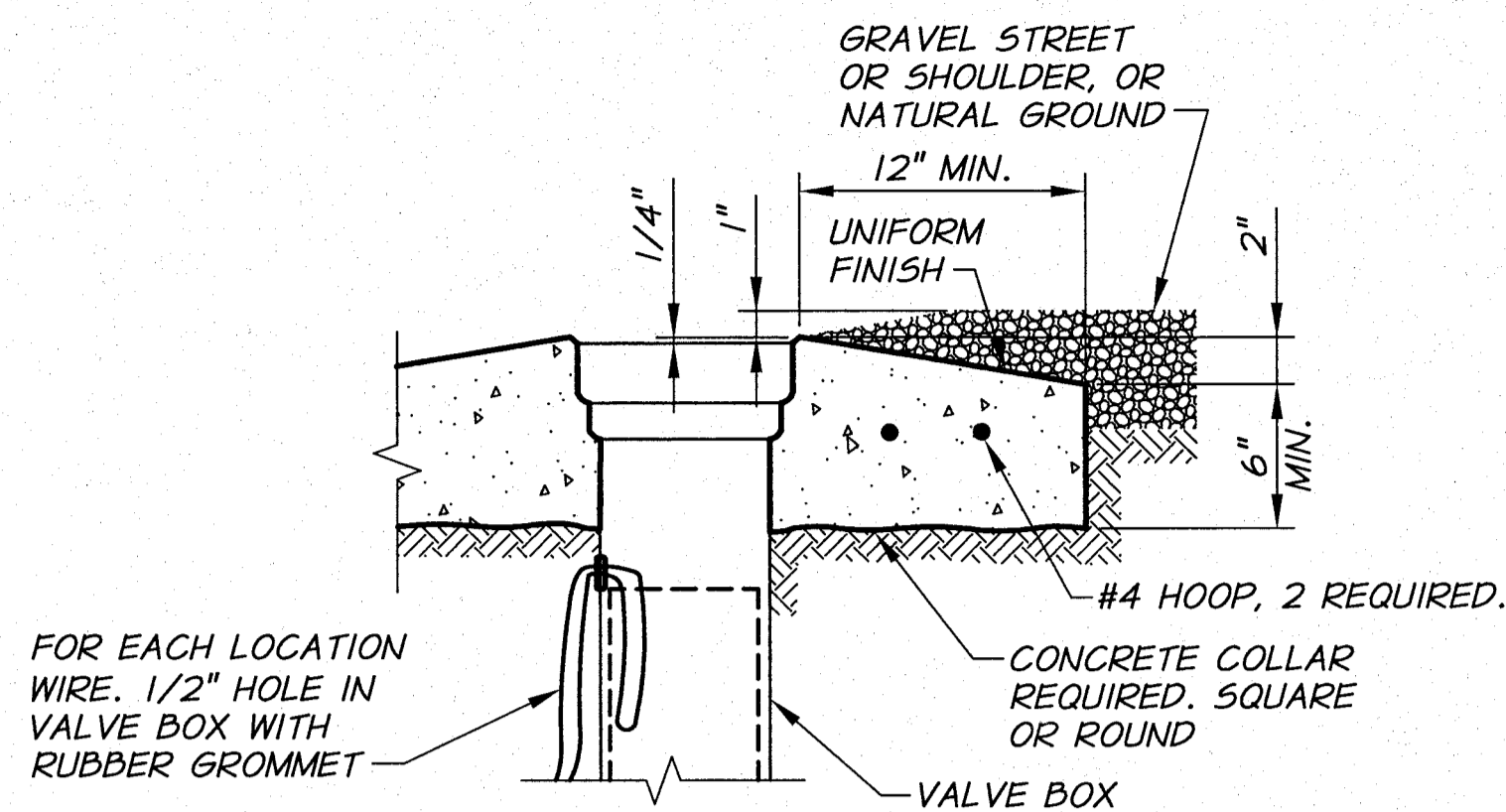


REVISION	BY	DATE	HORZ. SCALE	NONE	VERT. SCALE
DESIGNED BY	R. HARRIS		JOB NUMBER	1199-336	DATE
DRAWN BY	D. CHRISTMAN		ACAD FILE:	lrrgDets-PH2C.dwg	
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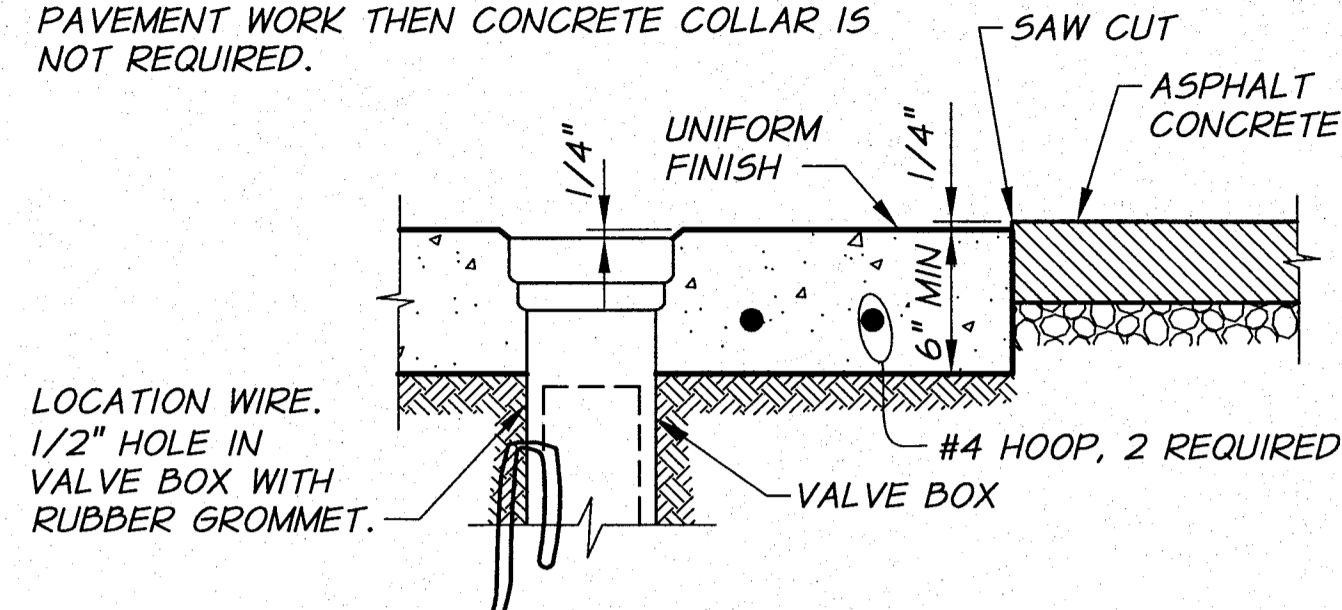
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C
MISCELLANEOUS DETAILS II



- REQUIREMENTS FOR CONCRETE COLLARS:
1. CONCRETE : 3/4", 7 SACK, 4000 PSI AT 28 DAYS, 2" TO 4" SLUMP, 4-7% AIR.
 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.

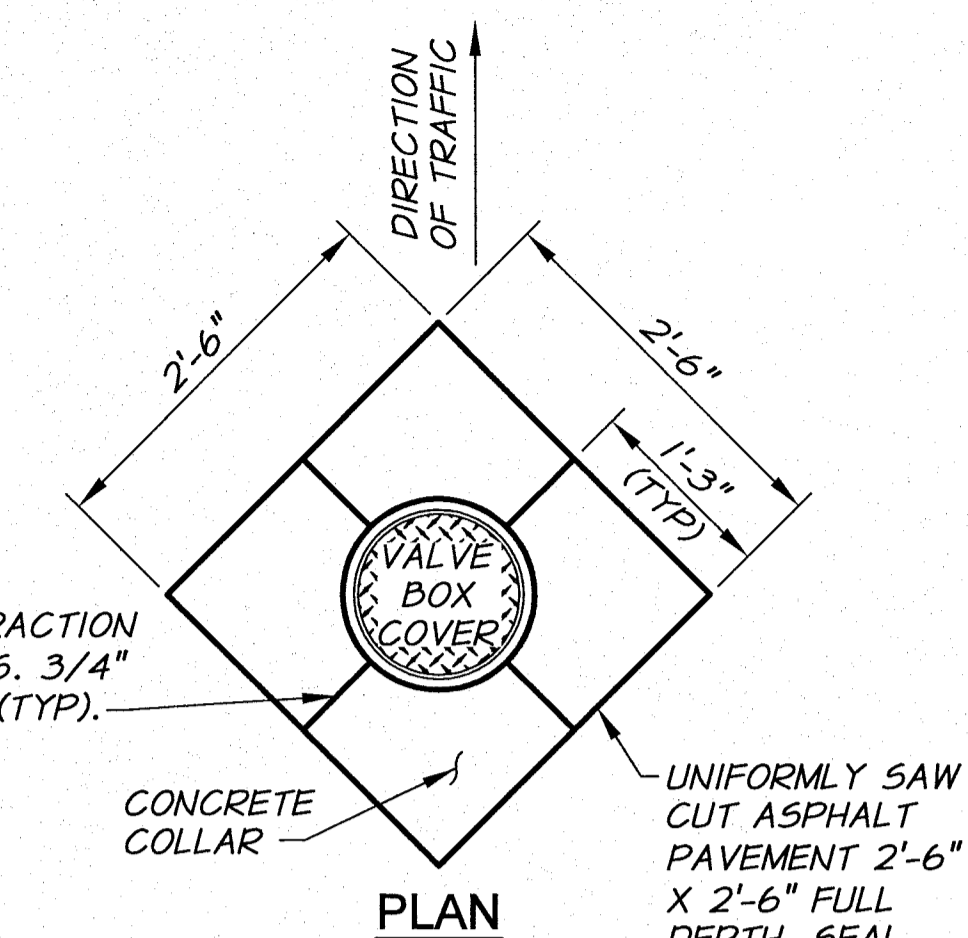
NOTE:
CONCRETE COLLAR REQUIRED IF VALVE BOX GRADE IS ADJUSTED AFTER ASPHALT PAVEMENT WORK IS PERFORMED. IF GRADE ADJUSTMENT OCCURS PRIOR TO ASPHALT PAVEMENT WORK THEN CONCRETE COLLAR IS NOT REQUIRED.



TYPICAL SECTION

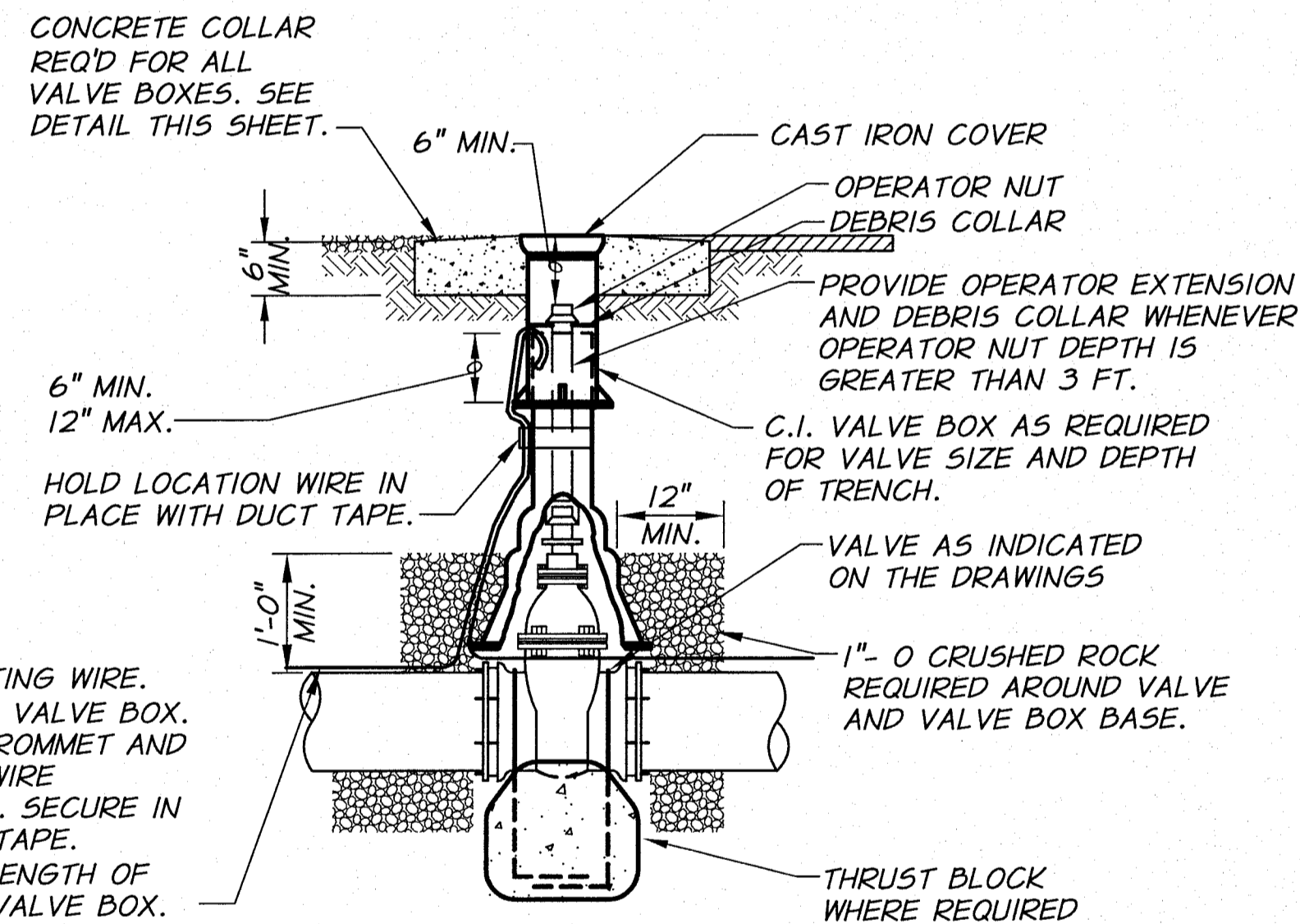
- REQUIREMENTS FOR CONCRETE COLLARS:
1. CONCRETE: 3/4", 7 SACK, 4000 PSI AT 28 DAYS, 2" TO 4" SLUMP, 4-7% AIR.
 2. SMOOTH BROOMED FINISH REQUIRED.
 3. APPLY CONCRETE CURING COMPOUND.
 4. PROTECT FROM TRAFFIC FOR 4 DAYS MINIMUM.

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

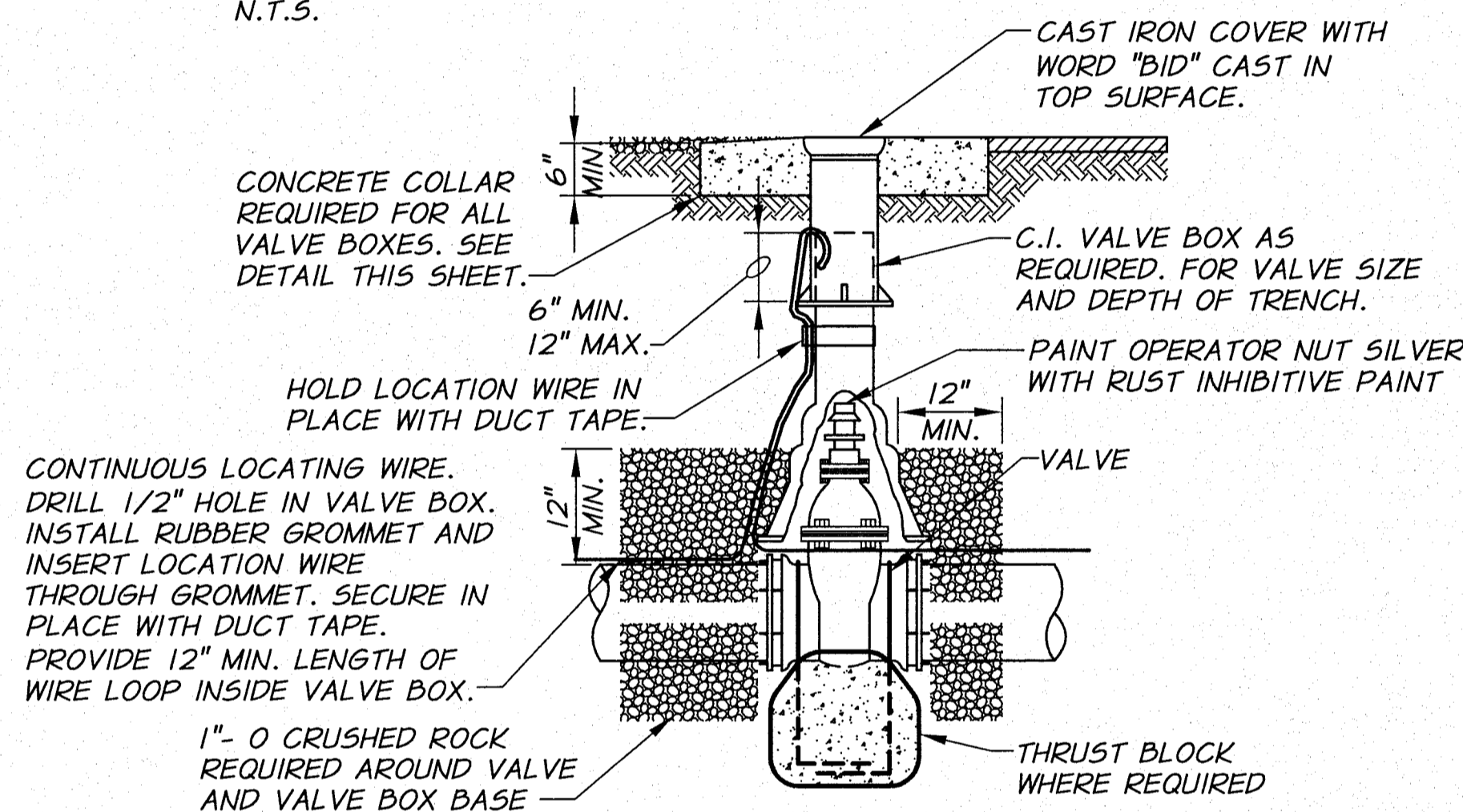


PLAN

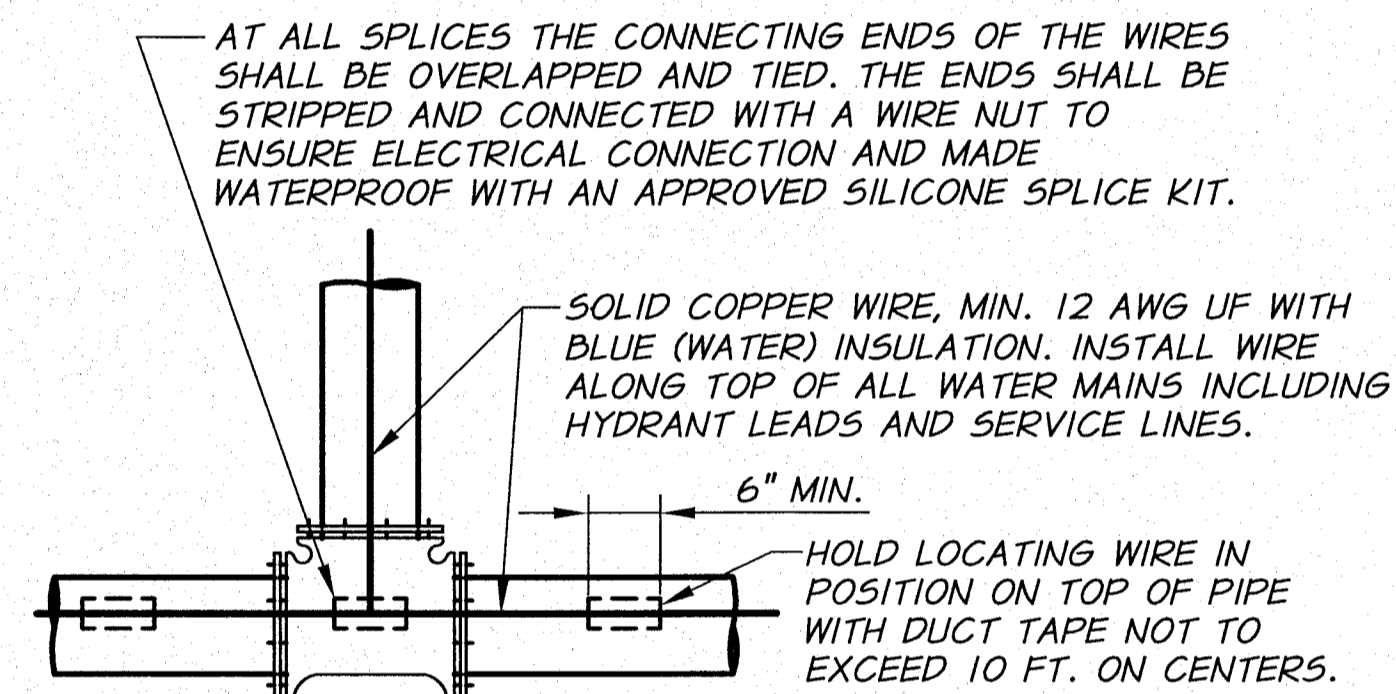
UNIFORMLY SAW CUT ASPHALT PAVEMENT 2'-6" X 2'-6" FULL DEPTH. SEAL ALL CUTS PAST CONCRETE COLLAR.



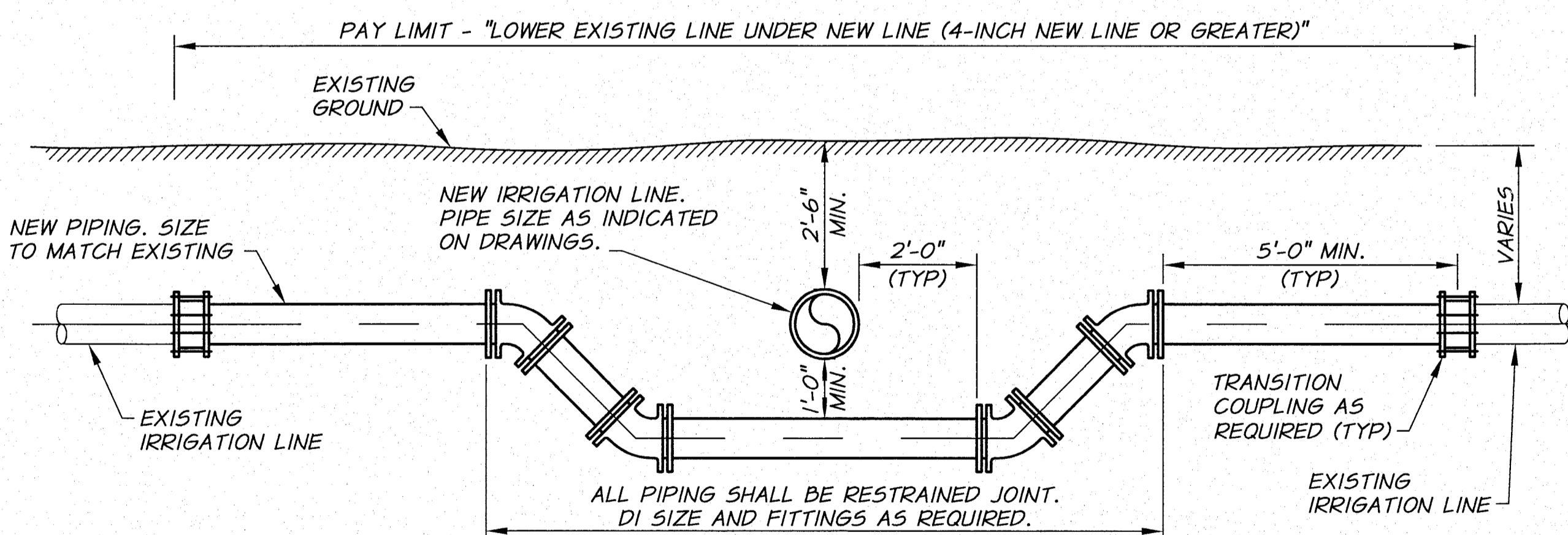
VALVE BOX EXTENSION DETAIL
N.T.S.



VALVE BOX DETAIL
N.T.S.



CONTINUOUS LOCATING WIRE DETAIL
N.T.S.



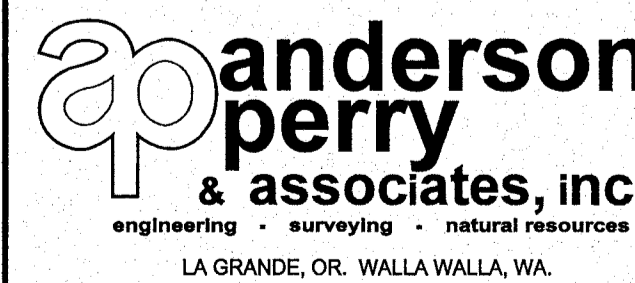
LOWER EXISTING IRRIGATION LINE UNDER NEW
SECTION
N.T.S.



REVISION	BY	DATE	HORIZ. SCALE	NONE	VERT. SCALE
DESIGNED BY	R. HARRIS	XREFS: TB-BID.dwg	JOB NUMBER	1199-336	DATE
DRAWN BY	D. CHRISTMAN		ACAD FILE:	irrgDets2-PH2C.dwg	
REVIEWED BY	B. MOORE		COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.		

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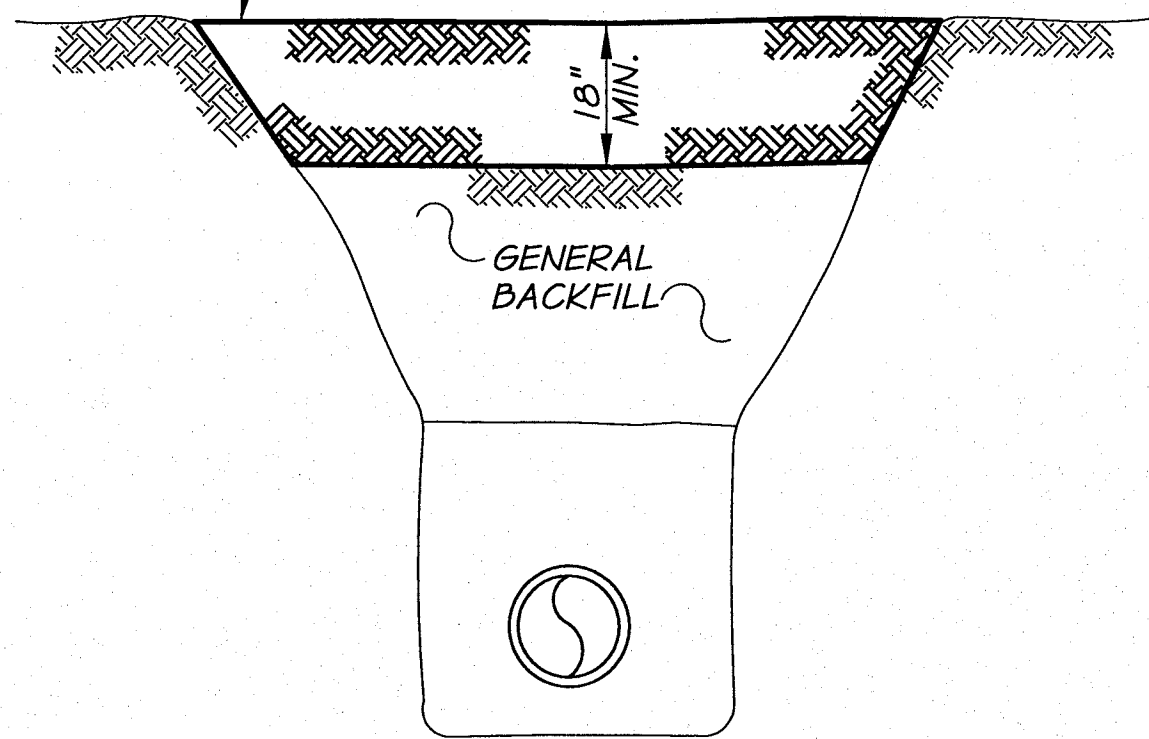
BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C

MISCELLANEOUS DETAILS III

SHEET

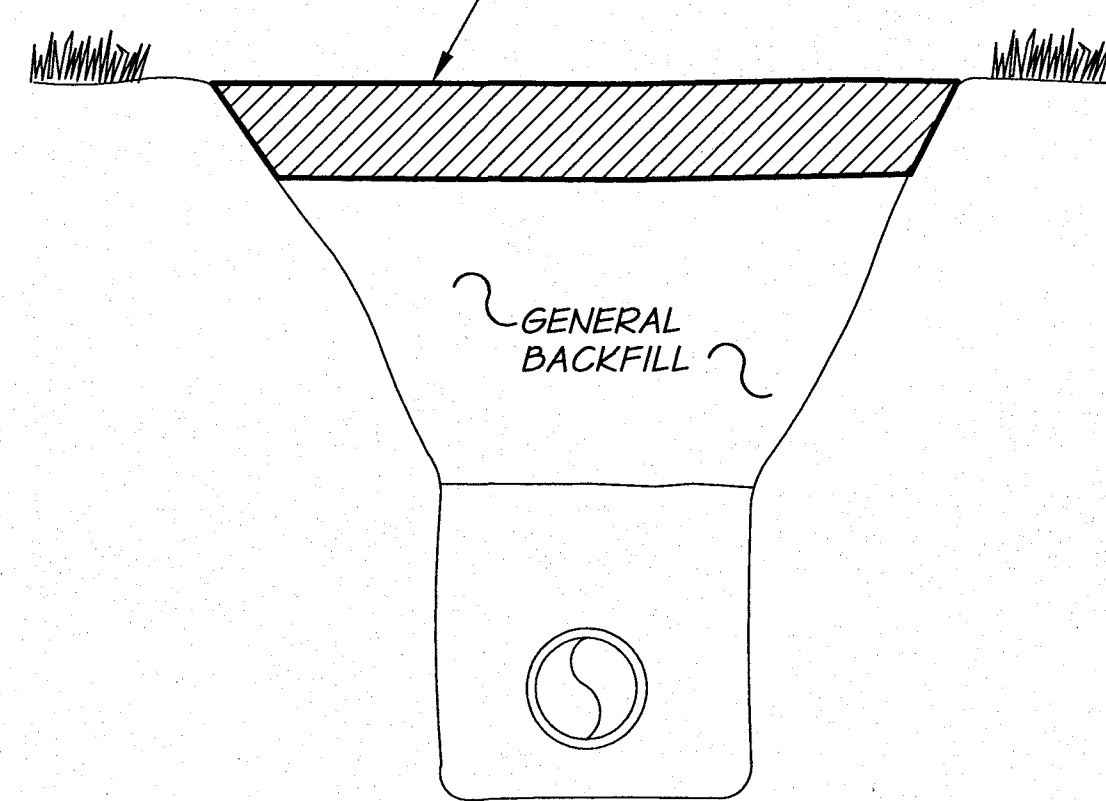
51

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.

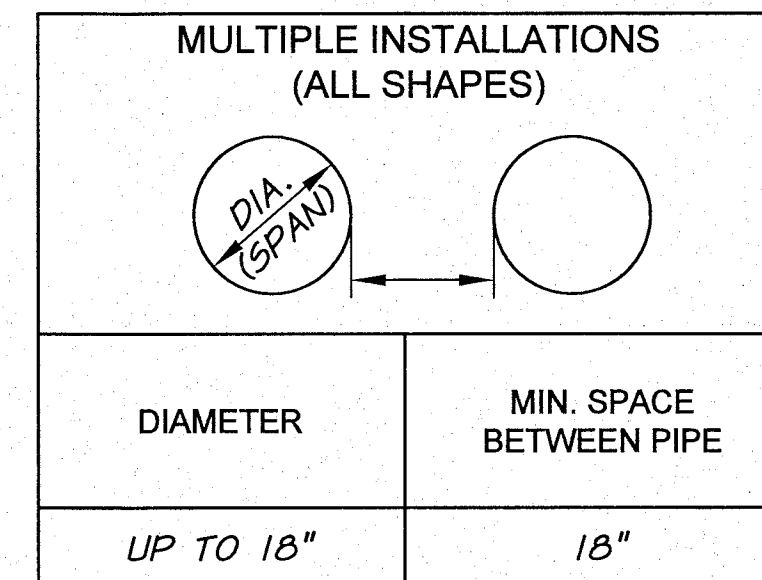


TRENCH RESTORATION
AGRICULTURAL AREAS
N.T.S.

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.

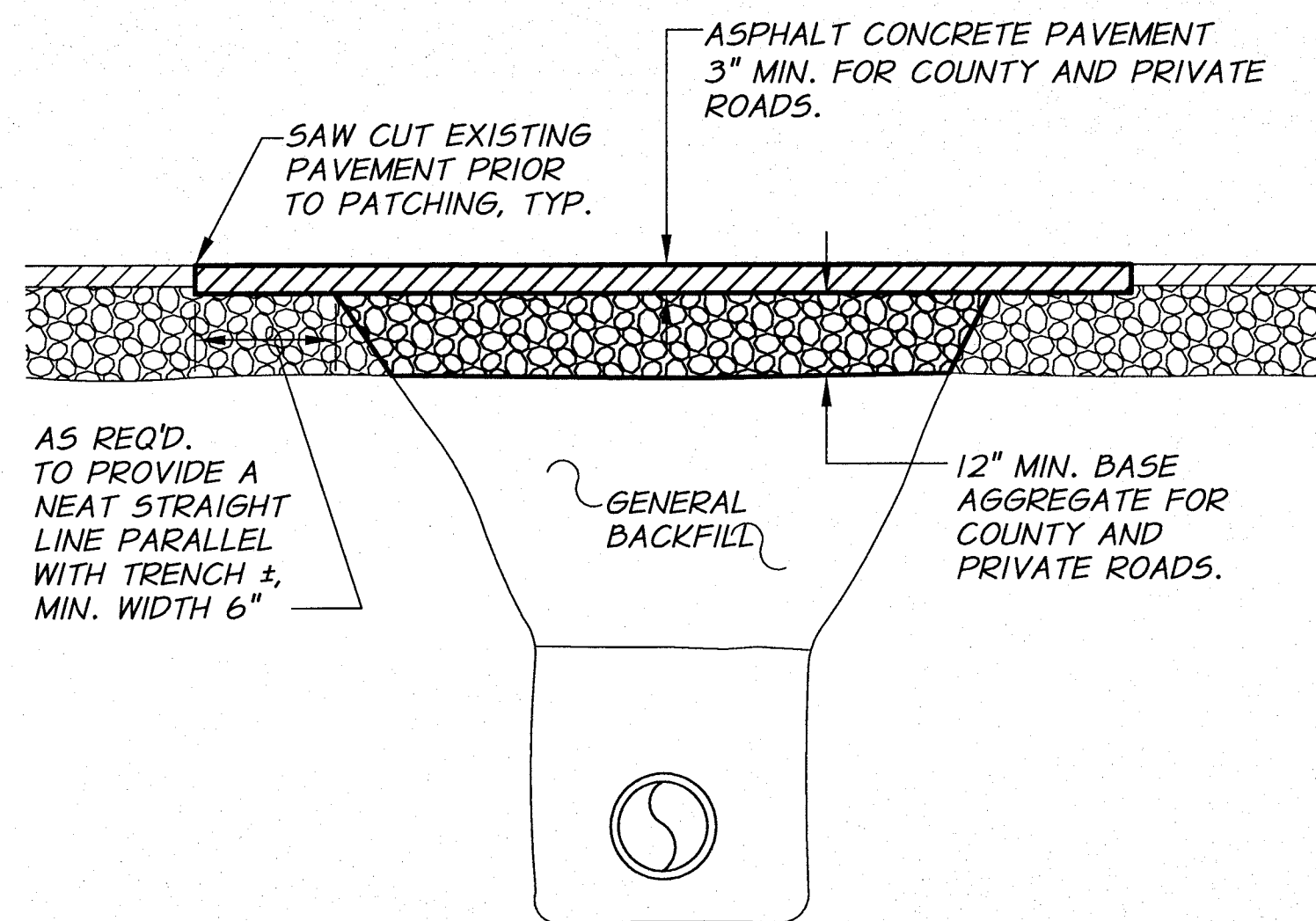


TRENCH RESTORATION
LAWNS & LANDSCAPED AREAS
N.T.S.

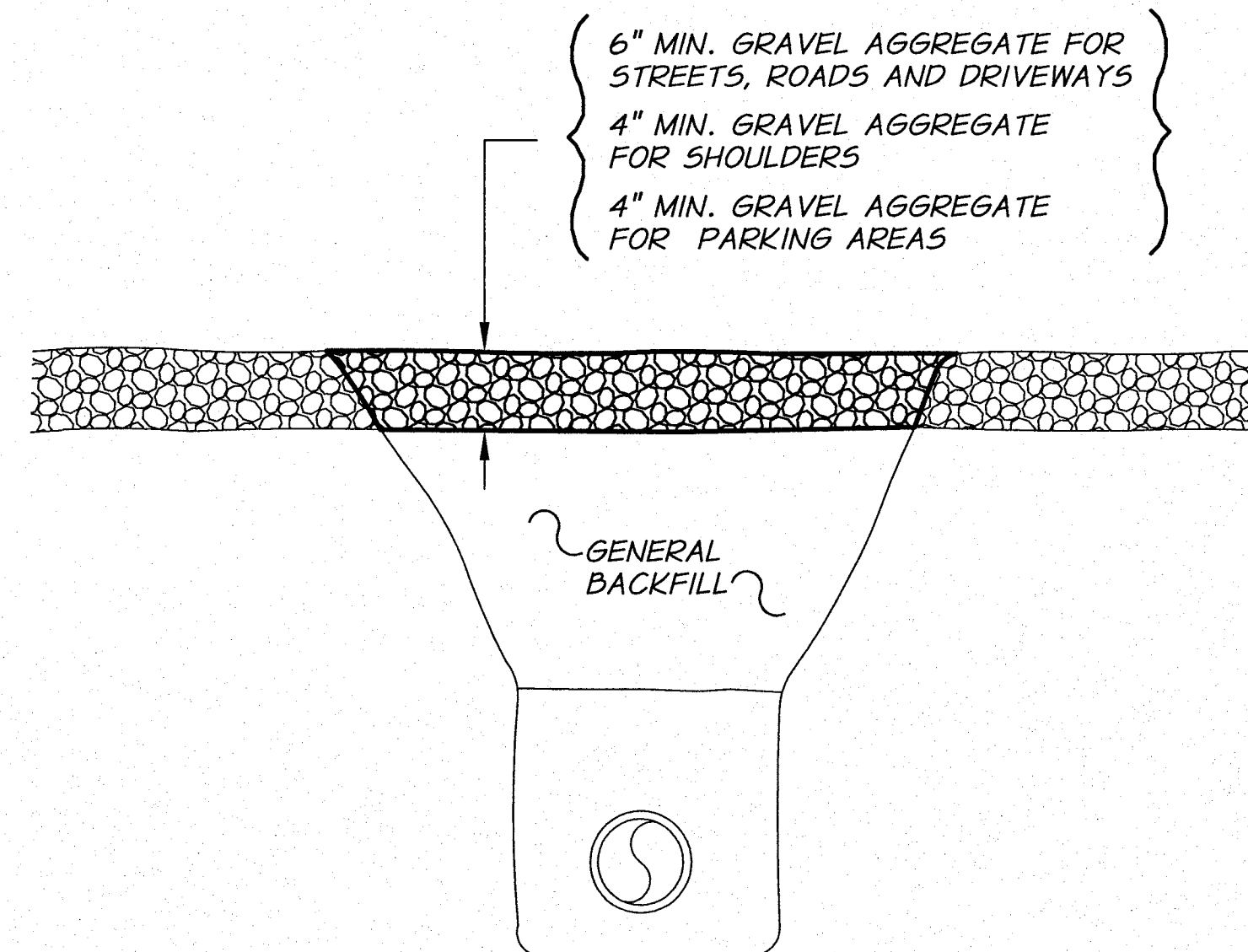


NOTES
1. SURFACING OF PAVED AREAS SHALL COMPLY WITH STREET CUT STANDARD DRAWING.

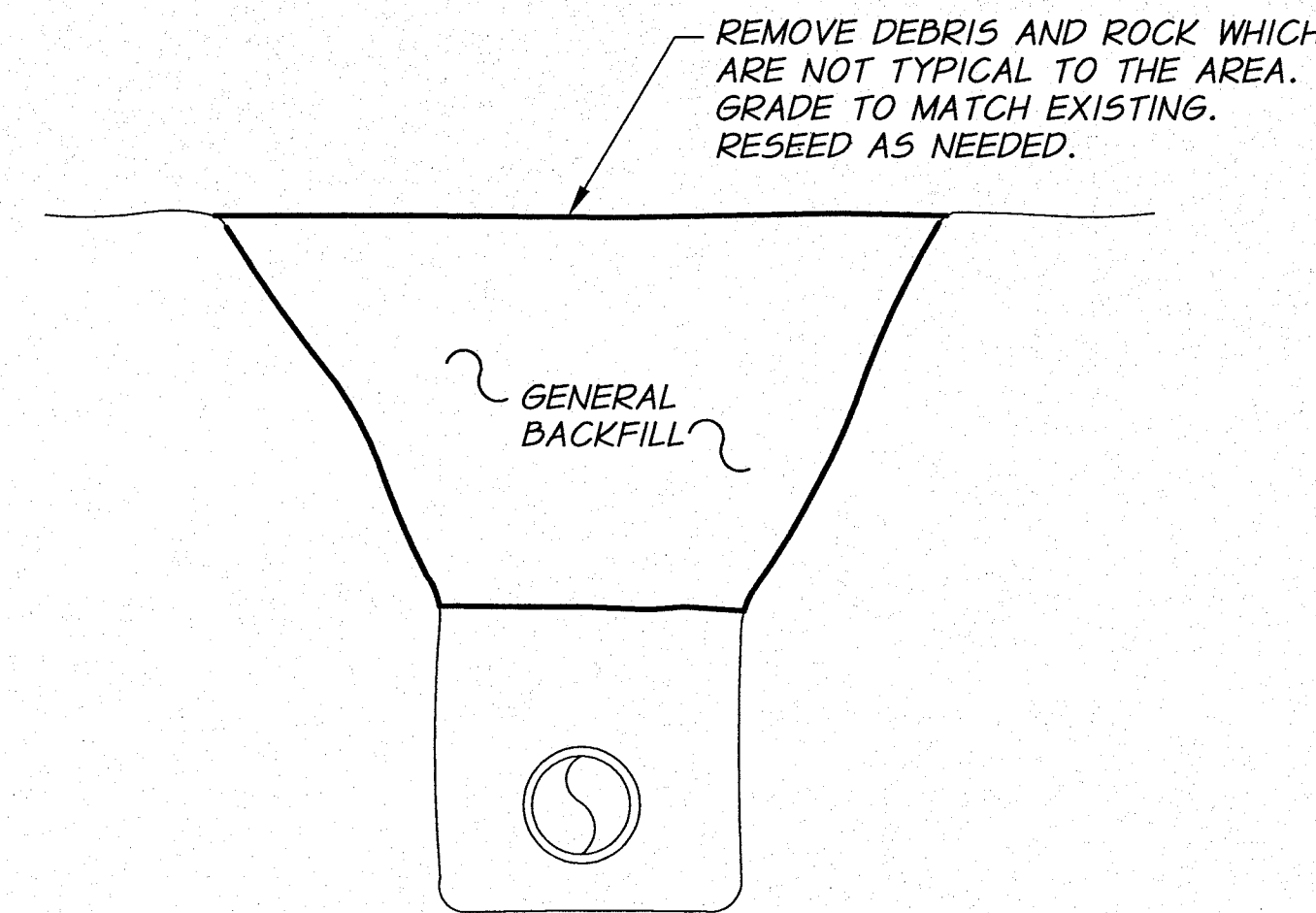
TRENCH BACKFILL AND BEDDING TABLE			
	ASPHALT SURFACE RESTORATION	GRAVEL STREETS, ROADWAYS, SHOULDERS AND PARKING AREAS	GENERAL / HYDROSEED RESTORATION AREAS
SURFACE	SURFACING MATCHING EXISTING	3/4"-0 GRAVEL AGGREGATE (FOR THICKNESS SEE DETAIL THIS SHEET)	TOPSOIL OR AS DIRECTED
BASE MATERIAL UNDER SURFACE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



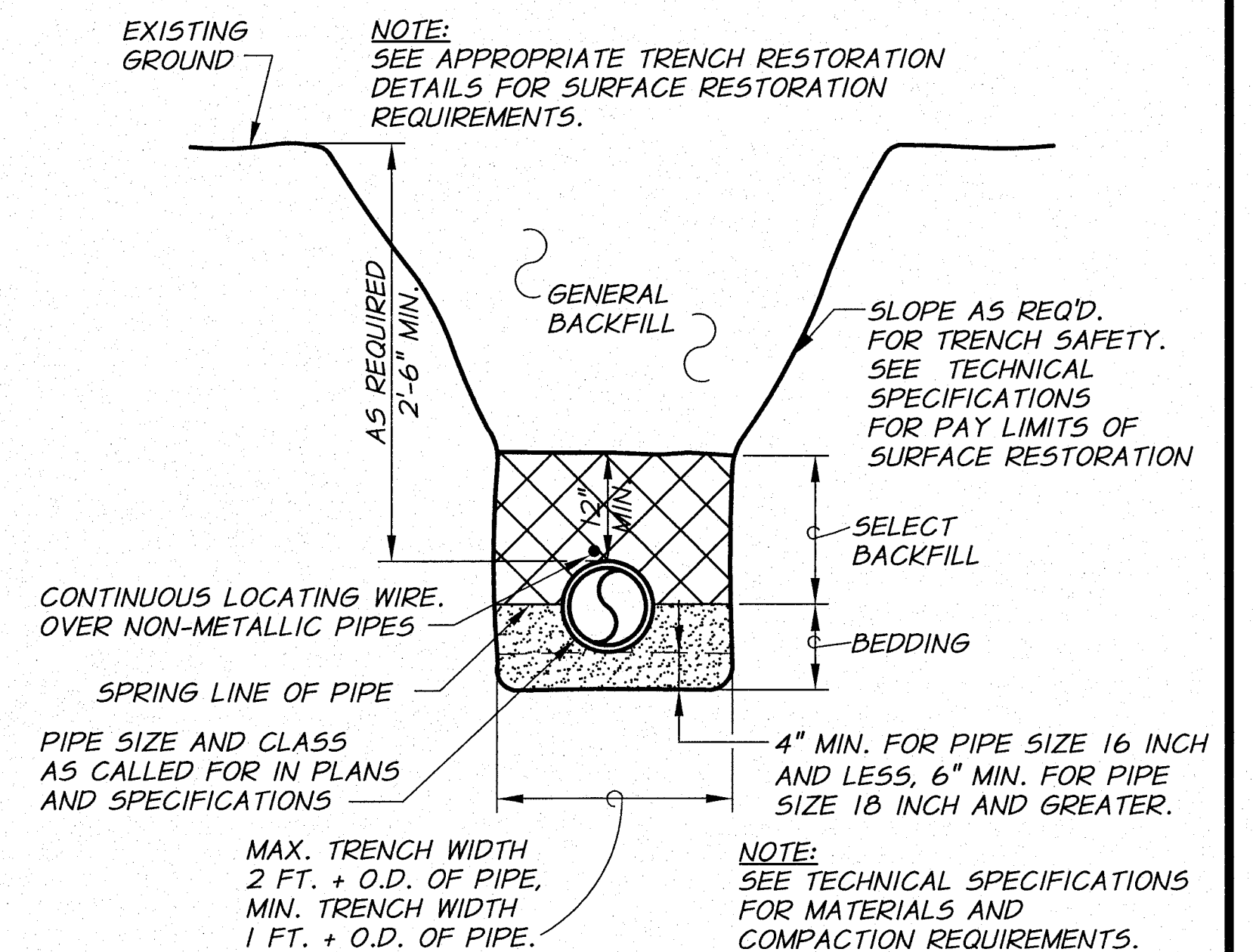
TRENCH RESTORATION
PAVED STREETS AND ROADWAYS
("ASPHALT SURFACE RESTORATION" PAY ITEM)



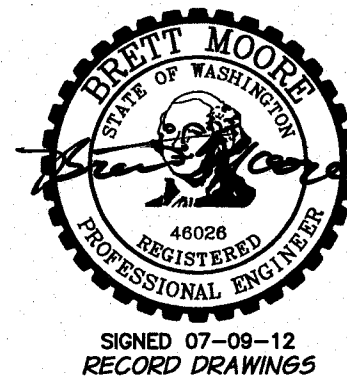
TRENCH RESTORATION
GRAVEL STREETS, ROADWAYS, SHOULDERS, AND PARKING AREAS
("GRAVEL SURFACE RESTORATION" PAY ITEM)
N.T.S.



TRENCH RESTORATION
GENERAL AREAS
N.T.S.

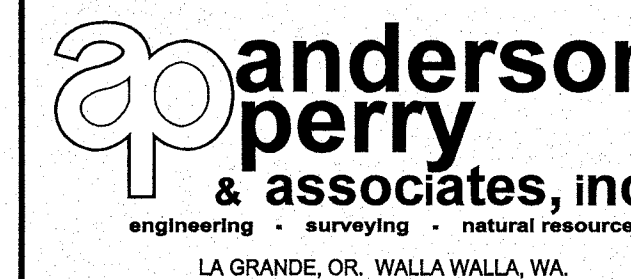


TRENCH EXCAVATION AND BACKFILL
N.T.S.



REVISION	BY	DATE	HORIZ. SCALE	VERT. SCALE
DESIGNED BY	R. HARRIS		NONE	
DRAWN BY	D. CHRISTMAN		JOB NUMBER	1199-336
REVIEWED BY	B. MOORE		DATE	2011
			ACAD FILE:	TrenchDets-PH2C.dwg
			COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.	

RECORD DRAWINGS
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BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C
TRENCH DETAILS

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 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 = 15,050 X 1.75 = 8.8 SQ.FT. = 9 SQ.FT. (ROUND UP TO NEAREST 3,000 WHOLE SQ.FT.)

TABLE NO. 1

THRUST AT FITTINGS IN POUNDS AT 100 PSI OF PRESSURE

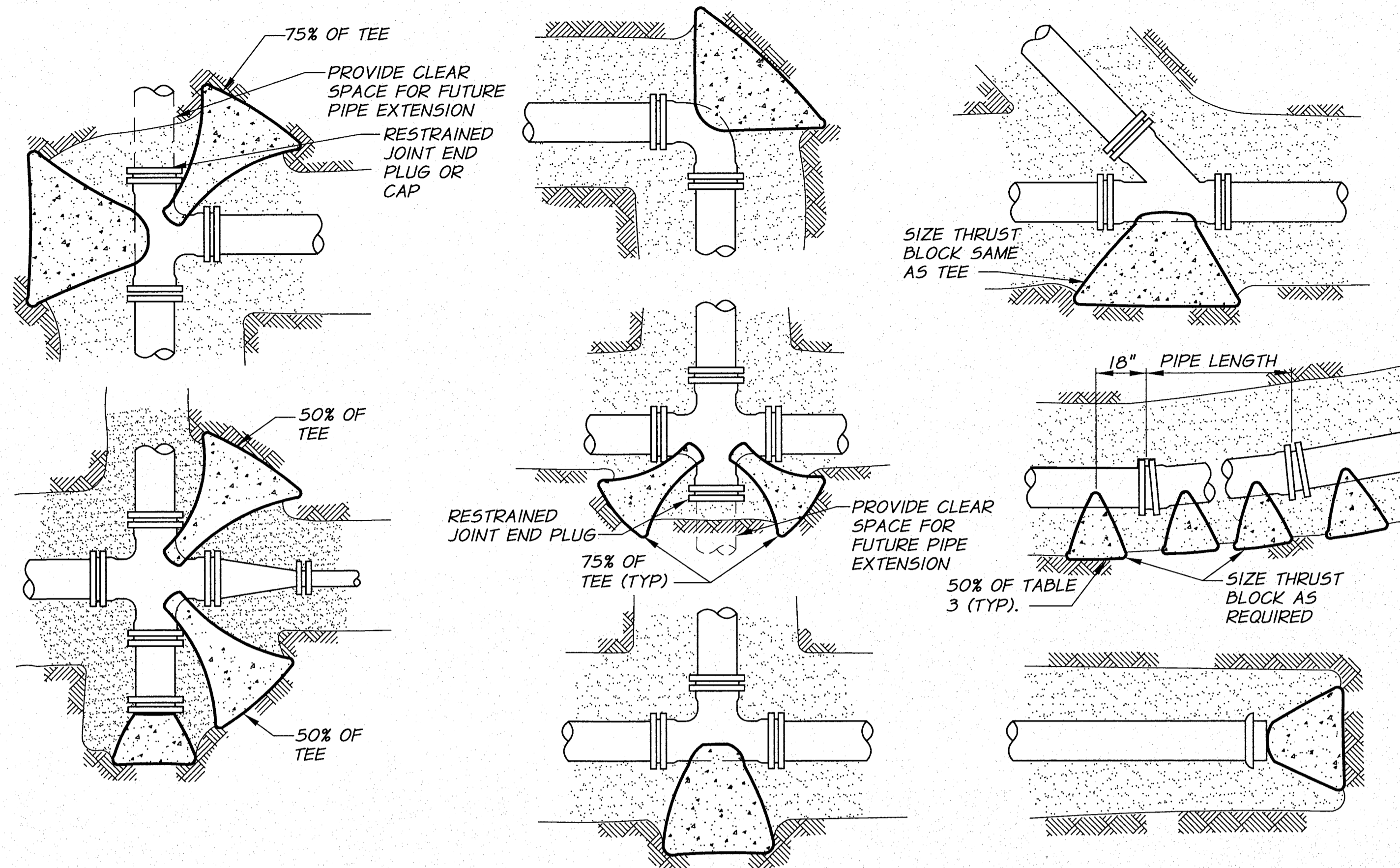
PIPE SIZE	TEES AND DEAD ENDS	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	1,680	2,310	1,290	660	340
6"	3,770	5,320	2,890	1,480	750
8"	6,690	9,460	5,120	2,620	1,320
10"	10,440	14,780	8,010	4,090	2,050
12"	15,050	21,280	11,520	5,880	2,960
14"	20,490	28,960	15,680	8,000	4,020
16"	26,750	37,830	20,470	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

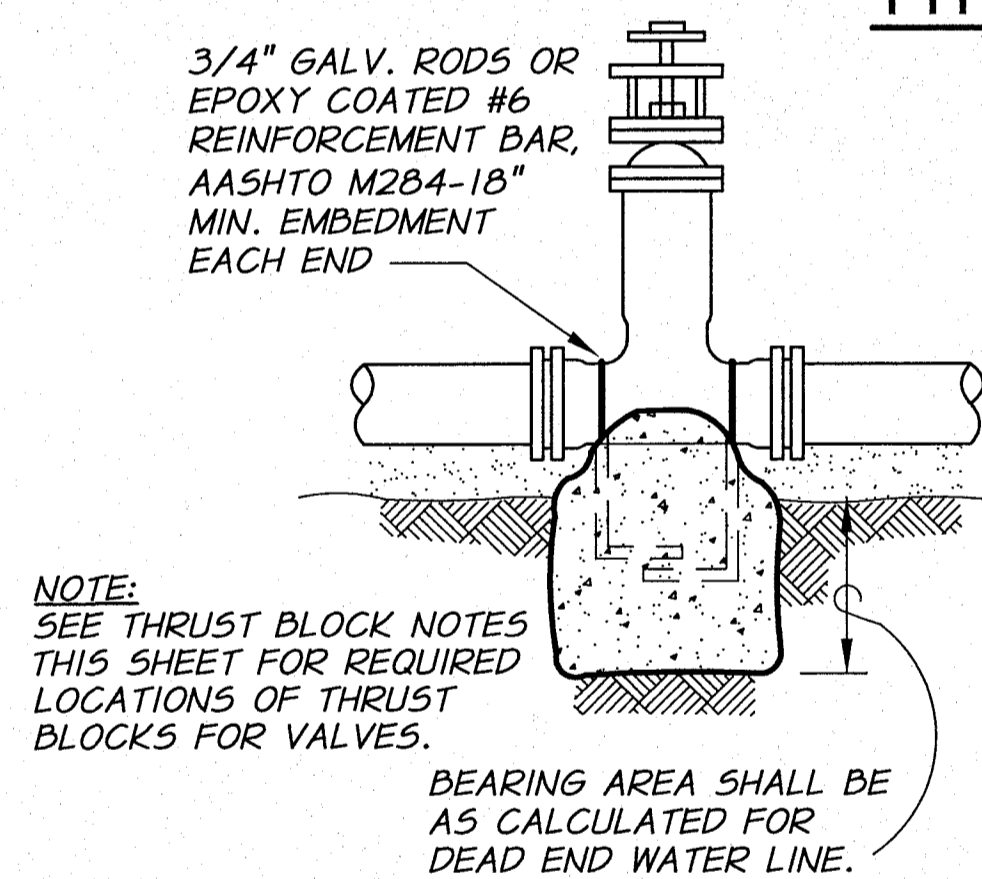
TABLE NO. 2

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

TYPICAL THRUST BLOCK LOCATIONS



PLAN VIEWS



NOTE: SEE THRUST BLOCK NOTES THIS SHEET FOR REQUIRED LOCATIONS OF THRUST BLOCKS FOR VALVES.

BEARING AREA SHALL BE AS CALCULATED FOR DEAD END WATER LINE.

TYPICAL VALVE THRUST BLOCK

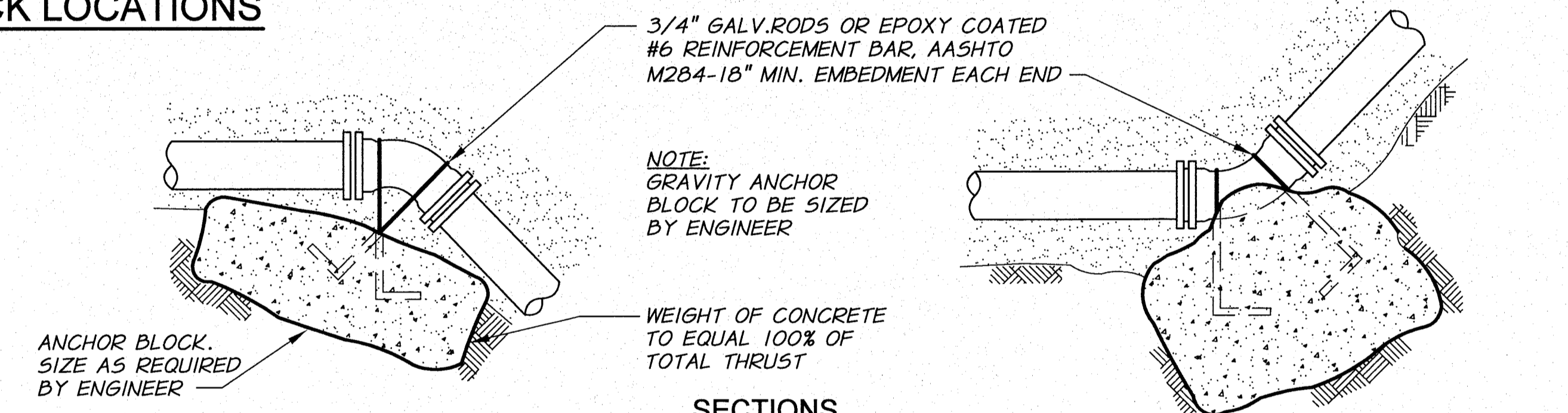
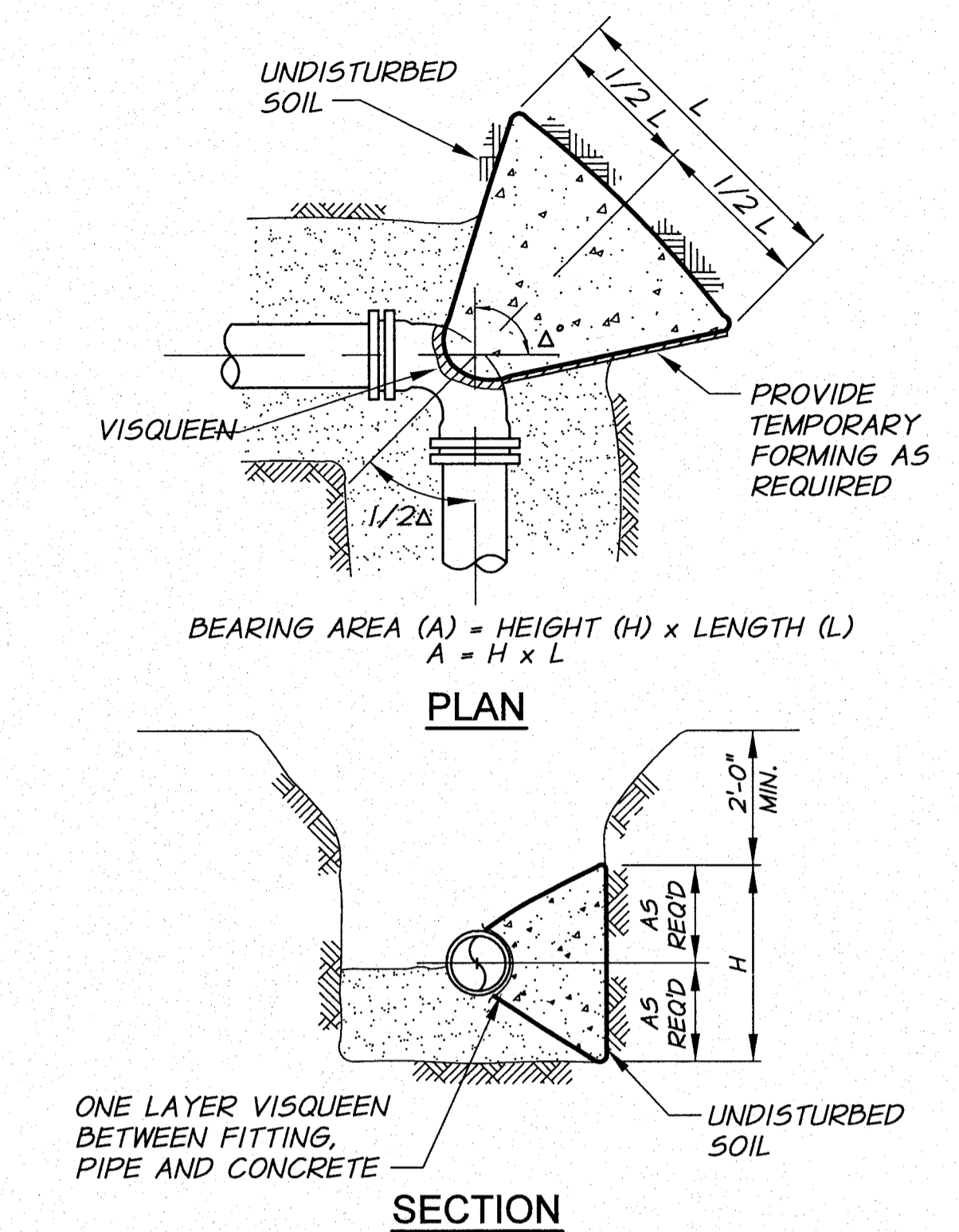
NOTE: NOT REQUIRED FOR VALVES WITH FLANGED CONNECTION TO TEE WITH THRUST BLOCK.

TABLE NO. 3

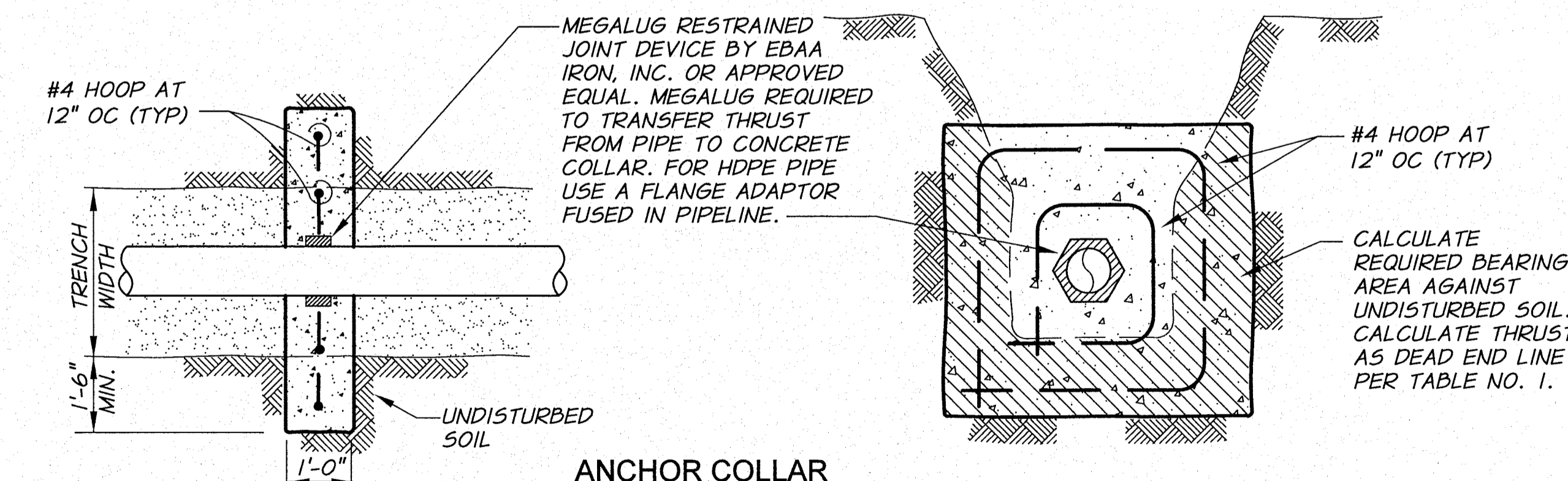
SIDE THRUST PER 100 LB./SQ.IN. PRESSURE PER DEGREE OF DEFLECTION			
PIPE SIZE	SIDE THRUST-LB	PIPE SIZE	SIDE THRUST-LB
4"	N/A	14"	360
6"	N/A	16"	470
8"	N/A	18"	600
10"	190	20"	730
12"	270	24"	1,050

MULTIPLY THRUST BY DEGREE OF DEFLECTION TO OBTAIN TOTAL THRUST

TYPICAL THRUST BLOCK DETAILS



SECTIONS

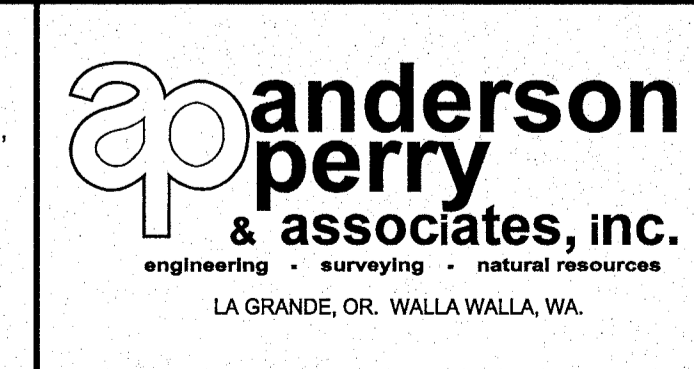


TYPICAL ANCHOR BLOCKS



REVISION	BY	DATE	HORIZ. SCALE NONE	VERT. SCALE
DESIGNED BY R. HARRIS			JOB NUMBER 1199-336	DATE 2011
DRAWN BY D. CHRISTMAN			ACAD FILE Thrust-PH2C.dwg	
REVIEWED BY B. MOORE			COPYRIGHT 2011 BY ANDERSON-PERRY & ASSOC., INC.	

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BENTON IRRIGATION DISTRICT
IRRIGATION SYSTEM IMPROVEMENTS
PHASE 2C
THRUST BLOCK DETAILS