



Major Stormwater Plan Form SW-002

OFFICIAL USE ONLY:

Permit Number: _____

Date Filed: _____

Date Approved: _____

Contact Information

APPLICANT:

Name: Big Box, LLC

Address: 1197 Duck Road

Duck, NC 27949

Telephone: 252-261-3934

E-Mail Address: monica.thibodeau@carolinadesigns.com

PROPERTY OWNER:

Name: Big Box, LLC

Address: 1197 Duck Road

Duck, NC 27949

Telephone: 252-261-3934

E-Mail Address: monica.thibodeau@carolinadesigns.com

Property Information

Physical Street Address: Caratoke Highway, Harbinger, NC 27941

Parcel Identification Number(s): 0125-000-0001-0000

FEMA Flood Zone Designation: X

Request

Project Description: Commercial Building, Parking, Drives, Utilities and Stormwater Infiltration Basin

Total land disturbance activity: 65,423 sf

Calculated volume of BMPs: 12,694 cf

Maximum lot coverage: 36,513 sf

Proposed lot coverage: 27,232 sf

TYPE OF REQUEST

- Major subdivision (10-year, 24-hour rate)
- Major site plan (5-year, 24-hour rate)

METHOD USED TO CALCULATE PEAK DISCHARGE

- Rational Method
- NRCS Method (TR-55 and TR-20)
- Simple volume calculation for small sites (less than 10 acres)
- Alternative stormwater runoff storage analysis
- Downstream drainage capacity analysis

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

[Signature]
Applicant

1/27/25
Date

[Signature]
Property Owner(s)

1/27/25
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
Narrative, Calculations and Supporting
Documentation

Project:

BIG BOX, LLC

COMMERCIAL SITE DEVELOPMENT

Harbinger, Currituck County, North Carolina

Prepared By:

Bissell Professional Group

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

January 31, 2025

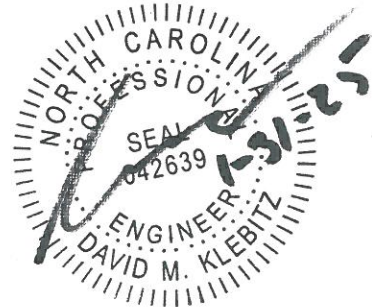


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- A: Site Maps**
- B: Drainage Area Delineation Maps**
- C: Soils Report**
- D: Stormwater Management Calculations (Sealed Under Cover)**
- E: Sedimentation and Erosion Control Calculations (Sealed Under Cover)**

STORMWATER MANAGEMENT NARRATIVE:

PROJECT OVERVIEW & PROPOSED DEVELOPMENTAL ACTIVITIES

The following project requires a coastal county stormwater management permit pursuant to North Carolina Administrative Code Section: 15A NCAC 2H.1000, Rules for Stormwater Management. Proposed development activities require an erosion and sediment control permit and with a built-upon area density greater than 24%, the project is considered High Density. The project is slated for development along the west side of Caratoke Highway, US HWY 158 in the Harbinger area of Currituck County.

Proposed developmental activities include the following;

- a) 8,300 sf Commercial Building with Front Porch
- b) 2,322 sf Canopy over a Loading Area
- c) Concrete Driveways and Parking
- d) Gravel access connections to adjoining properties
- e) Stormwater Management and Utility Improvements

*Please reference the **Development Overview Map** provided under **Attachment A**.*

EXISTING SITE CONDITIONS, TOPOGRAPHY AND DRAINAGE FEATURES

The rear 10.3-acres of the property was formerly utilized for a sand mining operation with the excavation having since been reclaimed as a lake. The front 1.3-acre portion that provided access to the mine is now vacant woodlands and is the site for proposed development. Topography across the front is generally flat at an average ground surface elevation of 7.5 ft-msl. Remnant berms from the mine operation still exist around the perimeter with some reaching an elevation of 10.0 ft-msl. Surrounding development includes commercial, vacant woodlands and a golf course. The front portion of the property primarily drains east from a low ridge along the lake to the roadway ditch along the west side of Caratoke Hwy. From there it drains south and then east under the highway to a tributary known as Pan Ridge Ditch that ultimately discharges to the Currituck Sound, classified as SC waters.

*Please reference the **USGS 7.5 Minute Quadrangle Site Location Map** under **Attachment A**.*

*Please reference the **Existing Site Features Map** provided in the **Construction Drawings***

SITE SOILS

Pursuant to the USDA Soil Survey Manual of Currituck County, soils across the proposed development area are composed of Conetoe & Nimmo Loamy Sands. Conetoe soils are described as well drained with moderately rapid permeability. Nimmo soils are described as poorly drained with moderate to moderately rapid permeability.

Protocol Sampling Service, Inc. conducted on-site evaluations to determine the presence of restrictive horizons, seasonal high-water table conditions and permeability capabilities of the underlying soils. A total of four (4) borings were advanced across the site, (3) in the vicinity of the proposed infiltration basin and (1) near the proposed wastewater disposal system.

Findings of the evaluations concluded that compacted soils found in the vicinity of the infiltration basin will need to be removed to a depth of 30 inches below the surface and replaced with clean fine to medium sand to the expected bottom elevation of the infiltration basin. The undercut and backfill will help to level the 4.82 ft-msl seasonal high-water table elevation across the area and ensure an infiltration rate of 18 inches/hour within the basin.

*For additional details, please reference the **Soils Report** provided under **Attachment C**.*

OVERVIEW OF STORMWATER MANAGEMENT DESIGN CRITERIA

NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

Supplemental to North Carolina's General Statutes, Session Laws and other Administrative Codes, 15A NCAC 02H.1019 sets forth rules governing stormwater management of developmental activities within the state's 20 Coastal Counties. These rules intend to protect surface waters of the state by controlling pollutants associated with stormwater runoff applicable to the development of land for residential, commercial, industrial, or institutional uses. The proposed developmental activities of this project shall comply with the following:

- I. The proposed development requires an Erosion and Sedimentation Control Plan approval, is Non-Residential in nature, proposes to add greater than 10,000 sf of built-upon area, and, therefore, shall obtain a Stormwater Management Permit.
- II. Stormwater runoff from the proposed development will ultimately drain to surface waters of the Currituck Sound. These waters are classified as "SC" and, in accordance with Rule .1019(5)(c), subject the development to the coastal stormwater program requirements set forth for "Other Coastal County Water."
- III. The proposed development will have an overall built upon area density greater than 24% percent and, therefore, in accordance with Rule .1019(6)(a), is considered "High-Density" and is required to manage a 1.5 inch rainfall event.
- IV. In accordance with Rule .1003(3)(a), High Density projects are required to utilize Stormwater Control Measures (SCM) to treat runoff from the design rainfall event. For this project, an infiltration basin will be employed that must meet the Minimum Design Criteria (MDC) outlined in Rule .1051, MDC for Infiltration Systems, and applicable chapters of the "Stormwater Design Manual."

CURRITUCK COUNTY

In addition to NCDEQ's high-density permitting requirements, the development's stormwater management system shall also be designed in accordance with the standards prescribed for Major Site Plans as outlined in Chapter 7.3 of the Currituck County UDO and Chapter 2.4 of the Currituck County Stormwater Manual. Among other provisions, the following primary standards shall be met:

- I. Major Site Plans shall implement adequate stormwater practices to reduce the post-development peak discharge from the 24-hour storm event with a 5-year recurrence interval down to the pre-development discharge rate from the 24-hour storm event with a 2-year recurrence interval based on pre-development conditions from a wooded site, regardless of actual pre-development site conditions.
- II. Major Site Plans shall provide Minimum Building Pad Elevations required to prevent flooding from the 24-hour storm event with a 10-year recurrence interval.
- III. Finished Floor Elevations for all principal structures shall be above the 100-year Regulatory Flood Protection Elevation, or 18 inches above the 24-hour storm event with a 10-year recurrence interval, or at least 6 inches above a filled septic system, whichever is greater.

OVERVIEW OF STORMWATER MANAGEMENT FEATURES BY DRAINAGE AREA

Developmental activities will consist of those previously itemized in the "Project Overview and Proposed Development Activities" section above. Like Pre-Development drainage conditions, proposed grading and drainage improvements form a single primary Post-Development Drainage Area [#1] and two small residual Drainage Areas [#2 & #3].

Please reference Pre and Post Development Drainage Area Delineation Maps under Attachment B

Drainage Area #1

This is the project's primary drainage area that drains east to the roadway ditch along the west side of Caratoke Hwy. The on-site area totals approx. 1.20 acres in the Pre-Development condition and will increase slightly to approx. 1.27 acres in the proposed Post-Development state. Development will include nearly all of the proposed built-upon area and the following stormwater management improvements:

Collection

Stormwater runoff from the northern half of the proposed commercial building and the adjoining parking & drive aisle areas will sheet flow to a network of catch basins located within the parking area. Once collected, runoff will be conveyed by a series of pipes to the northeast corner of the proposed infiltration basin for treatment and disposal. Stormwater runoff from the southern half of the commercial building, the rear loading area and the front drainfield area will be collected by a typical vegetated swale running along the southern property boundary. The swale is sloped to convey runoff to the southeast corner of the infiltration basin. The proposed gravel access road located along the north side of the infiltration basin is superelevated to promote sheet flow across the vegetated shoulder and into the basin.

Stage and Storage

In accordance with the NCDEQ and County Design Criteria outline above, the Infiltration Basin has been designed with an open storage capacity capable of accommodating runoff in excess of both the 1.5 inch rainfall event and the Post-Development 5 year - 24 hour storm event.

The following is a summary of design conditions:

STAGE ELEVATIONS

- Seasonal high-water table elevation = 4.82 ft-msl (See Site Soils section above)
- Basin Bottom Elevation = 6.90 ft-msl (Provides required 2' of separation to SHWT)
- 1.5" rainfall event stage = 7.40 ft-msl (See NCDEQ Calculations)
- 5 yr – 24 hr event stage = 8.00 ft-msl (See Currituck Calculations*)
- 10 yr – 24 hr event stage = 8.18 ft-msl (See EPA SWMM Model Results)
- Minimum Basin Top Elevation = 8.50 ft-msl (See grading and drainage plan)

STORAGE VOLUMES

- 1.5" rainfall event storage = 3,128 cf (See NCDEQ Calculations)
- 5 yr-24 hr event storage = 8,392 cf (See Currituck Calculations*)
- 10 yr-24 hr event storage = 9,932 cf (See EPA SWMM Model Results)
- Basin storage capacity = 12,694 cf

**Sections 2.4.3 and 2.4.4 of the Currituck County Stormwater Manual allows the use of "Rational Method" and "Simple Volume Calculations" determine runoff rates and required storage volumes for sites under 10 acres.*

Treatment

Primary treatment will be provided by the proposed Infiltration Basin. Measures of Pre-treatment will also be provided by the leading vegetative swales and sumps provided within the proposed catch basins. Runoff from the rear loading area and gravel access road will also receive pre-treatment by sheet flowing over vegetated shoulders before entering into the infiltration basin. Longitudinal slopes of the proposed swales and pipe collection network are kept to a minimum to reduce flow velocities, reduce erosion and promote infiltration.

Disposal & Overflow

Infiltration is the primary source of disposal and drawdown calculations resolve that the basin's full capacity volume will infiltrate into the site's excessively drained sandy soils in a period of approximately 2.30 hours, or 0.10 days. This is significantly less than the maximum 72 hour allowance prescribed by NCDEQ. In the event that the system capacity is exceeded, excess runoff will begin to overflow the western bank of the infiltration basin (8.50 ft-msl) and sheet flow towards the on-site lake. During exceptional events, stormwater will also backflow out of the catch basins and the east end of the southern boundary swale and flow into the ditch along Caratoke Highway.

Building Pad Elevation (BPE) and First Floor Elevation (FFE)

- Finished building pad elevations located immediately around the perimeter of the building are set at, or above 9.5 ft-msl. This provides 1.3' of separation to the 10 yr-24 hour storm event stage of 8.2 ft-msl.
- First floor elevation of proposed building is set at 10.5 ft-msl, providing 2.3' of separation to the 10 yr-24 hr storm event stage of 8.2 ft-msl. The site is located in a FEMA X Flood Zone so there is no base flood or regulatory flood protection elevation. Finished grade elevations across the drainfield average around 9.5 ft-msl, providing 12" of separation to the finished first floor elevation.

Drainage Areas #2 & #3

These are small residual drainage areas at the rear of the project that drain north and south to existing low-lying areas off-site. The on-site areas total approx. 0.11 acres in the Pre-Development condition and will be reduced to 0.04 acres in the Post-Development state. Improvements include the grading necessary to return to surrounding off-site elevations and a small (215 sf+/-) portion of the proposed gravel access road where it connects to the existing path around the lake. Runoff from these areas should be considered minimal and will continue to drain much like existing conditions.

*Please reference **Stormwater Management Calculations under Attachment D, Erosion Control Calculations under Attachment E** and the **Construction Drawings** for more details.*

OPERATION & MAINTENANCE

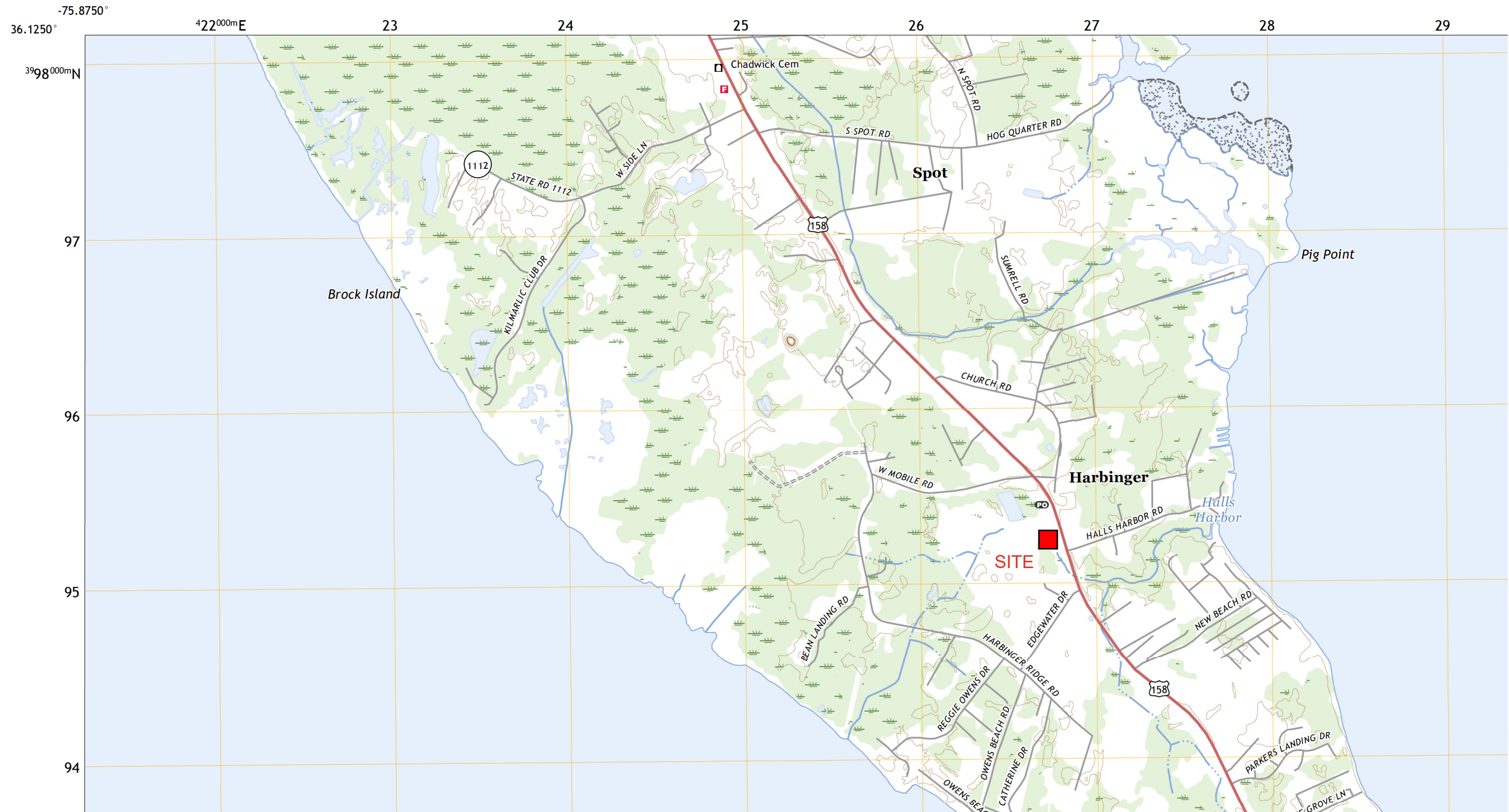
The NCDEQ stormwater permit holder is obligated to maintain the development's stormwater management system as outlined and executed in the Operation and Maintenance Agreements submitted with the State Stormwater Permit application and as denoted on the construction drawings prepared by Bissell Professional Group title "CONSTRUCTION DRAWINGS FOR BIG BOX, LLC COMMERCIAL SITE DEVELOPMENT." The following is a general overview of some, but possibly not all, maintenance responsibilities;

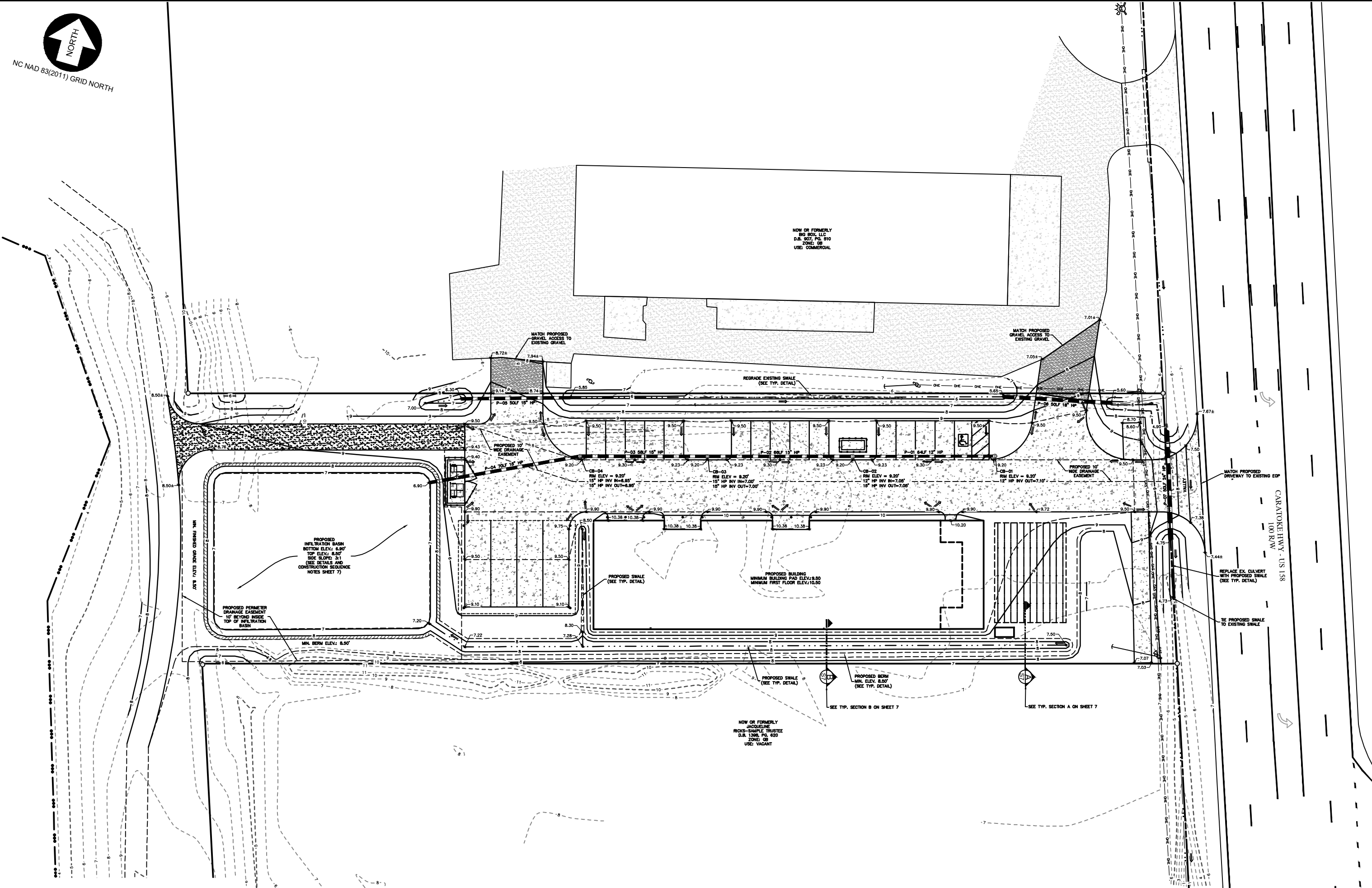
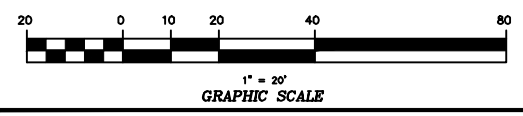
- A. For purposes of operating and maintaining the infiltration basin, access must be maintained such that entire perimeter of the basin can be reached by light construction equipment.
- B. All provisions of the "Infiltration Basin Operation and Maintenance Agreement" executed in part with the NCDENR permit application shall be performed.
- C. During construction, erosion shall be kept to a minimum and any eroded areas of the vegetated conveyances shall be repaired immediately. During the course of construction, the area of the proposed infiltration basin may be used as a temporary sediment basin. Please refer to the Infiltration Basin Construction Sequence Notes provided on the construction drawings for further details.

For purposes of access and maintenance, the permit holder shall establish Drainage Easements in accordance with those outlined in the Construction Drawings noted above.

ATTACHMENT A – SITE MAPS

- USGS 7.5 Minute Quadrangle Site Location Map
- Development Overview Map (Reduction)





BISELL
 Engineers, Planners, Surveyors
 and Environmental Specialists
 Bissell Professional Group
 Firm License # 00-806
 252 Mountain Highway
 252 Mountain Highway
 Cary, North Carolina 27513
 FAX: (919) 261-1760

**GRADING, DRAINAGE AND
 STORMWATER MANAGEMENT PLAN**
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 LAWN, NORTH CAROLINA. THE REPRODUCTION, WHOLE OR
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BIG BOX, LLC
 CURRITUCK
 HARBINGER
 NORTH CAROLINA
COMMERCIAL SITE DEVELOPMENT PLAN

NO.	DATE	REVISIONS	DESCRIPTION

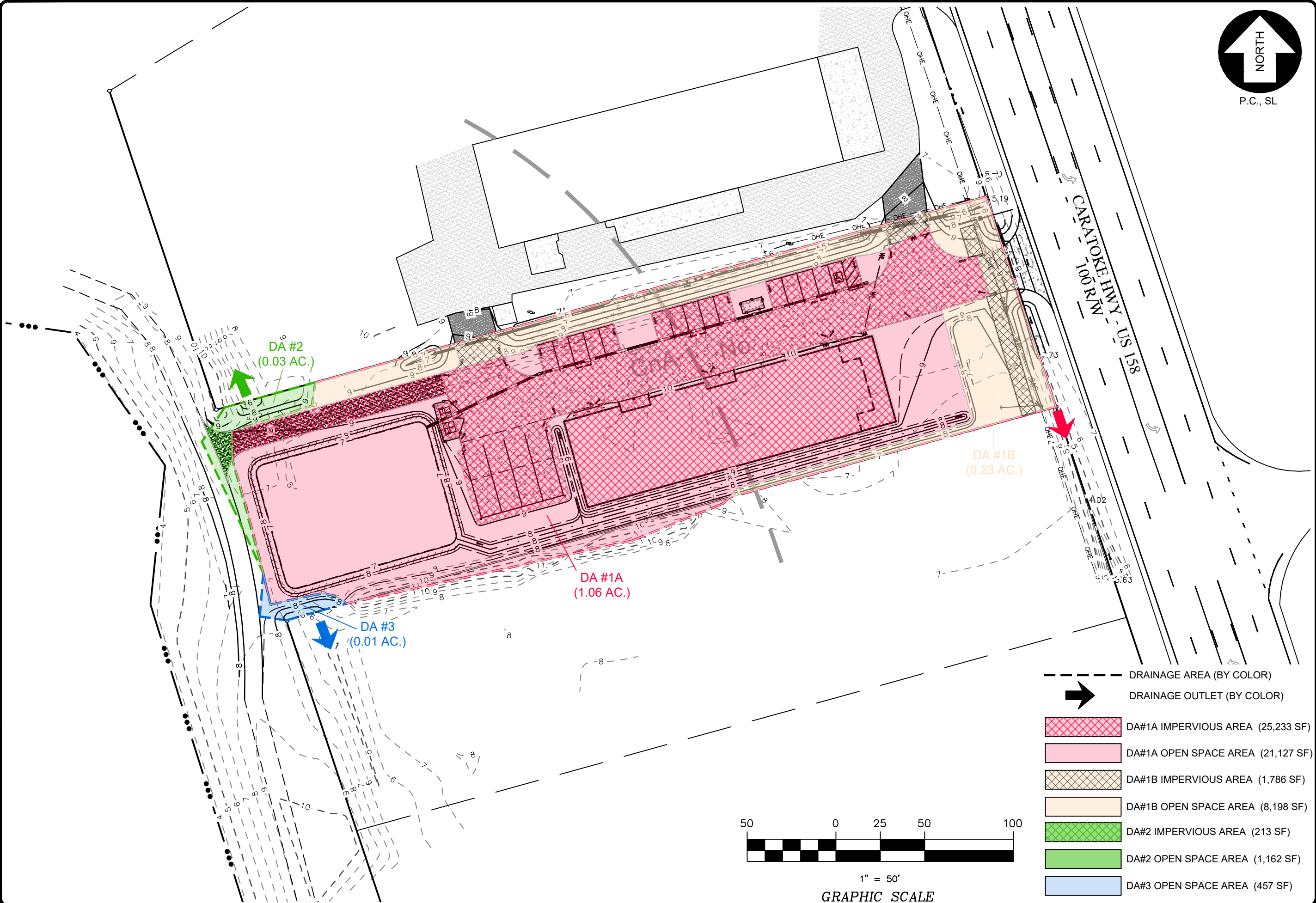
**PRELIMINARY
 DO NOT USE FOR
 CONSTRUCTION**

DATE: 1-13-25 SCALE: 1"=20'
 DESIGNED: BPG CHECKED: MSB
 DRAWN: DMK APPROVED: DMK
 SHEET: 4 OF 10
 CAD FILE: 486900B1
 PROJECT NO: 4869

ATTACHMENT B – DRAINAGE AREA DELINEATION MAPS

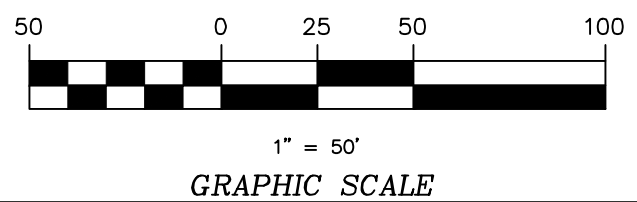
- NCDEQ - Post – Development Drainage Area Map used for Simple Method Calculations
- Currituck - Pre - Development Drainage Area Map used for Rational Method Calculations
- Currituck - Post - Development Drainage Area Map used or Rational Method Calculations
- Post - Development Drainage Map used for EPA SWMM Model

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P.C., SL

- DRAINAGE AREA (BY COLOR)
- DRAINAGE OUTLET (BY COLOR)
- DA#1A IMPERVIOUS AREA (25,233 SF)
- DA#1A OPEN SPACE AREA (21,127 SF)
- DA#1B IMPERVIOUS AREA (1,786 SF)
- DA#1B OPEN SPACE AREA (8,198 SF)
- DA#2 IMPERVIOUS AREA (213 SF)
- DA#2 OPEN SPACE AREA (1,162 SF)
- DA#3 OPEN SPACE AREA (457 SF)



BISSELL
 PROFESSIONAL GROUP
 Engineers, Planners, Surveyors
 and Environmental Specialists

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 Firm License # C-966
 200 E. 10th Street
 Kitty Hawk, North Carolina 27949
 (252) 261-3266
 FAX (252) 261-1760

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PROJECT: **BIG BOX, LLC**
COMMERCIAL SITE DEVELOPMENT PLAN
 HARBINGER CURRITUCK NORTH CAROLINA
NCDEQ POST-DEVELOPMENT DRAINAGE AREA MAP

REVISIONS		DATE	DESCRIPTION
NO.	DATE	DESCRIPTION	

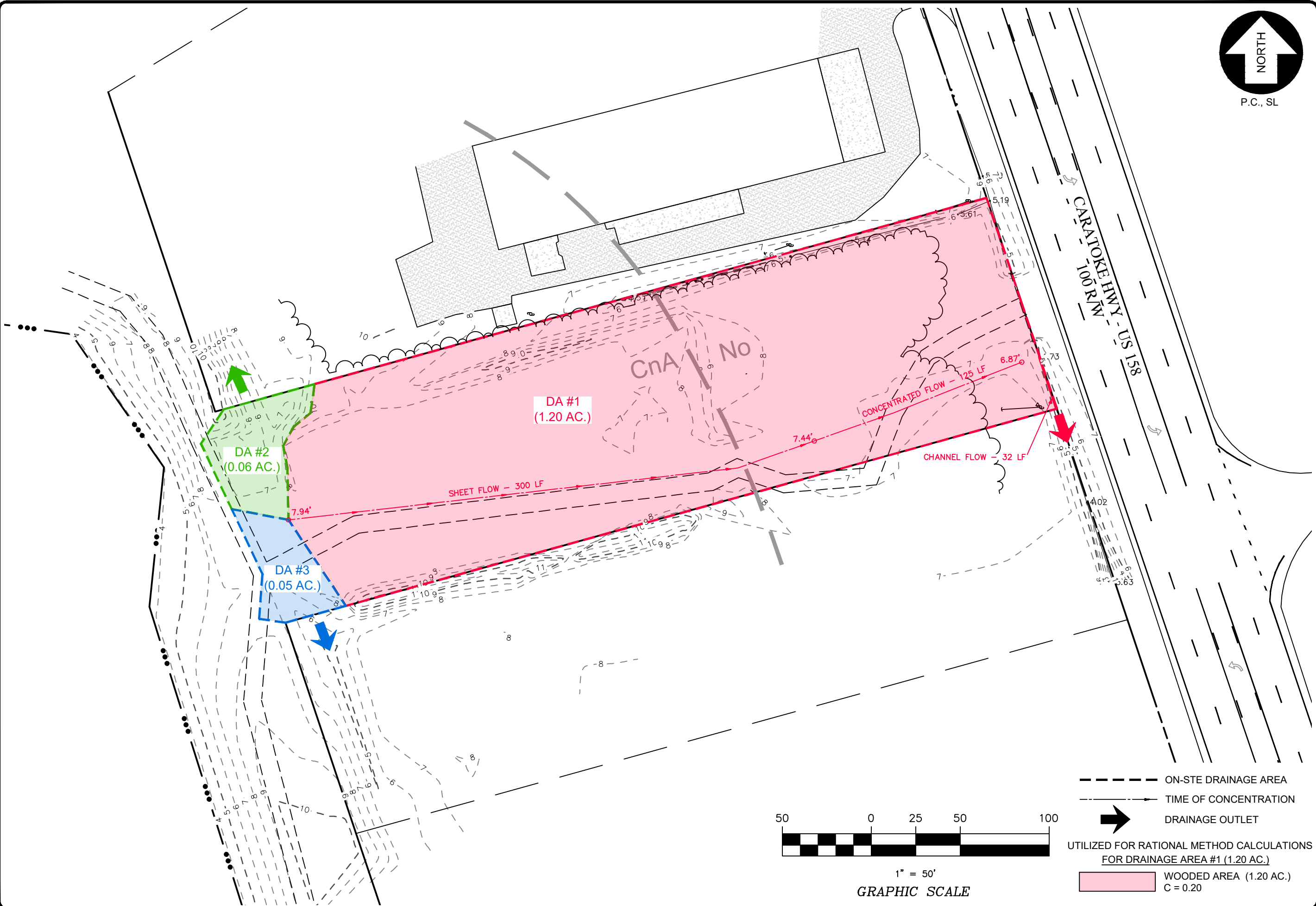
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DESIGNED:	BPG	CHECKED:	DMK
DRAWN:	DMK	APPROVED:	DMK

SHEET: **1 of 1**

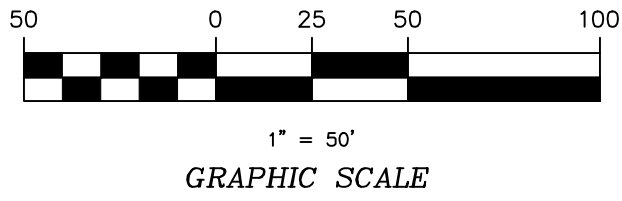
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PROJECT NO: **4869**

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P.C., SL



- ON-SITE DRAINAGE AREA
- - - TIME OF CONCENTRATION
- ➔ DRAINAGE OUTLET
- UTILIZED FOR RATIONAL METHOD CALCULATIONS FOR DRAINAGE AREA #1 (1.20 AC.)
- WOODED AREA (1.20 AC.)
C = 0.20

BISSELL
PROFESSIONAL GROUP
Engineers, Planners, Surveyors
and Environmental Specialists

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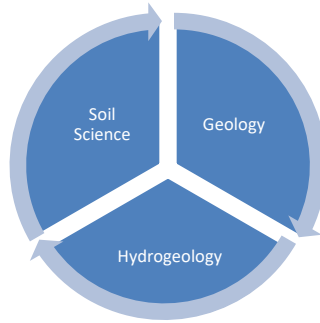
PROJECT:
BIG BOX, LLC
COMMERCIAL SITE DEVELOPMENT PLAN
HARBINGER CURRITUCK NORTH CAROLINA
CURRITUCK PRE-DEVELOPMENT DRAINAGE AREA MAP

REVISIONS	
NO.	DATE DESCRIPTION

DATE: 1-20-25	SCALE: 1"=50'
DESIGNED: BPG	CHECKED: DMK
DRAWN: DMK	APPROVED: DMK
SHEET: 1 of 1	
CAD FILE: 486900B1	
PROJECT NO: 4869	

ATTACHMENT C – SOILS REPORT

- Soils Report - Protocol Sampling Service, Inc.



4114 Laurel Ridge Drive
Raleigh, North Carolina 27612

Protocol Sampling Service, Inc.
"Experts in Environmental Compliance"

Protocolsampling@yahoo.com
Environmentalservicesnc.com

(919) 210-6547

December 31, 2024

Mr. David Klebitz, P.E.
Bissell Professional Group, Inc.
Post Office Box 1068
Kitty Hawk, North Carolina 27949

Re: **Storm Water Management Soil Investigation
Big Box, LLC
Caratoke Highway
Harbinger, Currituck County, North Carolina
Protocol Job No. 24-194**

Dear Mr. Klebitz:

The following Soil Investigation is submitted to assist in a site assessment for the proposed storm water management improvements associated with the Big Box, LLC project south of 8760 Caratoke Highway in Harbinger, North Carolina. The study area is being considered for one (1) infiltration basin.

SITE HISTORY AND PHYSICAL CHARACTERISTICS

Commercial and residential development surround the study area. The site was used as a commercial sand pit for at least 20-years with an access road and staging area in the proposed storm water basin location. Protocol Sampling Service, Inc. of Raleigh, North Carolina was hired to perform an investigation to identify the depth to seasonal high-water table, if any restrictive layers are present and determine subsurface permeabilities at or slightly below the expected infiltration basin bottom.

SOIL INVESTIGATION

The field survey was conducted on Thursday, November 21 and Thursday, December 12, 2024. Four (4) soil borings were advanced from 48 to 60-inches below land surface (bls) with a hand auger in and around the proposed basin as shown on the attached exhibit. Soil color was determined with a Munsell Soil Color Chart. The presence of fill or other disturbances, the depth to the seasonal high-water table, soil structure and consistence were noted. The borings were also checked for reduced colors, an anaerobic smell or obvious soil wetness. Surface elevations range from 7.29 feet msl to 7.74 feet msl from west to east across the study area.

FINDINGS - Soil

- The subject property contains soil belonging to the Conetoe series. The Conetoe series is a loamy, mixed, thermic, Arenic Hapludult. The soil profile was found to be compacted in areas previously used as the sand pit access road and associated staging areas.

- The Conetoe series soil was found to have an apparent depth to seasonal high-water table of 22-inches bls in soil boring No.1 (elevation 5.51'-msl), 20-inches bls in soil boring No.2 (elevation 6.08'-msl), 30-inches bls in soil boring No.3 (elevation 4.82'-msl) and 30-inches bls in the soil boring No.4 (elevation 4.29'-msl). Static water levels were found at 3.41'-msl in soil boring No.3, to 3.79'-msl in Soil boring No.4.
- Cemented soil was encountered to a depth of 24 to 30-inches in soil borings 1, 2 and 3; all due to the proximity of the borings to the access road and staging areas used by dump trucks to load and carry sand from the sand pit offsite.

FINDINGS - Conductivity

- **HYDRAULIC CONDUCTIVITY TESTING**
- Initial saturated hydraulic conductivity testing, (Ksat 1 at Boring 1), was performed on November 21, 2024 to determine the subsurface permeability in the center of the proposed infiltration basin at the infiltrative elevation of 32-inches bls at an elevation of 4.67'-msl, 0.84' above the seasonal high-water elevation and at least one-foot above the static water table elevation. The saturated hydraulic conductivity test (Ksat) reached steady state readings within five minutes and three consecutive readings revealed an average conductivity of 0.564 inches/hour; well below what would be expected for an undisturbed sandy soil.
- Subsequent saturated hydraulic conductivity testing was performed on December 12, 2024 to determine the subsurface permeabilities outside of the proposed basin in native, undisturbed soil (Ksat 2 at Boring 4) and at the edge of the basin below the compacted soil (Ksat 3 at Boring 3). Ksat 2 reached steady state readings immediately and three consecutive readings revealed an average conductivity of 6.106 inches/hour. Ksat 3 run inside the proposed infiltration basin, reached steady state readings immediately and three consecutive readings revealed an average conductivity of 18.676 inches/hour; exactly what would be expected for an undisturbed sandy soil.

Conclusions

- Removal of all compacted soil to a depth of 30-inches below land surface and replace with clean fine to medium sand to the expected basin bottom of 6.90'-msl.
- This will ensure that the stormwater will infiltrate into the basin and into the surficial aquifer at a rate of 18-inches/hour.

The findings presented herein are based on the site conditions observed during performance of the field survey on Thursday, November 21 and Thursday, December 12, 2024.

Please call me at (919) 210-6547 if you have any questions or need further assistance.

Sincerely,
Protocol Sampling Service, Inc.



David E. Meyer, N.C.L.S.S.
 President

Soil Profile Description

SB-3

- A/E 0 – 18 inches; dark brown (7.5YR 3/3) loamy fine sand; cemented; firm.
- Bt 18 – 30 inches; brownish yellow (10YR 6/8) sandy loam; cemented; friable.
- C1 30 – 48 inches; brownish yellow (10YR 6/8) and very pale brown (10YR 7/4) sand with strong brown (7.5YR 5/6) concentrations and gray (10YR 6/1) depletions; single grained; loose.
Ksat 3 (32")
- C2 48 – 60 inches; brownish yellow (10YR 6/8) fine sand; single grained; loose

Soil Series: **Conetoe - disturbed/compacted**

Landscape: Coastal Plain

Landform: terrace

Parent Material: Marine sediments

Drainage Class: moderately well drained

Particle Size Class: sandy

Temperature Regime: thermic

Subgroup Classification: Arenic Hapludult

Examination Method: auger boring

Date: December 12, 2024

Weather: Clear, 55

Investigators: David Meyer

Shwt: 30"

Measured water table depth: 47"

SATURATED HYDRAULIC CONDUCTIVITY STUDY

Big Box LLC

Date: ##### 11/21/14 Weather Condition: sunny
 Location: SB-1 Conetoe Temperature (F): 60
 Number: Ksat 1
 Horizon: C

	cm	in
Depth(inches): 32.0 h20 59"	15.2	6.0
SET UP		
	cm	in
Target Water Level:	15.2	6.0
Beginning Water Level:	15.2	6.0
Ending Water Level:	15.2	6.0
Hole Depth:	81.3	32.0
Reference: +	10.2	4.0
Head: -	15.2	6.0
CHT Tube(s) setting: =	76.2	30.0
Hole diameter (d):	5.0	cm
Hole radius (r):	2.5	cm
coefficient A:	0.001136	

Valve Setting: 1-ON 2-ON

NOTE: Readings based on Ending Water Level

Conversion Factor (C.F.): 105.0

Water Reading	Change in Water Level	Chamber C.F.	Clock Time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm3/hr)	K (cm/hr)	K (in/hr)	K (gal/ft2/day)
46			0.0						
44			3.0						
43	1.0	105.0	4.0	1.00	0.017	6300.0	7.1582	2.8182	42.165
42.8	0.2	105.0	5.0	1.00	0.017	1260.0	1.4316	0.5636	8.433
41.5	1.3	105.0	10.0	5.00	0.083	1638.0	1.8611	0.7327	10.963
38.5	3.0	105.0	20.0	10.00	0.167	1890.0	2.1475	0.8455	12.649
36.5	2.0	105.0	30.0	10.00	0.167	1260.0	1.4316	0.5636	8.433
34.5	2.0	105.0	40.0	10.00	0.167	1260.0	1.4316	0.5636	8.433
32.5	2.0	105.0	50.0	10.00	0.167	1260.0	1.4316	0.5636	8.433
Final Ksat							1.432	0.564	8.433

SATURATED HYDRAULIC CONDUCTIVITY STUDY

Big Box LLC

Date: ##### 12/1/14 Weather Condition: sunny
 Location: SB-4 Conetoe Temperature (F): 45
 Number: Ksat 2
 Horizon: C

	cm	in
Depth(inches): 30.0 H20 42"	15.2	6.0
SET UP		
	cm	in
Target Water Level:	15.2	6.0
Beginning Water Level:	10.2	4.0
Ending Water Level:	10.2	4.0
Hole Depth:	76.2	30.0
Reference: +	0.0	0.0
Head: -	0.0	0.0
CHT Tube(s) setting: =	76.2	28.0
Hole diameter (d):	5.0	cm
Hole radius (r):	2.5	cm
coefficient A:	0.002045	

Valve Setting: 1-ON 2-ON

NOTE: Readings based on Ending Water Level

Conversion Factor (C.F.): 105.0

Water Reading	Change in Water Level	Chamber C.F.	Clock Time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm3/hr)	K (cm/hr)	K (in/hr)	K (gal/ft2/day)
43			0.0						
41			1.0						
39	2.0	105.0	2.0	1.00	0.017	12600.0	14.3165	5.6364	84.330
37	2.0	105.0	3.0	1.00	0.017	12600.0	14.3165	5.6364	84.330
35	2.0	105.0	4.0	1.00	0.017	12600.0	14.3165	5.6364	84.330
32.5	2.5	105.0	5.0	1.00	0.017	15750.0	17.8956	7.0455	105.412
21.5	11.0	105.0	10.0	5.00	0.083	13860.0	15.7481	6.2000	92.763
11	10.5	105.0	15.0	5.00	0.083	13230.0	15.0323	5.9182	88.546
0	11.0	105.0	20.0	5.00	0.083	13860.0	15.7481	6.2000	92.763
Final Ksat							15.510	6.106	91.357

SATURATED HYDRAULIC CONDUCTIVITY STUDY
Big Box LLC

Date: ##### 12/12/24 Weather Condition: sunny
 Location: SB-3 Conetoe Temperature (F): 45
 Number: Ksat 3
 Horizon: C

	cm	in
--	----	----

Depth(inches): 30.0 H20 42" **SET UP** Target Water Level: 15.2 6.0

	cm	in
--	----	----

Hole Depth: 76.2 30.0 Beginning Water Level: 10.2 4.0
 Reference: + 10.2 4.0 Ending Water Level: 10.2 4.0
 Head: - 15.2 6.0
 CHT Tube(s) setting: = 71.1 28.0 Hole diameter (d): 5.0 cm
 Hole radius (r): 2.5 cm
 coefficient A: 0.002045

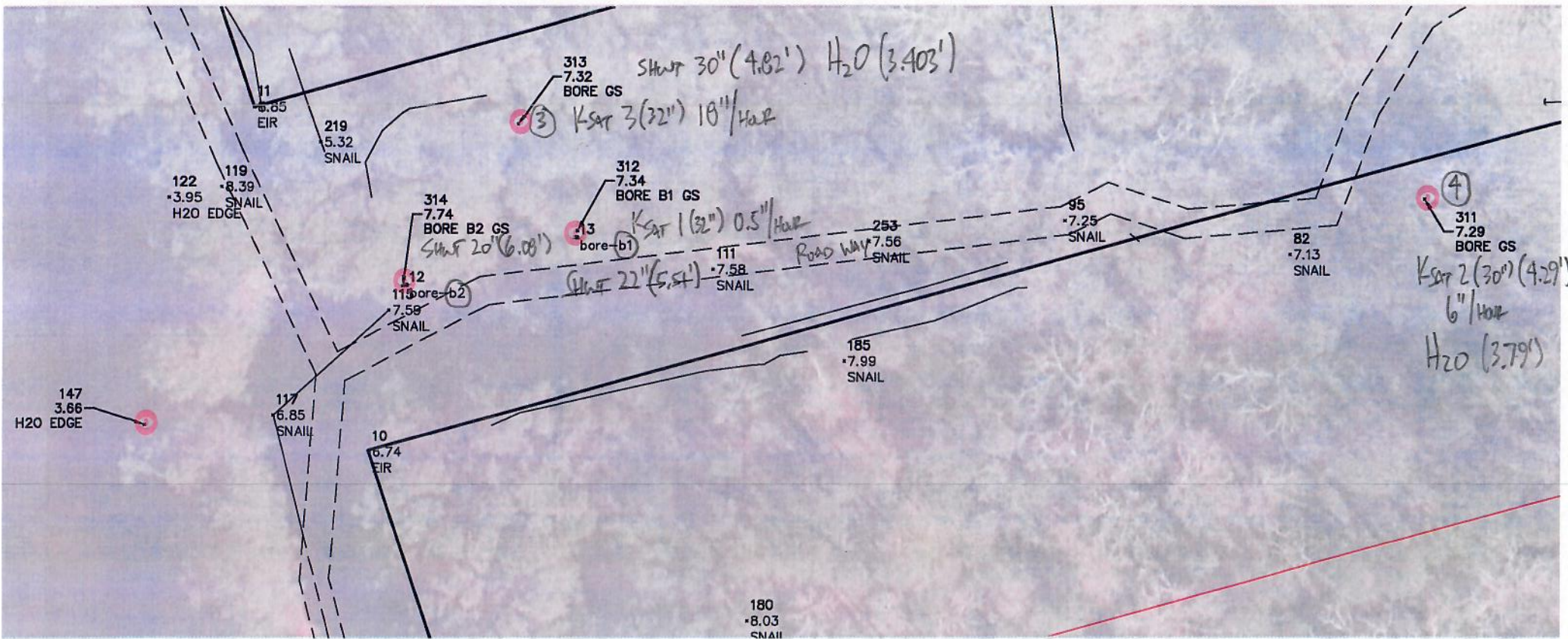
Valve Setting: x
 1-ON 2-ON

NOTE: Readings based on Ending Water Level

Conversion Factor (C.F.): 105.0

Water Reading	Change in Water Level	Chamber C.F.	Clock Time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm ³ /hr)	K (cm/hr)	K (in/hr)	K gal/ft ² /day
46.5			0.0						
38			2.0						
27.5	10.5	105.0	5.0	3.00	0.050	22050.0	45.0921	17.7528	265.610
23.5	4.0	105.0	6.0	1.00	0.017	25200.0	51.5338	20.2889	303.555
19	4.5	105.0	7.5	1.50	0.025	18900.0	38.6504	15.2167	227.666
16.5	2.5	105.0	8.0	0.50	0.008	31500.0	64.4173	25.3611	379.443
13	3.5	105.0	9.0	1.00	0.017	22050.0	45.0921	17.7528	265.610
9	4.0	105.0	10.0	1.00	0.017	25200.0	51.5338	20.2889	303.555
0	9.0	105.0	12.5	2.50	0.042	22680.0	46.3805	18.2600	273.199
Final Ksat							47.669	18.767	280.788

Boring #	SEASONAL HIGH WATER TABLE DEPTH	SEASONAL HIGH WATER TABLE ELEVATION (AUL)	STATIC WATER TABLE DEPTH	STATIC WATER TABLE ELEVATION	K _{SAT} RATE	K _{SAT} DEPTH	K _{SAT} ELEVATION	
1	7.34'	22"	5.51'	NR	NR	0.5"/hour	32"	4.67'
2	7.74'	20"	6.08'	NR	NR	NR	-	-
3	7.32'	30"	4.82'	47"	3.403'	18"/hour	32"	4.65'
4	7.29'	30"	4.29'	42"	3.79'	6"/hour	30"	4.79'



ATTACHMENT D – STORMWATER MANAGEMENT CALCULATIONS

- NCDEQ - 1.5 Inch Post-Development Infiltration Basin Design Calculations
- Currituck - 2 yr-24 hr Wooded Pre-Development Rational Method Calculations
- Currituck - 5 Yr-24 hr Post-Development Rational Method Calculations
- Currituck – Storage Volume and Drawdown Calculations
- 10 Yr -24hr Post-Development EPA SWMM Model Results

NCDEQ – 1.5 INCH INFILTRATION BASIN DESIGN CALCULATIONS

Stormwater Management Calculations

First Flush Design Storm Rainfall Depth ($R_{D1.5}$) 1.50 in.

Total Drainage Area #1A

On-site Drainage Area 45,328 s.f. or 1.04 ac.
Off-Site Drainage Area 1,032 s.f. or 0.02 ac.
Total Drainage Area (A_{post}) 46,360 s.f. or 1.06 ac.

Soils Data

Soil Type Conetoe Loamy Sand
Hydraulic Conductivity Rate, K 18 in/hr.
Seasonal High Water Table Elev. 4.9 ft. msl
Soils Data Based On-Site Evaluation Performed by Protocol Sampling Service, Inc.

Built-Up Area within Drainage Area #1A

Built Upon Area Description	Area (ft ²)	Factor	Adjusted Area (ft ²)	Acre
Proposed Building	9,608	1.0	9,608	0.22
Proposed Loading Area Canopy	2,322	1.0	2,322	0.05
Proposed Concrete Parking & Driveway	11,598	1.0	11,598	0.27
Proposed Concrete Dumpster & Generator Pads	205	1.0	205	0.00
Proposed Gravel Access Road	1,500	1.00	1,500	0.03
Total Built Upon Area			25,233	0.58

Runoff Volume Calculation - Simple Method

Post-Dev. Impervious Fraction (I_A) 0.54 54%
Post-Dev. Runoff Coefficient (Rv_{post}) = $0.05 + 0.9*(I_A)$ 0.54
First Flush Runoff Volume ($V_{1.5}$) = $3630*R_{D1.5} * Rv_{post} * A_{post}$ 3,128 ft³

SCM Storage Volume Calculation

Basin Bottom Elevation 6.9 ft. msl
Basin Bottom Area 7,098 ft²
Elevation @ Design Storm Storage Volume 7.40 ft. msl
Area of Basin @ Design Storm Storage Volume 7,605 ft²
Depth of Basin @ Design Storm Storage Volume 0.50 ft
Design Storm Storage Volume Provided 3,676 ft³
Storage Volume Provided > Storage Volume Req'd O.K.

Drawdown Calculations

Drawdown Time, $T = FS*(Dv*12)/(K*SA)$
Factor of Safety, FS 2
Design Storage Volume Provided, Dv 3,676 ft³
Surface Area of Bottom of Infiltration Basin, SA 7,098 ft²
Hydraulic Conductivity Rate, K 18.0 in/hr
Drawdown Time (Hours) 0.69 hrs
Drawdown Period is < 72 hours O.K.

**CURRITUCK – 2 YR-24 HR WOODED PRE-DEVELOPMENT RATIONAL
METHOD CALCULATIONS**

Rational Method Calculator

Big Box, LLC
 Pre-Construction (Wooded, 2-yr, 24 hr rainfall event)
 Curr SW Manual Sec 2.4.3.A, Rational Method

"= Input"
 "= Calculated"

Area = 1.20 Ac. (DA#1)
 C = 0.2 (Woods, Table 2-2)
 P = 4.0 in, (2yr-24hr rain depth)

Time of Concentration:

Sheet Flow

Mannings n = 0.1 (Woods, Table2-4)
 Elev Up = 7.94
 Elev Down = 7.44
 Length = 300
 Slope = 0.001667 ft/ft
 Tc₁ = 41.23 min

Shallow Concentrated Flow

Land Use = Unpaved
 Elev. Up = 7.44
 Elev. Down = 6.87
 Length = 125 ft
 Slope = 0.00456 ft/ft
 Velocity = 55.84 fpm (=972xS^{0.53})
 Tc₂ = 2.24 min (=L/V)

Channel Flow

Mannings n = 0.035 (Grass, Table2-4)
 Elev Up = 4.73
 Elev Down = 4.50
 Length = 30
 A = 18.8 sf
 W = 18.2 ft
 R = 1.03 ft (=A/w)
 Slope = 0.007667 ft/ft
 Velocity = 3.81 fps (=1.49*[(R^{0.67}*S^{0.5})/n])
 Tc₃ = 0.13 min (=L/60V)

Total Time of Concentration

Total Tc = 43.60 min (=Tc₁+Tc₂+Tc₃)

Peak Flow Calculation:

Intensity, I = 2.33 in/hr (2 yr, Interpolated from Table 2-5)
 Q₂ = 0.56 cfs (Q=CiA)

**CURRITUCK – 5 YR-24 HR
METHOD CALCULATIONS**

POST-DEVELOPMENT RATIONAL

Rational Method Calculator

Big Box, LLC
Post-Construction (5-yr, 24 hr rainfall event)
Curr SW Manual Sec 2.4.3.A, Rational Method

"= Input"
"= Calculated"

Area = 1.27 Ac. (DA#1)

Composite C Calculation: Table 2-2

Coverage	C	Area	Weighted Area
Impervious	0.95	0.61	0.5795
Open Space	0.25	0.66	0.17

Composite C = 0.59

Time of Concentration:

Total Tc = 5.00 min (Conservative assumption based on experience with similar small commercial sites)

Peak Flow Calculation:

Intensity, I = 6.72 in/hr (5yr, Interpolated from Table 2-5)

Q₅ = 5.00 cfs (Q=CiA)

CURRITUCK – STORAGE VOLUME AND DRAWDOWN CALCULATIONS

Runoff Depth Calculator

Big Box, LLC
Post-Construction (5-yr, 24 hr rainfall event)
Curr SW Manual Sec 2.4.3.B, (Steps 2 & 3)

"= Input"
 "= Calculated"

Composite Cn Calculation:

Coverage	Cn	Area	Weighted Area
Impervious (A Soils)	98	0.61	59.78
Open Space (A Soils)	49	0.66	32.34

Composite Cn =

Calculate Runoff Depth:

S = (S = 1000/Cn-10)
P = in. (5yr, Interpolated from Table 2-7)

Q(Depth) = in.

Storage Volume Required Calculator

Big Box, LLC
Pre /Post -Construction (2-yr / 5yr, 24 hr mitigation)
Curr SW Manual Sec 2.4.4

"= Input"
"= Calculated"

Summary from other calculations:

Drainage Area = 1.27 ac.
Q₂(pre) = 0.56 cfs
Q₅(post) = 5.00 cfs
Q(Depth) = 2.05 in.

Calculate Runoff Volume:

Vr = 0.217 ac-ft (Vr = Q_{depth}/12*A)

Calculate Required Storage Volume:

Vs = 310.8 cy (Vs = 1613.33 * Vr * (1 - Q₂/Q₅))
Vs = 8,392 cf

Calculate Storage Volume Provided:

Basin Bottom Area = 7,098 sf
Basin Bottom Elev. = 6.90 ft
Basin Top Area = 8,770 sf
Basin Top Elev. = 8.50 ft
Total Volume = 12,694 cf

Estimated 5yr Stage = 8.0 ft
Basin Area @ 5yr Stage = 8,232 sf
Basin Volume @ 5yr Stage = 8,432 cf

Infiltration Calculator

Big Box, LLC
Infiltration System Drawdown Calculations
NCDEQ SCM Manual

= "Input"
 = "Calculated"

Summary of calculation:

Equation, $T = FS * (Dv * 12)/(K * SA)$
T = Dewatering (drawdown) Time (hrs)
FS = Factor of Safety
Dv = Design Volume (cf)
K = Hydraulic Conductivity (in/hr)
SA = Surface Area of bottom of infiltration basin (SF)

Calculate Drawdown time:

Fs =	<input type="text" value="2"/>	
DV =	<input type="text" value="12,694"/>	cf, (Full Capacity)
K =	<input type="text" value="18.7"/>	in/hr
SA =	<input type="text" value="7,098"/>	sf
T =	<input type="text" value="2.30"/>	hrs
T =	<input type="text" value="0.10"/>	days

10 YR-24 HR POST-DEVELOPMENT EPA SWMM MODEL RESULTS

BIG BOX, LLC - POST-DEVELOPMENT 10YR-24HR RAINFALL EVENT

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.014)

WARNING 02: maximum depth increased for Node CB-01

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

Analysis Options

Flow Units CFS
Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing YES
 Ponding Allowed YES
 Water Quality NO
Infiltration Method CURVE_NUMBER
Flow Routing Method DYNWAVE
Surcharge Method EXTRAN
Starting Date 01/01/2024 00:00:00
Ending Date 01/07/2024 06:00:00
Antecedent Dry Days 0.0
Report Time Step 00:15:00
Wet Time Step 00:05:00
Dry Time Step 01:00:00
Routing Time Step 0.67 sec
Variable Time Step YES
Maximum Trials 8
Number of Threads 1
Head Tolerance 0.005000 ft

```

*****
Runoff Quantity Continuity      Volume      Depth
                                acre-feet    inches
*****                          -----
Total Precipitation .....      1.425       5.740
Evaporation Loss .....          0.000       0.000
Infiltration Loss .....         0.726       2.922
Surface Runoff .....            0.690       2.779
Final Storage .....             0.011       0.043
Continuity Error (%) .....      -0.084

```

```

*****
Flow Routing Continuity        Volume      Volume
                                acre-feet    10^6 gal
*****                          -----
Dry Weather Inflow .....       0.000       0.000
Wet Weather Inflow .....       0.691       0.225
Groundwater Inflow .....       0.000       0.000
RDII Inflow .....              0.000       0.000
External Inflow .....          0.000       0.000
External Outflow .....         0.440       0.143
Flooding Loss .....            0.000       0.000
Evaporation Loss .....         0.000       0.000
Exfiltration Loss .....        0.000       0.000
Initial Stored Volume .....     0.000       0.000
Final Stored Volume .....       0.251       0.082
Continuity Error (%) .....      -0.022

```

```

*****
Highest Continuity Errors
*****
Node SW-02 (12.53%)
Node SW-06 (2.50%)
Node CB-02 (1.72%)
Node CB-03 (1.11%)

```

```

*****
Time-Step Critical Elements
*****
None

```

 Highest Flow Instability Indexes

 All links are stable.

Routing Time Step Summary

Minimum Time Step : 0.04 sec
 Average Time Step : 0.67 sec
 Maximum Time Step : 0.67 sec
 Percent in Steady State : -0.00
 Average Iterations per Step : 2.00
 Percent Not Converging : 0.00

Subcatchment Runoff Summary

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10 ⁶ gal	Peak Runoff CFS	Runoff Coeff
DA-04	5.74	0.00	0.00	0.43	5.32	0.00	5.32	0.01	0.40	0.926
DA-03	5.74	0.00	0.00	0.67	5.07	0.00	5.07	0.02	0.47	0.884
DA-02	5.74	0.00	0.00	0.70	5.03	0.00	5.03	0.02	0.51	0.877
DA-01	5.74	0.00	0.00	0.46	5.28	0.00	5.28	0.01	0.40	0.920
DA-OF-4	5.74	0.00	0.00	2.10	0.00	3.59	3.59	0.04	1.62	0.626
DA-07	5.74	0.00	0.00	3.36	0.00	2.36	2.36	0.01	0.34	0.412
DA-OF-1	5.74	0.00	0.00	2.97	0.00	2.73	2.73	0.05	1.78	0.475
DA-OF-6	5.74	0.00	0.00	5.69	0.00	0.00	0.00	0.00	0.00	0.000
DA-OF-3	5.74	0.00	0.00	5.69	0.00	0.00	0.00	0.00	0.00	0.000
DA-06	5.74	0.00	0.00	2.92	0.00	2.78	2.78	0.01	0.59	0.485
DA-OF-2	5.74	0.00	0.00	2.30	0.00	3.39	3.39	0.04	1.48	0.591
DA-05	5.74	0.00	0.00	5.69	0.00	0.00	0.00	0.00	0.00	0.000
DA-SCM	5.74	0.00	0.00	5.69	0.00	0.00	0.00	0.00	0.00	0.000
DA-OF-5	5.74	0.00	0.00	2.40	0.00	3.29	3.29	0.01	0.50	0.573
DA-08	5.74	0.00	0.00	2.53	0.00	3.16	3.16	0.00	0.18	0.551

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
SW-15	JUNCTION	0.03	0.80	5.30	0 12:14	0.80
SW-14	JUNCTION	0.03	0.65	5.40	0 12:14	0.65
SW-07	JUNCTION	0.02	0.67	6.32	0 12:13	0.67
CB-04	JUNCTION	1.13	1.23	8.18	3 04:09	1.23
CB-03	JUNCTION	1.09	1.18	8.18	3 03:59	1.18
CB-02	JUNCTION	1.04	1.13	8.18	3 09:51	1.13
CB-01	JUNCTION	0.99	1.08	8.18	5 03:41	1.08
SW-09	JUNCTION	0.03	0.64	5.83	0 12:14	0.64
SW-08	JUNCTION	0.01	0.46	6.06	0 12:13	0.46
SW-02	JUNCTION	0.82	0.90	8.18	3 08:43	0.90
SW-13	JUNCTION	0.02	0.93	5.83	0 12:14	0.93
SW-01	JUNCTION	0.62	0.68	8.18	4 01:24	0.68
SW-05	JUNCTION	0.00	0.03	6.33	0 12:13	0.02
SW-06	JUNCTION	0.01	0.48	6.33	0 12:13	0.47
SW-10	JUNCTION	0.03	0.66	6.66	0 12:12	0.65
SW-11	JUNCTION	0.02	0.90	6.30	0 12:15	0.90
SW-12	JUNCTION	0.03	0.77	6.07	0 12:16	0.77
SW-04	JUNCTION	0.00	0.00	7.00	0 00:00	0.00
Outfall1	OUTFALL	0.04	0.80	4.80	0 12:14	0.80
SCM	STORAGE	1.17	1.28	8.18	5 01:14	1.28

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
------	------	-------------------------------------	-----------------------------------	------------------------------------------	-----------------------------------------	---------------------------------------	-------------------------------------

SW-15	JUNCTION	0.50	4.77	0	12:14	0.0125	0.143	0.000
SW-14	JUNCTION	0.00	4.35	0	12:14	0	0.131	0.001
SW-07	JUNCTION	1.62	1.62	0	12:12	0.044	0.0447	-0.042
CB-04	JUNCTION	0.40	1.78	0	12:12	0.013	0.0635	0.923
CB-03	JUNCTION	0.47	1.38	0	12:12	0.0151	0.0499	1.127
CB-02	JUNCTION	0.51	0.91	0	12:12	0.0164	0.0329	1.751
CB-01	JUNCTION	0.40	0.40	0	12:12	0.0129	0.014	1.971
SW-09	JUNCTION	0.00	3.07	0	12:15	0	0.0922	-0.049
SW-08	JUNCTION	0.00	1.48	0	12:13	0	0.044	-0.011
SW-02	JUNCTION	0.34	0.92	0	12:12	0.00709	0.0223	14.323
SW-13	JUNCTION	1.48	4.37	0	12:14	0.0387	0.131	-0.002
SW-01	JUNCTION	0.59	0.59	0	12:12	0.0129	0.0144	8.539
SW-05	JUNCTION	0.00	0.01	0	12:11	0	3.95e-06	0.031 gal
SW-06	JUNCTION	0.00	0.13	0	12:06	0	0.000723	2.566
SW-10	JUNCTION	1.78	1.78	0	12:12	0.0482	0.0482	-0.202
SW-11	JUNCTION	0.00	1.73	0	12:12	0	0.0483	0.203
SW-12	JUNCTION	0.00	1.62	0	12:15	0	0.0483	0.110
SW-04	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
Outfall1	OUTFALL	0.00	4.77	0	12:14	0	0.143	0.000
SCM	STORAGE	0.18	2.84	0	12:12	0.0043	0.0817	1.926

Node Surcharge Summary

No nodes were surcharged.

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
SCM	9.091	19	0	0	9.932	20	5 01:14	0.01

 Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
Outfall1	10.40	0.34	4.77	0.143
System	10.40	0.34	4.77	0.143

 Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
SW15-Outfall1	CONDUIT	4.77	0 12:14	2.48	0.05	0.32
SW14-SW15	CONDUIT	4.34	0 12:14	2.75	0.03	0.29
P-04	CONDUIT	1.77	0 12:12	2.65	0.95	0.99
P-03	CONDUIT	1.37	0 12:12	1.55	0.67	0.96
P-02	CONDUIT	0.91	0 12:12	1.01	0.47	0.92
P-01	CONDUIT	0.40	0 12:12	0.46	0.20	0.88
SW08-SW09	CONDUIT	1.48	0 12:13	1.91	0.04	0.37
P-06	CONDUIT	1.48	0 12:13	2.41	0.41	0.38
SW02-SW03	CONDUIT	0.89	0 12:12	1.08	0.05	0.73
SW1-DI2	CONDUIT	0.58	0 12:12	0.73	0.07	0.53
P-07	CONDUIT	4.35	0 12:14	3.75	0.32	0.40
SW09-SW13	CONDUIT	3.16	0 12:16	1.81	0.02	0.32

SW04-SW05	CONDUIT	0.00	0	00:00	0.00	0.00	0.01
P-05	CONDUIT	0.01	0	12:11	0.04	0.00	0.21
SW06-SW07	CONDUIT	0.13	0	12:06	0.21	0.02	0.39
SW10-SW11	CONDUIT	1.73	0	12:12	1.14	0.11	0.52
EX-PIPE	CONDUIT	1.62	0	12:15	1.85	0.96	0.67
SW12-SW09	CONDUIT	1.61	0	12:15	1.12	0.09	0.35
OVERFLOWWEIR	WEIR	0.00	0	00:00			0.00

Flow Classification Summary

Conduit	Adjusted /Actual Length	----- Fraction of Time in Flow Class -----								
		Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
SW15-Outfall1	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.87	0.00
SW14-SW15	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.17	0.00
P-04	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
P-03	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
P-02	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
P-01	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.04	0.00
SW08-SW09	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.92	0.00
P-06	1.00	0.07	0.81	0.00	0.11	0.00	0.00	0.00	0.84	0.00
SW02-SW03	1.00	0.00	0.08	0.00	0.92	0.00	0.00	0.00	0.00	0.00
SW1-DI2	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.00
P-07	1.00	0.07	0.75	0.00	0.17	0.00	0.00	0.00	0.88	0.00
SW09-SW13	1.00	0.07	0.00	0.00	0.90	0.02	0.00	0.00	0.03	0.00
SW04-SW05	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P-05	1.00	0.08	0.92	0.00	0.00	0.00	0.00	0.00	0.92	0.00
SW06-SW07	1.00	0.07	0.00	0.00	0.92	0.00	0.00	0.00	0.91	0.00
SW10-SW11	1.00	0.08	0.00	0.00	0.92	0.00	0.00	0.00	0.04	0.00
EX-PIPE	1.00	0.07	0.81	0.00	0.12	0.00	0.00	0.00	0.84	0.00
SW12-SW09	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.81	0.00

Conduit Surge Summary

Conduit	Hours Full			Hours	Hours
	Both Ends	Upstream	Dnstream	Above Full Normal Flow	Capacity Limited
P-04	0.01	0.01	128.00	0.01	0.01

Analysis begun on: Thu Jan 23 13:53:18 2025
 Analysis ended on: Thu Jan 23 13:53:25 2025
 Total elapsed time: 00:00:07

ATTACHMENT E – SEDIMENTATION AND EROSION CONTROL CALCULATIONS

- Erosive Velocity Calculations
- Sediment Basin Calculations

EROSIVE VELOCITY CHECK

Calculations Include the Following:

- 2 Year, Bare Soil Condition; 2 fps Max Velocity
- 10 Year, Vegetated Condition; 4 fps Max Velocity

Note:

This check is performed by highlighting respective summaries of conveyances that exceed maximum permissible velocities as determined by separate EPA SWMM modeling.

2 YEAR, BARE SOIL CONDITION; 2 FPS MAX VELOCITY

Link Flow and Velocity - 2yr			Velocity Check
Link	Flow (cfs)	Velocity (fps)	Bare Soil > 2 fps
SW15-Outfall1	1.49	1.85	OK
SW14-SW15	1.30	2.07	SPEC LINER
P-04	1.14	2.73	PIPE, OK
P-03	0.89	1.41	OK
P-02	0.59	0.92	OK
P-01	0.26	0.44	OK
SW08-SW09	0.69	1.98	OK
P-06	0.69	1.78	OK
SW02-SW03	0.17	0.5	OK
SW1-DI2	0.19	0.61	OK
P-07	1.30	2.48	PIPE, OK
SW09-SW13	0.82	1.61	OK
SW04-SW05	0.00	0.00	OK
P-05	0.00	0.00	OK
SW06-SW07	0.07	0.25	OK
SW10-SW11	0.35	0.86	OK
EX-PIPE	0.34	0.90	OK
SW12-SW09	0.34	0.71	OK
OVERFLOWWEIR	0.00	0.00	OK

*Estimated peak flows and velocities per EPA SWMM model results

10 YEAR, VEGETATED CONDITION; 4 FPS MAX VELOCITY

Link Flow and Velocity - 10yr			Velocity Check
Link	Flow (cfs)	Velocity (fps)	Vegetated > 4 fps
SW15-Outfall1	4.77	2.48	OK
SW14-SW15	4.34	2.75	OK
P-04	1.77	2.65	OK
P-03	1.37	1.55	OK
P-02	0.91	1.01	OK
P-01	0.40	0.46	OK
SW08-SW09	1.48	1.91	OK
P-06	1.48	2.41	OK
SW02-SW03	0.89	1.08	OK
SW1-DI2	0.58	0.73	OK
P-07	4.35	3.75	OK
SW09-SW13	3.16	1.81	OK
SW04-SW05	0.00	0.00	OK
P-05	0.01	0.04	OK
SW06-SW07	0.13	0.21	OK
SW10-SW11	1.73	1.14	OK
EX-PIPE	1.62	1.85	OK
SW12-SW09	1.61	1.12	OK
OVERFLOW/WEIR	0.00	0.00	OK

*Estimated peak flows and velocities per EPA SWMM model results

SEDIMENT BASIN CALCULATIONS

Sediment Basin 1Requirements

Tributary Disturbed Area*	1.06	acres	
Min. Required Storage Volume	1,908	ft ³	(1,800 ft ³ /acre)
Estimated 10 year peak inflow**	2.84	cfs	
Min. Required Surface Area	1,235	ft ²	(435 ft ² /cfs)

Design

Choose Avg. Storage Depth	1.5	ft	
Necessary Storage Surface Area	1,272	ft ²	
Is Necessary Surface Area > Required	YES		
Choose Storage Width	80	ft	
Choose Storage Length	110	ft	
Length to Width Ratio	1.4		Ratio Not Met
Surface Area Provided	8,770	ft ²	7.1 times required
Is Surface Area Provided > Required	YES		
Storage Volume Provided	12,694	ft ³	
Is Storage Volume Provided > Required	YES		6.7 times required

The temporary sediment basin will ultimately be utilized as a stormwater infiltration basin. Drawdown calculations resolve that the basin's full capacity volume will infiltrate into the site's excessively drained soils in a period of approximately 2.30 hours. For this reason, no formal drawdown devices are provided.

* Tributary Disturbed Area from Autocad

** Estimated 10 year peak flows per separate EPA SWMM calculations

ATLANTIC ENVIRONMENTAL CONSULTANTS, LLC

PO Box 3266, Kitty Hawk, NC 27949

January 31, 2025

Dave Klebitz
Bissell Professional Group
3512 N. Croatan Hwy
Kitty Hawk, NC 27949

RE: Site Evaluation – Parcel ID. No.012500000010000

Dear Mr. Klebitz,

This letter pertains to a site evaluation conducted on January 31, 2025, for the parcel located on Caratoke Highway in Poplar Branch, Currituck County, North Carolina.

The site was assessed for the presence of wetlands subject to Section 404 of the Clean Water Act. Atlantic Environmental Consultants, LLC conducted the evaluation using the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. Based on our assessment, no hydric soils or wetland hydrology were identified within the parcel boundaries. Therefore, the site does not meet the criteria for jurisdictional wetlands under Section 404 of the Clean Water Act, as regulated by the U.S. Army Corps of Engineers.

For reference, the attached survey from Bissell Professional Group, dated January 13, 2025, outlines the property review area.

Sincerely,



Doug Dorman
Atlantic Environmental Consultants, LLC



Rational Method Peak Flow Form SW-003

Project Information

Project Location: CARATOKE HIGHWAY, HARBINGERIZ

Parcel Identification Number(s): 0125-000-0001-000

Drainage area: _____ ac

Average Slope: _____ %

Maximum Slope Length: _____ ft

SEE PRE & POST DEVELOPMENT
RATIONAL METHOD CALCULATIONS
UNDER ATTACHMENT 'D' OF STUDY REPORT

Calculations

*The Rational Method may only be used where development will impact less than 10 acres

Time of Concentration (Tc) (Use additional sheets if necessary)			
	Pre-	Post-	
<u>Sheet Flow</u>			
Manning's roughness, n (Table 2-4)			
2-year, 24-hour Rainfall, P	4.0	6.0	in
Slope, S			ft/ft
Length of Sheet Flow, L (<=300 feet)			ft
Total Time for Sheet Flow			min
<u>Shallow Concentrated Flow</u>			
Surface Paved (P) or Unpaved (U)			
Length of flow, L			ft
Slope, S			ft/ft
Average Velocity, V (Table 2-3)			ft/min
Total Time for Shallow Concentrated Flow			min
<u>Channel Flow</u>			
Pipe (P) or Channel (C)			
If pipe: Diameter, D			in
If channel: Bottom Width, w			ft
If channel: side slope 1 (___:1)			
If channel: side slope 2 (___:1)			
Cross sectional flow area, A			sq ft
Wetted perimeter, Wp			ft
Hydraulic radius, R = A/Wp			ft

Time of Concentration (Tc) (Use additional sheets if necessary)			
	Pre-	Post-	
Channel slope, S			ft/ft
Manning's roughness, n (Table 2-4)			
Channel velocity			ft/sec
Length of Flow, L			ft/sec
Total Time for Channel Flow			min
Total Time of Concentration, Tc			min

Pre-development Conditions			
Land Use Description	C	Area (acres)	C*A
Woods	0.2		
Total			

Intensity for 2-year, 24-hour storm (Table 2-5) 2.33 in/hr

Pre-development peak flow, Q = CiA 0.56 cfs

Post-development Conditions			
Land Use Description	C	Area (acres)	C*A
Totals			

Area-weighted C: 0.59

Intensity for 10-year, 24-hour storm (Table 2-5) 6.72 in/hr

Post-development peak flow, Q = CiA 5.00 cfs

Minimum Storage Volume Required – Refer to Section 2.4.4 for Volume Calculations

Storage Volume, V_s 8,392 ft³

12,694 PROVIDED

Date

1/31/25

Applicant ENGINEER

SEE CALCS UNDER ATTACH'D

ALBEMARLE REGIONAL HEALTH SERVICES

430177

Applicant:

Big Box LLC c/o Monica Thibodeau
1197 Duck Rd
Duck, NC 27949

Owner:

Big Box LLC c/o Monica Thibodeau
1197 Duck Rd
Duck, NC 27949

Site Location:

8760 Caratoke Hwy
Harbinger, NC 27941

GPD: 500 LTAR: 0.500 Classification:

If unsuitable, the site may be reclassified to provisionally suitable with the following modification(s):

- * Other: Seasonal Soil Wetness was found to be at 20", therefore, 16" of sand fill above existing (original, prior to removal of trees) grade will be needed.

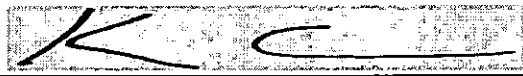
To obtain an Authorization to Construct:

- * Submit a plat or scale drawing of the lot, showing location and dimensions of all property lines, proposed structures and driveways
- * Pay permit fee of \$735

Comments:

- **Seasonal Soil Wetness @ 20"
- **A benchmark elevation should be established prior to clearing of trees so original grade is known.
- **Finished building pad to be higher than finished septic tank grade, unless a pump is used

EHS:



Carver, Kevin

Date: 10/30/2024

THIS APPROVAL WILL BECOME VOID AFTER 12 MONTHS AND A NEW APPLICATION WILL BE NECESSARY.

Bertie (252) 794-5303 Camden (252) 338-4460 Chowan (252) 482-1199 Currituck (252) 232-6603
Gates (252) 357-1380 Pasquotank (252) 338-4490 Perquimans (252) 426-2100

Check if this project is ARPA-funded
Attach a copy of the Letter of Intent to Fund

**FINANCIAL RESPONSIBILITY/OWNERSHIP FORM
SEDIMENTATION POLLUTION CONTROL ACT**

No person may initiate any land-disturbing activity on one or more acres as covered by the Act, including any activity under a common plan of development of this size as covered by the NCG01 permit, before this form and an acceptable erosion and sedimentation control plan have been completed and approved by the Land Quality Section, N.C. Department of Environmental Quality. Submit the completed form to the appropriate Regional Office. (Please type or print and, if the question is not applicable or the e-mail address or phone number is unavailable, place N/A in the blank.)

Part A.

1. Project Name Big Box, LLC Commercial Site Development

**If this project involves American Rescue Plan Act (ARPA) funds, list the Project Name or Project Number (e.g., SRP-D-ARP-0121) below under which you were approved for funding through the Division of Water Infrastructure (DWI).*

2. Location of land-disturbing activity: County Currituck City or Township Harbinger
Highway/Street US HWY 158 Latitude(decimal degrees) 36.09861 Longitude(decimal degrees) -75.81306

3. Approximate date land-disturbing activity will commence: 4/1/25

4. Purpose of development (residential, commercial, industrial, institutional, etc.): Commercial

5. Total acreage disturbed or uncovered (including off-site borrow and waste areas): 1.50

6. Amount of fee enclosed: \$ \$200. The application fee of \$100.00 per acre (rounded up to the next acre) is assessed without a ceiling amount (Example: 8.10-acre application fee is \$900). Checks should be addressed to NCDEQ.

7. Has an erosion and sediment control plan been filed? Yes Enclosed No

8. Person to contact should erosion and sediment control issues arise during land-disturbing activity:

Name Ryan Thibodeau E-mail Address ryan.thibodeau@carolinadesigns.com
Phone: Office # 252-261-3934 Mobile # 252-202-2988

9. Landowner(s) of Record (attach accompanied page to list additional owners):

<u>Big Box, LLC</u>	<u>252-261-3934</u>	<u>252-207-7739</u>
Name	Phone: Office #	Mobile #
<u>1197 Duck Road</u>	<u>1197 Duck Road</u>	
Current Mailing Address	Current Street Address	
<u>Duck NC 27949</u>	<u>Duck NC 27949</u>	
City State Zip	City State Zip	

10. Deed Book No. 1554 Page No. 578 Provide a copy of the most current deed.

Part B.

1. Company(ies) who are financially responsible for the land-disturbing activity (Provide a comprehensive list of all responsible parties on accompanied page.) *If the company is a sole proprietorship or if the landowner(s) is an individual(s), the name(s) of the owner(s) may be listed as the financially responsible party(ies).*

<u>Big Box, LLC</u> Company Name	<u>monica.thibodeau@carolinadesigns.com</u> E-mail Address
<u>1197 Duck Road</u> Current Mailing Address	<u>1197 Duck Road</u> Current Street Address
<u>Duck NC 27949</u> City State Zip	<u>Duck NC 27949</u> City State Zip
Phone: Office # <u>252-261-3934</u>	Mobile # <u>252-207-7739</u>

Note: If the Financially Responsible Party is not the owner of the land to be disturbed, include with this form the landowner's signed and dated written consent for the applicant to submit a draft erosion and sedimentation control plan and to conduct the anticipated land disturbing activity.

2. (a) If the Financially Responsible Party is a domestic company registered on the NC Secretary of State business registry, give name and street address of the Registered Agent:

<u>Monica Thibodeau</u> Name of Registered Agent	<u>monica.thibodeau@carolinadesigns.com</u> E-mail Address
<u>1197 Duck Road</u> Current Mailing Address	<u>1197 Duck Road</u> Current Street Address
<u>Duck NC 27949</u> City State Zip	<u>Duck NC 27949</u> City State Zip
Phone: Office # <u>252-261-3934</u>	Mobile # <u>252-207-7739</u>

Name of Individual to Contact (if Registered Agent is a company)

- (b) If the Financially Responsible Party is not a resident of North Carolina, give name and street address of the designated North Carolina agent who is registered on the NC Secretary of State business registry:

_____ Name of Registered Agent	_____ E-mail Address
_____ Current Mailing Address	_____ Current Street Address
_____ City State Zip	_____ City State Zip
Phone: Office # _____	Mobile # _____

Name of Individual to Contact (if Registered Agent is a company)

(c) If the Financially Responsible Party is engaging in business under an assumed name, give name under which the company is Doing Business As. If the Financially Responsible Party is an individual, General Partnership, or other company not registered and doing business under an assumed name, **attach a copy of the Certificate of Assumed Name.**

Company DBA Name

The above information is true and correct to the best of my knowledge and belief and was provided by me under oath. (This form must be signed by the Financially Responsible Person if an individual(s) or his attorney-in-fact, or if not an individual, by an officer, director, partner, or registered agent with the authority to execute instruments for the Financially Responsible Party). I agree to provide corrected information should there be any change in the information provided herein.

Monica Thibodeau

Agent, Managing Member

Type or print name

Title or Authority

Monica Thibodeau

1/27/25

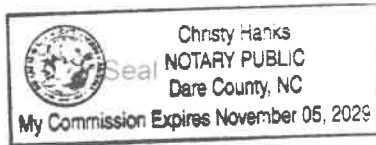
Signature

Date

I, Christy Hanks, a Notary Public of the County of Dare

State of North Carolina, hereby certify that Monica Thibodeau appeared personally before me this day and being duly sworn acknowledged that the above form was executed by him/her.

Witness my hand and notarial seal, this 27 day of January, 2025



Christy Hanks
Notary

My commission expires November 05, 2029

Operation & Maintenance Agreement

Project Name: Big Box, LLC Commercial Site Development
Project Location: Harbinger, Currituck County, NC

Cover Page

Maintenance records shall be kept on the following SCM(s). This maintenance record shall be kept in a log in a known set location. Any deficient SCM elements noted in the inspection will be corrected, repaired, or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the pollutant removal efficiency of the SCM(s).

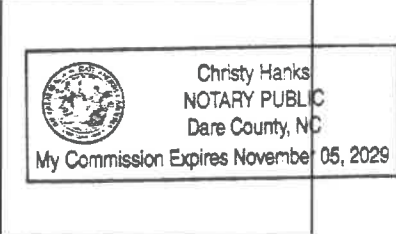
The SCM(s) on this project include (check all that apply & corresponding O&M sheets will be added automatically):

Infiltration Basin	Quantity: 1	Location(s): Rear of project
Infiltration Trench	Quantity:	Location(s):
Bioretention Cell	Quantity:	Location(s):
Wet Pond	Quantity:	Location(s):
Stormwater Wetland	Quantity:	Location(s):
Permeable Pavement	Quantity:	Location(s):
Sand Filter	Quantity:	Location(s):
Rainwater Harvesting	Quantity:	Location(s):
Green Roof	Quantity:	Location(s):
Level Spreader - Filter Strip	Quantity:	Location(s):
Proprietary System	Quantity:	Location(s):
Treatment Swale	Quantity:	Location(s):
Dry Pond	Quantity:	Location(s):
Disconnected Impervious Surface	Present: No	Location(s):
User Defined SCM	Present: No	Location(s):
Low Density	Present: No	Type:

I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed for each SCM above, and attached O&M tables. I agree to notify NCDEQ of any problems with the system or prior to any changes to the system or responsible party.

Responsible Party:	Big Box, LLC
Title & Organization:	Monica Thibodeau, Registered Agent, Managing Member
Street address:	1197 Duck Road
City, state, zip:	Duck, NC 27949
Phone number(s):	252-261-3934
Email:	monica.thibodeau@carolinadesigns.com

Signature: *Christy Hanks* Date: 1/27/25
 I, Christy Hanks, a Notary Public for the State of North Carolina
 County of Dare, do hereby certify that Monica Thibodeau
 personally appeared before me this 27 day of January 2025 and
 acknowledge the due execution of the Operations and Maintenance Agreement.
 Witness my hand and official seal, *Christy Hanks*



Seal My commission expires November 05, 2029

Infiltration Basin Maintenance Requirements

Important operation and maintenance procedures:

- The drainage area will be carefully managed to reduce the sediment load to the infiltration basin.
No portion of the infiltration basin will be fertilized after the initial fertilization that is required to
- establish the vegetation. Lime may be allowed if vegetation is planted on the surface of the infiltration basin and a soil test shows that it is needed.
- The vegetation in and around the basin will be maintained at a height of four to six inches.

After the infiltration basin is established, it will be inspected **quarterly and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance shall be kept in a known set location and shall be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

SCM element:	Potential problem:	How to remediate the problem:
The entire infiltration basin	Trash/debris is present.	Remove the trash/debris.
The grass filter strip or other pretreatment area	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, plant ground cover and water until it is established. Provide lime and a one-time fertilizer application.
	Sediment has accumulated to a depth of greater than three inches.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the SCM.
The flow diversion structure (if applicable)	The structure is clogged.	Unclog the conveyance and dispose of any sediment in a location where it will not cause impacts to streams or the SCM.
	The structure is damaged.	Make any necessary repairs or replace if damage is too much for repair.
The inlet device	The inlet pipe is clogged (if applicable).	Unclog the pipe and dispose of any sediment in a location where it will not cause impacts to streams or the SCM.
	The inlet pipe is cracked or otherwise damaged (if applicable).	Repair or replace the pipe.
	Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary and provide erosion control devices such as reinforced turf matting or riprap to avoid future erosion problems.
	Stone verge is clogged or covered in sediment (if applicable).	Remove sediment and clogged stone and replace with clean stone.
The basin	More than four inches of sediment has accumulated.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the SCM.
	Erosion of the basin surface has occurred or riprap is displaced.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Water is standing more than three days after a storm event.	Replace the top few inches of soil to see if this corrects the standing water problem. If not, consult an appropriate professional for a more extensive repair.

Infiltration Basin Maintenance Requirements (continued)

SCM element:	Potential problem:	How to remediate the problem:
The embankment	Shrubs or trees are growing on the embankment.	Remove shrubs and trees immediately.
	An annual inspection by an appropriate professional shows that the embankment needs repair.	Make needed repairs immediately.
The outlet device	Clogging has occurred.	Clean out the outlet device and dispose of sediment in a location where it will not cause impacts to streams or the SCM.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Repair the damage and improve the flow dissipation structure.
	Discharges from the infiltration basin are causing erosion or sedimentation in the receiving water.	Contact the local NCDEQ Regional Office.

DEMLR USE ONLY		
Date Received	Fee Paid	Permit Number
Applicable Rules: <input type="checkbox"/> Coastal SW - 1995 <input type="checkbox"/> Coastal SW - 2008 <input type="checkbox"/> Ph II - Post Construction (select all that apply) <input type="checkbox"/> Non-Coastal SW- HQW/ORW Waters <input type="checkbox"/> Universal Stormwater Management Plan <input type="checkbox"/> Other WQ Mgmt Plan: _____		

State of North Carolina
Department of Environmental Quality
Division of Energy, Mineral and Land Resources

POST-CONSTRUCTION STORMWATER MANAGEMENT PERMIT APPLICATION FORM

This form may be photocopied for use as an original.

I. GENERAL INFORMATION

- Project Name (subdivision, facility, or establishment name - should be consistent with project name on plans, specifications, letters, operation and maintenance agreements, etc.):
Big Box, LLC Commercial Site Development
- Location of Project (street address):
Caratoke Highway
 City: Harbinger County: Currituck Zip: 27941
- Directions to project (from nearest major intersection):
The site is located along the west side of Caratoke Hwy (US HWY 158), approx. 170 ft north of its intersection with Hall Harbor Rd. (SR 1106)
- Latitude: 36° 05' 55" N Longitude: -75° 48' 47" W of the main entrance to the project.

II. PERMIT INFORMATION:

- a. Specify whether project is (check one): New Modification Renewal w/ Modification[†]
[†]Renewals with modifications also requires SWU-102 – Renewal Application Form
 b. If this application is being submitted as the result of a **modification** to an existing permit, list the existing permit number _____, its issue date (if known) _____, and the status of construction: Not Started Partially Completed* Completed* **provide a designer's certification*
- Specify the type of project:
 Low Density High Density Drains to an Offsite Stormwater System Other
- If this application is being submitted as the result of a **previously returned application** or a **letter from DEMLR requesting a state stormwater management permit application**, list the stormwater project number, if assigned, _____ and the previous name of the project, if different than currently proposed, _____.
- a. Additional Project Requirements (check applicable blanks; information on required state permits can be obtained by contacting the Customer Service Center at 1-877-623-6748):
 CAMA Major Sedimentation/Erosion Control: 1.50 ac of Disturbed Area
 NPDES Industrial Stormwater 404/401 Permit: Proposed Impacts _____

 b. If any of these permits have already been acquired please provide the Project Name, Project/Permit Number, issue date and the type of each permit: _____
- Is the project located within 5 miles of a public airport? No Yes
If yes, see S.L. 2012-200, Part VI: <http://portal.ncdenr.org/web/lr/rules-and-regulations>

III. CONTACT INFORMATION

1.a. Print Applicant / Signing Official's name and title (specifically the developer, property owner, lessee, designated government official, individual, etc. who owns the project):

Applicant/Organization: Big Box, LLC

Signing Official & Title: Monica Thibodeau, Registered Agent, Managing Member

b. Contact information for person listed in item 1a above:

Street Address: 1197 Duck Road

City: Duck State: NC Zip: 27949

Mailing Address (if applicable): 1197 Duck Road

City: Duck State: NC Zip: 27949

Phone: (252) 261-3934 Fax: ()

Email: monica.thibodeau@carolinadesigns.com

c. Please check (one) the appropriate box. The applicant listed above is:

- The property owner (Skip to Contact Information, item 3a)
- Lessee* (Attach a copy of the lease agreement and complete Contact Information, item 2a and 2b below)
- Purchaser* (Attach a copy of the pending sales agreement and complete Contact Information, item 2a and 2b below)
- Developer* (Complete Contact Information, item 2a and 2b below.)

2.a. Print Property Owner's name and title below, if you are the lessee, purchaser or developer. (This is the person who owns the property that the project is located on):

Property Owner/Organization: _____

Signing Official & Title: _____

b. Contact information for person listed in item 2a above:

Street Address: _____

City: _____ State: _____ Zip: _____

Mailing Address (if applicable): _____

City: _____ State: _____ Zip: _____

Phone: () Fax: ()

Email: _____

3.a. (Optional) Print the name and title of another contact such as the project's construction supervisor or other person who can answer questions about the project:

Other Contact Person/Organization: Ryan Thibodeau

Signing Official & Title: Marketing and Operations Manager at Carolina Designs Realty, Inc

b. Contact information for person listed in item 3a above:

Mailing Address: 1197 Duck Road

City: Duck State: NC Zip: 27949

Phone: (252) 261-3934 Fax: ()

Email: ryan.thibodeau@carolinadesigns.com

4. Local jurisdiction for building permits: Currituck County

Point of Contact: Bill News Phone #: (252) 232-6023

Email: bil.news@currituckcountync.gov

IV. PROJECT INFORMATION

1. In the space provided below, briefly summarize how the stormwater runoff will be treated.
Stormwater runoff from built-upon areas will be conveyed to a single infiltration basin for treatment & disposal

2.a. **If claiming vested rights**, identify the supporting documents provided and the date they were approved:

- Approval of a Site Specific Development Plan or PUD Approval Date: _____
- Valid Building Permit Issued Date: _____
- Other: _____ Date: _____

b. **If claiming vested rights**, identify the regulation(s) the project has been designed in accordance with:

- Coastal SW – 1995
- Ph II – Post Construction

3. Stormwater runoff from this project drains to the Pasquotank River basin.

4. Total Property Area: 1.34 acres
 5. Total Coastal Wetlands Area: 0 acres
 6. Total Surface Water Area: 0 acres

7. Total Property Area (4) – Total Coastal Wetlands Area (5) – Total Surface Water Area (6) = Total Project Area*: 1.34 acres

* Total project area shall be calculated to exclude the following: the normal pool of impounded structures, the area between the banks of streams and rivers, the area below the Normal High Water (NHW) line or Mean High Water (MHW) line, and coastal wetlands landward from the NHW (or MHW) line. The resultant project area is used to calculate overall percent built upon area (BUA). Non-coastal wetlands landward of the NHW (or MHW) line may be included in the total project area.

8. Project percent of impervious area: (Total Impervious Area / Total Project Area) X 100 = 46.81 %

9. How many drainage areas does the project have? 1 (For high density, count 1 for each proposed SCM. For low density and other projects, use 1 for the whole property area. If there are multiple receiving streams, provide the drainage areas within the project area to each stream.)

10. Complete the following information for each drainage area directed to an SCM or low density area identified in Project Information item 9. If there are more than four drainage areas in the project, attach an additional sheet with the information for each area provided in the same format as below.

Basin Information	Drainage Area 1A	Drainage Area 1B	Drainage Area 2	Drainage Area 3
Receiving Stream Name	Currituck Sound	Currituck Sound	Currituck Sound	Currituck Sound
Stream Class *	SC	SC	SC	SC
Stream Index Number *	30-1	30-1	30-1	30-1
Total Drainage Area (sf)	46360	9984	1375	457
On-site Drainage Area (sf)	45328	9984	1375	457
Off-site Drainage Area (sf)	1032	0	0	0
Proposed Impervious Area** (sf)	25233	1786	213	0
% Impervious Area** (total)	54.4%	17.9%	15.5%	0

Impervious** Surface Area	Drainage Area 1A	Drainage Area 1B	Drainage Area 2	Drainage Area 3
On-site Buildings/Lots (sf)	11930	0	0	0
On-site Streets (sf)	1500	979	213	0
On-site Parking (sf)	11598	0	0	0
On-site Sidewalks (sf)	0	807	0	0
Other on-site (sf)	205	0	0	0
Future (sf)	0	0	0	0
Off-site (sf)	0	0	0	0
Existing BUA*** (sf)	0	0	0	0
Total (sf):	25233	1786	213	0

* Stream Class and Index Number can be determined at: <https://www.deq.nc.gov/about/divisions/water-resources/water-planning/classification-standards/classifications>

** Impervious area is defined as the built upon area including, but not limited to, buildings, roads, parking areas, sidewalks, gravel areas, etc.

*** Report only that amount of existing BUA that will remain after development. Do not report any existing BUA that is to be removed and which will be replaced by new BUA. See definition 15A NCAC 02H . 1002(17).

11. How was the off-site impervious area listed the Section IV, 10 Tables determined? Provide documentation.
N/A

Projects in Union County: Contact DEMLR Central Office staff to check if the project is located within a Threatened & Endangered Species watershed that may be subject to more stringent stormwater requirements as per 15A NCAC 02B .0600.

V. SUPPLEMENT AND O&M FORMS

The applicable state stormwater management permit supplement and operation and maintenance (O&M) forms must be submitted for each SCM specified for this project. The latest versions of the forms can be downloaded from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/stormwater-design-manual>. For SCMs subject to older design standards or offsite projects, the archived supplement can be found from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/stormwater-design-manual/archived-stormwater-design-manual-supplemental-forms>

VI. CHECKLIST OF SUBMITTAL REQUIREMENTS FOR AN ADMINISTRATIVELY COMPLETE APPLICATION PACKAGE PER 15A NCAC 02H .1042(2)

Only complete application packages will be accepted and reviewed by the Division of Energy, Mineral and Land Resources (DEMLR). An administratively complete application package includes all of the items listed below. A detailed application instruction sheet and SCM checklists are available from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/post-construction-program/new-permits-permit-modifications>. The complete application package should be submitted to the appropriate DEMLR Office. (The appropriate office may be found by locating project on the interactive online map at <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/post-construction-program>.)

Please **indicate that the following required information have been provided by initialing** in the space provided for each item. All original documents **MUST** be signed and initialed in blue ink. **Download the latest versions for each submitted application package** from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program>.

- | | Initials |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1. Original and one copy of the Stormwater Management Permit Application Form. | <u>DMK</u> |
| 2. Original and one copy of the signed and notarized Deed Restrictions & Protective Covenants Form or, for major modifications, a copy of the recorded deed restrictions and protective covenants limiting the built-upon area so that it does not exceed the capacity of the SCM(s) or the BUA thresholds. (if required as per Part VII below)
Deed book: _____ Page No: _____ Relevant section: _____ | <u>N/A</u> |
| 3. Original of the applicable Supplement Form(s) (sealed, signed and dated) and O&M agreement(s) for each SCM. (please refer to Section V for more information) | <u>DMK</u> |
| 4. Appropriate permit application processing fee per NCGS 143-215.3D(e)(2) payable to NCDEQ.
A full list of fee adjustments is available on the DEQ website: https://www.deq.nc.gov/accessdeq/permit-fees-2023-updates
(For an Express review, refer to: https://www.deq.nc.gov/accessdeq/express-permitting for information on the Express program and the associated fees. Contact the appropriate Coastal regional office Express Permit Coordinator for additional information and to schedule the required application meeting.) | <u>DMK</u> |
| 5. A detailed narrative (one to two pages) describing the stormwater treatment/management for the project. This is required in addition to the brief summary provided in the Project Information, item 1. | <u>DMK</u> |
| 6. A USGS map identifying the site location. If the receiving stream is reported as class SA or the receiving stream drains to class SA waters within 1/2 mile of the site boundary, include the 1/2 mile radius on the map. | <u>DMK</u> |
| 7. Sealed, signed, and dated calculations (one copy). | <u>DMK</u> |

8. Two sets of plans folded to 8.5" x 14" (sealed, signed, & dated), including: DMK
- a. Development/Project name.
 - b. Engineer and firm.
 - c. Location map with named streets and NCSR numbers.
 - d. Legend.
 - e. North arrow.
 - f. Scale.
 - g. Revision number and dates.
 - h. Identify all surface waters on the plans by delineating the normal pool elevation of impounded structures, the banks of streams and rivers, the MHW or NHW line of tidal waters, and any coastal wetlands landward of the MHW or NHW lines.
 - Delineate the vegetated setback landward from the normal pool elevation of impounded structures, the banks of streams or rivers, and the MHW (or NHW) of tidal waters.
 - i. Dimensioned property/project boundary with bearings & distances.
 - j. Site Layout with all BUA identified and dimensioned.
 - k. Existing contours, proposed contours, spot elevations, finished floor elevations.
 - l. Details of roads, drainage features, collection systems, and stormwater control measures (including any applicable SCM planting plans).
 - m. Wetlands delineated, or a note on the plans that none exist. (Must be delineated by a qualified person; identify the person who made the determination on the plans.
 - n. Existing drainage (including off-site), drainage easements, pipe sizes, runoff calculations.
 - o. Drainage areas delineated (included in the main set of plans, not as a separate document).
9. Copy of any applicable soils report with the associated SHWT elevations (Please identify elevations in addition to depths) as well as a map of the boring locations with the existing elevations and boring logs. Include an 8.5"x11" copy of the NRCS County Soils map with the project area clearly delineated. For projects with infiltration SCMs, the report should also include the soil type, expected infiltration rate, and the method of determining the infiltration rate. (Infiltration Devices submitted to WIRO: Schedule a site visit for DEMLR to verify the SHWT Prior to submittal, (910) 796-7378.) DMK
10. A copy of the most current property deed. Deed book: 1554 Page No: 578 DMK
11. For corporations and limited liability corporations (LLC): Provide documentation from the NC Secretary of State or other official documentation, which supports the titles and positions held by the persons listed in Contact Information, item 1a, 2a, and/or 3a per 15A NCAC 2H.1040(1). The corporation or LLC must be listed as an active corporation in good standing with the NC Secretary of State, otherwise the application will be returned. <http://www.secretary.state.nc.us/Corporations/CSearch.aspx> DMK
12. If the applicant is not the property owner, a copy of a lease agreement, affidavit, or other document showing that the applicant has obtained legal rights to submit a stormwater permit application within the proposed project area; N/A
13. If applicable, a copy of any recorded drainage, maintenance, or operation and maintenance easements demonstrating ownership interest sufficient to operate the SW system. Deed book: _____ Page No: _____ Relevant section: _____ N/A
14. If a modification to an existing permit: N/A
- a. The applicant / permit holder will remain the same and permit has not and will not expire within the next 180 days.
 - b. Signed, sealed & dated Designer Certification Forms
 - c. Copies of the following documents recorded with the County Register of Deeds
 - i. Deed restrictions and protective covenants limiting the BUA so that it does not exceed the capacity of the SCM(s) or the BUA thresholds.
 - ii. Drainage easements, when applicable.
 - iii. Operation & Maintenance Agreement
 - iv. Final subdivision plat referencing the Operation & Maintenance Agreement

VII. DEED RESTRICTIONS AND PROTECTIVE COVENANTS

For all subdivisions, outparcels, and future development, the appropriate property restrictions and protective covenants are required to be recorded prior to the sale of any lot. If lot sizes vary significantly or the proposed BUA allocations vary, a table listing each lot number, lot size, and the allowable built-upon area must be provided as an attachment to the completed and notarized deed restriction form. The appropriate deed restrictions and protective covenants forms can be downloaded from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/post-construction-program/post-construction-forms>. Download the latest versions for each submittal.

In the instances where the applicant is different than the property owner, it is the responsibility of the property owner to sign the deed restrictions and protective covenants form while the applicant is responsible for ensuring that the deed restrictions are recorded.

By the notarized signature(s) below, the permit holder(s) certify that the recorded property restrictions and protective covenants for this project, if required, shall include all the items required in the permit and listed on the forms available on the website, that the covenants will be binding on all parties and persons claiming under them, that they will run with the land, that the required covenants cannot be changed or deleted without concurrence from the NC DEMLR, and that they will be recorded prior to the sale of any lot.

VIII. CONSULTANT INFORMATION AND AUTHORIZATION

Applicant: Complete this section if you wish to designate authority to another individual and/or firm (such as a consulting engineer and/or firm) so that they may provide information on your behalf for this project (such as addressing requests for additional information).

Consulting Engineer: David M. Klebitz, P.E.

Consulting Firm: Bissell Professional Group

Mailing Address: P.O. Box 1068

City: Kitty Hawk State: NC Zip: 27949

Phone: (252) 261-3266 Fax: (252) 261-1760

Email: davek@bissellprofessionalgroup.com

IX. PROPERTY OWNER AUTHORIZATION (if Contact Information, item 2 has been filled out, complete this section)

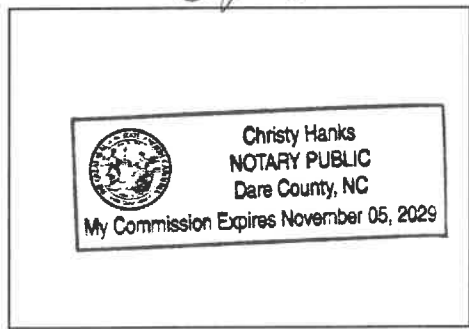
I, (print or type name of person listed in Contact Information, item 2a) Monica Tribodeau, certify that I own the property identified in this permit application, and thus give permission to (print or type name of person listed in Contact Information, item 1a) _____ with (print or type name of organization listed in Contact Information, item 1a) _____ to develop the project as currently proposed. A copy of the lease agreement or pending property sales contract has been provided with the submittal, which indicates the party responsible for the operation and maintenance of the stormwater system.

As the legal property owner I acknowledge, understand, and agree by my signature below, that if my designated agent (entity listed in Contact Information, item 1) dissolves their company and/or cancels or defaults on their lease agreement, or pending sale, responsibility for compliance with the DEMLR Stormwater permit reverts back to me, the property owner. As the property owner, it is my responsibility to notify DEMLR immediately and submit a completed Name/Ownership Change Form within 30 days; otherwise I will be operating a stormwater treatment facility without a valid permit. I understand that the operation of a stormwater treatment facility without a valid permit is a violation of NC General Statute 143-215.1 and may result in appropriate enforcement action including the assessment of civil penalties of up to \$25,000 per day, pursuant to NCGS 143-215.6.

Signature: [Signature] Date: 1/27/25

I, Christy Hanks, a Notary Public for the State of North Carolina County of Dare, do hereby certify that Monica Tribodeau personally appeared before me this 27 day of January, 2025, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

[Signature]



SEAL

My commission expires November 05, 2029

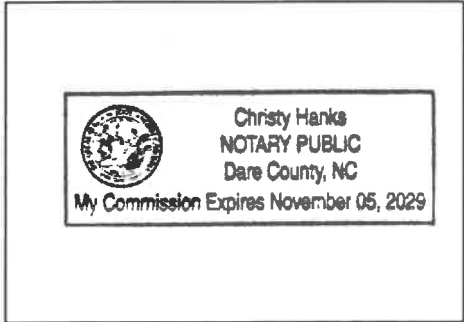
X. APPLICANT'S CERTIFICATION

I, (print or type name of person listed in Contact Information, item 1a) Monica Thibodeau, for Big Box, LLC, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans, that the required deed restrictions and protective covenants will be recorded, and that the proposed project complies with the requirements of the applicable stormwater rules under 15A NCAC 2H .1000 and any other applicable state stormwater requirements.

Signature: [Handwritten Signature] Date: 1/27/25

I, Christy Hanks, a Notary Public for the State of North Carolina, County of Dare, do hereby certify that Monica Thibodeau personally appeared before me this 27 day of January, 2025, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

Christy Hanks



SEAL

My commission expires November 05, 2029



APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
Driveway Permit No.	Date of Application 1-24-25	
County: Currituck		
Development Name: Big Box, LLC Commercial Site Development		

LOCATION OF PROPERTY:

Route/Road: Caratoke Hwy. (US Hwy 158)

Exact Distance 170 Miles N S E W
 Feet

From the Intersection of Route No. SR 1106 and Route No. US Hwy 158 Toward Jarvisburg

Property Will Be Used For: Residential /Subdivision Commercial Educational Facilities TND Emergency Services Other

Property: is is not within Currituck County City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
- I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.
- I agree that that driveway(s) or street(s) as used in this agreement include any approach tapers, storage lanes or speed change lanes as deemed necessary.
- I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.
- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a \$50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
- I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.
- I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.
- I agree to indemnify and save harmless the North Carolina Department of Transportation from all damages and claims for damage that may arise by reason of this construction.
- I agree that the North Carolina Department of Transportation will assume no responsibility for any damages that may be caused to such facilities, within the highway right-of-way limits, in carrying out its construction.
- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
- The granting of this permit is subject to the regulatory powers of the NC Department of Transportation as provided by law and as set forth in the N.C. Policy on Driveways and shall not be construed as a contract access point.
- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

SIGNATURES OF APPLICANT

PROPERTY OWNER (APPLICANT)		WITNESS	
COMPANY	Big Box, LLC c/o Monica Thibodeau, Reg. Agent	NAME	Christy Hanks
SIGNATURE		SIGNATURE	
ADDRESS	1197 Duck Road	ADDRESS	4120 Poor Ridge Rd
	Duck, NC 27949 Phone No. 252-261-3934		Kitty Hawk NC 27949

AUTHORIZED AGENT		WITNESS	
COMPANY	Bissell Professional Group	NAME	Marcie Despass
SIGNATURE		SIGNATURE	
ADDRESS	3512 N. Croatan Highway	ADDRESS	PO Box 1068
	Kitty Hawk, NC 27949 Phone No. 252-261-3266		Kitty Hawk, NC 27949

APPROVALS

APPLICATION RECEIVED BY DISTRICT ENGINEER

SIGNATURE DATE

APPLICATION APPROVED BY LOCAL GOVERNMENTAL AUTHORITY (when required)

SIGNATURE TITLE DATE

APPLICATION APPROVED BY NCDOT

SIGNATURE TITLE DATE

INSPECTION BY NCDOT

SIGNATURE TITLE DATE

COMMENTS:

ROUTE US HWY 158 PROJECT Big Box, LLC COUNTY OF CURRITUCK STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

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

-AND-

Big Box, LLC c/o Monica Thibodeau

1197 Duck Road, Duck NC 27949

-AND-

County of Currituck, North Carolina

153 Courthouse Rd. Currituck, NC 27929

THIS AGREEMENT, made and entered into this the _____ day of _____, 20____, by and between the Department of Transportation, party of the first part; and Big Box, LLC c/o Monica Thibodeau party of the second part; and County of Currituck, North Carolina party of the third part,

WITNESSETH

THAT WHEREAS, the party of the second part desires to encroach on the right of way of the public road designated as Route(s) US HWY 158 (Caratoke Hwy), located Approx. 190 feet north from the intersection with SR 1106 (Halls Harbor Rd.) towards Jarvisburg

with the construction and/or erection of: Fire Hydrant and water service installations to serve proposed commercial development

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

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

That the installation, operation, and maintenance of the above described facility will be accomplished in accordance with the party of the first part's latest POLICIES AND PROCEDURES FOR ACCOMMODATING UTILITIES ON HIGHWAY RIGHTS-OF-WAY, and such revisions and amendments thereto as may be in effect at the date of this agreement. Information as to these policies and procedures may be obtained from the Division Engineer or State Utility Agent of the party of the first part.

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

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

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

That the party of the second part agrees to restore all areas disturbed during installation and maintenance to the satisfaction of the Division Engineer of the party of the first part. The party of the second part agrees to exercise every reasonable precaution during construction and maintenance to prevent eroding of soil; silting or pollution of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces or other property; or pollution of the air. There shall be compliance with applicable rules and regulations of the North Carolina Division of Environmental Management, North Carolina Sedimentation Control Commission, and with

ordinances and regulations of various counties, municipalities and other official agencies relating to pollution prevention and control. When any installation or maintenance operation disturbs the ground surface and existing ground cover, the party of the second part agrees to remove and replace the sod or otherwise reestablish the grass cover to meet the satisfaction of the Division Engineer of the party of the first part.

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

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

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

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

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

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

- a. Compliance with Regulations: The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the U. S. Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
- b. Nondiscrimination: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
- c. Solicitations for Subcontracts, including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- d. Information and Reports: The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
- e. Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to,
 - (1) withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (2) cancellation, termination or suspension of the contract, in whole or in part.
- f. Incorporation of Provisions: The contractor shall include the provisions of paragraphs "a" through "f" in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Department of Transportation to enter into such litigation to protect the interests of the State, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

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

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

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

DEPARTMENT OF TRANSPORTATION

BY: _____
DIVISION ENGINEER

WITNESS:

Christy Hanks
Christy Hanks
4120 Poor Ridge Rd.
Kitty Hawk NC 27949

Big Box, LLC c/o Monica Thibodeau
[Signature]

Second Party

WITNESS:

County of Currituck, North Carolina

Third Party

