

## HDPE PIPE TO PVC PIPE / SPIGOT TO BELL CONNECTION

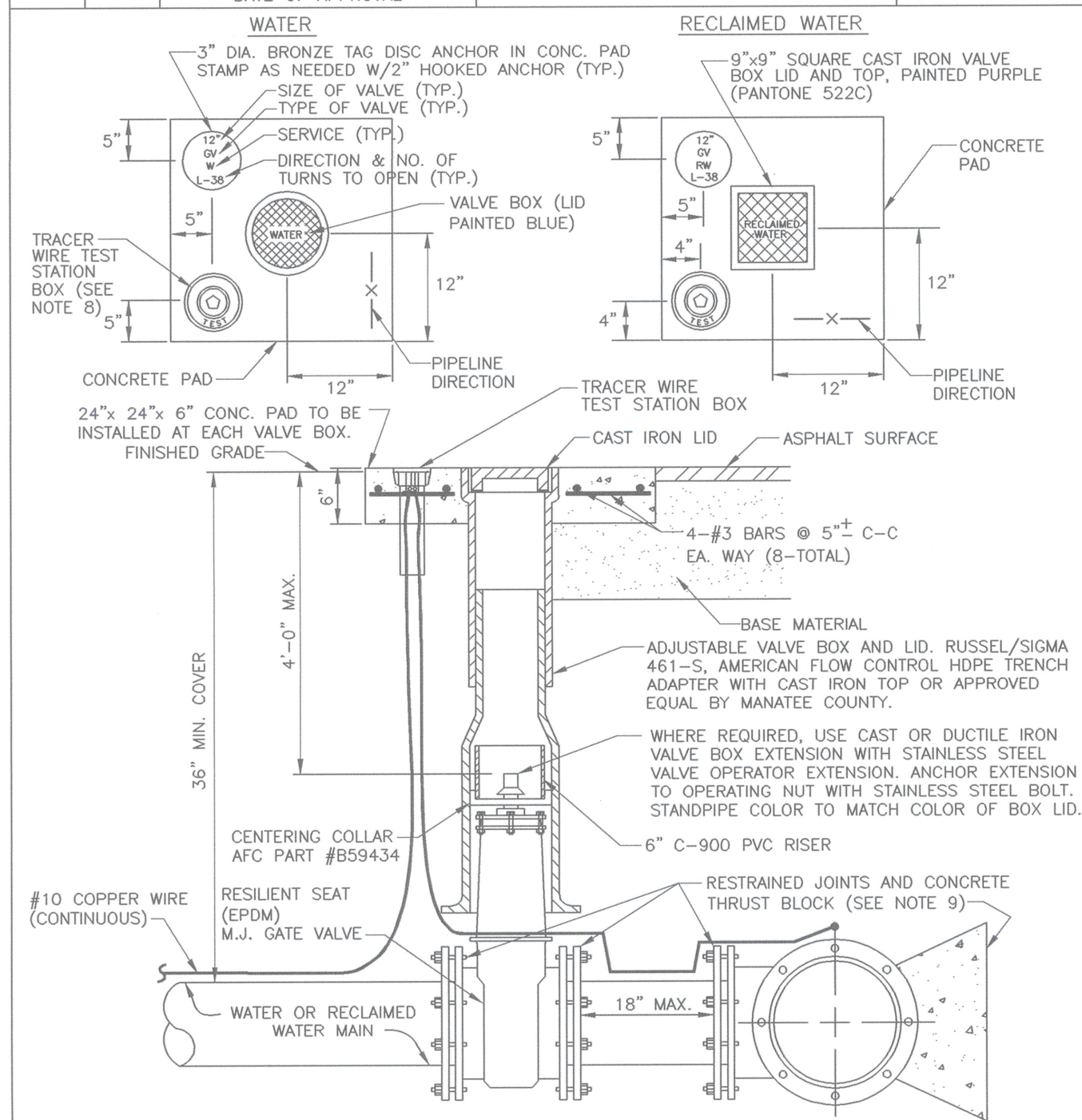
NOTE: SCHEMATIC SHOWN FOR STANDARD MJ FITTINGS AND GATE VALVES.

## HDPE PIPE TO MJ FITTING TRANSITION

## HDPE PIPE TO PVC PIPE SPIGOT TO SPIGOT CONNECTION

1. ONE # 10 GAUGE EXTRA HIGH STRENGTH COPPER CLAD STEEL TRACER WIRE SHALL BE PULLED AND SECURED TO THE PIPE FOR PIPELINES THAT ARE INSTALLED BY TRENCHLESS HORIZONTAL DIRECTIONAL DRILLING METHOD. IN NON-DIRECTIONAL BORE (TRENCHES AND BORE & JACK) APPLICATIONS, A # 10 GAUGE SOLID INSULATED COPPER WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRES SHALL HAVE A MINIMUM 30-MILS OF POLYETHYLENE INSULATION.

<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		HDPE TO PVC OR DI PIPE ADAPTER	UG-6  PAGE 106
REV. BY CLB/BR	DATE 11/10  MAY 10, 2011 DATE OF APPROVAL		



NOTES:

1. "WV" OR "FWV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE  
2. CURB. IF NO CURB, INSTALL A BLUE DISC WITH "WV" OR PURPLE DISC WITH "FWV" AND A 1/8"x1" GALVANIZED STEEL  
3. PLATE. THE DISC SHALL BE PLACED AT THE END OF THE TRACER. THE DISC SHALL BE PLACED AT THE END OF THE  
4. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS DETERMINED IN THE FIELD.  
5. PRECAST CONCRETE PADS & THRUST BLOCKS SHALL NOT BE USED.  
6. EXPOSED ENDS OF CONCRETE SHALL BE CHAMFERED.  
7. FOR VALVES 16" AND LARGER, USE BUTTERFLY VALVES.  
8. TRACERS TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE PAD.  
9. TRACER WIRE TEST BOXION IS NOT REQUIRED IN VALVE BOX PAD IF THE GATE VALVE IS LOCATED WITHIN 200 FEET  
10. OF A WATER SERVICE, BLOW-OFF, BACKFLOW PREVENTER OR FIRE HYDRANT TRACER.  
11. TRACER SHALL BE PLACED AT THE END OF THE TRACER. THE TRACER SHALL BE PLACED AT THE END OF THE TRACER  
12. BINGHAM & TAYLOR P2000NF FOR NONFALL YARD SERVICE, WHERE VALVE IS IN TREE FUL SPECIFIED FOR "TEES,"  
13. BINGHAM & TAYLOR P2000NF FOR NONFALL YARD SERVICE, WHERE VALVE IS IN TREE FUL SPECIFIED FOR "TEES,"

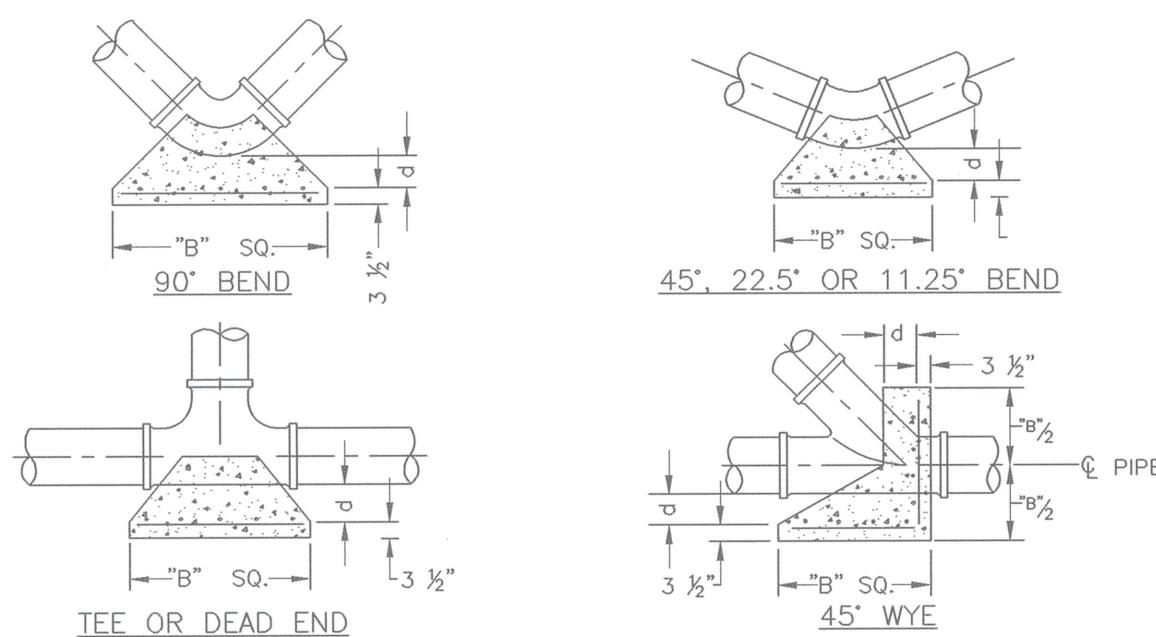
<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		GATE VALVE, BOX, LID AND TAG	UW-2  PAGE 120
REV. BY CLB/KE	DATE 11/10  MAY 10, 2011 DATE OF APPROVAL		

THRUST BLOCK DIMENSIONS B ft. x d inches												
PIPE SIZE (IN.)	90°BEND		45°BEND		22.5°BEND		11.25°BEND		DEAD END & TEE		45° WYE	
	B	d	B	d	B	d	B	d	B	d	B	d
4	1.5	3 ½	1.1	3 ½	0.8	3 ½	0.6	3 ½	1.3	3 ½	1.1	3 ½
6	2.2	5 ¼	1.6	3 ¾	1.2	3 ½	0.8	3 ½	1.9	4 ½	1.6	3 ¾
8	2.9	7	2.1	5	1.5	3 ½	1.1	3 ½	2.4	5 ¾	2.0	4 ¾
10	3.5	8 ½	2.6	6 ¼	1.9	4 ½	1.3	3 ½	3.0	7 ½	2.5	6
12	4.2	10	3.1	7 ½	2.2	5 ¼	1.6	3 ¾	3.5	8 ¾	3.0	7 ¾
16	5.5	13 ¼	4.1	9 ¾	2.9	7	2.1	5	4.7	11 ¼	3.9	9 ¾
18	6.2	15	4.6	11	3.3	8	2.3	5 ½	5.2	12 ¾	4.4	10 ½
20	6.9	16 ½	5.0	12	3.6	8 ¾	2.6	6 ¼	5.8	14	4.9	11 ¾
24	8.2	19 ¾	6.0	14 ½	4.3	10 ¼	3.1	7 ½	6.9	16 ½	5.8	14
30	10.1	24 ¼	7.5	18	5.3	12 ¾	3.8	9	8.5	20 ½	7.2	17 ¼
36	12.1	29	8.9	21 ¼	6.4	15 ¼	4.5	10 ¾	10.2	24 ½	8.6	20 ¾
42	15.3	34	11.2	24 ¾	8.0	18	5.7	13	12.9	29		

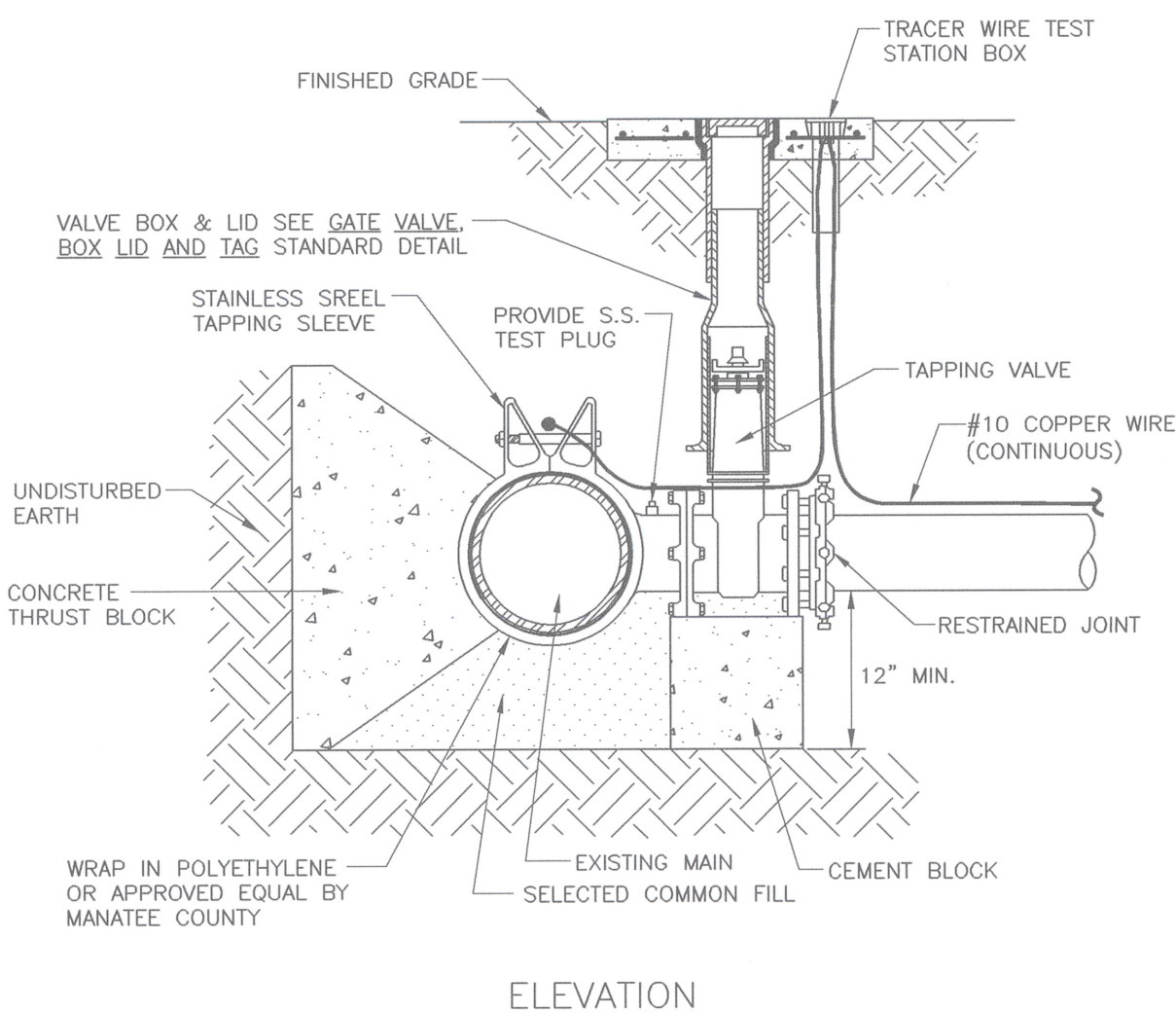
REINFORCEMENT MAT SCHEDULE	
	<p>FOR DIM. "B" BETWEEN 5.75' &amp; 12.5' USE #4 @ 8" EACH WAY</p> <p>FOR DIM. "B" LESS THAN 5.75' USE #3 @ 8" EACH WAY</p>

NOTES:

1. ALL THRUST BLOCKS SHALL BE CAST IN PLACE. FITTINGS ADJACENT TO THRUST BLOCKS SHALL BE WRAPPED IN POLYETHYLENE.
2. THIS TABLE IS BASED ON WATER PRESSURE=180 PSI WITH AN ALLOWABLE SOIL BEARING PRESSURE=2000 PSF, CONCRETE STRENGTH  $f_c$ =3000 PSI, REINFORCEMENT  $f_y$ =60.0 KSI. THRUST BLOCK SHALL BE CAST AGAINST FIRM UNDISTURBED SOIL.
3. FOR LARGER "B" DIMENSIONS IT IS NECESSARY TO CHECK THAT PIPE IS SUFFICIENTLY DEEP TO ALLOW 15" MIN. SOIL COVER OVER TOP EDGE OF THRUST BLOCK.
4. RESTRAINED JOINTS MAY BE USED IN LIEU OF THRUST BLOCKS TO SAVE SPACE. THRUST BLOCKS SHALL BE USED IN SITUATIONS WHERE THRUST BLOCKS AND RESTRAINED JOINTS ARE BOTH REQUIRED.



<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		CONCRETE THRUST BLOCKS	UG-7A
REV. BY JS/BR	DATE 10/13		
_____ DATE OF APPROVAL			



NOTES:

1. PRIOR TO TAPPING, CONTRACTOR TO DEMONSTRATE 60 MINUTE HYDROSTATIC TEST OF THE TAPPING SLEEVE AND VALVE WITH NO LOSS OF 180 PSI PRESSURE FOR WATER AND RECLAIMED WATER OF 150 PSI FOR OIL.
2. ALL FITTINGS TO BE WRAPPED WITH 20 MIL VISQUEEN AT THRUST BLOCK.
3. ALL TAPS ON CONCRETE WATER MAINS AND LARGER THAN 12" ARE TO BE MADE BY A MANATEE COUNTY APPROVED TAPPING COMPANY.
4. TAPS ON 12" AND SMALLER SIZE MAINS MUST BE THE MAIN BEING TAPPED & PLACED NO CLOSER THAN 30" OR A DISTANCE EQUAL TO (1) MAIN PIPE DIAMETER PLUS (2) TAP PIPE DIAMETERS (WHICHEVER IS GREATER) FROM A JOINT OR FITTING.
5. TAPPING MUST BE DONE BY A DEDICATED TAPPING CREW TO WORK IN AND BACK-HOE TO LOWER TAPPING MACHINE INTO THE HOLE.
6. WHERE THRUST BLOCK NOT USED, RESTRAINED JOINTS MUST THEN EXTEND FROM TEE FULL LENGTH TO NEXT FIXED POINT.
7. TRACER WIRE TEST STATION BOX IS REQUIRED AT CONNECTIONS TO EXISTING MAINS.

<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		TAPPING SLEEVE AND VALVE	UW-4
REV. BY	DATE		
CLB/KE	11/10		
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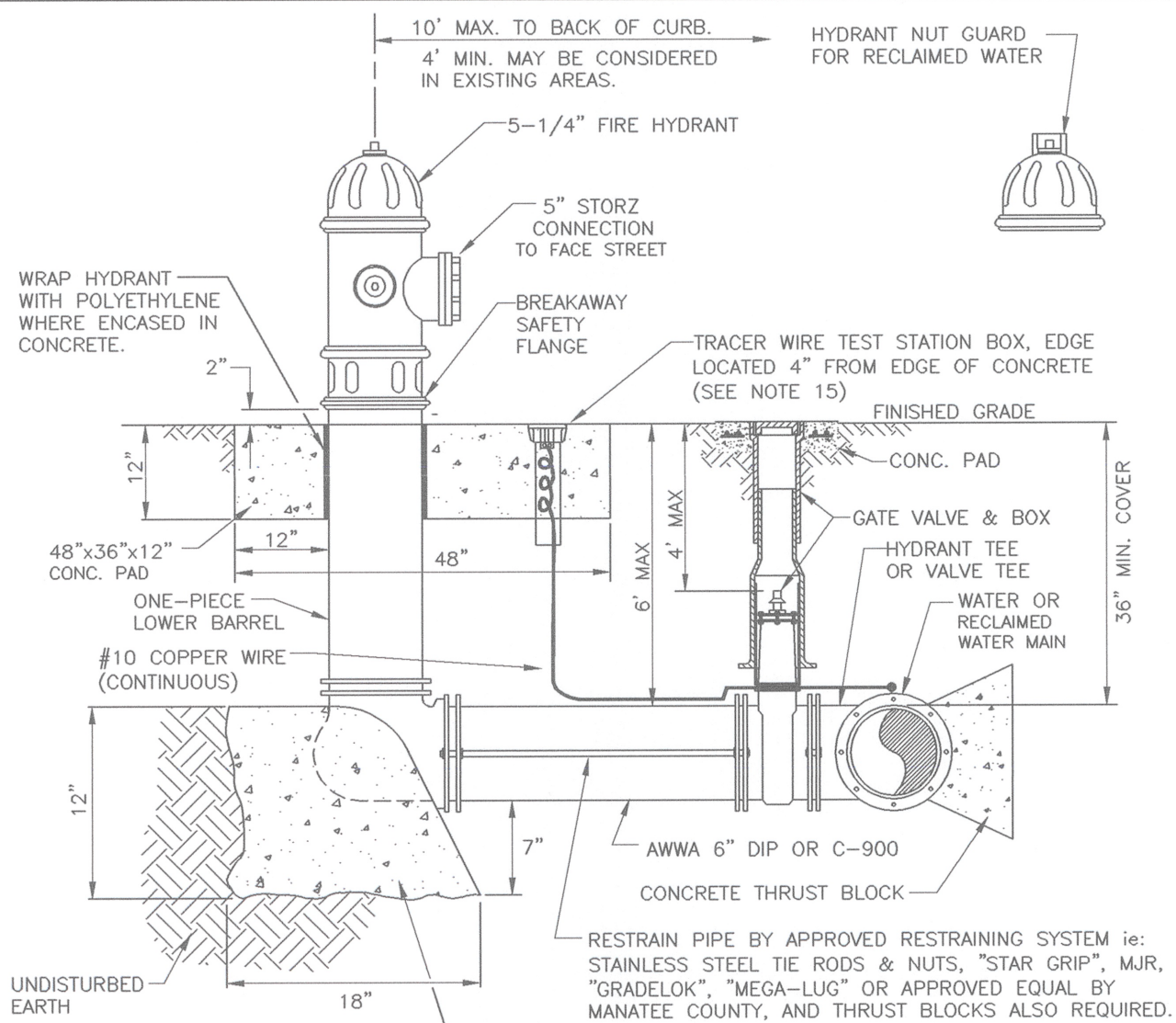
### REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DR-18 PVC PIPE

MAIN PIPE SIZE	HORIZ. BENDS			TEES							REDUCERS					PLUGS & VALVES
	90°	45°	22.5°	SIZE LENGTH							SIZE LENGTH					
				X24	X16	X12	X10	X8	X6	X4	X16	X12	X10	X8	X6	
24	90°	45°	22.5°	X24 <sub>89</sub>	X16 <sub>40</sub>	X12 <sub>36</sub>	X10 <sub>32</sub>	X8 <sub>28</sub>	X6 <sub>24</sub>	X4 <sub>20</sub>	X16 <sub>112</sub>	X12 <sub>108</sub>	X10 <sub>104</sub>	X8 <sub>100</sub>	214	
20	90°	45°	22.5°	X20 <sub>141</sub>	X16 <sub>101</sub>	X12 <sub>91</sub>	X10 <sub>81</sub>	X8 <sub>71</sub>	X6 <sub>61</sub>	X4 <sub>51</sub>	X16 <sub>65</sub>	X12 <sub>60</sub>	X10 <sub>55</sub>	X8 <sub>50</sub>	184	
16	90°	45°	22.5°	X16 <sub>111</sub>	X12 <sub>87</sub>	X10 <sub>77</sub>	X8 <sub>67</sub>	X6 <sub>57</sub>	X4 <sub>47</sub>	X16 <sub>64</sub>	X12 <sub>60</sub>	X10 <sub>56</sub>	X8 <sub>52</sub>	X6 <sub>48</sub>	151	
12	90°	45°	22.5°	X12 <sub>83</sub>	X10 <sub>69</sub>	X8 <sub>59</sub>	X6 <sub>49</sub>	X4 <sub>39</sub>	X16 <sub>58</sub>	X12 <sub>54</sub>	X10 <sub>50</sub>	X8 <sub>46</sub>	X6 <sub>42</sub>	X4 <sub>38</sub>	118	
10	90°	45°	22.5°	X10 <sub>63</sub>	X8 <sub>49</sub>	X6 <sub>39</sub>	X4 <sub>29</sub>	X16 <sub>53</sub>	X12 <sub>49</sub>	X10 <sub>45</sub>	X8 <sub>41</sub>	X6 <sub>37</sub>	X4 <sub>33</sub>	X16 <sub>48</sub>	100	
8	90°	45°	22.5°	X8 <sub>49</sub>	X6 <sub>35</sub>	X4 <sub>25</sub>	X16 <sub>41</sub>	X12 <sub>37</sub>	X10 <sub>33</sub>	X8 <sub>29</sub>	X6 <sub>25</sub>	X4 <sub>21</sub>	X16 <sub>36</sub>	X12 <sub>32</sub>	83	
6	90°	45°	22.5°	X6 <sub>29</sub>	X4 <sub>19</sub>	X16 <sub>25</sub>	X12 <sub>21</sub>	X10 <sub>17</sub>	X8 <sub>13</sub>	X6 <sub>9</sub>	X4 <sub>5</sub>	X16 <sub>24</sub>	X12 <sub>20</sub>	X10 <sub>16</sub>	63	
4	90°	45°	22.5°	X4 <sub>12</sub>	X16 <sub>12</sub>	X12 <sub>12</sub>	X10 <sub>12</sub>	X8 <sub>12</sub>	X6 <sub>12</sub>	X4 <sub>12</sub>	X16 <sub>12</sub>	X12 <sub>12</sub>	X10 <sub>12</sub>	X8 <sub>12</sub>	45	

NOTES:

1. RESTRAIN 11.25' BENDS 50% OF LENGTH FOR 22.5' BENDS.
2. ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
3. ALL ISOLATION VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION.
4. PIPE SIZES ARE GIVEN IN INCHES.
5. RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.
6. LENGTHS SHOWN ARE FOR A TEST PRESSURE OF 180 PSI.
7. THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON SOIL CLASSIFICATION SP WITH AWWA TYPE 3 TRENCH CONDITIONS, 180 PSI TEST PRESSURE, 3 FEET OF COVER AND 1.5 FACTOR OF SAFETY. ACTUAL BURY CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY.
8. RESTRAINED LENGTHS TO BE APPLIED TO PIPELINES PER DETAIL RESTRAINED LENGTHS FOR PIPE.

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MAY 10, 2011 DATE OF APPROVAL			



## NOTES

2. WEEPHOLES SHALL BE EXCLUDED FROM THE FIRE HYDRANT.
3. FIRE HYDRANTS SHALL BE A MINIMUM OF 6' OFF EDGE OF PAVEMENT AND 10' MAX. FROM BACK OF CURB, WHERE POSSIBLE AND WHERE SIDEWALK IS TO BE INSTALLED, FIRE HYDRANT SHALL BE LOCATED BETWEEN SIDEWALK AND RIGHT-OF-WAY LINE.
4. HYDRANTS SHALL BE COATED WITH ORANGE BOILER PAINT (PANTONE 1655C) OR COATED SAFETY YELLOW FOR WATER AND PURPLE (PANTONE 522C) FOR RECLAIMED WATER. HYDRANT SHALL BE DUCTILE IRON CONSTRUCTION.
5. FIRE HYDRANTS SHALL BE PLACED SO THAT STORM WATER FLOWS AWAY FROM THE HYDRANT.
6. FIRE HYDRANTS SHALL BE CONSTRUCTED WITH "GROUND LINE" SET TO FINISHED GRADES AS ESTABLISHED IN THE FIELD. NORMAL GRADE IS 3 INCHES BELOW FINISHED GRADE FOR POTABLE WATER LINES.
7. FIRE HYDRANTS MAY BE CONSTRUCTED WITH "GRADE-TO-TOE" OFFSET FITTING.
8. RAISED REFLECTIVE PAVEMENT MARKER (BLUE) FOR POTABLE WATER (PURPLE) FOR RECLAIMED WATER. SHALL BE INSTALLED AT CENTERLINE OF PAVEMENT ADJACENT TO EACH HYDRANT.
9. PRECAST CONCRETE THRUST BLOCKS & PADS SHALL NOT BE USED.
10. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE 1/2" FLARE.
11. FIRE HYDRANT VALVE SHALL BE FASTENED DIRECTLY TO TREE.
12. IN-LINE VALVES SHOULD BE LOCATED AT HYDRANT TEES.
13. HYDRANTS SHALL BE LOCATED ON SAME SIDE OF ROAD AS POTABLE WATER MAIN UNLESS OTHERWISE APPROVED.
14. HYDRANTS SHALL BE LOCATED FROM 7' FROM FRONT AND BOTH SIDES, AND FOUR FEET TO THE REAR OF THE HYDRANT, TO ABOVE GRADE OBSTRUCTIONS INCLUDING POSTS, FENCES, TREES, ETC, PER THE FLORIDA FIRE PREVENTION CODE.
15. SEE STANDARD DETAIL, GATE VALVE, BOX, IDL AND TAG.
16. SHOULD THE FIRE HYDRANT CONCRETE PAD OVERLAP THE SIDEWALK, THE TRACER WIRE TEST STATION BOX SHALL NOT BE LOCATED WITHIN THE SIDEWALK.

<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		FIRE HYDRANT ASSEMBLY	UW-5
REV. BY CLB/KE	DATE 11/10		
MAY 10, 2011 DATE OF APPROVAL			
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### REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (POLY-WRAPPED)

[illegible]

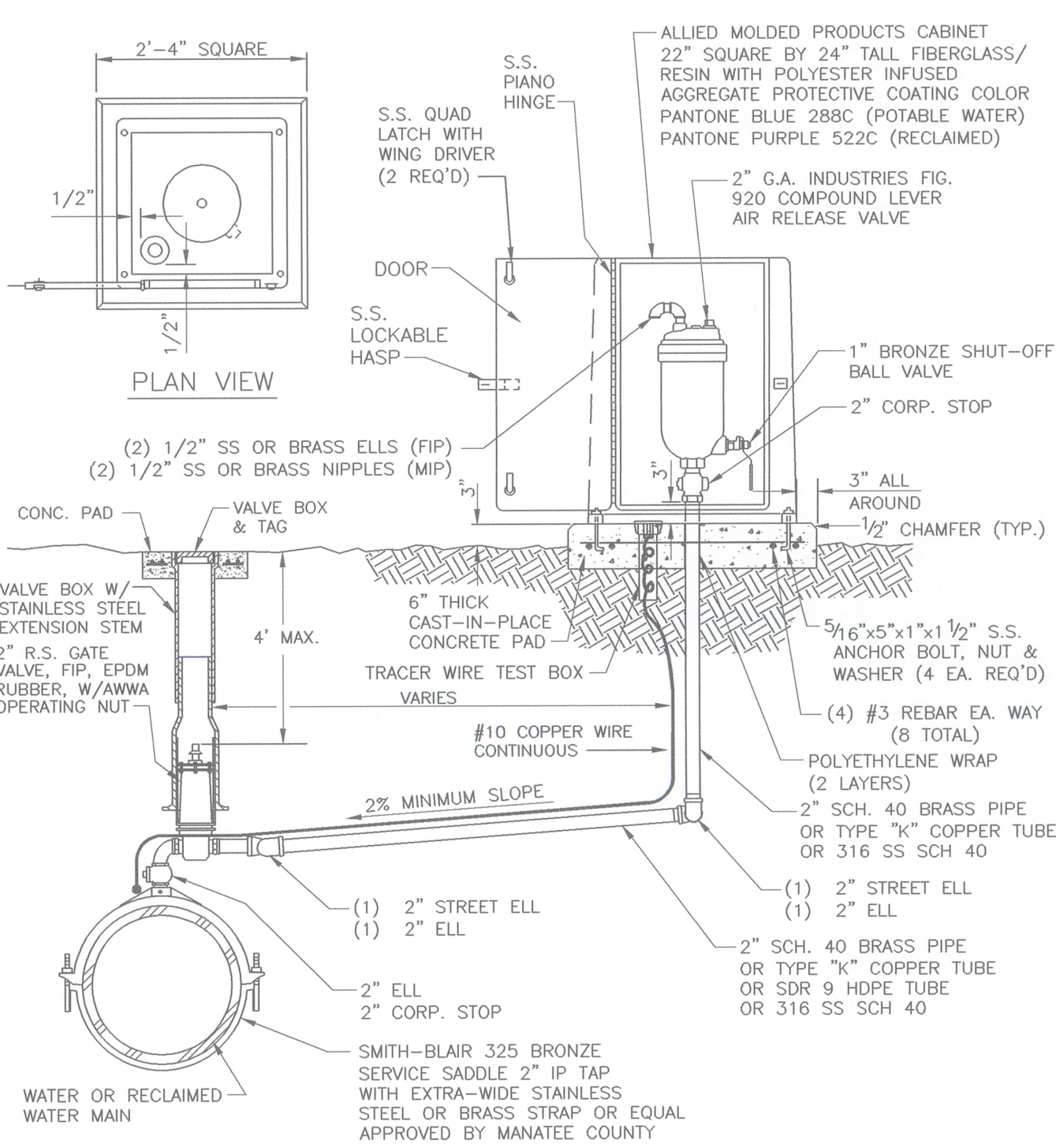
### REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (NON-WRAPPED)

[illegible]

NOTE:

SEE RESTRAINED LENGTHS FOR PVC PIPE DETAIL FOR NOTES 1 THROUGH 8 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR DIP.

<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		RESTRAINED LENGTHS FOR DIP	UG-9A
REV BY	DATE		
JS/BR	10/13		
_____ DATE OF APPROVAL			



NOTES:

1. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS ALONG WATER MAINS WHERE SPECIFICALLY INDICATED ON THE PLAN.
2. AIR VENT ORIFICE TO BE SIZED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION FOR WATER MAIN SIZE.
3. ALL INCIDENTAL FITTINGS AND HARDWARE TO BE STAINLESS STEEL, BRASS OR COPPER.
4. ALL PIPE THREADS TO BE SEALED AIR TIGHT.
5. VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.
6. SEE GATE VALVE, BOX, LID AND TAG STANDARD DETAIL. CENTERING COLLAR IS NOT REQUIRED ON 2" GATE VALVES.

<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		AIR RELEASE ASSEMBLY FOR 16-INCH AND LARGER MAINS	UW-10
REV. BY	DATE		
CLB/KE	11/10		
	MAY 10, 2011 DATE OF APPROVAL		
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1022 26th Avenue East  
Bradenton, FL 34208

**FORCE MAIN 27-A  
FROM 51st ST. W. TO THE SWWRP  
STANDARD DETAILS**

NO.	REVISION	DESCRIPTION	BY	DATE
PROJECT #	406-6082980			
SURVEY #	3825			
SEC./TWN./RGE	16,17,18/35/17			
VERT. SCALE	N.T.S.			
HORZ. SCALE	N.T.S.			
	BY	DATE		
SURVEYED	LSF/HYATT	2001/2012		
DESIGNED	LSF/JS	2002/2013		
DRAWN	BLR	03/2013		
CHECKED	JS	03/2013		

JAMES STOCKWELL, P.E.

