

**COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL**

SECTION 3

UTILITIES DETAIL DRAWINGS

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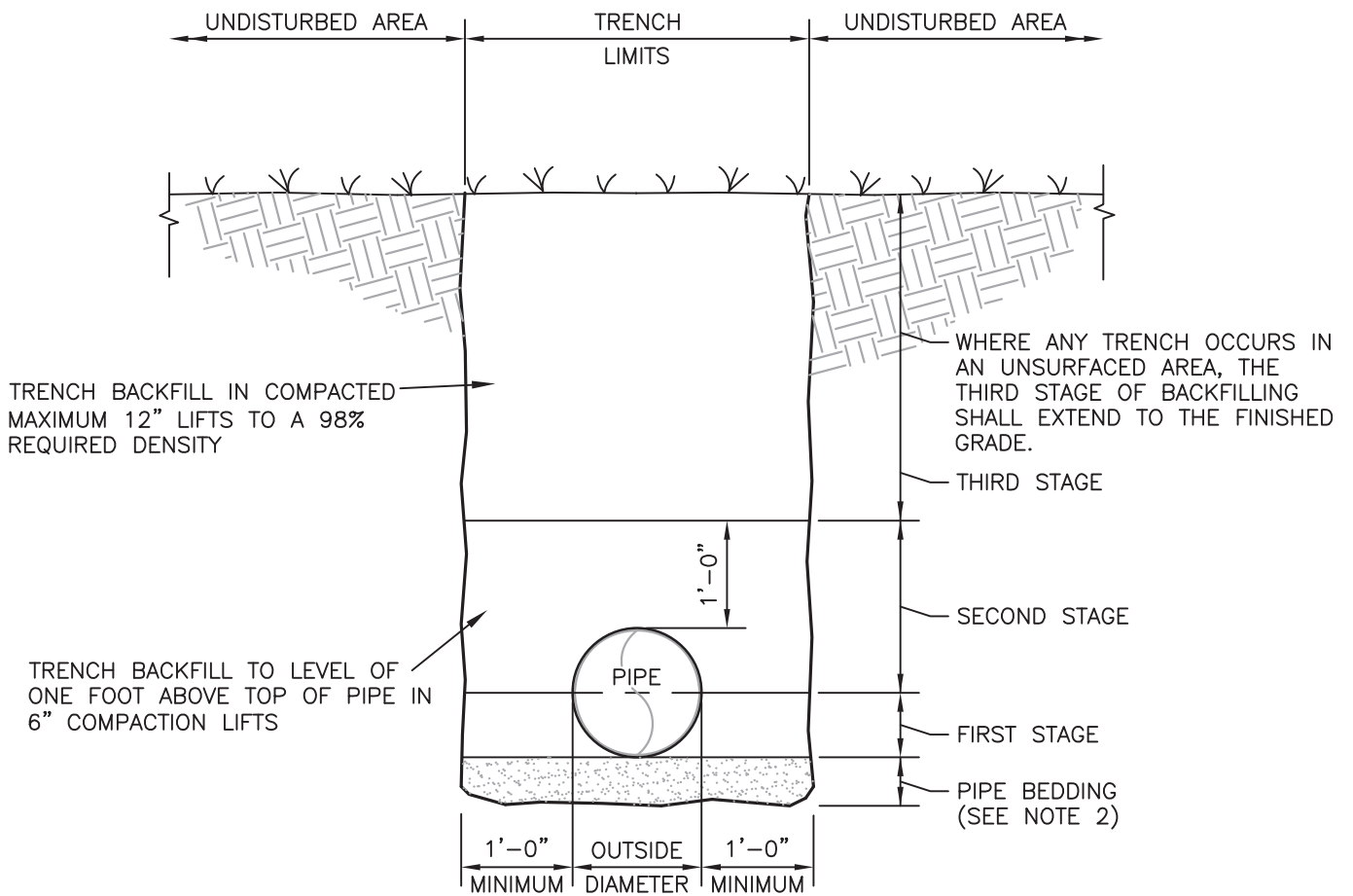
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NOTES:

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.

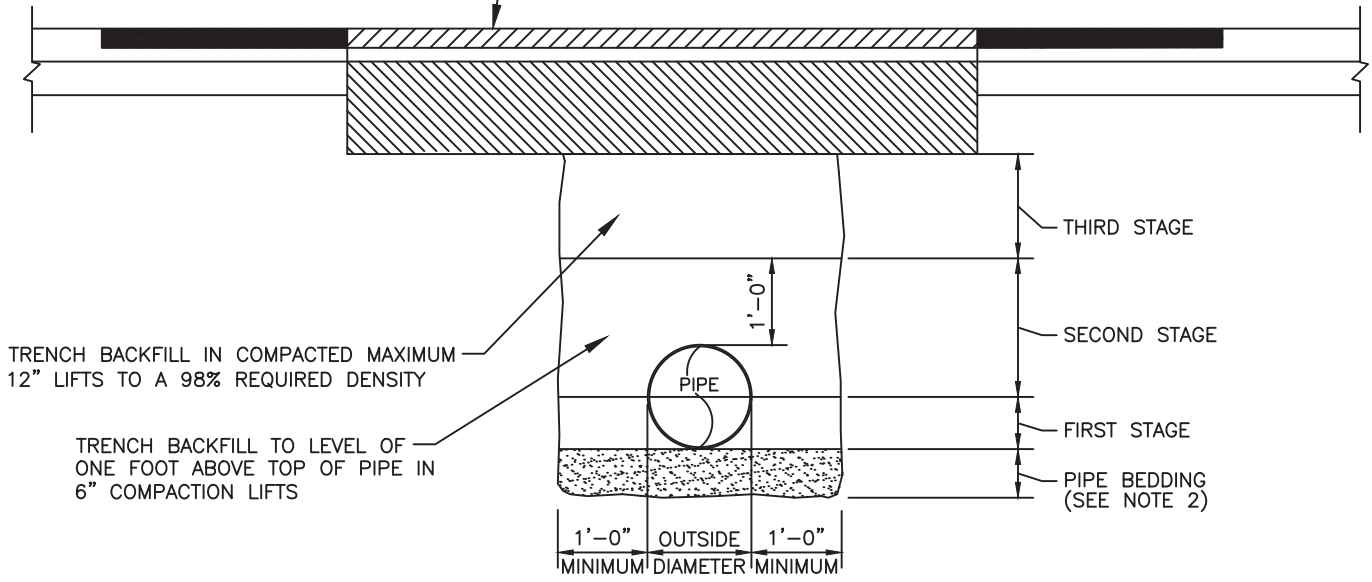
UNPAVED AREA TRENCH
BACKFILL DETAIL

NTS

G-1

REVISED: APRIL 2006

FOR ROADWAY AND BASE RESTORATION
DETAILS, REFER TO THE COLLIER
COUNTY RIGHT OF WAY HANDBOOK.



TRENCH BACKFILL IN COMPACTED MAXIMUM
12" LIFTS TO A 98% REQUIRED DENSITY

TRENCH BACKFILL TO LEVEL OF
ONE FOOT ABOVE TOP OF PIPE IN
6" COMPACTION LIFTS

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.

**PAVED AREA TRENCH RESTORATION
DETAIL
FOR PRIVATE ROADS**

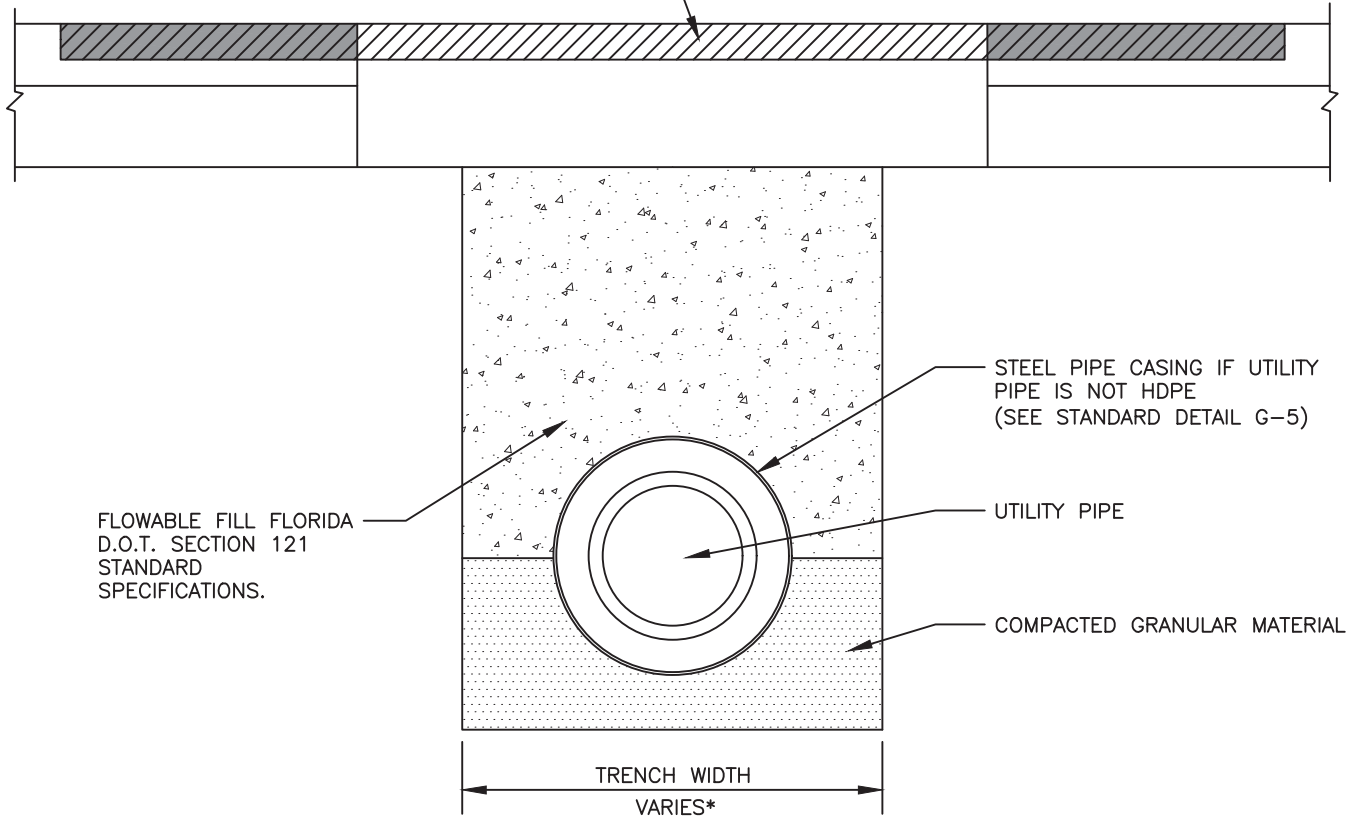
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REVISION DATE:
JULY 2018



SHEET NO.
G-2

FOR ROADWAY AND BASE RESTORATION
DETAILS, REFER TO THE COLLIER COUNTY
RIGHT OF WAY HANDBOOK.



*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 CONSTRUCTED WITHIN 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:

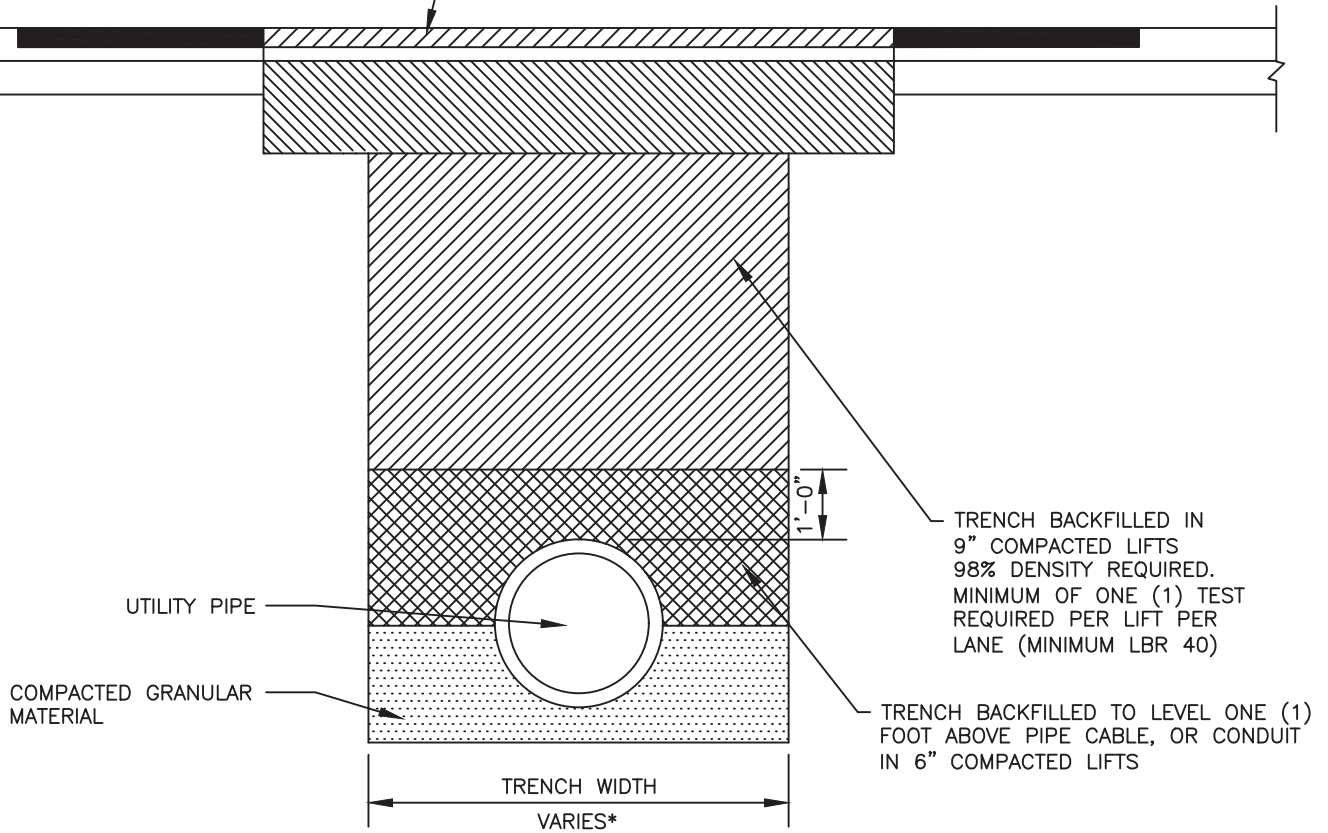
JULY 2018



SHEET NO.

G-2A

FOR ROADWAY AND BASE RESTORATION
DETAILS, REFER TO THE COLLIER
COUNTY RIGHT OF WAY HANDBOOK.



*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.

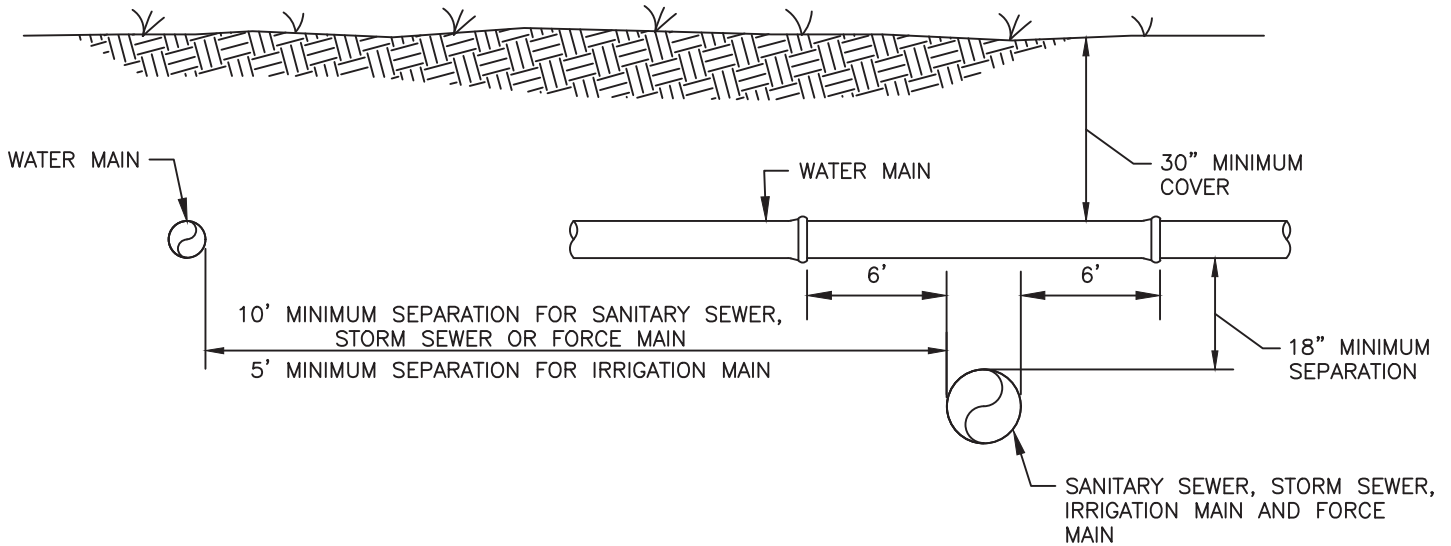
ROAD AND TRENCH RESTORATION
FOR LOCAL ROADS

NTS

REVISION DATE:
JULY 2018



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.

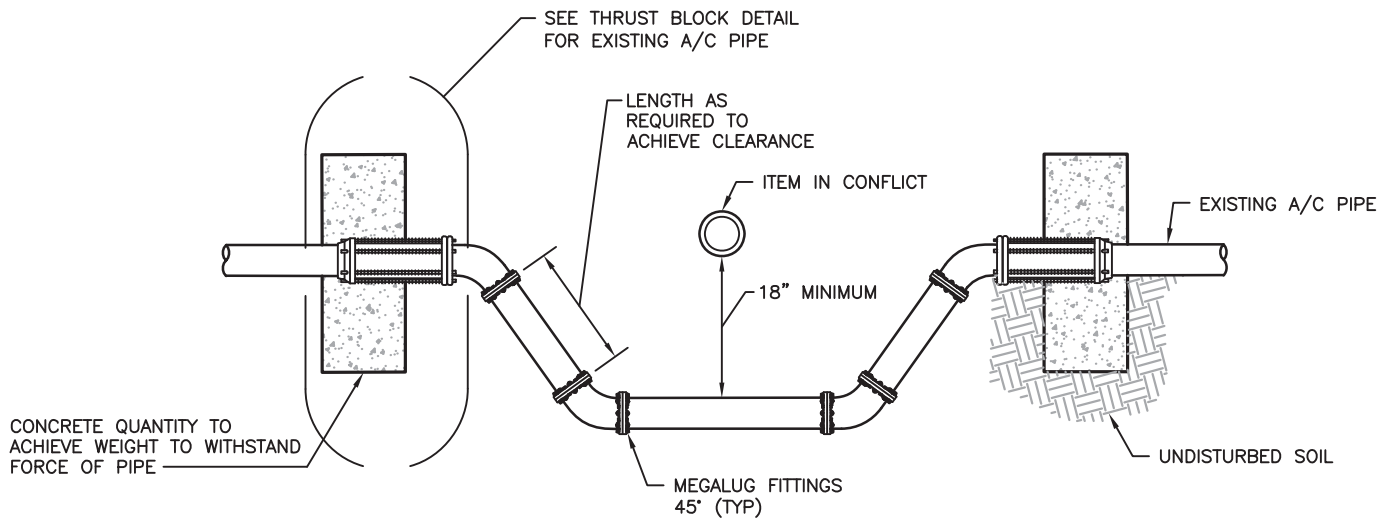
PIPE SEPARATION DETAIL

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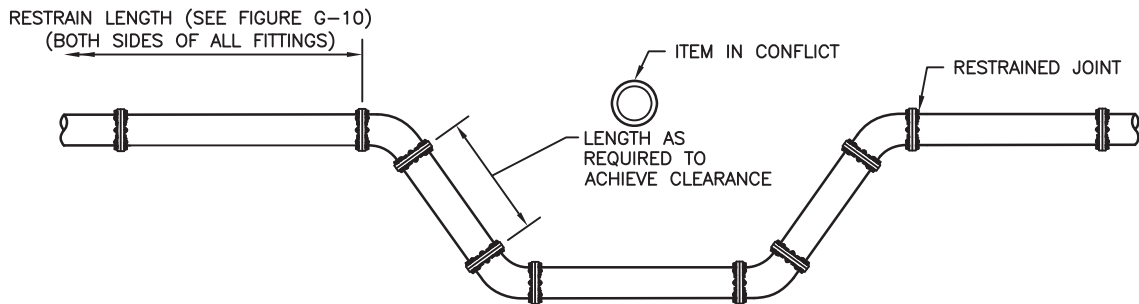
REVISION DATE:
JULY 2018



SHEET NO.
G-3



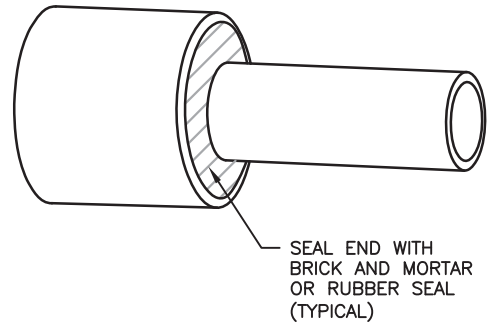
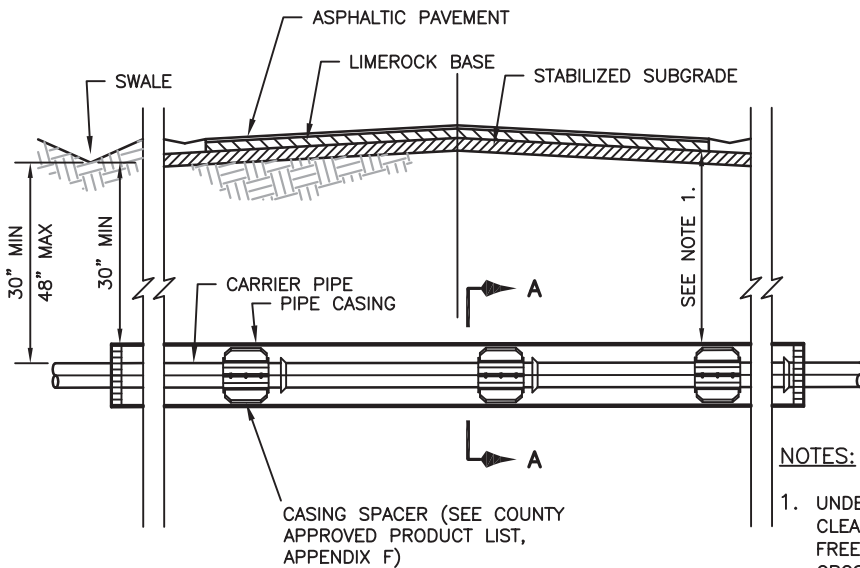
EXISTING A/C PIPE – HEADWALL



NEW & EXISTING PIPE – RESTRAINED JOINT

NOTES

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



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.

STAINLESS STEEL SPACERS:

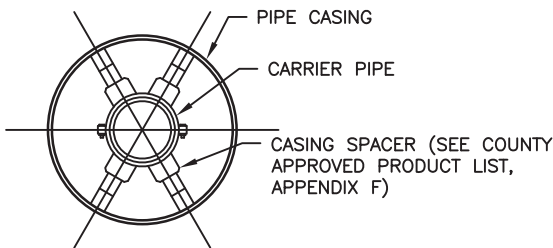
1. SPACERS SHALL BE BOLT-ON STYLE WITH A TWO PIECE SOLID SHELL MADE FROM T-304 STAINLESS STEEL OF A MINIMUM 14 GAUGE THICKNESS. THE SHELL SHALL BE LINED WITH A RIBBED PVC SHEET OF A 0.090" THICKNESS THAT OVERLAPS THE EDGES. RUNNERS MADE FROM UHMW POLYMER SHALL BE ATTACHED TO RISERS AT APPROPRIATE POSITIONS 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:

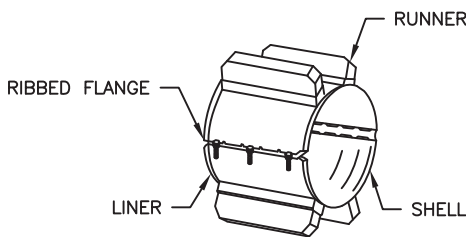
1. GENERAL - ONE SPACER SHALL BE PLACED NOT MORE THAN TWO FEET FROM EACH END OF CASING. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' TO 10' INTERVALS WITHIN THE CASING, OR IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATIONS.
2. PVC CARRIER - ONE SPACER SHALL BE PLACED ON THE SPIGOT END OF EACH SEGMENT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



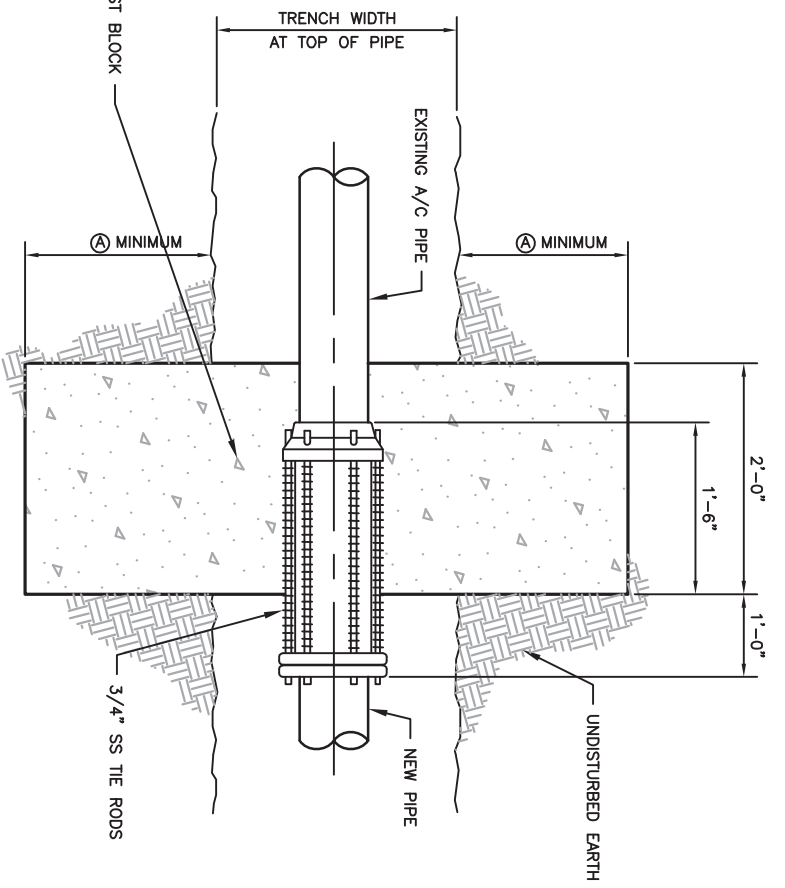
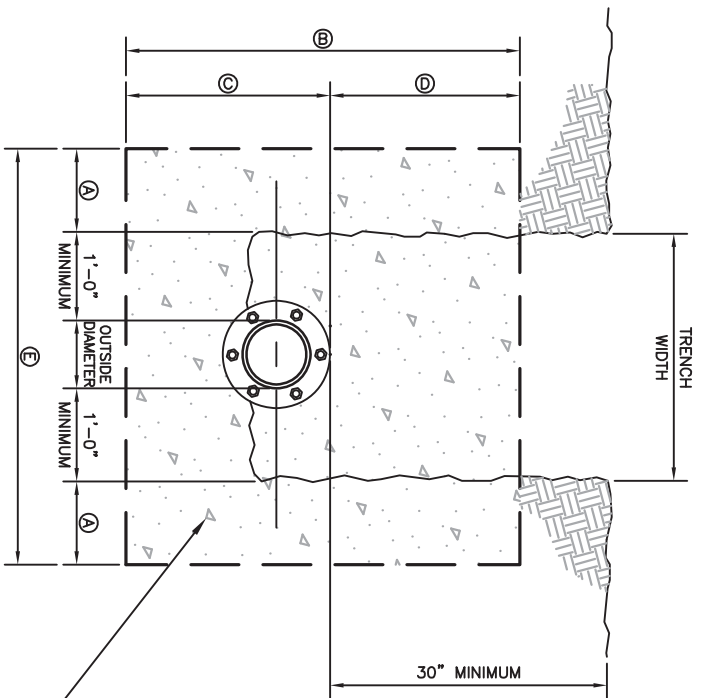
SECTION A-A



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



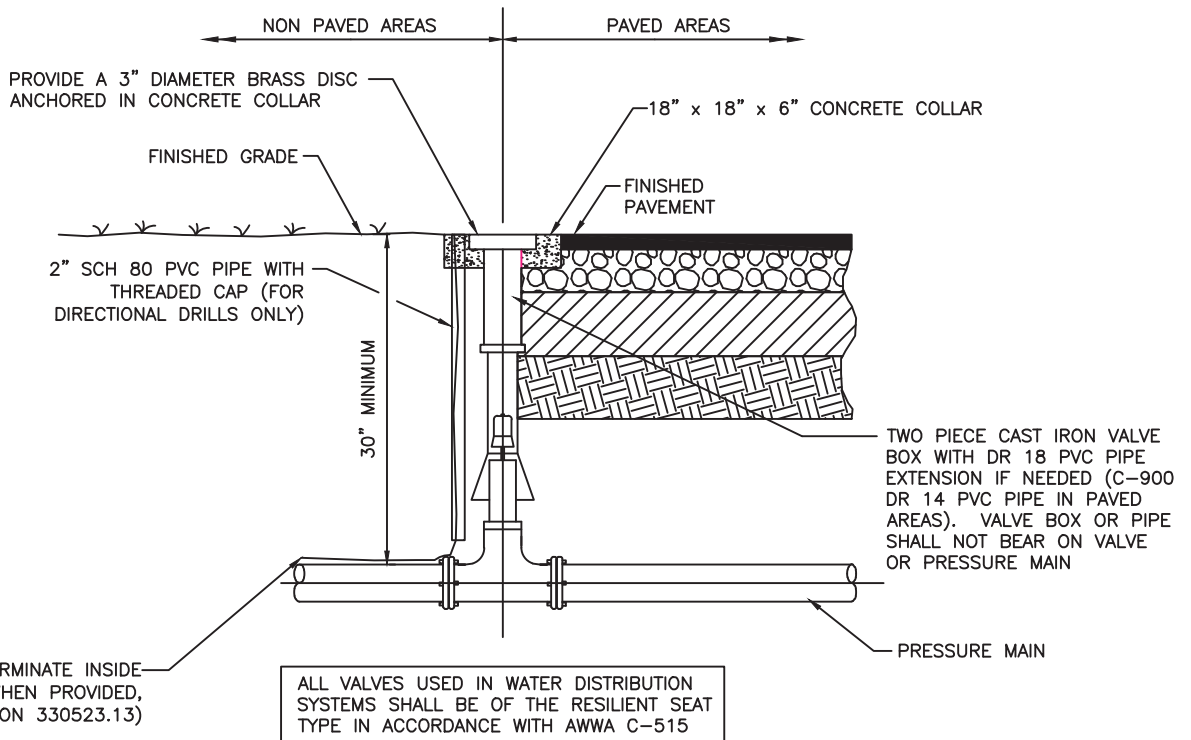
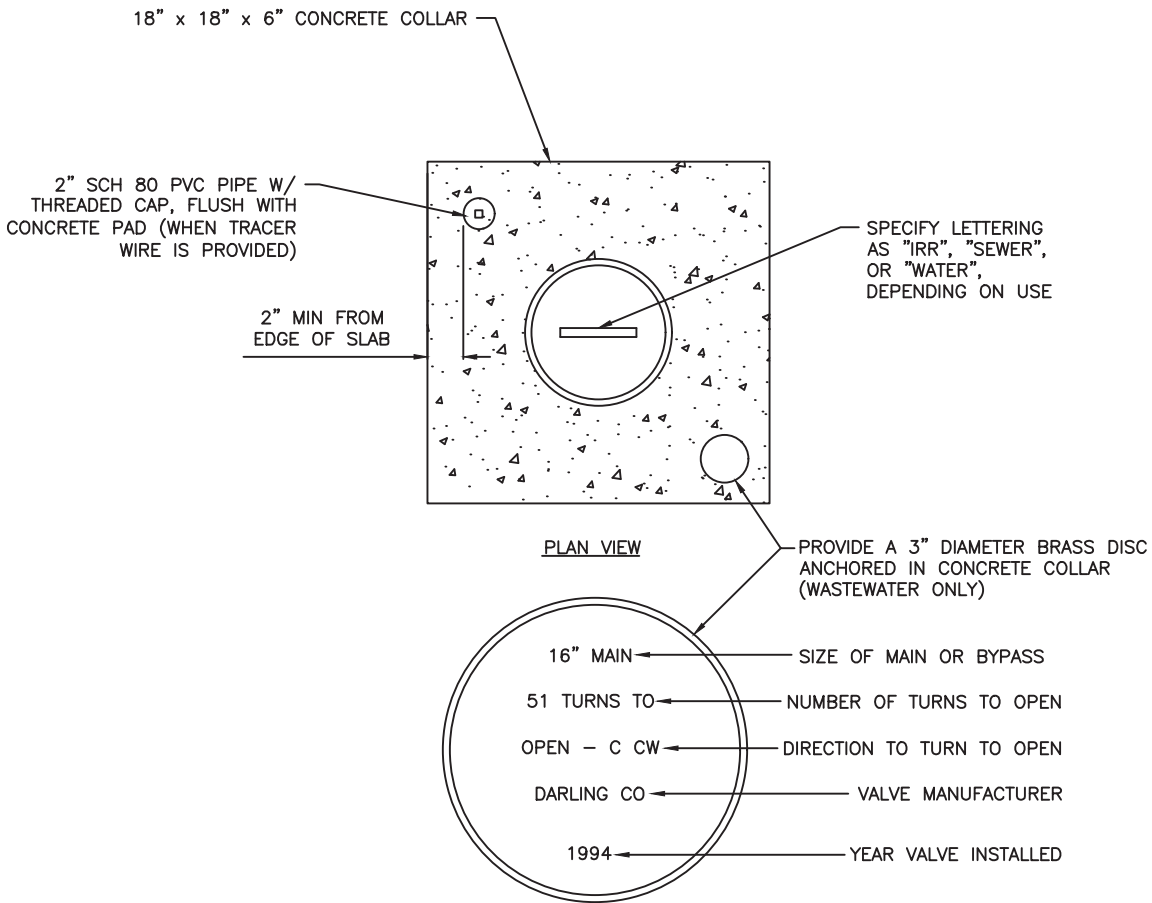
PIPE DIAMETER	A	B	C	D	E	NUMBER OF THE RODS REQUIRED	CY.
4"	9"	36"	20"	16"	3'-10"	2	.85
6"	12"	36"	21"	15"	4'-6"	2	1.00
8"	12"	36"	22"	14"	4'-8"	2	1.04
10"	12"	36"	23"	13"	4'-10"	2	1.07
12"	18"	36"	24"	12"	6'-0"	2	1.33
16"	18"	36"	32"	4"	6'-4"	4	1.41

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

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

THRUST BLOCK DETAIL FOR EXISTING A/C PIPE

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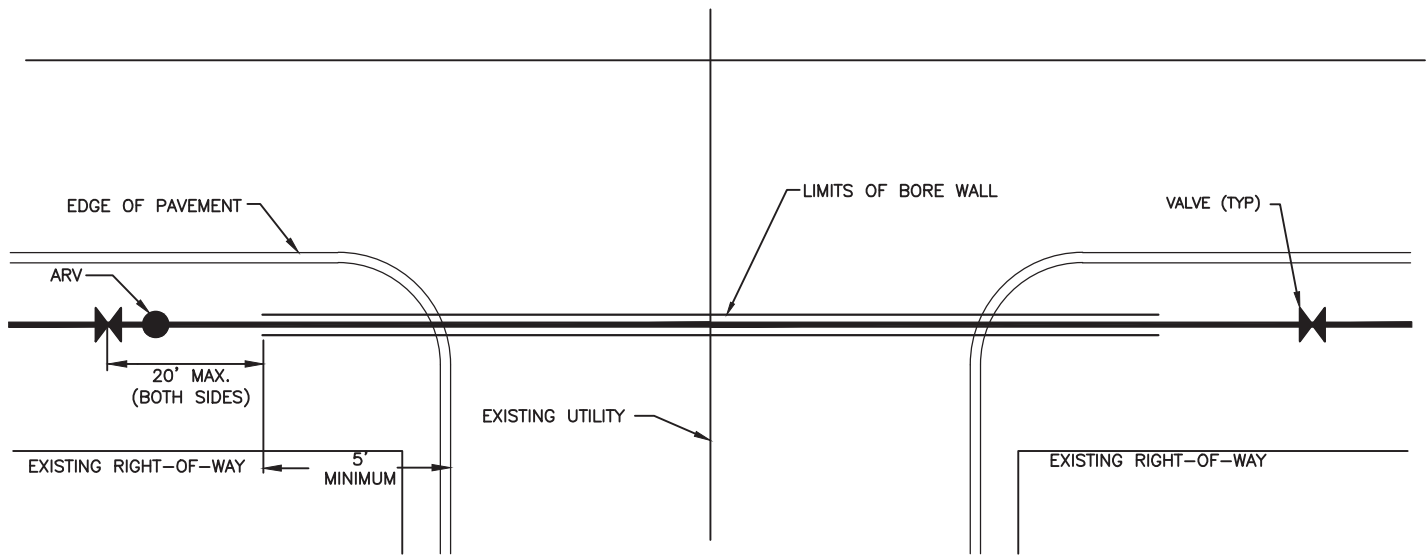


**TYPICAL VALVE
SETTING DETAIL**
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REVISION DATE:
JULY 2018

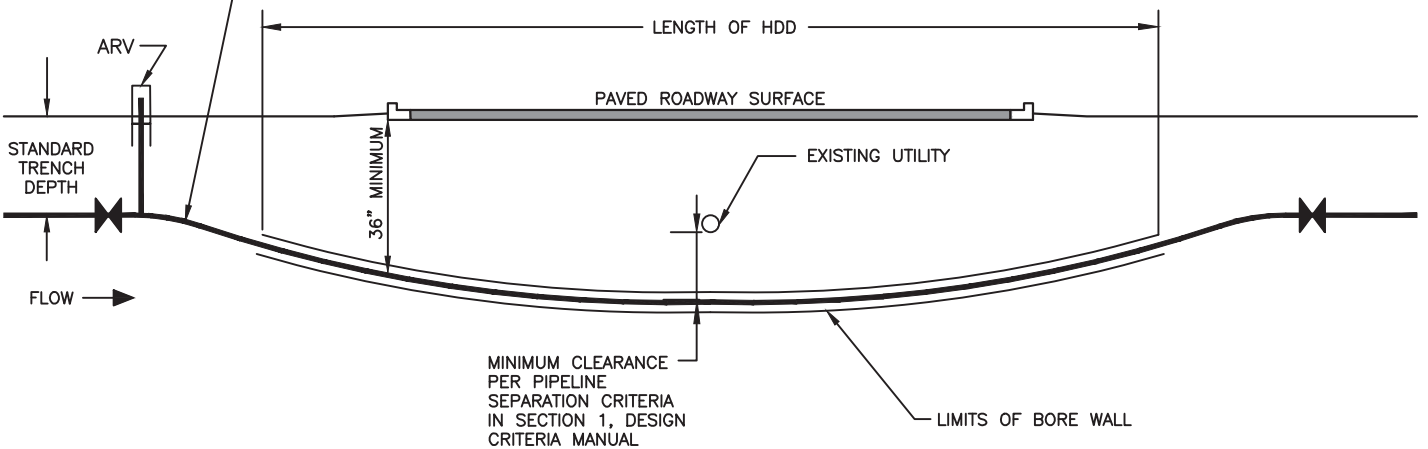


SHEET NO.
G-7



PLAN
HORIZONTAL MINIMUM CLEARANCES

MAINTAIN MIN. BEND RADIUS OF 100X O.D. WITHIN 5X O.D. OF A VALVE OR FITTING AND 25X O.D. ELSEWHERE. OR PROVIDE A BEND (TYP).



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.

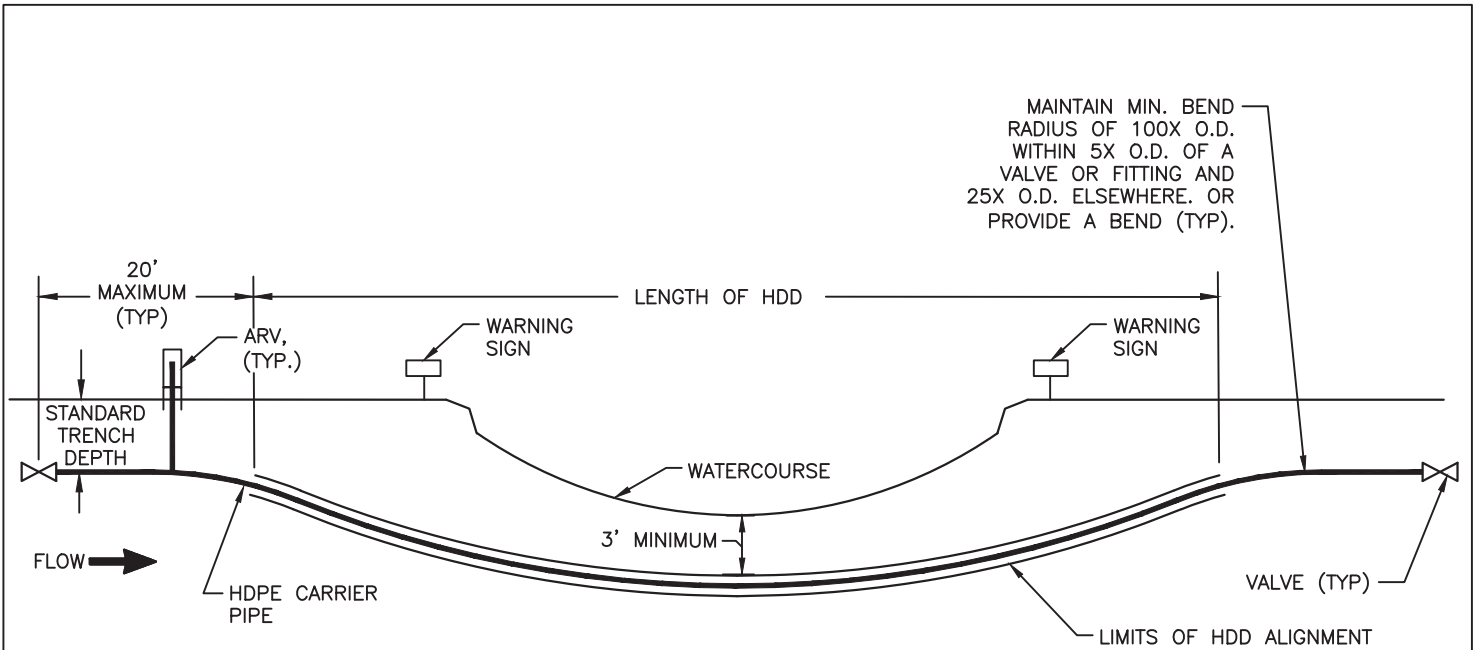
TYPICAL HORIZONTAL DIRECTIONAL DRILL (HDD) UNDER A ROADWAY

NTS

JULY 2018



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)**

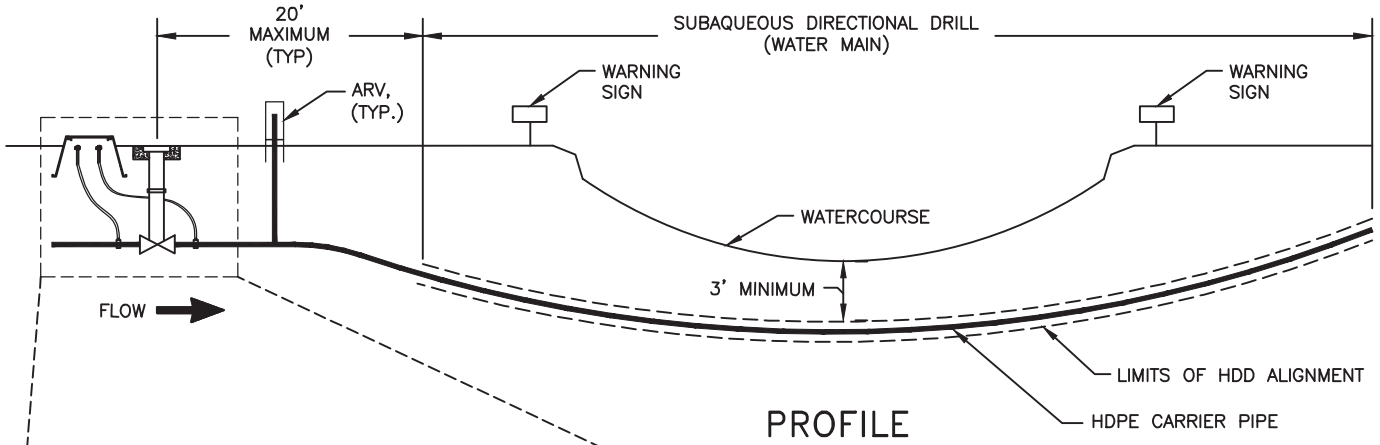
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JULY 2018

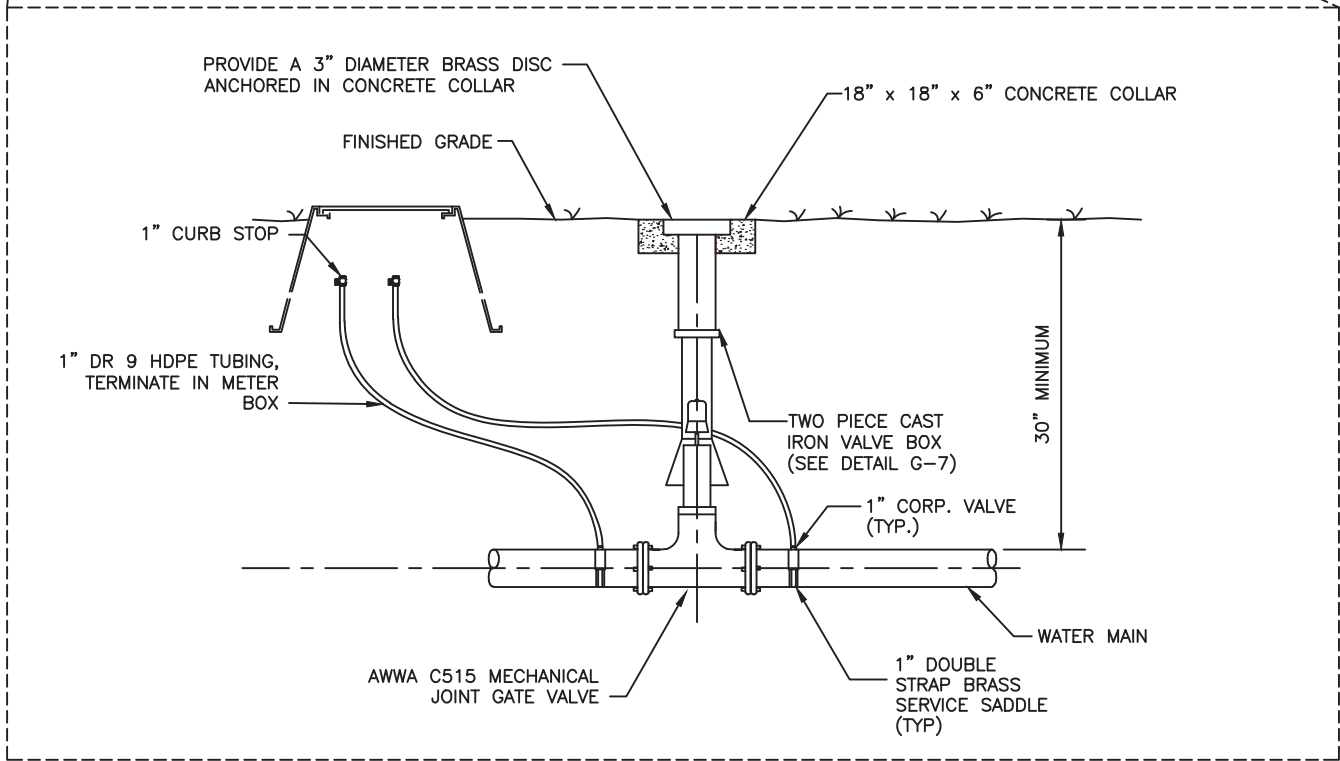


SHEET NO.

G-9



- 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



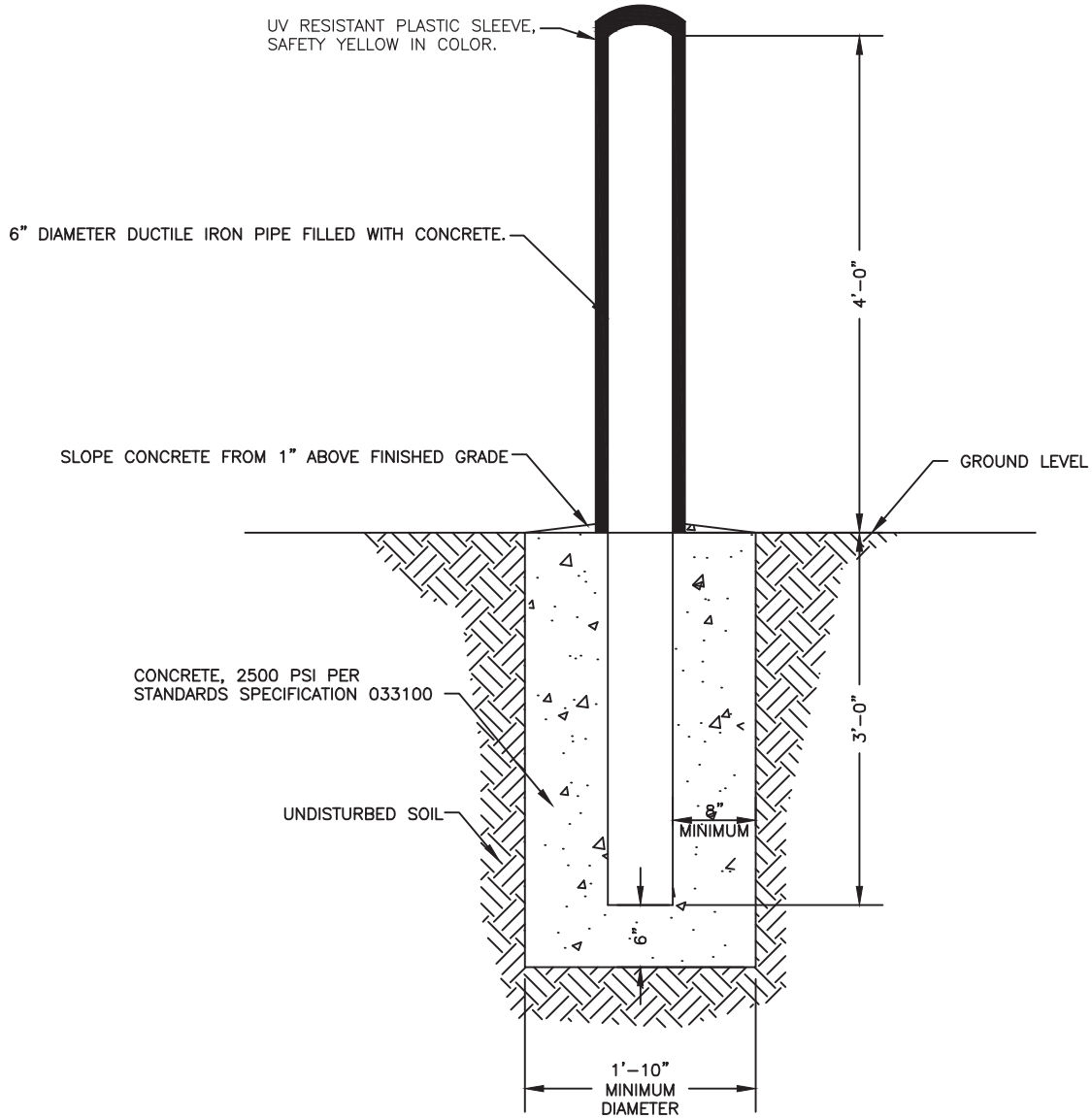
SHEET NO.
 G-9A

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.



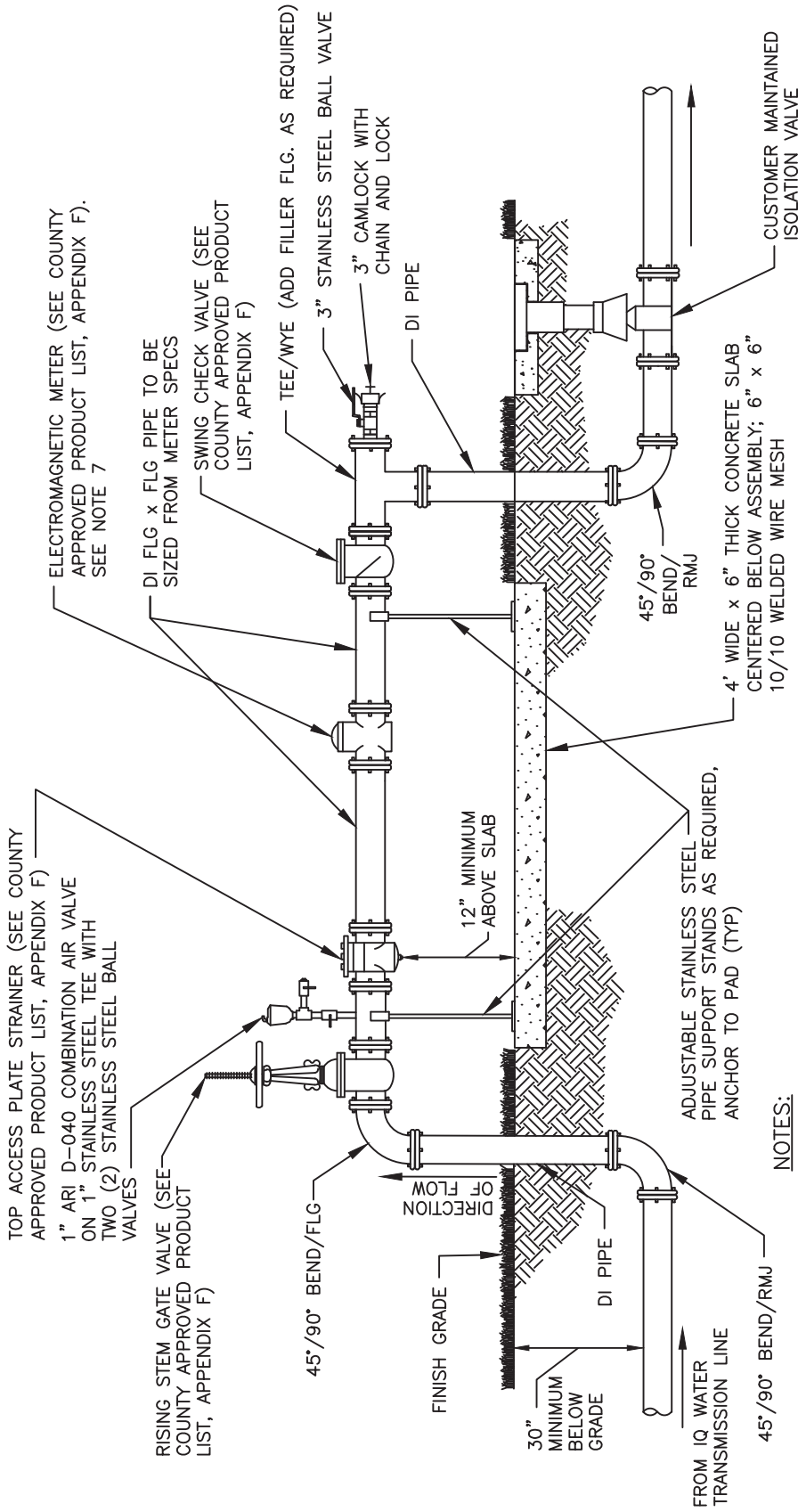
VEHICULAR GUARD POST DETAIL

NTS

REVISION DATE:
JULY 2018



SHEET NO.
G-11



TOP ACCESS PLATE STRAINER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
 1" ARI D-040 COMBINATION AIR VALVE ON 1" STAINLESS STEEL TEE WITH TWO (2) STAINLESS STEEL BALL VALVES

RISING STEM GATE VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
 DI FLG x FLG PIPE TO BE SIZED FROM METER SPECS
 SWING CHECK VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)

TEE/WYE (ADD FILLER FLG. AS REQUIRED)
 3" STAINLESS STEEL BALL VALVE
 3" CAMLOCK WITH CHAIN AND LOCK
 DI PIPE

45°/90° BEND/FLG
 FINISH GRADE
 30" MINIMUM BELOW GRADE
 DI PIPE
 FROM IQ WATER TRANSMISSION LINE

12" MINIMUM ABOVE SLAB
 4" WIDE x 6" THICK CONCRETE SLAB CENTERED BELOW ASSEMBLY; 6" x 6" 10/10 WELDED WIRE MESH

ADJUSTABLE STAINLESS STEEL PIPE SUPPORT STANDS AS REQUIRED, ANCHOR TO PAD (TYP)
 45°/90° BEND/RMJ
 CUSTOMER MAINTAINED ISOLATION VALVE

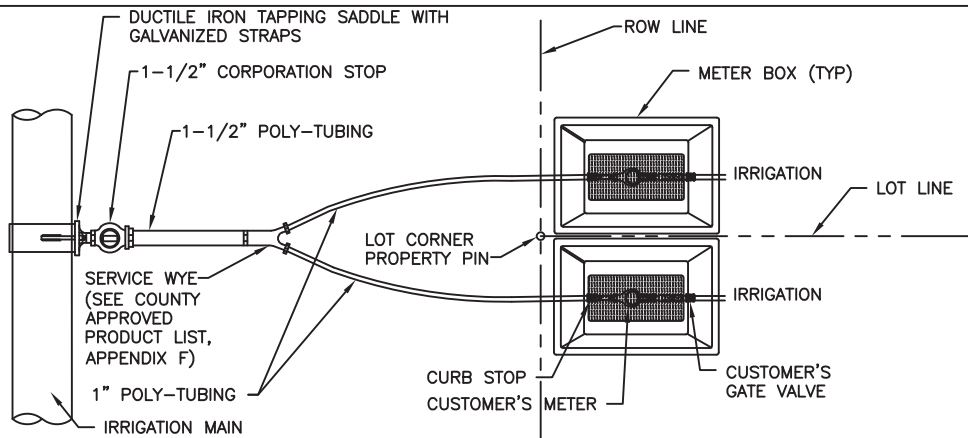
NOTES:

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**

REVISION DATE:	JULY 2018

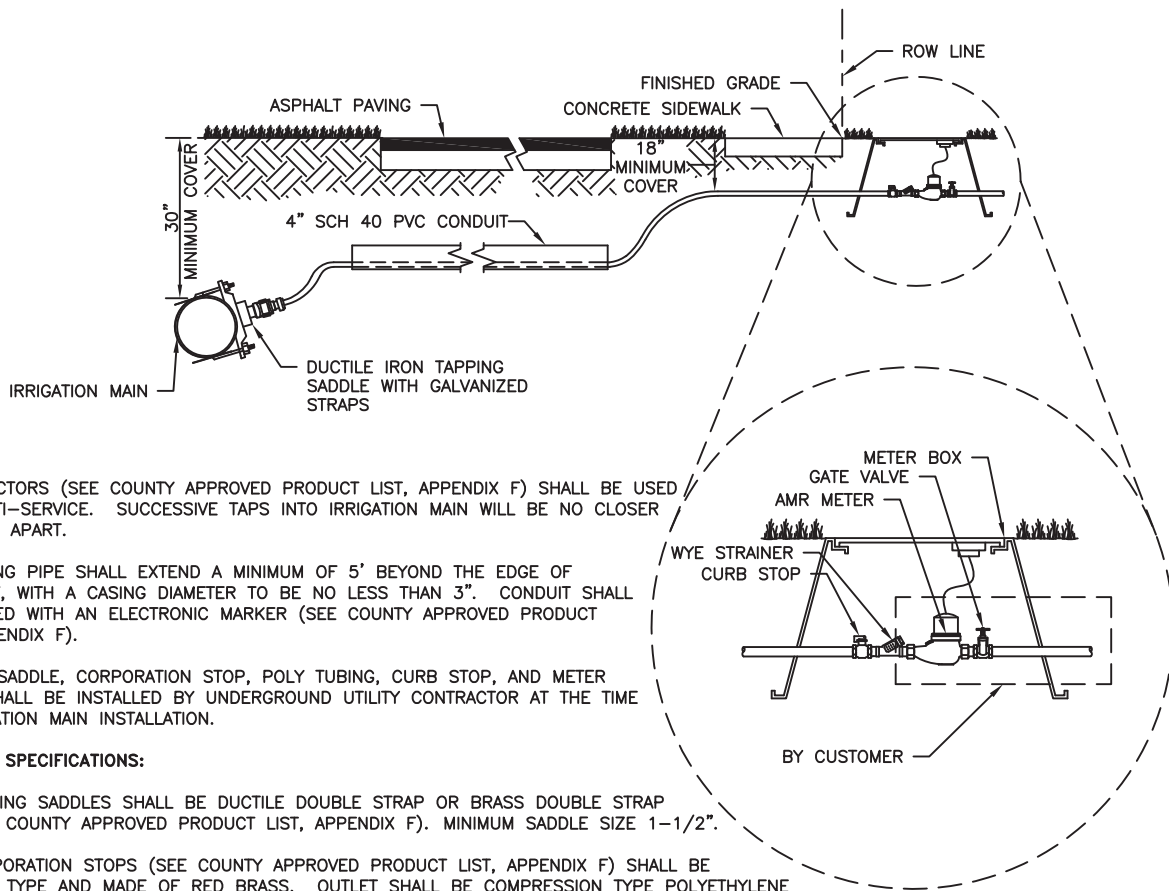




MULTI-SERVICE CONNECTIONS WILL ONLY BE ALLOWED SERVICE FOR TWO SINGLE FAMILY LOTS

PLACE CURB STOP AND METER BOX INSIDE LOT LINE AT LOT CORNERS.

MULTIPLE METER SERVICE CONNECTIONS



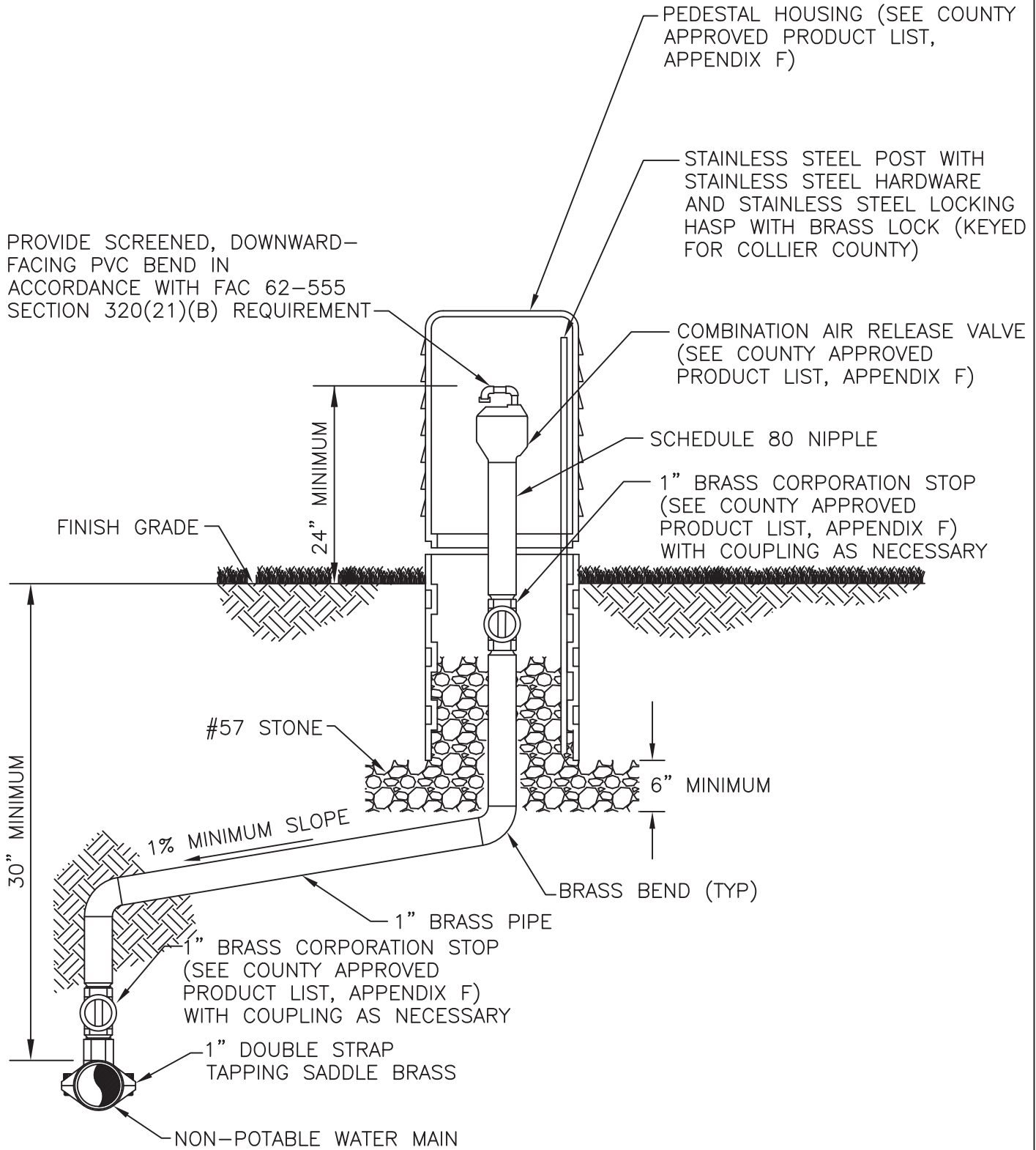
NOTES:

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

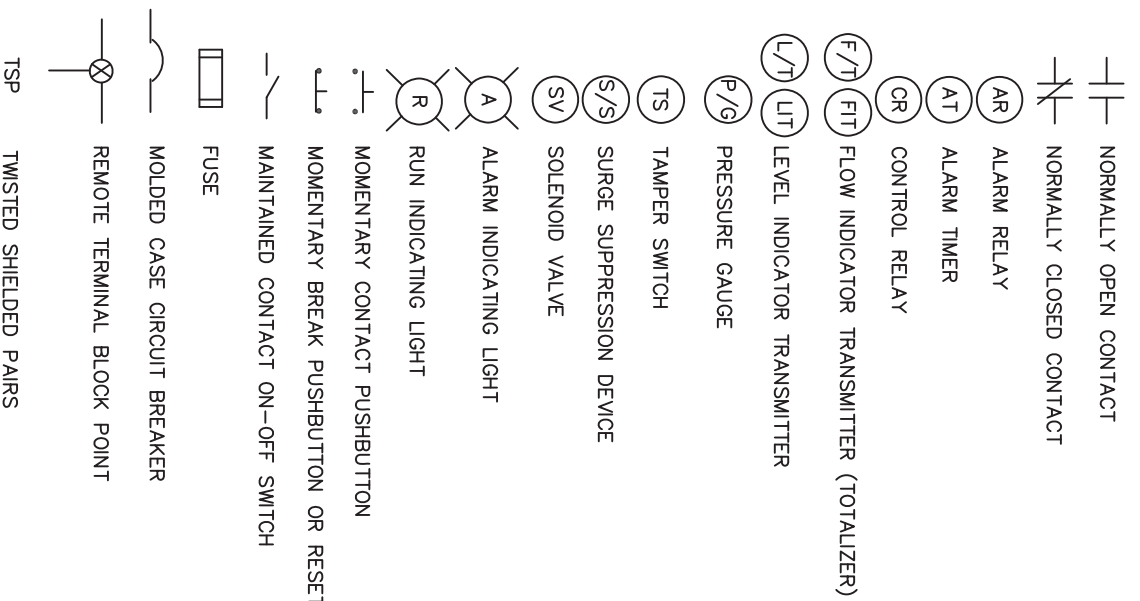
NP-4

REVISED: MAY 2009

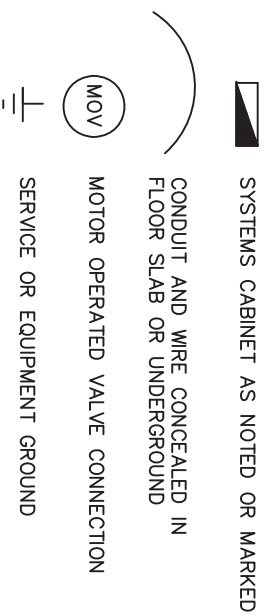
GENERAL NOTES:

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

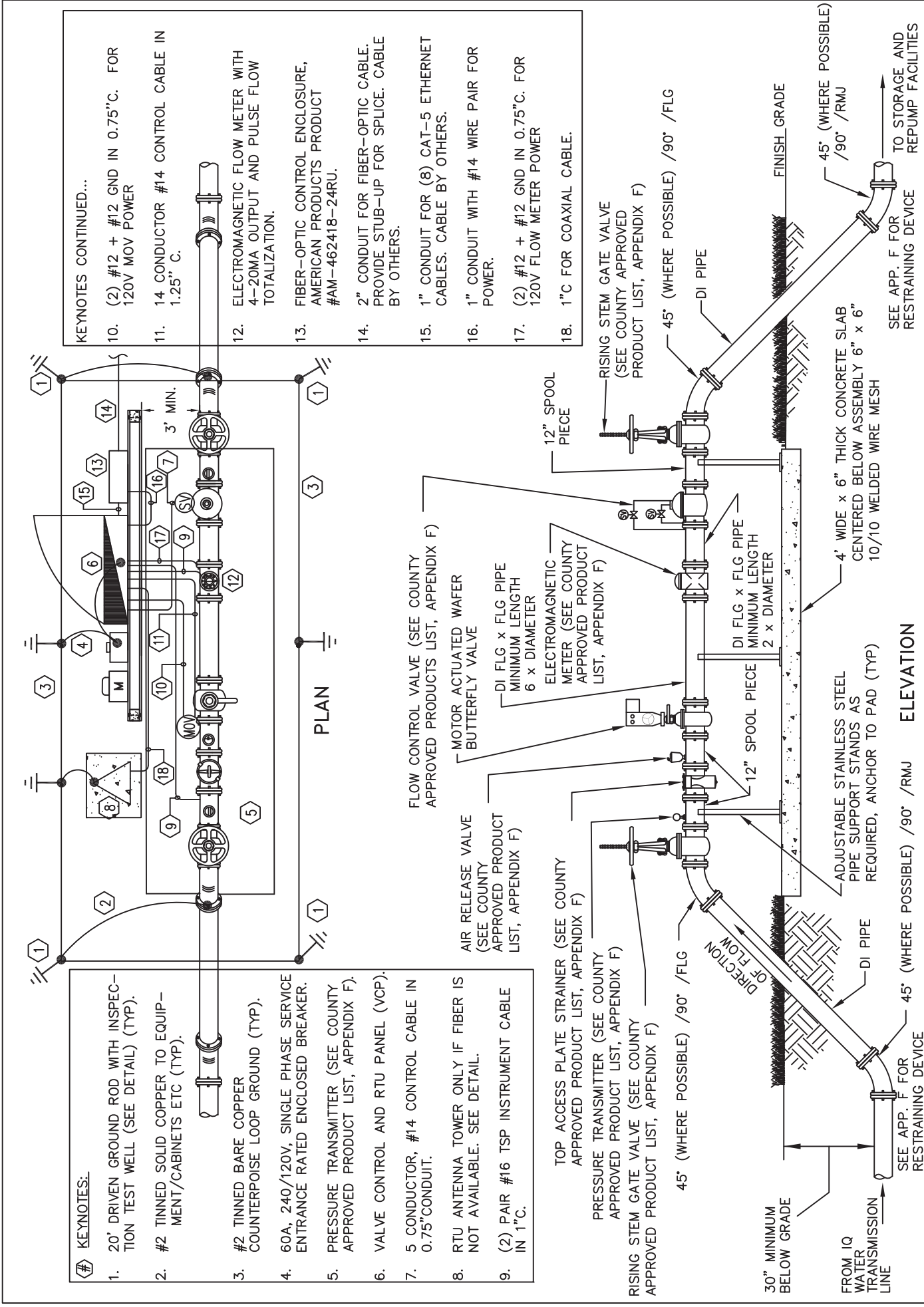


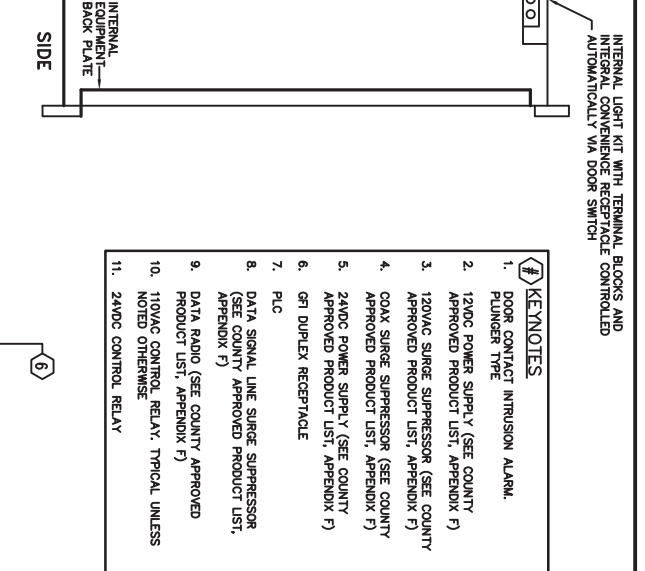
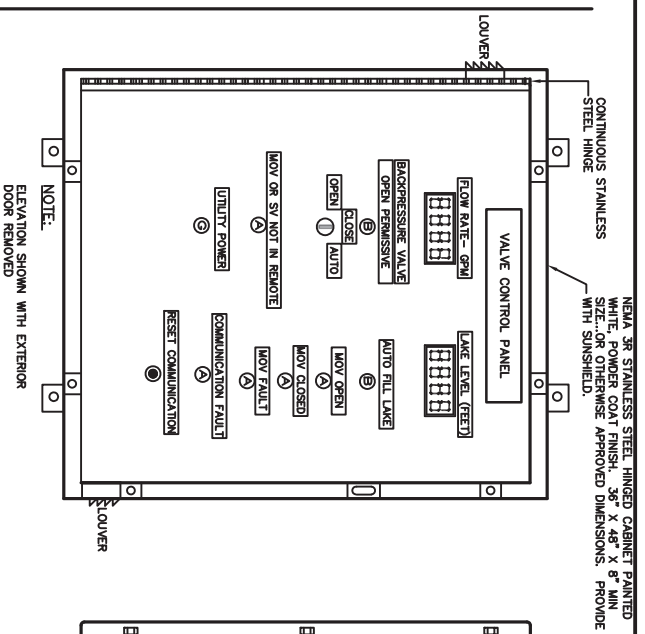
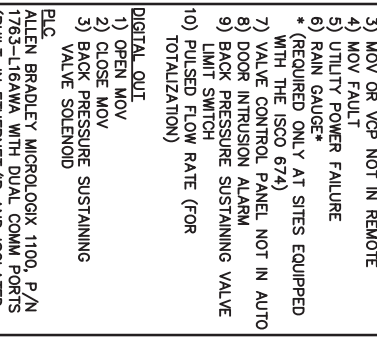
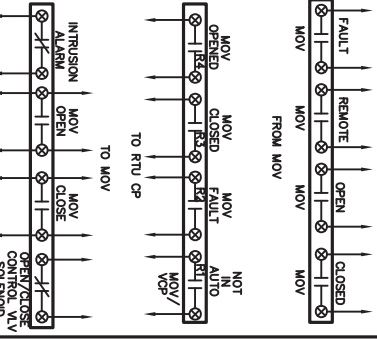
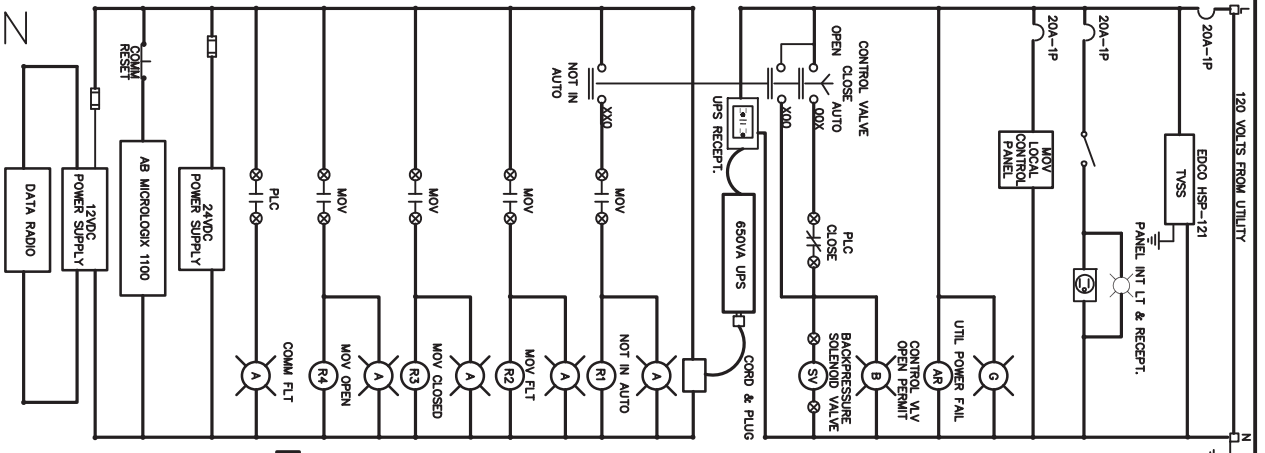
REVISED: APRIL 2006

ND - F1

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

NTS





- KEYNOTES**
- DOOR CONTACT INTRUSION ALARM, PLUNGER TYPE
 - 120VAC POWER SUPPLY (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
 - 120VAC SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
 - COAX SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
 - 24VDC POWER SUPPLY (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
 - GF1 DUPLEX RECEPTACLE
 - PLC
 - DATA SIGNAL LINE SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
 - DATA RADIO (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
 - 110VAC CONTROL RELAY, TYPICAL UNLESS NOTED OTHERWISE
 - 24VDC CONTROL RELAY

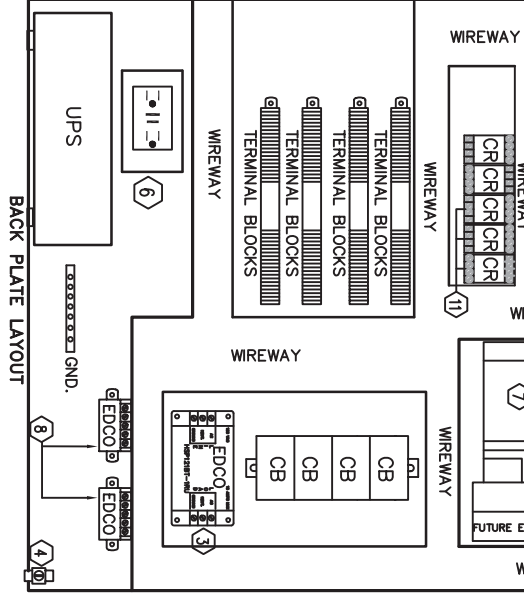
OPEN/CLOSE REUSE SERVICE CONNECTION RTU I/O POINT LIST

- ANALOG IN**
- FLOW RATE
 - LAKE LEVEL /TANK LEVEL
- DIGITAL IN**
- MOV OPEN
 - MOV CLOSED
 - MOV OR VOP NOT IN REMOTE
 - MOV FAULT
 - UTILITY POWER FAILURE
 - RAIN GAUGE*
 - VALVE CONTROL PANEL NOT IN AUTO WITH THE ISO 674)

- VALVE CONTROL PANEL, NOT IN AUTO
- DOOR INTRUSION ALARM
- BACK PRESSURE SUSTAINING VALVE LIMIT SWITCH
- PULSED FLOW RATE (FOR TOTALIZATION)
- DIGITAL OUT
- OPEN MOV
- CLOSE MOV
- BACK PRESSURE SUSTAINING SOLENOID

VALVE CONTROL PANEL ELEMENTARY

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

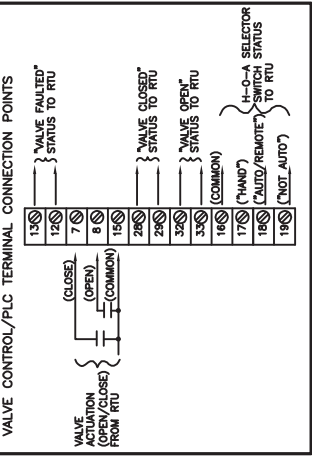


NOTE:

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 PLD/AO STAFF FOR APPROVED MODIFICATIONS TO THIS AND RELATED DRAWINGS.

LEGEND

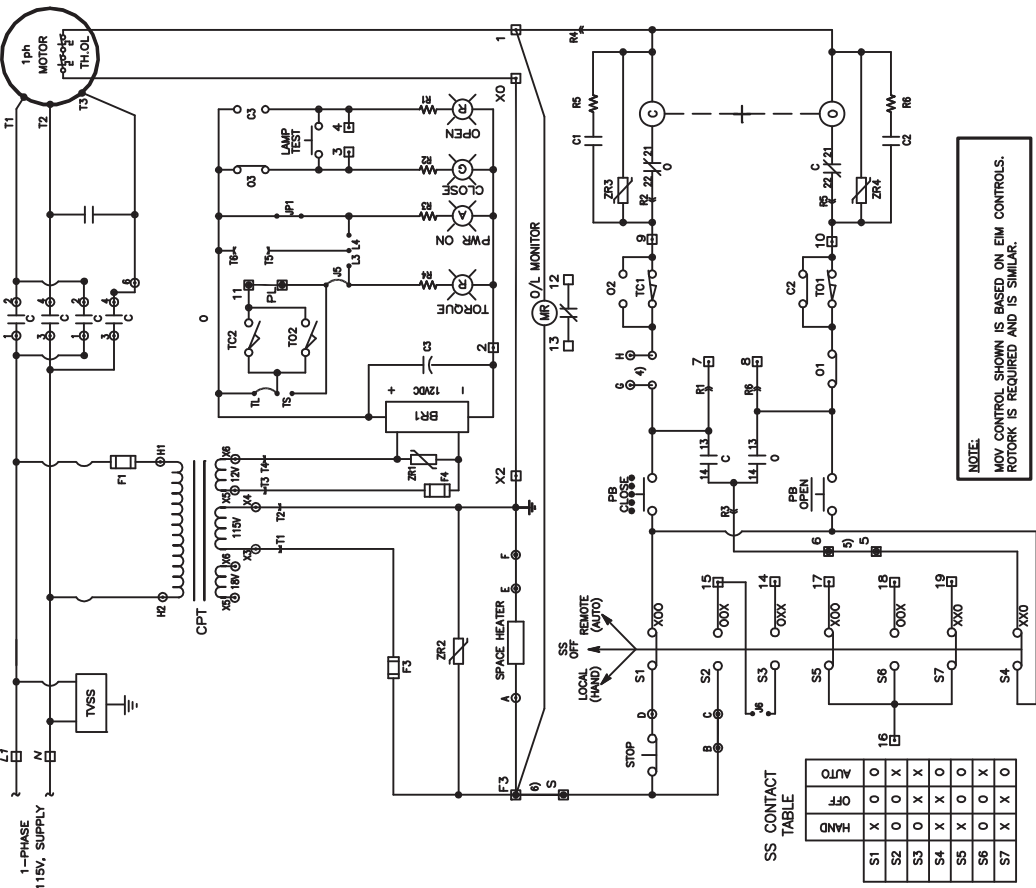
- O—OPEN CONTACT
- C—CLOSE CONTACT
- ⊖—OPENING COIL
- ⊕—CLOSING COIL
- ⊕—MECHANICAL INTERLOCK
- CPT—CONTROL POWER TRANSFORMER
- TH.O.L.—THERMAL OVERLOAD CONTACTS
- SS—SELECTOR SWITCH (LOCAL—OFF—REMOTE)
- PB—PUSHBUTTON
- MR—MONITOR RELAY
- ZR—ZENER DIODE
- ⊖—RED INDICATING LIGHT
- ⊕—AMBER INDICATING LIGHT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



NOTES

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

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

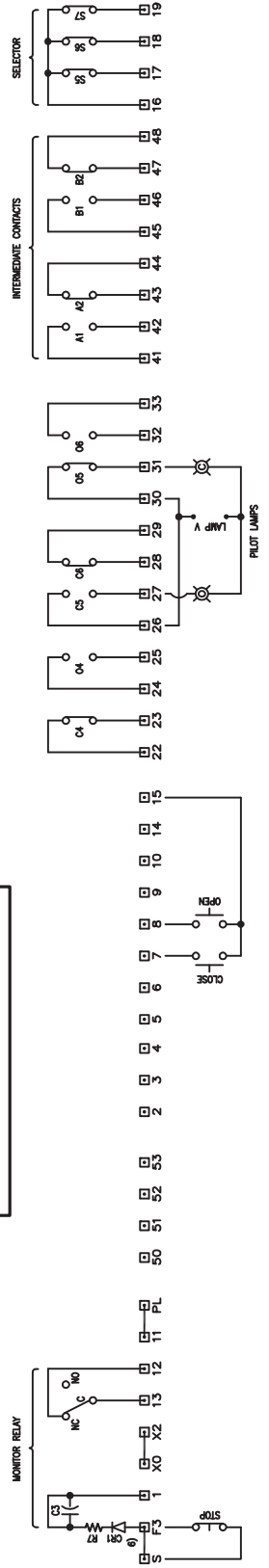


SS CONTACT TABLE

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

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

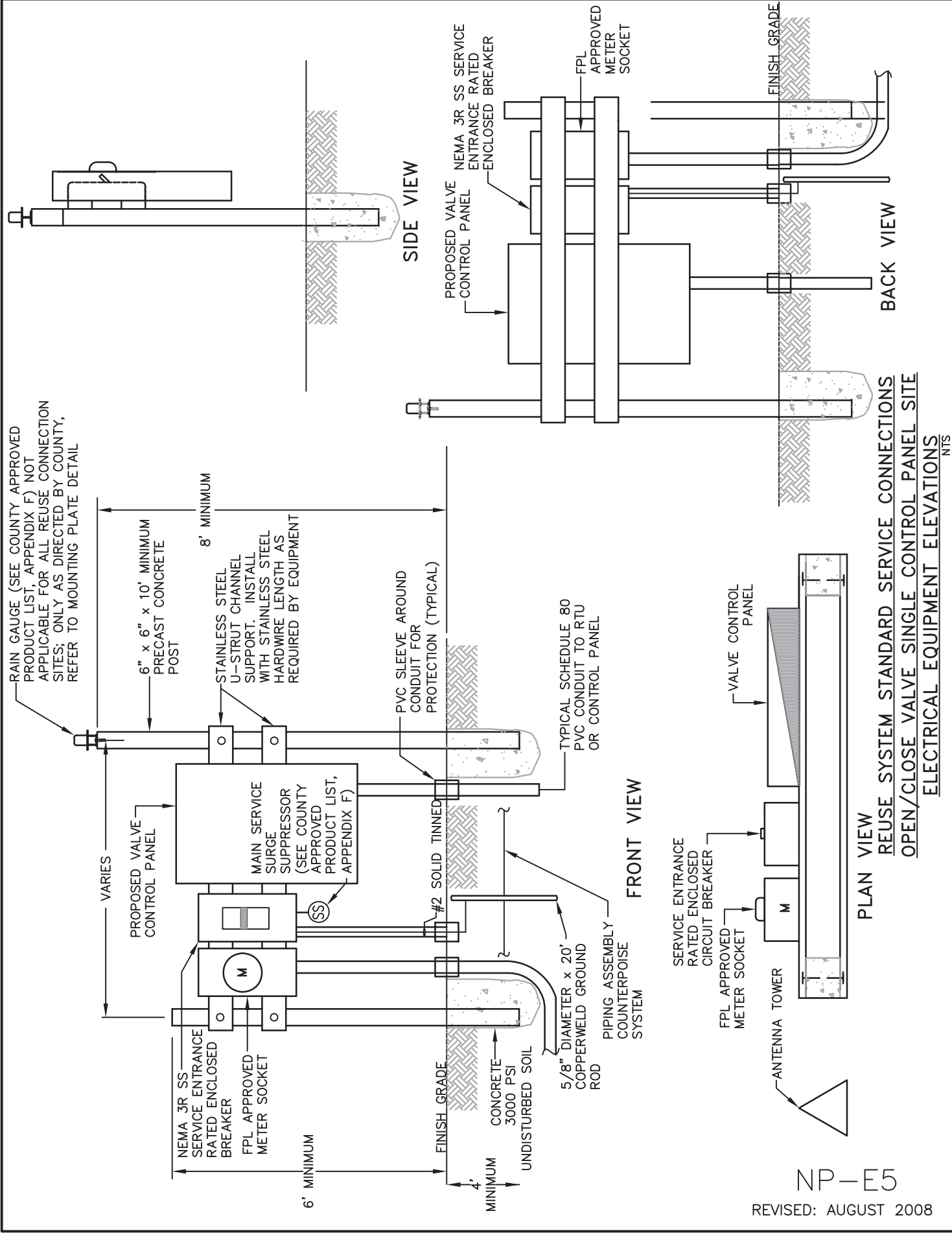
NOTE.
SET VALVE TO FAIL IN PLACE ON LOSS OF POWER.



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

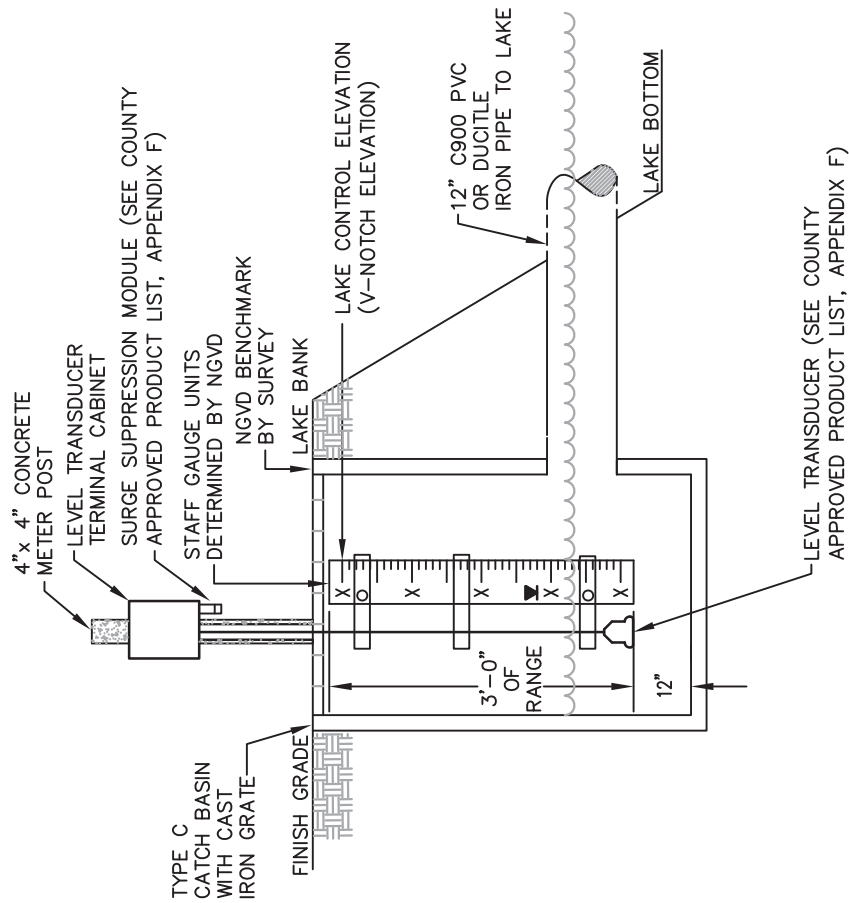
NP-E4

REVISED: APRIL 2006

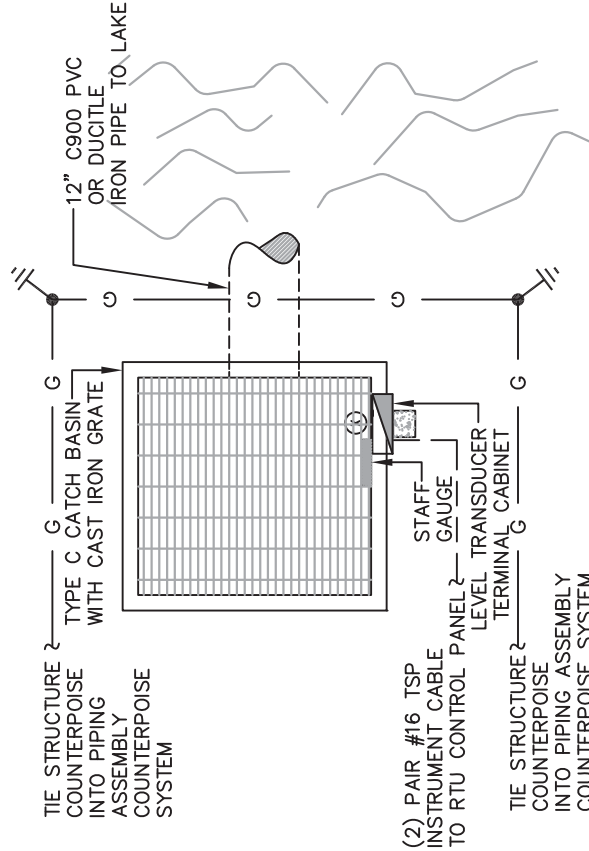


NP-E5

REVISED: AUGUST 2008

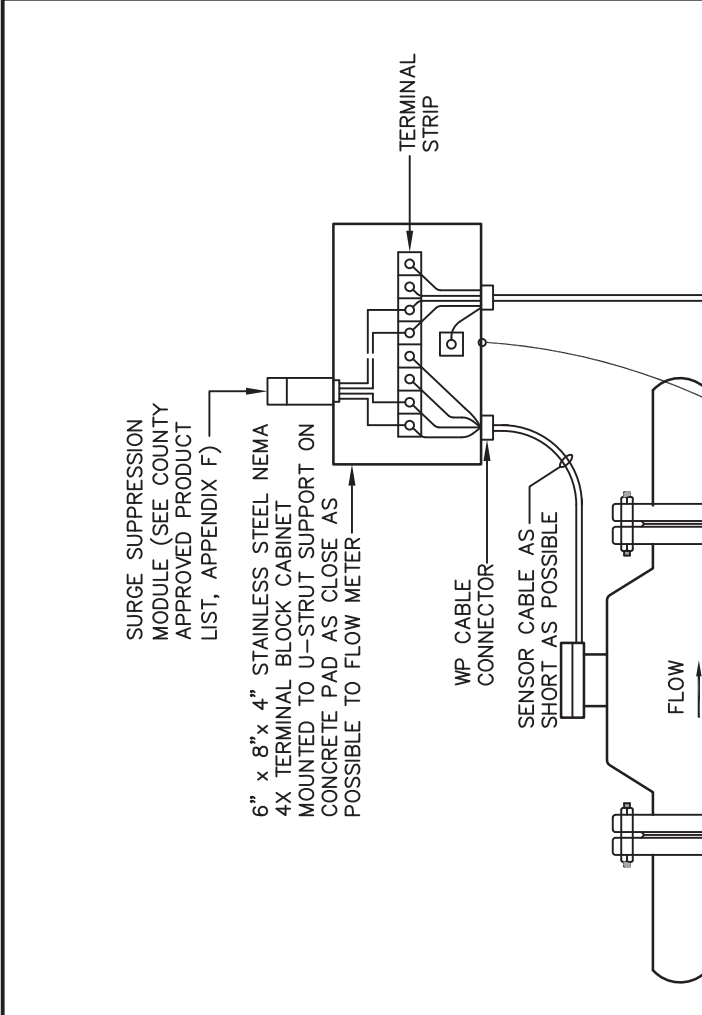


CROSS SECTION

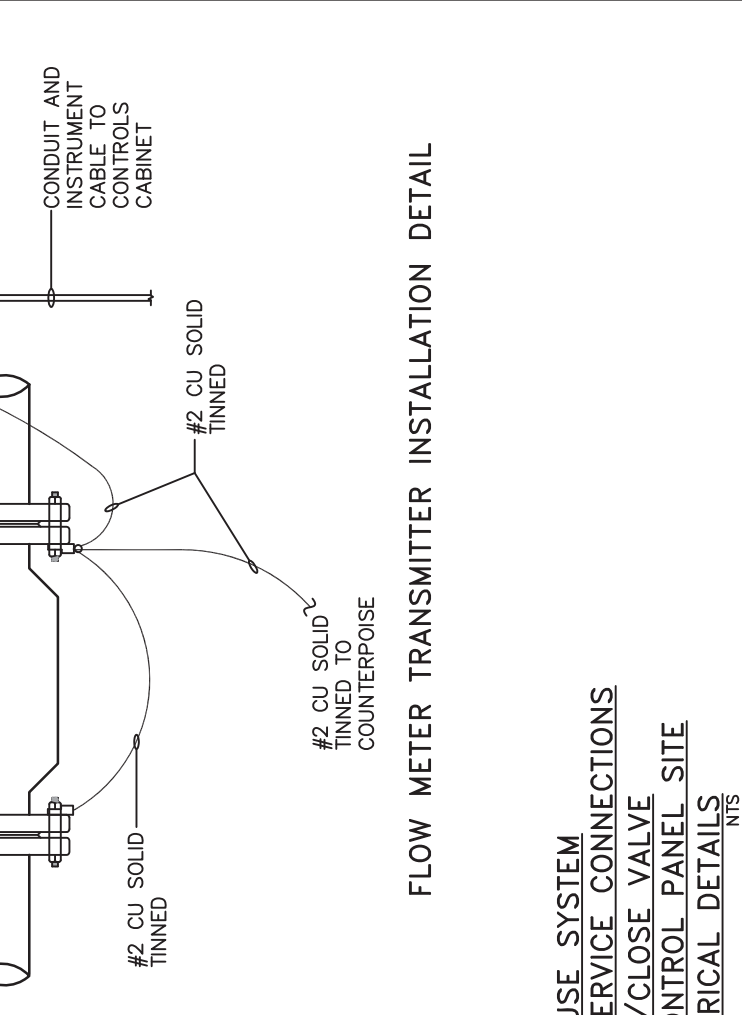


PLAN VIEW

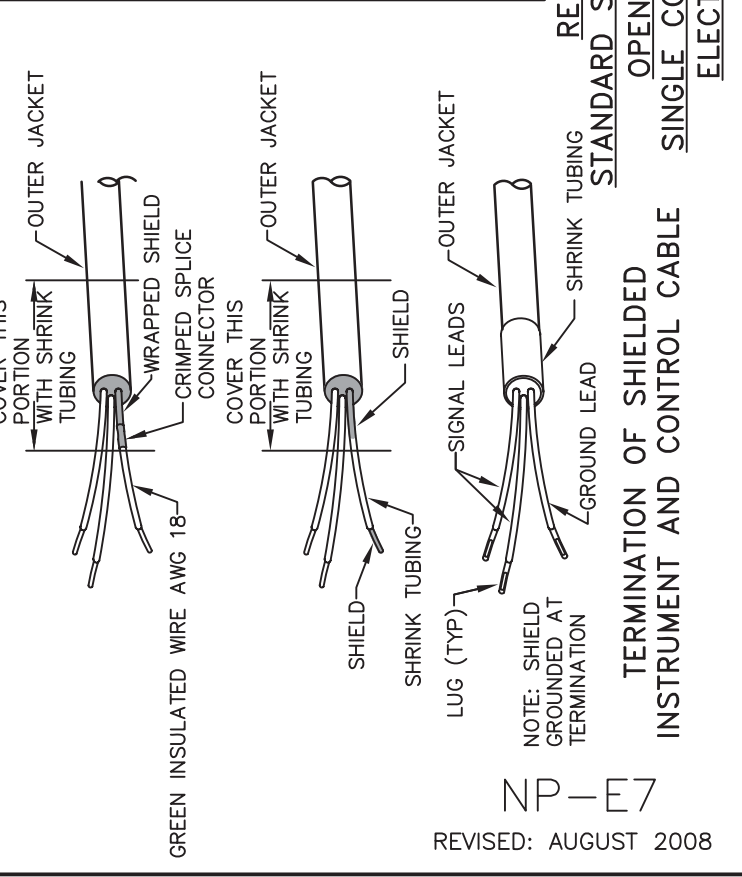
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
LEVEL TRANSDUCER MOUNTING DETAILS
 NTS



RAIN GAUGE MOUNTING PLATE

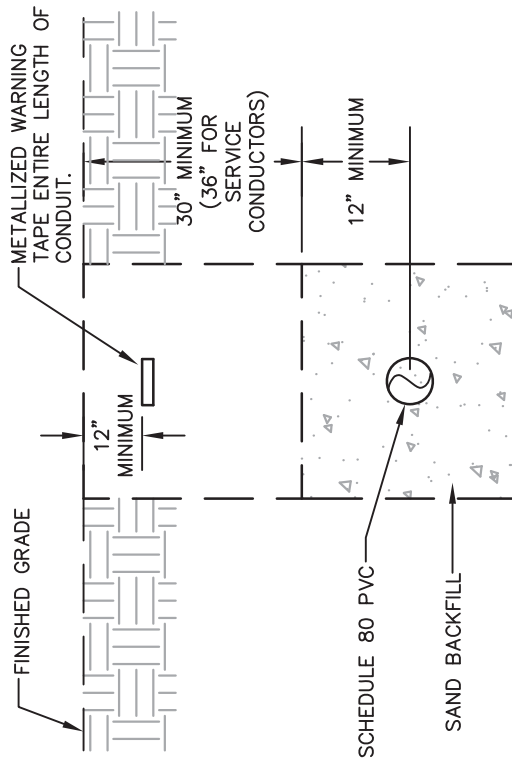


FLOW METER TRANSMITTER INSTALLATION DETAIL

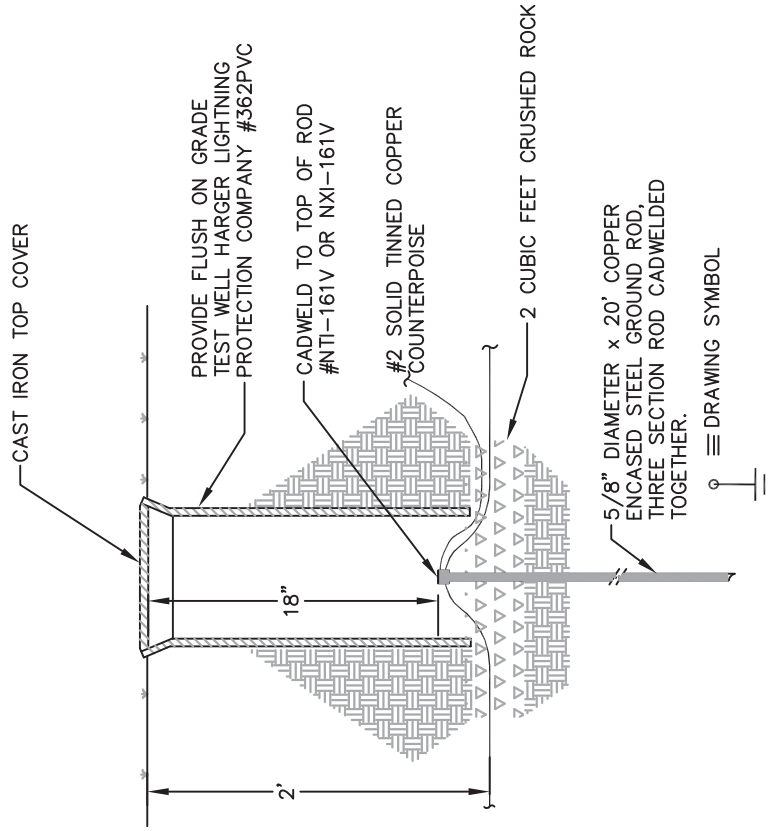


TERMINATION OF SHIELDED INSTRUMENT AND CONTROL CABLE

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

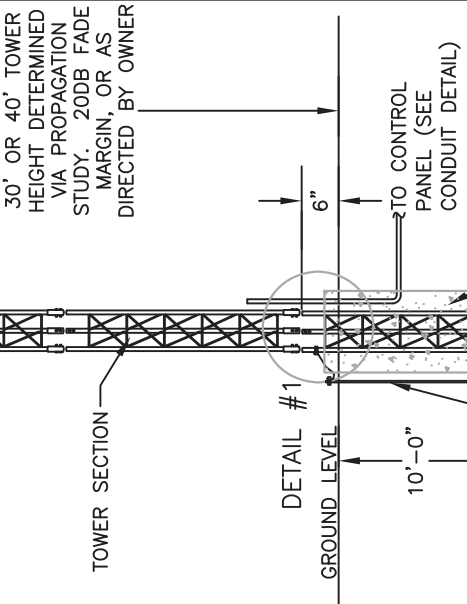
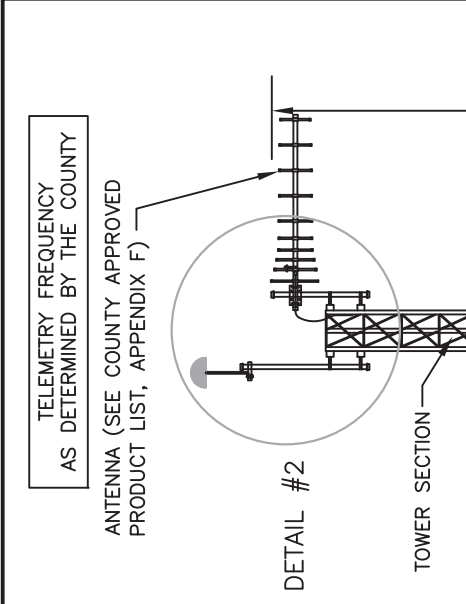


UNDERGROUND CONDUIT INSTALLATION



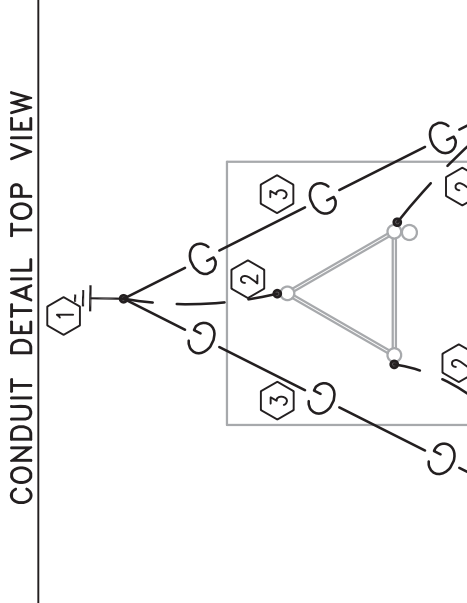
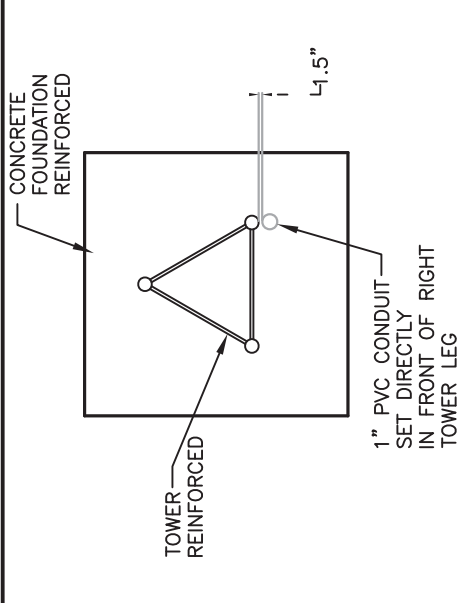
TYPICAL GROUND ROD INSTALLATION DETAIL

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



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.

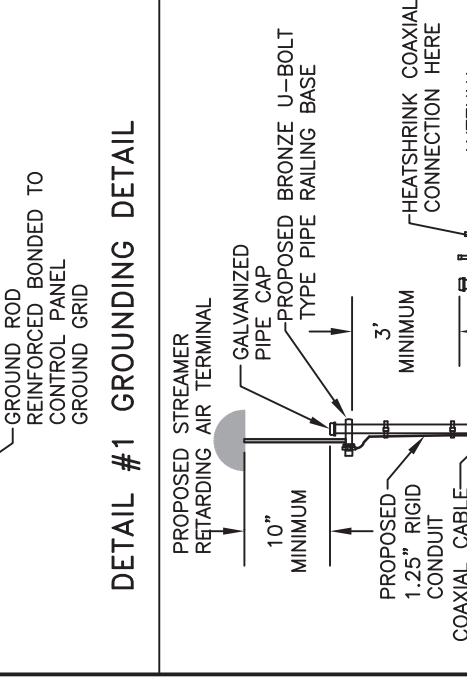
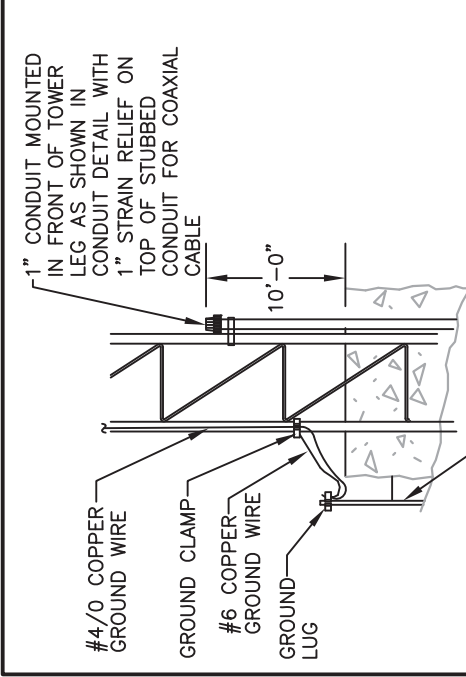
TYPICAL POLE DETAIL



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).

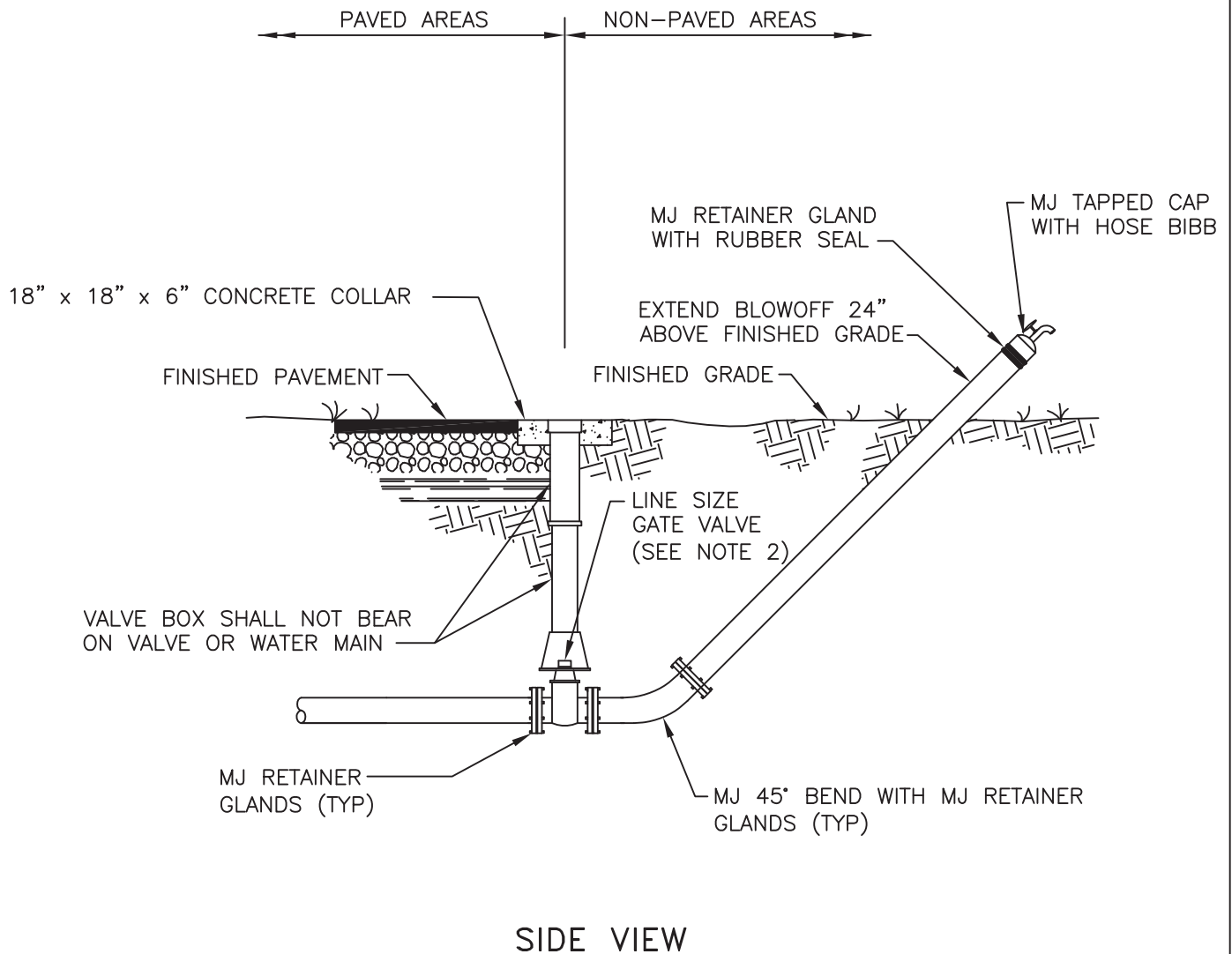
**REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
TYPICAL RTU ANTENNA TOWER DETAILS**
NTS



DETAIL #2 TOWER TOP DETAIL

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

REVISED: AUGUST 2008



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.

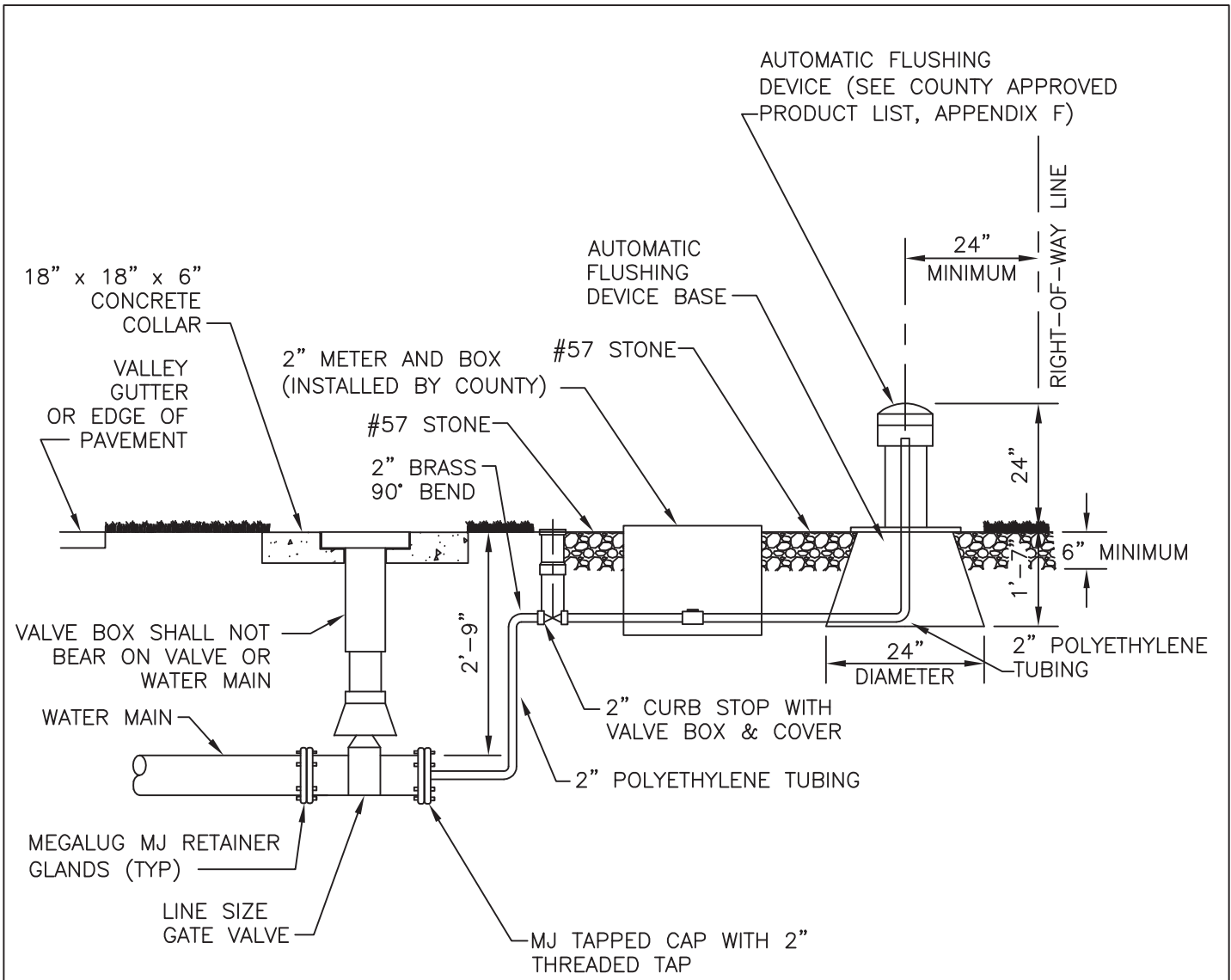
**TEMPORARY BLOWOFF
ASSEMBLY WITH BACTERIAL
SAMPLING POINT DETAIL** NTS

REVISION DATE:
MAY 2013



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

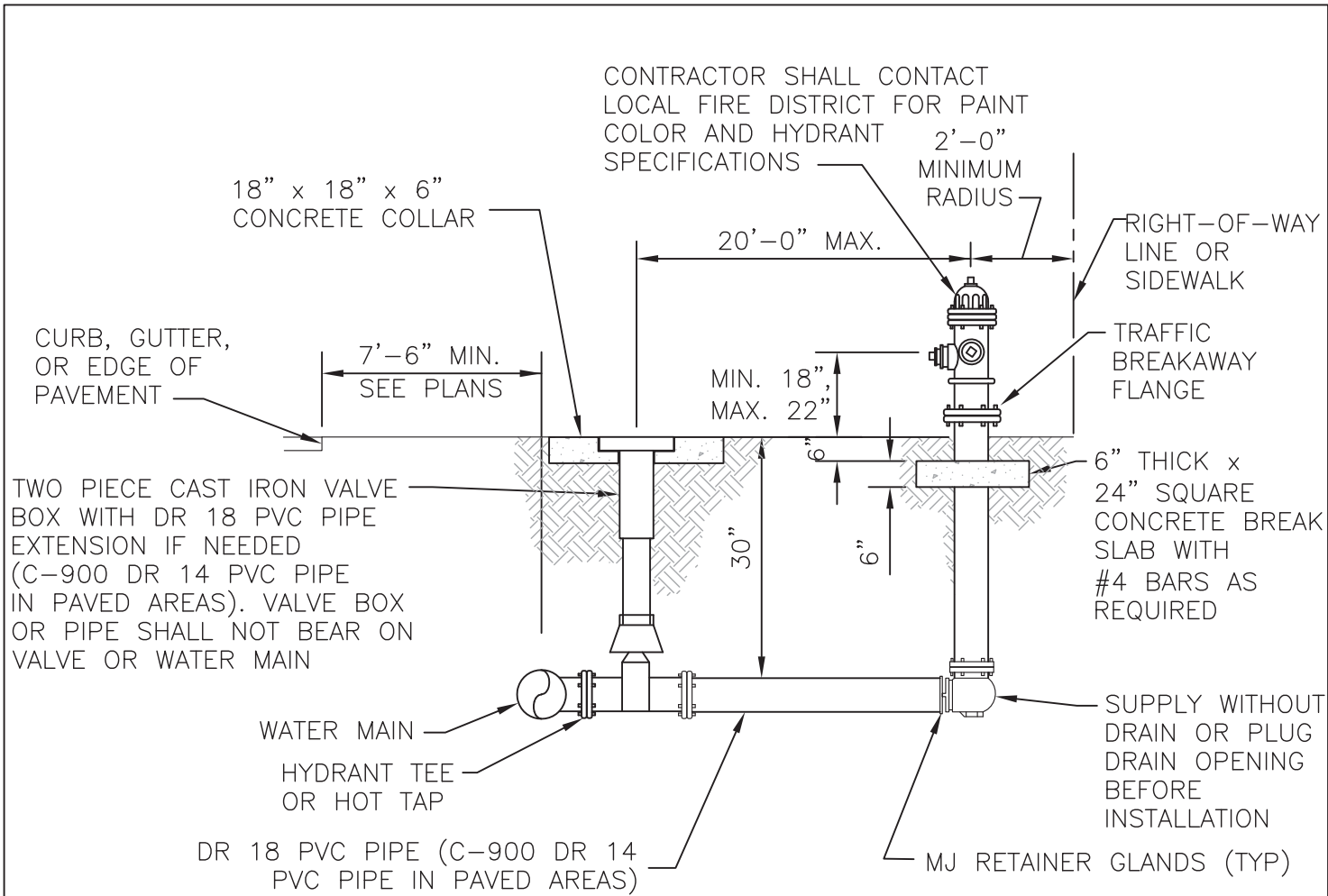
SHEET NO.
W-1



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.

<p style="text-align: center;">AUTOMATIC WATER MAIN FLUSHING DEVICE DETAIL</p> <p style="text-align: center;">NTS</p>	<p>REVISION DATE: MAY 2013</p>	<p>COLLIER COUNTY PUBLIC UTILITIES DIVISION 3301 E. TAMAMI TRAIL NAPLES, FLORIDA 34112</p>	<p>SHEET NO. W-2</p>
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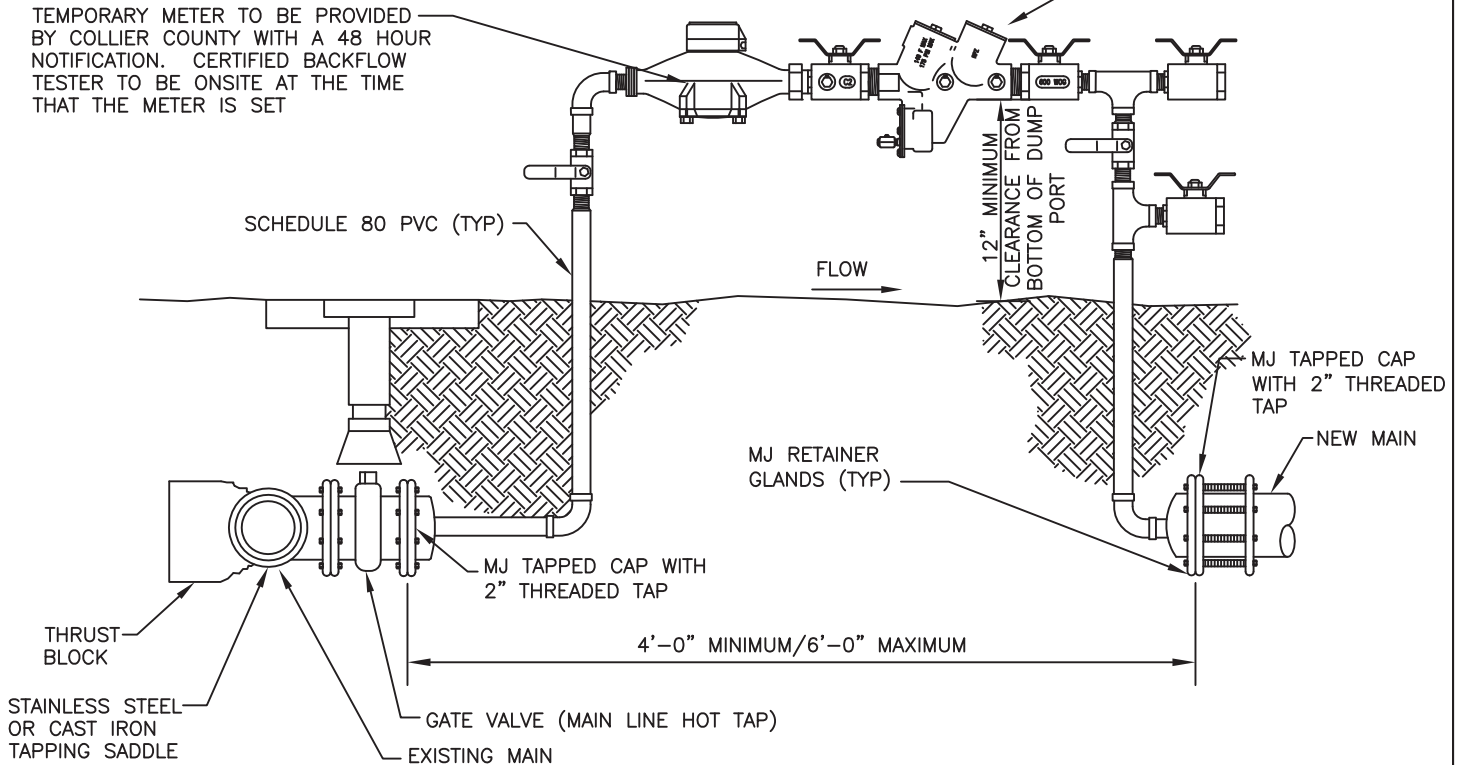


NOTES:

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.

<p>FIRE HYDRANT DETAIL</p> <p>NTS</p>	<p>REVISION DATE: JULY 2018</p>		<p>SHEET NO. W-3</p>

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER ASSEMBLY (PROVIDED BY CONTRACTOR) SUPPLIED WITH AMMONIA AND CHLORINE RESISTANT SEATS AND SILICONE RUBBER SEALS. INSTALLATION AS REQUIRED BY COUNTY ORDINANCE AND AWWA M-14 STANDARDS (SEE APPROVED BACKFLOW DEVICES, APPENDIX G)



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.

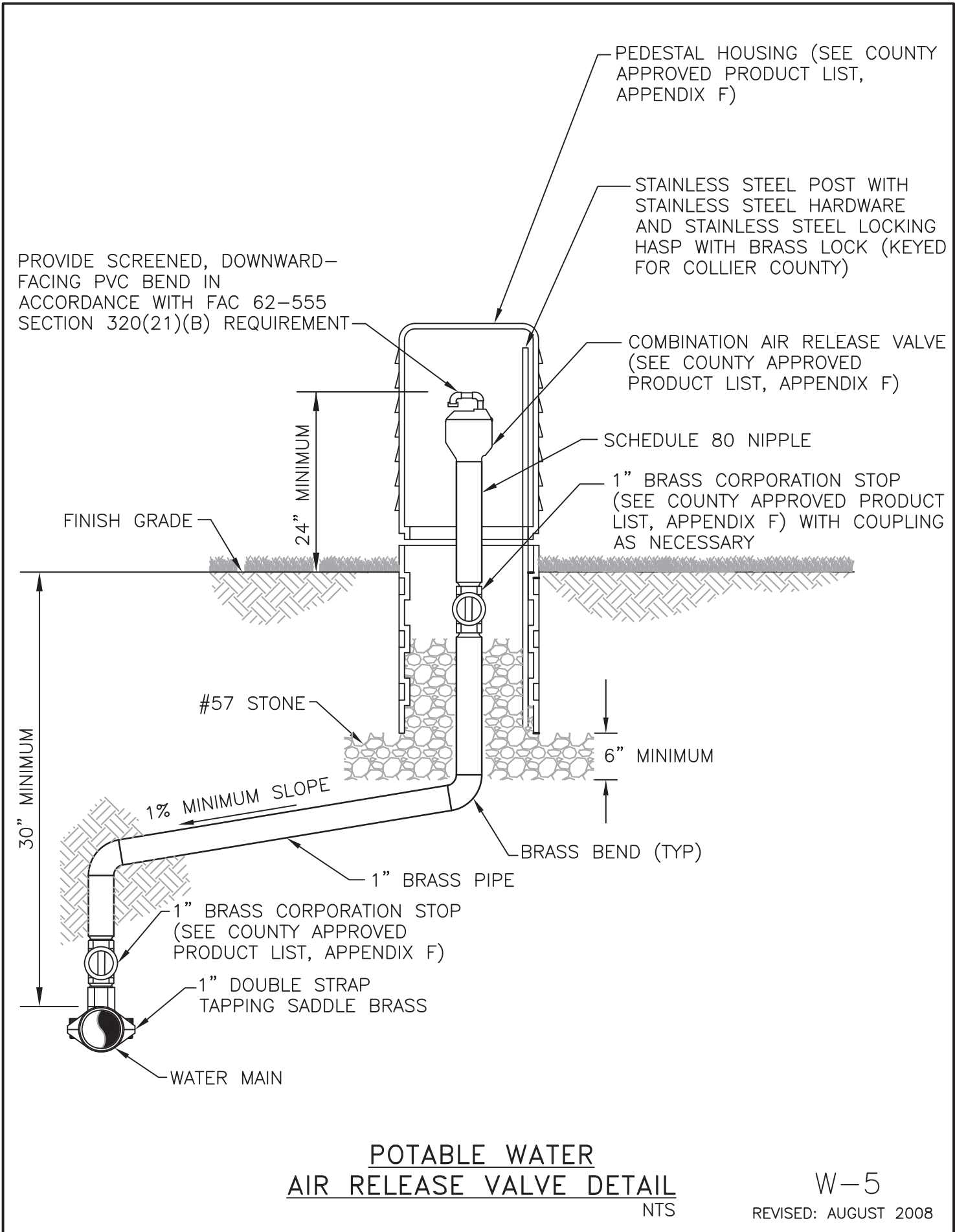
**CONNECTION TO EXISTING WATER MAIN
DETAIL
(GAP CONFIGURATION)**

NTS

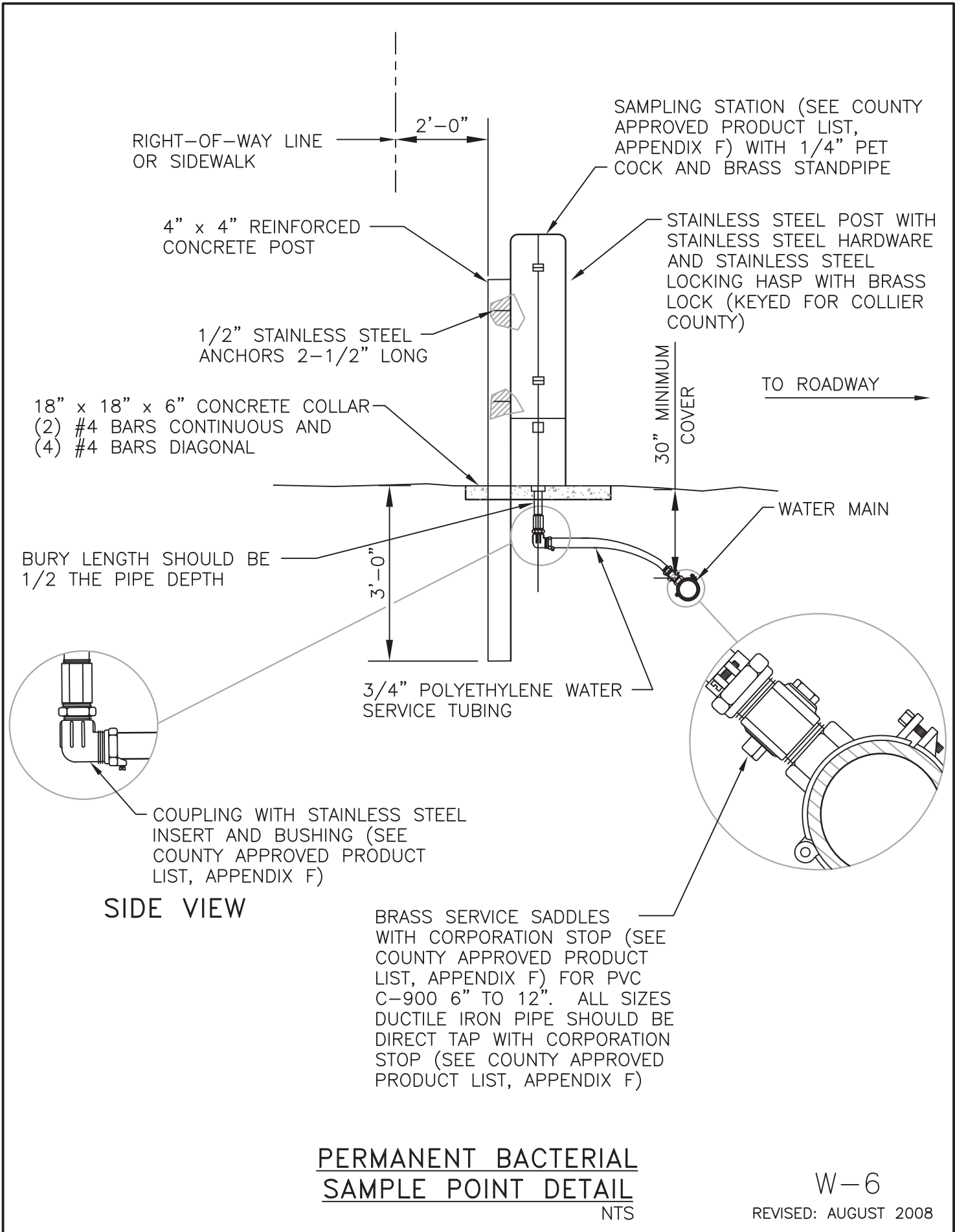
JULY 2018

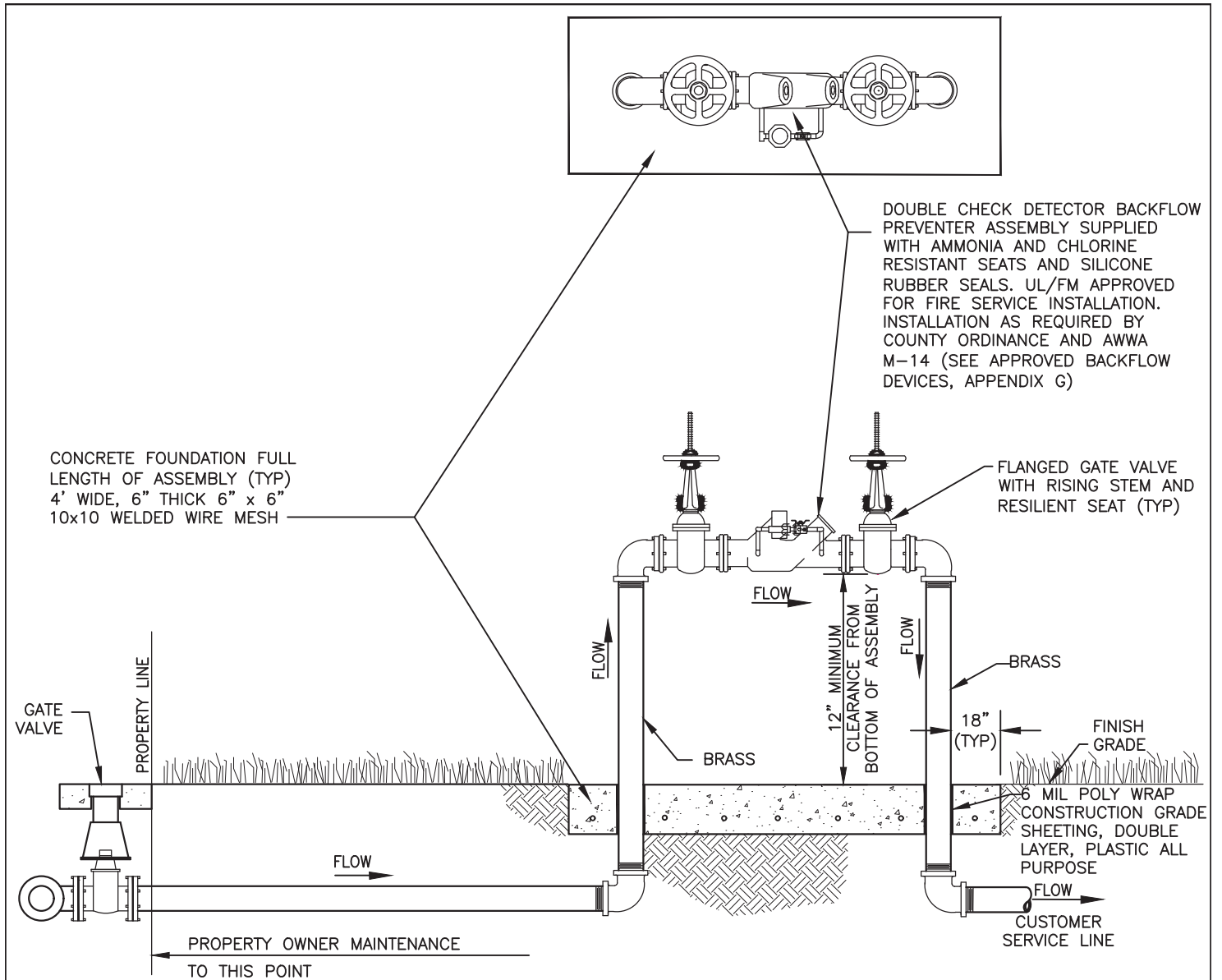


SHEET NO.
W-4



**POTABLE WATER
AIR RELEASE VALVE DETAIL**
NTS





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.

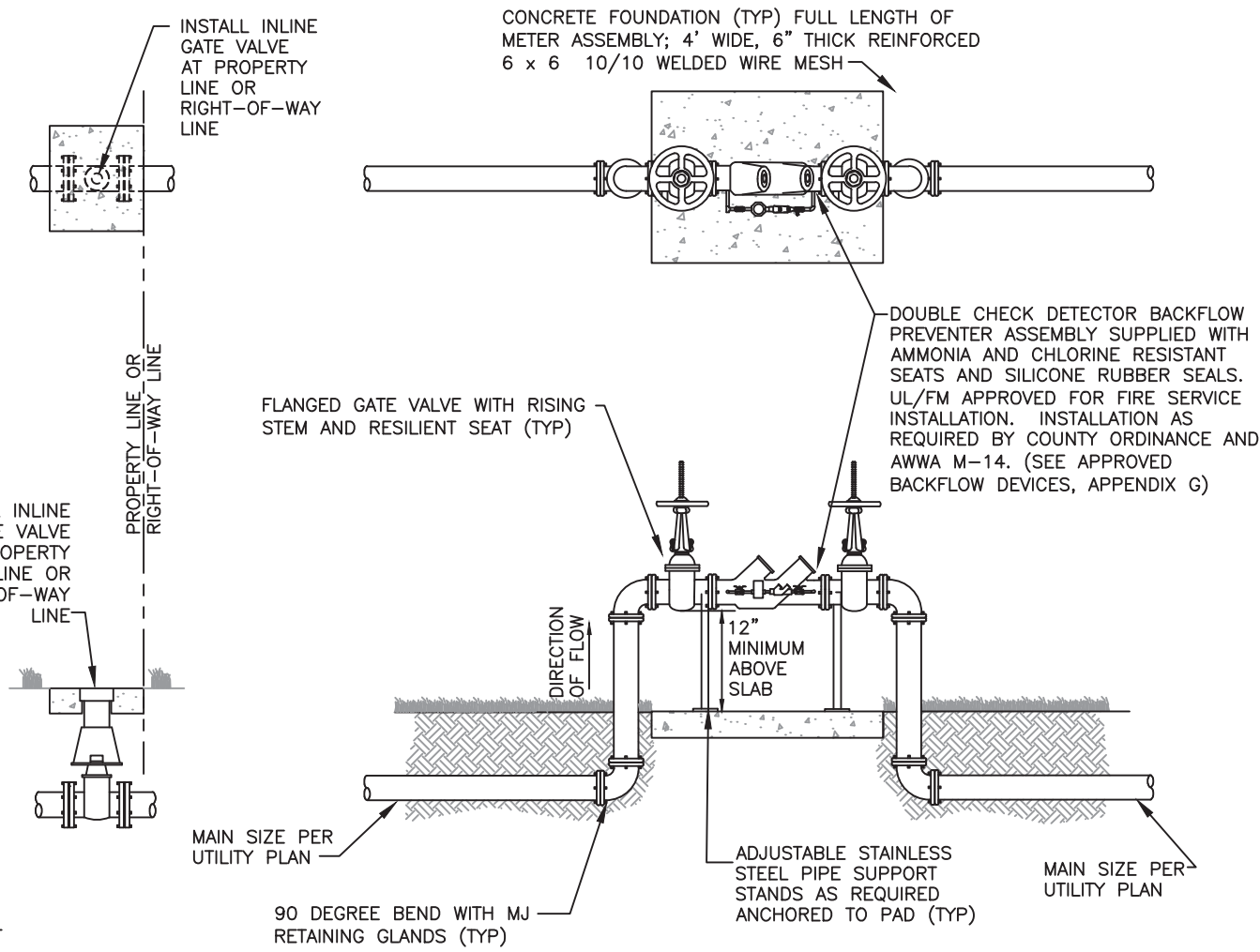
**2-1/2" AND SMALLER FIRE SYSTEM
DETECTOR CHECK ASSEMBLY DETAIL**

NTS

REVISION DATE:
JULY 2018



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.

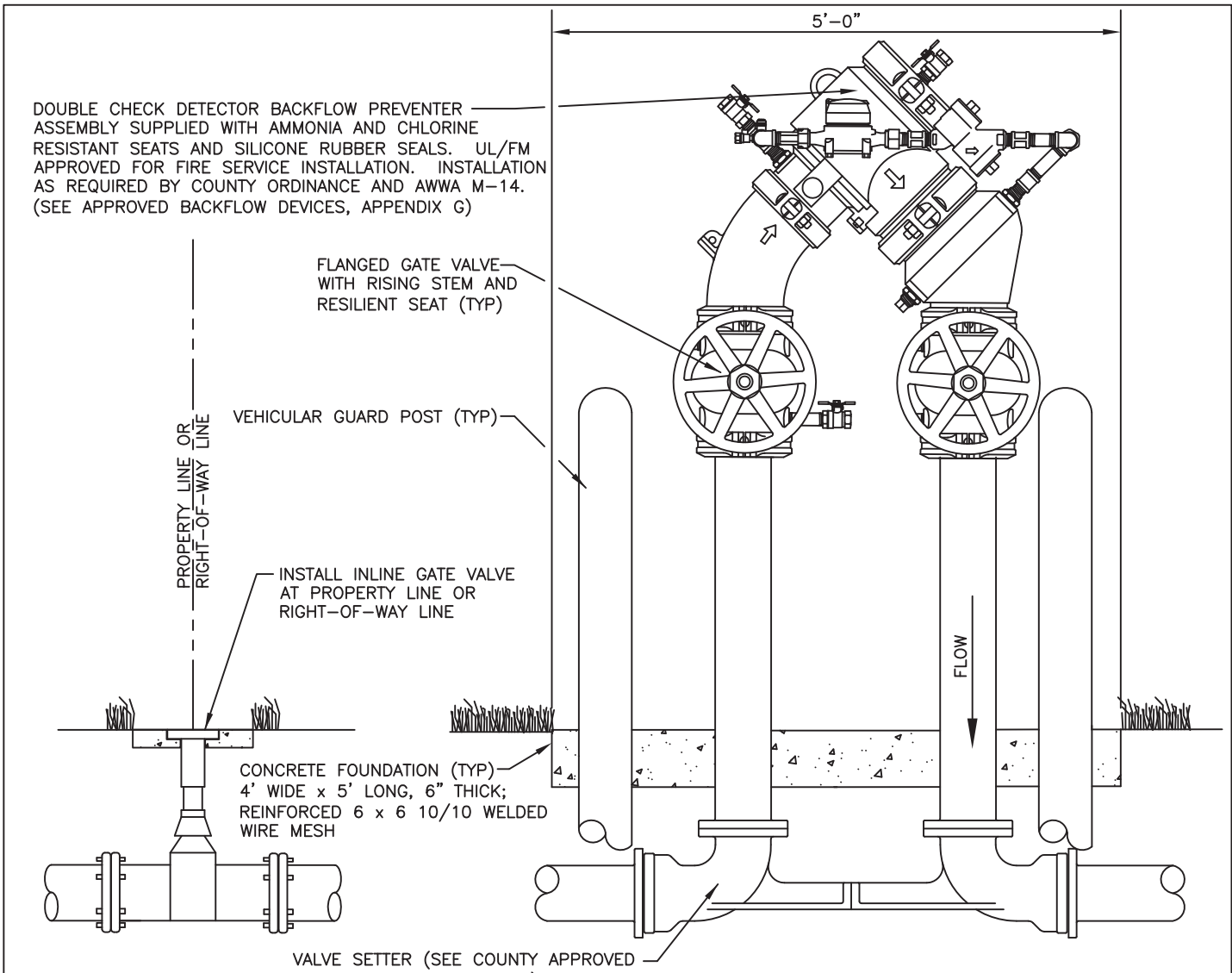
**3" AND LARGER FIRE
SYSTEM DETECTOR CHECK
ASSEMBLY DETAIL**

NTS

REVISION DATE:
JULY 2018



SHEET NO.
W-11



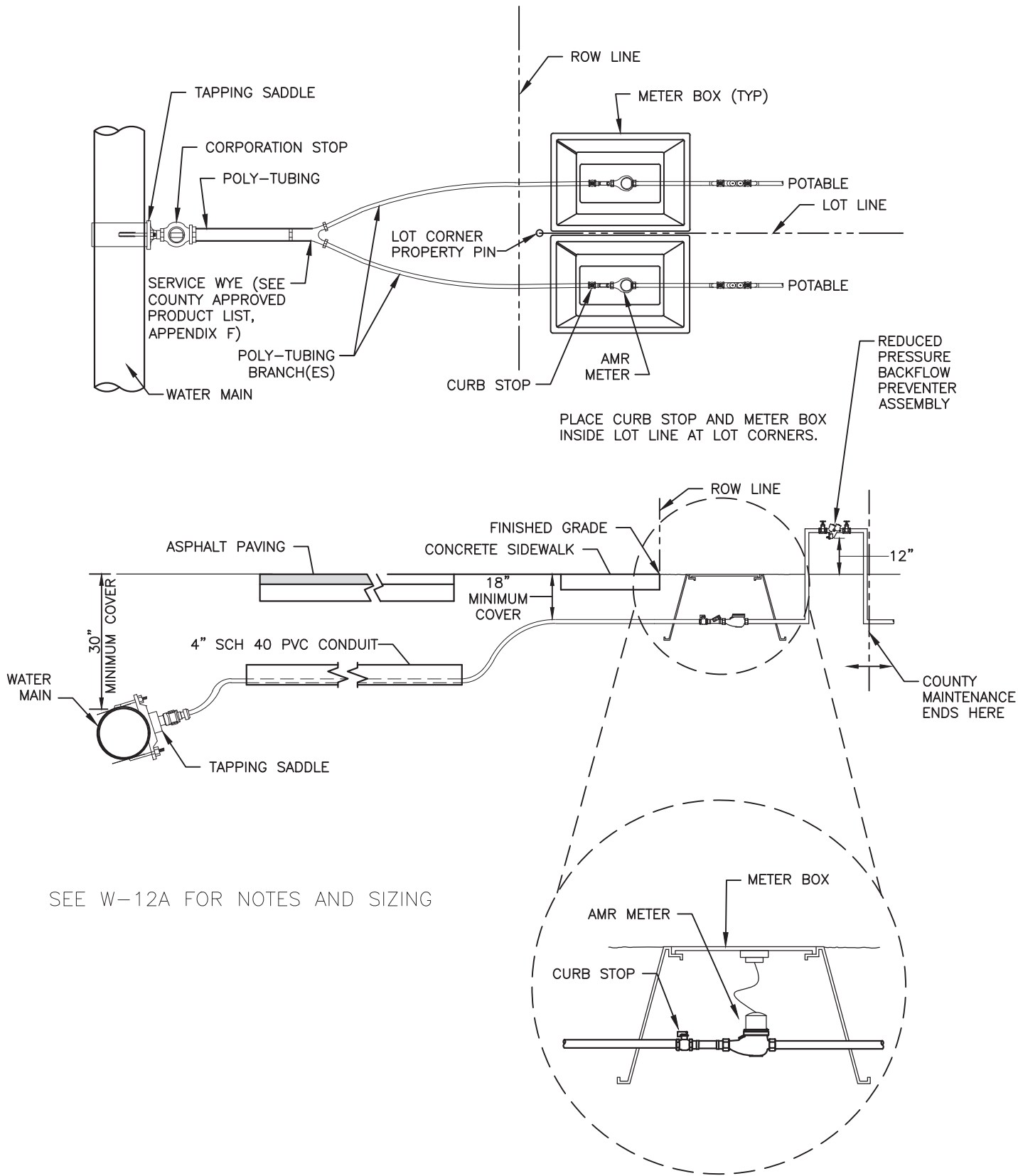
NOTES:

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



SHEET NO.
W-12

SERVICE CONNECTION SIZING CHART

SINGLE SERVICE	CONNECTION TO MAIN	DOUBLE SERVICE	CONNECTION TO MAIN	BRANCH SIZE
¾" METER	1-½"	(2) ¾" METERS	1-½"	1"
1" METER	1-½"	(2) 1" METERS	1-½"	1"
1-½" METER	1-½"			
2" METER	2"			

NOTES:

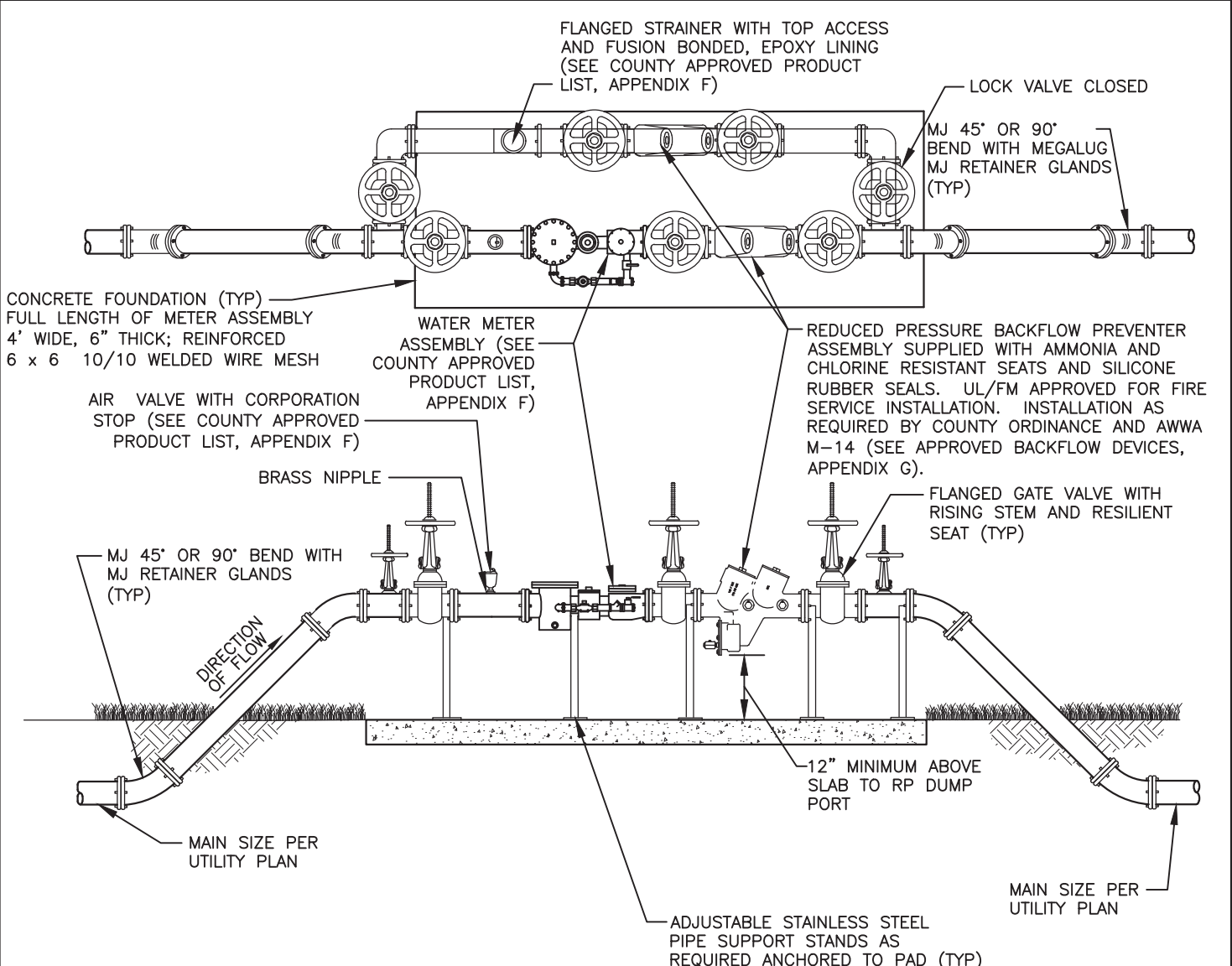
1. 1-½" AND LARGER METERS SHALL BE SERVED BY SINGLE SERVICES ONLY.
2. WYE CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI-SERVICE. SUCCESSIVE TAPS INTO WATER MAIN WILL BE NO CLOSER THAN 24" APART.
3. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, 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.

**SERVICE CONNECTION SIZING CHART AND
NOTES**

REVISION DATE:
JULY 2018



SHEET NO.
W-12A



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.

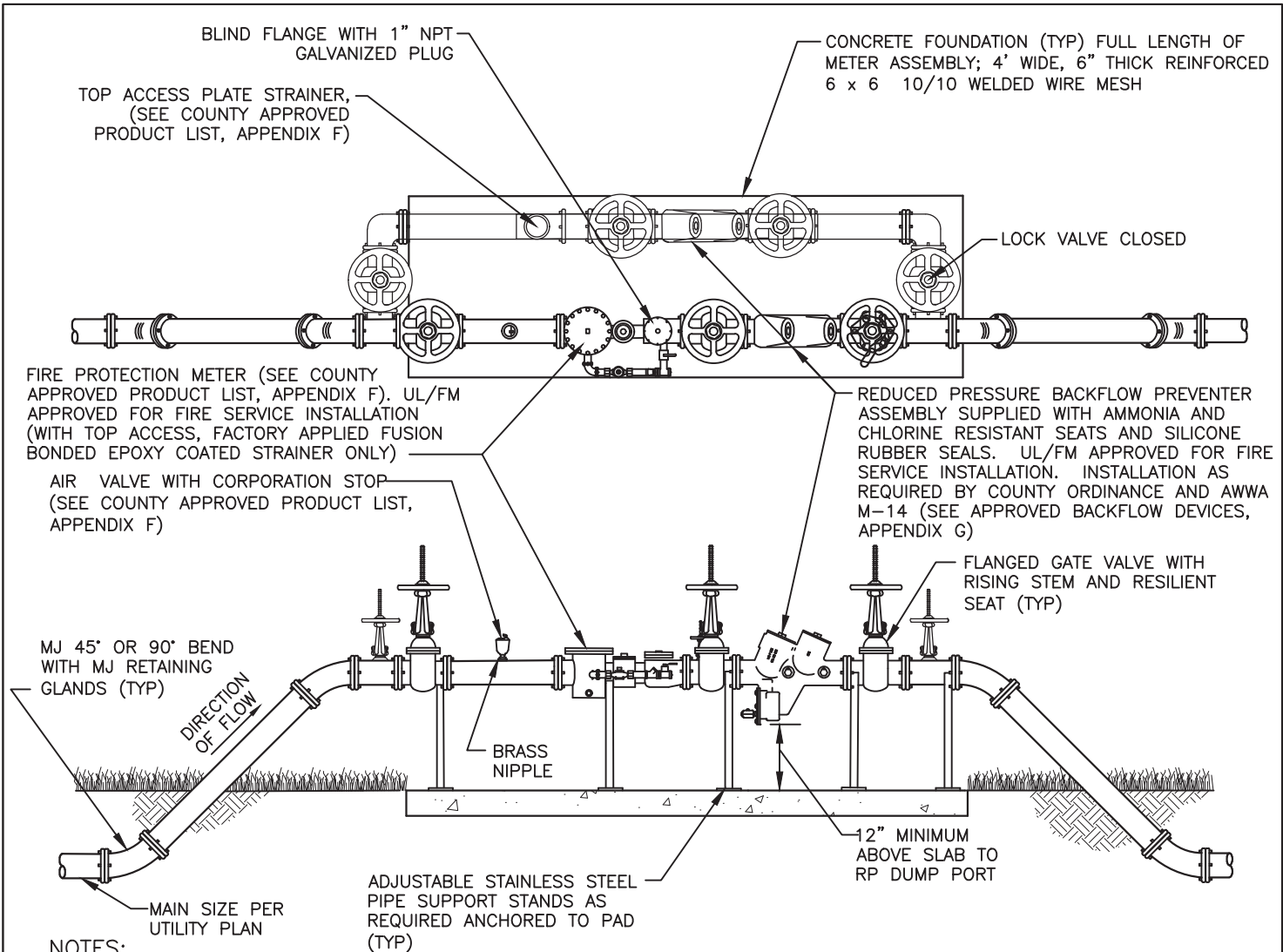
3" AND OVER POTABLE WATER METER ASSEMBLY DETAIL

NTS

REVISION DATE:
JULY 2018




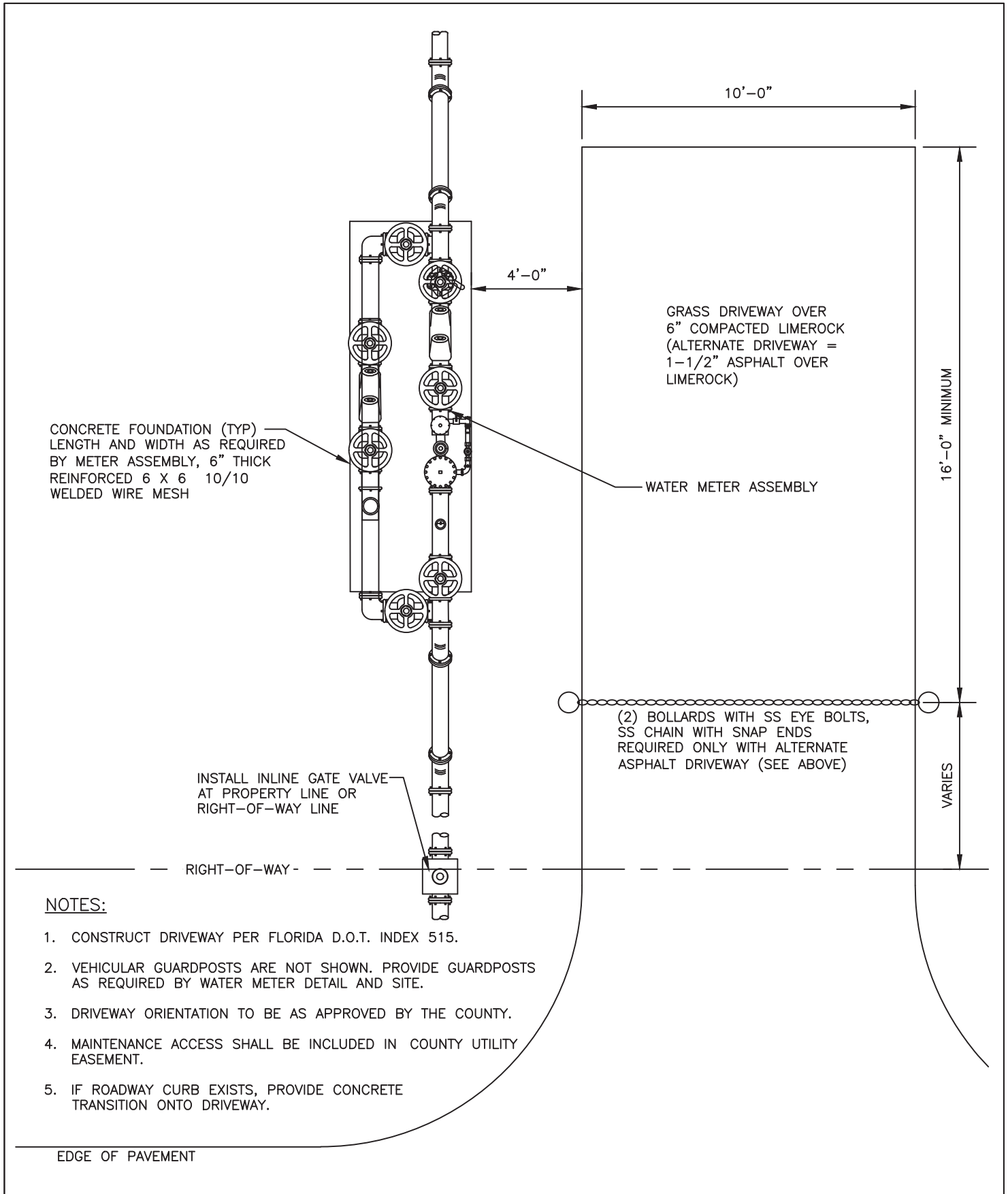
SHEET NO.
W-13



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.

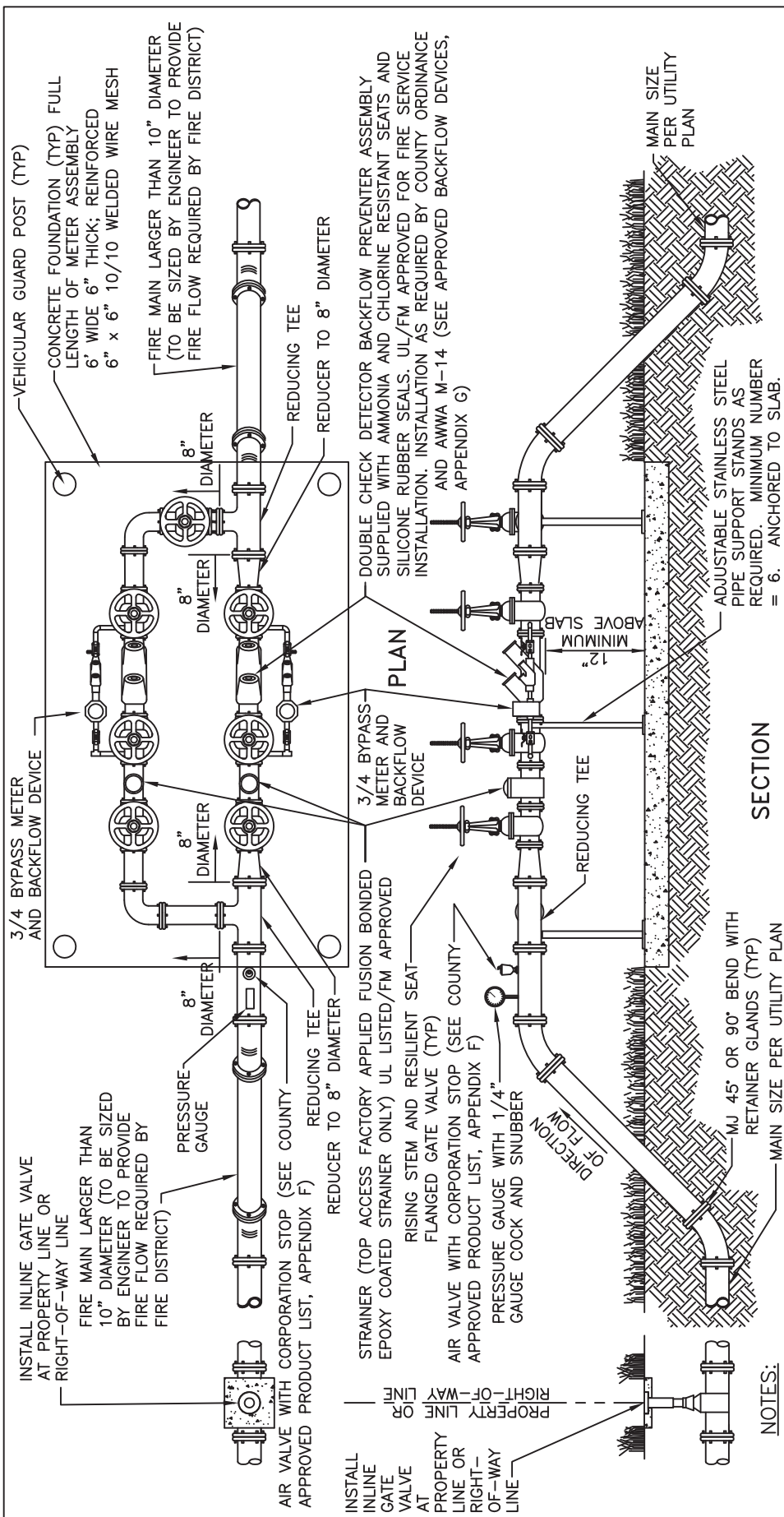
<p>4" AND OVER POTABLE-WATER FIRE AND DOMESTIC METER ASSEMBLY DETAIL</p> <p>NTS</p>	<p>REVISION DATE: JULY 2018</p>		<p>SHEET NO. W-14</p>
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NOTES:

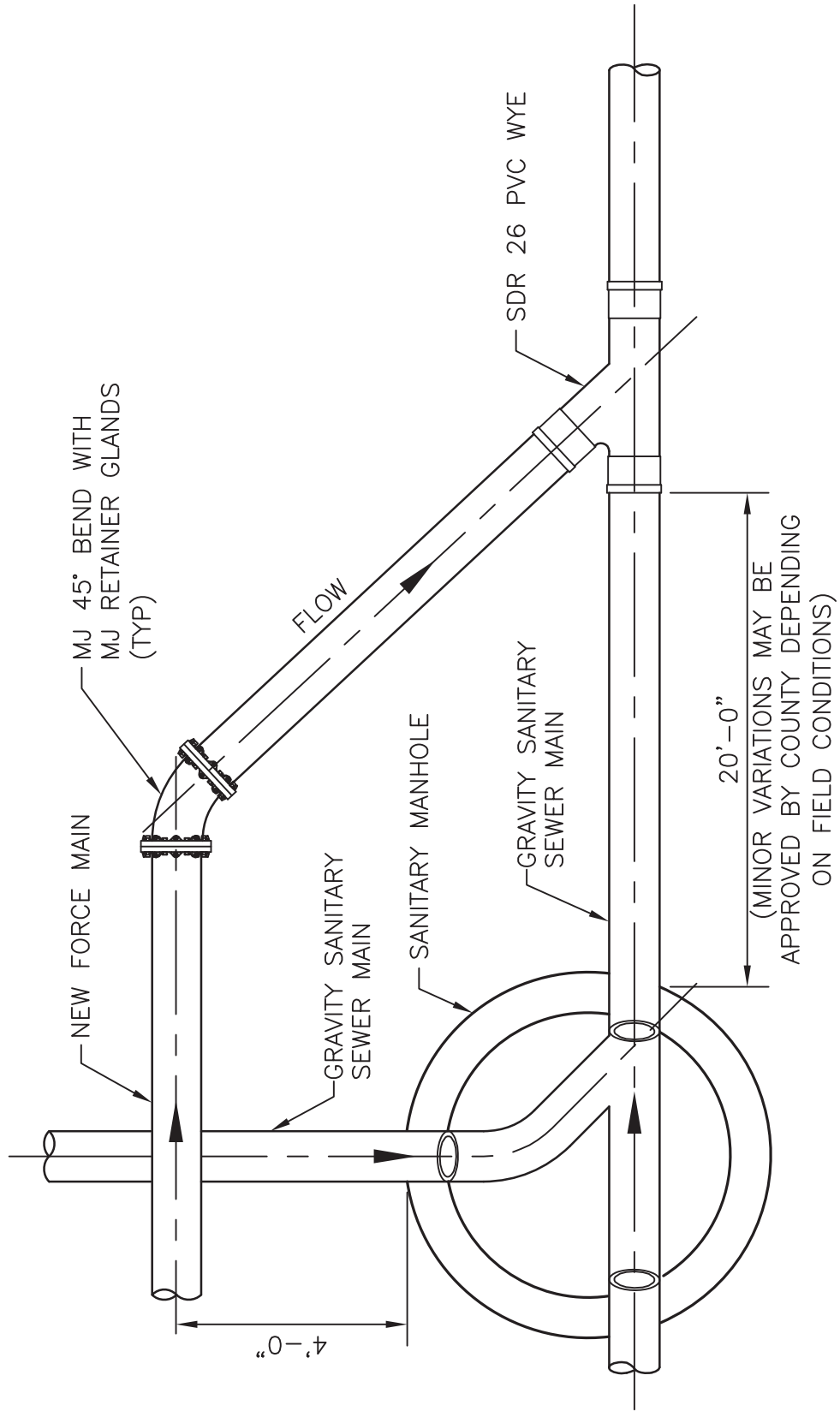
1. CONSTRUCT DRIVEWAY PER FLORIDA D.O.T. INDEX 515.
2. VEHICULAR GUARDPOSTS ARE NOT SHOWN. PROVIDE GUARDPOSTS AS REQUIRED BY WATER METER DETAIL AND SITE.
3. DRIVEWAY ORIENTATION TO BE AS APPROVED BY THE COUNTY.
4. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT.
5. IF ROADWAY CURB EXISTS,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

MAINTENANCE DRIVEWAY FOR WATER METERS 3" AND LARGER NTS	REVISION DATE: JULY 2018		SHEET NO. W-14A

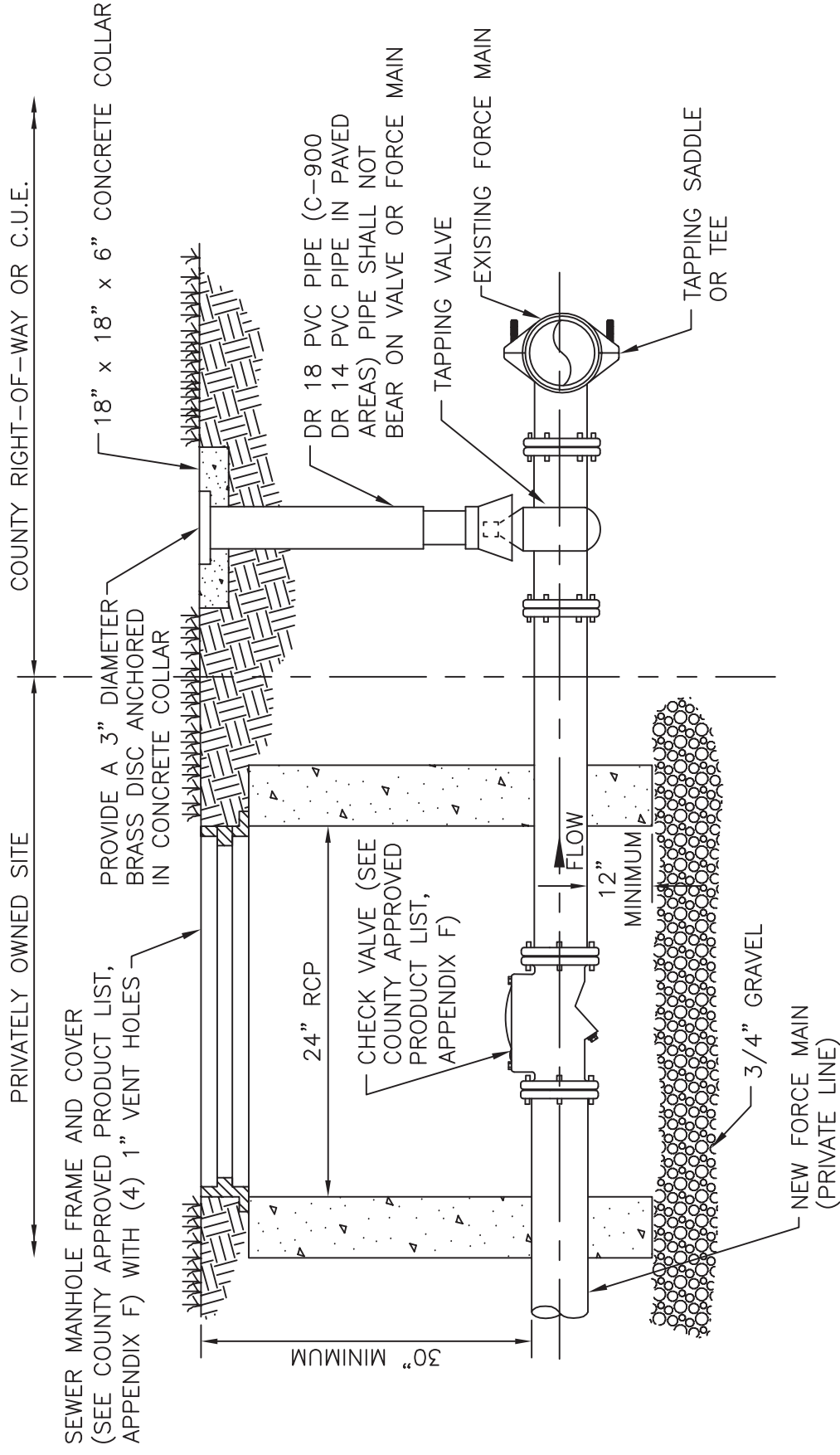


- NOTES:**
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
 2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
 3. 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.

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



FORCE MAIN CONNECTION TO
GRAVITY SANITARY SEWER DETAIL
 NTS

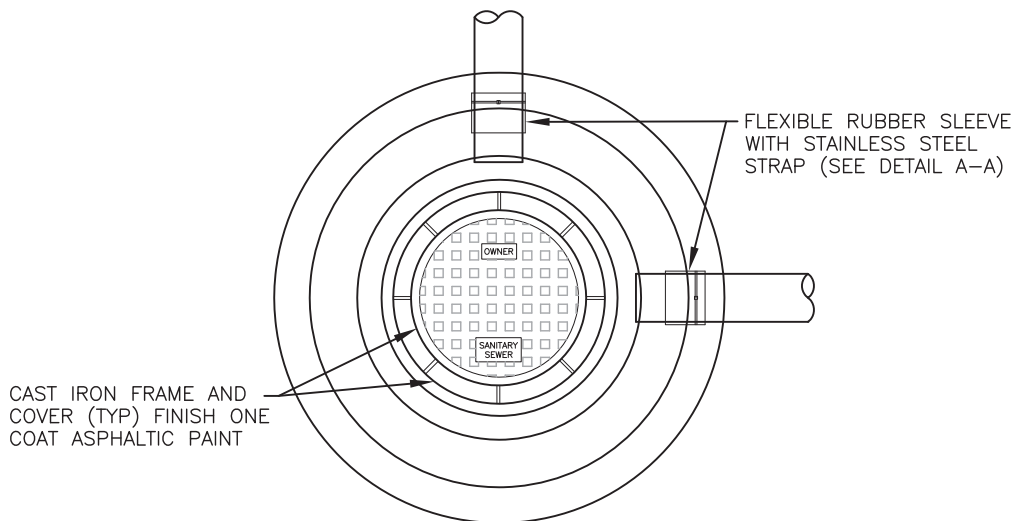


**PRIVATE FORCE MAIN CONNECTION
TO COUNTY FORCE MAIN DETAIL**
NTS

REVISION DATE:

MAY 2013

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

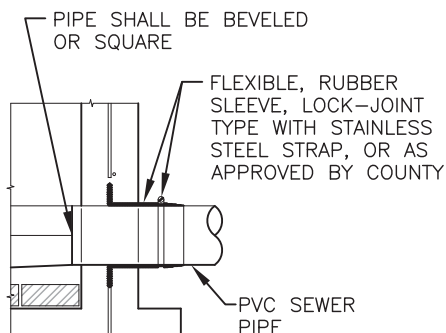


PLAN

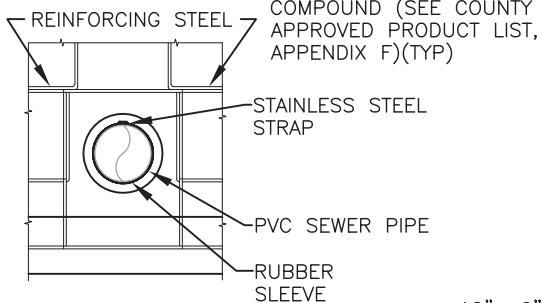
WATERTIGHT SEWER MANHOLE FRAME AND COVER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) FLUSH WITH GRADE (24" MINIMUM DIAMETER)

PAVEMENT OR EQUIVALENTLY STABILIZED SURFACE

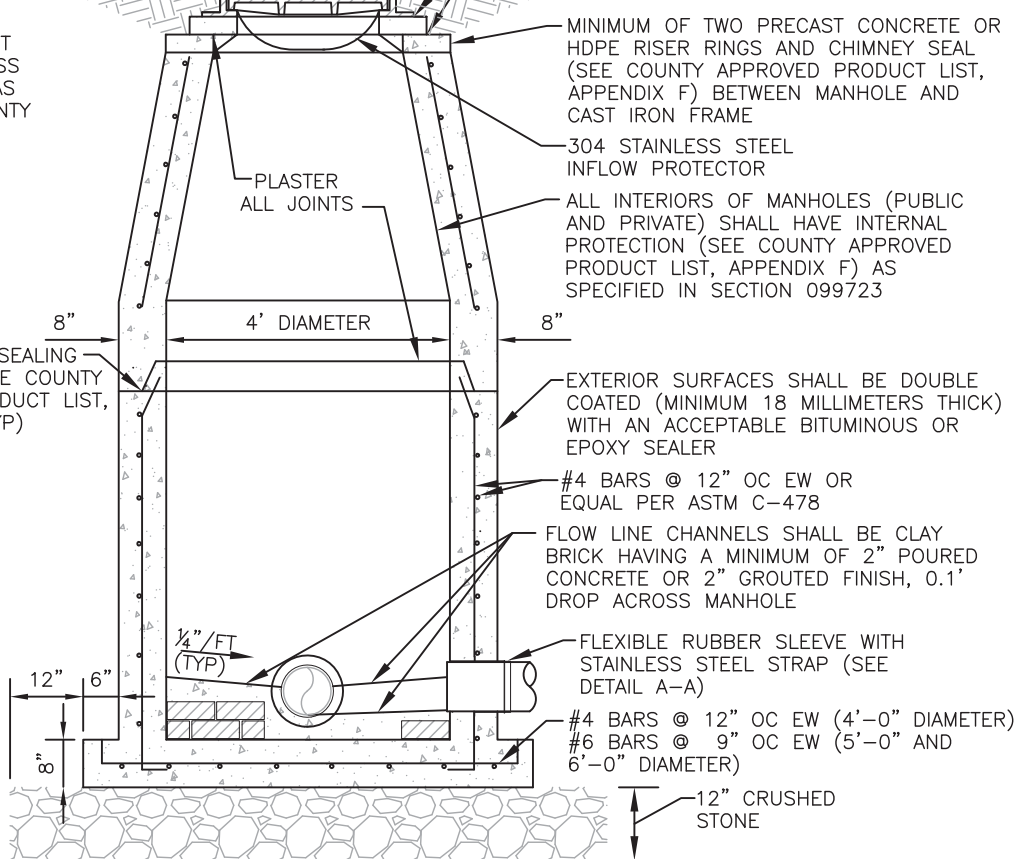
GROUT (TYP)



SECTION



**ELEVATION
DETAIL A-A**



SECTION

**PRECAST REINFORCED
CONCRETE MANHOLE DETAIL**

NTS

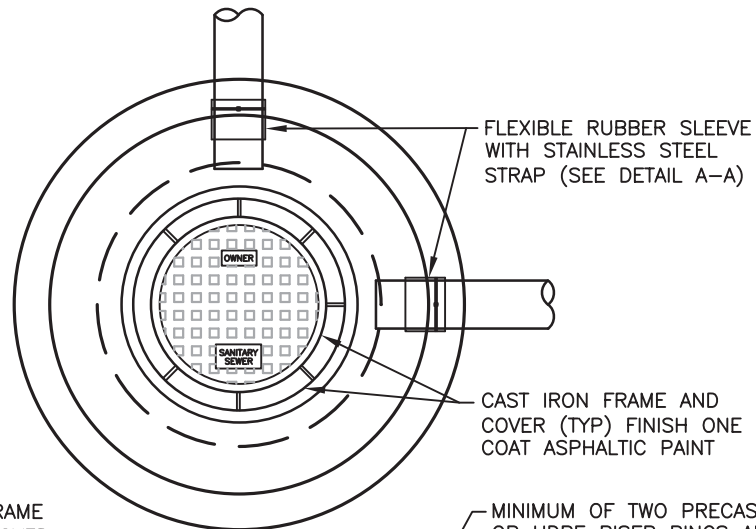
REVISION DATE:

JULY 2018



SHEET NO.

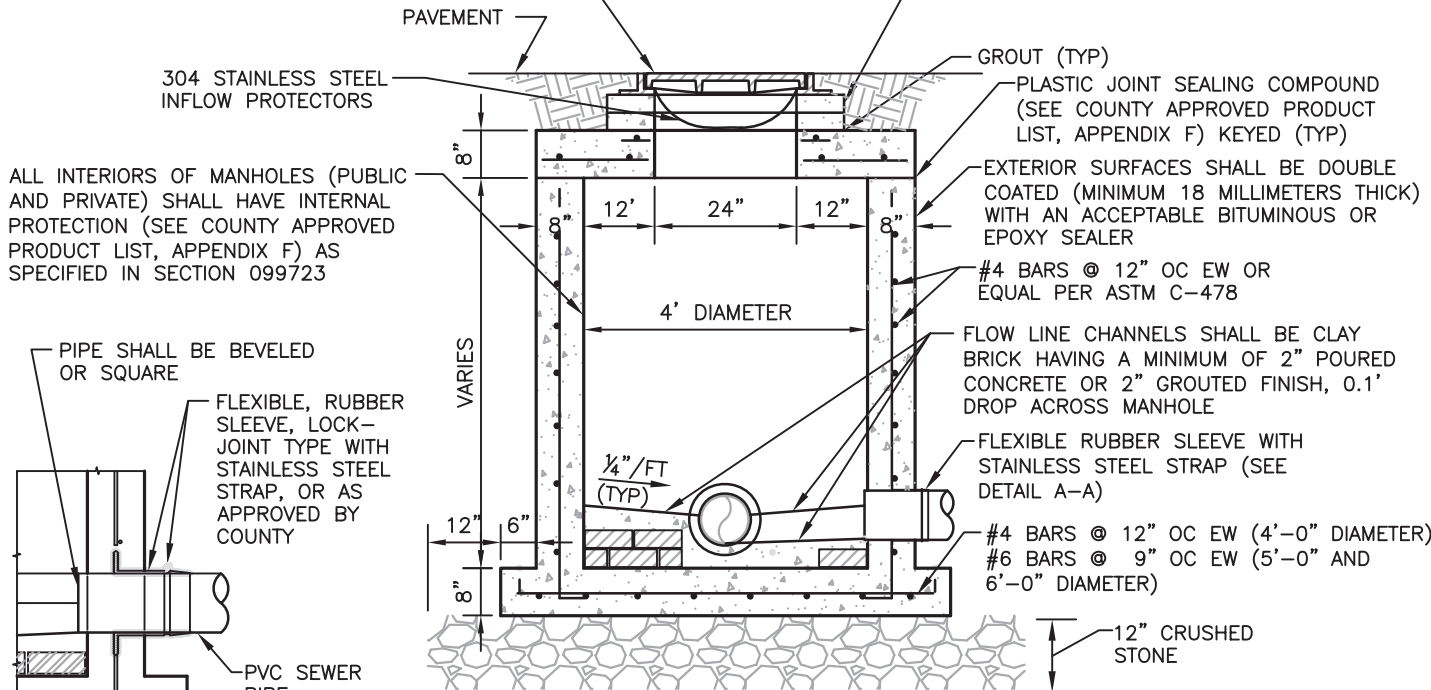
WW-3



PLAN

WATERTIGHT SEWER MANHOLE FRAME AND COVER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) FLUSH WITH GRADE (24" MINIMUM DIAMETER)

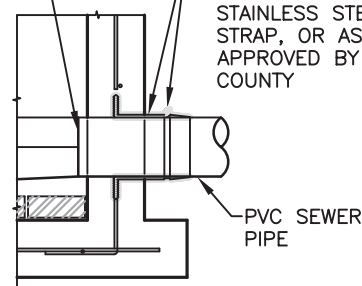
MINIMUM OF TWO PRECAST CONCRETE OR HDPE RISER RINGS AND CHIMNEY SEAL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) BETWEEN MANHOLE AND CAST IRON FRAME



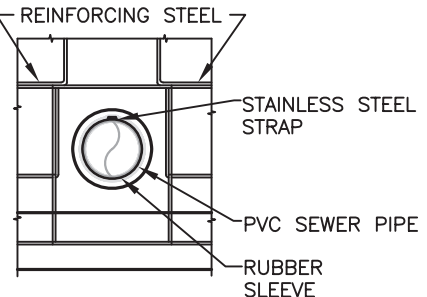
SECTION

ALL INTERIORS OF MANHOLES (PUBLIC AND PRIVATE) SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AS SPECIFIED IN SECTION 099723

PIPE SHALL BE BEVELED OR SQUARE
 FLEXIBLE, RUBBER SLEEVE, LOCK-JOINT TYPE WITH STAINLESS STEEL STRAP, OR AS APPROVED BY COUNTY



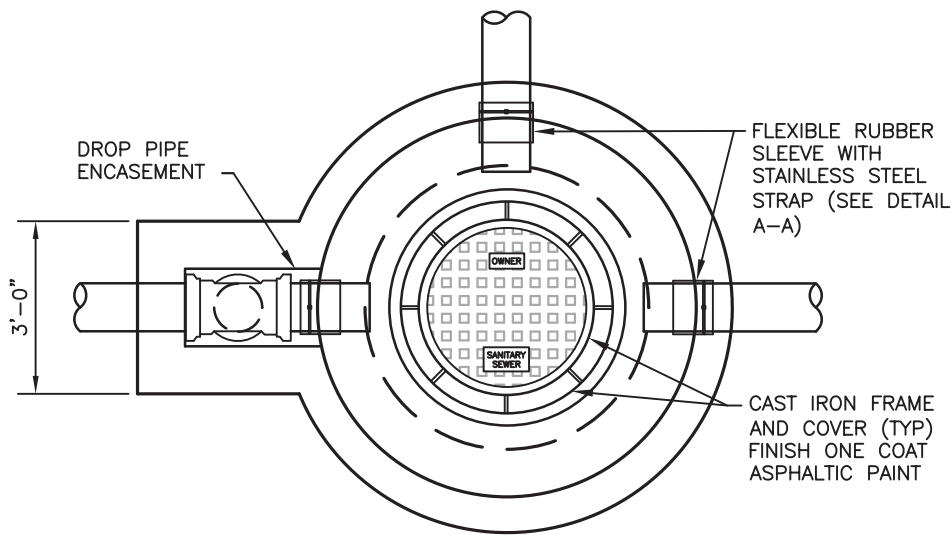
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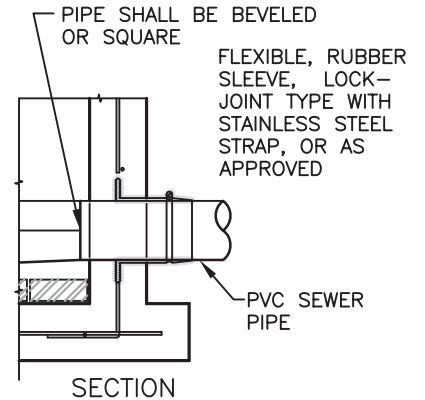
ELEVATION

DETAIL A-A

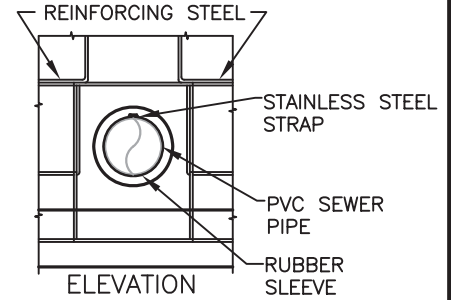
SHALLOW MANHOLE DETAIL
 NTS



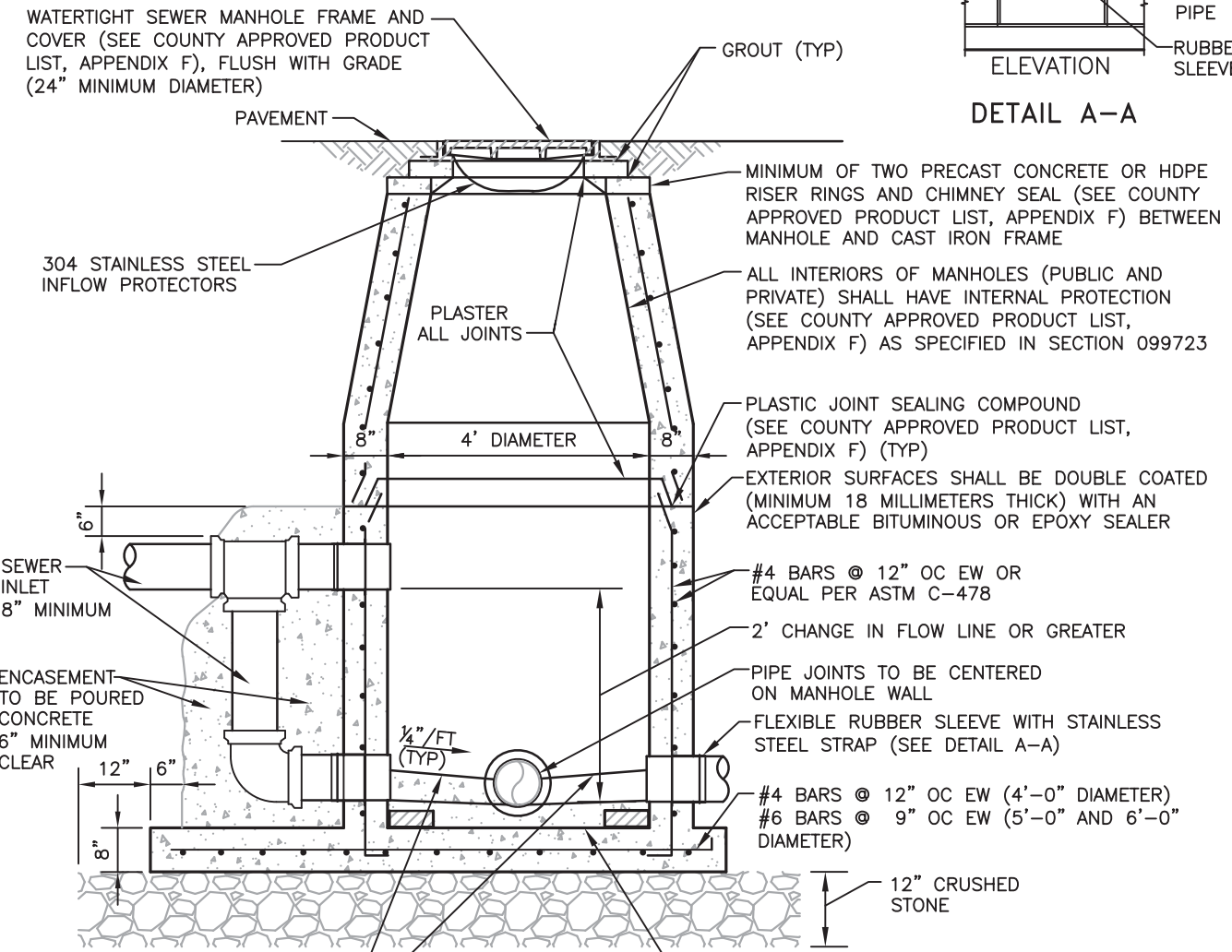
PLAN



SECTION



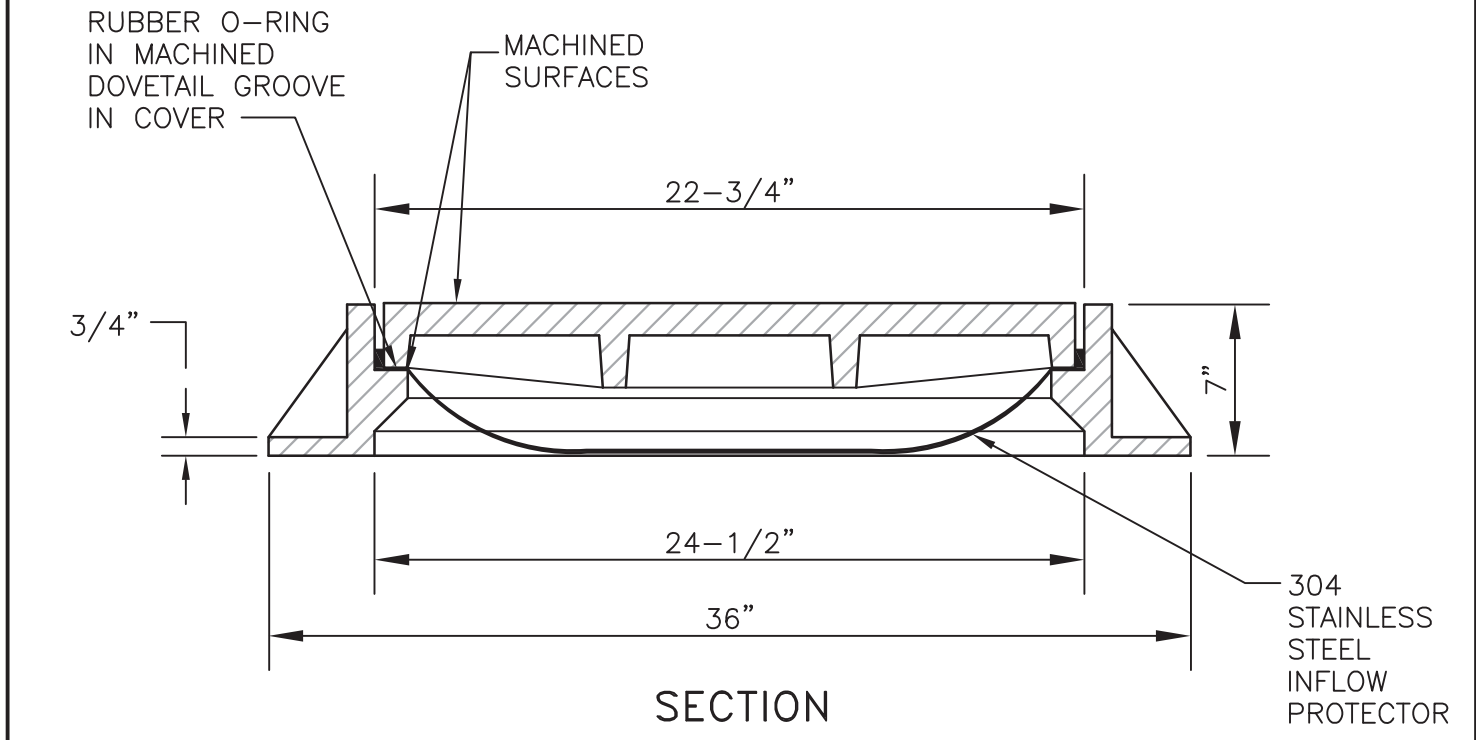
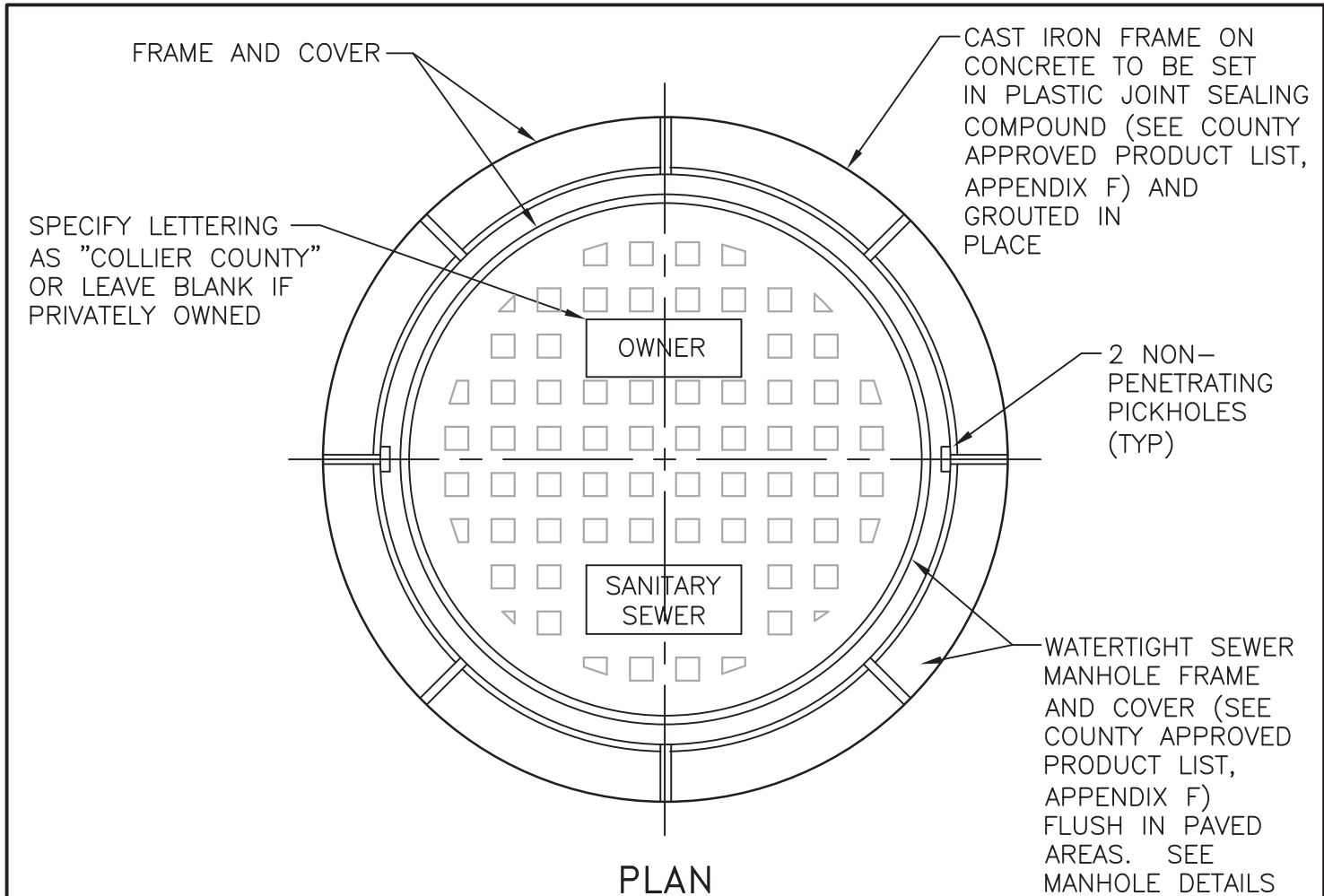
DETAIL A-A



SECTION

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

DROP MANHOLE DETAIL
NTS

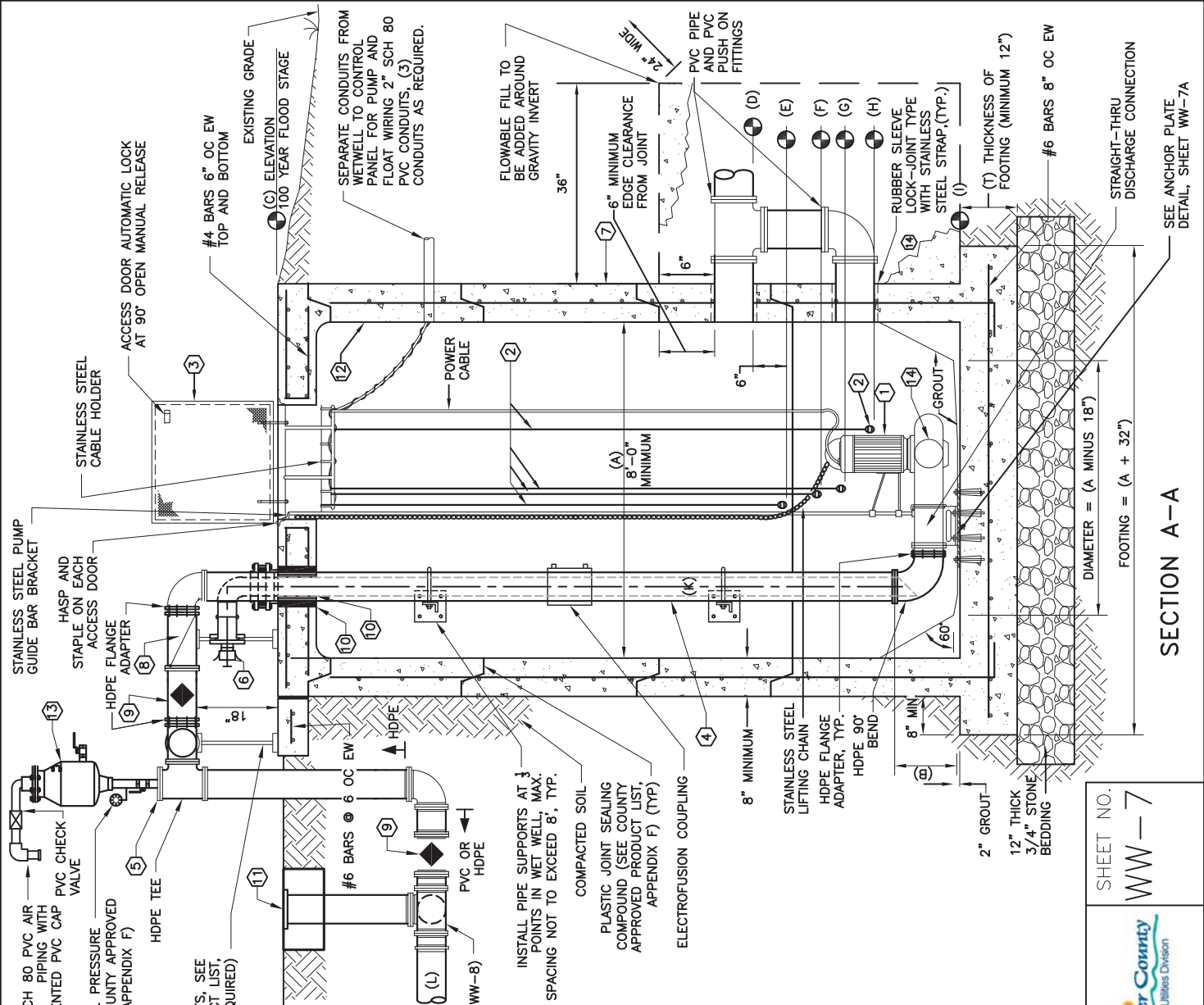


MANHOLE RING AND COVER DETAIL

NTS

WW-6

REVISED: AUGUST 2008



DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER
(B)	DISTANCE B/W WETWELL FLOOR AND TOP OF JUMP CONNECTION
(C)	WETWELL PIPE ELEVATION
(D)	HIGH WATER ALARM ELEV.
(E)	LAG PUMP ON ELEV.
(F)	LAG PUMP ON ELEVATION*
(G)	TOP OF WETWELL FOOTING
(H)	DIAMETER OF DISCHARGE RISER
(I)	DIAMETER OF DISCHARGE FORCE MAIN
(J)	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

- MARK
- ① DUPLEX 1/2" DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/480 VOLT OR 480 VOLT MOTORS. EACH PUMP SHALL HAVE THE APPROPRIATE RANGE SET FORTH ON THIS SHEET AS THE REQUIRED PUMP CAPACITY AND 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 HOUSING, LOCK, LATCH, COVER, TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS.
 - ④ ALL RISERS IN THE WETWELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE WELDING FLANGES BRASS VALVES. BRASS VALVES SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. SEE SPECIFICATIONS SECTION 330902.
 - 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 CONNECTION 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 SECTION 330902. 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 098725.
 - 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).

TEE WITH ISOLATION VALVE (SEE PLAN VIEW ON WW-8) EQUIPMENT SPECIFICATIONS

INSTALL PIPE SUPPORTS AT 3 POINTS IN WET WELL, MAX. SPACING NOT TO EXCEED 8', TYP.

COMPACTED SOIL

PLASTIC JOINT SEALING COMPOUND (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (TYP)

ELECTROFUSION COUPLING

8" MINIMUM

STAINLESS STEEL LIFTING CHAIN

HDPE FLANGE ADAPTER, TYP.

HDPE 90° BEND

8" MIN

2" GROUT

12" THICK 3/4" STONE BEDDING

DIAMETER = (A + 32')

FOOTING = (A + 32')

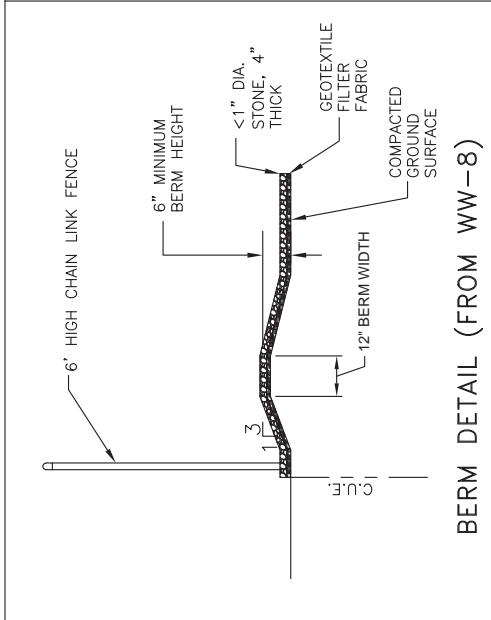
SECTION A-A

PUMP STATION
DETAIL - PROFILE

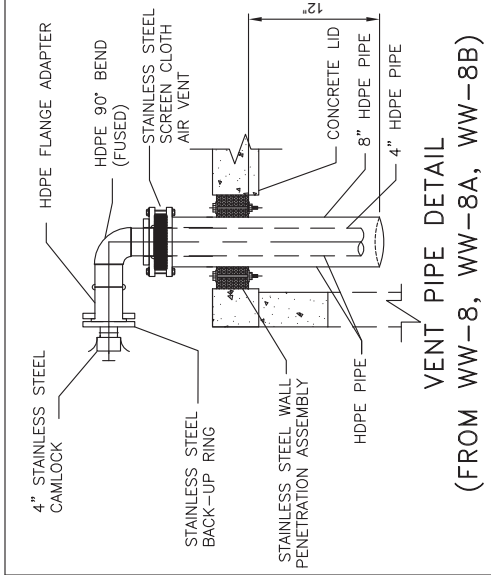
NTS

REVISION DATE: JULY 2018	SHEET NO. WW-7
	

NOTE: ALL STAINLESS STEEL SHALL BE SERIES 316

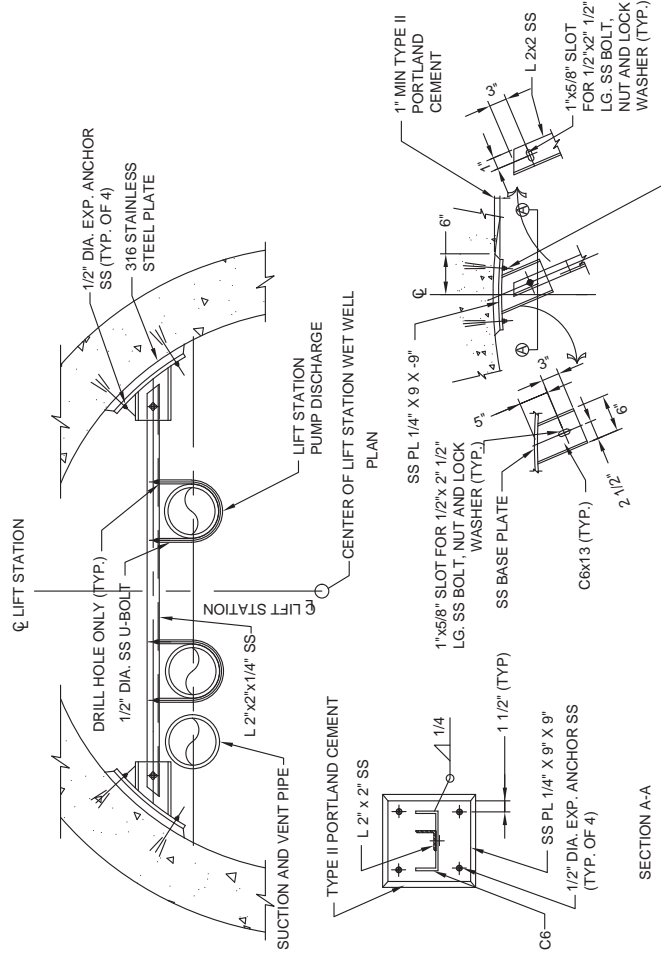


BERM DETAIL (FROM WW-8)



VENT PIPE DETAIL

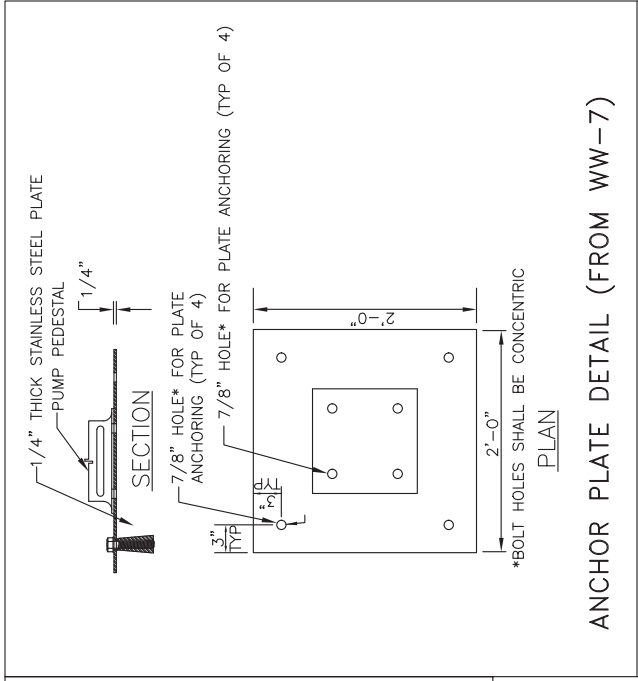
(FROM WW-8, WW-8A, WW-8B)



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

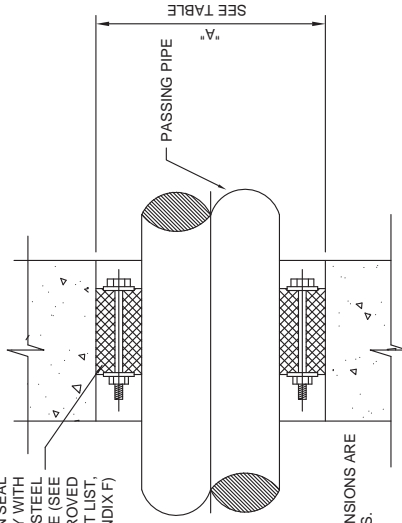
DISCHARGE PIPE SUPPORT DETAIL

(FROM WW-7)



ANCHOR PLATE DETAIL (FROM WW-7)

PENETRATION SEAL ASSEMBLY WITH STAINLESS STEEL HARDWARE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)



NOTE: ALL DIMENSIONS ARE GIVEN IN INCHES.

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)

REVISION DATE:

JAN. 2015

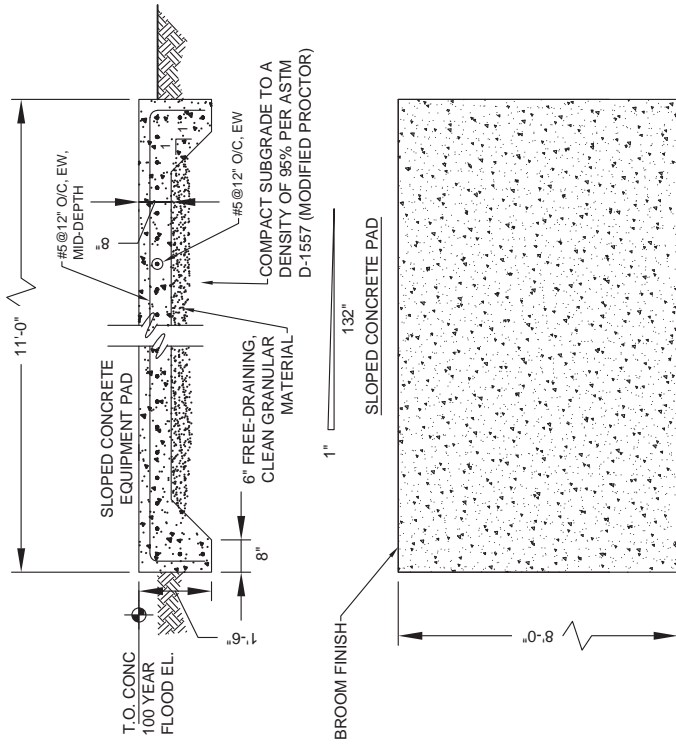
SHEET NO.

WW-7A

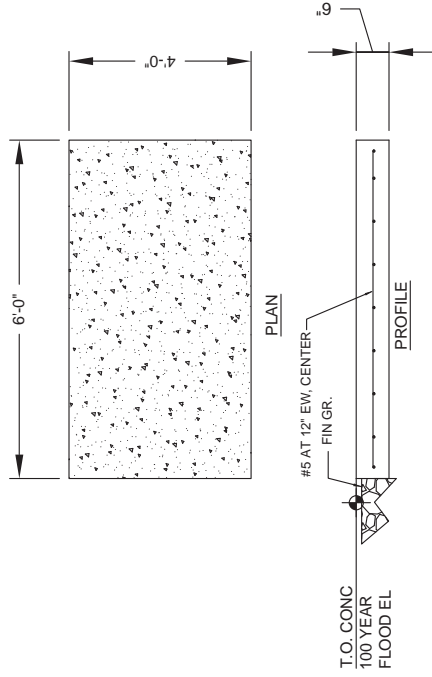


PUMP STATION AND WASTEWATER DETAILS

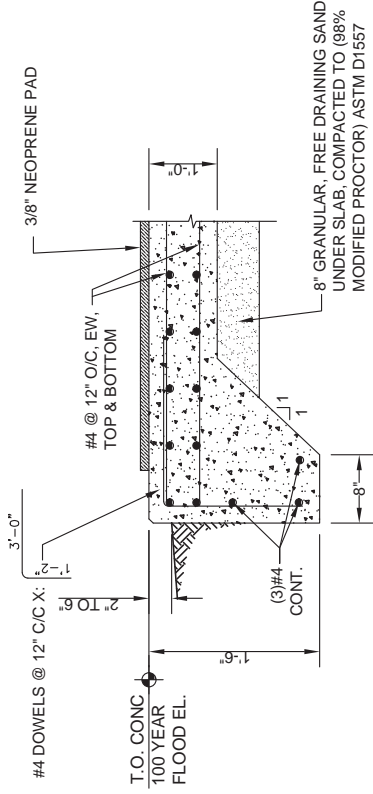
NTS



ODOR CONTROL PAD (TYPICAL)
N.T.S.



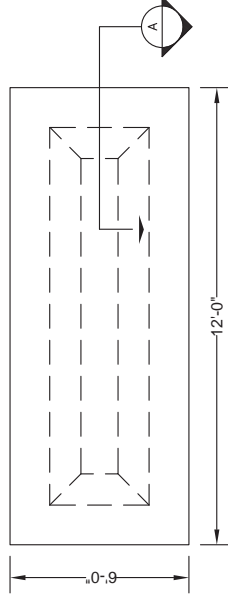
PUMP CONTROL PANEL PAD (TYPICAL) – N.T.S.



SECTION
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

REVISION DATE:

JAN. 2015



SHEET NO.

WW-7B

PUMP STATION CONCRETE DETAILS

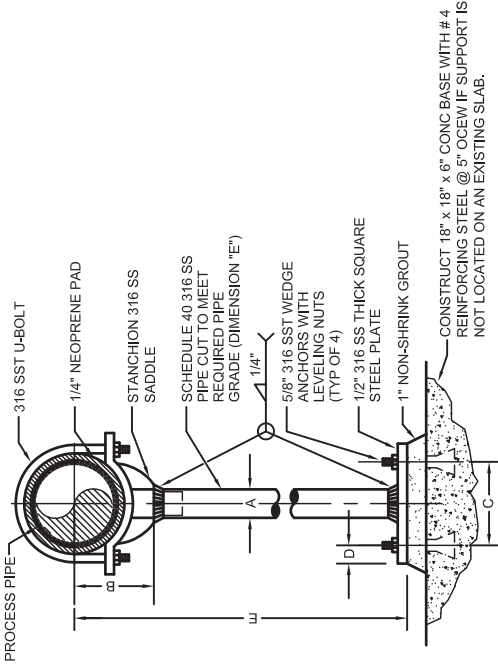
PIPE SIZE	A	B	C	D	E	
					MIN	MAX
4	3	4 3/16	7	1	18	30
5	3	4 13/16	7	1	18	30
6	3	5 7/16	7	1	18	30
8	3	6 15/16	7	1	18	30
10	3	8 7/16	7	1	18	30
12	3	9 15/16	7	1	18	30

* 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.

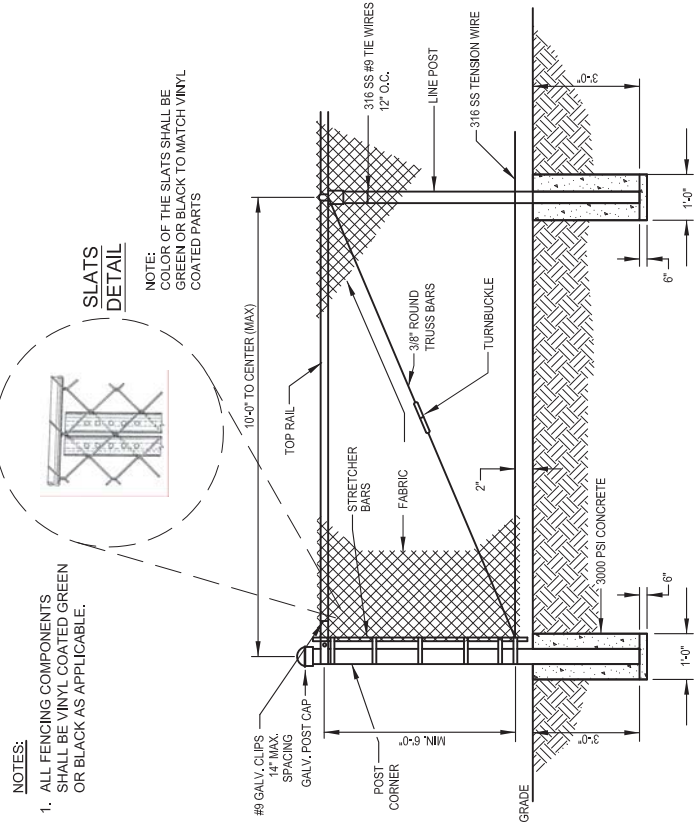
PIPE SUPPORT DETAIL



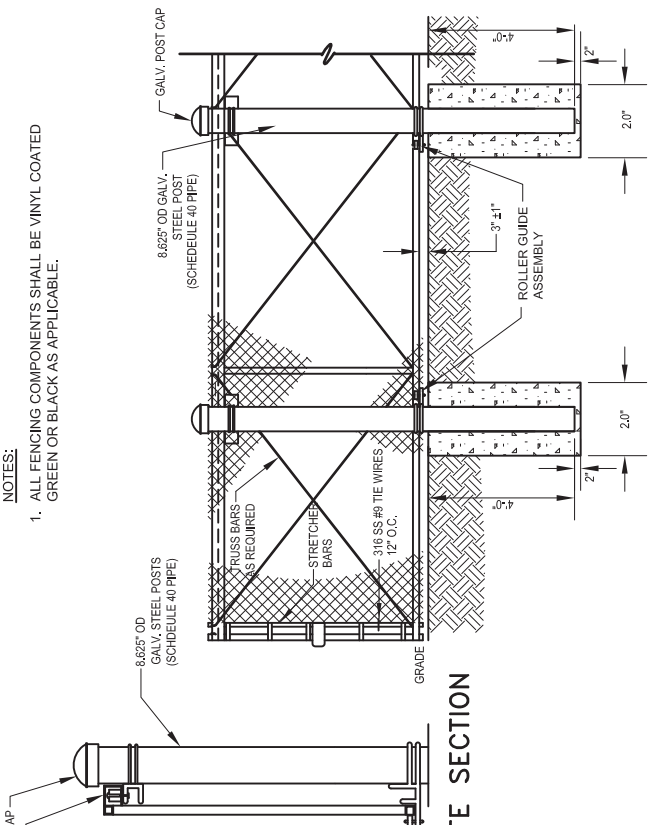
- NOTES:**
1. ALL FENCING COMPONENTS SHALL BE VINYL COATED GREEN OR BLACK AS APPLICABLE.

SLATS DETAIL

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



GATE SECTION



NOTES:

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

CHAIN LINK FENCE DETAIL

CHAIN LINK FENCE GATE DETAIL

PUMP STATION AND WASTEWATER DETAILS

REVISION DATE:
JULY 2018

SHEET NO.
WW-7C

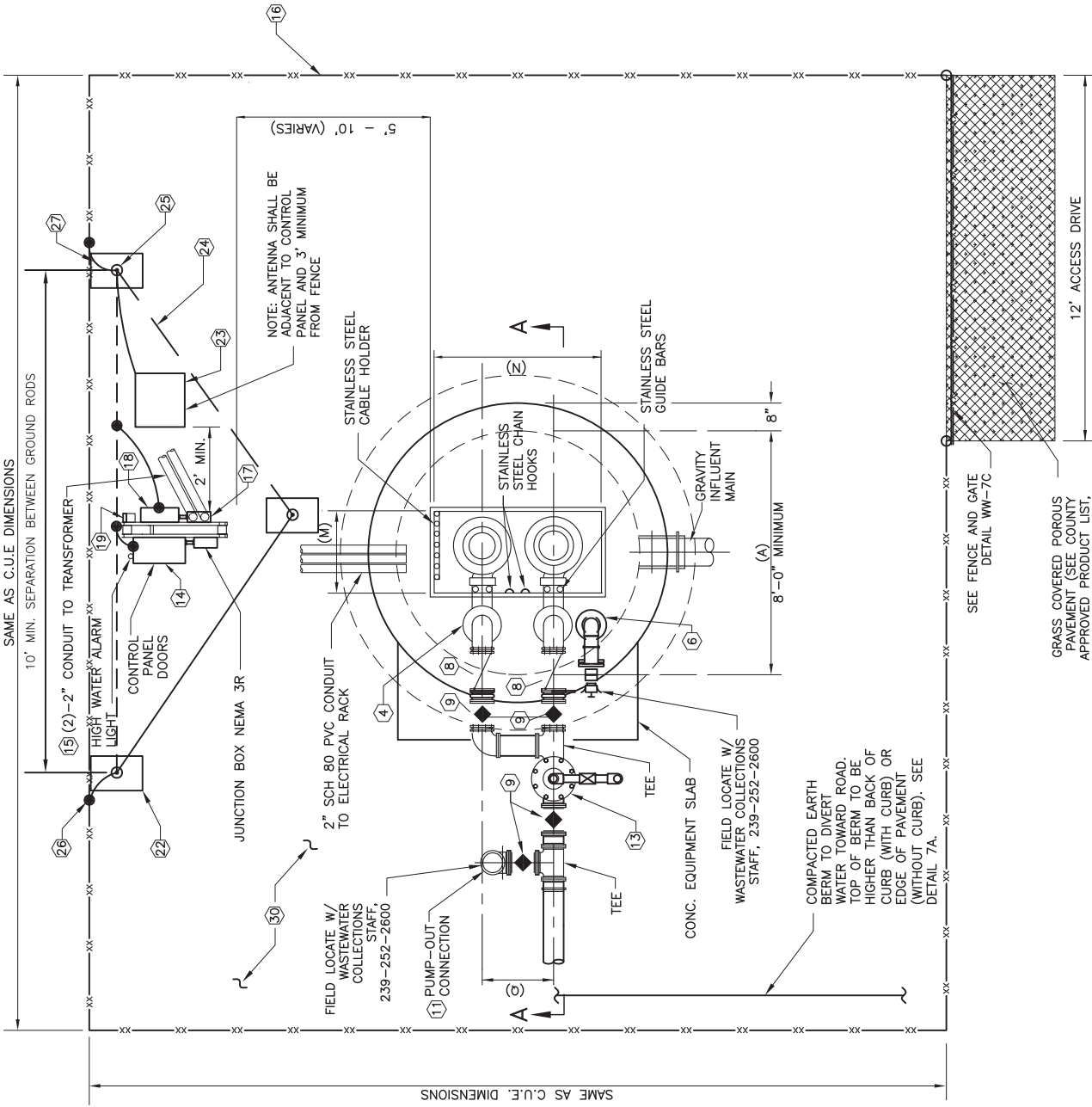


NTS

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 VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS. STEEL BOLTING RINGS AND BOLTS. SEE SPECIFICATIONS SECTION 336502.
- 5 TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR AS REQUIRED FOR PUMPING STATION STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO A/V.
- 6 COMBINATION SUCTION PIPE AND METWELL VENT WITH 4" 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-COUPING 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 WITH DOWN CONDUCTOR TO BE FIELD LOCATED ON PUMP STATION. LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
- 24 #4/O 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 COPPER 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)	METWELL INSIDE DIAMETER
(M)	METWELL HATCH OPENING
(N)	METWELL HATCH OPENING
(O)	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

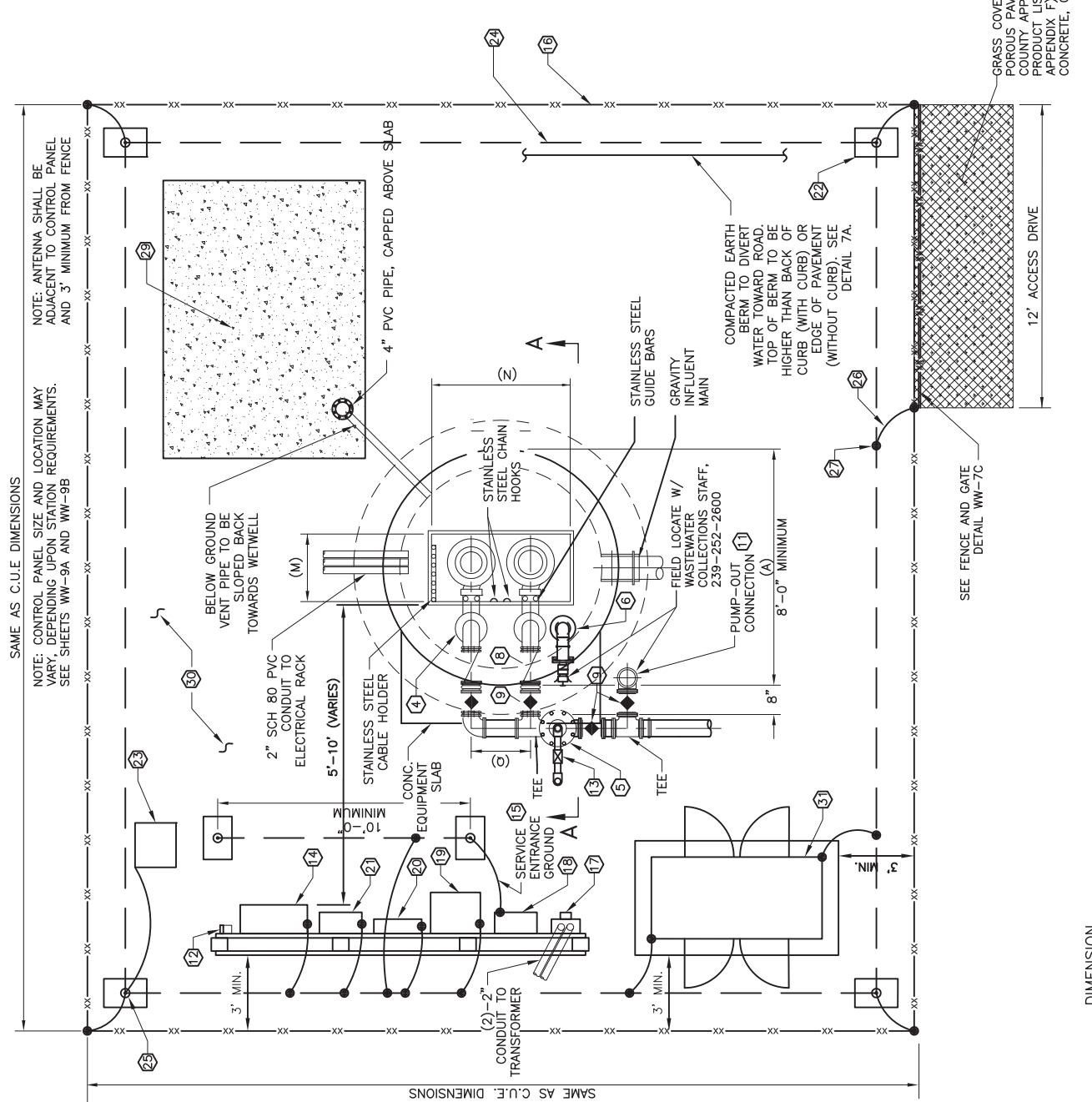
SHEET NO.
WW-8



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 FLANGED FITTINGS. SEE SECTION 330302.
- ⑤ TAPPED STAINLESS STEEL END FLANGE OR COMPANION FLANGE FOR ANY ABOVE GRADE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO A/R.
- ⑥ COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" 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. PROVIDE 1/2" DIA. BRASS ROD WITH 1/4" DIA. RIGID CONDUIT TO STATION 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 ODOOR CONTROL
- ㉚ GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
- ㉛ STANDBY-DIESEL GENERATOR, SUB BASE FUEL TANK, AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 263213



NOTE: ANTENNA SHALL BE ADJACENT TO CONTROL PANEL AND 3' MINIMUM FROM FENCE

NOTE: CONTROL PANEL SIZE AND LOCATION MAY VARY, DEPENDING UPON STATION REQUIREMENTS. SEE SHEETS WW-9A AND WW-9B

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.

REVISION DATE: JULY 2018

SHEET NO. WW-8A

Public Utilities Division

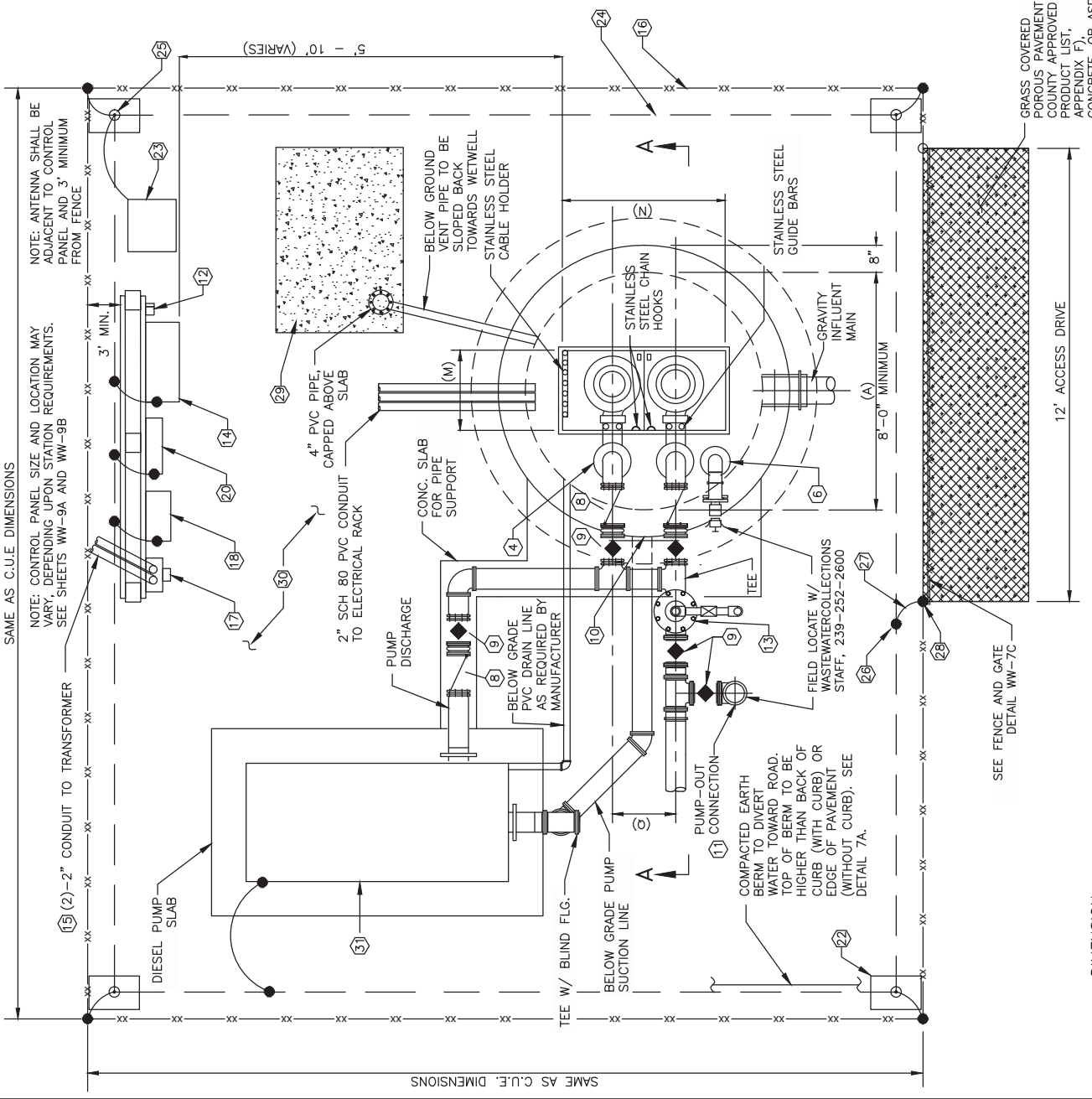
COMMUNITY PUMP STATION WITH GENERATOR DETAIL - PLAN

NTS

DIMENSION TABLE	
(A)	WETWELL INSIDE DIAMETER
(M)	WETWELL HATCH OPENING
(N)	WETWELL HATCH OPENING
(O)	SEPARATION OF DISCHARGE RISER PIPING

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. ALL STAINLESS STEEL BOLTING RINGS AND BOLTS. SEE SPECIFICATIONS SECTION 343502.
 - 5 TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR FUTURE PUMP CONNECTION. STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO A/R/V.
 - 6 COMBINATION SUCTION PIPE AND METWELL VENT WITH 4" 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 GRAEL.
 - 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.I.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 CONNECTION AND DOWN CONDUCTOR TO BE MOUNTED ON WW-17. ROD SHALL BE 1/2" DIA. GALV. STEEL ROD WITH 1/2" DIA. GALV. STEEL 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.



REVISION DATE:

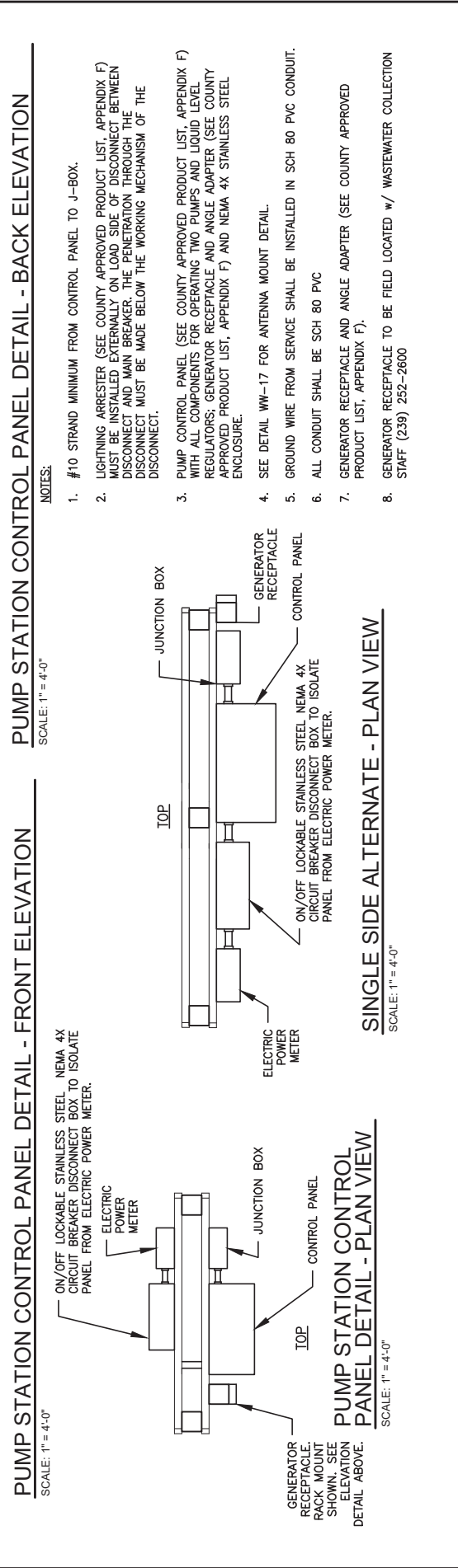
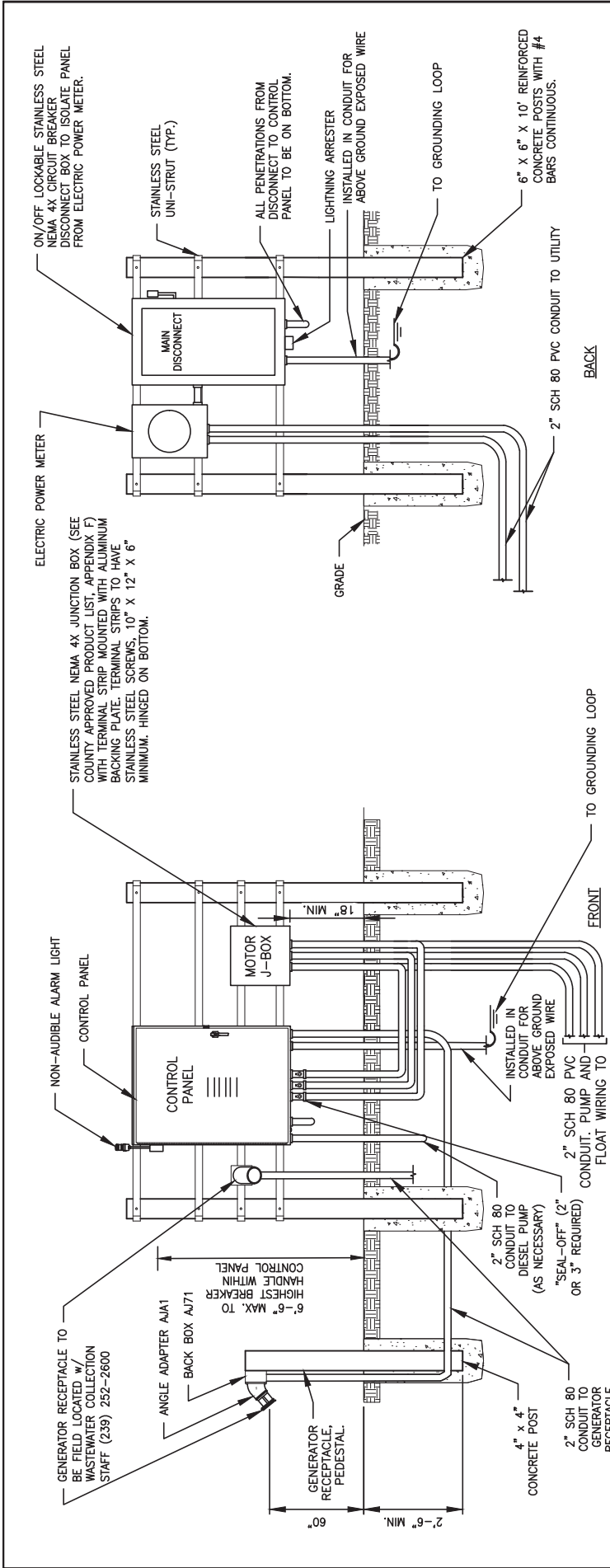
1	JULY 2018

COMMUNITY PUMP STATION WITH DIESEL PUMP DETAIL
— PLAN

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

DIMENSION TABLE

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



PUMP STATION CONTROL PANEL DETAIL - FRONT ELEVATION
SCALE: 1" = 4'-0"

PUMP STATION CONTROL PANEL DETAIL - BACK ELEVATION
SCALE: 1" = 4'-0"

SINGLE SIDE ALTERNATE - PLAN VIEW
SCALE: 1" = 4'-0"

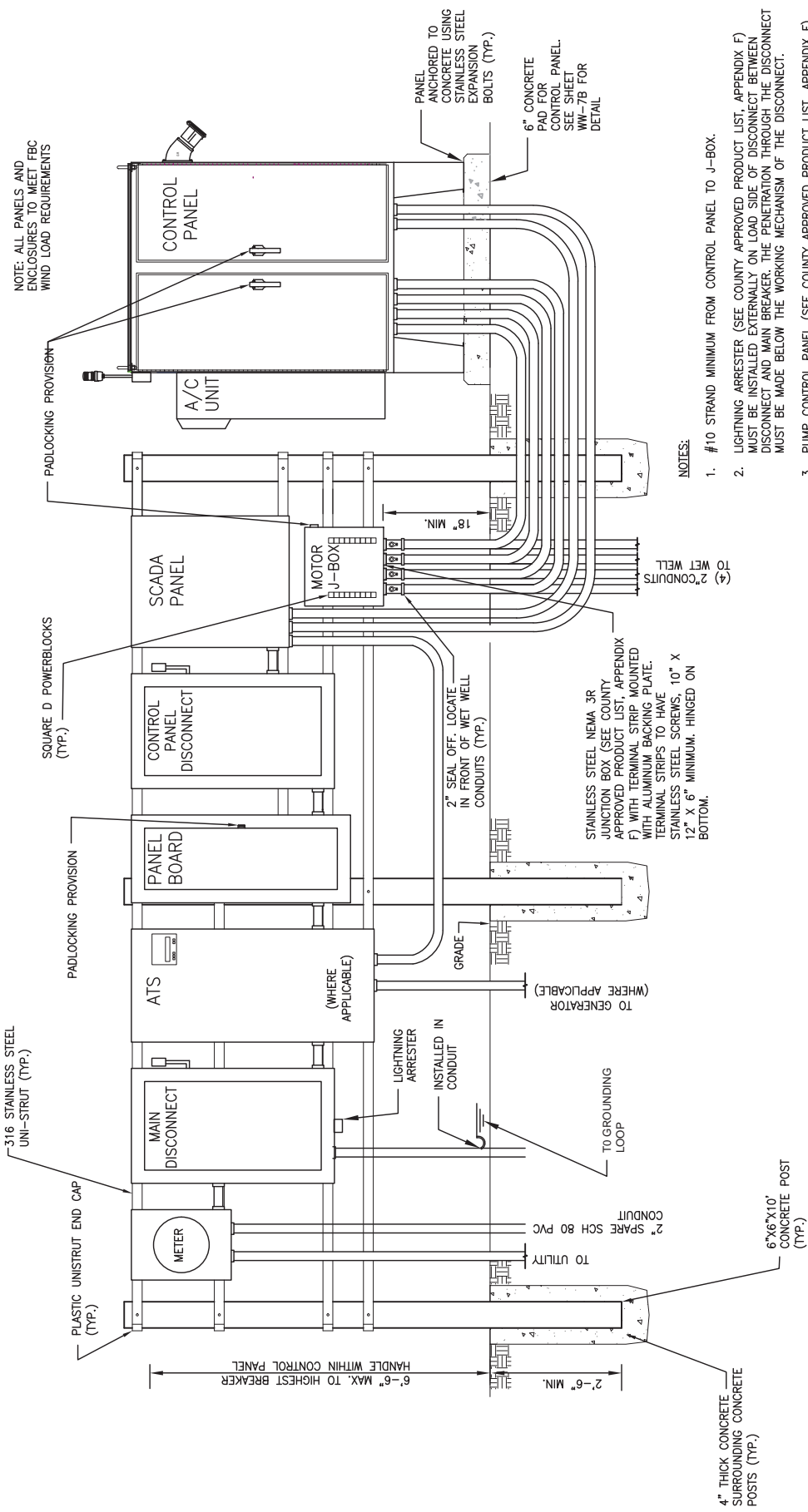
PUMP STATION CONTROL PANEL DETAIL - PLAN VIEW
SCALE: 1" = 4'-0"

NOTES:

- #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
- 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.
- 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.
- SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
- GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN SCH 80 PVC CONDUIT.
- ALL CONDUIT SHALL BE SCH 80 PVC
- GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
- GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF (239) 252-2600

REVISION DATE:	JULY 2018
SHEET NO.	WW-9

Collier County
Public Utilities Division



NOTE: ALL PANELS AND ENCLOSURES TO MEET FBC WIND LOAD REQUIREMENTS

SQUARE D POWERBLOCKS (TYP.)

PADLOCKING PROVISION

316 STAINLESS STEEL UNI-STRUT (TYP.)

PADLOCKING PROVISION

6'-6" MAX. TO HIGHEST BREAKER HANDLE WITHIN CONTROL PANEL

2'-6" MIN.

4" THICK CONCRETE SURROUNDING CONCRETE POSTS (TYP.)

TO UTILITY

2" SPARE SCH 80 PVC CONDUIT

TO GROUNDING LOOP

LIGHTNING ARRESTER INSTALLED IN CONDUIT

TO GENERATOR (WHERE APPLICABLE)

GRADE

STAINLESS STEEL NEMA 3R JUNCTION BOX (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH TERMINAL STRIP MOUNTED WITH ALUMINUM BACKING PLATE. TERMINAL STRIPS TO HAVE STAINLESS STEEL SCREWS, 10" X 12" X 6" MINIMUM. HINGED ON BOTTOM.

18" MIN.

TO WET WELL

2" CONDUITS

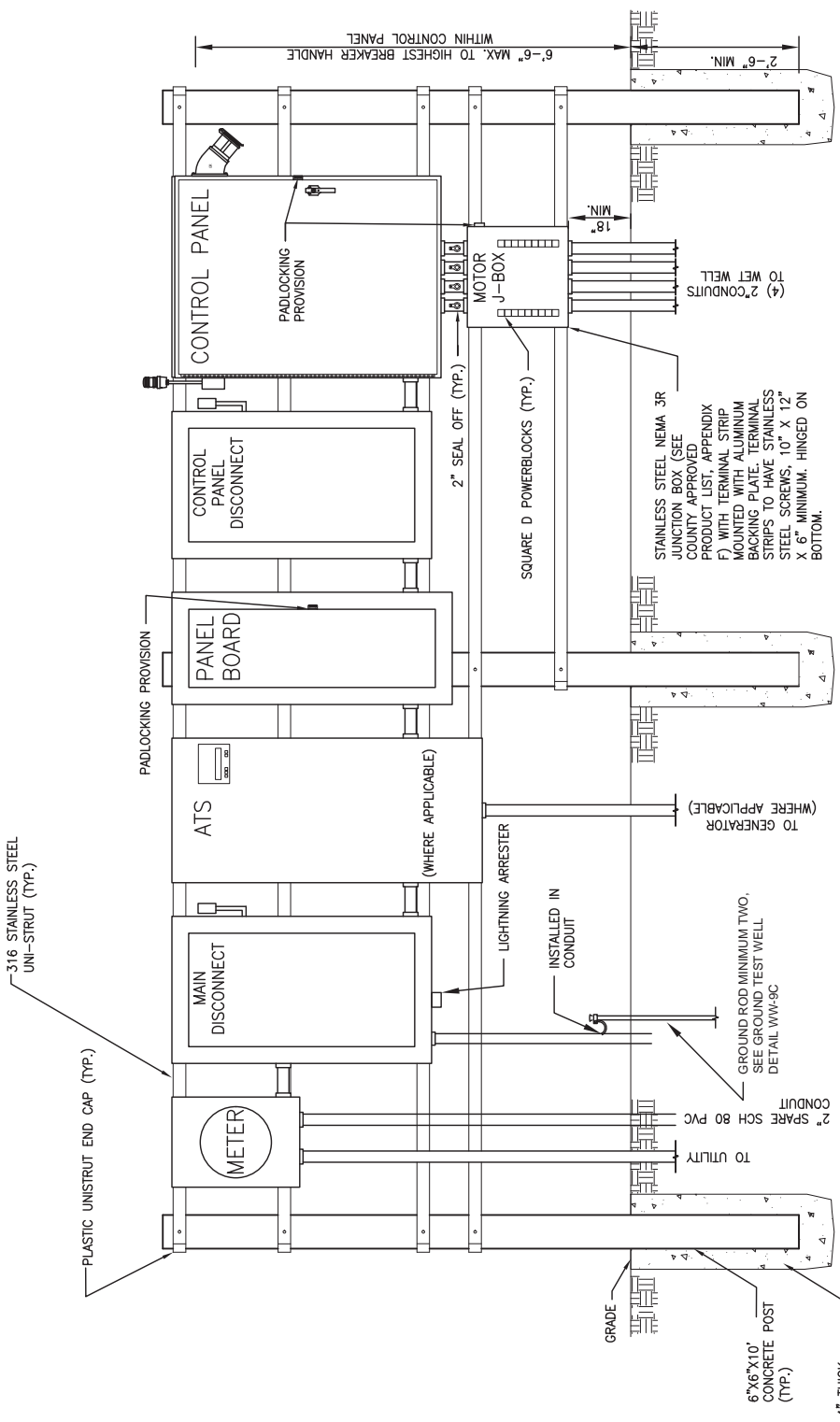
PANEL ANCHORED TO CONCRETE USING STAINLESS STEEL EXPANSION BOLTS (TYP.)

6" CONCRETE PAD FOR CONTROL PANEL. SEE SHEET WW-7B FOR DETAIL

NOTES:

- #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
- 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.
- 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.
- SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
- GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
- ALL CONDUIT SHALL BE SCH 80 PVC
- LABEL ALL EQUIPMENT USING MIN. 3" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS

	REVISION DATE:	SHEET NO.
	JAN. 2015	WW-9A
	<p align="center">COMMUNITY PUMP STATION CONTROL PANEL DETAIL VFD STATION WITH GENERATOR</p>	



NOTES:

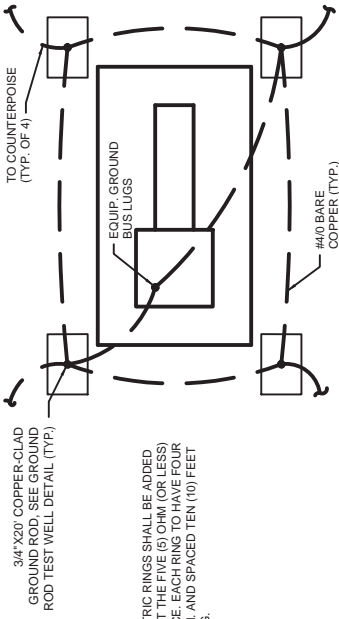
1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
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. 1/2" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS

REVISION DATE:
JAN. 2015



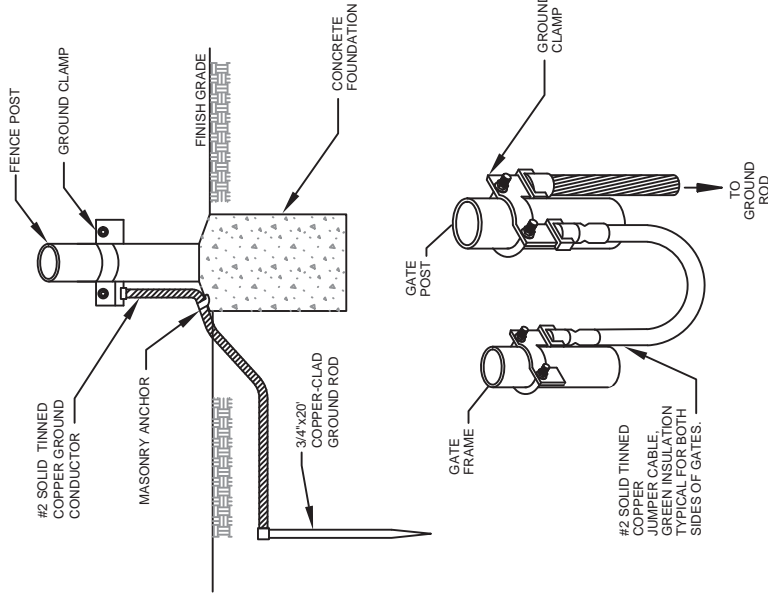
SHEET NO.
WW-9B

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

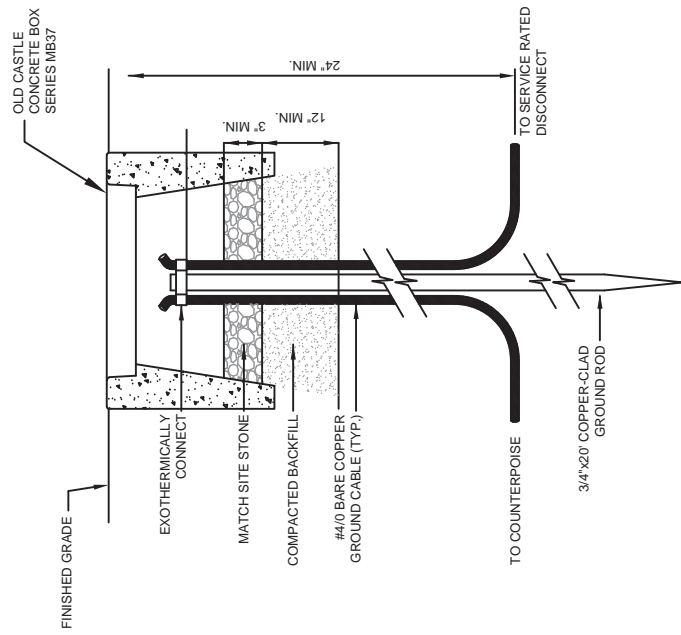
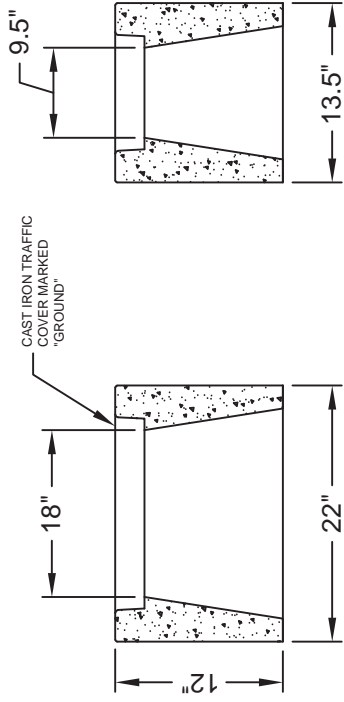


NOTES:
 1. ADDITIONAL CONCENTRIC RINGS SHALL BE ADDED AS REQUIRED TO MEET THE FIVE (5) OHM (OR LESS) SPECIFIED RESISTANCE. EACH RING TO HAVE FOUR (4) GROUND RODS MIN. AND SPACED TEN (10) FEET FROM THE INNER RING.

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

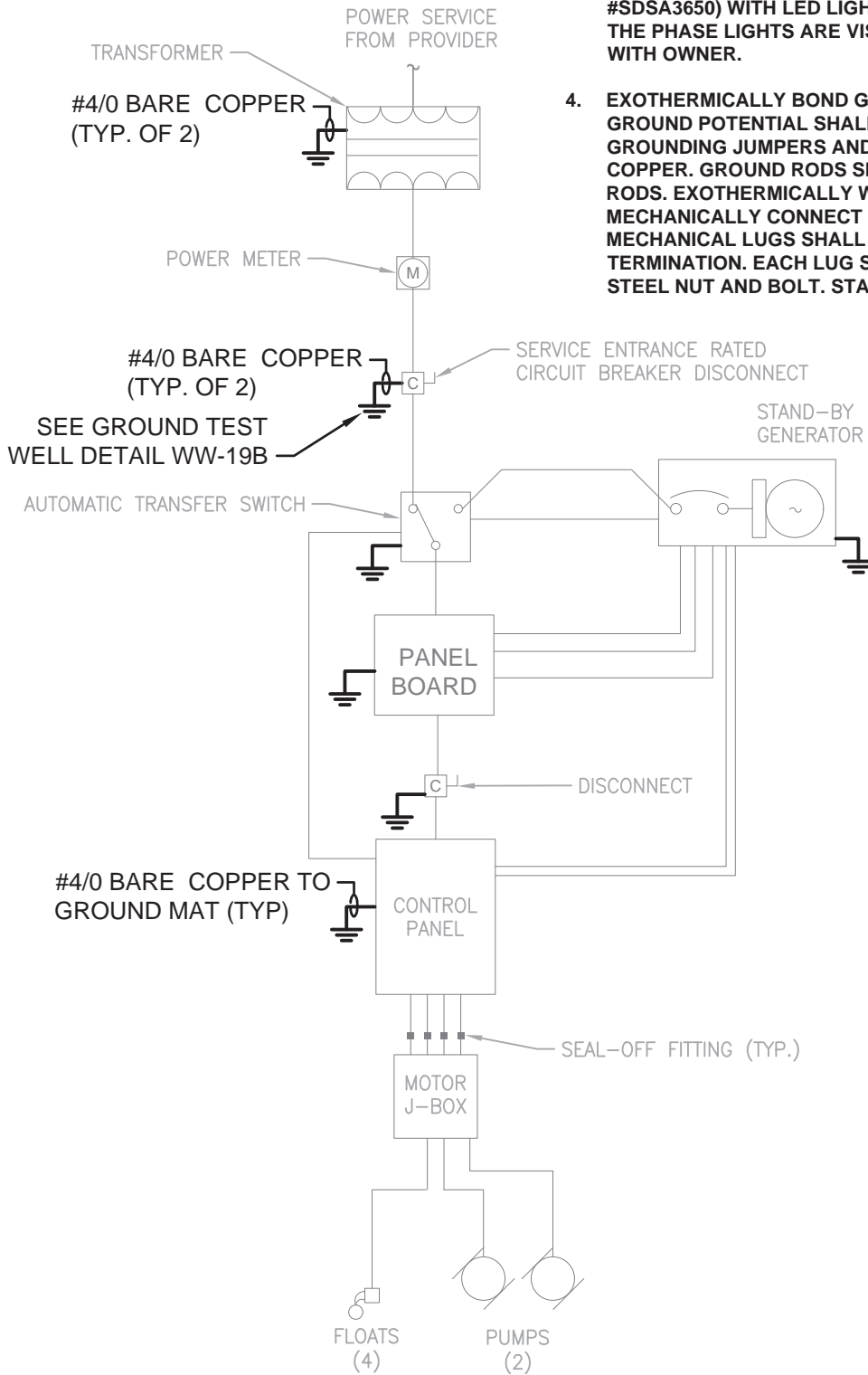
REVISION DATE:
 JAN. 2015

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

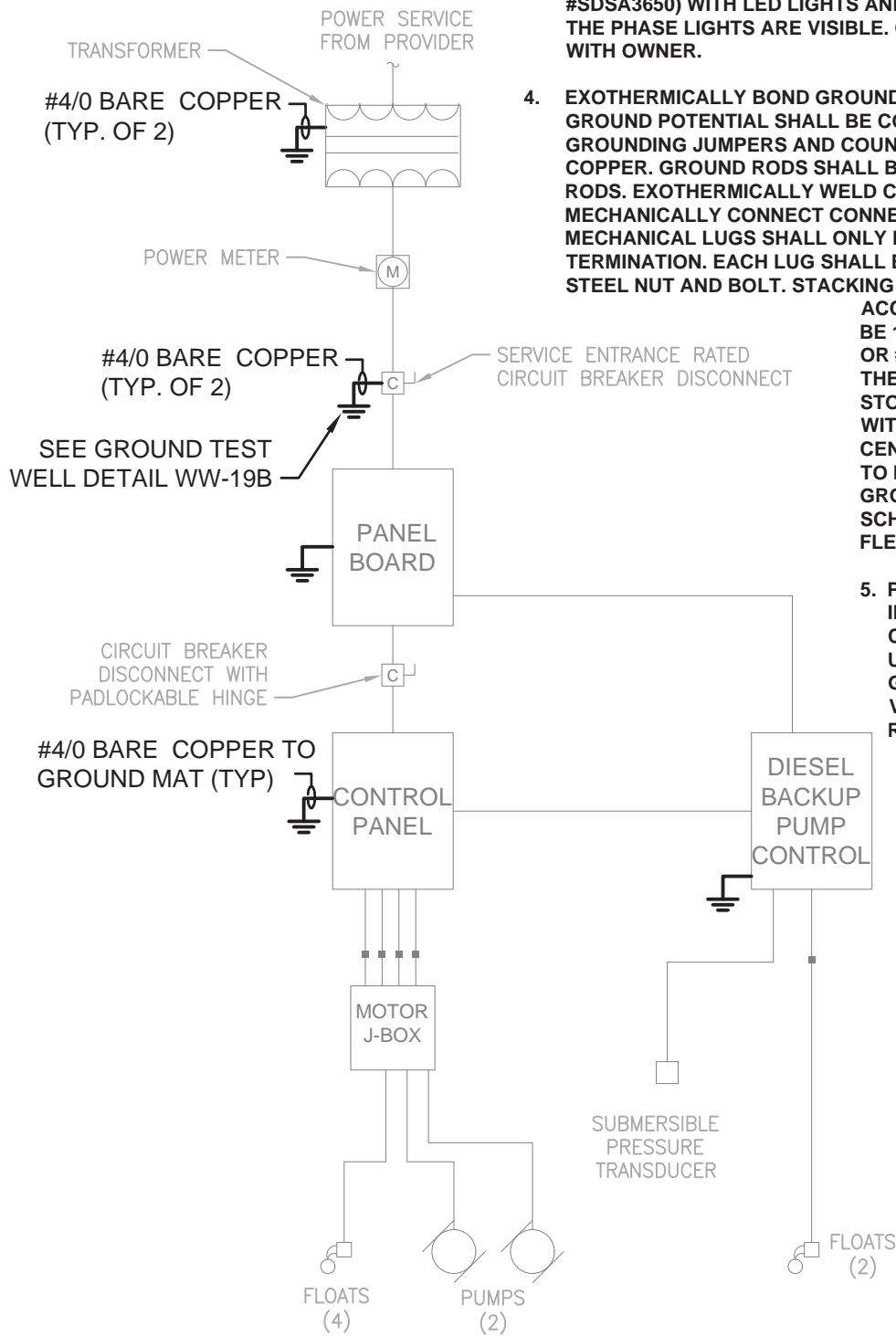
REVISION DATE:
JAN. 2015



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.
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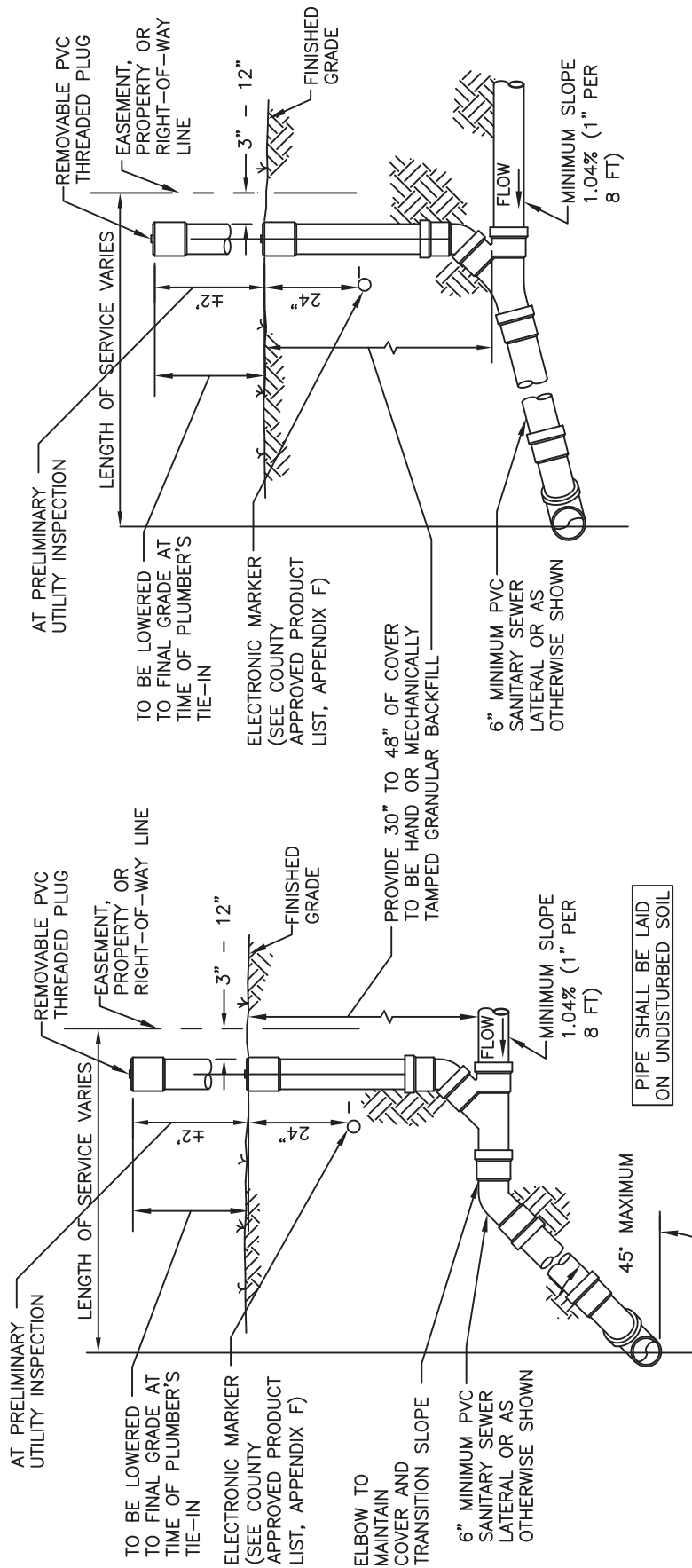


COMMUNITY PUMP STATION –
 RISER DIAGRAM
 WITH DIESEL BACKUP PUMP

REVISION DATE:
JAN. 2015



SHEET NO.
 WW-9E



SECTION
DEPTH LESS THAN 8'

SECTION
DEPTH 8' AND OVER

NOTE:

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

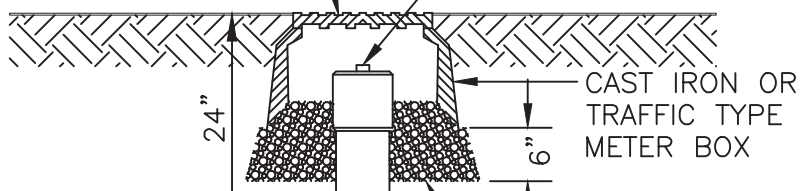
SEWER CONNECTION DETAILS
PROPERTY, RIGHT-OF-WAY OR EASEMENT LINE
NTS

SEWER CLEAN-OUT RIM AND COVER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) FLUSH IN PAVEMENT AREAS

REMOVABLE PVC THREADED PLUG

ELECTRONIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)

PROVIDE CLEAN-OUT ON SEWER LATERALS AT UTILITY EASEMENT LIMITS. SEE PLANS



SEWER BRANCH WYE

45° BEND

6" SANITARY LATERAL

FLOW

MINIMUM SLOPE

ELEVATION

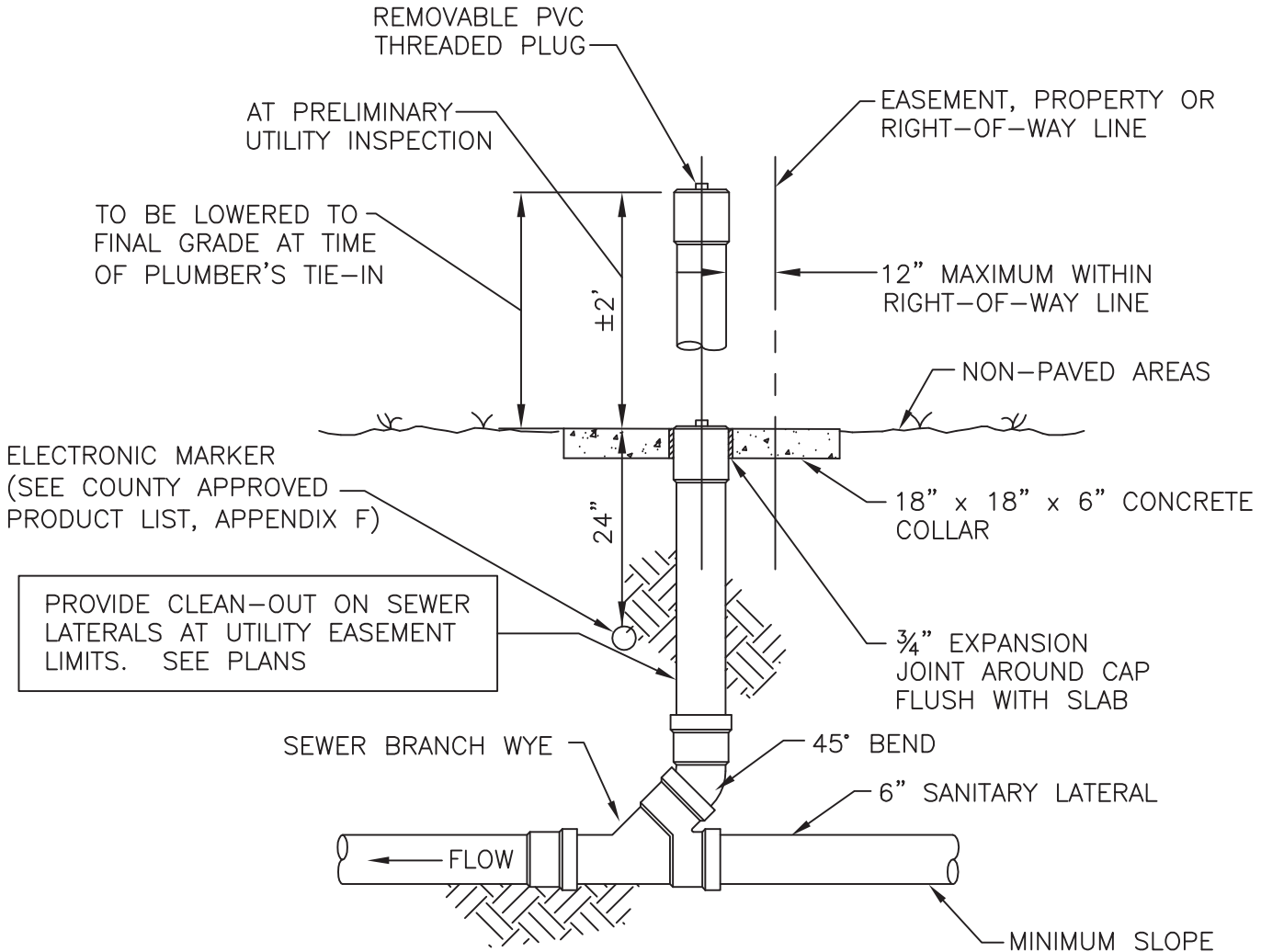
SEWER CLEAN-OUT DETAIL
PAVED AREAS

NTS

REVISION DATE:
JULY 2018



SHEET NO.
WW-11



ELEVATION

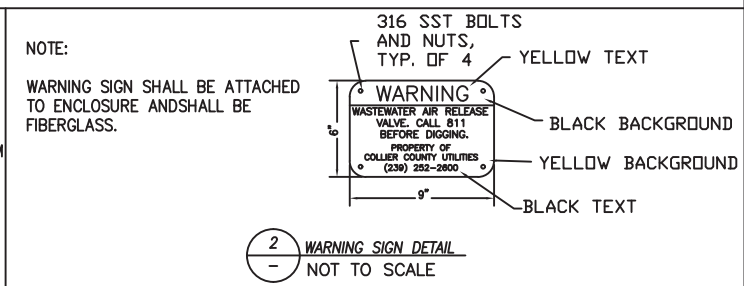
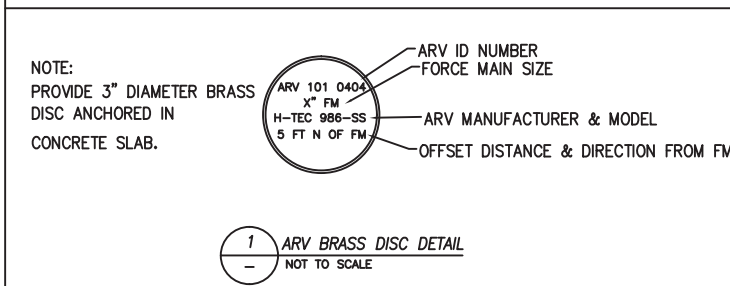
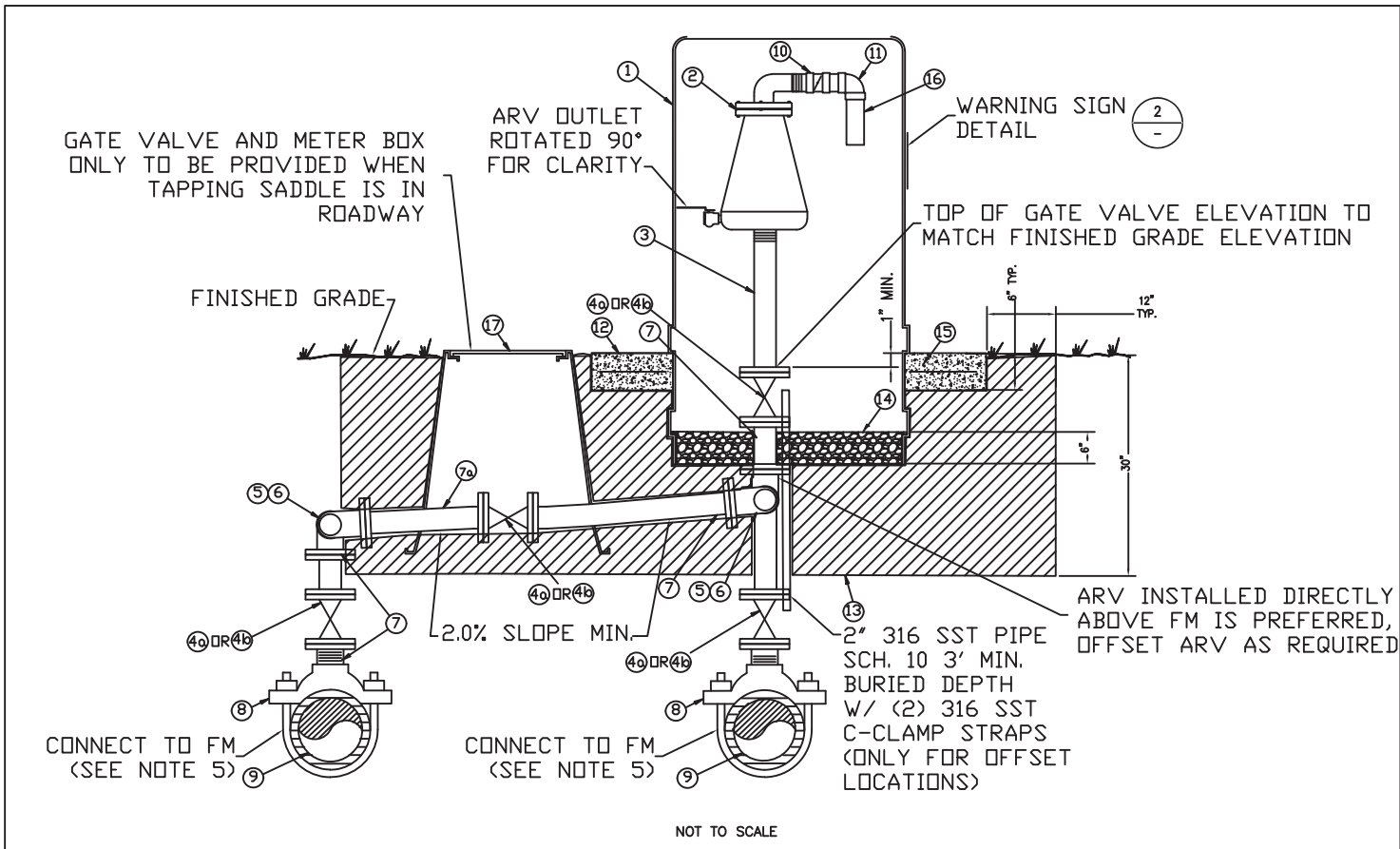
SEWER CLEAN-OUT DETAIL
NON PAVED AREAS
 NTS

REVISION DATE:	MAY 2013



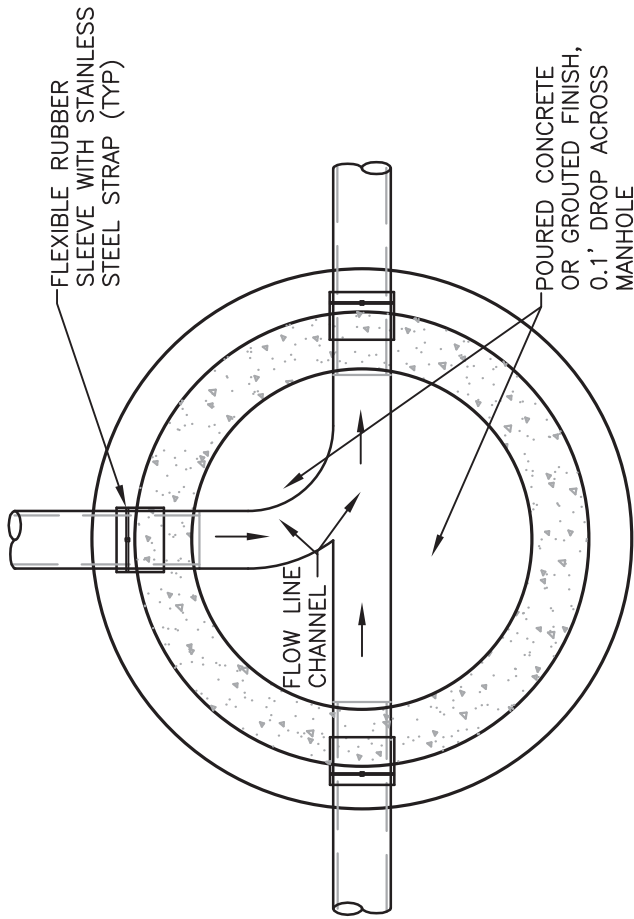
COLLIER COUNTY
 PUBLIC UTILITIES DIVISION
 3301 E. TAMiami TRAIL
 NAPLES, FLORIDA 34112

SHEET NO.
 WW-12

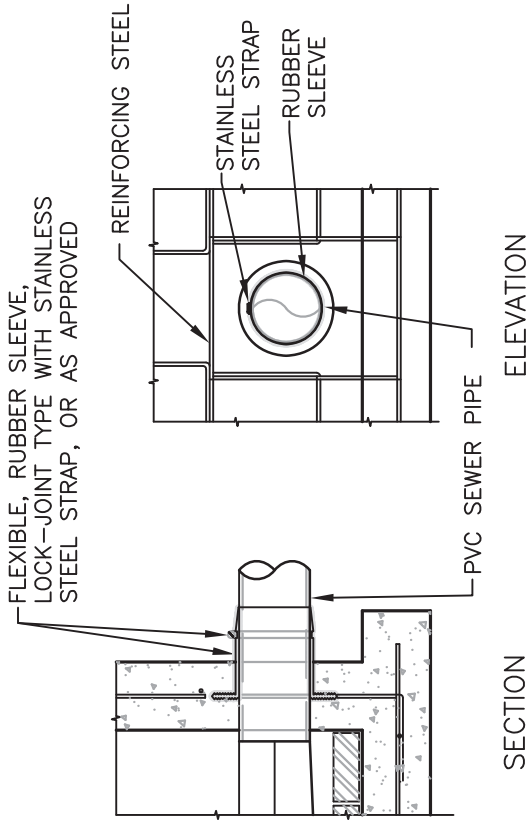
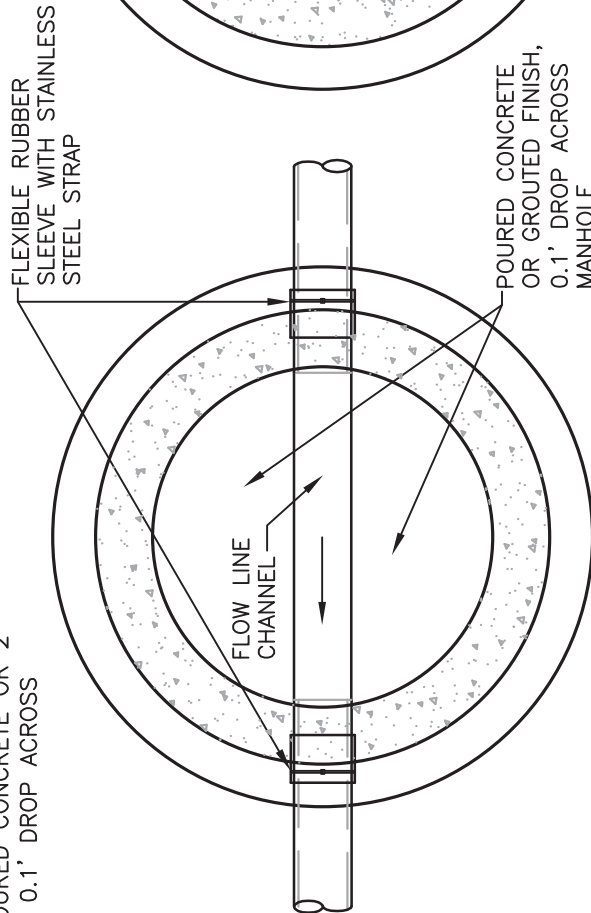


MATERIAL		
ITEM	QUANT.	DESCRIPTION
1	1	VENTED ENCLOSURE, WATER PLUS H30 MODEL FOR 2" & 3" ARVS, WATER PLUS H40 MODEL FOR ARVS >4"
2	1	AIR RELEASE VALVE, (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (<2" AND 3" THR, >4" FLG)
3	1	SCH 80 PVC NIPPLE, LENGTH AS REQUIRED, THR X THR (<2" & 3" ARV), 316 SST VAN STONE FLANGE (VSF) X 316 VSF (>4" ARV)
4a	UP TO 3	2" DR 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

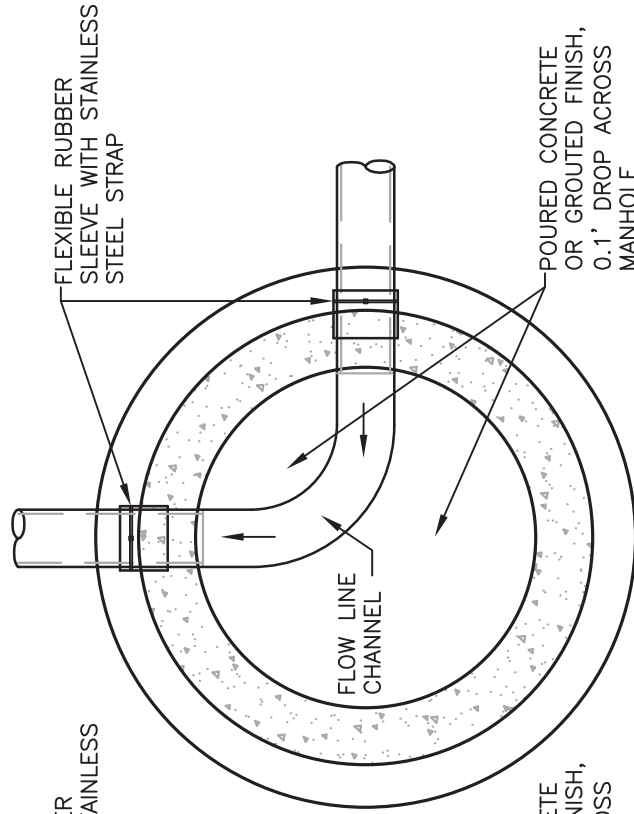
- NOTES:
- PROVIDE DARK GREEN REFLECTIVE MARKER ON CURB OR EDGE OF ROADWAY CLOSEST TO THE ARV.
 - PROVIDE 3'-0" RADIUS AROUND ARV ENCLOSURE CLEAR OF ALL LANDSCAPING FOR MAINTENANCE ACCESS.
 - PROVIDE 316 SST PIN ALLEN BOLT KEY SYSTEM WITH EACH ENCLOSURE.
 - THE THREADED OR FLANGED OUTLET SIZE OF THE ARV SHALL BE SIZED BY THE DESIGN ENGINEER. A MINIMUM DIAMETER OF 2-INCHES SHALL BE PROVIDED.
 - 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".



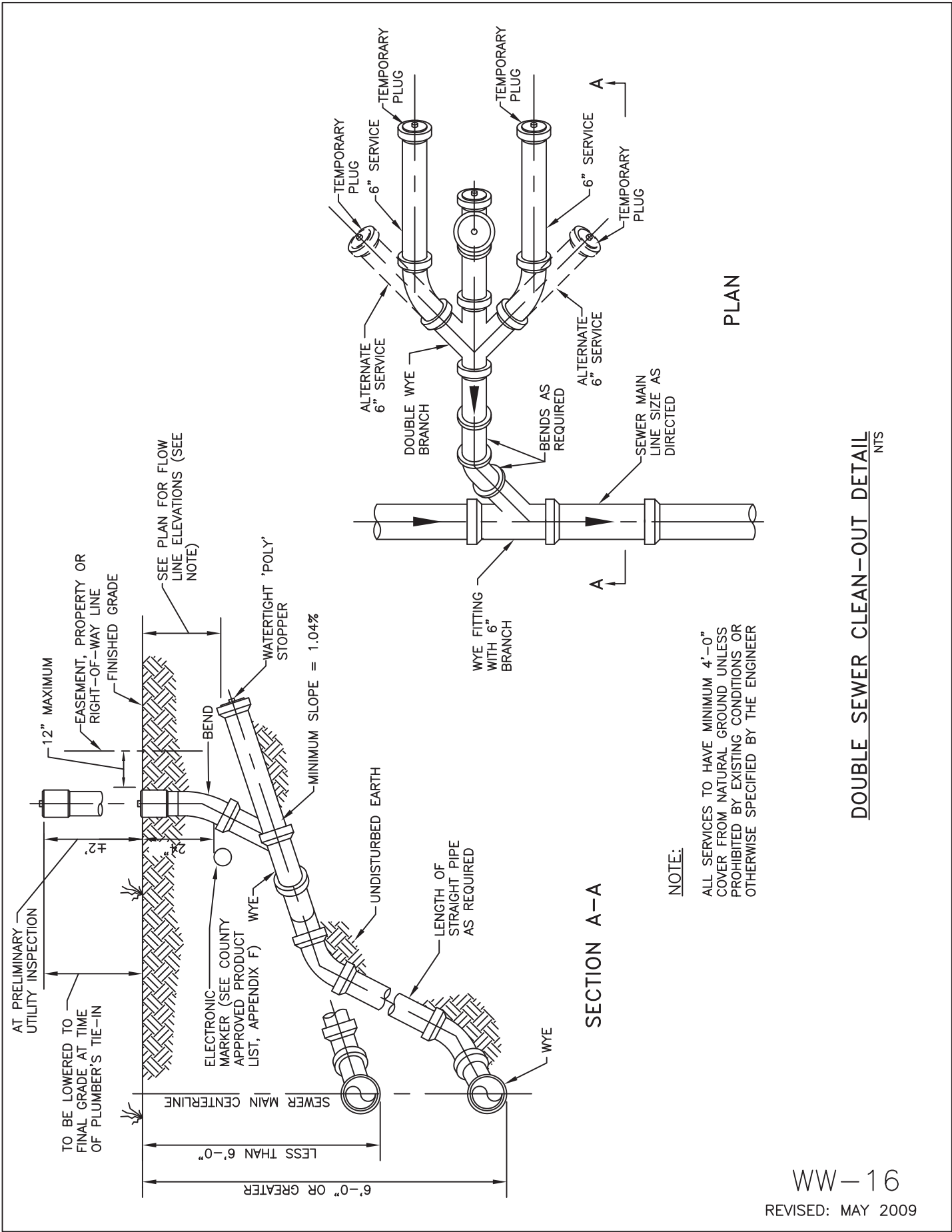
FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MINIMUM OF 2" POURED CONCRETE OR 2" GROUTED 0.1' DROP ACROSS MANHOLE



A-A



TYPICAL FLOW LINE CHANNELS DETAIL
NTS



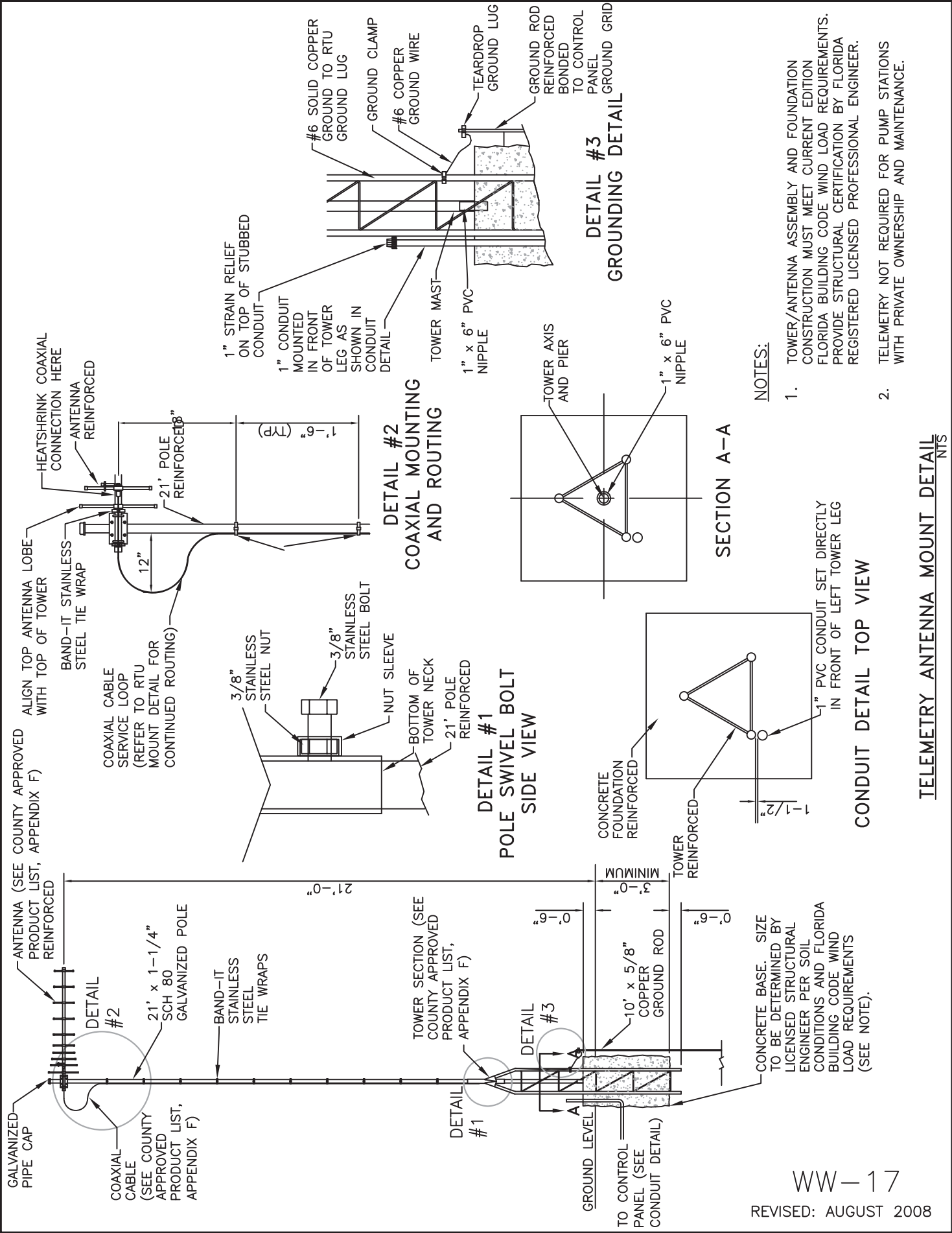
PLAN

SECTION A-A

NOTE:

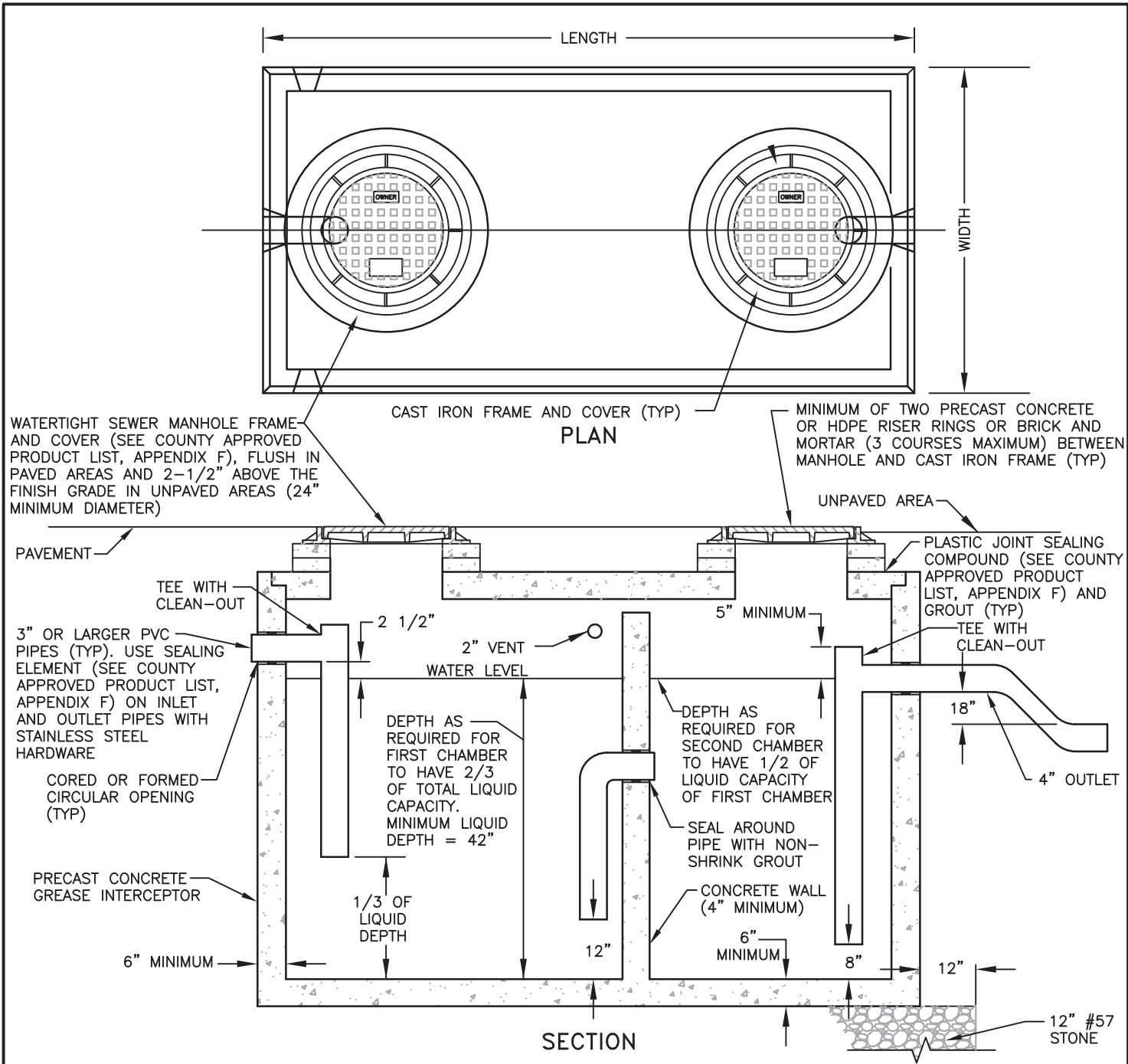
ALL SERVICES TO HAVE MINIMUM 4'-0" COVER FROM NATURAL GROUND UNLESS PROHIBITED BY EXISTING CONDITIONS OR OTHERWISE SPECIFIED BY THE ENGINEER

DOUBLE SEWER CLEAN-OUT DETAIL
NTS



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.



WATERTIGHT SEWER MANHOLE FRAME AND COVER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), FLUSH IN PAVED AREAS AND 2-1/2" ABOVE THE FINISH GRADE IN UNPAVED AREAS (24" MINIMUM DIAMETER)

CAST IRON FRAME AND COVER (TYP)

MINIMUM OF TWO PRECAST CONCRETE OR HDPE RISER RINGS OR BRICK AND MORTAR (3 COURSES MAXIMUM) BETWEEN MANHOLE AND CAST IRON FRAME (TYP)

PAVEMENT

TEE WITH CLEAN-OUT

3" OR LARGER PVC PIPES (TYP). USE SEALING ELEMENT (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) ON INLET AND OUTLET PIPES WITH STAINLESS STEEL HARDWARE

CORED OR FORMED CIRCULAR OPENING (TYP)

PRECAST CONCRETE GREASE INTERCEPTOR

6" MINIMUM

2 1/2"

2" VENT

DEPTH AS REQUIRED FOR FIRST CHAMBER TO HAVE 2/3 OF TOTAL LIQUID CAPACITY. MINIMUM LIQUID DEPTH = 42"

1/3 OF LIQUID DEPTH

5" MINIMUM

DEPTH AS REQUIRED FOR SECOND CHAMBER TO HAVE 1/2 OF LIQUID CAPACITY OF FIRST CHAMBER

SEAL AROUND PIPE WITH NON-SHRINK GROUT

CONCRETE WALL (4" MINIMUM)

6" MINIMUM

UNPAVED AREA

PLASTIC JOINT SEALING COMPOUND (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND GROUT (TYP)

TEE WITH CLEAN-OUT

18"

4" OUTLET

12"

12" #57 STONE

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.

SIZING FORMULA FOR RESTAURANTS, COUNTRY CLUBS
AND ASSISTED LIVING FACILITIES

$$(S) \times (GS) \times (HR/12) \times LF = \text{EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS}$$

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)

$$(M) \times (GM) \times (LF) = \text{EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS}$$

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