



PLANNING BOARD AGENDA

Members:

Chairman: Stephen Upton (Town)

Vice-Chairman: Mark Lane (ETJ)

Teresa Daughtry (Town)

Ashley Spain (ETJ)

Doris Wallace (Town Alt)

Alisa Bizzell (Town)

Michael Johnson (Town)

Debbie Howard (Town)

Stephen Wensman, AICP, ALA, Planning Director

Mark Helmer, AICP, CZO, Senior Planner

Julie Edmonds, Administrative Assistant

Meeting Date: Thursday, May 7, 2020

Meeting Time: 6:00 p.m.

Meeting Place: Council Chambers, Smithfield Town Hall

**PLANNING BOARD AGENDA
FOR REGULAR MEETING
May 7, 2020
MEETING TIME: 6:00 PM TOWN HALL**

Call to Order.

Identify voting members.

Approval of the agenda.

Approval of the minutes for April 2, 2020

New Business.

S-19-02 Twin Creeks Phase 2: Stewart-Proctor, PLLC is requesting preliminary plat approval of a 28 lot single-family attached residential subdivision on an 11.61 acre tract of land located within an R-20A (Residential-Agricultural) zoning district. The property considered for approval is located on the west east of Galilee Road, approximately 1,800 feet south its intersection with NC Highway 210. The property is further identified as Johnston County Tax ID# 15I09011B.

Old Business

Adjournment

**Draft
Town of Smithfield
Planning Board Minutes
Thursday, April 2, 2020
6:00 P.M., Town Hall, Council Chambers**

Members Present:

Chairman Stephen Upton
Teresa Daughtry
Debbie Howard
Michael Johnson
Doris Wallace

Members Absent:

Vice-Chair Mark Lane
Alisa Bizzell
Ashley Spain

Staff Present:

Stephen Wensman, Planning Director
Julie Edmonds, Administrative Support Specialist

Staff Absent:

Mark Helmer, Senior Planner

CALL TO ORDER

IDENTIFY VOTING MEMBERS

APPROVAL OF AGENDA

Doris Wallace made a motion, seconded by Debbie Howard to approve the agenda. Unanimously approved

APPROVAL OF MINUTES from February 13, 2020

Michael Johnson made a motion, seconded by Debbie Howard to approve the minutes as written. Unanimously approved

Donnie Adams was called by phone to participate in the meeting on behalf of Adam's & Hodge Engineering. Mr. Upton, asked Mr. Adams to please acknowledge for the record that it was his choice to communicate in this meeting by phone.

Mr. Adams stated that he did receive an invitation to attend the meeting but chose to participate by a conference call due to the COVID-19 situation.

NEW BUSINESS

S-18-01 Sam's Branch Development: The applicant is requesting substantial changes to a previously approved subdivision plat of the proposed 298-315 lot residential planned unit development named East River. The subject property is located on the East and West side of Buffalo Road approximately 490 feet North of its intersection with Booker Dairy Road. The property is further identified as Johnston County Tax ID# 14075013.

Mr. Wensman stated that staff has asked the applicant to resubmit their preliminary plat which was approved on December 4th, 2018. Phase 1 of the plat is complete. The developer submitted Phase 2 which showed a significant change in how the stormwater management is going to be addressed; which is considered a major change from the original plan. Preliminary and final plats need to align; therefore, I have asked the applicant to seek reapproval. This property in question is on Buffalo Road, just North of the Credit Union. Originally the applicant was going to use an existing pond in the buffer down by the Neuse River for stormwater. DEQ determined that pond couldn't be used for water quality only for quantity. That presented a problem for the development because they wanted to do both. The original narrative for the project described pocket parks with common open space. These parks would be long green strips between rows of homes with paved trails, landscaping usable for soccer, football, corn hole, horse shoes, fire pits and cookouts. A lot of this space is now being used for a storm pond. The proposed HOA trail in the open space use to run more or less down the center of that open space and because it's now a wetland it's pushed to the edge of that open space.

The original masterplan was approved with conditions. Those conditions were that the applicant would provide overflow parking with each phase of development and the trail would go around the cul-de-sac down by the river, rather than through it. Those are the main conditions that the masterplan in its current form did not address, but they were conditions of approval that we expected to see. The revised plan shows the strips of blue in between the different rows of homes and you can see how the trails have pushed up against the back of some of the property lines. Those are the HOA trails, not the public trails. At the end of those green spaces you'll see roughly three parallel parking stalls each. That is the overflow parking the applicant is talking about. In some cases, that overflow parking is where people will pick up their mail. There is a little conflict between overflow parking spaces and cluster mailbox pickup for those that drive to the mailbox.

Mr. Wensman stated that Mr. Adams received the original report which listed the conditions and they are as follows:

- 1) That the developer obtains a NCDOT Right-of-Way Permit for the street access onto Buffalo Road prior to construction approval.
- 2) That Homeowners Association deed restrictions and covenants will be submitted for Town Attorney review to address among other items, a statement of compliance with state local and federal regulations, and operation and maintenance of shared open space, amenities and stormwater management facilities. These documents will require Town Attorney approval prior to recordation.
- 3) That there be no attached single-family residential units within phases 1 or 2 as identified on the approved master plan phasing plan.
- 4) That a park dedication fee in lieu of parkland be paid prior to recording the final plat approval of each phase of the development consistent with Article 10, Section 10.112.8.
- 5) That the public trail be constructed and easements be dedicated for trails adjacent to

each phase with the final plat of that phase consistent with the preliminary plat.

6) That the public trail in the cul-de-sac of Shore Court be modified such that it is independent of the sanitary sewer pump station access way and shall go around the Shore Court cul-de-sac.

7) The utilities shall be designed such that that extension can be made conveniently and without undue burden or expense to serve future adjacent development.

8) The developer will work with staff to incorporate overflow parking areas into each phase of development.

Mr. Wensman stated that the previous two conditions have been met by the developer and they are as follows:

6) That the public trail in the cul-de-sac of Shore Court be modified such that it is independent of the sanitary sewer pump station access way and shall go around the Shore Court cul-de-sac.

8) The developer will work with staff to incorporate overflow parking areas into each phase of development.

Staff respectfully requests that the Planning Board review the PUD Master Plan/Preliminary Subdivision Plat and make a recommendation to approve, approve with conditions or deny the plat.

Mrs. Howard asked what the red area was on the map.

Mr. Adams stated the red is area that has been identified as wetlands.

Mrs. Daughtry asked if the pond gets inspected every so often.

Mr. Wensman said the developer or the HOA whomever is in charge at that point will have to submit a yearly stamped engineered certification that the pond has been inspected and operated correctly. If there are problems, they must be corrected within 190 days.

Mrs. Daughtry asked if the HOA will have a budget to take care of long-term maintenance and repair of the pond.

Mr. Adams stated he wasn't exactly sure but he knows the model of the HOA being used is one like they've used in other communities and it is maintenance free. He does know there are monthly fees associated but he doesn't know if the organization starts off with a beginning balance. Sometimes they do and are supplemented by the developer. He apologized for not having a better answer.

Mr. Upton requested that the Planning Department staff look into that to finalize the question.

Mr. Wensman stated that could be a recommended condition that there be funds for long-term maintenance. He doesn't know if it can be legally required though. If nothing else the Planning Board can make their concerns known.

Mrs. Howard said once so much of that is built out and sold, the homeowners will have control over the HOA so they can make changes as they would like to budgeting wise.

Mr. Upton requested someone make a motion with the approval of the recommendation by the Planning Department to the Town Council but to also include the recommendation just discussed about the HOA situation.

Mrs. Daughtry made a motion to approve S-18-01 with the recommendation that the Planning Department staff look into the long-term maintenance responsibility of the pond seconded by Debbie Howard. Unanimously approved

Mr. Upton thanked Mr. Adams for participating by phone and told him he would receive the recommendations from the Planning Department.

Old Business

None

Adjournment

Being no further business, Doris Wallace made a motion seconded by Debbie Howard to adjourn the meeting. Unanimously approved

Respectfully Submitted,



Julie Edmonds
Administrative Support Specialist



Request for Planning Board Action

**Business
Item:** S-19-02
Date: 05/07/20

Subject: Twin Creeks Phase 2 Preliminary Subdivision

Department: Planning

Presented by: Stephen Wensman, Planning Director

Presentation: Business Item

Issue Statement

Stewart-Proctor, PLLC is requesting the Twin Creeks Phase 2 Preliminary Subdivision Plat on behalf of Navaho Investment Company, LLC consisting of a proposed 28-lot attached single-family residential lots on 11.61 acres of land in the R-20A Zoning District.

Financial Impact

This development is within the Town Corporate limits, will provide property taxes for 28 single family residential lots and will be served by Town utilities, police, fire, and trash and other public services.

Action Needed

To review the Preliminary Subdivision Plat and make a recommendation to the Town Council.

Recommendation

Planning Staff recommends the Planning Board recommend approval of the S-19-01 with 8 conditions of approval.

Approved: Town Manager Town Attorney

Attachments:

1. Staff report
2. Application
3. Preliminary Plat and Plans



Staff Report

**Business S-19-
Item: 01**

REQUEST: Stewart-Proctor, PLLC is requesting the Twin Creeks Phase 2 Preliminary Subdivision Plat on behalf of Navaho Investment Company, LLC consisting of a proposed 28-lot attached single-family residential lots on 11.61 acres of land in the R-20A Zoning District.

APPLICATION:

Application Number: S-19-01
Project Name: Twin Creeks Phase 2 Preliminary Plat
TAX ID numbers: 15I09011B
NCPin numbers: 167300-56-5565
Town Limits/ETJ: Town Limits
Applicant: Stewart-Proctor, PLLC.
Property Owner: Navaho Investment Company, LLC
Agents: Michael Stewart

LOCATION: 6054 Black Creek Road – about 2000 linear feet south of Black Creek Road on Galilee Road.

SITE/DEVELOPMENT DATA:

Acreage: 11.61 acres
Present Zoning: R-20A
Existing Uses: Vacant agricultural land
Proposed Use: Single-family Detached Residential Cluster Subdivision
Fire Protection: Town of Smithfield
School Impacts: Potentially adding students to the schools.
Parks and Recreation: Subject to park dedication fees in lieu funds
Access: Galilee Road
Water Provider: Town of Smithfield
Sewer Provider: Town of Smithfield
Electric Provider: Duke Energy

ADJACENT ZONING AND LAND USES:

	Exiting Zoning	Existing Use:
North	R-20A	Rural Residential & West Smithfield Elementary School
South-East	R-20A	Agricultural
West	R-20A	Twin Creeks Phase 1 Subdivision (Preliminary Plat)
South	R-20A	Agricultural

EXISTING CONDITIONS:

The Phase 2 subdivision site is currently an agricultural property located just south of the West Smithfield Elementary School. The site slopes from Galilee Road towards a creek (which is the division line between Phase 1 and Phase 2). A drainage ditch bisects the field and flows toward the creek. Along the northern and southern property lines are rows of existing conifers.

SPECIAL USE:

The proposed subdivision plans on utilizing the cluster provisions of the Unified Development Code Section 7.34 which require a Special Use Permit. The approval of the preliminary plat is conditioned on approval of the special use permit.

PRELIMINARY PLAT/PLANS ANALYSIS:

Unit Type/Density/Lot Size. The developer is proposing to construct (28) single family detached residential lots, 0.25 acres in size on average (0.21-0.35 acres in size) with 2.94 acres of preserved open space containing the stormwater SCM and a trail to be owned in common ownership with a homeowner’s association.

The Minimum Lot Size in the R-20A zoning district is 15,000 sq. ft. (0.34 acres); however, the cluster regulations allow for 60% reduction in lot size or 9000 sq. ft. (.21 acres).

Minimum Lot Width in the R-20A zoning district is 75 feet; however, the cluster regulations allow for narrower lots (40 ft).

Open Space. The subdivision is preserving 2.94 acres (26.3%) of open space; with 0.81 acres serving as a buffer from Galilee Road and the remaining 2.13 acres along the creek. The development meets or exceeds each of the required open space requirements of the cluster regulations:

- greater or equal in area to the total amount of area by which each lot was reduced below the minimum lot size
- not less than 15% of the gross acreage as common open space.
- capable of being used and enjoyed for purposes of informal and unstructured recreation and relaxation or for horticulture (meets this requirement if stormwater SCM is not included).
- legally and practically accessible to the residents of the development.
- A minimum of one-half of the required open space shall be contained in one continuous undivided part.

- perpetually owned and maintained for the purposes of this section by a homeowners association.

Access and Parking. The subdivision will be served by a cul-de-sac that accesses Galilee Road. The access requires an NCDOT Permit. The developer is required to provide a 5-foot-wide sidewalk on one side of the street right-of-way in accordance with UDO Section 2.22. Comprehensive Growth Management Plan and Transportation Plan suggest an urban street section with curb and gutter in this area. The Town's Standard Street Section, Drawing 0302, Standard Detail and Specifications Manual requires a 27' back to back street with curb and gutter and a sidewalk on one side of the street in a 50 foot wide right-of-way. The construction drawings do not comply with this requirement at this time.

The cul-de-sac is temporary and will be removed when the street is extended to the vacant parcel to the south when it develops.

Utilities. The development will be served by Town of Smithfield water and sewer with a Master Meter on the County's system. A sewage lift station is proposed in Phase 1 to pump sewage to the County's lines. Electricity will be provided by Duke Progress Energy.

Sidewalks. The UDO requires the applicant to construct a public sidewalk along Galilee Road and along one side of the cul-de-sac with the new development according to UDO Section 10.112.

Park Dedication. According to the UDO, Section 10.112.3, at least one fifty-seventh of an acre (1/57) shall be dedicated for each dwelling unit planned or provided for in the subdivision plan. Alternatively, the Town can accept a fee in lieu of parkland. There are no Town plans for parks in this area and the applicant will be required to pay a fee in lieu of parkland dedication. The fee in lieu will be due prior to recording the final plat, based on the number of lots in the plat (28).

Stormwater Management. The applicant has submitted a stormwater management plan and is proposing to construction a stormwater management facility (SCM) in the open space near the creek. A stormwater maintenance agreement will be executed to ensure the developer/HOA is responsible for the ongoing maintenance of the pond.

Tree Preservation. A tree preservation plan is required, but none has been yet submitted by the developer. The tree preservation plan will identify perimeter trees and significant trees that are required for preservation or mitigation.

Lighting. A street lighting plan was submitted with the construction drawings in compliance with the Town's ordinance.

Signs. The applicant has not proposed any entrance/development signs at this time. Any signs will require a sign permit prior to construction and will need to comply with the UDO.

PLANNING DEPARTMENT RECOMMENDATIONS:

The Planning Department and Planning Board recommend approval of the preliminary plat (S-19-01) with the following conditions:

1. That a special use permit be approved by the Town Council for the cluster development.
2. That a NCDOT Permit be provided for the road access and sidewalk encroachment in the NCDOT right-of-way.

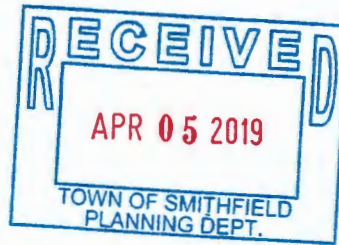
3. That the Town's stormwater management facility maintenance agreement be executed prior to final plat recordation.
 4. That the HOA declarations and covenants be submitted for Town Attorney review and recorded with the final plat.
 5. That a park dedication fee in lieu be paid for the 28 residential lots prior to final plat recordation in accordance with the UDO, Section 10.10.114.8.
 6. That sidewalks be constructed along Galilee Road and along the new street in the subdivision.
 7. That the trail maintenance shall be the responsibility of the homeowners association.
 8. That a tree preservation plan be submitted complying with UDO Section 10.9
-

ACTION REQUESTED:

The Planning Board is requested to review the preliminary plat application and make a recommendation to the Town Council.

Suggested motion:

“Move to recommend approval of the preliminary plat of the Oakfield Towns Preliminary Plat (S-18-02) with 8 conditions”



Town of Smithfield

Planning Department

350 E. Market St Smithfield, NC 27577

P.O. Box 761, Smithfield, NC 27577

Phone 919-934-2116

Fax: 919-934-1134

**Preliminary Subdivision Application
General Information**

Development Name **TWIN CREEKS PHASE II**

Proposed Use **RESIDENTIAL**

Property Address(es) **6054 BLACK CREEK RD. SMITHFIELD NC 27577**

Johnston County Property Identification Number(s) and Tax ID Number (s) for each parcel to which these guidelines will apply:

PIN# **167300-56-5565**

TAX ID# **15I09011B**

Project type? Single Family Townhouse Multi-Family Non-Residential Planned Unit Development (PUD)

OWNER/DEVELOPER INFORMATION

Company Name **NAVAHO INVESTMENT COMPANY LLC** Owner/Developer Name

Address **4909 WESTERN BLVD, SUITE 200 RALEIGH, NC 27606**

Phone Email Fax

CONSULTANT/CONTACT PERSON FOR PLANS

Company Name **STEWART-PROCTOR PLLC** Contact Name **MICHAEL STEWART**

Address **319 CHAPANOKE ROAD SUITE 106 RALEIGH, NC 27603**

Phone **(919) 779-1855** Email **STEWARTPE@AOL.COM** Fax **(919) 779-1661**

DEVELOPMENT TYPE AND SITE DATE TABLE (Applicable to all developments)

ZONING INFORMATION

Zoning District(s) **R-20A**

If more than one district, provide the acreage of each:

Overlay District? Yes No

Inside City Limits? Yes No

FOR OFFICE USE ONLY

File Number: _____ Date Submitted: _____ Date Received: _____ Amount Paid: _____

STORMWATER INFORMATION

Existing Impervious Surface	0	acres/sf	Flood Hazard Area	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Proposed Impervious Surface	3.33	acres/sf AC	Neuse River Buffer	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Watershed protection Area	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Wetlands	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

If in a Flood Hazard Area, provide the FEMA Map Panel # and Base Flood Elevation

NUMBER OF LOTS AND DENSITY

Total # of Single Family Lots	28	Overall Unit(s)/Acre Densities Per Zoning Districts	2.9 units/Acre
Total # of Townhouse Lots	0	Acreage in active open space	0
Total # of All Lots	28	Acreage in passive open space	2.94 Acres

SIGNATURE BLOCK (Applicable to all developments)

In filing this plan as the property owner(s), I/we do hereby agree and firmly bind ourselves, my/our heirs, executors, administrators, successors and assigns jointly and severally to construct all improvements and make all dedications as shown on this proposed subdivision plan as approved by the Town.

I hereby designate Michael Stewart to serve as my agent regarding this application, to receive and respond to administrative comments, to resubmit plans on my behalf, and to represent me in any public meeting regarding this application.

I/we have read, acknowledge, and affirm that this project is conforming to all application requirements applicable with the proposed development use.

Signature * *Robert L. Stewart* Date 4-5-19

Signature _____ Date _____

REVIEW FEES

- Major Subdivision (Submit 7 paper copies & **1 Digital copy on CD**) \$250.00 + \$5.00 a lot \$255.00 minimum 28 LOTS
\$390
- Minor Subdivision (Submit 4 paper copies & **1 Digital copy on CD**) \$50.00 + \$5.00 a lot \$55.00 minimum
- Recombination Plat (Submit 2 paper copies & **1 Digital copy on CD**) \$50.00

FOR OFFICE USE ONLY

File Number: _____ Date Submitted: _____ Date Received: _____ Amount Paid: _____

Project Narrative

As part of a complete application, a written project narrative that provides detailed information regarding your proposal must be included. On a separate sheet of paper, please address each of the lettered items listed below (answers must be submitted in both hard copy and electronic copy using the Adobe .PDF or MS Word .DOCX file formats):

a) A listing of contact information including name(s), address(es) and phone number(s) of: the owner of record, authorized agents or representatives, engineer, surveyor, and any other relevant associates;

b) A listing of the following site data: Address, current zoning, parcel size in acres and square feet, property identification number(s) (PIN), and current legal description(s);

c) A listing of general information including: the proposed name of the subdivision, the number of proposed lots, acreage dedicated for open space or public use, acreage dedicated within rights of way;

d) A narrative explaining the intent of the project and/or your original or revised vision for the finished product;

e) A statement showing the proposed density of the project with the method of calculating said density shown;

f) Discuss proposed infrastructure improvements and phasing thereof (i.e. proposed roadways, sewer systems, water systems, sidewalks/trails, parking, etc.) necessary to serve the subdivision;

g) A narrative addressing concerns/issues raised by neighboring properties (discussing your proposal with the neighboring land owners is recommended to get a sense of what issues may arise as your application is processed);

h) A description of how conflicts with nearby land uses (livability, value, potential future development, etc.) and/or disturbances to wetlands or natural areas are being avoided or mitigated;

i) Provide justification that the proposal will not place an excessive burden on roads (traffic), sewage, water supply, parks, schools, fire, police, or other public facilities/services (including traffic flows) in the area;

j) A description of proposed parks and/or open space. Please include a brief statement on the proposed ownership and maintenance of said areas;

k) A proposed development schedule indicating the approximate date when construction of the project, or stages of the same, can be expected to begin and be completed (including the proposed phasing of construction of public improvements and recreational and common space areas).

INFORMATION TO BE PROVIDED ON PRELIMINARY AND FINAL PLATS.

The preliminary and final plats shall depict or contain the information indicated in the following table. An "X" indicates that the information is required.

<i>Information</i>	<i>Preliminary Plat</i>	<i>Final Plat</i>
Vicinity map (6" W x 4" H) showing location of subdivision in relation to neighboring tracts, subdivision, roads, and waterways (to include streets and lots of adjacent developed or platted properties). Also include corporate limits, Town boundaries, county lines if on or near subdivision tract.	X	
Boundaries of tract and portion to be subdivided, including total acreage to be subdivided, distinctly and accurately represented with all bearings and distances shown.	X	X
Proposed street layout and right-of-way width, lot layout and size of each lot. Number lots consecutively throughout the subdivision.	X	X
Name of proposed subdivision.	X	X
Statement from the Johnston County Health Department that a copy of the sketch plan has been submitted to them, if septic tanks or other onsite water or wastewater systems are to be used in the subdivision, AND/OR statement from the County Public Utilities that application has been made for public water and/or sewer permits.	X	
Graphic scale.	X	X
North arrow and orientation.	X	X
Concurrent with submission of the Preliminary Plat to the Town, the subdivider or planner shall submit copies of the Preliminary Plat and any accompanying material to any other applicable agencies concerned with new development, including, but not limited to: District Highway Engineer, County Board of Education, U.S. Army Corps of Engineers, State Department of Natural Resources and Community Development, for review and recommendation.	X	
List the proposed construction sequence.	X	
Storm water plan – see Article 10, Part VI.	X	
Show existing contour lines with no larger than five-foot contour intervals.	X	
New contour lines resulting from earth movement (shown as solid lines) with no larger than five-foot contour intervals (existing lines should be shown as dotted lines).	X	
Survey plat, date(s) survey was conducted and plat prepared, the name, address, phone number, registration number and seal of the Registered Land Surveyor.	X	X
Names, addresses, and telephone numbers of all owners, mortgagees, land planners, architects, landscape architects and professional engineers responsible for the subdivision (include registration numbers and seals, where applicable).	X	X
Date of the drawing(s) and latest revision date(s).	X	X

<i>Information</i>	<i>Preliminary Plat</i>	<i>Final Plat</i>
The owner's name(s) of adjoining properties and Zoning District of each parcel within 100' of the proposed site.	X	
State on plans any variance request(s).	X	
Show existing buildings or other structures, water courses, railroads, bridges, culverts, storm drains, both on the land to be subdivided and land immediately adjoining. Show wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or stream beds and any other natural features affecting the site.	X	
The exact location of the flood hazard, floodway and floodway fringe areas from the community's FHBM or FIRM maps (FEMA). State the base flood elevation data for subdivision.	X	X
Show the minimum building setback lines for each lot.	X	X
Provide grading and landscape plans. Proposed plantings or construction of other devices to comply with the screening requirements of Article 10, Part II.	X	
Show location of all proposed entrance or subdivision signage (see Section 10.23.1).	X	
Show pump station detail including any tower, if applicable.	X	
Show area which will not be disturbed of natural vegetation (percentage of total site).	X	
Label all buffer areas, if any, and provide percentage of total site.	X	X
Show all riparian buffer areas.	X	X
Show all watershed protection and management areas per Article 10, Part VI.	X	X
Soil erosion plan.	X	
Show temporary construction access pad.	X	
Outdoor illumination with lighting fixtures and name of electricity provider.	X	
The following data concerning proposed streets:		
Streets, labeled by classification (see Town of Smithfield construction standards) and street name showing linear feet, whether curb and gutter or shoulders and swales are to be provided and indicating street paving widths, approximate grades and typical street cross-sections. Private roads in subdivisions shall also be shown and clearly labeled as such.	X	X
Traffic signage location and detail.	X	
Design engineering data for all corners and curves.	X	X
For office review; a complete site layout, including any future expansion anticipated; horizontal alignment indicating general curve data on site layout plan; vertical alignment indicated by percent grade, PI station and vertical curve length on site plan layout; the District Engineer may require the plotting of the ground profile and grade line for roads where special conditions or problems exist; typical section indicating the pavement design and width and the slopes, widths and details for either the curb and gutter or the shoulder and ditch proposed; drainage facilities and drainage.	X	

<i>Information</i>	<i>Preliminary Plat</i>	<i>Final Plat</i>
Type of street dedication; all streets must be designated public. (Where public streets are involved which will be dedicated to the Town, the subdivider must submit all street plans to the UDO Administrator for approval prior to preliminary plat approval).	X	X
When streets have been accepted into the municipal or the state system before lots are sold, a statement explaining the status of the street in accordance with the Town of Smithfield construction standards.	X	X
If any street is proposed to intersect with a state maintained road, a copy of the application for driveway approval as required by the Department of Transportation, Division of Highways Manual on Driveway Regulations. (1) Evidence that the subdivider has applied for such approval. (2) Evidence that the subdivider has obtained such approval.	X X X	
The location and dimensions of all:		
Utility and other easements.	X	X
Pedestrian and bicycle paths.	X	X
Areas to be dedicated to or reserved for public use.	X	X
The future ownership (dedication or reservation for public use to governmental body or for owners to duly constituted homeowners' association) of recreation and open space lands.	X	X
Required riparian and stream buffer per Article 10, Part VI.	X	X
The site/civil plans for utility layouts including:		
Sanitary sewers, invert elevations at manhole (include profiles).	X	
Storm sewers, invert elevations at manhole (include profiles).	X	
Best management practices (BMPs)	X	
Stormwater control structures	X	
Other drainage facilities, if any.	X	
Impervious surface ratios	X	
Water distribution lines, including line sizes, the location of fire hydrants, blow offs, manholes, force mains, and gate valves.	X	
Gas lines.	X	
Telephone lines.	X	
Electric lines.	X	
Plans for individual water supply and sewage disposal systems, if any.	X	
Provide site calculations including:		
Acreage in buffering/recreation/open space requirements.	X	X
Linear feet in streets and acreage.	X	X
The name and location of any property or buildings within the proposed subdivision or within any contiguous property that is located on the US Department of Interior's National Register of Historic Places.	X	X

<i>Information</i>	<i>Preliminary Plat</i>	<i>Final Plat</i>
Sufficient engineering data to determine readily and reproduce on the ground every straight or curved line, street line, lot line, right-of-way line, easement line, and setback line, including dimensions, bearings, or deflection angles, radii, central angles and tangent distance for the center line of curved property lines that is not the boundary line of curved streets. All dimensions shall be measured to the nearest one-tenth of a foot and all angles to the nearest minute.	X	X
The accurate locations and descriptions of all monuments, markers, and control points.	X	X
Proposed deed restrictions or covenants to be imposed upon newly created lots. Such restrictions are mandatory when private recreation areas are established. Must include statement of compliance with state, local, and federal regulations.	X	X
A copy of the erosion control plan submitted to the Regional Office of NC-DNRCD, when land disturbing activity amounts to one acre or more.	X	
All certifications required in Section 10.117.	X	X
Any other information considered by either the subdivider, UDO Administrator, Planning Board, or Town Council to be pertinent to the review of the plat.	X	X
Improvements guarantees (see Section 5.8.2.6).		X

FOR OFFICE USE ONLY			
File Number: _____	Date Submitted: _____	Date Received: _____	Amount Paid: _____

2500 Block of Galilee Road

Project Name:
Twin Creeks
Subdivision
Phase II

File Number:
S-19-01

Existing Zoning:
R-20A (Residential
-Agricultural)

Proposed Lots:
28

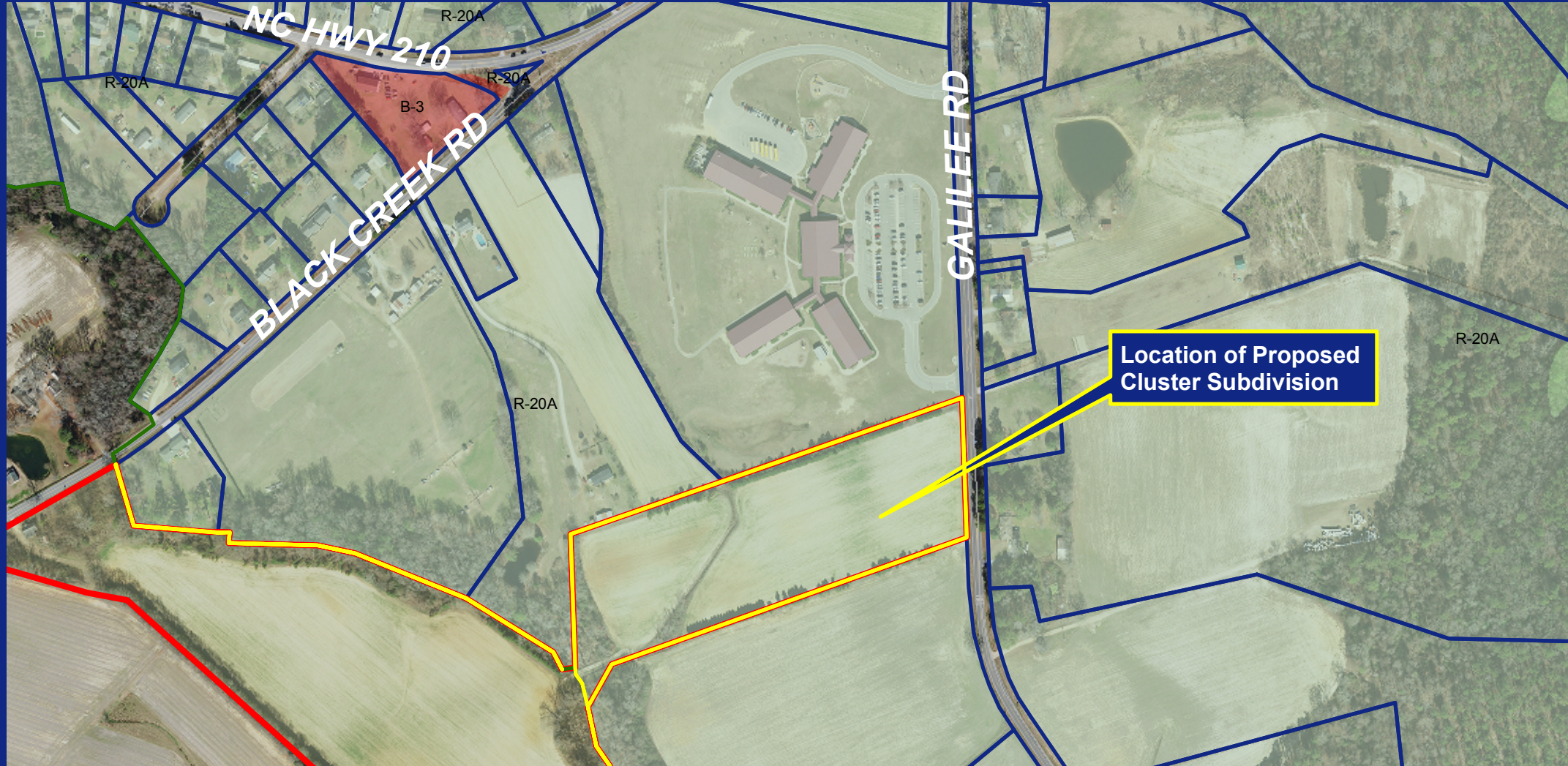
Property Owner:
Navaho Investment
Company LLC

Location: 2500 Block
of Galilee Road

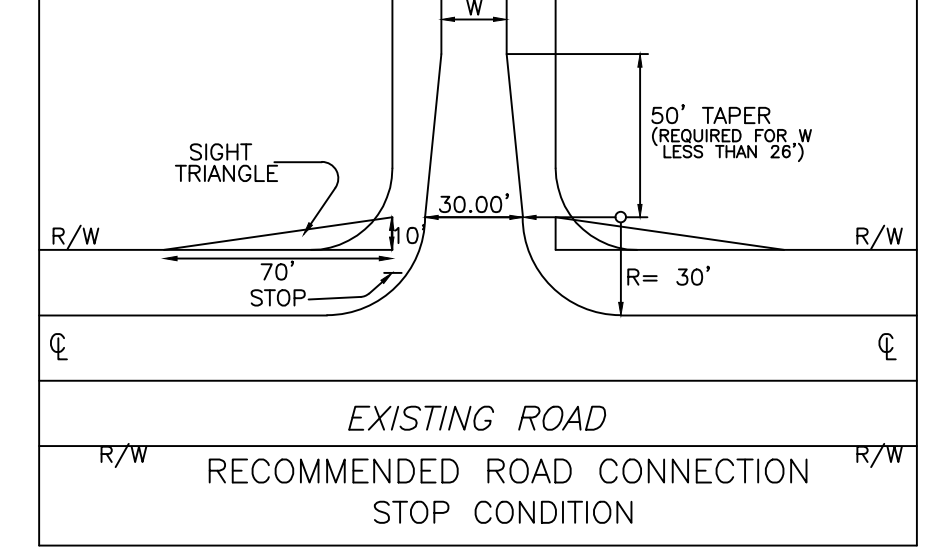
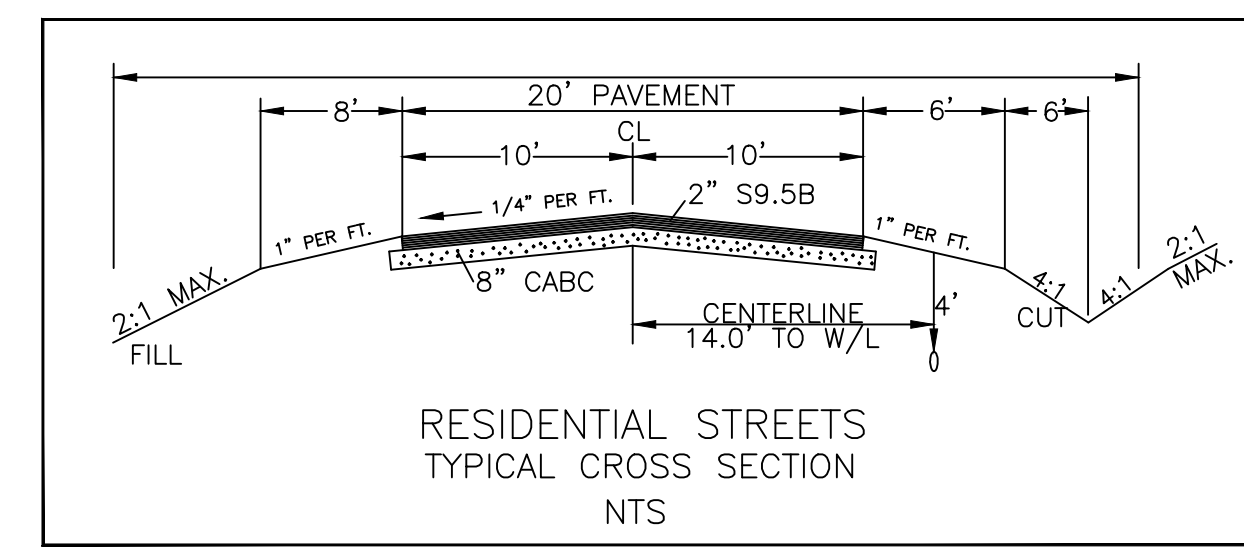
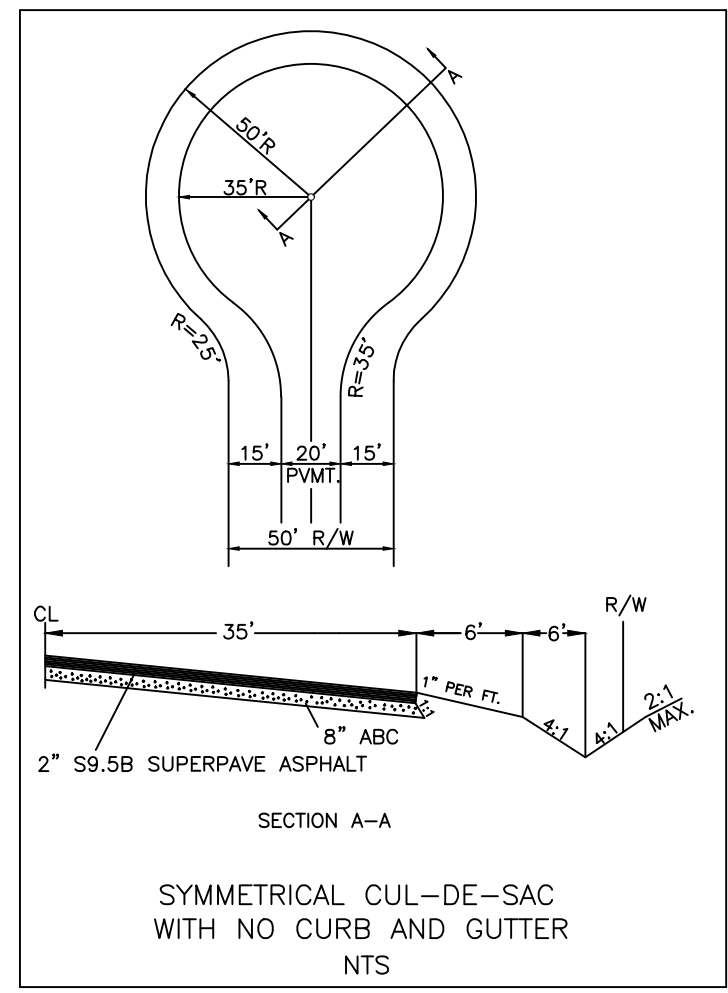
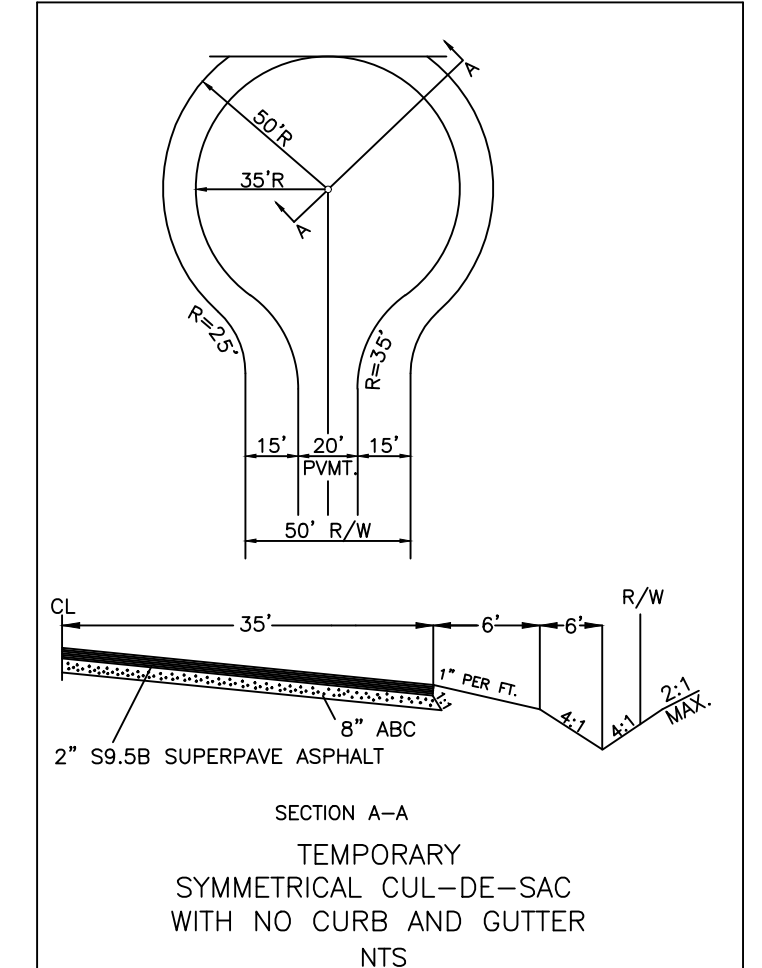
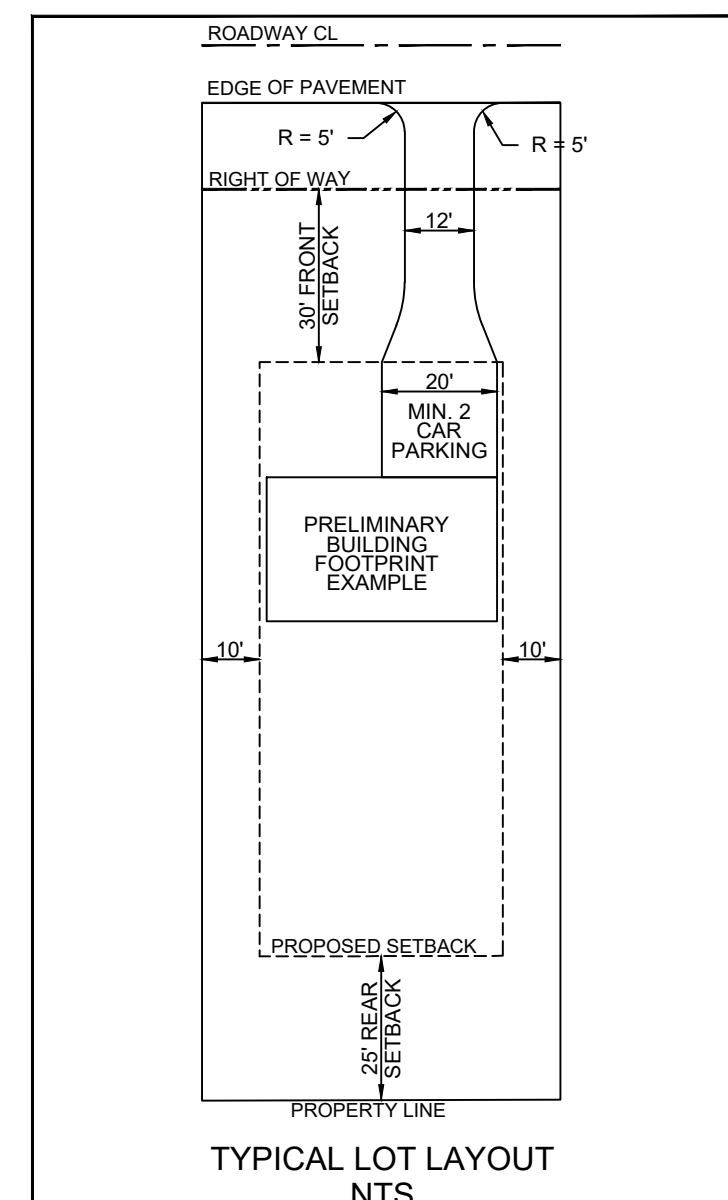
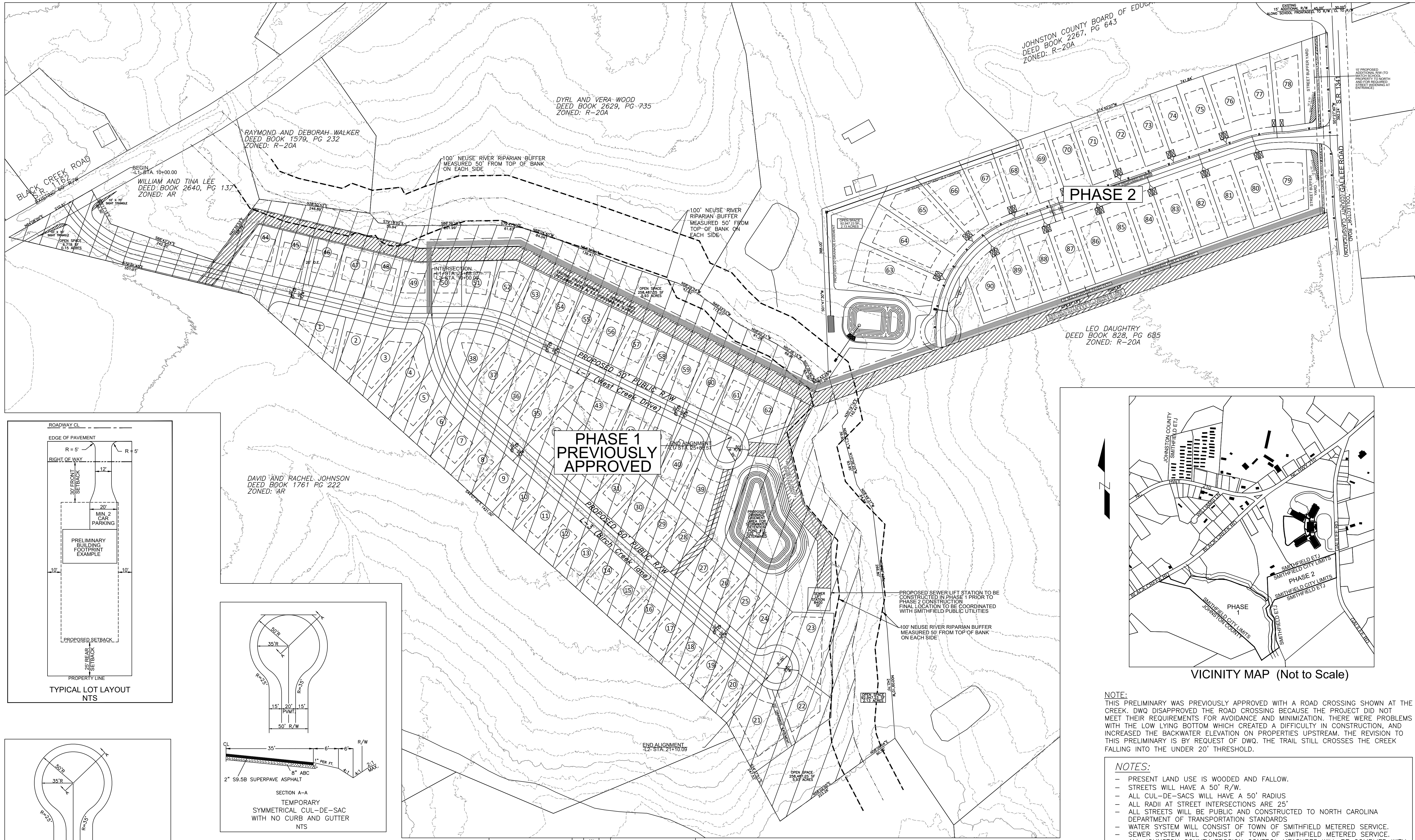
Tax ID# 15109011B



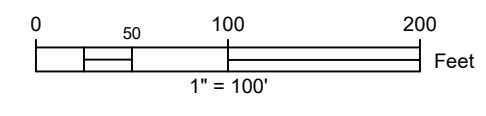
1 in = 400 ft



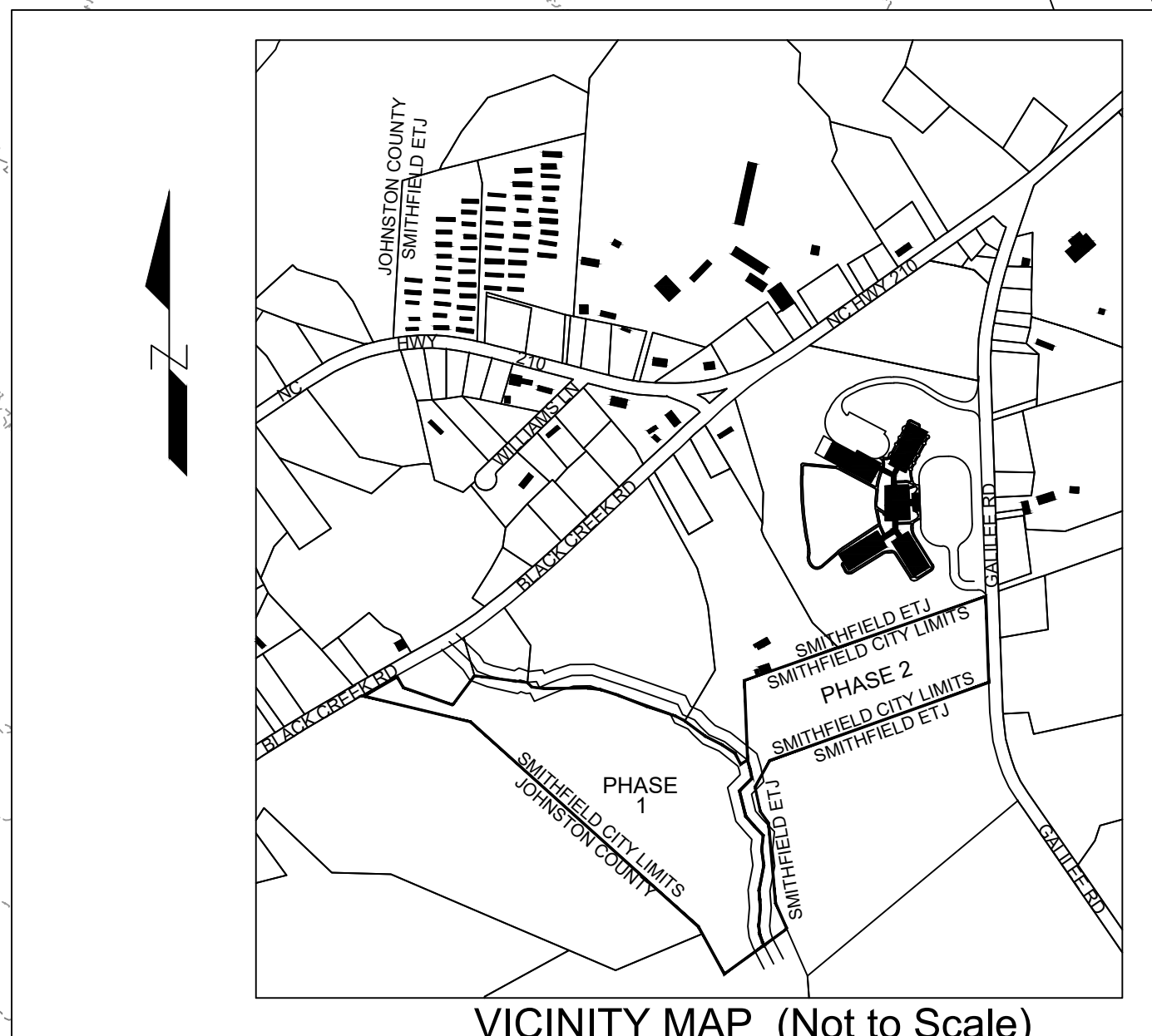
**Location of Proposed
Cluster Subdivision**



VAR.	6'	8'	5'
PAVEMENT WIDTH	1.14%/FT	-2.08%	+8%
SHOULDER WIDTH	-8.33%	OR 1%/FT	-16%
DRIVEWAY TURNOUT GRADES			+20%



FOR REVIEW ONLY - NOT FOR CONSTRUCTION
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NOTE:
 THIS PRELIMINARY WAS PREVIOUSLY APPROVED WITH A ROAD CROSSING SHOWN AT THE CREEK. DWQ DISAPPROVED THE ROAD CROSSING BECAUSE THE PROJECT DID NOT MEET THEIR REQUIREMENTS FOR AVOIDANCE AND MINIMIZATION. THERE WERE PROBLEMS WITH THE LOW LYING BOTTOM WHICH CREATED A DIFFICULTY IN CONSTRUCTION, AND INCREASED THE BACKWATER ELEVATION ON PROPERTIES UPSTREAM. THE REVISION TO THIS PRELIMINARY IS BY REQUEST OF DWQ. THE TRAIL STILL CROSSES THE CREEK FALLING INTO THE UNDER 20' THRESHOLD.

- NOTES:**
- PRESENT LAND USE IS WOODED AND FALLOW.
 - STREETS WILL HAVE A 50' R/W.
 - ALL CUL-DE-SACS WILL HAVE A 50' RADIUS.
 - ALL RADI AT STREET INTERSECTIONS ARE 25'
 - ALL STREETS WILL BE PUBLIC AND CONSTRUCTED TO NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARDS.
 - WATER SYSTEM WILL CONSIST OF TOWN OF SMITHFIELD METERED SERVICE.
 - SEWER SYSTEM WILL CONSIST OF TOWN OF SMITHFIELD METERED SERVICE.
 - ALL JOHNSON COUNTY EROSION CONTROL MEASURES WILL BE COMPLIED WITH DURING CONSTRUCTION.
 - ALL FEDERAL FLOOD HAZARD REGULATIONS WILL BE COMPLIED WITH DURING CONSTRUCTION.
 - ALL STATE AND LOCAL GOVERNMENT APPROVALS SHALL BE SUBMITTED TO THE SUBDIVISION OFFICE BEFORE FINAL PLAT APPROVAL.
 - TOPO TAKEN FROM JOHNSON COUNTY GIS AND SHOULD NOT BE USE EXTENSIVELY FOR DESIGN OR QUANTITY TAKEOFFS.
 - CONTOUR INTERVAL IS 2'
 - DRAINAGE EASEMENTS SHALL BE PROVIDED FOR ALL AREAS DRAINING 4 ACRES OR 4 LOTS AND SHALL BE SHOWN ON THE CONSTRUCTION DRAWINGS AND ON THE FINAL PLAT. AFTER SUCH AREAS CAN BE DETERMINED AND HAVE BEEN FIELD VERIFIED.
 - BOUNDARY INFORMATION TAKEN FROM SURVEY BY OTHERS.
 - ALL RIPARIAN BUFFERS TO BE VERIFIED BY D.W.Q. PRIOR TO CONSTRUCTION.
 - SITE IS NOT LOCATED IN A F.E.M.A 100 YEAR FLOOD HAZARD AREA.
- REFERENCE: 2000 FEMA INDEX # 37101C0360

NO.	REVISION	DATE

STEWART - PROCTOR
 ENGINEERING AND SURVEYING
 319 CHAPANOKE ROAD
 Raleigh, North Carolina 27603
 Phone (919) 779-1855 Fax (919) 779-1661

SP

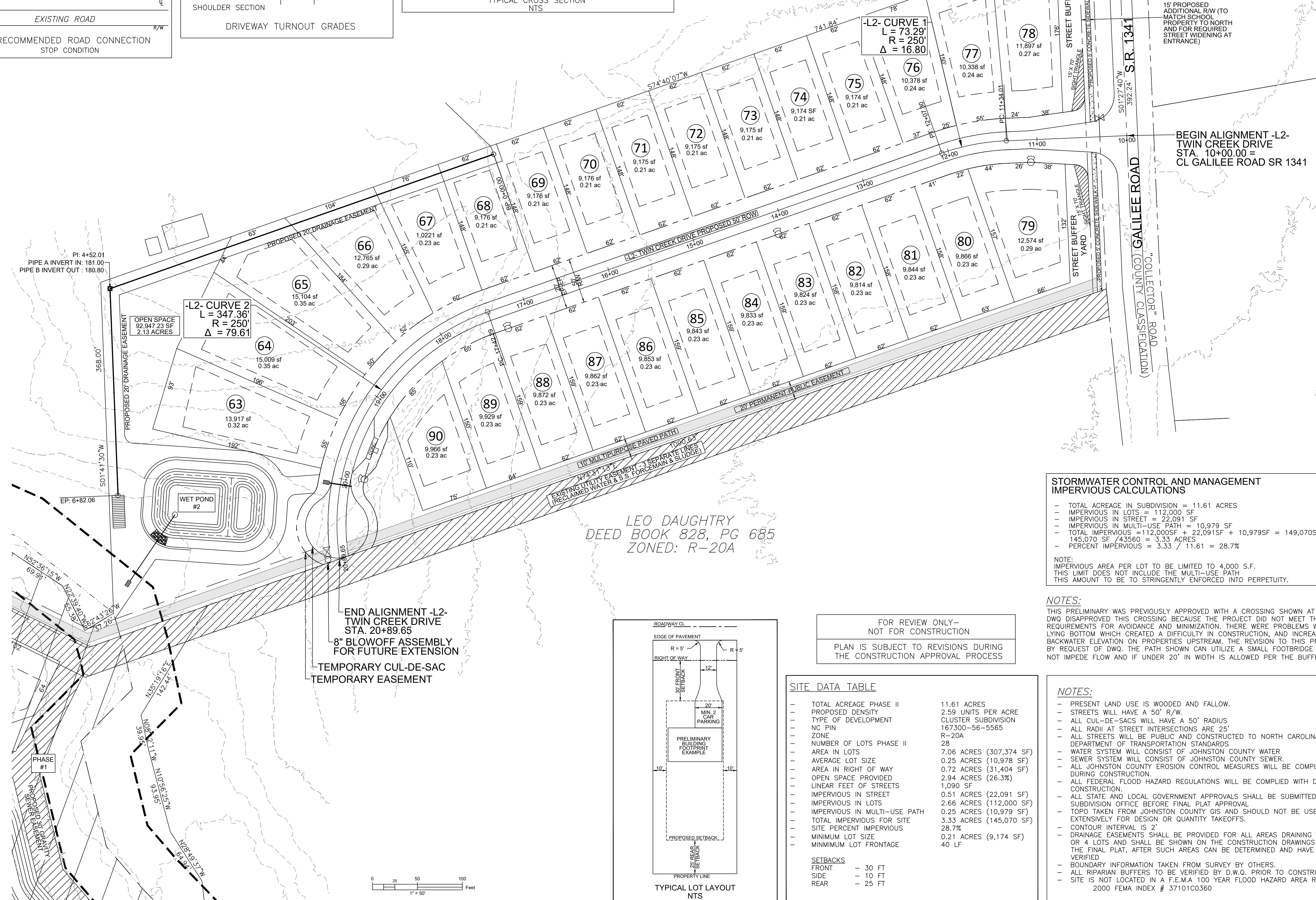
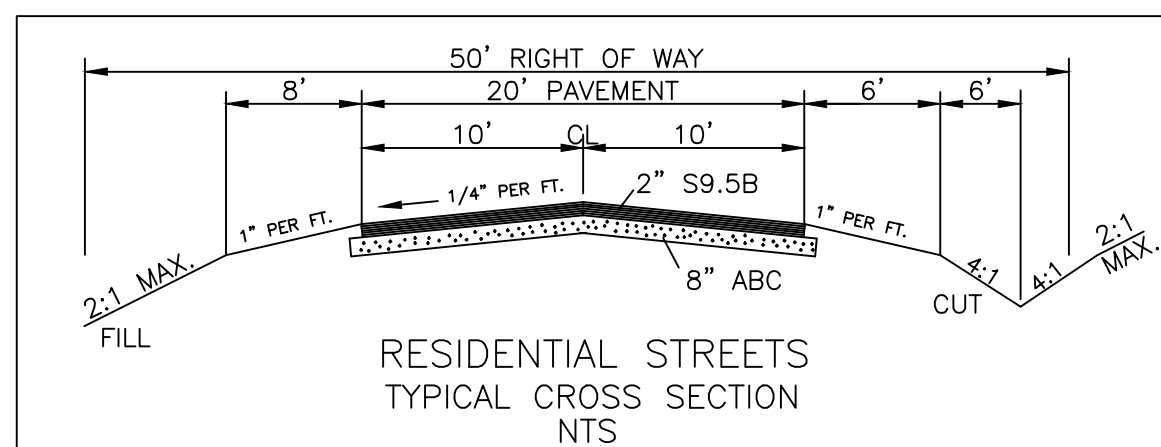
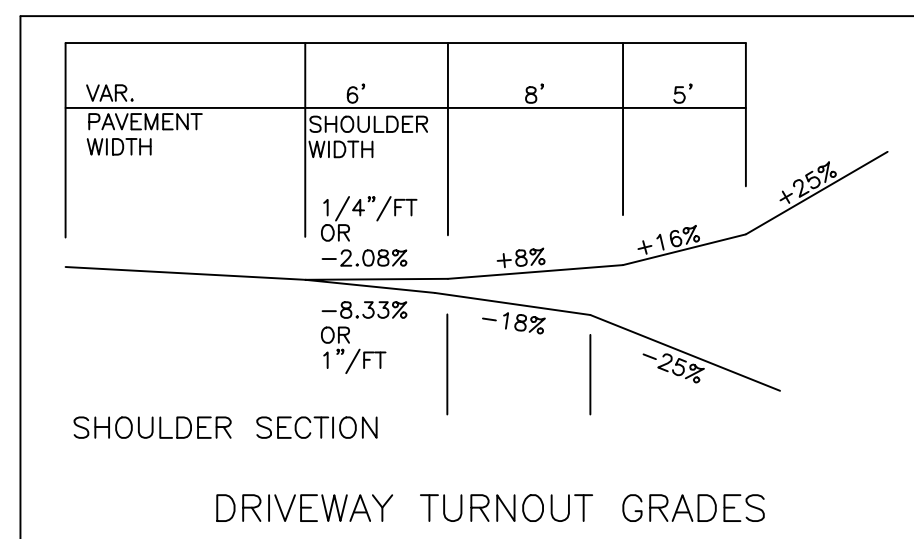
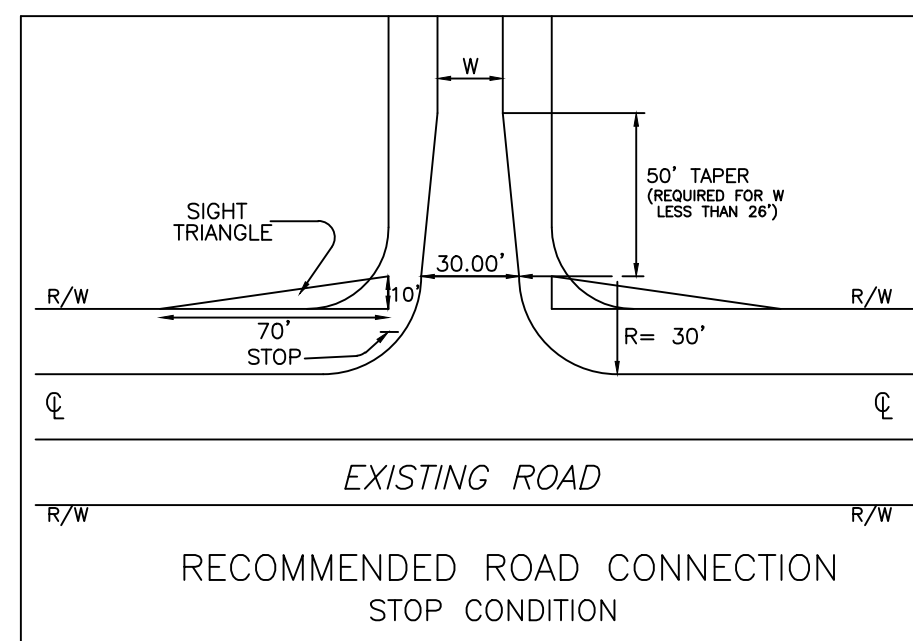
SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22024

PREPARED FOR: MAWHD INVESTMENT COMPANY, LLC
 200 S. WILKINSON ST. # 200
 RALEIGH, NC 27606

DATE: 03-01-2019
 PROJECT ENGINEER: MIKE STEWART
 PROJECT ENGINEER: EMILY S. WILLIAMSON
 PROJECT NUMBER:

TWIN CREEKS PHASE 2
 SMITHFIELD, NORTH CAROLINA
 PHASE PLAN
 (A CLUSTER SUBDIVISION)

DRAWING SHEET
C-2



-L2- CURVE 2
L = 347.36'
R = 250'
Δ = 79.61'

-L2- CURVE 1
L = 73.29'
R = 250'
Δ = 16.80'

STORMWATER CONTROL AND MANAGEMENT IMPERVIOUS CALCULATIONS

- TOTAL ACREAGE IN SUBDIVISION = 11.61 ACRES
- IMPERVIOUS IN LOTS = 112,000 SF
- IMPERVIOUS IN STREET = 22,091 SF
- IMPERVIOUS IN MULTI-USE PATH = 10,979 SF
- TOTAL IMPERVIOUS = 112,000SF + 22,091SF + 10,979SF = 145,070SF
- 145,070 SF ÷ 43560 = 3.33 ACRES
- PERCENT IMPERVIOUS = 3.33 / 11.61 = 28.7%

NOTE:
IMPERVIOUS AREA PER LOT TO BE LIMITED TO 4,000 S.F.
THIS LIMIT DOES NOT INCLUDE THE MULTI-USE PATH
THIS AMOUNT TO BE TO STRINGENTLY ENFORCED INTO PERPETUITY.

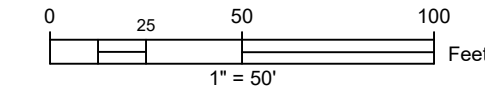
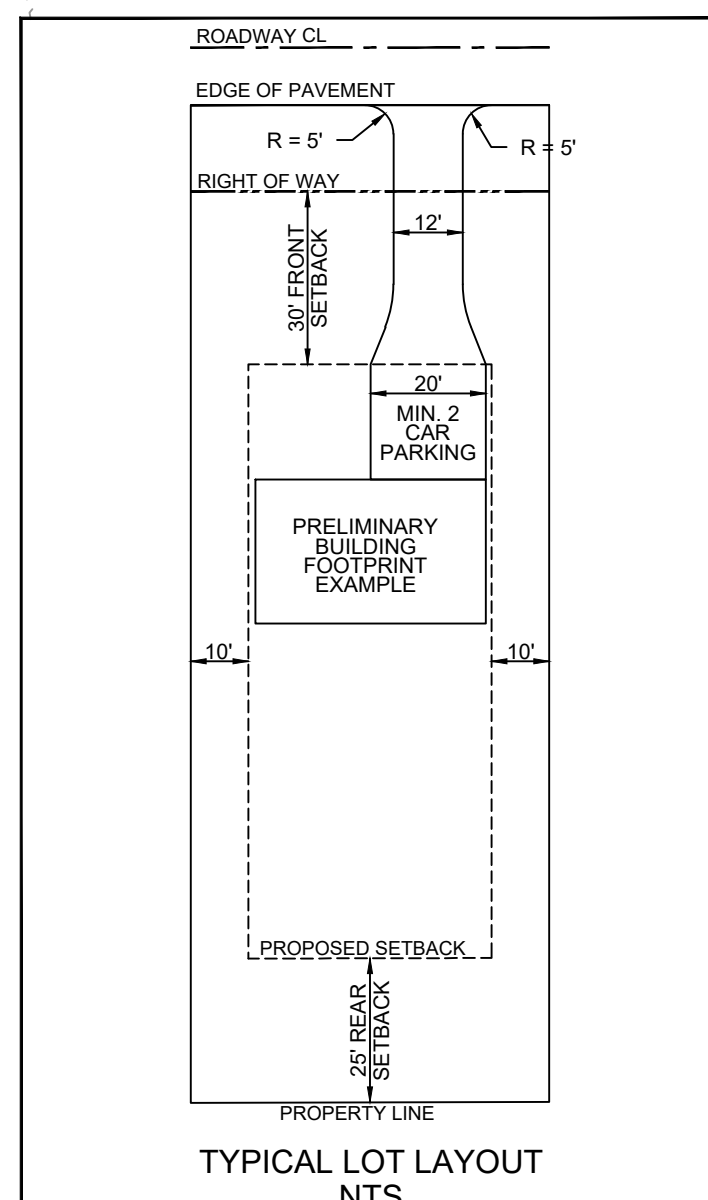
NOTES:
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FOR REVIEW ONLY—
NOT FOR CONSTRUCTION
PLAN IS SUBJECT TO REVISIONS DURING THE CONSTRUCTION APPROVAL PROCESS

SITE DATA TABLE

TOTAL ACREAGE PHASE II	11.61 ACRES
PROPOSED DENSITY	2.59 UNITS PER ACRE
TYPE OF DEVELOPMENT	CLUSTER SUBDIVISION
NC PIN	167300-56-5565
ZONE	R-20A
NUMBER OF LOTS PHASE II	28
AREA IN LOTS	7.06 ACRES (307,374 SF)
AVERAGE LOT SIZE	0.25 ACRES (10,978 SF)
AREA IN RIGHT OF WAY	0.72 ACRES (31,404 SF)
OPEN SPACE PROVIDED	2.94 ACRES (26.3%)
LINEAR FEET OF STREETS	1,090 SF
IMPERVIOUS IN STREET	0.51 ACRES (22,091 SF)
IMPERVIOUS IN LOTS	2.66 ACRES (112,000 SF)
IMPERVIOUS IN MULTI-USE PATH	0.25 ACRES (10,979 SF)
TOTAL IMPERVIOUS FOR SITE	3.33 ACRES (145,070 SF)
SITE PERCENT IMPERVIOUS	28.7%
MINIMUM LOT SIZE	0.21 ACRES (9,174 SF)
MINIMUM LOT FRONTAGE	40 LF

SETBACKS
FRONT - 30 FT
SIDE - 10 FT
REAR - 25 FT



DATE: _____

REVISION: _____

NO. _____

SEAL: _____

SEAL 22024

03-16-2020

STEWART - PROCTOR
ENGINEERING AND SURVEYING
319 CHAPANOKE ROAD
Raleigh, North Carolina 27603
Phone (919) 779-1855 Fax (919) 779-1661

PREPARED FOR: MARIHO INVESTMENT COMPANY, LLC
167300-56-5565, SITE 200
RALEIGH, NC 27603

DATE: 03-01-2019
SENIOR PROJECT ENGINEER: MIKE STEWART
PROJECT ENGINEER: EMILY S. WILLIAMSON
PROJECT NUMBER: _____

TWIN CREEKS PHASE 2
SMITHFIELD, NORTH CAROLINA
SITE PLAN PHASE 2
(A CLUSTER SUBDIVISION)

DRAWING SHEET
C-2A

SEEDING PREPARATION:

- Chisel compacted areas and spread topsoil three inches deep over adverse soil conditions, if possible. Rip the entire area to six inches deep.
- Remove all loose rocks, roots and other obstructions, leaving surface reasonably smooth and uniform.
- Apply agricultural lime, fertilizer and superphosphate uniformly and mix with soil (see mixture below).
- Continue tillage until a well-pulverized, firm, reasonably uniform seedbed is prepared four to six inches deep.
- Seed on a freshly prepared seedbed and cover seed lightly with seeding equipment or outdoors after seeding.
- Mulch immediately after seeding and anchor mulch.
- Inspect all seeded areas and make necessary repairs or reseedings within the planting season, if possible. If stand should be more than 60% damaged, re-establish following the original lime, fertilizer and seeding rates.
- Consult S&E Environmental Engineers on maintenance treatment and fertilization after permanent cover is established.

MIXTURES:

Agricultural Limestone	2 tons/acre (3 tons/acre in clay soils)
Fertilizer	1,000 lbs/acre - 10-10-10
Superphosphate	500 lbs/acre - 20% analysis
Mulch	2 tons/acre - small grain straw
Anchor	Asphalt emulsion at 300 gals/acre

SEEDING SCHEDULE

FOR SHOULDERS, SIDE DITCHES, SLOPES (MAX 3:1):

Date	Type	Planting Rate
Aug 15 - Nov 1	Tall Fescue	300 lbs/acre
Nov 1 - Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1 - Apr 15	Tall Fescue	300 lbs/acre
Apr 15 - Jun 30	Hulled Common Bermudagrass	25 lbs/acre
Jun 1 - Aug 15	Tall Fescue AND Browstap Millet or Sorghum-Sudan Hybrid**	125 lbs/acre (Tall Fescue): 30 lbs/acre (Browstap Millet): 30 lbs/acre (Sorghum-Sudan Hybrid)

FOR SHOULDERS, SIDE DITCHES, SLOPES (3:1 TO 2:1):

Date	Type	Planting Rate
Mar 1 - Jun 1	Sericea Lepedeosa (scarified) and use the following combinations:	50 lbs/acre (Sericea Lepedeosa):
Mar 1 - Apr 15	Add Tall Fescue	120 lbs/acre
Mar 1 - Jun 30	Or add Weeping Love grass	100 lbs/acre
Mar 1 - Jun 30	Or add Hulled Common Bermudagrass	25 lbs/acre
Jun 1 - Sept 1	Tall Fescue AND Browstap Millet or Sorghum-Sudan Hybrid**	120 lbs/acre (Tall Fescue): 30 lbs/acre (Browstap Millet): 30 lbs/acre (Sorghum-Sudan Hybrid)
Sept 1 - Mar 1	Sericea Lepedeosa (unharmed) AND Tall Fescue	70 lbs/acre (Sericea Lepedeosa): 120 lbs/acre (Tall Fescue)
Nov 1 - Mar 1	AND Abruzzi Rye	25 lbs/acre

Consult S&E Environmental Engineers for additional information concerning other alternatives for vegetation of disturbed areas. The above vegetation rates are those that do well under local conditions; other seeding rate combinations are possible.

** TEMPORARY: Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow more than 12" in height before mowing, otherwise, residue may be shredded out.

STOCKPILE NOTES

STOCKPILE HEIGHT NOT TO EXCEED 35 FT. STOCKPILE SLOPES 2:1 OR FLATTER.

APPROVED BMPs SHALL BE SHOWN ON A PLAN TO CONTROL ANY POTENTIAL SEDIMENT LOSS FROM A STOCKPILE.

STOCKPILING MATERIALS ADJACENT TO A DITCH, DRAINAGEWAY, WATERCOURSE, WETLAND, STREAM BUFFER, OR OTHER BODY OF WATER SHALL BE AVOIDED UNLESS AN ALTERNATIVE LOCATION IS DEMONSTRATED TO BE UNAVAILABLE.

DIVERSIONS TO APPROVED BMPs SHOULD BE UTILIZED ON UPSLOPE SIDES OF STOCKPILES.

OFF-SITE SPOIL OR BORROW AREAS MUST BE IN COMPLIANCE WITH HARNETT COUNTY UDO AND STATE REGULATIONS. ALL SPOIL AREAS OVER AN ACRE ARE REQUIRED TO HAVE AN APPROVED SEDIMENT CONTROL PLAN. DEVELOPER/CONTRACTOR SHALL NOTIFY HARNETT CO. OF ANY OFF-SITE DISPOSAL OF SOIL, PRIOR TO DISPOSAL. FILL OF ANY FEMA FLOODWAYS AND NON-ENCROACHMENT AREAS ARE PROHIBITED EXCEPT AS OTHERWISE PROVIDED BY THE HARNETT COUNTY UNIFIED DEVELOPMENT ORDINANCE (CERTIFICATIONS AND PERMITS REQUIRED).

SEEDING OR COVERING PILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEPT IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.

STAGED SEEDING AND MULCHING SHALL BE IMPLEMENTED ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE.

ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).

PLASTIC COVERING CAN ALSO BE USED FOR IMMEDIATE PROTECTION FROM EROSION ON DISTURBED AREAS AND STOCKPILES. SHEETING SHOULD BE KEPT IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.

STOCKPILE FOOTPRINTS SHALL BE SETBACK A MIN. OF 25' FROM PROPERTY LINES.

ANY CONCENTRATED FLOW LIKELY TO AFFECT THE STOCKPILE SHALL BE DIVERTED TO AN APPROVED BMP.

IF STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY HARNETT COUNTY OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.

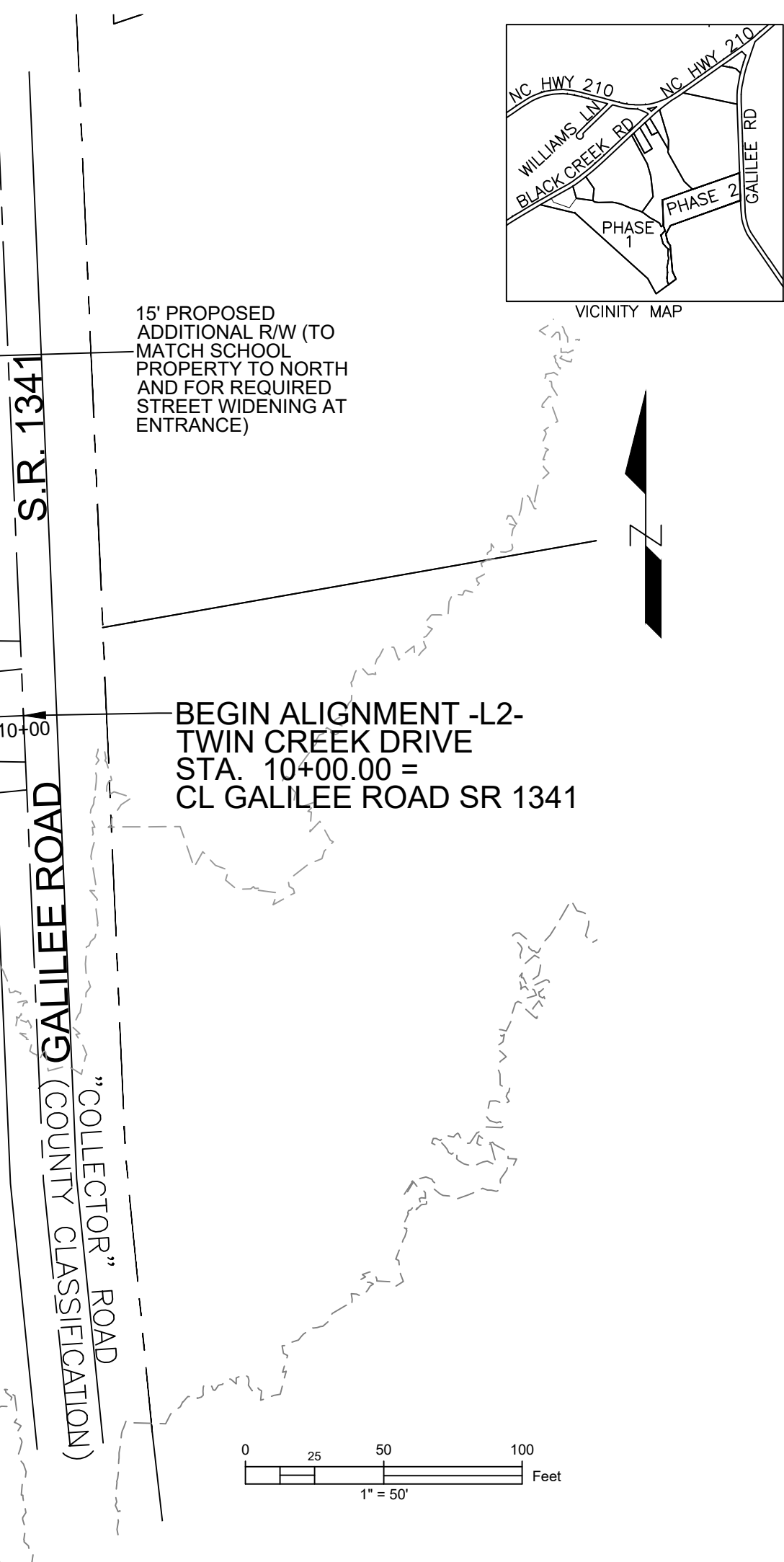
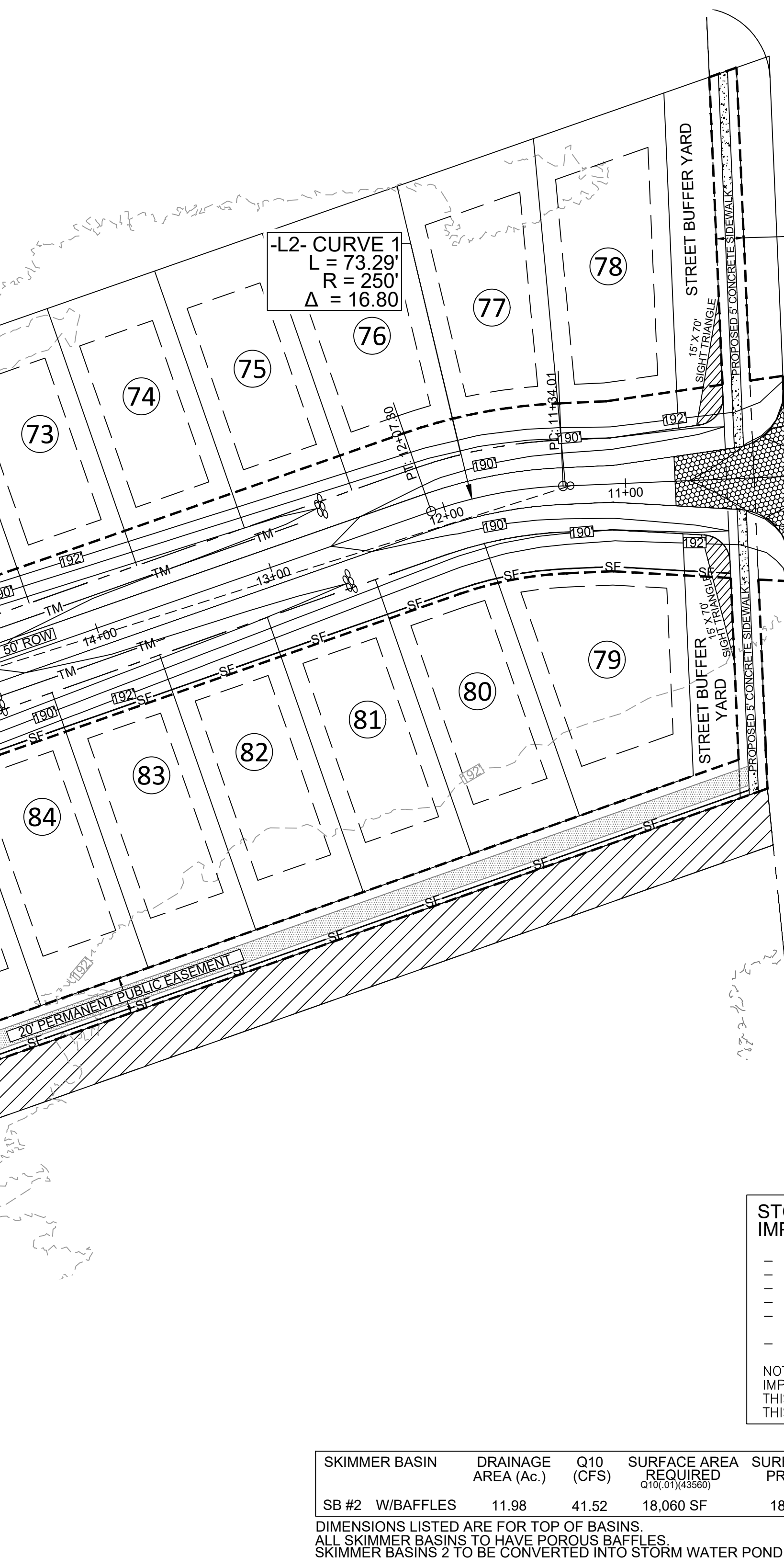
CONSTRUCTION SEQUENCE

- Schedule a pre-construction conference with the Environmental Engineer and Town of Smithfield Planning. Obtain land-disturbing permit.
- Install gravel construction entrance, check dams, silt fence as shown for phase 2.
- Clear only as necessary to install temporary erosion control device #2.
- Install Skimmer Basin #2. Note skimmer basin not to be converted to the proposed permanent detention pond until approval from inspector is obtained. Seed temporary diversions, berms and basin immediately after construction.
- Begin clearing and grubbing. Maintain Devices as needed.
- Install storm pipes A, B and C, as shown and protect inlets with block and gravel inlet controls, check dams or other approved measures as shown on the plan.
- Rough grade site, fill in existing ditch as the water is now being diverted into Bypass Storm pipe A.
- Install Temporary Matting according to the schedule.
- Begin construction of L2- TWIN CREEKS DRIVE.
- Refer to the NPDES New Stabilization Timeframes for areas of land-disturbing activities.
- Stabilize site as areas are brought up to finish grade with vegetation, paving, ditch linings, etc. seed and mulch denuded areas per ground stabilization time frames.
- When construction is complete and all areas are stabilized completely, call environmental consultant for an inspection.
- If site is approved proceed to convert Temporary Skimmer Basins #2 to Permanent Wet Ponds #2.
- Remove temporary matting, diversions ditches, silt fence, and seed out or stabilize any resulting bare areas. All remaining permanent erosion control devices, such as velocity dissipators, should now be installed.
- Seed wet pond immediately. Perform seedbed preparation, seed, mulch and asphalt tack any resulting bare areas immediately.
- When the site is fully stabilized and when vegetation has become established, call for a final site inspection by the environmental consultant. Obtain a certificate of completion.

BASIN REMOVAL SEQUENCE

- Schedule a site meeting with the environmental consultant to determine if a basin can be removed. Install silt fencing or other temporary erosion control measures as needed prior to removal of the basin.
- Remove basin(s) and associated temporary diversion ditches. If culvert pipes need to be extended, perform this operation at this time. Fine grade area in preparation for seeding.
- Perform seedbed preparation, seed, mulch and asphalt tack any resulting bare areas immediately.
- Install velocity dissipators and/or level spreaders as required on the erosion control plan.
- When site is fully stabilized, call environmental consultant for approval of removing remaining temporary erosion control measures and advice on when site can be issued a certificate of completion.

Note: A meeting should also be scheduled with the environmental consultant to determine when a basin may be converted for stormwater use.



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STORMWATER CONTROL AND MANAGEMENT IMPERVIOUS CALCULATIONS

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- IMPERVIOUS IN LOTS = 112,000 SF
- IMPERVIOUS IN STREET = 22,091 SF
- IMPERVIOUS IN MULTI-USE PATH = 10,979 SF
- TOTAL IMPERVIOUS = 112,000 SF + 22,091 SF + 10,979 SF = 149,070 SF
- 149,070 SF / 43560 = 3.33 ACRES
- PERCENT IMPERVIOUS = 3.33 / 11.61 = 28.7%

NOTE: IMPERVIOUS AREA PER LOT TO BE LIMITED TO 4,000 S.F. THIS LIMIT DOES NOT INCLUDE THE MULTI-USE PATH. THIS AMOUNT TO BE TO STRINGENTLY ENFORCED INTO PERPETUITY.

SKIMMER BASIN	DRAINAGE AREA (Ac.)	Q10 (CFS)	SURFACE AREA REQUIRED (10,014,355)	SURFACE AREA PROVIDED	STORAGE REQUIRED	STORAGE PROVIDED	BASIN SIZE L x W x D	WEIR SKIMMER SIZE
SB #2 W/BAFFLES	11.98	41.52	18,060 SF	18,704 SF	21,564 CF	26,814 CF	171' x 161' x 2.5'	15' 3.0"

DIMENSIONS LISTED ARE FOR TOP OF BASINS. ALL SKIMMER BASINS TO HAVE POROUS BAFFLES. SKIMMER BASINS 2 TO BE CONVERTED INTO STORM WATER POND

DISTURBED AREA = 4.09 AC

Calculate Skimmer Size

Basin Volume in Cubic Feet	26,814 CuFt	Skimmer Size	3.0 Inch
Days to Drain	3 Days	Orifice Radius	1.4 Inch(es)
		Orifice Diameter	2.8 Inch(es)

In NC assume 3 days to drain

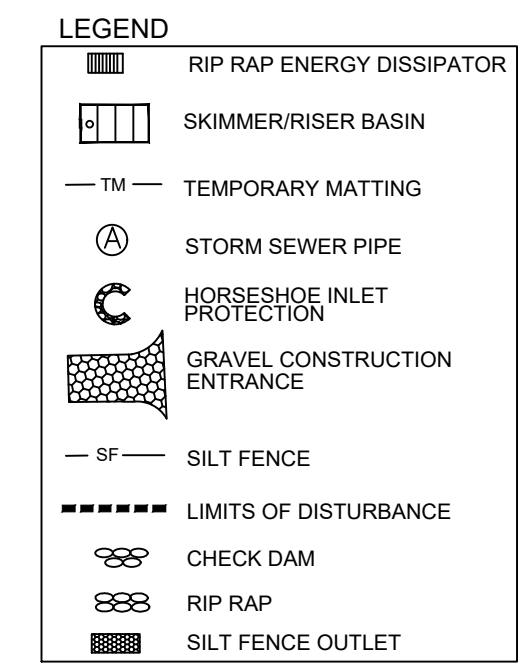
STORM SEWER - PIPE CHART

PIPE	SIZE	DRAIN AREA Ac	Q25 CFS	LENGTH FEET	SLOPE %	INVERT IN	OUTVERT IN	DISSIPATOR DESIGN LENGTH FT	WIDTH FT	D50 FT	LINING THICKNESS
PIPE A	54"HDPE	34.43	77.63	452	1.11	186.00	181.00				
PIPE B	54"HDPE	34.43	77.63	230	1.22	180.80	178.00	36.0	13.5	13"	24" CLASS 1
PIPE C	30"RCP	3.80	18.81	60	0.83	179.80	179.30	15.0	7.5	6"	18" CLASS B

NOTES:
ALL PIPES 24" TO 42" REQUIRE FES (FLARED END SECTIONS) ON BOTH ENDS. ALL PIPES 48" OR GREATER REQUIRE HEADWALL ON BOTH ENDS. ALL DRIVEWAY PIPES REQUIRE MATCHING FES OR HEADWALL ON BOTH ENDS PER TOWN OF SMITHFIELD STANDARDS.

TEMPORARY MATTING DITCH PROTECTION SCHEDULE

DITCH #1	STA. 13+67 -L2- LEFT TO STA. 20+06 -L2- LEFT
DITCH #2	STA. 12+78 -L2- RIGHT TO STA. 20+06 -L2- RIGHT



SITE DATA TABLE

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AVERAGE LOT SIZE	0.25 ACRES (10,978 SF)
AREA IN RIGHT OF WAY	0.72 ACRES (31,404 SF)
OPEN SPACE PROVIDED	2.94 ACRES (26.3%)
LINEAR FEET OF STREETS	1,090 SF
IMPERVIOUS IN STREET	0.51 ACRES (22,091 SF)
IMPERVIOUS IN LOTS	2.66 ACRES (112,000 SF)
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SITE PERCENT IMPERVIOUS	28.7%
MINIMUM LOT SIZE	0.21 ACRES (9,174 SF)
MINIMUM LOT FRONTAGE	40 LF

SETBACKS

FRONT	- 30 FT
SIDE	- 10 FT
REAR	- 25 FT

NOTES:

- PRESENT LAND USE IS WOODED AND FALLOW.
- STREETS WILL HAVE A 50' RW.
- ALL CUL-DE-SACS WILL HAVE A 50' RADIUS.
- ALL RADI AT STREET INTERSECTIONS ARE 25'.
- ALL STREETS WILL BE PUBLIC AND CONSTRUCTED TO NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARDS.
- WATER SYSTEM WILL CONSIST OF JOHNSTON COUNTY WATER.
- SEWER SYSTEM WILL CONSIST OF JOHNSTON COUNTY SEWER.
- ALL JOHNSTON COUNTY EROSION CONTROL MEASURES WILL BE COMPLIED WITH DURING CONSTRUCTION.
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- BOUNDARY INFORMATION TAKEN FROM SURVEY BY OTHERS.
- ALL RIPARIAN BUFFERS TO BE VERIFIED BY D.W.Q. PRIOR TO CONSTRUCTION.
- SITE IS NOT LOCATED IN A F.E.M.A 100 YEAR FLOOD HAZARD AREA REFERENCE: 2000 FEMA INDEX # 37101C0360

NO.	REVISION	DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22024

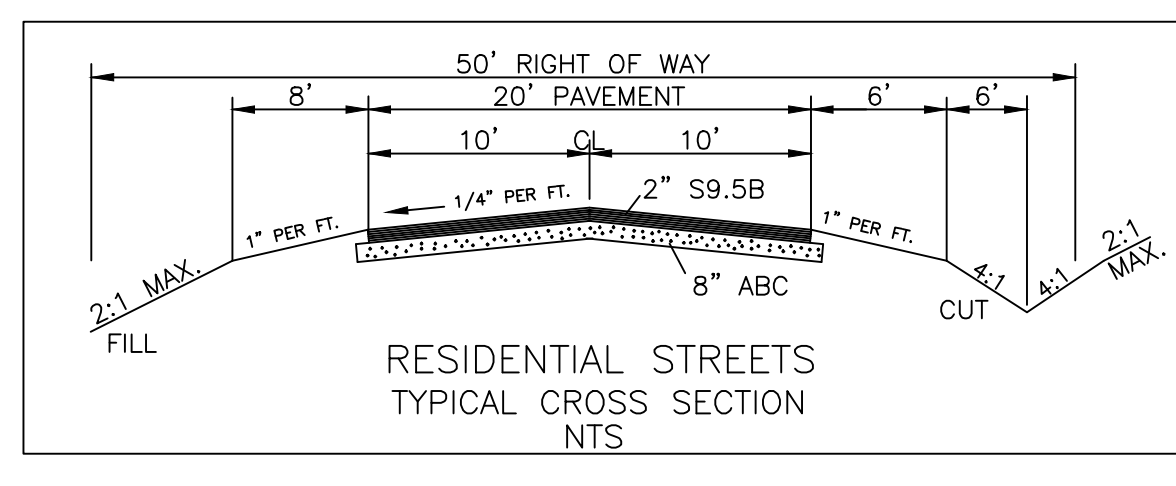
STEWART - PROCTOR
ENGINEERING AND SURVEYING
319 CHAPANOKE ROAD
Raleigh, North Carolina 27603
Phone (919) 779-1855 Fax (919) 779-1661

PREPARED FOR: MAWHD INVESTMENT COMPANY, LLC
319 CHAPANOKE ROAD, SUITE 200
RALEIGH, NC 27603

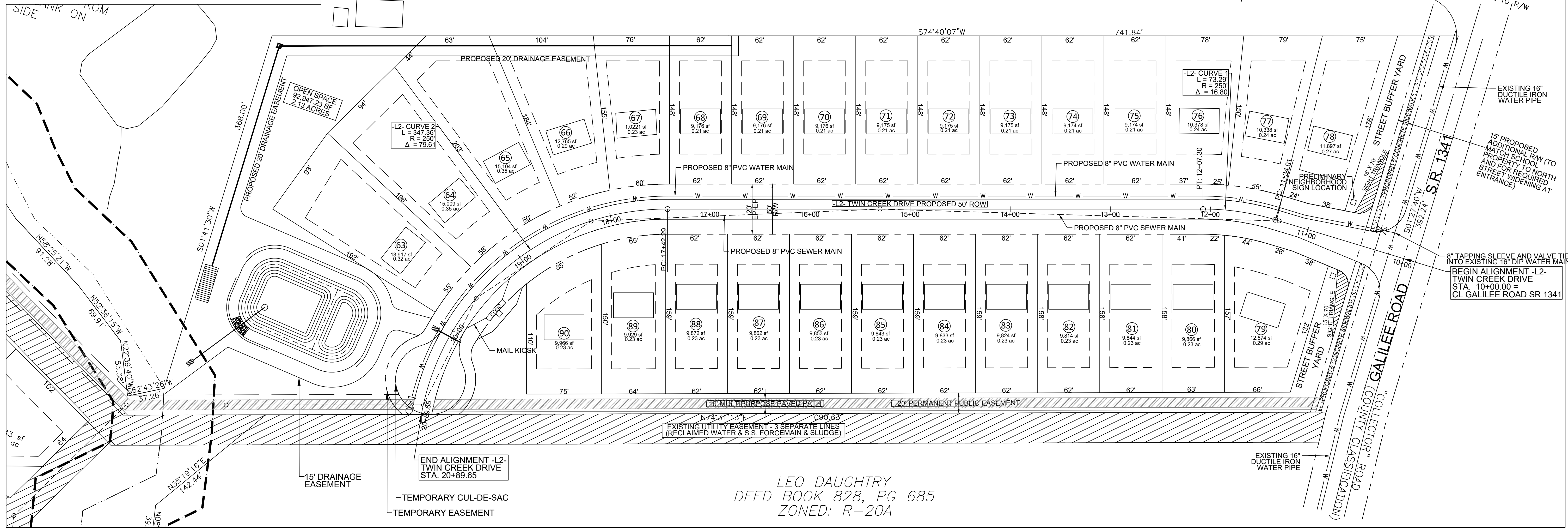
DATE: 03-01-2019
SENIOR PROJECT ENGINEER: MIKE STEWART
PROJECT ENGINEER: LINDY S. WILLIAMS
PROJECT NUMBER:

TWIN CREEKS PHASE 2
SMITHFIELD, NORTH CAROLINA
SITE PLAN
(A CLUSTER SUBDIVISION)

DRAWING SHEET C-3

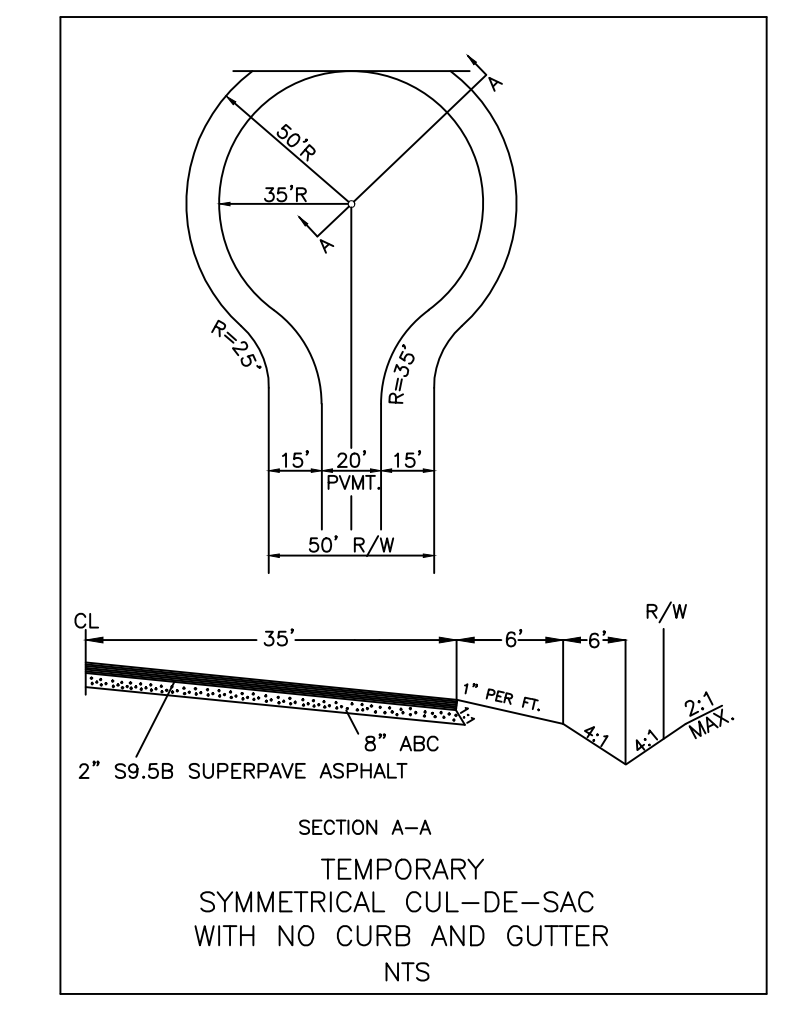
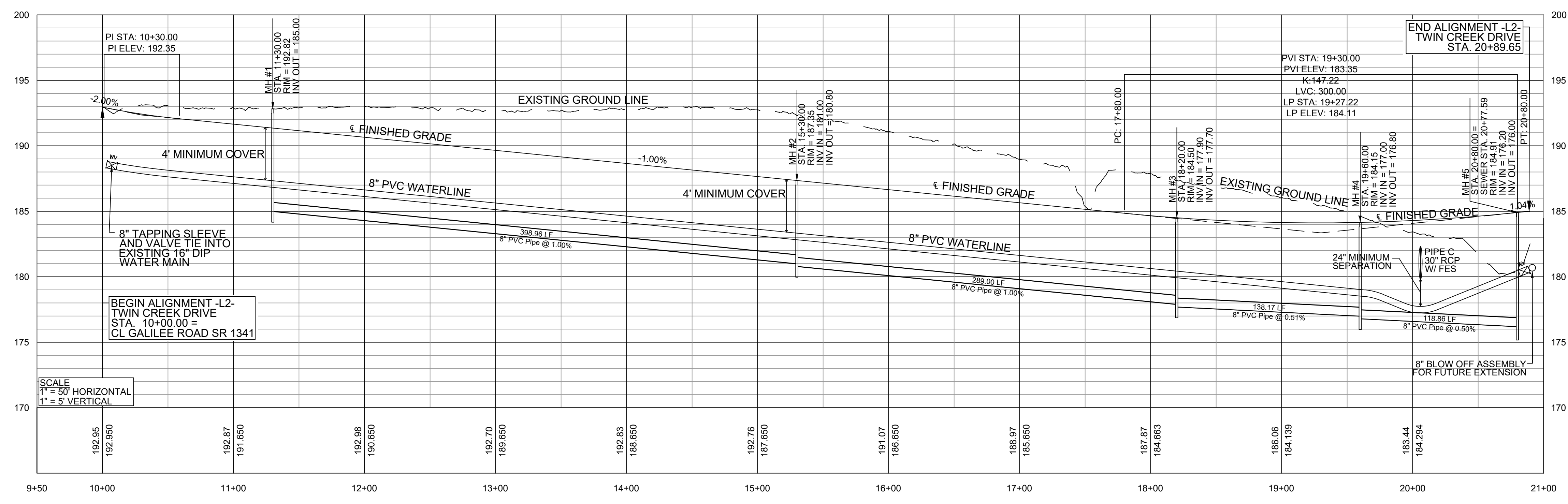
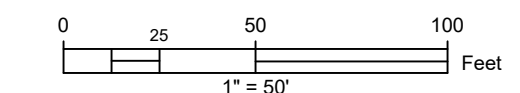


JOHNSTON COUNTY BOARD OF EDUCATION
DEED BOOK 2267, PG 643
ZONED: R-20A



LEO DAUGHTRY
DEED BOOK 828, PG 685
ZONED: R-20A

L2- TWIN CREEK DRIVE PLAN VIEW



FOR REVIEW ONLY - NOT FOR CONSTRUCTION
PLAN IS SUBJECT TO REVISIONS DURING THE CONSTRUCTION APPROVAL PROCESS

L2- TWIN CREEK DRIVE PROFILE VIEW

NO.	REVISION	DATE

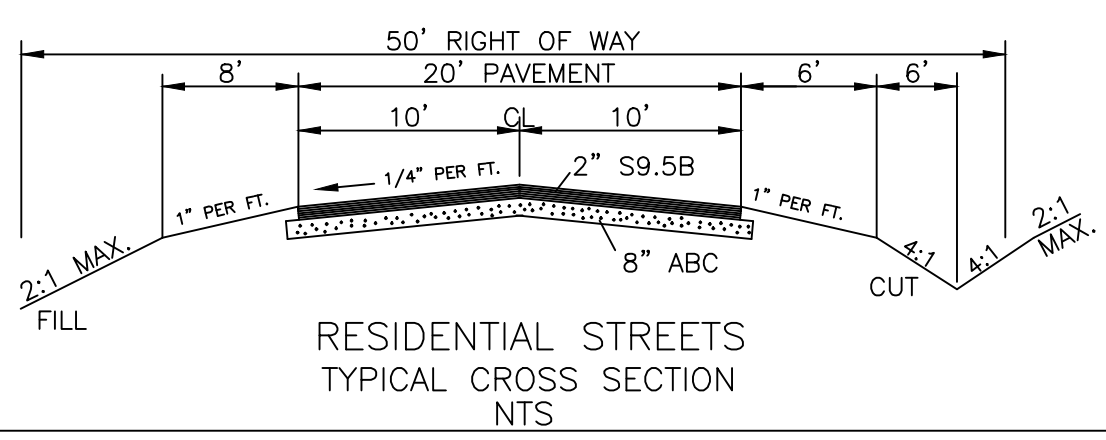
SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 22024
03-04-2020

STEWART - PROCTOR
ENGINEERING AND SURVEYING
319 CHAPANOKE ROAD
Raleigh, North Carolina 27603
Phone (919) 779-1855 Fax (919) 779-1661

PREPARED FOR: MAWHD INVESTMENT COMPANY, LLC
PROJECT ENGINEER: MIKE STEWART
DATE: 03-01-2019
PROJECT NUMBER: 27603_SIT_200

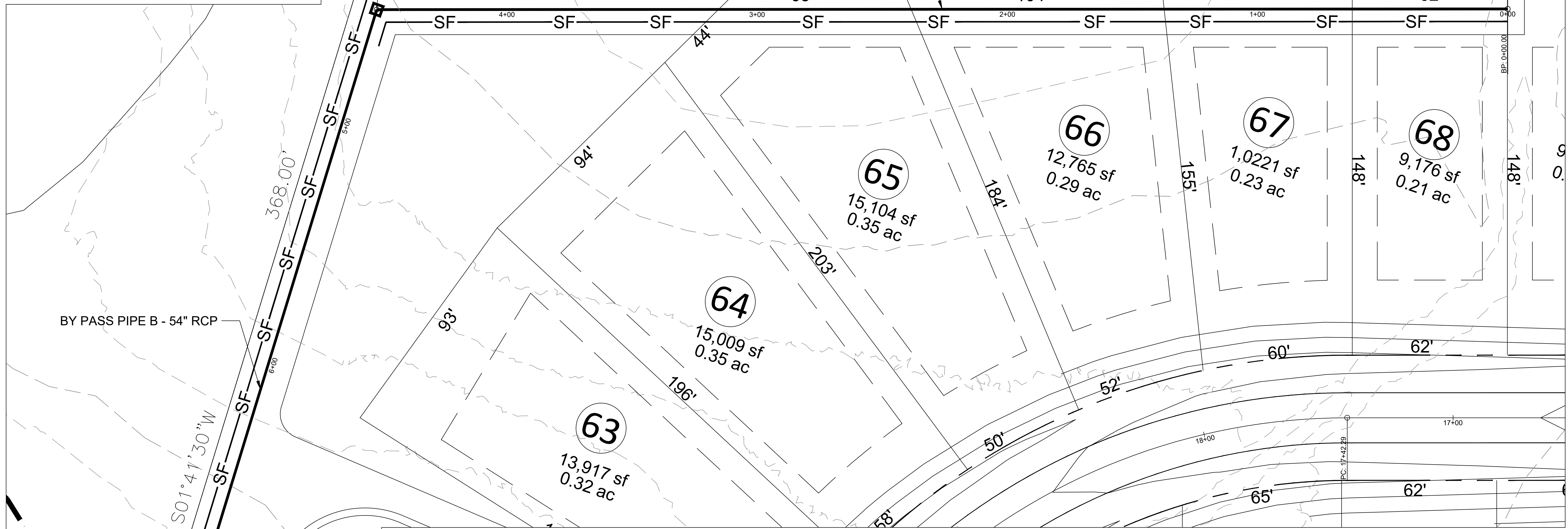
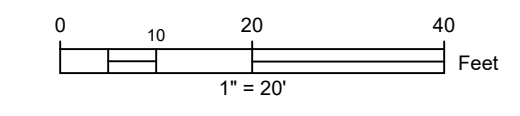
TWIN CREEKS PHASE 2
SMITHFIELD, NORTH CAROLINA
ROADWAY PLAN AND PROFILE
(A CLUSTER SUBDIVISION)

DRAWING SHEET
C-4

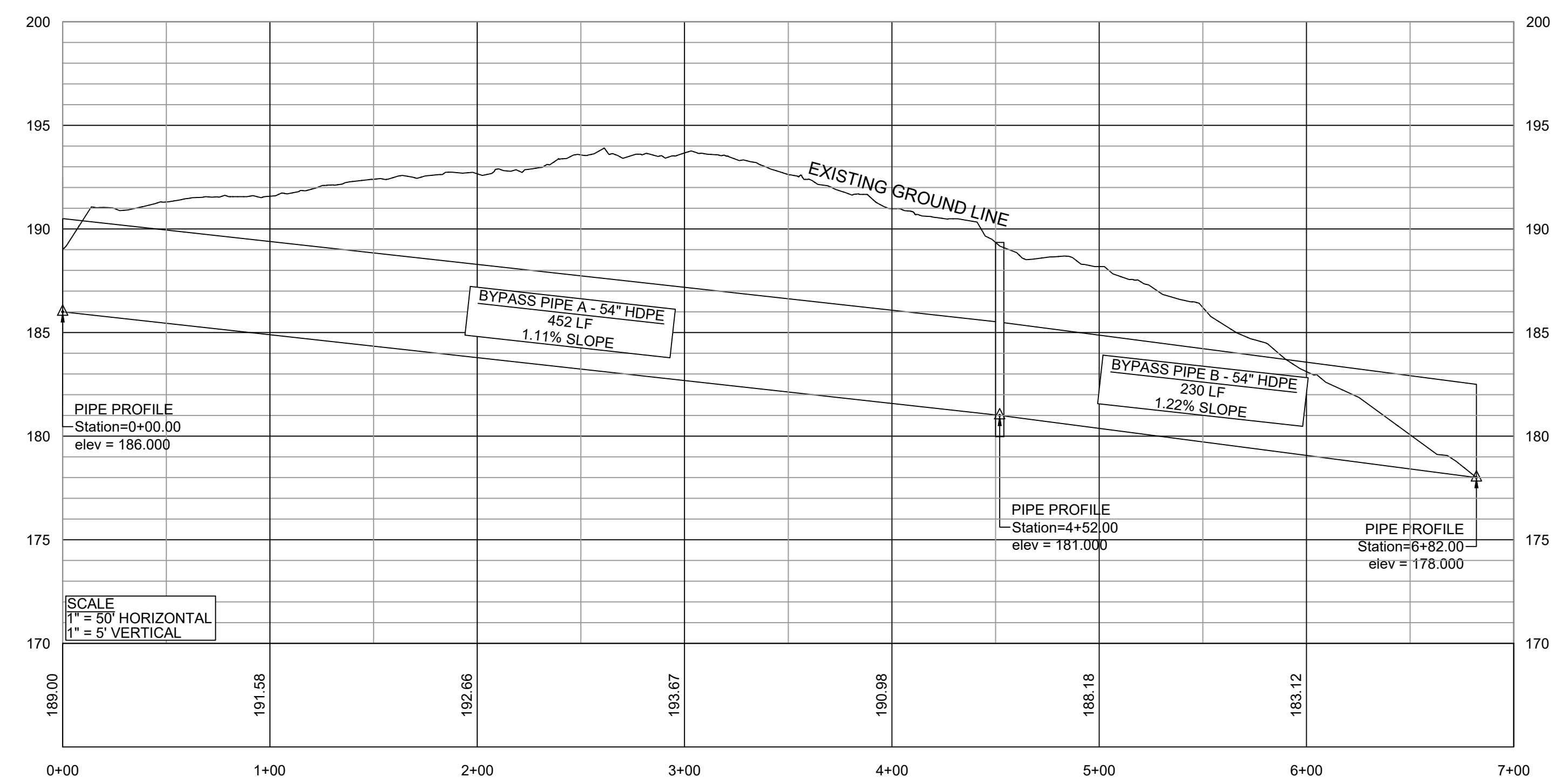


PI: 4+52.01
 PIPE A INVERT IN: 181.00
 PIPE B INVERT OUT: 180.80

BY PASS PIPE A - 54" RCP



BY-PASS PIPE PLAN VIEW



BY-PASS PIPE PROFILE VIEW

STORM SEWER - PIPE CHART										DISSIPATOR DESIGN			
PIPE	SIZE	DRAIN AREA	Q25	LENGTH	SLOPE	INVERT	INVERT	LENGTH	WIDTH	D50	LINING		
		Ac	CFS	FEET	%	IN	OUT	FT	FT	FT	THICKNESS		
PIPE A	54"HDPE	34.43	77.63	452	1.11	186.00	181.00						
PIPE B	54"HDPE	34.43	77.63	230	1.22	180.80	178.00	36.0	13.5	13"	24"	CLASS 1	

NOTES:
 ALL PIPES 24" TO 42" REQUIRE FES (FLARED END SECTIONS) ON BOTH ENDS.
 ALL PIPES 48" OR GREATER REQUIRE HEADWALL ON BOTH ENDS.
 ALL DRIVEWAY PIPES REQUIRE MATCHING FES OR HEADWALL ON BOTH ENDS PER TOWN OF SMITHFIELD STANDARDS.

FOR REVIEW ONLY - NOT FOR CONSTRUCTION
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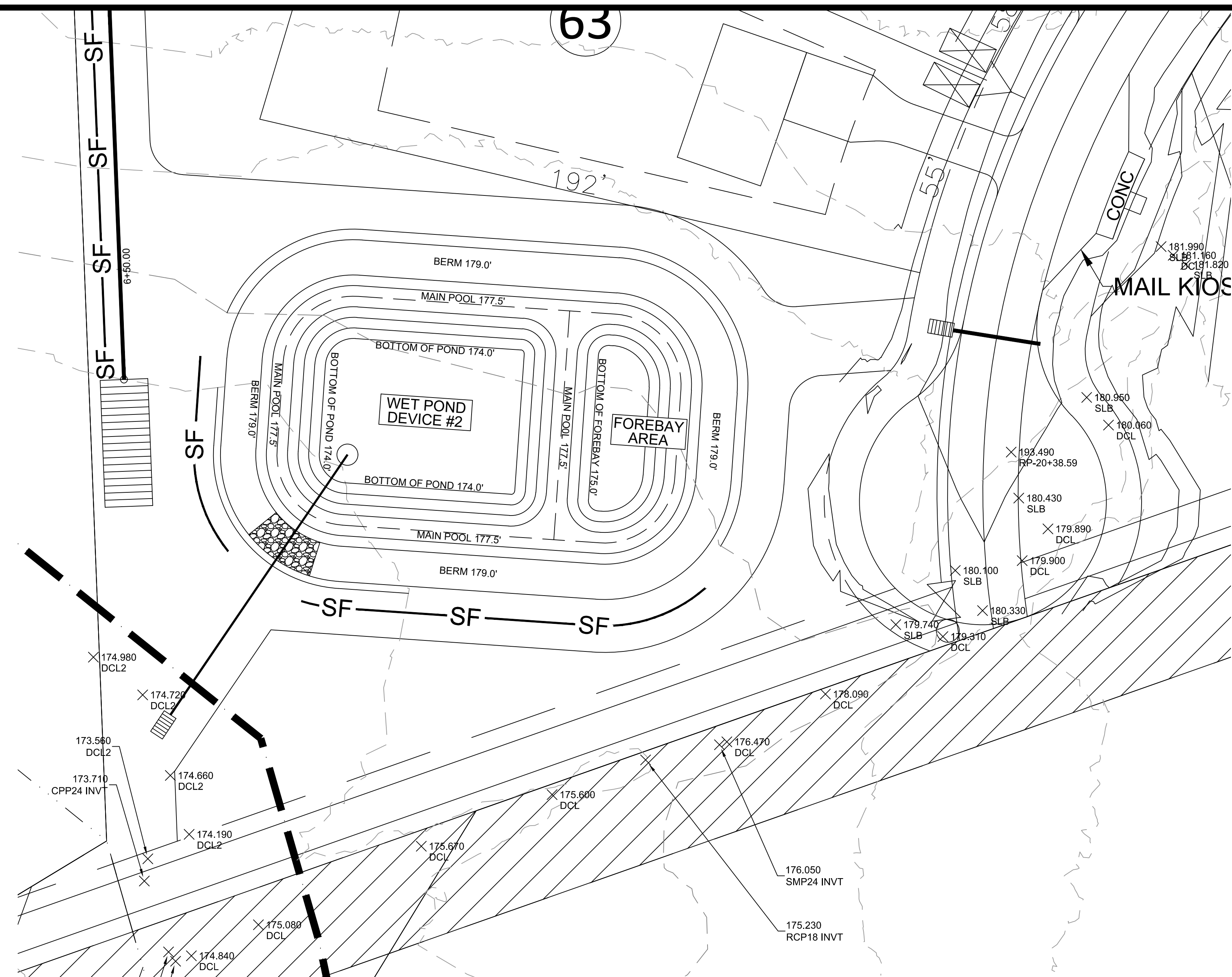
NO.	REVISION	DATE

STEWART - PROCTOR
 ENGINEERING AND SURVEYING
 319 CHAPANOKE ROAD
 Raleigh, North Carolina 27603
 Phone (919) 779-1855 Fax (919) 779-1661

PREPARED FOR: MAWHD INVESTMENT COMPANY, LLC
 1000 W. GARDNER ST. #200
 RALEIGH, NC 27606
 DATE: 03-01-2019
 PROJECT ENGINEER: MIKE STEWART
 PROJECT ENGINEER: LINDY S. WILLIAMSON
 PROJECT NUMBER:

TWIN CREEKS PHASE 2
 SMITHFIELD, NORTH CAROLINA
 BY-PASS PIPE PLAN AND PROFILE
 (A CLUSTER SUBDIVISION)

DRAWING SHEET
C-5



PLAN VIEW FOR WET POND DEVICE #2

REQUIRED LANDSCAPING FOR STORMWATER POND 1:

LANDSCAPING FOR VEGETATED SHELF:
 REQUIREMENT: PLANT A MINIMUM OF 3 DIVERSE SPECIES OF SHALLOW WATER EMERGENT AND SHALLOW LAND HERBACEOUS

REQUIRED LANDSCAPING:
 VEGETATED SHELF PLANTS = 50 PLANTS PER 200 SF OF SHELF AREA = 3,246 SF/200 SF = 17 X 50 = 850 PLANTS

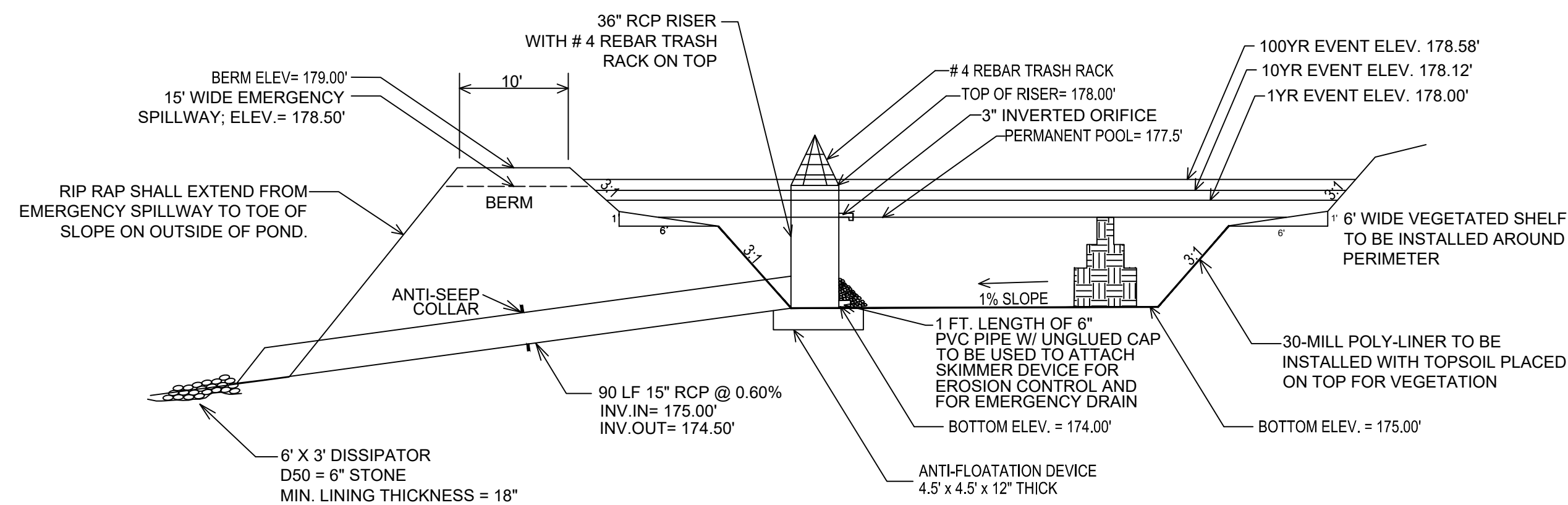
PROVIDED LANDSCAPING:
 VEGETATED SHELF PLANTS = 852 PLANTS

LANDSCAPING FOR BERM AND SIDE SLOPES: CENTIPEDE GRASS TO BE PLANTED ON TOP OF BERM AND EXTERIOR SLOPES OF CONTAINMENT BERM

**PLANT LIST
 VEGETATED SHELF**

COMMON	SIZE	QUAN.	REMARKS
HYDROLEA QUADRIVALVIS	4 CUBIC-INCH CONTAINER	142	1.5' O.C. IN STAGGERED ROWS
PRIMROSE WILLOW LUDWIGIA SPP.	4 CUBIC-INCH CONTAINER	142	1.5' O.C. IN STAGGERED ROWS
ARROW ARUM PELTANDRA VIRGINICA	4 CUBIC-INCH CONTAINER	142	1.5' O.C. IN STAGGERED ROWS
SWAMP MILKWEED ASCLEPIAS INCARNATA	4 CUBIC-INCH CONTAINER	142	3' O.C. IN STAGGERED ROWS
WHITE TURTLEHEAD CHELONE GLABRA	4 CUBIC-INCH CONTAINER	142	3' O.C. IN STAGGERED ROWS
JOE PYE WEED EUPATORIADDELPHUS FISTULOSUS	4 CUBIC-INCH CONTAINER	142	3' O.C. IN STAGGERED ROWS

NOTE: PLANTS LISTED IN TABLE OR EQUAL TO BE USED FOR VEGETATED SHELF PLANTING.



PROFILE VIEW FOR DEVICE #1

NTS

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 THE CONSTRUCTION APPROVAL PROCESS

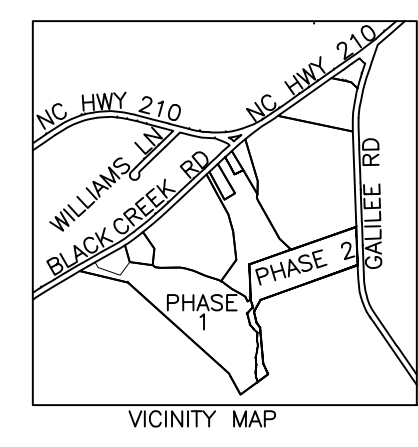
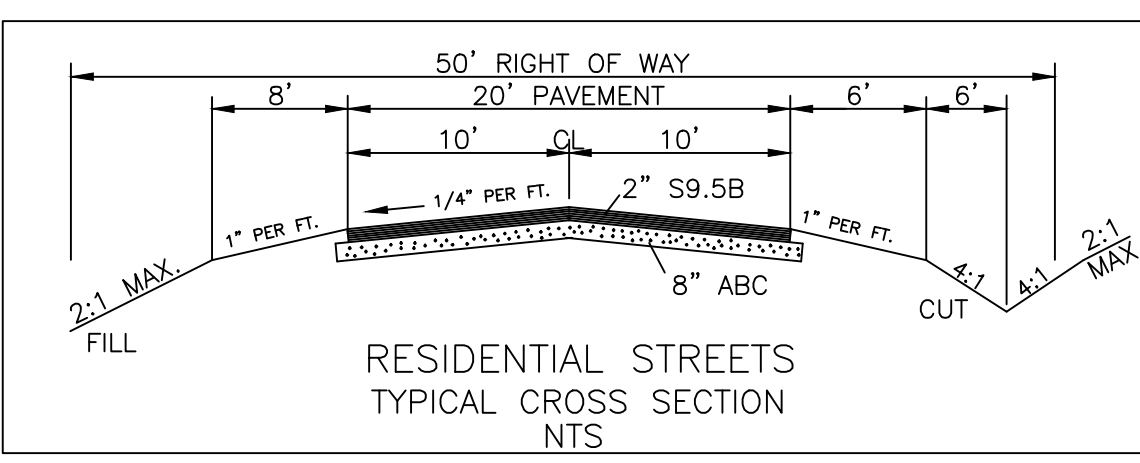
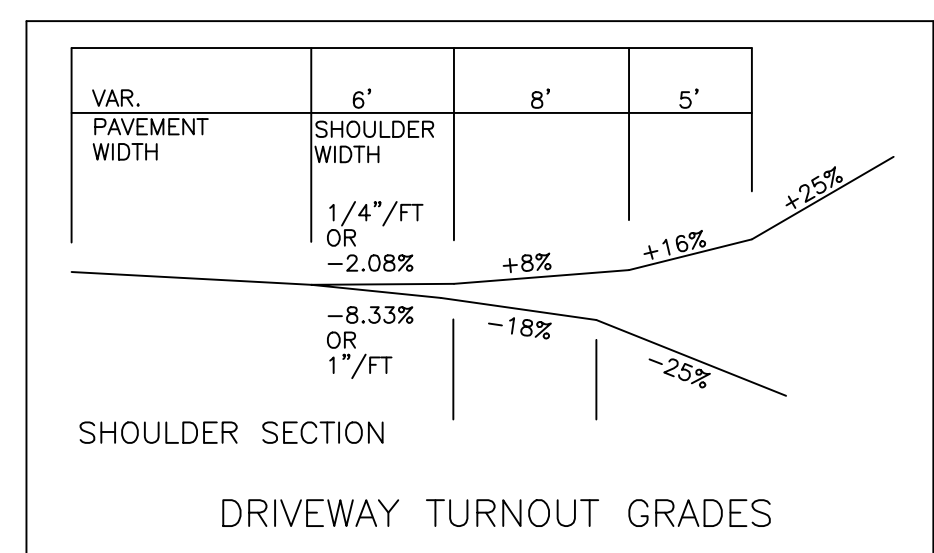
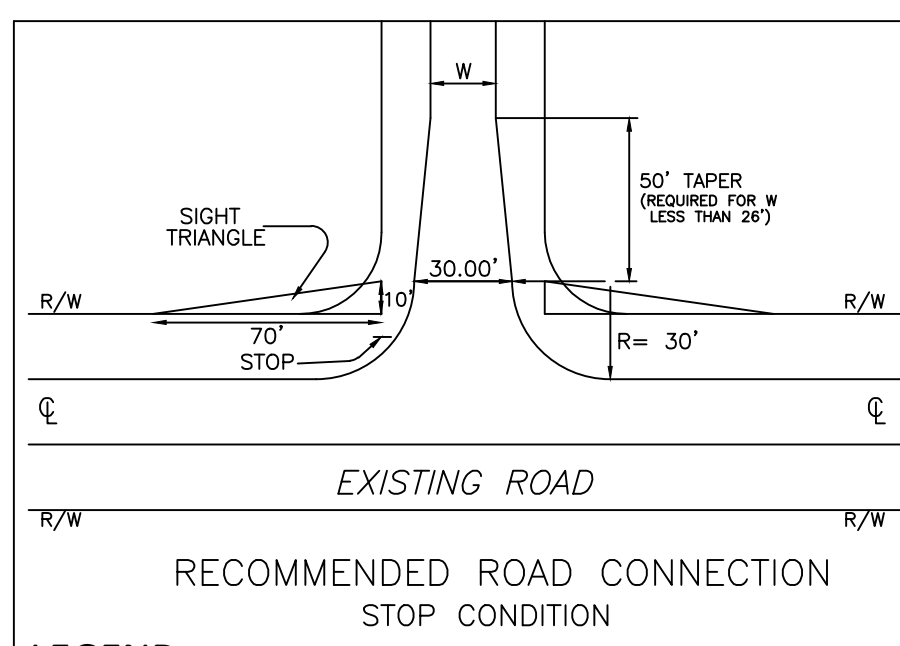
NO.	REVISION	DATE

STEWART - PROCTOR
 ENGINEERING AND SURVEYING
SP
 319 CHAPANOKE ROAD
 Raleigh, North Carolina 27603
 Phone (919) 779-1855 Fax (919) 779-1661

PREPARED FOR: MAWHD INVESTMENT COMPANY, LLC
 27606 S. WILKINSON RD., SUITE 200
 RALEIGH, NC 27606
 DATE: 03-01-2019
 PROJECT ENGINEER: MIKE STEWART
 PROJECT ENGINEER: LINDY S. WILKINSON
 PROJECT NUMBER:

TWIN CREEKS PHASE 2
 SMITHFIELD, NORTH CAROLINA
 WET DETENTION POND
 (A CLUSTER SUBDIVISION)

DRAWING SHEET
C-6

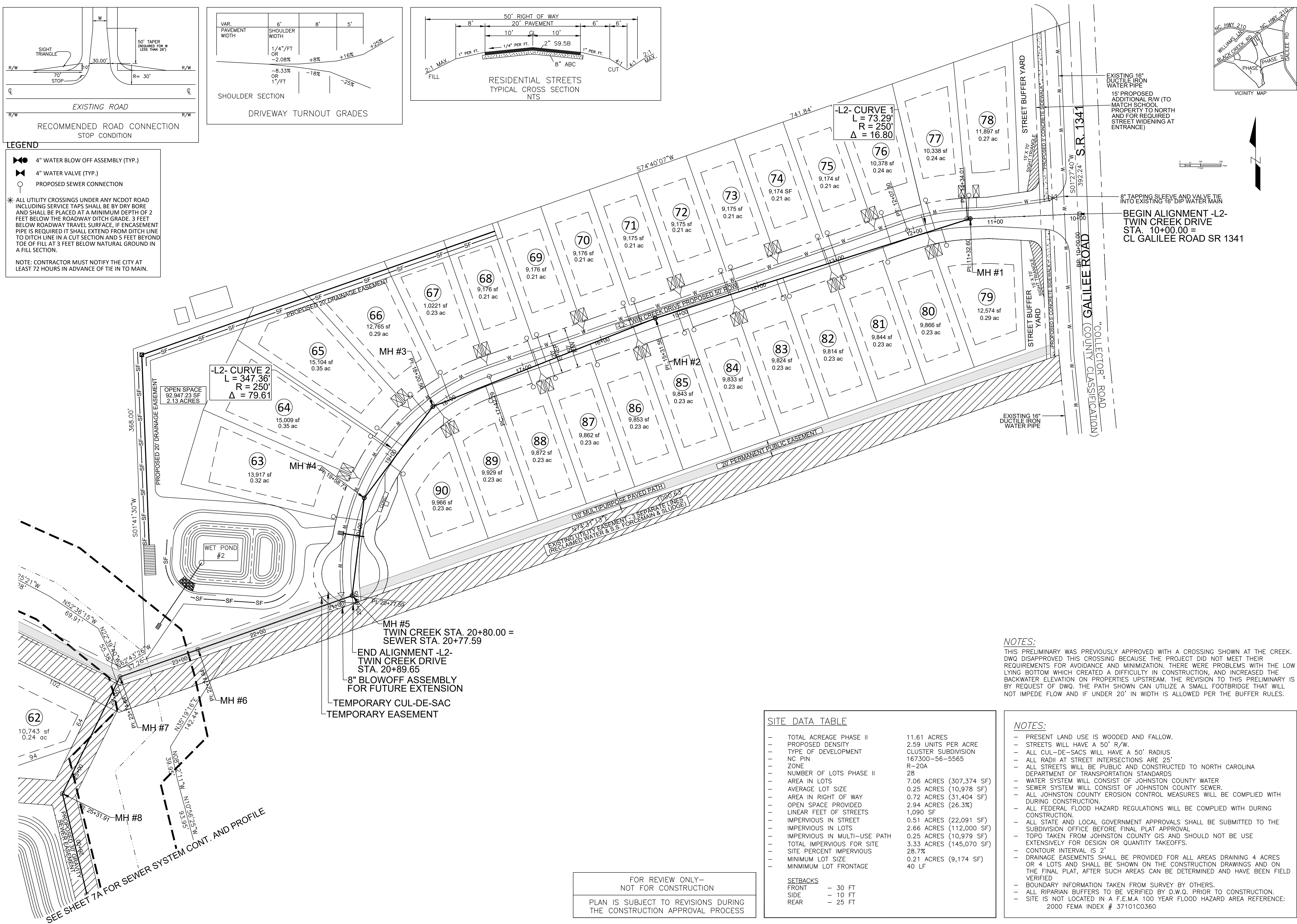


LEGEND

- 4" WATER BLOW OFF ASSEMBLY (TYP.)
- 4" WATER VALVE (TYP.)
- PROPOSED SEWER CONNECTION

* ALL UTILITY CROSSINGS UNDER ANY NCDOT ROAD INCLUDING SERVICE TAPS SHALL BE BY DRY BORE AND SHALL BE PLACED AT A MINIMUM DEPTH OF 2 FEET BELOW THE ROADWAY DITCH GRADE, 3 FEET BELOW ROADWAY TRAVEL SURFACE, IF ENCASEMENT PIPE IS REQUIRED IT SHALL EXTEND FROM DITCH LINE TO DITCH LINE IN A CUT SECTION AND 5 FEET BEYOND TOE OF FILL AT 3 FEET BELOW NATURAL GROUND IN A FILL SECTION.

NOTE: CONTRACTOR MUST NOTIFY THE CITY AT LEAST 72 HOURS IN ADVANCE OF TIE IN TO MAIN.



SITE DATA TABLE

TOTAL ACREAGE PHASE II	11.61 ACRES
PROPOSED DENSITY	2.59 UNITS PER ACRE
TYPE OF DEVELOPMENT	CLUSTER SUBDIVISION
NC PIN	167300-56-5565
ZONE	R-20A
NUMBER OF LOTS PHASE II	28
AREA IN LOTS	7.06 ACRES (307,374 SF)
AVERAGE LOT SIZE	0.25 ACRES (10,978 SF)
AREA IN RIGHT OF WAY	0.72 ACRES (31,404 SF)
OPEN SPACE PROVIDED	2.94 ACRES (26.3%)
LINEAR FEET OF STREETS	1,090 SF
IMPERVIOUS IN STREET	0.51 ACRES (22,091 SF)
IMPERVIOUS IN LOTS	2.66 ACRES (112,000 SF)
IMPERVIOUS IN MULTI-USE PATH	0.25 ACRES (10,979 SF)
TOTAL IMPERVIOUS FOR SITE	3.33 ACRES (145,070 SF)
SITE PERCENT IMPERVIOUS	28.7%
MINIMUM LOT SIZE	0.21 ACRES (9,174 SF)
MINIMUM LOT FRONTAGE	40 LF

SETBACKS

FRONT	30 FT
SIDE	10 FT
REAR	25 FT

NOTES:

THIS PRELIMINARY WAS PREVIOUSLY APPROVED WITH A CROSSING SHOWN AT THE CREEK. DWQ DISAPPROVED THIS CROSSING BECAUSE THE PROJECT DID NOT MEET THEIR REQUIREMENTS FOR AVOIDANCE AND MINIMIZATION. THERE WERE PROBLEMS WITH THE LYING BOTTOM WHICH CREATED A DIFFICULTY IN CONSTRUCTION, AND INCREASED THE BACKWATER ELEVATION ON PROPERTIES UPSTREAM. THE REVISION TO THIS PRELIMINARY IS BY REQUEST OF DWQ. THE PATH SHOWN CAN UTILIZE A SMALL FOOTBRIDGE THAT WILL NOT IMPEDE FLOW AND IF UNDER 20' IN WIDTH IS ALLOWED PER THE BUFFER RULES.

NOTES:

- PRESENT LAND USE IS WOODED AND FALLOW.
- STREETS WILL HAVE A 50' R/W.
- ALL CUL-DE-SACS WILL HAVE A 50' RADIUS
- ALL RADII AT STREET INTERSECTIONS ARE 25'
- ALL STREETS WILL BE PUBLIC AND CONSTRUCTED TO NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARDS
- WATER SYSTEM WILL CONSIST OF JOHNSTON COUNTY WATER
- SEWER SYSTEM WILL CONSIST OF JOHNSTON COUNTY SEWER.
- ALL JOHNSTON COUNTY EROSION CONTROL MEASURES WILL BE COMPLIED WITH DURING CONSTRUCTION.
- ALL FEDERAL FLOOD HAZARD REGULATIONS WILL BE COMPLIED WITH DURING CONSTRUCTION.
- ALL STATE AND LOCAL GOVERNMENT APPROVALS SHALL BE SUBMITTED TO THE SUBDIVISION OFFICE BEFORE FINAL PLAT APPROVAL
- TOPO TAKEN FROM JOHNSTON COUNTY GIS AND SHOULD NOT BE USE EXTENSIVELY FOR DESIGN OR QUANTITY TAKEOFFS.
- CONTOUR INTERVAL IS 2'
- DRAINAGE EASEMENTS SHALL BE PROVIDED FOR ALL AREAS DRAINING 4 ACRES OR 4 LOTS AND SHALL BE SHOWN ON THE CONSTRUCTION DRAWINGS AND ON THE FINAL PLAT, AFTER SUCH AREAS CAN BE DETERMINED AND HAVE BEEN FIELD VERIFIED
- BOUNDARY INFORMATION TAKEN FROM SURVEY BY OTHERS.
- ALL RIPARIAN BUFFERS TO BE VERIFIED BY D.W.Q. PRIOR TO CONSTRUCTION.
- SITE IS NOT LOCATED IN A F.E.M.A 100 YEAR FLOOD HAZARD AREA REFERENCE: 2000 FEMA INDEX # 37101C0360

FOR REVIEW ONLY- NOT FOR CONSTRUCTION

PLAN IS SUBJECT TO REVISIONS DURING THE CONSTRUCTION APPROVAL PROCESS

DATE: _____

REVISION: _____

NO. _____

SEAL: _____

PROFESSIONAL SEAL: _____

DATE: 03-28-19

STEWART - PROCTOR

ENGINEERING AND SURVEYING

319 CHAPANOKE ROAD

Raleigh, North Carolina 27603

Phone (919) 779-1855 Fax (919) 779-1661

PREPARED FOR: MAWHD INVESTMENT COMPANY, LLC

PROJECT NO: 2019-006

DATE: 03-01-2019

SENIOR PROJECT ENGINEER: MIKE STEWART

PROJECT ENGINEER: JULIE S. WILLIAMS

PROJECT NUMBER: _____

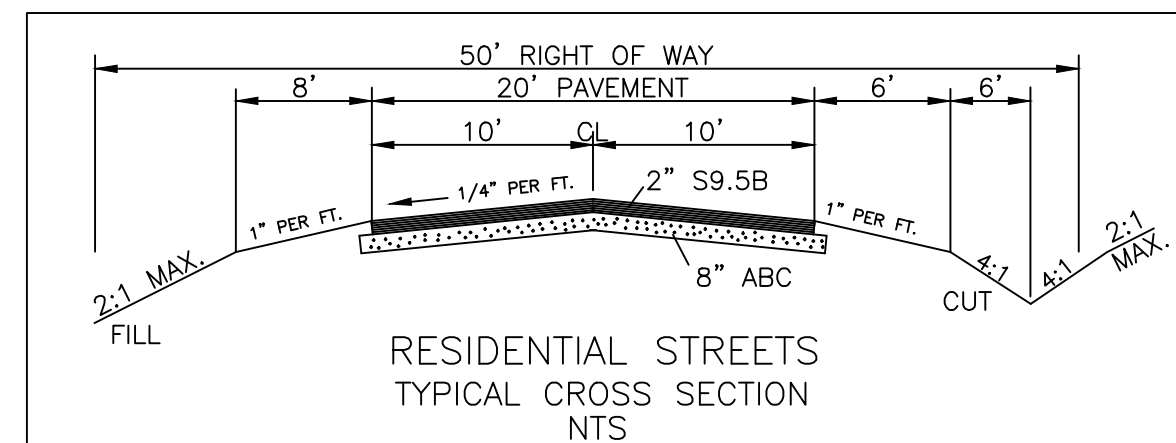
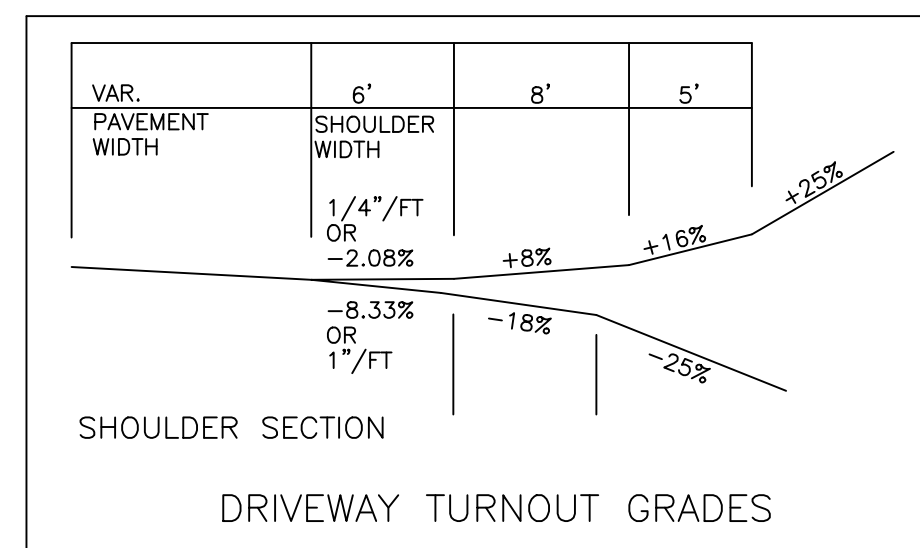
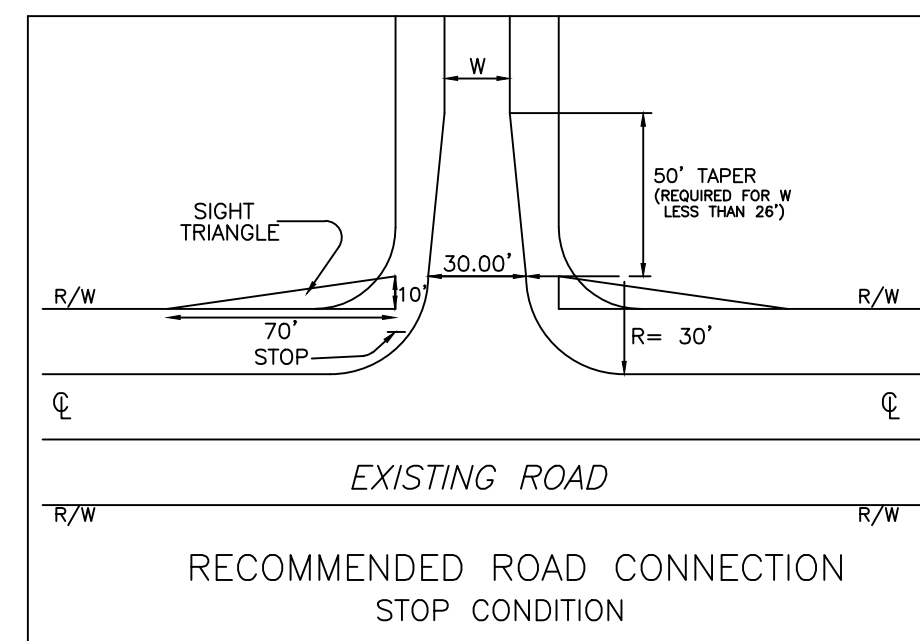
TWIN CREEKS PHASE 2

SMITHFIELD, NORTH CAROLINA

WATER SYSTEM AND UTILITY PLAN

(A CLUSTER SUBDIVISION)

DRAWING SHEET C-7

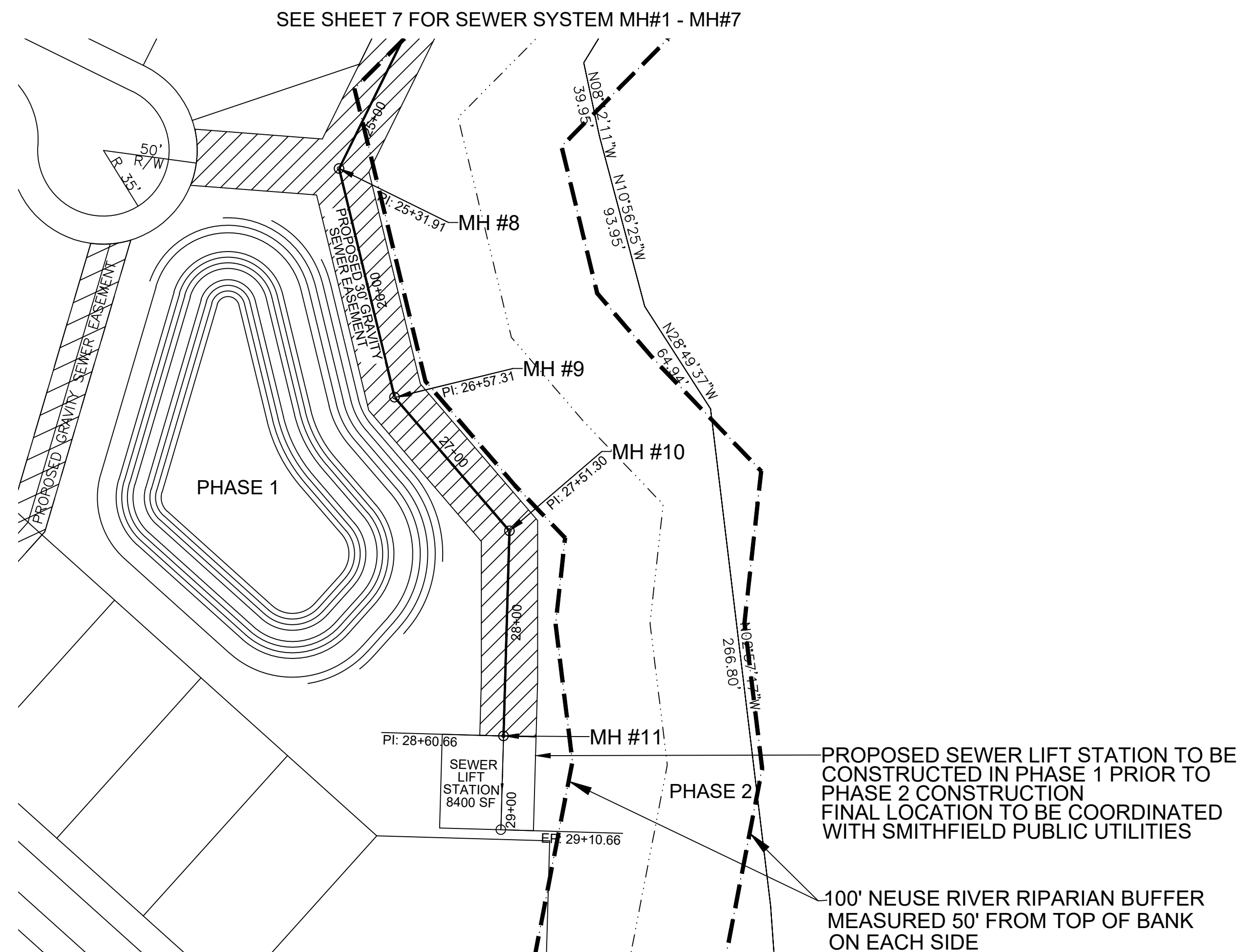
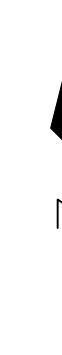
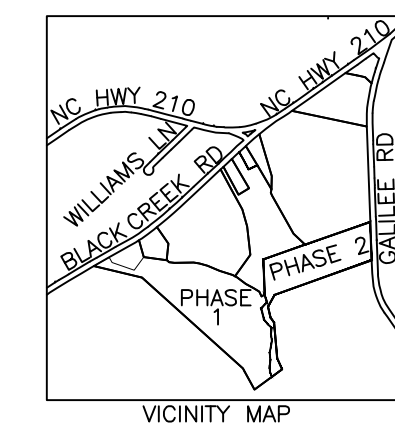


LEGEND

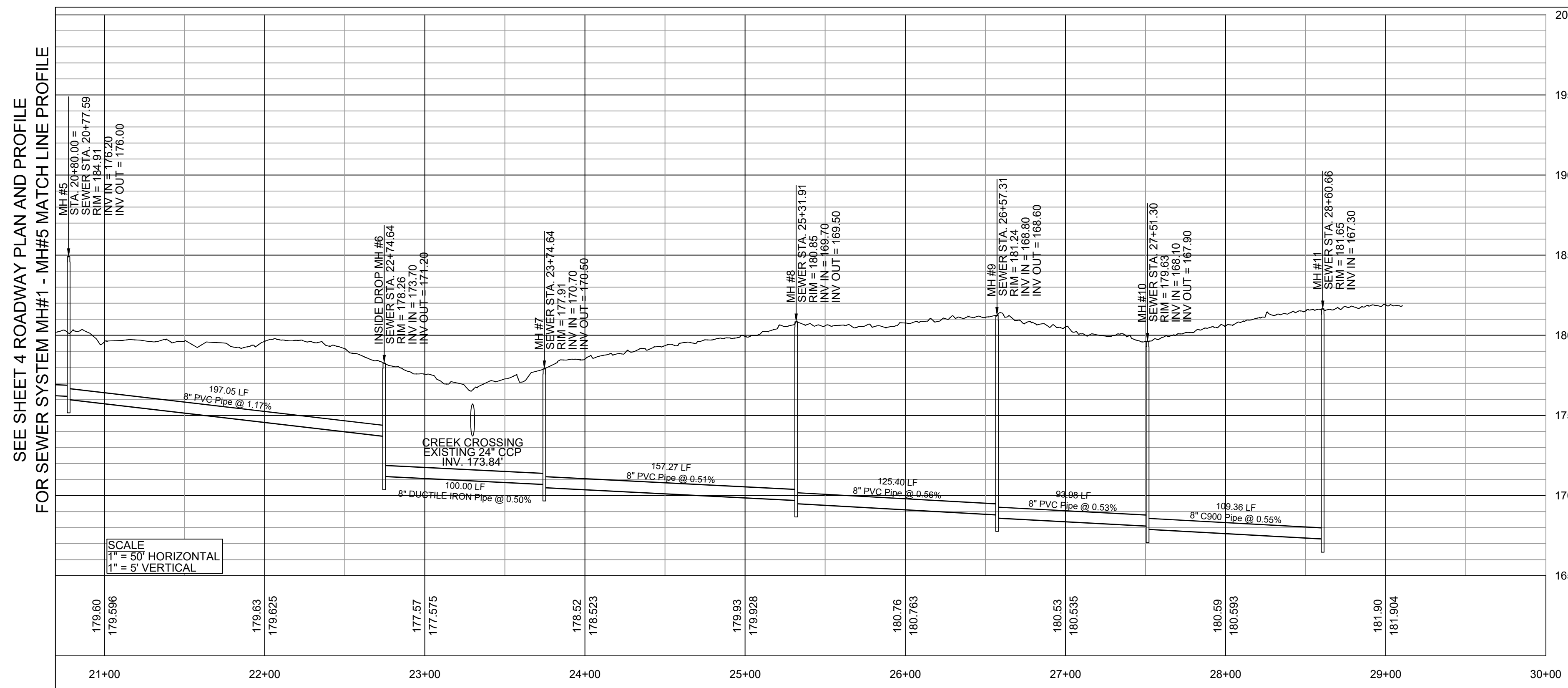
- 4" WATER BLOW OFF ASSEMBLY (TYP.)
- 4" WATER VALVE (TYP.)
- PROPOSED SEWER CONNECTION

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NOTE: CONTRACTOR MUST NOTIFY THE CITY AT LEAST 72 HOURS IN ADVANCE OF THE TIE IN TO MAIN.



PROFILE FOR SEWER SYSTEM MH#5 TO PROPOSED PHASE 1 SEWER LIFT STATION



SITE DATA TABLE	
TOTAL ACREAGE PHASE II	11.61 ACRES
PROPOSED DENSITY	2.59 UNITS PER ACRE
TYPE OF DEVELOPMENT	CLUSTER SUBDIVISION
NC PIN	167300-56-5565
ZONE	R-20A
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AREA IN LOTS	7.06 ACRES (307,374 SF)
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TOTAL IMPERVIOUS FOR SITE	3.33 ACRES (145,070 SF)
SITE PERCENT IMPERVIOUS	28.7%
MINIMUM LOT SIZE	0.21 ACRES (9,174 SF)
MINIMUM LOT FRONTAGE	40 LF
SETBACKS	
FRONT	30 FT
SIDE	10 FT
REAR	25 FT

FOR REVIEW ONLY - NOT FOR CONSTRUCTION

PLAN IS SUBJECT TO REVISIONS DURING THE CONSTRUCTION APPROVAL PROCESS

NOTES:

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- ALL RADI AT STREET INTERSECTIONS ARE 25'
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- WATER SYSTEM WILL CONSIST OF JOHNSTON COUNTY WATER
- SEWER SYSTEM WILL CONSIST OF JOHNSTON COUNTY SEWER.
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- SITE IS NOT LOCATED IN A F.E.M.A 100 YEAR FLOOD HAZARD AREA REFERENCE: 2000 FEMA INDEX # 37101C0360

NO.	REVISION	DATE

STEWART - PROCTOR
ENGINEERING AND SURVEYING

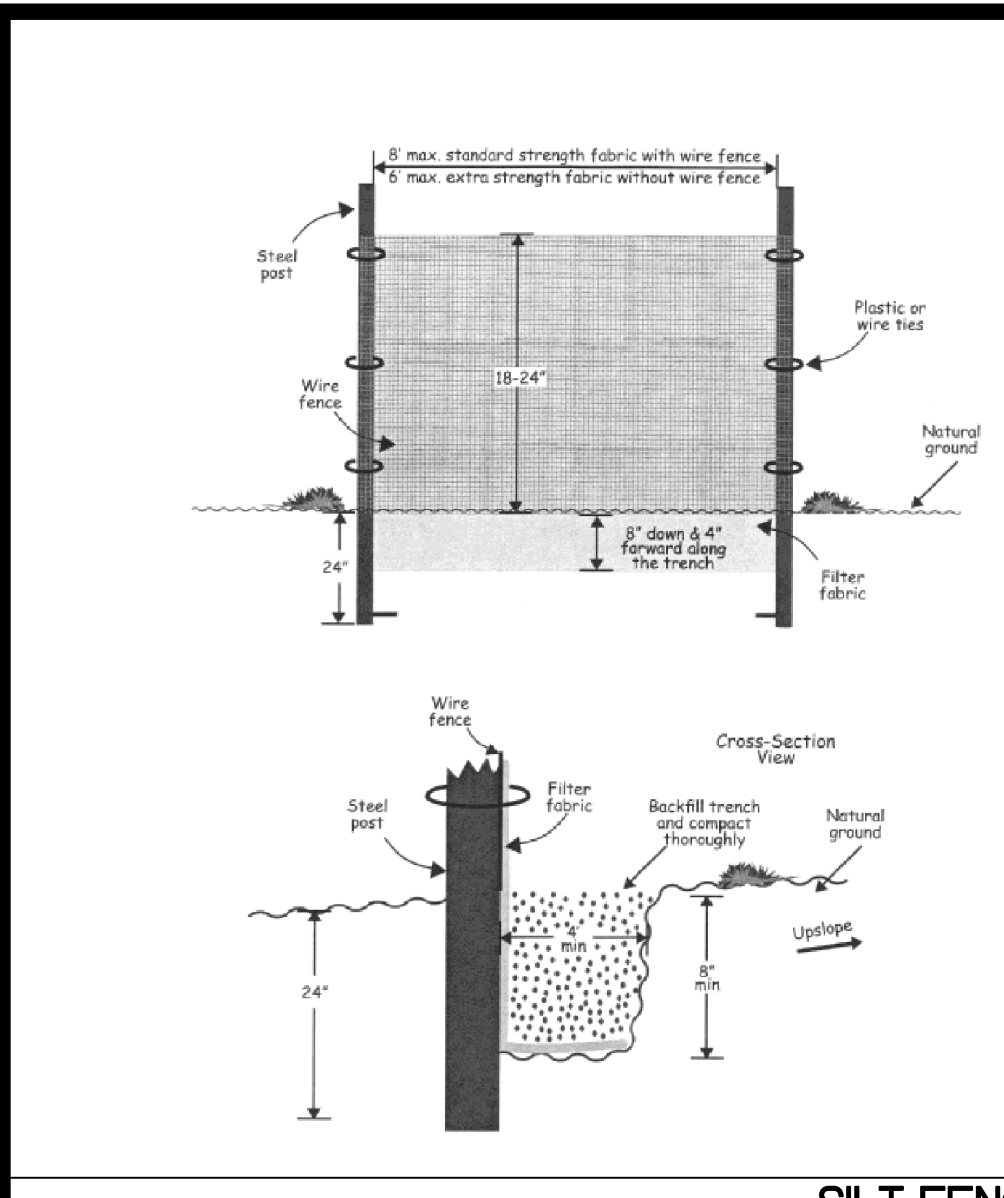
319 CHAPANOKE ROAD
Raleigh, North Carolina 27603
Phone (919) 779-1855 Fax (919) 779-1661

SEAL: 22024

PREPARED FOR:	MAVHIO INVESTMENT COMPANY, LLC
DATE:	03-01-2019
SENIOR PROJECT ENGINEER:	MIKE STEWART
PROJECT ENGINEER:	EMILY S. WILLIAMSON
PROJECT NUMBER:	

TWIN CREEKS PHASE 2
SMITHFIELD, NORTH CAROLINA
WATER SYSTEM AND UTILITY PLANS -2
(A CLUSTER SUBDIVISION)

DRAWING SHEET
C-7A



Maintenance

Inspect sediment fences at least once a week and after each rainfall. Make any required repairs immediately.

Should the fabric of a sediment fence collapse, tear, decompose or become ineffective, replace it promptly.

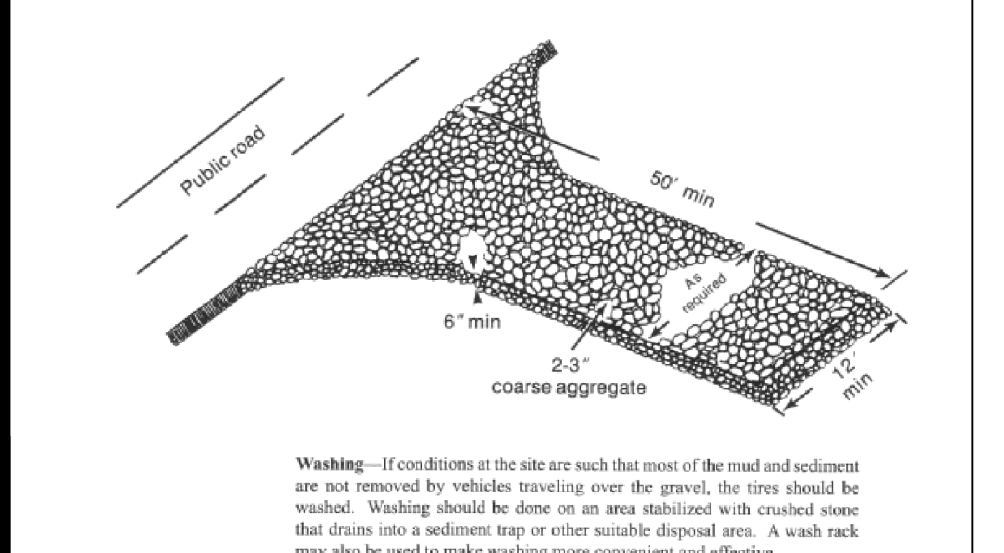
Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence. Take care to avoid undermining the fence during cleaning.

Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

Installation Specifications

- The base of each end post should be at least one foot higher than the middle of the fence. Check with a level if necessary.
- Install posts 4 feet apart in critical areas and 6 feet apart on standard applications.
- Install posts 2 feet deep on the downstream side of the silt fence, and as deep as possible to the fabric, creating posts to support the fabric from upstream water pressure.
- Install posts with the nipples facing away from the silt fence.
- Attach the fabric to each post with three ties, all spaced within the top 8 inches of the fabric. Attach each tie diagonally to the fabric, with each post at least 1 inch vertically apart. Also, each tie should be positioned to hang on a post nipple when tightened to prevent sagging.
- Wrap approximately 6 inches of fabric around the end posts and secure with 3 ties.
- No more than 24 inches of a 36 inch fabric is allowed above ground level.
- The installation should be checked and corrected for any deviations before construction.
- Completion is visually important for effective results. Compact the soil immediately next to the silt fence fabric with the fore wheel of the tractor, skid steer, or roller excavator at least 60 pounds per square inch. Compact the upstream side, and then each side twice for a total of 4 rips.

SILT FENCE

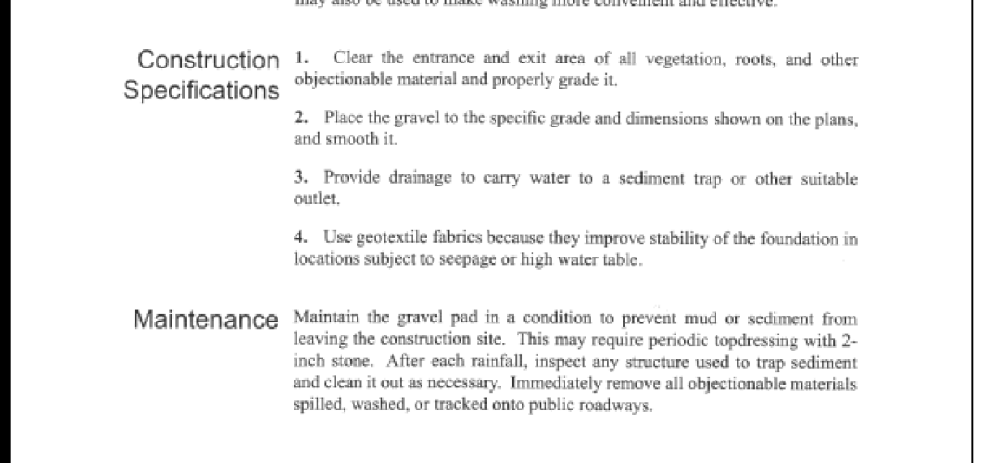


Maintenance

Inspect check dams and channels at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Clean out sediment, straw, limbs, or other debris that could clog the channel when needed.

Anticipate sedimentation and deposition above the check dam and erosion from high flows around the edges of the dam. Correct all damage immediately. If significant erosion occurs between dams, additional measures can be taken such as, installing a protective riprap liner in that portion of the channel (Practice 6.31, Riprap-Liner and Filter Channels).

Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation. Allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam. Add stones to dams as needed to maintain design height and cross section.



Construction Specifications

- Clear the entrance and exit area of all vegetation, rocks, and other objectionable material and properly grade it.
- Place the curb to the specific grade and dimensions shown on the plans, and smooth it.
- Provide drainage to carry water to a sediment trap or other suitable outlet.
- Use geotextile fabrics because they improve stability of the foundation in locations subject to seepage or high water table.

Maintenance

Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing with 2-inch stone. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary. Immediately remove all objectionable materials spilled, washed, or tracked onto public roadways.

CONSTRUCTION ENTRANCE

NCDES Stormwater Discharge Permit for Construction Activities (NCG01)

SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

NCDCR/Division of Water Quality

NEW STABILIZATION TIMEFRAMES (Effective Aug. 3, 2011)

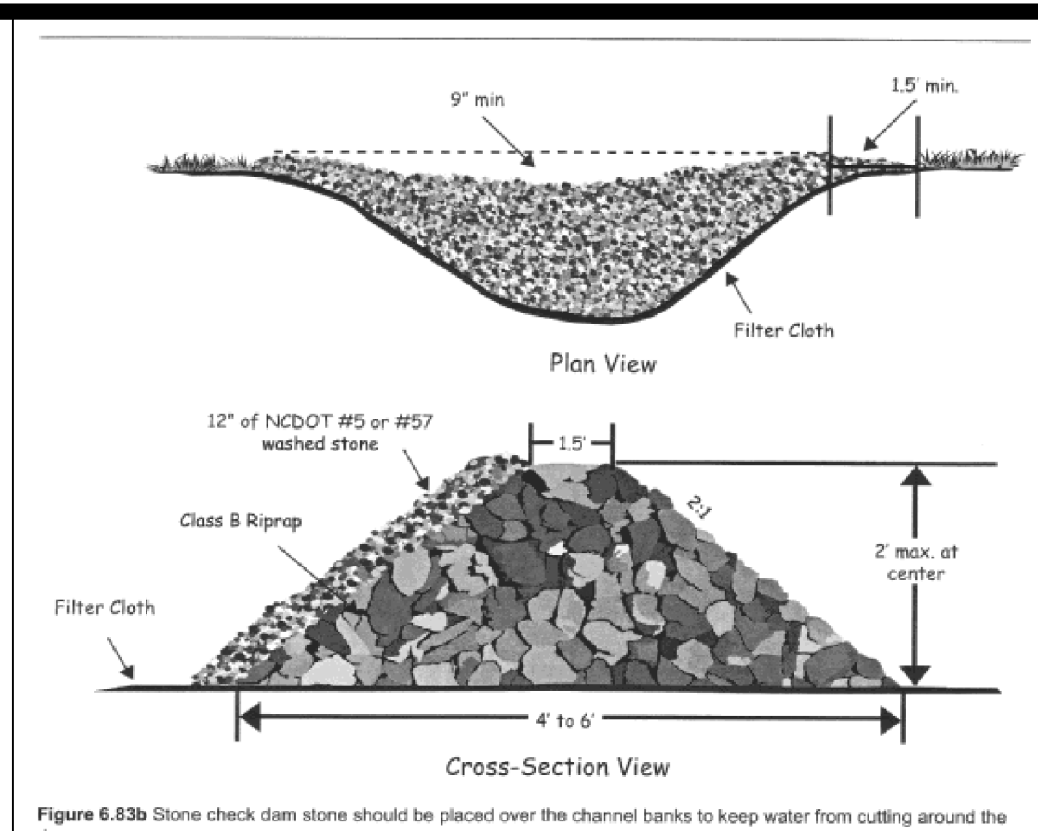


Figure 6.33a Stone check dam stone should be placed over the channel banks to keep water from cutting around the dam.

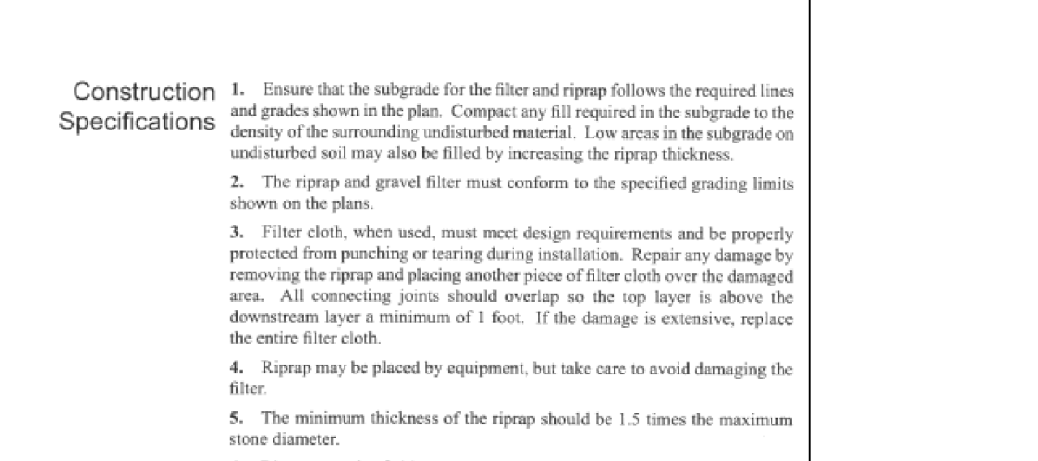
Maintenance

Inspect check dams and channels at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Clean out sediment, straw, limbs, or other debris that could clog the channel when needed.

Anticipate sedimentation and deposition above the check dam and erosion from high flows around the edges of the dam. Correct all damage immediately. If significant erosion occurs between dams, additional measures can be taken such as, installing a protective riprap liner in that portion of the channel (Practice 6.31, Riprap-Liner and Filter Channels).

Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation. Allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam. Add stones to dams as needed to maintain design height and cross section.

ROCK CHECK DAM



Construction Specifications

- Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
- The riprap and gravel filter must conform to the specified grading limits shown on the plans.
- Filter cloth, when used, must meet design requirements and be properly protected from punching or tearing during installation. Repair any damage by removing the riprap and placing another piece of filter cloth over the damaged area. All connecting joints should overlap so the top layer is above the downstream layer a minimum of 1 foot. If the damage is extensive, replace the entire filter cloth.
- Riprap may be placed by equipment, but take care to avoid damaging the filter.
- The minimum thickness of the riprap should be 1.5 times the maximum stone diameter.
- Riprap may be field stone or rough quarry stone. It should be hard, angular, highly weather-resistant and well graded.
- Construct the apron on zero grade with no overfill at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it.
- Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit the conditions, place it in the upper section of the apron.
- A filter blanket or filter fabric should be installed between the riprap and soil foundations.

Maintenance

Inspect riprap outlet structures weekly and after significant (1/2 inch or greater) rainfall events to see if any erosion around or below the riprap has taken place, or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.

OUTLET PROTECTION

NCDCR/Division of Water Quality

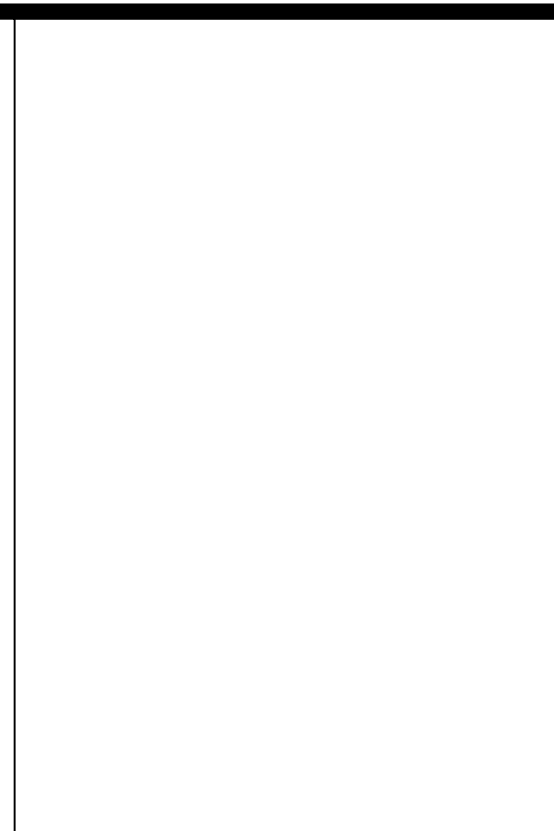


Figure 6.33a Stone check dam stone should be placed over the channel banks to keep water from cutting around the dam.

Maintenance

Inspect check dams and channels at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Clean out sediment, straw, limbs, or other debris that could clog the channel when needed.

Anticipate sedimentation and deposition above the check dam and erosion from high flows around the edges of the dam. Correct all damage immediately. If significant erosion occurs between dams, additional measures can be taken such as, installing a protective riprap liner in that portion of the channel (Practice 6.31, Riprap-Liner and Filter Channels).

Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation. Allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam. Add stones to dams as needed to maintain design height and cross section.

ROCK CHECK DAM



Construction Specifications

- Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
- The riprap and gravel filter must conform to the specified grading limits shown on the plans.
- Filter cloth, when used, must meet design requirements and be properly protected from punching or tearing during installation. Repair any damage by removing the riprap and placing another piece of filter cloth over the damaged area. All connecting joints should overlap so the top layer is above the downstream layer a minimum of 1 foot. If the damage is extensive, replace the entire filter cloth.
- Riprap may be placed by equipment, but take care to avoid damaging the filter.
- The minimum thickness of the riprap should be 1.5 times the maximum stone diameter.
- Riprap may be field stone or rough quarry stone. It should be hard, angular, highly weather-resistant and well graded.
- Construct the apron on zero grade with no overfill at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it.
- Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit the conditions, place it in the upper section of the apron.
- A filter blanket or filter fabric should be installed between the riprap and soil foundations.

Maintenance

Inspect riprap outlet structures weekly and after significant (1/2 inch or greater) rainfall events to see if any erosion around or below the riprap has taken place, or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.

OUTLET PROTECTION

NCDCR/Division of Water Quality

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

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

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

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

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

SECTION F: LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

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

PAINT AND OTHER LIQUID WASTE

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

PORTABLE TOILETS

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

SECTION G: POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

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

NG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

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

Inspection	Frequency (during normal business hours)	Inspection records must include:
(1) Site safety	Daily	Daily rainfall amounts. If on site, an observation on made during inspection or holiday periods, and no individual day rainfall information is available, the permittee shall record the total rainfall for the inspection period. If a site inspection is performed during a storm event, the permittee may use another rain monitoring device approved.
(2) Erosion	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measure inspected. 2. Date and time of the inspection. 3. Name of the person performing the inspection. 4. Indication of whether the measures were operating properly. 5. Description of maintenance needs for the measure. 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outlets (SDO)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outlet inspected. 2. Date and time of the inspection. 3. Name of the person performing the inspection. 4. Evidence of indicators of stormwater pollution such as oil, debris, floating or suspended solids or discoloration. 5. Indicators of visible sediment leaving the site. 6. Description, evidence, and date of corrective actions taken.
(4) Prevention of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Actions taken to clean up or stabilize the sediment that has left the site limits. 2. Description, evidence, and date of corrective actions taken, and 3. For noncompliance, an action taken to correct future violations.
(5) Streams or wetlands outside of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. If there are wetlands that have increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 2. Description, evidence and date of corrective actions taken. 3. Record of the required reports to the appropriate Division Regional Office per Part III, Section G, Item (2)(c) of this permit. 1. The phase of grading/ installation of perimeter E&S measures, clearing and grubbing, installation of storm drainage facilities, operation of all land-clearing activity, construction or redevelopment, permanent (green) cover. 2. Documentation that the required ground stabilization measures have been provided within the required timeframe as an assurance that they will be provided as soon as practicable.

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

PART II, SECTION G, ITEM (4)

DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

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

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

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

- Visible sediment deposition in a stream or wetland.
- Oil spills if:
 - They are 25 gallons or more,
 - They are less than 25 gallons but cannot be cleaned up within 24 hours,
 - They cause sheen on surface waters (regardless of volume), or
 - They are within 100 feet of surface waters (regardless of volume).
- Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3) and/or 40 CFR 137.3 or Section 302 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

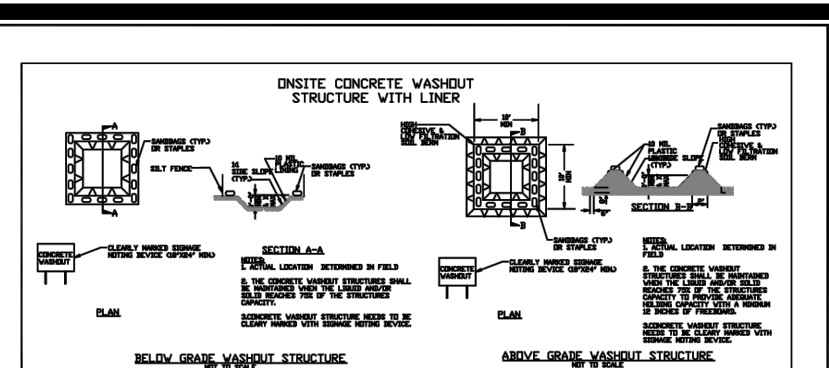
2. Reporting Timeframes and Other Requirements

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

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none"> Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. If the stream is named on the NC 302(a) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired waters conditions.
(b) Oil spills and release of hazardous substances per item (3)(b)(i) above	<ul style="list-style-type: none"> Within 24 hours, in oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses (40 CFR 122.43)(6)(ii)	<ul style="list-style-type: none"> A report of least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses (40 CFR 122.43)(6)(i)	<ul style="list-style-type: none"> Within 24 hours, in oral or electronic notification. Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment (40 CFR 122.43)(7)	<ul style="list-style-type: none"> Within 24 hours, in oral or electronic notification. Within 7 calendar days, a report that contains a description of the noncompliance, why it occurred, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. (40 CFR 122.43)(8)(b). Division staff may waive the requirement for a written report on a case-by-case basis.

NG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19



CONCRETE WASHOUTS

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

HERBICIDES, PESTICIDES AND RODENTICIDES

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

HAZARDOUS AND TOXIC WASTE

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

DATE: _____

REVISION: _____

NO. _____

SEAL:

NORTH CAROLINA PROFESSIONAL ENGINEERING & SURVEYING

20204

03-04-2020

STEWART - PROCTOR

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DATE: 03-01-2019

PROJECT ENGINEER:

MICHAEL STEWART

PROJECT ENGINEER:

DAVID S. WILKINSON

PROJECT NUMBER:

TWIN CREEKS PHASE 2

SMITHFIELD, NORTH CAROLINA

DETAILS SHEET

(A CLUSTER SUBDIVISION)

FOR REVIEW ONLY - NOT FOR CONSTRUCTION

PLAN IS SUBJECT TO REVISIONS DURING THE CONSTRUCTION APPROVAL PROCESS

DRAWING SHEET D-1