FAYETTEVILLE PUBLIC WORKS COMMISSION
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FAYETTEVILLE, NORTH CAROLINA 28302-1089
TELEPHONE (910) 483-1401
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February 17, 2023

TO: All Prospective Bidders

FROM: Tanya Hazlett, Procurement Advisor *TH*

SUBJECT: **ADDENDUM NO. 2**
PWC2223039 – RFQ / DESIGN-BUILD SERVICES LINE 54-INCH OUTFALL RESEARCH TO I-95

1. The Specifications and Bid Documents are hereby modified or clarified per the attached documents.

    a. The Preliminary Engineering Report for Bank Stabilization and Access Roadway Stabilization at Rockfish Outfall was inadvertently left out of RFQ Attachment A.

2. The foregoing changes or clarifications shall be incorporated in the original Bid Documents and a signed copy of this Addendum No. 1 shall accompany the bid to acknowledge the bidder's receipt and familiarly with the changes and/or clarifications.

Acknowledgement:

Company_____

By_____

Date_____

Attachment A

PRELIMINARY ENGINEERING REPORT FOR BANK STABILIZATION AND ACCESS ROADWAY STABILIZATION AT ROCKFISH OUTFALL

PROJECT NO. 20-90

October 28, 2021

Prepared For:

PWC
Fayetteville's
HOMETOWN UTILITY

Public Works Commission

955 Old Wilmington Road

Fayetteville, NC 28301

Prepared By:

FLEMING
& ASSOCIATES, PA

1004 HAY STREET
FAYETTEVILLE, NC 28305
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NC LICENSE NO. C-2828

General Project Description and Scope of Work

Fayetteville Public Works Commission (FPWC) is in the process of lining a 46-year-old, 54-inch diameter RCP gravity sewer located in the 50 feet wide easement that runs along the north side of Rockfish Creek, just east of Interstate I-95 and south of Claude Lee Road in Cumberland County. In recent years, FPWC has noticed significant bank instability for an approximate length of 200 feet along the creek at the northeast side of the creek bend shown in Figure 1. The sewer pipe at that location is shallow below the current grade (as little as a foot of cover at the lowest spot) and roughly 55 ft to 60 ft from the edge of the creek according to the plan provided by FPWC. The bottom of the pipe is about 20 ft above the lowest topography line provided by FPWC along the creek at that location. In order to protect the existing sewer pipe, FPWC has requested that our office evaluate the bank instability and provide a Preliminary Engineering Report (PER) with the recommended method of stabilizing the approximate 200 feet of bank. Additionally, continuing down station (west) from the bank instability location for a distance of approximately 900 LF, the easement access roadway is not stable enough to support maintenance vehicular traffic. Access roadway stabilization recommendations are included in the PER for this 900 LF as well as along the area where the bank is currently unstable.

Figure 1: Vicinity map (Google Earth)

Bank Stability

The area of bank instability is located at a sharp bend in the creek starting in the vicinity of the existing manhole at Station 58+04 and extending in the east direction to approximately Station 60+04. The 54-inch RCP sewer pipe is located uphill of and within a few feet of the edge of the bank failure. According to the existing drawings dated February 1974 by Rose & Purcell, Inc., the top of the pipe in this area is shallow, two to three feet below original grade and as little as 1 foot below current grade at the lowest point. It is our understanding that the interior of the pipe was recently inspected by camera and that no displacement was observed at the time of the inspection.

Several methods of providing slope stability were investigated to include secant piles, soldier pile and lagging, pile supported sewer pipe saddles, cantilevered sheet piles and tied-back sheet piles. The controlling criteria was as follows:

1. Avoid damage to existing sewer pipe.
2. Minimize by-pass requirements.
3. Provide adequate construction equipment access.
4. Provide long term solution.
5. Minimize cost.

The preferred method of stabilizing the bank was determined to be a cantilevered sheet pile wall located on the creek side of the sewer pipe (see schematic drawing, Sheet S3). Construction equipment access to install the sheet pile wall will be facilitated by providing a 25 feet wide level bench on the uphill side of the sewer pipe. A permanent soil nail wall will be required to retain the bank above the bench. The equipment access benched area will also be used after construction as the permanent maintenance access road. The soil removed to provide the construction bench will reduce the surcharge on the sewer pipe during construction and will also likely be used as fill behind the sheet pile wall.

Building & Earth Sciences, LLP, performed a preliminary subsurface exploration and geotechnical evaluation (see Building & Earth report dated April 23, 2021). Six 50 feet deep borings were performed along the 200 LF of bank instability. The subsurface investigation indicates that a stiff layer of clay material is located typically 10 ft to 15 ft below the existing grade at the proposed location of the sheet pile wall. A cantilevered sheet pile wall is recommended to retain the soil, thereby stabilizing the bank. Pre-drilling prior to sheet pile installation is recommended to minimize vibration and potential damage to the sewer pipe. Additional subsurface investigation will be required before final design work is completed for the retaining wall, primarily to evaluate long-term slope stability and to identify the effects of instability during the proposed repair effort. Temporary bank stability measures may be required until the sheet pile wall is completed. In addition, we recommend that a sewer bypass plan be developed in the event that the existing pipe is damaged during construction.

Maintenance Roadway Stabilization

The sewer outfall is maintained using an existing service roadway located alongside the sewer line within the 50 feet wide easement. The section of roadway that was investigated for vehicular stability extends from approximately Station 49+00 to the manhole at Station 58+04. The terrain can be described as rolling with a few erosion gullies. The roadway was covered with tall grass at the time of our site visits. There are several areas of very soft soils and shallow water impoundment on the roadway surface. Seven soil SPT borings and three Kessler DCP borings were performed by Building & Earth Sciences along the proposed roadway. Top soil was encountered to a depth of approximately 14 inches at boring B-12 only, however, top soil may also be present in unexplored locations. Very loose to medium dense fill soils were encountered in the majority of the borings to depths of approximately 13 feet. Very loose to very dense naturally occurring sandy soils were encountered below the fill material.

At the time of our site visits, water was ponded in several locations along the proposed easement roadway. The boring data suggest that the ground water may be perched in the earth strata or caused by springs emanating from the adjacent hillside. The water is not likely related to the local groundwater table; however, groundwater seepage may be encountered in locations where undercutting of soft soils is required. The contractor should be prepared to use dewatering methods during construction of the roadway.

The following general recommendations are required to stabilize the roadway for vehicular traffic:

1. Prior to construction, preferably as soon as possible, it is recommended that the roadway be ditched to allow water to drain and the surface to dry as much as possible.
2. The contractor will need to continue to manage surface water during construction to keep it from the area of work as well as to avoid causing additional erosion and bank instability.
3. Remove all vegetation and topsoil for a 15 feet wide roadway plus drainage ditch. Excess top soil will need to be disposed of offsite.
4. Cut high areas and fill low areas for a smooth roadway.
5. Remove soft soils in fill areas along roadway and place geogrid with engineered fill material to subgrade elevations.
6. Construct a continuous drainage ditch along the uphill side of the roadway. Place geogrid and Class A stone in the ditch.
7. Provide a geogrid and 18 inches minimum of Class A stone below the roadway ABC stone.
8. Install cross drain pipes below the roadway to direct seepage and runoff water from the continuous ditch located on the uphill side of the roadway beneath the roadway. Cross drains will include a combination of perforated HDPE pipe and RCP. The pipe will extend to daylight on the down slope side of the roadway in a bed of dissipator stone.
9. Place final roadway surface consisting of 6 to 8 inches of ABC stone over a woven geosynthetic fabric.

Additional Easement

Additional easement will be required at the bank instability area in order to install the permanent soil nail wall and provide the construction access bench on the uphill side of the sewer pipe. There are also areas along the roadway where additional easement will be necessary in order to provide the continuous ditch on the uphill side as well as providing adequate space to slope the bank back from the ditch.

Opinion of Probable Construction Cost

Our opinion of probable construction cost is in the range of $2 million to $2.5 million. This does not include constructing and maintaining roadway access to the project area. The following additional costs should be considered as the project is evaluated:

1. Fee for geotechnical engineering services to evaluate long-term slope stability.
2. Sheet pile wall and roadway/drainage design fees.
3. Contingency fees.
4. Inflation, rising fuel costs, and decreased material availability.
5. The scope of services for this project did not include any environmental assessment of the site or identification of pollutants or hazardous materials or conditions.

Closing

Please see the schematic drawings that are enclosed with this report (Sheets S1, S2, and S3) for additional information. The Report of Preliminary Subsurface Exploration and Geotechnical Evaluation by Building & Earth Sciences, LLP, dated April 23, 2021 will be provided separately via email.

Thank you for the opportunity to provide engineering services to you.

If you have any questions or need additional information please let me know.

Sincerely.

Stephen Fleming, P.E.
Fleming & Associates, P.A.

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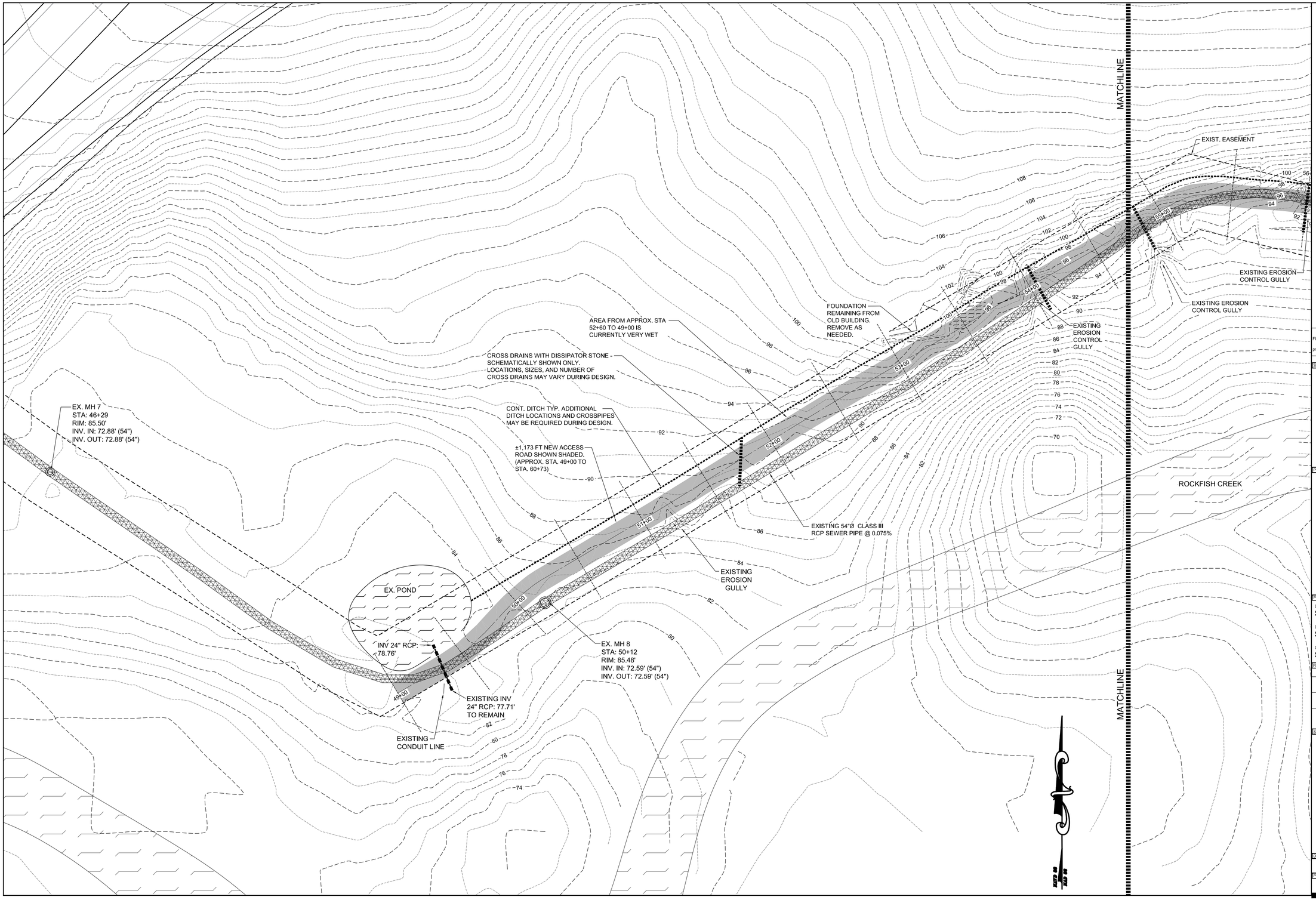
1004 Hay Street ■ Fayetteville, North Carolina 28305



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SEAL

NOT FOR CONSTRUCTION
SCHEMATIC DESIGN ONLY

PROJECT NAME

Bank Stabilization and Access Roadway Stabilization at Rockfish Outfall

Cumberland County, North Carolina

PROJECT TEAM

DESIGNED BY: SD
DRAWN BY: SD
CHECKED BY: SF

REVISIONS

NO.	REASON	DATE

SHEET TITLE

ACCESS ROADWAY PARTIAL PLAN

DATE: 10/28/21
PROJECT NO.: 20-90
SHEET NUMBER: S1

MATCHLINE

EXIST. EASEMENT

ADDITIONAL EASEMENT WILL BE REQUIRED FOR DITCH AND ADJUSTING SLOPE OF EXISTING GRADE IN THIS AREA.

CONT. DITCH TYP. ADDITIONAL DITCH LOCATIONS AND CROSSPIPES MAY BE REQUIRED DURING DESIGN.

CROSS DRAINS WITH DISSIPATOR STONE - SCHEMATICALLY SHOWN ONLY. LOCATIONS, SIZES, AND NUMBER OF CROSS DRAINS MAY VARY DURING DESIGN.

FOUNDATION REMAINING FROM OLD BUILDING. REMOVE AS NEEDED.

EXISTING EROSION CONTROL GULLY

EXISTING EROSION CONTROL GULLY

EXISTING EROSION CONTROL GULLY

EXISTING 54"Ø CLASS III RCP SEWER PIPE @ 0.075%

EXISTING 54"Ø CLASS III RCP SEWER PIPE @ 0.075%

EX. MH 9
STA: 58+04
RIM: 86.70'
INV. IN: 72.00' (54")
INV. OUT: 72.00' (54")

NEW CROSS DRAIN TO REPLACE EXISTING CROSS DRAIN IN THIS VICINITY

NEW PERMANENT SOIL NAIL WALL ± 210 FT LONG

ADDITIONAL EASEMENT WILL BE REQUIRED FOR SOIL NAIL WALL INSTALLATION, PILE DRIVING EQUIPMENT ACCESS AND THE FINAL GRAVEL ROAD AND DITCH.

NEW ROAD ELEVATION FROM APPROX. STA. 58+35 TO STA 60+73 EXPECTED TO BE 85.0±. ELEVATIONS OF REMAINDER OF NEW ROAD WILL BE DETERMINED DURING DESIGN.

APPROXIMATELY 220 FT LONG CANTILEVERED SHEET PILE WALL. TOP OF WALL EL.80.67±.

NEW RCP AT EXIST. CREEK

ACCESS ROAD

ROCKFISH CREEK

MATCHLINE

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PROJECT TEAM

DESIGNED BY: SD

DRAWN BY: SD

CHECKED BY: SF

REVISIONS

NO.	REASON	DATE

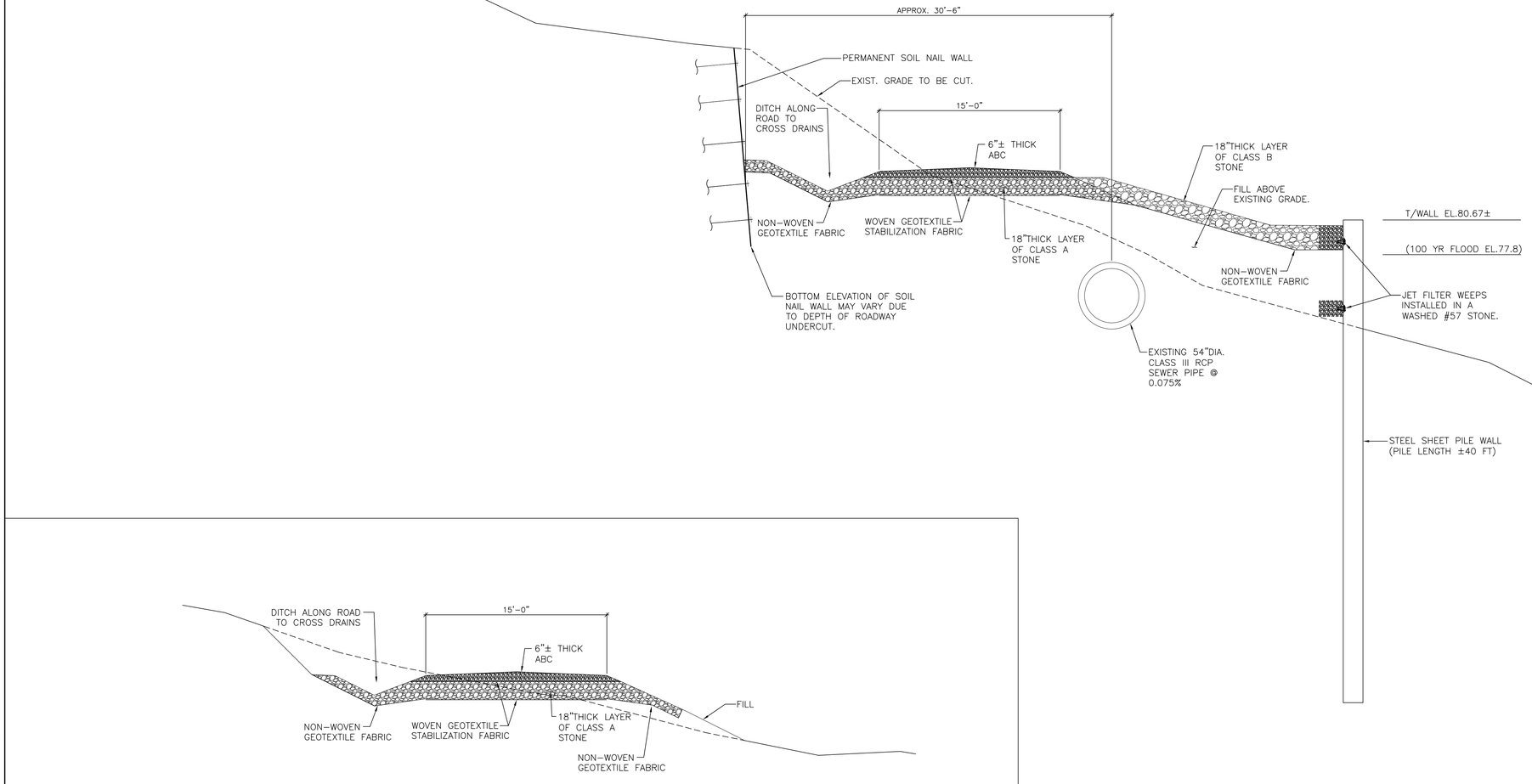
SHEET TITLE

BANK STABILIZATION PLAN AND ACCESS ROADWAY PARTIAL PLAN

DATE: 10/28/21

PROJECT NO.: 20-90

SHEET NUMBER: S2



SECTION ALONG SHEET PILE WALL 1/S3
3/16" = 1'-0"

SECTION ALONG ROAD 2/S3
3/16" = 1'-0"

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PROJECT NAME

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Cumberland County, North Carolina

PROJECT TEAM

DESIGNED BY: SD
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REVISIONS

NO.	REASON	DATE

SHEET TITLE

PROPOSED TYPICAL SHEET PILE WALL AND ROAD SECTIONS

DATE: 10/28/21
PROJECT NO.: 20-90
SHEET NUMBER: S3