XVI - STANDARD DETAILS INDEX

Drawing #	Title
1A,1B,1C,1D,1E	General Notes, Specifications and Separation Statement
2	Service Connection Detail 5/8" or 1" Meter
3	Water Service Connections (Single or Double) Plan/Profile
4	Typical Connection for Multiple Services (Three or More)
5	1–1/2" and 2" Meter Detail
6	Typical Above Ground Meter (3" or Larger)
7	Fire Hydrant Installation Detail & Notes
8	Potable Water Flushing Hydrant
9	Sample Point Detail
10	Permanent Sampling Point Detail
11	Double Valve Detail and Filling and Flushing Connection
12	Pressure–Type Vacuum Breaker (P.V.B.) (Irrigation System)
13	Reduced Pressure Backflow Preventer–Single Service 3/4" – 2"
14	Reduced Pressure Backflow Preventer–Dual Service 3/4" – 2"
15	Reduced Pressure Backflow Preventer–Single Service (3" or larger–45° ELL)
16	Reduced Pressure Backflow Preventer–Single Service (3" or larger–90° ELL)
17	Fireline Double Check Detector Assembly
18	Valve Setting Detail
19	Underground Air Release Valve and Box
20	Pressure Pipe Conflict Detail
21	Mechanical Joint Anchoring Requirements
22	Air Gap Separation
23	Typical Trench Detail
24	Flexible Pavement Replacement Detail
25	Concrete Pavement Replacement Detail
26	Casing Installation Detail
27	Typical Utilities Canal Crossing
28	Pile Cap Support Detail Dual Pipe (Elevation)
28A	Pile Cap Support Detail Dual Pipe (View C–C)
28B	Concrete Pile Detail
28C	Concrete Pile Notes
29	Fan Guard Detail
30	Protective Slab for Pipe
31	Typical Sewer Service Connection
32	Sanitary Sewer Lateral Detail
33	Sewer Service Cleanout (For Traffic Areas)
34	Standard Manhole
35	Shallow Manhole
36	Flat Top Precast Manhole
37	Invert Flow Channel Detail
38	Sanitary Sewer Manhole Ring and Cover
39	Drop Manhole and Service Drop
40	Force Main Entering Shallow Manhole
41	Force Main Entering Deep Manhole

XVI - STANDARD DETAILS INDEX

XVI - STANDARD DETAILS INDEX

GENERAL NOTES:

FOR THE PURPOSE OF THE GENERAL NOTES BELOW, THE TERM DEPARTMENT SHALL MEAN "MARTIN COUNTY UTILITIES & SOLID WASTE DEPARTMENT".

1. ALL CONNECTIONS TO EXISTING MAINS SHALL BE OBSERVED BY THE DEPARTMENT. VALVES ON EXISTING MAINS SHALL BE OPERATED BY DEPARTMENT PERSONNEL OR UNDER THEIR DIRECT SUPERVISION. TAPPING SLEEVE AND VALVE SHALL BE PRESSURE TESTED PRIOR TO TAPPING. IF SERVICE MUST BE CUT OFF TO EXISTING CUSTOMERS, THE DEPARTMENT MUST HAVE THREE DAYS NOTICE TO MAKE NECESSARY NOTIFICATIONS. THE CONTRACTOR MAY BE REQUIRED TO ASSIST IN NOTIFICATIONS. IN THIS EVENT, CONTRACTOR SHALL BE READY TO PROCEED WITH AS MUCH MATERIAL PREASSEMBLED AS POSSIBLE AT THE SITE TO MINIMIZE THE LENGTH OF SERVICE INTERRUPTION. THE DEPARTMENT WILL POSTPONE A SERVICE CUT OFF IF THE CONTRACTOR IS NOT READY TO PROCEED ON SCHEDULE. SUCH CONNECTIONS SHALL BE MADE AT NIGHT TO MINIMIZE EFFECTS UNLESS OTHERWISE AUTHORIZED BY THE DEPARTMENT. NO CUSTOMER SHOULD BE WITHOUT SERVICE FOR MORE THAN FOUR HOURS.

LOCAL CHLORINATION WILL BE REQUIRED FOR ALL PIPE AND FITTINGS USED TO COMPLETE CONNECTIONS WITH POTABLE WATER.

2. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES ONE COPY OF MARTIN COUNTY UTILITIES MINIMUM DESIGN AND CONSTRUCTION STANDARDS, ONE COPY OF THE CONTRACT DOCUMENTS, INCLUDING PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS, AND COPIES OF ANY REQUIRED CONSTRUCTION PERMITS.

3. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.

4. THE LOCATION AND SIZE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITIES BY ELECTRONIC METHOD AND BY HAND EXCAVATION IN COORDINATION WITH ALL UTILITY COMPANIES PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS. ANY AND ALL CONFLICTS OF EXISTING UTILITIES WITH PROPOSED IMPROVEMENTS SHALL BE RESOLVED BY THE ENGINEER AND DEPARTMENT PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS. THIS WORK BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

5. LOCATION OF PROPOSED FACILITIES WILL BE STAKED BY CONTRACTOR. CONTRACTOR MUST GIVE 48 HOURS NOTICE TO THE DEPARTMENT IN ADVANCE OF LAYOUT.

6. PROJECT SUPERINTENDENT: THE CONTRACTOR SHALL PROVIDE A QUALIFIED SUPERINTENDENT TO REMAIN ON THE JOB SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. THE SUPERINTENDENT SHALL BE PRESENT AT THE PRE-CONSTRUCTION MEETINGS. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT BY LETTER PRIOR TO THE PRE-CONSTRUCTION MEETING APPOINTING THE SUPERINTENDENT FOR THIS PROJECT INCLUDING A FORMAL RESUME SHOWING QUALIFICATIONS. IN THE EVENT THE SUPERINTENDENT WILL NOT BE PRESENT FOR ANY PERIOD OF TIME DURING CONTRACT WORK THE CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE IN WRITING TO THE DEPARTMENT, INCLUDING THE APPOINTMENT OF A QUALIFIED REPLACEMENT SUPERINTENDENT WHO WILL BE PRESENT DURING THE CONSTRUCTION. WORK SHALL NOT BE ALLOWED TO PROCEED UNLESS THE ASSIGNED SUPERINTENDENT IS PRESENT.

7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE HIS COMPLETE FAMILIARITY WITH THE PROJECT SITE AND COMPONENTS TO INCLUDE SUBSURFACE CONDITIONS OF SOIL AND GROUNDWATER TABLE.

WARNING: EXACT LOCATION OF UNDERGROUND UTILITIES IS NOT KNOWN NOR IS THIS DRAWING TO BE CONSTRUED AS DEPICTING THE LOCATION OF ALL UNDERGROUND UTILITIES OR STRUCTURES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINATION OF LOCATION PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR IS RESPONSIBLE, THEREFORE, FOR ALL DAMAGE AND REPAIR COSTS.

GENERAL NOTES (Cont.):

8. DENSITY TESTS OF TRENCH BACKFILL MATERIAL SHALL BE REQUIRED AT INTERVALS OF NOT MORE THAN 500 FEET. DENSITY TESTS OF PAVEMENT OPEN-CUT AREAS INCLUDING ROADS, TURNLANES, AND DRIVES SHALL BE REQUIRED AT EACH OPEN-CUT AT INTERVALS OF NOT MORE THAN 50 FEET. ALL TESTS SHALL COMMENCE AT THE TOP OF CONDUIT AND EVERY 12 INCHES TO THE FINISH GRADE. COMPACTION SHALL BE IN ACCORDANCE WITH MARTIN COUNTY UTILITIES CONSTRUCTION STANDARDS "TYPICAL TRENCH DETAIL" AND "FLEXIBLE PAVEMENT REPLACEMENT DETAIL". FLORIDA BEARING TESTS FOR THE STABILITY OF EXISTING SUBSOIL SHALL BE TAKEN AT INTERVALS OF NOT MORE THAN 500 FEET, AND CLOSER AS MIGHT BE NECESSARY IN THE EVENT OF VARIATIONS IN THE STRATA. A CERTIFIED COPY OF THE TESTS SHALL BE PROVIDED TO THE DEPARTMENT AND THE FLORIDA DEPARTMENT OF TRANSPORTATION OR MARTIN COUNTY ENGINEERING DEPARTMENT DEPENDING ON JURISDICTION. CONTRACTORS BID PRICE SHALL INCLUDE PAYMENT FOR ALL TESTS CONDUCTED BY AN INDEPENDENT TESTING LAB.

9. ANY LANDSCAPING DISTURBED, UNLESS OTHERWISE SHOWN ON THE PLANS, SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE DEPARTMENT AT THE CONTRACTORS EXPENSE.

10. ANY SIDEWALK, CURB AND GUTTER OR PAVEMENT DISTURBED, UNLESS OTHERWISE SHOWN ON PLANS, SHALL BE REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. UNLESS OTHERWISE SPECIFIED OR INDICATED, ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 psi AT 28 DAYS AND ALL CONCRETE WORK SHALL COMPLY WITH THE CURRENT EDITION OF THE AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE AND THE APPLICABLE BUILDING CODES HAVING JURISDICTION IN THE AREA. ALL CONSTRUCTION SHALL MEET ADA REQUIREMENTS. THIS INCLUDES, BUT IS NOT LIMITED TO, DETECTABLE WARNING SURFACES.

11. ALL SOD IS TO BE PLACED FOR THE FULL WIDTH DISTURBED AT THE PER LINEAR FOOT UNIT PRICE FOR SOD. SOD SHALL BE REPLACED TO MATCH EXISTING KIND UNLESS OTHERWISE SHOWN ON PLANS.

12. CONTRACTOR SHALL PROVIDE PROPER BENDS TO MAINTAIN REQUIRED DEPTH AND ALIGNMENT OF PIPE. COST OF BENDS NOT DESIGNATED ON PLANS SHALL BE INCLUDED WITH THE UNIT PRICE FOR PIPE.

13. ANY TREES AND/OR SCRUB OR OTHER VEGETATION NOT TO BE REPLACED SHALL BE REMOVED FROM THE PROJECT AT THE CONTRACTOR'S EXPENSE.

14. ALL RUBBLE AND UNSUITABLE MATERIAL MUST BE REMOVED FROM THE PROJECT AND DISPOSED OF PROPERLY BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

15. MAILBOXES MUST BE CAPABLE OF RECEIVING MAIL AT ALL TIMES.

16. DEFLECT PIPE AS NECESSARY TO OBTAIN THE REQUIRED ALIGNMENT. USE APPROPRIATE FITTINGS WHEN DEFLECTION EXCEEDS 75% OF MANUFACTURER'S RECOMMENDED MAXIMUM DEFLECTION.

17. ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED. REFER TO MARTIN COUNTY UTILITIES DEPARTMENT MINIMUM DESIGN & CONSTRUCTION STANDARDS (LATEST EDITION).

18. ALL CONSTRUCTION DEWATERING (WELL POINTS, SUMPS, ETC.) WILL REQUIRE A DEWATERING PERMIT FROM SOUTH FLORIDA WATER MANAGEMENT DISTRICT. THIS SHALL BE OBTAINED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE PRIOR TO BEGINNING OF CONSTRUCTION.

19. THE "TRENCH SAFETY ACT" SHALL BE INCORPORATED INTO THIS CONTRACT AS ENACTED BY THE LEGISLATURE OF THE STATE OF FLORIDA TO BE IN EFFECT AS OF OCTOBER 1, 1990.

20. A U-2 PERMIT IS REQUIRED FOR ALL WORK WITHIN COUNTY RIGHT-OF-WAY. THIS PERMIT MUST BE OBTAINED BY THE CONTRACTOR FROM THE MARTIN COUNTY ENGINEERING DEPARTMENT. ALL COSTS PAYABLE BY THE CONTRACTOR. A COPY OF THIS PERMIT MUST BE MAINTAINED ON THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.

21. ALL CONCRETE AND ASPHALT DRIVES MUST BE REPLACED FROM SAW CUT TO EDGE OF PAVEMENT.

GENERAL NOTES (Cont.):

22. LOCATIONS OF FIRE HYDRANTS AND AIR RELEASE VALVES ARE APPROXIMATE ONLY. FINAL LOCATIONS WILL BE DETERMINED BY DEPARTMENT PERSONNEL IN FIELD.

23. MAXIMUM LENGTH OF WATER MAIN AND FORCE MAIN PRESSURE TEST SHALL BE 1500 FEET. WATER SOURCE FOR FLUSHING, FILLING AND PRESSURE TESTING THE WATER MAIN SHALL BE FROM A TREATED SOURCE APPROVED BY THE DEPARTMENT.

24. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION AND RESTORATION (IF DAMAGED) OF ALL EXISTING STRUCTURES WITHIN THE CONSTRUCTION LIMITS OF THE PROJECT, INCLUDING BUT NOT LIMITED TO WALLS, FENCES, POWER POLES, MAIL BOXES, DRAINAGE PIPES AND STRUCTURES, ETC.

25. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING WATER SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROTECT THE EXISTING WATER SERVICES FROM DAMAGE AND REPAIR ANY BREAKS IMMEDIATELY.

26. "RECORD DRAWINGS" SHALL INCLUDE FURNISHING MARTIN COUNTY UTILITIES DEPARTMENT WITH ALL INFORMATION NECESSARY FOR A COMPLETE SET OF RECORD DRAWINGS AS STIPULATED IN THE MARTIN COUNTY UTILITIES DEPARTMENT MINIMUM DESIGN AND CONSTRUCTION STANDARDS (LATEST EDITION).

27. MECHANICALLY RESTRAIN LENGTHS, AS INDICATED ON DRAWING No. 20, ON EACH SIDE OF ALL BENDS AND AS INSTRUCTED IN MARTIN COUNTY UTILITIES DEPARTMENT SPECIFICATIONS. MECHANICAL RESTRAINTS SHALL BE EITHER MEG-A-LUG, TYLER OR UNIFLANGE. THE CONTRACTORS BID PRICE FOR PIPE, GATE VALVES AND FITTINGS SHALL INCLUDE MECHANICAL RESTRAINT.

28. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL SUPPORT UTILITIES AND SHORE TRENCH AS REQUIRED TO PROTECT AND MAINTAIN EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY EACH UTILITY PRIOR TO ATTEMPTING TO SUPPORT THEIR FACILITIES. IF THE UTILITY REQUIRES THAT ONLY THEIR CREWS SHALL BE ALLOWED TO SUPPORT THEIR FACILITIES, THEN IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE WORK AND PAY THE UTILITY FOR THEIR EXPENSES IF REQUIRED. ALL COSTS FOR THIS WORK SHALL BE AT THE CONTRACTORS EXPENSE AND INCLUDED IN THE CONTRACTORS BID PRICE.

29. ALL PRESSURE TESTS SHALL BE IN ACCORDANCE WITH AWWA STANDARDS.

30. AIR RELEASE VALVE VAULT COVERS SHALL BE CONSTRUCTED PER DETAIL AS SHOWN IN THE DEPARTMENTS MINIMUM DESIGN AND CONSTRUCTION STANDARDS.

31. ALL WATER SERVICES SHALL BE DIRECTIONALLY DRILLED UNDER EXISTING PAVEMENT.

32. VALVE STEM RISER SHALL BE REQUIRED WHERE OPERATING NUT DEPTH EXCEEDS 4 FEET. THE RISER SHALL BE BOLTED TO THE VALVE NUT. METHOD AND MATERIALS SHALL BE APPROVED BY THE DEPARTMENT. COST FOR THIS WORK SHALL BE INCLUDED IN THE CONTRACTORS BID UNIT PRICE FOR GATE VALVES.

33. THE CONTRACTOR SHALL CLEAN MAINS USING APPROVED POLYURETHANE PIG(S). TEMPORARY CLEANING STATIONS SHALL BE CONSTRUCTED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE A CLEANING PLAN SHOWING METHOD OF FILLING AND CLEANING MAINS PRIOR TO START OF CONSTRUCTION. THE CLEANING PLAN SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION. ALL COSTS FOR FILLING AND CLEANING SHALL BE AT THE CONTRACTORS EXPENSE.

34. A FLORIDA DEPARTMENT OF TRANSPORTATION PERMIT IS REQUIRED FOR ALL WORK, EXCEPT PERPENDICULAR CONNECTIONS, WITHIN THE STATE RIGHT-OF-WAY. A COPY OF THIS PERMIT MUST BE MAINTAINED ON THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.

35. THE CONTRACTOR SHALL INSTALL TESTING POINTS FOR PRESSURE & BACTERIOLOGICAL TESTING OF WATER MAINS. THE CONTRACTOR SHALL INSTALL AND REMOVE AND PLUG CORP. STOPS PER MARTIN COUNTY UTILITIES STANDARDS "SAMPLE POINT DETAIL". THE LOCATION OF TEST POINTS SHALL BE APPROVED BY THE DEPARTMENT.

GENERAL NOTES (Cont.):

36. WATER MAIN DISINFECTION SHALL BE IN ACCORDANCE WITH CURRENT AWWA, BULLETIN C-651.

37. WATER MAINS AND APPURTENANCES SHALL BE IN ACCORDANCE WITH CURRENT AWWA, FDEP AND NSF STANDARDS.

38. MINIMUM COVER TO FINISHED GRADE OVER WATER MAINS SHALL BE 30 INCHES UP TO 8" DIAMETER; 10" OR LARGER SHALL HAVE 36" COVER OR GREATER TO PROVIDE A MINIMUM 18" COVER OVER OPERATING NUT OF GATE VALVES.

39. ALL MAINS SHALL BE TESTED FOR LEAKAGE. WATER SHALL BE SUPPLIED TO THE MAIN AND PUMPED TO THE REQUIRED 150 PSI PRESSURE. THE MAIN TESTED SHALL EITHER BE ISOLATED FROM PRESENTLY POTABLE LINES OR PROTECTED FROM LEAKAGE BY A DOUBLE VALVE ARRANGEMENT.

40. NEWLY CONSTRUCTED FIRE HYDRANTS THROUGHOUT THE PROJECT SHALL HAVE A RED "OUT OF SERVICE" DISK (JOSEPH G. POLLARD CO. OR EQUAL) ATTACHED TO 4" PUMPER NOZZLE CAP. DISK TO BE REMOVED AFTER WATER SYSTEM HAS BEEN APPROVED FOR SERVICE BY THE DEPARTMENT.

THE DEPARTMENT SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ANY TESTING PROCEDURES. AFTER FLUSHING IS COMPLETED, LINE PRESSURE SHALL BE APPLIED TO THE WATER SYSTEM TO DETERMINE IF ANY MAJOR DEFECTS ARE PRESENT. THE COMPLETE WATER SYSTEM SHALL THEN BE TESTED AT A PRESSURE OF 150 PSI FOR A PERIOD OF NOT LESS THAN TWO HOURS. THE DEPARTMENT MAY, AT ITS DISCRETION, INCREASE THE PERIOD TO FOUR HOURS. MAXIMUM LENGTH OF LINE TO BE TESTED AT ONE TIME SHALL NOT EXCEED 1500 LINEAR FEET. AN OIL FILLED PRESSURE GAUGE UP TO 200 PSI AT 2 POUND INCREMENTS SHALL BE USED FOR ALL PRESSURE TESTS. NO VISIBLE MOVEMENT OF THE SYSTEM SHALL OCCUR AND LEAKAGE SHALL NOT EXCEED:

$$L=\frac{ND\sqrt{P}}{7400} \text{ PER HOUR}$$

WHERE:
- L= LEAKAGE IN GALLONS
- N= NUMBER OF JOINTS IN TEST SECTION
- P= TEST PRESSURE IN PSI.
- D= DIAMETER OF PIPE IN INCHES

NOTE: MARTIN COUNTY UTILITIES DEPARTMENT'S MINIMUM DESIGN AND CONSTRUCTION STANDARDS (LATEST EDITION), ARE TO BE ADHERED TO AND WILL BE ENFORCED TO AT LEAST THESE MINIMUM STANDARDS.

48 HOURS BEFORE DIGGING
CALL TOLL-FREE
1-800-432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA, INC
UNDERGROUND UTILITIES NOTIFICATION CENTER

STANDARD WATER/SEWER SEPARATION STATEMENT

62–555.314 Location of Public Water System Mains.
For the purpose of this section, the phrase water mains shall mean mains, including treatment plant process piping, conveying either raw, partially treated, or finished drinking water; fire hydrant leads; and service lines that are under the control of a public water system and that have an inside diameter of three inches or greater.

(1) Horizontal Separation Between Underground Water Mains and Sanitary or Storm Sewers, Wastewater or Stormwater Force Mains, Reclaimed Water Pipelines, and On–Site Sewage Treatment and Disposal Systems.

(a) New or relocated, underground water mains shall be laid to provide a horizontal distance of at least three feet between the outside of the water main and the outside of any existing or proposed storm sewer, Stormwater force main, or pipeline conveying reclaimed water regulated under Part III of Chapter 62–610, F.A.C.

(b) New or relocated, underground water mains shall be laid to provide a horizontal distance of at least three feet, and preferably ten feet, between the outside of the water main and the outside of any existing or proposed vacuum–type sanitary sewer.

(c) New or relocated, underground water mains shall be laid to provide a horizontal distance of at least six feet, and preferably ten feet, between the outside of the water main and the outside of any existing or proposed gravity– or pressure–type sanitary sewer, wastewater force main, or pipeline conveying reclaimed water not regulated under Part III of Chapter 62–610, F.A.C. The minimum horizontal separation distance between water mains and gravity–type sanitary sewers shall be reduced to three feet where the bottom of the water main is laid at least six inches above the top of the sewer.

(d) New or relocated, underground water mains shall be laid to provide a horizontal distance of at least ten feet between the outside of the water main and all parts of any existing or proposed on–site sewage treatment and disposal system as defined in Section 381.0065(2), F.S., and Rule 64E–6.002, F.A.C.

(2) Vertical Separation Between Underground Water Mains and Sanitary or Storm Sewers, Wastewater or Stormwater Force Mains, and Reclaimed Water Pipelines.

(a) New or relocated, underground water mains crossing any existing or proposed gravity– or vacuum–type sanitary sewer or storm sewer shall be laid so the outside of the water main is at least six inches, and preferably 12 inches, above or at least 12 inches below the outside of the other pipeline. However, it is preferable to lay the water main above the other pipeline.

(b) New or relocated, underground water mains crossing any existing or proposed pressure–type sanitary sewer, wastewater or stormwater force main, or pipeline conveying reclaimed water shall be laid so the outside of the water main is at least 12 inches above or below the outside of the other pipeline. However, it is preferable to lay the water main above the other pipeline.

(c) At the utility crossings described in paragraphs (a) and (b) above, one full length of water main pipe shall be centered above or below the other pipeline so the water main joints will be as far as possible from the other pipeline. Alternatively, at such crossings, the pipes shall be arranged so that all water main joints are at least three feet from all joints in vacuum–type sanitary sewers, storm sewers, stormwater force mains, or pipelines conveying reclaimed water regulated under Part III of Chapter 62–610, F.A.C., and at least six feet from all joints in gravity– or pressure–type sanitary sewers, wastewater force mains, or pipelines conveying reclaimed water not regulated under Part III of Chapter 62–610, F.A.C.

(3) Separation Between Water Mains and Sanitary or Storm Sewer Manholes.

(a) No water main shall pass through, or come into contact with, any part of a sanitary sewer manhole.

(b) Effective August 28, 2003, water mains shall not be constructed or altered to pass through, or come into contact with, any part of a storm sewer manhole or inlet structure. Where it is not technically feasible or economically sensible to comply with this requirement (i.e., where there is a conflict in the routing of a water main and a storm sewer and where alternative routing of the water main or the storm sewer is not technically feasible or is not economically sensible), the Department shall allow exceptions to this requirement (i.e., the Department shall allow construction of conflict manholes), but suppliers of water or persons proposing to construct conflict manholes must first obtain a specific permit from the Department in accordance with Part V of this chapter and must provide in the preliminary design report or drawings, specifications, and design data accompanying their permit application the following information:

1. Technical or economic justification for each conflict manhole.
2. A statement identifying the party responsible for maintaining each conflict manhole.
3. Assurance of compliance with the design and construction requirements in sub–subparagraphs a. through d. below.

a. Each water main passing through a conflict manhole shall have a flexible, watertight joint on each side of the manhole to accommodate differential settling between the main and the manhole.

b. Within each conflict manhole, the water main passing through the manhole shall be installed in a watertight casing pipe having high impact strength (i.e., having an impact strength at least equal to that of 0.25–inch–thick ductile iron pipe).

c. Each conflict manhole shall have an access opening, and shall be sized, to allow for easy cleaning of the manhole.

d. Gratings shall be installed at all storm sewer inlets upstream of each conflict manhole to prevent large objects from entering the manhole.

(4) Separation Between Fire Hydrant Drains and Sanitary or Storm Sewers, Wastewater or Stormwater Force Mains, Reclaimed Water Pipelines, and On–Site Sewage Treatment and Disposal Systems. New or relocated fire hydrants with underground drains shall be located so that the drains are at least three feet from any existing or proposed storm sewer, stormwater force main, or pipeline conveying reclaimed water regulated under Part III of Chapter 62–610, F.A.C.; at least three feet, and preferably ten feet, from any existing or proposed vacuum–type sanitary sewer; at least six feet, and preferably ten feet, from any existing or proposed gravity– or pressure–type sanitary sewer, wastewater force main, or pipeline conveying reclaimed water not regulated under Part III of Chapter 62–610, F.A.C.; and at least ten feet from any existing or proposed on–site sewage treatment and disposal system as defined in Section 381.0065(2), F.S., and Rule 64E–6.002, F.A.C.

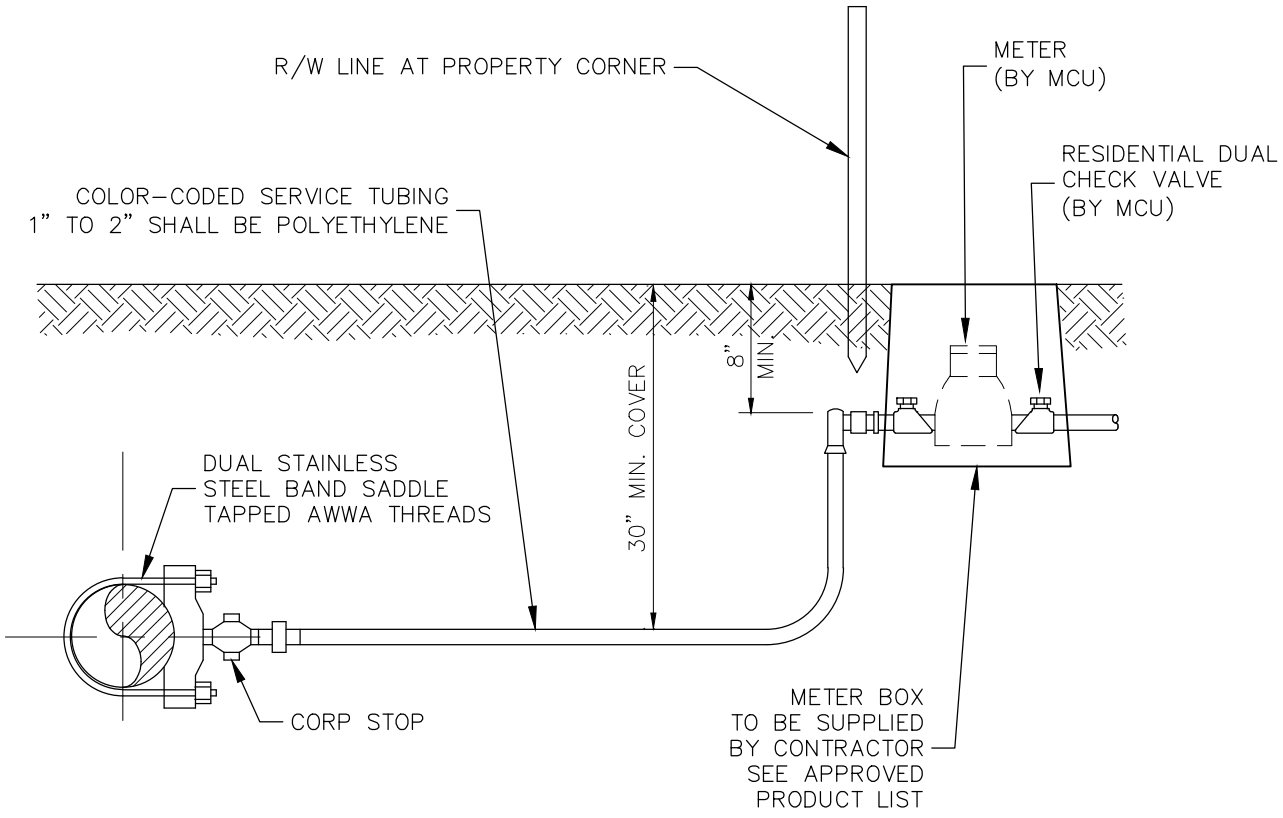
(5) Exceptions. Where it is not technically feasible or economically sensible to comply with the requirements in subsection (1) or (2) above, the Department shall allow exceptions to these requirements if suppliers of water or construction permit applicants provide technical or economic justification for each exception and provide alternative construction features that afford a similar level of reliability and public health protection. Acceptable alternative construction features include the following:

(a) Where an underground water main is being laid less than the required minimum horizontal distance from another pipeline and where an underground water main is crossing another pipeline and joints in the water main are being located less than the required minimum distance from joints in the other pipeline:

1. Use of pressure–rated pipe conforming to the American Water Works Association standards incorporated into Rule 62–555.330, F.A.C., for the other pipeline if it is a gravity– or vacuum–type pipeline;
2. Use of welded, fused, or otherwise restrained joints for either the water main or the other pipeline; or
3. Use of watertight casing pipe or concrete encasement at least four inches thick for either the water main or the other pipeline.

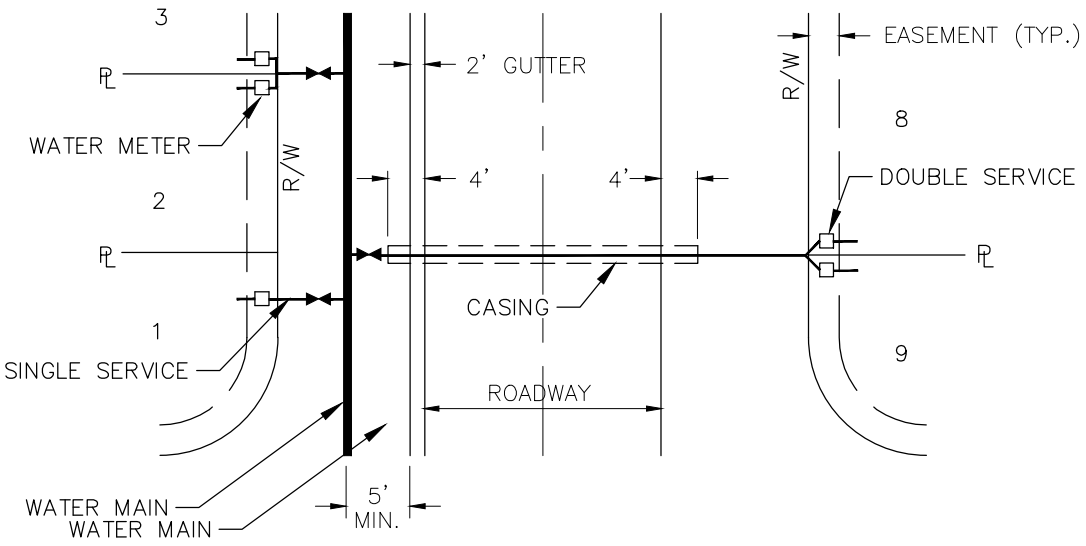
(b) Where an underground water main is being laid less than three feet horizontally from another pipeline and where an underground water main is crossing another pipeline and is being laid less than the required minimum vertical distance from the other pipeline:

1. Use of pipe, or casing pipe, having high impact strength (i.e., having an impact strength at least equal to that of 0.25–inch–thick ductile iron pipe) or concrete encasement at least four inches thick for the water main; and
2. Use of pipe, or casing pipe, having high impact strength (i.e., having an impact strength at least equal to that of 0.25–inch–thick ductile iron pipe) or concrete encasement at least four inches thick for the other pipeline if it is new and is conveying wastewater or reclaimed water.

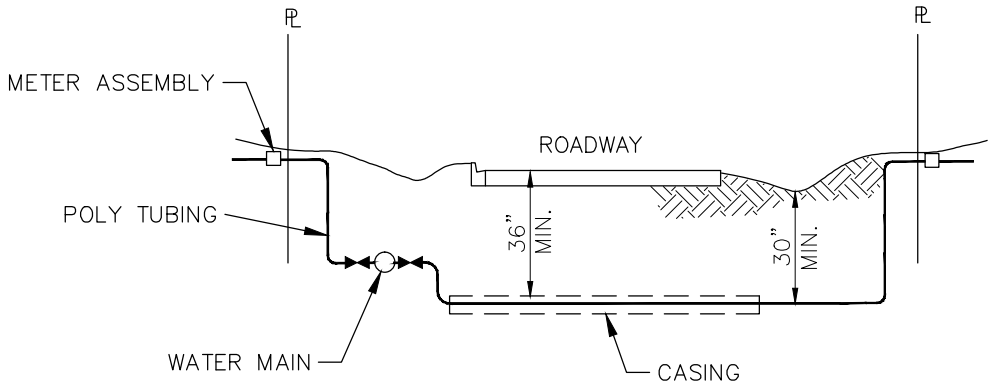


NOTES:

1. MIN. SERVICE LINES SHALL BE AS FOLLOWS: 1" FOR SINGLE AND DOUBLE SERVICES WHERE METER SIZE IS 5/8"; 2" FOR SINGLE AND DOUBLE SERVICES WHERE METER SIZE IS 1".
2. COMPRESSION FITTINGS SHALL BE SUITABLE FOR TUBING USED AND REQUIRE METAL (S.S.) INSERTS.
3. DOUBLE SERVICES REQUIRE "U" BRANCH WITH ANGLE CURB STOPS.
4. POLYETHYLENE SHALL BE AS DEFINED BY A.S.T.M. D2737 SDR9 COPPER TUBE SIZE (CTS) AND A.W.W.A. 901, LATEST EDITION, AND BE PRESSURE RATED FOR 200 PSI AND SHALL BE "ENDOPURE" BY ENDOT INDUSTRIES, INC., ROCKAWAY, N.J., OR APPROVED EQUAL.
5. TUBING SHALL BE MARKED WITH SIZE, MANUFACTURERS NAME, WORKING PRESSURE, NATIONAL SANITATION FOUNDATION APPROVAL, A.S.T.M. SPECIFICATION AND PRODUCTION CODE. TUBING SHALL HAVE AN OUTSIDE DIAMETER EQUIVALENT TO THE OUTER DIAMETER OF COPPER TUBING.
6. SERVICE LOCATOR WIRE SHALL BE LAID IN THE TRENCH WITH ALL SERVICES, CONNECTED TO THE MAIN WIRE AND WRAPPED AROUND THE SERVICE PIPING OR TUBING. WIRE FOR POTABLE WATER SHALL BE BLUE IN COLOR.



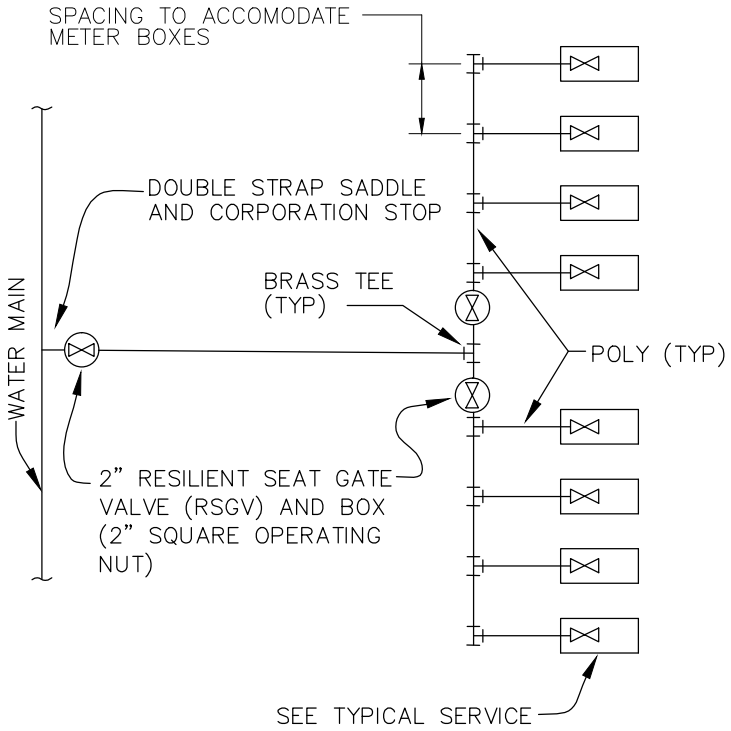
PLAN



PROFILE

NOTES:

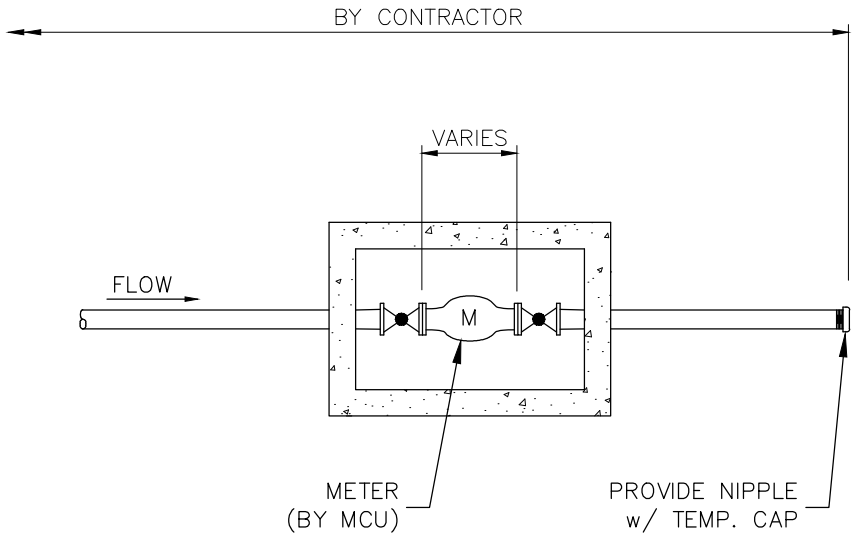
1. HOUSE SERVICE LATERAL UNDER PAVEMENT SHALL BE INSTALLED THROUGH A 2" MINIMUM PVC SCH. 80 CASING OR HDPE CASING (EXISTING ROADWAYS).
2. TAPPING SADDLE AND CORPORATION STOP MUST BE PLACED IN ACCESSIBLE AREAS, OUT FROM UNDER ANY PAVED AREAS.
3. SERVICE LOCATOR WIRE SHALL BE LAID IN THE TRENCH WITH ALL SERVICES, CONNECTED TO THE MAIN WIRE AND WRAPPED AROUND THE SERVICE PIPING OR TUBING. WIRE FOR POTABLE WATER SHALL BE BLUE IN COLOR.



TYPICAL MULTIPLE SERVICE SIZES	
No. OF UNITS	LINE SIZES
3 –12	2" OR 4"

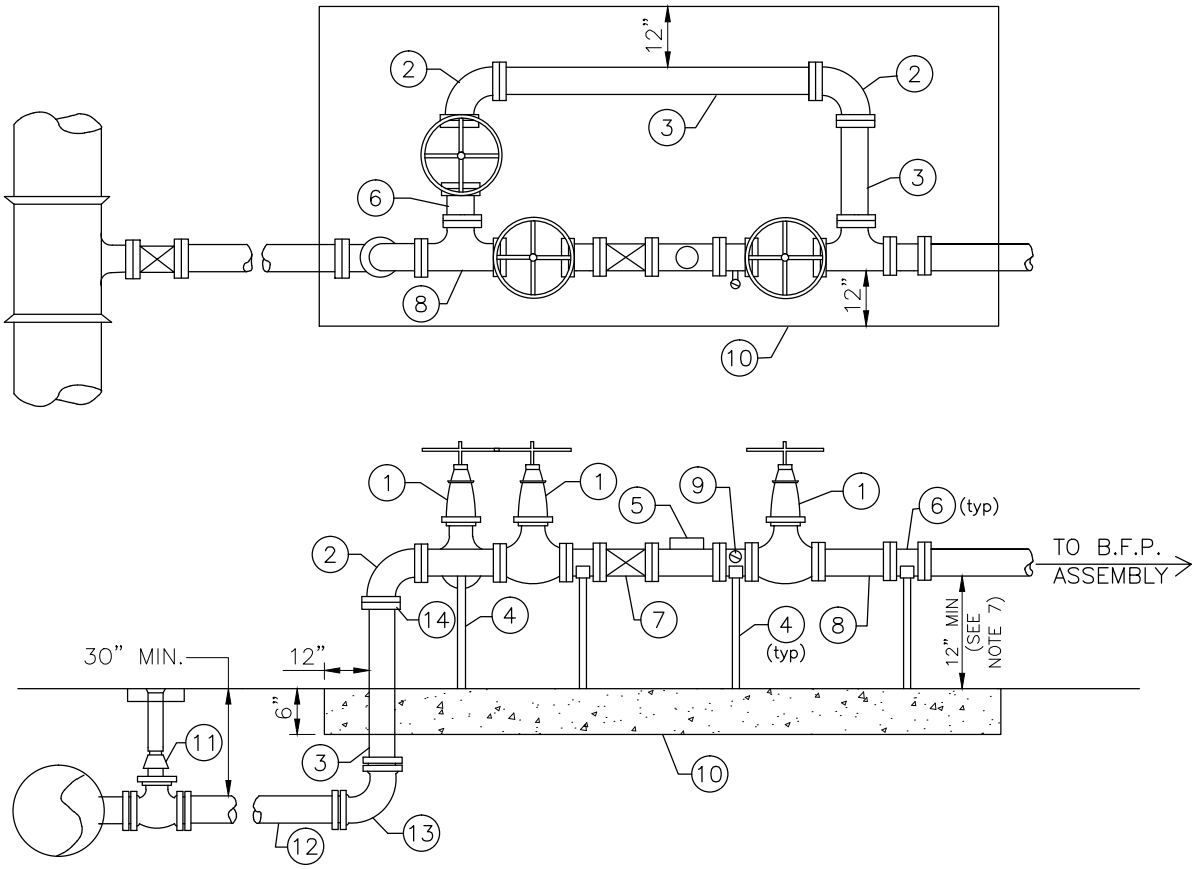
NOTES:

1. CONTRACTOR TO BUILD ALL METER MANIFOLDS.



NOTES:

1. ALL VALVES TO BE STRAIGHT 1–1/2" BALL VALVES FOR 1–1/2" METER AND 2" BALL VALVES FOR 2" METER WITH LOCK–WING. (FLANGE AT METER) FORD OR APPROVED EQUAL.
2. SEE TYPICAL SERVICE DETAIL FOR MAIN CONNECTION.
3. METER BOX SHALL BE POLYMER CONCRETE AND FIBER REINFORCED POLYESTER.
4. PIPING SHALL BE 1–1/2" HDPE FOR 1–1/2" METER AND 2" HDPE FOR 2" METER, DR 9 WITH BRONZE COMPRESSION FITTINGS.

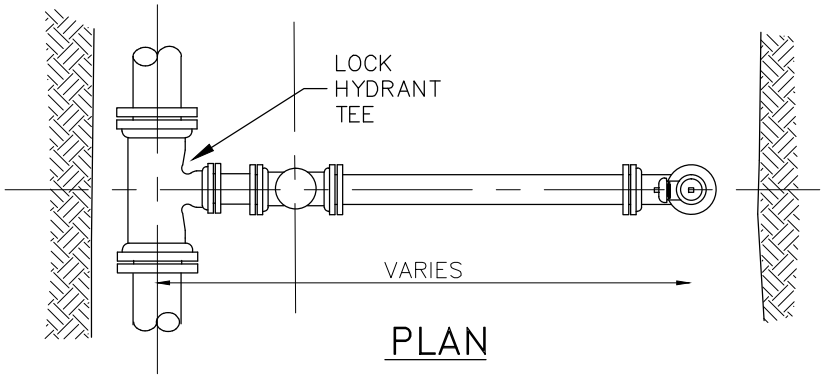


MATERIAL

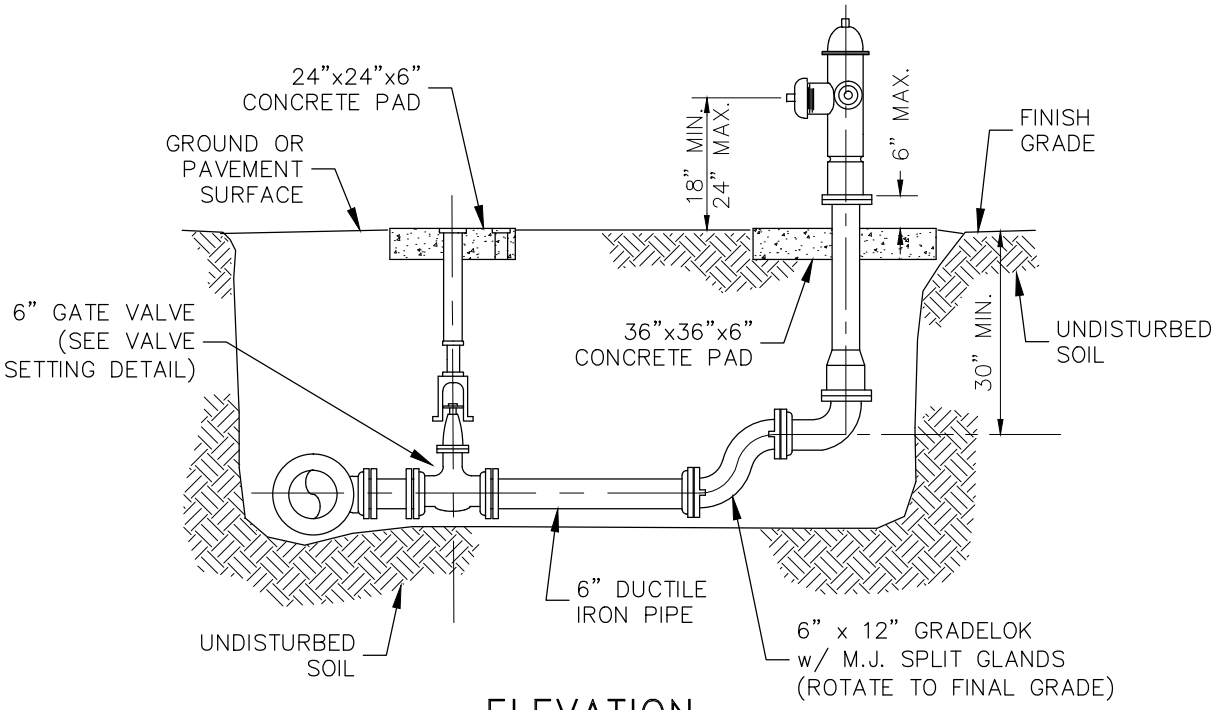
ITEM	QUANT.	DESCRIPTION
1	3	4",6",8" VALVE, GATE, C.I., (FLANGE – FLANGE) OS&Y
2	3	4",6",8" BEND – 90 , (FLANGE – FLANGE)
3	VARIES	4",6",8" PIPE, DUCTILE IRON, (FLANGE – FLANGE)
4	4	ADJUSTABLE PIPE SUPPORTS (316 SS)
5	1	3",4",6",8" METER, (FLANGE – FLANGE)
6	4	4",6",8" D.I. SPOOL PIECE, 12" MIN. LENGTH, F – F
7	1	3",4",6",8" WATER METER STRAINER, (FLANGE – FLANGE)
8	2	D.I. BYPASS TEE, (FLANGE – FLANGE), (SIZE VARIES)
9	1	2" TAP WITH LOCKING BALL VALVE
10	*	CONC. SLAB, 2500# PSI
11	1	4",6",8" VALVE, GATE, MJ
12	VARIES	4",6",8" PIPE
13	1	4",6",8" BEND–90°, (MJ–MJ) W/ RETAINER GLANDS
14	1	4",6",8" ADAPTER, FLANGE, DIP

NOTES:

1. ALL ABOVE GRADE PIPING SHALL BE DUCTILE IRON WITH FLANGED ENDS
2. FOR 3" METER AND STRAINER, USE 4" D.I. PIPE WITH 4"x3" REDUCER WITH FLANGED ENDS ON BOTH SIDES OF THE METER/STRAINER ASSEMBLY.
3. FIELD ADJUST AND CUT D.I. PIPE TO THE PROPER LENGTH AS REQUIRED.
4. METER BYPASS SHALL BE A MIN. OF 4" DIA. AND SIZED TO MEET REQUIRED FLOWS
5. ALL EXPOSED DUCTILE IRON PIPING AND FITTINGS SHALL BE PAINTED "BLUE". PAINT SPECIFICATIONS MUST BE SUBMITTED TO MARTIN COUNTY UTILITIES PRIOR TO APPLICATION.
6. METER SHALL BE BADGER COMPOUND METER, BRONZE BODY, POLYMER BOTTOM PLATE WITH INTEGRAL MOUNT ITRON 100W FN ENDPOINT.
7. HEIGHT SHALL ALLOW A MINIMUM OF 12" FROM TOP OF SLAB TO THE BOTTOM OF THE BLOWDOWN OF THE B.F.P.



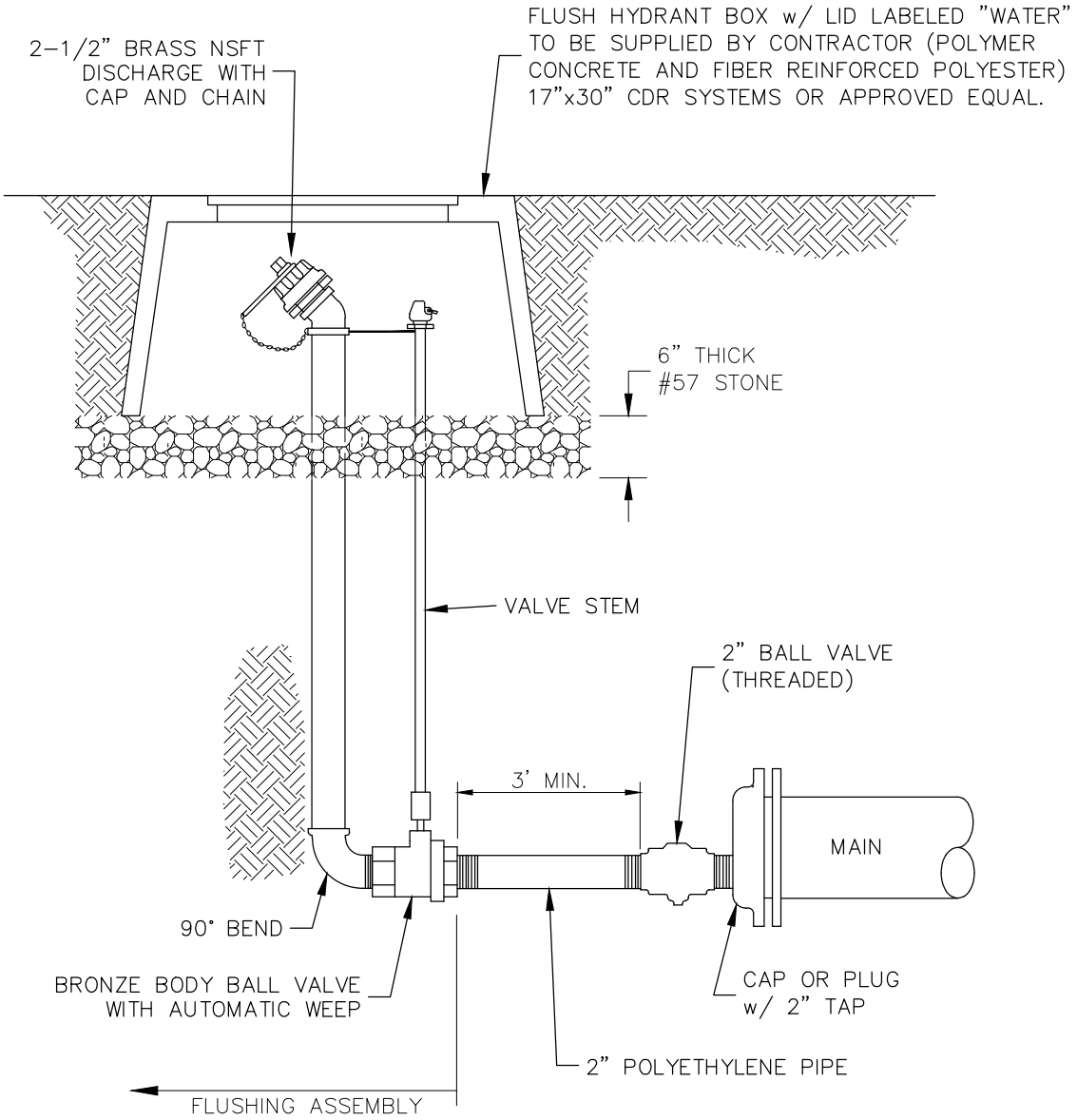
PLAN



ELEVATION

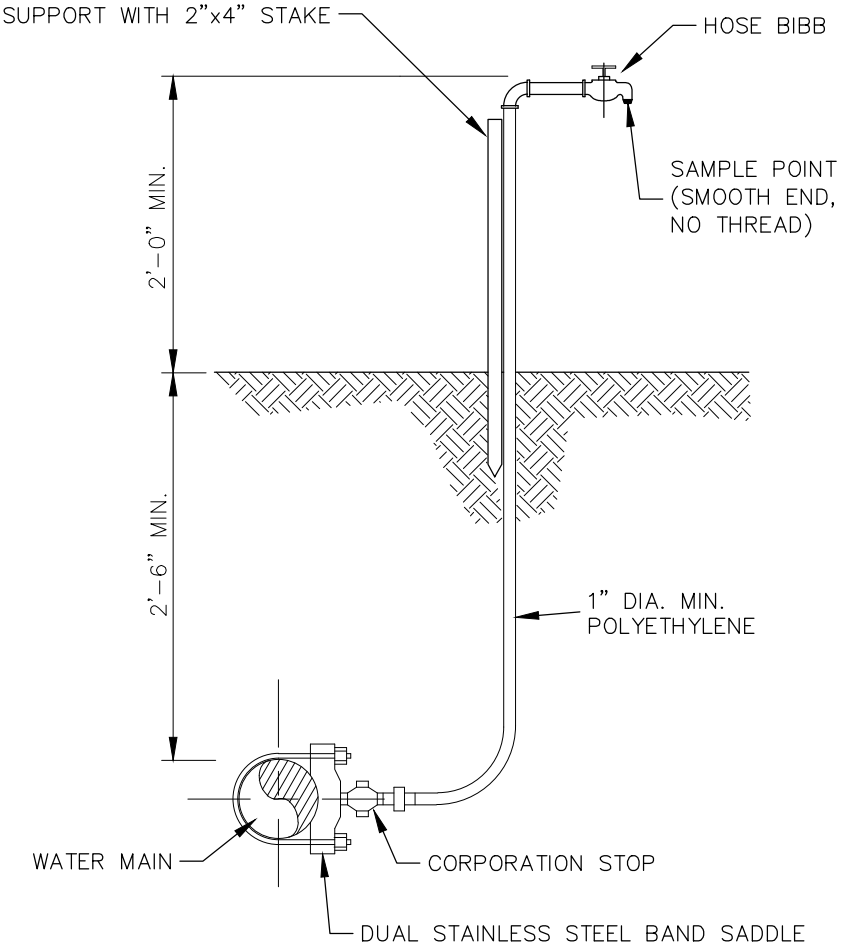
NOTES:

1. HYDRANTS SHALL BE INSTALLED PLUMB AND TRUE.
2. VALVES SHALL BE PLACED ADJACENT TO MAIN, AND TIED TO TEE.
3. ANCHOR TEES ARE REQUIRED.
4. ALL HYDRANTS SHALL BE TEE'D OFF OF MAIN.
5. HYDRANTS SHALL NOT BE PLACED IN SIDEWALK, ROADWAYS OR BIKEPATHS.
6. PIPE FROM VALVE TO HYDRANT SHALL BE RESTRAINED.
7. HYDRANT BARREL AND BONNET COLOR TO BE OSHA YELLOW.
8. THE CONNECTOR PIPE SHALL BE CEMENT LINED DUCTILE IRON, CLASS 350 AND POSITIONED BETWEEN THE FIRE HYDRANT AND GATE VALVE.
9. THE CONNECTOR PIPE SHALL HAVE AN ANCHORING FEATURE AT BOTH ENDS SO THAT WHEN USED WITH M.J. SPLIT GLANDS A RESTRAINED JOINT IS PROVIDED.
10. HYDRANT EXTENSIONS SHALL NOT BE ALLOWED.
11. NEWLY CONSTRUCTED FIRE HYDRANTS THROUGHOUT THE PROJECT SHALL HAVE A RED "OUT OF SERVICE" DISK (JOSEPH G. POLLARD CO. OR EQUAL) ATTACHED TO 4" PUMPER NOZZLE CAP. DISK TO BE REMOVED AFTER WATER SYSTEM HAS BEEN APPROVED FOR SERVICE BY THE DEPARTMENT.
12. A MAXIMUM OF 20 FEET OF HORIZONTAL PIPE SHALL TYPICALLY BE INSTALLED BETWEEN THE 6" GATE VALVE AT THE WATER MAIN AND THE HYDRANT. IF IT IS NECESSARY TO INSTALL MORE THAN 20 FEET OF HORIZONTAL PIPE, AN ADDITIONAL 6" GATE VALVE WILL BE REQUIRED AT THE HYDRANT LOCATION.



NOTES:

1. FLUSHING HYDRANT ASSEMBLY SHALL BE GIL INDUSTRIES, AQUARIUS ONE–O–ONE OR WATER PLUS VB2000 2" POST FLUSHING HIDDEN HYDRANT.
2. MAIN TO BE RESTRAINED FOR THREE FULL LENGTHS.

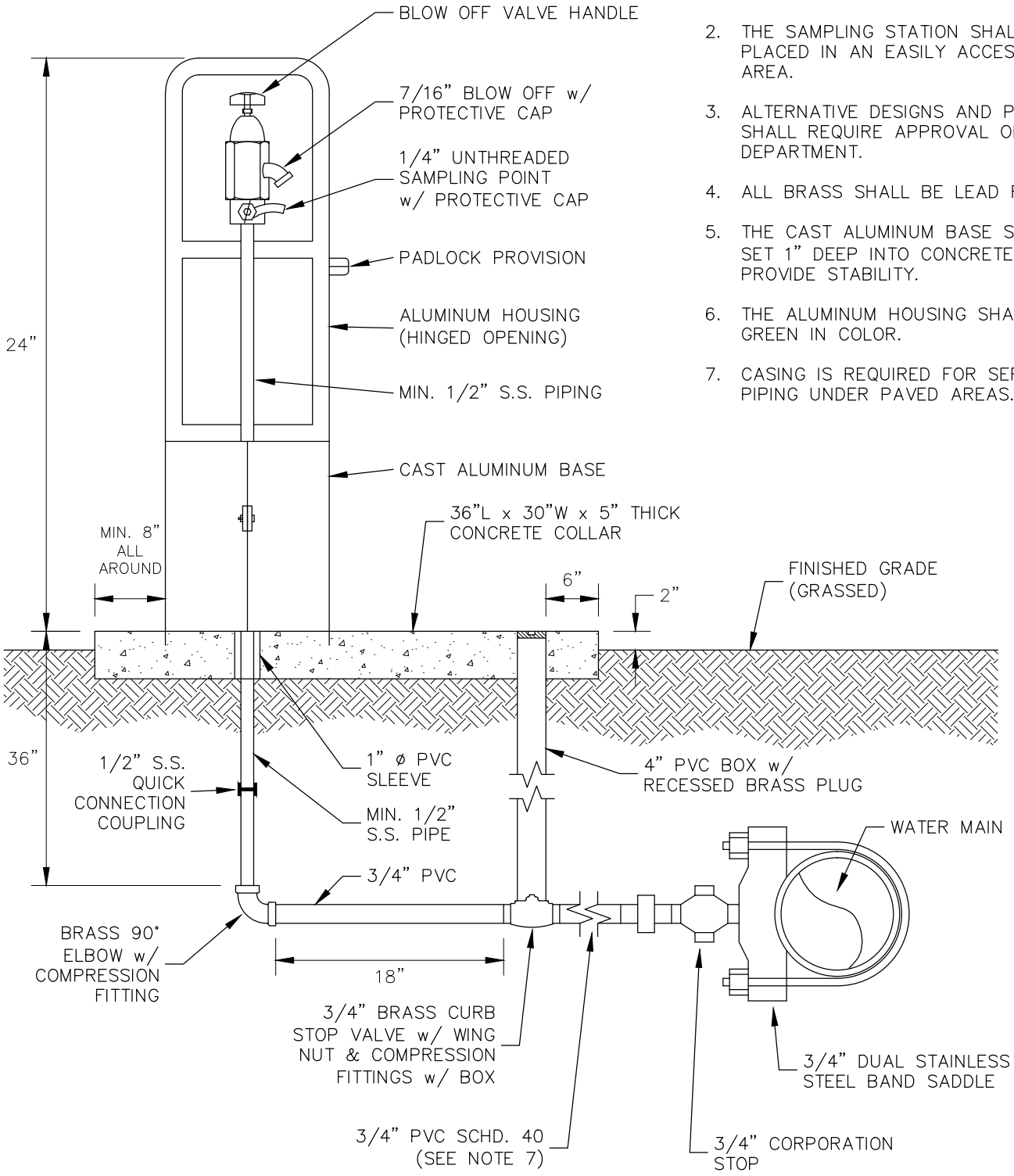


NOTES:

1. SAMPLE POINT SHOULD BE A SERVICE LINE.
2. AFTER SAMPLING IS COMPLETED AND APPROVED, SHUT OFF CORP. STOP, REMOVE TUBING, PLUG WITH BRASS PLUG AND LOCATE FOR RECORD DRAWINGS.
3. MOUNT METAL OR PLASTIC TAG INDICATING "SAMPLE POINT – DO NOT TURN OFF"

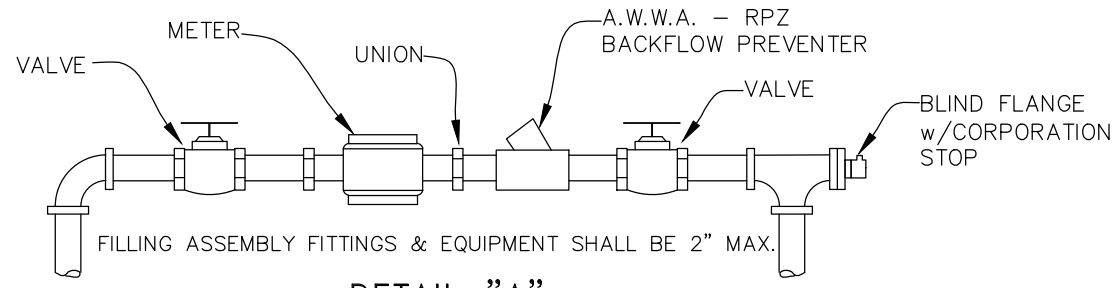
NOTES:

1. THE SITE LOCATION(S) OF THE PERMANENT SAMPLING STATION SHALL BE DETERMINED BY THE DEPARTMENT.
2. THE SAMPLING STATION SHALL BE PLACED IN AN EASILY ACCESSIBLE AREA.
3. ALTERNATIVE DESIGNS AND PLACEMENT SHALL REQUIRE APPROVAL OF THE DEPARTMENT.
4. ALL BRASS SHALL BE LEAD FREE.
5. THE CAST ALUMINUM BASE SHALL BE SET 1" DEEP INTO CONCRETE PAD TO PROVIDE STABILITY.
6. THE ALUMINUM HOUSING SHALL BE GREEN IN COLOR.
7. CASING IS REQUIRED FOR SERVICE PIPING UNDER PAVED AREAS.

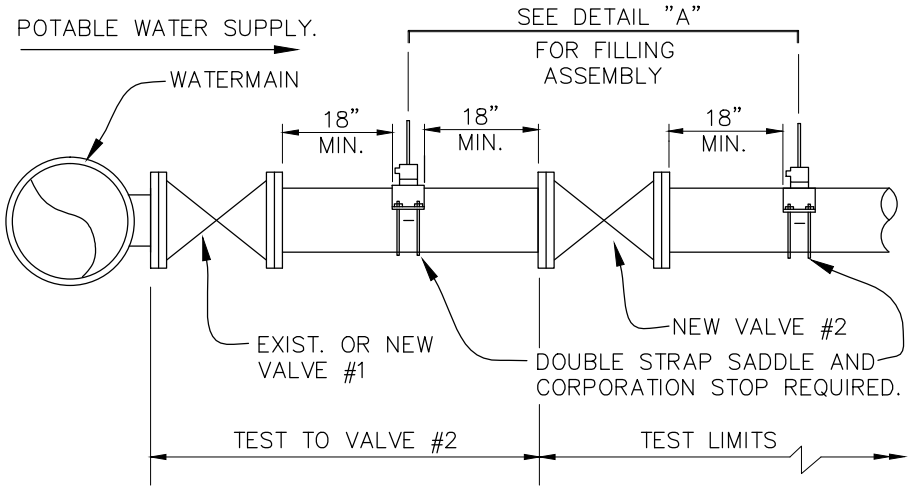


MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	PERMANENT SAMPLING POINT DETAIL	DWG No.
AUGUST 2016		10

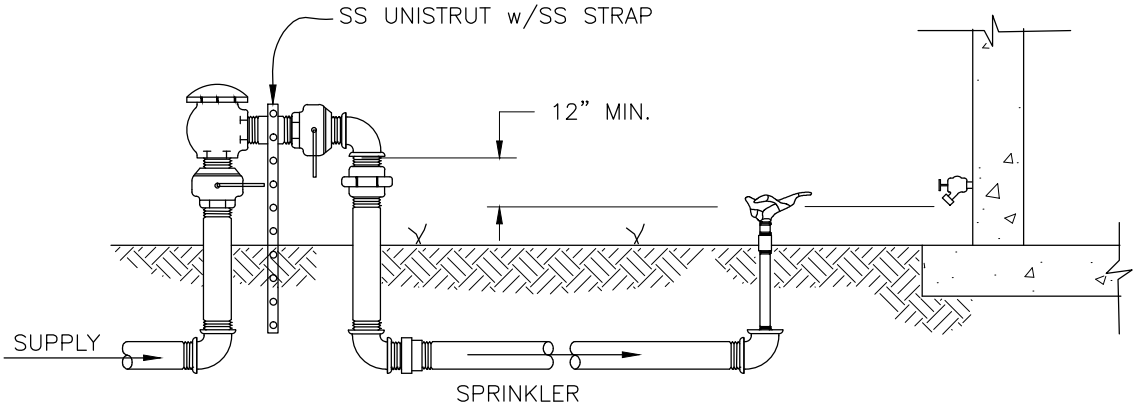


DETAIL "A"



NOTES:

1. BOTH VALVES SHALL BE KEPT CLOSED EXCEPT FOR FILLING, FLUSHING AND BACTERIOLOGICAL TESTING PURPOSES.
2. DEPARTMENT SHALL BE NOTIFIED BEFORE FILLING AND FLUSHING.
3. PRESSURE TEST PUMP CONNECTS TO SERVICE LINE OR BLOWOFF. NO EXTRA TAPS ARE PERMITTED UNLESS PRECEEDING ARE NOT PRESENT IN TEST SECTION.
4. PRESSURE GAUGE TO BE LOCATED IN VICINITY OF TEST PUMP CONNECTION.
5. GAUGE AND RISER TO BE REMOVED AFTER PRESSURE TEST.
6. REMOVE TEMPORARY CONNECTION AT CORPORATION STOPS AFTER FILLING AND FLUSHING HAS BEEN COMPLETED.
7. INJECT CHLORINE ON PROJECT SIDE OF BACKFLOW PREVENTER.
8. CONTRACTOR TO PROVIDE AN RPZ CERTIFICATION (LESS THAN 1 YEAR) PRIOR TO INSTALLATION.



NOTES:

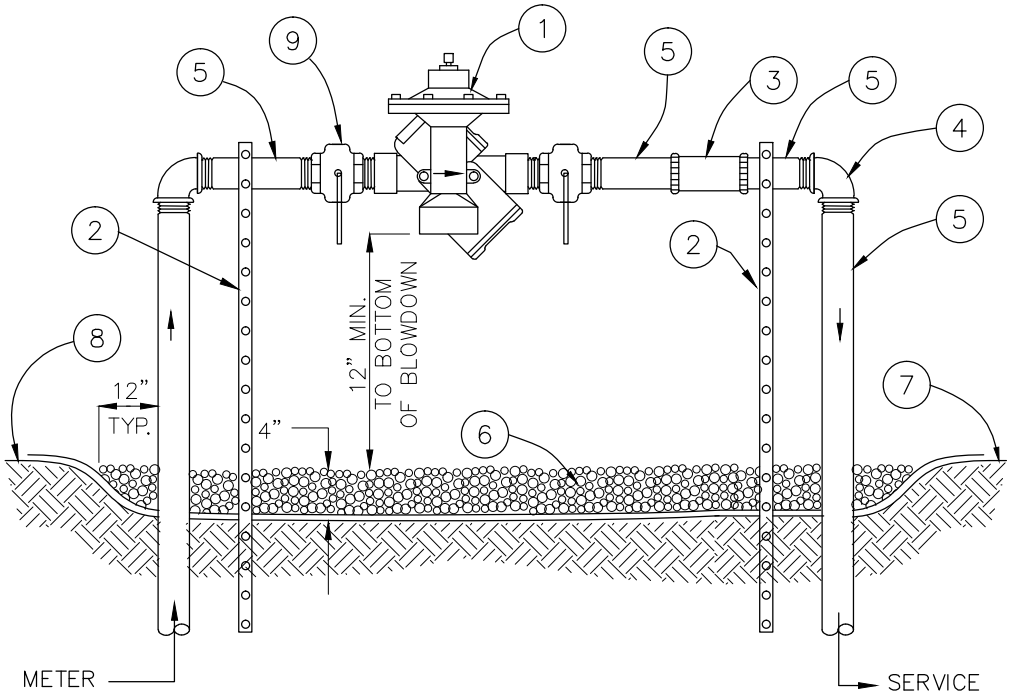
1. THE PRESSURE VACUUM BREAKER (P.V.B.) CANNOT BE INSTALLED WHERE IT WILL BE SUBJECTED TO BACK PRESSURE. IT PROVIDES PROTECTION AGAINST BACK-SIPHONAGE OF BOTH POLLUTANTS AND CONTAMINANTS.

2. EACH P.V.B. SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING.

3. EACH P.V.B. SHALL BE INSTALLED ON THE MAIN LINE TO THE IRRIGATION SYSTEM AND AT LEAST 12 INCHES ABOVE THE HIGHEST SPRINKLER HEAD OR OUTLET. (VALVES MAY BE LOCATED DOWNSTREAM FROM THE DEVICE).

4. ALL ABOVE GROUND PIPING WILL BE TYPE "K" OR "L" COPPER TUBING WITH SWEAT FITTINGS.

5. IF CHEM FEED IS USED IN IRRIGATION LINE, THEN USE RPZ. RPZ MAY BE USED IN LIEU OF PRESSURE VACUUM BREAKER.

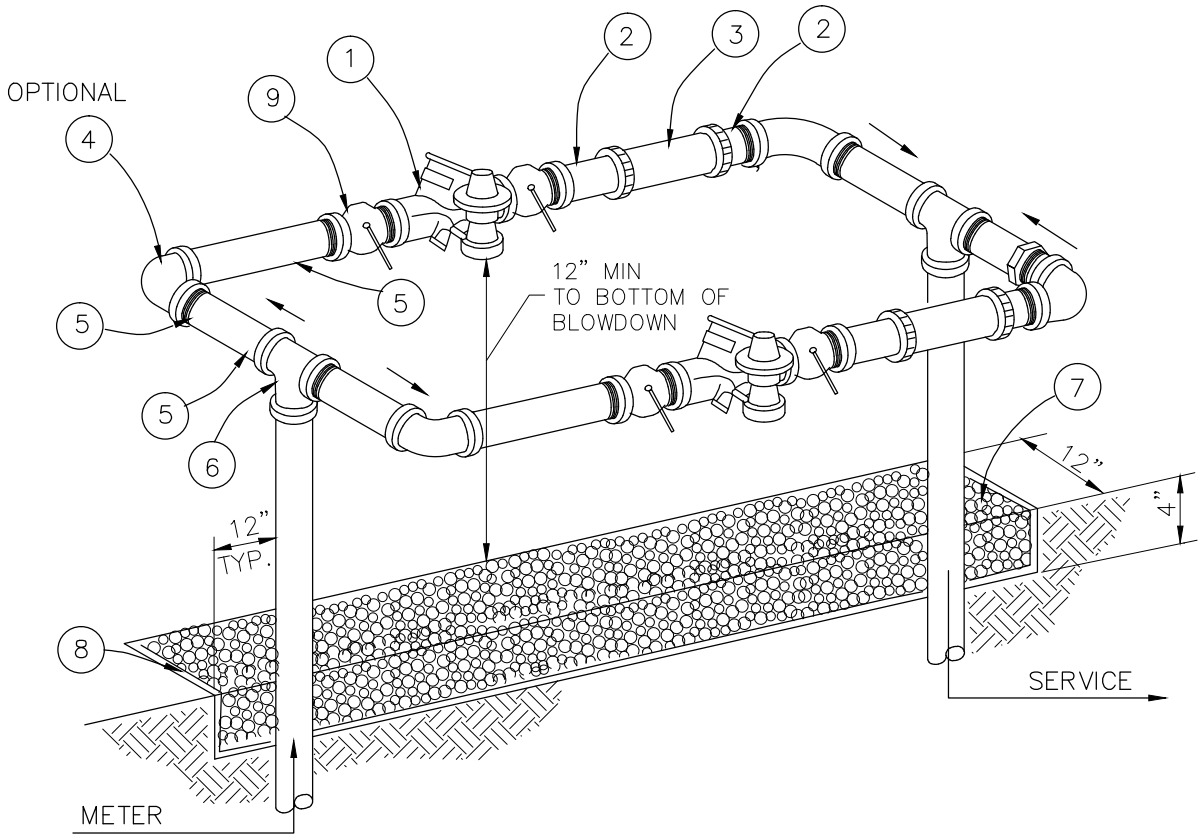


MATERIALS		
ITEM	QUANT.	DESCRIPTION
1	1	2" BACKFLOW PREVENTER
2	2	1" S.S. UNISTRUT W/ S.S. STRAPS
3	1	2" COUPLING – COMPRESSION
4	2	2" X 90° ELBOW
5	4	2" X 6" NIPPLES
6		PEA GRAVEL
7		FILTER FABRIC
8		FINISHED GRADE
9	2	BALL VALVE

NOTES:

1. INSTALLATION SHOWN ABOVE IS FOR A 2" SERVICE. CHANGE PIPING MATERIALS ACCORDINGLY FOR SERVICE SIZE.

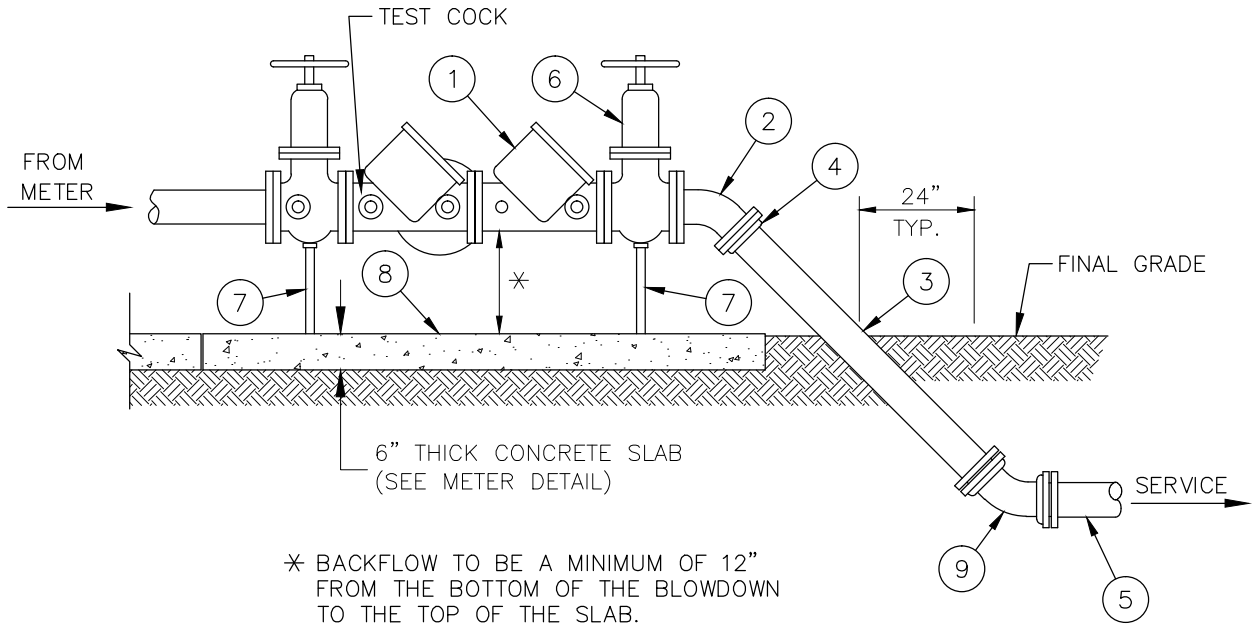
2. USE COPPER, BRASS OR STAINLESS STEEL FOR FITTINGS AND PIPE MATERIAL.



MATERIALS			
ITEM	QUANT.	DESCRIPTION	
1	2	2"	BACKFLOW PREVENTER
2	4	2" X 6"	NIPPLES
3	2	2"	COUPLING – COMPRESSION
4	4	2" X 90°	ELBOW
5	14	2" X 4"	NIPPLES
6	2	2"	TEE
7	*		PEA GRAVEL
8	*		FILTER FABRIC
9	4		BALL VALVES

NOTES:

1. INSTALLATION SHOWN ABOVE IS FOR A 2" SERVICE. CHANGE PIPING MATERIALS ACCORDINGLY FOR SERVICE SIZE.
2. USE COPPER, BRASS OR STAINLESS STEEL FOR FITTINGS AND PIPE MATERIAL.

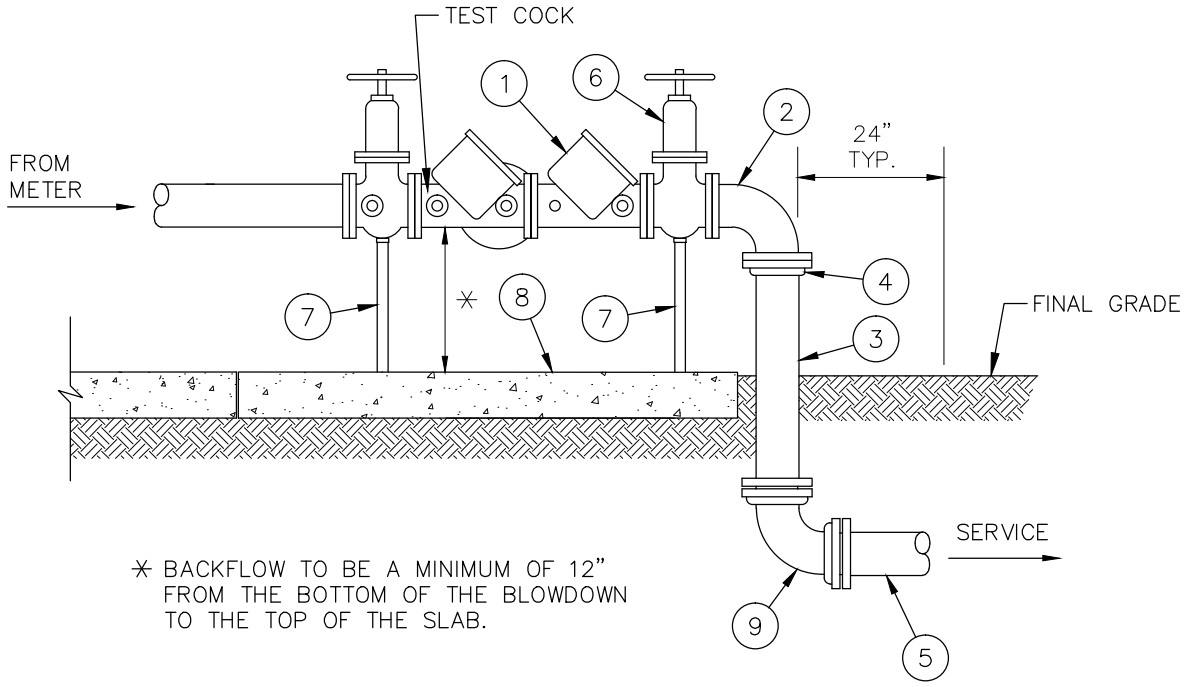


MATERIAL

ITEM	QUANT.	DESCRIPTION	
1	1	3", 4", 6", 8"	VALVE, O.C. BACKFLOW PREVENTER
2	2	4", 6", 8"	BEND _ 45° (FLANGE–FLANGE)
3	*	4", 6", 8"	PIPE, DUCTILE IRON (CLASS 350)
4	2	4", 6", 8"	ADAPTER, FLANGE, D.I.P.
5	2	4", 6", 8"	PIPE, P.V.C. (DR–18)
6	2	3", 4", 6", 8"	GATE VALVE, C.I., (FLANGE–FLANGE)
7	2		ADJUSTABLE PIPE SUPPORTS (316 SS)
8	1	6"	CONCRETE SLAB
9	2		BEND – 45° (MJ–MJ)

NOTES:

1. FIELD ADJUST AND CUT ITEM 3 TO PROPER LENGTH. THIS TYPE OF CONSTRUCTION IS DESIGNED FOR LIMITED WORKING AREA.
2. ALL EXPOSED DUCTILE IRON PIPES AND FITTINGS SHALL BE PAINTED "BLUE". PAINT SPECIFICATIONS MUST BE SUBMITTED TO MARTIN COUNTY UTILITIES PRIOR TO APPLICATION.
3. FOR 3" BACKFLOW ASSEMBLY, USE 4" D.I. PIPE WITH 4"x3" REDUCER WITH FLANGED ENDS ON BOTH SIDES OF THE BACKFLOW ASSEMBLY.

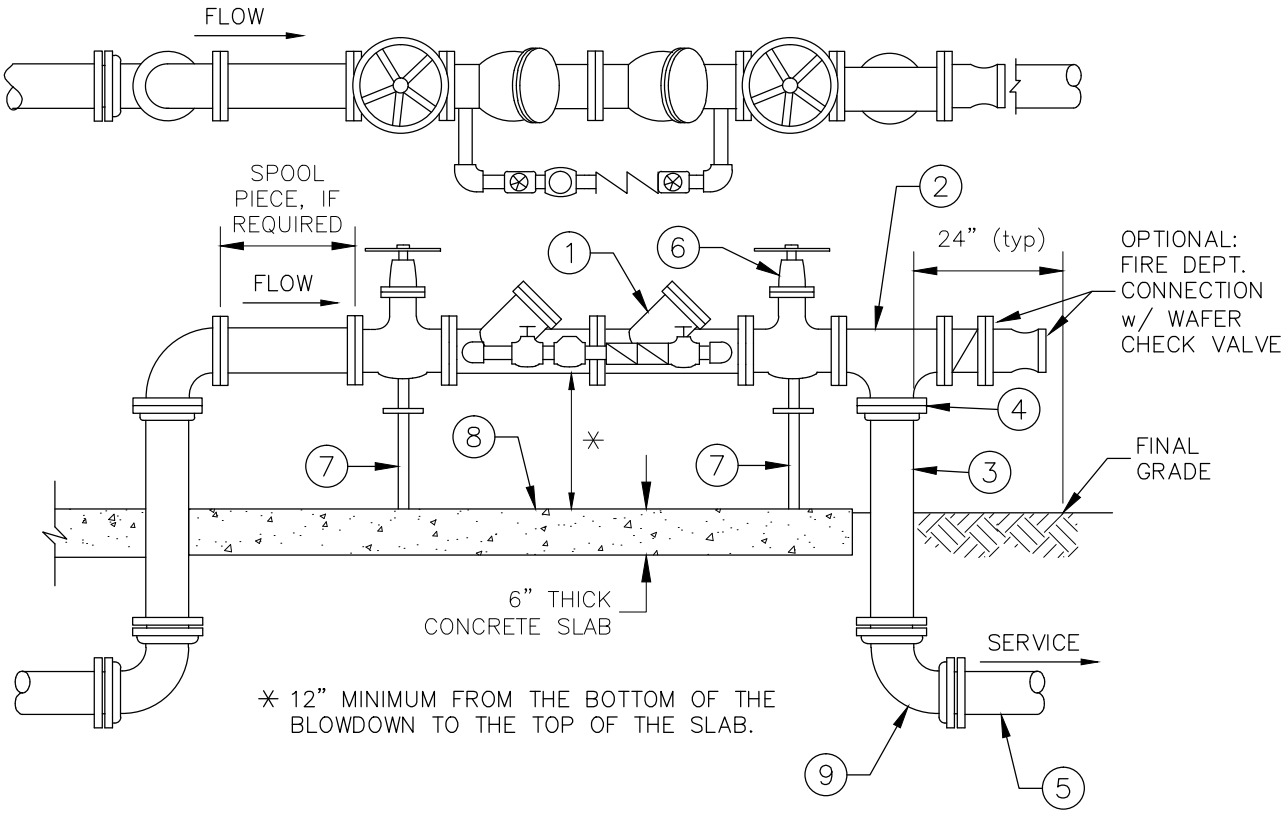


MATERIAL

ITEM	QUANT.	DESCRIPTION	
1	1	3", 4", 6", 8"	VALVE, O.C. BACKFLOW PREVENTER
2	2	4", 6", 8"	BEND _ 90° (FLANGE–FLANGE)
3	*	4", 6", 8"	PIPE, DUCTILE IRON (CLASS 350)
4	2	4", 6", 8"	ADAPTER, FLANGE, D.I.P.
5	2	4", 6", 8"	PIPE, P.V.C. (DR–18)
6	2	3", 4", 6", 8"	GATE VALVE, C.I., (FLANGE–FLANGE)
7	2		ADJUSTABLE PIPE SUPPORTS (316 SS)
8	1	6"	CONCRETE SLAB
9	2		BEND – 90° (MJ–MJ)

NOTES:

1. FIELD ADJUST AND CUT ITEM 3 TO PROPER LENGTH. THIS TYPE OF CONSTRUCTION IS DESIGNED FOR LIMITED WORKING AREA.
2. ALL EXPOSED DUCTILE IRON PIPES AND FITTINGS SHALL BE PAINTED "BLUE". PAINT SPECIFICATIONS MUST BE SUBMITTED TO MARTIN COUNTY UTILITIES PRIOR TO APPLICATION.
3. FOR 3" BACKFLOW ASSEMBLY, USE 4" D.I. PIPE WITH 4"x3" REDUCER WITH FLANGED ENDS ON BOTH SIDES OF THE BACKFLOW ASSEMBLY.

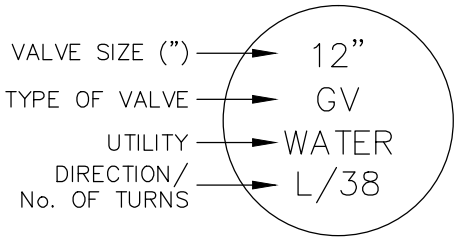


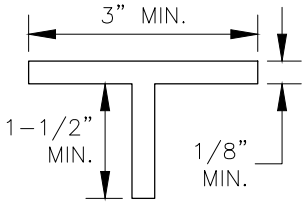
MATERIAL

ITEM	QUANT.	DESCRIPTION	
1	1	2", 4", 6", 8"	DOUBLE CHECK DETECTOR BACKFLOW PREVENTER
2	2	2", 4", 6", 8"	TEE (FLANGE–FLANGE)
3	*	2", 4", 6", 8"	PIPE, DUCTILE IRON (CLASS 350)
4	2	2", 4", 6", 8"	ADAPTER, FLANGE, D.I.P.
5	2	2", 4", 6", 8"	PIPE
6	2	2", 4", 6", 8"	GATE VALVE, C.I., (FLANGE–FLANGE) OS&Y
7	2		ADJUSTABLE PIPE SUPPORTS (316 SS)
8	1	6"	CONCRETE SLAB
9	3		BEND – 90° (MJ–MJ)

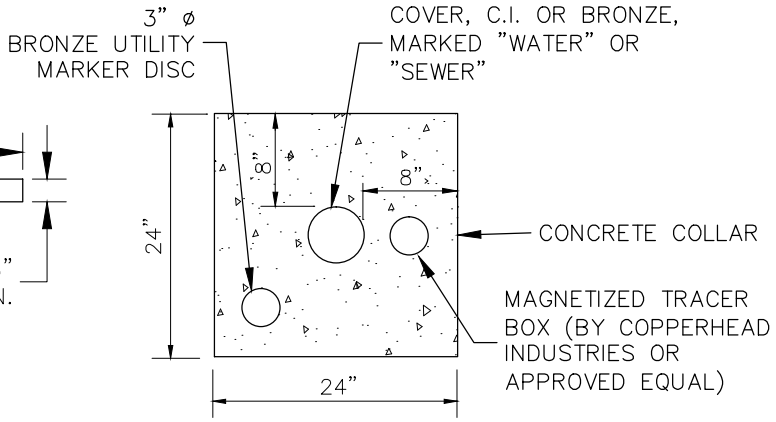
NOTES:

1. FIELD ADJUST AND CUT ITEM 3 TO PROPER LENGTH. THIS TYPE OF CONSTRUCTION IS DESIGNED FOR LIMITED WORKING AREA.
2. ALL EXPOSED DUCTILE IRON PIPES AND FITTINGS SHALL BE PAINTED "RED". PAINT SPECIFICATIONS MUST BE SUBMITTED TO MARTIN COUNTY UTILITIES PRIOR TO APPLICATION.
3. DETECTOR METER SHALL READ IN GALLONS AND SHALL BE 5/8" NEPTUNE MAGNETIC DRIVE, MODEL T–10.

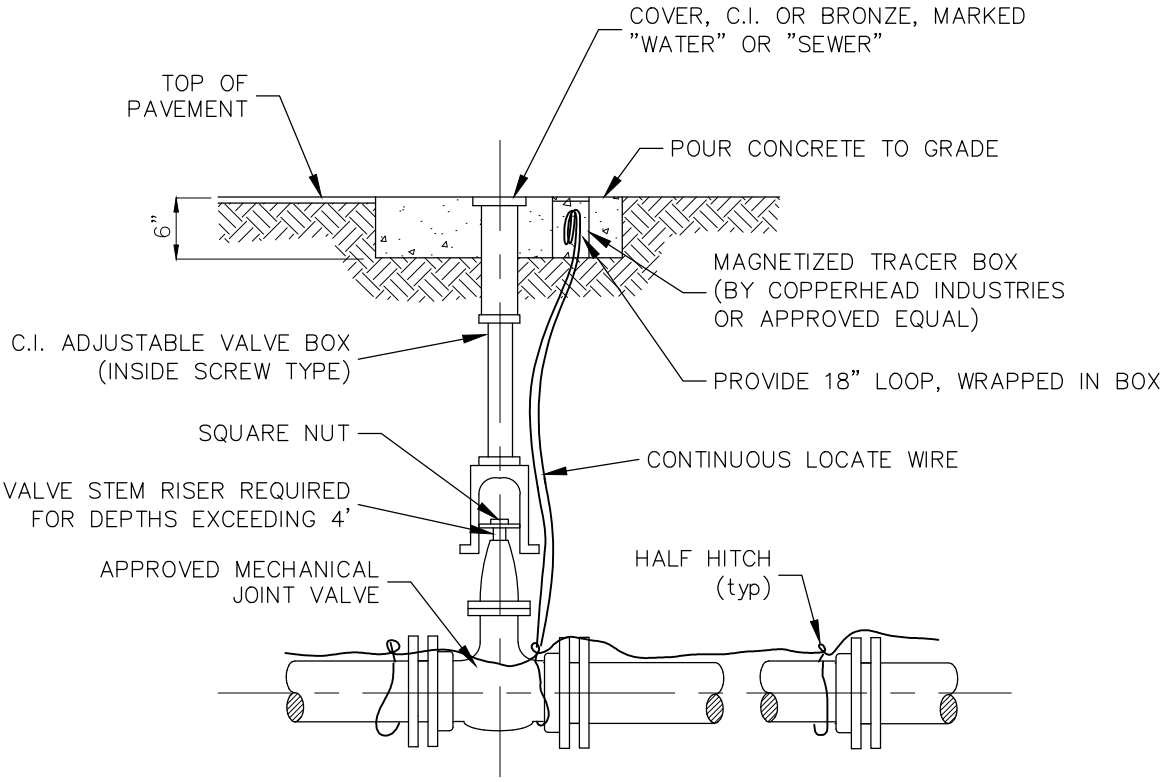




UTILITY MARKER DISC



PLAN

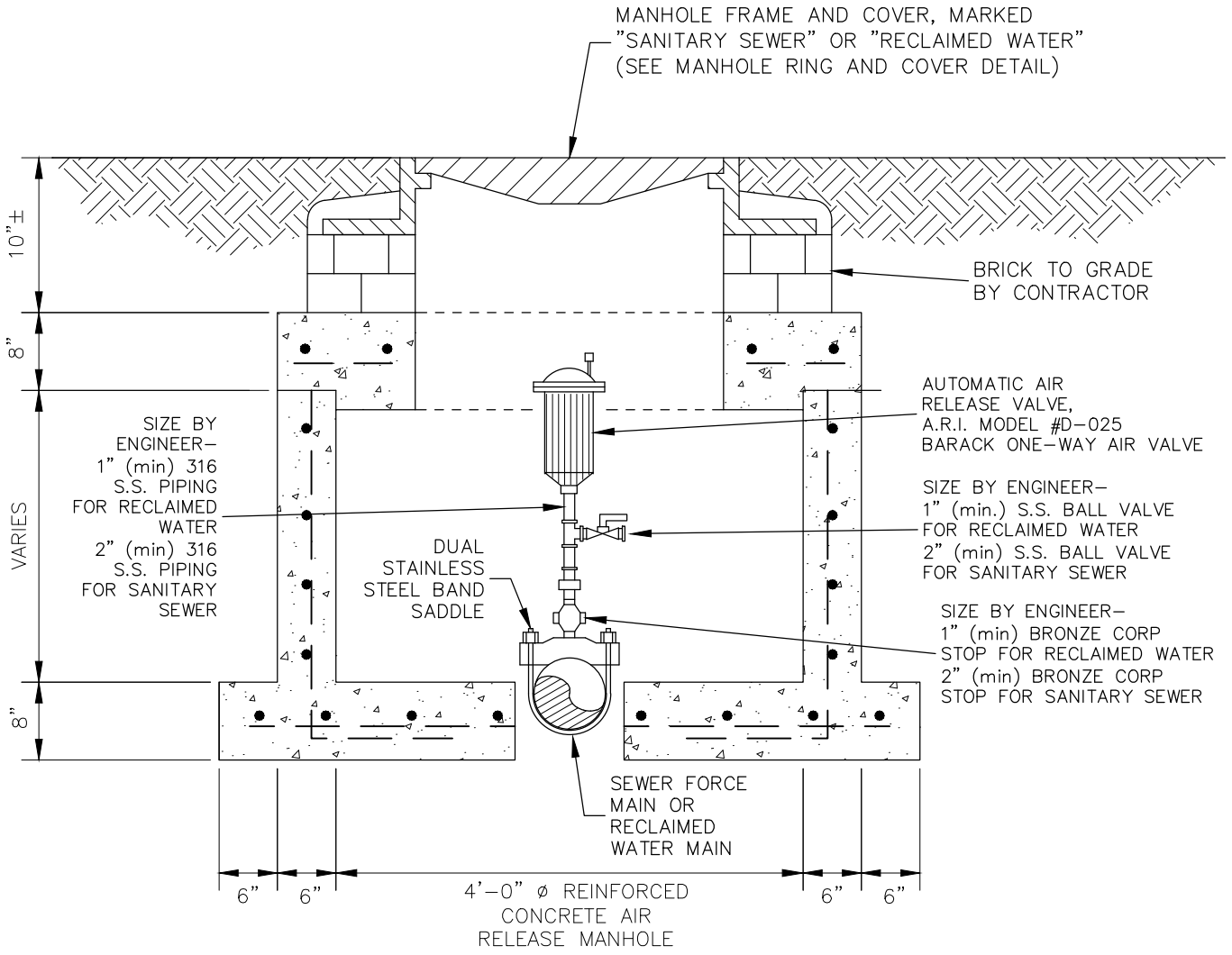


ELEVATION

NOTES:

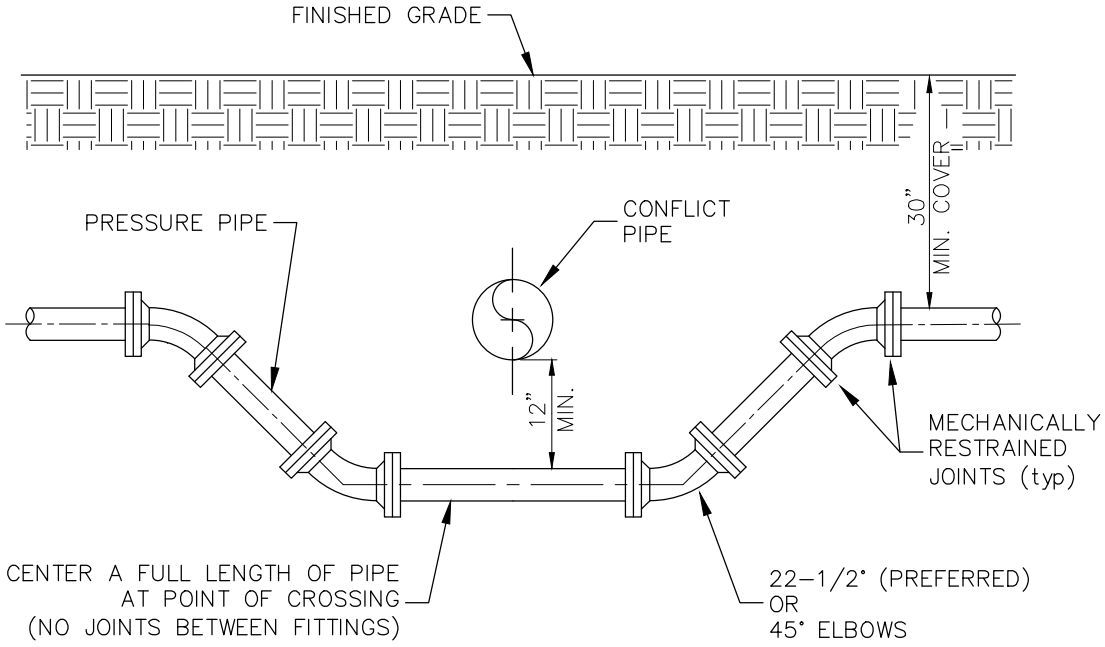
1. A LOCATION BALL (3M EMS BALL MARKERS; WATER/BLUE, MODEL No. 1403-XR; SEWER/GREEN, MODEL No. 1404-XR OR EQUAL) SHALL BE INSTALLED AT EACH FITTING AND/OR EVERY 100 FEET OF SEPARATION.

2. FOR DEEP VALVE INSTALLATIONS, A 6" C-900 PVC EXTENSION MAY BE USED TO BRING VALVE BOX TO GRADE.

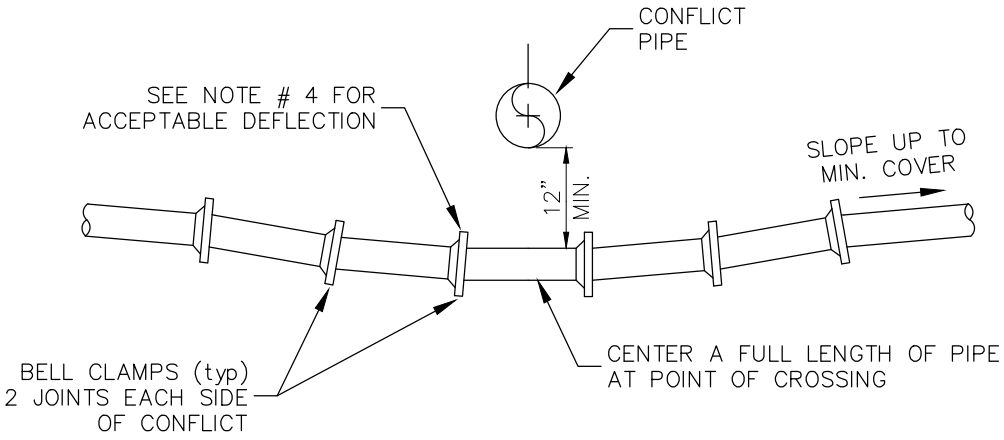


NOTES:

1. AIR RELEASE VALVE SHALL BE A.R.I. MODEL #D-025 WITH BARACK ONE-WAY AIR VALVE, SIZED APPROPRIATELY FOR SERVICE INTENDED.
2. ALL PIPING TO BE 316 STAINLESS STEEL.
3. TYPE II CEMENT; CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
4. CONCRETE STRUCTURE REINFORCEMENT SHALL MEET ASTM C478 SPECS.
5. CONCRETE STRUCTURE AND D.I. COVER SHALL MEET H-20 LOADING REQUIREMENTS.
6. FOR MINIMUM PIPING AND AIR RELEASE VALVE SIZES, REFER TO M.C.U. APPROVED PRODUCT LIST. ENGINEER OF RECORD SHALL BE RESPONSIBLE FOR SIZING.



FITTING TYPE



DEFLECTION TYPE

NOTES:

1. THESE METHODS ARE TO BE USED WHEN INSUFFICIENT COVER EXISTS TO ALLOW PRESSURE PIPE TO CROSS ABOVE CONFLICT PIPE WITH 6" VERTICAL SEPARATION AND MAINTAIN REQUIRED COVER TO FINISHED GRADE.
2. FITTINGS SHALL BE RESTRAINED WITH RETAINER GLANDS.
3. THE DEFLECTION TYPE CROSSING IS PREFERRED.
4. DO NOT EXCEED 50% OF MANUFACTURER'S RECOMMENDED MAXIMUM JOINT DEFLECTION.

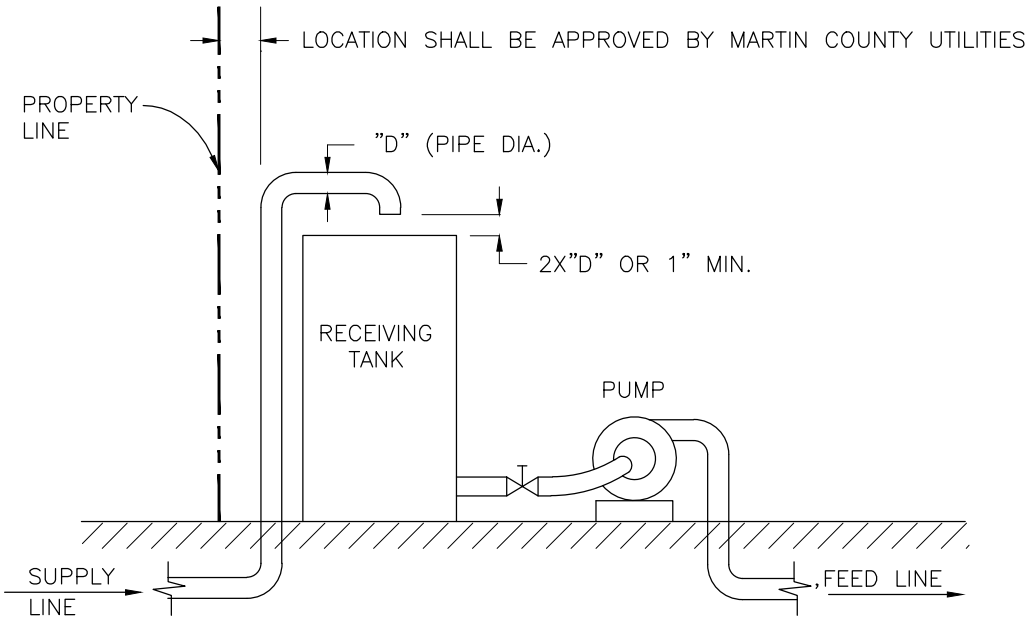
MIN. LENGTH (IN FEET) OF PIPE TO BE RESTRAINED

(SOURCES: EBAA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1, AND DIPRA THRUST RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2)

FITTING TYPE		PIPE SIZE							
		4"	6"	8"	10"	12"	16"	20"	24"
90° HORIZ. BEND		14	20	25	30	35	45	54	62
45° HORIZ. BEND		6	8	11	13	15	19	22	26
22.5° HORIZ. BEND		3	4	5	6	7	9	11	12
11.25° HORIZ. BEND		1	2	3	3	4	4	5	6
90° VERT. OFFSET	UPPER BEND	29	41	53	64	74	95	115	134
	LOWER BEND	7	10	13	16	19	25	30	35
45° VERT. OFFSET	UPPER BEND	12	19	24	29	34	39	48	56
	LOWER BEND	3	4	6	7	8	10	12	15
22.5° VERT. OFFSET	UPPER BEND	6	9	12	14	17	19	23	27
	LOWER BEND	1	2	4	4	4	5	6	7
11.25° VERT. OFFSET	UPPER BEND	3	4	6	7	8	9	11	13
	LOWER BEND	1	1	1	2	2	2	3	3
PLUG (DEAD END)		32	45	59	70	83	107	129	151
IN-LINE VALVE		32	45	45	45	45	55	65	80
TEE (BRANCH RESTRAINT)	4" x ø	23	–	–	–	–	–	–	–
	6" x ø	21	35	–	–	–	–	–	–
	8" x ø	18	34	47	–	–	–	–	–
	10" x ø	16	32	46	58	–	–	–	–
	12" x ø	13	30	44	57	69	–	–	–
	16" x ø	7	26	41	55	67	90	–	–
	20" x ø	1	21	38	52	65	88	109	–
	24" x ø	1	16	34	49	62	86	108	129
	30" x ø	1	8	28	44	58	83	106	127
	36" x ø	1	1	22	39	54	80	103	124
	42" x ø	1	1	15	33	49	77	100	122
	48" x ø	1	1	7	27	44	73	97	120
REDUCER (LARGER PIPE RESTRAINT)	6" x ø	23	–	–	–	–	–	–	–
	8" x ø	38	25	–	–	–	–	–	–
	10" x ø	57	43	24	–	–	–	–	–
	12" x ø	72	60	44	41	–	–	–	–
	16" x ø	99	90	78	75	45	–	–	–
	20" x ø	123	116	107	105	81	45	–	–
	24" x ø	146	140	132	131	111	82	45	–

NOTES:

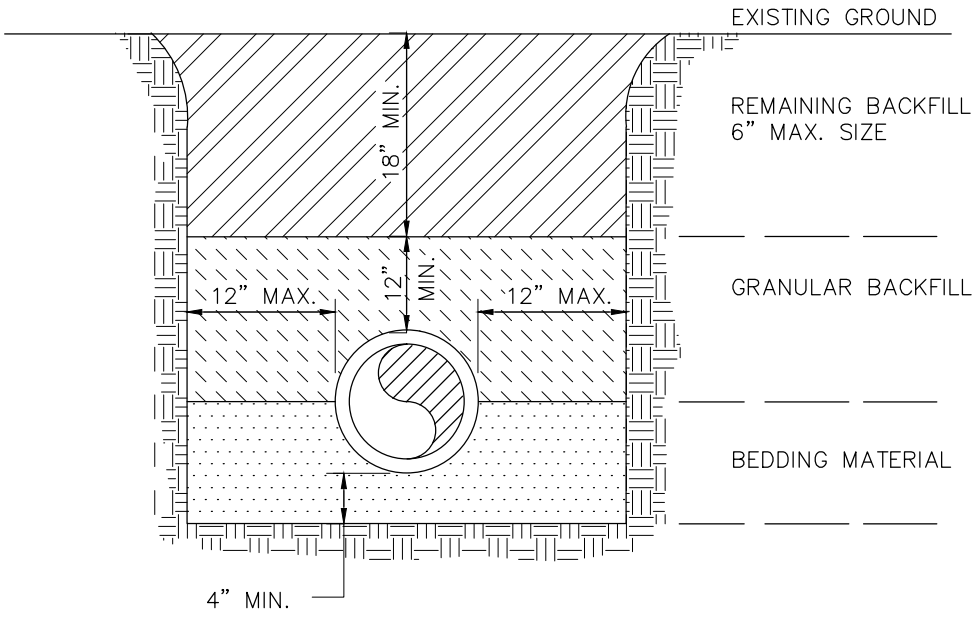
1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
   SOIL TYPE–SAND TEST PRESSURE–150 PSI DEPTH OF BURY–3'
   TRENCH TYPE–3 SAFETY FACTOR– 1.5 VERTICAL OFFSET–3'
   MINIMUM PIPE LENGTH ALONG TEE RUN–5'
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
5. DESIGN ENGINEER SHALL BE RESPONSIBLE FOR PROPERLY SIZING THE LENGTH OF PIPE TO BE RESTRAINED.



NOTES:

1. AN AIR GAP SEPARATION MEANS THE UNOBSTRUCTED VERTICAL DISTANCE THROUGH THE FREE ATMOSPHERE BETWEEN THE LOWEST OPENING FROM ANY PIPE OR FAUCET SUPPLYING WATER TO A TANK, PLUMBING FIXTURE OR OTHER DEVICE AND THE FLOOD LEVEL OR OVERFLOW RIM OF THE RECEPTACLE.

2. THE "APPROVED AIR GAP SEPARATION" SHALL BE AT LEAST DOUBLE THE DIAMETER OF THE SUPPLY PIPE MEASURED VERTICALLY ABOVE THE OVERFLOW RIM OF THE VESSEL AND IN NO CASE SHALL THE GAP BE LESS THAN ONE (1) INCH IN DIAMETER.



NOTES:

1. BEDDING MATERIAL SHALL BE HAND PLACED IN 6" LIFTS AND SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8"-7/8" SIZING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCK SHALL BE REMOVED.

2. THE PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.

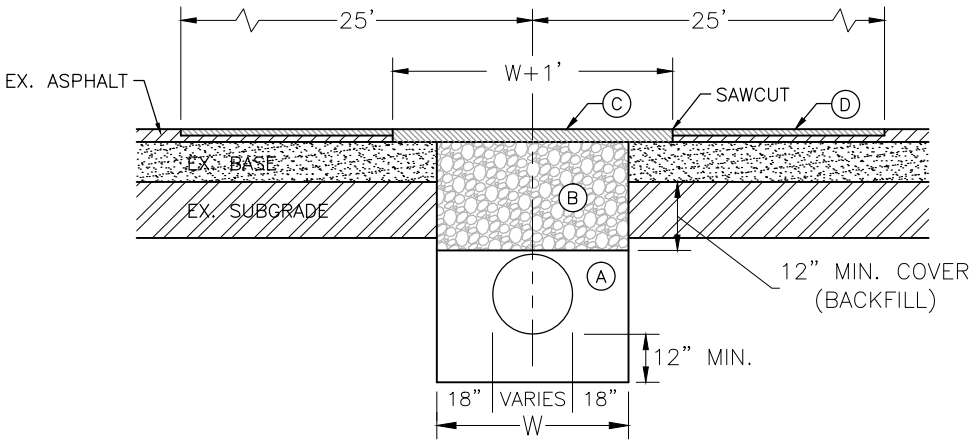
3. THE PIPE SHALL BE PLACED IN A DRY TRENCH.

4. BACKFILL SHALL BE DONE WITH APPROVED MATERIAL, CLEAN AND FREE OF ROCKS, MUCK AND OTHER DELETERIOUS MATTER AND COMPACTED BENEATH THE HAUNCHES OF THE PIPE USING MECHANICAL TAMPERS TO 100% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

5. BACKFILL TO BE COMPACTED ALONG THE SIDES OF THE PIPE AND TO A POINT ONE FOOT ABOVE THE TOP OF THE PIPE TO 100% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

6. A. WHERE PAVEMENT IS TO BE CONSTRUCTED OVER THE PIPE THE REMAINING BACKFILL SHALL BE COMPACTED IN 6 INCH LAYERS AND COMPACTED TO 95% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
   B. WHERE "NO" PAVEMENT IS TO BE CONSTRUCTED OVER THE PIPE THE REMAINING FILL SHALL BE COMPACTED IN 6 INCH LAYERS TO A DENSITY 90% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.

7. CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL TRENCH SAFETY REGULATIONS



TRENCH DETAIL
N.T.S.

BACKFILL AND BASE

A. PROVIDE CLEAN BACKFILL. BACKFILL SHALL BE REPLACED IN 6" LAYERS. EACH LAYER SHALL BE MECHANICALLY COMPACTED TO A MINIMUM 100% DENSITY AS DETERMINED BY AASHTO T-99, METHOD "C" (MINIMUM LBR OF 40).

B. BASE ROCK MATERIAL SHALL BE A MINIMUM OF 2' THICK AND BE PLACED IN 6" LAYERS OR AS OTHERWISE APPROVED AND EACH LAYER THOROUGHLY MECHANICALLY COMPACTED TO (98%) DENSITY AS DETERMINED BY AASHTO T-180. ALL BASE MATERIAL MUST MEET FDOT SPECIFICATIONS FROM A CERTIFIED MINING OPERATION. DEPTH OF BASE MATERIAL VARIES ON ROADWAY TYPE AS PER MARTIN COUNTY ENGINEERING STANDARD DETAIL R-10.

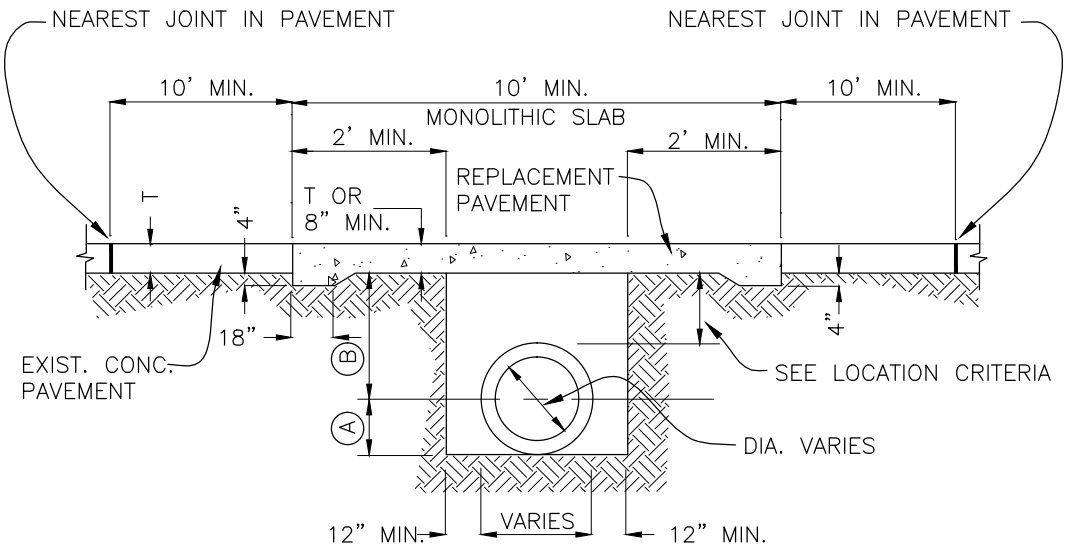
PAVING

C. A TEMPORARY PATCH SHALL BE NO LESS THAN 2" THICK OR MATCHING EXISTING PAVEMENT THICKNESS, WHICHEVER IS GREATER. ASPHALT PATCHES MUST BE OF A HOT MIX TYPE FRICTION COURSES. MARTIN COUNTY DOES NOT ALLOW COLD PATCH IN COUNTY MAINTAINED ROADWAYS. THE PATCH IS TO REMAIN 30 DAYS AT MINIMUM TO ASSURE ANY SETTLING OF THE ROADWAY TRENCH HAS TAKEN PLACE.

D. MILL 1 INCH OF ASPHALT A MINIMUM OF 25' FROM CENTER OF TRENCH ON BOTH SIDES, SEE NOTE #1. PAVE AND COMPACT 1" OF SP-9.5 OR MATCH EXISTING TYPE OF FRICTION COURSE.

NOTES:

1. ALL OPEN CUT OF PAVEMENT MUST BE REVIEWED BY MARTIN COUNTY ENGINEERING PRIOR TO ANY WORK BEING DONE IN COUNTY MAINTAINED RIGHT-OF-WAY. DEPENDING ON THE LOCATION OF THE OPEN CUT ADDITIONAL MILLING AND PAVING MAY BE REQUIRED; ALL PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
2. ALL MATERIAL USED WITHIN THE ROADWAY MUST MEET FDOT SPECIFICATIONS AND BE SUPPLIED FROM A FDOT CERTIFIED MINING OPERATION AND ASPHALT PLANT.
3. A MINIMUM OF TWO DENSITY TESTS SHALL BE TAKEN FOR EACH SIX (6) INCH LIFT OF SUB GRADE AND EACH OPEN CUT CROSSING. WHEN THE SPECIFIED COMPACTED BASE IS GREATER THAN SIX AND ONE-HALF (6 ½") INCHES THE BASE SHALL BE CONSTRUCTED IN TWO OR MORE COURSES. PROCTORS FOR MATERIALS USED IN BACK-FILLING SHALL BE OBTAINED BY A CERTIFIED LABORATORY. DENSITY TESTS SHALL BE CONDUCTED BY A CERTIFIED LABORATORY OR THE PERMITTEE'S CONSULTANTS. THE PERCENTAGE OF MAXIMUM DENSITY REQUIRED SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS. A COPY OF ALL COMPLETED AND ACCEPTED DENSITY TESTS SHALL BE FURNISHED TO THE COUNTY ENGINEER'S OFFICE PRIOR TO FINAL INSPECTION.
4. MARTIN COUNTY DOES NOT ALLOW CRUSHED CONCRETE WITHIN COUNTY MAINTAINED ROADWAY.



REPLACEMENT OF CONCRETE PAVEMENT FOR PERMITTED PAVEMENT CUT

DENSITY PROCEDURES:

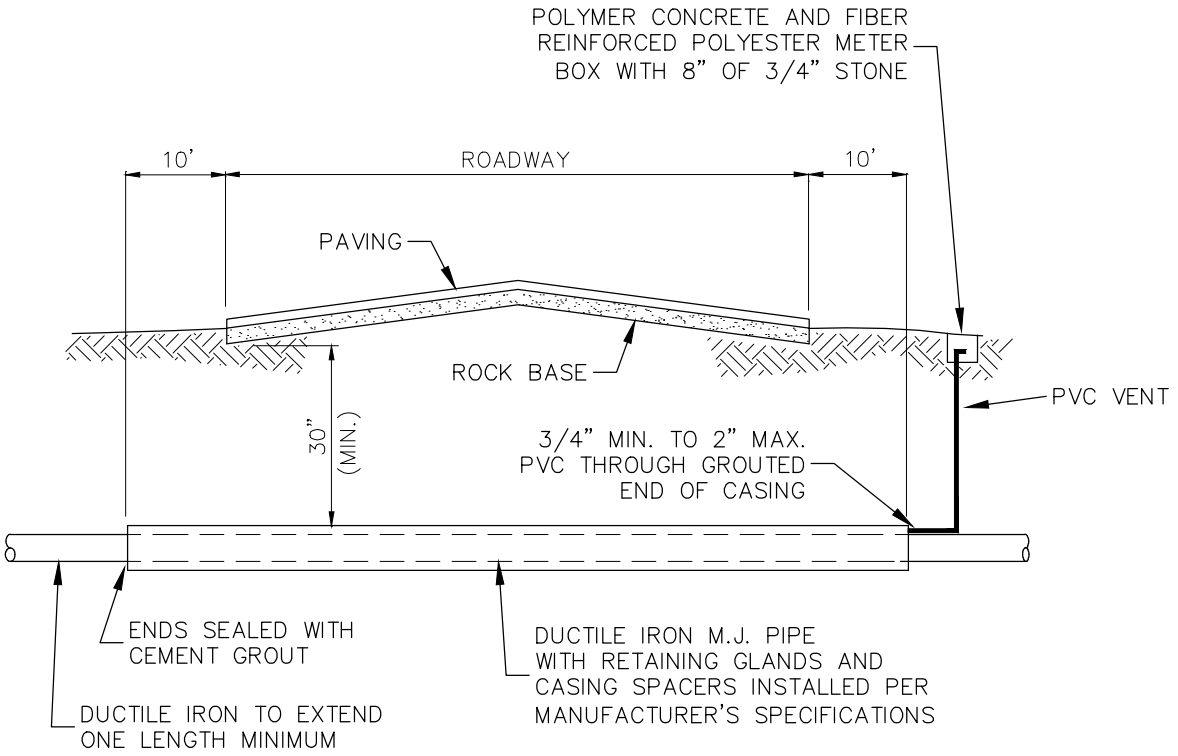
THE BACKFILL FOR Ⓐ AND Ⓑ SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99 METHOD "C".

Ⓐ THE PERMITTEE SHALL PROVIDE ADEQUATE COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE, USING MECHANICAL TAMPS SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HAUNCHES OF THE PIPE AND ABOVE ANY BEDDING REQUIRED.

Ⓑ THE PERMITTEE SHALL OBTAIN A WELL COMPACTED BED AND FILL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE BOTTOM OF REPLACEMENT PAVEMENT.

GENERAL NOTES:

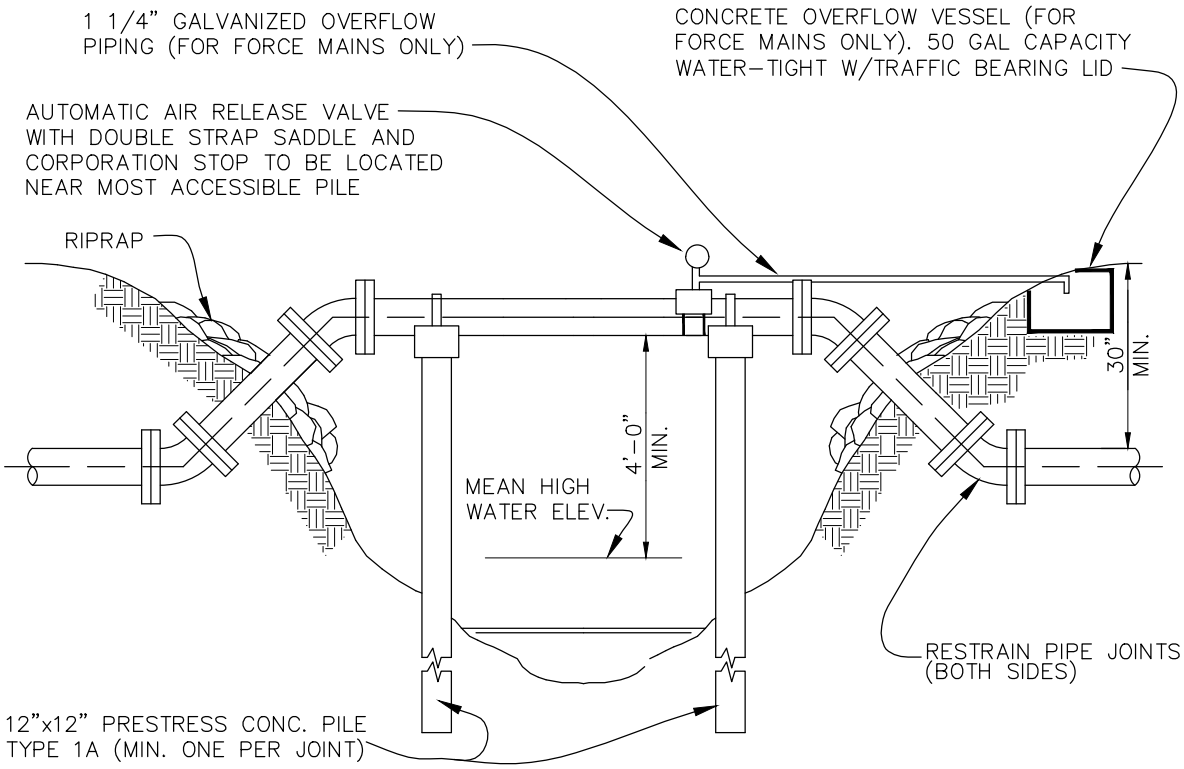
1. 3000 P.S.I. CONCRETE, BY USE OF HIGH EARLY STRENGTH CEMENT, TO BE USED FOR REPLACEMENT, OR OTHER APPROVED HIGH STRENGTH, FAST SET MATERIALS.
2. CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED TO CONFORM WITH ADJOINING SLABS.
3. BACKFILL MATERIAL SHALL BE EITHER OF THE SAME TYPE AND COMPOSITION AS THE MATERIAL REMOVED, OR OF EQUAL OR GREATER STRUCTURAL ADEQUACY. MATERIALS CONTAMINATED WITH DELETERIOUS SUBSTANCES DURING EXCAVATION SHALL NOT BE USED.



CARRIER PIPE SIZE	MINIMUM STEEL CASING	MINIMUM WALL THICKNESS
4"	12"	.250
6"	16"	.250
8"	18"	.312
10"	20"	.375
12"	24"	.375
16"	30"	.500
18"	30"	.500
20"	36"	.562
24"	36"	.562

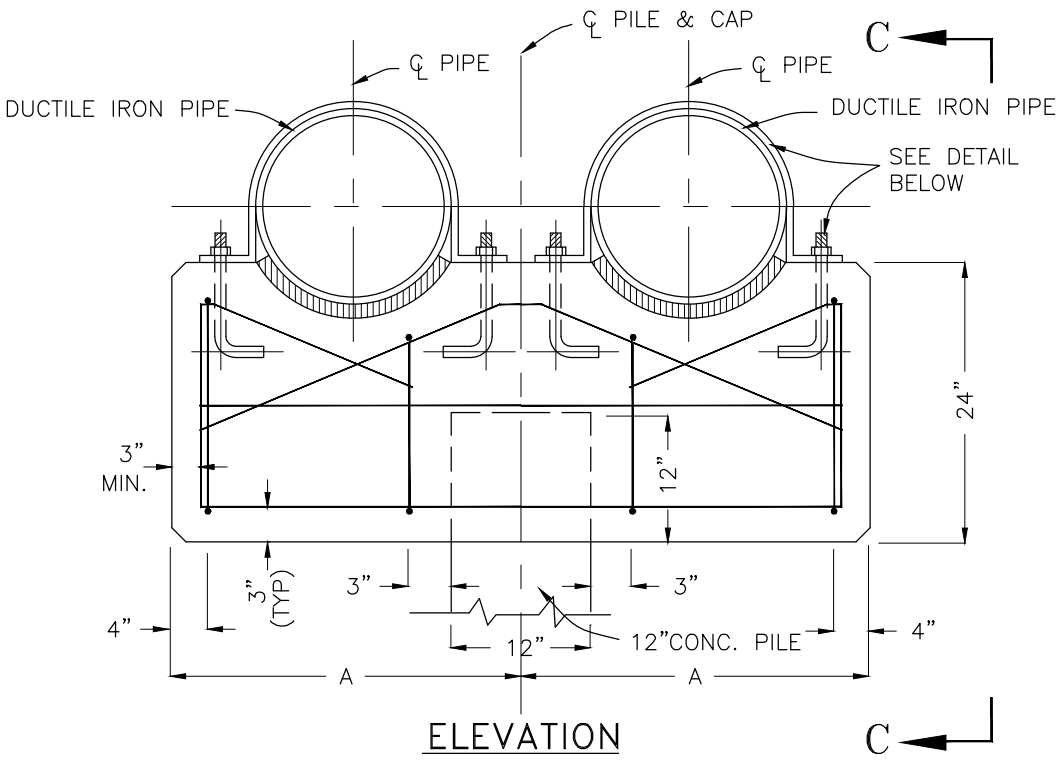
NOTE:

1. LOCATOR WIRE SHALL BE MIN. #10 GAUGE MULTI-STRAND WIRE FOR ALL BORE & JACKING



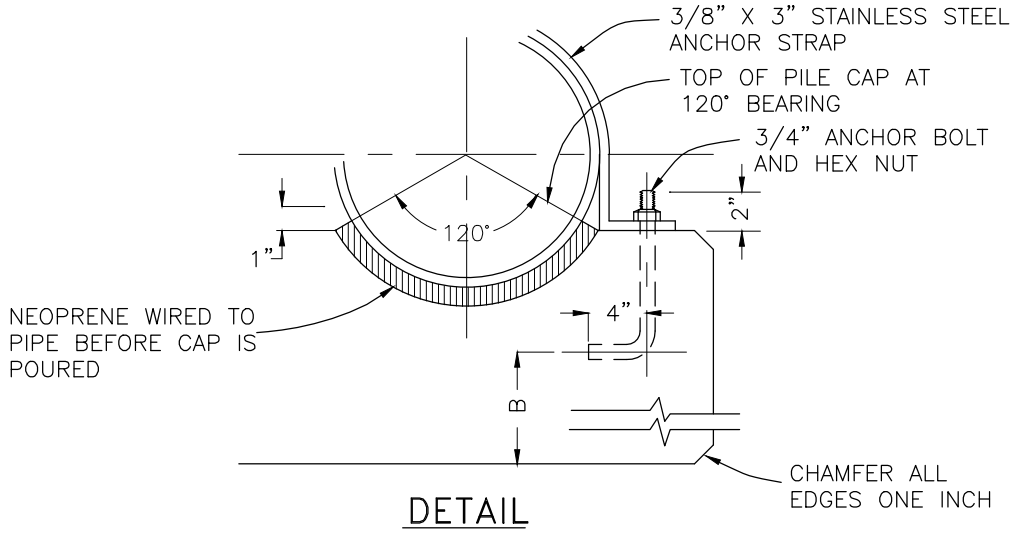
NOTES

1. ALL EXPOSED PIPES SHALL BE DUCTILE IRON WITH FLANGED FITTINGS. RETAINER GLANDS. UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS.
2. SPAN HEIGHT AS REQUIRED BY PERMITTING AGENCY.
3. MAXIMUM SUPPORT SPACING SHALL BE IN ACCORDANCE TO MANUFACTURERS RECOMMENDATION.
4. FAN GUARDS ARE REQUIRED, SEE STANDARD DETAIL.
5. ALL EXPOSED PIPING, GUARDS AND FITTINGS SHALL BE PAINTED.
6. PIPE SHALL BE CRADLED ON NEOPRENE.
7. TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
8. FOR CONCRETE PILES SEE DETAILS
9. ALL PAINT SPECIFICATIONS MUST BE SUBMITTED AND APPROVED BY MARTIN COUNTY UTILITIES PRIOR TO APPLICATION.
10. CONCRETE IN C.I.P. CAP SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3,400 p.s.i.
11. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
12. THE PILES SHALL BE DRIVEN TO A MINIMUM PENETRATION OF 20'-0" UNLESS THE PRESENCE OF POOR SOILS (N<3) NECESSITATE A DEEPER PENETRATION.
13. PROVIDE TWO FULL LENGTHS OF RESTRAINED D.I.P. BOTH SIDES OF CROSSING.
14. CONTINUE LOCATOR WIRE ACROSS CANAL CROSSING.



ELEVATION

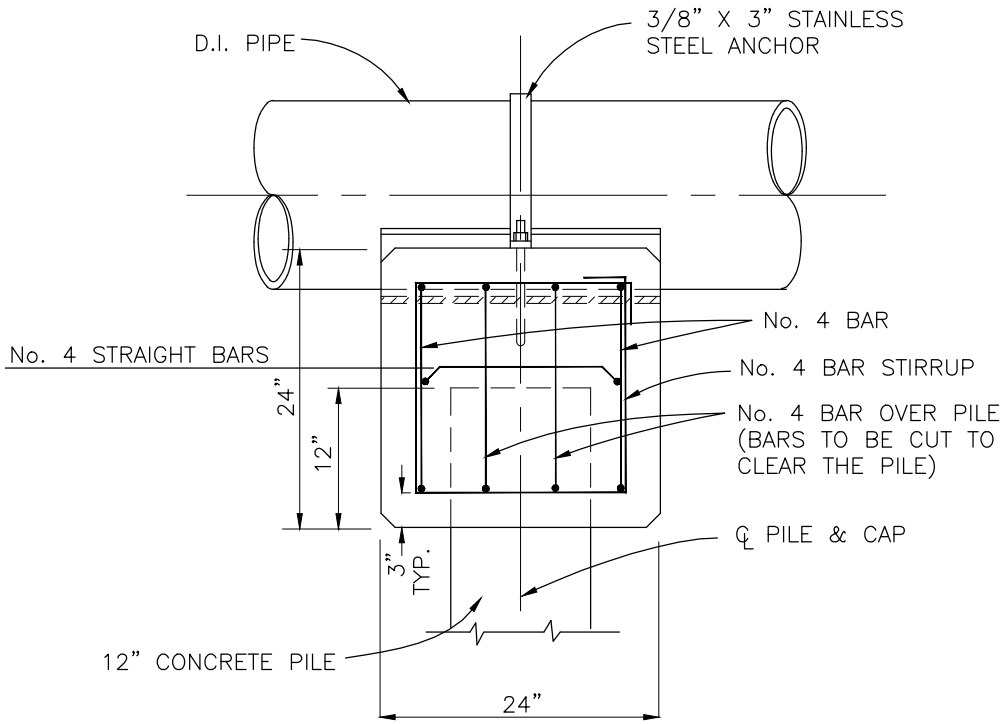
NOTE:
1. ALL REINF. STEEL SHALL BE No. 4 BARS.
2. ALL HARDWARE SHALL BE STAINLESS STEEL.
3. SEE SHEET 28A FOR ADDITIONAL DIMENSIONS.



DETAIL

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

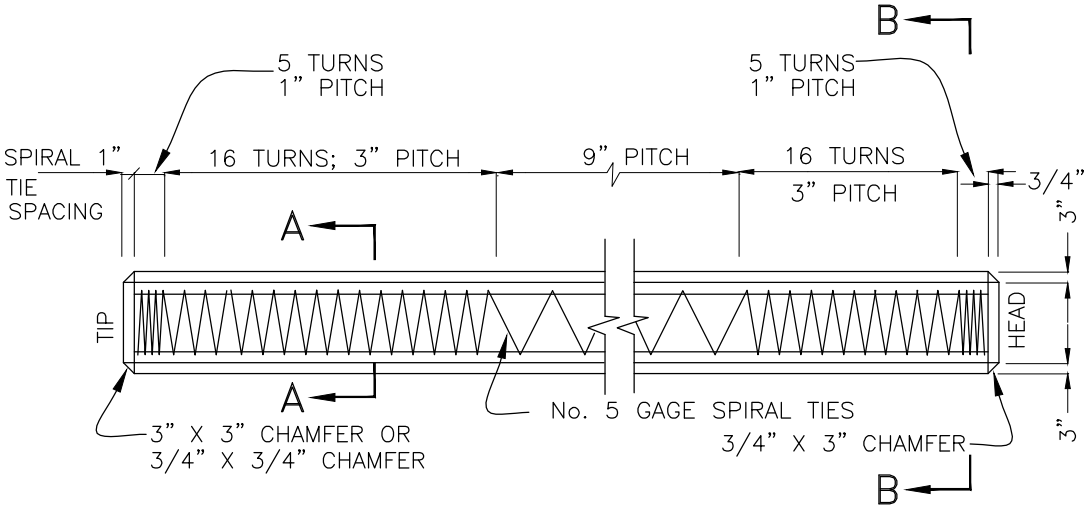
REVISION	PILE CAP SUPPORT DETAIL DUAL PIPE (ELEVATION)	DWG No.
AUGUST 2016		28



VIEW C–C

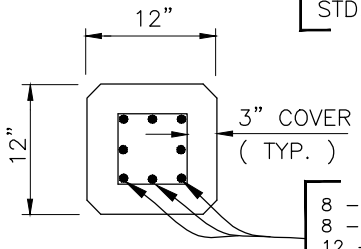
NOTE: ALL HARDWARE SHALL BE STAINLESS STEEL.

PIPE DIA.	PILE SIZE	DIMENSIONS	
		A	B
4"	12"x12"	16"	16"
8"	12"x12"	20"	16"
12"	12"x12"	26"	16"
16"	12"x12"	30"	16"



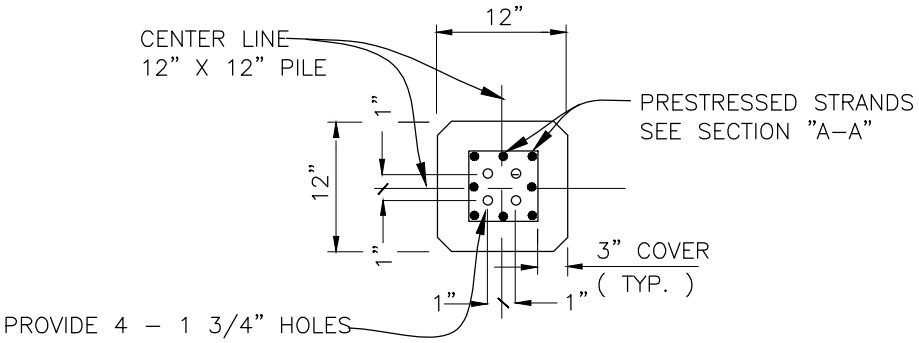
ELEVATION OF 12" X 12" PILE

MAXIMUM LENGTH – 50' SINGLE POINT PICK–UP
MAXIMUM LENGTH – 70' DOUBLE POINT PICK–UP
OVER 70' TRIPLE POINT PICK–UP SEE F.D.O.T
STD. DRAWINGS INDEX No. 600



8 – 7/16"Ø L.R.S. – AS – 0.115 in². – 270K @ 21.700# EA. SPACED 2 9/16" CTRS.
8 – 1/2"Ø S.R. – AS – 0.144 in². – 250K @ 24.100# EA. SPACED 2 1/2" CTRS.
12 – 3/8"Ø L.R.S. – AS – 0.085 in². – 270K @ 14.800# EA. SPACED 1 11/16" CTRS.
12 – 3/8"Ø S.R. – AS – 0.085 in². – 270K @ 15.600# EA. SPACED 1 11/16" CTRS.

SECTION "A–A"



SECTION "B–B"

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	CONCRETE PILE DETAIL	DWG No.
AUGUST 2016		28B

NOTES:

1. PILE BUILD–UP, WHEN REQUIRED, SHALL BE ACCOMPLISHED WITH 4 #10 DOWEL 3" LONG SET IN 1 3/4" DIA. DRILLED HOLES WITH EPOXY MORTAR. PROVIDE 4 #5 LONGITUDINAL BARS AS LONGITUDINAL REINFORCING. SPIRAL TIES SHALL BE #5 CONTINUOUS. SPIRALS SHALL BE TIED TO AT LEAST TWO LONGITUDINAL BARS FOR EACH WRAP.

2. PILING AS PER F.D.O.T. STANDARD SPECIFICATION SECTION 455.

3. SPIRAL TIES: EACH WRAP OF SPIRALS SHALL BE TIED TO AT LEAST TWO CORNER STRANDS. ONE TURN REQUIRED FOR SPIRAL SPLICES. SPIRALS MAY BE MANUFACTURED FROM STOCK MEETING REQUIREMENTS OF ANY GRADE OF REINFORCING STEEL OR HARD DRAWN STEEL.

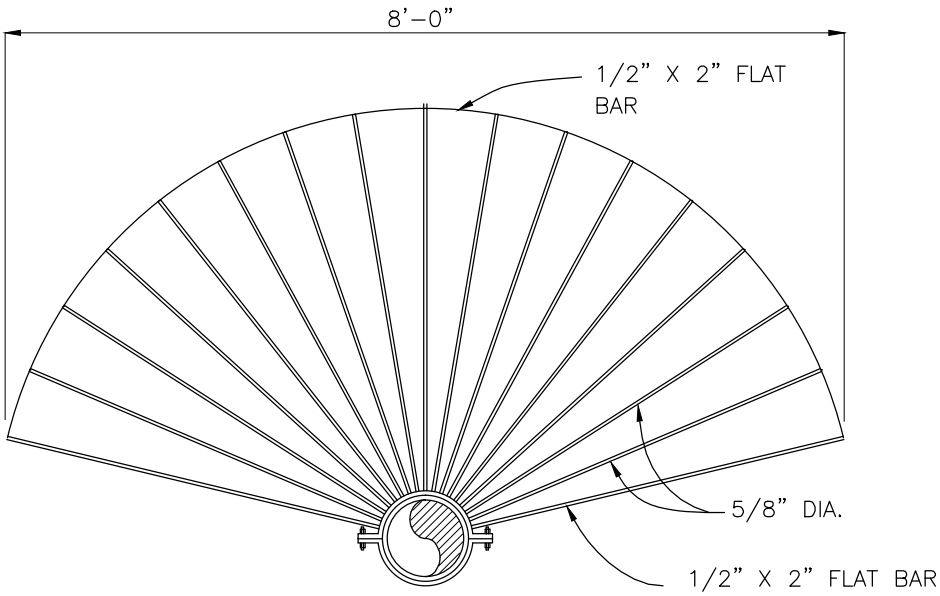
4. CONCRETE CLASS: CONCRETE FOR ALL PILES SHALL BE CLASS V (SPECIAL). CLASS V (SPECIAL) CONCRETE SHALL CONFORM TO THE REQUIREMENTS FOR CLASS V CONCRETE EXCEPT FOR THE 28 DAY STRENGTH AS NOTED BELOW.

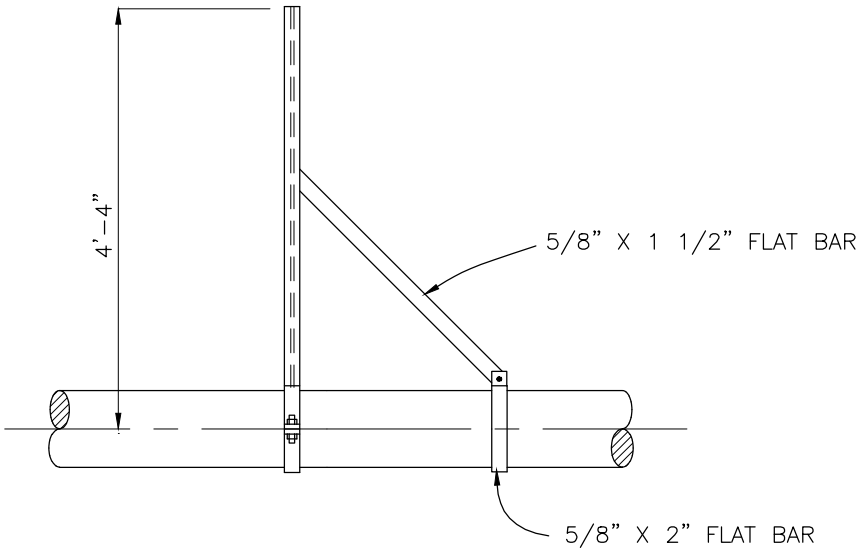
5. CONCRETE STRENGTH: THE CYLINDER STRENGTH SHALL BE 6,000 p.s.i. MINIMUM AT 28 DAYS AND 4,000 p.s.i. MINIMUM AT TRANSFER OF THE PRESTRESSING FORCE.

6. PILES SHALL BE MARKED AT PICK–UP POINTS TO INDICATE PROPER POINTS FOR ATTACHING HANDLING LINE.

7. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE EITHER GRADE 40 OR 60. UNLESS OTHERWISE NOTED. SEE ENVIRONMENTAL REQUIREMENTS NOTE FOR SPLICE REINFORCING ONLY (SPIRAL TIES AND PRESTRESSING STRAND ARE UNCOATED FOR ALL ENVIRONMENTAL CLASSES).

8. STRAND NOMENCLATURE: S.R. = STRESS RELIEVED STRAND L.R.S = LOW–RELAXATION STRAND



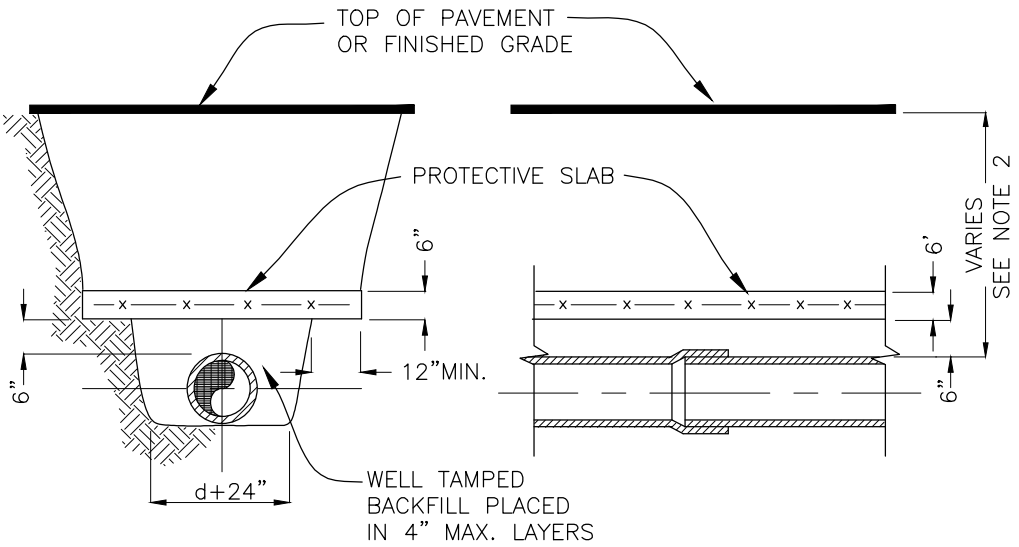


NOTES:

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.

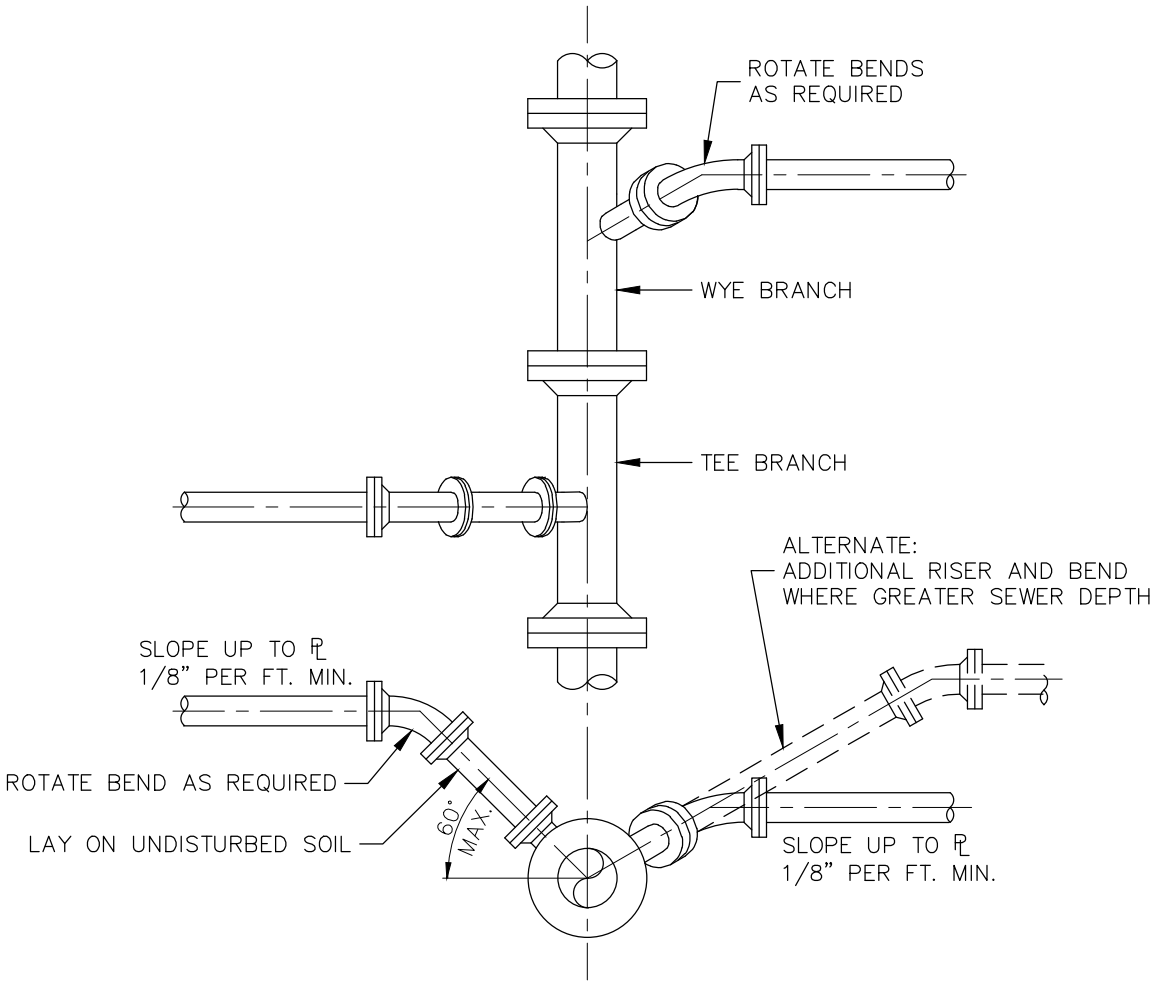
2. FAN GUARD AND ALL MOUNTING BRACKETS TO BE HOT DIP GALVANIZED AND MOUNTING HARDWARE TO BE STAINLESS STEEL.

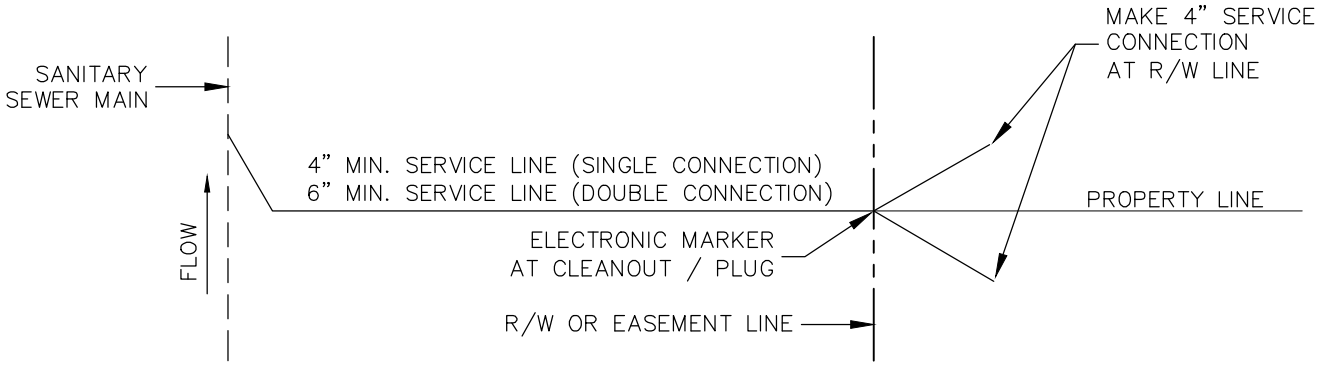
3. 1/2" THICK NEOPRENE PAD TO INSULATE PIPE FROM CONTACT WITH ALL MOUNTING HARDWARE, FAN GUARD HARDWARE, AND CONCRETE SURFACES.



NOTES:

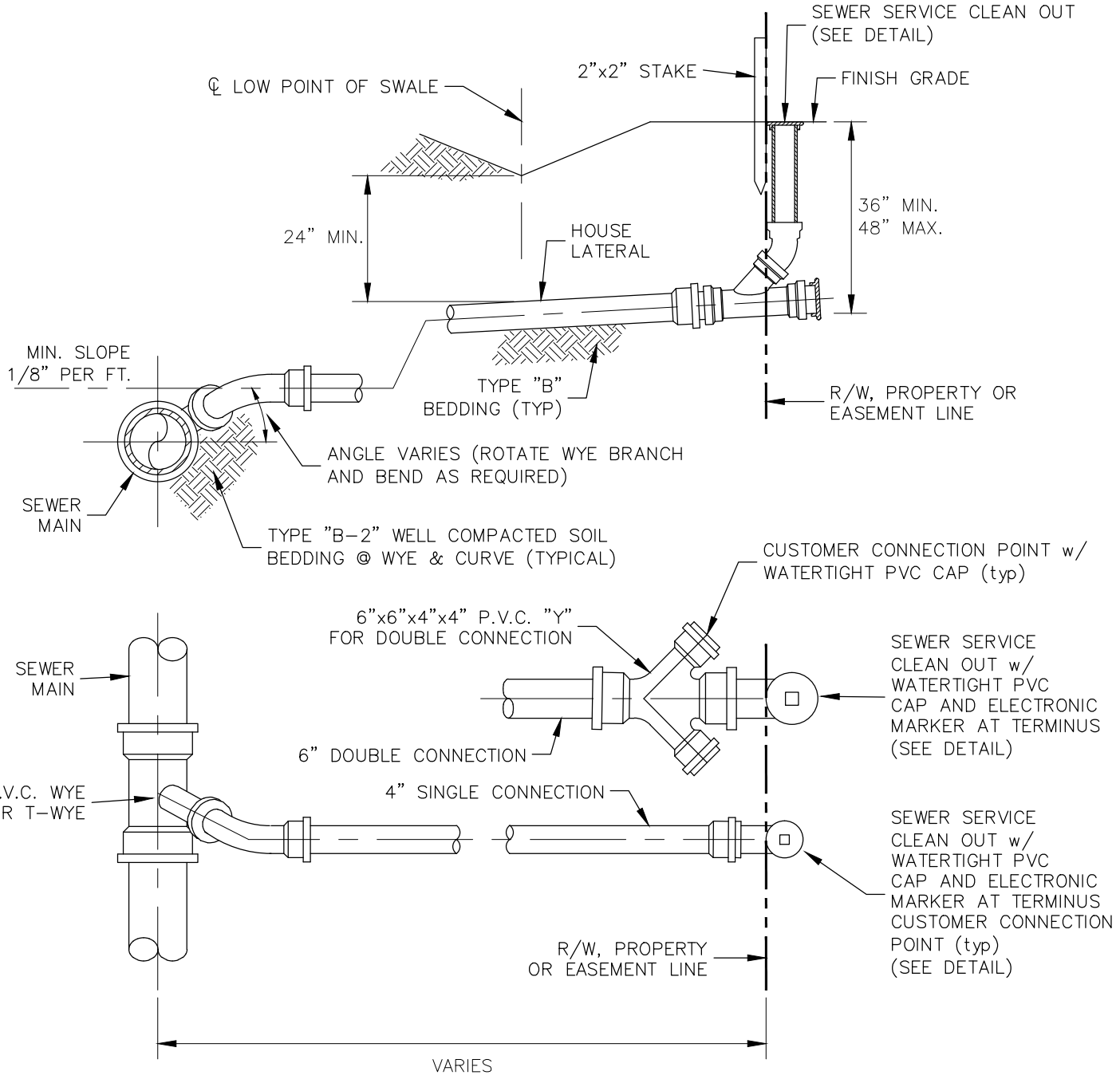
1. CONCRETE PROTECTIVE SLAB SHALL BE 2500 P.S.I. WITH 6"X6"–10/10 W.W. MESH AND 12" MIN. BEARING EACH SIDE OF TRENCH.
2. PROTECTIVE SLAB REQUIRED WHERE COVER FOR MAINS IS LESS THAN 30" AND LATERALS WHEN LESS THAN 24".





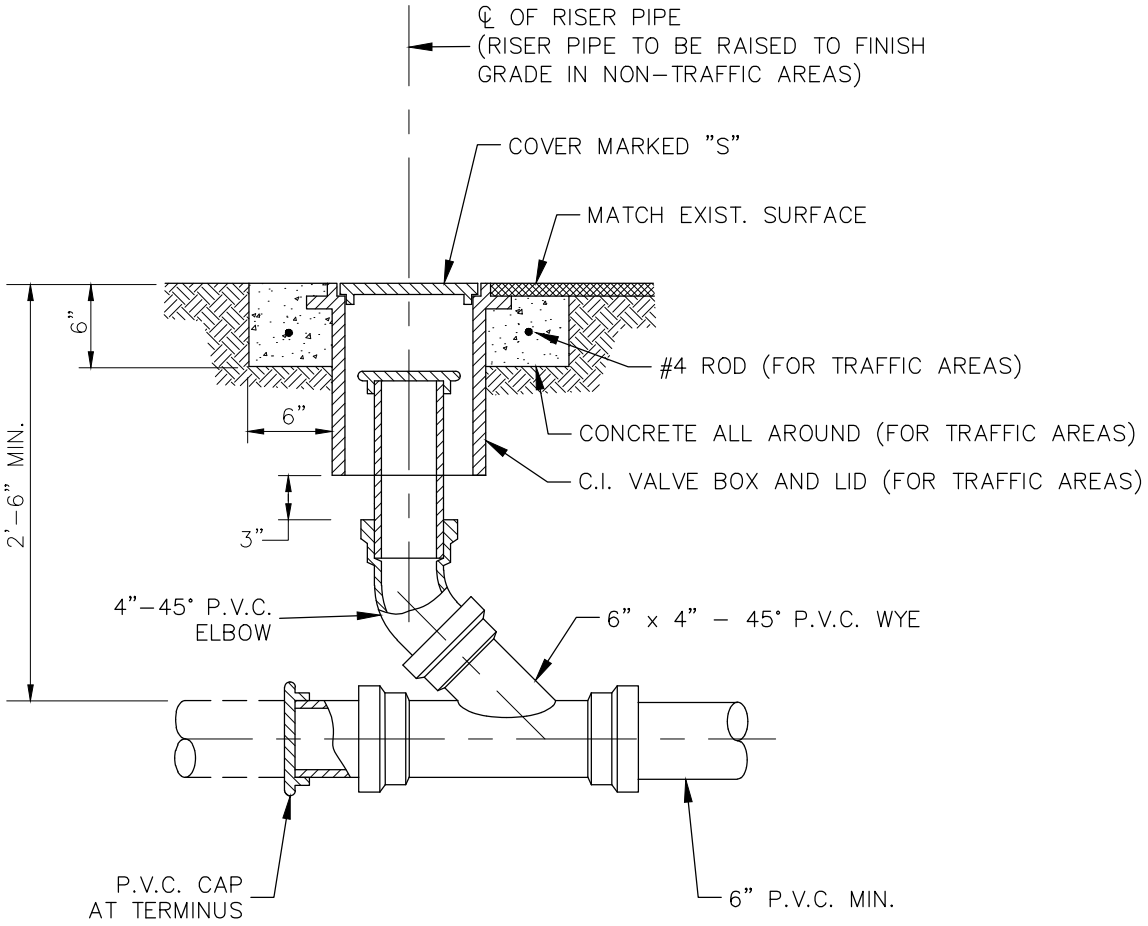
NOTES:

1. SERVICE LATERALS SHALL TERMINATE WITH A CLEANOUT AT ℄.
2. LATERAL DEPTH AT ℄ SHALL BE (3) FEET MIN., PLUGGED WATERTIGHT AND MARKED WITH 2" x 2" TREATED STAKE AND ELECTRONIC MARKER.



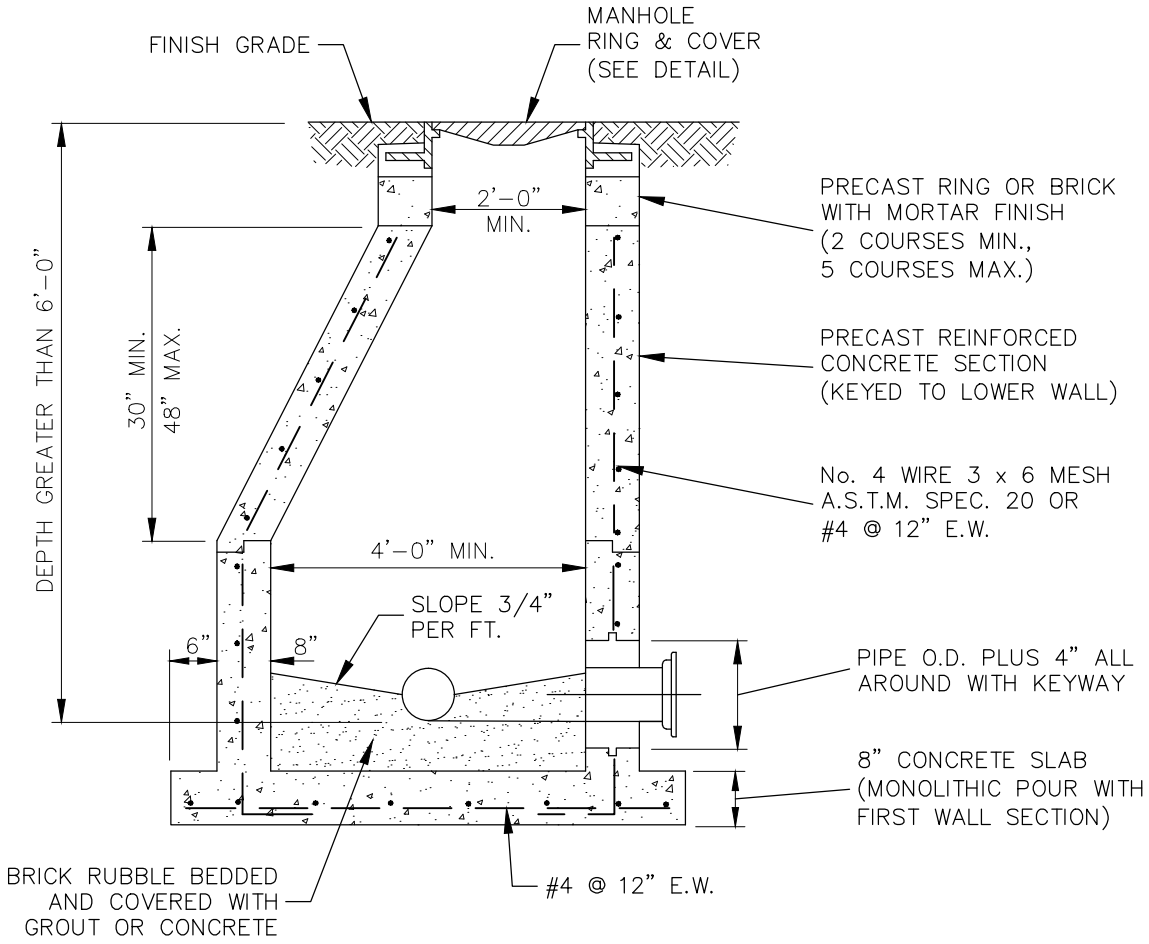
NOTES:

1. INVERT OF LATERAL TO BE 36" FROM FINISHED GRADE EXCEPT ON " WATER LINE SIDE " OF STREET R/W WHERE IT SHALL DROP TO 48" AS SOON AS DEPTH OF SEWER MAIN PERMITS.
2. THIS DETAIL TO BE USED WHEN TOP OF SEWER MAIN IS LESS THAN 7'-0" DEEP.
3. INSTALL MAGNETIC MARKERS AT THE END OF EACH SERVICE LINE OR OPPOSITE WYES AND RECORD LOCATION.
4. SERVICE LATERALS SHALL TERMINATE WITH A CLEANOUT AT ℄.



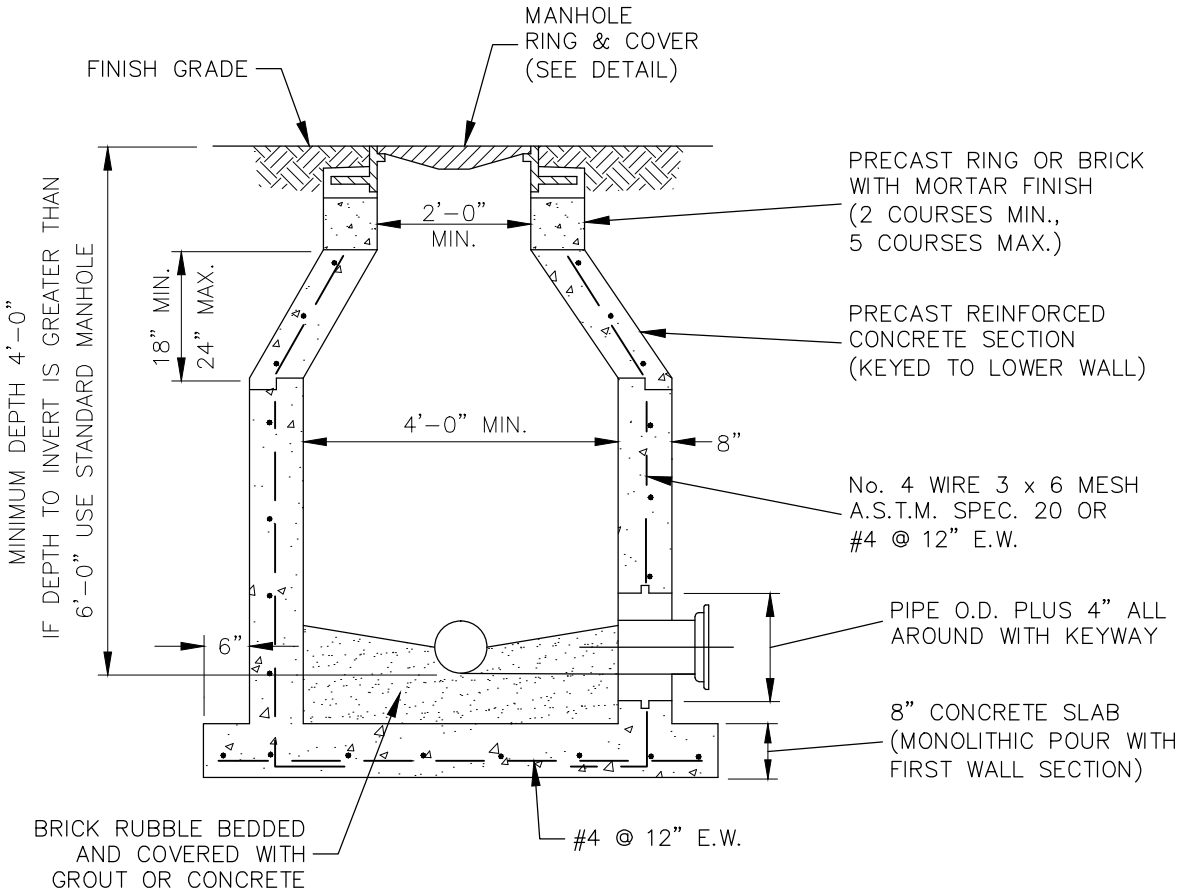
NOTES:

1. CONCRETE PAD w/ REBAR AND CAST IRON VALVE BOX TO BE INSTALLED IN TRAFFIC AREAS ONLY.



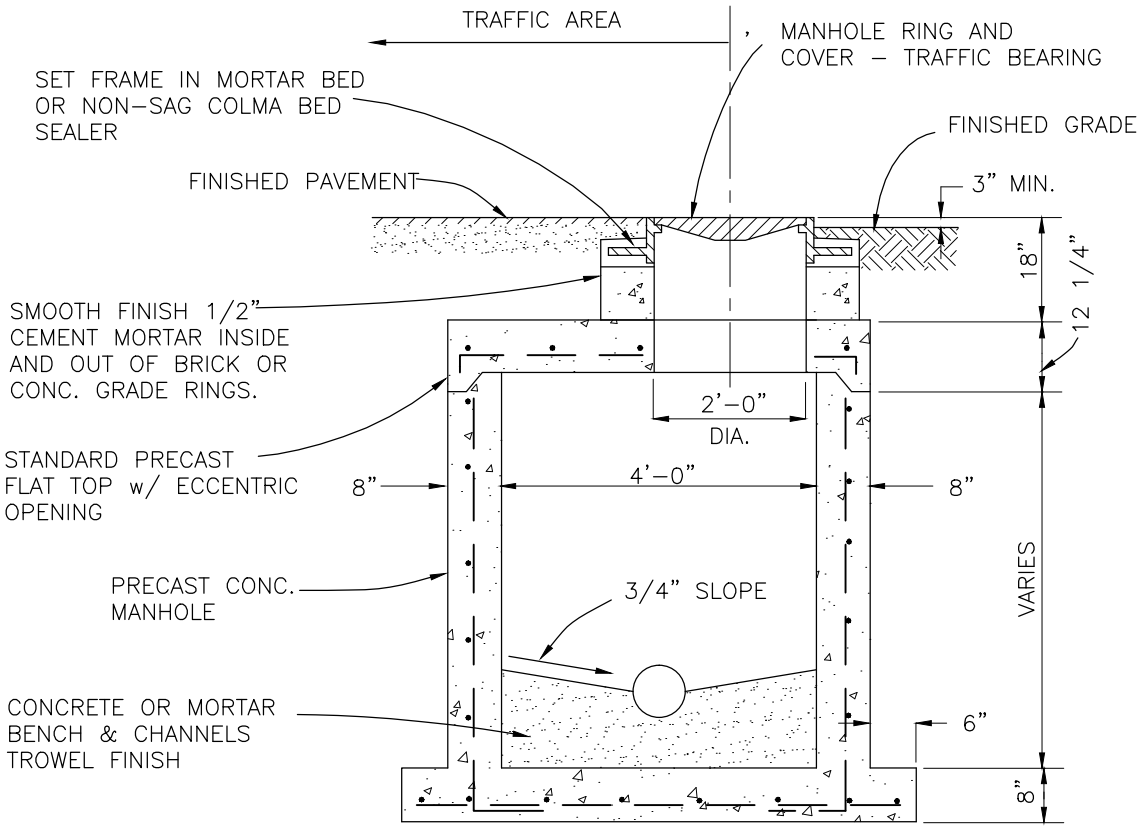
NOTES:

1. PROVIDE 0.1' DROP THROUGH MANHOLE.
2. PRECAST CONCRETE TYPE II, 4000 P.S.I.
3. "RAMNEK" OR EQUAL AT ALL RISER JOINTS (1/2" THICK WITH WIDTH AT LEAST 1/2 THE WALL THICKNESS) WITH GROUT ON INSIDE AND OUTSIDE.
4. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
5. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
6. LIFT HOLES ARE PERMITTED.
7. ALL PIPE HOLES SHALL BE PRECAST OR CORE-DRILLED.
8. SAND COLLAR OR APPROVED RUBBER BOOT MUST BE USED WITH P.V.C. PIPE.
9. MANHOLE TO RECEIVE 2 COATS WATER BASED EPOXY (PRO TECH EW-1 OR APPROVED EQUAL) ON THE INTERIOR AND EXTERIOR. TERMINAL MANHOLES, i.e. THE LAST MANHOLE PRIOR TO DISCHARGE TO A LIFT STATION, SHALL RECEIVE 2 COATS OF WATER BASED EPOXY ON THE EXTERIOR (PRO TECH EW-1 OR APPROVED EQUAL). THE INTERIOR SHALL RECEIVE COATING OF 120 MILS OF REZCLAD E-125S AR OR MIN. 1/2" SEWPER COAT OR IET SYSTEMS COATING (10 MILS PRIMARY COAT, 30 MILS INTERMEDIATE COAT, 5-10 MILS FINISH COAT) OR MIN. 1/2" REFRATTA HAC 100.



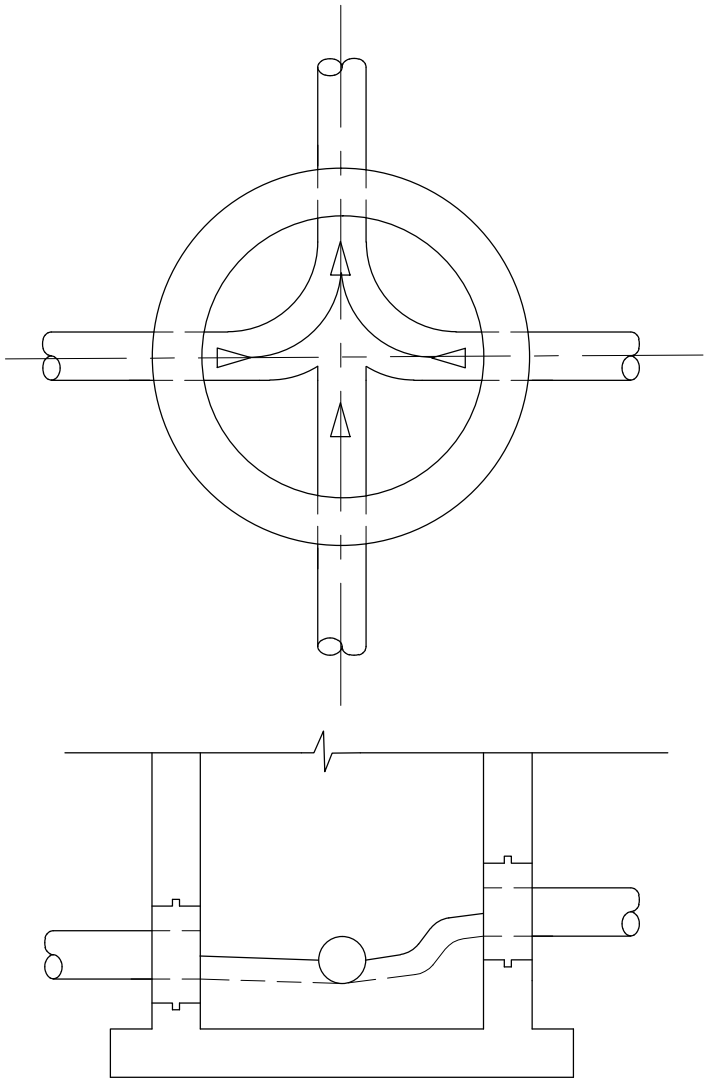
NOTES:

1. PROVIDE 0.1' DROP THROUGH MANHOLE.
2. PRECAST CONCRETE TYPE II, 4000 P.S.I.
3. "RAMNEK" OR EQUAL AT ALL RISER JOINTS (1/2" THICK WITH WIDTH AT LEAST 1/2 THE WALL THICKNESS) WITH GROUT ON INSIDE AND OUTSIDE.
4. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
5. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
6. LIFT HOLES ARE PERMITTED.
7. ALL PIPE HOLES SHALL BE PRECAST OR CORE-DRILLED.
8. SAND COLLAR OR APPROVED RUBBER BOOT MUST BE USED WITH P.V.C. PIPE.
9. MANHOLE TO RECEIVE 2 COATS WATER BASED EPOXY (PRO TECH EW-1 OR APPROVED EQUAL) ON THE INTERIOR AND EXTERIOR. TERMINAL MANHOLES, i.e. THE LAST MANHOLE PRIOR TO DISCHARGE TO A LIFT STATION, SHALL RECEIVE 2 COATS OF WATER BASED EPOXY ON THE EXTERIOR (PRO TECH EW-1 OR APPROVED EQUAL). THE INTERIOR SHALL RECEIVE COATING OF 120 MILS OF REZCLAD E-125S AR OR MIN. 1/2" SEWPER COAT OR IET SYSTEMS COATING (10 MILS PRIMARY COAT, 30 MILS INTERMEDIATE COAT, 5-10 MILS FINISH COAT) OR MIN. 1/2" REFRATTA HAC 100.



NOTES:

1. PROVIDE 0.1' DROP THROUGH MANHOLE.
2. PRECAST CONCTETE MANHOLES SHALL CONFORM TO ASTM C478, SHALL BE TYPE II ACID RESISTANT CEMENT AND SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN 28 DAYS.
3. USE ONLY WHERE APPROVED AND SPECIFIED ON PLANS.
4. "RAMNEK" OR EQUAL AT ALL RISER JOINTS (1/2" THICK WITH WIDTH AT LEAST 1/2 THE WALL THICKNESS) WITH GROUT ON INSIDE AND OUTSIDE.
5. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON–SHRINKING GROUT.
6. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
7. LIFT HOLES ARE PERMITTED.
8. ALL PIPE HOLES SHALL BE PRECAST OR CORE–DRILLED.
9. SAND COLLAR OR APPROVED RUBBER BOOT MUST BE USED WITH P.V.C. PIPE.
9. MANHOLE TO RECEIVE 2 COATS WATER BASED EPOXY (PRO TECH EW–1 OR APPROVED EQUAL) ON THE INTERIOR AND EXTERIOR. TERMINAL MANHOLES, i.e. THE LAST MANHOLE PRIOR TO DISCHARGE TO A LIFT STATION, SHALL RECEIVE 2 COATS OF WATER BASED EPOXY ON THE EXTERIOR (PRO TECH EW–1 OR APPROVED EQUAL). THE INTERIOR SHALL RECEIVE COATING OF 120 MILS OF REZCLAD E–125S AR OR MIN. 1/2" SEWPER COAT OR IET SYSTEMS COATING (10 MILS PRIMARY COAT, 30 MILS INTERMEDIATE COAT, 5–10 MILS FINISH COAT) OR MIN. 1/2" REFRATTA HAC 100.



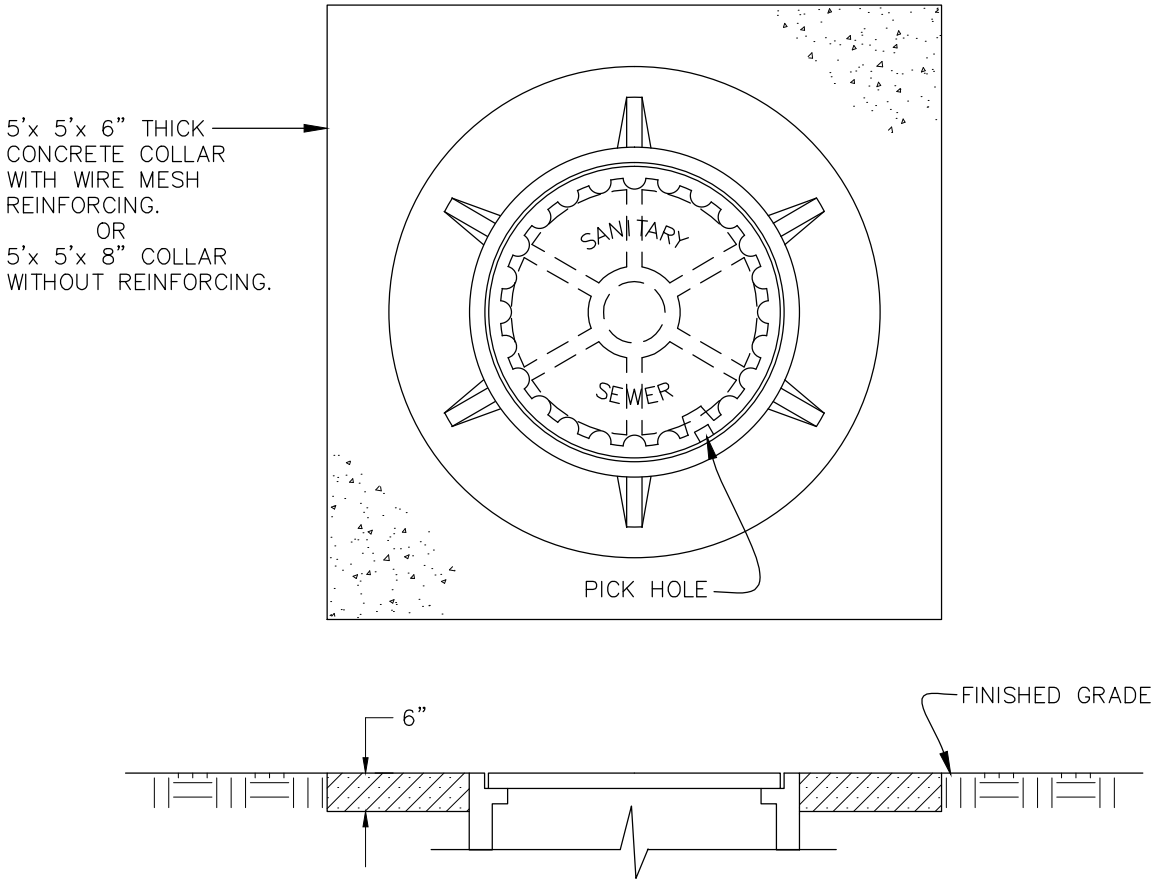
NOTES:

1. ALL INVERT CHANNELS ARE TO BE CONSTRUCTED FOR SMOOTH FLOW WITHOUT OBSTRUCTION.

2. PROPERLY SHAPED SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.

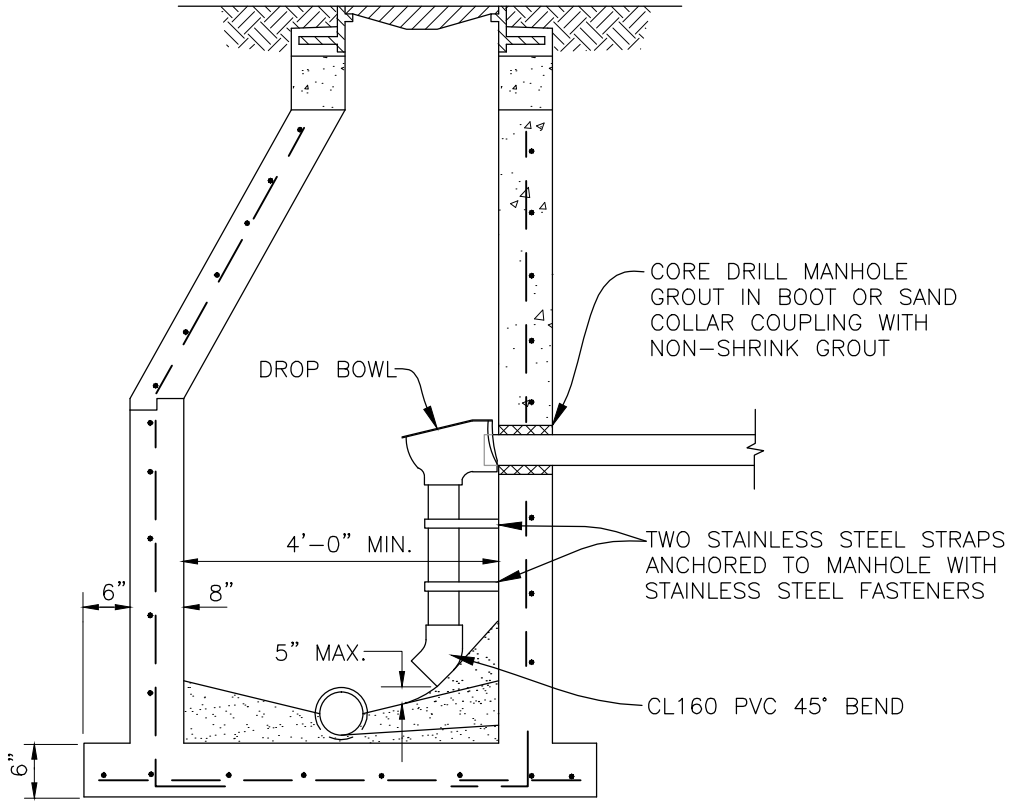
3. BRICK AND CONCRETE RUBBLE PERMITTED AS FLOW CHANNEL BUILDUP.

4. SIDEWALLS OF FLOW CHANNEL SHALL BE AT LEAST HALF OF PIPE HEIGHT AT ALL POINTS.



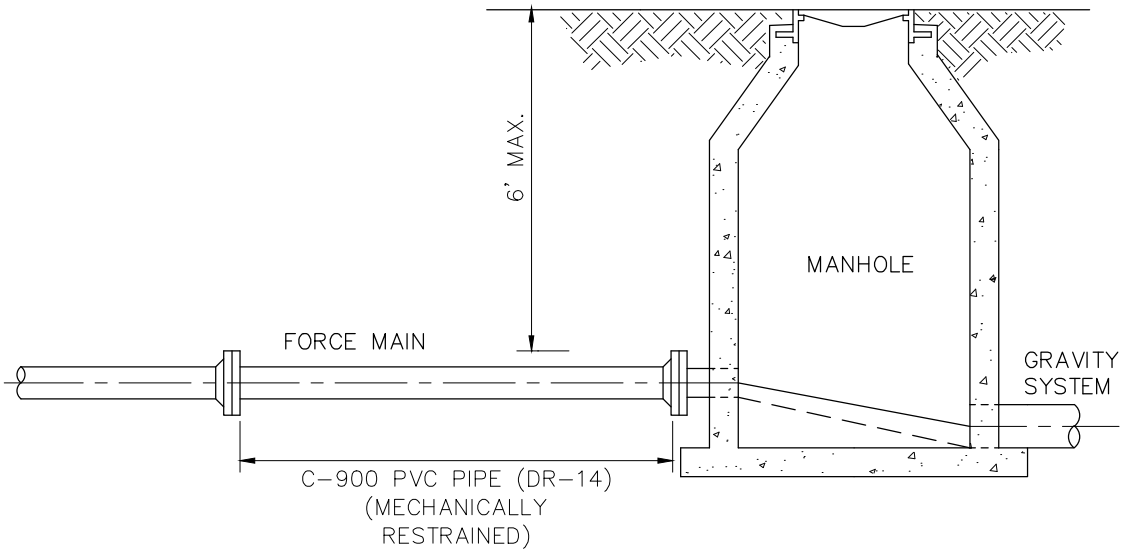
NOTES:

1. COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
2. MINIMUM WEIGHTS: COVER – 160 LBS., FRAME – 240 LBS.
3. RING AND COVER SHALL BE U.S. FOUNDRY 420–C, VULCAN FOUNDRY V–101 OR APPROVED EQUAL.
4. MANHOLE COVER SHALL HAVE THE WORDS "SANITARY SEWER" CAST IN METAL.
5. MANHOLE COVER SHALL MEET H–20 TRAFFIC LOADING.



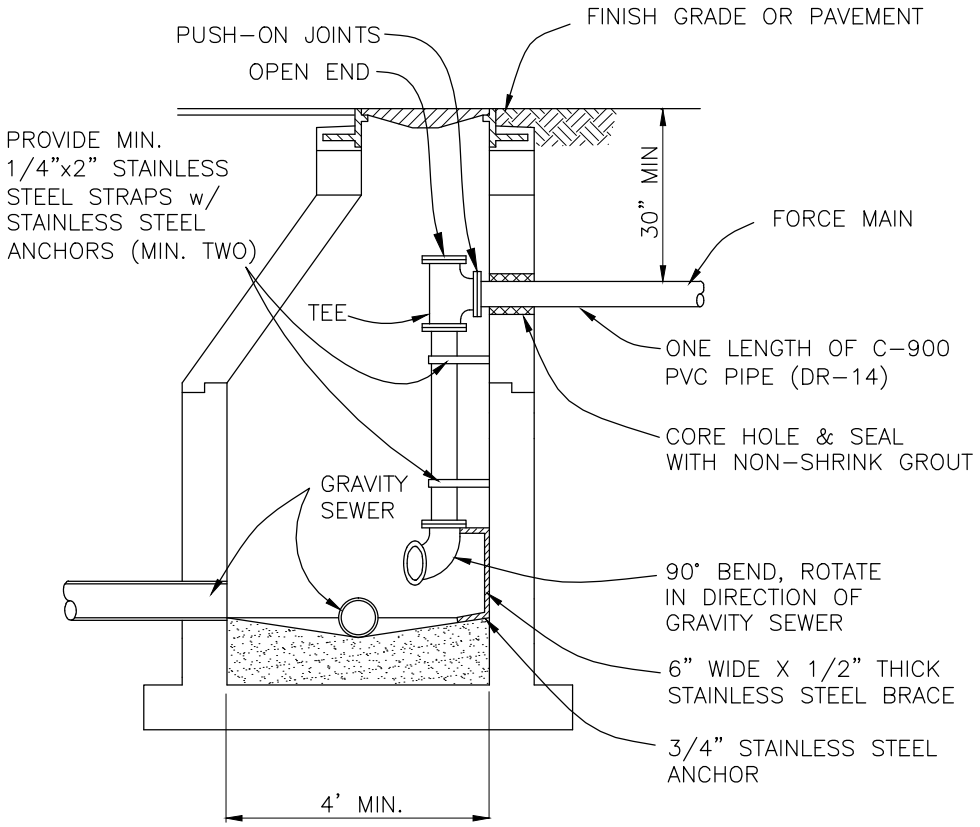
NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR STANDARD MANHOLES ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY AND COATINGS.
2. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
3. MASONRY CONSTRUCTION ABOVE THE EXTENDED PRECAST BASE IS PERMISSIBLE IF FILLED WITH CONCRETE.
4. BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN DROP ENCASEMENT.
5. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 24–INCH DROP.
6. SOLVENT TYPE JOINT P.V.C. FITTINGS MAY BE UTILIZED IN THE DROP ASSEMBLY ONLY.
7. THE EXTERIOR SHALL RECEIVE 2 COATS OF WATER BASED EPOXY (PRO TECH EW–1 OR APPROVED EQUAL). THE INTERIOR SHALL RECEIVE COATING OF 120 MILS OF REZCLAD E–125S AR OR MIN. 1/2" SEWPER COAT OR IET SYSTEMS COATING (10 MILS PRIMARY COAT, 30 MILS INTERMEDIATE COAT, 5–10 MILS FINISH COAT) OR MIN. 1/2" REFRATTA HAC 100.



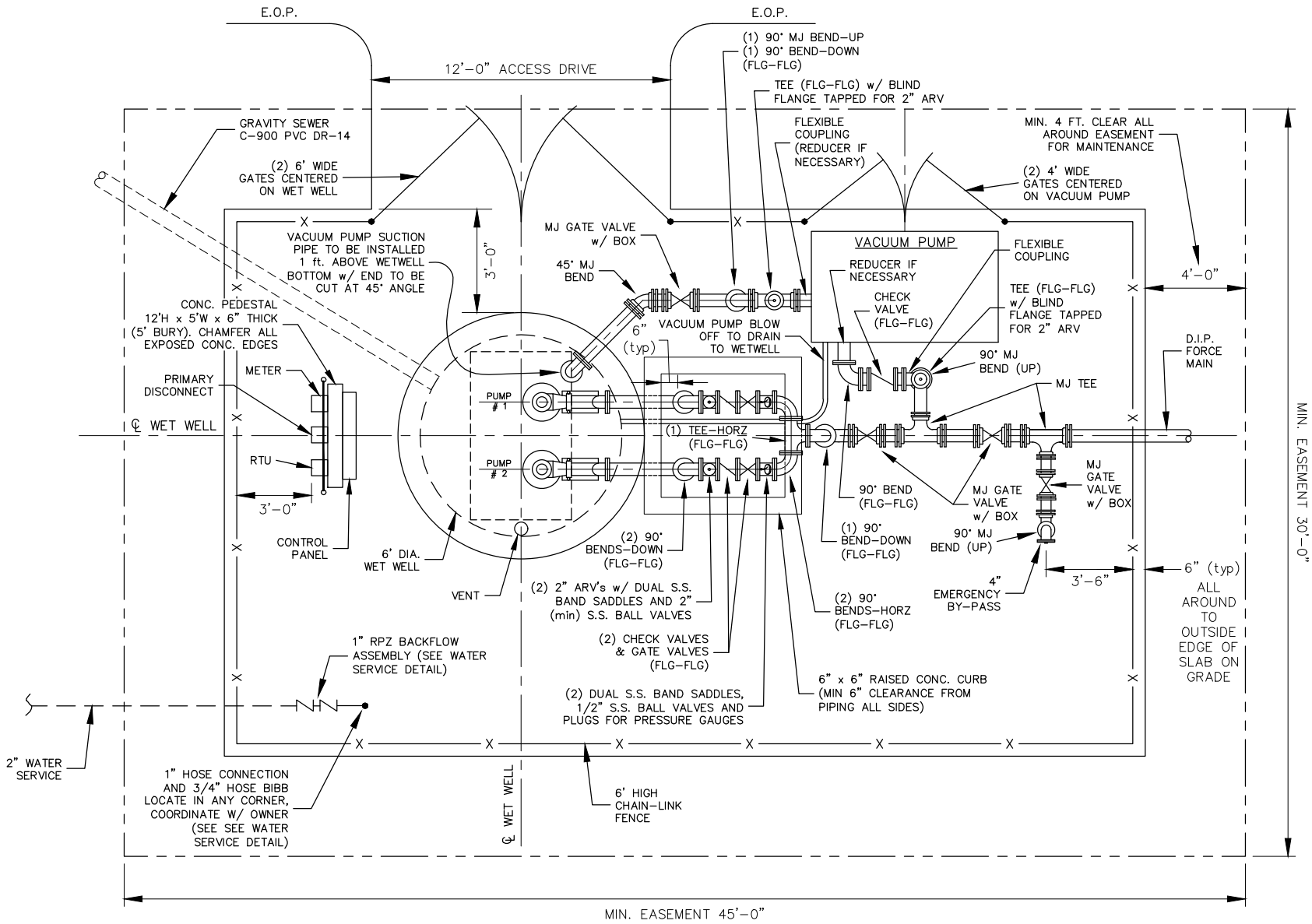
NOTES:

1. FORCE MAIN TO ENTER MANHOLE AS CLOSE AS POSSIBLE TO 180° TO GRAVITY OUTLET.
2. THE INVERT LEVEL OF FORCE MAIN AT POINT OF ENTRY SHALL BE 6" ABOVE INVERT OF MANHOLE.
3. CORE ENTRY ONLY INTO EXISTING MANHOLES. SAND COLLAR OR APPROVED RUBBER BOOT MUST BE USED WITH PVC PIPE.
4. FLOW CHANNEL REQUIRED.
5. THE EXTERIOR SHALL RECEIVE 2 COATS OF WATER BASED EPOXY (PRO TECH EW-1 OR APPROVED EQUAL). THE INTERIOR SHALL RECEIVE COATING OF 120 MILS OF REZCLAD E-125S AR OR MIN. 1/2" SEWPER COAT OR IET SYSTEMS COATING (10 MILS PRIMARY COAT, 30 MILS INTERMEDIATE COAT, 5-10 MILS FINISH COAT) OR MIN. 1/2" REFRATTA HAC 100.



NOTES:

1. DROP PIPE AND FITTINGS MUST BE PVC.
2. PRECAST CONCRETE TYPE II, 4000 P.S.I.
3. "RAMNEK" OR EQUAL AT ALL RISER JOINTS (1/2" THICK WITH WIDTH AT LEAST 1/2 THE WALL THICKNESS) WITH GROUT ON INSIDE AND OUTSIDE.
4. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON–SHRINKING GROUT.
5. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
6. LIFT HOLES ARE PERMITTED.
7. ALL PIPE HOLES SHALL BE PRECAST OR CORE–DRILLED.
8. SAND COLLAR OR APPROVED RUBBER BOOT MUST BE USED WITH PVC PIPE.
9. THE EXTERIOR SHALL RECEIVE 2 COATS OF WATER BASED EPOXY (PRO TECH EW–1 OR APPROVED EQUAL). THE INTERIOR SHALL RECEIVE COATING OF 120 MILS OF REZCLAD E–125S AR OR MIN. 1/2" SEWPER COAT OR IET SYSTEMS COATING (10 MILS PRIMARY COAT, 30 MILS INTERMEDIATE COAT, 5–10 MILS FINISH COAT) OR MIN. 1/2" REFRATTA HAC 100.



NOTES:

1. ACCESS ROAD SHALL CONSIST OF:
   - 12" THICK STABILIZED SUBBASE, STABILIZED TO NOT LESS THAN 50 FBV AND COMPACTED TO NOT LESS THAN 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180
   - 8" THICK ROCK BASE, COMPACTED TO NOT LESS THAN 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180
   - 8" THICK CONCRETE w/FIBERGLASS MESH REINFORCEMENT.
2. FURNISH AND INSTALL, TWO (2) EACH; 4", 0-60 psig (MAX PRESSURE TO BE CONFIRMED WITH PUMP STATION DESIGN) OIL FILLED PRESSURE GAUGES.
3. ENGINEER OF RECORD RESPONSIBLE FOR FINAL PIPING AND LIFT STATION LAYOUT.

REVISION
AUGUST 2016

TYPE "A" LIFT STATION
TYPICAL SITE PLAN LAYOUT

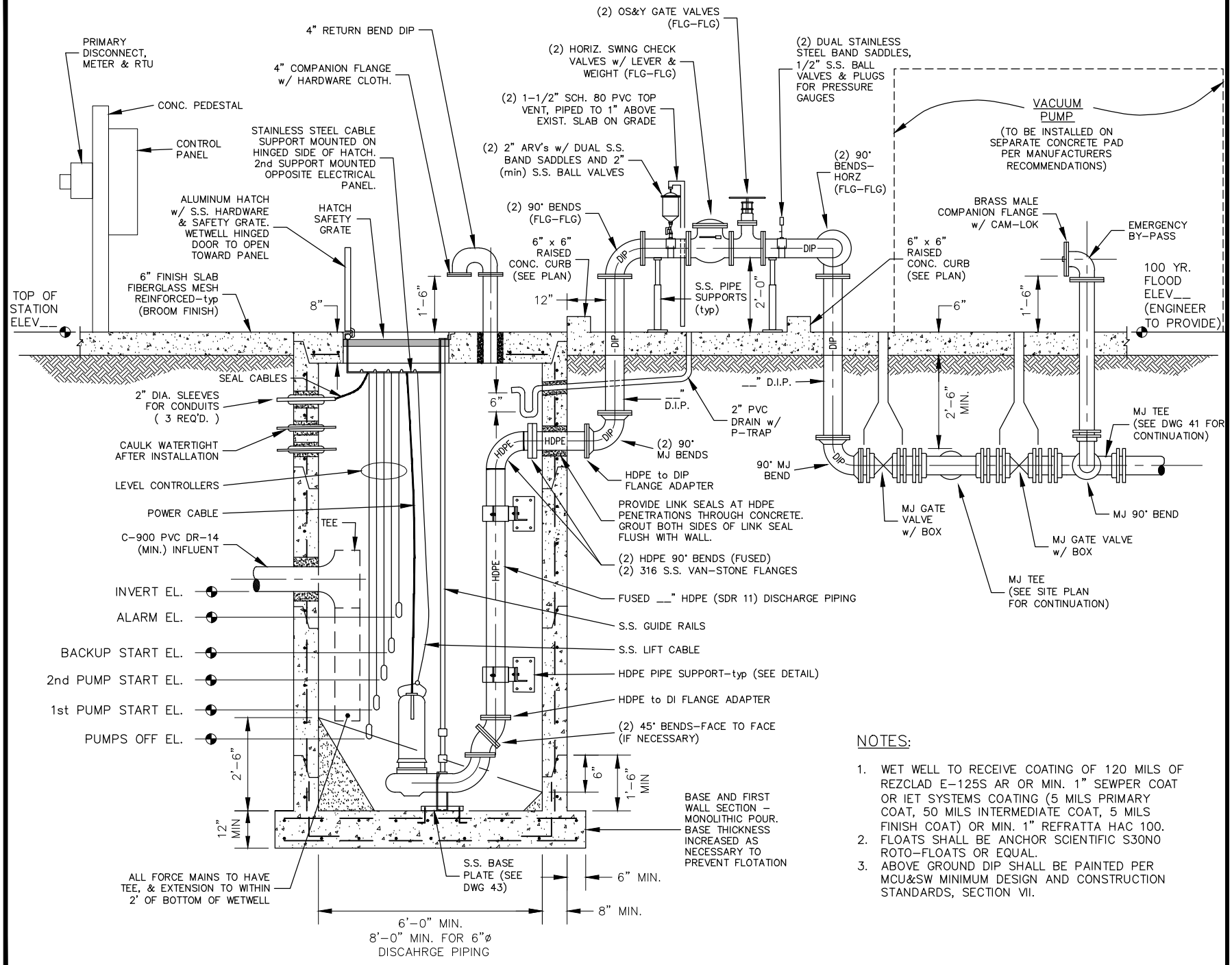
DWG No.
42

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

TYPE "A" LIFT STATION
TYPICAL SECTION

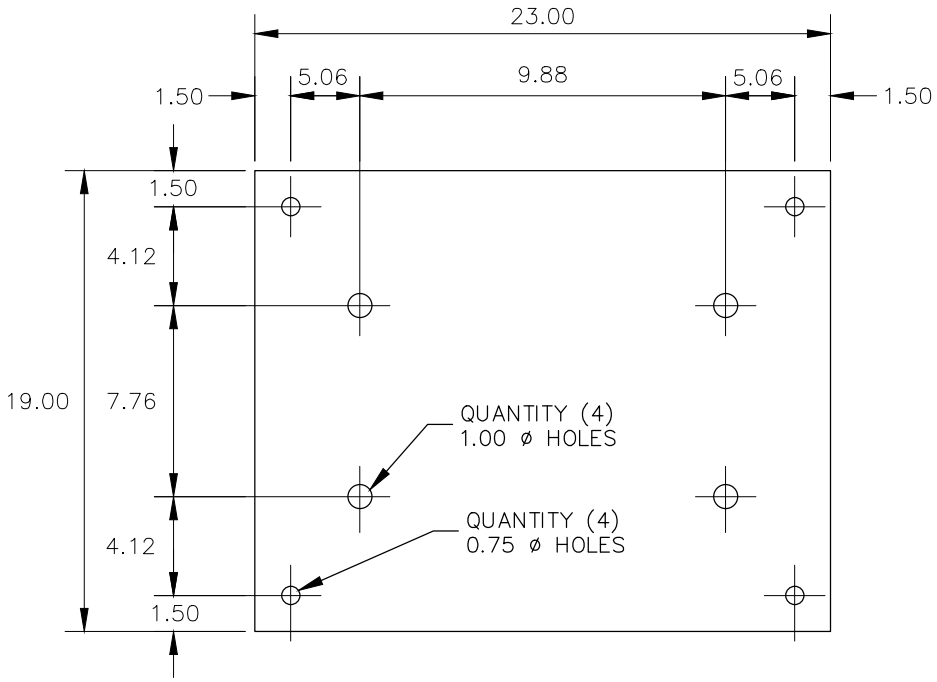
REVISION
AUGUST 2016

DWG No.
43

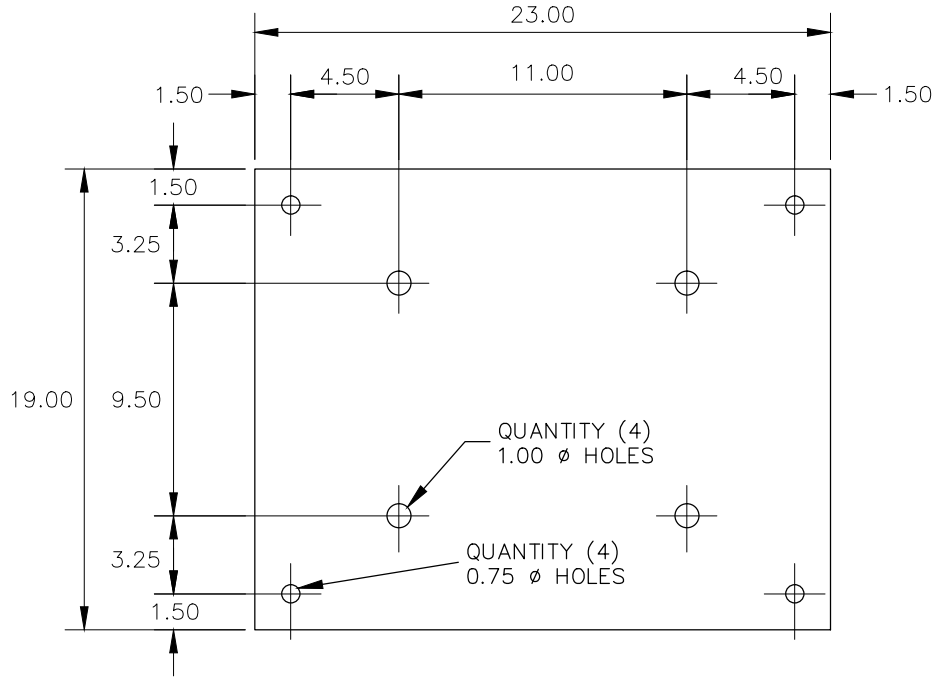


NOTES:

1. WET WELL TO RECEIVE COATING OF 120 MILS OF REZCLAD E–125S AR OR MIN. 1" SEWPER COAT OR IET SYSTEMS COATING (5 MILS PRIMARY COAT, 50 MILS INTERMEDIATE COAT, 5 MILS FINISH COAT) OR MIN. 1" REFRATTA HAC 100.
2. FLOATS SHALL BE ANCHOR SCIENTIFIC S30N0 ROTO–FLOATS OR EQUAL.
3. ABOVE GROUND DIP SHALL BE PAINTED PER MCU&SW MINIMUM DESIGN AND CONSTRUCTION STANDARDS, SECTION VII.



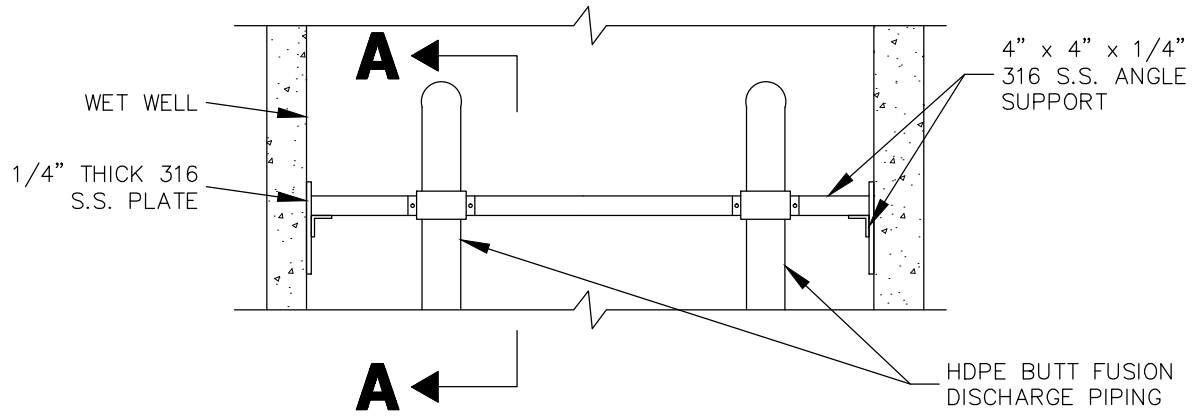
4"x4" ELBOWS

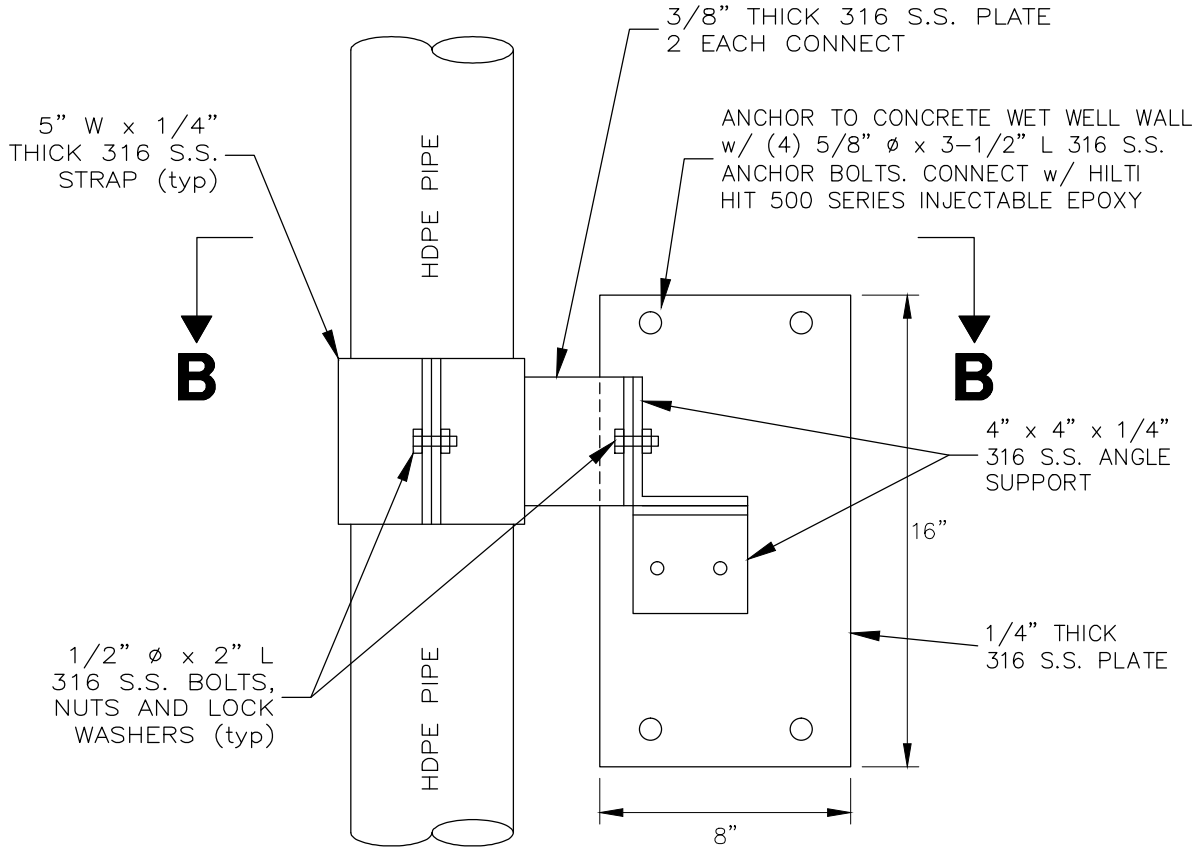


6"x6", 6"x8" & 8"x8" ELBOWS

NOTES:

1. EACH BASE ELBOW SHALL BE SECURED TO THE BOTTOM OF THE WET WELL WITH FOUR (4) 3/4" STEEL WEDGE ANCHOR BOLTS AND STAINLESS STEEL PLATE. THE PLATE SHALL BE SECURED WITH FOUR (4) 1/2" STAINLESS STEEL ANCHOR BOLTS. THE BOLTS SHALL BE EMBEDDED A MINIMUM OF 4" INTO THE CONCRETE AND TORQUED TO 150 FT. LBS.
2. THE STAINLESS STEEL PLATES AND BOLTS SHALL BE FURNISHED BY THE PUMP MANUFACTURER.

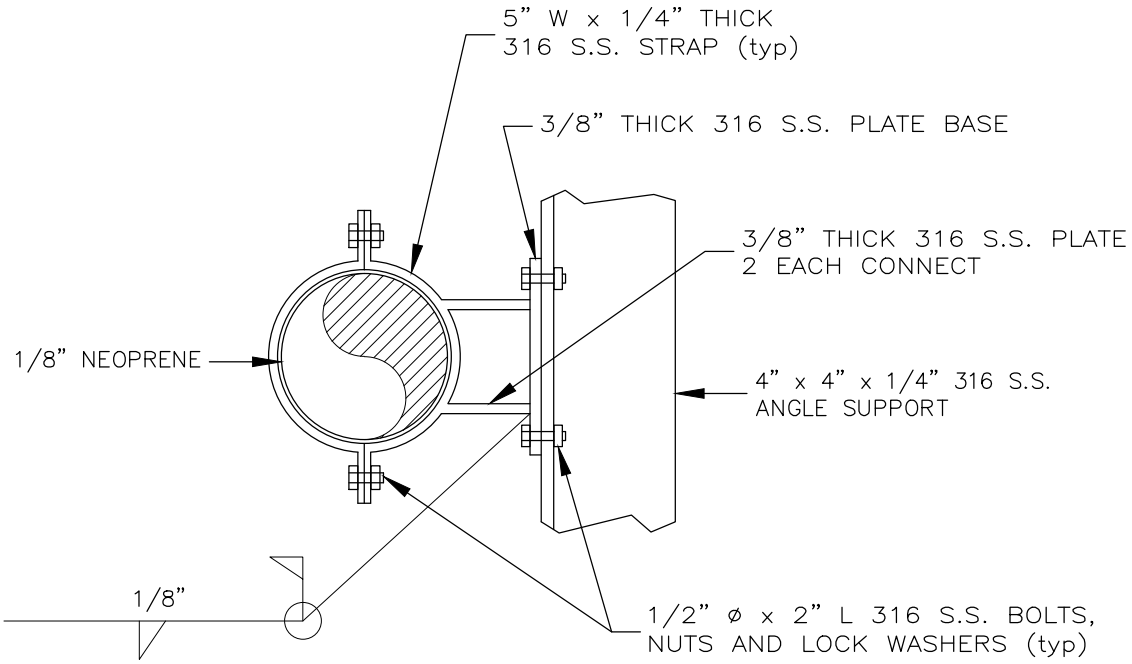




SECTION A–A

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

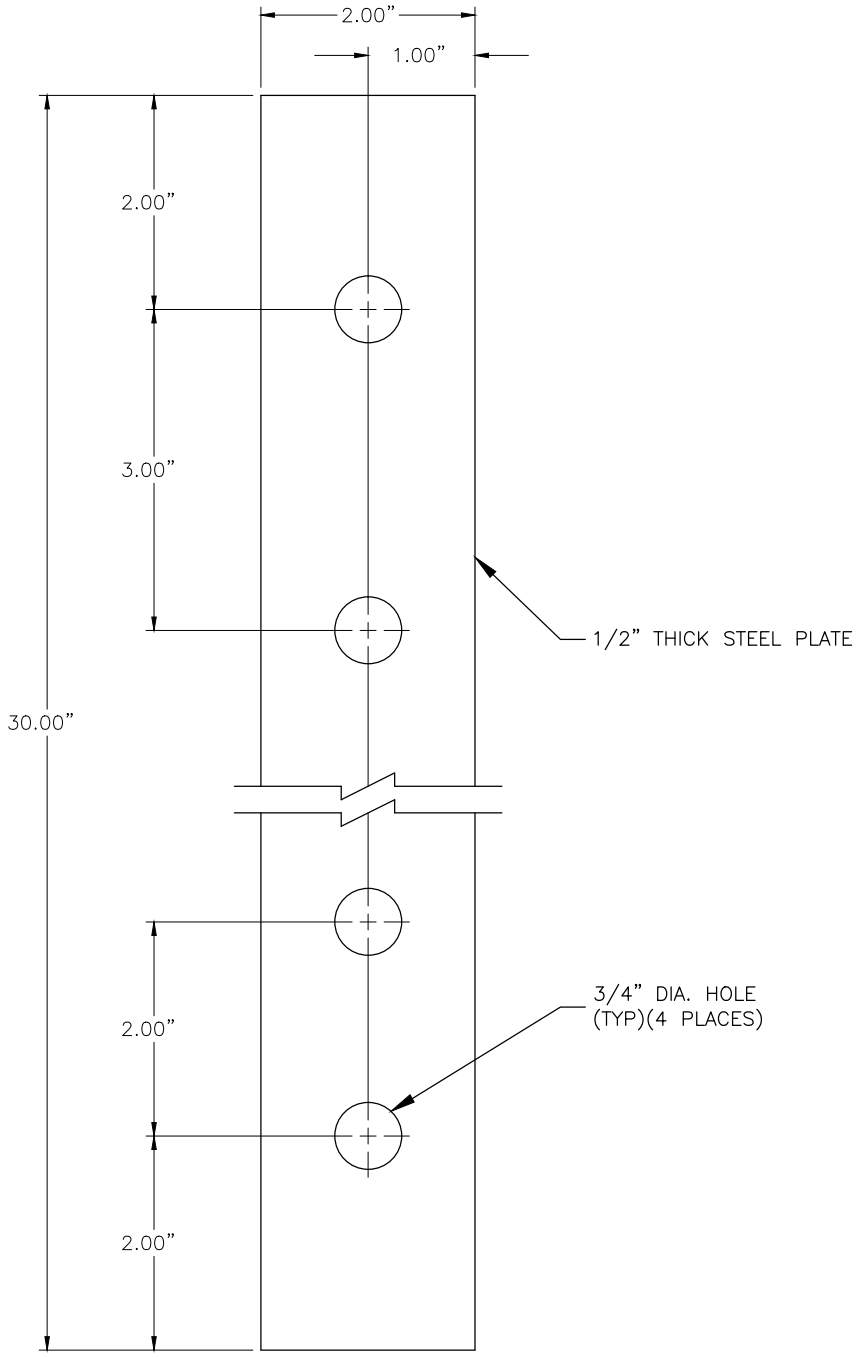
REVISION	TYPE "A" LIFT STATION HDPE ANGLE PIPE SUPPORT	DWG No.
AUGUST 2016		45



SECTION B–B

NOTE:

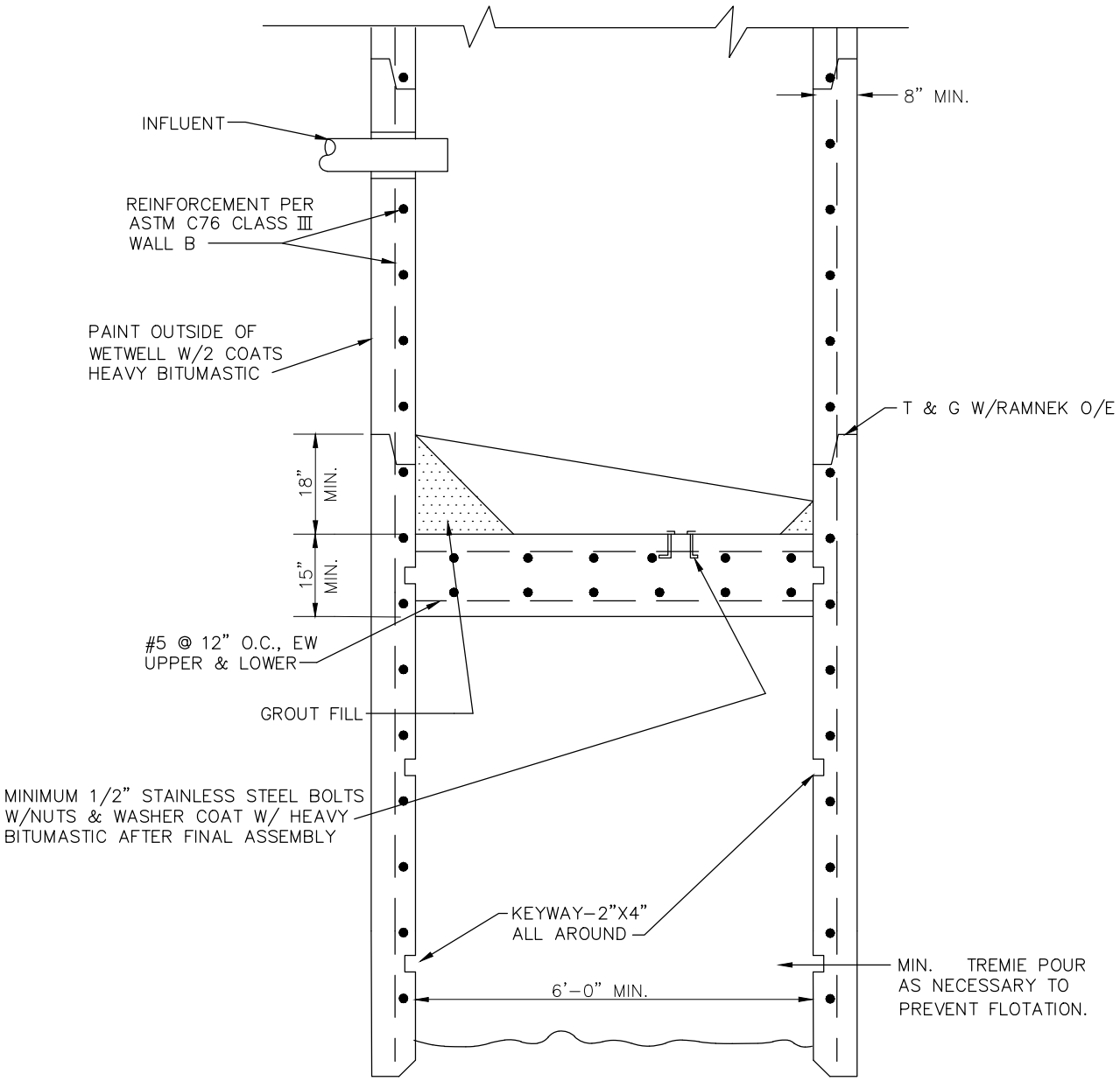
1. CONSTRUCT ALL WELDS IN ACCORDANCE WITH AWS D–1.6 STRUCTURAL WELDING CODE.
2. ALL FASTENERS, SUPPORTS AND ANCHOR BOLTS SHALL BE 316 S.S.
3. SUPPORTS SHALL HAVE A MAXIMUM SPACING OF 5'–0"
4. AT A MINIMUM, ONE SUPPORT SHALL BE LOCATED 4' ABOVE THE BASE ELBOW AND ONE SUPPORT SHALL BE LOCATED 4' BELOW THE BOTTOM OF TOP SLAB.



NOTE: 6 RETAINER STRAPS PER JOINT.

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION WET WELL SECTION RETAINER STRAP	DWG No.
AUGUST 2016		46



SECTION

NOTES:

1. CONCRETE WETWELL SECTIONS SHALL BE CONNECTED BY STEEL STRAPS, SIX PER JOINT. CONTRACTOR SHALL SUBMIT METHOD TO UTILITIES FOR APPROVAL ALONG WITH SHOP DRAWING.
2. SEE TYPICAL LIFT STATION DETAILS FOR ADDITIONAL DESIGN AND CONSTRUCTION STANDARDS.
3. TREMIE SEAL MINIMUM 5'-0" THICK.
4. DESIGN CALCULATIONS TO BE SUBMITTED FOR APPROVAL.
5. WET WELL TO RECEIVE COATING OF MIN. 120 MILS OF REZCLAD E-125S AR OR MIN. 1" SEWPER COAT OR IET SYSTEMS COATING (MIN. 5 MILS PRIMARY COAT, MIN. 50 MILS INTERMEDIATE COAT, MIN. 5 MILS FINISH COAT) OR MIN. 1" REFRATTA HAC 100.

PUMP DATA: MANUFACTURER, _____

_____ MOD. No., _____ IMP. No., _____ MOTOR,

_____ HP, _____ RPM, _____ VOLTS, _____ PHASE, 60 HERTZ

OPERATING CONDITIONS: _____ GPM AT _____ TDH.

AS-BUILT:
- PUMP NO. 1 _____ GPM AT _____ TDH.
- PUMP NO. 2 _____ GPM AT _____ TDH.

WET WELL: SIZED FOR MINIMUM PUMP CYCLE TIME OF 10 MINUTES AND A MAXIMUM OF 6 PUMP STARTS PER HOUR. WORKING DEPTH _____ FT. WORKING VOLUME _____ GALS.

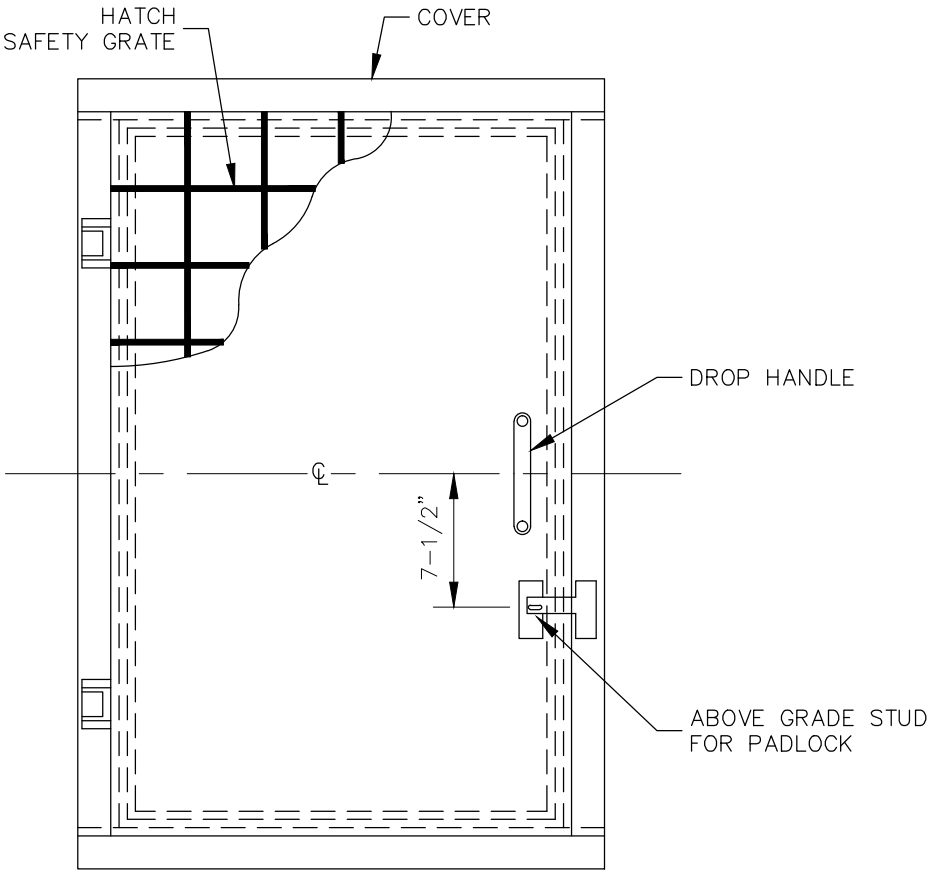
ELECTRICAL: FEEDERS AND CONDUIT _____ MAIN SWITCH _____ POLES _____ AMPS

NOTE:

THE FOLLOWING VOLTAGE STANDARDS FOR LIFT STATION PUMPS ARE REQUIRED PER FPL AND MCU:

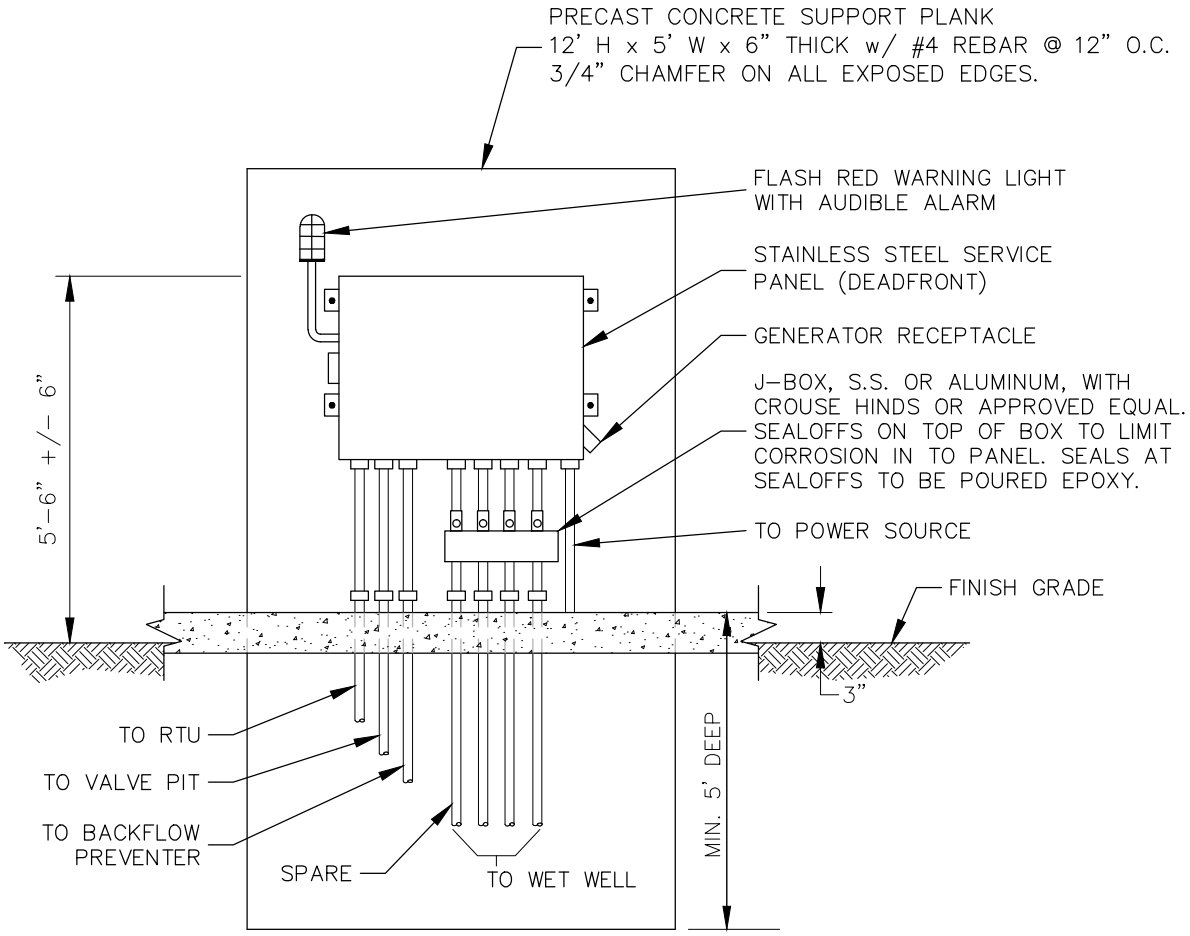
WHERE 3-PHASE POWER IS AVAILABLE

- LESS THAN OR EQUAL TO 10 HP: 120/230 3-PHASE, 4 WIRE, OPEN DELTA
- MORE THAN 10 HP: 277/480 3-PHASE, 4 WIRE, OPEN DELTA (WHEN POSSIBLE)
- COORDINATE WITH FPL FOR SUPPLY



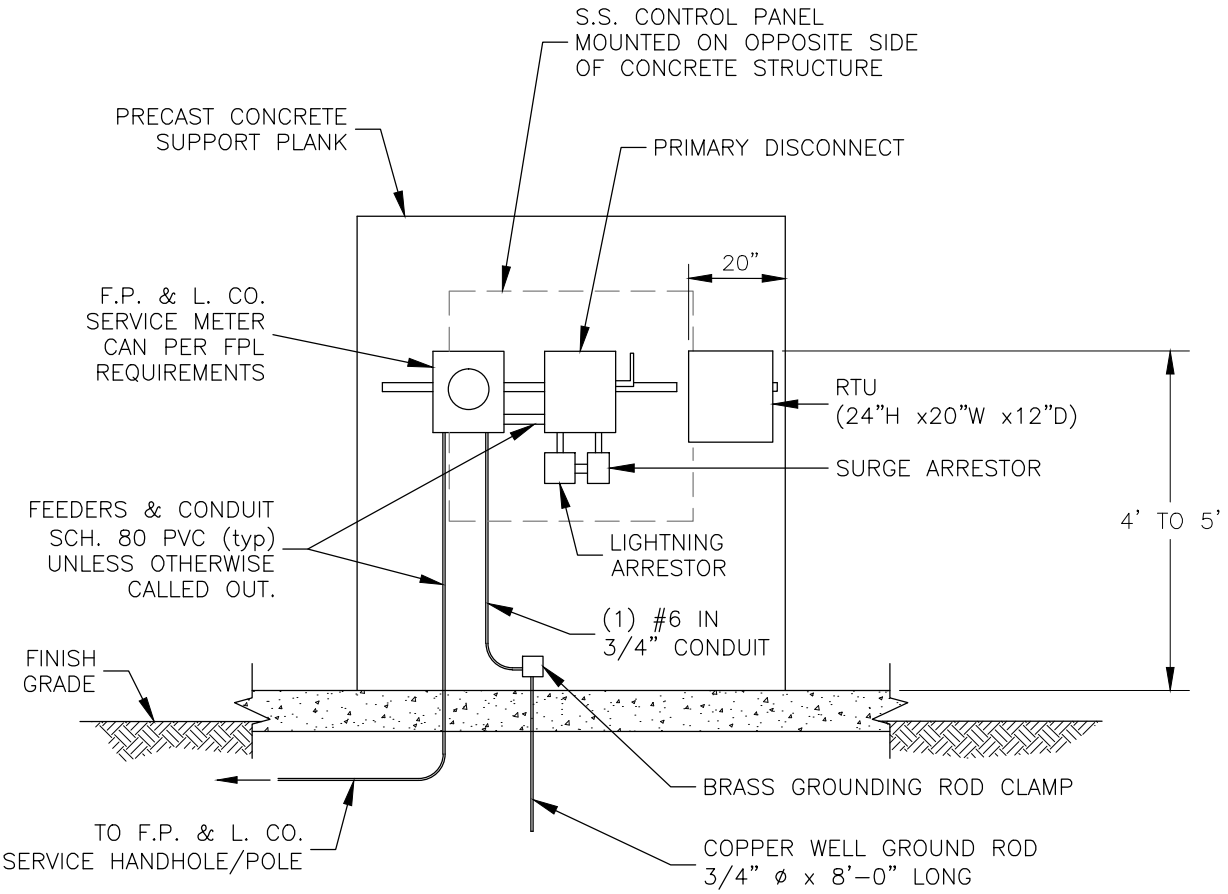
NOTES:

1. COVER TO BE ALUMINUM DIAMOND PLATE, HINGED, TRAFFIC BEARING WITH POSITIVE LOCKING ARM AND PADLOCK STUD.
2. MINIMUM COVER DIMENSIONS – – – 36"x 60"
3. COVER SHALL BE CAST IN PLACE (BILCO TYPICAL).
4. SPLIT COVER IS ACCEPTABLE FOR LARGER SIZES.
5. RECESSED LOCKING HASP IS REQUIRED IN WALKWAYS AND TRAFFIC AREAS.
6. LID TO BE DESIGNED TO HANDLE A MINIMUM OF 300 LBS. PER S.F. LOADING.
7. HANDLE TO BE SECURED BY STAINLESS STEEL NUTS.
8. HATCH SAFETY GRATE SHALL BE MANUFACTURED BY U.S.F. FABRICATION, INC.



NOTES:

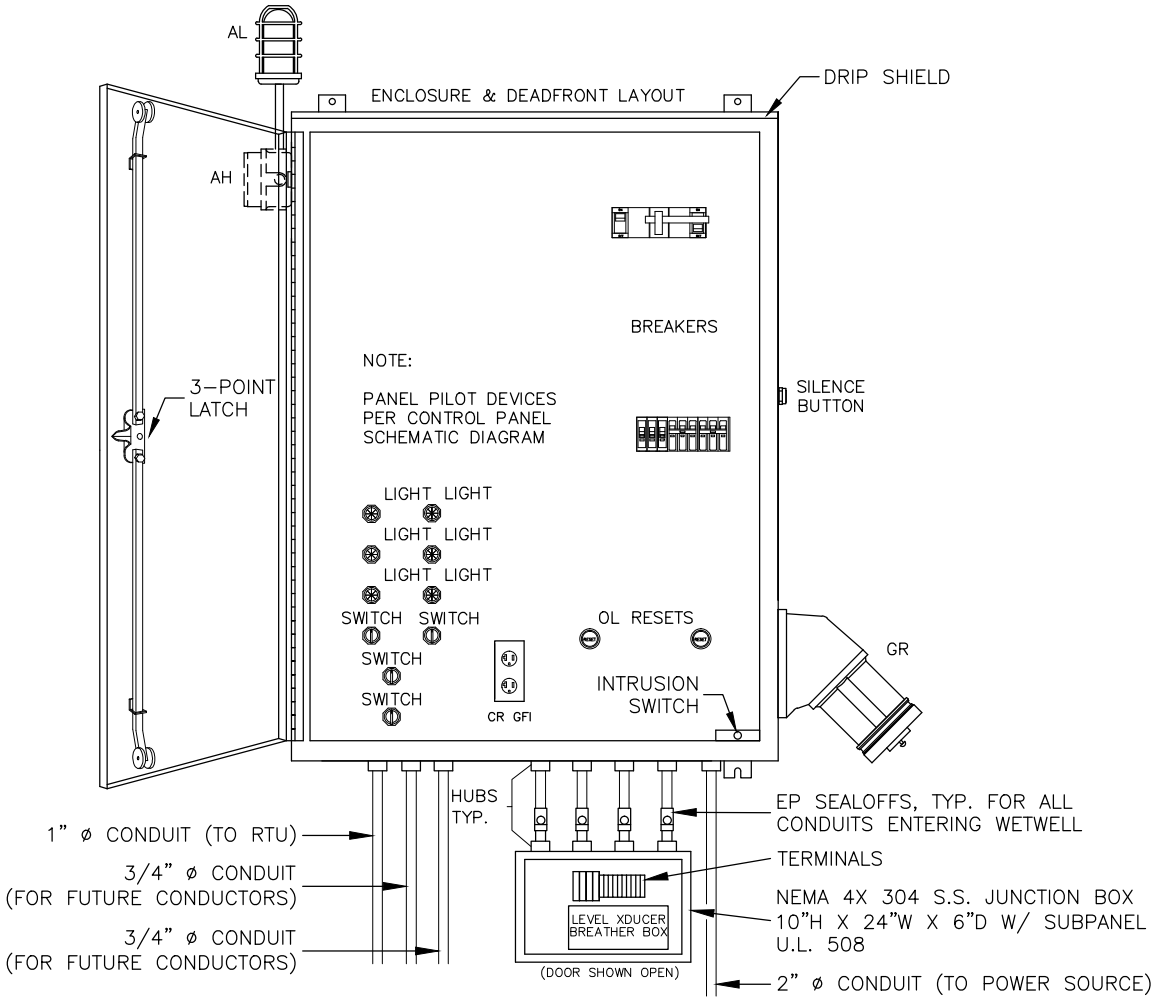
1. ELECTRIC METER AND PRIMARY DISCONNECT MOUNTED ON BACK SIDE OF PANEL.
2. EMERGENCY GENERATOR RECEPTACLES: RUSSELL & STOLL, JRSB 1044FR (FOR 100 amp SERVICE), 2044FR (FOR 200 amp SERVICE).
3. ALL POWER AND CONTROLS LINES SHALL BE CONTINUOUS (NO SPLICES).
4. POWER SUPPLY MECHANICALLY INTERLOCKED.
5. PHASE MONITOR ON ALL THREE PHASES (480 & 230 3ø); VOLTAGE MONITOR REQUIRED ON 1ø.
6. GROUND FAULT INTERRUPTER ON CONVENIENCE RECEPTACLE.
7. 1.5 K.V.A. TRANSFORMER IN ALL CONTROL PANELS.
8. PANEL MOUNTED TO S/S UNI-STRUT BY WELDED TABS.
9. CONTROL PANEL SHALL BE UL LISTED AS A UNIT.
10. TELEMETRY CONDUIT SHALL BE INSTALLED BY THE CONTRACTOR WITH SWEEP 90 DEGREE BEND.
11. ALL HARDWARE, NUTS & BOLTS, AND APPURTENANCES ABOVE GROUND SHALL BE 316 STAINLESS STEEL.
12. ALL CONDUIT NOT ENTERING WETWELL SHALL BE SCHEDULE 80 P.V.C.
13. PANEL MOUNTING SHALL ALLOW FOR UNRESTRICTED VIEW OF ALARM LIGHT.
14. MOUNT RTU PANEL TO ALLOW FOR UNRESTRICTED LINE-OF-SIGHT TO ANTENNA FROM ALL DIRECTIONS.
15. INSTALL PANFLEX STRAIN RELIEF ON PUMP POWER LEADS IN J-BOX JUST ABOVE SLAB ON GRADE (THOMAS AND BETTS OR APPROVED EQUAL)
16. INSTALLATION IS NOT CLASSIFIED. SEALOFFS ARE USED SOLELY FOR THE PURPOSE OF LIMITING CORROSIVE CHEMICALS INTO THE ELECTRICAL EQUIPMENT.



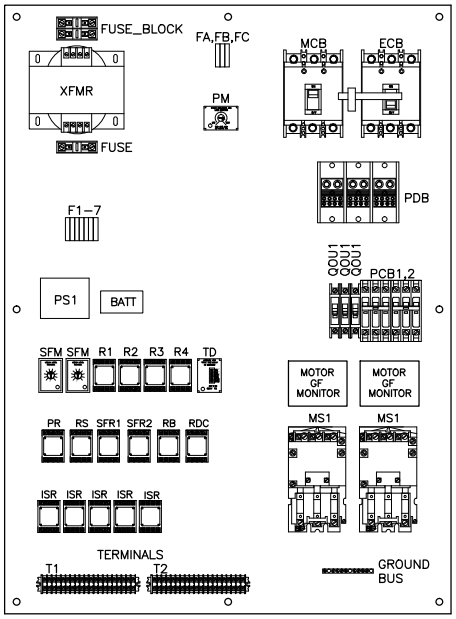
NOTES:

1. NO PENETRATION THROUGH PANEL TOPS.
2. TWENTY INCHES ON RIGHT SIDE OF SUPPORT PLANK (MEASURED FROM INSIDE EDGE OF RIGHT BEVEL) IS RESERVED FOR RTU AND ACCESSORIES.

BACK VIEW OF L.S. CONTROL PANEL



ENCLOSURE & DEADFRONT LAYOUT



BACKPLATE LAYOUT

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION	DWG No.
AUGUST 2016	CONTROL PANEL – DEADFRONT & BACKPLATE LAYOUT	52

LIFT STATION CONTROL PANEL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES. THE PANEL MAKER SHALL BE A U.L. LISTED SHOP.

2. THE CONTROL PANEL SHALL BE FURNISHED COMPLETELY ASSEMBLED AND WIRED WITH THE FOLLOWING MINIMUM FEATURES:

   A. ENCLOSURE SHALL BE STAINLESS STEEL, MODIFIED NEMA 3R, 14 GAUGE, TYPE 304 SS, WITH WELDED SEAMS AND DRIP SHIELD. ALL HARDWARE SHALL BE STAINLESS STEEL. PROVIDE BLANK OUTSIDE DOOR WITH PIANO HINGE, NEOPRENE GASKET, 3 POINT CAPTIVE LATCH WITH NYLON ROLLERS OPERATED FROM A SINGLE PADLOCKABLE HANDLE, WITH DRAWING POCKET. PROVIDE ALUMINUM DEAD FRONT HINGED INNER DOOR FOR MOUNTING CONTROL COMPONENTS; EXTEND CIRCUIT BREAKER HANDLES, RESET BUTTONS, ETC. THROUGH THE DEAD FRONT INNER DOOR. PROVIDE SUB PLATE OF ENAMELED STEEL OR ALUMINUM.

   B. MAIN BREAKER, MECHANICALLY INTERLOCKED WITH EMERGENCY BREAKER.

   C. GROUND BUS.

   D. SEPARATE CIRCUIT BREAKERS FOR THE CONTROL CIRCUITS ETC.

   E. 15A DUPLEX RECEPTACLE, GFI, WITH SEPARATE BREAKER.

   F. SURGE ARRESTER ON THE INCOMING POWER FEEDER

   G. POWER MONITOR WHICH DISCONNECT THE CONTROL POWER FOR ABNORMAL POWER CONDITIONS INCLUDING VOLTAGE DEGRADATION OR PHASE LOSS AND WILL AUTOMATICALLY, WHEN POWER RETURNS, RETURN TO NORMAL. EQUAL TO DIVERSIFIED SLA SERIES.

   H. PROVIDE SQD NEMA SIZED STARTER CONTROLLER WITH OVERCURRENT PROTECTION, SHORT CIRCUIT PROTECTION AND DISCONNECT FOR EACH MOTOR.

   I. HOA, MAINT.LIGHT SW. AND PILOT LIGHTS

   J. ALL SELECTOR SWITCHES, PUSH BUTTONS, AND PILOT LIGHTS SHALL BE THE HEAVY DUTY, OIL TIGHT, EQUAL TO SQ.D. TYPE K. ALL PILOT LIGHTS SHALL NOT BE TRANSFORMER TYPE AND NOT BE PRESS TO TEST.

   K. 120V/12V POWER SUPPLY FOR THE FLOAT TYPE LEVEL SWITCH RELAYS AND ANALOG SIGNAL.

   L. SURGE CAPACITOR ON THE LOAD SIDE OF THE MAIN BREAKER EQUAL TO GE 9118BAB301.

   M. NUMBERED WIRES AND CORRESPONDING TERMINALS. COLOR CODED WIRING TO DISTINGUISH PANEL WIRING OF DIFFERING VOLTAGES AND INCOMING FOREIGN CIRCUITS.

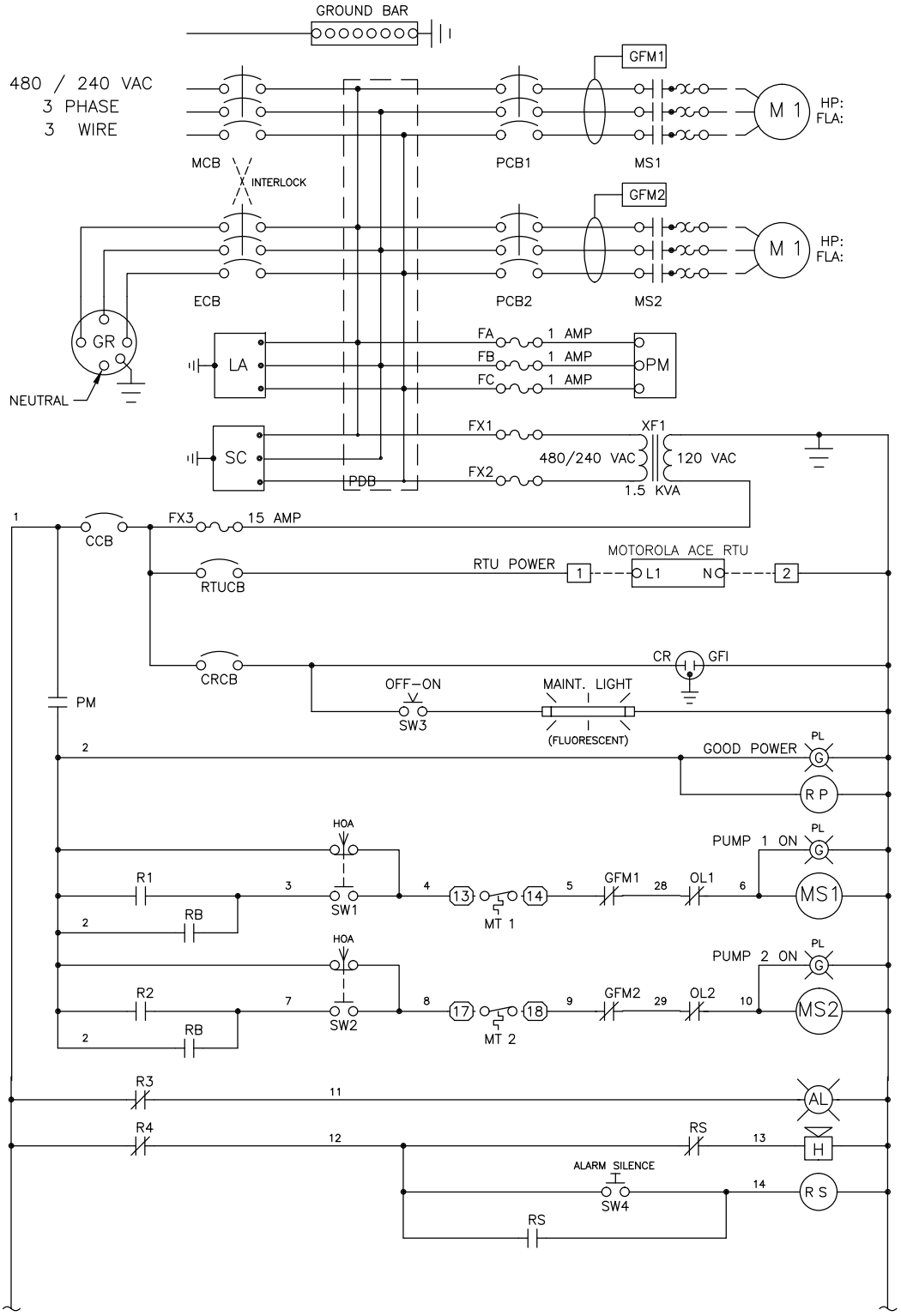
   N. CONTROL PANEL AND RTU SHALL BE PROVIDED AND CONFIGURED TO SEND & RECEIVE SIGNALS TO THE WWTP COMPUTER SYSTEM USING THE OWNER'S AND I/O SYSTEM. ALL CONFIGURATION AT THE CONTROL COMPUTER SHALL BE PROVIDED SEPARATELY BY THE OWNER. CONFIGURATION, STARTUP, TESTING AND CHECK-OUT SHALL BE PROVIDED BY THE RTU MANUFACTURER. CONTRACTOR SHALL PROVIDE AND INSTALL RADIO/MODEM AND I/O SYSTEM IN AGREEMENT WITH THE OWNER'S STANDARD

3. ALL CONDUITS ENTERING THE WETWELL SHALL PVC COATED RGS, SIZED PER PLANS, PERMACOAT, ROBROY OR AN APPROVED EQUAL.

4. ALL CONTROL CIRCUITS ENTERING WETWELL SHALL BE INSTALLED THROUGH INTRINSICALLY SAFE RELAYS, PHOENIX CONTACT OR TURCK, OR AN APPROVED EQUAL.

5. THE PUMP MOTOR CIRCUITS SHALL BE INSTALLED WITH GROUND FAULT MONITORS, AS MANUFACTURED BY BENDER OR AN APPROVED EQUAL.

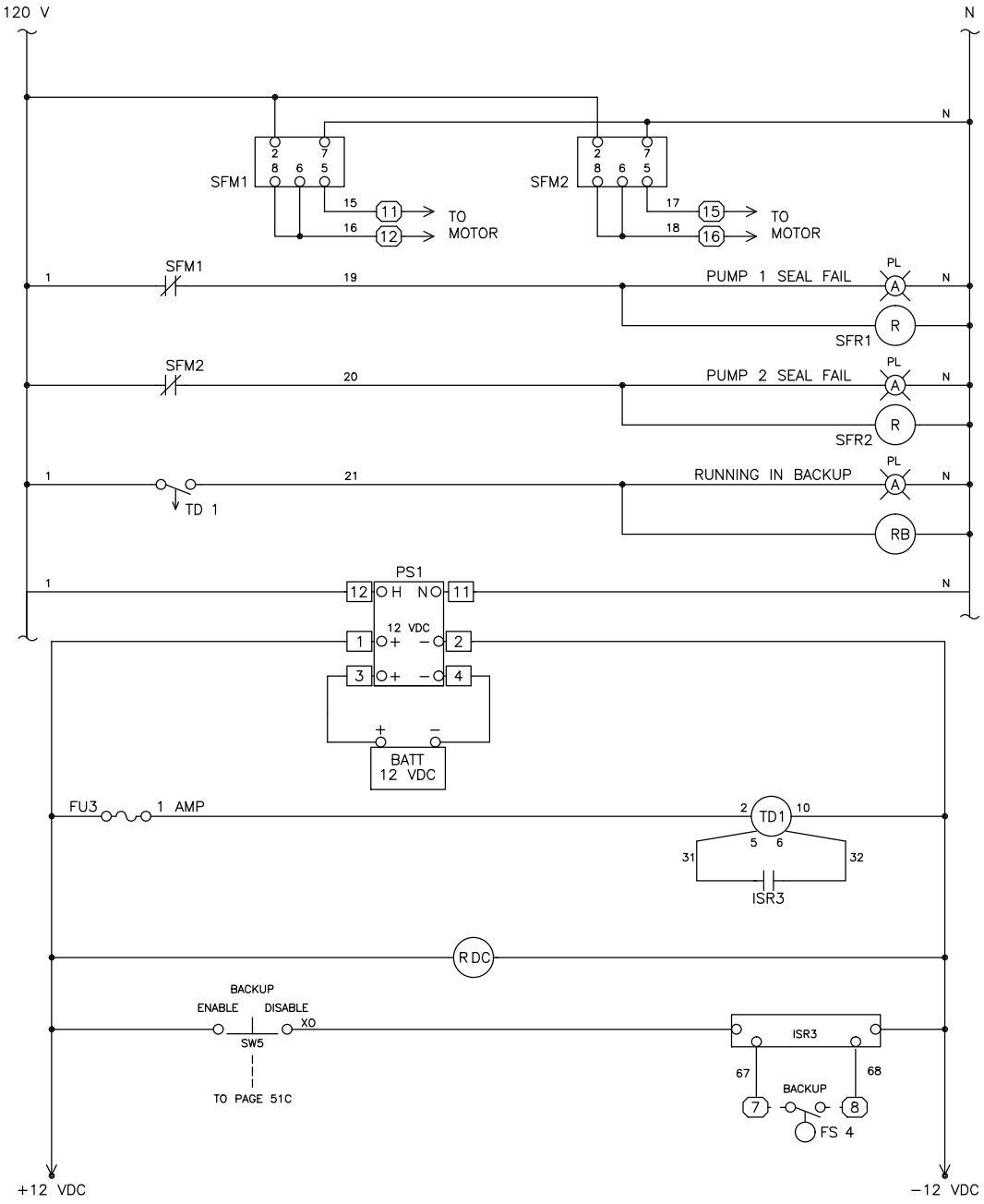
6. ARC FLASH LABEL TO BE INSTALLED ON THE FRONT OF THE PANEL.



CONTINUED ON 53A

NOTE:
COORDINATE PANEL WIRING, GR RECEPTACLE WIRING, AND ENGINE–GENERATOR WIRING SUCH THAT THE CENTER WIRE ON THE BREAKER AND AT ALL POINTS IS THE HIGH LINE.

CONTINUED ON 53

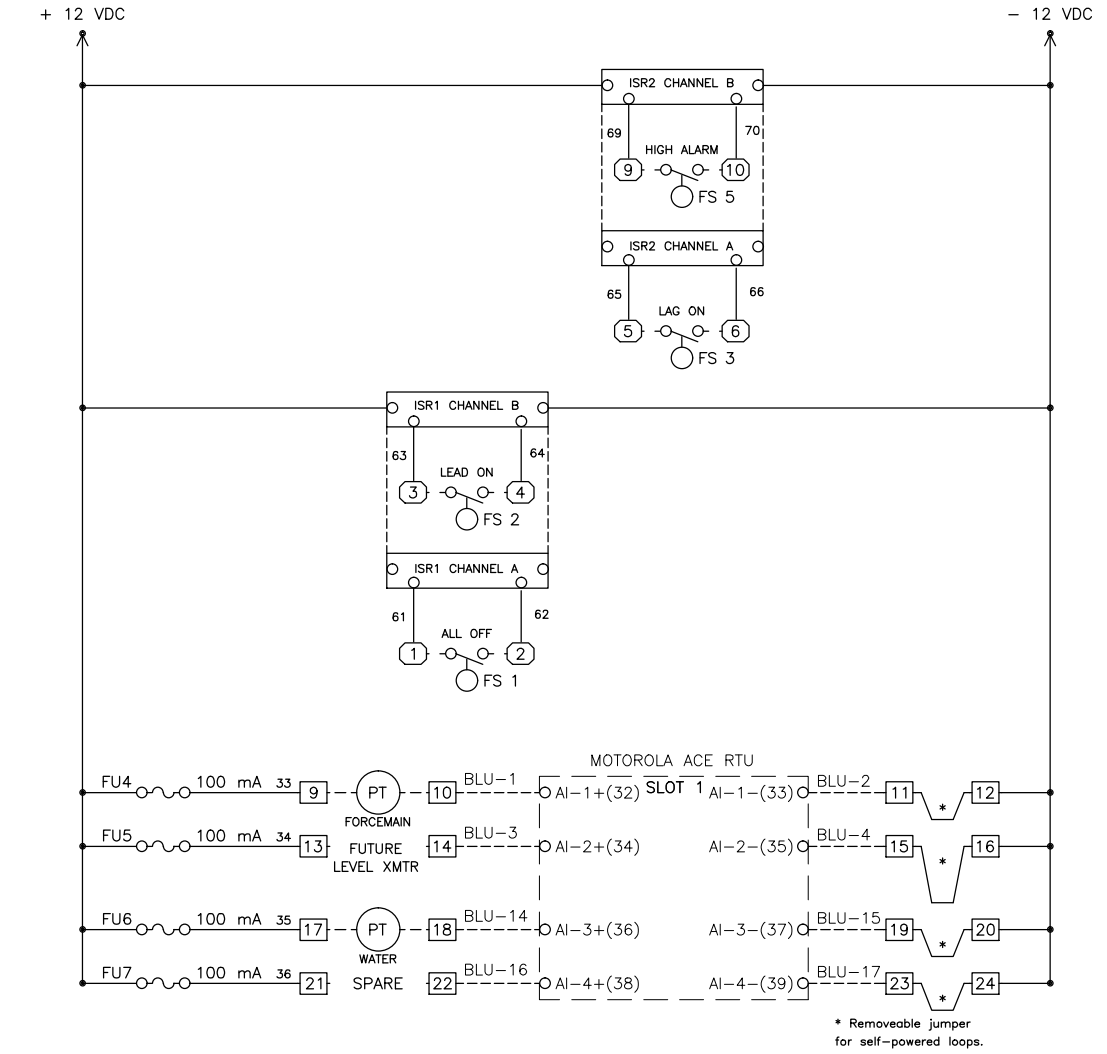


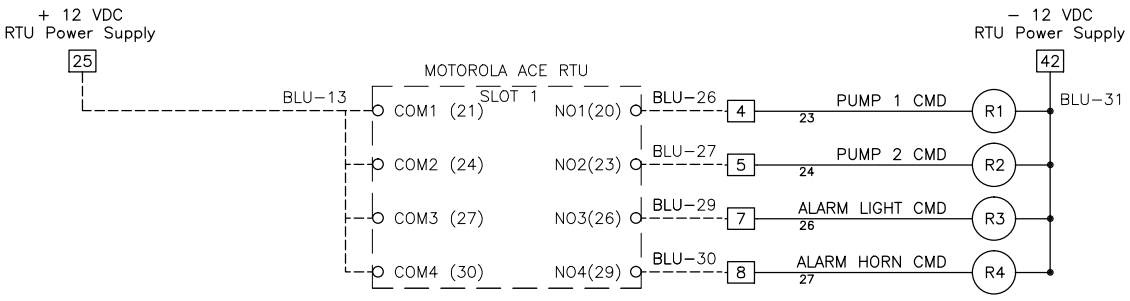
CONTINUED ON 53B

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (480/240 VOLT, 3 PHASE, 3 WIRE)	DWG No.
AUGUST 2016		53A

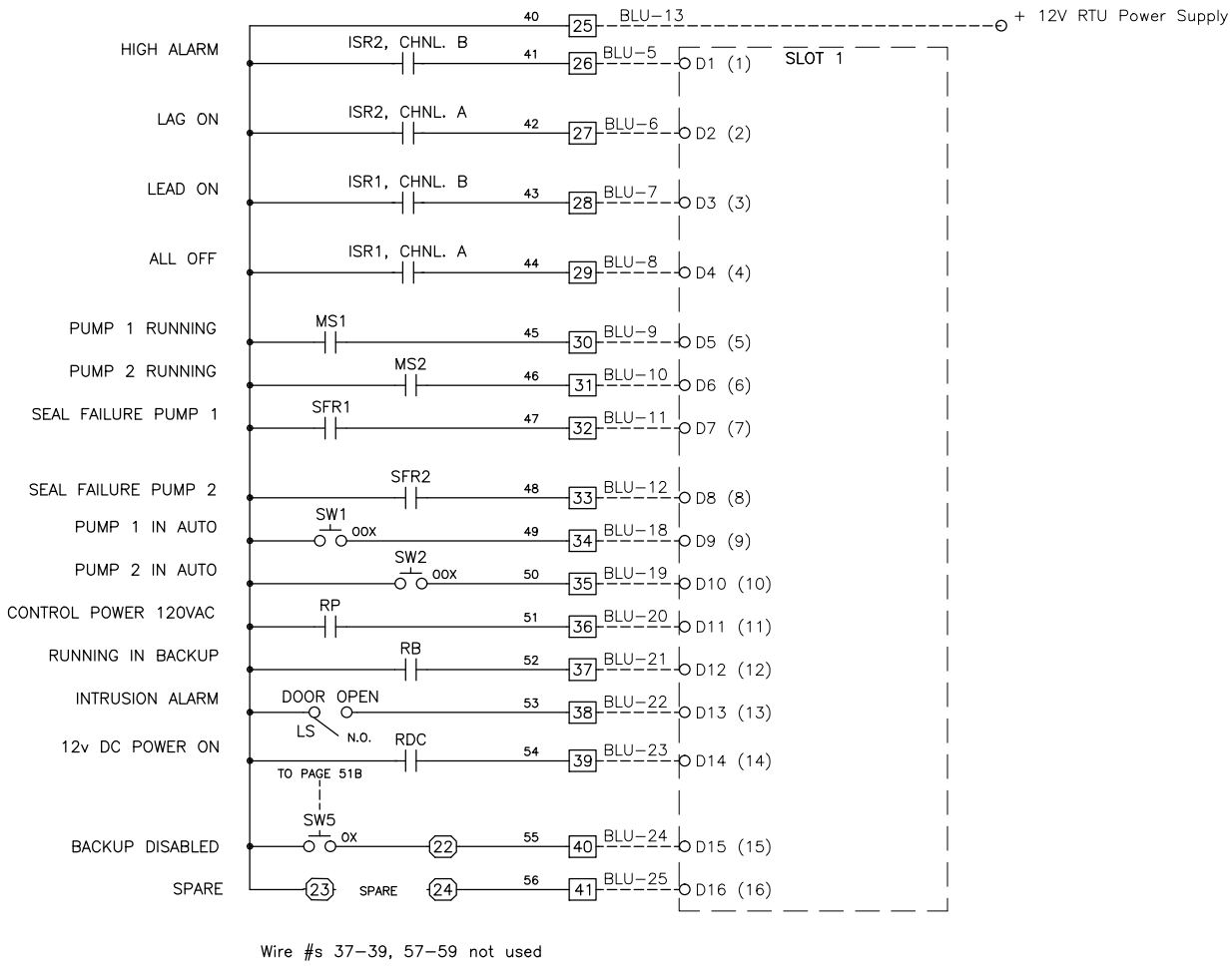
CONTINUED ON 53A





MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (480/240 VOLT, 3 PHASE, 3 WIRE)	DWG No.
AUGUST 2016		53B



Wire #s 37–39, 57–59 not used

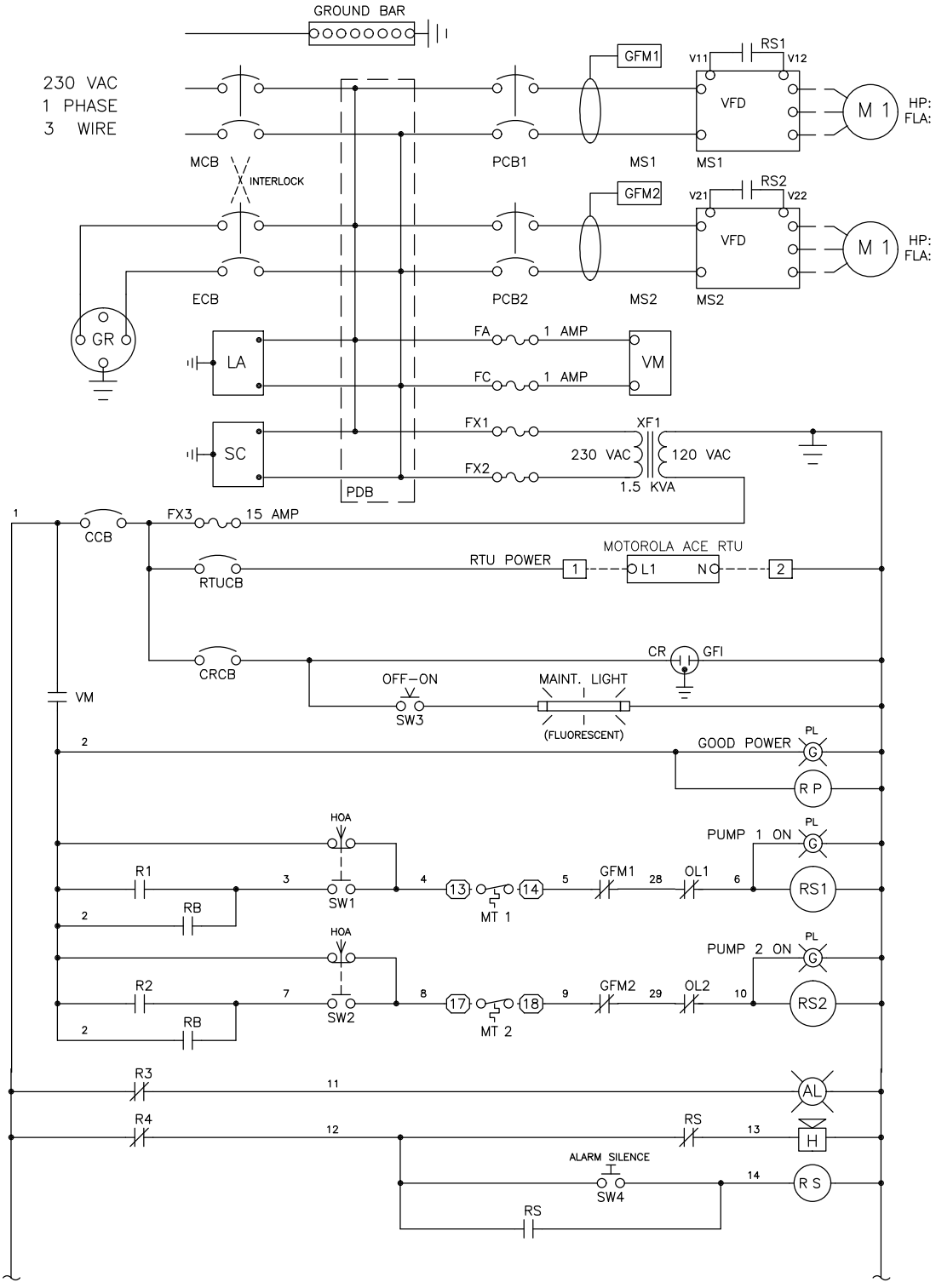
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (480/240 VOLT, 3 PHASE, 3 WIRE)	DWG No.
AUGUST 2016		53C

CONTROL PANEL PARTS LIST

Abbrv.	Description	Manufacturer	Part Number
ENC	Enclosure	Hoffman or equal	Custom, Nema 3R, 304SS w/ rainshield and 3 Pt. latch
AL	Alarm Light (Red Bulb)	RAB	RAB-VP100DG
BATT	Battery, 12V DC	Power Sonic	PS-1270
CCB	Control Circuit Breaker	Square D	QOU110
CR	Convenience Recept, GFI Type	Pass and Seymour	1595-I and Weatherproof Box
CRCB	Convenience Recept, CB	Square D	QOU115
ECB	Emergency Circuit Breaker	Square D	Size as required
FA-FC	Fuse, Phase Monitor Power	Ferraz	ATQR-1
FX1, FX2	Fuse, Transformer Primary	Ferraz	ATQR-X (460 V) or ATQR-15 (230 V)
FX3	Fuse, Transformer Secondary	Ferraz	FNM15
FU1-FU3	Fuse	Buss	GDB-1A
FU4-FU7	Fuse	Buss	GDB-100Ma
GFM1,2	Motor Ground Fault Monitor	Bender	RCM460/465 Series
GR	Generator Receptacle	Russell-Stoll	JRS1044FR or JRS2044FR (as required)
H	Horn	Federal	350-WB-120
ISR1-3	Intrinsically Safe Relays	Ingram Products	ISR2-12V-100K
LA	Lightning Arrestor	Ditek	DTK-240-3CM or DTK-480-3CM (as required)
MCB	Main Circuit Breaker	Square D	Size as required
MS1, MS2	Motor Starters	Square D	Class 8536 NEMA series, Size as required
PCB1,2	Pump Circuit Breaker	Square D	Size as required
PDB	Power Distribution Block	Marathon	1333555
PL	Pilot Light, color as noted	Square D	Class 9001 Type SK
PS1	Power Supply, 12 DC	Astrodyne	AD55-A
PM	Phase Monitor	Diversified	SLA-230-ASA or SUA-460-ASA (as required)
R1-R4	Control Relay	Omron	MY2N-DC12V
RB, RP, RS	Control Relay	Omron	MK2PS-AC120
RDC	Control Relay	Omron	MY2N-DC12V
RTUCB	RTU Circuit Breaker	Square D	QOU110
SFM1, SFM2	Seal Fail Monitor	SSAC	LC54BA
SFR1, SFR2	Control Relay, Seal Fail Relay	Square D	Class 8501 Type KP
SW1 - 3, SW5	Switch	Square D	Class 9001 Type SK
SW4	Alarm Silence Pushbutton	Square D	Class 9001 Type SK
TB	Terminal Blocks	Wago	280 Series
TD1	Time Delay Relay	SSAC	TRDU12D3
XF1	Transformer	Square D	Class 9070 T1500-D1
SC	Surge Capacitor	Square D	6671-SDSA3650

NO EXCEPTIONS will be allowed as to manufacturer of Generator Receptacle, Breakers or Motor Starters. Upon submittal and approval, substitution of other parts on an "As Equal" basis may be allowed if they are directly interchangeable with parts specified. APPROVAL OF A SUBMITTED ITEM AS AN "EQUAL" SHALL BE AT THE SOLE DISCRETION OF THE DEPARTMENT.

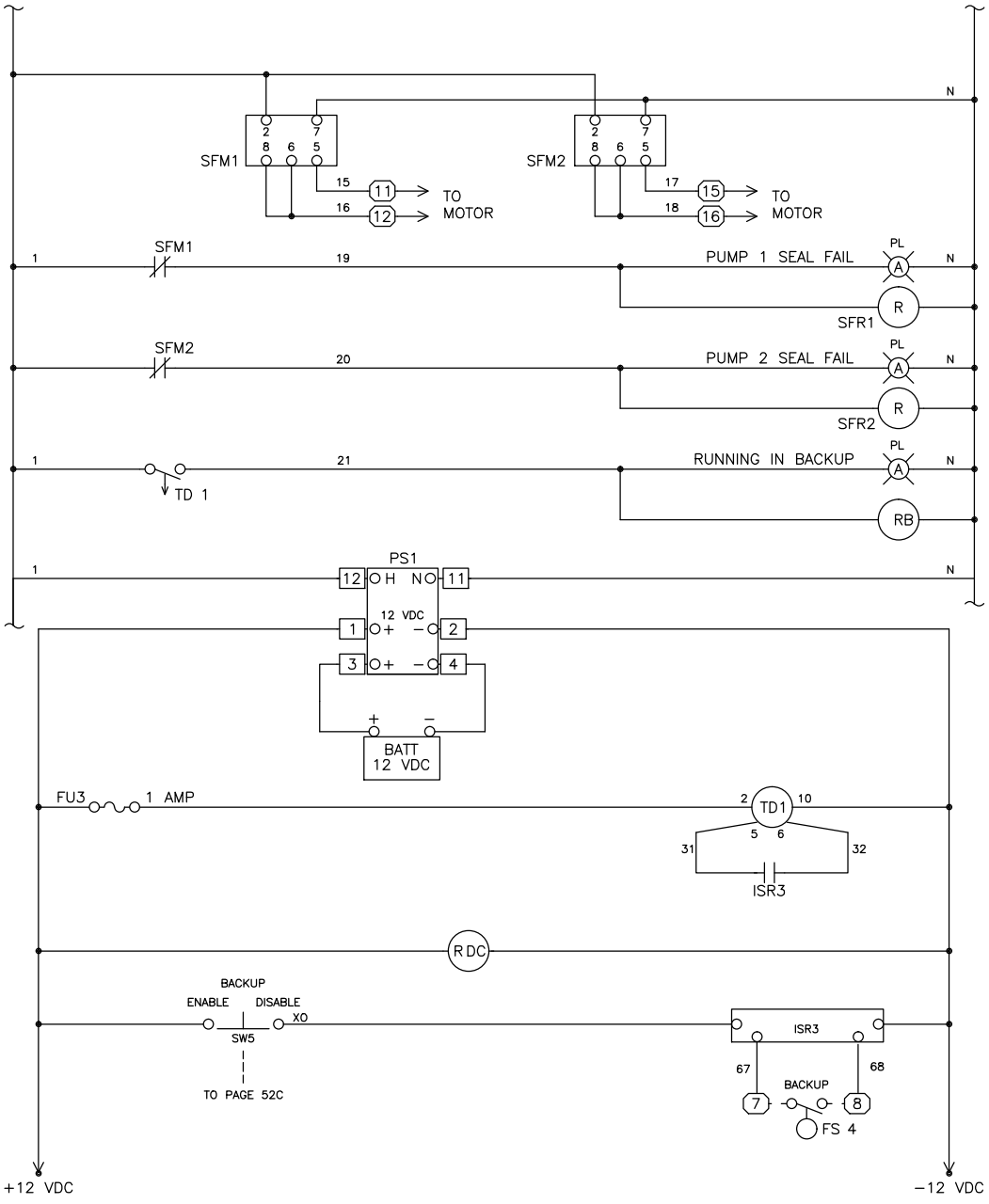


CONTINUED ON 54A

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (230 VOLT, 1 PHASE, 3 WIRE)	DWG No.
AUGUST 2016		54

CONTINUED ON 54

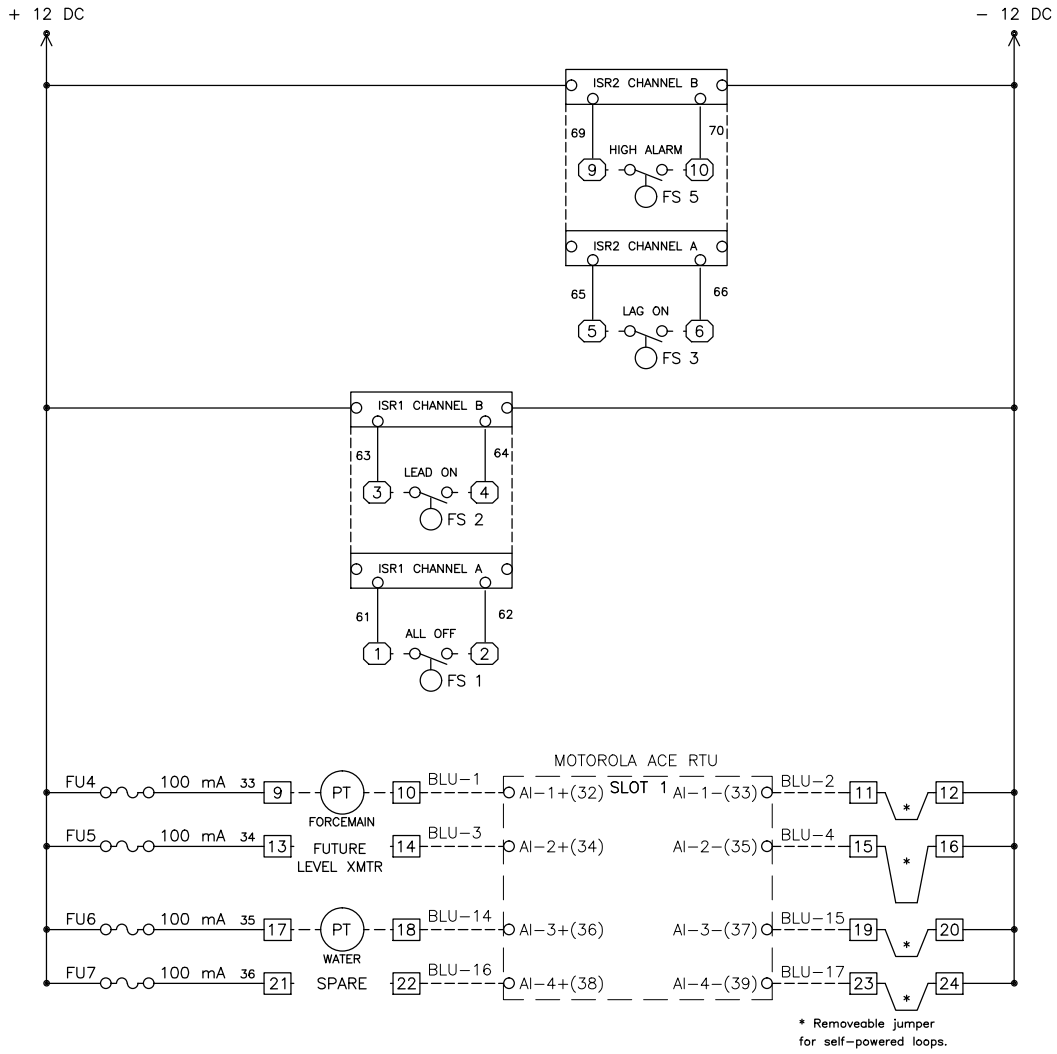


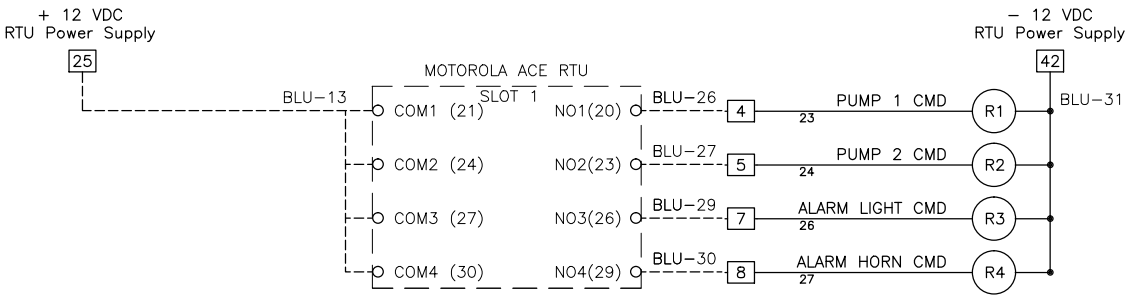
CONTINUED ON 54B

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (230 VOLT, 1 PHASE, 3 WIRE)	DWG No.
AUGUST 2016		54A

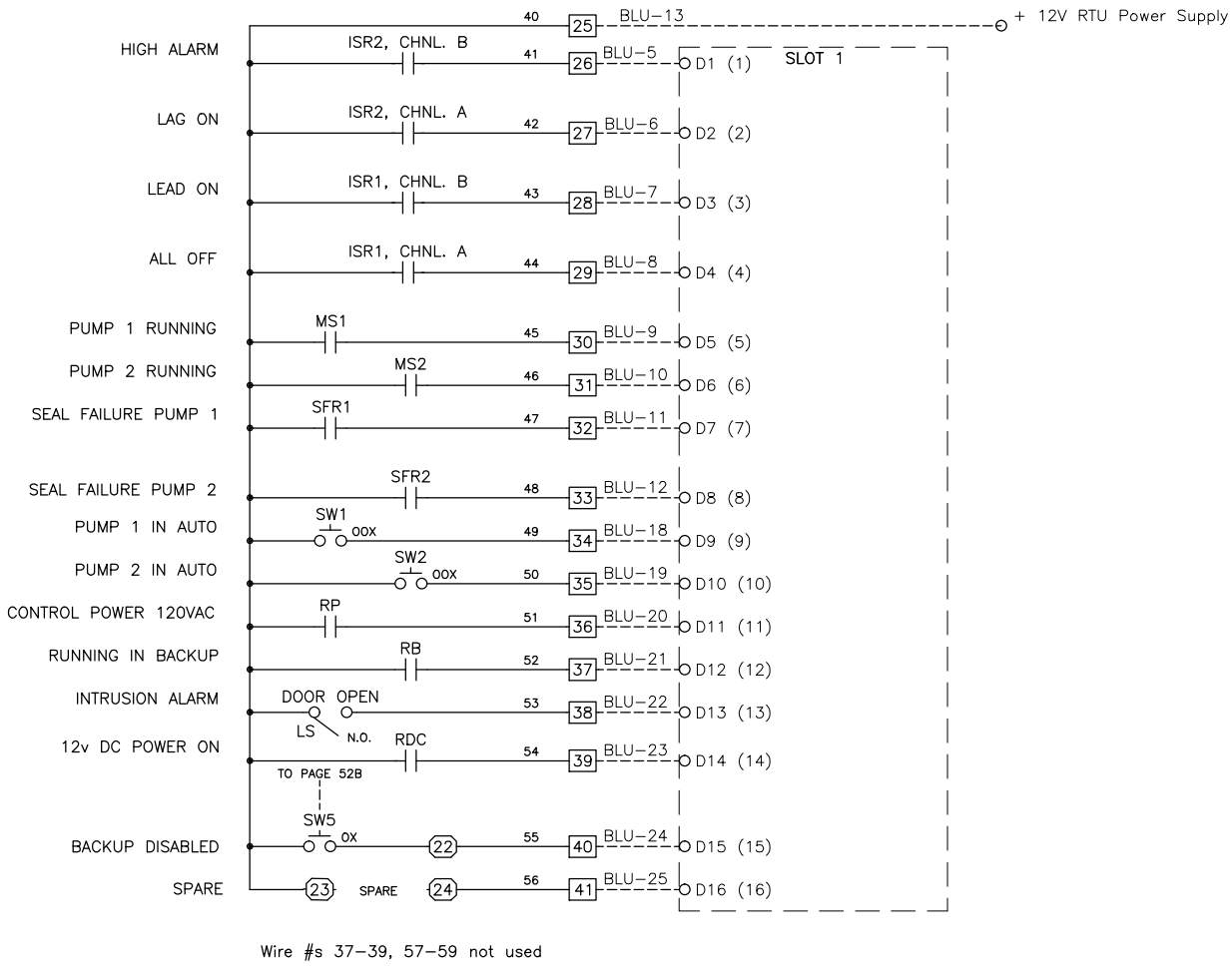
CONTINUED ON 54A





MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (230 VOLT, 1 PHASE, 3 WIRE)	DWG No.
AUGUST 2016		54B



Wire #s 37–39, 57–59 not used

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (230 VOLT, 1 PHASE, 3 WIRE)	DWG No.
AUGUST 2016		54C

CONTROL PANEL PARTS LIST

Abbrv.	Description	Manufacturer	Part Number
ENC	Enclosure	Hoffman or equal	Custom, Nema 3R, 304SS w/ rainshield and 3 Pt. latch
AL	Alarm Light (Red Bulb)	RAB	RAB-VP100DG
BATT	Battery, 12V DC	Power Sonic	PS-1270
CCB	Control Circuit Breaker	Square D	QOU110
CR	Convenience Recept, GFI Type	Pass and Seymour	1595-I and Weatherproof Box
CRCB	Convenience Recept, CB	Square D	QOU115
ECB	Emergency Circuit Breaker	Square D	Size as required
FA-FC	Fuse, Phase Monitor Power	Ferraz	ATQR-1
FX1, FX2	Fuse, Transformer Primary	Ferraz	ATQR-15 (230 V)
FX3	Fuse, Transformer Secondary	Ferraz	FNM15
FU1-FU3	Fuse	Buss	GDB-1A
FU4-FU7	Fuse	Buss	GDB-100Ma
GFM1,2	Motor Ground Fault Monitor	Bender	RCM460/465 Series
GR	Generator Receptacle	Russell-Stoll	JRS1044FR or JRS2044FR (as required)
H	Horn	Federal	350-WB-120
ISR1-3	Intrinsically Safe Relays	Ingram Products	ISR2-12V-100K
LA	Lightning Arrestor	Ditek	DTK-240-3CM (as required)
MCB	Main Circuit Breaker	Square D	Size as required
MS1, MS2	Motor Starters	Yaskawa-iQ Pump Controller Series	Size as required
PCB1,2	Pump Circuit Breaker	Square D	Size as required
PDB	Power Distribution Block	Marathon	1333555
PL	Pilot Light, color as noted	Square D	Class 9001 Type SK
PS1	Power Supply, 12 DC	Astrodyne	AD55-A
VM	Voltage Monitor	Diversified	VBA-120-ALA (as required)
R1-R4	Control Relay	Omron	MY2N-DC12V
RB, RP, RS	Control Relay	Omron	MK2PS-AC120
RDC	Control Relay	Omron	MY2N-DC12V
RTUCB	RTU Circuit Breaker	Square D	QOU110
SFM1, SFM2	Seal Fail Monitor	SSAC	LC54BA
SFR1, SFR2	Control Relay, Seal Fail Relay	Square D	Class 8501 Type KP
SW1 - 3, SW5	Switch	Square D	Class 9001 Type SK
SW4	Alarm Silence Pushbutton	Square D	Class 9001 Type SK
TB	Terminal Blocks	Wago	280 Series
TD1	Time Delay Relay	SSAC	TRDU12D3
XF1	Transformer	Square D	Class 9070 T1500-D1
SC	Surge Capacitor	Square D	6671-SDSA3650

NO EXCEPTIONS will be allowed as to manufacturer of Generator Receptacle, Breakers or Motor Starters. Upon submittal and approval, substitution of other parts on an "As Equal" basis may be allowed if they are directly interchangeable with parts specified. APPROVAL OF A SUBMITTED ITEM AS AN "EQUAL" SHALL BE AT THE SOLE DISCRETION OF THE DEPARTMENT.

XYLEM / GODWIN CD-103M FOUR INCH SOUND ATTENUATED FIXED- MOUNTED EMERGENCY BACKUP PUMP

PART ONE - GENERAL DESCRIPTION

1.1.1 Furnish and Install one (1) fixed–mounted Xylem/Godwin CD103M automatic starting lift station dry–priming back–up pump at each Type "A" Lift Station.

1.2 SYSTEM DESCRIPTION

1.2.1 The emergency backup trash pump specified in this section will be used to automatically pump raw sewage in the event that the Type "A" pumps fail to pump.

1.2.2 Pump shall be fitted with a fully automatic priming system capable of repeated priming from a completely dry pump casing.

1.2.3 The pump and accessories shall be supplied by the pump manufacturer.

1.2.4 The pump offered shall be the manufacturer's standard production model. It shall have been in continuous use by municipal and industrial owners for a minimum of five years.

1.2.5 The diesel engine driven pump unit shall be fixed–mounted at the new lift station by the installing contractor complete with spring type isolation dampeners affixed to a suitably sized concrete base. Concrete base shall be designed by the lift station Engineer of Record using information from Xylem/Godwin to provide a stable installation with no unacceptable vibration transmitted to the surrounding housekeeping slab.

1.2.6 The engine and pump shall be completely enclosed with marine grade 5052 aluminum sheet metal panels backed with one inch and two–inch layers of polydamp acoustical sound–deadening material. The acoustical enclosure shall reduce pump and engine noise to sixty–nine dBA or less at a distance of thirty feet. The enclosure shall be removable for easy access to the engine / pump for maintenance and repair. The enclosure doors shall all be equipped with latches that are keyed alike. For maintenance and service needs, the enclosure sides shall have hinged doors for quick access to the engine oil fill, fuel fill port, oil dipstick, and filters.

1.3 DESIGN REQUIREMENTS

1.3.1

OPERATING SPEED (MAXIMUM)	2200 RPM
MAXIMUM SOLIDS HANDLING SIZE	3 INCHES
IMPELLER DIAMETER	256 mm
SUCTION SIZE	4 INCHES
DISCHARGE SIZE	4 INCHES
MAXIMUM SUCTION LIFT	28 FEET
MAXIMUM DUTY POINT	700 GPM AT 140' TDH (INCLUDING A 15' SUCTION LIFT)
SECOND DUTY POINT	500 GPM AT 90' TDH (INCLUDING A 25' SUCTION LIFT)
MINIMUM SHUTOFF HEAD	170 FEET

1.4 REFERENCES

1.4.1 ANSI B16.1 – Standard for Cast Iron Pipe Flanges and Flanged Fittings.

PART TWO - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

2.1.1 The pump shall be a Model CD103M, size 4" x 4" as manufactured by GODWIN PUMPS, Bridgeport, New Jersey.

2.2.1 CASING, SUCTION COVER, SEPARATION TANK: Pump castings shall be cast iron. Pump design shall incorporate a direct suction flow path that is in axial alignment with the impeller eye. There shall be no turns, chambers, or valves between the suction flange and the impeller eye.

2.2.2 IMPELLERS: The pump impeller shall be an open, two–bladed, non–clog type with pump–out vanes on the back shroud and fabricated from hardened cast–chromium steel construction (minimum Brinell Hardness 341 HB).

2.2 EQUIPMENT

2.2.3 WEARPLATES: Shall be fully adjustable and replaceable, fabricated of cast iron. Wear plate clearances shall have no relationship to the ability of the pump to achieve a prime.

2.2.4 BEARINGS AND SHAFTS: Pump shall be fitted with a bearing bracket to contain the shaft and bearings. Bearings shall be tapered roller bearings of adequate size to withstand imposed loads for sustained pumping at maximum duty points. Minimum ISO L10 bearing life to be 100,000 hours. Impeller shafts shall be fabricated of 1.5% chromium alloy.

2.2.5 SEALS: Seals shall be high pressure, mechanical self–adjusting type with silicon carbide faces capable of withstanding suction pressures to 100 psi. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. Pump shall be capable of running dry, with no damage, for periods up to twenty–four hours. All metal parts shall be of stainless steel. Elastomers shall be Viton.

2.2.6 PUMP SUCTION AND DISCHARGE FLANGES: Shall be cast iron ANSI (B16.1) Class 150, raised faced.

2.2.7 PUMP GASKETS: Shall be compressed fiber and/or Teflon.

2.2.8 PUMP O–RINGS: Shall be Viton.

2.2.9 PRIMING SYSTEM: Automatic priming system incorporates a twin–cylinder compressor and air ejector assembly, no vacuum pump. The compressor shall be mounted on the pump bearing frame, driven by the pump shaft, lubricated by the engine. The priming system shall require no fail–safe protection float gear or any adjusting at high or low suction lifts. Pumps with self–priming chambers modified with vacuum priming systems shall not be accepted as equal. The pump must be capable of running totally dry for periods up to 24 hours, then re–priming and returning to normal pumping volumes. Pump and priming system is capable of priming the pump from a completely dry pump casing. The pump shall be capable of static suction lifts to 28 vertical feet, at sea level. It shall also be capable of operation using extended suction lines.

2.2.10 CHECK VALVE: Pump shall be supplied with an integral swing check valve mounted on the discharge of the pump, allowing unrestricted flow from the impeller. The check valve shall prevent in–line return of flow when the pump is shut off. Non–return valve elastomers shall be Nitrile rubber and shall be field replaceable.

2.2.11 DRIVE UNIT: The drive unit shall be a diesel, water–cooled engine. The engine shall drive the pump by use of direct–connected intermediate drive plate. Starter shall be 12 volt electric. Safety shutdown switches for low oil pressure and high temperature shall be provided. Battery shall have 180 amp hour rating. Unit shall include a tachometer and an hour meter. Drive unit shall be an Isuzu 4LE2T Final Tier 4 or equal, rated at 48 HP (continuous) at 2000 R.P.M. A certified, continuous–duty engine curve shall be supplied to the owner/engineer.

2.2.12 GOVERNOR: Governor shall be a mechanical type. Engine speed shall be adjustable to operate the pump between maximum and minimum design operation speeds.

2.2.13 EXHAUST: Exhaust system shall include a hospital grade muffler housed in a separate chamber within the enclosure. All exhaust piping and manifolds shall be encased in fitted acoustic blankets. They shall be constructed of high–density fiberglass material with waterproof jacketing.

2.2.14 UL LISTED SKID BASE/FUEL TANK

2.2.14.1 Integral 316L stainless steel skid type 80–gallon fuel tank shall have sufficient capacity to provide at least 24 hours of operating time at full load. The engine shall be capable of operating satisfactorily on a commercial grade of distilled No. 2 fuel oil.

2.2.14.2 The pump base tank shall be a UL–142 approved double wall design constructed in accordance with Flammable and Combustible Liquids Code, NFPA 30; The Standard for Installation and use of Stationary Combustible Engine and Gas Turbines, NFPA 37; and The Standard for Emergency and Standby Power Systems, NFPA 110.

2.2.14.3 The tank design shall be a Closed Top Dike Pump Base Tank. It shall be of double wall construction having a primary tank to contain the diesel fuel, held within another tank or dike, which is intended to collect and contain any accidental leakage from the primary fuel tank. The completed base tank assembly is to incorporate pump mounting locations and must be able to support four times the rated load.

2.2.14.4 The primary tank shall be designed to withstand normal and emergency internal pressures and external loads. It shall be capable of withstanding internal air pressures of 3 to 5 psig without showing signs of excessive or permanent distortion and 25 psig hydrostatic pressure without evidence of rupture or leakage.

2.2.14.5 The primary and secondary tanks or dike shall have venting provisions to prevent the development of vacuum or pressure capable of distorting them as a result of the atmospheric temperature changes or while emptying or filling. The vent shall also permit the relief of internal pressures caused by exposure to fires. The vent size shall be determined by using the calculated wetted surface area in square feet (the top is excluded) in conjunction with venting capacity table 10.1of UL–142. The tank's vent shall also be equipped with a coupling device and shall be located to facilitate connection to a vent piping system. The dike's vent may be an opening for venting directly to the atmosphere and protection from the entrance of natural elements or debris shall be provided.

2.2.14.6 The primary tank is to be constructed of 7 gauge 316 stainless steel hot rolled plate material. Internal baffles or reinforcement plates shall be located on a maximum of 24 inch centers in tanks up to 60 inch width and on a maximum of 19.5 inch centers in tanks over 60 inch width. At least one baffle shall separate the fuel suction pipe from the fuel return line.

2.2.14.7 The outer tank is to be constructed of 316L stainless steel hot rolled plate material in a manner to be able to support four times the wet load of the pump and housing. All of the load is to be carried by the outer tank so no load or vibration stress is placed on the primary tank. If the pump base tank is wider than the pump set to be supported, structural rails are to be incorporated to span the width of the base tank so that the load is transferred to the side rails of the tank. Vertical reinforcements shall be welded to the outer sides of the secondary tank or dike at a maximum of 45 inch centers on tanks up to 30 inches high and on 24 inch centers on tanks greater than 30 inches high. At least one vertical reinforcement shall be positioned adjacent to each mounting hole location.

2.2.14.8 Both primary and secondary tanks shall be fitted with the proper welded pipe fittings to accommodate the requirements for the fill port and normal and emergency venting.

2.2.14.9 The completed assembly is to be cleaned with a heated pressure wash followed by a chromium free post treatment to ensure proper paint adhesion. The tank assembly is to be painted with an epoxy ester primer and high quality polyurethane enamel with total paint thickness of 3.5 mils. The painted tank assembly is to be baked at 180 degrees for 30 minutes to provide a hard durable finish.

2.2.14.10 Manufacturing and testing of this system shall be performed within the scope of Underwriters Laboratories, Inc. "Standard for Safety UL 142." A UL label shall be permanently attached to the tank system showing the following information:

- The registered UL mark and the name: Underwriters Laboratories, Inc.
- A control number and the word "listed"
- The product's name as identified by Underwriters Laboratories Inc.
- The serial number assigned by Underwriters Laboratories, Inc.
- Other manufacturer's information may also be included.

2.2.15 FACTORY PAINTING: Pump, engine, other related components and enclosure shall be shop primed with PPG HSP–528 Urethane Primer 1.0–1.8 DFT and finish painted with PPG HSP–528 Urethane Primer 1.0–1.8 DFT at the place of manufacture.

2.3 AUTOMATIC STARTING CONTROL SYSTEM

2.3.1 The engine shall be equipped with a factory installed PrimeGuard microprocessor–based controller as supplied by Godwin Pumps of America, Inc. and designed to start/stop the engine at a signal supplied by high and low level floats or a 4–20 mA transducer.

2.3.2 Engine / Pump Control Specifications

The engine shall be started, stopped, and controlled by a PrimeGuard high performance state of the art digital controller as supplied by Godwin Pumps of America, Inc. The controller shall be weather proof enclosed, and contain an external weatherproof 12–position keypad accessible without the need to remove or open any protective cover or enclosure. It shall be designed to start/stop the engine at a signal supplied by high and low level floats or a 4–20 mA transducer. The PrimeGuard controller shall provide the following functions without modification, factory recalibration, or change of chips or boards, by simply accessing the keypad.

2.3.2.1 The keypad shall be a capacitive touch sensing system. No mechanical switches will be acceptable. The keypad shall operate in extreme temperatures, with gloves, through ice, snow, mud, grease, etc. and maintain complete weather–tight sealing of the PrimeGuard controller.

2.3.2.2 In automatic mode, the unit shall conserve energy and go to "sleep".

2.3.2.3 The PrimeGuard controller shall function interchangeably from float switches, pressure switch, or transducer, as well as manual start/stop by selection at the keypad. No other equipment or hardware changes are required.

2.3.2.4 The PrimeGuard controller with integrated AutoThrottle shall be capable of varying the engine speed to maintain a constant level in a process without a change to the controller other than via the keypad.

2.3.2.5 The start function can be programmed to provide three separate functions each day for seven days (i.e. a start, warm up, exercise cycle on two separate days at different times and for a varying length of time all via the keypad).

2.3.2.6 Manual–Automatic Button:

2.3.2.6.1 In Manual Mode, manual "Start" button starts engine and runs until "Stop" button is depressed or an emergency shutdown occurs.

2.3.2.6.2 In Automatic Mode, start/stop sequencing is initiated by two normally–open narrow–angle float switches.

2.3.2.7 The controller shall integrate the engine safety shut–off for low and high oil temperature, and provide over–speed protection.

2.3.2.8 The controller shall include standard, field–adjustable parameters for engine cycle crank timer, shutdown time delay, warm–up time delay, and cool–down time delay.

2.3.2.9 The PrimeGuard controller shall have only one circuit board with eight built–in relays. Three (3) of the relays shall be programmable to output desired parameter on display and to be used as dry–contacts for communication with Martin County Utility Department's SCADA system, all via the keypad without changing relays, chips, printed circuits, or any hardware or software.

2.3.2.10 Standard components shall consist of (24) digital inputs, (7) analog inputs, (1) magnetic pick–up input, (8) 20–amp form "C" relays, (1) RS232 port, (1) RS485 port, (1) RS232/RS485 port, (1) J1939 port, and (1) 64X128 pixel full graphic LCD display with backlight.

2.3.2.11 The industrially–hardened PrimeGuard Controller shall withstand Vibration of 3 g, 3 axis, frequency swept 10–1000 Hz, in an operating temperature Range of 4 to 176F (–20 to 80C) and an operating humidity range of 0–95% Non–Condensing.

2.4 REQUIRED ADDITIONAL ITEMS

2.4.1 ELECTRICAL JUNCTION BOX: The unit shall include a duplex GFCI outlet (junction box) for a single point 115VAC, 30–amp electrical connection circuit to power the automatic trickle charger.

2.4.2 FULLY AUTOMATIC TRICKLE CHARGER: The unit shall include a fully automatic trickle charger powered by 2–amps, 115VAC (6A 12VDC).

2.4.3 FLOATS: The unit shall include two (2) normally open PrimeGuard floats which shall be connected to the unit by the installing contractor to automatically control start and stop of the unit.

2.4.4 LIGHT: The unit shall include a single switch operated 12VDC interior dome light mounted within the enclosure.

2.4.5 EXTERIOR HINGES AND HARDWARE: All hinges and hardware attached to the sound enclosure shall be fabricated from 316L stainless steel.

PART THREE - EXECUTION

3.1 MANUFACTURERS SERVICES

3.1.1 The manufacturer shall furnish the services of a competent factory representative to do the following:

3.1.1.1 Inspect the system prior to delivery, supervise the start up and testing of the system, and certify the system has been properly furnished and is ready for operation.

3.1.1.2 Instruct the owner's operating personnel in the proper operation and maintenance of the system for a period of not less than one–half day.

3.2 TOOLS AND SPARE PARTS

3.2.1 The manufacturer shall furnish the following on delivery of the pumping system;

3.2.1.1 One Spare Parts Kit Consisting of:

INCLUDES	PART NUMBER	DESCRIPTION
1	GPV4150F	GPV4-150# Valve Flapper
1	GPV4150300G	GPV4-150/300# Valve Cover Gasket
1	2305682016	Ejector Jet
1	2305712016	Ejector Nozzle
1	2305869923	CD80-HL80 Separation Tank Filter/Screen
10	4307639912	M12 Dowty Washer
2	3810041112A	Viton Wearplate O-Ring
2	3810134112A	O-Ring
2	3810144112A	Ejector Nozzle O-Ring
1	3906414113A	Ejector Ball
1	4316129913	Compressor Pipe
2	4400369912A	Relief Valve
1	390H150	Compressor Belt
3	4905230300A	Valve Plate Gasket
3	4905230400A	Valve Plate Gasket
3	4905230900A	Head Gasket

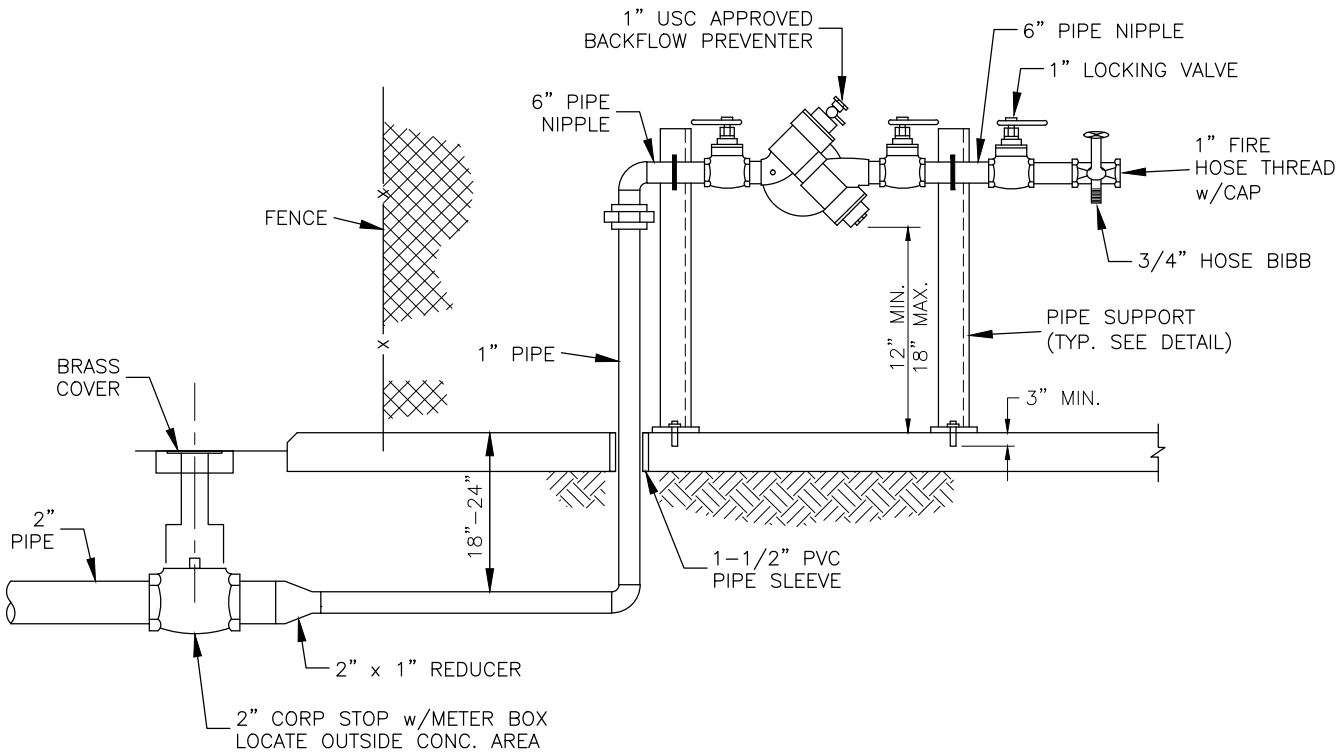
3.2.1.2 An Operations and Maintenance manual for the pump and engine.

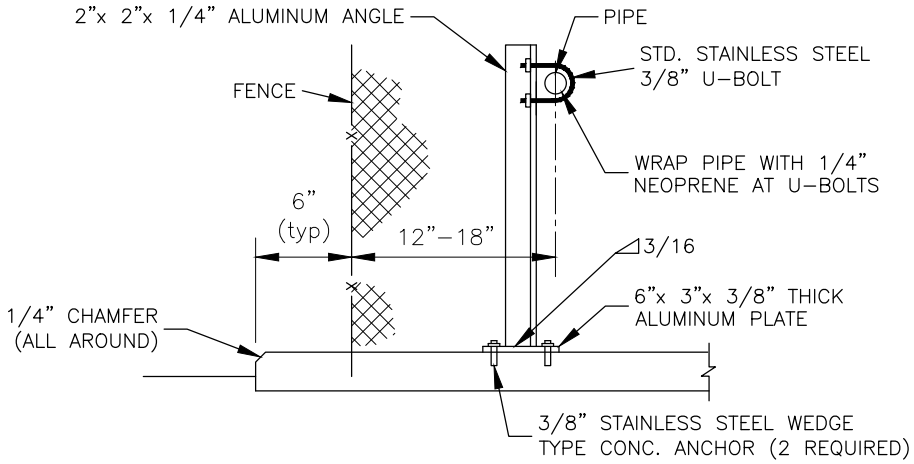
3.3 WARRANTY

3.3.1 The manufacturer shall furnish the following to the owner:

3.3.1.1 A copy of the engine manufacturer's parts and labor warranty.

3.3.1.2 A one-year Parts and Labor Warranty issued by the manufacturer on the Trash Pump System. This warranty must cover all pump parts, including the mechanical seal.

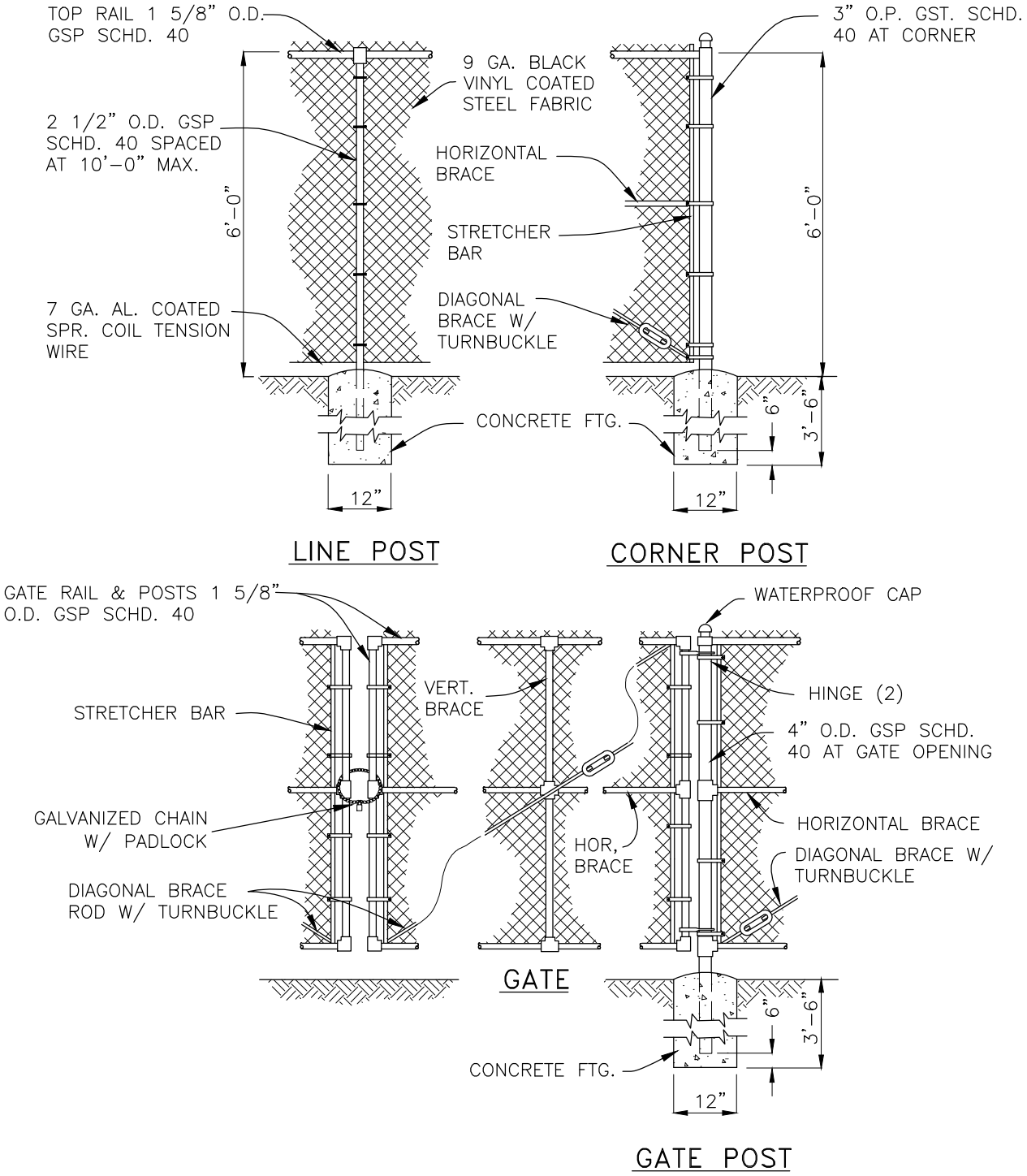




PIPE SUPPORT DETAIL

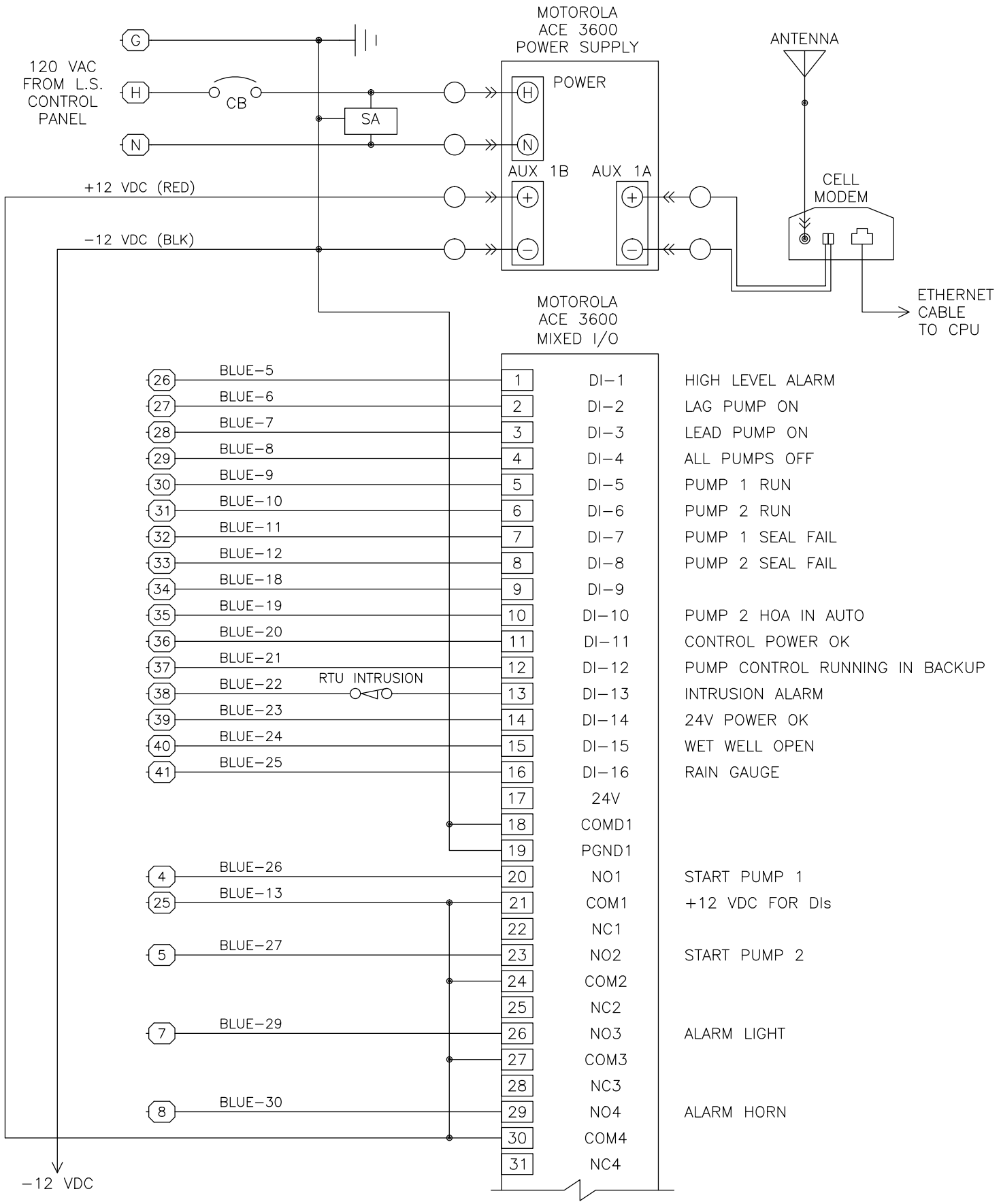
NOTES:

1. ALL ABOVE GRADE PIPING SHALL BE BRASS. FITTINGS SHALL BE BRONZE.
2. ALL JOINTS SHALL BE THREADED.
3. FOR LIFT STATION TO BE OWNED BY M.C.E.S. USE RPZ BACKFLOW PREVENTER BY FEBCO MODEL 825Y, AMES SERIES 4000 SS (SILVER BULLET), OR APPROVED EQUAL.
4. MIN. 24" CLEARANCE BETWEEN RPZ BACKFLOW PREVENTER AND CONTROL PANEL REQUIRED.
5. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.



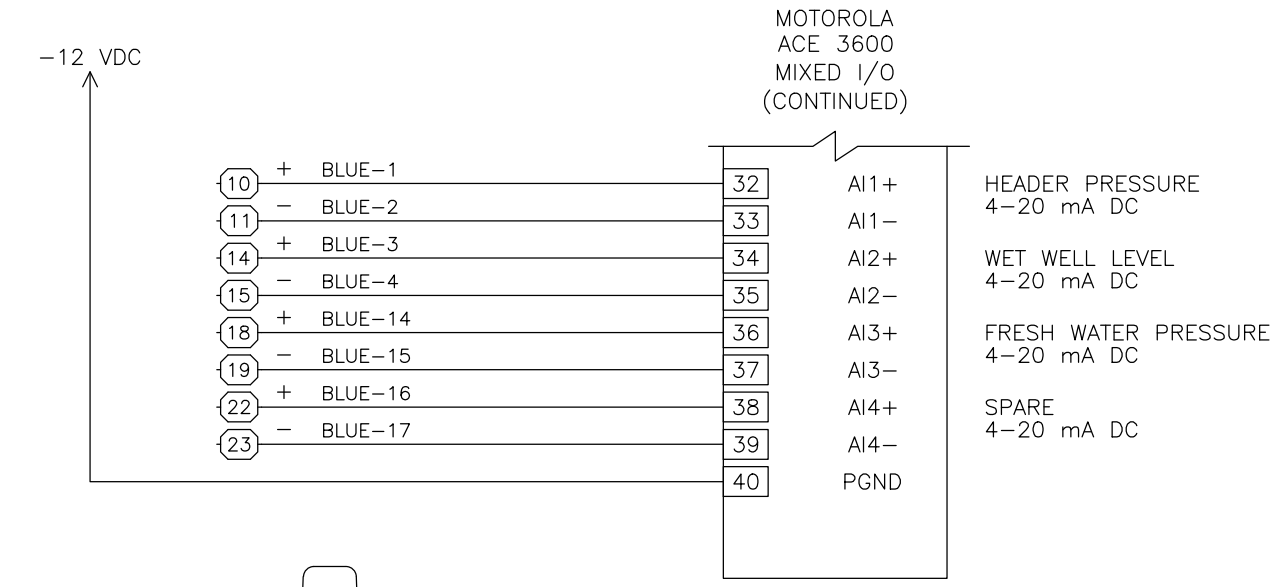
NOTES:

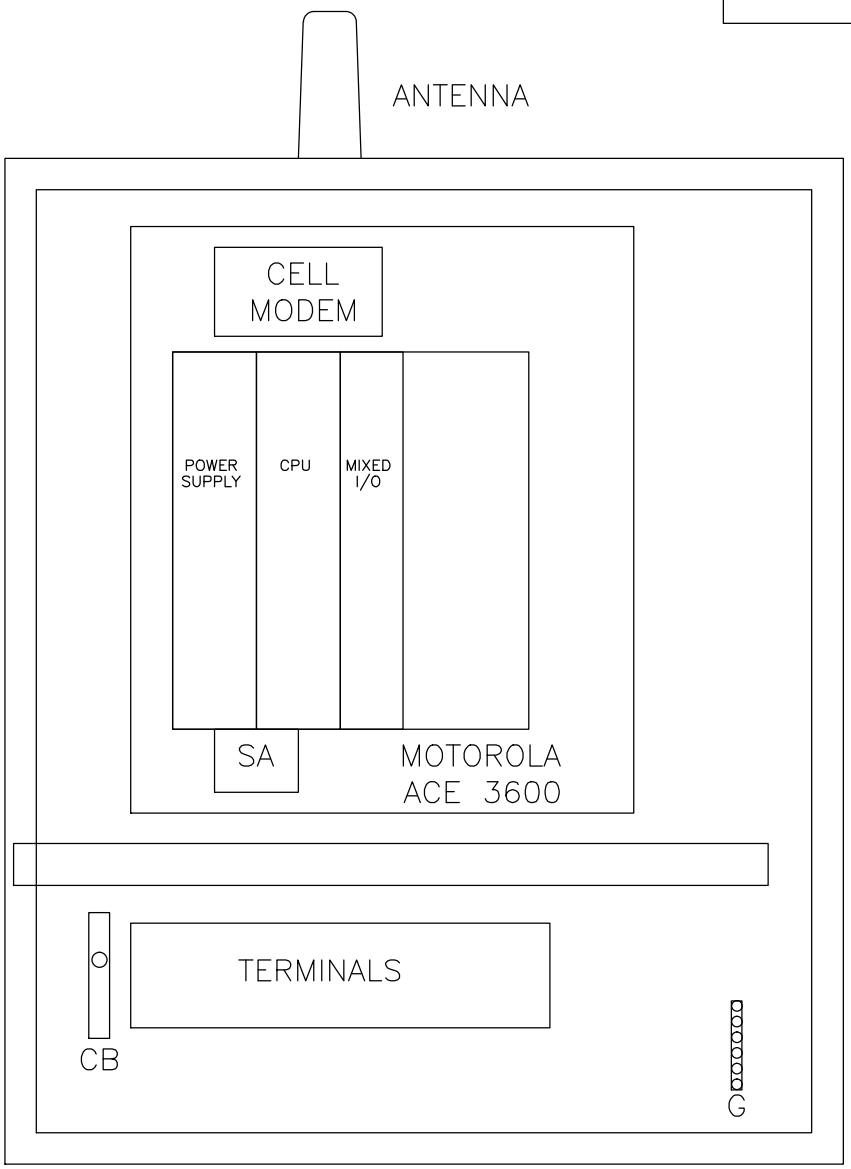
1. GATE TO BE 12'-0" CLEAR OPENING.
2. BLACK VINYL COATED STEEL WOVEN WIRE FABRIC TO BE STRETCHED TAUT W/ STRETCHER BARS AND STRAPS AND FASTENED TOP & BOTTOM AND AT LINE POSTS WITH GALV. PIG RING TIES.
3. GATE TO BE SECURED OPEN WITH GATE STOP SET IN CONCRETE.
4. ALL RAILS, POSTS AND HARDWARE TO BE VINYL COATED. ALL VINYL COATING SHALL BE BLACK.



MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" & "B" LIFT STATIONS RTU – MOTOROLA ACE 3600 – WIRING DIAGRAM	DWG No.
AUGUST 2016		58





ENCLOSURE

NEMA 4X Stainless Steel
Single Door, Continuos Hinge (left side)
Padlockable 3 Pt. Latch
White Powdercoat Epoxy Finish
24"H x 20" W x 10" D

OUTER DOOR NOT SHOWN FOR CLARITY

Components to be mounted on removeable back panel, white painted steel or heavy guage aluminum.

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "A" & "B" LIFT STATIONS RTU-MOTOROLA ACE 3600-WIRING DIAGRAM & ENCLOSURE	DWG No.
AUGUST 2016		59

LIFT STATION RTU PARTS LIST

ITEM	QUANTITY	MANUFACTURER	MODEL	PART NUMBER	
ENCLOSURE	1		24"H x 20"W x 12"D Stainless Steel, Painted White, 3 point locking hatch, drip shield, document holder, door brace		
MODEM	1	Sierra Wireless	GX450	1102326	
ANTENNA	1	Laird	Phantom	TRA6927M3NWN-001	
ANTENNA MOUNT & CABLE	1	PCTEL	MAXRAD	MLF-12-204-S1-A	
RTU SYSTEM	1	Motorola	ACE3600	F7509	ACE3600 Basic Model no Radio
Required Options	1	Motorola		V103	3 I/O Slots Frame
	1	Motorola		V214	Medium metal chassis
	1	Motorola		V245	Mixed I/O Module
	1	Motorola		V260	24V Plug in power supply for IO modules
	1	Motorola		V261	AC Power Supply
	1	Motorola		V114	6.5 Ah backup battery
	1	Motorola		V448	CPU3680
	2	Motorola		V20	Slot Filler
RADIO BRACKET	1	Motorola		FHN6895	XTL Radio Bracket

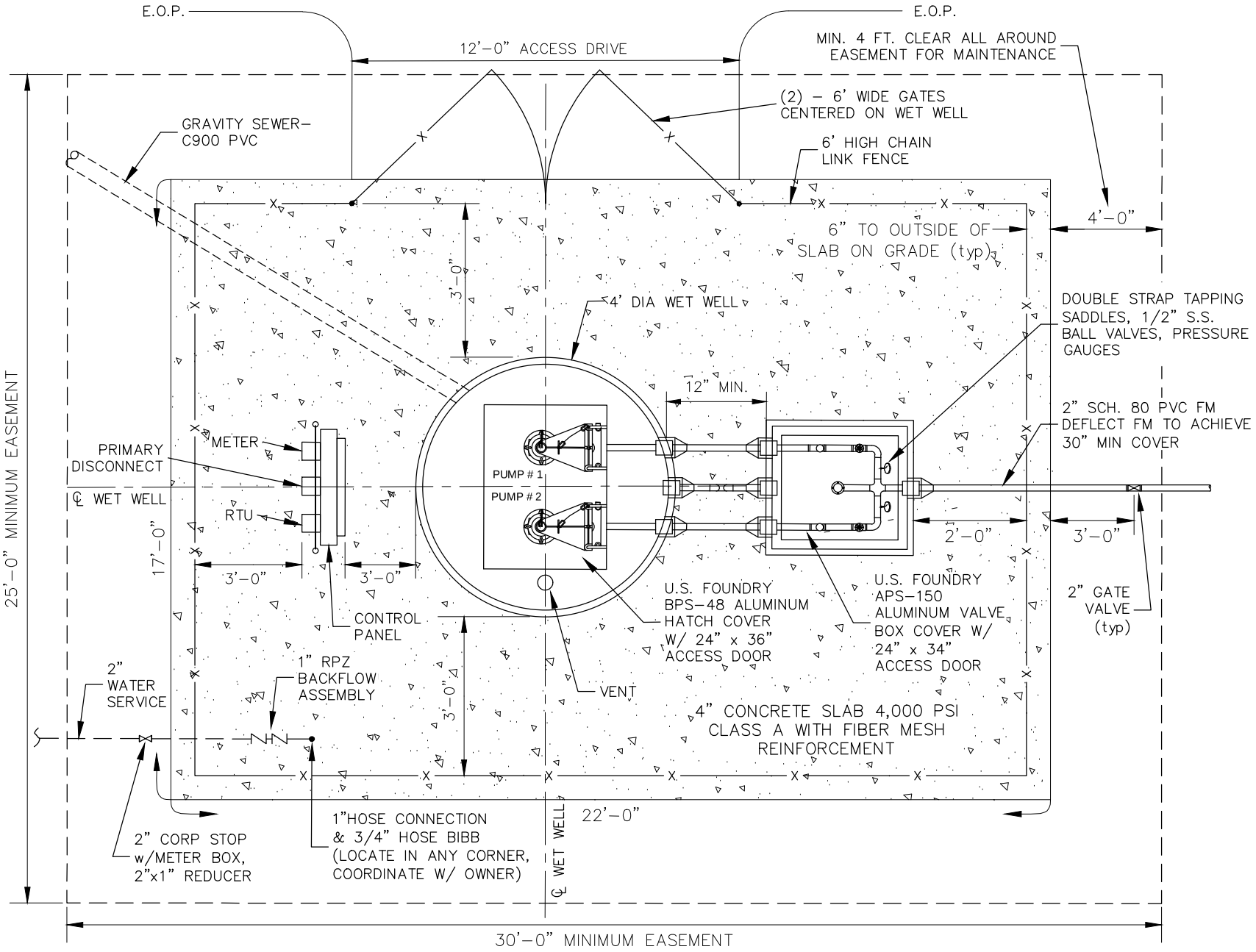
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

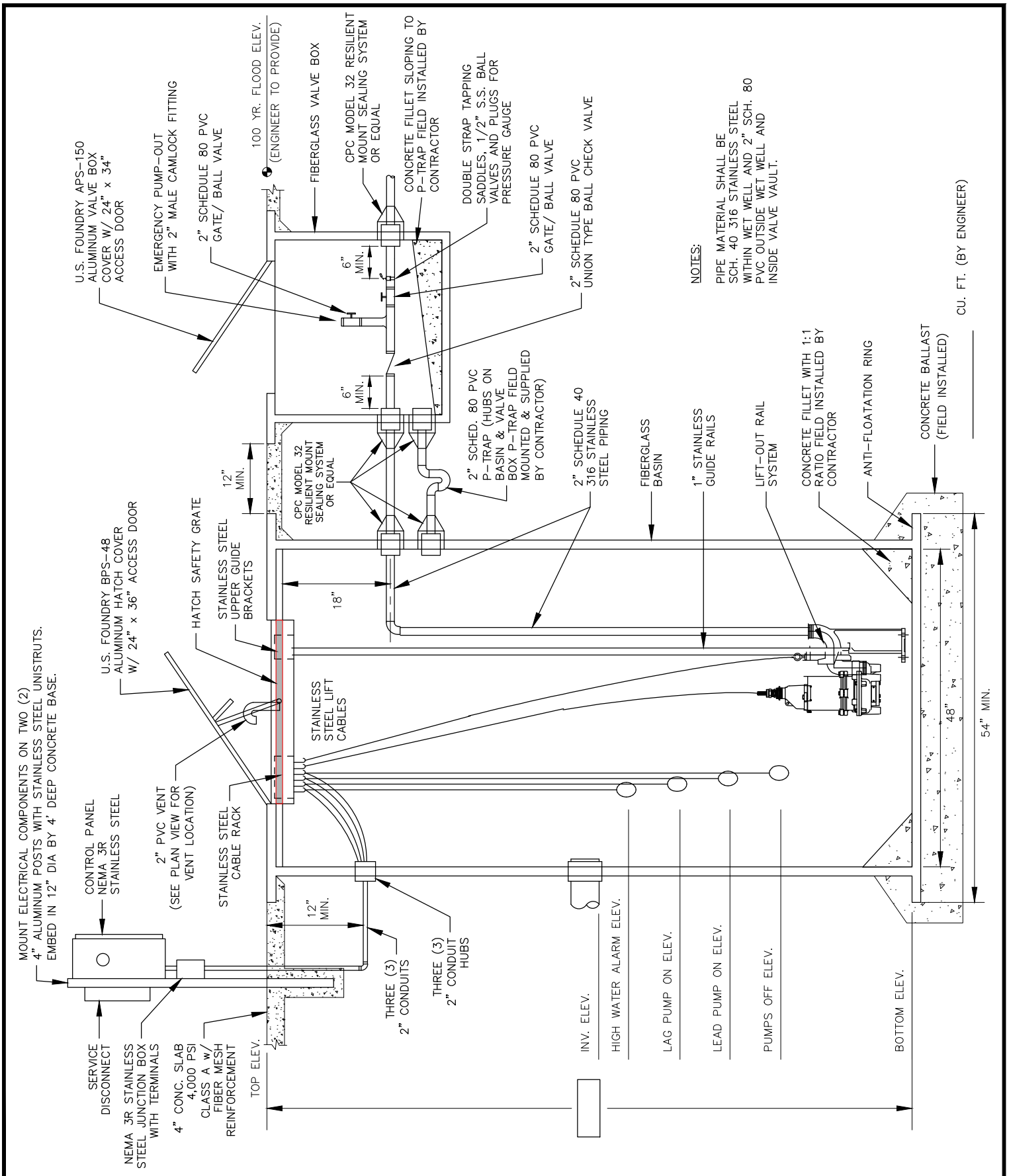
REVISION
AUGUST 2016

TYPE "B" LIFT STATION
TYPICAL SITE PLAN LAYOUT

DWG No.
61

NOTES:
1. Access Road shall consist of:
   - 12" thick Stabilized Subbase, stabilized to not less than 50 FBV and compacted to not less than 98% maximum density as determined by AASHTO T-180
   - 8" Thick Rock Base, compacted to not less than 98% maximum density as determined by AASHTO T-180
   - 8" Thick Concrete w/ fiberglass mesh reinforcement.
2. Furnish and Install two (2) 4", 0-60 psig, oil filled pressure gauges (max pressure to be coordinated with pump station design).





MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "B" LIFT STATION TYPICAL SECTION	DWG No.
AUGUST 2016		62

PUMP DATA: MANUFACTURER,_____

MOD. No._____ IMP. No._____ MOTOR,_____ HP,_____

RPM,_____ VOLTS,_____ PHASE, 60 HERTZ

OPERATING CONDITIONS:_____ GPM AT _____ TDH. _____% EFFICIENCY

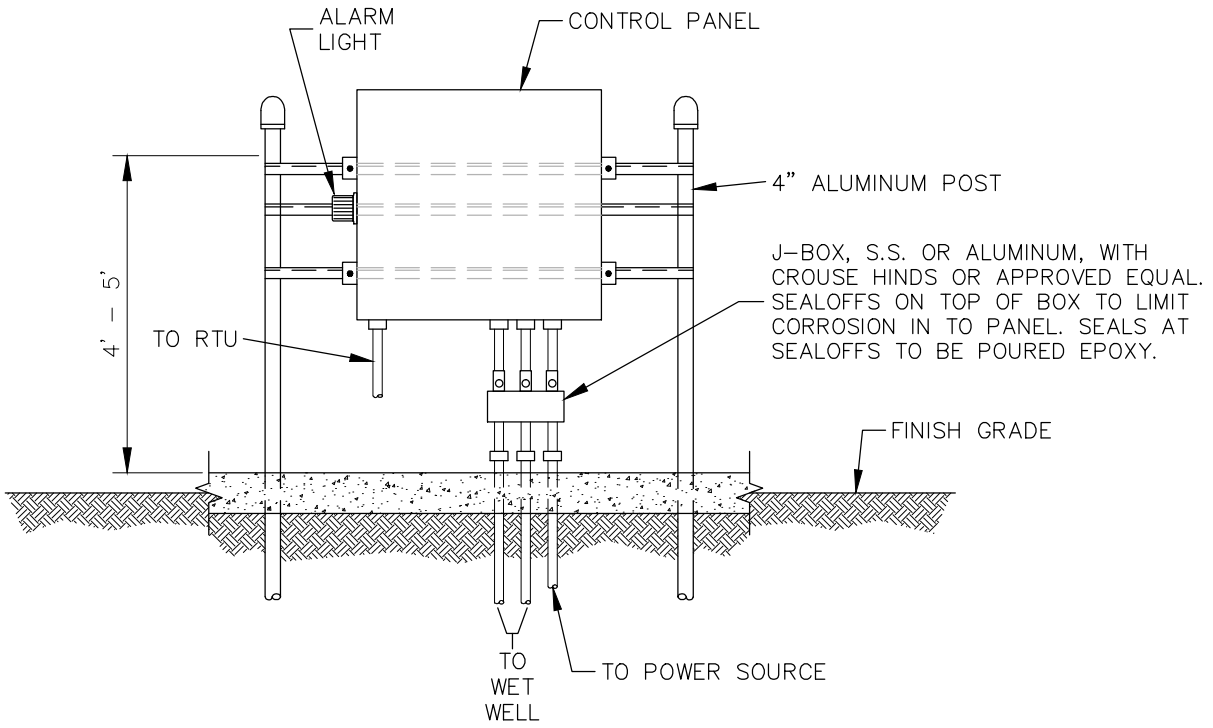
AS-BUILT:

PUMP NO. 1: _____ GPM AT _____ TDH.

PUMP NO. 2: _____ GPM AT _____ TDH.

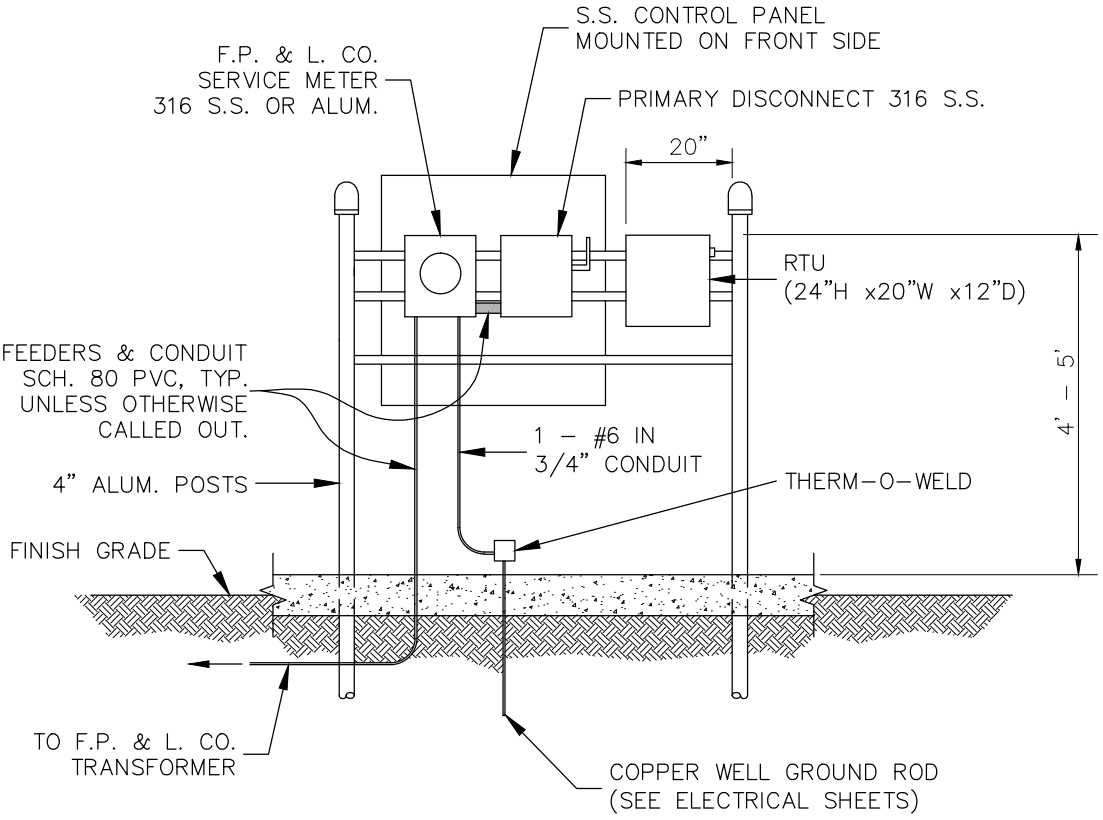
WET WELL: SIZED FOR MINIMUM PUMP CYCLE TIME OF 10 MINUTES AND A MAXIMUM OF 6 PUMP STARTS PER HOUR. WORKING DEPTH _____ FT. WORKING VOLUME _____ GALS.

ELECTRICAL: FEEDERS AND CONDUIT_____ MAIN SWITCH _____POLES_____ AMPS



NOTES:

1. ELECTRIC METER AND PRIMARY DISCONNECT MOUNTED TO UNI-STRUT ON BACK SIDE OF PANEL.
2. ALL POWER AND CONTROLS LINES SHALL BE CONTINUOUS (NO SPLICES).
3. GROUND FAULT INTERRUPTER ON CONVENIENCE RECEPTACLE.
4. PANEL MOUNTED TO S/S UNI-STRUT BY WELDED TABS.
5. ALUMINUM POSTS IN CONCRETE SHALL BE COATED WITH BITUMASTIC.
6. CONTROL PANEL SHALL BE UL LISTED AS A UNIT.
7. ALL HARDWARE, NUTS & BOLTS, AND APPURTENANCES ABOVE GROUND SHALL BE 316 STAINLESS STEEL.
8. TELEMETRY CONDUIT SHALL BE INSTALLED BY THE CONTRACTOR WITH SWEEP 90 DEGREE BEND.
9. ALL CONDUIT NOT ENTERING WETWELL SHALL BE SCHEDULE 80 P.V.C.
10. PANEL MOUNTING SHALL ALLOW FOR UNRESTRICTED VIEW OF ALARM LIGHT.
11. MOUNT RTU PANEL TO ALLOW FOR UNRESTRICTED LINE-OF-SIGHT TO ANTENNA FROM ALL DIRECTIONS.
12. INSTALLATION IS NOT CLASSIFIED. SEALOFFS ARE USED SOLELY FOR THE PURPOSE OF LIMITING CORROSIVE CHEMICALS INTO THE ELECTRICAL EQUIPMENT.



NOTES:
1. TWENTY INCHES ON RIGHT SIDE OF SUPPORT POST IS RESERVED FOR RTU AND ACCESSORIES.

BACK VIEW OF CONTROL PANEL

SPECIFICATIONS FOR DUPLEX (FDEP TYPE) CONTROL PANEL

EACH PANEL SHALL CONTROL 2, 3, 5 OR 7.5 HP, 230 VOLT, THREE PHASE (PREFERRED), 60 Hz PUMPS.
230 VOLT, SINGLE PHASE w/VFD DRIVES WILL BE ACCEPTED ONLY WHERE THREE PHASE IS NOT AVAILABLE.

A NEUTRAL SHALL BE SUPPLIED TO THE PANEL FOR 120 VOLT CONTROL POWER.

PANEL ENCLOSURE

ENCLOSURE SHALL BE NEMA 3R, FABRICATED FROM 304 STAINLESS STEEL

ENCLOSURE SHALL BE WELDED CONSTRUCTION, INCLUDING INTEGRAL WELDED RAIN GUARD. OUTER DOOR SHALL HAVE HINGES AND MEANS FOR PAD LOCKING, INNER DEADFRONT DOOR SHALL BE 5052–H32 ALLOY ALUMINUM. ALL MOUNTING HOLES SHALL BE DRILLED AND TAPPED, SELF TAPPING SCREW NOT ACCEPTABLE. ALL BOLTS, NUTS, LOCK WASHERS, AND MACHINE SCREWS SHALL BE STAINLESS STEEL.

THE FOLLOWING MAJOR COMPONENTS ARE REQUIRED:

1) MAIN BREAKER
2) EMERGENCY BREAKER AND GENERATOR RECEPTACLE–RUSSELL STOLL JRS1044FR (FOR 100 AMP SERVICE)
3) PUMP BREAKERS
4) CONTROL CIRCUIT BREAKER
5) ALTERNATOR
6) HIGH LEVEL FLASHING ALARM LIGHT
7) HIGH LEVEL HORN ALARM WITH SILENCE – WHEN SILENCE LIGHT STAYS ON
8) LIGHTNING ARRESTOR
9) SURGE SUPPRESOR
10) PHASE/UNDER VOLTAGE MONITORING RELAY IF 3 PHASE, UNDER VOLTAGE MONITORING RELAY IF SINGLE PHASE
11) NEMA RATED MOTOR STARTERS WITH OVERLOAD PROTECTION FOR ALL POWER LEGS
12) ELAPSE TIME METERS
13) YASKAWA VFD ON SINGLE PHASE SYSTEM.

TYPICAL SEQUENCE OF OPERATION:

ON RISE LEVEL:

LOWEST FLOAT WILL CLOSE CIRCUIT TO RELAY.
LEAD PUMP ON FLOAT CLOSES TO BRING LEAD PUMP ON.
IF LEAD DOES NOT RECEDE AND CONTINUES TO RISE, THE LAG FLOAT WILL CLOSE AND BRING ON THE LAG PUMP. FURTHER RISING OF LEVEL IN WETWELL WILL CLOSE 4TH FLOAT (HIGH LEVEL) AND ACTIVATE THE HIGH LEVEL ALARM LIGHT AND HORNS.

ON FALLING LEVEL:

ALL PUMPS WILL DE–ENERGIZE AT THE OPENING OF THE LOWEST (OFF) FLOAT

CONTROL CIRCUITRY WILL BE SUCH THAT NO FLOAT WILL DEPEND ON ANOTHER FLOAT FOR ITS CONTROL POWER.

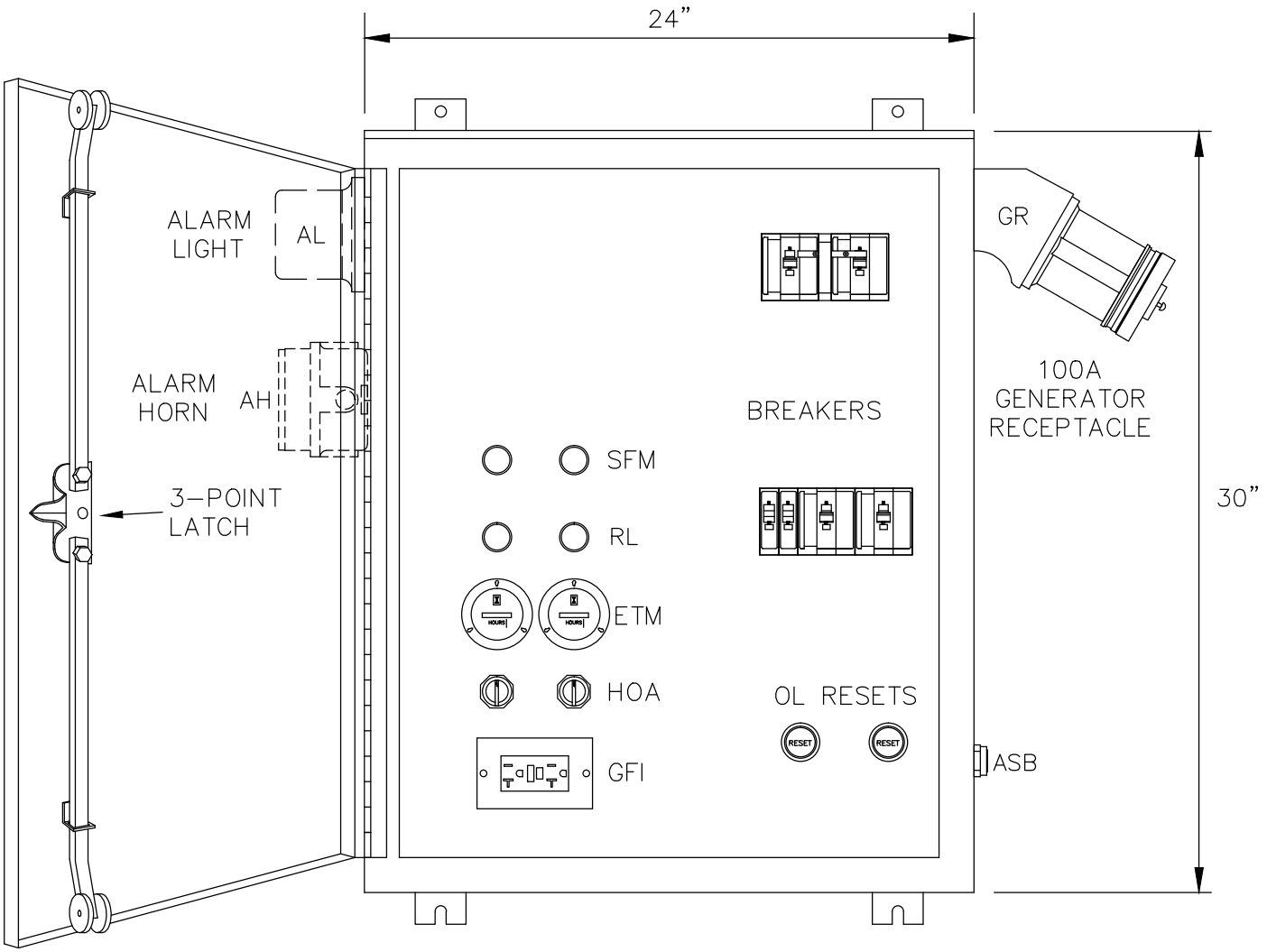
CONTROL PANEL SCHEMATICS, IN PLASTIC LAMINATE, IS TO BE AFFIXED TO THE INSIDE OF THE OUTER DOOR.

ALL WIRING SHALL BE NUMBERED.

IN THE EVENT THE PUMPS BEING FURNISHED REQUIRE SEAL FAILURE COMPONENTS AND INDICATION TO VALIDATE WARRANTY, THESE COMPONENTS SHALL BE FURNISHED AS REQUIRED.

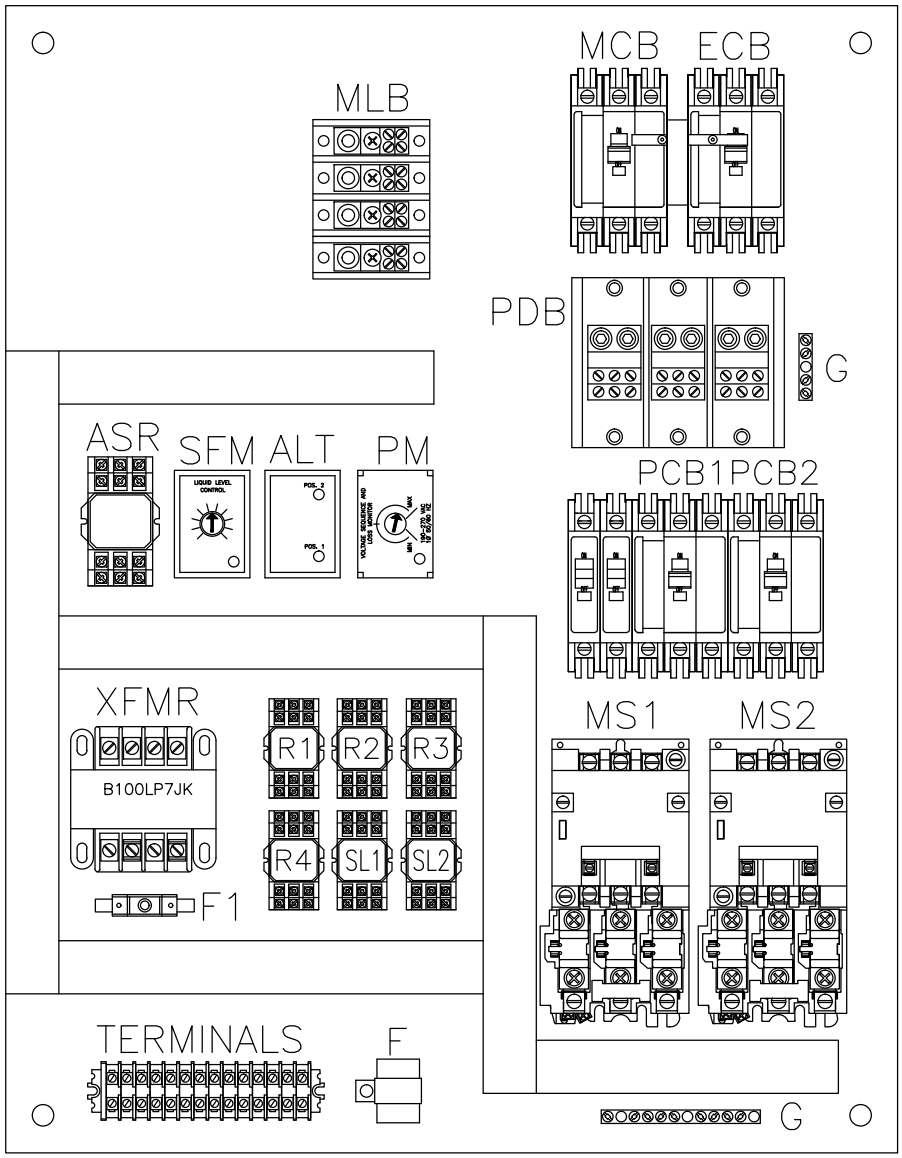
ALL COMPONENT LABELS SHALL BE OF THE LASER PRINTED MYLAR PLASTIC LABELS.

A 24 HOUR EMERGENCY TELEPHONE CONTACT SHALL BE ATTACHED TO CONTROL PANEL COVER "FOR EMERGENCIES CONTACT MARTIN COUNTY UTILITIES AT TEL : 772–221–1442"



MAIN ENCLOSURE : NEMA 3R RATED, FABRICATED FROM 304 STAINLESS STEEL, WELDED CONSTRUCTION, INCLUDING INTEGRAL WELDED RAIN GUARD (3 PT. LATCH ON OUTER DOOR).
BACKPANEL : 12 GAUGE STEEL WITH WHITE ENAMEL.
HINGED INNER DOOR : FABRICATED FROM .080 ALUMINUM.

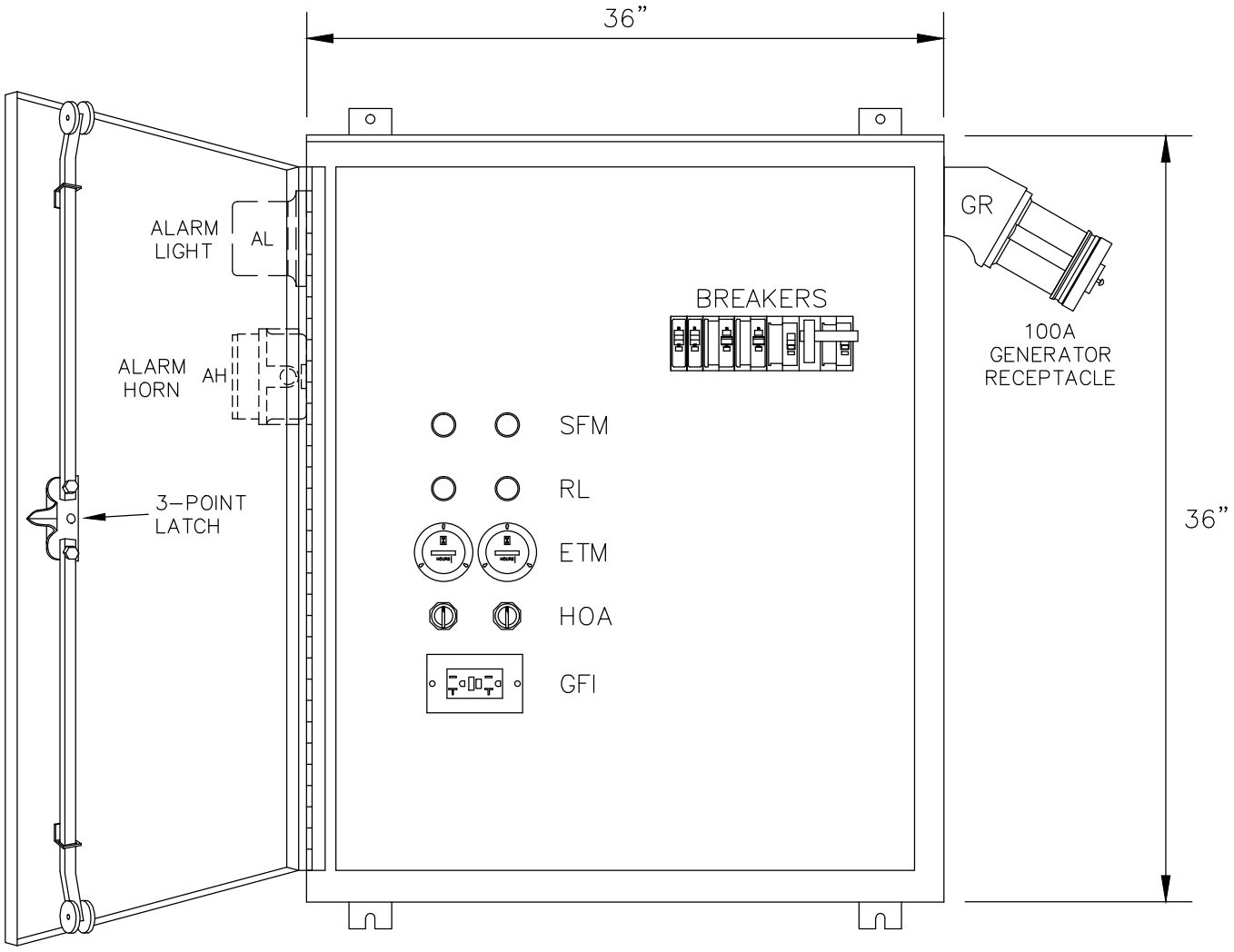
ENCLOSURE AND DEADFRONT LAYOUT THREE PHASE



BACKPANEL LAYOUT – THREE PHASE

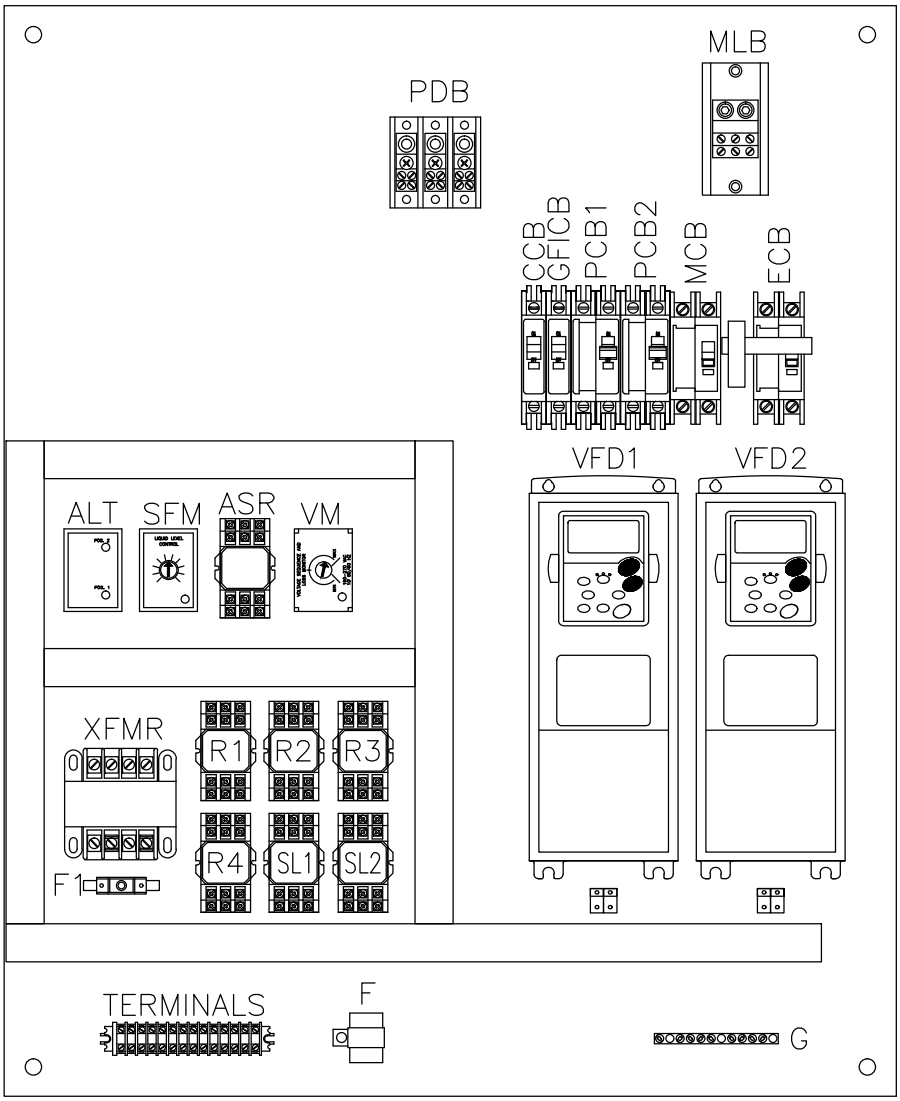
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "B" LIFT STATION – CONTROL PANEL BACKPANEL LAYOUT (THREE PHASE)	DWG No.
AUGUST 2016		67A



MAIN ENCLOSURE : NEMA 3R RATED, FABRICATED FROM 304 STAINLESS STEEL, WELDED CONSTRUCTION, INCLUDING INTEGRAL WELDED RAIN GUARD (3 PT. LATCH ON OUTER DOOR).
BACKPANEL : 12 GAUGE STEEL WITH WHITE ENAMEL.
HINGED INNER DOOR : FABRICATED FROM .080 ALUMINUM.

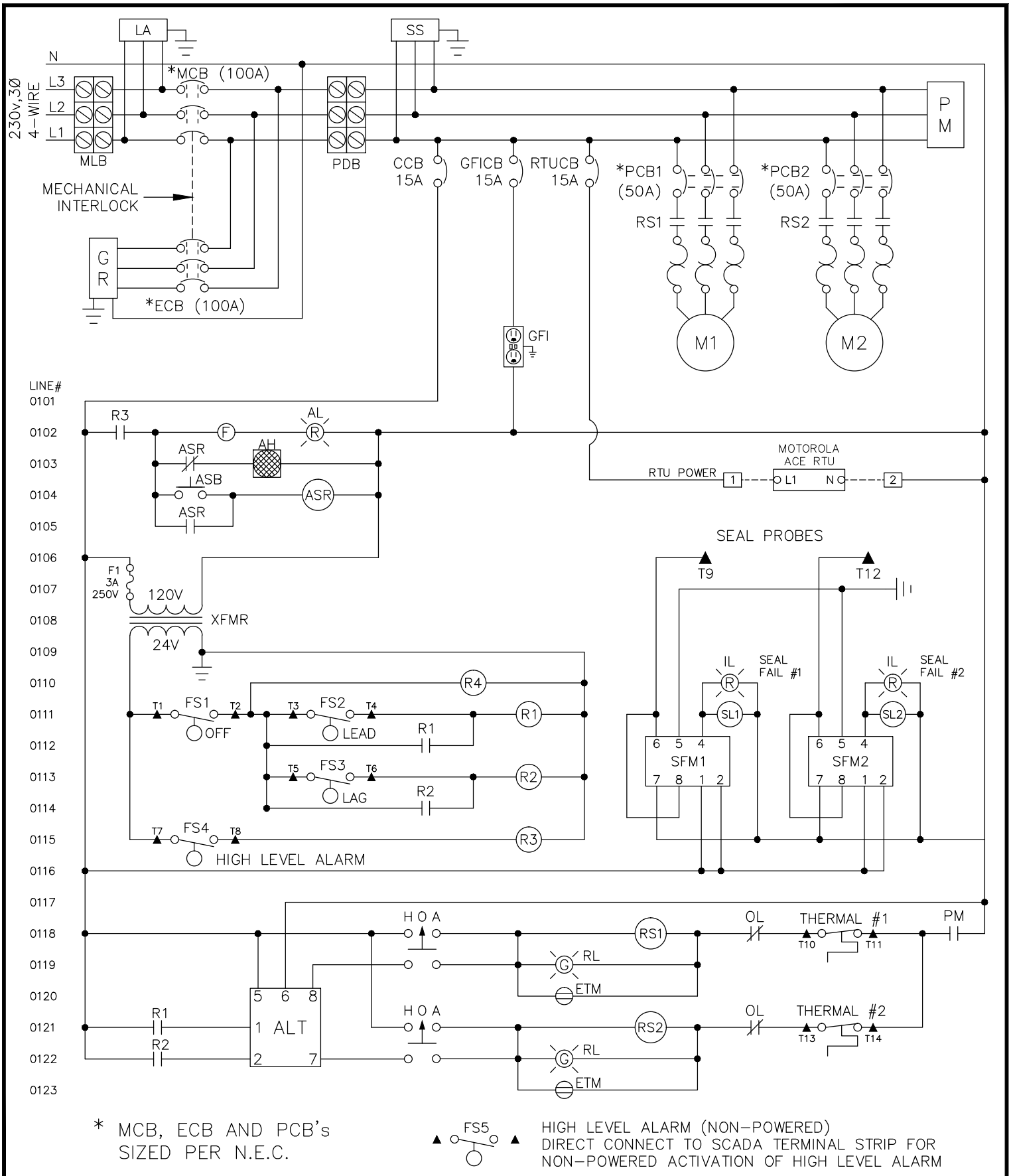
ENCLOSURE AND DEADFRONT LAYOUT SINGLE PHASE



BACKPANEL LAYOUT – SINGLE PHASE

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "B" LIFT STATION – CONTROL PANEL BACKPANEL LAYOUT (SINGLE PHASE)	DWG No.
AUGUST 2016		68A



* MCB, ECB AND PCB's SIZED PER N.E.C.

FS5 — HIGH LEVEL ALARM (NON-POWERED) DIRECT CONNECT TO SCADA TERMINAL STRIP FOR NON-POWERED ACTIVATION OF HIGH LEVEL ALARM

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "B" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (THREE PHASE)	DWG No.
AUGUST 2016		69

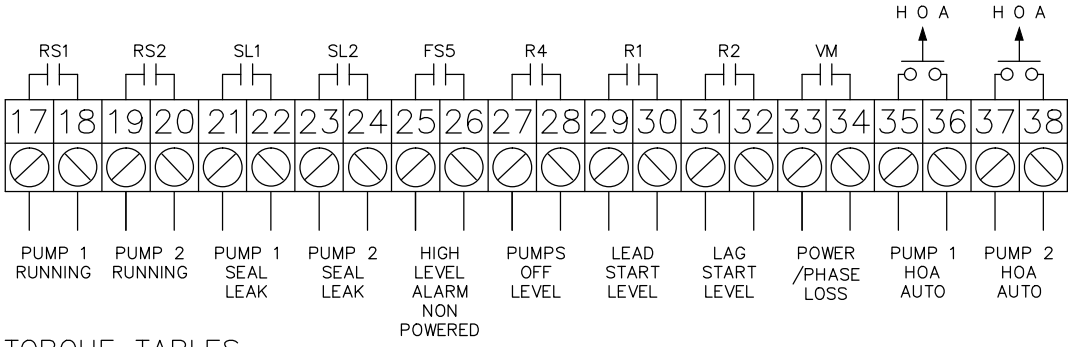
NOTES:

1. CONTROL TERMINAL IN MAIN PANEL
2. ⊡ NEUTRAL TERMINAL AND GROUND LUGS IN MAIN PANEL
3. ○ TERMINAL IN JUNCTION BOX
4. — — — FIELD WIRING (EXTERNAL TO CONTROL PANEL)
5. ——— PANEL WIRING
6. SEAL ALL CONDUITS ENTERING CONTROL PANEL
7. CONTROL PANEL IS UL508A LABELED
8. INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE N.E.C.
9. MINIMUM #16 AWG WIRE AT 600V

CONTROL WIRE COLOR CODE

120VAC HOT	RED	24VDC POSITIVE (+)	ORANGE
120VAC NEUTRAL	WHITE	24VDC NEGATIVE (−)	BROWN
24VAC HOT	BLUE	12VDC POSITIVE (+)	RED
POWER FROM OUTSIDE PANEL SOURCE & RTU CONNECTIONS	YELLOW	12VDC NEGATIVE (−)	BLACK

TERMINAL STRIP IN CONTROL PANEL FOR SCADA



TORQUE TABLES

CONTROL TERMINALS
RECOMMENDED TIGHTENING TORQUE

TERMINAL	TORQUE
SIZE 2.5	4.4 in/lb.
SIZE 4.0	4.4 in/lb.
SIZE 6.0	7.0 in/lb.
SIZE 16.0	10.6 in/lb.
SIZE 35.0	26.5 in/lb.

GROUND LUG
RECOMMENDED TIGHTENING TORQUE

WIRE SIZE	TORQUE
AWG 14 - 10	35.0 in/lb.
AWG 8	40.0 in/lb.
AWG 6 - 4	45.0 in/lb.
AWG 3 - 2	50.0 in/lb.

BLUE – TYPICAL OF ALL

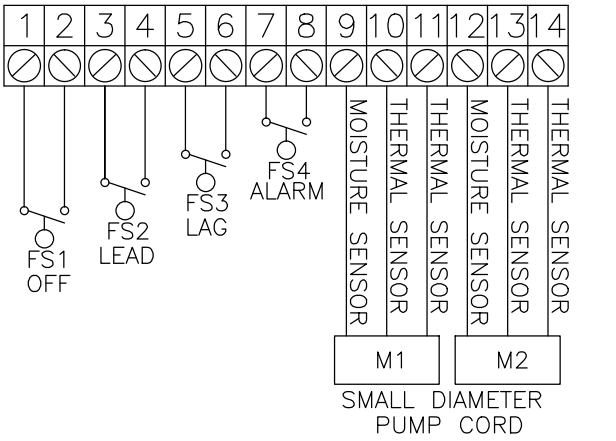
BILL OF MATERIALS			
QTY.	ABBR.	DESCRIPTION	MANUFACTURER, PART#
1	ENC	ENCLOSURE, 304SS, NEMA 3R/12	HOFFMAN, 30Hx24Wx12D-3R
1	MCB	MAIN CIRCUIT BREAKER	SQ.D, QOU360 *
1	ECB	EMERGENCY CIRCUIT BREAKER	SQ.D, QOU360 *
2	PCB1,2	PUMP CIRCUIT BREAKER	SQ.D, QOU330 *
1	RTUCB	RTU CIRCUIT BREAKER	SQ.D, QOU115
1	CCB	CONTROL CIRCUIT BREAKER	SQ.D, QOU115
1	GFICB	GFI CIRCUIT BREAKER	SQ.D, QOU115
1	PM	PHASE MONITOR	DIVERSIFIED, SLA-230-ASA
1	XFMR	TRANSFORMER 120V/24V	EATON, C0100E1B OR SQ. D, 9070T SERIES **
1	SS	SURGE SUPPRESSOR	SQ.D, 6671-SDSA3650
2	MS1,2	MOTOR STARTER	SQ.D, 8536-SCO3-V02S
6	OL	OVERLOAD HEATER	SQ.D, B-28
1	GR	GENERATOR RECEPTACLE	RUSSELL STOLL, JRSB1044FR
1	GFI	GFI RECEPTACLE	HUBBEL GF151L
2	IL	INDICATING LIGHT	EATON, C22-L-XR-120 & M22-XLH-R
2	RL	RUN LIGHT	SQ.D, 9001-SKP38-G9
4	R1-4	CONTROL RELAY 24V	SQ.D, 8501-KU13-V14
2	HOA	HAND OFF AUTO SWITCH	SQ.D, 9001-SKS43BH13
1	AL	ALARM LIGHT	RAB VAPORPROOF VP100DG
1	AH	ALARM HORN	FEDERAL VIBRATONE, 350-100V, SERIES B1
1	ASB	ALARM SILENCE BUTTON	SQ.D, 9001-SKR1BH5
1	ASR	ALARM SILENCE RELAY 120V	SQ.D, 8501-KU13-V20
2	SL1,2	SEAL FAIL RELAY 120V	SQ.D, 8501-KU13-V20
2	SFM1,2	SEAL FAIL MODULE	SSAC, LLC54BA
1	J-BOX	JUNCTION BOX, 304SS, NEMA 4X	CUSTOM EQUIPMENT, 10X24X6
2	P-TER	PUMP TERMINALS	MARATHON, 1333555
2	ETM	ELAPSED TIME METER	EATON, 6-T-3H-508RPM-406
1	ALT	ALTERNATOR	DIVERSIFIED, ARB-120-AEA
1	F	FLASHER	INGRAM, SSF-150W
1	F1	FUSE 3A 250V	BUSS, GDB 3A
1	LA	LIGHTNING ARRESTOR	SQ.D, 6671-SDSA3650
1	SC	SURGE CAPACITOR	
22		CONTROL TERMINALS	WAGO 280 SERIES

NOTES:

* PUMP MANUFACTURER SHALL SIZE THESE BREAKERS. SUBMIT SIZING CONFIRMATION WITH PANEL SHOP DRAWINGS.

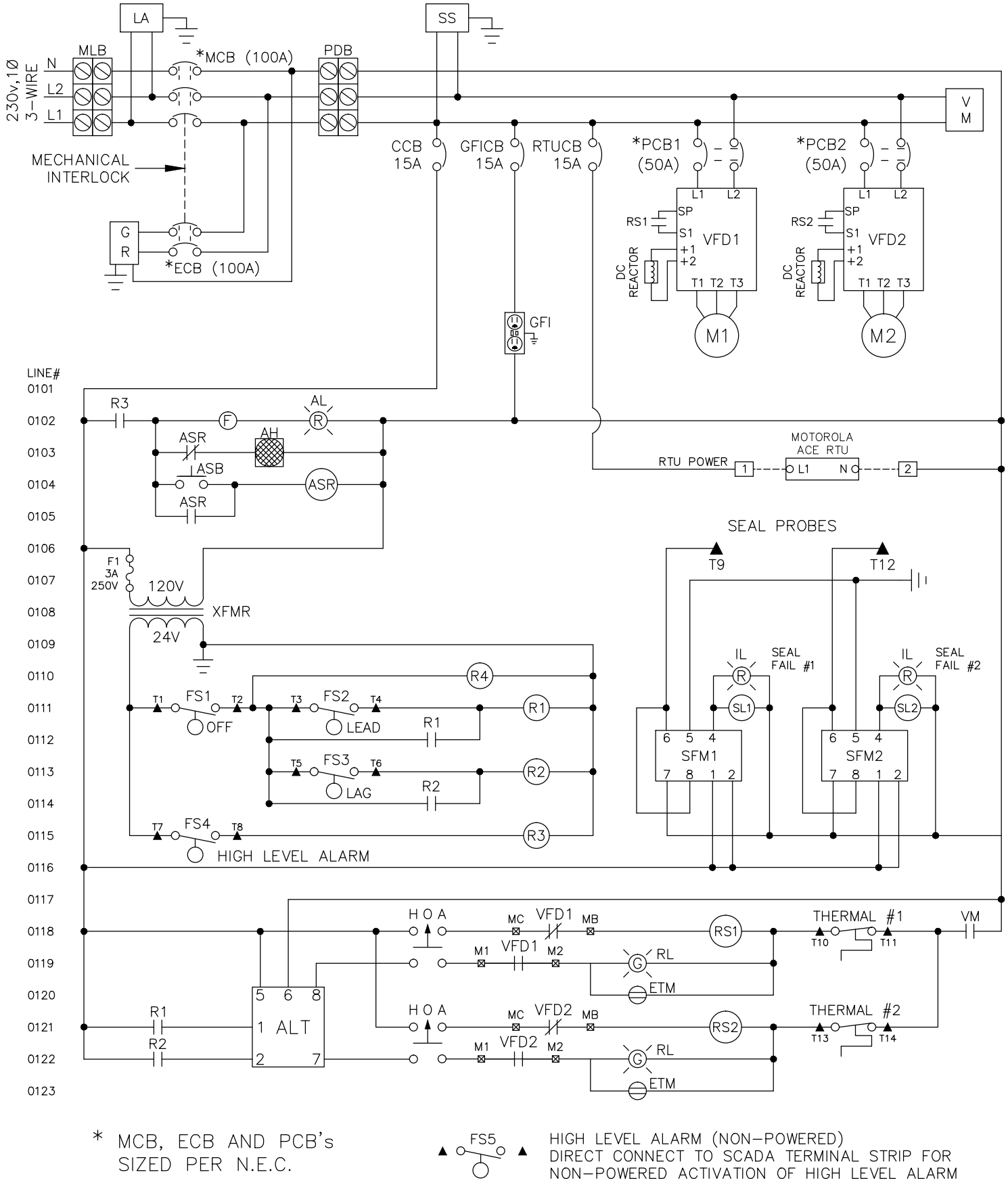
** CONTROL POWER TRANSFORMER TO BE SIZED FOR ALL LOADS OPERATING SIMULTANEOUSLY PLUS ONE SIZE LARGER.

TERMINAL STRIP IN JUNCTION BOX & CONTROL PANEL



MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "B" LIFT STATION – CONTROL PANEL BILL OF MATERIALS (THREE PHASE)	DWG No.
AUGUST 2016		69B



* MCB, ECB AND PCB's SIZED PER N.E.C.

▲ FS5 ▲ HIGH LEVEL ALARM (NON-POWERED) DIRECT CONNECT TO SCADA TERMINAL STRIP FOR NON-POWERED ACTIVATION OF HIGH LEVEL ALARM

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "B" LIFT STATION – CONTROL PANEL WIRING DIAGRAM (SINGLE PHASE)	DWG No.
AUGUST 2016		70

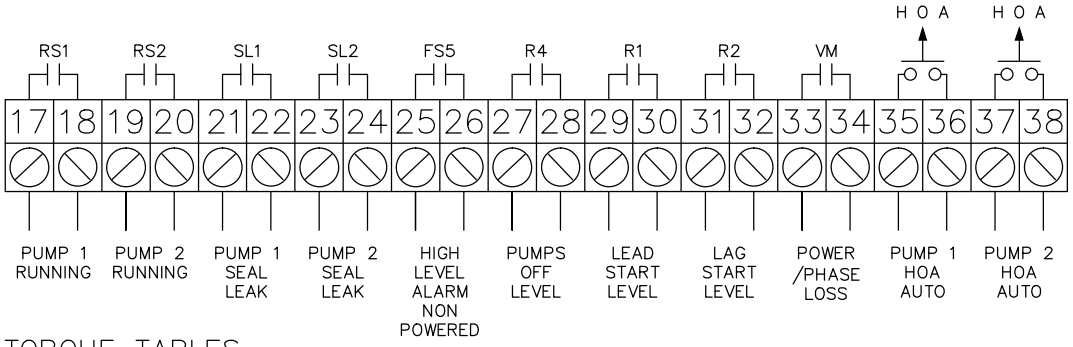
NOTES:

1. CONTROL TERMINAL IN MAIN PANEL
2. ⊡ NEUTRAL TERMINAL AND GROUND LUGS IN MAIN PANEL
3. ○ TERMINAL IN JUNCTION BOX
4. — — — FIELD WIRING (EXTERNAL TO CONTROL PANEL)
5. ——— PANEL WIRING
6. SEAL ALL CONDUITS ENTERING CONTROL PANEL
7. CONTROL PANEL IS UL508A LABELED
8. INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE N.E.C.
9. MINIMUM #16 AWG WIRE AT 600V

CONTROL WIRE COLOR CODE

120VAC HOT	RED	24VDC POSITIVE (+)	ORANGE
120VAC NEUTRAL	WHITE	24VDC NEGATIVE (−)	BROWN
24VAC HOT	BLUE	12VDC POSITIVE (+)	RED
POWER FROM OUTSIDE PANEL SOURCE & RTU CONNECTIONS	YELLOW	12VDC NEGATIVE (−)	BLACK

TERMINAL STRIP IN CONTROL PANEL FOR SCADA



TORQUE TABLES

CONTROL TERMINALS
RECOMMENDED TIGHTENING TORQUE

TERMINAL	TORQUE
SIZE 2.5	4.4 in/lb.
SIZE 4.0	4.4 in/lb.
SIZE 6.0	7.0 in/lb.
SIZE 16.0	10.6 in/lb.
SIZE 35.0	26.5 in/lb.

GROUND LUG
RECOMMENDED TIGHTENING TORQUE

WIRE SIZE	TORQUE
AWG 14 - 10	35.0 in/lb.
AWG 8	40.0 in/lb.
AWG 6 - 4	45.0 in/lb.
AWG 3 - 2	50.0 in/lb.

BLUE — TYPICAL OF ALL

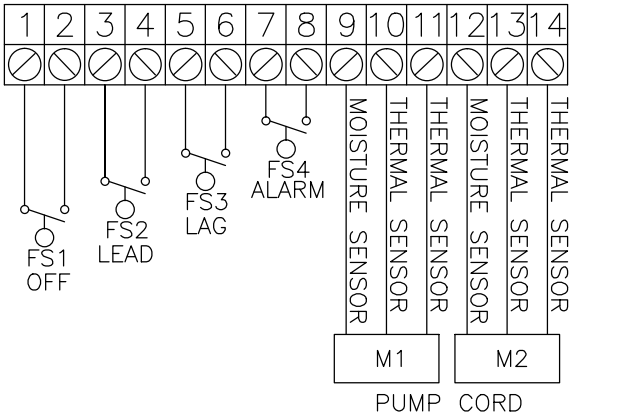
BILL OF MATERIALS			
QTY.	ABBR.	DESCRIPTION	MANUFACTURER, PART#
1	ENC	ENCLOSURE, 304 SS, NEMA3R/12	HOFFMAN, 36x36x12-3R
1	MCB	MAIN CIRCUIT BREAKER	SQ.D, QOU250 *
1	ECB	EMERGENCY CIRCUIT BREAKER	SQ.D, QOU250 *
2	PCB1,2	PUMP CIRCUIT BREAKER	SQ.D, QOU225 *
1	RTUCB	RTU CIRCUIT BREAKER	SQ.D, QOU115
1	CCB	CONTROL CIRCUIT BREAKER	SQ.D, QOU115
1	GFICB	GFI CIRCUIT BREAKER	SQ.D, QOU115
1	VM	VOLTAGE MONITOR	DIVERSIFIED, UOA-240-ALA Check this
1	XFMR	TRANSFORMER 120V/24V	EATON, C0100E1B or SQ.D. 9070T Series **
1	SS	SURGE SUPPRESSOR	SQ.D, 6671-SDSA1175
2	VFD1,2	VARIABLE FREQUENCY DRIVES	YASKAWA CIMR-PW2A0056FAA
2		DC BUS REACTOR (OPEN TYPE)	YASKAWA URX000059
1	GR	GENERATOR RECEPTACLE	RUSSELL STOLL, JRSB1044FR
1	GFI	GFI RECEPTACLE	HUBBELL GF15IL
2	IL	INDICATING LIGHT	EATON, C22-L-XR-120 & M22-XLH-R
2	RL	RUN LIGHT, GREEN	SQ.D, 9001-SKP38-G9
4	R1-4	CONTROL RELAYS 24V	A.B. 700-HC14A24
2	HOA	HAND OFF AUTO SWITCH	SQ.D, 9001-SKS43BH13
1	AL	ALARM LIGHT	RAB VAPORPROOF VP100DG
1	AH	ALARM HORN	FEDERAL VIBRATONE, 350-100V, SERIES B1
1	ASB	ALARM SILENCE BUTTON	SQ.D, 9001-SKR1BH5
1	ASR	ALARM SILENCE RELAY 120V	SQ.D, 8501-KU13-V20
2	SL1,2	SEAL FAIL RELAY 120V	SQ.D, 8501-KU13-V20
2	SFM1,2	SEAL FAIL MODULE	SSAC, LLC54BA
2	SR	START RELAY	MARS, 19007
1	J-BOX	JUNCTION BOX, 304SS, NEMA 4X	CUSTOM EQUIPMENT, 10X24X6
2	P-TER	PUMP TERMINALS	MARATHON, 1333555
2	ETM	ELAPSED TIME METER	EATON, 6-T-3H-508RPM-406
1	ALT	ALTERNATOR	DIVERSIFIED, ARB-120-AEA
1	F	FLASHER	INGRAM, SSF-150W
1	F1	FUSE 3A 250V	BUSS, GDB 3A
1	LA	LIGHTNING ARRESTOR	SQ.D, 6671-SDSA1175
1	SC	SURGE CAPACITOR	REFER TO ELECTRICAL DWGS.
22		CONTROL TERMINALS	WAGO 280 SERIES

NOTES:

* PUMP MANUFACTURER SHALL SIZE THESE BREAKERS. SUBMIT SIZING CONFIRMATION WITH PANEL SHOP DRAWINGS.

** CONTROL POWER TRANSFORMER TO BE SIZED FOR ALL LOADS OPERATING SIMULTANEOUSLY PLUS ONE SIZE LARGER.

TERMINAL STRIP IN JUNCTION BOX & CONTROL PANEL



MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPE "B" LIFT STATION – CONTROL PANEL BILL OF MATERIALS (SINGLE PHASE)	DWG No.
AUGUST 2016		70B

TYPE "B" PACKAGED FIBERGLASS PUMP LIFT STATIONS, PACKAGED FIBERGLASS VALVE BOXES, AND STANDARD CONTROL PANELS

FURNISH AND INSTALL A COMPLETE PACKAGED TYPE "B" GRINDER PUMP STATION AS DESCRIBED BELOW:

SPECIFICATIONS

DESIGN CONDITIONS

MODEL	_____	H.P.	_____
VOLT	_____	PHASE	_____
DISCHARGE	_____	IMPELLER	_____
GPM	_____	TDH	_____

PUMP: MILWAUKEE, MYERS, FLYGT, BARNES – GRINDER PUMP 2.0 – 7.5 H.P.

THE PUMP SHALL HAVE AN INTEGRALLY BUILT IN GRINDER UNIT AND SUBMERSIBLE TYPE MOTOR. THE PUMP SHALL BE SUSPENDED IN THE BASIN BY TWO (2) 1" GUIDE RAILS AND QUICK DISCONNECT LIFT OUT MOUNTING ASSEMBLY. SOLIDS SHALL BE FED IN AN UPFLOW DIRECTION TO THE GRINDER MECHANISM WITH NO OBSTRUCTIONS BELOW THE GRINDER INLET.

THE GRINDER UNIT SHALL BE CAPABLE OF CUTTING SOLID MATERIAL FOUND IN NORMAL DOMESTIC SEWAGE, INCLUDING REASONABLE AMOUNTS OF FOREIGN OBJECTS, SUCH AS WOOD PLASTIC, GLASS, RUBBER, SANITARY NAPKINS, DISPOSABLE DIAPERS AND PANTY HOSE INTO A FINE SLURRY THAT WILL PASS FREELY THROUGH THE PUMP, SERVICE LINE AND FORCE MAIN.

MOTOR

THE PUMP MOTOR SHALL BE OF THE SUBMERSIBLE TYPE RATED FOR 2 – 7.5 HORSEPOWER AT 3450 RPM. MOTOR SHALL BE THREE PHASE, 230 VOLT, 60 HERTZ.

THE STATOR WINDING SHALL BE THE OPEN TYPE WITH CLASS F INSULATION RATED FOR 105° C MAXIMUM OPERATING TEMPERATURE. THE WINDING HOUSING WILL BE FILLED WITH CLEAN DIELECTRIC OIL THAT WILL LUBRICATE BEARINGS, SEALS AND TRANSFER HEAT FROM THE WINDINGS TO THE OUTER SHELL. THE MOTOR STATOR IS TO BE PRESSED INTO THE MOTOR HOUSING FOR OPTIMUM CONCENTRICITY AND ALIGNMENT, AND MAXIMUM HEAT TRANSFER. THE MOTOR SHALL BE CAPABLE OF OPERATING OVER FULL RANGE OF PERFORMANCE CURVE WITHOUT OVERLOADING MOTOR AND CAUSING ANY OBJECTIONAL NOISE OR VIBRATION.

THE MOTOR SHALL HAVE TWO BEARINGS TO SUPPORT THE ROTOR; AN UPPER BALL BEARING TO ACCOMMODATE THRUST LOADS AND A LOWER BALL BEARING TO TAKE RADIAL LOADS. BALL BEARINGS SHALL BE DESIGNED FOR A LB–10 LIFE (50,000 HOURS).

A HEAT SENSOR THERMOSTAT AND OVERLOAD SHALL BE ATTACHED TO THE TOP END OF THE MOTOR WINDINGS AND SHALL STOP THE MOTOR IF THE MOTOR WINDING TEMPERATURE REACHES 200° F. THE HIGH TEMPERATURE SHUTOFF WILL CAUSE THE PUMP TO CEASE OPERATION, SHOULD A CONTROL FAILURE CAUSE THE PUMP TO RUN IN A DRY WET WELL. THE THERMOSTAT SHALL RESET AUTOMATICALLY WHEN THE MOTOR COOLS TO A SAFE OPERATING TEMPERATURE.

SEAL CHAMBER

THE MOTOR SHALL BE PROTECTED BY TWO (2) ROTARY SHAFT SEALS MOUNTED IN TANDEM WITH AN OIL FILLED CHAMBER SEPARATING THE SEALS. THE SEALS SHALL HAVE CARBON / CERAMIC / SILICON SEAL FACES DIAMOND LAPPED TO A TOLERANCE OF ONE LIGHT BAND. METAL PARTS AND SPRINGS FOR SEALS SHALL BE STAINLESS STEEL. AN ELECTRICAL SENSING PROBE SHALL BE MOUNTED IN THE SEAL CHAMBER TO DETECT ANY WATER LEAKAGE PAST THE LOWER SEAL.

CONTINUED ON 66A

GRINDER ASSEMBLY & CONSTRUCTION

THE GRINDER ASSEMBLY SHALL CONSIST OF A ROTATING RADIAL CUTTER AND A STATIONARY SHREDDING RING, AND SHALL BE MOUNTED DIRECTLY BELOW THE VOLUTE PASSAGE. THE ROTATING CUTTER SHALL BE THREADED ONTO THE STAINLESS STEEL SHAFT AND SHALL BE LOCKED WITH A SCREW AND WASHER. THE STATIONARY SHREDDING RING SHALL BE PRESSED ONTO AN IRON HOLDING FLANGE FOR EASY REMOVAL. THE FLANGE SHALL BE PROVIDED WITH TAPPED BACK-OFF HOLES SO THAT SCREWS CAN BE USED TO PUSH THE SHREDDING RING FROM THE HOUSING. BOTH THE RADIAL CUTTER AND SHREDDING RING SHALL BE REMOVABLE FROM THE OUTSIDE WITHOUT DISMANTLING PUMP. GRINDER ASSEMBLY SHALL BE OF SUCH CONSTRUCTION THAT NO CLEARANCE ADJUSTMENTS ARE REQUIRED WHEN ASSEMBLING. ALL GRINDING OF SOLIDS SHALL BE FROM THE ACTION OF THE RADIAL CUTTER AGAINST THE SHREDDING RING. THE RADIAL CUTTER AND SHREDDING RING SHALL BE OF #440 STAINLESS STEEL HARDENED TO 58-60 ROCKWELL C.

PUMP IMPELLER

THE PUMP IMPELLER SHALL BE OF THE RECESSED TYPE TO PROVIDE AN OPEN UNOBSTRUCTED PASSAGE THROUGH THE VOLUTE FOR THE GROUND SOLIDS. THE IMPELLER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL HAVE PUMP OUT VANES ON THE BACK SIDE OF THE IMPELLER TO KEEP SOLIDS FROM LOWER SEAL AND REDUCE PRESSURE AT THE SEAL FACES. IMPELLER SHALL BE THREADED ONTO THE STAINLESS STEEL SHAFT.

PUMP & MOTOR CASTINGS

ALL IRON CASTING SHALL BE OF HIGH TENSILE CAST IRON AND SHALL BE PROPERLY CLEANED, PRE-TREATED WITH CHROMIC RINSE, AND PAINTED WITH A HIGH QUALITY ENAMEL PAINT. ALL PUMP COMPONENTS THAT ARE NOT CAST IRON OR STAINLESS STEEL SHALL BE GALVANIZED OR PAINTED WITH BAKED-ON EPOXY. ALL FASTENERS SHALL BE #302 STAINLESS STEEL.

WET WELL

SHALL BE A FILAMENT WOUND FIBERGLASS BASIN USING A COMMERCIAL GRADE OF GLASS FIBER HAVING A COUPLING AGENT WHICH WILL PROVIDE A SUITABLE BOND BETWEEN THE GLASS REINFORCEMENT AND THE RESIN. THE LAMINATE SHALL CONSIST OF AN INNER SURFACE, AN INTERIOR LAYER, AND AN EXTERIOR LAYER OF LAMINATE BODY. THE INNER SURFACE SHALL BE FREE OF CRACKS AND CRAZING WITH A SMOOTH FINISH. SOME WAVINESS IS PERMISSIBLE AS LONG AS THE SURFACE IS SMOOTH AND FREE OF PITS. BETWEEN 0.010 AND 0.020 INCHES OF RESIN-RICH SURFACE SHALL BE PROVIDED. THE BASIN SHALL BE PROVIDED WITH AN ANTI-FLOATATION RING TO PREVENT RISING.

VALVE BOX

SHALL BE CPC MODEL VB3242 FIBERGLASS VALVE BOX WITH U.S. FOUNDRY APS-150 ALUMINUM VALVE BOX COVER. VALVE BOX SHALL BE PRE-PLUMBED USING ALL SCHEDULE 80 PVC PIPING AND FITTINGS, AND SHALL INCLUDE TWO (2), 2" SCHEDULE 80 PVC BALL CHECK VALVES, AND THREE (3), 2" SCHEDULE 80 PVC GATE VALVES. (ONE (1) 2" GATE VALVE IS SUPPLIED AS AN EMERGENCY PUMP-OUT). PVC PIPING IN VALVE BOX, AND WET WELL SHALL BE CONNECTED AND HELD IN PLACE BY CPC MODEL 32 RESILIENT MOUNT SEALING SYSTEM TO COMPENSATE FOR POSSIBLE UNEVEN SETTLING OF BASIN OR VALVE BOX. SYSTEM SHALL BE PRESSURE TESTED AT 150 P.S.I. PRIOR TO SHIPMENT.

ALUMINUM HATCH COVERS

SHALL BE FABRICATED FROM 1/4" ALUMINUM DIAMOND PLATE AND BUILT TO WITHSTAND A LOAD OF 300 P.S.F. AND SHALL BE MANUFACTURED BY U.S. FOUNDRY, HALLIDAY, OR EQUAL. STAINLESS STEEL BOLTS, NUTS AND HINGES - LOCKING STAPLE.

FLOATS

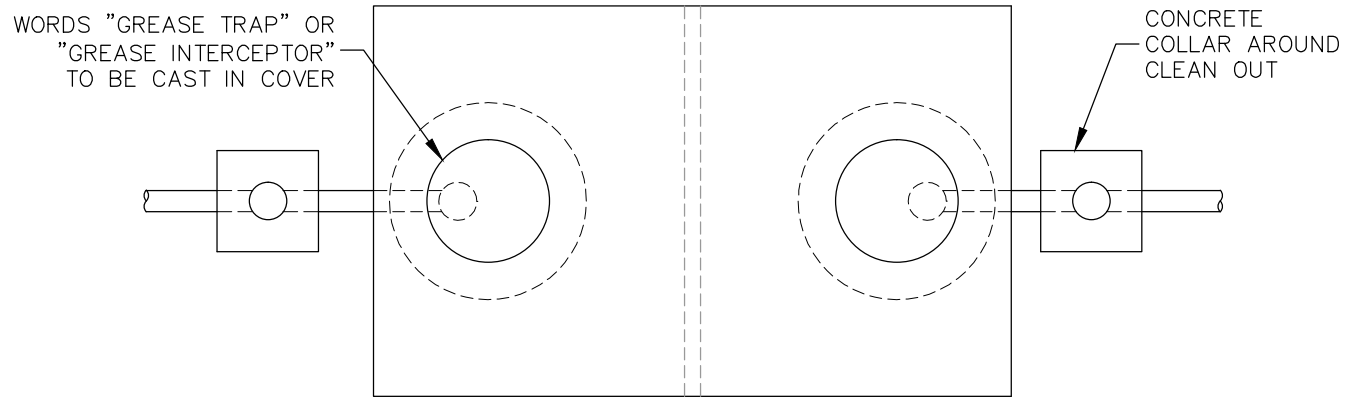
SHALL BE ANCHOR SCIENTIFIC S30N0 ROTO-FLOATS OR EQUAL.

ACCESSORIES

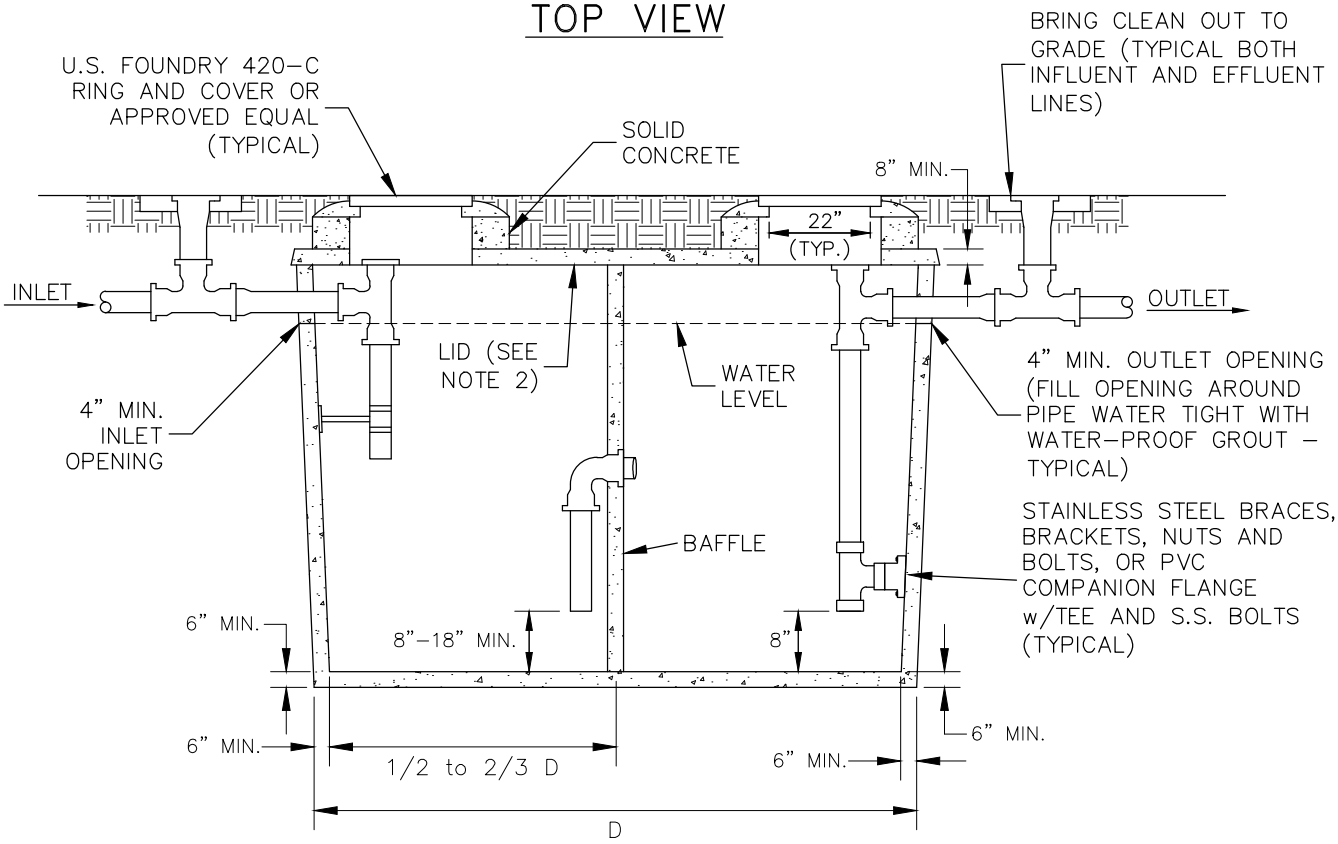
-- STAINLESS STEEL UPPER GUIDE BRACKETS
-- STAINLESS STEEL GUIDE RAILS
-- STAINLESS STEEL CABLE RACK
-- STAINLESS STEEL LIFT CABLES

ANTI-FLOATATION

CONCRETE IS REQUIRED TO PREVENT FLOATATION OF THE FIBERGLASS BASIN. THE ENGINEER OF RECORD SHALL PROVIDE SIGNED AND SEALED BUOYANCY CALCULATIONS TO UTILITY DEPARTMENT.



TOP VIEW

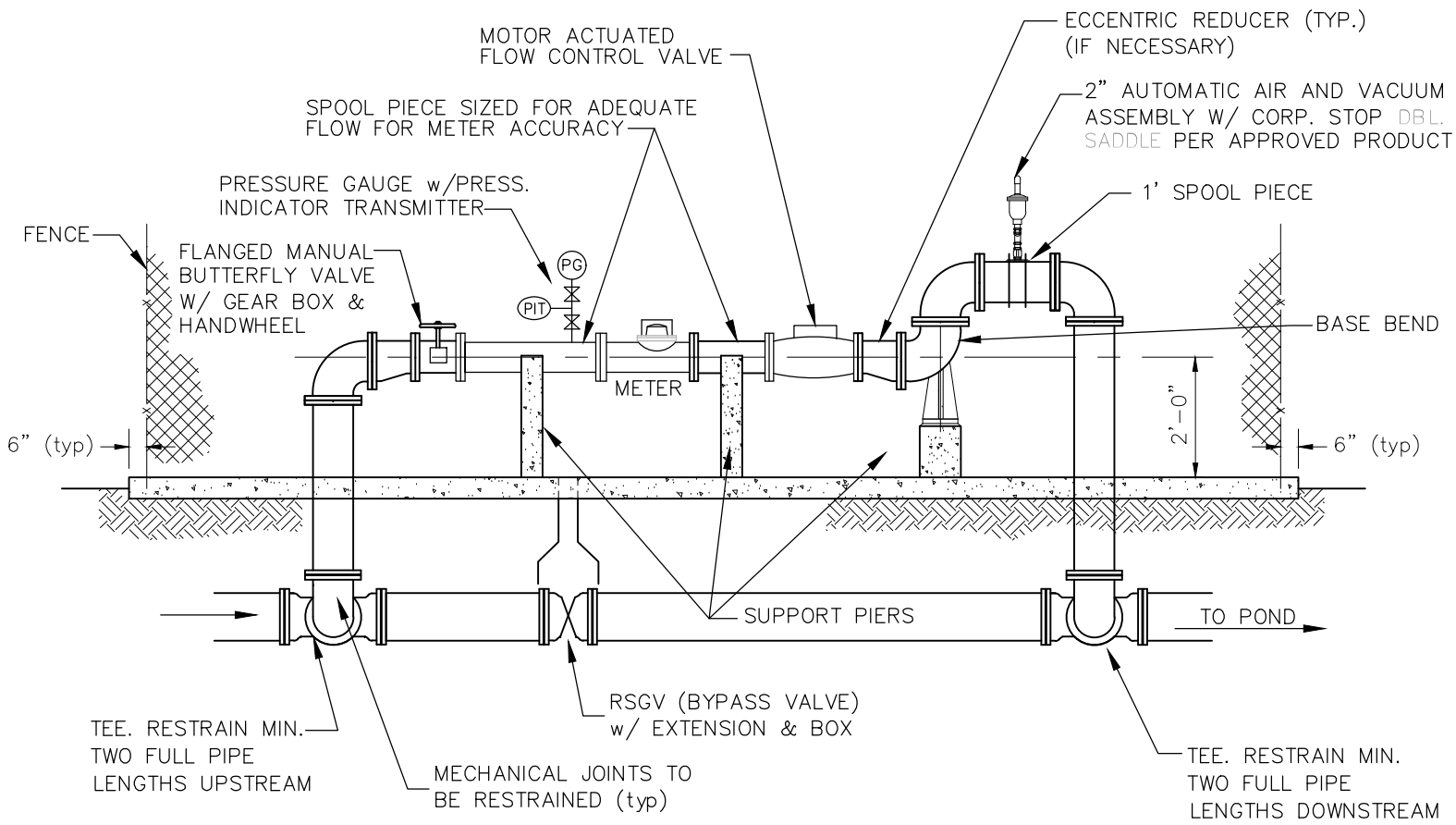


SECTION

NOTES:

1. GREASE TRAPS (SEPTIC TANKS) SHALL BE MANUFACTURED BY FLORIDA SEPTIC INC., SEBRING SEPTIC, AVERETT SEPTIC, OR APPROVED EQUAL. STATEMENT: "THIS CONCRETE STRUCTURE MEETS OR EXCEEDS ALL THE REQUIREMENTS FOR GREASE INTERCEPTORS/SEPTIC TANKS AS REQUIRED BY THE FLORIDA ADMINISTRATIVE CODE (F.A.C.), CHAPTERS 64E-6.013". TANK SIZES SHALL BE 750 GALLONS MINIMUM AND 1,250 GALLONS MAXIMUM AS REQUIRED BY THE F.A.C.. SIZING CALCULATIONS, (3 COPIES MINIMUM), SHALL THEN BE SIGNED AND SEALED BY THE ENGINEER-OF-RECORD AND FORWARDED TO THE DEPARTMENT FOR APPROVAL. NOTE THAT GENERATION RATES FOR ORDINARY RESTAURANTS SHALL BE 16 GPD PER SEAT PER MARTIN COUNTY UTILITY DEPARTMENTAL POLICY.
2. LID TYPES:
   A) 4" REGULAR LID
   B) 8" TRAFFIC BEARING LID
3. ALL INTERNAL COMPONENTS WILL BE CONSTRUCTED BY GREASE TRAP INSTALLER.
4. TANK INSPECTIONS WILL OCCUR WITH TANK ABOVE GROUND.
5. BAFFLE SHALL BE INSTALLED 1/2 (ONE HALF) TO 2/3 (TWO THIRDS) 'D'.
6. MEETS H-20 LOAD REQUIREMENTS.

BULK USER RECLAIMED WATER SYSTEM



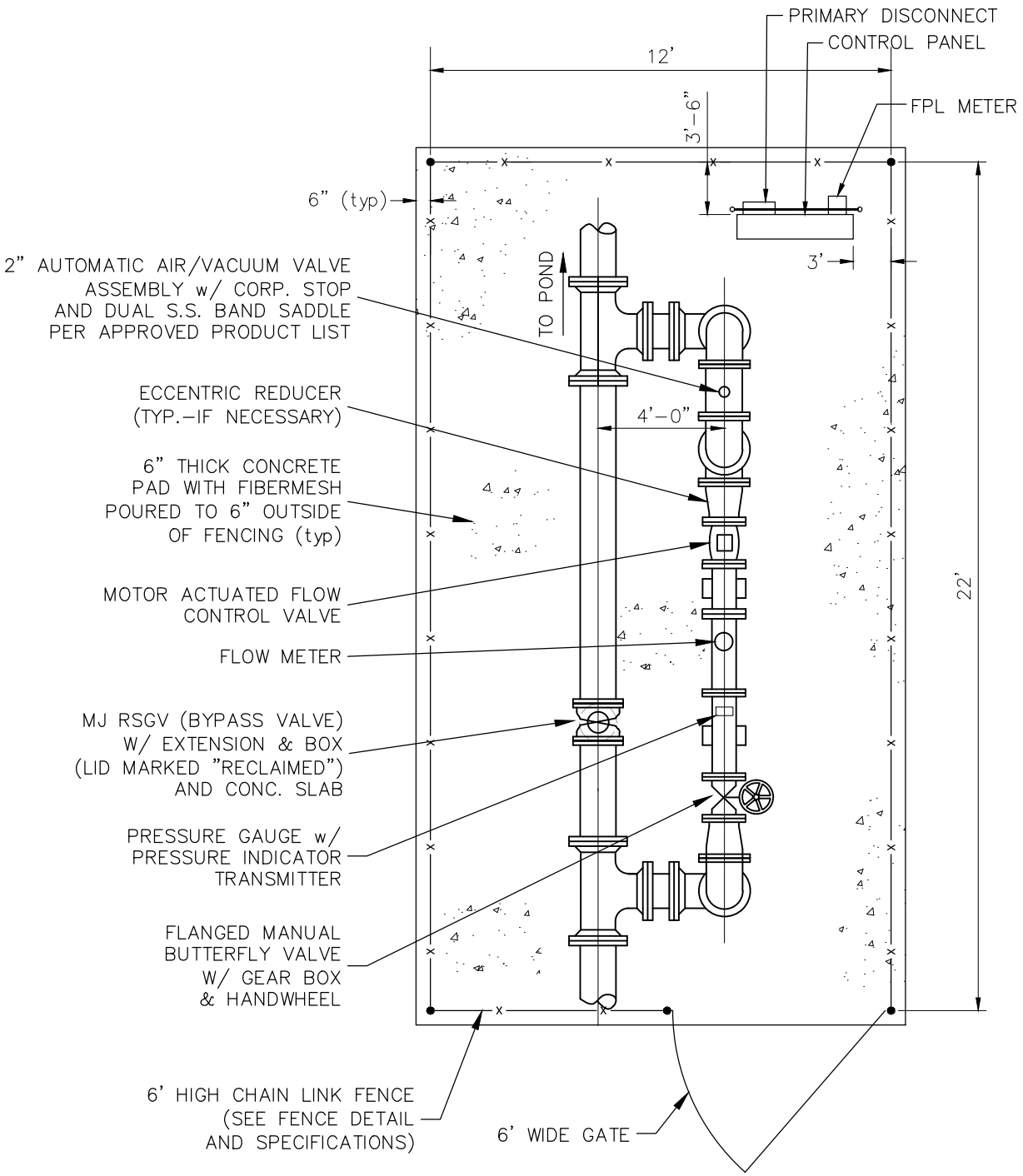
NOTES:

1. ALL FLANGED PIPE AND FITTINGS SHALL BE DUCTILE IRON, CEMENT LINED.
2. MECHANICAL JOINT FITTINGS REQUIRED BELOW GRADE AND FLANGED FITTINGS FOR ABOVE GRADE USE.
3. ALL ABOVE GRADE MATERIAL SHALL BE COATED WITH PANTONE PURPLE 522 PAINT PER THE FOLLOWING SPECIFICATION:

   TNEMEC
   Primer: TNEME-ALUMINUM MASTIC #135 (3.0 to 5.0 mils DFT)
   Intermediate Coat: Series 66 Epoxoline Hi-Build Epoxy (4.0 to 6.0 mils DFT)
   Finish Coat: Series 73 Endura-Shield III Urethane or equal (2.0 to 3.0 mils DFT)

4. CONCRETE SUPPORTS SHALL BE INSTALLED AS SHOWN. ALL CONCRETE SHALL BE 3000 PSI.
5. ALL ABOVE GROUND BOLTING SHALL BE STAINLESS STEEL.
6. PIPE SHALL BE SIZED BY ENGINEER.
7. CONCRETE MONOLITHIC SLAB POURED TO 6" OUTSIDE OF FENCING.

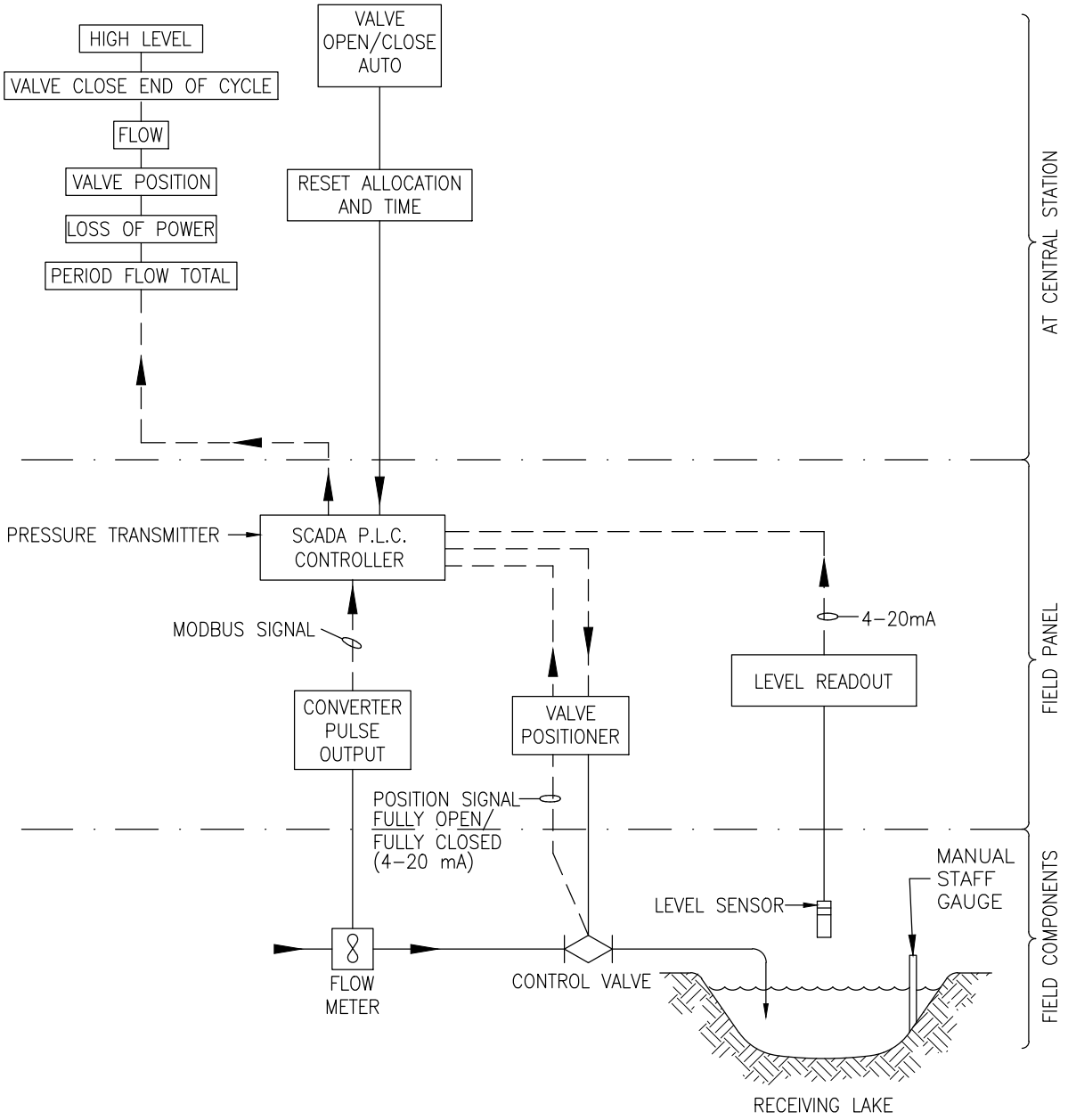
BULK USER RECLAIMED WATER SYSTEM



MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	RECLAIMED WATER METERING FACILITY PLAN (BULK USER)	DWG No.
AUGUST 2016		74

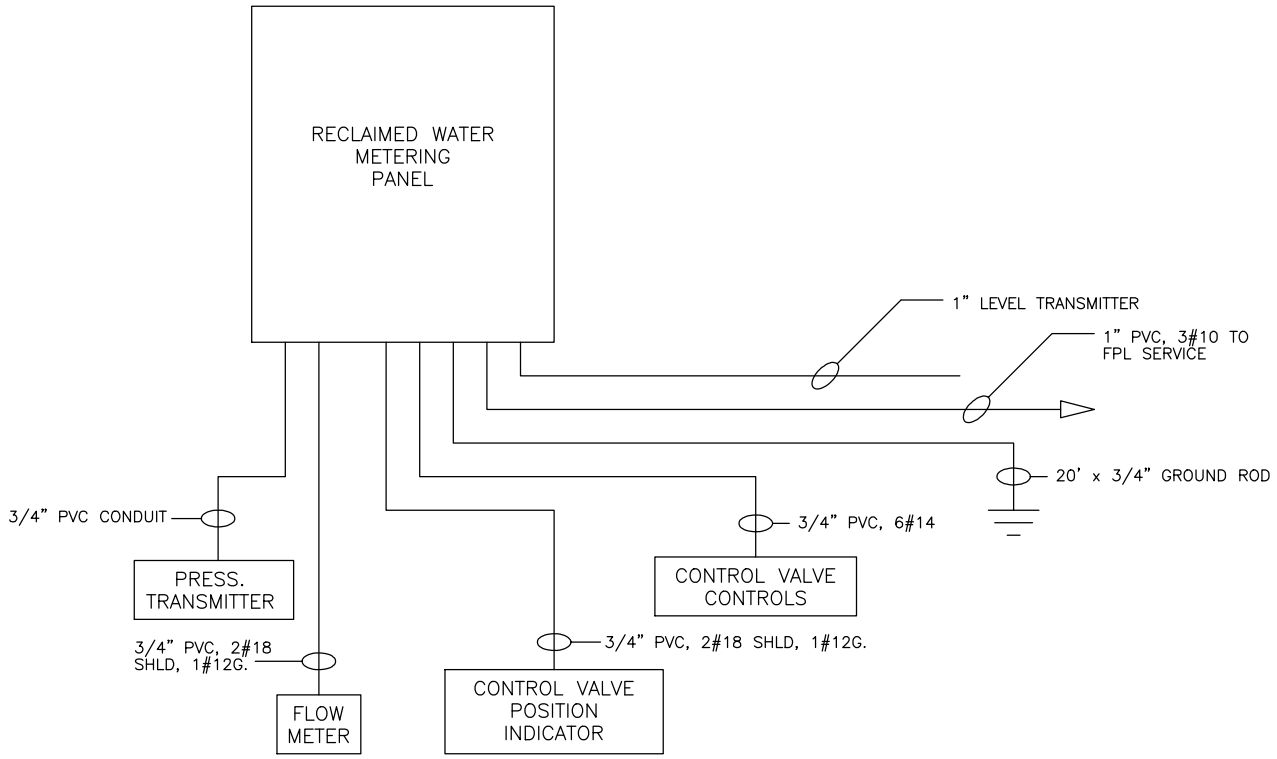
BULK USER RECLAIMED WATER SYSTEM



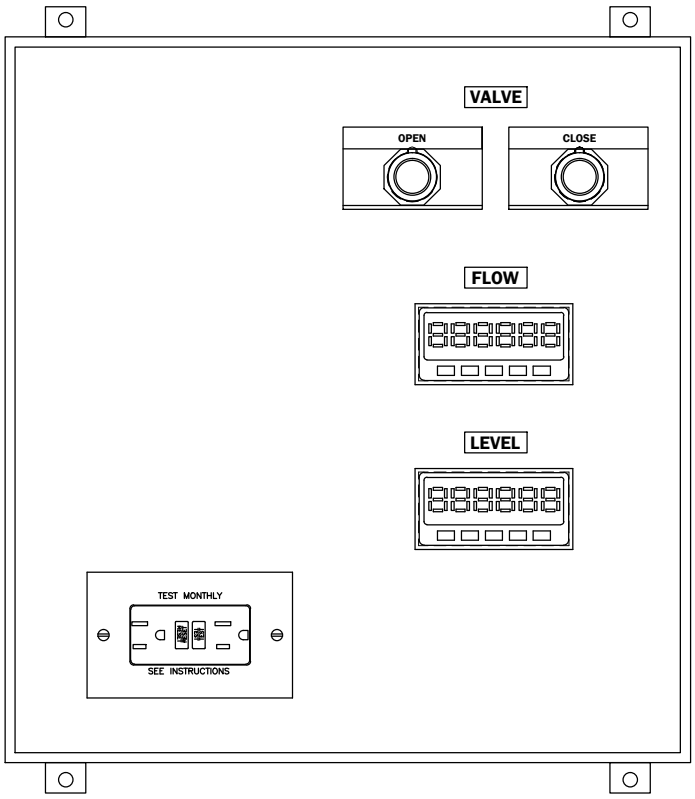
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION		DWG No.
AUGUST 2016	RECLAIMED WATER METERING FACILITY CONTROL SCHEMATIC (BULK USER)	75

BULK USER RECLAIMED WATER SYSTEM

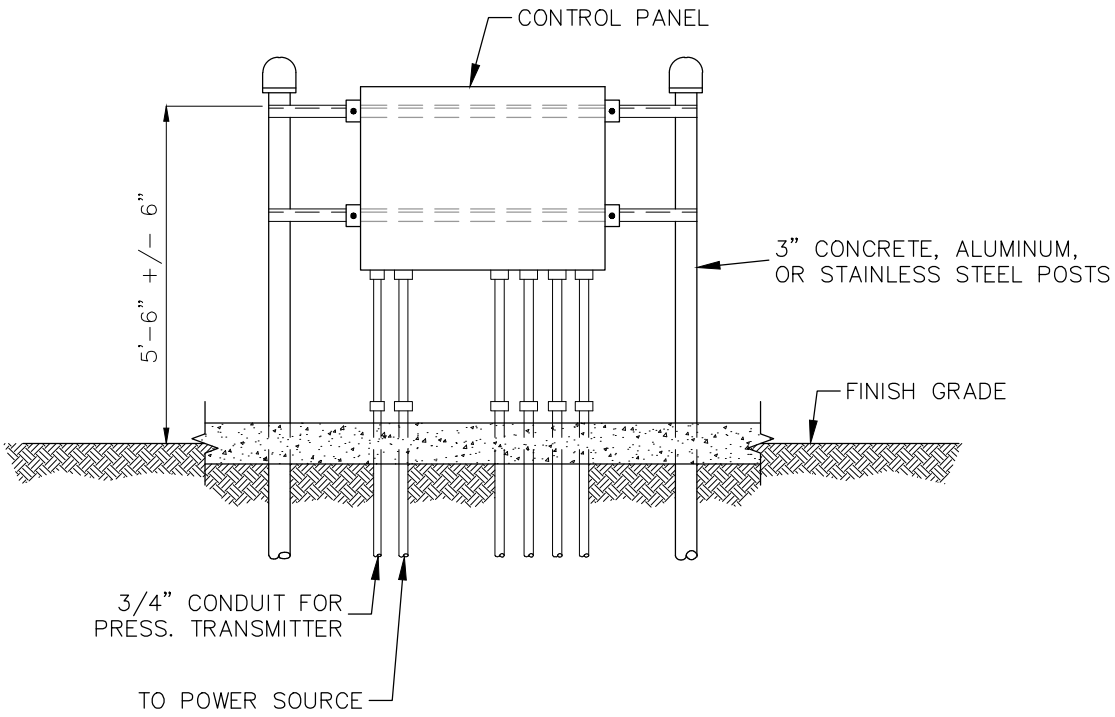


CONDUIT SCHEMATIC



CONTROL PANEL DEADFRONT LAYOUT (BULK USER)

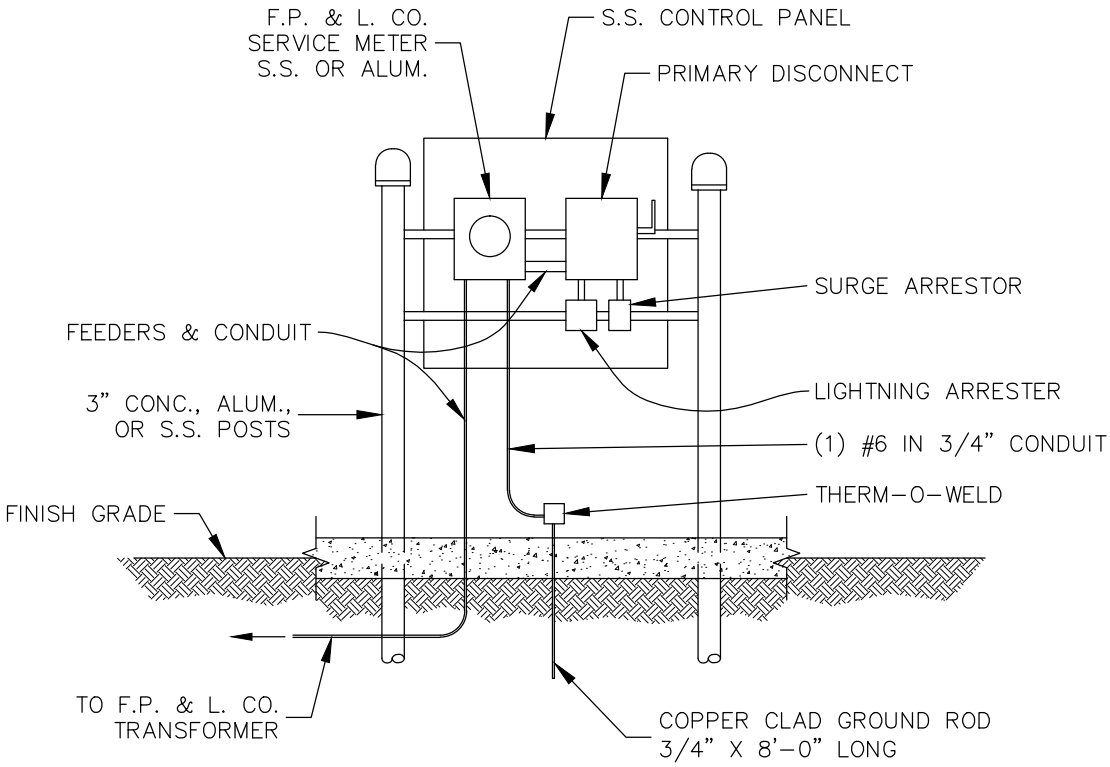
BULK USER RECLAIMED WATER SYSTEM



NOTES:

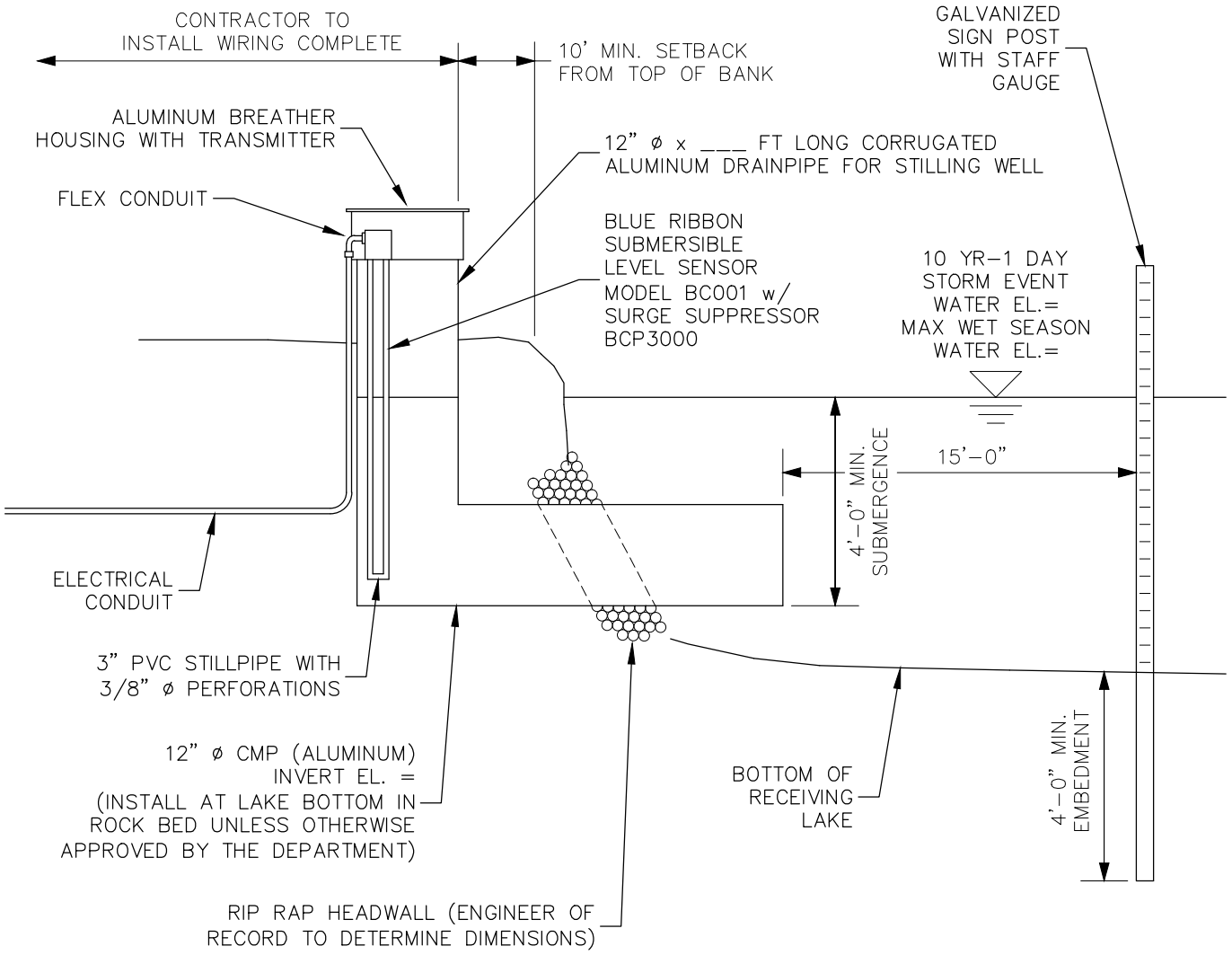
1. ELECTRIC METER AND PRIMARY DISCONNECT MOUNTED TO UNI-STRUT ON BACK SIDE OF PANEL.
2. ALL POWER AND CONTROLS LINES SHALL BE CONTINUOUS (NO SPLICES).
3. GROUND FAULT INTERRUPTER ON CONVENIENCE RECEPTACLE.
4. PANEL MOUNTED TO S/S UNI-STRUT BY WELDED TABS.
5. ALUMINUM POSTS IN CONCRETE SHALL BE COATED WITH BITUMASTIC.
6. CONTROL PANEL SHALL BE UL LISTED AS A UNIT.
7. ALL HARDWARE, NUTS & BOLTS, AND APPURTENANCES ABOVE GROUND SHALL BE 316 STAINLESS STEEL.

BULK USER RECLAIMED WATER SYSTEM



BACK VIEW OF CONTROL PANEL

BULK USER RECLAIMED WATER SYSTEM



NOTES:

1. SIGN POST SHALL BE 12' LONG, STEEL, U-CHANNEL SIGN POST FOR LAKE LEVEL STAFF GAUGE ATTACHMENT, USA BLUEBOOK ITEM # 53759 OR APPROVED EQUAL. TRIM AS NECESSARY.

2. LAKE LEVEL GAUGE SHALL BE 4" WIDE FIBERGLASS STREAM GAUGE MARKED IN INCREMENTS OF FEET, TENTHS AND HUNDREDTHS, BEN MEADOWS ITEM # 8JH-12511* (*=WATER LEVEL) OR APPROVED EQUAL.

   A. A LICENSED SURVEYOR MUST SET THE GAUGE TO ACCURATELY DISPLAY ELEVATION IN NGVD 1929.
   B. GAUGE MUST BE VISIBLE 1 FOOT ABOVE THE TOP OF BANK AND THE BOTTOM OF THE GAUGE MUST TOUCH THE BOTTOM OF THE LAKE. THE GAUGE SHALL BE PLACED IN A DEEP PART OF THE POND TO ENSURE VISIBILITY AS THE WATER RECEDES DURING THE DRY SEASON.

BULK USER RECLAIMED WATER SYSTEM

RECLAIMED WATER

Used for Irrigation

"DO NOT DRINK"

"NO BEBER"

A Water Conscious Community

NOTE: FOR POSTING IN AREAS THAT IRRIGATE WITH RECLAIMED WATER

LAKE CONTAINS RECLAIMED WATER

"DO NOT DRINK"

"NO BEBER"

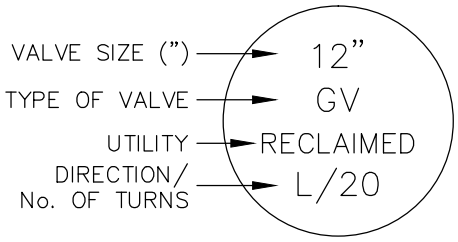
"DO NOT SWIM"

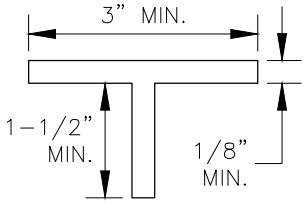
"NO NADAR"

A Water Conscious Community

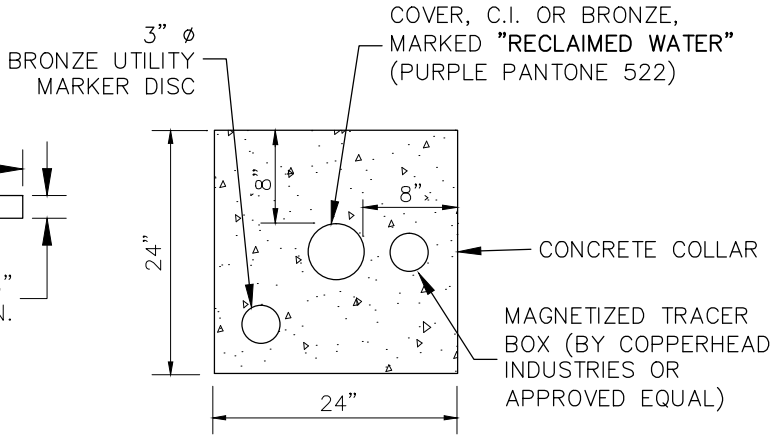
NOTE: FOR POSTING AROUND STORAGE LAKES/PONDS THAT USE RECLAIMED WATER.

RECLAIMED WATER SYSTEM
(BULK AND PRESSURIZED)

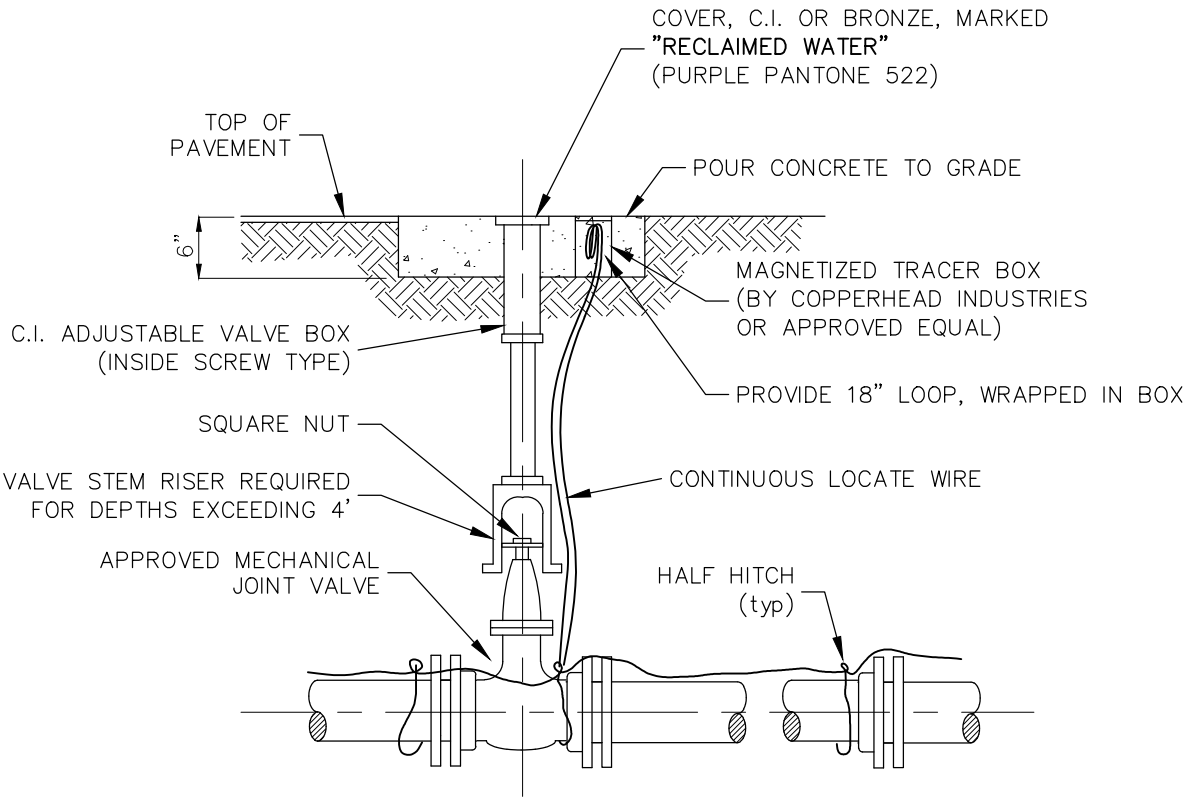




UTILITY MARKER DISC



PLAN



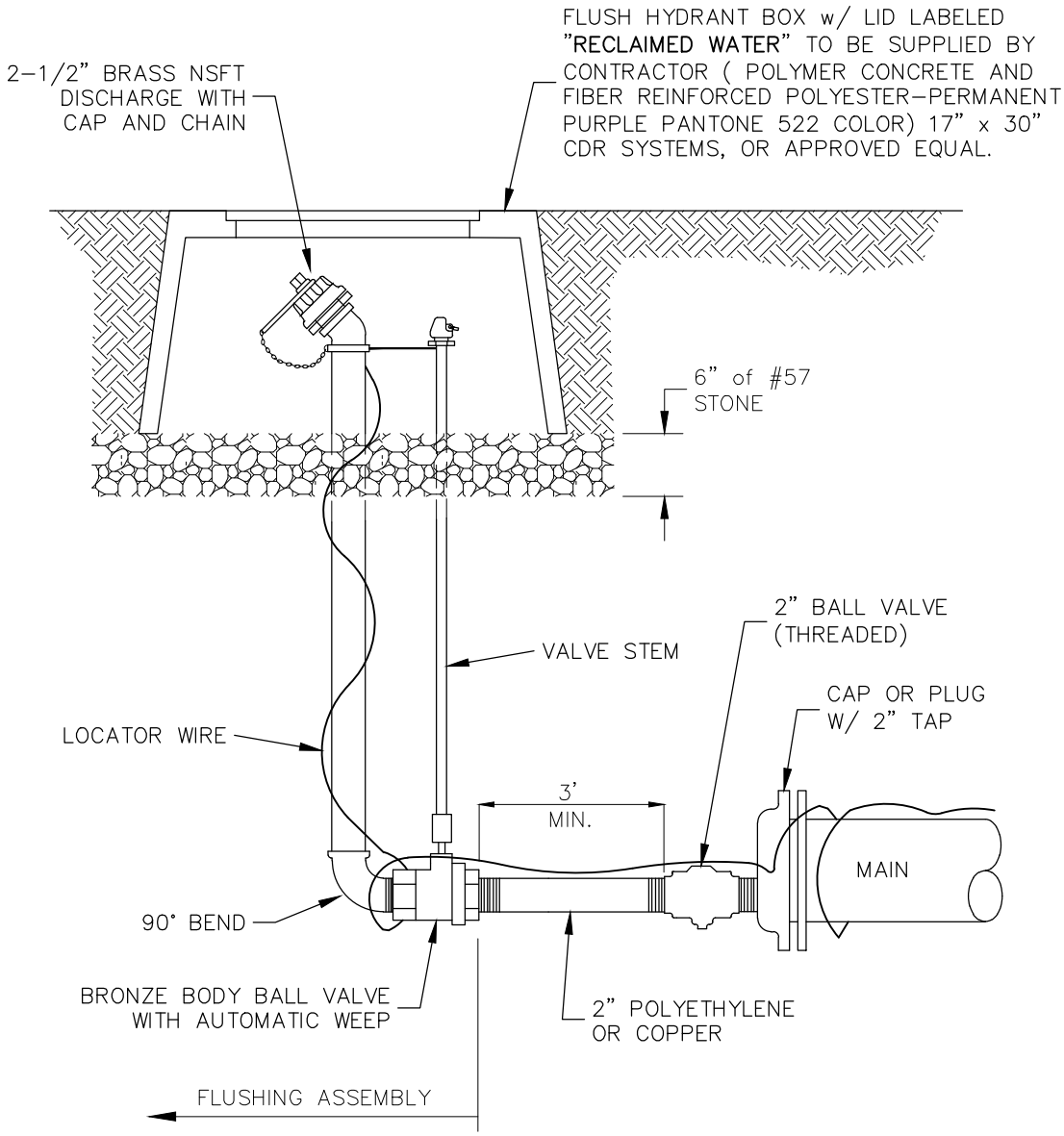
ELEVATION

NOTES:

1. A LOCATION BALL (3M EMS BALL MARKERS; RECLAIMED WATER/PURPLE, MODEL No. 1408-XR) SHALL BE INSTALLED AT EACH FITTING AND/OR EVERY 100 FEET OF SEPARATION.

2. FOR DEEP VALVE INSTALLATIONS, A 6" C-900 PVC EXTENSION MAY BE USED TO BRING VALVE BOX TO GRADE.

RECLAIMED WATER SYSTEM
(BULK AND PRESSURIZED)



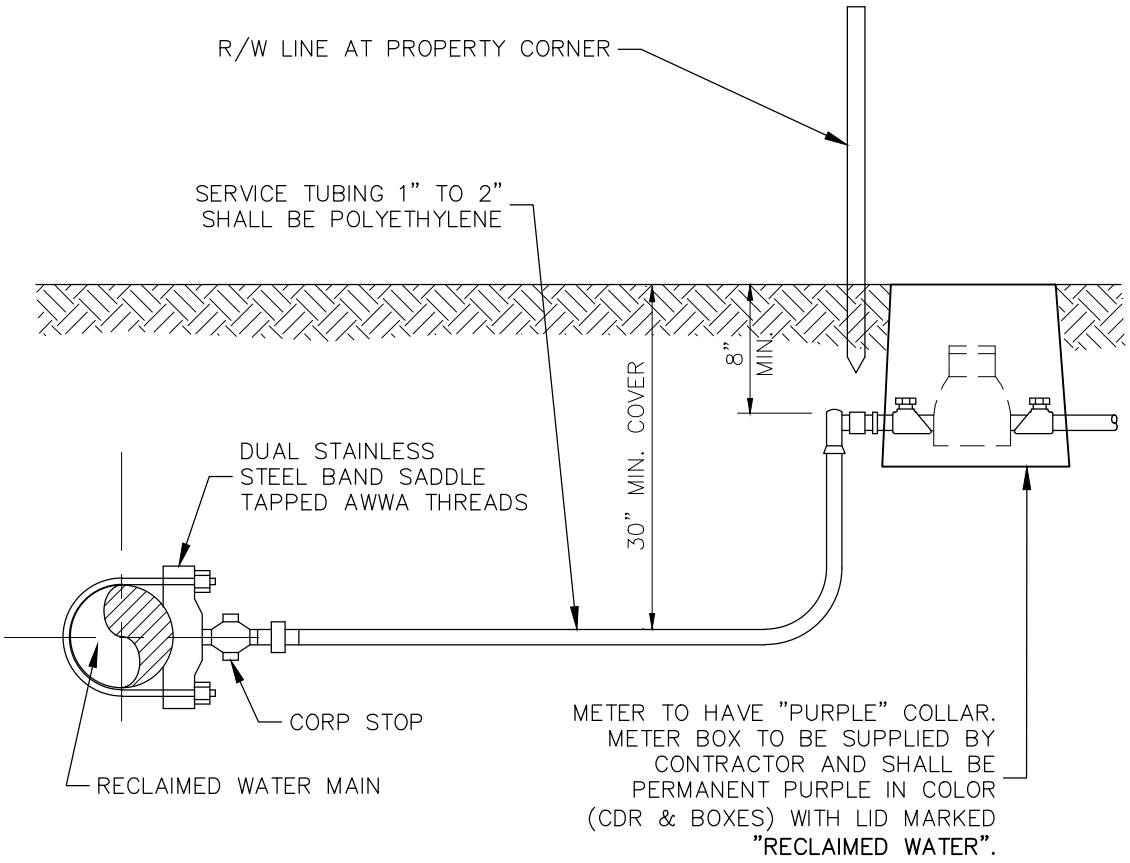
NOTES:

1. FLUSHING HYDRANT ASSEMBLY SHALL BE GIL INDUSTRIES, AQUARIUS ONE–O–ONE 2" POST FLUSHING HIDDEN HYDRANT.

2. MAIN TO BE RESTRAINED FOR TWO FULL LENGTHS.

3. LID SHALL BE LOCKABLE AND MARKED "RECLAIMED WATER".

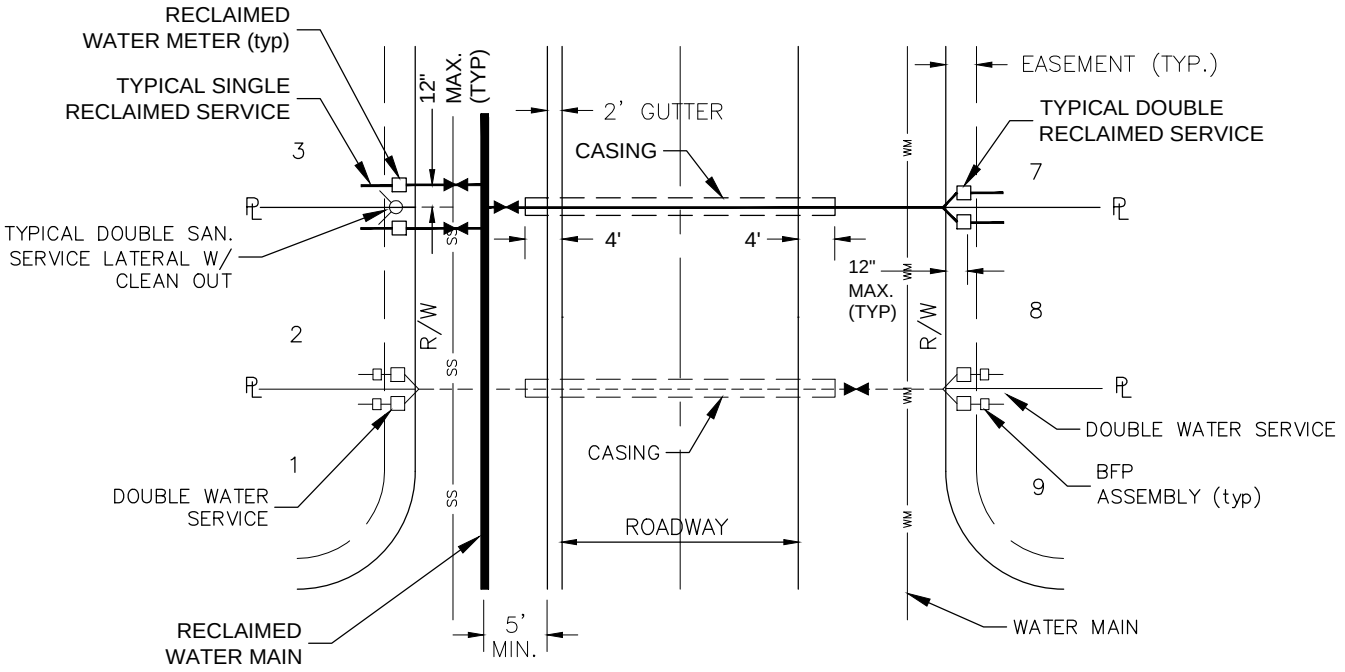
PRESSURIZED RECLAIMED WATER SYSTEM



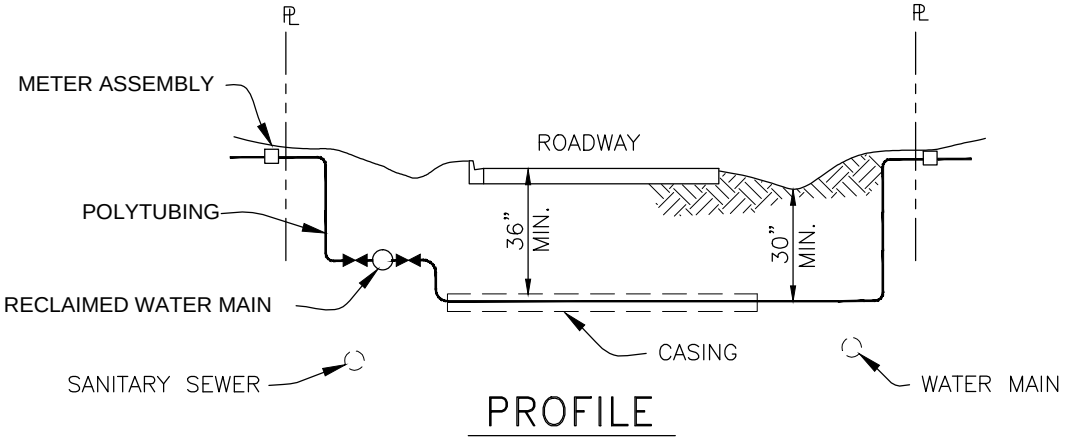
NOTES:

1. MIN. SERVICE LINES SHALL BE AS FOLLOWS: 1" FOR SINGLE AND DOUBLE SERVICES WHERE METER SIZE IS 5/8"; 2" FOR SINGLE AND DOUBLE SERVICES WHERE METER SIZE IS 1".
2. COMPRESSION FITTINGS SHALL BE SUITABLE FOR TUBING USED AND REQUIRE METAL (S.S.) INSERTS.
3. DOUBLE SERVICES REQUIRE "U" BRANCH WITH ANGLE CURB STOPS.
4. POLYETHYLENE SHALL BE AS DEFINED BY A.S.T.M. D2737 SDR9 AND A.W.W.A. 901, LATEST EDITION, AND BE PRESSURE RATED FOR 200 PSI. (COLORED PURPLE PANTONE 522).
5. TUBING SHALL BE MARKED WITH SIZE, MANUFACTURERS NAME, WORKING PRESSURE, NATIONAL SANITATION FOUNDATION APPROVAL, A.S.T.M. SPECIFICATION AND PRODUCTION CODE. TUBING SHALL HAVE AN OUTSIDE DIAMETER EQUIVALENT TO THE OUTER DIAMETER OF COPPER TUBING.
6. SERVICE LOCATOR WIRE SHALL BE LAID IN THE TRENCH WITH ALL SERVICES, CONNECTED TO THE MAIN WIRE AND WRAPPED AROUND THE SERVICE PIPING OR TUBING. WIRE FOR RECLAIMED WATER SHALL BE PURPLE IN COLOR.

PRESSURIZED RECLAIMED WATER SYSTEM



PLAN

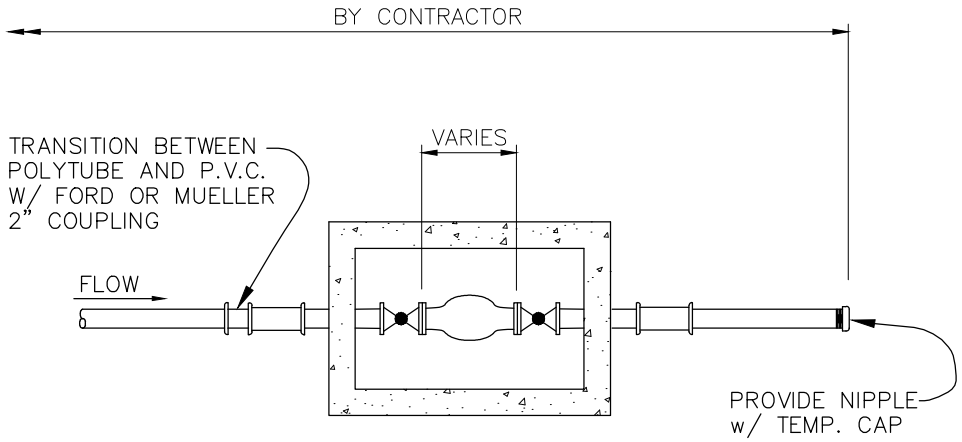


PROFILE

NOTES:

1. HOUSE SERVICE LATERAL UNDER PAVEMENT SHALL BE INSTALLED THROUGH A 2" BLACK IRON PIPE OR PVC SCH. 80 CASING.
2. TAPPING SADDLE AND CORPORATION STOP MUST BE PLACED IN ACCESSABLE AREAS, OUT FROM UNDER ANY PAVED AREAS.
3. RECLAIMED WATER SERVICE TO BE LOCATED ADJACENT TO SANITARY SERVICE LOCATIONS.

PRESSURIZED RECLAIMED WATER SYSTEM



NOTES:

1. ALL VALVES TO BE STRAIGHT 2" BALL VALVES WITH LOCK– WING. (FLANGE AT METER) FORD OR APPROVED EQUAL.
2. SEE TYPICAL SERVICE DETAIL FOR MAIN CONNECTION.
3. METER BOX SHALL BE POLYMER CONCRETE FIBER REINFORCED POLYESTER, AND "PURPLE" IN COLOR. (PANTONE 522)
4. PIPING SHALL BE 2" SCHEDULE 80 PVC WITH SCHEDULE 80 FITTINGS.
5. LID SHALL BE PURPLE AND MARKED "RECLAIMED WATER".

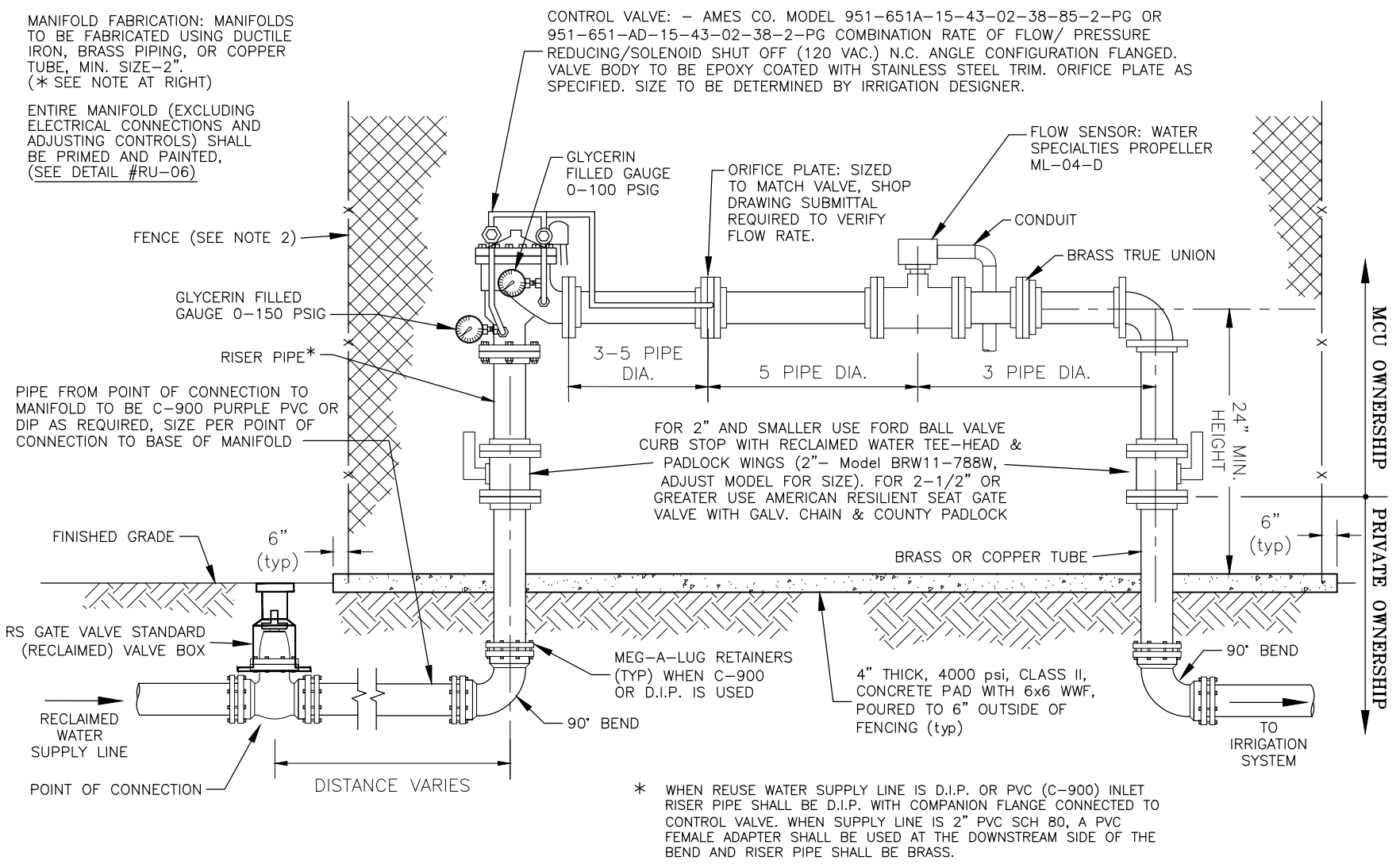
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION
AUGUST 2016

PRESSURIZED RECLAIMED WATER SYSTEM
POINT OF CONNECTION DETAIL–CONNECTION CONTROLS

DWG No.
86

PRESSURIZED RECLAIMED WATER SYSTEM

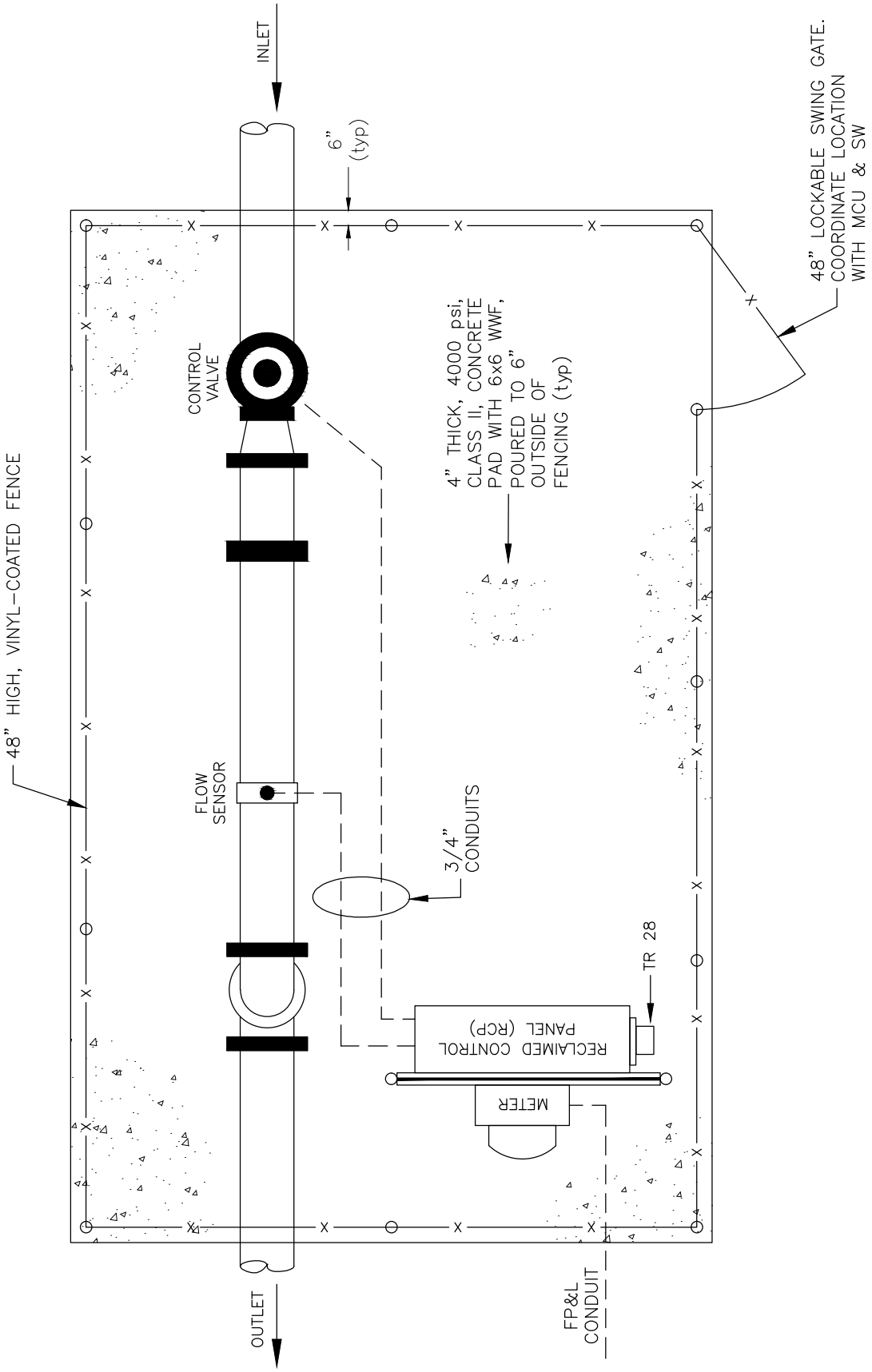


* WHEN REUSE WATER SUPPLY LINE IS D.I.P. OR PVC (C–900) INLET RISER PIPE SHALL BE D.I.P. WITH COMPANION FLANGE CONNECTED TO CONTROL VALVE. WHEN SUPPLY LINE IS 2" PVC SCH 80, A PVC FEMALE ADAPTER SHALL BE USED AT THE DOWNSTREAM SIDE OF THE BEND AND RISER PIPE SHALL BE BRASS.

NOTES:

1. TWO (2) GLYCERIN FILLED/SS BODY PRESSURE GAUGES SHALL BE INSTALLED ON HIGH AND LOW SIDE PORTS OF CONTROL VALVE.
2. FENCE: 48" HIGH, VINYL–COATED, w/ 48" WIDE LOCKABLE GATE.
3. ALL PRESSURIZED RECLAIMED FACILITIES TO BE PAINTED PER SPECIFICATIONS FOR RECLAIMED WATER SYSTEMS.

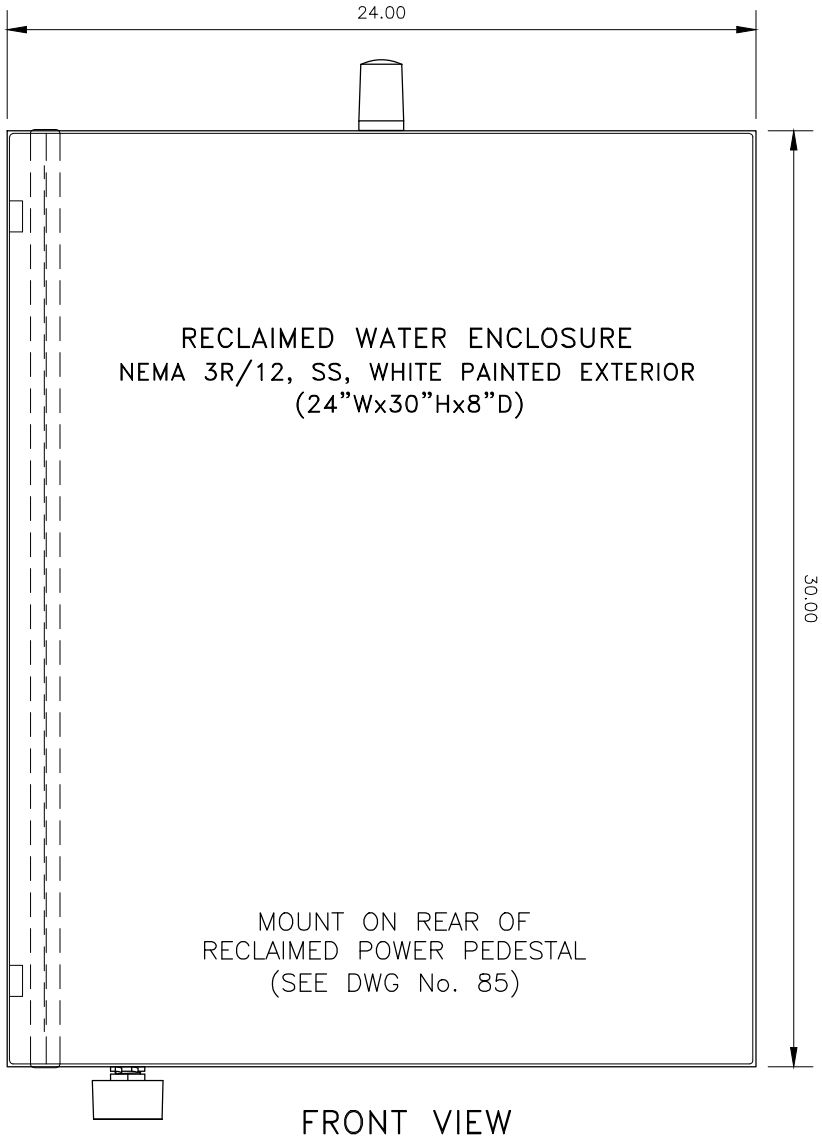
PRESSURIZED RECLAIMED WATER SYSTEM



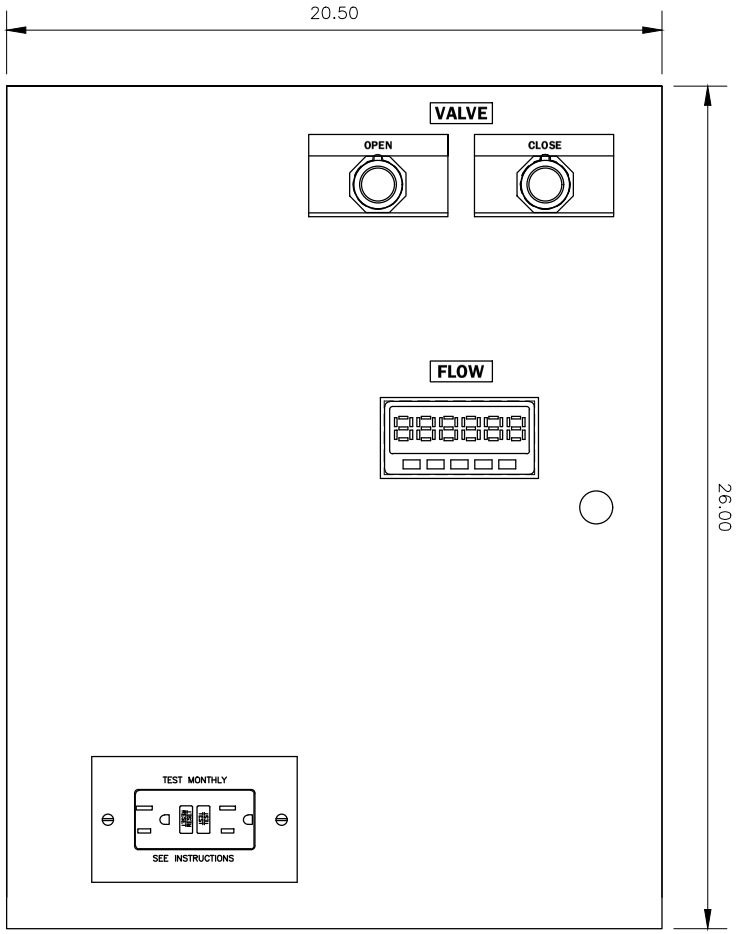
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION		DWG No.
AUGUST 2016	PRESSURIZED RECLAIMED WATER SYSTEM POINT OF CONNECTION PLAN–CONNECTION CONTROLS	87

PRESSURIZED RECLAIMED WATER SYSTEM



FRONT VIEW
(N.T.S.)



RECLAIMED WATER ENCLOSURE
DEAD FRONT DOOR LAYOUT
(N.T.S.)

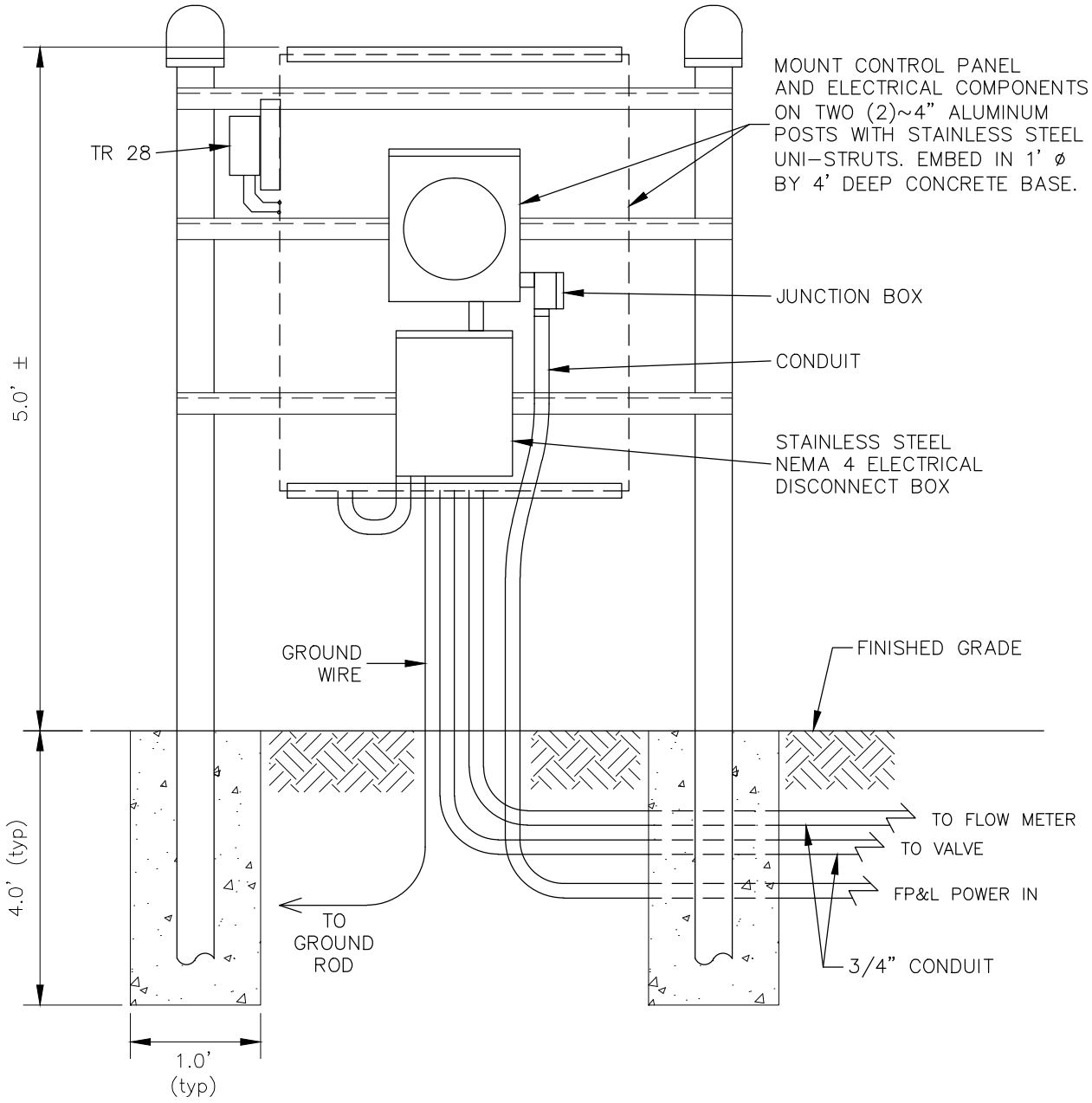
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

PRESSURIZED RECLAIMED WATER SYSTEM
CONTROL PANEL (FRONT) – CONNECTION CONTROLS

REVISION
AUGUST 2016

DWG No.
88

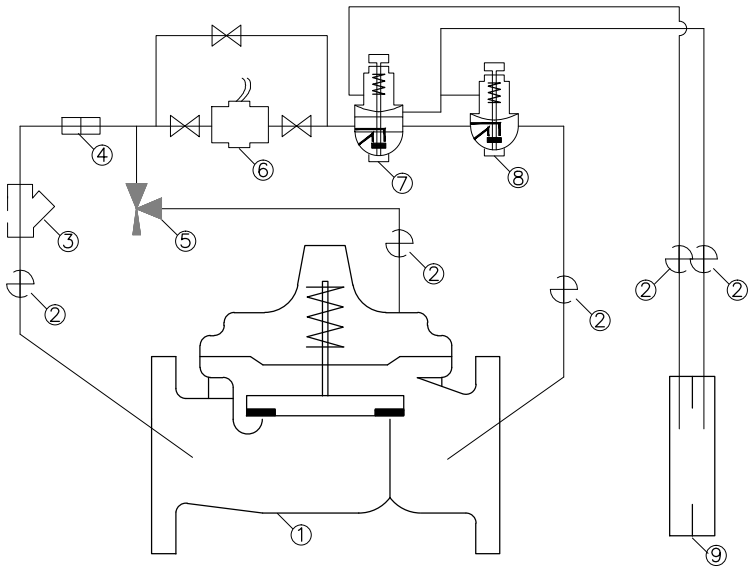
PRESSURIZED RECLAIMED WATER SYSTEM



NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL ALUMINUM POSTS W/ UNI-STRUTS AND STAINLESS STEEL NEMA 4 DISCONNECT SWITCH AND ENCLOSURE.
2. CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT AND WIRES BETWEEN FIXTURES AND CONTROL PANEL.
3. ELECTRIC METER AND PRIMARY DISCONNECT MOUNTED TO UNI-STRUT ON BACK SIDE OF PANEL.
4. ALL POWER AND CONTROLS LINES SHALL BE CONTINUOUS (NO SPLICES).
5. PANEL MOUNTED TO S/S UNI-STRUT BY WELDED TABS.
6. ALUMINUM POSTS IN CONCRETE SHALL BE COATED WITH BITUMASTIC, BOTH EXTERIOR AND INTERIOR.
7. ALL HARDWARE, NUTS & BOLTS, AND APPURTENANCES ABOVE GROUND SHALL BE 316 STAINLESS STEEL.

PRESSURIZED RECLAIMED WATER SYSTEM

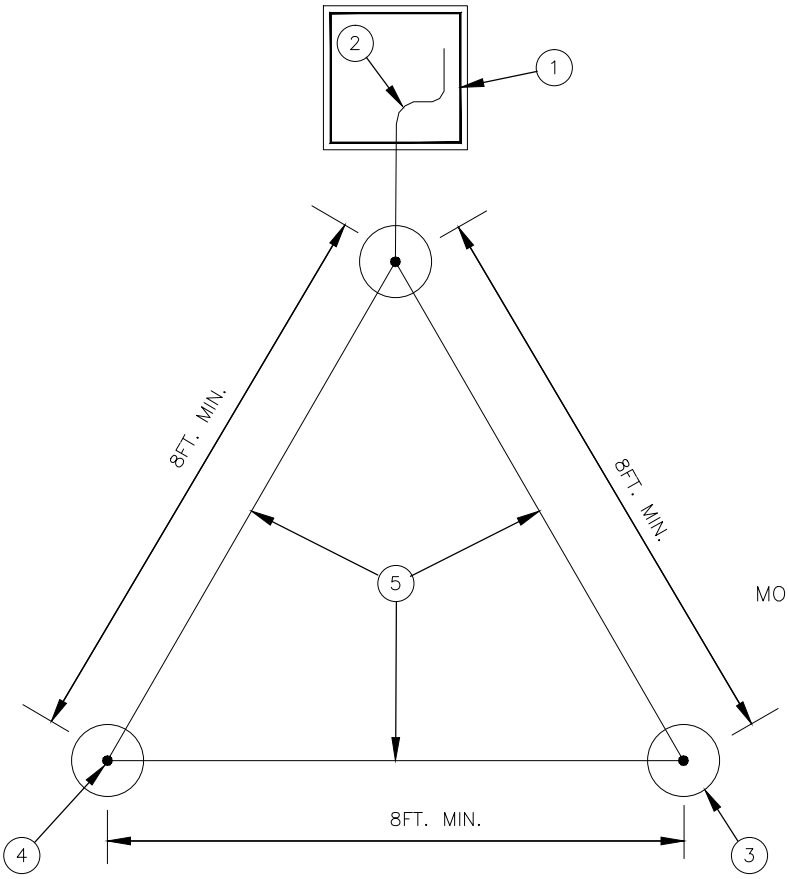


1. CONTROL VALVE
2. ISOLATION COCKS
3. LARGE CONTROL FILTER
4. RESTRICTION FITTING
5. OPENING SPEED CONTROL
6. TWO–WAY SOLENOID (120VAC)
7. PRESSURE REDUCING PILOT
8. RATE OF FLOW PILOT
9. ORIFICE PLATE ASSEMBLY

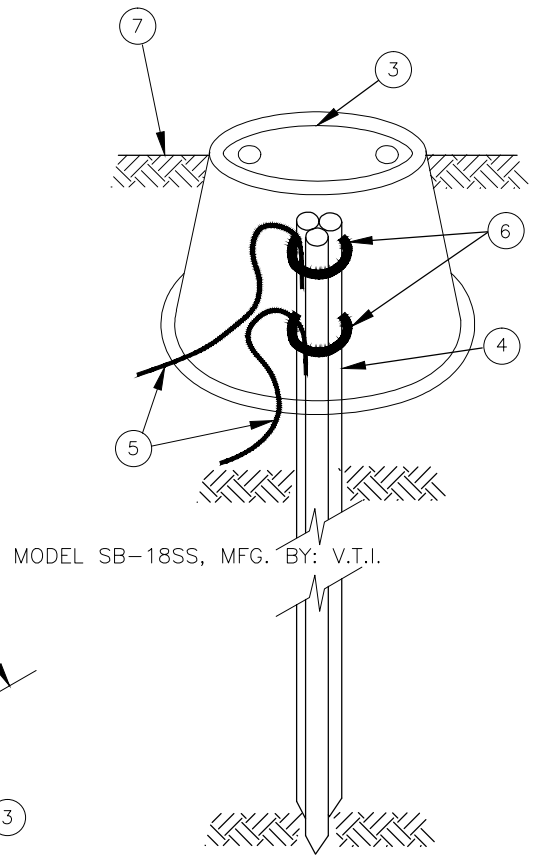
NOTE:
ORIFICE PLATE ASSEMBLY SHOULD BE INSTALLED 3 TO 5 PIPE DIAMETERS DOWNSTREAM OF MAIN VALVE OUTLET.

RATE OF FLOW, PRESSURE REDUCING & SOLENOID SHUTOFF VALVE
EQUIPPED WITH LARGE CONTROL FILTER AND SPEED CONTROL

PRESSURIZED RECLAIMED WATER SYSTEM



GROUND ROD LAYOUT



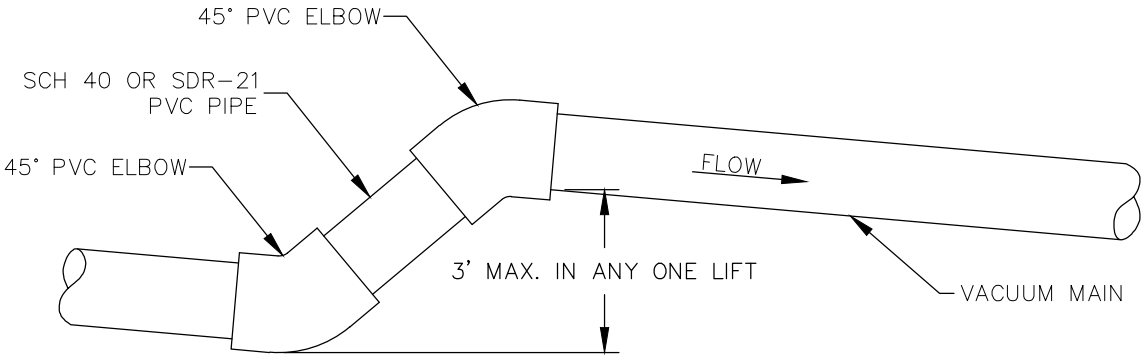
GROUND ROD ASSEMBLY

LEGEND:

1. RCP PANEL.
2. #10 AWG SOLID BARE COPPER WIRE FROM GROUNDING ROD TO RCP. MAKE WIRE AS SHORT AND STRAIGHT AS POSSIBLE.
3. COVER GROUNDING ROD WITH 10" ROUND VALVE BOX.
4. 5/8" X 8' COPPER CLAD GROUNDING ROD. INSTALL RODS IN SOIL IN A TRIANGULAR PATTERN SPACED A MINIMUM OF 8' APART FROM EACH OTHER. GROUNDING GRID TO HAVE A RESISTANCE OF 5 OHMS OR LESS.
5. #10 AWG BARE COPPER BETWEEN GROUNDING RODS.
6. BRASS WIRE CLAMP. USE SEPARATE CLAMP FOR EACH WIRE.
7. FINISH GRADE.

3-ROD GROUNDING GRID INSTALLATION

THE 3 RODS SHALL BE DRIVEN INTO THE GROUND WITH THE TOP OF THE ROD AT LEAST 6" BELOW THE FINISH GRADE. THE RODS SHALL BE TIED TOGETHER BELOW GRADE WITH #10 GAUGE OR LARGER BARE COPPER WIRE. THE WIRE SHALL BE ATTACHED TO THE ROD USING A BRASS CLAMP. A SEPARATE BRASS CLAMP SHALL BE USED FOR EACH ATTACHMENT. NOTE! NO MORE THAN ONE WIRE SHALL BE USED IN ANY INDIVIDUAL CLAMP – MULTIPLE WIRES SHALL NOT BE ALLOWED. ANY ROD THAT HAS A GROUND WIRE CONNECTED TO IT, COMING FROM THE SURGE ARRESTOR AT THE EQUIPMENT OR GROUNDING THE EQUIPMENT, SHALL HAVE A 6" AMETEK OR CARSON VALVE BOX, PURPLE COLOR INSTALLED AROUND THE TOP OF THE ROD. THIS SHALL PROVIDE FUTURE ACCESS FOR MAINTENANCE.

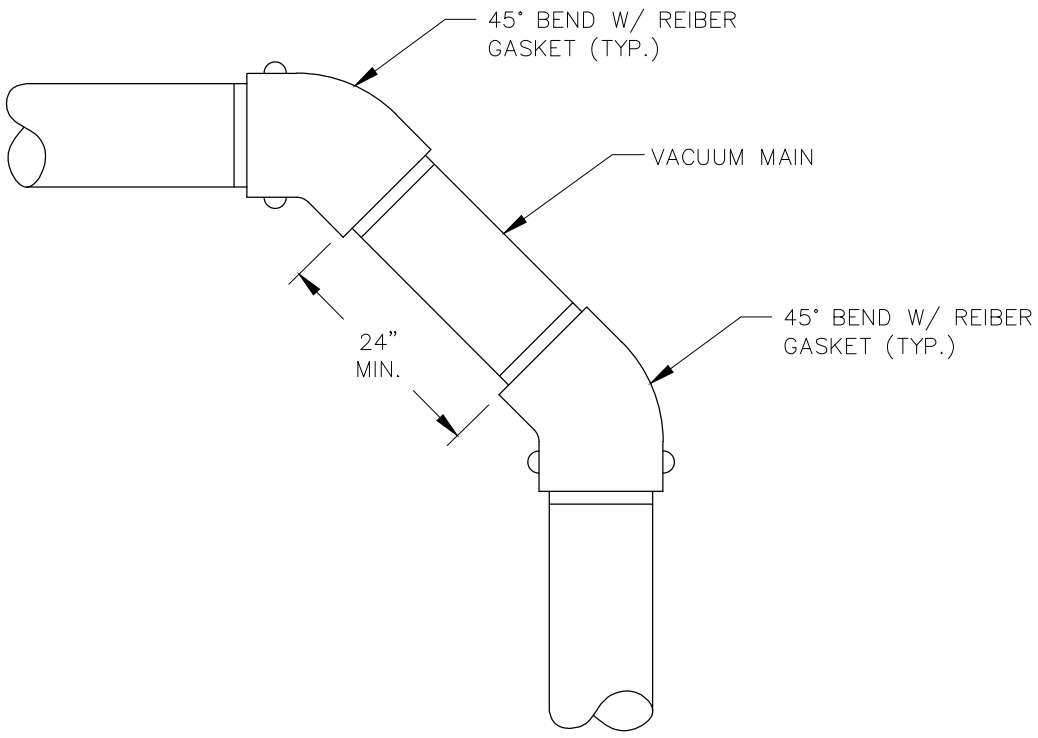


SLOPE SCHEDULE			
PIPE DIA.	MINIMUM FALL BETWEEN LIFTS * USE GREATER VALUE OF (A) OR (B)		DISTANCE AT WHICH (B) GOVERNS
	(A)	(B)	
3"	0.20 FT	0.2% x DISTANCE	> 100 FT
4"	0.25 FT	0.2% x DISTANCE	> 125 FT
6"	0.25 FT	0.2% x DISTANCE	> 125 FT
8"	0.25 FT	0.2% x DISTANCE	> 125 FT
10"	0.25 FT	0.2% x DISTANCE	> 125 FT

* WHEN NOT BETWEEN LIFTS, USE 0.2% SLOPE

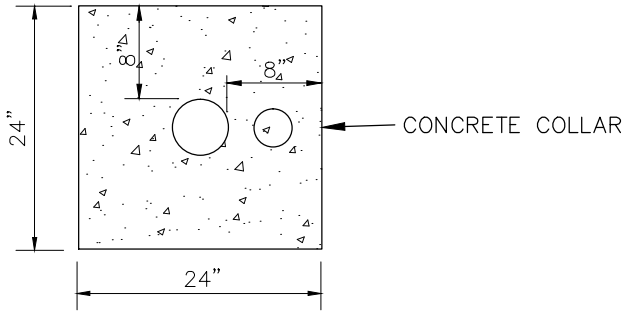
NOTE:

1. MAGNETIC MARKERS SHALL BE PLACED AT EVERY FITTING, LIFT, AND EVERY 100 ft. ALONG THE VACUUM MAIN INSTALLATION. (3M EMS BALL MARKERS; SEWER/GREEN, MODEL No. 1404-XR OR EQUAL)



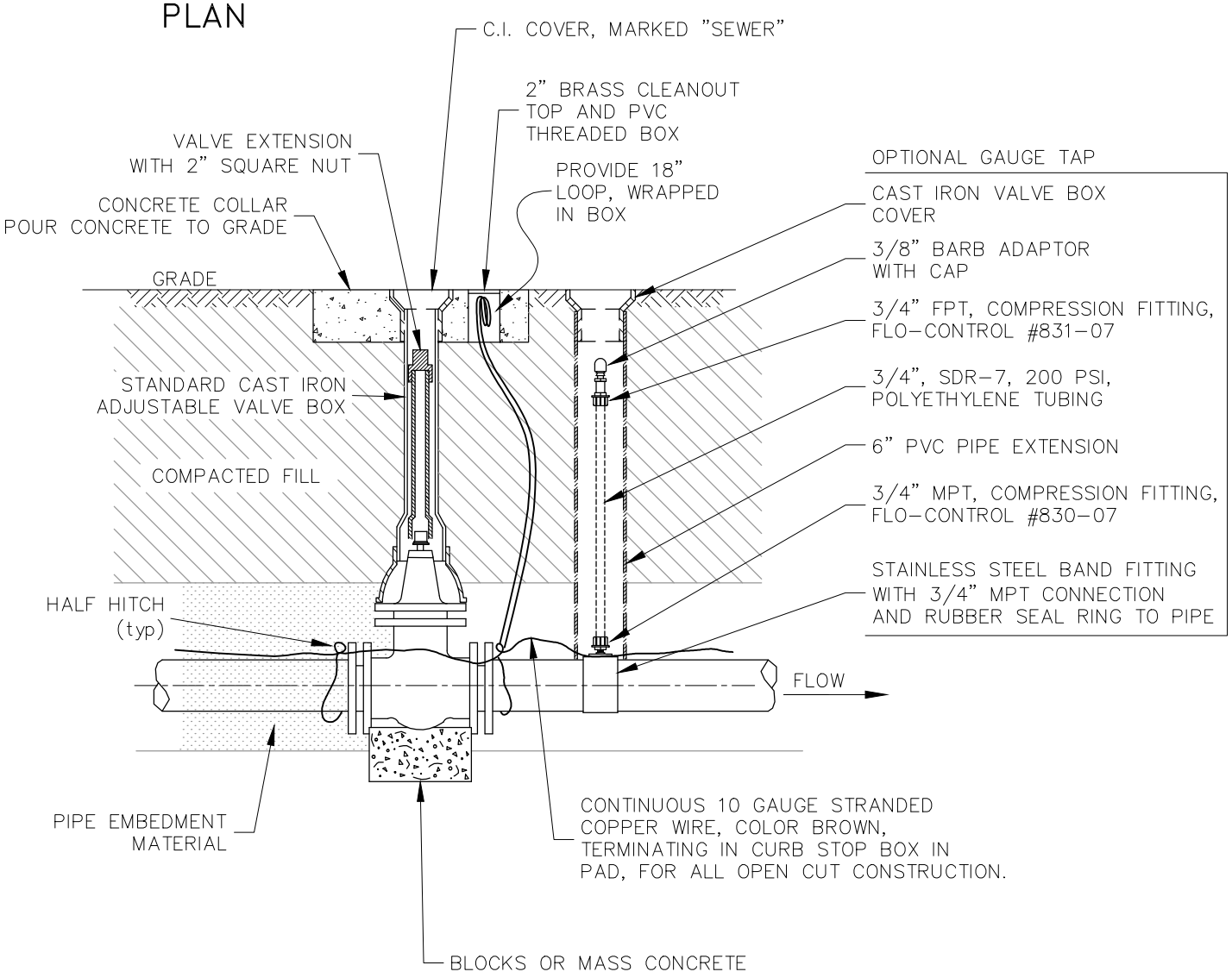
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION		DWG No.
AUGUST 2016	VACUUM SEWER VACUUM MAIN – CHANGE OF DIRECTION	93



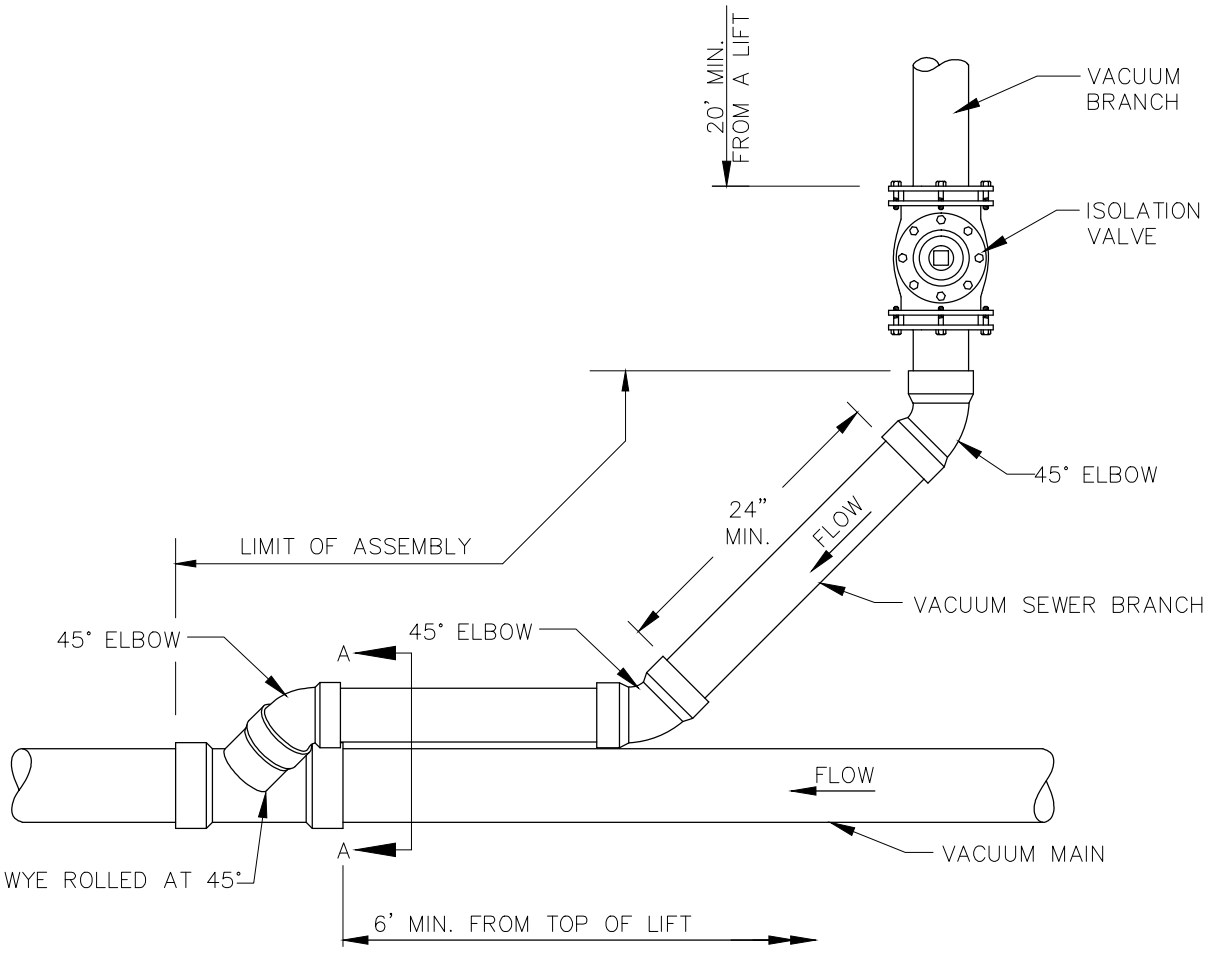
PLAN

DIVISION VALVE SUPPORT INFORMATION	
VALVE SIZE	SUPPORT SIZE
4"	1" THICK X 1.75' SQUARE
6"	1" THICK X 2.25' SQUARE
8"	1" THICK X 3.00' SQUARE
10"	1" THICK X 3.50' SQUARE

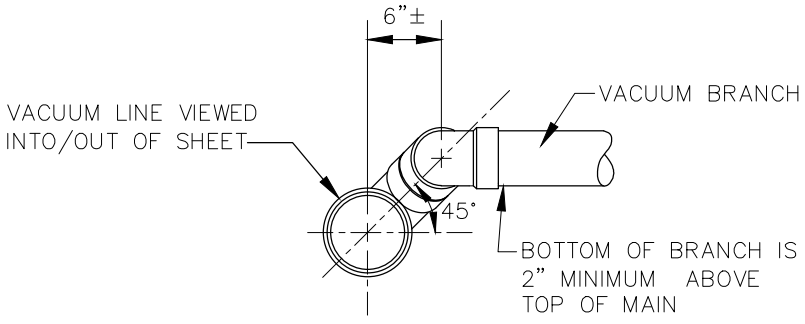


MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	VACUUM SEWER	DWG No.
AUGUST 2016	ISOLATION VALVE & BOX W/ OPTIONAL GAUGE TAP	94



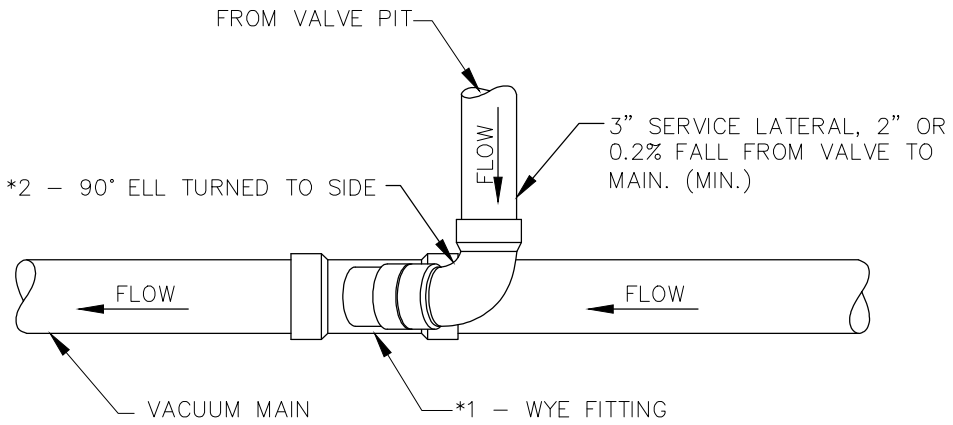
PLAN VIEW



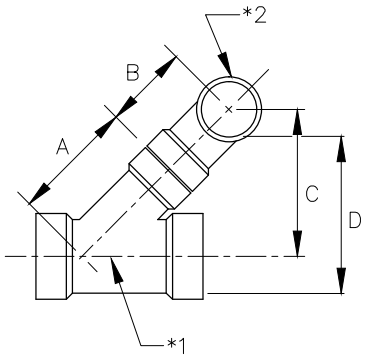
SECTION A–A

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION		DWG No.
AUGUST 2016	VACUUM SEWER BRANCH TO MAIN CONNECTION ASSEMBLY	95



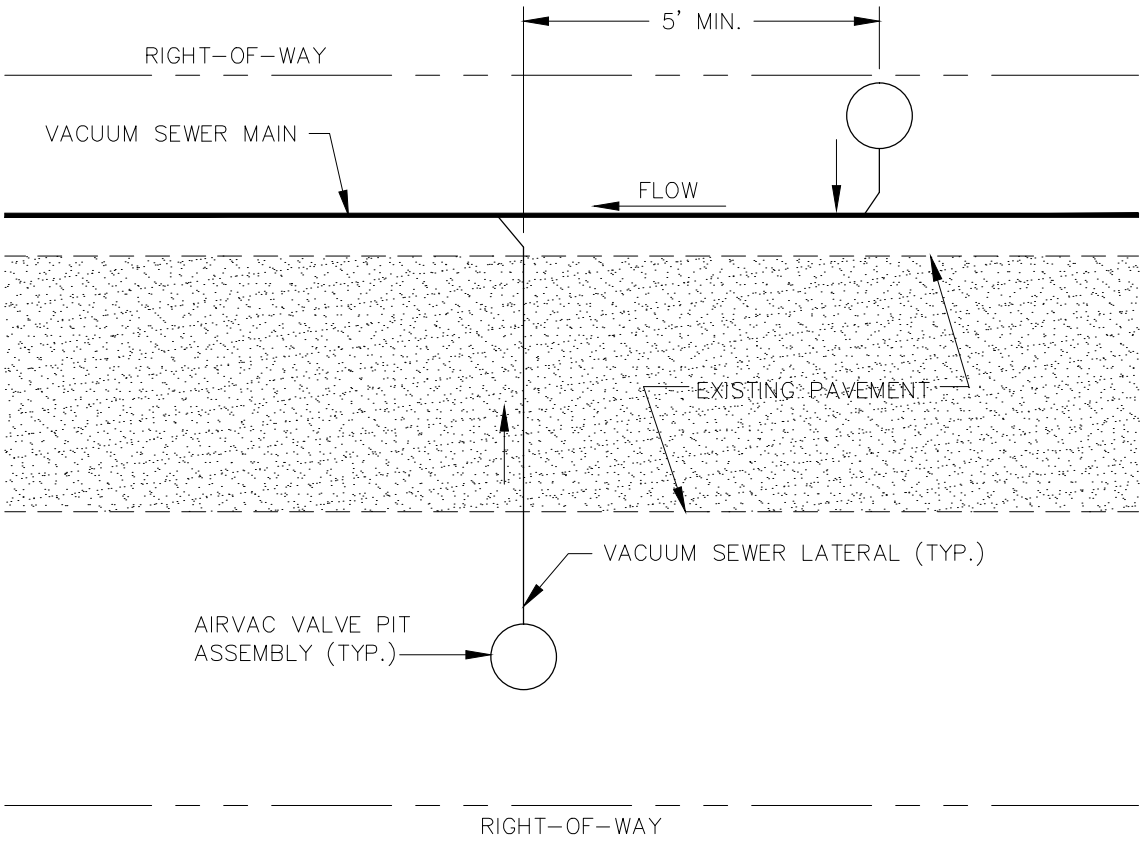
PLAN VIEW



ELEVATION

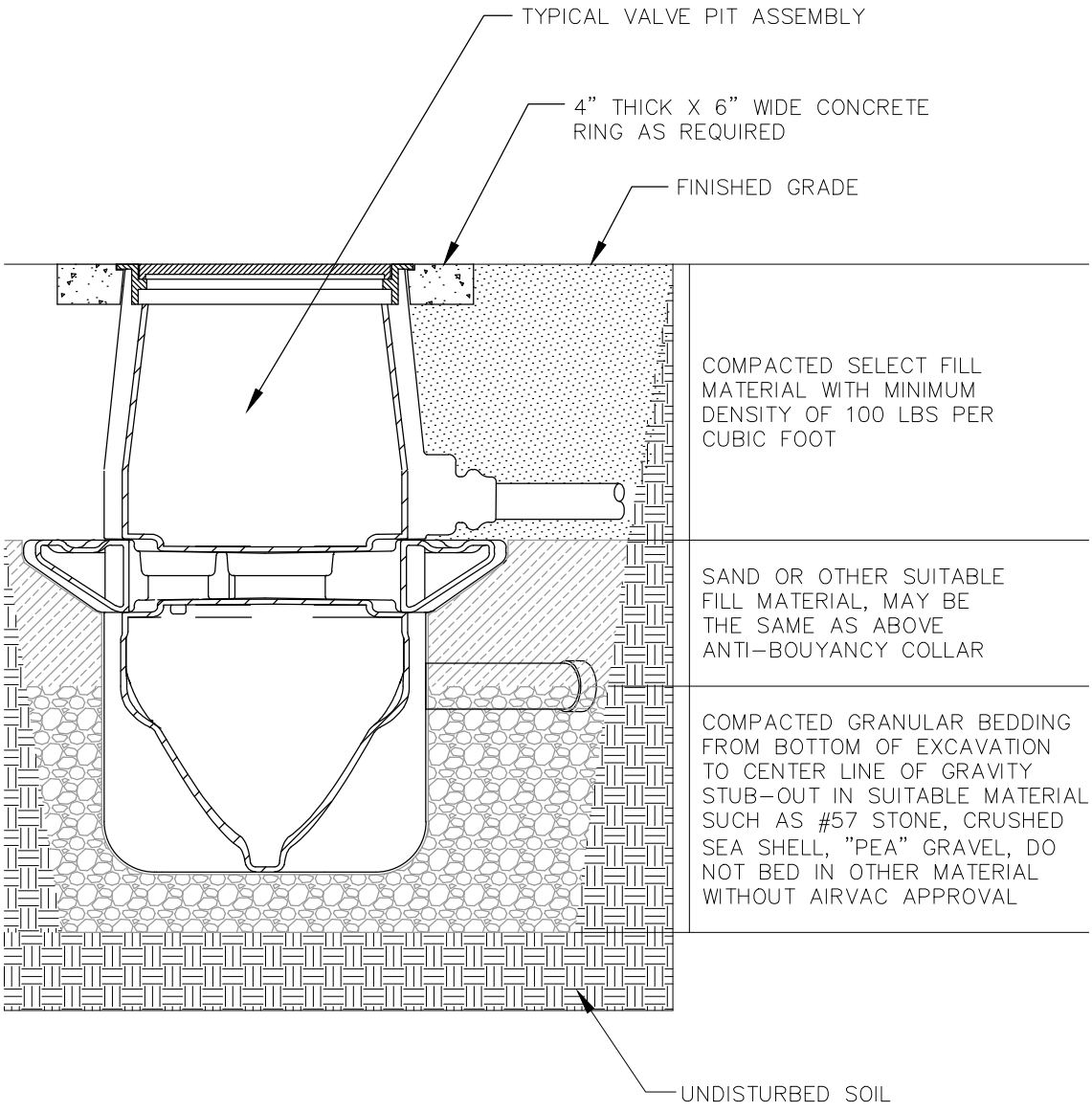
* DIMENSIONS BASED ON SPEARS MANUFACTURING
1. 45 DEG WYE, SOCKET x SOCKET x SOCKET
2. 90 DEG ELL, SOCKET x SOCKET

WYE SIZE	A	B	C	D– INVERT
4 x 4 x 3	9 1/4"	3 25/32"	9.32"	0.78'
6 x 6 x 3	10 1/2"	3 25/32"	10.21"	0.85'
8 x 8 x 3	13"	3 25/32"	11.86"	1.00'
10 x 10 x 3	14 3/8"	3 25/32"	12.84"	1.10'



MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

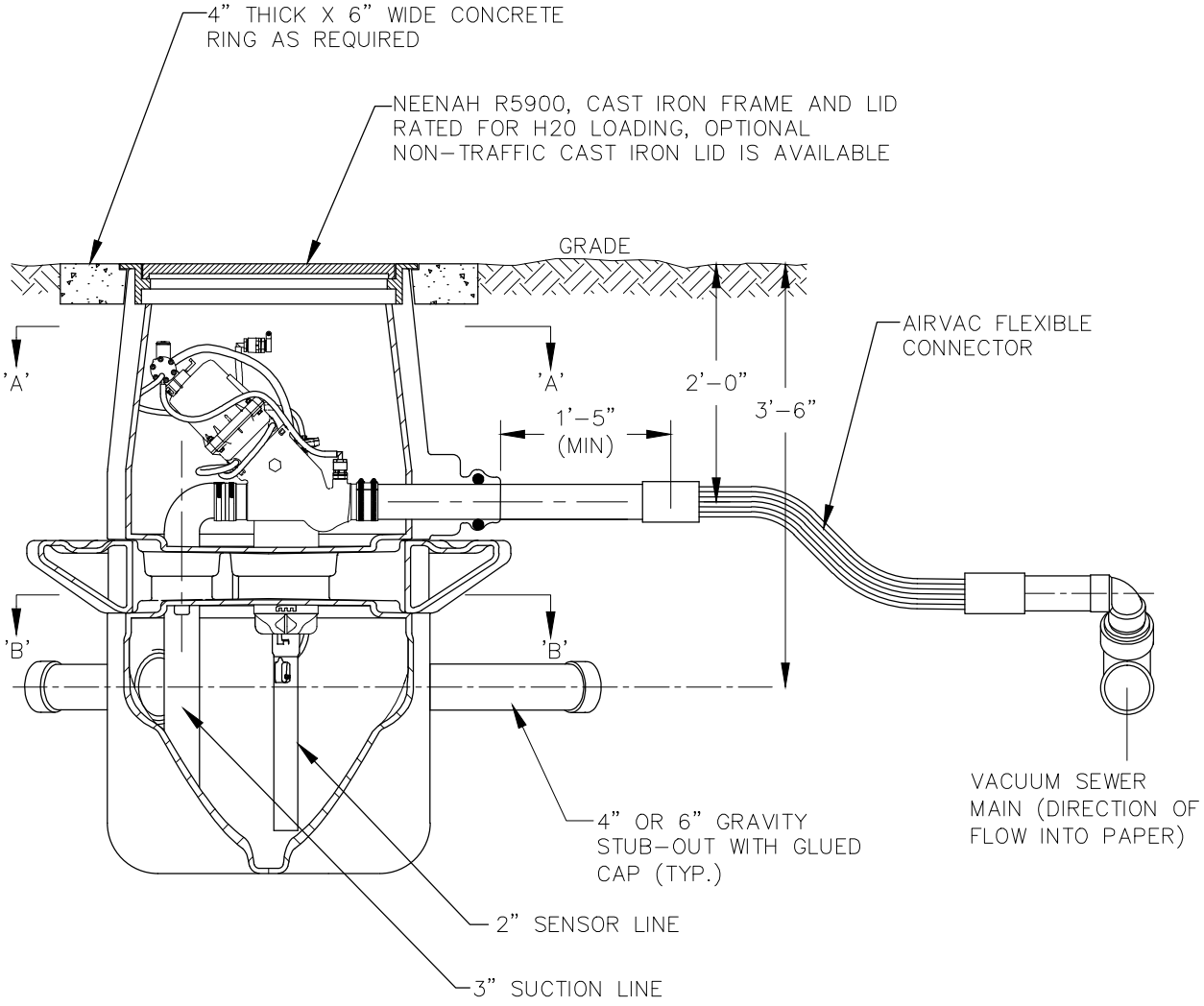
REVISION	VACUUM SEWER MINIMUM SPACING BETWEEN CONNECTIONS	DWG No.
AUGUST 2016		97



MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

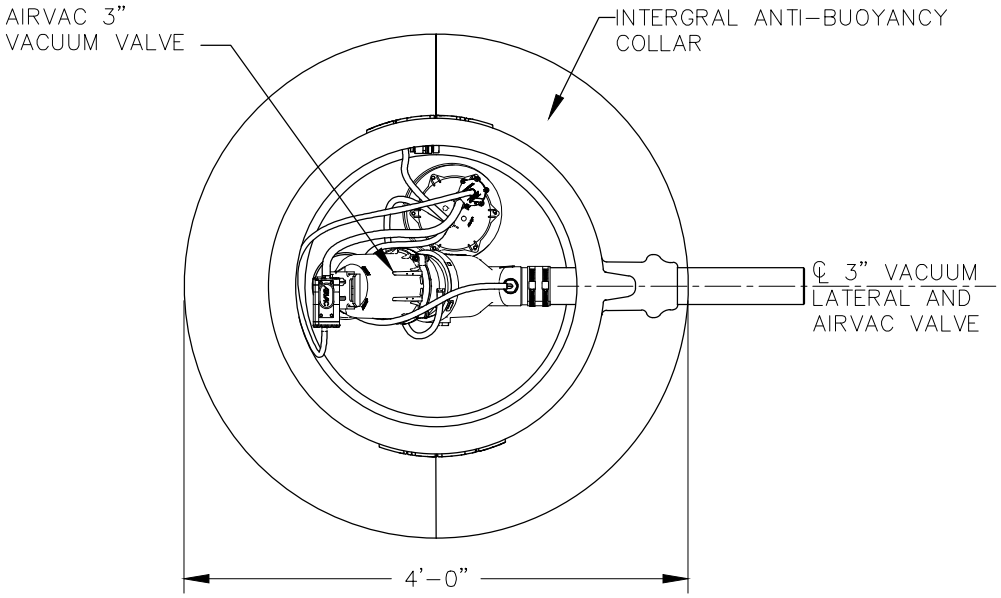
REVISION	VACUUM SEWER	DWG No.
AUGUST 2016	VALVE PIT BEDDING AND BACKFILL	98

MODEL VP3030WT

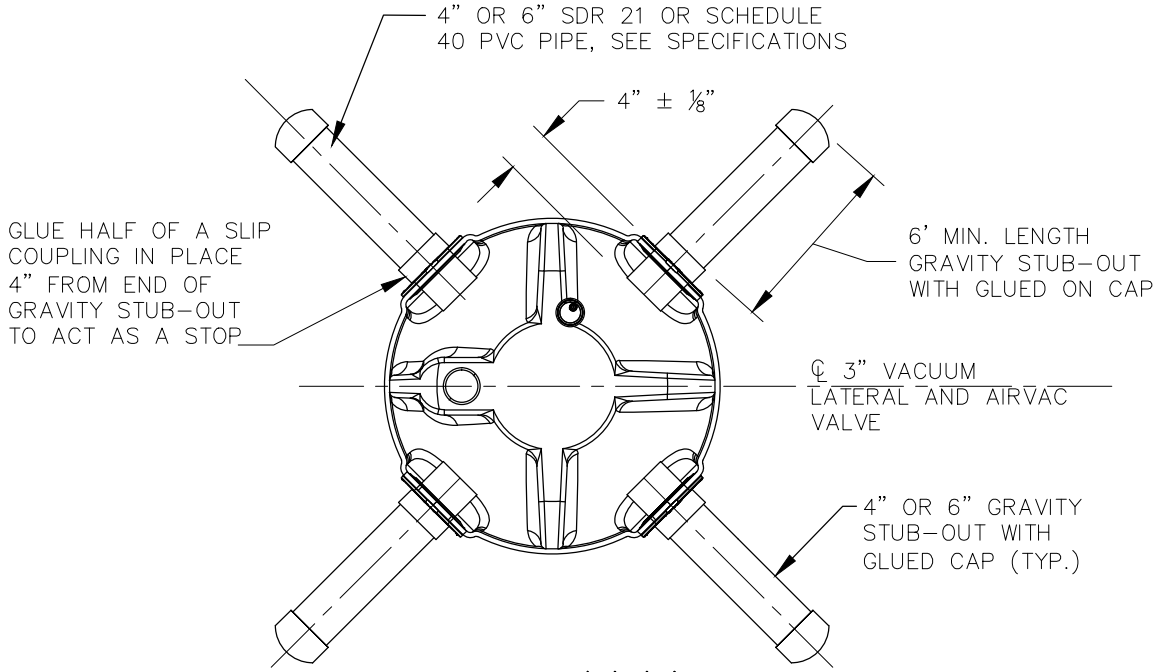


MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	VACUUM SEWER	DWG No.
AUGUST 2016	STANDARD 1-PIECE VALVE PIT	99



SECTION 'A'-A'

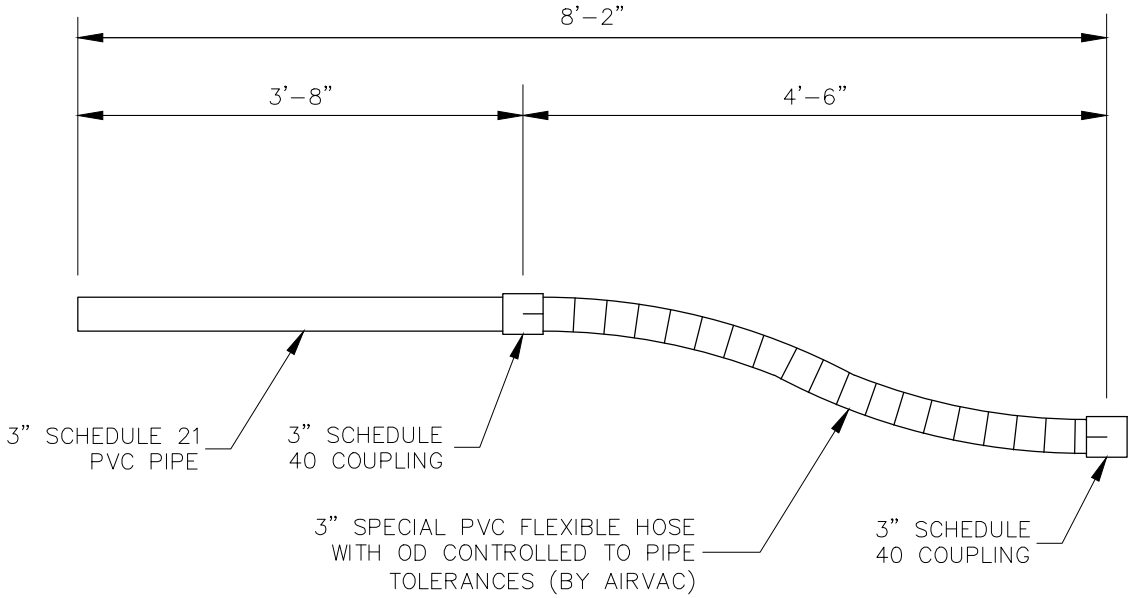


SECTION 'B'-'B'

SHOWING UP TO 4 GRAVITY
CONNECTIONS TO SUMP

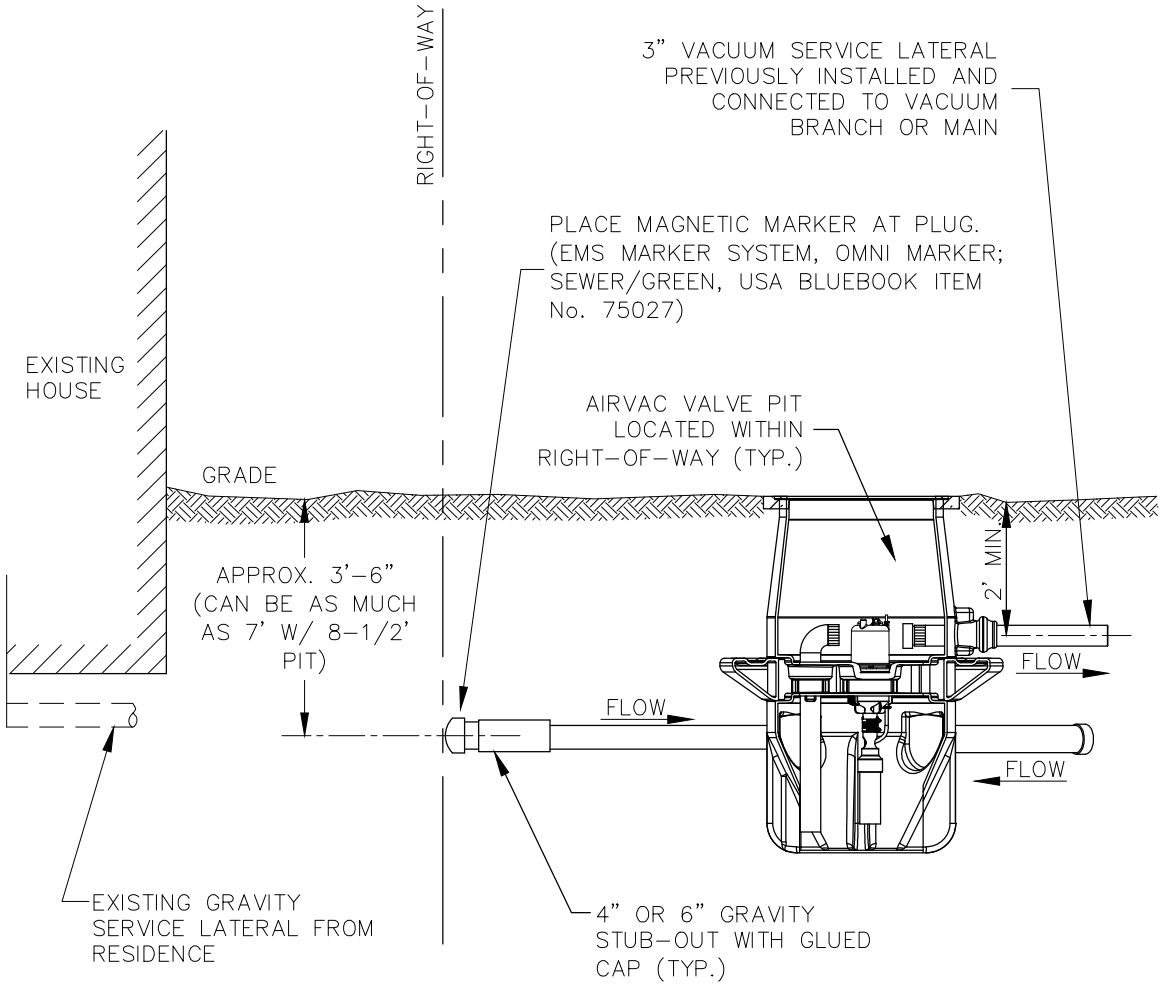
NOTE:

1. EVIDENCE THAT COUPONS FROM GRAVITY SEWER LATERAL CONNECTIONS TO THE VALVE PIT SUMP MUST BE PRESENTED TO THE MCU INSPECTOR PRIOR ACCEPTANCE AND PLACEMENT OF VALVE PIT INTO OPERATION



NOTE:

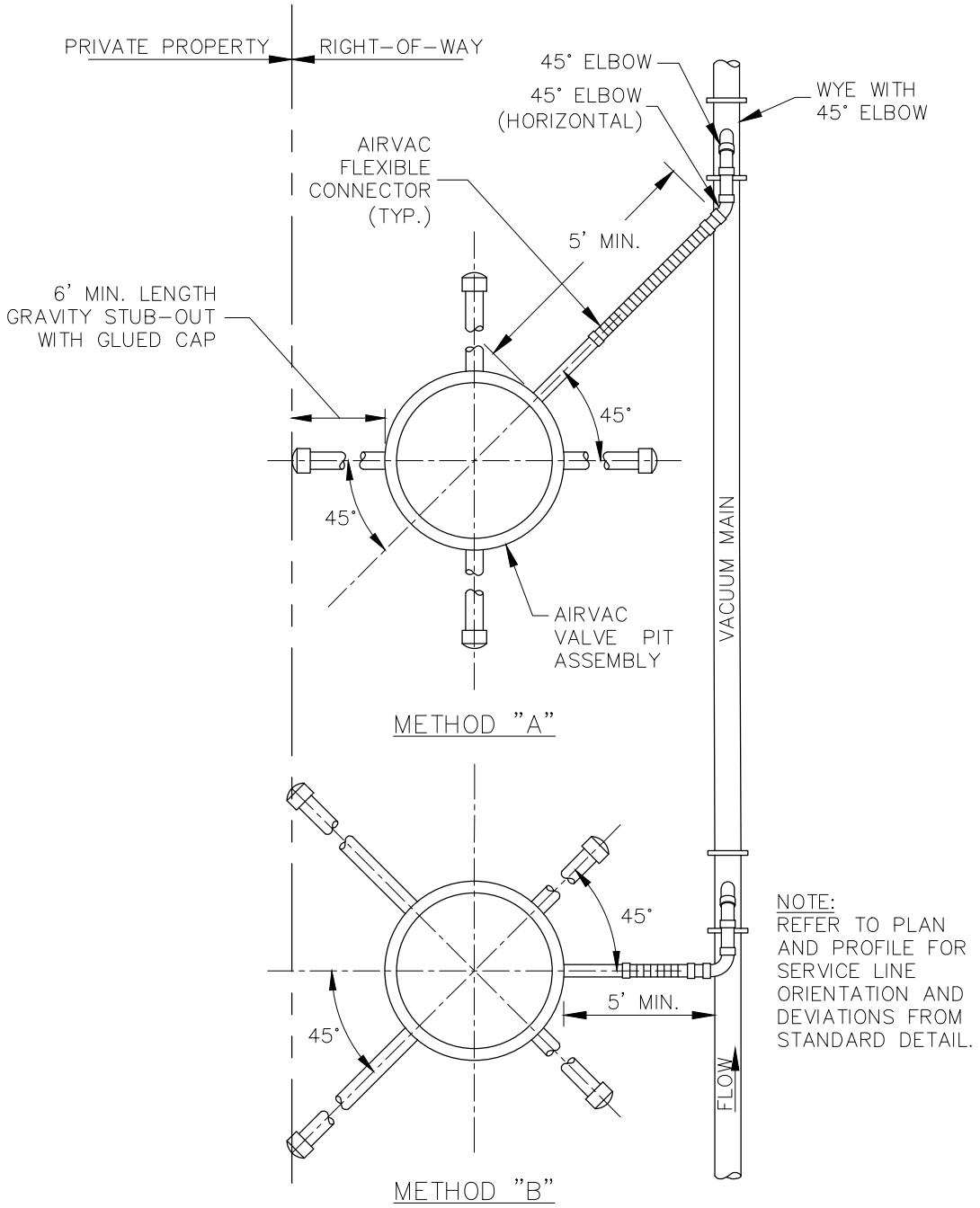
1. FLEXIBLE CONNECTOR USED TO CONNECT VALVE PIT TO 3" VACUUM SERVICE LATERAL
2. FLEXIBLE CONNECTOR LENGTH MAY NOT BE ALTERED, DO NOT CUT PVC PIPE OF FLEXIBLE HOSE



NOTE:
DO NOT INSTALL AIRVAC VALVE UNTIL 6" AIR-INTAKE ASSEMBLY IS IN PLACE

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

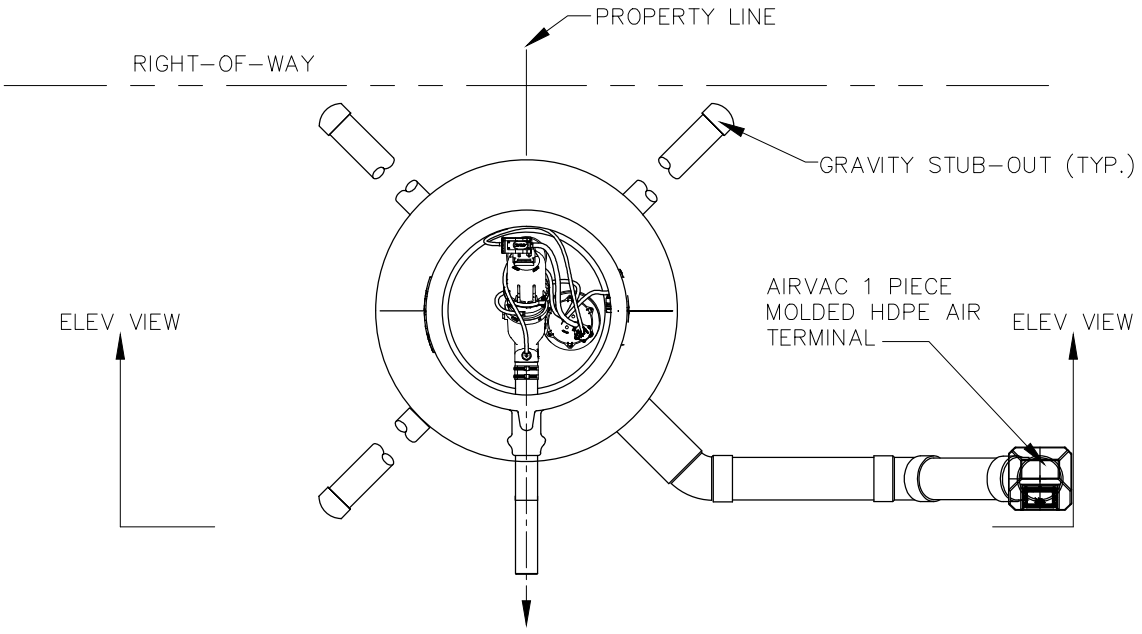
REVISION		DWG No.
AUGUST 2016	VACUUM SEWER VALVE PIT – PRIOR TO HOUSE CONNECTION	102

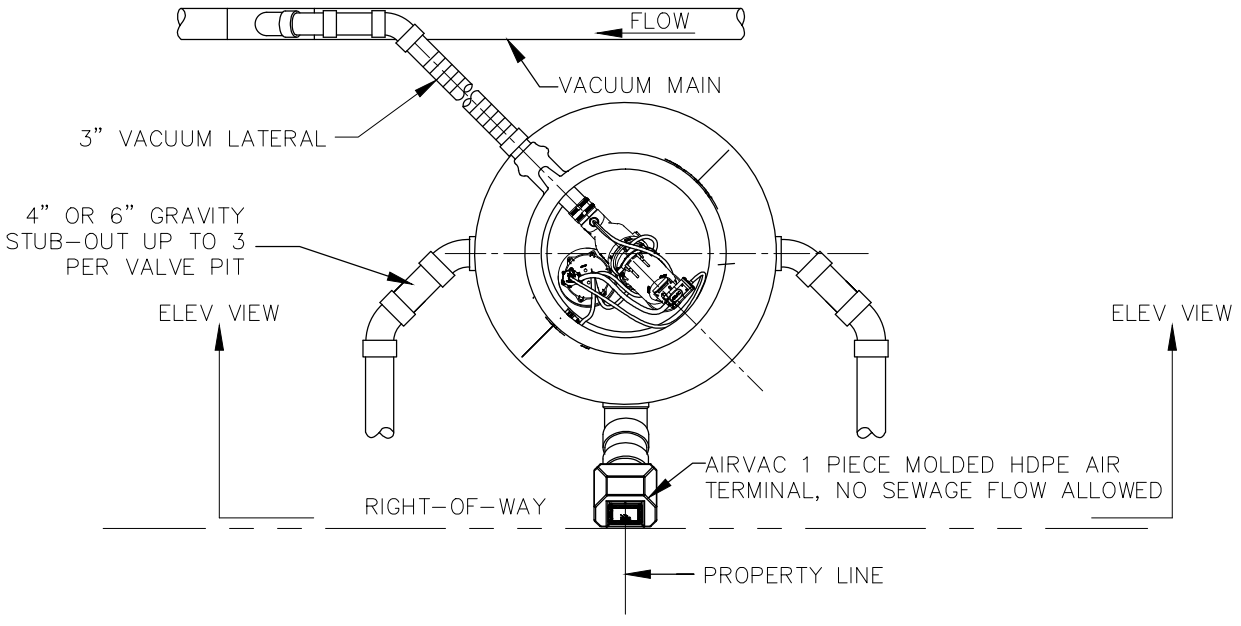


NOTE:
REFER TO PLAN AND PROFILE FOR SERVICE LINE ORIENTATION AND DEVIATIONS FROM STANDARD DETAIL.

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION		DWG No.
AUGUST 2016	VACUUM SEWER STANDARD VALVE PIT ORIENTATION	103



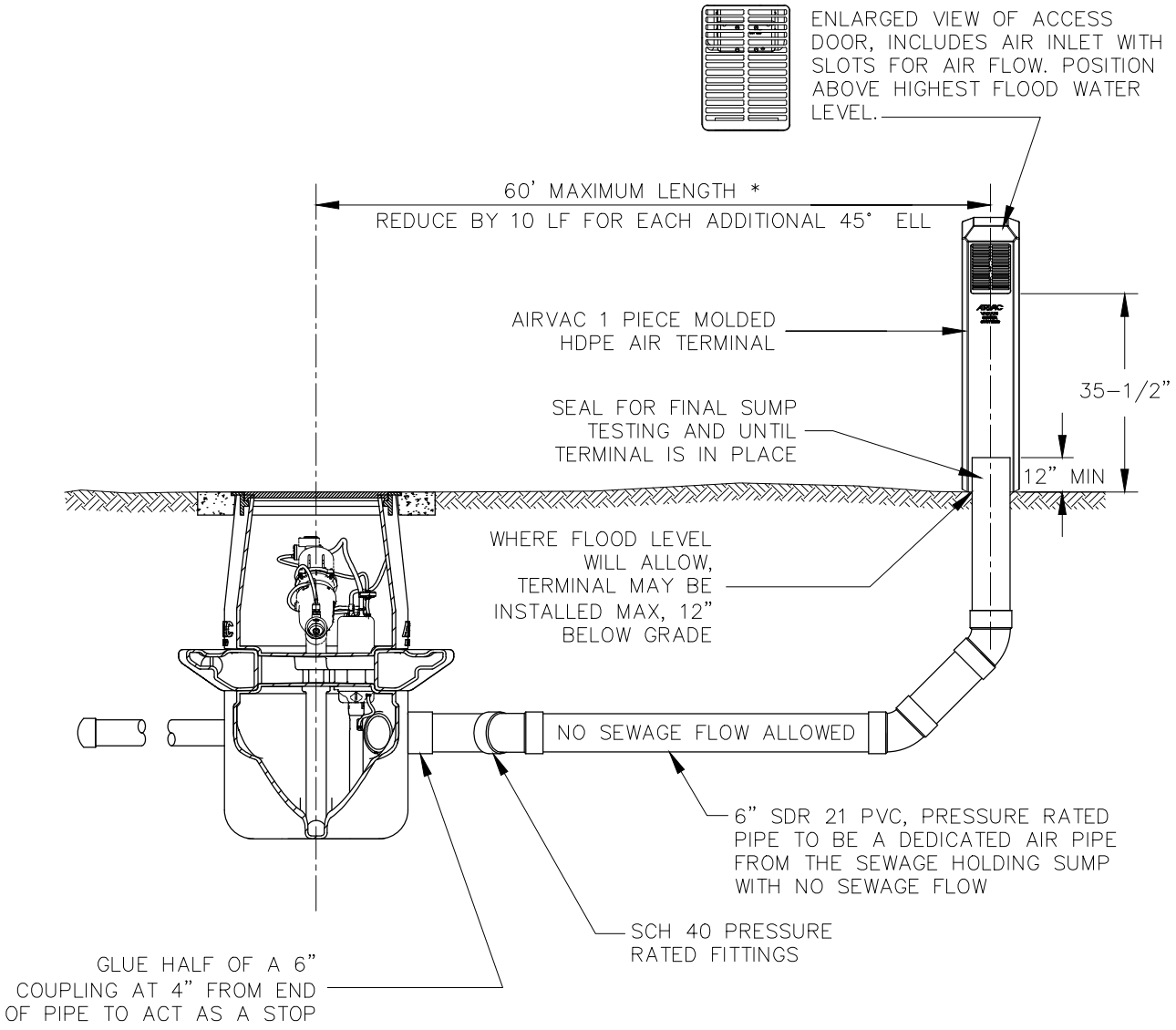


ALTERNATE ARRANGEMENT

PLAN

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

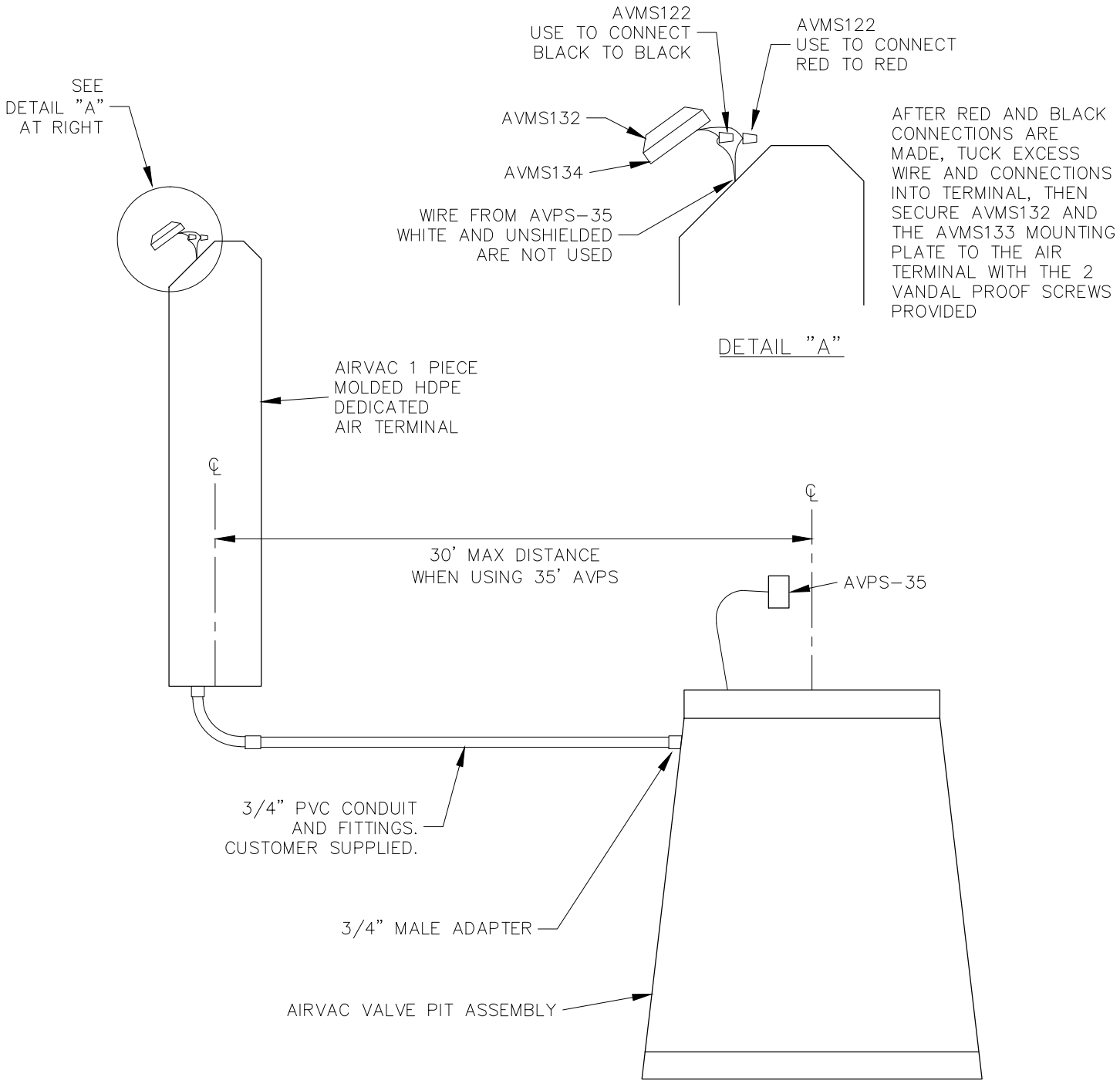
REVISION		DWG No.
AUGUST 2016	VACUUM SEWER 6" DEDICATED AIR TERMINAL (PLAN)	104



ELEVATION

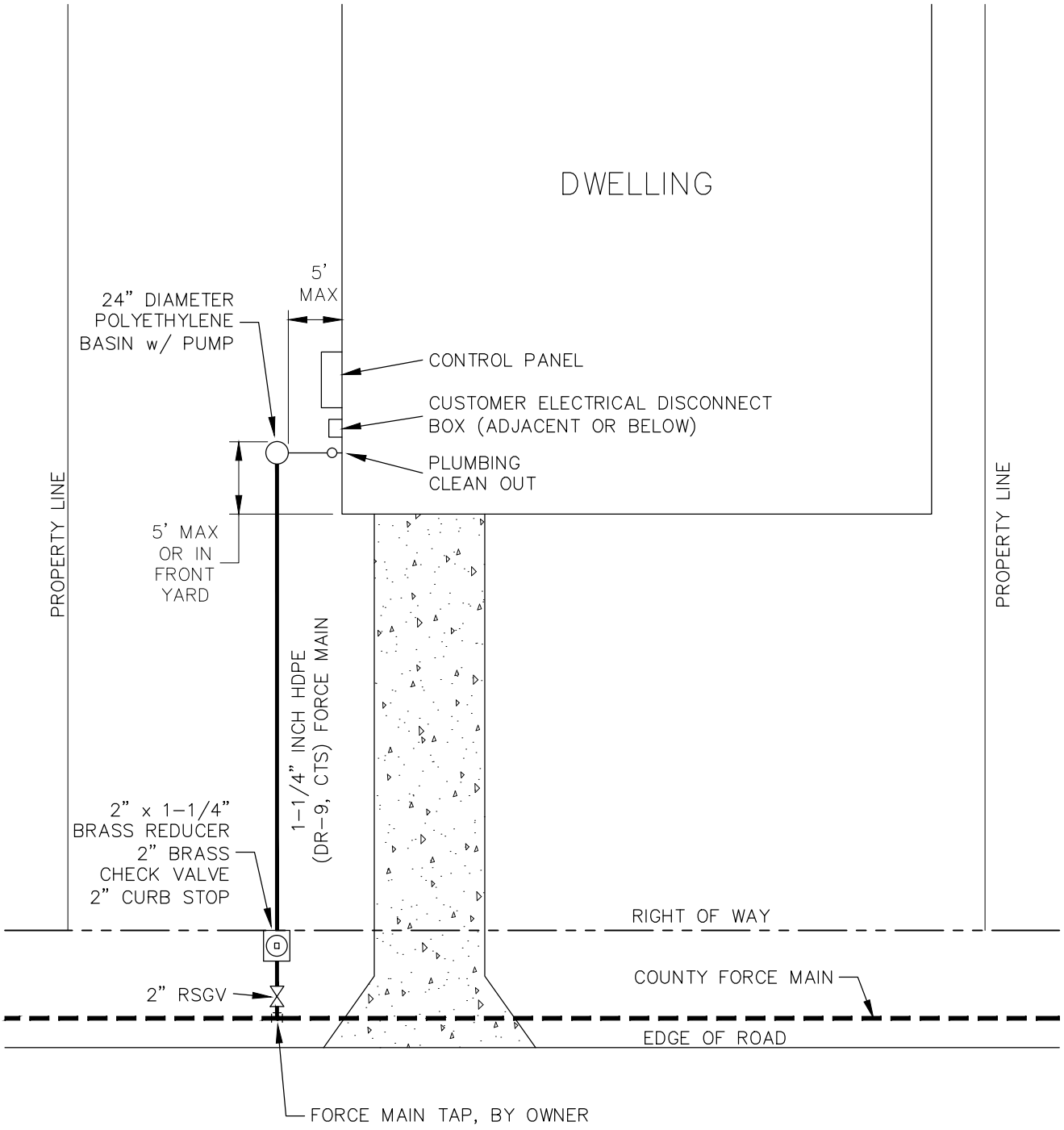
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	VACUUM SEWER	DWG No.
AUGUST 2016	6" DEDICATED AIR TERMINAL (ELEVATION)	105



NOTE:

1. IF AVPS CABLE IS TOO SHORT, LONGER CABLES ARE AVAILABLE THROUGH AIRVAC. EXTENDING WIRE LEADS IS NOT RECOMMENDED.
2. FOR FIBERGLASS PIT: USE 1-1/6" HOLE SAW TO DRILL HOLE FOR ADP. SECURE ADP TO PIT WITH CONDUIT NUT PROVIDED
3. FOR PE PIT: USE 59/64" DRILL. TAP HOLE 3/4" NPT. USE THREAD TAPE AND SCREW INTO SIDEWALL.
4. SLIDE AVPS-35 INTO 3" VALVE UPPER HOUSING SLOT AND SECURE WITH TREE CLIP.

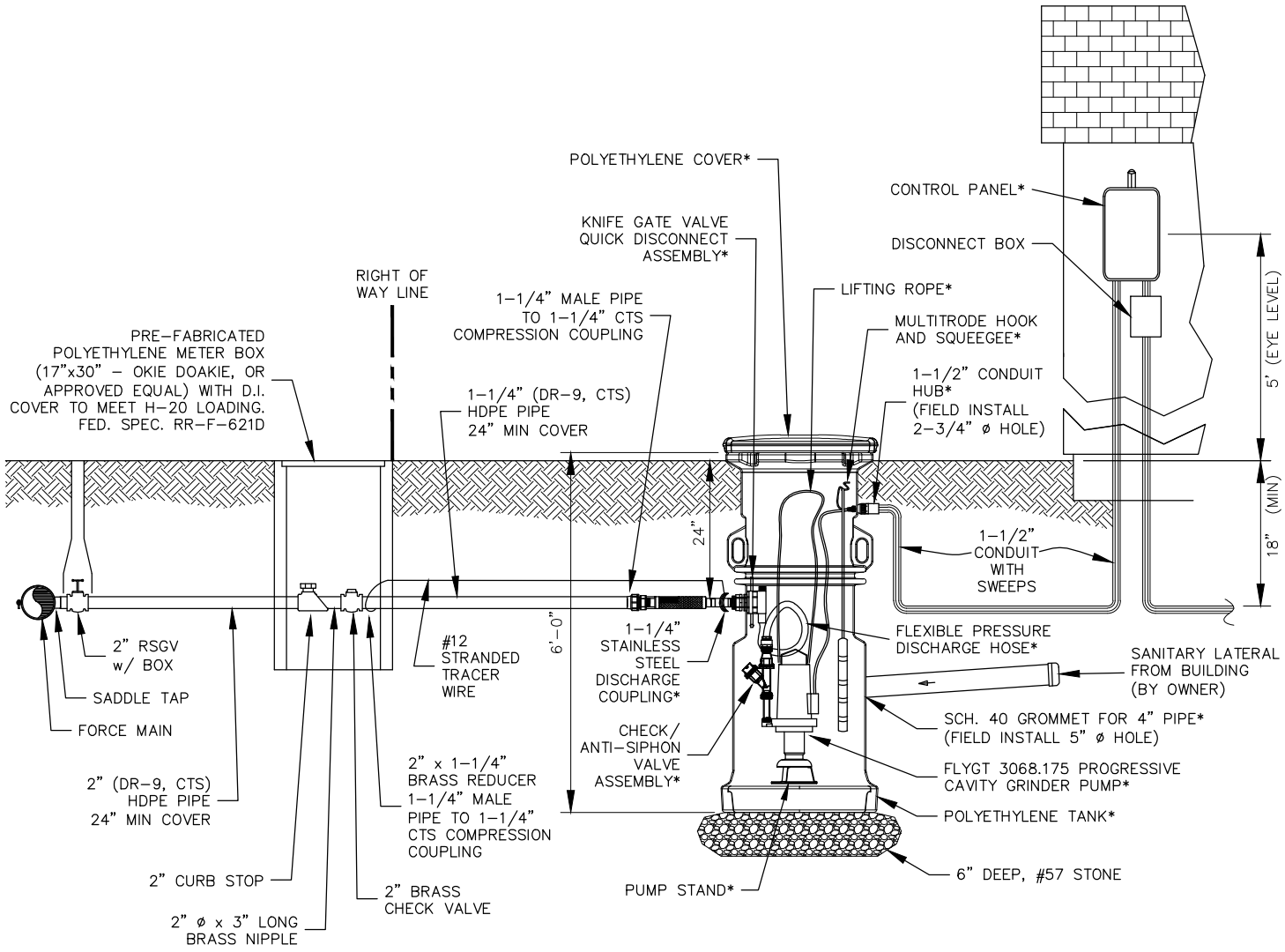


NOTE:

1. REPLACE EXISTING CLEANOUT IF NOT 2-WAY.
2. BASIN TO BE INSTALLED WITH PUMP DISCHARGE FACING RIGHT OF WAY.

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPICAL RESIDENTIAL GRINDER SYSTEM LAYOUT (PLAN VIEW)	DWG No.
AUGUST 2016		107

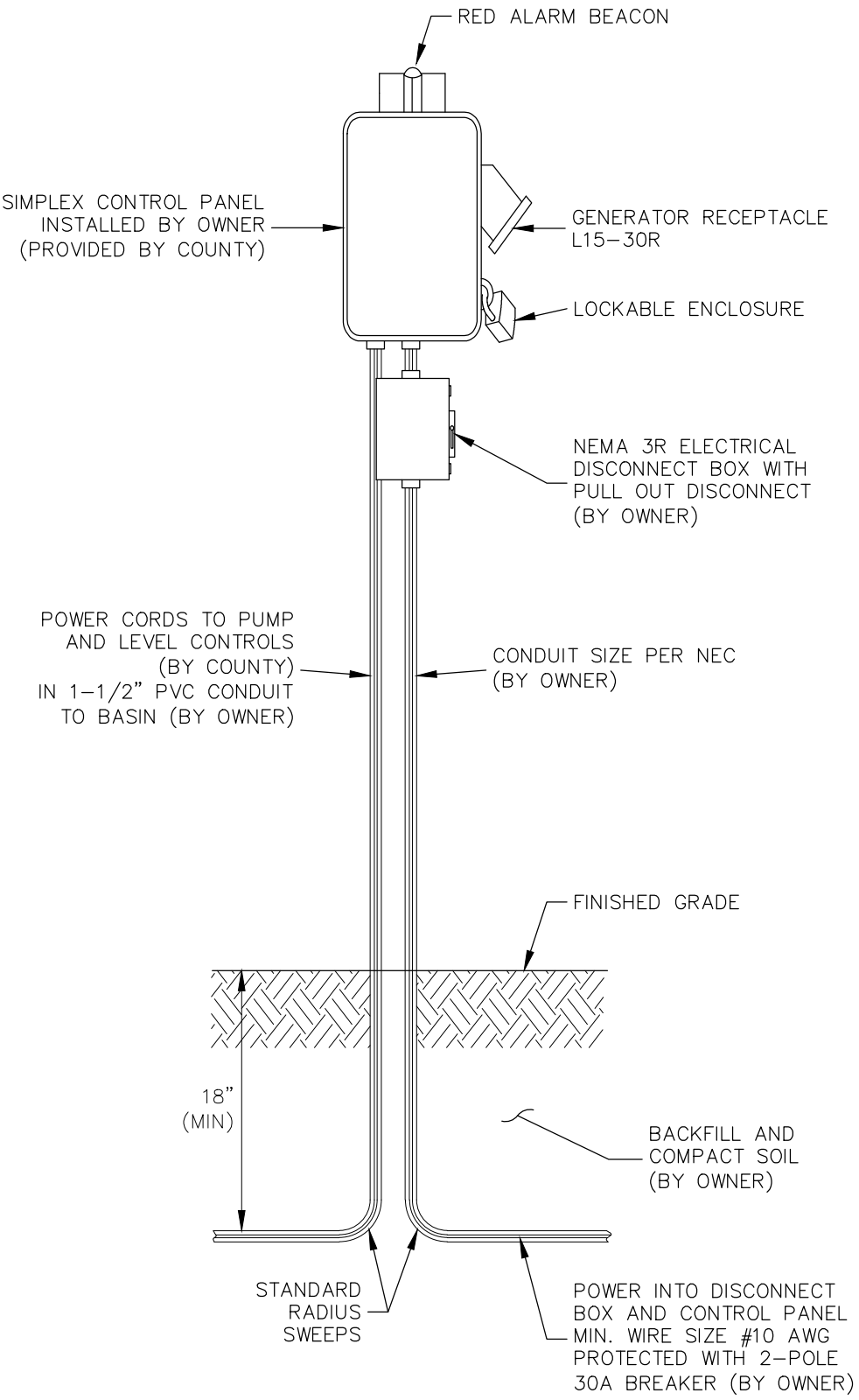


NOTE:

* COMPONENTS PROVIDED WITH GRINDER ASSEMBLY

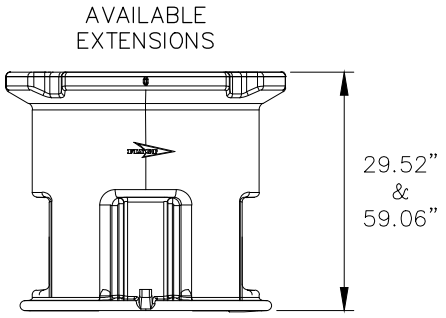
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

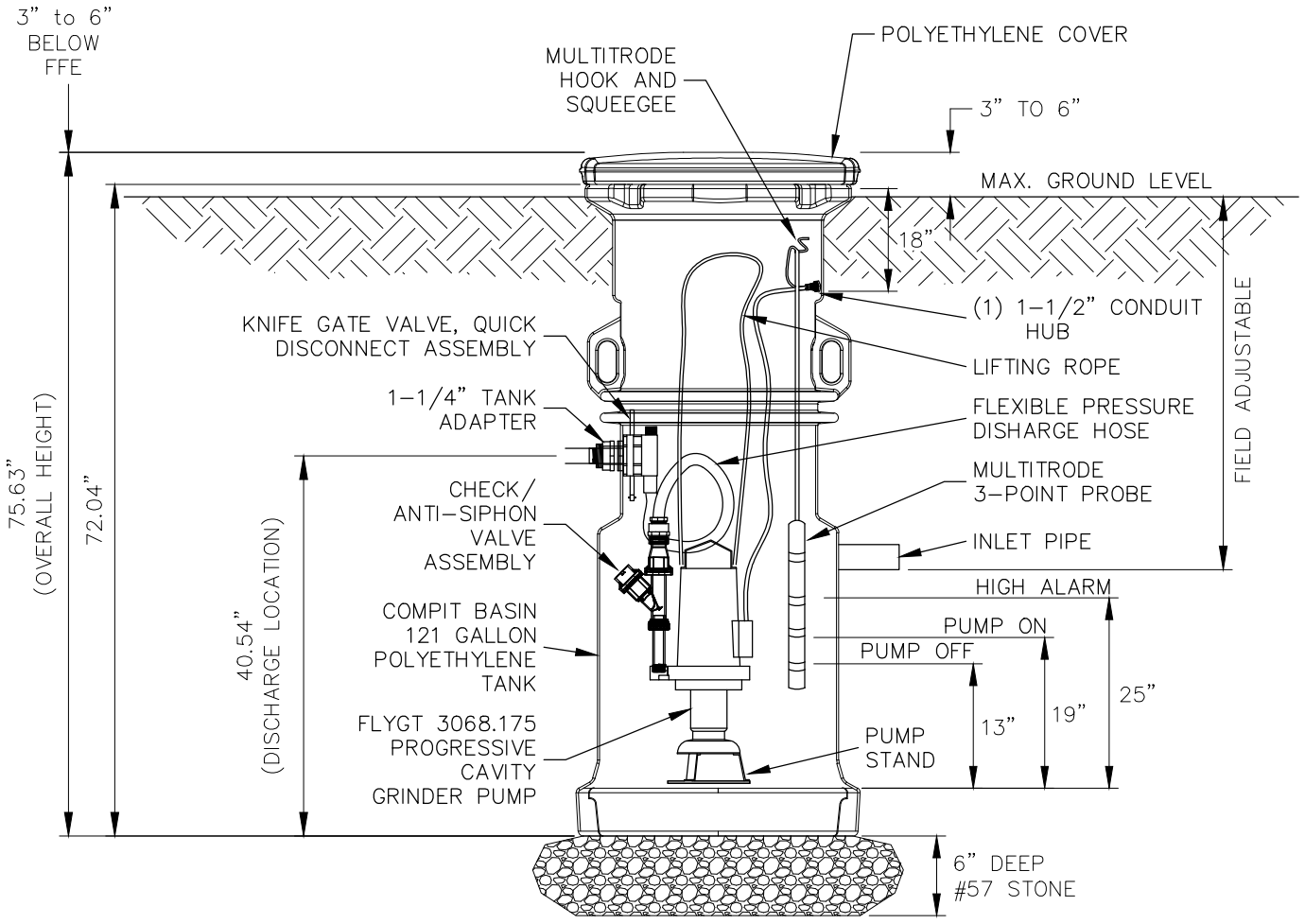
REVISION	TYPICAL RESIDENTIAL GRINDER SYSTEM LAYOUT (SECTION VIEW)	DWG No.
AUGUST 2016		108



MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

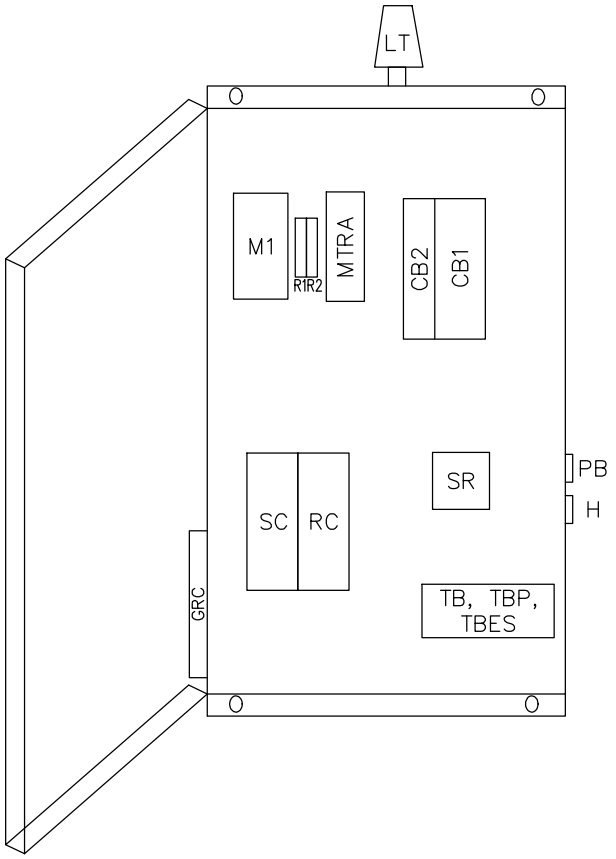
REVISION	TYPICAL RESIDENTIAL GRINDER SYSTEM WALL MOUNTED CONTROL PANEL	DWG No.
AUGUST 2016		109



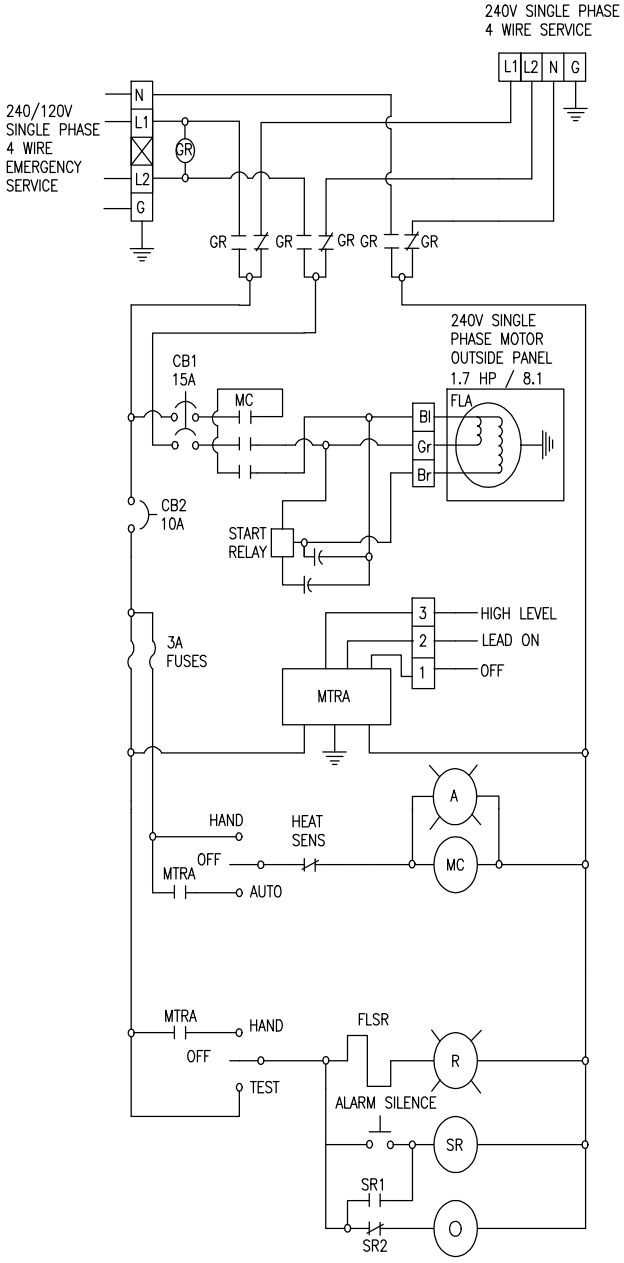


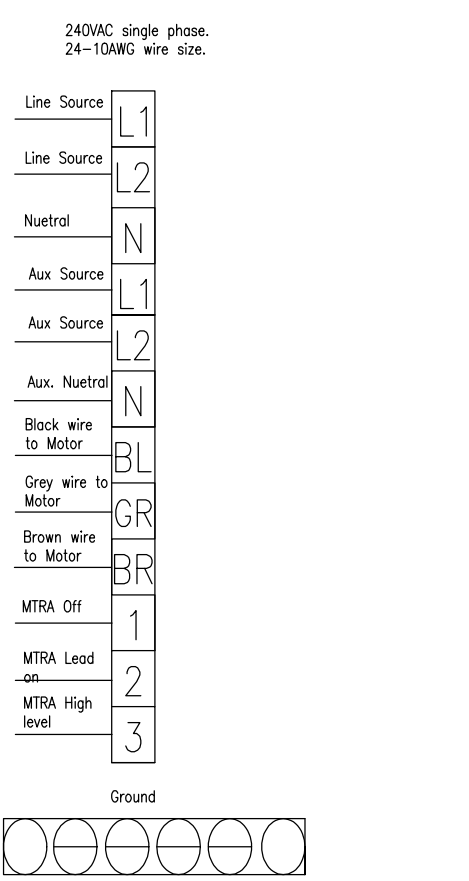
MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPICAL RESIDENTIAL GRINDER SYSTEM TYPICAL WET WELL	DWG No.
AUGUST 2016		110



DESCRIPTION	ABV
14" x 12" x 6" POLY ENCLOSURE	ENC
14" x 12" BACK PANEL – ALUMINUM	BP
14" x 12" HINGED FRONT PANEL	FP
CIRCUIT BREAKER 2 POLE, 15A UL 489	CB1
CIRCUIT BREAKER 1 POLE, 10A UL 489	CB2
CONTACTOR – 3 HP @ 230V, 1 PH	M1
N/O BLACK PLASTIC PUSH BUTTON 22mm	PB
PILOT LIGHT 22mm	PL
3 POSITION MAINTAINED SELECTOR SWITCH, 2 NO	3P
2 POSITION MAINTAINED SELECTOR SWITCH, 1 NO	2P
MIN. INDUSTRIAL RELAY, DPDT 8A 120V COIL	R1,R2
RELAY BASE	R1,R2
STROBE / FLASH ALARM LIGHT 120VAC	LT
WARBLE ALARM, 30 MM	H
START CAP 230V 150MFD	SC
START RELAY / POTENTIAL RELAY	SR
RUN CAP 370V 50MFD	RC
2, 5mm 2 SPRING TERMINAL BLOCK	TB
END PLATE FOR TERMINAL BLOCK	TBP
GENERATOR RECEPTACLE AND COVER 30A	GRC
END STOP	TBES



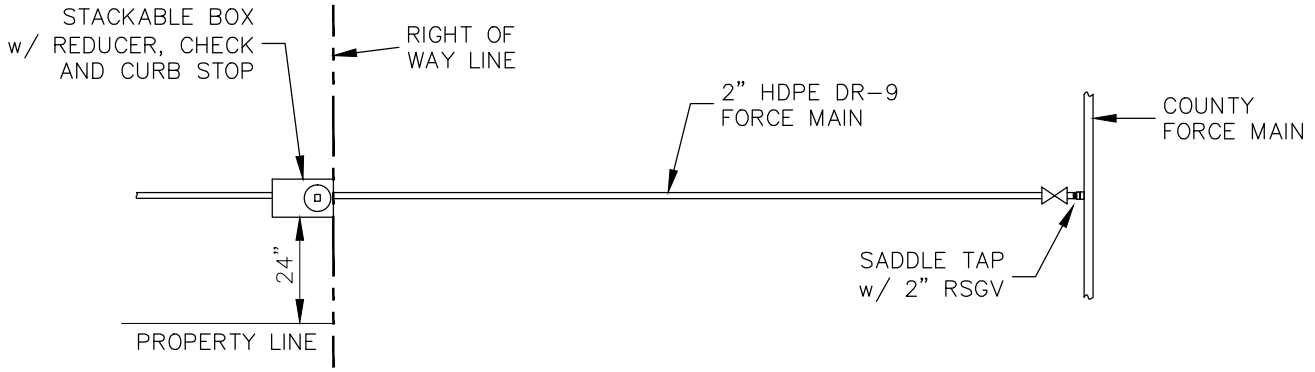


Notes:
> All wire to be 12-16AWG.
> Torque all wiring terminals to 4-8 in/lbs.
> Use 60 C Copper wire only minimum for less that 100 amps.
> All penetrations must meet the enclusure type rating indicated on the "UL" information label.
> L2 to act as Neutral in all control wiring.

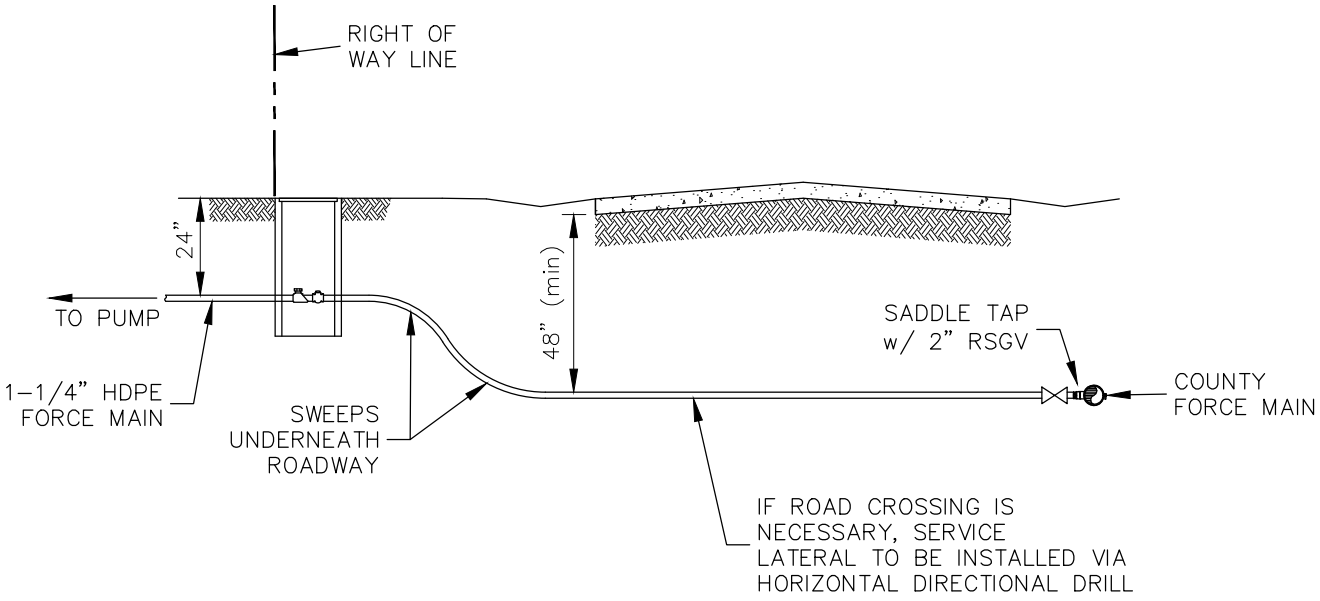
Voltage: 240VAC	Phase: 1	Hertz: 60	HP/FLA: 1.7/8.1
Enclosure Type: 4X			
Short curcuit current: 5KA			

MARTIN COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION	TYPICAL RESIDENTIAL GRINDER SYSTEM CONTROL PANEL WIRING DIAGRAM	DWG No.
AUGUST 2016		112



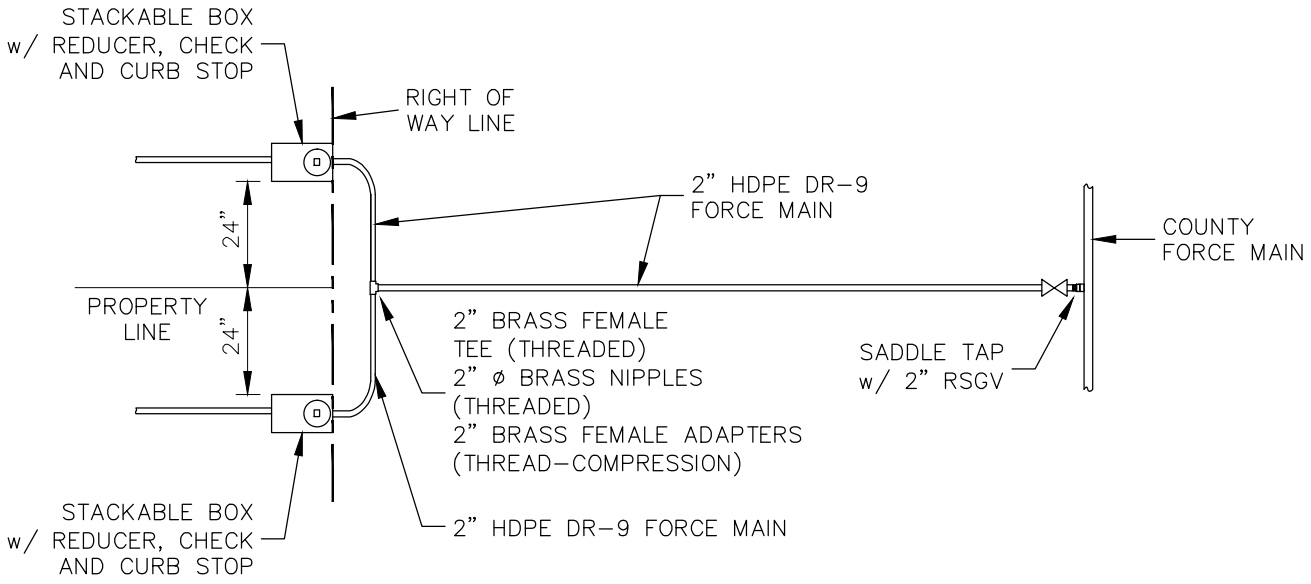
TYPICAL ROAD CROSSING PLAN VIEW



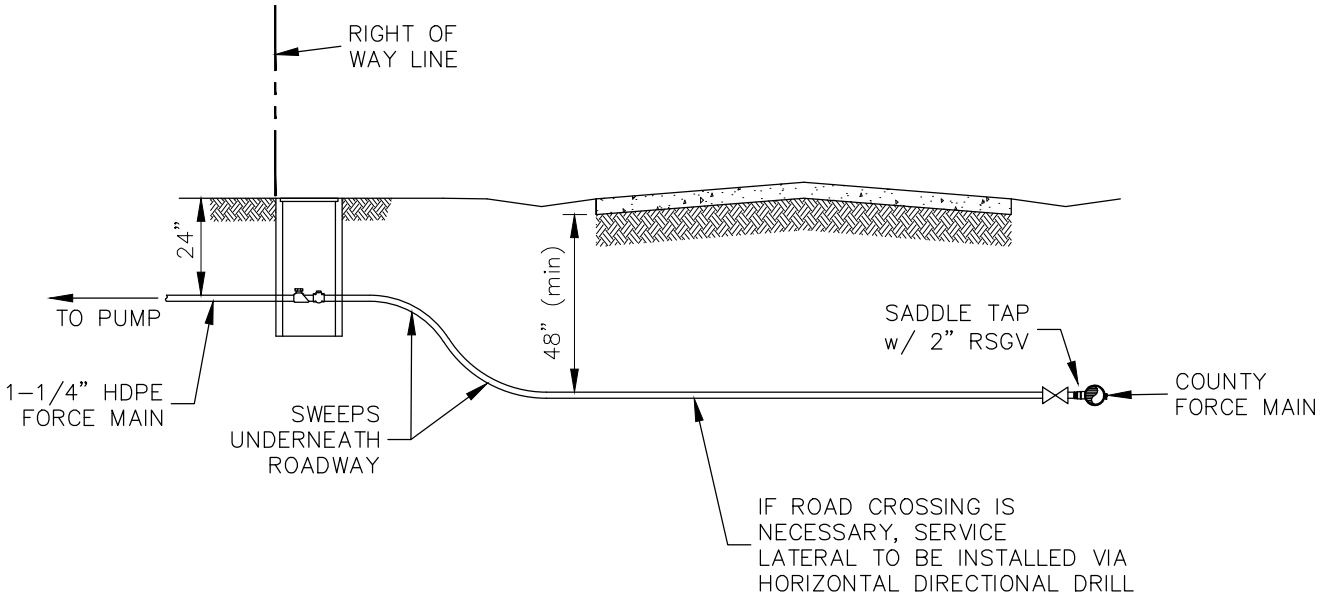
TYPICAL ROAD CROSSING SECTION VIEW

NOTES:

1. ACTUAL LOCATIONS OF SERVICES SHALL BE DETERMINED IN FIELD BY MARTIN COUNTY UTILITIES DEPENDING UPON EXISTING CONDITIONS & LOCATION OF EXISTING SEPTIC TANK.
2. SEE PLAN SHEET FOR LOCATION OF SERVICES



TYPICAL ROAD CROSSING PLAN VIEW



TYPICAL ROAD CROSSING SECTION VIEW

NOTES:

1. ACTUAL LOCATIONS OF SERVICES SHALL BE DETERMINED IN FIELD BY MARTIN COUNTY UTILITIES DEPENDING UPON EXISTING CONDITIONS & LOCATION OF EXISTING SEPTIC TANK.
2. SEE PLAN SHEET FOR LOCATION OF SERVICES