

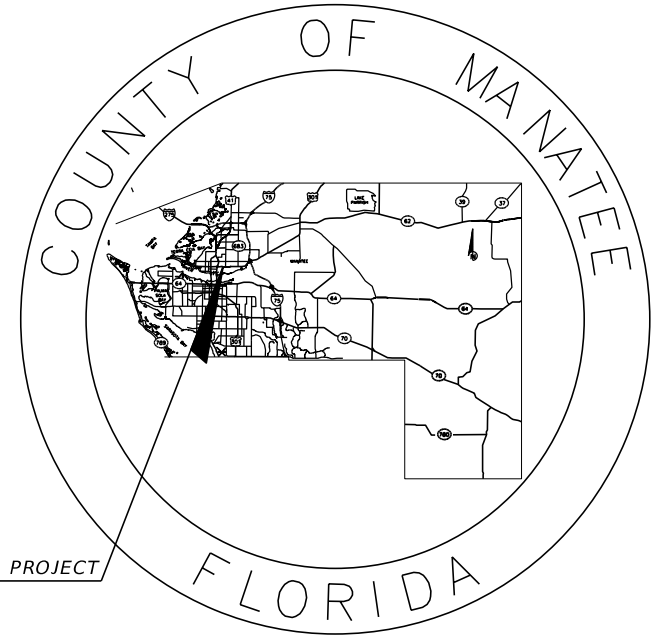
**MANATEE COUNTY
PUBLIC WORKS DEPARTMENT**

CONTRACT PLANS

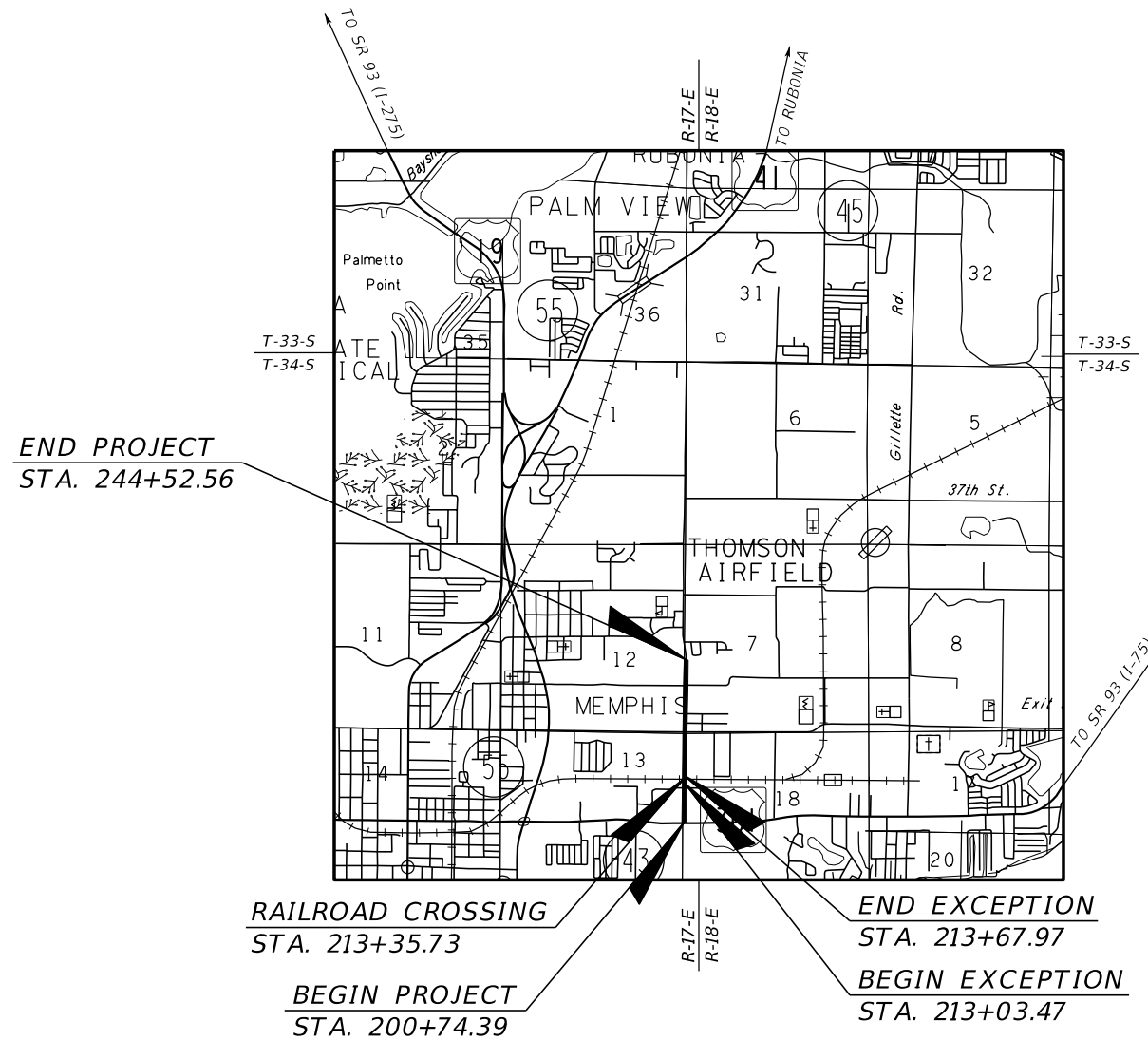
**MANATEE COUNTY
PROJECT NUMBER 6094360
CANAL ROAD (16TH AVENUE EAST)
SEGMENT 1 - US 301 TO 17TH STREET EAST
UTILITY RELOCATION PLANS**

INDEX OF UTILITY RELOCATION PLANS

SHEET NO.	SHEET DESCRIPTION
U-1	KEY SHEET
U-2	SIGNATURE SHEET
U-3	TABULATION OF QUANTITIES
U-4	PROJECT LAYOUT
U-5	GENERAL NOTES
U-6 THRU U-11	UTILITY RELOCATION PLANS
U-12 THRU U-18	UTILITY DETAILS



LOCATION OF PROJECT



**90% SUBMITTAL
12/2021**



**UTILITY RELOCATION PLANS
ENGINEER OF RECORD:**

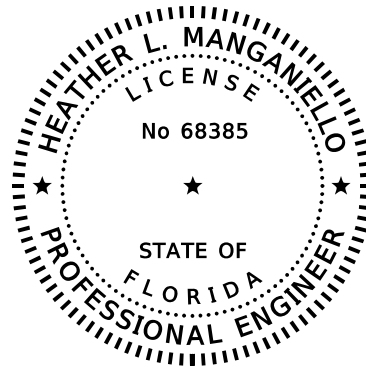
HEATHER L. MANGANIELLO, P.E.
P.E. NO.: 68385
HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232
VENDOR NO. 47-0680568
CONTRACT NO.: 15-0909JE

MANATEE CO. PROJECT MANAGER:
MICHAEL L. STURM, P.E.

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

FISCAL YEAR	SHEET NO.
21	U-1

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.



HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232-6212
HEATHER L. MANGANIELLO, PE NO. 68385

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

UTILITY RELOCATION PLANS



SHEET NO.	SHEET DESCRIPTION
U-1	KEY SHEET
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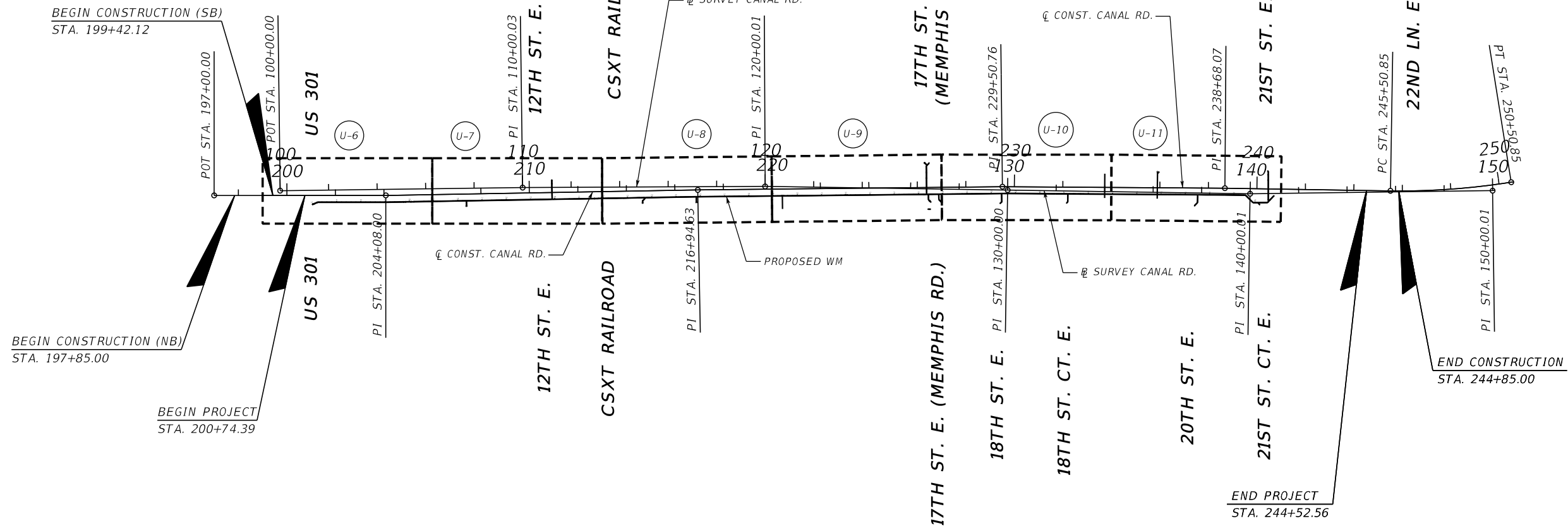
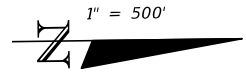
		SCALE	AS NOTED	 HDR Engineering, Inc. 2601 Cattlemen Road Suite 400 Sarasota, FL 34232-6233		DATE	12/2021	 MANATEE COUNTY PUBLIC WORKS	DESIGN ENGINEER	HEATHER L. MANGANIELLO	SIGNATURE SHEET	SHEET NO.	
		DESIGNED BY	HLM			PROJECT NO.	6094360		FL. LICENSE NO.	68385			U-2
1	90% SUBMITTAL	12/2021	JTT										
No.	REVISIONS	DATE	BY										

UTILITY PLANS (POTABLE WATER MAIN)									
ITEM NO.	ITEM	UNIT	U-6	U-7	U-8	U-9	U-10	U-11	TOTAL
MC-01-01	MOBILIZATION, WASTEWATER	LS							1
MC-01-02	6" DUCTILE IRON PIPE (RESTRAINED JOINT), POTABLE WATER	LF		20	41	44	65		170
MC-01-03	8" DUCTILE IRON PIPE (RESTRAINED JOINT), POTABLE WATER	LF		81		130		178	389
MC-01-04	10" DUCTILE IRON PIPE (RESTRAINED JOINT), POTABLE WATER	LF	495	700	700	700	700	678	3973
MC-01-05	12" DUCTILE IRON PIPE (RESTRAINED JOINT), POTABLE WATER	LF				41			41
MC-01-06	20" STEEL CASING, POTABLE WATER	LF		13	143				156
MC-01-07	REMOVE 6" PIPE, POTABLE WATER	LF				48	120		168
MC-01-08	REMOVE 8" PIPE, POTABLE WATER	LF		51		112		168	331
MC-01-09	REMOVE 10" PIPE, POTABLE WATER	LF	530	700	700	700	700	682	4012
MC-01-10	REMOVE 12" PIPE, POTABLE WATER	LF				41			41
MC-01-11	6" DUCTILE IRON ELBOW (RESTRAINED JOINT), POTABLE WATER	EA			2	4	4		10
MC-01-12	8" DUCTILE IRON ELBOW (RESTRAINED JOINT), POTABLE WATER	EA		4		6		10	20
MC-01-13	10" DUCTILE IRON ELBOW (RESTRAINED JOINT), POTABLE WATER	EA	8	2	2	6	4	4	26
MC-01-14	12" DUCTILE IRON ELBOW (RESTRAINED JOINT), POTABLE WATER	EA				4			4
MC-01-15	6" DUCTILE IRON UNION (RESTRAINED JOINT), POTABLE WATER	EA				1	2		3
MC-01-16	8" DUCTILE IRON UNION (RESTRAINED JOINT), POTABLE WATER	EA		1		1		3	5
MC-01-17	10" DUCTILE IRON UNION (RESTRAINED JOINT), POTABLE WATER	EA	1						2
MC-01-18	12" DUCTILE IRON UNION (RESTRAINED JOINT), POTABLE WATER	EA				1			1
MC-01-19	6" GATE VALVE (RESTRAINED JOINT), POTABLE WATER	EA		1	2	3	2		8
MC-01-20	8" GATE VALVE (RESTRAINED JOINT), POTABLE WATER	EA		1		1		4	6
MC-01-21	10" GATE VALVE (RESTRAINED JOINT), POTABLE WATER	EA		2	2	2	2	2	10
MC-01-22	12" GATE VALVE (RESTRAINED JOINT), POTABLE WATER	EA				1			1
MC-01-23	8"x6" DUCTILE IRON TEE (RESTRAINED JOINT), POTABLE WATER	EA				1			1
MC-01-24	10"x6" DUCTILE IRON TEE (RESTRAINED JOINT), POTABLE WATER	EA		1	2	1	2	1	7
MC-01-25	10"x8" DUCTILE IRON TEE (RESTRAINED JOINT), POTABLE WATER	EA		1		1		2	4
MC-01-26	10"x10" DUCTILE IRON TEE (RESTRAINED JOINT), POTABLE WATER	EA				1			1
MC-01-27	12"x6" DUCTILE IRON TEE (RESTRAINED JOINT), POTABLE WATER	EA				1			1
MC-01-28	12"x10" DUCTILE IRON REDUCER (RESTRAINED JOINT), POTABLE WATER	EA				1			1
MC-01-29	SAMPLE POINT, 6", POTABLE WATER	EA				1	2		3
MC-01-30	SAMPLE POINT, 8", POTABLE WATER	EA		1		1		3	5
MC-01-31	SAMPLE POINT, 10", POTABLE WATER	EA	1					1	2
MC-01-32	SAMPLE POINT, 12", POTABLE WATER	EA				1			1
MC-01-33	FIRE HYDRANT ASSEMBLY RELOCATION, POTABLE WATER	EA		1	2	1			4
MC-01-34	BLOWOFF REMOVAL, POTABLE WATER	EA						1	1
MC-01-35	METER/BACKFLOW TO PREVENTOR RELOCATION, POTABLE WATER	EA		2	3	2			7
MC-01-36	METER/BACKFLOW TO REMAIN/CONNECT TO PROP. WM, POTABLE WATER	EA		1	1	1	1		4
MC-01-37	RECORD DRAWINGS, POTABLE WATER	LS							1



UTILITY PLANS (WASTEWATER FORCE MAIN)									
ITEM NO.	ITEM	UNIT	U-6	U-7	U-8	U-9	U-10	U-11	TOTAL
MC-02-01	MOBILIZATION, WASTEWATER	LS							1
MC-02-02	MANHOLE (ADJ.)	EA					3	2	5
MC-02-03	VALVE (ADJ./MODIFY)	EA		1					1
MC-02-04	SEWER SERVICE (REPLACE/ADJ.)	EA					1	1	2

SCALE AS NOTED		 HDR Engineering, Inc. 2601 Cattlemen Road Suite 400 Sarasota, FL 34232-6233	DATE 12/2021	 MANATEE COUNTY PUBLIC WORKS	DESIGN ENGINEER HEATHER L. MANGANIELLO	TABULATION OF QUANTITIES	SHEET NO. U-3
DESIGNED BY HLM			PROJECT NO. 6094360		FL. LICENSE NO. 68385		
1	90% SUBMITTAL		12/2021		JTT		CHECKED BY HEH
No.	REVISIONS	DATE	BY				

16TH AVE. E. (CANAL RD.)



U-X UTILITY PLAN SHEET

SCALE AS NOTED		 HDR Engineering, Inc. 2601 Cattlemen Road Suite 400 Sarasota, FL 34232-6233	DATE 12/2021	 MANATEE COUNTY PUBLIC WORKS	DESIGN ENGINEER HEATHER L. MANGANIELLO	PROJECT LAYOUT	SHEET NO.
1	90% SUBMITTAL		12/2021		PROJECT NO. 6094360		FL. LICENSE NO. 68385
No.	REVISIONS	DATE	BY	CHECKED BY HEH			

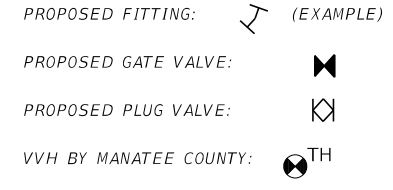
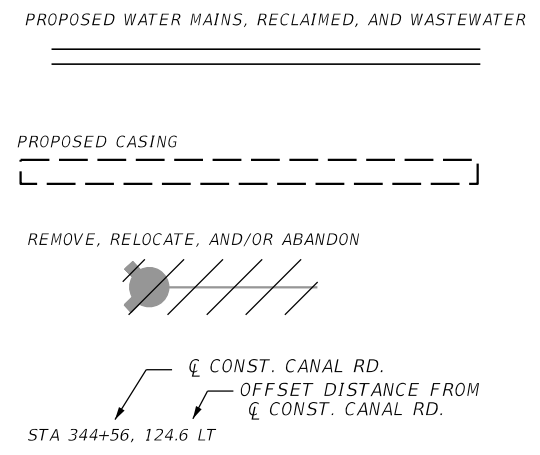
GENERAL NOTES

- THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS (INCLUDING THOSE DESIGNATED VV, VH AND VVH) ARE BASED ON LIMITED INVESTIGATION TECHNIQUES AND SHOULD BE CONSIDERED APPROXIMATE ONLY. THE VERIFIED LOCATIONS/ELEVATIONS APPLY ONLY AT THE POINTS SHOWN. INTERPOLATIONS BETWEEN THESE POINTS HAVE NOT BEEN VERIFIED.
- RECORD DRAWING INFORMATION SHALL BE SUPPLIED IN ACCORDANCE WITH THE MANATEE COUNTY PUBLIC WORKS UTILITY STANDARDS INCLUDING, BUT NOT LIMITED TO FINISHED GRADE ELEVATIONS, TIES TO MAINS, VALVES, FITTINGS, ELEVATIONS OF PIPES, AND LOCATIONS OF SAMPLE POINTS FOR COMPLIANCE TESTING, LOCATIONS, DIMENSIONS, AND ELEVATIONS OF ALL OTHER CONSTRUCTION COMPONENTS WHICH VARY FROM THE DESIGN.
- RESPECTIVE PROPERTY OWNERS SHALL BE NOTIFIED A MINIMUM OF 48 HOURS IN ADVANCE OF ANY AND ALL WORK REQUIRING DISRUPTION OF ACCESS, POTABLE WATER, RECLAIMED WATER, AND WASTEWATER SERVICE. DISRUPTION IN SERVICE TO ANY PROPERTY OWNER SHALL NOT EXCEED 2 HOURS FOR WATER AND WASTEWATER.
- MAINTAIN AND PROTECT THE INTEGRITY OF THE UTILITY POLES DURING CONSTRUCTION.
- ALL WATER COLLECTED AND PUMPED DURING TRENCH DEWATERING ACTIVITIES SHALL COMPLY WITH AND BE PERFORMED IN ACCORDANCE WITH NPDES REQUIREMENTS.
- COVER AS MEASURED FROM FINISHED (PROPOSED) GRADE TO TOP OF THE PIPELINE SHALL BE A MINIMUM OF 36 INCHES UNLESS OTHERWISE INDICATED.
- PIPELINE ALIGNMENTS SHALL BE ADJUSTED (AS REQUIRED) 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.
- ALL FITTINGS, VALVES, PIPE AND APPURTENANCES TO BE RESTRAINED VIA MECHANICAL RESTRAINTS OR INTERNAL JOINT RESTRAINTS PER DETAIL UG-9. THRUST BLOCKS TO BE FURNISH AND INSTALLED IN ADDITION TO MECHANICAL RESTRAINTS WHERE NOTED.
- REFER TO FDEP REQUIREMENTS AND TO AWWA CHAPTER C651-05 WHEN CONNECTING TO, AND DISINFECTING NEW AND EXISTING WATER MAINS. ALL FIRE HYDRANT ASSEMBLIES AND CONNECTING PIPES MUST BE INSPECTED, CLEANED, FLUSHED, AND DISINFECTED BEFORE THEY ARE CONNECTED TO THE NEWLY-INSTALLED PIPING. CLEARANCE MUST BE RECEIVED PRIOR TO TIE-ING TO EXISTING MAINS.
- CONTRACTOR TO COORDINATE WITH COUNTY PUBLIC WORKS DEPARTMENT AND FIRE MARSHALL WHEN TAKING FIRE HYDRANTS OFFLINE. CONTRACTOR MUST RECEIVE APPROVAL FROM THE FIRE MARSHALL PRIOR TO TAKING FIRE HYDRANTS OUT OF SERVICE.
- 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. PROVIDE ADEQUATE TRENCH SAFETY FOR TRENCH EXCAVATIONS, AND COMPLY WITH OSHA AND THE STATE OF FLORIDA TRENCH SAFETY REGULATIONS. THE COST OF DEWATERING SHALL BE INCLUDED IN THE PIPING PAY ITEMS.
- CONTRACTOR TO COORDINATE WITH FPL AND/OR OTHER POWER COMPANIES PRESENT WITHIN RIGHT-OF-WAY FOR POWER POLE STABILIZATION AND DE-ENERGIZING OF POWER LINES DURING CONSTRUCTION. CONTRACTOR TO SUPPORT POWER POLES AND OTHER UTILITIES DURING CONSTRUCTION.
- JACK AND BORE OF STEEL PIPE SHALL ALSO COMPLY WITH MANATEE COUNTY STANDARDS DETAIL UG-3.

- ARV(S) ARE SHOWN IN LOCATIONS BASED ON DESIGN PROFILE. ARV(S) ARE TO BE INSTALLED AT ALL HIGH POINTS CREATED DURING CONSTRUCTION. LOCATIONS TO BE APPROVED BY COUNTY PRIOR TO CONSTRUCTION OF ARV.
- THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, WATER AND SEWER LINES, STORM DRAINS, UTILITIES, DRIVEWAYS, SIDEWALKS, SIGNS, MAILBOXES, FENCES, TREES, LANDSCAPING, AND ANY OTHER IMPROVEMENT OR FACILITY IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DAMAGED ITEMS DUE TO CONSTRUCTION ACTIVITIES TO EQUAL OR BETTER THAN PRE-CONSTRUCTION CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.

SPECIAL CONDITIONS

- BENCH MARK DATUM IN NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
- CONSTRUCT HORIZONTAL AND VERTICAL TRANSITION OF PIPELINE BY DEFLECTION OF PIPE JOINTS USING NOT MORE THAN 75% OF THE MAXIMUM DEFLECTION RECOMMENED BY THE MANUFACTURER. SHOP DRAWINGS SHALL BE FURNISHED FOR APPROVAL OF ALL PIPE CONNECTIONS, TRANSITIONS, AND SPECIAL FITTINGS PRIOR TO FABRICATION OR DELIVERY TO JOB SITE.
- PROVIDE TEMPORARY THRUST RESTRAINT, BRACING, TESTING PLUGS, AND OTHER DEVICES NECESSARY TO SUCCESSFULLY COMPLETE PRESSURE TESTING OF PIPING SYSTEMS.
- ALL PROPOSED PIPE AND FITTINGS WITHIN PROJECT LIMITS SHALL BE RESTRAINED JOINT PER DETAIL UG-9. DUCTILE IRON PIPE AND FITTINGS ARE TO BE WRAPPED IN BLUE (WATER), PURPLE (RECLAIMED), OR GREEN (WASTERWATER) POLYETHYLENE WRAP IN ACCORDANCE WITH AWWA STANDARD C-105. POLYETHYLENE WRAP SHALL BE INCLUDED IN THE PRICE OF THE PIPE. EXISTING MAINS TO BE POST RESTRAINED PER DETAIL UG-9.
- ALL EXISTING WATER MAINS, WASTEWATER FORCE MAINS, AND RECLAIMED WATER MAINS IDENTIFIED TO BE REMOVED OR PLACED OUT OF SERVICE CANNOT BE REMOVED OR PLACED OUT OF SERVICE UNTIL PROPOSED FACILITIES HAVE BEEN CONSTRUCTED, TESTED, CLEARED, AND PLACED IN SERVICE.
- WATER, RECLAIMED, AND WASTEWATER SERVICE CONVEYANCE MUST BE MAINTAINED FOR ALL CUSTOMERS AT ALL TIMES, EXCEPT FOR MINOR DISRUPTIONS DURING CONNECTIONS/CHANGEOVERS. COORDINATE ALL SYSTEM SHUT DOWNS WITH COUNTY OPERATIONS STAFF AND AS REQUIRED IN THE SPECIFICATIONS.
- ALL UTILITY RELOCATION MUST BE IN PLACE, TESTED, CLEARED AND OPERATIONAL PRIOR TO ROADWAY CONSTRUCTION THAT IMPACTS EXISTING UTILITIES.
- PROPOSED PIPE SYMBOLOGY



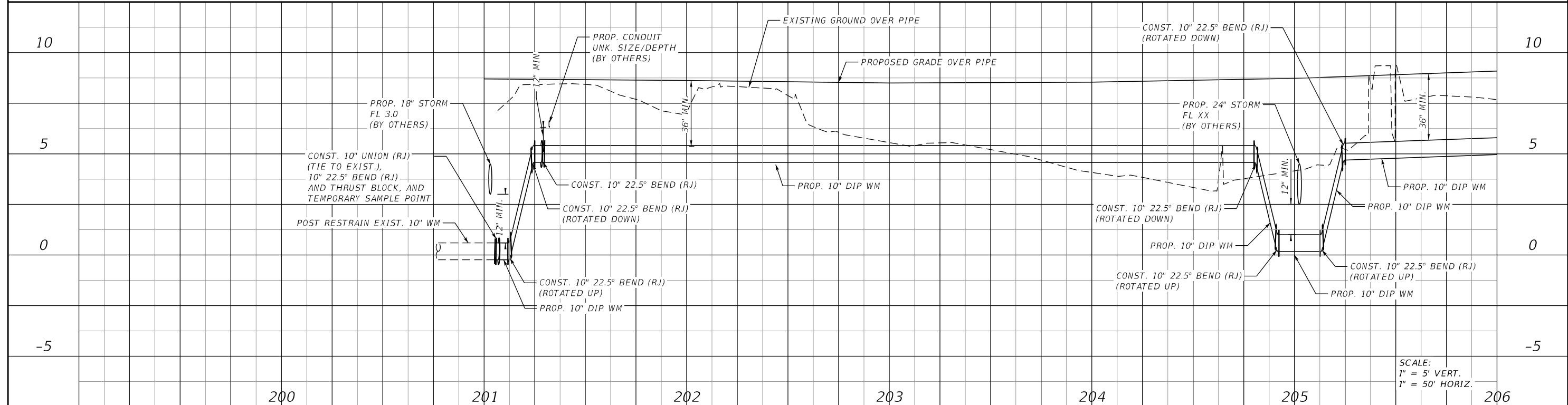
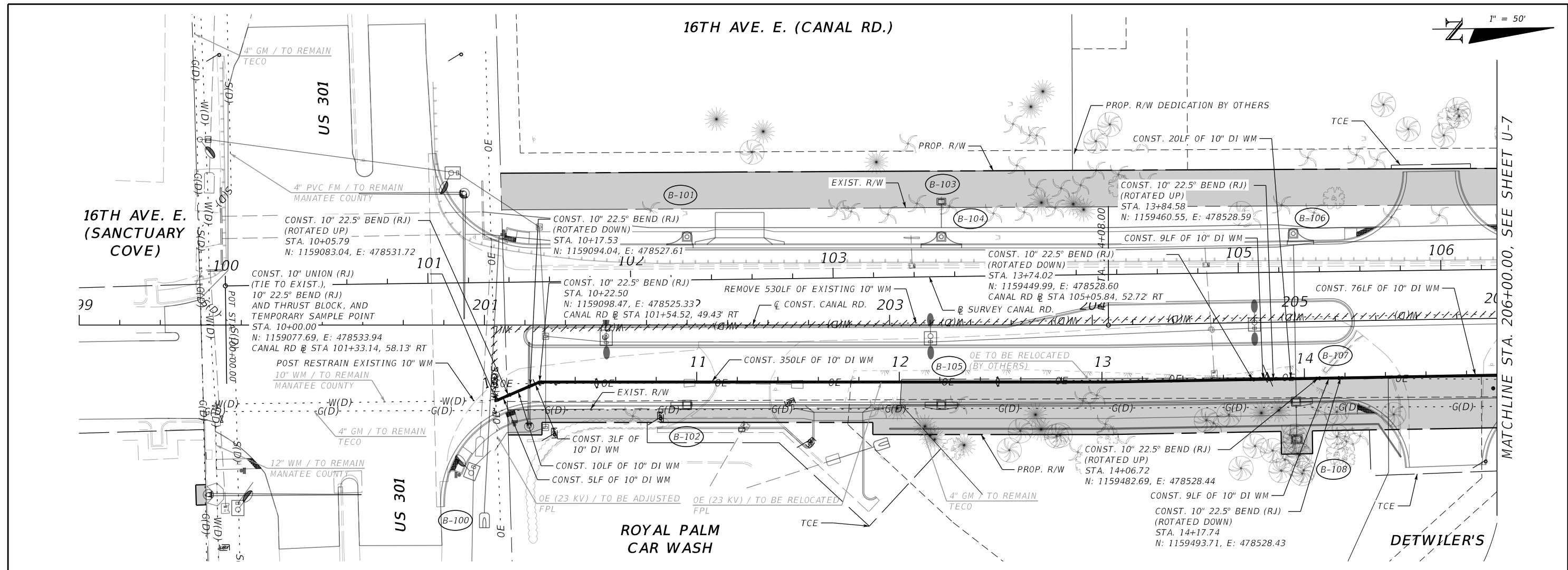
- IN THE EVENT OF A WATER OR SEWER MAIN BREAK, CALL 24 HOUR EMERGENCY NUMBER (941) 792-8811 EXT. 5216
- ALL CONCRETE SHOWN IN THESE DRAWINGS, UNLESS OTHERWISE NOTED, SHALL CONFORM TO CLASS NS CONCRETE.
- THESE CONTRACT DOCUMENTS INCLUDE BY REFERENCE THE MANATEE COUNTY PUBLIC WORKS UTILITY STANDARDS APPROVED FEBRUARY 2020.
- SUBMIT WATER MAIN BACTERIOLOGICAL SAMPLING PLAN FOR REVIEW. SAMPLE LOCATIONS INCLUDE, AT A MINIMUM, ALL POINTS OF CONNECTION TO EXISTING WATER MAIN. ALL TERMINAL ENDS AND MAXIMUM INTERVALS OF 1,200 FEET BETWEEN TWO SAMPLING LOCATIONS. SAMPLE POINT FURNISH AND INSTALLATION AND REMOVAL COST TO BE INCORPORATED INTO COST OF NEW MAINS. NOTE SAMPLE POINT CORPORATION STOP LOCATIONS ON AS-BUILTS. COST FOR SAMPLING PLAN(S) DEVELOPMENT TO BE INCORPORATED INTO COST OF POTABLE WATER MAIN.
- SUBMIT AND OBTAIN APPROVAL OF SHOP DRAWINGS, CONSTRUCTION SCHEDULE AND THE FOLLOWING PLANS PRIOR TO BEGINNING CONSTRUCTION (NOT LIMITED TO):
 - SHUTDOWN SCHEDULE AND PLAN TO INCLUDE BUT NOT LIMITED TO PIPE DEWATERING AND DISPOSAL PLANS; FOR WASTEWATER, POTABLE WATER, AND RECLAIMED WATER MAIN CONNECTION SCHEDULE FOR MAINS (INCLUDING LINSTOPS); WATER MAIN SAMPLING PLAN AND LOCATIONS FOR BACTRIOLOGICAL TESTING; PRESSURE TESTING SCHEDULE; LINSTOP LOCATIONS.
 - EROSION CONTROL AND STORMWATER POLLUTION PROTECTION PLANS TO BE COORDINATED WITH ROADWAY PROJECT.
 - COST FOR PLANS DEVELOPMENT TO BE INCORPORATED INTO COST OF PROPOSED MAINS.
- ALL CONCRETE THRUST BLOCKS INSTALLED FOR TESTING PROCESS SHALL BE REMOVED AND DISPOSED OF PRIOR TO FINAL ACCEPTANCE.
- ADJUST ALL VALVES (LIDS AND STEMS), ARVS, MANHOLE LIDS, VAULT ACCESS HATCHES, AND FIRE HYDRANTS WITHIN PROJECT LIMITS TO NEW/PROPOSED GRADE. COST TO BE INCORPORATED INTO INITIAL BID PRICE.

ABBREVIATIONS

AC	ASBESTOS CEMENT
ADJ.	ADJUST
APPROX.	APPROXIMATE
ARV	AIR RELEASE VALVE
BL	BASELINE
CI	CAST IRON
CL	CENTERLINE
CONST.	CONSTRUCT
DI	DUCTILE IRON
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
EL	ELEVATION
ELEV.	ELEVATION
EOP.	EDGE OF PAVEMENT
EXIST.	EXISTING
FH	FIRE HYDRANT
FL	FLOW LINE
FM	FORCE MAIN
GM	GAS MAIN
GR	GRADE
GS	GRAVITY SEWER
HDD	HORIZONTAL DIRECTIONAL DRILL
HDPE	HIGH DENSITY POLYETHYLENE
INV.	INVERT
LA	LIMITED ACCESS
LT	LEFT
MCU	MANATEE COUNTY UTILITIES
MIN	MINIMUM
NPW	NON-POTABLE WATER MAIN (RECLAIMED)
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
P.E.	POLYETHYLENE
P&F	PLUG AND FILL
PROP.	PROPOSED
PVC	POLYVINYL CHLORIDE
RWM	RECLAIMED WATER MAIN
R/W	RIGHT OF WAY
RJ	RESTRAINED JOINT
RT	RIGHT
SD	STORM DRAIN
STA.	STATION
TOP	TOP OF PIPE
TYP	TYPICAL
WM	WATER MAIN
W/	WITH
W/IN	WITH IN

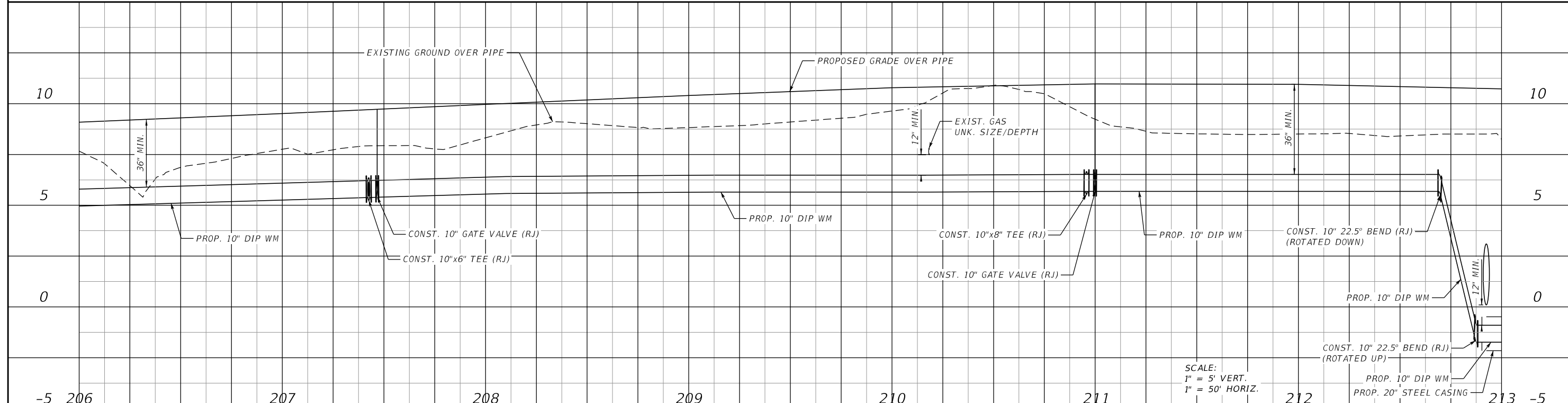
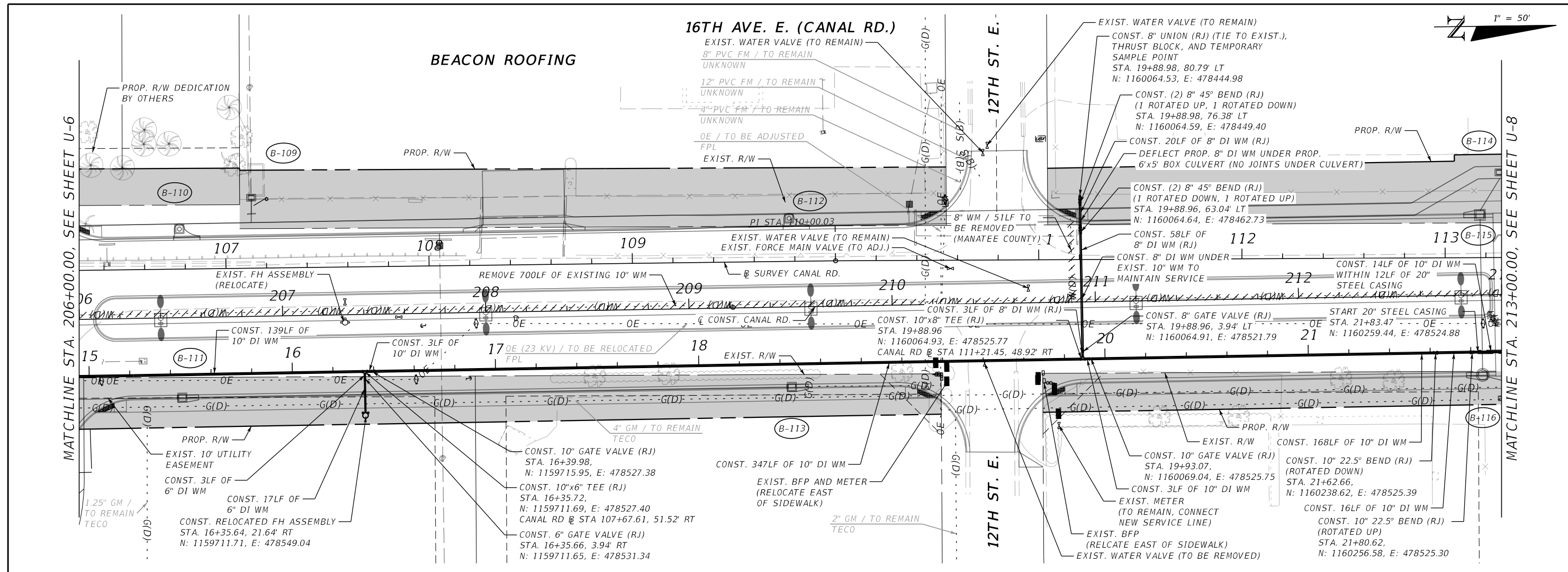
SCALE	AS NOTED	DESIGNED BY	HLM	DATE	12/2021	MANATEE COUNTY PUBLIC WORKS	DESIGN ENGINEER	HEATHER L. MANGANIELLO	GENERAL NOTES	SHEET NO.	U-5
DRAWN BY	JTT	CHECKED BY	HEH	PROJECT NO.	6094360		FL. LICENSE NO.	68385			
1	90% SUBMITTAL	12/2021	JTT								
No.	REVISIONS	DATE	BY								

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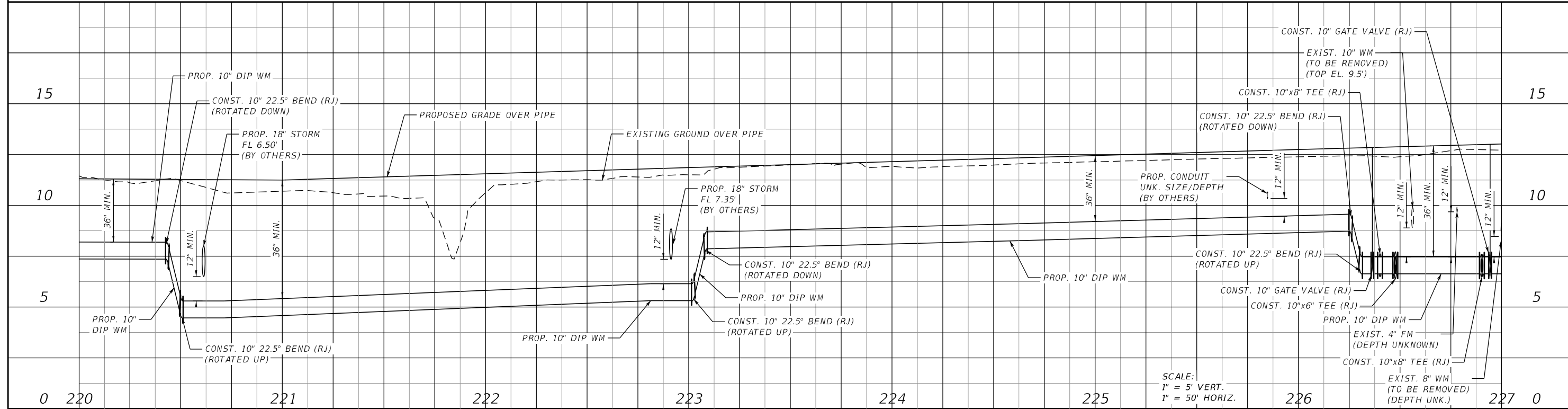
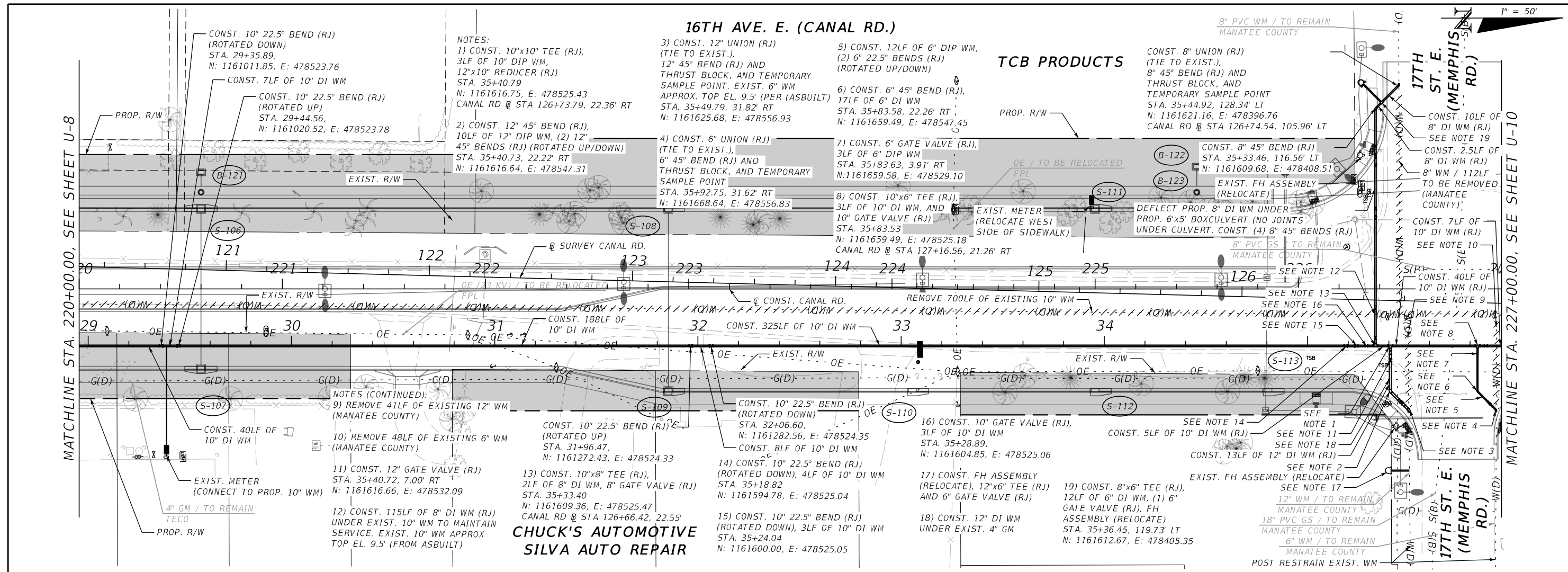
SCALE AS NOTED DESIGNED BY HLM DRAWN BY JTT CHECKED BY HEH		HDR Engineering, Inc. 2601 Cattlemen Road Suite 400 Sarasota, FL 34232-6233	DATE 8/2021	MANATEE COUNTY PUBLIC WORKS	DESIGN ENGINEER HEATHER L. MANGANIELLO FL. LICENSE NO. 68385	UTILITY RELOCATION PLANS (I)	SHEET NO. U-6
1 No.	90% SUBMITTAL REVISIONS		12/2021 DATE		PROJECT NO. 6094360		11:32:48 AM 12/8/2021

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SCALE AS NOTED		DESIGNED BY HLM		DRAWN BY JTT		CHECKED BY HEH			HDR Engineering, Inc. 2601 Cattlemen Road Suite 400 Sarasota, FL 34232-6233	DATE 8/2021		MANATEE COUNTY PUBLIC WORKS	DESIGN ENGINEER HEATHER L. MANGANIELLO FL. LICENSE NO. 68385	UTILITY RELOCATION PLANS (2)	SHEET NO. U-7
1	90% SUBMITTAL	12/2021	JTT	HEH	PROJECT NO. 6094360	11:33:09 AM 12/8/2021 PW:\3658\10001573\10131245\6.0_CAD_BIM\6.2_WIP\12345615201\utils\utaduw01.dgn									

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SCALE AS NOTED	
DESIGNED BY	HLM
DRAWN BY	JTT
CHECKED BY	HEH
1	90% SUBMITTAL
No.	REVISIONS
	DATE
	BY

HDR

HDR Engineering, Inc.
2601 Cattlemen Road
Suite 400
Sarasota, FL 34232-6233

DATE
8/2021

PROJECT NO.
6094360

11:33:46 AM

Manatee County

MANATEE COUNTY
PUBLIC WORKS

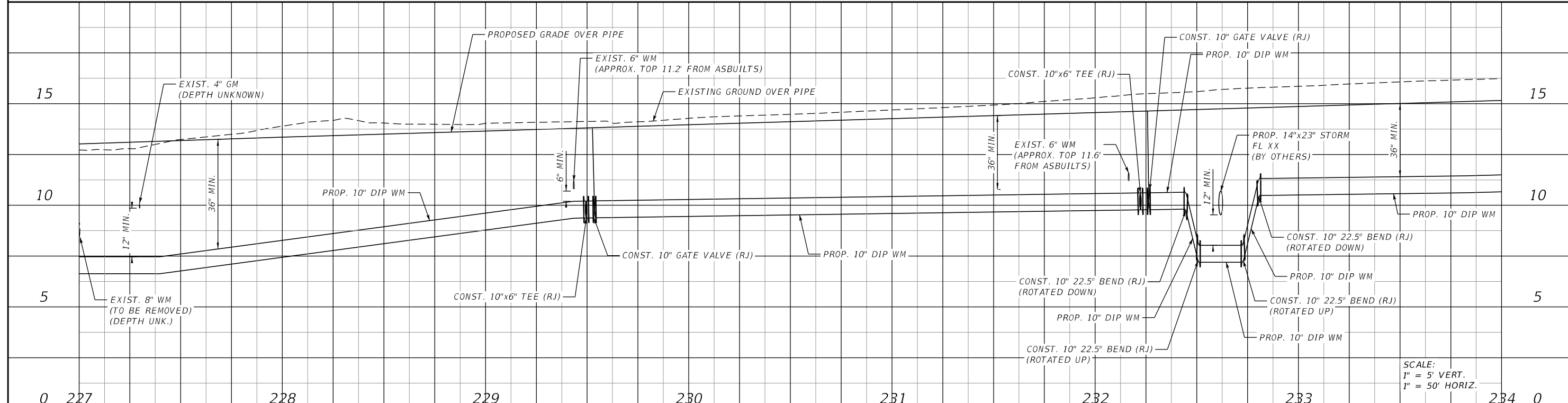
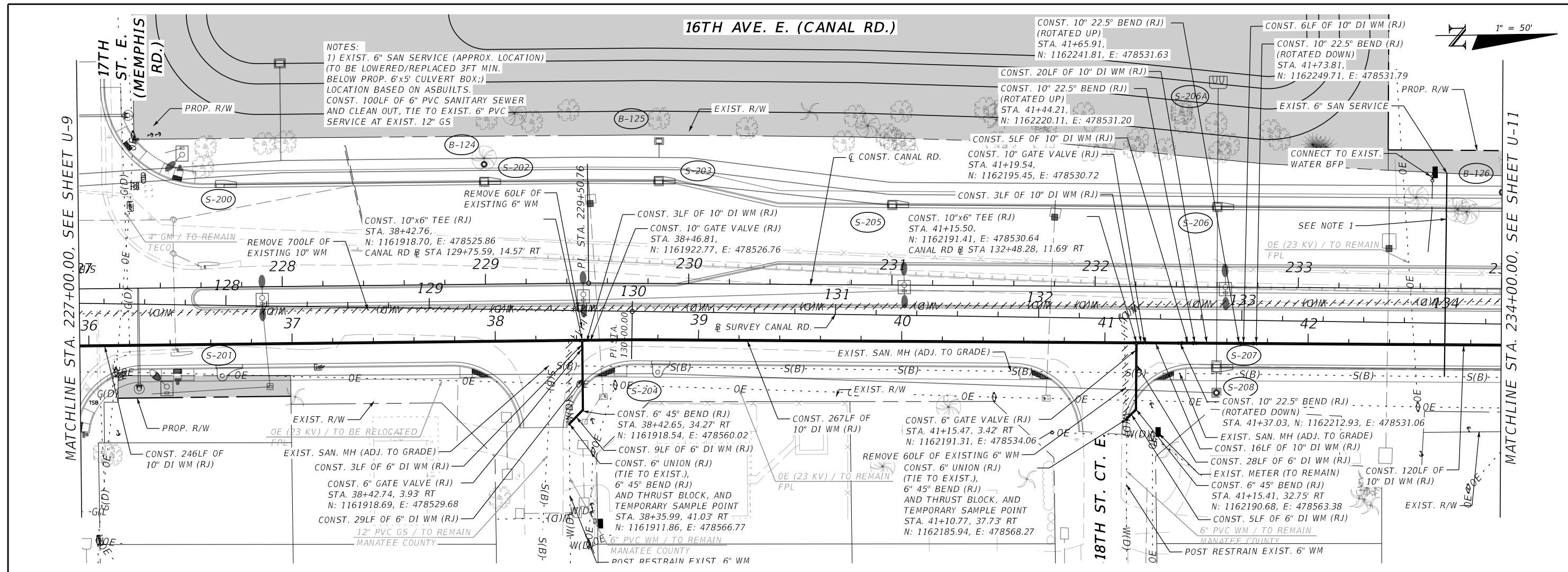
DESIGN ENGINEER
HEATHER L. MANGANIELLO

FL. LICENSE NO.
68385

**UTILITY RELOCATION
PLANS (4)**

SHEET NO.
U-9

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SCALE AS NOTED		DESIGNED BY HLM		DRAWN BY JTT		CHECKED BY HEH		DATE 8/2021		PROJECT NO. 6094360		DESIGN ENGINEER HEATHER L. MANGANIELLO FL. LICENSE NO. 68385		SHEET NO. U-10	
1 90% SUBMITTAL		12/2021		JTT		HEH		11:34:09 AM		12/8/2021		MANATEE COUNTY PUBLIC WORKS		UTILITY RELOCATION PLANS (5)	

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

- NOTES:
 1) REMOVE 46LF OF EXISTING 8" WM
 2) REMOVE 50LF OF EXISTING 8" WM
 3) CONST. 10" GATE VALVE (RJ)
 STA. 49+18.76,
 N: 1162981.58, E: 478576.94
 4) CONST. 3LF OF 10" DI WM

- 5) CONST. 10"x8" TEE (RJ),
 3LF OF 8" DI WM
 STA. 49+14.75,
 N: 1162977.58, E: 478576.97
 CANAL RD @ STA 140+34.39, 37.04' RT
 6) CONST. 8" 45° BEND (RJ),
 3LF OF 8" DI WM
 STA. 49+14.76, 3.46' RT
 N: 1162977.58, E: 478580.43
 7) CONST. 8" GATE VALVE (RJ),
 3LF OF 8" DI WM
 STA. 49+16.75, 5.51' RT
 N: 1162979.58, E: 478582.49
 SEE NOTE 17

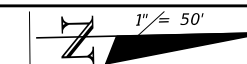
- CONST. 10"x8" TEE (RJ)
 STA. 46+50.95,
 N: 1162726.75, E: 478541.56
 CANAL RD @ STA 137+83.65, 7.34' RT
 CONST. 10"x8" TEE (RJ)
 STA. 46+50.95,
 N: 1162726.75, E: 478541.56
 CANAL RD @ STA 137+83.65, 7.34' RT

16TH AVE. E. (CANAL RD.)

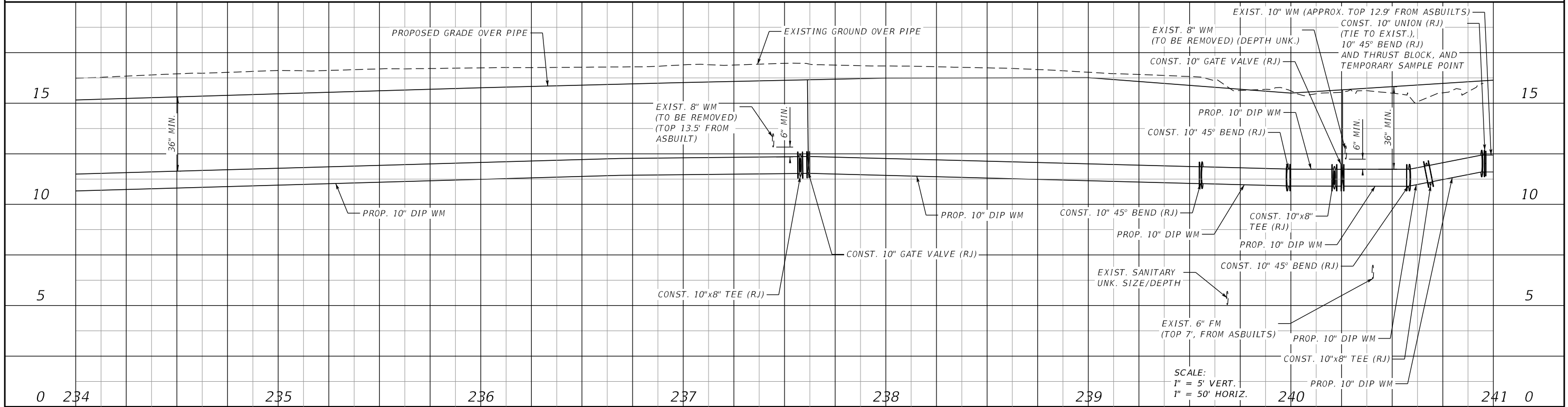
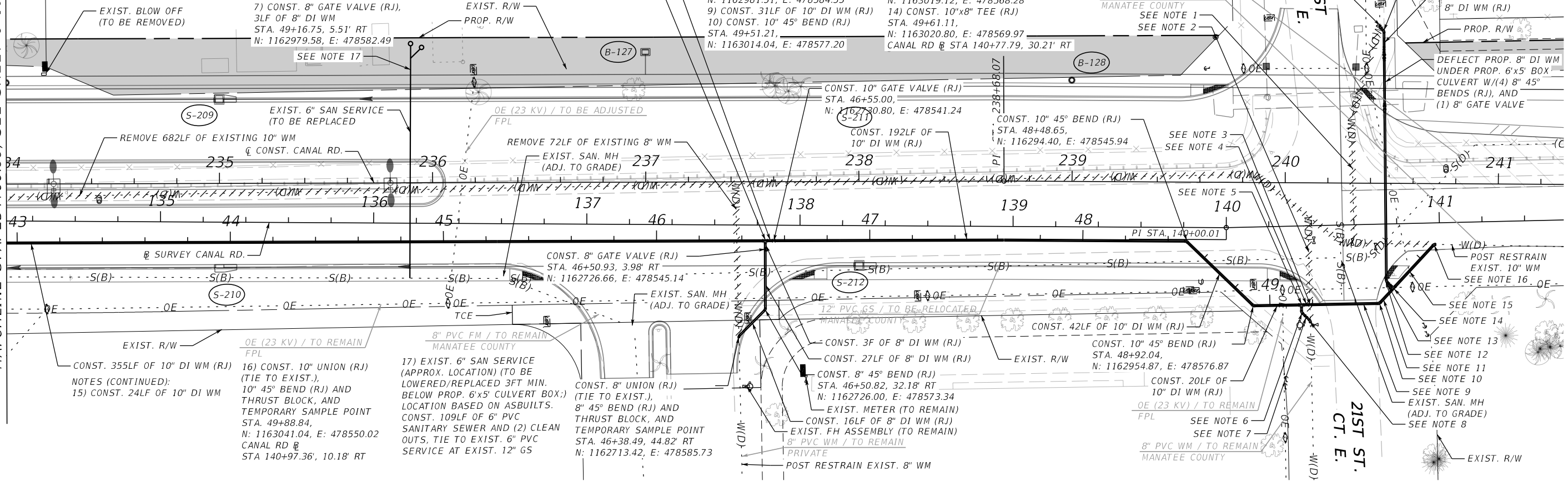
- 8) CONST. 8" UNION (RJ)
 (TIE TO EXIST.),
 8" 45° BEND (RJ) AND
 THRUST BLOCK, AND
 TEMPORARY SAMPLE POINT
 STA. 49+18.73, 7.56' RT
 N: 1162981.51, E: 478584.55
 9) CONST. 31LF OF 10" DI WM (RJ)
 10) CONST. 10" 45° BEND (RJ)
 STA. 49+51.21,
 N: 1163014.04, E: 478577.20

- 11) CONST. 8LF OF 10" DI WM
 12) CONST. 8" 45° BEND (RJ),
 3LF OF 8" DI WM
 STA. 49+61.25, 4.52' LT
 N: 1163017.78, E: 478566.78
 13) CONST. 8" GATE VALVE (RJ),
 3LF OF 8" DIP WM
 STA. 49+61.15, 2.56' LT
 N: 1163019.12, E: 478568.28
 14) CONST. 10"x8" TEE (RJ)
 STA. 49+61.11,
 N: 1163020.80, E: 478569.97
 CANAL RD @ STA 140+77.79, 30.21' RT

- CONST. 8" UNION (RJ)
 (TIE TO EXIST.), CONST.
 8" 45° BEND (RJ) AND
 THRUST BLOCK, AND
 TEMPORARY SAMPLE POINT
 CANAL RD @ STA 140+74.22, 93.19' LT
 6" PVC FM / TO REMAIN
 MANATEE COUNTY
 10" DIP WM / TO REMAIN
 MANATEE COUNTY
 SEE NOTE 1
 SEE NOTE 2



MATCHLINE STA. 234+00.00, SEE SHEET U-10



SCALE AS NOTED	
DESIGNED BY	HLM
DRAWN BY	JTT
CHECKED BY	HEH
1	90% SUBMITTAL
No.	REVISIONS
	DATE
	BY

HDR
 HDR Engineering, Inc.
 2601 Cattleman Road
 Suite 400
 Sarasota, FL 34232-6233

DATE
 8/2021
 PROJECT NO.
 6094360
 9:59:24 AM

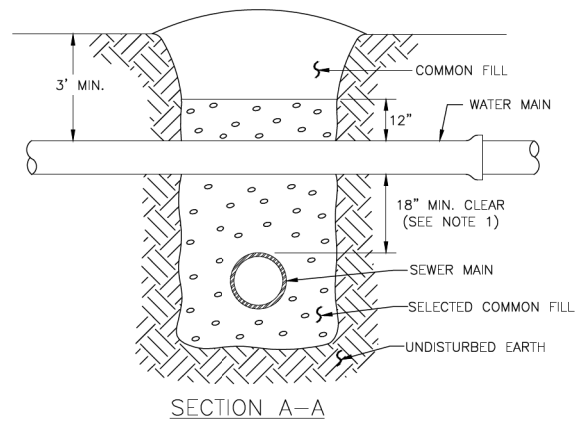
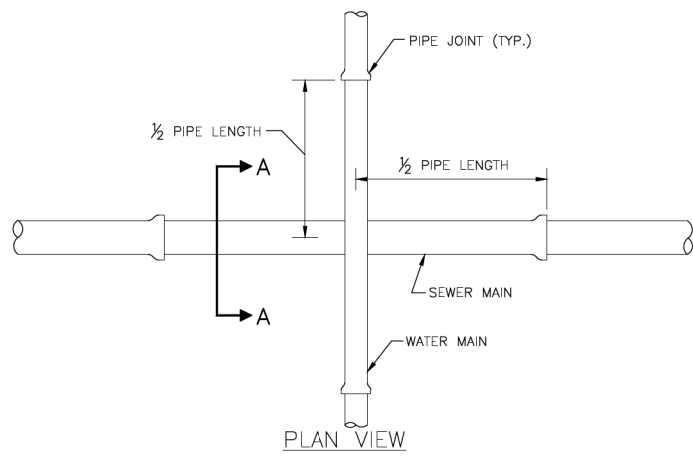
Manatee County
 MANATEE COUNTY
 PUBLIC WORKS

DESIGN ENGINEER
 HEATHER L. MANGANIELLO
 FL. LICENSE NO.
 68385

**UTILITY RELOCATION
 PLANS (6)**

SHEET NO.
 U-11

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

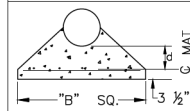


NOTES:

- CLEARANCE MAY BE REDUCED TO 6" FOR GRAVITY SEWER WHERE WATER MAIN IS DUCTILE IRON OR 3" FOR FORCE MAIN WHERE FORCE MAIN IS ENCASED A MINIMUM OF 10' EACH SIDE OF CROSSING.
- WHERE NO ENCASEMENT IS REQUIRED, PIPE SECTIONS SHALL BE FULL-LENGTH AND SHALL BE ADJUSTED HORIZONTALLY SO THAT THE CROSSING IS AT EACH PIPE SECTION'S MIDPOINT REGARDLESS OF THE VERTICAL CLEARANCE.
- REFER TO THE JACK & BORE CROSSING DETAIL FOR CASING AND SPACER REQUIREMENTS.

TYPICAL NEW WATER & SEWER LINE CROSSING UG-2

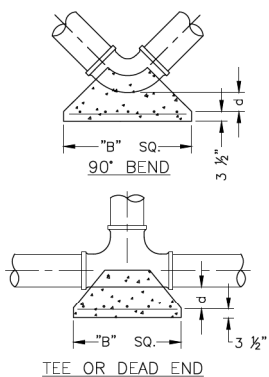
PIPE SIZE (IN.)	THRUST BLOCK DIMENSIONS B ft. x d inches											
	90° BEND		45° BEND		22.5° BEND		11.25° BEND		DEAD END & TEE		45° WYE	
	B	d	B	d	B	d	B	d	B	d	B	d
4	1.5	3 1/2	1.1	3 1/2	0.8	3 1/2	0.6	3 1/2	1.3	3 1/2	1.1	3 1/2
6	2.2	5 1/4	1.6	3 3/4	1.2	3 1/2	0.8	3 1/2	1.9	4 1/2	1.6	3 3/4
8	2.9	7	2.1	5	1.5	3 1/2	1.1	3 1/2	2.4	5 3/4	2.0	4 3/4
10	3.5	8 1/2	2.6	6 1/4	1.9	4 1/2	1.3	3 1/2	3.0	7 1/4	2.5	6
12	4.2	10	3.1	7 1/2	2.2	5 1/4	1.6	3 3/4	3.5	8 1/4	3.0	7 1/4
14	4.9	11 3/4	3.6	8 3/4	2.6	6 1/4	1.8	4 1/4	4.1	9 1/4	3.4	8 1/4
16	5.5	13 1/4	4.1	9 3/4	2.9	7	2.1	5	4.7	11 1/4	3.9	9 1/4
18	6.2	15	4.6	11	3.3	8	2.3	5 1/2	5.2	12 1/2	4.4	10 1/2
20	6.9	16 1/2	5.0	12	3.6	8 3/4	2.6	6 1/4	5.8	14	4.9	11 3/4
24	8.2	19 3/4	6.0	14 1/2	4.3	10 1/4	3.1	7 1/2	6.9	16 1/2	5.8	14
30	10.1	24 1/4	7.5	18	5.3	12 3/4	3.8	9	8.5	20 1/2	7.2	17 1/4
36	12.1	29	8.9	21 1/4	6.4	15 1/4	4.5	10 3/4	10.2	24 1/2	8.6	20 3/4



FOR DIM. "B" BETWEEN 5.75' & 12.5' USE #4 @ 8" EACH WAY
 FOR DIM. "B" LESS THAN 5.75' USE #3 @ 8" EACH WAY

NOTES:

- ALL THRUST BLOCKS SHALL BE CAST IN PLACE. FITTINGS ADJACENT TO THRUST BLOCKS SHALL BE WRAPPED IN POLYETHYLENE.
- 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.
- 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.
- 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.
- THRUST BLOCKS ARE ONLY TO BE USED IN THE FOOT RIGHT OF WAY WHEN IT IS NOT POSSIBLE TO RESTRAIN PIPE JOINTS OR IF THERE IS INSUFFICIENT LENGTH OF RESTRAINED PIPE TO RESTRAIN THRUST.



CONCRETE THRUST BLOCKS UG-7

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	X20	X16	X12	X10	X8	X6	X4		
24	90	38	18	169	132	90	38	6	64	117	158	214	
20	78	32	16	141	101	53	24	1	65	115	149	184	
16	66	27	13	111	67	41	12		64	107	111	151	
12	52	22	10	80	56	31	1		58	86	86	118	
10	44	18	9	63	40	7			58	61	81	100	
8	37	15	7	49	18	1			35	60		83	
6	29	12	6	29	1				33			63	
4	21	8	4	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 RESTRAINED LENGTHS FOR PIPE.

RESTRAINED LENGTHS FOR PVC PIPE UG-8

SCALE	AS NOTED
DESIGNED BY	HLM
DRAWN BY	JTT
CHECKED BY	HEH
REVISIONS	DATE BY
1	90% SUBMITTAL 12/2021 JTT
No.	DATE BY



HDR Engineering, Inc.
 2601 Cattlemen Road
 Suite 400
 Sarasota, FL 34232-6233

DATE

12/2021

PROJECT NO.

6094360



MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER

HEATHER L. MANGANIELLO

FL. LICENSE NO.

68385

UTILITY DETAILS
 (1 OF 7)

SHEET NO.

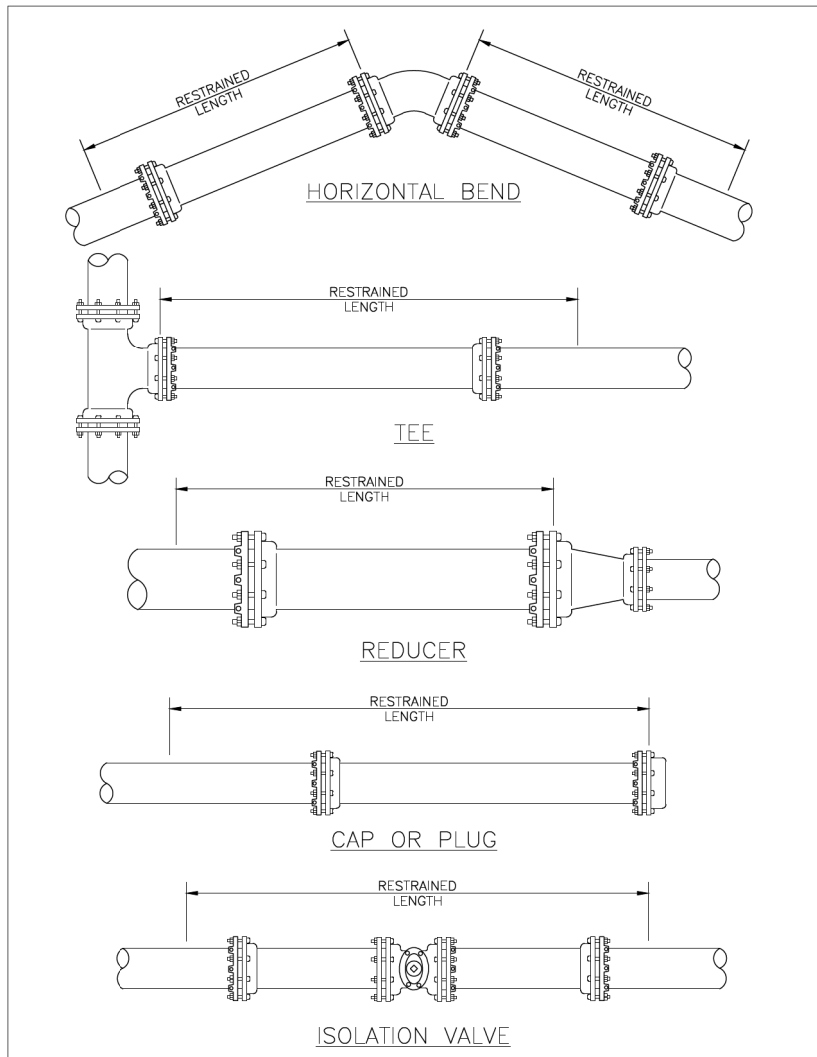
U-12

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

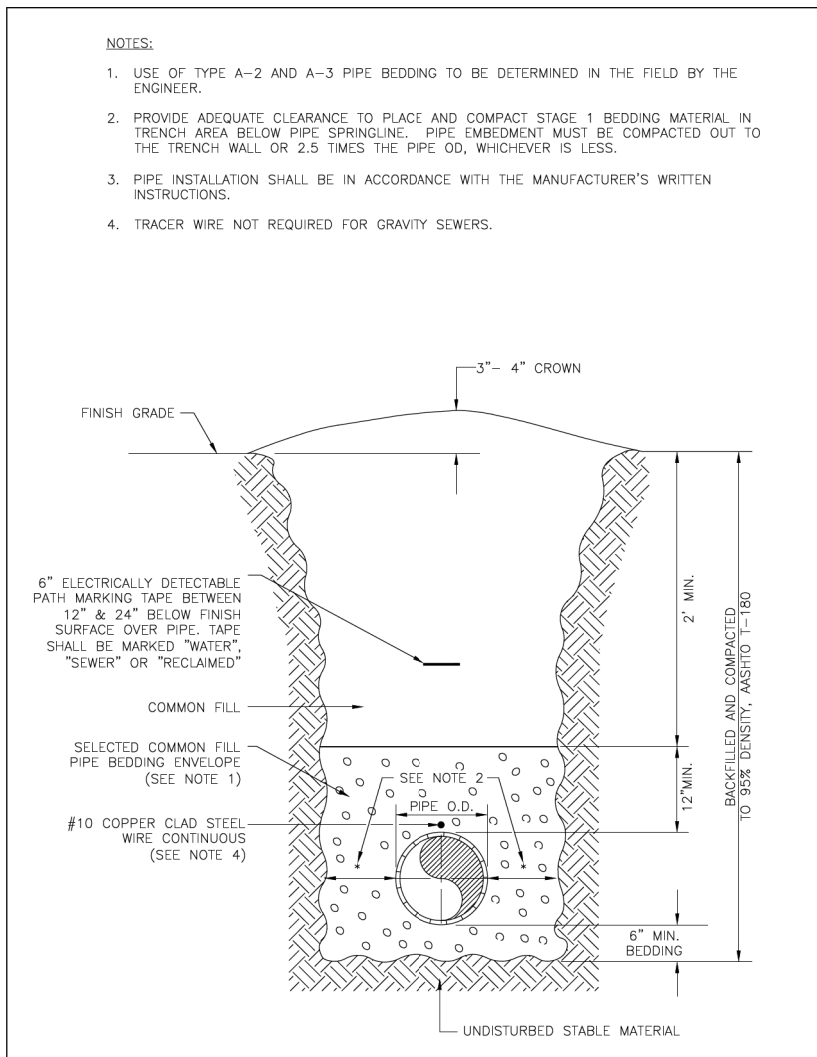
MAIN PIPE SIZE	HORIZ. BENDS			TEES								REDUCERS				PLUGS & VALVES
	90°	45°	22.5°	SIZE				LENGTH				SIZE		LENGTH		
36	142	59	28	x36	x30	x24	x20	x16	x12	x30	x24	x20	x16	453		
30	124	51	25	x30	x24	x20	x16	x12	x10	x24	x20	x16	391			
24	106	44	21	x24	x20	x16	x12	x10	x8	x20	x16	x12	327			
20	92	38	18	x20	x16	x12	x10	x8	x6	x16	x12	x10	280			
16	77	32	15	x16	x12	x10	x8	x6	x4	x12	x10	x8	231			
12	61	25	12	x12	x10	x8	x6	x4	x3	x10	x8	x6	181			
10	52	22	10	x10	x8	x6	x4	x3	x2	x8	x6	x4	153			
8	44	18	9	x8	x6	x4	x3	x2	x1	x6	x4	x2	128			
6	34	14	7	x6	x4	x3	x2	x1	x0	x4	x3	x2	98			
4	24	10	5	x4	x3	x2	x1	x0	x0	x2	x1	x0	69			

NOTE:
1. 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		



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



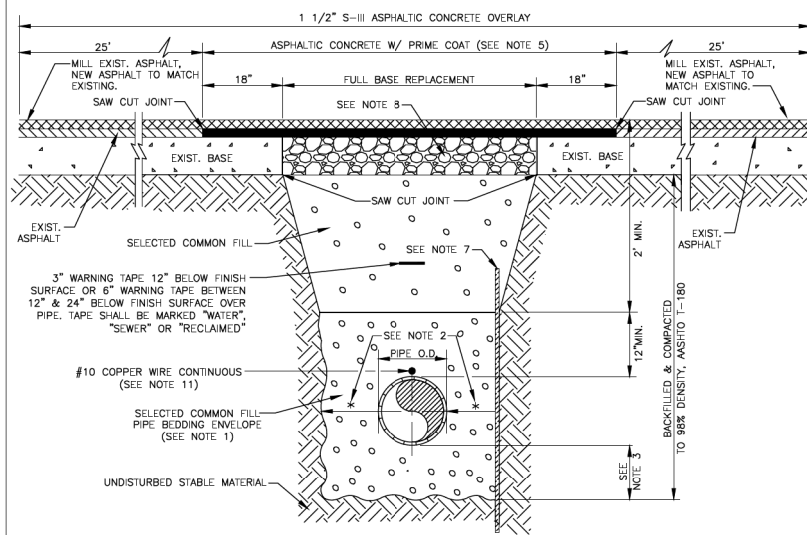
MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH UNIMPROVED SURFACE TYPE A-1 PIPE BEDDING	UG-11
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

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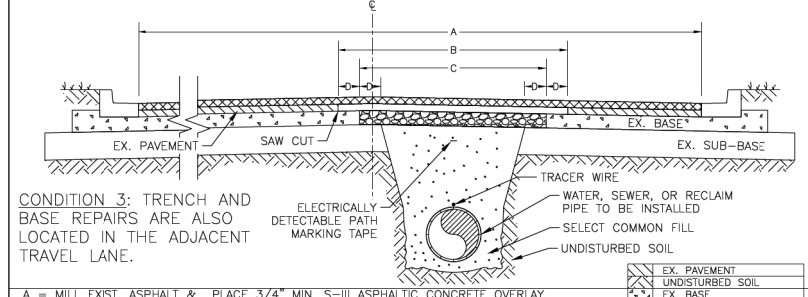
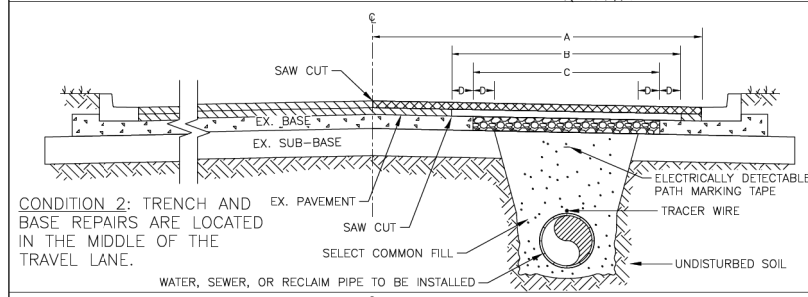
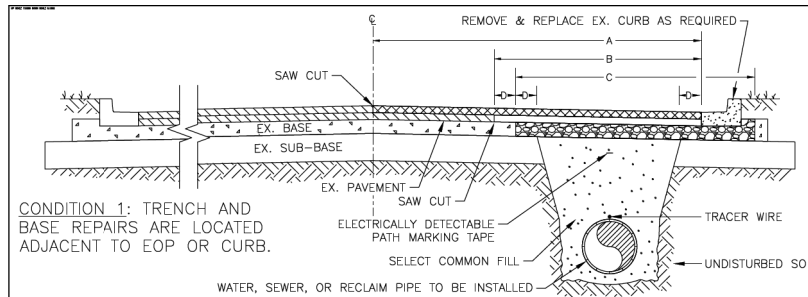
SCALE	AS NOTED	DATE	12/2021	DESIGN ENGINEER	HEATHER L. MANGANIELLO	UTILITY DETAILS (2 OF 7)	SHEET NO. U-13
DESIGNED BY	HLM	PROJECT NO.	6094360	FL. LICENSE NO.	68385		
DRAWN BY	JTT	HDR Engineering, Inc. 2601 Cattlemen Road Suite 400 Sarasota, FL 34232-6233		MANATEE COUNTY PUBLIC WORKS			
CHECKED BY	HEH	12/2021		DATE			
REVISIONS	1	90% SUBMITTAL		DATE			

NOTES:

- USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 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.
- TYPICALLY 4" TO 6".
- PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- ASPHALTIC CONCRETE STRUCTURE COURSE WITH PRIME COAT SHALL BE THE SAME DEPTH AND TYPE AS EXISTING OR A MINIMUM OF 1 1/4 INCH, WHICHEVER IS GREATER.
- MILL 25' BACK FROM TRENCH SAW CUT. ADJUST MILLING PER INDIVIDUAL SITE TO NOT IMPACT BASE. BUTT JOINT TO EXIST ASPHALT. FINAL OVERLAY LIMITS ARE FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT. 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.
- SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.
- BASE SHALL BE 8" MINIMUM THICKNESS CRUSHED CONCRETE.
- TEMPORARY PATCHES WILL BE INSTALLED TO PROVIDE A SMOOTH ALL WEATHER SURFACE AT ALL TIMES. PERMANENT REPLACEMENT TO BE MADE AS SOON AS POSSIBLE.
- RESTORE SIGNAGE & MARKING WITH THERMOPLASTIC PER FDOT STANDARDS, LATEST EDITION.
- TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.
- NOTES 5, THRU 10, ARE MINIMUM REQUIREMENTS FOR A TRENCH IN A 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	UG-12
REV. BY WRT/KE	DATE 03/11	MAY 10, 2011 DATE OF APPROVAL	PAGE 112

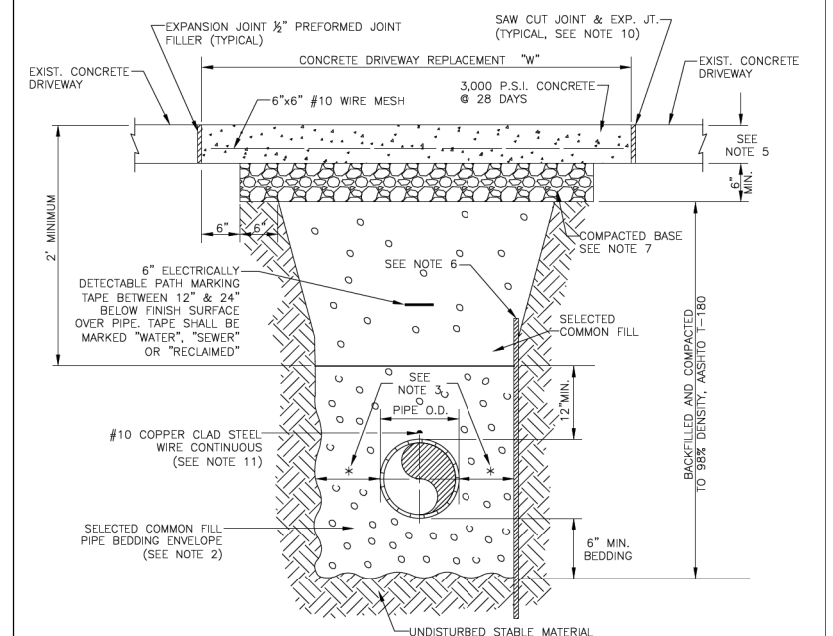


- A = MILL EXIST. ASPHALT & PLACE 3/4" MIN. S-III ASPHALTIC CONCRETE OVERLAY.
 B = 1-1/4" MIN. S-I ASPHALTIC CONCRETE W/ PRIME COAT.
 C = FULL BASE REPLACEMENT.
 D = 9 INCHES
- NOTE:**
- THIS DETAIL IS BASED ON A TWO-LANE ROADWAY AND SHALL BE FOLLOWED WHEN A PIPE IS INSTALLED WITHIN THE LIMITS OF A ROADWAY 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.
 - 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.
 - 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	

NOTES:

- CONCRETE PAVEMENT SHALL BE REMOVED WITH SAWEED EDGES AND CUT AT A MINIMUM DEPTH OF ONE AND ONE-HALF (1-1/2"). IF A SAW CUT IN CONCRETE PAVEMENT FALLS WITHIN THREE FEET (3') OF A CONTRACTION JOINT, COLD JOINT, EXPANSION JOINT OR EDGE, THE CONCRETE SHALL BE REMOVED TO THE JOINT OR EDGE. THE EDGES OF EXISTING CONCRETE PAVEMENT ADJACENT TO TRENCHES, WHICH HAD BEEN DAMAGED SUBSEQUENT TO SAW CUTTING OF PAVEMENT, SHALL BE SAW CUT TO NEAT STRAIGHT LINES FOR THE PURPOSE OF REMOVING THE DAMAGED PAVEMENT AREAS.
- USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 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.
- PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- THICKNESS TO MATCH EXISTING OR BE 6" MINIMUM, WHICHEVER IS GREATER.
- SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISH GRADE OR 12" BELOW SUBGRADE.
- BASE SHALL BE COMPACTED 6" MINIMUM THICKNESS OF APPROVED MATERIAL.
- DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST ADOPTED CONSTRUCTION STANDARDS OF THE MANATEE COUNTY TRANSPORTATION DEPARTMENT.
- IF THE DRIVEWAY IS 12' OR WIDER, SAWCUT AN EXPANSION JOINT ALONG THE CENTER OF THE DRIVEWAY (3/16" WIDE AND 1/2" DEEP) AFTER THE CONCRETE HAS SET.
- IF THERE IS AN EXISTING EXPANSION JOINT WITHIN 3' OF THE PROPOSED JOINT, EXTEND DRIVEWAY REPLACEMENT TO THE EXISTING JOINT.
- TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH CONCRETE DRIVEWAY SURFACE TYPE A-1 PIPE BEDDING	UG-14
REV. BY	DATE	February 25, 2020 DATE OF APPROVAL	

SCALE	AS NOTED
DESIGNED BY	HLM
DRAWN BY	JTT
CHECKED BY	HEH
DATE	12/2021
BY	JTT
REVISIONS	
No.	1
	90% SUBMITTAL
	12/2021
	DATE
	BY

HDR Engineering, Inc.
 2601 Cattleman Road
 Suite 400
 Sarasota, FL 34232-6233

DATE	12/2021
PROJECT NO.	6094360

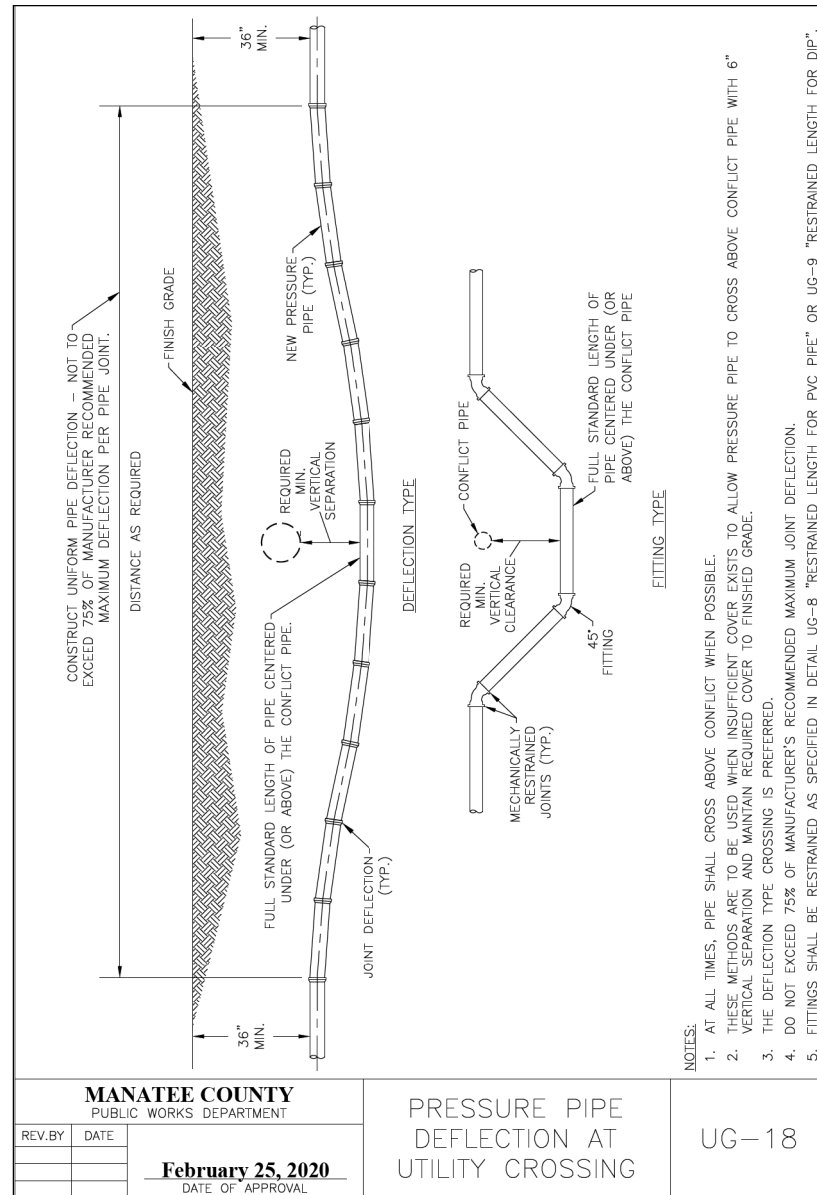
Manatee County
 FLORIDA
MANATEE COUNTY
 PUBLIC WORKS

DESIGN ENGINEER	HEATHER L. MANGANIELLO
FL. LICENSE NO.	68385

UTILITY DETAILS
 (3 OF 7)

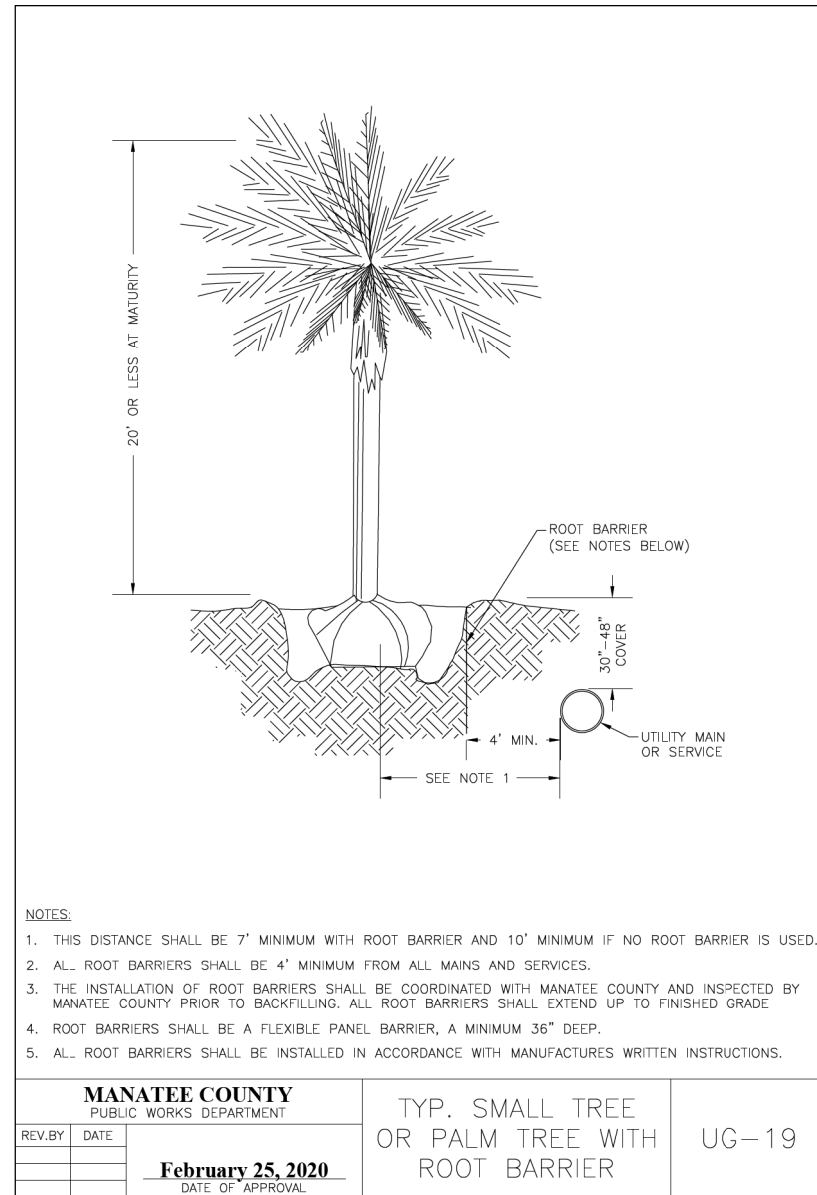
SHEET NO.	U-14
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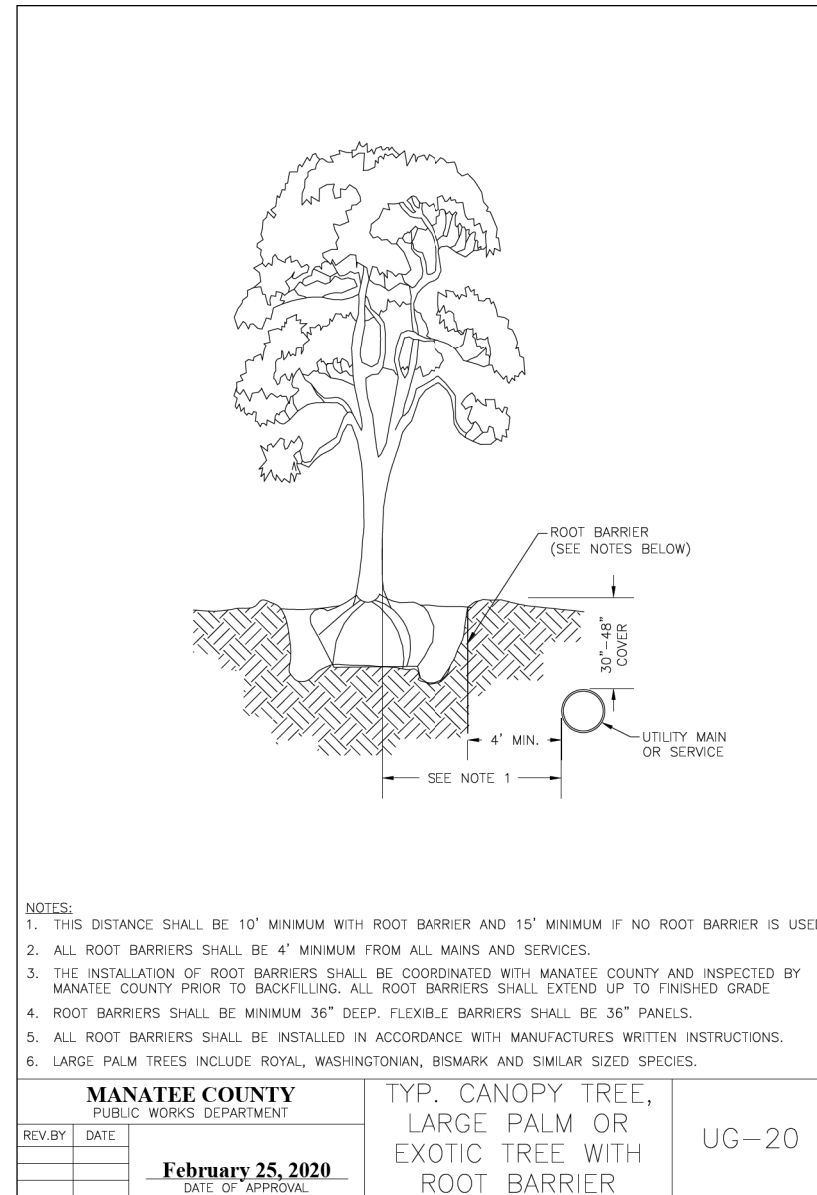
- NOTES:**
1. AT ALL TIMES, PIPE SHALL CROSS ABOVE CONFLICT WHEN POSSIBLE.
 2. THESE METHODS ARE TO BE USED WHEN INSUFFICIENT COVER EXISTS TO ALLOW PRESSURE PIPE TO CROSS ABOVE CONFLICT PIPE WITH 6" VERTICAL SEPARATION AND MAINTAIN REQUIRED COVER TO FINISHED GRADE.
 3. THE DEFLECTION TYPE CROSSING IS PREFERRED.
 4. DO NOT EXCEED 75% OF MANUFACTURER'S RECOMMENDED MAXIMUM JOINT DEFLECTION.
 5. FITTINGS SHALL BE RESTRAINED AS SPECIFIED IN DETAIL UG-8 "RESTRAINED LENGTH FOR PVC PIPE" OR UG-9 "RESTRAINED LENGTH FOR DIP".

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		PRESSURE PIPE DEFLECTION AT UTILITY CROSSING	UG-18
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		



- NOTES:**
1. THIS DISTANCE SHALL BE 7' MINIMUM WITH ROOT BARRIER AND 10' MINIMUM IF NO ROOT BARRIER IS USED.
 2. ALL ROOT BARRIERS SHALL BE 4' MINIMUM FROM ALL MAINS AND SERVICES.
 3. THE INSTALLATION OF ROOT BARRIERS SHALL BE COORDINATED WITH MANATEE COUNTY AND INSPECTED BY MANATEE COUNTY PRIOR TO BACKFILLING. ALL ROOT BARRIERS SHALL EXTEND UP TO FINISHED GRADE.
 4. ROOT BARRIERS SHALL BE A FLEXIBLE PANEL BARRIER, A MINIMUM 36" DEEP.
 5. ALL ROOT BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

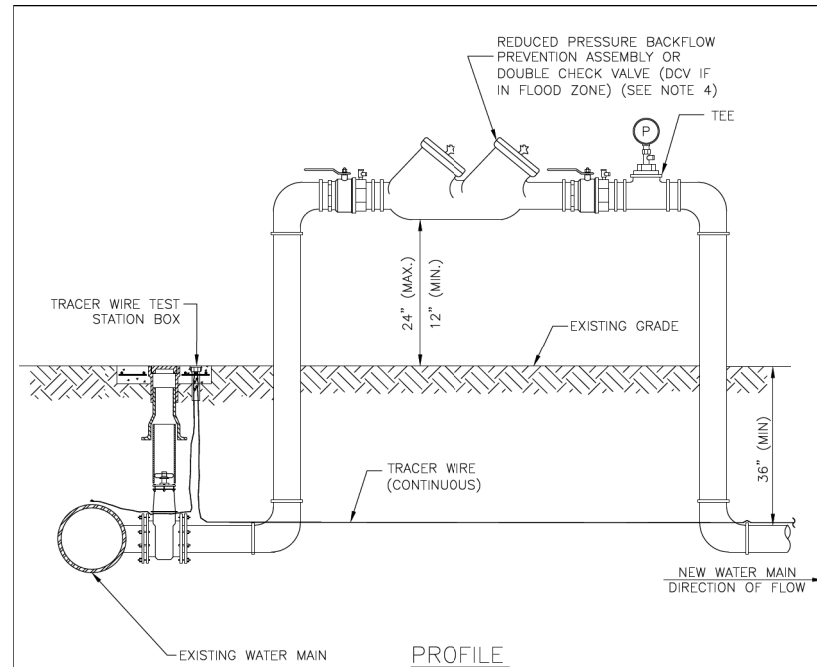
MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TYP. SMALL TREE OR PALM TREE WITH ROOT BARRIER	UG-19
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		



- NOTES:**
1. THIS DISTANCE SHALL BE 10' MINIMUM WITH ROOT BARRIER AND 15' MINIMUM IF NO ROOT BARRIER IS USED.
 2. ALL ROOT BARRIERS SHALL BE 4' MINIMUM FROM ALL MAINS AND SERVICES.
 3. THE INSTALLATION OF ROOT BARRIERS SHALL BE COORDINATED WITH MANATEE COUNTY AND INSPECTED BY MANATEE COUNTY PRIOR TO BACKFILLING. ALL ROOT BARRIERS SHALL EXTEND UP TO FINISHED GRADE.
 4. ROOT BARRIERS SHALL BE MINIMUM 36" DEEP. FLEXIBLE BARRIERS SHALL BE 36" PANELS.
 5. ALL ROOT BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
 6. LARGE PALM TREES INCLUDE ROYAL, WASHINGTONIAN, BISMARCK AND SIMILAR SIZED SPECIES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TYP. CANOPY TREE, LARGE PALM OR EXOTIC TREE WITH ROOT BARRIER	UG-20
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

SCALE	AS NOTED		HDR Engineering, Inc. 2601 Cattlemen Road Suite 400 Sarasota, FL 34232-6233	DATE	12/2021		MANATEE COUNTY PUBLIC WORKS	DESIGN ENGINEER	HEATHER L. MANGANIELLO	UTILITY DETAILS (4 OF 7)	SHEET NO.	U-15
DESIGNED BY	HLM			PROJECT NO.	6094360			FL. LICENSE NO.	68385			
DRAWN BY	JTT											
CHECKED BY	HEH											
1	90% SUBMITTAL	12/2021	JTT									
No.	REVISIONS	DATE	BY									



- NOTES:**
- FOR TIE-IN VALVE, SEE DETAIL UW-3 FOR TAPPING SLEEVE VALVE AND UW-2 FOR GATE VALVE.
 - CORPORATION STOP CONNECTIONS TO WATER MAINS SHALL BE AT A SUFFICIENT DISTANCE FROM NEW TAPPING SLEEVE & VALVE (TIE-IN VALVE). ALL CORPORATION STOP TAPS SHALL BE PLACED NO CLOSER THAN 30" OR A DISTANCE EQUAL TO (1) MAIN PIPE DIAMETER PLUS (2) TAP DIAMETERS (WHICHEVER IS LARGER) FROM THE NEW TIE-IN VALVE (TAPPING VALVE & SLEEVE). SIZE-ON-SIZE TAPS ARE NOT ALLOWED. A CUT-IN TEE SHALL BE USED.
 - IF THE EXISTING WATER MAIN IS LOCATED UNDER PAVEMENT OR CLOSE TO THE ROADWAY, BOTH JUMPER CORPORATION STOPS MAY CONNECT TO THE NEW WATER MAIN LOCATED OUTSIDE OF THE PAVEMENT. AN ADDITIONAL GATE VALVE SHALL BE INSTALLED AND THE VALVE MAY BE LOCATED AT THE ROW LINE. PIPING AND APPURTENANCES BETWEEN THE EXISTING MAIN AND ISOLATION VALVE AND JUMPER SHALL BE DISINFECTED BY SPRAYING OR SWABBING.
 - BACKFLOW PREVENTION ASSEMBLY SHALL BE STRUCTURALLY SUPPORTED.
 - SEE DETAIL UW-24 FOR ADDITIONAL JUMPER CONNECTION NOTES.


MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TEMPORARY JUMPER CONNECTION - NO HYDRANT AVAILABLE	UW-23B
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

- A 2-INCH MINIMUM TEMPORARY JUMPER CONNECTION IS REQUIRED AT ALL CONNECTIONS BETWEEN EXISTING ACTIVE POTABLE WATER MAINS AND PROPOSED NEW WATER MAIN IMPROVEMENTS WITH THE FOLLOWING EXCEPTIONS:
 - PROJECTS THAT INCLUDE A PERMANENT BACKFLOW PREVENTER AT THE RIGHT-OF-WAY WHICH IS ADJACENT TO THE EXISTING WATER MAIN;
 - PROJECTS THAT INCLUDE NEW WATER MAINS THAT ARE LESS THAN OR EQUAL TO 18 LINEAR FEET IN LENGTH; OR
 - OTHER PROPOSED CASES THAT ARE APPROVED BY MANATEE COUNTY AND THE CONSTRUCTION DRAWINGS SPECIFICALLY STATE THAT A TEMPORARY JUMPER CONNECTION IS NOT REQUIRED.
- A TEMPORARY JUMPER SHALL BE USED AND BE CONNECTED TO AN APPROVED POTABLE WATER SOURCE (E.G., EXISTING FIRE HYDRANT, EXISTING MAIN, EXISTING SERVICE TAP OR TANK TRUCK, ETC.) AS SHOWN IN THE STANDARD TEMPORARY JUMPER DETAIL UW-23A OR UW-23B.

A TEMPORARY JUMPER SHALL BE USED FOR FILLING, FLUSHING AND FOR DISINFECTION OF ANY NEW MAIN OF ANY SIZE. THE TEMPORARY JUMPER CONNECTION SHALL BE MAINTAINED UNTIL AFTER THE FILLING, FLUSHING, TESTING AND DISINFECTION OF THE NEW MAIN HAS BEEN SUCCESSFULLY COMPLETED AND CLEARANCE FOR USE FROM THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) HAS BEEN OBTAINED.
- THE LOCATION AND ORIENTATION OF TEMPORARY JUMPERS ASSOCIATED WITH CONNECTIONS TO EXISTING WATER MAINS THAT ARE LOCATED UNDER THE ROADWAY PAVEMENT SHALL BE APPROVED ON A CASE-BY-CASE BASIS.
- PIPE AND FITTINGS USED FOR CONNECTING THE NEW PIPE TO THE EXISTING PIPE SHALL BE DISINFECTED PRIOR TO INSTALLATION IN ACCORDANCE WITH AWWA C651, LATEST EDITION. UNLESS APPROVED OTHERWISE, THE TAPPING SLEEVE, AND EXTERIOR OF THE EXISTING MAIN TO BE TAPPED, PIPING WITHIN THE JUMPER, AND NEW PIPING SHOWN ON STANDARD TEMPORARY JUMPER DETAIL UW-23A OR UW-23B SHALL BE DISINFECTED BY SPRAYING OR SWABBING PER SECTION 4.6 OF AWWA C651.
- THE JUMPER SHALL INCLUDE A FLOW METER TO ENSURE THAT THE FLOW FROM THE SUPPLY SOURCE IS AT A CONSTANT MEASURED RATE WHILE CHLORINATING THE NEW MAIN. THE CHLORINE CONCENTRATION SHALL BE MEASURED AT REGULAR INTERVALS TO ENSURE THAT IT IS FED AT A CONSTANT RATE OF NOT LESS THAN 25 MILLIGRAMS PER LITER (MG/L) OF FREE CHLORINE.
- THE JUMPER CONNECTION SHALL ALSO BE USED TO MAINTAIN A MINIMUM PRESSURE OF 20 PSI IN THE NEW MAINS CONTINUOUSLY AFTER DISINFECTION AND UNTIL FDEP CLEARANCE LETTER IS OBTAINED.
- ALL TEMPORARY BACKFLOW PREVENTION ASSEMBLY OR "JUMPERS" UTILIZED DURING PIPELINE CONSTRUCTION MUST SHOW CERTIFICATION THAT THEY HAVE BEEN TESTED ANNUALLY AND PASSED ACCORDING TO THE FLORIDA BUILDING CODE, PLUMBING SECTION, CHAPTER 3, SECTION 312.9.1, 312.9.2, CHAPTER 6, SECTION 608, AND RESOLUTION R87-125. ANNUAL CERTIFICATION MUST BE VALID AT TIME OF INSTALLATION AND PROVIDED TO THE MANATEE COUNTY INSPECTOR UPON REQUEST.
- ALL INSTALLATION AND MAINTENANCE OF THE TEMPORARY JUMPER CONNECTION AND ASSOCIATED BACKFLOW PREVENTION ASSEMBLY, FLOW METER, FITTINGS, VALVES, ETC., SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- TEMPORARY JUMPER SIZE DEPENDS ON THE SITUATION: JUMPERS LARGER THAN 2-INCHES MAY BE USED FOR FLUSHING PURPOSES OR IF PARTIAL FIRE PROTECTION IS REQUIRED DURING INITIAL CONSTRUCTION, AS DETERMINED BY THE ENGINEER OF RECORD OR FIRE DEPARTMENT.
- PRIOR TO REMOVAL OF THE TEMPORARY JUMPER, THE NEWLY-CONSTRUCTED WATER SYSTEM SHALL HAVE RECEIVED CLEARANCE FROM THE FDEP.
- AFTER RECEIPT OF CLEARANCE FOR USE BY FDEP, MANATEE COUNTY, AND ALL OTHER PERTINENT AGENCIES, THE CONTRACTOR SHALL REMOVE THE TEMPORARY JUMPER CONNECTION AND COMPLETE THE WATER MAIN. ALL CORPORATION STOPS LEFT-IN-PLACE ARE TO BE CLOSED AND PLUGGED WITH 2-INCH BRASS.
- IF THE TEMPORARY JUMPER IS LOCATED WITHIN A STANDARD PIPE LENGTH AWAY FROM THE PROPOSED TIE-IN AND A SINGLE STANDARD LENGTH OF PIPE IS USED FOR COMPLETING THE CONNECTION, THEN THE COUNTY WILL PERFORM A VISUAL INSPECTION AND A SEPARATE HYDROSTATIC TEST MAY NOT BE REQUIRED.

IF MULTIPLE LENGTHS OF PIPES ARE USED TO COMPLETE THE CONNECTION, THEN A SEPARATE HYDROSTATIC TEST WILL BE REQUIRED. THE HYDROSTATIC TEST SHALL BE PERFORMED BETWEEN THE PROPOSED TIE-IN VALVE AND THE FIRST DOWNSTREAM VALVE FROM THE TEMPORARY JUMPER LOCATION.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TEMPORARY JUMPER CONNECTION NOTES	UW-24
REV. BY	DATE		
	February 25, 2020		
	DATE OF APPROVAL		

SCALE	AS NOTED	DATE	12/2021	 MANATEE COUNTY PUBLIC WORKS	DESIGN ENGINEER	HEATHER L. MANGANIELLO	UTILITY DETAILS (7 OF 7)	SHEET NO.	U-18
DESIGNED BY	HLM	PROJECT NO.	6094360		FL. LICENSE NO.	68385			
DRAWN BY	JTT								
CHECKED BY	HEH								
1	90% SUBMITTAL	12/2021	JTT						
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