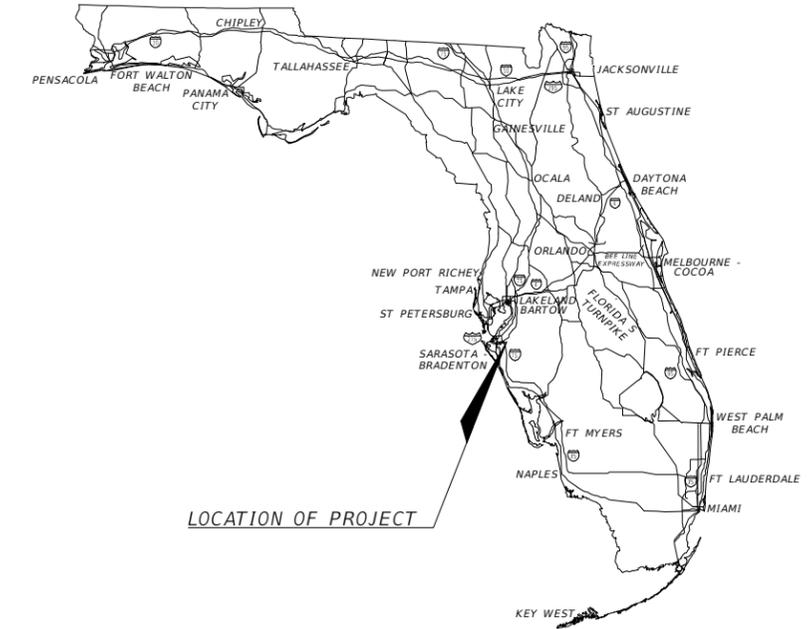


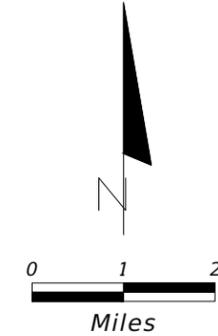
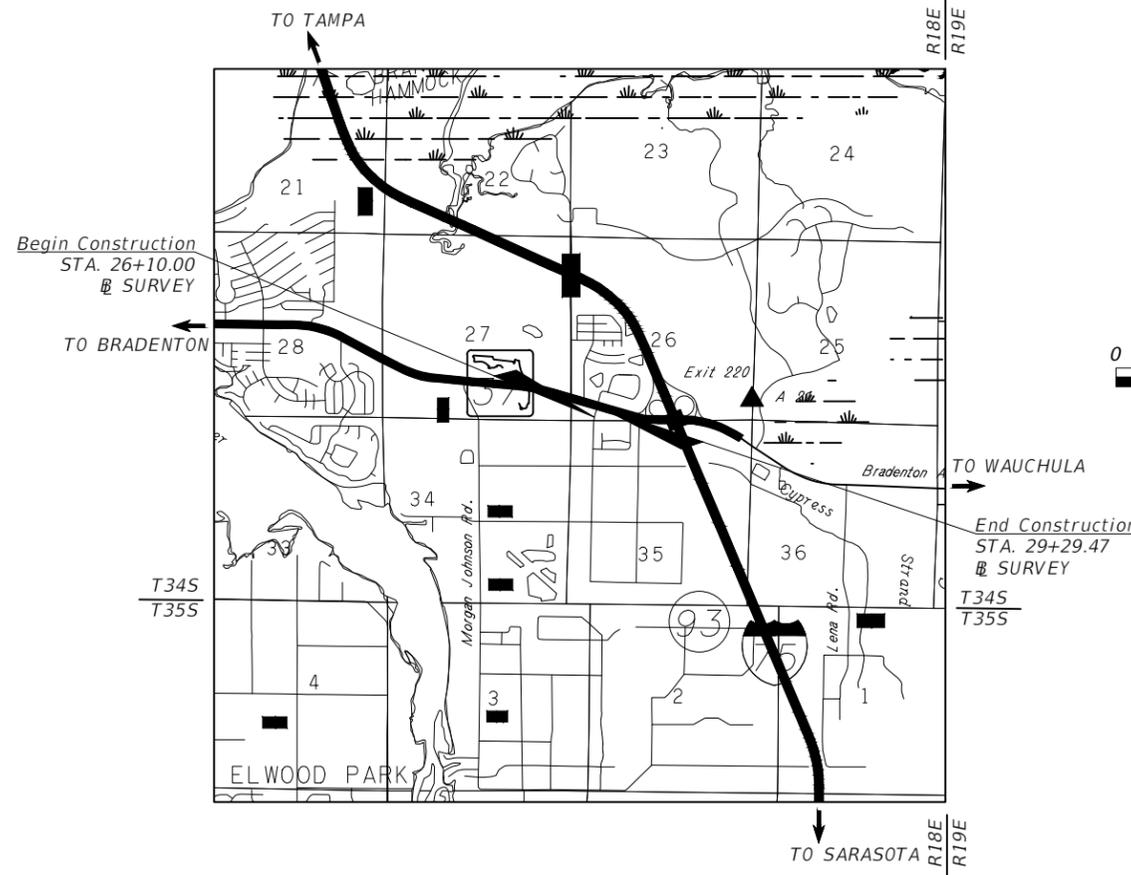


CONTRACT PLANS
COUNTY PROJECT NUMBER 6015061
MANATEE COUNTY
64TH STREET COURT EAST AND STATE ROAD 64
POTABLE WATER UTILITY PLANS
JUNE 2021



INDEX OF POTABLE WATER UTILITY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
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6	DETAIL (1)
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10	DETAIL (5)
11	DETAIL (6)
12	DETAIL (7)



**POTABLE WATER UTILITY
SHOP DRAWINGS TO BE
SUBMITTED TO:**

AECOM
ATTN: DAREN CARRIERE
7650 W COURTNEY CAMPBELL CAUSEWAY
TAMPA, FLORIDA 33607
(813) 286-1711

PLANS PREPARED BY:

AECOM TECHNICAL SERVICES, INC.
7650 W. COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711

VENDOR NO. F952661922
CERTIFICATE OF AUTHORIZATION NO. 00008115

NOTE: THE SCALE OF THESE PLANS MAY
HAVE CHANGED DUE TO REPRODUCTION.

**FINAL SUBMITTAL
DATED:
06/02/2021**

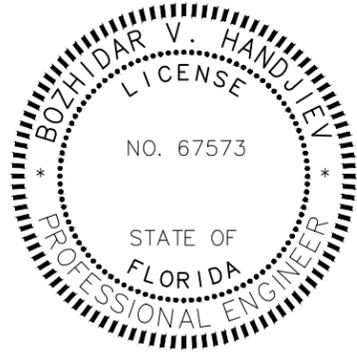
**POTABLE WATER
UTILITY PLANS**
ENGINEER OF RECORD: BOZHIDAR V. HANDJIEV, P.E.

P.E. NO.: 67573

FISCAL YEAR	SHEET NO.
19	1

MANATEE COUNTY PROJECT MANAGER: DANIEL GARNER, P.E.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



THIS ITEM HAS BEEN DIGITALLY
SIGNED AND SEALED BY:



ON THE DATE ADJACENT TO THE SEAL
PRINTED COPIES OF THIS DOCUMENT ARE
NOT CONSIDERED SIGNED AND SEALED
AND THE SIGNATURE MUST BE VERIFIED
ON ANY ELECTRONIC COPIES.

AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY
CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
BOZHIDAR V. HANDJIEV, P.E. NO. 67573
PHONE: 813-286-1711

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE
FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

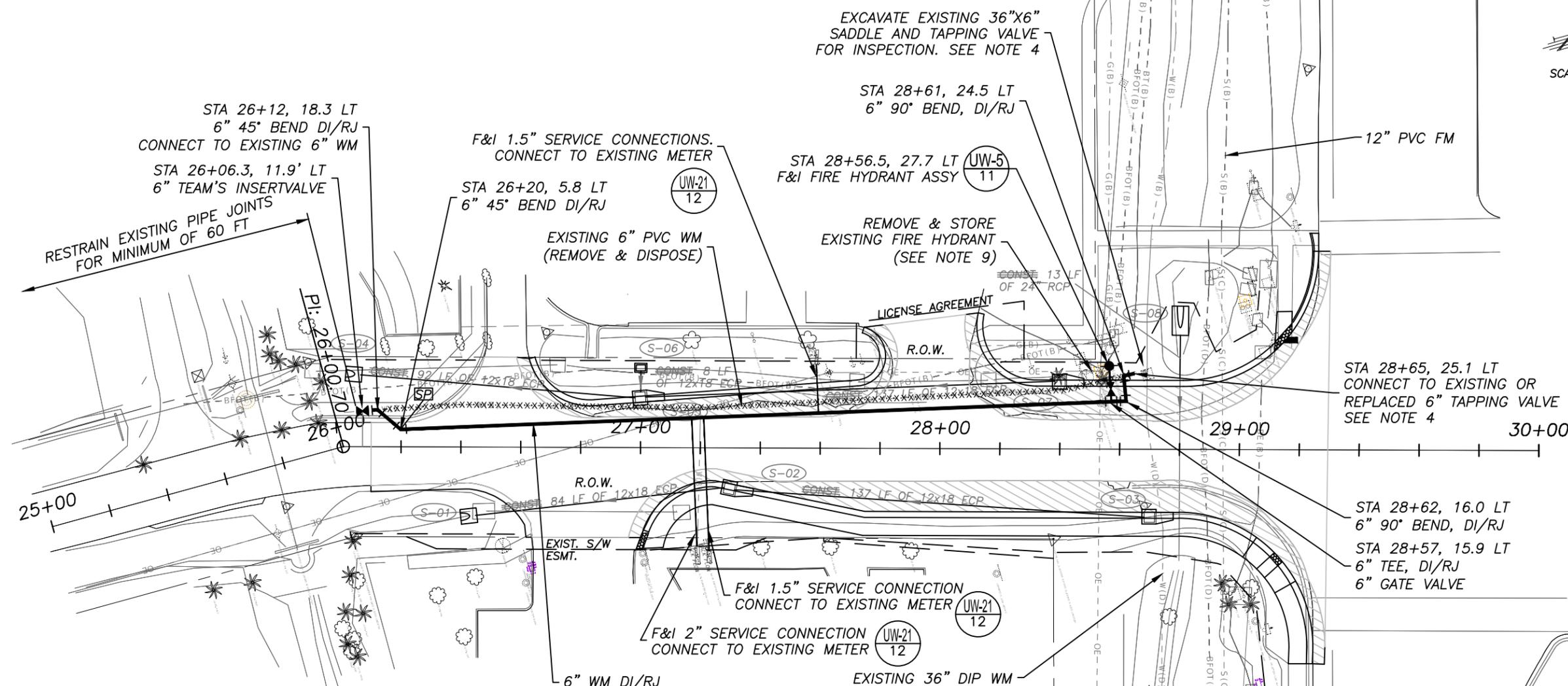
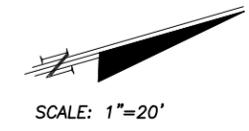
POTABLE WATER UTILITY PLANS

<u>SHEET NUMBER</u>	<u>SHEET DESCRIPTION</u>
1	KEY SHEET
2	SIGNATURE SHEET
3	GENERAL NOTES
4	PLAN
5	PROFILE
6	DETAILS (1)
7	DETAILS (2)
8	DETAILS (3)
9	DETAILS (4)
10	DETAILS (5)
11	DETAILS (6)
12	DETAILS (7)

				SCALE AS NOTED	BOZHIDAR V. HANDJIEV, P.E. P.E. NO. 67573 AECOM TECHNICAL SERVICES, INC. 7650 WEST COURTNEY CAMPBELL CAUSEWAY TAMPA, FL 33607-1462 (813) 286-1711 CERTIFICATE OF AUTHORIZATION: 8115	DATE 06/2021	 PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208	DESIGN ENGINEER BOZHIDAR V. HANDJIEV, P.E.	SIGNATURE SHEET	SHEET NO. 2
				DRAWN BY TRV	PROJECT NO. 6015061	FL. LICENSE NO. 67573				
No.	REVISIONS	DATE	BY							

1. COORDINATES ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM (WEST ZONE) NAD 1983/2011 – EPOCH 2010.0000. THIS COORDINATE ORIENTATION IS DERIVED FROM THE FLORIDA PERMANENT REFERENCE NETWORK SITE "MANATEE G. STROOP CORS-ARP" (PID DL7628).
2. THE ELEVATIONS NOTED HEREIN ARE IN FEET AND ARE BASED ON NAVD 1988 DATUM (NAVD88) (NAVD88 = NGVD29 - 0.97'), THE BENCHMARKS USED AS CONTROL ARE E564 (PID-DE8707), GLADES (PID-DN9441), GULF (PID-DN9442) AND DESOTO (PID-DO1662).
3. ALL FIELD LAYOUT AND SURVEYING FOR CONSTRUCTION OF THIS PROJECT SHALL BE PROVIDED BY THE CONTRACTOR AT HIS EXPENSE, UNDER THE DIRECTION OF A LICENSED PROFESSIONAL LAND SURVEYOR.
4. PROPERTY MARKERS SHALL BE PROTECTED BY THE CONTRACTOR. THE CONTRACTORS REGISTERED SURVEYOR SHALL REPLACE ANY MARKERS THAT ARE DISTURBED.
5. ANY U.S.C. AND G.S. MONUMENT WITHIN LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF IN DANGER OF DAMAGE, THE CONTRACTOR SHALL NOTIFY GEODETIC INFORMATION CENTER
ATTN.: MARK MAINTENANCE CENTER
ATTN.: N/CG-162
6001 EXECUTIVE BLVD. ROCKVILLE,
MARYLAND 20852 PH. (301)443-8319
6. ALL UTILITY CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST VERSION OF THE MANATEE COUNTY PUBLIC WORKS STANDARDS, PART 1 UTILITY STANDARDS MANUAL. THE SPECIFICATIONS AND DETAILS INCLUDED IN SAID MANUAL SHALL BE CONSIDERED PART OF THE CONTRACT DOCUMENTS FOR THIS PROJECT.
7. THE CONTRACTOR SHALL COMPLY WITH ALL STATE, COUNTY, AND LOCAL ORDINANCES AND OBTAIN ANY NECESSARY WORK PERMITS THAT MAY BE REQUIRED PRIOR TO CONSTRUCTION.
8. THE CONTRACTOR SHALL COORDINATE ALL TIE-INS AND ANY ACTIVITIES THAT COULD DISRUPT COUNTY UTILITY OPERATION WITH COUNTY PERSONNEL. THE OPENING AND CLOSING OF EXISTING VALVES SHALL BE BY COUNTY PERSONNEL.
9. LOCATION, ELEVATION, AND DIMENSIONS OF THE EXISTING UTILITIES, EXISTING AND PROPOSED STRUCTURES, AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT TIME OF THE PREPARATION OF THESE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES, EXISTING AND PROPOSED STRUCTURES AND OTHER FEATURES AFFECTING THIS WORK PRIOR TO CONSTRUCTION.
10. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN AREAS OF BURIED UTILITIES AND SHALL PROVIDE AT LEAST 48 HOURS NOTICE TO THE UTILITY COMPANIES PRIOR TO CONSTRUCTION TO OBTAIN FIELD LOCATIONS OF EXISTING UNDERGROUND UTILITIES. CALL SUNSHINE ONE CALL CENTER OF FLORIDA AT 1-800-432-4770 TO ARRANGE FIELD LOCATIONS. THE CONTRACTOR SHALL REPAIR ALL DAMAGES RESULTING FROM FAILURE TO COMPLY WITH THIS REQUIREMENT.
11. THE CONTRACTOR SHALL CONTACT THE COUNTY AND THE ENGINEER IMMEDIATELY WHEN CONFLICTS BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED.
12. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, WATER AND SEWER LINES, STORM DRAINS, UTILITIES, DRIVEWAYS, SIDEWALKS, SIGNS, MAIL BOXES, FENCES, TREES, LANDSCAPING, AND ANY OTHER IMPROVEMENT OR FACILITY IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DAMAGED ITEM DUE TO HIS CONSTRUCTION ACTIVITIES TO EQUAL OR BETTER THAN PRE-CONSTRUCTION CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
13. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING FACILITIES, ABOVE OR BELOW GROUND THAT MAY OCCUR AS A RESULT OF THIS WORK PERFORMED IN THIS CONTRACT. THE CONTRACTOR IS TO "PROTECT IN PLACE" THE FACILITIES THAT ARE NOT TO BE RELOCATED AND/OR REMOVED, BUT ARE TO REMAIN IN PLACE.
14. THE CONTRACTOR SHALL ENDEAVOR TO PROTECT PRIVATE PROPERTY. ANY DAMAGE CAUSED BY THE CONTRACTOR IN THE PERFORMANCE OF HIS WORK SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE. PAYMENT SHALL NOT BE MADE FOR THIS WORK.
15. ALL PROPOSED MAINS SHALL HAVE A MINIMUM OF 36 INCHES OF COVER UNLESS SHOWN OTHERWISE.
16. PIPE JOINT DEFLECTION SHALL NOT EXCEED 75% OF THE PIPE MANUFACTURER REQUIREMENTS.
17. ALL DUCTILE IRON PIPE SHALL BE POLY-WRAPPED.
18. ALL PIPING UNDER ROADWAYS SHALL BE DUCTILE IRON PIPE.
19. THE CONTRACTOR SHALL ADJUST (AS REQUIRED) PIPELINE ALIGNMENTS HORIZONTALLY AND/OR VERTICALLY TO AVOID CONFLICTS WITH ACTUAL FIELD CONDITIONS AS UNCOVERED DURING CONSTRUCTION. FIELD ADJUSTMENT SHALL BE COORDINATED WITH, AND APPROVED BY, THE ENGINEER.
20. ALL CONNECTIONS TO EXISTING PIPING, DEAD ENDS, FITTINGS AND VALVES SHALL BE RESTRAINED AS SHOWN IN THE DETAILS AND ON THE PLANS.
21. THE CONTRACTOR(S) PERFORMING TRENCH EXCAVATION ON THIS CONTRACT, SHALL COMPLY WITH THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION'S (OSHA) TRENCH EXCAVATION SAFETY STANDARDS, 29 C.F.R., S.1926.650, SUBPART P, INCLUDING ALL SUBSEQUENT REVISIONS OR UPDATES TO THE STANDARDS AS ADOPTED BY THE DEPARTMENT OF LABOR AND EMPLOYMENT SECURITY (DLES).
22. THE CONTRACTOR SHALL PROVIDE ALL DEWATERING EQUIPMENT NECESSARY TO KEEP EXCAVATIONS DRY AND SHALL PROVIDE ALL SHORING, SHEETING, AND BRACING NECESSARY TO PROTECT WORKMEN, ADJACENT STRUCTURES, UTILITIES, EXISTING PAVEMENT, OR TO MINIMIZE TRENCH WIDTH, AT THE CONTRACTORS' EXPENSE.
23. A STANDARD MINIMUM 18 INCHES OF VERTICAL CLEARANCE SHALL BE PRACTICED FOR WATER, GRAVITY SEWER, RECLAIMED WATER, STORM AND FORCE MAINS PIPES THAT CROSS. WHERE IT IS DEMONSTRATED AND THE COUNTY AGREES THAT STANDARD SEPARATIONS ARE NOT REALISTIC, OR WHERE MAINTENANCE OF A PIPE WOULD BE MADE MORE ACCESSIBLE THE COUNTY ENGINEER MAY APPROVE REDUCTIONS OF THE STANDARD SEPARATIONS AS FOLLOWS:
 - A. CLEARANCE FROM WATER TO FORCE MAIN, STORM, RECLAIMED WATER AND GRAVITY SEWER AND CLEARANCE FROM RECLAIMED WATER TO GRAVITY SEWER, WATER, FORCE MAIN AND STORM MAY BE REDUCED TO 6 INCHES WHEN THE WATER OR RECLAIMED WATER PIPE IS DI.
 - B. CLEARANCE FROM FORCE MAIN TO WATER AND RECLAIMED WATER MAY BE REDUCED TO 3 INCHES WHEN THE FORCE MAIN IS BELOW AND HAS A WATER TIGHT CASING PIPE.
 - C. CLEARANCE FROM RECLAIMED WATER TO WATER MAY BE REDUCED TO 3 INCHES WHEN THE RECLAIMED WATER IS BELOW AND HAS A WATER TIGHT CASING PIPE.
24. A MINIMUM OF 10 FEET OF HORIZONTAL SEPARATION (OUTSIDE OF PIPE TO OUTSIDE OF PIPE) IS REQUIRED BETWEEN WATER MAINS AND FORCE MAINS, AND BETWEEN WATER MAINS AND GRAVITY SEWER, AND BETWEEN WATER MAINS AND STORM SEWER, AND BETWEEN STORM SEWER AND GRAVITY SEWER. ALL OTHER COMBINATIONS OF WATER, GRAVITY SEWER, FORCE MAIN, RECLAIMED WATER AND STORM SEWER PIPES MUST HAVE 5 FEET OF SEPARATION AT A MINIMUM, EXCEPT FOR GRAVITY SEWER AND FORCE MAINS, WHICH SHALL HAVE A MINIMUM OF 3 FEET OF SEPARATION. IF NOT FEASIBLE, REFER TO CURRENT MANATEE COUNTY UTILITY STANDARDS FOR ALLOWABLE EXCEPTIONS.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE EXISTING DRAINAGE SYSTEM WITHIN THE LIMITS OF THE PROJECT AREA, FOR THE DURATION OF THE PROJECT. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE WORK INVOLVED.
26. CONTRACTOR IS TO PROVIDE TEMPORARY EROSION CONTROL/SEDIMENTATION BARRIER (HAY BALES OR SILTATION CURTAIN) TO PREVENT SILTATION OF ADJACENT PROPERTY, STREETS, STORM SEWERS, AND WATERWAYS UNTIL THE PROJECT IS COMPLETE AND ALL BARED SOILS ARE STABILIZED. IF IN THE OPINION OF THE ENGINEER AND/OR LOCAL AUTHORITIES, EXCESSIVE QUANTITIES OF EARTH ARE TRANSPORTED OFF-SITE EITHER BY NATURAL DRAINAGE OR VEHICULAR TRAFFIC, THE CONTRACTOR IS TO REMOVE AND CLEAN SAID EARTH TO THE SATISFACTION OF THE ENGINEER AND/OR AUTHORITIES. THE MAINTENANCE AND INSPECTION OF EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE CONTRACTOR AND THEIR COMPLETE REMOVAL ARE TO BE INCLUDED IN THE BID PRICE. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING FOR AND OBTAINING THE FDEP NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) NOTICE OF INTENT (NOI). THE PERMIT SHALL BE KEPT ONSITE AT ALL TIMES DURING CONSTRUCTION.
27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL EXCESS MATERIAL AND THE PROPER DISPOSAL OF THE SAME.
28. OVERALL CLEAN UP SHALL BE ACCOMPLISHED BY THE CONTRACTOR IN ACCORDANCE WITH COUNTY STANDARDS OR AS DIRECTED BY THE ENGINEER.
29. IF DEWATERING IS NECESSARY, THE CONTRACTOR SHALL OBTAIN A DEWATERING PERMIT FROM FDEP PRIOR TO PERFORMING ANY DEWATERING ACTIVITY AND SHALL COMPLY WITH 62-34.453 F.A.C.
30. THE CONTRACTOR SHALL PROVIDE DETAILED RECORD DRAWINGS. THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF REDLINE DRAWINGS THAT SHALL BE DELIVERED TO THE ENGINEER UPON COMPLETION OF CONSTRUCTION.

SCALE		BOZHIDAR V. HANDJIEV, P.E.		DATE	 PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208	DESIGN ENGINEER	GENERAL NOTES	SHEET NO.
DESIGNED BY	NTS	P.E. NO. 67573		06/2021		BOZHIDAR V. HANDJIEV, P.E.		
DRAWN BY	BVH	AECOM TECHNICAL SERVICES, INC.		PROJECT NO.		FL. LICENSE NO.		
CHECKED BY	TRS	7650 WEST COURTNEY CAMPBELL CAUSEWAY		6015061		67573		3
		TAMPA, FL 33607-1462						
		(813) 286-1711						
		CERTIFICATE OF AUTHORIZATION: 8115						
No.	REVISIONS	DATE	BY					



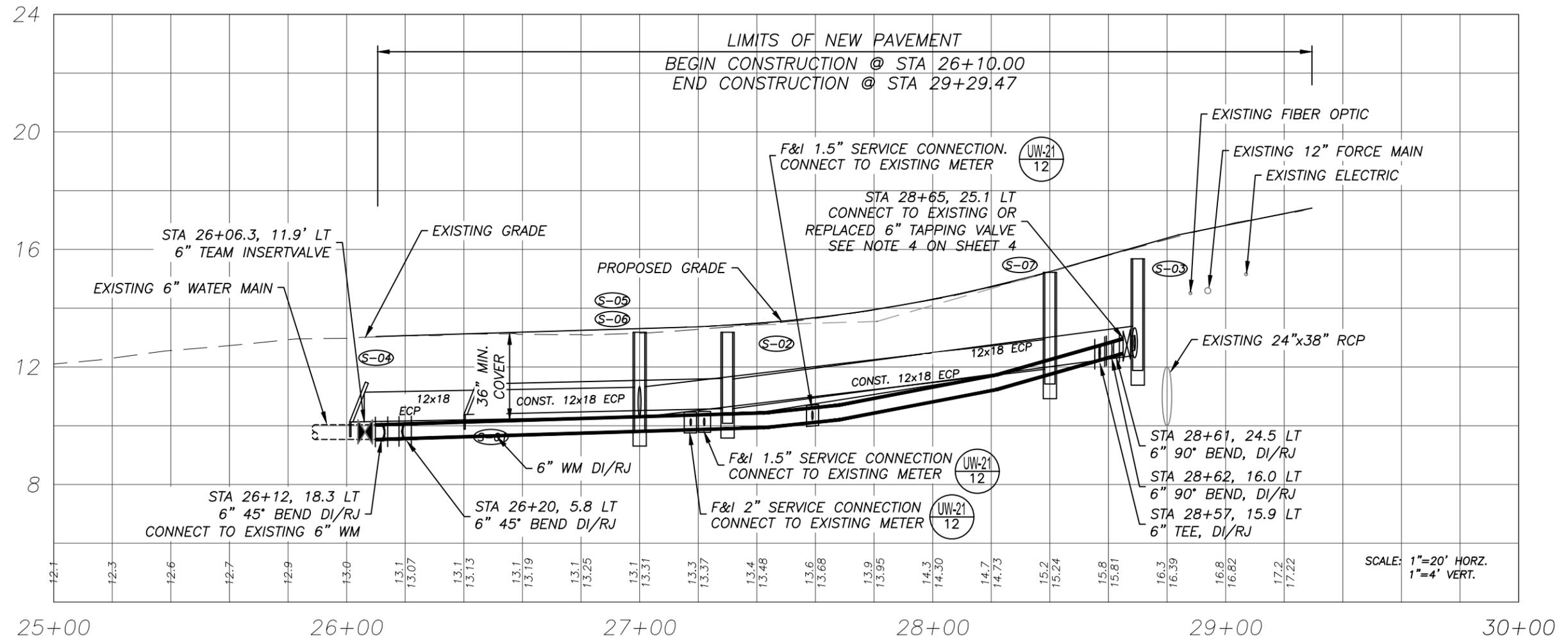
NOTES:

- 1) LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES HAVE NOT BEEN VERIFIED DURING DESIGN. CONTRACTOR TO FIELD VERIFY PRIOR TO CONSTRUCTION.
- 2) ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE PART 1 - UTILITIES STANDARDS MANUAL FROM THE MANATEE COUNTY PUBLIC WORKS STANDARDS & THE MANATEE COUNTY UTILITY APPROVED PRODUCT LIST WHICH ARE INCLUDED HEREIN BY REFERENCE.
- 3) MAINTAIN UNINTERRUPTED SERVICE TO ALL POTABLE WATER SERVICE CONNECTIONS.
- 4) CONTRACTOR SHALL EXCAVATE EXISTING 36"X6" TAPPING SLEEVE AND VALVE. MANATEE COUNTY PUBLIC UTILITIES SHALL INSPECT THE SADDLE AND VALVE. IF IT IS DETERMINED THAT THE SADDLE AND VALVE ARE IN GOOD CONDITION AND MEET CURRENT COUNTY STANDARDS, CONTRACTOR TO CONNECT THE NEW WM TO EXISTING 6" TAPPING VALVE. IF IT IS DETERMINED THAT THE TAPPING SADDLE AND VALVE ARE NOT IN GOOD CONDITION OR DO NOT MEET CURRENT COUNTY STANDARDS, CONTRACTOR SHALL REPLACE THEM. NEW SADDLE AND VALVE SHALL BE PER DETAIL UW-3 ON SHEET 11. COUNTY WILL SHUT DOWN AND DE-PRESSURIZE 36" WM BY CLOSING ISOLATION VALVES TO THE EAST AND WEST OF THE SADDLE. AFTER THE WM IS SHUT DOWN, CONTRACTOR SHALL DRAIN THE WM AND REPLACE THE SADDLE AND VALVE. WATER DRAINED FROM THE EXISTING 36" WM SHALL BE DE-CHLORINATED PRIOR TO DISCHARGING, USING A COUNTY APPROVED DE-CHLORINATION METHOD. RESIDUAL CHLORINE AFTER DE-CHLORINATION SHALL NOT EXCEED THE MAXIMUM VALUE LISTED IN SECTION 1.10.3, F OF THE UTILITIES STANDARDS MANUAL. VOLUME OF WATER TO BE DRAINED AND DE-CHLORINATED IS APPROXIMATELY 150,000 GALLONS. ONCE TAPPING SLEEVE AND VALVE HAS BEEN INSTALLED AND APPROVED, MANATEE COUNTY WILL RE-ACTIVATE THE 36" WATER MAIN.
- 5) ALL SHORT SIDE AND LONG SIDE POTABLE WATER SERVICES CONNECTED TO THE WATER MAIN THAT IS BEING RELOCATED, SHALL BE TRANSFERRED TO THE NEW WATER MAIN. NEW SERVICE LINE SHALL MATCH THE SIZE OF THE EXISTING AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAIL UW-21 ON SHEET 12. WATER SERVICES SHALL BE TRANSFERRED TO THE NEW WATER MAIN AFTER OBTAINING FDEP CLEARANCE FOR THE NEW WATER MAIN.
- 6) EXISTING PIPE SHALL BE RESTRAINED WITH SERIES 1600 (PVC) AND 1100 SD (DIP) SPLIT RING MEGALUG RESTRAINTS BY EBAA IRON.
- 7) CONTRACTOR TO COORDINATE WITH MANATEE COUNTY PUBLIC UTILITIES SCHEDULE TO INSTALL INSERTION VALVE & THE OPERATION OF ANY VALVES OWNED BY THE COUNTY.
- 8) PAVEMENT RESTORATION SHALL BE PER THE ROADWAY PLANS.
- 9) MANATEE COUNTY PUBLIC UTILITIES WILL RETAIN OWNERSHIP OF REMOVED FIRE HYDRANTS.

LEGEND
 SAMPLING POINT

SCALE: AS NOTED		DESIGNED BY: BVH	DATE: 06/2021		DESIGN ENGINEER: BOZHIDAR V. HANDJIEV, P.E.	SHEET NO. 4
DRAWN BY: TRS		CHECKED BY:	PROJECT NO.: 6015061		FL. LICENSE NO.: 67573	
No.	REVISIONS	DATE	BY	BOZHIDAR V. HANDJIEV, P.E. P.E. NO. 67573 AECOM TECHNICAL SERVICES, INC. 7650 WEST COURTNEY CAMPBELL CAUSEWAY TAMPA, FL 33607-1462 (813) 286-1711 CERTIFICATE OF AUTHORIZATION: 8115	PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208	WATER MAIN PLAN SHEET

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



NOTES:
 1) LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES HAVE NOT BEEN VERIFIED DURING DESIGN. CONTRACTOR TO FIELD VERIFY PRIOR TO CONSTRUCTION.

SCALE: AS NOTED DESIGNED BY: BVH DRAWN BY: TRS CHECKED BY:				BOZHIDAR V. HANDJIEV, P.E. P.E. NO. 67573 AECOM TECHNICAL SERVICES, INC. 7650 WEST COURTNEY CAMPBELL CAUSEWAY TAMPA, FL 33607-1462 (813) 286-1711 CERTIFICATE OF AUTHORIZATION: 8115		DATE: 06/2021 PROJECT NO.: 6015061		 PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208		DESIGN ENGINEER: BOZHIDAR V. HANDJIEV, P.E. FL. LICENSE NO.: 67573		WATER MAIN PROFILE SHEET		SHEET NO.: 5	
No.	REVISIONS			DATE	BY										

**REQUIRED LENGTH OF RESTRAINED JOINT PIPE
FOR C900-16 PVC PIPE (DR-18)**

MAIN PIPE SIZE	HORIZ. BENDS			TEES					REDUCERS			PLUGS & VALVES
	90°	45°	22.5°	SIZE LENGTH					SIZE LENGTH			
24	90	38	18	X24 169	X20 132	X16 90	X12 38	X10 6	X20 64	X16 117	X12 158	214
20	78	32	16	X20 141	X16 101	X12 53	X10 24	X8 1	X16 65	X12 115	X10 149	184
16	66	27	13	X16 111	X12 67	X10 41	X8 12		X12 64	X10 107	X8 111	151
12	52	22	10	X12 80	X10 56	X8 31	X6 1		X10 58	X8 62	X6 86	118
10	44	18	9	X10 63	X8 40	X6 7			X8 33	X6 61	X4 81	100
8	37	15	7	X8 49	X6 18	X4 1			X6 35	X4 60		83
6	29	12	6	X6 29	X4 1				X4 33			63
4	21	8	4	X4 12								45

NOTES:

- RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.
- ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
- ALL ISOLATION VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION.
- PIPE SIZES ARE GIVEN IN INCHES.
- RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.
- LENGTHS SHOWN ARE FOR A TEST PRESSURE OF 180 PSI.
- 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.
- RESTRAINED LENGTHS TO BE APPLIED TO PIPELINES PER DETAIL UG-10 RESTRAINED LENGTHS FOR PIPE.
- ALL RESTRAINED JOINT HARDWARE SHALL CONFORM TO 1.11.17 OF THE PUBLIC WORKS UTILITIES STANDARDS MANUAL.
- ALL THREE "LEGS" OF TEES SHALL BE RESTRAINED PER THE STATED LENGTH IN THE TABLE.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		RESTRAINED LENGTHS FOR PVC PIPE	UG-8
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

**REQUIRED LENGTH OF RESTRAINED JOINT PIPE
FOR DIP (POLY-WRAPPED)**

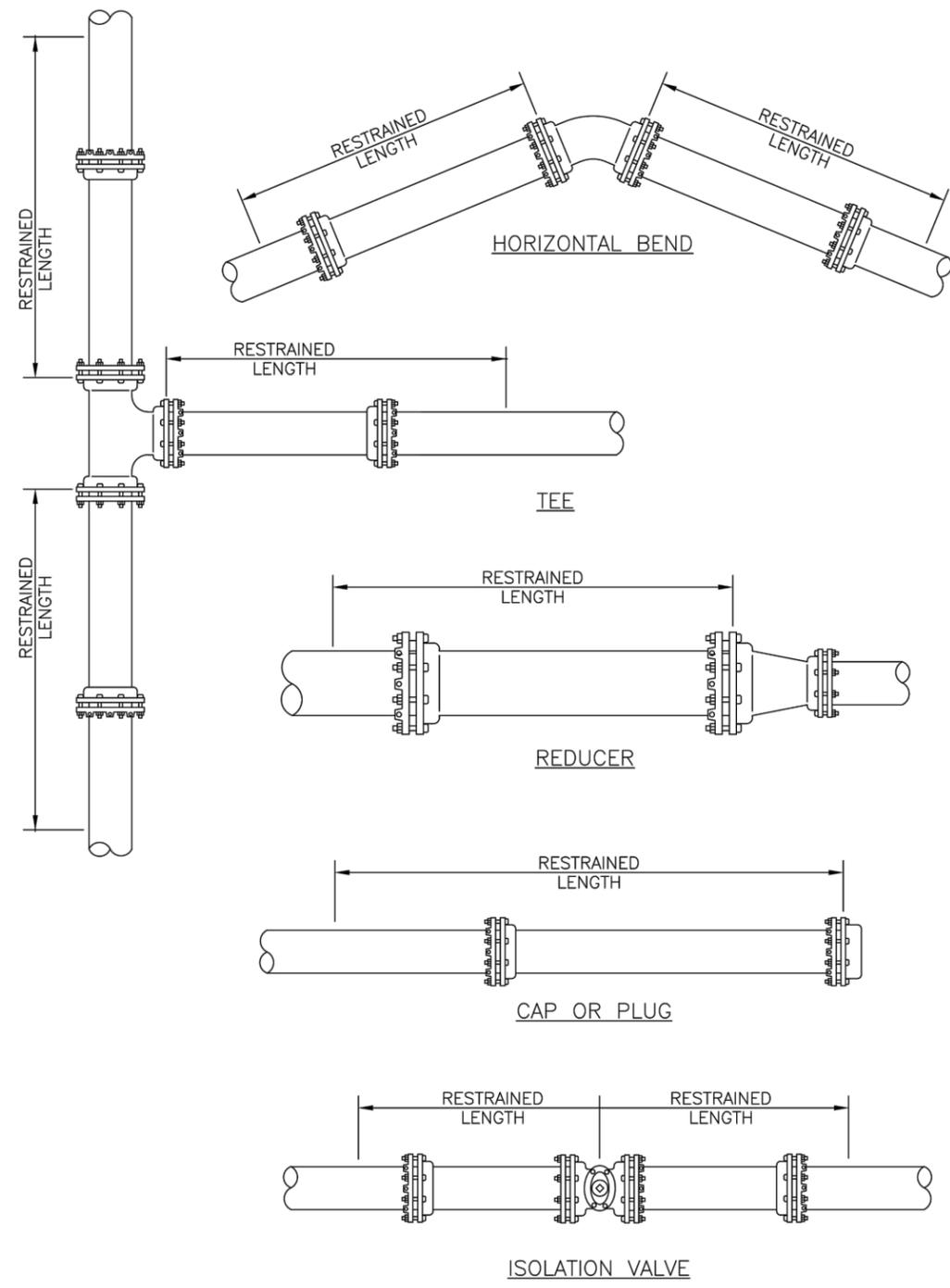
MAIN PIPE SIZE	HORIZ. BENDS			TEES					REDUCERS				PLUGS & VALVES	
	90°	45°	22.5°	SIZE LENGTH					SIZE LENGTH					
36	142	59	28	x36 393	x30 318	x24 232	x20 165	x16 84	x12 1	X30 137	X24 247	X20 309	X16 359	453
30	124	51	25	x30 333	x24 252	x20 189	x16 115	x12 23	x10 1	X24 137	X20 213	X16 276		391
24	106	44	21	X24 270	X20 211	X16 143	X12 61	X10 10	x8 1	X20 98	X16 178	X12 241		327
20	92	38	18	X20 225	X16 161	X12 85	X10 39	x8 1		X16 98	X12 176	X10 227		280
16	77	32	15	X16 177	X12 107	X10 65	X8 19	x6 1		X12 98	X10 163	X8 169		231
12	61	25	12	X12 127	X10 89	X8 50	x6 1			X10 88	X8 96	X6 131		181
10	52	22	10	X10 101	X8 64	x6 11				X8 51	X6 94	X4 125		153
8	44	18	9	X8 78	X6 30	x4 1				X6 54	X4 92			128
6	34	14	7	X6 46	x4 1					X4 50				98
4	24	10	5	x4 19										69

NOTE:

- SEE UG-8, RESTRAINED LENGTHS FOR PVC PIPE DETAIL FOR NOTES 1 THROUGH 9 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR DIP.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		RESTRAINED LENGTHS FOR DIP	UG-9
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY	SCALE AS NOTED	DESIGNED BY BOZHIDAR V. HANDJIEV, P.E. P.E. NO. 67573	DATE 06/2021	 PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208	DESIGN ENGINEER BOZHIDAR V. HANDJIEV, P.E.	SHEET NO. 6
				DRAWN BY BVH	AECOM TECHNICAL SERVICES, INC. 7650 WEST COURTNEY CAMPBELL CAUSEWAY TAMPA, FL 33607-1462 (813) 286-1711	PROJECT NO. 6015061		FL. LICENSE NO. 67573	
				CHECKED BY TRS	CERTIFICATE OF AUTHORIZATION: 8115			DETAILS (1)	



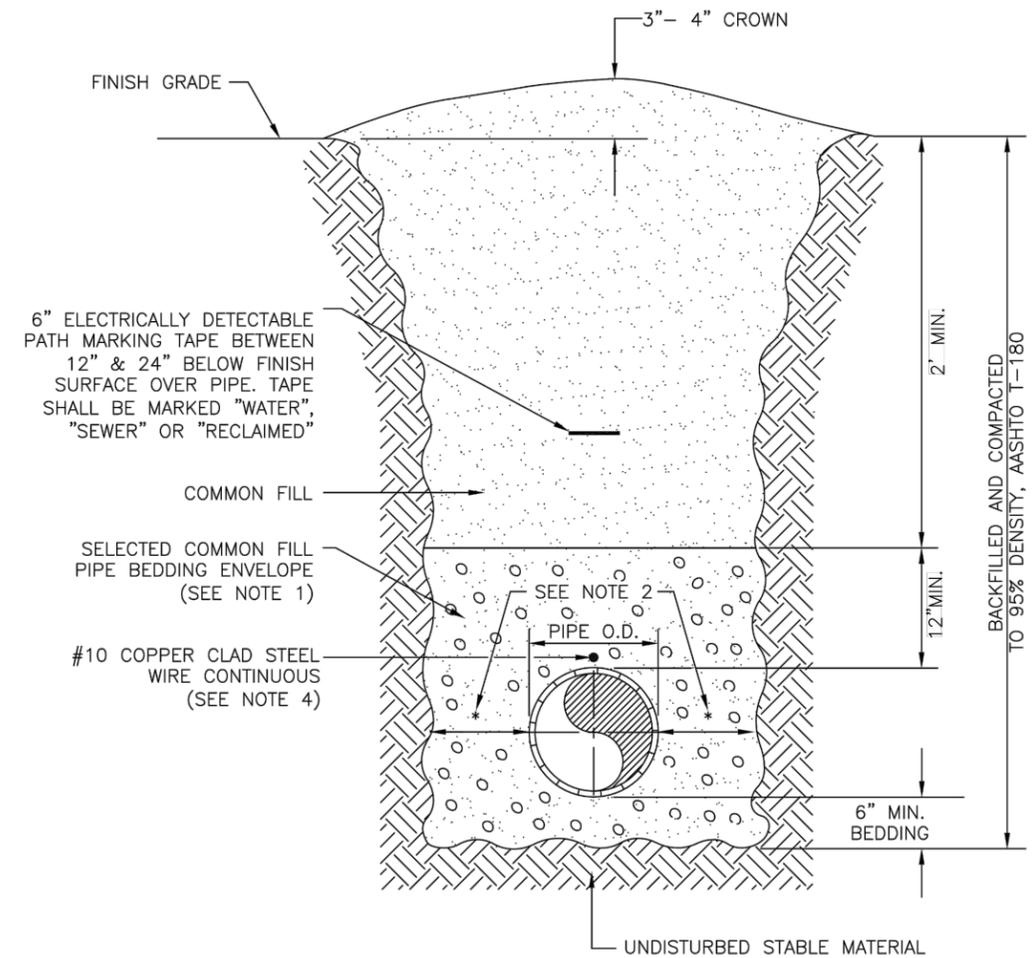
NOTE:

1. SEE DETAIL UG-8 RESTRAINED LENGTHS FOR PVC PIPE FOR NOTES 1 THROUGH 9 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR PIPE.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		RESTRAINED LENGTHS FOR PIPE	UG-10
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

NOTES:

1. USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. PROVIDE ADEQUATE CLEARANCE TO PLACE AND COMPACT STAGE 1 BEDDING MATERIAL IN TRENCH AREA BELOW PIPE SPRINGLINE. PIPE EMBEDMENT MUST BE COMPACTED OUT TO THE TRENCH WALL OR 2.5 TIMES THE PIPE OD, WHICHEVER IS LESS.
3. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
4. TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



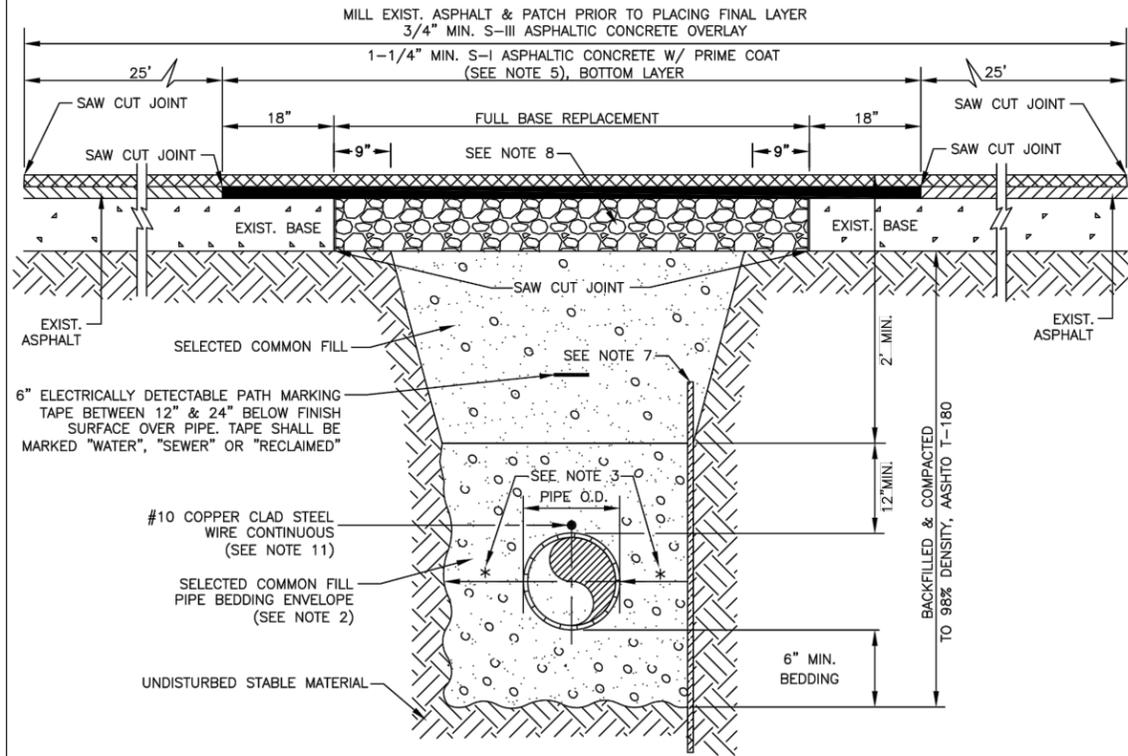
MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH UNIMPROVED SURFACE TYPE A-1 PIPE BEDDING	UG-11
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY	SCALE AS NOTED	DESIGNED BY BOZHIDAR V. HANDJIEV, P.E. P.E. NO. 67573	DATE 06/2021	 PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208	DESIGN ENGINEER BOZHIDAR V. HANDJIEV, P.E.	<h1 style="margin: 0;">DETAILS (2)</h1>	SHEET NO.
				DRAWN BY BVH	AECOM TECHNICAL SERVICES, INC. 7650 WEST COURTNEY CAMPBELL CAUSEWAY TAMPA, FL 33607-1462 (813) 286-1711 CERTIFICATE OF AUTHORIZATION: 8115	PROJECT NO. 6015061		FL. LICENSE NO. 67573		7

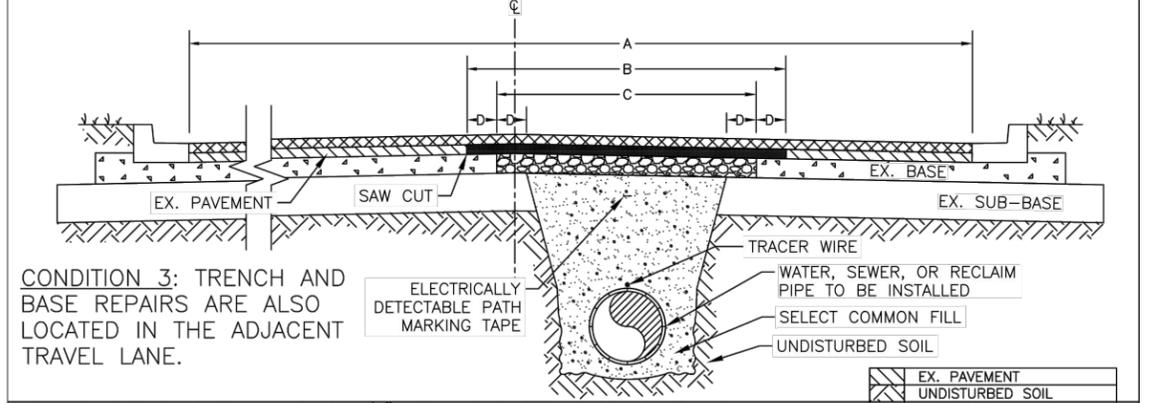
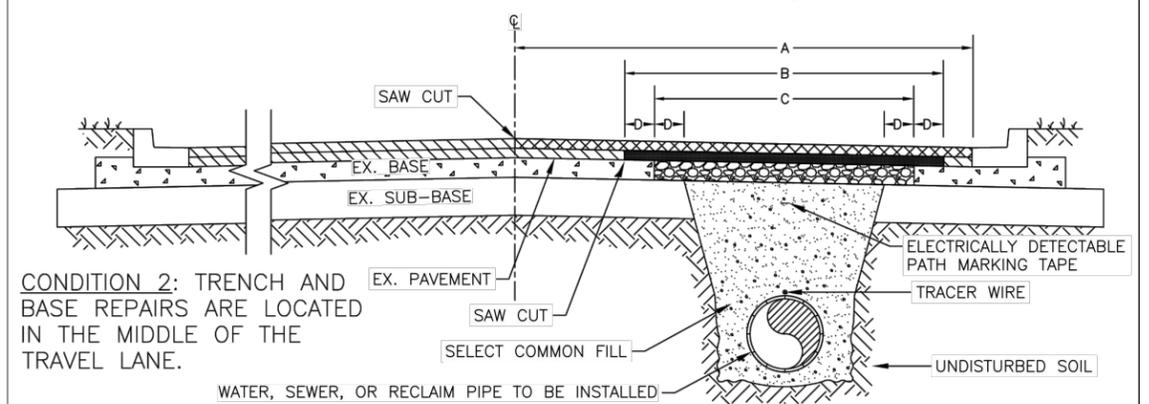
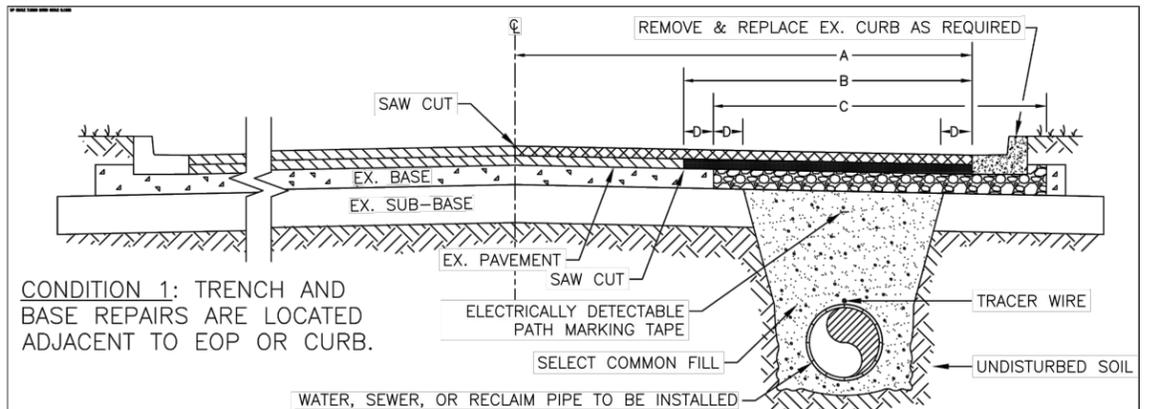
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NOTES:

1. BITUMINOUS PAVEMENT SHALL BE REMOVED IN CLEAN STRAIGHT LINES BY SAW CUTTING. WHERE BITUMINOUS PAVEMENT ADJOINS A TRENCH, THE EDGES ADJACENT TO THE TRENCH SHALL BE TRIMMED TO A NEAT STRAIGHT LINES BEFORE RESURFACING TO ENSURE THAT ALL AREAS TO BE RESURFACED ARE ACCESSIBLE TO ROLLERS OR TAMPERS USED TO COMPACT THE SUB-GRADE OR PAVING MATERIALS.
2. USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
3. PROVIDE ADEQUATE CLEARANCE TO PLACE AND COMPACT STAGE 1 BEDDING MATERIAL IN TRENCH AREA BELOW PIPE SPRINGLINE. PIPE EMBEDMENT MUST BE COMPACTED OUT TO THE TRENCH WALL OR 2.5 TIMES THE PIPE OD, WHICHEVER IS LESS.
4. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
5. ASPHALTIC CONCRETE STRUCTURE COURSE WITH PRIME COAT SHALL BE THE SAME DEPTH AND TYPE AS EXISTING OR A MINIMUM OF 1-1/4 INCH S-I, WHICHEVER IS GREATER.
6. MILL 25' BACK FROM TRENCH CROSSING SAW CUTS. ADJUST MILLING PER INDIVIDUAL SITE TO NOT IMPACT BASE. BUTT JOINT TO EXIST ASPHALT. FINAL OVERLAY TO MATCH EXISTING WITH NO DISCERNABLE "BUMP" AT JOINT. MILLING LIMITS THAT IMPACT INTERSECTION SHALL BE ADDRESSED ON A CASE BY CASE BASIS AND APPROVED BY MANATEE COUNTY.
7. SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.
8. NEW BASE SHALL MATCH EXISTING; OR BE CRUSHED CONCRETE, 8" MIN. THICKNESS, LBR ≥150, WHICHEVER IS GREATER.
9. TEMPORARY PATCHES WILL BE INSTALLED TO PROVIDE A SMOOTH ALL WEATHER SURFACE AT ALL TIMES. PERMANENT REPLACEMENT TO BE MADE AS SOON AS POSSIBLE.
10. RESTORE SIGNAGE & MARKING WITH THERMOPLASTIC PER FDOT STANDARDS, LATEST EDITION.
11. TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.
12. NOTES 5. THRU 10. ARE MINIMUM REQUIREMENTS FOR A TRENCH IN A LOCAL ROAD. REFER TO LATEST EDITION OF MANATEE COUNTY HIGHWAY AND TRAFFIC STANDARDS FOR ADDITIONAL REQUIREMENTS.



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING (CROSSING)	UG-12
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

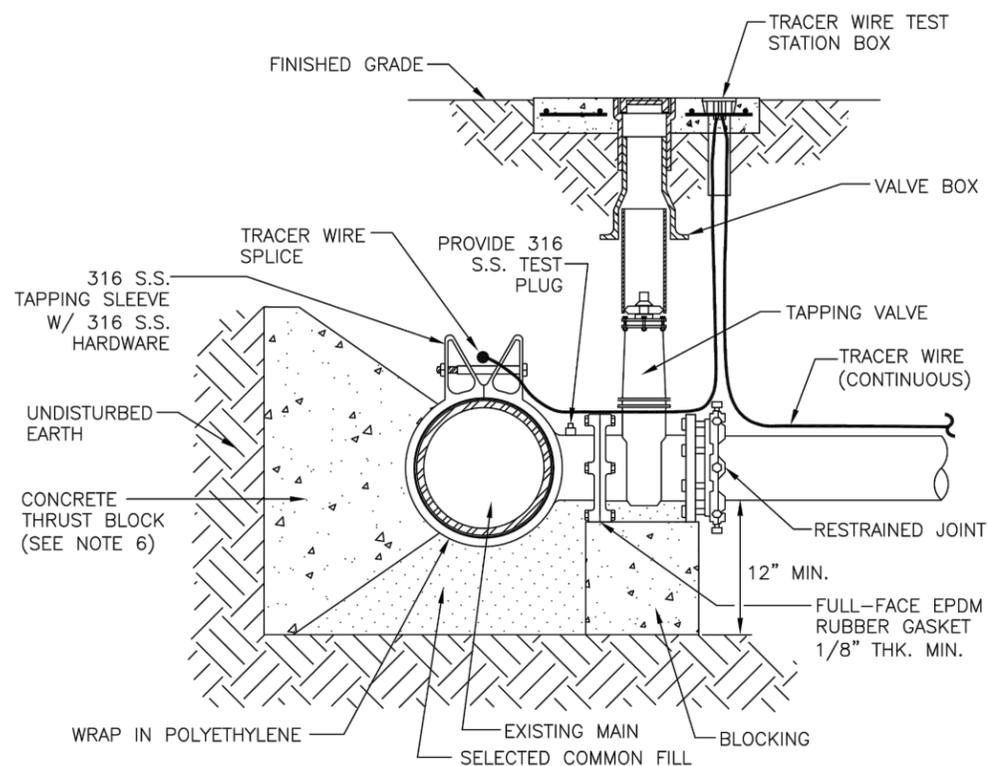


- A = MILL EXIST. ASPHALT & PLACE 3/4" MIN. S-III ASPHALTIC CONCRETE OVERLAY.
 B = 1-1/4" MIN. S-I ASPHALTIC CONCRETE W/ PRIME COAT.
 C = FULL BASE REPLACEMENT.
 D = 9 INCHES
- NOTE:**
1. THIS DETAIL IS BASED ON A TWO-LANE ROADWAY AND SHALL BE FOLLOWED WHEN A PIPE IS INSTALLED WITHIN THE LIMITS OF A ROADWAY AND RUNS PARALLEL WITH THE EDGE OF PAVEMENT. THIS DETAIL CAN ALSO BE UTILIZED FOR RESTORATION NEEDS OF ROADWAYS WITH ADDITIONAL LANES. CONDITION 3 ONLY EXTENDS TO NEXT ADJACENT LANE ON MULTI-LANE ROADS.
 2. THE MILL AND OVERLAY SHALL BE FIELD ADJUSTED TO MEET THE NEEDS FOR PAVEMENT RESTORATION DUE TO CONSTRUCTION ACTIVITIES AND SHALL BE COORDINATED WITH THE COUNTY.
 3. SEE TRENCH WITH ASPHALT PAVEMENT TYPE A-1 PIPE BEDDING (CROSSING) DETAIL FOR NOTES 1 TO 12 THAT ARE ALSO APPLICABLE TO ASPHALT PAVEMENT RESTORATION.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING (LONGITUDINAL)	UG-12B
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

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SCALE	AS NOTED	DESIGNED BY	BOZHIDAR V. HANDJIEV, P.E. P.E. NO. 67573 AECOM TECHNICAL SERVICES, INC. 7650 WEST COURTNEY CAMPBELL CAUSEWAY TAMPA, FL 33607-1462 (813) 286-1711 CERTIFICATE OF AUTHORIZATION: 8115	DATE	06/2021		DESIGN ENGINEER	BOZHIDAR V. HANDJIEV, P.E. FL. LICENSE NO. 67573	DETAILS (3)	SHEET NO.	8
DESIGNED BY	BVH	DRAWN BY	TRS	PROJECT NO.	6015061		PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208				
No.	REVISIONS	DATE	BY								

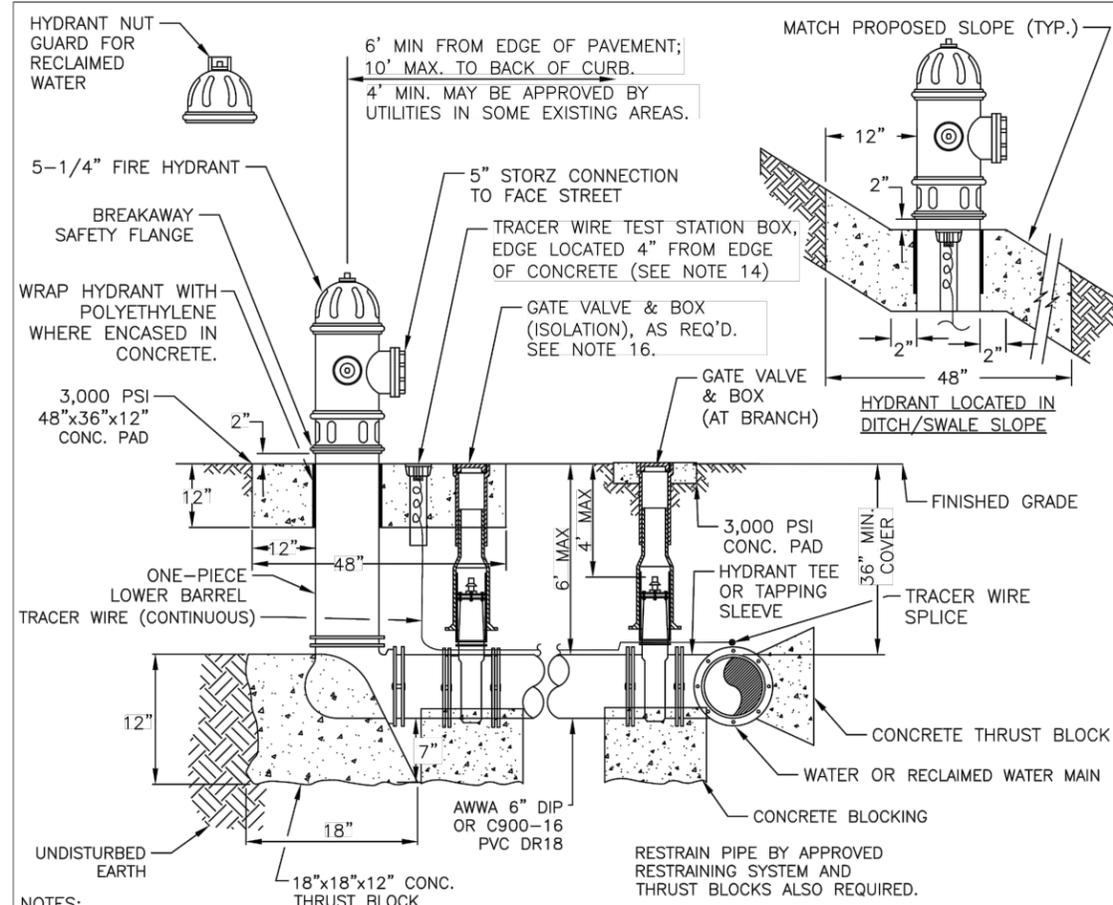


ELEVATION

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.
2. ALL FITTINGS TO BE WRAPPED WITH 20 MIL POLYETHYLENE WRAP 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. ALL MATERIALS TO BE SUPPLIED BY THE CONTRACTOR.
4. ALL TAPS MUST BE OF A SMALLER SIZE THAN 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. CONTRACTOR TO SUPPLY A DRY HOLE FOR TAPPING CREW TO WORK IN AND A BACK-HOE TO LOWER TAPPING MACHINE INTO THE HOLE.
6. WHERE THRUST BLOCK NOT USED, RESTRAINED JOINTS MUST THEN EXTEND FROM TEE FULL LENGTH SPECIFIED FOR "TEES."
7. TRACER WIRE TEST STATION BOX IS REQUIRED AT CONNECTIONS TO EXISTING MAINS.
8. SEE SECTION 1.11 TAPPING SLEEVES AND VALVES IN THE PUBLIC WORKS UTILITY STANDARDS MANUAL FOR FURTHER DETAILS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TAPPING SLEEVE AND VALVE (WATER/RECLAIM)	UW-3
REV. BY	DATE		
	February 25, 2020 DATE OF APPROVAL		



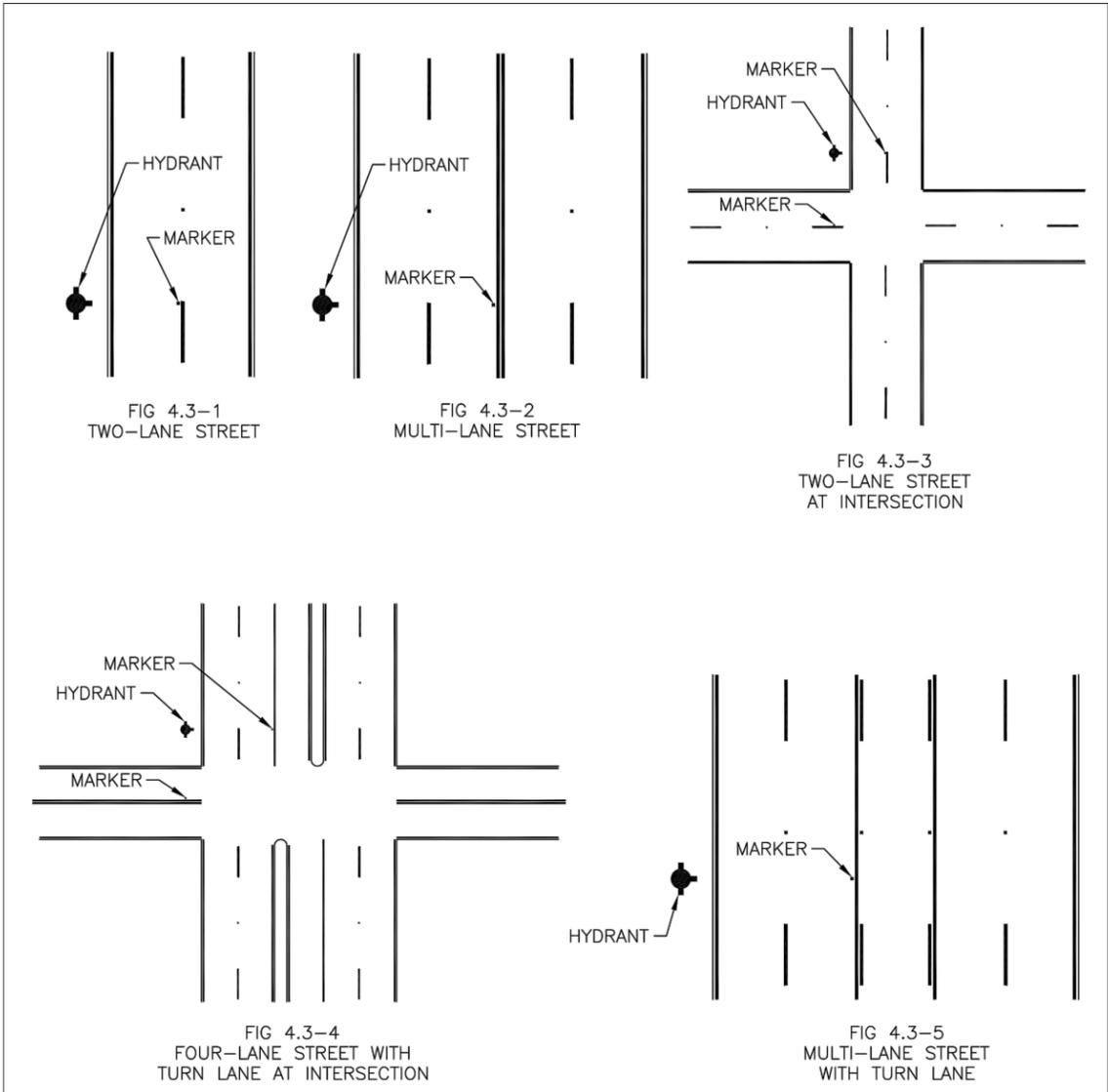
NOTES:

1. WEEPHOLES SHALL BE EXCLUDED FROM THE FIRE HYDRANT.
2. 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.
3. HYDRANT SHALL BE DUCTILE IRON CONSTRUCTION. HYDRANTS SHALL BE FUSION BONDED EPOXY COATED SAFETY YELLOW FOR WATER; PURPLE (PANTONE 522C) FOR RECLAIMED WATER; AND RED FOR PRIVATE.
4. FIRE HYDRANTS SHALL BE PLACED SO THAT STORM WATER FLOWS AWAY FROM THE HYDRANT.
5. FIRE HYDRANTS SHALL BE CONSTRUCTED WITH "GROUND LINE" SET TO FINISHED GRADES AS ESTABLISHED IN THE FIELD. NORMAL BURY IS 3 FEET OF COVER FOR ALL WATER LINES.
6. FIRE HYDRANTS MAY BE CONSTRUCTED WITH "GRADELOK" OFFSET FITTING.
7. RAISED REFLECTIVE PAVEMENT MARKER(S) (BLUE) FOR POTABLE WATER (PURPLE) FOR RECLAIMED WATER SHALL BE INSTALLED ON THE PAVEMENT DIRECTLY ACROSS FROM THE HYDRANT IN ACCORDANCE WITH THE FDOT TRAFFIC ENGINEERING MANUAL, CHAPTER 4, SECTION 4.3 OR MOST CURRENT ADDITION.
8. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE 1/2" CHAMFER.
9. FIRE HYDRANT VALVE SHALL BE FASTENED DIRECTLY TO TEE.
10. IN-LINE VALVES SHOULD BE LOCATED AT HYDRANT TEES.
11. HYDRANTS SHALL BE LOCATED ON SAME SIDE OF ROAD AS WATER OR RECLAIMED MAIN.
12. THERE MUST BE A CLEARANCE OF 7 1/2 FEET 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.
13. SEE STANDARD DETAIL UW-2 GATE VALVE, BOX, LID AND TAG.
14. SHOULD THE FIRE HYDRANT'S CONCRETE PAD OVERLAP A SIDEWALK, THE TRACER WIRE TEST STATION BOX SHALL NOT BE LOCATED WITHIN THE SIDEWALK.
15. IF A HYDRANT IS LOCATED ON THE SLOPE OF A DITCH OR SWALE; THE CONCRETE PAD SHALL CONFORM TO THE FINISH GRADE/SLOPE. THE CONCRETE PAD SHALL BE LEVEL 2-INCHES BEHIND & IN FRONT OF THE HYDRANT.
16. AT THE DISCRETION OF THE COUNTY AN ADDITIONAL ISOLATION GATE VALVE SHALL BE ADDED, WHEN A PHYSICAL BARRIER IS PRESENT, (I.E. ROADWAY, FENCE, WALL, BERM ETC), BETWEEN THE BRANCH GATE VALVE AND THE HYDRANT.
17. SEE SECTION 1.11 HYDRANTS IN THE PUBLIC WORKS UTILITY STANDARDS MANUAL FOR FURTHER DETAILS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		FIRE HYDRANT ASSEMBLY	UW-5
REV. BY	DATE		
	February 25, 2020 DATE OF APPROVAL		

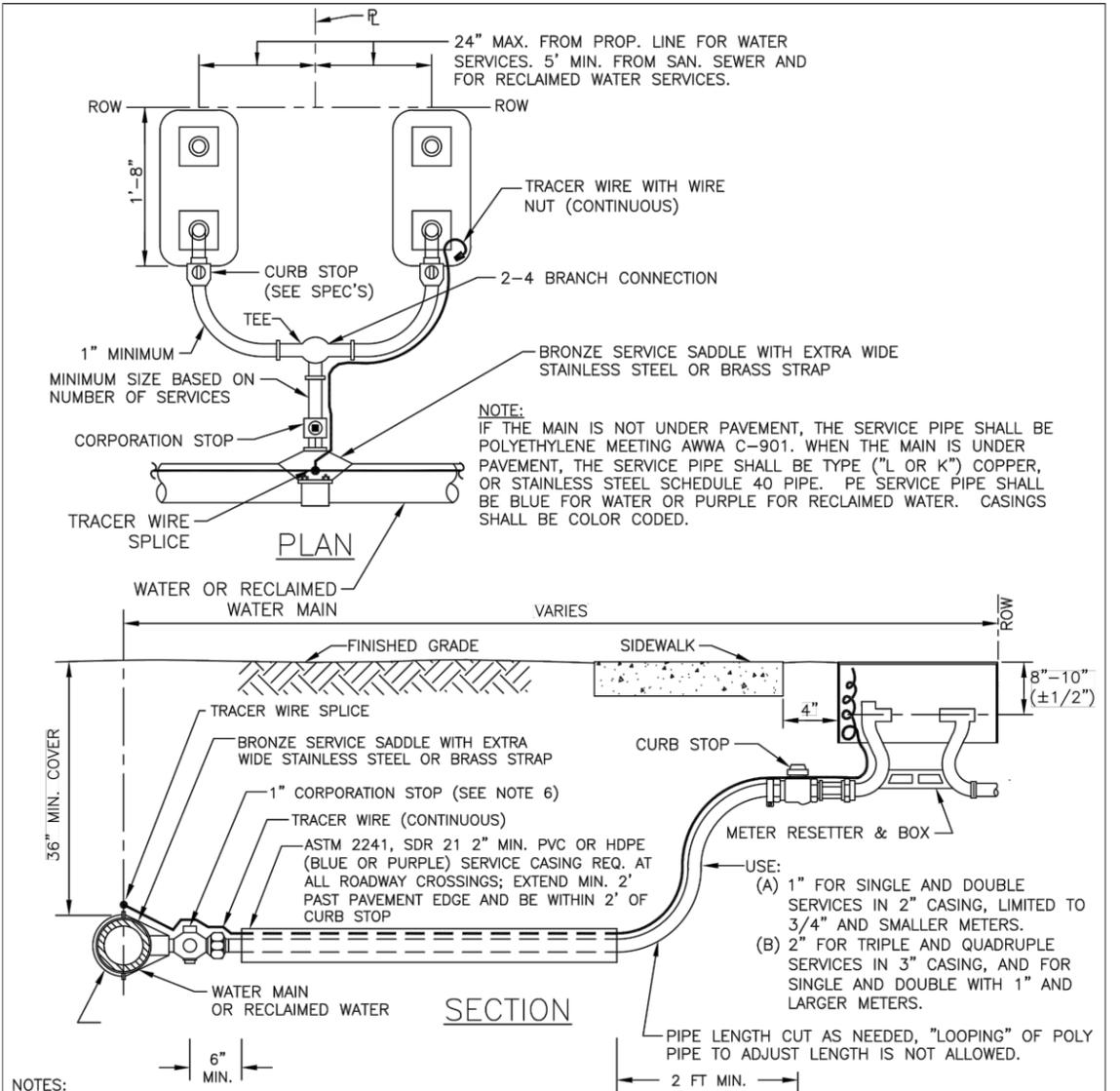
No.	REVISIONS	DATE	BY	SCALE	AS NOTED	DESIGNED BY	BOZHIDAR V. HANDJIEV, P.E. P.E. NO. 67573	DATE	06/2021	 PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208	DESIGN ENGINEER	BOZHIDAR V. HANDJIEV, P.E.	SHEET NO.	11
					BVH	DRAWN BY	AECOM TECHNICAL SERVICES, INC. 7650 WEST COURTNEY CAMPBELL CAUSEWAY TAMPA, FL 33607-1462 (813) 286-1711 CERTIFICATE OF AUTHORIZATION: 8115	PROJECT NO.	6015061		FL. LICENSE NO.	67573		
DETAILS (6)														

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- NOTES:**
- TWO-WAY STREETS OR ROADS: MARKER SHOULD BE PLACED 6 INCHES FROM EDGE OF PAINTED CENTERLINE ON THE SIDE NEAREST THE FIRE HYDRANT. IF THE STREET HAS NO CENTERLINE, THE MARKER SHOULD BE PLACED 6 INCHES FROM APPROXIMATE CENTER OF THE ROADWAY ON THE SIDE NEAREST THE HYDRANT. SEE FIGURE 4.3-1, 4.3-2, AND 4.3-3.
 - STREETS WITH LEFT TURN LANE AT INTERSECTION: MARKER SHOULD BE PLACED 6 INCHES FROM EDGE OF PAINTED WHITE CHANNELIZING LINE OF THE SIDE NEAREST THE FIRE HYDRANT. SEE FIGURE 4.3-4.
 - STREETS WITH CONTINUOUS TWO-WAY TURN LANE: MARKER SHOULD BE PLACED 6 INCHES FROM THE EDGE OF THE PAINTED YELLOW BARRIER LINE ON THE SIDE NEAREST THE FIRE HYDRANT. SEE FIGURE 4.3-5.
 - MARKER SHALL BE BLUE/BLEU RAISED RETROREFLECTIVE PAVEMENT MARKER.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		HYDRANT LOCATION MARKERS - BLUE (RPMs)	UW-6
REV. BY	DATE		
	February 25, 2020 DATE OF APPROVAL		



- NOTES:**
- ALL SERVICE TAPS TO BE LOCATED IN THE FIELD. TAPS SHALL BE NO CLOSER THAN 2'-0" STAGGERED INTERVALS OR WITHIN 2'-0" FROM BELL OR SPIGOT ENDS.
 - METER BOXES & RESETTERS ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND SHALL NOT BE SET IN DRAINAGE SWALES, SIDEWALKS OR DRIVEWAYS. WITH PRIOR APPROVAL BY COUNTY, METER BOXES WITH LOCKABLE LIDS MAY BE LOCATED IN SIDEWALKS.
 - "WM" OR "RWM" TO BE IMPRESSED INTO THE NEWLY POURED CONCRETE CURB ALONG WITH DISTANCE IN FEET TO THE METER. IF NO CURB, INSTALL A BLUE DISC WITH "WM" OR A PURPLE DISC WITH "RWM" AND A 1/8"x 1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE DISTANCE (IN FEET) FROM THE DISC TO THE METER.
 - COLOR CODED TRACER WIRE SHALL BE INSTALLED WITH WATER AND RECLAIMED MAIN AND ALL SERVICES. SERVICE WIRE SHALL BE CONNECTED TO THE TRACER WIRE ALONG THE MAIN. ON DOUBLE SERVICES, WHEN SECOND METER IS OVER 8 FT APART, TWO TRACER WIRES SHALL BE INSTALLED; ONE FOR EACH METER.
 - WATER AND RECLAIMED WATER SERVICE LINES TO BE 5' MINIMUM FROM SEWER SERVICE PIPES.
 - FOR 2" SERVICES REPLACE CORPORATION STOP WITH 2" RESILIENT WEDGE FIP GATE VALVE W/BOX, LID & TAG.
 - WHEN THE DISTANCE BETWEEN THE EDGE OF THE SIDEWALK AND THE ROW IS ONE FOOT (CUL-DE-SAC W/MEDIAN) A 10-FOOT-WIDE PUBLIC UTILITY EASEMENT SHALL BE LOCATED IN THE FRONT OF THE LOTS, ADJACENT TO THE ROW.
 - TEMPORARY RESIDENTIAL USE CAN BE PROVIDED BY CONTACTING THE UTILITY CUSTOMER SERVICE. SEE DETAIL UW-19.
 - SERVICE TUBING SHALL NOT BE CRIMPED OR KINKED TO RE-ADJUST CURB STOP LOCATION.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TYPICAL SERVICE CONNECTION	UW-21
REV. BY	DATE		
	February 25, 2020 DATE OF APPROVAL		

No.	REVISIONS	DATE	BY	SCALE	DESIGNED BY	DATE	PROJECT NO.	DESIGN ENGINEER	SHEET NO.
				AS NOTED	BOZHIDAR V. HANDJIEV, P.E.	06/2021	6015061	BOZHIDAR V. HANDJIEV, P.E.	
					BVH			FL. LICENSE NO.	12
					TRS			67573	
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DETAILS (7)

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