ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
WILLIAM E. TOBY VINSON, JR
Interim Director

NORTH CAROLINA
Environmental Quality

May 16, 2024

LETTER OF APPROVAL

North-South Development Group, LLC
Attn: Mr. Justin Old, Owner
417 Caratoke Hwy Unit D
Moyock, NC 27958

RE: Project Name: Flora Farms
Project ID: Curri-2022-018
County: Currituck
City: Moyock
Address: Survey Road
River Basin: Pasquotank
Date Received by LQS: April 17, 2022
Submitted By: Bissell Professional Group
Plan Type: Revision (with new added acreage)

Acres Approved: 106.4 total
(9.0 new)

Dear Sir,

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable and hereby issue this Letter of Approval. The Certificate of Approval provided with the previous plan approval must be posted at the job site. 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.

As of April 1, 2019, all new construction activities are required to complete and submit an electronic Notice of Intent (eNOI) form requesting a Certificate of Coverage (COC) under the NCG010000 Construction General Permit. After the form is reviewed and found to be complete, you will receive a link with payment instructions for the $100 annual permit fee. After the fee is processed, you will receive the COC via email. As the Financially Responsible Party shown on the FRO form submitted for this project, you MUST obtain the COC prior to commencement of any land disturbing activity. The eNOI form may be accessed at deq.nc.gov/NCG01. Please direct questions about the eNOI form to the Stormwater Program staff in the Raleigh central office. If the owner/operator of this project changes in the future, the new responsible party must obtain a new COC.

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 ensure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Act is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, 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.

Sincerely,

Samir Dumpor, PE
Regional Engineer
Land Quality Section

cc w/o enc: Justin Old, North-South Development Group, LLC (email)
Marcie Respass, Bissell Professional Group (e-mail)
WaRO Division of Water Resources (e-mail)

PROJECT INFORMATION SHEET

APPROVAL DATE: May 16, 2024

RESPONSIBLE PARTY: North-South Development Group, LLC

PROJECT NAME: Flora Farms

COUNTY: Currituck NO.: Curri-2022-018

OFF-SITE BORROW AND/OR DISPOSAL SITE: _____ NO.: _____

START-UP DATE: _____

CONTRACTOR: _____

ON-SITE CONTACT: _____

ON-SITE PHONE NO.: _____

OFFICE PHONE NO.: _____

COMPLETE & RETURN THIS FORM
PRIOR TO THE START OF CONSTRUCTION TO:

N.C.D.E.Q.
LAND QUALITY SECTION
ATTN: *Bradley West*
943 WASHINGTON SQUARE MALL
WASHINGTON, NORTH CAROLINA 27889
donald.west@deq.nc.gov

ROY COOPER
Governor
ELIZABETH S. BISER
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WILLIAM E. TOBY VINSON, JR
Interim Director

NORTH CAROLINA
Environmental Quality

August 29, 2024

North-South Development Group, LLC
Attn: Justin Old - Owner
P417-D Caratoke Hwy
Moyock, NC 27958

Subject: **State Stormwater Management Permit No. SW7220504 MOD**
Flora Farms
High Density Subdivision Project
Currituck County

Dear Justin Old:

The Washington Regional Office received a complete, State Stormwater Management Permit Modification Application for the subject project on July 12, 2024. The modification adds additional lots and a commercial lot. Staff review of the plans and specifications has determined that the project, as proposed, complies with the Stormwater Regulations set forth in 15A NCAC 2H.1000 amended on January 1, 2017 (2017 Rules). We are hereby forwarding Permit No. SW7220504 dated August 29, 2024, for the construction of the built-upon areas (BUA) and vegetated conveyances associated with the subject project.

This permit shall be effective from the date of issuance until May 25, 2030 and the project shall be subject to the conditions and limitations as specified therein and does not supersede any other agency permit that may be required. Failure to comply with these requirements will result in future compliance problems. Please note that this permit is not transferable except after notice to and approval by the Division.

This cover letter, attachments, and all documents on file with DEMLR shall be considered part of this permit and is herein incorporated by reference.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing by filing a written petition with the Office of Administrative Hearings (OAH). The written petition must conform to Chapter 150B of the North Carolina General Statutes and must be filed with the OAH within thirty (30) days of receipt of this permit. You should contact the OAH with all questions regarding the filing fee (if a filing fee is required) and/or the details of the filing process at 6714 Mail Service Center, Raleigh, NC 27699-6714, or via telephone at 919-431-3000, or visit their website at www.NCOAH.com. Unless such demands are made this permit shall be final and binding.

If you have any questions concerning this permit, please contact Carl Dunn in the Washington Regional Office, at (252) 948-3959 or carl.dunn@ncdenr.gov.

Sincerely,

William Carl Dunn, PE
Division of Energy, Mineral and Land Resources

Enclosures: Attachment A – BUA Allotment
Attachment B – Designer's Certification Form
Application Documents

Cc: David Deel, PE – Deel Engineering (dadeeleng@gmail.com)
Currituck County Inspections – Bill Newns (Bill.Newns@CurrituckCountyNC.gov)
Washington Regional Office Stormwater File

STATE OF NORTH CAROLINA

DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF ENERGY, MINERAL AND LAND RESOURCES

STATE STORMWATER MANAGEMENT PERMIT

HIGH DENSITY SUBDIVISION DEVELOPMENT

In compliance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations promulgated and adopted by the North Carolina Environmental Management Commission, including 15A NCAC 02H.1000 amended on January 1, 2017 (2017 Rules) (the "stormwater rules"),

PERMISSION IS HEREBY GRANTED TO

North-South Development Group, LLC

Flora Farms

320 Survey Road, Moyock, Currituck County

FOR THE

construction, management, operation and maintenance of built-upon area draining to seven wet ponds acting as two wet ponds due to interconnectivity ("stormwater control measures" or "SCMs") discharging to Class C;SW waters as outlined in the application, approved stormwater management, supplement, calculations, operation and maintenance agreement, recorded documents, specifications, and other supporting data (the "approved plans and specifications") as attached and/or on file with and approved by the Division of Energy, Mineral and Land Resources (the "Division" or "DEMLR"). The project shall be constructed, operated and maintained in accordance with these approved plans and specifications. The approved plans and specifications are incorporated by reference and are enforceable part of this permit.

This permit shall be effective from the date of issuance until May 25, 2030 and shall be subject to the following specified conditions and limitations. The permit issued shall continue in force and effect until the permittee files a request with the Division for a permit modification, transfer, renewal, or rescission; however, these actions do not stay any condition. The issuance of this permit does not prohibit the Director from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit for cause as allowed by the laws, rules, and regulations contained in Title 15A NCAC 2H.1000 and NCGS 143-215.1 et.al.

1. BUA REQUIREMENTS. The maximum amount of BUA allowed for the entire project is 1,656,579 square feet. The runoff from all BUA within the permitted drainage areas of this project must be directed into the permitted SCM. The BUA requirements and allocations for this project are as follows:

a. SCM BUA LIMITS. The SCM labeled DA1 has been designed using the runoff treatment method to handle the runoff from 1,536,160 square feet of BUA within the delineated drainage area, which includes 85,550 square feet of future BUA allocation and 41,505 square feet of off-site BUA (Survey Road). The SCM labeled DA2 has been designed using the runoff treatment method to handle the runoff from 120,419 square feet of BUA within the delineated drainage, which does not contain a future BUA allotment.

b. BUA FOR INDIVIDUAL LOTS. Each of the one hundred eighty-six (186) single family lots are limited to a maximum amount of **See Attachment A** square feet of BUA as indicated in the approved plans and specifications. **The maximum BUA assigned to each lot via this permit and the recorded deed restrictions and protective covenants may not be increased or decreased by either the individual lot owner or the permittee unless and until the permittee notifies the Division and obtains written approval from the Division.**

2. PERVIOUS AREA IMPROVEMENTS. At this time, none of the pervious area improvements listed in G.S. 143-214.7(b2) or the Stormwater Design Manual have been proposed for this project. Pervious area improvements will be allowed in this project if documentation is provided demonstrating those improvements meet the requirements of the stormwater rule.

3. OFFSITE LOT REQUIREMENTS. Each non-residential lot whose ownership is not retained by the permittee shall submit a separate off-site stormwater permit application to the Division and receive approval prior to construction. Prior to the discharge of stormwater runoff from any lot into the approved stormwater system, the permittee shall ensure that the owner of the non-residential lot has obtained the separate off-site stormwater management permit.

4. SCM REQUIREMENTS. The SCM requirements for this project are as follows:

a. SCM DESIGN. The SCM is permitted based on the design criteria presented in the sealed, signed and dated supplement and as shown in the approved plans and specifications. The SCM must be provided and maintained at the design condition.

b. FOUNTAINS. At this time, a decorative spray fountain has not been proposed within the wet pond. Decorative spray fountains will be allowed in the wet pond if documentation is provided demonstrating that the proposed fountain will not cause resuspension of sediment within the pond or cause erosion of the pond side slopes.

c. IRRIGATION. If the wet pond is to be used for irrigation, it is recommended that some water be maintained in the permanent pool, the vegetated shelf is planted with appropriate species that can handle fluctuating conditions, and human health issues are addressed.

5. STORMWATER OUTLETS. The peak flow from the 10-year storm event shall not cause erosion downslope of the discharge point.

6. VEGETATED SETBACKS. A 50-foot wide vegetative setback must be provided and maintained in grass or other vegetation adjacent to all surface waters as shown on the approved plans. The setback is measured horizontally from the normal pool elevation of impounded structures, from the top of bank of each side of streams or rivers, and from the mean high waterline of tidal waters, perpendicular to the shoreline.

7. RECORDED DOCUMENT REQUIREMENTS. The stormwater rules require the following documents to be recorded with the Office of the Register of Deeds prior to the sale of individual lots or groups of lots:

   a. ACCESS AND/OR EASEMENTS. The entire stormwater conveyance system, including any SCMs, and maintenance accesses must be located in public rights-of-way, dedicated common areas that extend to the nearest public right-of-way, and/or permanent recorded easements that extend to the nearest public right-of-way for the purpose of inspection, operation, maintenance, and repair.

   b. OPERATION AND MAINTENANCE AGREEMENT. The operation and maintenance agreement must be recorded with the Office of the Register of Deeds.

   c. FINAL PLATS. The final recorded plats must reference the operation and maintenance agreement and must also show all public rights-of-way, dedicated common areas, and/or permanent drainage easements, in accordance with the approved plans.

   d. DEED RESTRICTIONS AND PROTECTIVE COVENANTS. Recorded deed restrictions and protective covenants must include, at a minimum, the following statements related to stormwater management:

      i. The following covenants are intended to ensure ongoing compliance with State Stormwater Management Permit Number SW7220504, as issued by the Division of Energy, Mineral and Land Resources (the "Division") under 15A NCAC 02H.1000, effective January 1, 2017.
      ii. The State of North Carolina is made a beneficiary of these covenants to the extent necessary to maintain compliance with the Stormwater Management Permit.
      iii. These covenants are to run with the land and be binding on all persons and parties claiming under them.
      iv. The covenants pertaining to stormwater may not be altered or rescinded without the express written consent of the Division.
      v. Alteration of the drainage as shown on the approved plans may not take place without the concurrence of the Division.
      vi. The maximum built-upon area (BUA) per lot is **See Attachment A** square feet. This allotted amount includes any BUA constructed within the lot property boundaries, and that portion of the right-of-way between the front lot line and the edge of the pavement not shown on the approved plans. BUA has the same meaning as G.S. 143-214.7, as amended.
      vii. The maximum allowable BUA shall not be exceeded on any lot until the permit is modified to ensure compliance with the stormwater rules, permit, and the approved plans and specifications.
      viii. All runoff from the BUA on the lot must drain into the permitted system. This may be accomplished via grading, a stormwater collection system and/or a vegetated conveyance.
      ix. A 50-foot wide vegetative setback must be provided and maintained adjacent to all surface waters in accordance with 15A NCAC 02H.1003(4) and the approved plans.
      x. Any individual or entity found to be in noncompliance with the provisions of a stormwater management permit or the requirements of the stormwater rules is subject to enforcement procedures as set forth in NCGS 143, Article 21.
      xi. Each non-residential lot within the subdivision whose ownership is not retained by the permittee, must apply for and receive a separate offsite stormwater management permit from the Division prior to construction.

e. DEEDS FOR INDIVIDUAL LOTS. The permittee shall record deed restrictions and protective covenants prior to the issuance of a certificate of occupancy to ensure the permit conditions and the approved plans and specifications are maintained in perpetuity.

8. CONSTRUCTION. During construction, erosion shall be kept to a minimum and any eroded areas of the on-site stormwater system will be repaired immediately.

   a. PROJECT CONSTRUCTION, OPERATION AND MAINTENANCE. During construction, all operation and maintenance for the project shall follow the Erosion Control Plan requirements until the Sediment-Erosion Control devices are converted to SCMs or no longer needed. Once the device is converted to a SCM, the permittee shall provide and perform the operation and maintenance as outlined in the applicable section below.

   b. SCM RESTORATION. If one or more of the SCMs are used as an Erosion Control device and/or removed or destroyed during construction, it must be restored to the approved state stormwater design condition prior to close-out of the erosion control plan and/or project completion and/or transfer of the state stormwater permit. Upon restoration, a new or updated certification will be required for the SCM(s) and a copy must be submitted to the appropriate DEQ regional office.

9. MODIFICATIONS. No person or entity, including the permittee, shall alter any component shown in the approved plans and specifications. Prior to the construction of any modification to the approved plans, the permittee shall submit to the Director, and shall have received approval for modified plans, specifications, and calculations including, but not limited to, those listed below. For changes to the project or SCM that impact the certifications, a new or updated certification(s), as applicable, will be required and a copy must be submitted to the appropriate DEQ regional office upon completion of the modification.

   a. Any modification to the approved plans and specifications, regardless of size including the SCM(s), BUA, details, etc.

   b. Redesign or addition to the approved amount of BUA or to the drainage area.

   c. Further development, subdivision, acquisition, lease or sale of any, all or part of the project and/or property area as reported in the approved plans and specifications.

   d. Altering, modifying, removing, relocating, redirecting, regrading, or resizing of any component of the approved SCM(s), stormwater collection system and/or vegetative conveyance shown on the approved plan.

   e. The construction of any allocated future BUA.

   f. Adding the option to use permeable pavement or #57 stone within the lots as a permeable surface. The request may require a proposed amendment to the deed restrictions and protective covenants for the subdivision to be submitted and recorded.

   g. The construction of any permeable pavement, #57 stone area, public trails, or landscaping material within the common areas to be considered a permeable surface that were not included in the approved plans and specifications.

   h. Other modifications as determined by the Director.

10. DESIGNER'S CERTIFICATION. Upon completion of the project, the permittee shall determine if the project is in compliance with the approved plans and take the necessary following actions:

    a. If the permittee determines that the project is in compliance with the approved plans, then within 45 days of completion, the permittee shall submit to the Division one hard copy and one electronic copy of the following:

        i. The completed and signed Designer's Certification provided in Attachment B noting any deviations from the approved plans and specifications. Deviations may require approval from the Division;
        ii. A copy of the recorded operation and maintenance agreement;
        iii. Unless already provided, a copy of the recorded deed restrictions and protective covenants; and
        iv. A copy of the recorded plat delineating the public rights-of-way, dedicated common areas and/or permanent recorded easements, when applicable.

    b. If the permittee determines that the project is <u>not</u> in compliance with the approved plans, the permittee shall submit an application to modify the permit within 30 days of completion of the project or provide a plan of action, with a timeline, to bring the site into compliance.

11. OPERATION AND MAINTENANCE. The permittee shall provide and perform the operation and maintenance necessary, as listed in the signed operation and maintenance agreement, to assure that all components of the permitted on-site stormwater system are maintained at the approved design condition. The approved operation and maintenance agreement must be followed in its entirety and maintenance must occur at the scheduled intervals.

    a. CORRECTIVE ACTIONS REQUIRED. If the facilities fail to perform satisfactorily, the permittee shall take immediate corrective actions. This includes actions required by the Division and the stormwater rules such as the construction of additional or replacement on-site stormwater systems. These additional or replacement measures shall receive a permit from the Division prior to construction.

    b. MAINTENANCE RECORDS. Records of maintenance activities must be kept and made available upon request to authorized personnel of the Division. The records will indicate the date, activity, name of person performing the work and what actions were taken.

12. PERMIT RENEWAL. A permit renewal request must be submitted at least 180 days prior to the expiration date of this permit. The renewal request must include the appropriate application, documentation and the processing fee as outlined in 15A NCAC 02H.1045(3).

13. CURRENT PERMITTEE NAME OR ADDRESS CHANGES. The permittee shall submit a completed <u>Permit Information Update Application Form</u> to the Division within 30 days to making any one or more of the following changes:

    a. A name change of the current permittee;

    b. A name change of the project;

    c. A mailing address change of the permittee.

14. TRANSFER. This permit is not transferable to any person or entity except after notice to and approval by the Director. Neither the sale of the project and/or property, in whole or in part, nor the conveyance of common area to a third party constitutes an approved transfer of the permit.

a. TRANSFER REQUEST. The transfer request must include the appropriate application, documentation and the processing fee as outlined in 15A NCAC 02H.1045(2) and must be submitted upon occurrence of any one or more of the following events:

   i. The sale or conveyance of the project and/or property area in whole or in part, except in the case of an individual residential lot sale that is made subject to the recorded deed restrictions and protective covenants;
   ii. The assignment of declarant rights to another individual or entity;
   iii. The sale or conveyance of the common areas to a Homeowner's or Property Owner's Association, subject to the requirements of NCGS 143-214.7(c2);
   iv. Dissolution of the partnership, corporate, or LLC entity, subject to NCGS 55-14-05 or NCGS 57D-6-07 and 08;
   v. Bankruptcy;
   vi. Foreclosure, subject to the requirements of Session Law 2013-121;

b. TRANSFER INSPECTION. Prior to transfer of the permit, a file review and site inspection will be conducted by Division personnel to ensure the permit conditions have been met and that the project and the on-site stormwater system complies with the permit conditions. Records of maintenance activities performed to date may be requested. Projects not in compliance with the permit will not be transferred until all permit and/or general statute conditions are met.

15. COMPLIANCE. The permittee is responsible for complying with the terms and conditions of this permit and the approved plans and specifications until the Division approves the transfer request.

a. REVIEWING AND MONITORING EACH LOT FOR COMPLIANCE. The permittee is responsible for verifying that the proposed BUA on each individual lot, within each drainage area and for the entire project does not exceed the maximum amount allowed by this permit. The permittee shall review all individual lot plans for new construction and all subsequent modifications and additions for compliance. The plans reviewed must include all proposed BUA, grading, and driveway pipe placement. The permittee shall not approve any lot plans where the maximum allowed BUA limit has been exceeded or where modifications are proposed to the grading and/or to the stormwater collection system and/or to the vegetated conveyance unless and until a permit modification has been approved by the Division. The permittee shall review and routinely monitor the project and each lot to ensure continued compliance with the conditions of the permit, the approved plans and specifications, and the recorded deed restrictions and protective covenants. The permittee shall notify any lot owner that is found to be in noncompliance with the conditions of this permit in writing and shall require timely resolution.

b. ARCHITECTURAL REVIEW BOARD (ARB) OR COMMITTEE (ARC). The permittee may establish an ARB or ARC to conduct individual lot reviews. However, any approval given by the ARB or ARC on behalf of the permittee does not relieve the permittee of the responsibility to maintain compliance with the conditions of the permit and the approved plans and specifications.

c. APPROVED PLANS AND SPECIFICATIONS. A copy of this permit, approved plans, application, supplement, operation and maintenance agreement, all applicable recorded documents, and specifications shall be maintained on file by the permittee at all times.

d. MAINTENANCE ACCESS. SCMs, stormwater collection systems, and vegetated conveyances must be accessible for inspection, operation, maintenance and repair as shown on the approved plans.

e. DIVISION ACCESS. The permittee grants Division Staff permission to enter the property during normal business hours to inspect all components of the permitted project.

f. ENFORCEMENT. Any individual or entity found to be in noncompliance with the provisions of a stormwater management permit or the requirements of the stormwater rules is subject to enforcement procedures as set forth in NCGS 143 Article 21.

g. ANNUAL CERTIFICATION. The permittee shall electronically submit to the Division an annual certification completed by either the permittee or their designee confirming the projects conformance with permit conditions.

h. OBTAINING COMPLIANCE. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of modified plans and certification in writing to the Director that the changes have been made.

i. OTHER PERMITS. The issuance of this permit does not preclude the permittee from obtaining and complying with any and all other permits or approvals that are required for this development to take place, as required by any statutes, rules, regulations, or ordinances, which are imposed by any other Local, State or Federal government agency having jurisdiction. Any activities undertaken at this site that cause a water quality violation or undertaken prior to receipt of the necessary permits or approvals to do so are considered violations of NCGS 143-215.1, and subject to enforcement procedures pursuant to NCGS 143-215.6.

Permit issued this the 29th day of August 2024.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

For Toby Vinson, Interim Director
Division of Energy, Mineral and Land Resources
By Authority of the Environmental Management Commission

Permit Number SW7220504

Attachment A

PHASE 1

LOT NO.	LOT AREA (ft^2)	Max. Allowable Built-Upon Area (BUA) (ft^2)
1	15,538	4,661
2	15,000	4,500
3	15,000	4,500
4	15,000	4,500
5	15,000	4,500
6	15,000	4,500
7	15,000	4,500
8	15,000	4,500
9	15,000	4,500
10	15,000	4,500
11	15,000	4,500
12	15,000	4,500
13	15,000	4,500
14	15,000	4,500
15	15,000	4,500
16	15,000	4,500
17	15,000	4,500
18	15,401	4,620
19	15,401	4,620
20	15,000	4,500
21	15,000	4,500
22	15,000	4,500
23	15,000	4,500
24	15,000	4,500
25	15,000	4,500
26	15,000	4,500
27	15,000	4,500
28	15,000	4,500
29	15,000	4,500
30	15,000	4,500
31	15,000	4,500
32	15,000	4,500
33	15,000	4,500
34	15,000	4,500
35	15,000	4,500
36	15,000	4,500
37	15,000	4,500
38	15,000	4,500
39	15,000	4,500
40	15,000	4,500
41	15,000	4,500
42	15,000	4,500
43	15,000	4,500
44	15,000	4,500
45	15,000	4,500
46	15,000	4,500
47	15,000	4,500
48	15,000	4,500

DRAINAGE AREA #1

PHASE 1	49	15,000	4,500	DRAINAGE AREA #1
	50	15,000	4,500	
	51	15,000	4,500	
	52	17,000	5,100	
	53	17,000	5,100	
	54	17,000	5,100	
	55	17,000	5,100	
	56	17,000	5,100	
	57	17,000	5,100	
PHASE 2	58	29,333	8,800	
	59	20,499	6,150	
	60	15,952	4,786	
	61	15,111	4,533	
	62	15,101	4,530	
	63	15,669	4,701	
	64	16,278	4,883	
	65	16,289	4,887	
	66	16,300	4,890	
	67	17,511	5,253	
	68	15,105	4,532	
	69	15,112	4,534	
	70	15,414	4,624	
	71	15,506	4,652	
	72	15,556	4,667	
	73	15,582	4,675	
PHASE 3	74	15,615	4,685	
	75	15,640	4,692	
	76	15,777	4,733	
	77	16,456	4,937	
	78	16,236	4,871	
	79	21,059	6,318	
	80	23,291	6,987	
	81	19,354	5,806	
	82	19,569	5,871	
	83	16,500	4,950	
	84	15,000	4,500	
	85	15,000	4,500	
	86	15,000	4,500	
	87	15,000	4,500	
	88	15,000	4,500	
	89	15,015	4,505	
	90	15,000	4,500	
	91	15,018	4,505	
	92	15,576	4,673	
	93	15,576	4,673	
	94	15,576	4,673	
	96	15,137	4,541	
	96	15,243	4,573	
	97	17,841	5,352	
	98	18,779	5,634	

PHASE 3	99	21,240	6,372	DRAINAGE AREA #1
	100	21,030	6,309	
	101	16,976	5,093	
	102	15,269	4,583	
	103	15,295	4,589	
	104	15,296	4,589	
	105	15,547	4,664	
	106	17,479	5,244	
	107	20,484	6,145	
	108	16,433	4,930	
	109	16,091	4,827	
	110	16,000	4,800	
	111	16,000	4,800	
	112	15,254	4,576	
	113	20,479	6,144	
PH 2	114	17,671	5,301	
	115	19,029	5,709	
	116	16,156	4,847	
	117	15,839	4,752	
PHASE 3	118	15,118	4,535	
	119	15,118	4,535	
	120	15,118	4,535	
	121	15,118	4,535	
	122	15,690	4,707	
	123	16,227	4,868	
	124	16,208	4,862	
	125	15,350	4,605	
	126	15,118	4,535	
	127	15,118	4,535	
	128	15,118	4,535	
	129	15,118	4,536	
	130	15,174	4,552	
	131	15,253	4,576	
	132	15,274	4,582	
PHASE 2	133	15,834	4,750	
	134	17,232	5,170	
	135	16,219	4,866	
	136	15,753	4,726	
	137	15,753	4,726	
	138	15,753	4,726	
	139	15,760	4,728	
	140	15,809	4,743	
	141	15,779	4,734	
	142	15,776	4,733	
	143	15,754	4,726	
	144	15,753	4,726	
	145	15,753	4,726	
	146	18,881	5,664	
	147	15,214	4,564	
	148	15,214	4,564	

PHASE 2	149	15,214	4,564	DRAINAGE AREA #1
	150	15,772	4,732	
	151	16,001	4,800	
	152	16,001	4,800	
	153	16,001	4,800	
	154	15,411	4,623	
	155	15,214	4,564	
	156	15,214	4,564	
	157	15,214	4,564	
	158	15,214	4,564	
	159	15,399	4,620	
	160	15,214	4,564	
	161	15,032	4,510	
	162	15,200	4,560	
	163	16,745	5,024	
	164	16,041	4,812	
	165	15,000	4,500	
	166	15,000	4,500	
	167	15,601	4,680	
	168	15,601	4,680	
	169	15,339	4,602	
	170	15,783	4,735	
	171	15,082	4,525	
	172	19,839	5,952	DRAINAGE AREA #2
	173	16,956	5,087	
	174	17,441	5,232	
	175	15,370	4,611	
	176	15,450	4,635	
	177	15,247	4,574	
	178	15,250	4,575	
	179	16,373	4,812	
	180	15,132	4,540	
	181	16,359	4,908	
	182	17,425	5,228	
	183	18,755	5,627	
	184	15,892	4,768	
	185	15,745	4,724	
	186	15,100	4,530	
	Total	2,967,415	890,225	

Commercial Lot

85,550 SF

Attachment B

Certification Forms

The following blank Designer Certification forms are included and specific for this project:

- As-Built Permittee Certification
- As-Built Designer's Certification General MDC
- As-Built Designer's Certification for Wet Detention Pond Project

A separate certification is required for each SCM. These blank certification forms may be copied and used, as needed, for each SCM and/or as a partial certification to address a section or phase of the project.

AS-BUILT PERMITTEE CERTIFICATION

I hereby state that I am the current permittee for the project named above, and I certify by my signature below, that the project meets the below listed Final Submittal Requirements found in NCAC 02H.1042(4) and the terms, conditions and provisions listed in the permit documents, plans and specifications on file with or provided to the Division.

☐ Check here if this is a partial certification. Section/phase/SCM #?_____

☐ Check here if this is part of a Fast Track As-built Package Submittal.

Printed Name_____Signature_____

I, _____, a Notary Public in the State of _____

County of _____, do hereby certify that _____

personally appeared before me this _____ day of _____, 20_____

and acknowledge the due execution of this as-built certification. (SEAL)

Witness my hand and official seal

_____

My commission expires _____

Permittee's Certification NCAC .1042(4)	Completed / Provided	N/A
A. DEED RESTRICTIONS / BUA RECORDS		
1. The deed restrictions and protective covenants have been recorded and contain the necessary language to ensure that the project is maintained consistent with the stormwater regulations and with the permit conditions.	Y or N	
2. A copy of the recorded deed restrictions and protective covenants has been provided to the Division.	Y or N	
3. Records which track the BUA on each lot are being kept. (See Note 1)	Y or N	
B. MAINTENANCE ACCESS		
1. The SCMs are accessible for inspection, maintenance and repair.	Y or N	
2. The access is a minimum of 10 feet wide.	Y or N	
3. The access extends to the nearest public right-of-way.	Y or N	
C. EASEMENTS		
1. The SCMs and the components of the runoff collection / conveyance system are located in recorded drainage easements.	Y or N	
2. A copy of the recorded plat(s) is provided.	Y or N	
D. SINGLE FAMILY RESIDENTIAL LOTS - Plats for residential lots that have an SCM include the following:	Y or N	
1. The specific location of the SCM on the lot.	Y or N	
2. A typical detail for the SCM.	Y or N	
3. A note that the SCM is required to meet stormwater regulations and that the lot owner is subject to enforcement action as set	Y or N	

forth in NCGS 143 Article 21 if the SCM is removed, relocated or altered without prior approval.		
E. OPERATION AND MAINTENANCE AGREEMENT	Y or N	
1. The O&M Agreement is referenced on the final recorded plat.	Y or N	
2. The O&M Agreement is recorded with the Register of Deeds and appears in the chain of title.	Y or N	
F. OPERATION AND MAINTENANCE PLAN – maintenance records are being kept in a known set location for each SCM and are available for review.	Y or N	
G. DESIGNER'S CERTIFICATION FORM – has been provided to the Division.	Y or N	

Note 1- Acceptable records include ARC approvals, as-built surveys, and county tax records.

Provide an explanation for every requirement that was not met, and for every "N/A" below. Attach additional sheets as needed.

AS-BUILT DESIGNER'S CERTIFICATION GENERAL MDC

I hereby state that I am a licensed professional and I certify by my signature and seal below, that I have observed the construction of the project named above to the best of my abilities with all due care and diligence, and that the project meets the below listed General MDC found in NCAC 02H.1050 in accordance with the permit documents, plans and specifications on file with or provided to the Division, except as noted on the "AS-BUILT" drawings, such that the intent of the stormwater rules and statutes has been preserved.

☐ Check here if this is a partial certification. Section/phase/SCM #?_____

☐ Check here if this is a part of a Fast-Track As-Built Package Submittal per .1044(3).
☐ Check here if the designer did not observe the construction, but is certifying the project.
☐ Check here if pictures of the SCM are provided.

Printed Name_____Signature_____

NC Registration Number_____Date_____

SEAL:

Consultant's Mailing Address:

_____

City/State/ZIP _____

Phone Number _____

Consultant's Email address:

_____

① Circle N if the as-built value differs from the Plan. If N is circled, provide an explanation on Page 2.
②N/E = not evaluated (provide explanation on page 2) ③N/A = not applicable to this SCM or project.

Consultant's Certification NCAC .1003((3) & General MDC .1050	①As-built	②N/E	③N/A
A. TREATMENT REQUIREMENTS			
1. The SCM achieves runoff treatment.	Y or N		
2. The SCM achieves runoff volume match.	Y or N		
3. Runoff from offsite areas and/or existing BUA is bypassed.	Y or N		
4. Runoff from offsite areas and/or existing BUA is directed into the permitted SCM and is accounted for at the full build-out potential.	Y or N		
5. The project controls runoff through an offsite permitted SCM that meets the requirements of the MDC.	Y or N		

6. The net area of new BUA increase for an existing project has been accounted for at the appropriate design storm level.	Y or N		
7. The SCM(s) meets all the specific minimum design criteria.	Y or N		
B. VEGETATED SETBACKS / BUA			
1. The width of the vegetated setback has been measured from the normal pool of impounded waters, the MHW line of tidal waters, or the top of bank of each side of rivers or streams.	Y or N		
2. The vegetated setback is maintained in grass or other vegetation.	Y or N		
3. BUA that meets the requirements of NCGS 143-214.7 (b2)(2) is located in the setback.	Y or N		
4. BUA that does not meet the requirements of NCGS 143-214.7 (b2)(2) is located within the setback and is limited to: a. Publicly funded linear projects (road, greenway sidewalk) b. Water-dependent structures c. Minimal footprint uses (utility poles, signs, security lighting and appurtenances)	Y or N		
5. Stormwater that is not treated in an SCM is released at the edge of the setback and allowed to flow through the setback as dispersed flow.	Y or N		
	①As-built	②N/E	③N/A
C. STORMWATER OUTLETS – the outlet handles the peak flow from the 10 year storm with no downslope erosion.	Y or N		
D. VARIATIONS			
1. A variation (alternative) from the stormwater rule provisions has been implemented.	Y or N		
2. The variation provides equal or better stormwater control and equal or better protection of surface waters.	Y or N		
E. COMPLIANCE WITH OTHER REGULATORY PROGRAMS has been met.	Y or N		
F. SIZING -the volume of the SCM takes the runoff from all surfaces into account and is sufficient to handle the required storm depth.	Y or N		
G. CONTAMINATED SOILS – infiltrating SCM's are not located in or on areas with contaminated soils.	Y or N		
H. SIDE SLOPES			
1. Vegetated side slopes are no steeper than 3H:1V.	Y or N		
2. Side slopes include retaining walls, gabion walls, or other surfaces that are steeper than 3H:1V.	Y or N		
3. Vegetated side slopes are steeper than 3H:1V (provide supporting documents for soils and vegetation).	Y or N		
I. EROSION PROTECTION			
1. The inlets do not cause erosion in the SCM.	Y or N		
2. The outlet does not cause erosion downslope of the discharge point during the peak flow from the 10 year storm.	Y or N		
J. EXCESS FLOWS – An overflow / bypass has been provided.	Y or N		

K. DEWATERING – A method to drawdown standing water has been provided to facilitate maintenance and inspection.	Y or N		
L. CLEANOUT AFTER CONSTRUCTION – the SCM has been cleaned out and converted to its approved design state.	Y or N		
M. MAINTENANCE ACCESS			
1. The SCM is accessible for maintenance and repair.	Y or N		
2. The access does not include lateral or incline slopes >3:1.	Y or N		
N. DESIGNER QUALIFICATIONS (FAST-TRACK PERMIT) – The designer is licensed under Chapters 89A, 89C, 89E, or 89F of the General Statutes.	Y or N		

Provide an explanation for every MDC that was not met, and for every item marked "N/A" or "N/E", below. Attach additional pages as needed:

AS-BUILT DESIGNER'S CERTIFICATION FOR WET DETENTION POND PROJECT

I hereby state that I am a licensed professional and I certify by my signature and seal below, that I have observed the construction of the project named above to the best of my abilities with all due care and diligence, and that the project meets all of the MDC found in NCAC 02H.1053, in accordance with the permit documents, plans and specifications on file with or provided to the Division, except as noted on the "AS-BUILT" drawings, such that the intent of the stormwater rules and the general statutes has been preserved.

☐ Check here if this is a partial certification. Section/phase/SCM #?_____

☐ Check here if this is part of a Fast-Track As-Built Package Submittal per .1044(3).

☐ Check here if the Designer did not observe the construction, but is certifying the project.

☐ Check here if pictures of the SCM are provided.

Printed Name_____Signature_____

NC Registration Number_____Date_____

SEAL:

Consultant's Mailing Address:

_____

City/State/ZIP _____

Phone Number _____

Consultant's Email address:

_____

① Circle N if the as-built value differs from the Plan/permit. If N is circled, provide an explanation on page 2

②N/E = not evaluated (provide explanation on page 2) ③N/A = not applicable to this project or SCM.

This Certification must be completed in conjunction with the General MDC certification under NCAC 02H.1050

Consultant's Certification (MDC .1053)	①As-built	②N/E	③N/A
A. Forebay / Depths / Fountain			
1. The available Sediment storage is consistent with the approved plan and is a minimum of 6 in.	Y or N		
2. Water flow over the forebay berm into the main pond occurs at a non-erosive velocity.	Y or N		
3. The provided Forebay Volume is 15%-20% of the main pool volume.	Y or N		
4. The Forebay entrance elevation is deeper than the exit elevation into the pond.	Y or N		
5. The Average Design Depth of the main pond below the permanent pool elevation is consistent with the permitted value?	Y or N		
6. Fountain documentation is provided.	Y or N		
B. Side slopes / Banks / Vegetated Shelf			
1. The width of the Vegetated Shelf is consistent with the approved plans and is a minimum of 6 feet.	Y or N		

2. The slope of the Vegetated Shelf is consistent with the approved plans and is no steeper than 6:1.	Y or N		
C. As-built Main Pool / Areas / Volumes / Elevations			
1. The permanent pool surface area provided is consistent with the permitted value.	Y or N		
2. The Temporary Pool Volume provided is consistent with the permitted value.	Y or N		
3. The permanent pool elevation is consistent with the permitted value.	Y or N		
4. The temporary pool elevation is consistent with the permitted value.	Y or N		
	①As-built	②N/E	③N/A
D. Inlets / Outlet / Drawdown			
1. The design volume draws down in 2-5 days.	Y or N		
2. The size of the Orifice is consistent with the permitted value.	Y or N		
3. A trash rack is provided on the outlet structure.	Y or N		
4. Hydrologic impacts to the receiving channel are minimized from the 1 yr 24 hr storm discharge?	Y or N		
5. The inlets and the outlet location are situated per the approved plan and avoid short-circuiting.	Y or N		
E. Vegetation			
1. The vegetated shelf has been planted with a minimum of 3 diverse species.	Y or N		
2. The vegetated shelf plant density is consistent with the approved plans and is no less than 50 plants per 200 sf or no less than 24 inches on center.	Y or N		

Provide an explanation for every MDC that was not met, and for every item marked "N/A" or "N/E" below. Attach additional pages as needed:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

September 6, 2024

North-South Development Group, LLC
227 Caratoke Hwy
Moyock, NC 27958

-AND-

Currituck Water and Sewer, LLC
4700 Homewood Ct, Suite 108
Raleigh, NC 27609

County: Currituck

Subject: Encroachment to allow the installation of a wastewater force main under SR1215

Dear Applicant,

Attached for your records is a copy of the approved encroachment package to allow the installation of a wastewater force main under SR1215, to serve Flora Farms. **Any and all damages done to State Routes must be properly repaired.** This approval will expire on September 6, 2025, unless construction has started or been completed prior to that date.

Please feel free to contact the District Office at (252) 621-6400 if you have any questions.

Sincerely yours,

DocuSigned by:
Caitlin A Spear
930880FAC40F45A...

Caitlin A. Spear, PE
District Engineer

Attachments
Cc: Division Engineer (W/Attachments)
County Maintenance Engineer (W/Attachments)

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION ONE – DISTRICT ONE
1929 NORTH ROAD STREET
ELIZABETH CITY, NC 27909

Telephone: (252) 621-6400
Fax: (252) 621-6410
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1929 NORTH ROAD STREET
ELIZABETH CITY, NC 27909

Pre-Construction

Contact Offices & Outside Agency issues / Contacts / Info.

1. Approval may be rescinded upon failure to follow any of the provisions in this permit and may be considered a violation of the encroachment agreement.

2. The Encroaching party or their contractor shall provide the following notices prior to construction activity within the NCDOT Right of Way:
   a. Three (3) business days advance phone call at telephone (252) 621-6400 or email to caspear@ncdot.gov to the District Engineer's office
   b. If the construction falls within the limits of an NCDOT managed construction project, five (5) business days advance phone call to the Resident Engineer, Mr. Brandon Tatum at (252) 621-6400 or email to bjtatum@ncdot.gov.

   Failure to provide these notifications prior to beginning construction is subject to the Division Engineer's discretion to cease construction activity for this encroachment. NCDOT reserves the right to cease any construction or maintenance work associated with this installation by the encroaching party until the construction or maintenance meets the satisfaction of the Division Engineer or their representative.

3. Prior to beginning work, it is the requirement of the Encroaching Party to contact the appropriate Utility Companies involved and make arrangements to adjust or relocate any utilities that conflict with the proposed work.

4. It shall be the responsibility of the encroaching party to determine the location of utilities within the encroachment area. NCGS § 87-115 through § 87-130 of the Underground Utility Safety and Damage Prevention Act requires underground utilities to be located by calling 811 prior to construction. The encroaching party shall be responsible for notifying other utility owners and providing protection and safeguards to prevent damage or interruption to existing facilities and maintain access to them.

5. The encroaching party shall notify the appropriate municipal office prior to beginning any work within the municipality's limits of jurisdiction.

6. Excavation within 1000 feet of a signalized intersection will require notification by the encroaching party to the Division Traffic Engineer at telephone number (252) 482-1857 no less than one week prior to beginning work. All traffic signal or detection cables must be located prior to excavation. Cost to replace or repair NCDOT signs, signals, pavement markings or associated equipment and facilities shall be the responsibility of the encroaching party.

7. At the option of the District Engineer, a preconstruction meeting including representatives of NCDOT, the encroaching party, contractors and municipality, if applicable, shall be required. A pre-construction conference held between a municipality (or other facility owner) and a contractor without the presence of NCDOT personnel with subsequent construction commencing may be subject to NCDOT personnel ceasing any work on NCDOT right-of-way related to this encroachment until such meeting is held. Contact the District office to schedule.

8. At the discretion of the District Engineer, a NOTIFICATION FOR UTILITY / NON-UTILITY ENCROACHMENT WITHIN NCDOT R/W form (See corresponding attachment) with the scheduled pre-construction meeting and associated construction schedule details must be completed and submitted to the District Engineer's office a minimum of one week prior to construction.

9. At the discretion of the District Engineer, the encroaching party (not the utility contractor) shall make arrangements to have a qualified inspector, under the supervision of a Professional Engineer registered in North Carolina, on site at all times during construction. The registered Professional Engineer shall be required to submit a signed and PE sealed certification that the utility was installed in accordance with the encroachment agreement.

Legal & Right-of-Way Issues

10. This approval and associated plans and supporting documents shall not be interpreted to allow any design change or change in the intent of the design by the Owner, Design Engineer, or any of their representatives. Any revisions or changes to these approved plans or intent for construction must be obtained in writing from the Division Engineer's office or their representative prior to construction or during construction if an issue arises during construction to warrant changes.

11. NCDOT does not guarantee the right of way on this road, nor will it be responsible for any claim for damages brought about by any property owner by reason of this installation. It is the responsibility of the encroaching party to verify the right of way.

12. Encroaching party shall be responsible for obtaining all necessary permanent and/or temporary construction, drainage, utility and/or sight distance easements.

13. All Right of Way and easements necessary for construction and maintenance shall be dedicated to NCDOT with proof of dedication furnished to the District Engineer prior to beginning work.

14. No commercial advertising shall be allowed within NCDOT Right of Way.

15. The encroaching party shall obtain proper approval from all affected pole owners prior to attachment to any pole.

16. This agreement does not authorize installations within nor encroachment onto railroad rights of way. Permits for installations within railroad right of way must be obtained from the railroad and are the responsibility of the encroaching party.

Work Zone Traffic

17. Traffic control shall be coordinated with the District Engineer and the Division Traffic Engineer at telephone (252) 621-6400, prior to construction.

18. <u>WORK ZONE TRAFFIC CONTROL QUALIFICATIONS AND TRAINING PROGRAM</u>

    All personnel performing any activity inside the highway right of way are required to be familiar with the NCDOT Maintenance / Utility Traffic Control Guidelines (MUTCG). No specific training course or test is required for qualification in the Maintenance /Utility Traffic Control Guidelines (MUTCG).

    All flagging, spotting, or operating Automated Flagger Assist Devices (AFAD) inside the highway right of way requires qualified and trained Work Zone Flaggers. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

    All personnel involved with the installation of Work Zone Traffic Control devices inside the highway right of way are required to be qualified and trained Work Zone Installers. Training for this

certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

All personnel in charge of overseeing work zone Temporary Traffic Control operations and installations inside the highway right of way are required to be qualified and trained Work Zone Supervisors. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

For questions and/or additional information regarding this training program please refer to https://connect.ncdot.gov/projects/WZTC/Pages/Training.aspx or call the NCDOT Work Zone Traffic Control Section (919) 814-5000.

19. The party of the second part shall employ traffic control measures that are in accordance with the prevailing federal, state, local, and NCDOT policies, standards, and procedures. These policies, standards, and procedures include, but are not limited to the following:
    a. Manual on Uniform Traffic Control Devices (MUTCD) – North Carolina has adopted the MUTCD to provide basic principles and guidelines for traffic control device design, application, installation, and maintenance. North Carolina uses the MUTCD as a minimum requirement where higher supplemental standards specific to North Carolina are not established. Use fundamental principles and best practices of MUTCD (Part 6, Temporary Traffic Control).
    b. NCDOT Maintenance / Utility Traffic Control Guidelines – This document enhances the fundamental principles and best practices established in MUTCD Part 6, Temporary Traffic Control, incorporating NCDOT-specific standards and details. It also covers important safety knowledge for a wide range of work zone job responsibilities.

20. If the Traffic Control Supervisor determines that portable concrete barrier (PCB) is required to shield a hazard within the clear zone, then PCB shall be designed and sealed by a licensed North Carolina Professional Engineer. PCB plans and design calculations shall be submitted to the District Engineer for review and approval prior to installation.

21. Ingress and egress shall be maintained to all businesses and dwellings affected by the project. Special attention shall be paid to police, EMS and fire stations, fire hydrants, secondary schools, and hospitals.

22. Traffic shall be maintained at all times. All lanes of traffic are to be open during the hours of 7:00 A.M. to 9:00 A.M. and from 4:00 P.M. to 6:00 P.M. Monday through Friday, during any time of inclement weather, **or as directed by the District Engineer**. If the location of work calls for a rolling roadblock on a divided highway for US routes, the restriction is to work only on Sunday from 1:00 A.M. to 10:00 A.M, **or as Directed by the District Engineer**. Any violation of these hours will result in ceasing any further construction by the Encroaching Party or their contractor.

23. Nighttime and weekend operations will NOT be allowed unless written approval is received from the District Engineer. If nighttime or weekend work is allowed or required, all signs must be retro-reflective, and a work zone lighting plan must be submitted for approval prior to construction.

24. Two-way traffic shall be maintained at all times unless designated by the District Engineer. Traffic shall not be rerouted or detoured without the prior written approval from the District Engineer. No utility work will be allowed on state holidays from 7:00 PM the night before through 9:00 AM the day prior to, following or during local events without prior approval from the District Engineer. If the construction is within 1000 feet of a school location or on a designated bus route, the construction shall be coordinated with the school start and end times to avoid traffic delays.

25. Work requiring lane or shoulder closures shall not be performed on both sides of the road simultaneously within the same area.

26. Any work requiring equipment or personnel within 5 feet of the edge of any travel lane of an undivided facility and within 10 feet of the edge of any travel lane of a divided facility shall require a lane closure with appropriate tapers per current *NCDOT Roadway Standard Drawings or MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.*

27. At the discretion of the District Engineer, a traffic control plan shall be developed and submitted under the seal and signature of a Licensed North Carolina Professional Engineer prior to construction. The plan shall be specific to the site and adequately detailed. Issues such as the close proximity to intersections shall be addressed.

28. Temporary and final pavement markings are the responsibility of the encroaching party. Final pavement markings and sign plans shall be submitted with the encroachment request to the Division Traffic Engineer prior to construction. Final pavement markings shall be thermoplastic unless otherwise directed by the Division Traffic Engineer or District Engineer.

29. Any pavement markings that are damaged or obliterated shall be restored by the encroaching party at no expense to NCDOT.

30. Sidewalk closures shall be installed as necessary. Pedestrian traffic shall be detoured around these closures and shall be signed appropriately and in accordance with The American with Disabilities Act Accessibility Guidelines. The encroaching party must adhere to the guidelines for accommodating pedestrians in encroachment work zones as described in the NCDOT Pedestrian Work Zone Accommodations Training found at https://www.youtube.com/watch?v=AOuYa5IW3dg&feature=youtu.be

Roadside Environmental

31. The encroaching party shall comply with all applicable Federal, State and local environmental regulations and shall obtain all necessary Federal, State and local environmental permits, including but not limited to, those related to sediment control, stormwater, wetland, streams, endangered species and historical sites. Additional information can be obtained by contacting the NCDOT Roadside Environmental Engineer regarding the North Carolina Natural Heritage Program or the United States Fish and Wildlife Services. Contact the Division Roadside Environmental Engineer's Office at (252) 621-6310.

32. When surface area in excess of one acre will be disturbed, the Encroacher shall submit a Sediment and Erosion Control Plan which has been approved by the appropriate regulatory agency or authority prior to beginning any work on the Right of Way. Failure to provide this information shall be grounds for suspension of operations. Proper temporary and permanent measures shall be used to control erosion and sedimentation in accordance with the approved sediment and erosion control plan.

33. The Verification of Compliance with Environmental Regulations (VCER-1) form is required for all non-utility encroachment agreements or any utility encroachments when land disturbance within NCDOT right of way exceeds 1 acre. When required, the VCER-1 form must be PE sealed by a NC registered professional engineer who has verified that all appropriate environmental permits (if applicable) have been obtained and all applicable environmental regulations have been followed.

34. All erosion control devices and measures shall be constructed, installed, maintained, and removed by the Encroacher in accordance with all applicable Federal, State, and Local laws, regulations, ordinances, and policies. Permanent vegetation shall be established on all disturbed areas in accordance with the recommendations of the Division Roadside Environmental Engineer. All areas disturbed (shoulders, ditches, removed accesses, etc.) shall be graded and seeded in accordance with the latest *NCDOT Standards Specifications for Roads and Structures* and within 15 calendar days with an approved NCDOT seed mixture (all lawn type areas shall be maintained and reseeded as such). Seeding rates per acre shall be applied according to the Division Roadside Environmental Engineer. Any plant or vegetation in the NCDOT planted sites that is destroyed or damaged as a result of this encroachment shall be replaced with plants of like kind or similar shape.

35. No trees within NCDOT right of way shall be cut without authorization from the Division Roadside Environmental Engineer. An inventory of trees measuring greater than 4 caliper inches (measured 6" above the ground) is required when trees within C/A right of way will be impacted by the encroachment installation. Mitigation is required and will be determined by the Division Roadside Environmental Engineer's Office.

36. Prior to installation, the Encroaching Party shall contact the District Engineer to discuss any environmental issues associated with the installation to address concerns related to the root system of trees impacted by boring or non-utility construction of sidewalk, roadway widening, etc.

37. The applicant is responsible for identifying project impacts to waters of the United States (wetlands, intermittent streams, perennial streams and ponds) located within the NCDOT right-of-way. The discharge of dredged or fill material into waters of the United States requires authorization from the United States Army Corps of Engineers (USACE) and certification from the North Carolina Division of Water Quality (NCDWQ). The applicant is required to obtain pertinent permits or certification from these regulatory agencies if construction of the project impacts waters of the United States within the NCDOT right-of-way. The applicant is responsible for complying with any river or stream Riparian Buffer Rule as regulated by the NCDWQ. The Rule regulates activity within a 50-foot buffer along perennial streams, intermittent streams and ponds. Additional information can be obtained by contacting the NCDWQ or the USACE.

38. The contractor shall not begin the construction until after the traffic control and erosion control devices have been installed to the satisfaction of the Division Engineer or their agent.

39. The contractor shall perform all monitoring and record keeping and any required maintenance of erosion and sediment control measures to maintain compliance with stormwater regulations.

Bonds

40. A Performance and Indemnity Bond in the amount of $0 shall be posted with the District Engineer's Office by the Party of the Second Part prior to beginning any work within the NCDOT Right of Way. The bond shall be held for a minimum of one year after a satisfactory final inspection of the installation by NCDOT. The bond may be held for a period longer than one year after completion if, in the opinion of NCDOT, the size or complexity of the installation warrants a longer period.

41. The release of the bond is subject to a final inspection by NCDOT. Contact the District office to schedule a Final Inspection and to request release of the bond.

42. When a Continuing Indemnity bond is on file with the central Raleigh office, the cashing of that bond may be used to fund any necessary repairs by NCDOT forces for unaddressed defects in workmanship by the encroaching party and/or by their contractor.

Control of Access

43. No access to the job site, parking or material storage shall be allowed along or from the **Control of Access Roadway.**

44. The installation within the Control of Access fence shall not adversely affect the design, construction, maintenance, stability, traffic safety or operation of the controlled access highway, and the utility must be serviced without access from the through-traffic roadways or ramps.

45. The resetting of the Control of Access fence shall be in accordance with the applicable NCDOT standard and as directed by the Division Engineer or their representative.

STIP (or Division Managed) Projects

46. State Transportation Improvement Project (STIP) X-XXXX is scheduled for future construction. Any encroachment determined to be in conflict with the construction of this NCDOT project shall be removed and/or relocated at the encroaching party's expense.

Construction

General

47. An executed copy of the encroachment agreement, provisions and approved plans shall be present at the construction site at all times. If safety or traffic conditions warrant such an action, NCDOT reserves the right to further limit, restrict or suspend operations within the right of way.

48. If the approved method of construction is unsuccessful and other means are required, prior approval must be obtained through the District Engineer before construction may continue.

49. Any REVISIONS marked in RED on the attached non-PE sealed plans shall be incorporated into and made part of the approved encroachment agreement.

50. All disturbed areas are to be fully restored to current NCDOT minimum roadway standards or as directed by the Division Engineer or their representative. Disturbed areas within NCDOT Right-of-Way include, but not limited to, any excavation areas, pavement removal, drainage or other features.

51. The encroaching party shall notify the Division Engineer or their representative immediately in the event any drainage structure is blocked, disturbed or damaged. All drainage structures disturbed, damaged or blocked shall be restored to its original condition as directed by the Division Engineer or their representative.

52. A minimum of five-foot clearance is required for utility installations beneath or near drainage pipes, headwalls, and a minimum of two-foot clearance below the flowline of streams. If directional drilling, a minimum of ten-foot clearance distance is required from drainage structures and a minimum of five feet below flowline of streams.

53. At points where the utility is placed under existing storm drainage, the trench will be backfilled with excavatable flowable fill up to the outside diameter of the existing pipe.

54. Unless specified otherwise, during non-working hours, equipment shall be located away from the job site or parked as close to the right of way line as possible and be properly barricaded in order not to have any equipment obstruction within the Clear Zone. Also, during non-working hours, no parking or material storage shall be allowed along the shoulders of any state-maintained roadway.

55. The Encroaching Party and/or their Contractor shall comply with all OSHA requirements. If OSHA visits the work area associated with this encroachment, the District Office shall be notified by the encroaching party immediately if any violations are cited.

56. Any guardrail removed or damaged during construction shall be replaced or repaired to its original condition, meeting current NCDOT standards or as directed by the Division Engineer or their representative.

57. Right of Way monuments disturbed during construction shall be referenced by a registered Land Surveyor and reset after construction.

58. All Traffic signs moved during construction shall be reinstalled as soon as possible to the satisfaction of the Division Engineer or their representative.

59. Detection tape, where required by NCGS § 87-115 through § 87-130 of the Underground Utility Safety and Damage Prevention Act, shall be buried in the trench approximately 1 foot above the installed facility. Where conduit is installed in the right of way and is not of ferrous material, locating tape or detection wire shall be installed with the conduit.

60. All driveways disturbed during construction shall be returned to a state comparable with the condition of the driveways prior to construction.

61. Conformance with driveway permit review should be required in conjunction with this encroachment agreement. In the event there is a conflict between the driveway permit and the encroachment agreement, the District Engineer should resolve the conflict and notify the parties involved.

Engineering

62. All traffic control, asphalt mixes, structures, construction, workmanship and construction methods, and materials shall be in compliance with the most-recent versions of the following resources: *ASTM Standards*, *Manual on Uniform Traffic Control Devices, NCDOT Utilities Accommodations Manual, NCDOT Standard Specifications for Roads and Structures, NCDOT Roadway Standard Drawings,* NCDOT *Asphalt Quality Management System* manual, **and the approved plans.**

63. Regulator stations, metering stations, cathodic test stations, and anode beds are not permitted within NCDOT right of way. Header wires are permitted.

64. Non-Utility Communication and Data Transmission installations (ground mounted type or Small Cell pole-mounted type) must adhere to guidelines in the Utilities Accommodations Manual and, when located within municipal jurisdictions, are subject to review and approval by municipal ordinances and any additional municipal approval for proximity to historic districts and landmarks. All wiring and related telecommunications work shall conform to the latest regulations by the Federal Communications Commission.

65. All wiring and related electrical work shall conform to the latest edition of the National Electrical Safety Code.

66. Prior approval for any blasting must be obtained from the Division Engineer or their representative.

Location within R/W

67. All utility access points, such as manholes, vaults, handholes, splice boxes and junction boxes shall be located as close to the right of way line as possible and shall not be placed in the ditch line, side slopes of the ditches or in the pavement. All manholes, handholes, splice boxes, junction boxes and vaults and covers shall be flush with the ground when located within the vehicle clear zone. Slack loops for telecommunications in industry standard housing units shall be buried a minimum of 18 inches when buried or meet minimum NCDOT vertical and horizontal clearances when installed aerially.

68. Any utility markers, cabinets, pedestals, meter bases and services for meter reading required shall be as close to the Right of Way line as possible. If it is not feasible to install at or near Right of Way line, then written approval shall be obtained from NCDOT prior to installation.

69. Fire Hydrants shall be of the breakaway type. Hydrants shall be placed near the right of way line. In curb and gutter sections with written approval from the District, the hydrants may be placed at 6' behind the back of the curb or minimum 2' back of sidewalk.

70. Hot box (aka ASSE 1060) or Safe-T-Cover type enclosures covering utility main pipe joints, backflow preventers, valves, vent pipes, cross connections, pumps, grinders, irrigation assemblies, transformers, generators, and other similar large appurtenances shall be located outside sight distance triangles and off of the NCDOT Right-of-Way.

71. Sprinkler heads shall be located a minimum of 10 feet from the edge of pavement, edge of shoulder, or back of curb whichever is greater and shall be directed so that water does not spray or drain on the roadway surface, sidewalk, or passing vehicles at any time. Upon completion of the installation and prior to activation of the system, the Encroacher shall contact the District Engineer to schedule a test of the system to verify the spray pattern. Sprinkler systems shall not be operated during periods of high wind or freezing weather, or to the extent that the subgrade adjacent to the pavement structure becomes saturated. NCDOT reserves the right to require immediate termination and removal of any sprinkler system which in its judgement and opinion adversely affects safety, maintenance, or operation of the roadway.

72. Luminaire and/or utility poles and guy wires shall be set as close to the Right of Way line as practical and outside the Clear Zone in accordance with the latest version of the AASHTO Roadside Design Guide (See corresponding attachment) or made breakaway in accordance with the requirements of NCHRP Report 350. Any relocation of the utility poles from the original design due to Clear Zone requirements shall require a re-submittal for the utility design.

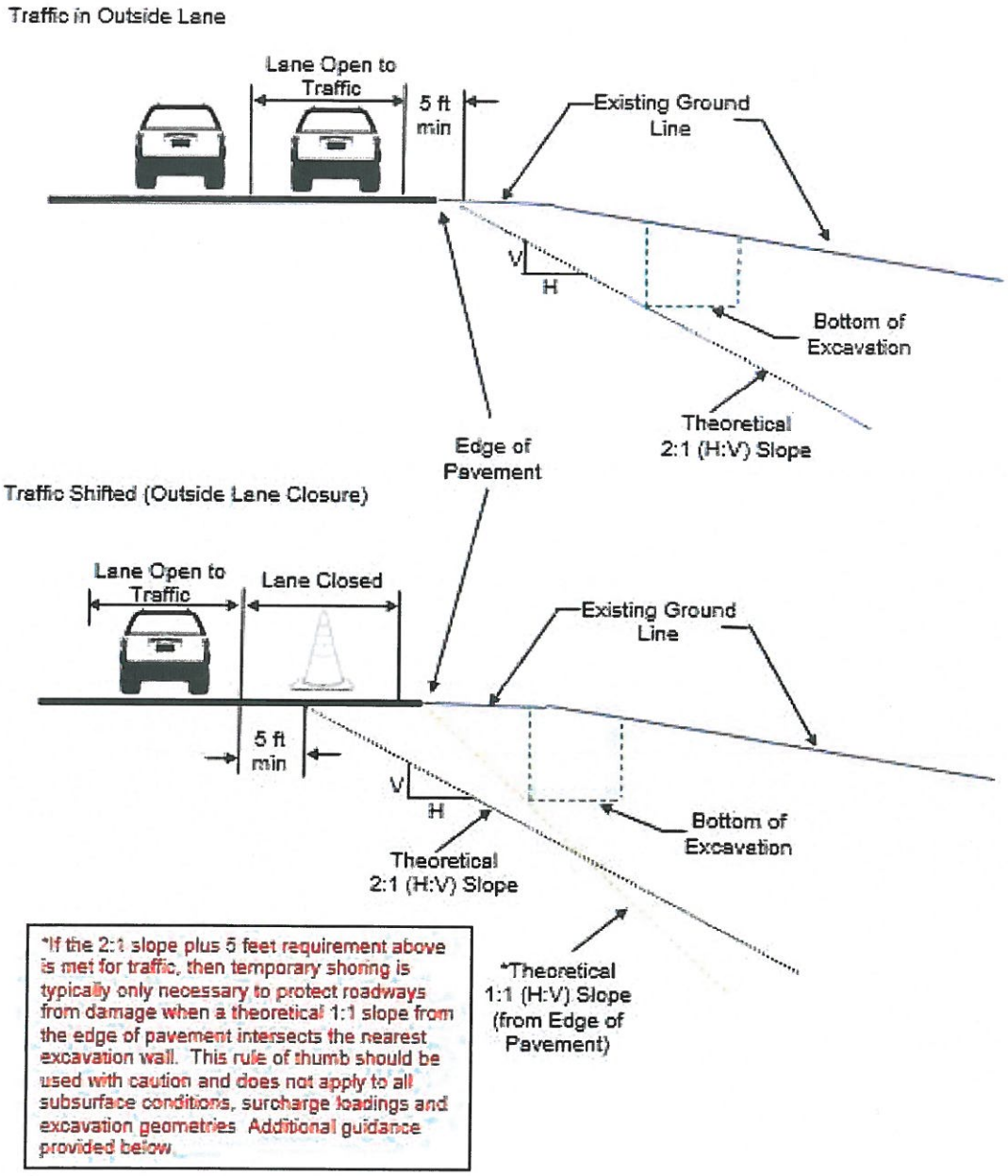
73. Luminaire and/or utility poles shall be set a minimum of 5'-6" behind face of any guardrail or otherwise sufficiently protected. However, standard placement may be reduced to 3'-6" behind face of guardrail when posts are spaced 3'-1 ½", or where speed limit is less than 55 MPH.

Excavation

74. Excavation material shall not be placed on pavement.

75. It is the responsibility of the encroaching party or their contractor to prevent any mud/dirt from tracking onto the roadway. Any dirt which may collect on the roadway pavement from equipment and/or truck traffic on site shall be immediately removed to avoid any unsafe traffic conditions.

76. The utility shall be installed within 5 feet of the right of way line and outside the 5-foot minimum from travel lane plus theoretical 2:1 slope from the edge of pavement to the bottom of the nearest excavation wall for temporary shoring. Temporary shoring is required when a theoretical 2:1 slope from the bottom of excavation will intersect the existing ground line less than 5 feet from the outside edge of an open travel lane as shown in the figure below or when a theoretical 2:1 slope from the bottom of excavation will intersect any existing structure, support, utility, property, etc. to be protected.



If the 2:1 slope plus 5 feet requirement above is met for traffic, then temporary shoring is typically only necessary to protect roadways from damage when a theoretical 1:1 slope from the edge of pavement intersects the nearest excavation wall. This rule of thumb should be used with caution and does not apply to all subsurface conditions, surcharge loadings and excavation geometries.

Situations where this 1:1 slope is not recommended include groundwater depth is above bottom of excavation or excavation is deeper than 10 feet or in Type B or C soils as defined by OSHA Technical Manual. Temporary shoring may be avoided by locating trenches, bore pits, and other excavations far enough away from the open travel lane, edge of pavement and any existing structure, support, utility, property, etc. to be protected.

Temporary shoring shall be designed and constructed in accordance with current NCDOT Standard Temporary Shoring provisions (refer to https://connect.ncdot.gov/resources/Specifications/Pages/2018-Specifications-and-Special-Provisions.aspx and see SP11 R002

a. Temporary excavation shoring, such as sheet piling, shall be installed. The design of the shoring shall include the effects of traffic loads. The shoring system shall be designed and sealed by a licensed North Carolina Professional Engineer. Shoring plans and design calculations shall be submitted to the Division Engineer for review and approval prior to construction. (See NCDOT *Utilities Accommodations Manual* for more information on requirements for shoring plans, design calculations, and subsurface investigation report.) **Trench boxes shall not be accepted as temporary shoring and will not be approved for use in instances where shoring is required to protect the highway, drainage structure, and/or supporting pavement or structure foundation**.
b. All trench excavation inside the limits of the theoretical two-to-one slope plus 5 feet requirement, as defined by the policy, shall be completely backfilled and compacted at the end of each construction day. No portion of the trench shall be left open overnight. Any excavation that is not backfilled by the end of the workday must address any safety and traveling public concerns including accommodations for bicycles, pedestrians and persons with disabilities.
c. The trench backfill material shall meet the Statewide Borrow Criteria. The trench shall be backfilled in accordance with Section 300-7 of the latest *NCDOT Standard Specifications for Roads and Structures,* which basically requires the backfill material to be placed in layers not to exceed 6 inches loose and compacted to at least 95% of the density obtained by compacting a sample in accordance with AASHTO T99 as modified by DOT.
d. At the discretion of the Division Engineer, a qualified NCDOT inspector shall be on the site at all times during construction. The encroaching party shall reimburse NCDOT for the cost of providing the inspector. If NCDOT cannot supply an inspector, the encroaching party (not the utility contractor) should make arrangements to have a qualified inspector, under the supervision of a licensed North Carolina Professional Engineer, on the site at all times. The Professional Registered Engineer shall certify that the utility was installed in accordance with the encroachment agreement and that the backfill material meets the Statewide Borrow Criteria.
e. The length of parallel excavation shall be limited to the length necessary to install and backfill one joint of pipe at a time, not to exceed twenty-five (25) feet.

77. All material to a depth of 8 inches below the finished surface of the subgrade shall be compacted to a density equal to at least 100% of that obtained by compacting a sample of the material in accordance with AASHTO T99 as modified by the Department. The subgrade shall be compacted at a moisture content which is approximately that required to produce the maximum density indicated by the above test method. The contractor shall dry or add moisture to the subgrade when required to provide a uniformly compacted and acceptable subgrade. The option to backfill any trenches with dirt or either #57 stone or #78 stone with consolidation with a plate tamp and without a conventional density test may be pursued with the written consent of the District Engineer. If this option is exercised, then roadway ABC stone and asphalt repair as required will also be specified by the District Engineer.

Boring

78. Boring equipment will be provided of a type and size to facilitate boring in the local geologic conditions and shall be able to facilitate the encroachment work.

79. When Horizontal Directional Drilling (HDD) is used, the following stipulations apply:
    a. Use drilling fluids as appropriate for the type soils but use of water alone is prohibited. Pump drilling fluids only while drilling or reaming. Directional boring using jetting with a Bentonite (or equivalent material) slurry is recommended. Monitor flow rates to match the amount leaving the bore hole and do not increase pressure or flow to free stuck drill heads, reamers or piping. Open cutting to retrieve stuck drill heads is not allowed without prior permission from the District Engineer.
    b. The minimum depth shall adhere to the table below for transverse (under non-controlled access, partial controlled access, or limited controlled access roadway) installations and refers to maximum diameter of hole drilled and not the dimension of the carrier or encasement pipe.

Diameter of Drilled Hole (Backream)	Minimum Depth of Cover
2" to 6"	5 feet
>6" to 15"	12 times hole diameter (e.g. 6-inch hole means 6 feet minimum depth)
>15" to 36"	15 feet or greater

    c. Under fully controlled access roadway installations, the minimum depth for transverse crossings shall be 15 feet under any pavement (ramps or thru lanes)
    d. An overbore (backream diameter) shall not be more than 1.5 times the outside diameter of the pipe or encasement under any highway for pipes 12 inches in diameter or less. For pipes with outer diameter larger than 12 inches, the overbore may be no larger than outer diameter of pipe plus 6 inches. An overbore exceeding 1.5 times greater than the outside diameter of the pipe or encasement may be considered if the encroachment agreement includes a statement signed and sealed by a licensed North Carolina Professional Engineer indicating that an overbore in excess of 1.5 times the outside diameter of the pipe or encasement will appropriately arch and no damage will be done to the pavement or sub-grade.
    e. Directional boring is allowed beneath embankment material in naturally occurring soil.
    f. Any parallel installation utilizing the directional boring method shall be made at a minimum depth of three (3') feet (cover) below the ground surface and outside the theoretical 1:1 slope from the existing edge of pavement except where the parallel installation crosses a paved roadway.
    g. All directional bores shall maintain ten (10) feet minimum (clear) distance from the nearest part of any structure, including but not limited to bridges, footings, pipe culverts or box culverts. Directional bores are not allowed beneath bridge footings, culvert wingwall footings, slope protection or retaining walls.
    h. The tip of the drill string shall have a cutter head.
    i. Detection wire shall be installed with non-ferrous material.
    j. HDPE pipe installed by directional boring shall not be connected to existing pipe or fittings for one (1) week from the time of installation to allow tensional stresses to relax.

Aerial clearances

80. Vertical clearance of overhead power and communication lines shall meet the National Electrical Safety Code requirements except the minimum vertical clearance shall be 18' for crossings over NCDOT roadways (24' over Fully Controlled Access roadways) and 16' for parallel installations.

81. When applicable for aerial installations, in relation to the bridge, the utility line shall be located with minimum clearances as indicated in Figure 3-3 in the Utilities Accommodations Manual for NCDOT **Required Clearances for Aerial Installations by Encroachment Near Bridge Structures**.

Pavement Detail and Repair

82. The paving of this roadway shall be in accordance with the latest version of NCDOT Standard Specifications, Sections 610, 1012 and 1020. The Contractor shall follow all procedures of the latest Quality Management System (QMS) Asphalt Manual for asphalt pavement - Maintenance Version (see https://connect.ncdot.gov/resources/Materials/MaterialsResources/Forms/Default.aspx) to find the most recent version. The Contractor must adhere to all testing requirements and quality control requirements specified. The Contractor shall contact the NCDOT Division QA Supervisor prior to producing plant mix and make the Supervisor aware that the mix is being produced for a future NCDOT road. Contact the District Engineer to determine the NCDOT Division QA Supervisor. Only NCDOT approved mix designs will be acceptable. A Quality Control Plan shall be submitted (as Directed by the District Engineer) to the District Engineer's Office prior to asphalt production utilizing form QMS-MV1. Failing mixes and/or densities are subject to penalties including monetary payments or removal and replacement. To minimize traffic queuing in construction areas, the possibility of traffic detours may be considered when working on high traffic routes even if traffic control is used. The District Engineer may require traffic detours.

83. When paving beyond utility installation is involved, a Roadway certification report sealed by a Professional Engineer shall be submitted to the District Engineer's office indicating the following:
    - Pavement thickness by type
    - Pavement density, core and/or test locations
    - Base thickness
    - Base density
    - Subgrade density

    Test frequency and method shall be in conformance with the NCDOT *Materials and Tests Manual.* Test must be performed by a Certified Technician including name and Certification number on report.

84. "Potholing" (or "daylighting") pavement cores to expose existing utilities shall be made with a circular minimum 6" to maximum 18" diameter "test" hole to a maximum depth of 12 inches. Pavement core locations shall not be placed in the wheel path whenever possible. Vacuum excavation shall be utilized to expose underground utilities below pavement subgrade. Displaced dirt and rock debris must be suctioned away from the excavation area through a large hose to a vacuum truck and disposed by the encroaching party. Avoid using mechanized equipment in the proximity of all exposed underground utility lines. Pavement cores shall be repaired within the same working day. The pavement core shall be retained and evaluated for reuse to fill the core hole.

    The excavation shall be backfilled and compacted with select material to the bottom of the existing pavement structure or as indicated by the District Engineer. If in good condition, the retained core shall be placed in the hole and secured with a waterproof, mechanical joint. If the pavement core is damaged and cannot be re-used, the core may be replaced with the surface mix, S9.5B. The asphalt patch shall match the thickness of the existing asphalt or four inches, whichever is greater and the use

of NCDOT approved sealant applied to the cracks to fill the voids. All materials must be listed on the NCDOT Approved Products List (APL) found at: https://apps.ncdot.gov/vendor/approvedproducts/.

85. The minimum pavement design for pavement repair shall be according to the most recent version of NCDOT Standard Drawing 654.01 (https://connect.ncdot.gov/resources/Specifications/Pages/default.aspx). The version valid in 2024 through 2030 is located at https://connect.ncdot.gov/resources/Specifications/2024StandardRdwyDrawings/Div%206%20Combined.pdf. The pavement design shall include a mechanical overlay extent to be a minimum of 25 feet each side of the pavement repair area OR as directed by the District Engineer.
86. Pavement cuts shall be repaired the same day the cuts are made unless an asphalt patch cannot be accomplished the same day due to material availability or time restrictions. When the asphalt patch is not feasible, the following apply:
    a. The pavement cut shall be filled to the surface with ABC stone or Flowable Fill per NCDOT's Standards and Specifications.
    b. Once the cut is filled, a minimum ¾-inch steel plate shall be placed and pinned to prevent moving. Plates shall be designed large enough to span a minimum of 1-foot on all sides on the pavement cut.
    c. When flowable fill is used, it shall cure for 24 hours prior to any asphalt material placement. Flowable fill bleed water shall not be present during paving operations. Paving shall not cause damage (shoving, distortion, pumping, etc.) to the flowable fill.
    d. Install and leave "BUMP" signs according to MUTCD until the steel plate has been removed. Once the flowable fill has cured, remove the steel plate, and mill/fill according to the directions of the District Engineer.
    e. All pavement cuts must be sealed with NCDOT approved sealant to prevent future pavement separation or cracking.
87. Any pavement damaged because of settlement of the pavement or damaged by equipment used to perform encroachment work, shall be re-surfaced to the satisfaction of the District Engineer. This may include the removal of pavement and a 50' mechanical overlay. All pavement work and pavement markings (temporary and final) are the responsibility of the Encroaching Party.

Post Construction

Close out/ Inspection

88. The Encroaching party shall notify the District Engineer's office within 2 business days after construction is complete. The District Engineer may perform a construction inspection. Any deficiencies may be noted and reported to the encroaching party to make immediate repairs or resolve any issues to restore the right-of-way to a similar condition prior to construction, including pavement, signage, traffic signals, pavement markings, drainage, structures/pipes, or other highway design features.
89. At the discretion of the District Engineer, a final inspection report may be provided to the encroaching party upon satisfactory completion of the work.
90. When a performance bond is required, a written acknowledgement of the completed work by the District Engineer's office begins the one-year warranty period associated with the performance bond.

91. If the actual construction differs from the approved plans associated with this encroachment, a copy of "as-built" plans shall be submitted to the District Engineer's office in a PDF format and in a current ESRI GIS format within 4 weeks of construction.

92. The encroaching party shall provide the North Carolina Turnpike Authority (NCTA) with an electronic copy of coordinate correct as-built plans within two weeks of installation completion. Failure to provide the as-built plans may jeopardize future approvals within NCTA right of way.

93. A copy (in PDF format) of the completed ground water analysis shall be given to the District Engineer, including detailed drawings of the "as-built" wells showing location, depth and water level in well.

ATTACHMENT FORM

NOTIFICATION FOR UTILITY / NON-UTILITY ENCROACHMENT WITHIN NCDOT R/W

Instructions for use:
This form must be completed in its entirety and submitted directly to the designated personnel in the District Engineer's office via email, fax or hand delivery a minimum of one week prior to construction for the encroachment. If the designated NCDOT personnel names are unknown by the person completing this form, please contact the District Engineer's office to determine that contact info.

Date: _____ Submitted by Name: _____

To: District Personnel Name: Caitlin Spear
District Personnel Email: caspear@ncdot.gov
District Fax No.: (252) 621-6410

This notification is to inform you that we (encroaching party or their contractor) will begin construction work on the following project in a minimum of one week.

Encroachment number
(assigned by NCDOT) for the project: _____

Construction start date: _____

Approximate ending date: _____

Contact NCDOT inspector a minimum of 72 hrs. in advance to set-up Preconstruction meeting in the District Engineer's office or other location as directed by the District Engineer

Preconstruction meeting date & time: _____

Preconstruction meeting address: _____
_____

Type of project: _____
[Examples: power, telecommunication, water, sewer, gas, petroleum, other (describe)]

Contact Info for this project:

Contractor Company Name:
_____
Contractor Contact Name:
_____
Contractor Phone Number:
_____
Contractor Email:
_____

NCDOT Utility Inspector Name:
_____
NCDOT Utility Inspector Phone:
_____
NCDOT Utility Inspector Email:
_____
NCDOT Utility Project Manager Name:
_____
NCDOT Utility Project Manager Phone:
_____
NCDOT Utility Project Manager Email:
_____

Attachment for Clear Zone Guidelines from AASHTO

Clear - Zone Table

TABLE 3.1 (Cont'd)

[U.S. Customary Units]

DESIGN SPEED	DESIGN ADT	FORESLOPES			BACKSLOPES		
		1V:6H or flatter	1V:5H TO 1V:4H	1V:3H	1V:3H	1V:5H TO 1V:4H	1V:6H or flatter
40 mph or less	UNDER 750	7 – 10	7 – 10	**	7 – 10	7 – 10	7 – 10
	750 – 1500	10 – 12	12 – 14	**	10 – 12	10 – 12	10 – 12
	1500 – 6000	12 – 14	14 – 16	**	12 – 14	12 – 14	12 – 14
	OVER 6000	14 – 16	16 – 18	**	14 – 16	14 – 16	14 – 16
45–50 mph	UNDER 750	10 – 12	12 – 14	**	8 – 10	8 – 10	10 – 12
	750 – 1500	14 – 16	16 – 20	**	10 – 12	12 – 14	14 – 16
	1500 – 6000	16 – 18	20 – 26	**	12 – 14	14 – 16	16 – 18
	OVER 6000	20 – 22	24 – 28	**	14 – 16	18 – 20	20 – 22
55 mph	UNDER 750	12 – 14	14 – 18	**	8 – 10	10 – 12	10 – 12
	750 – 1500	16 – 18	20 – 24	**	10 – 12	14 – 16	16 – 18
	1500 – 6000	20 – 22	24 – 30	**	14 – 16	16 – 18	20 – 22
	OVER 6000	22 – 24	26 – 32 *	**	16 – 18	20 – 22	22 – 24
60 mph	UNDER 750	16 – 18	20 – 24	**	10 – 12	12 – 14	14 – 16
	750 – 1500	20 – 24	26 – 32 *	**	12 – 14	16 – 18	20 – 22
	1500 – 6000	26 – 30	32 – 40 *	**	14 – 18	18 – 22	24 – 26
	OVER 6000	30 – 32 *	36 – 44 *	**	20 – 22	24 – 26	26 – 28
65–70 mph	UNDER 750	18 – 20	20 – 26	**	10 – 12	14 – 16	14 – 16
	750 – 1500	24 – 26	28 – 36 *	**	12 – 16	18 – 20	20 – 22
	1500 – 6000	28 – 32 *	34 – 42 *	**	16 – 20	22 – 24	26 – 28
	OVER 6000	30 – 34 *	38 – 46 *	**	22 – 24	26 – 30	28 – 30

* Where a site specific investigation indicates a high probability of continuing crashes, or such occurrences are indicated by crash history, the designer may provide clear-zone distances greater than the clear-zone shown in Table 3.1. Clear zones may be limited to 30 ft for practicality and to provide a consistent roadway template if previous experience with similar projects or designs indicates satisfactory performance.

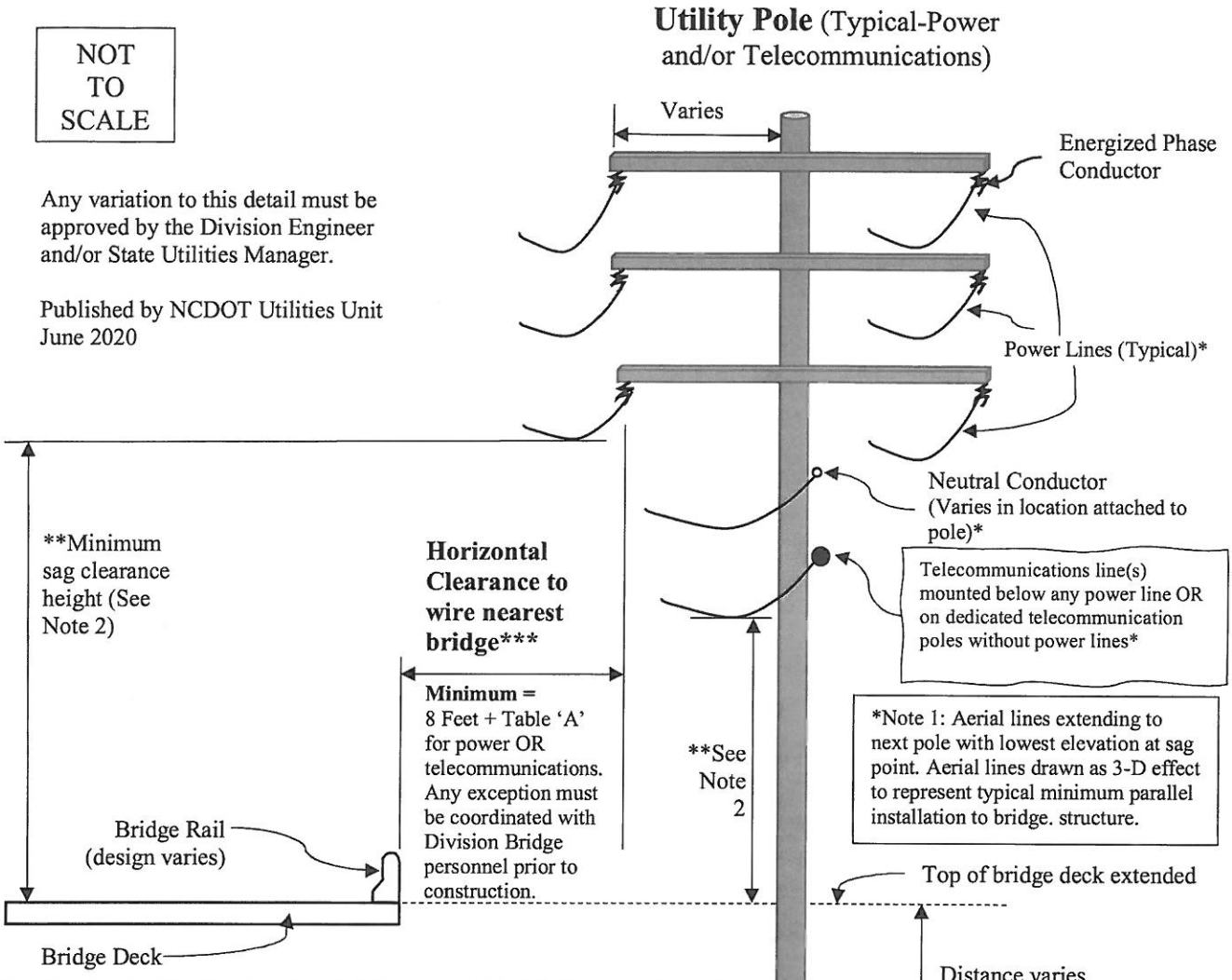
** Since recovery is less likely on the unshielded, traversable 1V:3H slopes, fixed objects should not be present in the vicinity of the toe of these slopes. Recovery of high-speed vehicles that encroach beyond the edge of the shoulder may be expected to occur beyond the toe of slope. Determination of the width of the recovery area at the toe of slope should take into consideration right-of-way availability, environmental concerns, economic factors, safety needs, and crash histories. Also, the distance between the edge of the through traveled lane and the beginning of the 1V:3H slope should influence the recovery area provided at the toe of slope. While the application may be limited by several factors, the foreslope parameters which may enter into determining a maximum desirable recovery area are illustrated in Figure 3.2.

NCDOT Required Clearances for Aerial Installations Near Bridge Structures

NOT TO SCALE

Any variation to this detail must be approved by the Division Engineer and/or State Utilities Manager.

Published by NCDOT Utilities Unit
June 2020



Note 2- **MINIMUN SAG CLEARANCE HEIGHT is 25 feet (applies to telecommunications AND power).

Table A – Minimum Horizontal Clearance Distances to POWER Lines (from OSHA)	
VOLTAGE (nominal, kV, alternating current)	**MINIMUM CLEARANCE (feet)**
Up to 50	**10**
Over 50 to 200	**15**
Over 200 to 350	**20**
Over 350 to 500	**25**
Over 500 to 750	**35**
Over 750 to 1000	**45**
Over 1000	**As established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution**

***Note 3: HORIZONTAL CLEARANCE EXCEPTION. If vertical sag clearance height for power above bridge deck is ≥ 45 feet AND voltage is ≤ 350kV, then Minimum Horizontal Clearance may be reduced to 3 feet. Any telecommunications attachment to power pole allowed in this exception must have a minimum 25 feet sag clearance height above bridge deck.

ROUTE SR1215 PROJECT Flora Farms COUNTY OF STATE OF NORTH CAROLINA Currituck

DEPARTMENT OF TRANSPORTATION

-AND-

North-South Development Group, LLC

227 Caratoke Hwy Moyock, NC 27958

-AND-

Currituck Water and Sewer, LLC

4700 Homewood Ct. Ste. 108 Raleigh, NC 27609

THREE PARTY RIGHT OF WAY ENCROACHMENT AGREEMENT ON PRIMARY AND SECONDARY SYSTEM

E011-027-24-00314

THIS AGREEMENT, made and entered into this the 6th day of September, 20 24 , by and between the Department of Transportation, party of the first part; and North-South Development Group, LLC party of the second part; and Currituck Water and Sewer, LLC party of the third part,

WITNESSETH

THAT WHEREAS, the party of the second part desires to encroach on the right of way of the public road designated as Route(s) SR1215 (Survey Rd) , located approx. 3,065 feet east from the intersection with SR1506 (Eagle Creek Rd) toward NC 168

with the construction and/or erection of: Wastewater force main extension to serve Flora Farms

WHEREAS, it is to the material advantage of the party of the second part to effect this encroachment, and the party of the first part in the exercise of authority conferred upon it by statute, is willing to permit the encroachment within the limits of the right of way as indicated, subject to the conditions of this agreement;

NOW, THEREFORE, IT IS AGREED that the party of the first part hereby grants to the party of the second part the right and privilege to make this encroachment as shown on attached plan sheet(s), specifications and special provisions which are made a part hereof upon the following conditions, to wit:

That the installation, operation, and maintenance of the above described facility will be accomplished in accordance with the party of the first part's latest UTILITIES ACCOMMODATIONS MANUAL, and such revisions and amendments thereto as may be in effect at the date of this agreement. Information as to these policies and procedures may be obtained from the Division Engineer or State Utilities Manager of the party of the first part.

That the said party of the second part binds and obligates himself to install and maintain the encroaching facility in such safe and proper condition that it will not interfere with or endanger travel upon said highway, nor obstruct nor interfere with the proper maintenance thereof, to reimburse the party of the first part for the cost incurred for any repairs or maintenance to its roadways and structures necessary due to installation and existence of the facilities of the party of the second part, and if at any time the party of the first part shall require the removal of or changes in the location of the said facilities, that the said party of the second part binds himself, his successors and assigns, to promptly remove or alter the said facilities, in order to conform to the said requirement, without any cost to the party of the first part.

That the party of the second part agrees to provide during construction and any subsequent maintenance proper signs, signal lights, flagmen and other warning devices for the protection of traffic in conformance with the latest Manual on Uniform Traffic Control Devices for Streets and Highways and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the Division Engineer of the party of the first.

That the party of the second part hereby agrees to indemnify and save harmless the party of the first part from all damages and claims for damage that may arise by reason of the installation and maintenance of this encroachment.

That the party of the second part agrees to restore all areas disturbed during installation and maintenance to the satisfaction of the Division Engineer of the party of the first part. The party of the second part agrees to exercise every reasonable precaution during construction and maintenance to prevent eroding of soil; silting or pollution of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces or other property; or pollution of the air. There shall be compliance with applicable rules and regulations of the North Carolina Division of Environmental Management, North Carolina Sedimentation Control Commission, and with ordinances and regulations of various counties, municipalities and other official agencies relating to pollution prevention and control. When any installation or maintenance operation disturbs the ground surface and existing ground cover, the party of the second part agrees to remove and replace the sod or otherwise reestablish the grass cover to meet the satisfaction of the Division Engineer of the party of the first part.

That the party of the second part agrees to assume the actual cost of any inspection of the work considered to be necessary by the Division Engineer of the party of the first part.

That the party of the second part agrees to have available at the construction site, at all times during construction, a copy of this agreement showing evidence of approval by the party of the first part. The party of the first part reserves the right to stop all work unless evidence of approval can be shown.

Provided the work contained in this agreement is being performed on a completed highway open to traffic; the party of the second part agrees to give written notice to the Division Engineer of the party of the first part when all work contained herein has been completed. Unless specifically requested by the party of the first part, written notice of completion of work on highway projects under construction will not be required.

That in the case of noncompliance with the terms of this agreement by the party of the second part, the party of the first part reserves the right to stop all work until the facility has been brought into compliance or removed from the right of way at no cost to the party of the first part.

That it is agreed by both parties that this agreement shall become void if actual construction of the work contemplated herein is not begun within one (1) year from the date of authorization by the party of the first part unless written waiver is secured by the party of the second part from the party of the first part.

During the performance of this contract, the second party, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor"), agrees as follows:

a. Compliance with Regulations: The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the U. S. Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

b. Nondiscrimination: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

c. Solicitations for Subcontracts, including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

d. Information and Reports: The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

e. Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to,

(1) withholding of payments to the contractor under the contract until the contractor complies, and/or
(2) cancellation, termination or suspension of the contract, in whole or in part.

f. Incorporation of Provisions: The contractor shall include the provisions of paragraphs "a" through "f" in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Department of Transportation to enter into such litigation to protect the interests of the State, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

That when title to the subject that constitutes the aforesaid encroachment passes from the party of the second part and vests in the party of the third part, the party of the third part agrees to assume all responsibilities and rights and to perform all obligations as agreed to herein by the party of the second part.

R/W (166) : Party of the Second Part certifies that this agreement is true and accurate copy of the form R/W (166) incorporating all revisions to date.

IN WITNESS WHEREOF, each of the parties to this agreement has caused the same to be executed the day and year first above written.

DEPARTMENT OF TRANSPORTATION

BY: DocuSigned by: Caitlin A Sam 930880FAC40F4... DISTRICT ENGINEER

WITNESS:

Kelley W Baldt

North-South Development Group, LLC

Justin M. Old

Second Party

WITNESS:

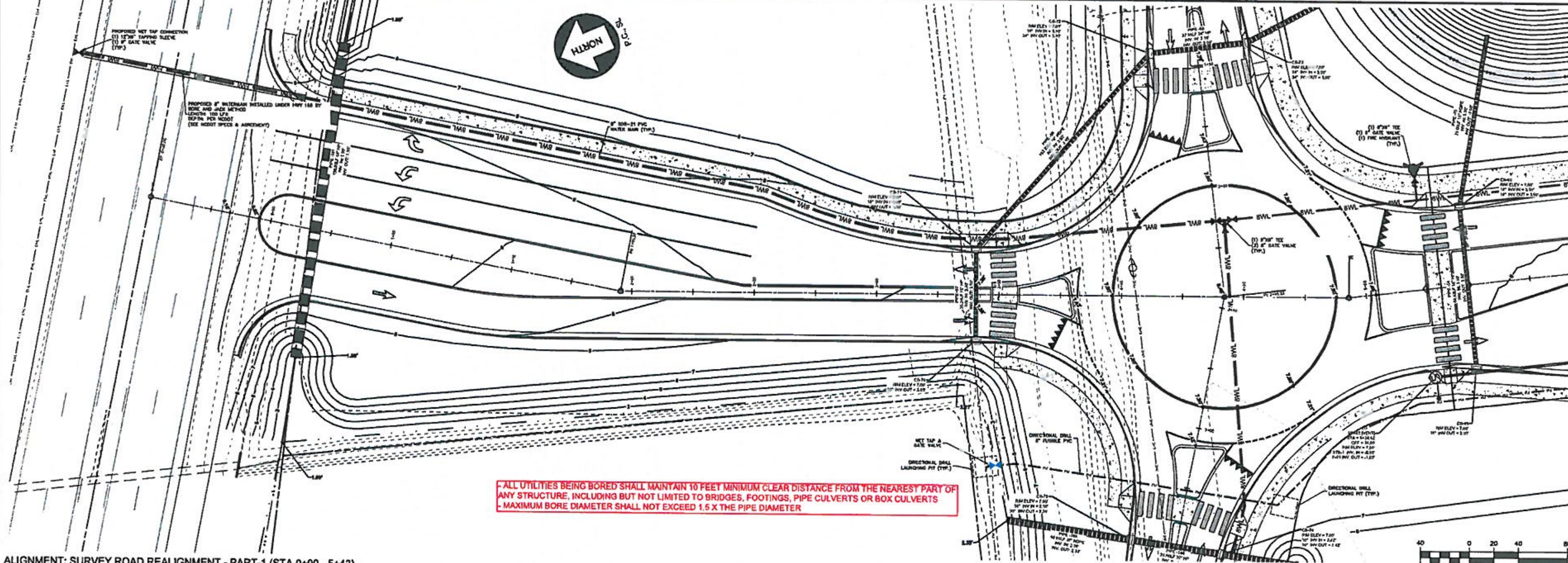
Charles A Dannell

Currituck Water and Sewer, LLC

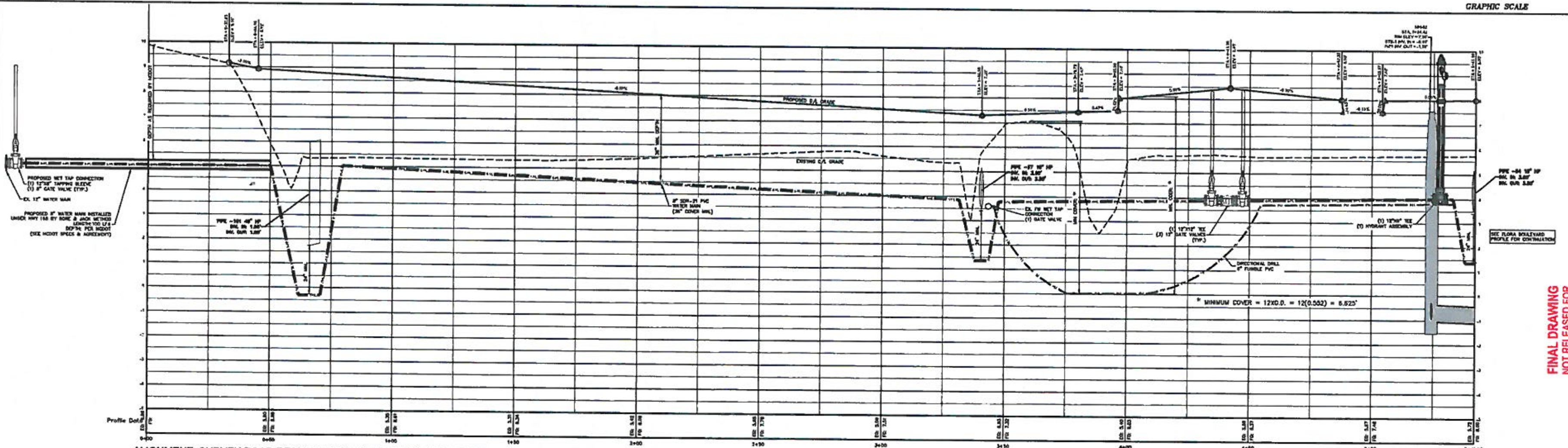
Michael J. Myers

Vice-President

Third Party



ALIGNMENT: SURVEY ROAD REALIGNMENT - PART-1 (STA 0+00 - 5+42)
SCALE: HOR.: 1"=20' (PLAN VIEW)



ALIGNMENT: SURVEY ROAD REALIGNMENT - PART-1 (STA 0+00 - 5+42)
SCALE: HOR.: 1"=20', VERT.: 1"=2' (PROFILE VIEW)

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION

BISSELL
Bissell Professional Group
Firm License # C-656
3512 North Croatan Highway
P.O. Box 1068
Kitty Hawk, North Carolina 27949
(252) 261-3266
FAX (252) 261-1760
Engineers, Planners, Surveyors and Environmental Specialists

SURVEY ROAD REALIGNMENT
PART - 1 PLAN & PROFILE

PROJECT: FLORA FARM PHASES 1 - 2
MOYOCK CURRITUCK COUNTY NORTH CAROLINA
CONSTRUCTION DRAWINGS

REVISIONS

NO	DATE	DESCRIPTION	BY
1	8/29/24	DIRECTIONAL DRILL MODIFICATIONS	

DATE 4/10/24	SCALE AS NOTED
PROJECT BPG	CHECKED MSB
DRAWN DMK	APPROVED MSB
SHEET 24 of 49	
CAD FILE: 468000B1	
PROJECT NO: 4680	

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Currituck County, North Carolina

September 6, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

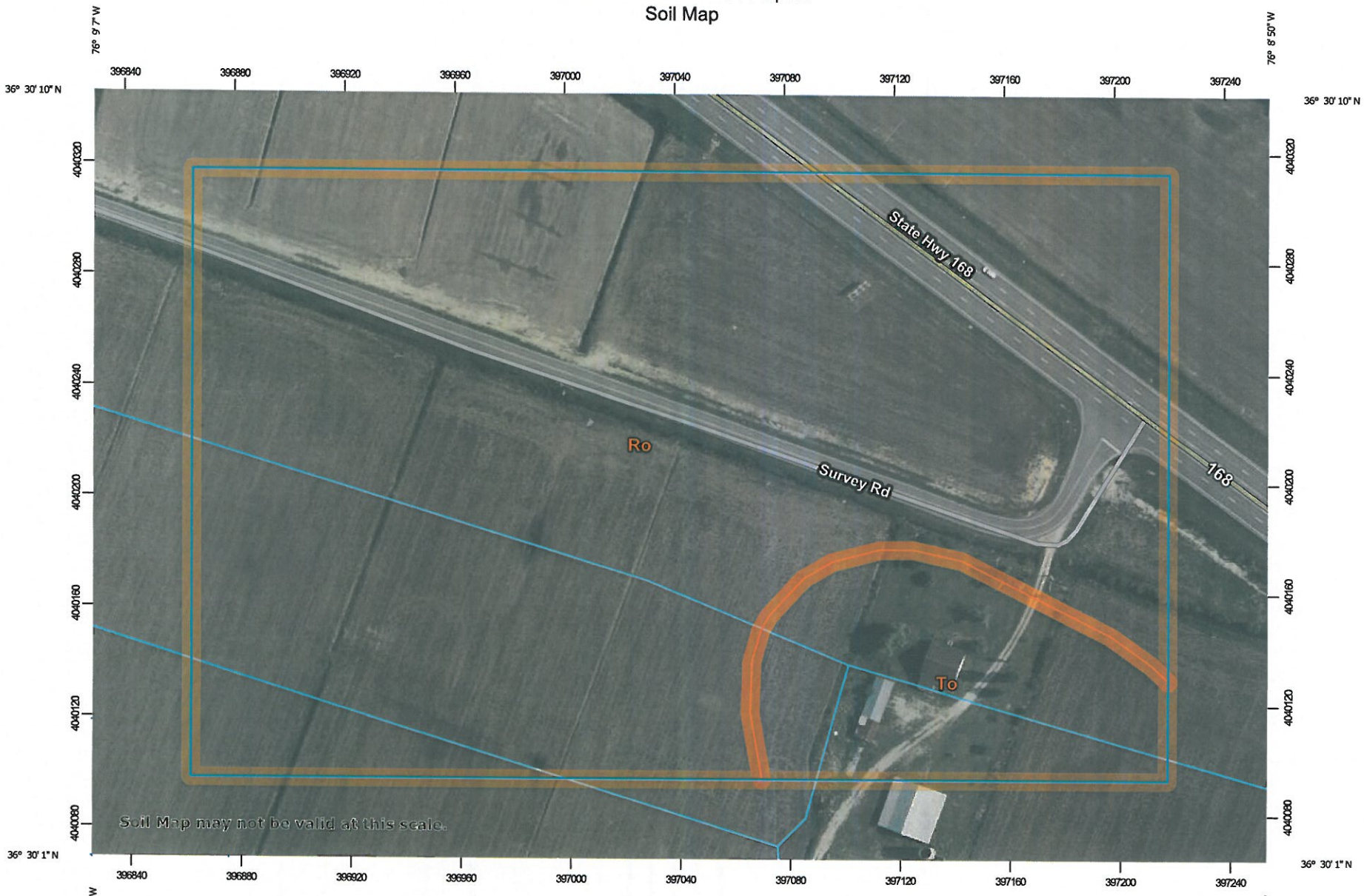
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,960 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Currituck County, North Carolina
Survey Area Data: Version 23, Sep 13, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 18, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ro	Roanoke fine sandy loam	16.9	86.9%
To	Tomotley fine sandy loam	2.6	13.1%
Totals for Area of Interest		**19.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Currituck County, North Carolina

Ro—Roanoke fine sandy loam

Map Unit Setting

National map unit symbol: 3rp1
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Roanoke, drained, and similar soils: 80 percent
Roanoke, undrained, and similar soils: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Roanoke, Drained

Setting

Landform: Flats on marine terraces, depressions on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey marine deposits and/or fluviomarine deposits

Typical profile

Ap - 0 to 8 inches: silt loam
Btg - 8 to 58 inches: clay
Cg - 58 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F153BY090NC - Flooded Mineral Soil Floodplains and Terraces, F153AY065NC - Wet Clay Flats and Depressions
Hydric soil rating: Yes

Description of Roanoke, Undrained

Setting

Landform: Flats on marine terraces, depressions on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Clayey marine deposits and/or fluviomarine deposits

Typical profile

A - 0 to 8 inches: silt loam
Btg - 8 to 58 inches: clay
Cg - 58 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F153BY090NC - Flooded Mineral Soil Floodplains and Terraces, F153AY065NC - Wet Clay Flats and Depressions
Hydric soil rating: Yes

To—Tomotley fine sandy loam

Map Unit Setting

National map unit symbol: 3rp4
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Tomotley, drained, and similar soils: 75 percent
Tomotley, undrained, and similar soils: 10 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tomotley, Drained

Setting

Landform: Flats on marine terraces, depressions on stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Btg1 - 7 to 12 inches: fine sandy loam
Btg2 - 12 to 42 inches: sandy clay loam
BCg - 42 to 50 inches: sandy loam
Cg - 50 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions, F153AY090NC - Flooded Mineral Soil Floodplains and Terraces
Hydric soil rating: Yes

Description of Tomotley, Undrained

Setting

Landform: Depressions on stream terraces, flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 7 inches: fine sandy loam
Btg1 - 7 to 12 inches: fine sandy loam
Btg2 - 12 to 42 inches: sandy clay loam
BCg - 42 to 50 inches: sandy loam
Cg - 50 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions, F153AY090NC - Flooded Mineral Soil Floodplains and Terraces
Hydric soil rating: Yes

Minor Components

Nimmo, undrained
Percent of map unit: 3 percent
Landform: Depressions on marine terraces, flats on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions, F153AY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Arapahoe, undrained
Percent of map unit: 3 percent
Landform: Flats, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions, F153AY090NC - Flooded Mineral Soil Floodplains and Terraces
Hydric soil rating: Yes

Dragston, undrained
Percent of map unit: 1 percent
Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F153AY040NC - Moist Loamy Rises and Flats, F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

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SAMPLE
FRACTION MITIGATION
CONTINGENCY PLAN
FOR DIRECTIONAL DRILLING

TABLE OF CONTENTS

FRAC-OUT CONTINGENCY PLAN (FCP)

1.0 Introduction and Purpose

Directional bore operations have a potential to release drilling fluids into the surface environment through frac-outs (A frac-out is the condition where drilling mud is released through fractured bedrock into the surrounding rock and sand and travels toward the surface.) Because drilling muds consist largely of a bentonite clay-water mixture, they are not classified as toxic or hazardous substances. However, if it is released into water bodies, bentonite has the potential to adversely impact fish and invertebrates.

While drilling fluid seepage associated with a frac-out is most likely to occur near the bore entry and exit points where the drill head is shallow, frac-outs can occur in any location along a directional bore. This Frac-Out Contingency Plan (FCP) establishes operational procedures and responsibilities for the prevention, containment, and clean-up of frac-outs associated with the proposed directional drilling utility project of _____. All personnel and Sub-Contractors responsible for the work must adhere to this plan during the directional drilling process.

The specific objectives of this plan are to:

1. Minimize the potential for a frac-out associated with directional drilling activities;
2. Provide for the timely detection of frac-outs;
3. Protect the environmentally sensitive riverbed and associated riparian vegetation;
4. Ensure an organized, timely, and "minimum-impact" response in the event of a frac-out and release of drilling bentonite; and
5. Ensure that all appropriate notifications are made immediately to the customer, management and safety personnel.

2.0 Description of Work:

The proposed project consists of: *(Explain work task in detail to crew members.)*

Drilling operations will be halted by the drill rig operators immediately upon detection of a drop in drilling pressure or other evidence of a frac-out. The clean-up of all spills shall begin immediately. Management & safety department shall be notified immediately of any spills and shall be consulted regarding clean-up procedures. A spill kit shall be on-site and used if a frac-out occurs. A vacuum truck and containment materials, such as straw bales, shall also be on-site prior to and during all operations. The Site Supervisor will be immediately notified. In the event of a frac-out, the on-site foreman/supervisor will conduct an evaluation of the situation and direct recommended mitigation actions, based on the following guidelines:

a. If the frac-out is minor, easily contained. has not reached the surface and is not threatening sensitive resources, drilling operations may resume after use of a leak stopping compound or redirection of the bore;

b. If the frac-out has reached the surface, any material contaminated with Bentonite shall be removed by hand to a depth of 2-feet, contained and properly disposed of, as required by law. The drilling contractor shall be responsible for ensuring that the bentonite is either properly disposed of at an approved disposal facility or properly recycled in an approved manner. The Site Supervisor shall notify and take any necessary follow-up response actions in coordination with agency representatives. The Site Supervisor will coordinate the mobilization of equipment stored at off-site locations (e.g., vacuum trucks) on an as needed basis;

3.0 Site Supervisor/Foremen Responsibilities:

The Site Supervisor/Foremen has overall responsibility for implementing this FCP. The Site Supervisor/Foremen will ensure that all employees are trained prior to all drilling. The Site Supervisor/Foremen shall be notified immediately when a frac-out is detected. The Site Supervisor/Foremen will be responsible for ensuring that the safety department is aware of the frac-out, coordinating personnel, response, cleanup, regulatory agency notification and coordination to ensure proper clean-up, disposal of recovered material and timely reporting of the incident. The Site Supervisor/Foremen shall ensure all waste materials are properly containerized, labeled, and removed from the site to an approved disposal facility by personnel experienced in the removal, transport and disposal of drilling mud.

The Site Supervisor/Foremen shall be familiar with all aspects of the drilling activity, the contents of this Frac-out Contingency Plan and the conditions of approval under which the activity is permitted to take place. The Site Supervisor/Foremen shall have the authority to stop work and commit the resources (personnel and equipment) necessary to implement this plan. The Site Supervisor/Foremen shall assure that a copy of this plan is available (onsite) and accessible to all construction personnel. The Site Supervisor/Foremen shall ensure that all workers are properly trained and familiar with the necessary procedures for response to a frac-out, prior to commencement of drilling operations.

Drilling pressures shall be closely monitored so they do not exceed those needed to penetrate the formation. Pressure levels shall be monitored randomly by the operator. Pressure levels shall be set at a minimum level to prevent frac-outs. During the pilot bore, maintain the drilled annulus. Cutters and reamers will be pulled back into previously-drilled sections after each new joint of pipe is added.

Exit and entry pits shall be enclosed by silt fences a nd straw. A spill kit shall be on-site and used if a frac-out occurs. A vacuum truck shall be readily available on-site prior to and during all drilling operations. Containment materials (Straw, silt fencing, sand bags, frac-out spill kits, etc.) shall be staged on-site at location where they are readily available and easily mobilized for immediate use in the event of an accidental release of drilling mud (frac-out). If necessary, barriers (straw bales or sedimentation fences) between the bore site and the edge of the water source, shall be constructed, prior to drilling, to prevent released bentonite material from reaching the water.

Once the drill rig is in place, and drilling begins, the drill operator shall stop work whenever the pressure in the drill rig drops, or there is a lack of returns in the entrance pit. At this time the Site Supervisor/Foremen shall be informed of the potential frac-out. The Site Supervisor/Foremen and the drill rig operator(s) shall work to coordinate the likely location of the frac-out. The location of the frac-out shall be recorded and notes made on the location and measures taken to address the concern. The following subsections shall be adhered to when addressing a frac-out situation.

Water containing mud, silt, bentonite, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake, flowing stream or any other water source. The Bentonite used in the drilling process shall be either disposed of at an approved disposal facility or recycled in an approved manner. Other construction materials and wastes shall be recycled, or disposed of, as appropriate.

6.1 Vac-Truck:

A vacuum truck shall be staged at a location from which it can be mobilized and relocated so that any place along the drill shot, can be reached by the apparatus, within 10 minutes of a frac-out.

6.2 Field Response to Frac-out Occurrence:

The response of the field crew to a frac-out release shall be immediate and in accordance with procedures identified in this Plan. All appropriate emergency actions that do not pose additional threats to sensitive resources will be taken, as follows:

a. Directional boring will stop immediately;
b. The bore stem will be pulled back to relieve pressure on frac-out;
c. The Site Supervisor/Foremen will be notified to ensure that management and the safety department is notified, adequate response actions are taken and notifications made;
d. The Site Supervisor/Foremen shall evaluate the situation and recommend the type and level of response warranted, including the level of notification required;
e. If the frac-out is minor, easily contained, has not reached the surface and is not threatening sensitive resources, a leak stopping compound shall be used to block the frac-out. If the use of leak stopping compound is not fully successful, the bore stem shall be redirected to a new location along the desired drill path where a frac-out has not occurred;
f. If the frac-out has reached the surface, any material contaminated with Bentonite shall be removed by hand, to a depth of 2-feet, contained and properly disposed of, as required by law. A dike or berm may be constructed around the frac-out to entrap released drilling fluid, if necessary. Clean sand shall be placed and the area returned to pre-project contours; and
g. If a frac-out occurs, reaches the surface and becomes widespread, the Site Supervisor/Foremen shall authorize a readily accessible vacuum truck and bulldozer stored off-site to be mobilized. The vacuum truck may be either positioned at either end of the line of the drill so that the frac-out can be reached by crews on foot, or may be pulled by a bulldozer, so that contaminated soils can be vacuumed up.

6.3 Response Close-out Procedures:

When the release has been contained and cleaned up, response closeout activities will be conducted at the direction of the Site Supervisor/Foremen and shall include the following:

a. The recovered drilling fluid will either be recycled or hauled to an approved facility for disposal. No recovered drilling fluids will be discharged into streams, storm drains or any other water source;
b. All frac-out excavation and clean-up sites will be returned to pre-project contours using clean fill, as necessary; and
c. All containment measures (fiber rolls, straw bale, etc.) will be removed, unless otherwise specified by the Site Supervisor/Foremen.

6.4 Construction Re-start:

For small releases not requiring external notification, drilling may continue, if 100 percent containment is achieved through the use of a leak stopping compound or redirection of the bore and the clean-up crew remains at the frac-out location throughout the construction period.

For releases requiring external notification and/or other agencies, construction activities will not restart without prior approval from the safety department.

6.5 Bore Abandonment:

Abandonment of the bore will only be required when all efforts to control the frac-out within the existing directional bore have failed.

7.0 Notification:

In the event of a Frac-out that reaches a water source, the Site Supervisor/Foremen will notify safety department so they can notify the appropriate resource agencies. All agency notifications will occur within 24 hours and proper documentation will be accomplished in a timely and complete manner. The following information will be provided:

1. Name and telephone number of person reporting;
2. Location of the release;
3. Date and time of release;
4. Type and quantity, estimated size of release;
5. How the release occurred;
6. The type of activity that was occurring around the area of the frac-out;
7. Description of any sensitive areas, and their location in relation to the frac-out;
8. Description of the methods used to clean up or secure the site; and
9. Listing of the current permits obtained for the project.

7.1 Communicating with Regulatory Agency Personnel:

All employees and subcontractors will adhere to the following protocols when permitting Regulatory Agency Personnel arrive on site. Regulatory Agency Personnel will be required to comply with appropriate safety rules. Only the Site Supervisor/Foremen and the safety department are to coordinate communication with Regulatory Agency Personnel.

7.2 Documentation:

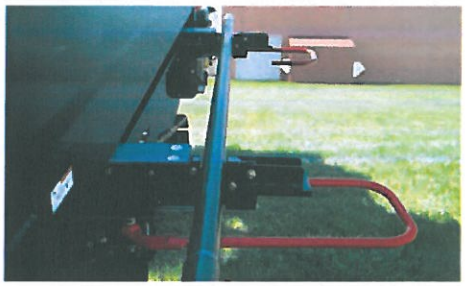
The Site Supervisor/Foremen shall record the frac-out event in his or her daily log. The log will include the following: Details on the release event, including an estimate of the amount of bentonite released, the location and time of release, the size of the area impacted, and the success of the clean-up action. The log report shall also include the: Name and telephone number of person reporting; Date, How the release occurred; The type of activity that was occurring around the area of the free-out: Description of any sensitive areas, and their location in relation to the frac-out: Description of the methods used to clean up or secure the site; and a listing of the current permits obtained for the project.

8.0 Project Completion and Clean-up:

a. All materials and any rubbish-construction debris shall be removed from the construction zone at the end of each workday;
b. Sump pits at bore entry and exits will be filled and returned to natural grade; and
c. All protective measures (fiber rolls, straw bale, silt fence, etc.) will be removed unless otherwise specified by the Site Supervisor/Foremen.

D40x55 S3 NAVIGATOR®
HORIZONTAL DIRECTIONAL DRILL

PREMIUM PERFORMANCE. With 40,000 lb (177.9 kN) of thrust/pullback and 5,500 ft-lb (7,457 Nm) of rotational torque, the D40x55 S3 offers a 10% increase in thrust and rotation over its predecessor, the D36x50 Series II – helping to maximize productivity.



VARIETY OF ROD OPTIONS. The D40x55 S3 is available with a range of drill rod options, including a 10 ft (3 m) length in 2.38 in (6 cm) or a 2.63 in (6.7 cm) diameter, and a 15 ft (4.6 m) length in a 2.63 in (6.7 cm) diameter. A variety of rod options allows the drill to be configured to the specific needs of the contractor.

CLASS-LEADING CYCLE TIMES. The D40x55 S3 features a carriage speed of 188 fpm (57.3 m/min) – which is 7% faster than its predecessor, the D36x50 Series II – helping contractors install more linear feet per day.

SIGNIFICANT SOUND REDUCTION. With a 104 dB(A) guaranteed sound power level and an operator ear rating of 82.9 dB(A) [in-cab rating of 75.7 dB(A)], the D40x55 S3 is significantly quieter than its predecessor – contributing to a quieter working environment with less neighborhood disturbance and easier communication among the crew.

COMFORTABLE CAB. The excavator-style cab provides operators more legroom and greater comfort.

AURORA™ TOUCHSCREEN DISPLAY. Interactive full-color touchscreen display delivers real-time, easy-to-view locate information, bore plans and more that can help increase productivity.

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EQUIPPED TO DO MORE.

D40x55 S3 NAVIGATOR® HORIZONTAL DIRECTIONAL DRILL

GENERAL WEIGHTS AND DIMENSIONS

Min transport length: 20.1 ft (6.1 m)

Min transport width: 89 in (226.1 cm)

Min transport height: 76 in (193 cm)

Height (with cab): 94.5 in (240 cm)

Min weight: 22,380 lb (10,151.4 kg)

Max weight: 26,110 lb (11,843.3 kg)

ENGINE OPTION ONE

Make and model: John Deere Series 4045

Fuel type: Ultra low sulfur diesel

Max engine rpm: 2,400 rpm

Gross horsepower: 140 hp (104 kW)

Emissions rating: Tier 4 Final (EU Stage V)

ENGINE OPTION TWO

Make and model: John Deere Series 4045

Fuel type: Diesel

Max engine rpm: 2,400 rpm

Gross horsepower: 140 hp (104 kW)

Emissions rating: Tier 3 (EU Stage IIIA)

OPERATIONAL

Thrust/Pullback: 40,000 lb (177.9 kN)

Max carriage speed at max engine rpm: 188 ft/min (57.3 m/min)

Max spindle torque (low at max engine rpm): 5,500 ft-lb (7457 Nm)

Max spindle speed at max engine rpm: 227 rpm

Min bore diameter: 4 in (10.2 cm)

Max ground drive speed at max engine rpm (fwd): 3.3 mph (5.3 km/h)

Noise level at operator's ear: 82.9 dB(A)

Noise level at operator's ear (cab) : 75.7 dB(A)

Drill rack angle [10 ft (3 m) rod]: 15.5-20.5° (27.7-37.4%)

Drill rack angle [15 ft (4.6 m) rod]: 12.5-17.5° (22.2-31.5%)

FLUID CAPACITIES

Fuel tank: 44 gal (166.6 L)

Antifreeze tank capacity: 1.6 gal (6 L)

DRILLING FLUID SYSTEM OPTION ONE

Max flow: 50 gpm (189.3 L/min)

Max pressure: 1,050 psi (7.2 MPa)

DRILLING FLUID SYSTEM OPTION TWO

Max flow: 70 gpm (265 L/min)

Max pressure: 1,100 psi (7.6 MPa)

FEATURES

Breakout system: Standard hydraulic vise

Drilling lights: Standard

Flow indicator: Standard

Stakedown system: Standard

Strike alert: Standard

Remote lockout: Standard

DRILL PIPE OPTION ONE

Type: Firestick® drill rod

Length: 10 ft (3 m)

Rod diameter: 2.38 in (6 cm)

Weight: 80 lb (36.3 kg)

Bend radius: 108 ft (32.9 m)

Carrying capacity: 500 ft (152.4 m)

DRILL PIPE OPTION TWO

Type: Firestick drill rod

Length: 10 ft (3 m)

Rod diameter: 2.63 in (6.7 cm)

Weight: 131 lb (59.4 kg)

Bend radius: 145 ft (44.2 m)

Carrying capacity: 450 ft (137.2 m)

DRILL PIPE OPTION THREE

Type: Firestick drill rod

Length: 15 ft (4.6 m)

Rod diameter: 2.63 in (6.7 cm)

Weight: 165 lb (74.9 kg)

Bend radius: 145 ft (44.2 m)

Carrying capacity: 525 ft (160 m)

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EQUIPPED TO DO MORE.

02/23

PN 296431556

HYDRAUL-EZ®

OR APPROVED EQUAL

HORIZONTAL DIRECTIONAL DRILLING FLUID - NEW IMPROVED FORMULA

Certified to NSF/ANSI/CAN 60

DESCRIPTION

HYDRAUL-EZ is a high-yield, 230 bbl yield (minimum), 200 mesh sodium bentonite, with a special dry polymer additive. This new improved formula is designed to maintain borehole integrity in horizontally drilled boreholes. HYDRAUL-EZ is certified to NSF/ANSI/CAN Standard 60, Drinking Water Treatment Chemicals - Health Effects.

RECOMMENDED USE

HYDRAUL-EZ is specially designed for conditions encountered in angle and horizontal drilling. It can be used for all types of freshwater mud rotary drilling and as a jacking lubricant.

CHARACTERISTICS

- Concentrated for high yield
- Eliminates clay and shale swelling, bit balling, and sticking problems
- Forms a tight, thin filter cake in unstable formations
- Maintains borehole integrity in horizontal and vertically drilled holes
- Mixes quickly
- Requires less material due to low fluid loss properties

MIXING AND APPLICATION

Mixing ratios are based on the use of freshwater. Water purity will affect bentonite performance. For best results, make-up water should be pre-treated with SODA ASH to a pH of 8.5-9.5. HYDRAUL-EZ should be added slowly through a jet/hopper mixer.

DRILLING FLUID HYDRAUL-EZ mixing ratios in lbs (kg) per 100 gallons (1 m^3) of water

Condition	Lbs of HYDRAUL-EZ	% Solids
Normal Conditions	15 - 25 lbs (18 - 28 kg)	1.8 - 2.9%
Sand and Gravel	25 - 35 lbs (28 - 42 kg)	2.9 - 4.0%
Fluid loss Control	35 - 40 lbs (40 - 47 kg)	4.0 - 4.6%

BULK DENSITY

54 lbs/ft^3 (0.86 kg/L)

PACKAGING

~50 lbs (~22.7 kg) bags, 48 per pallet. All pallets are plastic-wrapped.

North America: 847.851.1800 | 800.527.9948 | www.CETCO.com

UPDATED: JANUARY 2022

FORM: TDS_HYDRAUL-EZ - NEW IMPROVED FORMULA_AM_EN_202201