

**BIDDING AND CONTRACT DOCUMENTS  
FOR THE  
BRUNSWICK COUNTY PUBLIC UTILITIES  
NORTHWEST WATER TREATMENT PLANT – CONCENTRATE DISCHARGE PIPELINE**

DOCUMENT 009102

ADDENDA

ADDENDUM NUMBER 2

DATE: January \_\_, 2020

PROJECT: NORTHWEST WATER TREATMENT PLANT – CONCENTRATE DISCHARGE PIPELINE

OWNER: BRUNSWICK COUNTY PUBLIC UTILITIES

ENGINEER: CDM SMITH

TO: Project Planholders

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated October 2019, with amendments and additions noted herein below.

Acknowledge receipt of this Addendum in the space provided in the Bid form. Failure to do so may disqualify the Bidder.

This Addendum consists of \_\_\_ pages.

## GENERAL

1. Pre-Bid Meeting Sign-In Sheet, Presentation, and Questions/Answers are incorporated into this Addendum as an attachment.
2. Fusible PVC is allowed for all open cut and HDD applications.
3. Pavement repairs include full depth asphalt replacement within the 1:1 pipe trench zone which is measured at the base of the trench and projecting a 1:1 line to ground surface. Pavement repairs outside the 1:1 trench zone include a 1.5" mill and overlay. Refer to the note on detail E, Sheet C-D-1.

## IN THE SPECIFICATIONS

### DOCUMENT 001122

1. Page NB-1
  - a. Replace the fifth paragraph (beginning with "Bids will be received...") in its entirety with the following:

"Bids will be received as a **Single Prime Contract**. All proposals shall be lump sum with provisions for unit prices, allowances and alternates as indicated in the Form of Proposal. The entire project shall be Substantially Complete within 365 days of notice to proceed. Work "in the river" as shown on Drawings C-CP-27 and C-CP-28 can only be performed between July 1, 2020 and January 31, 2021 due to anadromous migrations of certain fish and other environmental restrictions but cannot exceed 90 consecutive calendar days within that period. Work "in the river" refers to actual construction below the ordinary high water mark for the Cape Fear River and does not include above-water preparation such as equipment mobilization by barge or floating of pipe during HDD pullback operations. Contractors shall receive notice to proceed on approximately May 11, 2020, within the 120 day Bid Security period.

There are liquidated damages associated with this project. Liquidated damages will be in the amount of \$2,500 per day for each calendar day beyond the Substantial Completion date. Liquidated damages will increase to the amount of \$10,000 per day for each calendar day more than 120 days after the Substantial Completion deadline."

### DOCUMENT 004213

1. Replace existing unit price schedule with attached unit price schedule.

### DOCUMENT 005213

1. Page CA-2
  - a. Replace paragraph 2, "TERMS OF AGREEMENT" in its entirety with the following:

"The term of this Agreement begins upon issuance of the Notice to Proceed by Brunswick County (the "Effective Date") and continues in effect until the entire project achieves Substantial Completion within 365 days of Notice to Proceed, unless extended or sooner terminated as provided for in the Brunswick County General Conditions of the Contract."
2. Page CA-3
  - a. Replace the paragraph at the top of the page (beginning with "The Contractor is hereby notified...") in its entirety with the following:

"The Contractor is hereby notified that there are liquidated damages associated with this project. Liquidated damages will be in the amount of \$2,500 per day for each calendar day beyond the Substantial Completion date (365 days after the Notice to Proceed). Liquidated damages will increase to the amount of \$10,000 per day for each calendar day more than 120 days after the Substantial Completion deadline."

## SECTION 012901

1. Page 012901-5, Paragraph 3.02A
  - a. Replace Paragraph 3.02A title (“AC Pavement Replacement (BID ITEM NO. 3)”) with the following text:  
“A. Full Depth AC Pavement Replacement (BID ITEM NO. 3)”
2. Page 012901-7, Paragraph 3.02F
  - a. Following Paragraph 3.02F, insert the following:  
  
“G. 1.5” Mill and Overlay (BID ITEM NO. 9)
    1. Measurement
      - a. Measurement shall be for the volume of material defined by the technical specifications as being required for 1.5” milling and overlay of existing AC. For the defined volume, the unit price shall include all work to remove and dispose of existing 1.5” asphalt concrete (AC) and furnish and install new AC.
      - b. Measurement for progress payment shall be made by, or approved by, the Engineer based on the estimated effective quantity installed. The effective quantity installed represents the actual units or quantities installed, adjusted for incomplete elements or components.
      - c. Unless otherwise provided for in the Form of Proposal unit price items are all-inclusive of all related work, direct and indirect, to provide a complete and functional item. For this bid item it includes, but is not limited to saw cutting, removal of existing pavement, traffic control, milling, tack coat, AC surface course, sealcoating, replacement of reflective markers and restriping per NCDOT requirements, inspection fees and other measures necessary to receive written approval from NCDOT and successful project completion including permitting, general conditions, overhead and profit.
      - d. The final measurement shall be based on actual quantities, jointly measured by Contractor and Engineer, complete, fully, tested and placed into service.
    2. Payment
      - a. Progress payments shall be in accordance with the contract documents based on estimated effective quantities installed, paid at the bid unit price.
      - b. The final payment shall be based on actual quantities, fully installed, tested and placed into service, paid at the bid unit price.”

## SECTION 013100

1. On page 013100-7, delete subparagraph 1.7G.2 in its entirety with no replacement. Renumber following paragraphs accordingly.
2. On page 013100-7, add the following subparagraph following subparagraph 1.7G.4.f:  
“g. eBuilder, Trimble Company”

## SECTION 015000

1. On page 015000-4, delete subparagraph 2.2B in its entirety with no replacement. Renumber following paragraphs accordingly.

## SECTION 321216

1. On page 321216-1 delete paragraph 1.3 in its entirety with no replacement. Renumber following paragraphs accordingly.

SECTION 331213

1. On page 331213-1 delete paragraph 1.2 in its entirety with no replacement. Renumber following paragraphs accordingly.

SECTION 331216

1. On page 331216-1 delete paragraph 1.2 in its entirety with no replacement. Renumber following paragraphs accordingly.

SECTION 331219

1. On page 331219-1 delete paragraph 1.2 in its entirety with no replacement. Renumber following paragraphs accordingly.

SECTION 334213.13

1. On page 334213.13-1 delete paragraph 1.3 in its entirety with no replacement. Renumber following paragraphs accordingly.

APPENDIX D

1. Insert the attached NCDEQ Land Quality Section Letter of Approval with Modifications and Performance Reservations as "Appendix D" in the Specifications Package.

## **IN THE DRAWINGS**

1. All Combination Air/Vacuum valves within road rights-of-way shall have offset manholes placed flush with the ground and adjacent to the right-of-way per detail A, Sheet C-D-2. See attached revised plan sheets.
2. Where the pipeline crosses side streets, extend pavement repairs to the right of way or 15' past the edge of trench, whichever is greater. See attached revised plan sheets.
3. For all air release manholes in the northern private properties, set the manhole rim 2' above ground.
4. Pavement repair limits have been updated per NCDOT and Brunswick County comments. See attached revised plan sheets.
5. Sheets C-CP-7 and C-CP-8 have updated wetlands delineation and disturbance limits.
6. The construction entrance on sheet C-CP-23 has been updated. The temporary entrance shall become permanent to the dimensions shown.
7. The construction entrance to the HDD laydown area on sheet C-CP-25 has been removed.

Replace the following drawings in their entirety with the respective new drawings included in the Attachments:

1. G-GN-3
2. C-CP-2
3. C-CP-4
4. C-CP-5
5. C-CP-6
6. C-CP-7
7. C-CP-8
8. C-CP-9
9. C-CP-12
10. C-CP-13
11. C-CP-14
12. C-CP-15
13. C-CP-16
14. C-CP-18
15. C-CP-19
16. C-CP-20
17. C-CP-21
18. C-CP-22
19. C-CP-23
20. C-CP-24
21. C-CP-25
22. C-CP-27
23. C-CP-28
24. C-CP-29
25. C-D-1

## **ATTACHMENTS**

1. Pre Bid Meeting Sign-In Sheet, Presentation, and Questions/Answers
2. Revised Unit Price Schedule
3. NCDEQ Land Quality Section Letter of Approval with Modifications and Performance Reservations
4. Revised Drawings

**END OF ADDENDUM 2**



BRUNSWICK COUNTY  
NORTHWEST WTP EXPANSION AND UPGRADES

Pre-Bid Meeting  
October 30, 2019

Name	Organization	E-mail	Phone
Brad Adams	Adams Robinson Crawder Construction	ARCO@ADAMSROBINSON.COM	937-274-5318
Rick Turner	"	L Turner@CrawderUSA.COM	919-367-2000
Randy Damm	"	R Damm@CrawderUSA.COM	919-367-2000
GREG EVERHART	GREG EVERHART & CONCRETE ASSOC.	GREGEVERHART@ CONCRETEASSOC.COM	804-552-4259
Tim Bishop	Hayward	tbishop@beyond.net	704-583-2305
Geoff Burdick	Underground Stations	gburdick@region.com	704-619-0522
Love Theriault	Garvey	ltheriault@garvey.com	720-810-9486
Rob Horgan	Core & Main	Rob.Horgan@coreandmain.com	813-382-6560
Manny Paouris	Core & Main	Emmanuel Paouris <del>paouris</del> @coreandmain.com	864-906-6068
Mike Manning	Core & Main	mike.manning@coreandmain.com	910-443-4390
Devin Carroll	CCU	devin.carroll@ccu.com	919-661-5556
CHAD A. VAN HYNING	ULLMAN SCHUTE	cvanhynig@ullmanschute.com	980-256-4674





# Northwest Water Treatment Plant Expansion and Upgrades - and - Concentrate Discharge Pipeline

Pre-Bid Meeting  
Brunswick County, NC

*October 30, 2019*



**CDM  
Smith**

# Meeting Agenda

- Introductions
- General Overview of Projects
  - Meeting Logistics
  - Project Description
  - Bidding Details
- Concentrate Discharge Pipeline - Project Details
- NWTP Upgrade and Expansions – Project Details
- Questions and Answers

# Introductions

- John Nichols, Utilities Director
- Bob Tweedy, Project Manager
- Glenn Walker, Water Resources Manager
  
- Greg Roy, Project Manager
- Jonathan Treadway, Design Manager
- Michael Pollard, Pipeline Design Manager



# Pre-Bid Meeting is for Two Projects

## NWTP Expansion and Upgrades

- Work 'inside the fence' at NWTP
- Includes pipeline portions on the WTP property
- Only Prequalified General Contractors may submit
- Bid Opening: December 12, 2019
- Estimated Value: \$110 million

## Concentrate Discharge Pipeline

- 4-mile PVC pipeline
  - Open cut and HDD
- Outfall into Cape Fear River
- Bid Opening: December 12, 2019
- Estimated Value: \$7 million



# General Overview of Project

# Meeting Logistics

- Sign-in sheet
- Questions and answers during presentation
- Meeting correspondence provided with first addendum
  - Sign-in, presentation, Q&A
- Pre-bid Presentation format
  - Pipeline project
  - NWTP project
  - Adjourn at noon
- Site visits
  - Not mandatory
  - Today @ 2:00 at NWTP, 3954 Clearwell Dr, Leland, NC
  - Other times – refer to contract documents for scheduling

# General Project Description

- General Project Description
  - NWTP, Clearwell Drive  
Leland, NC
- CDM Smith Role
- Permitting Status
- Project Funding
- Subcontractor Requirements
  - MBE goal 5%



# General Project Overview

- NWTP
  - Work in nearly every process area at the site
  - Multiple trades required: Civil, Architectural, Structural, Process, Plumbing, HVAC, Fire protection, Electrical, and Automation/ Controls
- Concentrate Pipeline
  - 4 miles (20,115 feet)
  - Majority in DOT right-of-way
  - Portions in easements on private property
  - Open cut, Jack-and-Bore, and multiple HDDs
  - Construction of outfall at Cape Fear River shoreline

# Bidding Details

- Bidding details (common to both projects)
  - Sealed bids with public opening
  - Bid opening December 12, 2019
  - Last addendum before December 5, 2019
- Basis of Award: *The Owner may award on the basis of the base bid, unit prices, any alternates the Owner chooses, as well as meeting the requirements for consideration as a responsible Bidder.*
- What constitutes a complete bid (refer to Instructions to Bidders)?
  - Form of Proposal (all entries completed)
  - Identification of Minority Business Participation Form
  - MBE Affidavit A (Listing of Good Faith Efforts)
  - Form of Bid Bond (5%) or cash deposit
  - Sealed inside envelope “SEALED BID, DO NOT OPEN”

# Procedures During Bidding

- Process to submit questions
  - Only written questions will receive responses
  - E-mail:
    - NWTP: Jonathan Treadway, CDM Smith: [treadwayjb@cdmsmith.com](mailto:treadwayjb@cdmsmith.com)
    - Pipeline: Michael Pollard, CDM Smith: [pollardma@cdmsmith.com](mailto:pollardma@cdmsmith.com)
  - Cut-off date for questions is December 2, 2019
    - 10 days prior to bid opening
- Addendum
  - Official changes to the contract documents
  - First addendum in early November
  - Addendum in early December detailing RO Building bid alternate

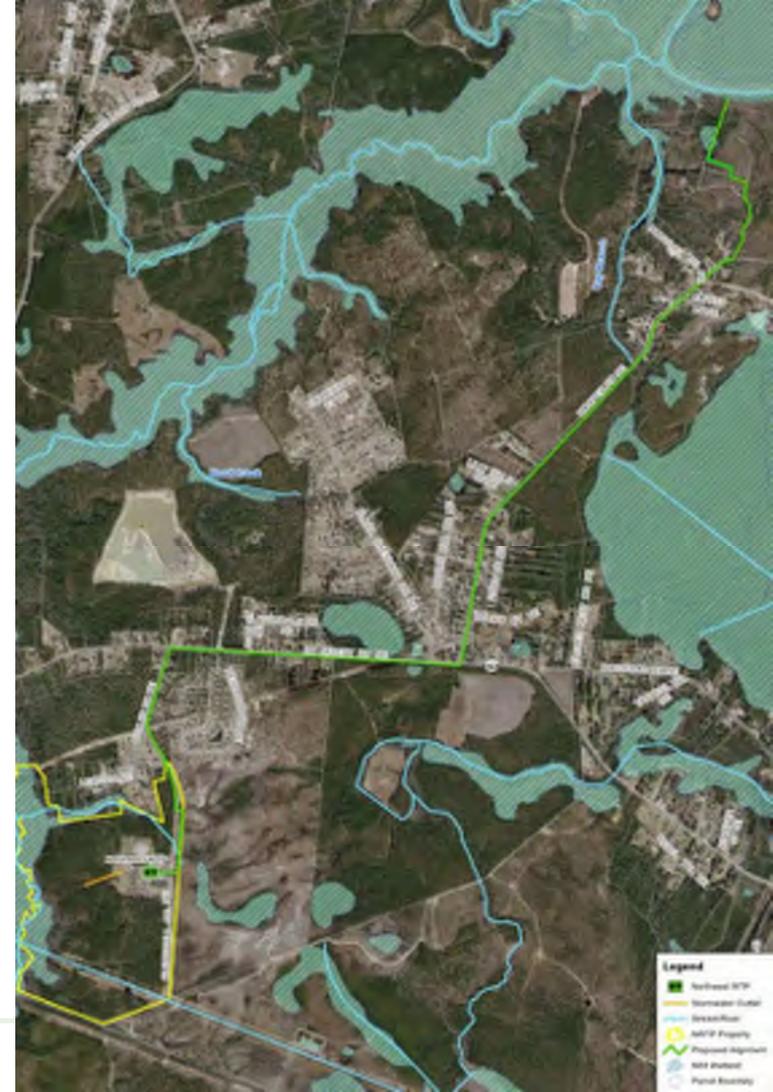
# Concentrate Discharge Pipeline



# Concentrate Discharge Pipeline

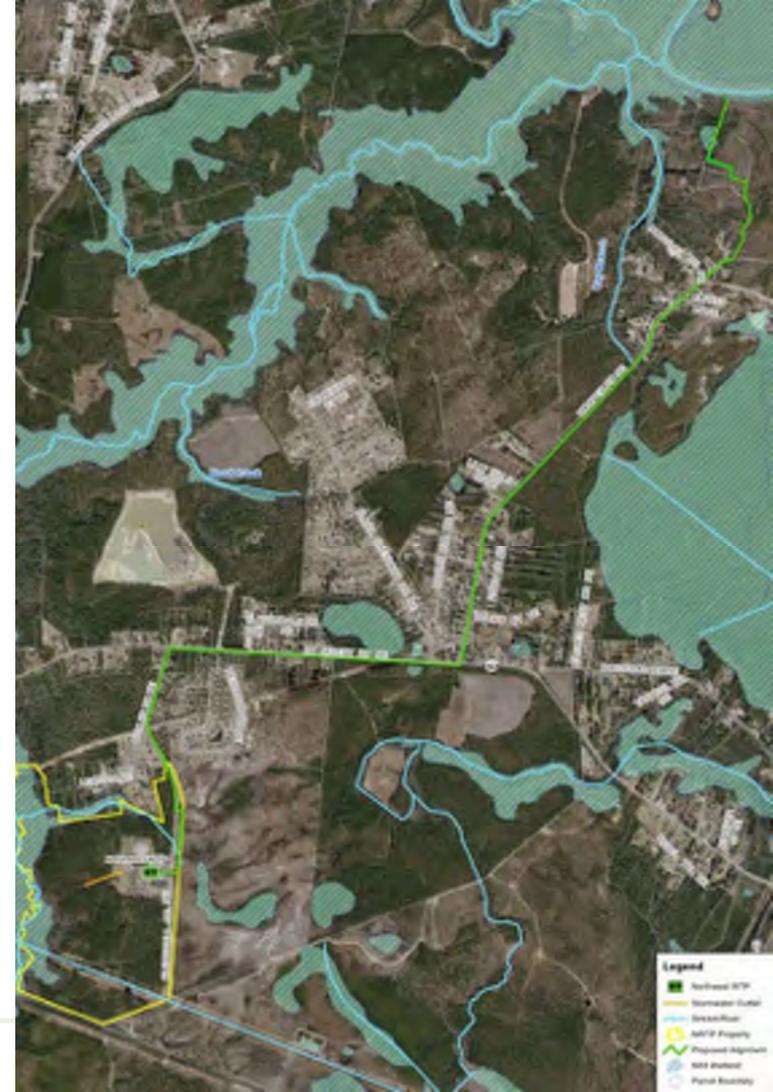
## Overview

- Project Description
  - 18" PVC C900, DR18 w/DIP fittings
  - Restrained joints where shown
- Methods of Construction
  - Open cut: Approx. 18,300'
  - Jack-and-bore: Approx. 70'
  - HDD: Approx. 1,800' (3 total)
    - Pull-back from River possible
- Anticipated Pavement Repairs
  - Crossings and Zone of Influence
- Status of Easements



# Concentrate Discharge Pipeline Overview

- Driveways and Culverts
  - Driveways from EP to R/W or nearest joint
  - Culverts min. 15" RCP
- Private Property Improvements
  - Replace in kind.
  - Photos on plans



# Concentrate Discharge Pipeline

## Schedule and Constraints

- Construction Constraints ... work in Cape Fear River
  - Seasonal work in River – July 1 to Jan 31
  - ‘Temporary’ obstructions in the river
- Construction schedule
  - February 1, 2021 – Substantial Completion
- Liquidated Damages
  - Beyond February 1, 2021 - \$2,500/ day
  - Beyond July 1, 2021 - \$10,000/ day

# Concentrate Discharge Pipeline

## Form of Proposal and Agreement

- Form of Proposal
  - Base Bid = Lump Sum + Unit Price + Allowances

### UNIT PRICE ITEMS:

Pay Item	Pay Item Description	Unit	Est. Quantity	Unit Price	Extended Price
1	Change Order (Allowance)			\$150,000	\$150,000
2	Materials Testing (Allowance)			\$40,000	\$40,000
3	AC Pavement Replacement	SY	2,900	\$	\$
4	Concrete Driveway Replacements	SY	525	\$	\$
5	15" RCP Culvert Replacements	LF	860	\$	\$
6	18" RCP Culvert Replacements	LF	65	\$	\$
7	30" RCP Culvert Replacements	LF	110	\$	\$
8	Remove and Replace Unsuitable Pipe Subgrade Material	CY	100	\$	\$
	<b>Unit Price Items (Total Extended Items 1-8)</b>			\$	

### Notes:

1. The base bid shall include all items as indicated on this form. Base bid amount shall be recorded where indicated on Form of Proposal page F-1, above.
2. Bidder is advised that pay items 1 and 2 are allowances and will be measured and paid for based on actual costs incurred as indicated in the contract documents.
3. Bidder is advised that Unit Price Items stipulated as part of these contract documents shall be measured and paid for based on the actual quantities installed.
4. Units: LF – Linear Feet, SY – Square Yard, CY – Cubic Yard



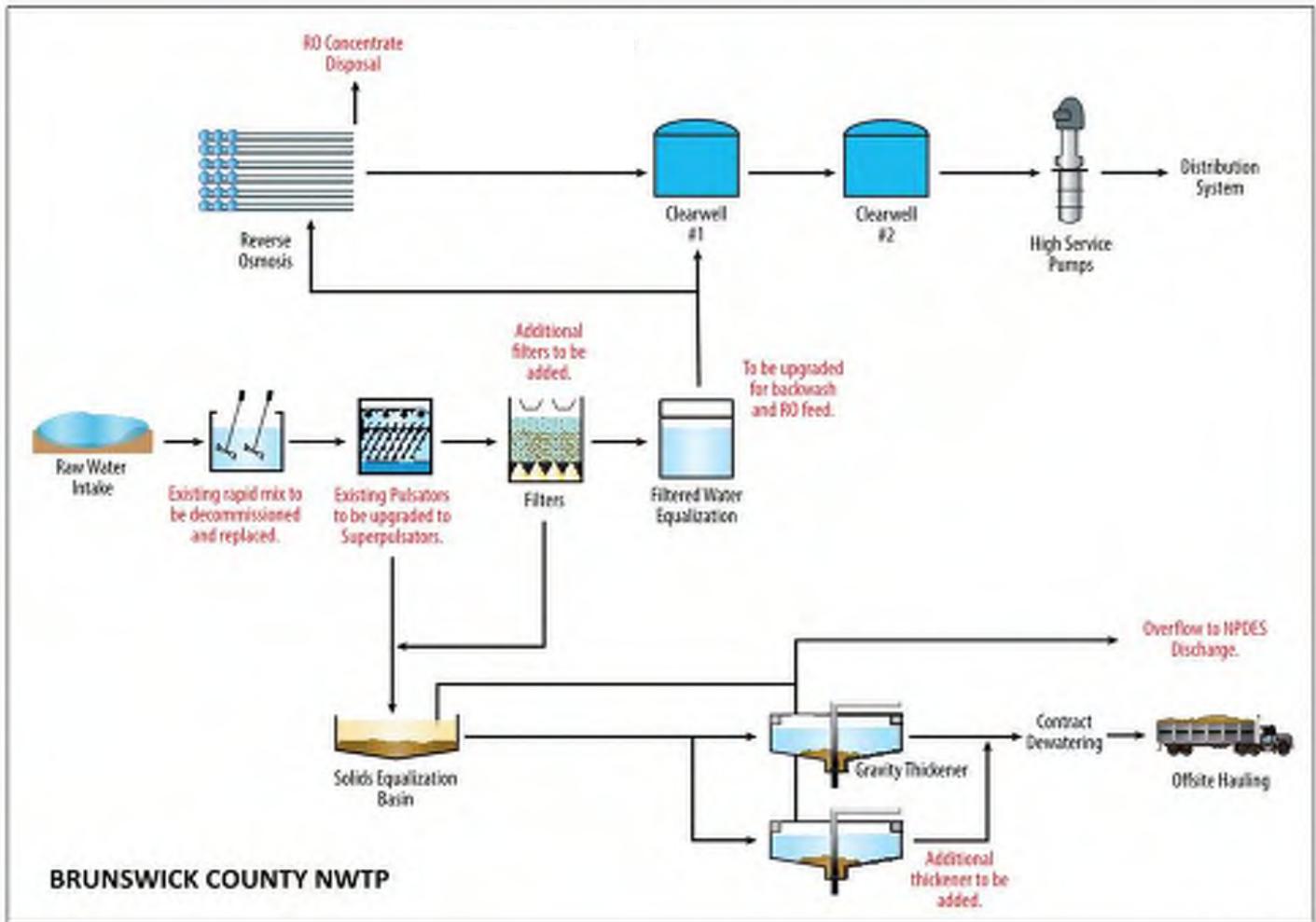
# NWTP Expansion and Upgrades

# NWTP Upgrade and Expansions

- Project Description
- MOPO
- Construction Constraints
- Dependent Construction Contracts
- Form of Proposal with Bid Alternates
- Construction Schedule



Brunswick County  
Northwest Water Plant



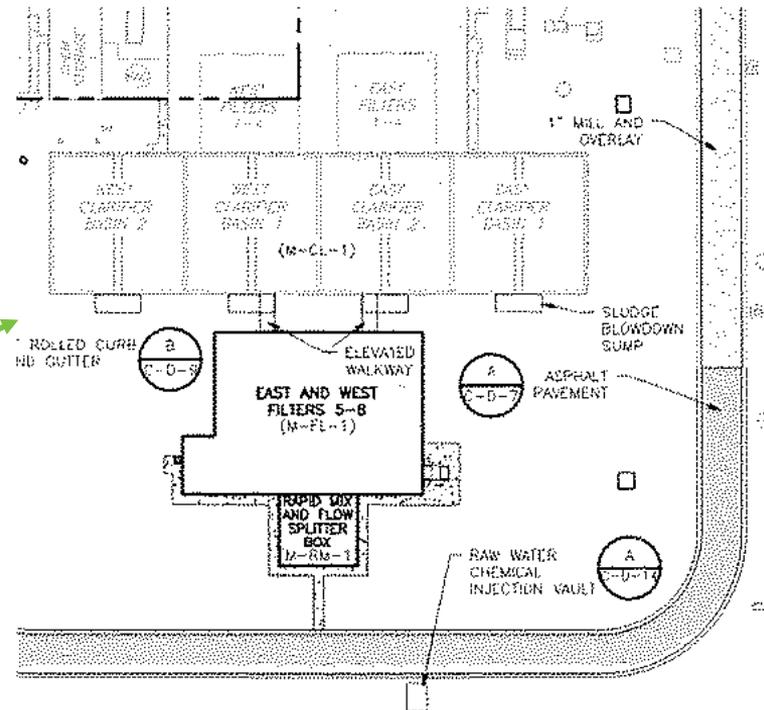
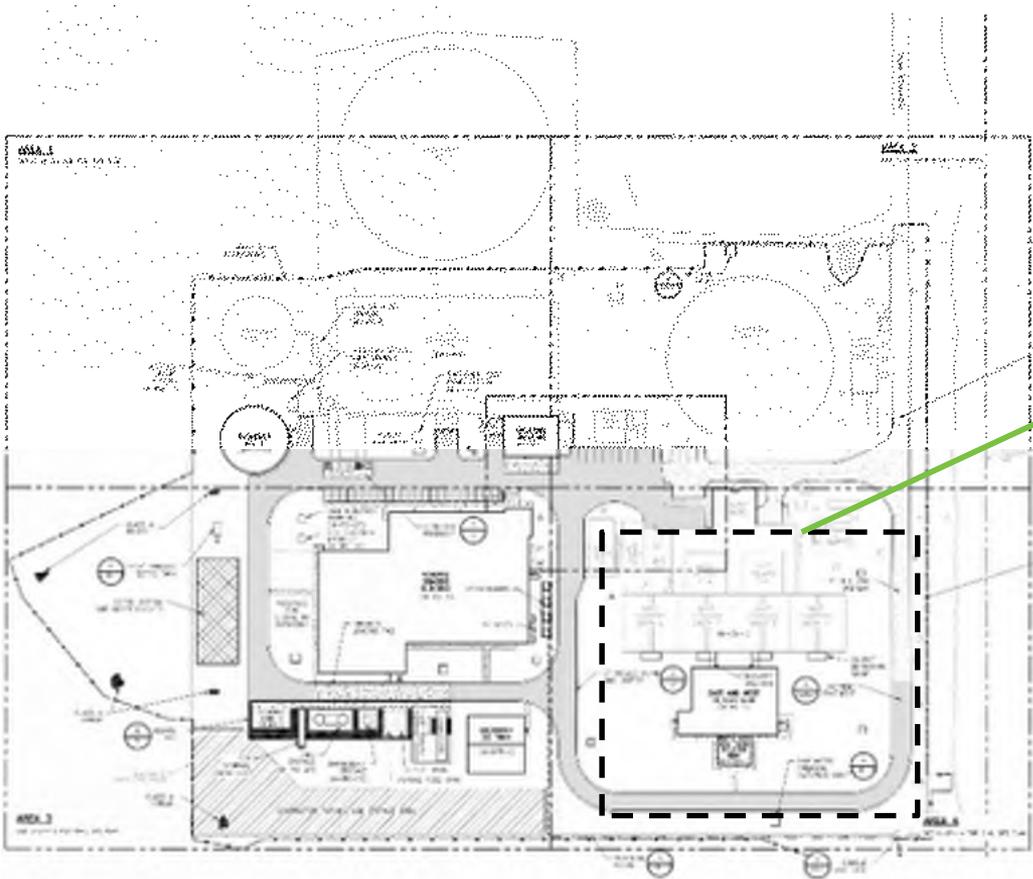
## Scope of Work

- New Raw Water Pipe
- New Rapid Mix
- Upgrade Clarifiers
- New Filters
- New EQ Tank
- New RO Building
- New Gravity Thickener
- New Chlorine Building
- New and Upgrades to Chemical Systems
- Yard Piping
- Electrical Upgrades
- I&C Upgrades with SCADA



# Project Scope of Work Details

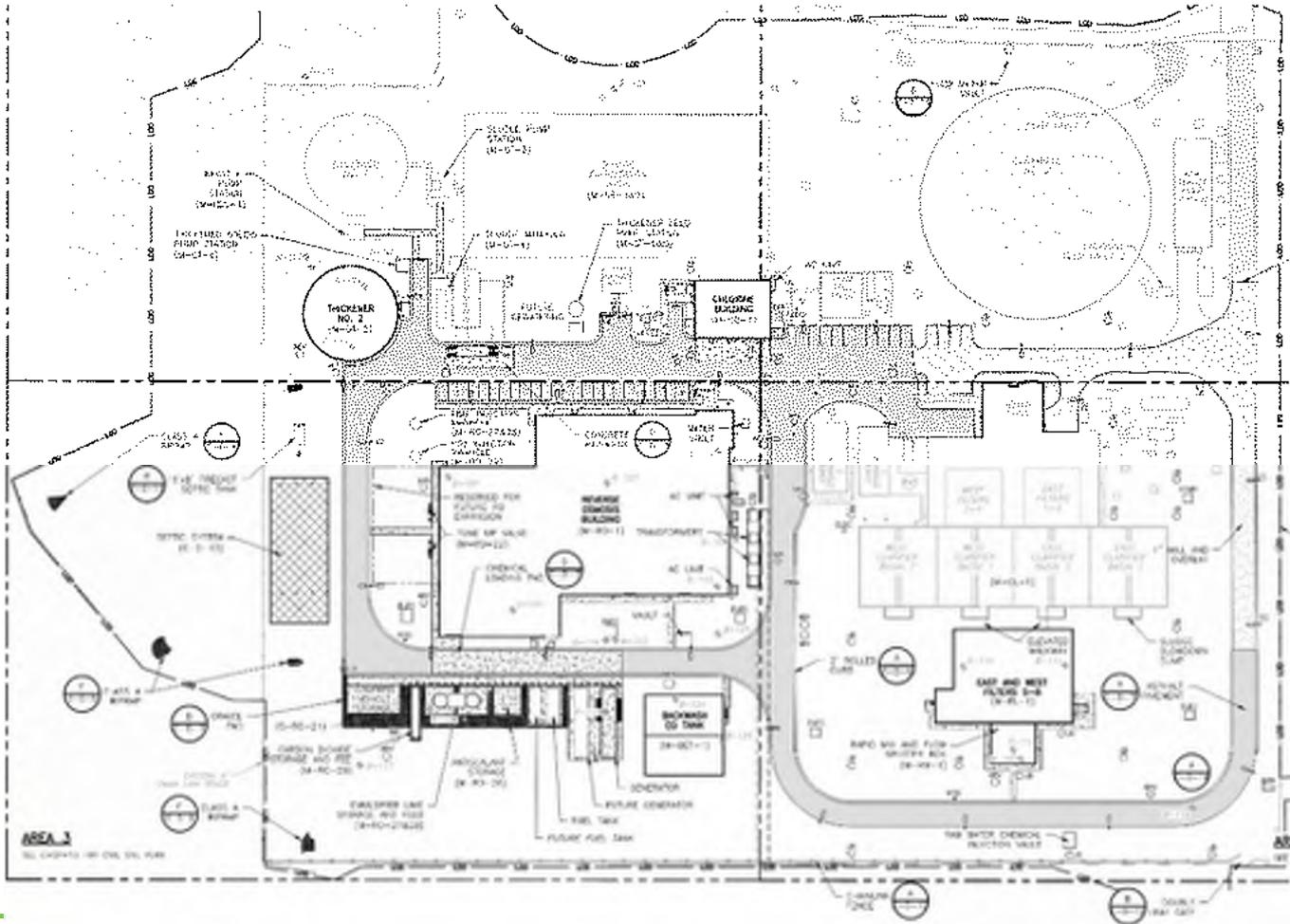
- Clarifiers
  - Upgrade existing basins (total of 4)
  - Sole source equipment to Suez for SuperPulsator® clarifiers
  - Seasonal work constraint for basin shutdowns
- Filters
  - New filter basins – Two ‘modules’ with 8 total filters
  - Sole source equipment to Suez for Greenleaf® filters
  - Deep pile foundations



# Project Scope of Work Details

- Reverse Osmosis Building
  - Tilt Up Construction
  - Large Underslab Piping
  - Skid Area, Pump Room, Electrical Room, Training Room, Control Room
  - 'Pre-load', allows for shallow foundation design
  - Early completion milestone
- Reverse Osmosis Equipment
  - 8 skids, 5.15 mgd permeate each
    - Membrane System Suppliers listed in spec have been prequalified





## Additional Scope of Work

- Gravity Thickener
- Chlorine Building
- Chemical Systems
- Electrical
- I&C

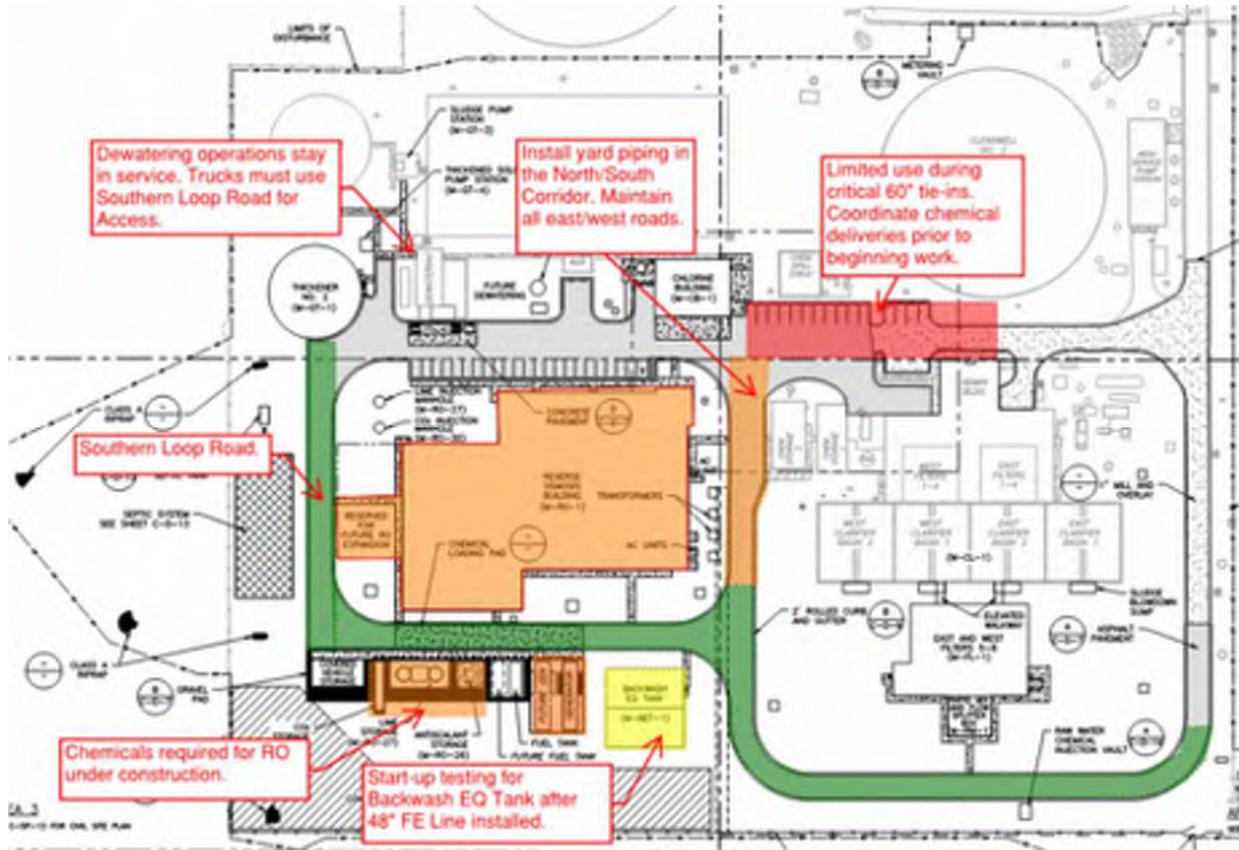
# Work By Others

- Concentrate Discharge Pipeline
  - 4.5 mile pipeline
  - Begins at NWTP gate
  - Discharges to Cape Fear River
- Raw Water Pipeline
  - Large Transmission Line By LCFWASA
  - Tie-in with on-site RW pipelines (1 new, 1 existing) required
- Residuals Dewatering Contractor
  - On-site contractor
  - Covered belt filter press
  - Infrequent chemical deliveries
  - Frequent hauling of dewatered cake

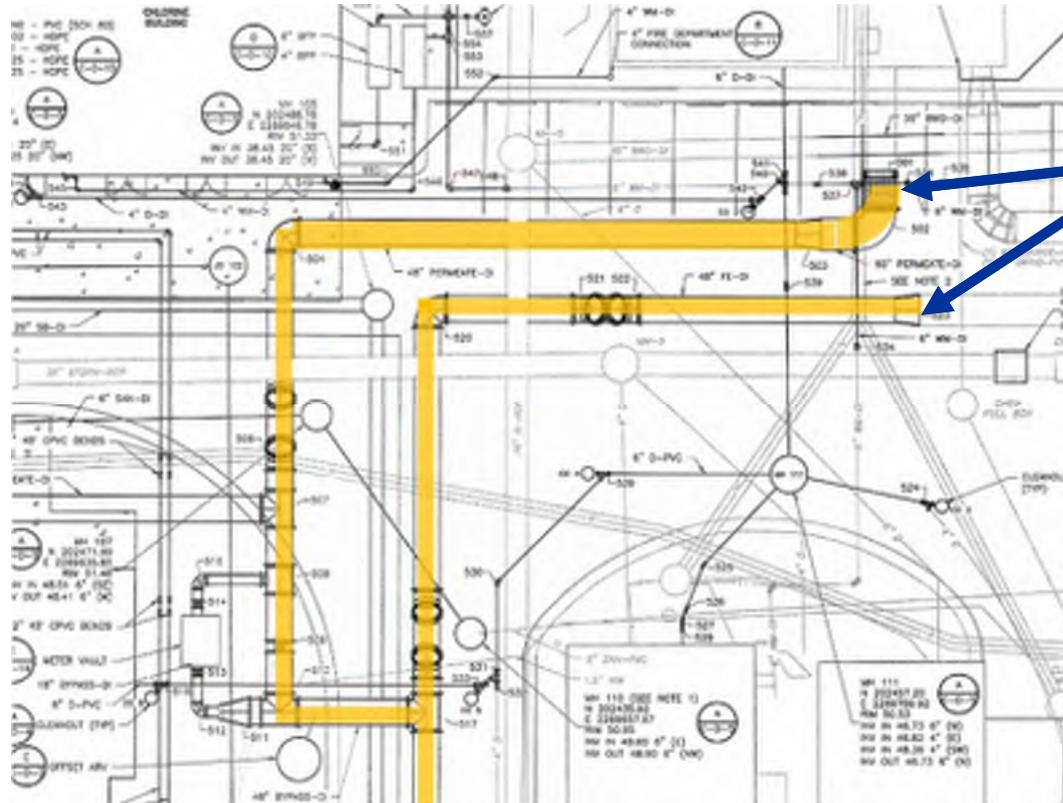
## Construction Constraints – Section 013513.54

- MOPO/ Capacity
  - 12 mgd capacity at all times
  - 24 mgd (full) capacity in warm months
  - Shutdown constraints
- Traffic
  - Chemical deliveries
  - Residuals contractor hauling
  - Plant O&M staff
  - ‘Contractor’ entrance planned
- Work sequence
  - New electrical service (RO)
  - Raw water pipeline
  - Rapid Mix construction
    - Temporary piping required
  - Early completion milestone for RO

# Critical Work Sequences – Road Closures

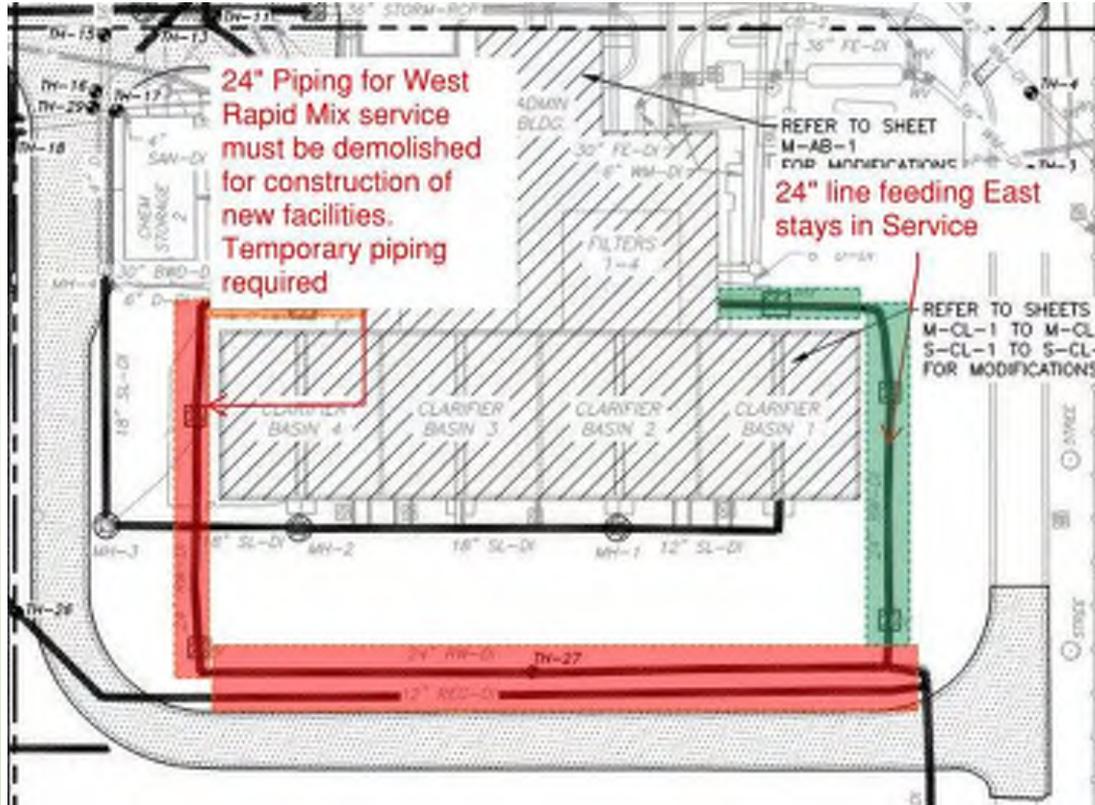


# Critical Work Sequence – Yard Piping Tie-In



Critical yard piping tie-ins

# Critical Work Sequences – Temporary Raw Water Piping



# Form of Proposal

- Base Bid
  - Lump Sum
  - Unit Price Work
- Deductive Bid Alternates
  - 1 & 2 – modify RO scope of work
  - 3, 4, & 5 – extend RO deadlines
  - 6 – extend project deadline for conventional treatment
  - 7, 8 & 9 – modify conventional treatment scope of work
  - 10 – remove all RO from the scope of work
- Measurement and Payment – Section 01 29 01

Pay Item	Pay Item Description	Unit	Est. Quantity	Unit Price	Extended Price
1	Change Order Allowance	LS	1	\$ 300,000	\$300,000
2	Materials Testing Allowance	LS	1	\$250,000	\$250,000
	Removal and replacement of Unsuitable Material	CY	200	\$	\$
4	Clarifier Concrete Tank Repair - Prepare and Repair equal to or greater than 3/8-inch in depth	SF	6,800	\$	\$
5	Clarifier Concrete Tank Repair - Prepare and Repair less than 3/8-inch and greater than 1/8-inch in depth	SF	10,300	\$	\$
6	Clarifier Concrete Tank Repair - Flexible Polyurethane Coating	SF	56,300	\$	\$
7	Clarifier Concrete Tank Repair - Prepare and Repair less than 1/8-inch in depth	SF	20,400	\$	\$
8	Clarifier Concrete Tank Repair Crack Repair	LF	400	\$	\$
	<b>Unit Price Items (Total Extended Items 3-8)</b>	S			

# Construction Schedule

Bid Alternate	First 4 RO Skids	36 mgd Conventional Treatment Capacity	Substantial Completion
Base Bid + Alternates 1, 2, 7, 8, & 9	12/16/2021	N/A	6/30/2022
Alternates 3, 4, & 5	12/16/2022	5/15/2022	4/28/2023
Alternate 6	12/16/2022	5/15/2022	4/28/2023
Alternate 10	N/A	N/A	6/30/2022

Note: Final Completion milestone is 3 months following Substantial Completion milestone  
 All alternates require conventional expansion to be completed 6/30/2022  
 Alternate 6: Extends milestone for final filters and clarifiers until 4/28/2023  
 Liquidated Damages are \$5,500 per day for each milestone



Questions?



**CLIENT:** Brunswick County Public Utilities

**PROJECT:** Northwest Water Treatment Plant

**DESCRIPTION:** Pre-bid meeting

**LOCATION:** Training Room, Utility Operations Center, Supply, NC

**DATE AND TIME:** Wednesday, October 30, 2019, 10:00 AM

**NOTES FOR BOTH NWTP UPGRADE AND CONCENTRATE DISCHARGE PIPELINE:**

1. See sign-in sheet for list of attendees.
2. Presenters include: Bob Tweedy, Greg Roy, Michael Pollard, and Jonathan Treadway.
3. During project introduction, it was noted the pre-bid meeting was common to two separate construction contracts currently out for bidding. The first contract is for the Northwest Water Treatment Plant (WTP) Expansion and Upgrades and has a planned contract value of approximately \$110 million. The second contract is for the Northwest Water Treatment Plant Concentrate Discharge Pipeline and has a planned contract value of approximately \$7 million.
4. The Northwest WTP Expansion and Upgrades project is open for bidding by six (6) prequalified general contractors listed in bid advertisement.
5. Project is funded by Brunswick County. Other funding sources such as SRF and WIFIA have been considered but are no longer being pursued for the project. Conditions of these funding sources – such as Davis-Bacon Act wage rates, federal minority business participation, and American Iron and Steel Act requirements – are not required.
6. County has an MBE participation goal of 5%.
7. Bid opening is 3/5/20 at 3:00 P.M.
8. Cut-off date for questions is 2/24/20 and last addendum is planned for 2/27/20.

**QUESTIONS AND ANSWERS:**

1. QUESTION: Since the contracts are written with fixed dates for completion, it is necessary to know the date of 'Notice to Proceed' for project planning. What is the latest date Brunswick County anticipates NTP? As a follow-up, if NTP is delayed until May 2020, the milestone of Feb. 1, 2021 causes concern with having adequate time to complete the work for the Concentrate Discharge Pipeline.  
RESPONSE: *Brunswick County has reviewed and updated the schedule for award and construction milestones for the WTP Expansion and Upgrades. The construction period for the concentrate discharge pipeline project is changed to 365 days from NTP. Refer to this Addendum and other WTP and Pipeline Addendums for clarification.*
2. QUESTION: When is start-up of the RO facility planned?  
RESPONSE: *Brunswick County has reviewed the schedule for award and construction milestones for the WTP Expansion and Upgrades and issued addenda to clarify these dates. The general contractor for the WTP project will develop the full schedule; however, startup and commissioning of RO is expected to begin as soon as June 2022.*

3. QUESTION: Will the concentrate discharge pipeline project be cancelled if Brunswick County selects the bid alternate that removes RO from the project?  
RESPONSE: *Yes. While the County intends to proceed with the full scope of both projects, the concentrate discharge pipeline project would be cancelled if RO is removed from the WTP project.*
4. QUESTION: Given that completion milestones – and associated liquidated damages – for the Concentrate Discharge Pipeline are tied to fixed dates, such as 2/1/2021 and 7/1/2021, will additional time be allowed for weather days?  
RESPONSE: *Completion of the pipeline is changed to 365 days from NTP. Additional time will be allowed for abnormal weather conditions when it can be demonstrated said conditions impact the completion date.*
5. QUESTION: Upon initial review, fusible PVC did not appear to be allowed by the specifications for the Concentrate Discharge Pipeline. Will fusible PVC be allowed? Is fusible PVC acceptable for restrained joints?  
RESPONSE: *Fusible PVC will be allowed for all open cut and HDD applications. An addendum will be issued to offer needed clarifications. Refer to specification 330531.16 for requirements of PVC and fusible PVC pipe.*
6. QUESTION: On C-CP-29 of the Concentrate Discharge Pipeline drawings, what access is available for areas inside the easements, but outside of areas shown for disturbance?  
RESPONSE: *All work and access are by construction easement. Land clearing and disturbance within the wetlands is only allowed in the locations shown on the plans.*
7. QUESTION: On the bid form for the concentrate pipeline, do the quantities in the unit price table match the quantities shown on the plans?  
RESPONSE: *Yes. The Bid Schedule has been revised in this addendum (Addendum #2).*
8. QUESTION: Is integral locking PVC acceptable as a restrained joint PVC on the Concentrate Discharge Pipeline?  
RESPONSE: *Integral locking PVC is acceptable as a restrained joint for open-cut construction. The use of this material may be evaluated for HDD if a driller requests use of the same and can provide proof of prior successful use.*
9. QUESTION: Regarding Detail E on C-D-1 and hatched areas of pavement shown on the pipeline plans (such as C-CP-4), what is the extent of the repair to be required?  
RESPONSE: *The limits of pavement repairs have been modified and are shown on the attached addendum (Addendum #2).*
10. QUESTION: On the bid form for the concentrate pipeline, what is the basis of the 2,900 sy estimate for AC pavement replacement?  
RESPONSE: *The bid form has been revised per the attached addendum (Addendum #2). This updated quantity is calculated based on the limits requested by NCDOT which are reflected in the plans.*
11. QUESTION: With open cut road crossings, what is expected for traffic control?  
RESPONSE: *Refer to project specifications for traffic control requirements. If contractor anticipates extended traffic control (i.e., 24-hr flagging), then alternate construction may be considered, subject to NCDOT approval.*

12. QUESTION: Section 013100 of the concentrate pipeline project requires up to ten (10) project management software licenses to be provided to Owner and Engineer. Will the owner consider reducing the number of licenses required given the size of the pipeline project?  
RESPONSE: *The County will not require project management software licenses for the pipeline project. Please refer to Addendum #2 for clarification.*
13. QUESTION: Under 'Temporary Facilities' of Section 015000 in the concentrate pipeline project, field offices are required for the engineer. Will the owner consider reducing this requirement given the size of the pipeline project?  
RESPONSE: *A field office for contractor's use will be provided at the discretion of the contractor. An engineer's field office will not be required for the pipeline project; refer to Addendum #2 for clarifications.*
14. QUESTION: Section 017823 of the concentrate pipeline project requires an emergency manual. Will the owner consider reducing the requirement given the scope and size of the pipeline project?  
RESPONSE: *The emergency manual is intended to focus on procedures for operations and special emergency operating procedures. Note that not all emergency manual procedures will be applicable to the Pipeline project.*
15. QUESTION: Will CDM Smith provide CAD files to aid in the preparation of record drawings?  
RESPONSE: *PDF files will be provided.*
16. QUESTION: What are the requirements for tree protection for work outside of the right-of-way (R/W)?  
RESPONSE: *Trees outside of the R/W shall not be disturbed without written permission of the property owner. Tree protection measures, when employed, shall be installed within the R/W unless written permission is obtained from the property owner to install protection measures outside of the R/W.*
17. QUESTION: Is a pre- and post-survey by PLS required by DOT?  
RESPONSE: *Not required.*
18. QUESTION: Is the reason for limiting clarifier upgrades to November-March due to seasonal demand restrictions?  
RESPONSE: *Yes.*
19. QUESTION: If coatings in clarifier require heating, heating and heating enclosures will be required; right?  
RESPONSE: *Correct.*
20. QUESTION: Will the Owner provide the security guard for site access?  
RESPONSE: *No. This is responsibility of the WTP general contractor. A security guard is only required for the WTP project, not the Pipeline project.*
21. QUESTION: Do specs require 10-hour OSHA and background checks for security guards?  
RESPONSE: *Specifications do not address OSHA and background check requirements. General contractors should use discretion when identifying security personnel.*
22. QUESTION: Do spoils have to be taken offsite for the NWTP Upgrade?  
RESPONSE: *The base bid shall include removal of all spoils from the site.*
23. QUESTION: For the WTP contract, on pay item descriptions, there is 56,300 sf of coating, but only 36,800 sf of concrete repair. Does that mean there is new concrete that does not require repair?

RESPONSE: *Yes, some of the existing concrete is in good enough shape to not require repair. Additionally, new concrete will be coated.*

24. QUESTION: When will the County decide on selecting Bid Alternate No. 10, deducting RO from the scope of work?

RESPONSE: *The time for deciding has not been determined. The controlling factors include bid price, available project budget, and status of the NPDES discharge permit. More information may become available as the permitting process progresses.*

25. QUESTION: Is it possible that contractors could be waiting for 120 days to find out who will be awarded the project due to the number of bid alternates and unknowns associated with the NPDES permit?

RESPONSE: *The basis of award for the WTP project has been updated per Addendum 3 for the WTP project.*

26. QUESTION: The method of award presents concerns. Are there considerations to simplify award to just the lowest base bid price?

RESPONSE: *The WTP project has been modified to reduce the number of bid alternates.*

27. QUESTION: Why is there a \$300,000 change order allowance on WTP project (approximate value of \$110 million), while the pipeline project (approximate value of \$7 million) has a \$150,000 allowance?

RESPONSE: *The intent of the change order allowance is not to cover all potential changes and costs. Instead, the allowance is intended to cover minor changes that need immediate approval to proceed. Major cost changes will be approved by the Board of Commissioners.*

28. QUESTION: Is the over-excavation shown on the plans (e.g., at the thickener) part of the lump sum or unit price items?

RESPONSE: *Over-excavation to the limits shown on the plans is in the lump sum fee.*

29. QUESTION: Will the County consider changing the project milestones to a 'days from notice to proceed' or are the completion dates going to remain a part of the contract?

RESPONSE: *The pipeline completion date has been changed to 365 days from Notice To Proceed. This change has been provided by Addendum #1 for this project.*

30. QUESTION: Will the County consider reducing the liquidated damages for the NWTP Upgrade? Some contracts have damages at \$2,000/day.

RESPONSE: *No. The liquidated damages of \$5,500/day are appropriate for the NWTP.*

**UNIT PRICE ITEMS:**

<b>Pay Item</b>	<b>Pay Item Description</b>	<b>Unit</b>	<b>Est. Quantity</b>	<b>Unit Price</b>	<b>Extended Price</b>
1	Change Order (Allowance)			\$150,000	\$150,000
2	Materials Testing (Allowance)			\$40,000	\$40,000
3	Full Depth AC Pavement Replacement	SY	1,850	\$	\$
4	Concrete Driveway Replacements	SY	525	\$	\$
5	15" RCP Culvert Replacements	LF	860	\$	\$
6	18" RCP Culvert Replacements	LF	65	\$	\$
7	30" RCP Culvert Replacements	LF	110	\$	\$
8	Remove and Replace Unsuitable Pipe Subgrade Material	CY	100	\$	\$
9	1.5" Mill and Overlay	SY	1,000	\$	\$
<b>Unit Price Items (Total Extended Items 1-8)</b>				\$	

Notes:

1. The base bid shall include all items as indicated on this form. Base bid amount shall be recorded where indicated on Form of Proposal page F-1, above.
2. Bidder is advised that pay items 1 and 2 are allowances and will be measured and paid for based on actual costs incurred as indicated in the contract documents.
3. Bidder is advised that Unit Price Items stipulated as part of these contract documents shall be measured and paid for based on the actual quantities installed.
4. Units: LF – Linear Feet. SY – Square Yard. CY – Cubic Yard



NORTH CAROLINA  
Environmental Quality

ROY COOPER

Governor

MICHAEL S. REGAN

Secretary

S. DANIEL SMITH

Director

October 29, 2019

## LETTER OF APPROVAL WITH MODIFICATIONS AND PERFORMANCE RESERVATIONS

Brunswick County  
ATTN: John Nichols, Public Utilities Director  
PO Box 249  
Bolivia, NC 28422

RE: Project Name: Northwest Water Treatment Plant Concentrate Discharge Pipeline  
Acres Approved: 12.5  
Project ID: BRUNS-2020-026  
County: Brunswick  
City: Northwest  
Address: Clearwell Drive  
River Basin: Cape Fear  
Stream Classification: HQW  
Submitted By: Kelly R. Boone, PE, CDM Smith, Inc.  
Date Received by LQS: October 10, 2019  
Plan Type: Utility

Dear Mr. Nichols:

This office has reviewed the subject erosion and sedimentation control plan and hereby issues this Letter of Approval with Modifications and Performance Reservations. A list of the modifications and reservations is attached. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0129. Should the plan not perform adequately, a revised plan will be required (G.S. 113A-54.1)(b).

As of April 1, 2019, all new construction activities are required to complete and submit an electronic Notice of Intent (NOI) form requesting a Certificate of Coverage (COC) under the NCG010000 Construction Stormwater General Permit. This form **MUST** be submitted and COC issued prior to the commencement of any land disturbing activity on the above-named project. The NOI form may be accessed at [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01). Please direct questions about the NOI form to Annette Lucas at [Annette.lucas@ncdenr.gov](mailto:Annette.lucas@ncdenr.gov) or Paul Clark at [Paul.clark@ncdenr.gov](mailto:Paul.clark@ncdenr.gov). After you submit a complete and correct NOI Form, a COC will be emailed to you within **three business days**. Initially, DEMLR will not charge a fee for coverage under the NCG01 permit. However, a \$100 fee will soon be charged annually. This fee is to be sent to the DEMLR Stormwater Central Office staff in Raleigh.



Title 15A NCAC 4B .0118(a) and the NCG01 permit require that the following documentation be kept on file at the job site:

1. The approved E&SC plan as well as any approved deviation.
2. The NCG01 permit and the COC, once it is received.
3. Records of inspections made during the previous 12 months.

Also, this letter gives the notice required by G.S. 113A-61.1(a) of our right of periodic inspection to insure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Program is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to ensure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you provided. This permit allows for a land-disturbance, as called for on the application plan, not to exceed the approved acres. Exceeding the acreage will be a violation of this permit and would require a revised plan and additional application fee. You are requested to file an amended form if there is any change in the information included on the form. In addition, it would be helpful if you notify this office of the proposed starting date for this project. Please notify us if you plan to have a preconstruction conference.

Your cooperation is appreciated.

Sincerely,

*Rhonda Hall*

Rhonda Hall  
Assistant Regional Engineer  
Land Quality Section

Enclosures: Modifications and Performance Reservations  
NPDES NCG01 Fact Sheet

cc: Kelly R. Boone, PE, CDM Smith, Inc.  
5400 Glenwood Avenue, Suite 400, Raleigh, NC 27612

Wilmington Regional Office file

## **MODIFICATIONS AND PERFORMANCE RESERVATIONS**

Project Name: Northwest Water Treatment Plant Concentrate Discharge Pipeline  
Project ID: BRUNS-2020-026  
County: Brunswick

1. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0129.
2. The developer is responsible for the control of sediment on-site. If the approved erosion and sedimentation control measures prove insufficient, the developer must take those additional steps necessary to stop sediment from leaving this site (NCGS 113A-57(3)). Each sediment storage device must be inspected after each storm event (NCGS 113A-54.1(e)). Maintenance and/or clean out is necessary anytime the device is at 50% capacity. All sediment storage measures will remain on site and functional until all grading and final landscaping of the project is complete (15A NCAC 04B .0113).
3. Any and all existing ditches on this project site are assumed to be left undisturbed by the proposed development unless otherwise noted. The removal of vegetation within any existing ditch or channel is prohibited unless the ditch or channel is to be regarded with side slopes of 2 horizontal to 1 vertical or less steep (15A NCAC 04B .0124 (d)). Bank slopes may be mowed, but stripping of vegetation is considered new earth work and is subject to the same erosion control requirements as new ditches (NCGS 113A-52(6)).
4. The developer is responsible for obtaining any and all permits and approvals necessary for the development of this project prior to the commencement of this land disturbing activity. This could include our agency's Stormwater regulations and the Division of Water Resources' enforcement requirements within Section 401 of the Clean Water Act, the U.S. Army Corps of Engineers' jurisdiction of Section 404 of the Clean Water Act, the Division of Coastal Management's CAMA requirements, the Division of Solid Waste Management's landfill regulations, the Environmental Protection Agency and/or The U.S. Army Corps of Engineers jurisdiction of the Clean Water Act, local County or Municipalities' ordinances, or others that may be required. This approval cannot supersede any other permit or approval; however, in the case of a Cease and Desist Order from the Corps of Engineers, that Order would only apply to wetland areas. All highland would still have to be in compliance with the N.C. Sedimentation Pollution Control Act.
5. If any area on site falls within the jurisdiction of Section 401 or 404 of the Clean Water Act, the developer is responsible for compliance with the requirements of the Division of Water Resources (DWR), the Corps of Engineers and the Environmental Protection Agency (EPA) respectively. Any erosion control measures that fall within jurisdictional wetland areas must be approved by the aforementioned agencies prior to installation. The Land Quality Section must be notified of a relocation of the measures in question to the transition point between the wetlands and the uplands to assure that the migration of sediment will not occur. If that relocation presents a problem or contradicts any requirements of either DWR, the Corps, or the EPA, it is the responsibility of the developer to inform the Land Quality Section regional office so that an adequate contingency plan can be made to assure sufficient erosion control remains on site. Failure to do so will be considered a violation of this approval (NCGS 113A-54.1(b)).

# Letter of Approval with Modifications and Performance Reservatios

Brunswick County

October 29, 2019

Page 4 of 4

6. Any borrow material brought onto this site must be from a legally operated mine or other approved source. Any soil waste that leaves this site can be transported to a permitted mine or separately permitted construction sites without additional permits under NCGS 74-49(7)(d). Disposal at any other location would have to be included as a permit revision for this approval.
7. This permit allows for a land disturbance, as called for on the application plan, not to exceed **12.5** acres. Exceeding that acreage will be a violation of this permit and would require a revised plan and additional application fee. Any addition in impervious surface, over that already noted on the approved plan, would also require a revised plan to verify the appropriateness of the erosion control measures and stormwater retention measures (NCGS 113A-54.1(b)). As proposed, the land disturbance width of the utility line should be limited as reflected on the application plans.
8. The construction detail for the proposed silt fence requires reinforcing wire and **steel** posts a maximum of eight (8) feet apart. Omission of the reinforcing wire is a construction change that necessitates more posts for support, i.e., the spacing distance needs to be reduced to no greater than six (6) feet apart (E&SC Planning & Design Manual 6.63, Rev. 6/06).
9. Because the sediment traps and basins are shown on the plan as the primary sedimentation and erosion control devices on this project, it is necessary that the traps and basins and their collection systems be installed before any other grading takes place on site, and that every structure that receives more than one acre of drainage is built so that each dewater only from the surface (NCG010000). If that proves to be impractical, a revised plan must be submitted and approved that addresses erosion and sediment control needs during the interim period until the traps and basins are fully functioning (113A-54.1(b)).
10. A graveled construction entrance must be located at each point of access and egress available to construction vehicles during the grading and construction phases of this project. Access and egress from the project site at a point without a graveled entrance will be considered a violation of this approval. Routine maintenance of the entrances is critical (113A-54.1(b)).
11. As a condition of the NPDES General Stormwater Permit (NCG010000), the financially responsible party shall comply with the NCG01 Ground Stabilization And Materials Handling requirements that became effective April 1, 2019. The NCG01 Ground Stabilization And Materials Handling standard detail can be printed from the [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01) website.
12. As a condition of the NPDES General Stormwater Permit (NCG010000), the financially responsible party shall comply with the NCG01 Self-Inspection, Recordkeeping and Reporting requirements that became effective April 1, 2019. The NCG01 Self-Inspection, Recordkeeping and Reporting standard detail can be printed from the [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01) website.
13. As a part of routine monitoring of the approved land-disturbing activity, the financially responsible party shall assure inspections of the area covered by the approved plan after each phase of the plan has been completed and after establishment of temporary ground cover in accordance with North Carolina General Statute 113A-54.1(e).

Ref: G.S. 113A-54.1 through G.S. 113A-57  
Sections 15A NCAC 04A.0101 through 15A NCAC 04E.0504  
General Permit NCG 010000 NPDES for Construction Activities

# Fact Sheet on the New NCG01 Permit

## April 2019



**The NC Construction General Permit (also known as “NCG01”) was renewed on April 1, 2019.** The updated permit does not significantly change the measures that are required to be implemented on construction sites. However, there are some organizational and technical updates to the permit as described below. Most notably, there is a new process in which construction sites will obtain official coverage under an NCG01 permit through an electronic process. DEMLR worked with a broad team of stakeholders to make all of these updates. If you have questions, contact Annette Lucas at [Annette.lucas@ncdenr.gov](mailto:Annette.lucas@ncdenr.gov) or (919) 707-3639.

### Organizational Updates

The new permit:

- Repeats state requirements for E&SC Plans and organizes them with federal construction activity requirements;
- Is clearly organized by topic; and
- Has less text and more tables.

### Technical Updates

The new permit:

- Requires that the E&SC Plan meet SWPPP requirements (p. 2);
- Provides a list of items that must be included in the SWPPP, such as the construction sequence, plans, calculations, etc. (p. 2-4);<sup>1</sup>
- Has updated language on bypasses and upsets that is tailored to construction activities (p. 10);
- Puts all timeframes for inspections, record-keeping and reporting in “calendar days” for clarity and consistency (p. 11-14);<sup>2</sup>
- Changes the inspection frequency (during business hours) to at least once per 7 calendar days and after every storm  $\geq 1.0$  inch (previously 0.5 inch);<sup>3</sup> and
- Excludes weekends, state and federal holidays from normal business hours unless construction activities take place (p. 23).

<sup>1</sup> This list is based on website guidance by the DEMLR Sediment Program.

<sup>2</sup> The number of calendar days was selected to be as equivalent as possible with the previous permit.

<sup>3</sup> The intent is to provide predictability to the inspection schedule.

### Acronyms to Know

**COC:** Certificate of Coverage, proof of coverage under an NCG01 permit

**DEMLR:** NC Division of Energy, Mineral, and Land Resources

**E&SC:** Erosion & Sedimentation Control

**e-NOI:** Notice of Intent, application form for the NCG01 permit

**e-NOT:** Notice of Termination, form for closing out the NCG01 permit

**SWPPP:** Stormwater Pollution Prevention Plan, required by the NCG01



### The NCG01 Process

***The new NCG01 applies to permits approved on or after April 1, 2019.***

Permittees will no longer receive a copy of the NCG01 permit in the mail with their E&SC Plan approvals and be considered as covered under the permit. Federal rules require that DEMLR receive an NOI on each construction project and issue each construction project its own COC.

Under the new NCG01 process, construction sites will continue to receive approval for E&SC Plans from either DEMLR or the delegated local E&SC program just like before. After receiving E&SC Plan approval, permittees will officially obtain coverage under the NCG01 by completing an e-NOI (available at [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01)). The e-NOI will only take about 20 minutes to fill out and submit on-line.

Initially, there will be no charge associated with applying for an NCG01 permit but on or around June 1, 2019, DEMLR will begin charging a \$100 annual general permit fee as required per §143-215.3D.

DEMLR is working on creating a single application form that will allow an applicant to simultaneously apply for an E&SC permit and an NCG01 COC. That effort is part of a larger Permit Transformation project at DEMLR.

# Q&A About the New NCG01 Permit

## Why do construction sites have to do this extra application step?

DEMLR is required by the EPA to issue a specific COC to every construction site that disturbs one acre or more. DEMLR is working to create a form that combines the E&SC plan approval and e-NOI processes, but that will take more time. For now, DEMLR has created an efficient e-NOI process.

## If an E&SC Plan is approved before April 1, which permit applies?

Projects with already approved E&SC Plans will automatically follow the new NCG01 permit, but will not need to fill out an e-NOI or pay an annual permit fee. However, the permittees should print the new permit and the two standard detail sheets and have them on site.

## Will DEMLR offer tools to help permittees comply with the new NCG01?

Yes, DEMLR will provide two sample plan sheets at [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01) that can be placed into the E&SC plan set. The first covers the site stabilization and materials handling portions of the permit. The second sheet covers the inspection, record-keeping and reporting portions of the permit.

## How will the new e-NOI submittal and COC process work?

Permittees will apply for E&SC Plan approvals from DEMLR or the local E&SC program like before. The E&SC approval letter will instruct the permittee to visit [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01) to submit an e-NOI form to DEMLR. The permittee may begin the construction activity after receipt of the COC (within three days\*). The permittee must print and retain a copy of the permit and the COC on site. Initially, the COC will be issued for free but on or around June 1, 2019, a \$100 annual general permit fee will be charged.

## Who is allowed to submit an e-NOI form?

Submittal must be by a responsible corporate officer that owns or operates the activity, such as a president, secretary, treasurer, or vice president or a manager that is authorized in accordance with IV.B.6 of the NCG01 permit. Additional signatory options are set forth in IV.B.6 of the permit. It is possible for consultant to prepare the e-NOI, save it as a draft, and email it to the responsible entity for signature & submittal.

## What happens to the COC when the construction activity is complete?

When a project is complete, the permittees will contact DEMLR or the local delegated program to close out the E&SC Plan. After DEMLR or the local E&SC program inform the permittee of the project close out via inspection report, the permittee will visit [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01) to submit an e-NOT.

## Will there be a grace period for adherence to the new process?

DEMLR does not have the authority to grant a grace period from a federally mandated permit. Permittees will be informed of the new process via web site, E&SC Plan approval letters and list servs. If a construction activity disturbs one acre or more (or is part of common plan of development that disturbs one acre or more) fails to submit an e-NOI after approval of its E&SC Plan, this is a violation of federal permitting requirements and the permittee could be subject to a penalty assessment.

## How does the new NCG01 affect the delegated local E&SC Programs?

Local programs will continue to review and approve E&SC plans. However, they will no longer send copies of the NCG01 with E&SC Plan approvals. DEMLR will provide sample language to use in local E&SC Plan approvals to advise permittees that they must submit an e-NOI to DEMLR.



Local programs are not required to check if permittees have submitted e-NOIs to DEMLR. However, if they wish to do this voluntarily, there will be a tool available on DEMLR's web site for them to view a list of construction projects that have submitted e-NOIs.

When local programs close out an E&SC Plan, the close-out letter will advise permittees that they must submit an e-NOT. DEMLR will provide sample language.

Local programs may approve E&SC plans that meet state sediment laws and rules even if those plans are not compliant with all of the NCG01 requirements. However, their permittees will be required to add two plan sheets (which will be provided by DEMLR) to their E&SC Plans to ensure that they fully comply with the ground stabilization, materials handling, and inspection, record-keeping and reporting portion of the NCG01 permit.

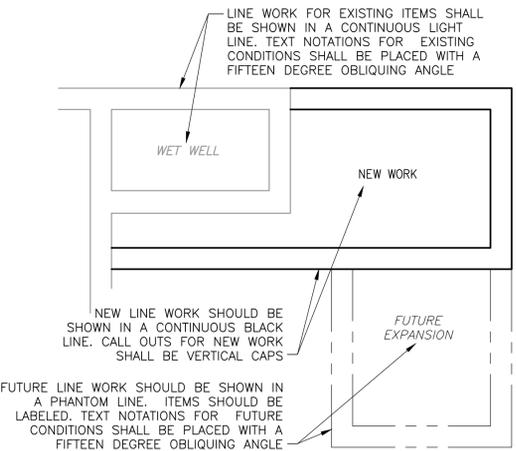
*\* Or 24 business hours for a project approved under the DEMLR Express review program.*



**GENERAL NOTES**

- THE INFORMATION PROVIDED IN THESE PLANS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF CONDITIONS WHICH WILL BE ENCOUNTERED DURING THE COURSE OF WORK. ACTUAL CONDITIONS MAY DEVIATE FROM THE INFORMATION SHOWN IN PROJECT DOCUMENTS. CONTRACTOR SHALL NOT HOLD OWNER OR ENGINEER RESPONSIBLE FOR ANY SUCH DEVIATIONS. EXISTING UTILITIES AND STRUCTURES SHOWN IN PROJECT DOCUMENTS MAY NOT REFLECT AN ACCURATE/COMPLETE REPRESENTATION OF ACTUAL CONDITIONS. THE PROJECT DRAWINGS DO NOT CLAIM TO SHOW ALL EXISTING UTILITIES AND FEATURES. ALL CONTRACTORS ARE DIRECTED PRIOR TO BIDDING TO CONDUCT WHATEVER INVESTIGATION 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.
- LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE PLANS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS, AND OTHER FEATURES AFFECTING HIS WORK PRIOR TO CONSTRUCTION. CONTRACTOR SHALL VERIFY THE EXISTENCE AND ACCURACY OF BENCHMARKS AND CONTROL DATA PROVIDED ON THE DRAWINGS. PRIOR TO INITIATING CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER IF DISCREPANCIES ARE FOUND.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ACHIEVE THE DESIRED HORIZONTAL AND VERTICAL PIPELINE ROUTING BY DEFLECTION OF PIPING AND JOINTS USING NO MORE THAN 75% OF THE MAXIMUM DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER OR THRU THE USE OF FITTINGS. FITTINGS SHOWN ON PIPELINES ARE THE MINIMUM REQUIRED TO MAINTAIN THE ALIGNMENT, BUT MAY NOT NECESSARILY BE ALL THE FITTINGS THAT WILL BE REQUIRED.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING ANY TEMPORARY STORMWATER CONTROL MEASURES DURING CONSTRUCTION.
- CONTRACTOR SHALL NOT STORE ANY MATERIALS OR EQUIPMENT UNDER EXISTING OVERHEAD UTILITY LINES.
- CONTRACTOR SHALL UTILIZE POSITIVE SHORING, (I.E. NO TRENCH BOXES) WHERE REQUIRED TO MEET THE REQUIREMENTS OF THE NCDOT ENCROACHMENT PERMIT AT NO ADDITIONAL COST TO THE OWNER.
- UTILITY CROSSING DEPTHS AND DIAMETERS SHOWN IN PROFILE ARE ASSUMED UNLESS ELEVATION SPECIFICALLY STATED OTHERWISE. GRAVITY SANITARY SEWER ELEVATIONS WERE INTERPOLATED BETWEEN UPSTREAM AND DOWNSTREAM MANHOLES. ALL OTHER UTILITY ELEVATIONS SHOWN WERE DETERMINED BASED ON LEVEL. A SUBSURFACE UTILITY ENGINEERING EXPLORATION AND ARE APPROXIMATE BASED ON MEASUREMENTS TAKEN FROM GROUND SURFACE. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER SHOWN OR NOT IN THE DRAWINGS, AND SHALL REPAIR ANY DAMAGE CAUSED DURING CONSTRUCTION AT CONTRACTORS COST.
- CONTRACTOR SHALL GET APPROVAL FROM OWNER OR ENGINEER PRIOR TO EXCAVATING WITHIN THE DRIPLINE OF ANY TREE. TREES WITHIN THE WATERMAIN PUE SHALL BE REMOVED. CONTRACTOR SHALL GET APPROVAL FROM OWNER OR ENGINEER PRIOR TO REMOVING ANY TREES OUTSIDE THE PUE AND WITHIN THE LOD.
- 
- CONTRACTOR SHALL RESTORE ANY PRIVATE PROPERTY ALONG THE WATER MAIN ALIGNMENT AFFECTED BY CONSTRUCTION ACTIVITIES TO PRE-EXISTING CONDITIONS. AT NO ADDITIONAL EXPENSE TO THE OWNER. REFER TO PRIVATE PROPERTY IMPACTS DETAIL SHEET.
- DRIVEWAY REPLACEMENT WIDTH FOR DRIVEWAYS DAMAGED BY PIPELINE CONSTRUCTION ACTIVITIES SHALL EXTEND FROM THE EDGE OF PAVEMENT TO ROAD RIGHT OF WAY.
- DISTURBED AREAS SHALL BE SEEDED, MULCHED AND/OR MATTED AT THE END OF EACH WORK DAY; AT A MINIMUM, DISTURBED AREAS SHALL BE STABILIZED WITHIN FIVE WORKING DAYS OR SEVEN CALENDAR DAYS, WHICHEVER IS SHORTER.
- SEDIMENT AND EROSION CONTROL SHALL COMPLY WITH THE PRACTICES OUTLINED IN THE DESIGN STANDARDS IN SENSITIVE WATERSHEDS (15A NCAC 4B.0124) AND WETLANDS.
- CONTRACTOR SHALL TAKE NECESSARY MEASURES TO ENSURE PROJECT SITE IS SECURE AT ALL TIMES TO PREVENT UNAUTHORIZED ACCESS.
- CONTRACTOR SHALL NOT OPERATE ANY EXISTING VALVES. CONTRACTOR SHALL COORDINATE WITH BRUNSWICK COUNTY TO HAVE EXISTING VALVES OPENED/CLOSED.
- SILT FENCE, WHERE CALLED FOR ON THE DRAWINGS, SHALL BE SPACED APPROXIMATELY 1' INSIDE OF LOD. CONTRACTOR SHALL DETERMINE ACTUAL SPACING BASED ON FIELD CONDITIONS.
- CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PROVIDE ADEQUATE DRAINAGE AND PREVENT POOLING OR FLOODING OF SURROUNDING AREAS. EXISTING DRAINAGE SWALES IMPACTED DURING CONSTRUCTION SHALL BE REINSTATED AND REPAIRED TO EXISTING OR BETTER THAN EXISTING CONDITIONS.
- BEFORE ANY EXCAVATION, CONTRACTOR SHALL CONTACT THE LOCAL PUBLIC UTILITIES LOCATING SERVICE AT 811 (1-800-632-4949) TO LOCATE UTILITIES A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION, EXCLUDING WEEKENDS AND HOLIDAYS, SO EXISTING UTILITY LOCATIONS CAN BE MARKED. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH OCCURRED THROUGH HIS/HER FAILURE TO LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES, STRUCTURES OR OTHER FEATURES.
- CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND OBTAINING APPROVAL OF THEIR TRAFFIC CONTROL PLANS WITH NCDOT AND BRUNSWICK COUNTY. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND REDUCED SPEED AS REQUIRED AT MT. MISERY ROAD DURING ALL JACK AND BORE OPERATIONS.
- HORIZONTAL DATUM IS NAD 83 (2011) AND VERTICAL DATUM IS NAVD88.
- CONTRACTOR SHALL NOT CREATE MORE HIGH POINTS ALONG THE CONCENTRATE FORCE MAIN THAN WHAT IS SHOWN IN THE PROFILE DRAWINGS.
- CONTRACTOR SHALL UTILIZE RESTRAINED JOINT SCHEDULE INCLUDED IN DRAWING DETAILS TO DETERMINE RESTRAINT LENGTHS. CONTRACTOR SHALL SUBMIT LAY SCHEDULE FOR REVIEW BY ENGINEER INDICATING REQUIRED RESTRAINED LENGTHS.
- CONTRACTOR SHALL INSTALL MARKER TAPE FOR ALL NEW PIPE AND WILL BE INCIDENTAL.
- CONCENTRATE DISCHARGE PIPELINE SHALL BE CLASSIFIED AS A SANITARY SEWER FORCE MAIN AND SHALL MEET ALL REQUIRED HORIZONTAL AND VERTICAL SEPARATIONS REQUIRED BY NCAC-15A-18C AND NCAC-15A-02T. CONTRACTOR SHALL IDENTIFY AND RELOCATE ALL POTABLE WATER SERVICE CROSSINGS AS REQUIRED.

**EXISTING OR FUTURE CONDITION DESIGNATION**



**GROUND SURVEY:**  
 SURVEYED BY: STEWART INC.  
 ADDRESS: 421 FAYETTEVILLE ST., SUITE 400  
 RALEIGH, NC 27601  
 TELEPHONE: (919) 380-8750  
 DATE SURVEY COMPLETED: DECEMBER 2018

**SEDIMENTATION AND EROSION CONTROL NOTES**

THE FOLLOWING SCHEDULE WILL BE REQUIRED DURING CONSTRUCTION:

- POST EROSION AND SEDIMENT CONTROL PLACARD AT ALL LOCATIONS WHERE WORK IS BEING PERFORMED.
- HOLD PRE-CONSTRUCTION CONFERENCE AT LEAST ONE WEEK PRIOR TO STARTING CONSTRUCTION. CONTACT NCDEQ AND BRUNSWICK COUNTY TO NOTIFY OF PRE-CONSTRUCTION MEETING.
- NOTIFY THE PERMITTING AGENCY (LAND QUALITY SECTION, REGIONAL OFFICE) 48 HOURS PRIOR TO ANY LAND DISTURBING ACTIVITIES.
- IDENTIFY THE LIMITS OF DISTURBANCE.
- INSTALL APPROVED TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS DIRECTED IN THE APPROVED PLAN.
- FINISH MOBILIZING EQUIPMENT.
- IMMEDIATELY STABILIZE ALL DISTURBED AREAS WITH VEGETATION WITHIN THE TIME FRAMES REQUIRED PER CONSTRUCTION DETAILS.
- CONTRACTOR SHALL LIMIT DISTURBANCES TO THE LENGTH THAT CAN BE STABILIZED AT THE END OF EACH WORK DAY.
- CONTRACTOR MUST STABILIZE ALL AREAS WHERE WORK WAS PERFORMED WITHIN 7 DAYS.
- EXCAVATED MATERIAL STORAGE SHALL NOT BE PLACED ONTO THE PAVEMENT OF NCDOT STATE MAINTAINED ROADS. SILT AND MUD SHALL BE REMOVED FROM PAVEMENT BY SWEEPING ON A DAILY BASIS AT A MINIMUM.
- INSPECT ALL EROSION AND SEDIMENT CONTROL PRACTICES WEEKLY AND AFTER RAINFALL EVENTS. MAKE ANY NEEDED REPAIRS IMMEDIATELY. MAINTAIN RECORDS ON SITE USING STORMWATER INSPECTION MONITORING FORMS TITLED "INSPECTION AND MONITORING RECORDS FOR ACTIVITIES UNDER STORMWATER GENERAL PERMIT NCG010000 AND SELF-INSPECTION RECORDS FOR LAND DISTRIBUTING ACTIVITIES PER G.S. 113A-54.1" FROM NCDEQ.
- CURB INLET PROTECTION DEVICES SHALL BE INSTALLED AT ALL CURB INLETS THAT WILL RECEIVE SEDIMENT RUNOFF FROM THE WORK AREA OR AS SHOWN ON THE DRAWINGS.
- CONTACT NCDEQ UPON PROJECT COMPLETION AND ESTABLISHMENT OF PERMANENT GROUND COVER FOR PROJECT CLOSEOUT.
- CONTRACTOR TO INSTALL COIR FIBER WATTLES AFTER CONSTRUCTION IN AREA IS COMPLETE.
- AFTER LOCATIONS WHERE WORK IS PERFORMED AND ARE STABILIZED, REMOVE AND DISPOSE OF ALL TEMPORARY EROSION CONTROL MEASURES.

**SURVEY LEGEND**

	SURVEY CONTROL POINT		BUFFER ZONE
	SURVEY BENCHMARK		0.2% CHANCE FLOOD LINE
	EXISTING IRON PIPE		1% CHANCE FLOOD LINE
	EXISTING IRON ROD		FLOODWAY LINE
	EXISTING CONCRETE MONUMENT		WIRE FENCE
	SET IRON ROD		CHAIN LINK FENCE
	SET CONCRETE MONUMENT		WOOD FENCE
	COMPUTED POINT		GUARDRAIL
	STORM DRAIN MANHOLE		TRELLIS
	STORM DRAIN INLET		UNDERGROUND TELEPHONE LINE
	STORM DRAIN INLET		UNDERGROUND FIBER OPTIC LINE
	STORM DRAIN CURB INLET		UNDERGROUND FUEL LINE
	STORM DRAIN FLARED END SECTION		UNDERGROUND GAS LINE
	SANITARY SEWER MANHOLE		UNDERGROUND ELECTRIC LINE
	SANITARY SEWER CLEANOUT		UNDERGROUND WATER LINE
	SANITARY FORCEMAIN VALVE		SANITARY SEWER LINE
	SANITARY SEWER WITNESS POST		STORM DRAIN LINE
	HYDRANT		STEAM LINE
	WATER VALVE		OVERHEAD WIRES
	WATER METER		UNIDENTIFIED LINE
	WATER MANHOLE		UNKNOWN DESTINATION
	WATER VAULT		FINISHED FLOOR ELEVATION
	BACKFLOW PREVENTER		DECIDUOUS TREE
	POST INDICATOR VALVE		EVERGREEN TREE
	SIAMESE CONNECTION		BUSH
	WELL		SATELLITE DISH
	WATERLINE WITNESS POST		TRAFFIC SIGNAL BOX
	IRRIGATION CONTROL VALVE		TRAFFIC SIGNAL POST
	SPRINKLER HEAD		RAILROAD CONTROL BOX
	GAS VALVE		MONITORING WELL
	GAS METER		BORING LOCATION
	GASLINE WITNESS POST		BOLLARD
	STEAM MANHOLE		SIGN
	TELEPHONE MANHOLE		MAILBOX
	TELEPHONE PEDESTAL		ELECTRIC BOX
	TELEPHONE BOOTH		ELECTRIC WITNESS POST
	TV MANHOLE		UTILITY POLE
	TV PEDESTAL		GUY POLE
	TELEPHONE WITNESS POST		GUY WIRE
	COMMUNICATION WITNESS POST		LIGHT POLE
	FIBER OPTIC WITNESS POST		FLOOD LIGHT
	FIBER OPTIC BOX		HAND HOLE
	ELECTRIC HAND HOLE		ELECTRIC MANHOLE
	ELECTRIC MANHOLE		JUNCTION BOX
	ELECTRIC METER		MANHOLE
	ELECTRIC TRANSFORMER		

**GENERAL ABBREVIATIONS**

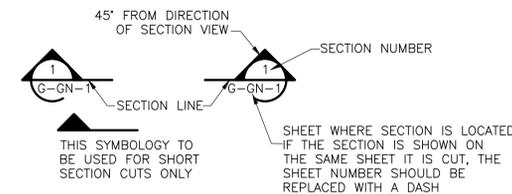
AC	ASPHALT CONCRETE	IE	INVERT ELEVATION	RS	ROAD SIGN
A.K.A.	ALSO KNOWN AS	INV	INVERT	R/W	RIGHT-OF-WAY
ARV	AIR RELEASE VALVE	LF	LINEAR FEET	SCP	STEEL CASING PIPE
ASP	ASPHALT	LOD	LIMITS OF DISTURBANCE	SD	SANITARY DRAIN
BFV	BUTTERFLY VALVE	MB	MAIL BOX	SL	SLIDE
BS	BUSINESS SIGN	MH	MANHOLE	SS	SANITARY SEWER
C/L	CENTERLINE	MIN	MINIMUM	STA	STATION
CATV	CABLE TELEVISION	MJ	MECHANICAL JOINT	(T)	TOTAL
CB	CATCH BASIN	NAD	NORTH AMERICAN DATUM	TCE	TEMPORARY CONSTRUCTION EASEMENT
CLF	CHAIN LINK FENCE	NAVD	NORTH AMERICAN VERTICAL DATUM	TEL	TELEPHONE
CMP	CORRUGATED METAL PIPE	NSRS	NATIONAL SPATIAL REFERENCE SYSTEM	TH	TEST HOLE
CPP	CORRUGATED PLASTIC PIPE	NTS	NOT TO SCALE	TS&V	TAPPING SLEEVE & VALVE
CAV	COMBINATION AIR/VACUUM VALVE	OHP	OVERHEAD POWER LINE	T.U.	TYPE OF PIPE UNKNOWN/NON VISIBLE
CONC	CONCRETE	OHT	OVERHEAD TRANSMISSION LINE	UGE	UNDERGROUND ELECTRIC
CPZ	CENTRAL PRESSURE ZONE	OHU	OVERHEAD UTILITY	UPE	UTILITY PIPE EASEMENT
D/W	DRIVEWAY	PB	PLAT BOOK	VCP	VITRIFIED CLAY PIPE
DB	DEED/DOCUMENT BOOK	PC	PLAT CABINET	WF	WOOD FENCE
DI	DUCTILE IRON	PED	PEDESTAL	WM	WATER MAIN
DIP	DUCTILE IRON PIPE	PIN	PARCEL IDENTIFICATION NUMBER		
D.U.	DIRECTION UNKNOWN	PG	PAGE		
EP	EDGE OF PAVEMENT	PL	PROPERTY		
FLG	FLANGED	PP	POWER POLE		
FOC	FIBER OPTIC CABLE	PRV	PRESSURE REDUCING VALVE		
GR	GRAVEL	PS	PUMP STATION		
GV	GATE VALVE	PUE	PERMANENT UTILITY EASEMENT		
HDD	HORIZONTAL DIRECTIONAL DRILL	PVC	POLYVINYL CHLORIDE PIPE		
HDPE	HIGH-DENSITY POLYETHYLENE PIPE	RCP	REINFORCED CONCRETE PIPE		
HFAC	HARNESSED FLANGED ADAPTER COUPLING	RJ	RESTRAINED JOINT		

**LEGEND**

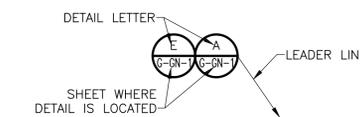
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	EXISTING OVERHEAD UTILITY
	EXISTING COMMUNICATIONS FIBER
	EXISTING SIGN POLE
	EXISTING UNDERGROUND TELEPHONE
	EXISTING UNDERGROUND GAS
	EXISTING FENCE
	EXISTING POWER POLE
	PROPERTY LINE AND RIGHT OF WAY
	PROPOSED CONCENTRATE PIPELINE - PLAN VIEW
	PROPOSED CONCENTRATE PIPELINE - PROFILE VIEW
	CONTOUR LINES
	LIMITS OF DISTURBANCE
	EDGE OF PAVEMENT
	EDGE OF WATER OR DITCH LINE
	RIPRAP
	EXISTING BUILDING
	EXISTING EDGE OF WOODS
	EXISTING TREE
	TEMPORARY SILTY FENCE
	TEMPORARY DIVERSION BERM
	TEMPORARY SEDIMENT TRAP
	TEMPORARY CHECK DAM
	LIMITS OF EROSION CONTROL MATTING
	EXISTING STORM DRAIN
	STATION CENTERLINE
	TREE PROTECTION
	PIPELINE UTILITY EASEMENT
	PAVEMENT REPAIR - (1.5\"/>
	PAVEMENT REPAIR - (AC REPLACEMENT)
	PAVEMENT ROAD
	GRAVEL DRIVEWAY REPAIR
	CONCRETE DRIVEWAY REPAIR
	GRASS DRIVEWAY REPAIR
	SILTY FENCE OUTLET
	COIR FIBER WATTLE

**DRAWING SYMBOLOGY**

**SECTION CUT SYMBOLS**

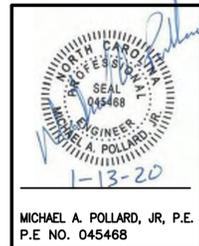
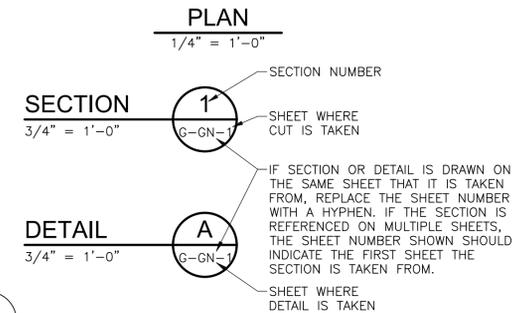


**DETAIL CALL OUT SYMBOLS**



**DRAWING, SECTION AND DETAIL TITLES**

SUBTITLE OR DESCRIPTION (AS REQ'D)



MICHAEL A. POLLARD, JR., P.E.  
 P.E. NO. 045468

PROJECT NO. 250459-232662  
 FILE NAME: G-GN-3.dwg

SHEET NO.  
**G-GN-3**

ISSUED FOR BID

XREFs: (CDMS, 2436, PL) Images: I  
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DESIGNED BY:	B. MACKIE
DRAWN BY:	D. BORNMANN
SHEET CHK'D BY:	B. WILLIAMS
CROSS CHK'D BY:	M. POLLARD
APPROVED BY:	M. POLLARD
DATE:	OCTOBER 2019

REV. NO.	01	DATE	01/2020	DRWN	D.B.	CHKD	M.P.	REMARKS	ADDENDUM NO.2
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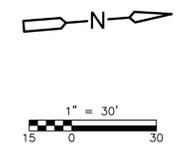
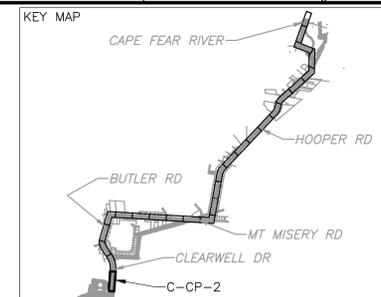
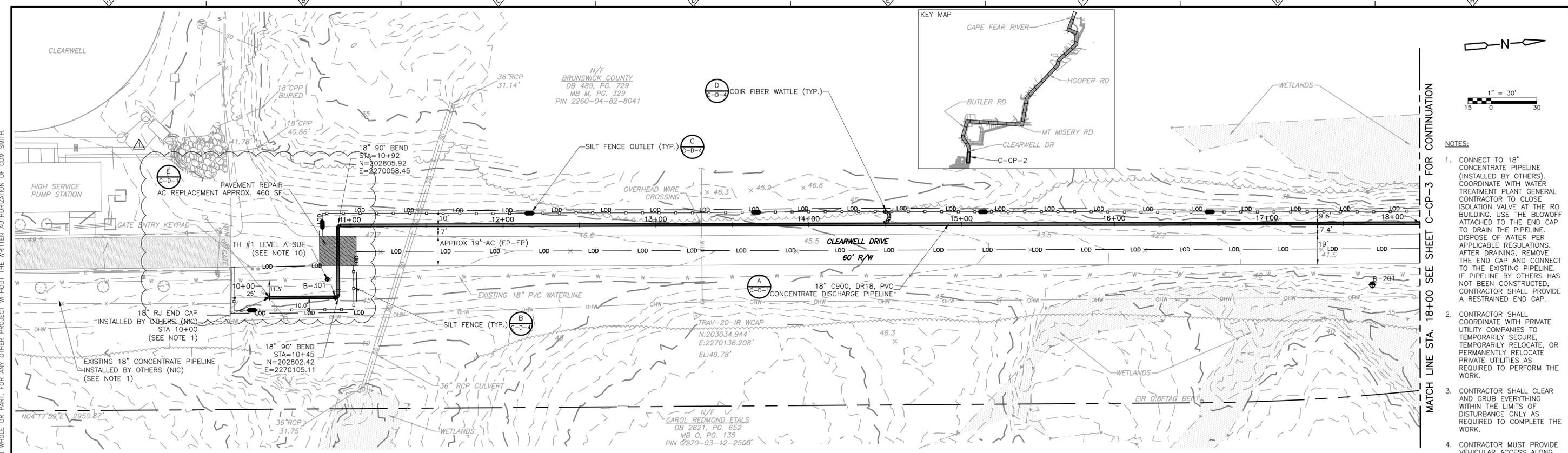
**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612  
 Tel: (919) 325-3500

BRUNSWICK COUNTY NC

**NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE**

**GENERAL NOTES AND ABBREVIATIONS**

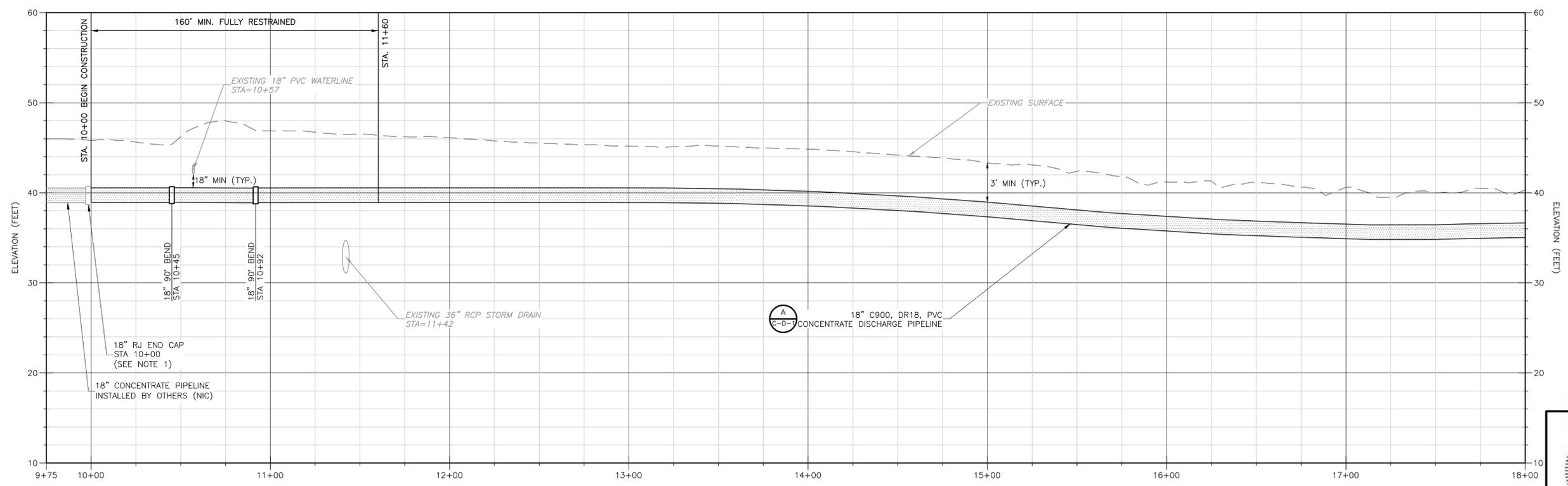
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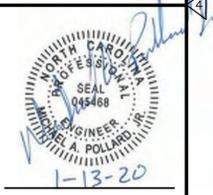
- NOTES:
- CONNECT TO 18" CONCENTRATE PIPELINE (INSTALLED BY OTHERS). COORDINATE WITH WATER TREATMENT PLANT GENERAL CONTRACTOR TO CLOSE ISOLATION VALVE AT THE RO BUILDING. USE THE BLOWOFF ATTACHED TO THE END CAP TO DRAIN THE PIPELINE. DISPOSE OF WATER PER APPLICABLE REGULATIONS. AFTER DRAINING, REMOVE THE END CAP AND CONNECT TO THE EXISTING PIPELINE. IF PIPELINE BY OTHERS HAS NOT BEEN CONSTRUCTED, CONTRACTOR SHALL PROVIDE A RESTRAINED END CAP.
  - CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.

**PLAN**  
SCALE: 1"=30'

- NOTES CONTINUED:
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: D  
C-D-7
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED 18" PVC WATERLINE CROWN 3.9' BELOW GRADE.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.



MICHAEL A. POLLARD, JR., P.E.  
P.E. NO. 045468

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
DRAWN BY: D. BORNMANN  
SHEET CHK'D BY: B. WILLIAMS  
CROSS CHK'D BY: M. POLLARD  
APPROVED BY: M. POLLARD  
DATE: OCTOBER 2019

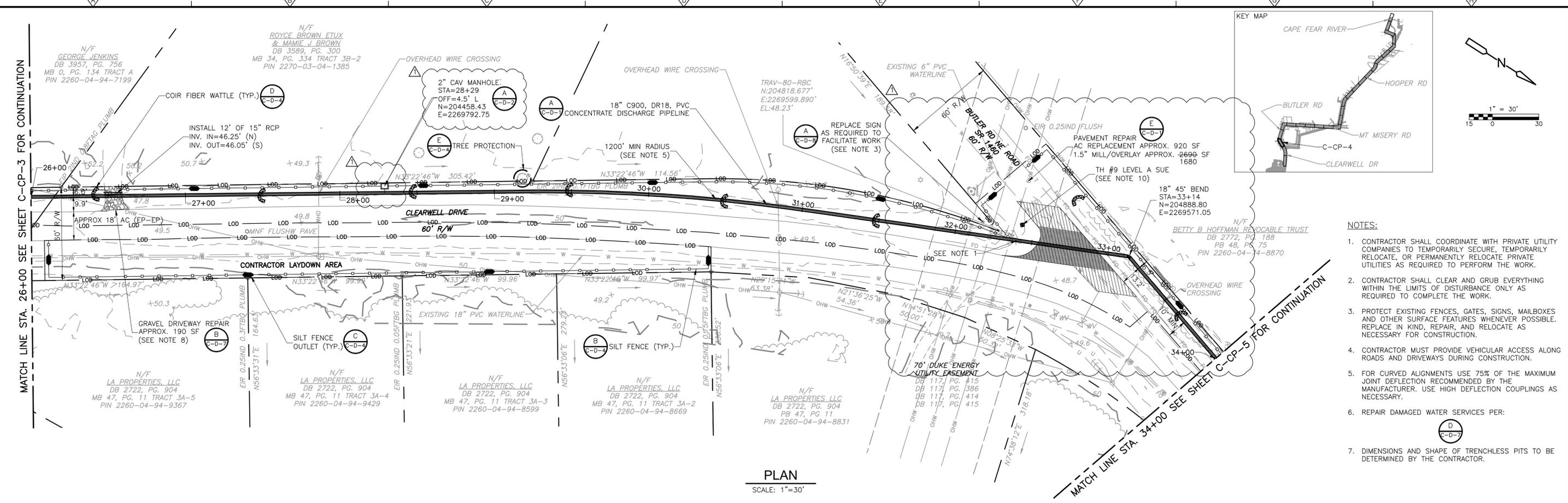


BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT  
CONCENTRATE DISCHARGE PIPELINE**

**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
STA. 10+00 THRU STA. 18+00**  
C-CP-2

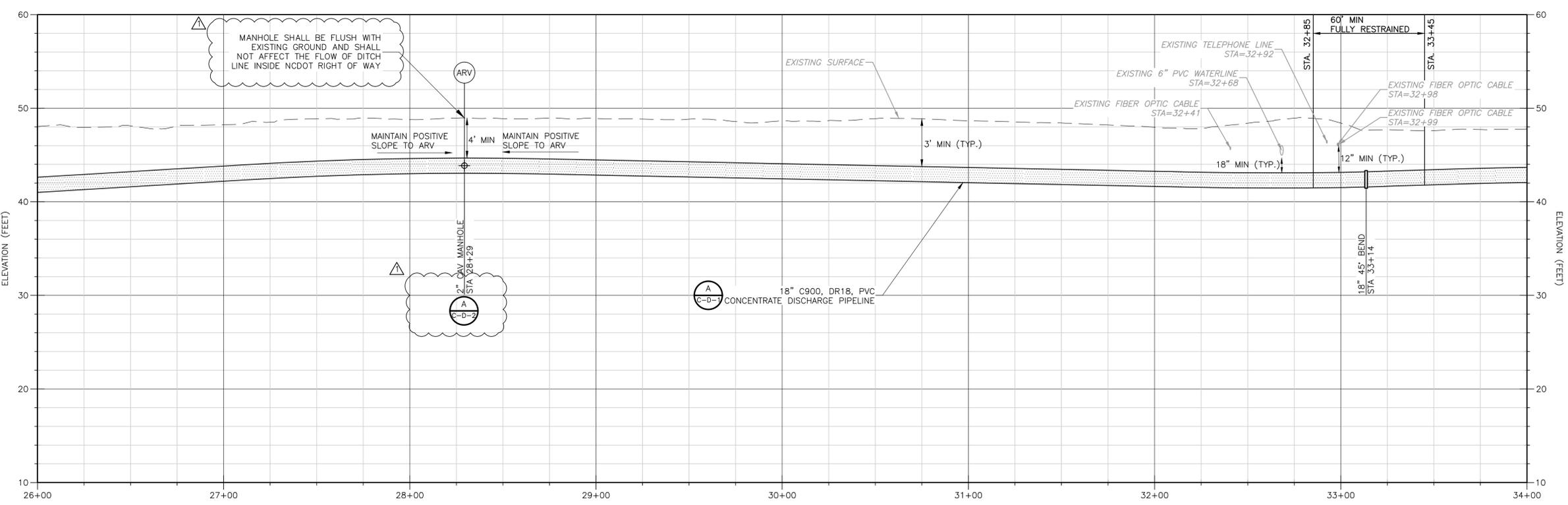
PROJECT NO. 250459-232662  
FILE NAME: C-CP-2.dwg  
SHEET NO.  
**C-CP-2**  
ISSUED FOR BID

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**PLAN**  
SCALE: 1"=30'

- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.
  - FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER:
    - (D) C-D-7
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
- DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED 6" PVC WATERLINE CROWN 3.1' BELOW GRADE.
  - CONCENTRATE PIPELINE SHALL HAVE MINIMUM COMPACTION AND DEPTH REQUIREMENTS AS DETERMINED BY CONTRACTOR TO SATISFY 80,000 LB POINT LOAD BEARING FOR HEAVY EQUIPMENT WITHIN DUKE ENERGY EASEMENT RIGHT OF WAY.
  - ANGLE OF TANGENT CROSSING DUKE ENERGY TRANSMISSION POWERLINES SHALL BE MINIMUM 30 TO 90 DEGREES FROM CENTER LINE OF THE DUKE ENERGY EASEMENT RIGHT OF WAY.
  - CONCENTRATE DISCHARGE PIPELINE IS APPROXIMATELY 230 LF (W) FROM NEAREST DUKE ENERGY ABOVE GROUND STRUCTURE AS MEASURED ALONG THE CENTERLINE OF THE DUKE ENERGY EASEMENT RIGHT OF WAY.
  - CONTRACTOR SHALL REVIEW AND COMPLY WITH MOST UPDATED REVISION OF DUKE ENERGY ELECTRIC TRANSMISSION RIGHT OF WAY GUIDELINES & RESTRICTIONS VALID FOR NORTH CAROLINA.
  - NO PERMANENT CONCENTRATE DISCHARGE PIPELINE ABOVE GROUND OBSTRUCTIONS ARE LOCATED WITHIN DUKE ENERGY EASEMENT RIGHT OF WAY.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019



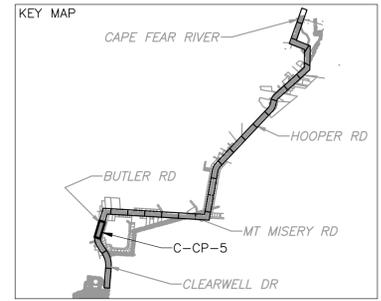
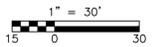
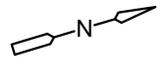
BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT**  
**CONCENTRATE DISCHARGE PIPELINE**

**CONCENTRATE FORCE MAIN - PLAN AND PROFILE**  
**STA. 26+00 THRU STA. 34+00**

Professional Engineer Seal for Michael A. Pollard, Jr., P.E. No. 045468, dated 1-13-20.

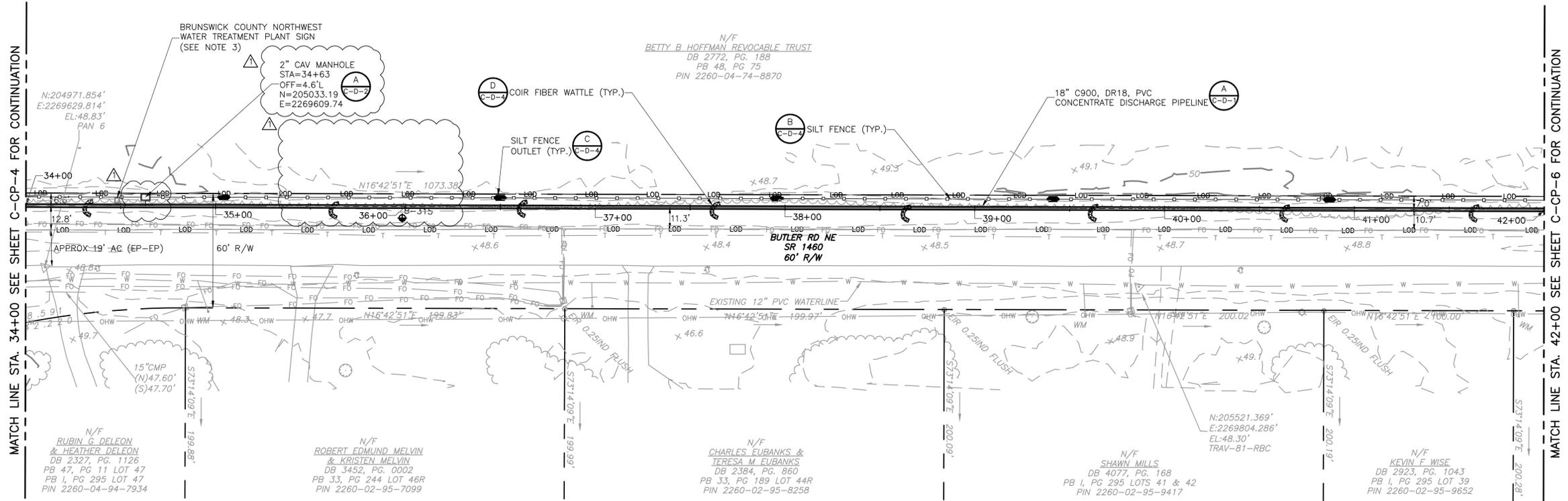
**MICHAEL A. POLLARD, JR., P.E.**  
 P.E. NO. 045468

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-4.dwg  
 SHEET NO.  
**C-CP-4**



NOTES:

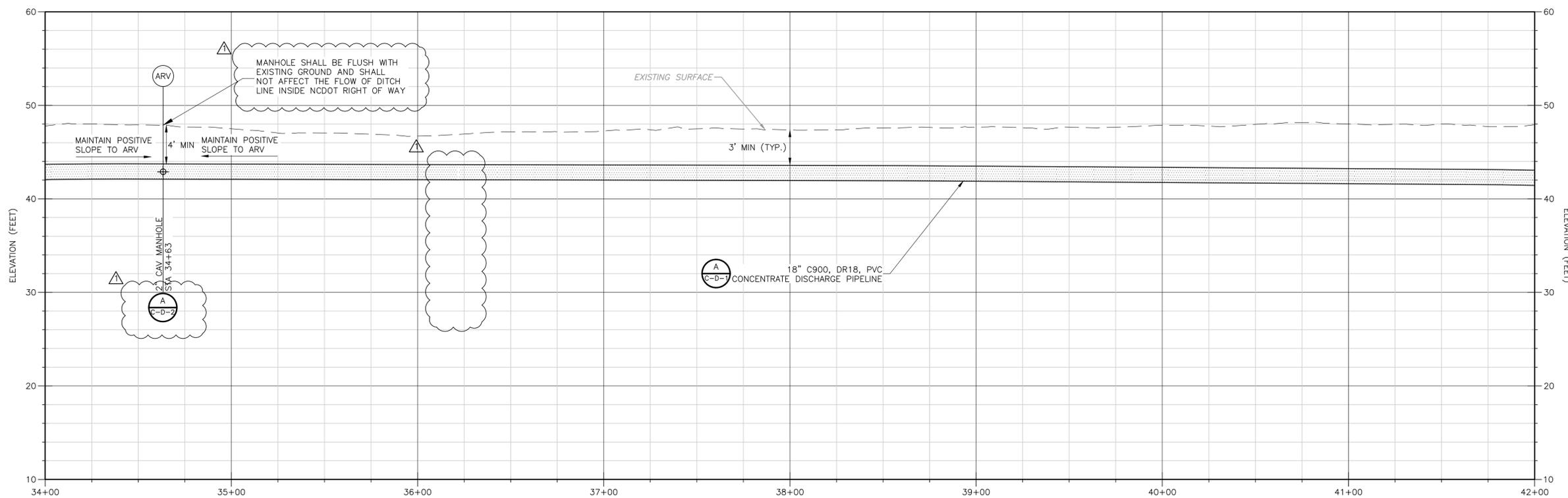
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
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- PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
- CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.



PLAN  
SCALE: 1"=30'

NOTES CONTINUED:

- REPAIR DAMAGED WATER SERVICES PER: (D C-D-7)
- DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
- DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
- DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.



PROFILE  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

Professional Engineer Seal for Michael A. Pollard, Jr., P.E. No. 045468, dated 1-13-20.

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REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

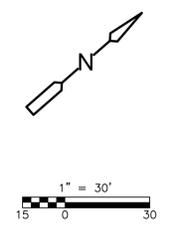
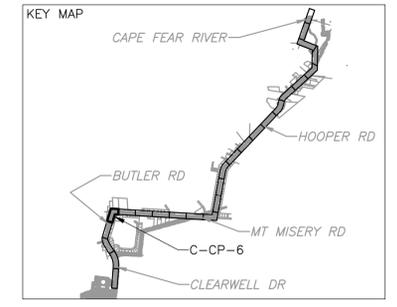
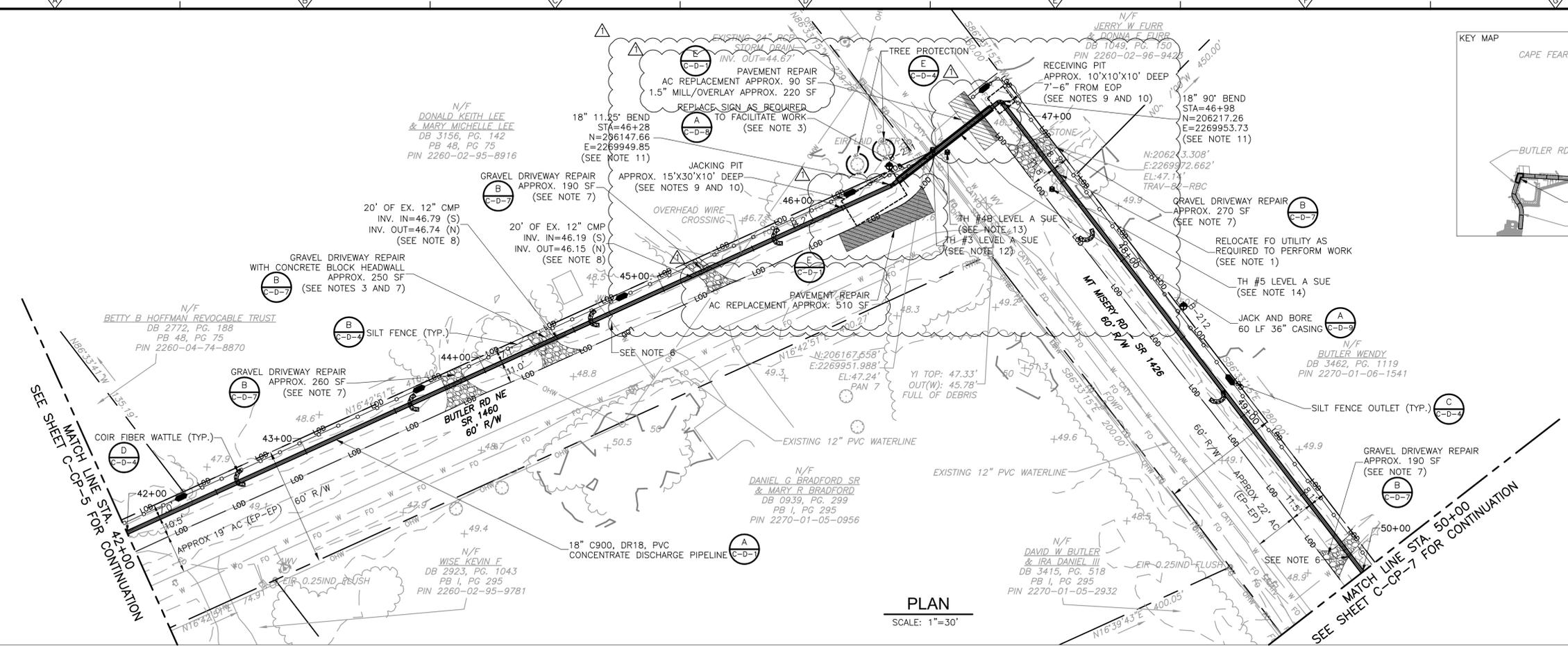
DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

BRUNSWICK COUNTY NC  
 NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE

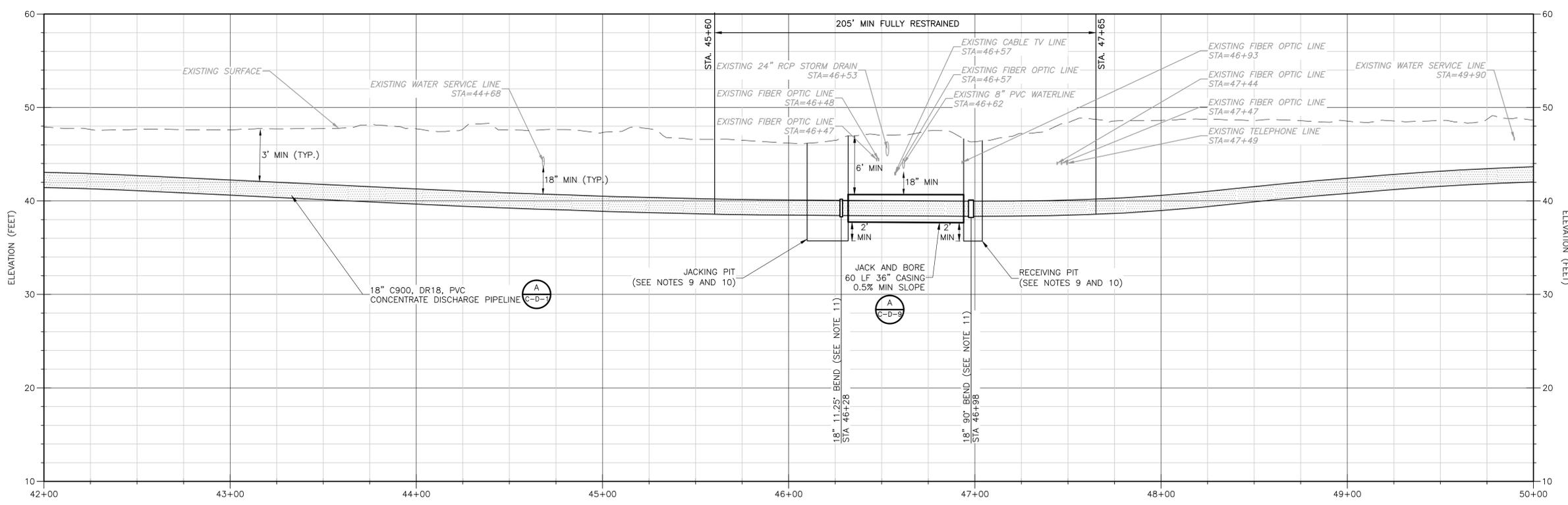
CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
 STA. 34+00 THRU STA. 42+00

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-5.dwg  
 SHEET NO. C-CP-5  
 ISSUED FOR BID

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- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.
  - FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER:
    - (A) C-D-1
    - (B) C-D-7
    - (C) C-D-9
    - (D) C-D-11
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.



- NOTES CONTINUED:**
- DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR. ALL EXCAVATION FOR TRENCHLESS PITS WITHIN THE 1:1 SLOPE FROM THE EDGE OF PAVEMENT SHALL REQUIRE POSITIVE SHORING (I.E. DO NOT TRENCH BOXES) IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
  - REFER TO SECTIONS 315000 AND 330507.25 FOR JACK AND BORE REQUIREMENTS.
  - TRANSITION FROM PVC TO DUCTILE IRON PIPE MATERIAL AT FITTING USING WEDGE ACTION MECHANICAL JOINT RESTRAINT.
  - LEVEL A SUE INDICATED 6" STEEL CONDUIT FOR CABLE TV AND FIBER OPTIC CROWN 3.9' BELOW GRADE.
  - LEVEL A SUE INDICATED 8" PVC WATERLINE CROWN 2.9' BELOW GRADE.
  - LEVEL A SUE INDICATED 2" CABLE FOR AT&T TELEPHONE CROWN 2.7' BELOW GRADE.

**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

1-13-20  
**MICHAEL A. POLLARD, JR., P.E.**  
 P.E. NO. 045468

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

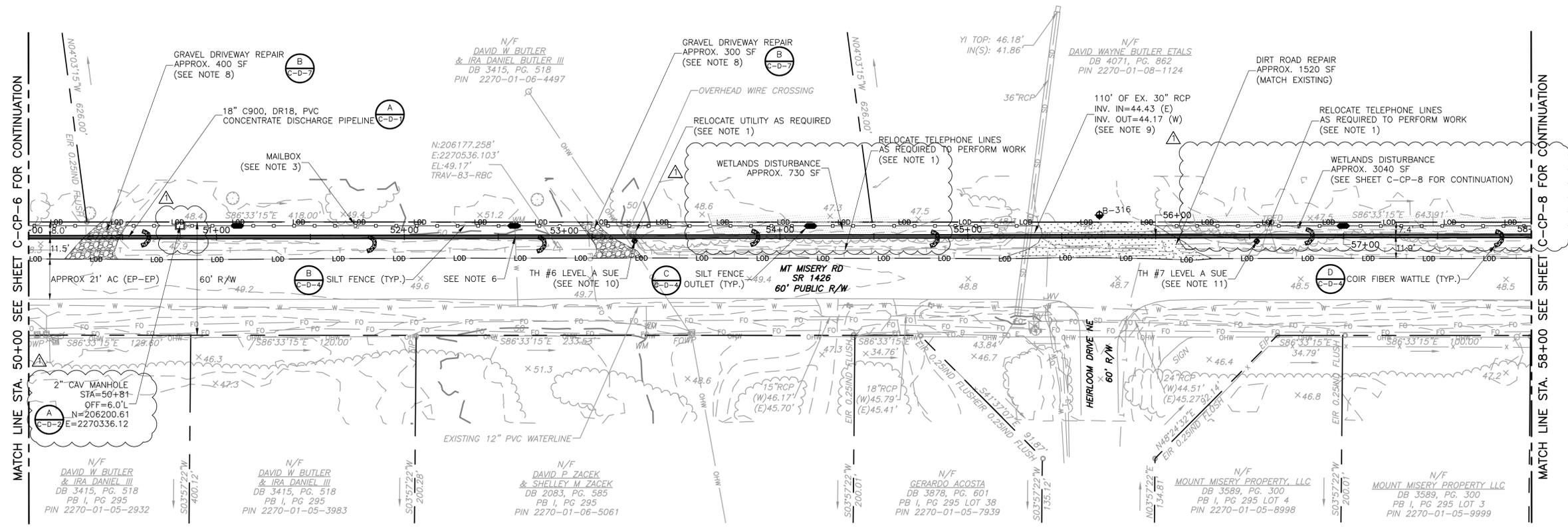
**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612  
 Tel: (919) 325-3500

BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE**

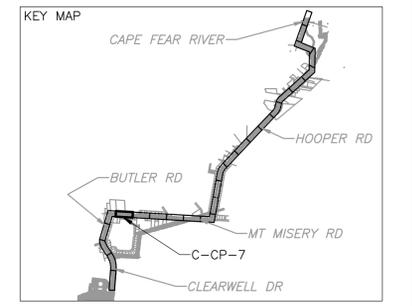
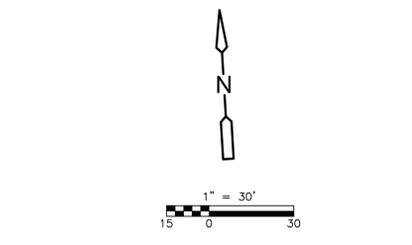
**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
 STA. 42+00 THRU STA. 50+00**

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-6.dwg  
 SHEET NO.  
**C-CP-6**  
 ISSUED FOR BID

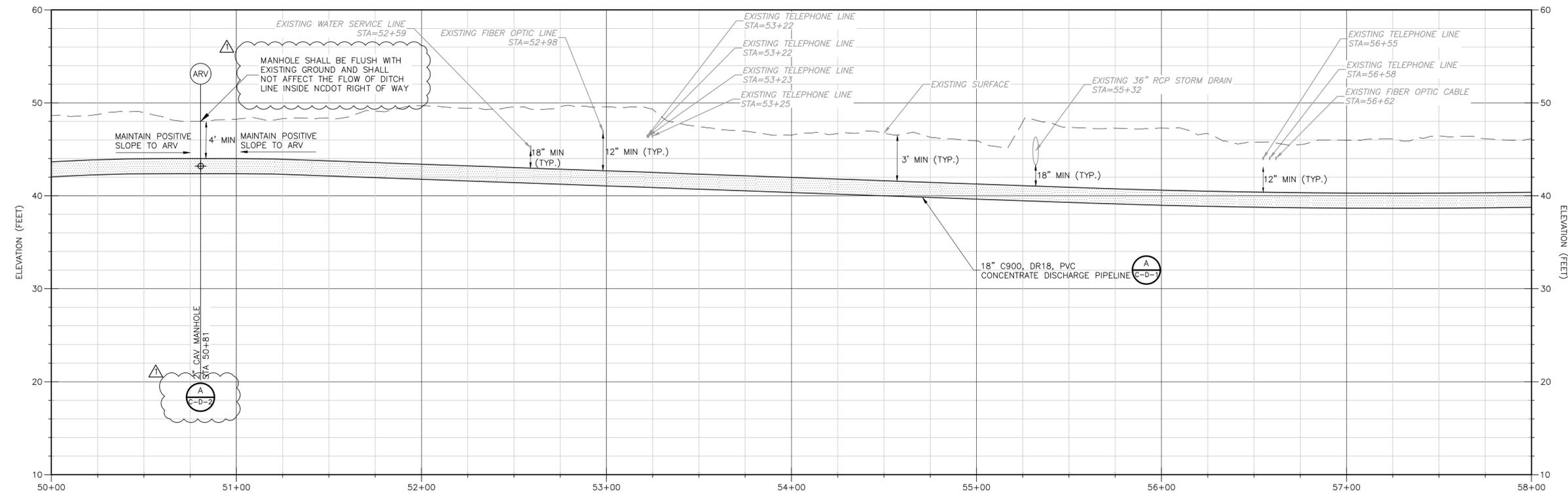
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**PLAN**  
SCALE: 1"=30'



- NOTES:**
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  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D-C-D-7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED 2" AT&T TELEPHONE CABLE CROWN 2.7' BELOW GRADE.
  - LEVEL A SUE INDICATED 2" AT&T TELEPHONE CABLE CROWN 2.4' BELOW GRADE.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

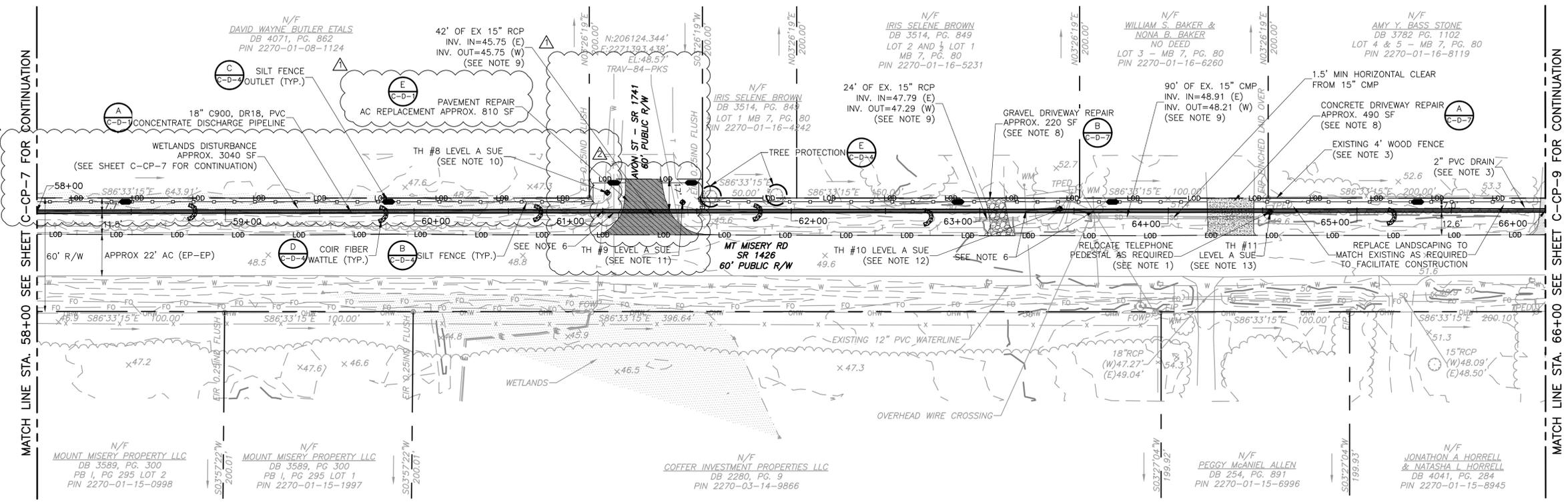


BRUNSWICK COUNTY NC  
 NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE

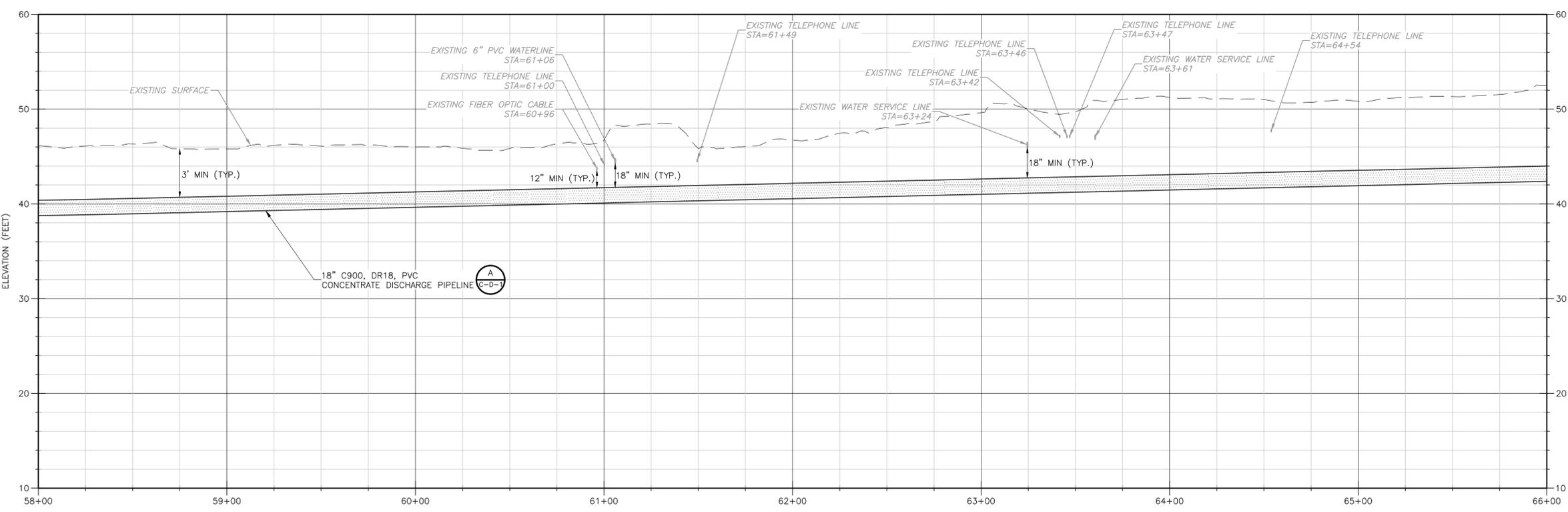
CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
 STA. 50+00 THRU STA. 58+00

**MICHAEL A. POLLARD, JR., P.E.**  
 P.E. NO. 045468  
 PROJECT NO. 250459-232662  
 FILE NAME: C-CP-7.dwg  
 SHEET NO. C-CP-7  
 ISSUED FOR BID

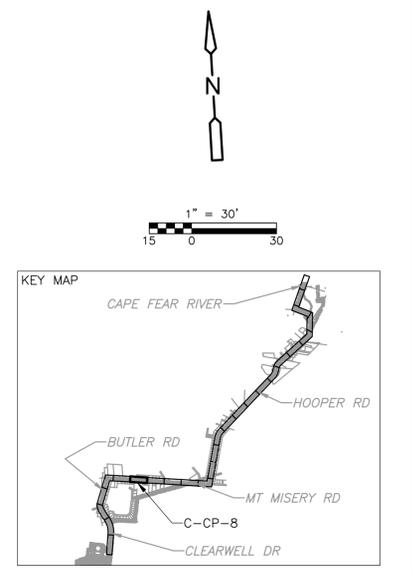
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**PLAN**  
SCALE: 1"=30'



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.



- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
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  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D-C-D-7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED NO WATERLINE FOUND AT THIS LOCATION.
  - LEVEL A SUE INDICATED 4" PVC CONDUIT FOR AT&T FIBER OPTIC CROWN AT 1.0' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 2" PVC CONDUIT FOR AT&T TELEPHONE CABLE CROWN AT 2.7' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 2" PVC CONDUIT FOR AT&T TELEPHONE CABLE CROWN AT 2.9' BELOW GRADE AT THIS LOCATION.

Professional Engineer Seal for Michael A. Pollard, Jr., P.E. No. 045468, dated 1-13-20.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

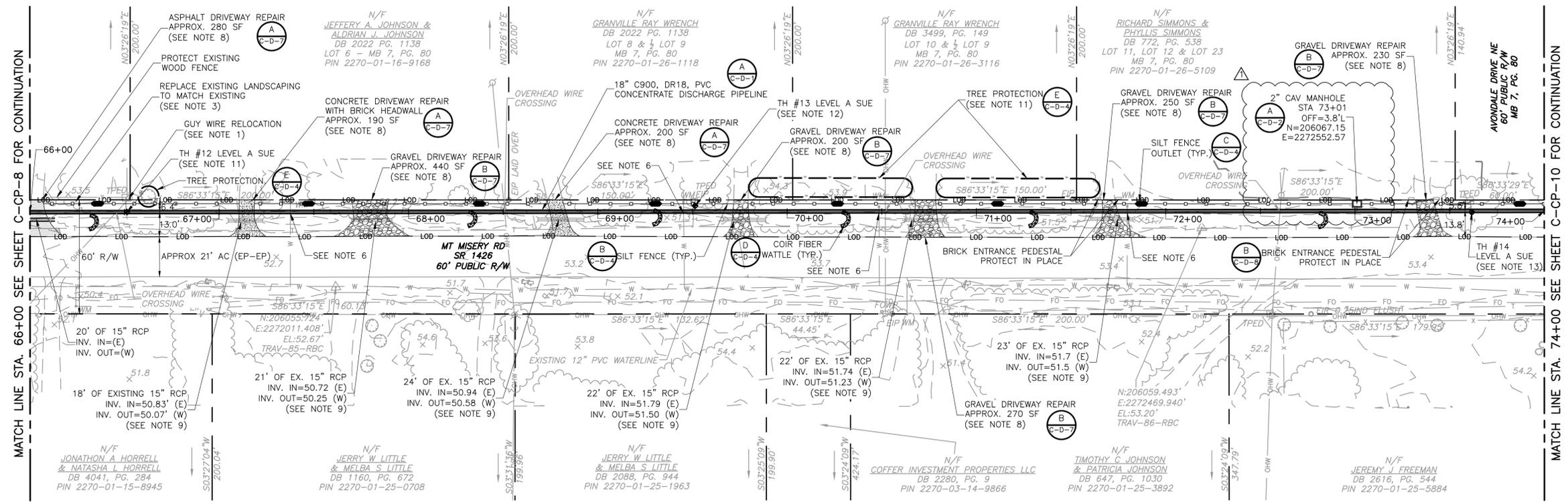


BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT**  
**CONCENTRATE DISCHARGE PIPELINE**

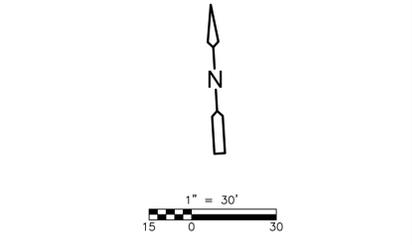
**CONCENTRATE FORCE MAIN - PLAN AND PROFILE**  
**STA. 58+00 THRU STA. 66+00**

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-B.dwg  
 SHEET NO.  
**C-CP-8**  
 ISSUED FOR BID

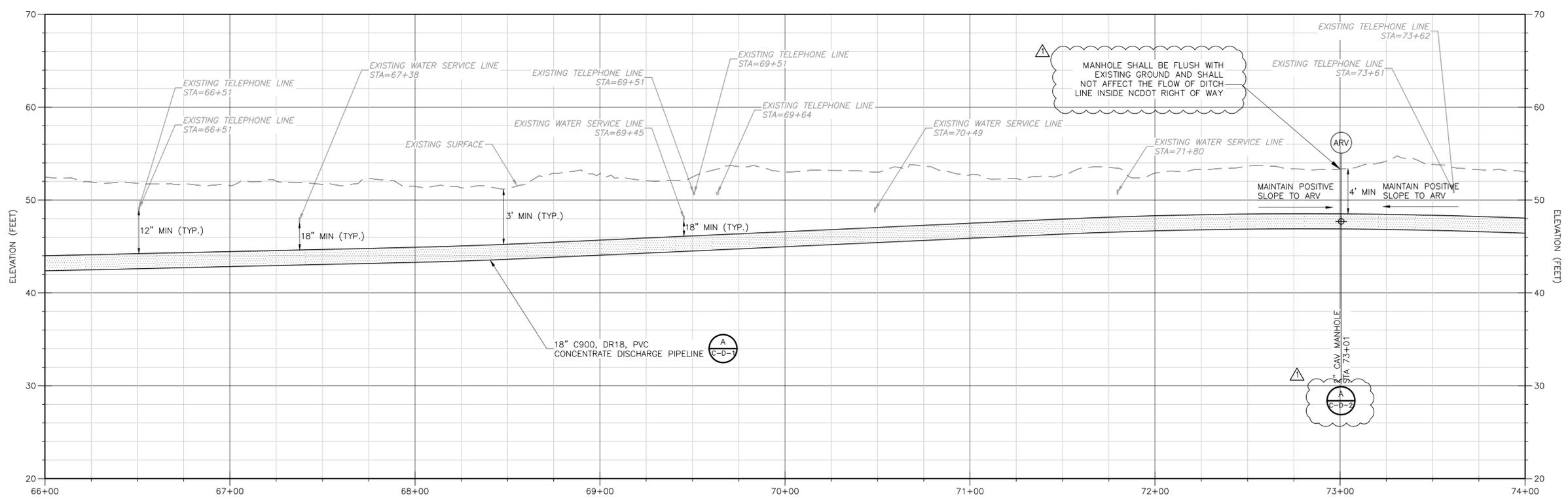
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**PLAN**  
SCALE: 1"=30'



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  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D-C-D-7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - PROTECT MATURE TREES AS REQUIRED TO FACILITATE CONSTRUCTION.
  - LEVEL A SUE INDICATED 2" AT&T TELEPHONE CABLE CROWN 2.6' BELOW GRADE.
  - LEVEL A SUE INDICATED 2" AT&T TELEPHONE CABLE CROWN 2.9' BELOW GRADE.
  - LEVEL A SUE INDICATED 1" AT&T TELEPHONE CONDUIT CROWN 2.5' BELOW GRADE.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019



BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE**

**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
 STA. 66+00 THRU STA. 74+00**

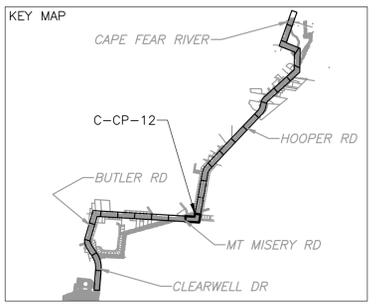
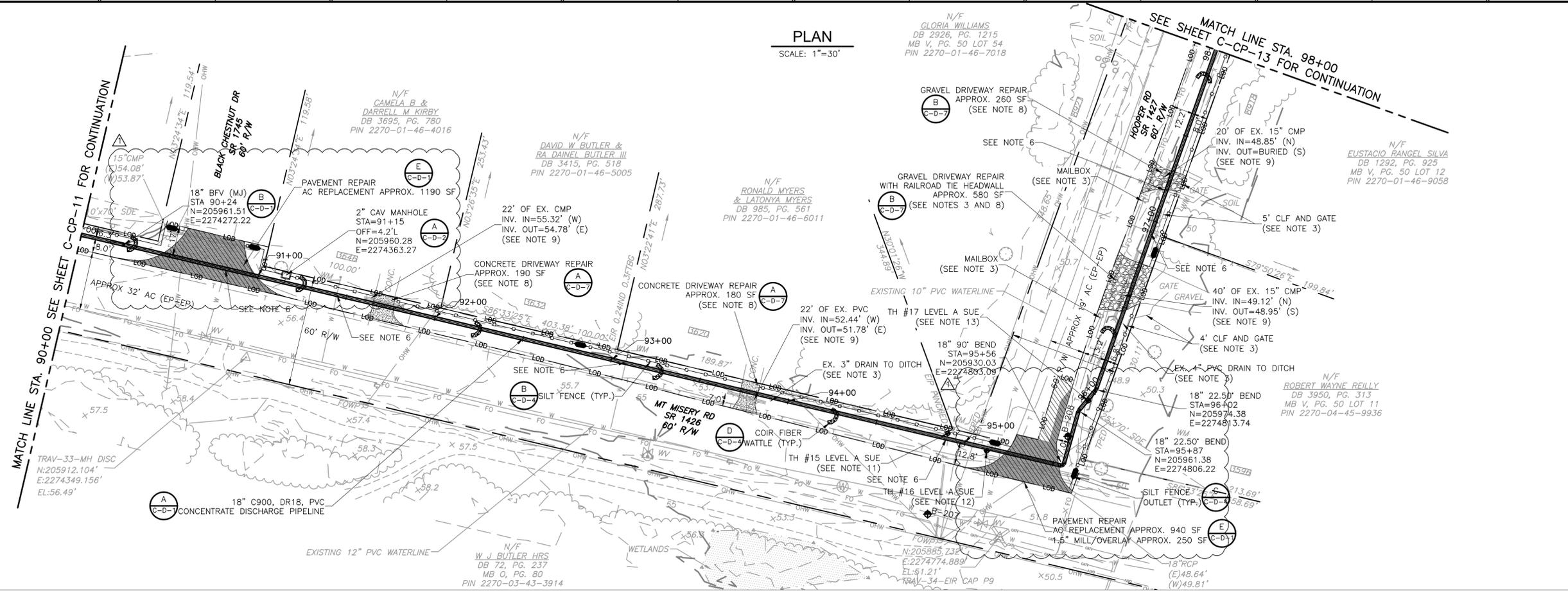
Professional Engineer Seal for Michael A. Pollard, Jr., P.E. No. 045468, dated 1-13-20.

**MICHAEL A. POLLARD, JR., P.E.**  
 P.E. NO. 045468

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-9.dwg  
 SHEET NO. **C-CP-9**

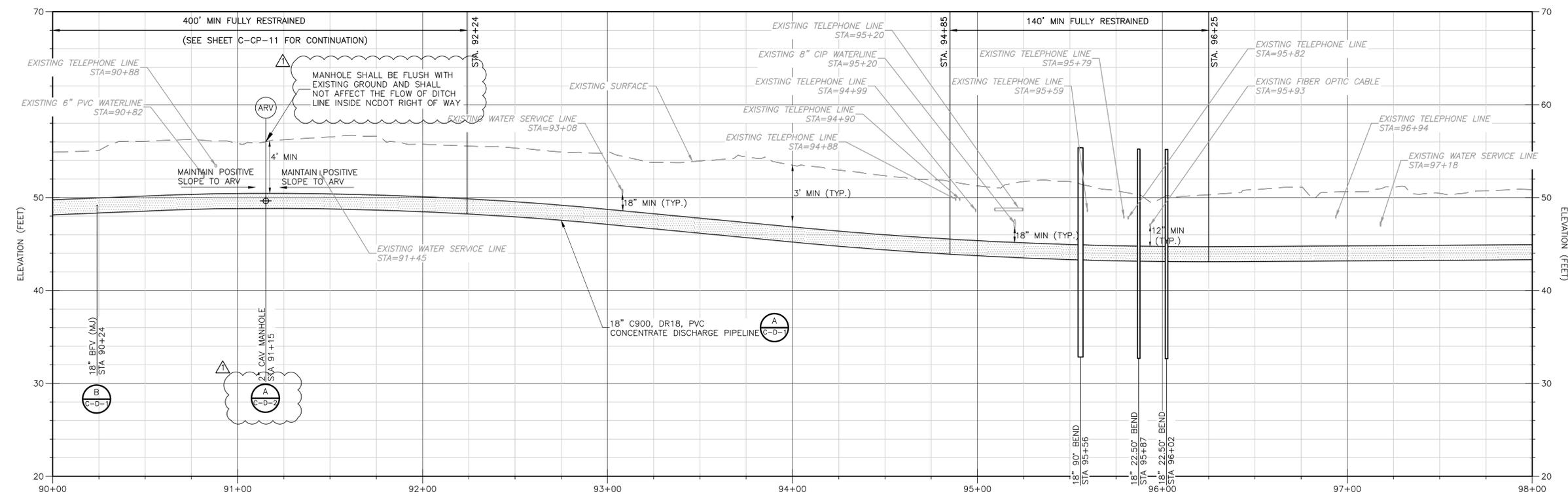
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**PLAN**  
SCALE: 1"=30'

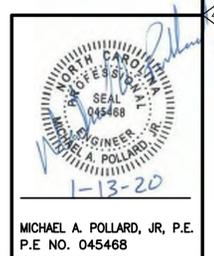


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  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.

**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.



- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D) C-D-7
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - CONTRACTOR SHALL MAINTAIN MINIMUM ONE LANE OF TRAFFIC FOR HOOPER RD AT ALL TIMES.
  - LEVEL A SUE INDICATED TWO (2) 1" AND 2" SPECTRUM FIBER OPTIC AND CABLE LINE CROWNS 2.9' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 8" CAST IRON WATERLINE CROWN 3.35' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T TELEPHONE CABLE CROWN 2.9' BELOW GRADE AT THIS LOCATION.



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

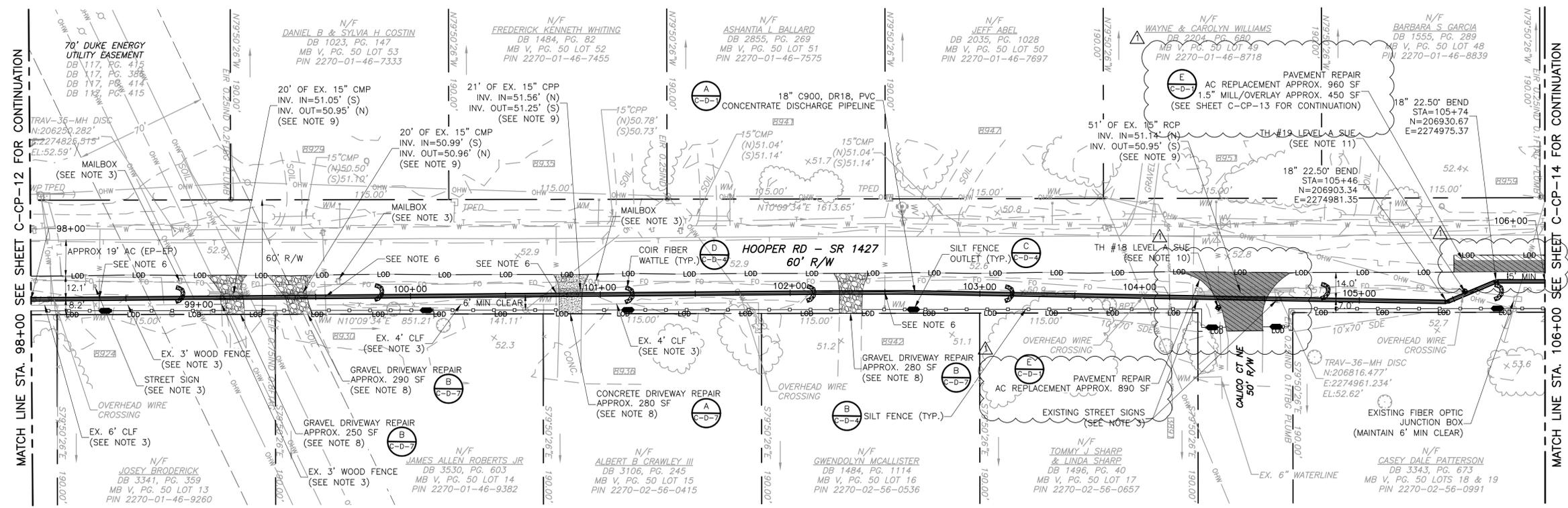


BRUNSWICK COUNTY NC  
 NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE

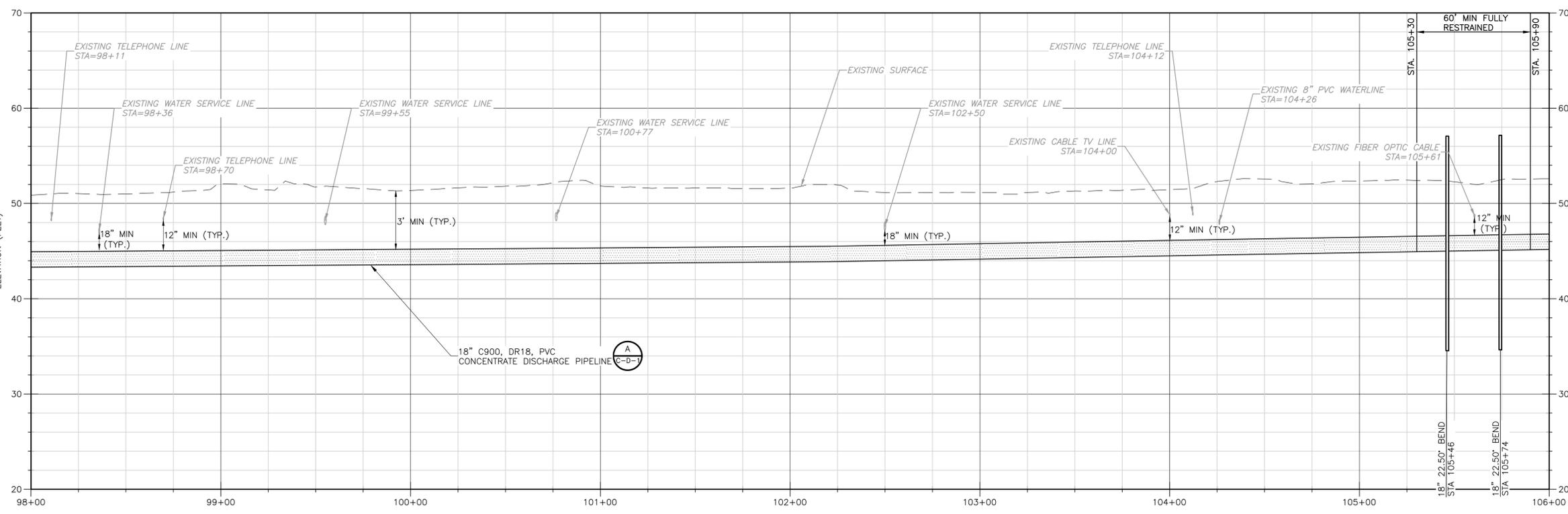
CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
 STA. 90+00 THRU STA. 98+00

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-12.dwg  
 SHEET NO.  
**C-CP-12**  
 ISSUED FOR BID

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**PLAN**  
SCALE: 1"=30'



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

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  - REPAIR DAMAGED WATER SERVICES PER:

- NOTES CONTINUED:**
- DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - CONCENTRATE PIPELINE SHALL HAVE MINIMUM COMPACTION AND DEPTH REQUIREMENTS AS DETERMINED BY CONTRACTOR TO SATISFY 80,000 LB POINT LOAD BEARING FOR HEAVY EQUIPMENT WITHIN DUKE ENERGY EASEMENT RIGHT OF WAY.
  - LEVEL A SUE INDICATED 8" PVC WATERLINE CROWN 4.15' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T FIBER OPTIC CABLE CROWN 3.35' BELOW GRADE AT THIS LOCATION.
  - CONCENTRATE PIPELINE SHALL HAVE MINIMUM COMPACTION AND DEPTH REQUIREMENTS AS DETERMINED BY CONTRACTOR TO SATISFY 80,000 LB POINT LOAD BEARING FOR HEAVY EQUIPMENT WITHIN DUKE ENERGY EASEMENT RIGHT OF WAY.
  - ANGLE OF TANGENT CROSSING DUKE ENERGY TRANSMISSION POWERLINES SHALL BE MINIMUM 30 TO 90 DEGREES FROM CENTER LINE OF THE DUKE ENERGY EASEMENT RIGHT OF WAY.
  - CONCENTRATE DISCHARGE PIPELINE IS APPROXIMATELY 210 LB (N) FROM NEAREST DUKE ENERGY ABOVE GROUND STRUCTURE AS MEASURED ALONG THE CENTERLINE OF THE DUKE ENERGY EASEMENT RIGHT OF WAY.
  - CONTRACTOR SHALL REVIEW AND COMPLY WITH MOST UPDATED REVISION OF DUKE ENERGY ELECTRIC TRANSMISSION RIGHT OF WAY GUIDELINES & RESTRICTIONS VALID FOR NORTH CAROLINA.
  - NO PERMANENT CONCENTRATE DISCHARGE PIPELINE ABOVE GROUND OBSTRUCTIONS ARE LOCATED WITHIN DUKE ENERGY EASEMENT RIGHT OF WAY.



MICHAEL A. POLLARD, JR., P.E.  
P.E. NO. 045468

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
DRAWN BY: D. BORNHANN  
SHEET CHK'D BY: B. WILLIAMS  
CROSS CHK'D BY: M. POLLARD  
APPROVED BY: M. POLLARD  
DATE: OCTOBER 2019

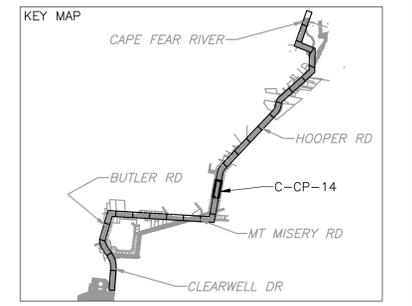
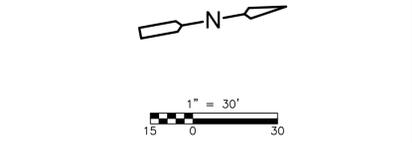
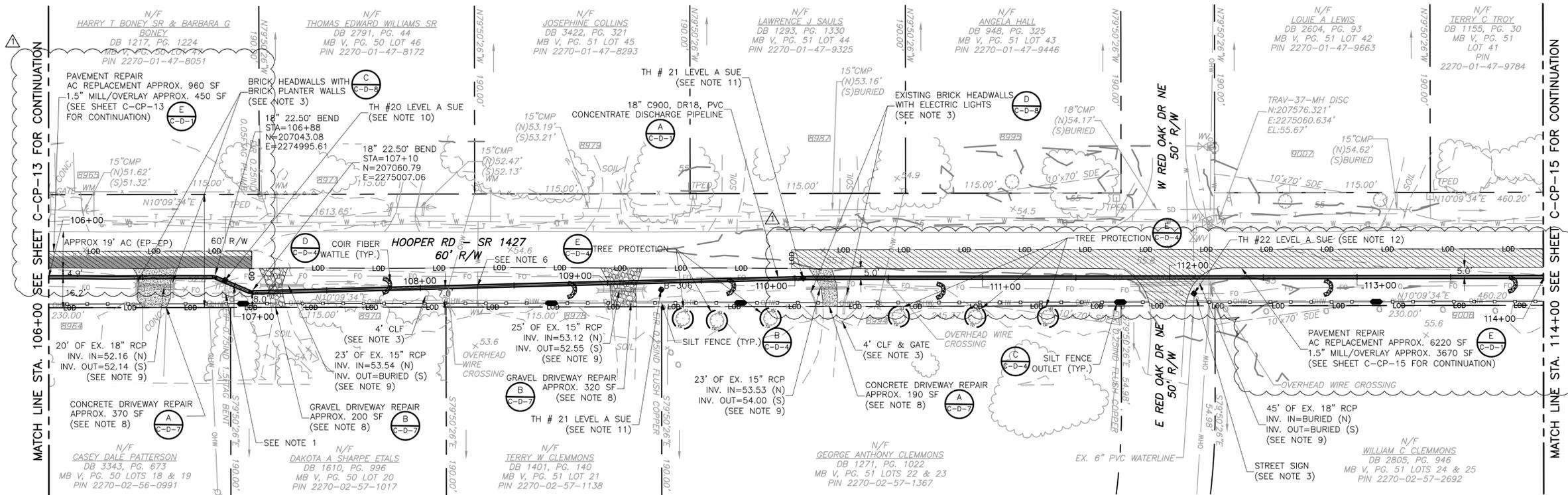


BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT  
CONCENTRATE DISCHARGE PIPELINE**

**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
STA. 98+00 THRU STA. 106+00**

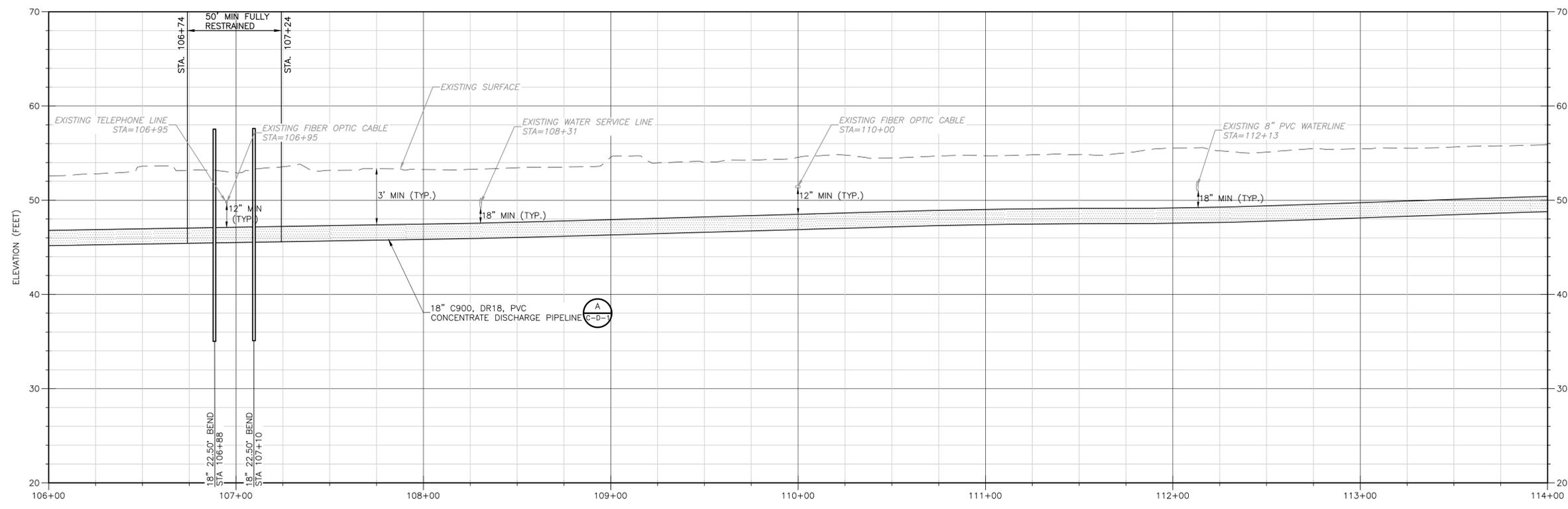
PROJECT NO. 250459-232662  
FILE NAME: C-CP-13.dwg  
SHEET NO.  
**C-CP-13**

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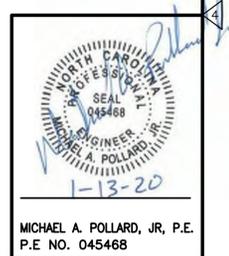
- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.

**PLAN**  
SCALE: 1"=30'



- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D-C-D-7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED 1" AT&T TELEPHONE CABLE CROWN 3.35' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T TELEPHONE CABLE CROWN 3.45' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 8" PVC WATERLINE CROWN 3.70' BELOW GRADE AT THIS LOCATION.

**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.



MICHAEL A. POLLARD, JR., P.E.  
P.E. NO. 045468  
PROJECT NO. 250459-232662  
FILE NAME: C-CP-14.dwg  
SHEET NO.  
**C-CP-14**

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

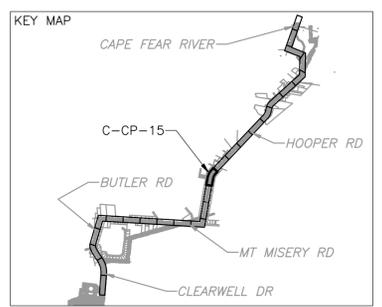
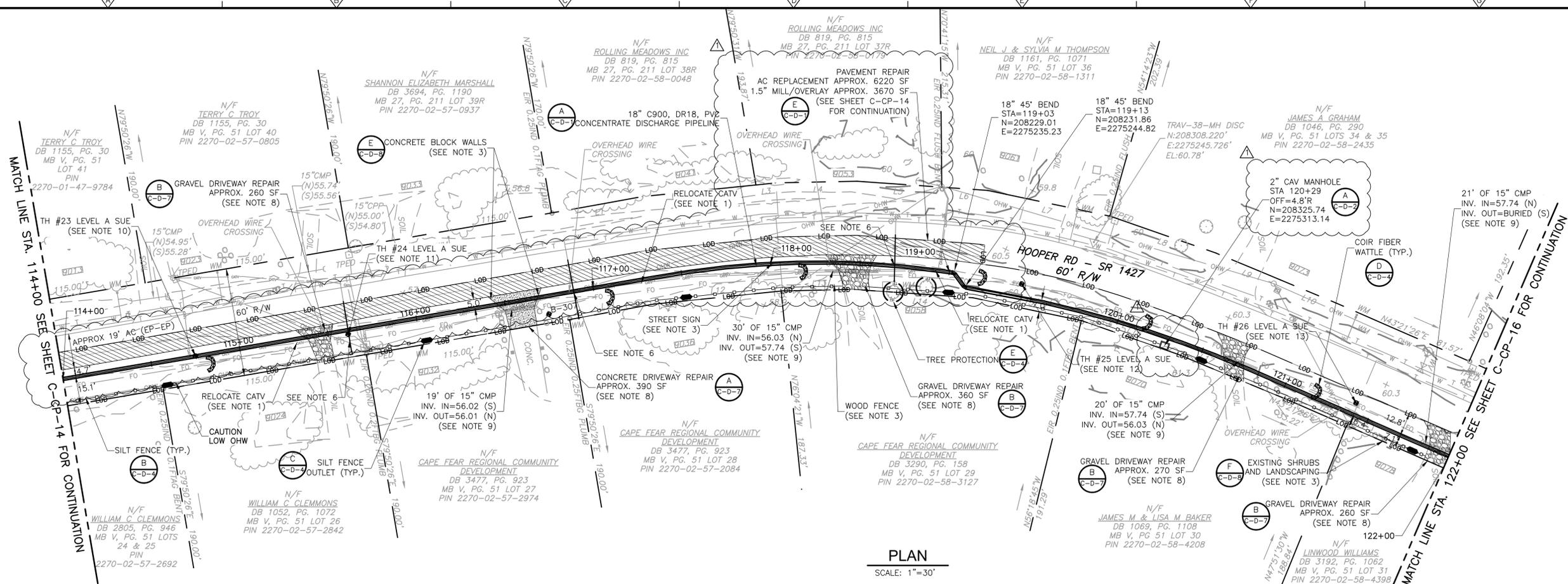
DESIGNED BY: B. MACKIE  
DRAWN BY: D. BORNMANN  
SHEET CHK'D BY: B. WILLIAMS  
CROSS CHK'D BY: M. POLLARD  
APPROVED BY: M. POLLARD  
DATE: OCTOBER 2019



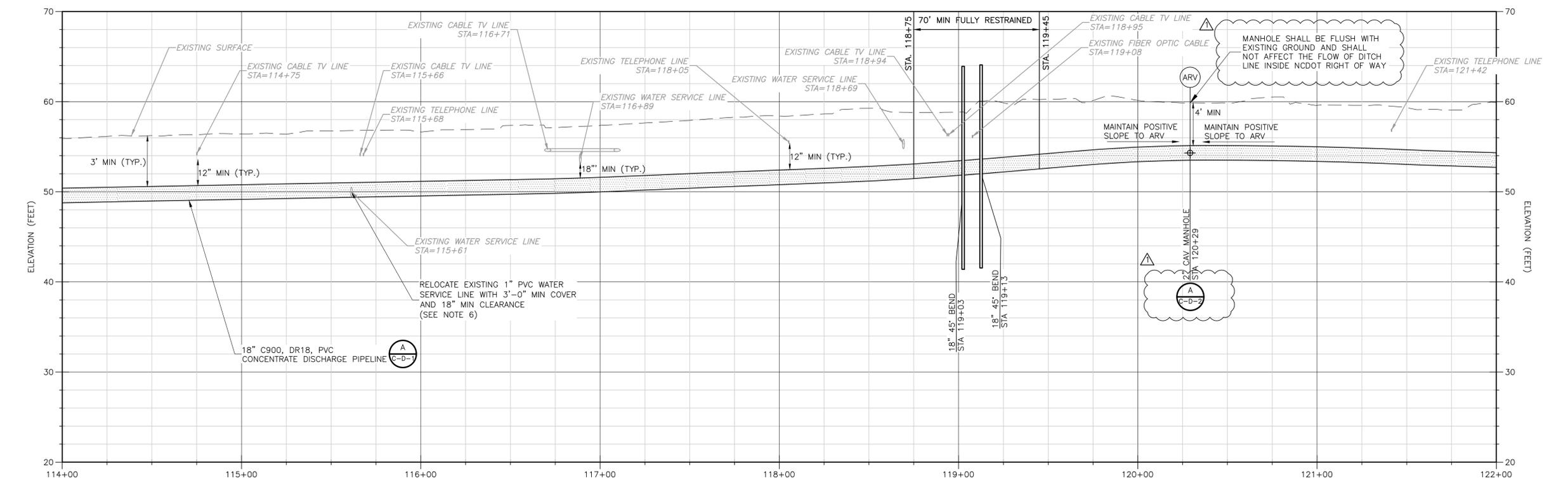
BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT  
CONCENTRATE DISCHARGE PIPELINE**

**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
STA. 106+00 THRU STA. 114+00**

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  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.



- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D-C-D-7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED 1" SPECTRUM TELEPHONE CABLE CROWN 2.3' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" PVC WATER SERVICE CROWN 7.2' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T TELEPHONE CABLE CROWN 3.25' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T FIBER OPTIC CABLE CROWN 3.45' BELOW GRADE AT THIS LOCATION.

**MICHAEL A. POLLARD, JR., P.E.**  
 P.E. NO. 045468

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

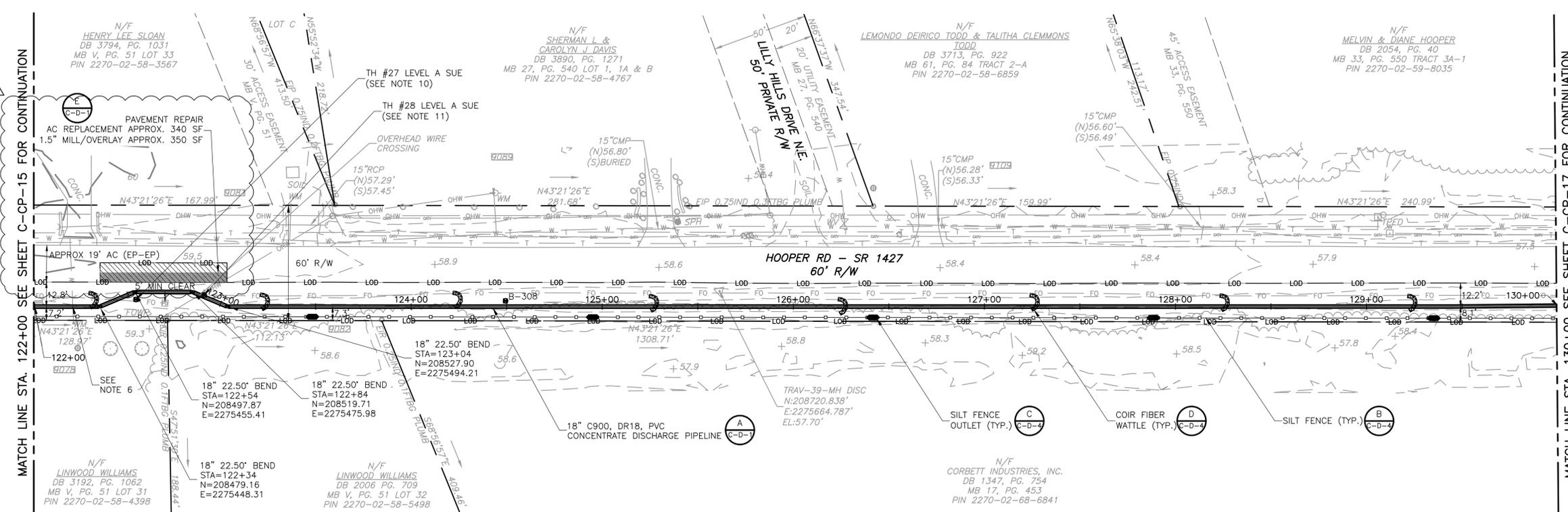
**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612  
 Tel: (919) 325-3500

BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT**  
**CONCENTRATE DISCHARGE PIPELINE**

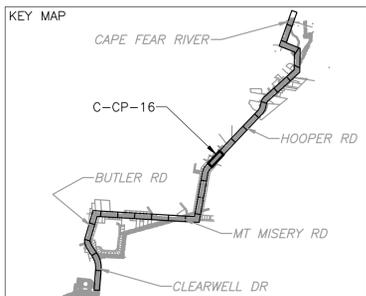
**CONCENTRATE FORCE MAIN - PLAN AND PROFILE**  
**STA. 114+00 THRU STA. 122+00**

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-15.dwg  
 SHEET NO.  
**C-CP-15**  
 ISSUED FOR BID

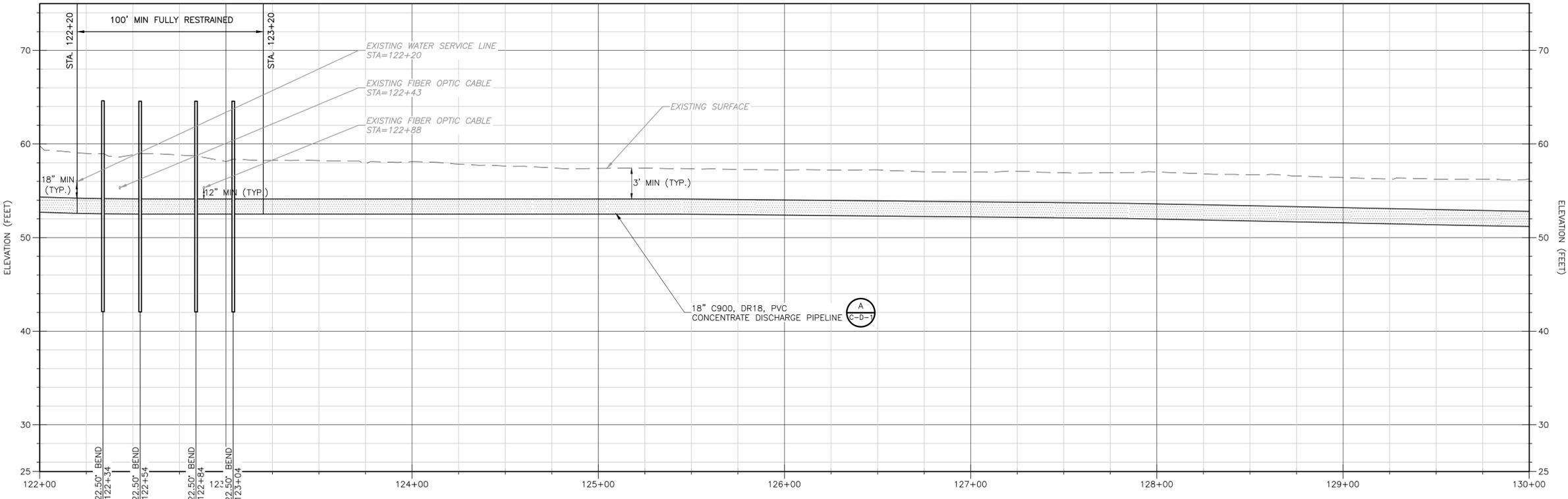
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**PLAN**  
SCALE: 1"=30'



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  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D C-D-7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED 1" AT&T TELEPHONE CABLE CROWN 3.55' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T FIBER OPTIC CABLE CROWN 3.35' BELOW GRADE AT THIS LOCATION.

Professional Engineer Seal for Michael A. Pollard, Jr., P.E. No. 045468. The seal includes the text 'NORTH CAROLINA PROFESSIONAL ENGINEER' and the date '1-13-20'.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612  
 Tel: (919) 325-3500

BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT**  
**CONCENTRATE DISCHARGE PIPELINE**

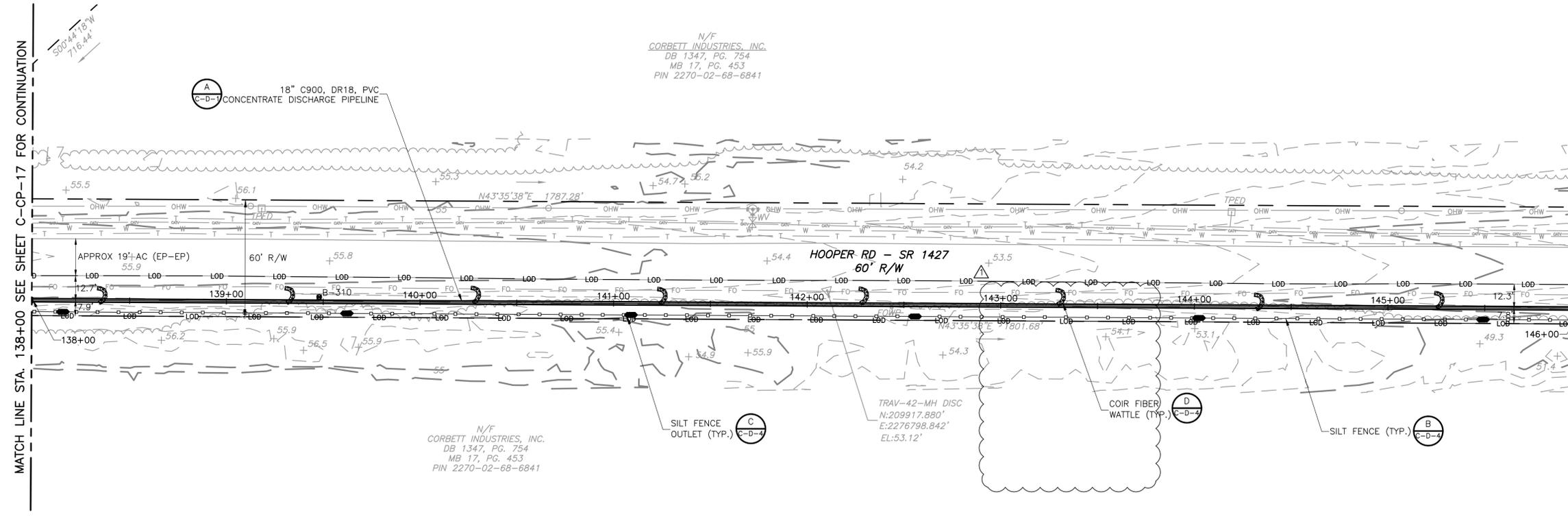
**CONCENTRATE FORCE MAIN - PLAN AND PROFILE**  
**STA. 122+00 THRU STA. 130+00**

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-16.dwg  
 SHEET NO.  
**C-CP-16**  
 ISSUED FOR BID

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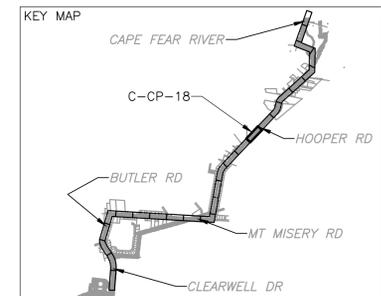
MATCH LINE STA. 138+00 SEE SHEET C-CP-17 FOR CONTINUATION

MATCH LINE STA. 146+00 SEE SHEET C-CP-19 FOR CONTINUATION

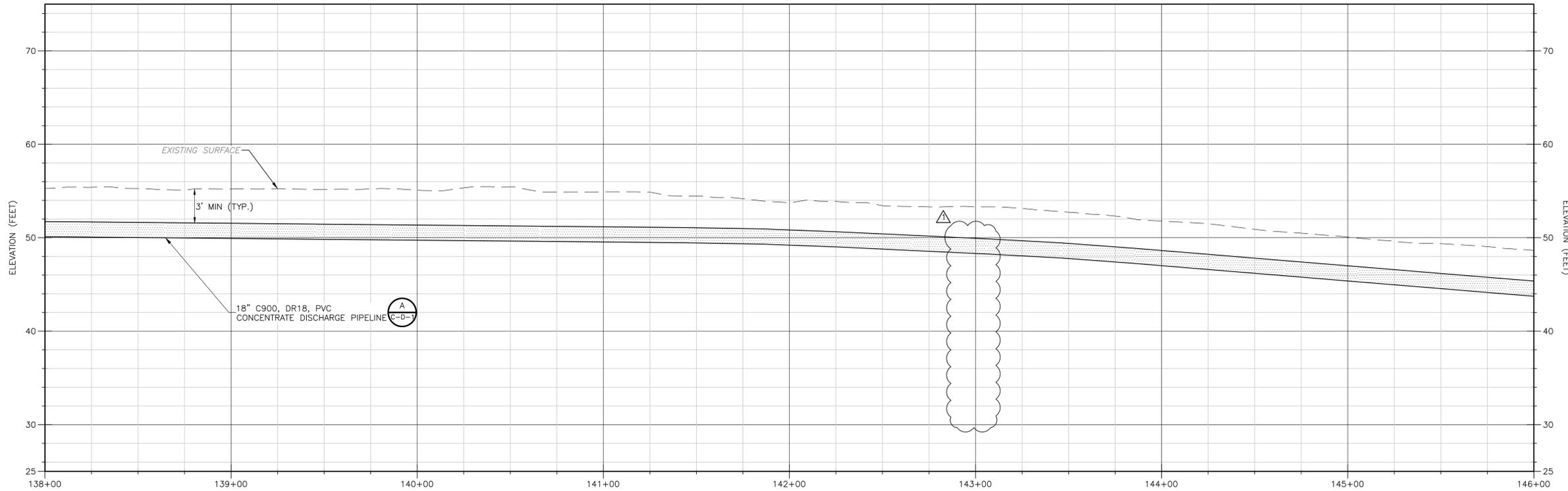


**PLAN**

SCALE: 1"=30'



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- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
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  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.



**PROFILE**

SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: D  
C-D-7
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
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  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
DRAWN BY: D. BORNMANN  
SHEET CHK'D BY: B. WILLIAMS  
CROSS CHK'D BY: M. POLLARD  
APPROVED BY: M. POLLARD  
DATE: OCTOBER 2019



BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT  
CONCENTRATE DISCHARGE PIPELINE**

**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
STA. 138+00 THRU STA. 146+00**

**MICHAEL A. POLLARD, JR., P.E.**  
 P.E. NO. 045468  
 PROJECT NO. 250459-232662  
 FILE NAME: C-CP-18.dwg  
 SHEET NO.  
**C-CP-18**

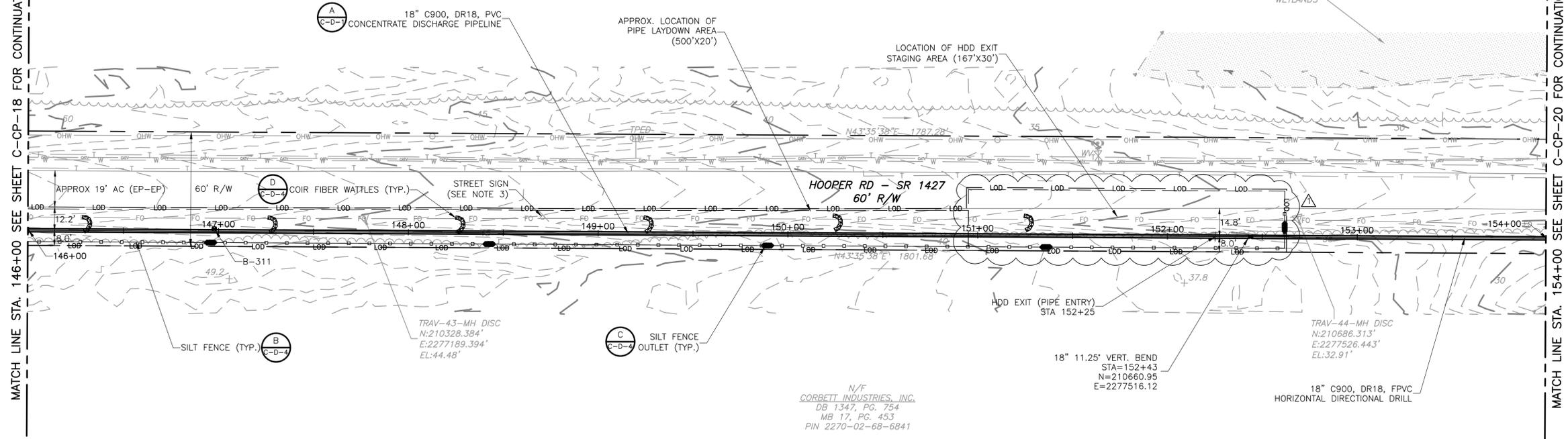
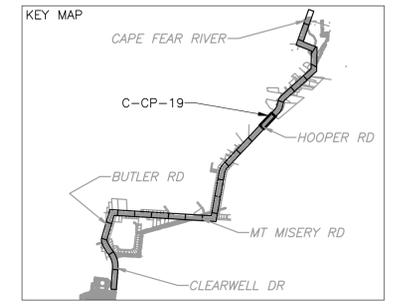
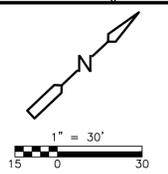
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MATCH LINE STA. 146+00 SEE SHEET C-CP-18 FOR CONTINUATION

MATCH LINE STA. 154+00 SEE SHEET C-CP-20 FOR CONTINUATION

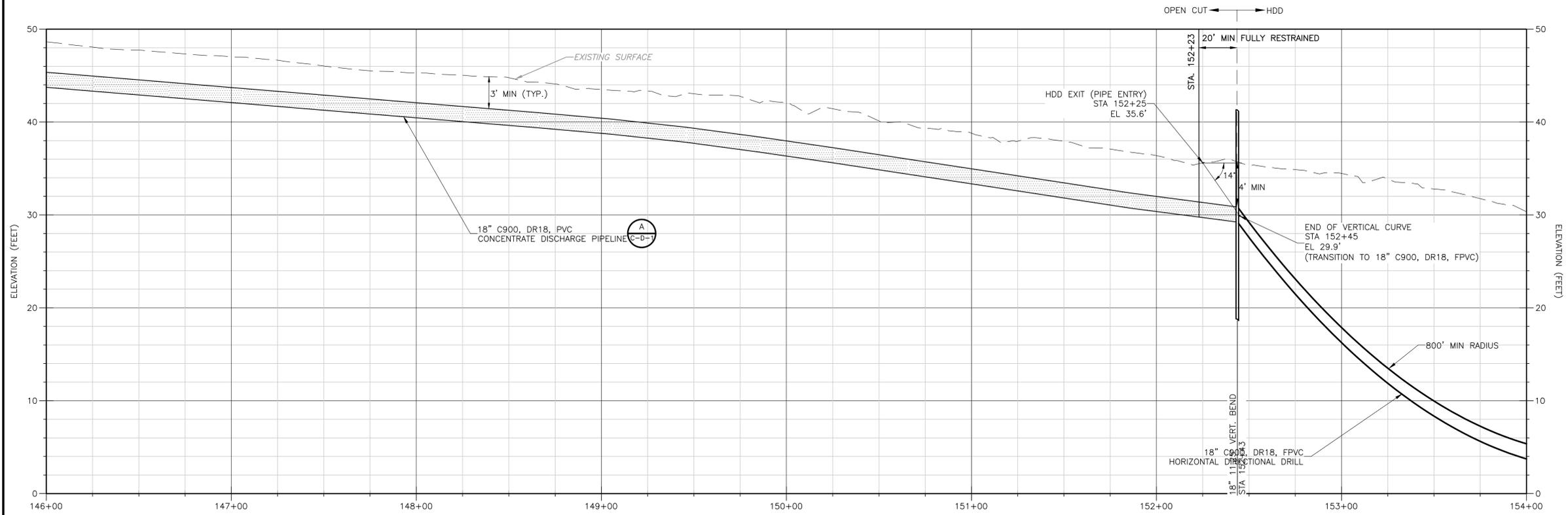
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CORBETT INDUSTRIES, INC.  
DB 1347, PG. 754  
MB 17, PG. 453  
PIN 2270-02-68-6841

N/F  
CORBETT INDUSTRIES, INC.  
DB 1347, PG. 754  
MB 17, PG. 453  
PIN 2270-02-68-6841



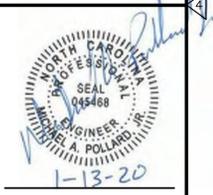
**PLAN**  
SCALE: 1"=30'

- NOTES:**
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  - REPAIR DAMAGED WATER SERVICES PER:
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
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  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - THE CONTRACTOR SHALL REVIEW THE GEOTECHNICAL DATA INCLUDED IN APPENDIX A PRIOR TO THE SELECTION OF TOOLS/EQUIPMENT FOR DRILLING THE PILOT HOLE AND REAMING.
  - THE CONTRACTOR SHALL BE AWARE OF THE POTENTIAL FOR INADVERTENT RETURNS (FRAC-OUT) IN THE VICINITY OF THE HDD ENTRY AND EXIT POINTS. THE CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MEANS AND METHODS TO REDUCE THE POTENTIAL FOR FRAC-OUT ALONG THE ENTIRE ALIGNMENT INCLUDING THE ENTRY AND EXIT POINTS. THE CONTRACTOR SHALL PREPARE AND SUBMIT A MITIGATION PLAN AS SPECIFIED AND BE PREPARED TO IMPLEMENT. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY ADDITIONAL PERMITS REQUIRED BASED UPON THEIR MEANS AND METHODS.
  - UTILITY CROSSINGS SHOWN ARE APPROXIMATE; OTHER UTILITIES MAY EXIST THAT ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITIES, STRUCTURES AND FACILITIES AND PROVIDE PROPER CLEARANCE BETWEEN UTILITIES, STRUCTURES AND FACILITIES AND THE PIPE.
  - HDD GEOMETRY SHOWN ARE THE MINIMUM REQUIREMENTS FOR BASIS OF DESIGN PURPOSES. THE CONTRACTOR MAY ADJUST THE DRILL PATH AND HDD ENTRY AND EXIT POINTS BASED UPON THEIR SPECIFIC EQUIPMENT REQUIREMENTS. SEE THE REQUIREMENTS OF SECTION 330507.13 FOR SPECIFIED TOLERANCES AND REQUIREMENTS FOR THE HDD WORK PLAN AND CALCULATIONS FOR REVIEW.
  - DRILLED PATH STATIONING IS MEASURED IN FEET BY PLAN LENGTHS. THE CONTRACTOR MUST TAKE INTO ACCOUNT VERTICAL PIPE RUNS AND BENDING RADII WHEN CALCULATING PIPE QUANTITIES.



MICHAEL A. POLLARD, JR., P.E.  
P.E. NO. 045468

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
DRAWN BY: D. BORNMANN  
SHEET CHK'D BY: B. WILLIAMS  
CROSS CHK'D BY: M. POLLARD  
APPROVED BY: M. POLLARD  
DATE: OCTOBER 2019

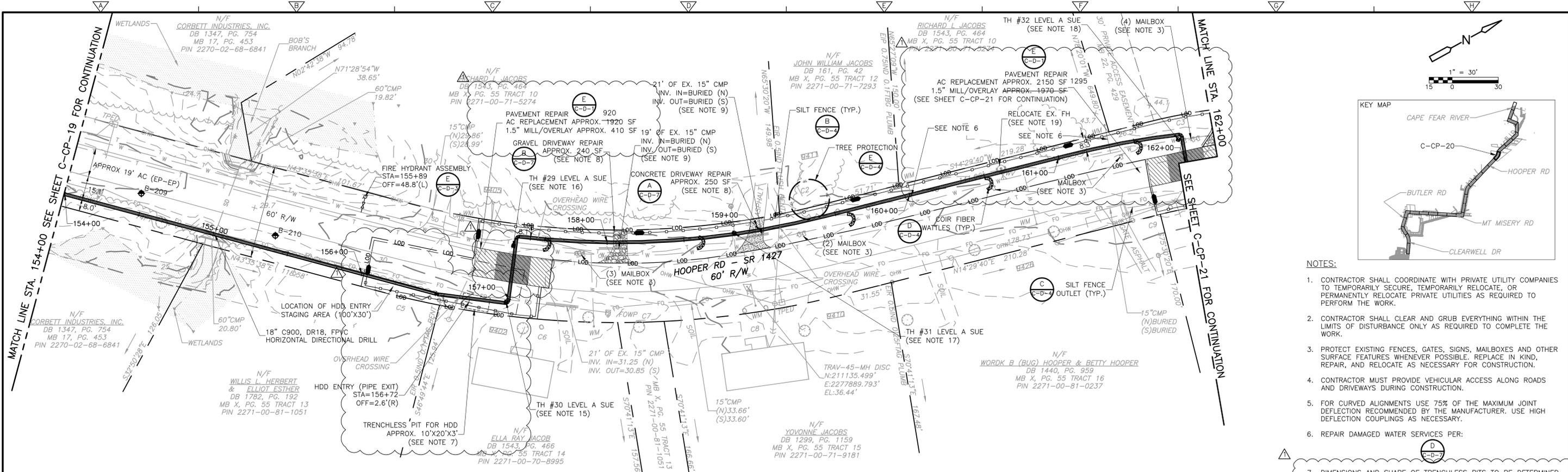


BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT  
CONCENTRATE DISCHARGE PIPELINE**

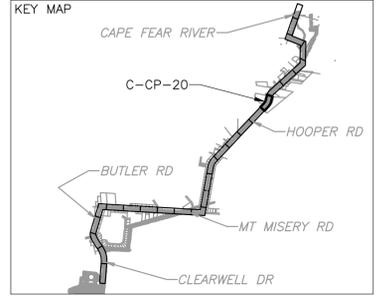
**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
STA. 146+00 THRU STA. 154+00**

PROJECT NO. 250459-232662  
FILE NAME: C-CP-19.dwg  
SHEET NO.  
**C-CP-19**  
ISSUED FOR BID

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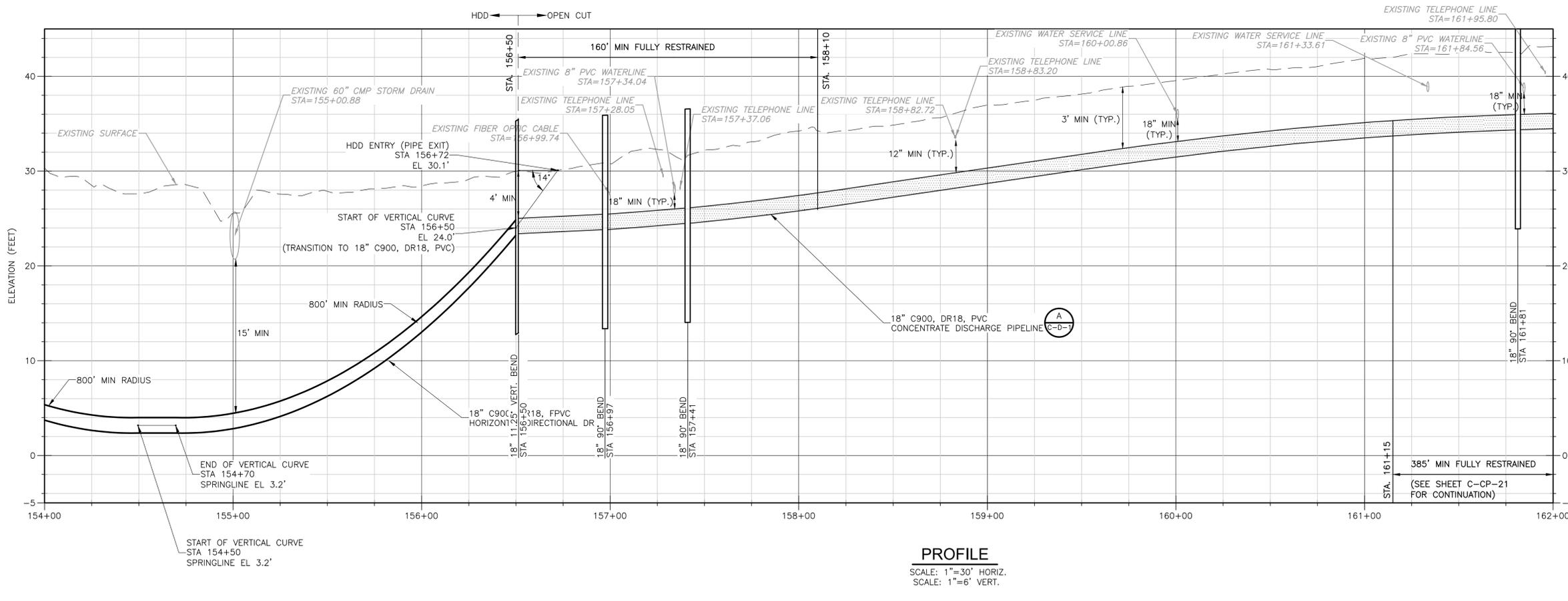


**PLAN**  
SCALE: 1"=30'



- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
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  - REPAIR DAMAGED WATER SERVICES PER:
    - (D) (SEE NOTE 7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR. ALL EXCAVATION FOR TRENCHLESS PITS WITHIN THE 1:1 SLOPE FROM EDGE OF PAVEMENT SHALL REQUIRE POSITIVE SHORING (I.E. DO NOT TRENCH BOXES) IN ACCORDANCE WITH PROJECT SPECIFICATIONS.

- NOTES CONTINUED:**
- DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - THE CONTRACTOR SHALL REVIEW THE GEOTECHNICAL DATA INCLUDED IN APPENDIX A PRIOR TO THE SELECTION OF TOOLS/EQUIPMENT FOR DRILLING THE PILOT HOLE AND REAMING.
  - THE CONTRACTOR SHALL BE AWARE OF THE POTENTIAL FOR INADVERTENT RETURNS (FRAC-OUT) IN THE VICINITY OF THE HDD ENTRY AND EXIT POINTS. THE CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MEANS AND METHODS TO REDUCE THE POTENTIAL FOR FRAC-OUT ALONG THE ENTIRE ALIGNMENT INCLUDING THE ENTRY AND EXIT POINTS. THE CONTRACTOR SHALL PREPARE AND SUBMIT A MITIGATION PLAN AS SPECIFIED AND BE PREPARED TO IMPLEMENT. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY ADDITIONAL PERMITS REQUIRED BASED UPON THEIR MEANS AND METHODS.
  - UTILITY CROSSINGS SHOWN ARE APPROXIMATE; OTHER UTILITIES MAY EXIST THAT ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITIES, STRUCTURES AND FACILITIES AND PROVIDE PROPER CLEARANCE BETWEEN UTILITIES, STRUCTURES AND FACILITIES AND THE PIPE.
  - HDD GEOMETRY SHOWN ARE THE MINIMUM REQUIREMENTS FOR BASIS OF DESIGN PURPOSES. THE CONTRACTOR MAY ADJUST THE DRILL PATH AND HDD ENTRY AND EXIT POINTS BASED UPON THEIR SPECIFIC EQUIPMENT REQUIREMENTS. SEE THE REQUIREMENTS OF SECTION 330507.13 FOR SPECIFIED TOLERANCES AND REQUIREMENTS FOR THE HDD WORK PLAN AND CALCULATIONS FOR REVIEW.
  - DRILLED PATH STATIONING IS MEASURED IN FEET BY PLAN LENGTHS. THE CONTRACTOR MUST TAKE INTO ACCOUNT VERTICAL PIPE RUNS AND BENDING RADII WHEN CALCULATING PIPE QUANTITIES.
  - LEVEL A SUE INDICATED 1" AT&T TELEPHONE CABLE CROWN 3.30' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T FIBER OPTIC CABLE CROWN 3.20' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T TELEPHONE CABLE CROWN 2.60' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 18" PVC WATERLINE CROWN 3.25' BELOW GRADE AT THIS LOCATION.
  - RELOCATE FIRE HYDRANT AS SHOWN AT STA. 155+89, OFF. 48.8'(L) AND STA. 162+78, OFF. 40.5'(L).



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNHANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019



BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT**  
**CONCENTRATE DISCHARGE PIPELINE**

**CONCENTRATE FORCE MAIN - PLAN AND PROFILE**  
**STA. 154+00 THRU STA. 162+00**

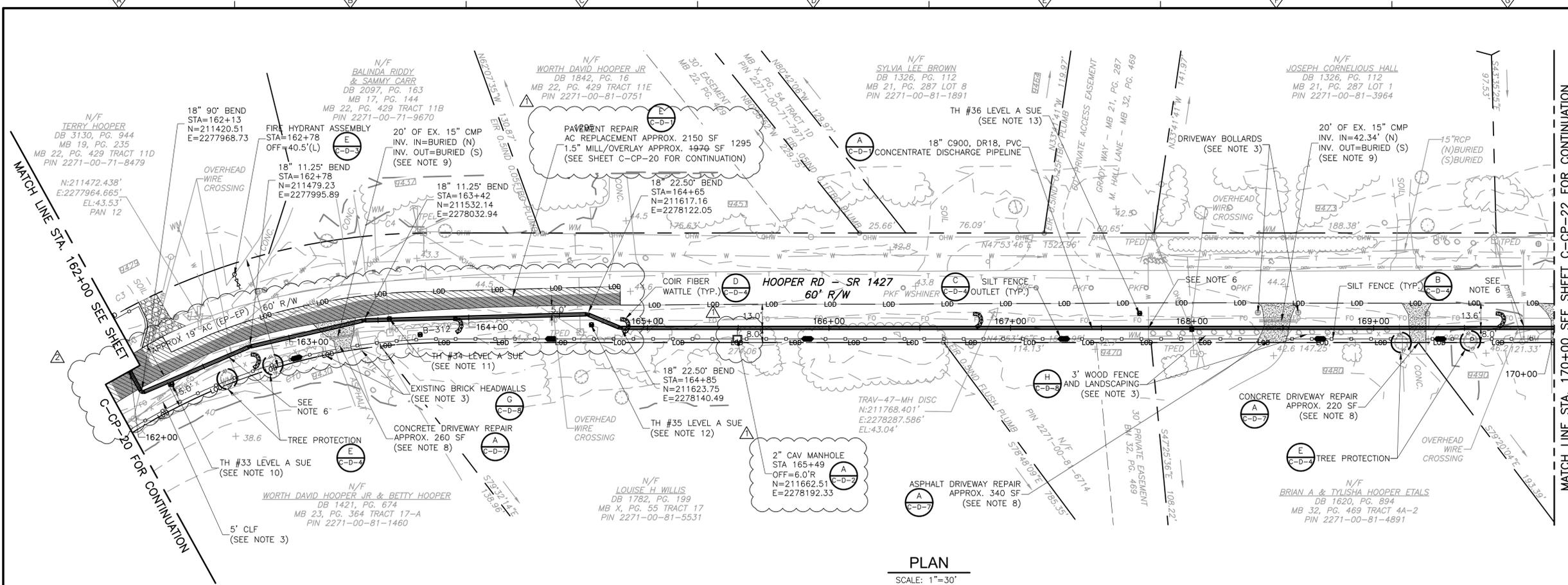
PROJECT NO. 250459-232662  
 FILE NAME: C-CP-20.dwg  
 SHEET NO.  
**C-CP-20**

ISSUED FOR BID

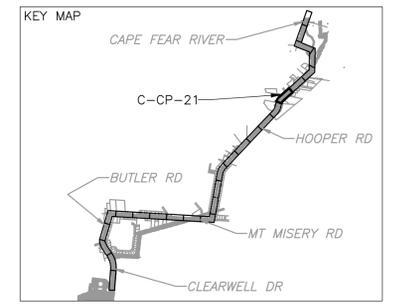


**MICHAEL A. POLLARD, JR., P.E.**  
 P.E. NO. 045468

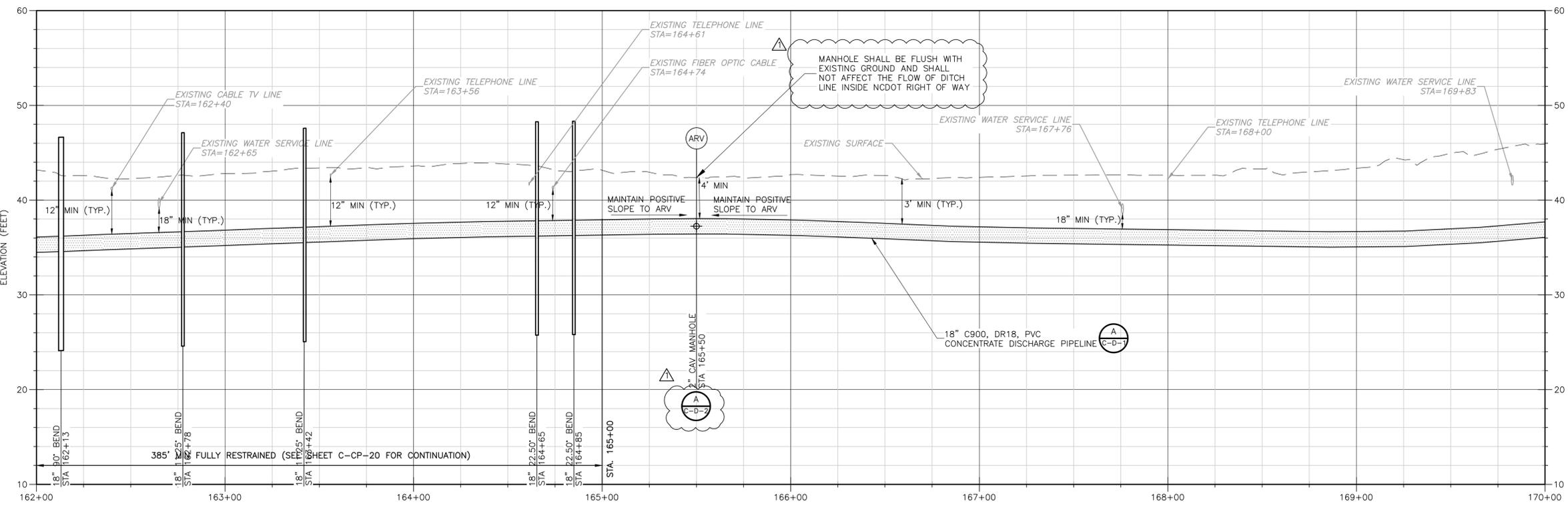
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**PLAN**  
SCALE: 1"=30'



- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D-C-D-7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED 1" SPECTRUM CABLE CROWN 0.55' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1/4" AT&T TELEPHONE CABLE CROWN 1.10' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1/4" AT&T TELEPHONE CABLE CROWN 1.47' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1/4" AT&T TELEPHONE CABLE CROWN 0.2' BELOW GRADE AT THIS LOCATION.

Professional Engineer Seal for Michael A. Pollard, Jr., P.E. No. 045468, dated 1-13-20.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612  
 Tel: (919) 325-3500

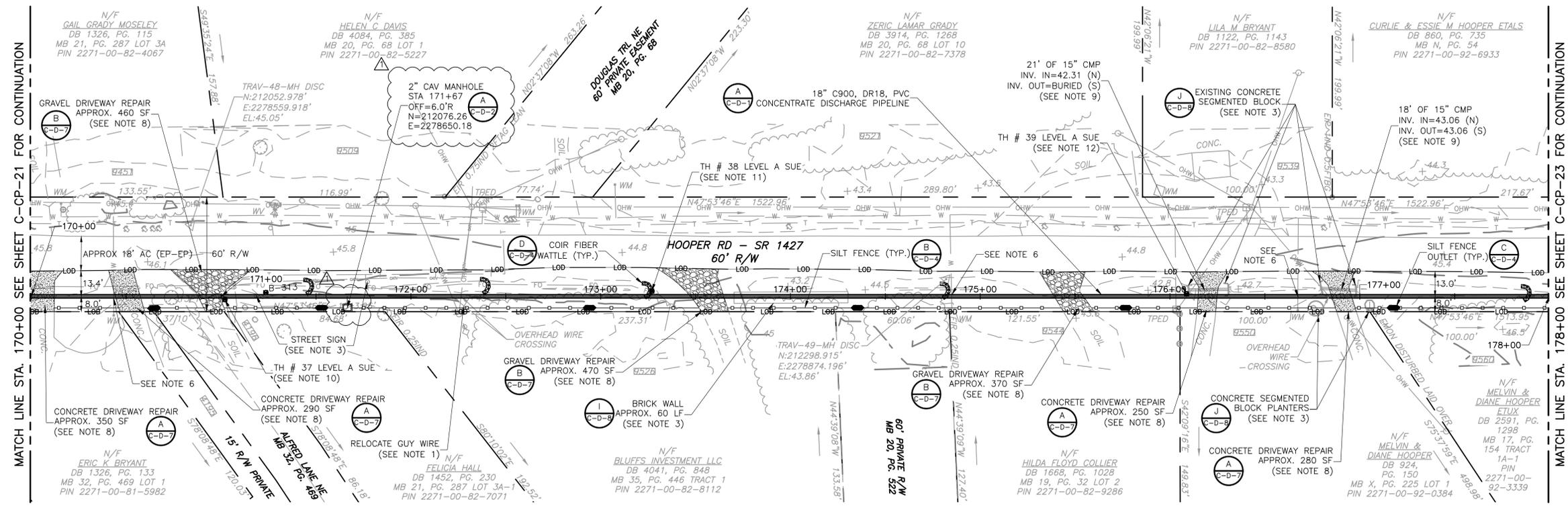
BRUNSWICK COUNTY NC

**NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE**

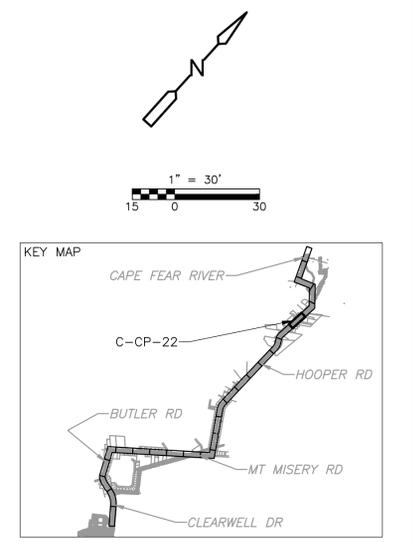
**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
 STA. 162+00 THRU STA. 170+00**

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-21.dwg  
 SHEET NO.  
**C-CP-21**  
 ISSUED FOR BID

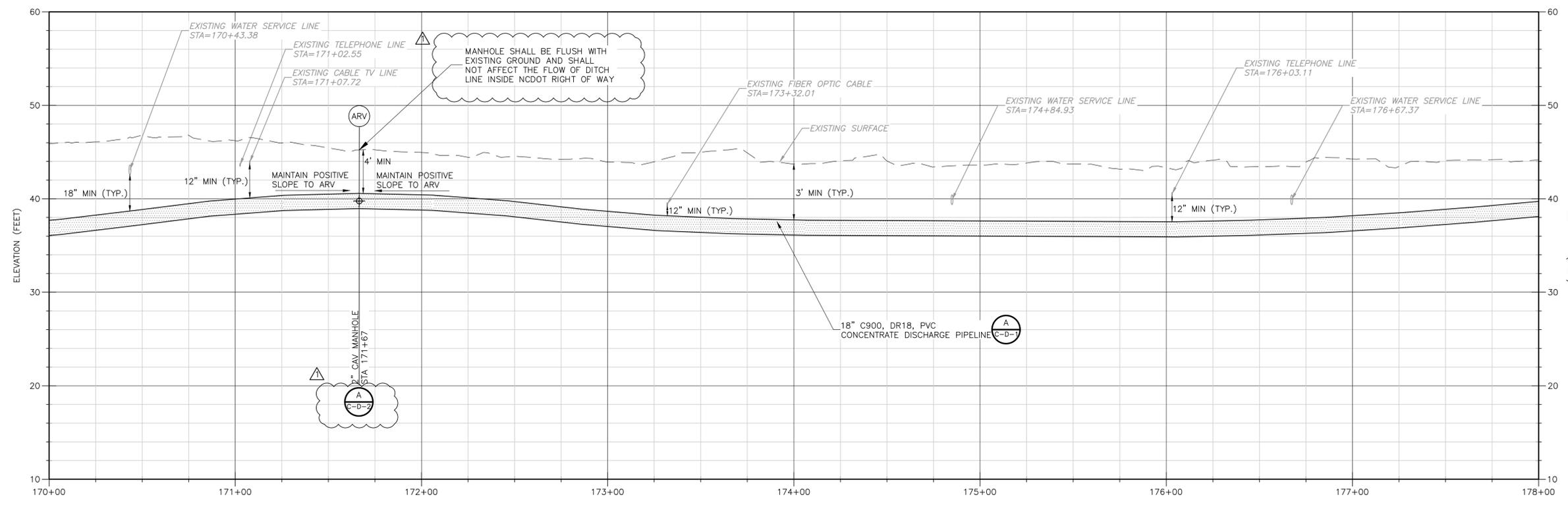
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**PLAN**  
SCALE: 1"=30'



- NOTES:**
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  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D-C-D-7)
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - LEVEL A SUE INDICATED 1/4" AT&T TELEPHONE CABLE CROWN 0.80' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1" AT&T FIBER OPTIC CABLE CROWN 3.95' BELOW GRADE AT THIS LOCATION.
  - LEVEL A SUE INDICATED 1/4" AT&T TELEPHONE CABLE CROWN 0.17' BELOW GRADE AT THIS LOCATION.

MICHAEL A. POLLARD, JR., P.E.  
 P.E. NO. 045468

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

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 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

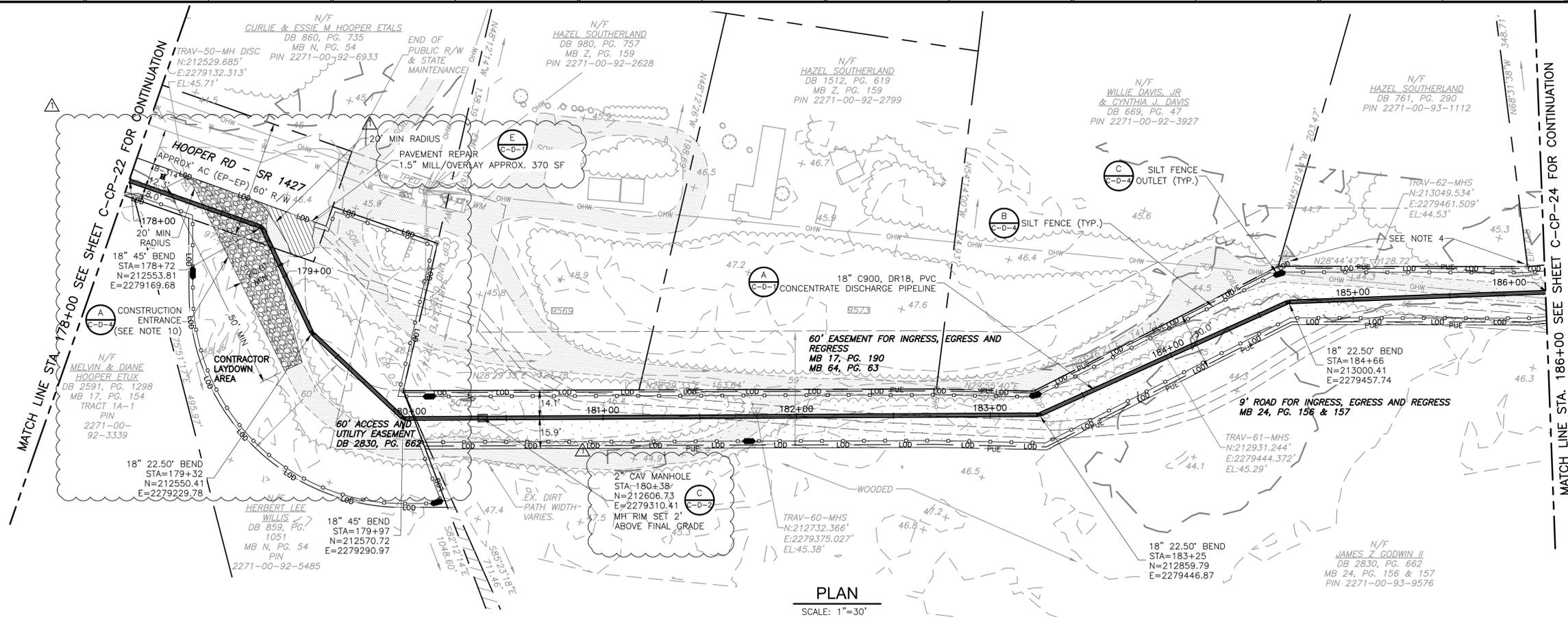
**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612  
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BRUNSWICK COUNTY NC  
 NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE

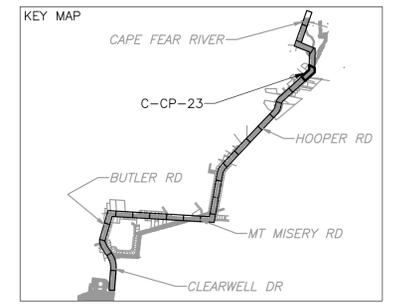
CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
 STA. 170+00 THRU STA. 178+00

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-22.dwg  
 SHEET NO.  
**C-CP-22**  
 ISSUED FOR BID

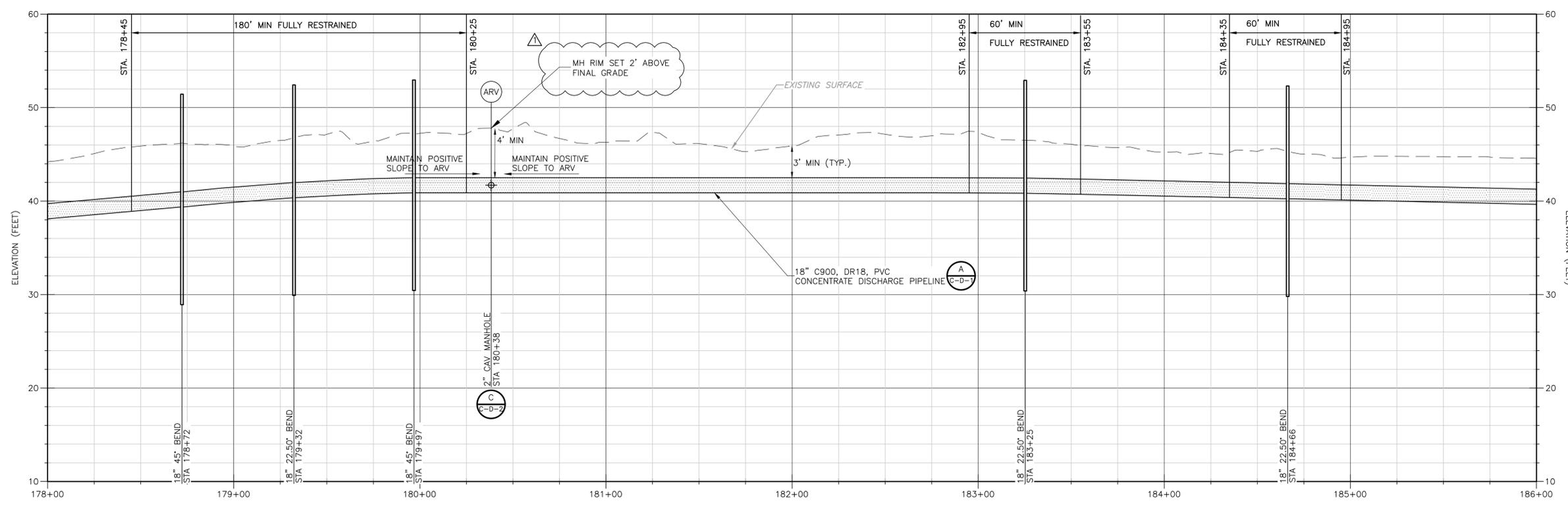
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**PLAN**  
SCALE: 1"=30'



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  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION. THIS INCLUDES DIRT ROADS THROUGH PRIVATE PROPERTIES.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: (D) C-D-7
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - TEMPORARY CONSTRUCTION ENTRANCE TO BE CONVERTED TO A PERMANENT GRAVEL DRIVEWAY AFTER CONSTRUCTION IS COMPLETE. MATCH EXISTING SLOPE. SEE DETAIL B, SHEET C-D-7.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
 CROSS CHK'D BY: M. POLLARD  
 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

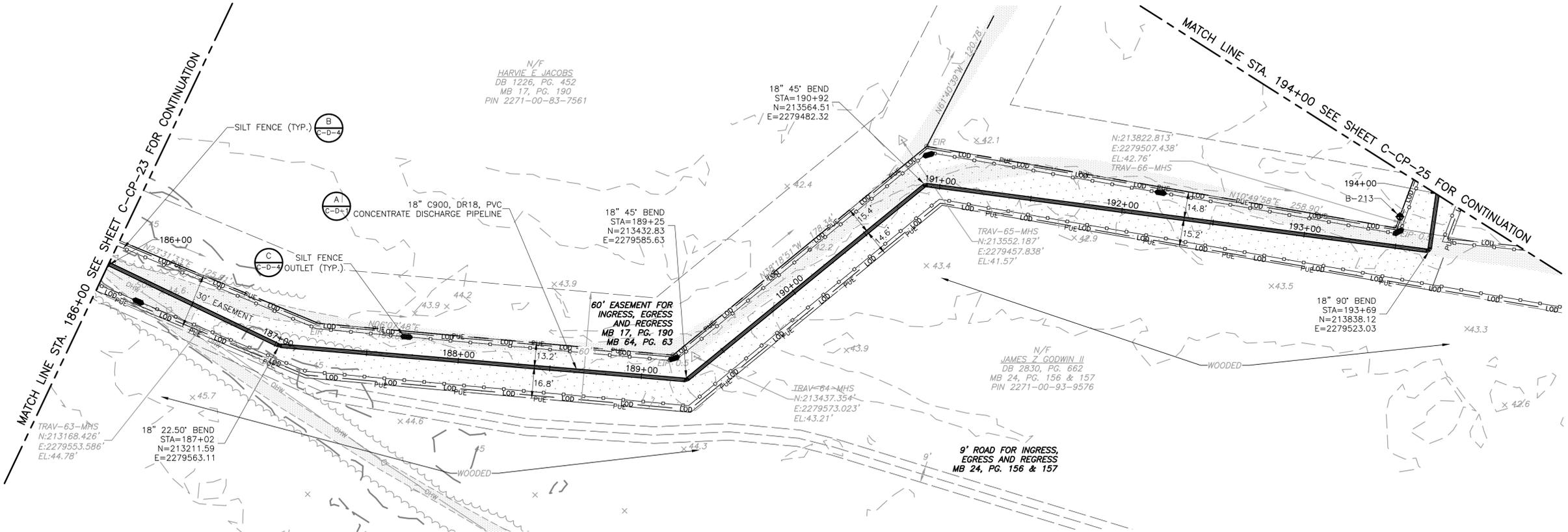


BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT**  
**CONCENTRATE DISCHARGE PIPELINE**

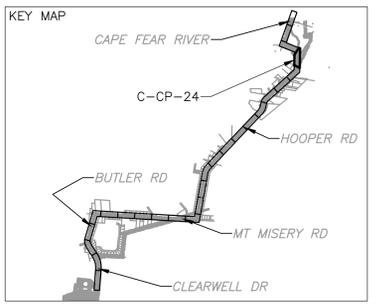
**CONCENTRATE FORCE MAIN - PLAN AND PROFILE**  
**STA. 178+00 THRU STA. 186+00**

**MICHAEL A. POLLARD, JR., P.E.**  
 P.E. NO. 045468  
 PROJECT NO. 250459-232662  
 FILE NAME: C-CP-23.dwg  
 SHEET NO.  
**C-CP-23**

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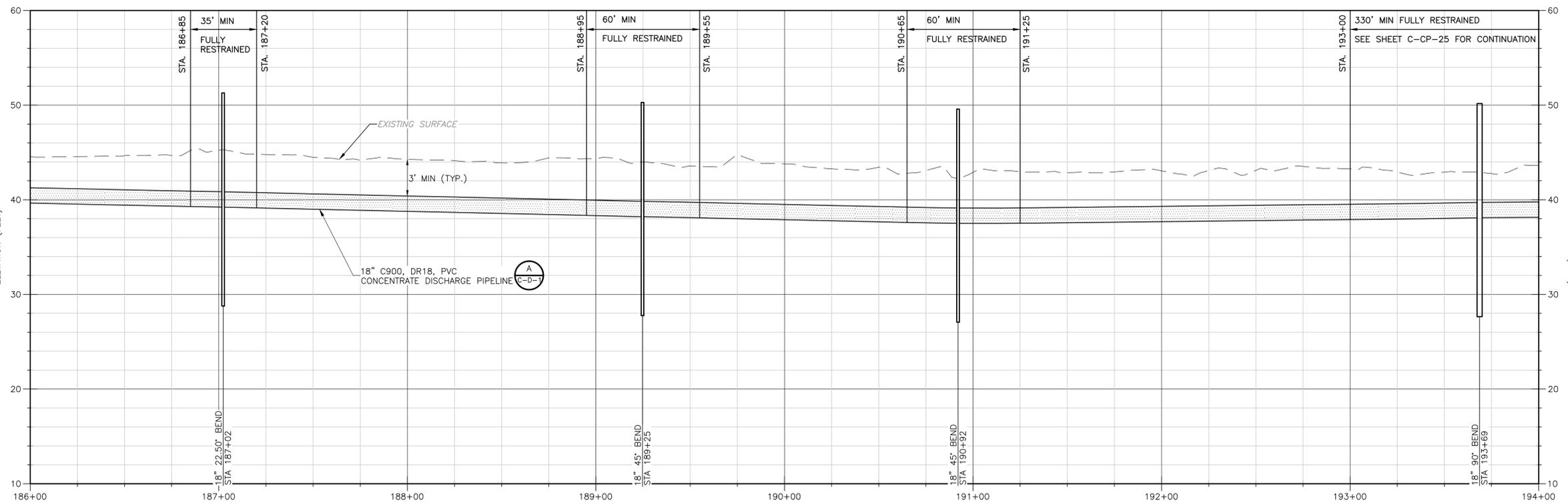


**PLAN**  
SCALE: 1"=30'



- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE ONLY AS REQUIRED TO COMPLETE THE WORK.
  - PROTECT EXISTING FENCES, GATES, SIGNS, MAILBOXES AND OTHER SURFACE FEATURES WHENEVER POSSIBLE. REPLACE IN KIND, REPAIR, AND RELOCATE AS NECESSARY FOR CONSTRUCTION.
  - CONTRACTOR MUST PROVIDE VEHICULAR ACCESS ALONG ROADS AND DRIVEWAYS DURING CONSTRUCTION.

- NOTES CONTINUED:**
- FOR CURVED ALIGNMENTS USE 75% OF THE MAXIMUM JOINT DEFLECTION RECOMMENDED BY THE MANUFACTURER. USE HIGH DEFLECTION COUPLINGS AS NECESSARY.
  - REPAIR DAMAGED WATER SERVICES PER: 
  - DIMENSIONS AND SHAPE OF TRENCHLESS PITS TO BE DETERMINED BY THE CONTRACTOR.
  - DRIVEWAY REPAIRS SHALL EXTEND FROM EDGE OF ROAD TO RIGHT OF WAY. FOR CONCRETE DRIVEWAYS, EXTEND FROM EDGE OF ROAD TO NEAREST JOINT OR PER FIELD ENGINEER'S DIRECTION.
  - DRIVEWAY CULVERTS IMPACTED BY CONSTRUCTION TO BE REPLACED WITH RCP AT THE SAME SLOPE UNLESS SHOWN OTHERWISE. 15" MIN. DIAMETER OR MATCH EXISTING, WHICHEVER IS GREATER.
  - APPROXIMATE LOCATION OF EXISTING DIRT ROAD SHOWN PER GIS AERIAL BEYOND DASHED LINES. SHOWN ROAD IS APPROXIMATE AND NOT VERIFIED VIA SURVEY.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	B.M.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
 SHEET CHK'D BY: B. WILLIAMS  
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 APPROVED BY: M. POLLARD  
 DATE: OCTOBER 2019

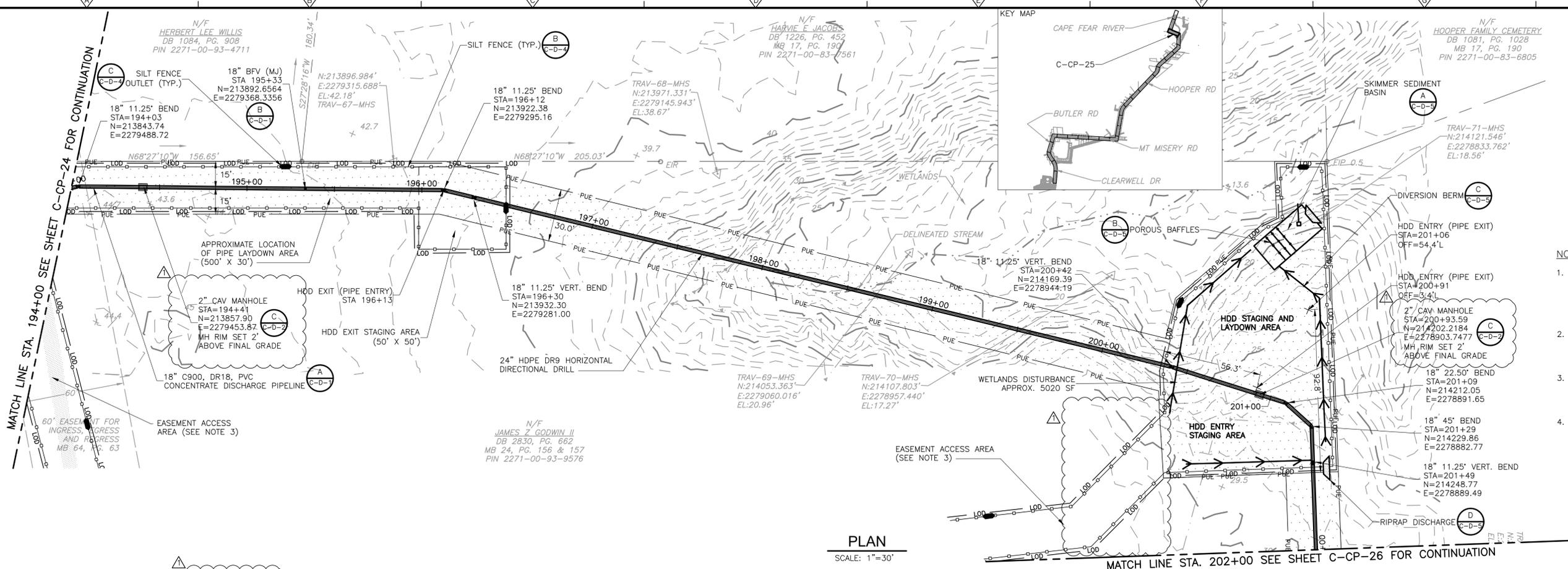


BRUNSWICK COUNTY NC  
 NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE

CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
 STA. 186+00 THRU STA. 194+00

MICHAEL A. POLLARD, JR., P.E.  
 P.E. NO. 045468  
 PROJECT NO. 250459-232662  
 FILE NAME: C-CP-24.dwg  
 SHEET NO.  
**C-CP-24**  
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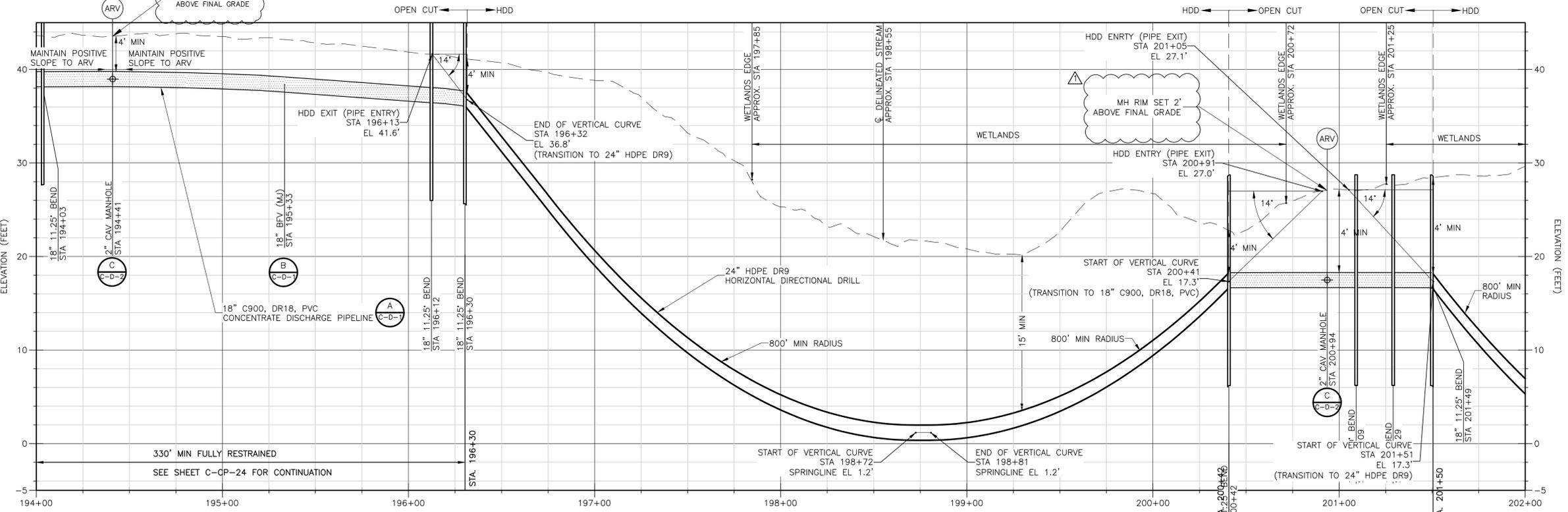


**PLAN**  
SCALE: 1"=30'

- NOTES:**
- CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES TO TEMPORARILY SECURE, TEMPORARILY RELOCATE, OR PERMANENTLY RELOCATE PRIVATE UTILITIES AS REQUIRED TO PERFORM THE WORK.
  - CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE LIMITS OF DISTURBANCE AND PUE, BUT ONLY AS REQUIRED TO COMPLETE WORK WITHIN TCE.
  - REFER TO EASEMENT EXHIBIT SHEET C-CP-29 FOR LOCATIONS OF TEMPORARY EASEMENTS, LOD, AND ACCESS TO RIVER ON PRIVATE PROPERTY.
  - THE CONTRACTOR SHALL REVIEW THE GEOTECHNICAL DATA INCLUDED IN APPENDIX A PRIOR TO THE SELECTION OF TOOLS/EQUIPMENT FOR DRILLING THE PILOT HOLE AND REAMING.

- NOTES CONTINUED:**
- THE CONTRACTOR SHALL BE AWARE OF THE POTENTIAL FOR INADVERTENT RETURNS (FRAC-OUT) IN THE VICINITY OF THE HDD ENTRY AND EXIT POINTS. THE CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MEANS AND METHODS TO REDUCE THE POTENTIAL FOR FRAC-OUT ALONG THE ENTIRE ALIGNMENT INCLUDING THE ENTRY AND EXIT POINTS. THE CONTRACTOR SHALL PREPARE AND SUBMIT A MITIGATION PLAN AS SPECIFIED AND BE PREPARED TO IMPLEMENT. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY ADDITIONAL PERMITS REQUIRED BASED UPON THEIR MEANS AND METHODS.
  - UTILITY CROSSINGS SHOWN ARE APPROXIMATE; OTHER UTILITIES MAY EXIST THAT ARE NOT SHOWN. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITIES, STRUCTURES AND FACILITIES AND PROVIDE PROPER CLEARANCE BETWEEN UTILITIES, STRUCTURES AND FACILITIES AND THE PIPE.
  - HDD GEOMETRY SHOWN ARE THE MINIMUM REQUIREMENTS FOR BASIS OF DESIGN PURPOSES. THE CONTRACTOR MAY ADJUST THE DRILL PATH AND HDD ENTRY AND EXIT POINTS BASED UPON THEIR SPECIFIC EQUIPMENT REQUIREMENTS. SEE THE REQUIREMENTS OF SECTION 330507.13 FOR SPECIFIED TOLERANCES AND REQUIREMENTS FOR THE HDD WORK PLAN AND CALCULATIONS FOR REVIEW.
  - DRILLED PATH STATIONING IS MEASURED IN FEET BY PLAN LENGTHS. THE CONTRACTOR MUST TAKE INTO ACCOUNT VERTICAL PIPE RUNS AND BENDING RADII WHEN CALCULATING PIPE QUANTITIES.

9. APPROXIMATE LOCATION OF EXISTING DIRT ROAD SHOWN PER GIS AERIAL BEYOND DASHED LINES. SHOWN ROAD IS APPROXIMATE AND NOT VERIFIED VIA SURVEY.



**PROFILE**  
SCALE: 1"=30' HORIZ.  
SCALE: 1"=6' VERT.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
DRAWN BY: D. BORNHANN  
SHEET CHK'D BY: B. WILLIAMS  
CROSS CHK'D BY: M. POLLARD  
APPROVED BY: M. POLLARD  
DATE: OCTOBER 2019



BRUNSWICK COUNTY NC  
**NORTHWEST WATER TREATMENT PLANT  
CONCENTRATE DISCHARGE PIPELINE**

**CONCENTRATE FORCE MAIN - PLAN AND PROFILE  
STA. 194+00 THRU STA. 202+00**

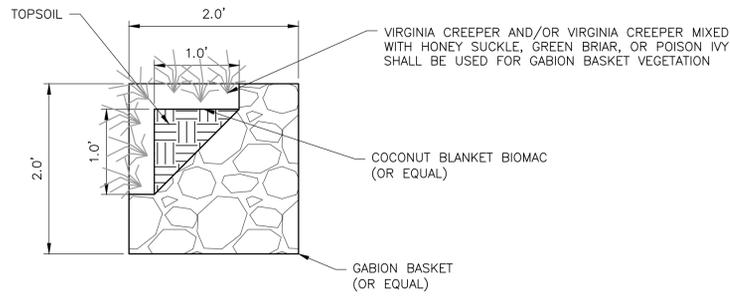
PROJECT NO. 250459-232662  
FILE NAME: C-CP-25.dwg  
SHEET NO.  
**C-CP-25**

ISSUED FOR BID



NOTES:

- CONTRACTOR SHALL CLEAR AND GRUB EVERYTHING WITHIN THE PUE BUT ONLY AS REQUIRED TO COMPLETE WORK WITHIN TCE.
- ALL ELEVATIONS LESS THAN 0.0' ARE SHOWN AS HATCHED TO INDICATE THE NORMAL WATER SURFACE ELEVATION OF THE CAPE FEAR RIVER.
- 100 YEAR FLOOD PLAIN ELEVATION 13.0'.
- REFER TO EASEMENT EXHIBIT SHEET C-CP-29 FOR LOCATIONS OF TEMPORARY EASEMENTS AND ACCESS TO PRIVATE PROPERTY.
- REFER TO SECTIONS 312319 AND 315000 FOR DEWATERING AND TEMPORARY EXCAVATION SUPPORT SYSTEM DESIGN REQUIREMENTS, WHICH INCLUDE COFFERDAM CONSTRUCTION.
- REFER TO SECTION 313600 FOR GABION REINFORCED SOIL SLOPE REQUIREMENTS.
- THE CONTRACTOR SHALL ABANDON TEMPORARY EXCAVATION SUPPORT SYSTEM SHEET PILES IN PLACE AND CUTOFF AT GRADE ALONG LAND AND BELOW SCOUR PROTECTION SURFACE.
- ALL AREAS WITHIN THE SHOWN LIMITS OF DISTURBANCE ALONG THE RIVER BANK AND ABOVE THE GABION WALL SHALL BE REPAIRED AND RE-SEEDED WITH EROSION STABILIZATION MATTING.
- GABION REINFORCEMENT SHALL EXTEND A MINIMUM OF 5' BEYOND THE TRENCH WALLS.

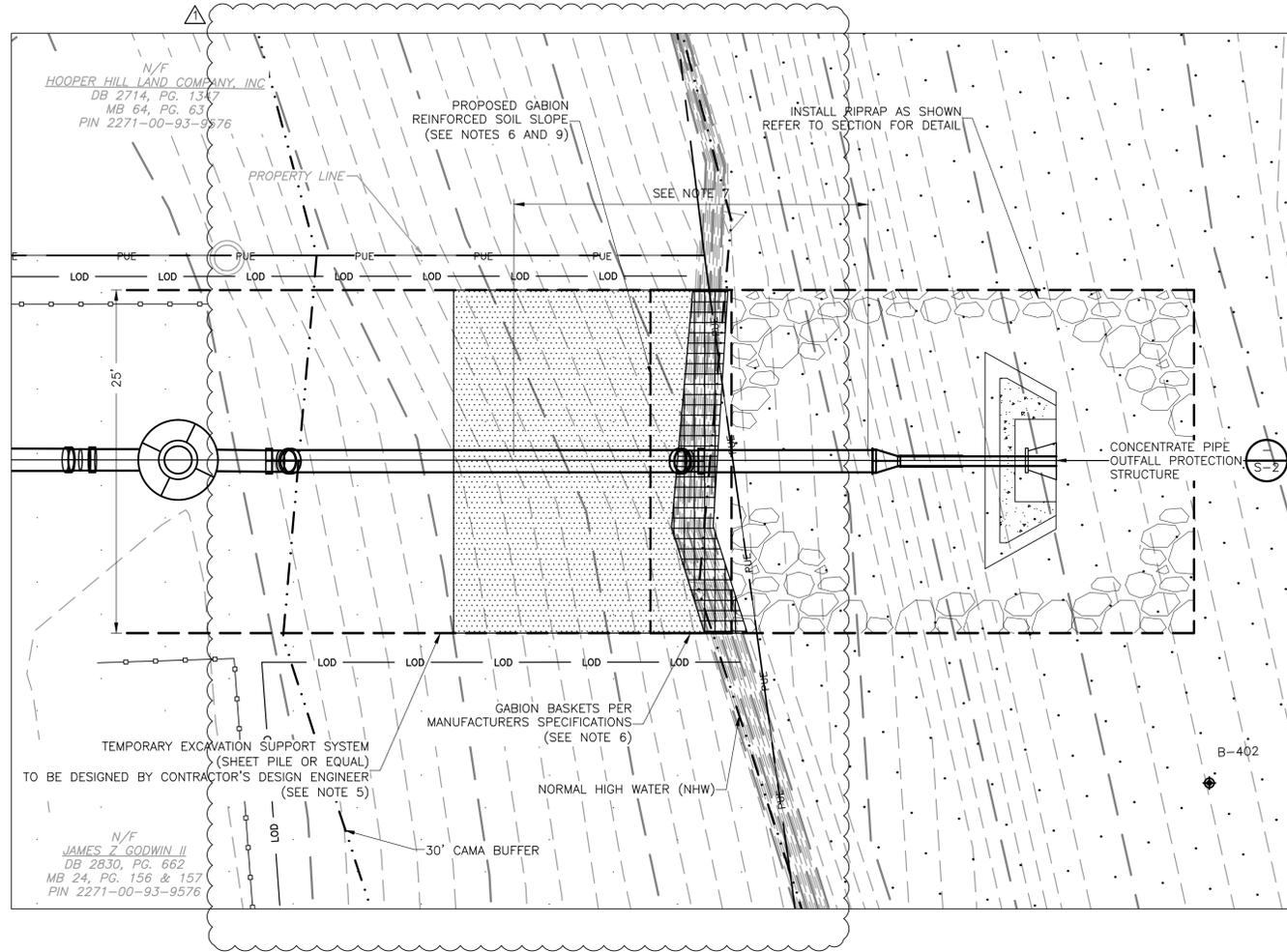
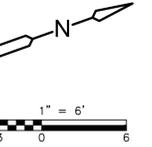


GABION BASKET GREEN FACE

DETAIL

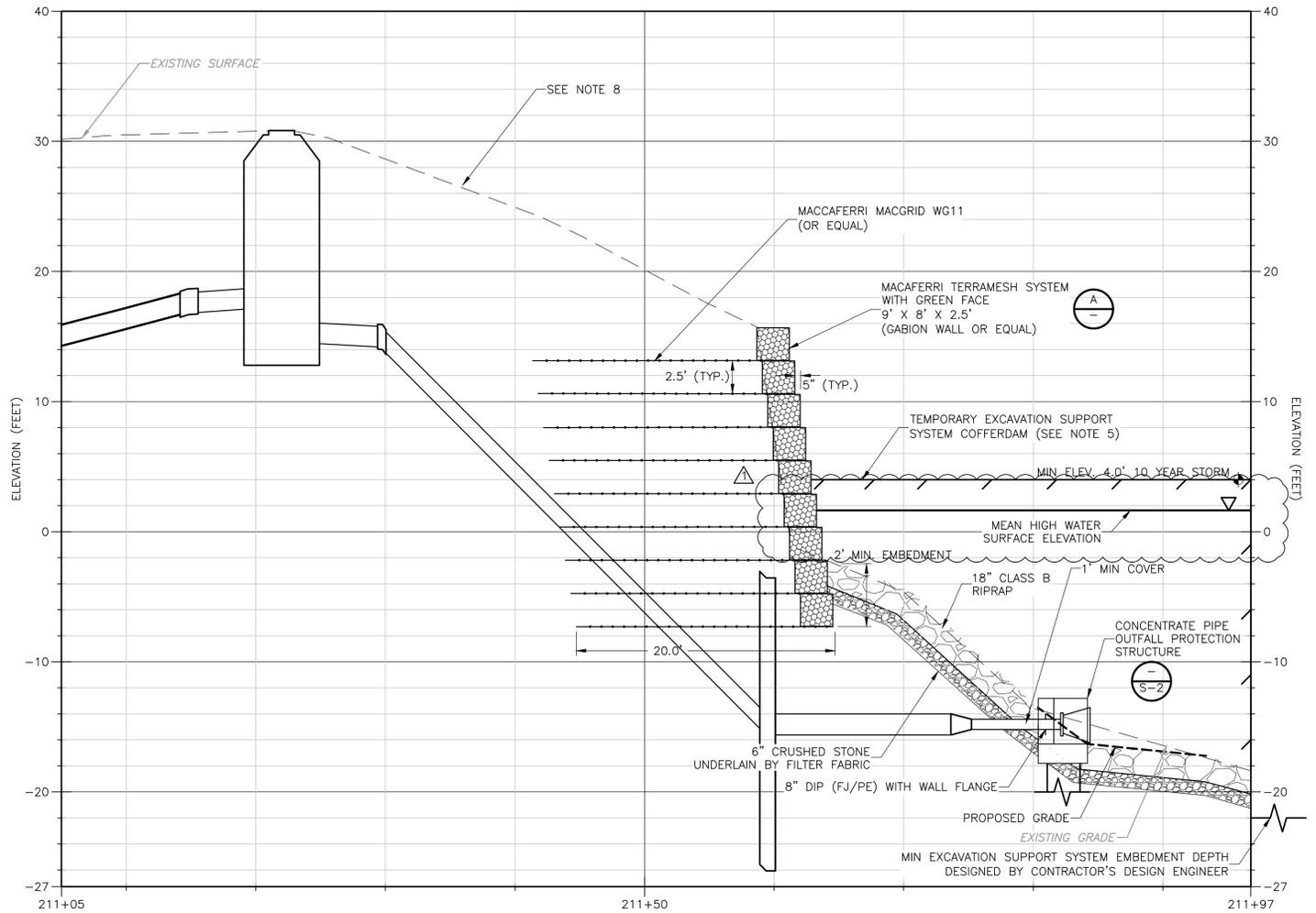


NTS



PLAN

SCALE: 1"=6'



PROFILE

SCALE: 1"=6' HORIZ.  
SCALE: 1"=6' VERT.

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BRUNSWICK COUNTY NC  
 NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE

CONCENTRATE FORCE MAIN  
 CAPE FEAR RIVER  
 BANK STABILIZATION AND OUTFALL



MICHAEL A. POLLARD, JR., P.E.  
 P.E. NO. 045468

PROJECT NO. 250459-232662  
 FILE NAME: C-CP-28.dwg

SHEET NO.  
 C-CP-28

ISSUED FOR BID

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N/F  
HOOPER FAMILY CEMETERY  
DB 1081, PG. 1028  
MB 17, PG. 190  
PIN 2271-00-83-6805

N/F  
HOOPER HILL LAND COMPANY, INC  
DB 2714, PG. 1347  
MB 64, PG. 63  
PIN 2271-00-93-9576

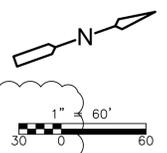
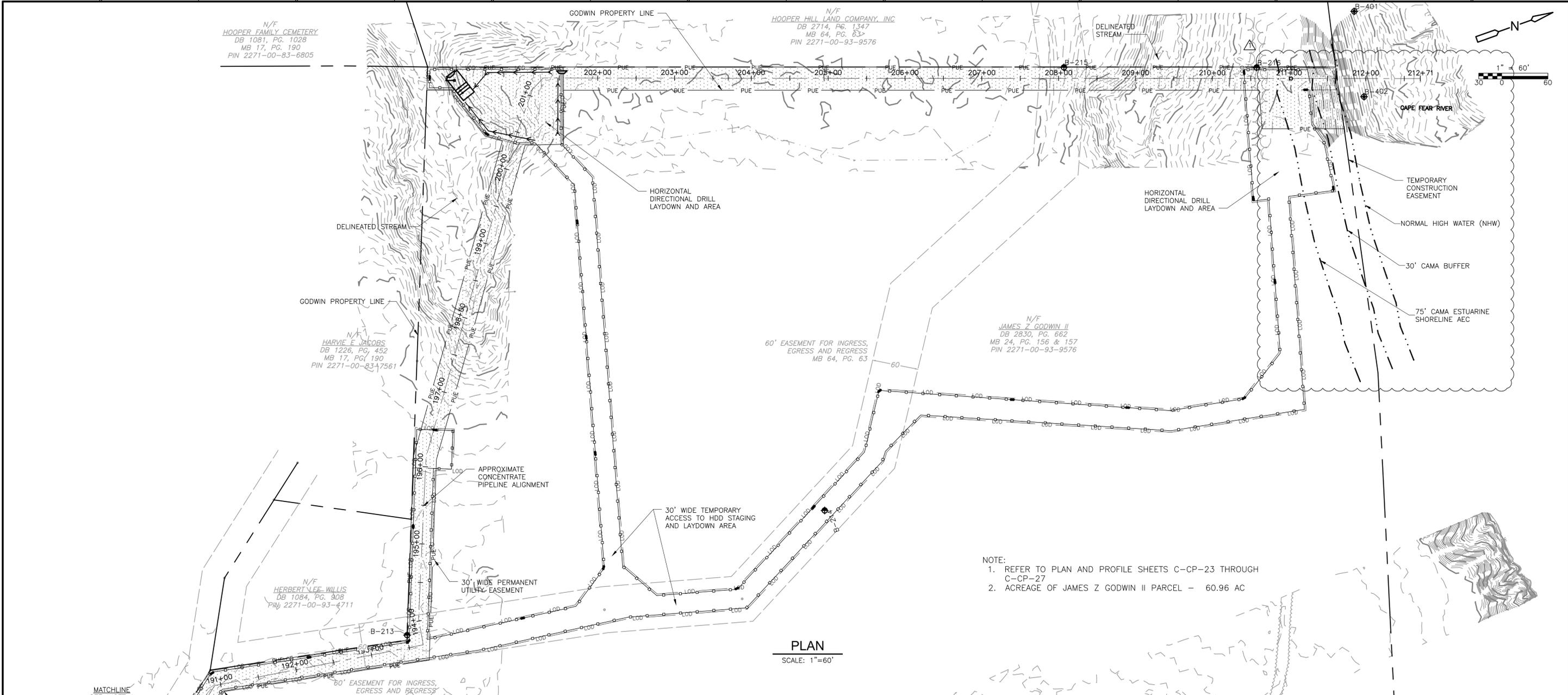
N/F  
HARVIE E. JACOBS  
DB 1226, PG. 452  
MB 17, PG. 190  
PIN 2271-00-83-7561

N/F  
HERBERT LEE WILLIS  
DB 1084, PG. 308  
PIN 2271-00-93-4711

N/F  
HARVIE E. JACOBS  
DB 1226, PG. 452  
MB 17, PG. 190  
PIN 2271-00-83-7561

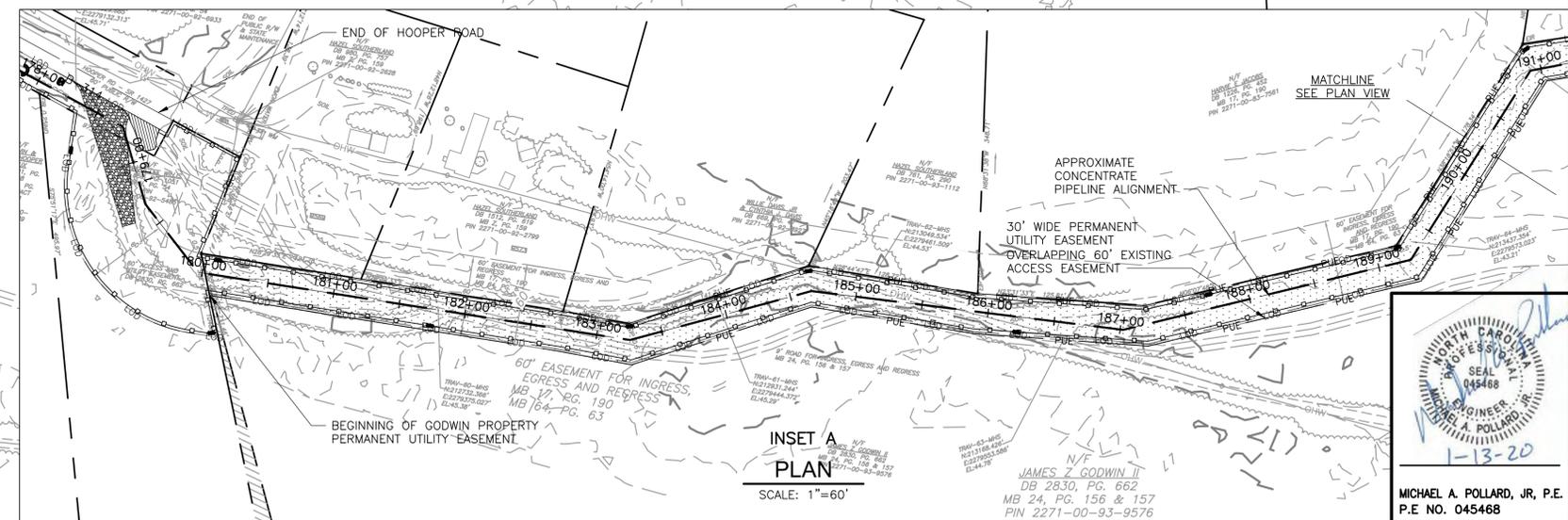
N/F  
JAMES Z. GODWIN II  
DB 2830, PG. 662  
MB 24, PG. 156 & 157  
PIN 2271-00-93-9576

N/F  
JAMES Z. GODWIN II  
DB 2830, PG. 662  
MB 24, PG. 156 & 157  
PIN 2271-00-93-9576



- NOTE:  
1. REFER TO PLAN AND PROFILE SHEETS C-CP-23 THROUGH C-CP-27  
2. ACREAGE OF JAMES Z. GODWIN II PARCEL - 60.96 AC

**PLAN**  
SCALE: 1"=60'



**INSET A  
PLAN**  
SCALE: 1"=60'



MICHAEL A. POLLARD, JR., P.E.  
P.E. NO. 045468

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/2020	D.B.	M.P.	ADDENDUM NO.2

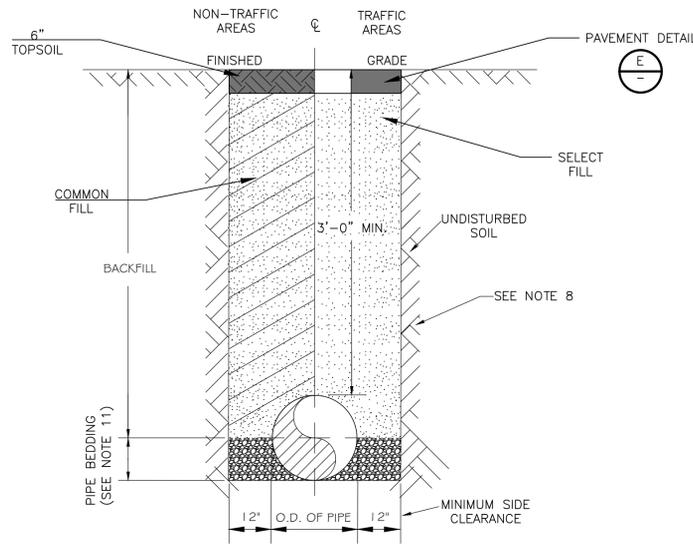
DESIGNED BY: B. MACKIE  
DRAWN BY: D. BORNMANN  
SHEET CHK'D BY: B. WILLIAMS  
CROSS CHK'D BY: M. POLLARD  
APPROVED BY: M. POLLARD  
DATE: OCTOBER 2019



BRUNSWICK COUNTY NC  
NORTHWEST WATER TREATMENT PLANT  
CONCENTRATE DISCHARGE PIPELINE

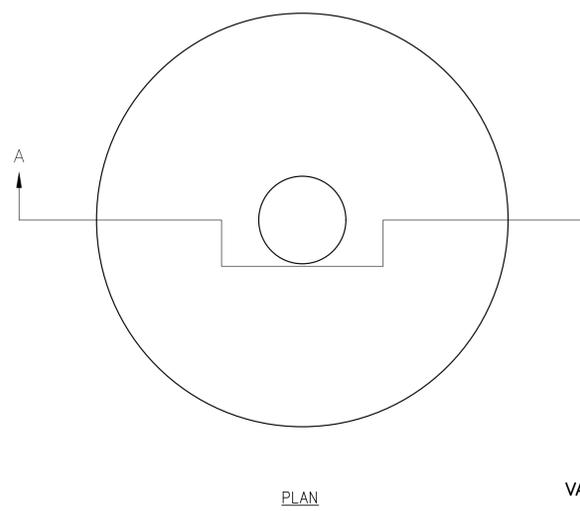
CONCENTRATE FORCE MAIN  
PRIVATE PROPERTY  
ACCESS AND EASEMENTS

PROJECT NO. 250459-232662  
FILE NAME: C-CP-29.dwg  
SHEET NO.  
**C-CP-29**  
ISSUED FOR BID

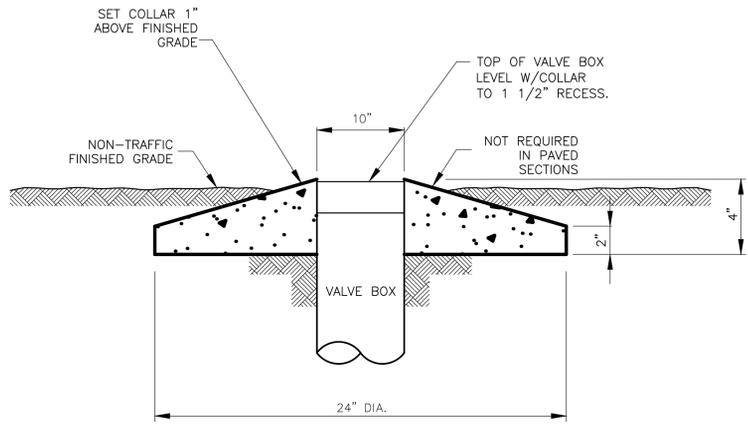


- NOTES:**
- FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
  - DEWATERING SHALL EXTEND TO 2' BELOW TRENCH BOTTOM DURING ALL EXCAVATION, PIPE INSTALLATION AND BACKFILL OPERATIONS. REFER TO SECTION 312319 FOR DEWATERING REQUIREMENTS.
  - SELECT FILL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557 WITHIN 3 PERCENTAGE POINTS OF OPTIMUM. SELECT COMMON FILL SHOULD BE COMPACTED IN MAXIMUM LOOSE LIFT THICKNESS OF 8 INCHES AND SHALL CONTAIN NO STONES GREATER THAN 2 INCHES IN DIAMETER.
  - COMMON FILL SHALL BE COMPACTED TO AT LEAST 90 PERCENT OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557 WITHIN 3 PERCENTAGE POINTS OF OPTIMUM. COMMON FILL SHOULD BE COMPACTED IN MAXIMUM LOOSE LIFT THICKNESS OF 12 INCHES AND SHALL CONTAIN NO STONES GREATER THAN 6 INCHES IN DIAMETER.
  - IF UNSUITABLE FOUNDATION IS ENCOUNTERED REMOVE UNSUITABLE MATERIAL TO REACH SUITABLE FOUNDATION, OR TO A DEPTH OF 4 FEET MAX CONFIRM WITH ENGINEER. REPLACE WITH COMPACTED STRUCTURAL FILL OR CRUSHED (#57 STONE), SEE SPECIFICATIONS.
  - SHEETING SHALL BE DRIVEN BELOW THE UTILITY INVERT IF REQUIRED FOR LATERAL SUPPORT OR UNSUITABLE MATERIAL REMOVAL. WHERE DRIVEN BELOW PIPE SPRINGLINE, SHEETING SHALL BE CUT OFF A MIN OF 12" ABOVE TOP OF PIPE OR HIGHER, AS AUTHORIZED BY THE ENGINEER, AND LEFT IN PLACE. IN NO CASE SHALL SHEETING LEFT IN PLACE EXTEND HIGHER THAN 18" BELOW SURFACE GRADE UNLESS SPECIFICALLY APPROVED. BRACING SHALL BE PROVIDED AS REQUIRED.
  - EXCAVATED MATERIALS MIXED WITH DELETERIOUS SUBSTANCES DURING CONSTRUCTION SHALL NOT BE USED FOR BACKFILLING.
  - TRENCH SLOPES SHALL BE AS REQUIRED BY OSHA. NCDOT ROADWAY AND PAVEMENT SHALL BE RESTORED IN ACCORDANCE WITH NCDOT DESIGN STANDARDS.
  - TRENCH BOXES SHALL NOT EXTEND BELOW THE SPRINGLINE OF THE PIPE, UNLESS APPROVED BY THE ENGINEER ON A PER-CASE BASIS.
  - REFER TO NOTE 25 SHEET G-GN-3 FOR SHORING WITH ZONE OF INFLUENCE OF NCDOT PAVEMENT.
  - FOR SUBGRADES CONSISTING OF FINE-GRAINED SOIL (I.E.; CLAYS AND SILTS), PIPE BEDDING SHALL CONSIST OF CRUSHED STONE EXTENDING FROM 6 INCHES BELOW THE PIPE TO THE PIPE SPRINGLINE.

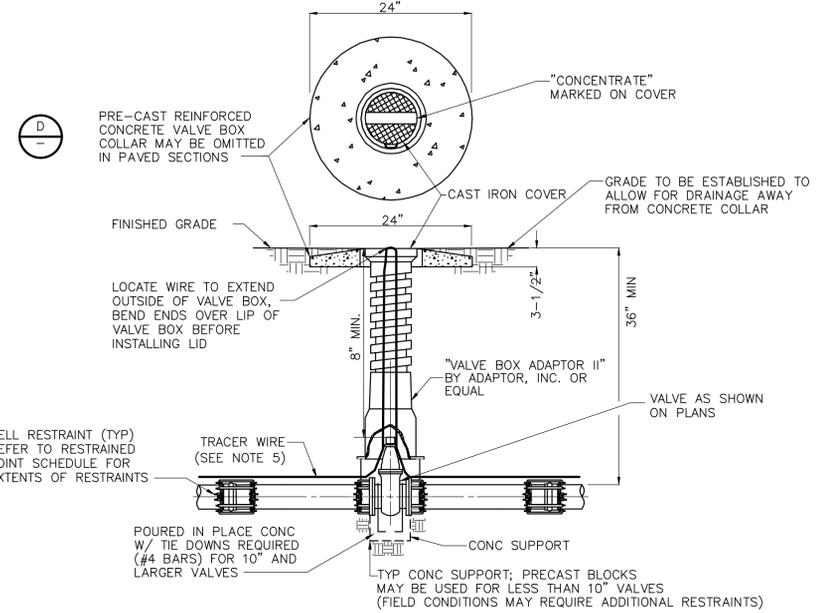
TRENCH DETAIL  
DETAIL A  
NTS



VALVE BOX COLLAR  
DETAIL D  
NTS



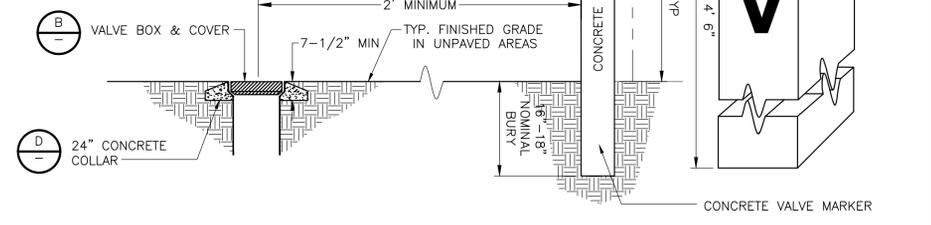
SECTION A-A



- NOTES:**
- TOP OF VALVE BOX AND COLLAR SHALL BE PAINTED GREEN FOR CONCENTRATE.
  - EXTENSION STEM WILL BE REQUIRED TO BE WITHIN 2 FEET OF THE SURFACE IF OPERATING NUT WOULD OTHERWISE BE OVER 5 FEET BELOW GRADE. EXTENSIONS SHALL BE PERMANENTLY ATTACHED TO VALVE NUT AND SHALL BE PROVIDED WITH HORIZONTAL SPACERS FOR VERTICAL ALIGNMENT WITHIN THE VALVE BOX.
  - MINIMUM CLEARANCE TO EXTENSION IS 8".
  - WIRE COLORS REQUIRED: CONCENTRATE-GREEN.
  - 12 GA. COPPERHEAD SUPER FLEX TRACER WIRE OR APPROVED EQUAL.

VALVE BOX  
DETAIL B  
NTS

- NOTES:**
- VALVE MARKER TO BE INSTALLED UPRIGHT WITH THE CAST 'MV' FACING THE NEAREST STREET.
  - DIRECTION AND DISTANCE MUST BE ETCHED OR STAMPED INTO THE BRONZE INSERT.
  - ONE POST TO BE INSTALLED FOR EACH VALVE LOCATED OUTSIDE OF THE PAVEMENT.
  - VALVE MARKER TO BE INSTALLED AT THE RIGHT OF WAY.
  - NO VALVE MARKER REQUIRED FOR FIRE HYDRANT ISOLATION VALVES.
  - PAINT VALVE MARKER USING STANDARD LOCATING COLORS:  
a) WATER - BLUE  
b) SEWER - GREEN (CONCENTRATE)  
c) RECLAIMED - PURPLE



VALVE MARKER  
DETAIL C  
NTS

**NOTES:**

- WHEN THE PIPELINE CROSSES NCDOT ROAD PERPENDICULAR, OR CLOSE TO PERPENDICULAR, FULL DEPTH AC REPLACEMENT LIMITS SHALL EXTEND TO A POINT 1' BEYOND THE TRENCH WIDTH.
- WHEN THE PIPELINE IS BEING INSTALLED PARALLEL TO THE NCDOT ROAD, FULL DEPTH AC REPLACEMENT LIMITS SHALL BE DETERMINED BY EXTENDING A 1:1 ZONE OF INFLUENCE LINE FROM THE TRENCH BOTTOM TO PAVEMENT SURFACE.
- ALL OTHER PAVEMENT REPAIRS OUTSIDE OF FULL DEPTH REPLACEMENT SHALL BE 1.5" MILL/OVERLAY.

D	X	W
12"	1'-4"	7'-4"
15"	1'-7"	7'-7"
18"	1'-10"	7'-10"
24"	2'-6"	8'-6"
30"	3'-1"	9'-1"
36"	3'-8"	9'-8"
42"	4'-5"	10'-5"
48"	5'-0"	11'-0"

**PAVEMENT MATCH DETAIL E**  
NTS

PAVEMENT REPAIRS ON ROADS TO BE RESURFACED (PIPE IS PLACED UNDER EXISTING PAVEMENT)

PAVEMENT REPAIRS ON ROADS NOT TO BE RESURFACED (PIPE IS TO BE PLACED UNDER EXISTING PAVEMENT)

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
PAVEMENT REPAIRS  
FOR SUPERPAVE MIX TYPES

SHEET 1 OF 1  
654.01

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1	01/2020	D.B.	M.P.	ADDENDUM NO.2

DESIGNED BY: B. MACKIE  
 DRAWN BY: D. BORNMANN  
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 APPROVED BY: M. POLLARD  
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BRUNSWICK COUNTY NC  
 NORTHWEST WATER TREATMENT PLANT  
 CONCENTRATE DISCHARGE PIPELINE

CIVIL DETAILS  
 PIPING

SHEET NO.  
 C-D-1

PROJECT NO. 250459-232662  
 FILE NAME: C-D-1.dwg  
 SHEET NO.  
 C-D-1  
 ISSUED FOR BID

