

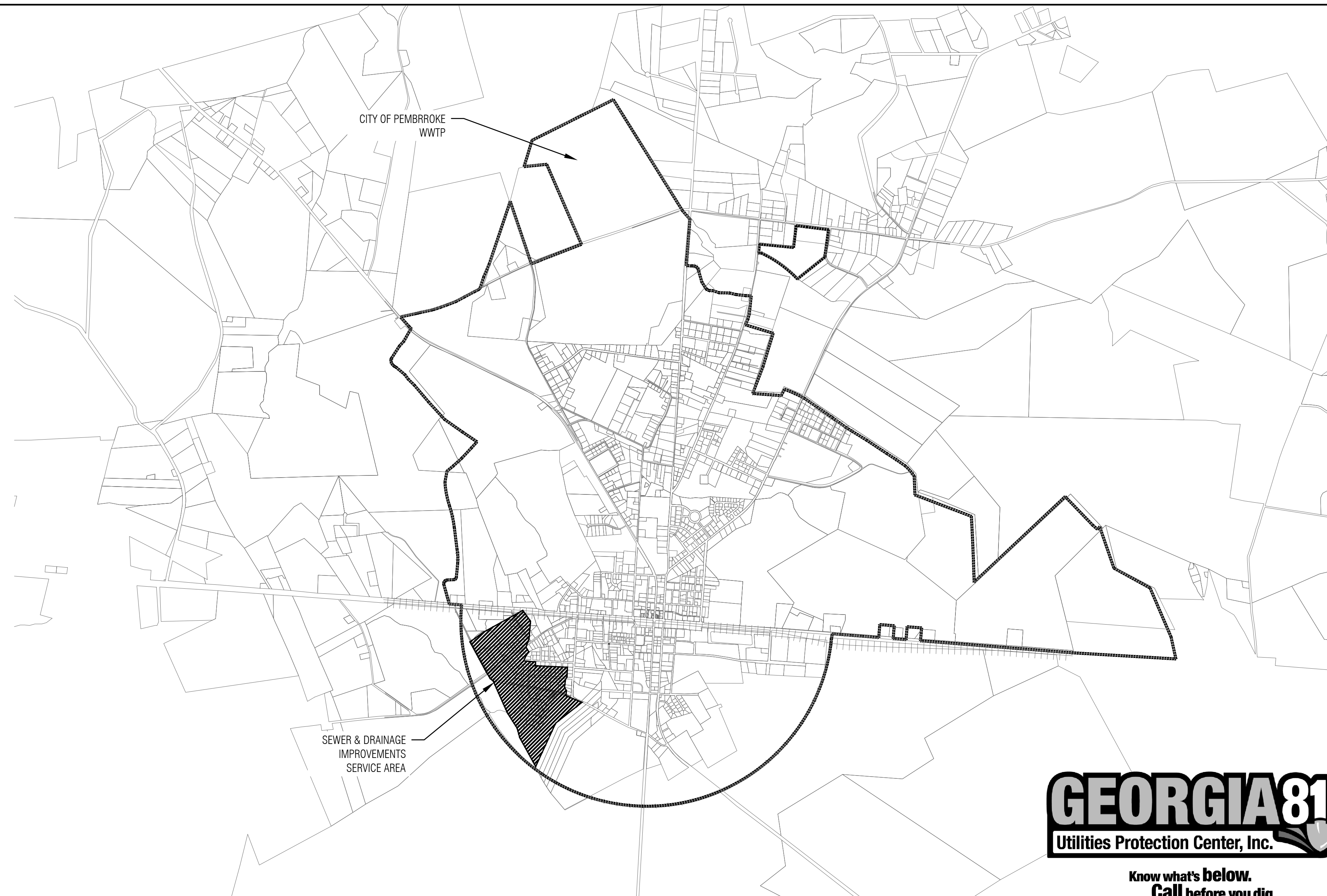
# SEWER AND DRAINAGE IMPROVEMENTS FOR THE CITY OF PEMBROKE BRYAN COUNTY, GEORGIA DATE: MARCH 08, 2024

**SHEET INDEX:**

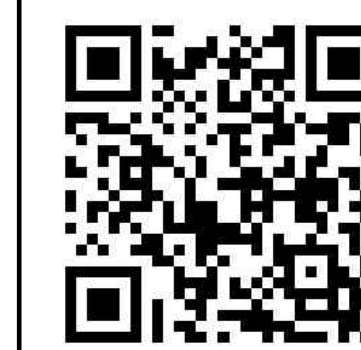
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**DRAWING LEGEND**

DESCRIPTION	PROPOSED	EXISTING
SANITARY SEWER	SS	SS
UNDERGROUND WATER LINE	W	W
FORCE MAIN	FM	FM
STORM DRAINAGE PIPE	T	T
UNDERGROUND TELEPHONE LINE	TC	TC
UNDERGROUND TELEPHONE CONDUIT	12"6	12"6
UNDERGROUND GAS LINE	12"6	12"6
DITCH CENTERLINE	X=90.00	X=90.00
SPOT ELEVATION	TC=90.00	TC=90.00
TOP OF CURB ELEVATION	TC=90.00	TC=90.00
FIRE HYDRANT		
SEWER MANHOLE		
WATER VALVE		
TELEPHONE MANHOLE		
LIGHT POLE		
SIGN		
WATER METER		
BENCHMARK		
CONCRETE MONUMENT FOUND		
GLY POLE		
IRON PIN FOUND		
IRON PIN SET		
POWER POLE		
HANDICAP SPACE		
SEDIMENT BASIN MARKER W/NOTCH		



**MINIMUM PROJECT SPECIFICATIONS**



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<https://www.mesack.com/technical-specification/>  
CONTACT ADMIN@MESACK.COM TO REQUEST CONFIRMATION OF CORRECT SPECIFICATIONS AT ANYTIME.

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160 N Main St  
Pembroke, GA 31321  
(912) 653-4413  
streets@pembrokega.net

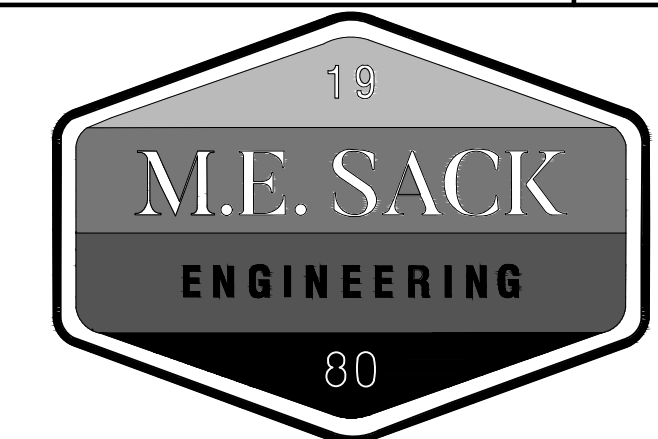
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E: 32.130000°  
N: -81.631944°  
DATUM: NAVD88

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streets@pembrokega.net

**DESIGN PROFESSIONAL:**



DATE: 1/16/2025



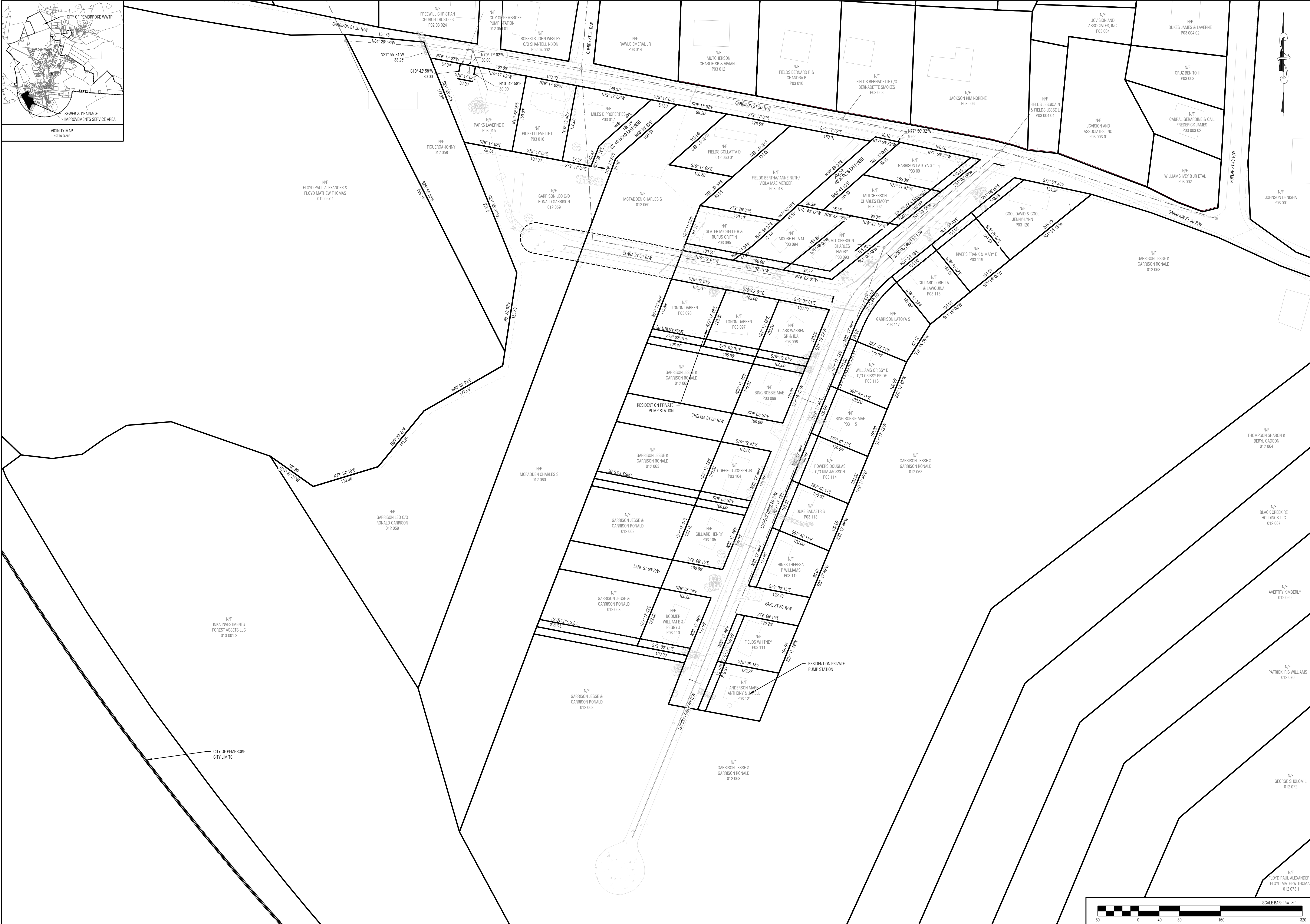
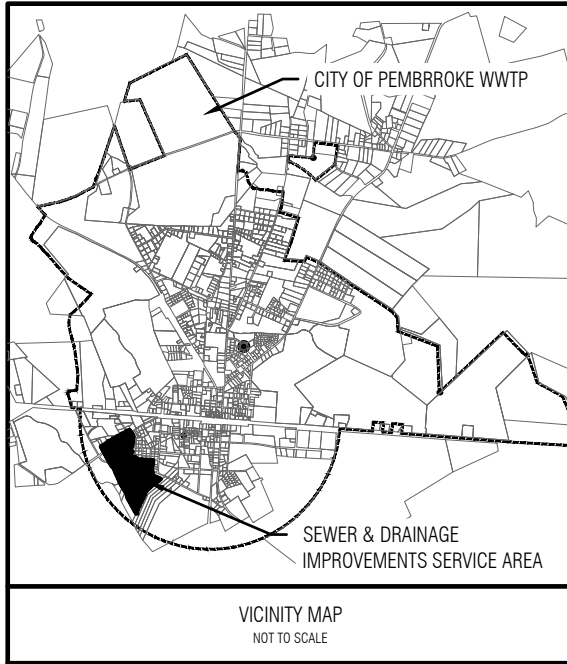
515 NORTH MAIN STREET  
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HINESVILLE, GA 31313  
TEL: (912) 368-5212  
10375 FORD AVENUE  
UNIT A-2  
RICHMOND HILL, GA 31324

**GENERAL NOTES**

- ALL EXISTING UTILITIES SHOWN ARE LOCATED FROM BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACTUAL FIELD LOCATION AND PROTECTION OF EXISTING UTILITIES. OVERHEAD LINES ARE NOT SHOWN FOR CLARITY.
- ALL DISTURBED AREAS TO BE REVEGETATED IMMEDIATELY AFTER CONSTRUCTION, IN ACCORDANCE WITH THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA.
- ALL EROSION AND SEDIMENTATION CONTROL STRUCTURES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY PROPERTY CORNERS, RIGHT OF WAY MONUMENTS, SIGNS OR OTHER STRUCTURES DISTURBED DURING CONSTRUCTION.
- ALL TRAFFIC AND SIGNAGE CONTROL SHALL BE IN ACCORDANCE WITH THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES, MUTCD, CURRENT EDITION.

REVISION NO.	DATE	DESCRIPTION
1	12/5/24	GSWCC REVISIONS

JOB NO. 2022-15PRJ  
**COVER SHEET**  
PLOT DATE: January 16, 2025

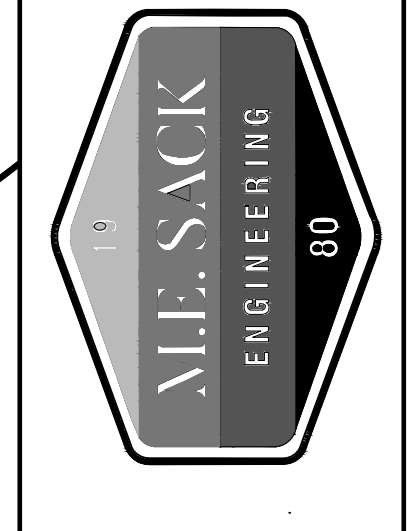


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DATE: January 16, 2025

MUNICIPALITY:  
CITY OF PEMBROKE

COUNTY:  
BRYAN COUNTY

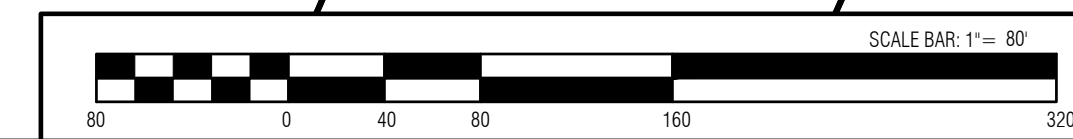
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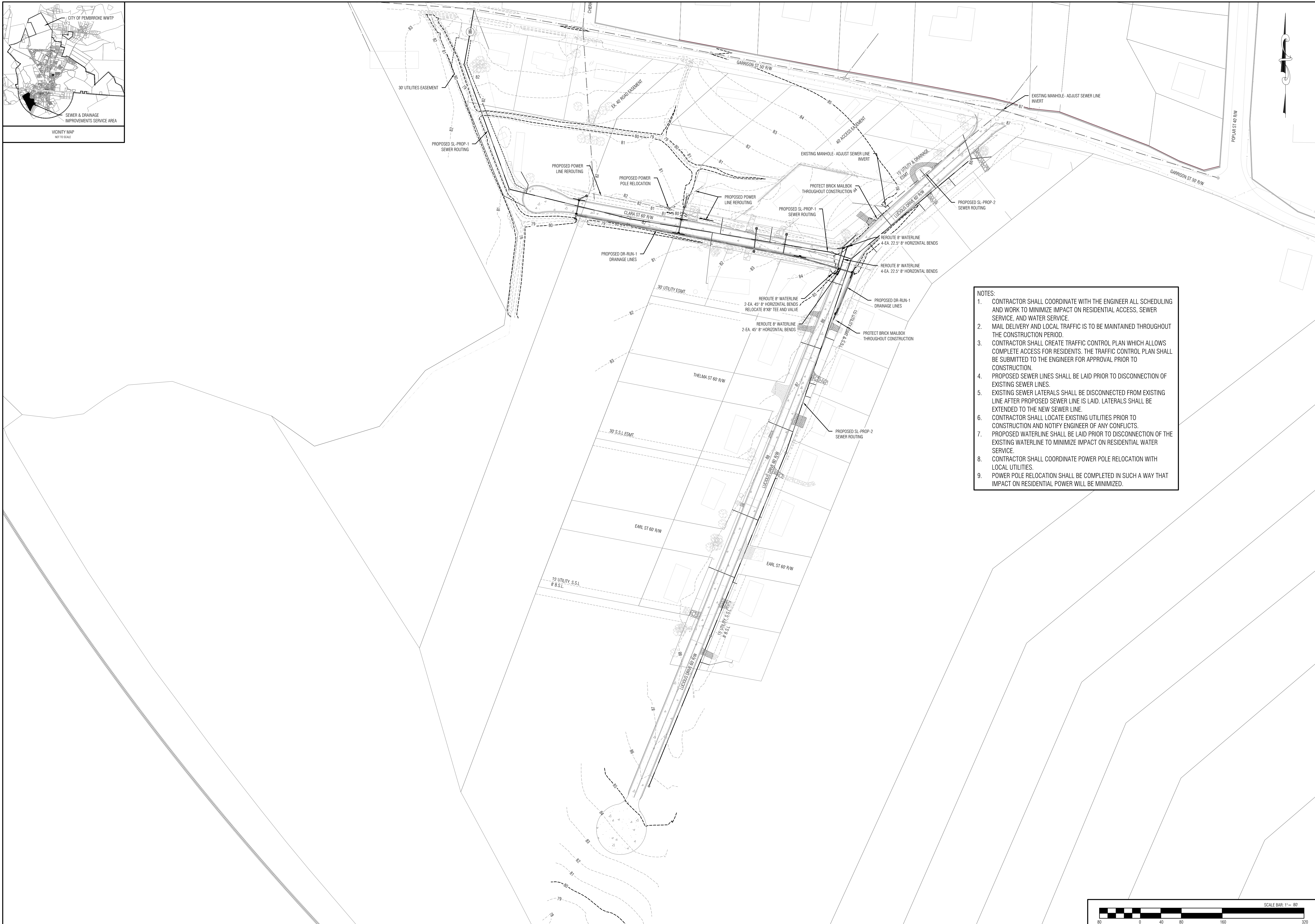
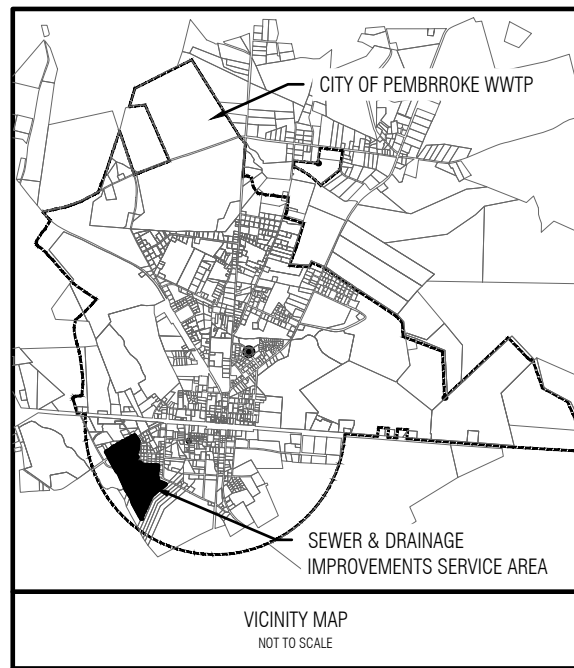
**SEWER & DRAINAGE IMPROVEMENTS**

PROPERTY BOUNDARIES

**C100**



FILE NO: 2022-15  
PLOT DATE: January 16, 2025



**NOTES:**

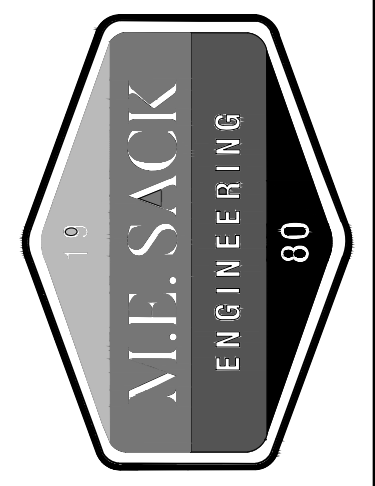
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- CONTRACTOR SHALL COORDINATE POWER POLE RELOCATION WITH LOCAL UTILITIES.
- POWER POLE RELOCATION SHALL BE COMPLETED IN SUCH A WAY THAT IMPACT ON RESIDENTIAL POWER WILL BE MINIMIZED.

NO.	REVISIONS

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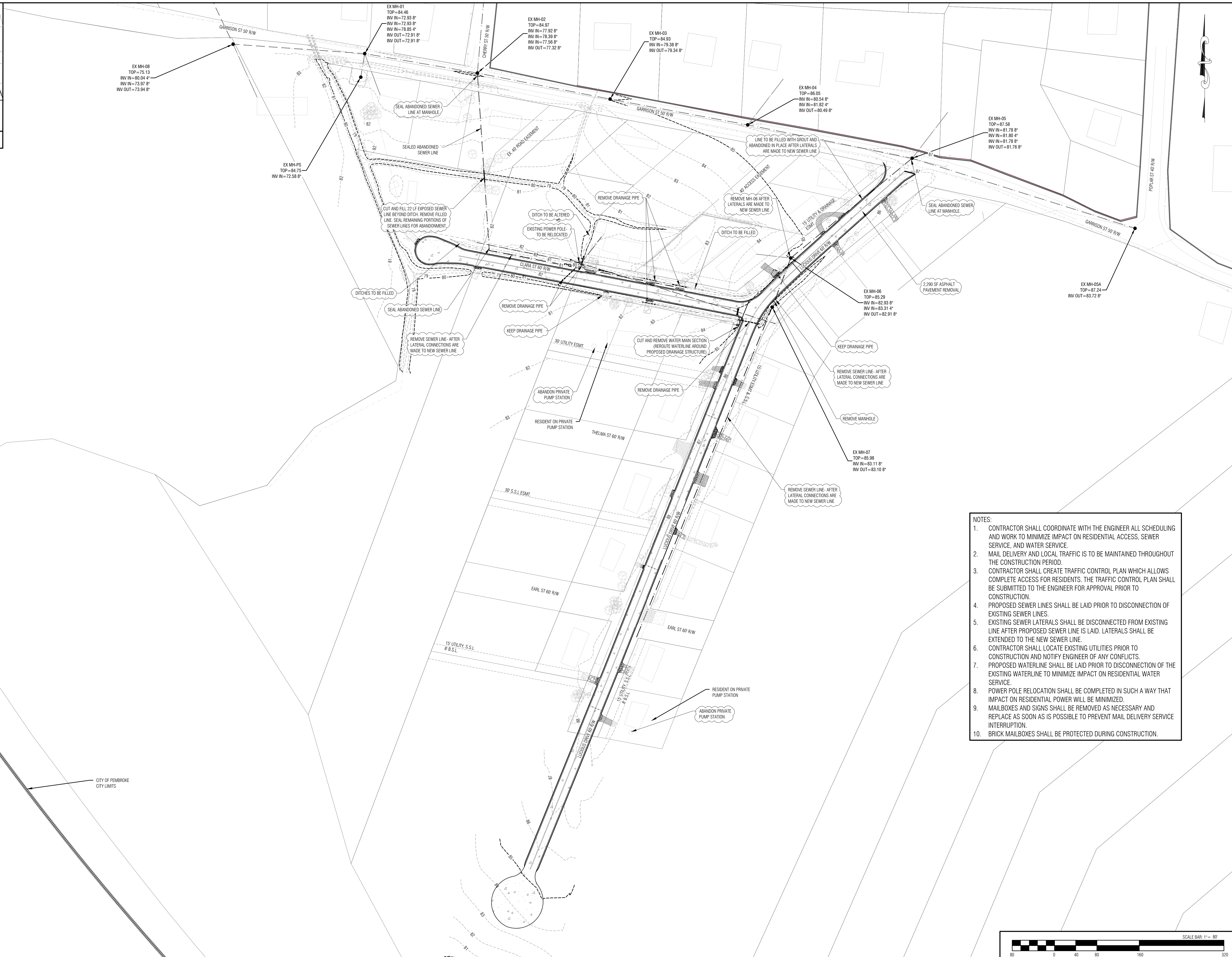
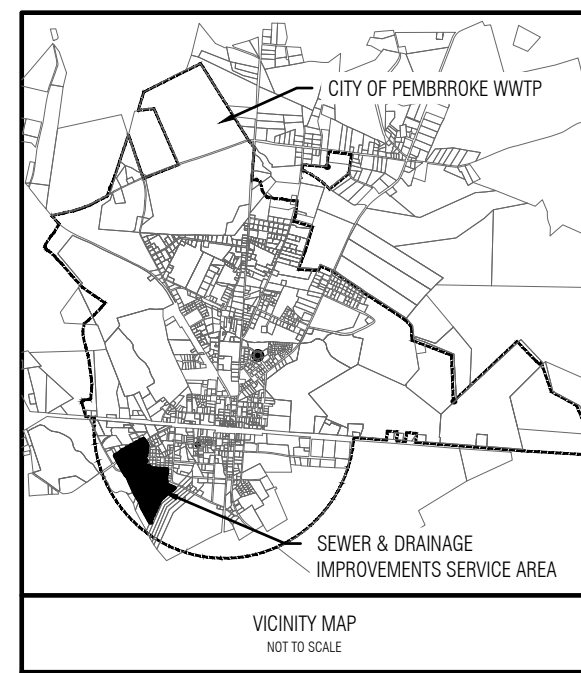
**SEWER & DRAINAGE IMPROVEMENTS**

**OVERALL SITE PLAN**

**C101**

**FILE NO:** 2022-15  
**PLOT DATE:** January 16, 2025





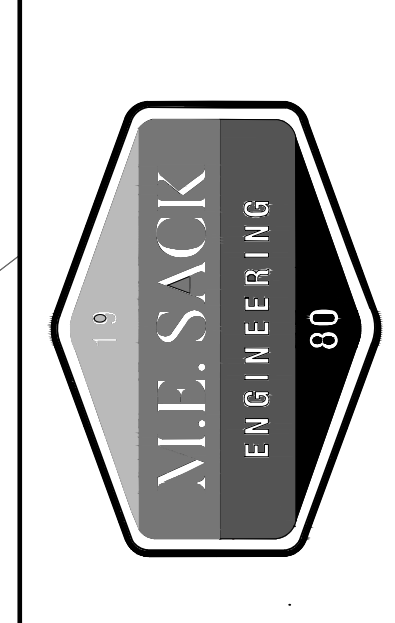
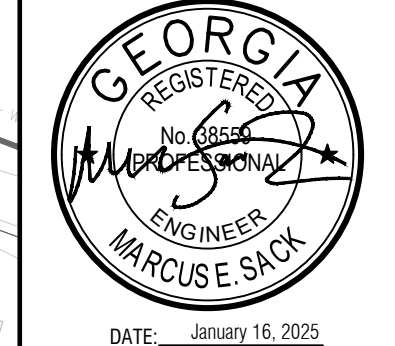
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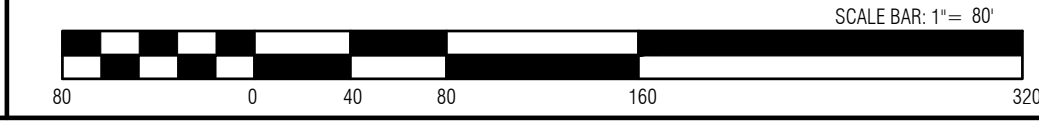
**SEWER & DRAINAGE IMPROVEMENTS**

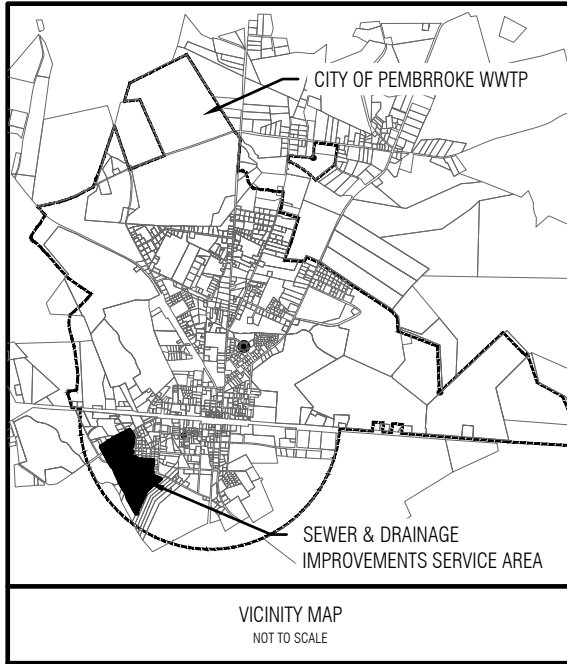
DEMOLITION PLAN

**C102**

FILE NO: 2022-15  
 PLOT DATE: January 16, 2025

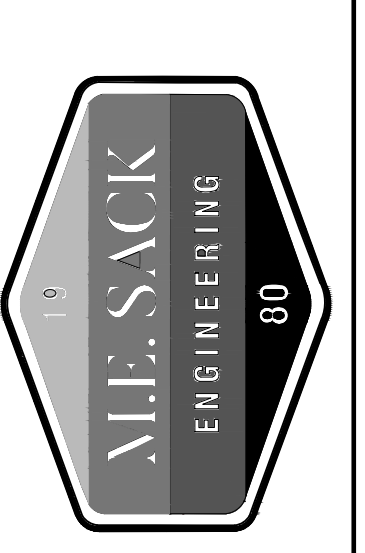
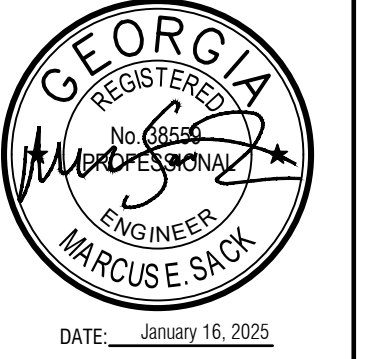
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  8. POWER POLE RELOCATION SHALL BE COMPLETED IN SUCH A WAY THAT IMPACT ON RESIDENTIAL POWER WILL BE MINIMIZED.
  9. MAILBOXES AND SIGNS SHALL BE REMOVED AS NECESSARY AND REPLACE AS SOON AS IS POSSIBLE TO PREVENT MAIL DELIVERY SERVICE INTERRUPTION.
  10. BRICK MAILBOXES SHALL BE PROTECTED DURING CONSTRUCTION.





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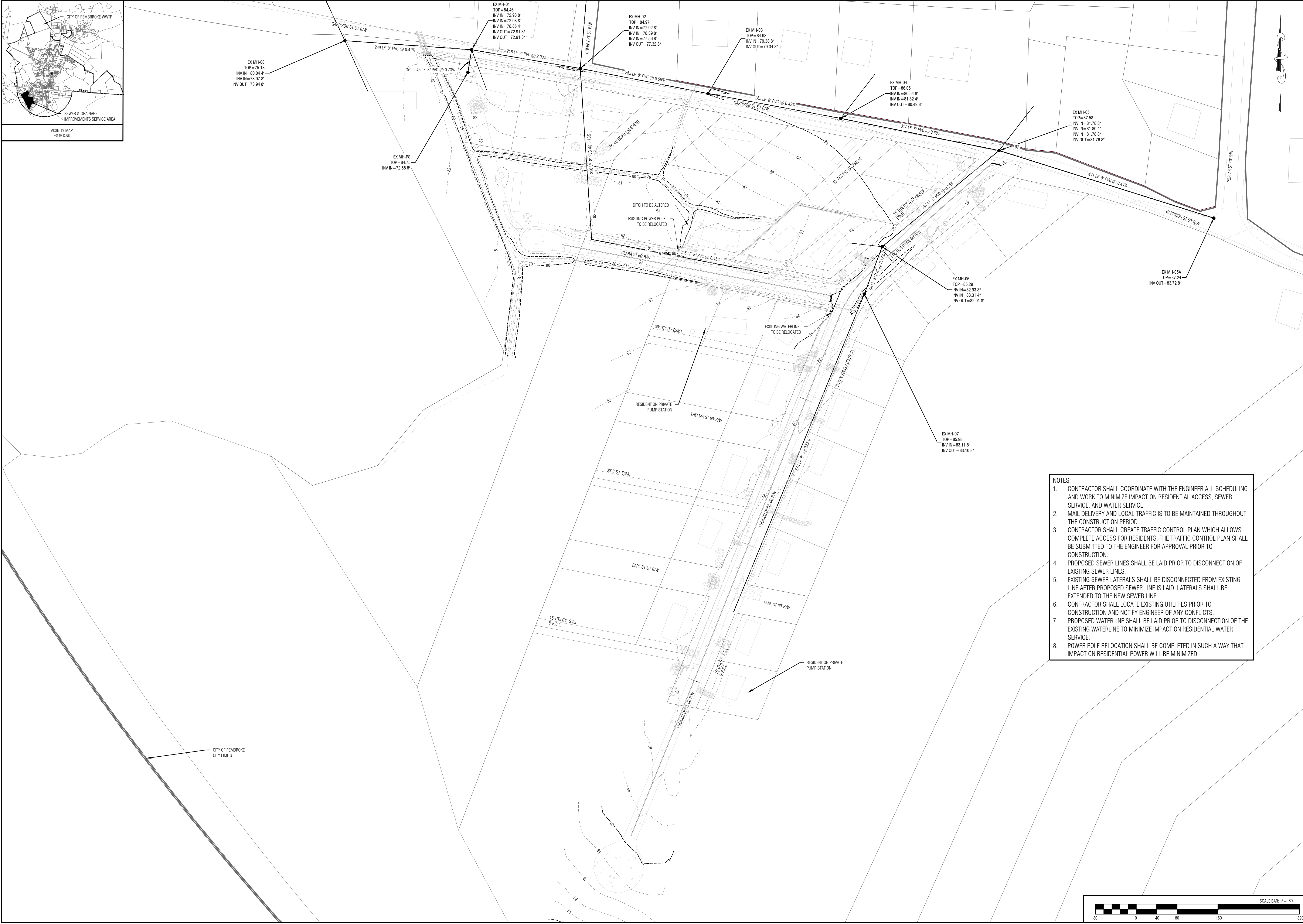
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# SEWER & DRAINAGE IMPROVEMENTS

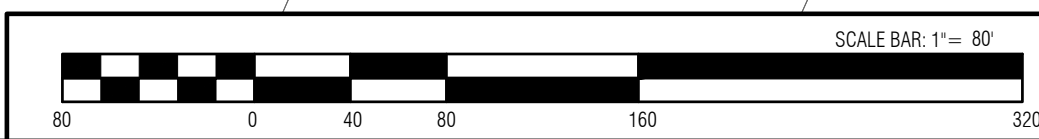
EXISTING SEWER CONDITIONS

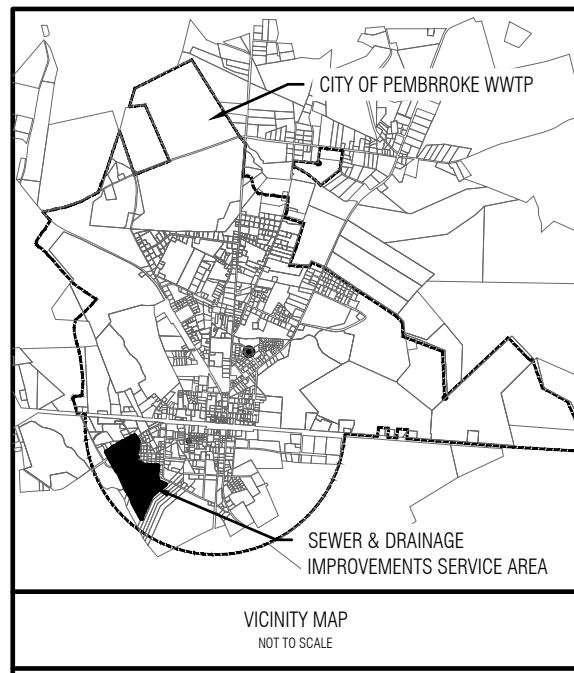
## C200

FILE NO: 2022-15  
PLOT DATE: January 16, 2025

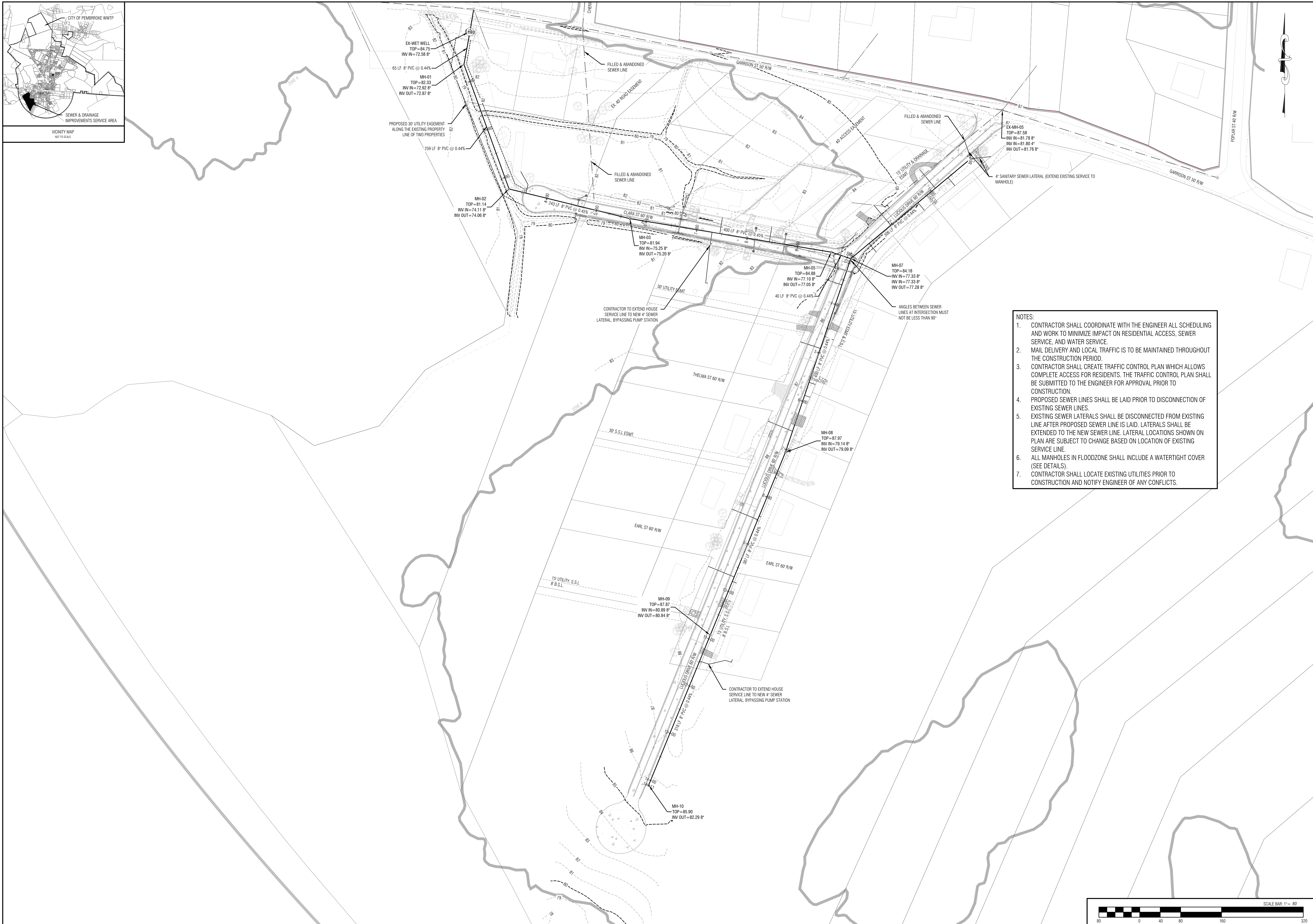


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VICINITY MAP  
NOT TO SCALE

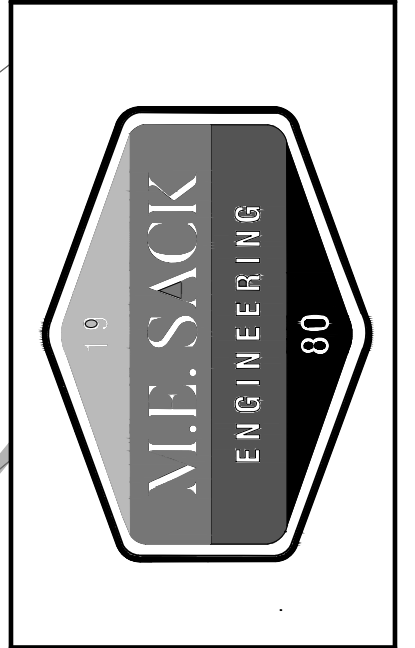


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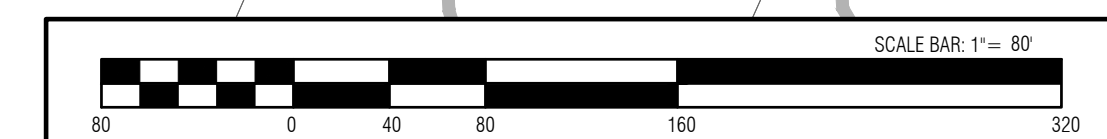
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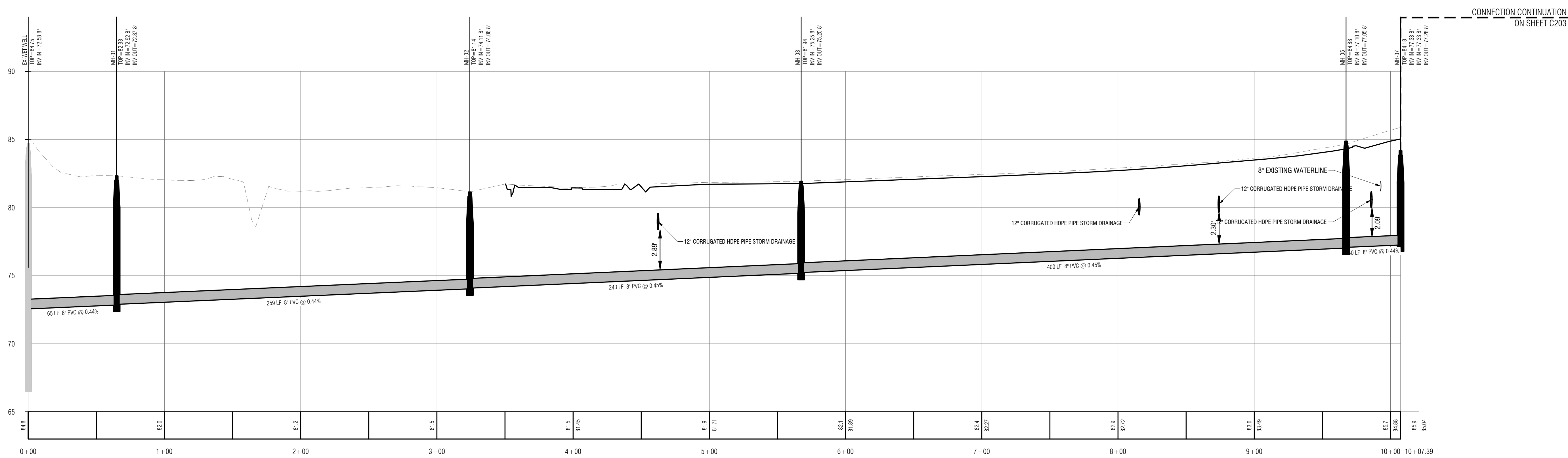
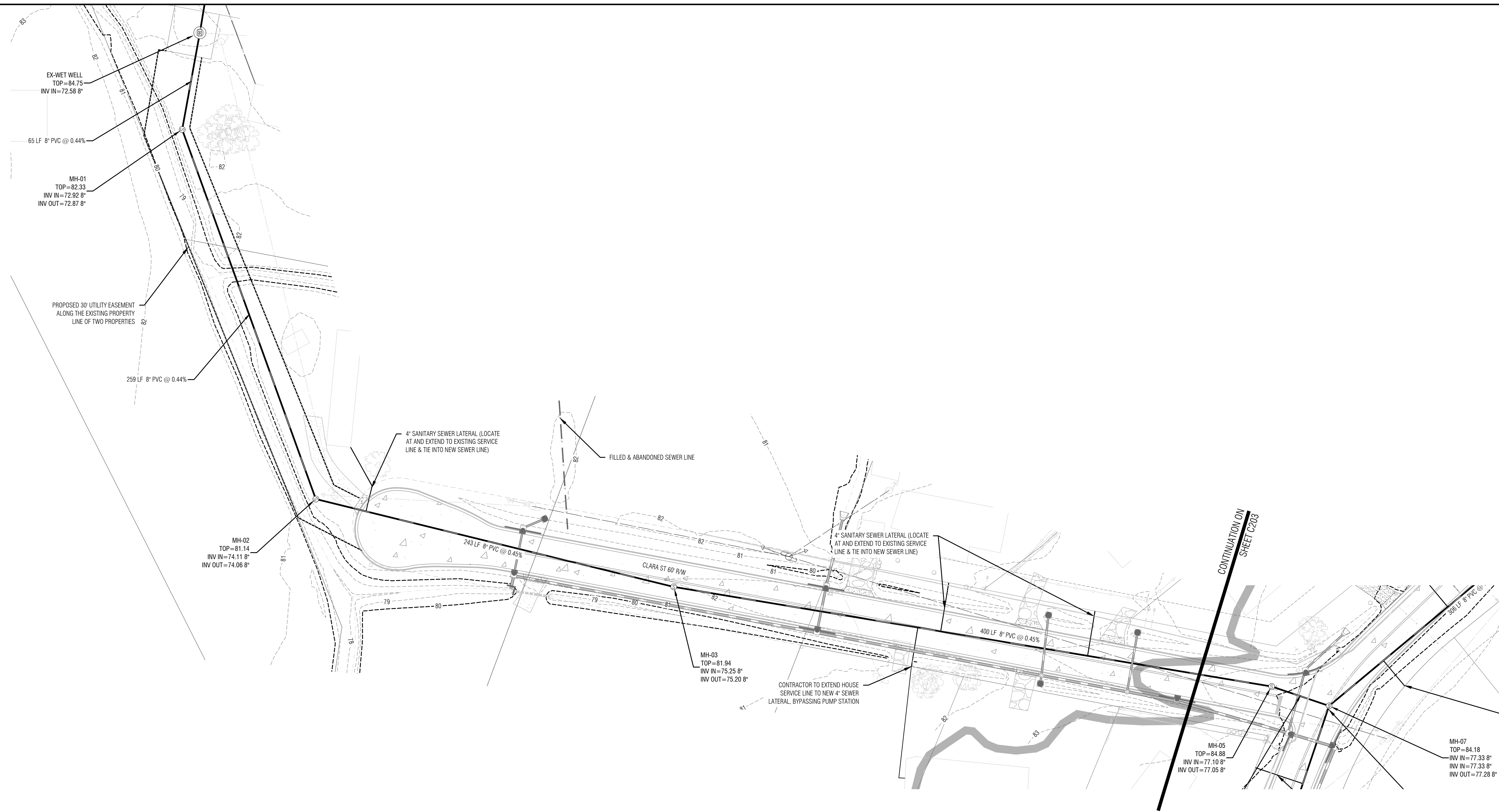
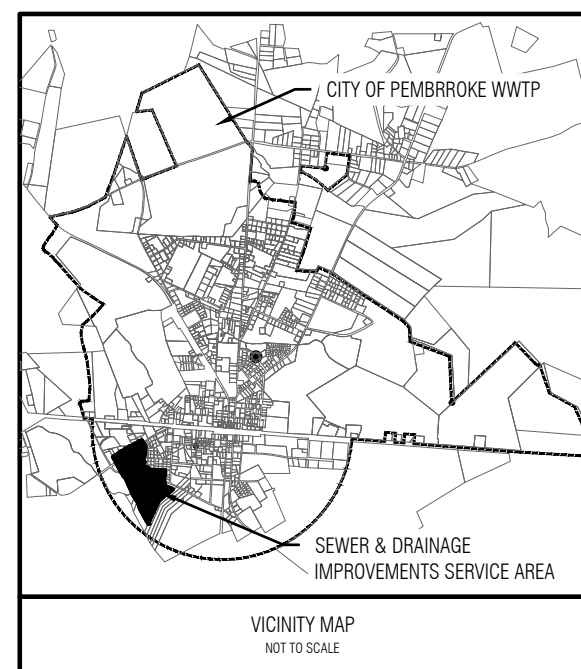
**OVERALL SEWER PLAN**

**C201**

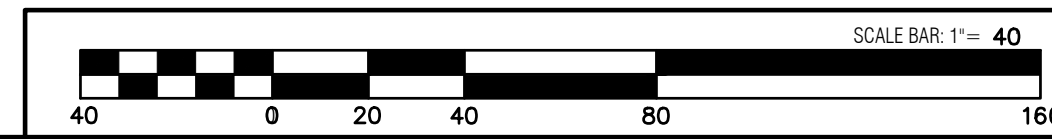
FILE NO: 2022-15  
 PLOT DATE: January 16, 2025

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  - EXISTING SEWER LATERALS SHALL BE DISCONNECTED FROM EXISTING LINE AFTER PROPOSED SEWER LINE IS LAID. LATERALS SHALL BE EXTENDED TO THE NEW SEWER LINE. LATERAL LOCATIONS SHOWN ON PLAN ARE SUBJECT TO CHANGE BASED ON LOCATION OF EXISTING SERVICE LINE.
  - ALL MANHOLES IN FLOODZONE SHALL INCLUDE A WATERTIGHT COVER (SEE DETAILS).
  - CONTRACTOR SHALL LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY CONFLICTS.





SL-PROP-1 PROFILE  
 VERT. SCALE: 1"=5'  
 HORIZ SCALE: 1"=50'



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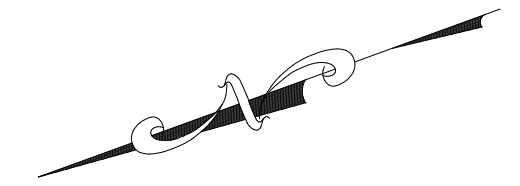
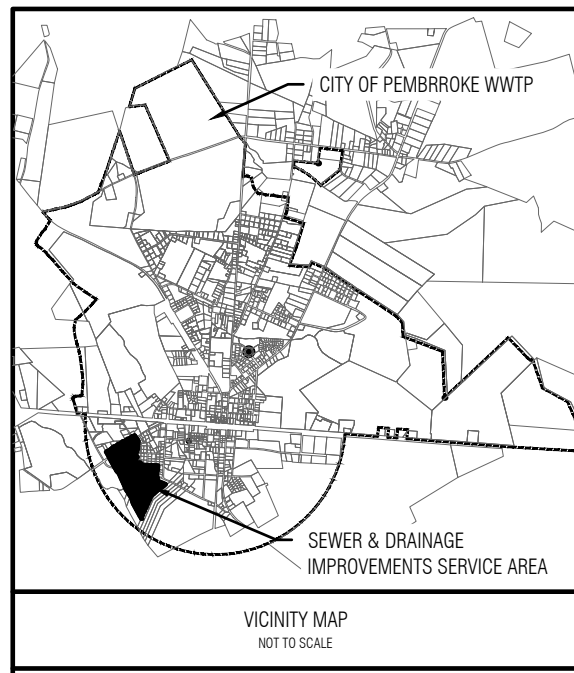
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SEWER & DRAINAGE IMPROVEMENTS

SEWER PLAN & PROFILE

C202

FILE NO: 2022-15  
 PLOT DATE: January 16, 2025

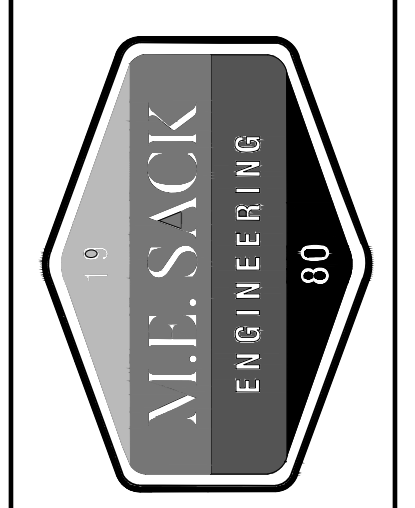


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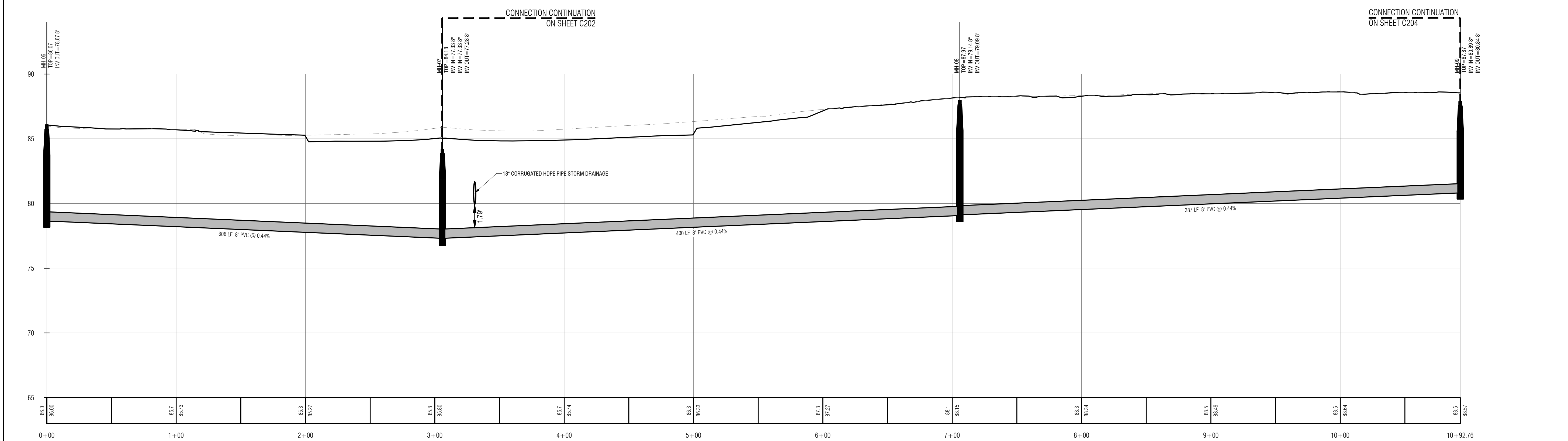
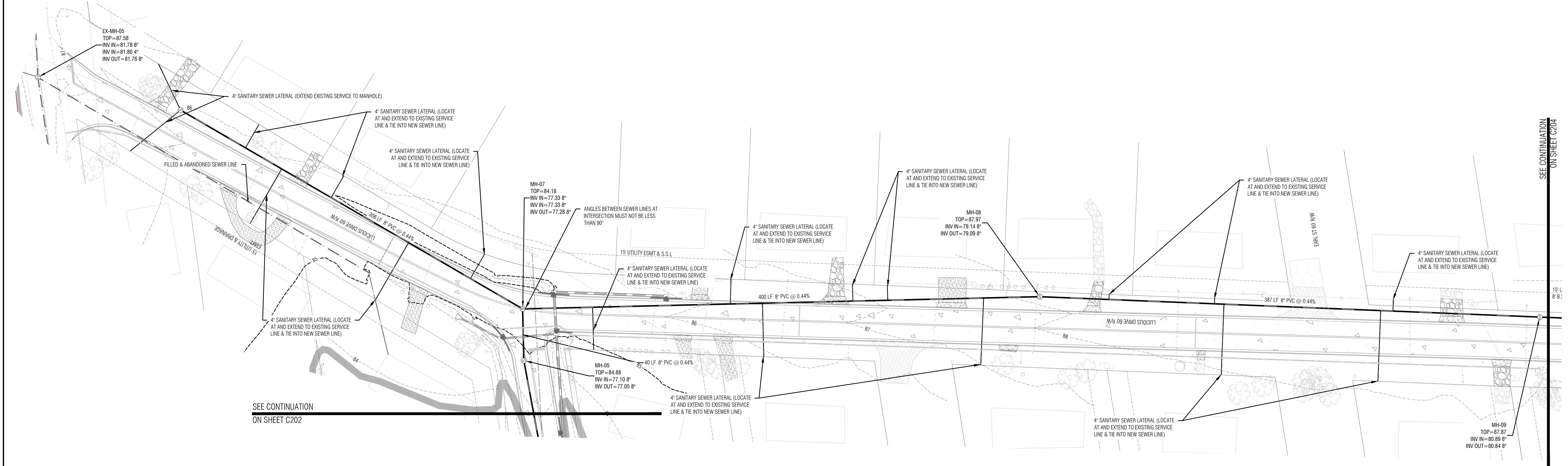
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SEWER & DRAINAGE IMPROVEMENTS

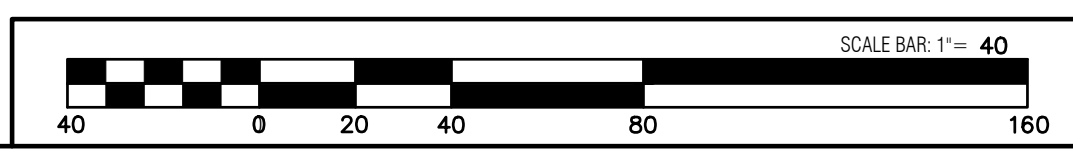
SEWER PLAN & PROFILE

C203

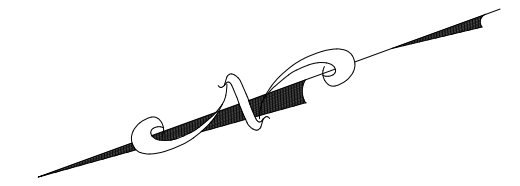
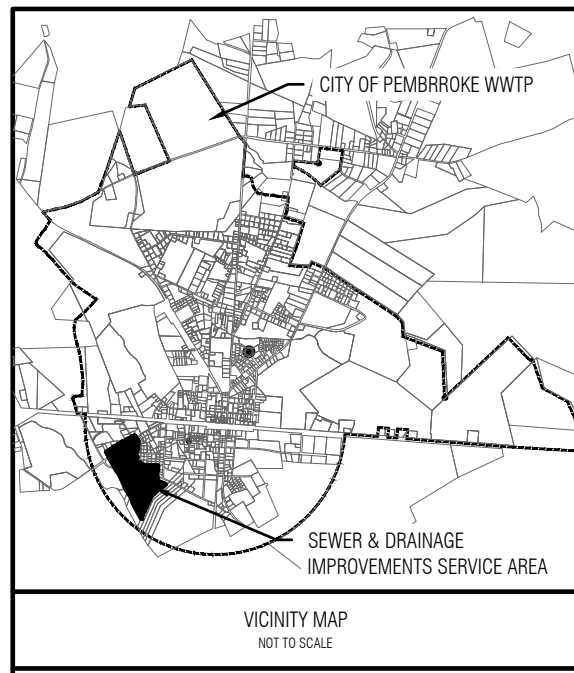
FILE NO: 2022-15  
PLOT DATE: January 16, 2025



SL-PROP-2 PROFILE  
VERT. SCALE: 1"=5'  
HORIZ SCALE: 1"=50'







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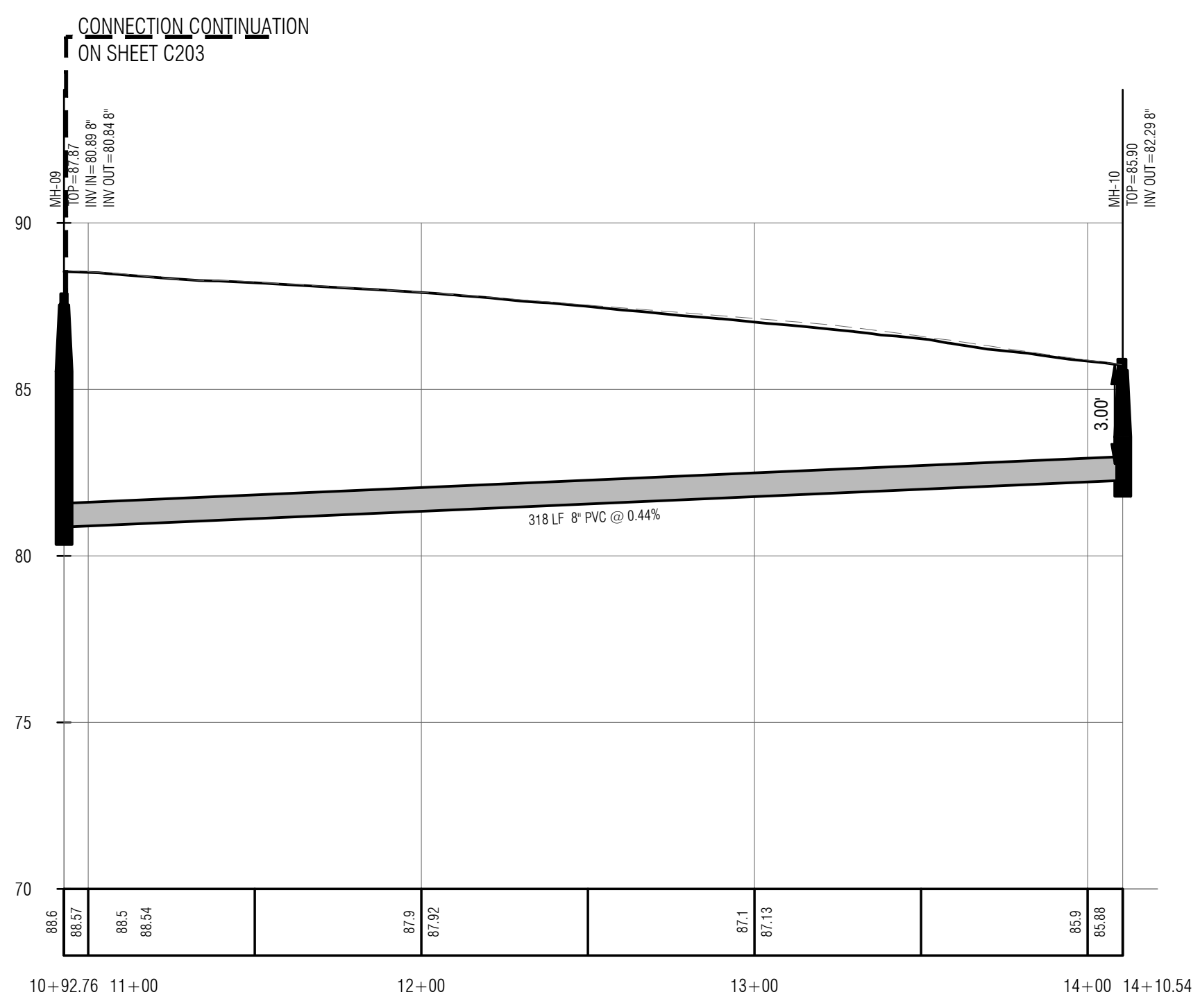
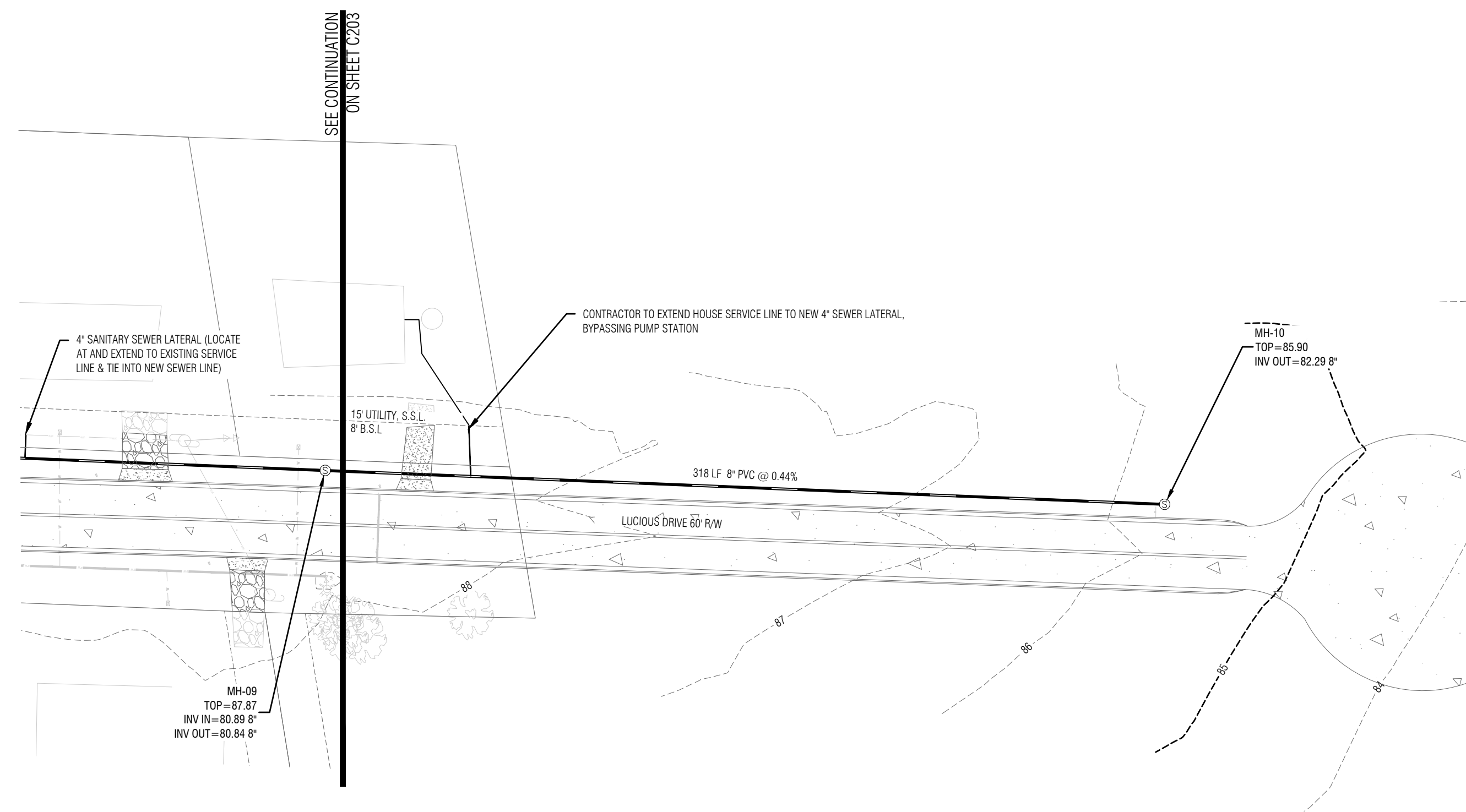
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SEWER &  
DRAINAGE  
IMPROVEMENTS

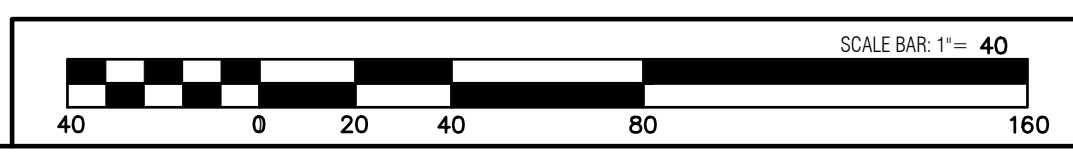
SEWER PLAN &  
PROFILE

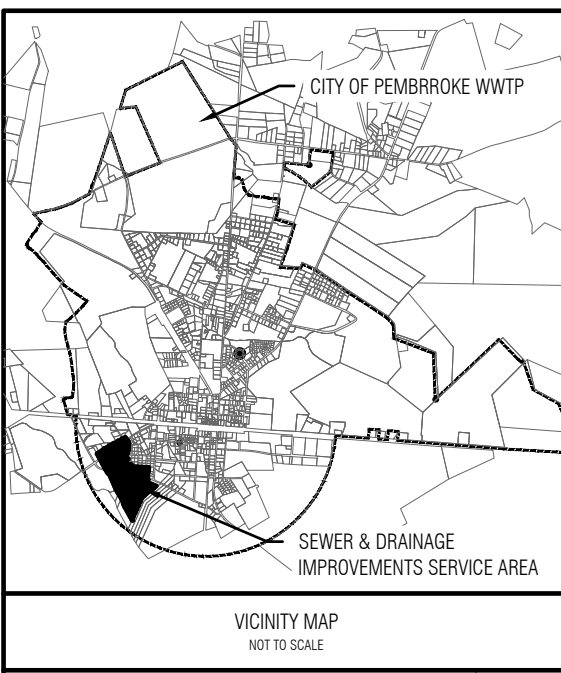
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FILE NO: 2022-15  
 PLOT DATE: January 16, 2025

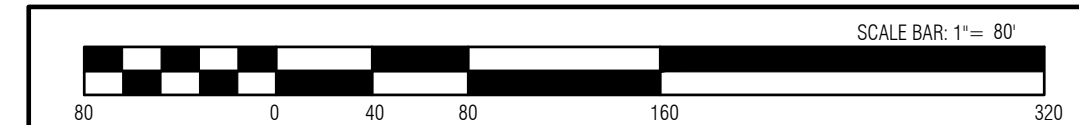


SL-PROP-2 PROFILE  
 VERT. SCALE: 1"=5'  
 HORIZ SCALE: 1"=50'





- NOTES:**
1. ROLLING CURBS SHALL BE MAINTAINED IN FRONT OF EACH RESIDENTIAL ACCESS DRIVE WITH AN EXTENDED CONCRETE APRON AND SMOOTH ROCK TRANSITION AT THE END OF EACH EXISTING GRAVEL & DIRT DRIVEWAY.
  2. ALL RESIDENTIAL ACCESS DRIVES SHALL BE GRADED WITHIN THE RIGHT OF WAY TO SLOPE TO THE NEW ROAD ELEVATION. THE MATERIAL OF THE RESIDENTIAL ACCESS DRIVES SHALL BE REPLACED WITH APPROVED MATERIAL, MATCHING THE EXISTING DRIVEWAY MATERIAL.
  3. ANY PAVED DRIVEWAYS SHALL BE REPLACED WITH CONCRETE PAVING WITHIN THE RIGHT OF WAY, SLOPED TO THE ELEVATION OF THE ROAD PAVEMENT.
  4. CURB & GUTTER SHALL TERMINATE PRIOR TO SOUTHERN CUL-DE-SAC ALONG LUCIOUS DRIVE. THIS CUL-DE-SAC SHALL BE MILLED AND OVERLAYED AT EXISTING GRADE WHERE THE ROAD ALIGNMENT ENDS.
  5. CONTRACTOR SHALL MINIMIZE IMPACT ON RESIDENTS AND ENSURE THEIR ACCESS TO THE PROJECT AREA. ROAD SHALL BE GRADED AND PAVED ONE LANE AT A TIME TO ENSURE MINIMAL IMPACT ON RESIDENTS.
  6. EXISTING WATERLINES BELOW ROAD CONSTRUCTION SHALL BE PROTECTED WITH COMPACTED CRUSHED GRAVEL.
  7. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER ALL SCHEDULING AND WORK TO MINIMIZE IMPACT ON RESIDENTIAL ACCESS, SEWER SERVICE, AND WATER SERVICE.
  8. MAIL DELIVERY AND LOCAL TRAFFIC IS TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
  9. CONTRACTOR SHALL CREATE TRAFFIC CONTROL PLAN WHICH ALLOWS COMPLETE ACCESS FOR RESIDENTS. THE TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

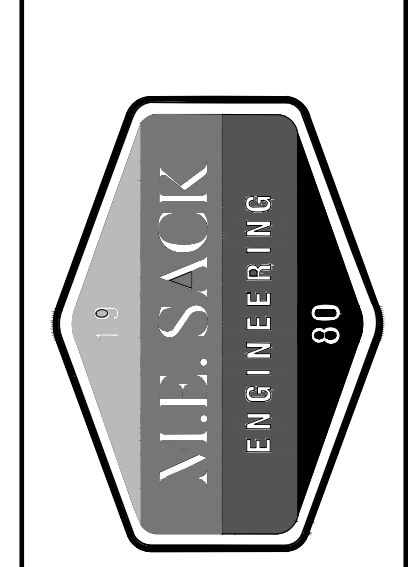
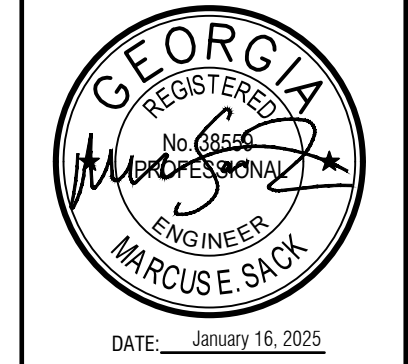


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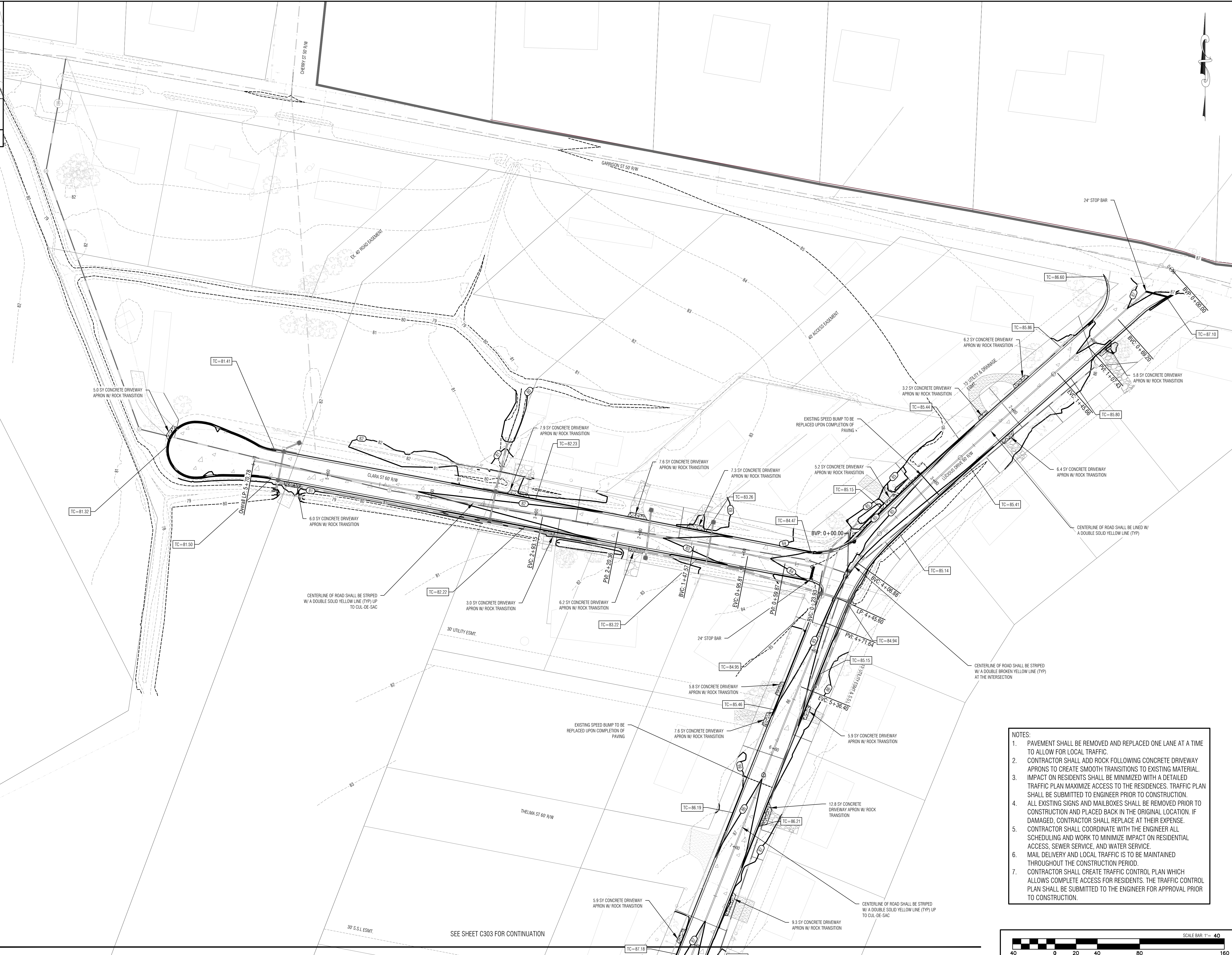
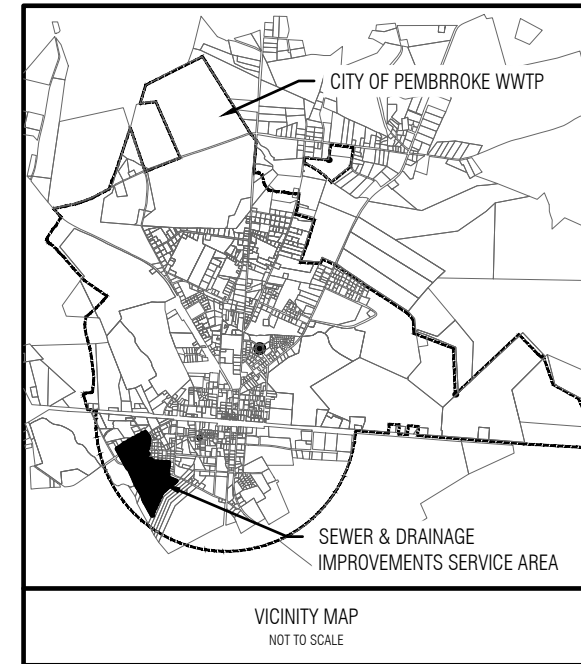
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**SEWER & DRAINAGE IMPROVEMENTS**

**OVERALL ROAD PLAN**

**C301**

**FILE NO:** 2022-15  
**PLOT DATE:** January 16, 2025

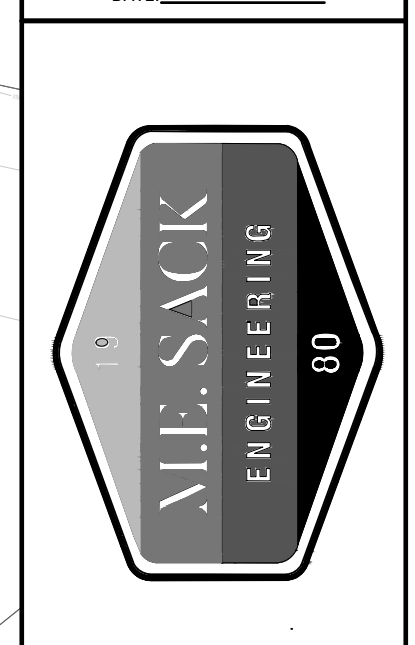
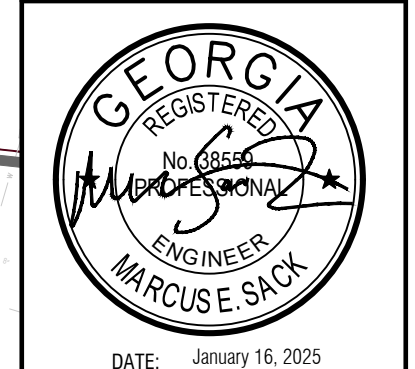


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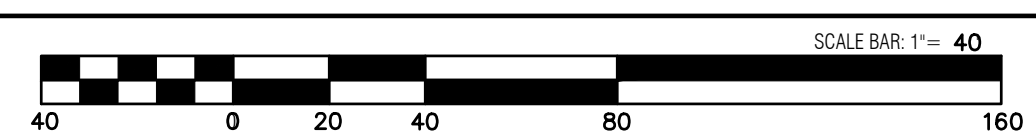
**SEWER & DRAINAGE IMPROVEMENTS**

ROAD PLAN 1

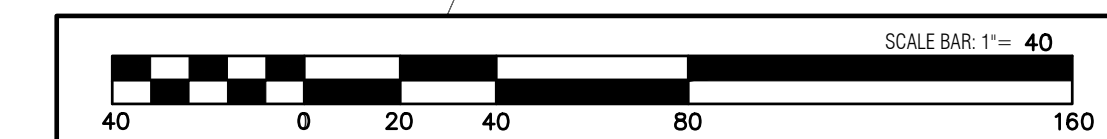
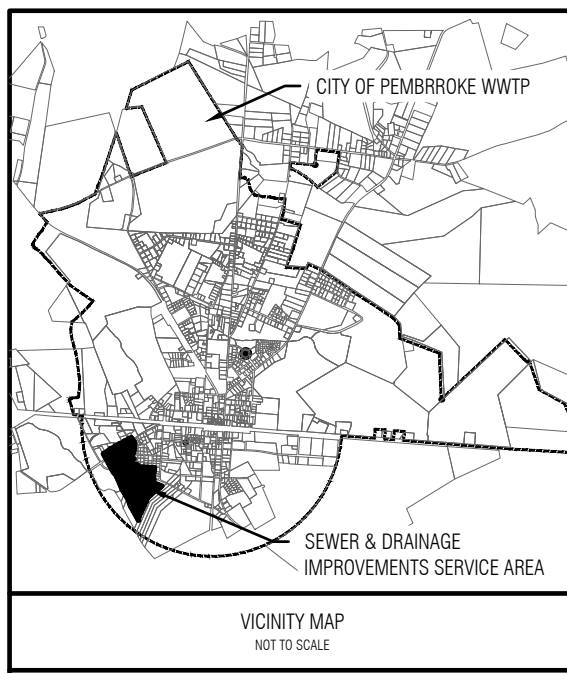
C302

FILE NO: 2022-15  
 PLOT DATE: January 16, 2025

- NOTES:**
- PAVEMENT SHALL BE REMOVED AND REPLACED ONE LANE AT A TIME TO ALLOW FOR LOCAL TRAFFIC.
  - CONTRACTOR SHALL ADD ROCK FOLLOWING CONCRETE DRIVEWAY APRONS TO CREATE SMOOTH TRANSITIONS TO EXISTING MATERIAL.
  - IMPACT ON RESIDENTS SHALL BE MINIMIZED WITH A DETAILED TRAFFIC PLAN MAXIMIZE ACCESS TO THE RESIDENCES. TRAFFIC PLAN SHALL BE SUBMITTED TO ENGINEER PRIOR TO CONSTRUCTION.
  - ALL EXISTING SIGNS AND MAILBOXES SHALL BE REMOVED PRIOR TO CONSTRUCTION AND PLACED BACK IN THE ORIGINAL LOCATION. IF DAMAGED, CONTRACTOR SHALL REPLACE AT THEIR EXPENSE.
  - CONTRACTOR SHALL COORDINATE WITH THE ENGINEER ALL SCHEDULING AND WORK TO MINIMIZE IMPACT ON RESIDENTIAL ACCESS, SEWER SERVICE, AND WATER SERVICE.
  - MAIL DELIVERY AND LOCAL TRAFFIC IS TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
  - CONTRACTOR SHALL CREATE TRAFFIC CONTROL PLAN WHICH ALLOWS COMPLETE ACCESS FOR RESIDENTS. THE TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.



SEE SHEET C303 FOR CONTINUATION



NO.	DATE	DESCRIPTION

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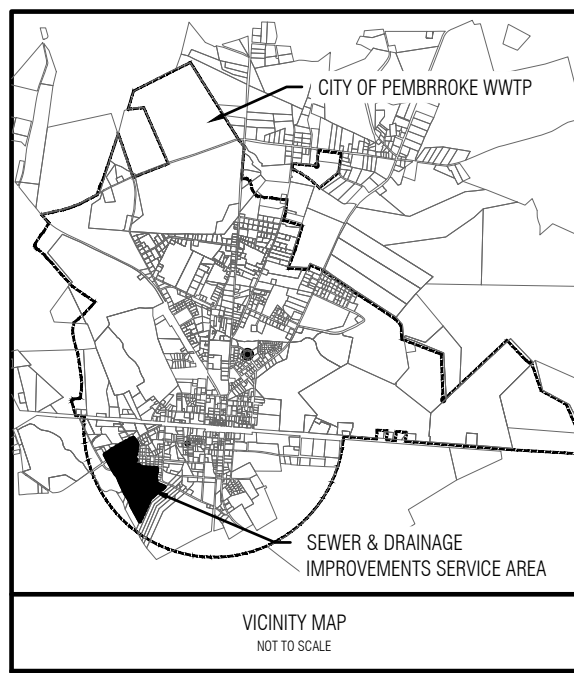
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CONTACT: KEITH COOK  
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**SEWER & DRAINAGE IMPROVEMENTS**

**ROAD PLAN 2**

**C303**

FILE NO: 2022-15  
 PLOT DATE: January 16, 2025



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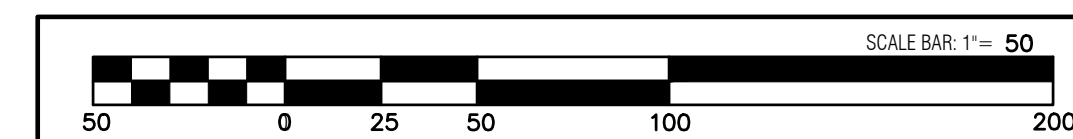
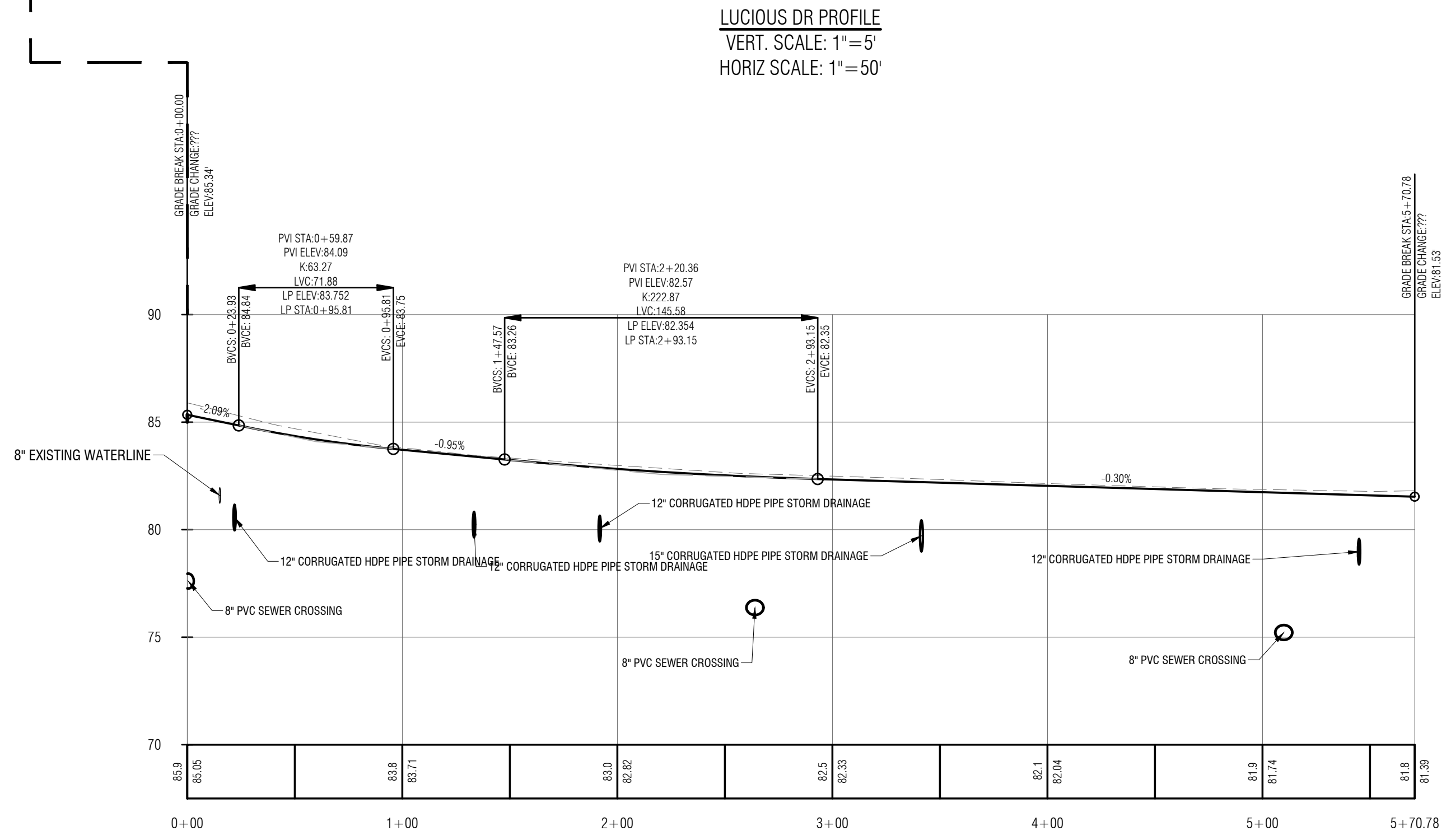
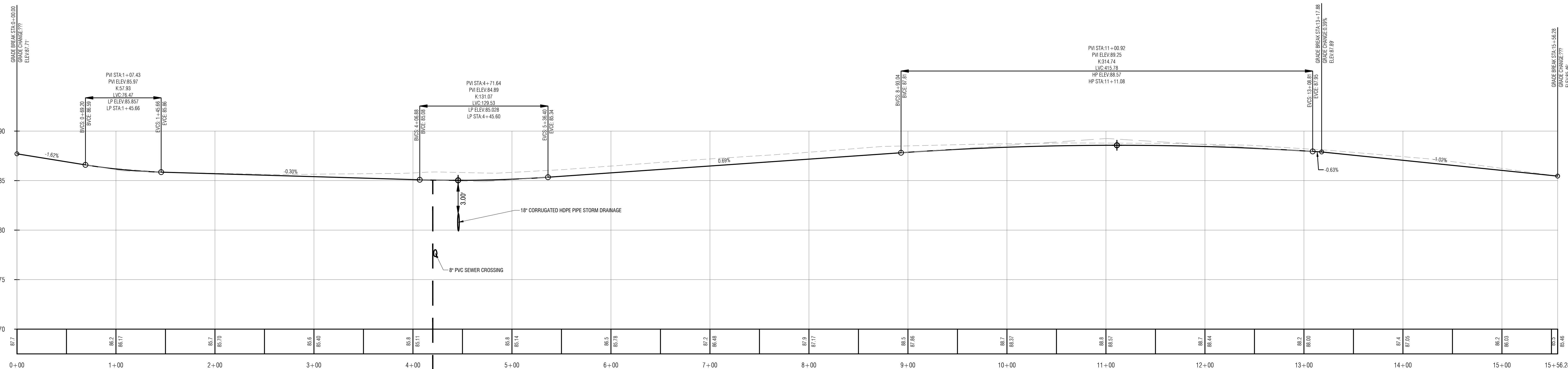
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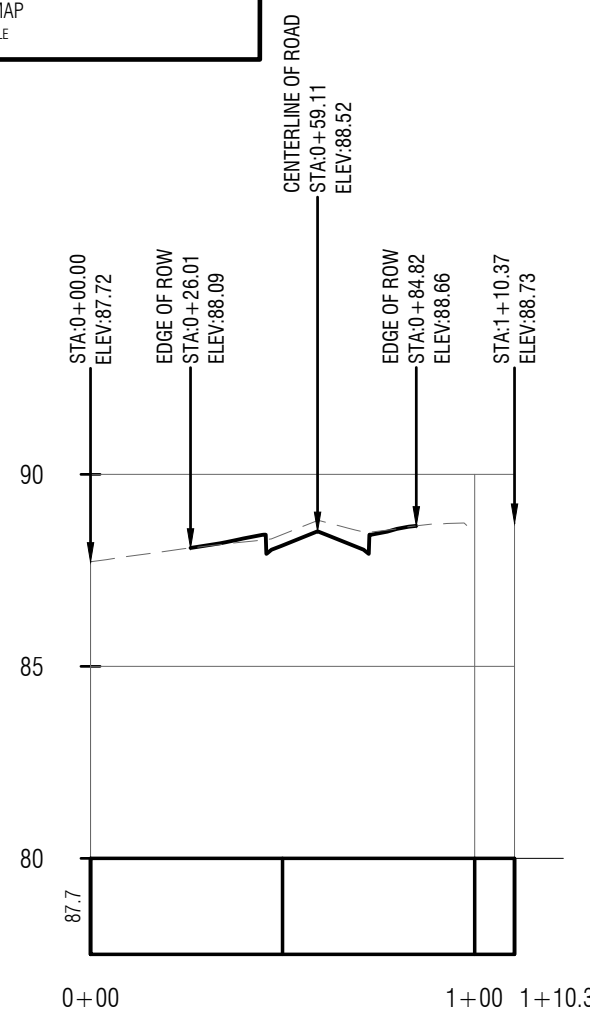
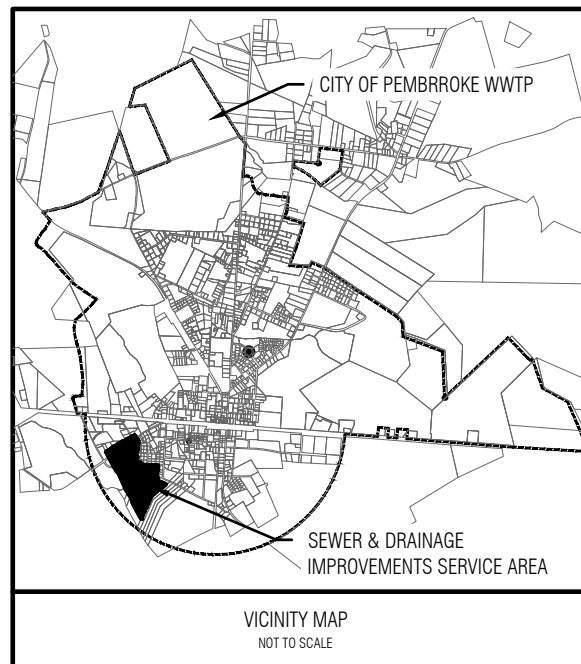
ROAD PROFILES

## C304

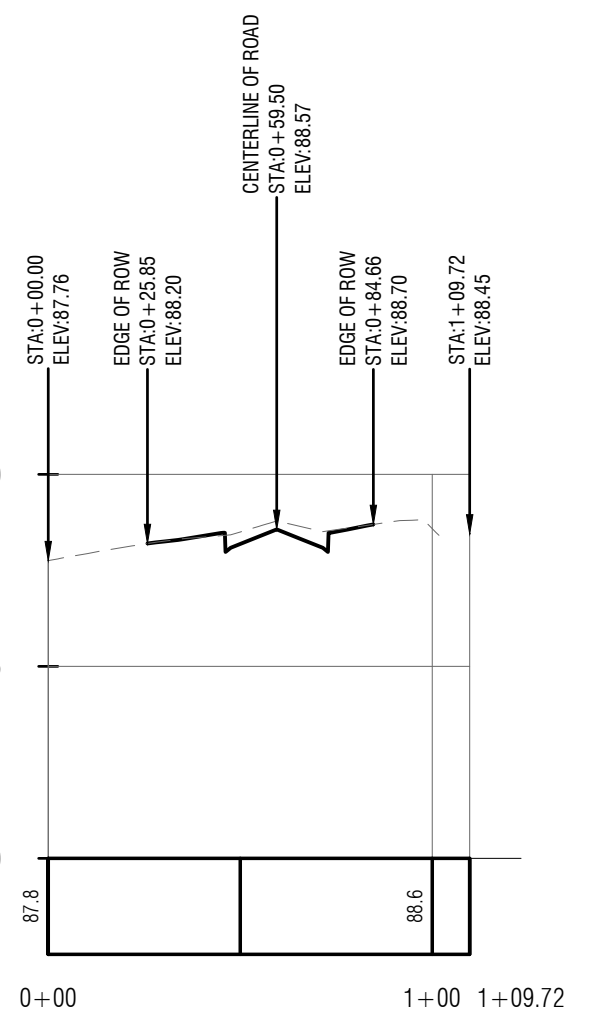
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 PLOT DATE: January 16, 2025



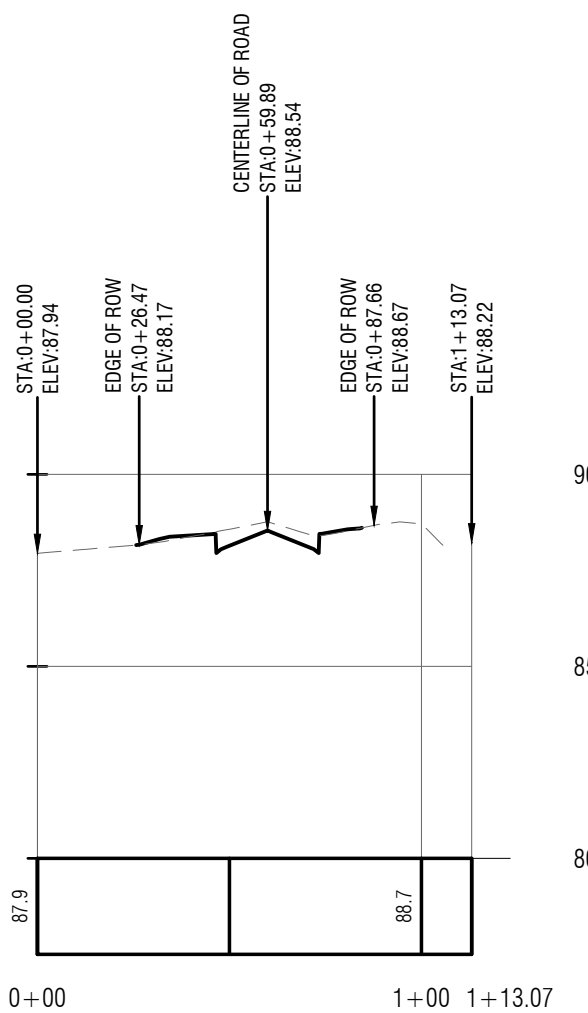




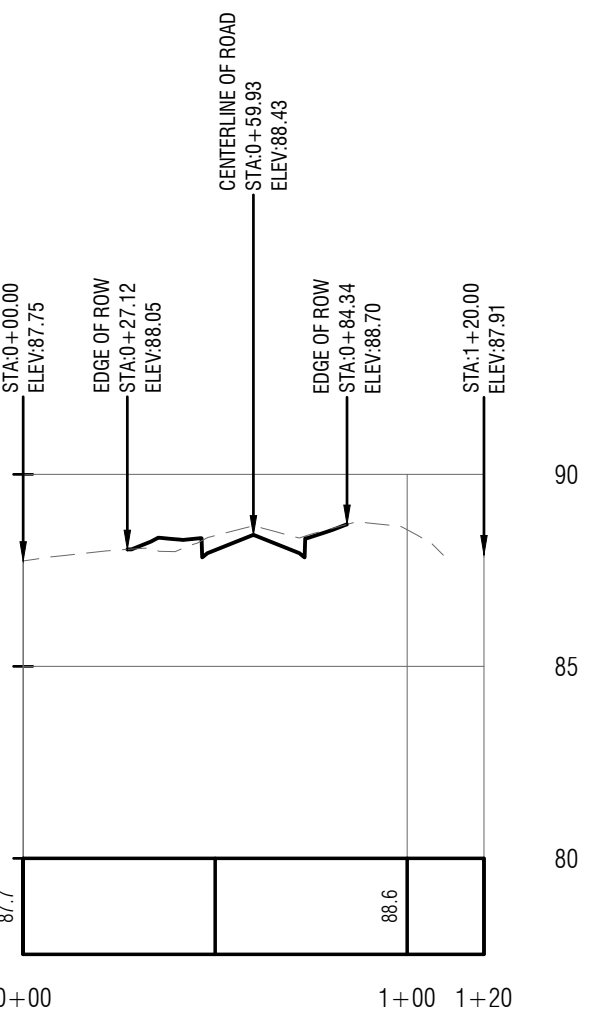
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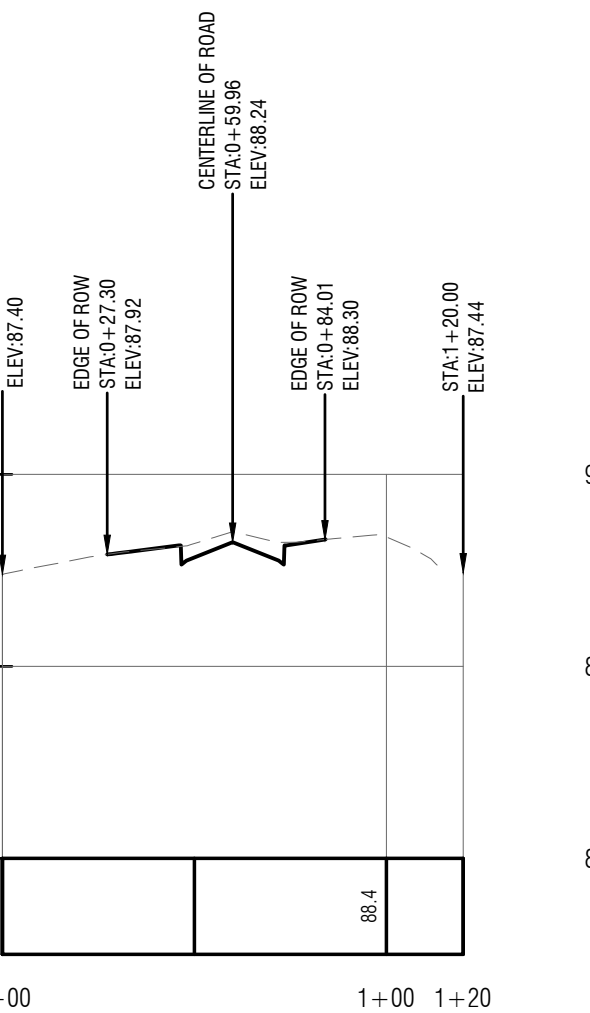
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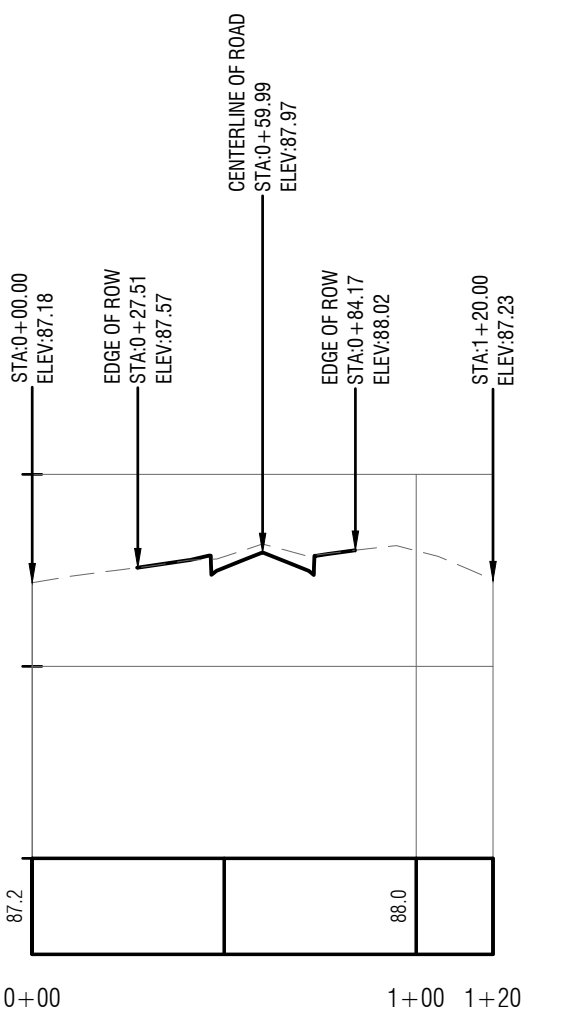
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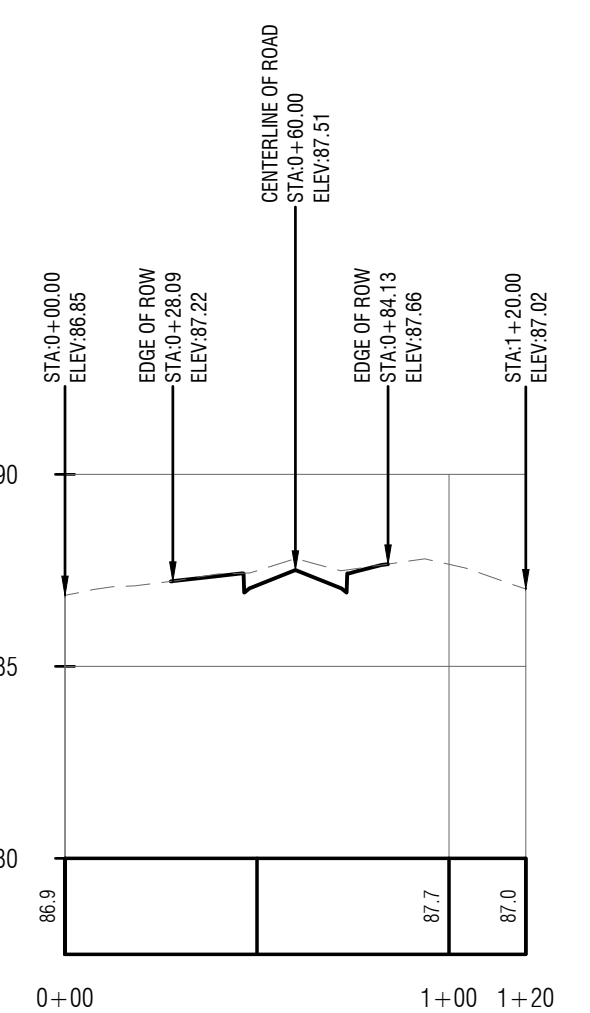
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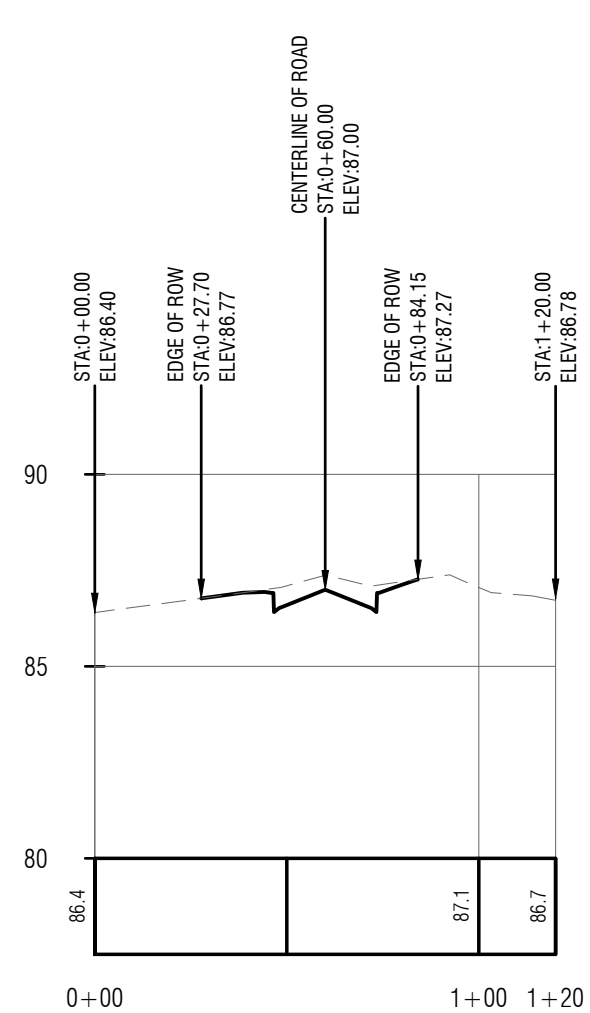
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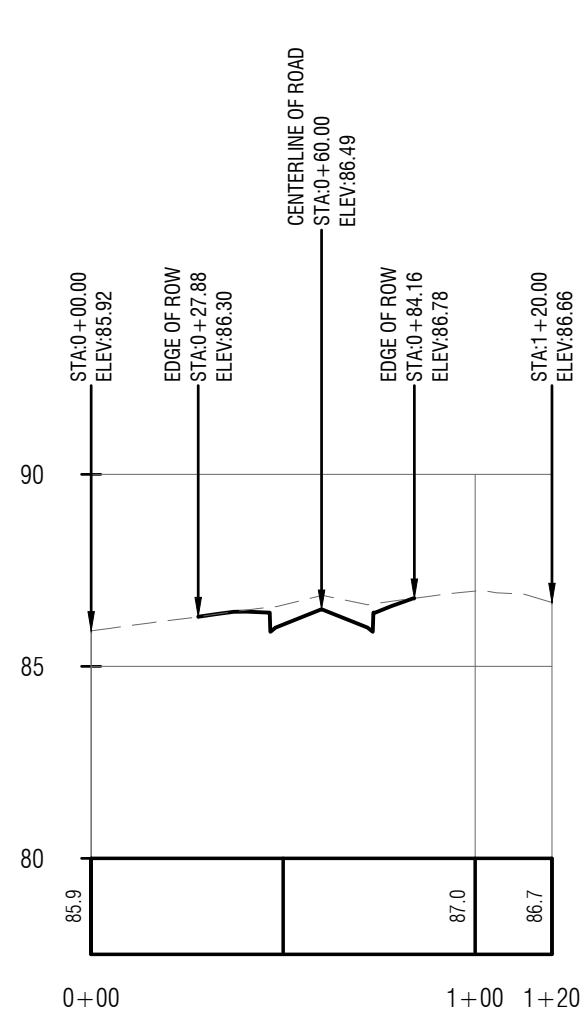
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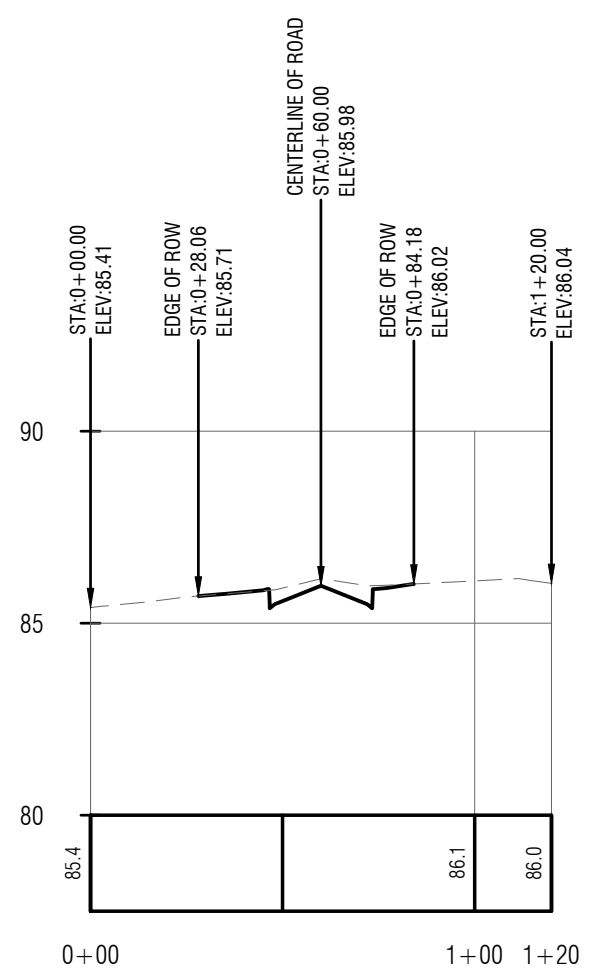
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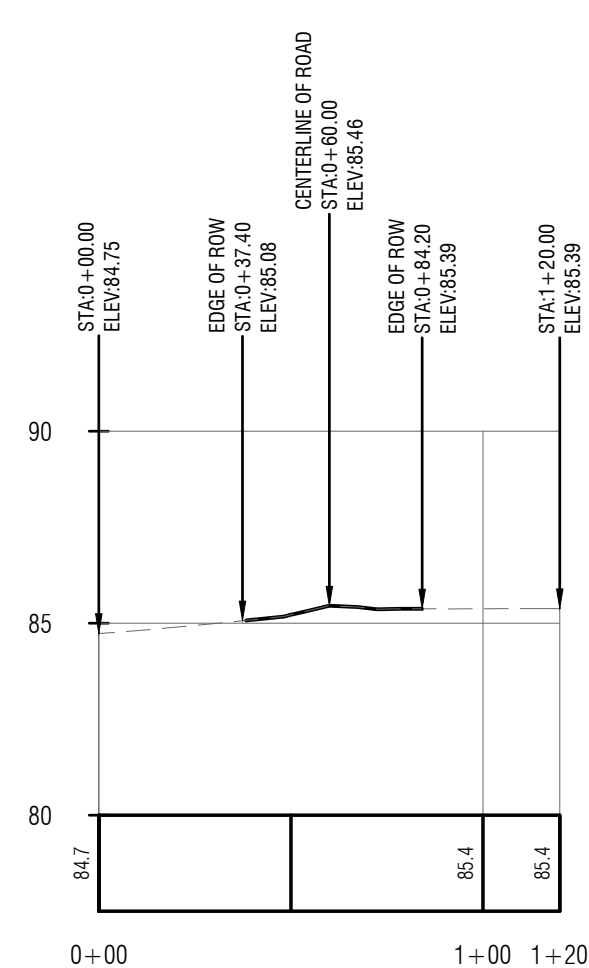
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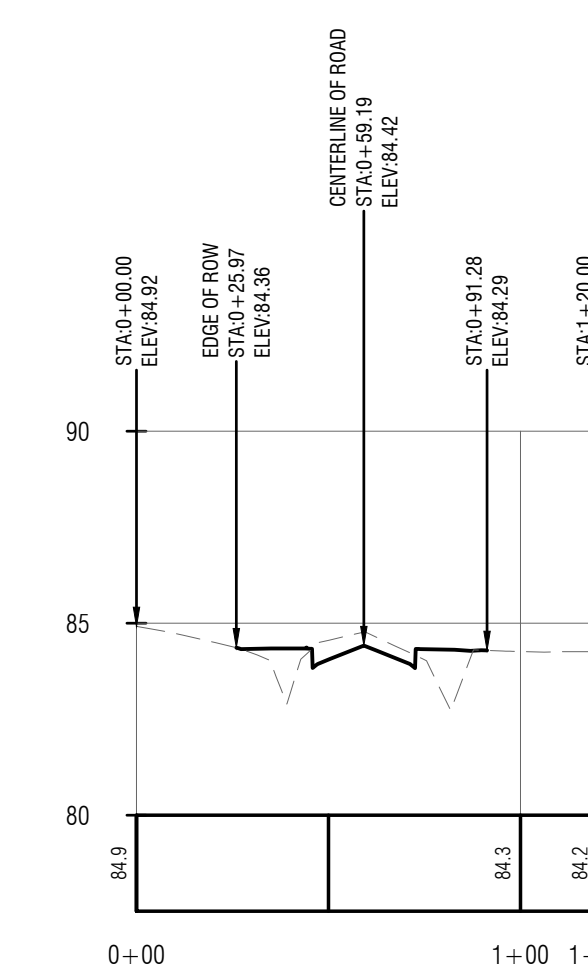
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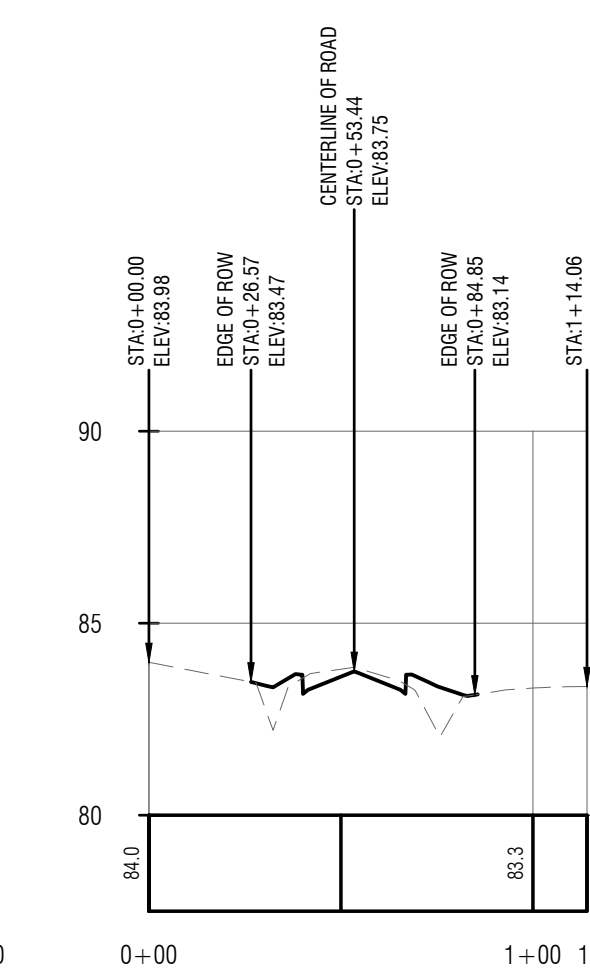
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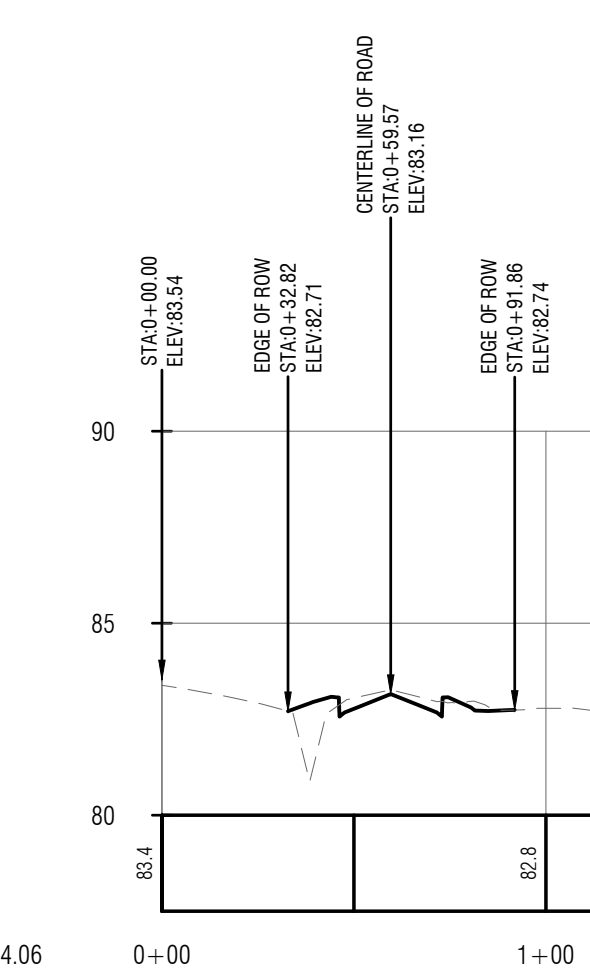
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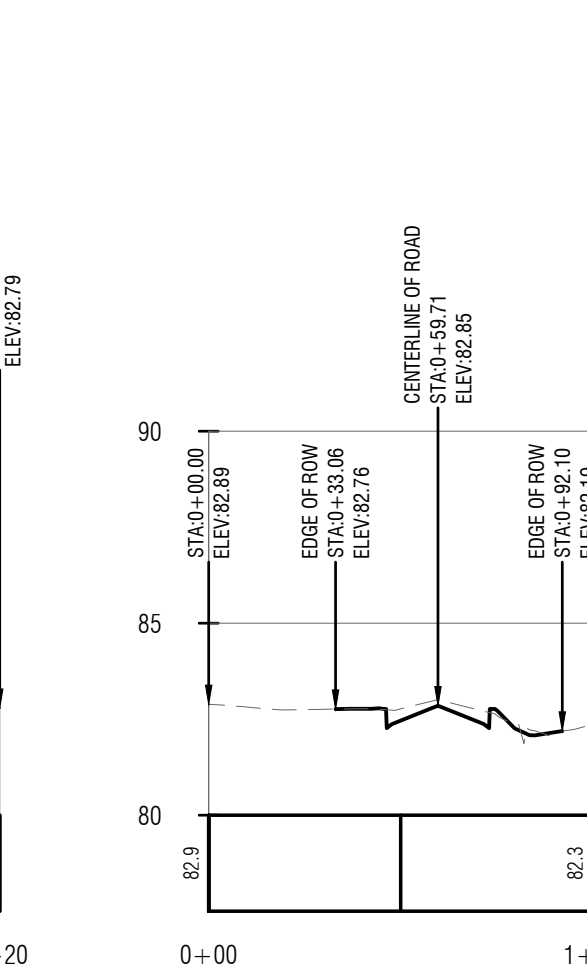
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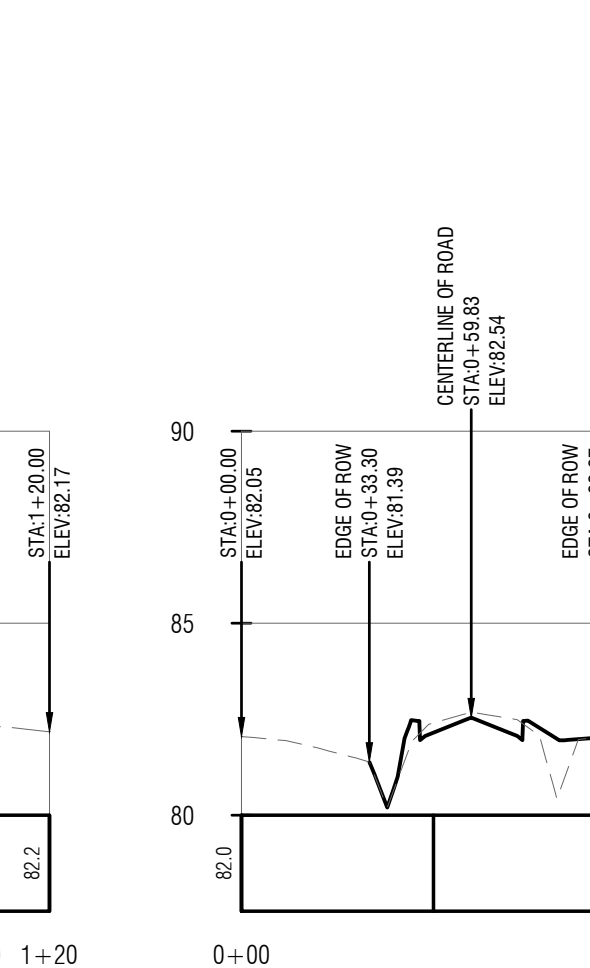
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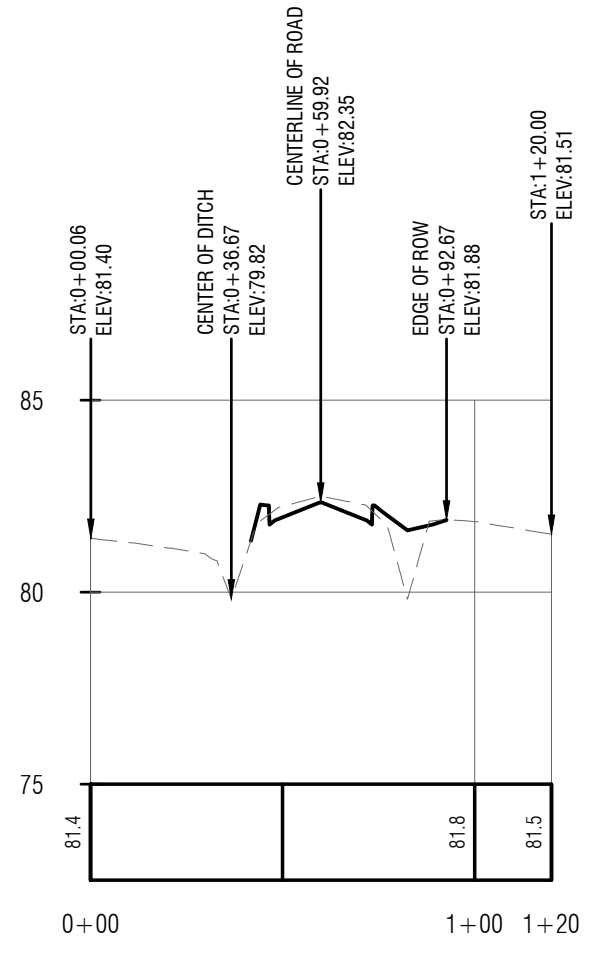
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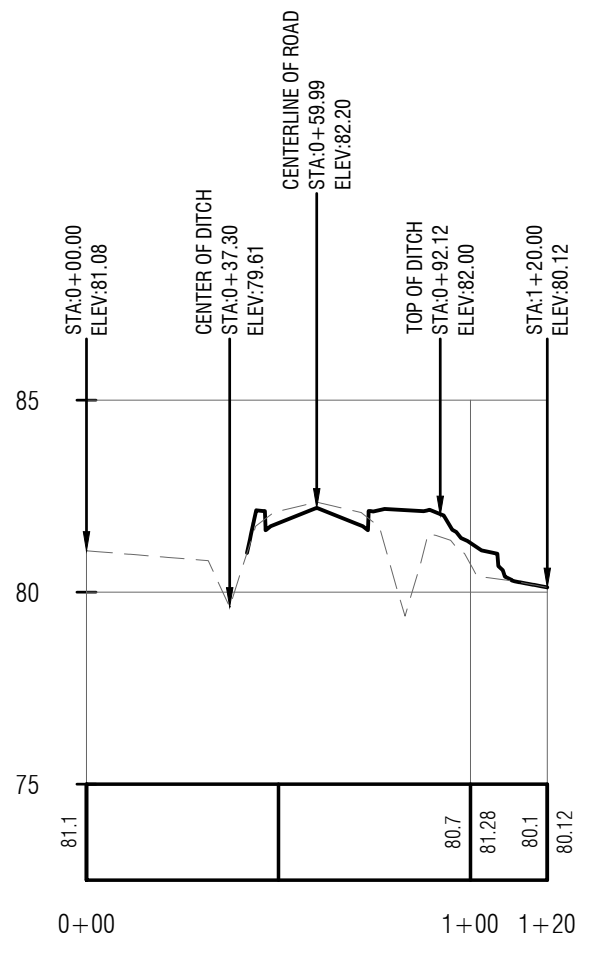
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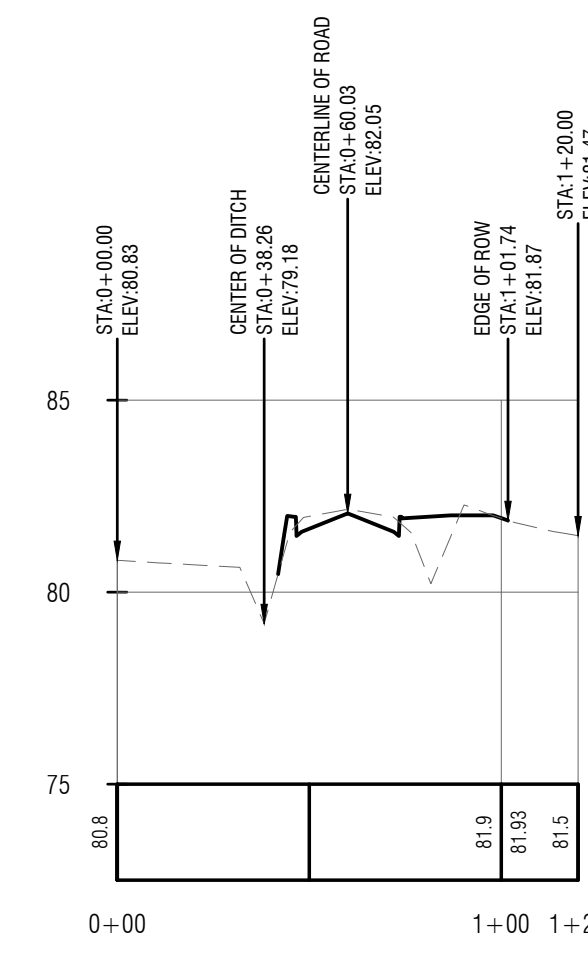
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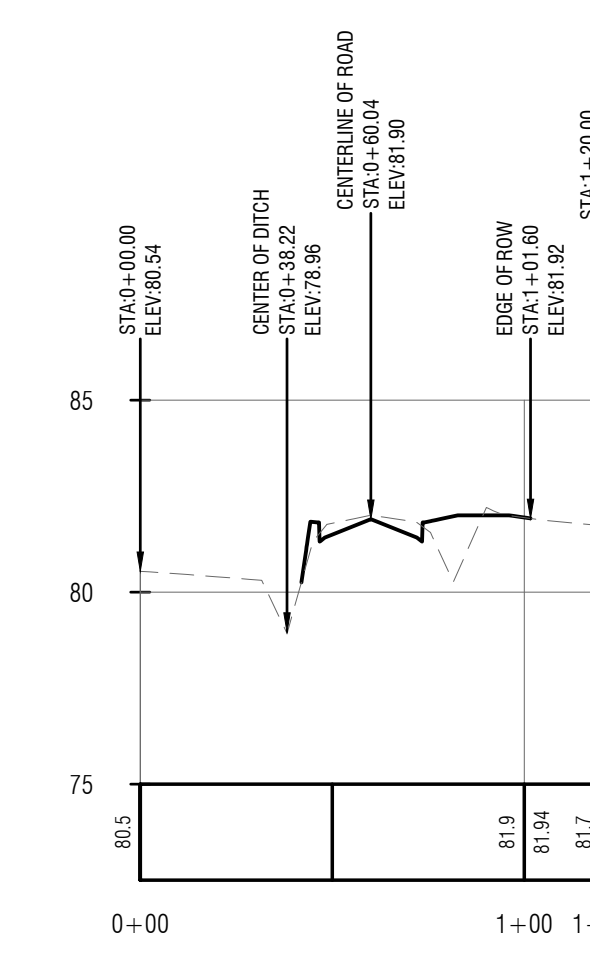
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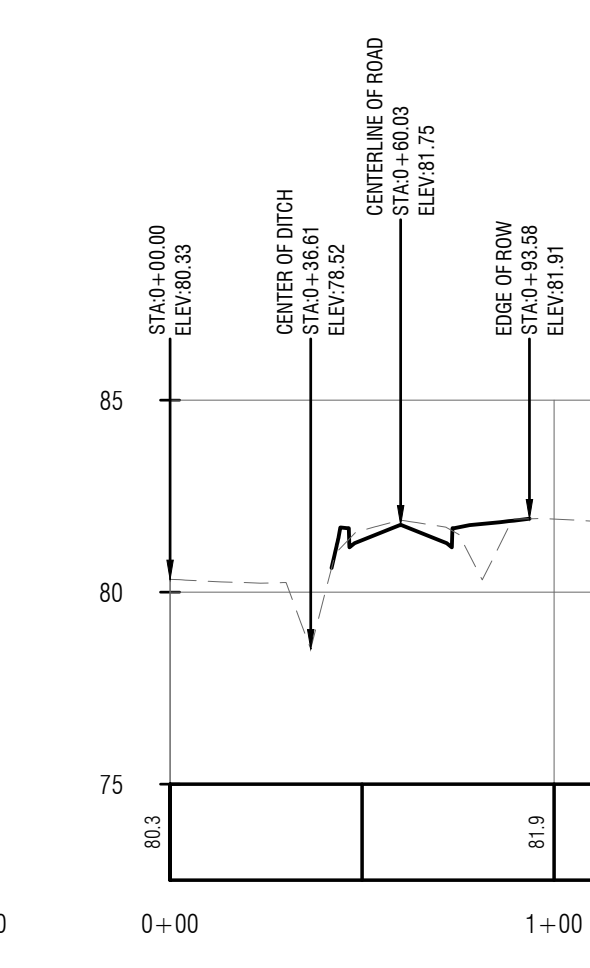
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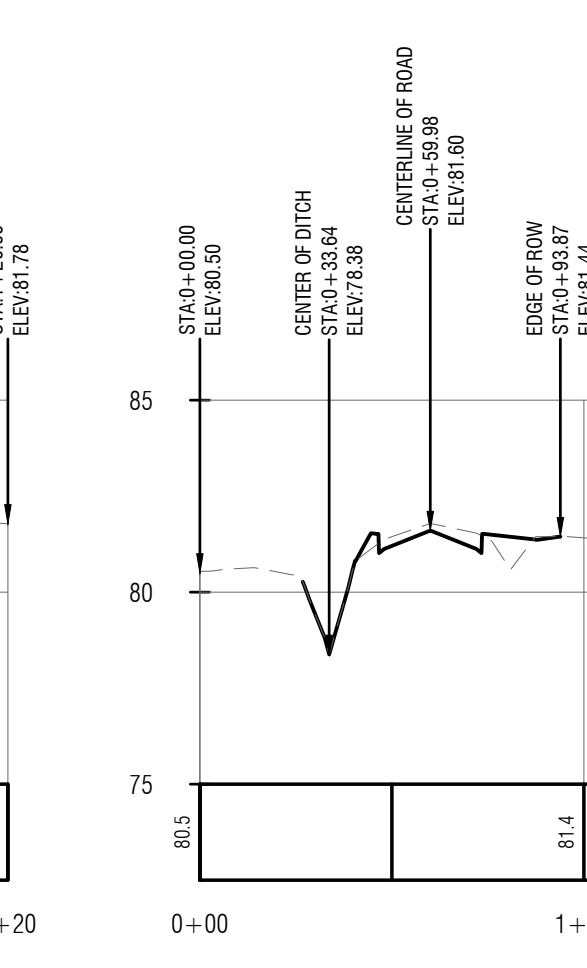
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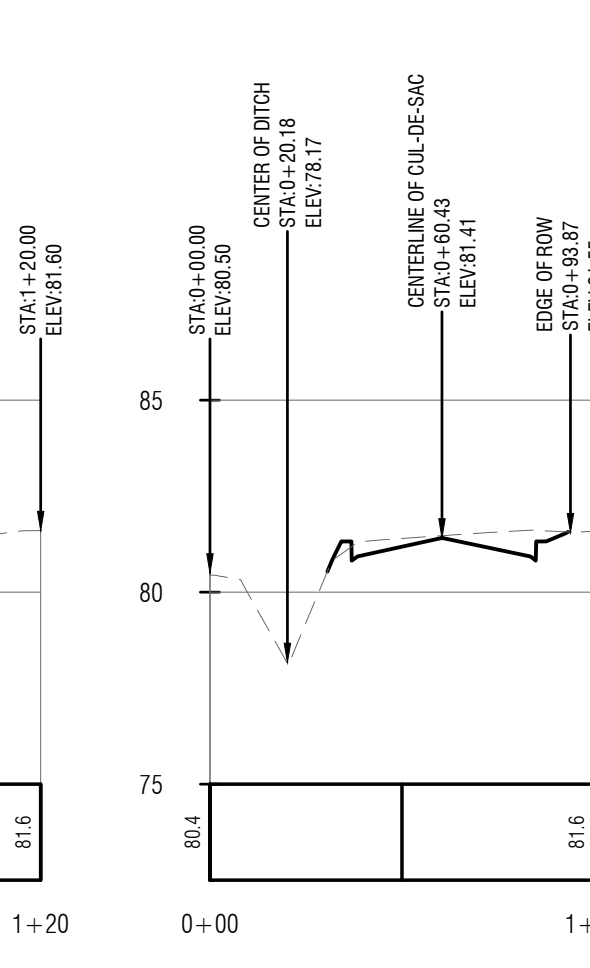
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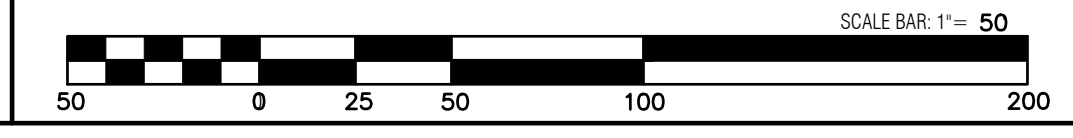
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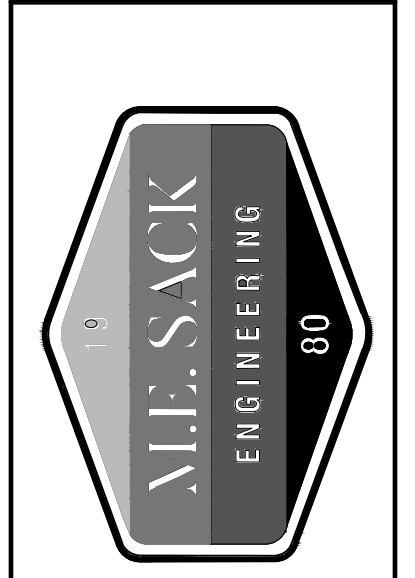
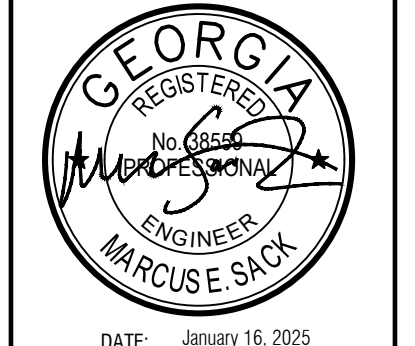


CLARA ST CUL-DE-SAC  
CROSS SECTION PROFILE  
VERT. SCALE: 1"=5'  
HORIZ SCALE: 1"=50'



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COUNTY:  
BRYAN COUNTY

OWNER:  
City of Pembroke  
160 N Main St  
Pembroke, GA 31321  
(912) 653-4413  
water@pembrokega.net

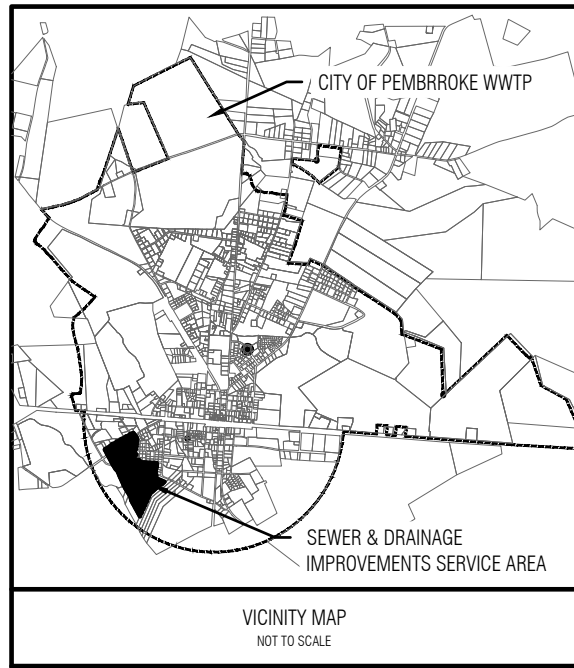
24 HOUR CONTACT:  
CITY OF PEMBROKE  
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SEWER &  
DRAINAGE  
IMPROVEMENTS

ROAD CROSS  
SECTIONS

C306

FILE NO: 2022-15  
PLOT DATE: January 16, 2025



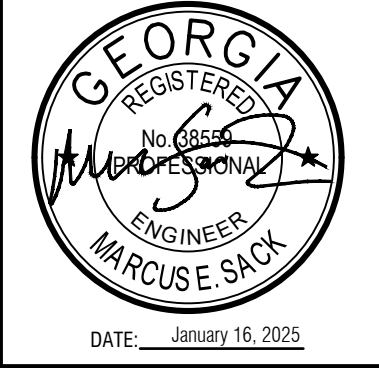
**NOTES:**

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4. CONTRACTOR SHALL LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY CONFLICTS.
5. EXISTING WATERLINE SECTIONS IN CONFLICT WITH PROPOSED DRAINAGE STRUCTURES SHALL BE REROUTED.



NO.	DESCRIPTION	DATE

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**SEWER & DRAINAGE IMPROVEMENTS**

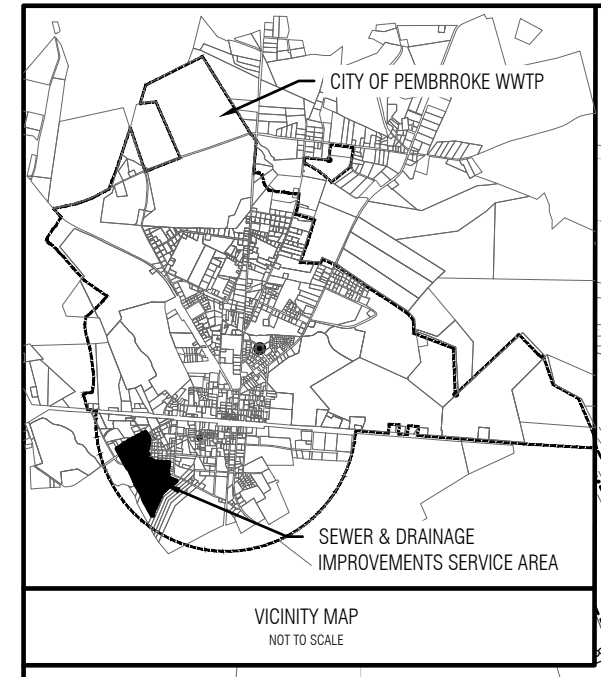
EXISTING DRAINAGE CONDITIONS

**C400**

FILE NO: 2022-15  
PLOT DATE: January 16, 2025





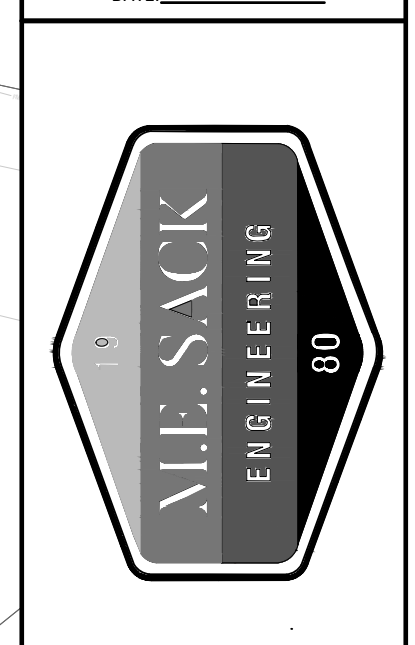
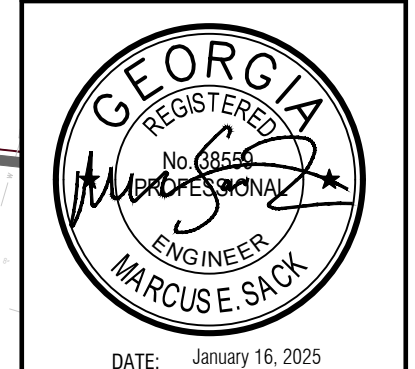


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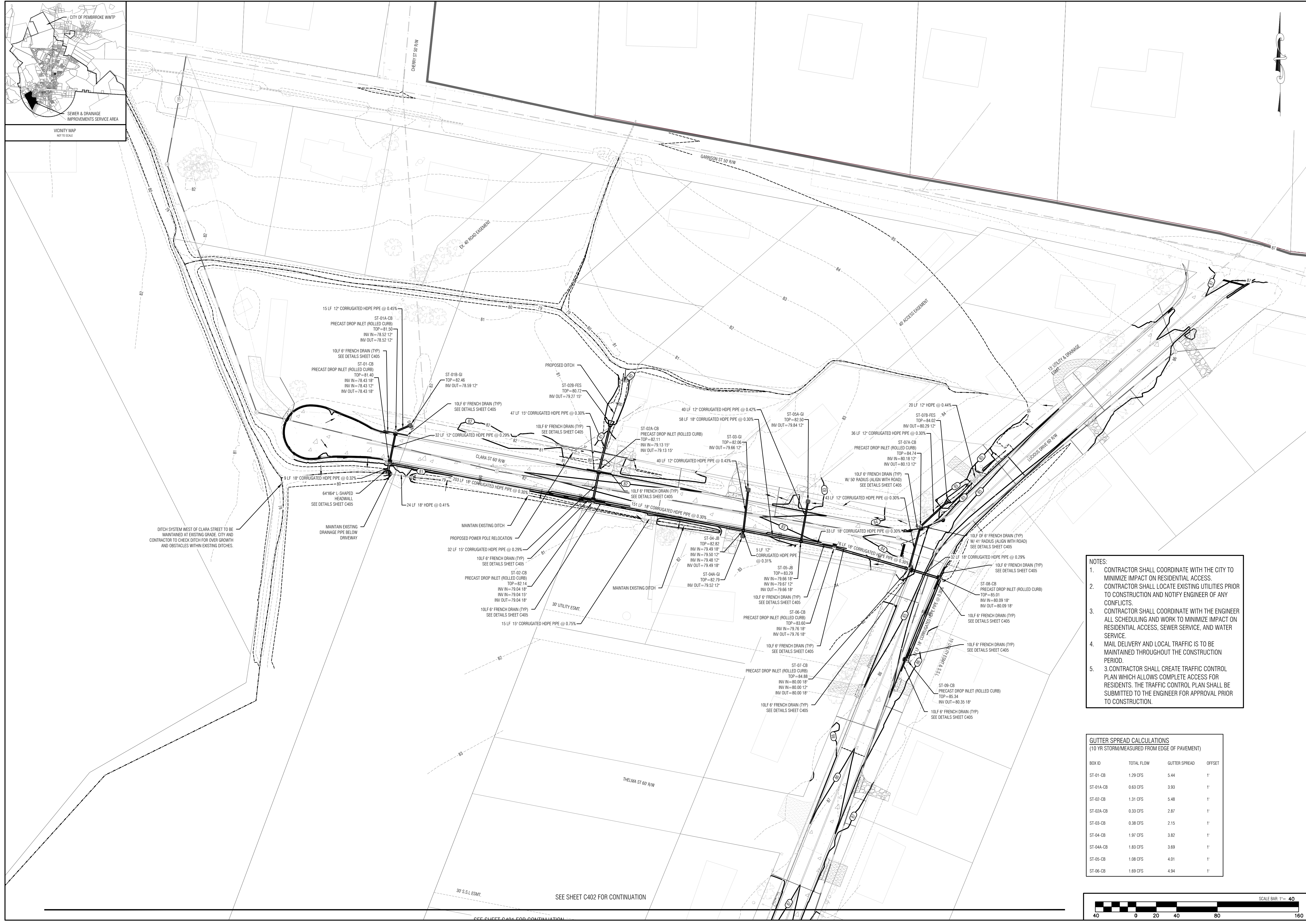
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**SEWER & DRAINAGE IMPROVEMENTS**

**DRAINAGE & GRADING PLAN 1**

**C401**

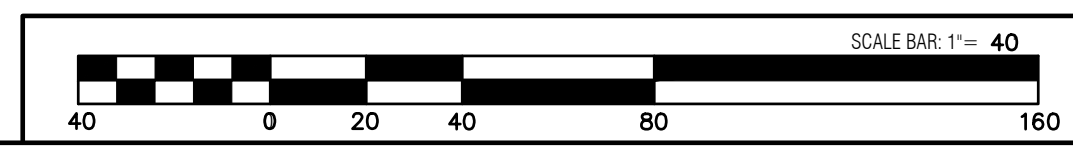
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 PLOT DATE: January 16, 2025



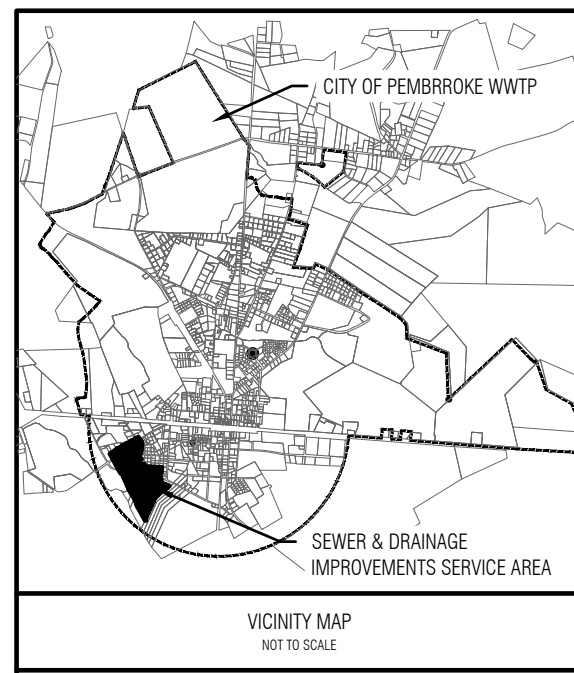
- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH THE CITY TO MINIMIZE IMPACT ON RESIDENTIAL ACCESS.
  - CONTRACTOR SHALL LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY CONFLICTS.
  - CONTRACTOR SHALL COORDINATE WITH THE ENGINEER ALL SCHEDULING AND WORK TO MINIMIZE IMPACT ON RESIDENTIAL ACCESS, SEWER SERVICE, AND WATER SERVICE.
  - MAIL DELIVERY AND LOCAL TRAFFIC IS TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
  - CONTRACTOR SHALL CREATE TRAFFIC CONTROL PLAN WHICH ALLOWS COMPLETE ACCESS FOR RESIDENTS. THE TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

**GUTTER SPREAD CALCULATIONS**  
 (10 YR STORM/MEASURED FROM EDGE OF PAVEMENT)

BOX ID	TOTAL FLOW	GUTTER SPREAD	OFFSET
ST-01-CB	1.29 CFS	5.44	1'
ST-01A-CB	0.63 CFS	3.93	1'
ST-02-CB	1.31 CFS	5.48	1'
ST-02A-CB	0.33 CFS	2.87	1'
ST-03-CB	0.38 CFS	2.15	1'
ST-04-CB	1.97 CFS	3.82	1'
ST-04A-CB	1.83 CFS	3.69	1'
ST-05-CB	1.08 CFS	4.01	1'
ST-06-CB	1.69 CFS	4.94	1'



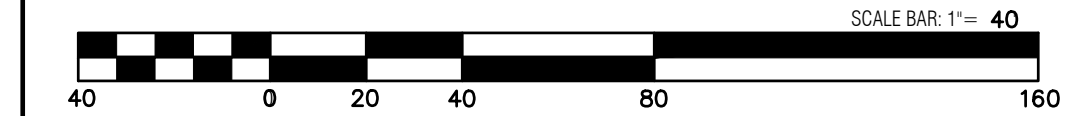
SEE SHEET C402 FOR CONTINUATION  
 SEE SHEET C403 FOR CONTINUATION



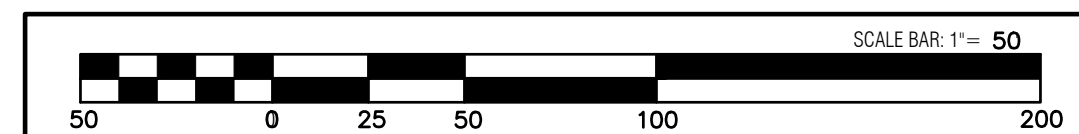
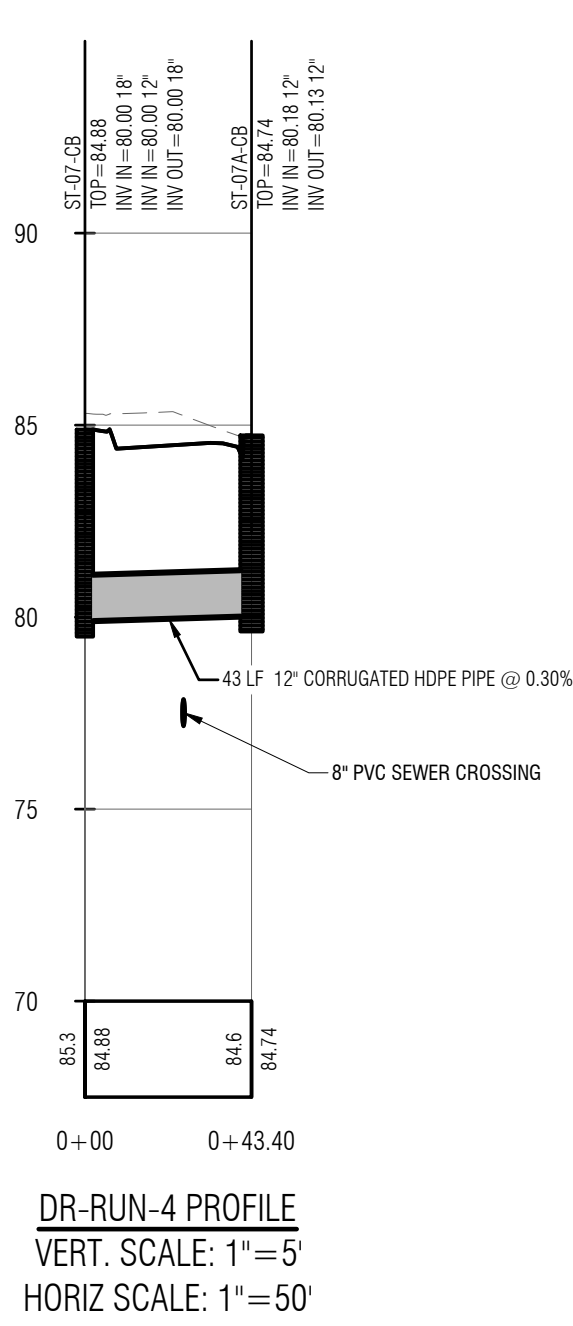
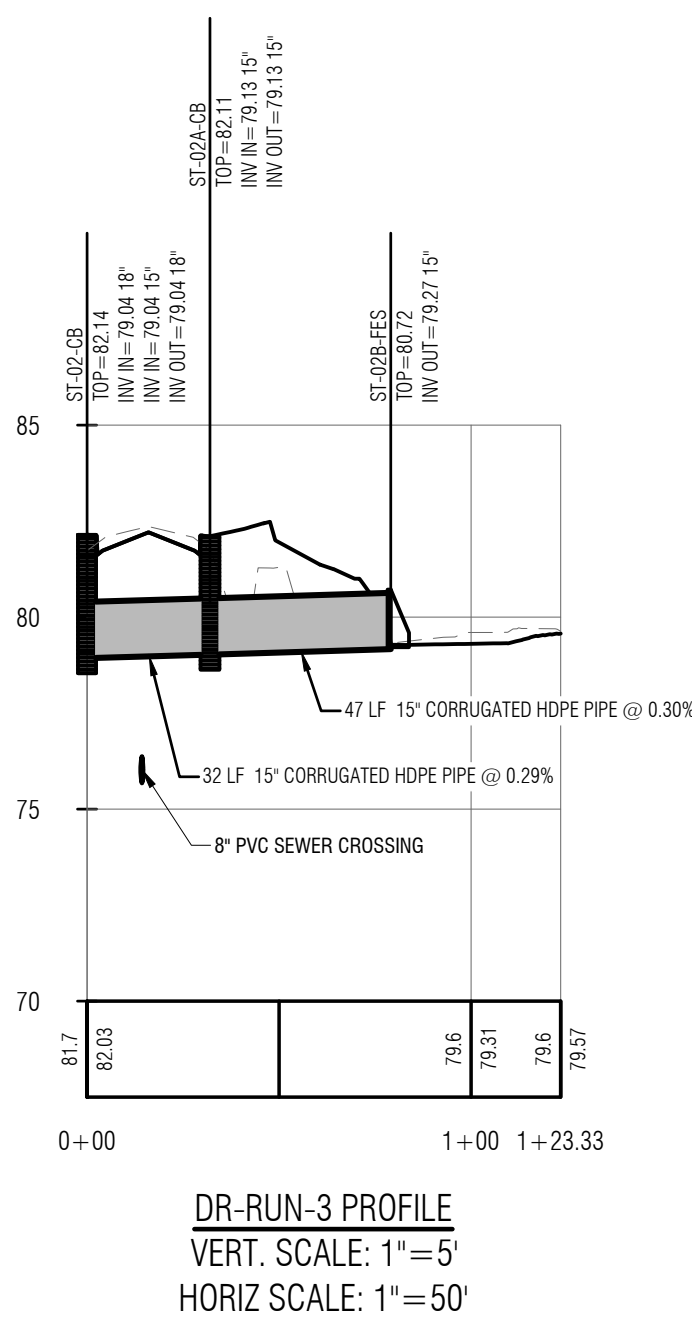
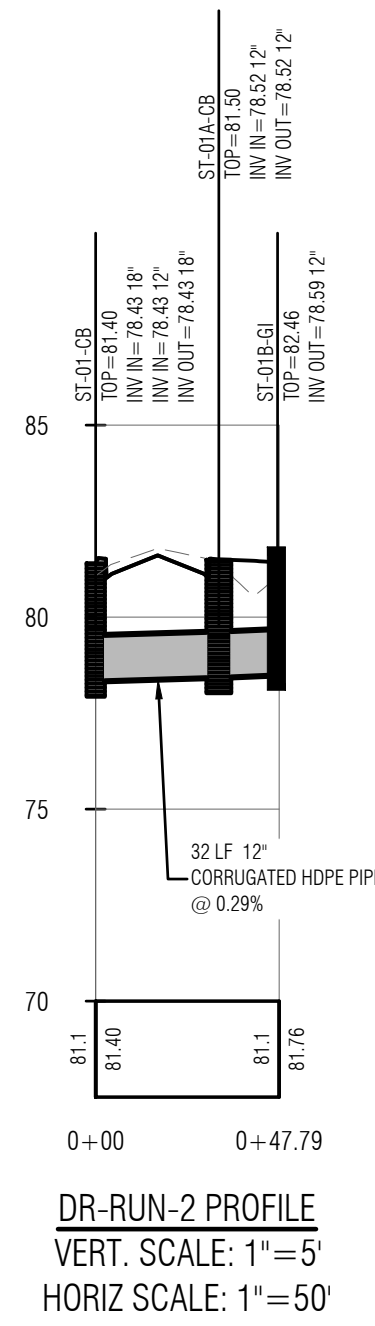
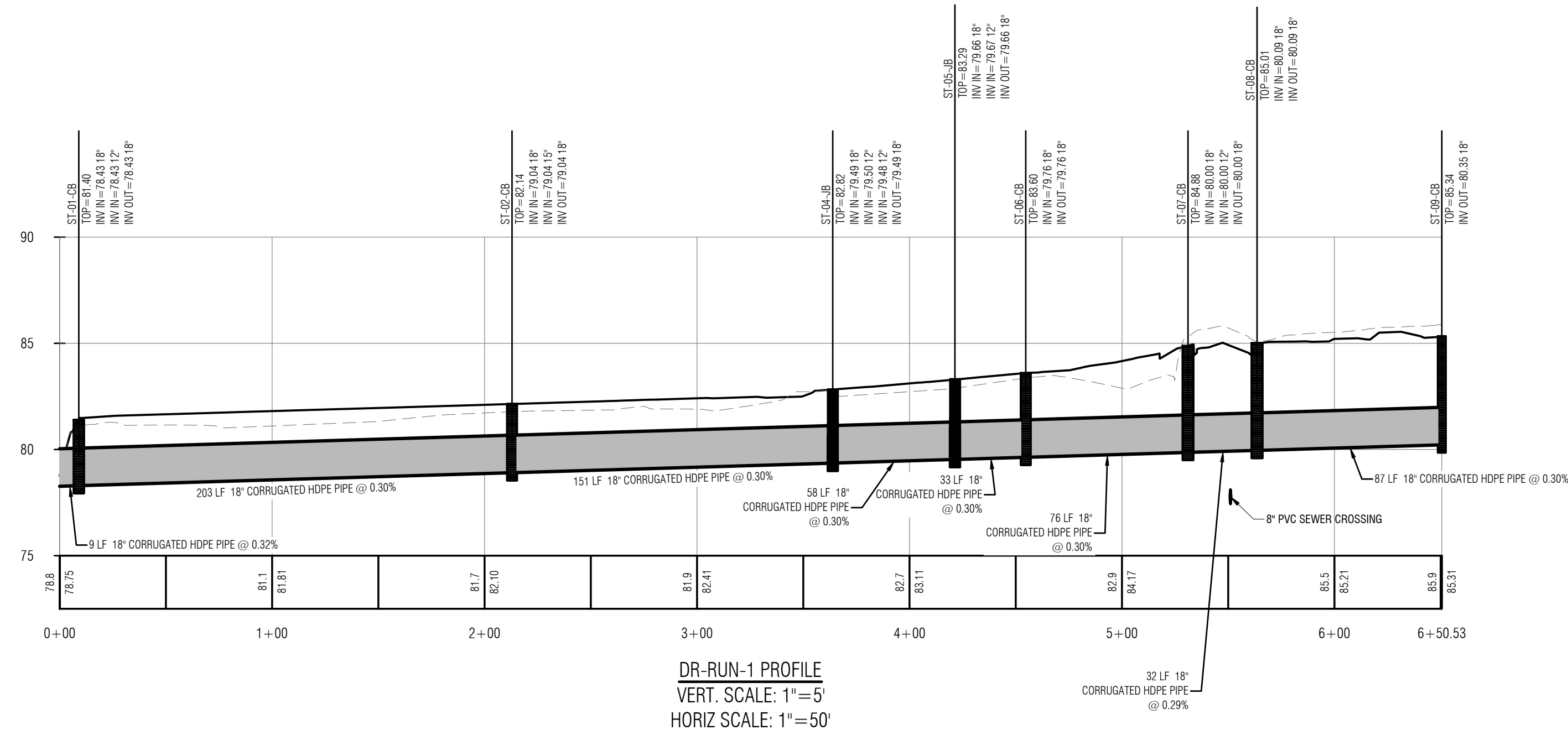
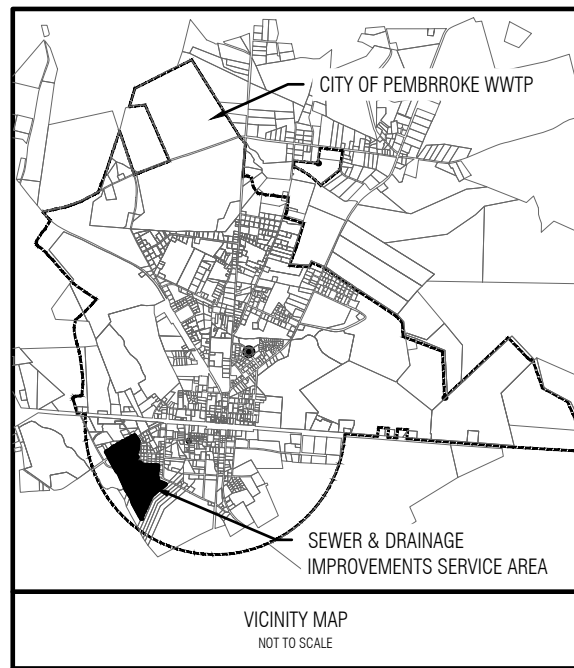
SEE SHEET C401 FOR CONTINUATION



- NOTES:
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<p>REVISIONS:</p> <table border="1"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>																					<p>THIS DRAWING IS AN INSTRUMENT OF SERVICE AND REMAINS THE PROPERTY OF P.C. SIMONTON &amp; ASSOCIATES, INC. AND M.E. SACK ENGINEERING, INC. IT MAY NOT BE COPIED, ALTERED, OR REPRODUCED IN ANY MANNER WITHOUT PERMISSION ON A SIGNED AND SEALED DOCUMENT. THE INFORMATION CONTAINED HEREIN IS INTENDED FOR THE NAMED CLIENT ONLY. IN THE EVENT OF AN ELECTRONIC VERSION P.C. SIMONTON &amp; ASSOC., INC. AND M.E. SACK ENGINEERING ASSUMES NO RESPONSIBILITY FOR DATA GENERATED, ALTERED OR STAGED FROM THIS DRAWING. IN THE EVENT OF A DISPUTE, HARD COPIES WILL TAKE PRECEDENCE OVER ANY ELECTRONIC MEDIA.</p>
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<p>MUNICIPALITY: CITY OF PEMBROKE</p>																					
<p>COUNTY: BRYAN COUNTY</p>	<p>OWNER: City of Pembroke 160 N Main St Pembroke, GA 31321 (912) 653-4413 water@pembrokega.net</p>																				
<p>24 HOUR CONTACT: CITY OF PEMBROKE CONTACT: KEITH COOK 160 N MAIN ST PEMBROKE, GA 31321 (912) 653-4413 STREETS@PEMBROKEGA.NET</p>	<p><b>SEWER &amp; DRAINAGE IMPROVEMENTS</b></p>																				
<p>DRAINAGE &amp; GRADING PLAN 2</p>	<p><b>C402</b></p>																				
<p>FILE NO: 2022-15</p>	<p>PLOT DATE: January 16, 2025</p>																				



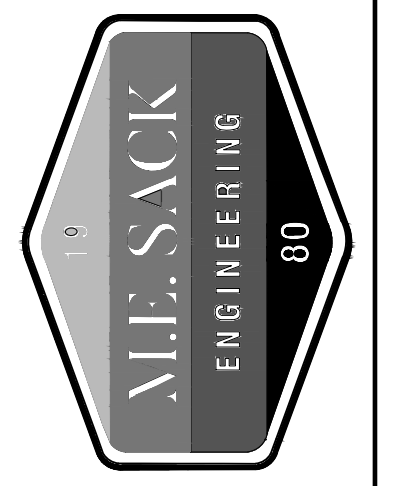
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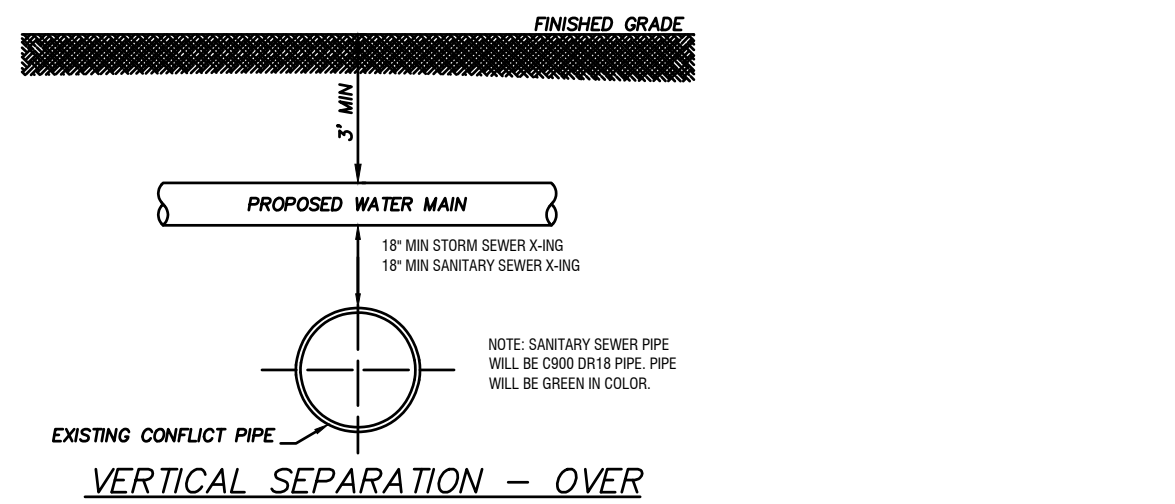
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# SEWER & DRAINAGE IMPROVEMENTS

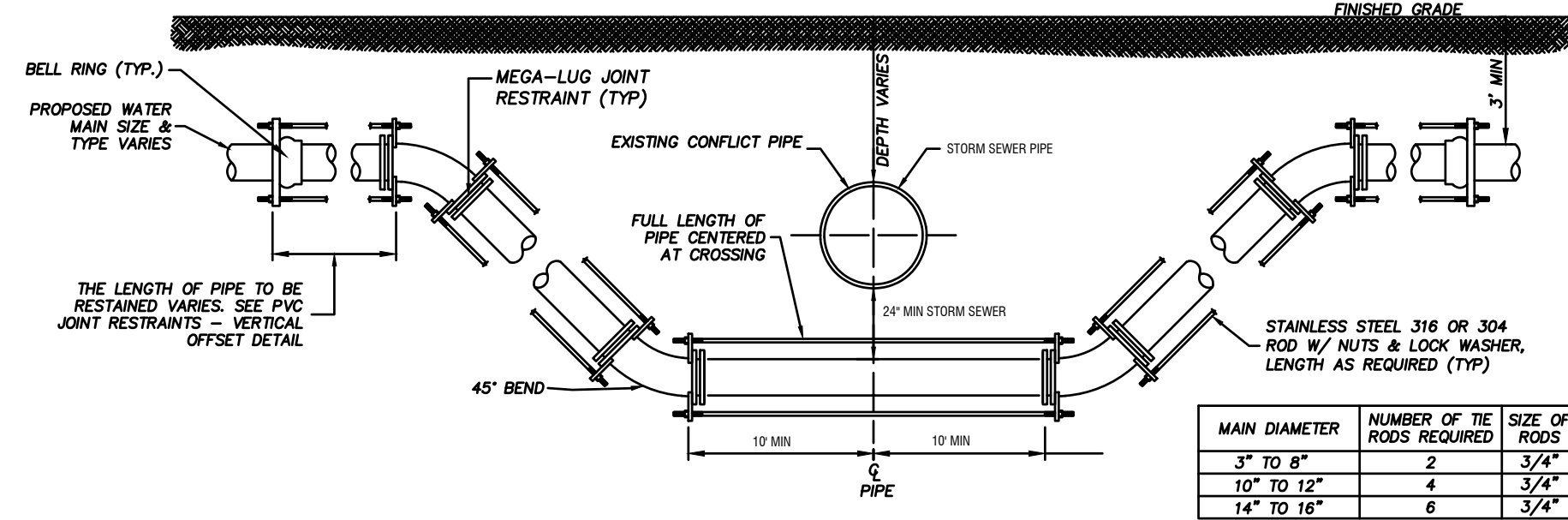
## DRAINAGE PROFILES

# C403

FILE NO: 2022-15  
PLOT DATE: January 16, 2025



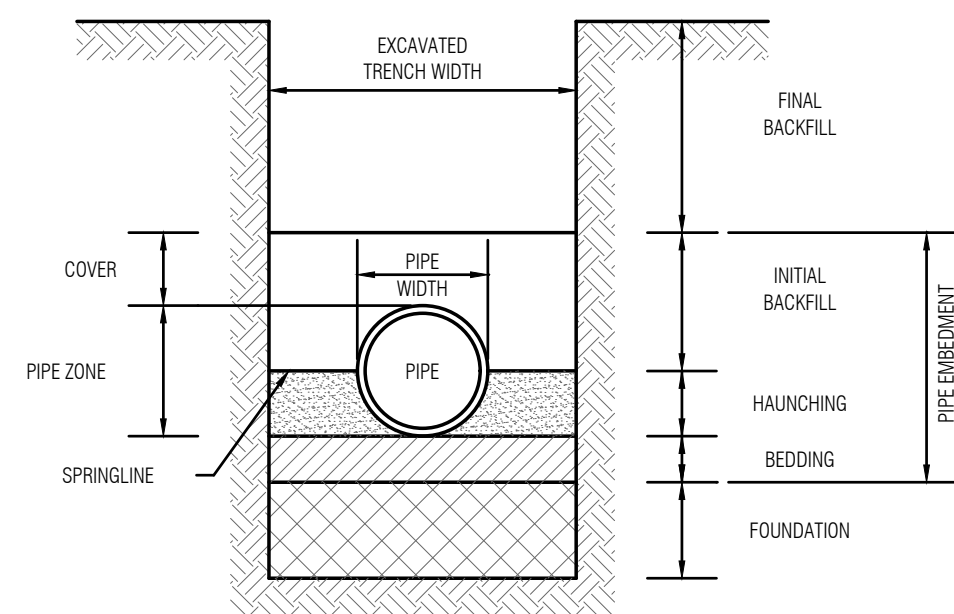
VERTICAL SEPARATION - OVER



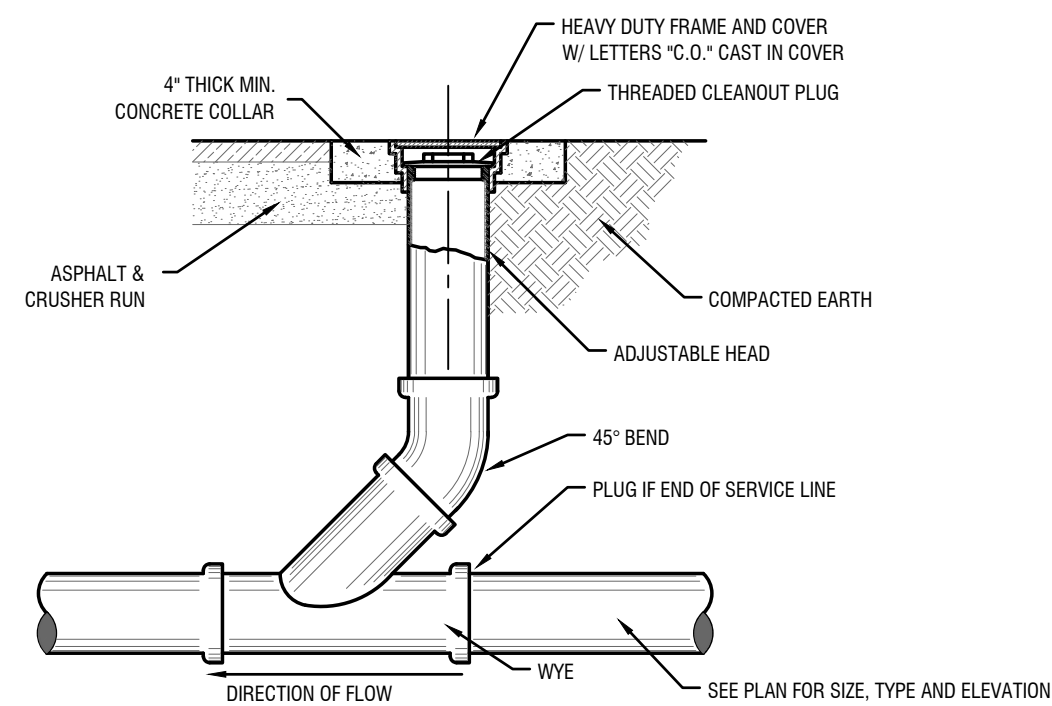
VERTICAL SEPARATION - UNDER

**GENERAL NOTES:**  
 WATER MAINS AND WATER SERVICE LINES CROSSING HOUSE SEWERS, STORM SEWERS OR SANITARY SEWER SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL SEPARATION OF AT LEAST 24" BETWEEN THE BOTTOM OF THE WATER MAIN AND THE TOP OF THE SEWER. AT CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR APART AS POSSIBLE.  
 WHEN LOCAL CONDITIONS PREVENT A VERTICAL SEPARATION OF 24", THE SEWER PASSING OVER OR UNDER WATER MAINS SHALL BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION EXTENDING ON EACH SIDE OF THE CROSSING UNTIL AT LEAST 10' SEPARATES THE TWO PIPES AND SHALL BE PRESSURE TESTED TO ASSURE WATER-TIGHTNESS PRIOR TO BACKFILLING. THE LENGTH OF WATER PIPE MUST BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER.  
 ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING ON AND BREAKING THE WATER MAINS.  
 IN CASE THAT A SEWER LATERAL PASSES ABOVE WATER MAIN, THE SEWER LATERAL MUST BE ENCASED IN A CARRIER PIPE CONSTRUCTED OF WATER MAIN MATERIALS, EXTENDING EACH SIDE OF THE CROSSING UNTIL, AT LEAST 10 FEET SEPARATES THE TWO PIPES.  
 WATER SERVICE LINES SHOULD GO OVER ANY SANITARY SEWER LINE AND MAINTAIN THE 24" VERTICAL SEPARATION.

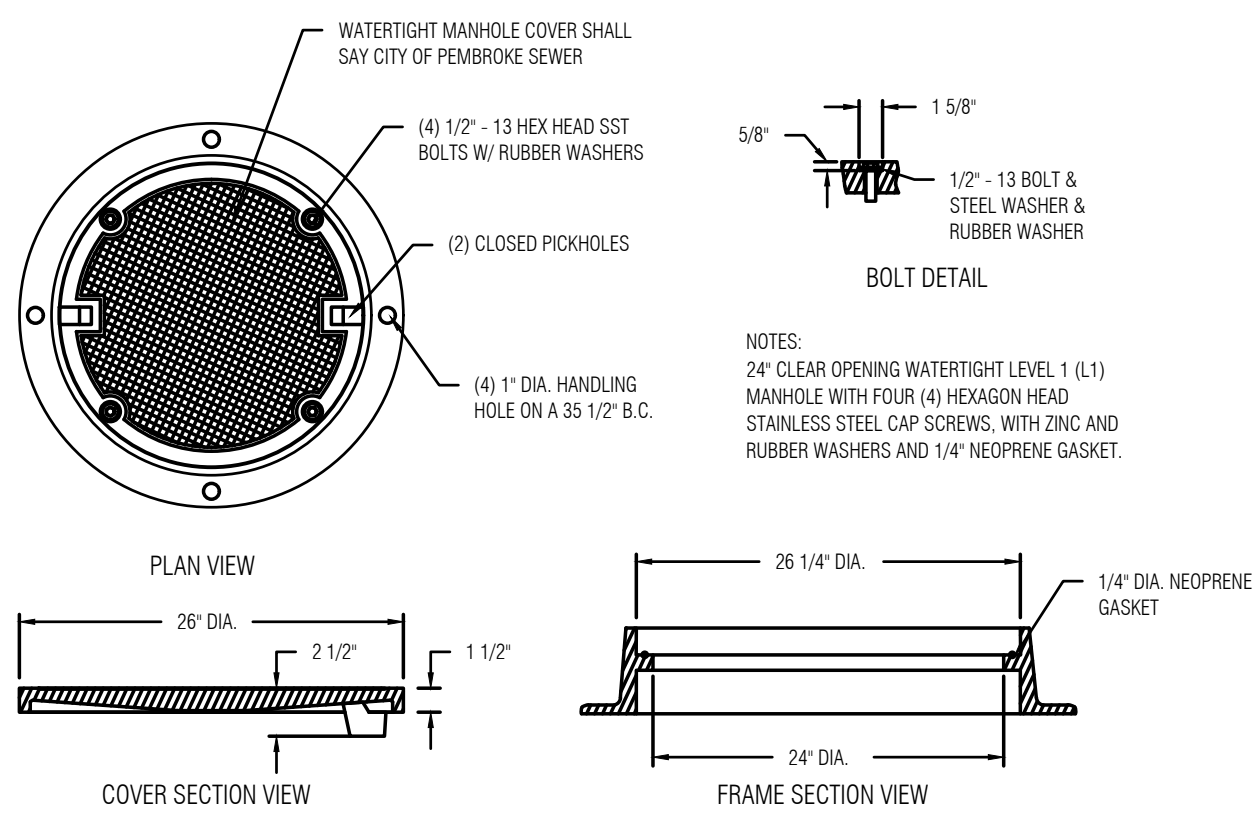
UTILITY SEPARATION DETAIL  
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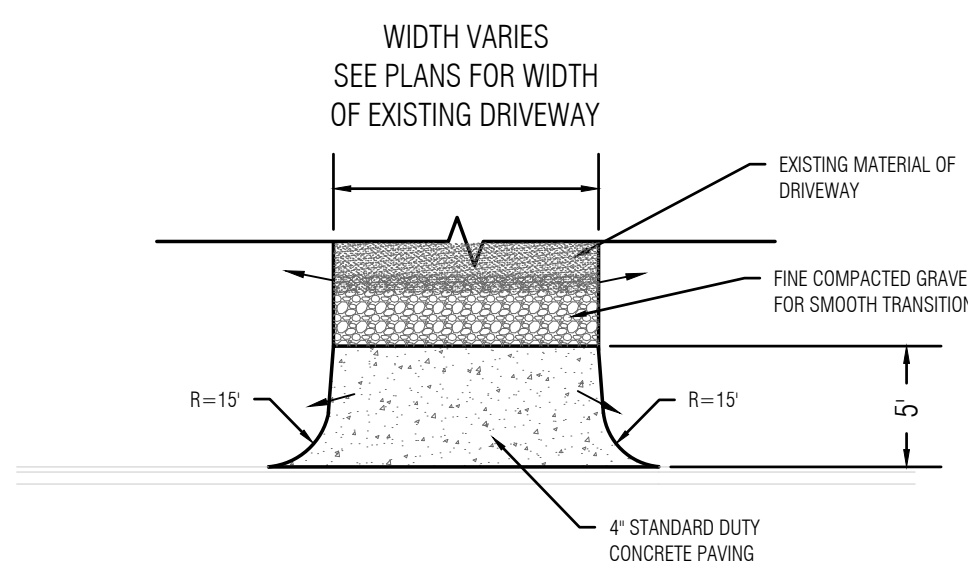
PIPE BEDDING DETAIL  
N.T.S.



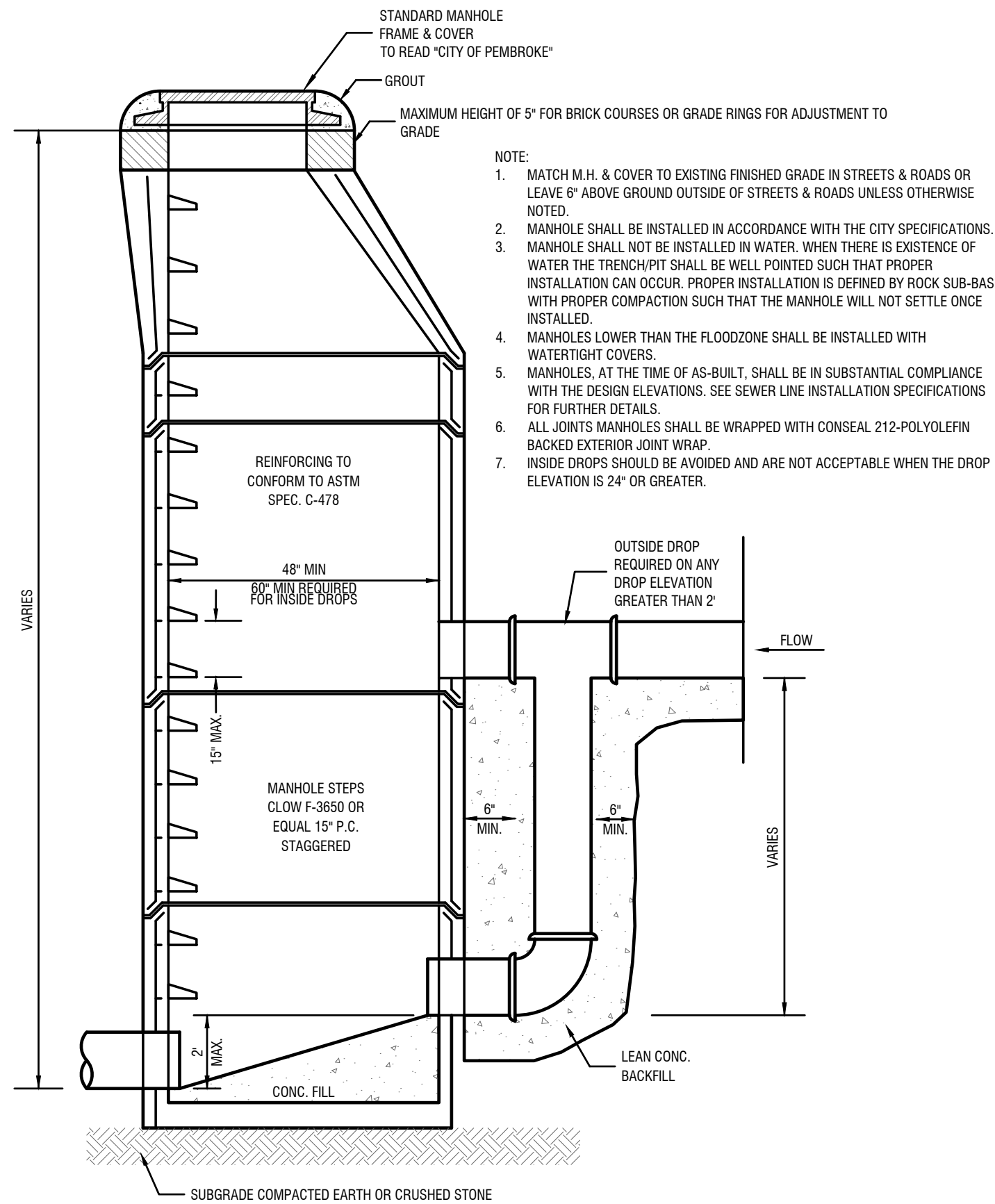
CLEANOUT DETAIL  
N.T.S.



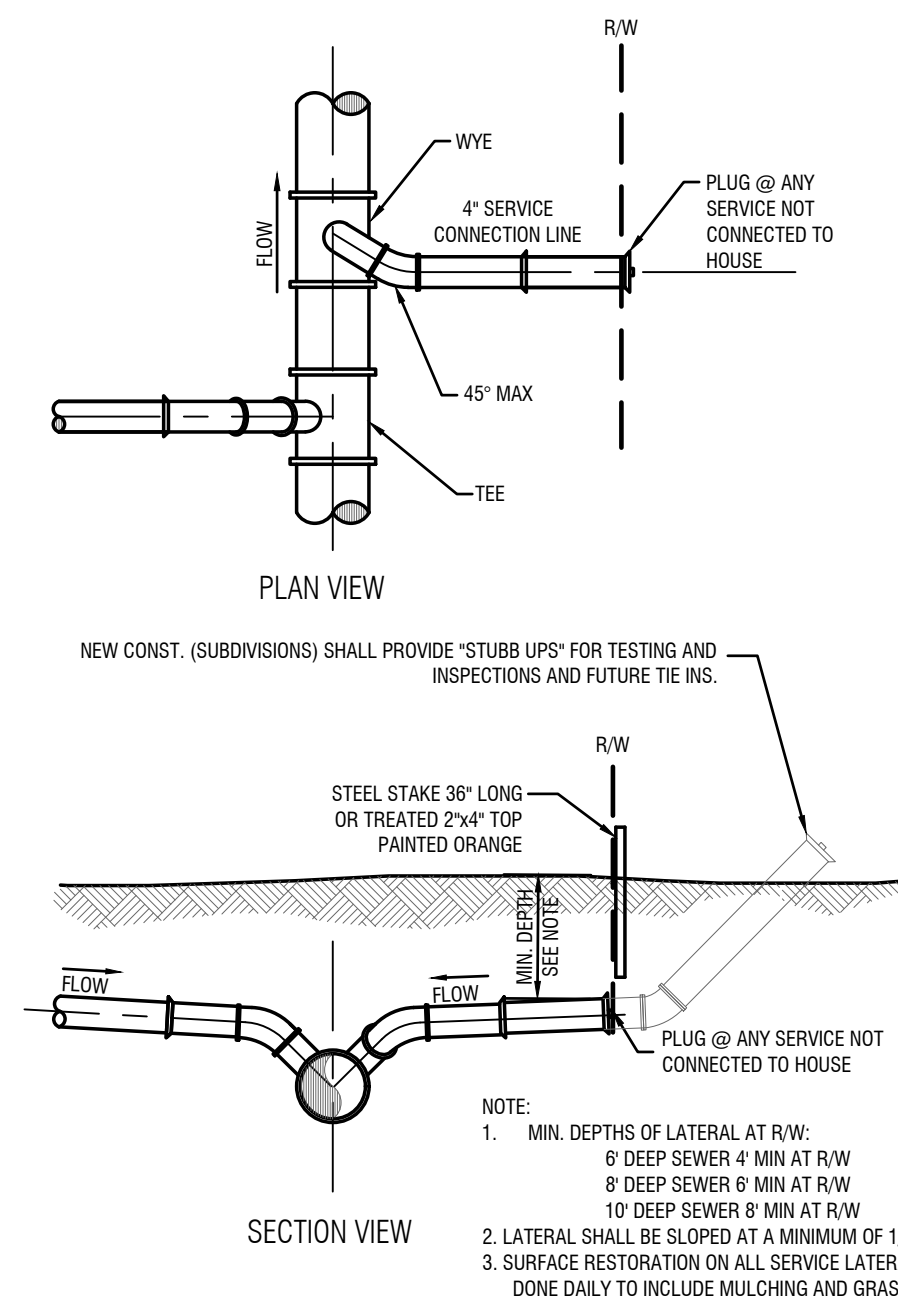
WATERTIGHT MANHOLE COVER DETAIL  
N.T.S.



CONCRETE DRIVEWAY APRON DETAIL  
N.T.S.



PRECAST CONCRETE MANHOLE  
N.T.S.



SEWER SERVICE CONNECTION DETAIL  
N.T.S.

TEE	UF	DUCTILE IRON LINE				PVC LINE			
		9'-10'	11'-20'	21'-35'	36'-50'	9'-10'	11'-20'	21'-35'	> 35'
4X4	23	15	2	*	4X4	43	28	4	*
6X4	21	9	*	*	6X4	38	17	*	*
8X6	35	27	14	*	8X6	64	49	25	*
8X4	18	3	*	*	8X4	34	6	*	*
8X6	33	23	5	*	8X6	61	42	10	*
8X8	47	39	26	6	8X8	87	72	48	12

MINIMUM RESTRAINED LENGTH (L)  
RESTRAINT AT TEE ONLY

- NOTES:
- LENGTH OF RESTRAINT SHOWN IS IN FEET.
  - WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
  - U1 AND U2 = UNINTERRUPTED STRAIGHT RUNS OF PIPE IN EACH DIRECTION.
  - U = THE SMALLER OF U1 AND U2.
  - L = MINIMUM RESTRAINED LENGTH ALONG THE BRANCH.
  - WHERE U IS LESS THAN 5', RESTRAINT TEE AS A 90° HORIZONTAL BEND.

TEE RESTRAINT

PIPE DIAMETER	DUCTILE IRON				PVC LINE			
	BEND ANGLE	22 1/2°	45°	90°	BEND ANGLE	22 1/2°	45°	90°
4	2	4	8	20	3	6	12	29
6	3	6	12	28	4	8	17	41
8	4	7	15	36	5	11	22	53

- NOTES:
- LENGTH OF RESTRAINT SHOWN IS IN FEET.
  - WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

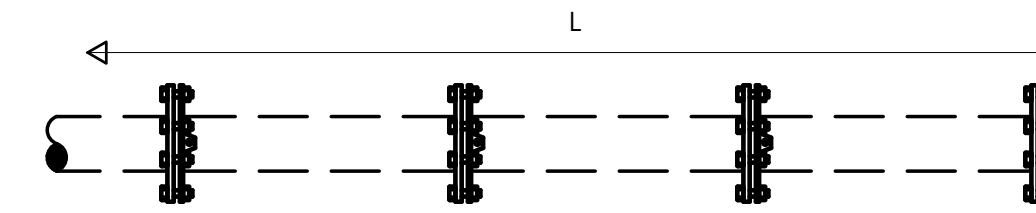
HORIZONTAL BEND RESTRAINT

RESTRAINED JOINTS DETAILS  
N.T.S.

REDUCER	DUCTILE IRON		PVC LINE	
	U	L	U	L
6X4	30	21	56	38
6X4	72	38	134	69
8X6	29	22	53	40

U = MINIMUM UNINTERRUPTED STRAIGHT RUN PIPE ON SMALL SIDE OF REDUCER.  
 L = MINIMUM RESTRAINED LENGTH.  
 \* WHERE 'U' IS NOT MET, PIPE ON LARGE SIDE OF REDUCER SHALL BE RESTRAINED FOR A MINIMUM OF 'L' FEET.

REDUCER RESTRAINT



PIPE DIA.	DUCTILE IRON		PVC LINE	
	L	L	L	L
4	28	52		
6	40	74		
8	52	96		

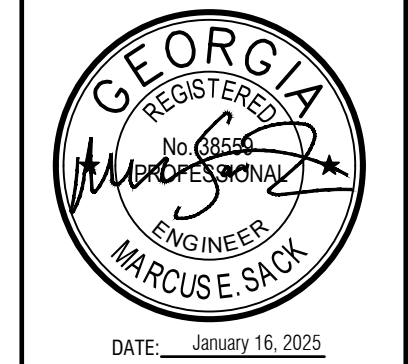
- NOTES:
- LENGTH OF RESTRAINT SHOWN IS IN FEET.
  - WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

DEAD END RESTRAINT

REVISIONS


DESIGN PROFESSIONAL:  
 MARCUS E. SACK  
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DATE: January 16, 2025



MUNICIPALITY:  
 CITY OF PEMBROKE

COUNTY:  
 BRYAN COUNTY

OWNER:  
 City of Pembroke  
 160 N Main St  
 Pembroke, GA 31321  
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 water@pembrokega.net

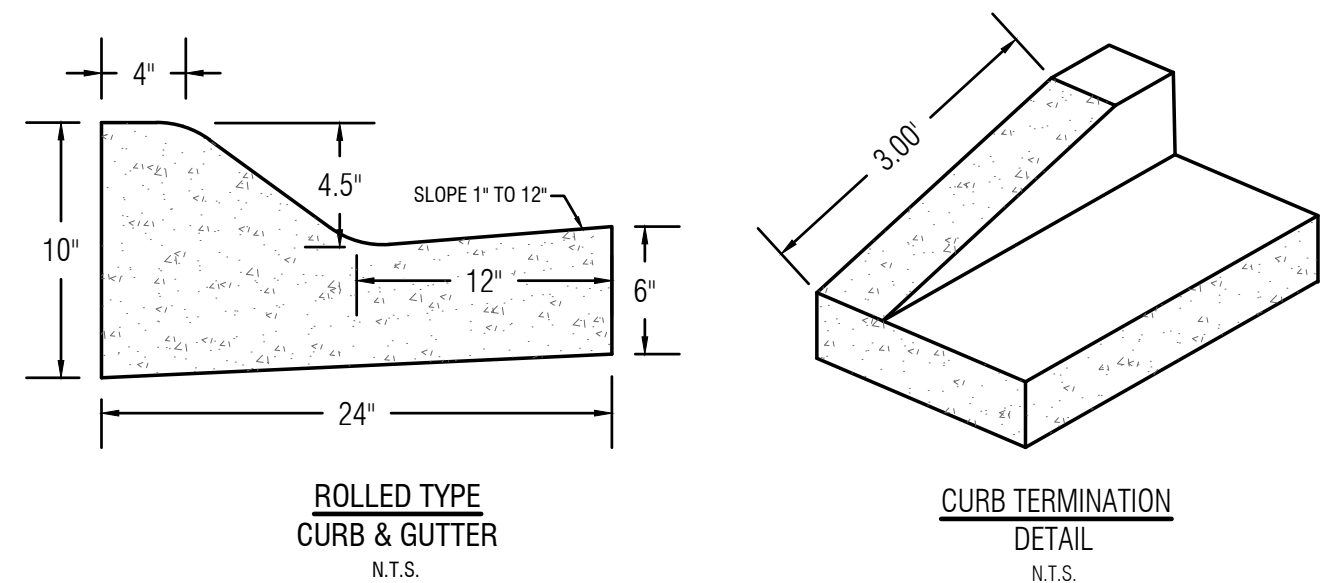
24 HOUR CONTACT:  
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 CONTACT: KEITH COOK  
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 PEMBROKE, GA 31321  
 (912) 653-4413  
 STREETS@PEMBROKEGA.NET

SEWER & DRAINAGE IMPROVEMENTS

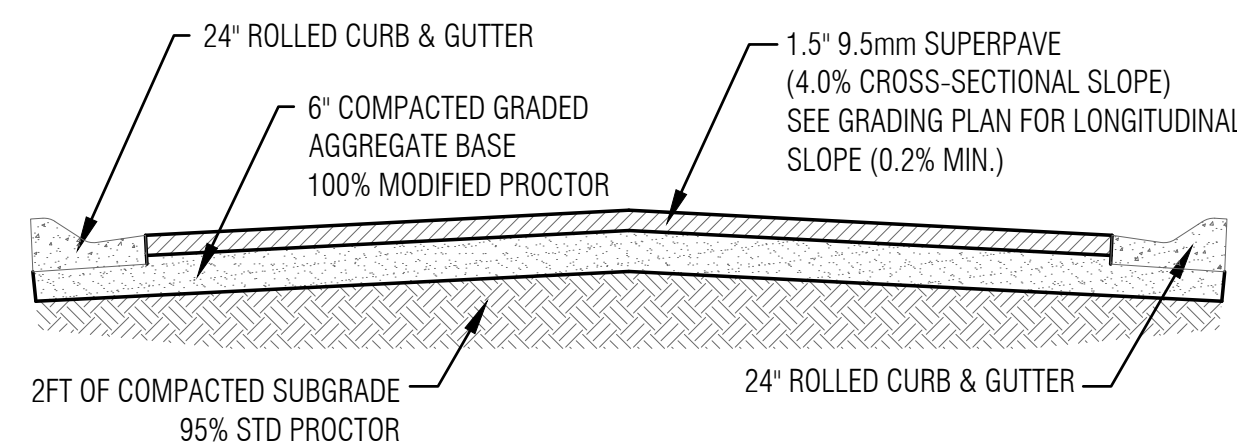
DETAILS

C404

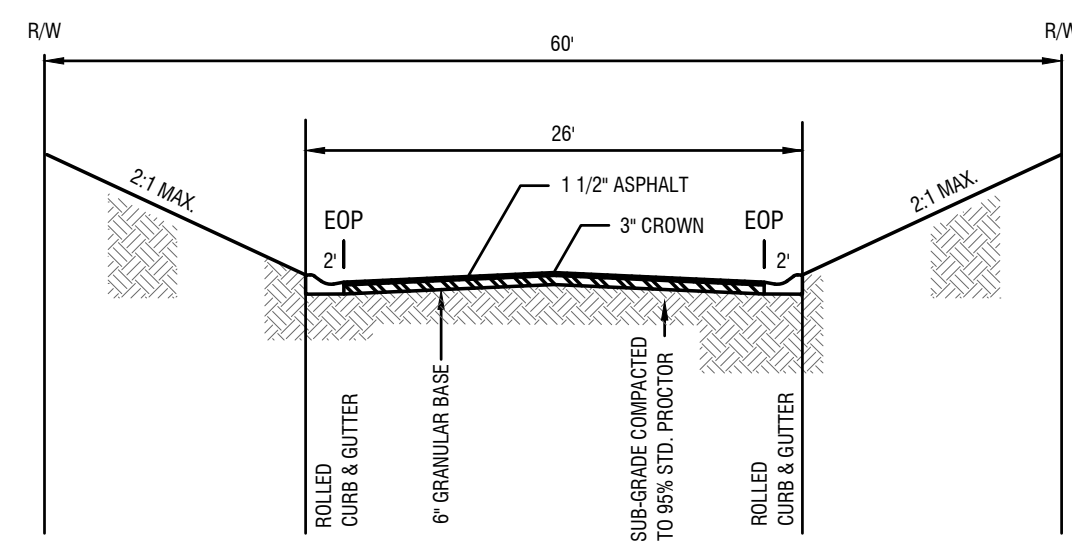
FILE NO: 2022-15  
 PLOT DATE: January 16, 2025



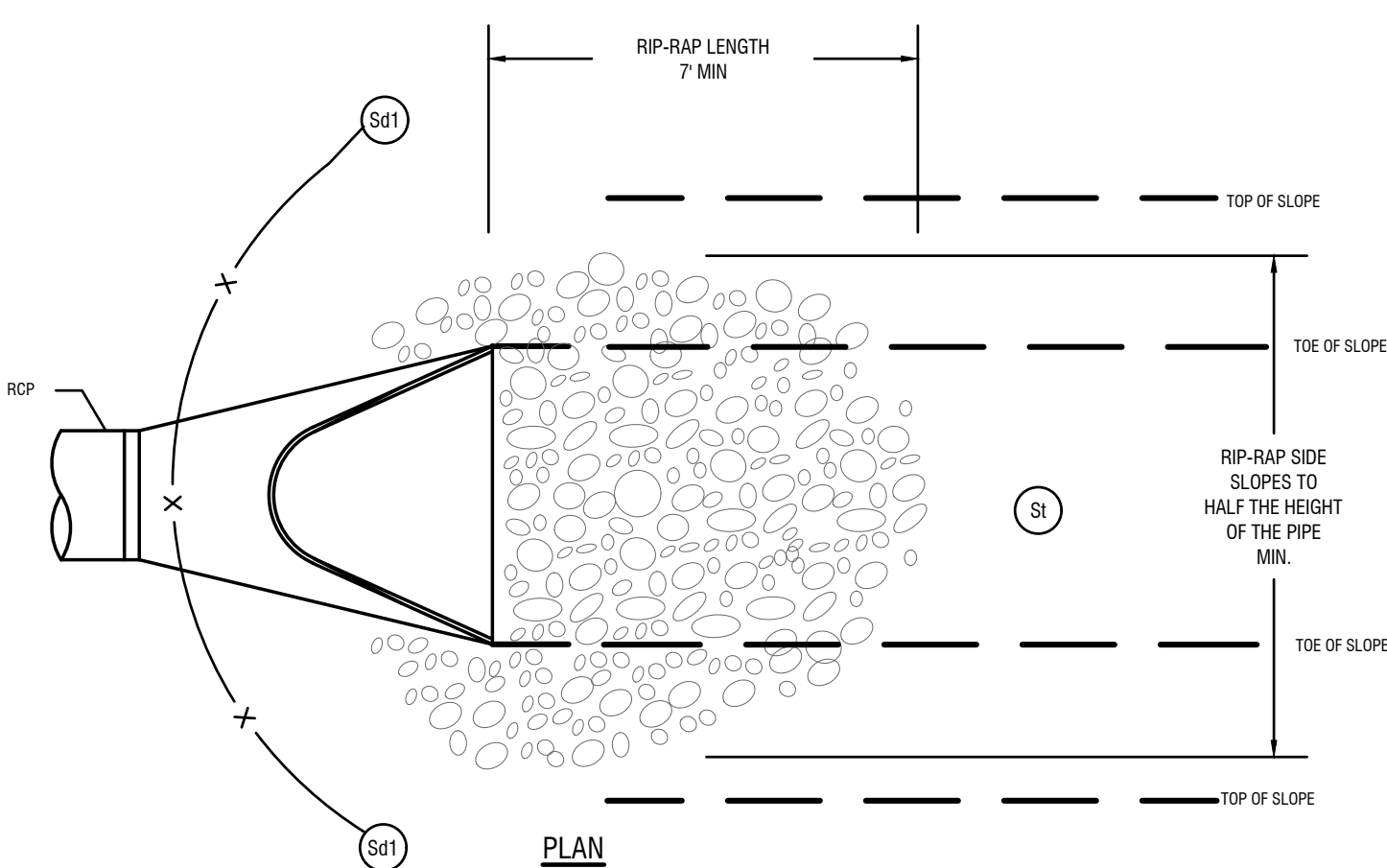
**CURB & GUTTER DETAIL**  
N.T.S.



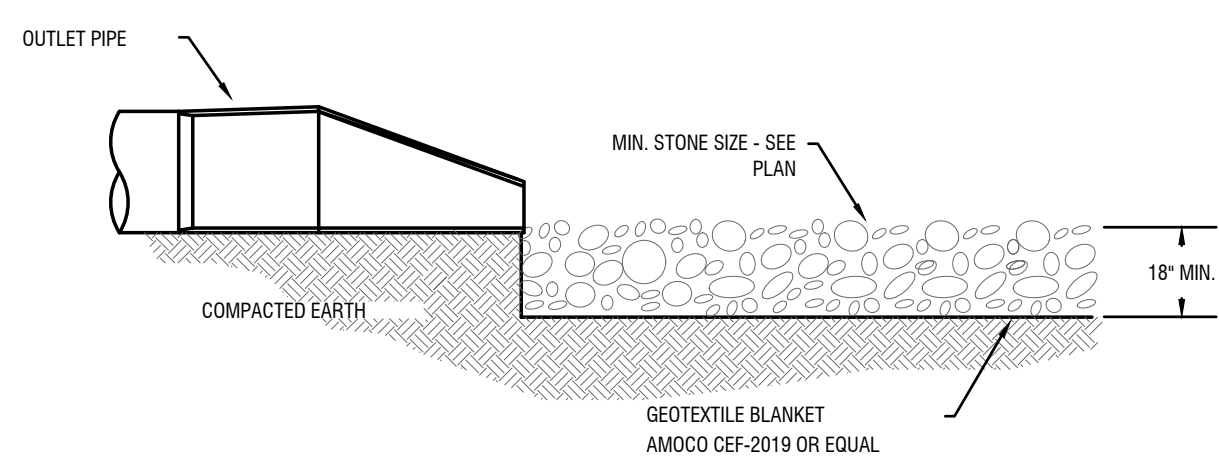
**PAVEMENT DETAIL**  
N.T.S.



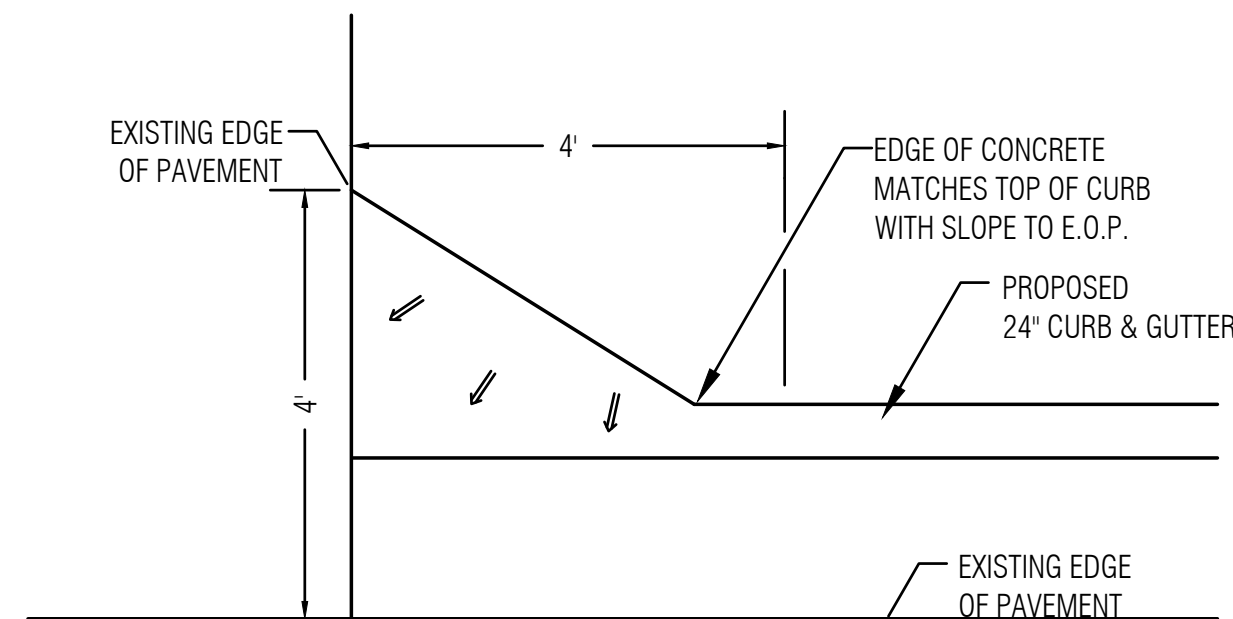
**ROADWAY DETAIL**  
N.T.S.



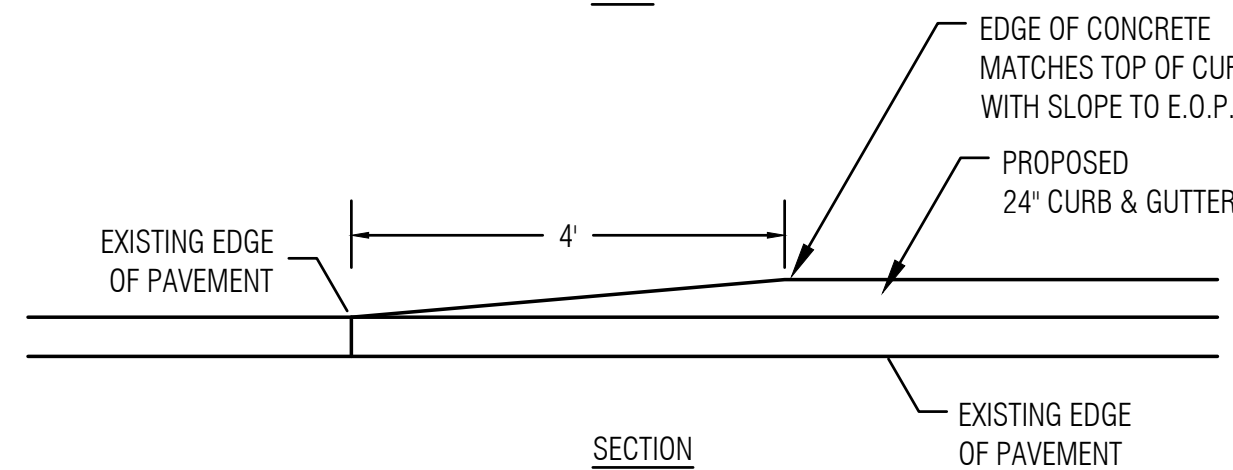
**PLAN**



**PRECAST FLARED END SECTION**  
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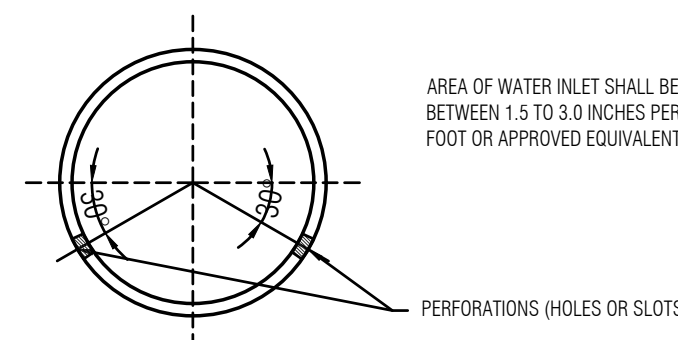
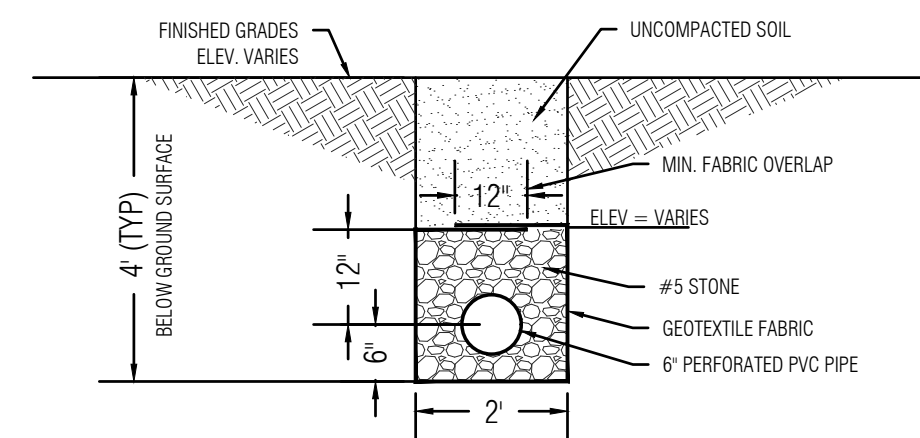


**PLAN**

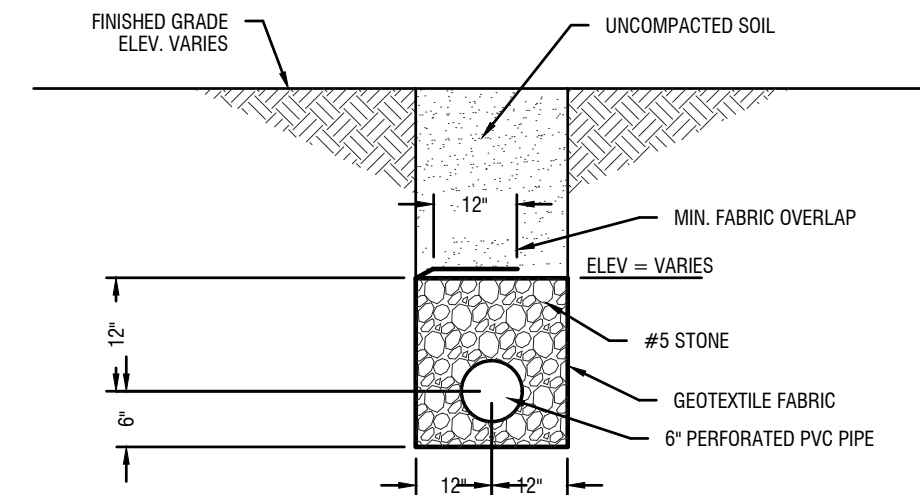


**SECTION**

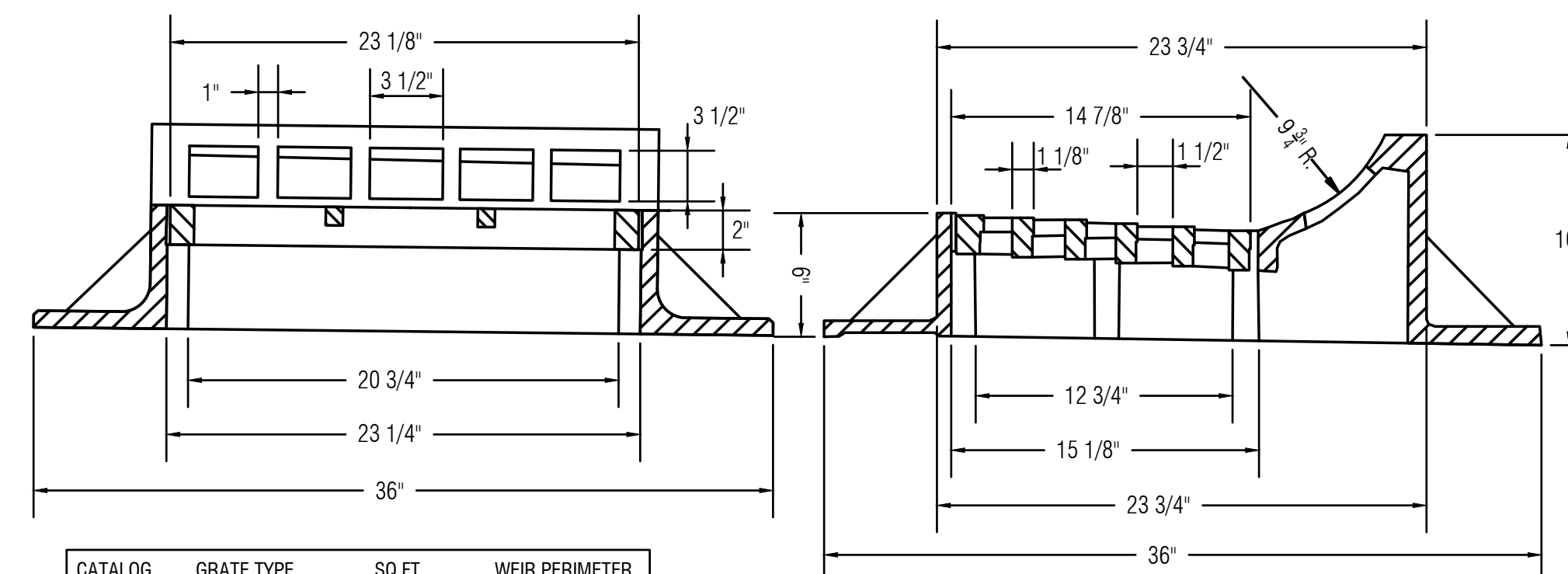
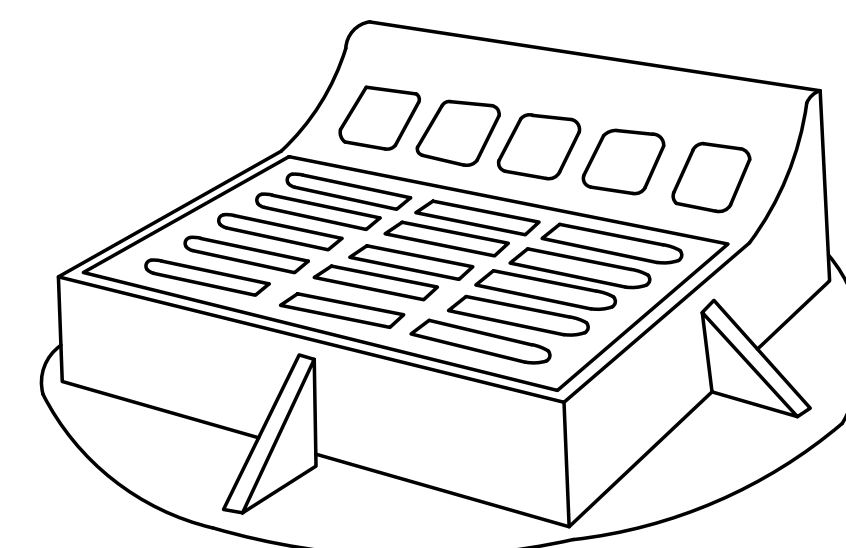
**CURB TRANSITION W/ FLARE DETAIL**  
N.T.S.



**UNDERDRAIN TYPICAL DETAIL**  
N.T.S.

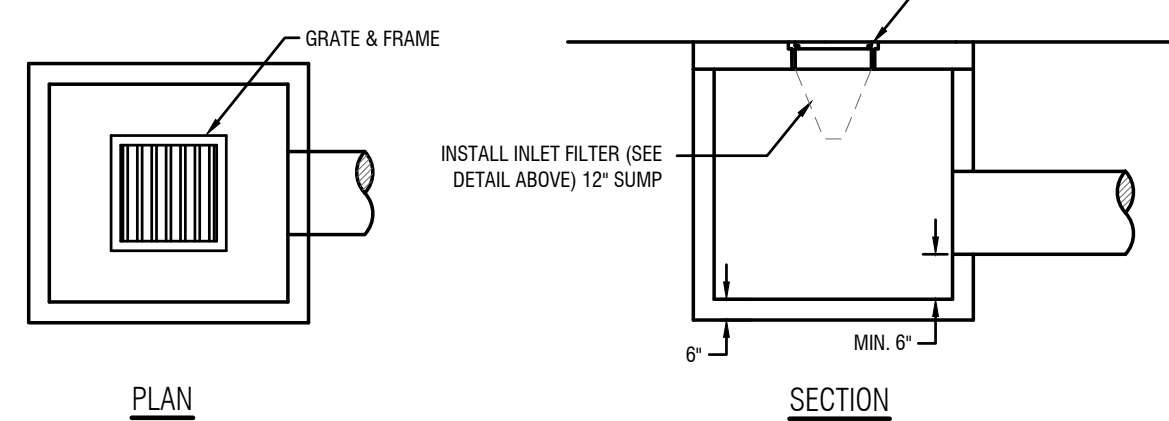


**UNDERDRAIN TYPICAL DETAIL**  
N.T.S.



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3501-L1A	C	1.2	4.4

**ROLL C.I. GRATING & FRAME DETAIL**  
N.T.S.

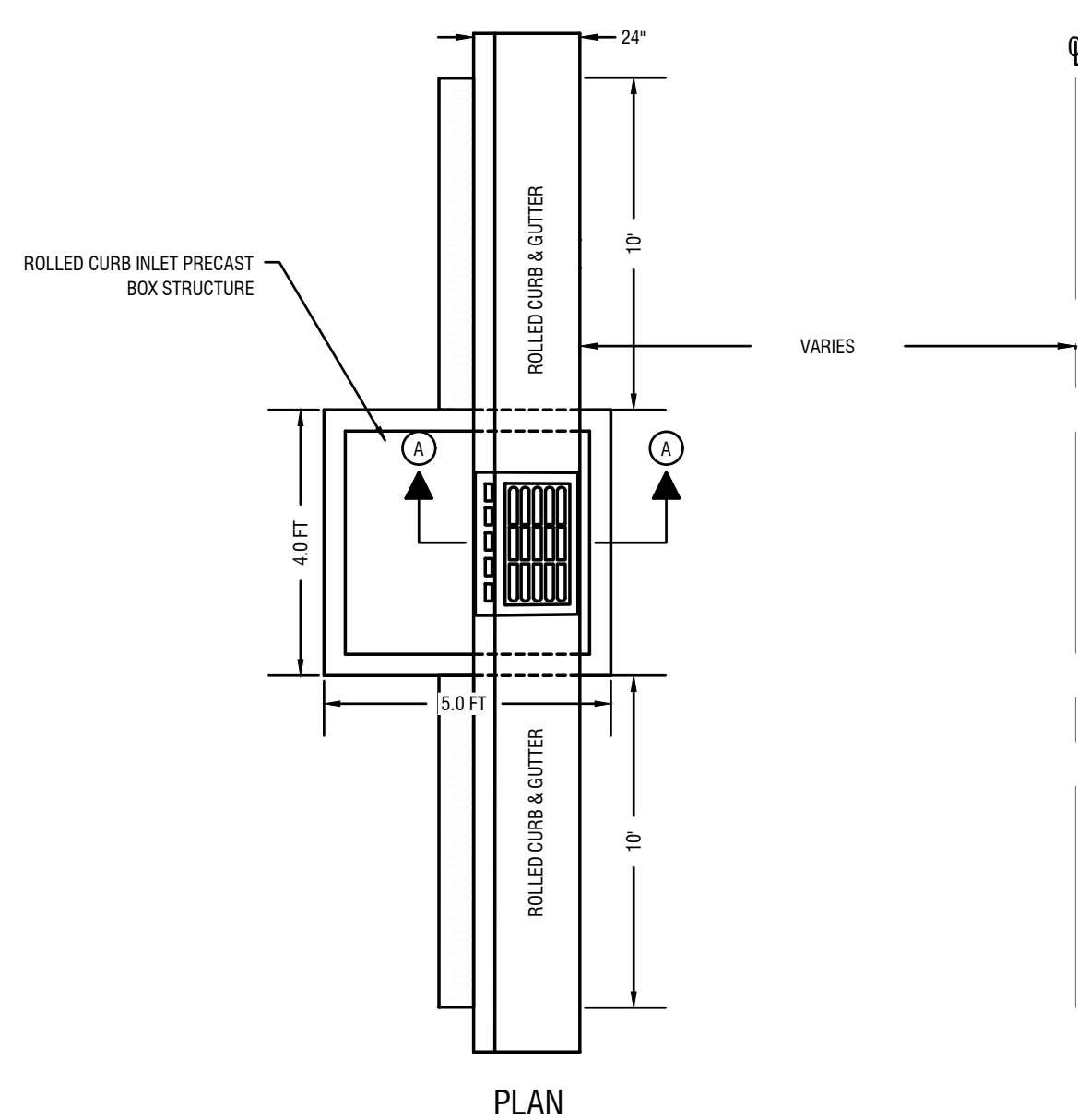


**PLAN**

**SECTION**

- CONSTRUCTION NOTES:**
- TWO COURSES OF BRICK MAX SHALL BE ALLOWED FOR LEVELING AND ADJUSTMENT OF LID. ANY SUPPORT OTHER THAN BRICK SHALL BE POURED IN PLACE MATCHING THE THICKNESS OF THE PRECAST WALL TO A MAXIMUM HEIGHT OF 24 INCHES.

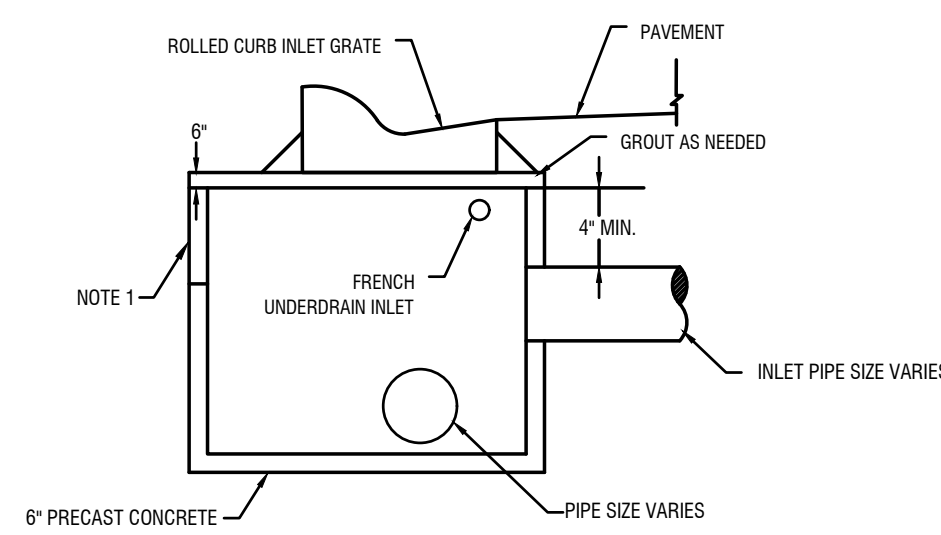
**GRATE INLET**  
N.T.S.



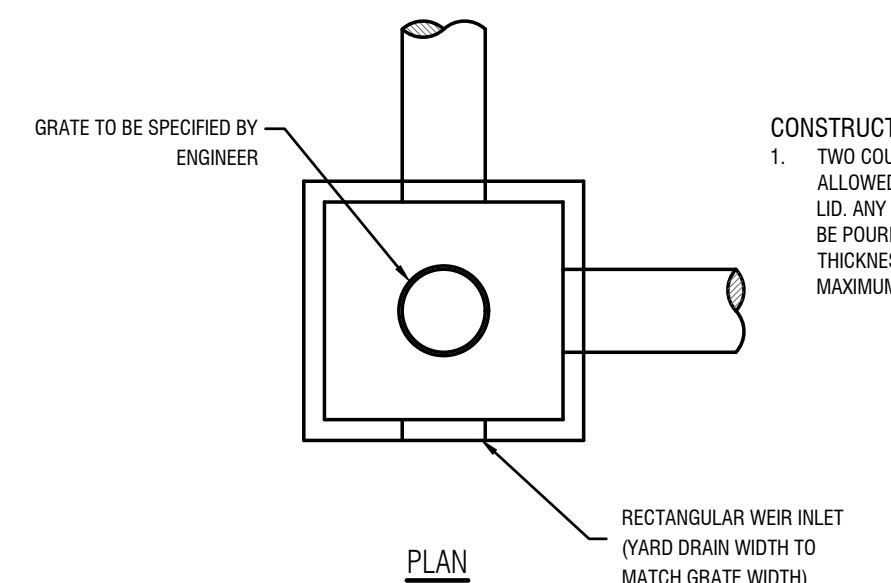
**PLAN**

**DROP INLET CATCH BASIN W/ TRENCH DRAIN**  
N.T.S.

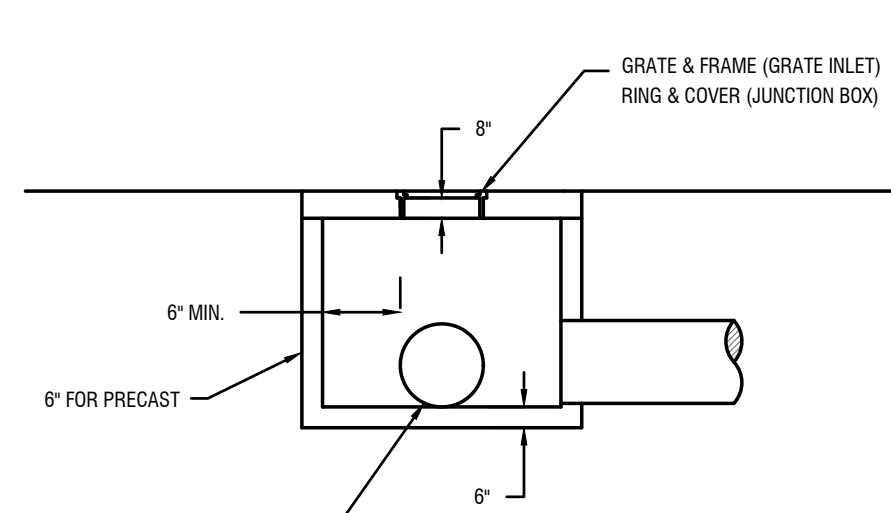
- CONSTRUCTION NOTES:**
- TWO COURSES OF BRICK MAX SHALL BE ALLOWED FOR LEVELING AND ADJUSTMENT OF LID. ANY SUPPORT OTHER THAN BRICK SHALL BE POURED IN PLACE MATCHING THE THICKNESS OF THE PRECAST WALL TO A MAXIMUM HEIGHT OF 24 INCHES. NO BRICK WILL BE ALLOWED ON THE THROAT. THROAT MUST BE MONOLITHIC POUR MINIMUM OF 2" THICK OPENING TO BE 4" AT THROAT.
  - ALL POURED COMPONENTS SHALL BE PLACED ON COMPACTED SUBGRADE (98% STANDARD PROCTOR)



**SECTION A-A**

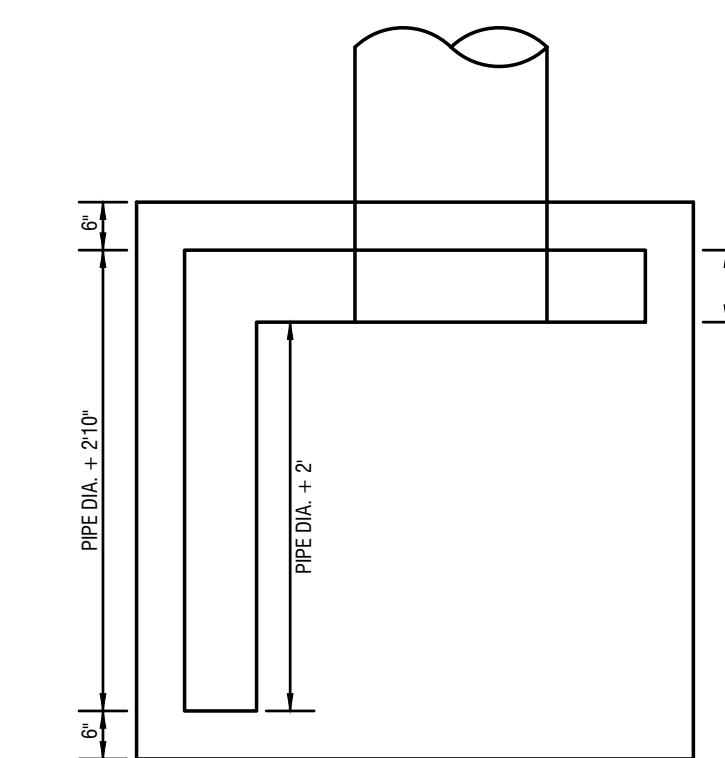


**PLAN**

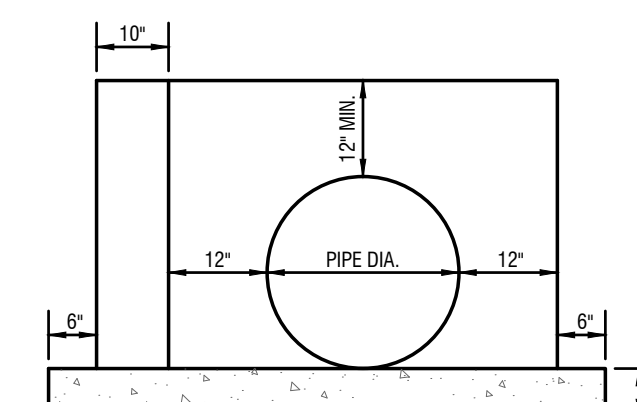


**SECTION**

**JUNCTION BOX / GRATE INLET**  
N.T.S.



**PLAN**



**SECTION**

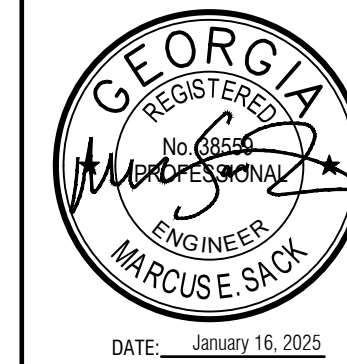
**L-SHAPED HEADWALL**  
N.T.S.

REVISIONS:

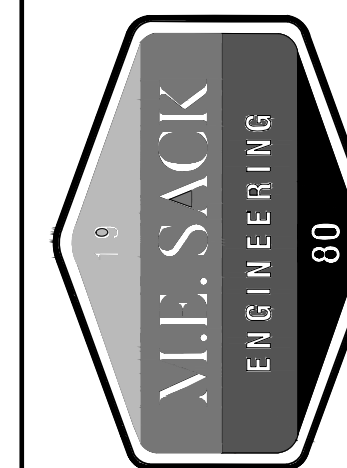
NO.	DATE	DESCRIPTION

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DATE: January 16, 2025



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**COUNTY:**  
BRYAN COUNTY

**OWNER:**  
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Pembroke, GA 31321  
(912) 653-4413  
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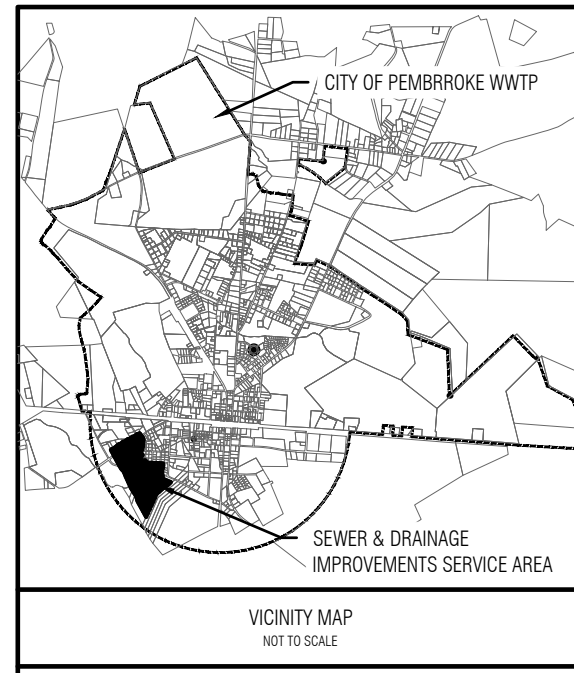
**SEWER & DRAINAGE IMPROVEMENTS**

**DETAILS**

**C405**

FILE NO: 2022-15

PLOT DATE: January 16, 2025



**RUNOFF COEFFICIENT**

PRE - CONSTRUCTION CN = 63  
POST - CONSTRUCTION CN = 62

**SITE INFORMATION:**

TOTAL SITE AREA = 4.55 AC  
TOTAL DISTURBED AREA = 3.91 AC

**EXISTING CONDITIONS:**

THE PROJECT SITE CONSISTS OF THE RIGHT OF WAYS & EXISTING EASEMENTS WITHIN A RESIDENTIAL NEIGHBORHOOD. IT ALSO ENCOMPASSES A SEWER EASEMENT, PROPOSED ALONG A RESIDENTIAL PROPERTY LINE TO THE CITY'S LIFT STATION AND A PROPOSED DRAINAGE EASEMENT ALONGSIDE 36 CLARA STREET. THE DRAINAGE IS COMPOSED OF A DITCH SYSTEM ALONGSIDE CLARA STREET WITH NO DISTINCT DRAINAGE ALONG LUCIOUS DRIVE. THE EXISTING SEWER SYSTEM IS SHALLOW AND EXPOSED WITHOUT AN EXTENSION OF THE GRAVITY SEWER LINE AVAILABLE TO THE END OF LUCIOUS DRIVE.

**CONSTRUCTION ACTIVITY DESCRIPTION**

**INITIAL PHASE** - CONSISTS OF INSTALLING CONSTRUCTION EXIT, PERIMETER BMPs, DUST CONTROL, CONCRETE WASHOUT AND TEMPORARY FILTER SOCK CHECK DAMS ON EXISTING DRIVEWAYS. BEGIN CLEARING, GRUBBING, AND GRADING. BEGIN DIRT ROAD CONSTRUCTION WITH DRAINAGE PIPES.

**INTERMEDIATE PHASE** - MAINTAIN INDICATED CONCRETE WASHOUT, CONSTRUCTION EXIT, AND SILT FENCE. REMOVE FILTER SOCK CHECK DAMS WHICH WERE INSTALLED FOR THE REMOVED DRAINAGE PIPES. INSTALL CHECK DAMS ON NEW DRAINAGE PIPES BELOW DIRT ROAD. USE DUST CONTROL, MULCHING, AND TEMPORARY GRASSING WHERE INDICATED.

**FINAL PHASE** - INSTALLATION OF PAVING AND FINAL GRADING. REMOVE CONCRETE WASHOUT AFTER COMPLETION OF PAVING. ONCE PERMANENT GRASSING IS ESTABLISHED TEMPORARY MEASURES CAN BE REMOVED INCLUDING: CHECK DAMS, SILT FENCE, & CONSTRUCTION EXITS.

**NOTES:**

BMPs AND SILT FENCE SHALL BE PLACED SUCH THAT RESIDENTIAL ACCESS TO DRIVEWAYS IS MAINTAINED TO THE BEST EXTENT POSSIBLE. THE CONSTRUCTION EXIT SHALL BE IN PLACE AFTER THE EXISTING ROAD IS MILLED AND REMOVED UPON COMPLETION OF THE NEWLY GRADED ROAD.

Cd-S CALCULATIONS	
Cd-S #1-2	
1.	CFS IN THE DITCH THAT CHECK DAM IS BEING USED IN: 11.78 CFS
2.	ABOVE 2.0 CFS: YES X, NO
3.	IF YES, LIST BMP BEING USED IN CONJUNCTION WITH CHECK DAMS: STORM DRAIN OUTLET PROTECTION (ST #1)

SOIL LEGEND	
[Symbol]	MISCELLANEOUS WATER, TREATMENT FACILITY
[Symbol]	PELHAM LOAMY SAND, 0 TO 2 PERCENT SLOPES FREQUENTLY FLOODED
[Symbol]	STILSON LOAMY SAND

SILT STORAGE CALCULATION	
ESTIMATED EROSION	= 3.91 AC X 67 C.Y./AC. = 262 C.Y. STORAGE CAPACITY REQUIRED.
Sd1-S STORAGE AVAILABLE	= 1,801 LF X 17 C.Y./LF = 306 C.Y.
Sd1-NS STORAGE AVAILABLE	= 5,935 LF X 17 C.Y./LF = 1,009 C.Y.
TOTAL AVAILABLE SEDIMENT STORAGE	= 1,315 C.Y.
IS THE AVAILABLE STORAGE GREATER THAN THE TOTAL REQUIRED STORAGE?	(YES) NO

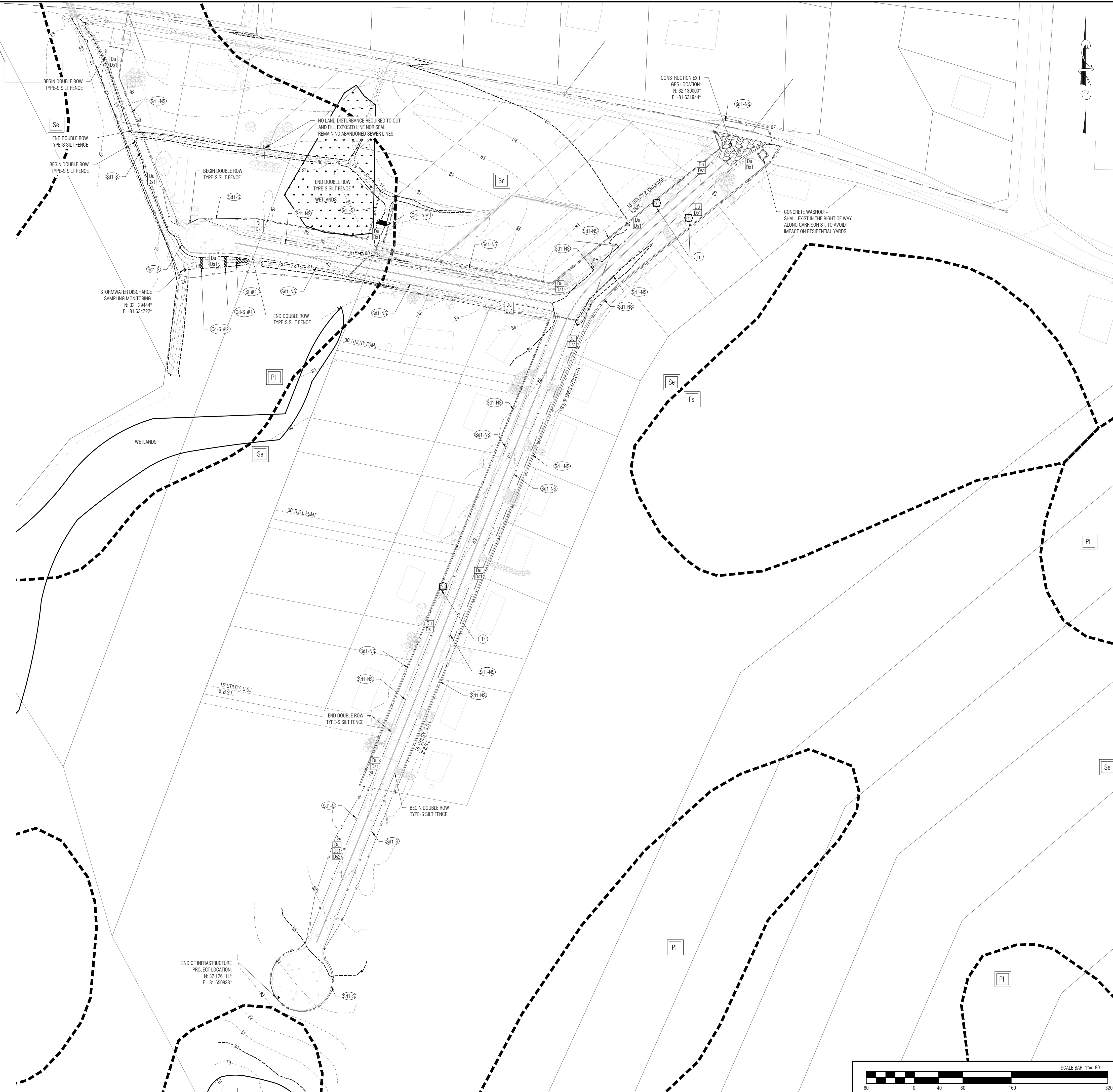
STORM OUTLET PROTECTION								
D <sub>o</sub> - OUTLET PIPE DIA.	W <sub>1</sub> - WIDTH AT HEADWALL	d <sub>50</sub> - AVE. STONE SIZE						
L <sub>a</sub> - LENGTH OF APRON	W <sub>2</sub> - DOWNSTREAM WIDTH	d <sub>40</sub> - MAX. STONE SIZE						
		D - STONE DEPTH						
STRUCTURE NO.	D <sub>o</sub>	L <sub>a</sub>	W <sub>1</sub>	W <sub>2</sub>	d <sub>50</sub>	D	FLOW RATE (CFS)	VELOCITY (FPS)
ST #1	18"	20'	4.5'	9.5'	15"	20.0"	10.63	6.04
ST #2	15"	12'	4'	6'	12"	20.0"	3.05	2.48

Cd-Hb CALCULATIONS	
Cd-Hb #1	
1.	CFS IN THE DITCH THAT CHECK DAM IS BEING USED IN: 3.05 CFS
2.	ABOVE 2.0 CFS: YES X, NO
3.	IF YES, LIST BMP BEING USED IN CONJUNCTION WITH CHECK DAMS: STORM DRAIN OUTLET PROTECTION (ST #2)

**DESIGN PROFESSIONAL:**  
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GSWCC LEVEL II # 70248  
CERTIFICATION #: 70248  
EXPIRES: 06-14-23

**PRIMARY PERMITEE:**  
CITY OF PEMBROKE  
CONTACT: KEITH COOK  
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PEMBROKE, GA 31321  
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KEITH COOK  
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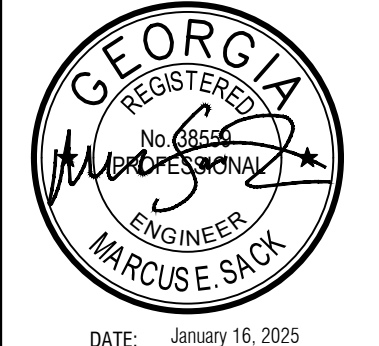


REVISIONS

NO.	DATE	DESCRIPTION

**DESIGN PROFESSIONAL:**  
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**MUNICIPALITY:**  
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**COUNTY:**  
BRYAN COUNTY

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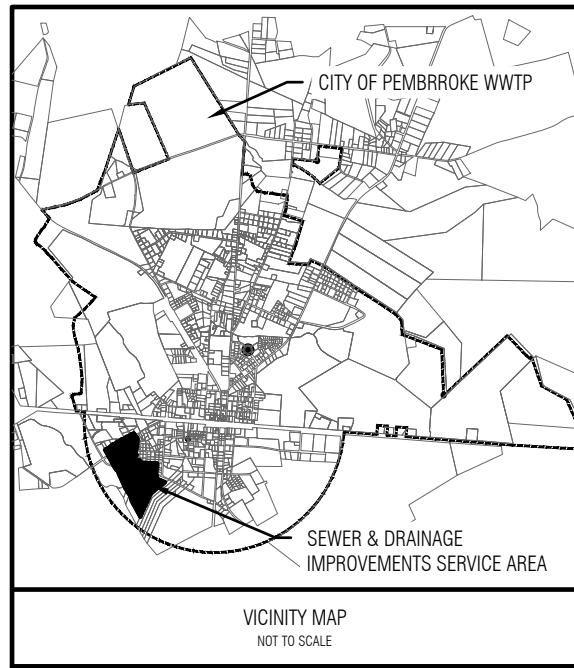
**SEWER & DRAINAGE IMPROVEMENTS**

**INITIAL EROSION CONTROL**

**C501**

FILE NO: 2022-15  
PLOT DATE: January 16, 2025





**RUNOFF COEFFICIENT**

PRE - CONSTRUCTION CN = 63  
 POST - CONSTRUCTION CN = 62

**SITE INFORMATION:**

TOTAL SITE AREA = 4.55 AC  
 TOTAL DISTURBED AREA = 3.91 AC

**EXISTING CONDITIONS:**

THE PROJECT SITE CONSISTS OF THE RIGHT OF WAYS & EXISTING EASEMENTS WITHIN A RESIDENTIAL NEIGHBORHOOD. IT ALSO ENCOMPASSES A SEWER EASEMENT. PROPOSED ALONG A RESIDENTIAL PROPERTY LINE TO THE CITY'S LEFT STATION AND A PROPOSED DRAINAGE EASEMENT ALONGSIDE 36 CLARA STREET. THE DRAINAGE IS COMPOSED OF A DITCH SYSTEM ALONGSIDE CLARA STREET WITH NO DISTINCT DRAINAGE ALONG LUCIOUS DRIVE. THE EXISTING SEWER SYSTEM IS SHALLOW AND EXPOSED WITHOUT AN EXTENSION OF THE GRAVITY SEWER LINE AVAILABLE TO THE END OF LUCIOUS DRIVE.

**CONSTRUCTION ACTIVITY DESCRIPTION**

**INITIAL PHASE** - CONSISTS OF INSTALLING CONSTRUCTION EXIT, PERIMETER BMPs, DUST CONTROL, CONCRETE WASHOUT, AND TEMPORARY FILTER SOCK CHECK DAMS ON EXISTING SHOALS. BEGIN CLEARING, GRUBBING, AND GRADING. BEGIN DIRT ROAD CONSTRUCTION WITH DRAINAGE PIPES.

**INTERMEDIATE PHASE** - MAINTAIN INDICATED CONCRETE WASHOUT, CONSTRUCTION EXIT, AND SILT FENCE. REMOVE FILTER SOCK CHECK DAMS WHICH WERE INSTALLED FOR THE REMOVED DRAINAGE PIPES. INSTALL CHECK DAMS ON NEW DRAINAGE PIPES BELOW DIRT ROAD. USE DUST CONTROL, MULCHING, AND TEMPORARY GRASSING WHERE INDICATED.

**FINAL PHASE** - INSTALLATION OF PAVING AND FINAL GRADING. REMOVE CONCRETE WASHOUT AFTER COMPLETION OF PAVING. ONCE PERMANENT GRASSING IS ESTABLISHED TEMPORARY MEASURES CAN BE REMOVED INCLUDING: CHECK DAMS, SILT FENCE, & CONSTRUCTION EXITS.

**NOTES:**

BMPs AND SILT FENCE SHALL BE PLACED SUCH THAT RESIDENTIAL ACCESS TO DRIVEWAYS IS MAINTAINED TO THE BEST EXTENT POSSIBLE. THE CONSTRUCTION EXIT SHALL BE IN PLACE AFTER THE EXISTING ROAD IS MILLED AND REMOVED UPON COMPLETION OF THE NEWLY GRADED ROAD.

**Cd-S CALCULATIONS**

Cd-S #1-2

1. CFS IN THE DITCH THAT CHECK DAM IS BEING USED IN: 11.78 CFS
2. ABOVE 2.0 CFS: YES X, NO
3. IF YES, LIST BMP BEING USED IN CONJUNCTION WITH CHECK DAMS: STORM DRAIN OUTLET PROTECTION (SP #1)

**SOIL LEGEND**

MISCELLANEOUS WATER, TREATMENT FACILITY
PELHAM LOAMY SAND, 0 TO 2 PERCENT SLOPES FREQUENTLY FLOODED
STILSON LOAMY SAND

**SILT STORAGE CALCULATION**

ESTIMATED EROSION = 3.91 AC X 67 C.Y./AC. = 262 C.Y. STORAGE CAPACITY REQUIRED.

Sd1-S STORAGE AVAILABLE =  $\frac{0.005}{1.009} \times 17 \text{ C.Y.} \times 1.7 = 0.15 \text{ C.Y.}$

Sd1-NS STORAGE AVAILABLE =  $\frac{0.005}{1.009} \times 17 \text{ C.Y.} \times 1.7 = 0.15 \text{ C.Y.}$

TOTAL AVAILABLE SEDIMENT STORAGE = 0.30 C.Y.

IS THE AVAILABLE STORAGE GREATER THAN THE TOTAL REQUIRED STORAGE? (YES) NO

**STORM OUTLET PROTECTION**

STRUCTURE NO.	D <sub>o</sub>	L <sub>a</sub>	W1 - WIDTH AT HEADWALL		d50	D	FLOW RATE (CFS)	VELOCITY (FPS)
			W2	d50				
ST #1	18"	20'	4.5'	9.5'	15"	20.0'	10.63	6.04

**DESIGN PROFESSIONAL**

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 GSWCC LEVEL II  
 CERTIFICATION # 70248  
 EXPIRES: 06-14-23

**PRIMARY PERMITEE**

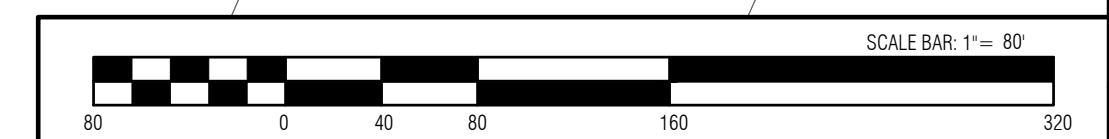
CITY OF PEMBROKE  
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**24-HOUR CONTACT**

KEITH COOK  
 160 N MAIN ST  
 PEMBROKE, GA 31321  
 (912) 653-4413  
 STREETS@PEMBROKEGA.NET



NOTE:  
 EACH Sd1-F SHALL ENCOMPASS THE 48" CATCH BASINS. SFT X 5FT OF SILT FENCE SHALL BE INSTALLED ALONG THE EDGE OF THE CATCH BASINS WITH STEEL POSTS PROVIDED EVERY 2-3FT. SEE Sd1-F DETAIL ON SHEET C505 FOR DEPTH MEASUREMENTS.

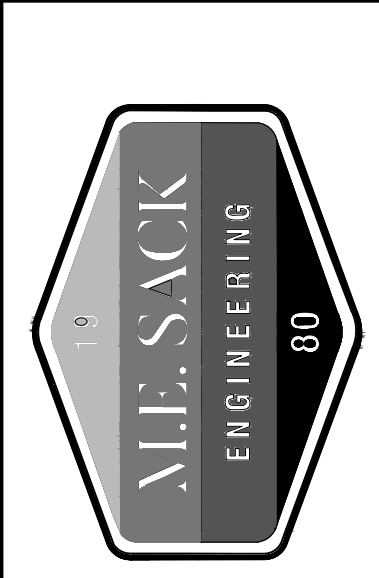
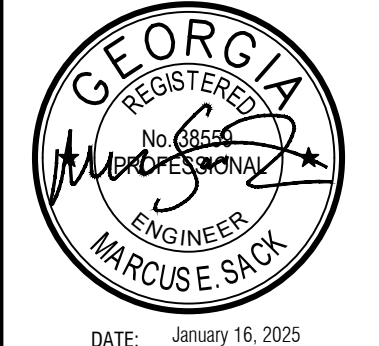


REVISIONS:


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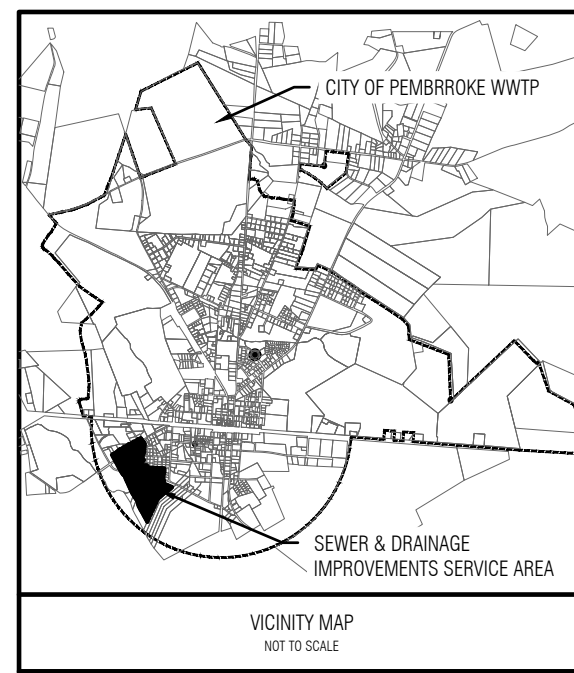
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**SEWER & DRAINAGE IMPROVEMENTS**

**INTERMEDIATE EROSION CONTROL**

**C502**

FILE NO: 2022-15  
 PLOT DATE: January 16, 2025



**RUNOFF COEFFICIENT**

PRE - CONSTRUCTION CN = 63  
POST - CONSTRUCTION CN = 62

**SITE INFORMATION:**

TOTAL SITE AREA = 4.55 AC  
TOTAL DISTURBED AREA = 3.91 AC

**EXISTING CONDITIONS:**

THE PROJECT SITE CONSISTS OF THE RIGHT OF WAYS & EXISTING EASEMENTS WITHIN A RESIDENTIAL NEIGHBORHOOD. IT ALSO ENCOMPASSES A SEWER EASEMENT. PROPOSED ALONG A RESIDENTIAL PROPERTY LINE TO THE CITY'S LEFT STATION AND A PROPOSED DRAINAGE EASEMENT ALONGSIDE 36 CLARA STREET. THE DRAINAGE IS COMPOSED OF A DITCH SYSTEM ALONGSIDE CLARA STREET WITH NO DISTINCT DRAINAGE ALONG LUCIOUS DRIVE. THE EXISTING SEWER SYSTEM IS SHALLOW AND EXPOSED WITHOUT AN EXTENSION OF THE GRAVITY SEWER LINE AVAILABLE TO THE END OF LUCIOUS DRIVE.

**CONSTRUCTION ACTIVITY DESCRIPTION**

**INITIAL PHASE** - CONSISTS OF INSTALLING CONSTRUCTION EXIT, PERIMETER BMPs, DUST CONTROL, CONCRETE WASHOUT, AND TEMPORARY FILTER SOCK CHECK DAMS ON EXISTING SHOULDS. BEGIN CLEARING, GRUBBING, AND GRADING. BEGIN DIRT ROAD CONSTRUCTION WITH DRAINAGE PIPES.

**INTERMEDIATE PHASE** - MAINTAIN INDICATED CONCRETE WASHOUT, CONSTRUCTION EXIT, AND SILT FENCE. REMOVE FILTER SOCK CHECK DAMS WHICH WERE INSTALLED FOR THE REMOVED DRAINAGE PIPES. INSTALL CHECK DAMS ON NEW DRAINAGE PIPES BELOW DIRT ROAD. USE DUST CONTROL, MULCHING, AND TEMPORARY GRASSING WHERE INDICATED.

**FINAL PHASE** - INSTALLATION OF PAVING AND FINAL GRADING. REMOVE CONCRETE WASHOUT AFTER COMPLETION OF PAVING. ONCE PERMANENT GRASSING IS ESTABLISHED TEMPORARY MEASURES CAN BE REMOVED INCLUDING: CHECK DAMS, SILT FENCE, & CONSTRUCTION EXITS.

**NOTES:**

BMPs AND SILT FENCE SHALL BE PLACED SUCH THAT RESIDENTIAL ACCESS TO DRIVEWAYS IS MAINTAINED TO THE BEST EXTENT POSSIBLE. THE CONSTRUCTION EXIT SHALL BE IN PLACE AFTER THE EXISTING ROAD IS MILLED AND REMOVED UPON COMPLETION OF THE NEWLY GRADED ROAD.

**Cd-S CALCULATIONS**

Cd-S #1-2

1. CFS IN THE DITCH THAT CHECK DAM IS BEING USED IN: 11.78 CFS
2. ABOVE 2.0 CFS: YES X, NO
3. IF YES, LIST BMP BEING USED IN CONJUNCTION WITH CHECK DAMS: STORM DRAIN OUTLET PROTECTION (SP #1)

**SOIL LEGEND**

MISCELLANEOUS WATER, TREATMENT FACILITY
PELHAM LOAMY SAND, 0 TO 2 PERCENT SLOPES FREQUENTLY FLOODED
STILSON LOAMY SAND

**SILT STORAGE CALCULATION**

ESTIMATED EROSION = 3.91 AC X 67 C.Y./AC. = 262 C.Y. STORAGE CAPACITY REQUIRED.

Sd1-S STORAGE AVAILABLE =  $\frac{0.005}{1.009} \times 17 \text{ C.Y.} \times 1.7 = 0.06 \text{ C.Y.}$

Sd1-NS STORAGE AVAILABLE =  $\frac{0.005}{1.009} \times 17 \text{ C.Y.} \times 1.7 = 0.06 \text{ C.Y.}$

TOTAL AVAILABLE SEDIMENT STORAGE = 0.12 C.Y.

IS THE AVAILABLE STORAGE GREATER THAN THE TOTAL REQUIRED STORAGE? (YES) NO

**STORM OUTLET PROTECTION**

STRUCTURE NO.	D <sub>o</sub>	L <sub>a</sub>	W <sub>1</sub>	W <sub>2</sub>	d <sub>50</sub>	D	FLOW RATE (CFS)	VELOCITY (FPS)
ST #1	18"	20'	4.5'	9.5'	15"	20.0"	10.63	6.04

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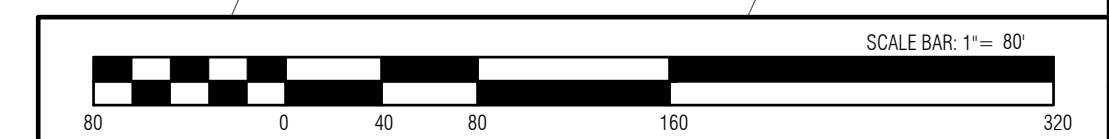
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EXPIRES: 06-14-23

**PRIMARY PERMITEE**

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**24-HOUR CONTACT**

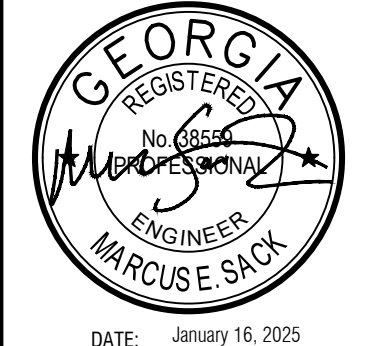
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**SEWER & DRAINAGE IMPROVEMENTS**

FINAL EROSION CONTROL

**C503**

FILE NO: 2022-15  
PLOT DATE: January 16, 2025



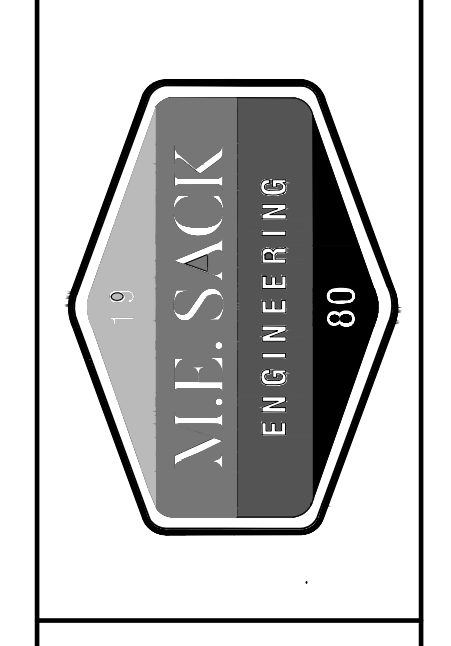
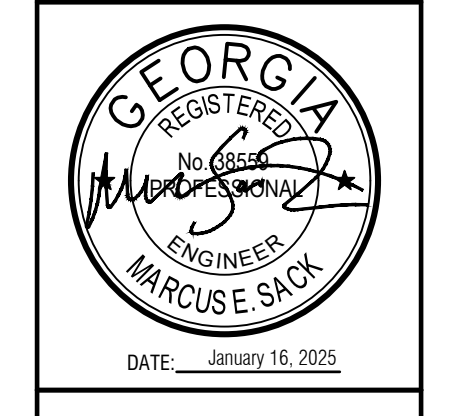




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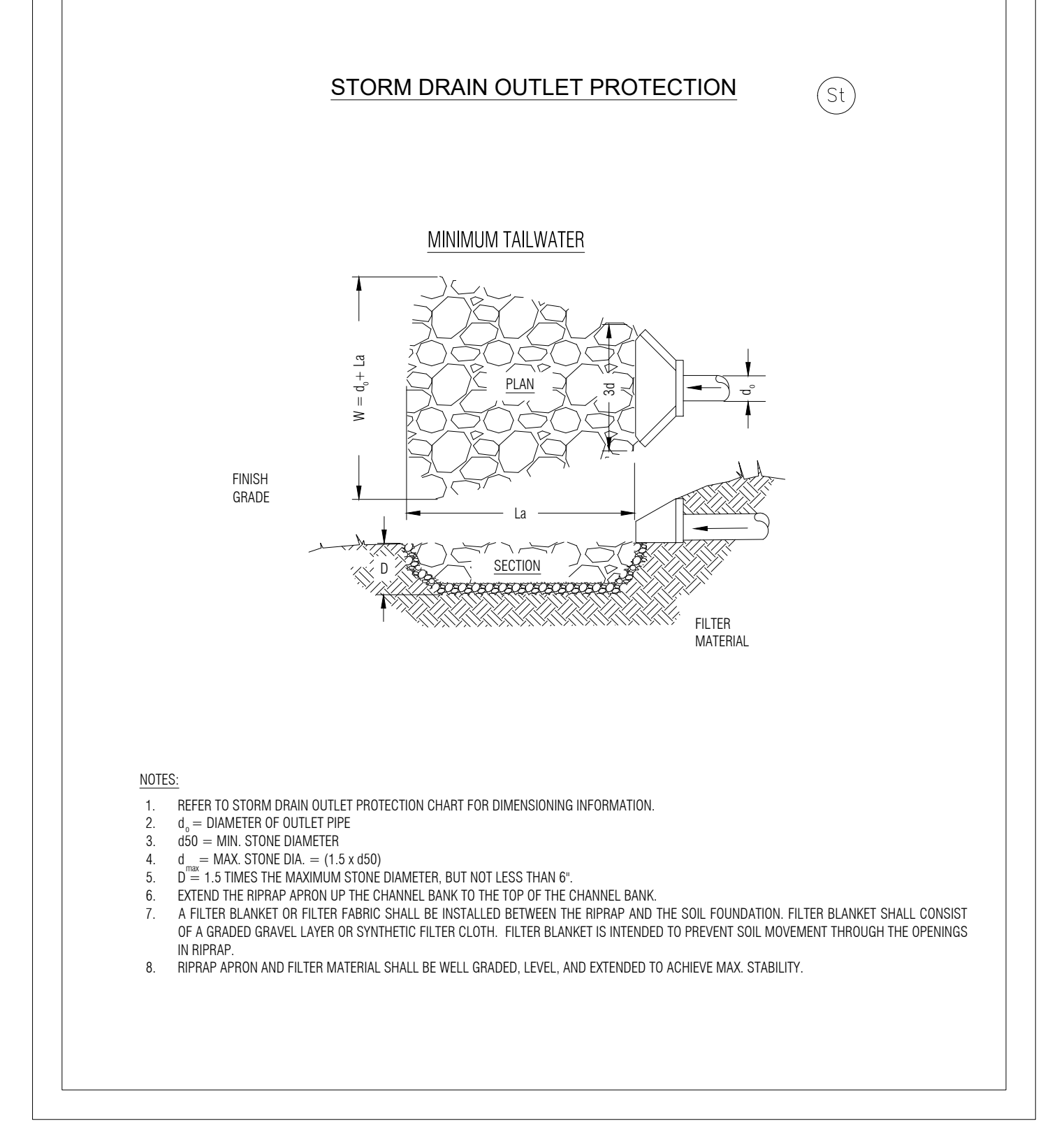
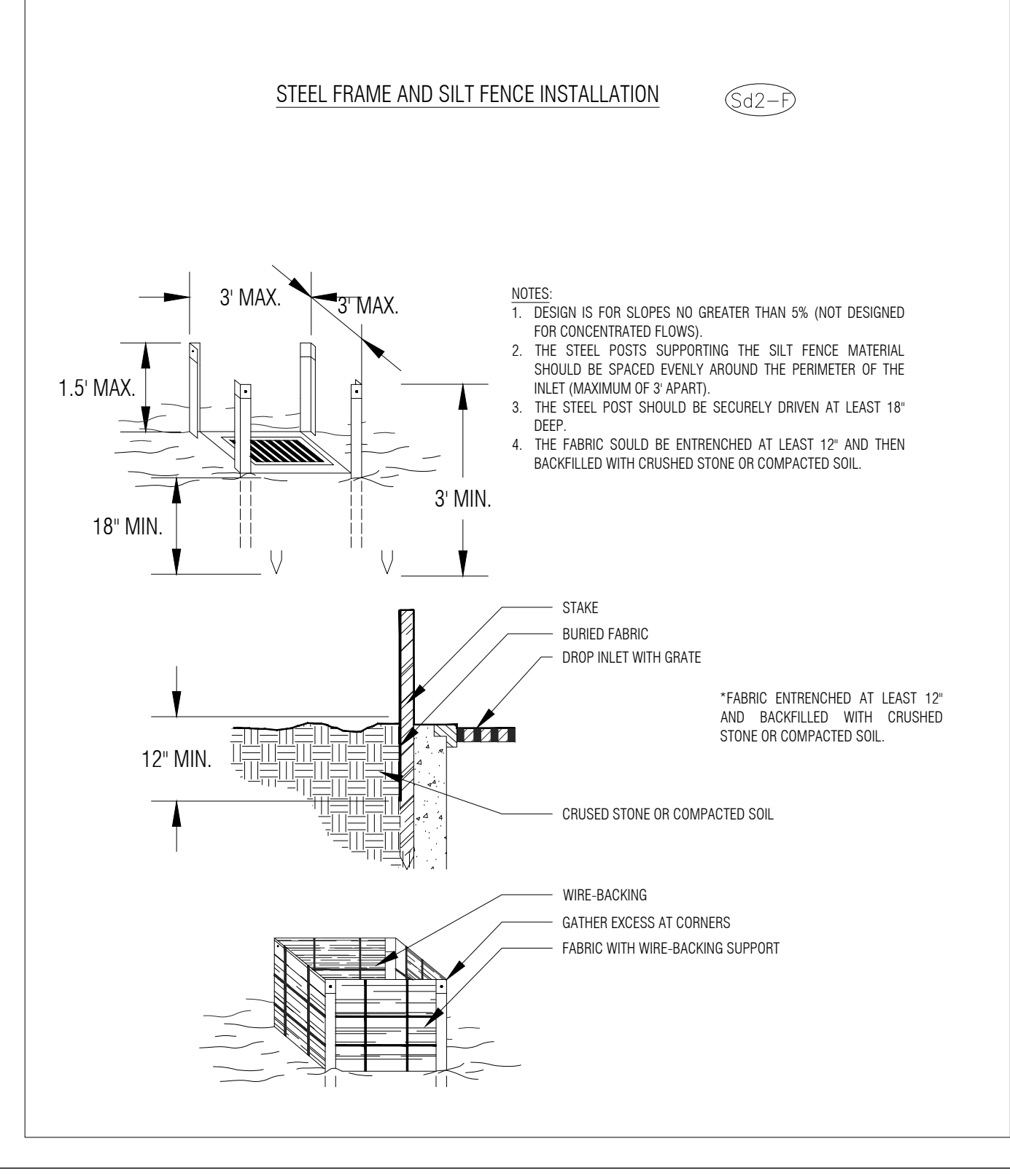
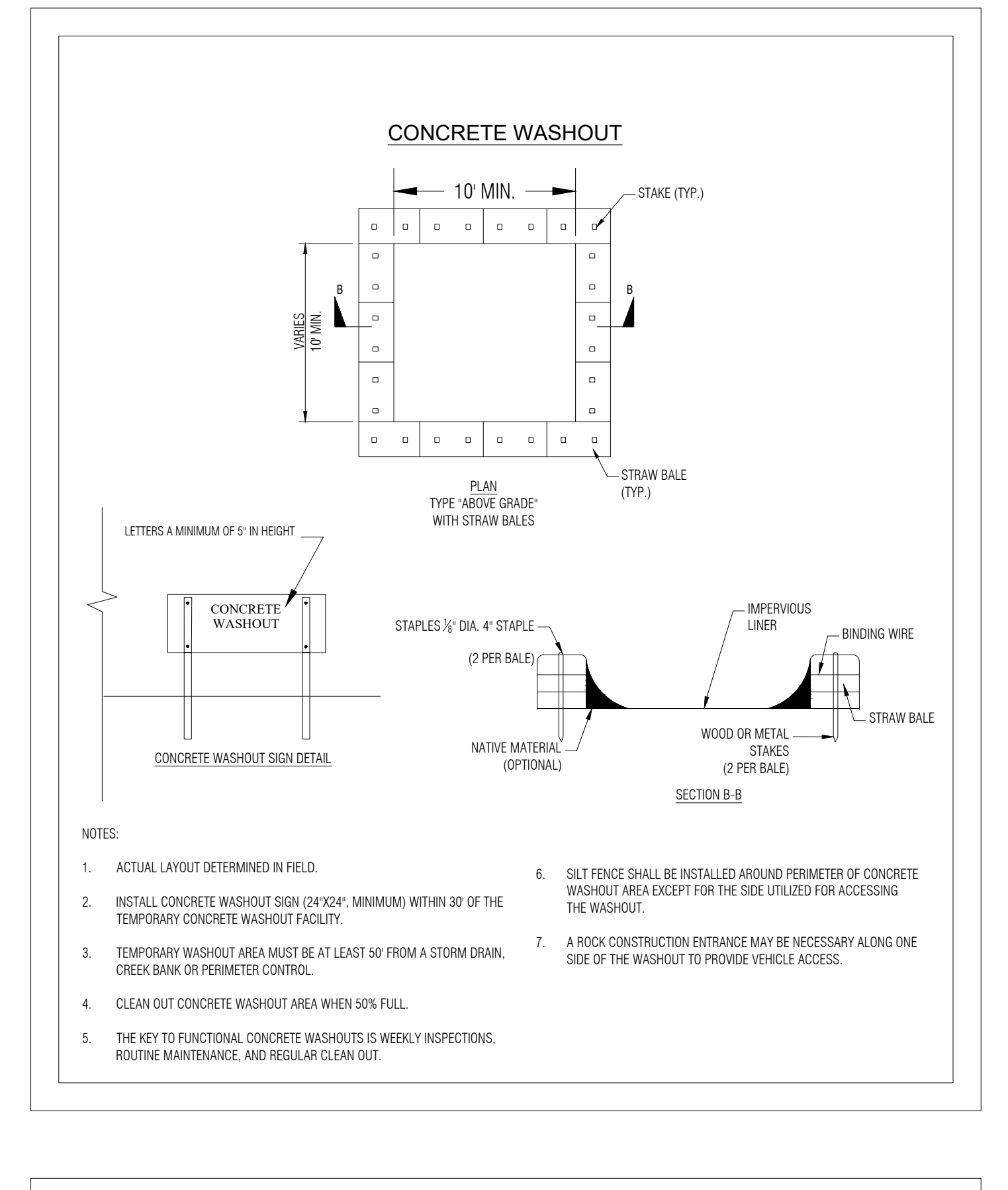
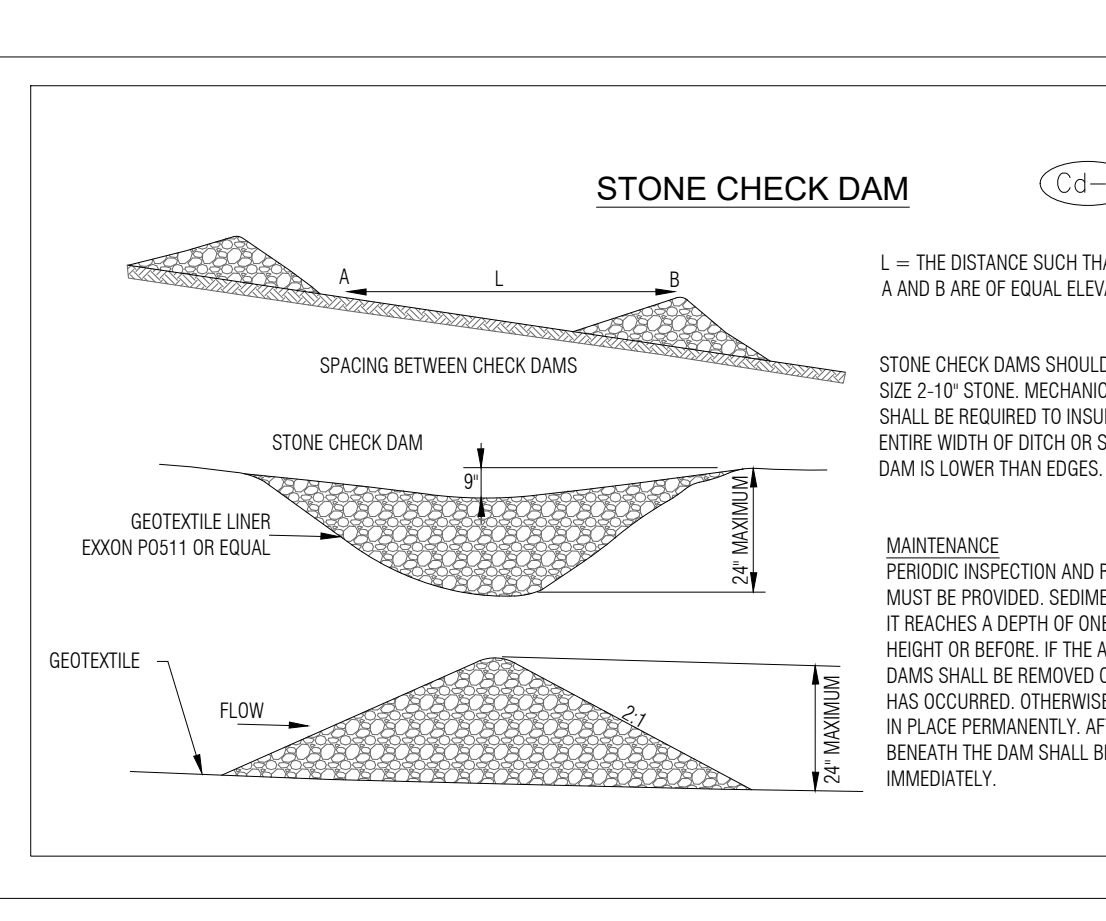
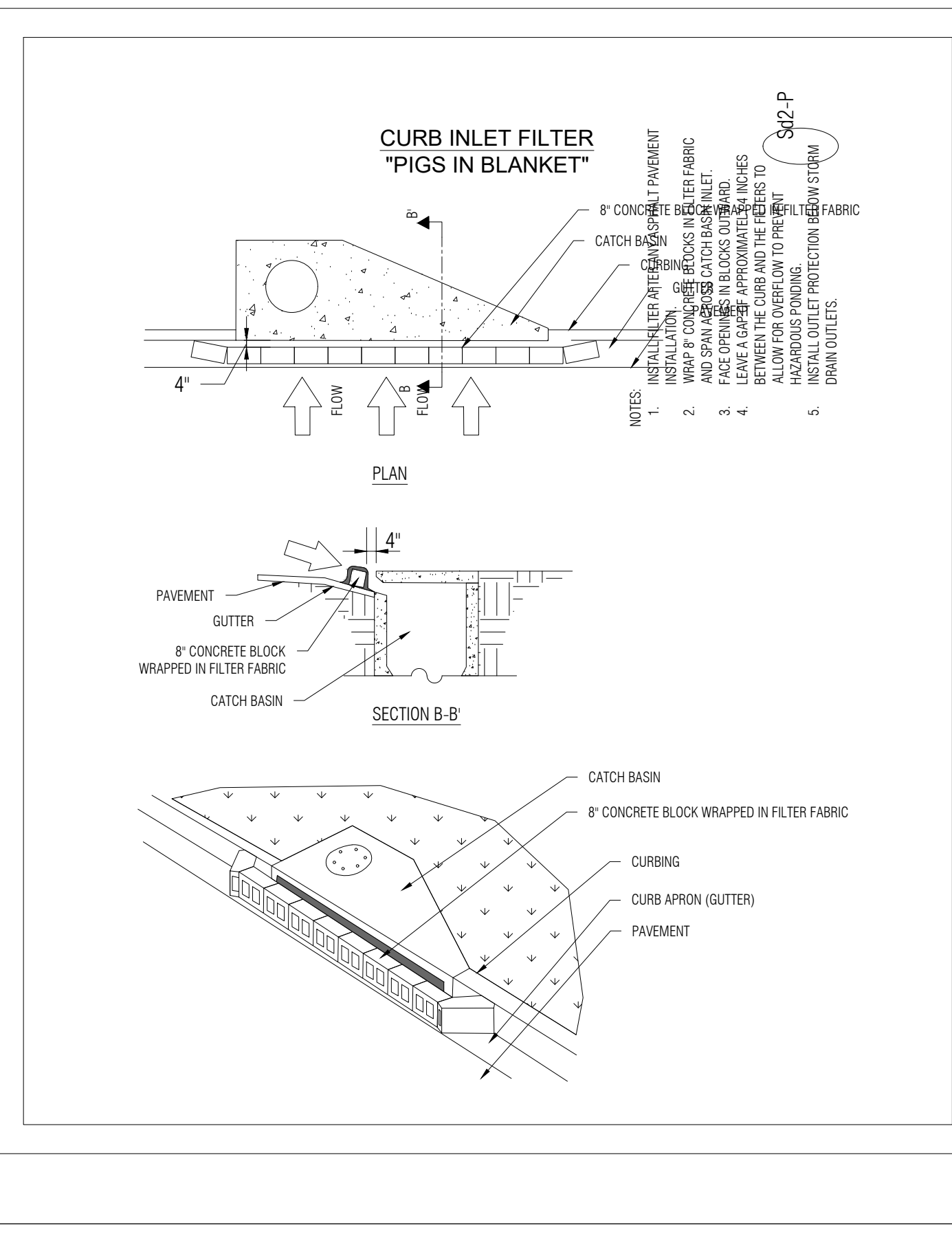
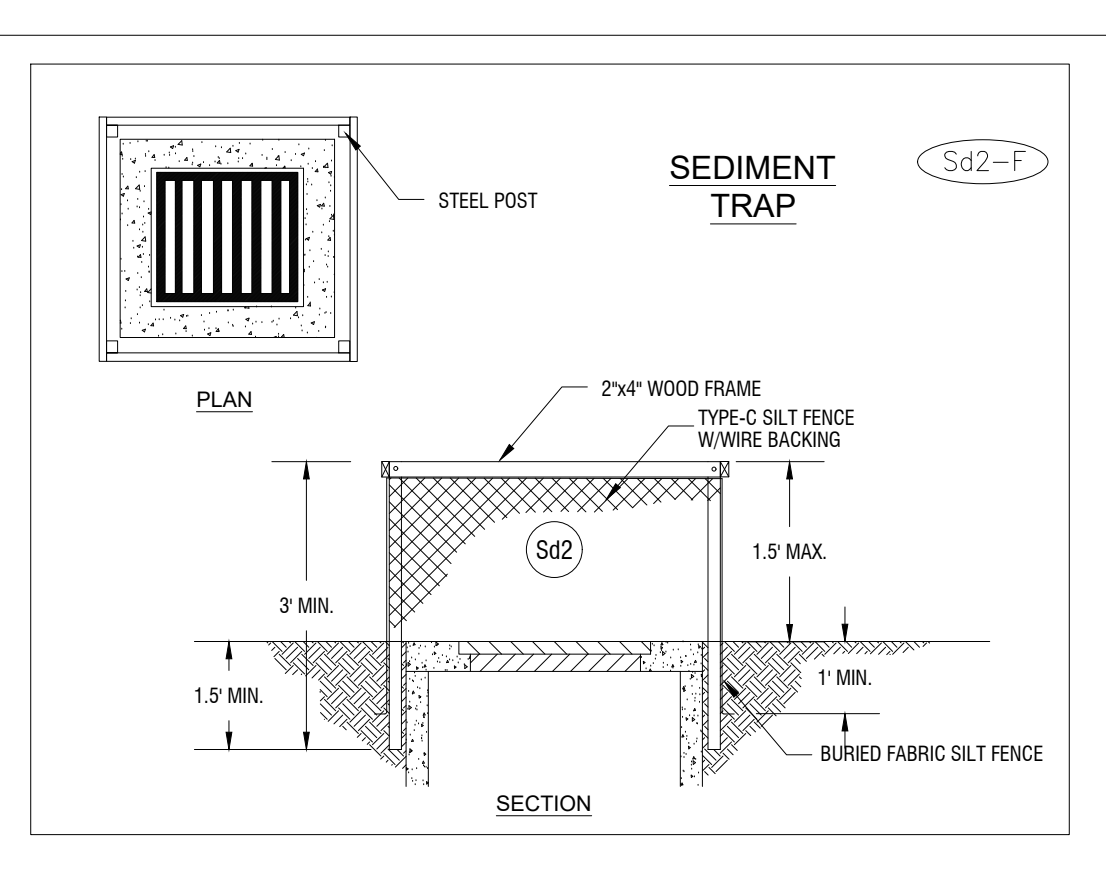
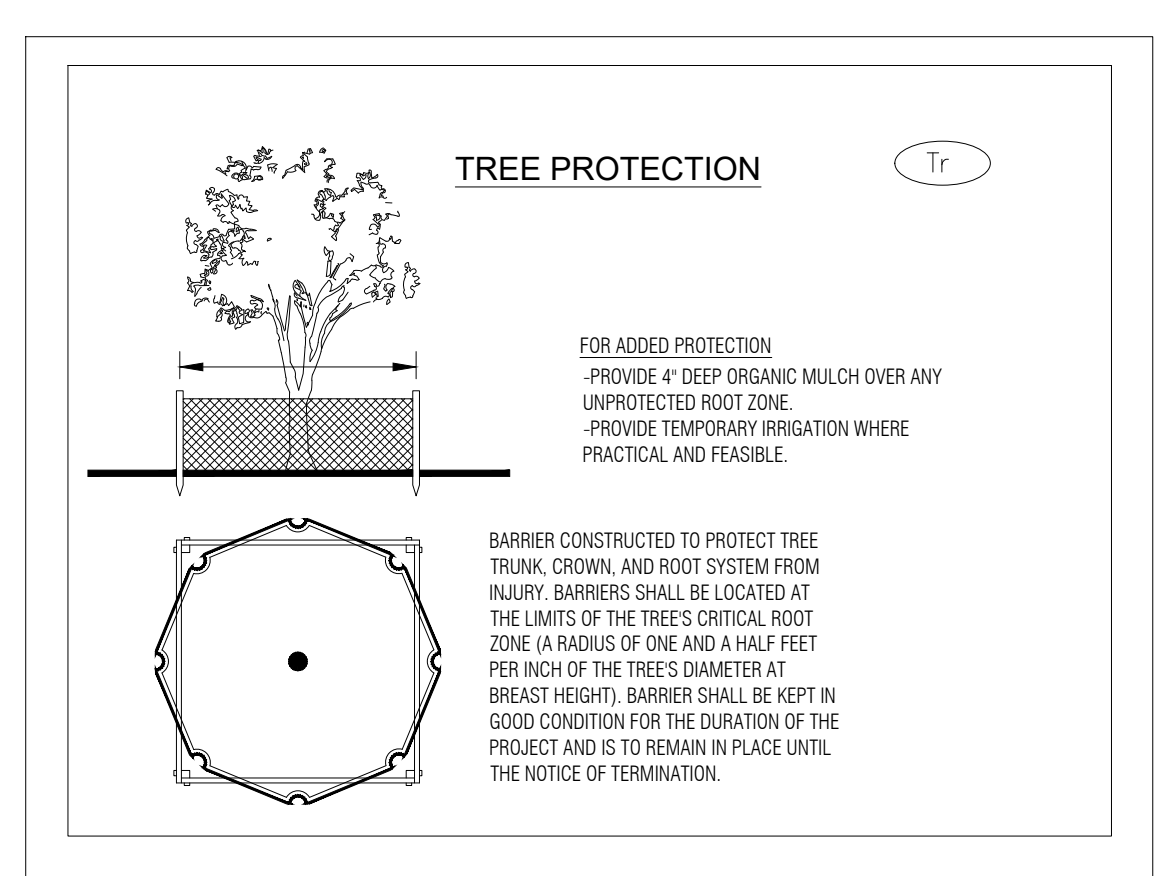
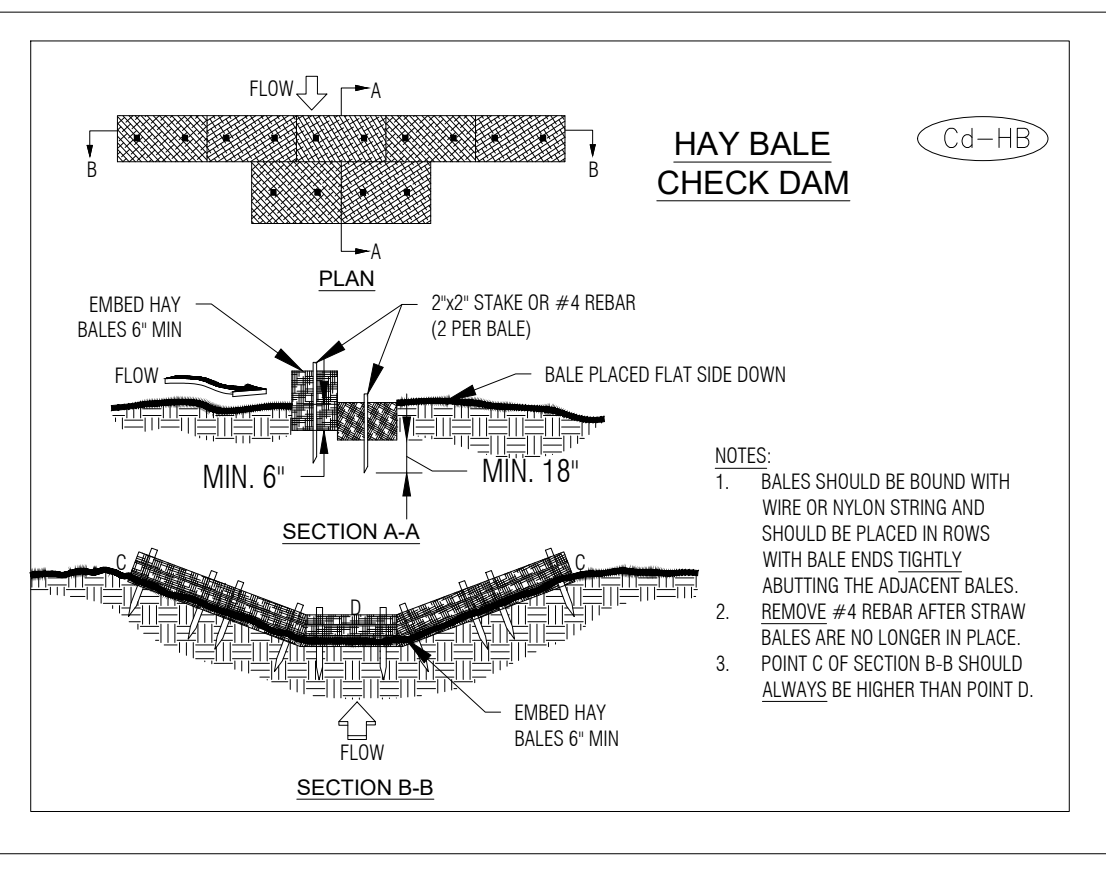
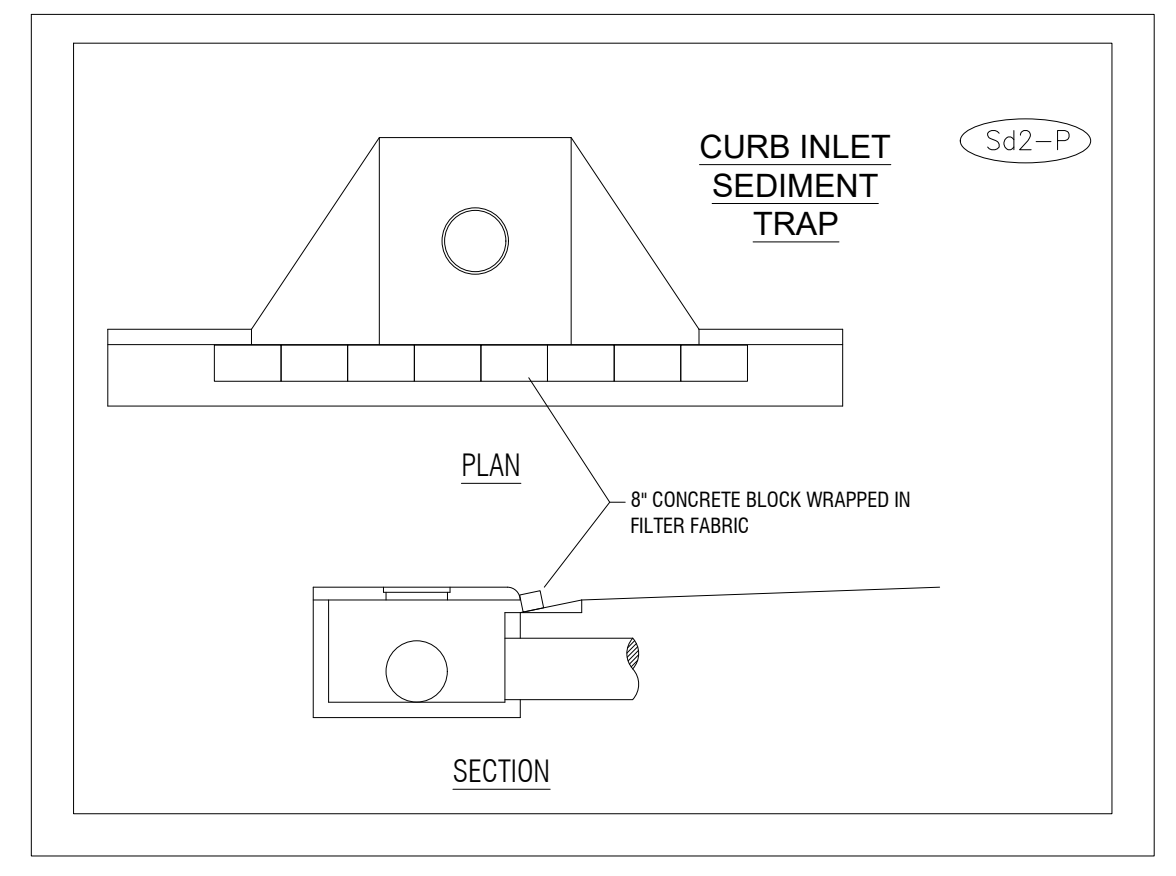
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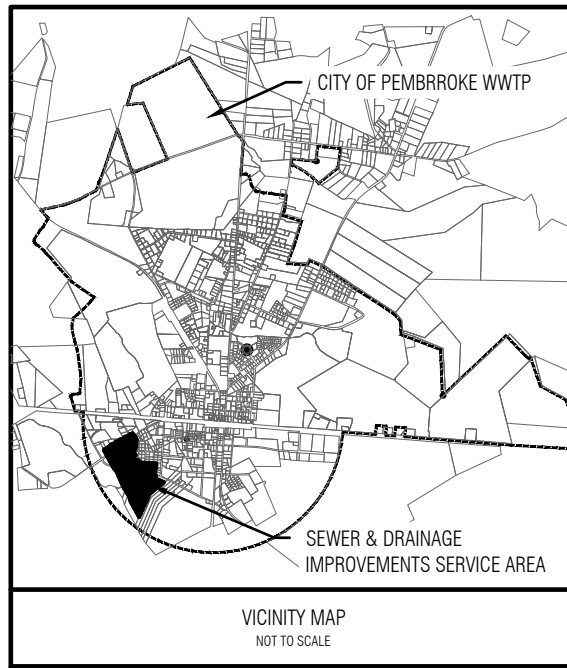
# SEWER & DRAINAGE IMPROVEMENTS

DETAILS

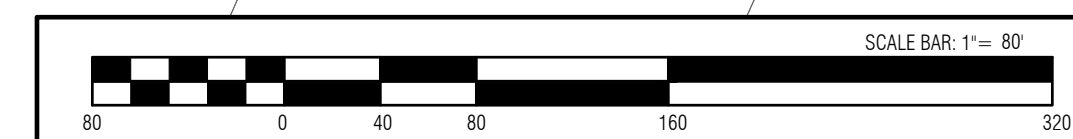
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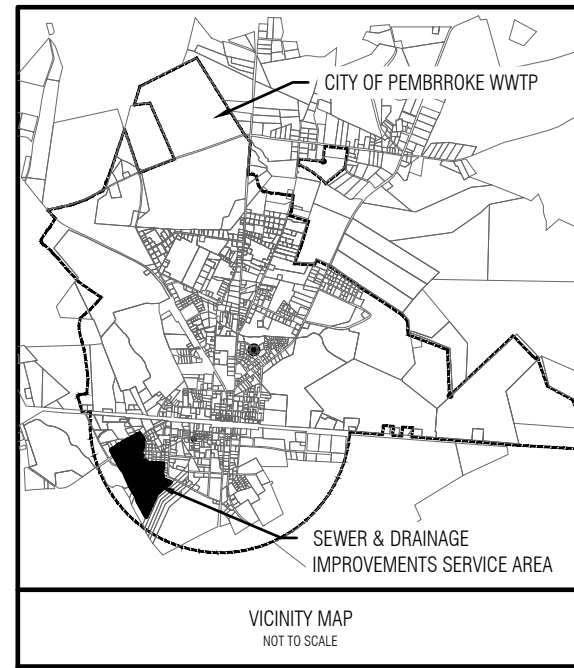
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SEWER & DRAINAGE IMPROVEMENTS
PRE-DEVELOPMENT BASINS
C601
FILE NO: 2022-15 PLOT DATE: January 16, 2025



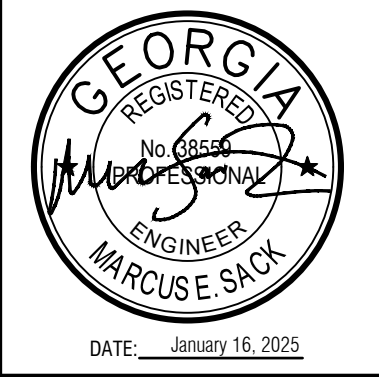


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SEWER & DRAINAGE IMPROVEMENTS

POST-DEVELOPMENT BASINS

C602

FILE NO: 2022-15  
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