



The Coastal Experts

September 28, 2023

Mr. Jason Litteral,
Currituck County Development Services Department – Planning & Zoning
153 Courthouse Road, Suite 110
Currituck, NC 27929

Reference: **Moyock Dental Office, Major Site Plan, TRC Response**

Dear Jason,

On behalf of GCG, Realty, LLC, Bissell Professional Group is submitting this response to address TRC comments received regarding an Application for Major Site Plan Approval for the Moyock Dental Office development located in Moyock. The original comments are provided along with responses in green.

Planning

1. It appears the southeast side of the building is right on top of the setback line. Please consider moving this away from the setback to avoid potential nonconformities when the exterior building finishes are applied. This will also provide more room to create an appropriate swale meeting the required slope.
The building has been shifted to be 16' from the side P/L to help avoid a possible encroachment.
2. An as-built survey will be required.
Comment acknowledged. An as-built survey will be provided.
3. Fill cannot be approved within ten feet of property lines.
The county's ordinance allows fill within 10' of a property line when part of a stormwater plan.
4. Slopes shall not exceed 3 to 1.
Proposed slopes do not exceed 3:1.
5. Consider moving dumpster pad away from the swale to allow more room for the fill slope and swale.
Proposed slopes do not exceed 3:1. The dumpster has been shifted 1' further from the P/L.

Building Inspections

1. Needed Fire Flow for construction is determined by the ISO method.
Comment acknowledged. Fire Flow Calculations will be provided with building permit application.
2. No new construction can occur that creates a Needed Fire Flow greater than the available fire flow on site.
Comment acknowledged. Fire Flow Calculations will be provided with building permit application.
3. Knox Box provided on buildings (Coordinate location with the local VFD for building and order the box at Knox website to order search for Currituck Co. Fire-EMS at <http://www.knoxbox.com> for Knox Box location and setup of box call Chris Bailey 252-435-8120.)
Comment acknowledged. A Knox Box will be provided if a sprinkler system and backflow preventor are determined to be necessary.
4. Apparatus must be able to reach within 150' of all portions of the structures with fire hose. 200' when building is equipped with approved sprinklers.
24' wide drive aisles are provided on (3) sides of the building allowing apparatus to get within 150' of all exterior portions of the structure.

5. Fire hydrant within 400' of all portions of the structure. 600' when building is equipped with approved sprinklers.
Three existing fire hydrants are located in the vicinity of the site as follows:
 - to the north, across Moyock Commons Dr., within 400' of the entire property.
 - to the south, along Currituck Commercial Dr., approx. 250' from the south side of the structure.
 - to the west, along Moyock Commons Dr., approx. 225' from the west side of the structure.
6. Depending on type of building construction location to the lot line may require fire protection. See Chapter 6 of the NC Building Code Tables 601 and 602.tables.
Comment acknowledged. Type of building construction, location and fire protection will be provided with building permit application.
7. Connectivity of all required exits to a public way (hard surface asphalt/concrete) 48" accessible route to public way.
Sidewalks along the two building sides with accessible parking have been revised to 6' width to allow 2' of vehicle overhang + 48" wide accessible route to accessible building entrances.
8. Soil and compaction testing for footings
Comment acknowledged. Soil and compaction testing will be provided at building construction.

Soil and Water Conservation

1. There is a 10' proposed elevation for the building pad. The nearby lot-line swale is 7' – 8'. The adjacent 15' mbl at the south-east lot line appears to conflict with maintaining a 3:1 slope.
Proposed slopes do not exceed 3:1. The building has been shifted 1' further from the P/L.
2. Ensure dumpster pad doesn't conflict with prescribed 3:1 slope of proposed swale near Southeast property line.
Proposed slopes do not exceed 3:1. The dumpster pad has been shifted 1' further from the P/L.
3. If existing 15" RCP is to be left in place after completed use of construction entrance, please ensure functionality of the pipe culvert.
A note has been added to the plan specifying that the culvert be flushed and functional at end of construction. See Sheet 4.

Public Utilities - Water

1. All medical facilities are required to have an RPZ style backflow preventor I do not see one listed anywhere on the plans. This must also be tested after installation and results of test provided to the county before water can be turned on to building.
A label specifying a RPZ type backflow preventor has been added at the proposed connection to the existing water meter. See Sheet 3. RPZ specifications to be provided by plumber for building permit

Public Utilities - Wastewater

1. The sewer connection will need to be verified by staff when connecting to stub out.
Comment acknowledged. Inspection of the sewer connection will be requested during building construction.

GIS

The Parcel ID Number on the major site plan application is incorrect. It should be: 015B 000 0016 0000.
Addresses for the units (based on floor plan):

Future Tenant #1: 100-A Currituck Commercial Dr

Future Tenant #2: 100-B Currituck Commercial Dr

Dental Office: 100-C Currituck Commercial Dr.

The Parcel ID has been corrected on the application and plan

Stormwater Review

1. There is no stormwater management narrative included with the submittal. Please include a stormwater narrative that explains where and how stormwater is being treated and detained. A stormwater report with narrative has been prepared and enclosed. The property is part of a commercial subdivision known as Currituck Commercial Center. The subdivision was designed and permitted with a centralized stormwater management system that collects and conveys runoff from the lots to a wet-detention basin for treatment and controlled release.
2. There is a permit renewal and name change letter for permit number SW7980513 issued November 1, 2007, included in the submittal that implies the use of a regional stormwater device for the Moyock Dental Office development.
 - a. This permit was effective until November 1, 2017, so it is now expired. Is there an updated permit for this site?
 - b. Please show that the Moyock Dental Office site is covered under the scope of this permit.
 - c. The provided permit documentation does not show what the impervious allotment is for the Moyock Dental Office site; please provide documentation for the allotted impervious area for this lot.

See enclosed stormwater report containing a copy the NCDEQ stormwater permit renewed on Dec. 28, 2022 and valid through 2030. Also enclosed with the report are a portion of the stormwater calculations submitted to obtain the original permit that show the subject Lot 16 was allocated 80% lot coverage. The county's current ordinance further limits lot coverage to 65%. Proposed lot coverage is 64.87% and within the prescribed allowances.

3. No sizing calculations are provided for the stormwater control measure. Please provide documentation that the SCM is properly sized for the proposed site plan. See enclosed stormwater report. Per the original subdivision design and approval, stormwater is managed by an existing off-site SCM. As noted in #2 above, the proposed project remains within the lot coverage allocation set forth in the original approval, therefore, sizing calculations are not necessary.
4. As a major site plan, this development would be required to meet the post-development 5-year 24-hour storm peak discharge to the 2-year 24-hour storm wooded condition peak discharge found in the Currituck County UDO Section 7.3.4.B. Based on Currituck County UDO Section 7.3.2.E(1)(e), this development is exempted from this rule. However, documentation was not provided in this submittal proving that this development is covered under an active stormwater permit and showing allowable lot coverage. Please provide sufficient permit documentation to show that this development abides by an active stormwater permit to be exempted from detention requirements. Enclosed is a copy the NCDEQ stormwater permit renewed on Dec. 28, 2022 and valid through 2030.
5. Existing and proposed swales and/or culverts are shown on all four sides of the site, however postdevelopment runoff calculations are only shown for drainage areas #1 and #2. It appears that this was done because DA #1 is the largest drainage area to an existing roadway swale and DA #2 is the largest drainage area to a proposed property line swale. This may be sufficient if it is shown that CNs for other drainage areas to existing roadway swales and proposed property line swales are lower than the CNs for DA #1 and DA #2, respectfully, and if the swale geometries are the same. However, CNs and swale geometry are not provided for all DAs. All swales and/or culverts conveying water from the site need to be sized to adequately handle runoff from the site. Please either provide calculations for all swales or show evidence that DA #1 and DA #2 represent the most conservative calculations, not solely based on drainage area size. See enclosed stormwater report with CN value calculations for all 5 drainage areas. DA#1, #4 & #5 drain to existing swales and of the three areas, DA#1 is the largest (20,341 sf) and has the highest CN value (94). DA#2 & #3 drain to a proposed swale and of the two areas, DA#2 is the largest (2,862 sf) and has the highest CN value (86). The calculations provided for DA#1 and DA#2, therefore, give a conservative representation of all the drainage areas.

6. The elevations of the existing and proposed swales also vary across the site. Per UDO Section 7.3.4.A(8), "the finished floor elevation for all principal structures shall be 18 inches above the 24-hour storm event with a 10-year recurrence interval". Please ensure that the swales you model the 10-year 24-hour storm in are not lower in elevation than other swales that also need to be 18" below the FFE.
See enclosed stormwater report for 10yr HGL evaluation.
7. In the post-development runoff calculations, a time of concentration of less than 5 minutes is used for both drainage areas. Please revise this as the TR-55 manual defines a minimum time of concentration of 5 minutes.
Increasing the Tc to 5 min. results in a reduction of peak discharge in all scenarios. The enclosed calculations provided are, therefore, conservative.
8. In the post-development runoff calculations, how is the CN being calculated for each drainage area? Please show land cover data for each DA. This ties into comment #5 above.
Please see response to comment #5 above.

CONSTRUCTION DRAWINGS

10. (Sheet 1/10) Where are the Currituck County and NCDEQ Permit impervious allowances coming from?
Please see response to comment #2 above
11. (Sheet 1/10) The permit documentation provided with this submittal is expired.
Please see response to comment #2 above
12. (Sheet 4/10) Please show this pond on a plan sheet and how this swale connects to it. It must be shown that the existing stormwater pond exists and is in good condition, and that it is adequately sized for all existing developments draining to it as well as Moyock Dental Office.
See enclosed stormwater report with 11x17 pre and post development drainage area maps illustrating how the surrounding swales connect to the subdivision's existing stormwater pond. Based on the recent permit renewal for NCDEQ it is believed the existing pond is in good shape.
13. (Sheet 4/10) The proposed grading for the property line swale in DA #2 is not shown to be a full foot deep on the lower end (eastern end of the swale).
Existing ground surface elevations continue to rise to the adjoining property and thereby create depth. Spot elevations along the P/L have been added to see Sheet 4.

GENERAL

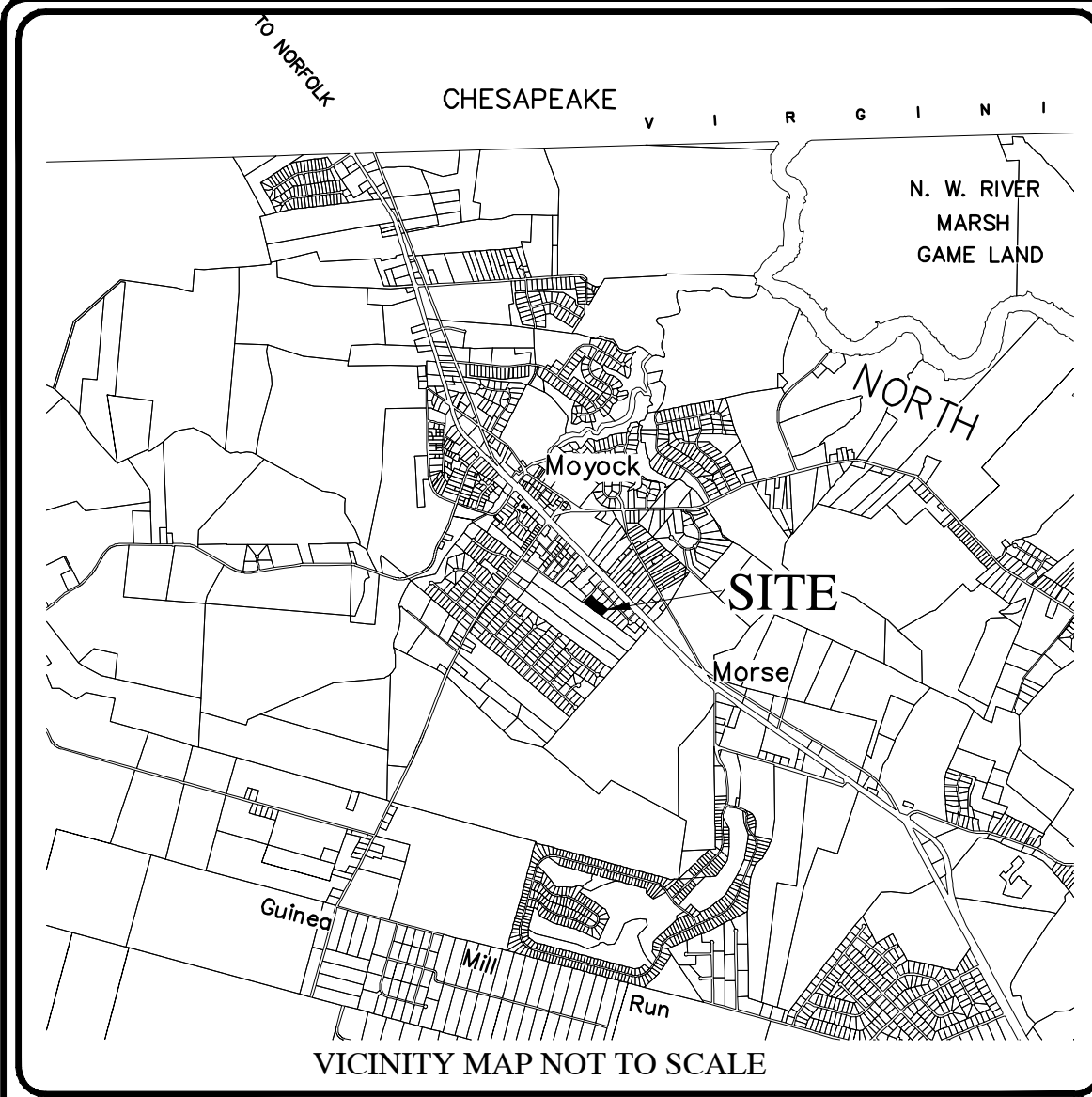
14. Currituck County Major Stormwater Plan form SW-002 contains a checklist of site features to show on plans and other documents required for Major Stormwater Plans. There are several items listed on this checklist that are missing from this submittal. Please refer to this checklist and ensure all items are provided.
Enclosed is the checklist with applicable and non-applicable items noted.

Enclosed are (3) full size copies of the revised Commercial Site Development Plans, (1) 8.5x11 reduced copy of the revised site plans, (1) copy of other referenced documents and (1) .pdf digital copy of all enclosed documents. We thank you for the review of this project and look forward to receiving final construction approval. If you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely yours,
Bissell Professional Group

David M. Klebitz, P.E.





CONSTRUCTION DRAWINGS FOR

MOYOCK DENTAL OFFICE

MOYOCK TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

- GENERAL NOTES:**
- PROJECT NAME: MOYOCK DENTAL OFFICE
 - OWNER/APPLICANT: GCG REALTY, LLC
200 CARMICHAEL WAY, SUITE 600
CHESAPEAKE VA, 23322
 - PROPERTY DATA:
PARCEL ID# 015B-000-0016-0000
ADDRESS: 100 CURRITUCK COMMERCIAL DRIVE, MOYOCK, NC 27958
RECORDED REFERENCES: D.B. 1741, PG. 690; P.C. G, SL. 24
PROPERTY ZONING: 0B
 - F.I.R.M. DATA:
THE SUBJECT PROPERTY IS LOCATED IN F.I.R.M. ZONE "X". REFERENCE F.I.R.M. PANEL # 3721803100 K, EFFECTIVE DATE DECEMBER 21, 2018.
 - THERE ARE NO KNOWN JURISDICTIONAL WETLANDS ON THIS PROPERTY.
 - PROPOSED COMMERCIAL DEVELOPMENT WITH A SINGLE BUILDING PROVIDING A MIXED USE OF OFFICE AND RETAIL SPACE. SEE BUILDING PLANS FOR FURTHER DETAILS OF USE AREAS.
 - LOT COVERAGE (BUA):
• PARCEL AREA: 55,827 SF (1.28 AC.)
• PROPOSED IMPERVIOUS AREA:
BUILDING UNDER ROOF: 11,323 SF
PARKING: 22,930 SF (INCLUDES POSSIBLE FUTURE PARKING)
SIDEWALKS: 1,801 SF
DUMPSTER: 160 SF
TOTAL: 36,214 SF (64.87%)
• CURRITUCK COUNTY ALLOWANCE: 36,288 SF (65%)
• NCDEQ PERMIT ALLOWANCE: 44,662 SF (80%)
 - TOTAL PROPOSED DISTURBED AREA: 1.26 AC.
 - PARKING:
• REQUIRED:
OFFICE - 1 SPACE/300 SF = 4,889/300 = 16.3 SPACES
RETAIL - 1 SPACE/300 SF = 5,182/300 = 17.3 SPACES
TOTAL = 33.6 SPACES
• PROVIDED:
42 SPACES, INCLUDING 3 A.D.A. SPACES [125% OF REQ. PER 5.13.C.(1)]
• THE PLAN ALSO PROPOSES A TOTAL OF (10) POSSIBLE FUTURE PARKING SPACES. IF NEEDED, AN ALTERNATIVE PARKING PLAN PROVING THE NEED FOR THESE SPACES MUST FIRST BE APPROVED. SUCH A PLAN MAY BE PROVIDED IN THE FUTURE WHEN TENANT USES AND PARKING DEMANDS ARE KNOWN. PARKING SURFACES SHALL BE IN ACCORDANCE WITH THE ORDINANCE.
 - UTILITIES:
• WATER SERVICE TO BE PROVIDED BY CURRITUCK COUNTY MAINLAND WATER SYSTEM.
• WASTEWATER TO BE PROVIDED BY CURRITUCK COUNTY SEWER AUTHORITY.
• ALL UTILITIES ARE TO BE INSTALLED UNDERGROUND.
 - ALL SIGNAGE SHALL COMPLY WITH COUNTY STANDARDS AS PRESCRIBED UNDER 5.12 OF THE U.D.O. A SEPARATE SIGNAGE PLAN MAY BE REQUIRED FOR APPROVAL PRIOR TO INSTALLATION.

Sheet
Number

Sheet Title

1
2
3
4
5
6
7
8
9
10

COVER SHEET, DEVELOPMENT NOTES & SITE LOCATION
EXISTING SITE CONDITIONS & FEATURES MAP
SITE OVERVIEW AND UTILITY PLAN
GRADING, DRAINAGE, & STORMWATER MANAGEMENT PLAN
EROSION & SEDIMENT CONTROL PLAN
LANDSCAPING, BUFFERING & EXTERIOR LIGHTING PLAN
TYP. PAVEMENT & DRAINAGE CONSTRUCTION DETAILS
TYP. EROSION CONTROL NOTES & CONSTRUCTION DETAILS
NCG01 SELF-INSPECTION, RECORDKEEPING & REPORTING
NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

THE FOLLOWING PERMITS ARE REQUIRED PRIOR TO PROJECT CONSTRUCTION:

PERMIT	AGENCY	REFERENCE NUMBER	DATE OF ISSUANCE
SEDIMENTATION AND EROSION CONTROL PERMIT	N.C.D.E.Q. - DIVISION OF LAND RESOURCES		
STORMWATER MANAGEMENT PERMIT	N.C.D.E.Q. - DIVISION OF LAND RESOURCES	SW7980513	12/28/2022
DRIVEWAY PERMIT	N.C.D.O.T.		
CURRITUCK COUNTY CONSTRUCTION AUTHORIZATION	CURRITUCK COUNTY PLANNING STAFF		

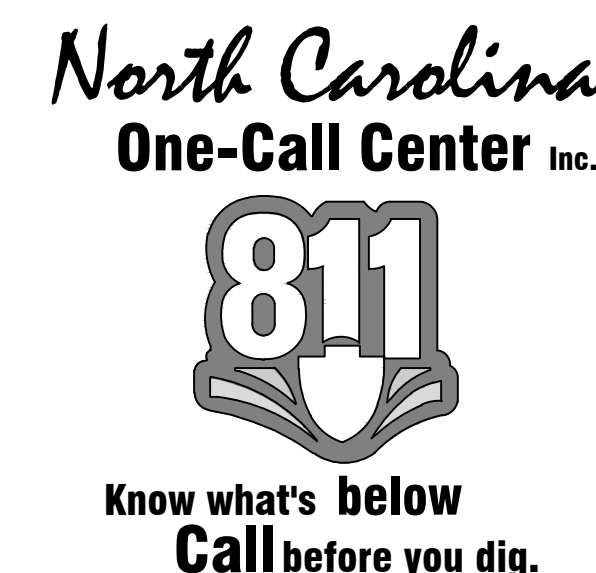
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STORMWATER CERTIFICATE

I, _____ OWNER/AGENT HEREBY CERTIFY THE INFORMATION INCLUDED ON THIS AND ATTACHED PAGES IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

ON THE PLAN ENTITLED, CONSTRUCTION DRAWINGS FOR MOYOCK DENTAL OFFICE - GRADING, DRAINAGE AND STORMWATER MANAGEMENT PLAN, STORMWATER DRAINAGE IMPROVEMENTS SHALL BE INSTALLED ACCORDING TO THESE PLANS AND SPECIFICATIONS AND APPROVED BY CURRITUCK COUNTY. YEARLY INSPECTIONS ARE REQUIRED AS PART OF THE STORMWATER PLAN. THE OWNER IS RESPONSIBLE FOR ALL MAINTENANCE, CURRITUCK COUNTY ASSUMES NO RESPONSIBILITY FOR THE DESIGN, MAINTENANCE, OR PERFORMANCE OF THE STORMWATER IMPROVEMENTS.

DATE _____ OWNER/AGENT _____



SURVEY LEGEND

SCM	SET CONCRETE MONUMENT
ECM	EXISTING CONCRETE MONUMENT
SR	SET IRON ROD
EIR	EXISTING IRON ROD
EIP	EXISTING IRON PIPE
CP	CALCULATED POINT
M.B.L.	MAXIMUM BUILDING LIMIT
N.T.S.	NOT TO SCALE
P.C.	PLAT CABINET
D.B.	DEED BOOK
SL	SLIDE
SF	SQUARE FEET
AC	ACRES

PLAN LEGEND

	ROADWAY CENTERLINE
	RIGHT-OF-WAY
	PROPERTY BOUNDARY
	ADJOINING PROPERTY LINE
	EXISTING DITCH CENTERLINE
	EXISTING DITCH TOP OF BANK
	PROPOSED SWALE W/ FLOW ARROW
	PROPOSED SWALE HIGH POINT
	EXISTING DITCH TO BE FILLED
	FEMA BOUNDARY LINE
	EXISTING GRADE CONTOUR
	PROPOSED GRADE CONTOUR
	EXISTING SPOT GRADE
	PROPOSED SPOT GRADE
	EXISTING CULVERT
	PROPOSED CULVERT
	PROPOSED DRAINAGE STRUCTURE
	EXISTING WATER LINE
	PROPOSED WATER LINE (SIZE AS NOTED)
	PROPOSED FIRE HYDRANT ASSEMBLY
	PROPOSED WATER SERVICE
	PROPOSED VALVE
	PROPOSED BLOW-OFF ASSEMBLY
	PROPOSED REDUCER
	PROPOSED SEWER FORCE MAIN
	PROPOSED SEWER COLLECTION MAIN
	PROPOSED SEWER MANHOLE
	PROPOSED LIMITS OF DISTURBANCE
	PROPOSED SILT FENCE
	PROPOSED INLET PROTECTION
	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED TEMPORARY CHECK DAM

SOILS LEGEND

	SOILS LINE
	ROANOKE FINE SANDY LOAM

NOTE:

EXISTING SITE INFORMATION DESCRIBED HEREON IS BELIEVED TO BE ACCURATE. HOWEVER, BPG INC. MAKES NO WARRANTY AS TO THE ACCURACY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THIS INFORMATION BEFORE RELYING ON IT. THE CONTENT OF THESE DOCUMENTS MAY ALSO INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. IF SUCH CONDITIONS EXIST, THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER PRIOR TO PROCEEDING WITH THE SCHEDULED WORK AND MAY CONTINUE AFTER AN AUTHORIZATION TO PROCEED HAS BEEN GRANTED.

Bissell Professional Group
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 2000 Highway 101
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 (252) 766-3066
 FAX (252) 761-1760

BISSSELL
 PROFESSIONAL GROUP

Engineers, Planners, Surveyors
 and Environmental Specialists

COVER SHEET, DEVELOPMENT
 NOTES AND SITE LOCATION

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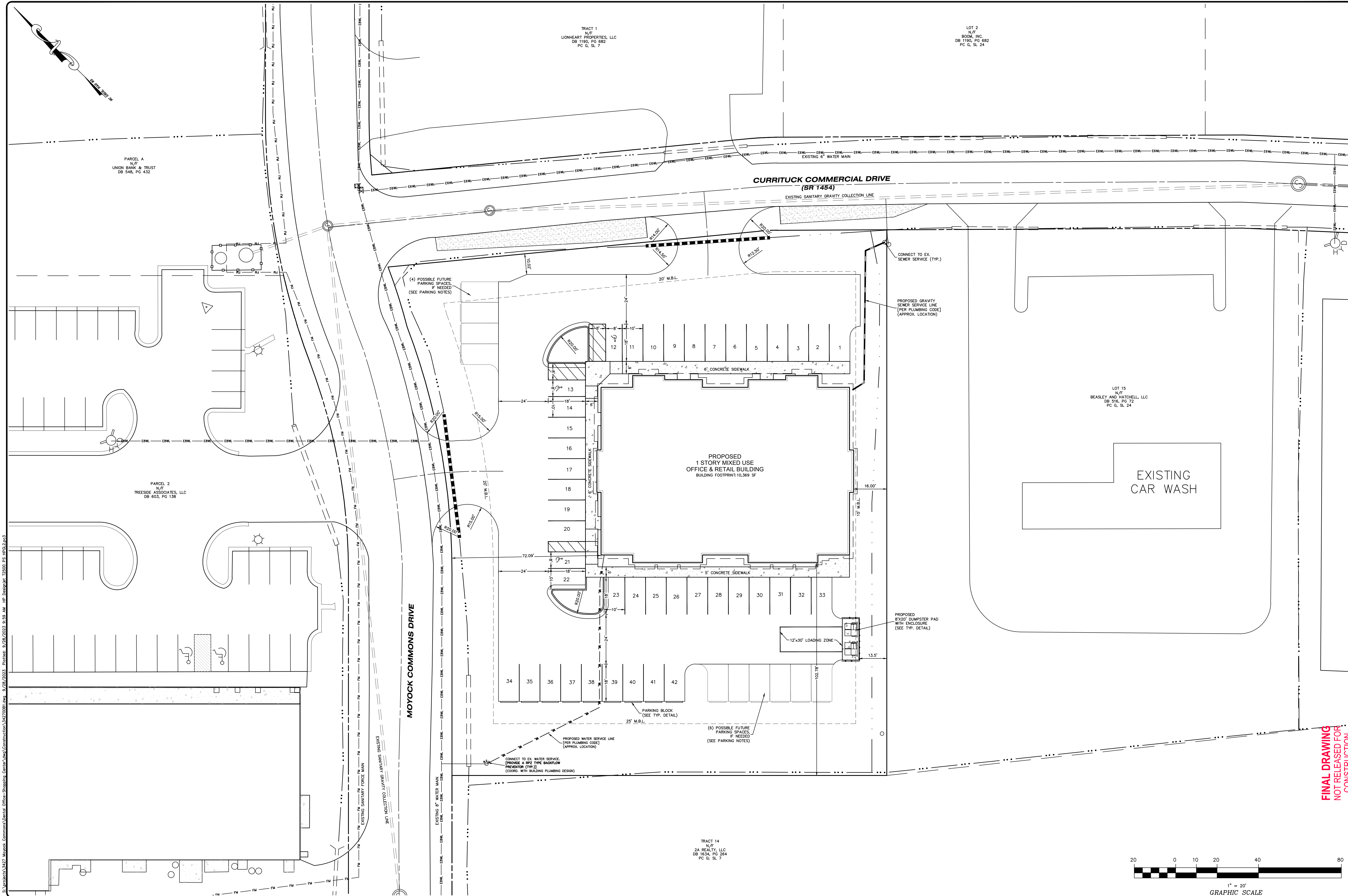
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 CURRITUCK COUNTY
 MOYOCK TOWNSHIP
 NORTH CAROLINA

COMMERCIAL SITE DEVELOPMENT PLANS

REVISIONS

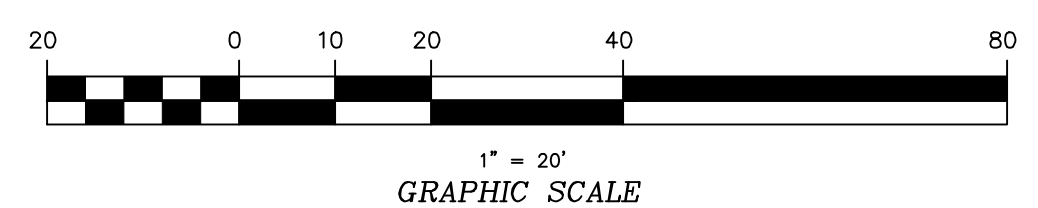
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 PROJECT NO: 3427



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and Environmental Specialists

Bissell Professional Group
Firm License # C-506
P.O. Box 1008
1000 North Carolina Highway 27949
Cary, NC 27513
Phone: (919) 252-7600
Fax: (919) 252-7611

**SITE OVERVIEW AND
UTILITY PLAN**

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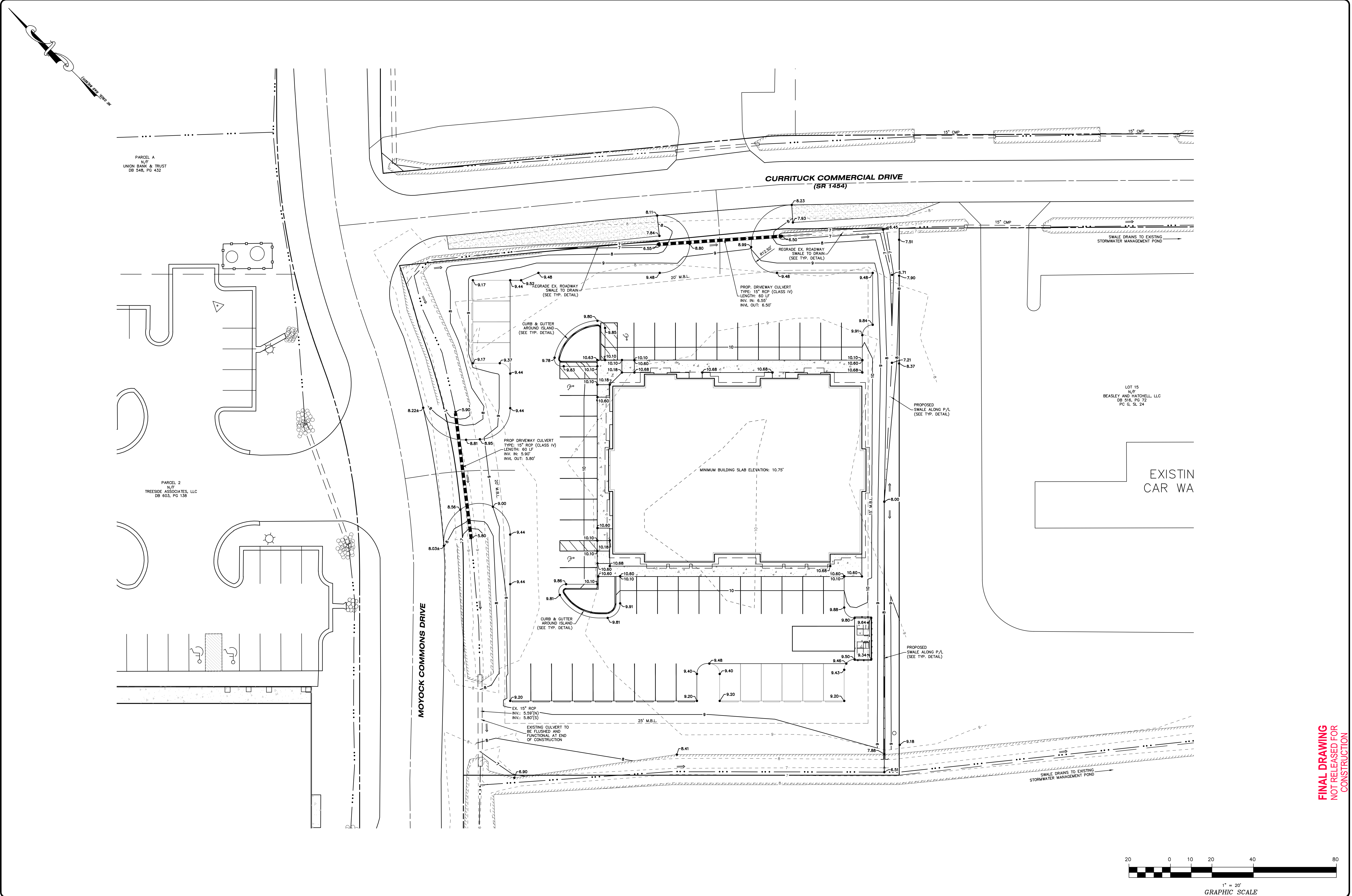
MOYOCK DENTAL OFFICE
NORTH CAROLINA
CURRITUCK COUNTY
MOYOCK TOWNSHIP

COMMERCIAL SITE DEVELOPMENT PLANS

REVISIONS	
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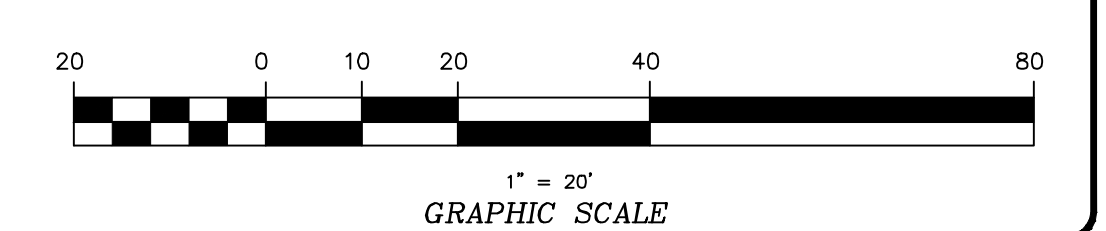
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PARCEL A
N/F
UNION BANK & TRUST
DB 548, PG 432

PARCEL 2
N/F
TREESIDE ASSOCIATES, LLC
DB 603, PG 138

LOT 15
N/F
BEASLEY AND HATCHELL, LLC
DB 516, PG 72
PC C, SL 24



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and Environmental Specialists

GRADING, DRAINAGE &
STORMWATER MANAGEMENT PLAN

MOYOCK DENTAL OFFICE
NORTH CAROLINA
CURRITUCK TOWNSHIP
MOYOCK TOWNSHIP

COMMERCIAL SITE DEVELOPMENT PLANS

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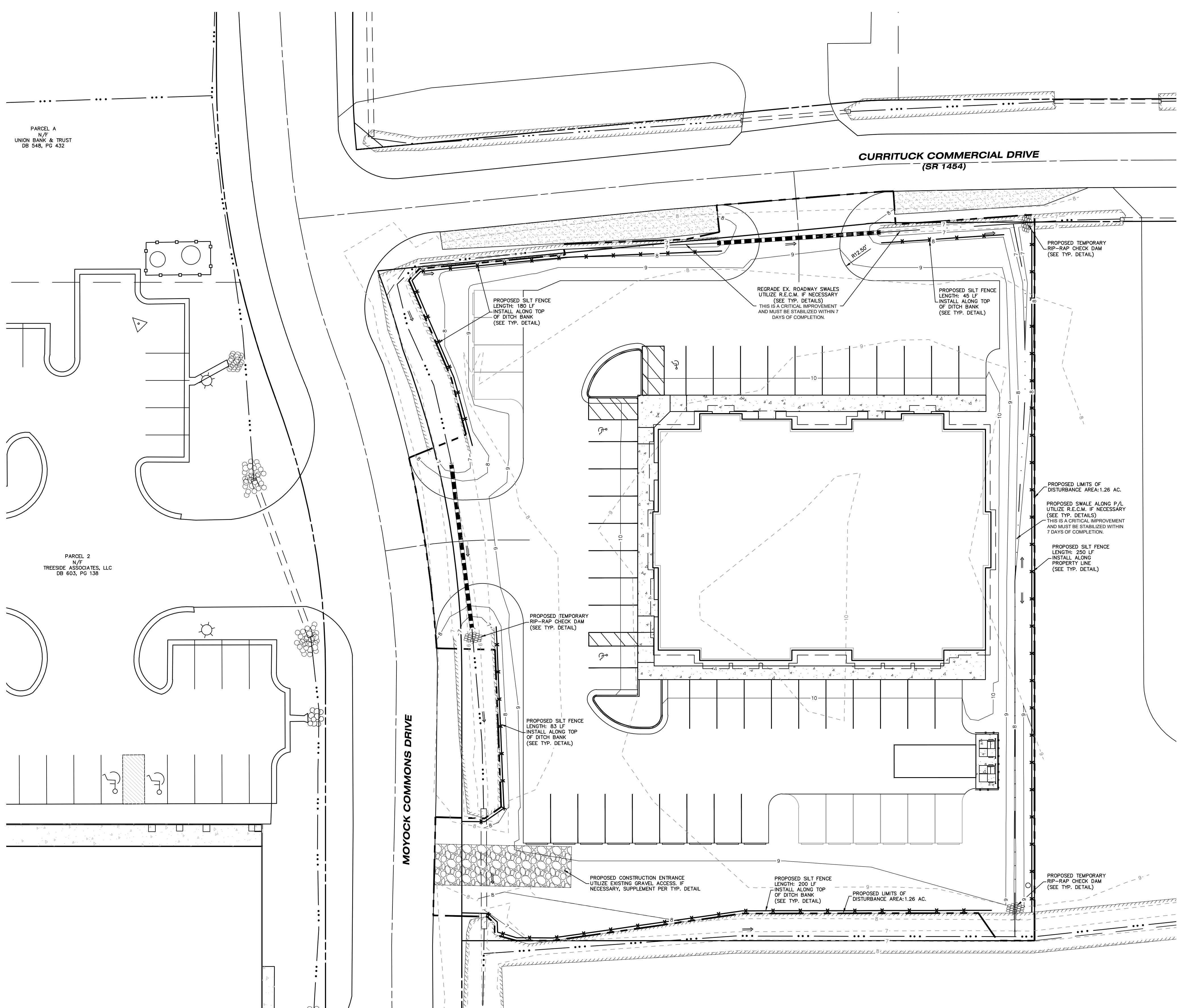
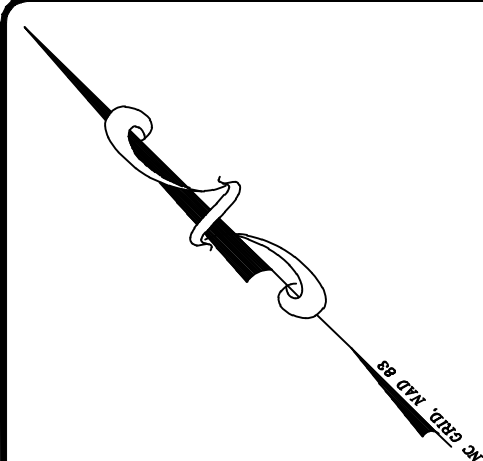
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SHEET: 4 OF 10

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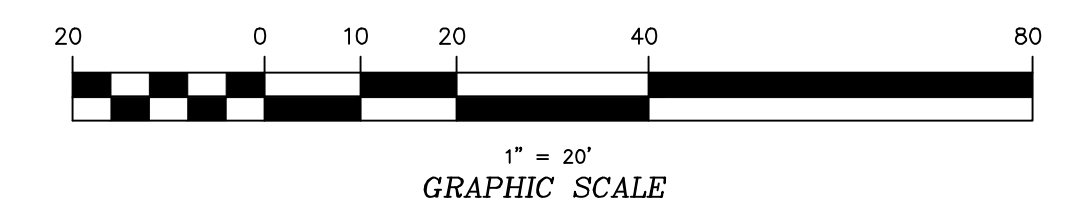


SEDIMENTATION AND EROSION CONTROL NOTES

- THESE NOTES ARE IN ADDITION TO THE SEDIMENTATION AND EROSION CONTROL NOTES AND DETAILS PROVIDED ON SHEETS 8 & 10.
- ALL MATERIALS EXCAVATED OVER THE COURSE OF CONSTRUCTION SHALL REMAIN ON THE PROJECT SITE. THIS MATERIAL SHALL BE USED FOR CONSTRUCTION OF PARKING AND BUILDING SITE AND PREPARING THE SITE AS ILLUSTRATED ON THE GRADING PLANS. IF NECESSARY, EXCAVATED MATERIALS REMAINING AT THE END OF CONSTRUCTION MAY BE DISPOSED OF OFF-SITE AT AN APPROVED AND PERMITTED BORROW PIT OR PLACED BACK INTO POND.
- OFF-SITE BORROW, IF NECESSARY, MUST BE OBTAINED FROM AN APPROVED AND PERMITTED BORROW PIT OR LAND DISTURBANCE.
- THIS PROJECT IS ANTICIPATED TO BE CONSTRUCTED IN A SINGLE PHASE.
- NO GREATER THAN 1.26 ACRES OF LAND SHALL BE DISTURBED AT ONE TIME. CONSTRUCTION AND STABILIZATION ACTIVITIES SHALL, TO THE MAXIMUM EXTENT PRACTICABLE, BE SCHEDULED ACCORDINGLY.
- THE FOLLOWING PROVIDES AN ESTIMATED MATERIAL BALANCE OF THE PROJECT:
APPROXIMATE CUT VOLUME: 100 CY±
APPROXIMATE FILL VOLUME: 1,000 CY±
*THE VALUES ARE GROSS ESTIMATES AND ARE PROVIDED FOR PERMITTING PURPOSES ONLY. COMPACTION AND SUITABILITY OF SOILS FOR USE IN CONSTRUCTION ARE NOT CONSIDERED AND ADDITIONAL MATERIAL MAY BE NECESSARY. CONTRACTORS SHALL NOT RELY UPON THESE ESTIMATES AND SHOULD DETERMINE THEIR OWN MATERIAL NEEDED FOR CONSTRUCTION.

CONSTRUCTION SEQUENCE

- UTILIZE EXISTING GRAVEL ACCESS OFF MOYOCK COMMONS DRIVE FOR CONSTRUCTION ENTRANCE. SUPPLEMENT WITH ADDITION GRAVEL AS NEEDED TO ACHIEVE STANDARD DETAIL.
- INSTALL SILT FENCE WHERE SPECIFIED.
- INSTALL TEMPORARY CHECK DAMS IN EXISTING DITCHES WHERE SPECIFIED.
- CONSTRUCT SWALE ALONG EASTERN PROPERTY BOUNDARY AS SPECIFIED. THIS IS A CRITICAL IMPROVEMENT AND MUST BE STABILIZED WITHIN 7 DAYS OF COMPLETION.
- INSTALL TEMPORARY CHECK DAMS IN NEW SWALE WHERE SPECIFIED AND NEEDED.
- INSTALL DRIVEWAY GULLVERTS AND MODIFY EXISTING ROADWAY SWALES TO DRAIN. THIS IS A CRITICAL IMPROVEMENT AND MUST BE STABILIZED WITHIN 7 DAYS OF COMPLETION.
- CONDUCT GENERAL CONSTRUCTION ACTIVITIES FOR INSTALLATION OF PROPOSED BUILDING, PARKING, DRAINAGE AND UTILITY IMPROVEMENTS.
- DURING THE COURSE OF CONSTRUCTION, MAINTAIN SILT FENCE, TEMPORARY CHECK DAMS AND ANY ADDITIONAL PROTECTION MEASURES AS NECESSARY AND WHERE NOTED.
- PERMANENTLY SEED AND STABILIZE ALL DISTURBED AREAS.
- AFTER STABILIZATION IS ESTABLISHED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.



FINAL DRAWING
NOT RELEASED FOR
CONSTRUCTION

BISSELL PROFESSIONAL GROUP
Firm License # C-956
P.O. Box 1008
2550 Highway 206
Columbia, South Carolina 29749
Phone: (803) 726-3066
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EROSION & SEDIMENT CONTROL PLAN

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MOYOCK DENTAL OFFICE
NORTH CAROLINA
CURRITUCK COUNTY
MOYOCK TOWNSHIP

COMMERCIAL SITE DEVELOPMENT PLANS

NO.	DATE	DESCRIPTION	BY	CHK

DATE: 08-22-23 SCALE: 1" = 20'

DRAWN: BPG CHECKED: MSB

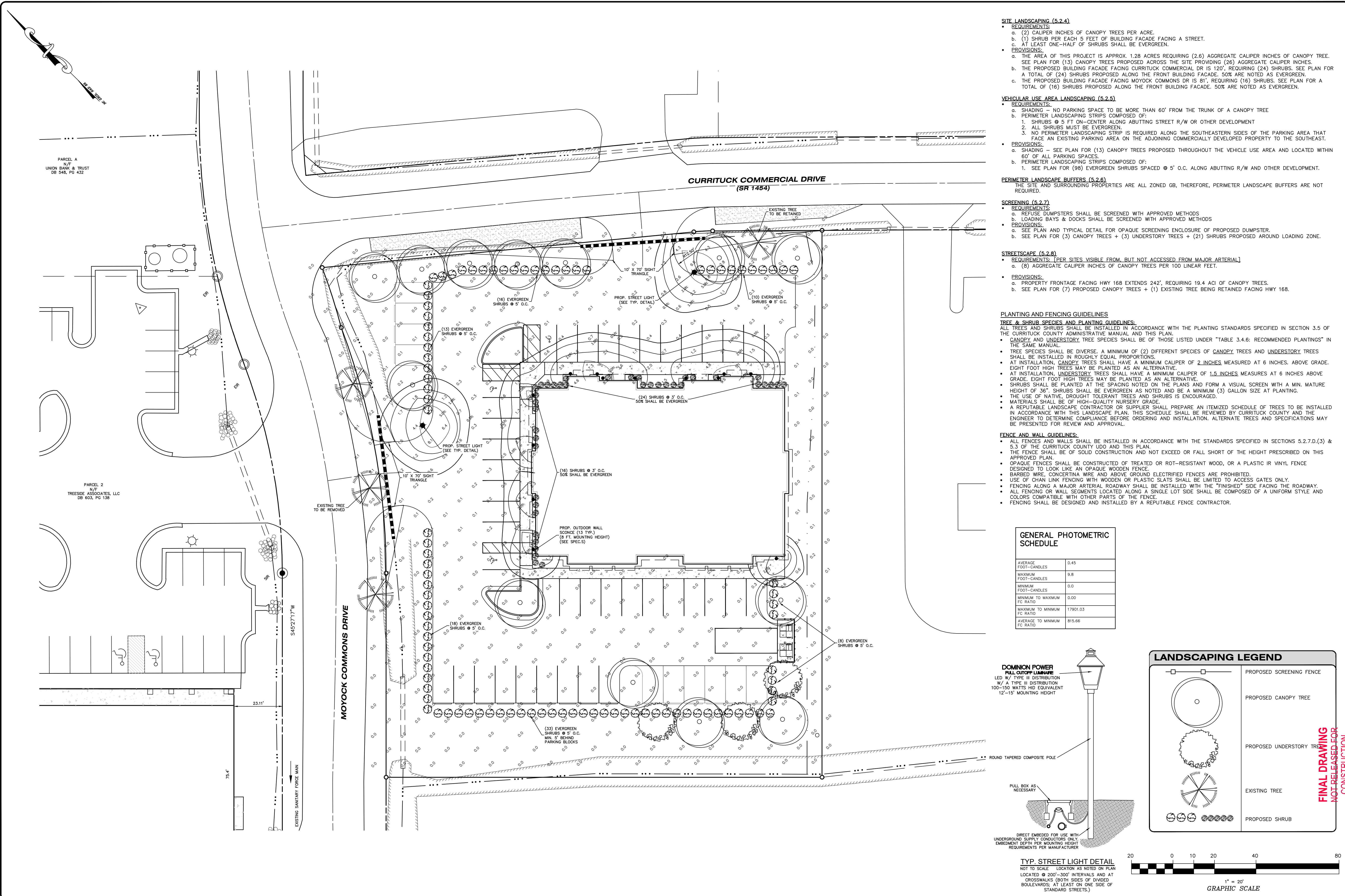
APPROVED: KTFW/DMK BPG

SHEET: 5 OF 10

CAD FILE: 342700B1

PROJECT NO: 3427

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SITE LANDSCAPING (5.2.4)
REQUIREMENTS:
 a. (2) CALIPER INCHES OF CANOPY TREES PER ACRE.
 b. (1) SHRUB PER EACH 5 FEET OF BUILDING FACADE FACING A STREET.
 c. AT LEAST ONE-HALF OF SHRUBS SHALL BE EVERGREEN.
PROVISIONS:
 a. THE AREA OF THIS PROJECT IS APPROX. 1.28 ACRES REQUIRING (2.6) AGGREGATE CALIPER INCHES OF CANOPY TREE. SEE PLAN FOR (13) CANOPY TREES PROPOSED ACROSS THE SITE PROVIDING (26) AGGREGATE CALIPER INCHES.
 b. THE PROPOSED BUILDING FACADE FACING CURRITUCK COMMERCIAL DR IS 120', REQUIRING (24) SHRUBS. SEE PLAN FOR A TOTAL OF (24) SHRUBS PROPOSED ALONG THE FRONT BUILDING FACADE. 50% ARE NOTED AS EVERGREEN.
 c. THE PROPOSED BUILDING FACADE FACING MOYOCK COMMONS DR IS 81', REQUIRING (16) SHRUBS. SEE PLAN FOR A TOTAL OF (16) SHRUBS PROPOSED ALONG THE FRONT BUILDING FACADE. 50% ARE NOTED AS EVERGREEN.

VEHICULAR USE AREA LANDSCAPING (5.2.5)
REQUIREMENTS:
 a. SHADING - NO PARKING SPACE TO BE MORE THAN 60' FROM THE TRUNK OF A CANOPY TREE
 b. PERIMETER LANDSCAPING STRIPS COMPOSED OF:
 1. SHRUBS @ 5 FT ON-CENTER ALONG ABUTTING STREET R/W OR OTHER DEVELOPMENT
 2. ALL SHRUBS MUST BE EVERGREEN.
 3. NO PERIMETER LANDSCAPING STRIP IS REQUIRED ALONG THE SOUTHEASTERN SIDES OF THE PARKING AREA THAT FACE AN EXISTING PARKING AREA ON THE ADJOINING COMMERCIAL DEVELOPMENT PROPERTY TO THE SOUTHEAST.
PROVISIONS:
 a. SHADING - SEE PLAN FOR (13) CANOPY TREES PROPOSED THROUGHOUT THE VEHICLE USE AREA AND LOCATED WITHIN 60' OF ALL PARKING SPACES.
 b. PERIMETER LANDSCAPING STRIPS COMPOSED OF:
 1. SEE PLAN FOR (98) EVERGREEN SHRUBS SPACED @ 5' O.C. ALONG ABUTTING R/W AND OTHER DEVELOPMENT.

PERIMETER LANDSCAPE BUFFERS (5.2.6)
 THE SITE AND SURROUNDING PROPERTIES ARE ALL ZONED GB, THEREFORE, PERIMETER LANDSCAPE BUFFERS ARE NOT REQUIRED.

SCREENING (5.2.7)
REQUIREMENTS:
 a. REFUSE DUMPSTERS SHALL BE SCREENED WITH APPROVED METHODS
 b. LOADING BAYS & DOCKS SHALL BE SCREENED WITH APPROVED METHODS
PROVISIONS:
 a. SEE PLAN AND TYPICAL DETAIL FOR OPAQUE SCREENING ENCLOSURE OF PROPOSED DUMPSTER.
 b. SEE PLAN FOR (3) CANOPY TREES + (3) UNDERSTORY TREES + (21) SHRUBS PROPOSED AROUND LOADING ZONE.

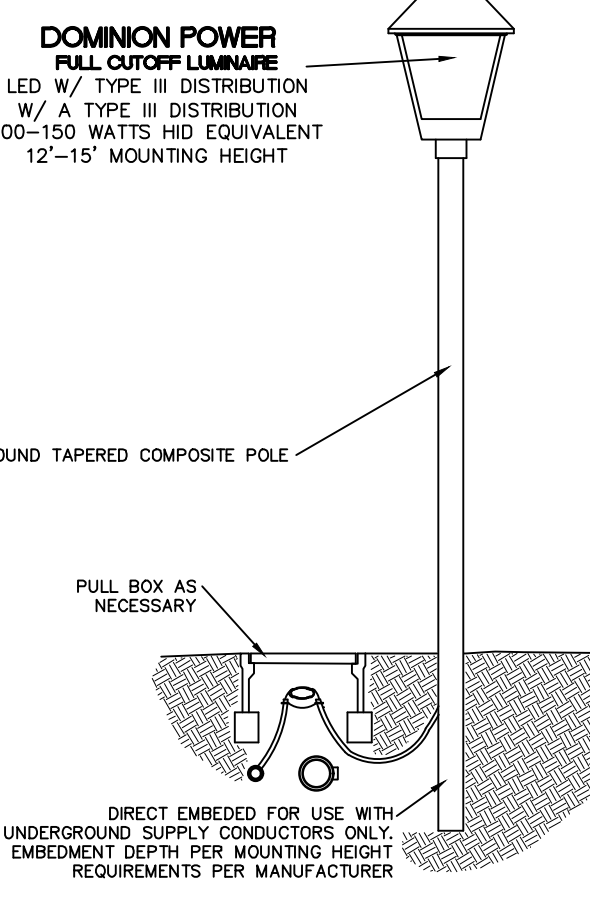
STREETSCAPE (5.2.8)
REQUIREMENTS: [PER SITES VISIBLE FROM, BUT NOT ACCESSED FROM MAJOR ARTERIAL]
 a. (8) AGGREGATE CALIPER INCHES OF CANOPY TREES PER 100 LINEAR FEET.
PROVISIONS:
 a. PROPERTY FRONTAGE FACING HWY 168 EXTENDS 242', REQUIRING 19.4 ACI OF CANOPY TREES.
 b. SEE PLAN FOR (7) PROPOSED CANOPY TREES + (1) EXISTING TREE BEING RETAINED FACING HWY 168.

PLANTING AND FENCING GUIDELINES
TREE & SHRUB SPECIES AND PLANTING GUIDELINES:
 ALL TREES AND SHRUBS SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANTING STANDARDS SPECIFIED IN SECTION 3.5 OF THE CURRITUCK COUNTY ADMINISTRATIVE MANUAL AND THIS PLAN.
 • CANOPY AND UNDERSTORY TREE SPECIES SHALL BE OF THOSE LISTED UNDER "TABLE 3.4.6: RECOMMENDED PLANTINGS" IN THE SAME MANUAL.
 • TREE SPECIES SHALL BE DIVERSE. A MINIMUM OF (2) DIFFERENT SPECIES OF CANOPY TREES AND UNDERSTORY TREES SHALL BE INSTALLED IN ROUGHLY EQUAL PROPORTIONS.
 • AT INSTALLATION, CANOPY TREES SHALL HAVE A MINIMUM CALIPER OF 2 INCHES MEASURED AT 6 INCHES ABOVE GRADE. EIGHT FOOT HIGH TREES MAY BE PLANTED AS AN ALTERNATIVE.
 • AT INSTALLATION, UNDERSTORY TREES SHALL HAVE A MINIMUM CALIPER OF 1.5 INCHES MEASURED AT 6 INCHES ABOVE GRADE. EIGHT FOOT HIGH TREES MAY BE PLANTED AS AN ALTERNATIVE.
 • SHRUBS SHALL BE PLANTED AT THE SPACING NOTED ON THE PLANS AND FORM A VISUAL SCREEN WITH A MIN. MATURE HEIGHT OF 36". SHRUBS SHALL BE EVERGREEN AS NOTED AND BE A MINIMUM (3) GALLON SIZE AT PLANTING.
 • THE USE OF NATIVE, DROUGHT TOLERANT TREES AND SHRUBS IS ENCOURAGED.
 • MATERIALS SHALL BE OF HIGH-QUALITY NURSERY GRADE.
 • A REPUTABLE LANDSCAPE CONTRACTOR OR SUPPLIER SHALL PREPARE AN ITEMIZED SCHEDULE OF TREES TO BE INSTALLED IN ACCORDANCE WITH THIS LANDSCAPE PLAN. THIS SCHEDULE SHALL BE REVIEWED BY CURRITUCK COUNTY AND THE ENGINEER TO DETERMINE COMPLIANCE BEFORE ORDERING AND INSTALLATION. ALTERNATE TREES AND SPECIFICATIONS MAY BE PRESENTED FOR REVIEW AND APPROVAL.

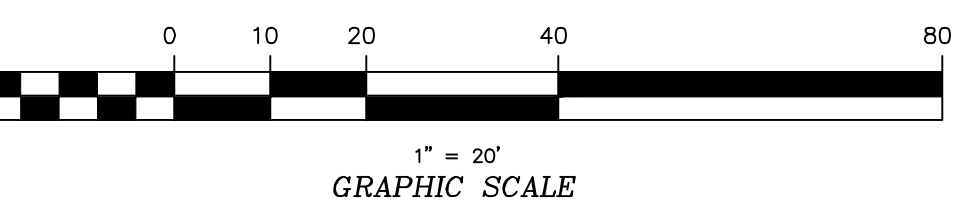
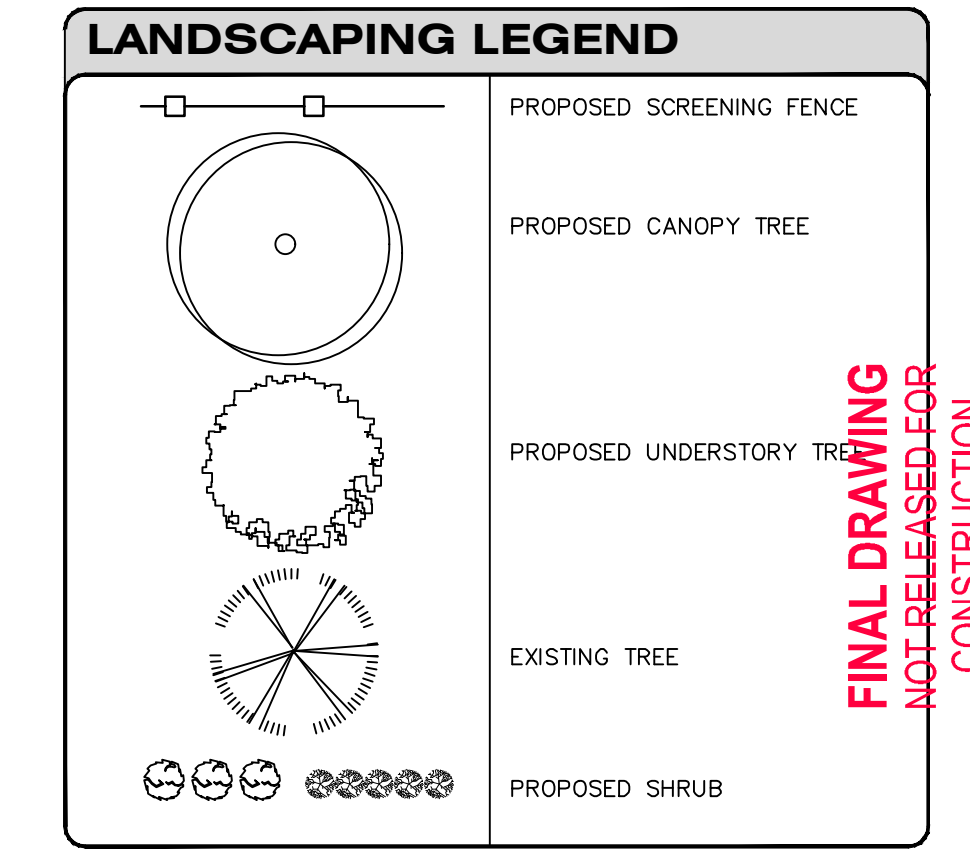
FENCE AND WALL GUIDELINES:
 • ALL FENCES AND WALLS SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS SPECIFIED IN SECTIONS 5.2.7.D.(3) & 5.3 OF THE CURRITUCK COUNTY UDO AND THIS PLAN.
 • THE FENCE SHALL BE OF SOLID CONSTRUCTION AND NOT EXCEED OR FALL SHORT OF THE HEIGHT PRESCRIBED ON THIS APPROVED PLAN.
 • OPAQUE FENCES SHALL BE CONSTRUCTED OF TREATED OR ROT-RESISTANT WOOD, OR A PLASTIC IR VINYL FENCE DESIGNED TO LOOK LIKE AN OPAQUE WOODEN FENCE.
 • BARBED WIRE, CONCERTINA WIRE AND ABOVE GROUND ELECTRIFIED FENCES ARE PROHIBITED.
 • USE OF CHAIN LINK FENCING WITH WOODEN OR PLASTIC SLATS SHALL BE LIMITED TO ACCESS GATES ONLY.
 • FENCING ALONG A MAJOR ARTERIAL ROADWAY SHALL BE INSTALLED WITH THE "FINISHED" SIDE FACING THE ROADWAY.
 • ALL FENCING OR WALL SEGMENTS LOCATED ALONG A SINGLE LOT SIDE SHALL BE COMPOSED OF A UNIFORM STYLE AND COLORS COMPATIBLE WITH OTHER PARTS OF THE FENCE.
 • FENCING SHALL BE DESIGNED AND INSTALLED BY A REPUTABLE FENCE CONTRACTOR.

GENERAL PHOTOMETRIC SCHEDULE

AVERAGE FOOT-CANDELES	0.45
MAXIMUM FOOT-CANDELES	9.8
MINIMUM FOOT-CANDELES	0.0
MINIMUM TO MAXIMUM FC RATIO	0.00
MAXIMUM TO MINIMUM FC RATIO	17901.03
AVERAGE TO MINIMUM FC RATIO	815.66



TYP. STREET LIGHT DETAIL
 NOT TO SCALE. LOCATION AS NOTED ON PLAN
 LOCATED @ 200'-300' INTERVALS AND AT CROSSWALKS (BOTH SIDES OF DIVIDED BOULEVARDS, AT LEAST ON ONE SIDE OF STANDARD STREETS.)



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LANDSCAPING, BUFFERING & EXTERIOR LIGHTING PLAN

MOYOCK DENTAL OFFICE
 NORTH CAROLINA
 CURRITUCK COUNTY
 MOYOCK TOWNSHIP

COMMERCIAL SITE DEVELOPMENT PLANS

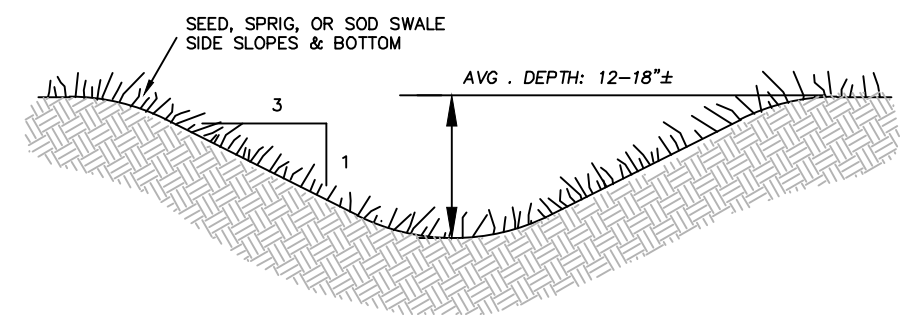
PROJECT: 342700B1
 SHEET: 6 OF 10
 PROJECT NO: 3427

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK
1	8-22-23	ISSUE FOR PERMITS	BPG	MSB
2	9-28-23	FOR CONSTRUCTION	KFW/DMK	BPG

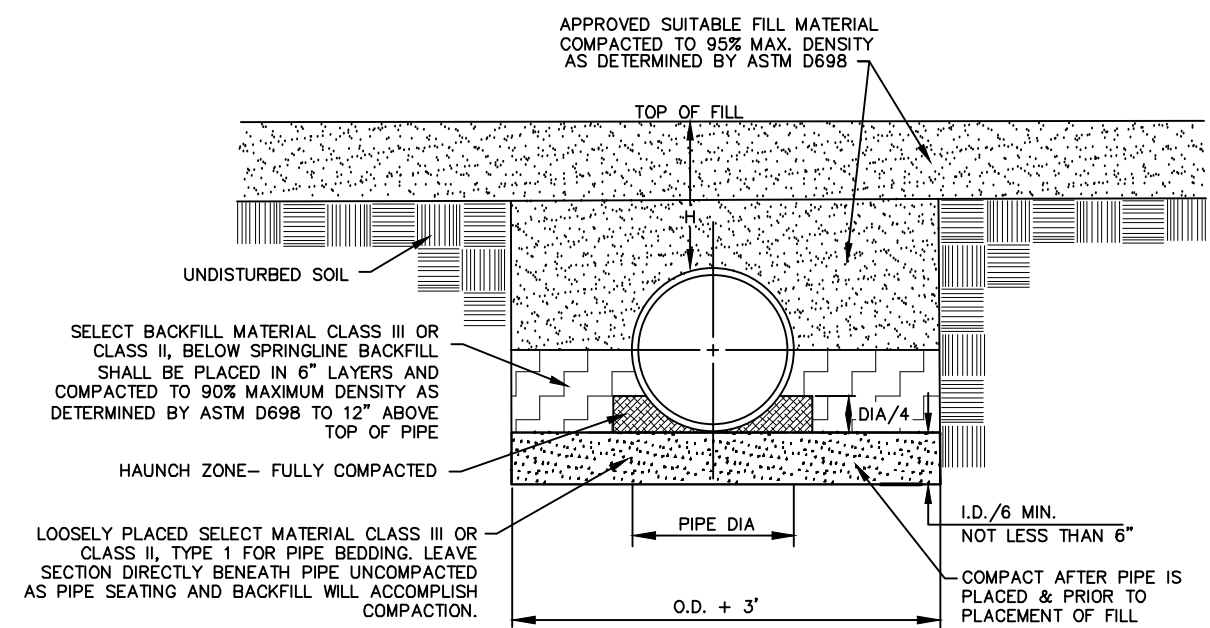
FINAL DRAWING NOT RELEASED FOR CONSTRUCTION

PROFESSIONAL SEAL
 BISSSELL PROFESSIONAL GROUP
 ENGINEER, PLANNER, SURVEYOR AND ENVIRONMENTAL SPECIALISTS

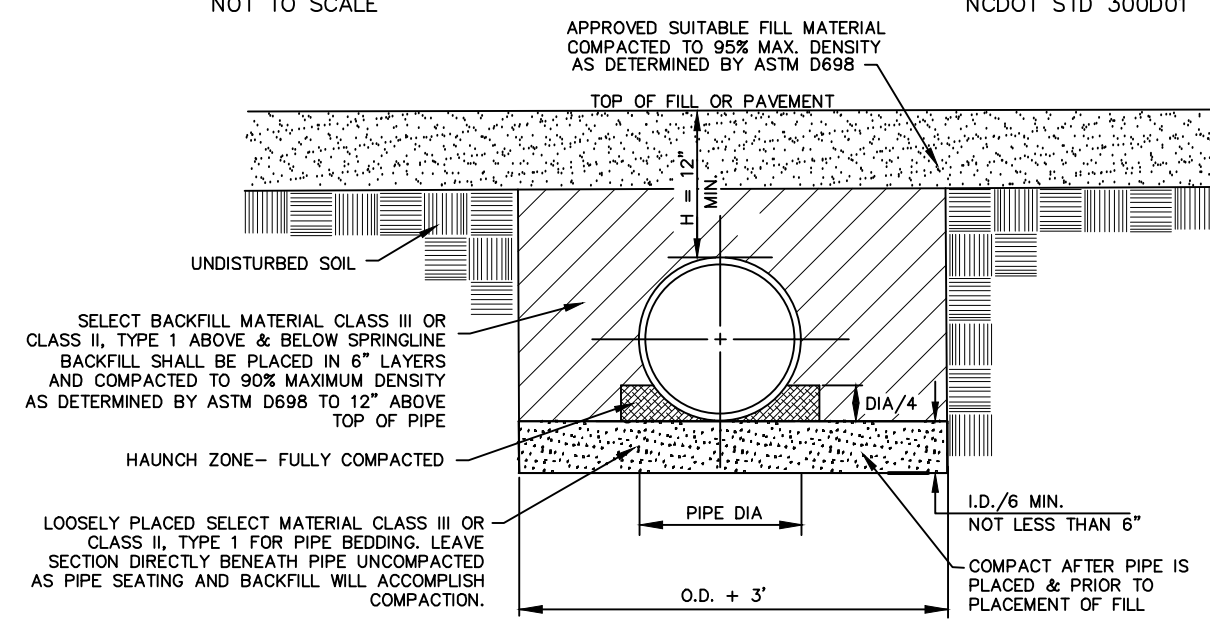


TYPICAL SWALE SECTION
NOT TO SCALE

CRITICAL AREA EROSION CONTROL NOTE:
IMPROVEMENT SHALL BE STABILIZED WITHIN 7 DAYS OF COMPLETION.



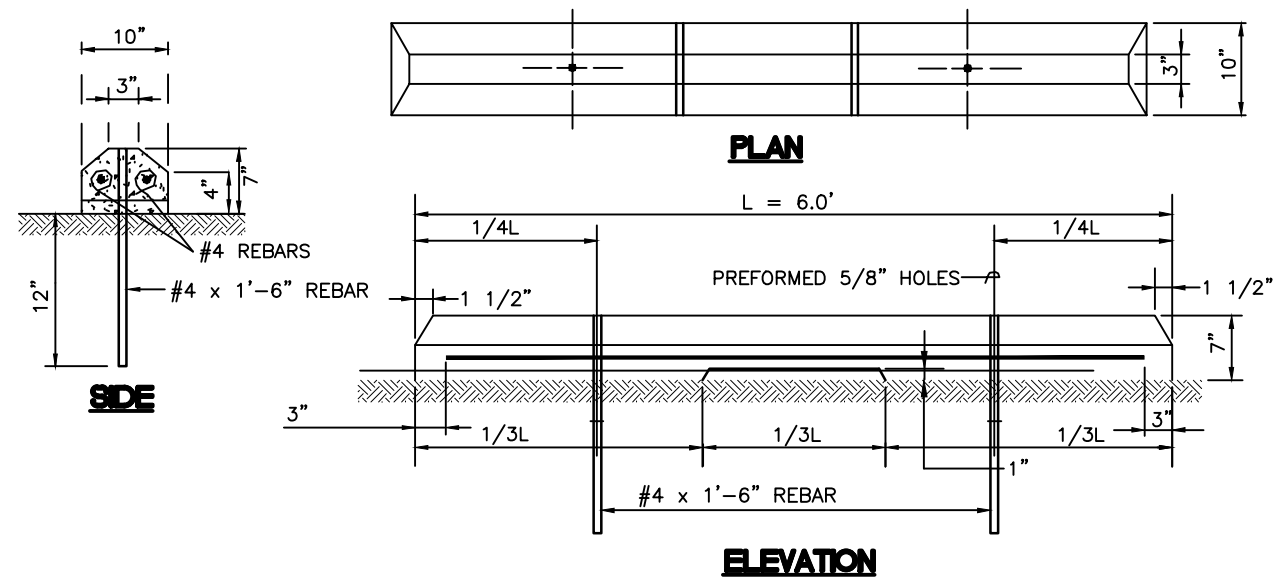
STANDARD RIGID PIPE INSTALLATION DETAIL
NOT TO SCALE NCDOT STD 3000D1



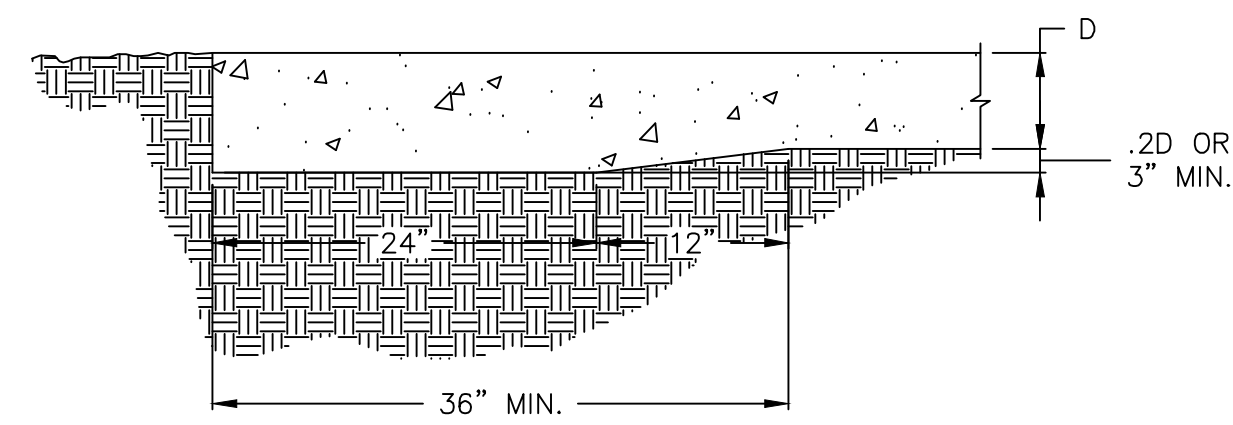
STANDARD FLEXIBLE PIPE INSTALLATION DETAIL
NOT TO SCALE NCDOT STD 3000D1

GENERAL PIPE INSTALLATION NOTES:

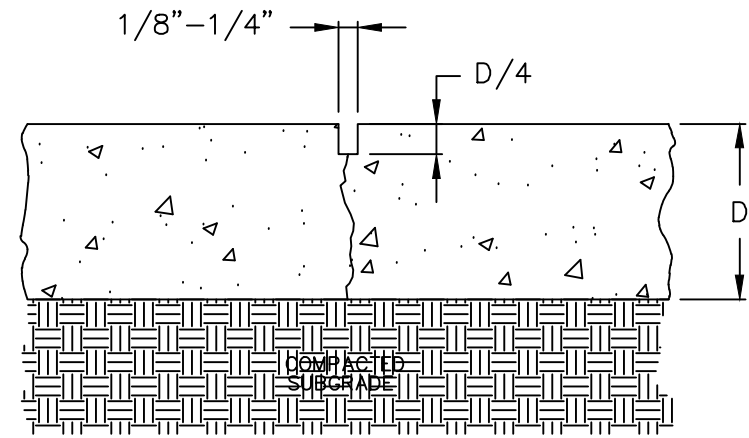
- ALL EXCAVATIONS SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION STANDARDS FOR EXCAVATIONS IN OSHA "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION", CHAPTER XVII OF TITLE 29, CFR, PART 1926. THE CONTRACTOR SHALL HAVE A COMPETENT PERSON ON THE JOB AT ALL TIMES AND SHALL EMPLOY A PROFESSIONAL ENGINEER TO ACT UPON ALL PERTINENT MATTERS OF THE WORK.
 - DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
 - THE PIPE CULVERT INSTALLATION SHALL BE INSTALLED IN ACCORDANCE WITH NCDOT TYPICAL STANDARD DETAIL 3000D1.
- LD = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION
OD = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT OR THE BOTTOM OF THE PAVEMENT STRUCTURE AT THAT POINT.



PRE-CAST CONCRETE PARKING BLOCK
NOT TO SCALE

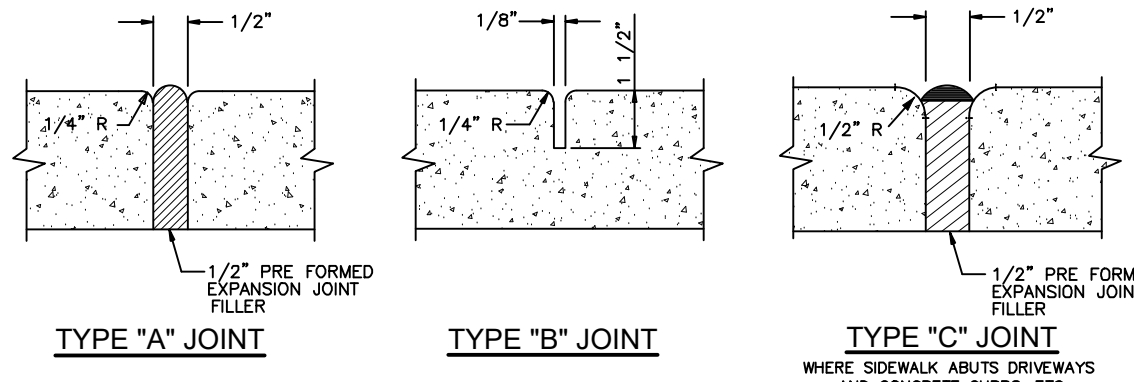


CONVENTIONAL CONCRETE THICKENED EDGE DETAIL
NOT TO SCALE



CONVENTIONAL CONCRETE CONTROL JOINT DETAIL
NOT TO SCALE

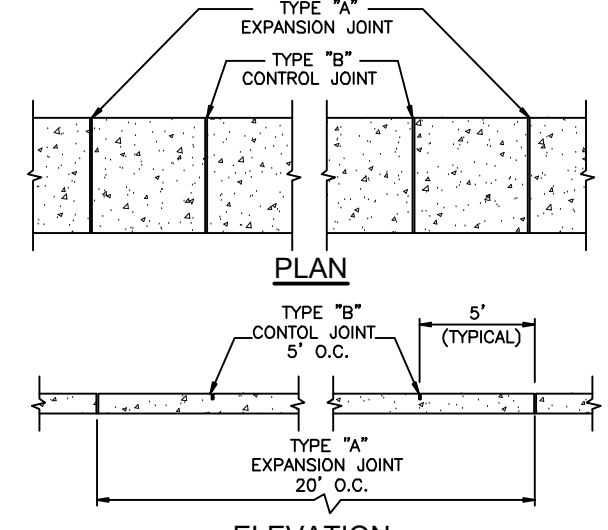
NOTES:
MINIMUM PAVEMENT THICKNESS (D) = 6" W/6x6-W2.9 x W2.9 W/W REINFORCEMENT, PLACE 2" BELOW TOP OF SLAB
UNDOWELED TRANSVERSE CONTRACTION OR LONGITUDINAL JOINT, SAWED OR PRE-MOLDED. DO NOT DOWEL PAVEMENTS LESS THAN 7" THICK.



TYPE "A" JOINT
TYPE "B" JOINT
TYPE "C" JOINT
WHERE SIDEWALK ABUTS DRIVEWAYS AND CONCRETE CURBS, ETC.

NOTES:
1. SIDEWALKS SHALL HAVE A 4" MINIMUM THICKNESS
2. ALL SIDEWALKS WILL BE CONSTRUCTED A MINIMUM OF 4 FEET WIDE OR AS DIMENSIONED ON THE PLAN.
3. ALL CONCRETE USED FOR SIDEWALKS SHALL BE A MINIMUM OF 3,000 PSI.
4. WHERE SIDEWALKS ARE LESS THAN 5 FEET WIDE, 5'x5' PASSING ZONES MUST BE PROVIDED EVERY 200'

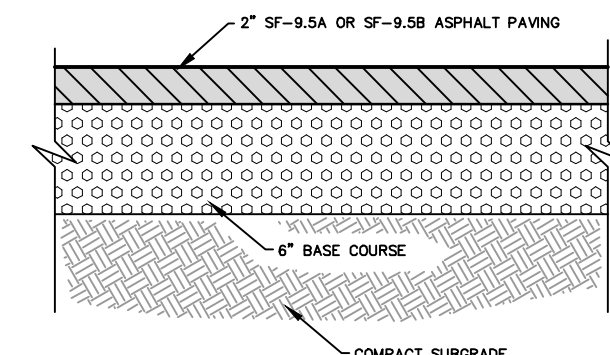
TABLE OF SIDEWALK JOINTS	
TYPE	LOCATION
"A"	20' CENTER TO CENTER ON SIDEWALKS, P.C. AND P.T. OF CURVES, JUNCTION OF EXISTING AND NEW SIDEWALKS, DRIVEWAYS, AND SIMILAR STRUCTURES.
"B"	5' CENTER TO CENTER ON SIDEWALKS.



TYPICAL CONCRETE SIDEWALK DETAIL
NOT TO SCALE

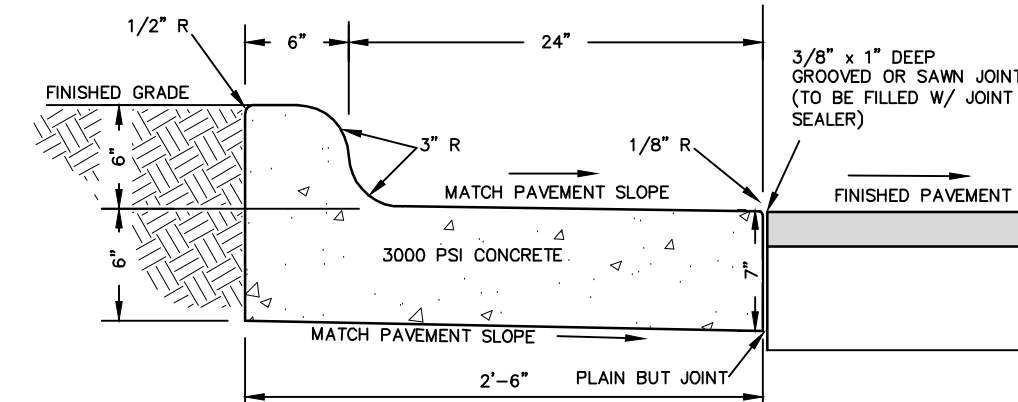
CONVENTIONAL CONCRETE SPECIFICATIONS:

- USE ACI CERTIFIED FLATWORK FINISHER
- USE ACI 330R-01 GUIDE FOR DESIGN AND CONSTRUCTION OF CONCRETE PARKING LOTS
- USE ACI 330.1-94 STANDARD SPECIFICATION FOR PLAIN CONCRETE PARKING LOTS
- ALL CONCRETE USED IN PARKING LOT, UNLESS OTHERWISE INDICATED, SHALL HAVE A COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS.
- IF SUBGRADE SOILS ARE FOUND BY THE CONTRACTOR TO BE UNSUITABLE, TESTING AND PREPARATION RECOMMENDATIONS BY A GEOTECHNICAL ENGINEER MUST BE PROVIDED PRIOR TO CONCRETE PLACEMENT.
- IMPORTED SOIL USE FOR BACK FILL SHOULD BE FREE OF HEAVY CLAY, SILTS, STONES, PLANT ROOT OR OTHER FOREIGN MATERIAL GREATER THAN 1 1/2" IN DIAMETER IN ORDER TO ACHIEVE ADEQUATE COMPACTION AROUND ANY FIXED OBJECT IN GROUND. ALTERNATE WILL BE TO USE FLOWABLE FILL.
- KEEP ALL JOINTS CONTINUOUS WITH A MAXIMUM JOINT SPACING OF 10 FT.
- CONTROL JOINTS SHALL BE FORMED OR SAWED WITHIN 12 HOURS FROM TIME OF PLACEMENT:
 - SIDEWALK-SPACING SHALL BE SAME AS WIDTH OF PAVEMENT AND LESS THAN 5 FEET IN LENGTH
 - PAVEMENT-MAXIMUM SPACING SHALL BE 2.5 TIMES THICKNESS IN UNIT OF FEET AND LESS THAN 15 FEET IN LENGTH (E.G. T=4 INCH SPACING AT 10'x10')
- CURE CONCRETE IMMEDIATELY AFTER FINISHING OPERATION IS COMPLETED BY USING ONE OF THE FOLLOWING METHODS: WATER, PIGMENTED WATER-BASED CURING COMPOUND OR VISQUEEN AND BURLAP

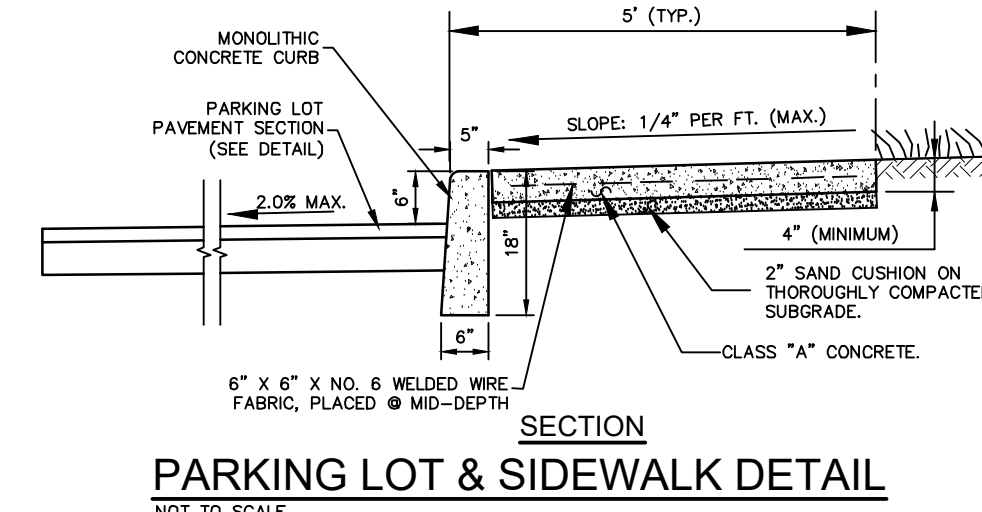


TYPICAL ASPHALT PAVEMENT SECTION
NOT TO SCALE

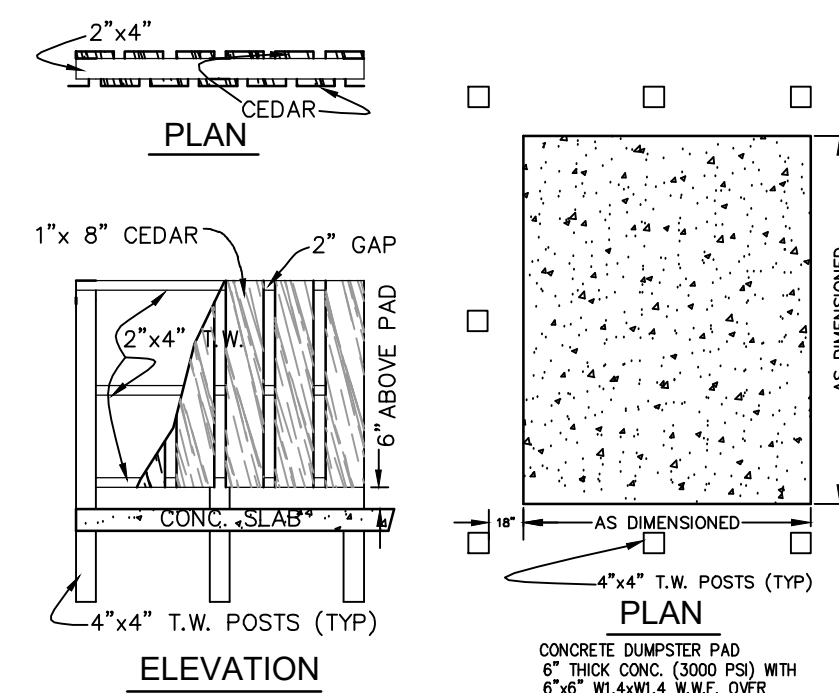
NOTE:
PAVING SHALL CONSIST OF FINE GRADING THE SPECIFIED PARKING & DRIVE AREAS AND INSTALLING 2" 5/8" OR 2" 9/16" ASPHALT CONCRETE SURFACE COURSE IN CONJUNCTION WITH A 6" AGGREGATE BASE COURSE. THE SOIL SUBGRADE BENEATH PAVEMENTS SHALL BE COMPACTED TO AT LEAST 95% OF ASTM D 1557 PRIOR TO ANY PLACEMENT OF SUBGRADE FILL OR STONE BASE COURSE. ALL SITE PREPARATION AND THE DESIGN AND CONSTRUCTION OF ALL FOUNDATIONS, GROUND SLABS, AND PAVEMENTS SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS PROVIDED BY A GEOTECHNICAL ENGINEER.



CURB & GUTTER DUMP SECTION
NOT TO SCALE NCDOT STD 846.01



PARKING LOT & SIDEWALK DETAIL
NOT TO SCALE



CONCRETE DUMPSTER PAD WITH ENCLOSURE
NOT TO SCALE

NO.	DATE	DESCRIPTION	BY

DATE: 8-22-23 SCALE: NOT SCALE
DESIGNED BY: BPG CHECKED BY: MSB
DRAWN BY: KFW/DMK APPROVED BY: BPG
SHEET: 7 OF 10
CAD FILE: 342700B1
PROJECT NO: 3427

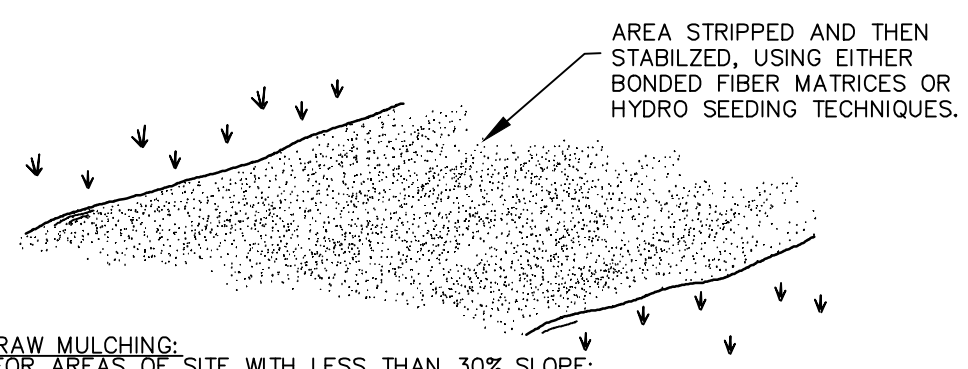
FINAL DRAWING NOT RELEASED FOR CONSTRUCTION



GENERAL PROJECT NOTES:

- PROJECT NAME: MOYOCK DENTAL OFFICE
MOYOCK CURRITUCK COUNTY, NORTH CAROLINA
- OWNER/APPLICANT: GCG REALTY, LLC
200 CARMICHAEL WAY
CHESAPEAKE, VA 23322
- PROJECT DESCRIPTION: MIXED USE COMMERCIAL SHOPPING CENTER
- NEAREST RECEIVING STREAM: MOYOCK RUN - INDEX NUMBER: 30-12-2-1
- STREAM CLASSIFICATION: C; Sw - PASQUOTANK RIVER BASIN
- PROJECT AREA TABULATION:
TOTAL PARCEL AREA: 1.28 AC.
TOTAL PROPOSED DISTURBED AREA: 1.26 AC.
- AREA CALCULATION NOTE:
All areas have been calculated utilizing properties within the Autocad software.
- MATERIAL BALANCE NOTE:
All excavated material occurring during the course of construction will remain on-site for parking and building construction. Borrow material is anticipated and must be obtained from a permitted borrow pit. See SCHEDULE OF LAND DISTURBING ACTIVITIES provided on Sheet 05 of this set for an estimated cut/fill material balance for the project.
- WETLAND NOTE:
The property contains no known 404 jurisdictional wetlands.
- STABILIZATION NOTE:
The angle of graded slopes and fills shall be no greater than the angle that can be retained by vegetative cover or other adequate erosion control devices or structures. In any event, all disturbed areas left exposed will, WITHIN 14 CALENDAR DAYS OF COMPLETION of any phase of grading, be planted or otherwise provided with temporary or permanent ground cover, devices, or structures sufficient to restrain erosion. Additionally, certain critical areas as identified on the plan, such as, but not limited to, perimeter dikes, swales, slopes steeper than 2:1, and areas located within High Quality Water Zones, must be temporarily or permanently stabilized WITHIN 7 CALENDAR DAYS OF COMPLETION of any phase of grading in these areas. A permanent ground cover for all disturbed areas must be provided WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS (whichever is shorter) following completion of construction or development.

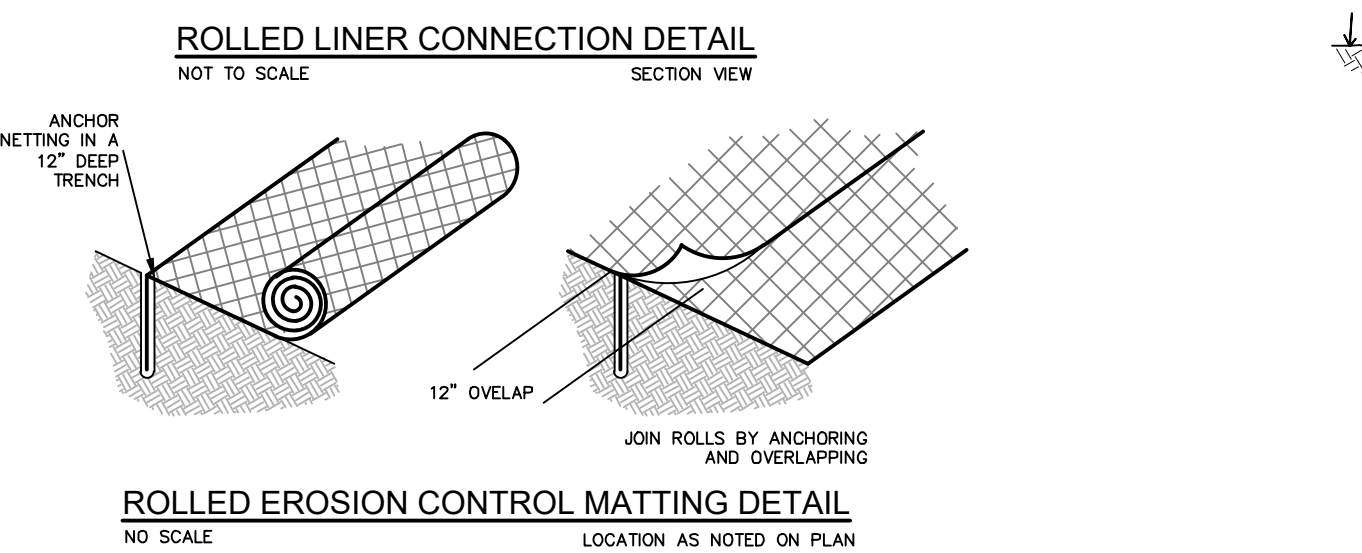
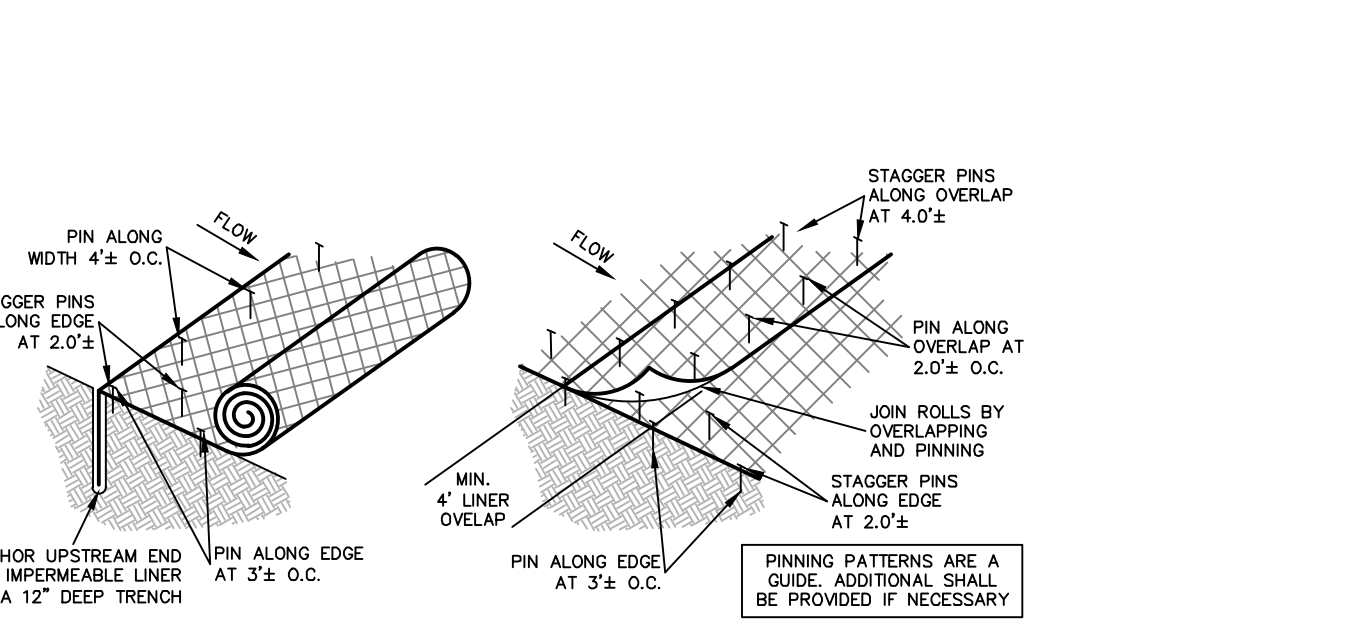
7. NARRATIVE AND SITE DATA
THE PROJECT IS LOCATED AT THE INTERSECTION OF CURRITUCK COMMERCIAL DRIVE (SR1454) AND MOYOCK COMMONS DRIVE, OFF THE SOUTH SIDE OF GARATONE HWY. I-80 IN MOYOCK. THE PROPERTY (LOT 16) IS PART OF A LARGER COMMERCIAL SUBDIVISION KNOWN AS CURRITUCK COMMERCIAL CENTER THAT WAS DEVELOPED IN THE LATE 1990'S. SOMETIME PRIOR, THE SITE WAS PARTIALLY PREPARED WITH INITIAL GRADING, GRAVEL BASE COURSE AND UTILITY STUB OUTS TO SERVE A FUTURE BUILDING THAT WAS NOT CONSTRUCTED. ADJACENT LANDS ARE EITHER DEVELOPED COMMERCIAL OR VACANT.
THE PROPOSED PROJECT INVOLVES CONSTRUCTION OF A SINGLE STORY BUILDING TO ACCOMMODATE A DENTAL OFFICE AND A RETAIL SPACES. OTHER IMPROVEMENTS WILL INCLUDE PARKING, DRIVEWAY CONNECTIONS TO MOYOCK COMMONS DRIVE AND CURRITUCK COMMERCIAL DRIVE, DRAINAGE, UTILITY CONNECTIONS, LANDSCAPING AND LIGHTING. STORMWATER RUNOFF WILL PRIMARILY SHEET FLOW INTO SURROUNDING SWALES THAT ULTIMATELY DRAIN TO AN EXISTING WET DETENTION BASIN THAT SERVES TO MANAGE STORMWATER FOR THE ENTIRE SUBDIVISION.
EXISTING TOPOGRAPHY IS FLAT WITH ELEVATIONS RANGING FROM JUST ABOVE 10' MSL NEAR THE CENTER OF THE SITE TO AROUND 8' BEFORE FALLING INTO EXISTING SWALES AROUND THE PERIMETER. PURSUANT TO THE USGS SOIL SURVEY MAP OF CURRITUCK COUNTY, SOILS ACROSS THE PROPERTY ARE COMPOSED OF ROANOKE FINE SANDY LOAM, ROANOKE SERIES SOILS ARE DESCRIBED AS NEARLY LEVEL, POORLY DRAINAGE AND SLOW PERMEABILITY WITH A SEASONAL HIGH WATER TABLE AT OR NEAR THE SURFACE.



STRAW MULCHING:
1. FOR AREAS OF SITE WITH LESS THAN 30% SLOPE:
2-3 BALES STRAW EQUALS 2-INCHES OF STRAW MULCH OVER 1000 SQUARE FEET.
2. MULCH SHALL BE WEED FREE STRAW.

TO PROVIDE TEMPORARY SOIL STABILIZATION BY PLANTING GRASSES AND LEGUMES TO AREAS THAT WOULD REMAIN BARE FOR MORE THAN 14 CALENDAR DAYS, OR 7 DAYS IN IDENTIFIED CRITICAL AREAS, WHERE PERMANENT COVER IS NOT NECESSARY OR APPROPRIATE.

LAND DISTURBANCE & STABILIZATION DETAIL
NOT TO SCALE



ROLLED EROSION CONTROL MATTING (R.E.C.M.) SPECIFICATIONS:
1. All areas identified as erosion control matting shall be lined with a protective covering to minimize erosion and protect seed until permanent vegetation is established.
2. Covering shall be composed of a bio or photo degradable material to minimize long term environmental impacts.
3. Mulching with straw or other organic materials can be utilized only when it will not impede the establishment of permanent vegetation. Mulches must be properly anchored which may be difficult in some environments. An example is straw mulch with jute netting stapled or pinned in place.
4. Pre-manufactured rolled erosion control products (RECP) are highly recommended for this application. RECP's shall be installed according to manufacturer specifications for channel linings. An example is a woven straw or wooden fiber Excelior matting.

CONSTRUCTION SEQUENCE SCHEDULE

- CONSTRUCTION ACTIVITY**
Entrance, construction routes, equipment parking areas
- Sediment Traps & Barriers**
Basin traps, sediment fences, & outlet protection
- Runoff Control**—
Diversion, perimeter dikes, water bars, and outlet protection
- Runoff Conveyance System**—
Stables stream banks, storm drains, channels, inlet & outlet protection, slope drains
- Land Clearing & Grading**—
Site preparation— cutting, filling & grading, sediment traps, barriers, diversions, drains, surface roughening
- Surface Stabilization**—
Temporary & permanent seeding, mulching, sodding, rip rap.
- Building Construction**—
Buildings, utilities, paving.
- Landscaping & Final Stabilization**—
Toppingsoil, trees & shrubs, permanent seeding, mulching, sodding, rip rap

SCHEDULE CONSIDERATION

- Install principal basins after construction site is accessed. Install additional traps and barriers as needed during grading.
- Install key practices after principal sediments traps and before land grading. Install additional runoff-control conveyance measures during grading.
- Where necessary, stabilize stream banks as early as possible. Install principal runoff conveyance system with runoff-control measures. Install remainder of system after grading.
- Begin major clearing and grading after principal & key runoff-control measures area installed. Clear borrow & disposal areas as needed. Install additional control measures as grading progresses. Mark trees & buffer areas for preservation.
- Apply temporary or permanent stabilization measures immediately on all disturbed areas where work is delayed or complete.
- Install necessary erosion & sedimentation control practices as work takes place.
- Stabilize all open areas, including borrow & spoil areas. Remove & stabilize all temporary control measures.

LAND GRADING CONSTRUCTION SPECIFICATIONS

- Construct & maintain all erosion & sedimentation control practices & measures in accordance with the approved sedimentation control plan and construction schedule.
- Remove good topsoil from areas to be graded and filled, and preserve it for use in finishing the grading of all critical areas.
- Scarify areas to be topsoiled to a minimum depth of 2 inches before placing topsoil.
- Clear & grub areas to be filled to remove trees, vegetation, roots, or other objectionable material that would affect the planned stability of fill.
- Ensure that fill material is free of brush, rubbish, rocks, logs, stumps, building debris, and other materials inappropriate for constructing stable fills.
- Place all fill in layers not to exceed 9 inches in thickness, and compact the layers as required to reduce erosion, slippage, settlement, or other related problems.
- Do not incorporate frozen material or soft, mucky, or highly compressible materials into fill slopes.
- Do not place fill on a frozen foundation, due to possible subsidence and slippage.
- Keep diversions and other water conveyance measures free of sediment during all phases of development.
- Handle seeps or springs encountered during construction in accordance with approved methods.
- Following completion of any phase of grading, provide a groundcover (temporary or permanent) on all exposed slopes within 14 calendar days, or 7 calendar days in critical areas identified on the plan; and, a permanent groundcover for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction or development.
- Provide adequate protection from erosion for all topsoil stockpiles, borrow areas, and spoil areas.

PERMANENT SEEDING

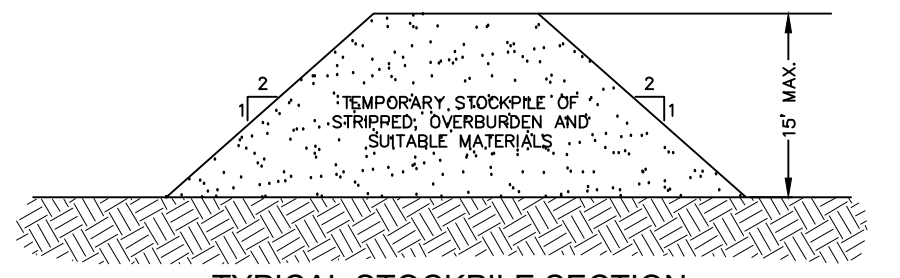
- The purpose of permanent seeding is to reduce erosion and decrease sediment yield from disturbed areas, and to permanently stabilize such areas in a manner that is economical, adapts to site conditions, and allows selection of the most appropriate plant materials. These areas must be seeded or planted within 15 working days or 90 calendar days after final grade is reached, unless temporary stabilization is applied.
- PERMANENT SEEDING SPECIFICATIONS**
Seeding Recommendations for Summer
SEEDING DATES – April to July
SEEDING MIXTURE
Species Rate
Common bermudagrass 10/1,000 sf (sprigs)
1-2 lb/1,000 sf (seed)
SOD (See Sodding Notes)
- Seeding Recommendations for Early Fall through Early Spring**
SEEDING DATES – August to March (early fall and spring recommended)
Species Rate
Kentucky 31 Tall Fescue 6 lb/1,000 sf (broadcast seed)
- SEEDING NOTES**—
1. Sprig or sod. Moisture is essential during initial establishment. Sod must be kept watered for 2-3 weeks, but can be planted earlier or later than sprigs.
2. Do not place fill on a frozen foundation, due to possible subsidence and slippage.
3. Keep diversions and other water conveyance measures free of sediment during all phases of development.
4. Handle seeps or springs encountered during construction in accordance with approved methods.
5. Following completion of any phase of grading, provide a groundcover (temporary or permanent) on all exposed slopes within 14 calendar days, or 7 calendar days in critical areas identified on the plan; and, a permanent groundcover for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction or development.
6. Provide adequate protection from erosion for all topsoil stockpiles, borrow areas, and spoil areas.
- MAINTENANCE**
Periodically check all graded areas & the supporting erosion & sedimentation control practices, especially after heavy rainfalls. Promptly remove all sediment from diversions and other water-disposal practices. If washouts or breaks occur, repair them immediately. Prompt maintenance of small-eroded areas before they become significant gullies is an essential part of an effective erosion & sedimentation control plan.

TEMPORARY SEEDING

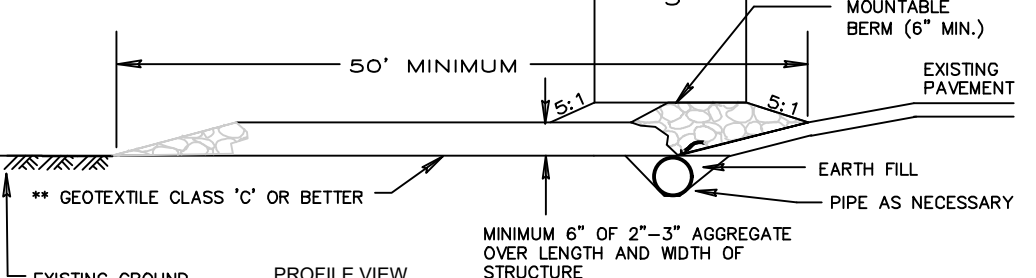
- The purpose of temporary seeding is to temporarily stabilize denuded areas that will not be brought to final grade or permanently seeded for a period of more than 14 calendar days, or 7 days in critical areas identified on the plan.
- TEMPORARY SEEDING SPECIFICATIONS**
Seeding Recommendations for Late Winter & Early Spring
SEEDING DATES— December 1 to April 15
SEEDING MIXTURE
Species Rate (lb/acre)
Winter Rye (grain) 120 (Annual Ryegrass shall not be used)
Annual Lespedeza 50
(Kobe)
*omit Annual Lespedeza when duration of temporary cover is not to extend beyond June
- Soil Amendments**—
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.
- Mulch**—
Apply 4,000-lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch-anchoring tool. A disk with blades set nearly straight can be used as a mulch-anchoring tool.
- Maintenance**—
Re-fertilize if growth is not fully adequate. Reseed, fertilize and mulch immediately following erosion or other damage.
- Seeding Recommendations for Summer**
SEEDING DATES— April 15 to August 15
SEEDING MIXTURE
Species Rate (lb/acre)
German Millet 40
- Soil Amendments**—
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.
- Mulch**—
Apply 4,000-lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch-anchoring tool. A disk with blades set nearly straight can be used as a mulch-anchoring tool.
- Maintenance**—
Re-fertilize if growth is not fully adequate. Reseed, fertilize and mulch immediately following erosion or other damage.
- Seeding Recommendations for Fall**
SEEDING DATES— August 15 to December 30
SEEDING MIXTURE
Species Rate (lb/acre)
Winter Rye (grain) 120
Soil Amendments—
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10-10-10 fertilizer.
- Mulch**—
Apply 4,000-lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch-anchoring tool. A disk with blades set nearly straight can be used as a mulch-anchoring tool.
- Maintenance**—
Repair and re-fertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe Lespedeza in late February or Early March.

SODDING

- The purpose of permanent seeding is to prevent erosion and damage from sediment and runoff by stabilizing the soil surface with permanent vegetation for the purpose of:
-the provision of immediate vegetative cover in critical areas
-to stabilize disturbed areas with a suitable plant material that cannot be established by seed.
-to stabilize drainage ways & channels and other areas of concentrated flow where flow velocities will not exceed that specified grass lining.
- SODDING SPECIFICATIONS**
Sod Quality
-Sod should be machine cut at a uniform depth of 1/2-2 inches
-Sod should not have been cut in excessively wet or dry weather.
-Sections of sod should be standard size as determined by the supplier, uniform, and uniform.
-Sections of sod should be strong enough to support their own weight and retain their size and shape when lifted by one end.
-Harvest, delivery, and installation of sod should take place within a period of 36 hours.
- Soil Amendments**—
Apply lime and fertilizer according to soil tests or 2 tons/acre of pulverized agricultural limestone and 1,000 lb/acre 10-10-10 fertilizer in the fall, or 5-10-10 in spring.
- Prior to laying sod, clear the soil surface of trash, debris, roots, branches, stones, and clods larger than 2 inches in diameter. Fill or level low spots in order to avoid standing water. Rake or harrow the site to achieve a smooth and level final grade. Complete soil preparation by rolling or outpacking to firm soil.**
- Sod Installation**—
1. Moistening the sod after it is unrolled helps maintain viability. Store in shade during installation.
2. Rake the soil surface to break the crust just before laying sod. During the summer, lightly irrigate the soil, immediately before laying sod to cool the soil and reduce root burning & dieback.
3. Do not sod on gravel, frozen soils, or soils that have been treated recently with sterilants or herbicides.
4. Lay the first row of sod in a straight line with subsequent rows placed parallel to and butting tightly against each other. Stagger strips in a brick-like pattern. Be sure that the sod is not stretched or overlapped and that all joints are butted tightly to prevent voids. Use a knife or sharp spade to firm and fill irregular shaped areas.
5. Install strips of sod with the longest dimension perpendicular to the slope. On slopes of 3:1 or greater, or wherever erosion may be a problem, secure sod with pegs or staples.
6. As sodding of clearly defined areas is completed, roll sod to provide good contact between roots and soil.
7. After rolling, irrigate until the soil is wet 4 inches below the sod.
8. Keep sodded areas moist to a depth of 4 inches until the grass takes root. This can be determined by tugging on the sod.
9. Mowing should not be attempted until the sod is firmly rooted, usually 2-3 weeks.
- Sodded Waterways**
1. Prepare sod as described above.
2. Lay sod strips perpendicular to the direction of flow, with the lateral joints staggered in a brick-like pattern. Butt edges tightly together.
- Maintenance**—
After the first week, water as necessary to maintain adequate moisture in the root zone & prevent dormancy of the sod.
Do not remove more than one-third of the shoot in any one mowing. Grass height should be maintained between 2-3 inches unless otherwise specified.
After first growing season, established sod requires fertilization, and may also require lime. Follow soil test recommendations.

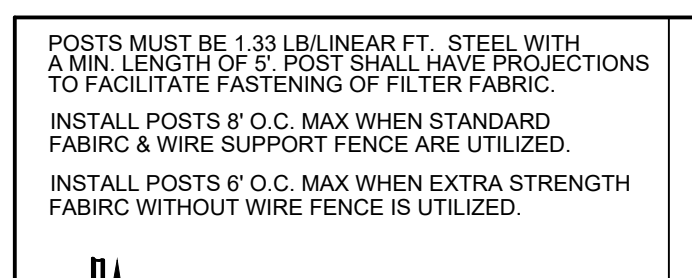


TYPICAL STOCKPILE SECTION
NOT TO SCALE
SECTION VIEW
STOCKPILES HAVING 2:1 SIDE SLOPES ARE CONSIDERED CRITICAL AREAS. SEE STABILIZATION NOTES FOR TEMPORARY AND PERMANENT STABILIZATION REQUIREMENTS. LEVEL GRADE AREA AND STABILIZE AT COMPLETION

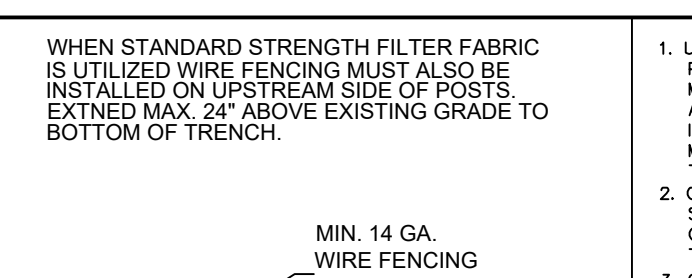


CONSTRUCTION ENTRANCE
NO SCALE
LOCATION AS NOTED ON PLAN

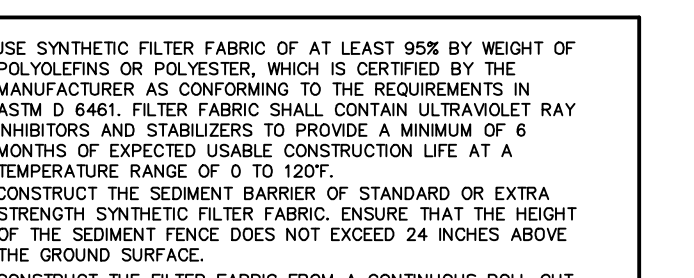
- CONSTRUCTION ENTRANCE SPECIFICATIONS**
1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 12' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.



TYPICAL SILT FENCING DETAIL
NOT TO SCALE
LOCATION AS NOTED ON PLAN



CONSTRUCTION ENTRANCE SPECIFICATIONS
NO SCALE
LOCATION AS NOTED ON PLAN



TYPICAL STOCKPILE SECTION
NOT TO SCALE
SECTION VIEW
STOCKPILES HAVING 2:1 SIDE SLOPES ARE CONSIDERED CRITICAL AREAS. SEE STABILIZATION NOTES FOR TEMPORARY AND PERMANENT STABILIZATION REQUIREMENTS. LEVEL GRADE AREA AND STABILIZE AT COMPLETION

POSTS MUST BE 1.33 LB/LINEAR FT. STEEL WITH A MIN. LENGTH OF 5' POST SHALL HAVE PROJECTIONS TO FACILITATE FASTENING OF FILTER FABRIC.
INSTALL POSTS @ 6' O.C. MAX WHEN STANDARD FABRIC & WIRE SUPPORT FENCE ARE UTILIZED.
INSTALL POSTS @ 6' O.C. MAX WHEN EXTRA STRENGTH FABRIC WITHOUT WIRE FENCE IS UTILIZED.

WHEN STANDARD STRENGTH FILTER FABRIC IS UTILIZED WIRE FENCING MUST ALSO BE INSTALLED ON UPSTREAM SIDE OF POSTS. EXTEND MAX. 24" ABOVE EXISTING GRADE TO BOTTOM OF TRENCH.

1. USE SYNTHETIC FILTER FABRIC OF AT LEAST 95% BY WEIGHT OF POLYPROPYLENE OR POLYESTER. WHICH IS COVERED BY THE MANUFACTURER AS CONFORMING TO THE REQUIREMENTS IN ASTM D 4641. FILTER FABRIC SHALL CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 TO 120°.
2. CONSTRUCT THE SEDIMENT BARRIER OF STANDARD OR EXTRA STRENGTH SYNTHETIC FILTER FABRIC. ENSURE THAT THE HEIGHT OF THE SEDIMENT FENCE DOES NOT EXCEED 24 INCHES ABOVE THE GROUND SURFACE.
3. CONSTRUCT THE FILTER FABRIC FROM A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, SECURELY FASTEN THE FILTER CLOTH ONLY AT A SUPPORT POST WITH 4 FT MINIMUM OVERLAP TO THE NEXT POST.
4. SYNTHETIC FILTER FABRIC SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH MIN. 50 LB. TENSILE STRENGTH WIRE OR ZIP TIES AT TOP, MID-SECTION AND BOTTOM. FABRIC HEIGHT SHALL BE BETWEEN 18" MIN. TO 24" MAX. ABOVE GROUND LEVEL. ON THE UPSLOPE SIDE OF THE POSTS EXTRA STRENGTH FILTER FABRIC W/6' POST SPACING SHALL BE SECURELY FASTENED DIRECTLY TO POSTS.
5. 12 INCHES OF FILTER FABRIC SHALL BE BURIED IN AN EXCAVATED TRENCH APPROXIMATELY 4 INCHES WIDE AND 8 INCHES DEEP ALONG THE PROPOSED LINE OF POSTS AND UPSLOPE FROM THE BARRIER. BACKFILL TRENCH WITH MECHANICALLY COMPACTED SOIL PLACED OVER THE FILTER FABRIC. DO NOT ATTACH FILTER FABRIC TO TREES.
6. SILT FENCE SHALL BE INSPECTED AT LEAST ONCE A WEEK & AFTER EACH RAINFALL EVENT. MAKE ANY REPAIRS IMMEDIATELY. SHOULD THE FABRIC COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
7. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
8. REMOVE ALL REMOVED MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

CONSTRUCT 4' W X 8\"/>

MIN. 18\"/>

1. FASTEN THE FILTER FABRIC TO THE UPSTREAM SIDE OF POSTS OR WIRE FENCE IF UTILIZED. EXTEND FABRIC 6\"/>

STEP 1

STEP 2

STEP 3

STEP 4

SECTION A-A

MIN. 18\"/>

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TYP. EROSION CONTROL NOTES & CONSTRUCTION DETAILS

MOYOCK DENTAL OFFICE
NORTH CAROLINA
CURRITUCK COUNTY
MOYOCK TOWNSHIP

COMMERCIAL SITE DEVELOPMENT PLANS

REVISIONS

NO.	DATE	DESCRIPTION
1	8-22-23	NO SCALE
2	BPG	MSB
3	KFW/DMK	BPG

DATE: 8-22-23 **SCALE:** NO SCALE
DESIGNED: BPG **CHECKED:** MSB
DRAWN: KFW/DMK **APPROVED:** BPG
SHEET: 8 OF 10
CAD FILE: 342700B1
PROJECT NO.: 3427

FINAL DRAWING NOT FOR RELEASE FOR CONSTRUCTION

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDCs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

**PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT**

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

- The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
- The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
- Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
- Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
- Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
- Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

- This General Permit as well as the Certificate of Coverage, after it is received.
- Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

- Visible sediment deposition in a stream or wetland.
- Oil spills if:
 - They are 25 gallons or more,
 - They are less than 25 gallons but cannot be cleaned up within 24 hours,
 - They cause sheen on surface waters (regardless of volume), or
 - They are within 100 feet of surface waters (regardless of volume).
- Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(l)(7)]	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). Division staff may waive the requirement for a written report on a case-by-case basis.



NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

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BISSELL
PROFESSIONAL GROUP

NCG01 SELF-INSPECTION,
RECORDKEEPING & REPORTING

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MOYOCK DENTAL OFFICE
NORTH CAROLINA
CURRITUCK COUNTY
MOYOCK TOWNSHIP

COMMERCIAL SITE DEVELOPMENT PLANS

NO.	DATE	DESCRIPTION	BY

DATE: 8-22-23 SCALE: NO SCALE
 DESIGNED: BPG CHECKED: MSB
 DRAWN: KFW/DMK APPROVED: BPG
 SHEET: 9 OF 10
 CAD FILE: 342700B1
 PROJECT NO: 3427

FINAL DRAWING
NOT RELEASED FOR
CONSTRUCTION



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GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes		
Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
<ul style="list-style-type: none"> Temporary grass seed covered with straw or other mulches and tackifiers Hydroseeding Rolled erosion control products with or without temporary grass seed Appropriately applied straw or other mulch Plastic sheeting 	<ul style="list-style-type: none"> Permanent grass seed covered with straw or other mulches and tackifiers Geotextile fabrics such as permanent soil reinforcement matting Hydroseeding Shrubs or other permanent plantings covered with mulch Uniform and evenly distributed ground cover sufficient to restrain erosion Structural methods such as concrete, asphalt or retaining walls Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

- Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
- Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
- Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
- Provide ponding area for containment of treated Stormwater before discharging offsite.
- Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

- Maintain vehicles and equipment to prevent discharge of fluids.
- Provide drip pans under any stored equipment.
- Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
- Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
- Remove leaking vehicles and construction equipment from service until the problem has been corrected.
- Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

- Never bury or burn waste. Place litter and debris in approved waste containers.
- Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
- Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
- Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
- Anchor all lightweight items in waste containers during times of high winds.
- Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
- Dispose waste off-site at an approved disposal facility.
- On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

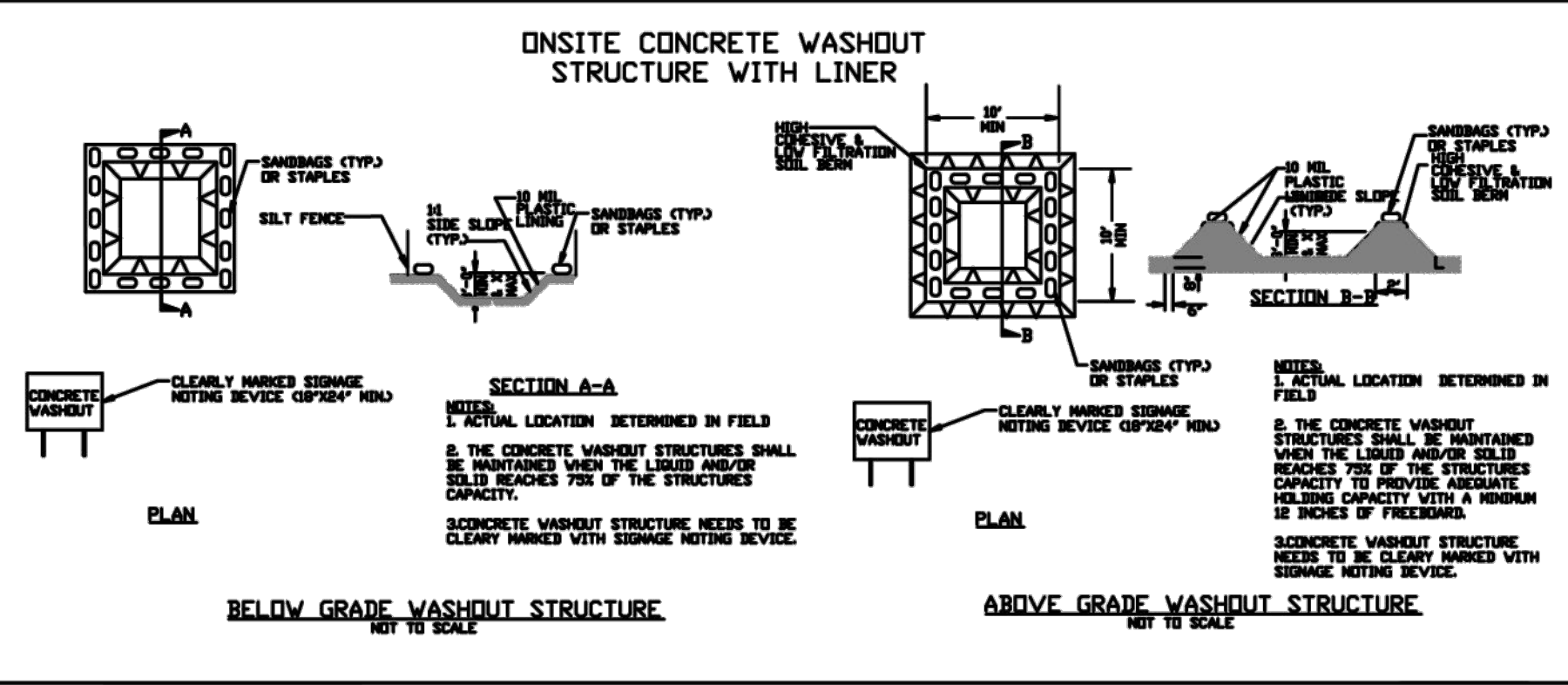
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled, sized and placed appropriately for the needs of site.
- Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS

- Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
- Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
- Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

- Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
- Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
- Provide stable stone access point when feasible.
- Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.



CONCRETE WASHOUTS

- Do not discharge concrete or cement slurry from the site.
- Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
- Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
- Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
- Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
- Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
- Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
- Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
- Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
- At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

- Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
- Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
- Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
- Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

- Create designated hazardous waste collection areas on-site.
- Place hazardous waste containers under cover or in secondary containment.
- Do not store hazardous chemicals, drums or bagged materials directly on the ground.



NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

Bissell Professional Group
Firm License # C-056
P.O. Box 1008
1205 S. Pine Bluff Road
Cary, NC 27513
Tel: (919) 232-1780
Fax: (919) 232-1780

BISSELL
PROFESSIONAL GROUP
Engineers, Planners, Surveyors
and Environmental Specialists

PROJECT: NCG01 GROUND STABILIZATION AND MATERIALS HANDLING
MOYOCK DENTAL OFFICE
NORTH CAROLINA
CURRITUCK COUNTY
MOYOCK TOWNSHIP
COMMERCIAL SITE DEVELOPMENT PLANS

NO.	DATE	DESCRIPTION	BY



DATE: 8-22-23	SCALE: NO SCALE
DRAWN: BPG	CHECKED: MSB
DESIGNED: KFW/DMK	APPROVED: BPG
SHEET: 10	OF 10
CAD FILE: 342700B1	PROJECT NO: 3427

FINAL DRAWING NOT RELEASED FOR CONSTRUCTION



Major Site Plan Application

OFFICIAL USE ONLY:	
Case Number:	_____
Date Filed:	_____
Gate Keeper:	_____
Amount Paid:	_____

Contact Information

APPLICANT:		PROPERTY OWNER:	
Name:	<u>GCG Realty, LLC</u>	Name:	<u>Same</u>
Address:	<u>200 Carmichael Way, Ste. 600</u>	Address:	_____
	<u>Chesapeake, VA 23322</u>		_____
Telephone:	<u>757-817-1795</u>	Telephone:	_____
E-Mail Address:	<u>curlingjh@hotmail.com</u>	E-Mail Address:	_____
LEGAL RELATIONSHIP OF APPLICANT TO PROPERTY OWNER:		<u>Same</u>	

Property Information

Physical Street Address: 100 Currituck Commercial Drive

Location: Moyock, NC 27958

Parcel Identification Number(s): 015B-000-0016-0000

Total Parcel(s) Acreage: 1.28

Existing Land Use of Property: Vacant

Request

Project Name: Moyock Dental Office

Proposed Use of the Property: Commercial -Dental Office and Retail

Deed Book/Page Number and/or Plat Cabinet/Slide Number: 1741/690/G/24

Total square footage of land disturbance activity: 54,810

Total lot coverage: 36,272 SF Total vehicular use area: 23,218 SF

Existing gross floor area: 0 Proposed gross floor area: 10,071 SF

I hereby authorize county officials to enter my property for purposes of determining zoning compliance. All information submitted and required as part of this process shall become public record.

Joshua H. Curling 7/26/23
 Property Owner(s)/Applicant* Date

*NOTE: Form must be signed by the owner(s) of record, contract purchaser(s), or other person(s) having a recognized property interest. If there are multiple property owners/applicants a signature is required for each.



STORMWATER MANAGEMENT REPORT FOR CURRITUCK COUNTY

Project:

Moyock Dental Office

Moyock Township, Currituck County, North Carolina

Prepared By:

Bissell Professional Group
P.O. Box 1068
3512 N. Croatan Highway
Kitty Hawk, North Carolina 27949

Date:

9-28-2023



Stormwater Narrative

The project is located at the intersection of Currituck Commercial Drive (SR1454) and Moyock Commons Drive, off the south side of Caratoke Hwy. (NC 168) in Moyock. The property (lot 16) is part of a larger commercial subdivision known as Currituck Commercial center that was developed in the late 1990's. Sometime prior, the site was partially prepared with initial grading, gravel base course and utility stub outs to serve a future building that was not constructed. Adjacent lands are either developed commercially or vacant.

The proposed project involves construction of a single story building to accommodate a dental office and retail spaces. Other improvements will include parking, driveway connections to Moyock Commons Drive and Currituck Commercial Drive, drainage, utility connections, landscaping and lighting. Stormwater runoff will primarily sheet flow into surrounding swales that ultimately drain to an existing wet-detention basin that serves to manage stormwater for the entire subdivision.

Existing topography is flat with elevations ranging from just above 10' msl near the center of the site to around 8' before falling into existing swales around the perimeter. Pursuant to the USDA Soil Survey Manual of Currituck County, soils across the property are composed of Roanoke fine sandy loam. Roanoke series soils are described as nearly level, poorly drained and slow permeability with a seasonal highwater table at or near the surface.

The Currituck Commercial Center subdivision was designed and permitted by NCDEQ and Currituck County with a centralized stormwater management system that collects and conveys runoff from the lots to a wet-detention basin for treatment and controlled release. Attached is a copy the current NCDEQ stormwater permit renewed on Dec. 28, 2022 and valid through 2030. Also attached are a portion of the stormwater calculations submitted to obtain the original permit that show the subject Lot 16 was allocated 80% lot coverage. The County's current ordinance further limits lot coverage to 65%. Proposed lot coverage is 64.87% and within the prescribed allowances.

Per the original subdivision design and approval, stormwater is managed by an existing off-site SCM. As explained above, the proposed project remains within the lot coverage allocation set forth in the original approval, therefore, sizing calculations for the SCM are not necessary.

In effort to ensure existing and proposed swales will not experience excessive erosion, attached are **Erosive Velocity Calculations** for the largest representative drainage areas. Additionally, in an effort to evaluate 10yr HGL conditions, attached are pre and post development runoff and channel calculations at a section of existing ditch just downstream of the site and upstream of the existing SCM.

EXISTING APPROVALS

- CURRENT NCDEQ STORMWATER PERMIT
- BUA CALCULATIONS FROM ORIGINAL SUBDIVISION DESIGN

ROY COOPER

Governor

ELIZABETH S. BISER

Secretary

DOUGLAS R. ANSEL

Interim Director



NORTH CAROLINA
Environmental Quality

December 28, 2022

Currituck Commercial Center Property Owner's Association, Inc.
Attention: R. Mark Warren
111 Currituck Comm. Dr., Suite A
Moyock, NC 27958

**Subject: Stormwater Permit No. SW7980513 Renewal
Currituck Commercial Center
High Density Project
Currituck County**

Dear Mr. Warren:

The Washington Regional Office received a Stormwater Management Permit Application for renewal of the subject permit on November 21, 2022. Staff review of the application has determined that the permit can be reissued. We are forwarding Permit No. SW7980513 dated December 28, 2022, for the continued operation of the existing stormwater treatment system.

This permit, upon its effective date, will replace all previous State Stormwater permits for this project. This permit shall be effective from the date of issuance until December 27, 2030 and shall be subject to the conditions and limitations as specified therein and does not supercede any other agency permit that may be required. Please pay special attention to the Operation and Maintenance requirements in this permit. Failure to establish an adequate system for operation and maintenance of the stormwater management system will result in future compliance problems.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 27699-6714. Unless such demands are made this permit shall be final and binding.

If you have any questions, or need additional information concerning this matter, please contact me at (252) 948-3923.

Sincerely,

A handwritten signature in blue ink that reads "Roger K. Thorpe".

Roger K. Thorpe
Environmental Engineer



STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES

STATE STORMWATER MANAGEMENT PERMIT
HIGH DENSITY DEVELOPMENT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

Currituck Commercial Center Property Owner's Association, Inc.

Currituck Commercial Center

Located on Commercial Dr., Moyock, NC

Currituck County

FOR THE

construction, operation and maintenance of a wet detention pond in compliance with the provisions of 15A NCAC 2H .1000 (hereafter referred to as the "*stormwater rules*") and the approved stormwater management plans and specifications and other supporting data as attached and on file with and approved by the Division of Energy, Mineral, and Land Resources (Division) and considered a part of this permit.

This permit shall be effective from the date of issuance until December 27, 2030, and shall be subject to the following specified conditions and limitations:

I. DESIGN STANDARDS

1. This permit is effective only with respect to the nature and volume of stormwater described in the application and other supporting data.
2. This stormwater system has been approved for the management of stormwater runoff as described in Section I.5. of this permit, the Project Data Sheet.
3. A maximum of 16.4 acres of built upon area is allowed.
4. All stormwater collection and treatment systems must be located in either dedicated common areas or recorded easements. The final plats for the project will be recorded showing all such required easements, in accordance with approved plans.



5. Approved plans and specifications for this project are incorporated by reference and are enforceable parts of the permit.

PROJECT DATA SHEET

Project Name: Currituck Commercial Center

Permit Number: SW7980513

Receiving Stream: UT to Northwest River

Classification of Water Body: SC

Total Site Area: 25.96 ac

Total Impervious allowed: 16.4 ac

Wet Pond Depth: 4.0 ft

Required Storage Volume: 67,654 cf

Provided Storage Volume: 78,433 cf

Required Surface Area: 45,233 sf

Provided Surface Area: 46,728 sf

Controlling Orifice: 3.0 inch



6. No homeowner/lot owner/developer shall be allowed to fill in, alter, or pipe any vegetative practices (such as swales) shown on the approved plans as part of the stormwater management system without submitting a revision to the permit and receiving approval from the Division.
7. The following items will require a modification to the permit:
 - a. Any revision to the approved plans, regardless of size
 - b. Project name change
 - c. Transfer of ownership
 - d. Redesign or addition to the approved amount of built-upon area
 - e. Further subdivision of the project area.

In addition, the Director may determine that other revisions to the project should require a modification to the permit.

8. 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 revised plans and certification in writing to the Director that the changes have been made.

II. SCHEDULE OF COMPLIANCE

1. The permittee will comply with the following schedule for construction and maintenance of the stormwater management system.
 - a. The stormwater management system shall be constructed in its entirety, vegetated and operational for its intended use prior to the construction of any built-upon surfaces except roads.
 - b. During construction, erosion shall be kept to a minimum and any eroded areas of the system will be repaired immediately.
2. The facilities must be properly maintained and operated at all times. The approved Operation and Maintenance Plan must be followed in its entirety and maintenance must occur at the scheduled intervals.
3. The permittee shall at all times provide the operation and maintenance necessary to assure the permitted stormwater system functions at optimum efficiency including, but not limited to:



- a. Semiannual scheduled inspections (every 6 months)
 - b. Sediment removal
 - c. Mowing and revegetation of side slopes
 - d. Immediate repair of eroded areas
 - e. Maintenance of side slopes in accordance with approved plans and specifications
 - f. Debris removal and unclogging of outlet structure, orifice device and catch basins and piping.
4. 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.
 5. This permit shall become voidable unless the facilities are constructed in accordance with the conditions of this permit, the approved plans and specifications, and other supporting data.
 6. Upon completion of construction and prior to operation of this permitted facility, a certification must be received from an appropriate designer for the system installed certifying that the permitted facility has been installed in accordance with this permit, the approved plans and specifications, and other supporting documentation. Mail the Certification to the Washington Regional Office, 943 Washington Square Mall, Washington, North Carolina, 27889.
 7. A copy of the approved plans and specifications shall be maintained on file by the Permittee for the life of the project.

III. GENERAL CONDITIONS

1. This permit is not transferable. In the event there is a desire for the facilities to change ownership, or there is a name change of the Permittee, a formal permit request must be submitted to the Division accompanied by an application fee, documentation from the parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits and may or may not be approved.
2. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to enforcement action by the Division, in accordance with North Carolina General Statute 143-215.6(a) to 143-215.6(c).
3. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state, and federal) which have jurisdiction.



4. In the event that the facilities fail to perform satisfactorily, including the creation of nuisance conditions, the Permittee shall take immediate corrective action, including those as may be required by this Division, such as the construction of additional or replacement stormwater management systems.
5. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and reissuance or termination does not stay any permit condition.
6. **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.
7. This permit shall be effective from **the date of issuance until December 27, 2030.** Application for permit renewal shall be submitted 180 days prior to the expiration date of this permit and must be accompanied by the processing fee.

Permit issued this the 28 th day of December 2022.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION



For

Douglas R. Ansel, Interim Director
Division of Energy, Mineral and Land Resources
By Authority of the Environmental Management Commission

Permit Number SW7980513



III. Stormwater Detention Pond Calculations & Data:

Total Impervious Coverage (DA)	=	714,212 ft. ² (16.4 Ac)
Total Site Area	=	1,130,818 ft. ²
% Impervious Coverage	=	63.16 %
Basin Depth	=	4.0'
Use SA/DA Table for 85% TSS Removal		
SA/DA	=	4.0

Pond Area Required (SA) = $\frac{1,130,818(4.0)}{100} = 45,233 \text{ ft.}^2$

Pond Surface Area Provided = 46,728 ft.² @ elev. 6.5'

Required Storage Capacity 1.0 in. Design Storm

Impervious Area	=	783,455 ft. ²
Required Storage*	=	67,654 ft. ³
Storage Volume Provided	=	78,433 ft. ³ @ elev. 8.0'
Permanent Pool Elevation	=	7.0' msl.
Design Storage Elevation	=	7.81' msl
Overflow Elevation	=	8.0' msl
Top of Bank Elevation	=	8.5' msl
Bottom Elevation	=	2.5' msl

* Volume = [(Building x 1.0) + (Parking/Concrete x .95) + (Green Areas x .20)] x (43560/12)
 (A factor of 1.0 has been used to calculate for the pond volume for future development of the undeveloped tracts. See attachment for calculations)

Orifice Sizing for Drawdown Device

$$Q = 11.79 d^2 h^{1/2}$$

* Assume a 3" dia. orifice

$$Q = 11.79 (3.0 \text{ in.})^2 (.77)^{1/2}$$

$$Q = 93.15 \text{ gpm}$$

$$\text{Runoff Volume} = 67,654 \text{ ft.}^3 * 7.4805 \text{ gal/ ft.}^3 = 506,085 \text{ gal.}$$

$$\text{Drawdown time} = 506,085 \text{ gal.} / 93.15 \text{ gpm} = 5,433 \text{ min} / 1440 \text{ min. per day} = 3.77 \text{ days}$$

Use a 3" orifice to drawdown the 1" storm runoff volume over a 4-day period

Wet Detention Basin Volume

Elev ft	Area mi ²	Cumml Avg ft ³	Cumml Conic ft ³
8.5000	0.0022	108342.4100	108277.1915
8.0000	0.0021	78433.0275	78372.9380
7.9000	0.0020	72681.0362	72620.9886
7.8000	0.0020	67004.9944	66944.9890
7.7000	0.0020	61404.6759	61344.7130
7.6000	0.0020	55879.8543	55819.9343
6.5000	0.0017	0.0000	0.0000

* Cumulative average figures were used in the overall calculations

CURRITUCK COMMERCIAL CENTER
POND VOLUME CALCULATIONS

TRACT	AREA (FT ²)	IMPERVIOUS COVERAGE	ADJUSTED AREA (FT ²)	FACTOR	IMPERVIOUS AREA (FT ²)
1	46,656	80%	37,325	1.0	37,325
	46,656	20%	9,331	0.2	1,866
2	41,656	80%	33,325	1.0	33,325
	41,656	20%	8,331	0.2	1,666
3	42,333	80%	33,866	1.0	33,866
	42,333	20%	8,467	0.2	1,693
4	44,023	80%	35,218	1.0	35,218
	44,023	20%	8,805	0.2	1,761
5	45,714	80%	36,571	1.0	36,571
	45,714	20%	9,143	0.2	1,829
6	48,897	80%	39,118	1.0	39,118
	48,897	20%	9,779	0.2	1,956
7	40,655	80%	32,524	1.0	32,524
	40,655	20%	8,131	0.2	1,626
8	54,349	80%	43,479	1.0	43,479
	54,349	20%	10,870	0.2	2,174
9	53,258	80%	42,606	1.0	42,606
	53,258	20%	10,652	0.2	2,130
10	40,686	80%	32,549	1.0	32,549
	40,686	20%	8,137	0.2	1,627
11	41,441	80%	33,153	1.0	33,153
	41,441	20%	8,288	0.2	1,658
12	42,690	80%	34,152	1.0	34,152
	42,690	20%	8,538	0.2	1,708
13	45,000	80%	36,000	1.0	36,000
	45,000	20%	9,000	0.2	1,800
14	149,996	80%	119,997	1.0	119,997
	149,996	20%	29,999	0.2	6,000
15	50,317	80%	40,254	1.0	40,254
	50,317	20%	10,063	0.2	2,013
16	55,842	80%	44,674	1.0	44,674
	55,842	20%	11,168	0.2	2,234

TOTAL

ACTUAL 55,827

80%

843,513

708,551

TOTAL PROJECT AREA

44,662

1,130,818

ADDITIONAL IMPERVIOUS COVERAGE

ASPHALT ROADWAY

37,863

GRAVEL PARKING & DRIVE

1,583

TOTAL IMPERVIOUS COVERAGE

747,997

ADDITIONAL GREEN AREA

WASTEWATER UTILITY AREA

120,211

DEDUCT WETLAND FOREBAY & LAGOON IN WASTEWATER UTILITY AREA

33,048

NET ADDITIONAL GREEN AREA IN WASTEWATER UTILITY AREA

87,163

TOTAL ADDITIONAL GREEN AREA

87,163

0.2

17,433

TOTAL IMPERVIOUS COVERAGE

765,430

3427

CURRITUCK COMMERCIAL CENTER
POND VOLUME CALCULATIONS

9/30/98

REQUIRED POND STORAGE	765,430	0.0833	63,760
ADDITIONAL STORAGE TO ACCOUNT FOR 1" RAINFALL OVER POND SURFACE AREA	46,728	0.08333	3,894
TOTAL REQUIRED STORAGE			67,654

EROSIVE VELOCITY CALCULATIONS

Runoff Calculations

- NOAA Precipitation Frequency Estimates
- Drainage Area Map
- Drainage Area CN Calculations
- SCS Method Runoff Calculations
 - Drainage Area #1 - Largest Area Tributary to Existing Roadway Swale
 - 2yr-24hr Runoff Hydrograph
 - 10yr-24hr Runoff Hydrograph
 - Time of Concentration
 - Drainage Area #2 – Largest Area Tributary to Proposed P/L Swale
 - 2yr-24hr Runoff Hydrograph
 - 10yr-24hr Runoff Hydrograph
 - Time of Concentration

Channel Velocity Calculations

- Existing Roadway Swale
 - 2yr-24hr – Bare Soil Condition
 - 10yr-24hr – Vegetated Condition
- Proposed Property Line Swale
 - 2yr-24hr – Bare Soil Condition
 - 10yr-24hr – Vegetated Condition



Latitude: 36.4541°, Longitude: -76.1063°

Elevation: 5 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.435 (0.394-0.480)	0.507 (0.459-0.561)	0.572 (0.517-0.633)	0.657 (0.592-0.727)	0.740 (0.664-0.818)	0.816 (0.730-0.901)	0.884 (0.788-0.977)	0.951 (0.843-1.05)	1.03 (0.906-1.14)	1.11 (0.968-1.23)
10-min	0.695 (0.630-0.766)	0.811 (0.733-0.898)	0.915 (0.828-1.01)	1.05 (0.947-1.16)	1.18 (1.06-1.30)	1.30 (1.16-1.44)	1.40 (1.25-1.55)	1.51 (1.34-1.67)	1.63 (1.43-1.80)	1.75 (1.52-1.94)
15-min	0.868 (0.787-0.958)	1.02 (0.922-1.13)	1.16 (1.05-1.28)	1.33 (1.20-1.47)	1.50 (1.34-1.65)	1.65 (1.47-1.82)	1.78 (1.58-1.96)	1.90 (1.68-2.10)	2.05 (1.80-2.27)	2.20 (1.91-2.43)
30-min	1.19 (1.08-1.31)	1.41 (1.27-1.56)	1.64 (1.49-1.82)	1.93 (1.74-2.13)	2.22 (1.99-2.45)	2.48 (2.22-2.74)	2.72 (2.42-3.00)	2.96 (2.62-3.27)	3.27 (2.87-3.61)	3.55 (3.10-3.94)
60-min	1.48 (1.35-1.64)	1.77 (1.60-1.96)	2.11 (1.91-2.34)	2.51 (2.26-2.78)	2.95 (2.65-3.26)	3.36 (3.00-3.71)	3.75 (3.34-4.14)	4.15 (3.68-4.59)	4.69 (4.12-5.18)	5.19 (4.52-5.75)
2-hr	1.74 (1.57-1.94)	2.08 (1.87-2.32)	2.53 (2.27-2.82)	3.06 (2.74-3.40)	3.68 (3.28-4.08)	4.26 (3.78-4.73)	4.84 (4.26-5.36)	5.44 (4.78-6.04)	6.26 (5.45-6.96)	7.05 (6.08-7.83)
3-hr	1.86 (1.68-2.09)	2.23 (2.00-2.50)	2.72 (2.44-3.04)	3.31 (2.96-3.70)	4.02 (3.57-4.48)	4.71 (4.16-5.24)	5.40 (4.74-6.00)	6.15 (5.36-6.82)	7.18 (6.19-7.96)	8.18 (6.98-9.08)
6-hr	2.22 (2.00-2.48)	2.64 (2.38-2.96)	3.23 (2.90-3.62)	3.95 (3.52-4.41)	4.80 (4.27-5.35)	5.65 (4.99-6.28)	6.50 (5.70-7.21)	7.43 (6.47-8.23)	8.72 (7.50-9.65)	9.98 (8.48-11.1)
12-hr	2.61 (2.35-2.92)	3.11 (2.78-3.50)	3.82 (3.41-4.28)	4.68 (4.17-5.24)	5.74 (5.08-6.41)	6.80 (5.97-7.58)	7.88 (6.86-8.76)	9.08 (7.82-10.1)	10.8 (9.13-11.9)	12.4 (10.4-13.8)
24-hr	3.06 (2.81-3.36)	3.73 (3.42-4.09)	4.81 (4.41-5.28)	5.72 (5.23-6.26)	7.07 (6.42-7.72)	8.23 (7.41-8.97)	9.50 (8.47-10.3)	10.9 (9.62-11.9)	13.0 (11.3-14.2)	14.8 (12.6-16.2)
2-day	3.55 (3.26-3.89)	4.30 (3.96-4.71)	5.52 (5.07-6.03)	6.56 (6.00-7.16)	8.13 (7.38-8.85)	9.48 (8.53-10.3)	11.0 (9.79-12.0)	12.7 (11.1-13.8)	15.2 (13.1-16.7)	17.4 (14.7-19.2)
3-day	3.78 (3.49-4.12)	4.57 (4.22-4.98)	5.84 (5.39-6.36)	6.91 (6.35-7.51)	8.49 (7.74-9.22)	9.84 (8.91-10.7)	11.3 (10.1-12.3)	13.0 (11.5-14.1)	15.4 (13.4-16.8)	17.6 (15.1-19.3)
4-day	4.00 (3.71-4.34)	4.85 (4.50-5.26)	6.17 (5.71-6.68)	7.26 (6.70-7.86)	8.86 (8.11-9.58)	10.2 (9.28-11.0)	11.6 (10.5-12.6)	13.2 (11.8-14.3)	15.6 (13.6-17.0)	17.8 (15.4-19.5)
7-day	4.68 (4.35-5.05)	5.64 (5.25-6.10)	7.08 (6.58-7.64)	8.27 (7.66-8.92)	9.99 (9.20-10.8)	11.4 (10.4-12.3)	13.0 (11.7-14.0)	14.6 (13.1-15.8)	17.0 (15.0-18.5)	19.0 (16.5-20.7)
10-day	5.28 (4.95-5.66)	6.33 (5.93-6.78)	7.84 (7.33-8.40)	9.09 (8.48-9.72)	10.9 (10.1-11.6)	12.4 (11.4-13.2)	13.9 (12.7-15.0)	15.6 (14.2-16.8)	18.1 (16.1-19.5)	20.0 (17.6-21.8)
20-day	7.17 (6.75-7.64)	8.54 (8.04-9.10)	10.4 (9.76-11.1)	11.9 (11.2-12.7)	14.0 (13.1-15.0)	15.8 (14.6-16.8)	17.6 (16.2-18.8)	19.6 (17.8-21.0)	22.3 (20.0-24.0)	24.5 (21.8-26.5)
30-day	8.84 (8.35-9.38)	10.5 (9.92-11.1)	12.6 (11.9-13.4)	14.3 (13.5-15.2)	16.7 (15.6-17.7)	18.6 (17.3-19.7)	20.5 (19.0-21.8)	22.5 (20.6-24.0)	25.2 (22.9-27.0)	27.3 (24.6-29.4)
45-day	11.0 (10.4-11.7)	13.0 (12.3-13.8)	15.5 (14.6-16.5)	17.6 (16.5-18.7)	20.5 (19.2-21.8)	22.9 (21.3-24.3)	25.4 (23.5-27.0)	28.0 (25.7-29.8)	31.5 (28.7-33.8)	34.4 (30.9-37.1)
60-day	13.1 (12.4-13.9)	15.5 (14.7-16.4)	18.3 (17.3-19.4)	20.6 (19.4-21.8)	23.7 (22.3-25.0)	26.1 (24.4-27.6)	28.5 (26.6-30.3)	31.0 (28.8-33.0)	34.4 (31.6-36.8)	37.0 (33.7-39.8)

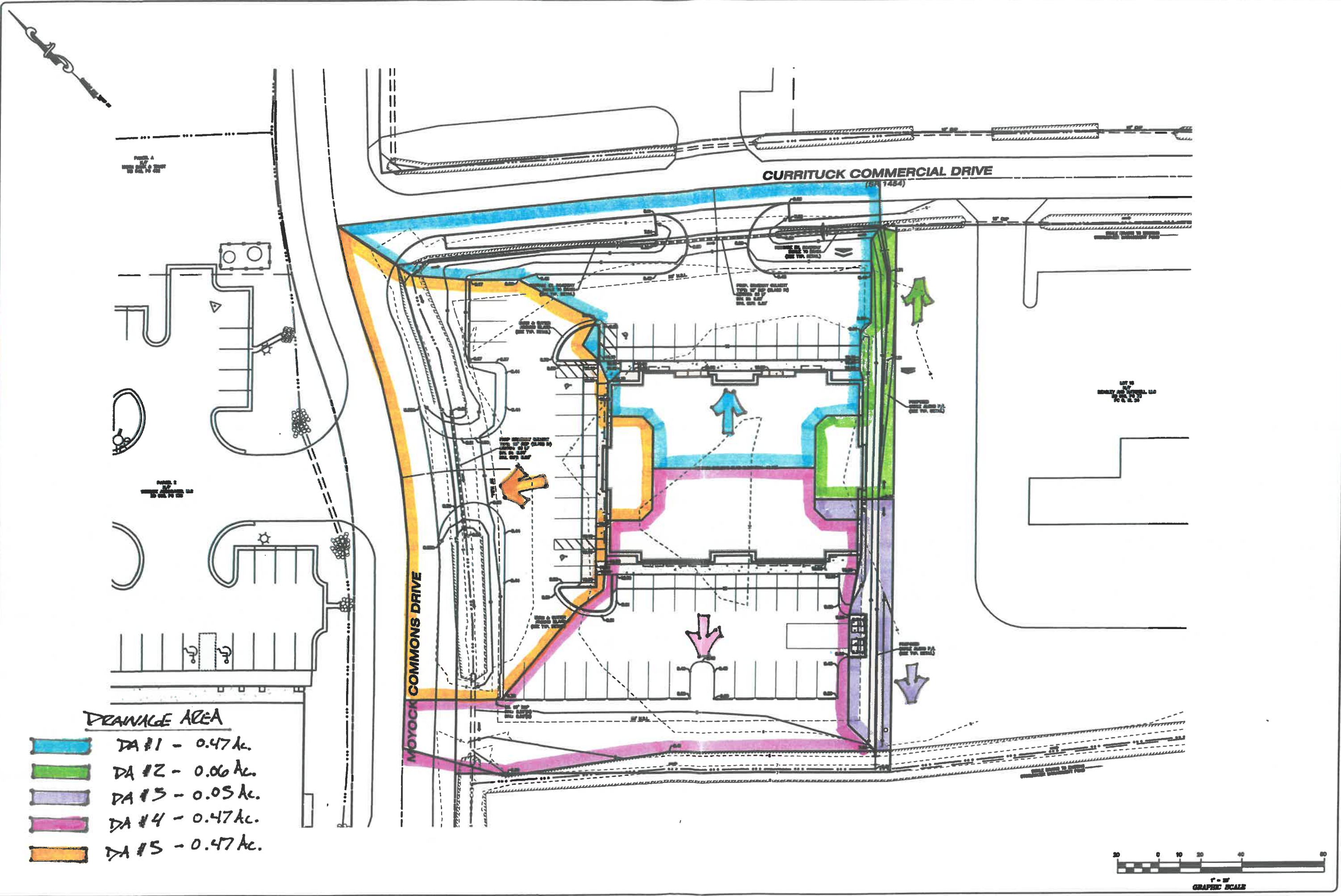
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

PF graphical



DRAINAGE AREA

- DA #1 - 0.47 Ac.
- DA #2 - 0.06 Ac.
- DA #3 - 0.05 Ac.
- DA #4 - 0.47 Ac.
- DA #5 - 0.47 Ac.



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PROJECT: **MOYOCK DENTAL OFFICE** NORTH CAROLINA
 MOYOCK TOWNSHIP CURRITUCK COUNTY
COMMERCIAL SITE DEVELOPMENT PLANS

NO.	DATE	DESCRIPTION

PRELIMINARY DO NOT USE FOR CONSTRUCTION

DATE: 07/14/23 SCALE: 1" = 20'
 DRAWN BY: BPG MSB
 CHECKED BY: KPW/DMK BPG
 SHEET: 4 OF 10
 CAD FILE: 342700B1
 PROJECT NO: 3427

Drainage Area #1 (Tributary to existing swale)

Sub Area A: 16,202 sf
Curve Number: 98 impervious
Sub Area B: 4,139 sf
Curve Number: 80 Open Space, Good Condition, HSG - D

Total Area: 20,341 sf
Composite Curve Number: 94

Drainage Area #2 (Tributary to proposed swale)

Sub Area A: 932 sf
Curve Number: 98 impervious
Sub Area B: 1,930 sf
Curve Number: 80 Open Space, Good Condition, HSG - D

Total Area: 2,862 sf
Composite Curve Number: 86

Drainage Area #3 (Tributary to proposed swale)

Sub Area A: 368 sf
Curve Number: 98 impervious
Sub Area B: 2,147 sf
Curve Number: 80 Open Space, Good Condition, HSG - D

Total Area: 2,515 sf
Composite Curve Number: 83

Drainage Area #4 (Tributary to existing swale)

Sub Area A: 13,124 sf
Curve Number: 98 impervious
Sub Area B: 7,141 sf
Curve Number: 80 Open Space, Good Condition, HSG - D

Total Area: 20,265 sf
Composite Curve Number: 92

Drainage Area #5 (Tributary to existing swale)

Sub Area A: 13,952 sf
Curve Number: 98 impervious
Sub Area B: 6,252 sf
Curve Number: 80 Open Space, Good Condition, HSG - D

Total Area: 20,204 sf
Composite Curve Number: 92

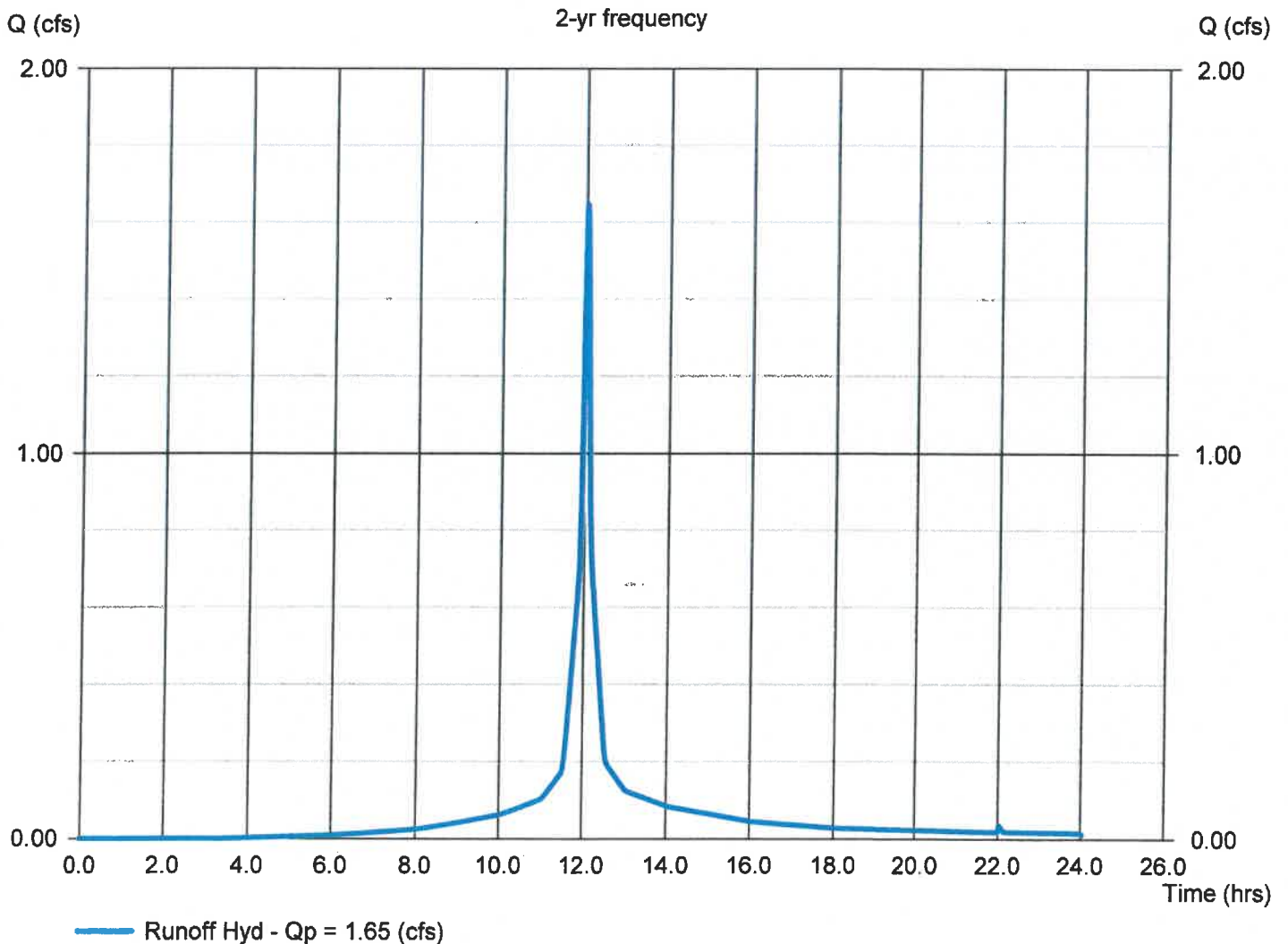
Hydrology Report

DA#1

Hydrograph type	= SCS	Peak discharge (cfs)	= 1.646
Storm frequency (yrs)	= 2	Time interval (min)	= 1
Drainage area (ac)	= 0.470	Curve number (CN)	= 94
Basin Slope (%)	= See Worksheet	Hydraulic length (ft)	= See Worksheet
Tc method	= TR55	Time of conc. (min)	= 3
Total precip. (in)	= 3.73	Storm Distribution	= Type III
Storm duration (hrs)	= 24	Shape factor	= 284

Hydrograph Volume = 5,170 (cuft); 0.119 (acft)

Runoff Hydrograph



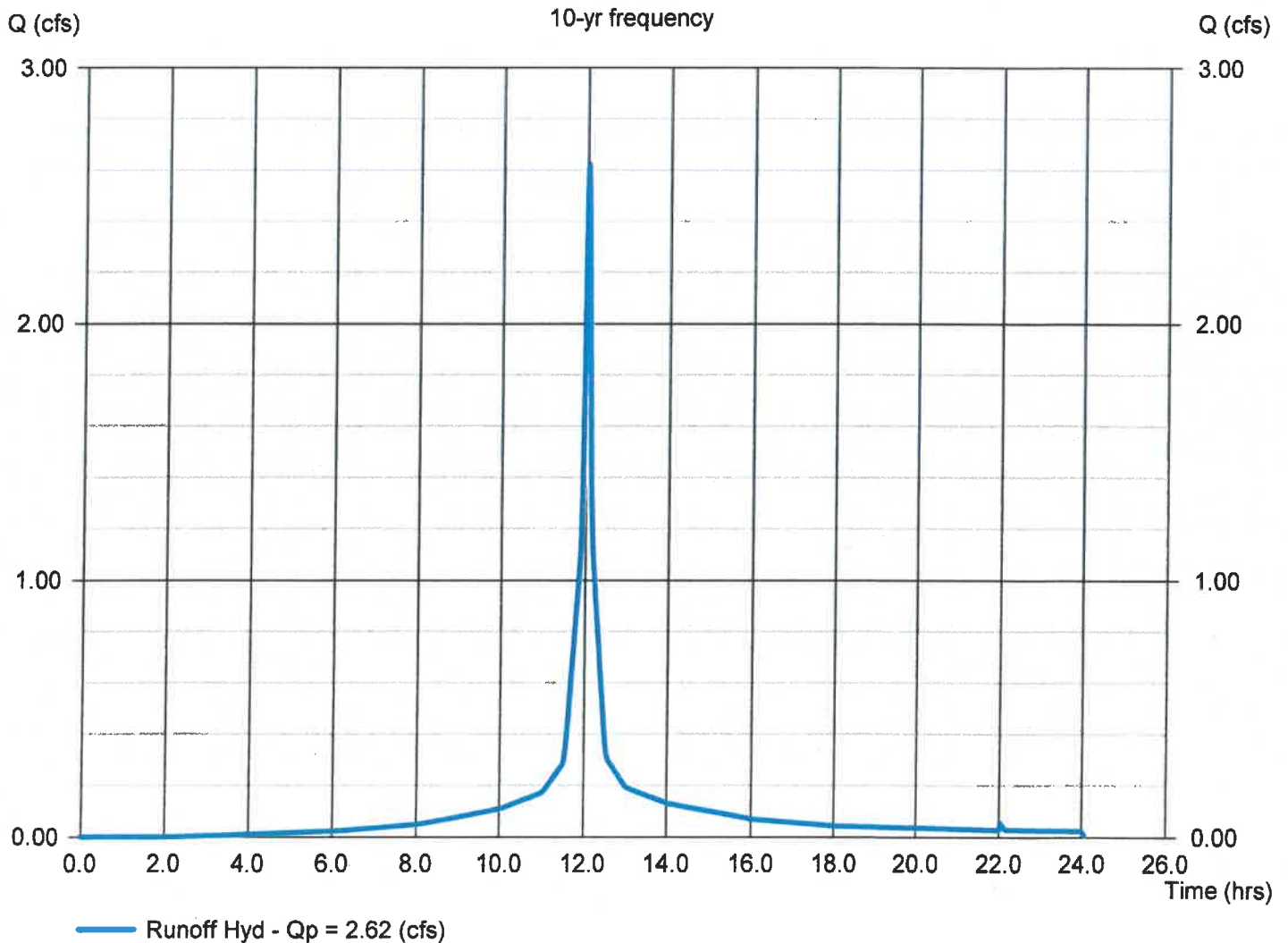
Hydrology Report

DA#1

Hydrograph type	= SCS	Peak discharge (cfs)	= 2.623
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.470	Curve number (CN)	= 94
Basin Slope (%)	= See Worksheet	Hydraulic length (ft)	= See Worksheet
Tc method	= TR55	Time of conc. (min)	= 3
Total precip. (in)	= 5.72	Storm Distribution	= Type III
Storm duration (hrs)	= 24	Shape factor	= 284

Hydrograph Volume = 8,480 (cuft); 0.195 (acft)

Runoff Hydrograph



TR55 Tc Worksheet

SCS

DA#1

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.011	0.011	0.011	
Flow length (ft)	= 33.0	0.0	0.0	
Two-year 24-hr precip. ((in))	= 3.73	0.00	0.00	
Land slope (%)	= 1.50	0.00	0.00	
Travel Time (min)	= 0.52	+ 0.00	+ 0.00	= 0.52
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	= 0.00	0.00	0.00	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Channel Flow				
X sectional flow area ((sqft))	= 4.70	0.00	0.00	
Wetted perimeter ((ft))	= 7.90	0.00	0.00	
Channel slope (%)	= 0.17	0.00	0.00	
Manning's n-value	= 0.040	0.015	0.015	
Velocity (ft/s)	= 1.08	0.00	0.00	
Flow length (ft)	= 170.0	0.0	0.0	
Travel Time (min)	= 2.6124710.000	+ 0	= 2.61	
Total Travel Time, Tc				3.00 min

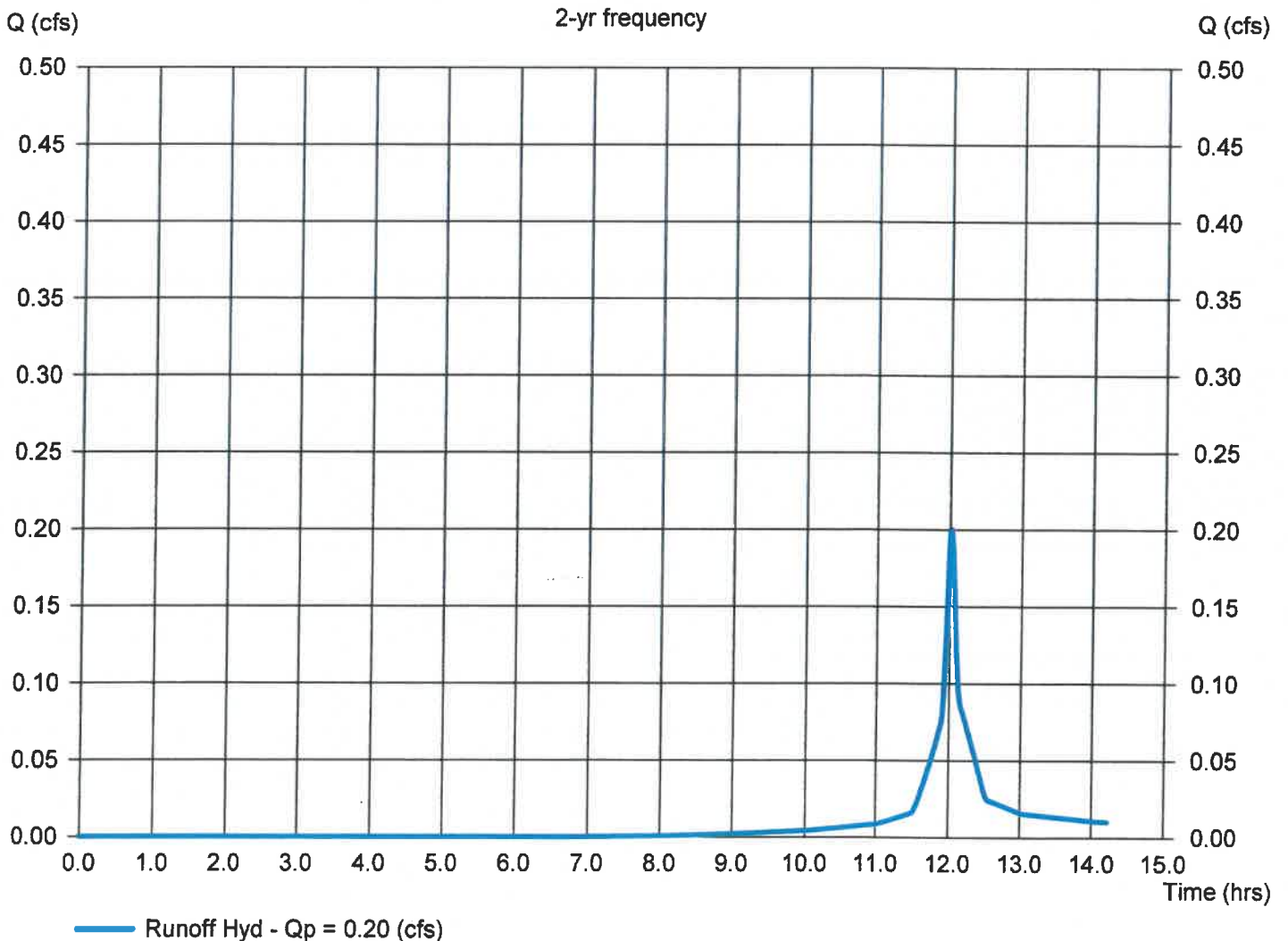
Hydrology Report

DA#2

Hydrograph type	= SCS	Peak discharge (cfs)	= 0.200
Storm frequency (yrs)	= 2	Time interval (min)	= 1
Drainage area (ac)	= 0.060	Curve number (CN)	= 86
Basin Slope (%)	= See Worksheet	Hydraulic length (ft)	= See Worksheet
Tc method	= TR55	Time of conc. (min)	= 1
Total precip. (in)	= 3.73	Storm Distribution	= Type III
Storm duration (hrs)	= 24	Shape factor	= 284

Hydrograph Volume = 552 (cuft); 0.013 (acft)

Runoff Hydrograph



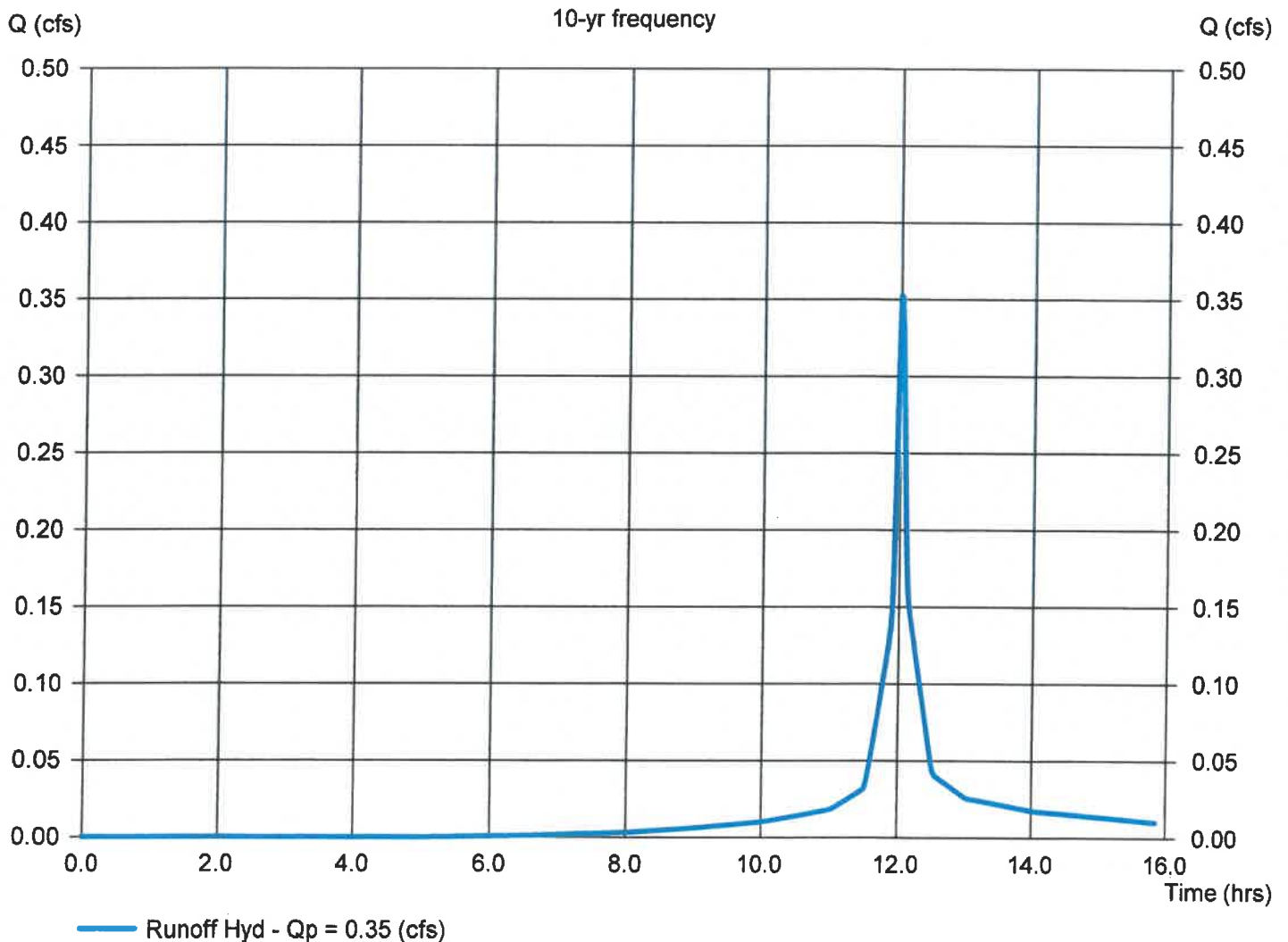
Hydrology Report

DA#2

Hydrograph type	= SCS	Peak discharge (cfs)	= 0.352
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.060	Curve number (CN)	= 86
Basin Slope (%)	= See Worksheet	Hydraulic length (ft)	= See Worksheet
Tc method	= TR55	Time of conc. (min)	= 1
Total precip. (in)	= 5.72	Storm Distribution	= Type III
Storm duration (hrs)	= 24	Shape factor	= 284

Hydrograph Volume = 993 (cuft); 0.023 (acft)

Runoff Hydrograph



TR55 Tc Worksheet

SCS

DA#2

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.011	0.011	0.011	
Flow length (ft)	= 24.0	0.0	0.0	
Two-year 24-hr precip. ((in))	= 3.73	0.00	0.00	
Land slope (%)	= 60.00	0.00	0.00	
Travel Time (min)	= 0.09	+	0.00	+
			0.00	= 0.09
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	= 0.00	0.00	0.00	
Travel Time (min)	= 0.00	+	0.00	+
			0.00	= 0.00
Channel Flow				
X sectional flow area ((sqft))	= 3.00	0.00	0.00	
Wetted perimeter ((ft))	= 6.30	0.00	0.00	
Channel slope (%)	= 1.20	0.00	0.00	
Manning's n-value	= 0.040	0.015	0.015	
Velocity (ft/s)	= 2.48	0.00	0.00	
Flow length (ft)	= 130.0	0.0	0.0	
Travel Time (min)	= 0.87289520.00	+	0	= 0.87
Total Travel Time, Tc				1.00 min

Channel Report

Ex. Roadway Swale - 2 yr 24 hr - Bare Soil

Triangular

Side Slopes (z:1) = 3.00, 3.00
 Total Depth (ft) = 1.25

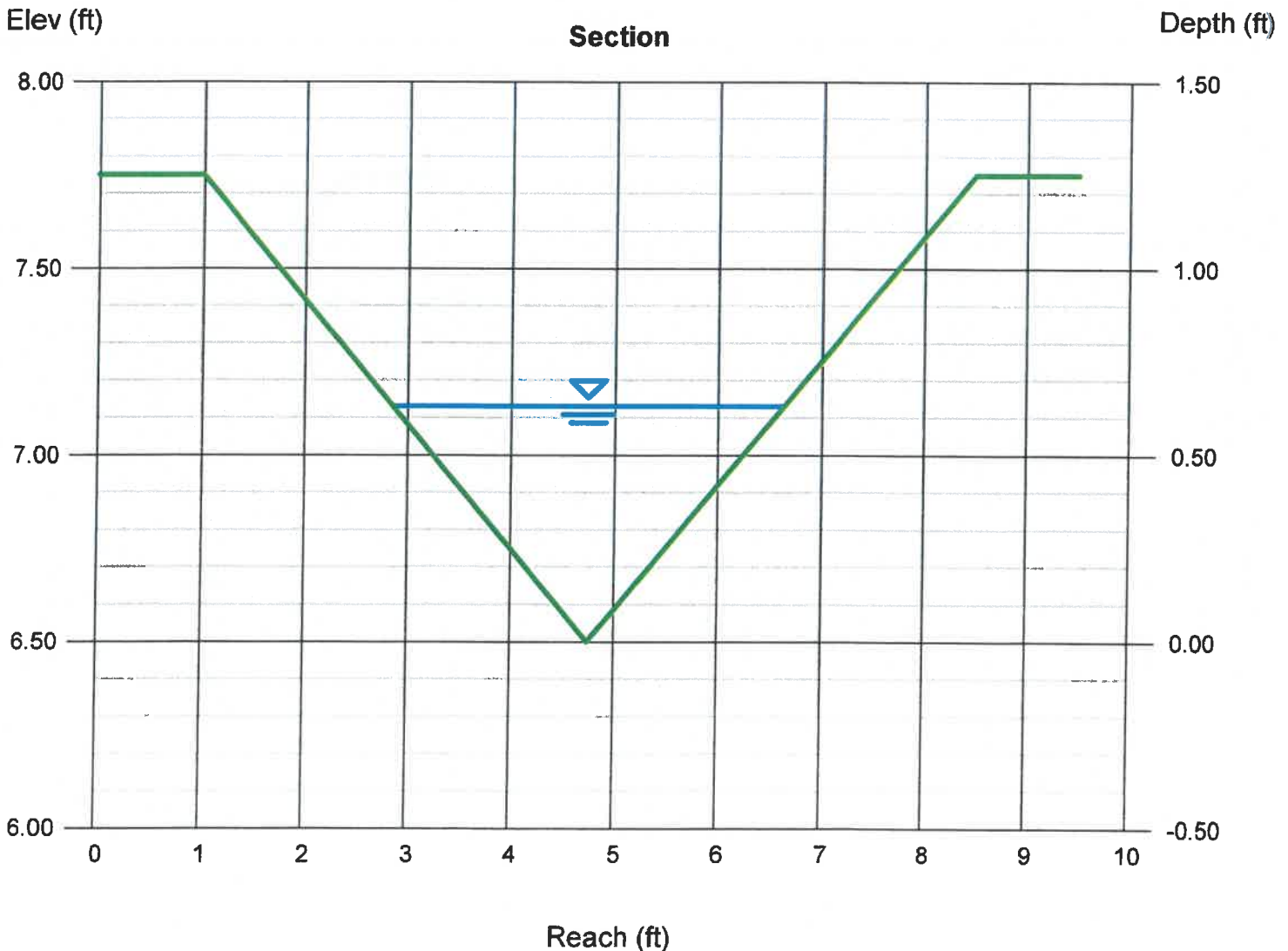
Invert Elev (ft) = 6.50
 Slope (%) = 0.17
 N-Value = 0.020

Calculations

Compute by: Known Q
 Known Q (cfs) = 1.60 *DA #1 - 2YR*

Highlighted

Depth (ft) = 0.63
 Q (cfs) = 1.600
 Area (sqft) = 1.19
 Velocity (ft/s) = 1.34 *< 2 FPS OK*
 Wetted Perim (ft) = 3.98
 Crit Depth, Yc (ft) = 0.45
 Top Width (ft) = 3.78
 EGL (ft) = 0.66



Channel Report

Ex. Roadway Swale - 10 yr 24 hr - Vegetated

Triangular

Side Slopes (z:1) = 3.00, 3.00
 Total Depth (ft) = 1.25

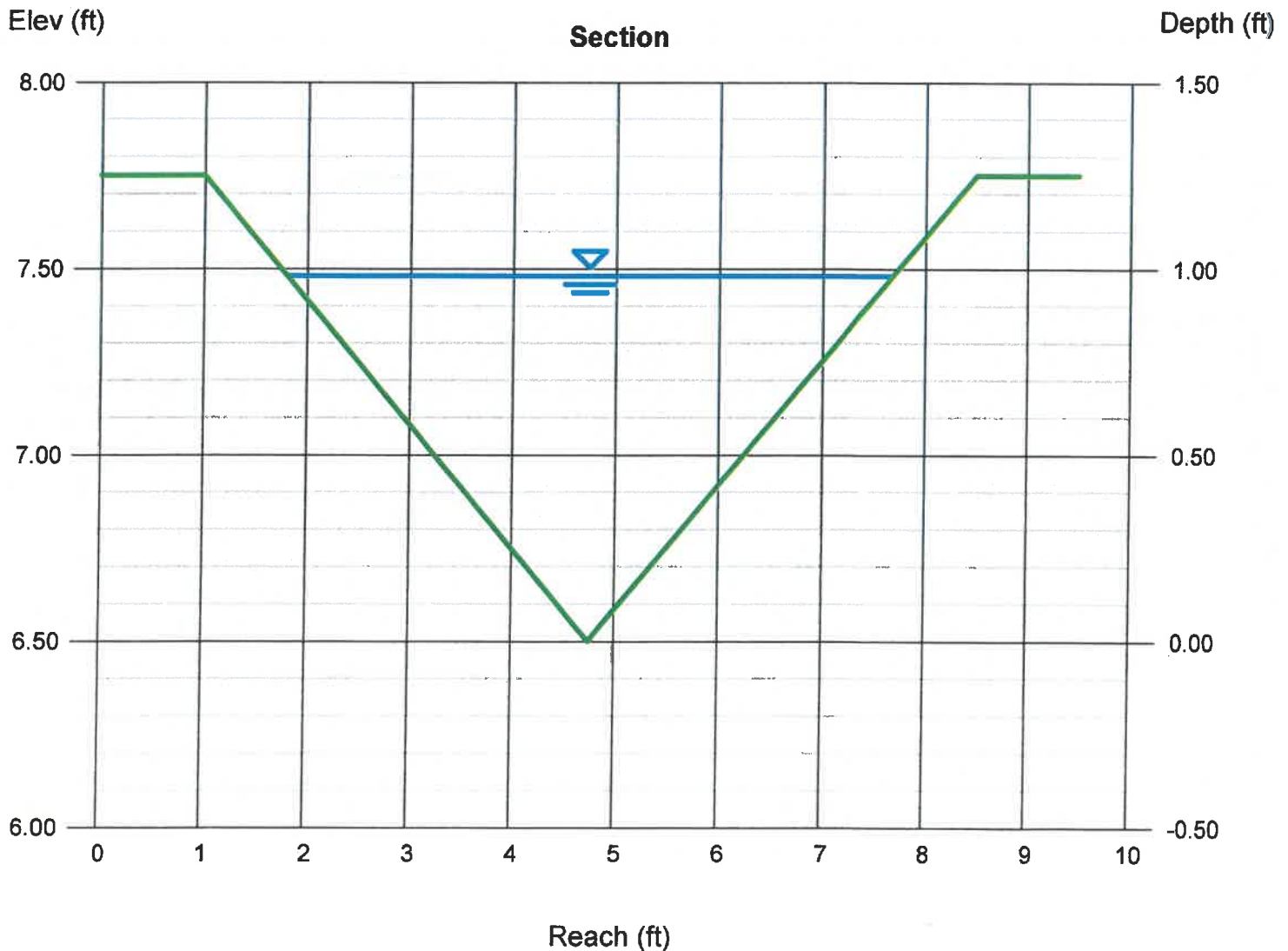
Invert Elev (ft) = 6.50
 Slope (%) = 0.17
 N-Value = 0.040

Calculations

Compute by: Known Q
 Known Q (cfs) = 2.60 *DA#1 - 10 YR*

Highlighted

Depth (ft) = 0.98
 Q (cfs) = 2.600
 Area (sqft) = 2.88
 Velocity (ft/s) = 0.90 *< 4 FPS OK*
 Wetted Perim (ft) = 6.20
 Crit Depth, Yc (ft) = 0.55
 Top Width (ft) = 5.88
 EGL (ft) = 0.99



Channel Report

Prop Property Line Swale - 2 yr 24 hr - Bare Soil

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.00

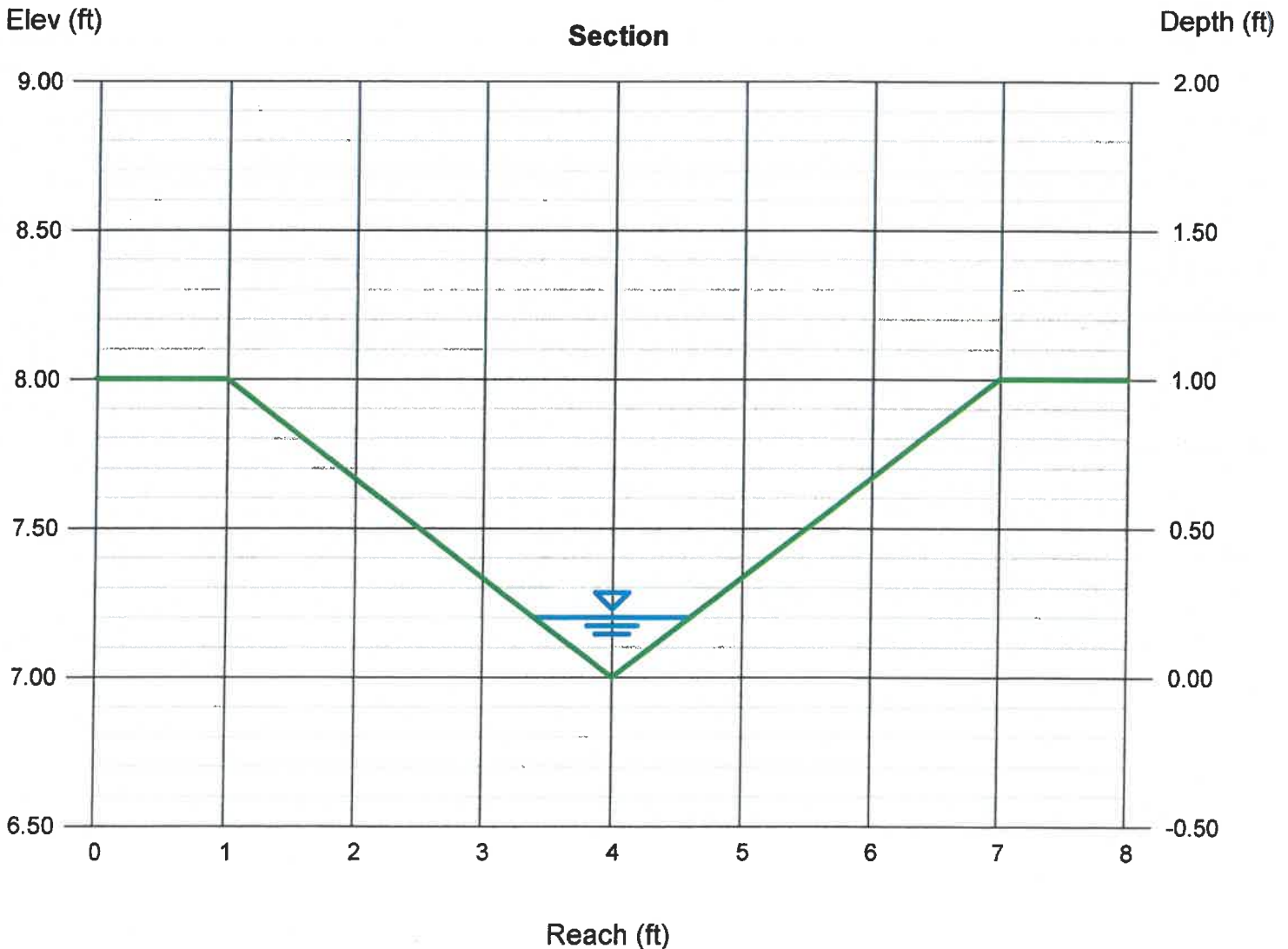
Invert Elev (ft) = 7.00
Slope (%) = 1.20
N-Value = 0.020

Calculations

Compute by: Known Q
Known Q (cfs) = 0.20 *DA #2 - 2 YR*

Highlighted

Depth (ft) = 0.20
Q (cfs) = 0.200
Area (sqft) = 0.12
Velocity (ft/s) = 1.67 *< 2 FPS OK*
Wetted Perim (ft) = 1.26
Crit Depth, Yc (ft) = 0.20
Top Width (ft) = 1.20
EGL (ft) = 0.24



Channel Report

Prop Property Line Swale - 10 yr 24 hr - Vegetated

Triangular

Side Slopes (z:1) = 3.00, 3.00
Total Depth (ft) = 1.00

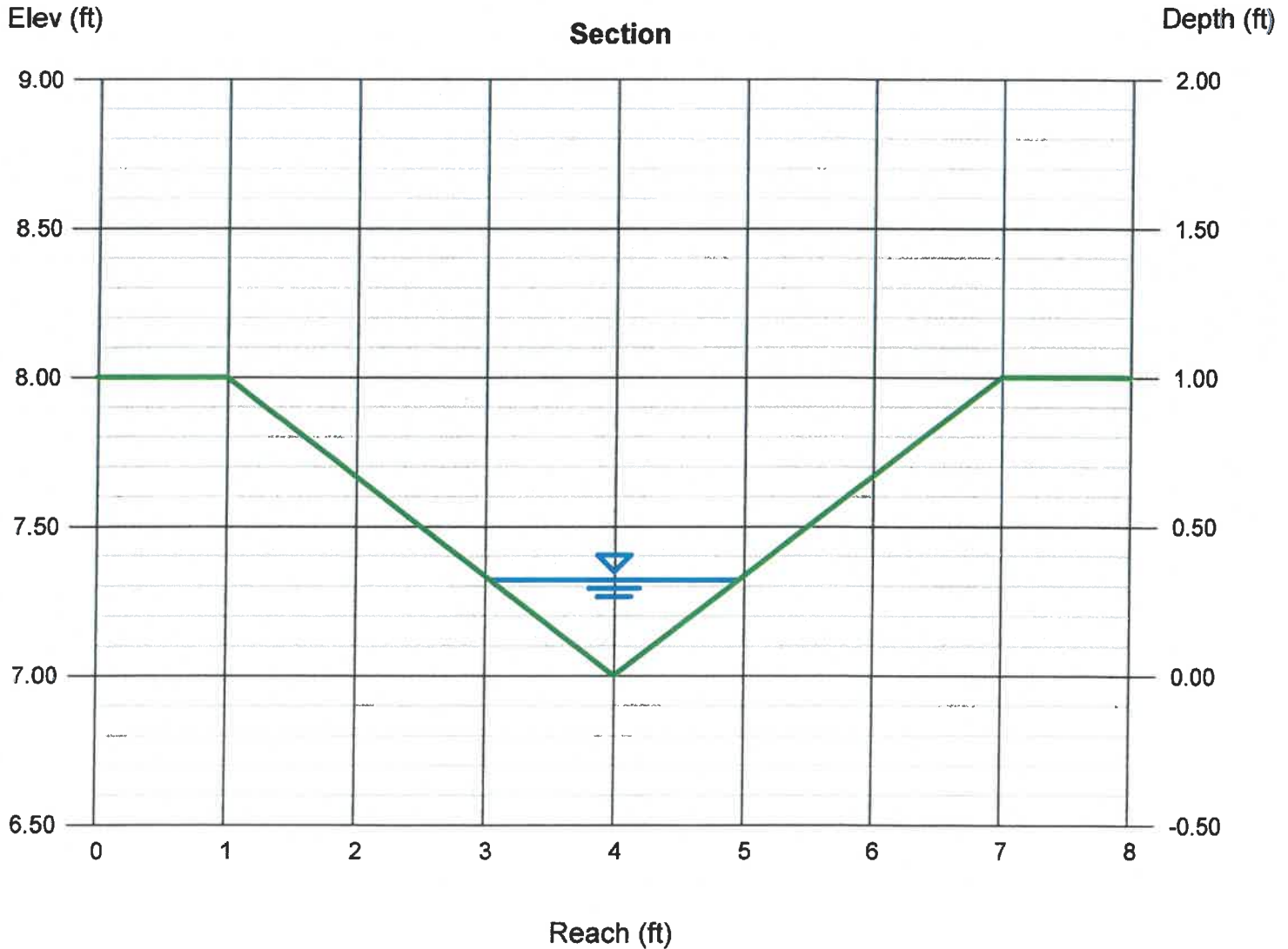
Invert Elev (ft) = 7.00
Slope (%) = 1.20
N-Value = 0.040

Calculations

Compute by: Known Q
Known Q (cfs) = 0.35 *DA #2-10 Y12*

Highlighted

Depth (ft) = 0.32
Q (cfs) = 0.350
Area (sqft) = 0.31
Velocity (ft/s) = 1.14 *< 4 FPS OK*
Wetted Perim (ft) = 2.02
Crit Depth, Yc (ft) = 0.25
Top Width (ft) = 1.92
EGL (ft) = 0.34



10yr HGL EVALUATION

Pre-Development

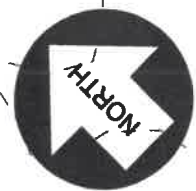
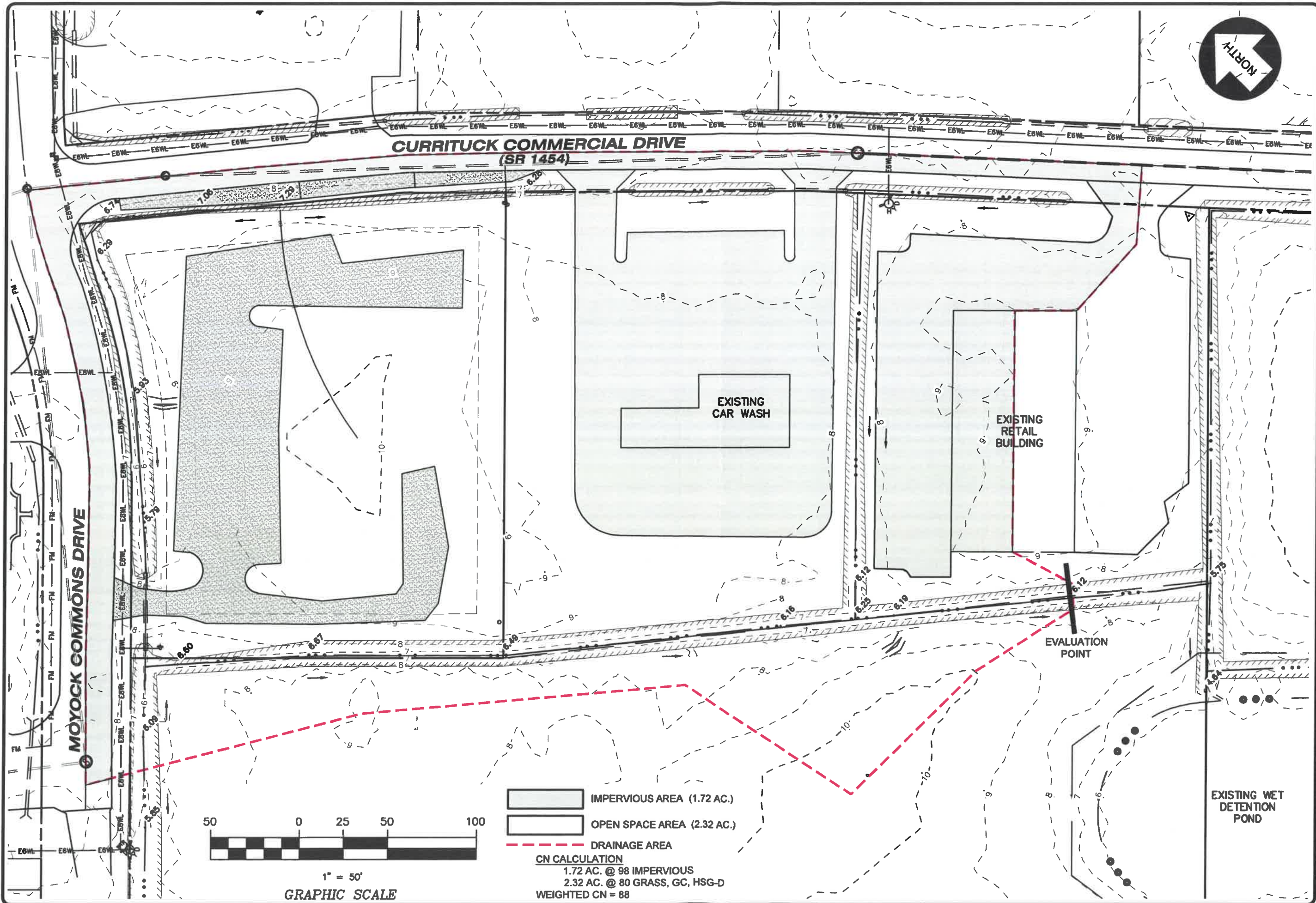
- Drainage Area Map w/ CN Calculation
- 10yr-24 hr SCS Method Runoff Calculations
- Channel HGL Calculations

Post-Development

- Drainage Area Map w/ CN Calculation
- 10yr-24 hr SCS Method Runoff Calculations
- Channel HGL Calculations

Summary

The enclosed calculations determined a Pre-Development HGL elevation of 7.73' and a Post-Development HGL elevation of 7.88', resulting in an anticipated HGL increase of 0.15', or 1.8". With regards to the County's requirement that a proposed FFE be a minimum of 18" above the 10-yr storm elevation, the proposed minimum building slab elevation of 10.75' is more than 34" above the calculated post-development HGL. With regards to surrounding existing buildings, they were constructed under prior rules and may, or may not meet the current 18" requirement. To determine this would require off-site surveying and extensive subdivision wide stormwater modeling efforts that are believed to be beyond the scope necessary for a project of this type. Nonetheless, the HGL increase of only 1.8 inches stays within the existing downstream ditch section and should be considered minor in terms of possible impact to adjoining buildings.



CURRITUCK COMMERCIAL DRIVE
(SR 1454)

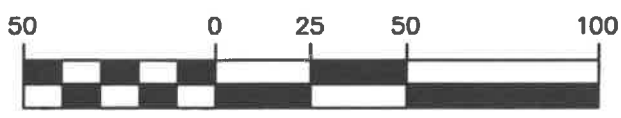
MOYOCK COMMONS DRIVE

EXISTING
CAR WASH

EXISTING
RETAIL
BUILDING

EVALUATION
POINT

EXISTING WET
DETENTION
POND



IMPERVIOUS AREA (1.72 AC.)
 OPEN SPACE AREA (2.32 AC.)
 DRAINAGE AREA
CN CALCULATION
 1.72 AC. @ 98 IMPERVIOUS
 2.32 AC. @ 80 GRASS, GC, HSG-D
WEIGHTED CN = 88

BISEL
 PROFESSIONAL GROUP
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 and Environmental Specialists
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 P.O. Box 1048
 Raleigh, NC 27604
 (252) 281-3268
 FAX (252) 281-1780

PROJECT: **MOYOCK DENTAL OFFICE**
COMMERCIAL SITE DEVELOPMENT PLAN
PRE-DEVELOPMENT DRAINAGE AREA MAP
 MOYOCK TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

REVISIONS		DATE	DESCRIPTION	BY

DATE: 09-27-23 SCALE: 1"=50'
 DESIGNER: BPG CHECKER: DMK
 DRAWN: DMK APPROVED: DMK
 SHEET: 1 of 1
 CAD FILE: 342700B1
 PROJECT NO: 3427

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Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Thursday, Sep 28 2023

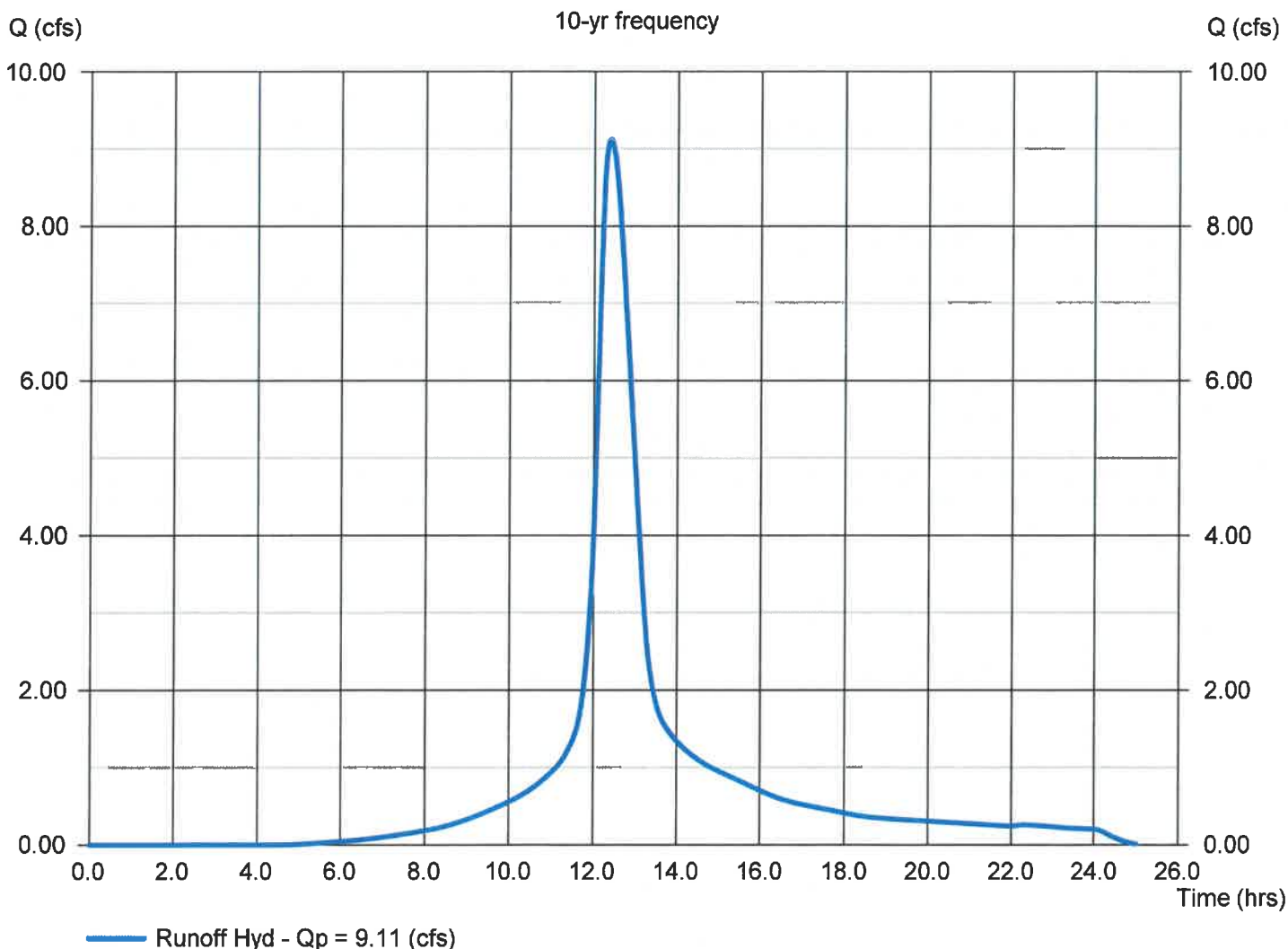
OVERALL 10YR PRE-DEVELOPMENT

Hydrograph type	= SCS	Peak discharge (cfs)	= 9.114
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 4.040	Curve number (CN)	= <u>88</u>
Basin Slope (%)	= See Worksheet	Hydraulic length (ft)	= See Worksheet
Tc method	= TR55	Time of conc. (min)	= <u>28</u>
Total precip. (in)	= 5.72	Storm Distribution	= Type III
Storm duration (hrs)	= 24	Shape factor	= 284

CN: 1.72 Ac. @ 98 (IMP?)
2.32 Ac @ 80 (GRASS, GC, HSG-D)
CN = 88

Hydrograph Volume = 63,678 (cuft); 1.462 (acft)

Runoff Hydrograph



TR55 Tc Worksheet

SCS

OVERALL 10YR PRE-DEVELOPMENT

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 84.0	37.0	18.0	
Two-year 24-hr precip. ((in))	= 3.73	3.73	3.73	
Land slope (%)	= 1.40	1.10	5.60	
Travel Time (min)	= 13.26	+ 0.64	+ 0.19	= 14.09
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	= 0.00	0.00	0.00	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Channel Flow				
X sectional flow area ((sqft))	= 7.20	9.70	0.00	
Wetted perimeter ((ft))	= 13.30	12.60	0.00	
Channel slope (%)	= 0.20	0.10	0.00	
Manning's n-value	= 0.040	0.040	0.015	
Velocity (ft/s)	= 1.10	0.99	0.00	
Flow length (ft)	= 359.0	526.0	0.0	
Travel Time (min)	= 5.4183849	0.008867871	0.000	= 14.29
Total Travel Time, Tc				28.00 min

Channel Report

Ex. Outlet Swale - 10 yr 24 hr - Pre-Development

Triangular

Side Slopes (z:1) = 3.08, 4.18
Total Depth (ft) = 1.92

Invert Elev (ft) = 6.12
Slope (%) = 0.10
N-Value = 0.040

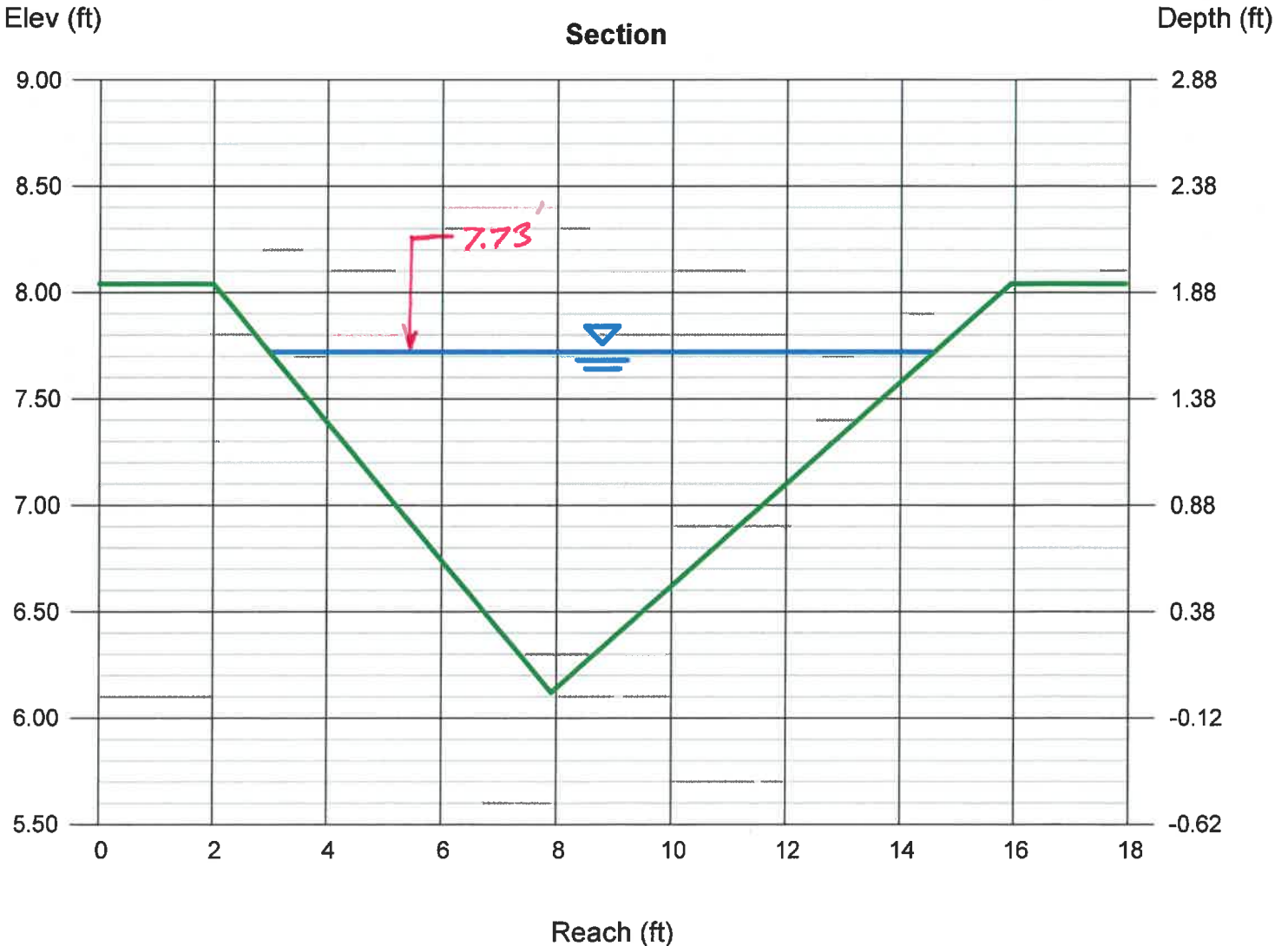
Calculations

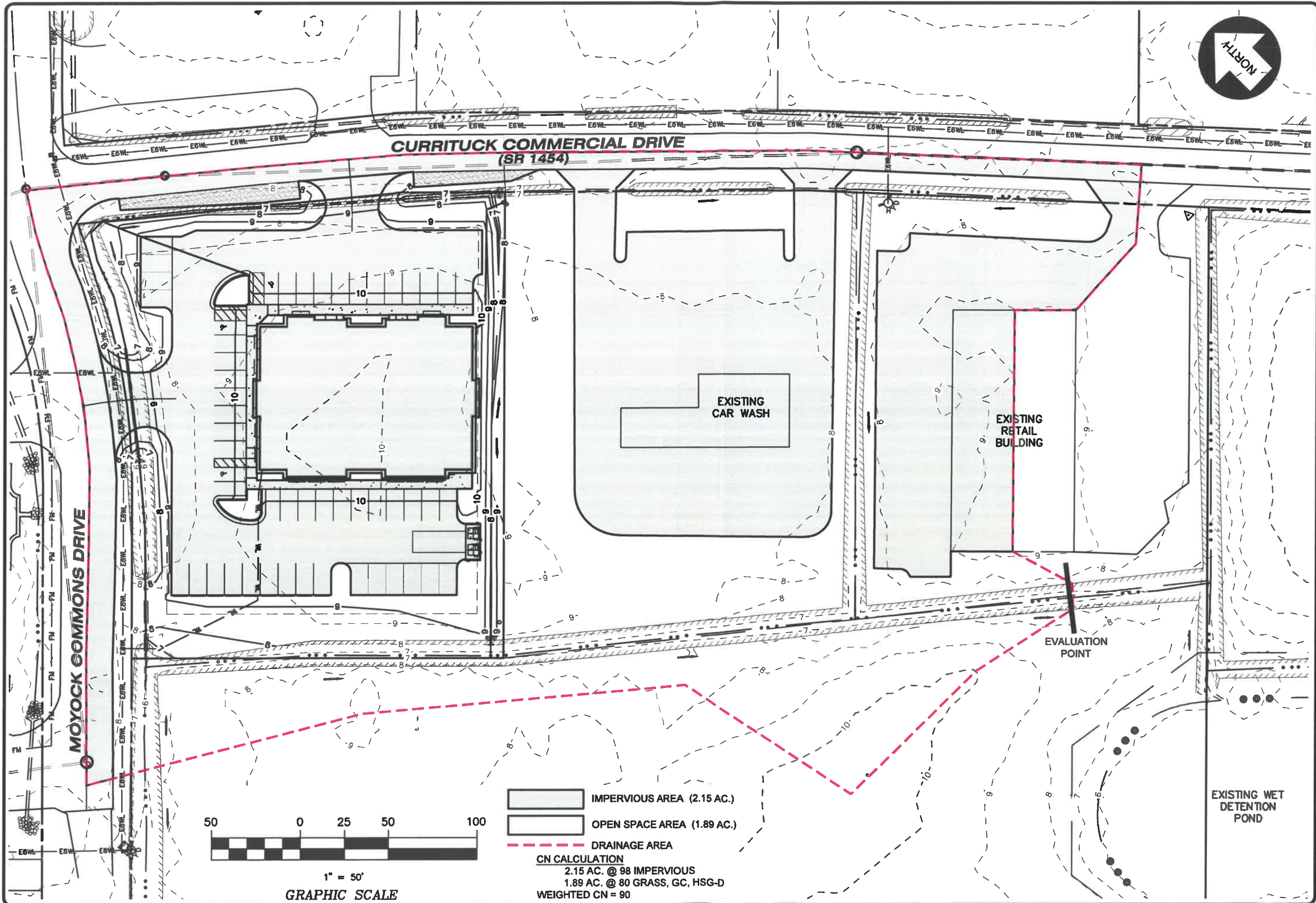
Compute by: Known Q
Known Q (cfs) = 9.11

Highlighted

Depth (ft) = 1.60
Q (cfs) = 9.110
Area (sqft) = 9.29
Velocity (ft/s) = 0.98
Wetted Perim (ft) = 12.06
Crit Depth, Yc (ft) = 0.83
Top Width (ft) = 11.62
EGL (ft) = 1.61

HGL ELEV. = 7.73





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 Engineers, Planners, Surveyors
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PROJECT:
MOYOCK DENTAL OFFICE
COMMERCIAL SITE DEVELOPMENT PLAN
POST-DEVELOPMENT DRAINAGE AREA MAP
 MOYOCK TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

REVISIONS	
NO.	DATE DESCRIPTION

DATE: 09-27-23 SCALE: 1"=50'
 DESIGNED: BPG CHECKED: DMK
 DRAWING: DMK APPROVED: DMK
 SHEET: 1 of 1
 CAD FILE: 342700B1
 PROJECT NO: 3427

Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Thursday, Sep 28 2023

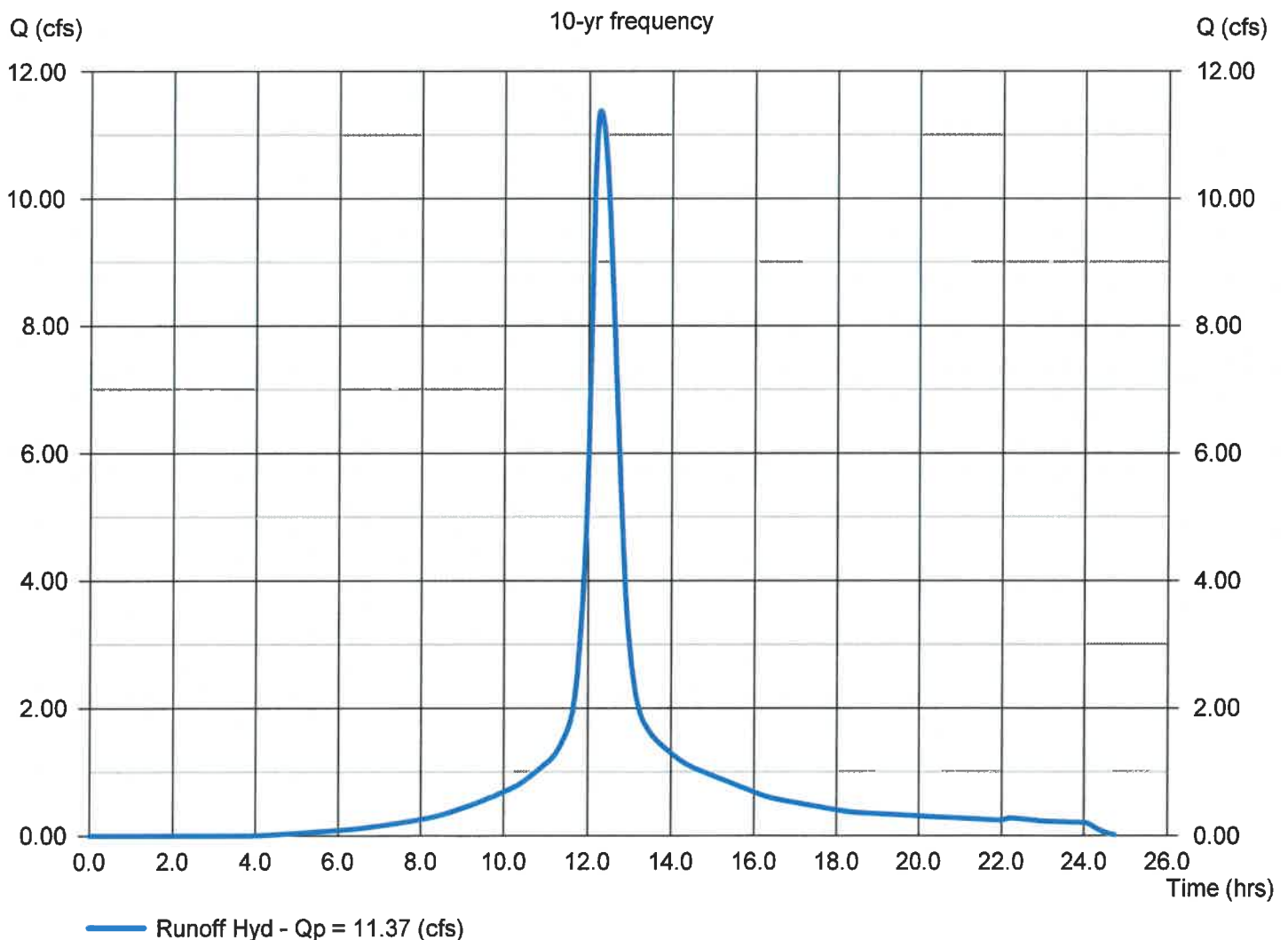
OVERALL 10YR POST-DEVELOPMENT

Hydrograph type	= SCS	Peak discharge (cfs)	= 11.37
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 4.040	Curve number (CN)	= 90
Basin Slope (%)	= See Worksheet	Hydraulic length (ft)	= See Worksheet
Tc method	= TR55	Time of conc. (min)	= 20
Total precip. (in)	= 5.72	Storm Distribution	= Type III
Storm duration (hrs)	= 24	Shape factor	= 284

CN: 2.15 Ac. @ 98 (IMP)
1.89 Ac. @ 80 (Grass, G.L., HSG-D)
CN = 90

Hydrograph Volume = 67,642 (cuft); 1.553 (acft)

Runoff Hydrograph



TR55 Tc Worksheet

SCS

OVERALL 10YR POST-DEVELOPMENT

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.011	0.240	0.011	
Flow length (ft)	= 64.0	22.0	0.0	
Two-year 24-hr precip. ((in))	= 3.73	3.73	0.00	
Land slope (%)	= 1.00	8.50	0.00	
Travel Time (min)	= 1.04	+ 2.21	+ 0.00	= 3.24
Shallow Concentrated Flow				
Flow length (ft)	= 0.00	0.00	0.00	
Watercourse slope (%)	= 0.00	0.00	0.00	
Surface description	= Paved	Paved	Paved	
Average velocity (ft/s)	= 0.00	0.00	0.00	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Channel Flow				
X sectional flow area ((sqft))	= 7.20	9.70	0.00	
Wetted perimeter ((ft))	= 13.30	12.60	0.00	
Channel slope (%)	= 0.05	0.10	0.00	
Manning's n-value	= 0.040	0.040	0.015	
Velocity (ft/s)	= 0.55	0.99	0.00	
Flow length (ft)	= 260.0	526.0	0.0	
Travel Time (min)	= 7.848355	0.008867871	0.000	= 16.72
Total Travel Time, Tc				20.00 min

Channel Report

Ex. Outlet Swale - 10 yr 24 hr - Post-Development

Triangular

Side Slopes (z:1) = 3.08, 4.18
 Total Depth (ft) = 1.92

Invert Elev (ft) = 6.12
 Slope (%) = 0.10
 N-Value = 0.040

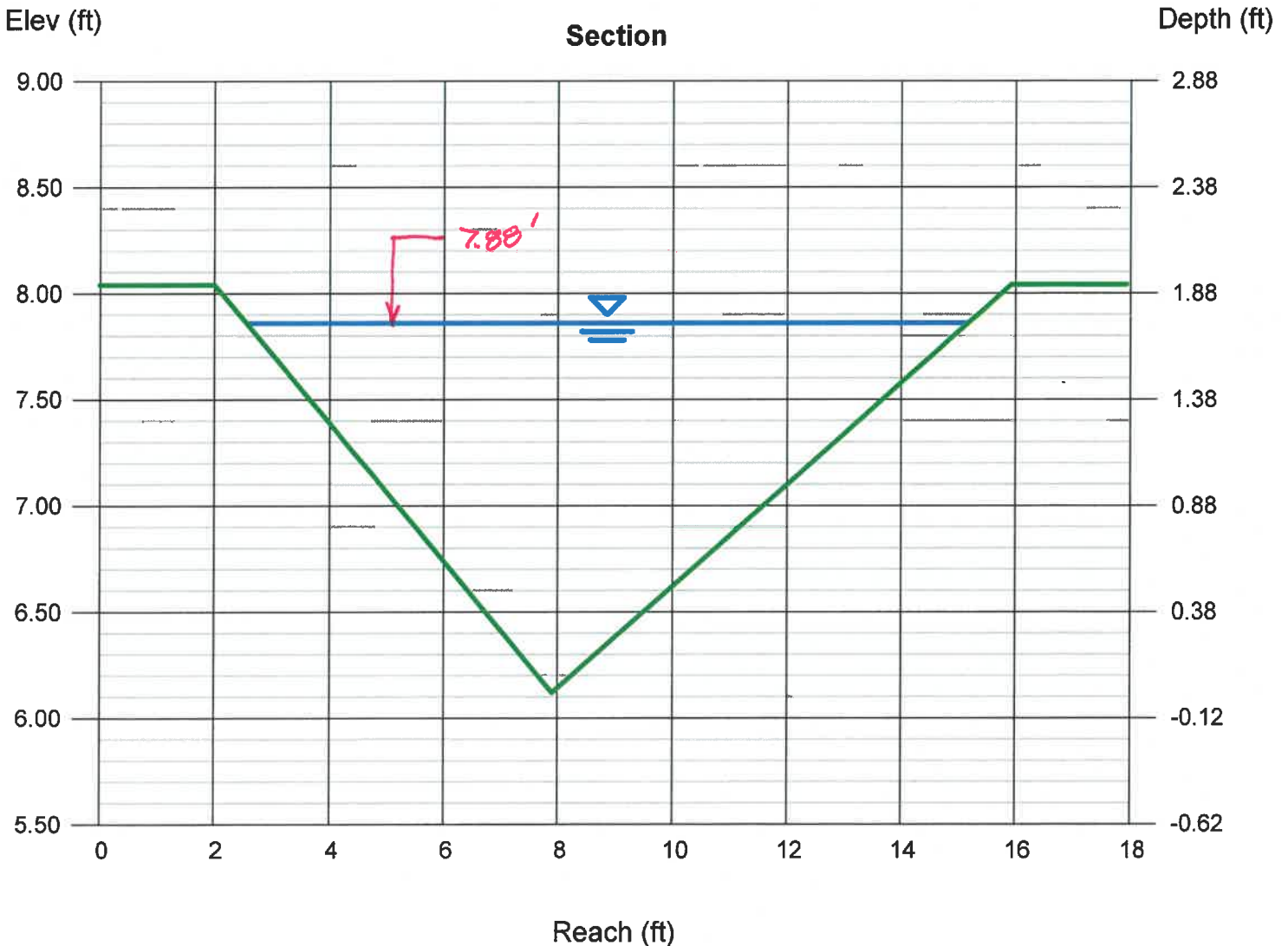
Calculations

Compute by: Known Q
 Known Q (cfs) = 11.37

Highlighted

Depth (ft) = 1.74
 Q (cfs) = 11.37
 Area (sqft) = 10.99
 Velocity (ft/s) = 1.03
 Wetted Perim (ft) = 13.11
 Crit Depth, Yc (ft) = 0.91
 Top Width (ft) = 12.63
 EGL (ft) = 1.76

HGL ELEV. = 7.88'



Major Stormwater Plan Design Standards Checklist

The table below depicts the design standards of the major stormwater plan application. Please make sure to include all applicable listed items to ensure all appropriate standards are reviewed.

**Major Stormwater Plan
Design Standards Checklist**

Date Received: 9/20/23
 Project Name: MOJOCK DENTAL OFFICE
 Applicant/Property Owner: GCCO REALTY, LLC

Minor Stormwater Plan Design Standards Checklist		
General		
1	Property owner name and address.	✓
2	Site address and parcel identification number.	✓
3	North arrow and scale to be 1" = 100' or larger.	✓
Site Features		
4	Scaled drawing showing existing and proposed site features: Property lines with dimensions, acreage, streets, easements, structures (dimensions and square footage), fences, bulkheads, septic area (active and repair), utilities, vehicular use areas, driveways, and sidewalks.	✓
5	Approximate location of all designated Areas of Environmental Concern (AEC) or other such areas which are environmentally sensitive on the property, such as Maritime Forest, CAMA, 404, or 401 wetlands as defined by the appropriate agency.	N/A
6	Existing and proposed ground elevations shown in one foot intervals. All elevation changes within the past six months shall be shown on the plan.	✓
8	Limits of all proposed fill, including the toe of fill slope and purpose of fill.	✓
9	Square footage of all existing and proposed impervious areas (structures, sidewalks, walkways, vehicular use areas regardless of surface material), including a description of surface materials.	✓
10	Existing and proposed drainage patterns, including direction of flow. (SEE PRE POST MAPS)	✓
11	Location, capacity, design plans (detention, retention, infiltration), and design discharge of existing and proposed stormwater management features. (SEE REPORT)	✓
12	Elevation of the seasonal high water level as determined by a licensed soil scientist.	N/A
13	Plant selection.	N/A
Permits and Other Documentation		
14	NCDENR stormwater permit application (if 10,000sf or more of built upon area).	✓
15	NCDENR erosion and sedimentation control permit application (if one acre or more of land disturbance). APPLICATION SUBMITTED	✓
16	NCDENR coastal area management act permit application, if applicable.	N/A
17	Stormwater management narrative with supporting calculations.	✓
18	Rational Method Form SW-003 or NRCS Method Form SW-004 (SEE REPORT)	✓
19	Alternative stormwater runoff storage analysis and/or downstream drainage capacity analysis, if applicable	N/A
20	Design spreadsheets for all BMPs (Appendix F – Currituck County Stormwater Manual).	N/A
21	Detailed maintenance plan for all proposed BMPs.	N/A