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

# 27TH STREET UTILITY IMPROVEMENTS

## COUNTY PROJECT NO. 6096260 MANATEE COUNTY, FLORIDA

27th STREET EAST FROM 31ST AVENUE EAST  
TO 26TH AVENUE EAST ROADWAY IMPROVEMENTS

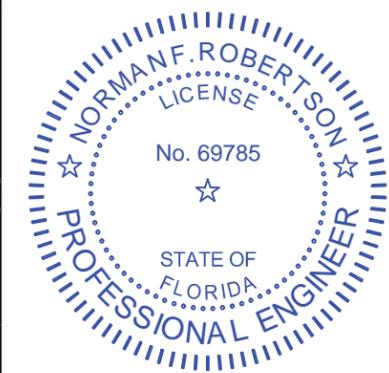
**JUNE 2025**

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**LOCATION SITE MAP**  
(NOT TO SCALE)



This item has been electronically signed and sealed by Norman F. Robertson on the date adjacent to the seal using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

**PREPARED BY:**  
*AtkinsRéalis*  
4030 W. BOY SCOUT BLVD., SUITE 700  
TAMPA, FL 33607  
(813) 282-7275  
CERTIFICATE OF AUTHORIZATION NO.: 24

REVISIONS		
DATE	BY	DESCRIPTION

MANATEE COUNTY PROJECT MANAGER

AL NEUMANN, P.E.

CALL 48 HOURS BEFORE YOU DIG

IT'S THE LAW!  
DIAL 811

Know what's below.  
Call before you dig.

SUNSHINE STATE ONE CALL OF FLORIDA, INC.

NORMAN F. ROBERTSTON, P.E.  
NO. 69785

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

UTILITY GENERAL NOTES

- ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST APPLICABLE FEDERAL, STATE, AND LOCAL AGENCY'S LAWS AND REGULATIONS.
- CALL SUNSHINE ONE CALL FOR ALL UTILITY LOCATES 48 HOURS PRIOR TO CONSTRUCTION AT 1-800-432-4770.
- LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE PLANS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL VERIFY DIMENSIONS OF ALL EXISTING UTILITIES AND OTHER FEATURES AFFECTING THIS WORK PRIOR TO CONSTRUCTION. IMPACTS SHALL BE NON-COMPENSABLE WHEN EXISTING UTILITIES ARE WITHIN 10 FT. HORIZONTALLY OR 2 FT. VERTICALLY OF WHERE THEY ARE SHOWN ON THE PLANS.
- ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER. UNLESS OTHERWISE NOTED NO PAVEMENT DISRUPTION SHALL BE ALLOWED. IF PAVEMENT IS DISRUPTED CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION AT NO ADDITIONAL PAYMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL ITEMS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE PERMITS. MAINTENANCE OF TRAFFIC SIGNS AND OTHER TRAFFIC CONTROL DEVICES SHALL BE PROVIDED BY THE CONTRACTOR DURING CONSTRUCTION AS REQUIRED BY THE F.D.O.T./S.D.O.T. MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE TO F.D.O.T. STANDARD INDICES NO. 601 AND 602. ALL OPEN CUTS SHALL BE RESTORED AS REQUIRED BY F.D.O.T. AND S.D.O.T..
- WHERE PIPE ALIGNMENT DEFLECTIONS LESS THAN 3 DEGREES ARE SHOWN ON THE PLANS, THE ALIGNMENT SHALL BE ACCOMPLISHED USING A CURVED ALIGNMENT AS RECOMMENDED BY THE PIPE MANUFACTURER, EXCEPT THAT THE CURVED ALIGNMENT SHALL HAVE MINIMUM RADIUS OF 380 FEET.
- THE CONTRACTOR SHALL SUCCESSFULLY COMPLETE ALL HYDROSTATIC TESTING, FLUSHING AND DISINFECTION OF NEW WATER MAINS PER SPECIFICATIONS.
- AIR RELEASE VALVES SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON THE PLANS PER THE DETAIL OR WHERE DIRECTED BY THE CONSTRUCTION ENGINEER.
- THE CONTRACTOR SHALL PROVIDE ACCESS FOR TRAFFIC AT ALL TIMES DURING CONSTRUCTION. CONSTRUCTION SHALL BE CONDUCTED IN SUCH A MANNER THAT RESIDENTS AND BUSINESS RETAIN ACCESS TO THEIR DRIVEWAYS AT ALL TIMES.
- FORCE MAINS AND WATER MAINS SHALL BE CONSTRUCTED WITH A MINIMUM OF 36 INCHES OF COVER UNLESS OTHERWISE SHOWN.
- WHERE VERTICAL ALIGNMENT OF INSTALLED PIPE IS ALTERED BY TWO DIAMETERS OR MORE COMPARED TO THE DESIGNED ALIGNMENT, DURING HORIZONTAL DIRECTIONAL DRILLING, CONTRACTOR SHALL INSTALL AN AIR RELEASE ASSEMBLY AT HIS OWN EXPENSE.
- ALL EXISTING FACILITIES IN THE PROJECT AREA SHALL REMAIN OPERATIONAL AND ACCESSIBLE BY COUNTY PERSONNEL AT ALL TIMES, I.E. VALVES, FIRE HYDRANTS, MANHOLE COVERS, SEWER CLEAN-OUTS, ETC. ALL SHALL BE ADJUSTED TO FINISHED GRADE.
- CONFORM HORIZONTAL AND VERTICAL CLEARANCES BETWEEN THE UNDERGROUND SANITARY FORCE MAIN, GRAVITY SEWERS, AND WATER MAINS OR RECLAIMED WATER LINES TO FLORIDA ADMINISTRATIVE CODE CHAPTER 62-604.

- REMOVE ONLY THOSE TREES AS SHOWN ON THE DRAWINGS. REPLACE ANY OTHER TREES DAMAGED DURING CONSTRUCTION.
- ALL EXISTING UTILITIES SHALL BE PROTECTED IN PLACE UNLESS IDENTIFIED OTHERWISE.
- ALL FORCEMAINS IN THIS PROJECT SHALL BE HYDROSTATICALLY PRESSURE TESTED AT 150 PSI FOR MINIMUM OF TWO HOURS (SEE SPECIFICATIONS).
- FOR NEW WATER SERVICE TO EXISTING METER, USE EXISTING CORPORATION STOP IF A DIRECT TAP. SERVICE WILL BE 1" FROM CORPORATION STOP TO METER, A 3/4"x 1" BRASS ADAPTER WILL BE USED ON CORPORATION STOP, IF THE CORPORATION STOP IS 3/4". IF EXISTING SERVICE HAS A SADDLE ON THE WATER MAIN, SADDLE WILL BE INSPECTED WITH A COUNTY REPRESENTATIVE PRESENT AND REPLACED IF IT DOES NOT MEET CURRENT COUNTY STANDARDS. SEE UTILITY DETAIL SHEETS (U-16-U-19).
- ALL EXISTING VALVES, TEES, SERVICE SADDLES AND SERVICE SLEEVES, WILL BE INSPECTED WITH A COUNTY REPRESENTATIVE AND REPLACED IF THEY DO NOT MEET CURRENT COUNTY STANDARDS.
- THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, WATER AND SEWER LINES, STORM DRAINS, UTILITIES, DRIVEWAYS, SIDEWALKS, PAVEMENT, SIGNS, MAILBOXES, FENCES, TREES, LANDSCAPING AND ANY OTHER IMPROVEMENTS OR FACILITY IN THE CONSTRUCTION AREA. CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DAMAGED ITEMS DUE TO THE CONSTRUCTION ACTIVITIES TO EQUAL OR BETTER THAN PRE-CONSTRUCTION CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL MAINTAIN EXISTING WATER SERVICES DURING CONSTRUCTION. THE EXISTING PIPE SHALL BE CAPPED AND REMOVED OR ABANDONED IN PLACE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE PLANS PRIOR TO PROCEEDING WITH ANY PROPOSED CONSTRUCTION.
- ALL NEW WATER MAIN TO BE INSTALLED UNDER THIS PROJECT WILL BE DUCTILE IRON.
- ALL FIRE HYDRANTS SHALL BE RELOCATED TO R/W AND ADJUSTED TO PROPOSED GRADE.
- ALL VALVE BOXES, VAULTS, MANHOLE RIMS AFFECTED BY THE ROADWAY WORK SHALL BE RAISED TO GRADE AS REQUIRED.
- JOINTS SHALL BE RESTRAINED BOTH UPSTREAM AND DOWNSTREAM OF PROPOSED BENDS AS SHOW IN DETAIL UG-10 INCLUDING AT CONNECTIONS BETWEEN PROPOSED AND EXISTING PIPE.
- FROM STA 251+10 TO STA 258+70 EXISTING FM WAS NOT PICKED UP BY SURVEY. FM IS SHOWN BASED ON AVAILABLE INFORMATION FROM THE COUNTY. FM IN THIS AREA SHOULD BE FIELD VERIFIED AS NEEDED
- PROVIDE BELL RESTRAINTS ON EXISTING WATER MAIN OR FORCE MAIN STARTING AT NEW FITTING CONNECTION FOR A LENGTH EQUIVALENT TO THE REQUIREMENT FOR 45 DEG BENDS PER DETAIL UG-9 FOR DUCTILE IRON PIPE AND UG-8 FOR PVC PIPE
- ALL 2" AND BELOW SERVICE TAPS ON DUCTILE IRON ARE TO BE DIRECT TAPS.

LEGEND

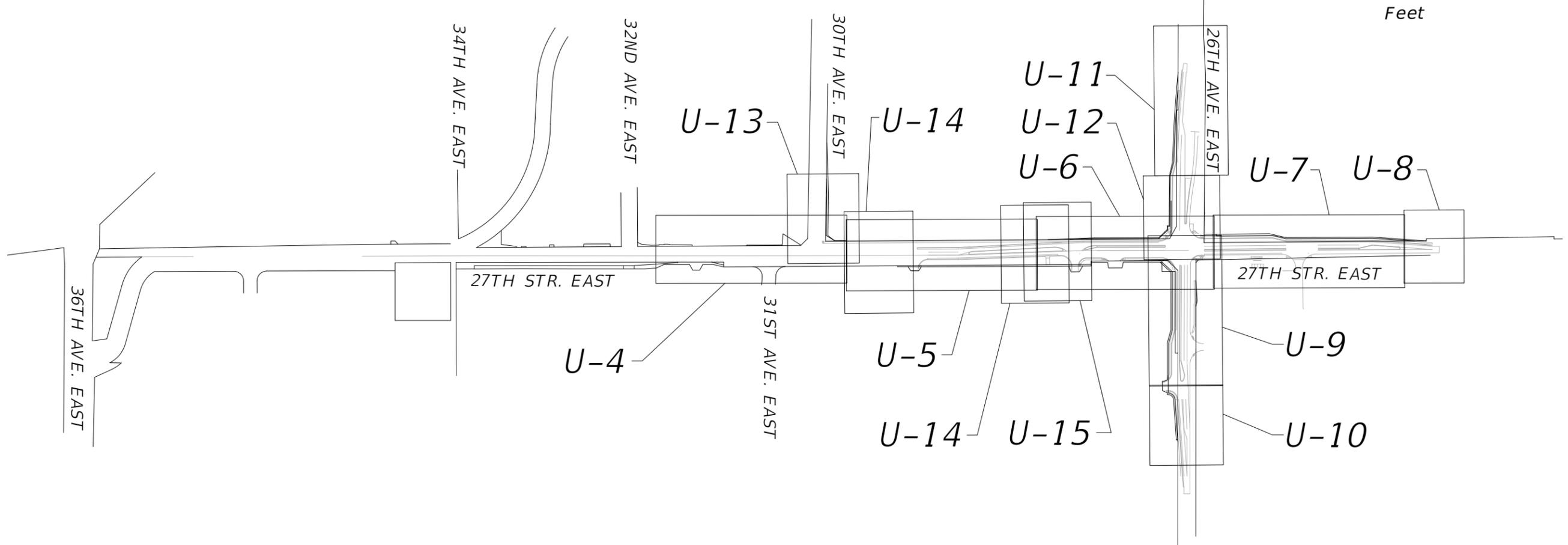
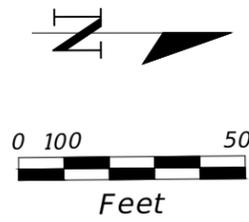
- — 4"x4" CONCRETE MONUMENT FOUND (AS NOTED)
- — IRON MARKER FOUND/SET (5/8" IRON ROD AS NOTED)
- — IRON PIPE FOUND
- ⊙ — NAIL & DISK
- CMF — CONCRETE MONUMENT FOUND
- IRS — IRON ROD SET (LB 6982)
- IRF — IRON ROD FOUND (AS NOTED)
- IPF — IRON PIPE FOUND
- N&D — NAIL & DISK
- ID — IDENTIFICATION
- R/W — RIGHT-OF-WAY
- (P) — PLAT DATA
- (D) — DEED DATA
- INV. — INVERT
- EL. — ELEVATION
- P.I. — POINT OF INTERSECTION
- RT. — RIGHT
- LT. — LEFT
- O.R.B. — OFFICIAL RECORDS BOOK
- PG. — PAGE
- CONC. — CONCRETE
- RCP — REINFORCED CONCRETE PIPE
- PID — PARCEL IDENTIFICATION (NUMBER)
- ℙ — PROPERTY LINE
- FP&L — FLORIDA POWER & LIGHT
- ◇ — POWER/UTILITY POLE
- ☀ — LIGHT POLE
- ← — EXISTING GUY ANCHOR
- EHH — HAND HOLE
- — UTILITY BOX
- ⊗ — WATER VALVE
- ⊙ — FIRE HYDRANT
- WM — WATER METER
- — BACK FLOW PREVENTER
- Ⓐ — AIR RELIEF VALVE
- ▤ — EXISTING GRATE INLET
- — EXISTING CATCH BASIN
- ▤ — EXISTING MITRED END SECTION
- ⊙ — EXISTING JUNCTION BOX
- ⊙ — EXISTING UTILITY MANHOLE
- A — EXISTING AIR RELIEF VALVE
- ☐ — MAIL BOX
- ♣ — SIGN
- — CHAIN LINK FENCE
- — WOOD FENCE
- x — BARBED WIRE FENCE
- OHU — OVERHEAD UTILITY LINE
- SD — STORM WATER PIPE
- OE — OVERHEAD ELECTRIC
- W — WATER PIPE
- SS — SANITARY SEWER
- FM — FORCE MAIN PIPE
- BFOC — BURIED FIBER OPTIC CABLE
- BFO — BURIED FIBER OPTIC
- BTV — BURIED TV CABLE
- OTV — OVERHEAD TV CABLE

NO.	REVISIONS	DATE	BY	SCALE	DATE	DESIGN ENGINEER	SHEET NO.
				AS NOTED	JUNE 2025	NORMAN F. ROBERTSON, P.E.	LEGEND AND GENERAL NOTES
				JRJ	PROJECT NO. 6096260	FL. LICENSE NO. 69785	
				JRJ			U-2
				NFR			

**AtkinsRéalis**  
4030 W BOY SCOUT BLVD  
SUITE 700  
TAMPA, FL 33607  
(813) 282-7275



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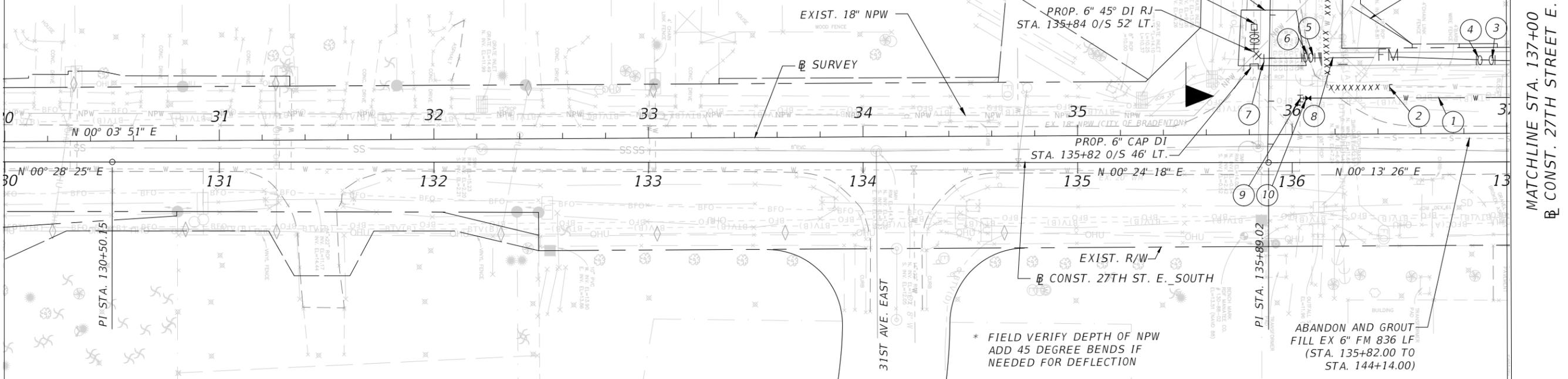
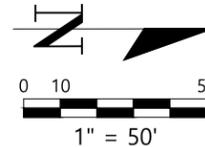
## UTILITY PLANS KEY

NO.	REVISIONS	DATE	BY	SCALE	DESIGNED BY	DATE	PROJECT NO.	DESIGN ENGINEER	SHEET NO.
				AS NOTED		JUNE 2025		NORMAN F. ROBERTSON, P.E.	<b>UTILITY PLANS KEY</b>
				DESIGNED BY	JRJ			FL. LICENSE NO.	
				DRAWN BY	JRJ				
				CHECKED BY	NFR				
					<b>AtkinsRéalis</b> 4030 W BOY SCOUT BLVD SUITE 700 TAMPA, FL 33607 (813) 282-7275	 PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208	6096260	69785	U-3

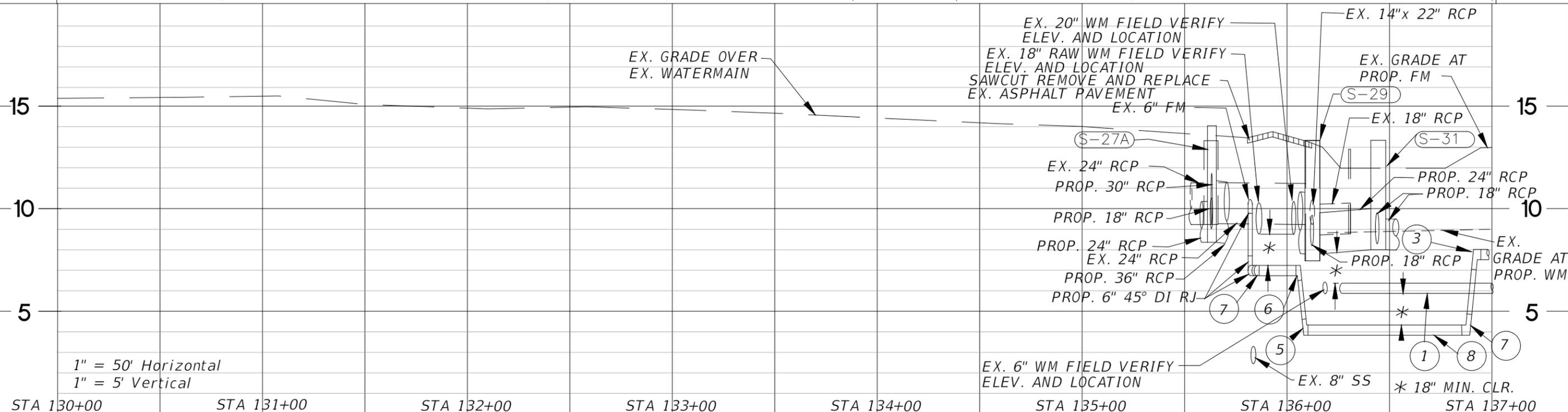
Johnson, Jessica R

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- 1 PROP. 6" DIP WM 176 LF
- 2 PROP. 6" CAP DI RJ AND GROUT FILL EX. 6" WM 50 LF STA. 136+46 O/S 35' LT.
- 3 PROP. 6" 45° DI RJ STA. 136+94 O/S 47' LT.
- 4 PROP. 6" 45° DI RJ STA. 136+88 O/S 47' LT.
- 5 PROP. 6" 45° DI RJ STA. 136+09 O/S 49' LT.
- 6 PROP. 6" 45° DI RJ STA. 136+06 O/S 49' LT.
- 7 PROP. 6" 45° DI RJ STA. 135+85 O/S 49' LT.
- 8 PROP. 6" PVC DR-18 FM 120 LF
- 9 PROP. 20"x6" TAPPING SLEEVE STA. 136+04 O/S 29.7' LT.
- 10 PROP. 6" G.V. D.I. RJ STA. 136+07 O/S 29.7' LT.



MATCHLINE STA. 137+00  
CONST. 27TH STREET E.



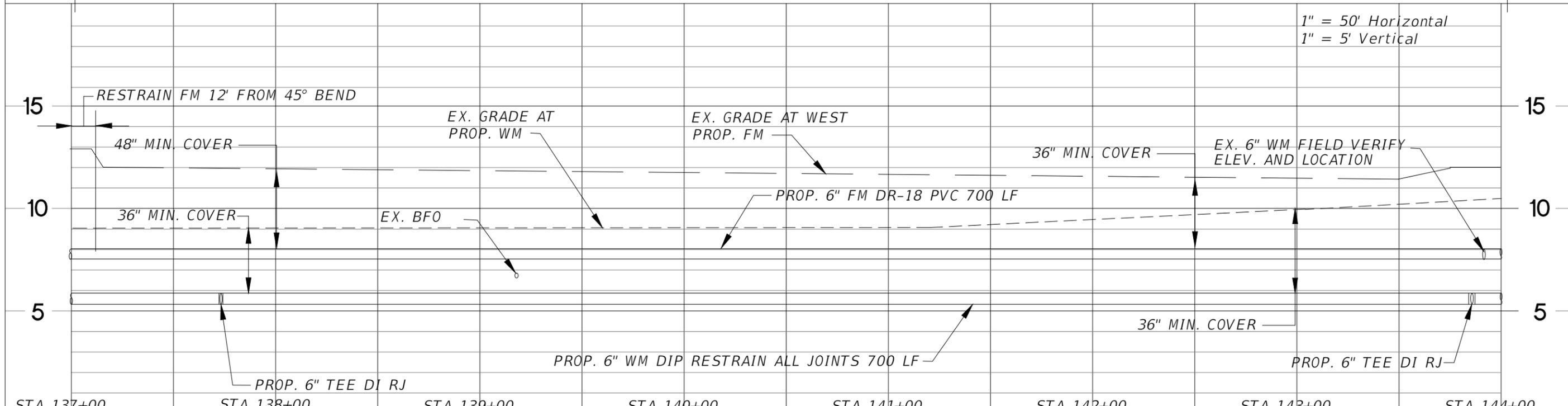
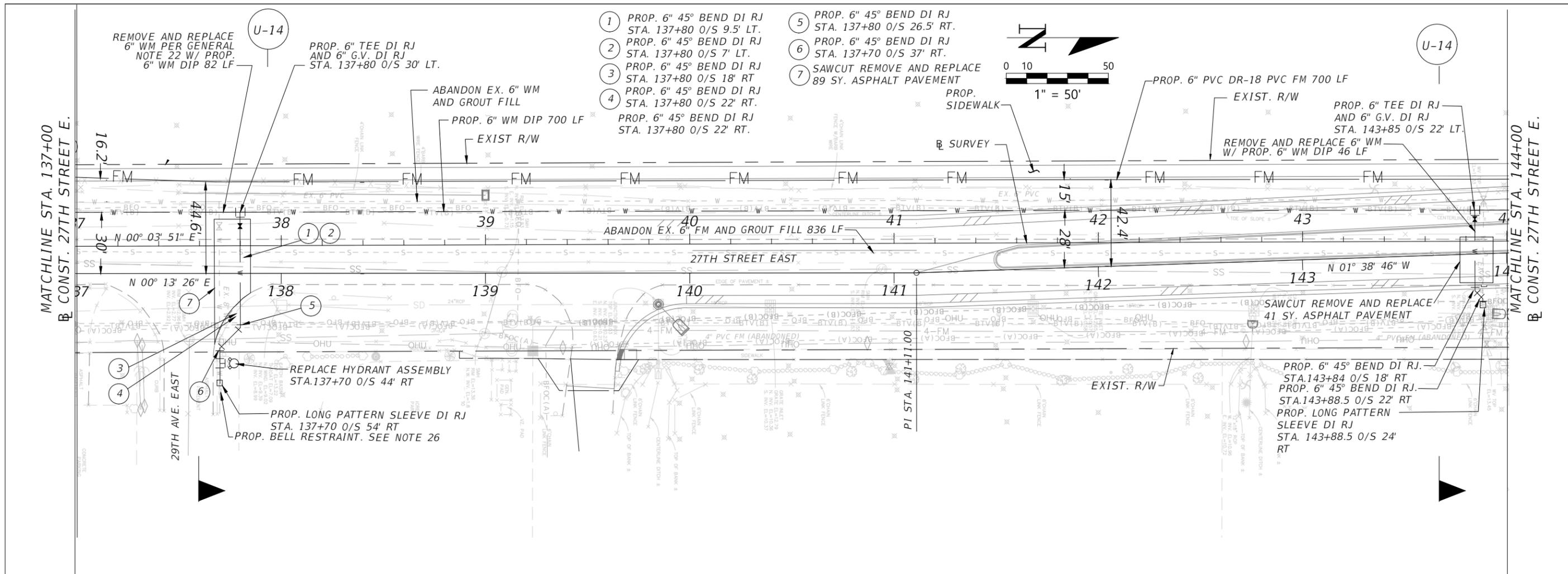
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	AS NOTED				JUNE 2025	6096260	NORMAN F. ROBERTSON, P.E. FL. LICENSE NO. 69785	U-4
	DESIGNED BY		JRJ					
	DRAWN BY		JRJ					
	CHECKED BY		NFR					

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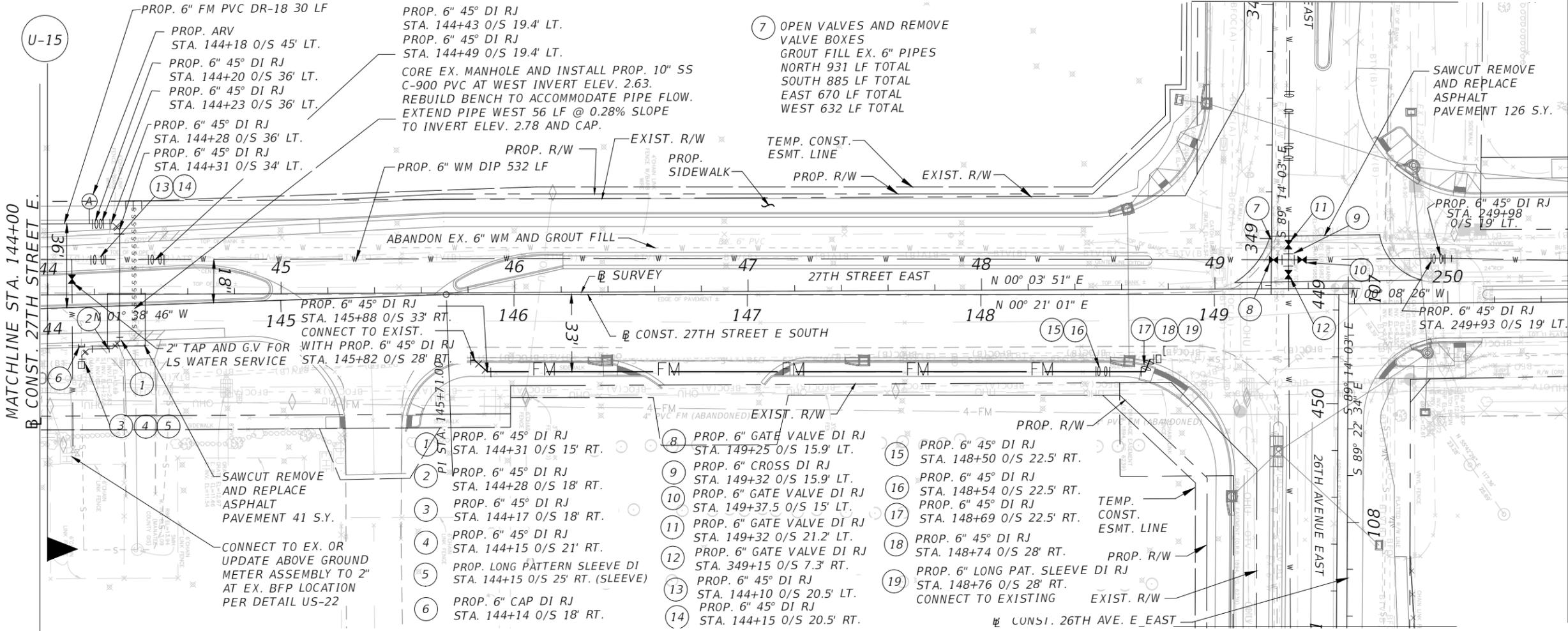
**UTILITY PLAN AND PROFILE**

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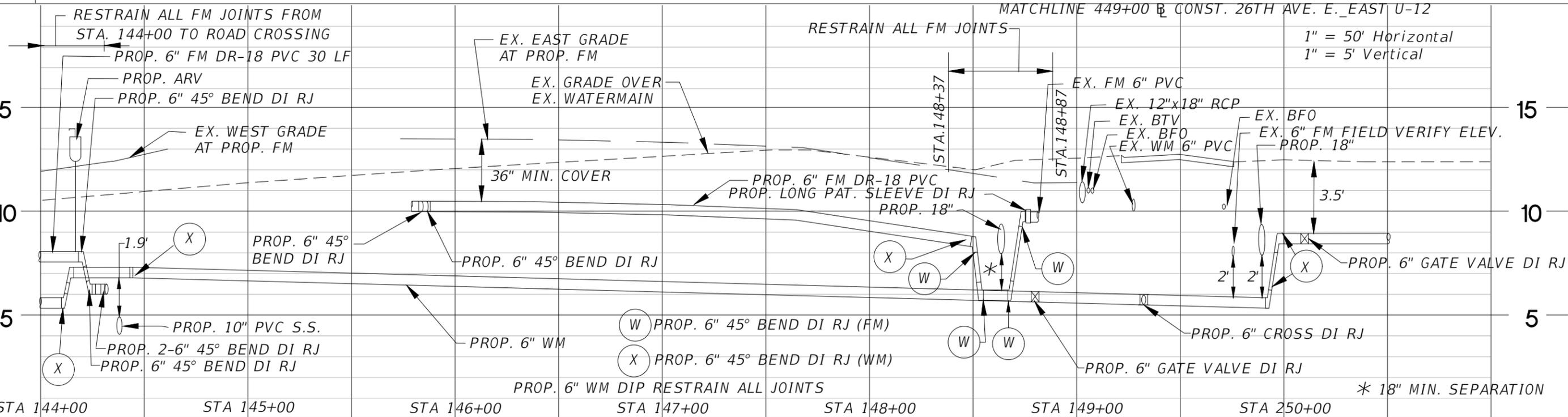
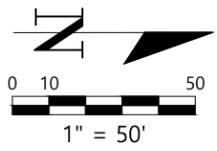


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				DESIGNED BY	PROJECT NO.	FL. LICENSE NO.		
				JRJ	6096260	69785		
				DRAWN BY				
				JRJ	PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES 1022 26th Avenue East, Bradenton, FL 34208			
				CHECKED BY				
				NFR				

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MATCHLINE STA. 250+50  
CONST. 27TH STREET E.



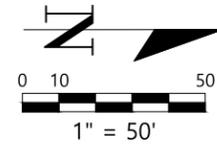
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	DESIGNED BY				PROJECT NO.	FL. LICENSE NO.	
	JRJ				6096260	69785	
	DRAWN BY						
	JRJ						
	CHECKED BY						
	NFR						

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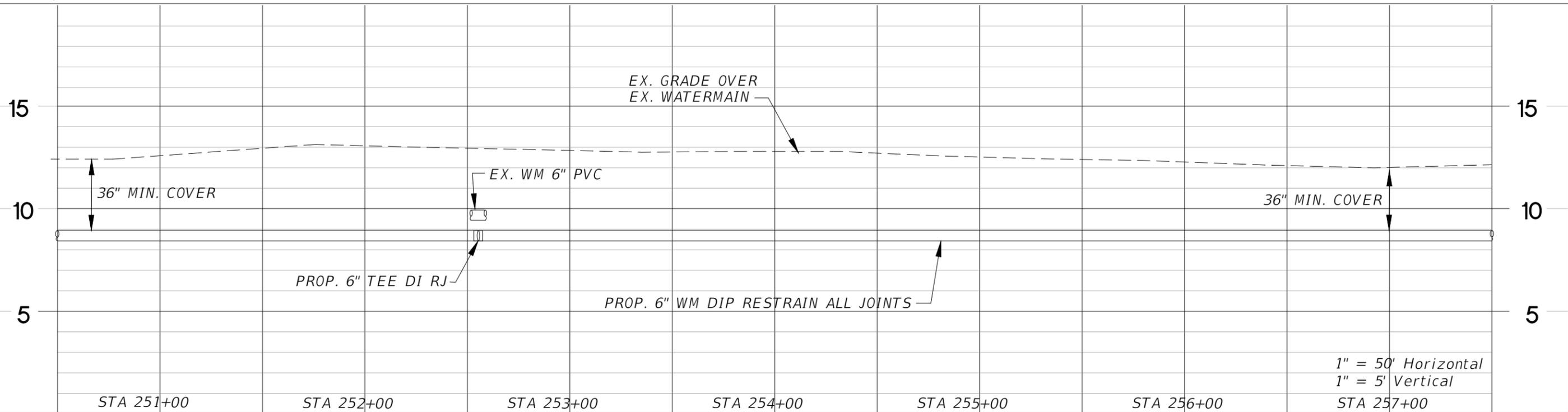
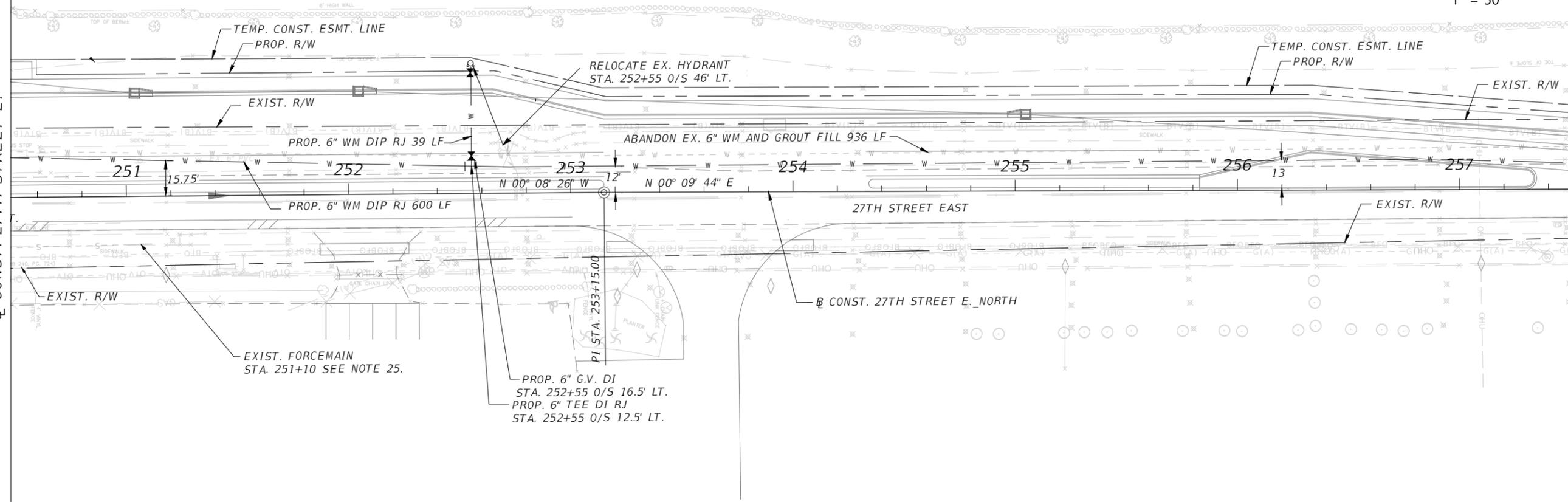
UTILITY PLAN AND PROFILE

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MATCHLINE STA. 250+50  
CONST. 27TH STREET E.

MATCHLINE STA. 257+50  
CONST. 27TH STREET E.



1" = 50' Horizontal  
1" = 5' Vertical

NO.	REVISIONS	DATE	BY
	AS NOTED		
	DESIGNED BY		JRJ
	DRAWN BY		JRJ
	CHECKED BY		NFR

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DATE  
JUNE 2025  
PROJECT NO.  
6096260



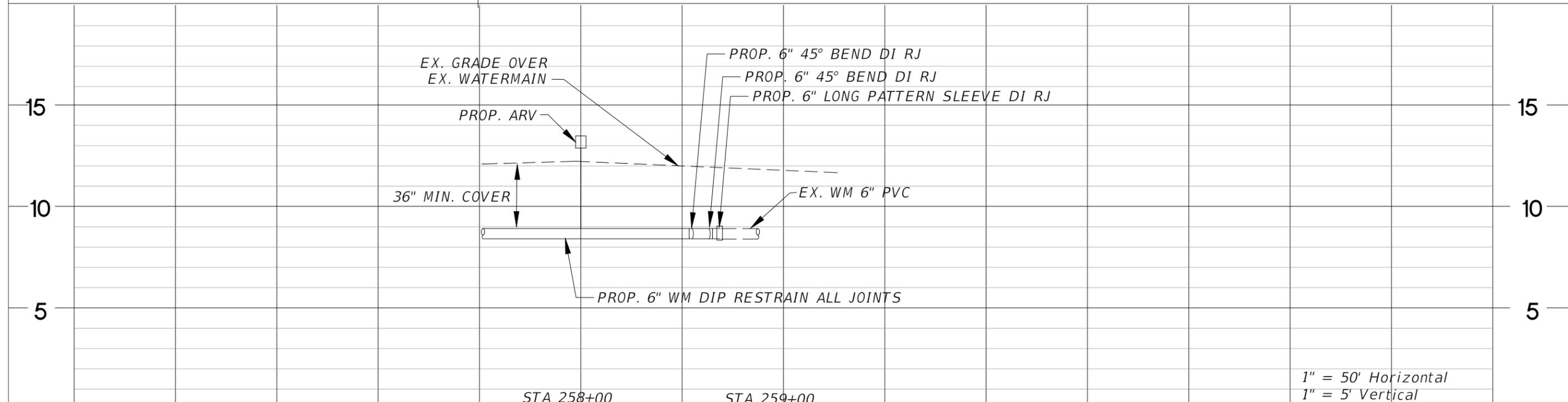
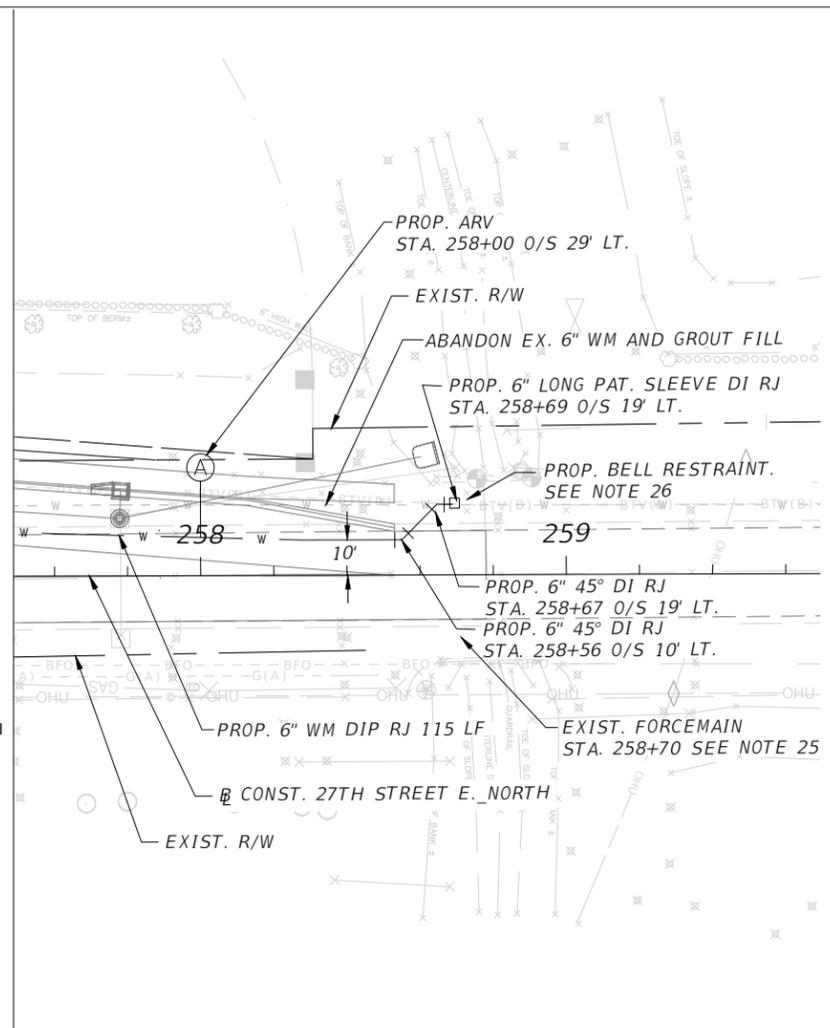
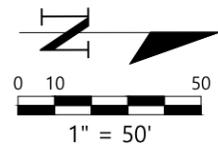
DESIGN ENGINEER  
NORMAN F. ROBERTSON, P.E.  
FL. LICENSE NO.  
69785

**UTILITY PLAN AND PROFILE**

SHEET NO.  
U-7

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MATCHLINE STA. 257+50  
 CONST. 27TH STREET E.



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 1" = 5' Vertical

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				AS NOTED
			JRJ	DESIGNED BY
			JRJ	DRAWN BY
			NFR	CHECKED BY

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DATE  
 JUNE 2025  
 PROJECT NO.  
 6096260

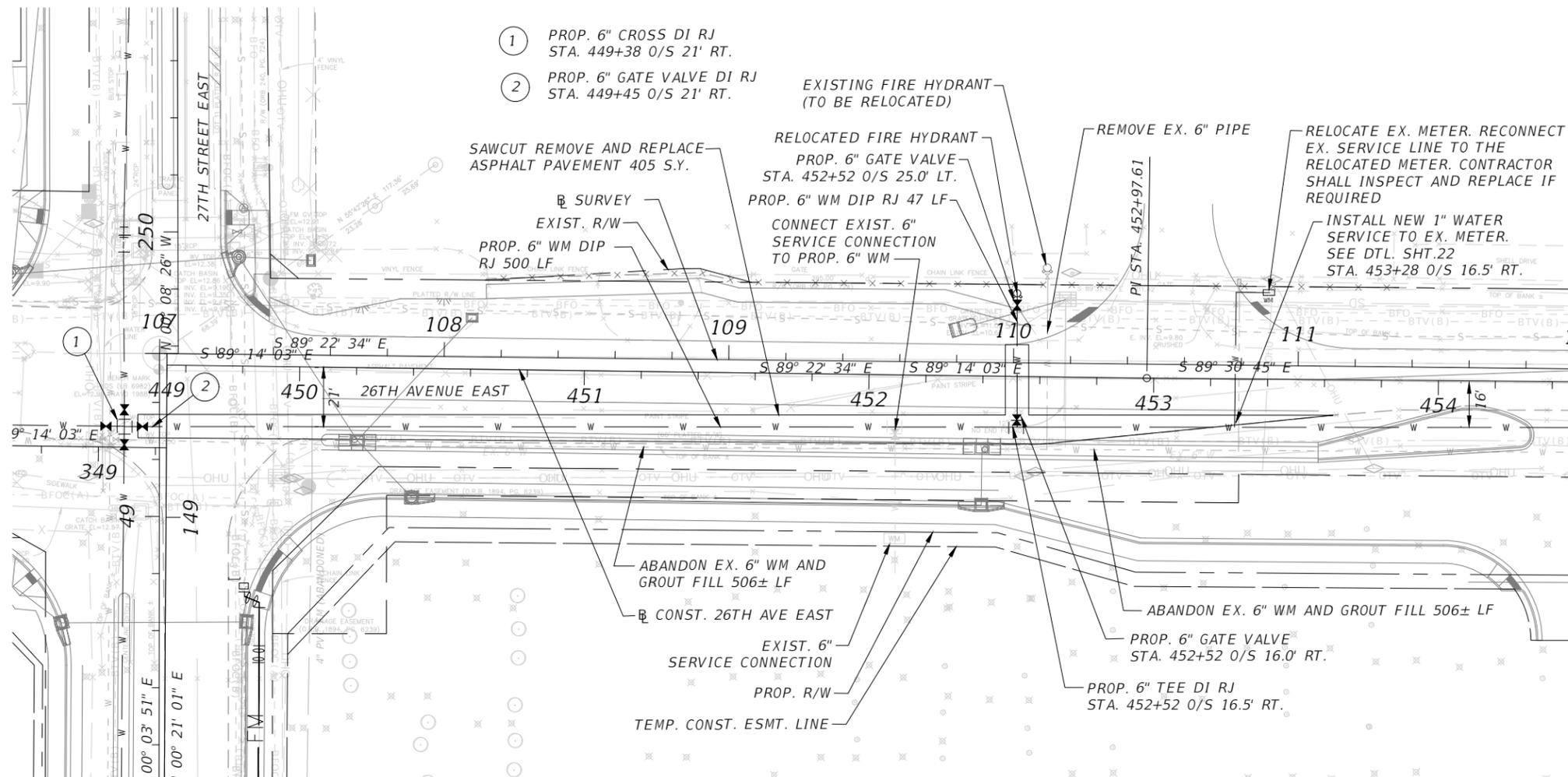


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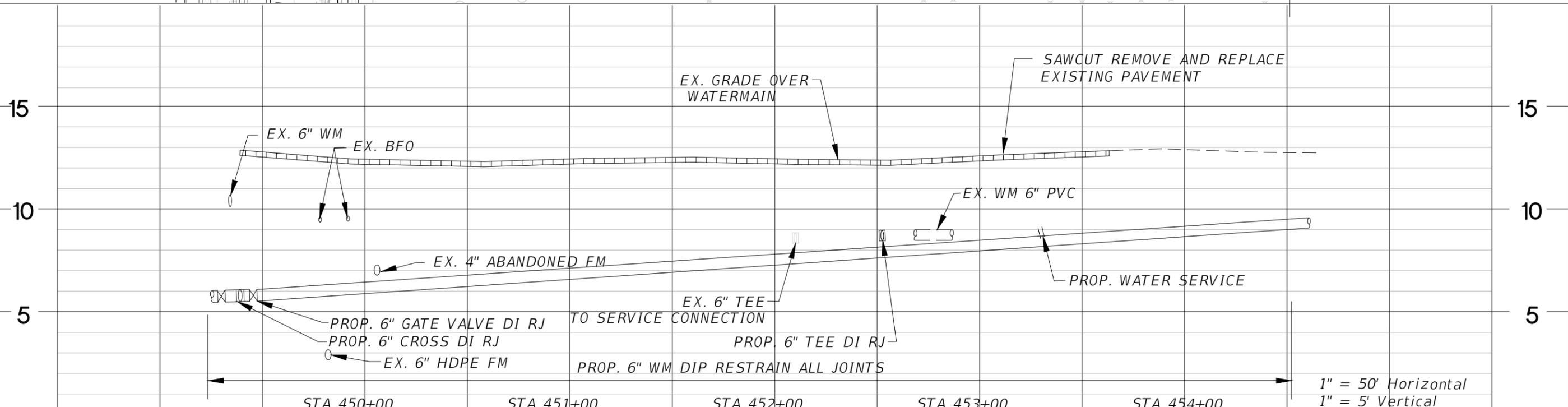
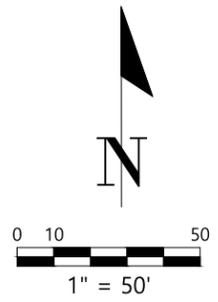
**UTILITY PLAN AND PROFILE**

SHEET NO.  
 U-8

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MATCHLINE STA. 454+50  
 CONST. 26TH AVENUE E.



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				DRAWN BY
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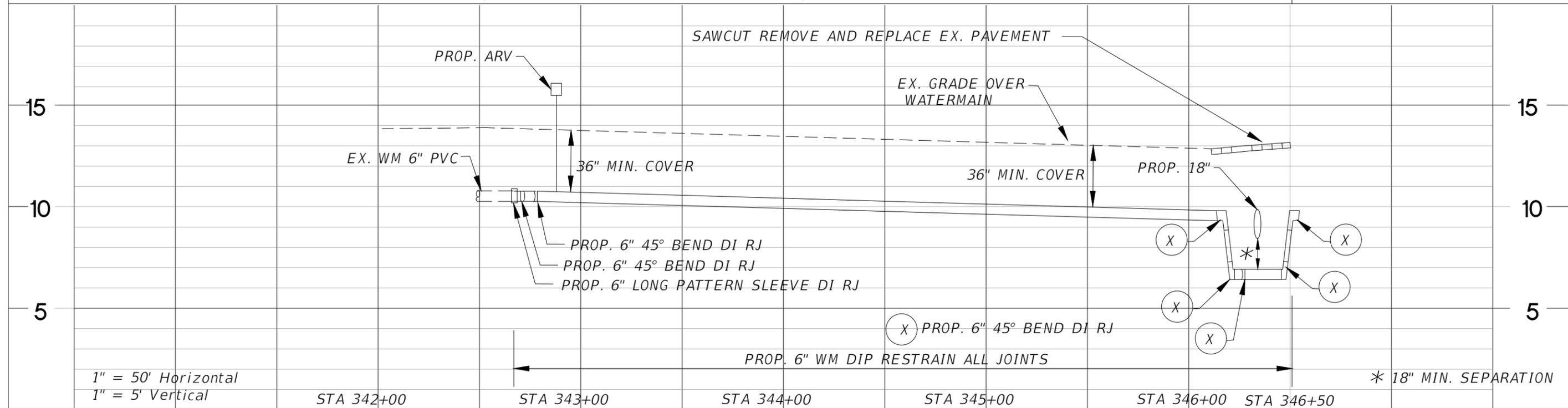
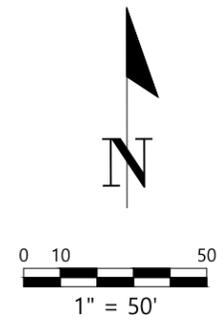
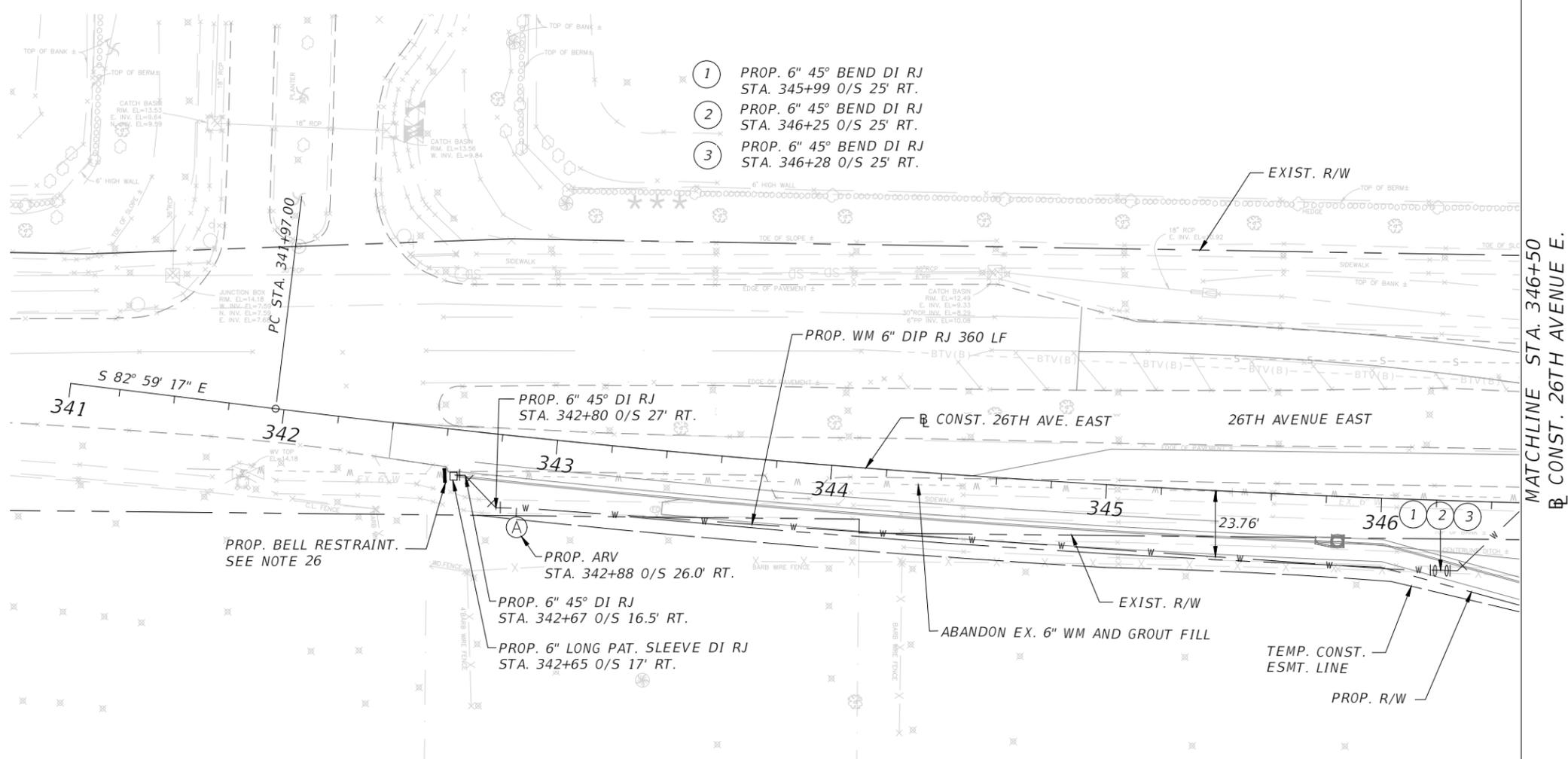
DESIGN ENGINEER  
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**UTILITY PLAN AND PROFILE**

SHEET NO.  
 U-9

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				AS NOTED	JUNE 2025	NORMAN F. ROBERTSON, P.E.	U-11
				DESIGNED BY	PROJECT NO.	FL. LICENSE NO.	
				JRJ	6096260	69785	
				DRAWN BY			
				JRJ			
				CHECKED BY			
				NFR			

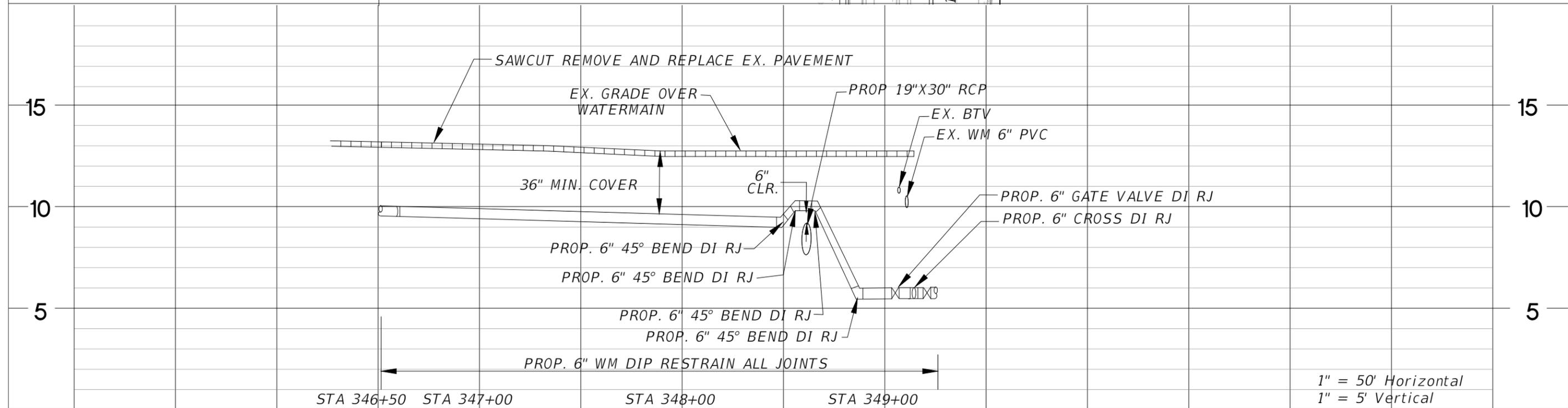
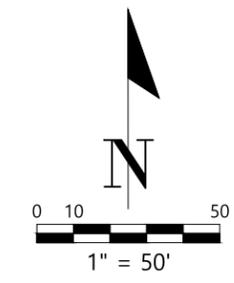
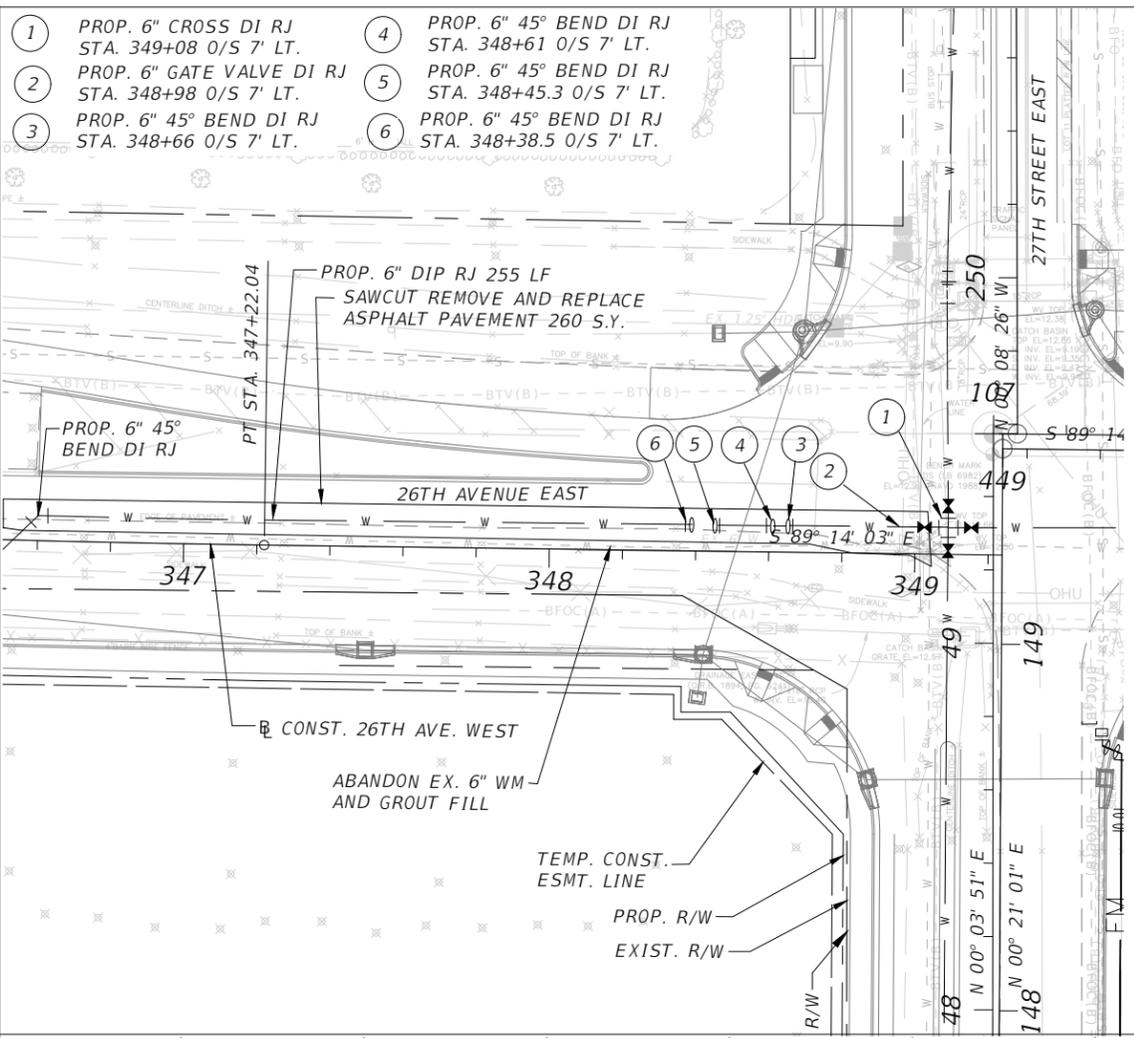
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**UTILITY PLAN AND PROFILE**

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MATCHLINE STA. 346+50  
 CONST. 26TH AVENUE E.



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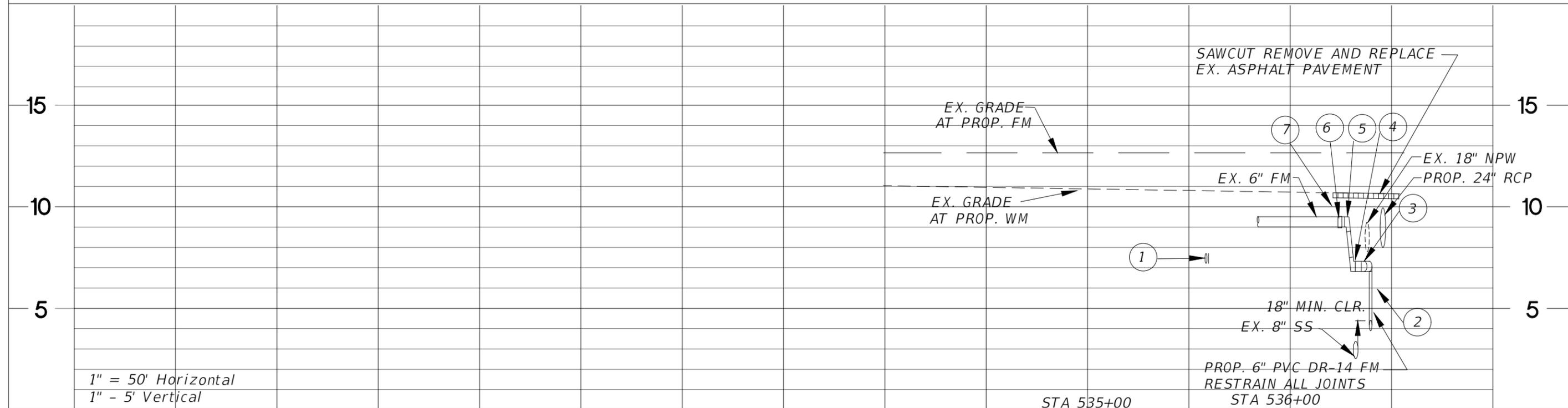
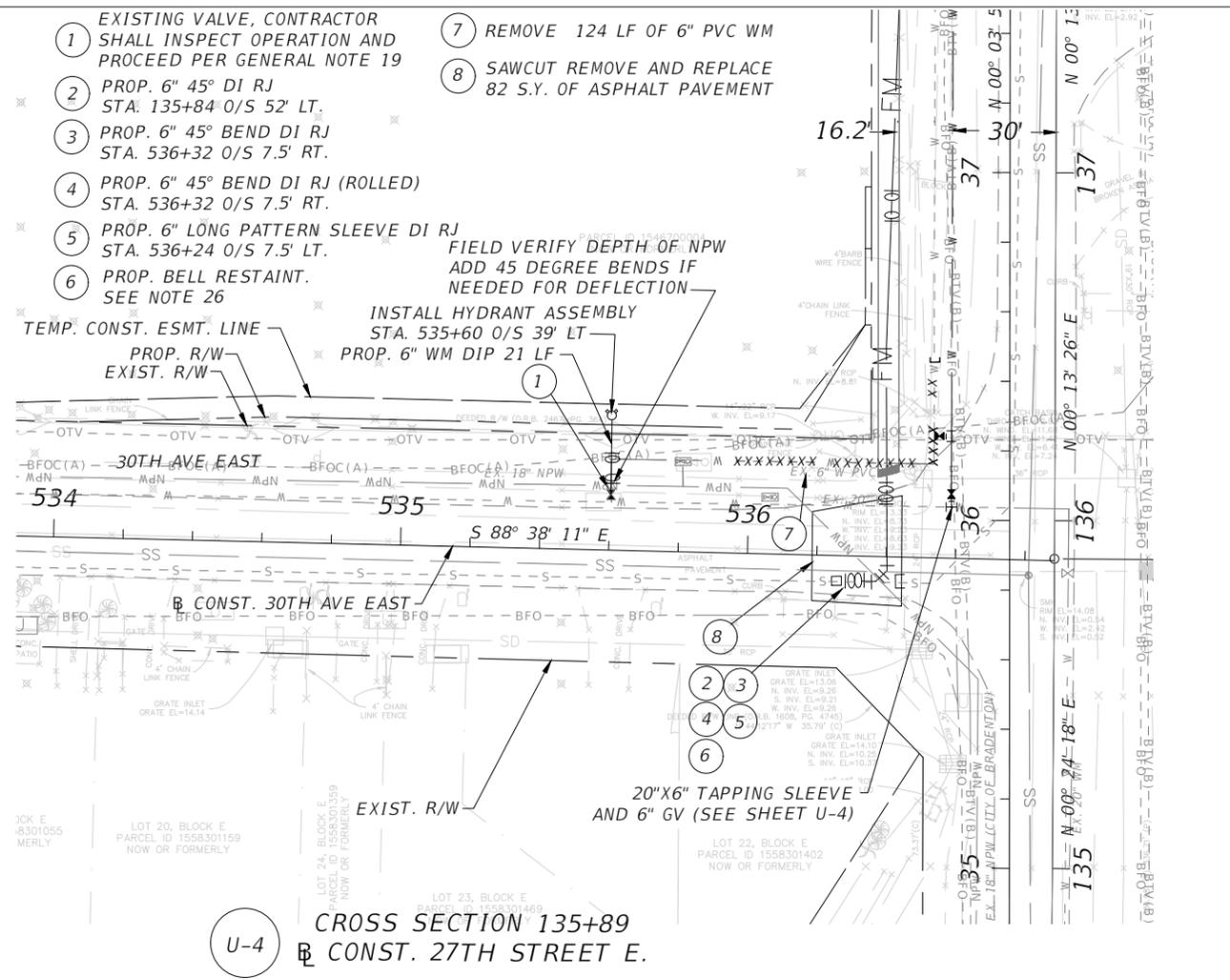
NO.	REVISIONS	DATE	BY	SCALE	DATE	DESIGN ENGINEER	SHEET NO.
	AS NOTED				JUNE 2025	NORMAN F. ROBERTSON, P.E.	U-12
	DESIGNED BY		JRJ		PROJECT NO.	FL. LICENSE NO.	
	DRAWN BY		JRJ		6096260	69785	
	CHECKED BY		NFR				

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 4030 W BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607  
 (813) 282-7275



UTILITY PLAN AND PROFILE

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	AS NOTED				JUNE 2025	NORMAN F. ROBERTSON, P.E.	U-13
	DESIGNED BY		JRJ		PROJECT NO.	FL. LICENSE NO.	
	DRAWN BY		JRJ		6096260	69785	
	CHECKED BY		NFR				

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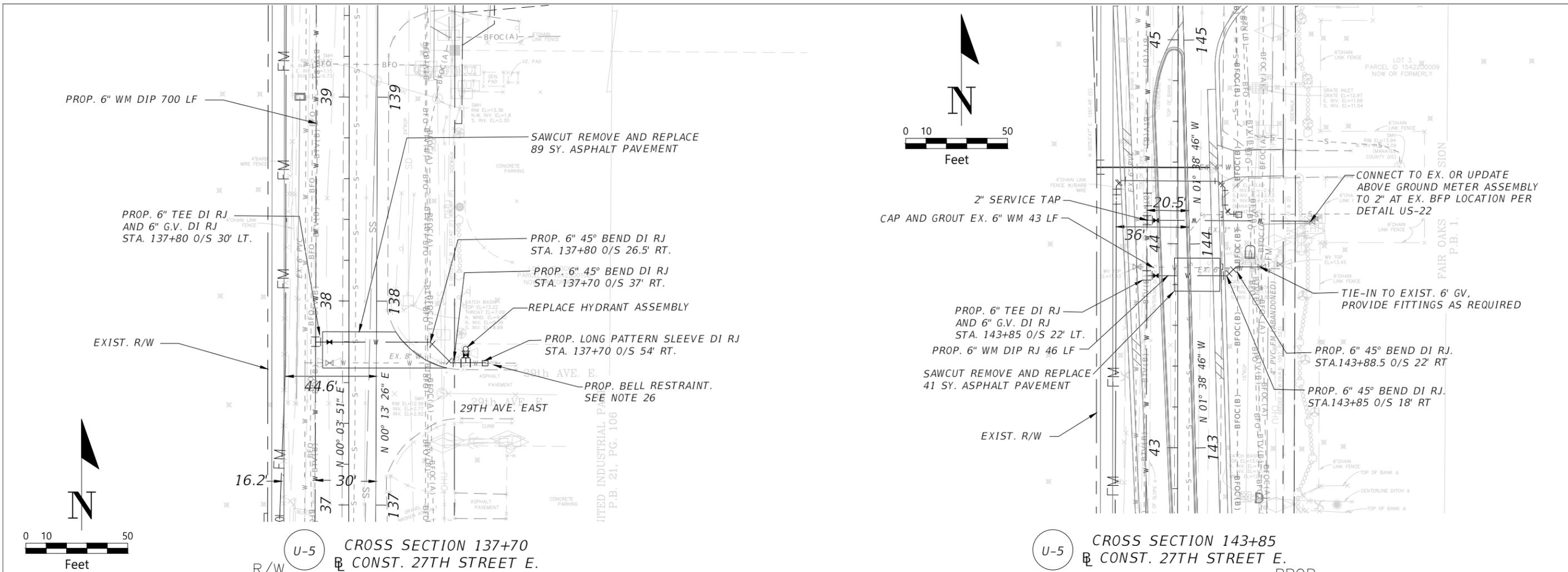


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FL. LICENSE NO.  
69785

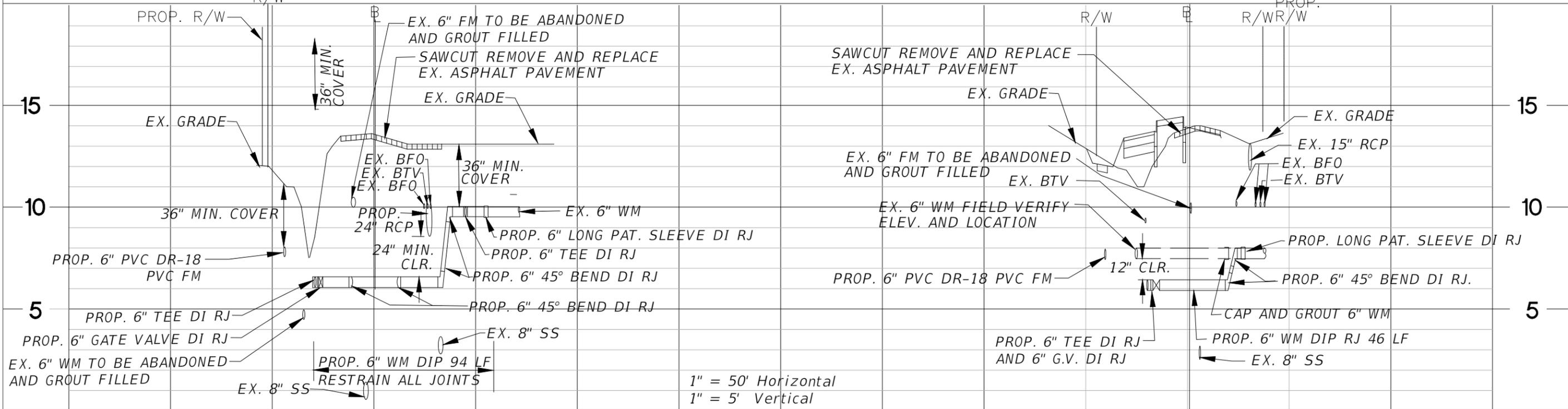
**UTILITY PLAN AND SECTIONS**

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U-5 CROSS SECTION 137+70  
CONST. 27TH STREET E.

U-5 CROSS SECTION 143+85  
CONST. 27TH STREET E.



1" = 50' Horizontal  
1" = 5' Vertical

NO.	REVISIONS	DATE	BY	SCALE
				AS NOTED
			DESIGNED BY	
			JRJ	
			DRAWN BY	
			JRJ	
			CHECKED BY	
			NFR	

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DATE  
JUNE 2025  
PROJECT NO.  
6096260

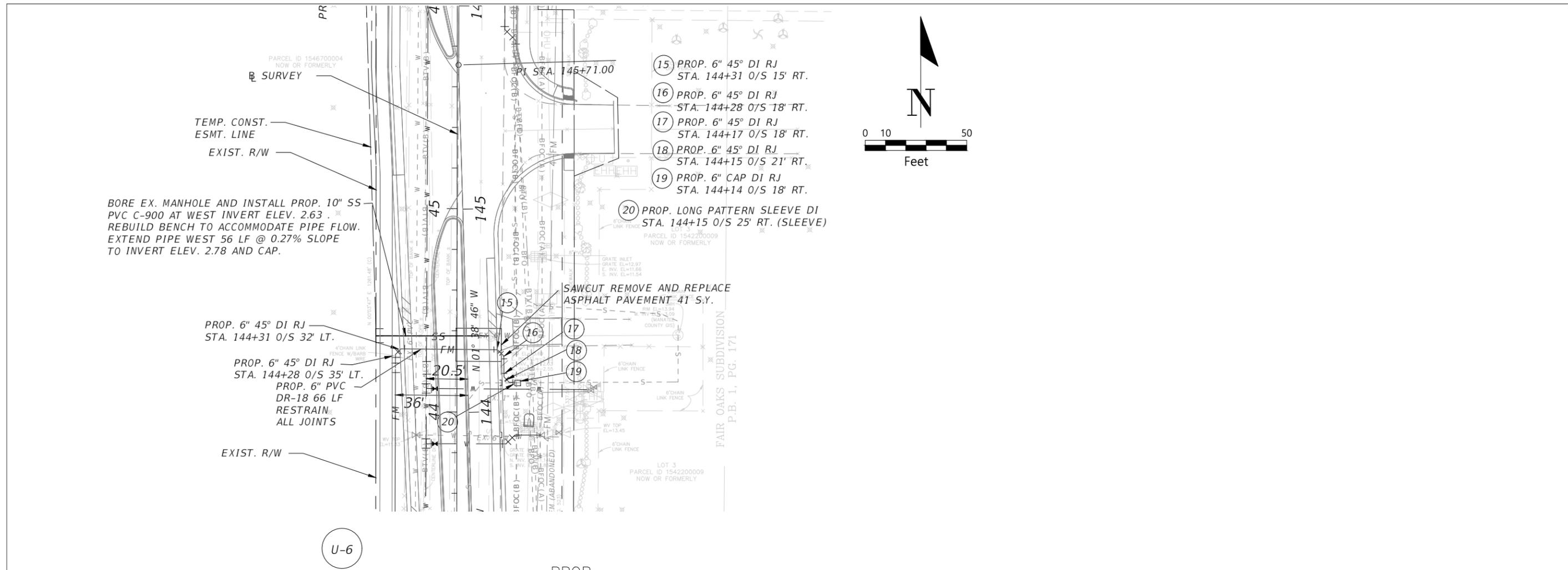


DESIGN ENGINEER  
NORMAN F. ROBERTSON, P.E.  
FL. LICENSE NO.  
69785

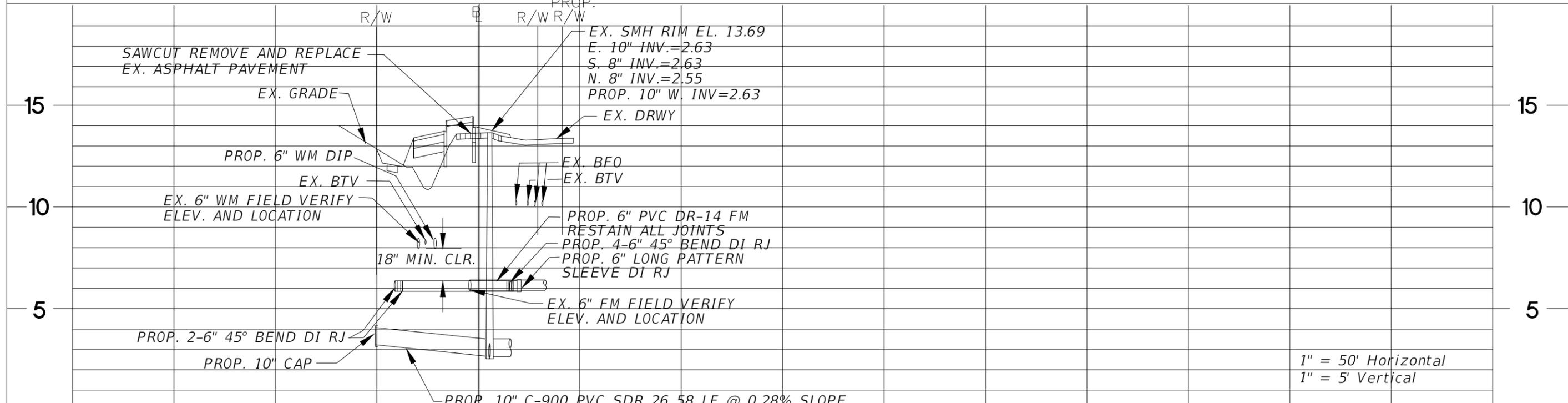
UTILITY PLAN AND SECTIONS

SHEET NO.  
U-14

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U-6



NO.	REVISIONS	DATE	BY	SCALE	DATE	DESIGN ENGINEER	SHEET NO.
				AS NOTED	JUNE 2025	NORMAN F. ROBERTSON, P.E.	
				DESIGNED BY	PROJECT NO.	FL. LICENSE NO.	
				DRAWN BY	6096260	69785	
				CHECKED BY			
				NFR			

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

UTILITY PLAN AND SECTIONS

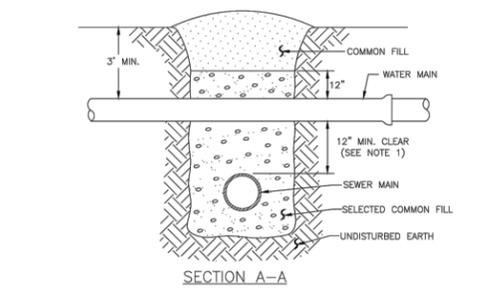
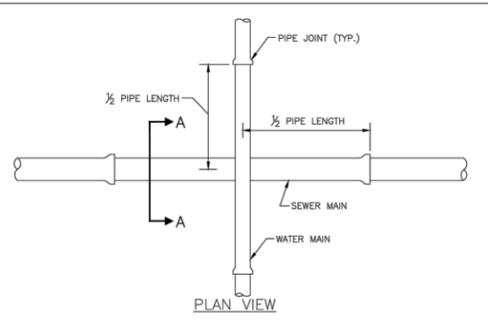
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MANATEE COUNTY PUBLIC WORKS STANDARDS  
PART 1 - UTILITIES STANDARDS MANUAL

SEPARATION MATRIX - SPECIAL APPROVAL CRITERIA

MANATEE COUNTY UTILITY REQUIRED SEPARATIONS	WATER (POTABLE) (water mains shall cross above all conflicts)	SANITARY SEWER (GRAVITY)	FORCE MAIN (SANITARY)	RECLAIMED (pipelines regulated under Part III of Chpt 62-610, F.A.C.)	STORM
WATER (POTABLE) (water mains shall cross above all conflicts)		min. horiz. separation: <math>\leq 3\text{-ft}</math> (3-ft min) min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-water is DI	min. horiz. separation: <math>\leq 3\text{-ft}</math> (3-ft min) min. vert. separation: 6-in (FM is below)	min. horiz. separation: <math>\leq 3\text{-ft}</math> min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-reclaimed is below	horiz. separation: <math>\leq 3\text{-ft}</math> min; gaskets shall be NBR or FKM *5-ft min from roadside underdrains min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-water is DI & gaskets shall be NBR or FKM
SANITARY SEWER (GRAVITY)	min. horiz. separation: <math>\leq 6\text{-ft}</math> (3-ft min) min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-water is DI		min. vert.: 6-in (12-in preferred)	min. horiz. separation: <math>\leq 3\text{-ft}</math> min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-reclaimed preferably above	min. horiz. separation: <math>\leq 3\text{-ft}</math> min min. vert. separation: <math>\leq 6\text{-ft}</math> (3-ft min)-sewer in watertight casing pipe *5-ft min from roadside underdrains
FORCE MAIN (SANITARY)	min. horiz. separation: <math>\leq 6\text{-ft}</math> (3-ft min) min. vert. separation: 6-in (FM is below)	min. vert.: 6-in (12-in preferred)		min. horiz. separation: <math>\leq 3\text{-ft}</math> min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min); force is below	min. vert. separation: <math>\leq 12\text{-in}</math> (force is above)
RECLAIMED (pipelines regulated under Part III of Chpt 62-610, F.A.C.)	min. horiz. separation: <math>\leq 3\text{-ft}</math> min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-reclaimed is below	min. horiz. separation: <math>\leq 3\text{-ft}</math> min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-reclaimed preferably above			min. horiz. separation: <math>\leq 3\text{-ft}</math> min min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-reclaimed is DI (reclaimed preferred above)
STORM	horiz. separation: <math>\leq 3\text{-ft}</math> min; gaskets shall be NBR or FKM *5-ft min from roadside underdrains min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-water is DI & gaskets shall be NBR or FKM	min. horiz. separation: <math>\leq 6\text{-ft}</math> (3-ft min)-sewer in watertight casing pipe *5-ft min from roadside underdrains	min. vert. separation: <math>\leq 12\text{-in}</math> (force is above)	min. horiz. separation: <math>\leq 3\text{-ft}</math> min min. vert. separation: <math>\leq 12\text{-in}</math> (6-in min)-reclaimed is DI (reclaimed preferred above)	

1. All dimensions are from outside edge of pipe to outside edge of pipe.
2. All new construction shall adhere to the standard horizontal and vertical required separations; non-standard separations may be considered when avoiding existing utilities.
3. All mains shall be a minimum of 3 feet from sewer and storm structures. A minimum of one (1) full standard length of pipe shall be centered on the structure. Confined box may be considered for water main passing through storm structures only with prior written approval from the County & FDEP. Refer to 62-555 for separation, in regards to storm sewer manholes or inlet structures.
4. One (1) standard full length of pipe shall be centered above or below the other pipeline so the pipe joints will be as far as possible from the other pipeline. Alternatively, at such crossings, the pipes shall be arranged so that all water main joints are at least 3 ft from all joints in a vacuum-type sanitary sewers, storm sewers, storm water force mains, or pipelines conveying reclaimed water regulated under Part III of Chapter 62-610, and at least 6 ft from all joints in gravity- or pressure-type sanitary sewers, wastewater force mains, or pipelines conveying reclaimed water not regulated under Part III of Ch 62-610 F.A.C.
5. Where an underground water main is being laid less than the required minimum horizontal distance from another pipeline and where an underground water main is crossing another pipeline and joints in the water main are being located less than the required minimum distance from joints in the other pipeline:
- a. Use of pressure-rated pipe conforming to the American Water Works Association standards incorporated into Rule 62-555.330, F.A.C., for the other pipeline if it is a gravity- or vacuum-type pipeline, or
- b. Use of welded, fused, or otherwise restrained joints for either the water main or the other pipeline, or
- c. Use of watertight casing pipe or concrete encasement at least four inches thick for either the water main or the other pipeline.



NOTES:

- CLEARANCE MAY BE REDUCED TO 6" FOR GRAVITY SEWER WHERE WATER MAIN IS DUCTILE IRON.
- 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.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	TYPICAL NEW WATER & SEWER LINE CROSSING	UG-2
REVISIONS	DATE	DATE OF APPROVAL
	SEPT 12, 2023	

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

MAIN PIPE SIZE	HORIZ. BENDS	TEES		REDUCERS	PLUGS & VALVES
		SIZE	LENGTH		
24	90°	X24	X24	X20	214
20	90°	X20	X20	X16	184
16	90°	X16	X16	X12	151
12	90°	X12	X12	X8	118
10	90°	X10	X10	X6	100
8	90°	X8	X8	X4	83
6	90°	X6	X6	X3	63
4	90°	X4	X4	X2	45

- NOTES:
- RESTRAIN 11.25" BENDS 50% OF LENGTH FOR 22.5" BENDS.
  - ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
  - ALL ISOLATION VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION.
  - PIPE SIZES ARE GIVEN IN INCHES.
  - RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.
  - LENGTHS SHOWN ARE FOR A TEST PRESSURE OF 180 PSI.
  - THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON SOIL CLASSIFICATION SP WITH AWWA TYPE 3 TRENCH CONDITIONS, 180 PSI TEST PRESSURE, 3 FEET OF COVER AND 1.5 FACTOR OF SAFETY. ACTUAL BURY CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY.
  - RESTRAINED LENGTHS TO BE APPLIED TO PIPELINES PER DETAIL UG-10 RESTRAINED LENGTHS FOR PIPE.
  - ALL RESTRAINED JOINT HARDWARE SHALL CONFORM TO 1.11.17 OF THE PUBLIC WORKS UTILITIES STANDARDS MANUAL.
  - ALL THREE "LEGS" OF TEES SHALL BE RESTRAINED PER THE STATED LENGTH IN THE TABLE.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	RESTRAINED LENGTHS FOR PVC PIPE	UG-8
REVISIONS	DATE	DATE OF APPROVAL
	SEPT 12, 2023	

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

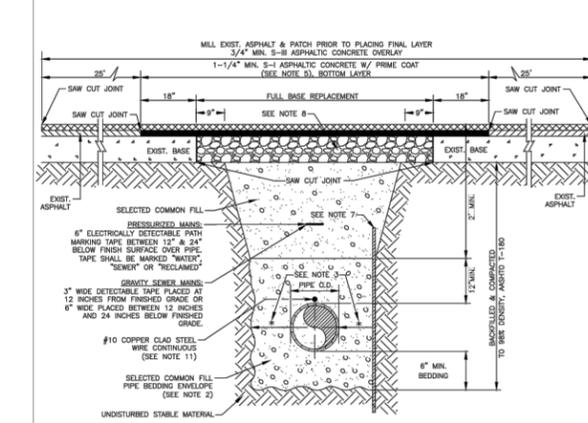
MAIN PIPE SIZE	HORIZ. BENDS	TEES		REDUCERS		PLUGS & VALVES
		SIZE	LENGTH	SIZE	LENGTH	
36	142	59	28	X36	X36	453
30	124	51	25	X30	X30	391
24	106	44	21	X24	X24	327
20	92	38	18	X20	X20	280
16	77	32	15	X16	X16	231
12	61	25	12	X12	X12	181
10	52	22	10	X10	X10	153
8	44	18	9	X8	X8	128
6	34	14	7	X6	X6	98
4	24	10	5	X4	X4	69

NOTES:

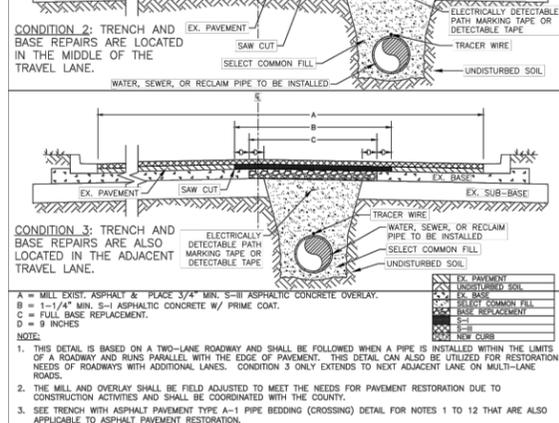
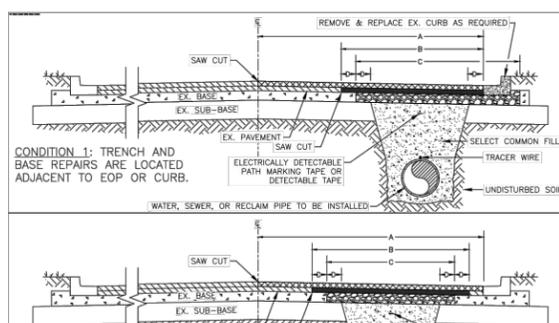
- SEE UG-8, RESTRAINED LENGTHS FOR PVC PIPE DETAIL FOR NOTES 1 THROUGH 10 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR DIP.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	RESTRAINED LENGTHS FOR DIP	UG-9
REVISIONS	DATE	DATE OF APPROVAL
	SEPT 12, 2023	

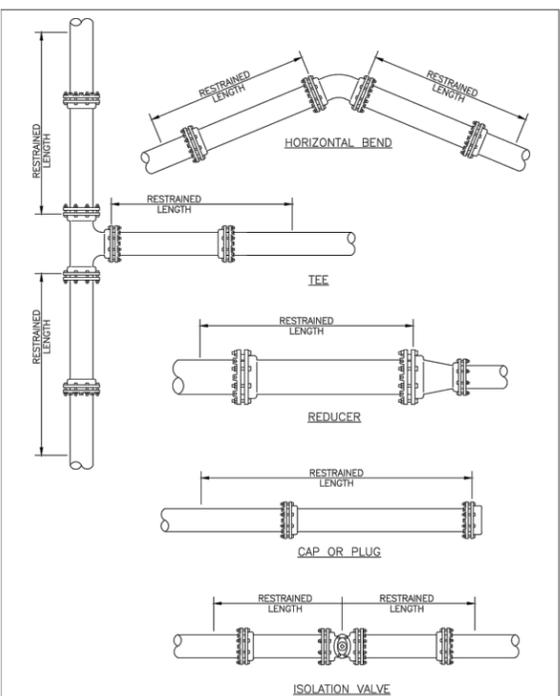
- NOTES:
- BITUMINOUS PAVEMENT SHALL BE REMOVED IN CLEAN STRAIGHT LINES BY SAW CUTTING. WHERE BITUMINOUS PAVEMENT ADJOINS A TRENCH, THE EDGES ADJACENT TO THE TRENCH SHALL BE TRIMMED TO A NEAT STRAIGHT LINE BEFORE RESURFACING TO ENSURE THAT ALL AREAS TO BE RESURFACED ARE ACCESSIBLE TO ROLLERS OR TAMPERS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



MANATEE COUNTY PUBLIC WORKS DEPARTMENT	TRENCH WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING (CROSSING)	UG-12
REVISIONS	DATE	DATE OF APPROVAL
	SEPT 12, 2023	



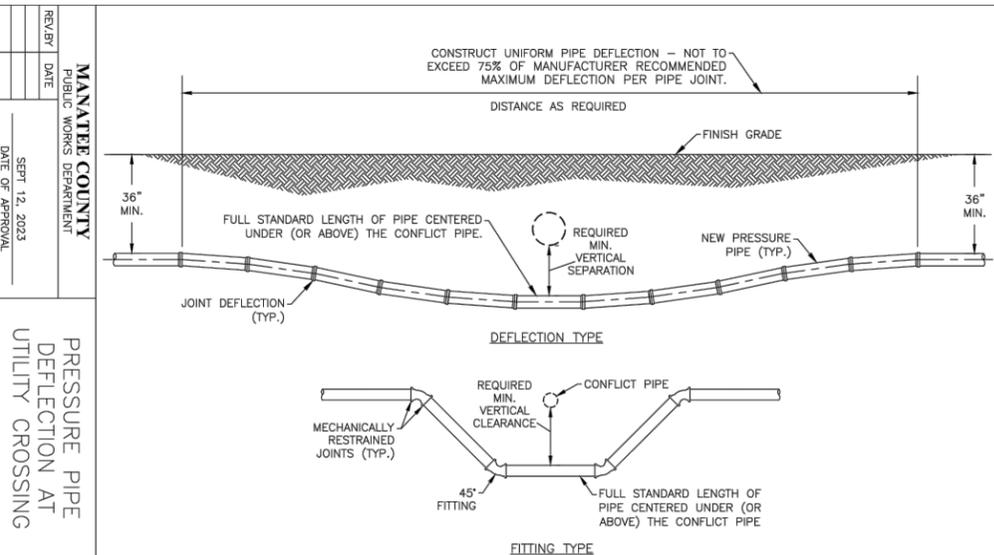
MANATEE COUNTY PUBLIC WORKS DEPARTMENT	TRENCH WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING (LONGITUDINAL)	UG-13
REVISIONS	DATE	DATE OF APPROVAL
	SEPT 12, 2023	



NOTE:

- SEE DETAIL UG-8 RESTRAINED LENGTHS FOR PVC PIPE FOR NOTES 1 THROUGH 10 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR PIPE.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	RESTRAINED LENGTHS FOR PIPE	UG-10
REVISIONS	DATE	DATE OF APPROVAL
	SEPT 12, 2023	



- NOTES:
- AT ALL TIMES, PIPE SHALL CROSS ABOVE CONFLICT WHEN POSSIBLE.
  - THESE METHODS ARE TO BE USED WHEN INSUFFICIENT COVER EXISTS TO ALLOW PRESSURE PIPE TO CROSS ABOVE CONFLICT PIPE WITH 6" VERTICAL SEPARATION AND MAINTAIN REQUIRED COVER TO FINISHED GRADE.
  - THE DEFLECTION TYPE CROSSING IS PREFERRED.
  - DO NOT EXCEED 75% OF MANUFACTURER'S RECOMMENDED MAXIMUM JOINT DEFLECTION.
  - FITTINGS SHALL BE RESTRAINED AS SPECIFIED IN DETAIL UG-8 "RESTRAINED LENGTH FOR PVC PIPE" OR UG-9 "RESTRAINED LENGTH FOR DIP".

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	DRAWN BY		JRJ		6096260	69785	
	CHECKED BY		NFR				

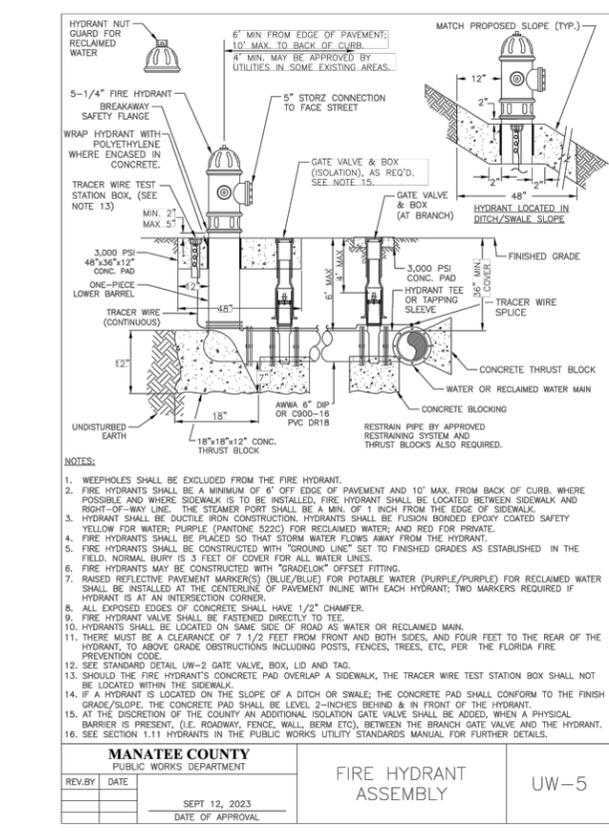
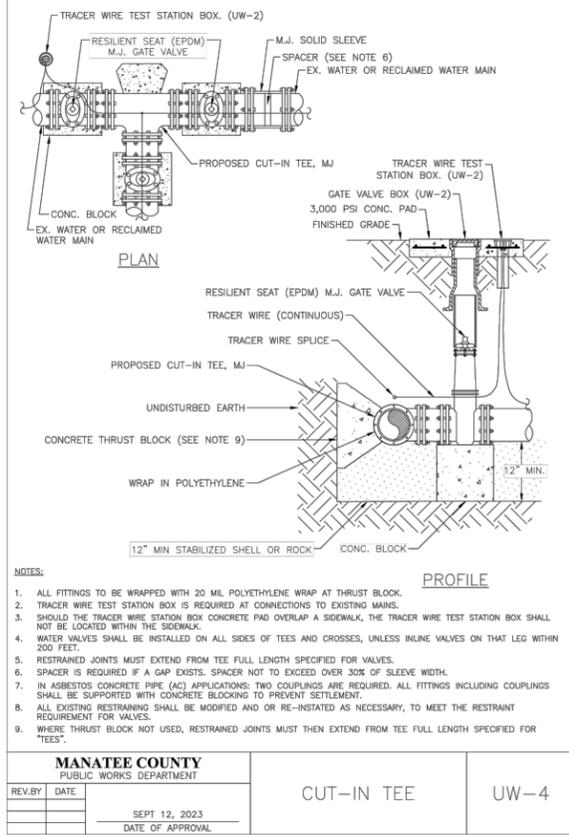
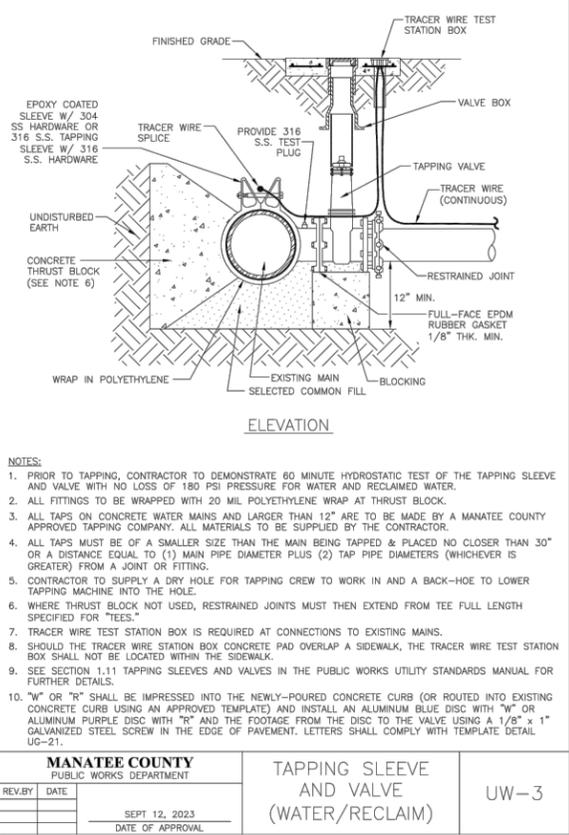
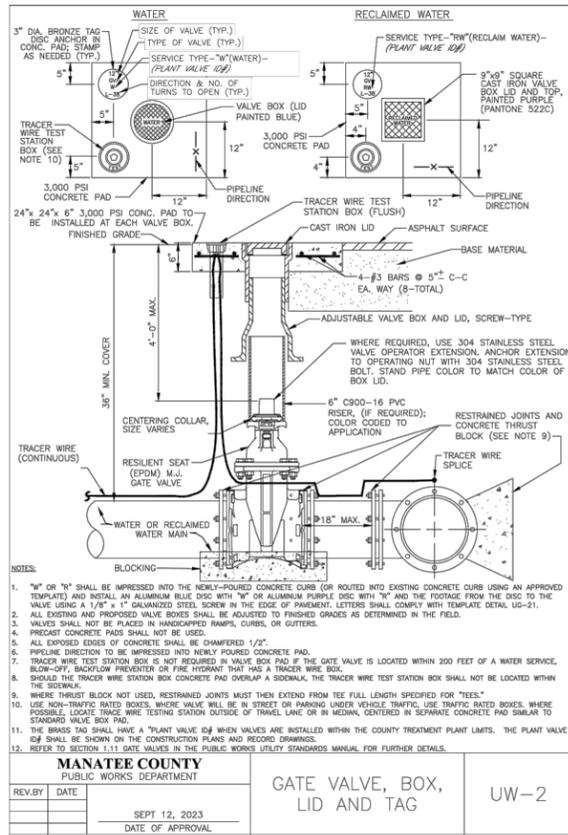
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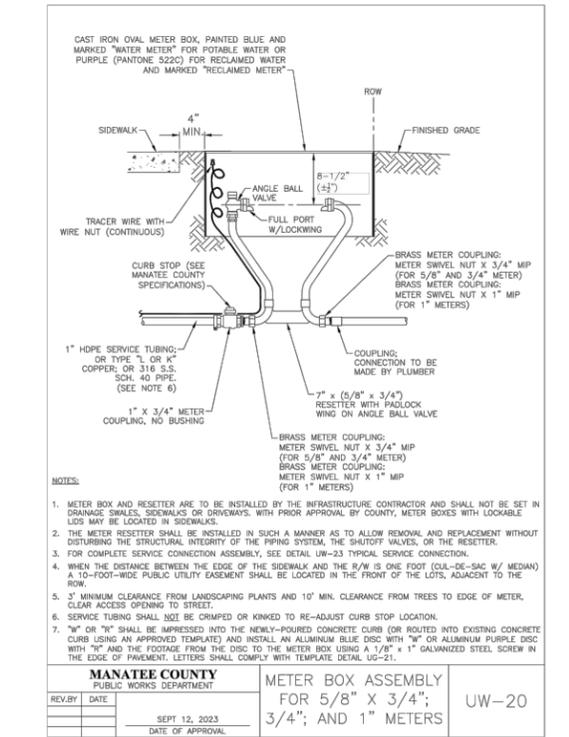
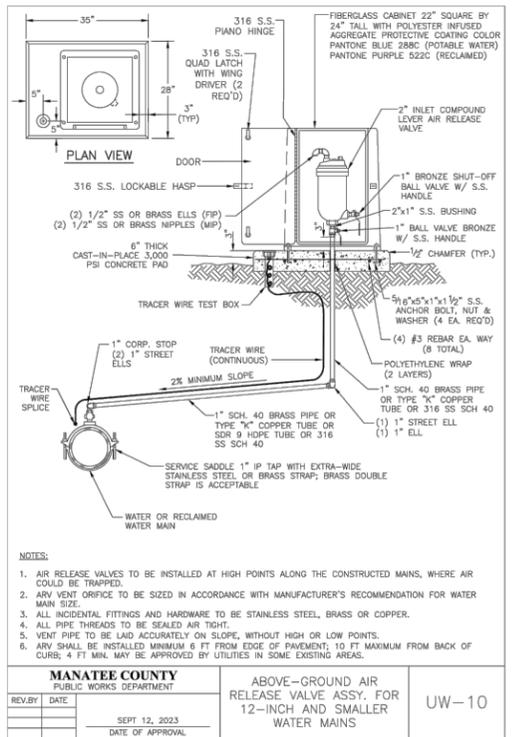


MANATEE COUNTY PUBLIC WORKS DEPARTMENT		GATE VALVE, BOX, LID AND TAG	UW-2
REV. BY	DATE		
	SEPT 12, 2023		
	DATE OF APPROVAL		

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TAPPING SLEEVE AND VALVE (WATER/RECLAIM)	UW-3
REV. BY	DATE		
	SEPT 12, 2023		
	DATE OF APPROVAL		

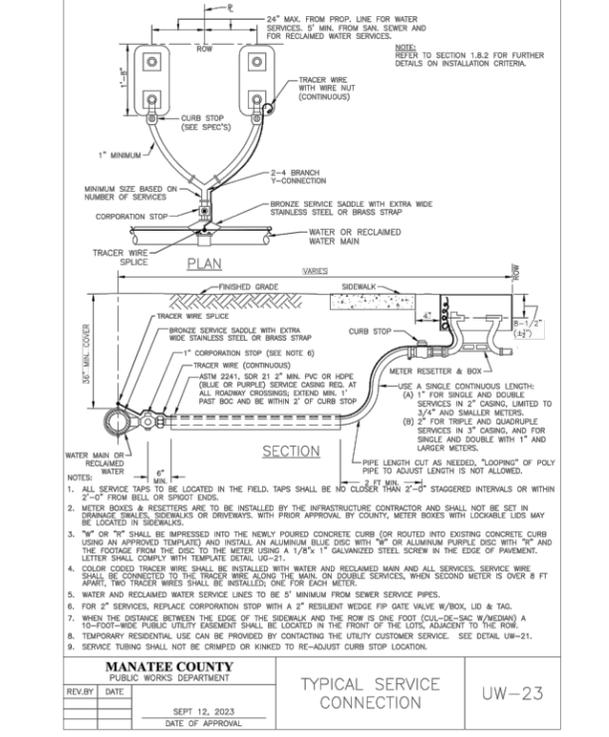
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REV. BY	DATE		
	SEPT 12, 2023		
	DATE OF APPROVAL		

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		FIRE HYDRANT ASSEMBLY	UW-5
REV. BY	DATE		
	SEPT 12, 2023		
	DATE OF APPROVAL		



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR 12-INCH AND SMALLER WATER MAINS	UW-10
REV. BY	DATE		
	SEPT 12, 2023		
	DATE OF APPROVAL		

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		METER BOX ASSEMBLY FOR 5/8\"/>
REV. BY	DATE	
	SEPT 12, 2023	
	DATE OF APPROVAL	



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TYPICAL SERVICE CONNECTION	UW-23
REV. BY	DATE		
	SEPT 12, 2023		
	DATE OF APPROVAL		

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	DESIGNED BY		JRJ	
	DRAWN BY		JRJ	
	CHECKED BY		NFR	

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DATE	JUNE 2025
PROJECT NO.	6096260

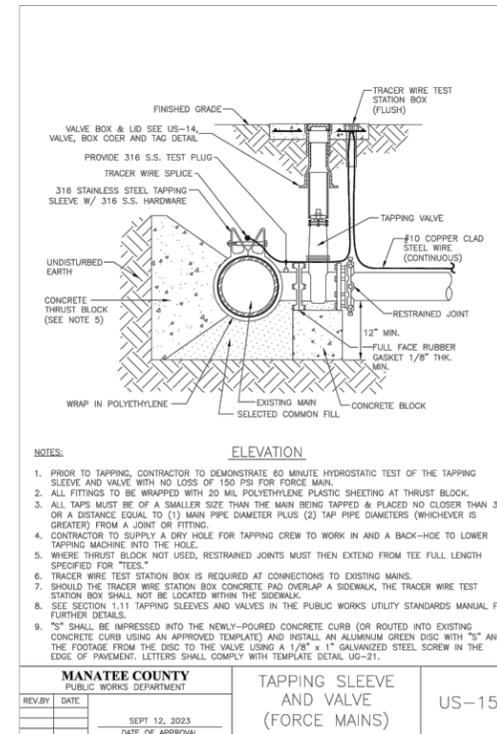
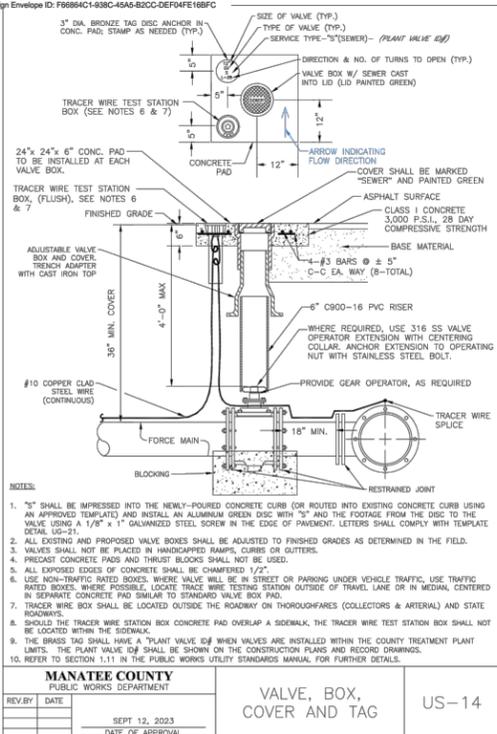
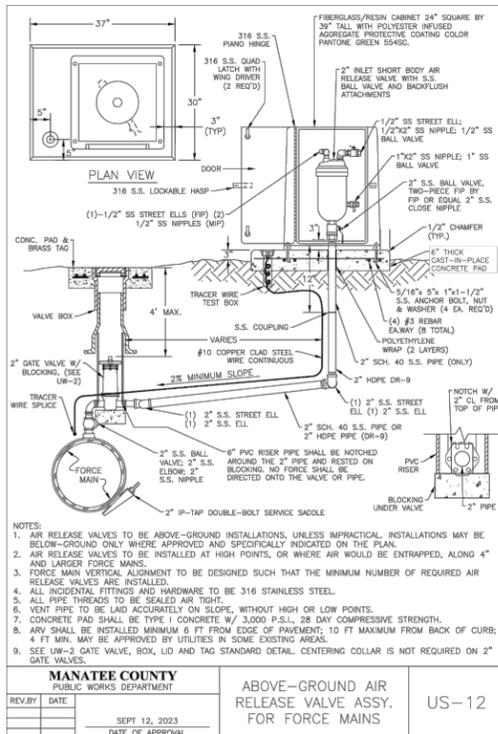
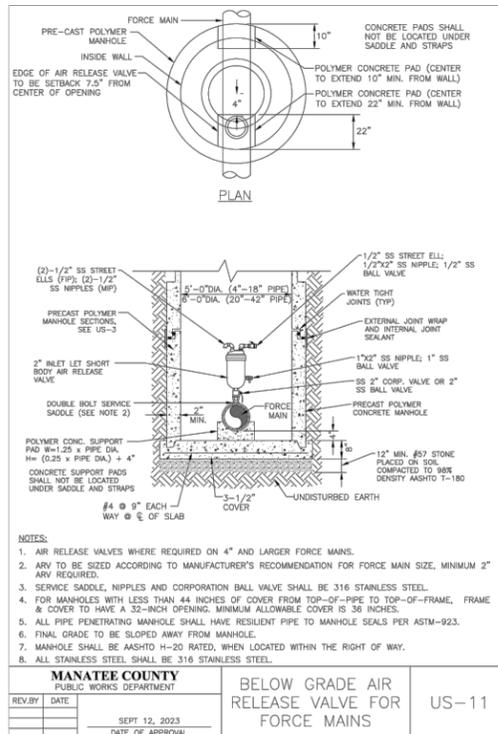
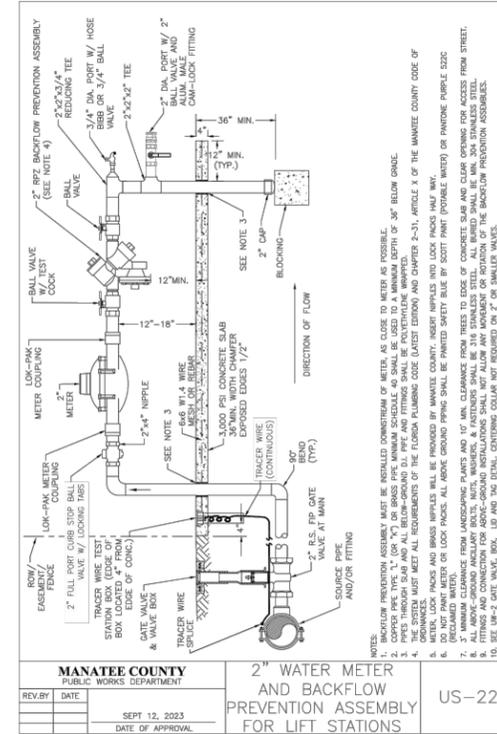
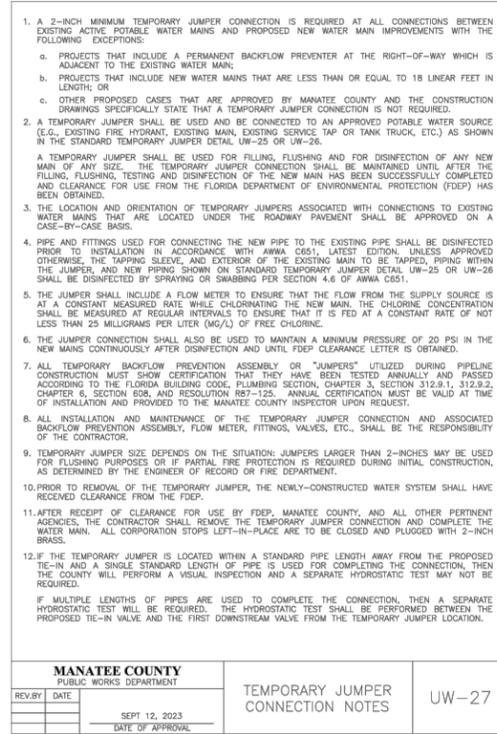
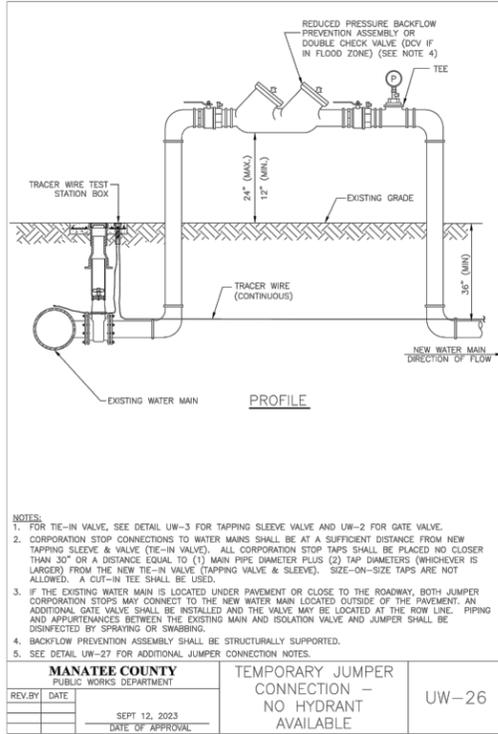
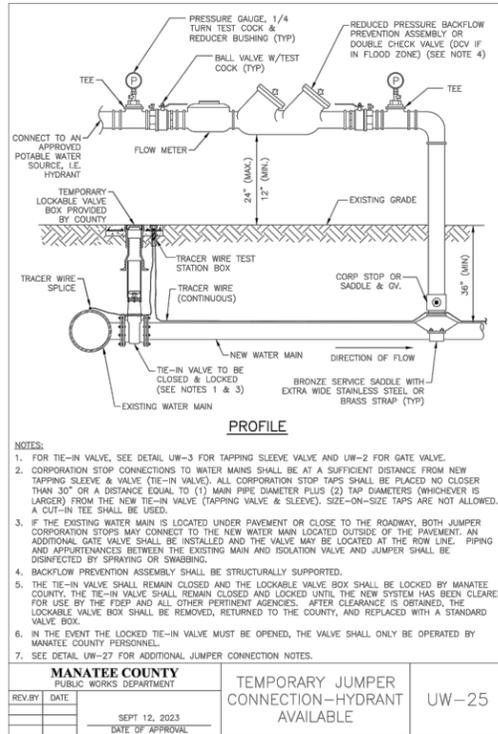


DESIGN ENGINEER	NORMAN F. ROBERTSON, P.E.
FL. LICENSE NO.	69785

UTILITY DETAILS

SHEET NO.	U-17
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NO.	REVISIONS	DATE	BY	SCALE
	AS NOTED			
	DESIGNED BY			
	DRAWN BY			
	CHECKED BY			

AtkinsRéalis  
4030 W BOY SCOUT BLVD  
SUITE 700  
TAMPA, FL 33607  
(813) 282-7275

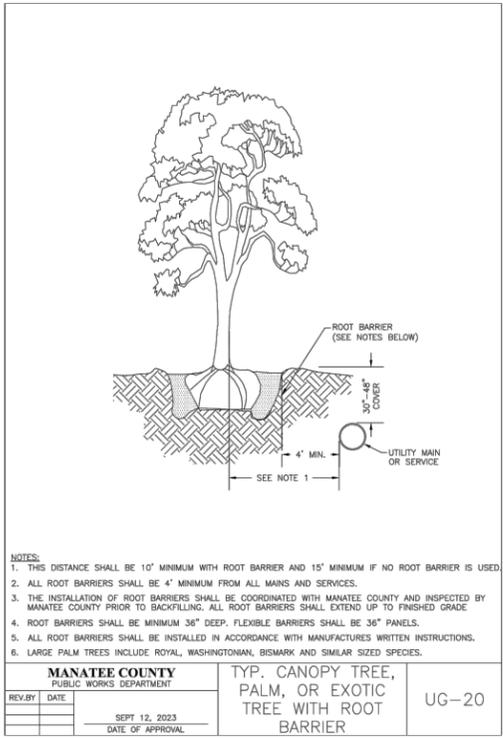
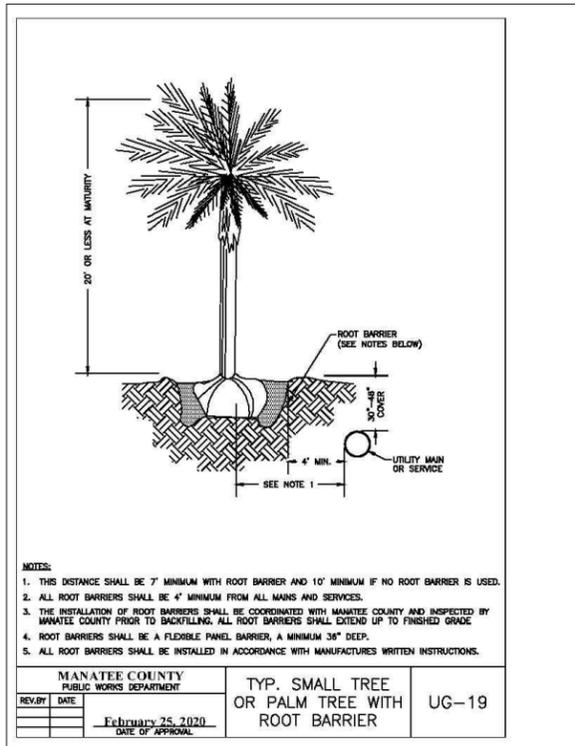
DATE  
JUNE 2025

PROJECT NO.  
6096260

DESIGN ENGINEER  
NORMAN F. ROBERTSON, P.E.  
FL. LICENSE NO.  
69785

UTILITY DETAILS

SHEET NO.  
U-18



NO.	REVISIONS	DATE	BY	SCALE	DATE	DESIGN ENGINEER	UTILITY DETAILS	SHEET NO.
				AS NOTED	JUNE 2025	NORMAN F. ROBERTSON, P.E.		
			JRJ	DESIGNED BY	PROJECT NO.	FL. LICENSE NO.		
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