

February 9, 2022 1:46 PM S:\Utilities\ENGINEERING\ACAD\Distribution\Littleton Road\10in WM Re-Location\Littleton RD WM RELOCATION LDO CS.dwg

LEE COUNTY

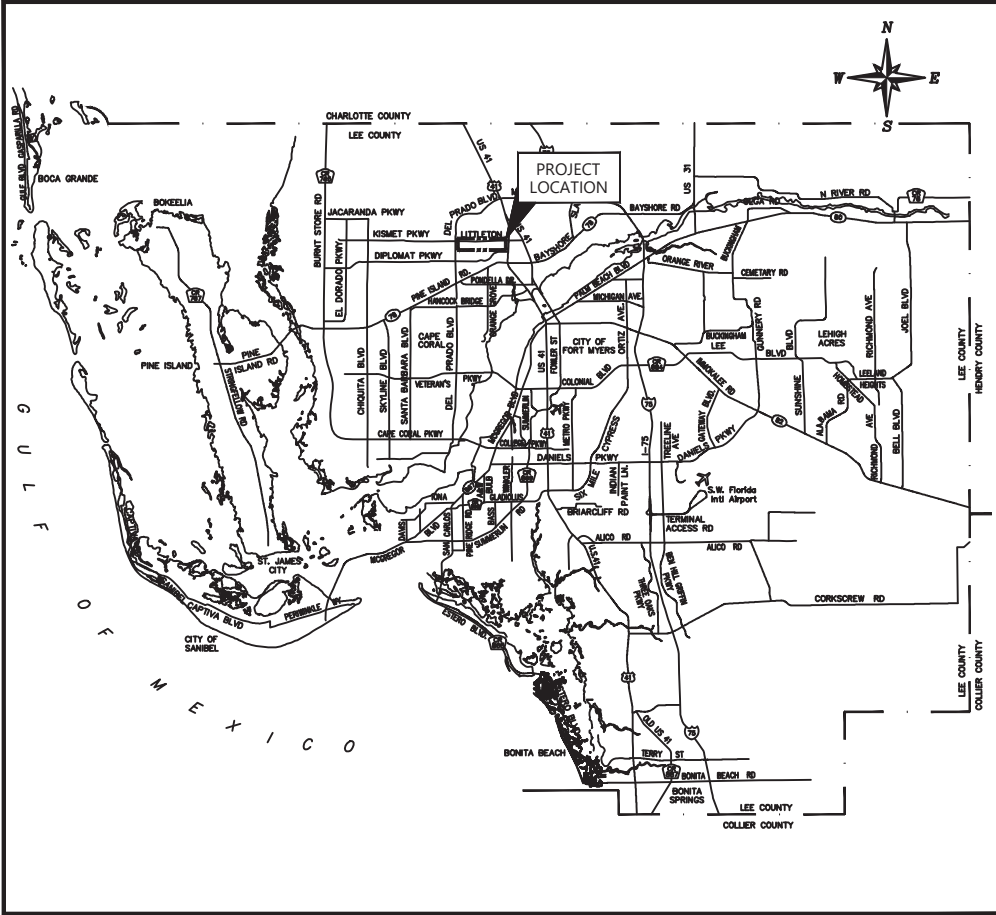
BOARD OF COUNTY COMMISSIONERS

LEE COUNTY UTILITIES ENGINEERING

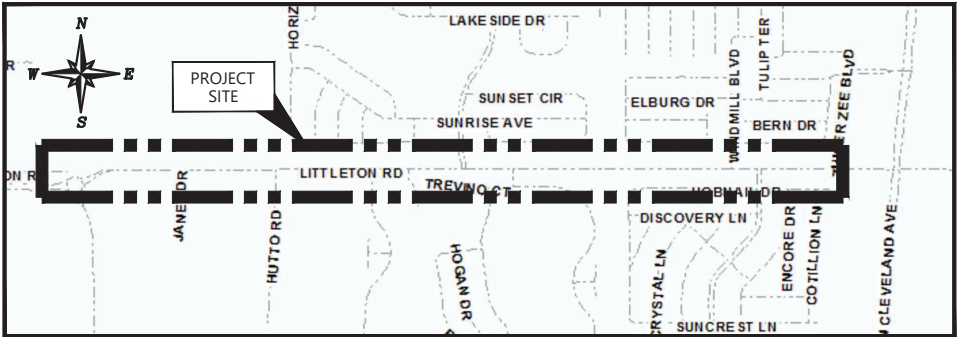
LITTLETON ROAD

WATERMAIN REPLACEMENT

LEE COUNTY, FLORIDA



PROJECT LOCATION
N.T.S.



PROJECT SITE
N.T.S.

THIS IS TO CERTIFY THAT THESE PLANS AND THE ASSOCIATED CONSTRUCTION PROJECT ARE IN SUBSTANTIAL COMPLIANCE WITH THE LEE COUNTY LAND DEVELOPMENT CODE WITH THE EXCEPTION OF THE FOLLOWING DEVIATIONS WHICH HAVE BEEN APPROVED BY THE ASSISTANT COUNTY MANAGER.

DEVIATIONS: NONE

JOEL ALLAN MAKAU, P.E. _____ DATE
FLORIDA P.E. #86414

DEVELOPEMENT ORDER APPROVED:
LEE COUNTY ADMINISTRATION

GLEN SALYER _____ DATE
ASSISTANT COUNTY MANAGER

ATTENTION IS DIRECTED IN THE FACT THAT THESE PLANS MAT HAVE BEEN REDUCED IN SIZE THROUGH REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

ELEVATIONS BASED ON NORTH AMERICAN
VERTICAL DATUM NAVD88.

SHEET INDEX

Sheet Number	SHEET DESCRIPTION
1	COVER SHEET
2	SIGNATURE SHEET
3	LCU STANDARD SYM, ABBREV & NOTES SHEET
4	LITTLETON RD STA 25+00 TO 30+80
5	LITTLETON RD STA 30+80 TO 36+40
6	LITTLETON RD STA 36+40 TO 42+00
7	LITTLETON RD STA 42+00 TO 47+60
8	LITTLETON RD STA 47+60 TO 53+20
9	LITTLETON RD STA 53+20 TO 58+80
10	LITTLETON RD STA 58+80 TO 64+40 NORTH
11	LITTLETON RD STA 58+80 TO 64+40 SOUTH
12	LITTLETON RD STA 64+40 TO 70+00 SOUTH
13	LITTLETON RD STA 70+00 TO 75+60 SOUTH
14	LITTLETON RD STA 75+60 TO 81+20 SOUTH
15	LITTLETON RD STA 81+20 TO 86+80 SOUTH
16	LITTLETON RD STA 86+80 TO 89+50 SOUTH
17	LITTLETON RD CROSSOVERS
18	LCU STANDARD DETAILS SHEET 1
19	LCU STANDARD DETAILS SHEET 2

LEE COUNTY COMMISSIONERS

- DIST 1. Kevin Ruane
- DIST 2. Cecil L Pendergrass
- DIST 3. Raymond Sandelli
- DIST 4. Brian Hamman
- DIST 5. Frank Mann

COUNTY MANAGER

Roger Desjarlais

ASSISTANT COUNTY MANAGER

Glen Salyer

DIRECTOR OF PUBLIC UTILITIES

Pamela S. Keyes, P.E.

REVISIONS

No.:	DATE:	DESCRIPTION:	APPROVED:



LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

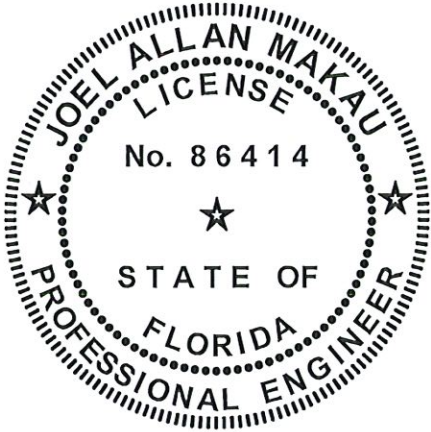
DATE:	02/09/2022	PROJECT No.:	----	SHEET No.:	1 OF 19
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THE PROFESSIONAL ENGINEERS NAME TO THE RIGHT SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

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THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL

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

JOEL ALLAN MAKAU, P.E.
P.E. LICENSE NUMBER 86414
LEE COUNTY UTILITIES
1500 MONROE ST.
FORT MYERS, FL 33901

Joel Allan Makau PE
86414 State of Florida

Digitally signed by Joel Allan Makau PE 86414 State of Florida
Date: 2023.05.01 11:52:20 -04'00'



LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

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DESIGNED: JAM	DATE: 02/09/2022
HORIZ. SCALE (FULL): 1" = 40'	
VERT. SCALE (FULL): 1" = 4'	

SHEET TITLE:
LITTLETON ROAD
SIGNATURE SHEET





























TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT:
LITTLETON ROAD
WATERMAIN REPLACEMENT

PROJECT NO.: ----	FILE NAME: LITTLETON RD WM RELOCATION SIG SHT.dwg	SHEET NUMBER: 2 OF 19
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SYMBOLS		ABBREVIATIONS		STANDARD PLAN NOTES		STANDARD PLAN NOTES CONTINUED		STANDARD DETAILS	
	AIR RELEASE VALVE	AC - ASBESTOS CEMENT		<p>THE STANDARD NOTES SHOWN BELOW SHALL BE INCLUDED ON ALL WATER AND SEWER PLANS SUBMITTED FOR APPROVAL TO LEE COUNTY UTILITIES (LCU).</p> <p>1. ALL WORK SHALL CONFORM TO LATEST REVISION OF THE LCU DESIGN MANUAL WHICH IS AVAILABLE ON OUR WEB-PAGE VIA THE FOLLOWING LINK: HTTPS://WWW.LEEGOV.COM/UTILITIES/DESIGN-MANUAL</p> <p>2. ALL REGULATORY AND PERMITTING AGENCIES' REQUIREMENTS SHALL BE COMPLIED WITH AS WELL.</p> <p>3. ANY QUANTITIES SHOWN ON PLANS ARE NOT VERIFIED BY LCU.</p> <p>4. THE INFORMATION PROVIDED IN THESE PLANS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF CONDITIONS THAT MAY BE ENCOUNTERED DURING THE COURSE OF WORK. ALL CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATIONS THEY MAY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSION REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH THEIR BIDS WILL BE BASED.</p> <p>5. ALL CONSTRUCTION WORK PERFORMED MUST BE DONE BY A CONTRACTOR LICENSED IN THE STATE OF FLORIDA TO DO THE WORK INTENDED.</p> <p>6. A PRE-CONSTRUCTION MEETING IS REQUIRED BEFORE WORK MAY BEGIN. REQUIRED ATTENDEES INCLUDE BUT ARE NOT LIMITED TO: THE ENGINEER OF RECORD OR HIS DESIGNEE, THE UNDERGROUND CONTRACTOR AND THE LCU INSPECTOR ASSIGNED TO THE PROJECT. LCU IS TO BE NOTIFIED TWO (2) WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING.</p> <p>7. ONE COPY OF THE LCU APPROVED/STAMPED CONSTRUCTION PLANS, ALL CONTRACT DOCUMENTS, REFERENCE DOCUMENTS AND TECHNICAL DOCUMENTS SUBMITTED MUST BE KEPT AT THE SITE AND MAINTAINED IN GOOD ORDER.</p> <p>8. ALL WORK AND MATERIALS, WHICH DO NOT CONFORM TO LCU SPECIFICATIONS, ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.</p> <p>9. ANY WORK PERFORMED WITHOUT THE KNOWLEDGE OF LCU IS SUBJECT TO RE-EXCAVATION, REMOVAL AND REPLACEMENT OF SAME TO BE DONE AT THE CONTRACTOR'S EXPENSE.</p> <p>10. LCU INSPECTION STAFF IS TO BE PRESENT FOR ALL HOT TAPS, PRESSURE TESTS, LIFT STATION START-UPS AND FOR ANY NECESSARY INSPECTION. THE CONTRACTOR IS TO PROVIDE A MINIMUM OF TWO (2) WORKING DAYS NOTICE PRIOR TO SCHEDULING ANY OF THE ABOVE WITH THE EXCEPTION OF THE LIFT STATION START-UP WHICH REQUIRES ONE-WEEK NOTICE.</p> <p>11. TRAFFIC MUST BE MAINTAINED AT ALL TIMES AS PER LEE COUNTY DEPARTMENT OF TRANSPORTATION (LCDOT) AND PER FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.</p> <p>12. THE CONTRACTOR IS TO UNCOVER ALL EXISTING LINES BEING TIED INTO AND VERIFY GRADES BEFORE BEGINNING CONSTRUCTION.</p> <p>13. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. LCU WILL NOT GUARANTEE ANY LOCATIONS AS SHOWN ON THESE PLANS OR THOSE OMITTED FROM THESE PLANS.</p> <p>14. THE CONTRACTOR SHALL VERIFY ALL UTILITIES AND PROVIDE AT LEAST TWO (2) WORKING DAYS NOTICE TO THE INDIVIDUAL UTILITY COMPANIES, FDOT AND LCDOT PRIOR TO CONSTRUCTION.</p> <p>15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND TAKE ALL POSSIBLE PRECAUTIONS TO AVOID ANY DAMAGE TO ALL UNDERGROUND PIPELINES, TELEPHONE, CABLE TV, ELECTRIC LINES/CONDUITS AND STRUCTURES IN ADVANCE OF ANY CONSTRUCTION. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES THAT MAY OCCUR DUE TO HIS FAILURE TO EXACTLY LOCATE AND PROTECT EXISTING UTILITIES AND STRUCTURES.</p> <p>16. ANYTHING NOT SHOWN ON THESE DRAWINGS SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND SHALL NOT CONSTITUTE AN EXTRA, UNLESS APPROVED BY THE ENGINEER OF RECORD.</p> <p>17. THE CONTRACTOR SHALL CONTACT THE ENGINEER AND LCU IMMEDIATELY CONCERNING ANY CONFLICTS WITH LCU UTILITIES/STRUCTURES ARISING DURING CONSTRUCTION OF ANY FACILITIES SHOWN ON THESE DRAWINGS.</p> <p>18. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES SHOWN ON THE PLANS. IF ANY DISCREPANCIES IN QUANTITIES ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD AND LCU.</p> <p>19. THE CONTRACTOR SHALL REPLACE ALL PAVEMENT, CURBS, DRIVEWAYS, SIDEWALKS, FENCES, ETC., WITH THE SAME TYPE OF MATERIAL THAT WAS REMOVED DURING CONSTRUCTION OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL RESTORE ALL AREAS AFFECTED BY THE CONSTRUCTION TO ITS ORIGINAL CONDITION, OR BETTER.</p> <p>20. WITHIN THE FDOT AND LCDOT RIGHT-OF-WAY, ALL DISTURBED AREAS SHALL RECEIVE GRASSING (SEEDING) OR SODDING MATERIALS IN ACCORDANCE WITH FDOT SPECIFICATIONS. THOSE AREAS THAT ARE CLASSIFIED AS DRAINAGE DITCHES SHALL RECEIVE FULL SOLID SOD.</p> <p>21. ALL FRAMES, COVERS VALVE BOXES, METER BOXES AND MANHOLES SHALL BE ADJUSTED TO FINISHED GRADE UPON COMPLETION OF PAVING OR RELATED CONSTRUCTION. ALL VALVE PADS SHALL BE POURED IN PLACE. NO PRE-FORMED VALVE PADS WILL BE ALLOWED.</p> <p>22. APPROPRIATE TURBIDITY CONTROL DEVICES (E.G. SILT FENCES, HAY BALES) WILL BE UTILIZED DURING ALL PHASES OF INSTALLATION AND GRADING. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING THE NOTICE OF INTENT AND NOTICE OF TERMINATION TO THE EPA IN COMPLIANCE WITH LEE COUNTY'S NPDES PERMIT.</p> <p>23. CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND MAINTAINING AN EFFECTIVE STORM WATER POLLUTION PREVENTION PLAN.</p> <p>24. LCU REQUIRES 30" OF COVER FOR ALL UNDERGROUND PIPING EXCEPT UNDER PAVEMENT, WHERE 36" OF COVER IS REQUIRED. IF LCU REQUIRED COVER CANNOT BE MAINTAINED, THE CONTRACTOR SHALL PROVIDE OTHER METHODS OF CONSTRUCTION OR PIPE PROTECTION, WHICH SHALL FIRST BE APPROVED BY LCU AND THE ENGINEER, AT NO ADDITIONAL COST TO THE COUNTY. IF STATE AGENCIES REQUIRE ADDITIONAL COVER, MEETING THE REQUIREMENTS SHALL BE DONE AT NO ADDITIONAL COST TO THE COUNTY.</p> <p>25. LCU REQUIRES THERE TO BE A MINIMUM OF TEN (10) FEET HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN POTABLE WATER & SANITARY SEWER MAINS. LCU ALSO REQUIRES MINIMUM OF TEN (10) FEET HORIZONTAL SEPARATION BETWEEN OTHER PUBLIC AND/OR PRIVATE UTILITIES, STRUCTURE(S), BUILDING(S), WALL(S), FOUNTAIN(S), FENCE(S) AND LCU INFRASTRUCTURE UNLESS SPECIFICALLY APPROVED BY LCU.</p> <p>26. LCU REQUIRES THERE TO BE A MINIMUM OF FIVE (5) FEET HORIZONTAL SEPARATION BETWEEN LCU INFRASTRUCTURE AND DRAINAGE INFRASTRUCTURE, MITERED END SECTIONS, INLETS, ETC. LCU ALSO REQUIRES MINIMUM OF FIVE (5) FEET HORIZONTAL SEPARATION BETWEEN LCU INFRASTRUCTURE AND ALL NEW LIGHT POLE FOUNDATIONS.</p> <p>27. THE ROOT BALL OF PALM TREES SHALL BE A MINIMUM OF FIVE (5) FEET AND THE ROOT BALL OF SHADE TREES SHALL BE A MINIMUM OF TEN (10) FEET FROM ANY EXISTING OR PROPOSED LCU OWNED AND MAINTAINED PIPE/INFRASTRUCTURE.</p> <p>28. AS THE WORK PROGRESSES THE CONTRACTOR SHALL RECORD ALL CHANGES AND DEVIATIONS FROM THE LCU STAMPED/APPROVED CONSTRUCTION PLANS. IN ADDITION, HE SHALL RECORD THE EXACT LOCATION OF ALL CHANGES IN VERTICAL AND HORIZONTAL ALIGNMENT WITH COORDINATES WITH RESPECT TO THE NAVD 1988 STATE PLANE FLORIDA WEST COORDINATE SYSTEM AS WELL AS ALL REQUIREMENTS SET FORTH IN THE LCU DESIGN MANUAL. THIS INFORMATION IS TO BE FORWARDED TO THE ENGINEER OF RECORD WHO PREPARED, SIGNED AND SEALED THE APPROVED CONSTRUCTION PLANS SO THAT HE CAN PREPARE 'RECORD DRAWINGS' PER THE REQUIREMENTS SET FORTH IN THE LCU DESIGN MANUAL.</p>		<p>TYPE 3 ASPHALTIC CONCRETE OR REQUIRED</p> <p>EXISTING SURFACE SHALL BE CUT SQUARE BY MECHANICAL SAWING (SEE GENERAL NOTE 3)</p> <p>25'</p> <p>25'</p> <p>TACK VERTICAL FACE JOIN AND/OR BUTT JOINT TO SATISFACTION OF COUNTY ENGINEER</p> <p>3" MIN. S-1 ASPHALT (SEE GENERAL NOTE 1)</p> <p>MATERIALS LCDOT TYP. ROAD SECTION 12" LBR 40 SUBGRADE 95% COMPACTION. 8" FDOT CERTIFIED PIT LIMEROCK COMPACTED 98% T-180.</p> <p>BACKFILL ZONE</p> <p>12" TYPICAL</p> <p>36" MIN.</p> <p>VARIES</p> <p>VARIES</p> <p>PIPE DIAMETER VARIES</p> <p>OVERLAY WITH 1" S-3 ASPHALT OR MATCH EXISTING, 25 FEET IN EACH DIRECTION WITH 2' WIDE X 3/4" DEEP MILLED BUTT JOINT AT EACH END.</p> <p>GENERAL NOTES 1. THE LIMITS OF ASPHALT (OVERLAY) REPLACEMENT SHALL BE DETERMINED BY LEE COUNTY. 2. FOR GRAVITY PIPE LINES, MAY USE ROCK 1' (FT) ABOVE PIPE. 3. USING A 3/4" THICK X 2' WIDE BUTT JOINT AT EACH END. 4. COMPACTION 6" LIFTS WITH DENSITIES EVERY 12".</p> <p>PAVEMENT RESTORATION DETAIL FOR PUBLIC ROADS N.T.S.</p> <p>CROSSING PIPE</p> <p>WITH MIN. 18" VERTICAL SEPARATION BETWEEN PIPES</p> <p>WATER MAIN</p> <p>ONE FULL LENGTH (20' PVC/18" DIP) CENTERED ON CROSSING PIPE</p> <p>ONE FULL LENGTH (20' PVC/18" DIP) CENTERED ON CROSSING PIPE</p> <p>TYPICAL WATER MAIN PIPE JOINT LOCATION AT PERPENDICULAR CROSSINGS PURSUANT TO CH. 62-555.314, F.A.C. N.T.S.</p> <p>RIGHT OF WAY</p> <p>EXISTING PAVEMENT</p> <p>36" MIN.</p> <p>36" MIN.</p> <p>WATER MAIN</p> <p>TYPICAL ROADWAY SECTION N.T.S.</p>			
	AUTOMATIC FLUSHING DEVICE	AFD - AUTOMATIC FLUSHING DEVICE							
	BACTERIAL SAMPLE POINT	ARV - AIR RELEASE VALVE							
	BEND	BOV - BLOW-OFF VALVE							
	BLOW-OFF VALVE	BV - BUTTERFLY VALVE							
	CAP	CI - CAST IRON							
	CROSS	CMP - CORRUGATED METAL PIPE							
	FIRE HYDRANT, EXISTING	CO - CLEANOUT							
	FIRE HYDRANT	DDCV - DOUBLE DETECTOR CHECK VALVE (DCDA)							
	GATE VALVE, EXISTING	DI - DUCTILE IRON							
	GATE VALVE, PLUG VALVE	EOP - EDGE OF PAVEMENT							
	IRRIGATION METER	FH - FIRE HYDRANT							
	MANHOLE, EXISTING	FM - FORCE MAIN							
	MANHOLE	GM - GRAVITY MAIN							
	MECHANICAL JOINT SLEEVE	GV - GATE VALVE							
	POWER POLE	HDPE - HIGH DENSITY POLYURETHANE							
	REDUCER, EXISTING	IRR - IRRIGATION							
	REDUCER	MH - MANHOLE							
	SEWER CLEAN OUT, EX. (LATERAL)	PSP - PERMANENT SAMPLE POINT							
	SEWER CLEAN OUT (LATERAL)	PV - PLUG VALVE							
	TEE, SADDLE	PVC - POLYVINYL CHLORIDE							
	WATER METER, EXISTING	RCP - REINFORCED CONCRETE PIPE							
	WATER METER	RDCR - REDUCER							
	S-SHAPED FITTING	ROW - RIGHT OF WAY							
	LINE STOP	SP - STEEL PIPE							
	DDCV (DCDV)	TSP - TEMPORARY SAMPLE POINT							
	LIFT STATION	VCP - VITRIFIED CLAY PIPE							
	CASING (WATER/SEWER)	WM - WATER MAIN							



LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

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HORIZ. SCALE (FULL):	
VERT. SCALE (FULL):	

SHEET TITLE:
LCU STANDARD SYMBOLS,
ABBREV. & NOTES SHEET

TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT: LITTLETON ROAD WATERMAIN REPLACEMENT		
PROJECT NO.: ----	FILE NAME: LITTLETON RD WM REL SYM-ABB-NOTES.dwg	SHEET NUMBER: 3 OF 19

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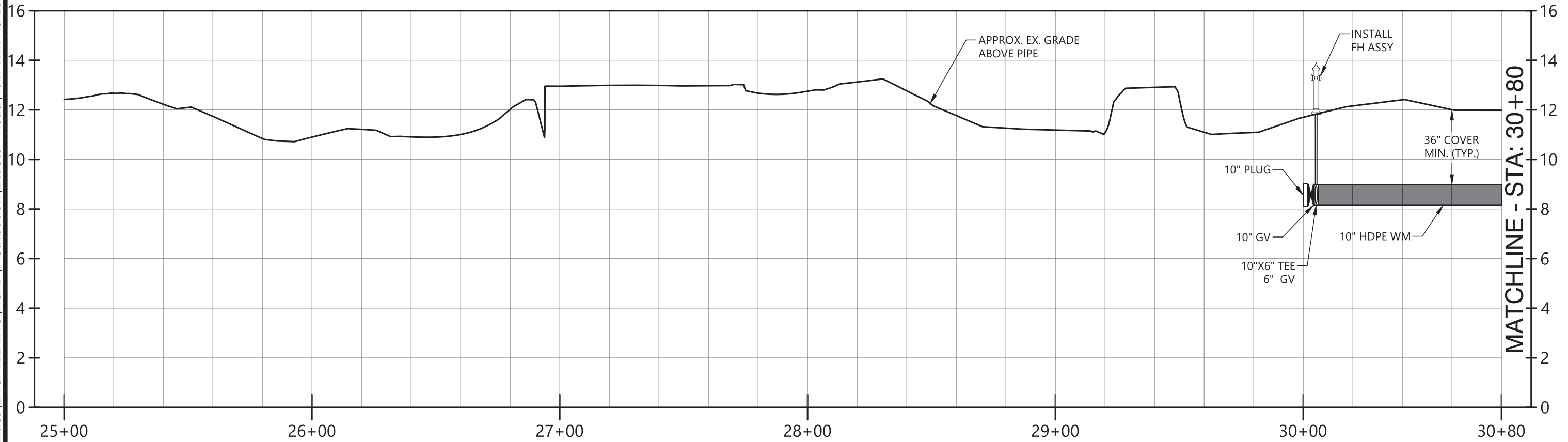
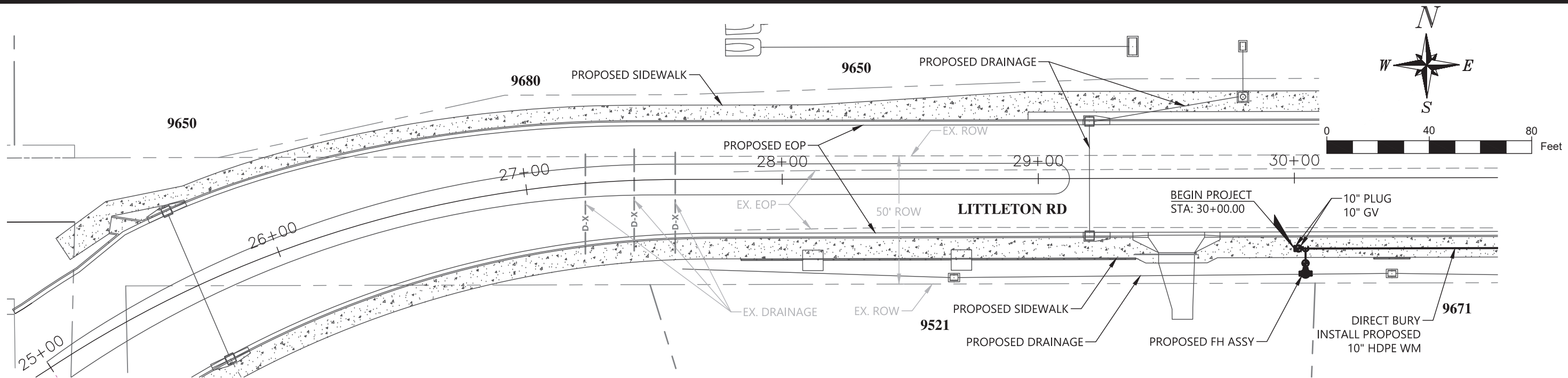
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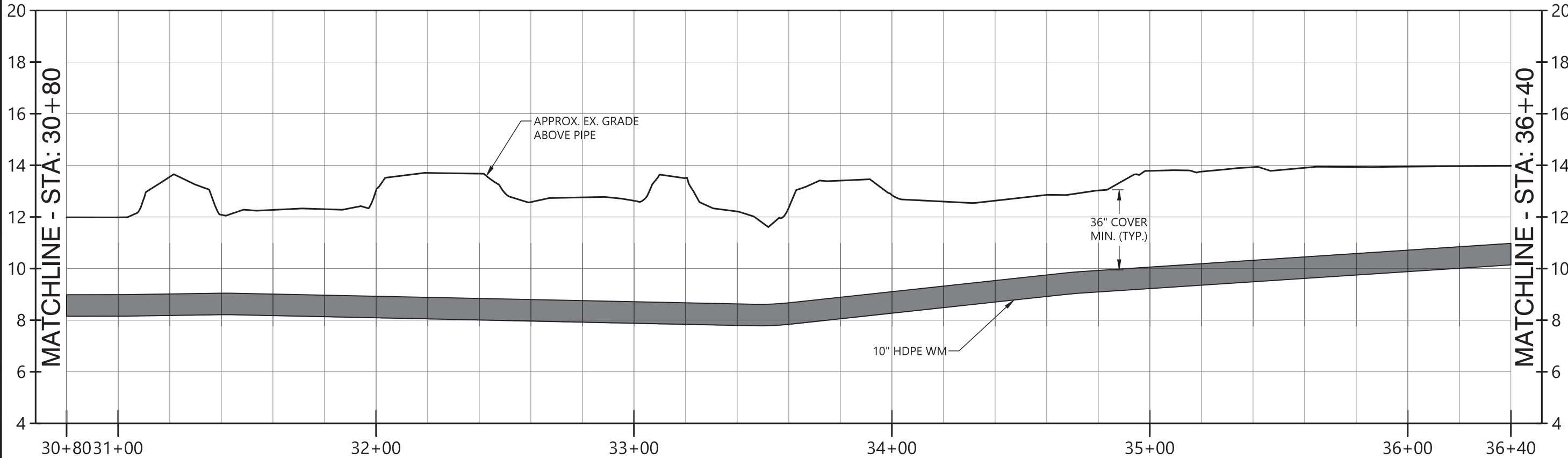
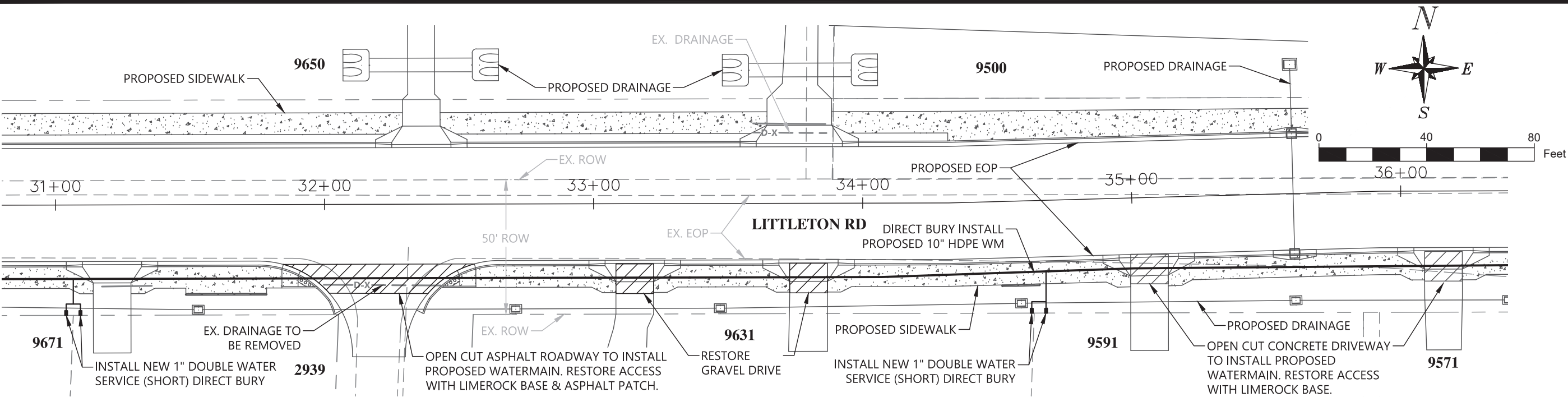
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**10" WATERMAIN
REPLACEMENT**

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PROJECT NO.: ----	FILE NAME: LITTLETON RD WM RELOCATION.dwg	SHEET NUMBER: 4 OF 19

REV #	REVISION	DRAWN	CHECKED	DATE

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SHEET TITLE:
PLAN & PROFILE SHEET
STA: 30+80 TO 36+40

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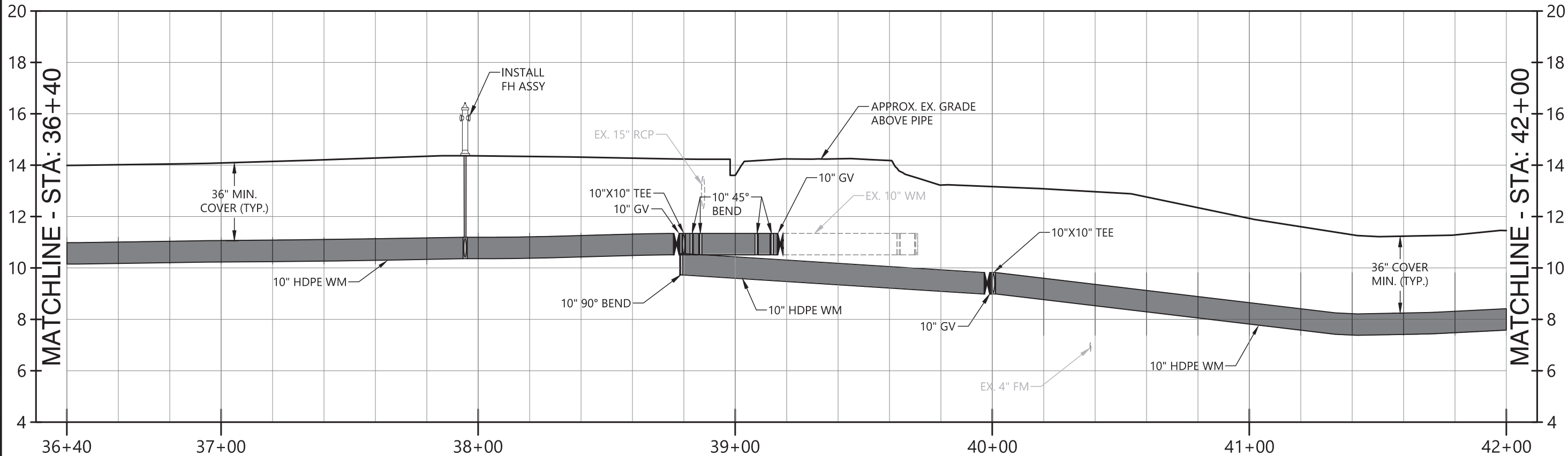
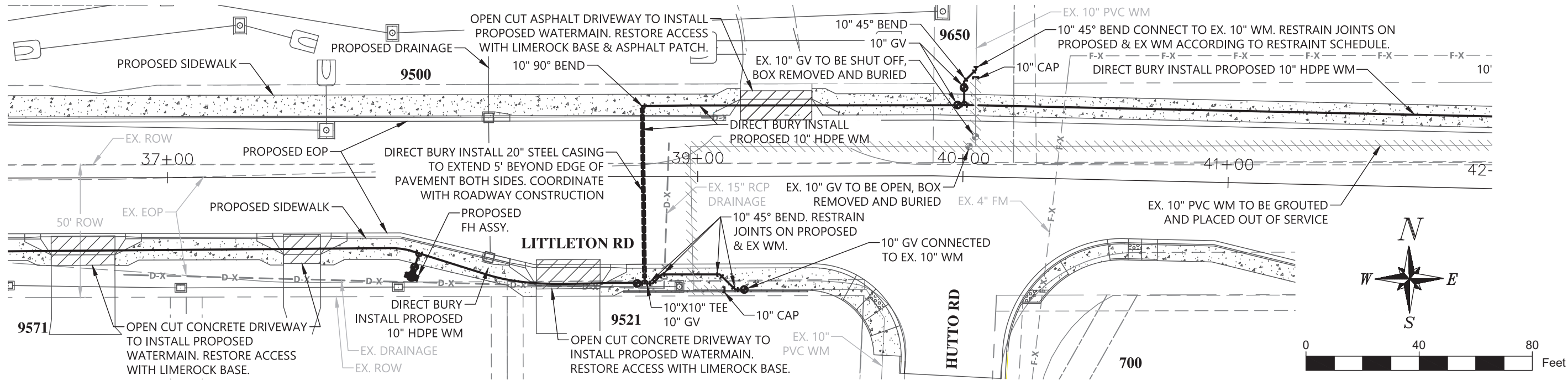
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SHEET TITLE:
PLAN & PROFILE SHEET
STA: 36+40 TO 42+00

TITLE:
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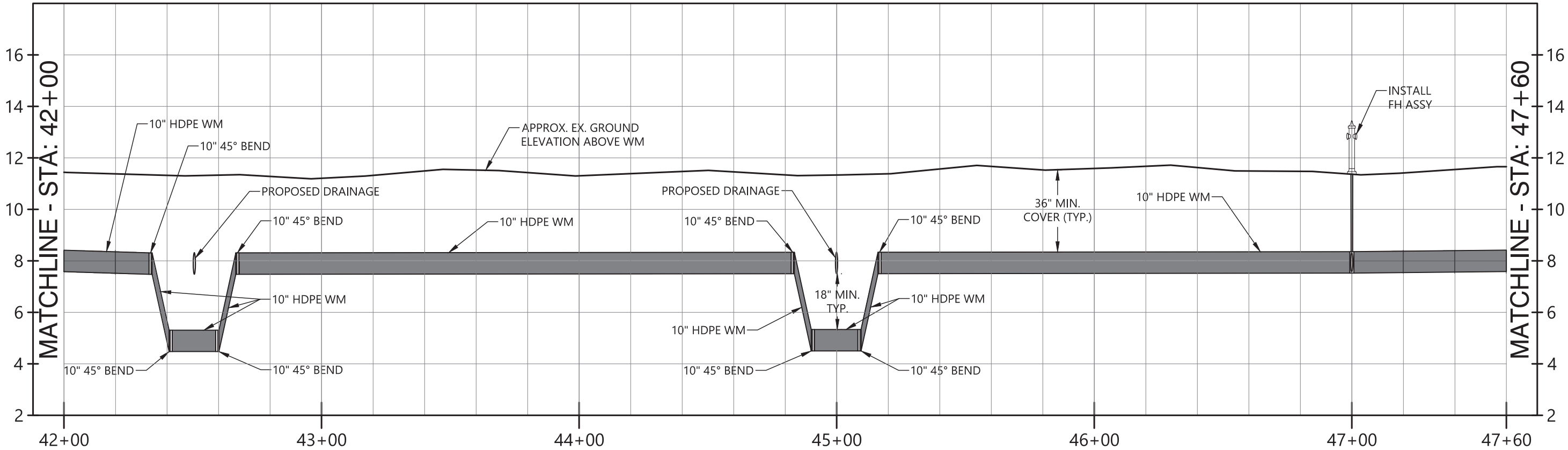
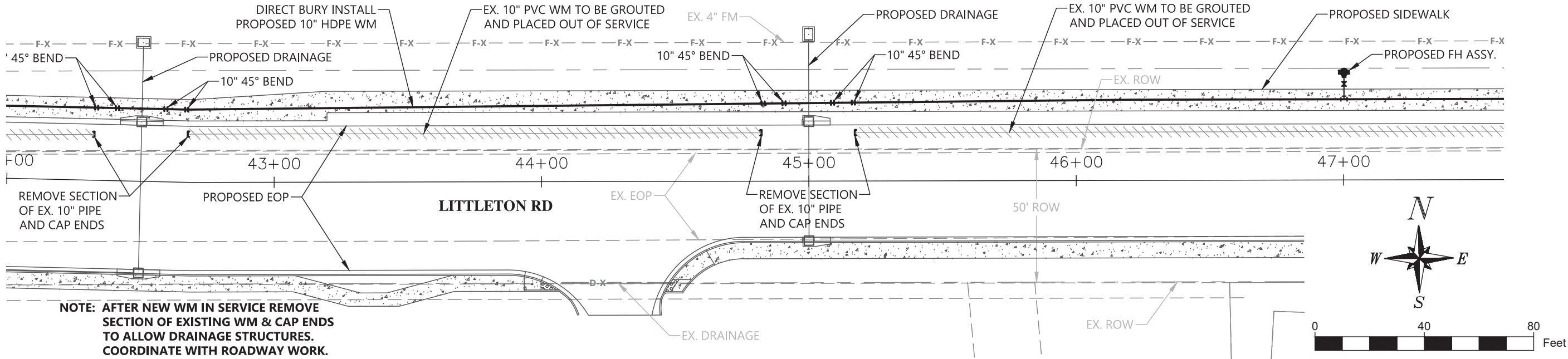
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SHEET TITLE:
PLAN & PROFILE SHEET
STA: 42+00 TO 47+60

TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT:

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7 OF 19

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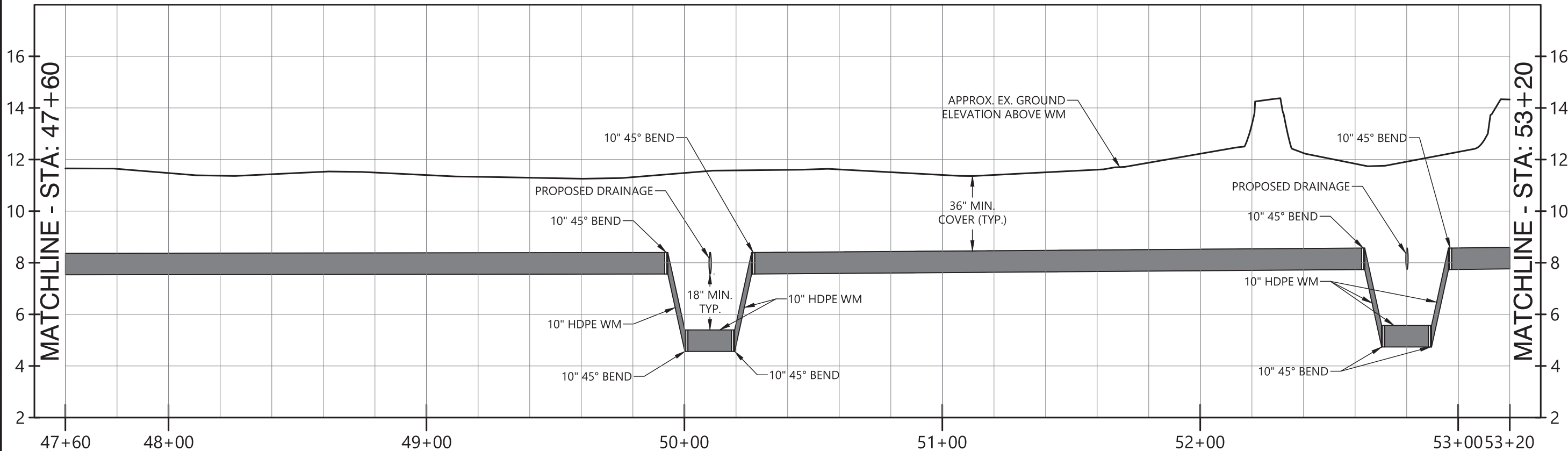
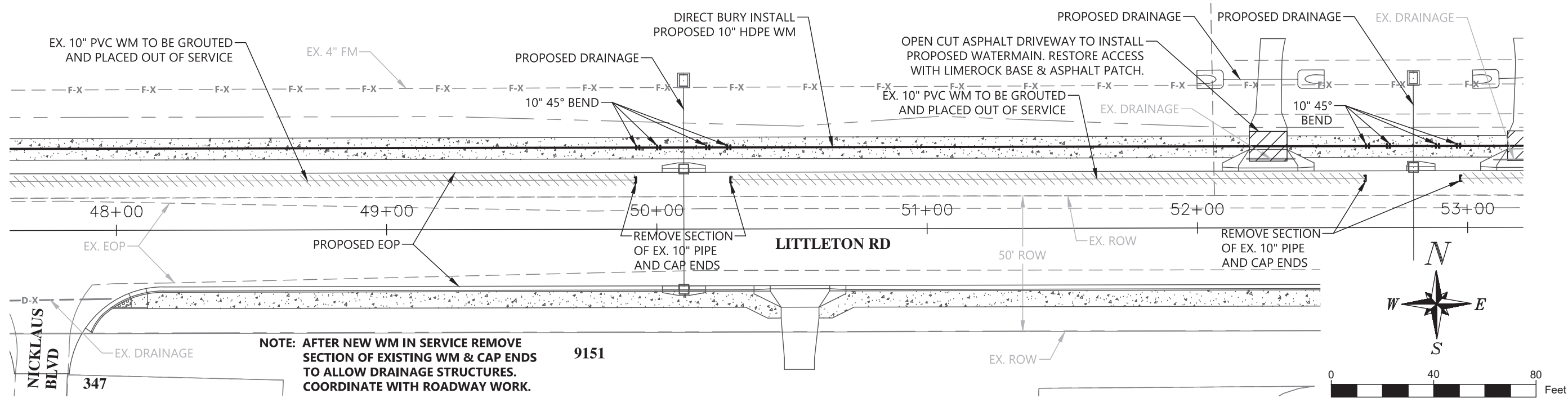
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FORT MYERS, FLORIDA 33901

DRAWN: DRW	CHECKED: JAM
DESIGNED: JAM	DATE: 02/09/2022
HORIZ. SCALE (FULL): 1" = 40'	
VERT. SCALE (FULL): 1" = 4'	

SHEET TITLE:
PLAN & PROFILE SHEET
STA: 47+60 TO 53+20

TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT:

LITTLETON ROAD
WATERMAIN REPLACEMENT

PROJECT NO.:

FILE NAME:

LITTLETON RD WM RELOCATION.dwg

SHEET NUMBER:

8 OF 19

REV #

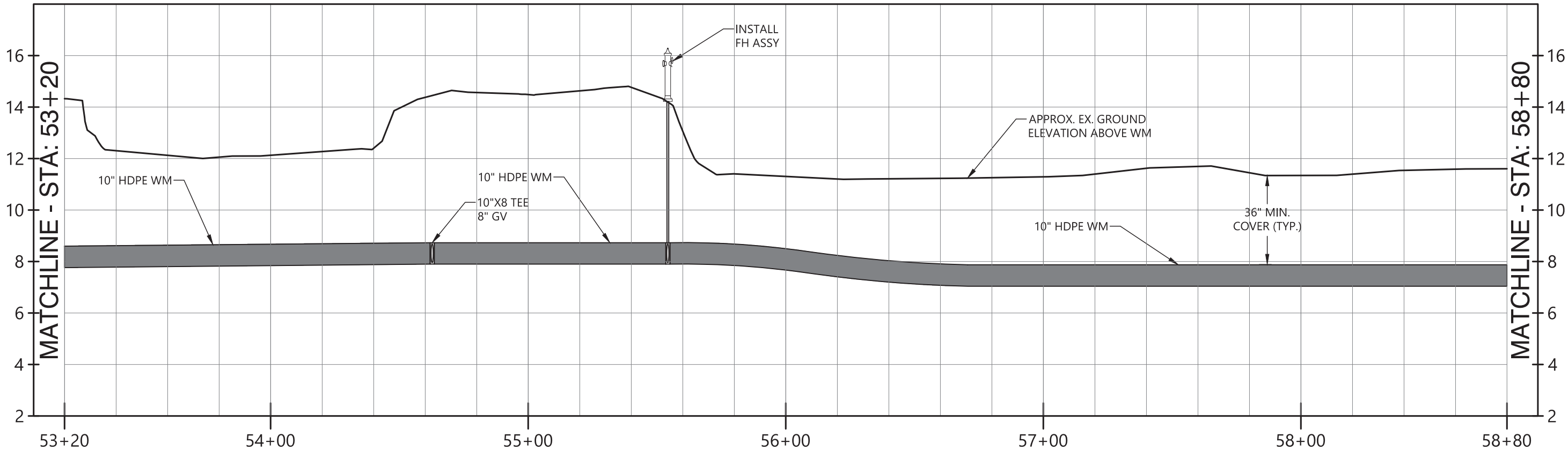
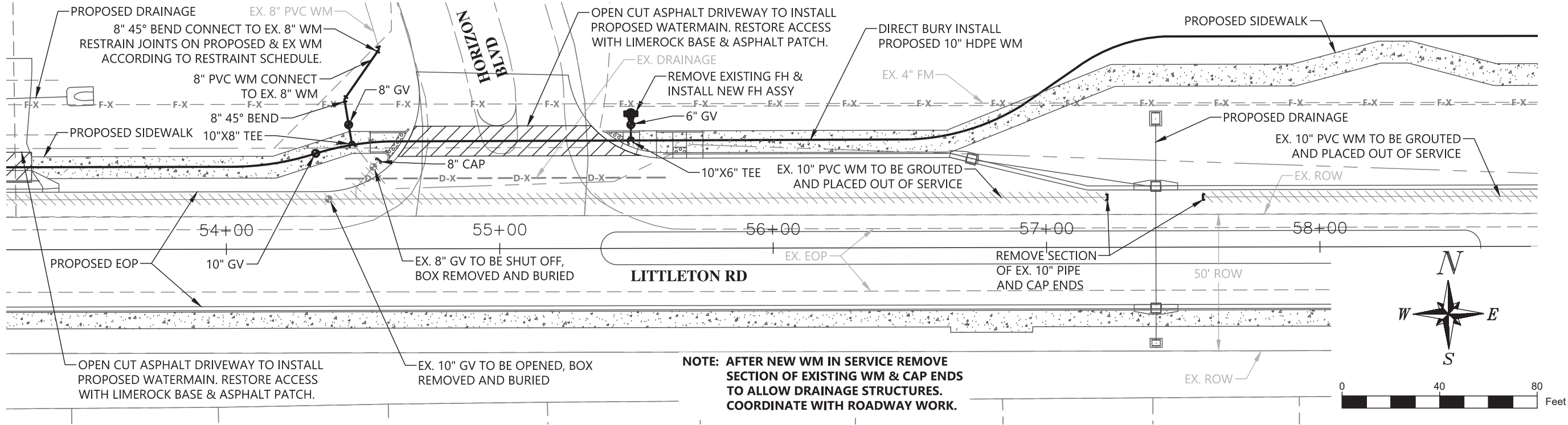
REVISION

CHECKED

DRAWN

DATE

February 9, 2022 1:29 PM S:\Utilities\ENGINEERING\ACAD\Distribution\Littleton Road\10in WM Re-Location\Littleton RD WM RELOCATION.dwg



LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN:
DRW

DESIGNED:
JAM

HORIZ. SCALE (FULL):
1" = 40'

VERT. SCALE (FULL):
1" = 4'

CHECKED:
JAM

DATE:
02/09/2022

SHEET TITLE:
**PLAN & PROFILE SHEET
STA: 53+20 TO 58+80**

TITLE:
**10" WATERMAIN
REPLACEMENT**

PROJECT:

**LITTLETON ROAD
WATERMAIN REPLACEMENT**

PROJECT NO.:

FILE NAME:

LITTLETON RD WM RELOCATION.dwg

SHEET NUMBER:

9 OF 19

REV #

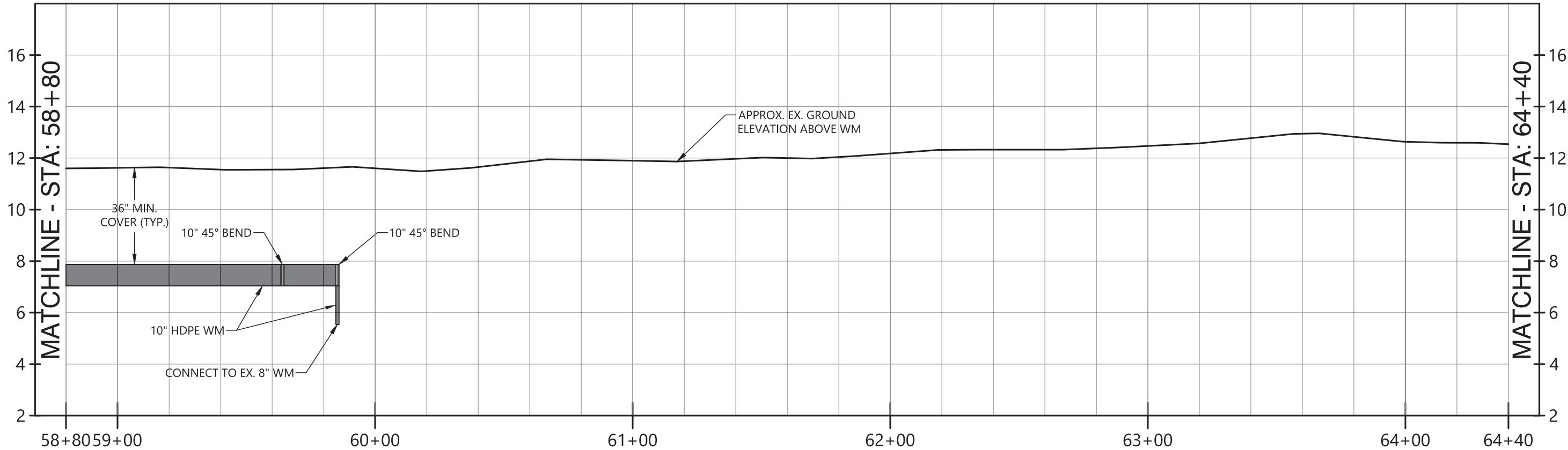
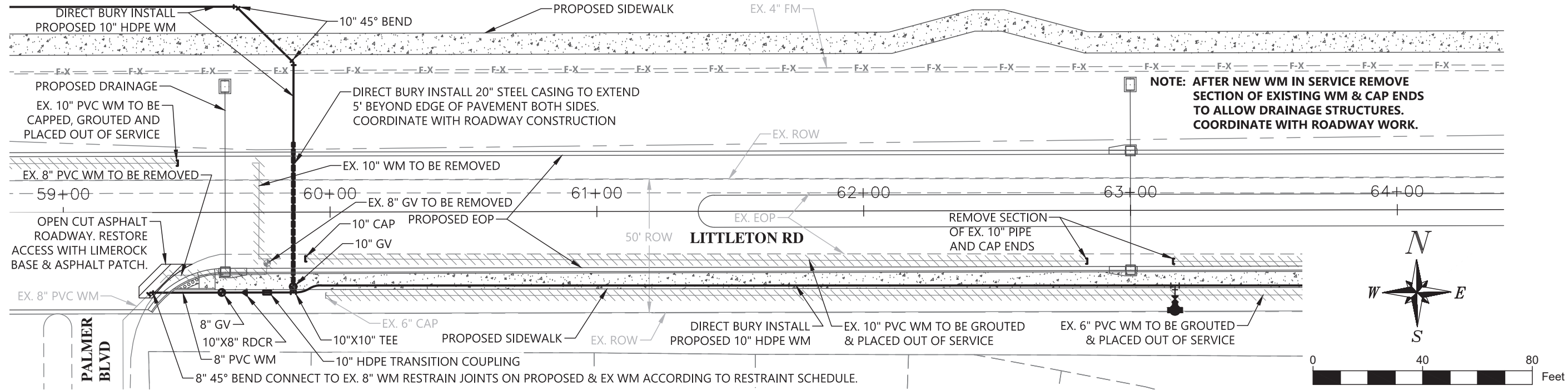
REVISION

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DATE

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LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN:
DRW

DESIGNED:
JAM

HORIZ. SCALE (FULL):
1" = 40'

VERT. SCALE (FULL):
1" = 4'

CHECKED:
JAM

DATE:
02/09/2022

SHEET TITLE:
PLAN & PROFILE SHEET
STA: 58+80 TO 64+40 (NORTH)

TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT:

LITTLETON ROAD
WATERMAIN REPLACEMENT

PROJECT NO.:

FILE NAME:

LITTLETON RD WM RELOCATION.dwg

SHEET NUMBER:

10 OF 19

REV #

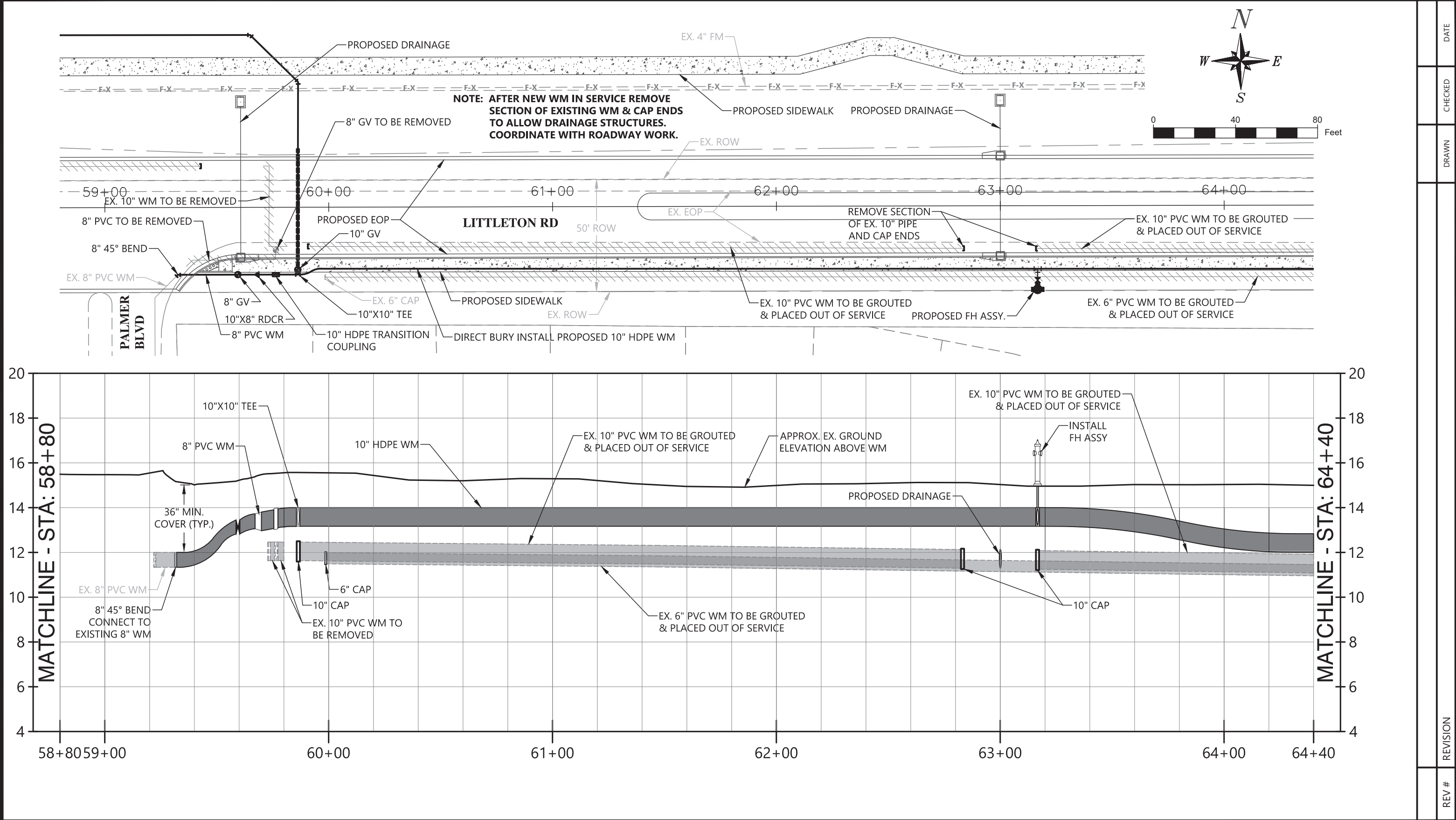
REVISION

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DATE

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LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN:
DRW

DESIGNED:
JAM

HORIZ. SCALE (FULL):
1" = 40'

VERT. SCALE (FULL):
1" = 4'

CHECKED:
JAM

DATE:
02/09/2022

SHEET TITLE:
PLAN & PROFILE SHEET
STA: 58+80 TO 64+40 (SOUTH)

TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT:

LITTLETON ROAD
WATERMAIN REPLACEMENT

PROJECT NO.:

FILE NAME:

LITTLETON RD WM RELOCATION.dwg

SHEET NUMBER:

11 OF 19

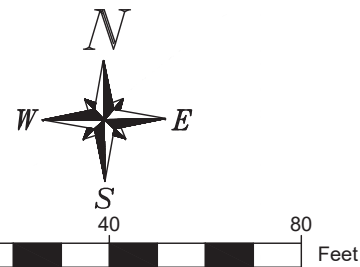
REV #

REVISION

DRAWN

CHECKED

DATE



SHEET TITLE:
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STA: 64+40 TO 70+00 (SOUTH)

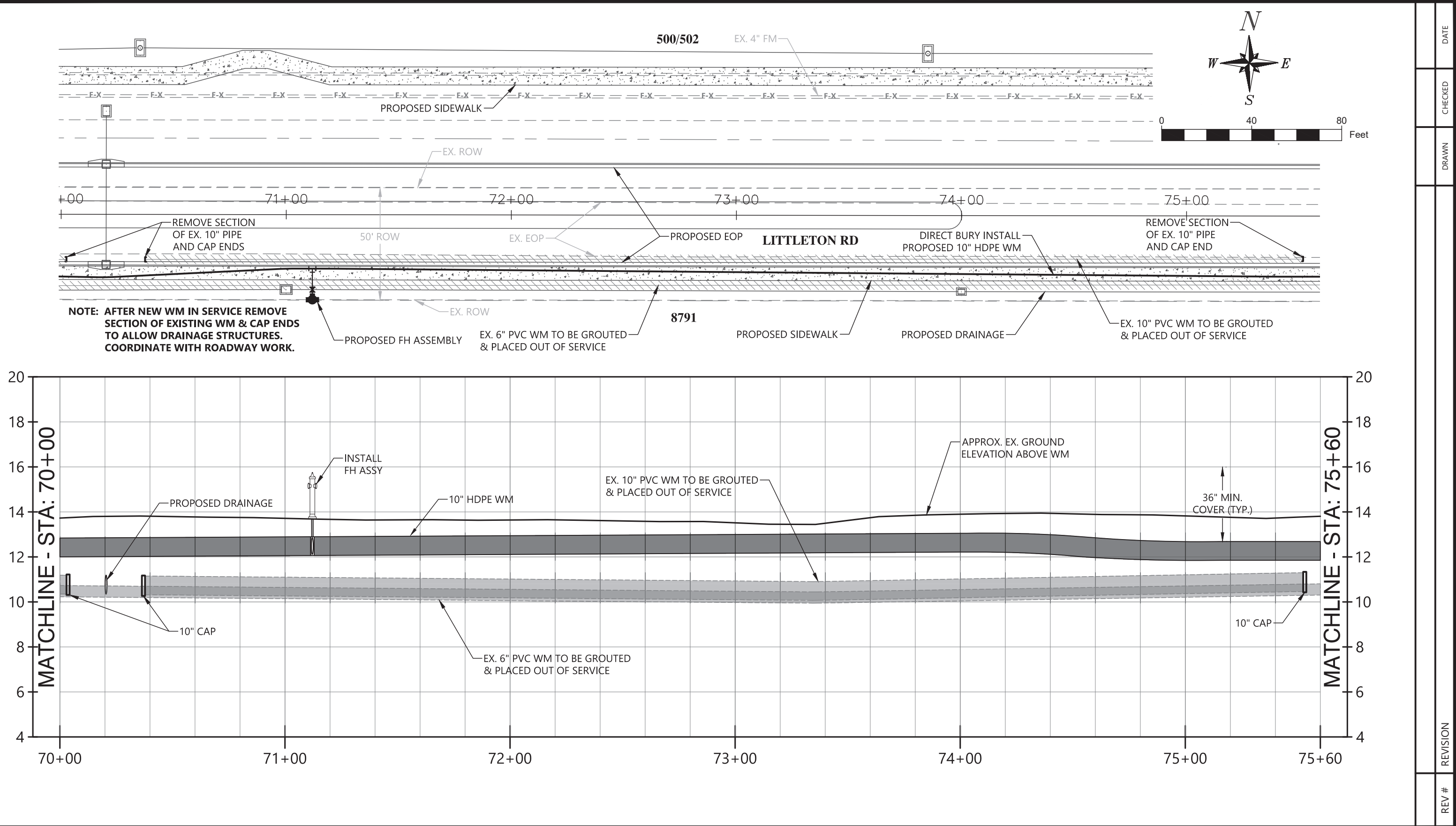
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10" WATERMAIN
REPLACEMENT

PROJECT:

LITTLETON ROAD WATERMAIN REPLACEMENT

PROJECT NO.: ----	FILE NAME: LITTLETON RD WM RELOCATION.dwg	SHEET NUMBER: 12 OF 19
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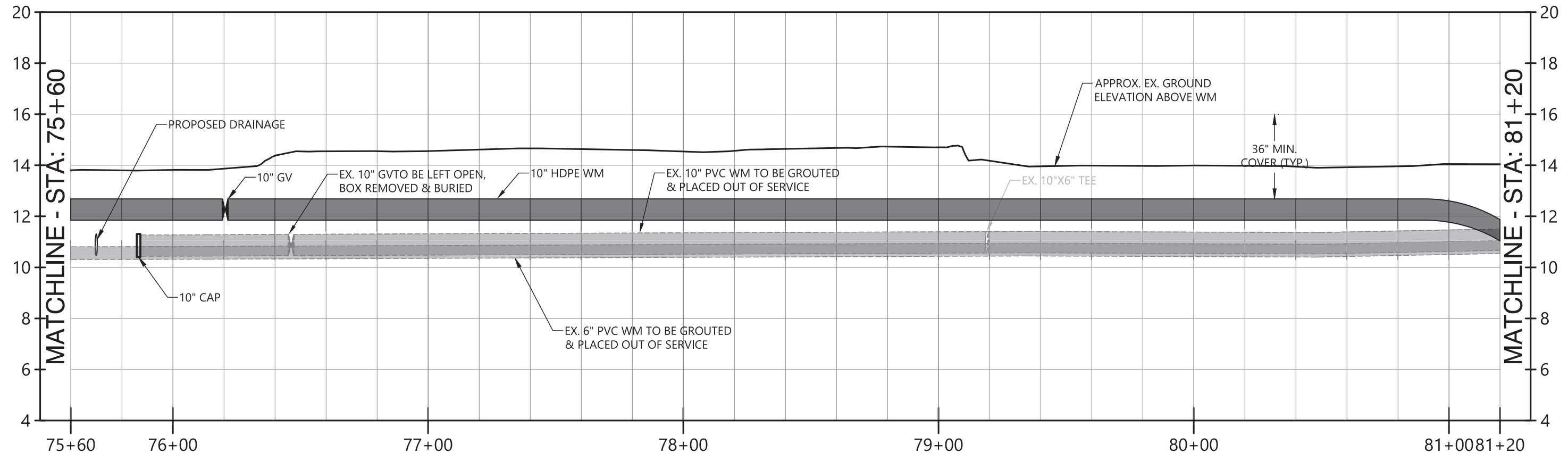
LEE COUNTY
UTILITIES
ENGINEERING
1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN: DRW	CHECKED: JAM
DESIGNED: JAM	DATE: 02/09/2022
HORIZ. SCALE (FULL): 1" = 40'	
VERT. SCALE (FULL): 1" = 4'	

SHEET TITLE:
PLAN & PROFILE SHEET
STA: 70+00 TO 75+60 (SOUTH)
TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT: LITTLETON ROAD WATERMAIN REPLACEMENT		
PROJECT NO.: ----	FILE NAME: LITTLETON RD WM RELOCATION.dwg	SHEET NUMBER: 13 OF 19

REV #	REVISION	DRAWN	CHECKED	DATE



SHEET TITLE:
PLAN & PROFILE SHEET
STA: 75+60 TO 81+20 (SOUTH)

TITLE: 10" WATERMAIN
REPLACEMENT

PROJECT:

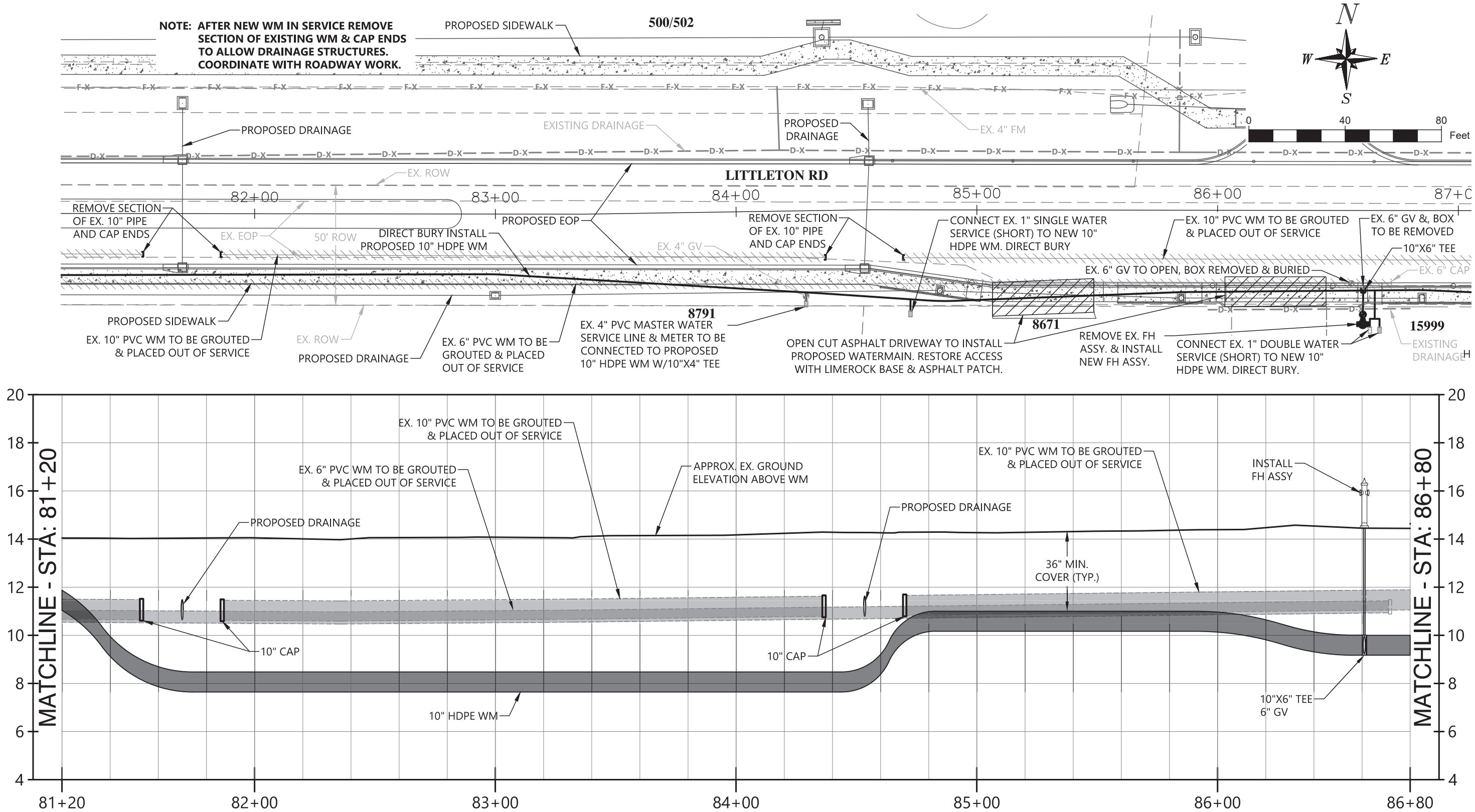
LITTLETON ROAD
WATERMAIN REPLACEMENT

PROJECT NO.:

FILE NAME:
LITTLETON RD WM RELOCATION.dwg

SHEET NUMBER:
14 OF 19

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**LEE COUNTY
UTILITIES
ENGINEERING**

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN: DRW
DESIGNED: JAM
HORIZ. SCALE (FULL): 1" = 40'
VERT. SCALE (FULL): 1" = 4'

CHECKED: JAM
DATE: 02/09/2022

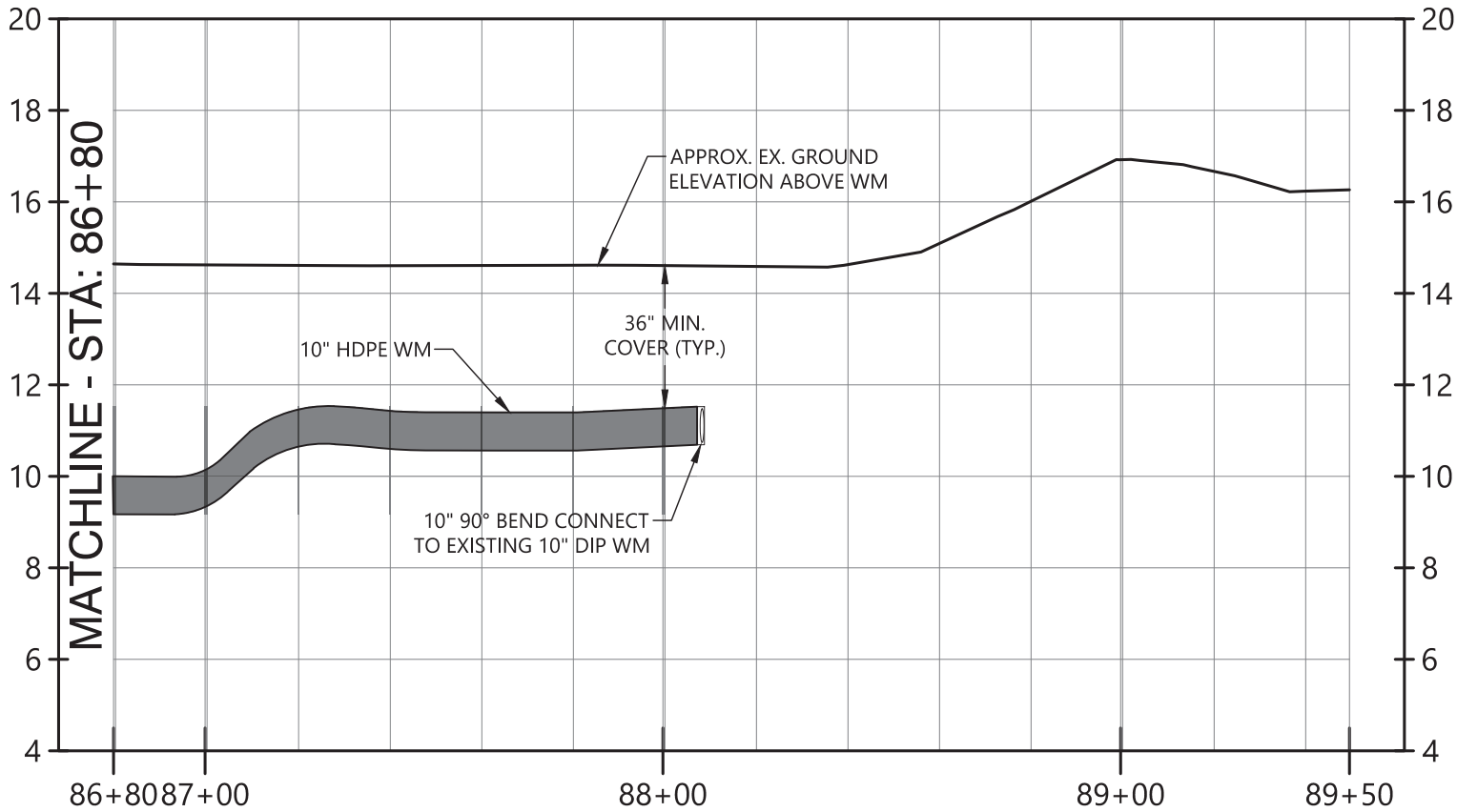
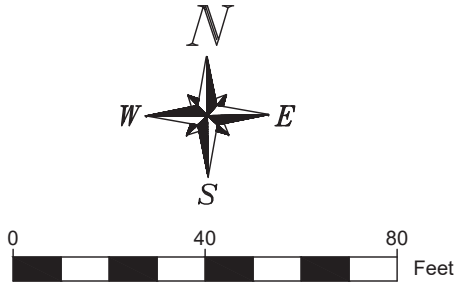
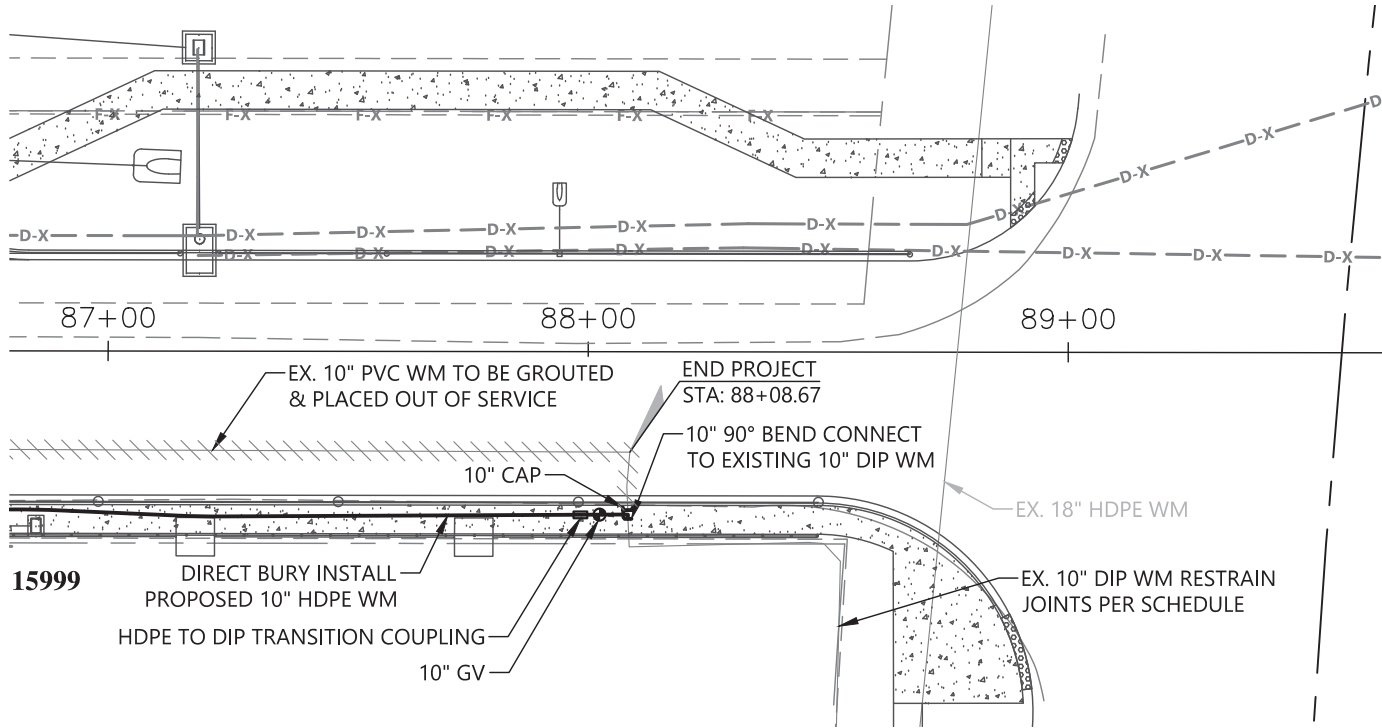
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PLAN & PROFILE SHEET
STA: 81+20 TO 86+80 (SOUTH)

TITLE:
**10" WATERMAIN
REPLACEMENT**

PROJECT:
**LITTLETON ROAD
WATERMAIN REPLACEMENT**

PROJECT NO.: ----
FILE NAME: LITTLETON RD WM RELOCATION.dwg
SHEET NUMBER: 15 OF 19

February 9, 2022 1:29 PM S:\Utilities\ENGINEERING\ACAD\Distribution\Littleton Road\10in WM Re-Location\Littleton RD WM RELOCATION.dwg



LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN:
DRW

DESIGNED:
JAM

HORIZ. SCALE (FULL):
1" = 40'

VERT. SCALE (FULL):
1" = 4'

CHECKED:
JAM

DATE:
02/09/2022

SHEET TITLE:
PLAN & PROFILE SHEET
STA: 86+80 TO 89+50 (SOUTH)

TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT:

LITTLETON ROAD
WATERMAIN REPLACEMENT

PROJECT NO.:

FILE NAME:

LITTLETON RD WM RELOCATION.dwg

SHEET NUMBER:

16 OF 19

REV #

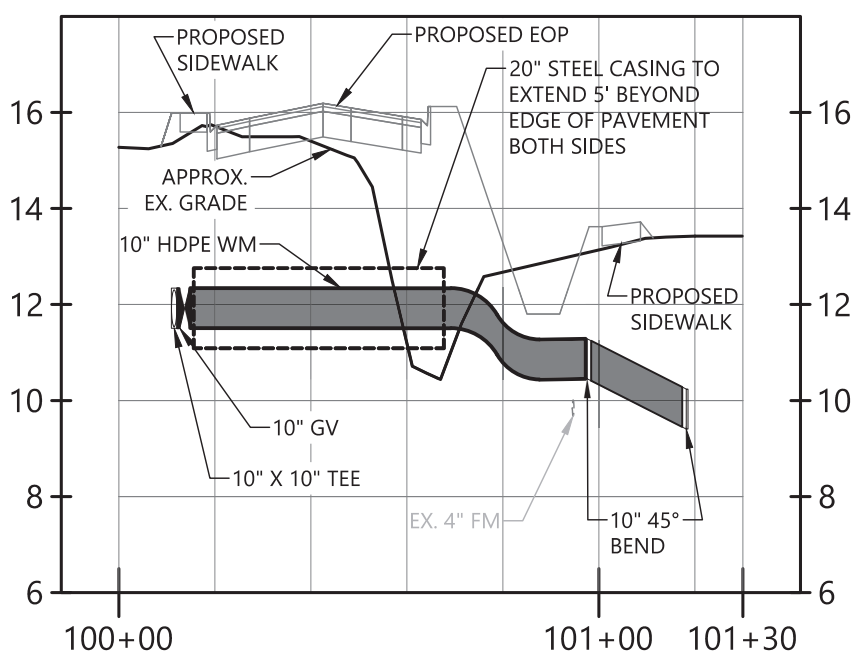
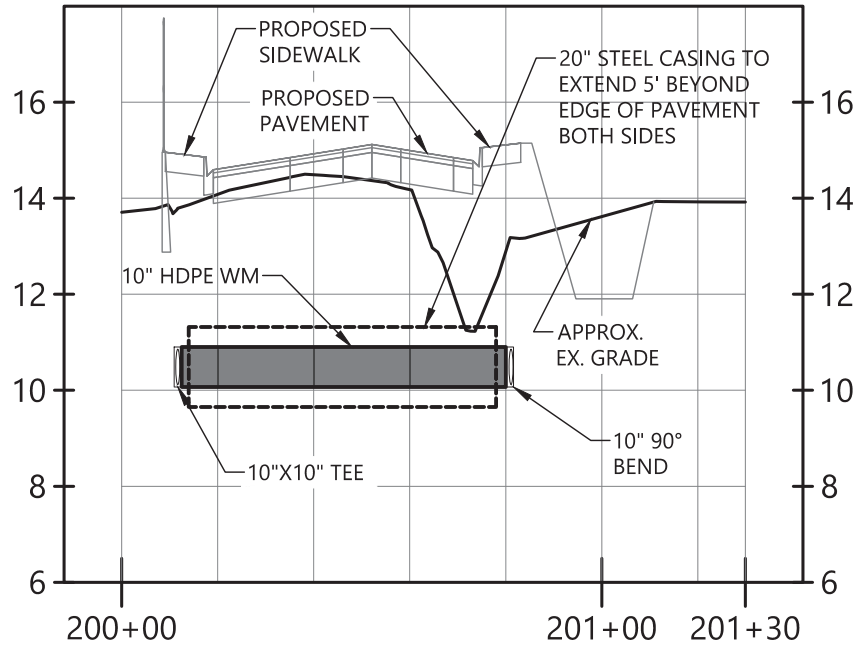
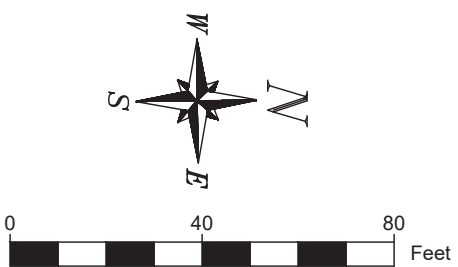
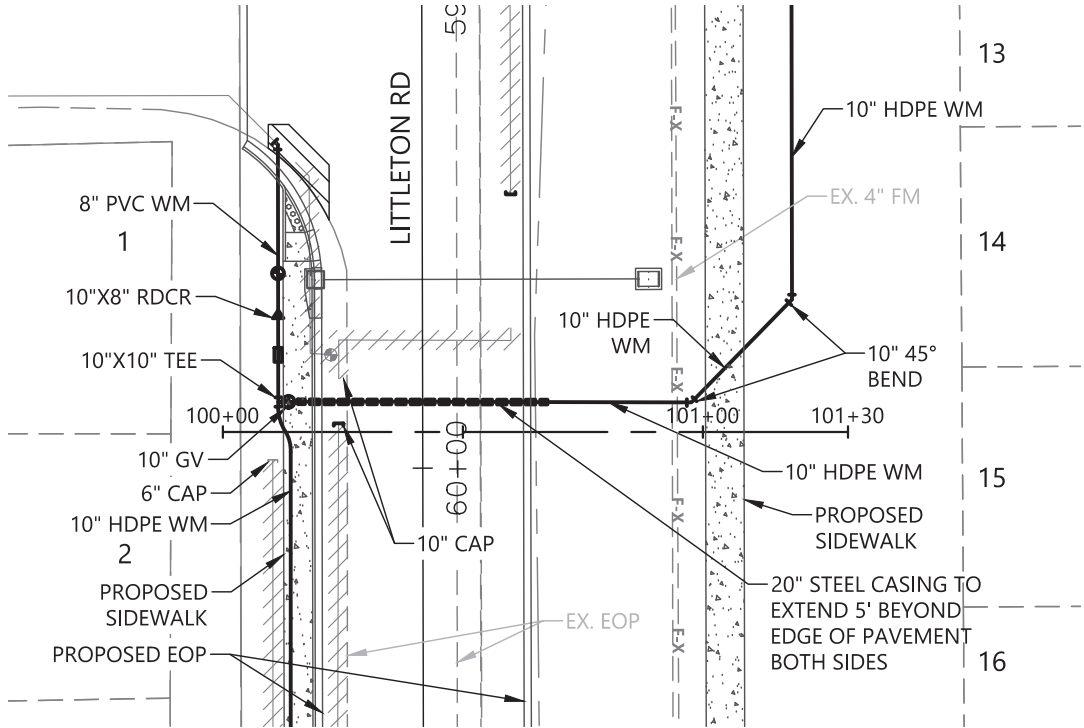
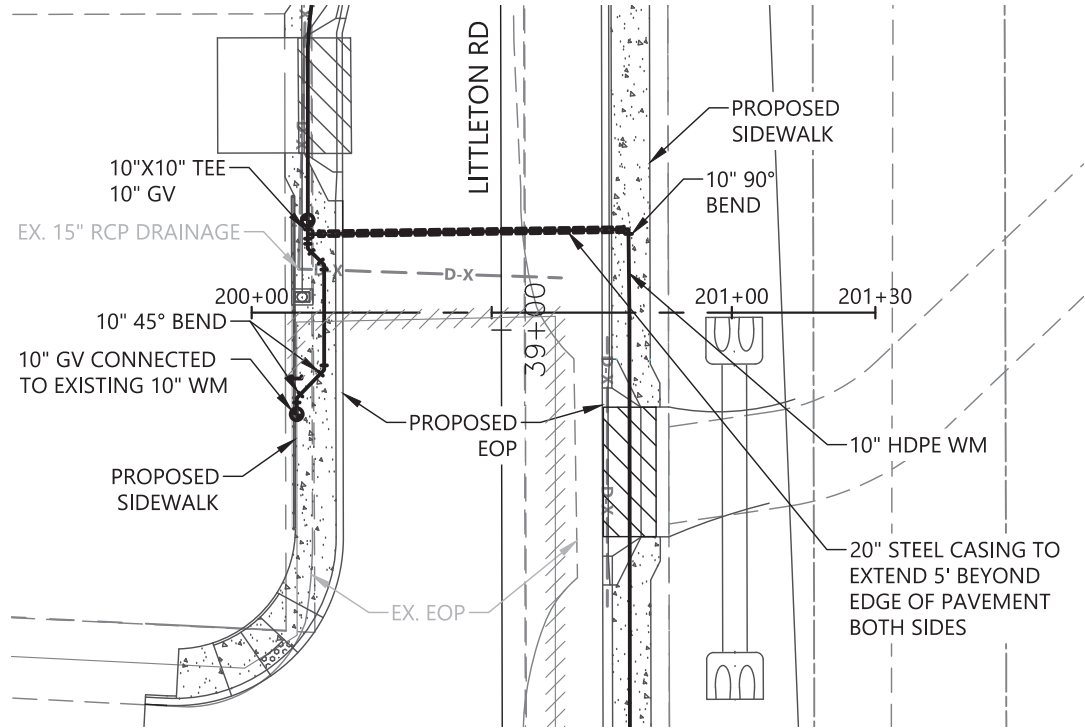
REVISION

DRAWN

CHECKED

DATE

February 9, 2022 1:29 PM S:\Utilities\ENGINEERING\ACAD\Distribution\Littleton Road\10in WM Re-Location\Littleton RD WM RELOCATION.dwg



LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN:
DRW

DESIGNED:
JAM

HORIZ. SCALE (FULL):
1" = 40'

VERT. SCALE (FULL):
1" = 4'

CHECKED:
JAM

DATE:
02/09/2022

SHEET TITLE:
PLAN & PROFILE SHEET
CROSSOVERS

TITLE:
10" WATERMAIN
REPLACEMENT

PROJECT:

LITTLETON ROAD
WATERMAIN REPLACEMENT

PROJECT NO.:

FILE NAME:

LITTLETON RD WM RELOCATION.dwg

SHEET NUMBER:

17 OF 19

REV #

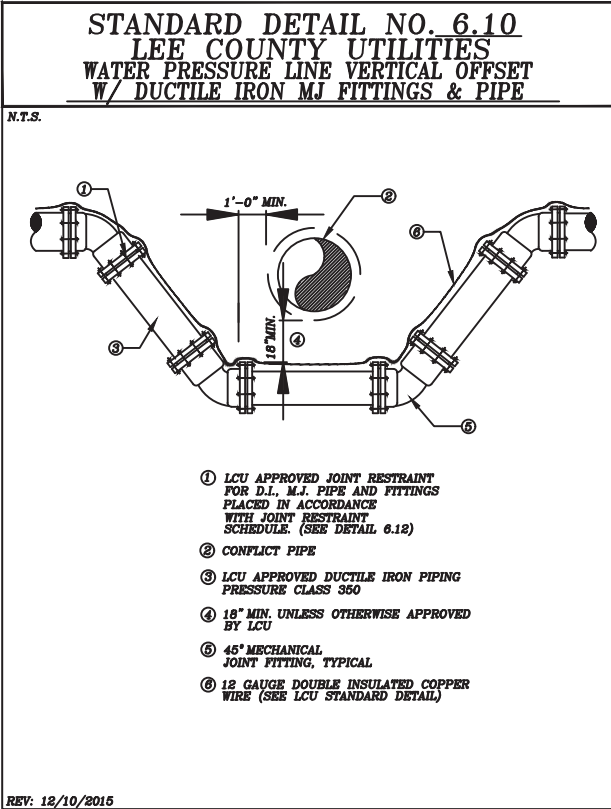
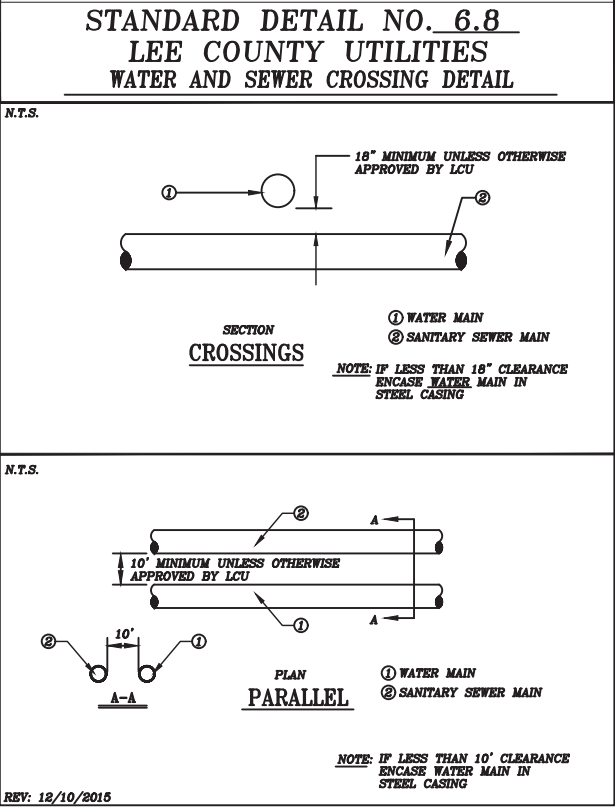
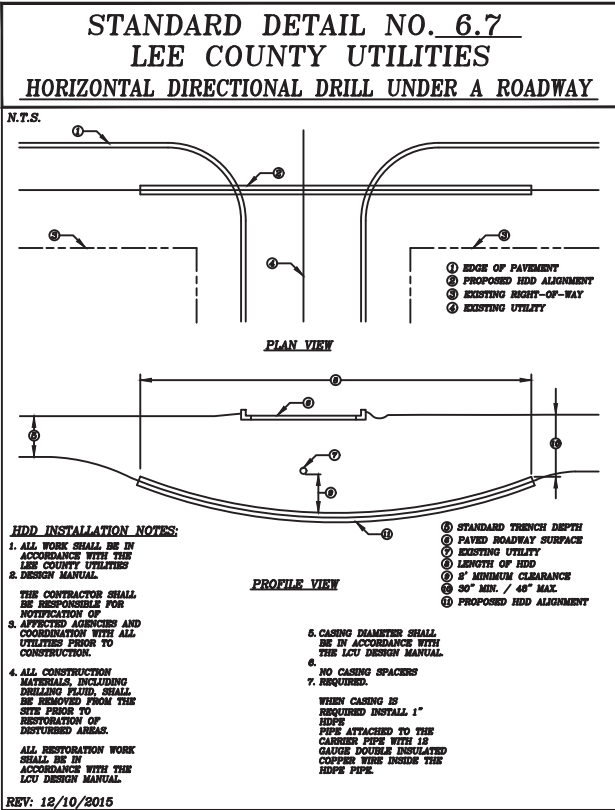
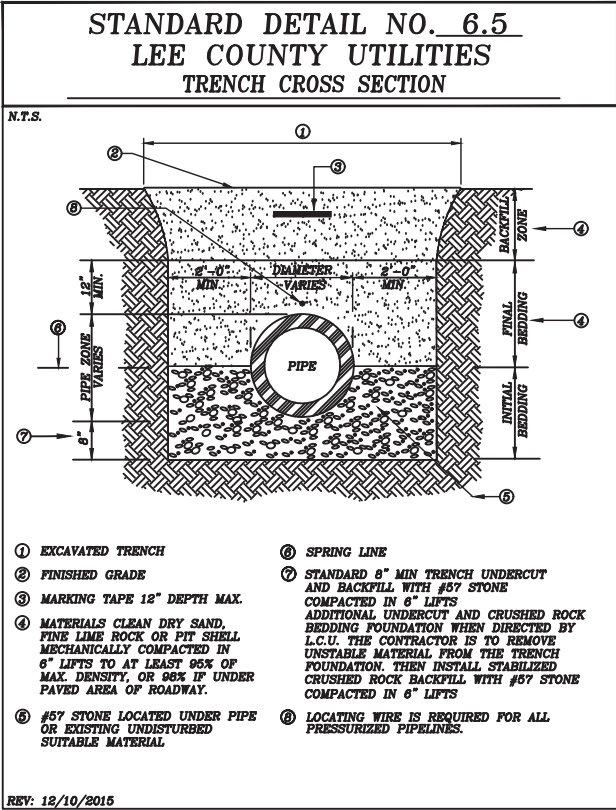
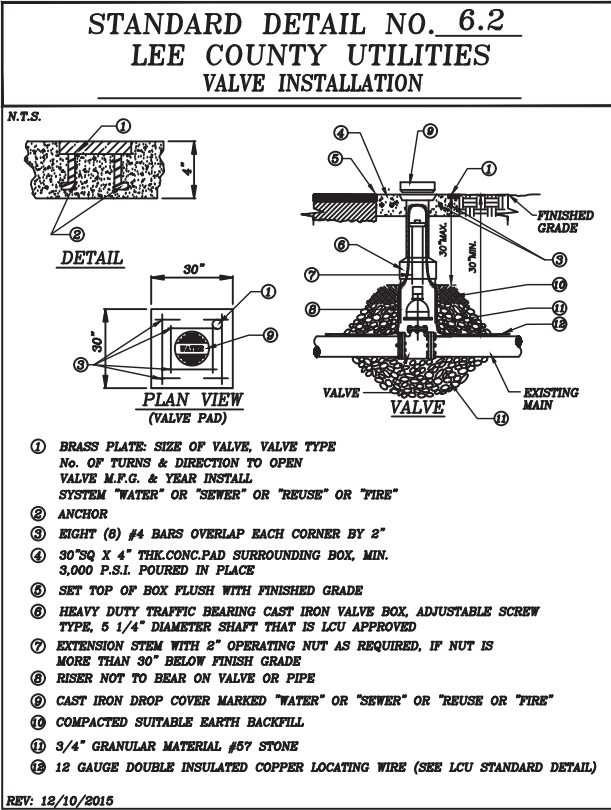
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DATE

February 9, 2022 1:41 PM S:\Utilities\ENGINEERING\ACAD\Distribution\Littleton Road\10in WM Re-Location\Littleton RD WM REL SYM-ABB-NOTES.dwg



STANDARD DETAIL NO. 6.12
LEE COUNTY UTILITIES
RESTRAINED LENGTH SCHEDULE

N.T.S.

DUCTILE IRON PIPE

PIPE SIZE (Inches)	MINIMUM RESTRAINED PIPE LENGTH (FEET)					HORIZONTAL TEE
	90°	45°	22-1/2°	11-1/4°	DEAD END	
4	17	7	4	2	29	6
6	23	10	5	2	40	17
8	29	12	6	3	53	29
10	35	14	7	4	63	38
12	41	17	8	4	74	49
16	51	21	11	5	94	68
24	69	29	14	7	131	105
30	81	34	17	8	156	129

PVC PIPE

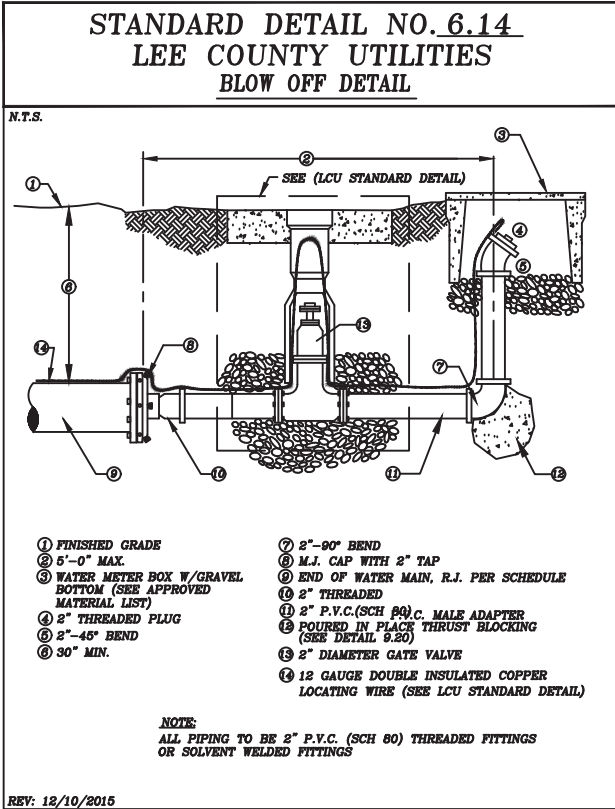
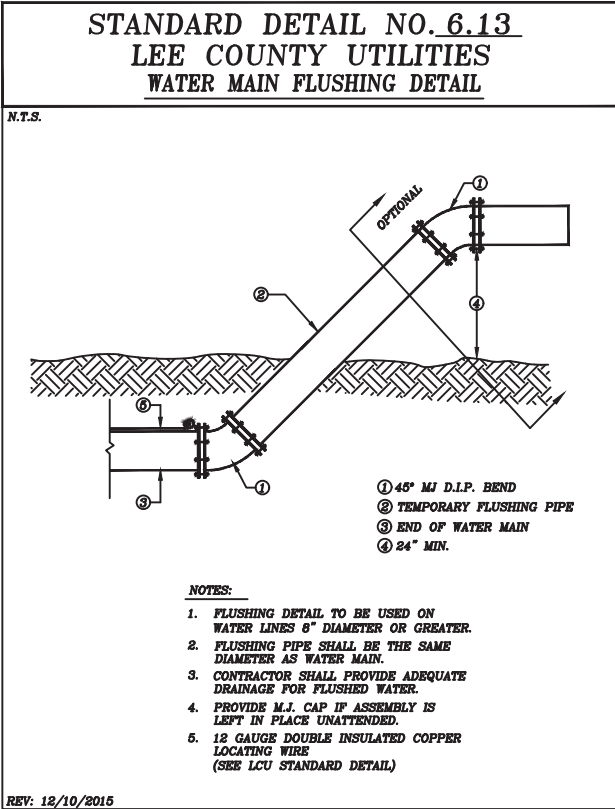
PIPE SIZE (Inches)	MINIMUM RESTRAINED PIPE LENGTH (FEET)					HORIZONTAL TEE
	90°	45°	22-1/2°	11-1/4°	DEAD END	
4	20	8	4	2	45	8
6	29	12	6	3	63	25
8	36	15	8	4	83	43
10	44	18	9	5	99	58
12	51	21	11	5	116	74
16	63	26	13	7	149	103
24	87	36	18	9	208	158
30	102	42	21	10	248	194

A COMPLETE JOINT RESTRAINING SCHEDULE FOR ALL ENCOUNTERED VERTICAL & HORIZONTAL BENDS, VERTICAL OFFSETS, TEES, AND DEAD ENDS SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER.

LENGTH FIGURES BASED ON FOLLOWING:

Pressure = 150 psi, FS = 1.5, trench type = 3, 30" cover on Bare pipe, Soil type = GP & SP

REV: 12/10/2015



LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN:
DRW

DESIGNED:
JAM

HORIZ. SCALE (FULL):

VERT. SCALE (FULL):

CHECKED:
JAM

DATE:
02/09/2022

SHEET TITLE:

LCU STANDARD
DETAILS SHEET

TITLE:

10" WATERMAIN
REPLACEMENT

PROJECT:

LITTLETON ROAD
WATERMAIN REPLACEMENT

PROJECT NO.:

FILE NAME:

LITTLETON RD WM REL SYM-ABB-NOTES.dwg

SHEET NUMBER:

18 OF 19

REV #

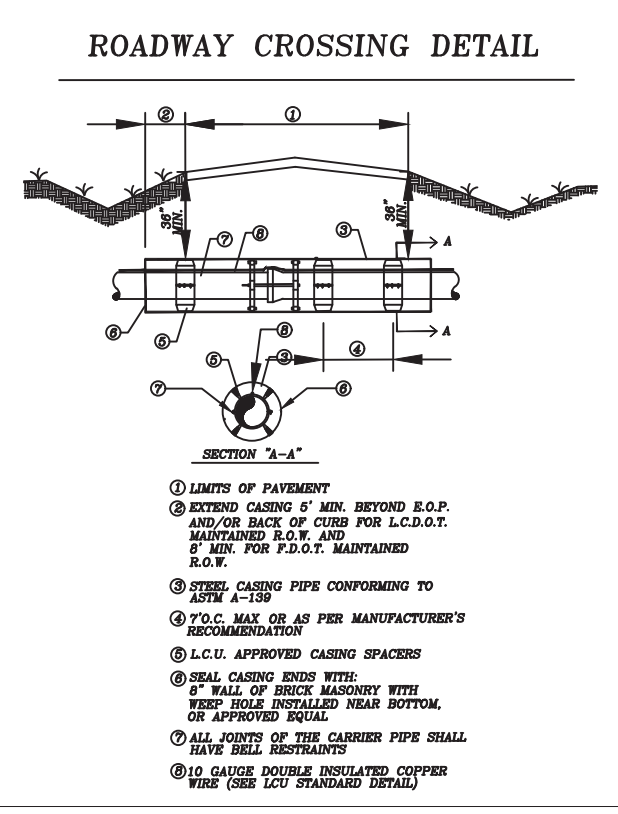
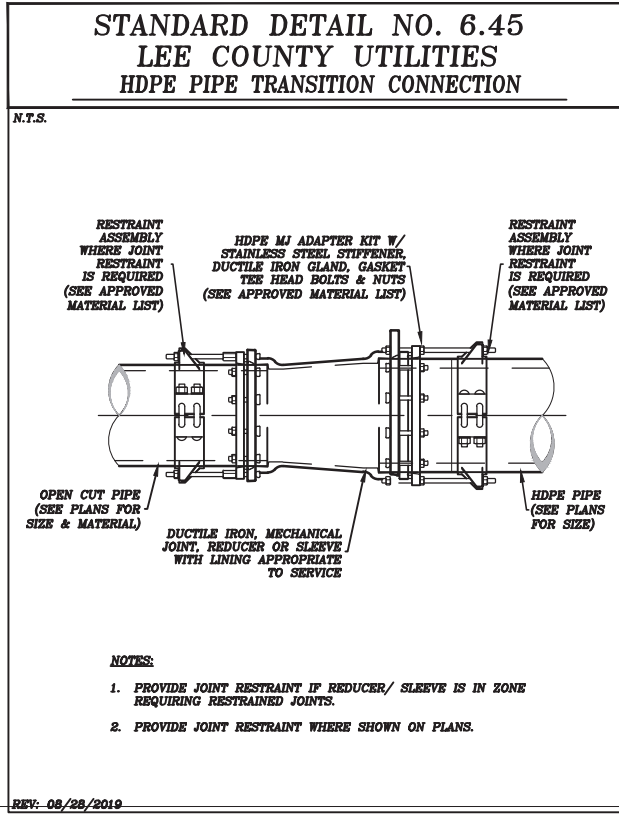
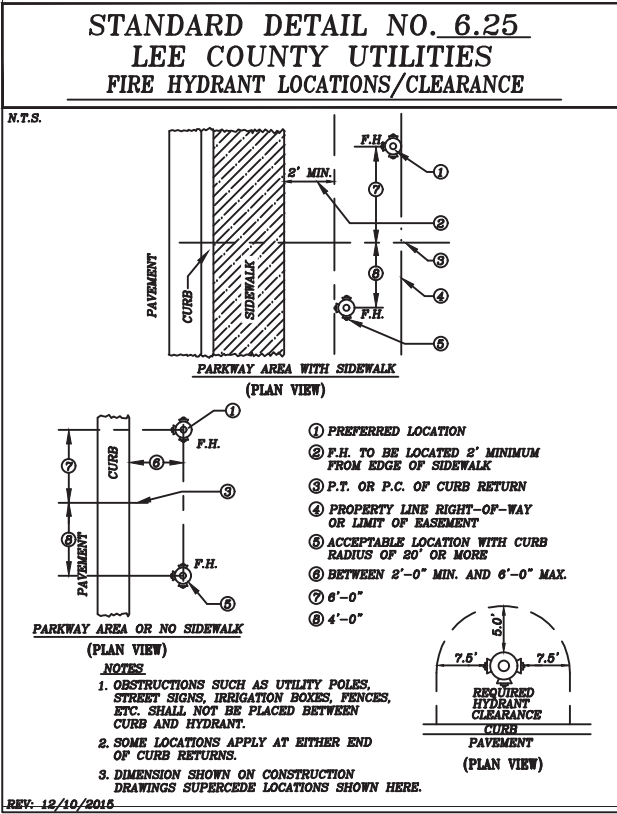
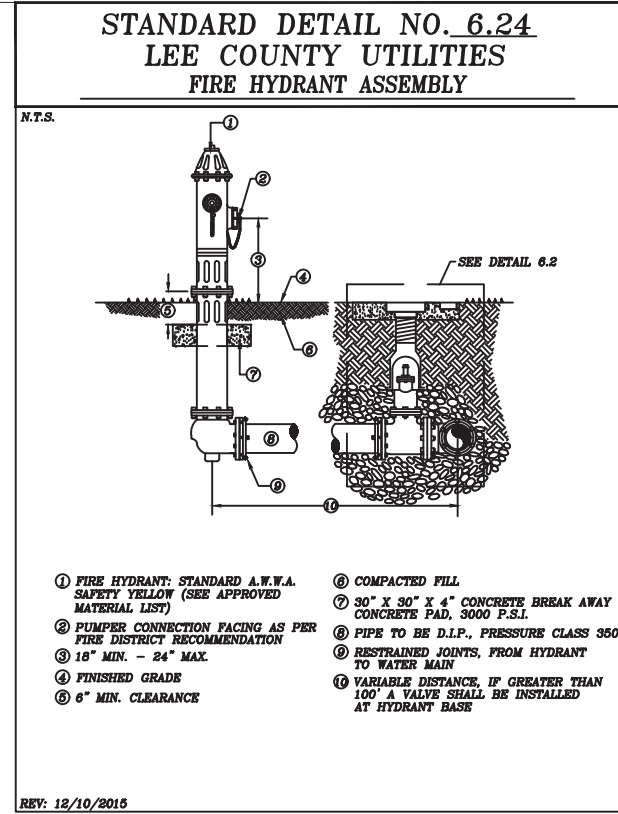
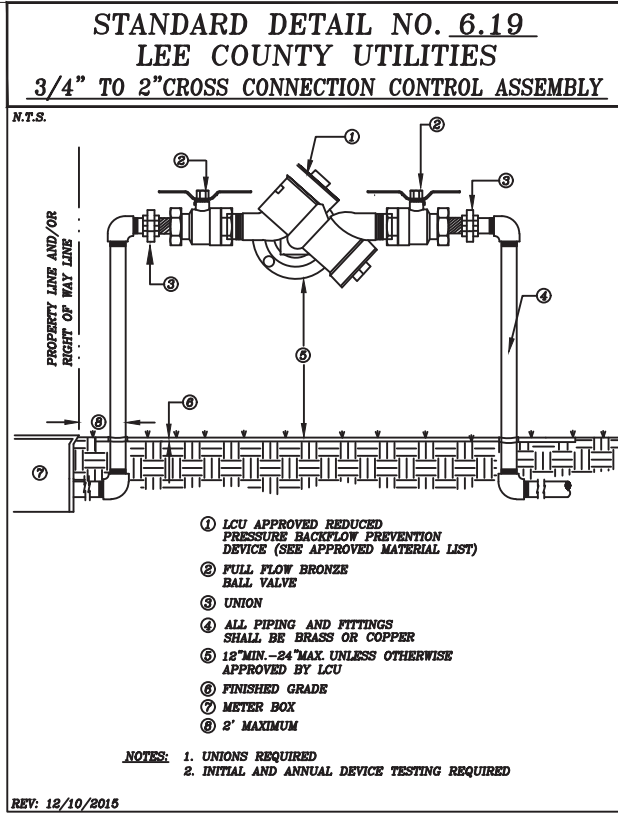
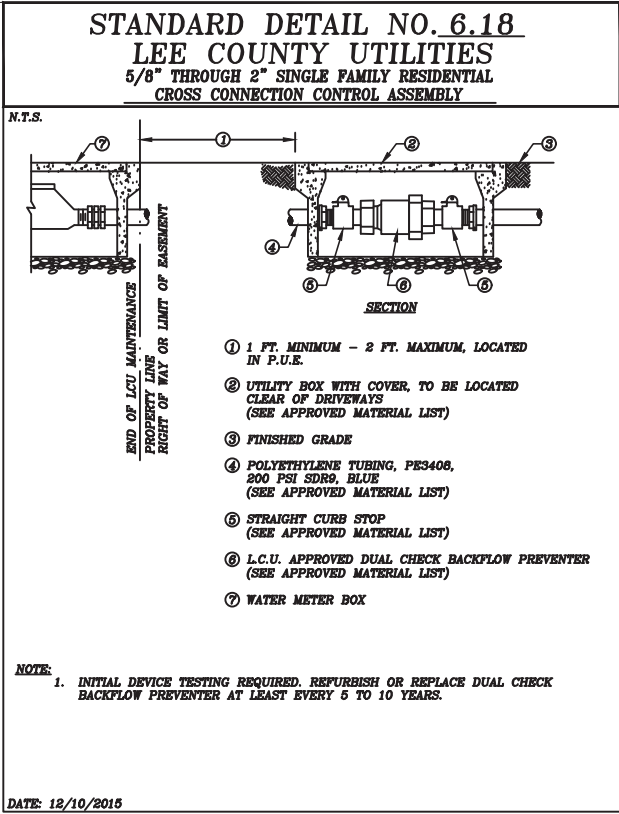
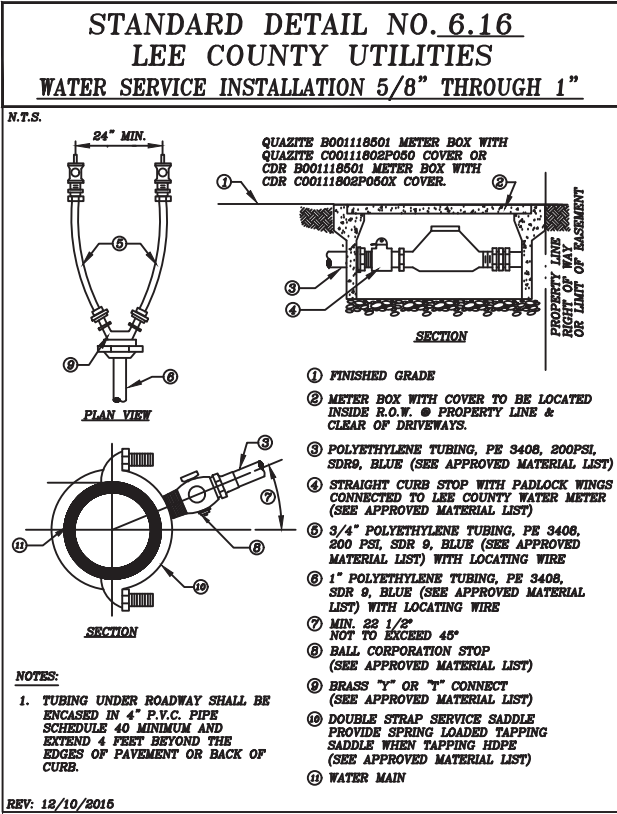
REVISION

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DATE

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LEE COUNTY
UTILITIES
ENGINEERING

1500 MONROE STREET
FORT MYERS, FLORIDA 33901

DRAWN: DRW	CHECKED: JAM
DESIGNED: JAM	DATE: 02/09/2022
HORIZ. SCALE (FULL):	
VERT. SCALE (FULL):	

SHEET TITLE:
**LCU STANDARD
DETAILS SHEET**

TITLE:
**10" WATERMAIN
REPLACEMENT**

PROJECT:
**LITTLETON ROAD
WATERMAIN REPLACEMENT**

PROJECT NO.:

FILE NAME:
LITTLETON RD WM REL SYM-ABB-NOTES.dwg

SHEET NUMBER:
19 OF 19

REV #

REVISION

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