COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 3

UTILITIES DETAIL DRAWINGS

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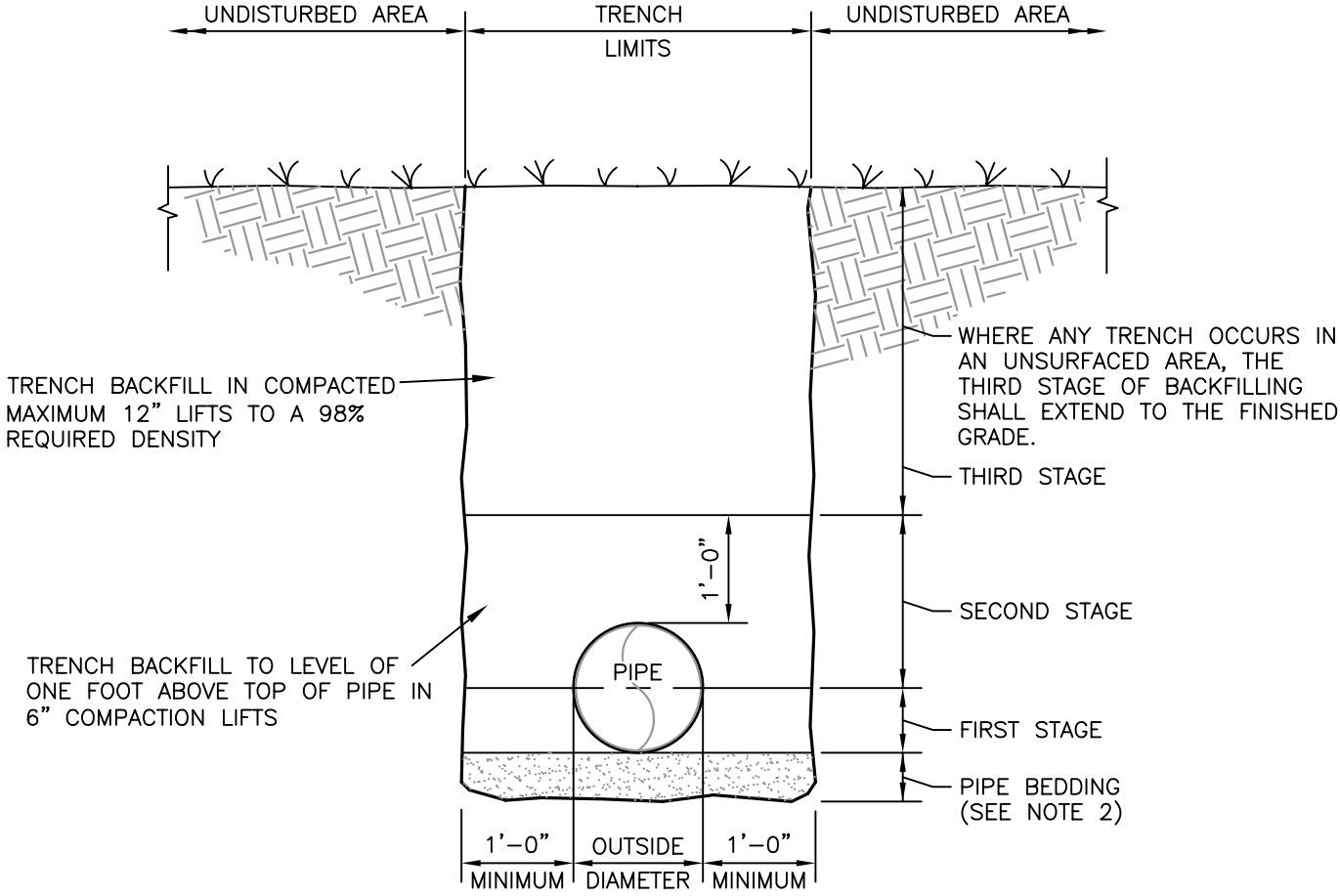


NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.

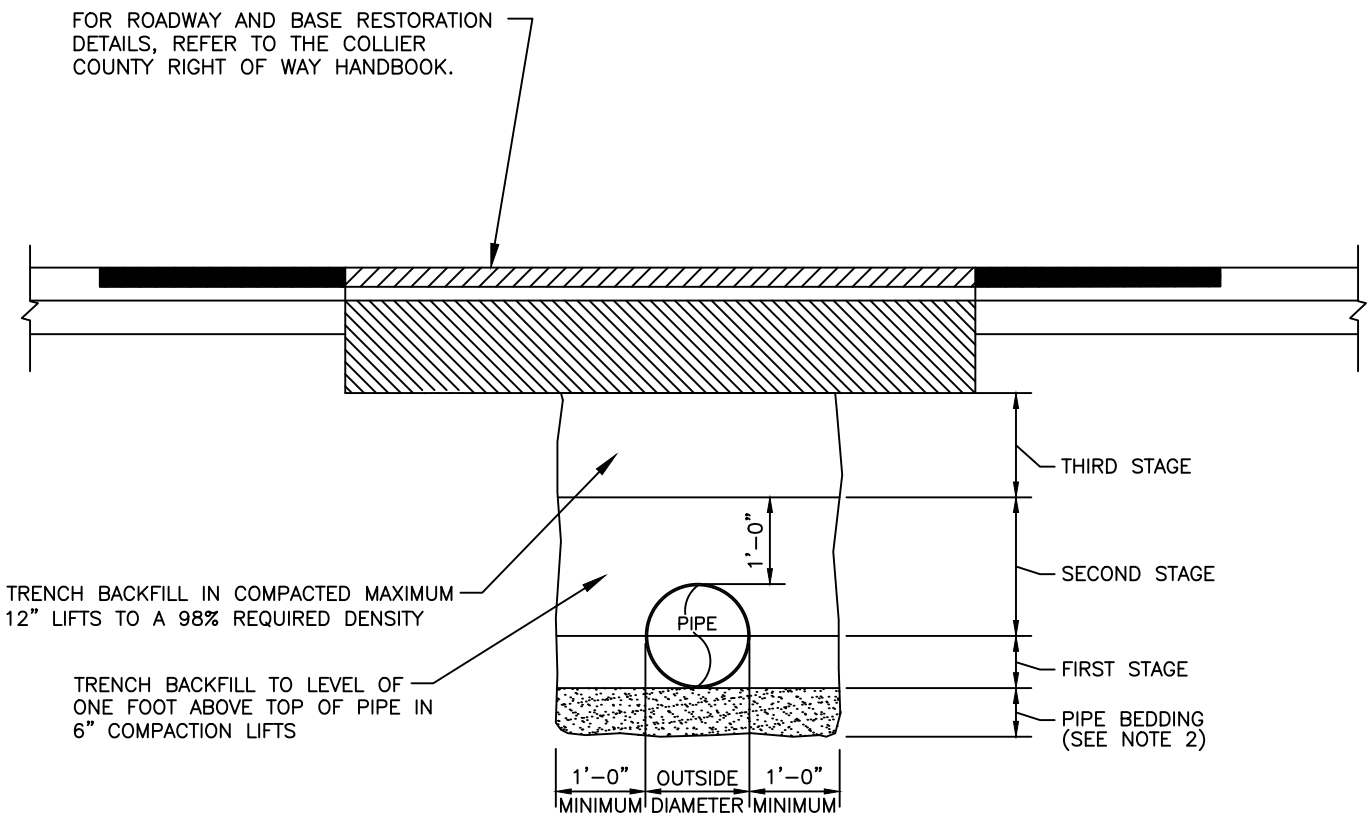
2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.

UNPAVED AREA TRENCH BACKFILL DETAIL

NTS

G-1

REVISED: APRIL 2006



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2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.

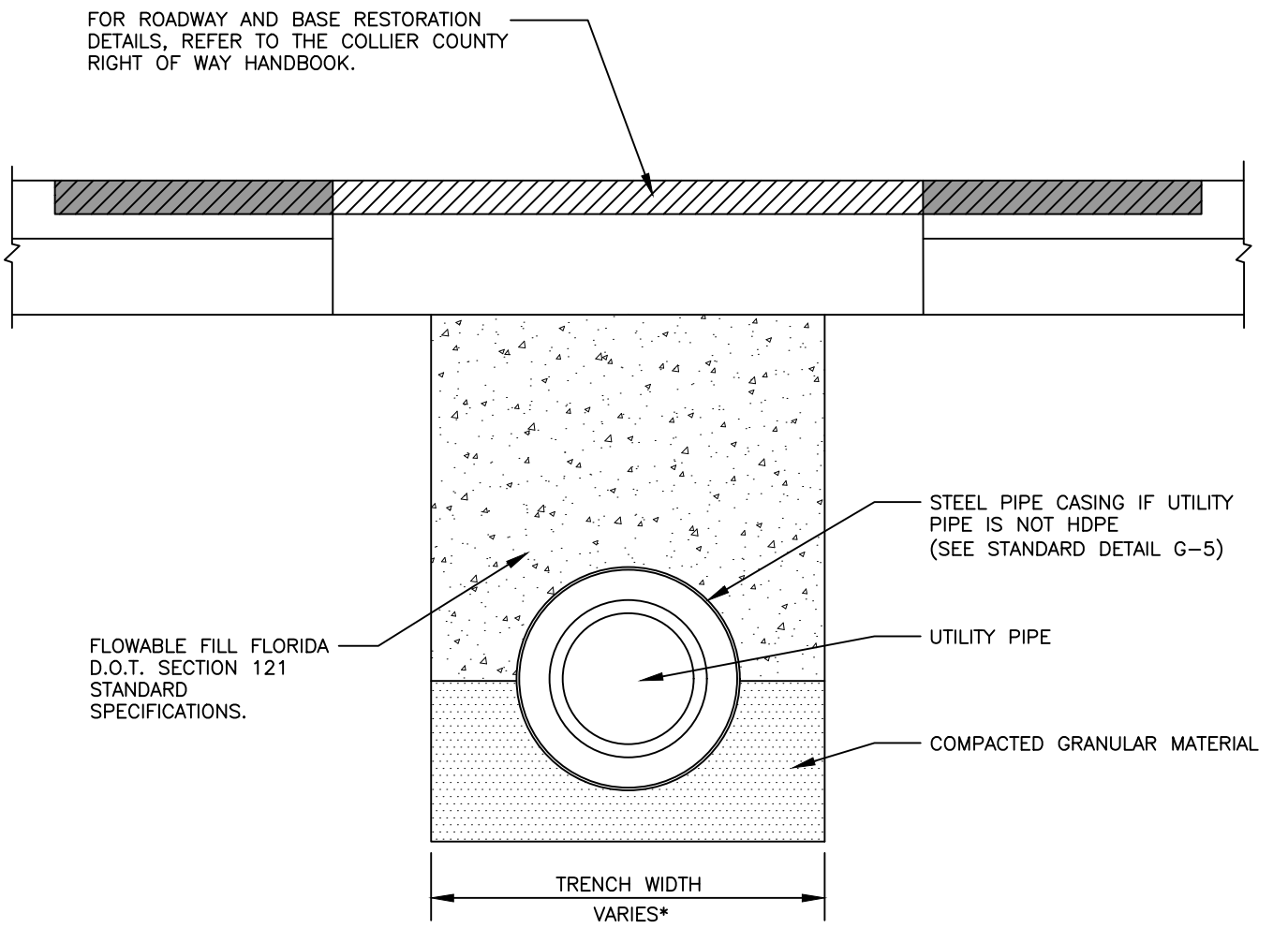
PAVED AREA TRENCH RESTORATION DETAIL FOR PRIVATE ROADS

NTS

REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
G-2

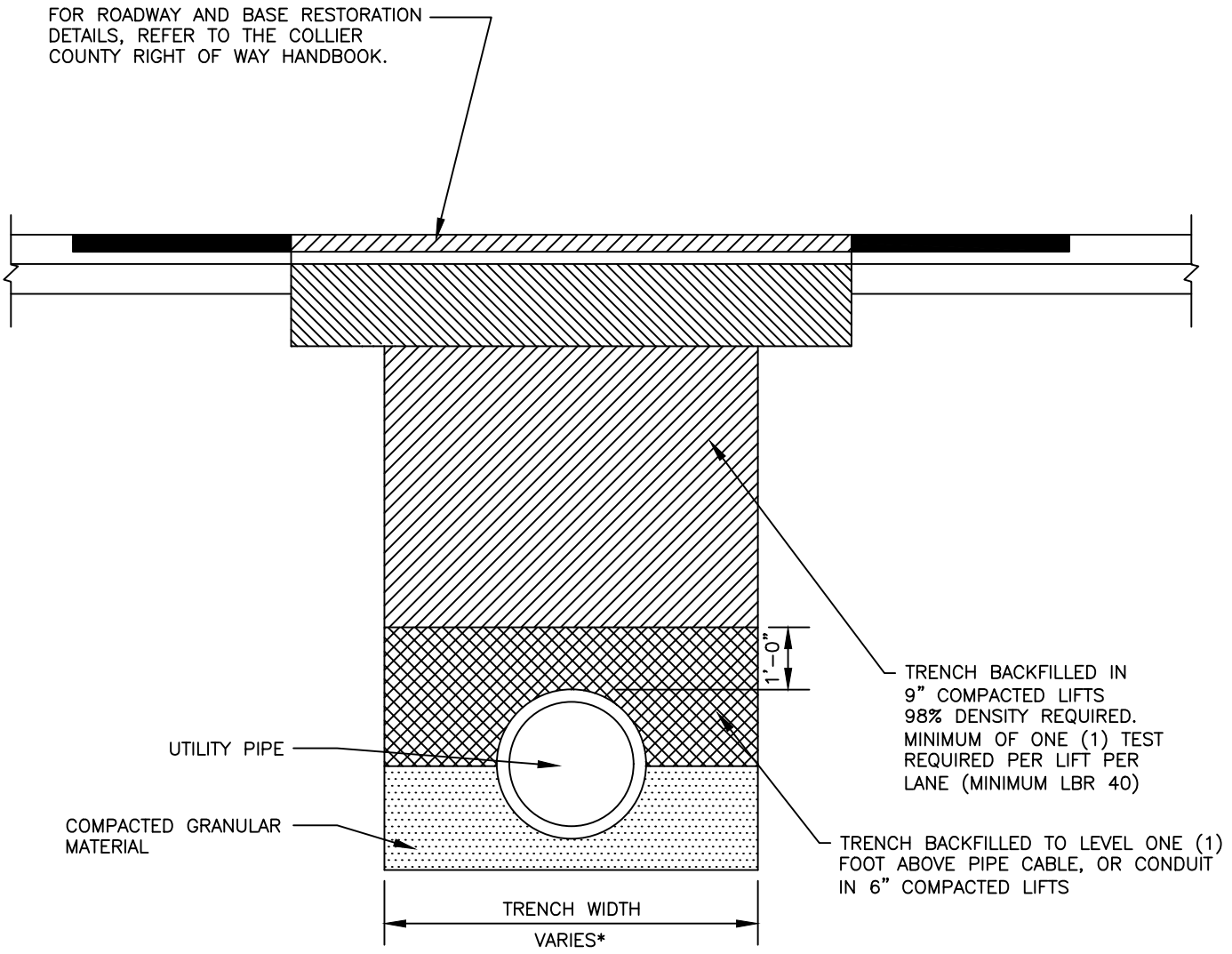


*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLUS 2 FEET

NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.
2. ALL PIPES SHALL BE CONSTURCTED WITIHN A STEEL CASING PIPE IF INSTALLED ON A ROAD TO BE WIDENED, UNLESS THE UTILITY PIPE IS HDPE.

STATE ROAD, MAJOR COUNTY ROAD, AND NUMBERED COUNTY ROAD FLOWABLE FILL ROAD AND TRENCH RESTORATION NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. G-2A

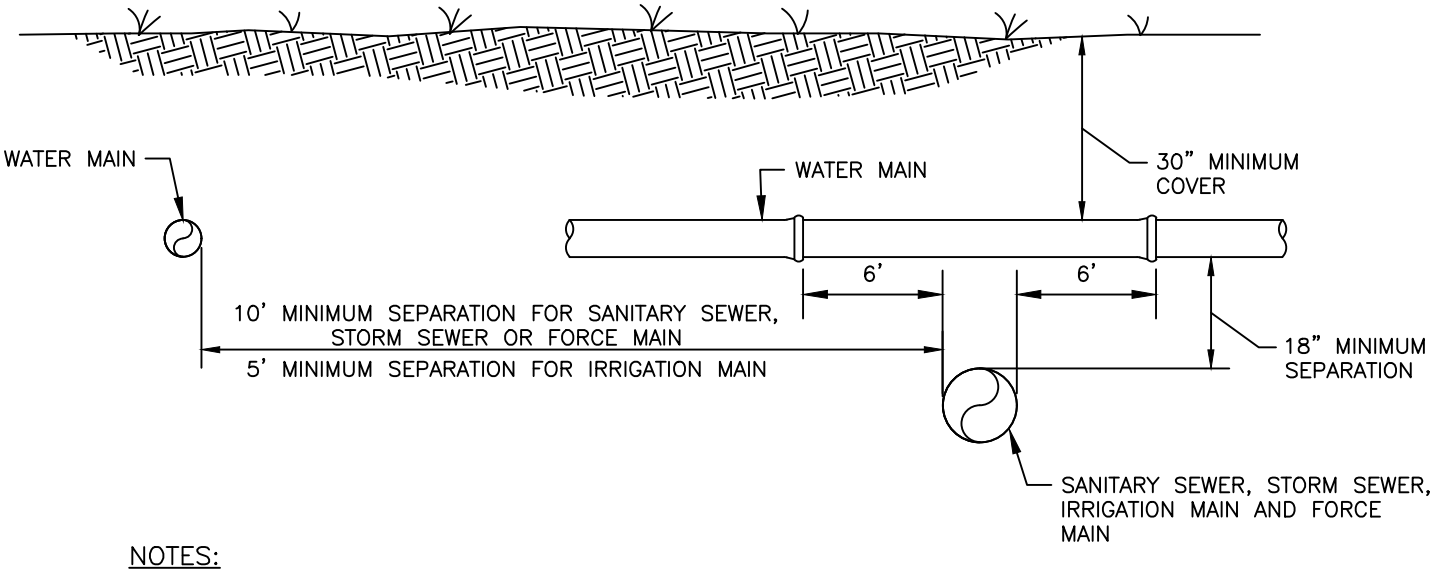


*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLUS 2 FEET

NOTES:

1. ALL MODIFIED PROCTOR AND DENSITY TESTS SHALL BE TAKEN BY A CERTIFIED LABORATORY.
2. ALL TESTS SHALL BE COMPLETED AND SHALL MEET MINIMUM DENSITY REQUIREMENTS PRIOR TO ADDITIONAL BACKFILLING.
3. RIGHT-OF-WAY PERMIT STIPULATIONS OVERRIDE THIS DETAIL WHERE TRENCH IS LOCATED WITHIN A COUNTY RIGHT-OF-WAY.
4. ASPHALT PATCH AND TAPERS MUST BE FLUSH WITH ADJACENT ASPHALT AND CURBING.

ROAD AND TRENCH RESTORATION FOR LOCAL ROADS NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. G-2B



NOTES:

1. WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER, NON-POTABLE IRRIGATION MAINS, AND FORCE MAINS BY A MINIMUM CLEAR VERTICAL DISTANCE OF 18 INCHES MEASURED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE TOP OF THE LOWER PIPE. THE 18 INCHES MINIMUM VERTICAL SEPARATION DISTANCE DOES NOT APPLY TO SEPARATIONS OF SEWER LATERALS AND POTABLE WATER MAIN PIPELINE INSTALLATIONS. ALSO, WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER AND FORCE MAINS BY 10 FEET AND FROM IRRIGATION MAINS BY 5 FEET MEASURED HORIZONTALLY BETWEEN OUTSIDE OF PIPES.

2. ALL CROSSINGS WITH VERTICAL CLEARANCE LESS THAN 18 INCHES SHALL REQUIRE SUBMISSION AND APPROVAL OF A DEVIATION. IF A DEVIATION IS SUBMITTED, THE FOLLOWING MINIMUM STIPULATIONS APPLY: THE CROSSING SHALL BE MADE USING A FULL LENGTH OF THICKNESS CLASS 200 (DR14) AWWA C-900 PVC OR CLASS 235 (DR18) AWWA C-905 PVC PIPE CENTERED ON THE CROSSING.

3. 18 INCHES CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER CROSSES UNDER SEWER LINE.

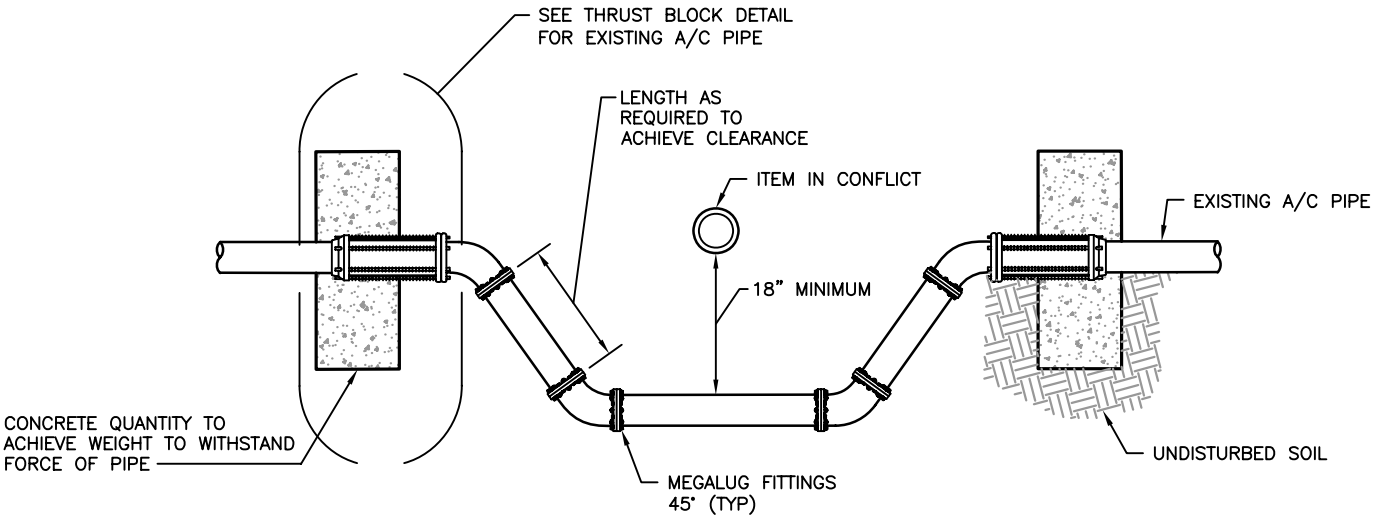
4. WATER MAINS, SANITARY SEWER, STORM SEWER, AND NON-POTABLE IRRIGATION MAINS SHALL BE IN SEPARATE TRENCHES.

5. WATER MAINS CROSSING ANY TYPE OF SANITARY SEWER, INCLUDING FORCE MAIN, OR STORM SEWER SHALL HAVE THE ONE FULL LENGTH OF WATER MAIN CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THAT THE WATER 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, FAC, AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY- OR PRSSURE-TYPE SANITARY SEWERS, FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610.

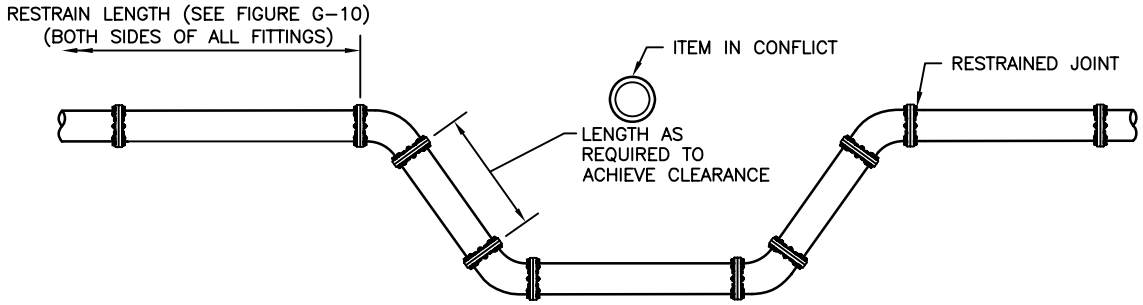
6. IF THE VERTICAL SEPARATION BETWEEN GRAVITY SANITARY SEWER AND STORMWATER LINES IS LESS THAN 18 INCHES, THEN 57 STONE SHALL BE UTILIZED BETWEEN THE TWO LINES.

7. SEE SECTION 1- DESIGN CRITERIA FOR ADDITIONAL REQUIREMENTS.

PIPE SEPARATION DETAIL	REVISION DATE:		SHEET NO.
NTS	JULY 2018	Collier County Public Utilities Division	G-3



EXISTING A/C PIPE – HEADWALL



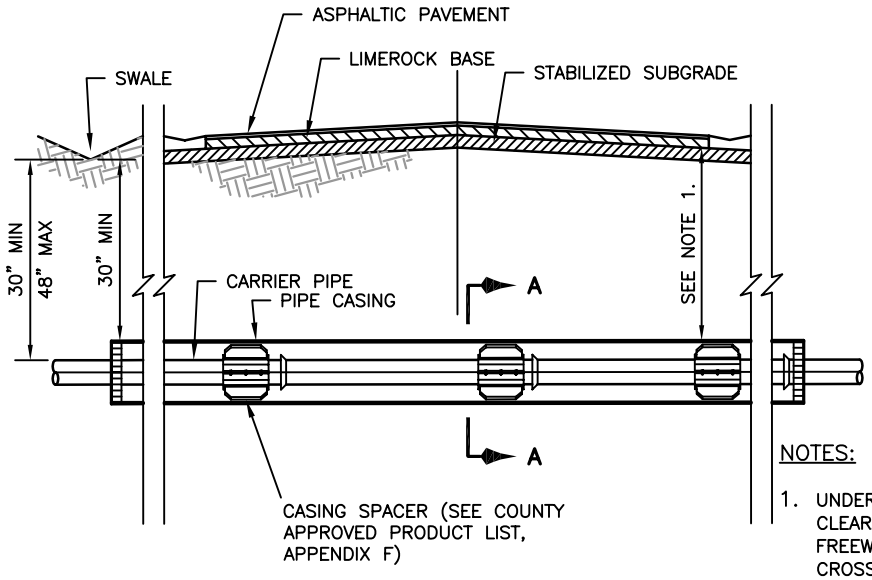
NEW & EXISTING PIPE – RESTRAINED JOINT

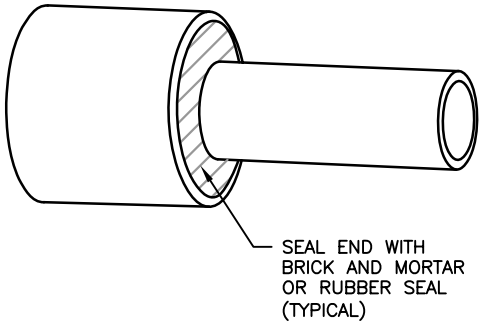
NOTES

1. SEE SECTION 1 – DESIGN CRITERIA FOR AIR RELEASE VALVE REQUIREMENTS.

PIPE CONFLICT DETAILS
NTS

REVISED: APRIL 2006



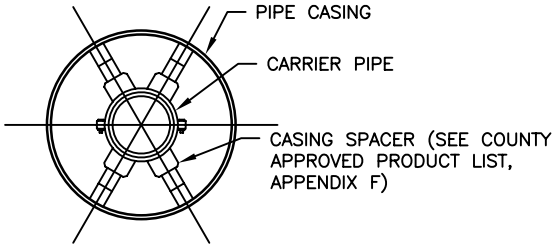


CASING END SEAL

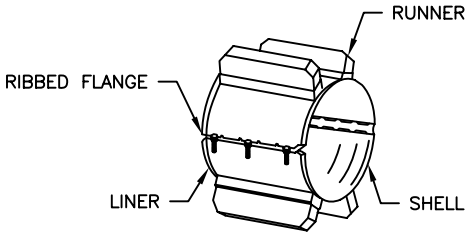
NOTES:

1. UNDERGROUND CROSSINGS REQUIRE A MINIMUM VERTICAL CLEARANCE OF 48" BELOW PAVEMENT SURFACE FOR FREEWAYS, 36" FOR OTHER HIGHWAYS AND SUBAQUEOUS CROSSINGS OR 30" BELOW UNPAVED GROUND INCLUDING DITCH GRADE PER FLORIDA D.O.T.

2. SEE TECHNICAL SPECIFICATIONS FOR CARRIER PIPE AND CASING PIPE REQUIREMENTS.



SECTION A–A



SPACER

STANDARD NUMBER OF RUNNERS REQUIRED

UP TO 14" CARRIER PIPE	– 4 REQUIRED
OVER 14" THROUGH 36" CARRIER PIPE	– 6 REQUIRED
OVER 36" THROUGH 48" CARRIER PIPE	– 7 REQUIRED

STAINLESS STEEL SPACERS:

1. SPACERS SHALL BE BOLT–ON STYLE WITH A TWO PIECE SOLID SHELL MADE FROM T–304 STAINLESS STEEL OF A MINIMUM 14 GAUGE THICKNESS. THE SHELL SHALL BE LINED WITH A RIBBED PVC SHEET OF A 0.090" THICKNESS THAT OVERLAPS THE EDGES. RUNNERS MADE FROM UHMW POLYMER SHALL BE ATTACHED TO RISERS AT APPROPRIATE POSITIONS TO PROPERLY LOCATE THE CARRIER WITHIN THE CASING AND TO EASE INSTALLATION. RISERS SHALL BE MADE FROM T–304 STAINLESS STEEL OF A MINIMUM 14 GAUGE THICKNESS AND SHALL BE ATTACHED TO THE SHELL BY MIG WELDING. ALL WELDS SHALL BE FULLY PASSIVATED. ALL FASTENERS SHALL BE MADE FROM T–304 STAINLESS STEEL. CASING SPACERS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

PLACEMENT OF SPACERS ON CARRIER PIPE:

1. GENERAL – ONE SPACER SHALL BE PLACED NOT MORE THAN TWO FEET FROM EACH END OF CASING. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' TO 10' INTERVALS WITHIN THE CASING, OR IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATIONS.

2. PVC CARRIER – ONE SPACER SHALL BE PLACED ON THE SPIGOT END OF EACH SEGMENT AT THE LINE MARKING THE LIMIT OF INSERTION INTO THE BELL. WHEN THE JOINT IS COMPLETE, THE SPACER SHALL BE IN CONTACT WITH THE BELL OF THE JOINT SO THAT THE SPACER PUSHES THE JOINT AND RELIEVES COMPRESSION WITHIN THE JOINT. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' TO 10' INTERVALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

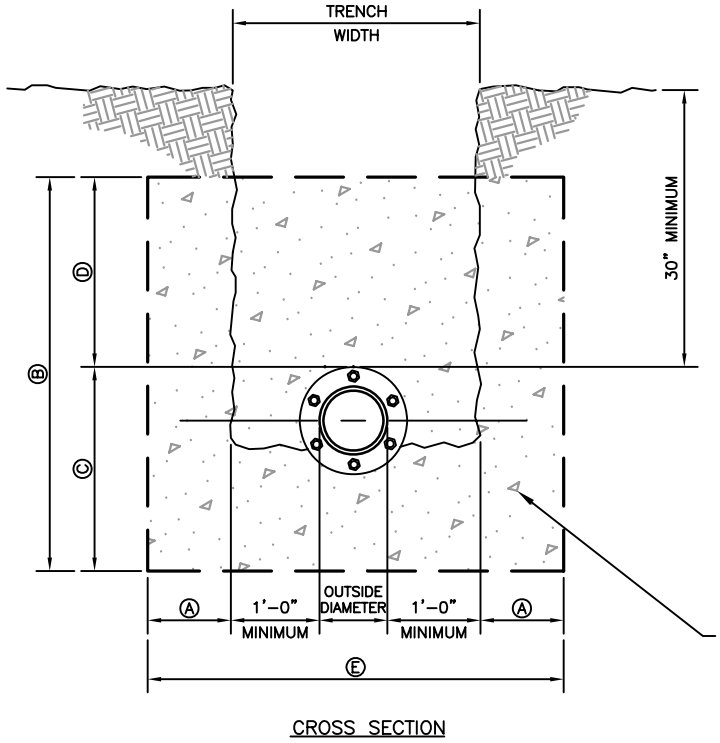
CARRIER PIPE:

1. CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY USE OF STAINLESS STEEL CASING SPACERS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

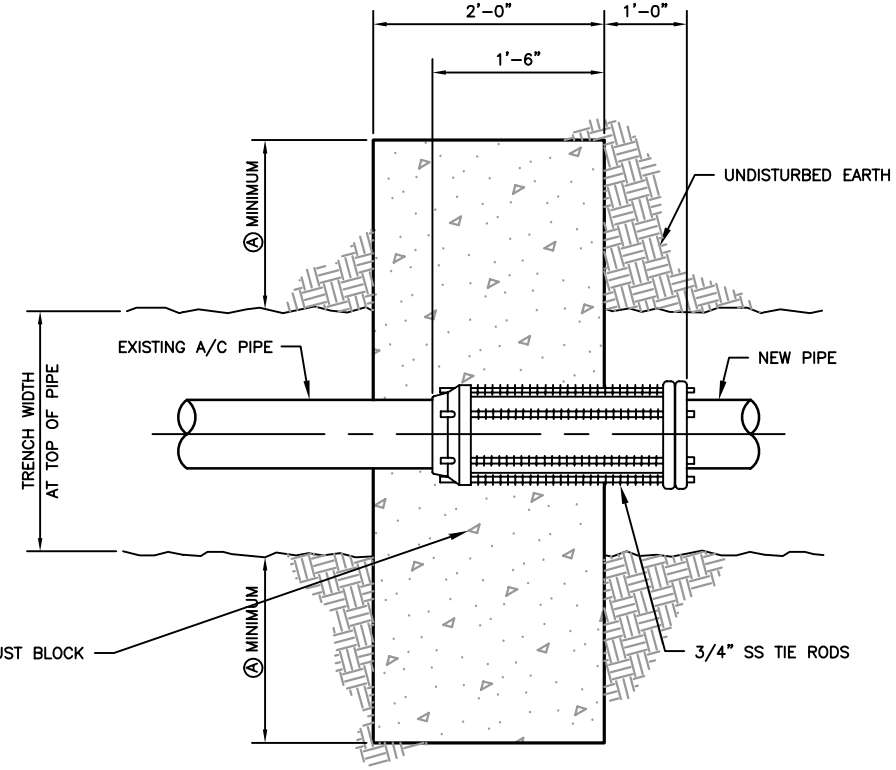
JACK AND BORE DETAIL

NTS

REVISED: AUGUST 2008



CROSS SECTION



PLAN VIEW

PIPE DIAMETER	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	NUMBER OF TIE RODS REQUIRED	CY.
4"	9"	36"	20"	16"	3'–10"	2	.85
6"	12"	36"	21"	15"	4'–6"	2	1.00
8"	12"	36"	22"	14"	4'–8"	2	1.04
10"	12"	36"	23"	13"	4'–10"	2	1.07
12"	18"	36"	24"	12"	6'–0"	2	1.33
16"	18"	36"	32"	4"	6'–4"	4	1.41

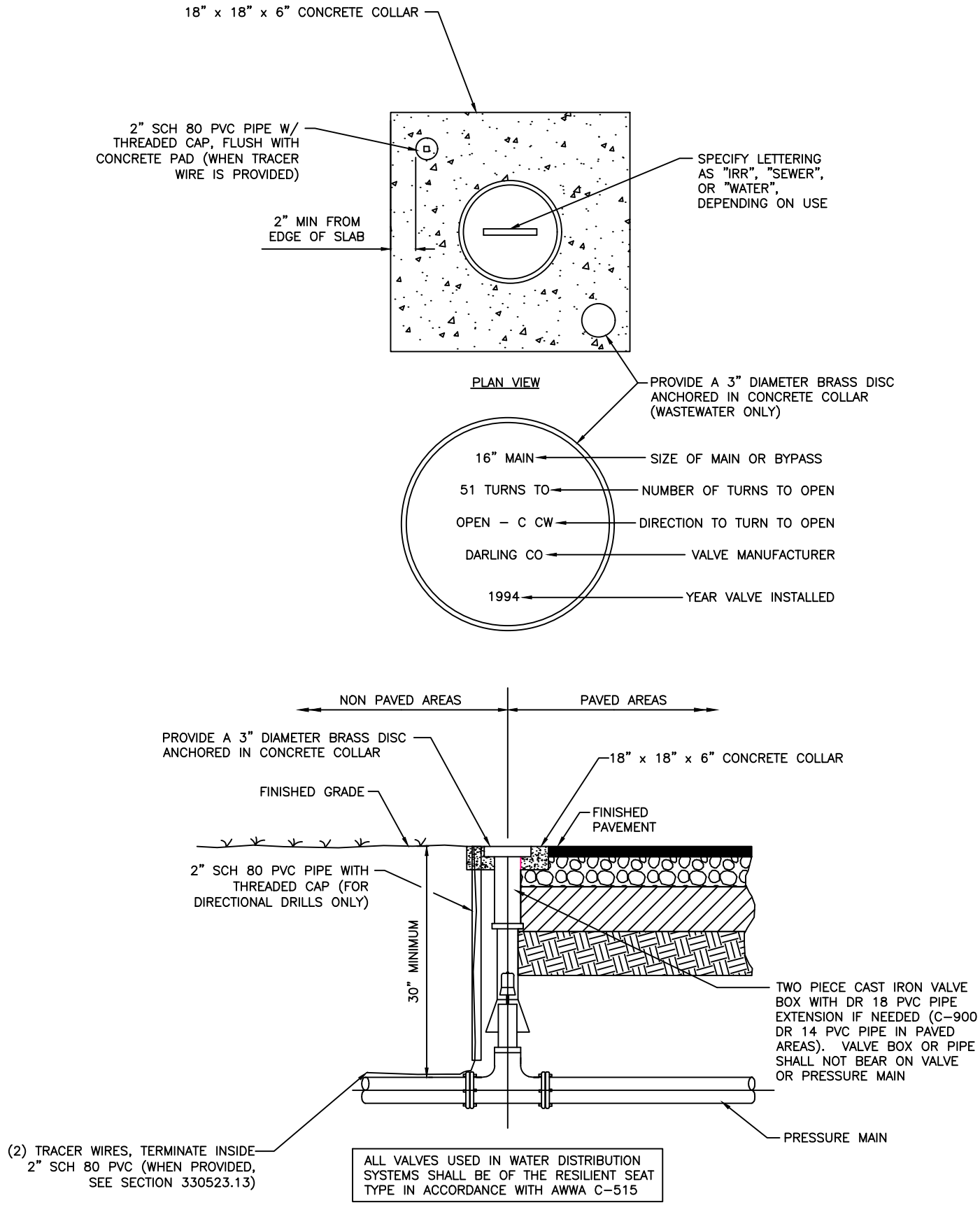
DESIGN ENGINEER SHALL VERIFY ABOVE DIMENSIONS AND THE NUMBER OF TIE RODS.

$$\text{CUBIC YARDS OF CONCRETE (CY)} = \frac{\left(\frac{Ⓑ \times Ⓔ}{12}\right) \times 2}{27}$$

THRUST BLOCK DETAIL FOR EXISTING A/C PIPE

NTS

REVISED: APRIL 2006



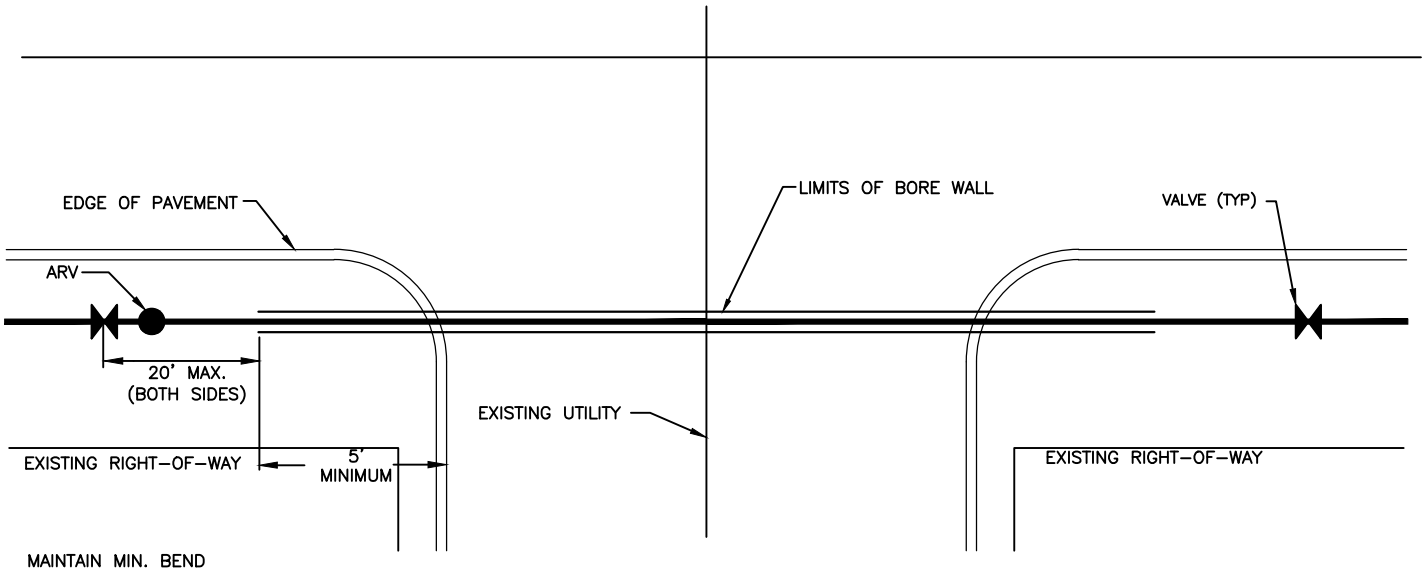
TYPICAL VALVE SETTING DETAIL

NTS

REVISION DATE:
JULY 2018

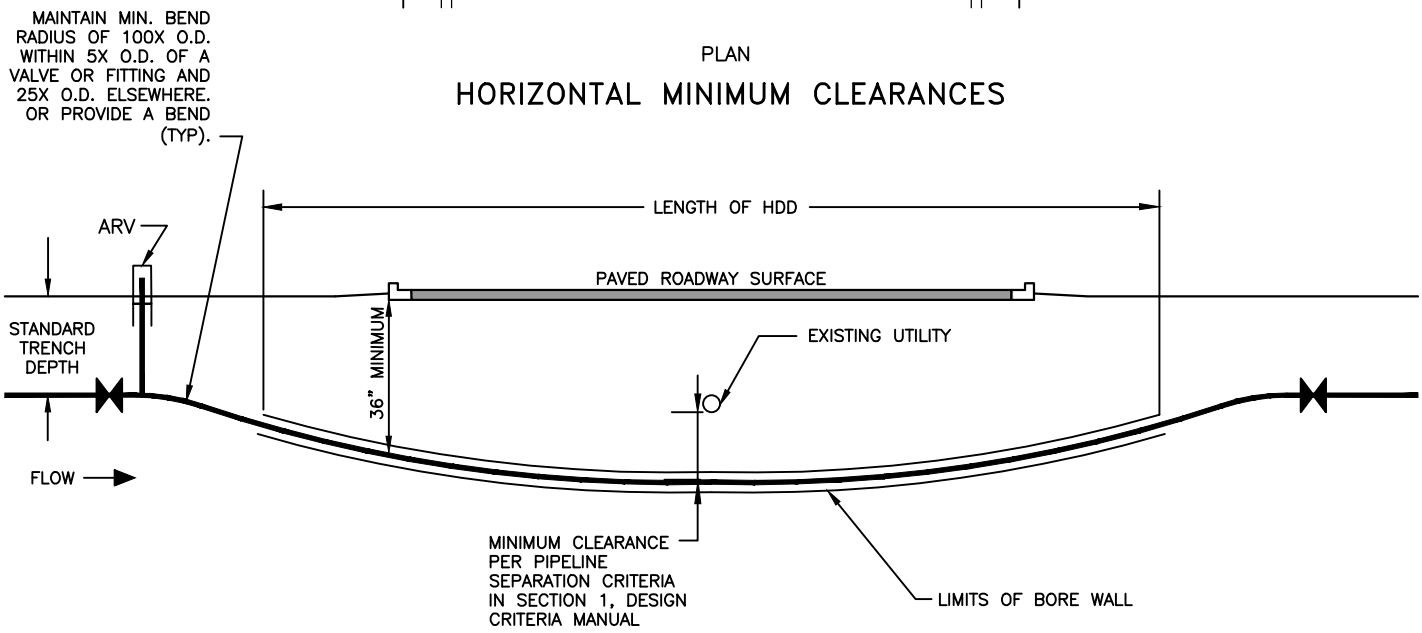
Collier County
Public Utilities Division

SHEET NO.
G-7



PLAN

HORIZONTAL MINIMUM CLEARANCES



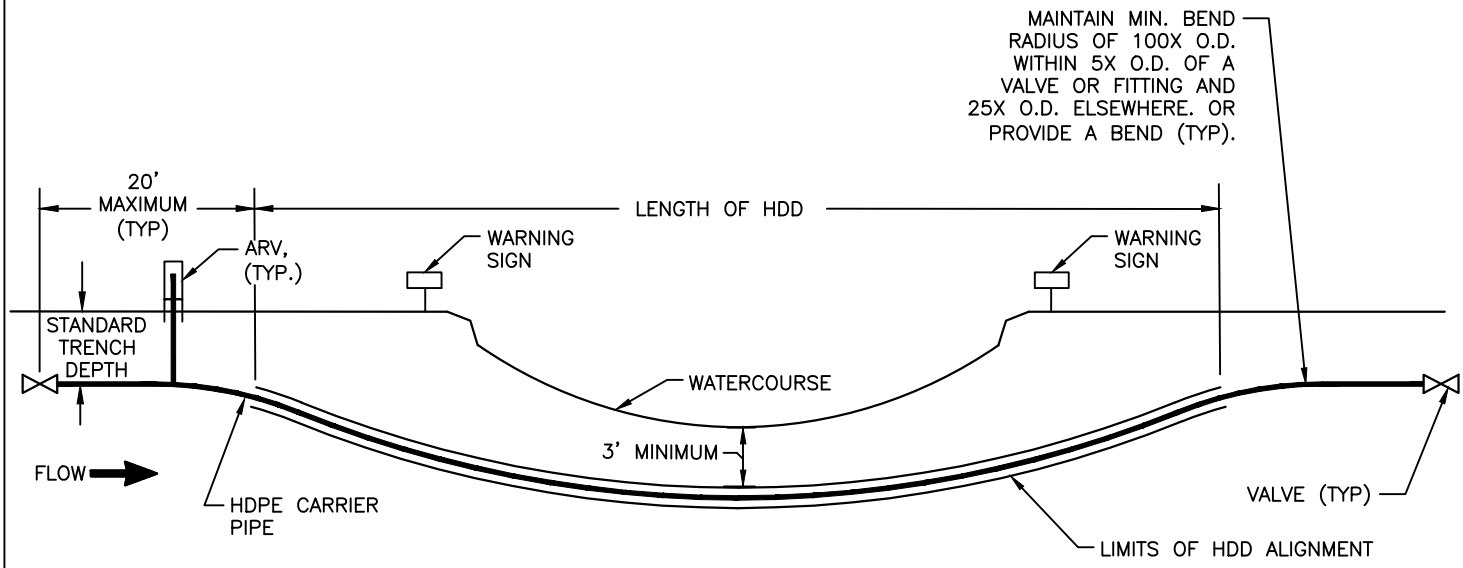
PROFILE

VERTICAL MINIMUM CLEARANCES

HDD INSTALLATION NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE COLLIER COUNTY UTILITIES TECHNICAL SPECIFICATION SECTION 330523.13.
2. ALL HDD INSTALLATION ACTIVITIES SHALL BE IN ACCORDANCE WITH THE FLORIDA D.O.T. UTILITY ACCOMMODATIONS MANUAL AND THE COLLIER COUNTY UTILITIES STANDARDS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION OF AFFECTED AGENCIES AND COORDINATION WITH ALL UTILITIES PRIOR TO CONSTRUCTION.
4. ALL CONSTRUCTION MATERIALS, INCLUDING DRILLING FLUID, SHALL BE REMOVED FROM THE SITE PRIOR TO RESTORATION OF DISTURBED AREAS.
5. PLACE ARV ON UPSTREAM SIDE. WHEN BIDIRECTIONAL FLOW CONDITIONS EXIST, AN ARV WILL BE REQUIRED AT EACH END OF THE HDD.
6. VALVES SHALL BE INSTALLED A MAXIMUM OF 20' FROM THE END OF ALL DIRECTIONAL DRILLS.

TYPICAL HORIZONTAL DIRECTIONAL DRILL (HDD) UNDER A ROADWAY NTS	JULY 2018	Collier County Public Utilities Division	SHEET NO. G-8

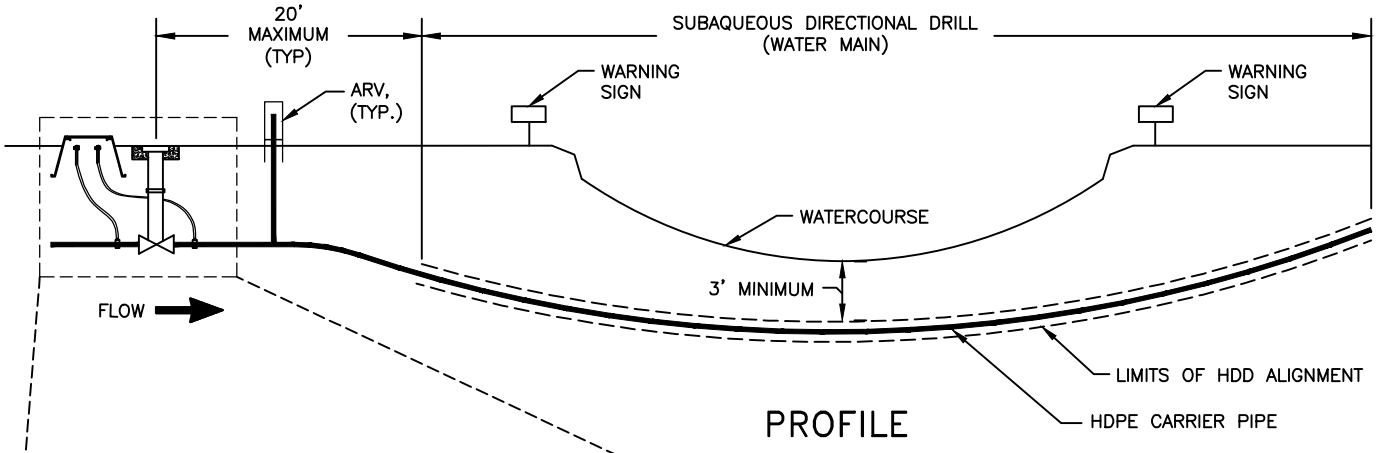


PROFILE

HDD INSTALLATION NOTES:

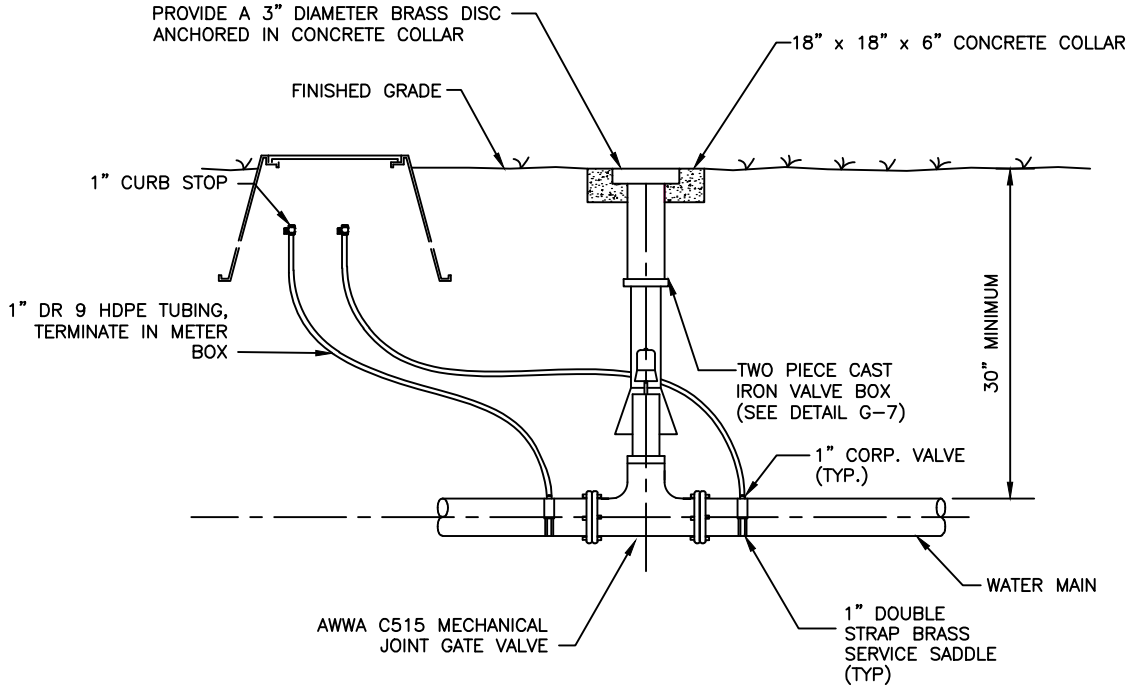
1. PROVIDE VALVES AT BOTH ENDS OF SUBAQUEOUS CROSSING. FOR WATERMAIN CROSSINGS, TWO 1" SERVICE TAPS AND SADDLES SHALL BE PROVIDED ON BOTH SIDES OF THE VALVE CLOSEST TO THE WATER SUPPLY AND TERMINATED INTO A METER BOX. SEE DETAIL G-9A.
2. PLACE ARV ON UPSTREAM SIDE. WHEN BIDIRECTIONAL FLOW CONDITIONS EXIST, AN ARV WILL BE REQUIRED AT EACH END OF THE HDD.
3. ALL SUBAQUEOUS CROSSINGS SHALL BE DISCUSSED AT A PLAN PRE-SUBMITTAL CONFERENCE WITH REPRESENTATIVES OF THE WATER OR WASTEWATER DEPARTMENTS. SUBAQUEOUS WATER MAINS SHALL REQUIRE APPROVAL BY THE WATER OR WASTEWATER DEPARTMENT.
4. WARNING SIGNS SHALL BE PLACED ALONG BANKS OF WATERWAY TO CLEARLY IDENTIFY SUBAQUEOUS CROSSING. SIGNS SHALL INDICATE TYPE OF PIPELINE AND DEPTH OF PIPELINE BELOW BOTTOM OF WATER BODY.
5. VALVES SHALL BE INSTALLED WITHIN 20' OF THE END OF ALL DIRECTIONAL DRILLS.
6. DEPTH OF COVER BENEATH THE WATERCOURSE SHALL BE A MINIMUM OF 3' OR AS REQUIRED BY ACOE, SFWMD, OR OTHER APPLICABLE REGULATORY AGENCY.

TYPICAL SUBAQUEOUS HORIZONTAL DIRECTIONAL DRILL (HDD) NTS	JULY 2018	Collier County Public Utilities Division	SHEET NO. G-9



PROFILE

NOTES:
1. WHERE BI–DIRECTIONAL FLOW DOES NOT OCCUR PLACE LEAK DETECTION ASSEMBLY AT UPSTREAM VALVE LOCATION AS SHOWN.
2. PLACE METER BOX AS FAR FROM NEARBY ROADWAY AS PRACTICABLE.



SUBAQUEOUS WATER MAIN VALVE DETAIL

NTS

JULY 2018

Collier County
Public Utilities Division

SHEET NO.
G–9A

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)						
	HORIZONTAL BENDS				DEAD ENDS (2)	45° VERTICAL BENDS	
	90°	45°	22-1/2°	11-1/4°		UPPER	LOWER
4	23	9	5	2	55	23	8
6	32	13	6	3	77	32	11
8	40	17	8	4	100	41	14
10	48	20	10	5	120	50	17
12	56	23	11	6	141	58	20
16	71	29	14	7	181	75	25
18	77	32	15	8	200	83	28
20	84	35	17	8	218	90	30
24	96	40	19	10	253	105	35
30	112	47	22	11	303	125	41
36	127	53	25	13	350	145	47

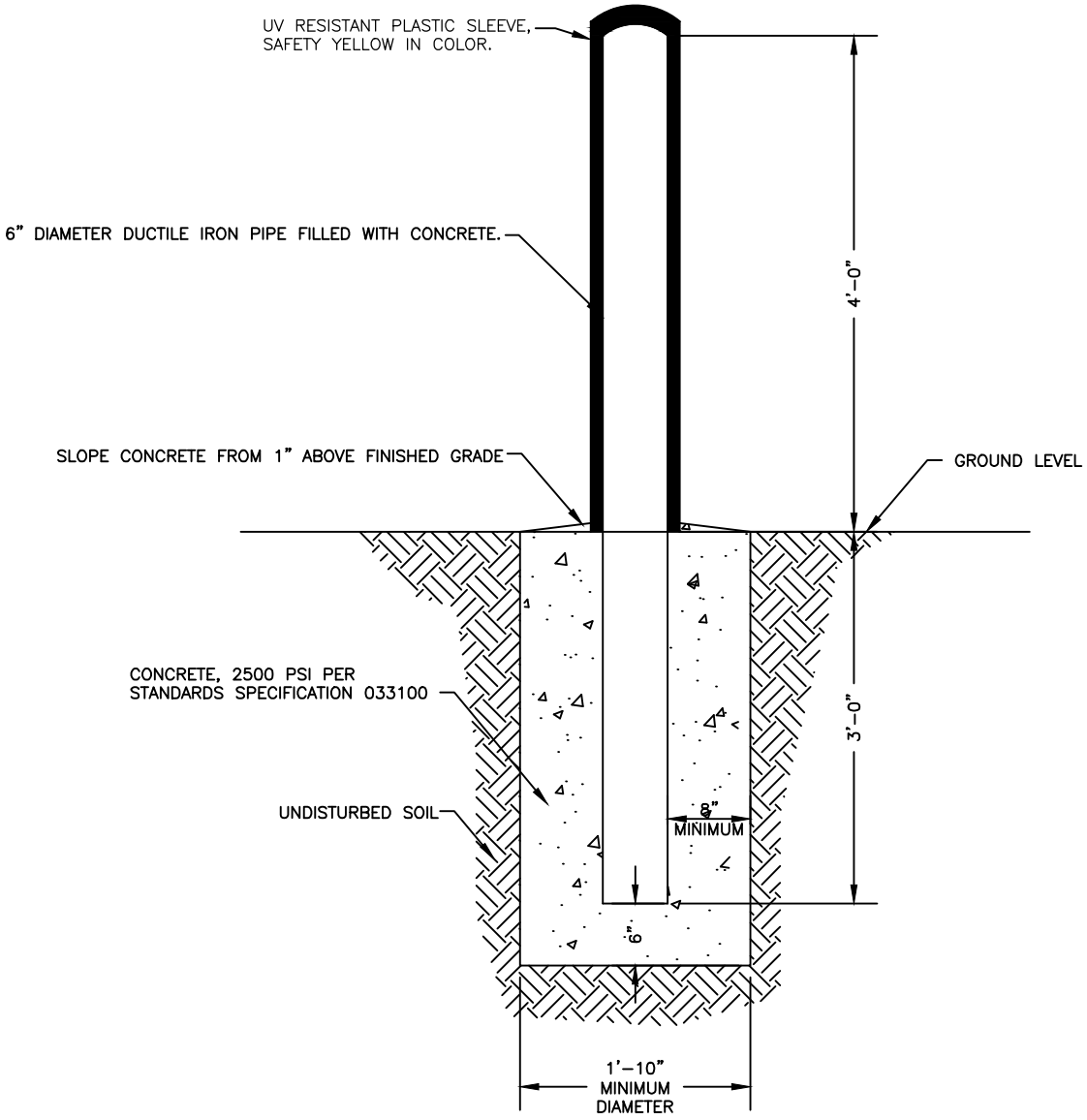
PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)	
	TEE (3)	REDUCER (4)
6 x 4	0	40
6 x 6	34	
8 x 4	0	72
8 x 8	55	
10 x 6	3	74
10 x 10	75	
12 x 4	0	122
12 x 8	31	75
12 x 12	95	
16 x 6	0	153
16 x 10	44	107
16 x 16	134	
18 x 8	0	157
18 x 12	68	108
18 x 18	152	
20 x 10	20	161
20 x 16	120	77
20 x 20	170	
24 x 12	37	187
24 x 18	132	109
24 x 24	204	
30 x 16	78	213
30 x 20	138	165
30 x 30	252	
36 x 18	84	259
36 x 24	170	191
36 x 36	298	

NOTES:

1. RESTRAIN ALL PIPE JOINTS WITHIN THE DISTANCE SHOWN ON THE TABLES MEASURED FROM THE POINT OF CONNECTION.
2. ISOLATION VALVES SHALL BE TREATED AS DEAD ENDS. WITH RESTRAINT ON BOTH SIDES OF THE VALVE.
3. RESTRAINT IS FOR BRANCH OF TEE. IF BRANCH SIZE IS NOT ON TABLE, USE NEXT LARGEST BRANCH.
4. RESTRAINT IS FOR LARGE DIAMETER SIDE OF REDUCER. IF REDUCER SIZE IS NOT ON TABLE, USE NEXT SMALLER REDUCER (SMALL END).
5. THIS SCHEDULE IS TO BE USED FOR DUCTILE IRON AND PVC PIPE.

PIPE RESTRAINT SCHEDULE

NTS



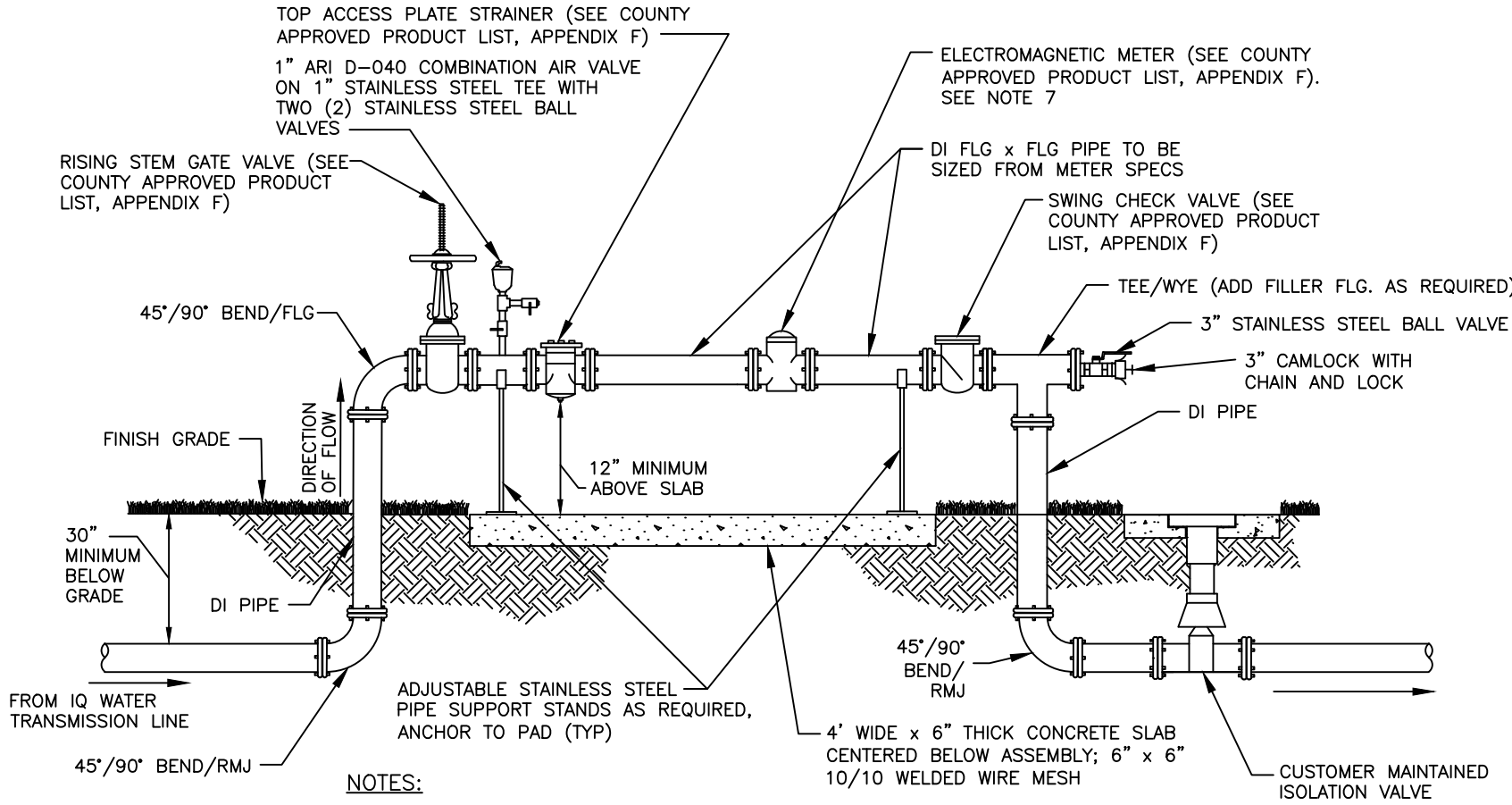
VEHICULAR GUARD POST DETAIL

NTS

REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
G-11



NOTES:

1. ALL ABOVE GROUND PIPE SHALL BE PAINTED PANTONE PURPLE 522-C.
2. ALL ABOVE GROUND PIPES WILL BE FLANGED END. ALL NUTS & BOLTS SHALL BE STAINLESS STEEL.
3. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. SUBMIT FOR REVIEW AND APPROVAL. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS.
4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
5. ALL PIPES UNDER 3" SHALL BE BRASS.
6. METER ASSEMBLY SHALL BE LOCATED WITHIN C.U.E.
7. USE 45-DEGREE BENDS WHERE POSSIBLE.

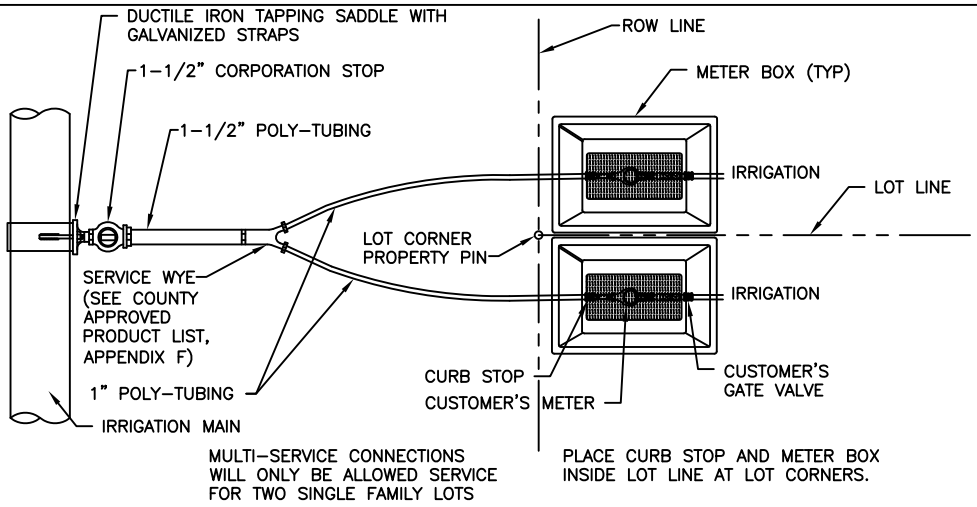
STANDARD IRRIGATION WATER NON-TELEMETRY METER ASSEMBLY 3" AND LARGER

NTS

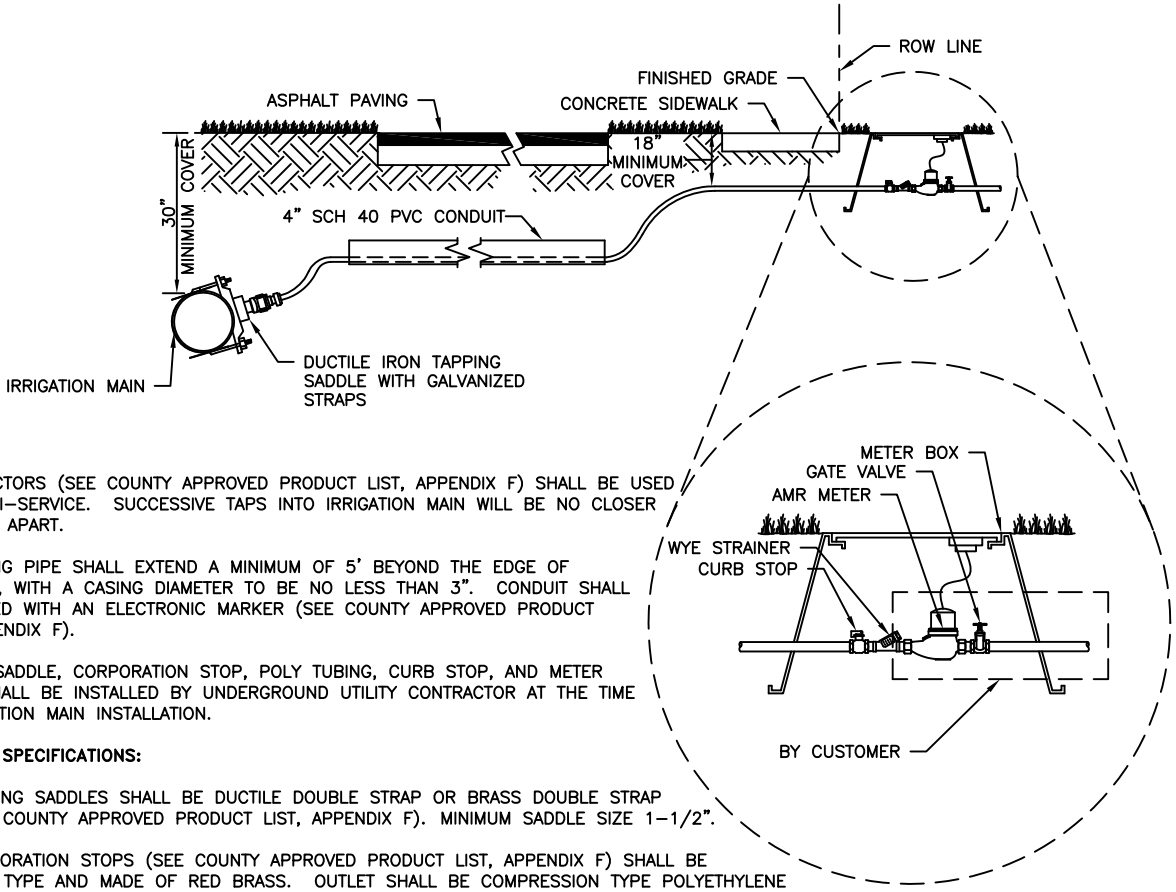
REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
NP-1



MULTIPLE METER SERVICE CONNECTIONS



NOTES:

1. Y CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI-SERVICE. SUCCESSIVE TAPS INTO IRRIGATION MAIN WILL BE NO CLOSER THAN 24" APART.

2. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 3". CONDUIT SHALL BE MARKED WITH AN ELECTRONIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

3. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF IRRIGATION MAIN INSTALLATION.

4. **MATERIAL SPECIFICATIONS:**

   A. TAPPING SADDLES SHALL BE DUCTILE DOUBLE STRAP OR BRASS DOUBLE STRAP (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F). MINIMUM SADDLE SIZE 1-1/2".

   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.

   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.

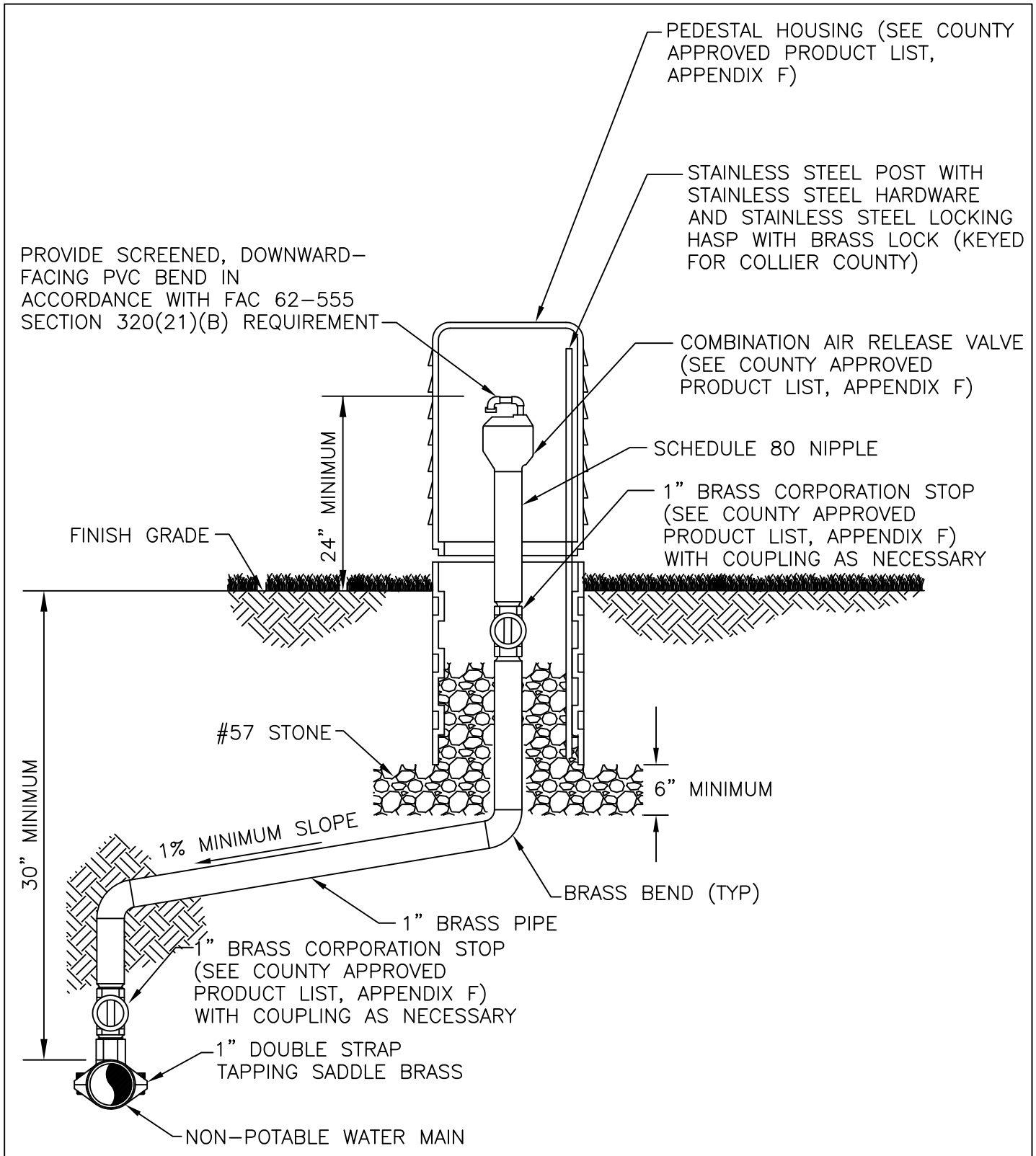
   D. AUTOMATIC METER READER (AMR) METER BOXES (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL HAVE CAST IRON READ LID.

TYPICAL IRRIGATION SERVICE METER SETTING DETAIL FOR CONNECTION TO IRRIGATION MAIN

NTS

NP-2

REVISED: MAY 2009



RECLAIMED, RAW, AND SUPPLEMENTAL WATER AIR RELEASE VALVE DETAIL

NTS

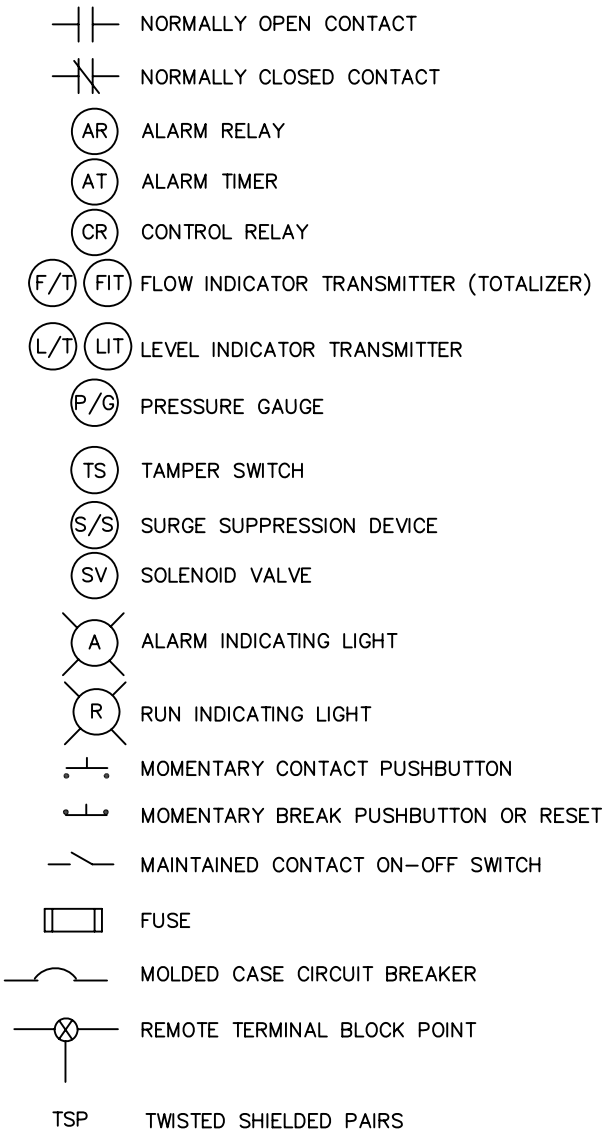
NP-4

REVISED: MAY 2009

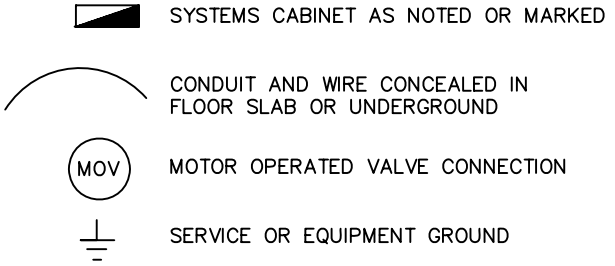
GENERAL NOTES:

1. ALL ABOVE GROUND PIPING SHALL BE PAINTED PANTONE PURPLE 522–C.
2. ALL ABOVE GROUND PIPES WILL BE FLANGED END. ALL HARDWARE NUTS AND BOLTS SHALL BE STAINLESS STEEL.
3. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SHALL SLAB AND PROVIDE A 3' ACCESS OPENING.
5. ALL PIPES UNDER 3" SHALL BE BRASS.
6. METER ASSEMBLY SHALL BE LOCATED WITHIN COUNTY UTILITY EASEMENT.
7. ALL BELOW GRADE GROUND CONNECTIONS TO BE VIA EXOTHERMIC WELD (CADWELD) UNLESS INDICATED OTHERWISE.

CONTROL/ELEMENTARY SYMBOLS



ELECTRICAL PLAN SYMBOLS

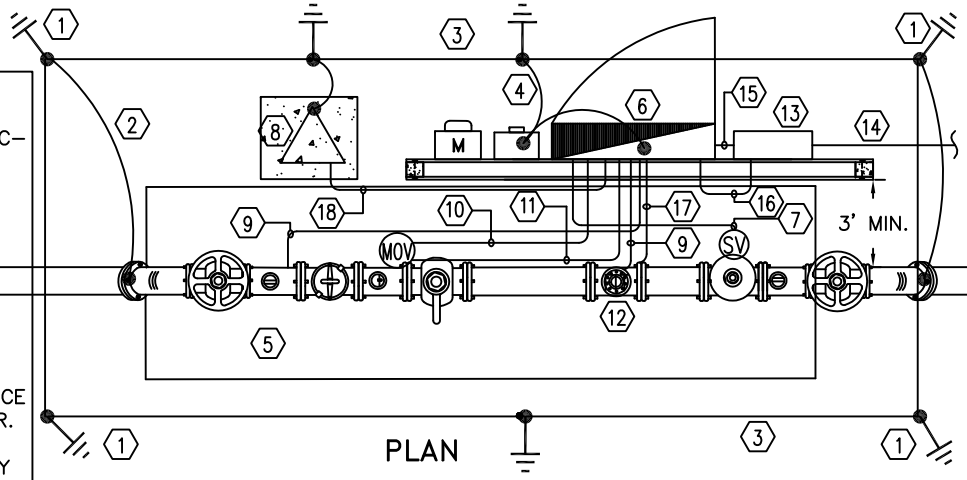


REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
GENERAL NOTE AND KEYNOTES

NTS

NP–E1

REVISED: APRIL 2006



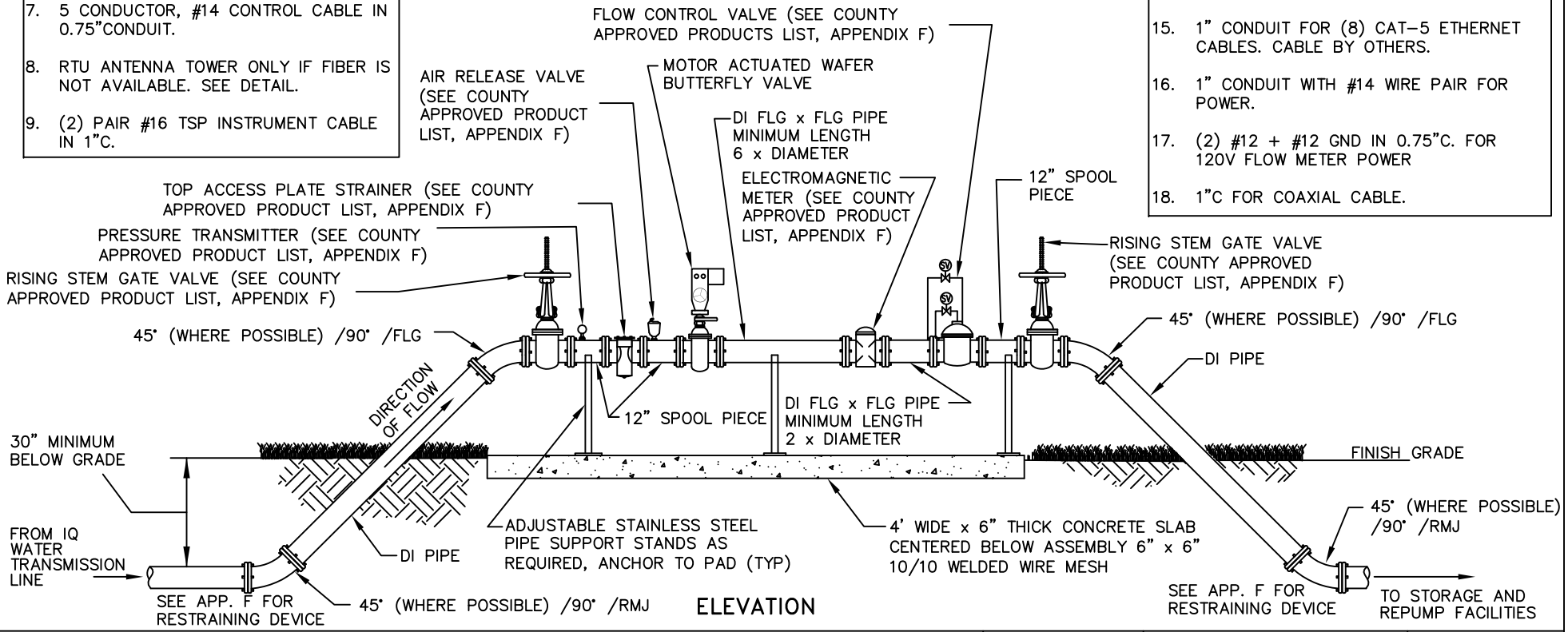
PLAN

KEYNOTES:

1. 20' DRIVEN GROUND ROD WITH INSPECTION TEST WELL (SEE DETAIL) (TYP).
2. #2 TINNED SOLID COPPER TO EQUIPMENT/CABINETS ETC (TYP).
3. #2 TINNED BARE COPPER COUNTERPOISE LOOP GROUND (TYP).
4. 60A, 240/120V, SINGLE PHASE SERVICE ENTRANCE RATED ENCLOSED BREAKER.
5. PRESSURE TRANSMITTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
6. VALVE CONTROL AND RTU PANEL (VCP).
7. 5 CONDUCTOR, #14 CONTROL CABLE IN 0.75"CONDUIT.
8. RTU ANTENNA TOWER ONLY IF FIBER IS NOT AVAILABLE. SEE DETAIL.
9. (2) PAIR #16 TSP INSTRUMENT CABLE IN 1"C.

KEYNOTES CONTINUED...

10. (2) #12 + #12 GND IN 0.75"C. FOR 120V MOV POWER
11. 14 CONDUCTOR #14 CONTROL CABLE IN 1.25" C.
12. ELECTROMAGNETIC FLOW METER WITH 4-20MA OUTPUT AND PULSE FLOW TOTALIZATION.
13. FIBER-OPTIC CONTROL ENCLOSURE, AMERICAN PRODUCTS PRODUCT #AM-462418-24RU.
14. 2" CONDUIT FOR FIBER-OPTIC CABLE. PROVIDE STUB-UP FOR SPLICE. CABLE BY OTHERS.
15. 1" CONDUIT FOR (8) CAT-5 ETHERNET CABLES. CABLE BY OTHERS.
16. 1" CONDUIT WITH #14 WIRE PAIR FOR POWER.
17. (2) #12 + #12 GND IN 0.75"C. FOR 120V FLOW METER POWER
18. 1"C FOR COAXIAL CABLE.



ELEVATION

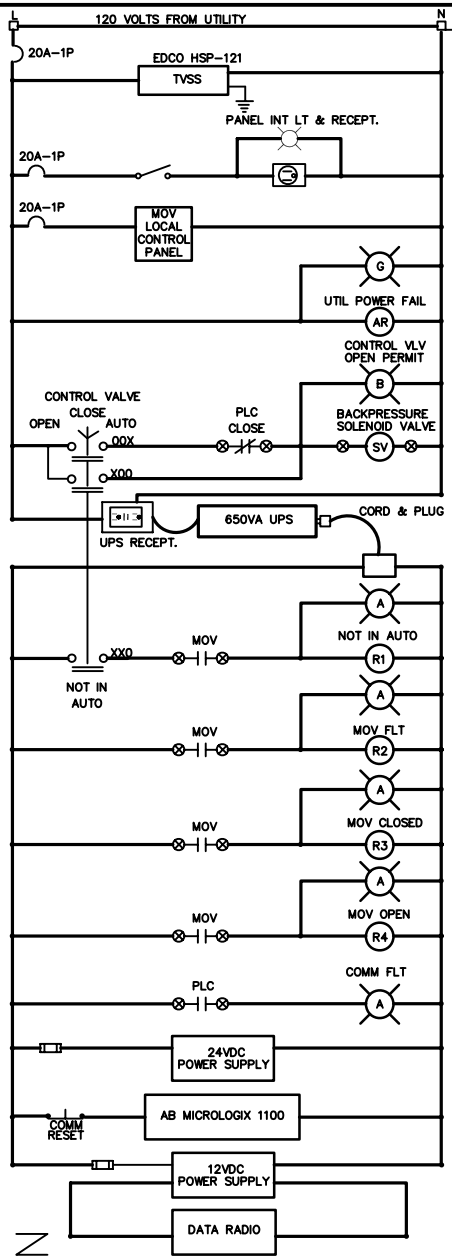
STANDARD IRRIGATION WATER METER ASSEMBLY 3" AND LARGER - TELEMETRY

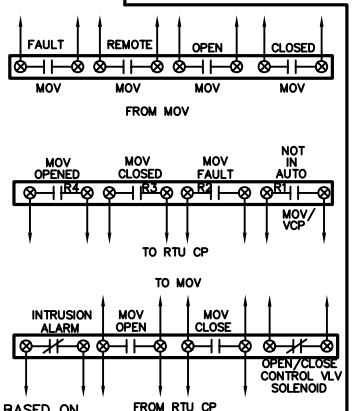
NTS

REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
NP-E2





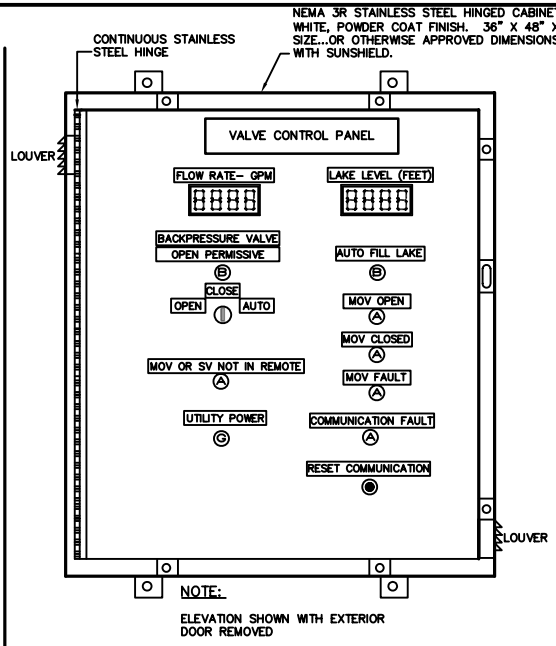
NOTE:

TYPICAL CONTROL PANEL WIRING AND MOUNTING IS BASED ON USING SINGLE PANEL FOR VALVE CONTROL AS WELL AS TELEMETRY. FOR SITES WHERE SEPARATE PANEL PROVISIONS ARE REQUIRED (ONE FOR VALVE CONTROL AND ONE FOR TELEMETRY), CONSULT WITH COUNTY PUED/IQ STAFF FOR APPROVED MODIFICATIONS TO THIS AND RELATED DRAWINGS.

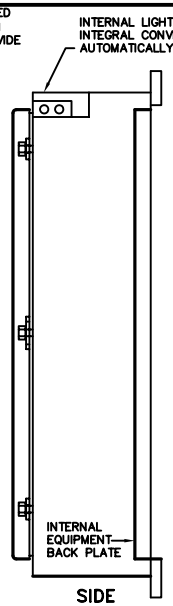
VALVE CONTROL PANEL ELEMENTARY

NP-E3

REVISED: AUGUST 2008



FRONT



SIDE

KEYNOTES

1. DOOR CONTACT INTRUSION ALARM. PLUNGER TYPE
2. 12VDC POWER SUPPLY (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
3. 120VAC SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
4. COAX SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
5. 24VDC POWER SUPPLY (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
6. GFI DUPLEX RECEPTACLE
7. PLC
8. DATA SIGNAL LINE SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. DATA RADIO (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
10. 110VAC CONTROL RELAY. TYPICAL UNLESS NOTED OTHERWISE
11. 24VDC CONTROL RELAY

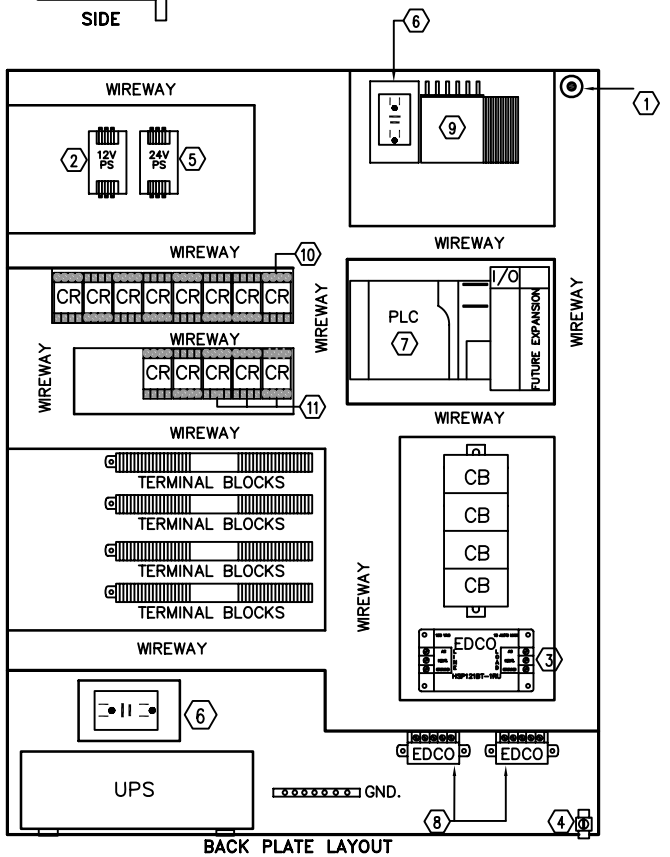
OPEN/CLOSE REUSE SERVICE CONNECTION RTU I/O POINT LIST

ANALOG IN
1) FLOW RATE
2) LAKE LEVEL/TANK LEVEL

DIGITAL IN
1) MOV OPEN
2) MOV CLOSED
3) MOV OR VCP NOT IN REMOTE
4) MOV FAULT
5) UTILITY POWER FAILURE
6) RAIN GAUGE*
* (REQUIRED ONLY AT SITES EQUIPPED WITH THE ISCO 674)
7) VALVE CONTROL PANEL NOT IN AUTO
8) DOOR INTRUSION ALARM
9) BACK PRESSURE SUSTAINING VALVE LIMIT SWITCH
10) PULSED FLOW RATE (FOR TOTALIZATION)

DIGITAL OUT
1) OPEN MOV
2) CLOSE MOV
3) BACK PRESSURE SUSTAINING VALVE SOLENOID

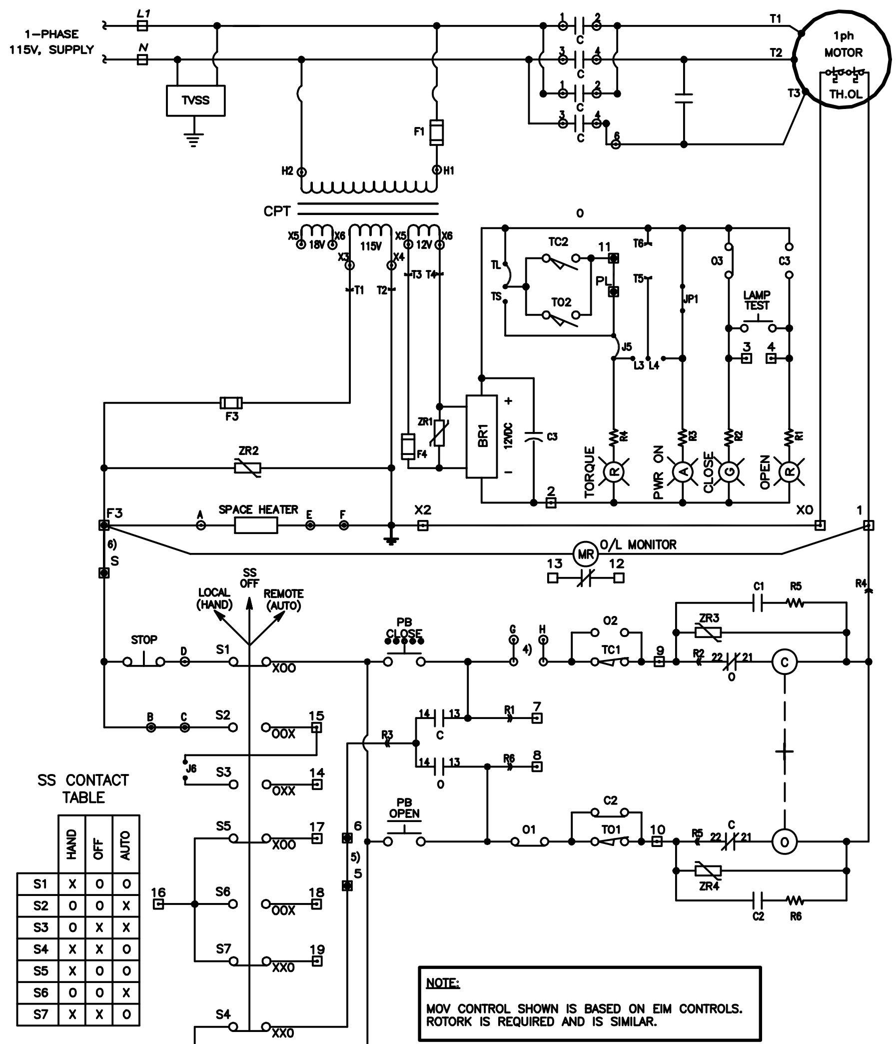
PLC
ALLEN BRADLEY MICROLOGIX 1100, P/N 1763-L16AWA WITH DUAL COMM PORTS (BUILT-IN ETHERNET/IP AND ISOLATED RS-232/RS-485COMBO); 4-PT ANALOG INPUT CARD, P/N 1762-IF4; AND EEPROM MEMORY MODULE; P/N 1763-MM1.



BACK PLATE LAYOUT

REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE LAYOUT & ELEMENTARY

NTS



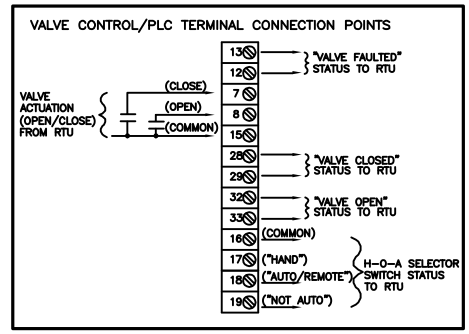
SS CONTACT TABLE	HAND	OFF	AUTO
S1	X	O	O
S2	O	O	X
S3	O	X	X
S4	X	X	O
S5	X	O	O
S6	O	O	X
S7	X	X	O

NOTE:

MOV CONTROL SHOWN IS BASED ON EIM CONTROLS. ROTORK IS REQUIRED AND IS SIMILAR.

NOTE:

SET VALVE TO FAIL IN PLACE ON LOSS OF POWER.



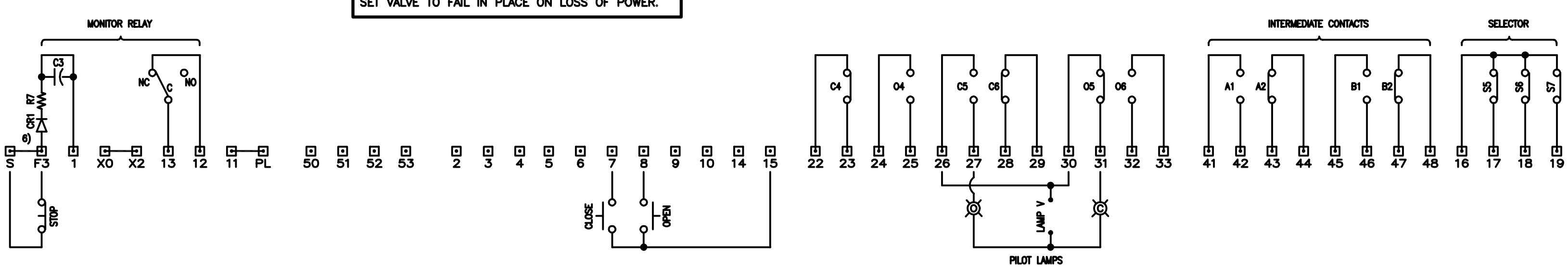
LEGEND

- O–OPEN CONTACT
- C–CLOSE CONTACT
- Ⓞ–OPENING COIL
- Ⓒ–CLOSING COIL
- +–MECHANICAL INTERLOCK
- CPT–CONTROL POWER TRANSFORMER
- TH.OL–THERMAL OVERLOAD CONTACTS
- SS–SELECTOR SWITCH (LOCAL–OFF–REMOTE)
- PB–PUSHBUTTON
- MR–MONITOR RELAY
- ZR–ZENER DIODE
- Ⓡ–RED INDICATING LIGHT
- Ⓐ–AMBER INDICATING LIGHT
- Ⓖ–GREEN INDICATING LIGHT

		VALVE POSITION			CONTACT FUNCTION
		CLOSE	MID	OPEN	
CLOSE rotor	C1	O	X	X	CLOSE COIL
	C2	X	O	O	BYPASS TO1
	C3	O	X	X	OPEN LAMP
	C4	X	O	O	
	C5	O	O	X	
	C6	X	O	O	
OPEN rotor	O1	X	X	O	OPEN COIL
	O2	O	O	X	BYPASS TC1
	O3	X	X	O	CLOSE LAMP
	O4	O	O	X	
	O5	X	X	O	
	O6	O	O	X	
A	A1	O		X	SPARE
	A2	X		O	SPARE
B	B1	O		X	SPARE
	B2	X		O	SPARE

NOTES

1) CONTACTS SHOWN: VALVE CLOSED; VOLTAGE: OFF; S/S: HAND
2) ⊡ CUSTOMER WIRES TO TERMINALS ON PWR AND TBM MODULES.
   ⊙ M2CP INTERNAL TERMINAL INTERCONNECT WIRING POINTS
   —— FIELD CONNECTED WIRING BY OTHERS.
3) TORQUE SWITCH (O⌐O) "TC1" & "TO1" NC CONTACTS OPEN, AND (O⌐O) "TC2" & "TO2" N.O. CONTACTS MAKE ON FIELD ADJUSTABLE MECHANICAL OVERLOAD IN (C) "CLOSE" OR IN (O) "OPEN" DIRECTION.
4) FOR TORQUE SEATED VALVE: INSTALL G TO H STRAP ON LSM.
5) FOR MAINTAINED PB CONTROL: REMOVE 5 TO 6 STRAP ON TBM.
6) FOR REMOTE STOP PB OR RELAY: REMOVE F3 TO S STRAP ON TBM.
7) O & C (22–31) REVERSING CONTACTOR NC INTERLOCK CONTACTS.
   O & C (14–13) MOMENTARY PUSHBUTTON N.O. SEAL–IN CONTACTS.
8) MOTOR THERMAL CONTACTS OPEN WITH EXCESSIVE TEMPERATURE.
9) POSITION INDICATOR PILOT LIGHTS: LED SOLID–STATE
   "OPEN" INDICATES: FULL OPEN (RED)
   "CLOSE" INDICATES: FULL CLOSED (GREEN)
   MID–POSITION: BOTH "OPEN" AND "CLOSE" ILLUMINATED.
   "PWR ON" AND "TORQUE" INDICATORS ARE ONLY VISIBLE WITH COVER OPEN FOR CONVENIENCE DURING MAINTENANCE PROCEDURES.

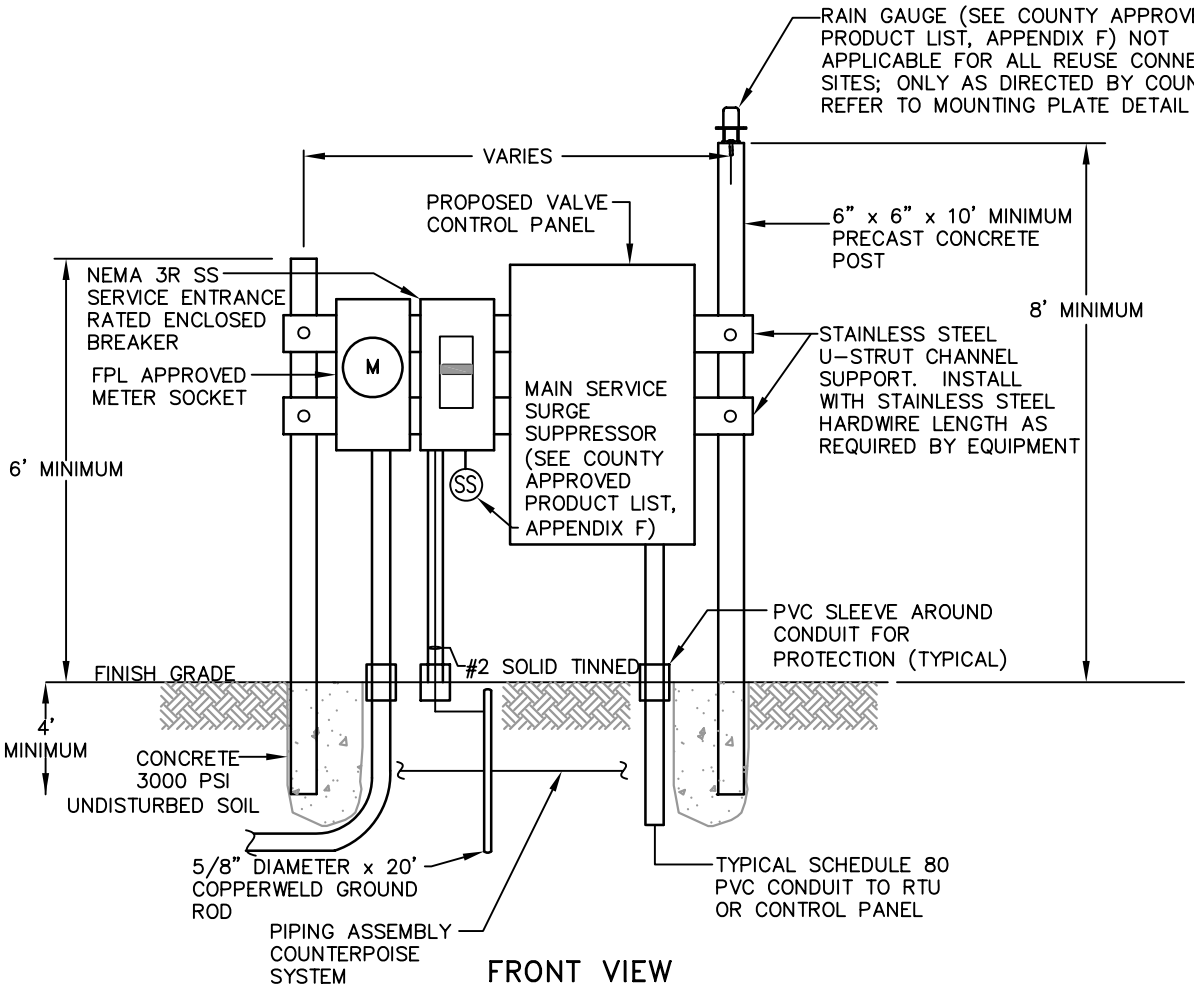


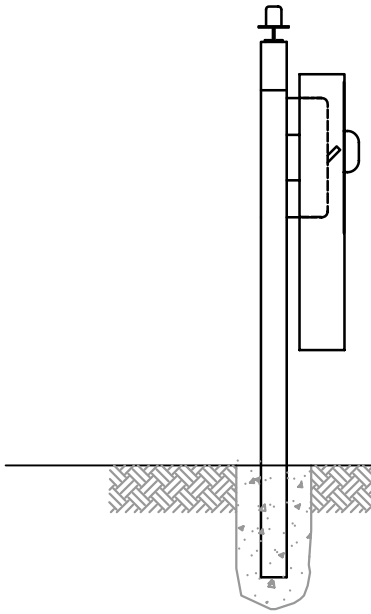
NP–E4

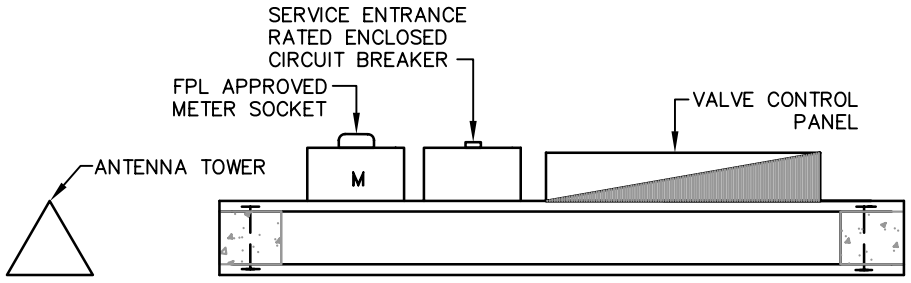
REVISED: APRIL 2006

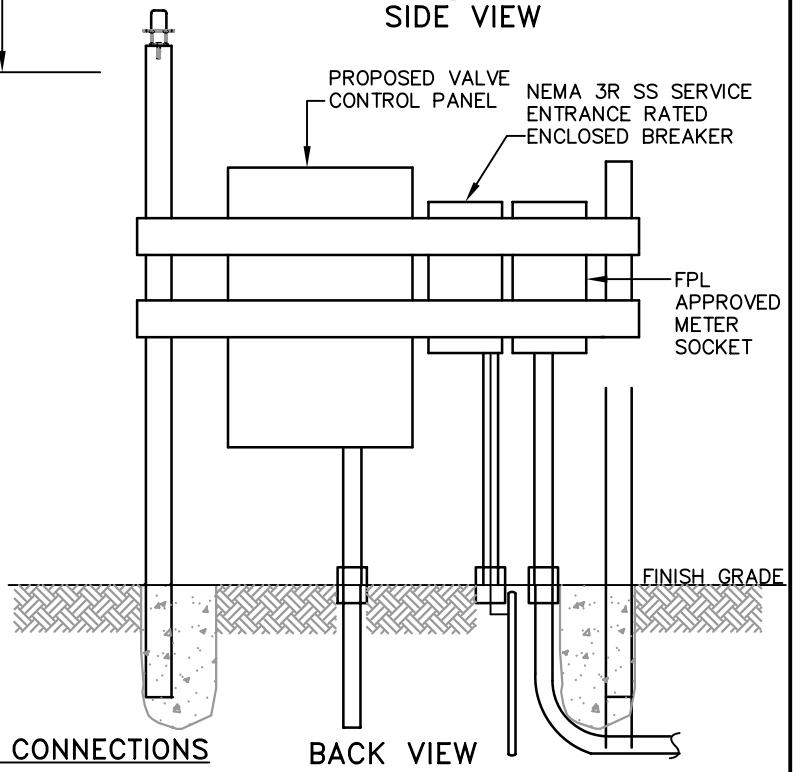
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
OPEN/CLOSED MOV CONTROL DIAGRAM

NTS







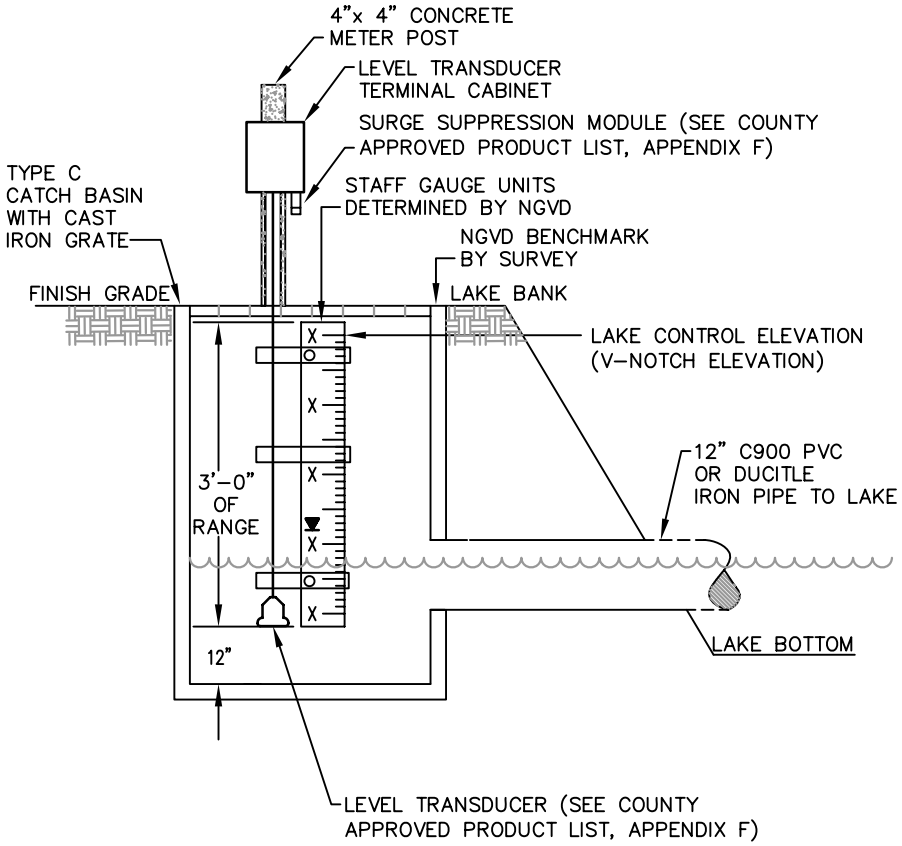


REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
ELECTRICAL EQUIPMENT ELEVATIONS

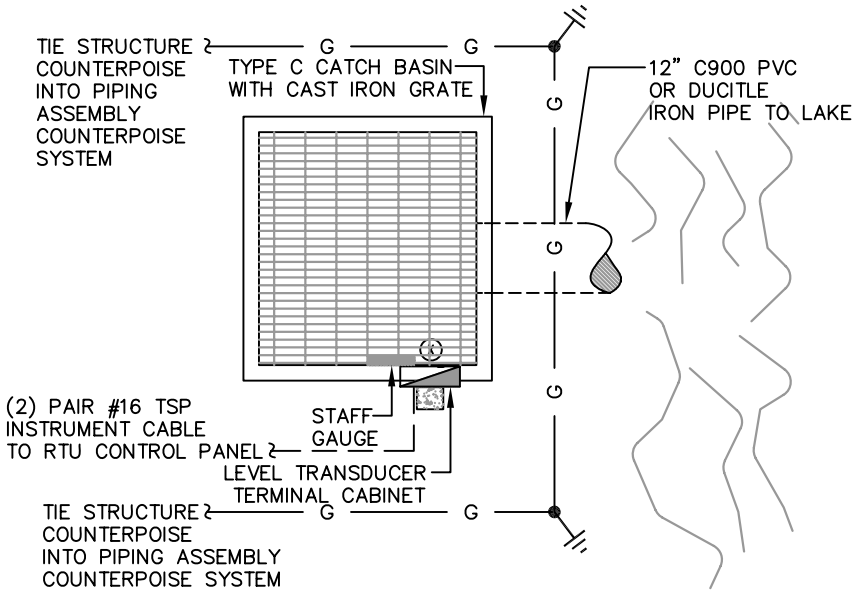
NTS

NP-E5

REVISED: AUGUST 2008



CROSS SECTION



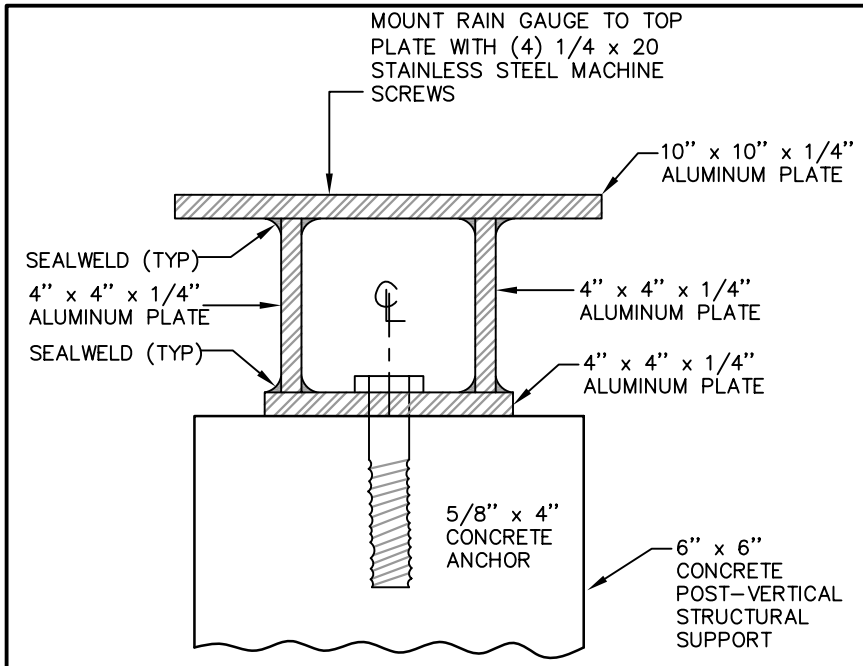
PLAN VIEW

NP-E6

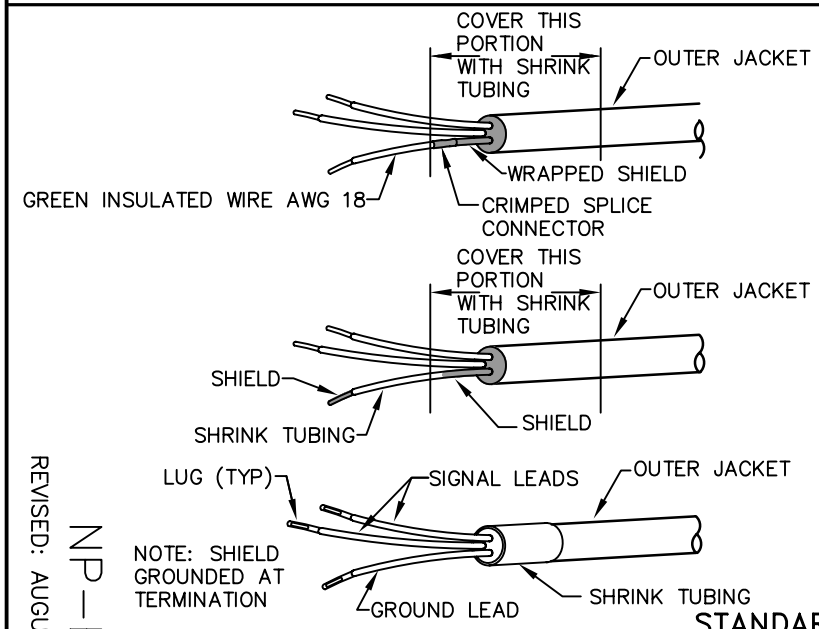
REVISED: AUGUST 2008

REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
LEVEL TRANSDUCER MOUNTING DETAILS

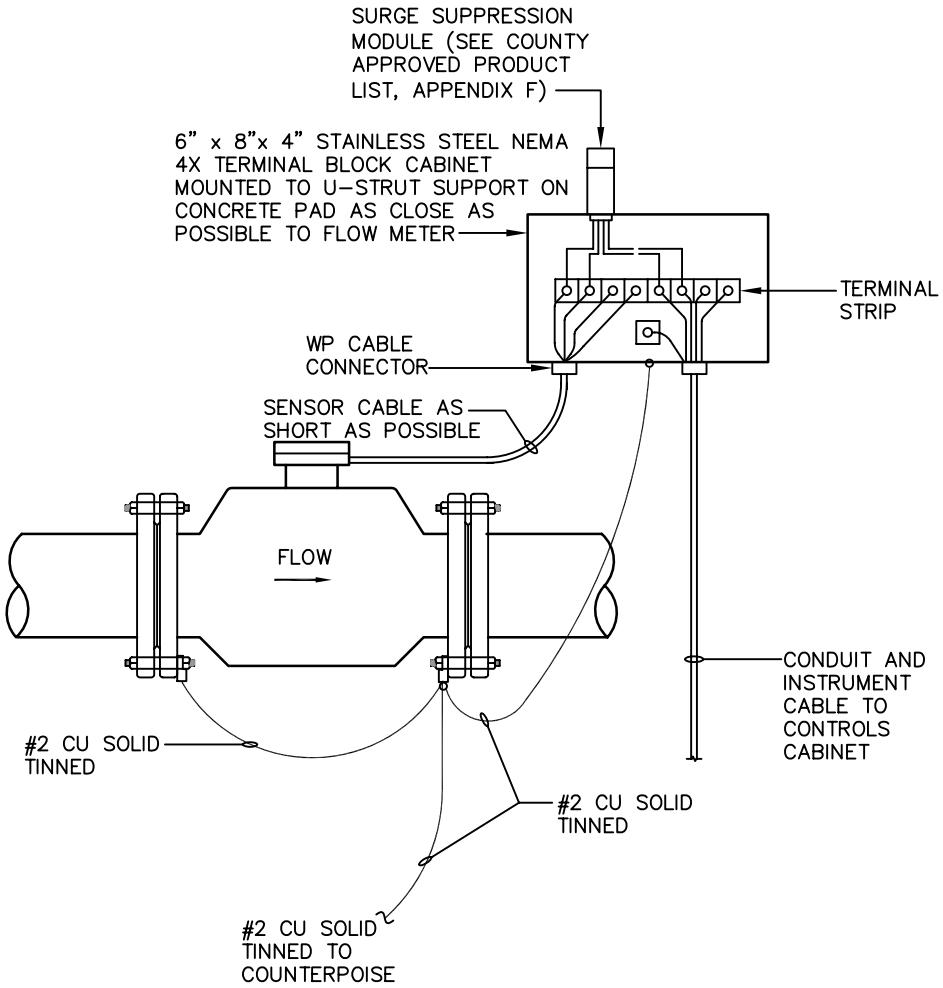
NTS



RAIN GAUGE MOUNTING PLATE



TERMINATION OF SHIELDED INSTRUMENT AND CONTROL CABLE



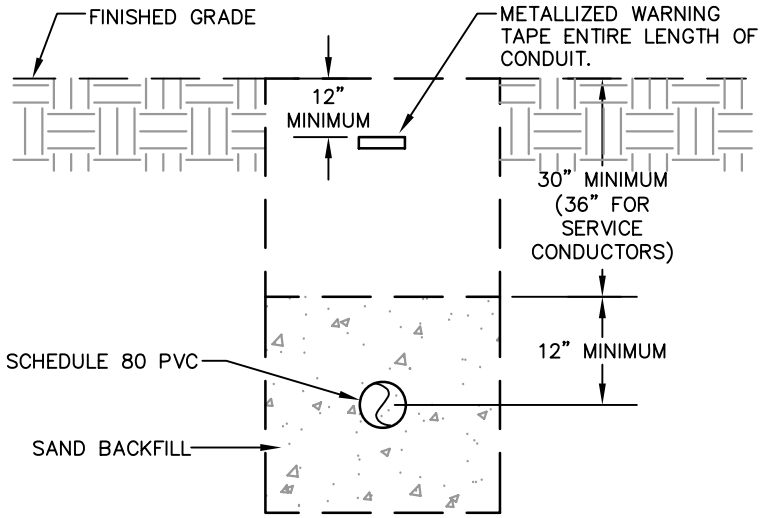
FLOW METER TRANSMITTER INSTALLATION DETAIL

NP–E7

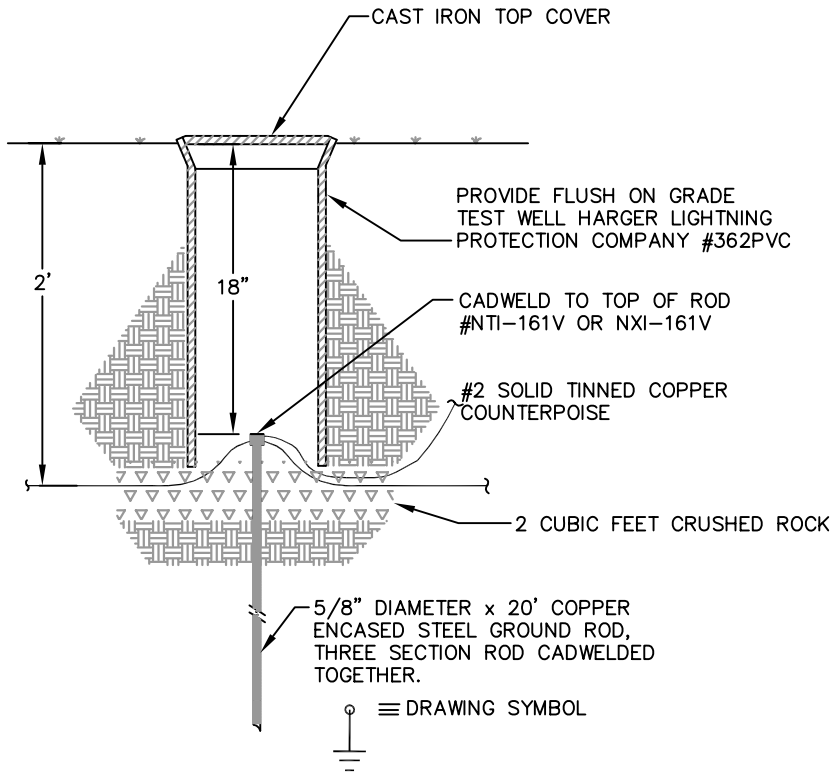
REVISED: AUGUST 2008

REUSE SYSTEM
STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE
SINGLE CONTROL PANEL SITE
ELECTRICAL DETAILS

NTS



UNDERGROUND CONDUIT INSTALLATION



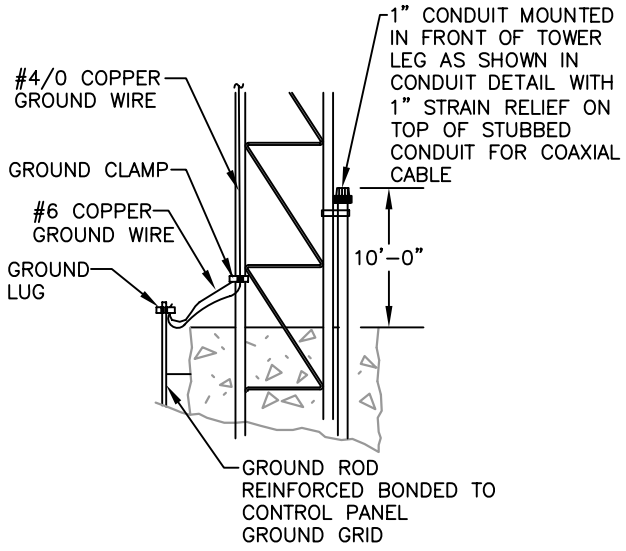
TYPICAL GROUND ROD INSTALLATION DETAIL

NP-E8

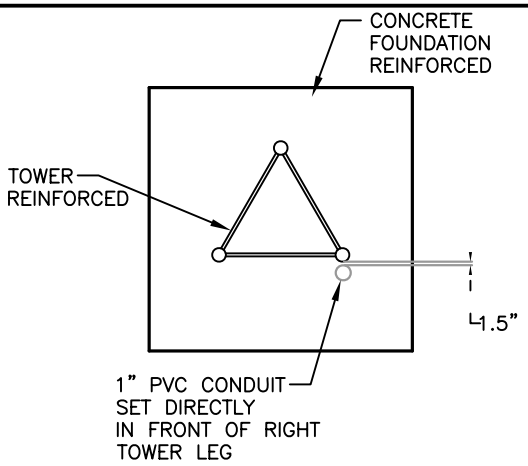
REVISED: APRIL 2006

REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
ELECTRICAL DETAILS

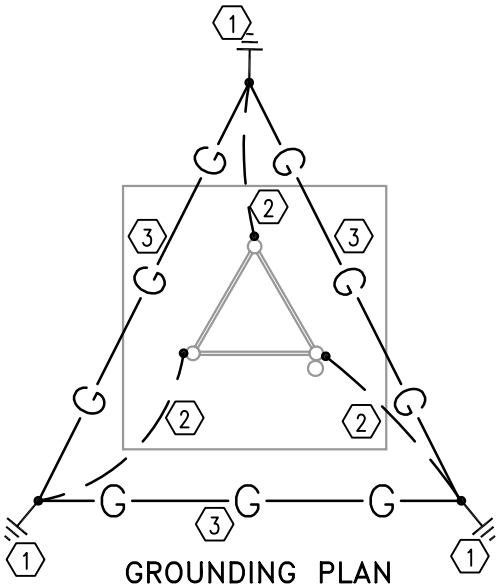
NTS



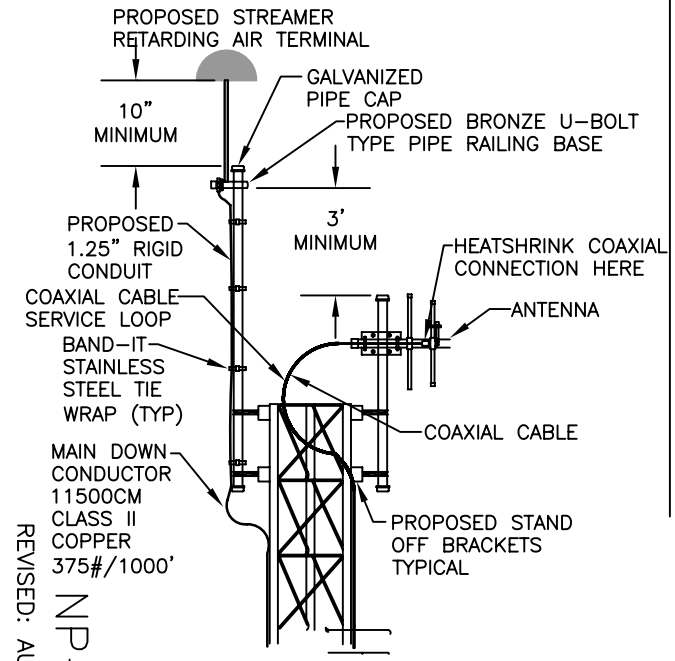
DETAIL #1 GROUNDING DETAIL



CONDUIT DETAIL TOP VIEW



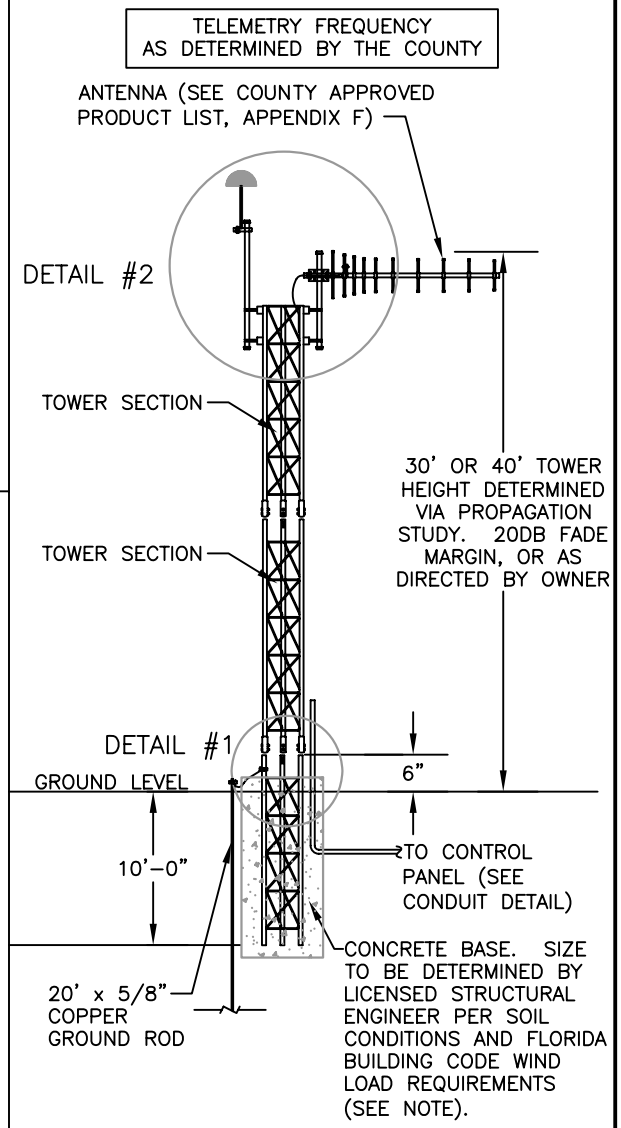
GROUNDING PLAN



DETAIL #2 TOWER TOP DETAIL

KEYNOTES:

1. 20' DRIVEN GROUND ROD WITH INSPECTION TEST WELL (SEE DETAIL) (TYP).
2. #2 TINNED SOLID COPPER TO TOWER LEG (TYP).
3. #2 TINNED BARE COPPER COUNTERPOISE LOOP GROUND (TYP).



NOTE:
TOWER/ANTENNA ASSEMBLY AND FOUNDATION CONSTRUCTION MUST MEET CURRENT EDITION FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS FOR 140 MPH WIND ZONE. PROVIDE STRUCTURAL CERTIFICATION BY FLORIDA REGISTERED LICENSED PROFESSIONAL ENGINEER.

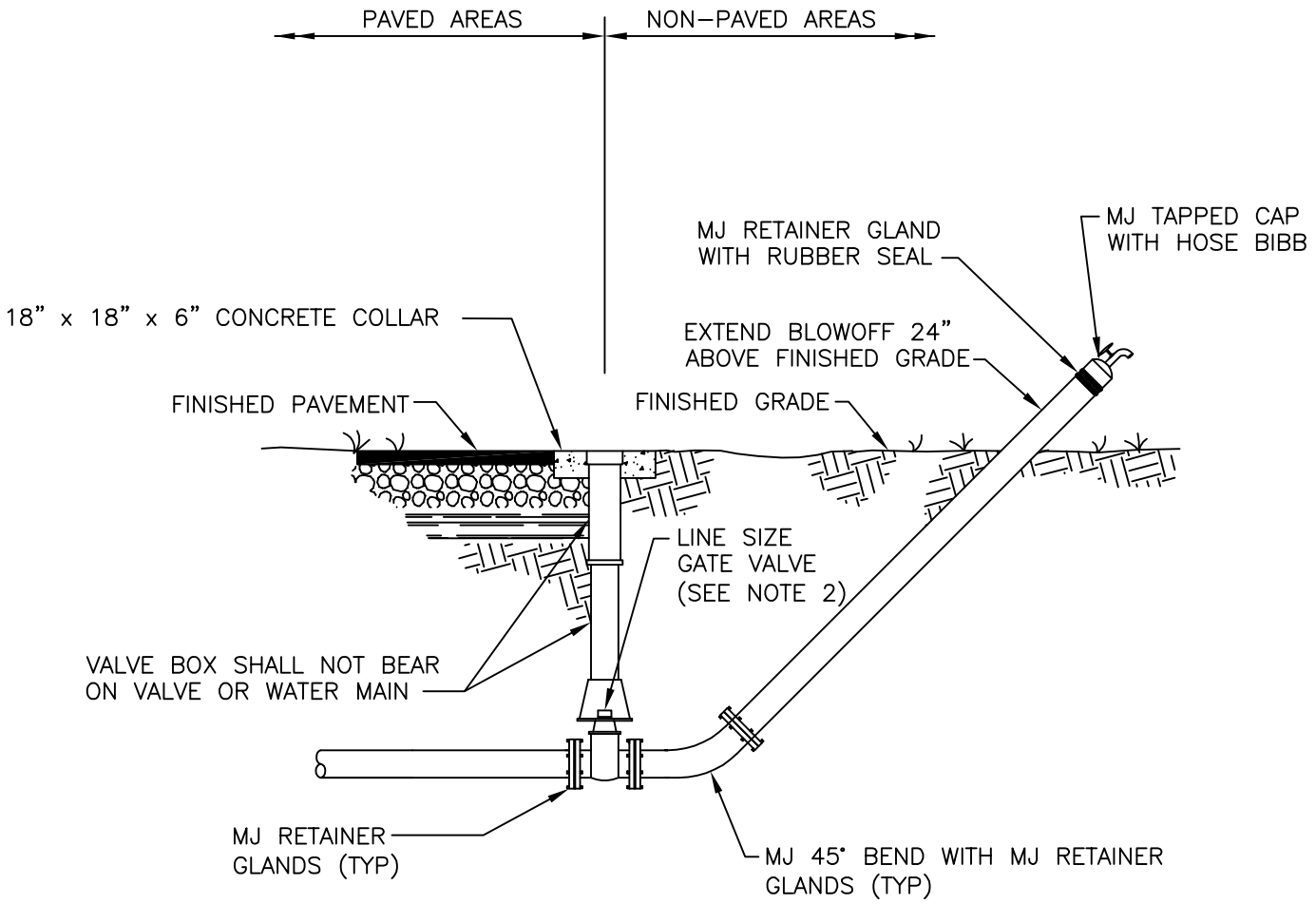
TYPICAL POLE DETAIL

REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
TYPICAL RTU ANTENNA TOWER DETAILS

NTS

NP-E9

REVISED: AUGUST 2008

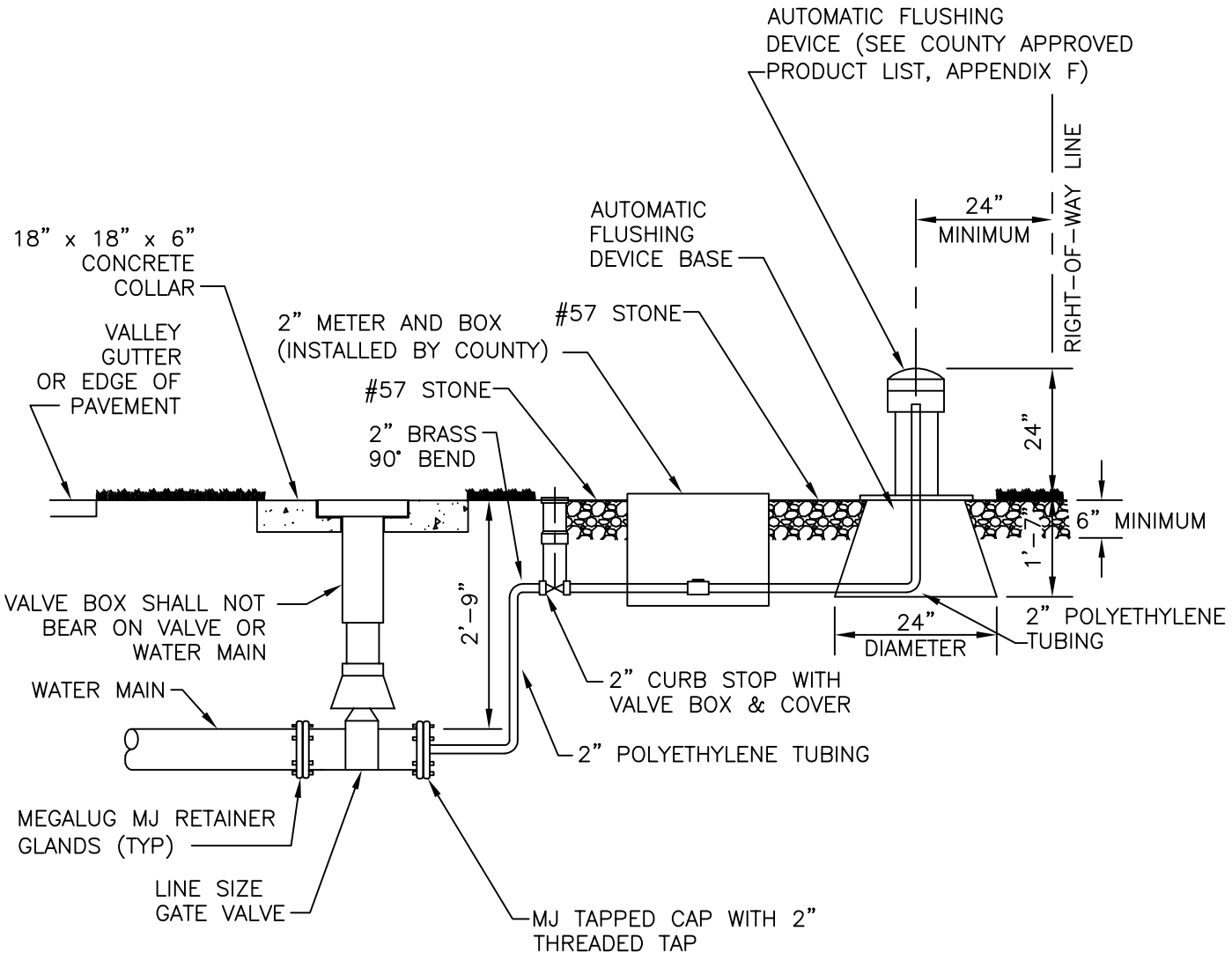


SIDE VIEW

NOTES:

1. MJ TAPPED CAP WITH HOSE BIBB IS TO BE REMOVED AFTER INITIAL BACTERIOLOGICAL CLEARANCE AND PRIOR TO WATER MAIN ACCEPTANCE.
2. SEE TECHNICAL SPECIFICATIONS SECTION 331200 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
3. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

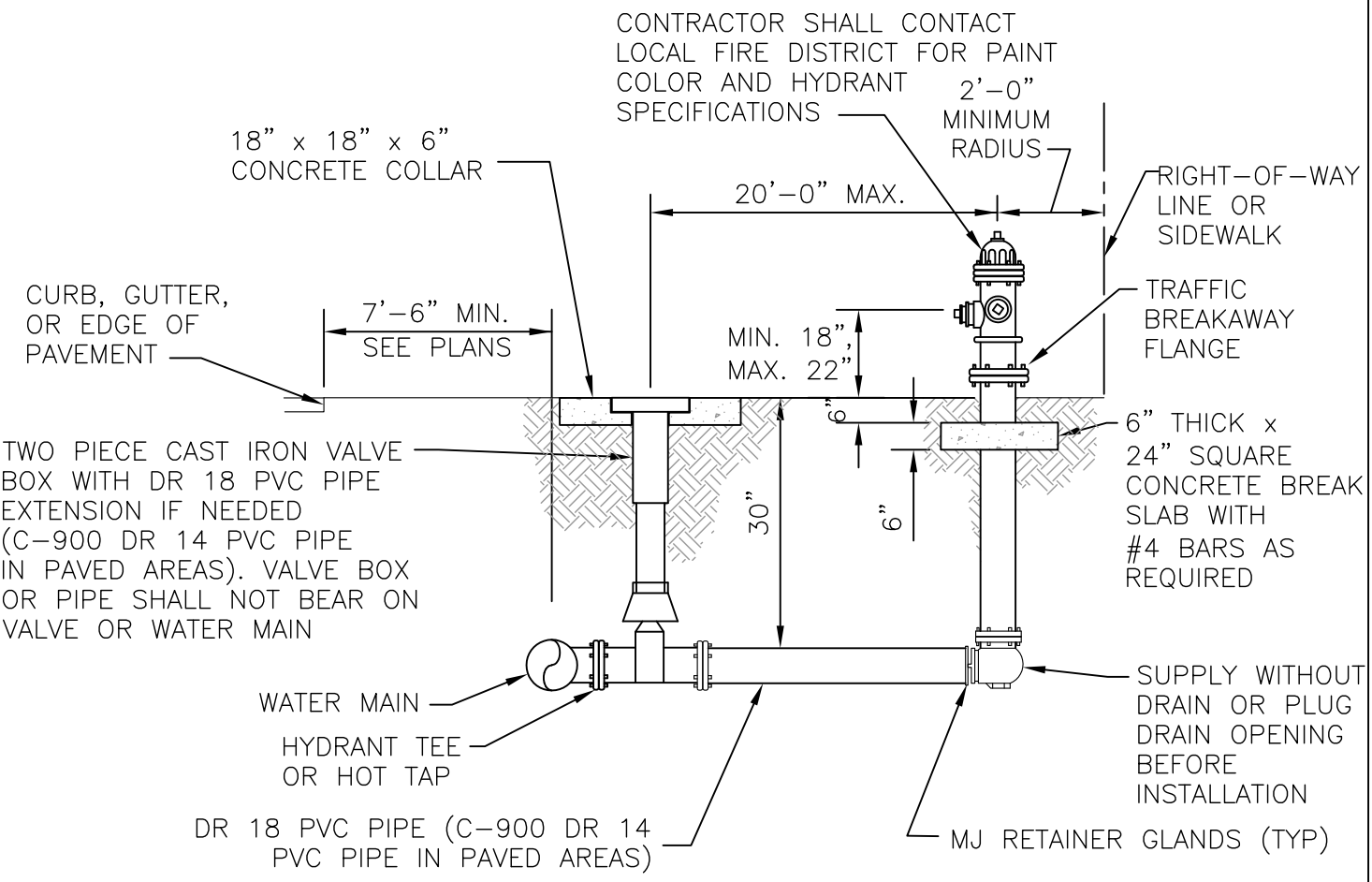
TEMPORARY BLOWOFF ASSEMBLY WITH BACTERIAL SAMPLING POINT DETAIL NTS	REVISION DATE: MAY 2013	COLLIER COUNTY PUBLIC UTILITIES DIVISION 3301 E. TAMIAMI TRAIL NAPLES, FLORIDA 34112	SHEET NO. W–1



NOTES:

1. PIPING SHALL BE INSTALLED UP TO 2" CURB STOP WITH VALVE BOX AND COVER AT TIME OF MAIN INSTALLATION.
2. AUTOMATIC FLUSHING DEVICE SHALL BE SHUT OFF UNTIL MAIN LINE HAS BEEN BACTERIOLOGICALLY TESTED.
3. SEE TECHNICAL SPECIFICATIONS SECTION 331200 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
4. AT TIME OF ACCEPTANCE, WATER DEPARTMENT WILL INSTALL 2" METER.
5. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

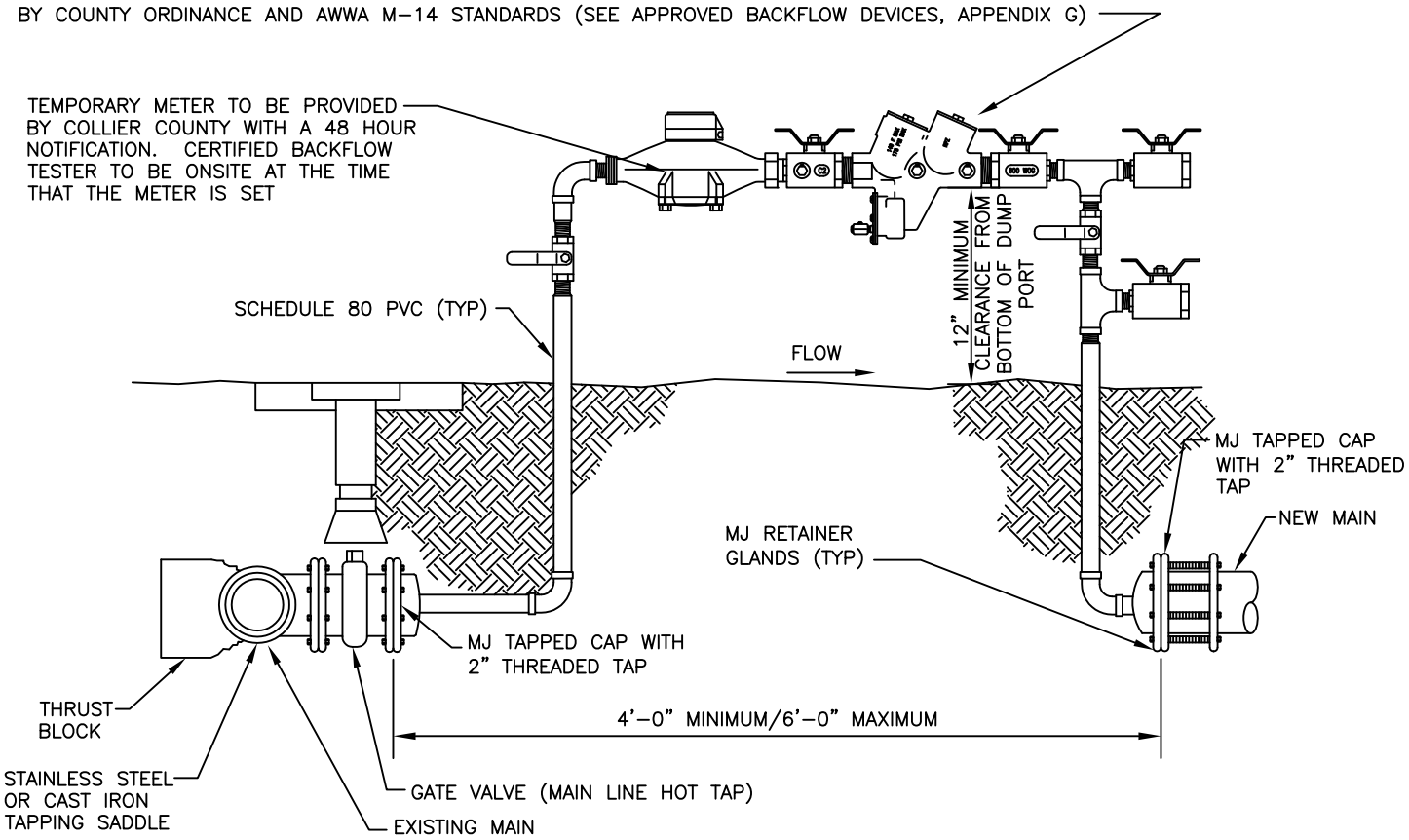
AUTOMATIC WATER MAIN FLUSHING DEVICE DETAIL NTS	REVISION DATE: MAY 2013	COLLIER COUNTY PUBLIC UTILITIES DIVISION 3301 E. TAMIAMI TRAIL NAPLES, FLORIDA 34112	SHEET NO. W-2



NOTES:

1. HYDRANT MUST BE CURRENT YEAR MANUFACTURE AND YEAR OF MANUFACTURE MUST BE CAST ON BARREL.
2. ALL EXISTING MAINS WHERE FIRE HYDRANTS ARE TO BE INSTALLED SHALL BE HOT TAPPED.
3. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
4. ALL FIRE HYDRANT BARRELS SHALL BE A MINIMUM 5-1/4" IN DIAMETER.
5. ALL FIRE HYDRANTS INSTALLED SHALL BE OF THE BREAK AWAY FLANGE TYPE AND SHALL MEET THE REQUIREMENTS OF THE LOCAL FIRE CONTROL DISTRICT.
6. HYDRANT SHALL CONFORM WITH AWWA C-502.
7. THRUST RESTRAINT SHALL BE BY MJ RETAINER GLANDS.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

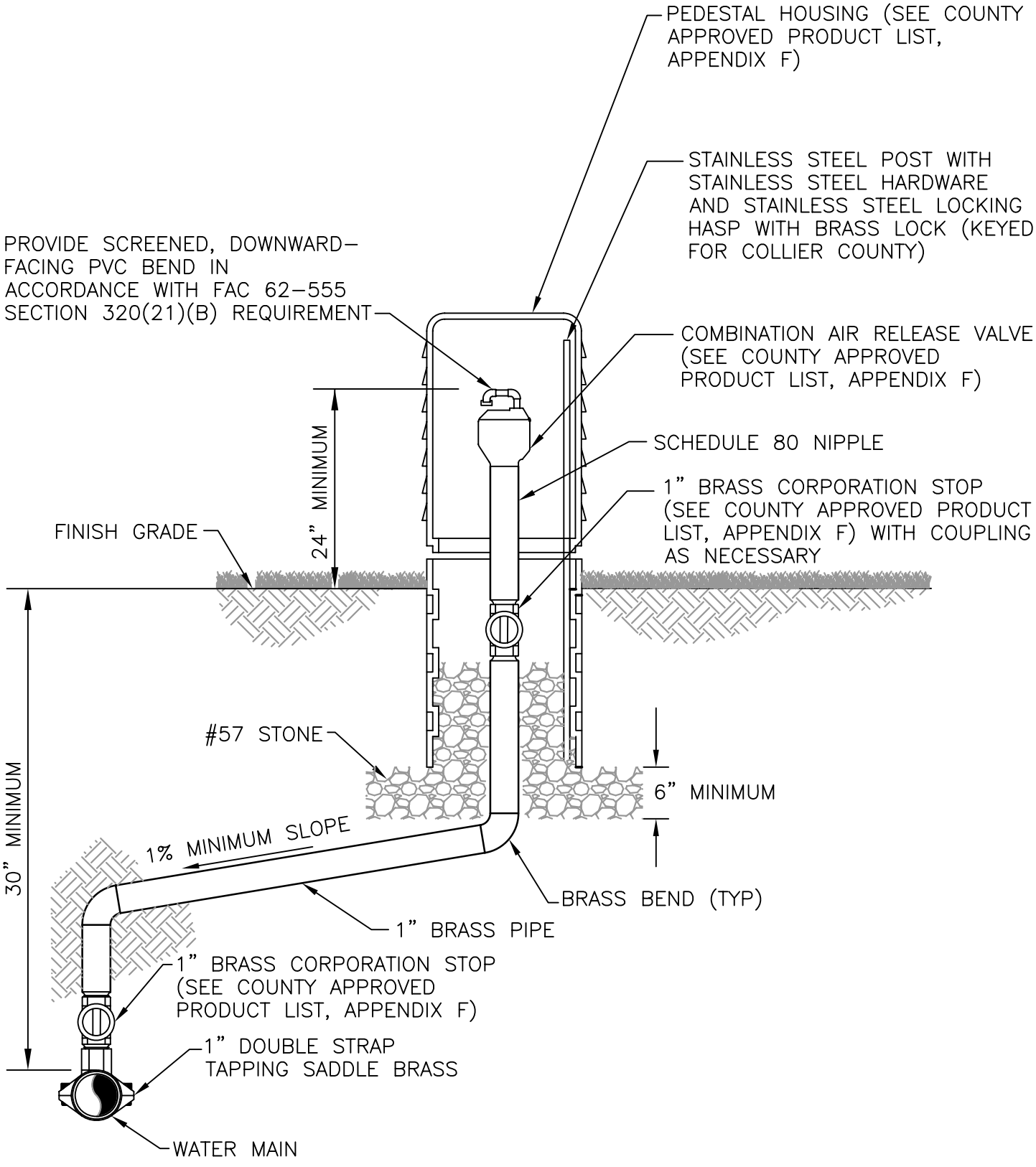
FIRE HYDRANT DETAIL NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. W-3



NOTES:

1. FINAL CONNECTION TO BE WITNESSED BY COLLIER COUNTY WATER DISTRIBUTION.
2. MJ TAPPED CAPS TO BE PROPERLY RESTRAINED.
3. INSTALL JUMPER TAP SYSTEM FOR TEMPORARY METER DOWNSTREAM OF BLIND FLANGE FOR CONSTRUCTION WATER.
4. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
5. JUMPER ASSEMBLY MUST BE MINIMUM OF 18" ABOVE FINISHED GRADE.
6. BACKFLOW ASSEMBLY REQUIRES INITIAL CERTIFICATION BY CERTIFIED BACKFLOW TESTER.
7. THIS ASSEMBLY SHALL ONLY BE USED IF NO COMBUSTIBLES WILL BE ON SITE. IF COMBUSTIBLES ARE BROUGHT ON SITE, THEN THE TEMPORARY BACKFLOW PREVENTERS AND FIRE PROTECTION METER TIE-IN ASSEMBLY SHALL BE USED.
8. THIS ASSEMBLY IS NOT APPROVED TO PROVIDE FIRE PROTECTION WATER TO THE SITE DURING CONSTRUCTION. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL AFTER TESTING, BACTERIAL CLEARANCE, FINAL INSPECTION AND COUNTY ACCEPTANCE.
9. GAP CONFIGURATION TO BE INSTALLED WITHIN 24 HOURS OR LESS AT THE DISCRETION OF THE WATER DISTRIBUTION DEPARTMENT.
10. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
11. FOR INSTALLATIONS WHERE LESS THAN 20' OF NEW WATER MAIN IS BEING CONSTRUCTED BETWEEN THE PERMANENT BACKFLOW ASSEMBLY AND THE EXISTING MAIN, NO TEMPORARY JUMPER IS REQUIRED.

CONNECTION TO EXISTING WATER MAIN DETAIL (GAP CONFIGURATION) NTS	JULY 2018	Collier County Public Utilities Division	SHEET NO. W-4

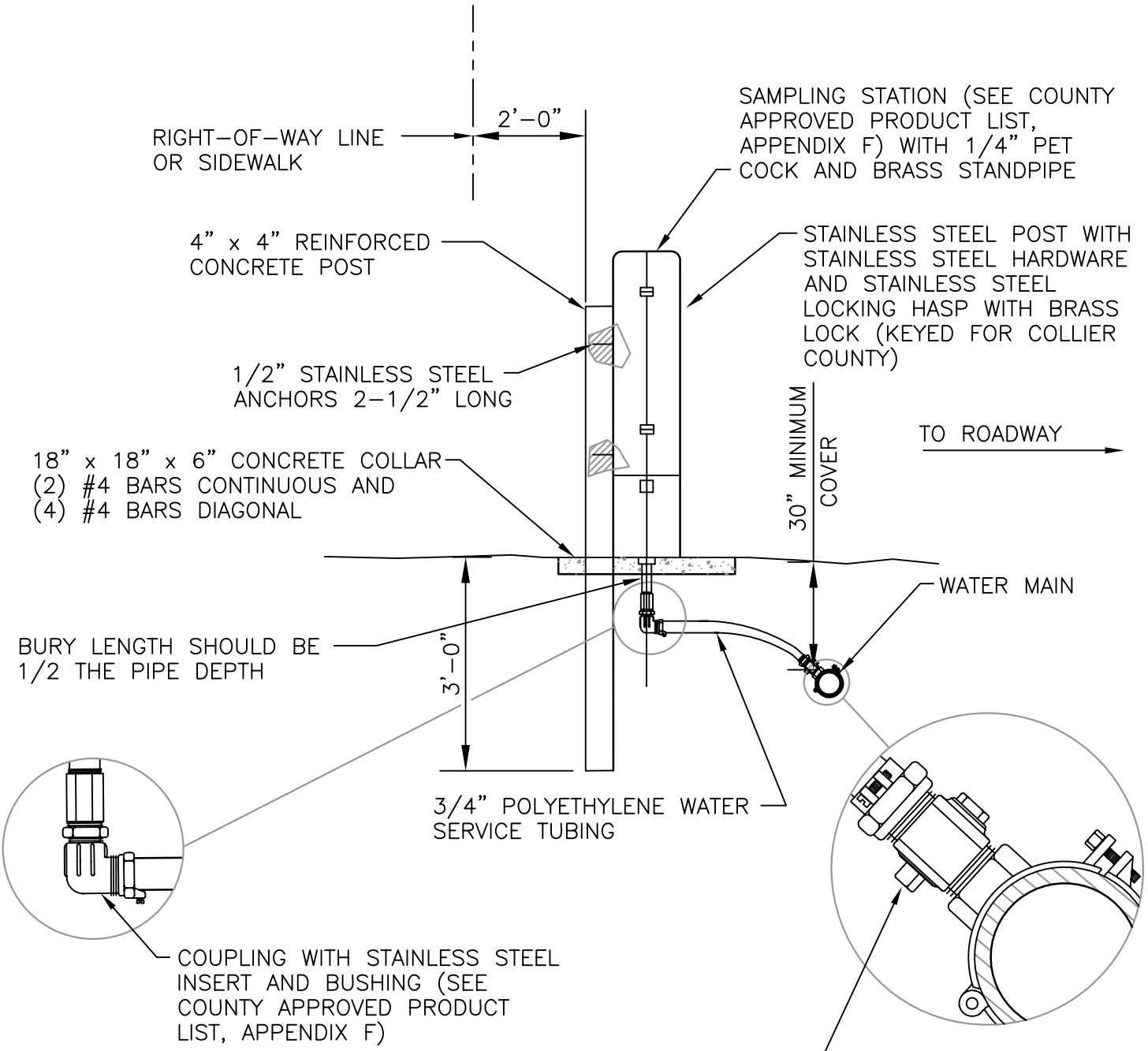


POTABLE WATER
AIR RELEASE VALVE DETAIL

NTS

W-5

REVISED: AUGUST 2008

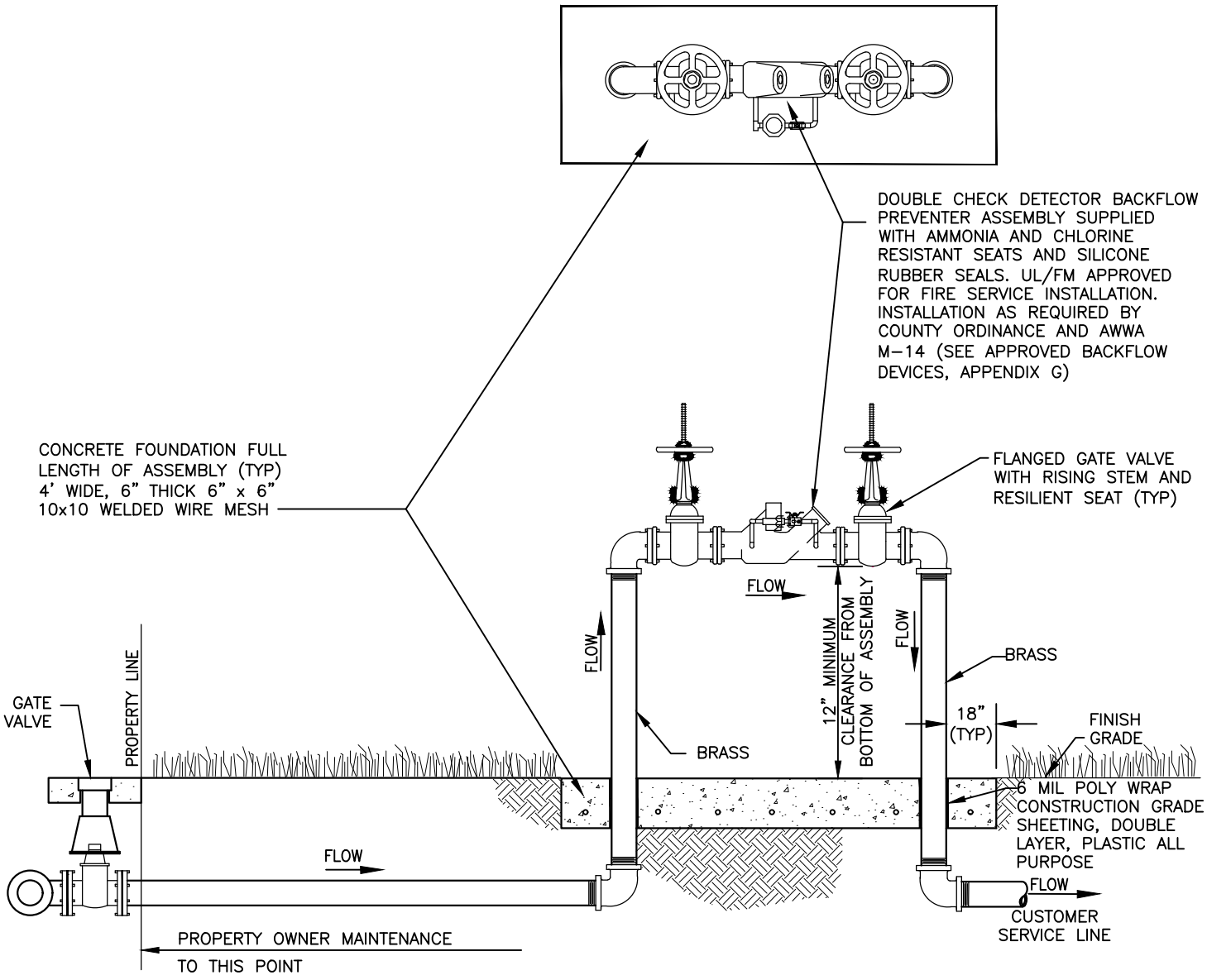


PERMANENT BACTERIAL SAMPLE POINT DETAIL

NTS

W–6

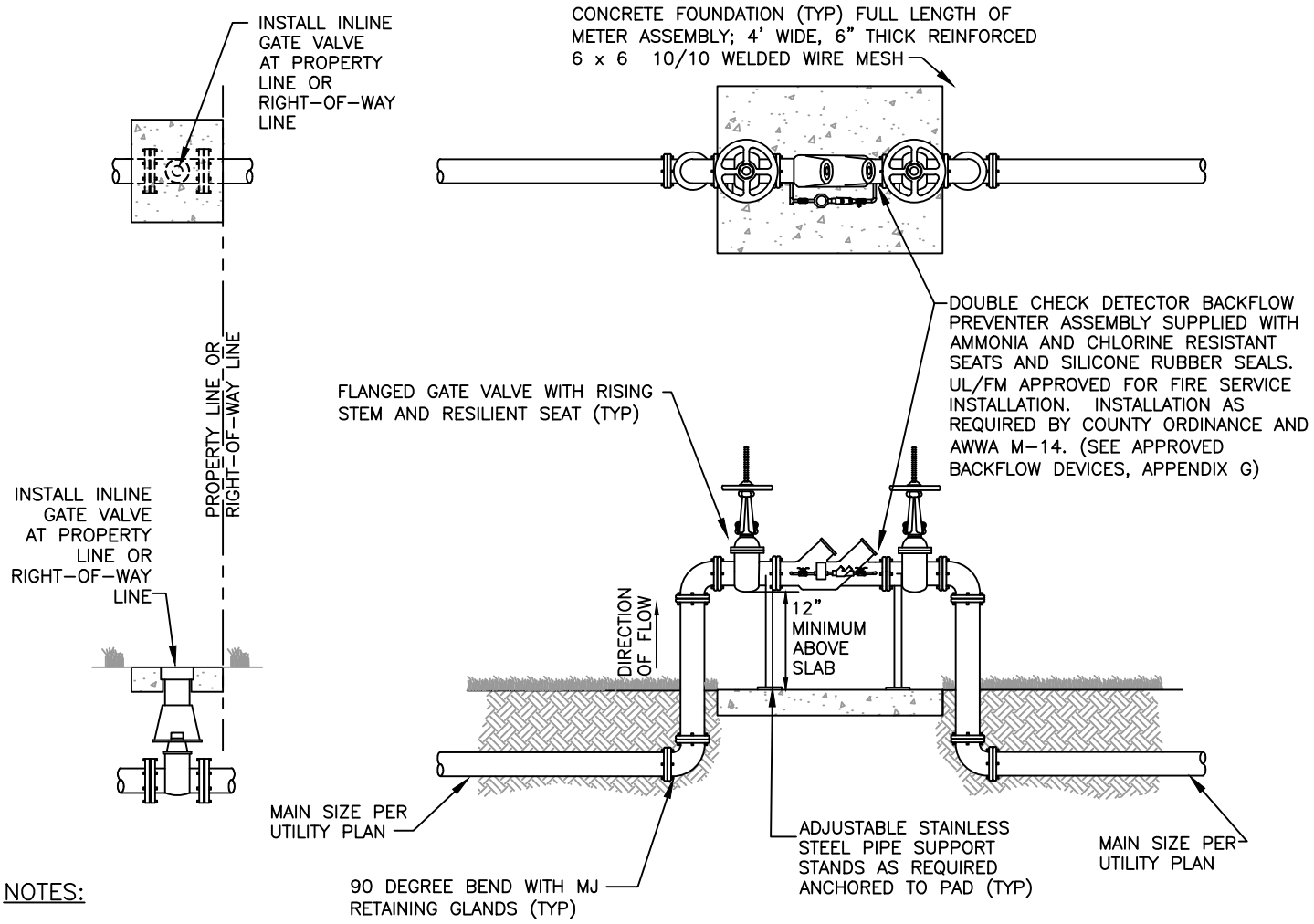
REVISED: AUGUST 2008



NOTES:

1. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
2. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
3. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
5. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
7. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.
8. ALL ABOVE GROUND PIPING SHALL BE BRASS.

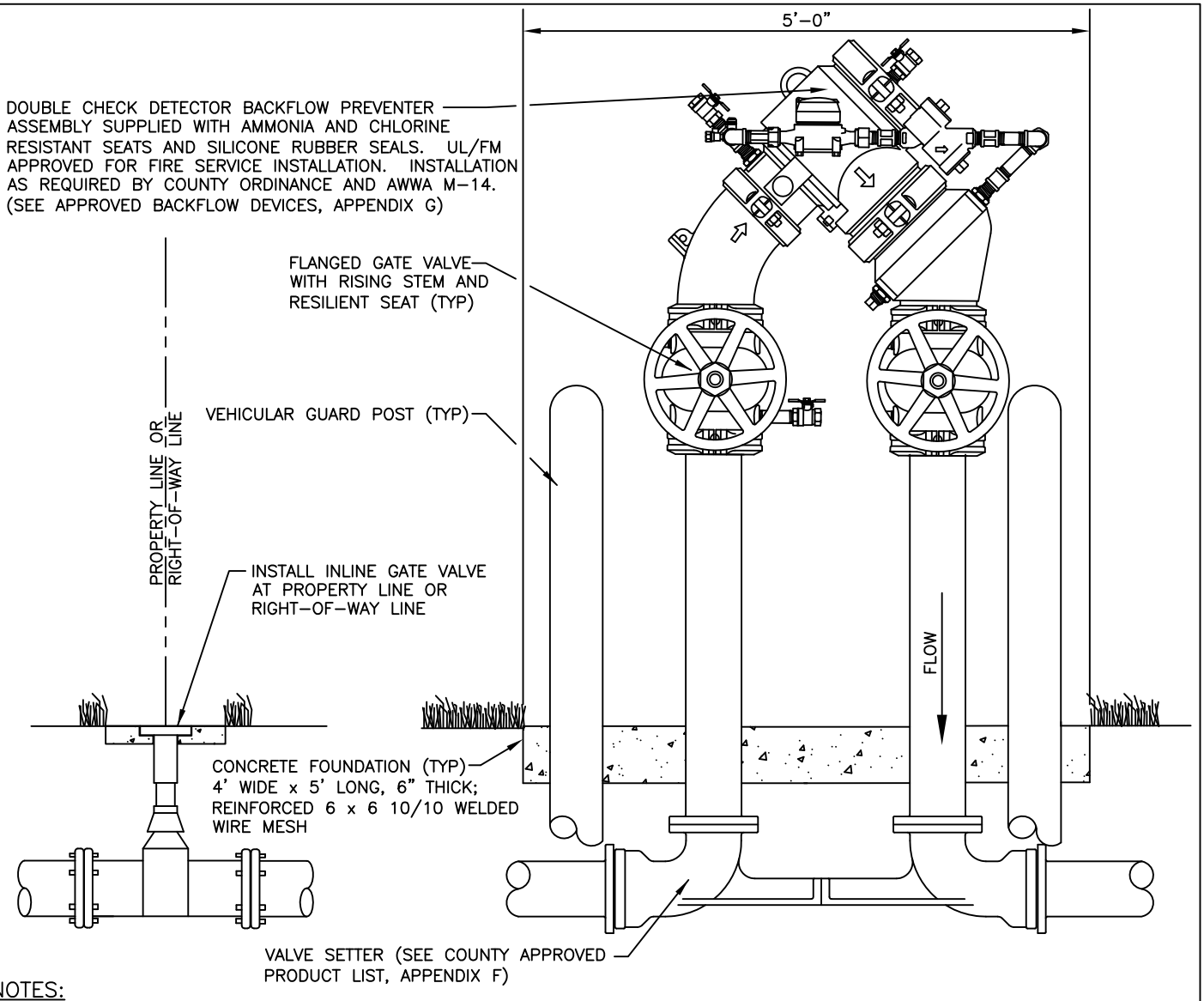
2-½" AND SMALLER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. W-8



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY.
3. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
4. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
5. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE FROM THE COUNTY'S WATER MAIN.
6. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
7. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

3" AND LARGER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. W-11



NOTES:

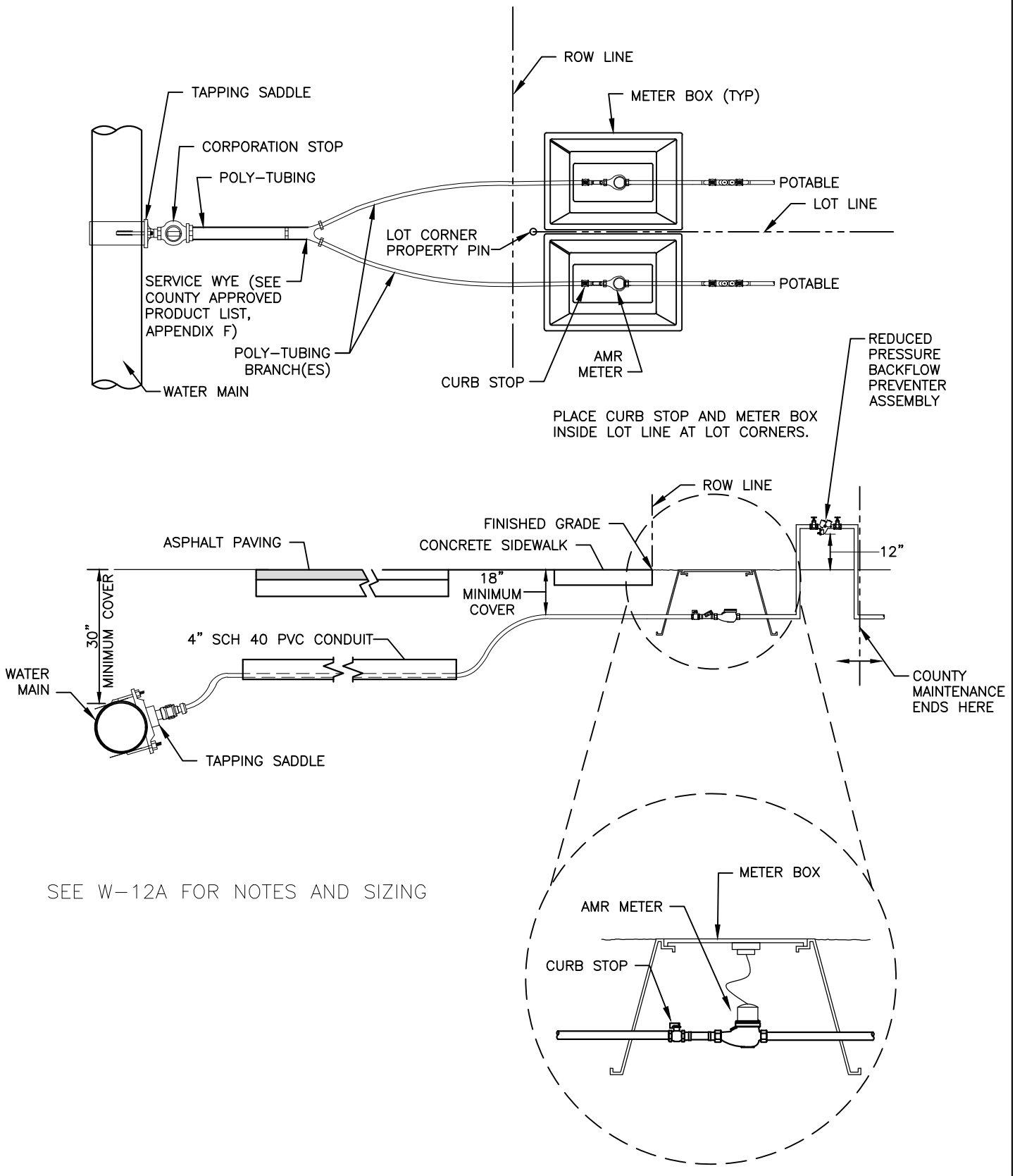
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
4. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
5. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
6. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
7. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

4" THROUGH 10" ONLY COMPACT FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL

NTS

W-11A

REVISED: JULY 2011



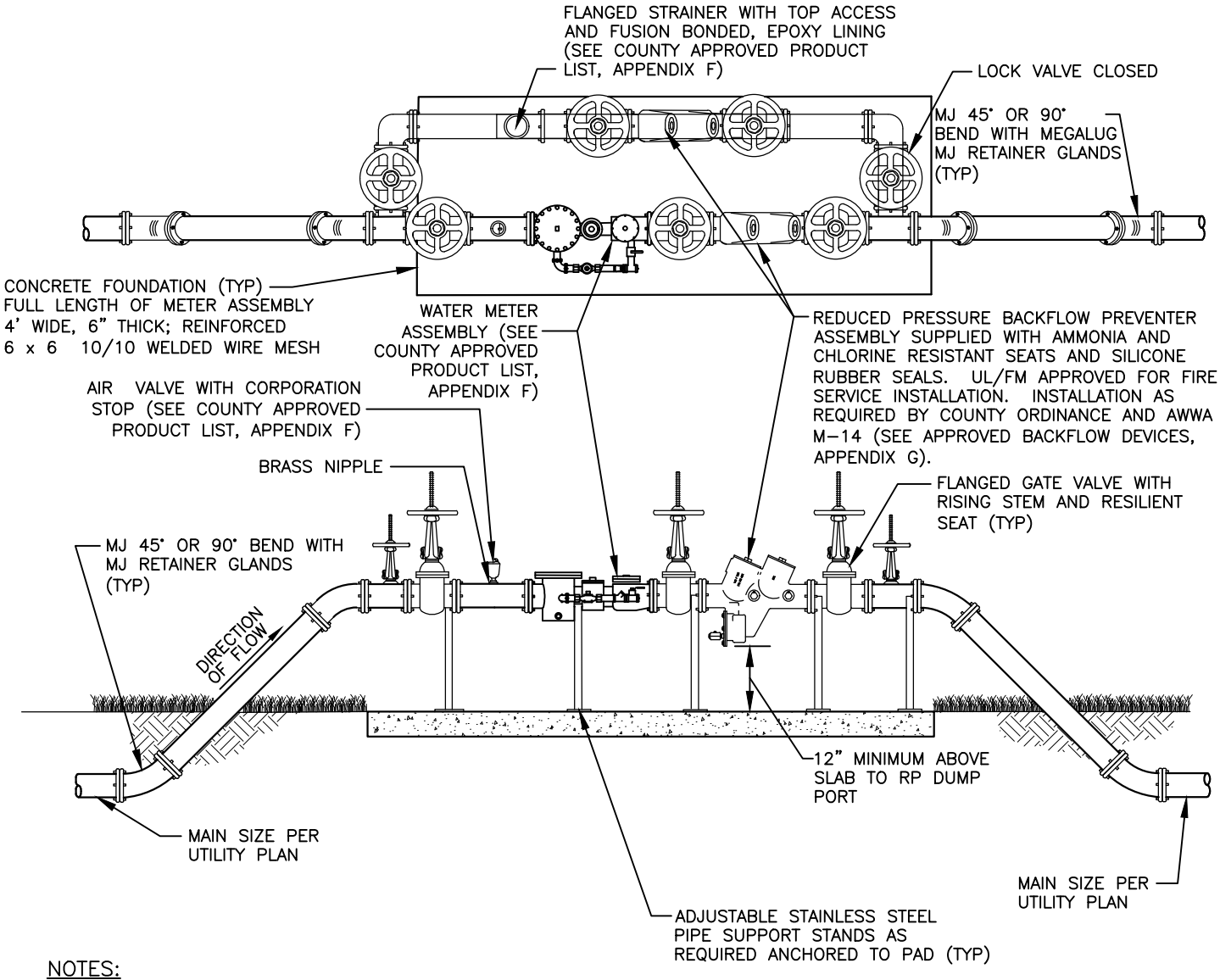
SEE W–12A FOR NOTES AND SIZING

TYPICAL SHORT AND LONG SIDE WATER SERVICE METER SETTING DETAIL FOR CONNECTION TO WATER MAIN NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. W–12

SERVICE CONNECTION SIZING CHART				
SINGLE SERVICE	CONNECTION TO MAIN	DOUBLE SERVICE	CONNECTION TO MAIN	BRANCH SIZE
$\frac{3}{4}$" METER	1–$\frac{1}{2}$"	(2) $\frac{3}{4}$" METERS	1–$\frac{1}{2}$"	1"
1" METER	1–$\frac{1}{2}$"	(2) 1" METERS	1–$\frac{1}{2}$"	1"
1–$\frac{1}{2}$" METER	1–$\frac{1}{2}$"			
2" METER	2"			

NOTES:

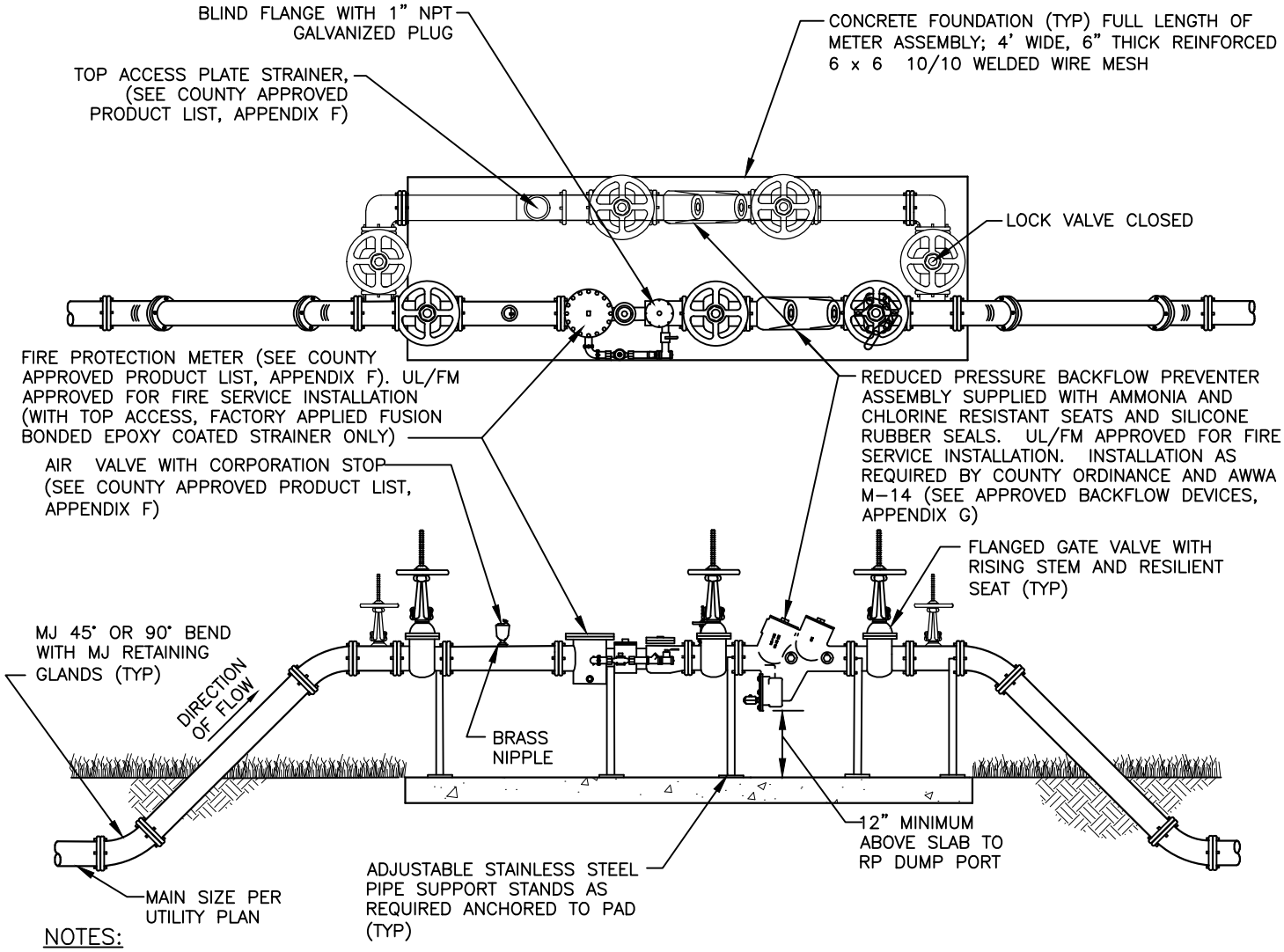
1. 1–$\frac{1}{2}$" AND LARGER METERS SHALL BE SERVED BY SINGLE SERVICES ONLY.
2. WYE CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI–SERVICE. SUCCESSIVE TAPS INTO WATER MAIN WILL BE NO CLOSER THAN 24" APART.
3. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 4". CONDUIT SHALL BE MARKED WITH A ELECTRONIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
4. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF WATER MAIN INSTALLATION.
5. MATERIAL SPECIFICATIONS:
   A. TAPPING SADDLES SHALL BE DOUBLE STRAP BRASS OR DUCTILE IRON (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.
   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.
   D. TUBING SHALL BE POLYETHYLENE, PE4710, (AWWA C–901, DR 9) AND BLUE IN COLOR.
6. ALL PLANTINGS SHALL BE A MINIMUM 3' FROM METER BOX, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 AND THE REDUCTION OF LEAD IN DRINKING WATER ACT AMENDING THE SAFE DRINKING WATER ACT.



NOTES:

1. ALL ABOVE GROUND PIPES WILL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. LOCATION TO BE FIELD DETERMINED BY THE ENGINEER OR HIS DESIGNEE.
3. THIS ASSEMBLY IS PERMITTED FOR POTABLE SERVICE ONLY.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW UNITS SHALL BE TESTED BY CERTIFIED BACKFLOW TECHNICIAN WITH TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT FOR CERTIFICATION AND APPROVAL.
6. COUNTY WILL REQUIRE DEDICATION OF ALL MATERIALS AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY WATER MAIN.
7. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

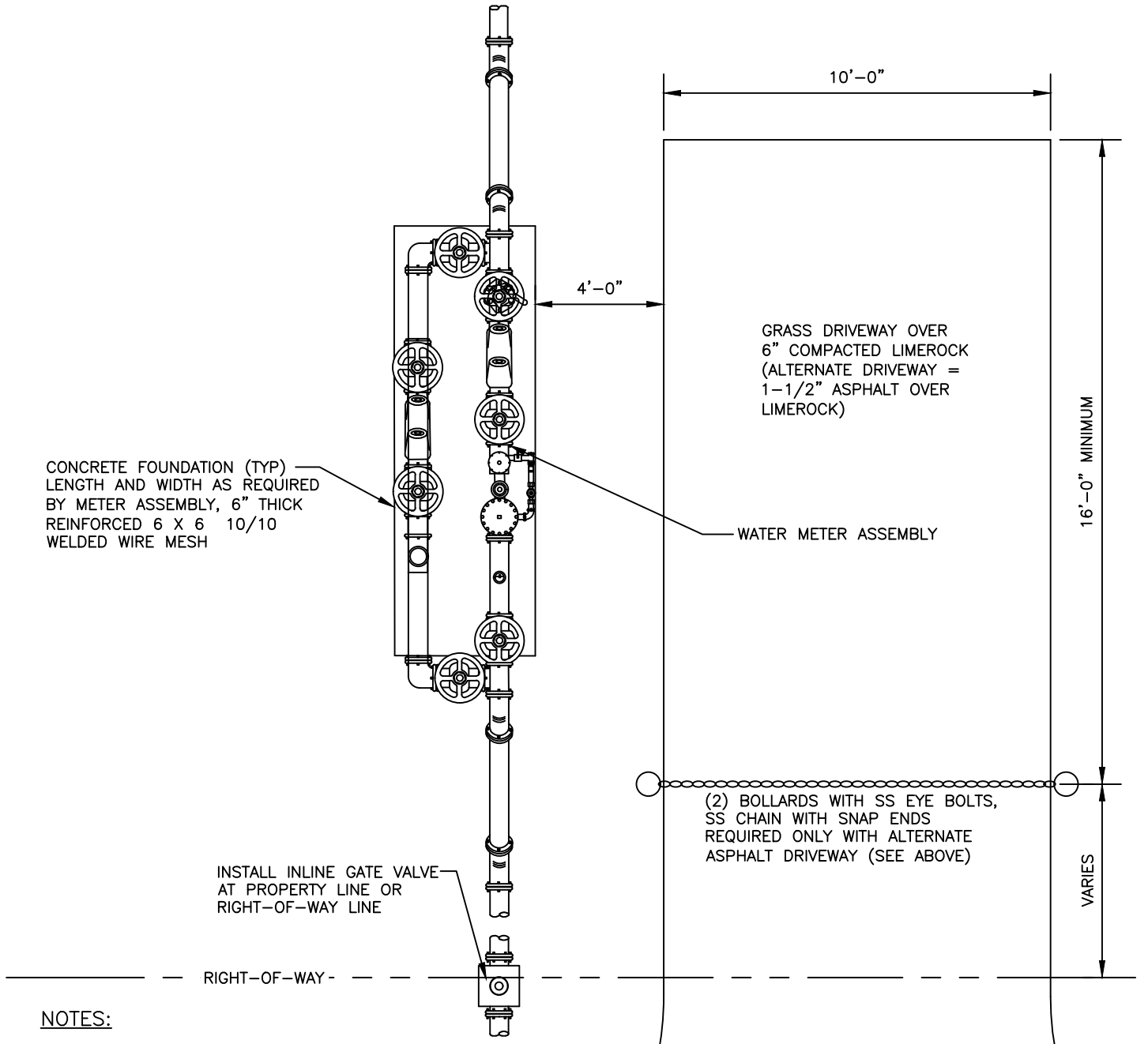
3" AND OVER POTABLE WATER METER ASSEMBLY DETAIL NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. W-13



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. THIS ASSEMBLY IS PERMITTED FOR COMBINATION FIRE AND POTABLE WATER SERVICE.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
6. COUNTY REQUIRES DEDICATION OF ALL ABOVE GROUND MATERIAL AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY MAIN.
7. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. STRAINER SHALL HAVE FUSION-BONDED EPOXY COATING.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

4" AND OVER POTABLE-WATER FIRE AND DOMESTIC METER ASSEMBLY DETAIL NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. W-14



NOTES:

1. CONSTRUCT DRIVEWAY PER FLORIDA D.O.T. INDEX 515.
2. VEHICULAR GUARDPOSTS ARE NOT SHOWN. PROVIDE GUARDPOSTS AS REQUIRED BY WATER METER DETAIL AND SITE.
3. DRIVEWAY ORIENTATION TO BE AS APPROVED BY THE COUNTY.
4. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT.
5. IF ROADWAY CURB EXISTS, PROVIDE CONCRETE TRANSITION ONTO DRIVEWAY.

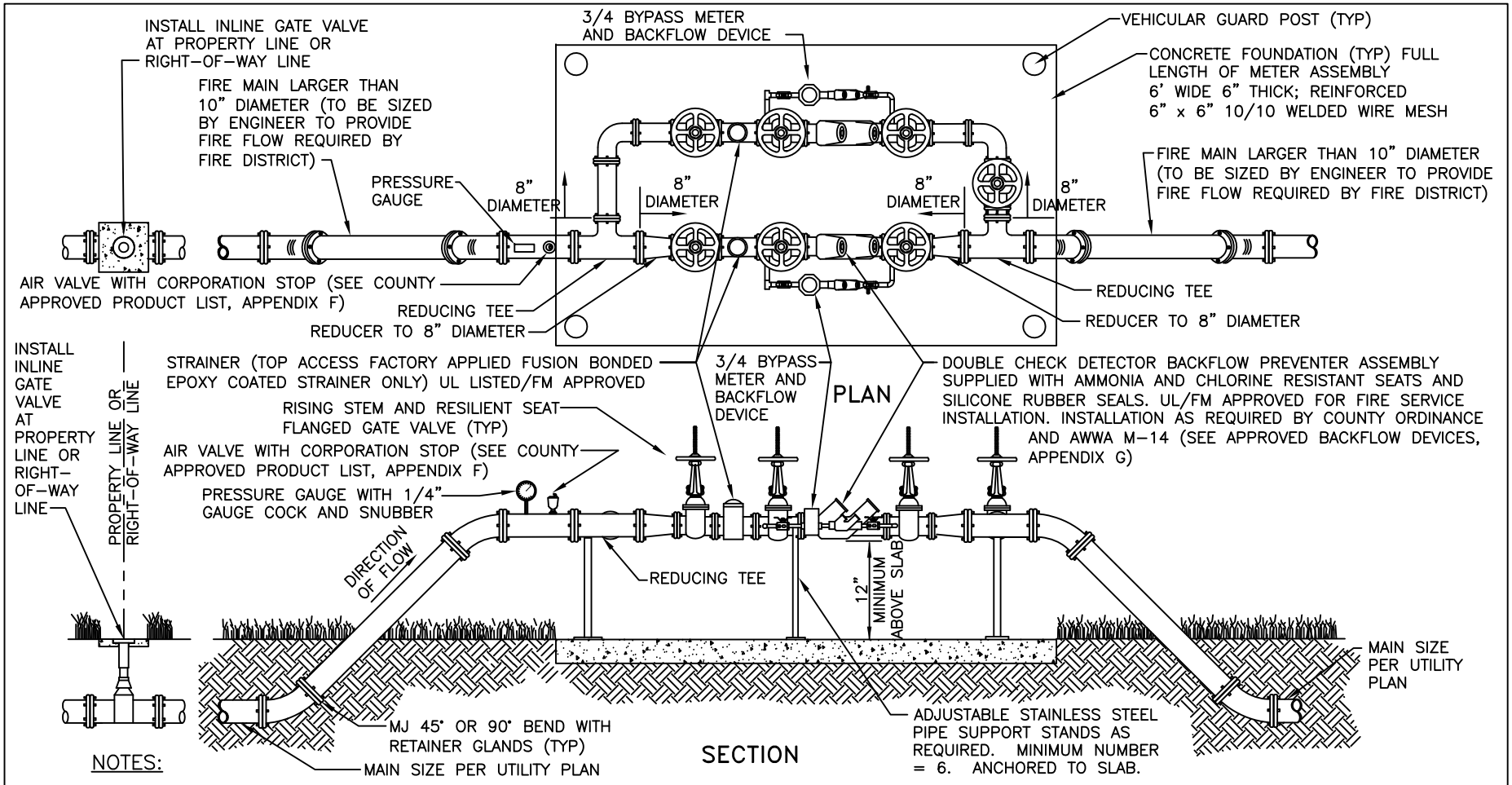
MAINTENANCE DRIVEWAY FOR WATER METERS 3" AND LARGER

NTS

REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
W–14A



NOTES:

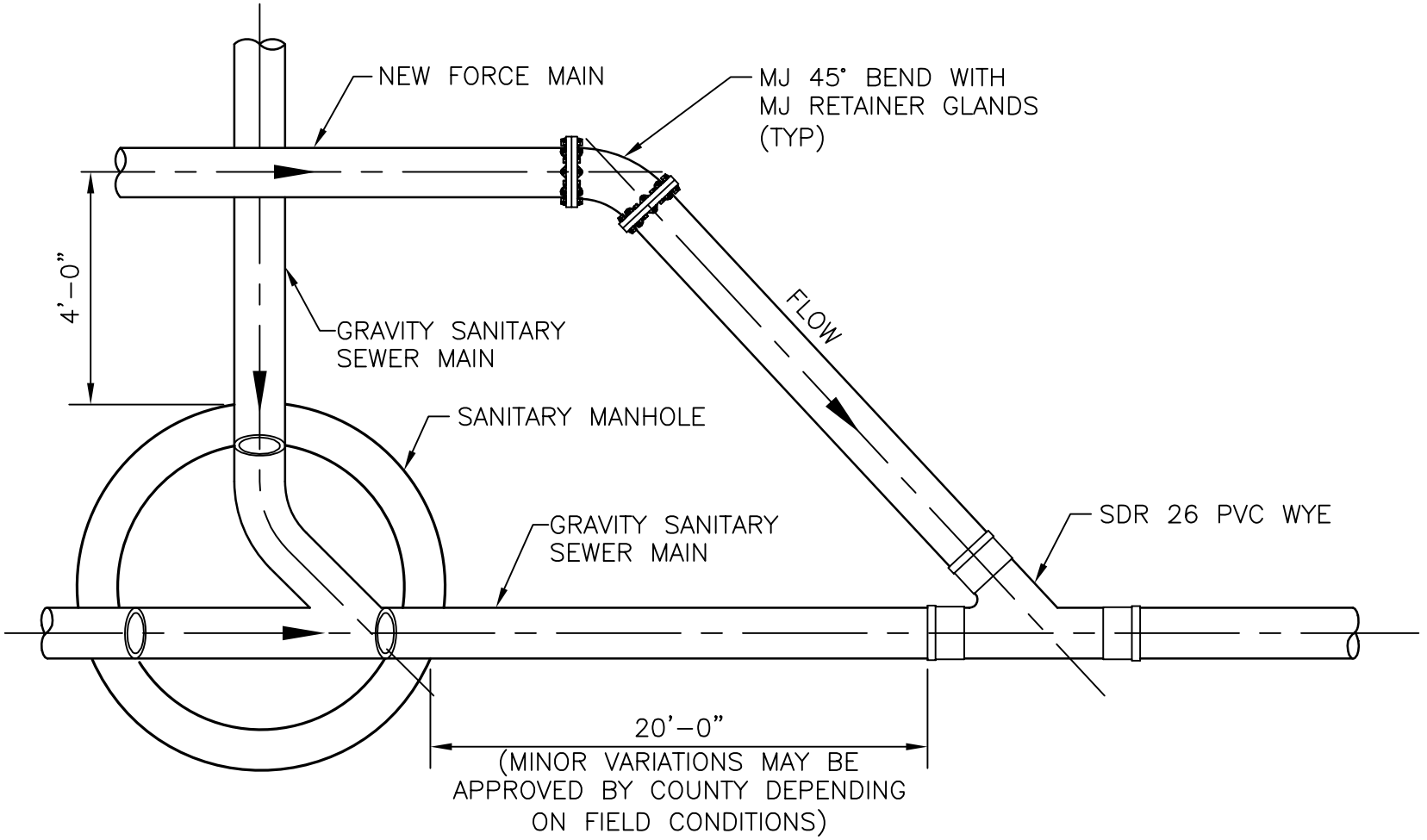
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
4. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
5. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
6. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

W-16

REVISED: JULY 2011

FIRE SERVICE DUAL DETECTOR CHECK ASSEMBLY OVER 10" FIRE MAIN DETAIL (DUAL 8" ASSEMBLIES)

NTS

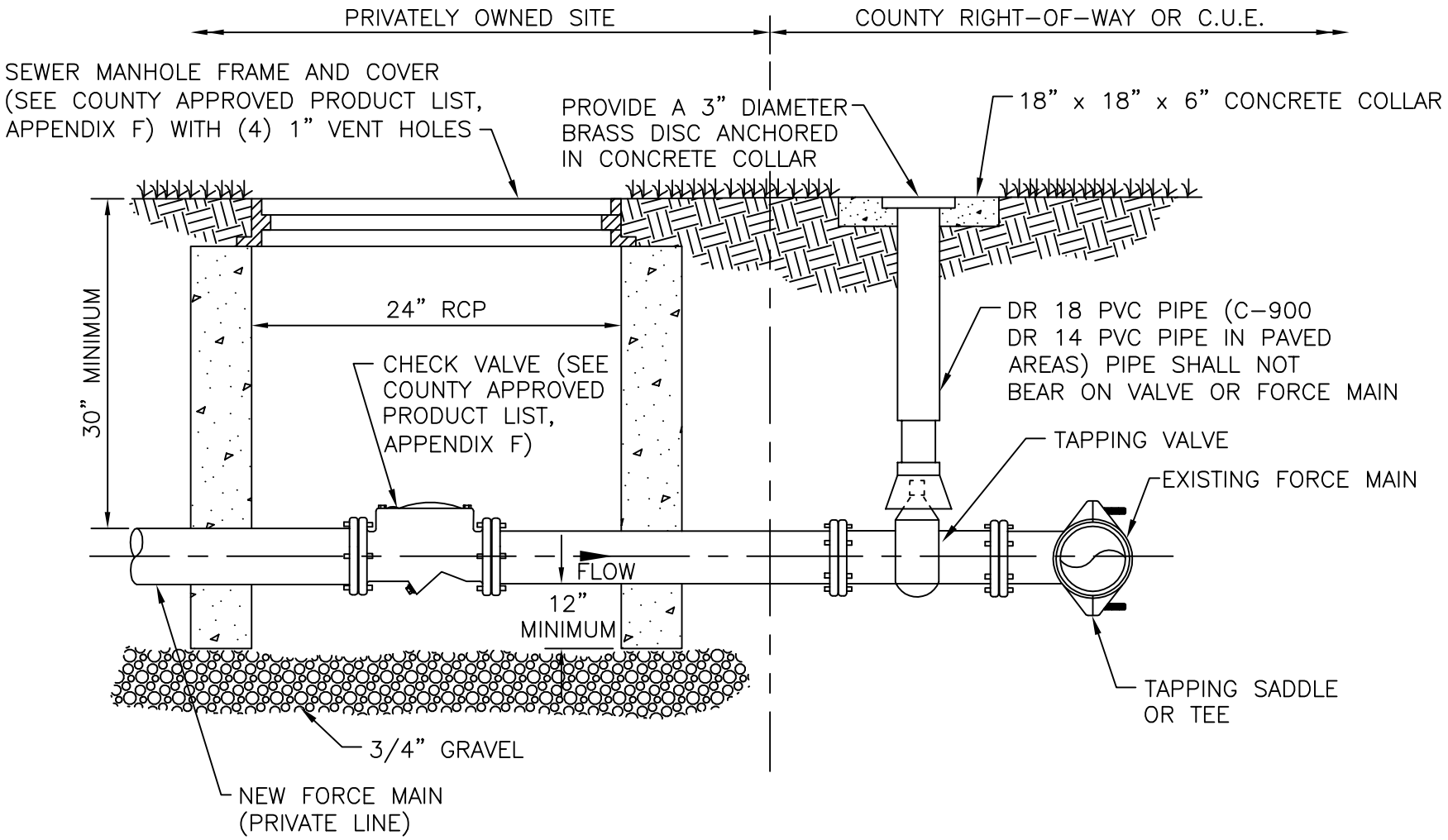


FORCE MAIN CONNECTION TO GRAVITY SANITARY SEWER DETAIL

NTS

WW–1

REVISED: APRIL 2006



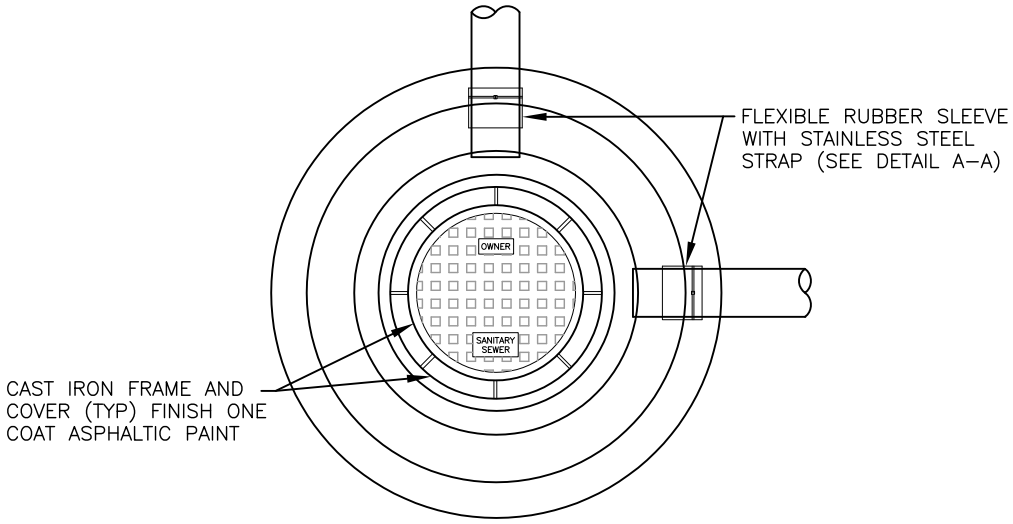
PRIVATE FORCE MAIN CONNECTION TO COUNTY FORCE MAIN DETAIL

NTS

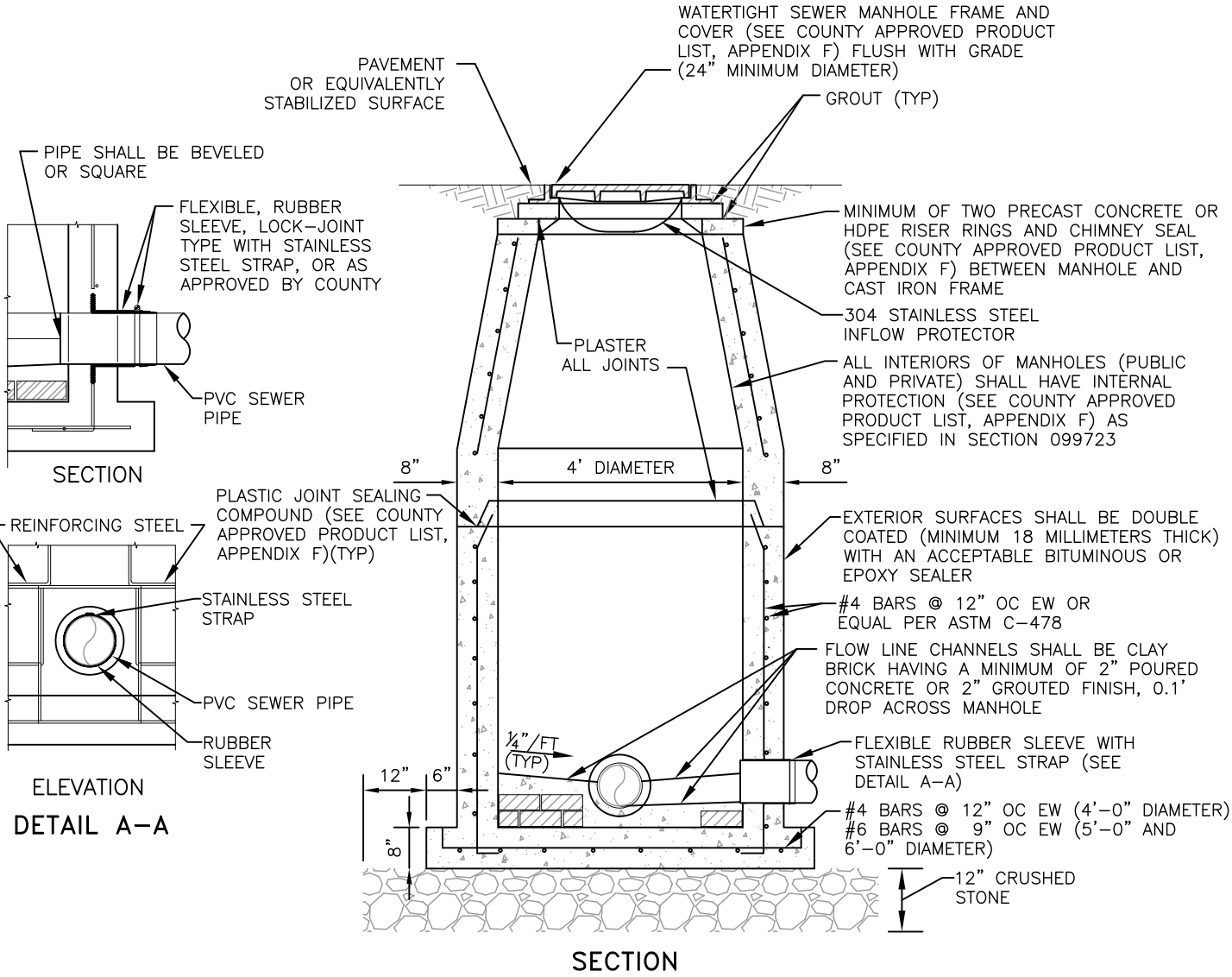
REVISION DATE:
MAY 2013

COLLIER COUNTY
PUBLIC UTILITIES DIVISION
3301 E. TAMIAMI TRAIL
NAPLES, FLORIDA 34112

SHEET NO.
WW–2



PLAN



SECTION

ELEVATION

DETAIL A–A

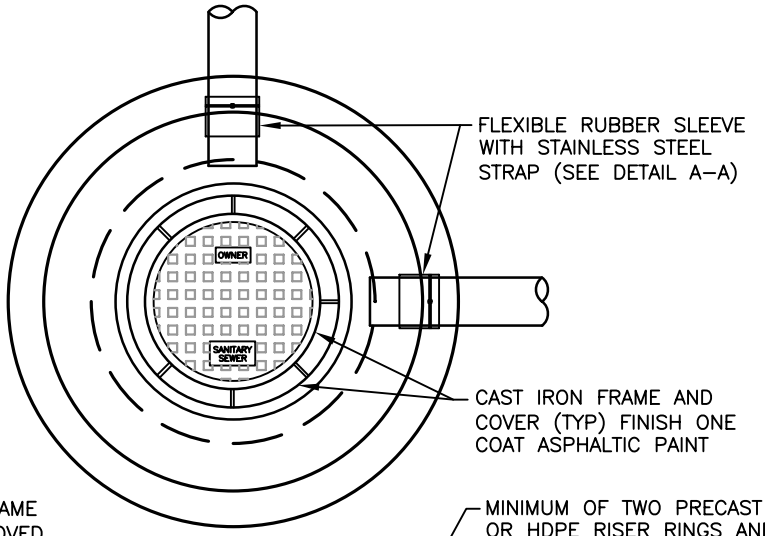
PRECAST REINFORCED CONCRETE MANHOLE DETAIL

NTS

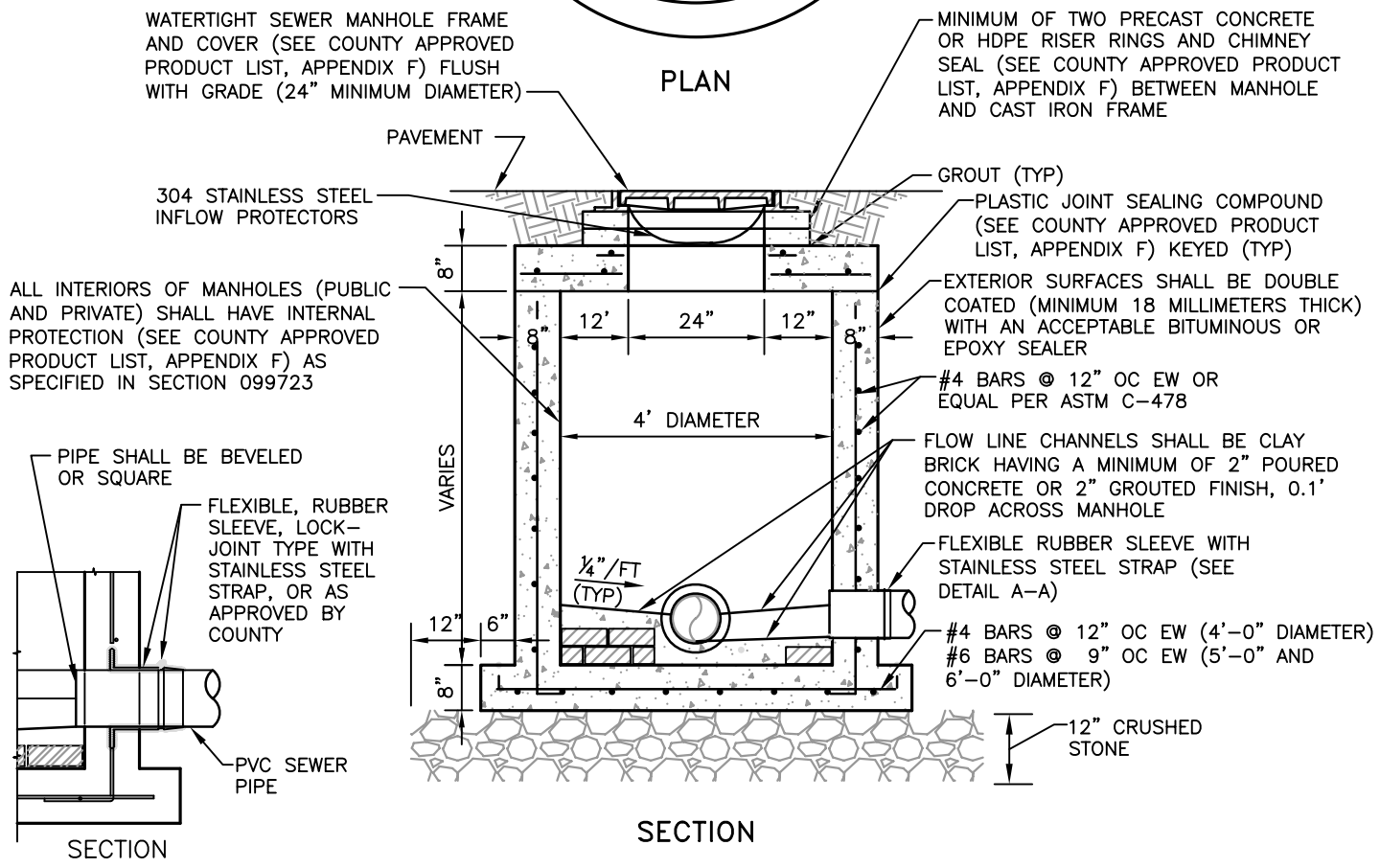
REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
WW–3

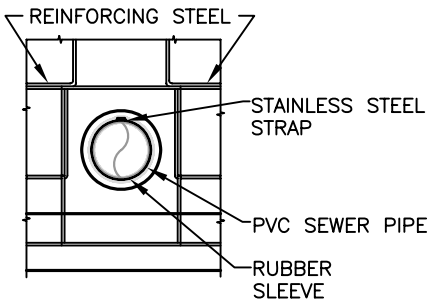


PLAN



SECTION

SECTION



ELEVATION

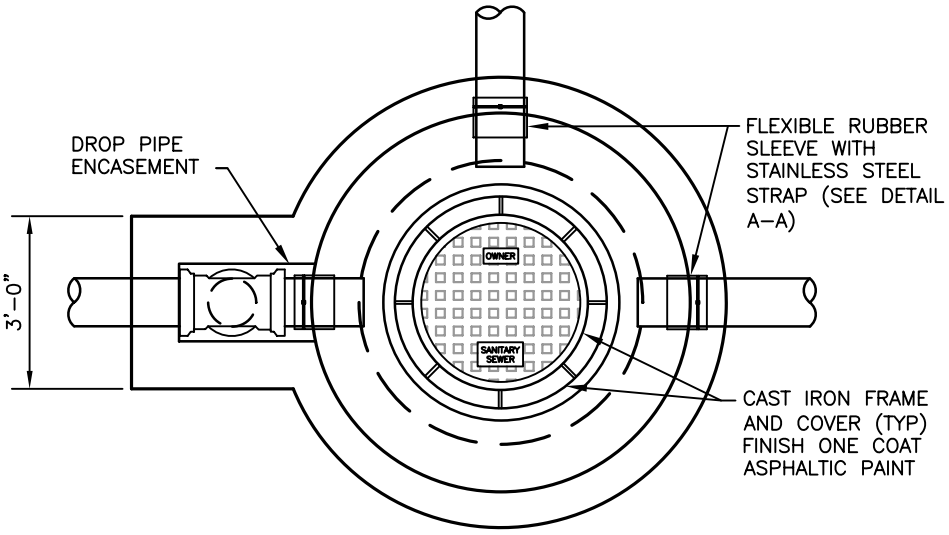
DETAIL A–A

SHALLOW MANHOLE DETAIL

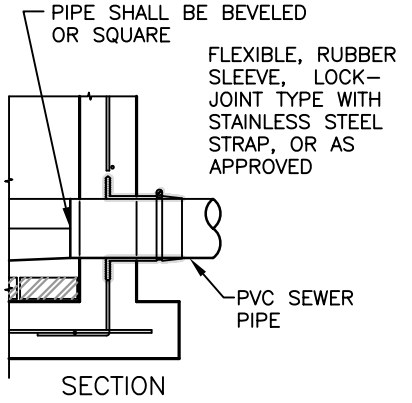
NTS

WW–4

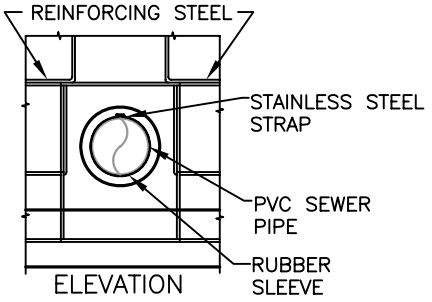
REVISED: AUGUST 2008



PLAN

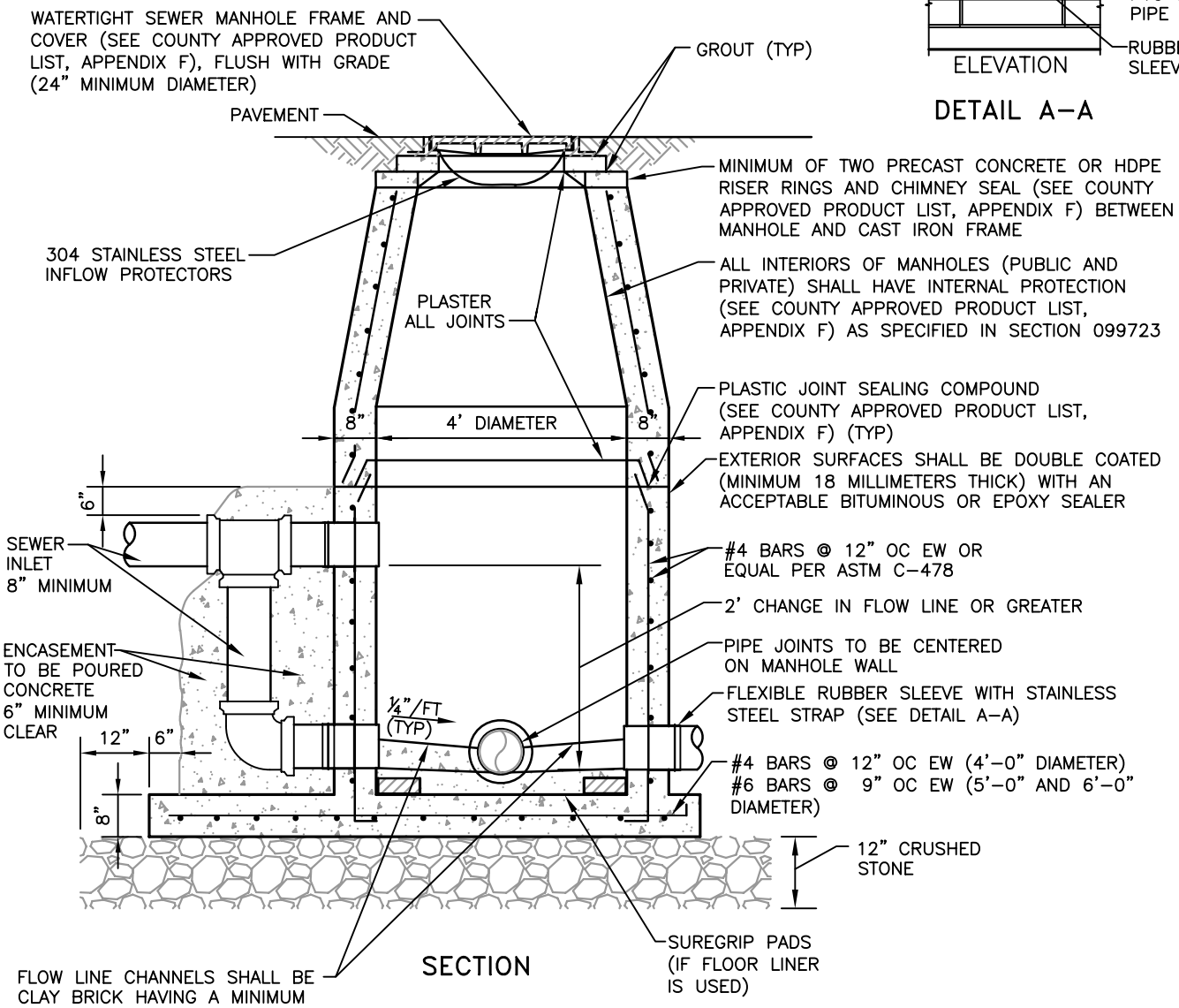


SECTION



ELEVATION

DETAIL A–A



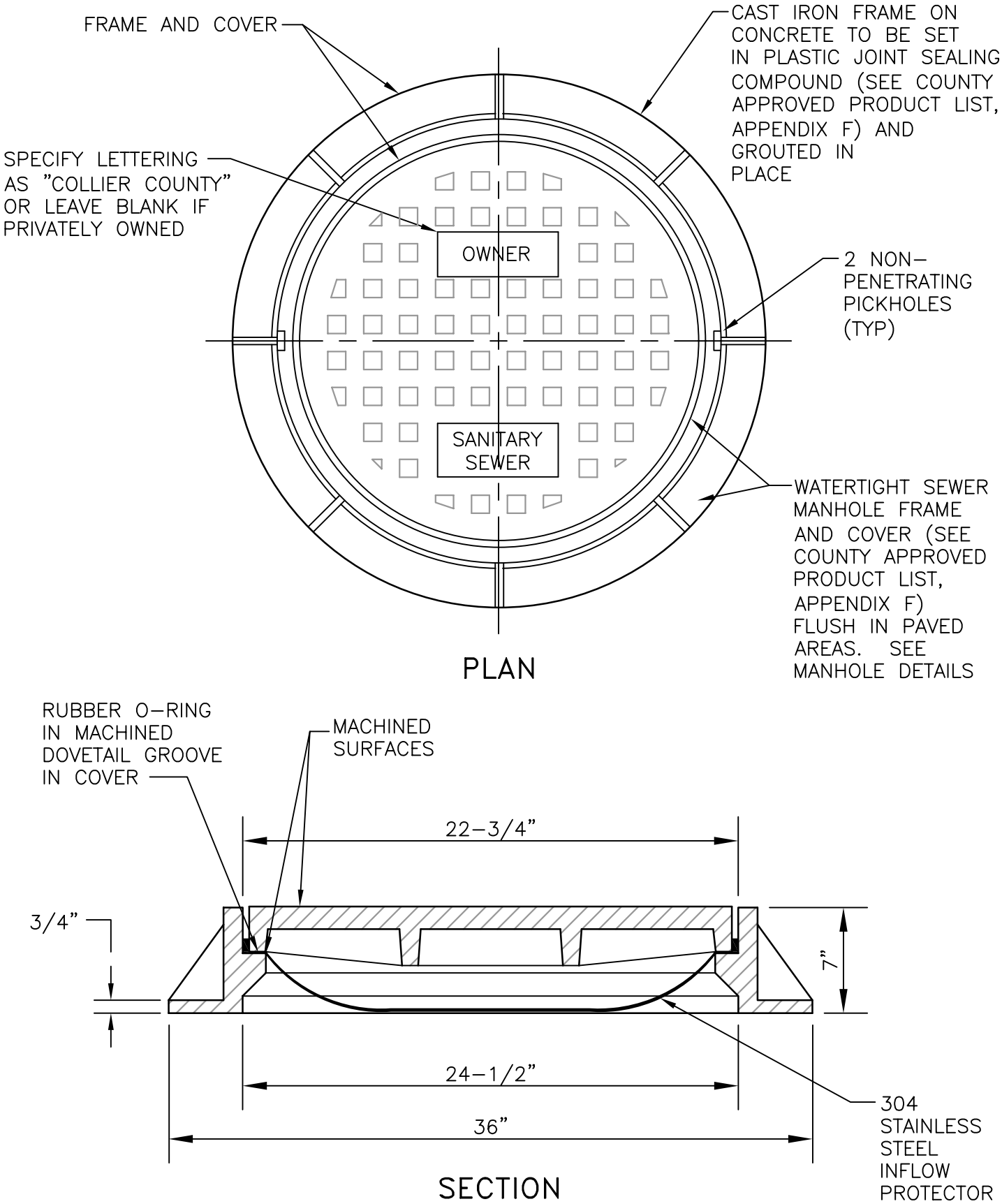
SECTION

DROP MANHOLE DETAIL

NTS

WW–5

REVISED: AUGUST 2008

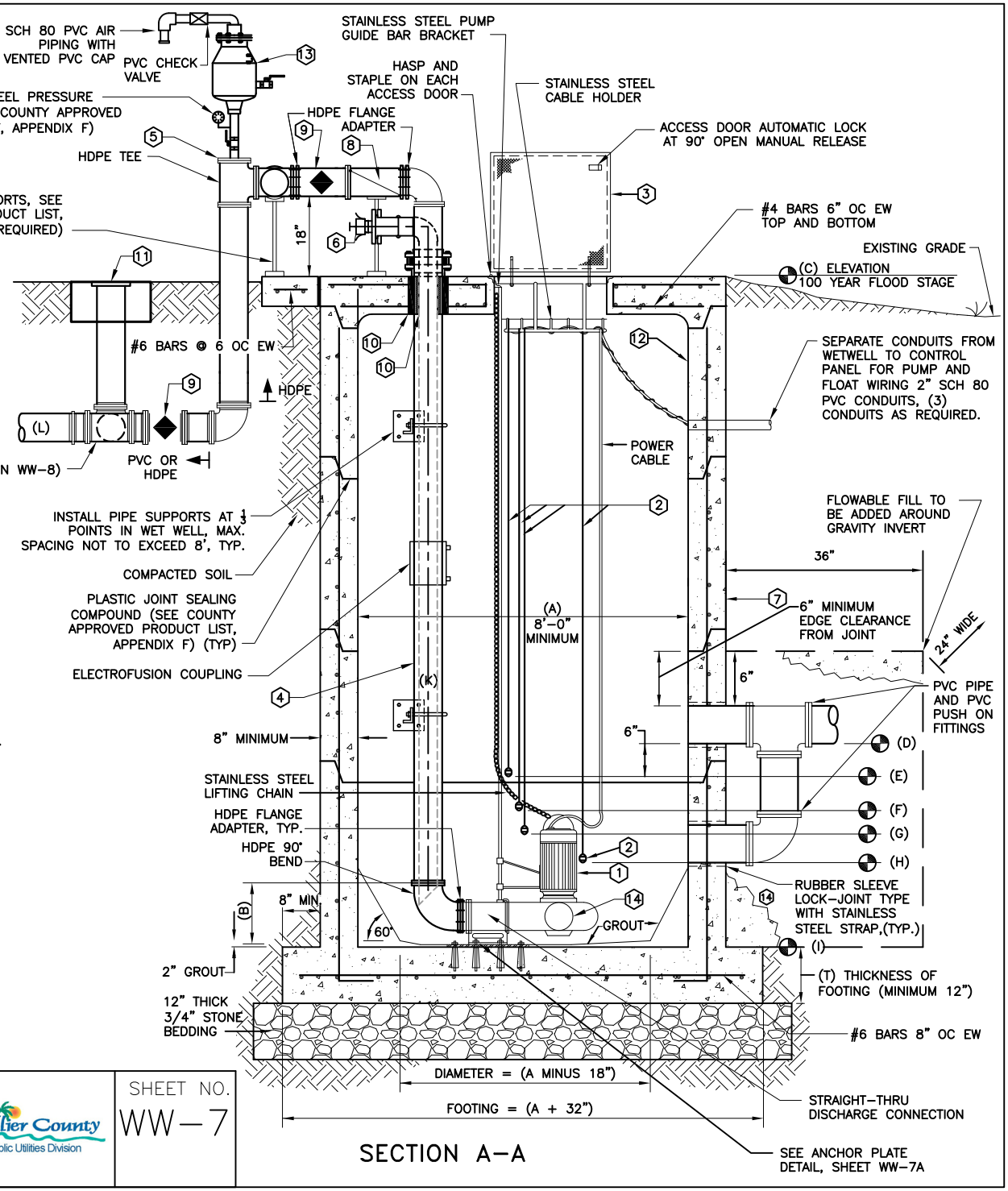


MANHOLE RING AND COVER DETAIL

NTS

WW-6

REVISED: AUGUST 2008



SECTION A-A

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(B)	DISTANCE B/W WETWELL FLOOR AND TOP OF DISCH. CONNECTION	
(C)	TOP OF WETWELL ELEVATION	
(D)	INFLUENT PIPE ELEV.	
(E)	HIGH WATER ALARM ELEV.	
(F)	LAG PUMP ON ELEV.	
(G)	LEAD PUMP ON ELEVATION	
(H)	ALL PUMPS OFF ELEVATION*	
(I)	TOP OF WETWELL FOOTING	
(K)	DIAMETER OF DISCHARGE RISER	
(L)	DIAMETER OF DISCHARGE FORCE MAIN	
(T)	THICKNESS OF FOOTING (MINIMUM 12")	

*SET ELEVATION H SO THAT THE MINIMUM SUBMERGENCE OF THE PUMPS IS 18", OR THE DEPTH RECOMMENDED BY THE MANUFACTURER, WHICHEVER IS GREATER

EQUIPMENT SPECIFICATIONS

MARK

1. DUPLEX ___ INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOLT OR 480 VOLT MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE". VERIFY PUMP LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2. LIQUID LEVEL REGULATORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), EACH PROVIDED WITH 60 FEET OF ELECTRICAL CABLE.
3. ACCESS DOOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH HINGED AND HASP EQUIPPED COVER, TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS.
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND STAINLESS STEEL PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL. SUCTION PIPE TO BE SET 1' ABOVE WETWELL BOTTOM.
7. WETWELL, REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76, O-RING JOINTS SHALL CONFORM TO ASTM C-443 WETWELL CONSTRUCTION. APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WETWELL.
8. CHECK VALVE, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), (K") COMPLETE WITH WRENCH.
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" STAINLESS STEEL QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. INTERIOR SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 099723.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" SCH 40 316 STAINLESS STEEL PIPING.
14. VOLUTE PORT WITH BOLTED COVER FOR FUTURE MIX FLUSH SYSTEM (ONE PUMP ONLY).

NOTE: ALL STAINLESS STEEL SHALL BE SERIES 316

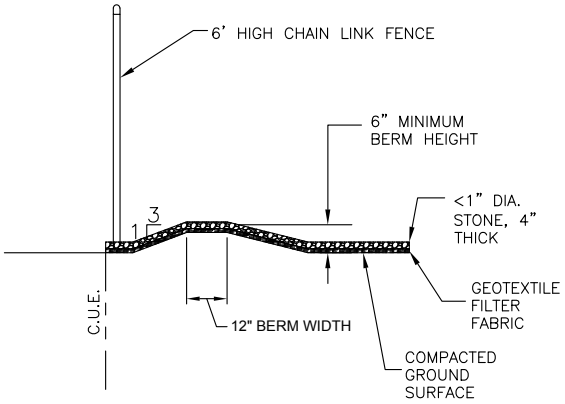
PUMP STATION DETAIL - PROFILE

NTS

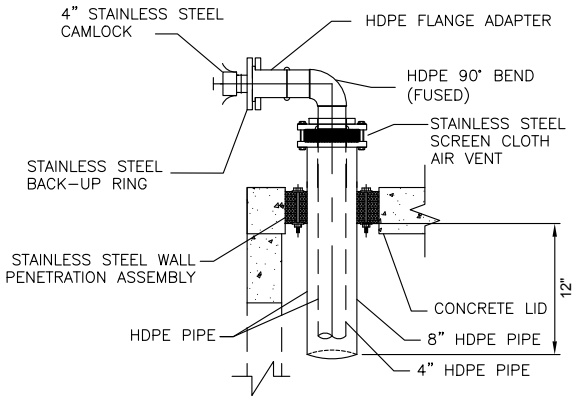
REVISION DATE: JULY 2018

Collier County Public Utilities Division

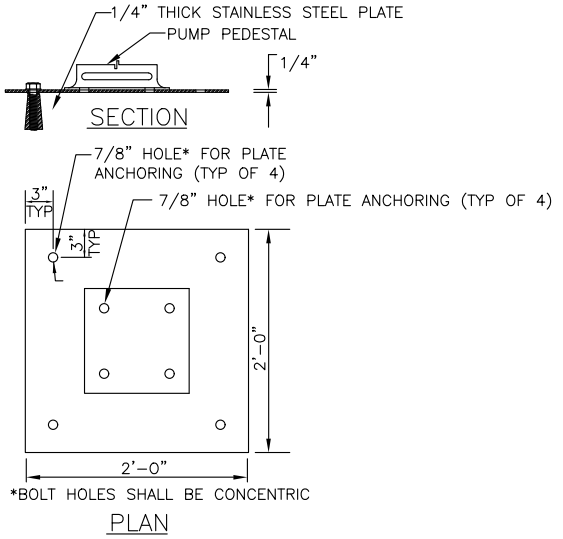
SHEET NO. WW-7



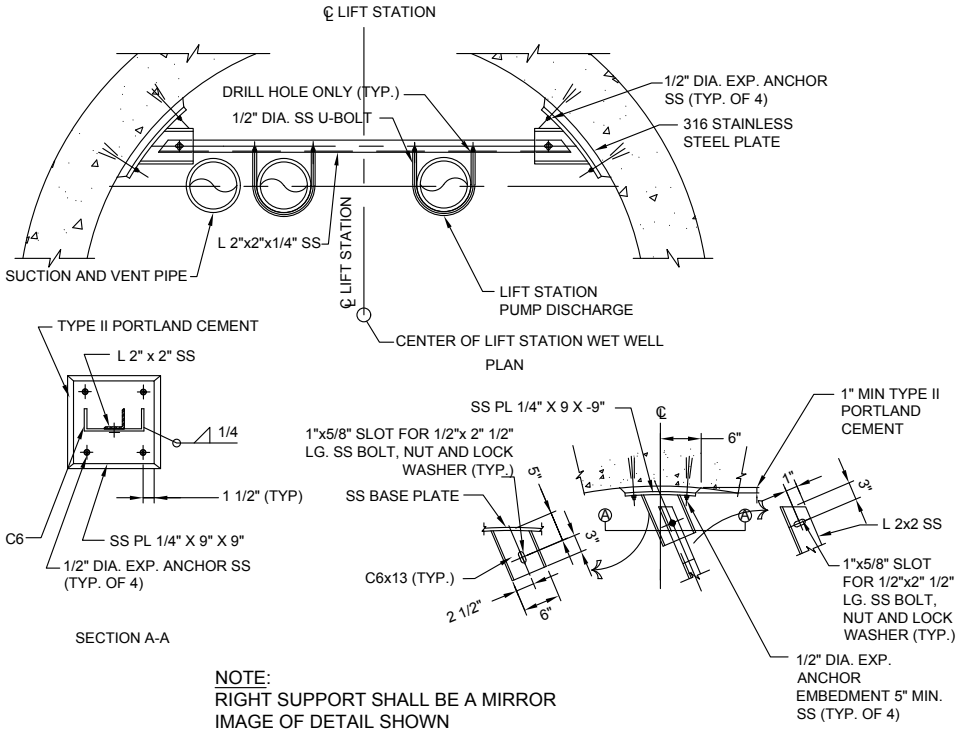
BERM DETAIL (FROM WW-8)



VENT PIPE DETAIL
(FROM WW-8, WW-8A, WW-8B)

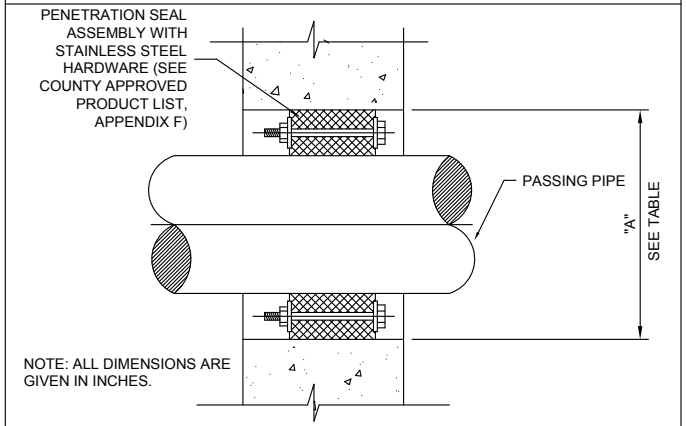


ANCHOR PLATE DETAIL (FROM WW-7)



NOTE:
RIGHT SUPPORT SHALL BE A MIRROR IMAGE OF DETAIL SHOWN

DISCHARGE PIPE SUPPORT DETAIL
(FROM WW-7)



PIPE SIZE	"A"	PIPE SIZE	"A"
2	4	14	18
4	8	16	20
6	10	18	24
8	12	20	26
10	14	24	28
12	16		

WALL PENETRATION DETAIL (FROM WW-7)

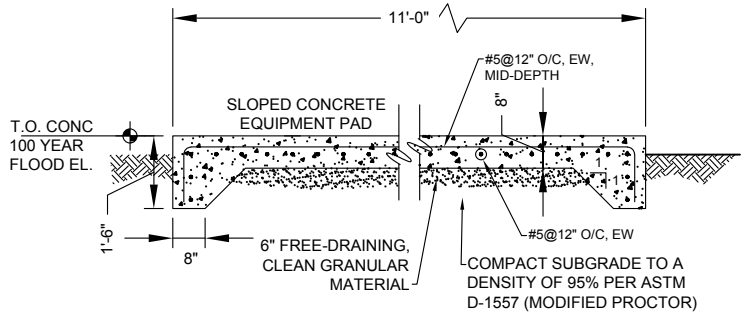
PUMP STATION AND WASTEWATER DETAILS

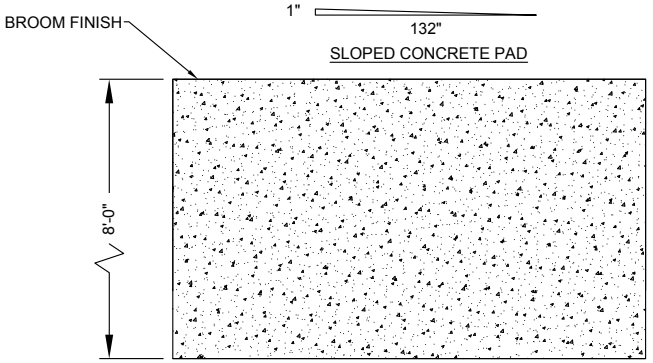
NTS

REVISION DATE:
JAN. 2015

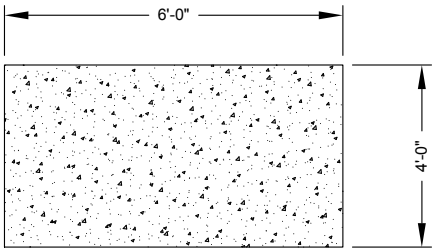
Collier County
Public Utilities Division

SHEET NO.
WW-7A

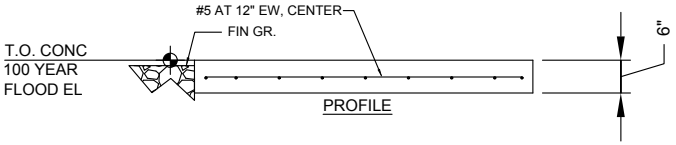




ODOR CONTROL PAD (TYPICAL)
N.T.S

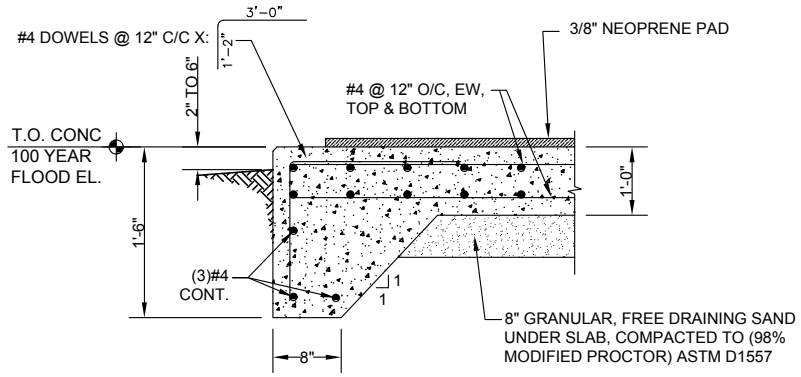


PLAN



PROFILE

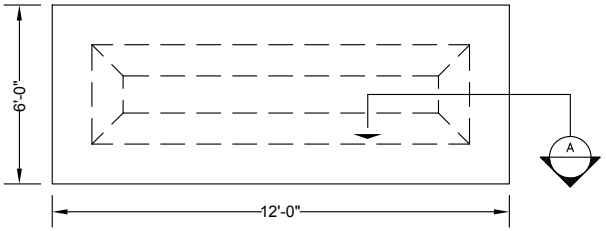
PUMP CONTROL PANEL PAD (TYPICAL) – N.T.S



SECTION A
SCALE: N.T.S.

GENERATOR (SLAB/REINF.)

NOTE: CONTRACTOR SHALL PROVIDE A 3/8" CLOSED CELL NEOPRENE PAD ON THE SLAB TO MATCH THE BASE FOOTPRINT OF THE GENERATOR OR THE DIESEL PUMP.



STAND–BY GENERATOR OR DIESEL PUMP CONCRETE SLAB DETAIL (TYP.) – N.T.S.

STRUCTURAL NOTES:

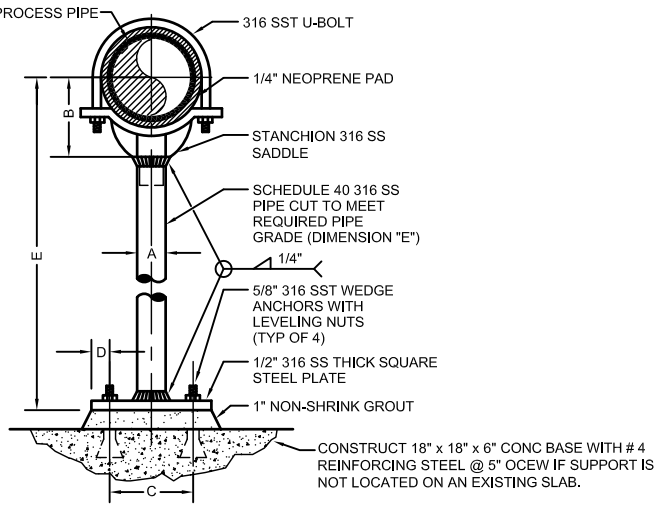
1. ALL CONCRETE SHALL BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH; W/C = 0.45, AIR CONTENT 6% (±) 1%; SLUMP = 4" BEFORE ADDING WATER REDUCING AGENT.
2. ALL STEEL SHALL BE ASTM A615, GR 60.
3. ALL DIMENSIONS SHOWN ARE TYPICAL ONLY. CONTRACTOR TO VERIFY OVERALL SLAB SIZE WITH EQUIPMENT MANUFACTURER AND ENGINEER PRIOR TO CONSTRUCTION.
4. ALL SLABS SHALL HAVE TOOLED EDGES ON ALL SIDES

PUMP STATION CONCRETE DETAILS

REVISION DATE:
JAN. 2015

Collier County
Public Utilities Division

SHEET NO.
WW–7B



PIPE SIZE	A	B	C	D	E	
					MIN	MAX
4	3	4 3/16	7	1	18	30
5	3	4 13/16	7	1	18	30
6	3	5 7/16	7	1	18	30
8	3	6 15/16	7	1	18	30
10	3	8 7/16	7	1	18	30
12	3	9 15/16	7	1	18	30

* ALL DIMENSIONS IN INCHES.

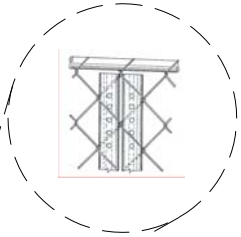
NOTES:

1. PIPE SUPPORT HEIGHT TO BE ADJUSTABLE.
2. SEE PLANS AND SECTIONS FOR PIPE GRADE REQUIREMENT (DIMENSION "E").
3. PIPE SUPPORT TO BE COMPATIBLE WITH HDPE PIPE.
4. ALL MATERIALS AND HARDWARE TO BE 316 SS.

PIPE SUPPORT DETAIL

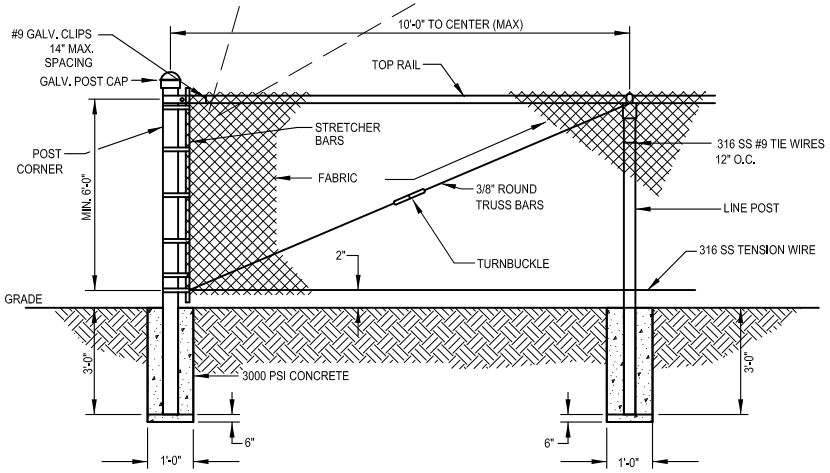
NOTES:

1. ALL FENCING COMPONENTS SHALL BE VINYL COATED GREEN OR BLACK AS APPLICABLE.



SLATS DETAIL

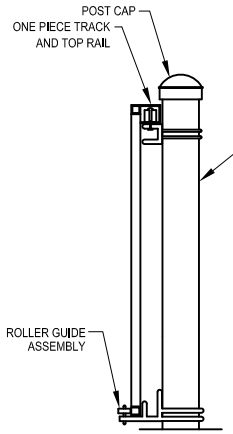
NOTE:
COLOR OF THE SLATS SHALL BE GREEN OR BLACK TO MATCH VINYL COATED PARTS



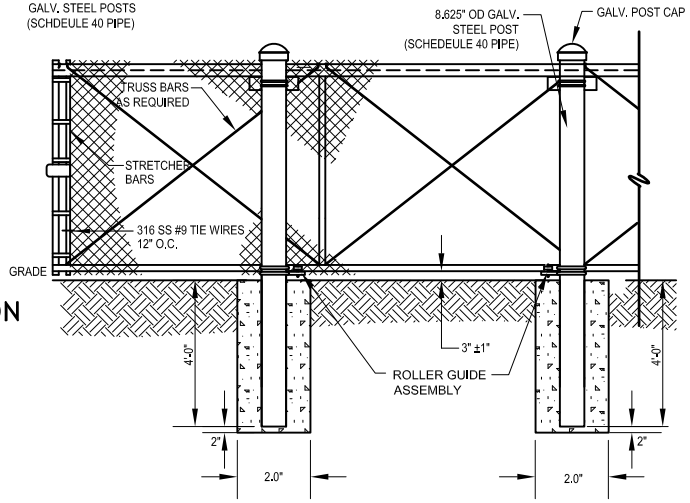
CHAIN LINK FENCE DETAIL

NOTES:

1. ALL FENCING COMPONENTS SHALL BE VINYL COATED GREEN OR BLACK AS APPLICABLE.



GATE SECTION



CHAIN LINK FENCE GATE DETAIL

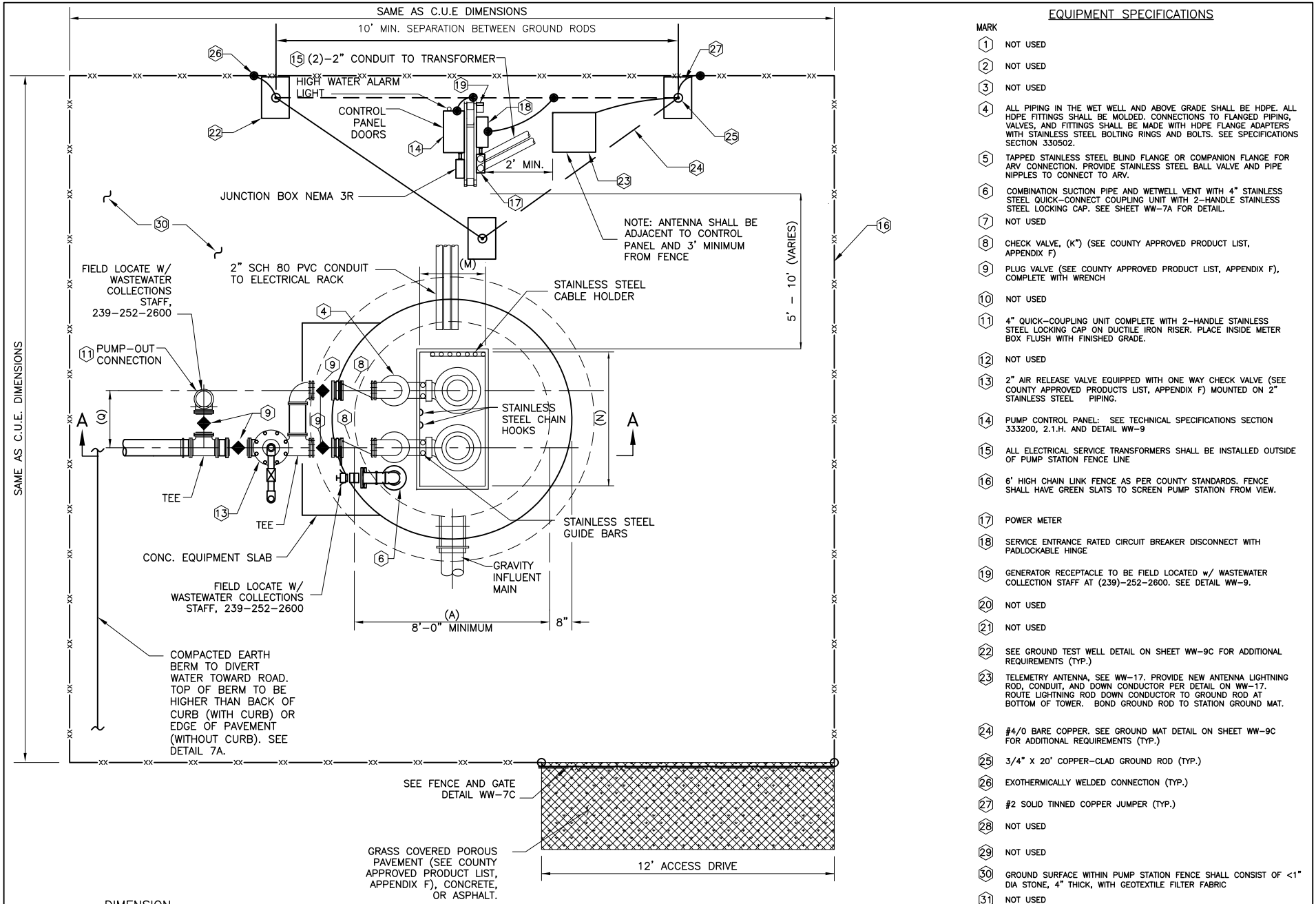
PUMP STATION AND WASTEWATER DETAILS

NTS

REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
WW-7C



EQUIPMENT SPECIFICATIONS

MARK	
1	NOT USED
2	NOT USED
3	NOT USED
4	ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. SEE SPECIFICATIONS SECTION 330502.
5	TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6	COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK–CONNECT COUPLING UNIT WITH 2–HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW–7A FOR DETAIL.
7	NOT USED
8	CHECK VALVE, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9	PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10	NOT USED
11	4" QUICK–COUPLING UNIT COMPLETE WITH 2–HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12	NOT USED
13	2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14	PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW–9
15	ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16	6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17	POWER METER
18	SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19	GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)–252–2600. SEE DETAIL WW–9.
20	NOT USED
21	NOT USED
22	SEE GROUND TEST WELL DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23	TELEMETRY ANTENNA, SEE WW–17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW–17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24	#4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25	3/4" X 20' COPPER–CLAD GROUND ROD (TYP.)
26	EXOTHERMICALLY WELDED CONNECTION (TYP.)
27	#2 SOLID TINNED COPPER JUMPER (TYP.)
28	NOT USED
29	NOT USED
30	GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31	NOT USED

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

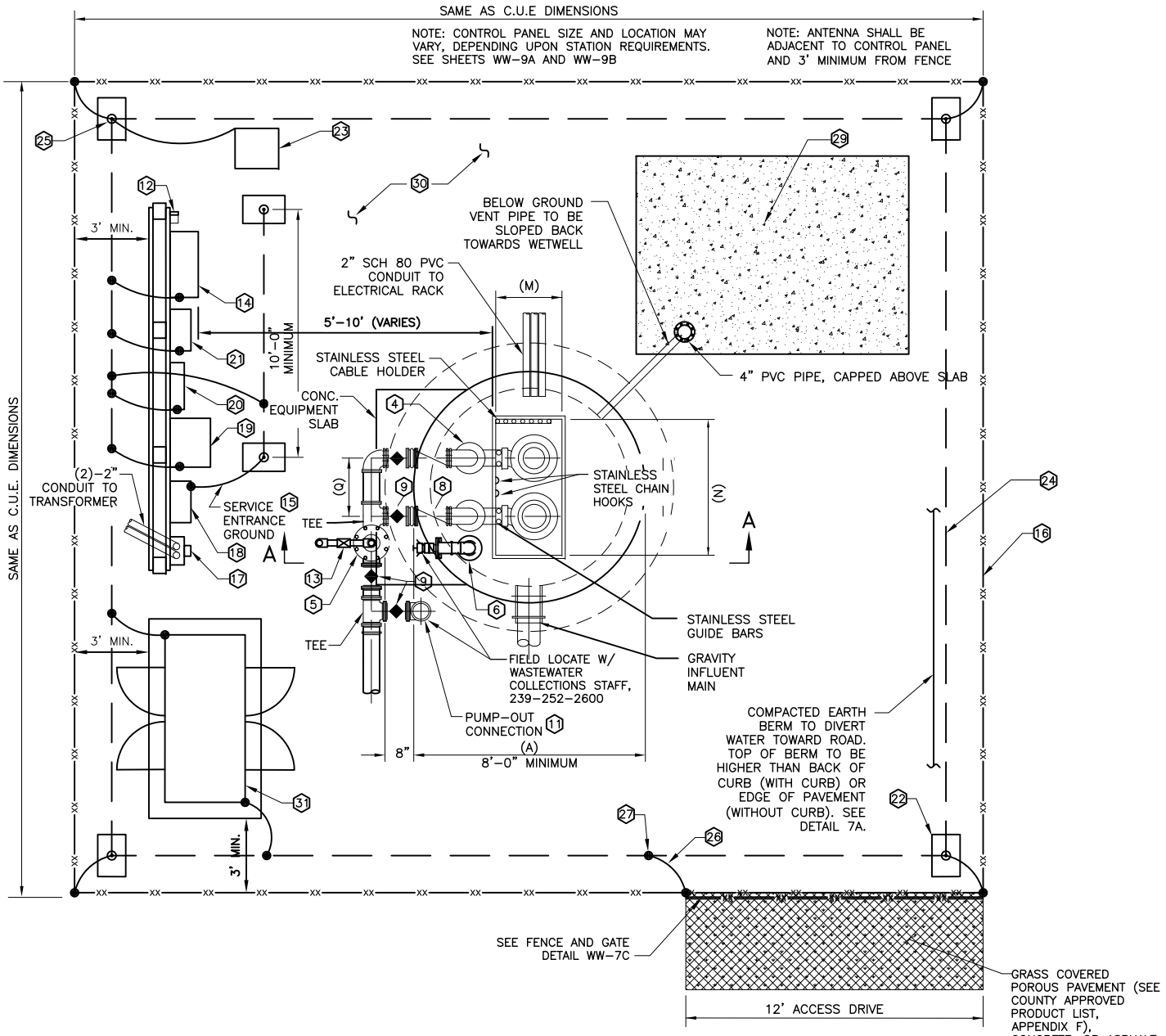
PUMP STATION DETAIL – PLAN

NTS

REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
WW–8



EQUIPMENT SPECIFICATIONS

MARK	
1	NOT USED
2	NOT USED
3	NOT USED
4	ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. SEE SPECIFICATIONS SECTION 330502.
5	TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6	COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7	NOT USED
8	CHECK VALVE, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9	PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10	NOT USED
11	4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12	GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600
13	2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14	PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE.
15	ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16	6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17	POWER METER
18	SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19	AUTOMATIC TRANSFER SWITCH
20	PANELBOARD / MINI POWER ZONE AS REQUIRED
21	CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
22	SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23	TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24	#4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25	3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26	EXOTHERMICALLY WELDED CONNECTION (TYP.)
27	#2 SOLID TINNED COPPER JUMPER (TYP.)
28	BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29	8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30	GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31	STANDY-BY DIESEL GENERATOR, SUB BASE FUEL TANK, AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 263213

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

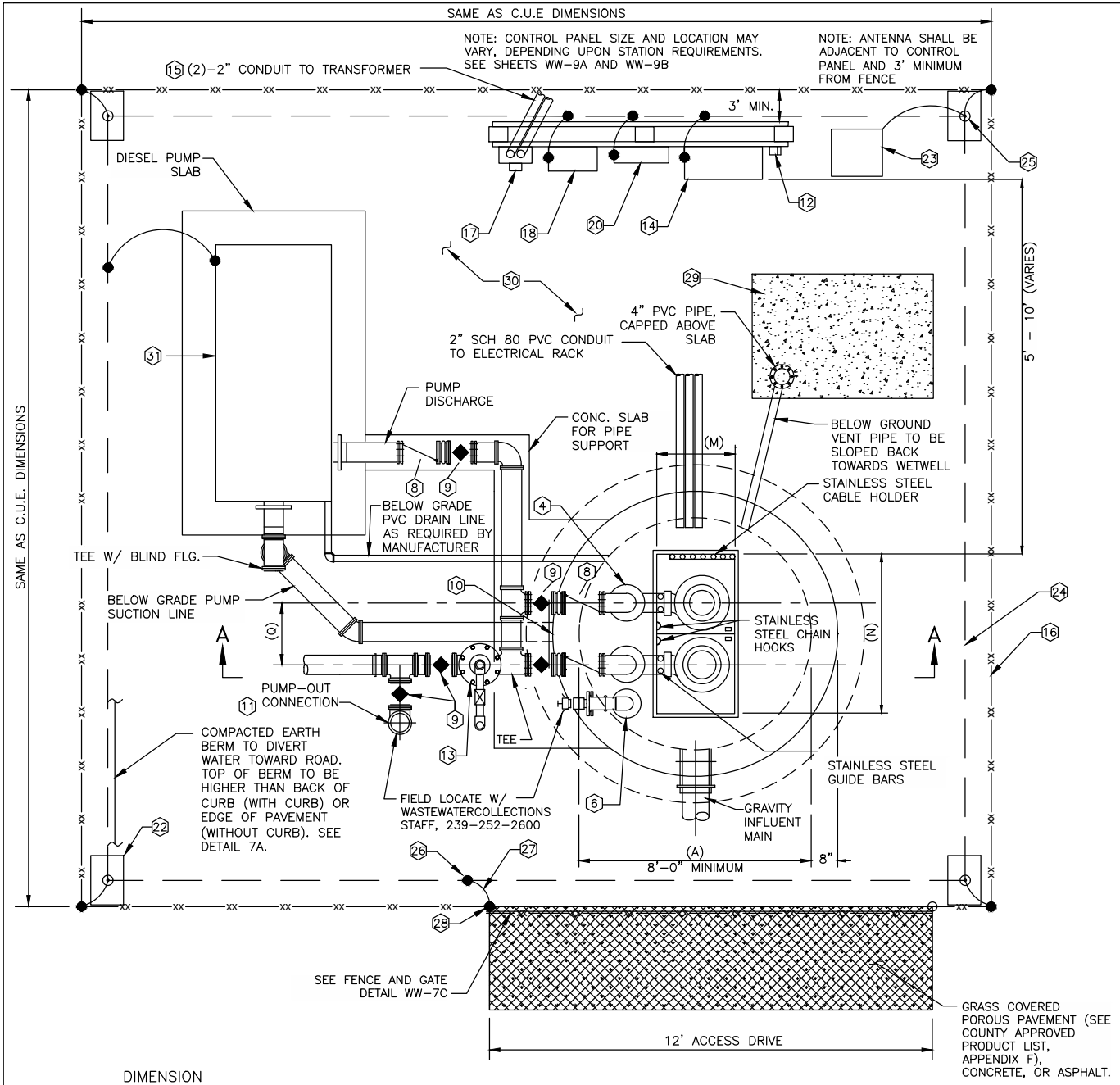
COMMUNITY PUMP STATION WITH GENERATOR DETAIL - PLAN

NTS

REVISION DATE: JULY 2018

Collier County
Public Utilities Division

SHEET NO. WW-8A



EQUIPMENT SPECIFICATIONS

MARK	
1	NOT USED
2	NOT USED
3	NOT USED
4	ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. SEE SPECIFICATIONS SECTION 330502.
5	TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6	COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7	NOT USED
8	CHECK VALVE, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9	PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10	STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11	4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12	GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600.
13	2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14	PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW-9
15	ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16	6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17	POWER METER
18	SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19	NOT USED
20	120V PANELBOARD / MINI POWER ZONE AS REQUIRED
21	NOT USED
22	SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23	TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24	#4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25	3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26	EXOTHERMICALLY WELDED CONNECTION (TYP.)
27	#2 SOLID TINNED COPPER JUMPER (TYP.)
28	BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29	8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30	GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31	STAND-BY DIESEL PUMP WITH INTEGRATED FUEL TANK AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 221336.

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: ORIENTATION AND LOCATION OF PUMP STATION COMPONENTS MAY VARY, FIELD ADJUSTMENT MAY BE REQUIRED.

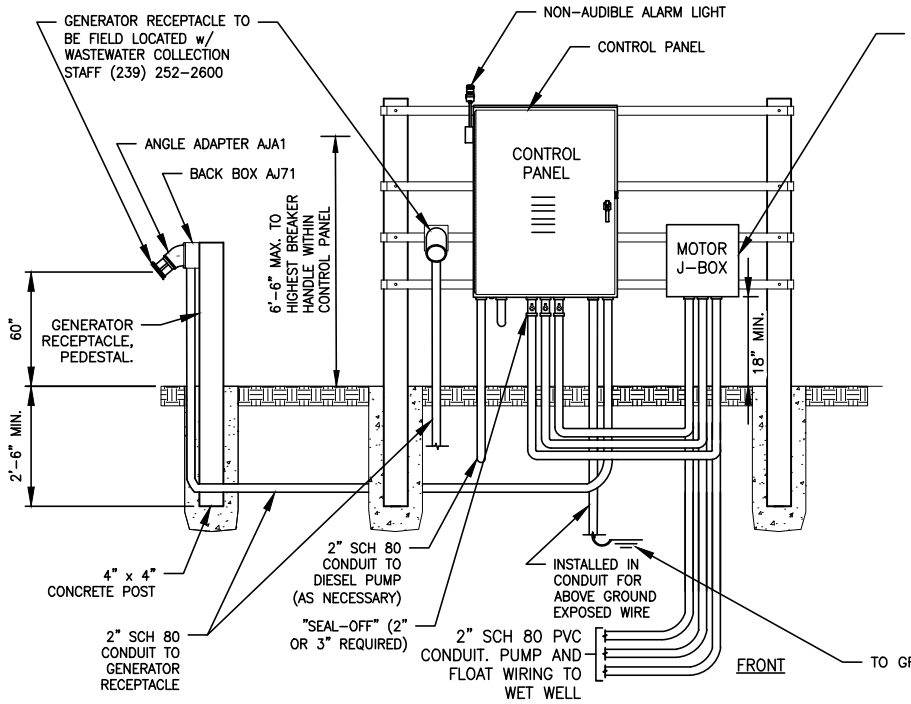
COMMUNITY PUMP STATION WITH DIESEL PUMP DETAIL - PLAN

NTS

REVISION DATE: JULY 2018

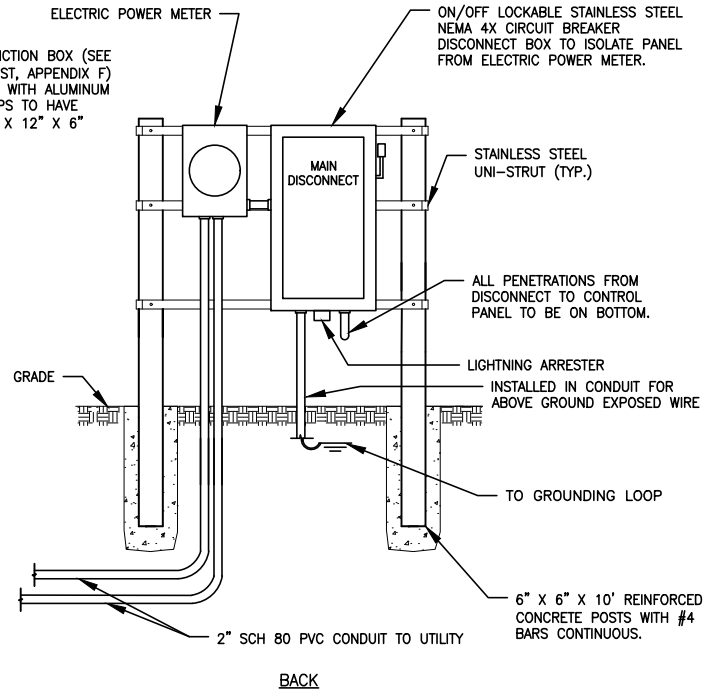
Collier County
Public Utilities Division

SHEET NO. WW-8B



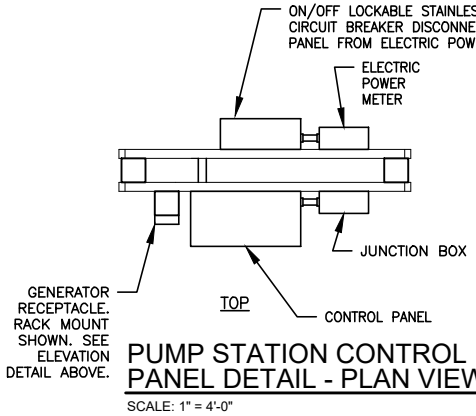
PUMP STATION CONTROL PANEL DETAIL - FRONT ELEVATION

SCALE: 1" = 4'-0"



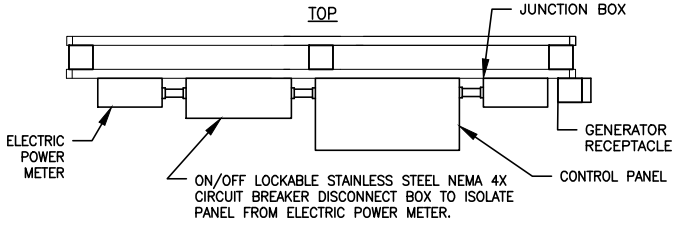
PUMP STATION CONTROL PANEL DETAIL - BACK ELEVATION

SCALE: 1" = 4'-0"



PUMP STATION CONTROL PANEL DETAIL - PLAN VIEW

SCALE: 1" = 4'-0"



SINGLE SIDE ALTERNATE - PLAN VIEW

SCALE: 1" = 4'-0"

NOTES:

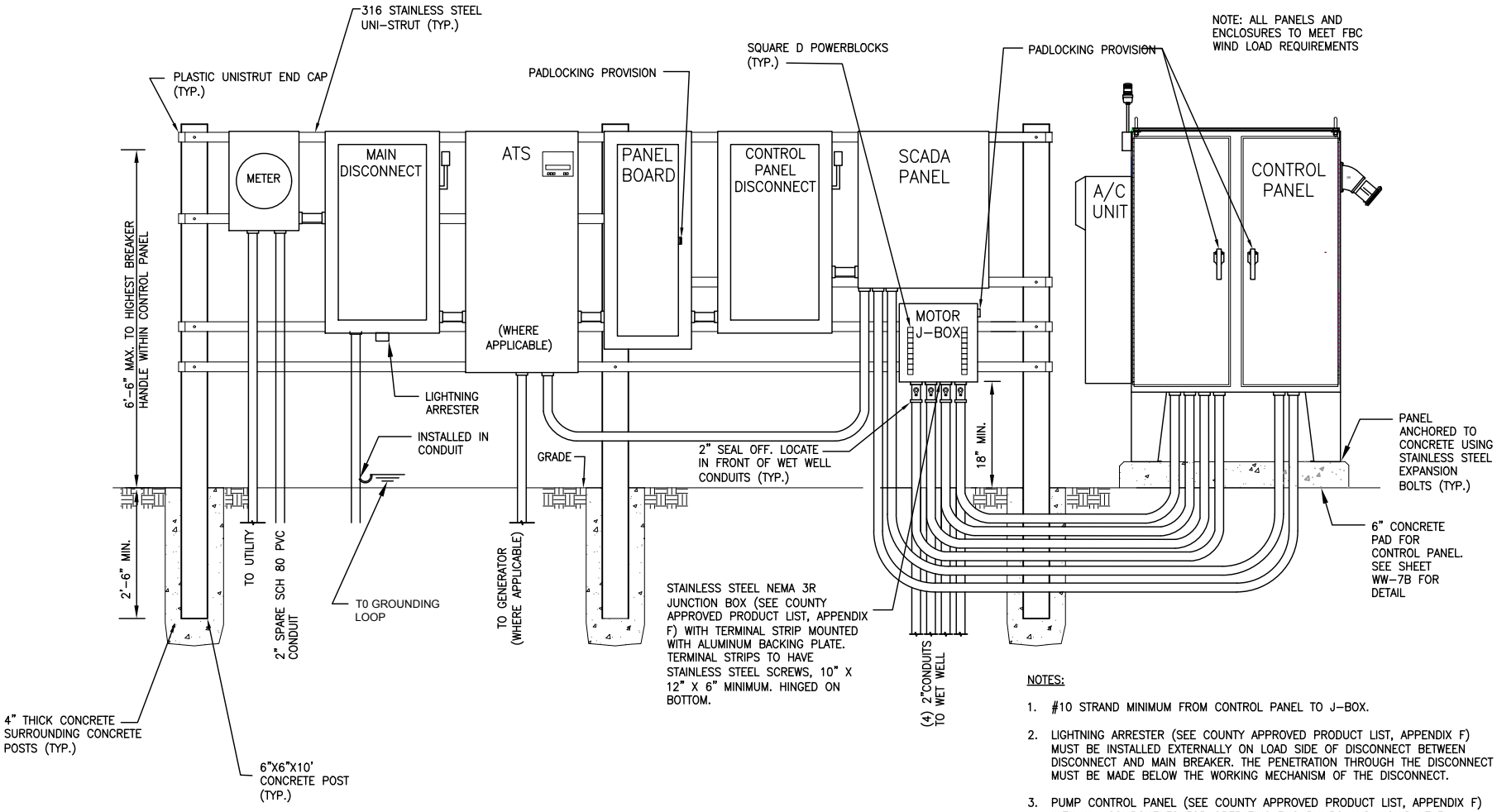
1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN SCH 80 PVC CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC
7. GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
8. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF (239) 252-2600

PUMP STATION CONTROL PANEL DETAIL

REVISION DATE:
JULY 2018

Collier County
Public Utilities Division

SHEET NO.
WW-9



NOTES:

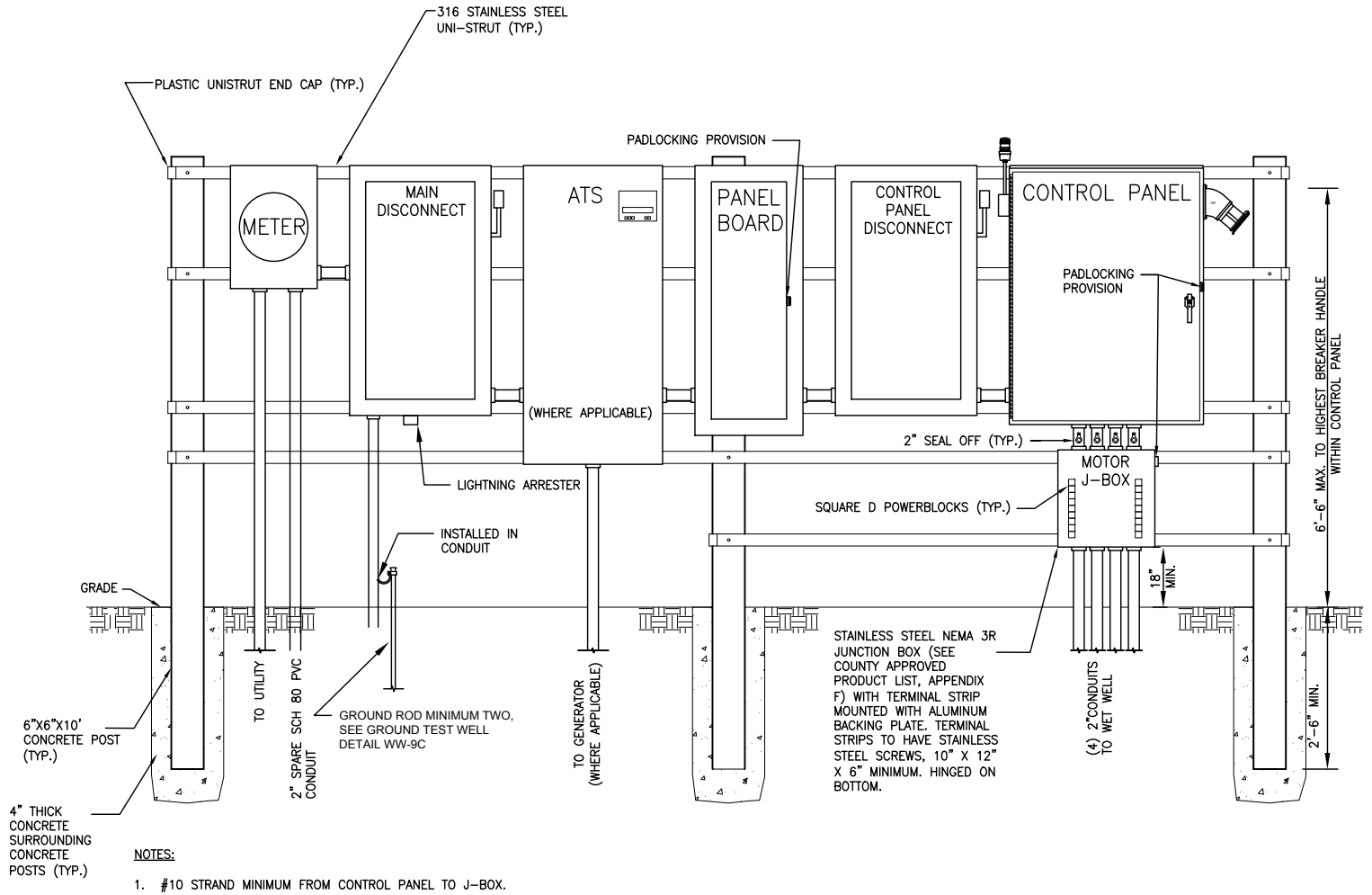
1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC
7. LABEL ALL EQUIPMENT USING MIN. $\frac{1}{2}$" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS

COMMUNITY PUMP STATION CONTROL PANEL DETAIL
VFD STATION WITH GENERATOR

REVISION DATE:
JAN. 2015

Collier County
Public Utilities Division

SHEET NO.
WW-9A



NOTES:

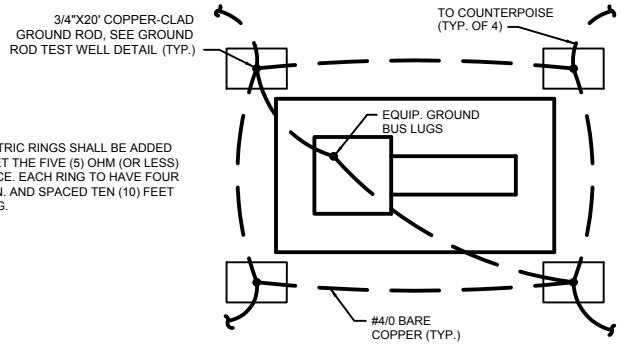
1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC
7. LABEL ALL EQUIPMENT USING MIN. ½" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS

COMMUNITY PUMP STATION CONTROL PANEL DETAIL NON-VFD STATION WITH GENERATOR

REVISION DATE:
JAN. 2015

Collier County
Public Utilities Division

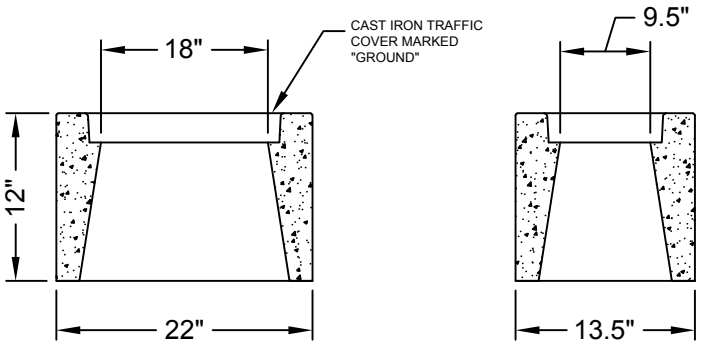
SHEET NO.
WW-9B

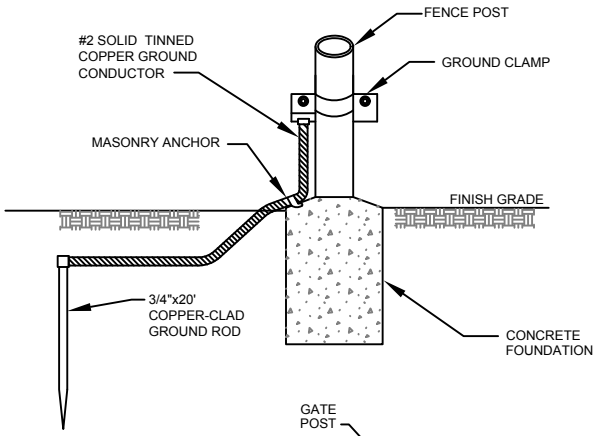


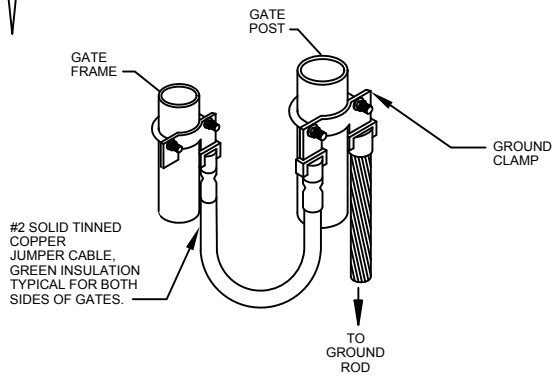
NOTES:
1. ADDITIONAL CONCENTRIC RINGS SHALL BE ADDED AS REQUIRED TO MEET THE FIVE (5) OHM (OR LESS) SPECIFIED RESISTANCE. EACH RING TO HAVE FOUR (4) GROUND RODS MIN. AND SPACED TEN (10) FEET FROM THE INNER RING.

GROUND MAT DETAIL

NOT TO SCALE

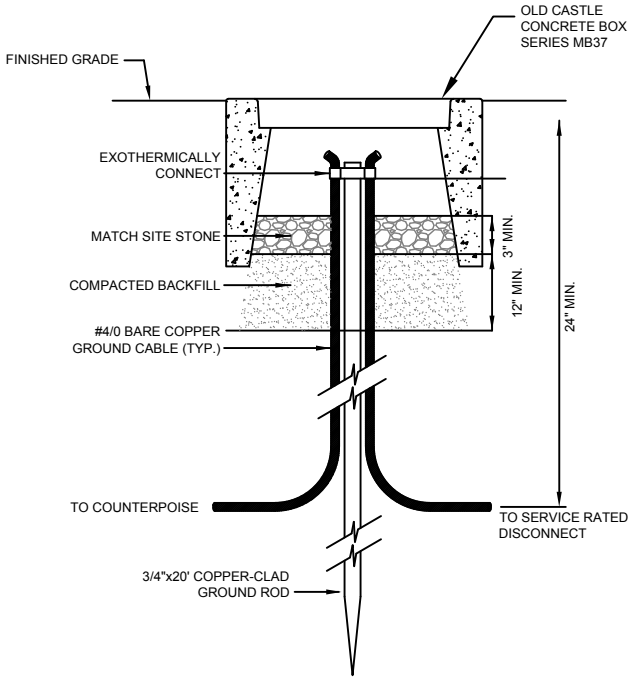






FENCE POST/GATE BONDING DETAIL

NOT TO SCALE



GROUND TEST WELL DETAIL

NOT TO SCALE

PUMP STATION LIGHTNING PROTECTION DETAILS

NTS

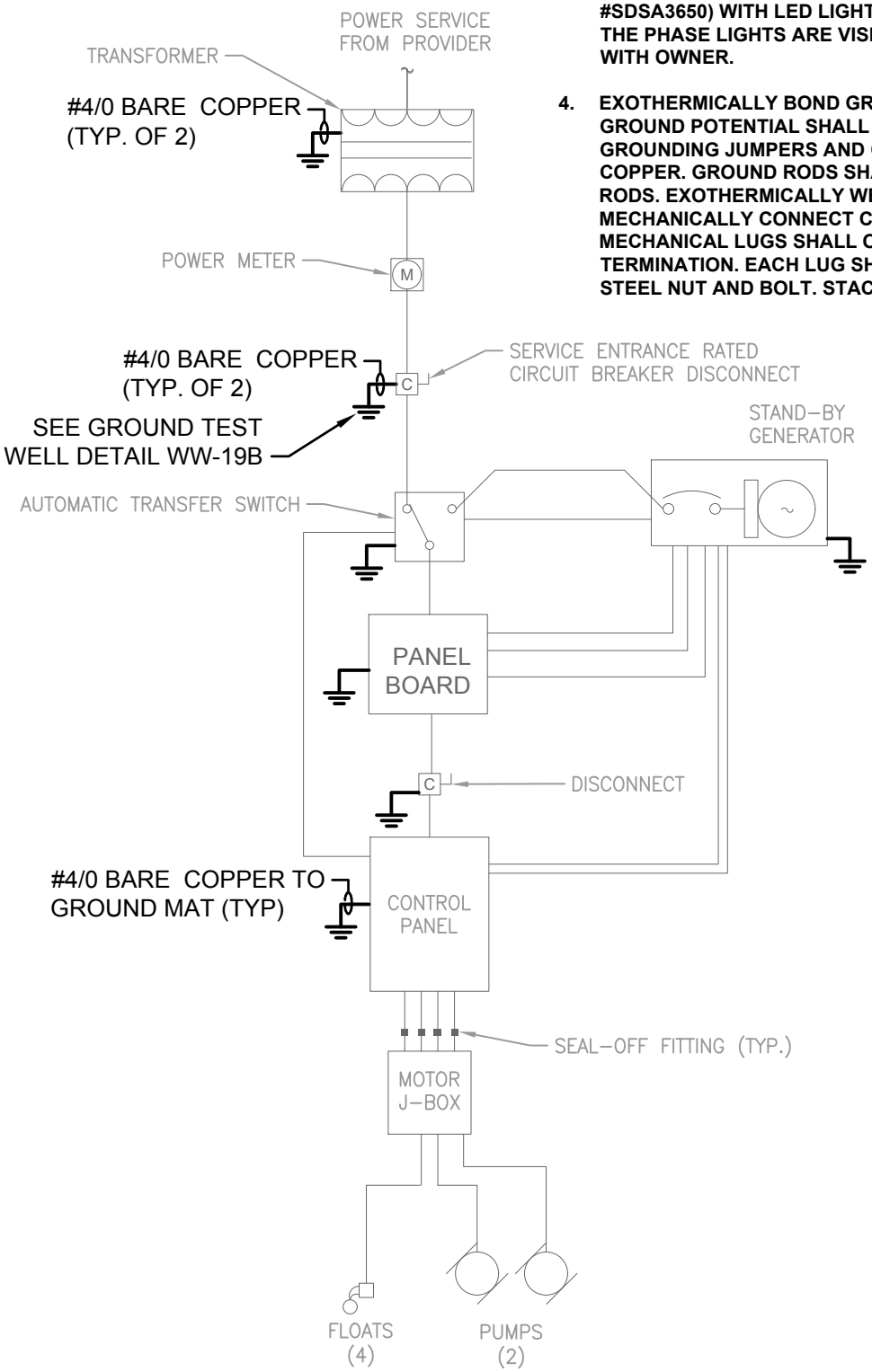
REVISION DATE:
JAN. 2015

Collier County
Public Utilities Division

SHEET NO.
WW-9C

NOTES

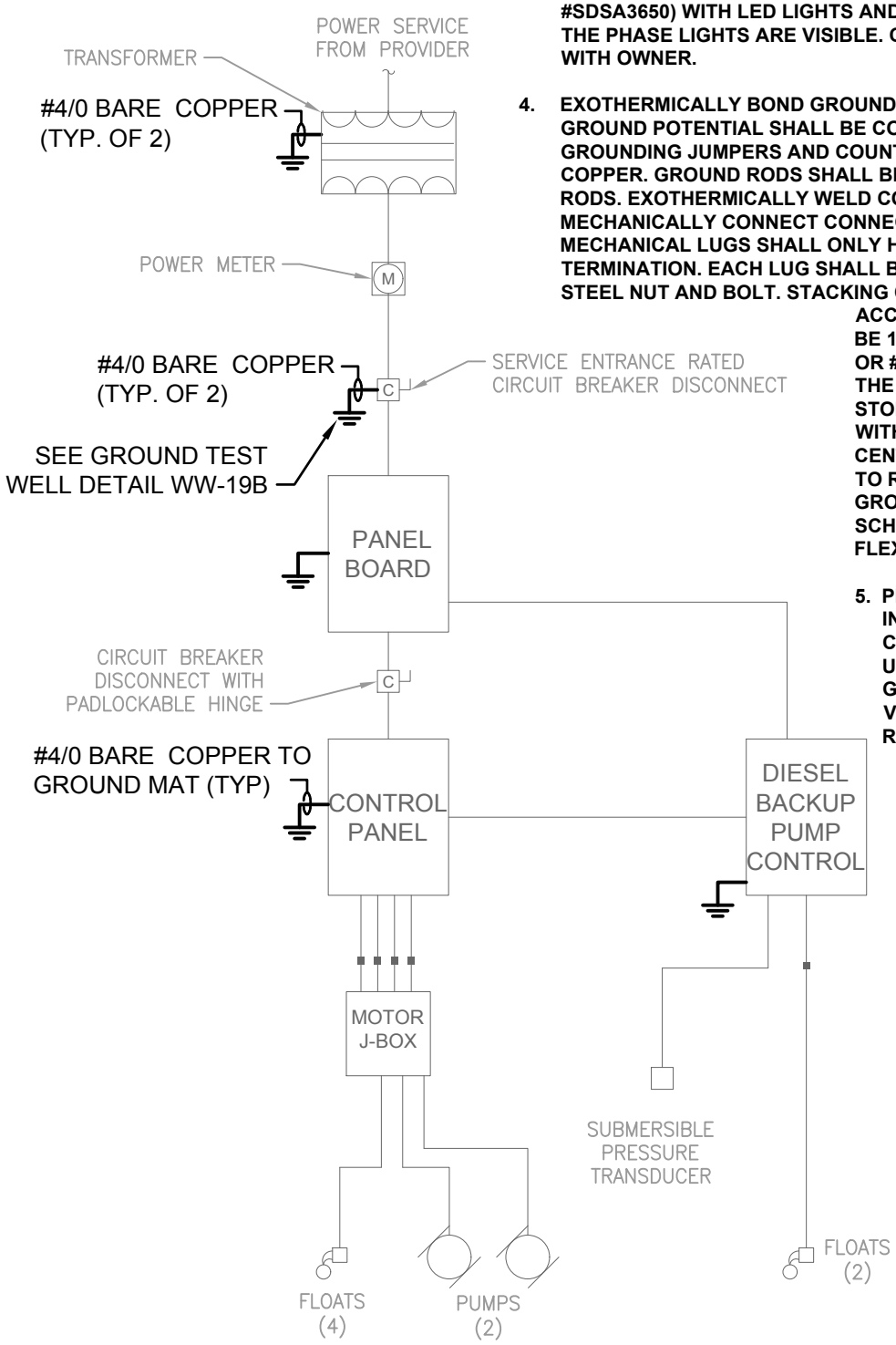
1. BOND FENCE AND VEHICLE ACCESS GATE TO COUNTERPOISE.
2. PROVIDE LIGHTNING PROTECTION FOR SCADA ANTENNA.
3. SURGE PROTECTION SHALL BE SQUARE D (THREE PHASE: #SDSA3650) WITH LED LIGHTS AND MOUNTED IN A FASHION THAT THE PHASE LIGHTS ARE VISIBLE. COORDINATE EXACT LOCATION WITH OWNER.
4. EXOTHERMICALLY BOND GROUNDING JUMPERS TO COUNTERPOISE. GROUND POTENTIAL SHALL BE CONSISTENT FOR ENTIRE SITE. GROUNDING JUMPERS AND COUNTERPOISE SHALL BE #4/0 BARE COPPER. GROUND RODS SHALL BE 3/4" X 20' COPPER-CLAD GROUND RODS. EXOTHERMICALLY WELD CONNECTIONS BELOW GRADE. MECHANICALLY CONNECT CONNECTIONS ABOVE GRADE. MECHANICAL LUGS SHALL ONLY HAVE ONE WIRE LANDED IN EACH TERMINATION. EACH LUG SHALL BE FASTENED WITH A STAINLESS STEEL NUT AND BOLT. STACKING OF INDIVIDUAL LUGS WILL NOT BE ACCEPTABLE. GROUND BOXES SHALL BE 14" LONG QUAZITE #PC1118CA0017 OR #PG1118BA12, INSTALL LEVEL WITH THE ADJACENT GROUND, PROVIDE 57 STONE OR MATCH SITE STONE IN BOX, WITH GROUND ROD LOCATED OFF CENTER OF BOX. QUAZITE BOX COVER TO READ "GROUND". EXPOSED GROUNDING SHALL BE IN 1" SCHEDULE 80 PVC OR LIQUID TIGHT FLEXIBLE CONDUIT.
5. PROVIDE COUNTY SIGNED INSPECTION OR PHOTO OF ALL CAD-WELDED SPLICES AND UNDERGROUND TAPS. PROVIDE GROUND TEST REPORT TO COUNTY VERIFYING COUNTERPOISE RESISTANCE IS LESS THAN 5 OHMS.



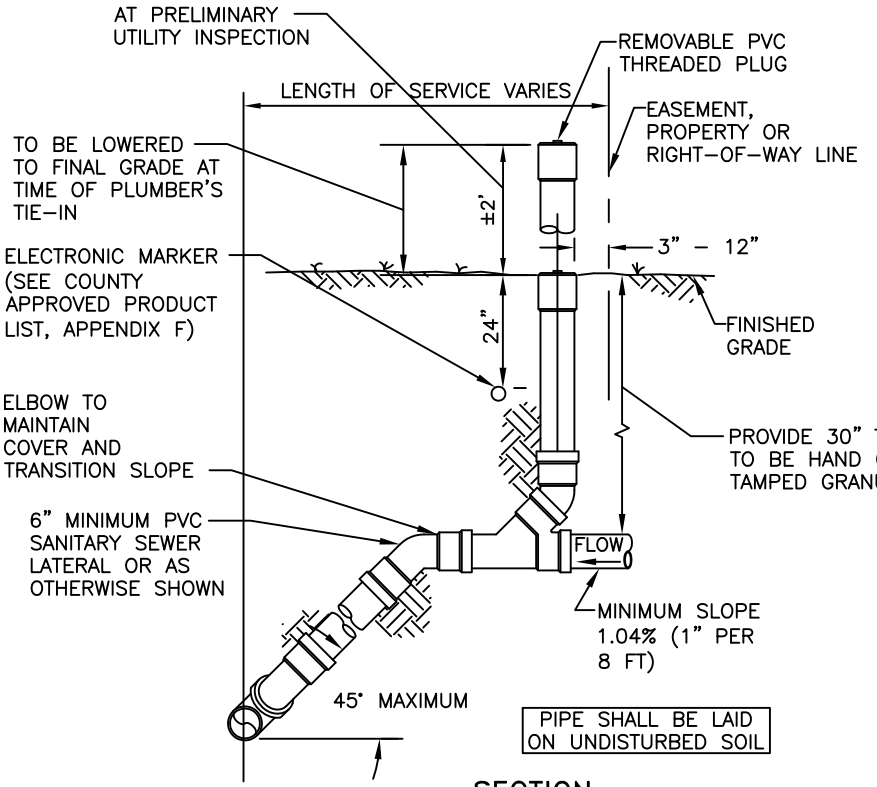
COMMUNITY PUMP STATION – RISER DIAGRAM WITH GENERATOR BACKUP	REVISION DATE: JAN. 2015	Collier County Public Utilities Division	SHEET NO. WW-9D

NOTES

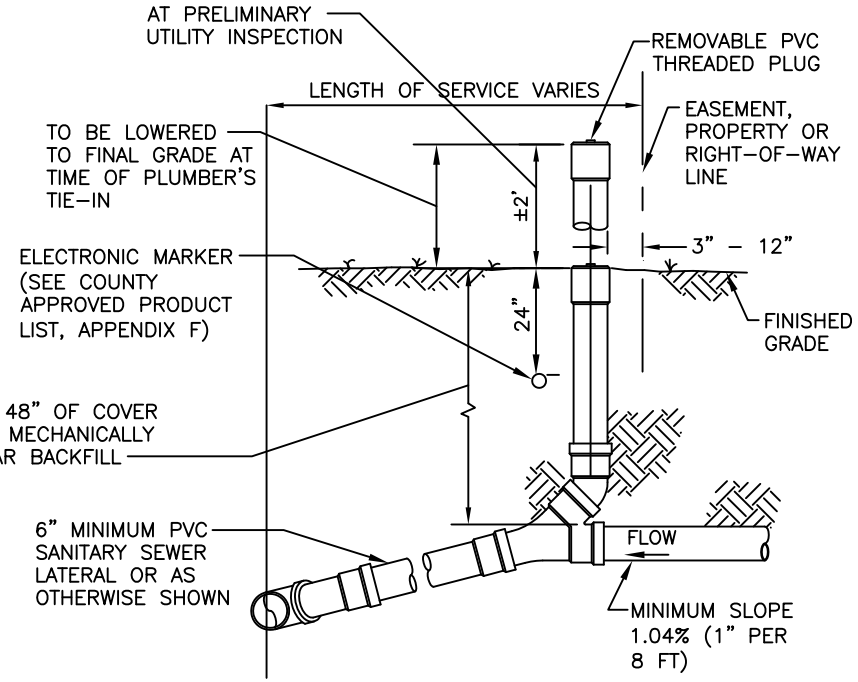
1. **BOND FENCE AND ACCESS GATE TO COUNTERPOISE.**
2. **PROVIDE LIGHTNING PROTECTION FOR SCADA ANTENNA.**
3. **SURGE PROTECTION SHALL BE SQUARE D (THREE PHASE: #SDSA3650) WITH LED LIGHTS AND MOUNTED IN A FASHION THAT THE PHASE LIGHTS ARE VISIBLE. COORDINATE EXACT LOCATION WITH OWNER.**
4. **EXOTHERMICALLY BOND GROUNDING JUMPERS TO COUNTERPOISE. GROUND POTENTIAL SHALL BE CONSISTENT FOR ENTIRE SITE. GROUNDING JUMPERS AND COUNTERPOISE SHALL BE #4/0 BARE COPPER. GROUND RODS SHALL BE 3/4" X 20' COPPER-CLAD GROUND RODS. EXOTHERMICALLY WELD CONNECTIONS BELOW GRADE. MECHANICALLY CONNECT CONNECTIONS ABOVE GRADE. MECHANICAL LUGS SHALL ONLY HAVE ONE WIRE LANDED IN EACH TERMINATION. EACH LUG SHALL BE FASTENED WITH A STAINLESS STEEL NUT AND BOLT. STACKING OF INDIVIDUAL LUGS WILL NOT BE ACCEPTABLE. GROUND BOXES SHALL BE 14" LONG QUAZITE #PC1118CA0017 OR #PG1118BA12, INSTALL LEVEL WITH THE ADJACENT GROUND, PROVIDE 57 STONE OR MATCH SITE STONE IN BOX, WITH GROUND ROD LOCATED OFF CENTER OF BOX. QUAZITE BOX COVER TO READ "GROUND". EXPOSED GROUNDING SHALL BE IN 1" SCHEDULE 80 PVC OR LIQUID TIGHT FLEXIBLE CONDUIT.**
5. **PROVIDE COUNTY SIGNED INSPECTION OR PHOTO OF ALL CAD-WELDED SPLICES AND UNDERGROUND TAPS. PROVIDE GROUND TEST REPORT TO COUNTY VERIFYING COUNTERPOISE RESISTANCE IS LESS THAN 5 OHMS.**



COMMUNITY PUMP STATION – RISER DIAGRAM WITH DIESEL BACKUP PUMP	REVISION DATE: JAN. 2015	Collier County Public Utilities Division	SHEET NO. WW–9E



SECTION
DEPTH 8' AND OVER



SECTION
DEPTH LESS THAN 8'

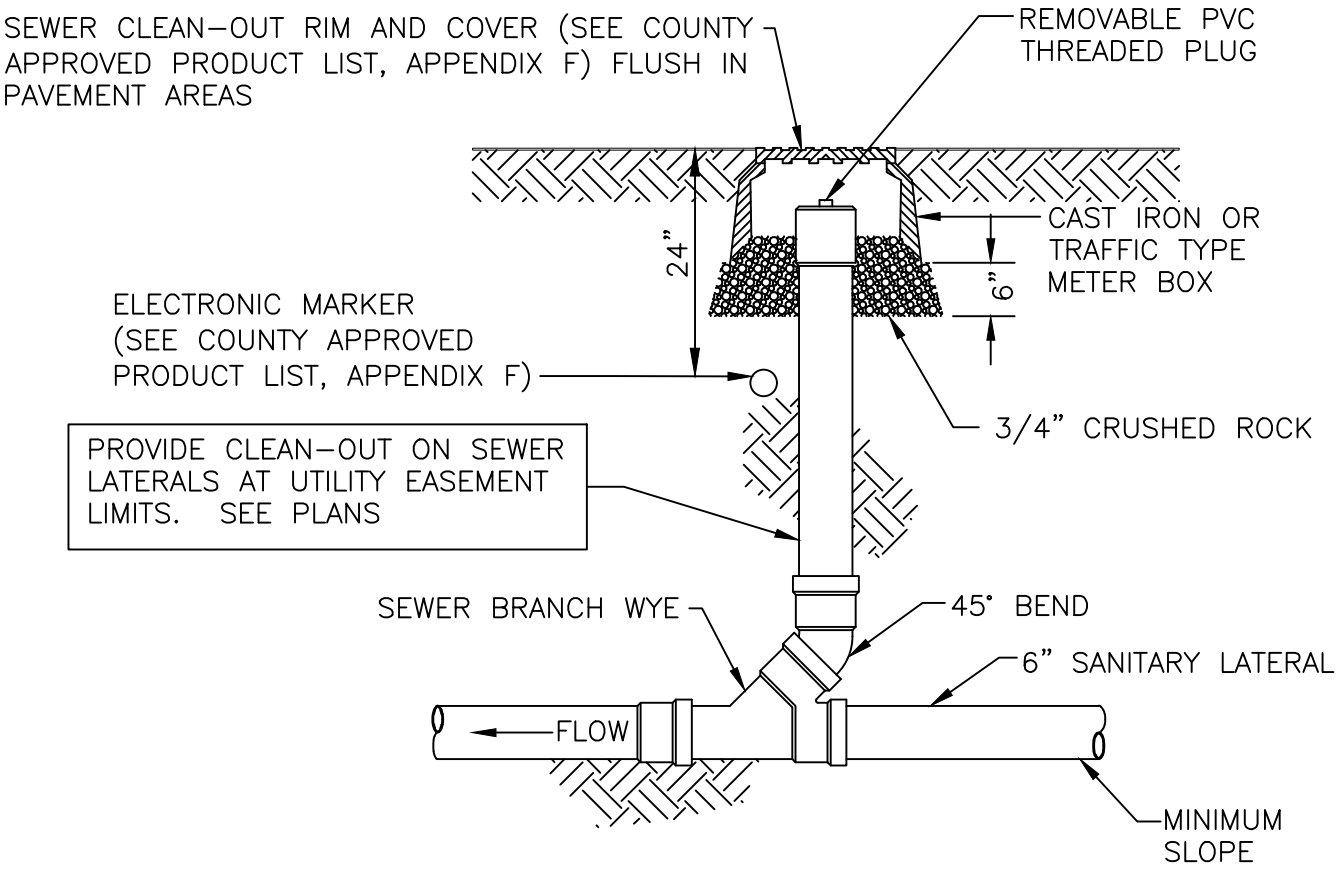
NOTE:

AT TIME OF PLUMBER'S TIE-IN, ADD CONCRETE COLLAR AS PER DETAIL WW-12.

SEWER CONNECTION DETAILS
PROPERTY, RIGHT-OF-WAY OR EASEMENT LINE

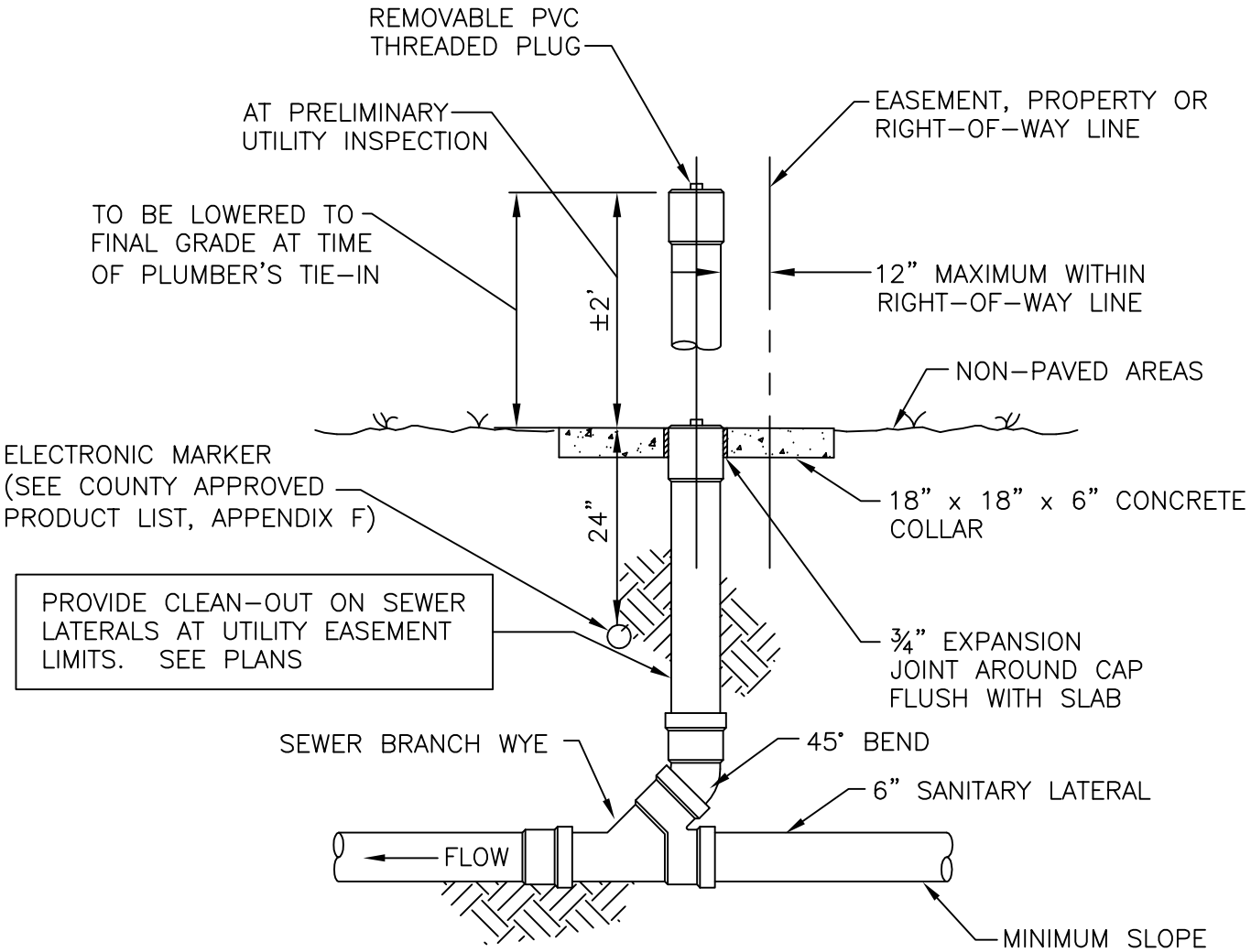
NTS

WW-10
REVISED: MAY 2009



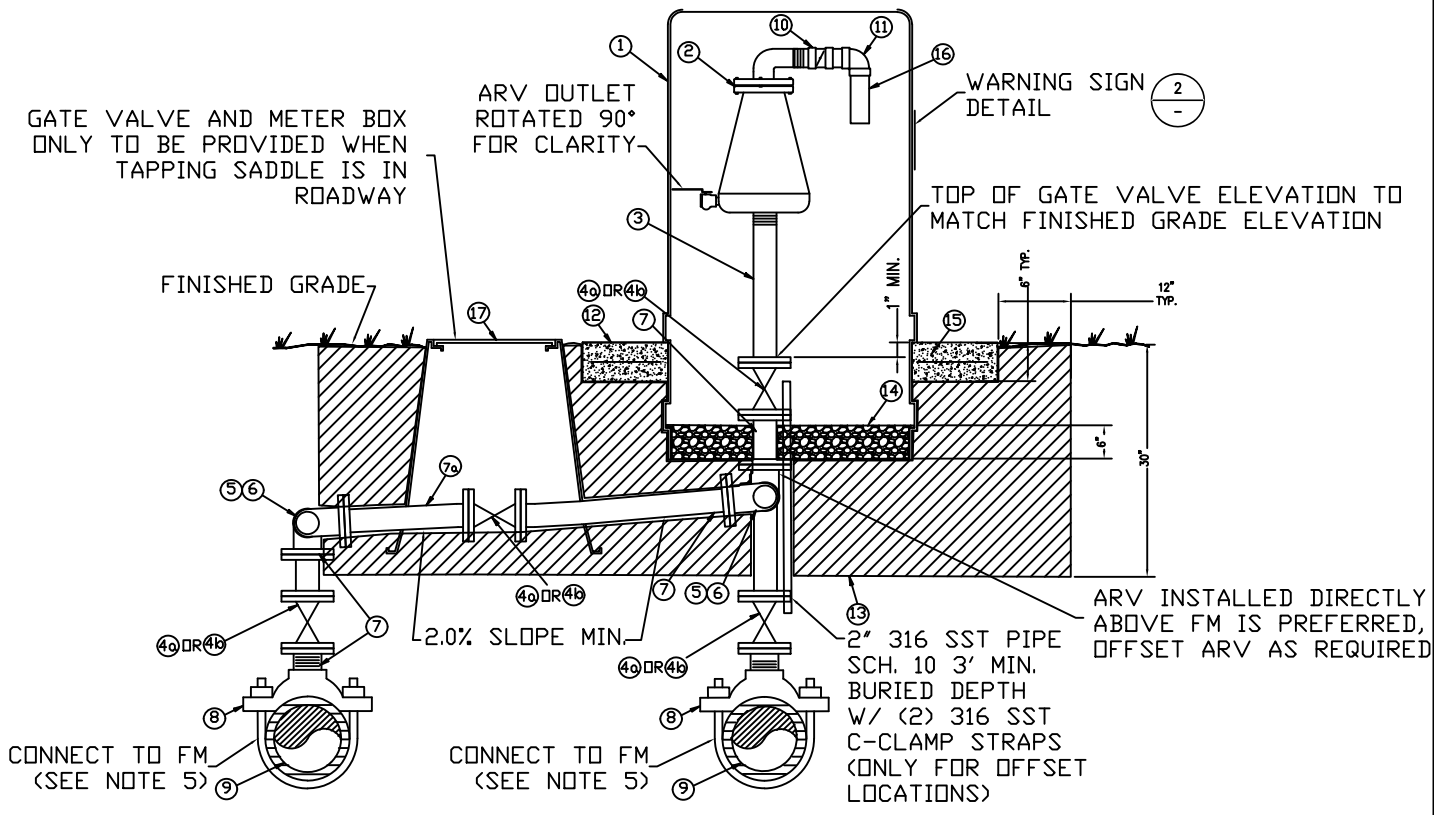
ELEVATION

SEWER CLEAN–OUT DETAIL PAVED AREAS NTS	REVISION DATE: JULY 2018	Collier County Public Utilities Division	SHEET NO. WW–11



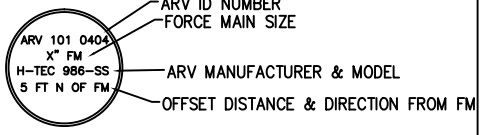
ELEVATION

SEWER CLEAN-OUT DETAIL NON PAVED AREAS NTS	REVISION DATE: MAY 2013	Collier County Public Utilities Division COLLIER COUNTY PUBLIC UTILITIES DIVISION 3301 E. TAMIAMI TRAIL NAPLES, FLORIDA 34112	SHEET NO. WW-12



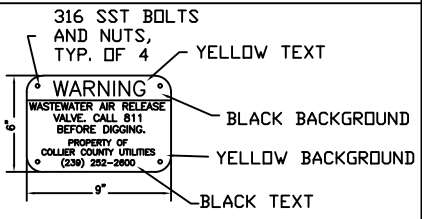
NOT TO SCALE

NOTE:
PROVIDE 3" DIAMETER BRASS DISC ANCHORED IN CONCRETE SLAB.



1/- ARV BRASS DISC DETAIL
NOT TO SCALE

NOTE:
WARNING SIGN SHALL BE ATTACHED TO ENCLOSURE ANDSHALL BE FIBERGLASS.



2/- WARNING SIGN DETAIL
NOT TO SCALE

MATERIAL		
ITEM	QUANT.	DESCRIPTION
1	1	VENTED ENCLOSURE, WATER PLUS H30 MODEL FOR 2"&3" ARVS, WATER PLUS H40 MODEL FOR ARVS ≥4"
2	1	AIR RELEASE VALVE, (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (2" AND 3" THR, ≥4" FLG)
3	1	SCH 80 PVC NIPPLE, LENGTH AS REQUIRED, THR X THR (2"& 3" ARV), 316 SST VAN STONE FLANGE (VSF) X 316 VSF (≥4" ARV)
4a	UP TO 3	2" OR 3" 316 SST BALL VALVE, FULL PORT, 316 SST HANDLE (THR)
4b	UP TO 3	4" - 8" PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (FLG)
5	UP TO 4	90° ELBOW, 316 SST (THR FOR 2" AND 3" ARVS, FLG FOR >4" ARVS)
6	2	SHORT NIPPLE, 316 SST, (THR BOTH ENDS FOR 2" AND 3" ARVS, FLG FOR >4" ARV)
7	2	316 SST PIPE, LENGTH AS REQUIRED, THR CONN FOR 2" AND 3", FLG CONN >4"
7a	2	2" PE 3408/3608 FOR 2" ARVS. 3" - 8" HDPE PIPE, PE 3608, DR 17 FOR ARVS 3" - 8".
8	1	DOUBLE STRAP TAPPING SADDLE, 316 SST WITH THREADED OUTLET FOR 2" & 3" ARV'S, DI TEE (MJ X MJ X FLANGE) FOR ARV'S >4"
9	2	4" & LARGER PIPE, D.I. OR PVC (DR-18)
10	1	1-1/2" CHECK VALVE, PVC, BY ARV MANUFACTURER
11	1	1-1/2" X 90° ELBOW, PVC SCH 80, BY ARV MANUFACTURER
12	1	CONCRETE SLAB FOR ENCLOSURES, 3000 PSI CONCRETE
13	1	COMPACTED FILL PER COLLIER COUNTY TYPICAL DETAIL, G-1
14	1	57 STONE
15	1	(2) #4 BARS CONTINUOUS & (4) #4 BARS DIAGONAL (2" MIN. COVER)
16	1	1-1/2" SCH 80 PVC, LENGTH AS REQUIRED
17	1	12" ALLIANCE METER BOX (ARV'S <4"), 18" ALLIANCE METER BOX (ARV'S >4"), BLACK

NOTES:
1. PROVIDE DARK GREEN REFLECTIVE MARKER ON CURB OR EDGE OF ROADWAY CLOSEST TO THE ARV.
2. PROVIDE 3'-0" RADIUS AROUND ARV ENCLOSURE CLEAR OF ALL LANDSCAPING FOR MAINTENANCE ACCESS.
3. PROVIDE 316 SST PIN ALLEN BOLT KEY SYSTEM WITH EACH ENCLOSURE.
4. THE THREADED OR FLANGED OUTLET SIZE OF THE ARV SHALL BE SIZED BY THE DESIGN ENGINEER. A MINIMUM DIAMETER OF 2-INCHES SHALL BE PROVIDED.
5. TAPPING SADDLE IS DEPICTED HOWEVER A TEE (DIA. OF FM X SIZE OF ARV) SHALL BE INSTALLED INSTEAD OF A TAPPING SADDLE FOR ARV'S >4".

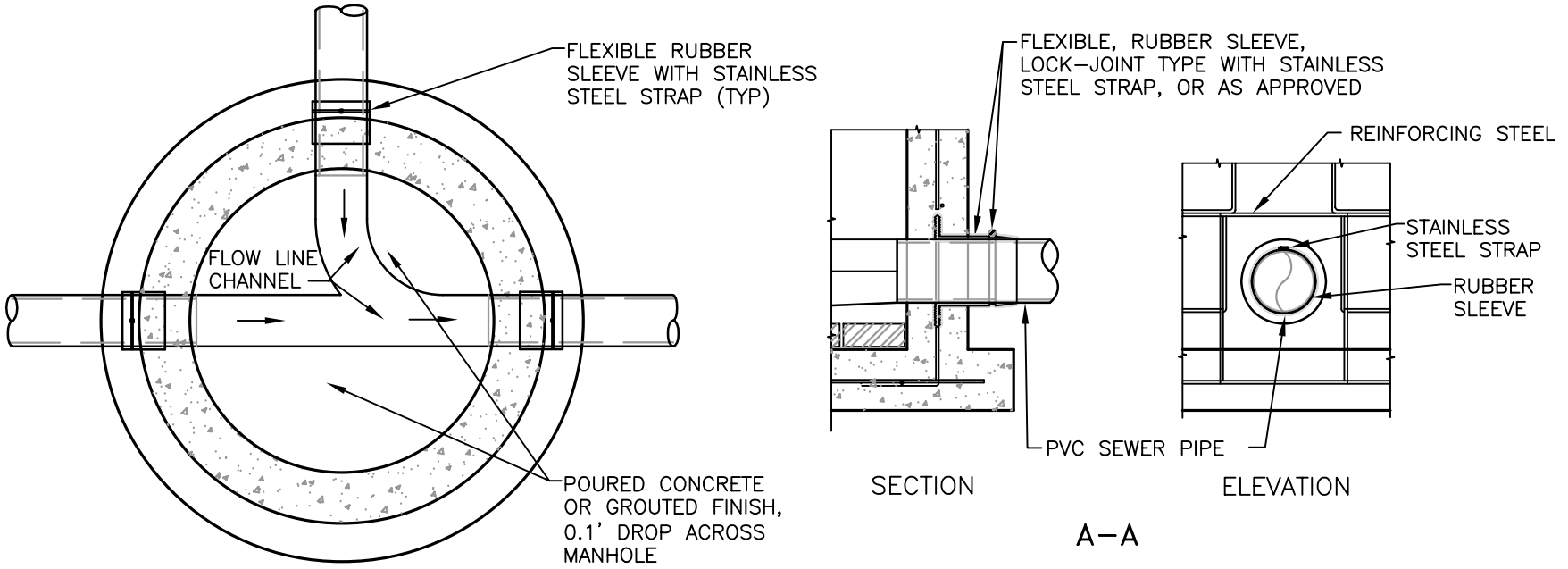
FORCE MAIN AIR RELEASE VALVE DETAIL

NTS

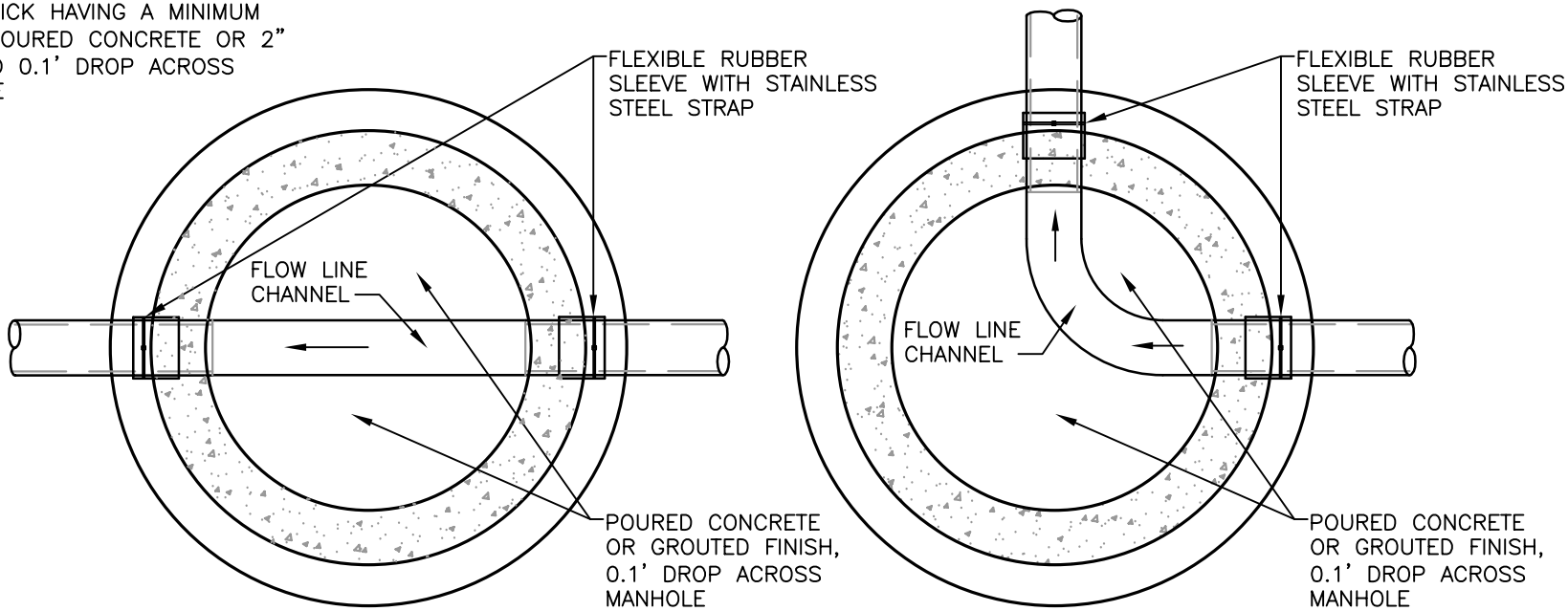
REVISION DATE:
JAN. 2015

Collier County
Public Utilities Division

SHEET NO.
WW-13



FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MINIMUM OF 2" POURED CONCRETE OR 2" GROUTED 0.1' DROP ACROSS MANHOLE

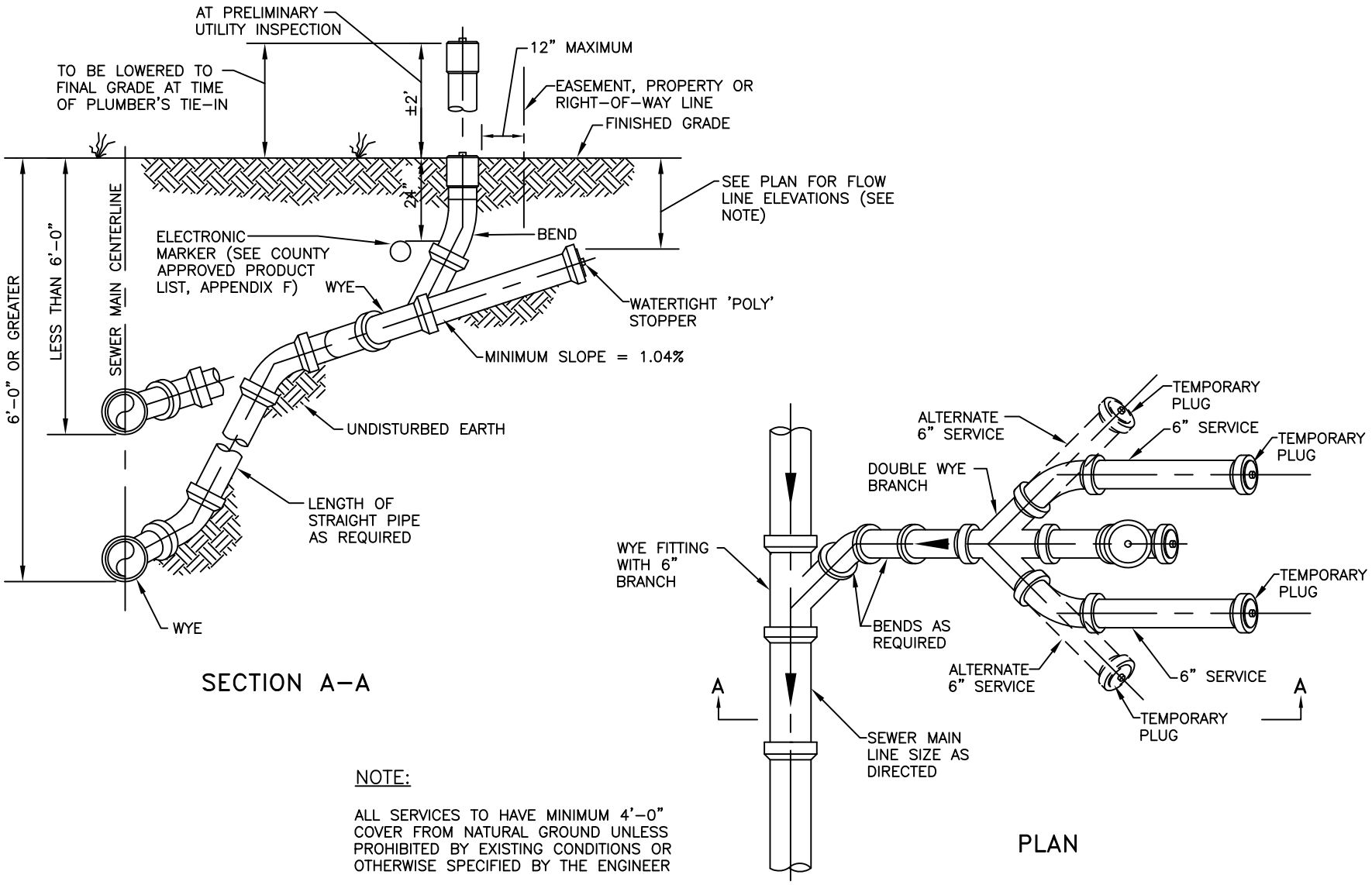


WW-15

REVISED: APRIL 2006

TYPICAL FLOW LINE CHANNELS DETAIL

NTS



NOTE:

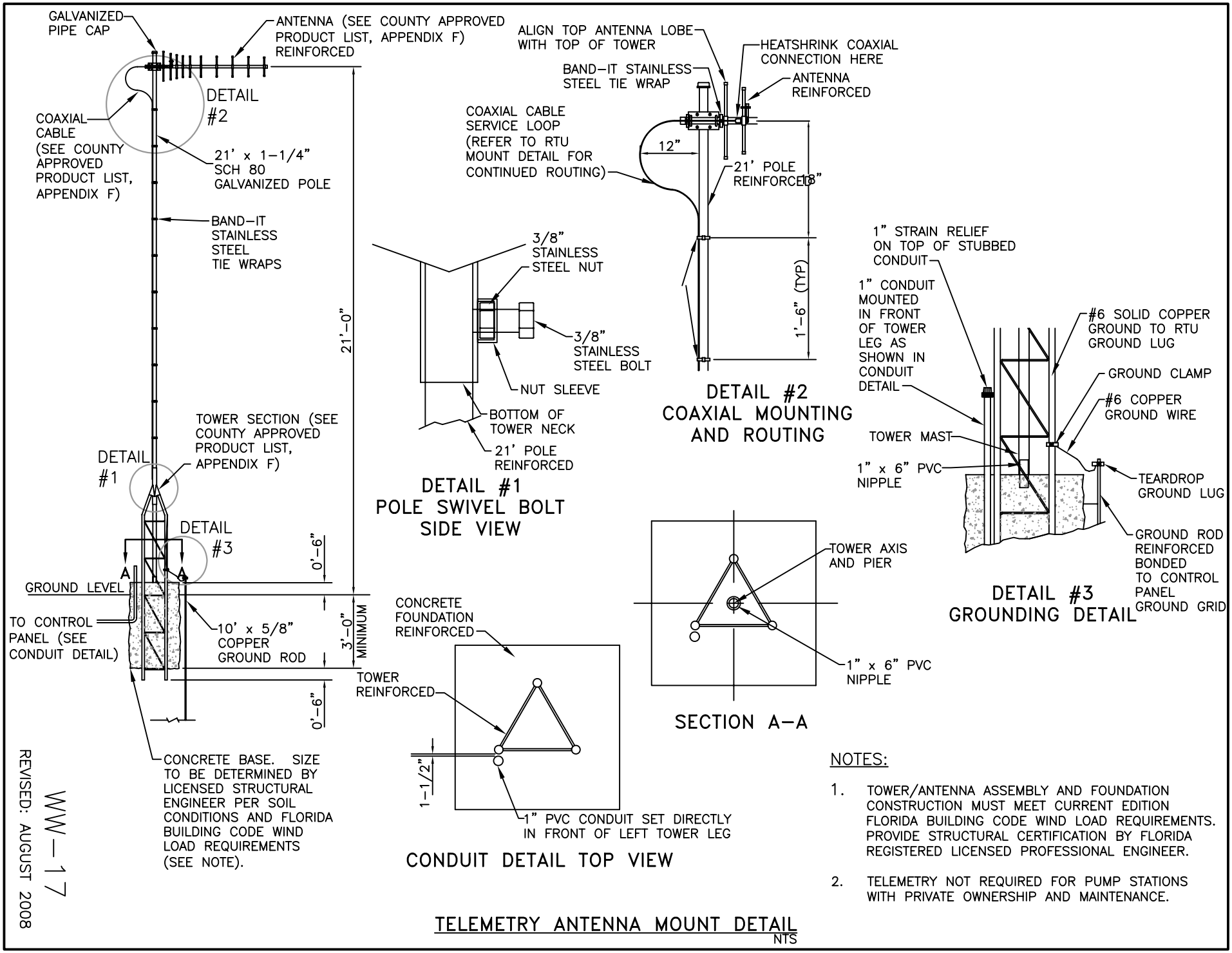
ALL SERVICES TO HAVE MINIMUM 4'-0" COVER FROM NATURAL GROUND UNLESS PROHIBITED BY EXISTING CONDITIONS OR OTHERWISE SPECIFIED BY THE ENGINEER

DOUBLE SEWER CLEAN-OUT DETAIL

NTS

WW-16

REVISED: MAY 2009



NOTES:

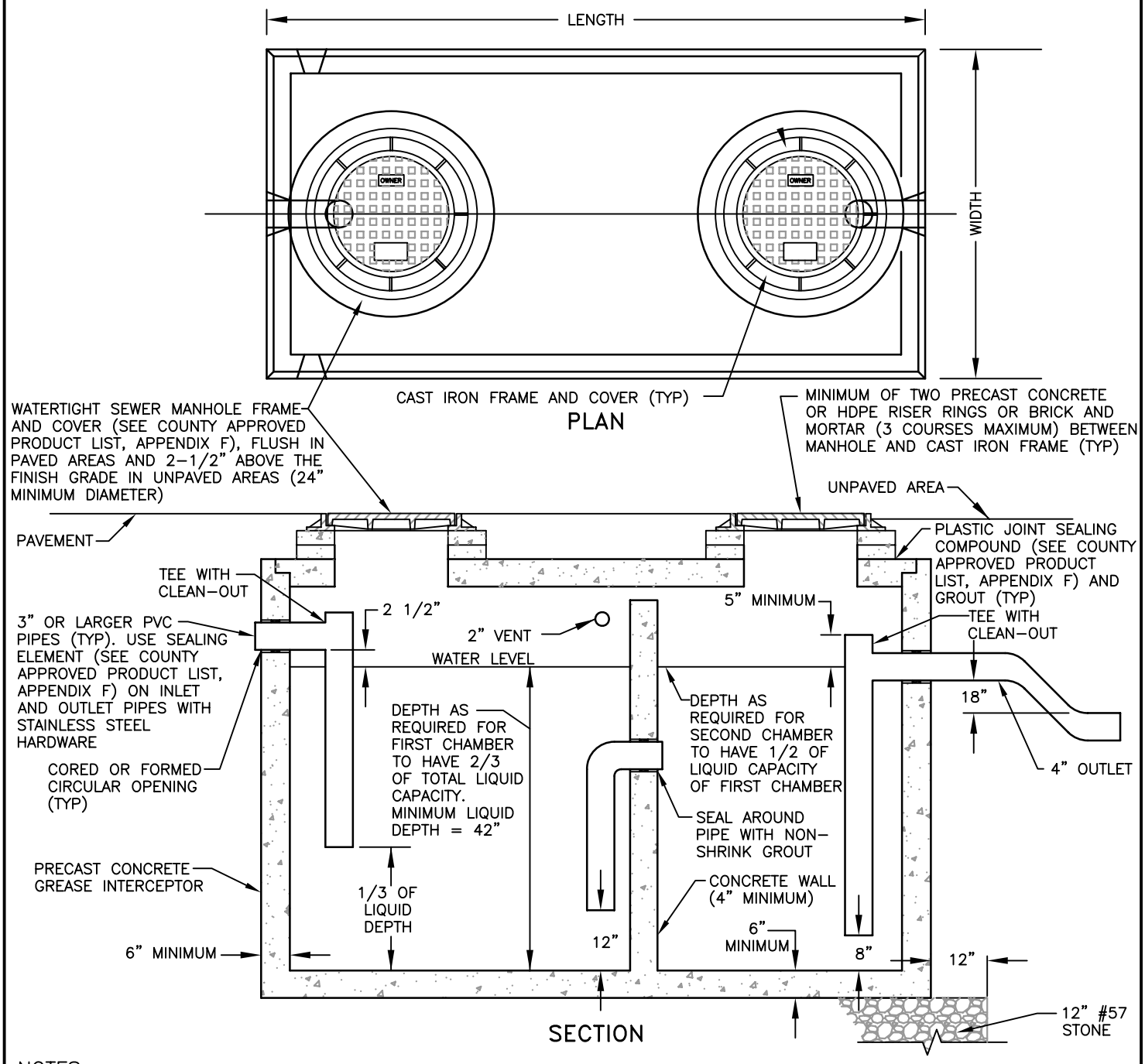
1. TOWER/ANTENNA ASSEMBLY AND FOUNDATION CONSTRUCTION MUST MEET CURRENT EDITION FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS. PROVIDE STRUCTURAL CERTIFICATION BY FLORIDA REGISTERED LICENSED PROFESSIONAL ENGINEER.
2. TELEMETRY NOT REQUIRED FOR PUMP STATIONS WITH PRIVATE OWNERSHIP AND MAINTENANCE.

TELEMETRY ANTENNA MOUNT DETAIL

NTS

WW-17

REVISED: AUGUST 2008



NOTES:

1. GREASE INTERCEPTOR SHALL COMPLY WITH STRUCTURAL REQUIREMENTS APPLICABLE TO SEPTIC TANKS EXCEPT THAT THE INLET INVERT SHALL DISCHARGE A MINIMUM 2–1/2 INCHES ABOVE THE LIQUID LEVEL LINE AND THE OUTLET PIPE SHALL HAVE A TEE WITH A MINIMUM DIAMETER OF FOUR (4) INCHES THAT EXTENDS TO WITHIN 8 INCHES OF THE BOTTOM OF THE TANK.
2. INTERCEPTOR MUST BE LOCATED SO AS TO PROVIDE EASY ACCESS FOR ROUTINE INSPECTION AND CLEANING.
3. WHERE A GREASE INTERCEPTOR IS REQUIRED, ONLY KITCHEN WASTEWATER SHALL FIRST PASS THROUGH THE INTERCEPTOR AND THEN BE DISCHARGED INTO THE FIRST COMPARTMENT OF A SEPTIC TANK OR OTHER APPROVED SYSTEM.
4. SIZING OF GREASE INTERCEPTORS SHALL BE BASED ON THE DETAIL WW–18A EQUATIONS. THE MINIMUM VOLUME OF ANY GREASE INTERCEPTOR SHALL BE 750 GALLONS AND THE MAXIMUM VOLUME OF A SINGLE GREASE INTERCEPTOR SHALL BE 1250 GALLONS. WHEN THE REQUIRED EFFECTIVE CAPACITY OF THE GREASE INTERCEPTOR IS GREATER THAN 1250 GALLONS, INSTALLATION OF GREASE TRAPS IN SERIES IS REQUIRED.
5. KEYED JOINT SEALED WITH BUTYL RUBBER.

GREASE INTERCEPTOR

NTS

WW–18

REVISED: AUGUST 2008

SIZING FORMULA FOR RESTAURANTS, COUNTRY CLUBS AND ASSISTED LIVING FACILITIES
(S) x (GS) x (HR/12) x LF = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS
WHERE: S = NUMBER OF SEATS IN DINING AREA. GS = GALLONS OF WASTE WATER PER SEAT (USE 25 GALLONS FOR RESTAURANTS WITH CHINA DISHES AND/OR AUTOMATIC DISHWASHER) (USE 10 GALLONS FOR RESTAURANTS WITH PAPER OR BASKETS AND NO DISHWASHER) HR = NUMBER OF HOURS RESTAURANT IS OPEN LF = LOADING FACTOR (USE 2.00 INTERSTATE HIGHWAY; 1.50 OTHER FREEWAYS; 1.25 RECREATIONAL AREA; 1.00 MAIN HIGHWAY; 0.75 OTHER HIGHWAY)

SIZING FORMULA FOR SCHOOLS AND OTHER ESTABLISHMENTS WITH COMMERCIAL KITCHENS (NO DISHWASHER)
(M) x (GM) x (LF) = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS
WHERE: M = MEALS PREPARED PER DAY GM = GALLONS OF WASTE WATER PER MEAL (USE 5 GALLONS) LF = LOADING FACTOR (USE 1.00 WITH DISHWASHING MACHINE AND 0.75 WITHOUT DISHWASHING MACHINE)

NO COMMERCIAL DISHWASHER, NO CHINA OR DISPOSAL CHINA ONLY CAPACITY OF GREASE TRAPS

TOTAL FLOW–THROUGH RATING (GPM)	GREASE RETENTION CAPACITY (POUNDS)
4	8
6	12
7	14
9	18
10	20
12	24
14	28
15	30
18	36
20	40
25	50
35	70
50	100

GREASE INTERCEPTOR TABLES

NTS

WW–18A

REVISED: APRIL 2006