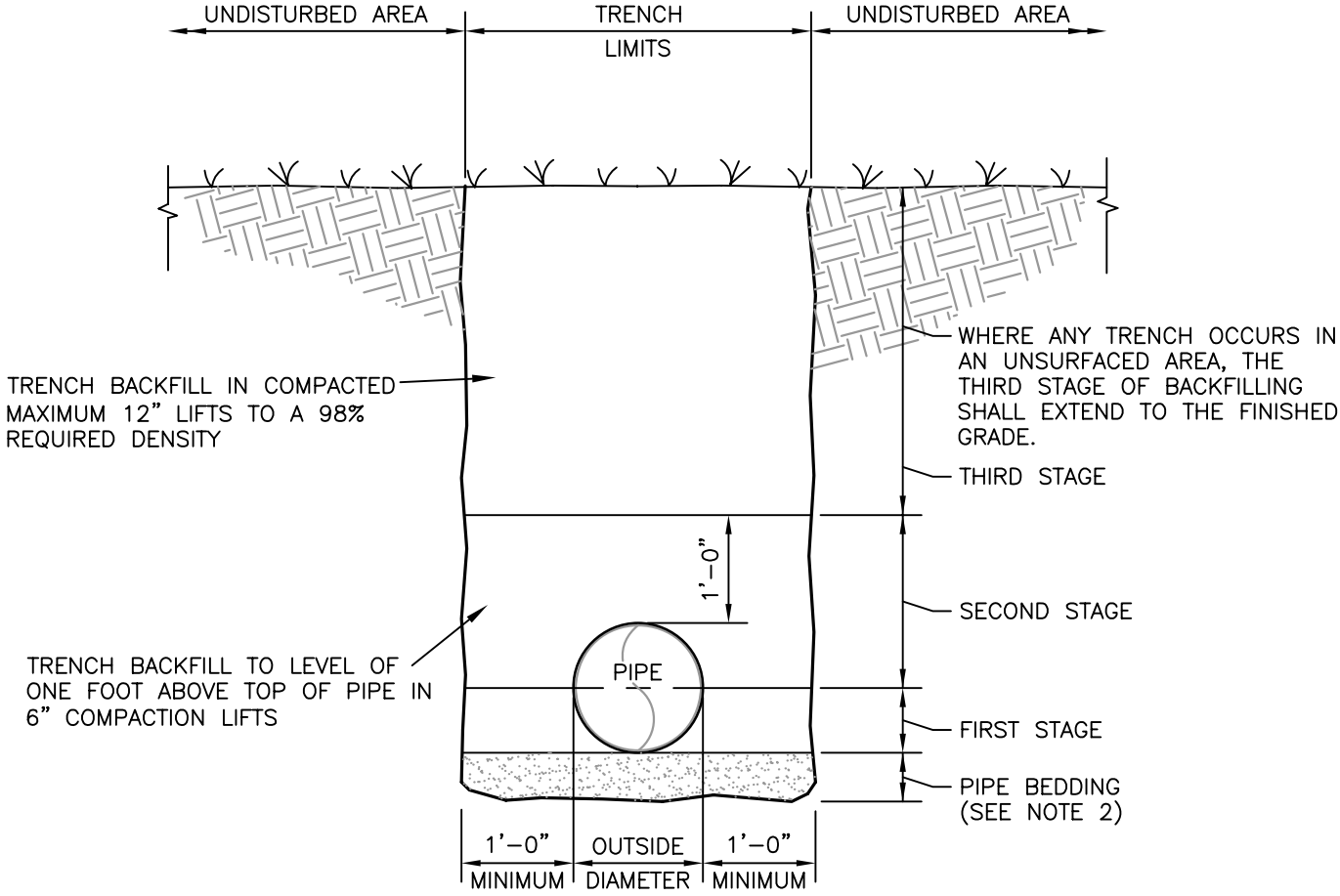


NOTES:

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

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

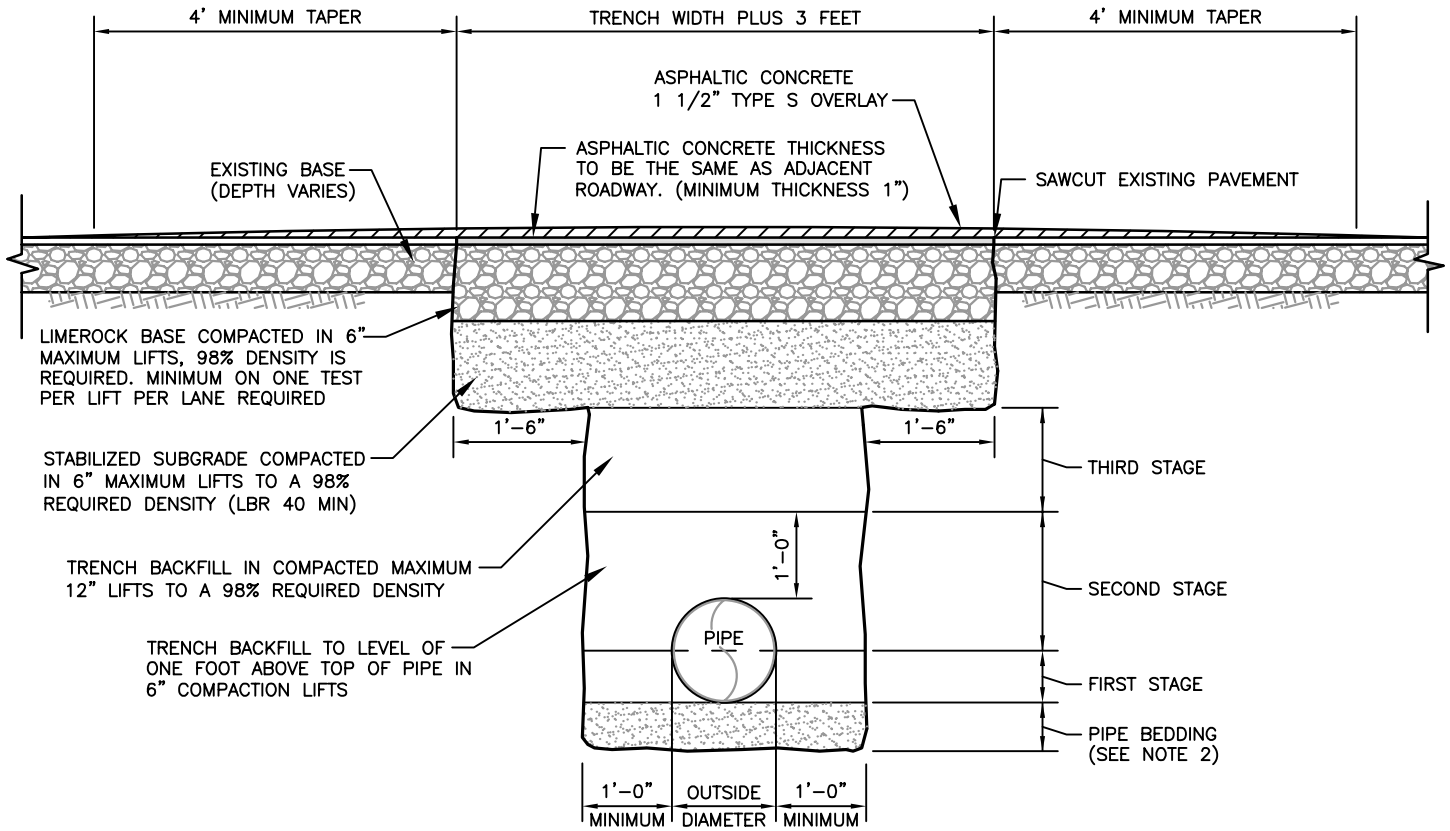
PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)	
	TEE (3)	REDUCER (4)
6 x 4	0	40
6 x 6	34	
8 x 4	0	72
8 x 8	55	
10 x 6	3	74
10 x 10	75	
12 x 4	0	122
12 x 8	31	75
12 x 12	95	
16 x 6	0	153
16 x 10	44	107
16 x 16	134	
18 x 8	0	157
18 x 12	68	108
18 x 18	152	
20 x 10	20	161
20 x 16	120	77
20 x 20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

NOTES:

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

PIPE RESTRAINT SCHEDULE

NTS



NOTES:

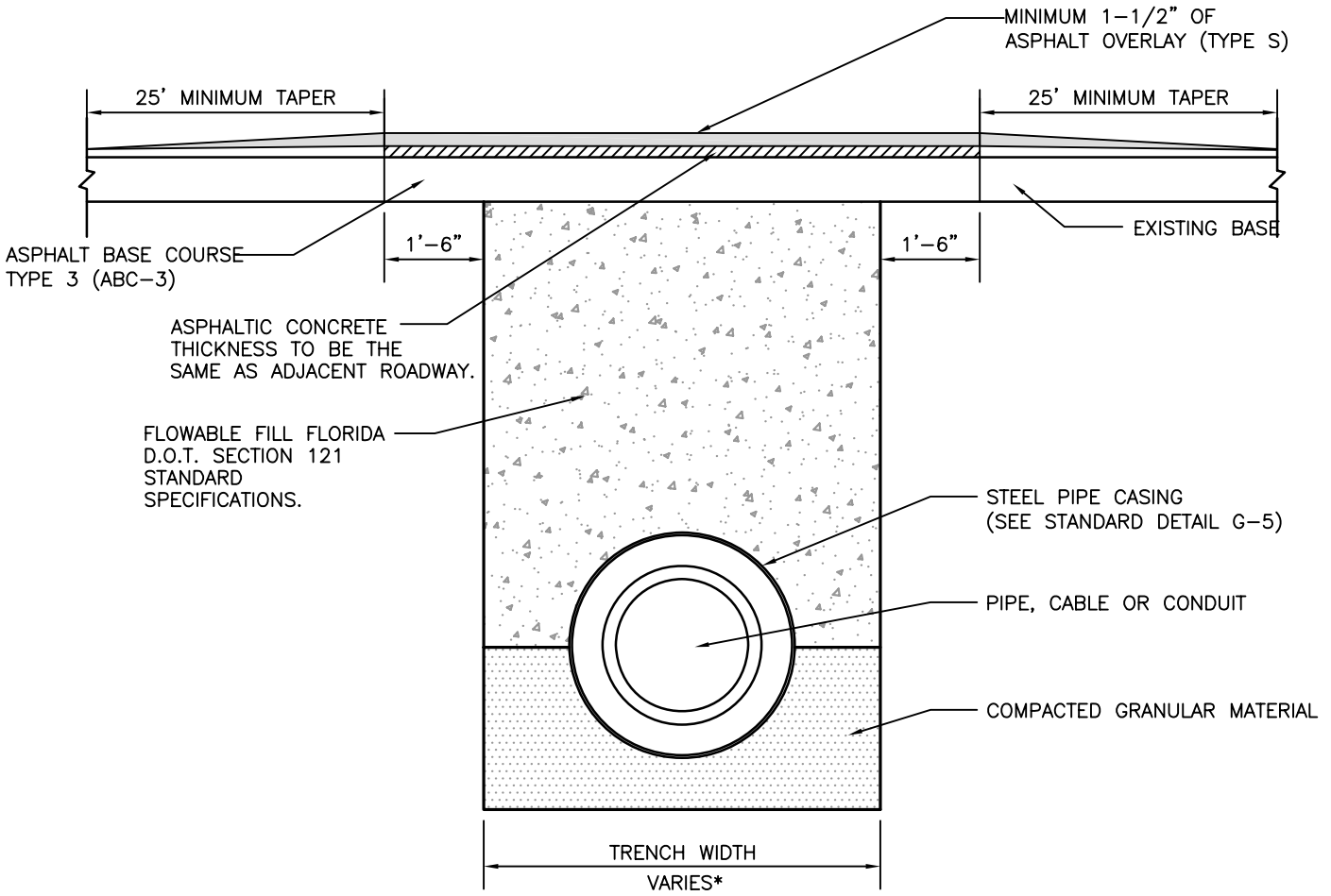
1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.
2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.
3. R.O.W. PERMIT STIPULATIONS OVERRIDE THIS DETAIL WHERE TRENCH IS LOCATED WITHIN A COUNTY R.O.W.

PAVED AREA TRENCH RESTORATION DETAIL FOR PRIVATE ROADS

NTS

G-2

REVISED: APRIL 2006



*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLIS 2 FEET

NOTES:

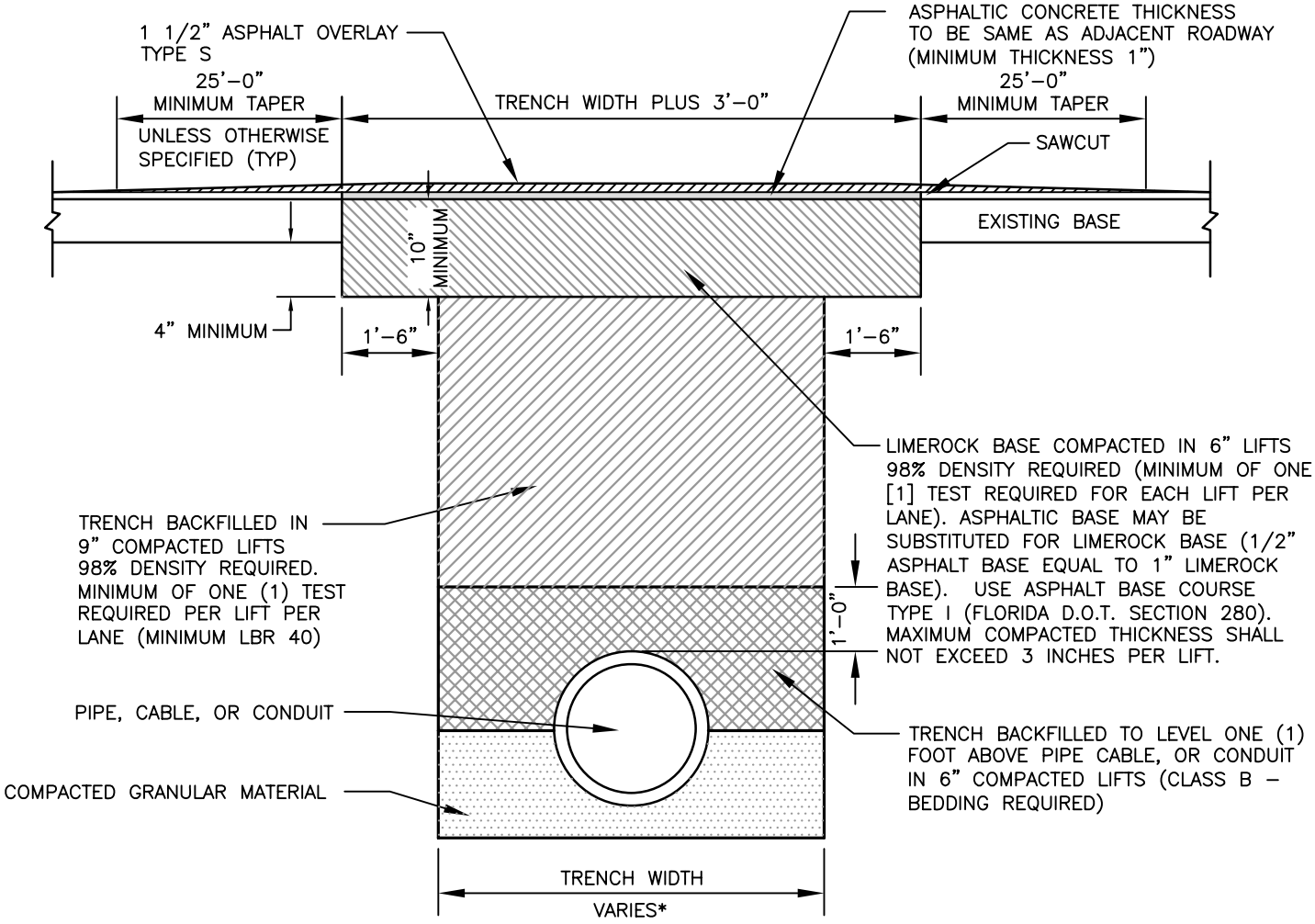
1. OVERLAY REQUIRED AT COLLIER COUNTY'S DISCRETION.
2. WRAP PIPE JOINTS WITH FILTER FABRIC.
3. ALL PIPES SHALL BE CONSTRUCTED WITHIN STEEL CASING PIPE IF INSTALLED ON A ROAD TO BE WIDENED.
4. RIGHT–OF–WAY PERMIT STIPULATIONS OVERRIDE THIS DETAIL WHERE TRENCH IS LOCATED WITHIN A COUNTY RIGHT–OF–WAY.

STATE ROAD, MAJOR COUNTY ROAD, AND NUMBERED COUNTY ROAD FLOWABLE FILL ROAD AND TRENCH RESTORATION

NTS

G–2A

REVISED: APRIL 2006



*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLUS 2 FEET

NOTES:

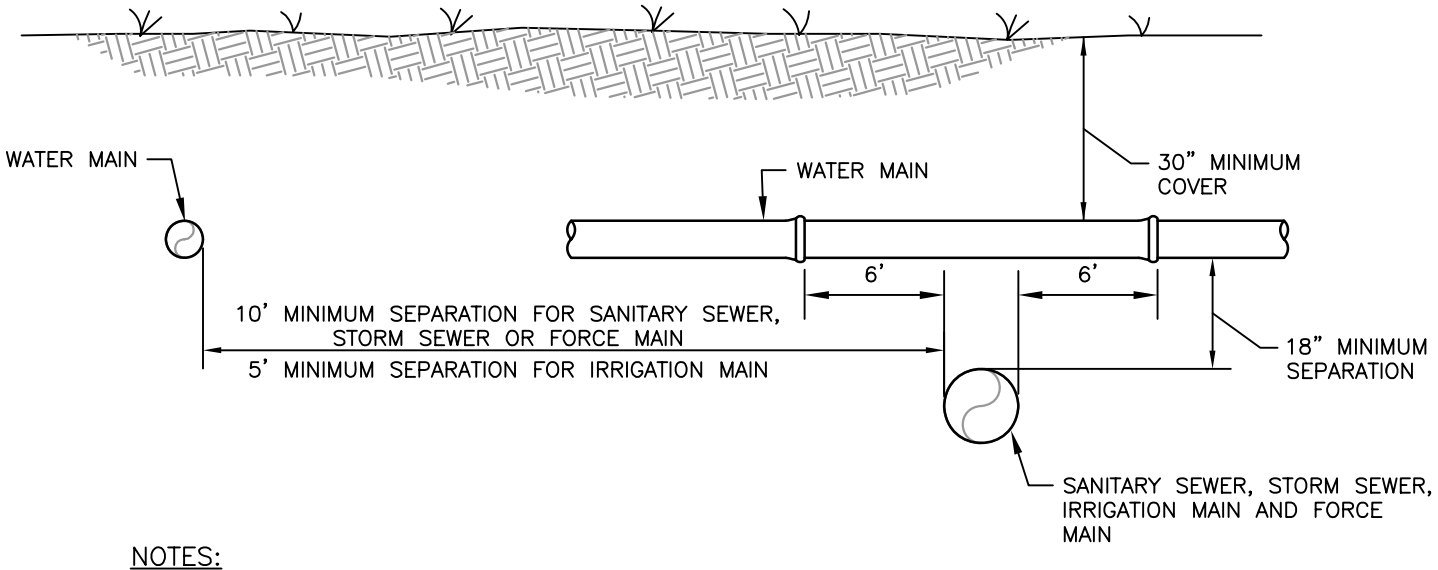
1. ALL MODIFIED PROCTOR AND DENSITY TESTS SHALL BE TAKEN BY A CERTIFIED LABORATORY.
2. ALL TESTS SHALL BE COMPLETED AND SHALL MEET MINIMUM DENSITY REQUIREMENTS PRIOR TO ADDITIONAL BACKFILLING.
3. ALL PIPES SHALL BE CONSTRUCTED WITHIN STEEL CASING PIPE IF INSTALLED ON COUNTY MAINTAINED ROADS OR IF A ROAD IS TO BE WIDENED.
4. RIGHT-OF-WAY PERMIT STIPULATIONS OVERRIDE THIS DETAIL WHERE TRENCH IS LOCATED WITHIN A COUNTY RIGHT-OF-WAY.

ROAD AND TRENCH RESTORATION FOR LOCAL ROADS

NTS

G-2B

REVISED: APRIL 2006



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 THICKNESS CLASS 200 AWWA C–900 DR14, PVC (CLASS 235 AWWA C–905, DR 18, PVC FOR PIPES GREATER THAN 12" IN DIAMETER) OR DUCTILE IRON, PRESSURE CLASS 250 PIPE FOR A HORIZONTAL DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING. WATER MAIN CONCRETE ENCASEMENT SHALL ONLY BE MADE AFTER WRITTEN APPROVAL OF THE WATER DIRECTOR OR HIS DESIGNEE.

2. 18 INCHES CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER CROSSES UNDER SEWER LINE.

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

4. 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 PRESSURE–TYPE SANITARY SEWERS, FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610.

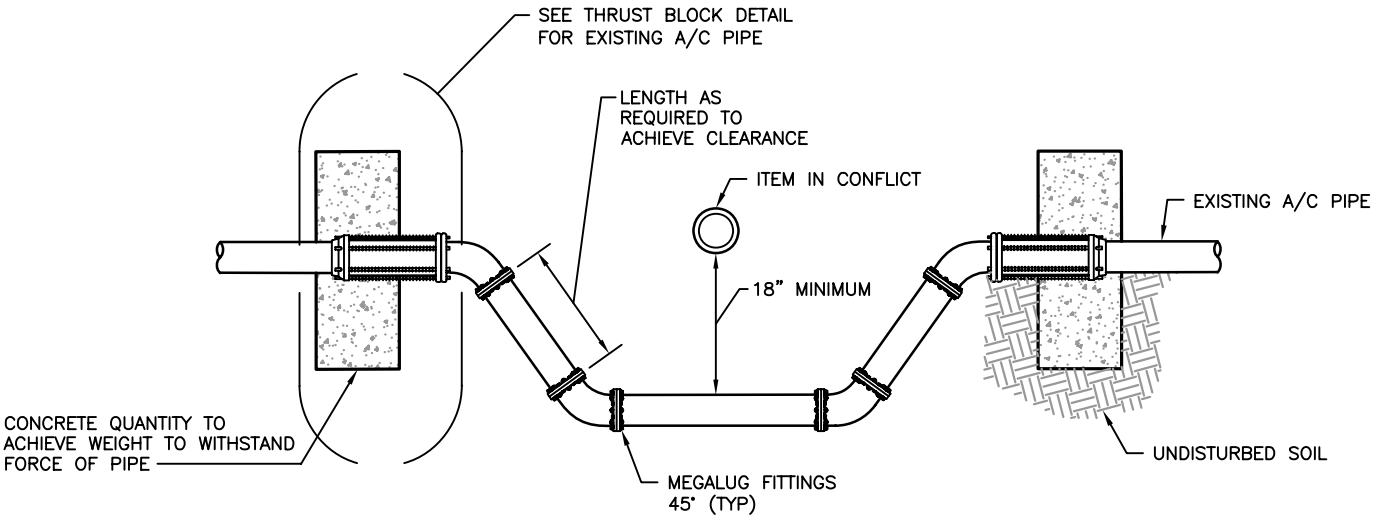
6. 57 STONE SHALL BE UTILIZED FOR SEPARATION BETWEEN GRAVITY SANITARY SEWER LINES AND STORMWATER LINES.

7. SEE SECTION 1– DESIGN CRITERIA, SUBSECTIONS .2.3 AND 1.3 FOR ADDITIONAL REQUIREMENTS.

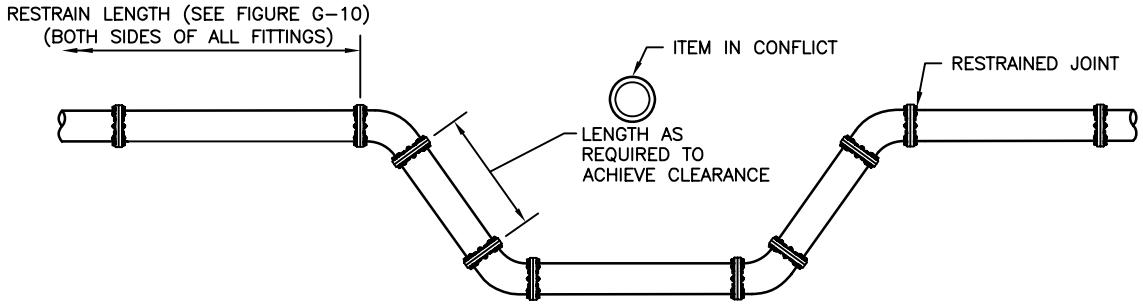
PIPE SEPARATION DETAIL

NTS

REVISED: APRIL 2006



EXISTING A/C PIPE – HEADWALL



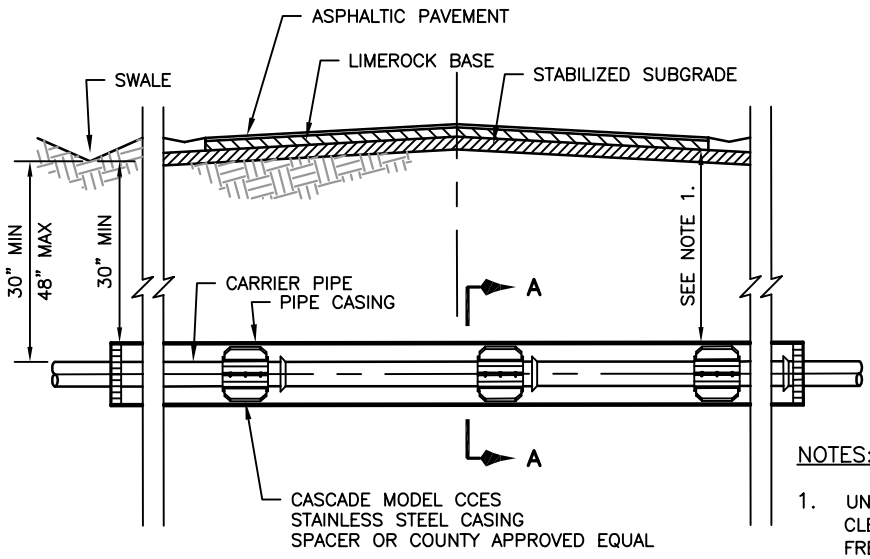
NEW & EXISTING PIPE – RESTRAINED JOINT

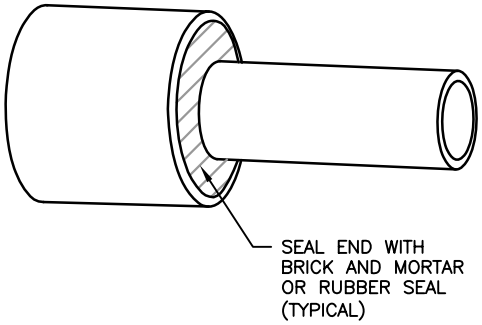
NOTES

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

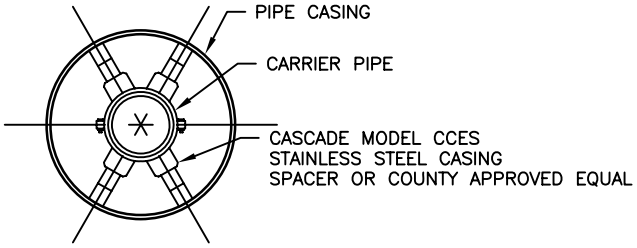
PIPE CONFLICT DETAILS
NTS

REVISED: APRIL 2006

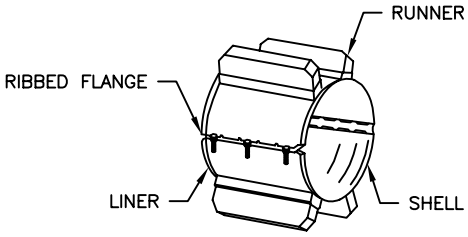




CASING END SEAL



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

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 SHALL BE MODEL CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG COMPANY OF YORKVILLE, ILLINOIS OR COUNTY APPROVED EQUAL.

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.

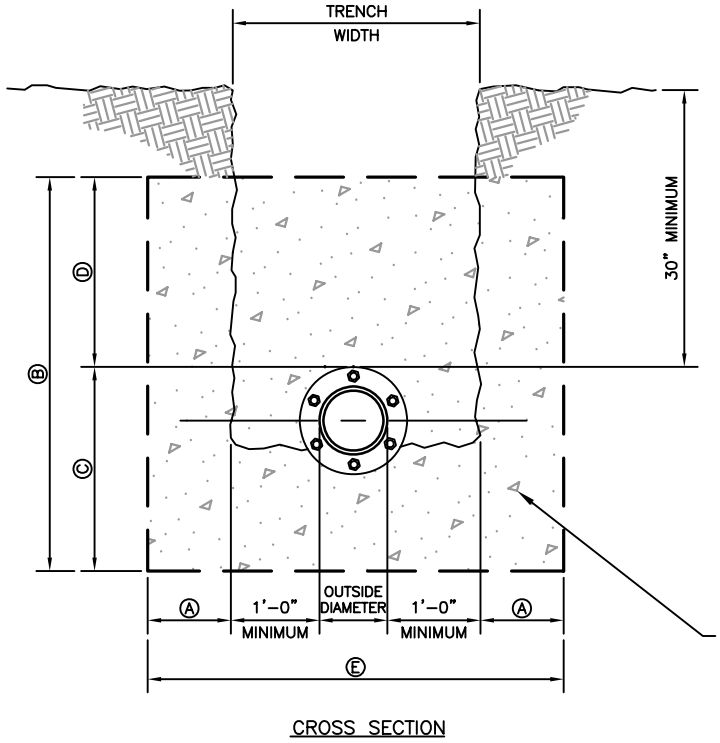
CARRIER PIPE:

1. CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY USE OF MODEL CCS STAINLESS STEEL CASING SPACERS AS MANUFACTURED BY CASCADE WATERWORKS MFG COMPANY OR COUNTY APPROVED EQUAL. SPACERS FOR PIPES OVER 48" MAY REQUIRE THREE PIECE SHELLS. SHELL CONNECTORS ABOVE 48" WILL BE RECEIVER BAR/WASHER PLATE TYPE.

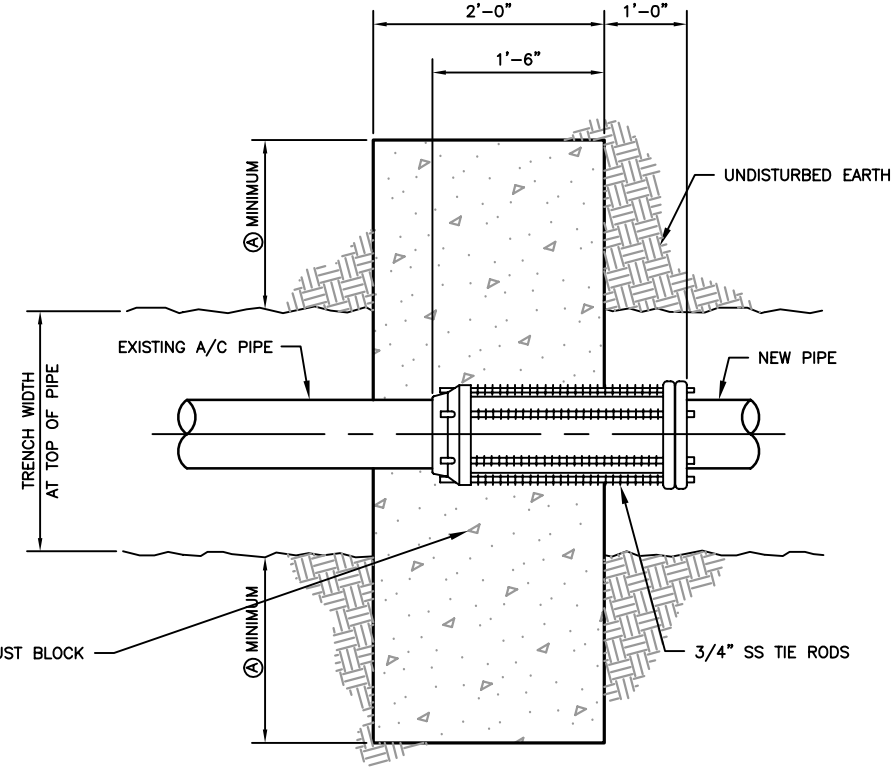
JACK AND BORE DETAIL

NTS

REVISED: APRIL 2006



CROSS SECTION



PLAN VIEW

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

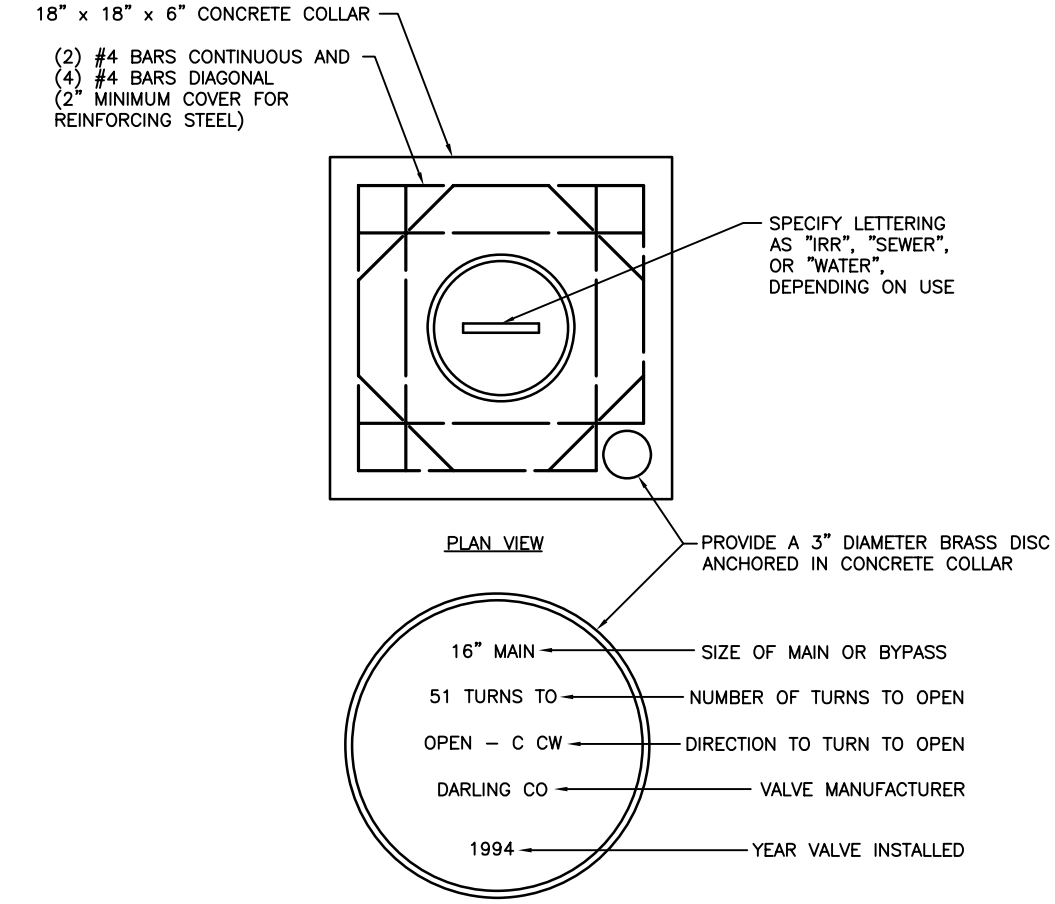
DESIGN ENGINEER SHALL VERIFY ABOVE DIMENSIONS AND THE NUMBER OF TIE RODS.

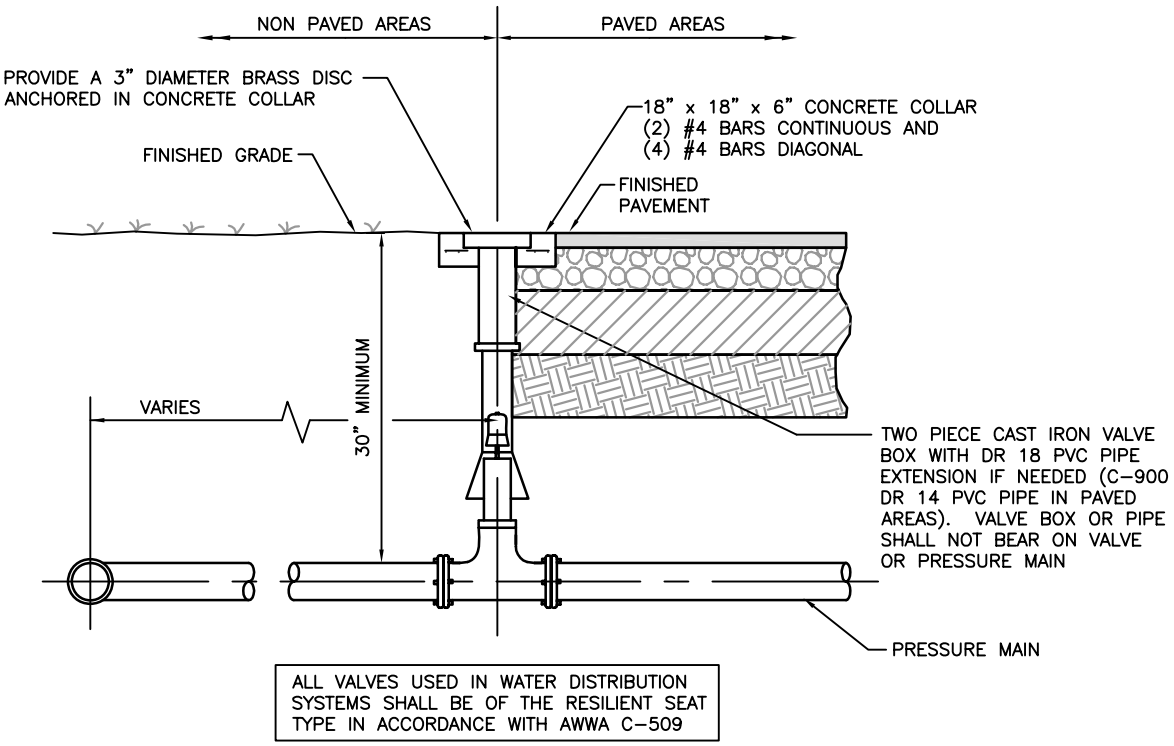
$$\text{CUBIC YARDS OF CONCRETE (CY)} = \frac{\left(\frac{Ⓑ \times Ⓔ}{12}\right) \times 2}{27}$$

THRUST BLOCK DETAIL FOR EXISTING A/C PIPE

NTS

REVISED: APRIL 2006



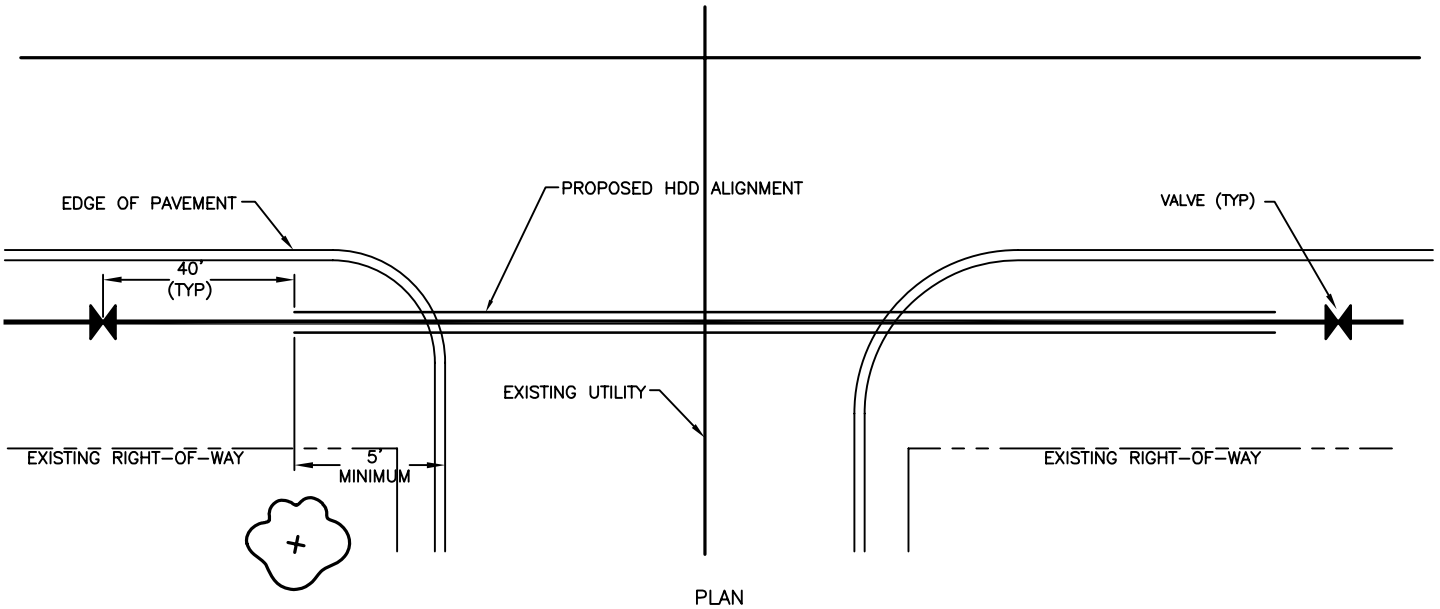


ALL VALVES USED IN WATER DISTRIBUTION SYSTEMS SHALL BE OF THE RESILIENT SEAT TYPE IN ACCORDANCE WITH AWWA C-509

TYPICAL VALVE SETTING DETAIL

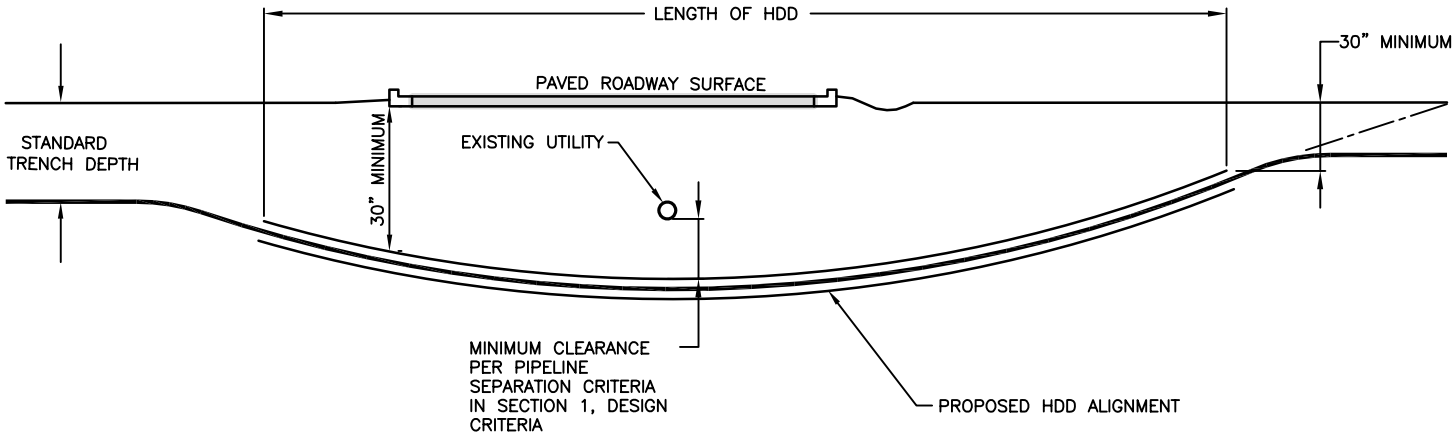
NTS

REVISED: SEPTEMBER 2006



PLAN

HORIZONTAL MINIMUM CLEARANCES



PROFILE

VERTICAL MINIMUM CLEARANCES

HDD INSTALLATION NOTES:

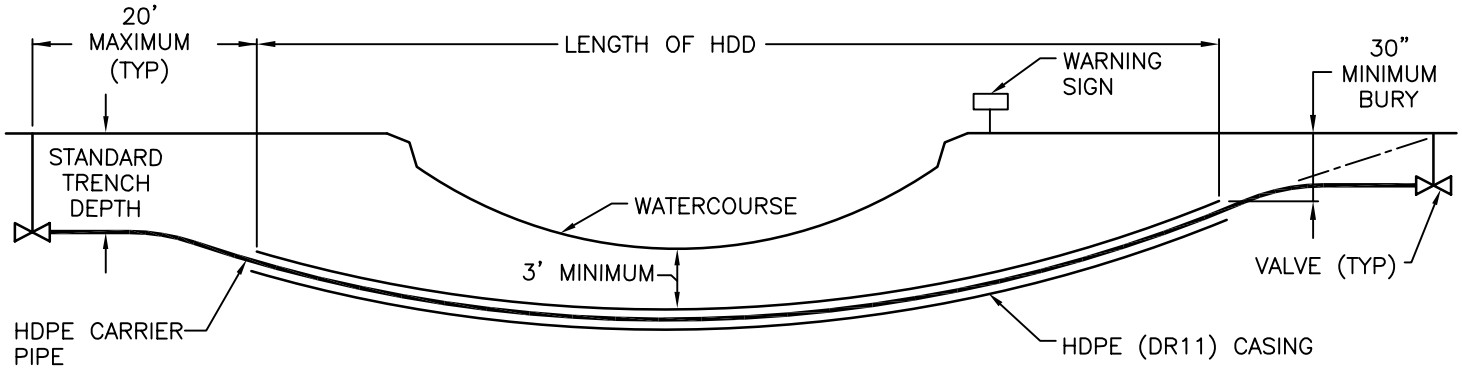
1. ALL WORK SHALL BE IN ACCORDANCE WITH SECTIONS 1 AND 02300 OF THE COLLIER COUNTY UTILITIES STANDARDS MANUAL.
2. ALL HDD INSTALLATION ACTIVITIES SHALL BE IN ACCORDANCE WITH THE FLORIDA D.O.T. UTILITY ACCOMMODATIONS MANUAL AND THE COLLIER COUNTY UTILITIES STANDARDS AND PROCEDURES ORDINANCE.
3. THE CONTRACTOR 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. ALL RESTORATION WORK SHALL BE IN ACCORDANCE WITH THE COLLIER COUNTY UTILITIES STANDARD MANUAL.
6. EXCAVATIONS SHALL BE RESTORED IN ACCORDANCE WITH THE COLLIER COUNTY UTILITIES STANDARD MANUAL AND STANDARD DETAILS FOR TRENCH RESTORATION.
7. CASING DIAMETER SHALL BE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
8. NO SPACERS REQUIRED.
9. ALLOW 40' BETWEEN VALVE AND END OF CASING. DISTANCE LESS THAN 40' REQUIRES APPROVAL OF DEVIATION. THE 40' LENGTH SHALL NOT INCLUDE BRANCHES/TEES IN THE PIPING BETWEEN VALVE AND END OF CASING.
10. VALVES AT EACH END OF THE HDD AND CASING FOR THE HDD ARE REQUIRED FOR NUMBERED COUNTY ROADS, STATE ROADS AND AT INTERSECTIONS WITH NUMBERED COUNTY ROADS AND STATE ROADS.

TYPICAL HORIZONTAL DIRECTIONAL DRILL (HDD) UNDER A ROADWAY

NTS

G-8

REVISED: APRIL 2006



PROFILE

HDD INSTALLATION NOTES:

1. PROVIDE VALVES AT BOTH ENDS OF SUBAQUEOUS CROSSING. FOR WATER MAIN CROSSINGS, THE VALVE CLOSEST TO THE WATER SUPPLY SHALL BE IN A VAULT WITH PERMANENT TAPS ON EACH SIDE OF THE VALVE WITHIN THE VAULT. SEE DETAIL G-9A.

2. FOR POTABLE WATER, PROVIDE VALVE VAULT (PER DETAIL 9A) FOR MAINS 12" OR LESS IN DIAMETER.

3. PROVIDE AIR RELEASE VALVES: ONE VALVE ON EACH SIDE OF CROSSING (PER DETAIL WW-14) FOR WASTEWATER CROSSINGS AND ONE VALVE ON EACH SIDE OF CROSSING (PER DETAIL W-5) FOR WATER CROSSINGS.

4. 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.

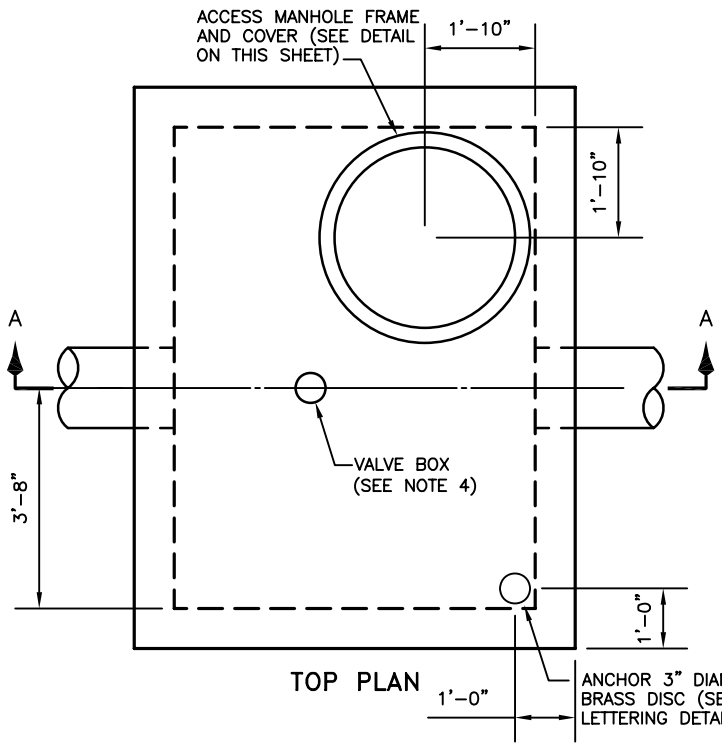
5. WARNING SIGN SHALL BE PLACED ALONG BANK OF WATERWAY TO CLEARLY IDENTIFY SUBAQUEOUS CROSSING. SIGN SHALL INDICATE TYPE OF PIPELINE AND DEPTH OF PIPELINE BELOW BOTTOM OF WATER BODY.

6. ALLOW 40' BETWEEN VALVE AND END OF CASING. DISTANCE LESS THAN 40' REQUIRES APPROVAL OF DEVIATION. THE 40' LENGTH SHALL NOT INCLUDE BRANCHES/TEES IN THE PIPING BETWEEN VALVE AND END OF CASING.

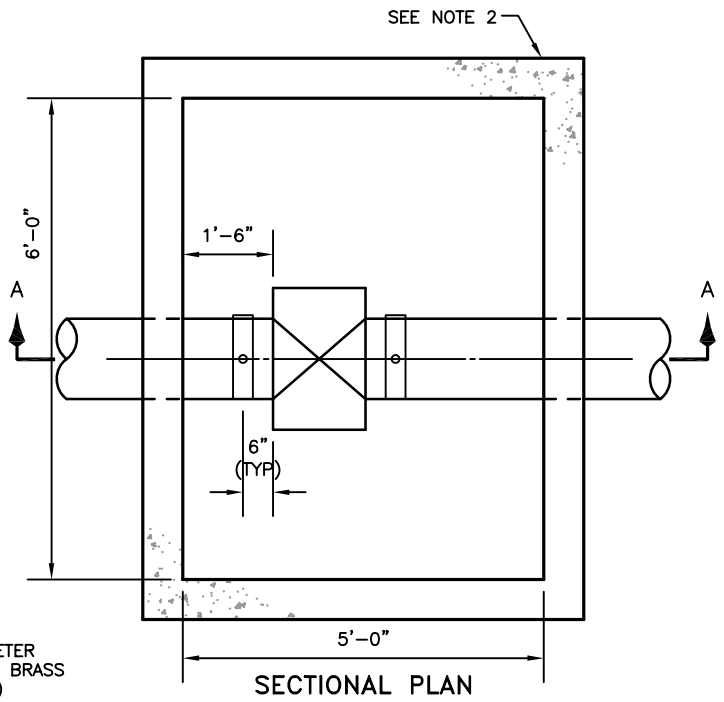
TYPICAL SUBAQUEOUS HORIZONTAL DIRECTIONAL DRILL (HDD)

NTS

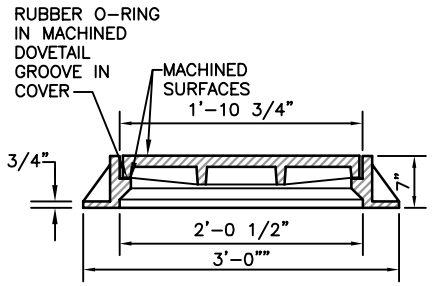
REVISED: APRIL 2006



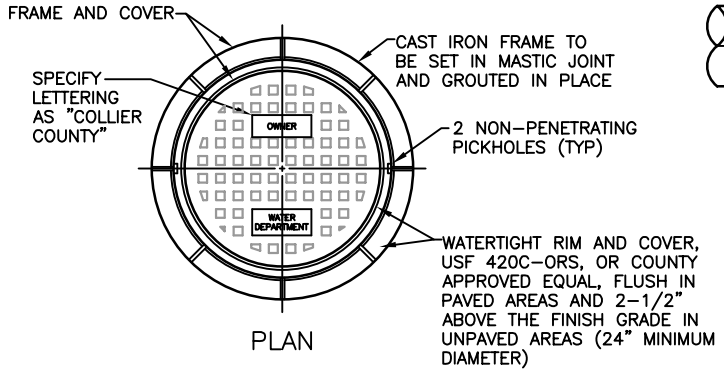
TOP PLAN



SECTIONAL PLAN

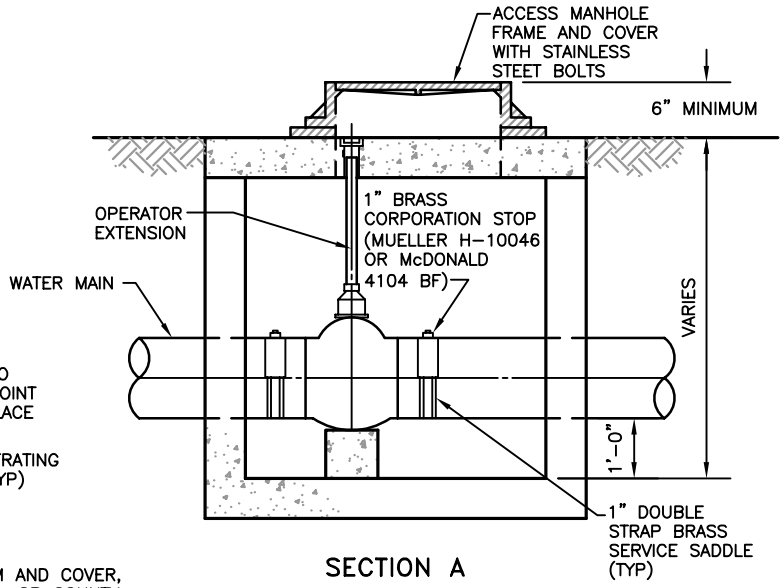


SECTION

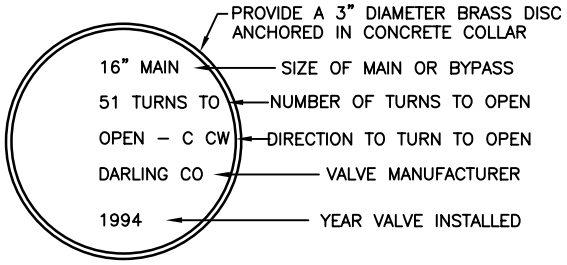


PLAN

MANHOLE RING & COVER DETAIL



SECTION A



BRASS DISC LETTERING

NOTES:

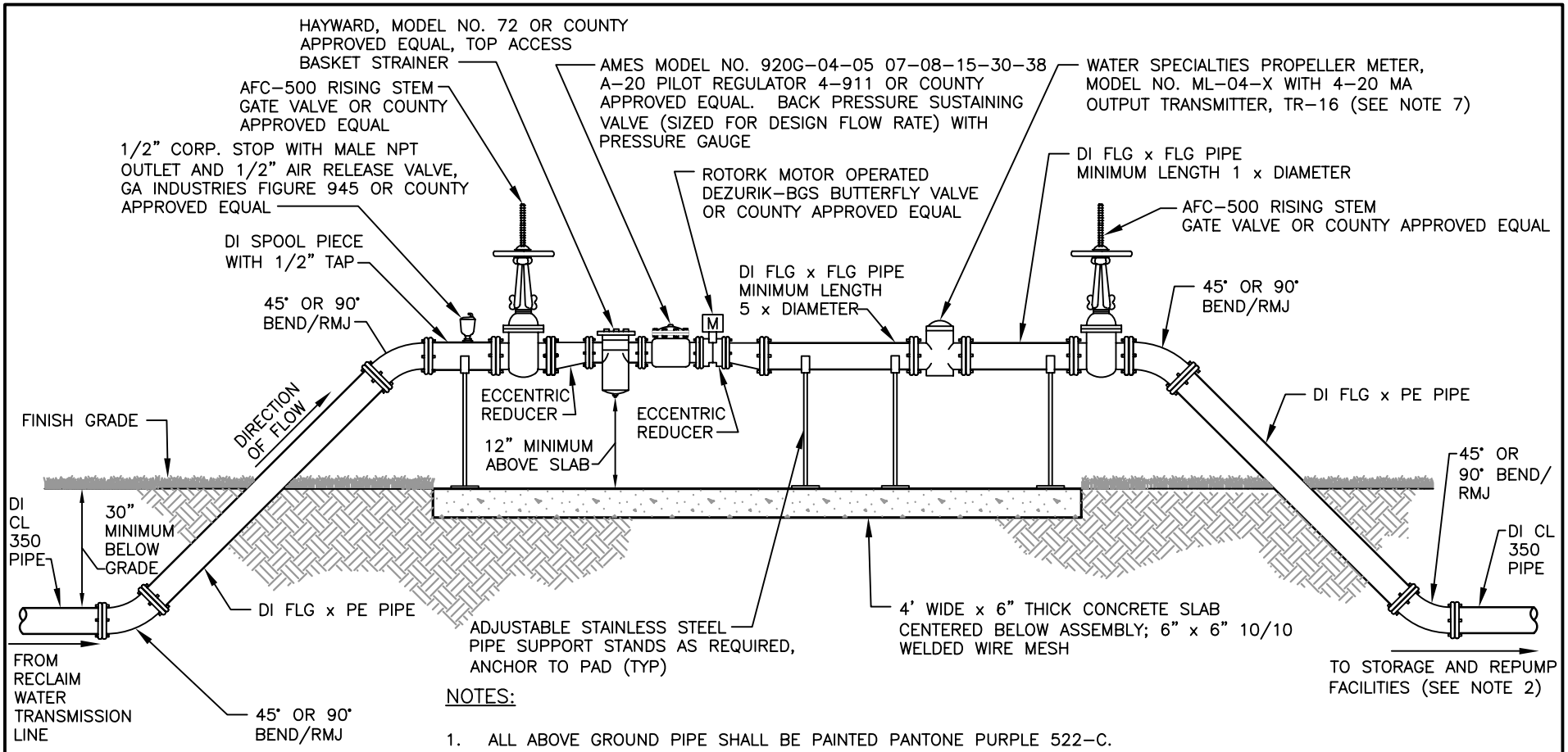
1. THIS DETAIL IS ONLY APPLICABLE FOR VALVES THAT HAVE BEEN SPECIFICALLY CALLED TO BE INSTALLED IN A VAULT
2. VAULT SHALL BE A FLAT TOP TYPE J, SCHEDULE D STRUCTURE WITH A TYPE 7 MANHOLE TOP, IN ACCORDANCE WITH FLORIDA D.O.T. STANDARD INDICES NO. 200 AND 201.
2. ALL VALVES SHALL BE OF THE RESILIENT SEATED TYPE IN ACCORDANCE WITH AWWA C 509.
3. LETTERING FOR THE VALVE COVER BOX SHALL READ "WATER".

G-9A

SUBAQUEOUS WATER MAIN VALVE VAULT DETAIL

NTS

REVISED: APRIL 2006



NOTES:

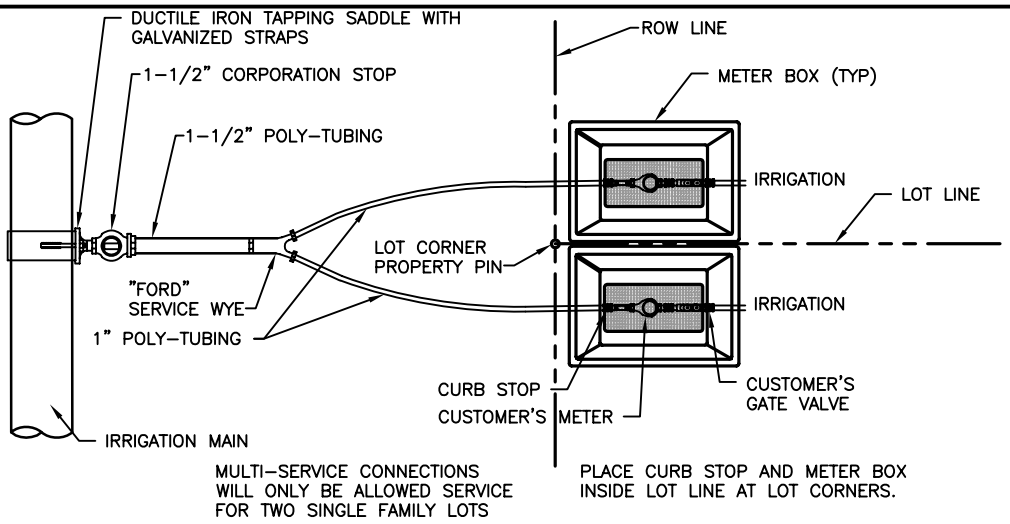
1. ALL ABOVE GROUND PIPE SHALL BE PAINTED PANTONE PURPLE 522-C.
2. THIS INCLUDES ALL STORAGE AND REPUMP FACILITIES TO BE TURNED OVER AND DEDICATED TO THE COUNTY.
3. ALL ABOVE GROUND PIPES WILL BE FLANGED END. ALL NUTS & BOLTS SHALL BE STAINLESS STEEL.
4. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. SUBMIT FOR REVIEW AND APPROVAL. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS.
5. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
6. ALL PIPES UNDER 3" SHALL BE BRASS.
7. METER ASSEMBLY SHALL BE LOCATED WITHIN C.U.E.
8. REFER TO NP-ELECTRICAL DETAILS FOR ADDITIONAL REQUIREMENTS AND CONDITIONS.

STANDARD NON-POTABLE IRRIGATION METER ASSEMBLY SERVICE CONNECTION

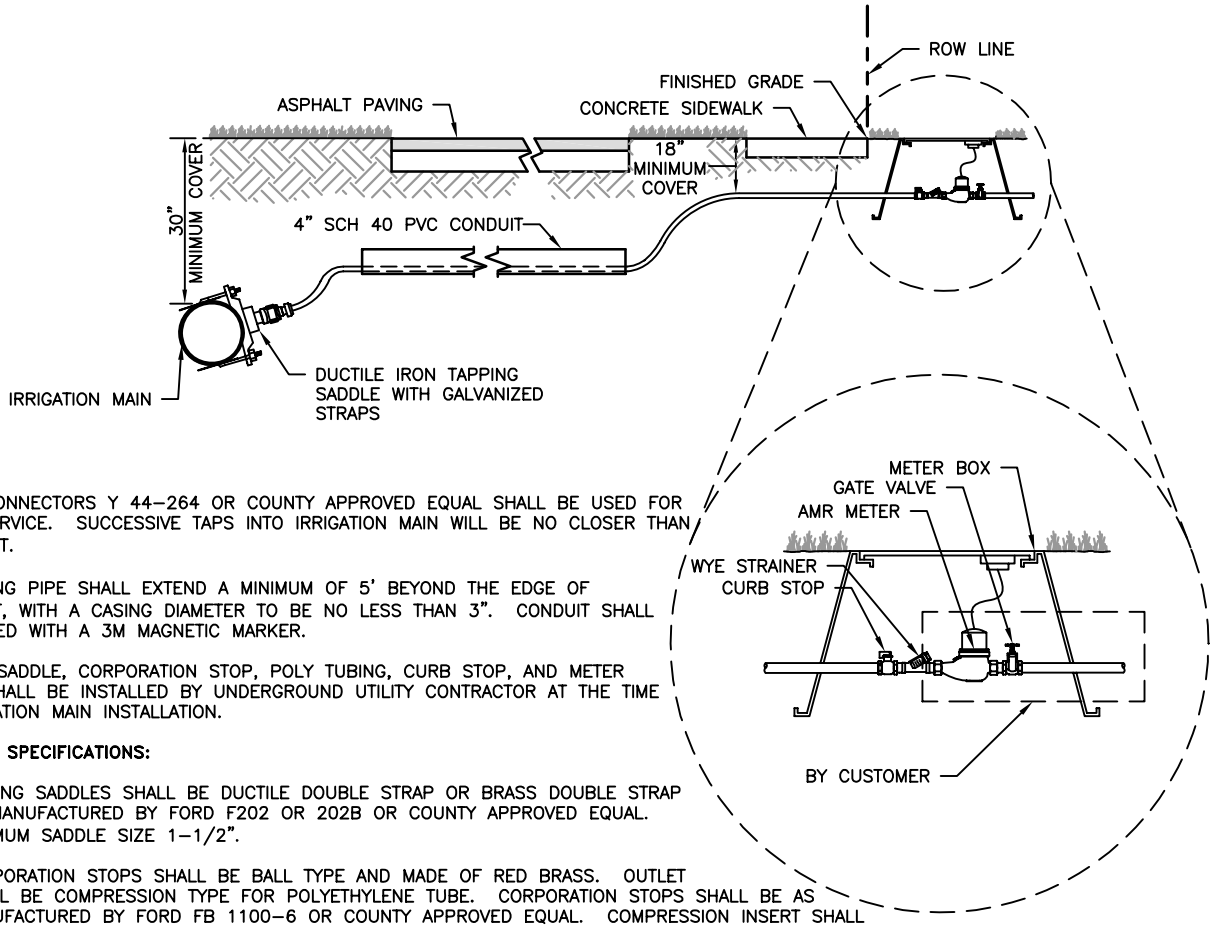
NTS

NP-1

REVISED: APRIL 2006



MULTIPLE METER SERVICE CONNECTIONS



NOTES:

1. "FORD" CONNECTORS Y 44-264 OR COUNTY APPROVED EQUAL 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 A 3M MAGNETIC MARKER.

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 AS MANUFACTURED BY FORD F202 OR 202B OR COUNTY APPROVED EQUAL. MINIMUM SADDLE SIZE 1-1/2".

   B. CORPORATION STOPS SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE FOR POLYETHYLENE TUBE. CORPORATION STOPS SHALL BE AS MANUFACTURED BY FORD FB 1100-6 OR COUNTY APPROVED EQUAL. COMPRESSION INSERT SHALL BE STAINLESS STEEL.

   C. CURB STOPS SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION. CURB STOP SHALL BE AS MANUFACTURED BY FORD B 43-342 WG OR COUNTY APPROVED EQUAL.

   D. TUBING SHALL BE POLYETHYLENE, PE3408, (AWWA C-901, SDS 9-200) AND PURPLE IN COLOR; SIZES SHALL BE 1-1/2" UP TO WYE AND 1" AFTER WYE FOR LONG AND SORT SIDE SERVICES.

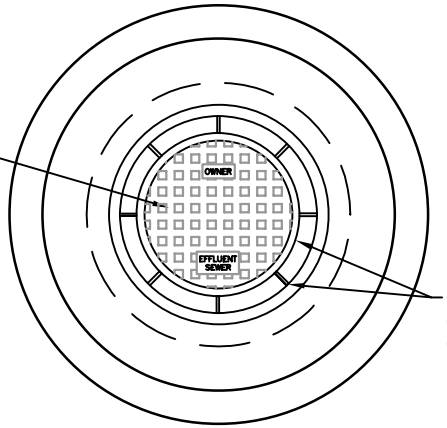
   E. METER BOXES:
   3/4" TO 1" METERS SHALL BE ALLIANCE 12" AUTOMATIC METER READER (AMR) BOX (16AMR SERIES) OR COUNTY APPROVED EQUAL, CAST IRON READ LID; 1-1/2" TO 2" METERS SHALL BE ALLIANCE 12" AUTOMATIC METER READER BOX (16AMR SERIES) OR COUNTY APPROVED EQUAL, CAST IRON READ LID.

TYPICAL IRRIGATION SERVICE METER SETTING DETAIL FOR CONNECTION TO IRRIGATION MAIN

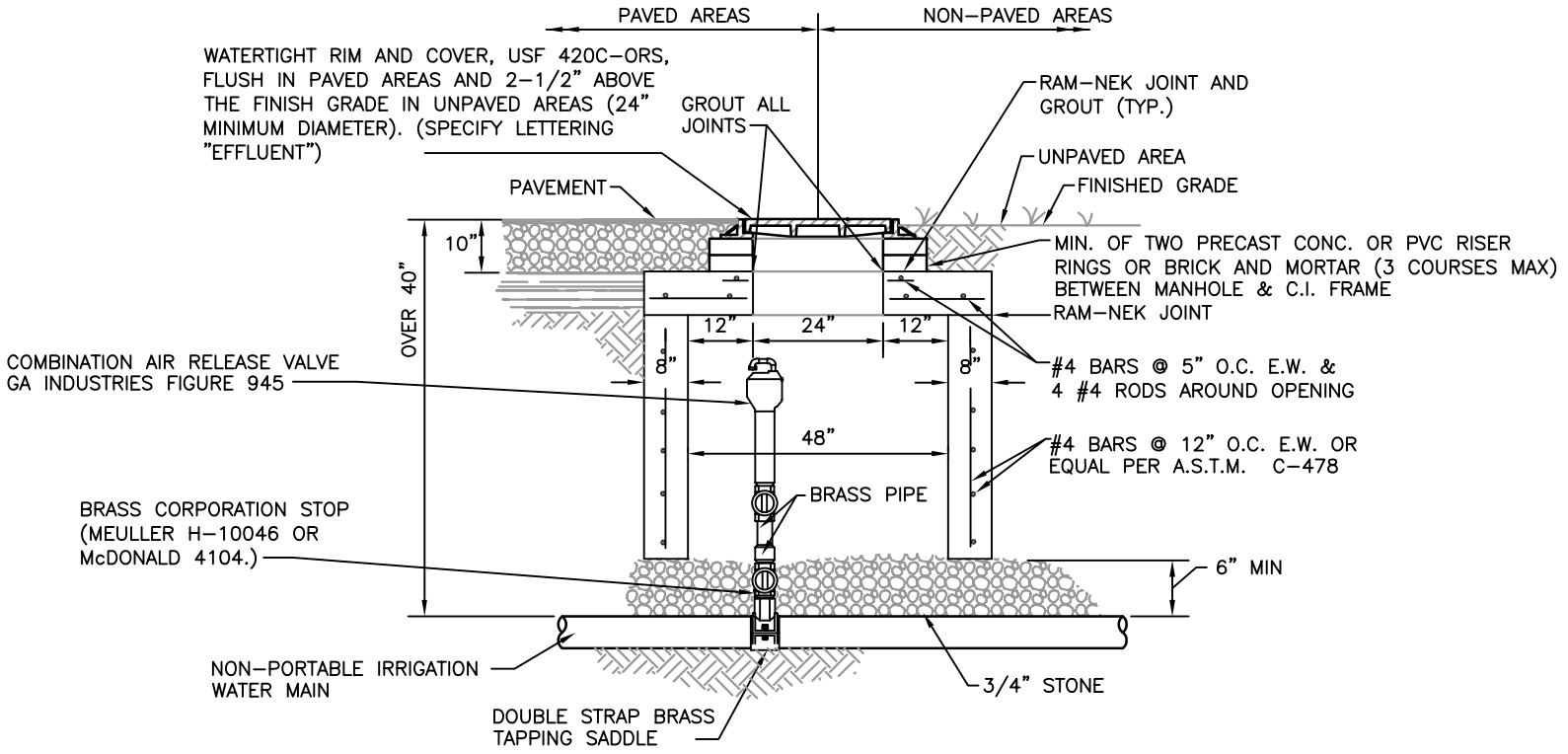
NTS

NP-2

REVISED: SEPTEMBER 2006



PLAN



NON–POTABLE IRRIGATION WATER AIR RELEASE VALVE DETAIL

(OVER 40" COVER)

N.T.S.

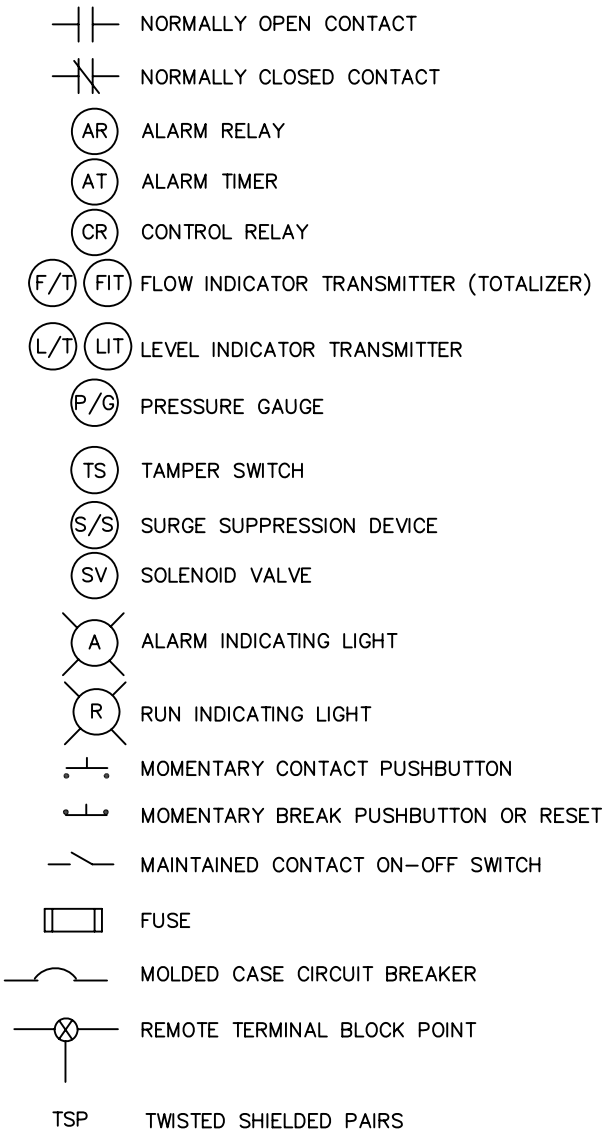
NP–3

REVISED: JULY 2005

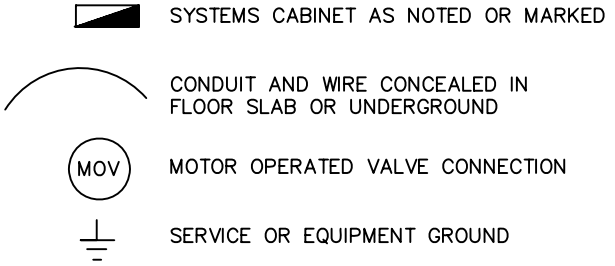
GENERAL NOTES:

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

CONTROL/ELEMENTARY SYMBOLS



ELECTRICAL PLAN SYMBOLS

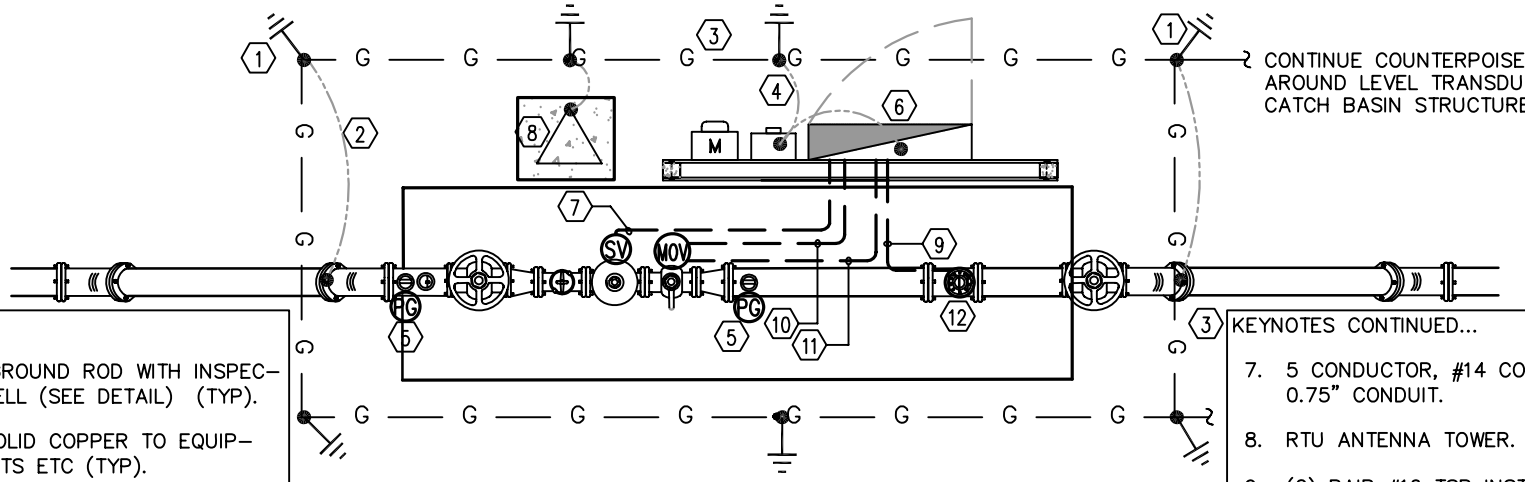


REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
GENERAL NOTE AND KEYNOTES

NTS

NP–E1

REVISED: APRIL 2006



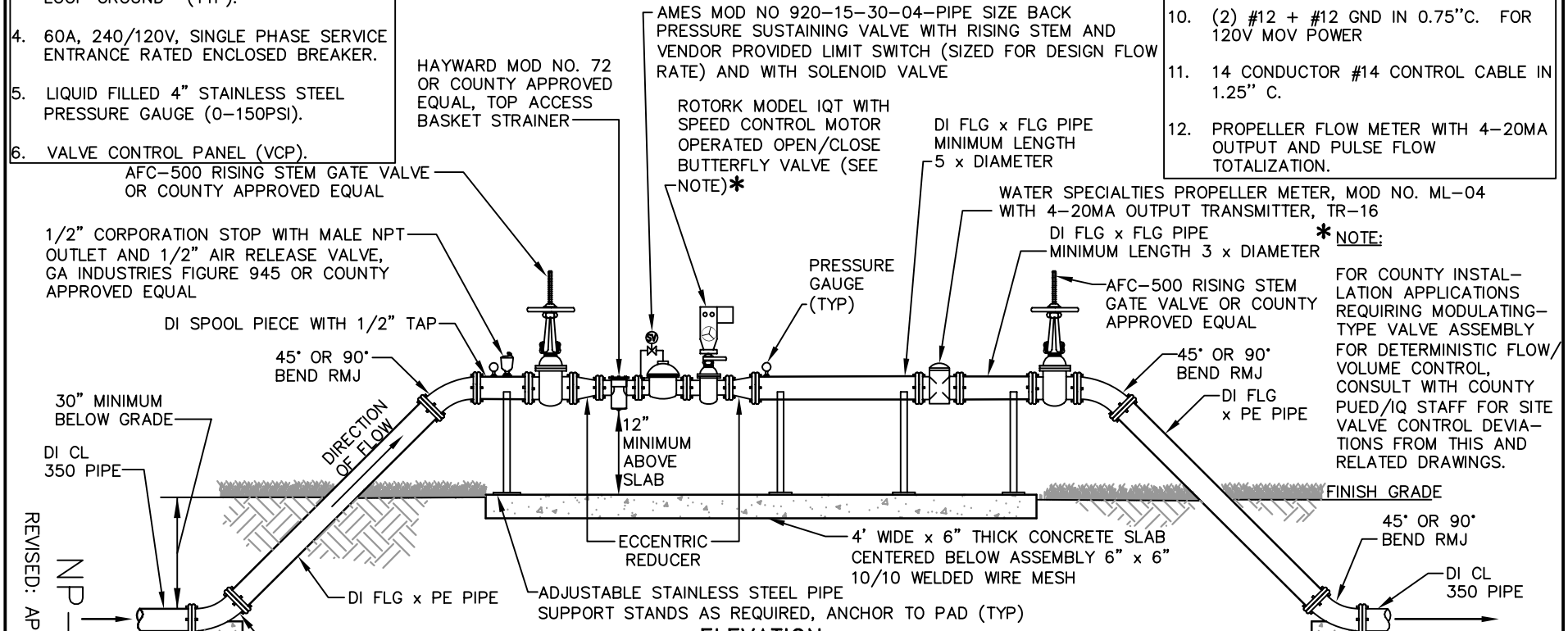
PLAN

(#) KEYNOTES:

1. 20' DRIVEN GROUND ROD WITH INSPECTION TEST WELL (SEE DETAIL) (TYP).
2. #2 TINNED SOLID COPPER TO EQUIPMENT/CABINETS ETC (TYP).
3. #2 TINNED BARE COPPER COUNTERPOISE LOOP GROUND (TYP).
4. 60A, 240/120V, SINGLE PHASE SERVICE ENTRANCE RATED ENCLOSED BREAKER.
5. LIQUID FILLED 4" STAINLESS STEEL PRESSURE GAUGE (0–150PSI).
6. VALVE CONTROL PANEL (VCP).

KEYNOTES CONTINUED...

7. 5 CONDUCTOR, #14 CONTROL CABLE IN 0.75" CONDUIT.
8. RTU ANTENNA TOWER. SEE DETAIL.
9. (2) PAIR #16 TSP INSTRUMENT CABLE IN 1"C.
10. (2) #12 + #12 GND IN 0.75"C. FOR 120V MOV POWER
11. 14 CONDUCTOR #14 CONTROL CABLE IN 1.25" C.
12. PROPELLER FLOW METER WITH 4–20MA OUTPUT AND PULSE FLOW TOTALIZATION.



ELEVATION

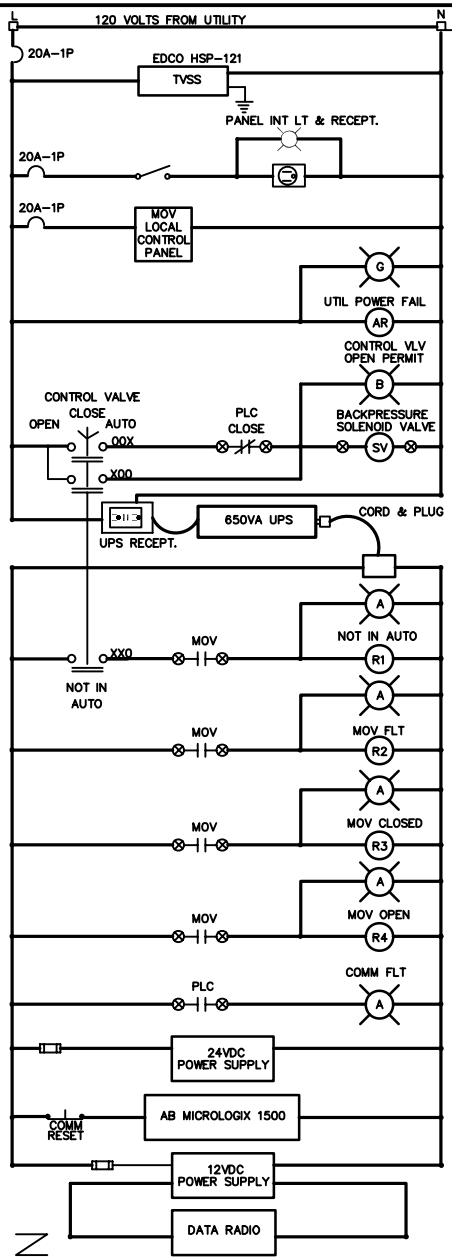
* NOTE:

FOR COUNTY INSTALLATION APPLICATIONS REQUIRING MODULATING–TYPE VALVE ASSEMBLY FOR DETERMINISTIC FLOW/VOLUME CONTROL, CONSULT WITH COUNTY PUED/IQ STAFF FOR SITE VALVE CONTROL DEVIATIONS FROM THIS AND RELATED DRAWINGS.

REVISED: APRIL 2006

REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
OPEN/CLOSED NON–POTABLE IRRIGATION METER ASSEMBLY

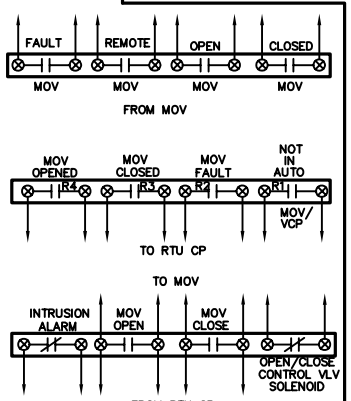
NTS

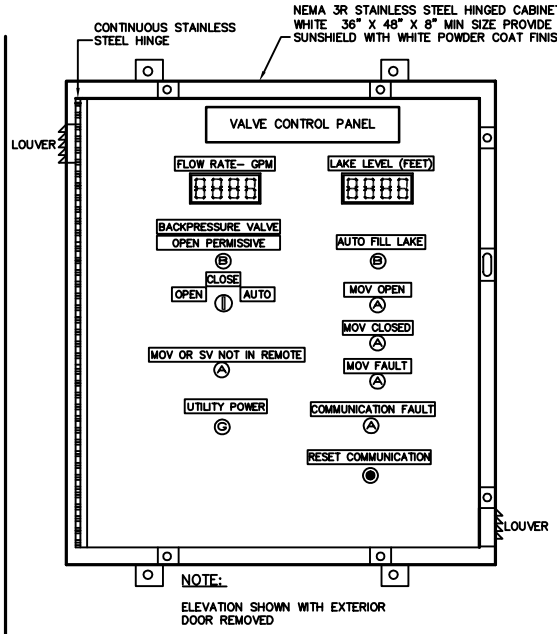


NOTE:

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

VALVE CONTROL PANEL ELEMENTARY

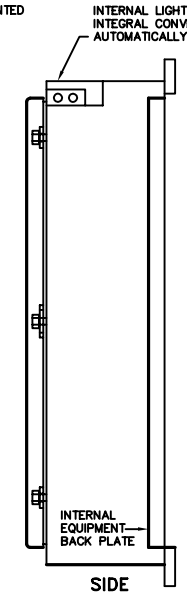




NOTE:

ELEVATION SHOWN WITH EXTERIOR DOOR REMOVED

FRONT



SIDE

KEYNOTES

1. DOOR CONTACT INTRUSION ALARM. PLUNGER TYPE
2. 12VDC POWER SUPPLY, ALLEN BRADLEY 1606 SERIES
3. 120VAC SURGE SUPPRESSOR, EDCO HSP121
4. COAX SURGE SUPPRESSOR, POLYPHASER ISB56LN SERIES BULKHEAD MOUNT SERIES
5. 24VDC POWER SUPPLY, ALLEN BRADLEY 1606 SERIES
6. DATA RADIO UHF RADIO AMPLIFIER. MODEL #PA6-1AB-RS-SSR-N WITH 10-25WATT OUTPUT AND 100% DUTY CYCLE.
7. PLC
8. DATA SIGNAL LINE SURGE SUPPRESSOR, EDCO PC642 SERIES
9. DATA RADIO, INTEGRA-TR
10. 110VAC CONTROL RELAY. TYPICAL UNLESS NOTED OTHERWISE
11. 24VDC CONTROL RELAY

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

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

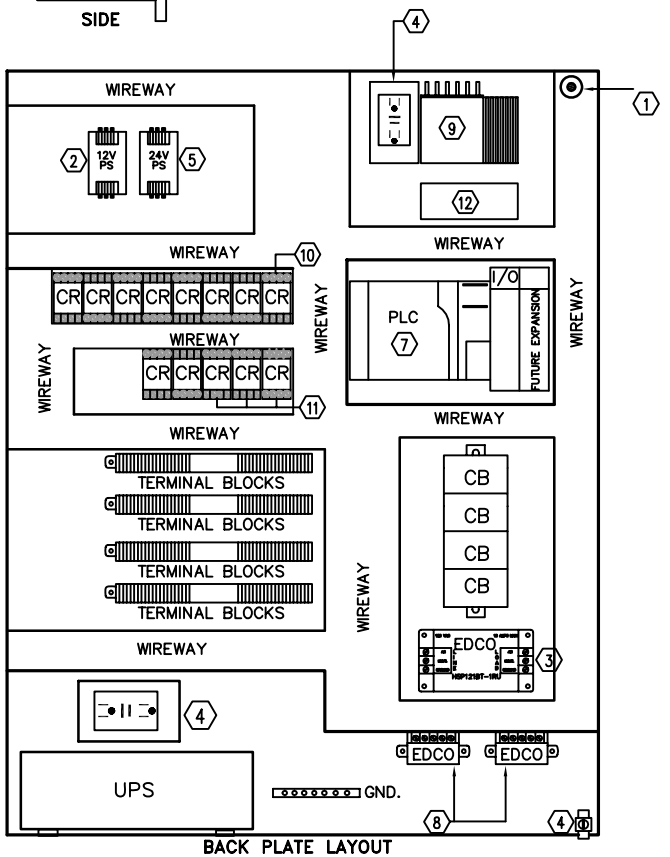
DIGITAL IN
1) MOV OPEN
2) MOV CLOSED
3) MOV OR VCP NOT IN REMOTE
4) MOV FAULT
5) UTILITY POWER FAILURE
6) RAIN GAUGE*
* (REQUIRED ONLY AT SITES EQUIPPED WITH THE ISCO 674)
7) VALVE CONTROL PANEL NOT IN AUTO
8) DOOR INTRUSION ALARM
9) BACK PRESSURE SUSTAINING VALVE LIMIT SWITCH
10) PULSED FLOW RATE (FOR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

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

PLC
ALLEN BRADLEY MICROLOGIX 1500 WITH DUAL COMMUNICATION PORT PROCESSOR, DATA ACCESS TOOL, MEMORY MODULE WITH REAL TIME CLOCK, ETHERNET ADAPTER, BATTERY BACK-UP AND 4 POINT ANALOG INPUT MODULE

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

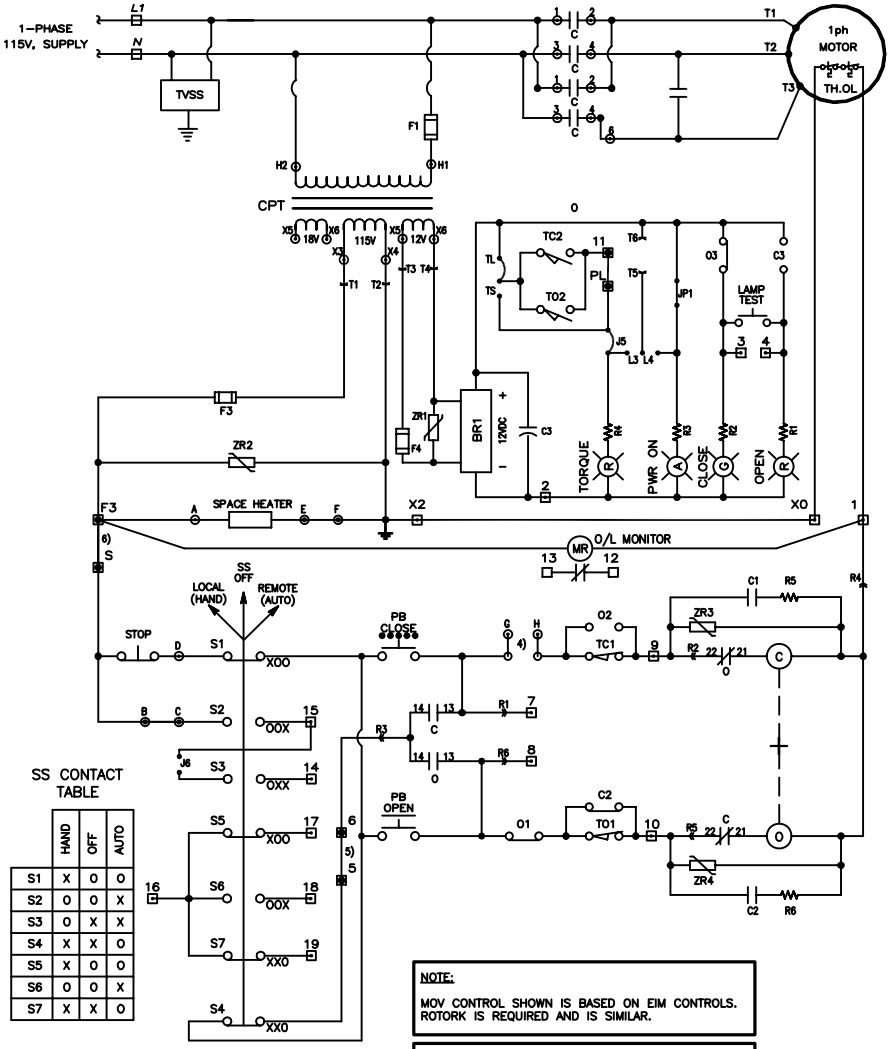
NTS



BACK PLATE LAYOUT

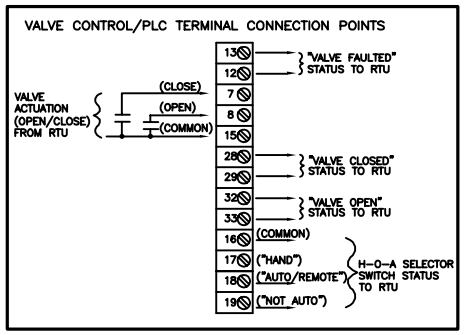
REVISED: APRIL 2006

NP-E3



SS CONTACT TABLE

	HAND	OFF	AUTO
S1	X	0	0
S2	0	0	X
S3	0	X	X
S4	X	X	0
S5	X	0	0
S6	0	0	X
S7	X	X	0



LEGEND

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

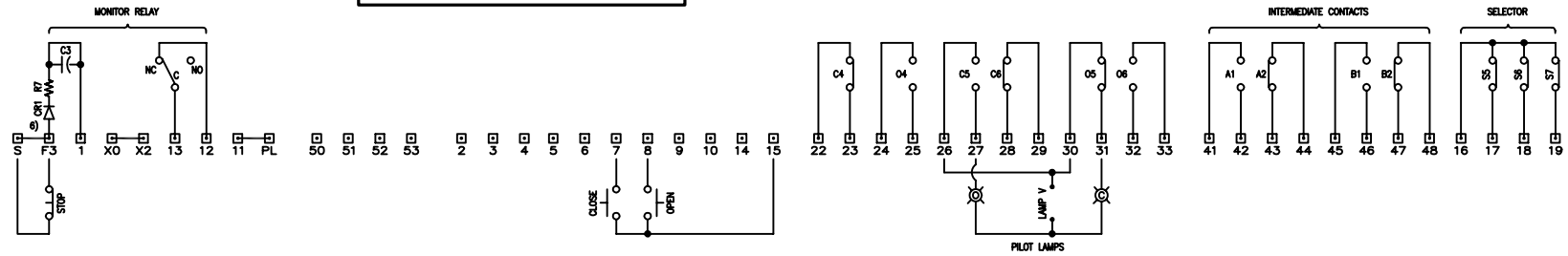
		VALVE POSITION			CONTACT FUNCTION
		CLOSE	MID	OPEN	
CLOSE rotor	C1	0	X	X	CLOSE COIL
	C2	X	0	0	BYPASS TO1
	C3	0	X	X	OPEN LAMP
	C4	X	0	0	
	C5	0	X	X	
	C6	X	0	0	
OPEN rotor	O1	X	X	0	OPEN COIL
	O2	0	0	X	BYPASS TC1
	O3	X	X	0	CLOSE LAMP
	O4	0	0	X	
	O5	X	X	0	
	O6	0	0	X	
A	A1	0		X	SPARE
	A2	X		0	SPARE
B	B1	0		X	SPARE
	B2	X		0	SPARE

NOTES

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

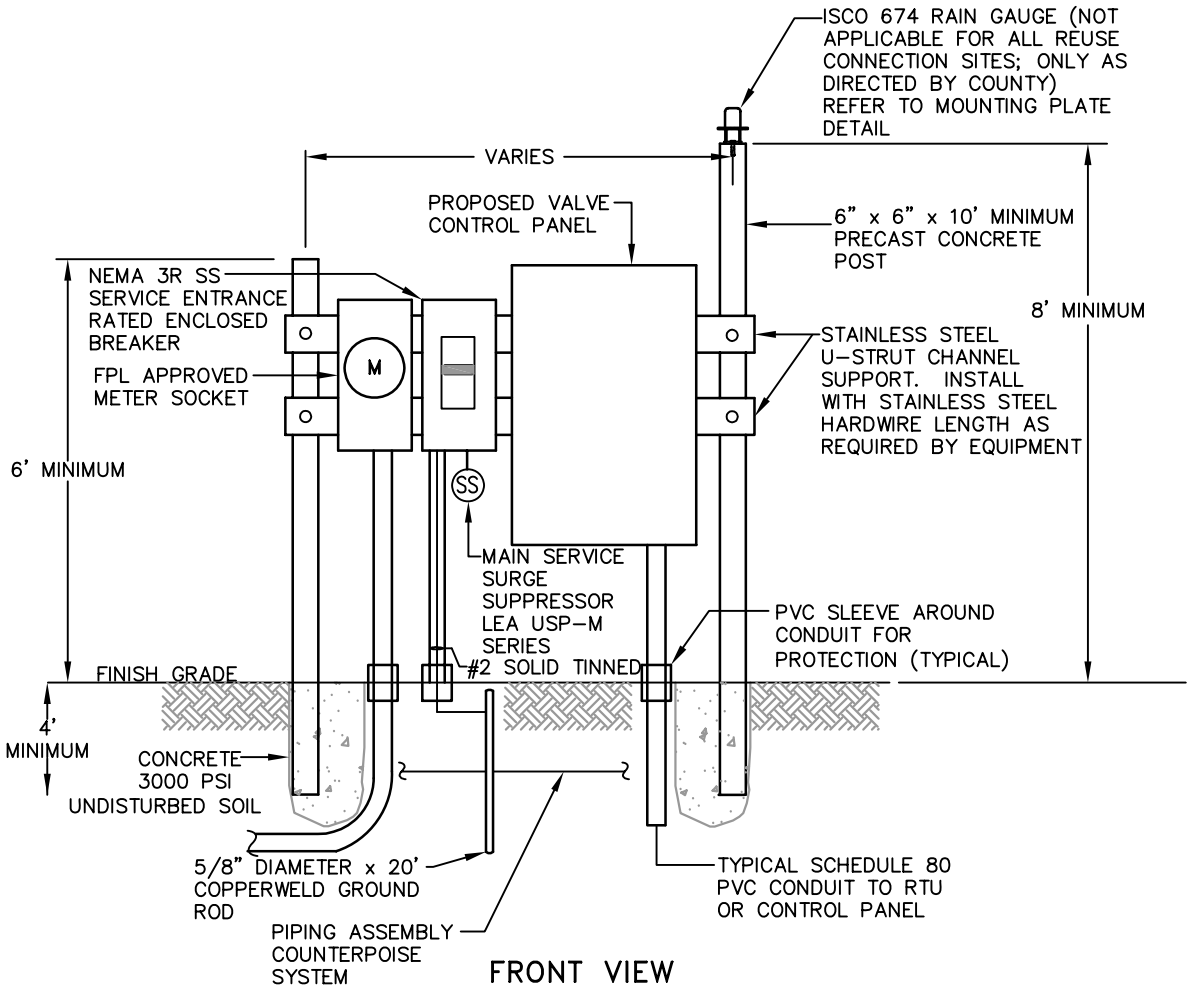
NOTE:
MOV CONTROL SHOWN IS BASED ON EIM CONTROLS. ROTORK IS REQUIRED AND IS SIMILAR.

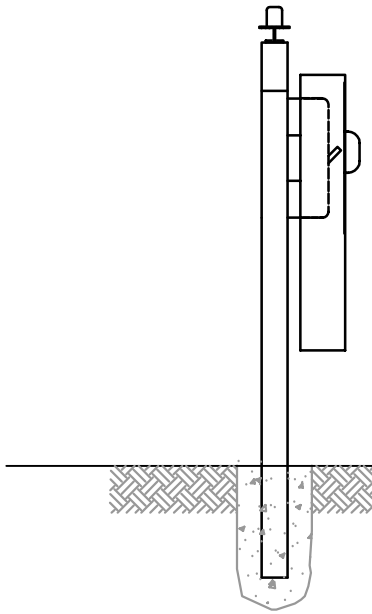
NOTE:
SET VALVE TO FAIL IN PLACE ON LOSS OF POWER.

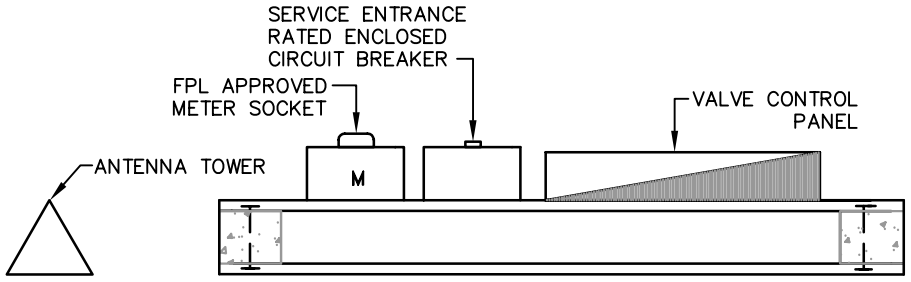


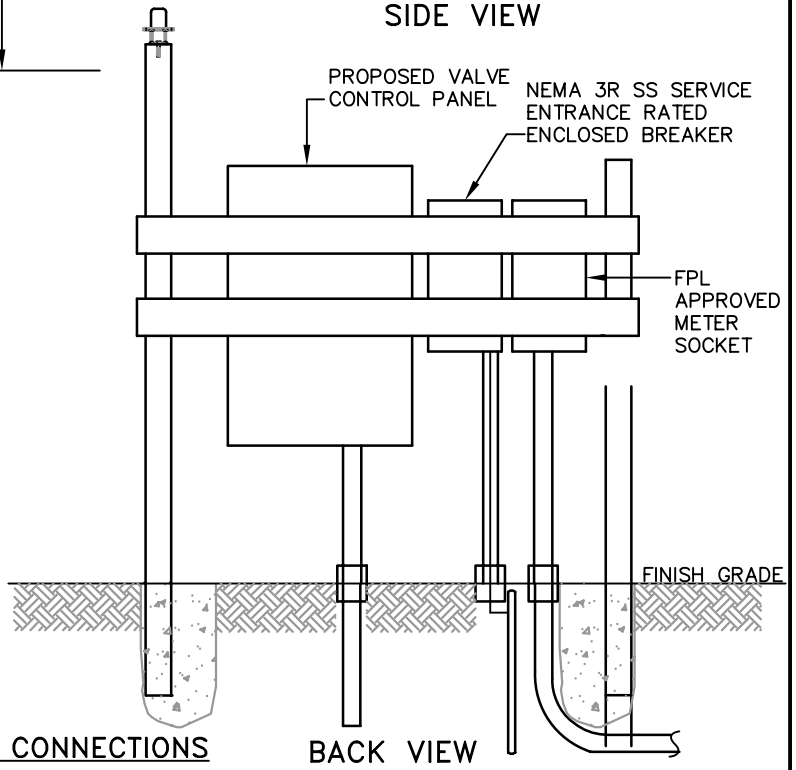
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
OPEN/CLOSED MOV CONTROL DIAGRAM
NTS

NP-E4
REVISED: APRIL 2006







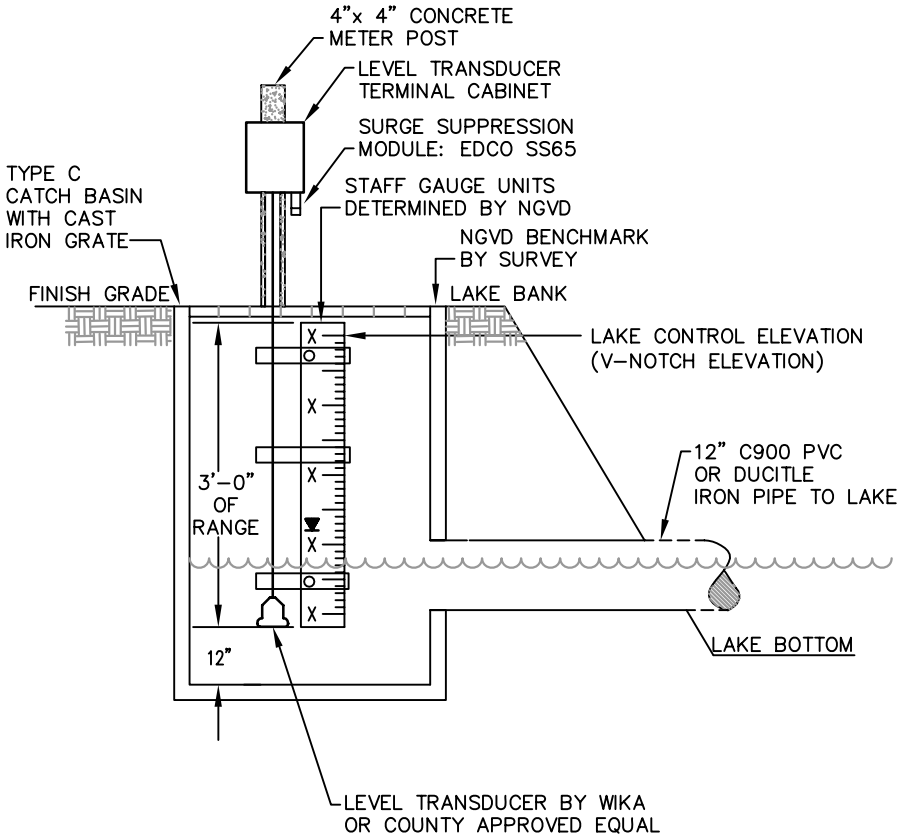


REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
ELECTRICAL EQUIPMENT ELEVATIONS

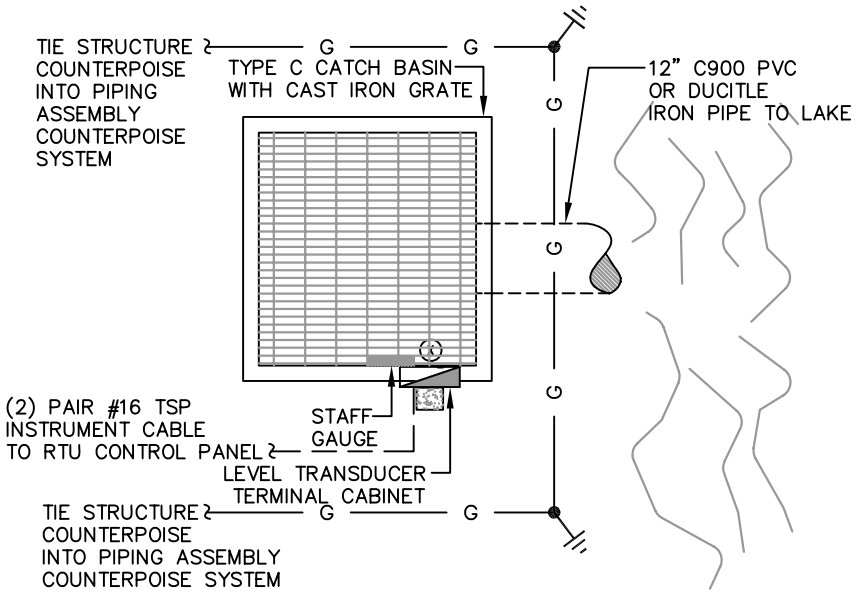
NTS

NP-E5

REVISED: APRIL 2006



CROSS SECTION



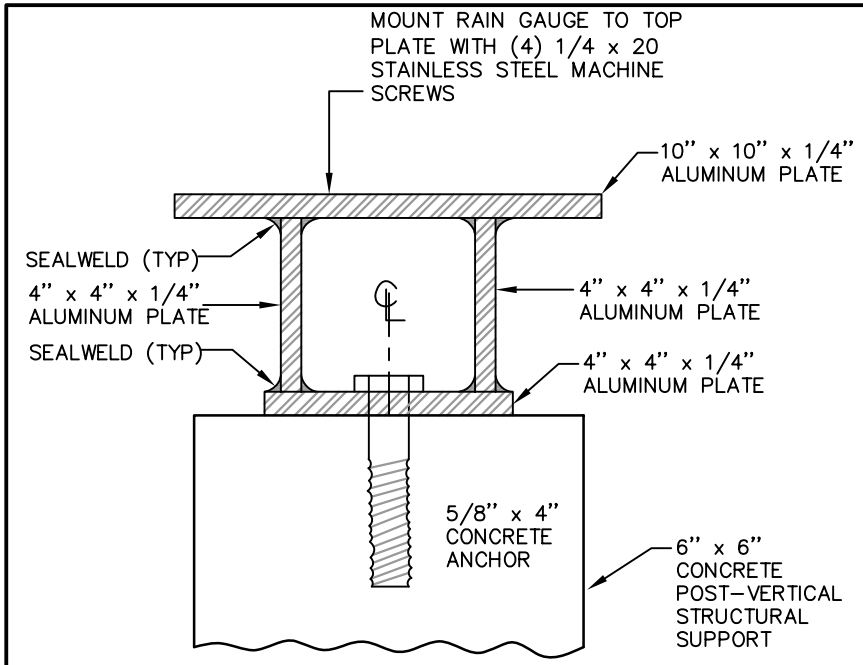
PLAN VIEW

NP-E6

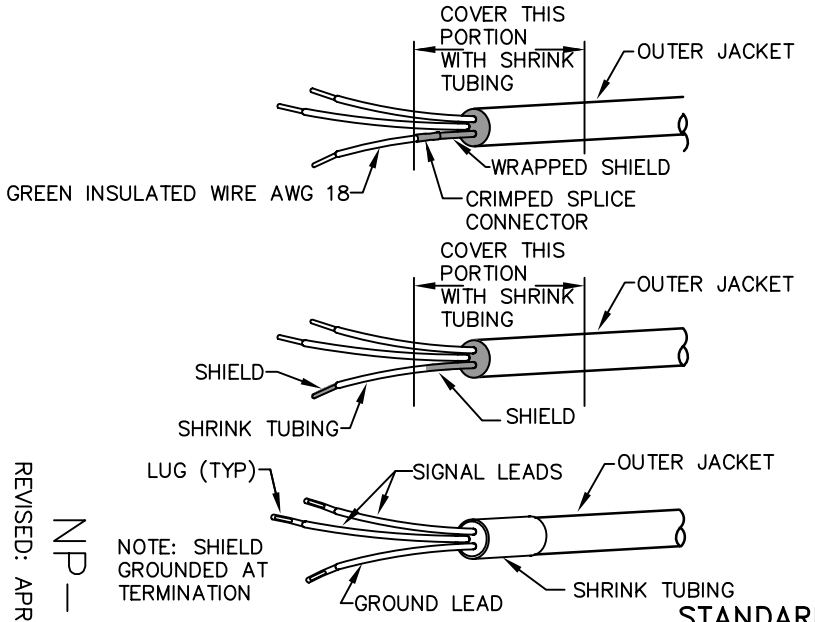
REVISED: APRIL 2006

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

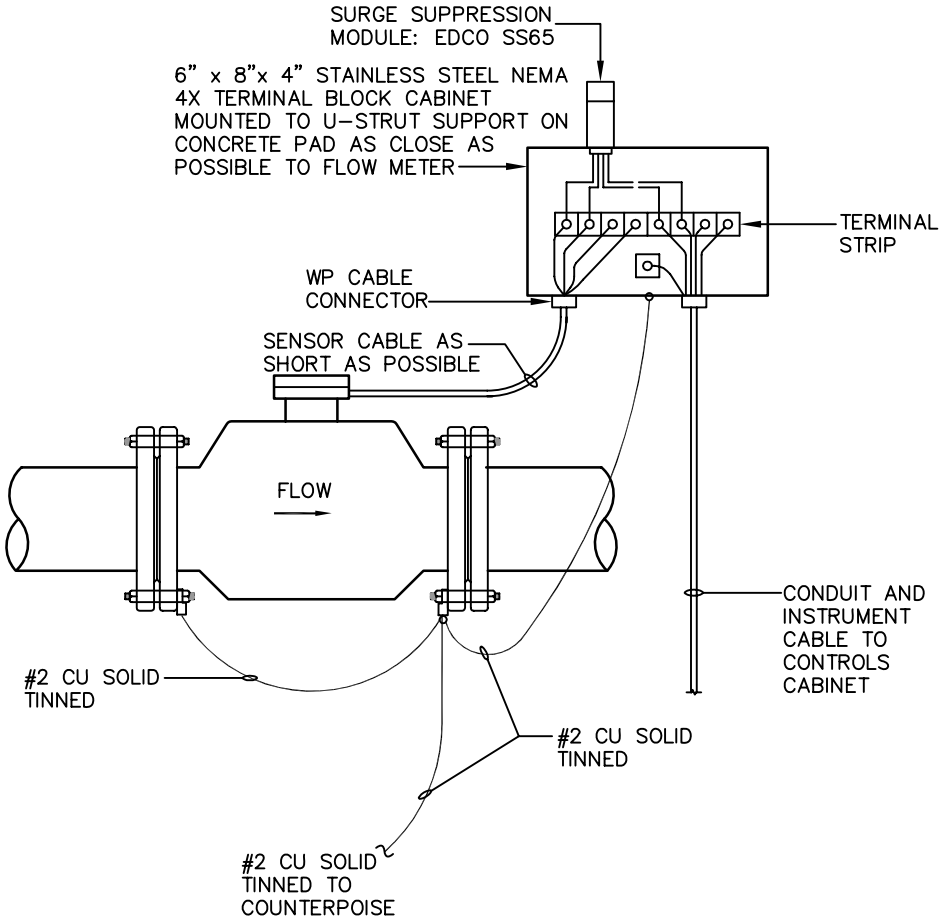
NTS



RAIN GAUGE MOUNTING PLATE



TERMINATION OF SHIELDED INSTRUMENT AND CONTROL CABLE

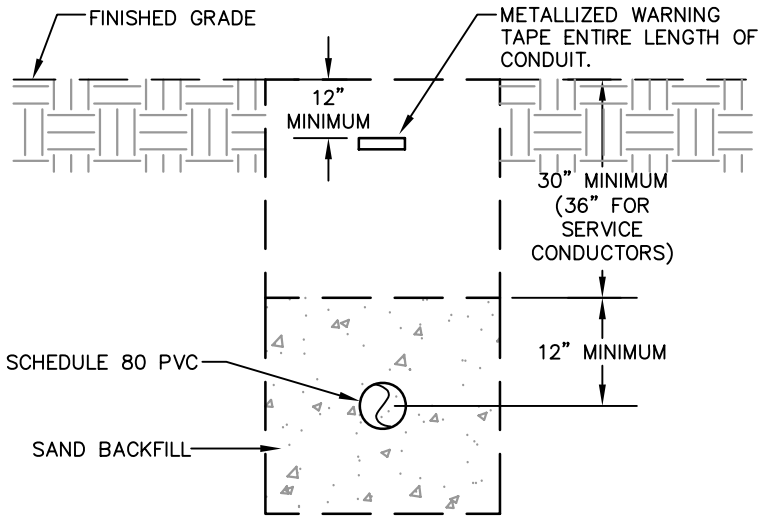


FLOW METER TRANSMITTER INSTALLATION DETAIL

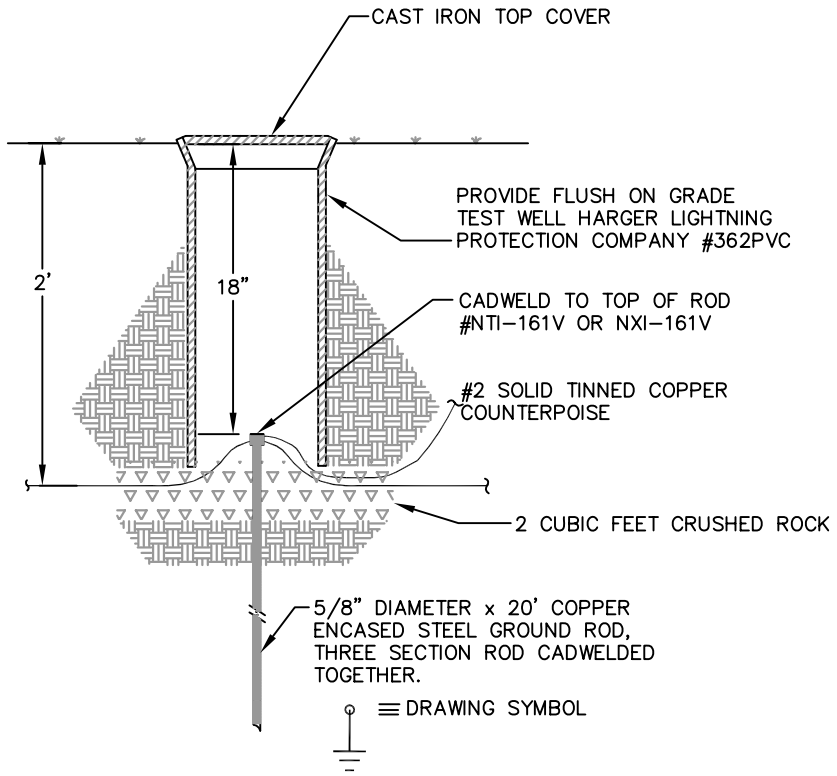
NP-E7
REVISED: APRIL 2006

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

NTS



UNDERGROUND CONDUIT INSTALLATION



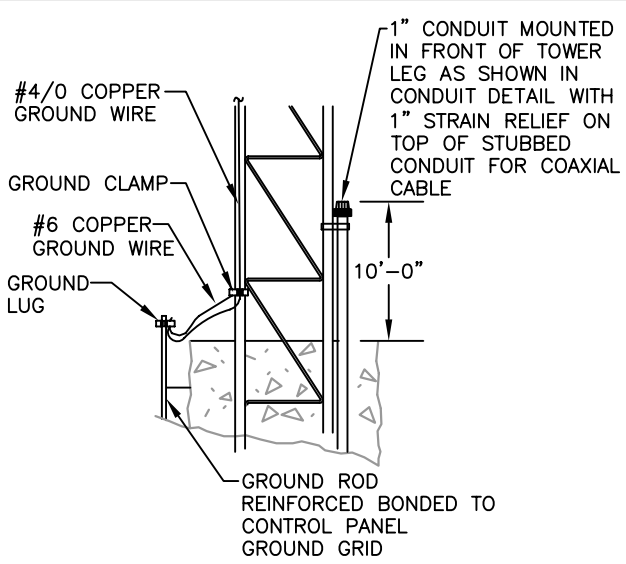
TYPICAL GROUND ROD INSTALLATION DETAIL

NP-E8

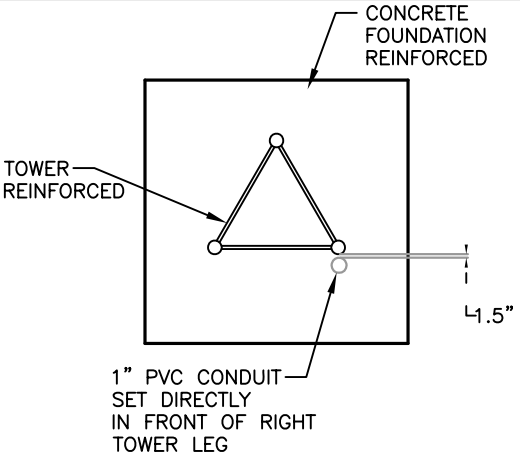
REVISED: APRIL 2006

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

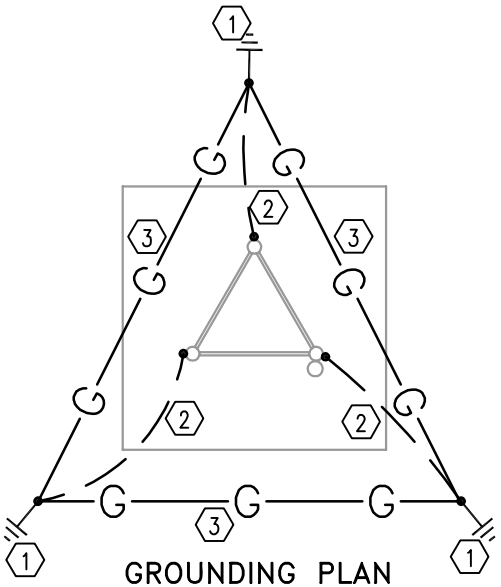
NTS



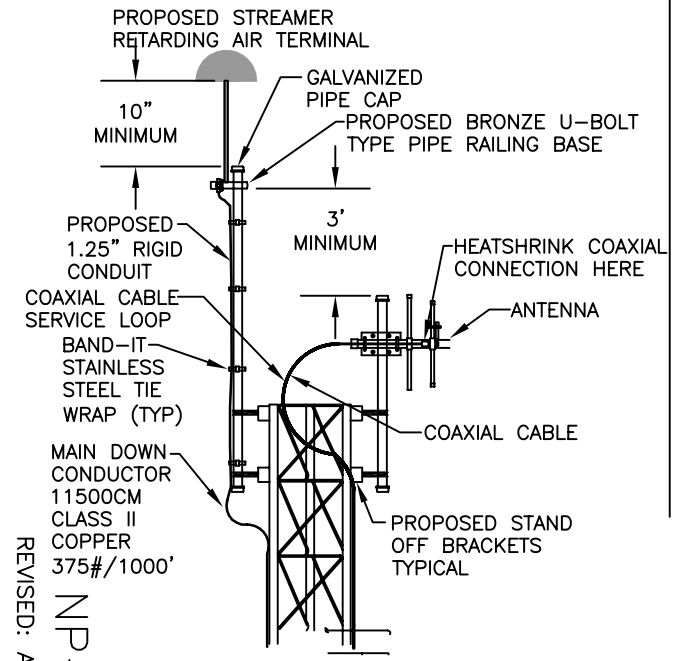
DETAIL #1 GROUNDING DETAIL



CONDUIT DETAIL TOP VIEW



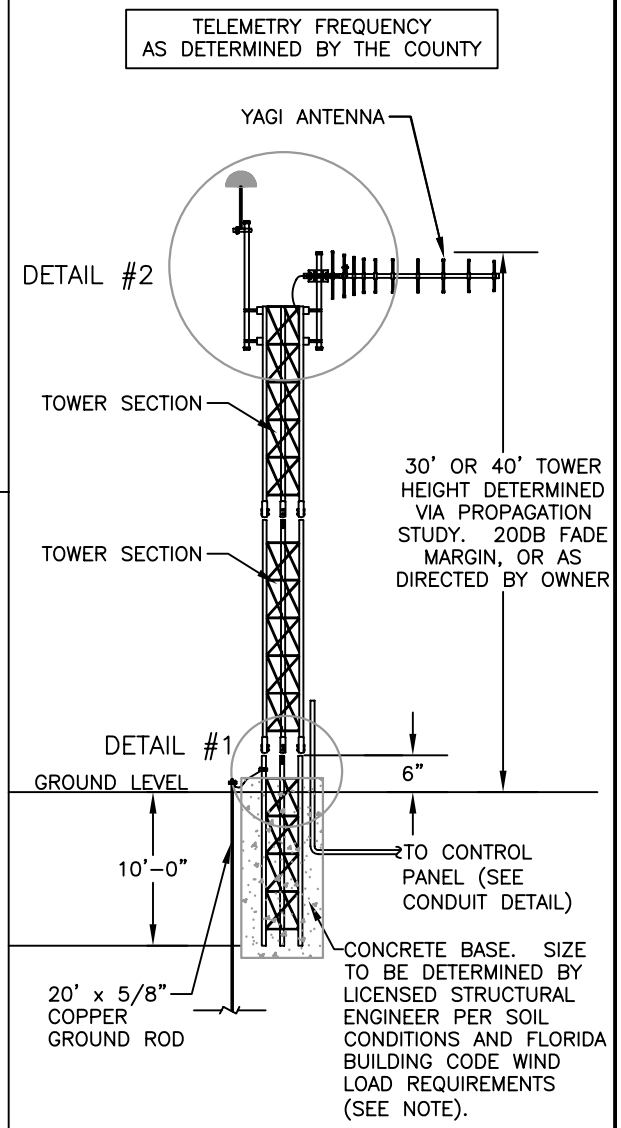
GROUNDING PLAN



DETAIL #2 TOWER TOP DETAIL

KEYNOTES:

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



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

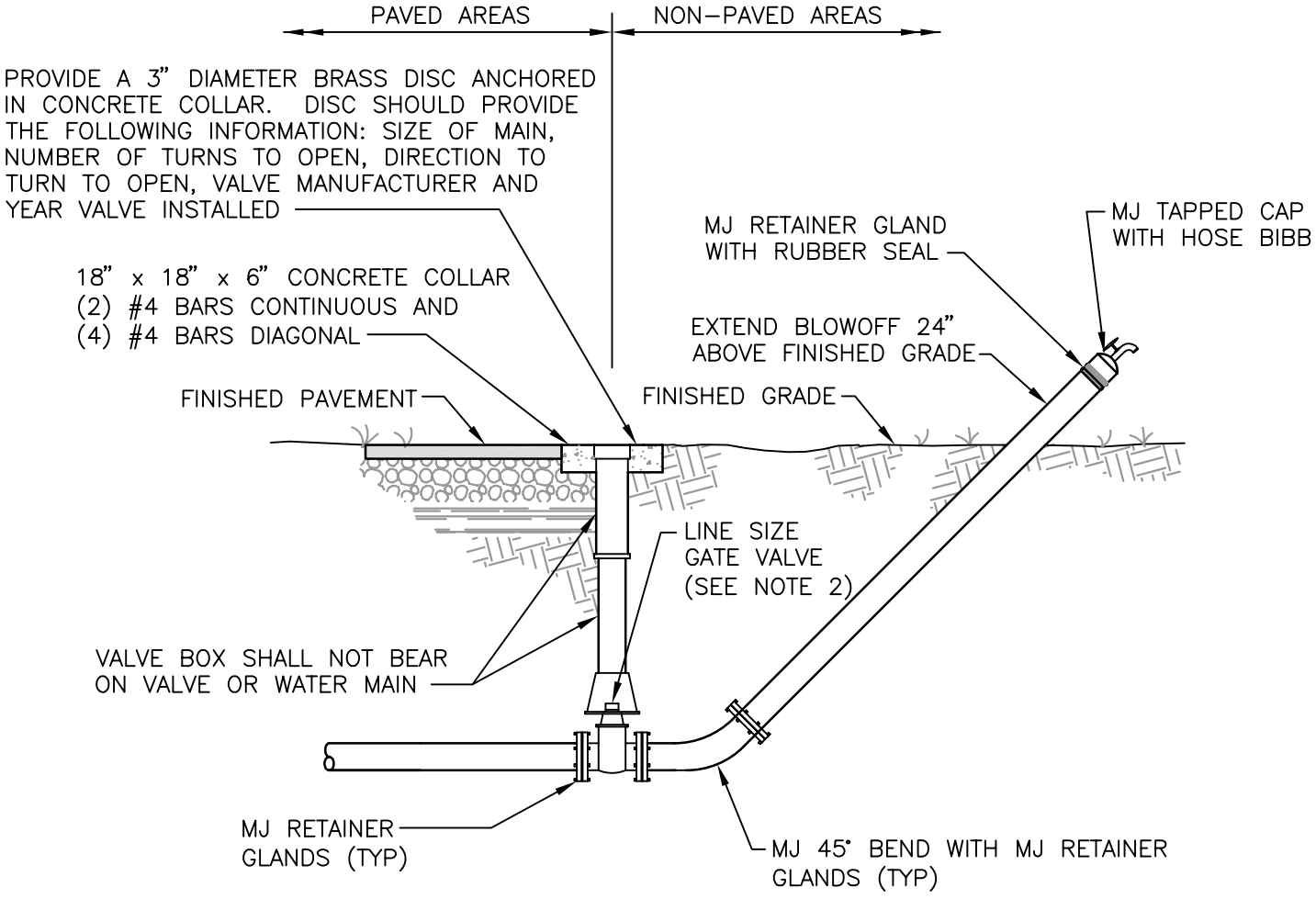
TYPICAL POLE DETAIL

REVISED: APRIL 2006

NP-E9

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

NTS



SIDE VIEW

NOTES:

1. MJ TAPPED CAP WITH HOSE BIBB IS TO BE REMOVED AFTER INITIAL BACTERIOLOGICAL CLEARANCE AND PRIOR TO WATER MAIN ACCEPTANCE.

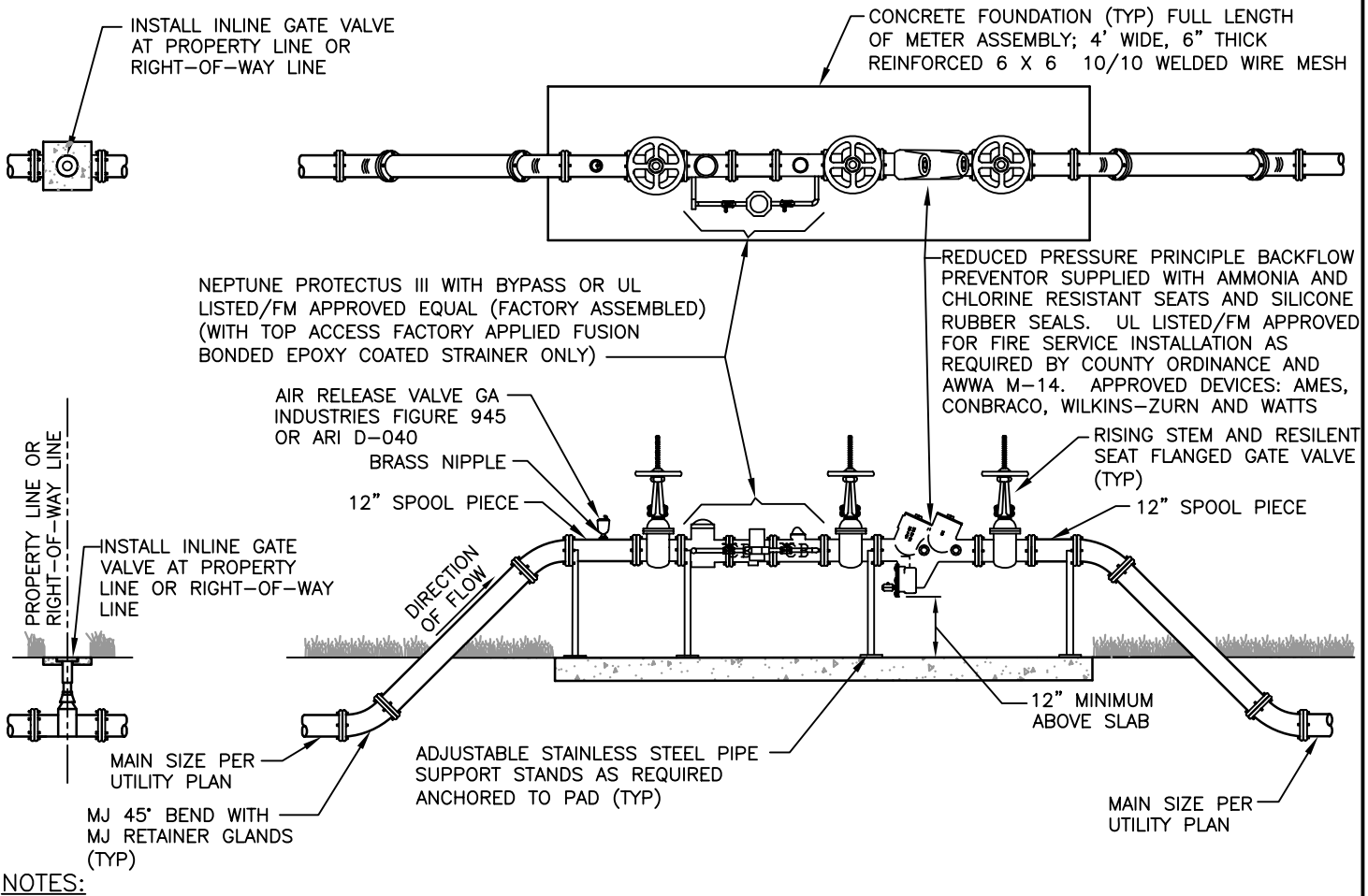
2. SEE TECHNICAL SPECIFICATIONS SECTION 15100 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.

TEMPORARY BLOWOFF ASSEMBLY WITH BACTERIAL SAMPLE POINT DETAIL

NTS

W–1

REVISED: APRIL 2006



NOTES:

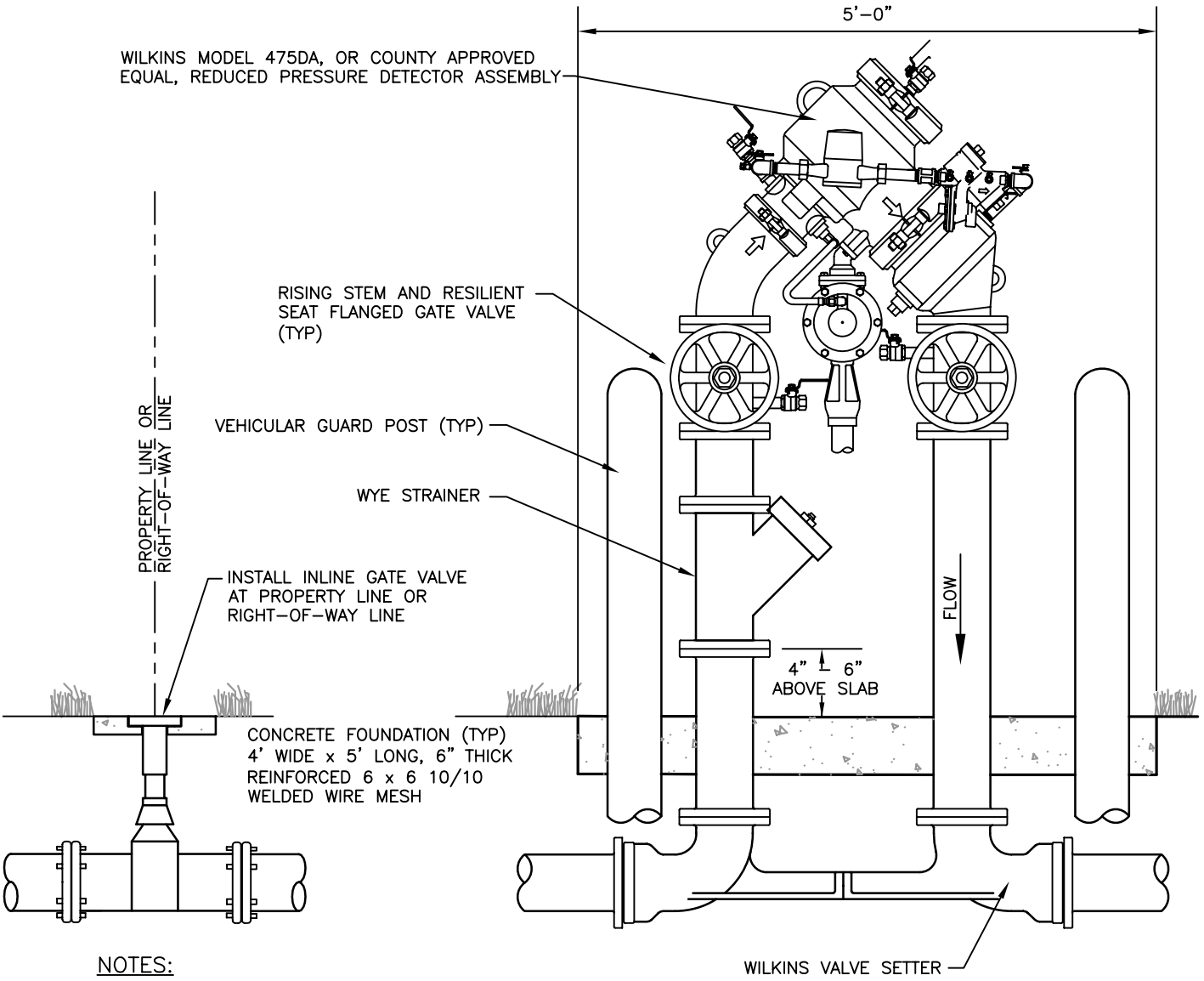
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. CONNECTIONS REFER TO ANY OUTLET PERMITTING ACCESS TO INTERNAL FIRE SYSTEM (HYDRANTS, ETC).
4. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
5. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING FROM THE FIRST ISOLATION VALVE PRIOR TO ASSEMBLY.
6. COUNTY WILL REQUIRE DEDICATION OF THE MATERIAL UP TO AND PRIOR TO VALVE ON THE ASSEMBLY FROM THE COUNTY'S WATER MAIN.
7. BACKFLOW UNIT REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
8. ALL PLANTINGS SHALL BE A MINIMUM OF 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
9. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
10. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
11. REFER TO APPROPRIATE SPECIFICATION IN MANUAL FOR GATE VALVES AND APPURTENANCES.

FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL WITH CONNECTIONS PERMITTED DOWNSTREAM

NTS

W-10

REVISED: APRIL 2006



NOTES:

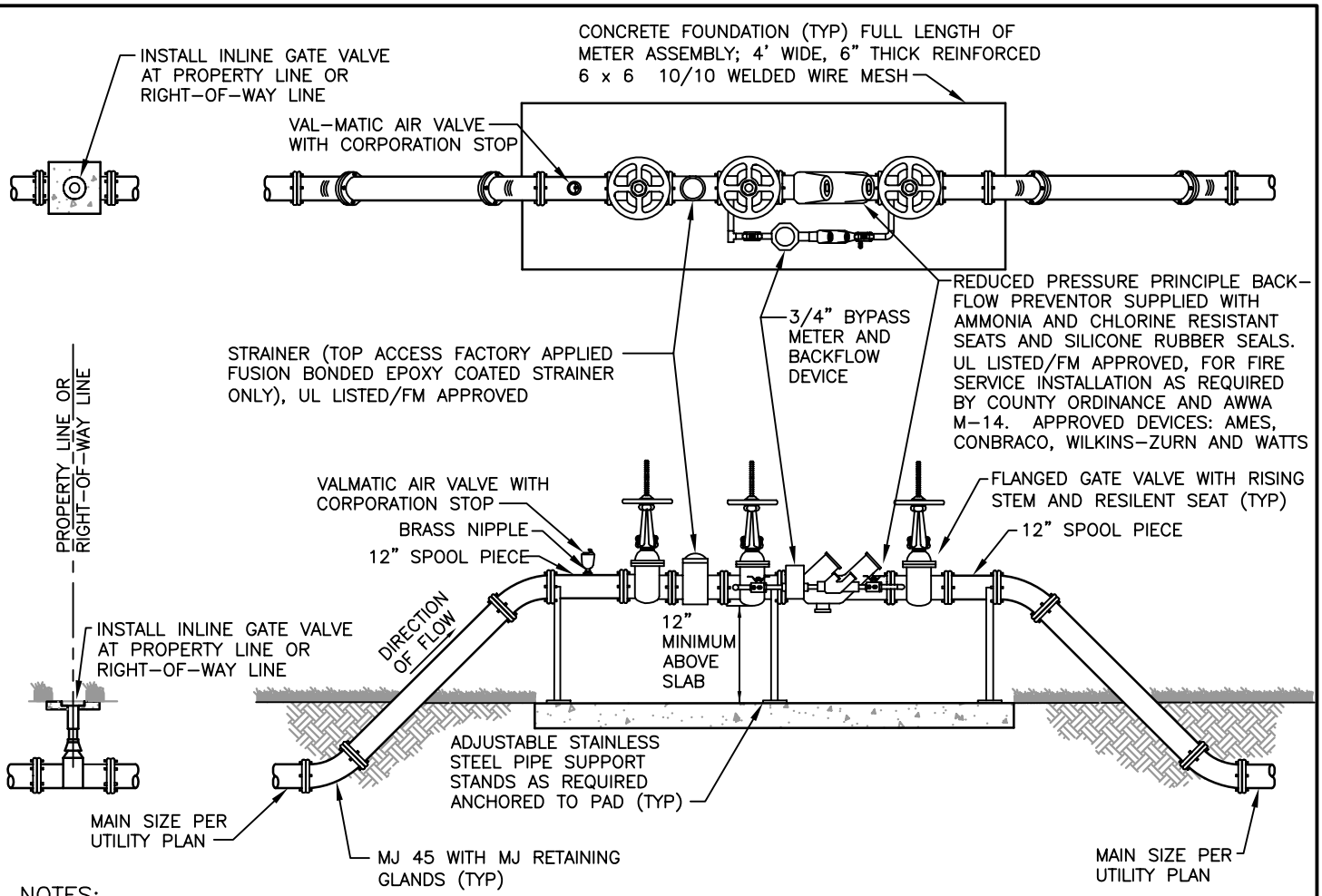
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. CONNECTIONS REFER TO ANY OUTLET PERMITTING ACCESS TO INTERNAL FIRE SYSTEM (HYDRANTS, ETC).
4. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
5. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
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. ALL ABOVE GROUND PIPING, INCLUDING ASSEMBLY, SHALL BE PAINTED RUSTOLEUM FEDERAL SAFETY RED.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

4" THROUGH 10" COMPACT FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL WITH CONNECTIONS PERMITTED DOWNSTREAM (WILKINS)

NTS

W-10A

REVISED: APRIL 2006



NOTES:

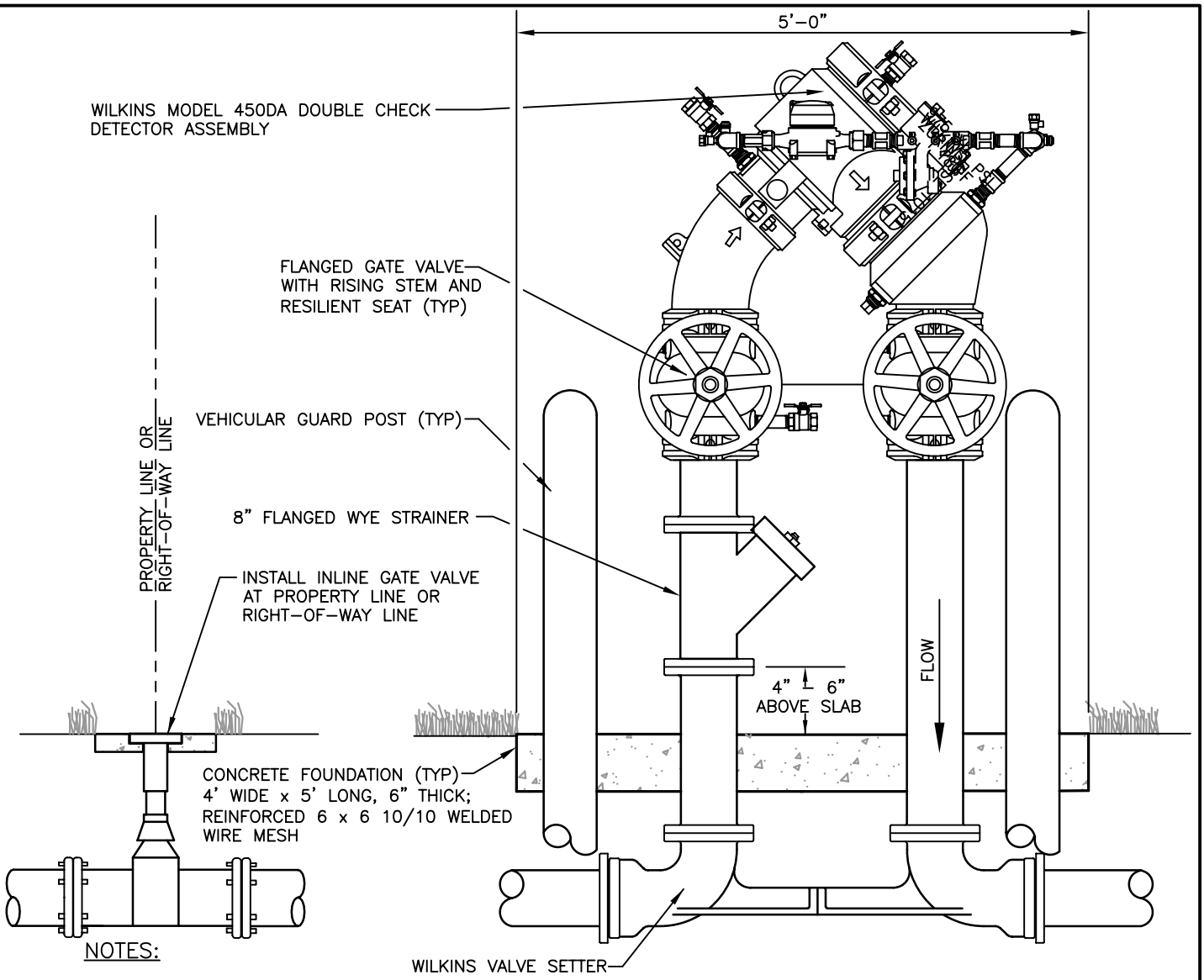
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, CLASS 51. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. CONNECTIONS REFER TO ANY OUTLET PERMITTING ACCESS TO INTERNAL FIRE SYSTEM (HYDRANTS, ETC).
4. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO NSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
5. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING FROM THE FIRST ISOLATION VALVE PRIOR TO ASSEMBLY.
6. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND PRIOR TO VALVE ON THE ASSEMBLY FROM THE COUNTY'S WATER MAIN.
7. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
8. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
9. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
10. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

4" AND OVER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL WITH NO CONNECTIONS PERMITTED DOWNSTREAM

NTS

W-11

REVISED: APRIL 2006



NOTES:

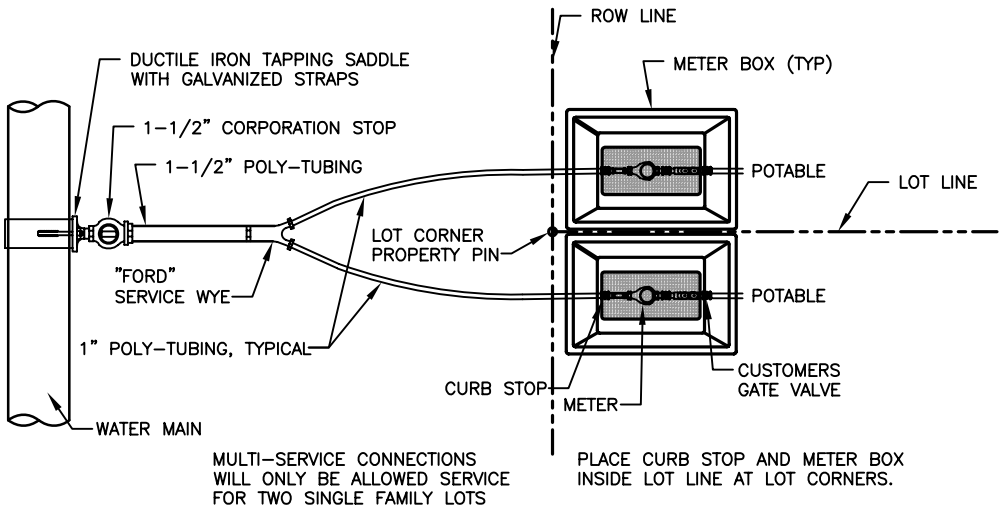
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. CONNECTIONS REFER TO ANY OUTLET PERMITTING ACCESS TO INTERNAL FIRE SYSTEM (HYDRANTS, ETC).
4. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
5. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF WAY LINE.
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. ALL ABOVE GROUND PIPING INCLUDING ASSEMBLY SHALL BE PAINTED RUSTOLEUM FEDERAL SAFETY RED.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. PROVIDE 3/4" BYPASS WITH FLOW METER.

4" THROUGH 10" ONLY COMPACT FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL WITH NO CONNECTIONS PERMITTED DOWNSTREAM (WILKINS)

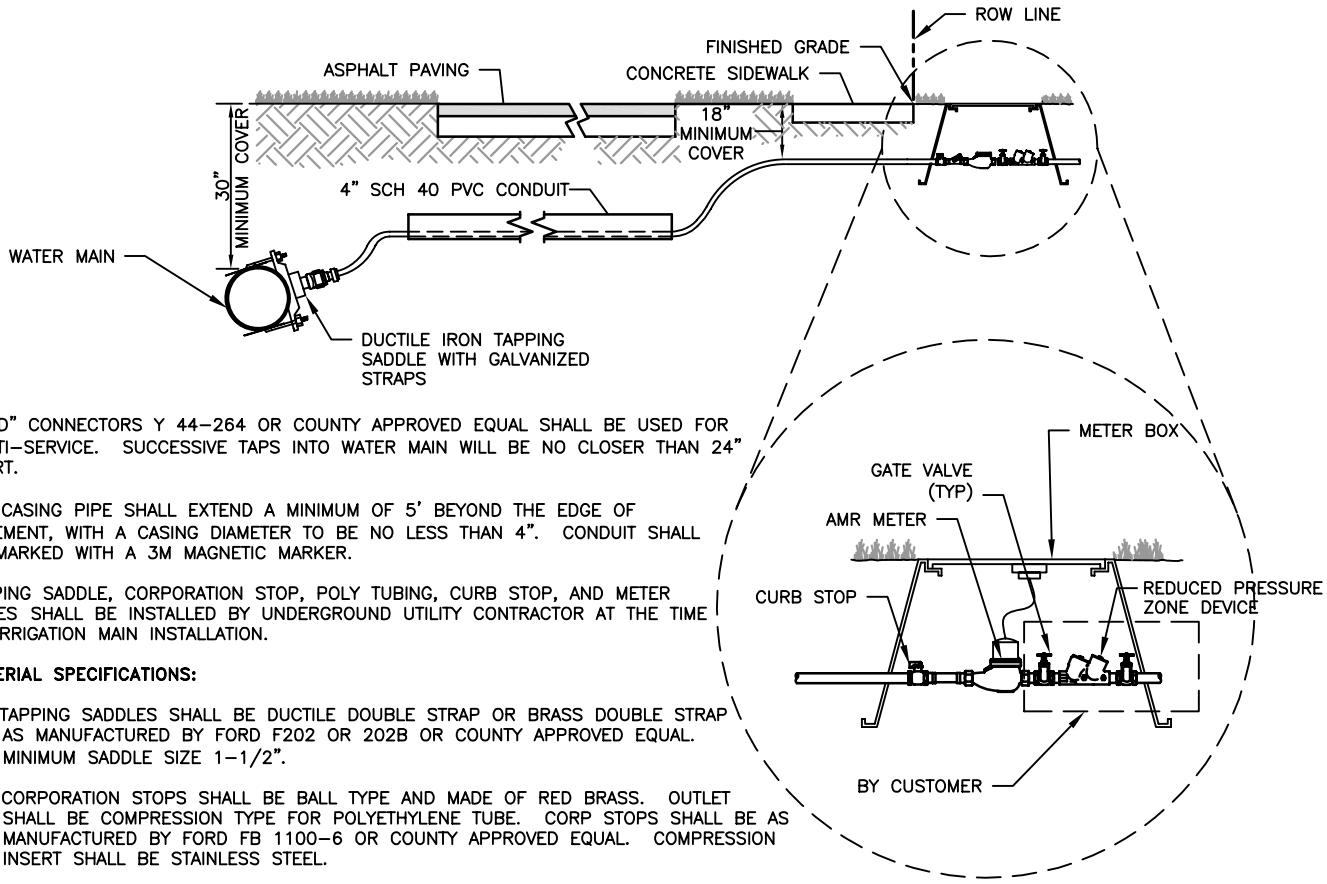
NTS

W-11A

REVISED: APRIL 2006



MULTIPLE METER SERVICE CONNECTIONS



NOTES:

1. "FORD" CONNECTORS Y 44-264 OR COUNTY APPROVED EQUAL SHALL BE USED FOR MULTI-SERVICE. SUCCESSIVE TAPS INTO WATER 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 4". CONDUIT SHALL BE MARKED WITH A 3M MAGNETIC MARKER.

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 AS MANUFACTURED BY FORD F202 OR 202B OR COUNTY APPROVED EQUAL. MINIMUM SADDLE SIZE 1-1/2".

   B. CORPORATION STOPS SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE FOR POLYETHYLENE TUBE. CORP STOPS SHALL BE AS MANUFACTURED BY FORD FB 1100-6 OR COUNTY APPROVED EQUAL. COMPRESSION INSERT SHALL BE STAINLESS STEEL.

   C. CURB STOPS SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION. CURB STOP SHALL BE AS MANUFACTURED BY FORD B 43-342 WG COUNTY APPROVED EQUAL.

   D. TUBING SHALL BE POLYETHYLENE, PE3408, (AWWA C-901, SDS 9-200) AND BLUE IN COLOR; SIZES SHALL BE 1-1/2" UP TO WYE AND 1" AFTER WYE FOR LONG AND SHORT SIDE SERVICES.

   E. METER BOXES:
   3/4" TO 1" METERS SHALL BE ALLIANCE 12" AUTOMATIC METER READER (AMR) BOX (16AMR SERIES) OR COUNTY APPROVED EQUAL, CAST IRON READ LID; 1-1/2" TO 2" METERS SHALL BE ALLIANCE 12" AUTOMATIC METER READER BOX (16AMR SERIES) OR COUNTY APPROVED EQUAL, CAST IRON READ LID.

   F. POLYETHYLENE PIPE (PE) SHALL MEET THE REQUIREMENTS OF AWWA C-901.

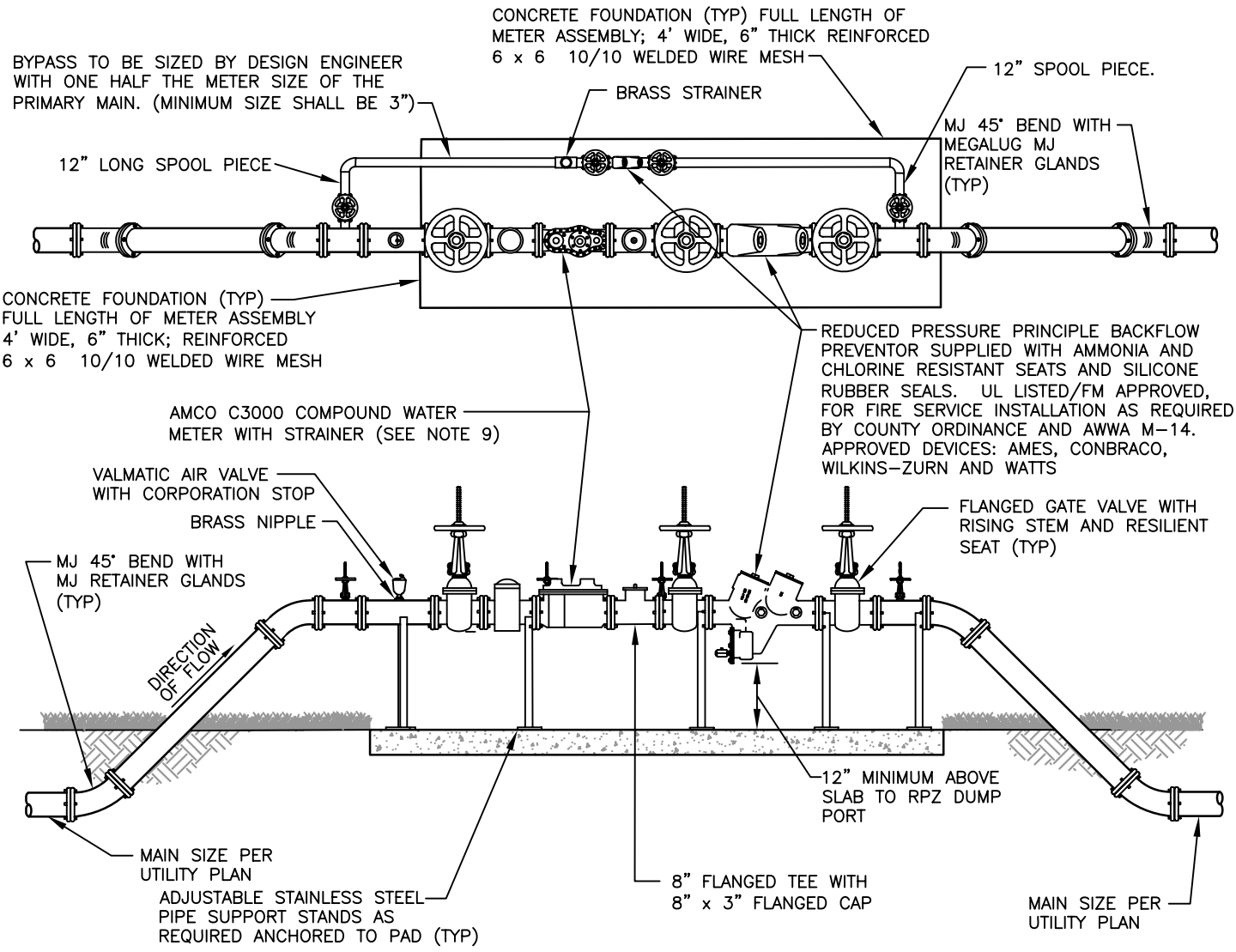
5. ALL PLANTINGS SHALL BE A MINIMUM 3' FROM METER BOX.

TYPICAL SHORT AND LONG SIDE WATER SERVICE METER SETTING DETAIL FOR CONNECTION TO WATER MAIN

NTS

W-12

REVISED: AUGUST 2006



NOTES:

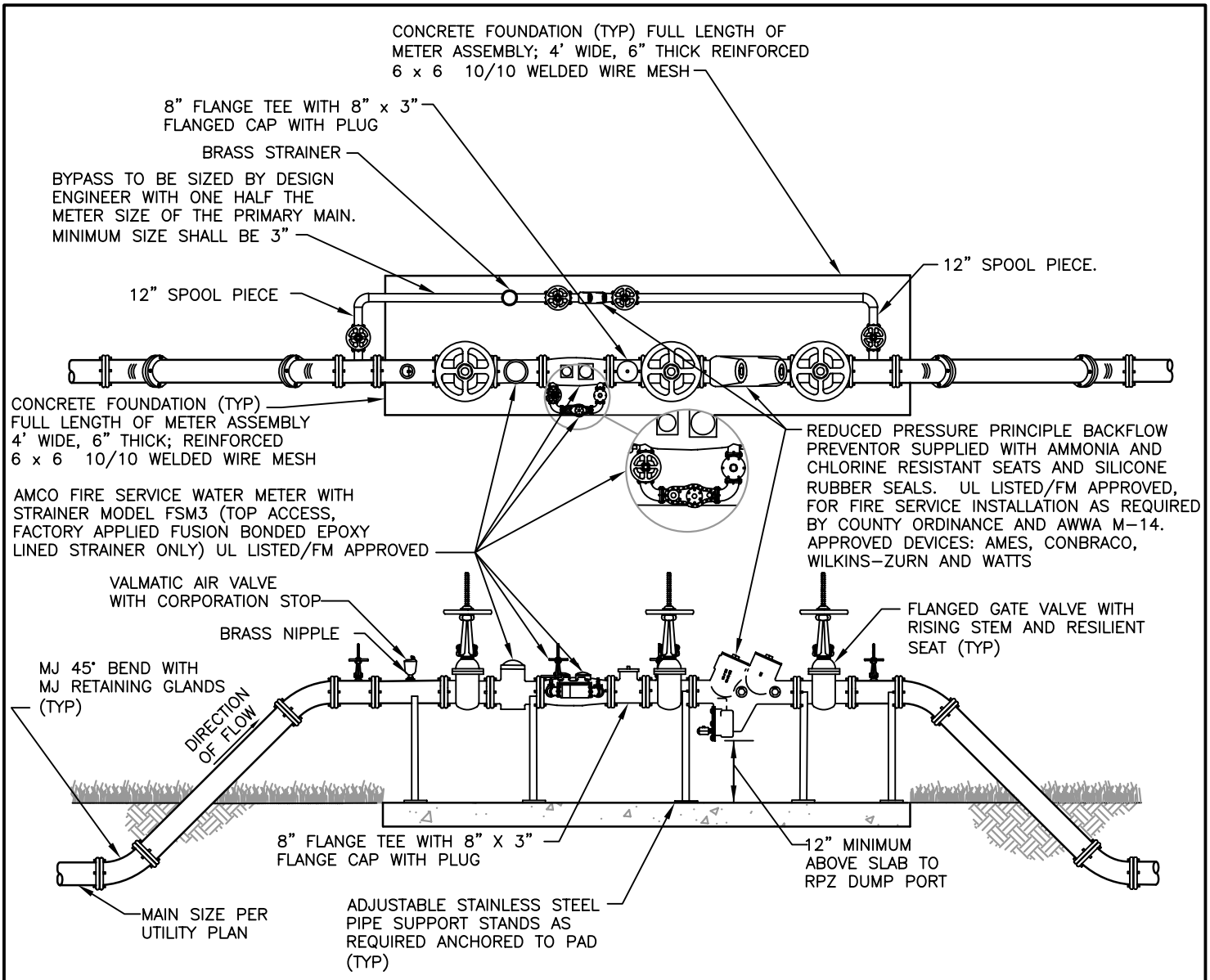
1. ALL ABOVE GROUND PIPES WILL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. LOCATION TO BE FIELD DETERMINED BY THE ENGINEER OR HIS DESIGNEE.
3. THIS ASSEMBLY IS PERMITTED FOR POTABLE SERVICE 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 3' 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

W-13

REVISED: APRIL 2006



NOTES:

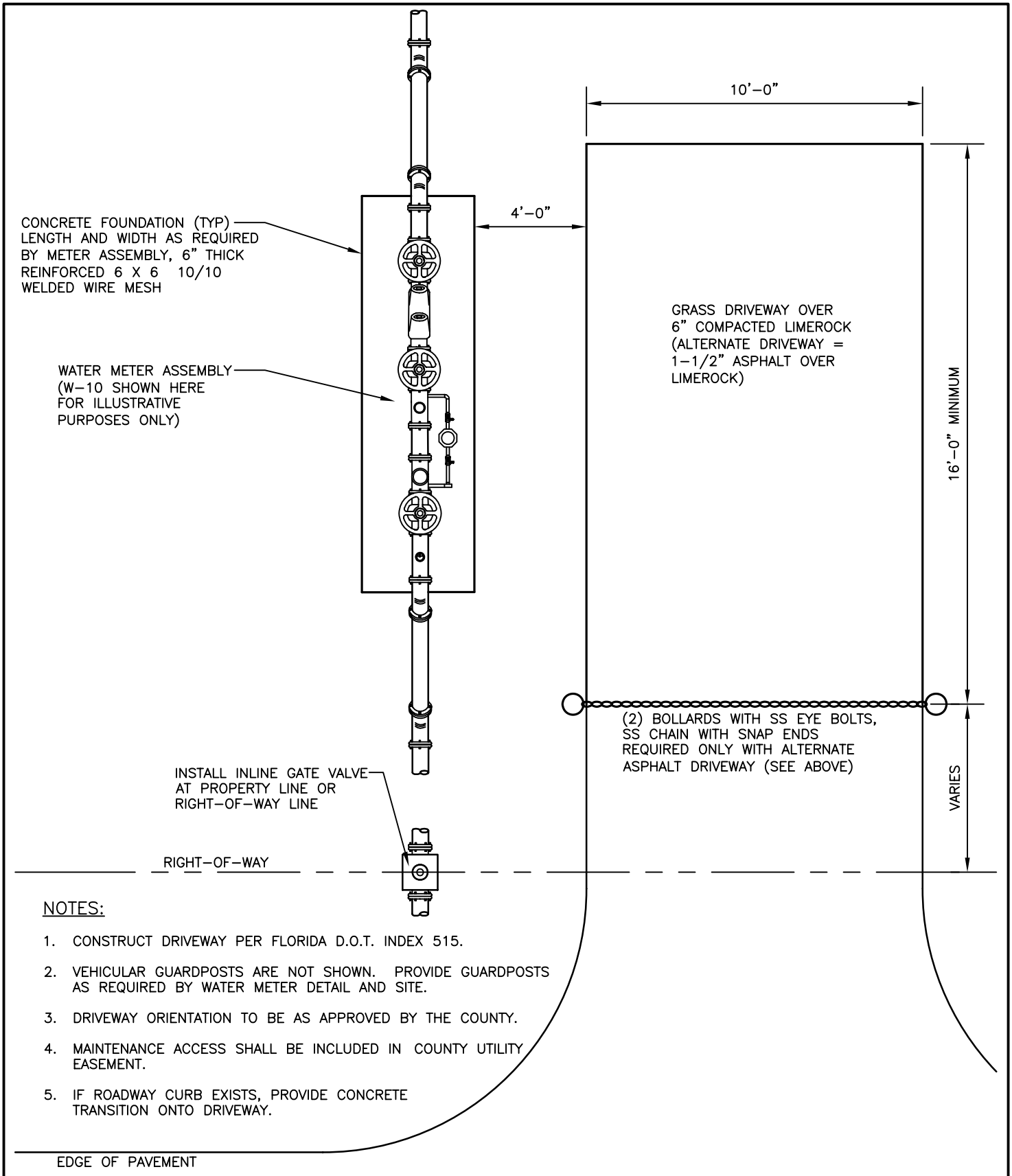
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. THIS ASSEMBLY IS PERMITTED FOR COMBINATION FIRE AND POTABLE WATER SERVICE.
4. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE SHALL PROVIDE PARALLEL UNITS OR FULL SIZE BYPASSES TO PREVENT SERVICE INTERRUPTIONS.
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 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. STRAINER SHALL HAVE FUSION-BONDED EPOXY COATING.

3" AND OVER POTABLE WATER FIRE AND WATER METER ASSEMBLY DETAIL

NTS

W-14

REVISED: APRIL 2006



NOTES:

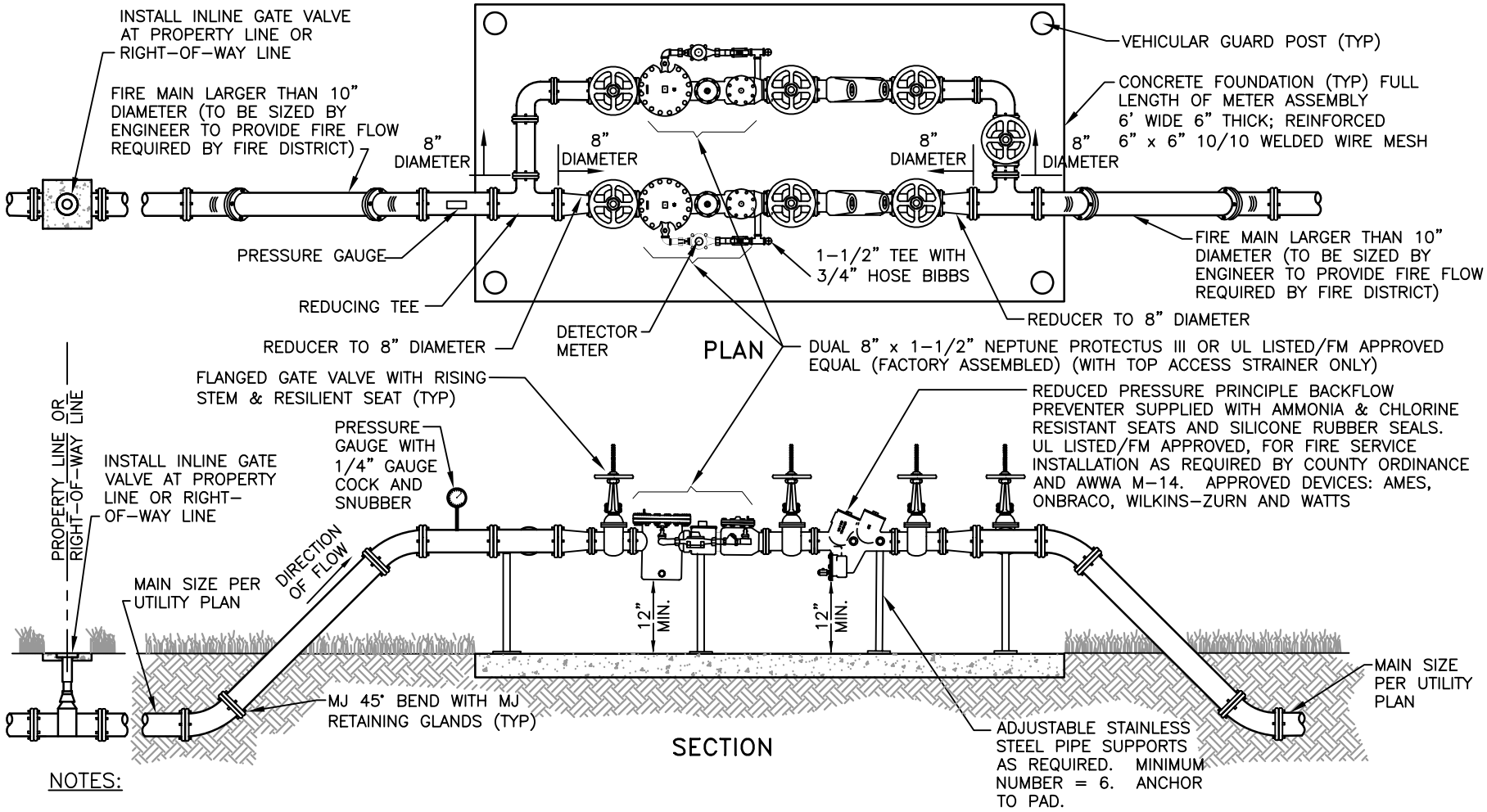
1. CONSTRUCT DRIVEWAY PER FLORIDA D.O.T. INDEX 515.
2. VEHICULAR GUARDPOSTS ARE NOT SHOWN. PROVIDE GUARDPOSTS AS REQUIRED BY WATER METER DETAIL AND SITE.
3. DRIVEWAY ORIENTATION TO BE AS APPROVED BY THE COUNTY.
4. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT.
5. IF ROADWAY CURB EXISTS,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

MAINTENANCE DRIVEWAY FOR WATER METERS 3" AND LARGER

NTS

W–14A

REVISED: SEPTEMBER 2006



NOTES:

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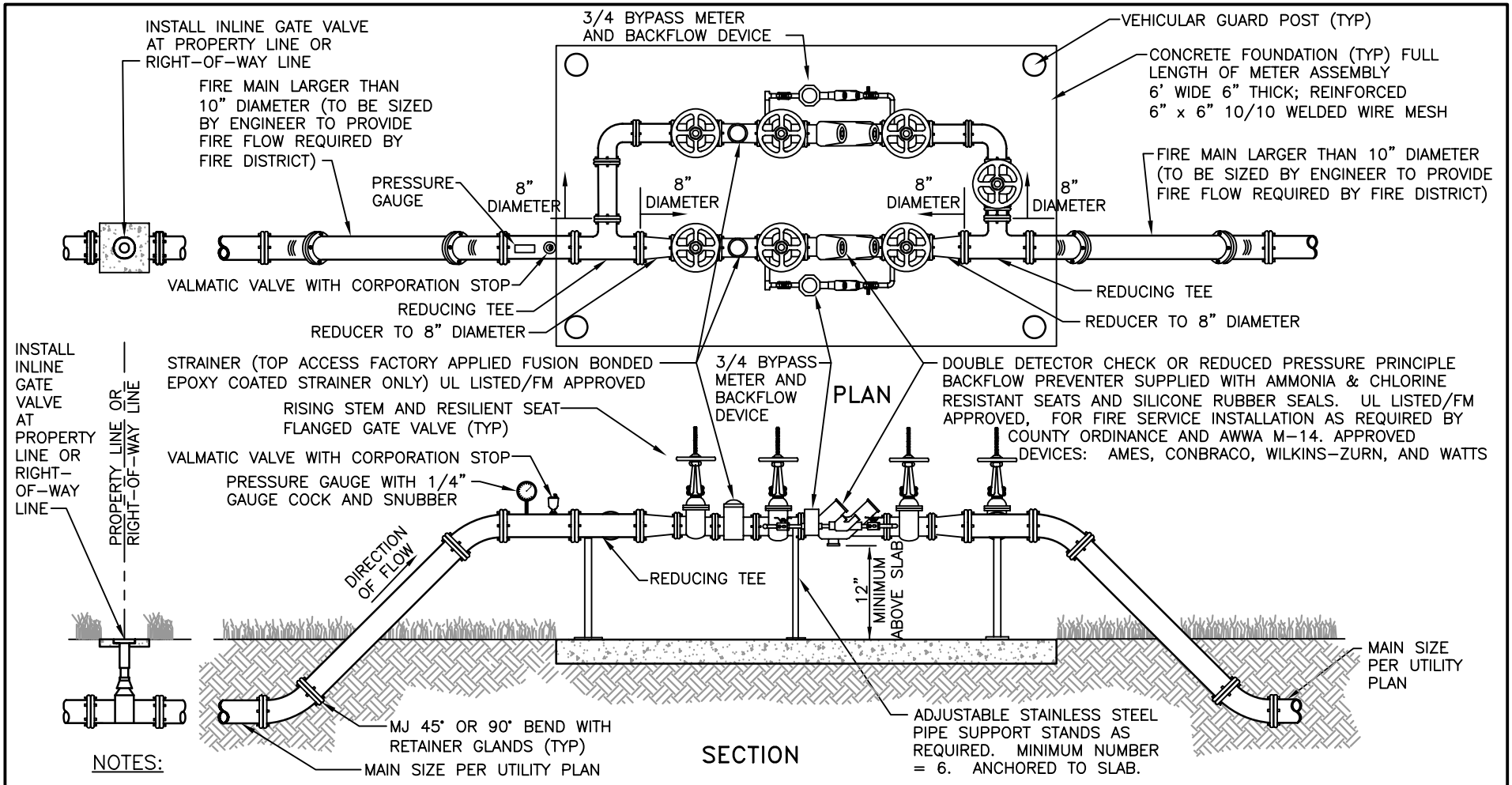
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. CONNECTIONS REFER TO ANY OUTLET PERMITTING ACCESS TO INTERNAL FIRE SYSTEM (HYDRANTS, ETC).
4. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
5. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
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. ALL ABOVE GROUND PIPING INCLUDING ASSEMBLY SHALL BE PAINTED RUSTOLEUM FEDERAL SAFETY RED.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. STRAINER SHALL HAVE FUSION-BONDED EPOXY COATING.

FIRE SERVICE DUAL METER ASSEMBLY
WITH CONNECTIONS PERMITTED OVER 10" FIRE MAIN (DUAL 8" METERS)

NTS



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE PRESSURE CLASS 350, ALL NUTS & 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. CONNECTIONS REFER TO ANY OUTLET PERMITTING ACCESS TO INTERNAL FIRE SYSTEM (HYDRANTS, ETC).
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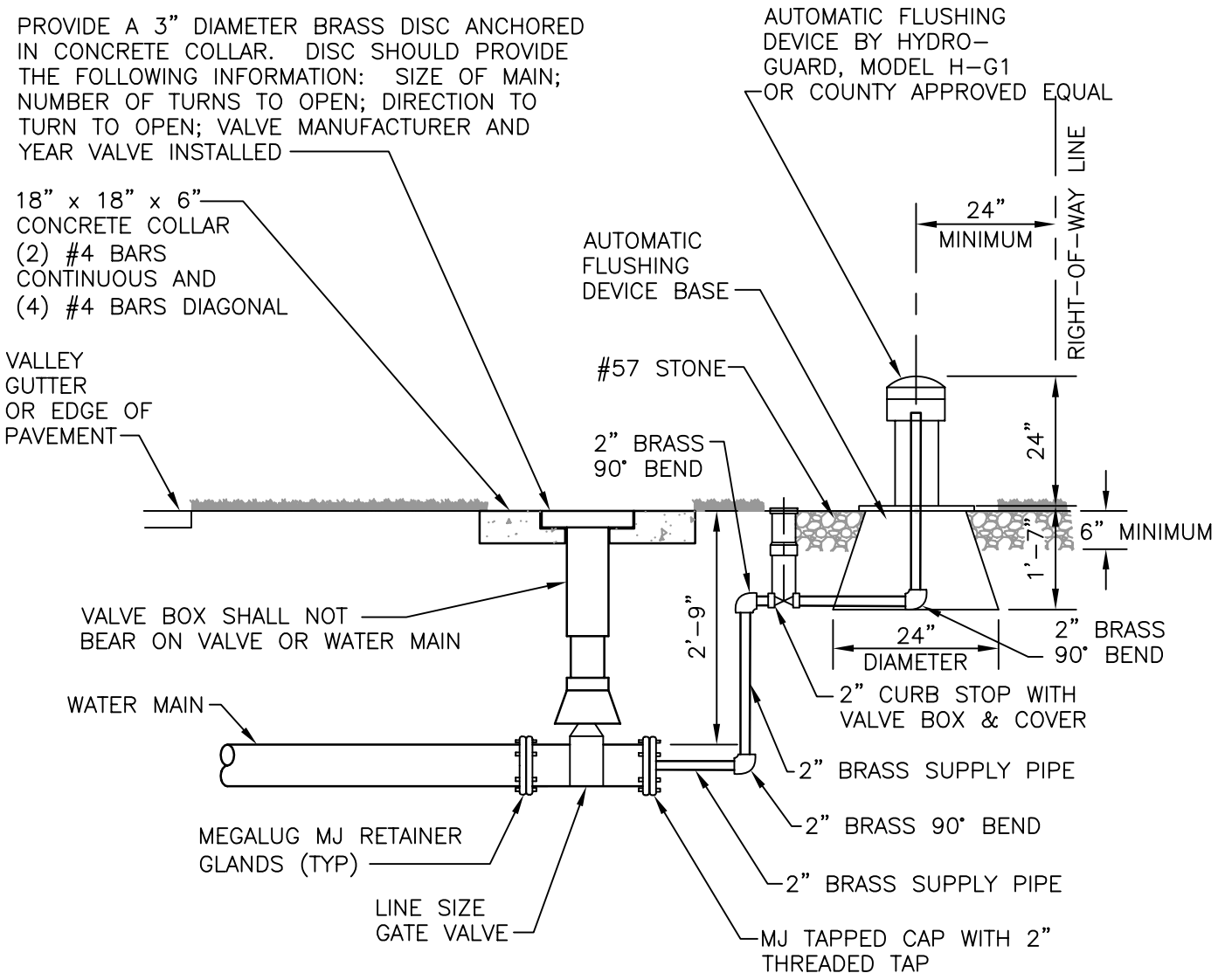
6. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
7. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. ALL ABOVE GROUND PIPING INCLUDING ASSEMBLY SHALL BE PAINTED RUSTOLEUM FEDERAL SAFETY RED.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. STRAINER SHALL HAVE FUSION-BONDED EPOXY COATING.

REVISED: APRIL 2006

W-16

FIRE SERVICE DUAL METER ASSEMBLY
WITH NO CONNECTIONS PERMITTED OVER 10" FIRE MAIN (DUAL 8" METERS)

NTS



NOTES:

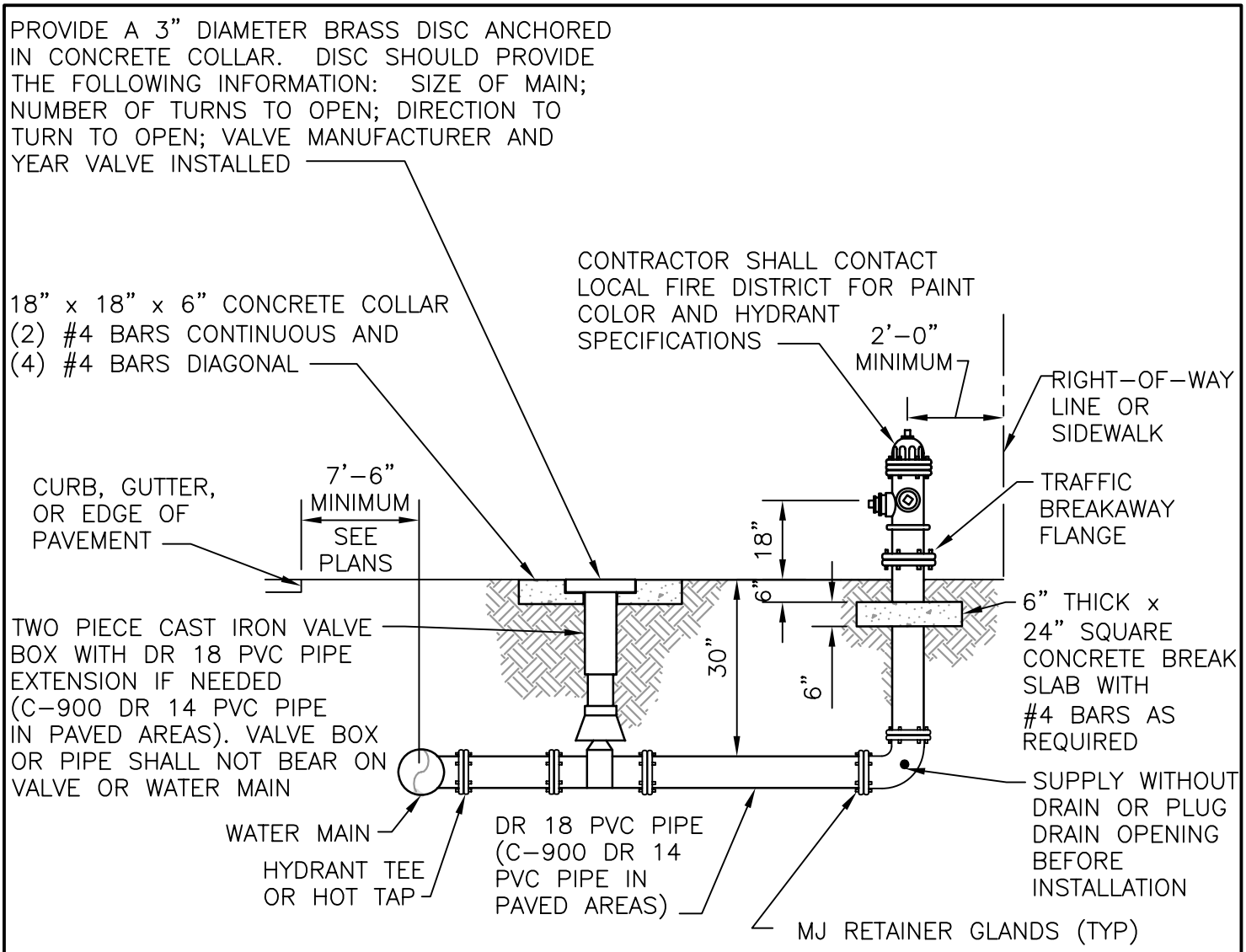
1. PIPING SHALL BE INSTALLED UP TO 2" CURB STOP WITH VALVE BOX AND COVER AT TIME OF MAIN INSTALLATION.
2. AUTOMATIC FLUSHING DEVICE SHALL BE INSTALLED AFTER MAIN LINE HAS BEEN BACTERIOLOGICALLY TESTED, BUT PRIOR TO TIE-IN.
3. ALL THREAD HARD PIPING SHALL BE BRASS.
4. SEE TECHNICAL SPECIFICATIONS SECTION 15100 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
5. AT TIME OF ACCEPTANCE, WATER DEPARTMENT WILL INSTALL 2" METER.

AUTOMATIC WATER MAIN FLUSHING DEVICE DETAIL

NTS

W-2

REVISED: JULY 2006



NOTES:

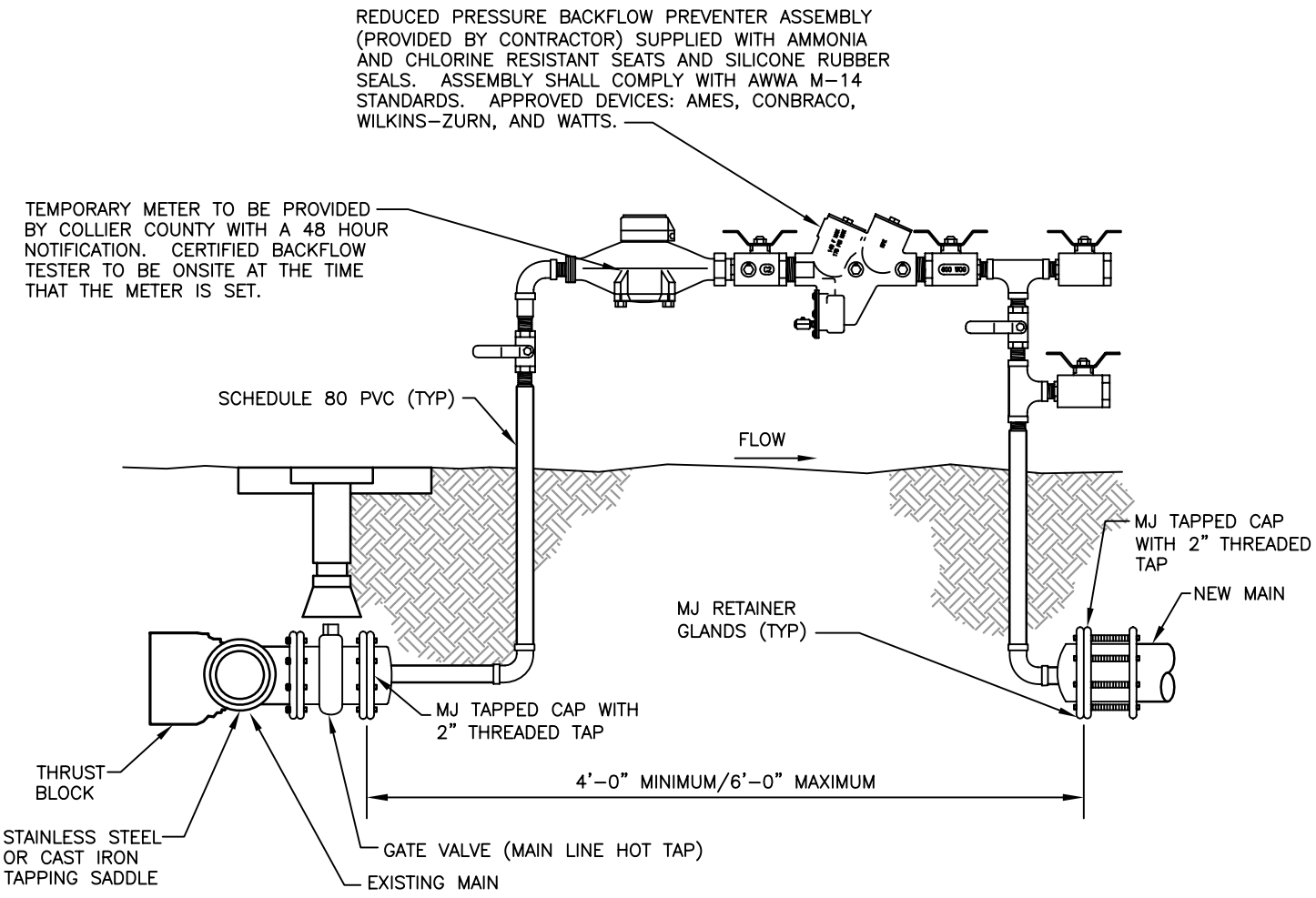
1. HYDRANT MUST BE CURRENT YEAR MANUFACTURE AND YEAR OF MANUFACTURE MUST BE CAST ON BARREL.
2. ALL EXISTING MAINS WHERE FIRE HYDRANTS ARE TO BE INSTALLED SHALL BE HOT TAPPED.
3. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS 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.

FIRE HYDRANT DETAIL

NTS

W-3

REVISED: SEPTEMBER 2006



NOTES:

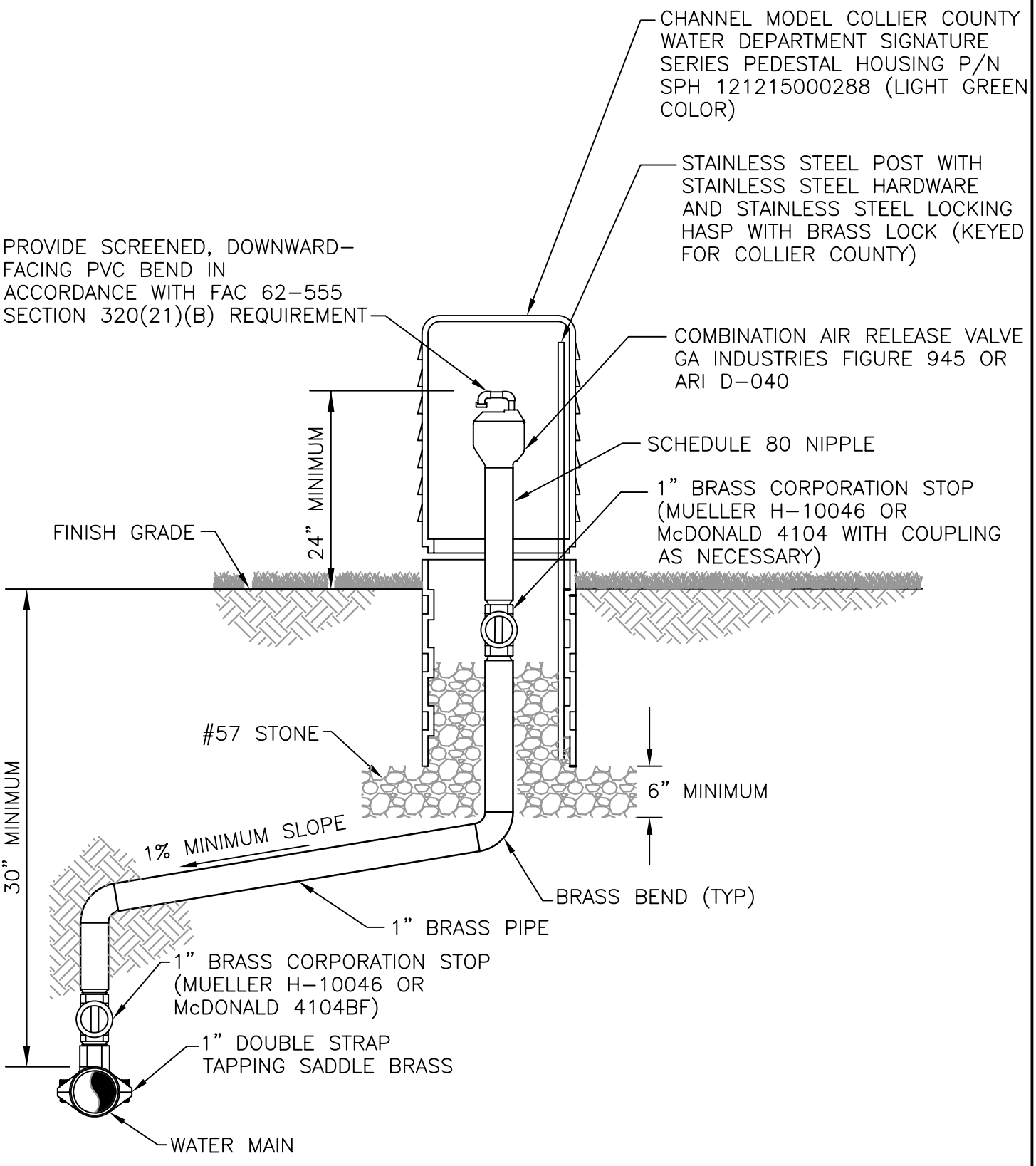
1. FINAL CONNECTION TO BE WITNESSED BY COLLIER COUNTY WATER DISTRIBUTION.
2. MJ TAPPED CAPS TO BE PROPERLY RESTRAINED.
3. INSTALL JUMPER TAP SYSTEM FOR TEMPORARY METER DOWNSTREAM OF BLIND FLANGE FOR CONSTRUCTION WATER.
4. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES 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 PREVENTORS 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.

CONNECTION TO EXISTING WATER MAIN DETAIL (GAP CONFIGURATION)

NTS

W-4

REVISED: APRIL 2006

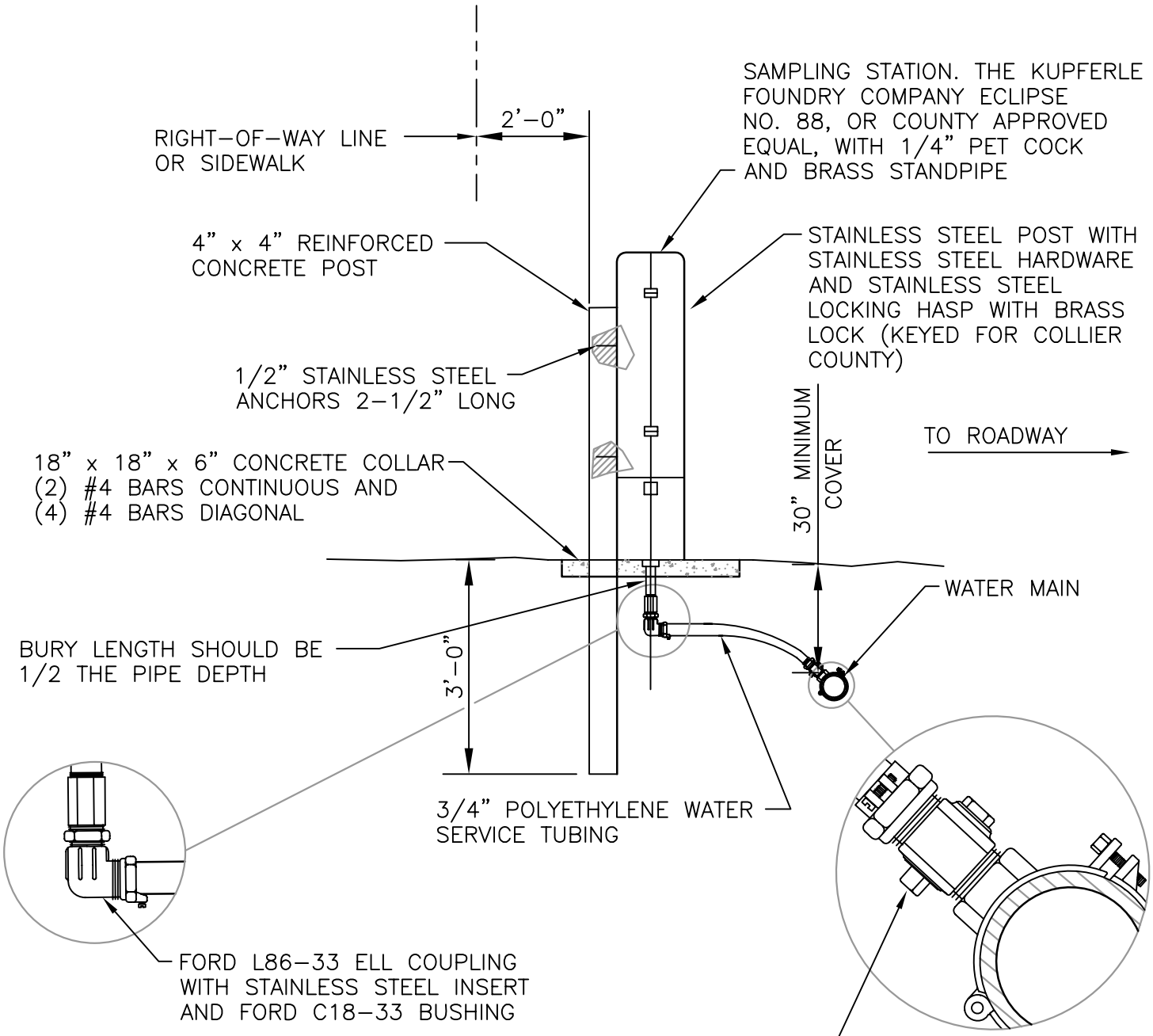


POTABLE WATER
AIR RELEASE VALVE DETAIL

NTS

W-5

REVISED: APRIL 2006

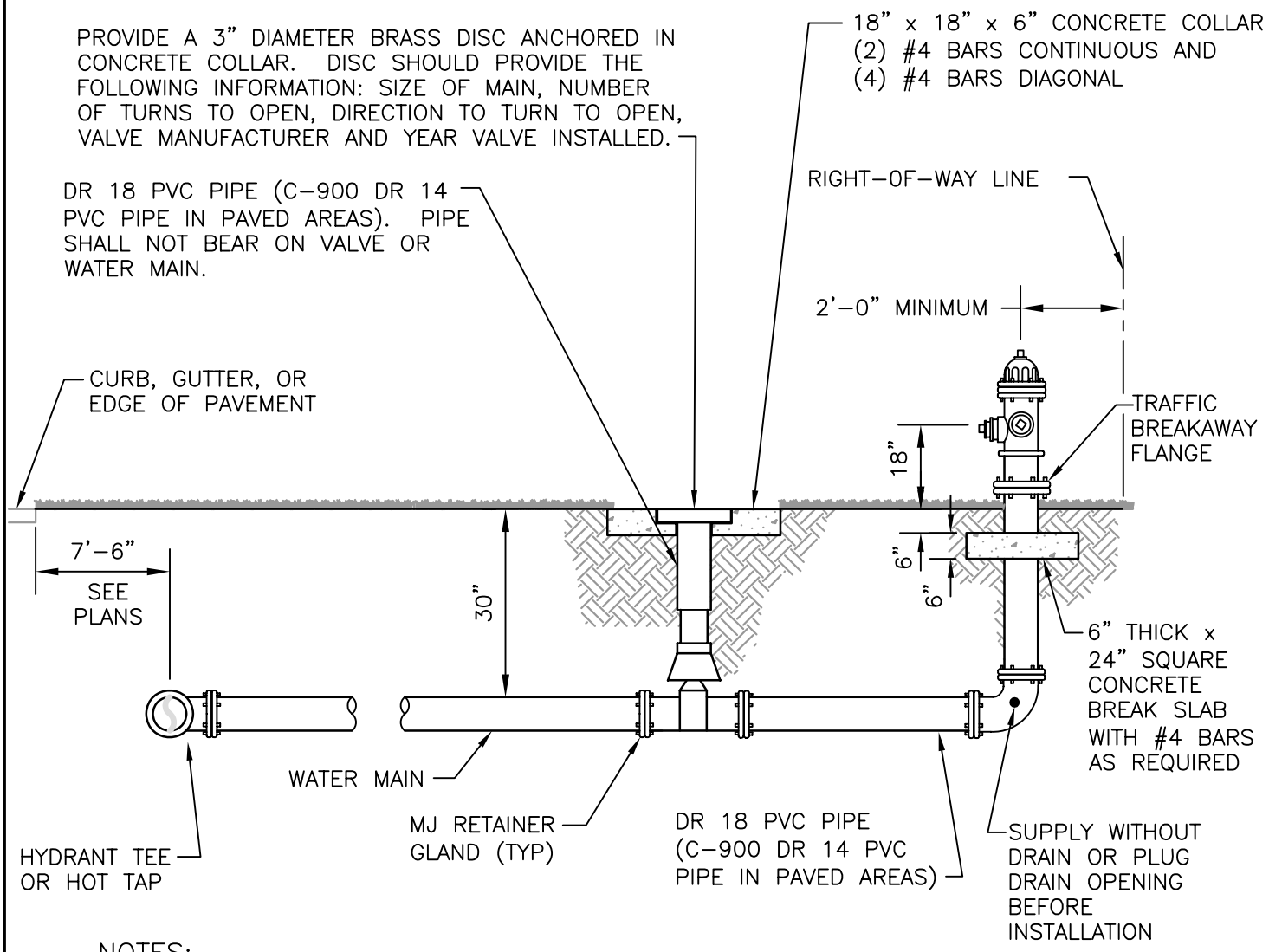


PERMANENT BACTERIAL SAMPLE POINT DETAIL

NTS

W-6

REVISED: APRIL 2006



NOTES:

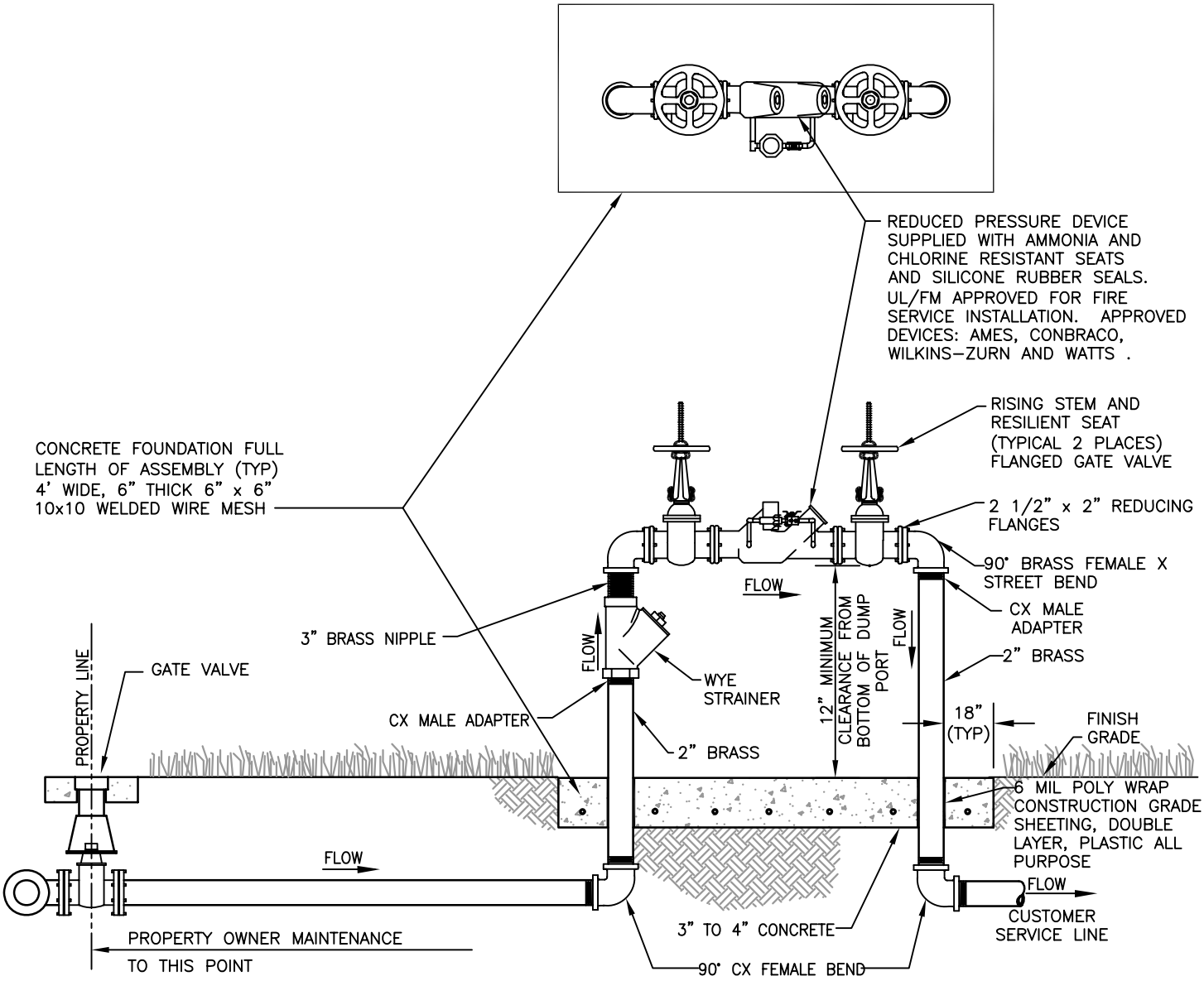
1. HYDRANT MUST BE CURRENT YEAR MANUFACTURE AND YEAR OF MANUFACTURE MUST BE CAST ON BARREL.
2. ALL EXISTING MAINS WHERE FIRE HYDRANTS ARE TO BE INSTALLED SHALL BE HOT TAPPED.
3. VALVE BOX RISER SHALL NOT BEAR ON VALVE OR PIPE.
4. ALL FIRE HYDRANT BARRELS SHALL BE A MINIMUM OF 5-1/4" DIAMETER.
5. ALL FIRE HYDRANTS INSTALLED SHALL BE OF THE BREAK AWAY FLANGE TYPE AND MEET THE REQUIREMENTS OF THE LOCAL FIRE CONTROL DISTRICT.
6. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
7. HYDRANT SHALL CONFORM WITH AWWA C-502.
8. THRUST RESTRAINT SHALL BE BY MJ RETAINER GLANDS.

DEAD END FIRE HYDRANT DETAIL

NTS

W-7

REVISED: APRIL 2006



NOTES:

1. CONNECTIONS REFER TO ANY OUTLET PERMITTING ACCESS TO INTERNAL FIRE SYSTEM (HYDRANTS, ETC).
2. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING FROM THE GATE VALVE AT PROPERTY LINE.
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. PROVIDE 3/4" BYPASS WITH FLOW METER.

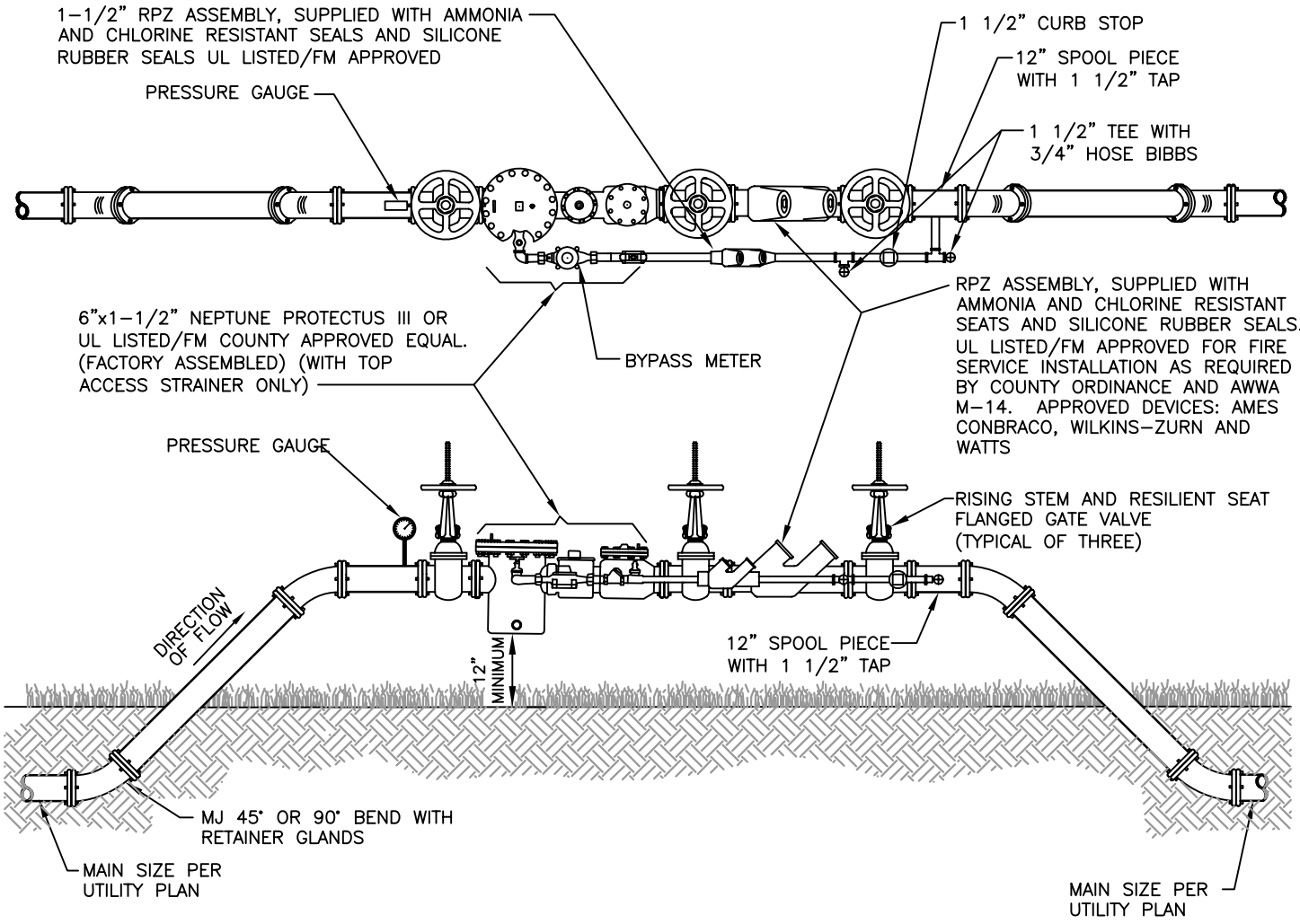
THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

2" AND 3" FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL WITH NO CONNECTIONS PERMITTED DOWNSTREAM

NTS

W–8

REVISED: APRIL 2006



NOTES:

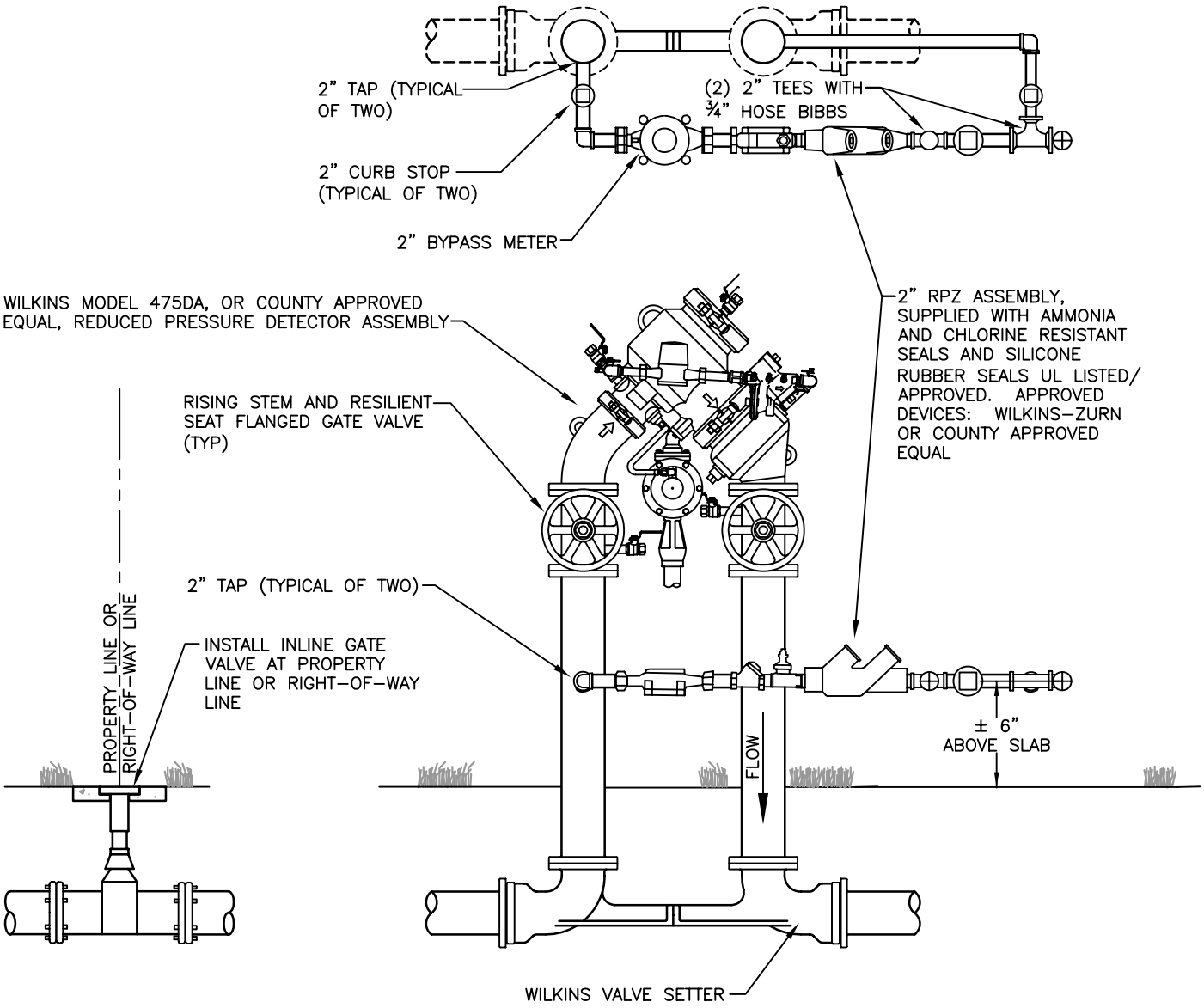
1. ALL ABOVE GROUND PIPE SHALL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. WATER MAIN EXTENSION AND ASSEMBLY IS REQUIRED TO BE FLUSHED, CHLORINATED AND GIVEN BACTERIAL CLEARANCE BY THE WATER DEPARTMENT LAB BEFORE PLACEMENT IN SERVICE.
3. BACKFLOW UNIT AND METER REQUIRES INITIAL CERTIFICATION FOR OPERATION AND ACCURACY WITH RESULTS AND ANNUAL TESTS SUBMITTED TO THE COLLIER COUNTY WATER DEPARTMENT FOR RECERTIFICATION.
4. INSPECTIONS ARE REQUIRED FOR SYSTEM TIE-IN AND ASSEMBLY CONNECTION.
5. ALL PLANTINGS SHALL BE A MINIMUM OF 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL COMFORM TO NSF STANDARD 61.
7. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.

TEMPORARY BACKFLOW PREVENTOR AND FIRE PROTECTION METER TIE-IN ASSEMBLY

NTS

W-9

REVISED: APRIL 2006



NOTES:

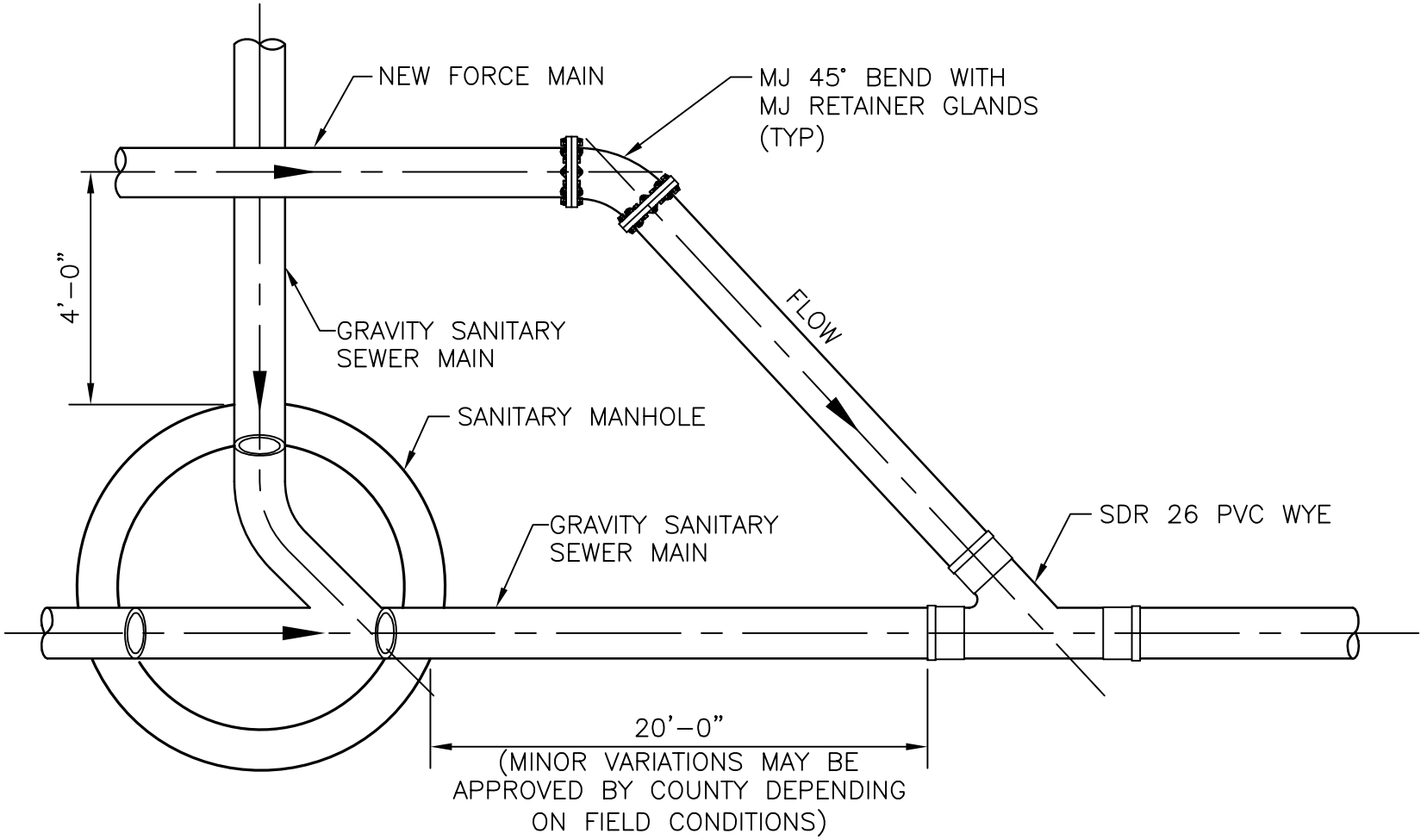
1. ALL ABOVE GROUND PIPE SHALL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. WATER MAIN EXTENSION AND ASSEMBLY IS REQUIRED TO BE FLUSHED, CHLORINATED AND GIVEN BACTERIAL CLEARANCE BY THE WATER DEPARTMENT LAB BEFORE PLACEMENT IN SERVICE.
3. BACKFLOW UNIT AND METER REQUIRES INITIAL CERTIFICATION FOR OPERATION AND ACCURACY WITH RESULTS AND ANNUAL TESTS SUBMITTED TO THE COLLIER COUNTY WATER DEPARTMENT FOR RECERTIFICATION.
4. INSPECTIONS ARE REQUIRED FOR SYSTEM TIE–IN AND ASSEMBLY CONNECTION.
5. ALL PLANTINGS SHALL BE A MINIMUM OF 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL COMFORM TO NSF STANDARD 61.

ALTERNATE TEMPORARY BACKFLOW PREVENTOR AND FIRE PROTECTION METER TIE–IN ASSEMBLY

NTS

W–9A

REVISED: AUGUST 2006

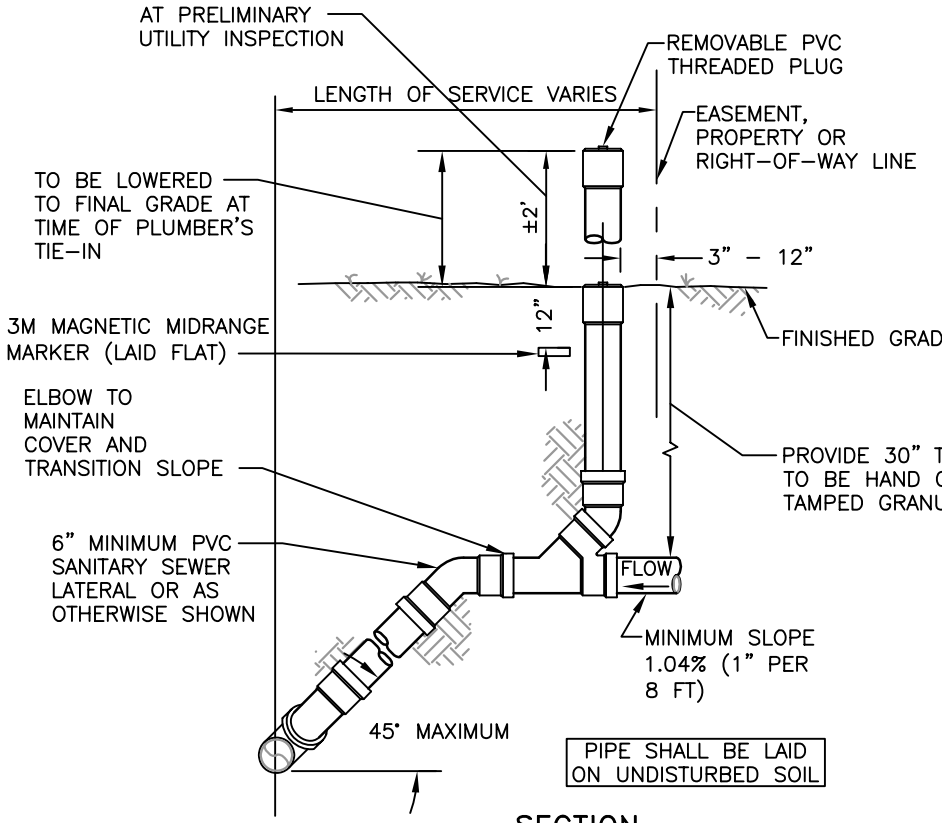


FORCE MAIN CONNECTION TO GRAVITY SANITARY SEWER DETAIL

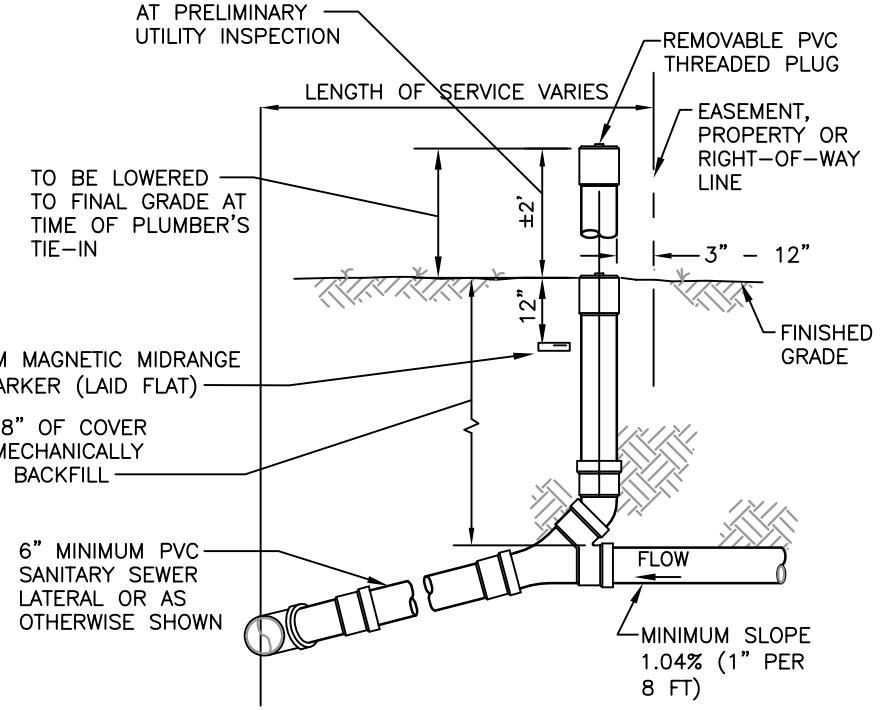
NTS

WW–1

REVISED: APRIL 2006



SECTION
DEPTH 8' AND OVER



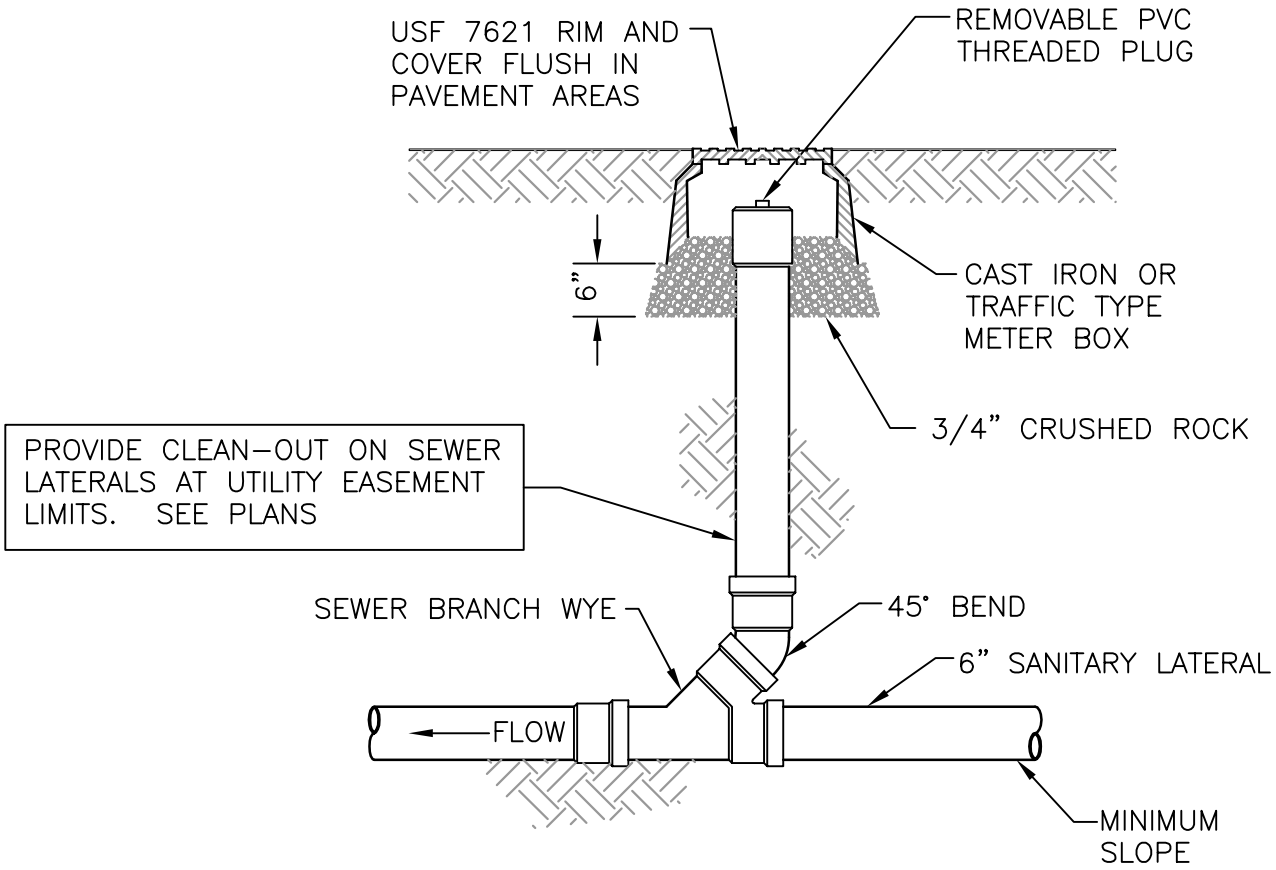
SECTION
DEPTH LESS THAN 8'

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

NTS

WW-10

REVISED: SEPTEMBER 2006



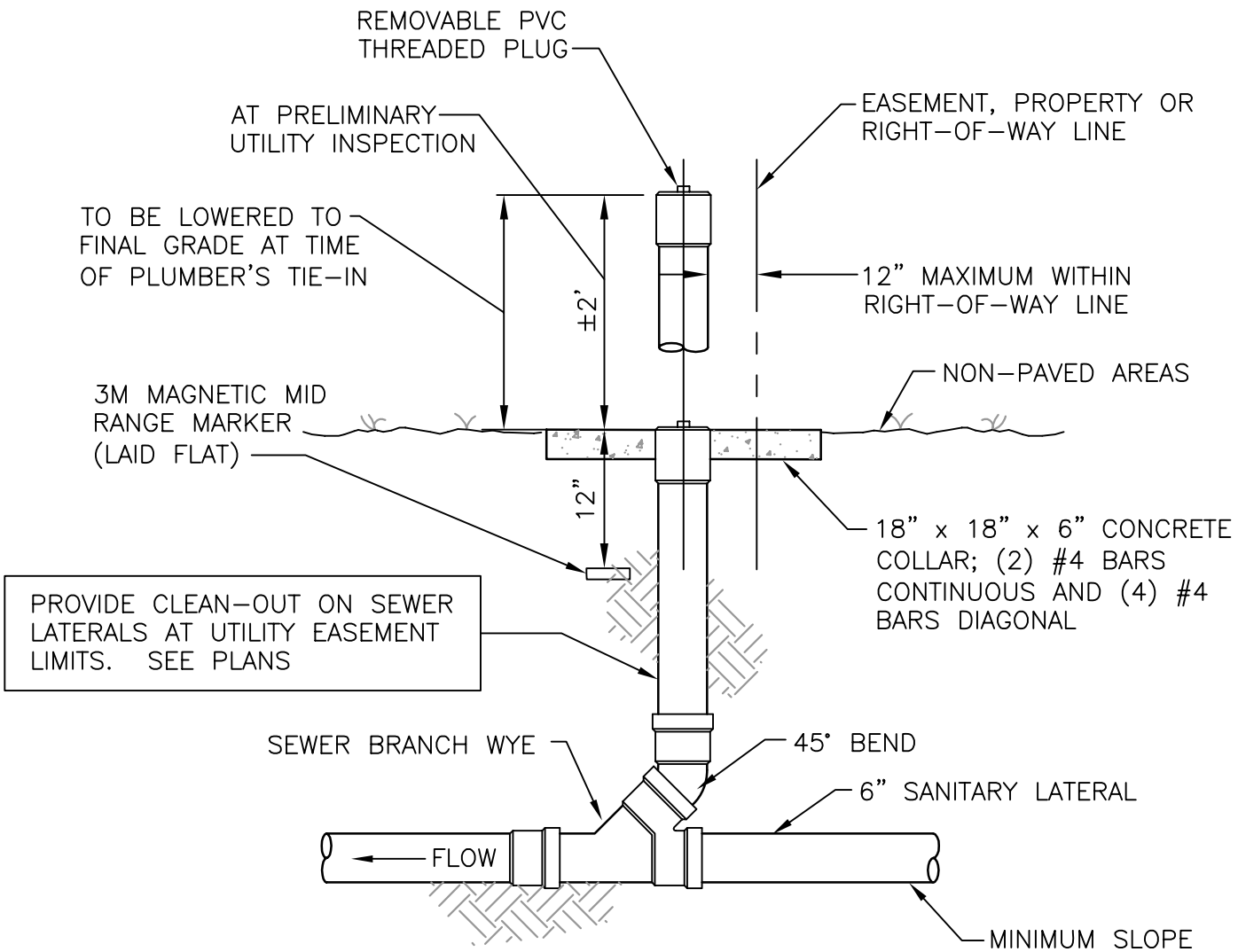
ELEVATION

SEWER CLEAN-OUT DETAIL
PAVED AREAS

NTS

WW-11

REVISED: APRIL 2006



ELEVATION

SEWER CLEAN-OUT DETAIL
NON PAVED AREAS

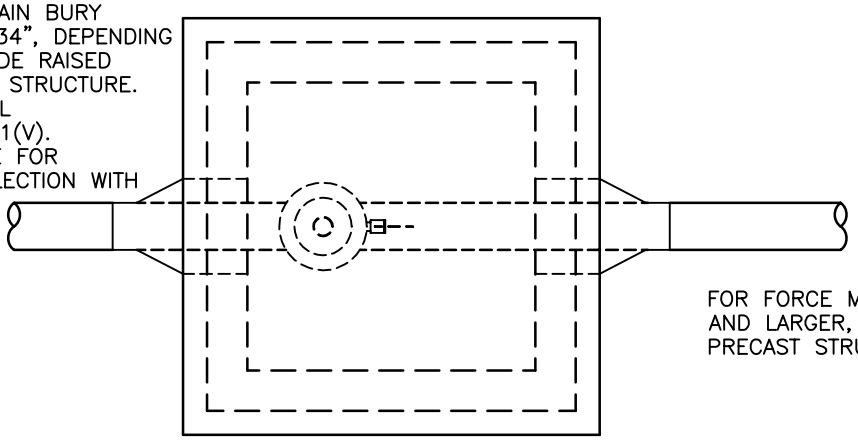
NTS

WW-12

REVISED: APRIL 2006

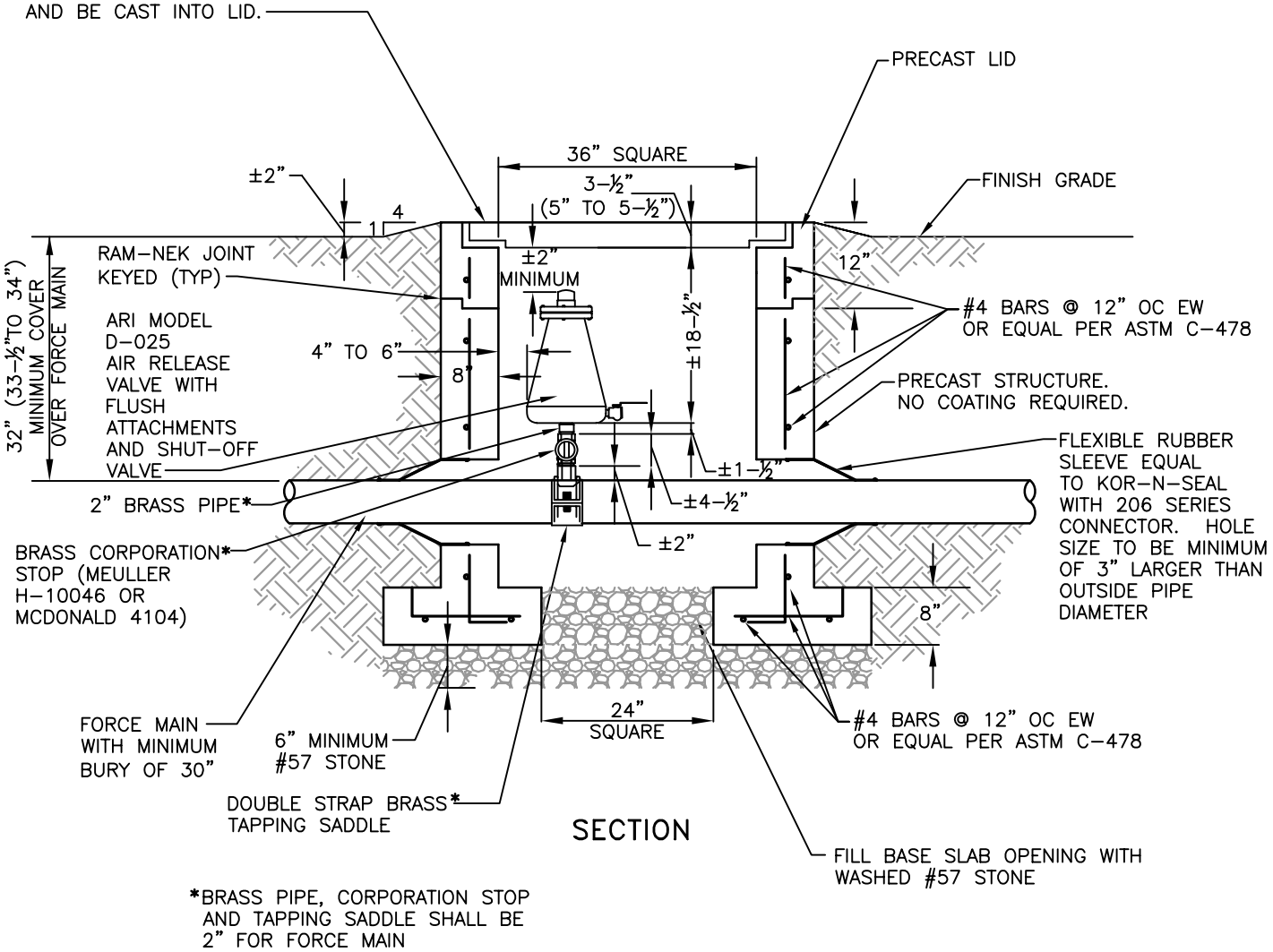
NOTE:

IN LOCATIONS WITH FORCE MAIN BURY BETWEEN 30" AND 32" (OR 34", DEPENDING ON HATCH SELECTED), PROVIDE RAISED GRADE AROUND VALVE VAULT STRUCTURE. FINISHED GRADE SLOPE SHALL NOT BE GREATER THAN 4(H):1(V). CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF HATCH SELECTION WITH AREA AVAILABLE FOR SLOPE.



FOR FORCE MAINS 24" DIAMETER AND LARGER, USE 48" SQUARE PRECAST STRUCTURE

PLAN



SECTION

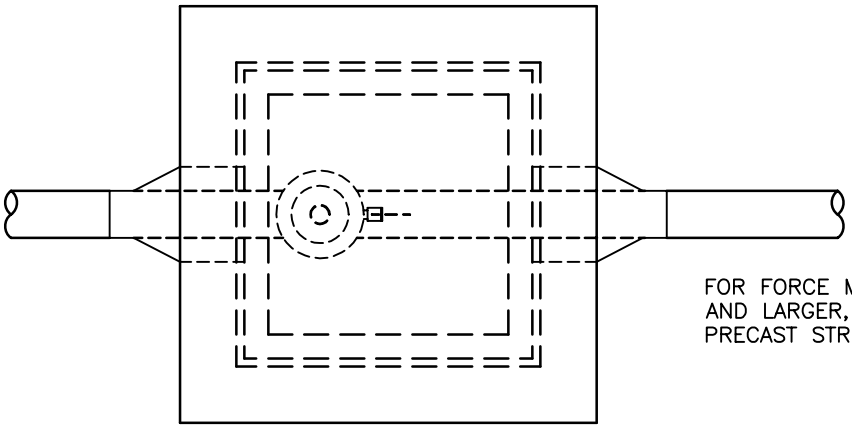
*BRASS PIPE, CORPORATION STOP AND TAPPING SADDLE SHALL BE 2" FOR FORCE MAIN

FORCE MAIN AIR RELEASE VALVE DETAIL (NON-TRAFFIC AREA)

SCALE: ½" = 1'-0"

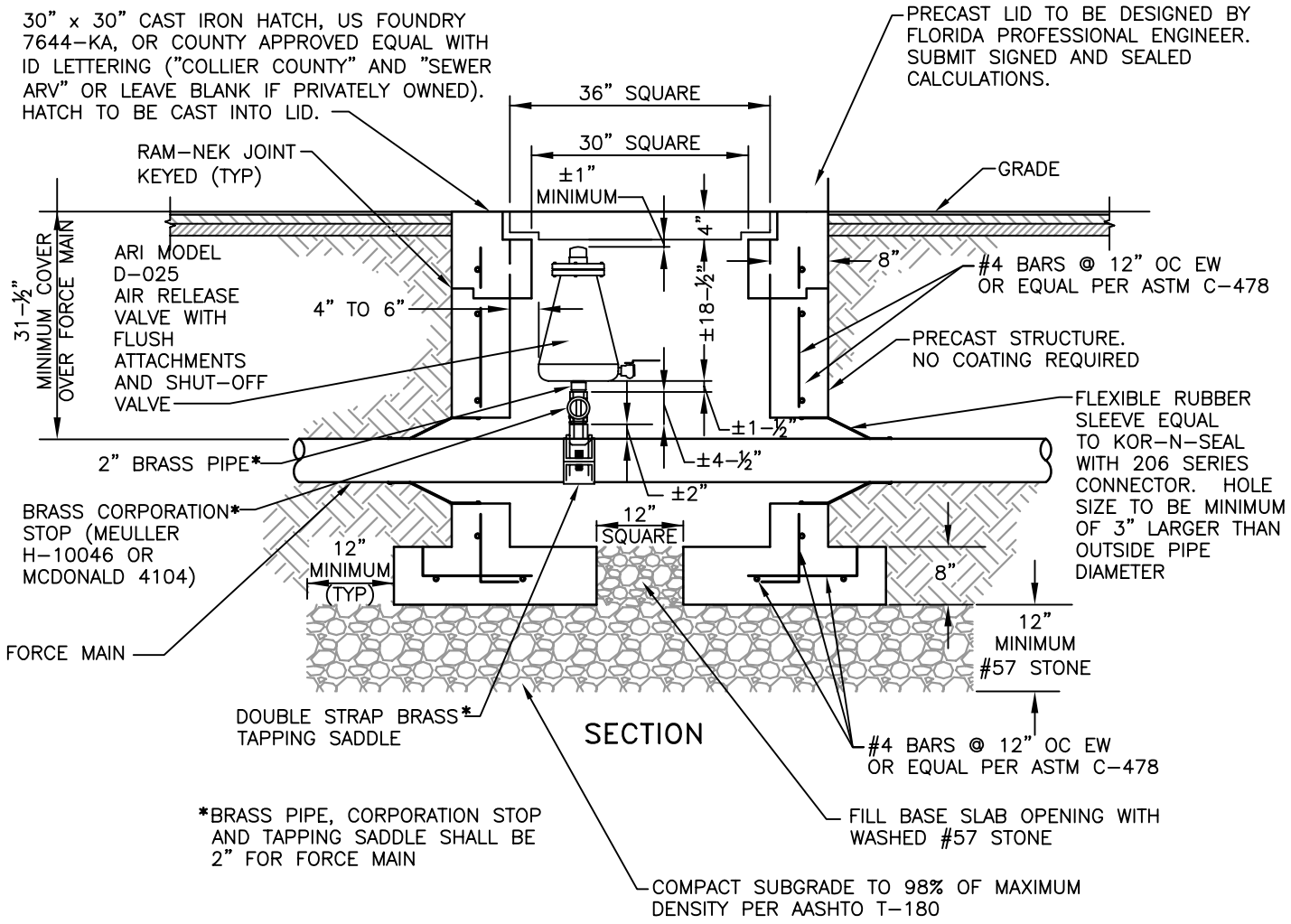
WW-13

REVISED: APRIL 2006



PLAN

FOR FORCE MAINS 24" DIAMETER AND LARGER, USE 48" SQUARE PRECAST STRUCTURE

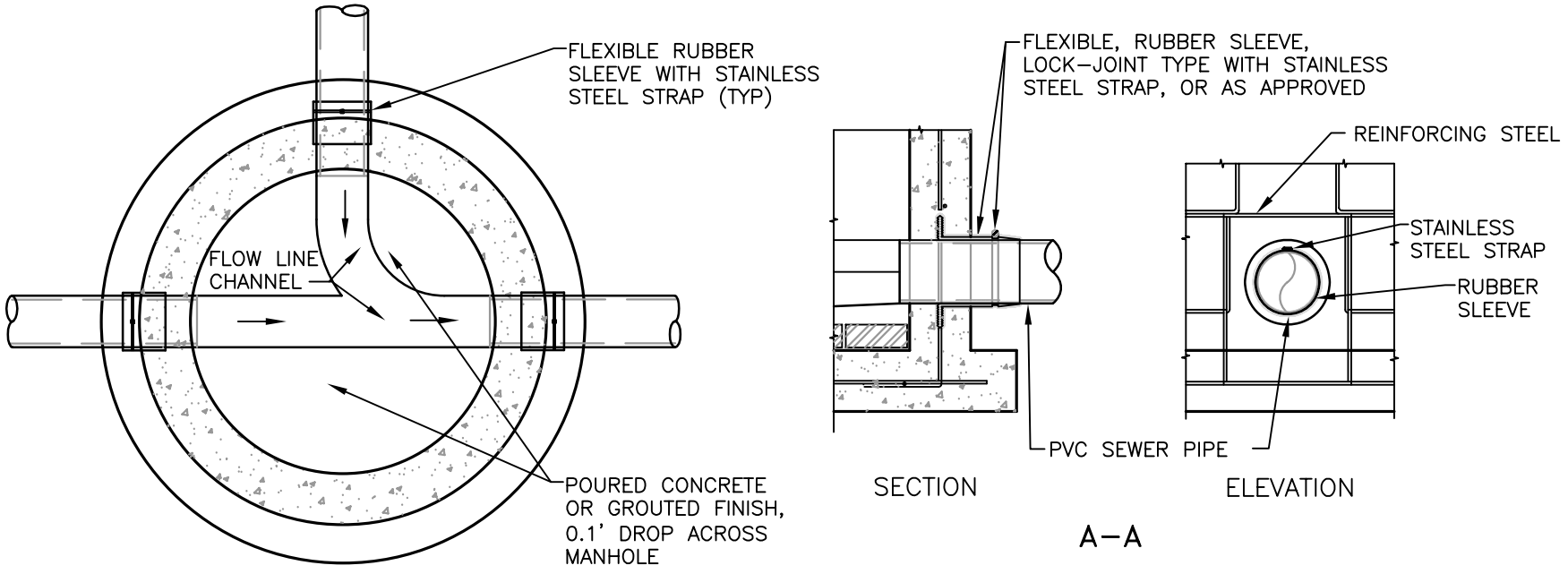


FORCE MAIN AIR RELEASE VALVE DETAIL (PAVED AREA)

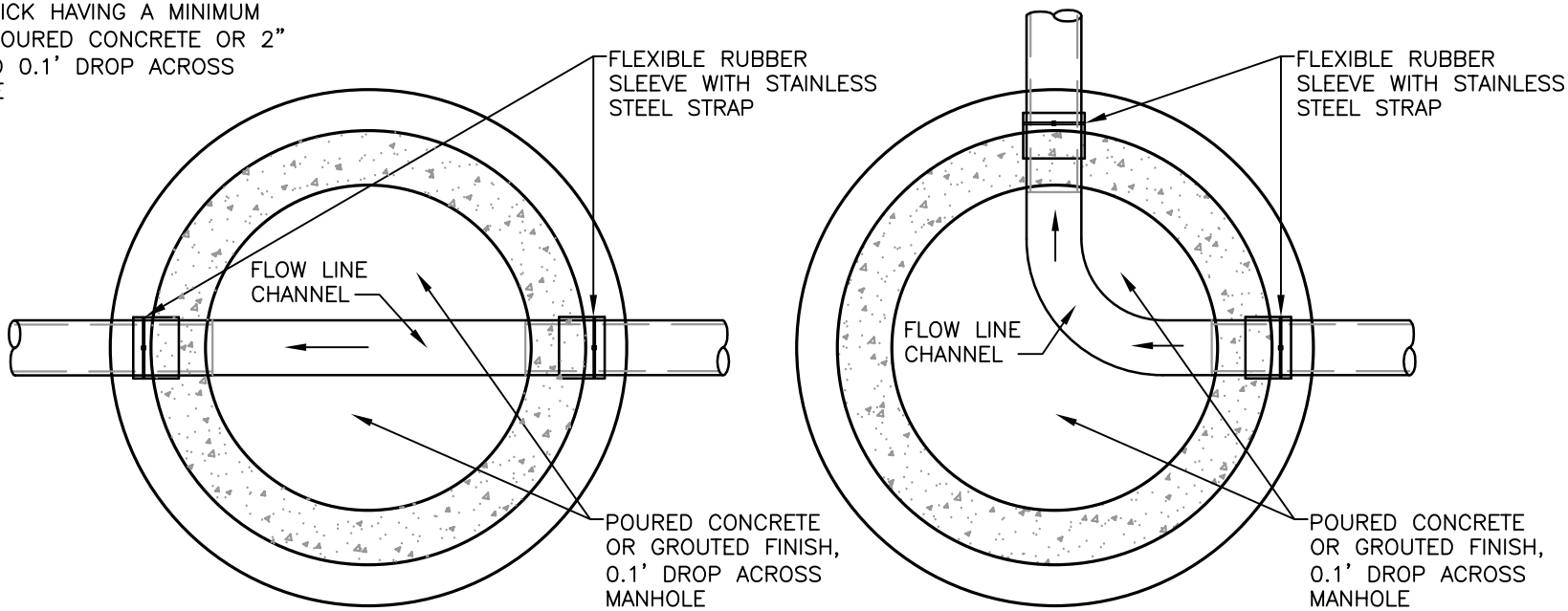
SCALE: ½" = 1'-0"

WW-14

REVISED: APRIL 2006



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

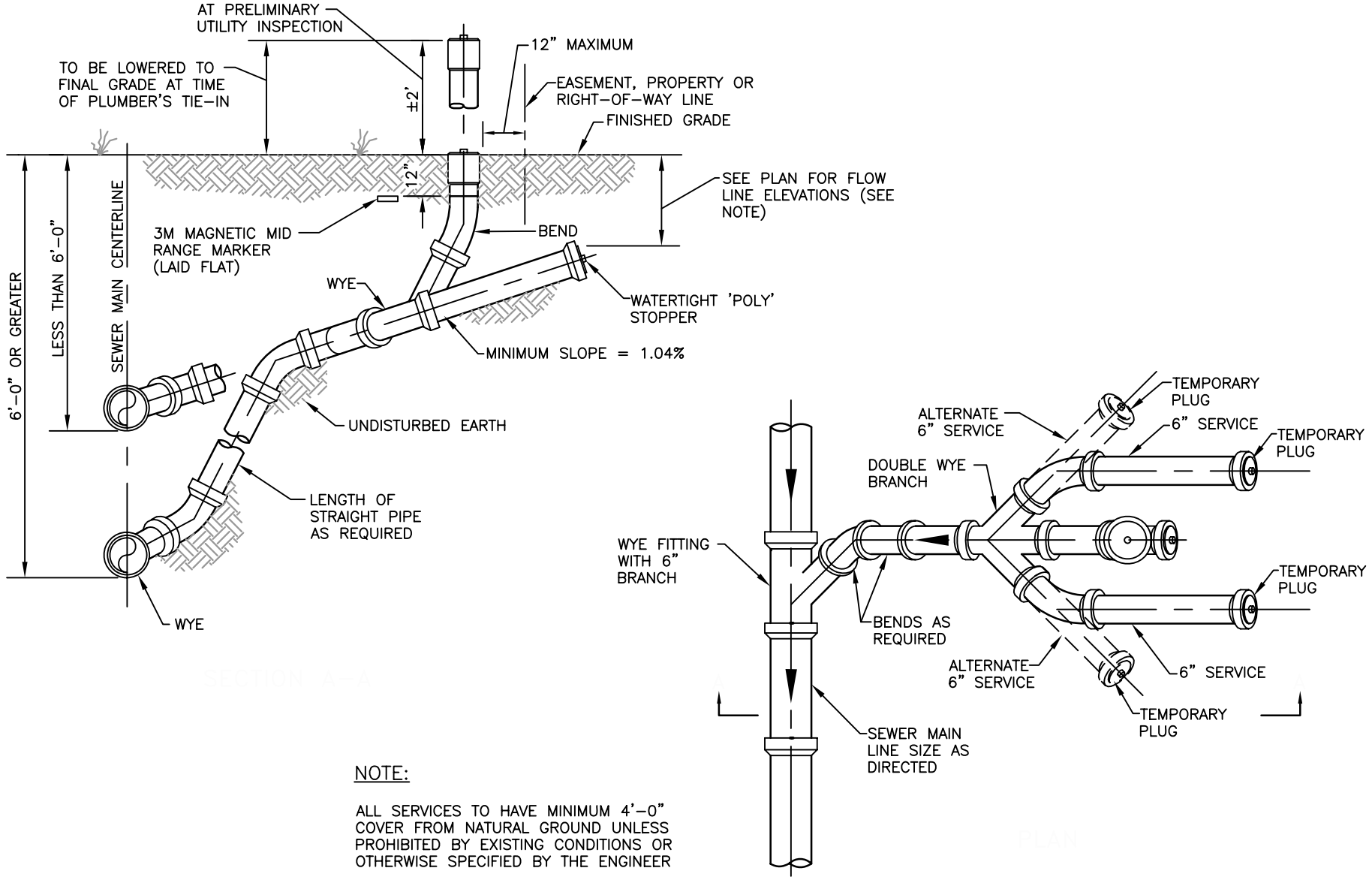


WW-15

REVISED: APRIL 2006

TYPICAL FLOW LINE CHANNELS DETAIL

NTS



NOTE:

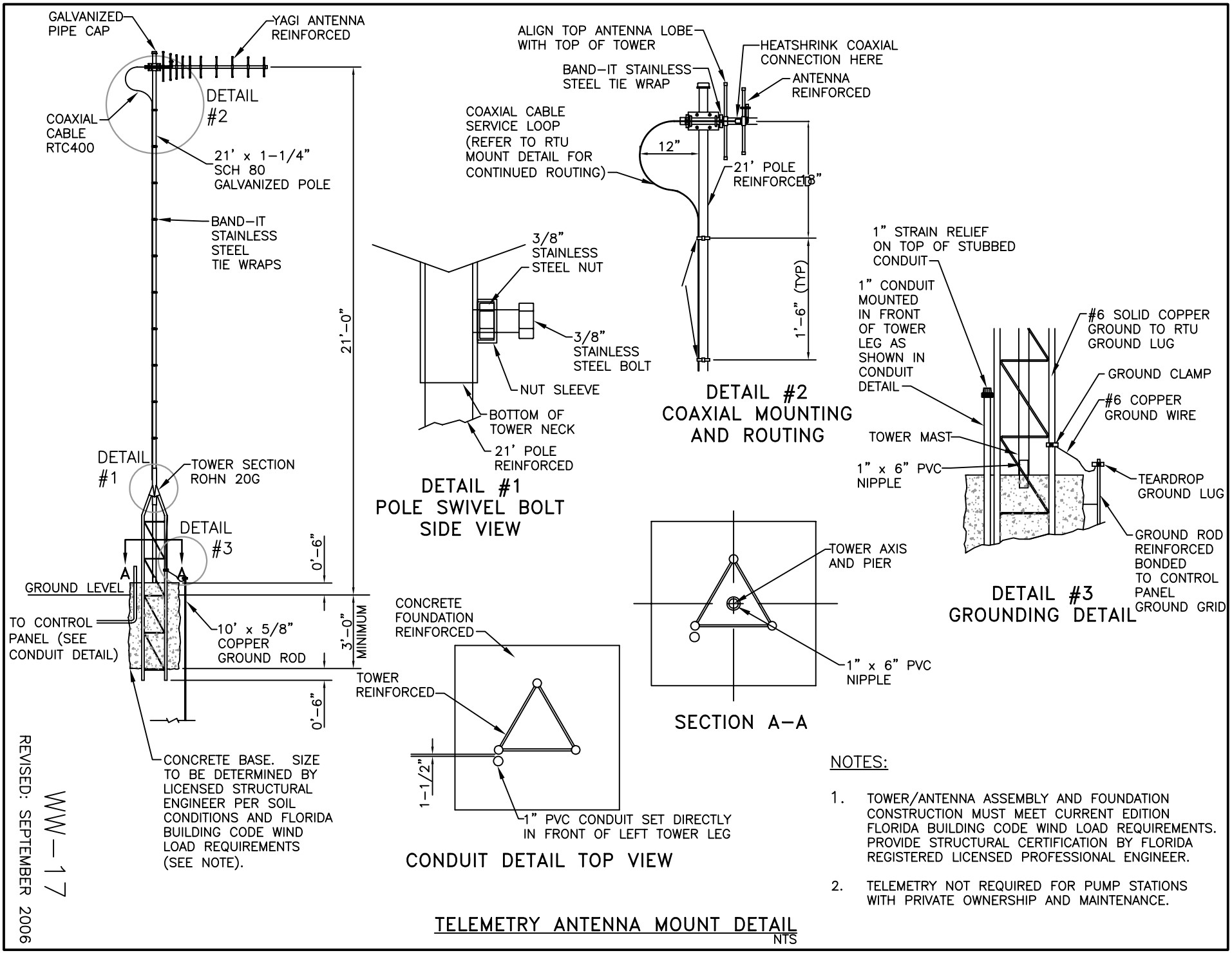
ALL SERVICES TO HAVE MINIMUM 4'-0" COVER FROM NATURAL GROUND UNLESS PROHIBITED BY EXISTING CONDITIONS OR OTHERWISE SPECIFIED BY THE ENGINEER

DOUBLE SEWER CLEAN-OUT DETAIL

NTS

WW-16

REVISED: APRIL 2006



NOTES:

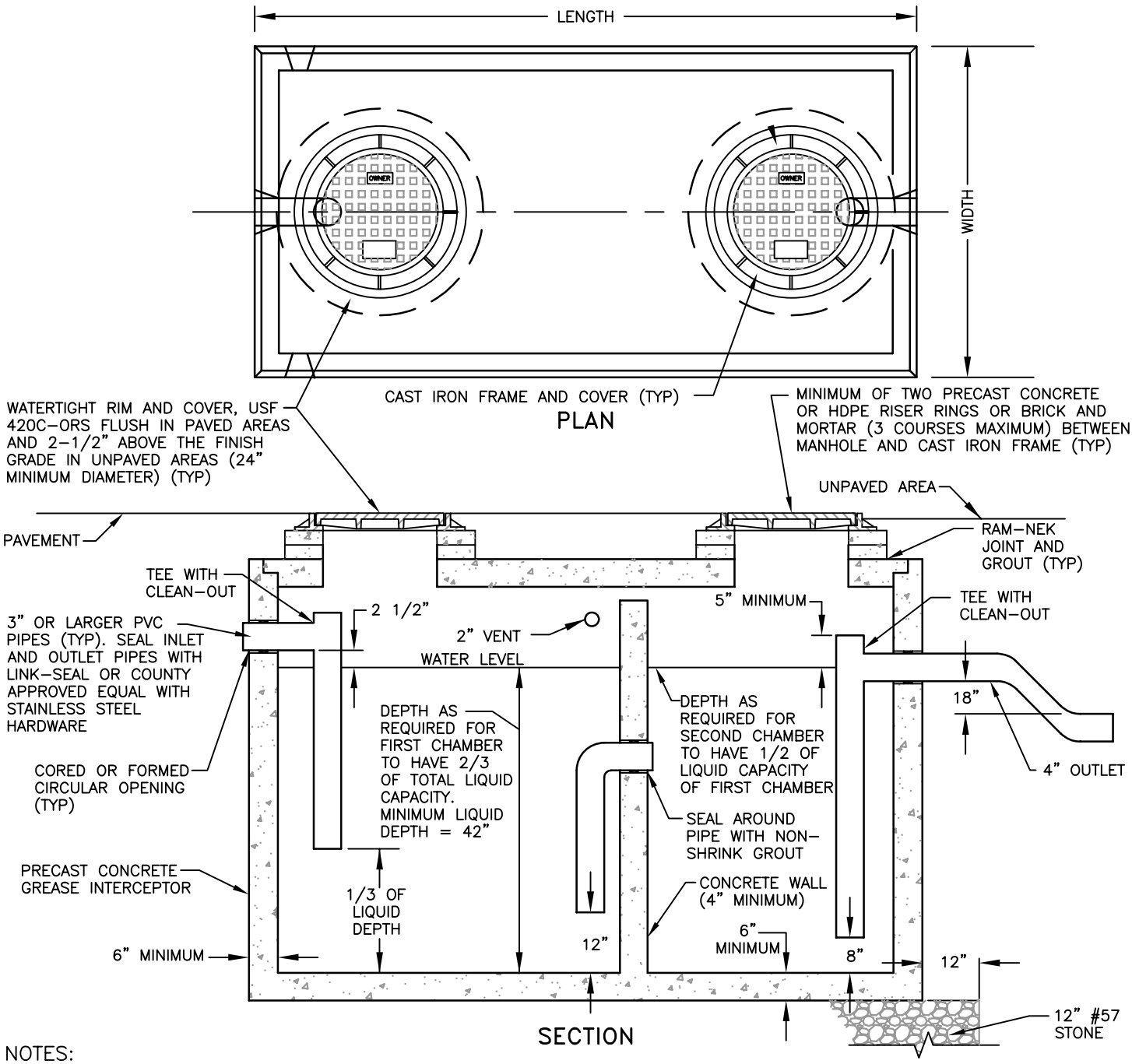
1. TOWER/ANTENNA ASSEMBLY AND FOUNDATION CONSTRUCTION MUST MEET CURRENT EDITION FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS. PROVIDE STRUCTURAL CERTIFICATION BY FLORIDA REGISTERED LICENSED PROFESSIONAL ENGINEER.
2. TELEMETRY NOT REQUIRED FOR PUMP STATIONS WITH PRIVATE OWNERSHIP AND MAINTENANCE.

TELEMETRY ANTENNA MOUNT DETAIL

NTS

WW-17

REVISED: SEPTEMBER 2006



NOTES:

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

GREASE INTERCEPTOR

NTS

WW–18

REVISED: AUGUST 2006

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

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

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

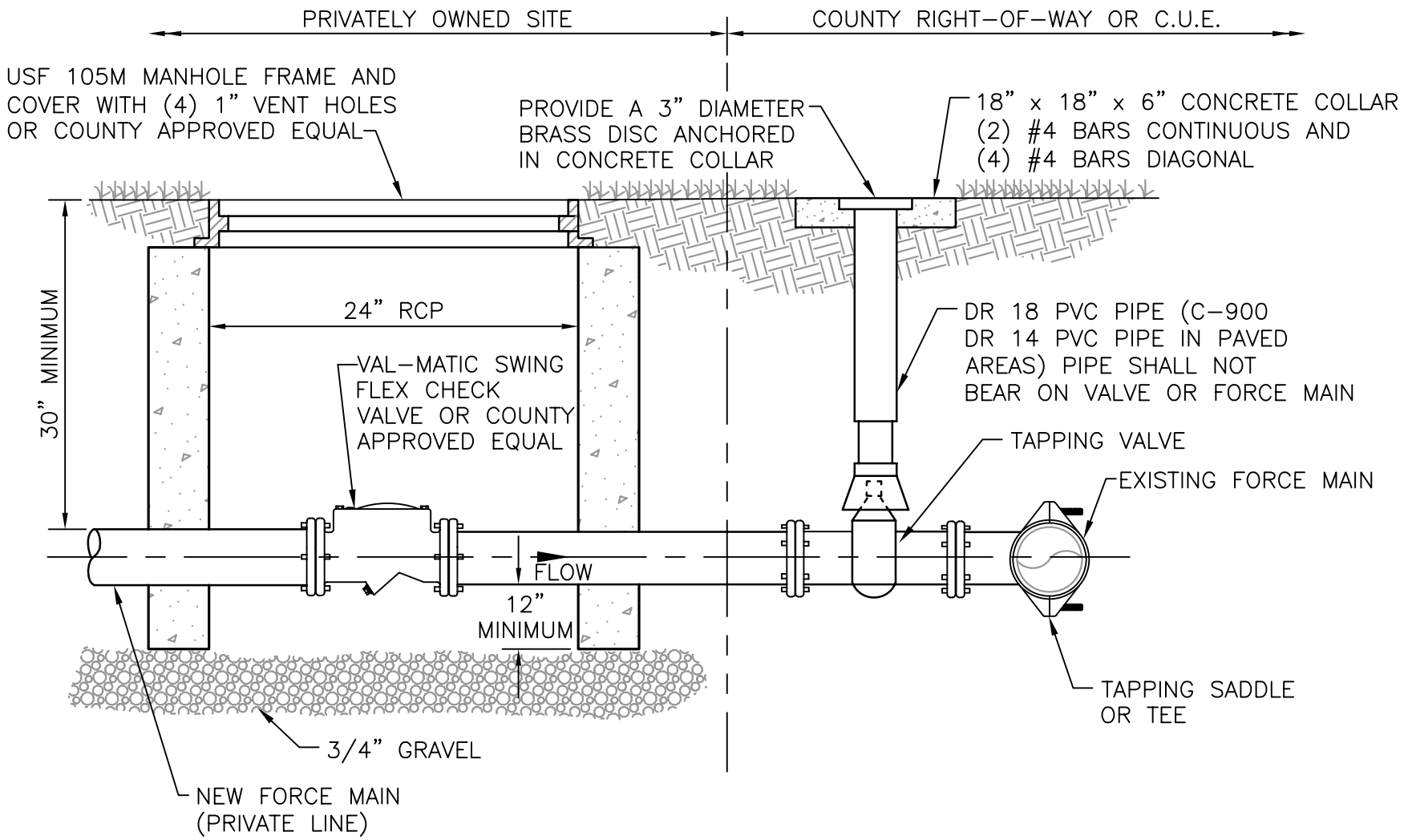
TOTAL FLOW–THROUGH RATING (GPM)	GREASE RETENTION CAPACITY (POUNDS)
4	8
6	12
7	14
9	18
10	20
12	24
14	28
15	30
18	36
20	40
25	50
35	70
50	100

GREASE INTERCEPTOR TABLES

NTS

WW–18A

REVISED: APRIL 2006

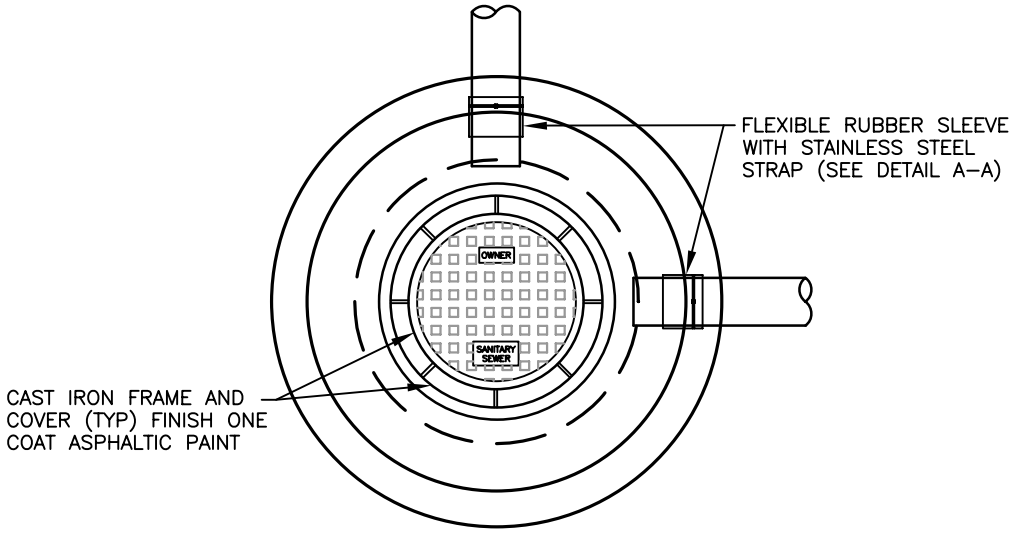


PRIVATE FORCE MAIN CONNECTION TO COUNTY FORCE MAIN DETAIL

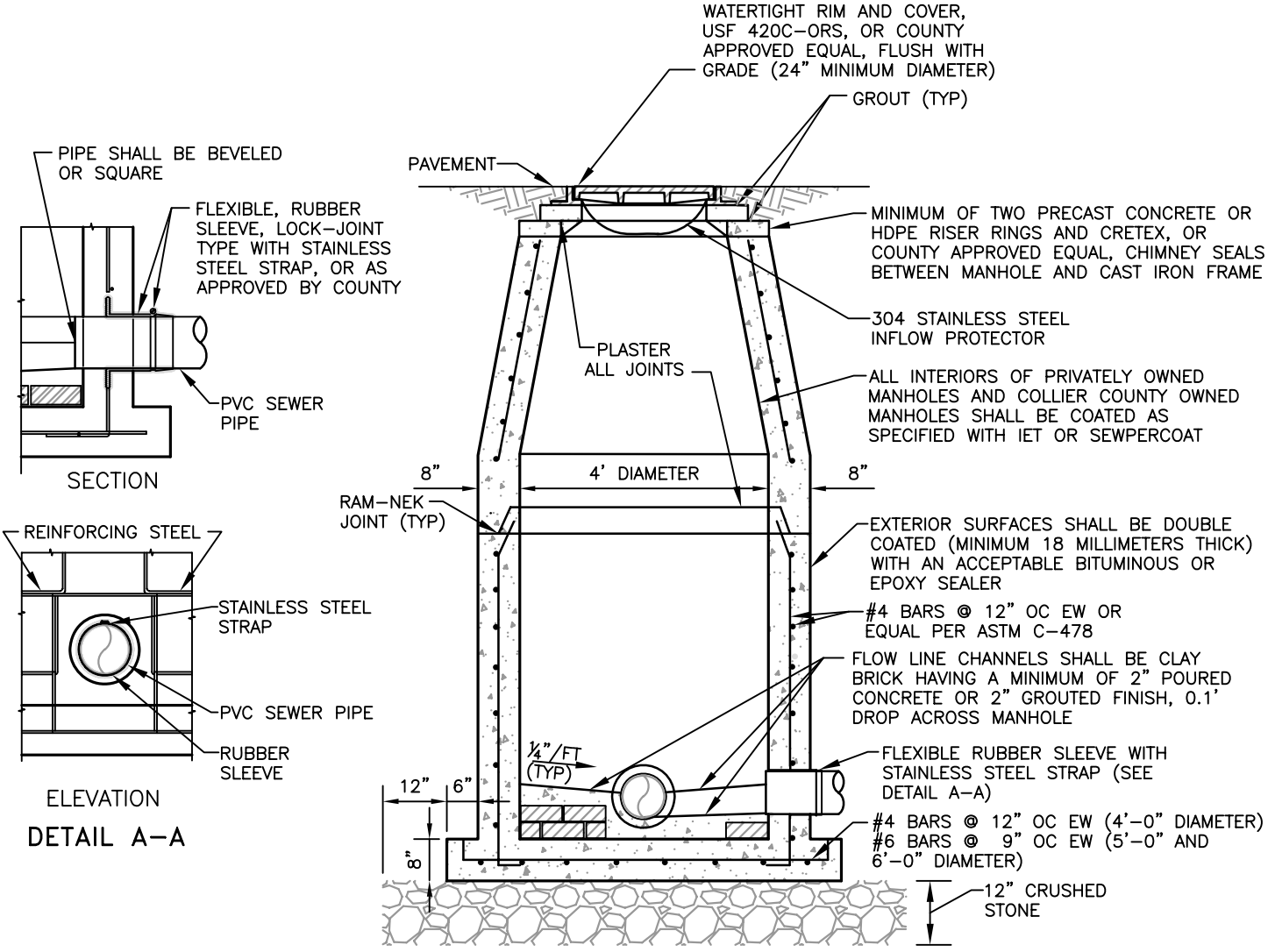
NTS

WW–2

REVISED: APRIL 2006



PLAN



SECTION

SECTION

ELEVATION

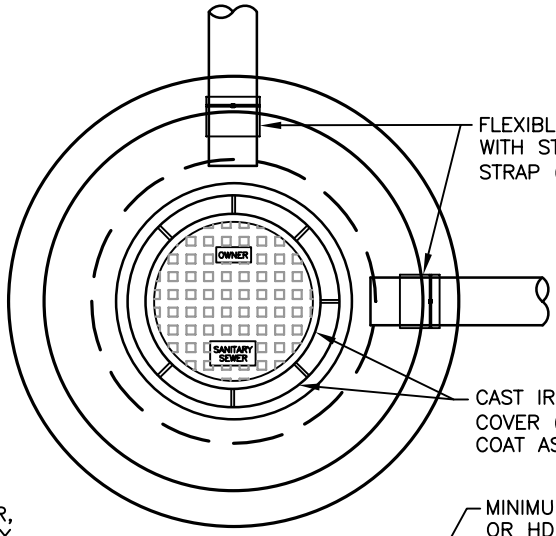
DETAIL A–A

PRECAST REINFORCED CONCRETE MANHOLE DETAIL

NTS

WW–3

REVISED: APRIL 2006



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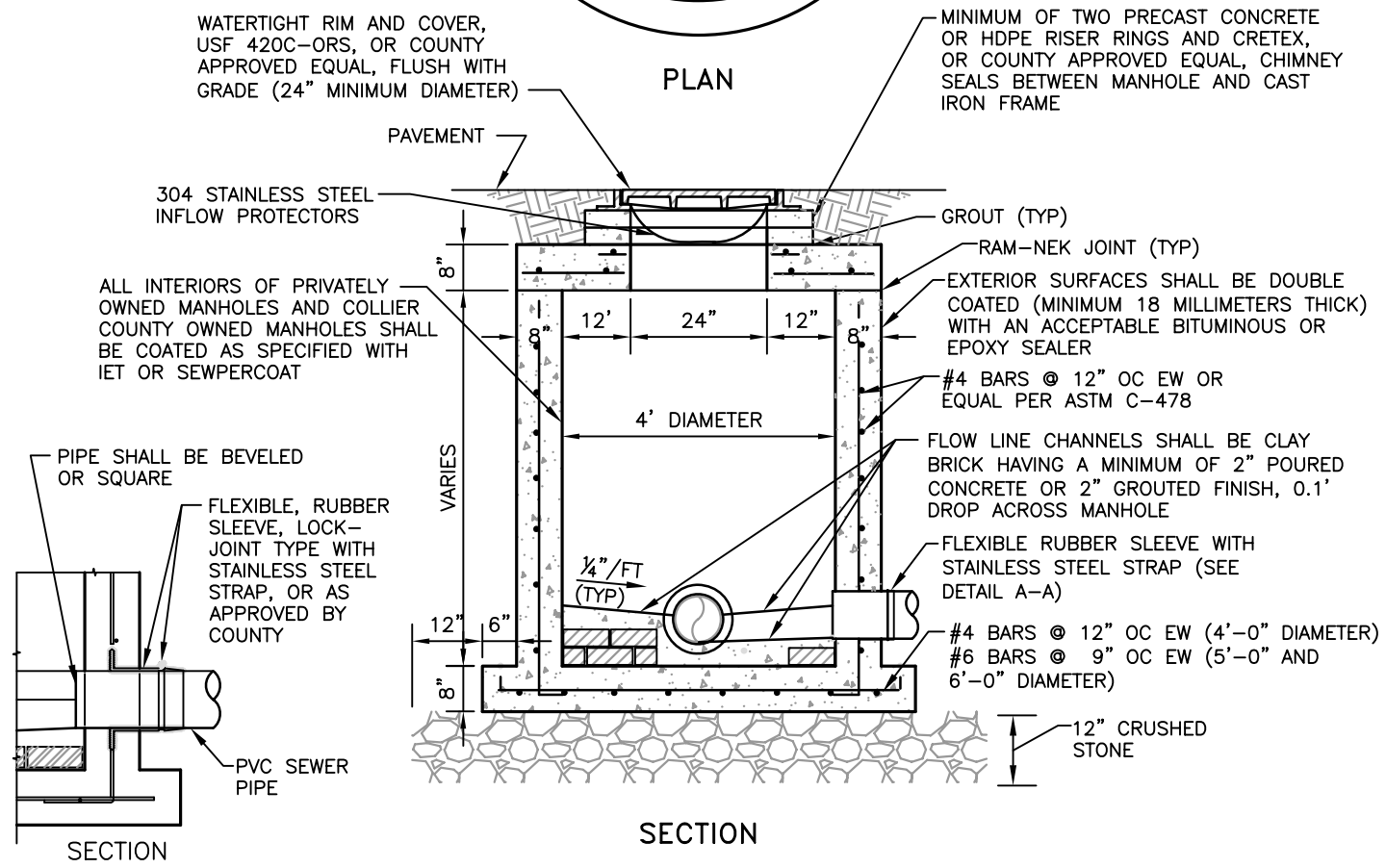
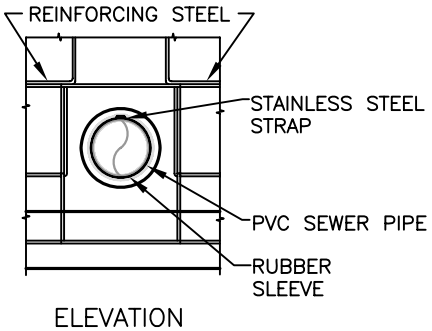


SECTION

SECTION



ELEVATION

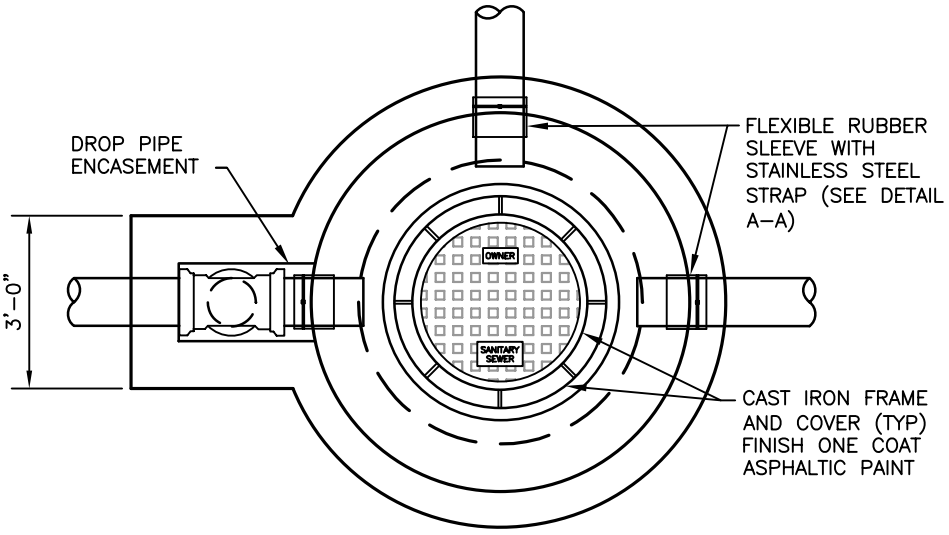
DETAIL A–A

SHALLOW MANHOLE DETAIL

NTS

WW–4

REVISED: APRIL 2006



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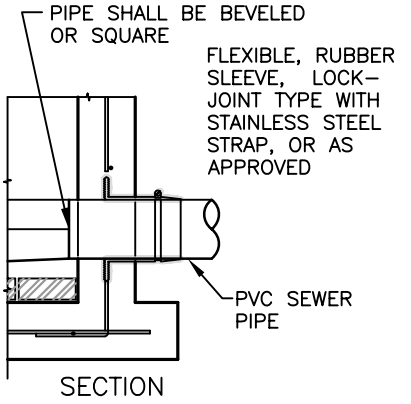

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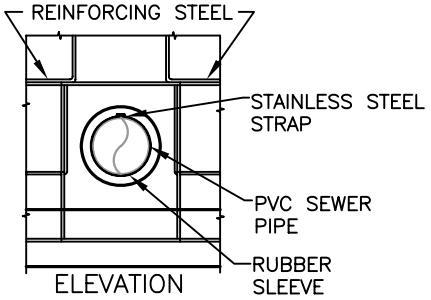
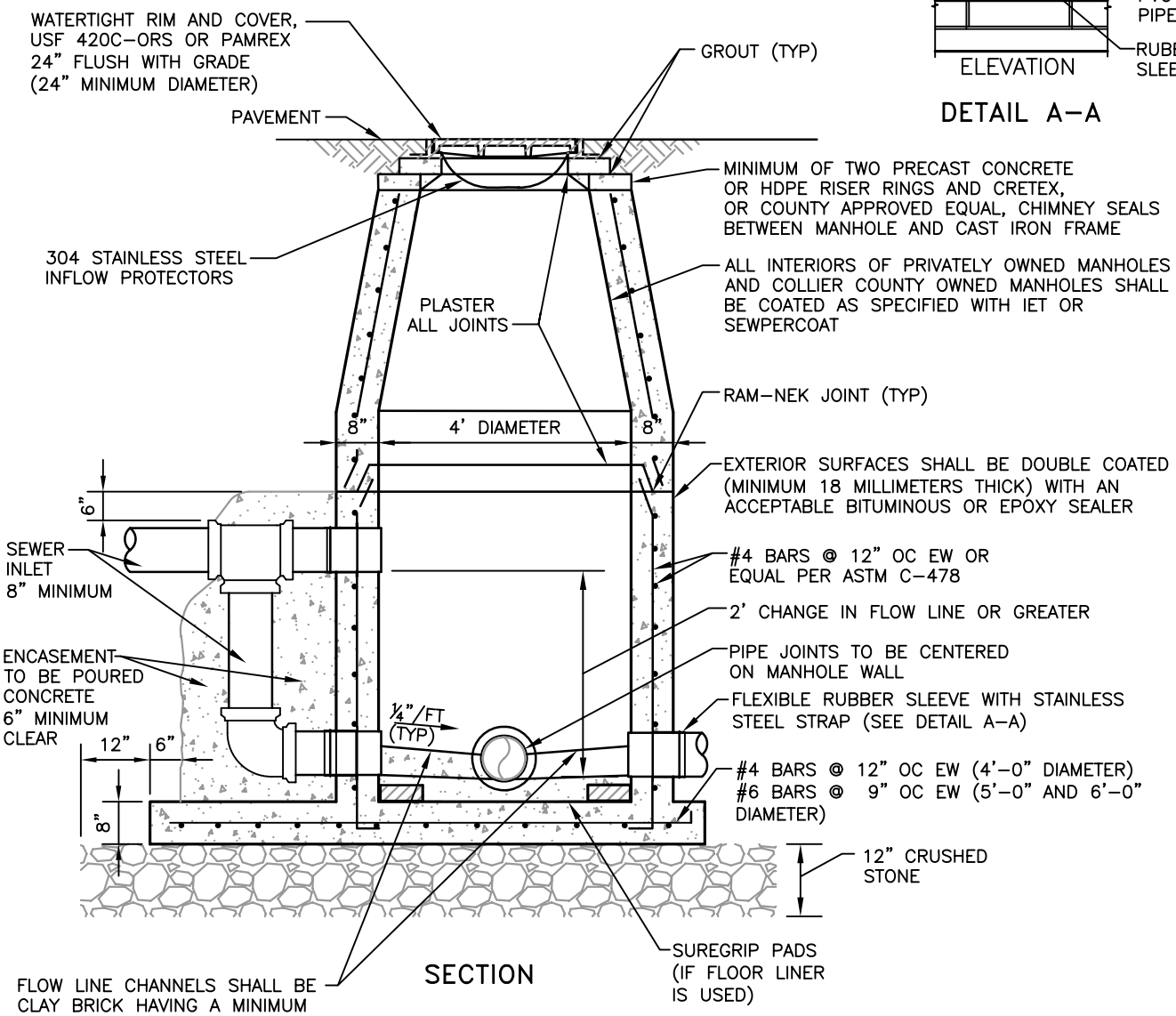


ELEVATION

DETAIL A–A



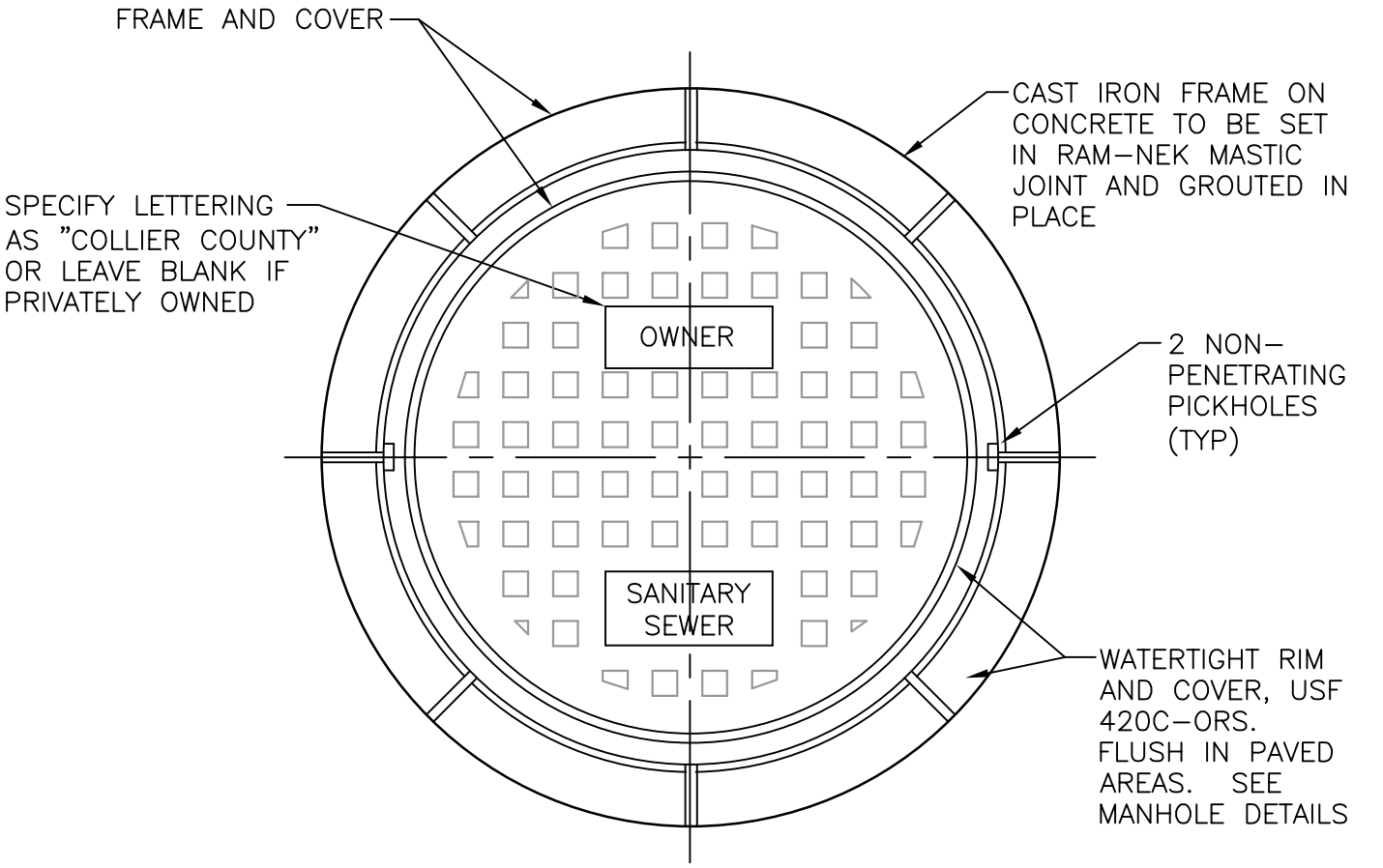
SECTION

DROP MANHOLE DETAIL

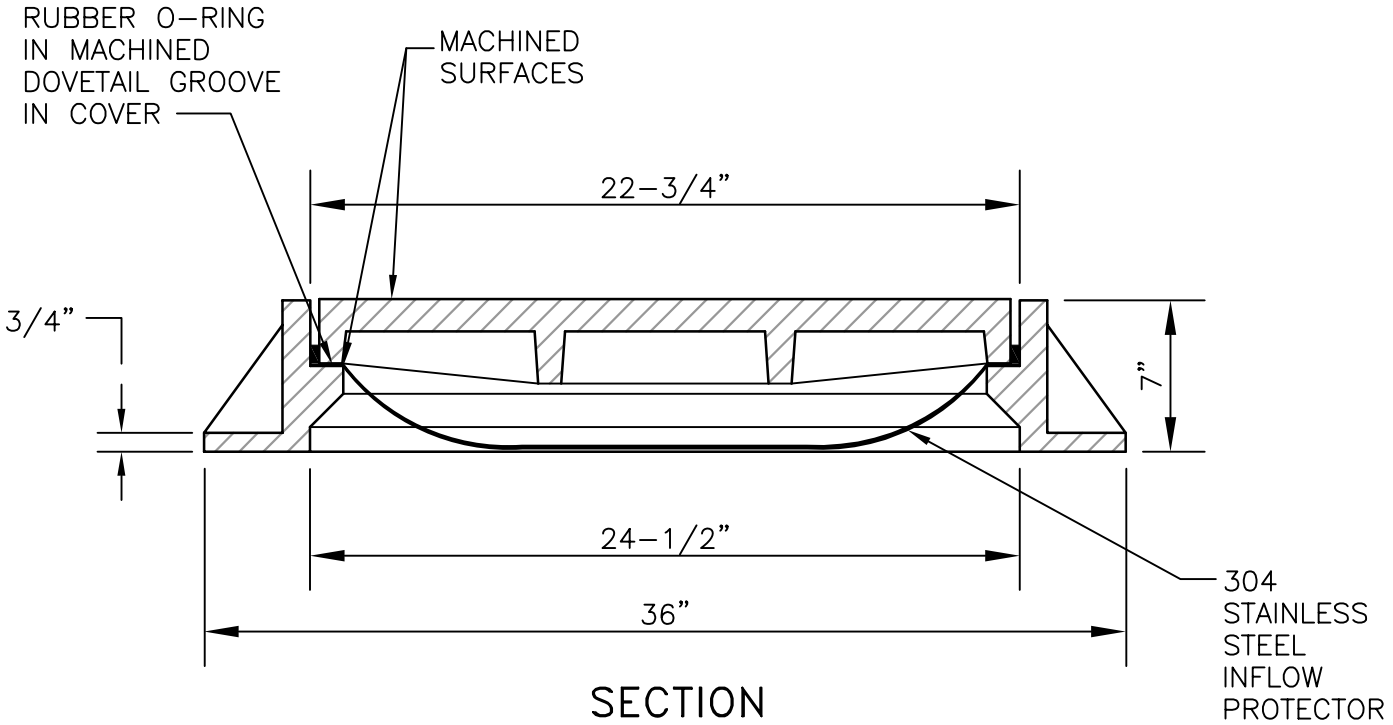
NTS

WW–5

REVISED: APRIL 2006



PLAN



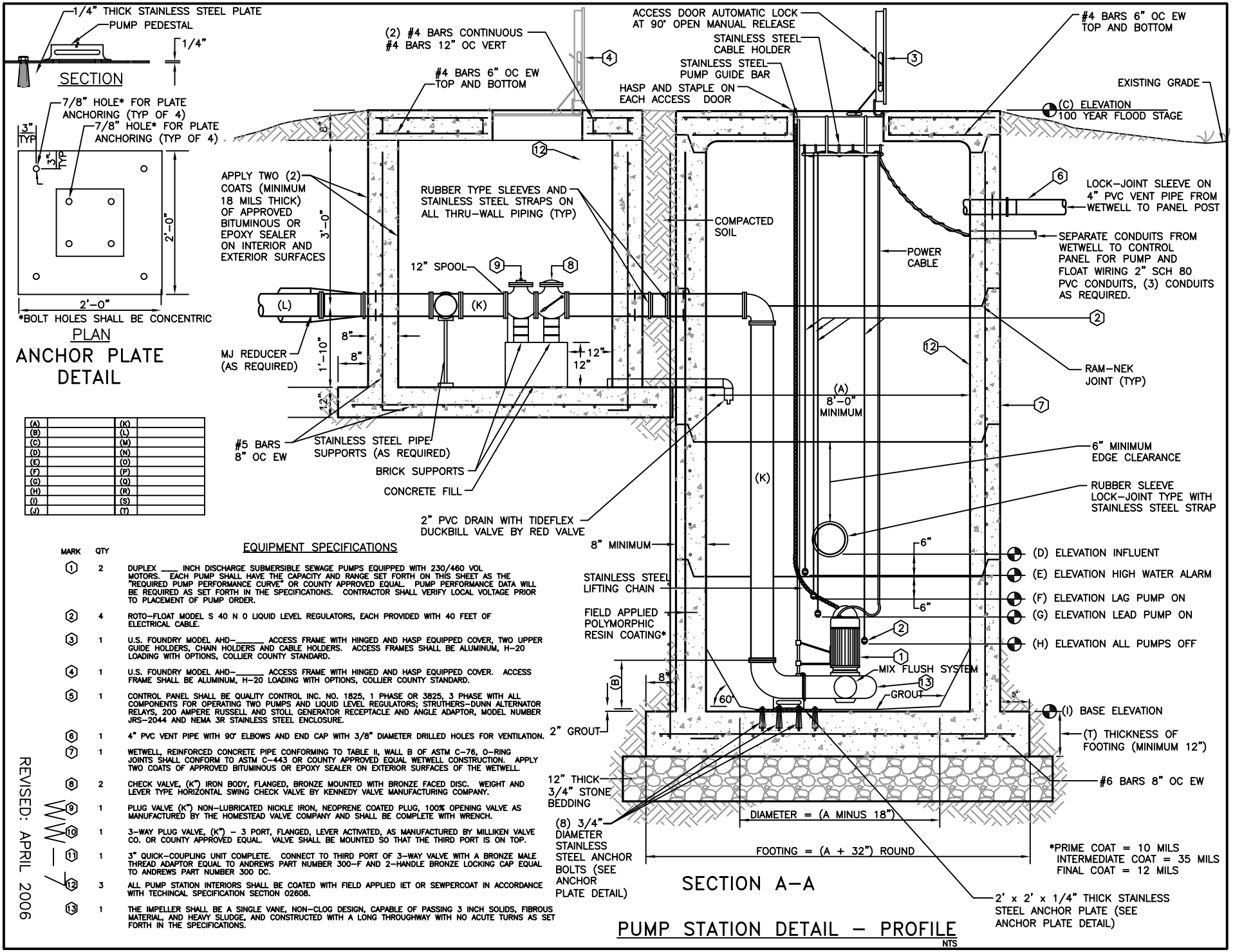
SECTION

MANHOLE RING AND COVER DETAIL

NTS

WW-6

REVISED: APRIL 2006



(A)		(K)	
(B)		(L)	
(C)		(M)	
(D)		(N)	
(E)		(O)	
(F)		(P)	
(G)		(Q)	
(H)		(R)	
(I)		(S)	
(J)		(T)	

EQUIPMENT SPECIFICATIONS

MARK	QTY	
1	2	DUPLEX ___ INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOL MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE" OR COUNTY APPROVED EQUAL. PUMP PERFORMANCE DATA WILL BE REQUIRED AS SET FORTH IN THE SPECIFICATIONS. CONTRACTOR SHALL VERIFY LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2	4	ROTO-FLOAT MODEL S 40 N O LIQUID LEVEL REGULATORS, EACH PROVIDED WITH 40 FEET OF ELECTRICAL CABLE.
3	1	U.S. FOUNDRY MODEL AHD-_____ ACCESS FRAME WITH HINGED AND HASP EQUIPPED COVER, TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS. ACCESS FRAMES SHALL BE ALUMINUM, H-20 LOADING WITH OPTIONS, COLLIER COUNTY STANDARD.
4	1	U.S. FOUNDRY MODEL AHD-_____ ACCESS FRAME WITH HINGED AND HASP EQUIPPED COVER. ACCESS FRAME SHALL BE ALUMINUM, H-20 LOADING WITH OPTIONS, COLLIER COUNTY STANDARD.
5	1	CONTROL PANEL SHALL BE QUALITY CONTROL INC. NO. 1825, 1 PHASE OR 3825, 3 PHASE WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; STRUTHERS-DUNN ALTERNATOR RELAYS, 200 AMPERE RUSSELL AND STOLL GENERATOR RECEPTACLE AND ANGLE ADAPTOR, MODEL NUMBER JRS-2044 AND NEMA 3R STAINLESS STEEL ENCLOSURE.
6	1	4" PVC VENT PIPE WITH 90° ELBOWS AND END CAP WITH 3/8" DIAMETER DRILLED HOLES FOR VENTILATION.
7	1	WETWELL, REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76, O-RING JOINTS SHALL CONFORM TO ASTM C-443 OR COUNTY APPROVED EQUAL WETWELL CONSTRUCTION. APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WETWELL.
8	2	CHECK VALVE, (K") IRON BODY, FLANGED, BRONZE MOUNTED WITH BRONZE FACED DISC. WEIGHT AND LEVER TYPE HORIZONTAL SWING CHECK VALVE BY KENNEDY VALVE MANUFACTURING COMPANY.
9	1	PLUG VALVE (K") NON-LUBRICATED NICKLE IRON, NEOPRENE COATED PLUG, 100% OPENING VALVE AS MANUFACTURED BY THE HOMESTEAD VALVE COMPANY AND SHALL BE COMPLETE WITH WRENCH.
10	1	3-WAY PLUG VALVE, (K") - 3 PORT, FLANGED, LEVER ACTIVATED, AS MANUFACTURED BY MILLIKEN VALVE CO. OR COUNTY APPROVED EQUAL. VALVE SHALL BE MOUNTED SO THAT THE THIRD PORT IS ON TOP.
11	1	3" QUICK-COUPLING UNIT COMPLETE. CONNECT TO THIRD PORT OF 3-WAY VALVE WITH A BRONZE MALE THREAD ADAPTOR EQUAL TO ANDREWS PART NUMBER 300-F AND 2-HANDLE BRONZE LOCKING CAP EQUAL TO ANDREWS PART NUMBER 300 DC.
12	3	ALL PUMP STATION INTERIORS SHALL BE COATED WITH FIELD APPLIED IET OR SEWPERCOAT IN ACCORDANCE WITH TECHINCAL SPECIFICATION SECTION 02608.
13	1	THE IMPELLER SHALL BE A SINGLE VANE, NON-CLOG DESIGN, CAPABLE OF PASSING 3 INCH SOLIDS, FIBROUS MATERIAL, AND HEAVY SLUDGE, AND CONSTRUCTED WITH A LONG THROUGHWAY WITH NO ACUTE TURNS AS SET FORTH IN THE SPECIFICATIONS.

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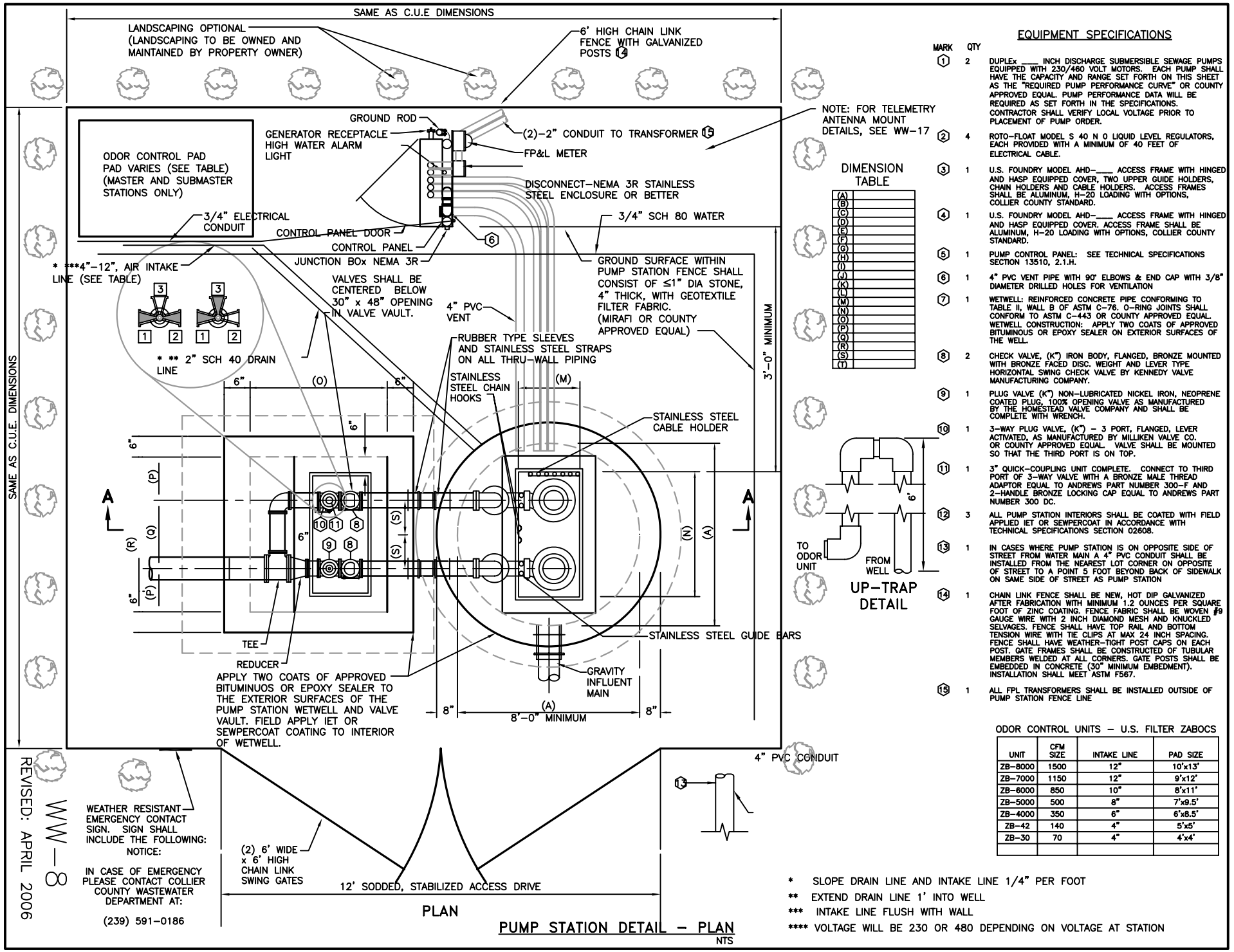
PUMP STATION DETAIL - PROFILE

NTS



EQUIPMENT SPECIFICATIONS

MARK	QTY	
1	2	DUPLEx ____ INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOLT MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE" OR COUNTY APPROVED EQUAL. PUMP PERFORMANCE DATA WILL BE REQUIRED AS SET FORTH IN THE SPECIFICATIONS. CONTRACTOR SHALL VERIFY LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2	4	ROTO-FLOAT MODEL S 40 N 0 LIQUID LEVEL REGULATORS, EACH PROVIDED WITH A MINIMUM OF 40 FEET OF ELECTRICAL CABLE.
3	1	U.S. FOUNDRY MODEL AHD-____ ACCESS FRAME WITH HINGED AND HASP EQUIPPED COVER, TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS. ACCESS FRAMES SHALL BE ALUMINUM, H-20 LOADING WITH OPTIONS, COLLIER COUNTY STANDARD.
4	1	U.S. FOUNDRY MODEL AHD-____ ACCESS FRAME WITH HINGED AND HASP EQUIPPED COVER. ACCESS FRAME SHALL BE ALUMINUM, H-20 LOADING WITH OPTIONS, COLLIER COUNTY STANDARD.
5	1	PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 13510, 2.1.H.
6	1	4" PVC VENT PIPE WITH 90° ELBOWS & END CAP WITH 3/8" DIAMETER DRILLED HOLES FOR VENTILATION
7	1	WETWELL: REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76. O-RING JOINTS SHALL CONFORM TO ASTM C-443 OR COUNTY APPROVED EQUAL. WETWELL CONSTRUCTION: APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WELL.
8	2	CHECK VALVE, (K") IRON BODY, FLANGED, BRONZE MOUNTED WITH BRONZE FACED DISC. WEIGHT AND LEVER TYPE HORIZONTAL SWING CHECK VALVE BY KENNEDY VALVE MANUFACTURING COMPANY.
9	1	PLUG VALVE (K") NON-LUBRICATED NICKEL IRON, NEOPRENE COATED PLUG, 100% OPENING VALVE AS MANUFACTURED BY THE HOMESTEAD VALVE COMPANY AND SHALL BE COMPLETE WITH WRENCH.
10	1	3-WAY PLUG VALVE, (K") - 3 PORT, FLANGED, LEVER ACTIVATED, AS MANUFACTURED BY MILLIKEN VALVE CO. OR COUNTY APPROVED EQUAL. VALVE SHALL BE MOUNTED SO THAT THE THIRD PORT IS ON TOP.
11	1	3" QUICK-COUPLING UNIT COMPLETE. CONNECT TO THIRD PORT OF 3-WAY VALVE WITH A BRONZE MALE THREAD ADAPTOR EQUAL TO ANDREWS PART NUMBER 300-F AND 2-HANDLE BRONZE LOCKING CAP EQUAL TO ANDREWS PART NUMBER 300 DC.
12	3	ALL PUMP STATION INTERIORS SHALL BE COATED WITH FIELD APPLIED IET OR SEWPERCOAT IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS SECTION 02608.
13	1	IN CASES WHERE PUMP STATION IS ON OPPOSITE SIDE OF STREET FROM WATER MAIN A 4" PVC CONDUIT SHALL BE INSTALLED FROM THE NEAREST LOT CORNER ON OPPOSITE OF STREET TO A POINT 5 FOOT BEYOND BACK OF SIDEWALK ON SAME SIDE OF STREET AS PUMP STATION
14	1	CHAIN LINK FENCE SHALL BE NEW, HOT DIP GALVANIZED AFTER FABRICATION WITH MINIMUM 1.2 OUNCES PER SQUARE FOOT OF ZINC COATING. FENCE FABRIC SHALL BE WOVEN #9 GAUGE WIRE WITH 2 INCH DIAMOND MESH AND KNUCKLED SELVAGES. FENCE SHALL HAVE TOP RAIL AND BOTTOM TENSION WIRE WITH TIE CLIPS AT MAX 24 INCH SPACING. FENCE SHALL HAVE WEATHER-TIGHT POST CAPS ON EACH POST. GATE FRAMES SHALL BE CONSTRUCTED OF TUBULAR MEMBERS WELDED AT ALL CORNERS. GATE POSTS SHALL BE EMBEDDED IN CONCRETE (30" MINIMUM EMBEDMENT). INSTALLATION SHALL MEET ASTM F567.
15	1	ALL FPL TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE

ODOR CONTROL UNITS - U.S. FILTER ZABOCS

UNIT	CFM SIZE	INTAKE LINE	PAD SIZE
ZB-8000	1500	12"	10'x13'
ZB-7000	1150	12"	9'x12'
ZB-6000	850	10"	8'x11'
ZB-5000	500	8"	7'x9.5'
ZB-4000	350	6"	6'x8.5'
ZB-42	140	4"	5'x5'
ZB-30	70	4"	4'x4'

* SLOPE DRAIN LINE AND INTAKE LINE 1/4" PER FOOT

** EXTEND DRAIN LINE 1' INTO WELL

*** INTAKE LINE FLUSH WITH WALL

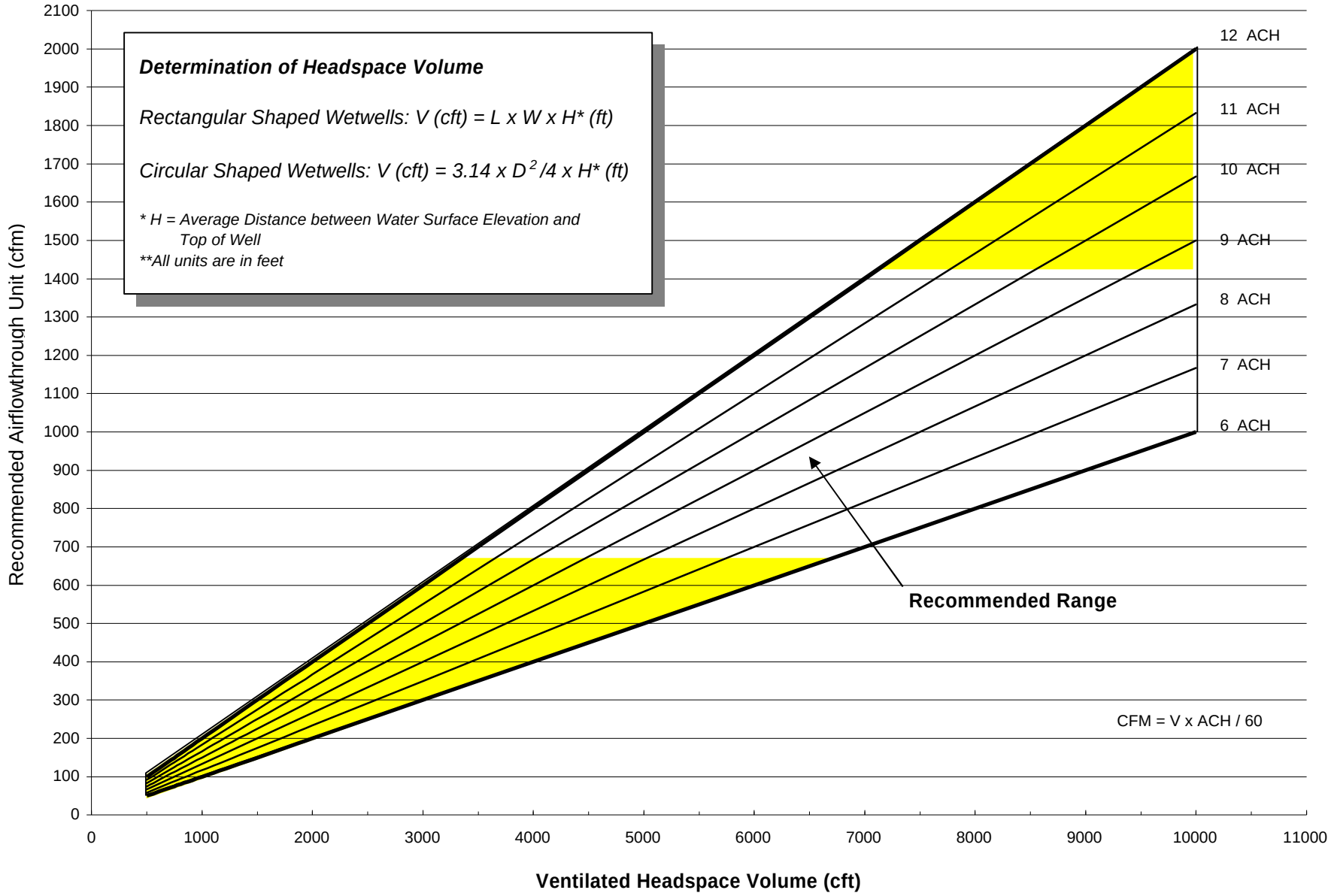
**** VOLTAGE WILL BE 230 OR 480 DEPENDING ON VOLTAGE AT STATION

PUMP STATION DETAIL - PLAN
NTS

WW-8

REVISED: APRIL 2006

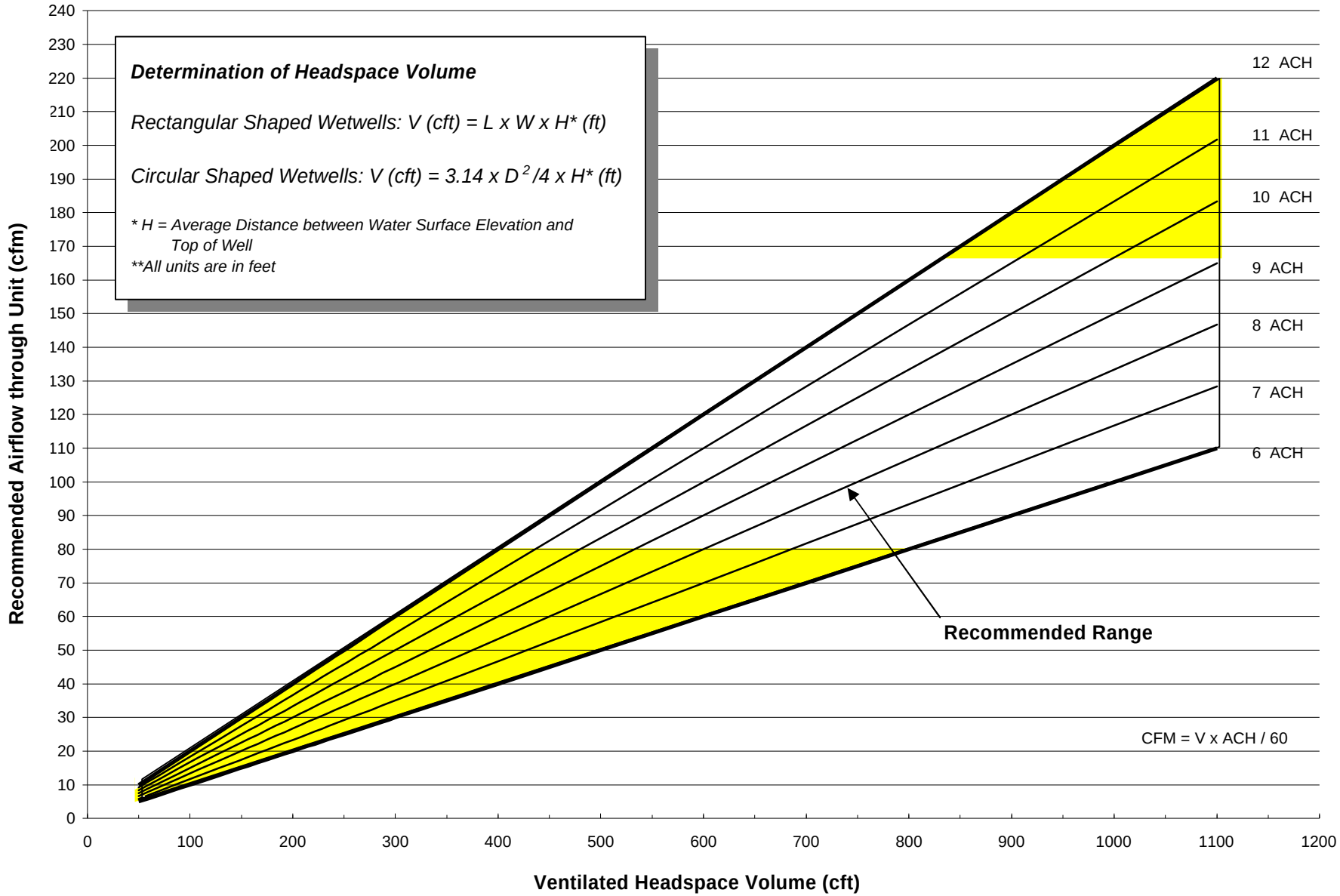
Air Treatment Sizing Chart (Large Wetwells)



ODOR CONTROL CFM SIZING CHART

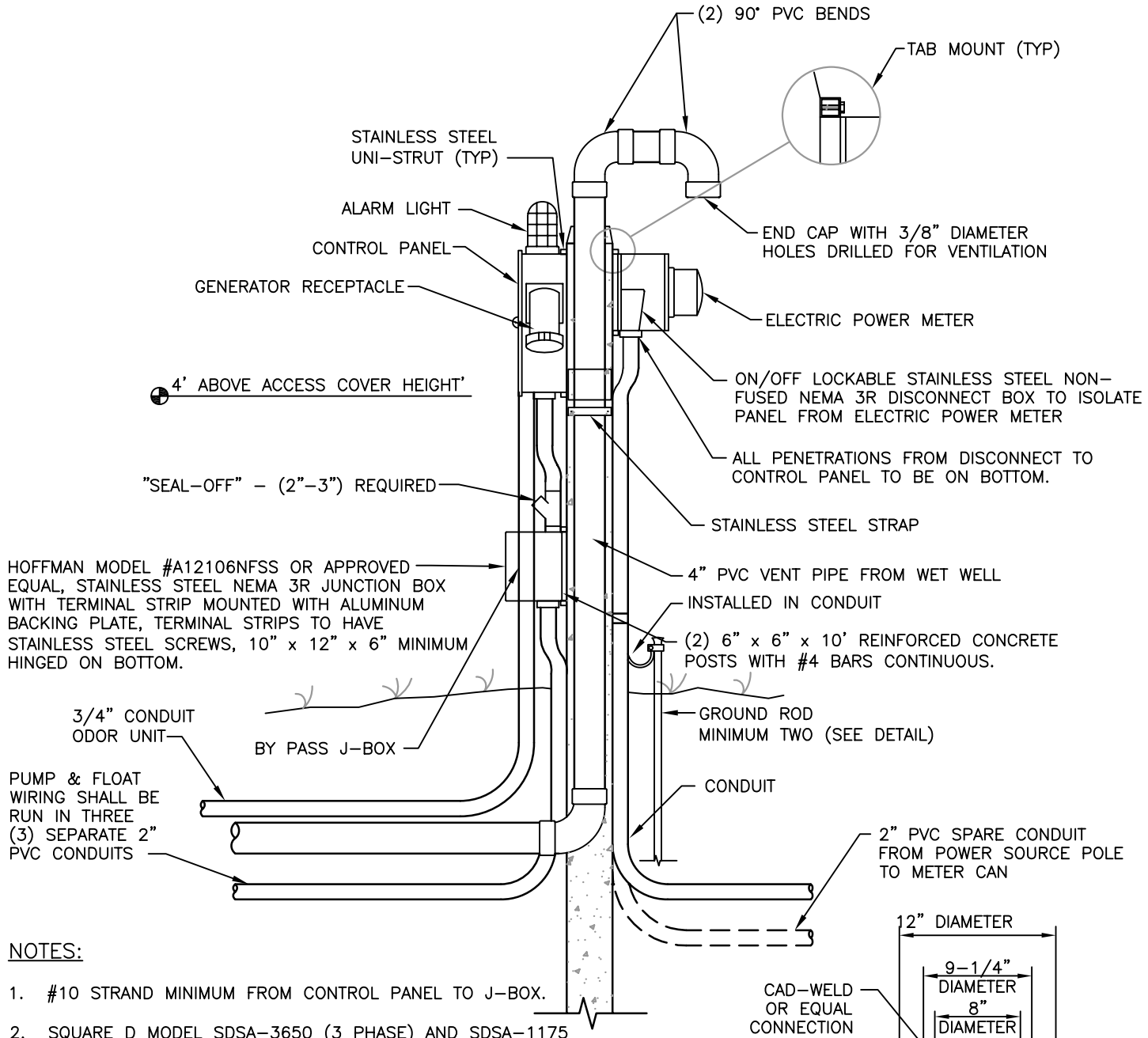
Source: "Odor Control Study for Collier County Wastewater Collection System April 2004"

Air Treatment Sizing Chart (Small Wetwells)



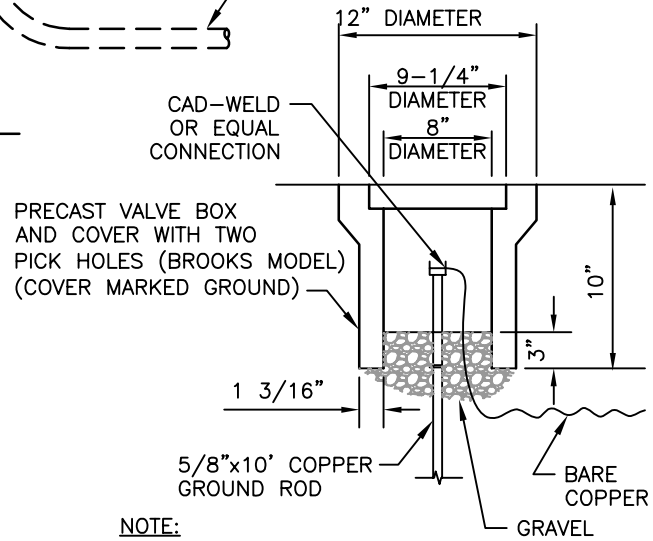
ODOR CONTROL CFM SIZING CHART

Source: "Odor Control Study for Collier County Wastewater Collection System April 2004"



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. SQUARE D MODEL SDSA-3650 (3 PHASE) AND SDSA-1175 (SINGLE PHASE) LIGHTNING ARRESTER 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 (AS REQUIRED BY COLLIER COUNTY PUBLIC WORKS DIVISION).
3. CONTROL PANEL SHALL BE QUALITY CONTROL INC NO. 1823, 1 PHASE OR 3825, 3 PHASE WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; STRUTHERS-DUNN ALTERNATOR RELAYS, 200 AMPERE RUSSELL AND STOLL GENERATOR RECEPTACLE AND ANGLE ADAPTER, MODEL NUMBER JRS-2044 AND NEMA 3R STAINLESS STEEL E NCLOSURE.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.



NOTE:
DIMENSIONS SHOWN ARE MINIMUM REQUIREMENTS

WW-9

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PUMPING STATION CONTROL PANEL DETAIL

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