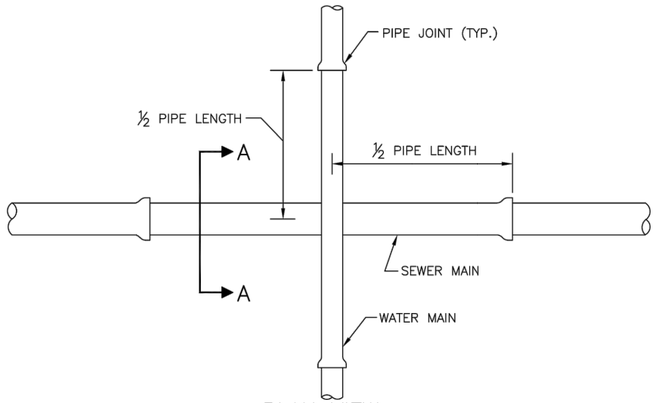
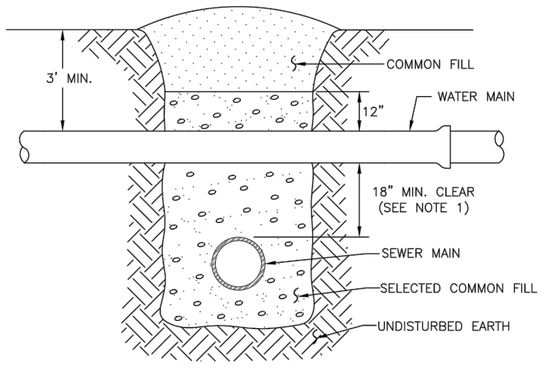


PLAN VIEW

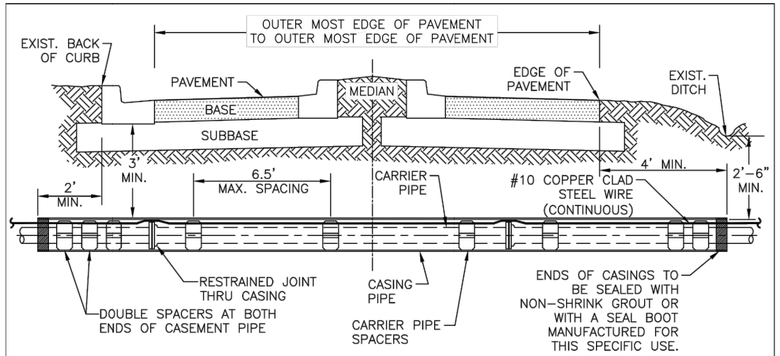


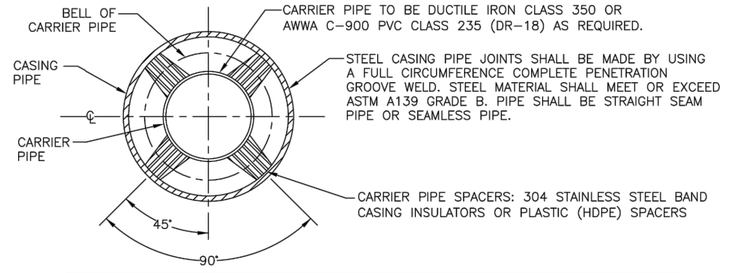
SECTION A–A

NOTES:

1. 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.
2. 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.
3. REFER TO THE CASING CROSSING DETAIL FOR CASING AND SPACER REQUIREMENTS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			TYPICAL NEW WATER & SEWER LINE CROSSING	UG–2
REV.BY	DATE	DATE OF APPROVAL		





CARRIER SIZE & MINIMUM CASING SIZE									
CARRIER	4"	6"	8"	10"	12"	*14"	16"	18"	20"
CASING	12"	14"	18"	20"	24"	30"	30"	36"	36"
CASING / WALL THICKNESS	0.188	0.188	0.250	0.250	0.344	0.406	0.406	0.406	0.406

STEEL CASING SIZES

CARRIER SIZE & MINIMUM CASING SIZE									
CARRIER	4"	6"	8"	10"	12"	*14"	16"	18"	20"
CASING	8"	12"	16"	20"	24"	30"	30"	36"	36"

PVC/HDPE CASING SIZES

NOTES:

1. THE ENGINEER OF RECORD MAY SELECT A LARGER CASING DIAMETERS, INCREASE WALL THICKNESS, AND/OR INCREASE DEPTH OF BURY DUE TO EXTERNAL LOADS.
2. ALL PIPES CROSSINGS OF FEDERAL OR STATE ROADS; OR RAILROADS SHALL BE INSTALLED IN A CASING PIPE.
3. ALL PIPES CROSSINGS OF COUNTY LOCAL ARTERIAL AND THOROUGHFARE ROADWAYS SHALL BE IN A CASING PIPE OR SHALL BE DUCTILE IRON PIPE.
4. SPLIT–STEEL CASINGS MAY BE USED ON EXISTING COUNTY MAINS.
5. FOR JACK & BORE SPECIFICATIONS UNDER STATE ROADS AND RAILROADS, REFER TO THE F.D.O.T. UTILITY ACCOMMODATION MANUAL, LATEST EDITION.
6. HDPE CASING SHALL HAVE ALL WELD BEADS REMOVED FROM THE INSIDE SURFACE SUCH THAT THE JOINT SURFACES SHALL BE SMOOTH.
7. *14–INCH DIAMETER MAINS ARE NOT TO BE INSTALLED IN POTABLE/RECLAIM WATER SYSTEMS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			CASING CROSSING	UG–3
REV.BY	DATE	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-74

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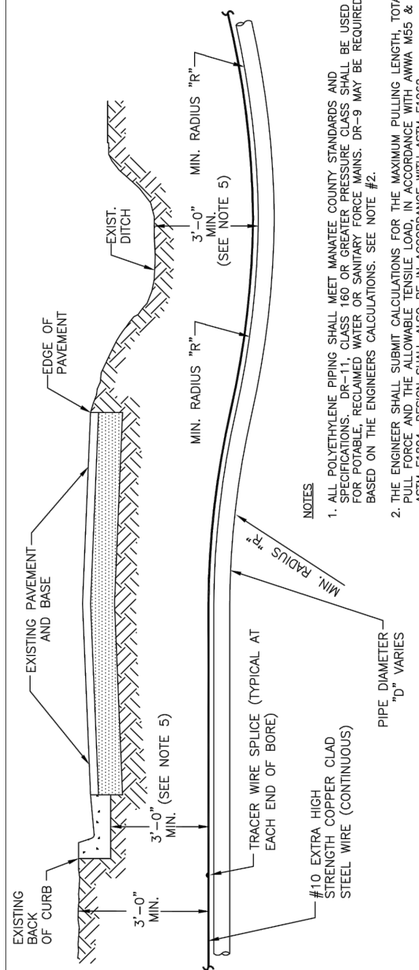


NOTES

1. ALL POLYETHYLENE PIPING SHALL MEET MANATEE COUNTY STANDARDS AND SPECIFICATIONS. DR-11, CLASS 160 OR GREATER PRESSURE CLASS SHALL BE USED FOR POTABLE, RECLAIMED WATER OR SANITARY FORCE MAINS. DR-9 MAY BE REQUIRED BASED ON THE ENGINEERS CALCULATIONS. SEE NOTE #2.
2. THE ENGINEER SHALL SUBMIT CALCULATIONS FOR THE MAXIMUM PULLING LENGTH, TOTAL PULL FORCE AND THE ALLOWABLE TENSILE LOAD, IN ACCORDANCE WITH AWWA M55 & ASTM F1804. DESIGN SHALL ALSO BE IN ACCORDANCE WITH ASTM F1962.
3. A MANDREL BASED ON 80% OF THE INSIDE DIAMTER OF THE PULLED PIPE SHALL BE HAND-PULLED THROUGH THE FINAL INSTALLED PIPE WITH A COUNTY INSPECTOR PRESENT, TO CONFIRM NO ELONGATION(S) (NECKING) HAS OCCURED.
4. ONE #10 GAUGE EXTRA HIGH STRENGTH COPPER CLAD STEEL TRACER WIRE SHALL BE SECURED TO THE PIPE FOR ALL TYPES OF PIPELINE INSTALLATIONS. TRACER WIRES SHALL HAVE A MINIMUM 30-MILS OF POLYETHYLENE INSULATION.
5. TRACER WIRE TO BE COLOR CODED: BLUE FOR POTABLE WATER MAINS; PURPLE (PANTONE 522 C) FOR RECLAIMED WATER MAINS; AND GREEN FOR SANITARY FORCE MAINS.
6. PIPE DEPTHS MAY NEED TO BE DEEPER TO AVOID FRACKOUTS. PIPE ALIGNMENT SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS. THE ENGINEER SHALL BE NOTIFIED PRIOR TO ANY DIVATIONS.
7. PIPES CROSSING FEDERAL OR STATE ROADS; OR RAILROADS SHALL BE INSTALLED IN A CASING PIPE.
8. FOR COUNTY LOCAL ARTERIAL OR THOROUGHFARE RADWAYS; AND ON A CASE BY CASE BASIS, STEEL, PVC, OR HDPE CASING PIPE MAY BE ALLOWED. HDPE CASING PIPE SHALL BE INSTALLED FIRST, TESTED, AND THEN THE CARRIER PIPE MAY BE PULLED THRU THE CASING PIPE AS A SEPARATE OPERATION.
9. FDOT DIRECTIONAL DRILL CRITERIA SHALL BE MET FOR PIPES UNDER STATE, & FEDERAL ROADS; OR LOCAL ARTERIALS & THOROUGHFARES.

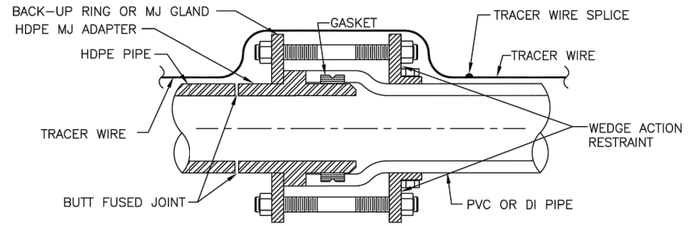
MIN. RADIUS FOR PE PIPE IN FEET			
PIPE DIAMETER "D" IN INCHES	MIN. RADIUS "R" FOR DR-11	MIN. RADIUS "R" FOR DR-9
2	4	5.5
3	6	8.3
4	8	11.0
6	12	16.5
8	16	22.0
10	20	27.5
12	24	33.0
16	32	44.0
18	36	49.5
20	40	55.0

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

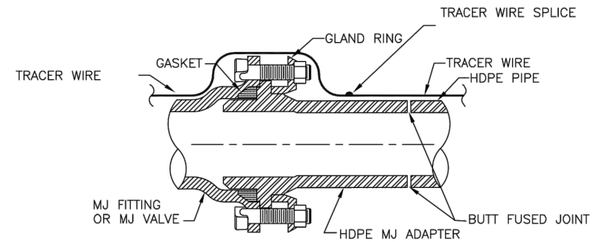
REV.BY	DATE	
		DATE OF APPROVAL

DIRECTIONAL BORE ROADWAY CROSSING

UG-4

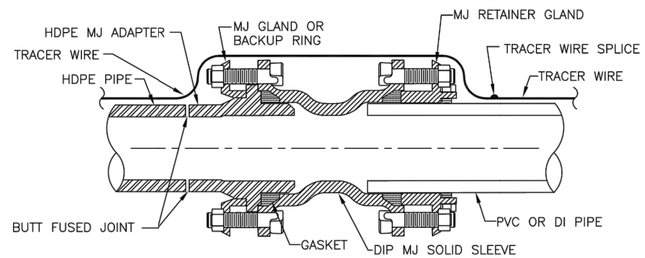


HDPE PIPE TO PVC PIPE / SPIGOT TO BELL CONNECTION



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 TRACER WIRE SHALL BE SECURED TO THE PIPE FOR ALL TYPES OF PIPELINE INSTALLATIONS.

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE	
		DATE OF APPROVAL

HDPE TO PVC OR DI PIPE ADAPTER

UG-6

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
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TAMPA, FL 33607-1462
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CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

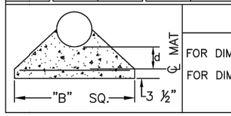
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-75

THRUST BLOCK DIMENSIONS B ft. x d inches												
PIPE SIZE	90°BEND		45°BEND		22.5°BEND		11.25°BEND		DEAD END & TEE		45° WYE	
(IN.)	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 ¼	2.5	6
12	4.2	10	3.1	7 ½	2.2	5 ¼	1.6	3 ¾	3.5	8 ¼	3.0	7 ¼
14	4.9	11 ¾	3.6	8 ¾	2.6	6 ¼	1.8	4 ¼	4.1	9 ¾	3.4	8 ¼
16	5.5	13 ¼	4.1	9 ¾	2.9	7	2.1	5	4.7	11 ¼	3.9	9 ¼
18	6.2	15	4.6	11	3.3	8	2.3	5 ½	5.2	12 ½	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



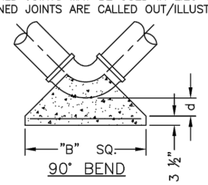
REINFORCEMENT MAT SCHEDULE

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

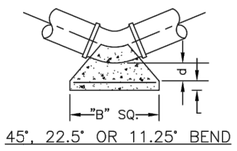
FOR DIM. "B" LESS THAN 5.75' USE #3 @ 8" EACH WAY

NOTES:

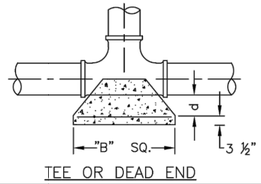
1. ALL THRUST BLOCKS SHALL BE CAST IN PLACE. FITTINGS ADJACENT TO THRUST BLOCKS SHALL BE WRAPPED IN POLYETHYLENE.
2. THIS TABLE IS BASED ON WATER PRESSURE=180 PSI WITH AN ALLOWABLE SOIL BEARING PRESSURE=2000 PSF, CONCRETE STRENGTH f_c =3000 PSI, REINFORCEMENT f_y =60.0 KSI. THRUST BLOCK SHALL BE CAST 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. HOWEVER, WHERE THRUST BLOCKS AND RESTRAINED JOINTS ARE CALLED OUT/ILLUSTRATED IN THE DETAILS, BOTH SHALL BE INSTALLED.



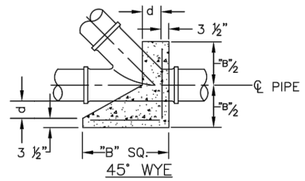
90° BEND



45°, 22.5° OR 11.25° BEND



TEE OR DEAD END



45° WYE

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	DATE OF APPROVAL	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			
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:

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.
9. ALL RESTRAINED JOINT HARDWARE SHALL CONFORM TO 1.11.18.E OF THE PUBLIC WORKS UTILITIES STANDARDS MANUAL.

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

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-76

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

MAIN PIPE SIZE	HORIZ. BENDS			TEES (SIZE / LENGTH)						REDUCERS (SIZE / LENGTH)				PLUGS & VALVES
	90°	45°	22.5°											
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

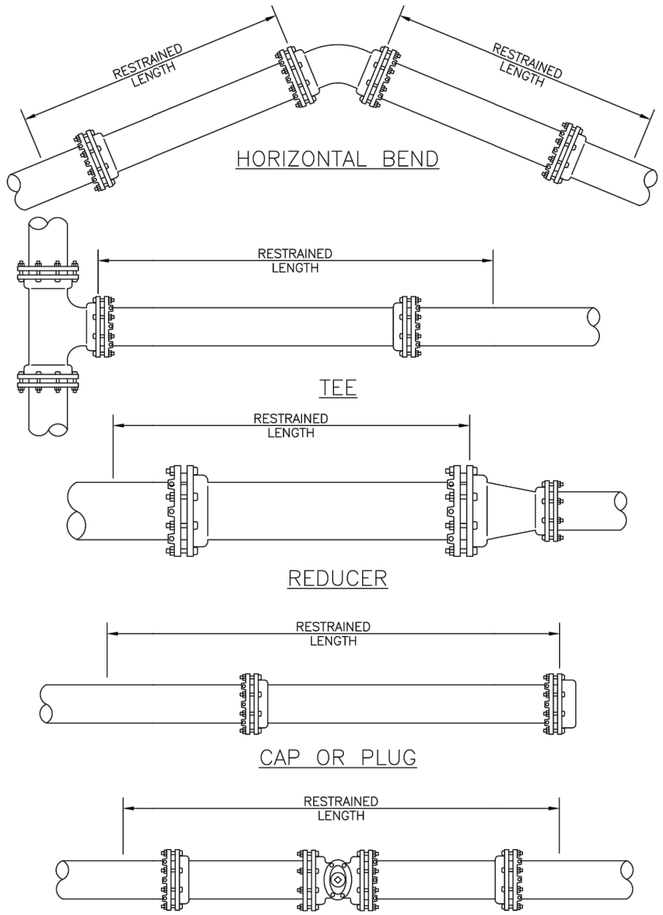
REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (NON-WRAPPED)

MAIN PIPE SIZE	HORIZ. BENDS			TEES (SIZE / LENGTH)						REDUCERS (SIZE / LENGTH)				PLUGS & VALVES
	90°	45°	22.5°											
36	100	42	20	x36 / 163	x30 / 132	x24 / 96	x20 / 68	x16 / 35	x12 / 1	X30 / 57	X24 / 103	X20 / 128	X16 / 149	188
30	88	37	18	X30 / 138	X24 / 104	X20 / 78	X16 / 48	X12 / 10	x10 / 1	X24 / 57	X20 / 88	X16 / 114		162
24	75	31	15	X24 / 112	X20 / 87	X16 / 59	X12 / 25	x10 / 4	x8 / 1	X20 / 40	X16 / 74	X12 / 100		135
20	65	27	13	X20 / 93	X16 / 67	X12 / 35	X10 / 16	x8 / 1		X16 / 41	X12 / 73	X10 / 94		116
16	54	22	11	X16 / 73	X12 / 44	X10 / 27	x8 / 8	x6 / 1		X12 / 41	X10 / 68	X8 / 70		96
12	43	18	8	X12 / 53	X10 / 37	X8 / 21	x6 / 1			X10 / 37	X8 / 40	X6 / 54		75
10	37	15	7	X10 / 42	X8 / 26	x6 / 5				X8 / 21	X6 / 39	X4 / 52		63
8	30	13	6	X8 / 32	X6 / 12	x4 / 1				X6 / 22	X4 / 38			53
6	24	10	5	X6 / 19	x4 / 1					X4 / 21				41
4	17	7	3	x4 / 8										29

NOTE:

1. SEE 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	DATE OF APPROVAL		



NOTE:

1. SEE RESTRAINED LENGTHS FOR PVC PIPE DETAIL 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	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

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P.E. NO. 34809
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DATE: FEBRUARY 2019
PROJECT NO.: 6086960

Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-77

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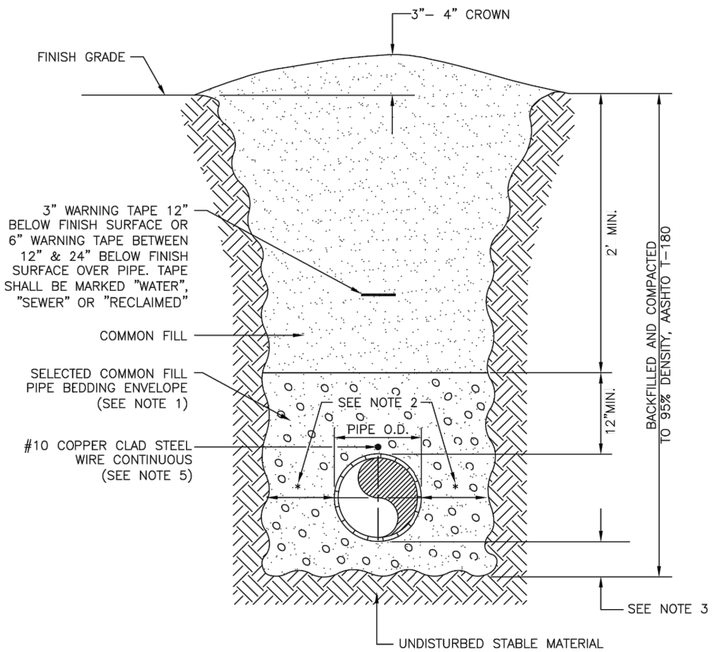
NOTES:

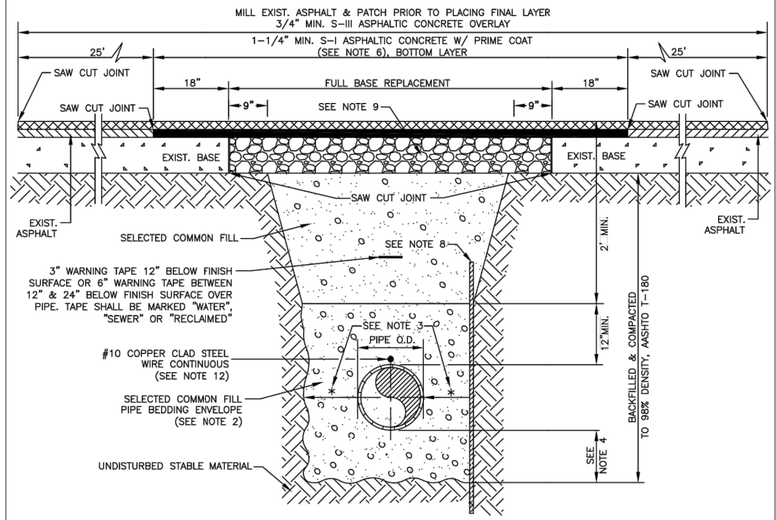
1. USE OF TYPE A–2 AND A–3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. PROVIDE ADEQUATE CLEARANCE TO PLACE AND COMPACT STAGE 1 BEDDING MATERIAL IN TRENCH AREA BELOW PIPE SPRINGLINE. PIPE EMBEDMENT MUST BE COMPACTED OUT TO THE TRENCH WALL OR 2.5 TIMES THE PIPE OD, WHICHEVER IS LESS.
3. TYPICALLY 4" TO 6".
4. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
5. 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	DATE OF APPROVAL		

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. TYPICALLY 4" TO 6".
5. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
6. 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.
7. 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.
8. SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.
9. NEW BASE SHALL MATCH EXISTING; OR BE CRUSHED CONCRETE, 8" MIN. THICKNESS, LBR ≥150, WHICHEVER IS GREATER.
10. TEMPORARY PATCHES WILL BE INSTALLED TO PROVIDE A SMOOTH ALL WEATHER SURFACE AT ALL TIMES. PERMANENT REPLACEMENT TO BE MADE AS SOON AS POSSIBLE.
11. RESTORE SIGNAGE & MARKING WITH THERMOPLASTIC PER FDOT STANDARDS, LATEST EDITION.
12. TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.
13. NOTES 6. 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 CROSSING WITH ASPHALT PAVEMENT SURFACE TYPE A–1 PIPE BEDDING	UG–12
REV.BY	DATE	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607–1462
(813) 286–1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U–78

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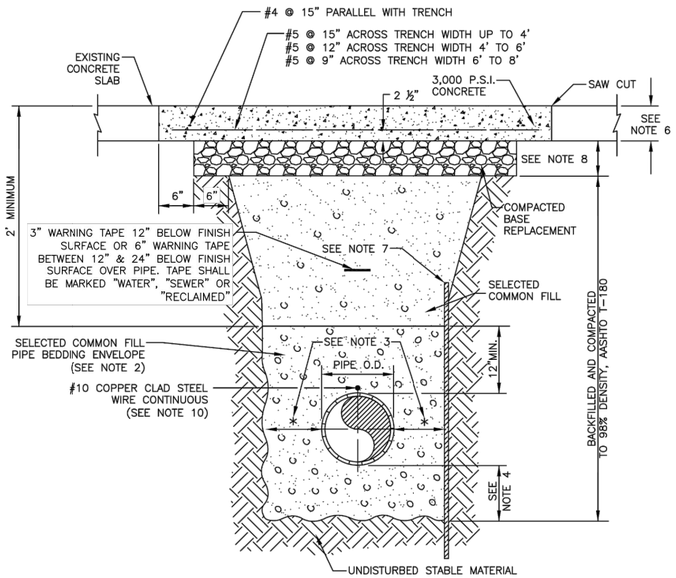
NOTES:

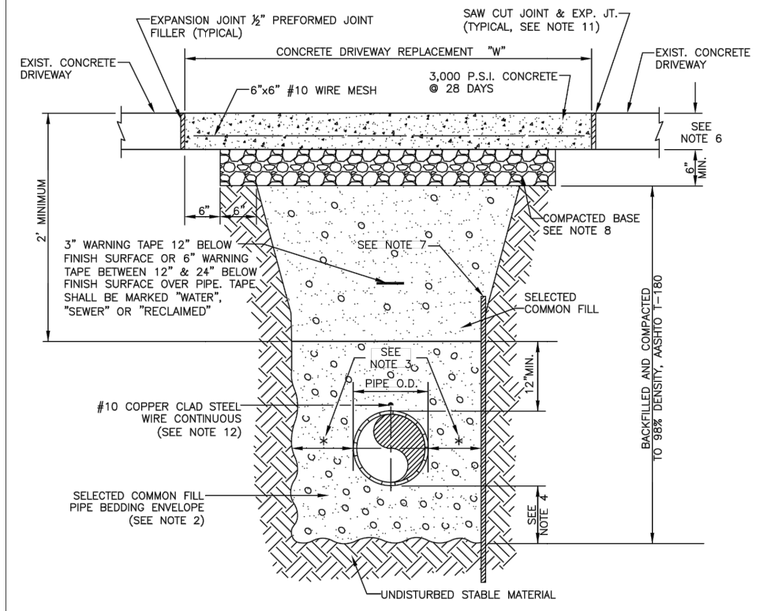
1. CONCRETE PAVEMENT SHALL BE REMOVED WITH SAWED EDGES AND CUT AT A MINIMUM DEPTH OF ONE AND ONE–HALF (1–1/2"). IF A SAW CUT IN CONCRETE PAVEMENT FALLS WITHIN THREE FEET (3') OF A CONTRACTION JOINT, COLD JOINT, EXPANSION JOINT OR EDGE, THE CONCRETE SHALL BE REMOVED TO THE JOINT OR EDGE. THE EDGES OF 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.
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. TYPICALLY 4" TO 6".
5. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
6. THICKNESS TO MATCH EXISTING OR BE 8" MINIMUM, WHICHEVER IS GREATER.
7. SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.
8. BASE SHALL BE CRUSHED CONCRETE, 8" MIN. THICKNESS, LBR ≥150.
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. TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.
11. NOTES 6 THRU 8 ARE MINIMUM REQUIREMENTS. REFER TO MANATEE COUNTY HIGHWAY AND TRAFFIC STANDARDS FOR ADDITIONAL REQUIREMENTS.



MANATEE COUNTY PUBLIC WORKS DEPARTMENT			TRENCH WITH CONCRETE PAVEMENT SURFACE TYPE A–1 PIPE BEDDING	UG–13
REV.BY	DATE	DATE OF APPROVAL		

NOTES:

1. CONCRETE PAVEMENT SHALL BE REMOVED WITH SAWED 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.
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. TYPICALLY 4" TO 6".
5. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
6. THICKNESS TO MATCH EXISTING OR BE 6" MINIMUM, WHICHEVER IS GREATER.
7. SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISH GRADE OR 12" BELOW SUBGRADE.
8. BASE SHALL BE COMPACTED 6" MINIMUM THICKNESS OF APPROVED MATERIAL.
9. DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST ADOPTED CONSTRUCTION STANDARDS OF THE MANATEE COUNTY TRANSPORTATION DEPARTMENT.
10. IF THE DRIVEWAY IS 12' OR WIDER, SAWCUT AN EXPANSION JOINT ALONG THE CENTER OF THE DRIVEWAY (3/16" WIDE AND 1½" DEEP) AFTER THE CONCRETE HAS SET.
11. IF THERE IS AN EXISTING EXPANSION JOINT WITHIN 3' OF THE PROPOSED JOINT, EXTEND DRIVEWAY REPLACEMENT TO THE EXISTING JOINT.
12. 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	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

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DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

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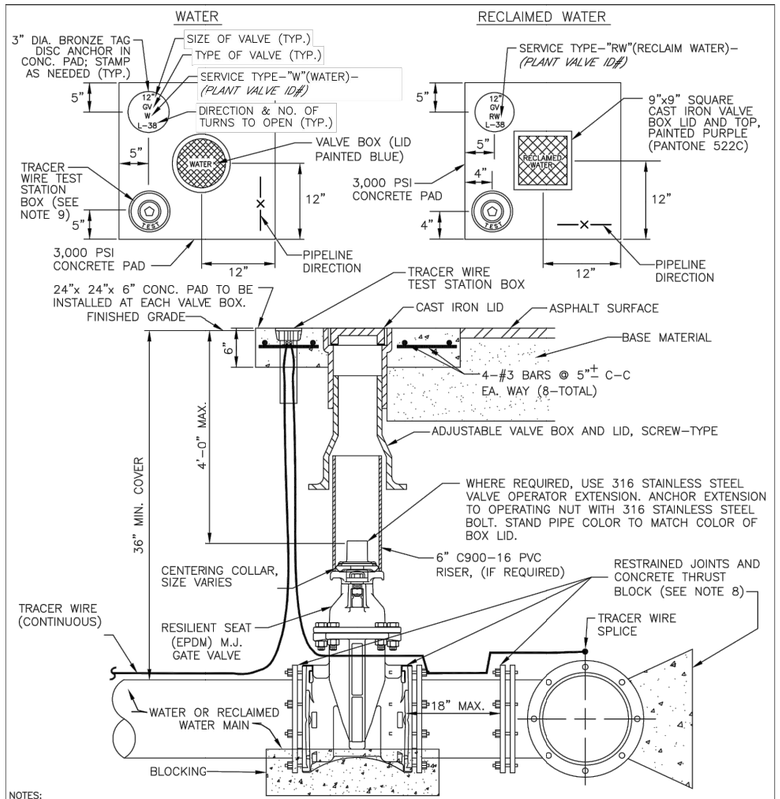
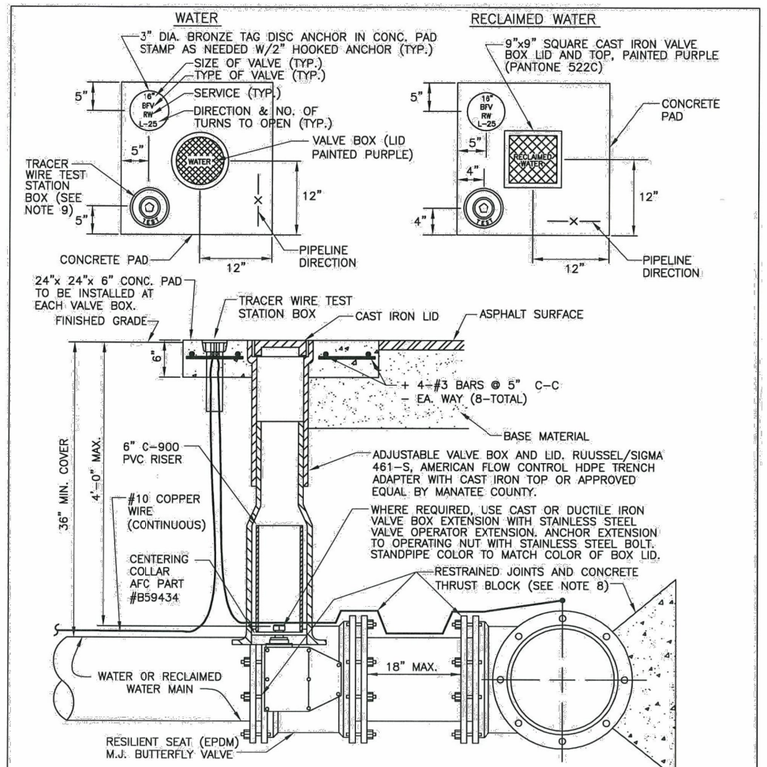


NOTES:

1. "WV" OR "RWV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE VALVE. IF NO CURB, INSTALL A BLUE DISC WITH "WV" OR PURPLE DISC WITH "RWV" USING A 1/8" x 1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE FOOTAGE FROM THE DISC TO THE VALVE.
2. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS DETERMINED IN THE FIELD.
3. VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS, CURBS, OR GUTTERS.
4. PRECAST CONCRETE PADS SHALL NOT BE USED.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. PIPELINE DIRECTION TO BE IMPRESSED INTO NEWLY POURED CONCRETE PAD.
7. TRACER WIRE TEST STATION BOX IS NOT REQUIRED IN VALVE BOX PAD IF THE GATE VALVE IS LOCATED WITHIN 200 FEET OF A WATER SERVICE, BLOW-OFF, BACKFLOW PREVENTER OR FIRE HYDRANT THAT HAS A TRACER WIRE BOX.
8. WHERE THRUST BLOCK NOT USED, RESTRAINED JOINTS MUST THEN EXTEND FROM TEE FULL LENGTH SPECIFIED FOR "TEES."
9. USE NON-TRAFFIC RATED BOXES FOR NORMAL YARD SERVICE. WHERE VALVE WILL BE IN STREET OR PARKING UNDER VEHICLE TRAFFIC, USE TRAFFIC RATED BOXES. WHERE POSSIBLE, LOCATE TRACE WIRE TESTING STATION OUTSIDE OF TRAVEL LANE OR IN MEDIAN, CENTERED IN SEPARATE CONCRETE PAD SIMILAR TO STANDARD VALVE BOX PAD.
10. THE BRASS TAG SHALL HAVE A "PLANT VALVE ID# WHEN VALVES ARE INSTALLED WITHIN THE COUNTY TREATMENT PLANT LIMITS. THE PLANT VALVE ID# SHALL BE SHOWN ON THE CONSTRUCTION PLANS AND RECORD DRAWINGS.
11. REFER TO SECTION 1.11 GATE VALVES FOR FURTHER DETAILS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	GATE VALVE, BOX, LID AND TAG	UW-2
		DATE OF APPROVAL	



NOTES:

1. "WV" OR "RWV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH IF NO CURB, INSTALL A BLUE DISC WITH "WV" OR PURPLE DISC DISTANCE IN FEET TO THE VALVE. WITH "RWV" AND A 1/8"x1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE FOOTAGE FROM THE DISC TO THE VALVE.
2. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS DETERMINED IN THE FIELD.
3. WATER VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
4. PRECAST CONCRETE PADS & THRUST BLOCKS SHALL NOT BE USED.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. FOR VALVES 16" AND LARGER, USE BUTTERFLY VALVES.
7. PIPELINE DIRECTION TO BE IMPRESSED INTO NEWLY POURED CONCRETE PAD.
8. WHERE THRUST BLOCK NOT USED, RESTRAINED JOINTS MUST THEN EXTEND FROM TEE FULL LENGTH SPECIFIED FOR "TEES."
9. BINGHAM & TAYLOR P200NFG OR EQUAL FOR NORMAL YARD SERVICE. WHERE VALVE WILL BE IN STREET OR PARKING UNDER VEHICLE TRAFFIC, USE P525RD CENTERED IN SEPARATE CONCRETE PAD SIMILAR TO STANDARD VALVE BOX PAD.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	BUTTERFLY VALVE, BOX, LID AND TAG	UW-3
CLB/KE	11/10		
		MAY 10, 2011 DATE OF APPROVAL	PAGE 121

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

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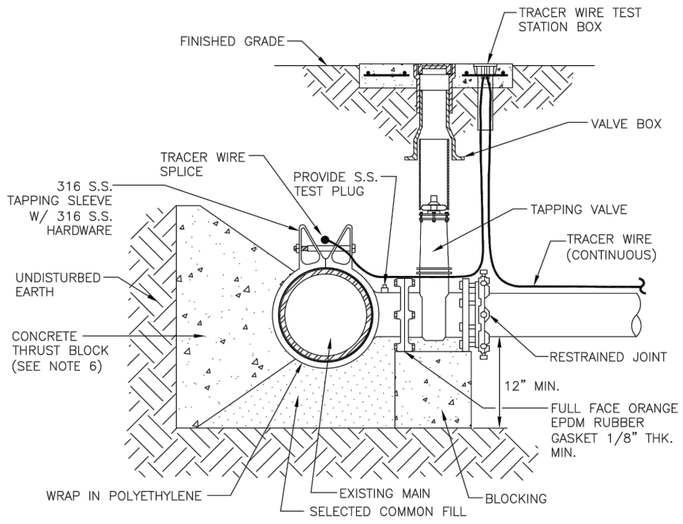
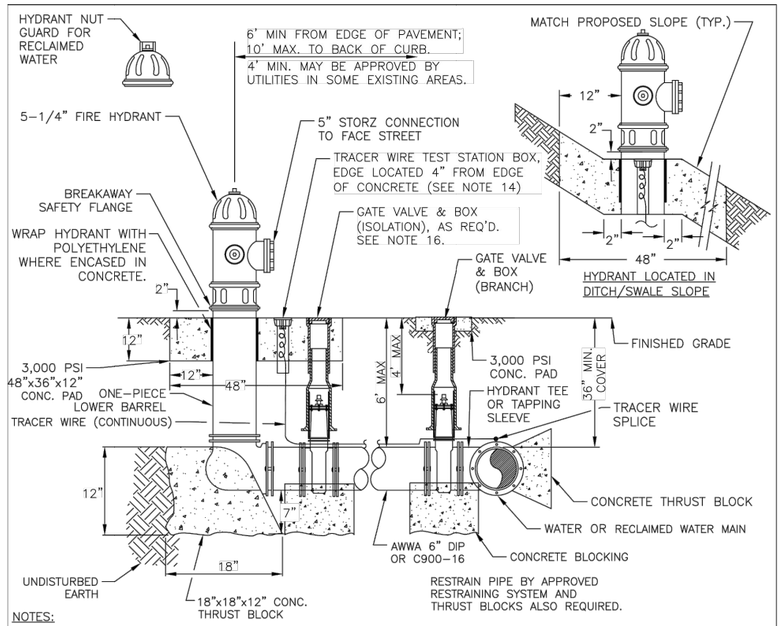


ELEVATION

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 FOR FURTHER DETAILS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			TAPPING SLEEVE AND VALVE (WATER/RECLAIM)	UW-3
REV.BY	DATE	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. HYDRANTS SHALL BE FUSION BONDED EPOXY COATED SAFETY YELLOW FOR WATER AND PURPLE (PANTONE 522C) FOR RECLAIMED WATER. HYDRANT SHALL BE DUCTILE IRON CONSTRUCTION.
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 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 FOR FURTHER DETAILS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			FIRE HYDRANT ASSEMBLY	UW-5A
REV.BY	DATE	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

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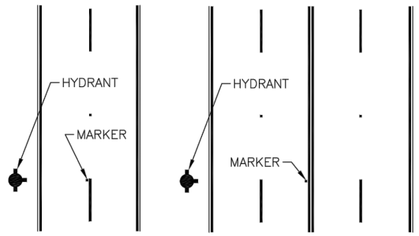

FIG 4.3–1
TWO–LANE STREET

FIG 4.3–2
MULTI–LANE STREET

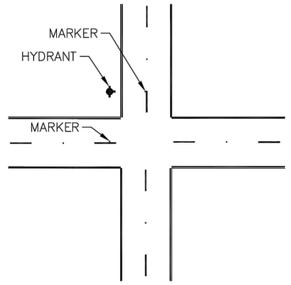

FIG 4.3–3
TWO–LANE STREET
AT INTERSECTION

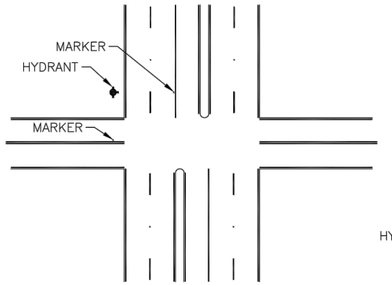

FIG 4.3–4
FOUR–LANE STREET WITH
TURN LANE AT INTERSECTION

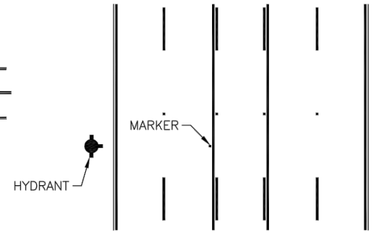

FIG 4.3–5
MULTI–LANE STREET
WITH TURN LANE

NOTES:

1. 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 PLACE 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.
2. 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.
3. 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.
4. MARKER SHALL BE BLUE/BLUE RAISED RETROREFLECTIVE PAVEMENT MARKER.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			HYDRANT LOCATION MARKERS – BLUE (RPMs)	UW–5B
REV.BY	DATE	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607–1462
(813) 286–1711
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ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-81A

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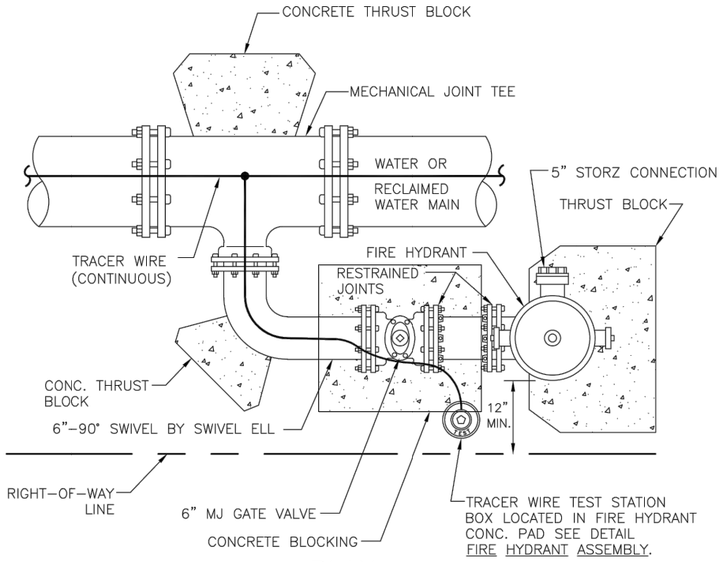
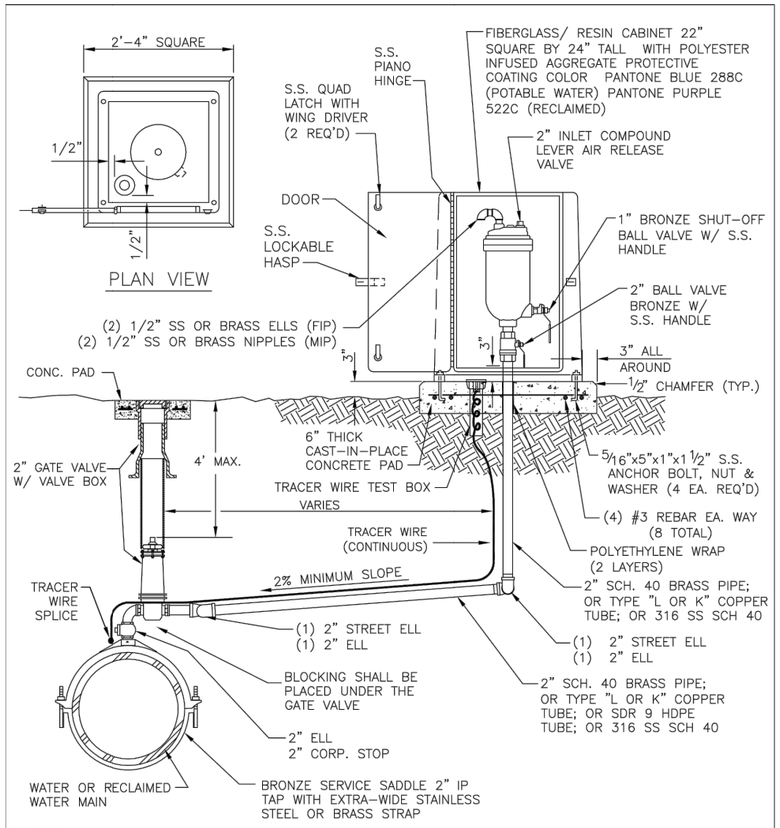


PLAN

NOTES:

1. THIS DETAIL FOR USE ONLY WHEN THE WATER MAIN IS LOCATED TOO CLOSE TO THE RIGHT-OF-WAY LINE TO USE THE FIRE HYDRANT ASSEMBLY DETAIL.
2. SEE STANDARD DETAIL GATE VALVE, BOX, LID AND TAG.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	DATE OF APPROVAL	FIRE HYDRANT WITH LOCKED 90° BEND
			UW-6



NOTES:

1. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS ALONG WATER MAINS WHERE SPECIFICALLY INDICATED ON THE PLAN.
2. ARV 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.
6. VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.
7. ARV SHALL BE INSTALLED MINIMUM 6 FT FROM EDGE OF PAVEMENT; 10 FT MAXIMUM FROM BACK OF CURB; 4 FT MIN. MAY BE APPROVED BY UTILITIES IN SOME EXISTING AREAS.
8. SEE GATE VALVE, BOX, LID AND TAG STANDARD DETAIL. CENTERING COLLAR IS NOT REQUIRED ON 2" GATE VALVES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	DATE OF APPROVAL	AIR RELEASE ASSEMBLY FOR 16-INCH AND LARGER MAINS
			UW-10

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

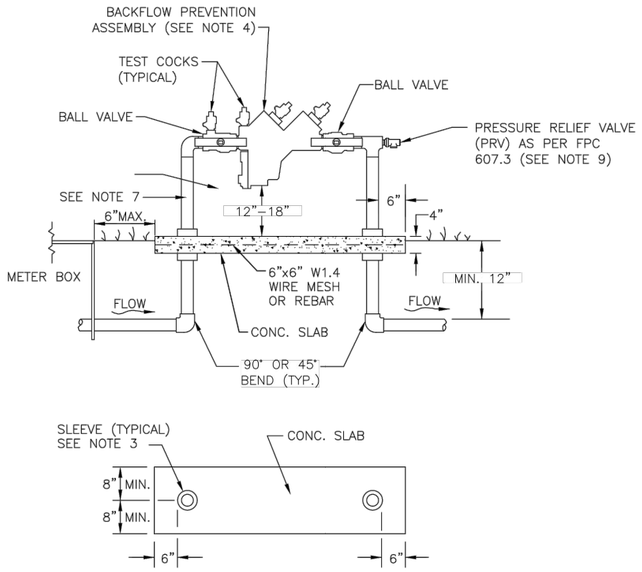
Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-82

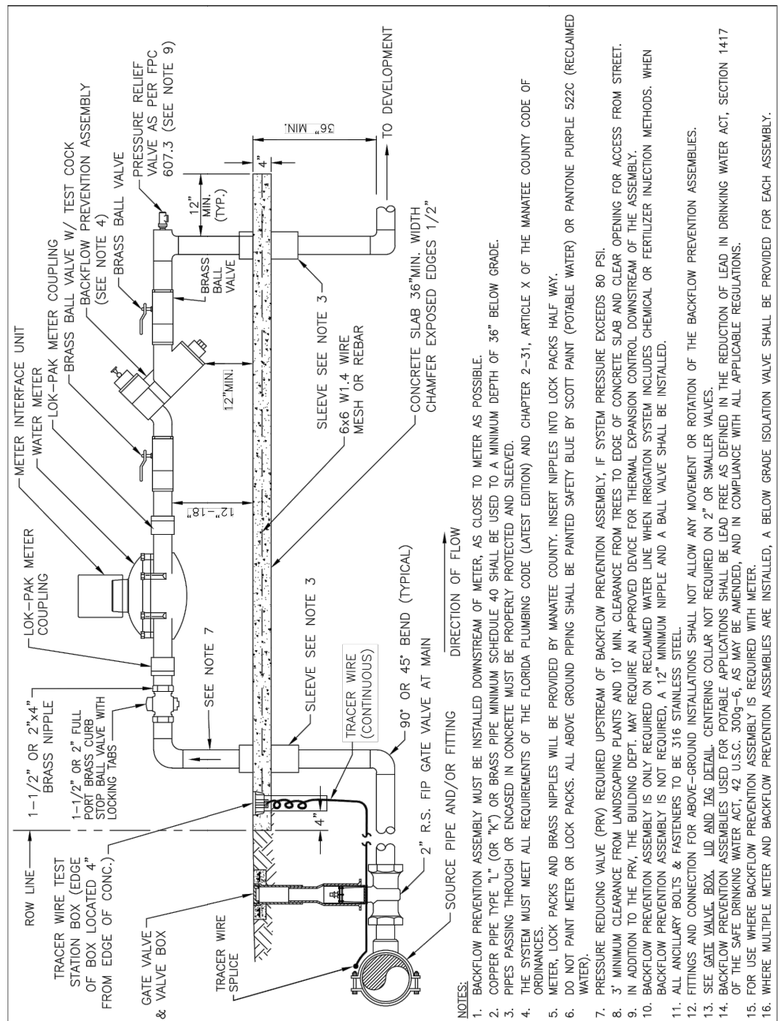
Sonnenberg, Terence 10/8/2019 1:03:26 PM S:\Projects_RDWY\ProjFdot\ProjFDOT\V8\60460213000\utils\cadd\UTDTUW02.dwg



NOTES:

1. BACKFLOW PREVENTION ASSEMBLY MUST BE INSTALLED IMMEDIATELY DOWNSTREAM OF METER, AS SHOWN ABOVE
2. COPPER PIPE TYPE "L" (OR "K") OR BRASS PIPE MINIMUM SCHEDULE 40 SHALL BE USED TO A MINIMUM DEPTH OF 12" BELOW GRADE.
3. PIPES PASSING THROUGH OR ENCASED IN CONCRETE MUST BE PROPERLY PROTECTED AND SLEEVED.
4. THE SYSTEM MUST MEET ALL REQUIREMENTS OF THE FLORIDA PLUMBING CODE (LATEST EDITION) AND CHAPTER 2–31, ARTICLE X OF THE MANATEE COUNTY CODE OF ORDINANCES.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. BACKFLOW PREVENTER SHALL BE TESTED AT THE TIME OF INSTALLATION.
7. PRESSURE REDUCING VALVE (PRV) REQUIRED UPSTREAM OF BACKFLOW PREVENTION ASSEMBLY, IF SYSTEM PRESSURE EXCEEDS 80 PSI.
8. 3' MINIMUM CLEARANCE FROM LANDSCAPING PLANTS AND 10' MIN. CLEARANCE FROM TREES TO EDGE OF CONCRETE SLAB AND CLEAR OPENING FOR ACCESS FROM STREET.
9. IN ADDITION TO THE PRV, THE BUILDING DEPT. MAY REQUIRE AN APPROVED DEVICE FOR THERMAL EXPANSION CONTROL DOWNSTREAM OF THE ASSEMBLY.
10. FITTINGS AND CONNECTIONS FOR ABOVE–GROUND INSTALLATIONS SHALL NOT ALLOW ANY MOVEMENT OR ROTATION OF BACKFLOW PREVENTION ASSEMBLY.
11. REFER TO DETAIL WATER METER & BACKFLOW PREVENTER FOR LIFT STATIONS FOR WATER SERVICE AT SEWAGE PUMPING STATION.
12. BACKFLOW PREVENTION ASSEMBLIES USED FOR POTABLE APPLICATIONS SHALL BE LEAD FREE AS DEFINED IN THE REDUCTION OF LEAD IN DRINKING WATER ACT, SECTION 1417 OF THE SAFE DRINKING WATER ACT, 42 U.S.C. 300g–6, AS MAY BE AMENDED, AND IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			3/4" & 1" BACKFLOW PREVENTER	UW–12
REV.BY	DATE	DATE OF APPROVAL		



NOTES:

1. BACKFLOW PREVENTION ASSEMBLY MUST BE INSTALLED DOWNSTREAM OF METER, AS CLOSE TO METER AS POSSIBLE.
2. COPPER PIPE TYPE "L" (OR "K") OR BRASS PIPE MINIMUM SCHEDULE 40 SHALL BE USED TO A MINIMUM DEPTH OF 36" BELOW GRADE.
3. PIPES PASSING THROUGH OR ENCASED IN CONCRETE MUST BE PROPERLY PROTECTED AND SLEEVED.
4. THE SYSTEM MUST MEET ALL REQUIREMENTS OF THE FLORIDA PLUMBING CODE (LATEST EDITION) AND CHAPTER 2–31, ARTICLE X OF THE MANATEE COUNTY CODE OF ORDINANCES.
5. METER, LOCK PACKS AND BRASS NIPPLES WILL BE PROVIDED BY MANATEE COUNTY. INSERT NIPPLES INTO LOCK PACKS HALF WAY.
6. DO NOT PAINT METER OR LOCK PACKS. ALL ABOVE GROUND PIPING SHALL BE PAINTED SAFETY BLUE BY SCOTT PAINT (POTABLE WATER) OR PANTONE PURPLE 522C (RECLAIMED WATER).
7. PRESSURE REDUCING VALVE (PRV) REQUIRED UPSTREAM OF BACKFLOW PREVENTION ASSEMBLY, IF SYSTEM PRESSURE EXCEEDS 80 PSI.
8. 3' MINIMUM CLEARANCE FROM LANDSCAPING PLANTS AND 10' MIN. CLEARANCE FROM TREES TO EDGE OF CONCRETE SLAB AND CLEAR OPENING FOR ACCESS FROM STREET.
9. IN ADDITION TO THE PRV, THE BUILDING DEPT. MAY REQUIRE AN APPROVED DEVICE FOR THERMAL EXPANSION CONTROL DOWNSTREAM OF THE ASSEMBLY.
10. BACKFLOW PREVENTION ASSEMBLY IS ONLY REQUIRED ON RECLAIMED WATER LINE WHEN IRRIGATION SYSTEM INCLUDES CHEMICAL OR FERTILIZER INJECTION METHODS. WHEN BACKFLOW PREVENTION ASSEMBLY IS NOT REQUIRED, A 12" MINIMUM NIPPLE AND A BALL VALVE SHALL BE INSTALLED.
11. ALL ANCILLARY BOLTS & FASTENERS TO BE 316 STAINLESS STEEL.
12. FITTINGS AND CONNECTION FOR ABOVE–GROUND INSTALLATIONS SHALL NOT ALLOW ANY MOVEMENT OR ROTATION OF THE BACKFLOW PREVENTION ASSEMBLIES.
13. SEE GATE VALVE BOX, LID AND TAG DETAIL. CENTERING COLLAR NOT REQUIRED ON 2" OR SMALLER VALVES.
14. BACKFLOW PREVENTION ASSEMBLIES USED FOR POTABLE APPLICATIONS SHALL BE LEAD FREE AS DEFINED IN THE REDUCTION OF LEAD IN DRINKING WATER ACT, SECTION 1417 OF THE SAFE DRINKING WATER ACT, 42 U.S.C. 300g–6, AS MAY BE AMENDED, AND IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.
15. FOR USE WHERE BACKFLOW PREVENTION ASSEMBLY IS REQUIRED
16. WHERE MULTIPLE METER AND BACKFLOW PREVENTION ASSEMBLIES ARE INSTALLED, A BELOW GRADE ISOLATION VALVE SHALL BE PROVIDED FOR EACH ASSEMBLY.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			$1\frac{1}{2}$" & 2" METER AND BACKFLOW PREVENTER	UW–13
REV.BY	DATE	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607–1462
(813) 286–1711
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DATE: FEBRUARY 2019
PROJECT NO.: 6086960

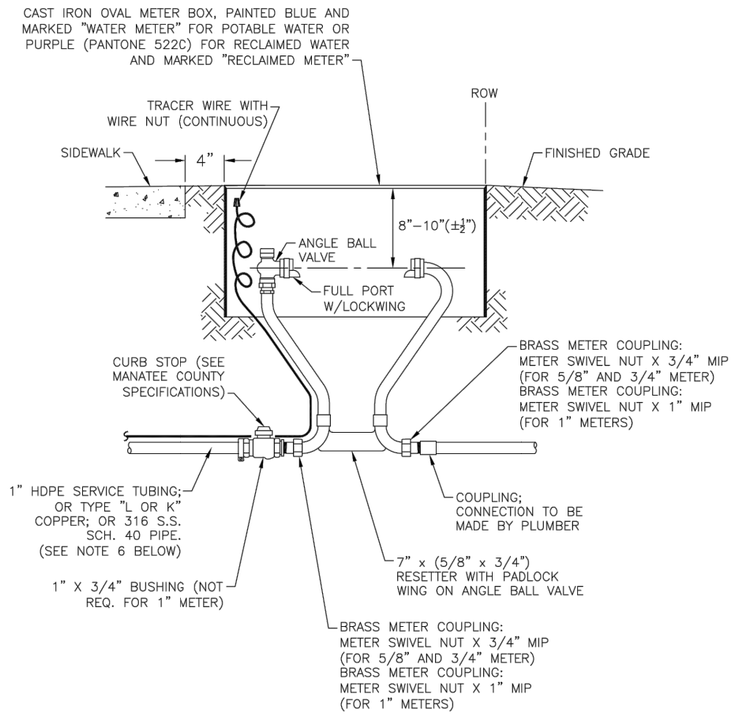
Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-83

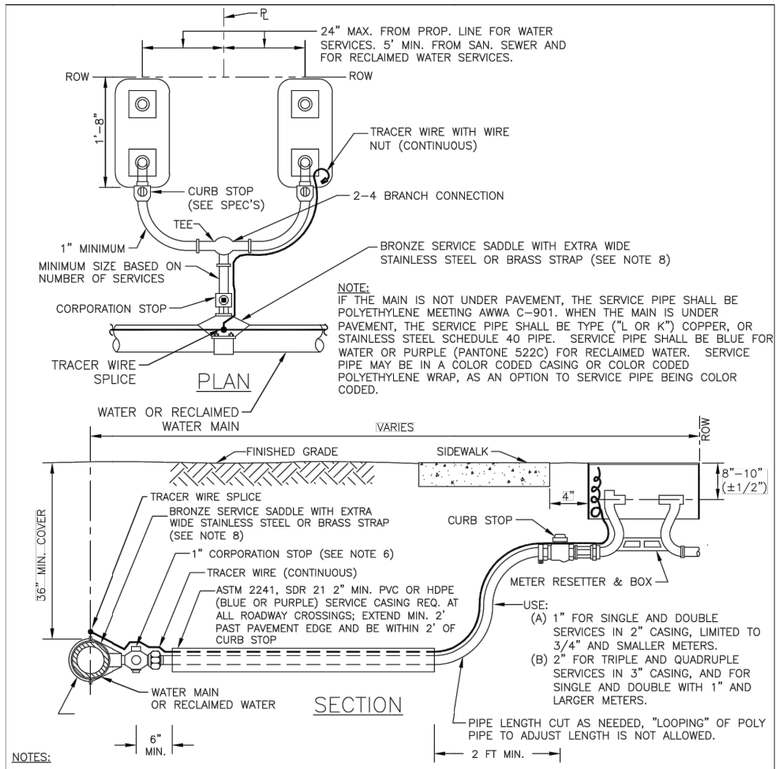
Sonnenberg, Terence 10/8/2019 1:03:28 PM S:\Projects_RDWY\ProjFdot\ProjFDOT\V8\60460213000\utils\cadd\UTDTUW02.dwg



NOTES:

1. METER BOX AND RESETTER 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.
2. THE METER RESETTER SHALL BE INSTALLED IN SUCH A MANNER AS TO ALLOW REMOVAL AND REPLACEMENT WITHOUT DISTURBING THE STRUCTURAL INTEGRITY OF THE PIPING SYSTEM, THE SHUTOFF VALVES, OR THE RESETTER.
3. FOR COMPLETE SERVICE CONNECTION ASSEMBLY, SEE DETAIL TYPICAL SERVICE CONNECTION.
4. WHEN THE DISTANCE BETWEEN THE EDGE OF THE SIDEWALK AND THE R/W 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.
5. 3' MINIMUM CLEARANCE FROM LANDSCAPING PLANTS AND 10' MIN. CLEARANCE FROM TREES TO EDGE OF METER, CLEAR ACCESS OPENING TO STREET.
6. HDPE SERVICE TUBING SHALL NOT BE CRIMPED OR KINKED TO RE–ADJUST CURB STOP LOCATION.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			METER BOX ASSEMBLY FOR 5/8" X 3/4", 3/4" & 1" METERS	UW–17
REV.BY	DATE	DATE OF APPROVAL		



NOTE:
IF THE MAIN IS NOT UNDER PAVEMENT, THE SERVICE PIPE SHALL BE POLYETHYLENE MEETING AWWA C–901. WHEN THE MAIN IS UNDER PAVEMENT, THE SERVICE PIPE SHALL BE TYPE ("L OR K") COPPER, OR STAINLESS STEEL SCHEDULE 40 PIPE. SERVICE PIPE SHALL BE BLUE FOR WATER OR PURPLE (PANTONE 522C) FOR RECLAIMED WATER. SERVICE PIPE MAY BE IN A COLOR CODED CASING OR COLOR CODED POLYETHYLENE WRAP, AS AN OPTION TO SERVICE PIPE BEING COLOR CODED.

NOTES:

1. 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.
2. 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.
3. "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.
4. 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.
5. WATER AND RECLAIMED WATER SERVICE LINES TO BE 5' MINIMUM FROM SEWER SERVICE PIPES.
6. FOR 2" SERVICES REPLACE CORPORATION STOP WITH 2" RESILIENT WEDGE FIP GATE VALVE W/BOX, LID & TAG.
7. 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.
8. TEMPORARY RESIDENTIAL USE CAN BE PROVIDED BY CONTACTING THE UTILITY CUSTOMER SERVICE. SEE DETAIL UW–24.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			TYPICAL SERVICE CONNECTION	UW–20
REV.BY	DATE	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

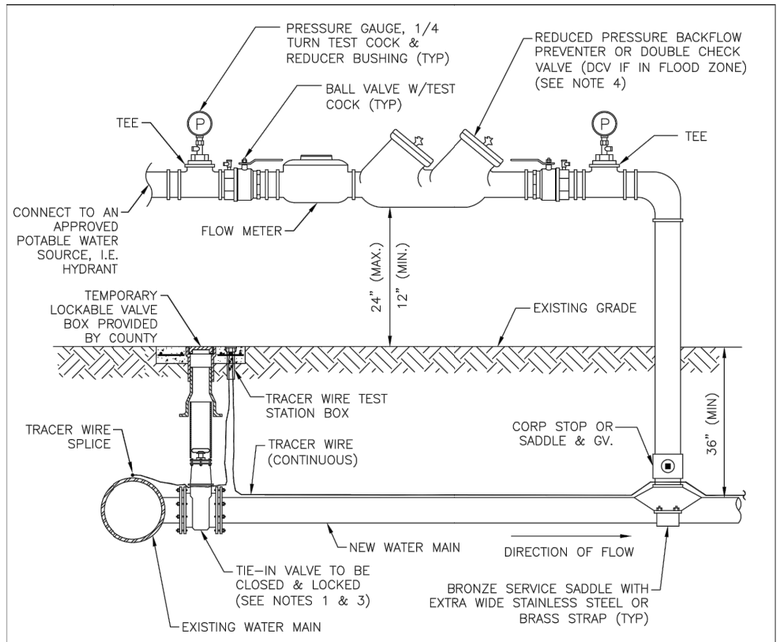
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-84

Sonnenberg, Terence 10/8/2019 1:03:31 PM S:\Projects_RDWY\ProjFdot\ProjFDOT\V8\60460213000\utils\cadd\UTDTUW02.dwg

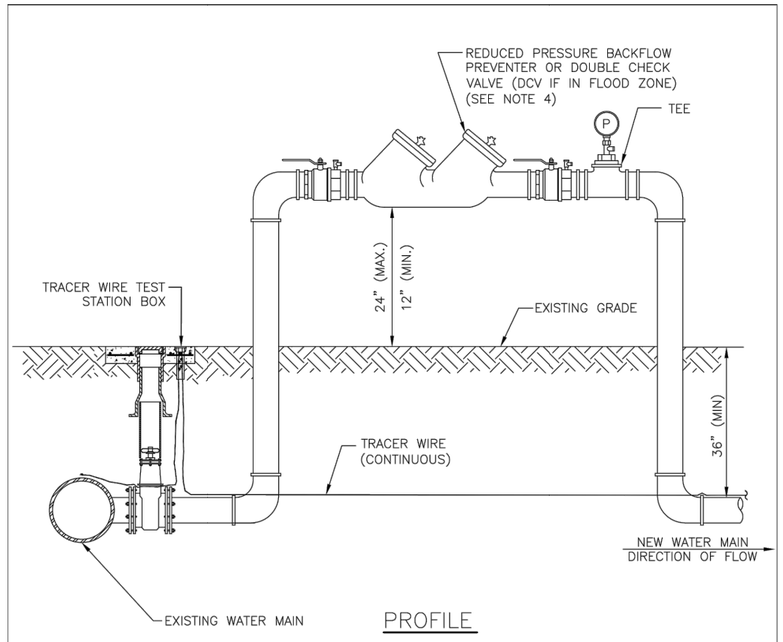


PROFILE

NOTES:

1. FOR TIE-IN VALVE, SEE DETAIL UW-4 FOR TAPPING SLEEVE VALVE AND UW-2 FOR GATE VALVE.
2. 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). A CROSS MAY BE INSTALLED IF THE EXISTING WATER MAIN IS NOT LARGER THAN THE NEW WATER MAIN.
3. 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.
4. BACKFLOW PREVENTER SHALL BE STRUCTURALLY SUPPORTED.
5. THE TIE-IN VALVE SHALL REMAIN CLOSED AND THE LOCKABLE VALVE BOX SHALL BE LOCKED BY MANATEE COUNTY. THE TIE-IN VALVE SHALL REMAIN CLOSED AND LOCKED UNTIL THE NEW SYSTEM HAS BEEN CLEARED FOR USE BY THE FDEP AND ALL OTHER PERTINENT AGENCIES. AFTER CLEARANCE IS OBTAINED, THE LOCKABLE VALVE BOX SHALL BE REMOVED, RETURNED TO THE COUNTY, AND REPLACED WITH A STANDARD VALVE BOX.
6. IN THE EVENT THE LOCKED TIE-IN VALVE MUST BE OPENED, THE VALVE SHALL ONLY BE OPERATED BY MANATEE COUNTY PERSONNEL.
7. SEE DETAIL UW-22 FOR ADDITIONAL JUMPER CONNECTION NOTES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			TEMPORARY JUMPER CONNECTION-HYDRANT AVAILABLE	UW-22A
REV.BY	DATE	DATE OF APPROVAL		



PROFILE

NOTES:

1. FOR TIE-IN VALVE, SEE DETAIL UW-4 FOR TAPPING SLEEVE VALVE AND UW-2 FOR GATE VALVE.
2. 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). A CROSS MAY BE INSTALLED IF THE EXISTING WATER MAIN IS NOT LARGER THAN THE NEW WATER MAIN.
3. 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.
4. BACKFLOW PREVENTER SHALL BE STRUCTURALLY SUPPORTED.
5. SEE DETAIL UW-23 FOR ADDITIONAL JUMPER CONNECTION NOTES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			TEMPORARY JUMPER CONNECTION - NO HYDRANT AVAILABLE	UW-22B
REV.BY	DATE	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
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DATE: FEBRUARY 2019
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Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-85

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1. A 2–INCH MIN. TEMPORARY JUMPER CONNECTION IS REQUIRED AT ALL CONNECTIONS BETWEEN EXISTING ACTIVE POTABLE WATER MAINS AND PROPOSED NEW WATER MAIN IMPROVEMENTS WITH THE FOLLOWING EXCEPTIONS:
   A. PROJECTS THAT INCLUDE A PERMANENT BACKFLOW PREVENTER AT THE RIGHT–OF–WAY WHICH IS ADJACENT TO THE EXISTING WATER MAIN;
   B. PROJECTS THAT INCLUDE NEW WATER MAINS THAT ARE LESS THAN OR EQUAL TO 18 LINEAR FEET IN LENGTH; OR
   C. OTHER PROPOSED CASES THAT ARE APPROVED BY MANATEE COUNTY AND THE CONSTRUCTION DRAWINGS SPECIFICALLY STATE THAT A TEMPORARY JUMPER CONNECTION IS NOT REQUIRED.
2. 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–21A. A TEMPORARY JUMPER SHALL BE USED FOR FILLING, FLUSHING AND FOR DISINFECTION OF ANY NEW MAIN OF ANY SIZE. THE 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.
3. LOCATIONS AND ORIENTATION OF JUMPERS ASSOCIATED WITH CONNECTIONS TO EXISTING WATER MAINS THAT ARE LOCATED UNDER THE ROADWAY PAVEMENT SHALL BE APPROVED ON A CASE–BY–CASE BASIS.
4. 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–21A OR UW–21B SHALL BE DISINFECTED BY SPRAYING OR SWABBING PER SECTION 4.6 OF AWWA C651.
5. A SEPARATE AND SUCCESSFUL HYDROSTATIC TEST ON THE NEW SYSTEM SHALL OCCUR BETWEEN THE TIE–IN VALVE AND THE CLOSEST DOWNSTREAM GATE VALVE BEFORE PERFORMING A HYDROSTATIC TEST ON THE REMAINDER OF THE NEWLY–CONSTRUCTED WATER MAIN. THE TIE–IN VALVE AND THE CLOSEST DOWNSTREAM GATE VALVE SHALL BE CLOSED DURING THE HYDROSTATIC TEST OF THE REMAINDER OF THE NEWLY CONSTRUCTED WATER MAIN.
6. 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.
7. 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.
8. ALL TEMPORARY BACKFLOW DEVICES OR "JUMPERS" UTILIZED DURING PIPELINE CONSTRUCTION MUST SHOW CERTIFICATION THAT THEY HAVE BEEN TESTED ANNUALLY 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.
9. AFTER RECEIPT OF CLEARANCE FOR USE BY FDEP, MANATEE COUNTY, AND ALL OTHER PERTINENT AGENCIES, THE CONTRACTOR SHALL REMOVE THE TEMPORARY JUMPER CONNECTION. THE CORPORATION STOPS ARE TO BE CLOSED AND PLUGGED WITH 2–INCH BRASS.
10. ALL INSTALLATION AND MAINTENANCE OF THE TEMPORARY JUMPER CONNECTION AND ASSOCIATED BACKFLOW PREVENTION DEVICE, FLOW METER, FITTINGS, VALVES, ETC., SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
11. TEMPORARY JUMPER SIZE DEPENDS ON THE SITUATION: JUMPERS LARGER THAN 2" MAY BE USED FOR FLUSHING PURPOSES OR IF PARTIAL FIRE PROTECTION IS REQUIRED DURING INITIAL CONSTRUCTION, AS DETERMINED BY THE EOR OR FIRE DEPARTMENT.

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE

DATE OF APPROVAL

TEMPORARY JUMPER CONNECTION NOTES

UW–23

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
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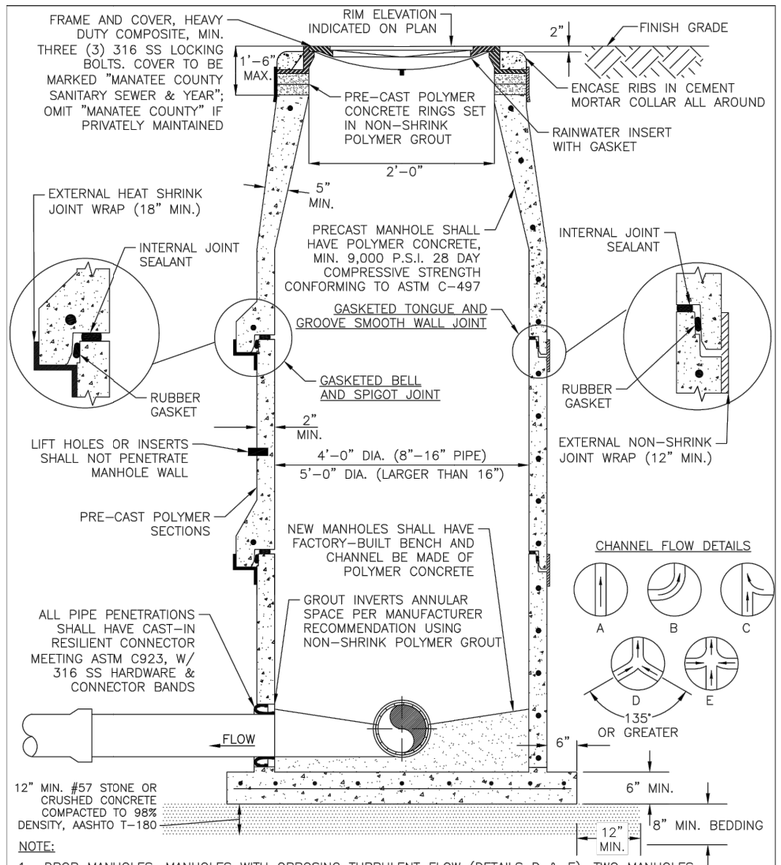
DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-85A

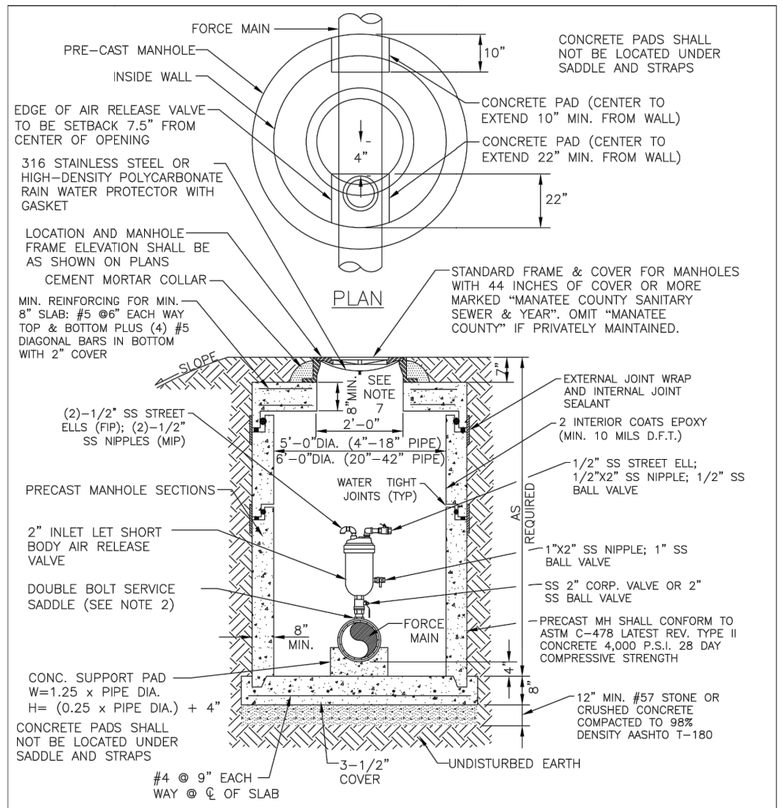
Sonnenberg, Terence 10/8/2019 1:03:34 PM S:\Projects_RDWY\ProjFdot\ProjFDOT\V8\60460213000\utils\cadd\UTDTUW02.dwg



NOTE:

1. DROP MANHOLES, MANHOLES WITH OPPOSING TURBULENT FLOW (DETAILS D & E), TWO MANHOLES IMMEDIATELY UPSTREAM OF A LIFT STATION WET WELL, MANHOLES WITH GRAVITY SEWERS GREATER THAN 12 INCHES IN DIAMETER, FORCE MAIN TERMINAL MANHOLE AND THE NEXT TWO DOWNSTREAM MANHOLES SHALL BE MADE OF POLYMER CONCRETE.
2. MANHOLES SHALL HAVE A GASKETED BELL & SPIGOT OR TONGUE & GROOVE SMOOTH WALL JOINT DESIGN.
3. ALL JOINTS SHALL MEET THE REQUIREMENTS OF ASTM C-443 AND ASTM C-990 FOR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS AND FLEXIBLE JOINT SEALANTS.
4. ALL FRP/STEEL REINFORCEMENT, MANHOLE RISERS, CONES, BASES, AND FLAT LIDS SHALL BE DESIGNED BY MANUFACTURER TO MEET LOADING REQUIREMENTS OF ASTM C-478, ASTM C-857, ACI 350, AND ACI 440.1R AS MODIFIED FOR POLYMER CONCRETE MANHOLES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			STANDARD PRE-CAST POLYMER CONCRETE SANITARY SEWER MANHOLE FOR TURBULENT FLOW	US-3
REV.BY	DATE	DATE OF APPROVAL		



NOTES:

1. AIR RELEASE VALVES WHERE REQUIRED ON 4" AND LARGER FORCE MAINS.
2. ARV TO BE SIZED ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR FORCE MAIN SIZE, MINIMUM 2" ARV REQUIRED.
3. SERVICE SADDLE, NIPPLES AND CORPORATION BALL VALVE SHALL BE STAINLESS STEEL.
4. FOR MANHOLES WITH LESS THAN 44 INCHES OF COVER FROM TOP-OF-PIPE TO TOP-OF-FRAME, FRAME & COVER TO HAVE A 32-INCH OPENING. MINIMUM ALLOWABLE COVER IS 36 INCHES.
5. ALL PIPE PENETRATING MANHOLE SHALL HAVE RESILIENT PIPE TO MANHOLE SEALS PER ASTM-923.
6. FINAL GRADE TO BE SLOPED AWAY FROM MANHOLE.
7. MANHOLE SHALL BE AASHTO H-20 RATED, WHEN LOCATED WITHIN THE RIGHT OF WAY.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			BELOW GRADE AIR RELEASE VALVE FOR FORCE MAINS	US-8
REV.BY	DATE	DATE OF APPROVAL		

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-86

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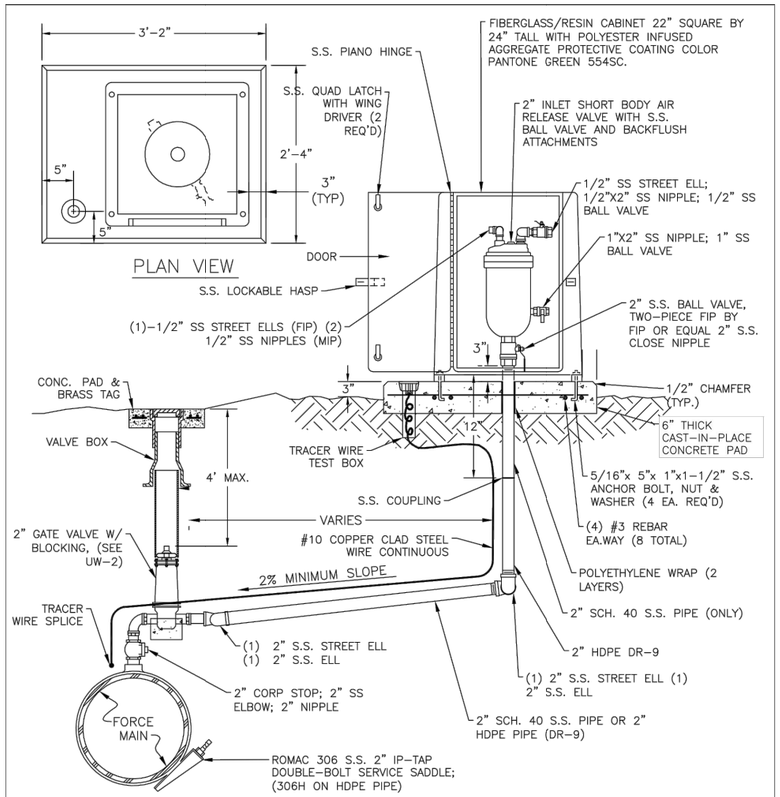
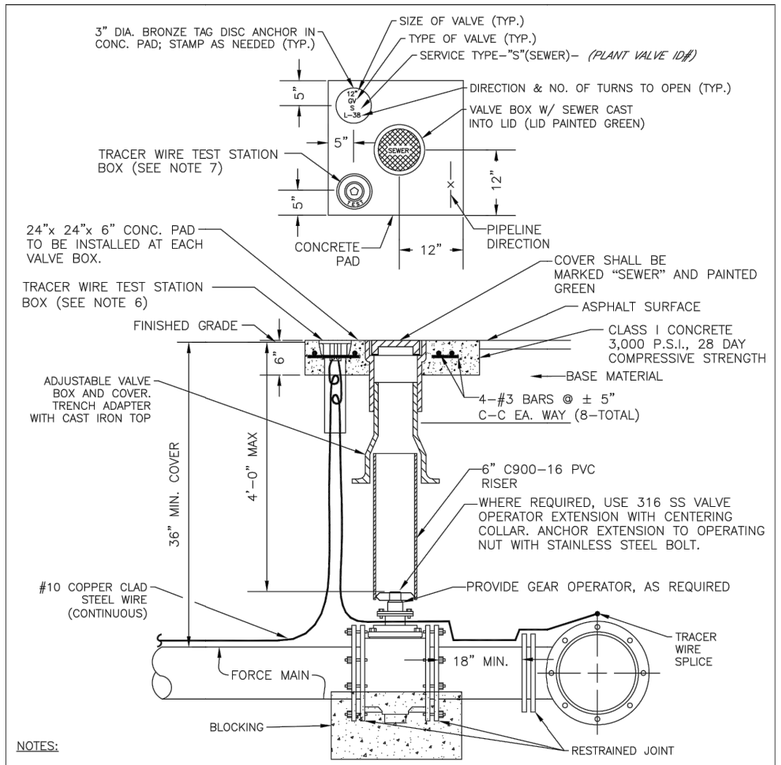


NOTES:
1. AIR RELEASE VALVES TO BE ABOVE-GROUND INSTALLATIONS, UNLESS IMPRACTICAL. INSTALLATIONS MAY BE BELOW-GROUND ONLY WHERE APPROVED AND SPECIFICALLY INDICATED ON THE PLAN.
2. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS, OR WHERE AIR WOULD BE ENTRAPPED, ALONG 4" AND LARGER FORCE MAINS.
3. FORCE MAIN VERTICAL ALIGNMENT TO BE DESIGNED SUCH THAT THE MINIMUM NUMBER OF REQUIRED AIR RELEASE VALVES ARE INSTALLED.
4. ALL INCIDENTAL FITTINGS AND HARDWARE TO BE STAINLESS STEEL.
5. ALL PIPE THREADS TO BE SEALED AIR TIGHT.
6. VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.
6. CONCRETE PAD SHALL BE TYPE I CONCRETE W/ 3,000 P.S.I., 28 DAY COMPRESSIVE STRENGTH.
7. ARV SHALL BE INSTALLED MINIMUM 6 FT FROM EDGE OF PAVEMENT; 10 FT MAXIMUM FROM BACK OF CURB; 4 FT MIN. MAY BE APPROVED BY UTILITIES IN SOME EXISTING AREAS.
8. SEE GATE VALVE, BOX, LID AND TAG STANDARD DETAIL. CENTERING COLLAR IS NOT REQUIRED ON 2" GATE VALVES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY / DATE	DATE OF APPROVAL	ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR FORCE MAINS	US-9



NOTES:
1. "SV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE VALVE. IF NO CURB, INSTALL A GREEN DISC WITH "SV" AND A 1/8" x 1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE FOOTAGE FROM THE DISC TO THE VALVE.
2. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS DETERMINED IN THE FIELD.
3. VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS, CURBS OR GUTTERS.
4. PRECAST CONCRETE PADS AND THRUST BLOCKS SHALL NOT BE USED.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. USE NON-TRAFFIC RATED BOXES FOR NORMAL YARD SERVICE. WHERE VALVE WILL BE IN STREET OR PARKING UNDER VEHICLE TRAFFIC, USE TRAFFIC RATED BOXES. WHERE POSSIBLE, LOCATE TRACE WIRE TESTING STATION OUTSIDE OF TRAVEL LANE OR IN MEDIAN, CENTERED IN SEPARATE CONCRETE PAD SIMILAR TO STANDARD VALVE BOX PAD.
7. TRACER WIRE BOX SHALL BE LOCATED OUTSIDE THE ROADWAY ON THOROUGHFARES, LOCAL ARTERIAL AND STATE ROADWAYS.
8. THE BRASS TAG SHALL HAVE A "PLANT VALVE ID# WHEN VALVES ARE INSTALLED WITHIN THE COUNTY TREATMENT PLANT LIMITS. THE PLANT VALVE ID# SHALL BE SHOWN ON THE CONSTRUCTION PLANS AND RECORD DRAWINGS.
9. REFER TO SECTION 1.11 FOR FURTHER DETAILS.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY / DATE	DATE OF APPROVAL	VALVE, BOX, COVER AND TAG	US-11

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

TIMOTHY M. CURRAN, P.E.
P.E. NO. 34809
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2019
PROJECT NO.: 6086960

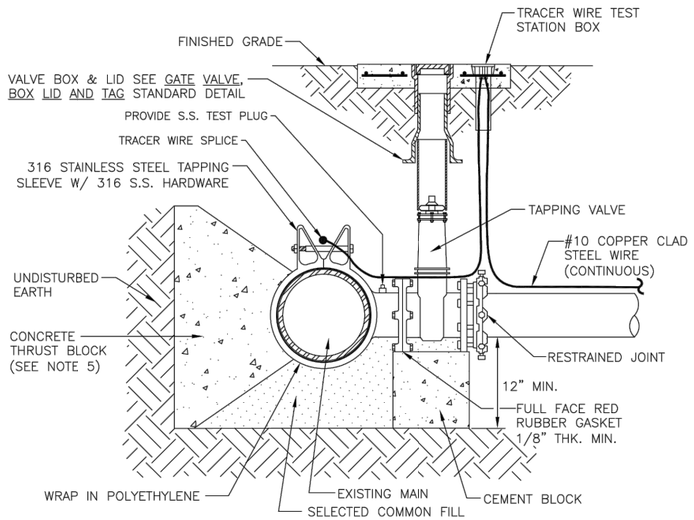
Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

STANDARD DETAILS

SHEET NO.: U-87

Sonnenberg, Terence 10/8/2019 1:03:39 PM S:\Projects_RDWY\ProjFdot\ProjFDOT\V8\60460213000\utils\cadd\UTDTUW02.dwg



ELEVATION

NOTES:

1. PRIOR TO TAPPING, CONTRACTOR TO DEMONSTRATE 60 MINUTE HYDROSTATIC TEST OF THE TAPPING SLEEVE AND VALVE WITH NO LOSS OF 150 PSI FOR FORCE MAIN.
2. ALL FITTINGS TO BE WRAPPED WITH 20 MIL POLYETHYLENE PLASTIC SHEETING AT THRUST BLOCK.
3. 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.
4. CONTRACTOR TO SUPPLY A DRY HOLE FOR TAPPING CREW TO WORK IN AND A BACK-HOE TO LOWER TAPPING MACHINE INTO THE HOLE.
5. WHERE THRUST BLOCK NOT USED, RESTRAINED JOINTS MUST THEN EXTEND FROM TEE FULL LENGTH SPECIFIED FOR "TEES."
6. TRACER WIRE TEST STATION BOX IS REQUIRED AT CONNECTIONS TO EXISTING MAINS.
7. SEE SECTION 1.11 TAPPING SLEEVES AND VALVES FOR FURTHER DETAILS.

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

REV.BY	DATE

DATE OF APPROVAL

TAPPING SLEEVE AND VALVE (FORCE MAINS)

US-12

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: R.A.
DRAWN BY: T.S.
CHECKED BY: T.C.

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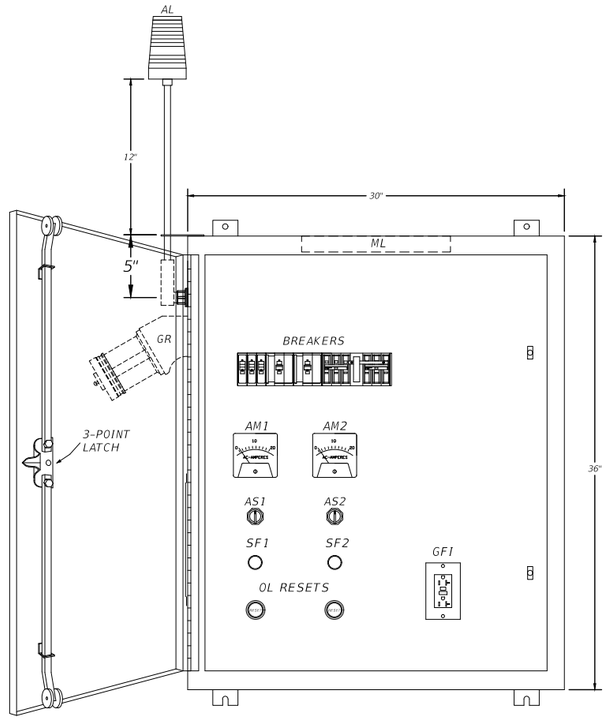
Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: TIMOTHY M. CURRAN, P.E.
FL. LICENSE NO.: 34809

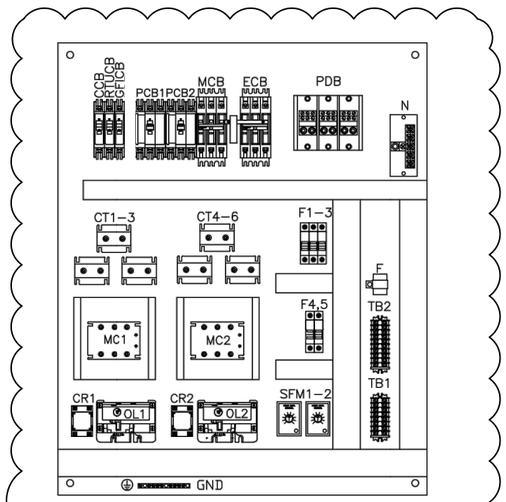
STANDARD DETAILS

SHEET NO.: U-87A



ENCLOSURE POWDER COATED WHITE

ENCLOSURE & DEADFRONT LAYOUT (TYPICAL)



BASE PLATE LAYOUT (TYPICAL)

PUMP CONTROL PANEL

PUMP CONTROL PANEL BILL OF MATERIALS			
QTY.	ABBR.	DESCRIPTION	MANUFACTURER, PART#
1	ENC	ENCLOSURE, 304SS N3R (WHITE)	HOFFMAN, A36H3012SSLP-P-8743 (MINIMUM SIZE)
1	MCB	MAIN CIRCUIT BREAKER	SQ.D, (100A)
1	ECB	EMERGENCY CIRCUIT BREAKER	SQ.D, (100A)
2	PCB1,2	PUMP CIRCUIT BREAKER	SQ.D, (SIZE AS REQUIRED)
1	CCB	CONTROL CIRCUIT BREAKER	SQ.D, QOU115
1	RTUCB	RTU CIRCUIT BREAKER	SQ.D, QOU115
1	GFICB	GFI CIRCUIT BREAKER	SQ.D, QOU120
2	MC1,2	SOLID STATE CONTACTOR + HEAT SINK	CRYDON, A53TP SIZE 1
2	CR1-2	CURRENT RELAY + HEAT SINK	CRYDON, CWA2410 + HS501DR + HSP-2
2	OL1-2	OVERLOAD RELAY	SIEMENS, ESP200 (SIZE AS REQUIRED)
1	GR	GENERATOR RECEPTACLE	RUSSELL STOLL, JRSB1044FR (230V, 100A) RUSSELL STOLL, JRSB2044FR (230V, 200A)
1	SPD	SURGE PROTECTOR	DITEK, DTK-2403CMX+
6	CT1-6	CURRENT TRANSFORMER 20:5	ELECTRO. IND, 2SFT-____ (SIZE AS REQUIRED)
2	AS1-2	AMMETER SELECTOR SWITCH	SPRECHER & SCHUH, LE2-12-8751
2	AM1-2	AMMETER 0-20A	CROMPTON, 013-75AA-LS_ _-C6-B3 (SIZE AS REQUIRED)
5	F1-5	FUSE, 1A	FERRAZ, ATMR-1
1	GFI	120V RECEPTACLE	PASS & SEYMOUR, 1597-I
1	ML	MAINTENANCE LIGHT, LED	HOFFMAN, LEDA1S35
2	SFM1,2	SEAL FAIL MODULE	SYRELEC, PNRU-110A
2	IL	INDICATING LIGHT, RED LED	EATON, C22-L-XR-120
1	ASB	ALARM SILENCE BUTTON	SQ.D, 9001-SKR1BH5
1	F	FLASHER	INGRAM, SSF-150W
1	AL	ALARM LIGHT, 120V LED	FEDERAL, LP3PL-120R

REVISIONS TO TABLE ARE NOTED IN THIS FONT

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: C.T.
DRAWN BY: T.S.
CHECKED BY: C.T.

CARLOS TURCIOS, P.E.
P.E. NO. 64578
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2018
PROJECT NO.: 6086960

Manatee County FLORIDA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: CARLOS TURCIOS, P.E.
FL. LICENSE NO.: 64578

GRINDER LIFT STATION AT ELWOOD 1 PS ELECTRICAL DETAILS

SHEET NO.: ULS-9

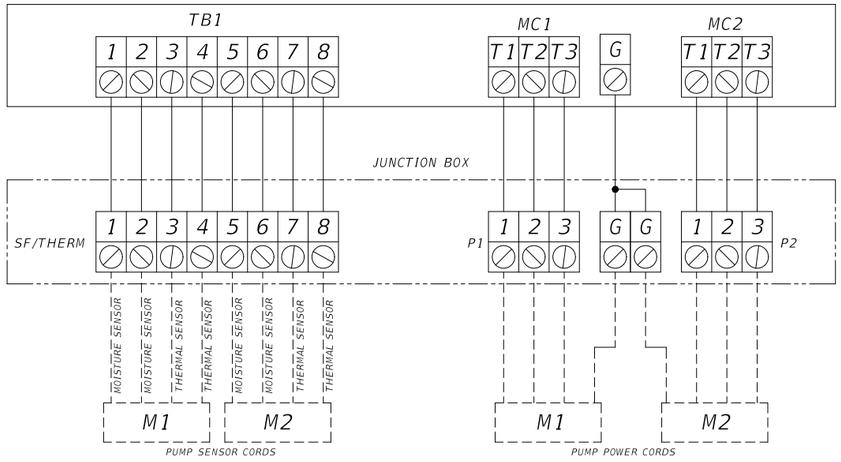
Sonnenberg, Terence 10/8/2019 1:04:49 PM S:\Projects_RDWY\ProjFdot\ProjFDOT\V8\60460213000\utils\cadd\LIFT STATION-ELECTRICAL.dwg

WIRE COLOR CODE

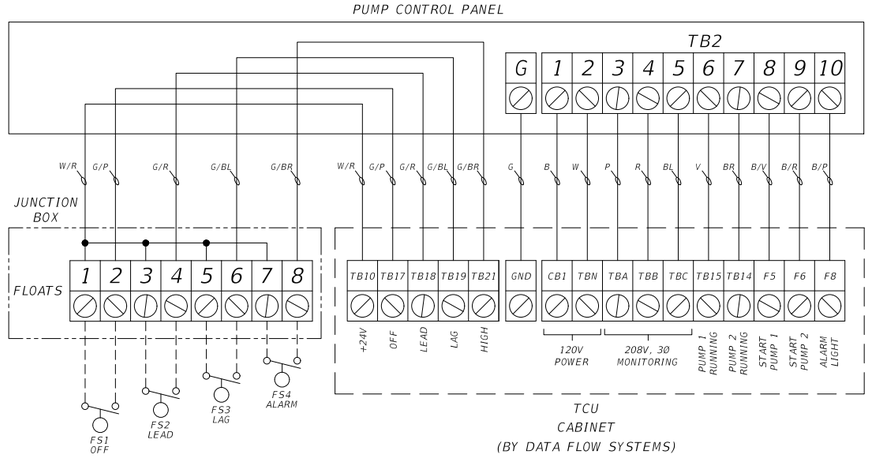
SYMBOL	COLOR	SYMBOL	COLOR	SYMBOL	COLOR
B	BLACK	V	VIOLET	G/R	GREY/RED
W	WHITE	BR	BROWN	G/BL	GREY/BLUE
G	GREEN	B/R	BLACK/RED	G/BR	GREY/BROWN
BL	BLUE	B/V	BLACK/VIOLET	W/R	WHITE/RED
R	RED	B/P	BLACK/PINK	W/B/V	WHT/BLK/VIOLET
P	PINK	G/P	GREY/PINK	W/B/R	WHT/BLK/RED

TERMINALS

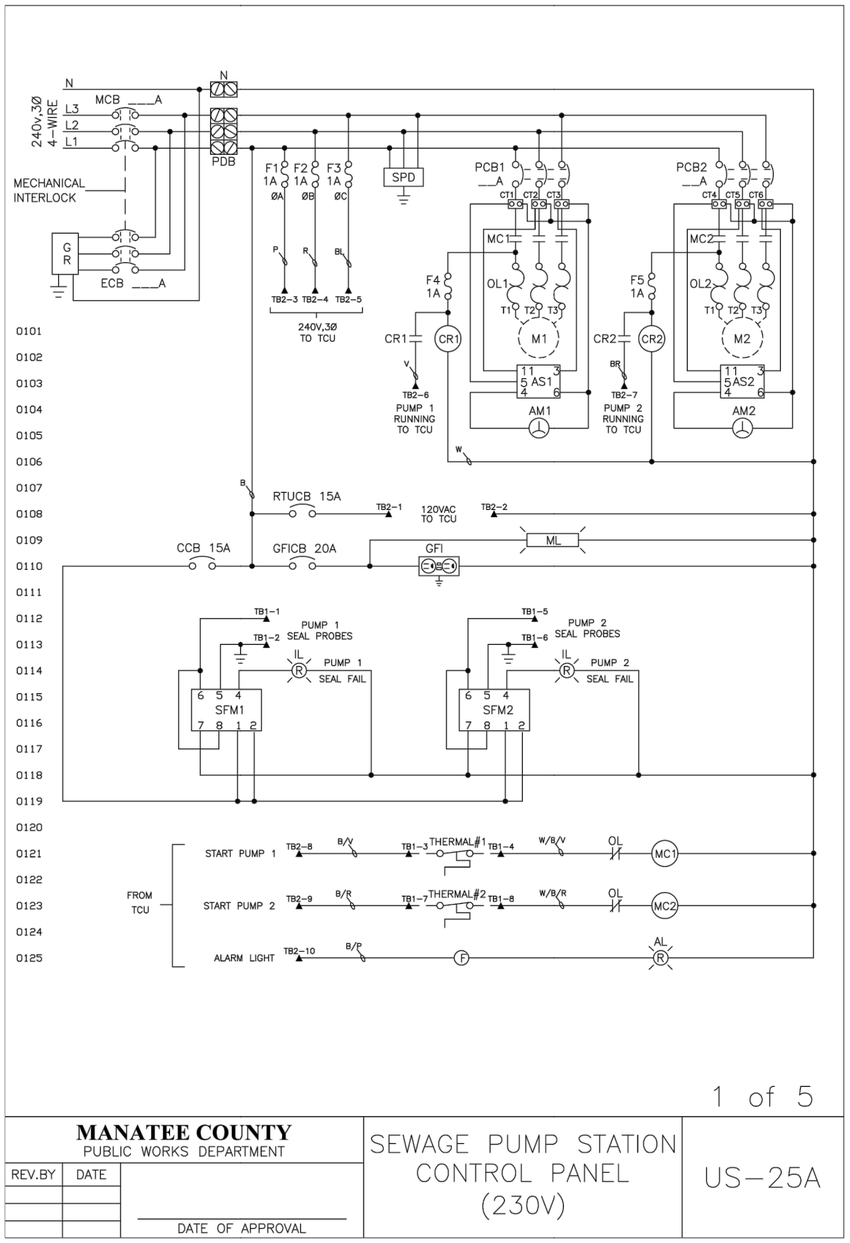
PUMP CONTROL PANEL



PUMP CONTROL PANEL



WIRING DIAGRAM



1 of 5

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	DATE OF APPROVAL	SEWAGE PUMP STATION CONTROL PANEL (230V)
			US-25A

CONTROL DIAGRAM

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

No.	REVISIONS	DATE	BY
1	ADDENDUM 1	10/08/19	RA

SCALE: AS NOTED
DESIGNED BY: C.T.
DRAWN BY: T.S.
CHECKED BY: C.T.

CARLOS TURCIOS, P.E.
P.E. NO. 64578
AECOM TECHNICAL SERVICES, INC.
7650 WEST COURTNEY CAMPBELL CAUSEWAY
TAMPA, FL 33607-1462
(813) 286-1711
CERTIFICATE OF AUTHORIZATION: 8115

DATE: FEBRUARY 2018
PROJECT NO.: 6086960

PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

DESIGN ENGINEER: CARLOS TURCIOS, P.E.
FL. LICENSE NO.: 64578

GRINDER LIFT STATION AT ELWOOD 1 PS ELECTRICAL DETAILS

SHEET NO.: ULS-11

Sonnenberg, Terence 10/8/2019 1:05:04 PM S:\Projects_RDWY\ProjFdot\ProjFDOT\V8\60460213000\utils\cadd\LIFT STATION-ELECTRICAL.dwg

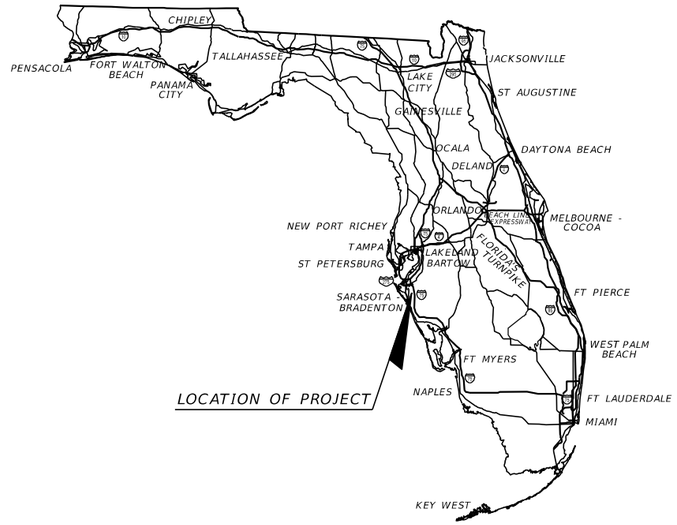
CONTRACT PLANS COMPONENTS

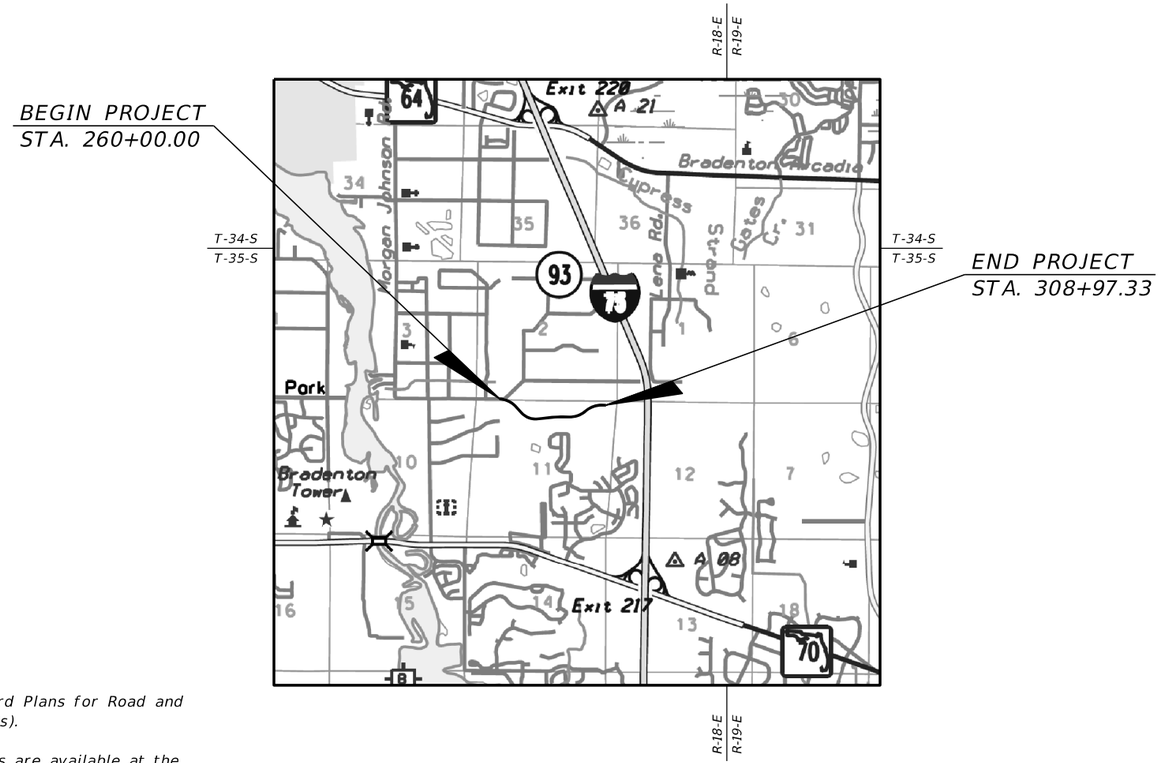
SIGNING AND PAVEMENT MARKING
SIGNALIZATION
LIGHTING

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

CONTRACT PLANS

MANATEE COUNTY
PROJECT NUMBER 6045662
44TH AVENUE EAST
PHASE I
FROM 44TH AVENUE PLAZA EAST TO I-75





INDEX OF ROADWAY PLANS

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1	KEY SHEET
2B (2)	SIGNATURE SHEET
3	SUMMARY OF PAY ITEMS
4 - 6	DRAINAGE MAPS
7	EXISTING DRAINAGE STRUCTURES
8 - 11	TYPICAL SECTIONS
12 - 13	SUMMARY OF DRAINAGE STRUCTURES
14	PROJECT LAYOUT
CTL-1	PROJECT CONTROL SHEET
15	GENERAL NOTES
16 - 23	ROADWAY PLAN & PROFILES
24	SUPERELEVATION TRANSITION DETAILS
25 - 39	DRAINAGE STRUCTURES
40 - 41	DRAINAGE DETAILS
42 - 43	POND PLAN SHEETS
44	POND TYPICAL SECTIONS
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70	TRAFFIC CONTROL GENERAL NOTES
71 - 74	TRAFFIC CONTROL PLANS
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	FOR INFORMATION ONLY
DET-1 - DET-2	ROADWAY DETAILS

GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY2019-20 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: http://www.fdot.gov/design/standardplans

Standard Plans for Bridge Construction are included in the Structures Plans Component

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, July 2019 Standard Specifications for Road and Bridge Construction at the following website: http://www.fdot.gov/programmanagement/Implemented/SpecBooks

REVISIONS:

1 Roadway Sheets 1, 2A, 16, DET-1, & DET-2 (Revised 10-10-19)

1 Signal Sheets T-1, T-2, & T-27-T-28 (Revised 10-10-19)

2 Roadway Sheets 1, 2B, 3, 12-13, 31-32, 34-35, & 41 (Revised 10-15-19)

REVISION 02
10/2019

ROADWAY PLANS ENGINEER OF RECORD:

JASON L. STARR, P.E.
P.E. NO.: 70171
HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232
FBPR CERTIFICATE OF AUTHORIZATION NO. 4213
VENDOR NO. 47-0680568
CONTRACT NO. C9480

MANATEE COUNTY PROJECT MANAGER:
ERIC S. SHROYER, P.E.

FISCAL YEAR	SHEET NO.
19	1

JASON L. STARR
LICENSE
No 70171
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

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. THE SIGNATURE MUST BE VERIFIED IN THE ELECTRONIC DOCUMENTS.

HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232-6212
CERTIFICATE OF AUTHORIZATION NO. 4213
JASON L. STARR, PE NO. 70171

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

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2B	SIGNATURE SHEET
3	SUMMARY OF PAY ITEMS

LISANDRO ARTURO ZAPATA
LICENSE
No 58822
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY:

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HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232-6212
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LISANDRO ARTURO ZAPATA, PE NO. 58822

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SHEET NO.	SHEET DESCRIPTION
2B	SIGNATURE SHEET
12 - 13	SUMMARY OF DRAINAGE STRUCTURES
31 - 32, 34 - 35	DRAINAGE STRUCTURES
41	DRAINAGE DETAILS

No.	REVISIONS	DATE	BY
2	New Sheet	10/2019	JLS

SCALE: AS NOTED
DESIGNED BY: JLS
DRAWN BY: JHC
CHECKED BY: DRH

HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232
CERTIFICATE OF AUTHORIZATION 4213

DATE: 10/2019
PROJECT NO.: 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: JASON L. STARR
FL. LICENSE NO.: 70171

SIGNATURE SHEET

SHEET NO. 2B

ROADWAY PLANS

ITEM NO.	ITEM	UNIT	QUANTITY
101-1	MOBILIZATION	LS	1
102-1	MAINTENANCE OF TRAFFIC	LS	1
104-10-3	SEDIMENT BARRIER	LF	8,219
104-11	FLOATING TURBIDITY BARRIER	LF	438
104-12	STAKED TURBIDITY BARRIER- NYLON REINFORCED PVC	LF	156
104-15	SOIL TRACKING PREVENTION DEVICE	EA	2
104-18	INLET PROTECTION SYSTEM	EA	48
107-1	LITTER REMOVAL	AC	5.28
107-2	MOWING	AC	5.28
110-1-1	CLEARING AND GRUBBING	AC	11.12
120-1	REGULAR EXCAVATION	CY	16,689
120-6	EMBANKMENT	CY	3,749
160-4	TYPE B STABILIZATION	SY	23,825
285-709	OPTIONAL BASE (BASE GROUP 09)	SY	21,028
327-70-6	MILLING EXIST. ASPH. PAVT., 1 1/2" AVG. DEPTH	SY	11,740
334-1-13	SUPERPAVE ASPHALTIC CONCRETE, TRAFFIC C	TN	3,470
337-7-83	ASPHALT FRICTION COURSE, TRAFFIC C, FC-12.5, PG 76-22	TN	3,023
400-0-11	CONCRETE CLASS NS, GRAVITY WALL	CY	75
400-2-2	CONCRETE CLASS II, ENDWALLS	CY	0.33
425-1-351	INLETS, CURB, TYPE P-5, < 10'	EA	24
425-1-355	INLETS, CURB, TYPE P-5, PARTIAL	EA	2
425-1-361	INLETS, CURB, TYPE P-6, < 10'	EA	2
425-1-365	INLETS, CURB, TYPE P-6, PARTIAL	EA	4
425-1-451	INLETS, CURB, TYPE J-5, < 10'	EA	3
425-1-461	INLETS, CURB, TYPE J-6, < 10'	EA	3
425-1-529	INLETS, DT BOT, TYPE C, MODIFY	EA	1
425-1-541	INLETS, DT BOT, TYPE D, <10'	EA	2
425-1-549	INLETS, DT BOT, TYPE D, MODIFY	EA	2
425-2-61	MANHOLES, P-8, < 10'	EA	3
425-2-63	MANHOLES, P-8, PARTIAL	EA	1
425-2-91	MANHOLES, J-8, < 10'	EA	2
430-175-115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15" S/CD	LF	141
430-175-118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18" S/CD	LF	2,679
430-175-124	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 24" S/CD	LF	636
430-175-130	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 30" S/CD	LF	99
430-175-136	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 36" S/CD	LF	360
430-175-218	PIPE CULVERT, OPTIONAL MATERIAL, OTHER SHAPE-ELIP/ARCH, 18" S/CD	LF	8
430-175-224	PIPE CULVERT, OPTIONAL MATERIAL, OTHER SHAPE-ELIP/ARCH, 24" S/CD	LF	4
430-982-123	MITERED END SECTION, OPTIONAL ROUND, 15" CD	EA	1
430-982-125	MITERED END SECTION, OPTIONAL ROUND, 18" CD	EA	1
430-982-129	MITERED END SECTION, OPTIONAL ROUND, 24" CD	EA	2
430-982-138	MITERED END SECTION, OPTIONAL ROUND, 30" CD	EA	1
430-982-133	MITERED END SECTION, OPTIONAL ROUND, 36" CD	EA	1
515-1-1	PIPE HANDRAIL - GUIDERAIL, STEEL	LF	550
520-1-10	CONCRETE CURB & GUTTER, TYPE F	LF	4,753
520-2-2	CONCRETE CURB & GUTTER, TYPE AB	LF	8,707
522-1	CONCRETE SIDEWALK & DRIVEWAYS, 4" THICK	SY	4,531
522-2	CONCRETE SIDEWALK & DRIVEWAYS, 6" THICK	SY	170
527-2	DETECTABLE WARNINGS	SF	379
570-1-2	PERFORMANCE TURF (SOD)	SY	18,705
710-11-101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	3.114
710-11-125	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR STOP LINE, 24"	LF	183
710-11-201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	2.947

LIGHTING PLANS

ITEM NO.	ITEM	UNIT	QUANTITY
630-2-11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	8,295
630-2-12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	1,765
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	57
715-1-12	LIGHTING CONDUCTORS, F&I, INSULATED, NO. 8 - 6	LF	34,727
715-1-13	LIGHTING CONDUCTORS, F&I, INSULATED, NO. 4 - 2	LF	500
715-4-13	LIGHT POLE COMPLETE, F&I STANDARD POLE STANDARD FOUNDATION, 40' MOUNTING HEIGHT	EA	22
715-4-23	LIGHT POLE COMPLETE, F&I STANDARD POLE SPECIAL FOUNDATION, 40' MOUNTING HEIGHT	EA	31
715-7-11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	1
715-11-111	LUMINAIRE, F&I, ROADWAY, COBRAHEAD	EA	2
715-500-1	POLE CABLE DISTRIBUTION SYSTEM, CONVENTIONAL	EA	53

SIGNALIZATION PLANS

ITEM NO.	ITEM	UNIT	QUANTITY
630-2-11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	3,316
630-2-12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	779
630-2-14	CONDUIT, FURNISH & INSTALL, ABOVE GROUND	LF	30
632-7-1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1
633-1-121	FIBER OPTIC CABLE, F&I, UNDERGROUND, 2-12 FIBERS	LF	220
633-1-122	FIBER OPTIC CABLE, F&I, UNDERGROUND, 13-48 FIBERS	LF	3,994
633-2-31	FIBER OPTIC CONNECTION, INSTALL, SPLICE	EA	8
633-3-11	FIBER OPTIC CONNECTION HARDWARE, F&I, SPLICE ENCLOSURE	EA	2
633-3-12	FIBER OPTIC CONNECTION HARDWARE, F&I, SPLICE TRAY	EA	2
633-3-15	FIBER OPTIC CONNECTION HARDWARE, F&I, PRETERMINATED PATCH PANEL	EA	2
633-8-1	MULTICONDUCTOR COMMUNICATION CABLE, F&I	LF	460
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	15
635-2-12	PULL & SPLICE BOX, F&I, 24" X 36" COVER SIZE	EA	3
635-2-13	PULL & SPLICE BOX, F&I, 30" X 60" RECTANGULAR OR 36" ROUND COVER SIZE	EA	2
639-1-122	ELECTRICAL POWER SERVICE, F&I, UNDERGROUND, METER PURCHASED BY CONTRACTOR	AS	1
639-2-1	ELECTRICAL SERVICE WIRE, FURNISH & INSTALL	LF	807
639-3-11	ELECTRICAL SERVICE DISCONNECT, F&I, POLE MOUNT	EA	1
639-4-6	EMERGENCY GENERATOR- PORTABLE, INSTALL HOUSING ONLY	EA	1
641-2-12	PRESTRESSED CONCRETE POLE, F&I, TYPE P-II SERVICE POLE	EA	1
641-2-13	PRESTRESSED CONCRETE POLE, F&I, TYPE P-III	EA	1
646-1-11	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTAL	EA	6
649-21-6	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 50'	EA	3
650-1-14	TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 3 SECTION, 1 WAY	AS	6
650-1-16	TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 4 SECTION, 1 WAY	AS	2
653-1-11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	6
660-3-11	VEHICLE DETECTION SYSTEM- MICROWAVE, F&I CABINET EQUIPMENT	EA	2
660-3-12	VEHICLE DETECTION SYSTEM- MICROWAVE, F&I, ABOVE GROUND EQUIPMENT	EA	4
660-6-121	VEHICLE DETECTION SYSTEM- AVI, BLUETOOTH, FURNISH & INSTALL, CABINET EQUIPMENT	EA	1
660-6-122	VEHICLE DETECTION SYSTEM- AVI, BLUETOOTH, FURNISH & INSTALL, ABOVE GROUND EQUIPMENT	EA	1
663-1-111	SIGNAL PRIORITY AND PREEMPTION SYSTEM, F&I, OPTICAL, CABINET ELECTRONICS	EA	1
663-1-112	SIGNAL PRIORITY AND PREEMPTION SYSTEM, F&I, OPTICAL, DETECTOR	EA	3
665-1-11	PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD	EA	6
670-5-112	TRAFFIC CONTROLLER ASSEMBLY, F&I, NEMA, 2 PREEMPTION	AS	1
676-2-122	ITS CABINET, FURNISH & INSTALL, POLE MOUNT W/ SUNSHIELD, 336S, 24"Wx46"Hx22"D	EA	1
682-1-113	ITS CCTV CAMERA, F&I, DOME PTZ ENCLOSURE - PRESSURIZED, IP, HIGH DEFINITION	EA	1
684-1-11	MANAGED FIELD ETHERNET SWITCH, F&I	EA	2
684-6-11	WIRELESS COMMUNICATION DEVICE, FURNISH & INSTALL, ETHERNET ACCESS POINT	EA	1
684-6-12	WIRELESS COMMUNICATION DEVICE, FURNISH & INSTALL, ETHERNET SUBSCRIBER UNIT	EA	1
685-1-11	UNINTERRUPTIBLE POWER SUPPLY, FURNISH AND INSTALL, LINE INTERACTIVE	EA	1
685-1-12	UNINTERRUPTIBLE POWER SUPPLY, FURNISH AND INSTALL, ONLINE/DOUBLE CONVERSION	EA	1
700-3-201	SIGN PANEL, FURNISH & INSTALL OVERHEAD MOUNT, UP TO 12 SF	EA	2
700-5-22	INTERNALLY ILLUMINATED SIGN, FURNISH & INSTALL, OVERHEAD MOUNT, 12-18 SF	EA	3

SIGNING AND PAVEMENT MARKING PLANS

ITEM NO.	ITEM	UNIT	QUANTITY
654-2-21	RRFB, F&I- SOLAR POWERED, COMPLETE SIGN ASSEMBLY- SINGLE DIRECTION	AS	2
654-2-22	RRFB, F&I- SOLAR POWERED, COMPLETE SIGN ASSEMBLY- BACK TO BACK	AS	1
700-1-11	SINGLE POST SIGN, F&I, GROUND MOUNT, UP TO 12 SF	AS	36
700-1-12	SINGLE POST SIGN, F&I, GROUND MOUNT, 12-20 SF	AS	9
700-1-13	SINGLE POST SIGN, F&I, GROUND MOUNT, 21-30 SF	AS	5
700-1-50	SINGLE POST SIGN, RELOCATE	AS	3
700-1-74	SINGLE POST SIGN, F&I CUSTOM, 31+ SF	AS	1
700-2-14	MULTI - POST SIGN, F&I GROUND MOUNT, 31-50 SF	AS	2
700-3-601	SIGN PANEL, REMOVE, UP TO 12 SF	EA	3
705-10-1	OBJECT MARKER, TYPE 1	EA	14
705-11-1	DELINEATOR, FLEXIBLE TUBULAR, YELLOW - YELLOW	EA	8
710-11-290	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, ISLAND NOSE	SF	124
710-90	PAINTED PAVEMENT MARKINGS, FINAL SURFACE	LS	1
711-11-123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND ROUNDABOUT	LF	1,448
711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE	LF	290
711-11-141	THERMOPLASTIC, STANDARD, WHITE, 2-4 DOTTED GUIDELINE/ 6-10 GAP EXTENSION, 6"	GM	0.545
711-11-170	THERMOPLASTIC, STANDARD, WHITE, ARROW	EA	25
711-11-224	THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18" FOR DIAGONAL OR CHEVRON	LF	256
711-11-241	THERMOPLASTIC, STANDARD, YELLOW, 2-4 DOTTED GUIDELINE/6-10 DOTTED EXTENSION, 6"	GM	0.186
711-14-125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	526
711-14-160	THERMOPLASTIC, PREFORMED, WHITE, BIKE MESSAGE	EA	8
711-14-170	THERMOPLASTIC, PREFORMED, WHITE, BIKE ARROW	EA	8
711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	GM	3.284
711-16-131	THERMOPLASTIC, OTHER SURFACES, WHITE, SKIP, 6",10-30 SKIP OR 3-9 LANE DROP	GM	1.706
711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	GM	1.852

No.	REVISIONS	DATE	BY
2	Quantity Changes	10/2019	JLS

SCALE AS NOTED
DESIGNED BY JLS
DRAWN BY JHC
CHECKED BY DRH

HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232
CERTIFICATE OF AUTHORIZATION 4213

DATE 10/2019
PROJECT NO. 6045662

Manatee County FLORIDA

MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER JASON L. STARR
FL. LICENSE NO. 70171

SUMMARY OF PAY ITEMS

QUANTITY	STR. NO.	STATION	SIDE	DESCRIPTION	BARRELS	STORM AND CROSS DRAIN OPTIONAL TYPE							CURB INLETS						MANHOLES			DITCH BOTTOM INLETS			CROSS DRAIN MITERED END SECTION					SOD	CLASS II CONC. (EW)	CLASS II CONC. (DITCH PAVT.)	REMARKS
						ROUND					OTHER		P-5		J-5	P-6		J-6	P-8		J-8	C	D		ROUND								
						15"	18"	24"	30"	36"	18"	24"	PART.	<10'	<10'	PART.	<10'	<10'	PART.	<10'	<10'	MOD.	<10'	MOD.	15"	18"	24"	30"	36"	SY	CY	CY	
P	S-101	263+11.12	LT	INLET,PIPE	1		47							1																			
F																																	
P	S-102	263+13.00	RT	INLET,PIPE	1			83						1																			
F																																	
P	S-103	263+80.80	RT	MES	1																						1			28			1:4
F																																	
P	S-104	264+60.00	LT	INLET,PIPE	1		147							1																			
F																																	
P	S-105	264+95.77	RT	MES	1																								1	34			1:4
F																																	
P	S-106	265+61.09	RT	MANHOLE,PIPE	1					91											1												5.0' DIA.
F																																	
P	S-107	265+90.40	LT	INLET,PIPE	1		44							1																			
F																																	
P	S-108	266+14.86	RT	INLET,PIPE	1					49					1																		3.5'x5.0'
F																																	
P	S-109	267+00.00	LT	INLET,PIPE	1		49							1																			
F																																	
P	S-110	267+00.00	RT	MANHOLE,PIPE	1					78											1												3.5'x5.0'
F																																	
P	S-111	268+12.40	LT	INLET,PIPE	1				37									1															4.0'x4.0'
F																																	
P	S-112	268+12.89	RT	INLET,PIPE	1					37					1																		5.0'x3.5'
F																																	
P	S-113	268+10.90	RT	INLET,PIPE	1					105								1															5.0'x5.0'
1																																	
P	S-114	268+09.80	RT	INLET,PIPE	1		56																	1								0.45	
F																																	
P	S-115	269+42.00	LT	INLET,PIPE	1			126						1																			
F																																	
P	S-116	269+42.00	RT	INLET,PIPE	1		127										1																
F																																	
P	S-117	269+50.00	LT	MANHOLE,PIPE	1		39													1													3.5' DIA.
F																																	
P	S-118	271+30.00	LT	INLET,PIPE	1		186							1																			
F																																	
P	S-119	272+10.00	RT	INLET,PIPE	1		258							1																			
F																																	
P	S-120	273+61.48	LT	INLET,PIPE	1		217							1																			
F																																	
P	S-121	273+62.17	RT	INLET,PIPE	1		151							1																			
F																																	
P	S-122	275+04.96	LT	INLET,PIPE	1		133							1																			
F																																	
P	S-201	276+00.02	RT	INLET,PIPE	1		111																1										
F																																	
P	S-202	277+26.35	LT	MES	1																							1		22			1:2
F																																	
P	S-203	277+13.84	LT	INLET,PIPE	1				62					1																			
F																																	
P	S-204	277+13.84	RT	INLET,PIPE	1			43															1										
F																																	
P	S-205	278+49.99	RT	INLET,PIPE	1		134							1																			
F																																	
P	S-206	278+49.70	LT	MES	1																					1				21			1:2
F																																	
P	S-207	278+49.70	LT	MANHOLE,PIPE	1		43													1													3.5' DIA.
F																																	
P	S-208	280+11.54	LT	INLET,PIPE	1		159							1																			
F																																	
P	S-209	280+11.54	RT	INLET,PIPE	1		78							1																			
F																																	
P	S-210	279+89.50	LT	INLET,PIPE	1	74																1										0.42	
F																																	
P	S-211	280+65.70	LT	MES	1																				1					26			1:2
F																																	
P	S-301	282+60.00	LT	INLET,PIPE	1			78						1																			
F																																	
SHEET TOTALS				PLAN QUANTITY		74	1979	330	99	360				16	2		1	2		2	2	1	2	1	1	1	1	1	1	131		0.87	
				FINAL QUANTITY																													

No.	REVISIONS	DATE	BY
2	Quantity Changes	10/2019	GAC

SCALE: AS NOTED
DESIGNED BY: LAZ
DRAWN BY: GAC
CHECKED BY: LAZ

HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232
CERTIFICATE OF AUTHORIZATION 4213

DATE: 10/2019
PROJECT NO. 6045662

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: LISANDRO A. ZAPATA
FL. LICENSE NO. 58822

SUMMARY OF DRAINAGE STRUCTURES (1 OF 2)

SHEET NO. 12

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

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QUANTITY	STR. NO.	STATION	SIDE	DESCRIPTION	BARRELS	STORM AND CROSS DRAIN OPTIONAL TYPE							CURB INLETS						MANHOLES			DITCH BOTTOM INLETS			CROSS DRAIN MITERED END SECTION					SOD	CLASS II CONC. (EW)	CLASS II CONC. (DITCH PAVT.)	REMARKS
						ROUND					OTHER		P-5		J-5	P-6		J-6	P-8		J-8	C	D		ROUND								
						15"	18"	24"	30"	36"	18"	24"	PART.	<10'	<10'	PART.	<10'	<10'	PART.	<10'	<10'	MOD.	<10'	MOD.	15"	18"	24"	30"	36"	SY	CY	CY	
P	S-302	282+60.00	RT	INLET,PIPE	1			221						1																			
F																																	
P	S-303	284+84.03	RT	PIPE,MANHOLE,PIPE	1			77				4								1													4.0' DIA.; W/ CONC. JACKET
F																																	
P	S-304	285+51.57	RT	MES	1																						1			28			1:4
F																																	
P	S-305	286+26.28	RT	INLET,PIPE	1			8																1								0.45	
F																																	
P	S-306	285+14.36	RT	INLET,PIPE	1		8								1																		2 3.5'x5.0'
F																																	W/ TWO CONC. JACKETS
P	S-307	289+89.19	RT	PIPE,INLET,PIPE	1						8							1															3.5'x4.0'
F																																	W/ TWO CONC. JACKETS
P	S-308	291+69.68	LT	INLET,PIPE	1		183							1																			
F																																	
P	S-401	294+48.00	RT	INLET,PIPE	1		74							1																			
F																																	
P	S-402	295+23.98	RT	INLET,PIPE	1		5										1																
F																																	
P	S-403	295+80.00	RT	INLET,PIPE	1		54							1																			
F																																	
P	S-501	298+00.00	RT	INLET,PIPE	1		170							1																			
F																																	
P	S-502	300+82.50	LT	INLET,PIPE	1		108							1																			
F																																	
P	S-503	301+82.50	LT	INLET,PIPE	1		98							1																			
F																																	
P	S-504	304+60.00	LT	INLET,PIPE	1	67								1																			
F																																	
P	EX-005	263+19.06	LT	MANHOLE	1														1														
F																																	
P	EX-017	273+79.82	LT	EXIST. INLET	1																										0.03		ADJUST EXISTING WIER;
F																																	COST INCL. REINF.
P	EX-024	275+89.15	RT	EXIST. INLET	1																										0.21		ADJUST EXISTING WIER;
F																																	COST INCL. REINF.
P	EX-025	279+68.42	LT	EXIST. INLET	1																										0.09		ADJUST EXISTING WIER;
F																																	COST INCL. REINF.
P	EX-039	289+89.27	LT	INLET	1											1																	
F																																	
P	EX-040	289+89.11	RT	INLET	1											1																	
F																																	
P	EX-051	295+23.98	RT	INLET	1											1																	
F																																	
P	EX-053	299+71.78	LT	INLET	1								1																				
F																																	
P	EX-054	299+71.78	RT	INLET	1								1																				
F																																	
P	EX-060	305+29.78	LT	INLET	1											1																	
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SHEET TOTALS				PLAN QUANTITY		67	700 2	306 2		2	8	4	2	8 2	1 2	4	1	1	1	1				1			1			28	0.33	0.45	
				FINAL QUANTITY																													
GRAND TOTALS				PLAN QUANTITY		141	2679	636	99	360	8	4	2	24	3	4	2	3	1	3	2	1	2	2	1	1	2	1	1	159	0.33	1.32	
				FINAL QUANTITY																													

No.	REVISIONS	DATE	BY
2	Quantity Changes	10/2019	GAC

SCALE: AS NOTED
DESIGNED BY: LAZ
DRAWN BY: GAC
CHECKED BY: LAZ

HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232
CERTIFICATE OF AUTHORIZATION 4213

DATE: 10/2019
PROJECT NO.: 6045662

Manatee County FLORIDA

MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: LISANDRO A. ZAPATA
FL. LICENSE NO.: 58822

SUMMARY OF DRAINAGE STRUCTURES (2 OF 2)

SHEET NO. 13

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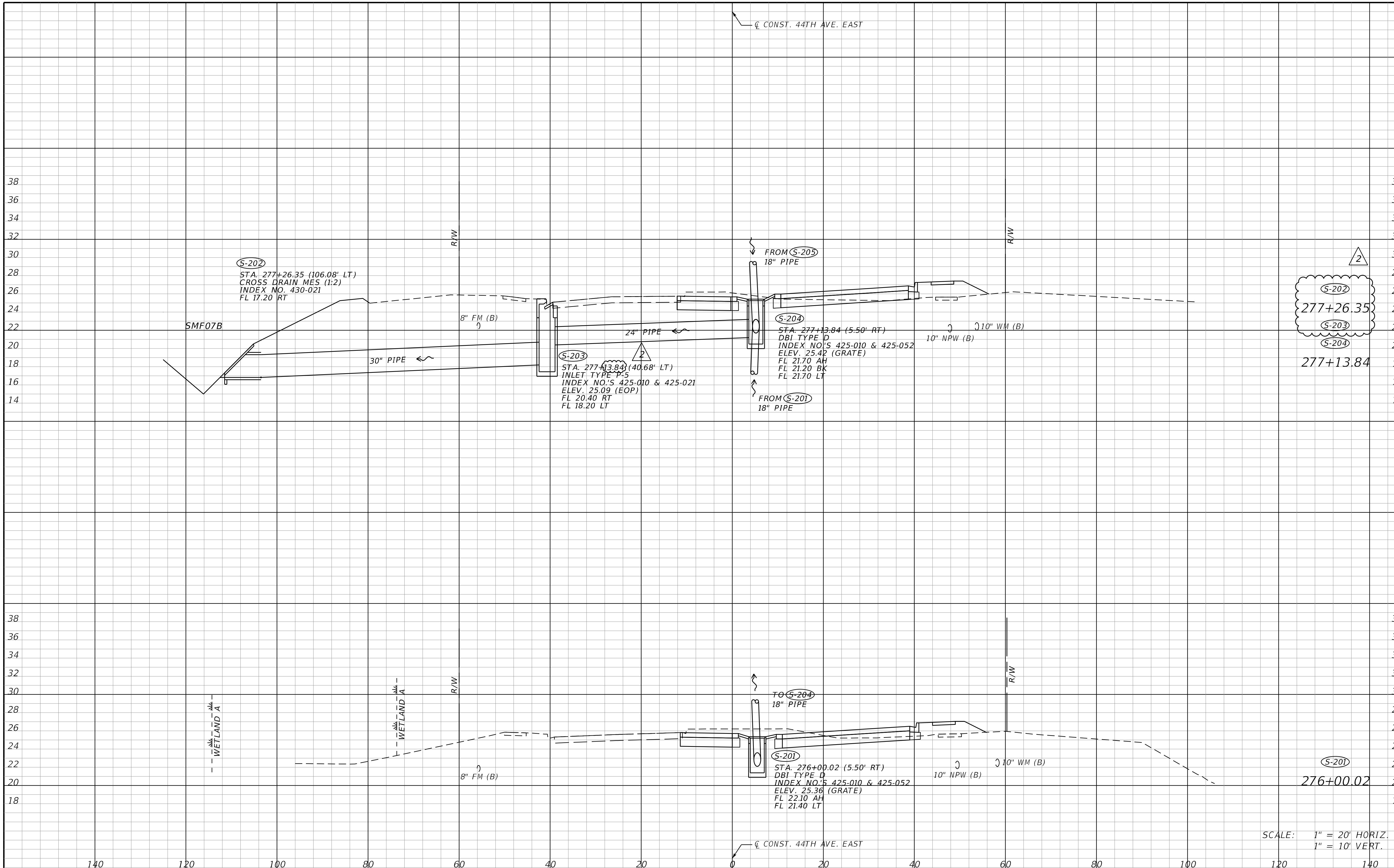

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No.	REVISIONS	DATE	BY
2	Stationing Changes	10/2019	GAC

SCALE: AS NOTED
DESIGNED BY: LAZ
DRAWN BY: GAC
CHECKED BY: LAZ

HDR ENGINEERING, INC.
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FLORIDA 34232
CERTIFICATE OF AUTHORIZATION 4213

DATE: 10/2019
PROJECT NO.: 6045662

MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: LISANDRO A. ZAPATA
FL. LICENSE NO.: 58822

DRAINAGE STRUCTURES (7)

SHEET NO. 31

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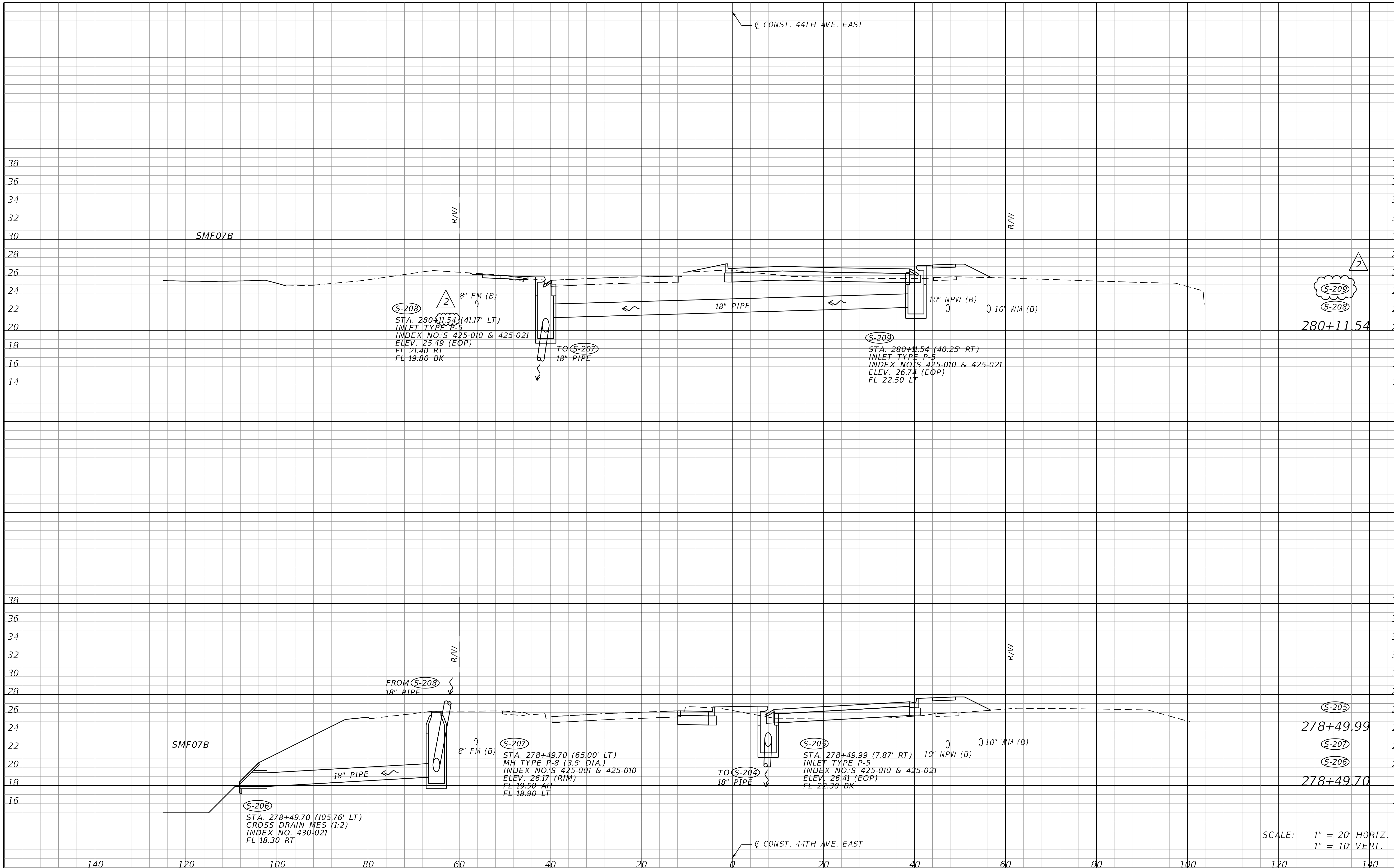

No.	REVISIONS	DATE	BY
2	Stationing Changes	10/2019	GAC

SCALE: AS NOTED
DESIGNED BY: LAZ
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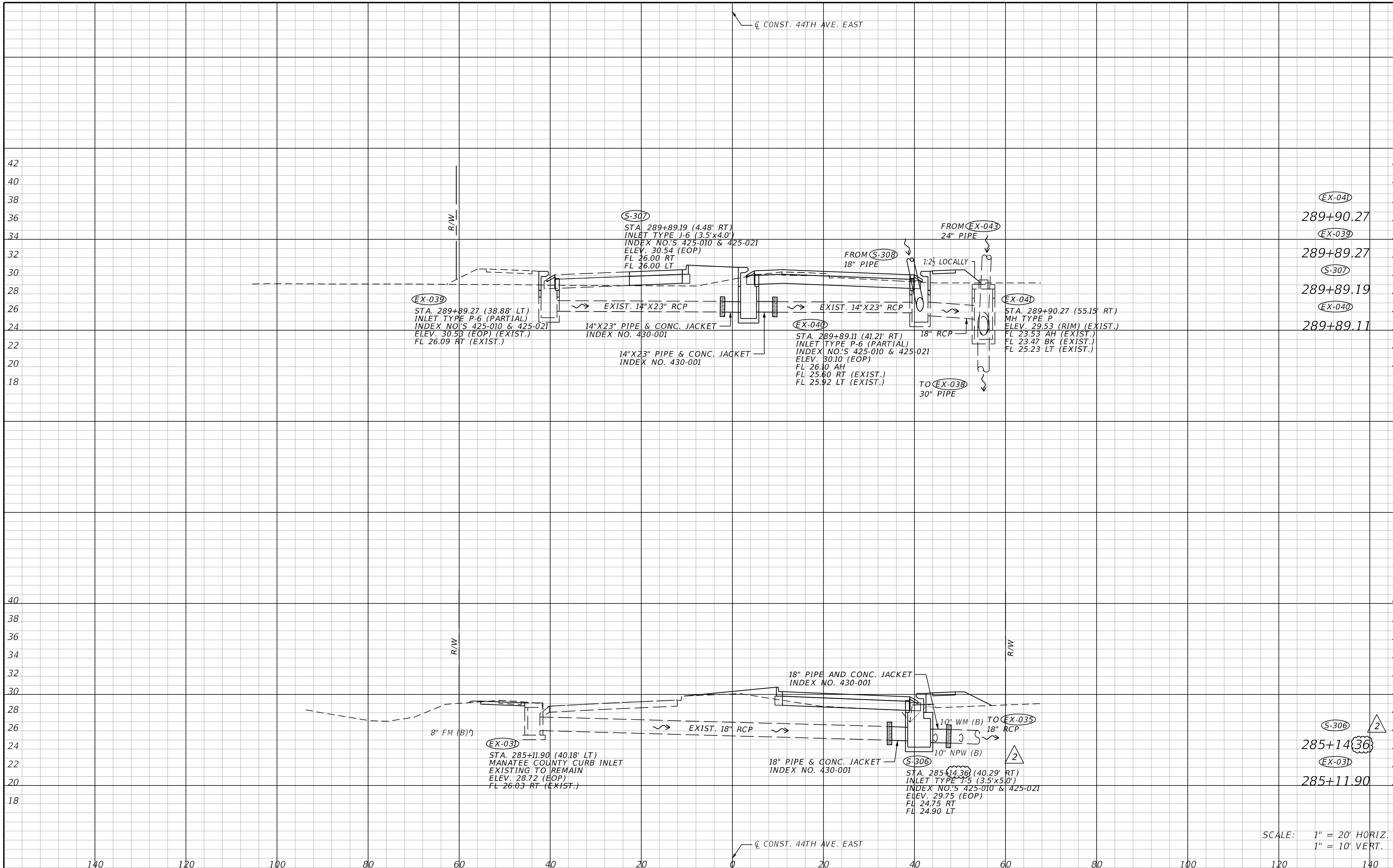
Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: LISANDRO A. ZAPATA
FL. LICENSE NO.: 58822

DRAINAGE STRUCTURES (8)

SHEET NO. 32



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No.	REVISIONS	DATE	BY
2	Stationing Changes	10/2019	GAC

SCALE: AS NOTED
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HDR ENGINEERING, INC.
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Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: LISANDRO A. ZAPATA
FL. LICENSE NO. 58822

DRAINAGE STRUCTURES (10)

SHEET NO. 34

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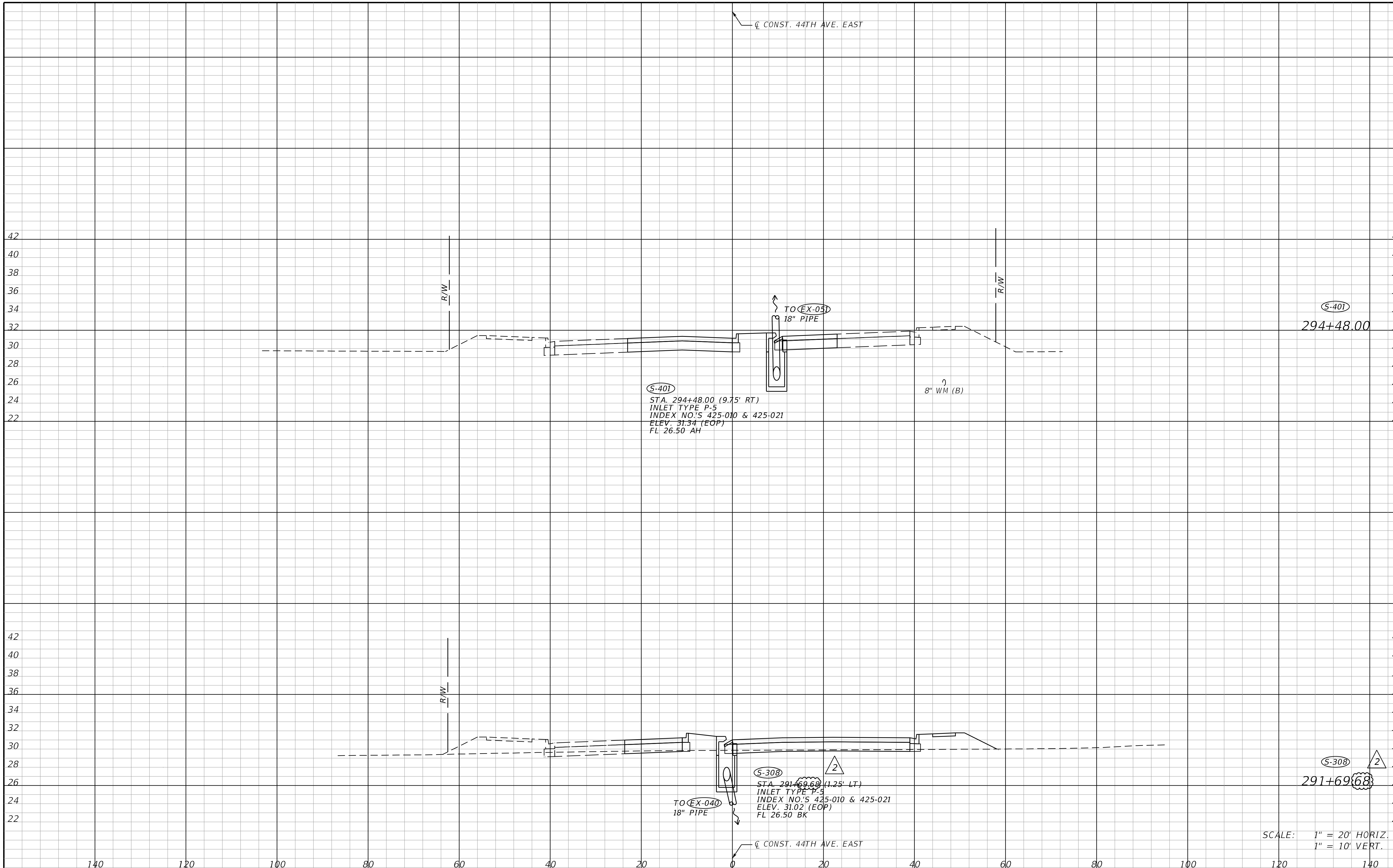

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No.	REVISIONS	DATE	BY
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Manatee County FLORIDA

MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: LISANDRO A. ZAPATA
FL. LICENSE NO.: 58822

DRAINAGE STRUCTURES (11)

SHEET NO. 35

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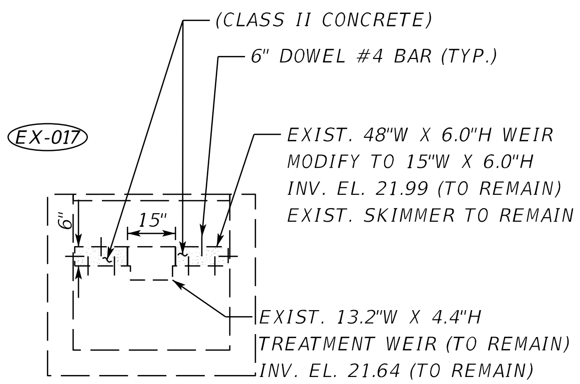
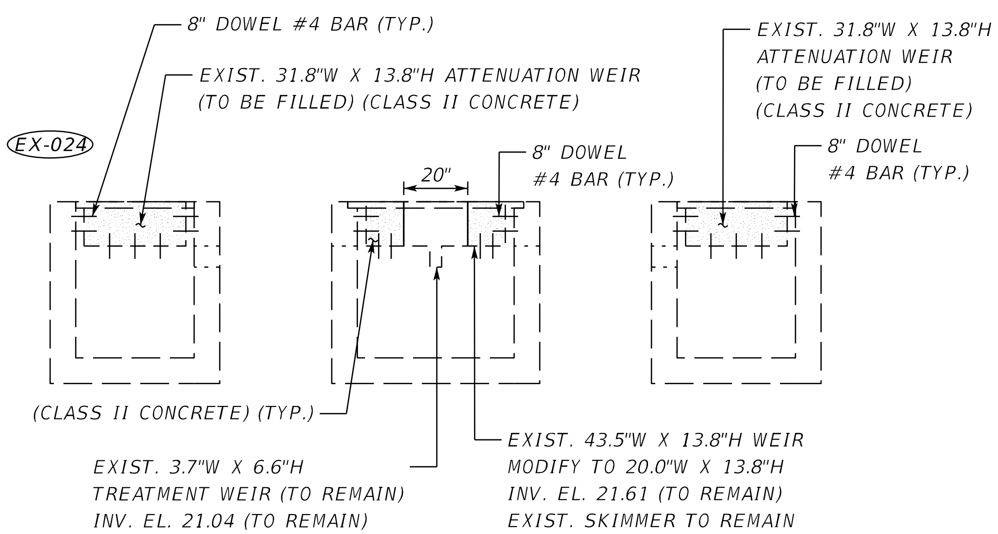
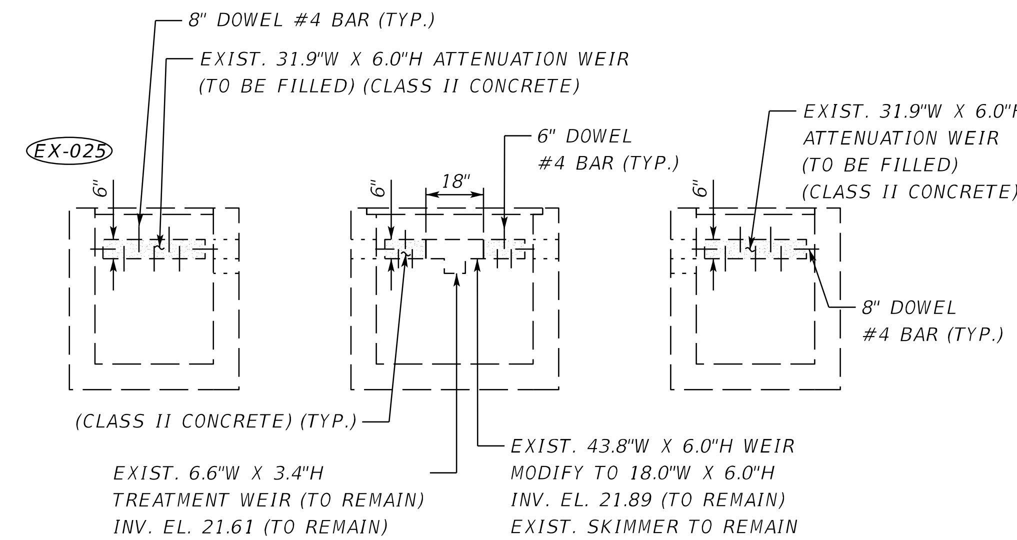
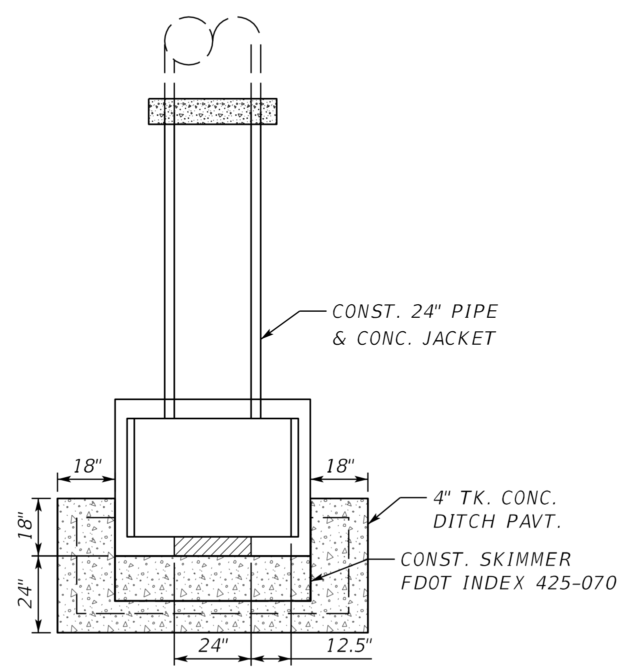






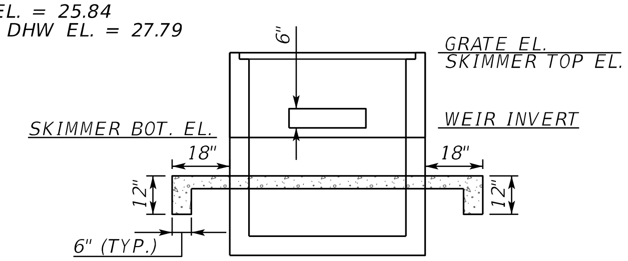


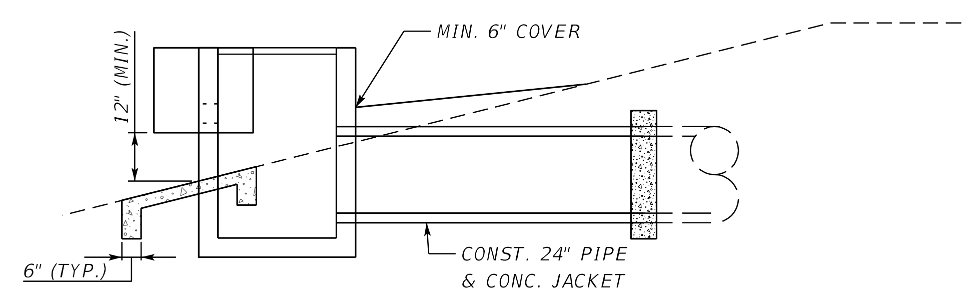
S-305 (2)

STA. 286+26.28 (275.08' RT)
CONST. DBI TYPE D (MODIFY)
SKIMMER TOP EL. 27.80
GRATE EL. 27.80
WEIR EL. 25.84
SKIMMER BOT. EL. 25.59
INDEX NO.'S 425-001, 425-010, AND 425-052
FL 23.60

SMF09

NWL EL. = 25.84
25-YR DHW EL. = 27.79





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No.	REVISIONS	DATE	BY
2	Quantity Changes	10/2019	GAC

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DRAINAGE DETAILS (2)

SHEET NO. 41