

W.O. 23-33 GRANDVIEW PARK IRRIGATION SYSTEM REPLACEMENT

BILLINGS, MONTANA

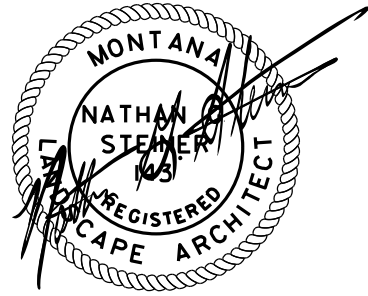
JUNE 1, 2023

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GENERAL NOTES:
1. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. UTILITIES ARE INDICATED ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE SURVEY. ACCURACY OF INFORMATION IS NOT GUARANTEED. SERVICE LINES MAY NOT BE IN STRAIGHT LINES OR AS INDICATED ON THE PLANS.
3. ALL EXISTING IMPROVEMENTS TO REMAIN AND BE PROTECTED UNLESS NOTED OTHERWISE.
4. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE PREPARED AND SEEDED AS SPECIFIED. A DISTURBED AREA IS DEFINED AS AN AREA WHERE CONSTRUCTION ACTIVITIES INCLUDING DEMOLITION, TRENCHING, EARTHWORK, MATERIAL STORAGE, STAGING, PARKING, OR ANY FORM OF EXCAVATION, COMPACTION, OR TRAFFIC RESULTS IN THE REMOVAL OR DISPLACEMENT OF EXISTING GROUND COVER OR GRADE. CONTRACTOR SHALL REVIEW ALL OTHER CONTRACT DOCUMENTS AND CONTRACTED WORK BY OTHERS TO DETERMINE FULL SCOPE OF POTENTIAL SITE DISTURBANCE TO BE RECLAIMED.
5. REFER TO ALL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



PREPARED FOR:



PREPARED BY:





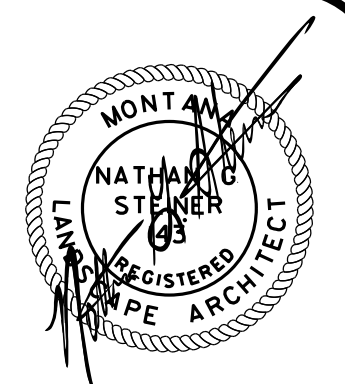
LEGEND:

SYMBOL	DESCRIPTION	SIZE	MANUF.	MODEL NUMBER
	ROTOR SPRINKLER	45' RADIUS	RAINBIRD	6504-6.0 GPM, @ 60 PSI (BLUE)
	AIR RELIEF VALVE	2"	BERMAD	C10-SP
	ISOLATION VALVE	LINE SIZE	AS SPECIFIED	AS SPECIFIED
	MAINLINE DRAIN VALVE		AS SPECIFIED	
	QUICK COUPLING VALVE	1"	RAINBIRD	44NP
	RAIN/FREEZE SENSOR		RAINBIRD	WR2-RFC
	ELECTRIC CONTROL VALVE	AS NOTED	RAINBIRD	IVM-PE5B
	SATELLITE CONTROLLER	60 STATION	RAINBIRD	ESP-PLXVM-QNCC4G W/ LXMSS
	MASTER VALVE/FLOW SENSOR	1-1/2"/1-1/2"	SUPERIOR/FLOMEC	3300150 W/ DC LATCHING SOLENOID/ QS200-15
	PUMP STATION	AS SPECIFIED		
	IRRIGATION MAIN- PVC	3"		CLASS 200
	LATERAL LINE- PVC	AS SHOWN		CLASS 200
	SLEEVES - PVC	SEE NOTES		SCHEDULE 40

Zone #
 GPM

- GENERAL NOTES:**
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES ON SITE OR ADJACENT PROPERTY SHALL BE CONTRACTOR'S RESPONSIBILITY.
 - IRRIGATION PLAN IS DIAGRAMMATIC IN NATURE. FIELD ADJUSTMENT OF IRRIGATION COMPONENTS MAY BE NECESSARY TO AVOID CONFLICTS WITH EXISTING SITE FEATURES. REASONABLE CHANGES IN PIPE LAYOUT MAY BE MADE BY THE CONTRACTOR WITH THE ADVANCE APPROVAL OF THE ARCHITECT. LINES SHOWN BELOW PAVEMENT ADJACENT TO TURF AREAS ARE TO BE LOCATED IN TURF AREAS.
 - SCHEDULE 40 PVC SLEEVES ARE REQUIRED UNDER ALL HARD AND GRAVEL SURFACES, EXISTING AND PROPOSED. LOCATION AND NUMBER OF SLEEVES IS THE RESPONSIBILITY OF THE CONTRACTOR FOR INSTALLATION OF THE IRRIGATION SYSTEM AS SHOWN. ALL PIPE SLEEVES TO BE 2 PIPE SIZES LARGER THAN PIPE TO BE INSTALLED THROUGH SLEEVE. PROVIDE SEPARATE SLEEVES FOR BOTH 120 V. AND 24 V. WIRING. WIRE SLEEVES TO BE 4" MIN. ANY SLEEVES INDICATED ON THE PLAN ARE FOR THE CONVENIENCE OF THE CONTRACTOR.
 - CONTRACTOR SHALL PROVIDE ALL DEVICES, WIRING AND PROGRAMMING FOR A COMPLETE OPERATIONAL SYSTEM.
 - LOCATIONS OF MAINLINE DRAINS MAY VARY. ACTUAL LOCATIONS SHALL BE IN ALL LOW SPOTS ALONG THE MAINLINE IN APPROXIMATE LOCATIONS AS SHOWN.
 - LOCATIONS OF AIR RELIEF VALVES MAY VARY. ACTUAL LOCATIONS SHALL BE IN ALL HIGH SPOTS ALONG THE MAINLINE IN APPROXIMATE LOCATIONS AS SHOWN.
 - CONTRACTOR SHALL MAINTAIN AN ACCURATE, CURRENT AS-BUILT ON THE JOB AT ALL TIMES.
 - ZONES WITH FLOWS THROUGH 60 GPM TO HAVE 1-1/2" CONTROL VALVES. ZONES WITH FLOWS 61 GPM AND GREATER TO HAVE 2" CONTROL VALVES.
 - CONTRACTOR SHALL COORDINATE AND PAY FOR TECHNICAL SUPPORT NEEDS WITH CONTROL SYSTEM MANUFACTURER AND SERVICE PROVIDERS AS REQUIRED FOR COMPLETE AND FUNCTIONAL SYSTEM.
 - ALL CONDUIT TO BE 1" MINIMUM, UNLESS NOTED OTHERWISE. CONCEAL OR BURY WHEREVER POSSIBLE. ALL VISIBLE CONDUITS SHALL BE ROUTED AS DIRECTED AND PAINTED TO MATCH MOUNTING SURFACES. ALL BURIED CONDUITS SHALL BE ELECTRICAL GRADE SCHEDULE 40 PVC. ALL CONDUITS ABOVE GRADE SHALL BE SCHEDULE 80 PVC.
 - ADJUST ALL HEADS AS REQUIRED TO PREVENT OVERSPRAY ONTO BUILDINGS AND STREETS.
 - CONTROLLER LOCATION TO BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
 - DESIGN BASED ON 0.28"/DAY WATER REQUIREMENT, 5 DAYS/WEEK WITH AN 8 HOUR WATER WINDOW WITH 60 PSI AT ALL 6504 IRRIGATION HEADS. OVERALL SYSTEM REQUIREMENTS AT THE PUMP STATION DISCHARGE HEAD ARE 75 GPM @ 81 PSI. (INCLUDES FILTER FLUSH)
 - POWER FOR CONTROLLER TO BE SUPPLIED AT PUMP STATION.
 - OWNER'S APPROVAL REQUIRED FOR WORK WITHIN 10' OF ANY TREE. SEE SPECIAL PROVISIONS.
 - REFER TO DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

- KEY NOTES:**
- IRRIGATION CONTROLLER TO BE MOUNTED ON EXTERIOR OF PUMP STATION ENCLOSURE, SEE I1.4. POWER FOR CONTROLLER TO BE SUPPLIED FROM PUMP STATION.
 - APPROXIMATE LOCATION OF NEW METER. COORDINATE WITH OWNERS REP. REFER TO 3/11.4 FOR INFORMATION REGARDING ELECTRICAL SERVICE.
 - EXISTING 3" PVC SUPPLY LINE THAT RUNS TO THE CANAL. EXISTING DEPTH IS APPROX. 6". FOLLOWING CONNECTION TO EXISTING SUPPLY LINE. ADJUST PIPE DEPTH TO 18" BURY DEPTH AND ROUTE TO PUMP STATION INLET. SEE I11.4. INSTALL MAINLINE DRAIN PRIOR TO PUMP STATION INLET. CONNECT DRAIN TO MANHOLE/BOULDER PIT.
 - OBTAIN NECESSARY PERMITS AND LOCATE ALL UTILITIES IN NORTH 30TH STREET PRIOR TO BORING FOR MAINLINE AND CONTROL WIRES. COORDINATE WITH PUBLIC WORKS DEPARTMENT TO OBTAIN PERMITS AND NECESSARY APPROVALS. INSTALL A 6" SLEEVE FOR MAINLINE AND 1" CONDUIT FOR WIRE.
 - REMOVE EXISTING CONCRETE VAULT AND BACKFILL.
 - DEMO EXISTING CONCRETE PUMP VAULT AND BACKFILL. DISPOSE OF IRRIGATION EQUIPMENT.
 - MOUNT RAIN/FREEZE SENSOR TO EXISTING UTILITY POLE.
 - INSTALL MAINLINE DRAIN AT LOW POINT OF STREET CROSSING. MAINLINE TO SLOPE TO DRAIN.
 - TRANSITION TO SOLVENT WELD MAINLINE INSIDE OF SLEEVE.
 - APPROXIMATE LOCATION OF MANHOLE/BOULDER PIT, SEE 2/11.4.



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W.O. 23-33 GRANDVIEW PARK IRRIGATION SYSTEM REPLACEMENT
IRRIGATION PLAN

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GOLF COURSE ARCHITECTURE
IRRIGATION DESIGN
LANDSCAPE ARCHITECTURE

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DRAWN BY: _____ JAV
DATE: _____ 6/1/23
CHECKED BY: _____ NSS
DATE: _____ 6/1/23
REV: _____
REV: _____
FILE: I1.1 IRRIGATION PLAN.DGN

SHEET
11.1



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W.O. 23-33 GRANDVIEW PARK IRRIGATION SYSTEM REPLACEMENT IRRIGATION DETAILS

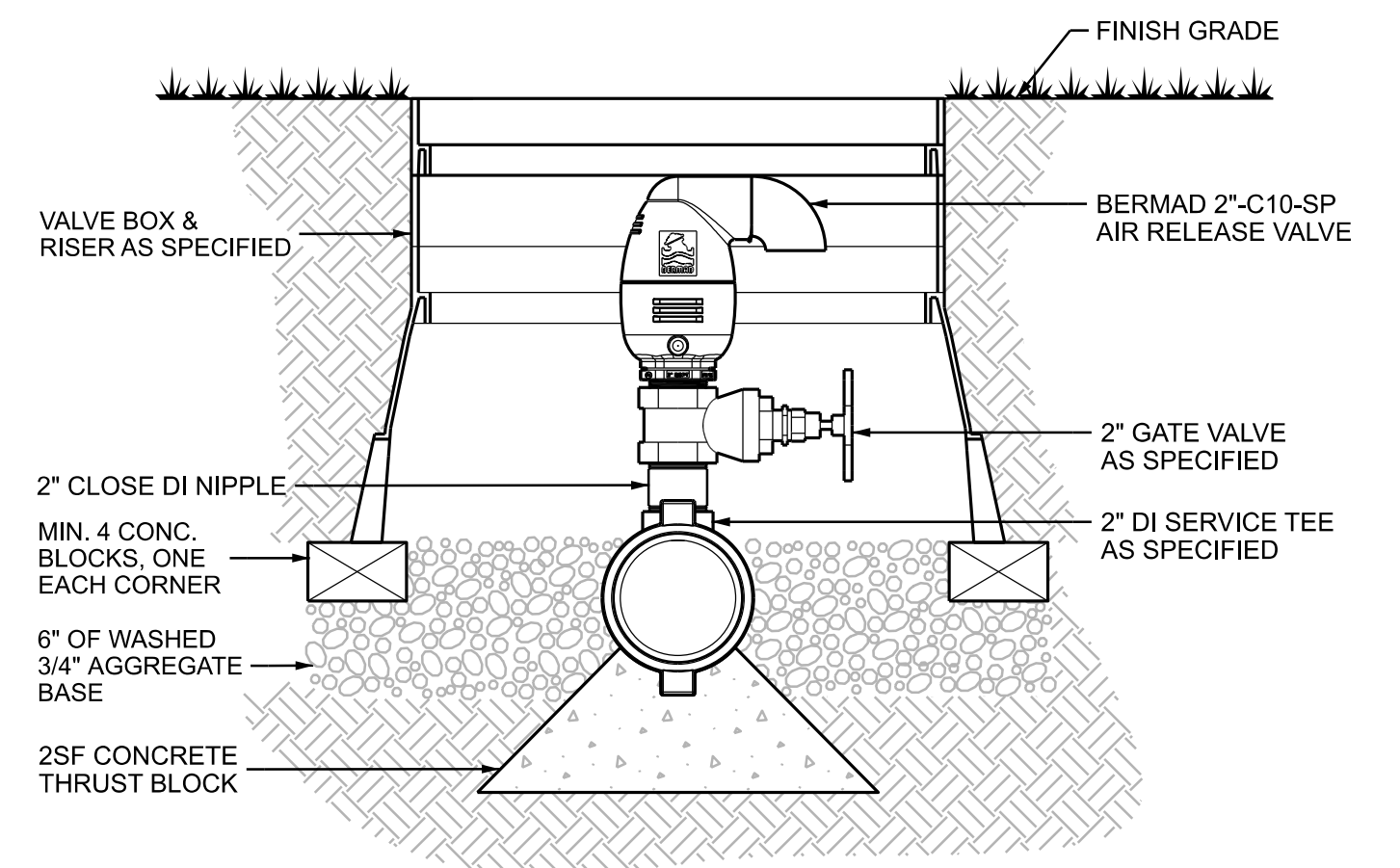
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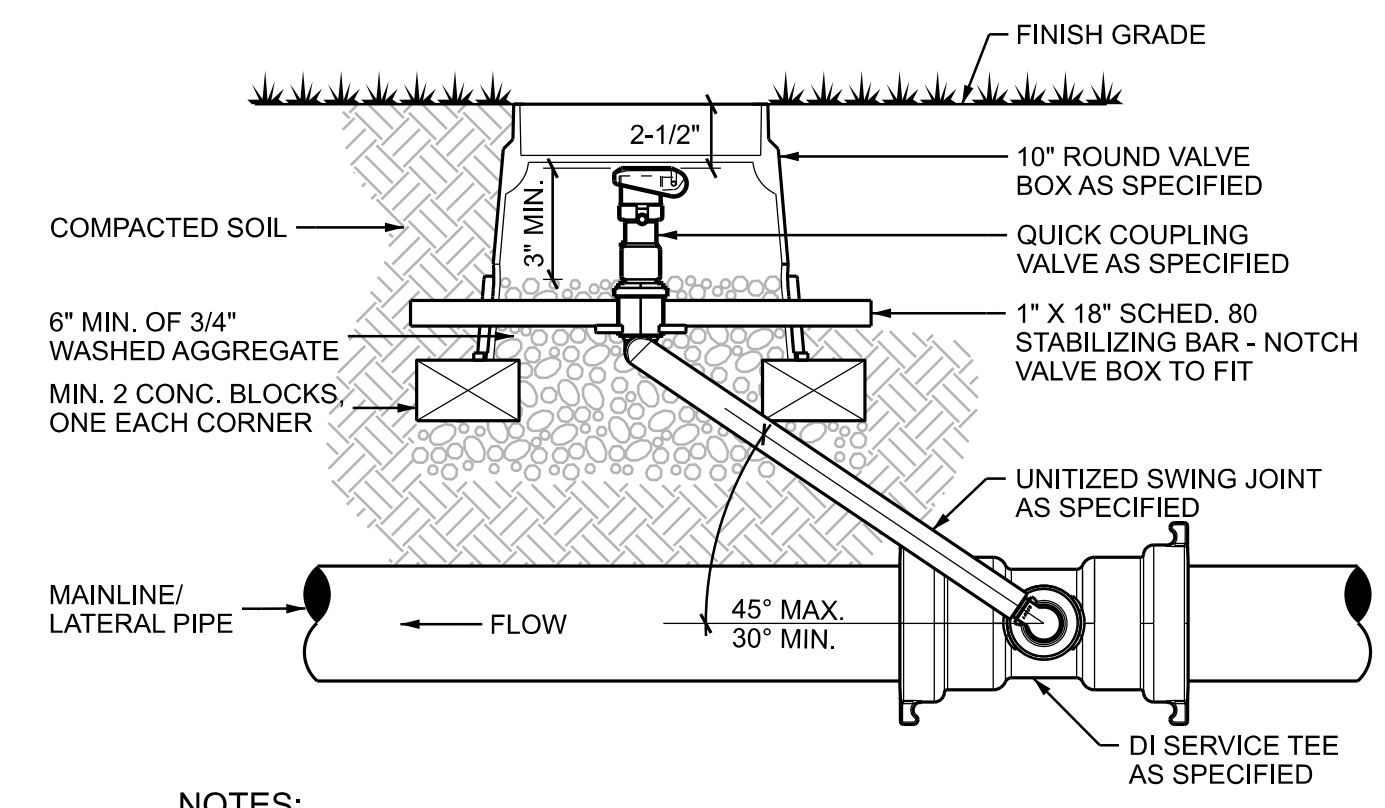
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FILE: 11.2 IRRIGATION DETAILS.DGN

SHEET 11.2



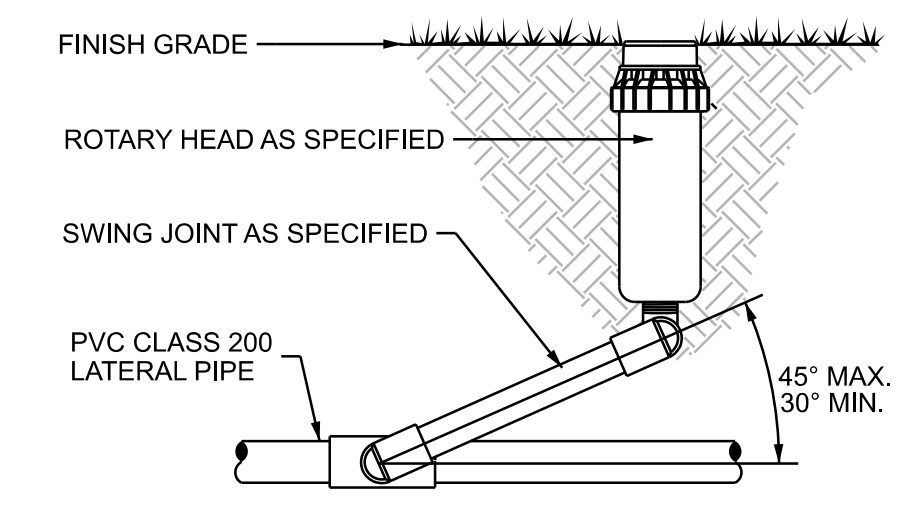
NOTES:
1. ROTATE TEE ON MAINLINE AS NECESSARY TO ENSURE CLEARANCE IS PROVIDED BETWEEN LID AND TOP OF AIR RELEASE VALVE.
2. PROVIDE 1\"/>

3 AIR RELIEF VALVE NOT TO SCALE

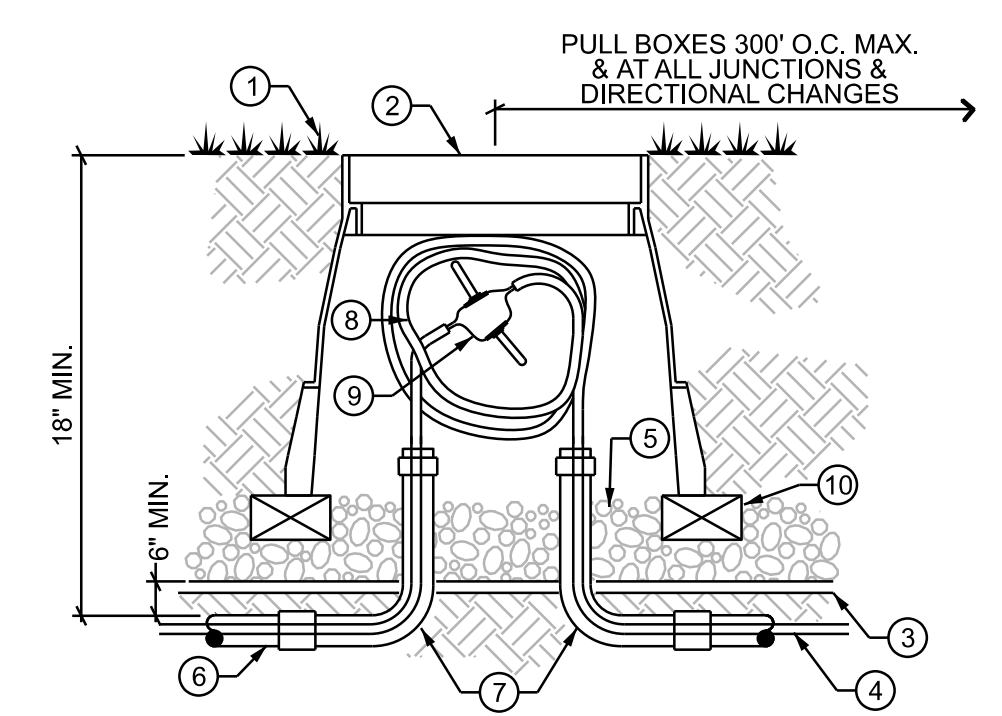


NOTES:
1. DO NOT DRIVE REBAR THROUGH TABS ON SWING JOINT, STABILIZING BAR TO BE USED.

2 TYPICAL QUICK COUPLER NOT TO SCALE

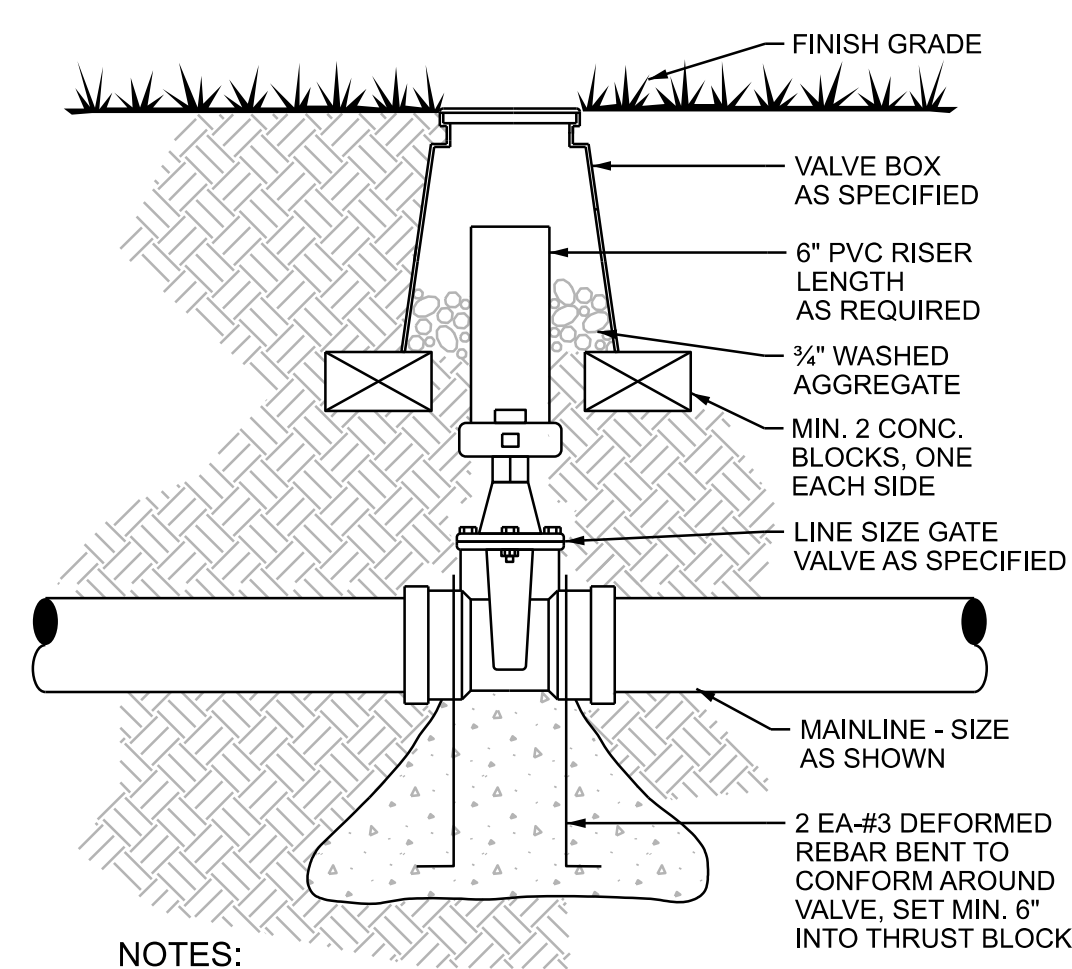


1 TYPICAL ROTOR HEAD NOT TO SCALE



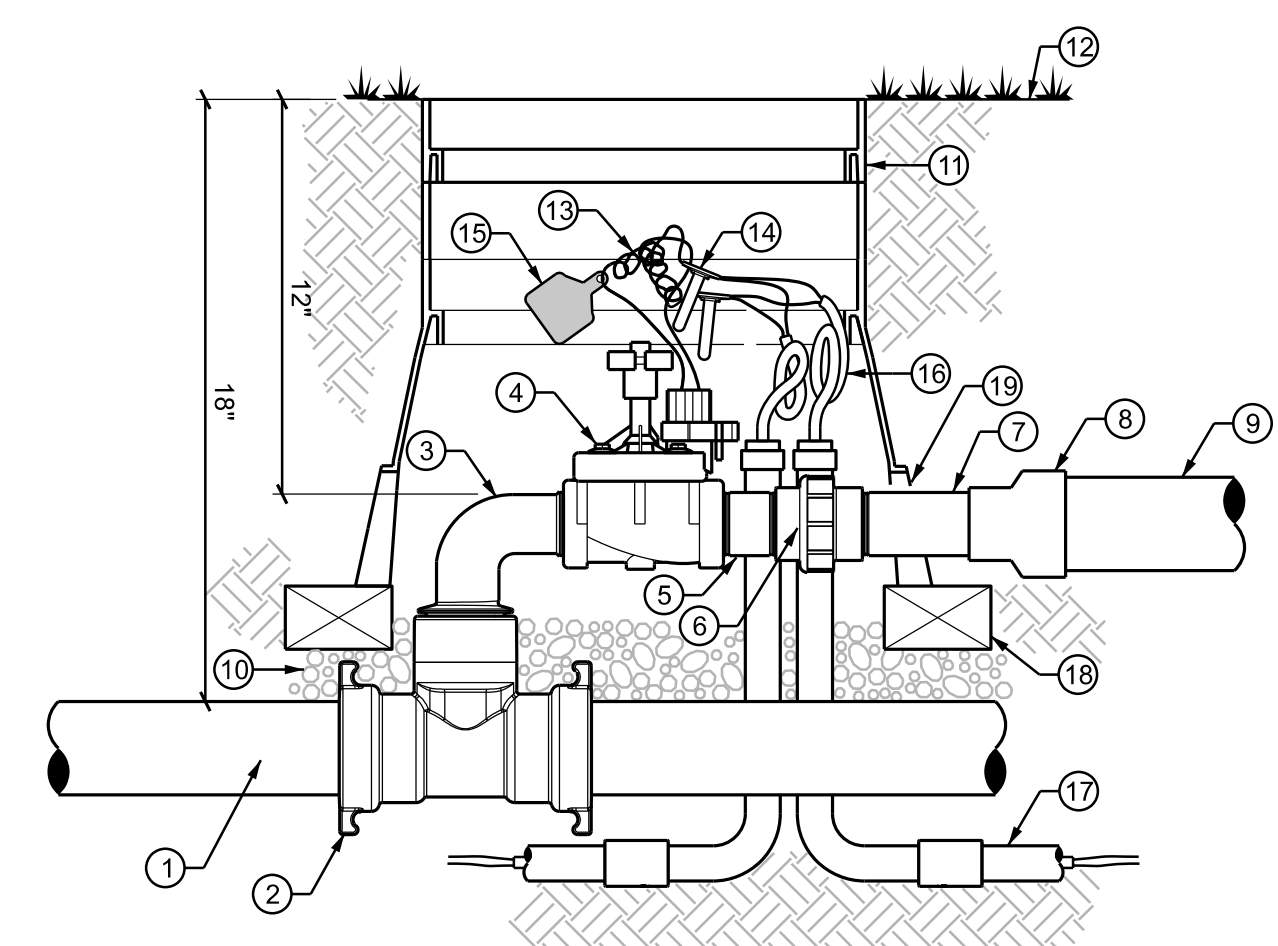
LEGEND:
1. FINISH GRADE
2. CARSON 1419-12 BOX & 1419-3B GREY COVER, ELECTRICAL MARKING.
3. PANDUIT HTDU 3R-E MARKER TAPE CONTINUOUS.
4. 2-WIRE COMM CABLE TO CONTROLLERS AND DECODERS.
5. MIN. 4\"/>

6 2-WIRE CONTROL PULL / SPLICE BOX NOT TO SCALE



NOTES:
1. FOR THRUST BLOCK SIZES, SEE THRUST BLOCK DETAIL AND SIZE THRUST BLOCK BASED ON TEES OF SAME SIZE AS ISOLATION VALVE.
2. THIS DETAIL FOR VALVES 3\"/>

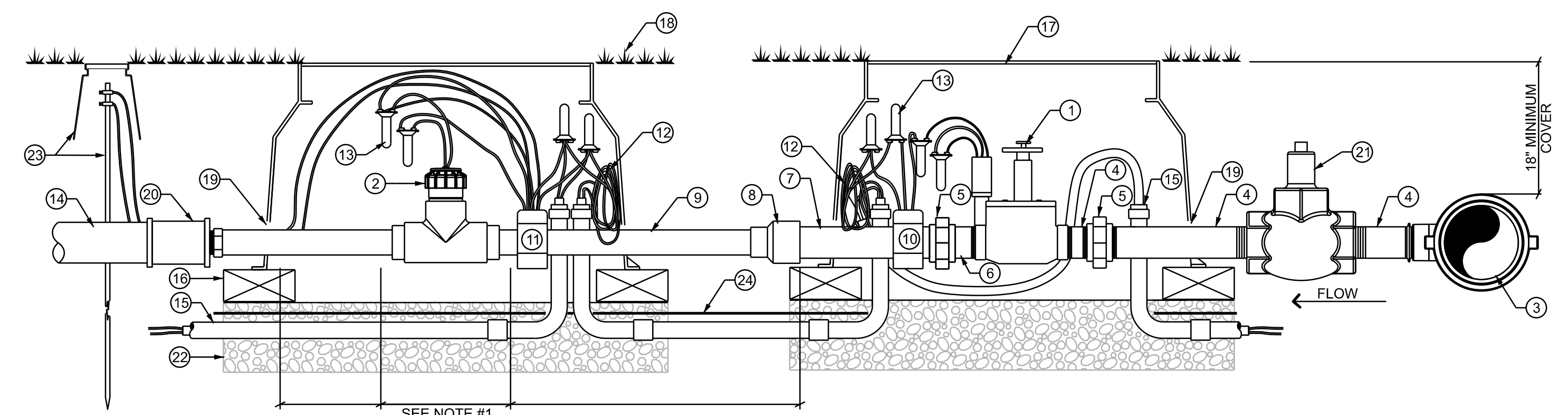
5 MAINLINE ISOLATION VALVE NOT TO SCALE



LEGEND:
1. MAINLINE.
2. HARCO D.I. SWIVEL TEE.
3. 2\"/>

NOTES:
1. ADJUST SIZE OF LATERAL 90\"/>

4 TYPICAL ELECTRIC CONTROL VALVE - IVM NOT TO SCALE



LEGEND:
1. MASTER VALVE.
2. FLOW SENSOR.
3. DI SERVICE TEE ON MAINLINE, REPLACE SERVICE TEE WITH DI TAPPED CAP AS REQUIRED.
4. DI NIPPLE, SIZE TO MATCH MASTER VALVE.
5. SCH 80 PVC UNION.
6. SCH 80 TOE NIPPLE.
7. PVC PIPE, SAME SIZE AS MASTER VALVE.
8. SCH 80 PVC REDUCER AS REQUIRED.
9. PIPE SIZE TO MATCH SIZE OF FLOW SENSOR.
10. IVM-OUT FIELD DECODER WITH WIRES TO MASTER VALVE AND 2-WIRE PATH.
11. IVM-SEN SENSOR DECODER WITH WIRES TO FLOW SENSOR, 2-WIRE PATH & GROUND ROD.
12. SLACK DECODER PATH WIRE, AS SPECIFIED.
13. WIRE CONNECTORS, AS SPECIFIED.
14. SUBMAINLINE PIPE TO CONTROL VALVES. SEE PLAN FOR SIZE.
15. 2-WIRE PATH TO CONTROLLER/DECODERS IN CONDUIT, 1\"/>

NOTES:
1. INLET PIPE LENGTH OF FLOW SENSOR MUST BE MIN. 10X PIPE DIA. STRAIGHT, CLEAN RUN OF PIPE, NO FITTINGS OR TURNS. OUTLET PIPE LENGTH OF FLOW SENSOR MUST BE MIN. 5X PIPE DIA. OF STRAIGHT CLEAN RUN OF PIPE, NO FITTINGS OR TURNS.
2. REFER TO LEGEND ON PLAN SHEETS FOR ADDITIONAL INFORMATION FOR MASTER VALVE AND FLOW SENSOR.

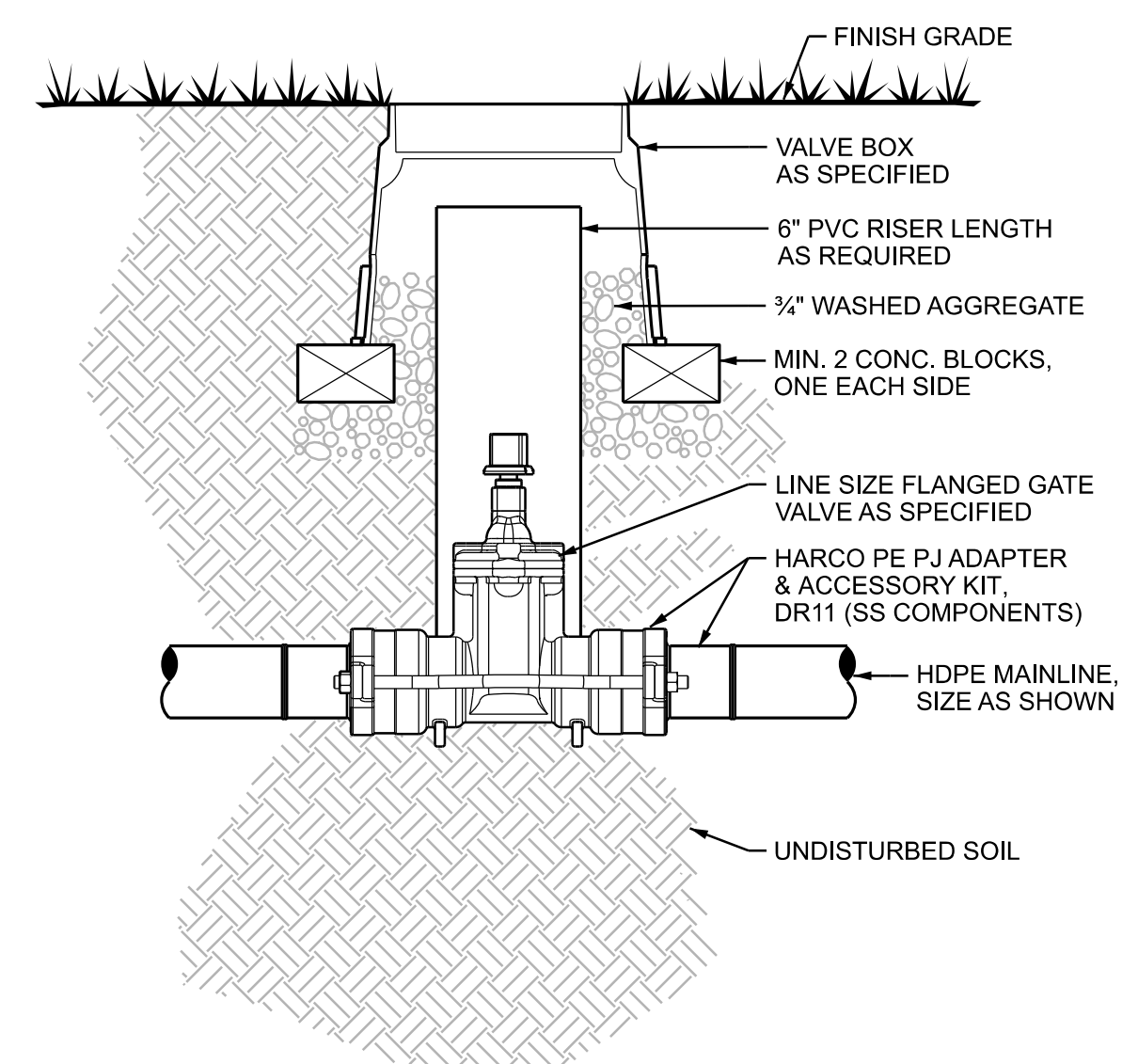
7 MASTER VALVE & FLOW SENSOR NOT TO SCALE



- KEY NOTES:**
- ① EXISTING 3" SUPPLY LINE TO THE CANAL. ABANDON IN PLACE.
 - ② OBTAIN NECESSARY PERMITS AND LOCATE ALL UTILITIES IN NORTH 30TH STREET PRIOR TO BORING FOR MAINLINE AND CONTROL WIRES. COORDINATE WITH PUBLIC WORKS DEPARTMENT TO OBTAIN PERMITS AND NECESSARY APPROVALS.
 - ③ CONNECTION TO EXISTING BOX SCREEN WITH FLANGE FITTING, FIELD VERIFY. SIZE PRIOR TO ORDERING PARTS.
 - ④ PROPOSED 6" HDPE SUPPLY LINE. SLOPE TO DRAIN TOWARD PUMP STATION.
 - ⑤ MAINLINE DRAIN ON BOTTOM OF HDPE SUPPLY LINE. PLUMB INTO CONCRETE VAULT.
 - ⑥ TERMINATE HDPE LINE W/ 6" X 3" REDUCER, 6" STIFFENER, 3" SPIGOT FLANGE, BACKUP RINGS, AND NUT BOLT GASKET KIT.
 - ⑦ INSTALL THRUST ANCHORS ON HDPE SUPPLY LINE, SEE 2/11.5
 - ⑧ PROVIDE ALL TRANSITION FITTINGS AS REQUIRED AT GATE VALVE, SEE 1/11.5.
 - ⑨ ADJUST LENGTH/DEPTH OF PUMP STATION DROP PIPE TO ACCOMMODATE HDPE SUPPLY LINE.
 - ⑩ EXISTING BOX SCREEN TO REMAIN AND BE PROTECTED.
 - ⑪ REMOVE EXISTING VAULTS, EQUIPMENT, ETC. UNDER BASE BID.

NOTES:

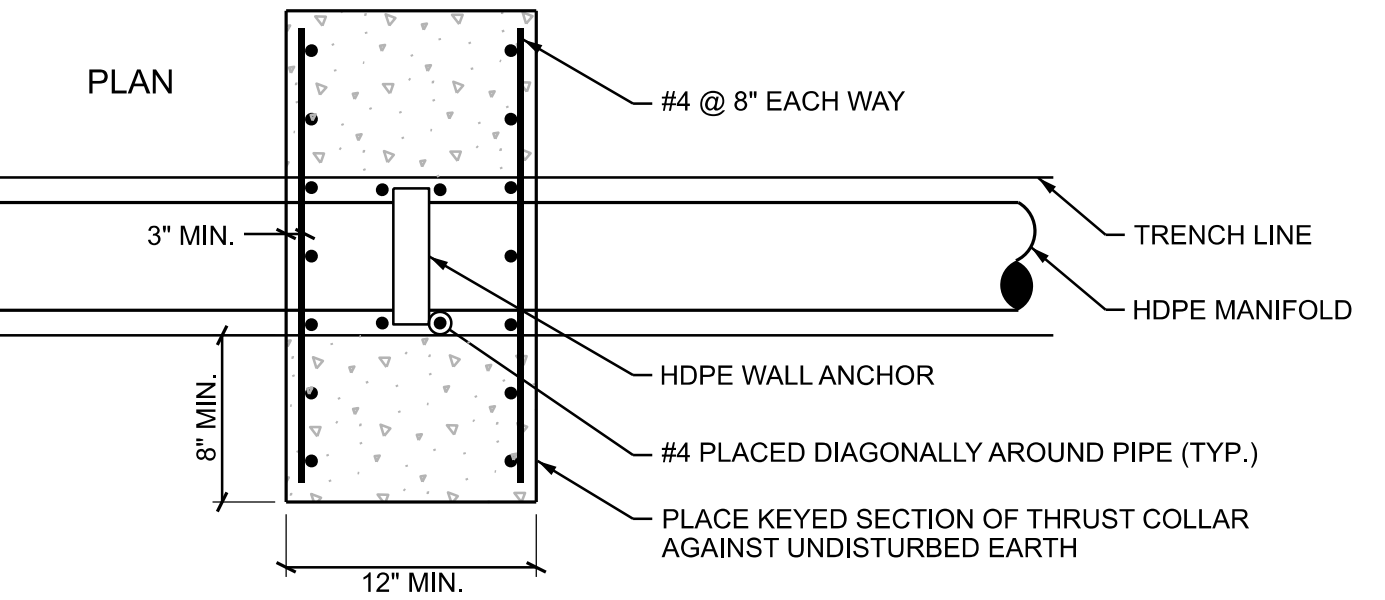
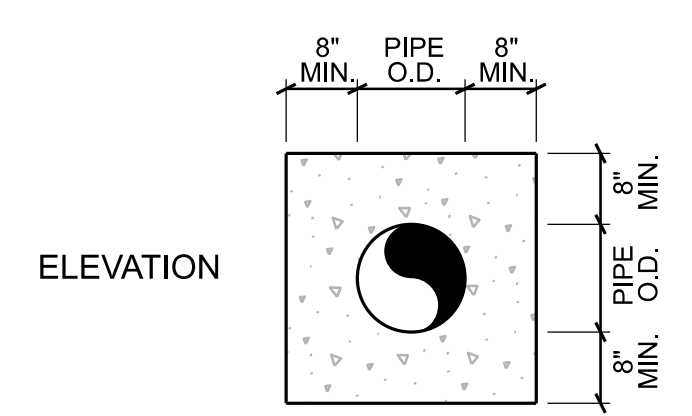
1. COORDINATE WITH BRIAN MACKKEY (406-657-2309) OF MSU-B 2 WEEKS PRIOR TO BEGINNING WORK ON NORTH SIDE OF POLY DRIVE. BRIAN WILL LOCATE IRRIGATION AND OTHER EQUIPMENT IN BORING PATH.



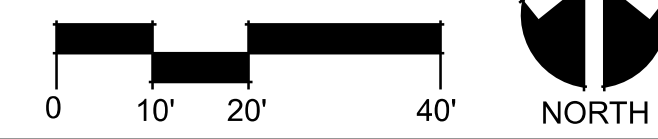
NOTES:

1. THIS DETAIL FOR VALVES 2" - 12" AND LARGER.

① MAINLINE ISOLATION VALVE NOT TO SCALE



② CONCRETE THRUST RESTRAINT DETAIL NOT TO SCALE



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SHEET **11.5**