STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

June 19, 2018

U. S. Army Corps of Engineers
2407 West 5th Street
Washington, North Carolina 27889

Attention: Mr. Kyle Barnes
NCDOT Coordinator

N.C. Division of Coastal Management
401 South Griffin Street, Suite 300
Elizabeth City, NC 27909

Attention: Mr. Greg Daisey
NCDOT Coordinator

Subject: **Application for Section 404 Individual Permit, Section 401 Water Quality Certification and CAMA Major Development Permit** for the proposed widening along SR 1217 (Colington Road) from dead end to US 158 (Croatan Highway), Dare County. TIP No. R-5014. Debit $475 from WBS 41162.1.1

Dear Sirs:

The North Carolina Department of Transportation (NCDOT) proposes to construct two bike lanes along SR 1217 (Colington Road) from the dead end to US 158 (Croatan Highway) in Dare County, NC. This project will also address safety issues along the route and raise the grade in areas that suffer from flooding during storm events and high wind driven tides.

The purpose of this letter is to request approval for a Section 404 Individual Permit, Section 401 Water Quality Certification, and CAMA Major Development Permit. In addition to this cover letter, this application package includes the following for R-5014: ENG Form 4345, stormwater management plan, permit drawings, utility permit drawings, roadway plans, NC Division of Mitigation Services (DMS) acceptance letter, and 4B/4C merger meeting minutes.

Purpose and Need

The purpose of the proposed project is to reduce roadway flooding and improve the operation and safety of SR 1217 (Colington Road).

Summary of Impacts

Waters of the U.S.: Proposed permanent impacts to jurisdictional areas total 0.83 acre of permanent wetland impacts, 4 linear feet of permanent stream impact and 0.08 acre of permanent surface water impact.

Summary of Mitigation

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent possible. The proposed construction of R-5014 will result in unavoidable impacts to 0.65 acre of riparian wetlands,

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENT ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

Telephone: (919) 707-6000
Fax: (919) 212-5785
Customer Service: 1-877-368-4968
Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

0.02 acres of non-riparian wetlands and 0.16 acres of coastal wetlands that will require mitigation. The Department has acquired the compensatory mitigation for these unavoidable impacts from the North Carolina Department of Environmental Quality (NCDEQ)-Division of Mitigation Services (DMS).

Project Schedule

Currently, R-5014 has a review date of January 29, 2019 and is scheduled to let March 19, 2019.

NEPA Document Status

The Categorical Exclusion (CE) was approved in November 2015. This document is available at https://xfer.services.ncdot.gov/pdea/EnvironmentalDocs/Documents/.

Resource Status

The project is located in Pasquotank River Basin and lies within Hydrologic Unit 03010205. This is within the Outer Coastal Plain physiographic region.

A jurisdictional wetland and stream verification was conducted on August 28, 2012. An approved jurisdictional determination (SAW-2015-00970) was issued on June 5, 2015.

Impacts to Jurisdictional Resources

Wetlands

Impacts to jurisdictional wetlands are summarized below in Table 1.

Table 1. R-5014 Wetland Impacts

Permit Drawing Site Number	CE Map Label	Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)
1	WA	Riparian	0.04	0
2	WB	Coastal	<0.01	0
3	WC	Non-riparian	<0.01	0
4	WD	Riparian	0.22	0
5	WE	Riparian	0.28	0
6	WG	Non-riparian	0.02	0
7	WL	Riparian	0.04	0
8	WM	Coastal	0.07	0
9	WO	Riparian	<0.01	0

Permit Drawing Site Number	CE Map Label	Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)
11	WP	Coastal	<0.01	0
12	WQ	Coastal	<0.01	0
13	WR	Non-riparian	<0.01	0
14	WS	Coastal	<0.01	0
15	WT	Coastal	<0.01	0
16	WW	Coastal	0.02	0
17	WV	Coastal	<0.01	0
		Riparian	<0.01	
18	WW	Coastal	0.07	0
19	WY	Riparian	0.05	0
20	WX	Riparian	<0.01	0
21	WZ	Non-riparian	<0.01	0
Total:			**0.83**	**0**

Wetland Impacts: Proposed permanent impacts for R-5014 include 0.83 acre of fill, <0.01 acre of excavation in wetlands. Of the total impact, 0.16 acre of fill and <0.01 acre of excavation will occur to coastal wetlands, There will be 0.02 acre of fill in non-riparian wetlands. There will be 0.33 acre of hand clearing.

Utility Wetland Impacts: There will be less than <0.01 acre of permanent impacts to coastal wetlands due to overhead power pole installations. Please see attached utility permit drawings.

Streams

Permanent Stream Impacts: Proposed permanent impacts to jurisdictional streams due for R-5014 totals 4 linear feet. This impact occurs at Site 2 due to the extension of an existing culvert.

Open Water

Permanent Open Water Impacts: Proposed permanent impacts to open water due to roadway fill for R-5014 totals 0.08 acre.

Protected Species

The United States Fish and Wildlife Service (USFWS) lists twelve species, and the National Marine Fisheries Service (NMFS) lists seven species that are federally protected in Dare County as of March 26, 2018 (Table 2).

Table 2. Federally protected species listed for Dare County

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Alligator mississippiensis	American alligator	TSA	Yes	Not Required
Chelonia mydas	Green sea turtle	T	No	No Effect
Eretmochelys imbricate	Hawksbill sea turtle	E	No	No Effect
Lepidochelys kempii	Kemp's ridley sea turtle	E	No	No Effect
Dermochelys coriacea	Leatherback sea turtle	E	No	No Effect
Caretta caretta	Loggerhead sea turtle	T	No	No Effect
Trichechus manatus	West Indian manatee	E	No	No Effect
Calidris canutus rufa	Red knot	T	No	No Effect
Sterna dougallii dougallii	Roseate tern	T	No	No Effect
Picoides borealis	Red-cockaded woodpecker	E	No	No Effect
Canis rufus	Red wolf	EXP	No	No Effect
Acipenser oxyrinchus oxyrinchus	Atlantic sturgeon	E	No	No Effect
Acipenser brevirostrum	Shortnose sturgeon	E	No	No Effect
Amaranthus pumilus	Seabeach amaranth	T	No	No Effect

Northern long-eared bat

The USFWS has developed a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is "May Affect, Likely to Adversely Affect." The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Dare County, where R-5014 is located.

Bald and Golden Eagle Protection Act (BGPA)

A desktop-GIS assessment of the study area, as well as the area within a 660 feet radius of the project limits, was performed on August 15, 2012 using 2010 aerial orthophotography. Blount Bay and Colington Creek were identified as water bodies large enough and sufficiently open to be considered potential feeding sources. A survey of the study area and the area within 660 feet of the project limits was conducted, on May 11, 2018, and no nests or birds were observed. A review of NCNHP records on May 8, 2018, indicated a known occurrence of the species within one mile of the project study area. However, due to no birds or nests observed within 660 feet of the project limits and the minimal impact anticipated for the proposed project, it has been determined this project will not likely affect his species.

Moratoria

An in-water construction moratorium will be implemented from April 1 to September 30 in order to protect SAV and juvenile fish.

Cultural Resources

As noted in the CE, the Wright Brothers National Memorial is listed on the National Register as a National Historic Landmark. From coordination with the National Park Service, the section of the project within the Memorial property will only be resurfaced. Existing travel lanes and shoulders will be maintained, therefore the proposed improvements will remain within the existing right-of-way and there will be no direct impacts to the Memorial property. A concurrence form of No Effect was issued by the State Historic Preservation Office (HPO) on October 20, 2015.

HPO reviewed the project in 2011 and determined no archaeological investigations were needed.

FEMA Compliance

The project has been coordinated with appropriate state and local officials and the Federal Emergency Management Agency (FEMA) to assure compliance with FEMA, state, and local floodway regulations.

Mitigation Options

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

Avoidance and Minimization

All jurisdictional features were delineated, field verified and surveyed within the corridor for R-5014. Using these features, preliminary designs were adjusted to avoid and/or minimize impacts to jurisdictional areas. NCDOT employs many strategies to avoid and minimize impacts to jurisdictional areas in all of its designs. Many of these strategies have been incorporated into BMP documents that have been reviewed and approved by the resource agencies and which will be followed throughout construction. All wetland areas not affected by the project will be protected from unnecessary encroachment. Individual avoidance and minimization items are as follows:

- No staging of construction equipment or storage of construction supplies will be allowed in wetlands or near surface waters.
- Water resources north of Colington Road have a classification of HQW, therefore Design Standards in Sensitive Watersheds will be implemented throughout the project.
- NCDOT and its contractors will not excavate, fill, or perform land clearing activities within Waters of the U.S. or any areas under the jurisdiction of the United States Army Corps of Engineers (USACE), except as authorized by the USACE. To ensure that all borrow and waste activities occur on high ground, except as authorized by permit, the NCDOT shall require its contractors to identify all areas to be used to borrow material, or to dispose of dredged, fill or waste material. Documentation of the location and characteristics of all borrow and disposal sites associated with the project will be available to the USACE on request.
- All of the proposed drainage has been designed to have as little environmental and surface water impacts as possible.

- Roadway fill slopes have been designed to be 3:1 in jurisdictional areas except for in the SAV areas where 2:1 slopes with rock plating have been utilized to minimize impacts.
- Ditch side slopes have been designed to be 3:1 and where possible ditches have been designed to meet grass swale criteria.
- Existing parking area at the Colington Cut mitigation site will be maintained.
- An in-water work moratorium from April 1 to September 30 will be adhered to.

Compensation

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent possible as described above. The unavoidable impacts to wetlands will be offset by compensatory mitigation provided by the DMS. No mitigation is proposed for the minimal stream impacts. An acceptance letter from DMS is attached.

Indirect and Cumulative Effects

Due to the minimal transportation impact resulting from this project, the addition of bicycle lanes will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study is not necessary.

Essential Fish Habitat

The NMFS has identified Blount Bay and Colington Creek as Essential Fish Habitat (EFH). The proposed project will not require the replacement of the two existing structures along the route. Due to the minimal impact to surface waters and SAV, as well as the implementation of the in-water work moratorium, impacts may have small localized impacts, but are likely to result in a negligible net effect on available EFH.

Regulatory Approvals

Section 404: Application is hereby made for a USACE Individual 404 Permit as required for the above-described activities.

Section 401: We are requesting a Section 401 Water Quality Certification from NCDWR. We are providing this application to NCDEQ, for their approval. Please coordinate with the NC Division of Coastal Management for the joint permit application fee.

CAMA: NCDOT requests that the proposed work be authorized under a Coastal Area Management Act Major Permit. Adjacent riparian landowner certified mail return receipts will be provide once they are received. Authorization to debit the $475 Permit Application Fee from WBS 41162.1.1 is hereby given.

A copy of this permit application and its distribution list will be posted on the NCDOT website at: https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jason Dilday at jldilday@ncdot.gov or (919) 707-6111.

Sincerely,

for Philip S. Harris III, P.E., C.P.M.
Environmental Analysis Unit Head

cc:

NCDOT Permit Application Standard Distribution List

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

(33 CFR 325)

OMB APPROVAL NO. 0710-0003
EXPIRES: 31 AUGUST 2012

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Philip Middle - S. Last - Harris	First - Middle - Last -
Company - NCDOT-EAU	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address-	Address-
City - State - Zip - Country -	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 919-707-6111 c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____
SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
R-5014

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Blount Bay, Colington Cut, Colington Creek	Address
15. LOCATION OF PROJECT Latitude: ◦N 36.015330 Longitude: ◦W -75.687495	City - State- Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality
Section - Township - Range -

17. DIRECTIONS TO THE SITE

Please see attached vicinity map and cover letter.

18. Nature of Activity (Description of project, include all features)

The proposed project will widen SR 1217 (Colington Rd) from dead end to US 158 (Croatan Highway) in Kill Devil Hills. This project will add two 7' bike lanes to address safety issues along this route. This project will also raise the grade in areas along the route that suffer from flooding during storm events and high wind driven tides.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of the proposed project is to reduce roadway flooding and improve the operation and safety of SR 1217 (Colington Road).

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Impacts will result from widening the roadway and shoulders.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
See attached cover letter.		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See attached cover letter.

or

Linear Feet See attached cover letter.

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See attached cover letter.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See attached list.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

for Philip S. Harris, III, P.E.

Charles C. Calhoun III — 6/19/18

SIGNATURE OF APPLICANT — DATE — SIGNATURE OF AGENT — DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

DCM MP-1

APPLICATION for Major Development Permit

(last revised 12/27/06)

North Carolina DIVISION OF COASTAL MANAGEMENT

1. Primary Applicant/ Landowner Information

Business Name North Carolina Department Of Transportation		Project Name (if applicable) R-5014		
Applicant 1: First Name Philip	MI S	Last Name Harris		
Applicant 2: First Name NA	MI NA	Last Name NA		
If additional applicants, please attach an additional page(s) with names listed.				
Mailing Address Environmental Analysis Unit 1598 Mail Service Center		PO Box	City Raleigh	State NC
ZIP 27610	Country USA	Phone No. 919 - 707 - 6111 ext.	FAX No. - -	
Street Address *(if different from above)* EAU - Century Center B, 1020 Birch Ridge Drive		City Raleigh	State NC	ZIP 27610-
Email jldilday@ncdot.gov				

2. Agent/Contractor Information

Business Name NA				
Agent/ Contractor 1: First Name NA	MI	Last Name		
Agent/ Contractor 2: First Name NA	MI	Last Name		
Mailing Address		PO Box	City	State
ZIP		Phone No. 1 - - ext.	Phone No. 2 - - ext.	
FAX No.		Contractor #		
Street Address *(if different from above)*		City	State	ZIP -
Email				

<Form continues on back>

3. Project Location

County (can be multiple)	Street Address	State Rd. #
Dare	Multiple	SR-1217

Subdivision Name	City	State	Zip
Colington	Kill Devil Hills	NC	27948 -

Phone No.	Lot No.(s) *(if many, attach additional page with list)*
- - ext.	, , , ,

a. In which NC river basin is the project located?	b. Name of body of water nearest to proposed project
Pasquotank	Colington Creek
c. Is the water body identified in (b) above, natural or manmade? ☒Natural ☐Manmade ☐Unknown	d. Name the closest major water body to the proposed project site. Albermarle Sound
e. Is proposed work within city limits or planning jurisdiction? ☒Yes ☐No	f. If applicable, list the planning jurisdiction or city limit the proposed work falls within. Kill Devil Hills, NC

4. Site Description

a. Total length of shoreline on the tract (ft.)	b. Size of entire tract (sq.ft.)
3,337 linear feet	147 ac
c. Size of individual lot(s) N/A, , , *(If many lot sizes, please attach additional page with a list)*	d. Approximate elevation of tract above NHW *(normal high water)* or NWL *(normal water level)* 5.0'-10.0' ☐NHW or ☒NWL

e. Vegetation on tract
Grass, marsh grass, pines

f. Man-made features and uses now on tract
Structural residential homes and commercial buildings

g. Identify and describe the existing land uses <u>adjacent</u> to the proposed project site.
Residential with some commercial development

h. How does local government zone the tract?	i. Is the proposed project consistent with the applicable zoning? (Attach zoning compliance certificate, if applicable) ☐Yes ☐No ☒NA
N/A	

j. Is the proposed activity part of an urban waterfront redevelopment proposal? ☐Yes ☒No

k. Has a professional archaeological assessment been done for the tract? If yes, attach a copy. ☐Yes ☒No ☐NA

If yes, by whom?

l. Is the proposed project located in a National Registered Historic District or does it involve a National Register listed or eligible property? ☒Yes ☐No ☐NA

<Form continues on next page>

m. (i) Are there wetlands on the site?	☒Yes ☐No
(ii) Are there coastal wetlands on the site?	☒Yes ☐No
(iii) If yes to either (i) or (ii) above, has a delineation been conducted? *(Attach documentation, if available)*	☒Yes ☐No

n. Describe existing wastewater treatment facilities.

NA

o. Describe existing drinking water supply source.

NA

p. Describe existing storm water management or treatment systems.

grass lined ditches and swales

5. Activities and Impacts

a. Will the project be for commercial, public, or private use? ☐Commercial ☒Public/Government ☐Private/Community

b. Give a brief description of purpose, use, and daily operations of the project when complete.

The proposed project will widen SR 1217 (Colington Rd) from dead end to US 158 Croatan Highway in Kill Devil Hills. This project will add two 7' bike lanes to address safety issues along this route. This project will also raise the grade in areas along the route that suffer from flooding during storm events and high wind driven tides. This will improve the safety of the road for the traveling public and emergency officials. The increase in road grade elevation has been minimized as much as practicable while attempting to improve the road navigability during flooding events. Roadway fill slopes have been designed to be 3:1 in jurisdictional areas except for in the subaquatic vegetation (SAV) areas where 2:1 slopes with rock plating have been utilized to minimize impacts. Ditch side slopes have also been designed to be 3:1 and where possible ditches have been designed to meet swale criteria. Utilities along the corridor will be relocated with minimal impact to CAMA AECs.

c. Describe the proposed construction methodology, types of construction equipment to be used during construction, the number of each type of equipment and where it is to be stored.

Cranes, sheet pile driving equipment, grading equipment, bull dozers, and large trucks

d. List all development activities you propose.

Grading, paving, clearing, ditch work, excavation and fill associated with the roadway widening.

e. Are the proposed activities maintenance of an existing project, new work, or both? New Work

f. What is the approximate total disturbed land area resulting from the proposed project? 18.9 ☐Sq.Ft or ☒Acres

g. Will the proposed project encroach on any public easement, public accessway or other area that the public has established use of? ☒Yes ☐No ☐NA

h. Describe location and type of existing and proposed discharges to waters of the state.

Existing discharges are made through roadway ditches and pipes along the project.

i. Will wastewater or stormwater be discharged into a wetland?	☒Yes ☐No ☐NA
If yes, will this discharged water be of the same salinity as the receiving water?	☐Yes ☒No ☐NA
j. Is there any mitigation proposed? If yes, attach a mitigation proposal.	☒Yes ☐No ☐NA

<Form continues on back>

6. Additional Information

In addition to this completed application form, (MP-1) the following items below, if applicable, must be submitted in order for the application package to be complete. Items (a) – (f) are always applicable to any major development application. Please consult the application instruction booklet on how to properly prepare the required items below.

a. A project narrative.

b. An accurate, dated work plat (including plan view and cross-sectional drawings) drawn to scale. Please give the present status of the proposed project. Is any portion already complete? If previously authorized work, clearly indicate on maps, plats, drawings to distinguish between work completed and proposed.

c. A site or location map that is sufficiently detailed to guide agency personnel unfamiliar with the area to the site.

d. A copy of the deed (with state application only) or other instrument under which the applicant claims title to the affected properties.

e. The appropriate application fee. Check or money order made payable to DENR.

f. A list of the names and complete addresses of the adjacent waterfront (riparian) landowners and signed return receipts as proof that such owners have received a copy of the application and plats by certified mail. Such landowners must be advised that they have 30 days in which to submit comments on the proposed project to the Division of Coastal Management.

Name See attached letters to adjacent riparian land owners	Phone No.
Address	
Name	Phone No.
Address	
Name	Phone No.
Address	

g. A list of previous state or federal permits issued for work on the project tract. Include permit numbers, permittee, and issuing dates.

h. Signed consultant or agent authorization form, if applicable.

i. Wetland delineation, if necessary.

j. A signed AEC hazard notice for projects in oceanfront and inlet areas. *(Must be signed by property owner)*

k. A statement of compliance with the N.C. Environmental Policy Act (N.C.G.S. 113A 1-10), if necessary. If the project involves expenditure of public funds or use of public lands, attach a statement documenting compliance with the North Carolina Environmental Policy Act.

7. Certification and Permission to Enter on Land

I understand that any permit issued in response to this application will allow only the development described in the application. The project will be subject to the conditions and restrictions contained in the permit.

I certify that I am authorized to grant, and do in fact grant permission to representatives of state and federal review agencies to enter on the aforementioned lands in connection with evaluating information related to this permit application and follow-up monitoring of the project.

I further certify that the information provided in this application is truthful to the best of my knowledge.

Date 6/19/18

Print Name for Philip S. Harris, III, P.E.

Signature Mark C. Rik III

Please indicate application attachments pertaining to your proposed project.

☒DCM MP-2 Excavation and Fill Information

☐DCM MP-3 Upland Development

☐DCM MP-4 Structures Information

☒DCM MP-5 Bridges and Culverts

Form DCM MP-2

EXCAVATION and FILL

(Except for bridges and culverts)

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

Describe below the purpose of proposed excavation and/or fill activities**. All values should be given in feet.**

	Access Channel (NLW or NWL)	Canal	Boat Basin	Boat Ramp	Rock Groin	Rock Breakwater	Other (excluding shoreline stabilization)
Length							
Width							
Avg. Existing Depth					NA	NA	
Final Project Depth					NA	NA	

1. EXCAVATION

☐ *This section not applicable*

a. Amount of material to be excavated from below NHW or NWL in cubic yards.
N/A

b. Type of material to be excavated.
soil

c. (i) Does the area to be excavated include coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.
☒CW 7.4 ☐SAV _____ ☐SB _____
☐WL _____ ☐None

(ii) Describe the purpose of the excavation in these areas:
Excavation due to roadway construction.

d. High-ground excavation in cubic yards.
N/A

2. DISPOSAL OF EXCAVATED MATERIAL

☐ *This section not applicable*

a. Location of disposal area.
Proposed road bed

b. Dimensions of disposal area.
42 ft x 20,000 ft (Proposed road bed)

c. (i) Do you claim title to disposal area?
☒Yes ☐No ☐NA

(ii) If no, attach a letter granting permission from the owner.

d. (i) Will a disposal area be available for future maintenance?
☐Yes ☒No ☐NA

(ii) If yes, where?

e. (i) Does the disposal area include any coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.
☐CW _____ ☐SAV _____ ☐SB _____
☐WL _____ ☒None

(ii) Describe the purpose of disposal in these areas:
N/A

f. (i) Does the disposal include any area in the water?
☐Yes ☒No ☐NA

(ii) If yes, how much water area is affected?

3. SHORELINE STABILIZATION

☐ This section not applicable

(If development is a wood groin, use MP-4 – Structures)

a. Type of shoreline stabilization:
☐Bulkhead ☒Riprap ☐Breakwater/Sill ☐Other: _____

b. Length: 1,250 ft
Width: 7.5 ft

c. Average distance waterward of NHW or NWL: 5 ft.

d. Maximum distance waterward of NHW or NWL: 7.0 ft

e. Type of stabilization material:
Rip rap

f. (i) Has there been shoreline erosion during preceding 12 months?
☐Yes ☒No ☐NA
(ii) If yes, state amount of erosion and source of erosion amount information.

g. Number of square feet of fill to be placed below water level.
Bulkhead backfill _____ Riprap 435
Breakwater/Sill _____ Other _____

h. Type of fill material.
Rip rap

i. Source of fill material.
Local quarry

4. OTHER FILL ACTIVITIES

☐ This section not applicable

(Excluding Shoreline Stabilization)

a. (i) Will fill material be brought to the site? ☒Yes ☐No ☐NA
If yes,
(ii) Amount of material to be placed in the water 3,050 sqft
(iii) Dimensions of fill area varies
(iv) Purpose of fill
Culvert installation and road widening

b. (i) Will fill material be placed in coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.
☒CW 11.8 ☒SAV 188 ☐SB _____
☒WL 45,300 ☐None
(ii) Describe the purpose of the fill in these areas:
Roadway construction

5. GENERAL

a. How will excavated or fill material be kept on site and erosion controlled?
NCDOT Design Standards in Sensitive Watersheds

b. What type of construction equipment will be used (e.g., dragline, backhoe, or hydraulic dredge)?
Cranes, sheet pile driving equipment, grading equipment, bull dozers, and large trucks

c. (i) Will navigational aids be required as a result of the project?
☐Yes ☒No ☐NA
(ii) If yes, explain what type and how they will be implemented.

d. (i) Will wetlands be crossed in transporting equipment to project site? ☐Yes ☒No ☐NA
(ii) If yes, explain steps that will be taken to avoid or minimize environmental impacts.

6/19/18
Date

for NCDOT- Philip S. Harris, III, P.E.
Applicant Name

Applicant Signature

R-5014
Project Name

Form DCM MP-5

BRIDGES and CULVERTS

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

1. BRIDGES

☒ *This section not applicable*

a. Is the proposed bridge:
☐Commercial ☐Public/Government ☐Private/Community

b. Water body to be crossed by bridge: _____

c. Type of bridge (construction material): _____

d. Water depth at the proposed crossing at NLW or NWL: _____

e. (i) Will proposed bridge replace an existing bridge? ☐Yes ☐No
If yes,
(ii) Length of existing bridge: _____
(iii) Width of existing bridge: _____
(iv) Navigation clearance underneath existing bridge: _____
(v) Will all, or a part of, the existing bridge be removed? (Explain) _____

f. (i) Will proposed bridge replace an existing culvert? ☐Yes ☐No
If yes,
(ii) Length of existing culvert: _____
(iii) Width of existing culvert: _____
(iv) Height of the top of the existing culvert above the NHW or NWL: _____
(v) Will all, or a part of, the existing culvert be removed? (Explain) _____

g. Length of proposed bridge: _____

h. Width of proposed bridge: _____

i. Will the proposed bridge affect existing water flow? ☐Yes ☐No
If yes, explain: _____

j. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening? ☐Yes ☐No
If yes, explain: _____

k. Navigation clearance underneath proposed bridge: _____

l. Have you contacted the U.S. Coast Guard concerning their approval? ☐Yes ☐No
If yes, explain: _____

m. Will the proposed bridge cross wetlands containing no navigable waters? ☐Yes ☐No
If yes, explain: _____

n. Height of proposed bridge above wetlands: _____

2. CULVERTS

☐ *This section not applicable*

a. Number of culverts proposed: 3 culvert extensions sites

b. Water body in which the culvert is to be placed:
Tributaries to Colington Creek and Blounts Bay

< Form continues on back>

c. Type of culvert (construction material):
Corugated Aluminum Pipe

d. (i) Will proposed culvert replace an existing bridge? ☐Yes ☒No

If yes,

(ii) Length of existing bridge: _____

(iii) Width of existing bridge: _____

(iv) Navigation clearance underneath existing bridge: _____

(v) Will all, or a part of, the existing bridge be removed? (Explain)

e. (i) Will proposed culvert replace an existing culvert? ☐Yes ☒No

If yes,

(ii) Length of existing culvert(s): _____

(iii) Width of existing culvert(s): _____

(iv) Height of the top of the existing culvert above the NHW or NWL: _____

(v) Will all, or a part of, the existing culvert be removed? (Explain)

f. Length of proposed culvert: 27 LF of 36" pipe, 25 LF of 48" pipe and 24 LF of 24" pipe

g. Width of proposed culvert: _____

h. Height of the top of the proposed culvert above the NHW or NWL.

_____

i. Depth of culvert to be buried below existing bottom contour.
0.0'

j. Will the proposed culvert affect navigation by reducing or increasing the existing navigable opening? ☐Yes ☒No

If yes, explain:

k. Will the proposed culvert affect existing water flow? ☐Yes ☒No

If yes, explain:

3. EXCAVATION and FILL

☐*This section not applicable*

a. (i) Will the placement of the proposed bridge or culvert require any excavation below the NHW or NWL? ☐Yes ☒No

If yes,

(ii) Avg. length of area to be excavated: _____

(iii) Avg. width of area to be excavated: _____

(iv) Avg. depth of area to be excavated: _____

(v) Amount of material to be excavated in cubic yards: _____

b. (i) Will the placement of the proposed bridge or culvert require any excavation within coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☐CW _____ ☐SAV _____ ☐SB _____

☐WL _____ ☒None

(ii) Describe the purpose of the excavation in these areas:

c. (i) Will the placement of the proposed bridge or culvert require any high-ground excavation? ☐Yes ☒No

If yes,

(ii) Avg. length of area to be excavated: _____

(iii) Avg. width of area to be excavated: _____

(iv) Avg. depth of area to be excavated: _____

(v) Amount of material to be excavated in cubic yards: _____

d. If the placement of the bridge or culvert involves any excavation, please complete the following:

(i) Location of the spoil disposal area: N/A

(ii) Dimensions of the spoil disposal area: _____

(iii) Do you claim title to the disposal area? ☐Yes ☐No (*If no, attach a letter granting permission from the owner.)*

(iv) Will the disposal area be available for future maintenance? ☐Yes ☐No

(v) Does the disposal area include any coastal wetlands/marsh (CW), submerged aquatic vegetation (SAVs), other wetlands (WL), or shell bottom (SB)?

☐CW ☐SAV ☐WL ☐SB ☐None

If any boxes are checked, give dimensions if different from (ii) above.

(vi) Does the disposal area include any area below the NHW or NWL? ? ☐Yes ☐No

If yes, give dimensions if different from (ii) above.

e. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed below NHW or NWL? ☒Yes ☐No

If yes,

(ii) Avg. length of area to be filled: 25 LF

(iii) Avg. width of area to be filled: 10 LF

(iv) Purpose of fill: To install culvert extensions

f. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed within coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☒CW 38 ☐SAV _____ ☐SB _____

☐WL _____ ☐None

(ii) Describe the purpose of the excavation in these areas:

g. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed on high-ground? ☐Yes ☒No

If yes,

(ii) Avg. length of area to be filled: _____

(iii) Avg. width of area to be filled: _____

(iv) Purpose of fill:

4. GENERAL

a. Will the proposed project require the relocation of any existing utility lines? ☒Yes ☐No

If yes, explain: Overhead utility lines for power, CATV will be relocated resulting in 0.19 ac. of hand clearing and <0.01 ac. of fill. A 12-inch water main will be relocated resulting in no impact to coastal wetlands.

If this portion of the proposed project has already received approval from local authorities, please attach a copy of the approval or certification.

b. Will the proposed project require the construction of any temporary detour structures? ☐Yes ☒No

If yes, explain:

< Form continues on back>

c. Will the proposed project require any work channels? ☐Yes ☒No

If yes, complete Form DCM-MP-2.

d. How will excavated or fill material be kept on site and erosion controlled?

NCDOT Design Standards in Sensitive Watersheds will be utilized.

e. What type of construction equipment will be used (for example, dragline, backhoe, or hydraulic dredge)?

Backhoe, dump trucks

f. Will wetlands be crossed in transporting equipment to project site? ☐Yes ☒No

If yes, explain steps that will be taken to avoid or minimize environmental impacts.

g. Will the placement of the proposed bridge or culvert require any shoreline stabilization? ☐Yes ☒No

If yes, complete form MP-2, Section 3 for Shoreline Stabilization only.

6/19/18
Date

R-5014
Project Name

NCDOT Philip S. Harris III P.E.
Applicant Name

for Michael C. Bill III
Applicant Signature

Environmental Quality

ROY COOPER
Governor

May 1, 2018

Mr. Philip S. Harris, P.E., CPM
Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: EEP Mitigation Acceptance Letter:

R-5014, SR 1217 (Collington Road) Improvements from US 158 (Croatan Highway) to Existing Dead End, Dare County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the stream mitigation for the subject project. Based on the information supplied by you on April 29, 2018, the impacts are located in CU 03010205 of the Pasquotank River basin in the Northern Outer Coastal Plain (NOCP) Eco-Region, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Pasquotank	03010205	NOCP	0	0	0	0.67	0	0.16

*Some of the impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

This mitigation acceptance letter replaces the mitigation acceptance letter issued on April 27, 2018. DMS commits to implementing sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill
DMS Asset Management Supervisor

Cc: Mr. Kyle Barnes, USACE – Washington Regulatory Field Office
Ms. Amy Chapman, NC Division of Water Resources
File: R-5014 Revised

North Carolina Department of Cultural Resources

State Historic Preservation Office

Claudia Brown, Acting Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

April 27, 2011

MEMORANDUM

TO: Greg Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: Claudia Brown P&E for Claudia Brown

SUBJECT: Improvements to SR 1217 (Colington Road), R-5014, Dare County, ER 11-0555

Thank you for your memorandum of March 31, 2011, concerning the above project.

There are no known archaeological sites within the proposed project area. Based on our knowledge of the area, it is unlikely that any archaeological resources that may be eligible for inclusion in the National Register of Historic Places will be affected by the project. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

We are unable to comment on the potential effect of this project on cultural architectural or historic resources until we receive further information. Please forward more information on the proposed improvements and maps showing any proposed right-of-way takings.

Please note, the eastern most portion of Colington Road is located within or adjacent to the Wright Brothers National Memorial (WBNM), which is listed in the National Register of Historic Places. The WBNM Visitors' Center, located approximately 0.6 miles north of Colington Road, is a National Historical Landmark.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Doug Stover, National Park Service, Doug_Stover@nps.gov
State Clearinghouse

Federal Aid # *TIP #* R-5014 *County*: Dare

CONCURRENCE FORM FOR PROPERTIES NOT ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

Project Description:

On October 16, 2012, representatives of the

- ☒ North Carolina Department of Transportation (NCDOT)
- ☐ Federal Highway Administration (FHWA)
- ☒ North Carolina State Historic Preservation Office (HPO)
- ☐ Other

Reviewed the subject project at historic architectural resources photograph review session/consultation and

All parties present agreed

- ☐ There are no properties over fifty years old within the project's Area of Potential Effects (APE).
- ☐ There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's APE.
- ☑ There are properties over fifty years old within the project's APE, but based on the historical information available and the photographs of each property, the properties identified as 2-37 are considered not eligible for the National Register and no further evaluation of them is necessary. Photographs of these properties are attached.
- ☐ There are no National Register-listed or Study Listed properties within the project's APE.
- ☐ All properties greater than 50 years of age located in the APE have been considered at this consultation, and based upon the above concurrence, all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- ☑ More information is requested on properties 1. Wright Brothers National Memorial (NHL)

Signed:

Katherine L. Hulband — October 16, 2012

Representative, NCDOT — Date

FHWA, for the Division Administrator, or other Federal Agency — Date

Representative, HPO — Date

Renee Gledhill-Earley — 10-16-12

State Historic Preservation Officer — Date

If a survey report is prepared, a final copy of this form and the attached list will be included.

Wright Brothers National Memorial (NHL) Boundaries.
Colington Road runs through the boundary.

Federal Aid #: STP-1217(6) *TIP #:* **R-5014** *County*: Dare

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Operational and Safety Improvements to Colington Road (SR 1217) from End to US 158 (Croatan Highway)

On October 20, 2015, representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [x] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (HPO)
- [ ] Other

Reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

Signed:

Kate Husband — 10/20/2015
Representative, NCDOT — Date

10-20-15
FHWA, for the Division Administrator, or other Federal Agency — Date

Renee McAskill-Early — 10.20.15
Representative, HPO — Date

Property and Status	Alternative	Effect Finding	Reasons
Property No. 1 **Wright Brothers National Memorial** National Register Listed National Memorial		No Effect	Resurfacing only in the boundary of the Property.

Initialed: NCDOT KLH FHWA DB HPO

FHWA Intends to use the SHPO's concurrence as a basis for a "de minimis" finding for the following properties, pursuant to Section 4(f):

Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

September 14, 2016

To:

Ron Lucas	Gary Lovering, PE
Travis Wilson	Greg Dickey, PE
Tracey Wheeler	Shawn Mebane, PE
Kyle Barnes	Bo Hemphill, PE
Cynthia Van Der Wiele, PhD	Chris Rivenbark
Gary Jordan	Jay A. McInnis, PE
Garcy Ward	Mark Staley
Amy Chapman	David Harris, PE
Stephen Lane	Cathy Brittingham

From: Paul Atkinson, PE
Project Manager – TIP East

Subject: **Final minutes of the 30% Hydraulic Design Review (4B) Meeting on August 17, 2016 for R-5014**: SR 1217 (Colington Rd.) from dead end to US-158 Croatan Highway in Kill Devil Hills in Dare County.

The "4B" Meeting for R-5014 was held on August 17, 2016 at 9:45 AM in the NCDOT Hydraulics Conference Room, at the Century Center Complex in Raleigh, NC. The following were in attendance.

Participant:

Team Members

Ron Lucas, FHWA (absent)
Travis Wilson, NCWRC (present)
Garcy Ward, DWR (absent)
Cathy Brittingham, NCDCM (present)
Cynthia Van Der Wiele, EPA (phone)
Stephen Lane, NCDCM (absent)
Tracey Wheeler, USACE (absent)
Gary Jordan, USFWS (present)

Support Staff

Gary Lovering, NCDOT-Roadway Design (present)
Shawn Mebane, NCDOT-Division 1 (absent)
Greg Dickey, NCDOT-SMU (absent)
Paul Atkinson, NCDOT-Hydraulics (present)
Bo Hemphill, NCDOT-Utilites (absent)
Chris Rivenbark, NCDOT-NES (present)
David Harris, NCDOT-REU (absent)
Jay A. McInnis, NCDOT-PDEA (present)
Mark Staley, NCDOT-REU (present)

Other Attendees
Monte Matthews, USACE
Greg Daisey, NCDCM
Kyle Barnes, USACE
Amy Chapman, DEQ
Dock Rosenthal, NCDOT-TPB
Kelvin Martin, NCDOT-Utilities
Janaki Patel, NCDOT-Hydraulics
Craig Freeman, NCDOT-Hydraulics
Angela Welsh, Albemarle RPO (phone)
Randy Midgett, Division 1 District Engineer (phone)
Ken Riley, NMFS (phone)

The meeting began with PDEA explaining that the 4A form had not been signed at the 4A meeting because the Park Service wanted to add a Multiuse Path to the project. The form has since been distributed to be signed by DocuSign.

The "4B" Meeting began with Craig Freeman (NCDOT-Hydraulics) giving a brief overview of the project and that he would go through the project sheet by sheet. Craig then started a project review at roadway sheet 4.

Sheets 4, 5:

No comments.

Sheet 6:

Proposed roadway ditches will tie into an existing system. There is a cross pipe that outfalls to the canal, ultimately going into the sound. NES will check if the canal is jurisdictional. DEQ asked if there is any kind of treatment. The roadway ditches will be designed at minimum or less than minimum slope with 3:1 side slopes and are expected to meet grass swale criteria.

Sheet 7:

Roadway ditches will outlet to wetland locations or existing outlets with rip rap if needed to slow velocities at the outlet. USACE asked if the rip rap will be in wetlands; which they will not be. DEQ asked if the drainage will go into a jurisdictional stream. The outlet is into a jurisdictional stream and will meet swale criteria. NCDCM wanted to know about CAMA wetland impacts. Exact impacts to CAMA wetlands cannot be determined at this time because these are only conceptual plans but will minimize impacts as much as possible. NCDCM requested that impacts to CAMA wetlands be avoided and minimized to the maximum extent practicable, including considering steepening the fill slope and any other appropriate measures if needed. DEQ asked what the drainage area was for the crossing; however the drainage area is indeterminate. USACE asked about lengths on pipe extensions; this is not known at this time and exact lengths will be determined during final design. NCDCM requested that existing use of Public Trust waters be maintained.

Sheet 8:

A pocket of wetlands at -L- station 71+50 will be mostly filled in due to the proposed alignment with an equalizer pipe between the two wetlands. Craig asked whether this would be considered a total take, to which USACE replied it would be. Given that, Craig responded that the pipe size would likely be reduced from the current 36" equalizer pipe size to an appropriately sized pipe based on hydraulic design. NES would like the acreage of total take to be noted on the Impact Summary Sheet. USACE asked if it will show as a total take, and NES replied yes but mitigation ratios would need to be decided.

Sheet 9:

The existing bridges are going to be retained and the proposed grade will tie into the existing bridges. NCDCM said there was some discussion as to whether there were one or two existing mitigation sites; currently only one is marked on the plans. NCDCM stated that the mitigation site (Colington Cut) should be marked and avoided. USACE will investigate whether it was used for mitigation. It was agreed that this issue would be resolved outside the "4B" meeting. SAVs are not impacted.

After the meeting, NCDCM provided the following comments:

> According to NCDCM records, NCDCM determined in 2003 that 0.09 acres of the Colington Cut mitigation site was successful. This left a deficit of 0.41 acres of restored coastal marsh wetland mitigation associated with the Colington Cut wetland mitigation site. In subsequent years, the DMS (referred to as the EEP at that time), provided a debit to account for the deficit at Colington Cut. However, because NCDOT received 0.09 acres of credit for successful Coastal Marsh wetland mitigation at this site, this existing mitigation site should be marked on the work plan and permit drawings, and impacts to the mitigation site should be avoided. It is NCDCM's understanding that NCDOT abandoned the unsuccessful portions of the Colington Cut mitigation site, not the entire mitigation site. If impacts to the Colington Cut and Colington Creek mitigation sites can be avoided by the R-5014 project, then there won't be a need to delve further into the details (such as where precisely is the successful 0.09 acres at the Colington Cut mitigation site).

Sheet 10:

There are pipe extensions and roadway ditches ending in wetland areas which may require rip rap to make sure they are not erosive. NCDCM requested that impacts to CAMA wetlands be avoided and minimized to the maximum extent practicable, including considering steepening the fill slope and any other appropriate measures if needed. Also, NCDCM requested that existing use of Public Trust waters be maintained. NCDOT will minimize impacts as much as practicable.

Sheet 11:

No comments.

Sheet 12:

The cross pipes will be retained and extended. Roadway ditches outlet into existing outlets. 3:1 slopes will be used. DEQ asked, what is the length of the ditches to which Hydraulics responded, the ditch on sheet 12 is roughly 500 feet in length. NCDCM asked if there will be impacts to the Colington Creek Mitigation Site. Existing drainage patterns will be maintained to Colington Creek Mitigation Site. There may possibly be excavation required to replace the existing pipe which may outlet into the wetland; additional surveys will be conducted to determine if this is the case. USACE asked whether CAMA has agreed with it being a mitigation site; NCDCM indicated they will check.

After the meeting, DCM submitted these comments:

> DCM accepted the Colington Cut mitigation site as successful in a letter to NCDOT dated October 15, 1999.

Sheet 13:

No comments.

Sheet 14:

Ditches will outlet into wetlands with rip rap at the outlet if needed. NCDCM stated that it is unusual to have fill in SAV areas and mitigation will be required for any impacts. NMFS has concerns about the extents of the seagrass limits and the existing surveys. There was discussion at the July 2015 on-site meeting and there was agreement to hold the toe of slope (line of rip rap) to avoid SAV impacts. Roadway Design stated the fill slope in SAV as currently shown may not be accurate and will investigate and correct as necessary. USEPA is concerned about sensitive resources and aesthetics for stabilizing side slopes and asked if anything other than rip rap could be used. Other options will be evaluated. USACE asked about what the total impacts are, but they are unknown at this stage in design. NCDCM would like to have another meeting about this site before 4C. This meeting will be coordinated through NCDOT Roadway Design and the agencies.

Sheet 15:

Roadway ditches will end at wetlands. USACE pointed out that in identifying existing mitigation sites, more research should be done for private mitigation sites, and that there may be a preservation site on the Go Kart property. NCDCM stated that it is unusual to have fill in SAV areas and mitigation will be required for any impacts.

Sheet 16:

A pedestrian bridge has been roughly sketched into the 4B plans. The bridge provides drainage for the ditch between the roadway and multiuse path. Rip rap will be used to ensure the velocities are nonerosive at the outlet. Roadway asked if the ditch on the back side of the path was needed or can water run over the multiuse path. This will be discussed further between Hydraulics and Roadway Design.

Sheets 17, 18, 19, 20:

No jurisdictional features.

General Comments:

NCDCM asked if there will be utility relocation impacts on this project. Utilities confirmed there will be utility relocations. NCDCM wants utility impacts included at 4C but NES stated that this will depend on the utility permit schedule and may not be complete by 4C meeting.

NCDCM stated a fisheries moratorium will probably be on this project.

NES said there will be a couple of moratoria. April 1-September 30 is primarily an SAV moratorium for in water work.

NMFS said growth of seagrass is from April 1-September 30 and NMFS would request and in water work moratorium from April 1-June 30.

There will be no detours; the work will be done in staged construction.

After the meeting:

NCDCM concurred with an in-water work moratorium from April 1 to September 30 to protect nursery habitat in waters adjacent to the project area during periods of high biological productivity.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

January 3, 2018

To:

Ron Lucas	Travis Wilson
Kyle Barnes	Chris Militshcer
Gary Jordan	Garcy Ward
Cathy Brittingham	Greg Daisey
Shane Staples	Ken Riley
Fritz Rhode	Pace Wilbur
Rachel Sweeney	Gary Lovering, PE
Kevin Fischer, PE	Shawn Mebane, PE
Pablo Hernandez, PE	Bo Hemphill, PE
Chris Rivenbark	Mark Staley
David Harris, PE	

From: Paul Atkinson, PE
Project Manager – TIP East

Subject: **Minutes of the Permit Drawing Review (4C) Meeting on December 20, 2017 for R-5014:** SR 1217 (Colington Rd.) from dead end to US-158 Croatan Highway in Kill Devil Hills in Dare County.

The 4C Meeting for R-5014 was held on December 20, 2017 at 10 am in the NCDOT Century Center Complex in Raleigh, NC. The following were in attendance.

Team Members

Ron Lucas, FHWA (absent)
Travis Wilson, NCWRC (absent)
Gary Jordan, USFWS (absent)
Shane Staples, NCDCM (phone)
Greg Daisey, NCDCM (phone)
Kyle Barnes, USACE (present)
Garcy Ward, DWR (present)
Cathy Brittingham, NCDCM (present)
Ken Riley, NMFS (phone)
Chris Militscher, EPA (absent)

Support Staff

Gary Lovering, NCDOT-Roadway Design (absent)
Shawn Mebane, NCDOT-Division 1 (absent)
Kevin Fischer, NCDOT-SMU (absent)
Paul Atkinson, NCDOT-Hydraulics (present)
Craig Freeman, NCDOT-Hydraulics (present)
Bo Hemphill, NCDOT-Utilites (absent)
Chris Rivenbark, NCDOT-NES (present)
David Harris, NCDOT-REU (absent)
Mark Staley, NCDOT-REU (phone)
Clay Willis, NCDOT-Division 1 (phone)

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
HYDRAULICS UNIT
1590 MAIL SERVICE CENTER
RALEIGH, NC 27699-1590

Telephone: (919) 707-6700
Fax: (919) 250-4108
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

The 4C Meeting began with Craig Freeman (NCDOT-Hydraulics) giving a brief overview of the project. Craig then started a permit drawing review, with discussions noted below (referenced by Permit Drawing Sheet number).

Sheet 2 of 41
Mark Staley questioned whether impacts shown at the toe of fill were adequate for construction. Clay Willis responded that he felt it was adequate, but would follow up on the issue.

Sheet 4 of 41
There was discussion of whether several JS waterbodies throughout the project were considered open water or streams, and thus whether it was appropriate to show stream lengths on the Summary Sheet. Discussion of Site 2 resulted in agreement that linear feet of stream should be shown only for the portion of JS upstream of the existing pipe.

Sheet 8 of 41
Chris Rivenbark stated that although it was agreed that Site 5 was a total take, the hatching should be removed from the portion that is not actually being filled.

Sheet 13 of 41
Cathy Brittingham questioned whether any existing parking impacted at the Colington Cut site would be replaced. Paul Atkinson responded that since it was paved now, we would have to replace it in kind. Cathy asked that the SMP Narrative include a statement that the parking is being maintained.

Sheet 16 of 41
Garcy Ward questioned whether stream lengths should be shown for Site 9. Kyle Barnes responded no, that it was considered open water, and Clay Willis confirmed that it was a canal, not a stream.

Cathy Brittingham asked about the "Remove wooden pier to Right of Way" note, and whether it might represent a loss of use, or potentially generate a comment from the property owner. Craig Freeman explained that the intent was to remove that portion of the wooden pier that would be within the proposed right of way, with the portion outside the right of way remaining and still usable. It was felt that the property owner had been informed, but Clay Willis responded that he would follow up on it. *Clay forwarded an email the following day from Michelle Pitman, Div. 1 Right of Way Office, indicating that as of 11/30/17 contact with property owner had not yet been made by the R/W agent. However, Michelle stated that the issue would be included in the discussion with the property owner, and that the property owner would be compensated.*

Sheet 25 of 41
After discussion, it was agreed that Site 12 was considered open water on both sides, and therefore would not show as linear feet on the Summary Sheet. However, it was requested that TS impacts be shown on the right side for temp. dewatering, and possibly HC if needed. Craig Freeman stated he would follow up on this and revise as necessary.

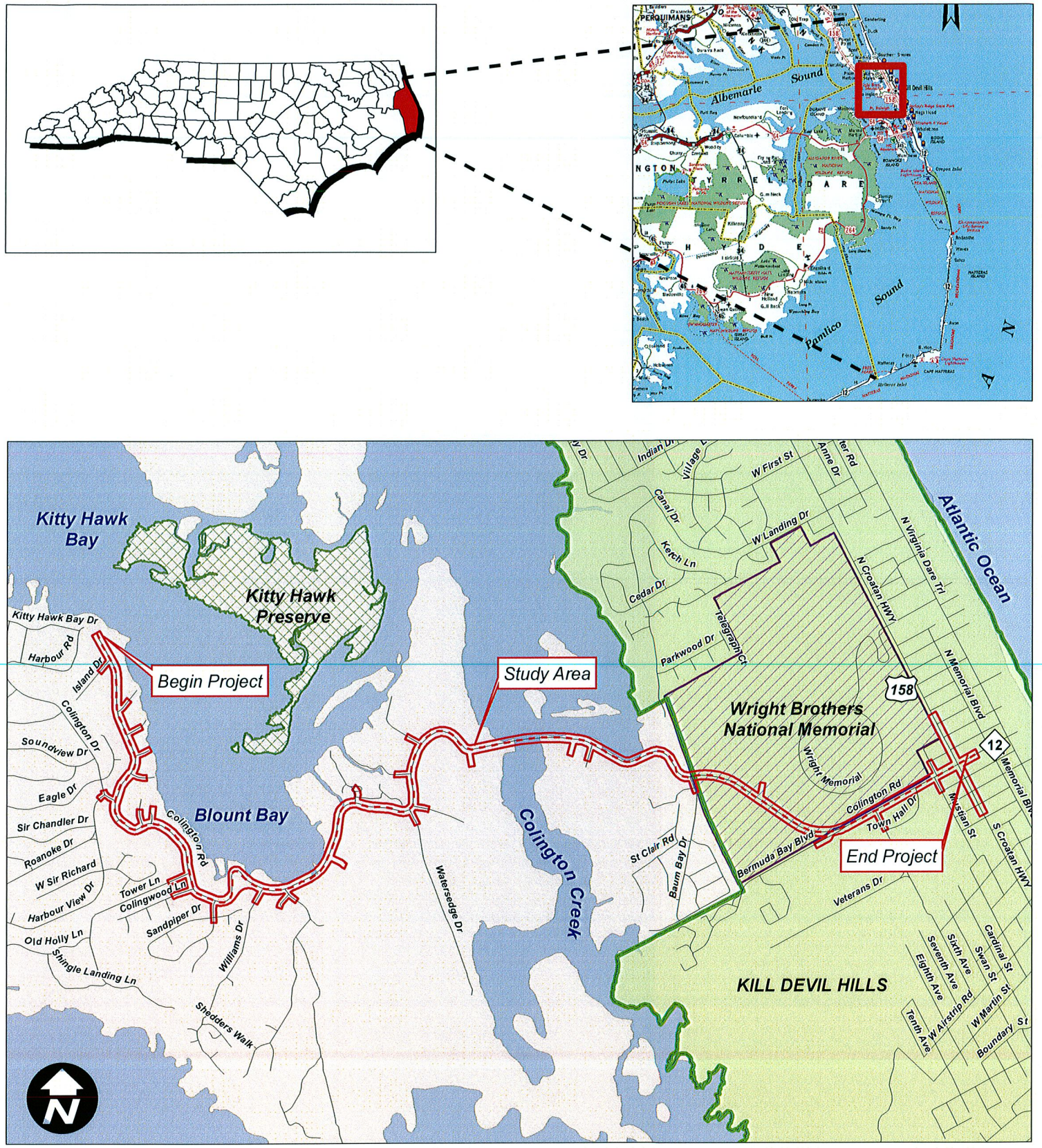
Cathy Brittingham asked if the boundaries were shown for the Collington Creek Mitigation Site and whether it could be labeled and/or shown on a separate sheet. Craig Freeman responded that it appeared the boundary was shown, and Chris Rivenbark stated he would check to ensure that they were. Craig Freeman stated that he would make sure it was clearly labeled (currently there is a label but it is cut off).

Sheet 31 of 41
Craig Freeman noted that SAV impacts had been reduced by using rock fill, and that a note indicating rock fill would be added to the plans. Shane Staples and Ken Riley confirmed that due to the minimal amount of SAV impacts, mitigation would not be required.

General
Garcy Ward requested that the Stormwater Management Plan include the grass swale data table. Paul Atkinson and Chris Rivenbark explained that the grass swale table was not included since it is only used for grass swales that are required, i.e. when buffers are present; however, it was agreed that the grass swale data would be provided separately.

There was a question of whether the designations of SA and HQW (as shown on the SMP) were correct for Colington Creek, or whether it was just SC waters. NCDOT will check and revise as necessary.

With no further comments, the meeting adjourned.



North Carolina Department of Transportation
Project Development and Environmental Analysis Unit

SR 1217 (Colington Road) from End of Road to US 158 (Croatan Highway)
Dare County
TIP Project **R-5014**

Figure 1

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

General Project Information

WBS Element:	41162.1.1	**TIP Number:**	R-5014	**Project Type:**	Roadway Widening
NCDOT Contact:	Craig Freeman PE	**Contractor / Designer:**	Craig Freeman PE	**Date:**	1/2/2018
Address:	1020 Birch Ridge Dr. Raleigh NC, 27610	**Address:**	1020 Birch Ridge Dr. Raleigh NC, 27610		
Phone:	919-707-6721	**Phone:**	919-707-6721		
Email:	cafreeman2@ncdot.gov	**Email:**	cafreeman2@ncdot.gov		
City/Town:	Kill Devil Hills	**County(ies):**	Dare		
River Basin(s):	Pasquotank	**CAMA County?**	Yes		
Wetlands within Project Limits?	Yes				

Project Description

Project Length (lin. miles or feet):	4.2 miles	**Surrounding Land Use:**	Residential

	Proposed Project	Existing Site
Project Built-Upon Area (ac.)	18.9 ac.	14.3 ac.
Typical Cross Section Description:	2 @ 11' lanes with 10' shoulders comprised of a 7' bike lane and 3' grass shoulder	2 @ 11.5' lanes with 3' grassed shoulder
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 19,300 Year: 2038	Existing: 13,970 Year: 2018

General Project Narrative: (Description of Minimization of Water Quality Impacts)

The proposed project will widen SR 1217 (Colington Rd) from dead end to US 158 Croatan Highway in Kill Devil Hills. This project will add two 7' bike lanes to address safety issues along this route. This project will also raise the grade in areas along the route that suffer from flooding during storm events and high wind driven tides. This will improve the safety of the road for the traveling public and emergency officials. The increase in road grade elevation has been minimized as much as practicable while attempting to improve the road navigability during flooding events. Roadway fill slopes have been designed to be 3:1 in jurisdictional areas except for in the subaquatic vegetation (SAV) areas where 2:1 slopes with rock plating have been utilized to minimize impacts. Ditch side slopes have also been designed to be 3:1 and where possible ditches have been designed to meet grass swale criteria. As part of this project the existing parking area at the Colington Cut mitigation site will be maintained.

Waterbody Information

Surface Water Body (1):	Colington Creek	**NCDWR Stream Index No.:**	03-01-56		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class SC (N. of Colington Rd)	Class SA (S. of Colington Rd)	
		Supplemental Classification:	HQW (S. of Colington Rd)		
Other Stream Classification:	SSNA				
Impairments:					
Aquatic T&E Species?	Comments:				
NRTR Stream ID:	Colington Creek			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element:	41162.1.1	TIP No.:	R-5014	County(ies):	Dare	Page	2	of	2

Additional Waterbody Information

Surface Water Body (2):	Blount Bay		**NCDWR Stream Index No.:**	03-01-56		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class SC (N. of Colington Rd)	Class SA (S. of Colington Rd)		
		Supplemental Classification:	HQW (S. of Colington Rd)			
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	Blount Bay			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

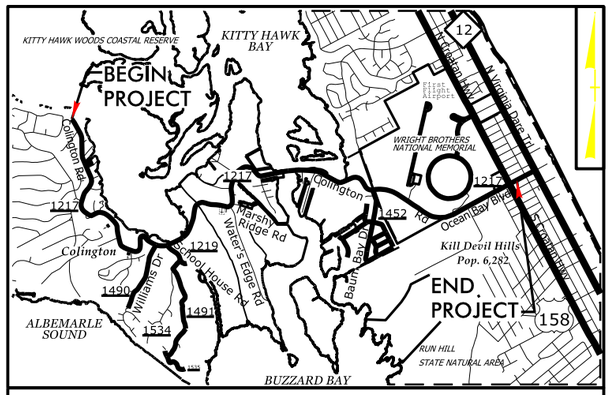
Surface Water Body (3):	Contiguous Canals		**NCDWR Stream Index No.:**	03-01-56		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class SC (N. of Colington Rd)	Class SA (S. of Colington Rd)		
		Supplemental Classification:	HQW (S. of Colington Rd)			
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	Contiguous Canals			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

09/08/99

TIP PROJECT: R–5014

CONTRACT:

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DARE COUNTY

ROW PLANS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–5014	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
41162.1.1	STP–1217(6)	PE
41162.2.1	STP–1217(6)	R/W & UTIL

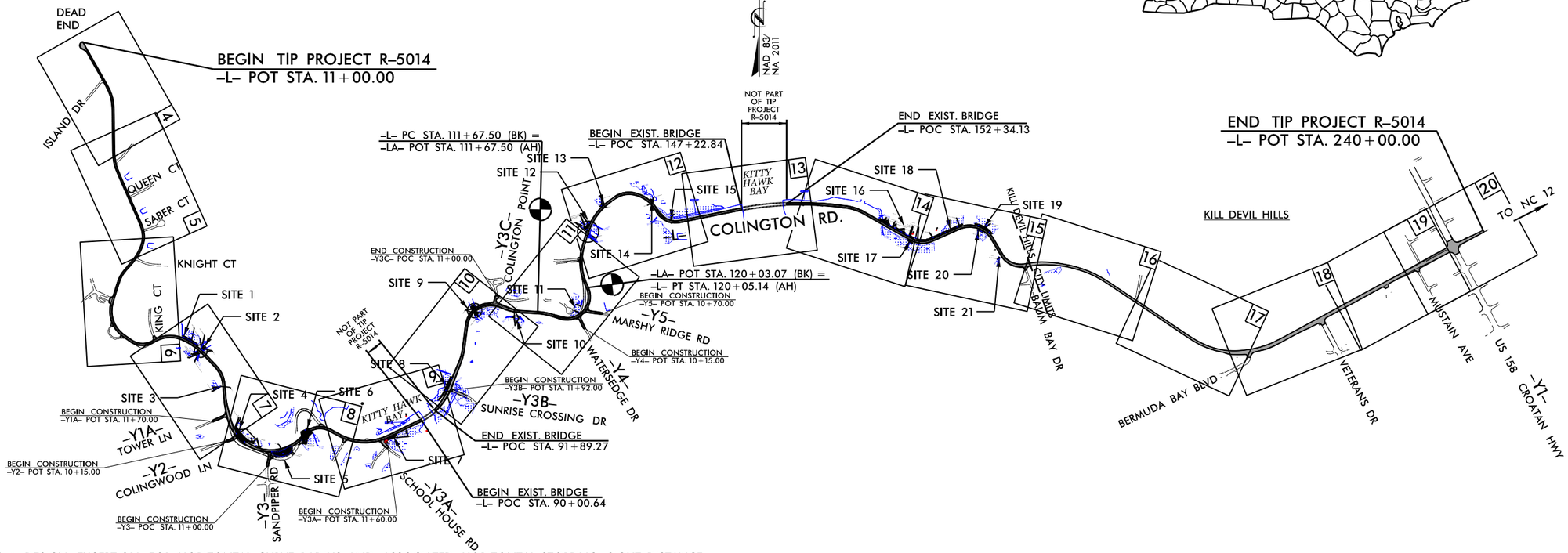
PERMIT DRAWING SHEET 1 OF 41

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: SR 1217 (COLINGTON RD.) FROM DEAD END TO US 158 CROATAN HIGHWAY IN KILL DEVIL HILLS

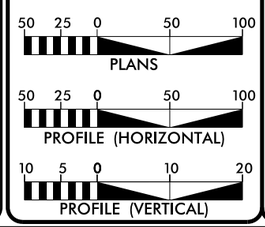
TYPE OF WORK: GRADING, DRAINAGE, PAVING & RESURFACING

WETLAND AND SURFACE WATER IMPACTS



THERE IS A DESIGN EXCEPTION FOR HORIZONTAL CURVE RADIUS AND ASSOCIATED HORIZONTAL STOPPING SIGHT DISTANCE.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF KILL DEVIL HILLS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 13,970
ADT 2038 = 19,300
DHV = 11 %
D = 65 %
T = 3 % *
V = 40 MPH

* TTST =1% DUAL 2%
FUNC CLASS = LOCAL
STATEWIDE TIER

PROJECT LENGTH

TOTAL LENGTH ROADWAY TIP PROJECT R–5014 = 4.204 MILES

Prepared in the Office of:
CALYX ENGINEERS + CONSULTANTS
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 18, 2017

LETTING DATE:
NOVEMBER 20, 2018

JOHNNY BANKS
CALYX E & C PROJECT MANAGER

STEPHEN C. BROWDE, PE
CALYX E & C PROJECT DESIGN ENGINEER

NCDOT CONTACT: GARY LOVERING, PE
ROADWAY DESIGN – PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

10242017
cafreeman2
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PERMIT DRAWING
SHEET 2 OF 41

CALYX
ENGINEERS + CONSULTANTS
6750 TRYON ROAD
CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
NC License # F-1333
Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

REVISIONS
8/17/99 RIGHT OF WAY REVISION - 9/28/2017 - ADJUSTED RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 30 AND 31.

SEE SHEET 4 OF 41 FOR ENLARGEMENT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=0.5 Ft.
FROM -L- STA. 52+00 TO STA. 53+93 LT

MATCH LINE -L- STA. 53+00.00 SEE SHEET 6

55+00

60+00

65+00

ALAIN J. TTEE PIRRONE
MONIKA C. TTEE PIRRONE
DB 2110 - PG 24
PB C - PG 167A

NANCY K. BALONIS
DB 1074 - PG 81

WILLIAM T. CAROON
DB 1417 - PG 101
PB C - PG 111A

JASON B. HILL
DB 38 - PG 99
DB 1695 - PG 27

TERRY BEASLEY
DB 864 - PG 210
PB C - PG 111A

GARLAND H. DUNSTAN, JR.
DB 1727 - PG 90

SHINGLE LANDING OF COLINGTON CORP
DB 1641 - PG 72

HARBRINGER LAND & TIMBER, LLC
DB 1932 - PG 176
PB 1 - PG 72

LEWIS R. BEASLEY
JUNE S. BEASLEY
DB 1936 - PG 351
PB C - PG 167A

SITE 1
SITE 2
SITE 3
SITE 4

HAND CLEARING
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
EXCAVATION IN WETLAND

Q10 = 0.7cfs
V10 = 0.8fps

Q10 = 2.9cfs
V10 = 1.4fps

Q10 = 2.5cfs
V10 = 1.2fps

SPECIAL CUT DITCH SEE DETAIL 'C'
SPECIAL CUT DITCH SEE DETAIL 'A'

COLLAR AND EXTEND EXISTING 36" CMP WITH 22 LF OF 36" CAAP
COLLAR AND EXTEND EXISTING 36" CMP WITH 15 LF OF 36" CAAP
COLLAR AND EXTEND EXISTING 36" CMP WITH 4 LF OF 36" CAAP
COLLAR AND EXTEND EXISTING 36" CMP WITH 4 LF OF 36" CAAP

JOSEPH JONES JR.
DB 2114 - PG 735

JANE C. BALDWIN
DB 124 - PG 651
DB 36 - PG 299

GARY LEE KENNEDY
DB 158 - PG 88
PB C - PG 178I

US CELLULAR

RICHARD A. COHEN
DB 1935 - PG 43
PB C - PG 167A

EDWARD G. COLLIER
DB 1703 - PG 256
PB G - PG 188

ISABEL LOPEZ
BLANDINA LOPEZ

SHINGLE LANDING OF COLINGTON CORP.
DB 1570 - PG 152
PB G - PG 212

COLINGTON RD 219' BST

MATCH LINE -L- STA. 66+50.00 SEE SHEET 8

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.0 Ft.
FROM -L- STA. 52+00 TO STA. 56+28 RT
FROM -L- STA. 56+54 TO STA. 59+90 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=0.5 Ft.
FROM -Y1A- STA. 12+00 TO STA. 13+15 RT

F F DENOTES FILL IN WETLAND
E E DENOTES EXCAVATION IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
HC HC DENOTES HAND CLEARING

100' 0' 100'
GRAPHIC SCALE

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
SEE SHEET 2G-2 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 22 AND 23 FOR -L- PROFILE
SEE SHEET 31 FOR -Y1A- PROFILE

1/8/2018
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PERMIT DRAWING
SHEET 3 OF 41

CALYX
ENGINEERS & CONSULTANTS
6750 TRYON ROAD
CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
NC License # P-1333
(formerly Mulkey Engineers & Consultants)

PROJECT REFERENCE NO.	SHEET NO.
R-5014	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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NAD 83/NA 2011

REVISIONS

8/17/99 RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 30 AND 31.

9/28/2017 - ADJUSTED RIGHT OF WAY REVISION

SEE SHEET 4 OF 41 FOR ENLARGEMENT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=0.5 Ft.
FROM -L- STA. 52+00 TO STA. 53+93 LT

MATCH LINE -L- STA. 53+00.00 SEE SHEET 6

MATCH LINE -L- STA. 66+50.00 SEE SHEET 8

55+00 60+00 65+00

SITE 1 — HAND CLEARING, FILL IN WETLAND, HAND CLEARING, SURFACE WATER IMPACTS
Q10 = 0.7cfs
V10 = 0.8fps
SPECIAL CUT DITCH SEE DETAIL 'C'
COLLAR AND EXTEND EXISTING 36" CMP WITH 22 LF OF 36" CAAP

SITE 2 — HAND CLEARING
COLLAR AND EXTEND EXISTING 36" CMP WITH 15 LF OF 36" CAAP

SITE 3 — HAND CLEARING, FILL IN WETLAND
Q10 = 2.5cfs
V10 = 1.2fps
SPECIAL CUT DITCH SEE DETAIL 'A'

SITE 4 — FILL IN WETLAND, HAND CLEARING
SPECIAL CUT DITCH SEE DETAIL 'C'

TEMPORARY SURFACE WATER IMPACTS
Q10 = 2.9cfs
V10 = 1.4fps
SPECIAL CUT DITCH SEE DETAIL 'A'

EXCAVATION IN WETLAND
SPECIAL CUT DITCH SEE DETAIL 'A'

HAND CLEARING
FILL IN WETLAND

COLLAR AND EXTEND EXISTING 36" CMP WITH 4 LF OF 36" CAAP
COLLAR AND EXTEND EXISTING 36" CMP WITH 4 LF OF 36" CAAP

ALAIN J. TTEE PIRRONE, MONIKA C. TTEE PIRRONE — DB 2110 - PG 24, PB C - PG 167A
LEWIS R. BEASLEY, JUNE E. BEASLEY — DB 1936 - PG 351, PB C - PG 167A
NANCY K. BALONIS — DB 1074 - PG 81
TERRY BEASLEY — DB 864 - PG 210, PB C - PG 111A
WILLIAM T. CAROON — DB 1417 - PG 101, PB C - PG 111A
JASON B. HILL — DB 38 - PG 99, DB 1695 - PG 27
GARLAND H. DUNSTAN, JR. — DB 1727 - PG 90
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HARBRINGER LAND & TIMBER, LLC — DB 1932 - PG 176, PB I - PG 72
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JANE C. BALDWIN — DB 124 - PG 651, DB 36 - PG 299
GARY LEE KENNEDY — DB 158 - PG 88, PB C - PG 178I
RICHARD A. COHEN — DB 1935 - PG 43, PB C - PG 167A
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EDWARD G. COLLIER — DB 1703 - PG 256, PB G - PG 188
ISABEL LOPEZ, BLANDINA LOPEZ
SHINGLE LANDING OF COLINGTON CORP. — DB 1570 - PG 152, PB G - PG 212

COLINGTON RD 219 BST
EXISTING R/W
WD RAMP
POND
FLAG POLE
CONC
DRAIN FIELD
GR
TOWER LINE
404

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
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FROM -L- STA. 56+54 TO STA. 59+90 RT

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SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 2:1, Front Ditch Slope
Min. D=0.5 Ft.
FROM -Y1A- STA. 12+00 TO STA. 13+15 RT

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E E DENOTES EXCAVATION IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
HC HC DENOTES HAND CLEARING

100' 0' 100'
GRAPHIC SCALE

NOTES:
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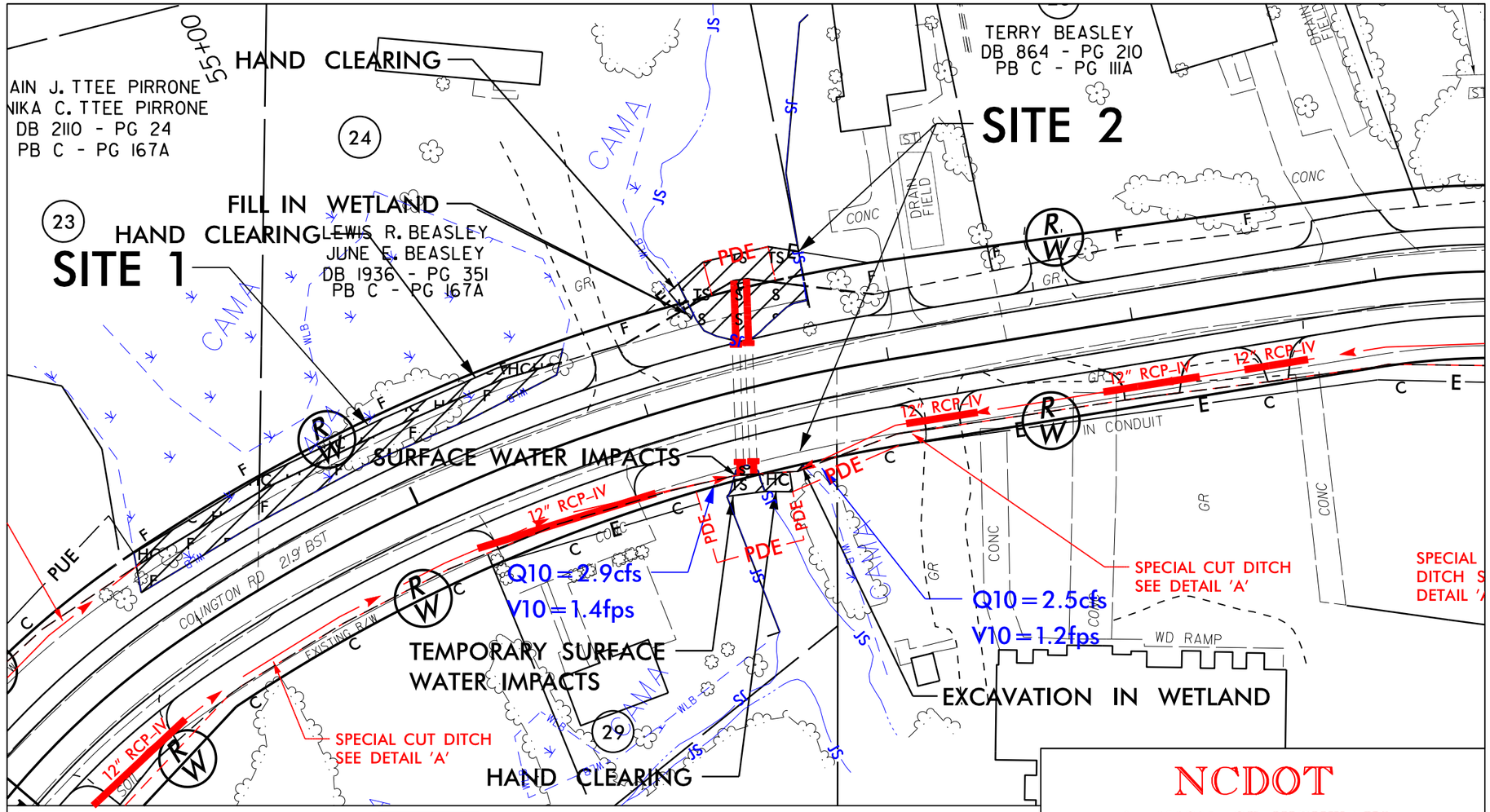

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

E E DENOTES EXCAVATION IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PLAN VIEW

100' 0' 100'

GRAPHIC SCALE

1/8/2018
cafreeman2
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NCDOT

DIVISION OF HIGHWAYS

DARE COUNTY

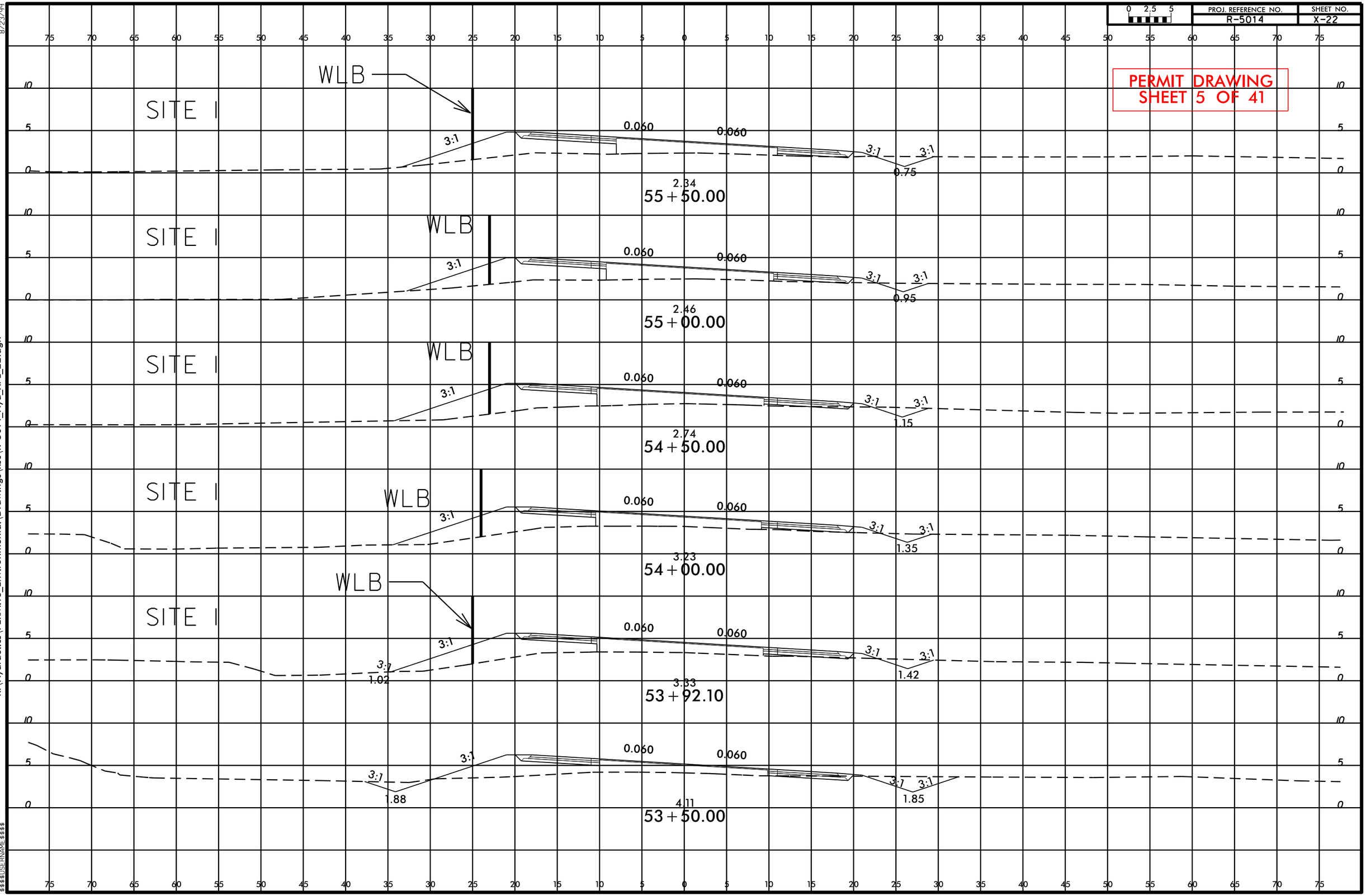
PROJECT: R-5014 (41162.1.1)

SHEET 4 OF 41 10/25/17

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-5014	X-22

PERMIT DRAWING
SHEET 5 OF 41



10/24/2017
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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-5014	X-23

PERMIT DRAWING
SHEET 6 OF 41

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10 5 0 10 5 0

0.021 0.021 3:1 3:1 3:1 1.61

3.05
58+50.00

0.020 0.020 3:1 3:1 3:1 1.46

2.57
58+00.00

0.020 0.020 3:1 3:1 3:1 1.31

2.56
57+50.00

0.040 0.040 3:1 3:1 3:1 1.16

2.38
56+98.52

ROCK PLATING

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WLB SITE 2

2.45
56+50.00

0.060 0.060 3:1 3:1 3:1 0.55

2.44
56+00.00

10/24/2017
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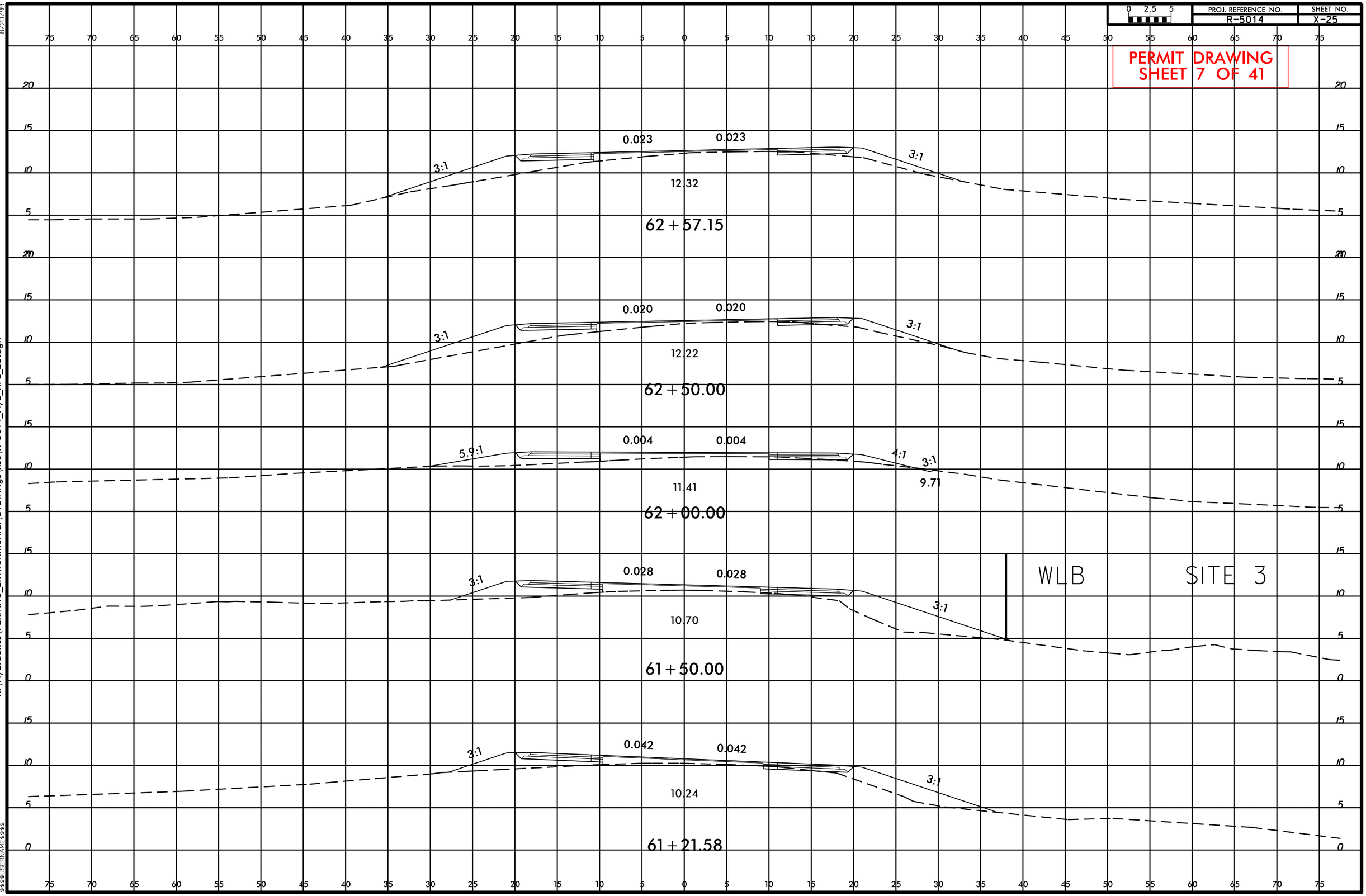
PERMIT DRAWING
SHEET 7 OF 41



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10/24/2017
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$$$$DGNNAME$$$$

8/17/99

REVISIONS

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

PERMIT DRAWING SHEET 8 OF 41

CALYX ENGINEERS + CONSULTANTS
6750 TRYON ROAD
CARY, NC 27518
phone 919.851.1912
CALYXengineers.com
NC License # P-0333
Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

DETAIL H
TOE PROTECTION
(Not to Scale)
NATURAL GROUND, d, 3:1 OR FLATTER, FILL SLOPE, GEOTEXTILE
d=1.5 Ft.
Type of Liner= Class B Rip-Rap
25 SY Geotextile
FROM -L- STA. 74+30 TO STA. 74+53 LT

DETAIL I
TOE PROTECTION
(Not to Scale)
Natural Ground, b, 3:1 or Flatter, Fill Slope, d, Geotextile
d=1.5 Ft.
b=5 Ft.
Type of Liner= 226 TONS Class B Rip-Rap
230 SY Geotextile
FROM -L- STA. 72+18 TO STA. 74+30 LT

DETAIL J
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 OR FLATTER, Front Ditch Slope
Min. D=0.5 Ft.
FROM -L- STA. 70+50 TO STA. 71+00 RT

DETAIL AA
CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D= 1.5 Ft.
FROM -L- STA. 69+12 TO STA. 69+50 RT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.0 Ft.
FROM -L- STA. 76+73 TO STA. 80+50 RT

MILTON R. HARTLEY
DB 184 - PG 373
DB 145 - PG 280
DB 167 - PG 687

HORACE B. HOOPER, JR.
DB 315 - PG 351
DB 1826 - PG 271

VIOLA P. WHITE
DB 655 - PG 753

LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614
44

HARBRINGER LAND & TIMBER, LLC
DB 315 - PG 351
DB 1848 - PG 331

PROPOSED R/W
5/8" REBAR W/ CAP
NO DEED REF
FOUND

COLINGTON RD 84.5' BST

43
COLINGTON UNITED CHURCH
DB 1826- PG 270
DB 291 - PG 748
DB 167 - PG 687
DB C - PG 274

EXISTING R/W

GRADE TO DRAIN

REMOVE

RETAIN

SITE 6

TOE PROTECTION
SEE DETAIL 'H'
44 TONS CLASS B
RIP RAP

COLLAR AND EXTEND
EXISTING 36" CMP WITH
11 LF OF 36" CAAP

SPECIAL CUT DITCH
SEE DETAIL 'A'

45
LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614

Q10=1.6cfs
V10=1.8fps

HAND CLEARING
FILL IN WETLAND

MATCH LINE -L- STA. 80+00.00
SEE SHEET 9

MATCH LINE -L- STA. 66+50.00
SEE SHEET 7

40
HARBRINGER LAND & TIMBER, LLC
DB 1932 - PG 176
PB L - PG 72
SITE 4

41
COLINGTON HARBOUR ASSOC.
DB 212 - PG 55
DB 167 - PG 687
DB 142 - PG 348
PB 3 - PG 12

TOE PROTECTION
SEE DETAIL 'I'
226 TONS CLASS B
RIP RAP

SITE 5

HAND CLEARING
FILL IN WETLAND

36

42

NANCY Z. ROTEN
DB 1821 - PG 229
PB 4 - PG 56

HOWARD E. SIMMONS, 3RD
DB 1675 - PG 188
PB 4 - PG 56

BRYAN J. BYRD
DB 1970 - PG 421
PB 4 - PG 56

BRIAN BYRD
DB 1801 - PG 419
PB 4 - PG 56

AMY L. BEASLEY
DB 1859 - PG 180
PB 4 - PG 56

MARY MARTHA ALDERTON
DB 1028 - PG 408
PB 4 - PG 56

CUT DITCH
SEE DETAIL 'AA'

SPECIAL CUT DITCH
SEE DETAIL 'J'

38
EMERALD COLINGTON RD HOLDINGS LLC
DB 2089 - PG - 845
PB E - PG 246

EDWARD G. COLLIER
DB 1703 - PG 256
PB G - PG 188

LUIS RODRIGEZ JR
DB 1928 - PG 242
PB 4 - PG 96

SANDPIPER RD 2010 BST

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEETS 22 AND 23 FOR -L- PROFILE
SEE SHEET 30 FOR -Y2- AND -Y3- PROFILE
GTD = GRADE TO DRAIN

100' 0' 100'
GRAPHIC SCALE

1/8/2018
cafreeman2
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8/17/99

REVISIONS

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

PERMIT DRAWING SHEET 9 OF 41

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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NAD 83/NA 2011

DETAIL H
TOE PROTECTION
(Not to Scale)
NATURAL GROUND, d, 3:1 OR FLATTER, FILL SLOPE, GEOTEXTILE
d=1.5 Ft.
Type of Liner= Class B Rip-Rap
25 SY Geotextile
FROM -L- STA. 74+30 TO STA. 74+53 LT

DETAIL I
TOE PROTECTION
(Not to Scale)
Natural Ground, 3:1 or Flatter Fill Slope, b, d, Geotextile
d=1.5 Ft.
b=5 Ft.
Type of Liner= 226 TONS Class B Rip-Rap
230 SY Geotextile
FROM -L- STA. 72+18 TO STA. 74+30 LT

DETAIL J
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 OR FLATTER, Front Ditch Slope
Min. D=0.5 Ft.
FROM -L- STA. 70+50 TO STA. 71+00 RT

DETAIL AA
CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D= 1.5 Ft.
FROM -L- STA. 69+12 TO STA. 69+50 RT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.0 Ft.
FROM -L- STA. 76+73 TO STA. 80+50 RT

MILTON R. HARTLEY
DB 184 - PG 373
DB 145 - PG 280
DB 167 - PG 687

HORACE B. HOOPER, JR.
DB 315 - PG 351
DB 1826 - PG 271

VIOLA P. WHITE
DB 655 - PG 753

LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614
44

HARBRINGER LAND & TIMBER, LLC
DB 315 - PG 351
DB 1848 - PG 331

PROPOSED R/W
NO DEED FOUND TO REF

COLINGTON RD 24.5' BST

43
COLINGTON UNITED CHURCH
DB 1826- PG 270
DB 291 - PG 748
DB 167 - PG 687
DB C - PG 274

EXISTING R/W
R = 268.73'
CHORD = 220.05'

GRADE TO DRAIN

REMOVE

RETAIN

SITE 6

TOE PROTECTION
SEE DETAIL 'H'
44 TONS CLASS B
RIP RAP

SPECIAL CUT DITCH
SEE DETAIL 'A'

COLLAR AND EXTEND
EXISTING 36" CMP WITH
11 LF OF 36" CAAP

45
LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614

Q10=1.6cfs
V10=1.8fps

HAND CLEARING
FILL IN WETLAND

MATCH LINE -L- STA. 80+00.00
SEE SHEET 9

MATCH LINE -L- STA. 66+50.00
SEE SHEET 7

40
HARBRINGER LAND & TIMBER, LLC
DB 1932 - PG 176
PB L - PG 72

SITE 4

41
COLINGTON HARBOUR ASSOC.
DB 212 - PG 55
DB 167 - PG 687
DB 142 - PG 348
PB 3 - PG 12

TOE PROTECTION
SEE DETAIL 'I'
226 TONS CLASS B
RIP RAP

SITE 5

42

NANCY Z. ROTEN
DB 1821 - PG 229
PB 4 - PG 56

HOWARD E. SIMMONS, 3RD
DB 1675 - PG 188
PB 4 - PG 56

BRYAN J. BYRD
DB 1970 - PG 421
PB 4 - PG 56

BRIAN BYRD
DB 1801 - PG 419
PB 4 - PG 56

AMY L. BEASLEY
DB 1859 - PG 180
PB 4 - PG 56

MARY MARTHA ALDERTON
DB 1028 - PG 408
PB 4 - PG 56

36
COLINGWOOD LN EAST

EMERALD COLINGTON RD HOLDINGS LLC
DB 2089 - PG - 845
PB E - PG 246

38

CUT DITCH
SEE DETAIL 'AA'

SPECIAL CUT DITCH
SEE DETAIL 'J'

GTD

EDWARD G. COLLIER
DB 1703 - PG 256
PB G - PG 188

LUIS RODRIGEZ JR
DB 1928 - PG 242
PB 4 - PG 96

SANDPIPER RD 2010 BST

75+00

70+00

404

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEETS 22 AND 23 FOR -L- PROFILE
SEE SHEET 30 FOR -Y2- AND -Y3- PROFILE
GTD = GRADE TO DRAIN

100' 0' 100'
GRAPHIC SCALE

1/8/2018
cafreeman2
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PROJ. REFERENCE NO.	SHEET NO.
R-5014	X-28

PERMIT DRAWING
SHEET 10 OF 41

SITE 4 WLB

0.060 0.060

3:1

0.82
67+50.00

-Y2- COLLINGWOOD LN

SITE 4 WLB

0.060 0.060

3:1

1.83
67+23.00

-Y2- COLLINGWOOD LN

SITE 4 WLB

0.060 0.060

3:1

3.89
67+00.00

-Y2- COLLINGWOOD LN

SITE 4 WLB

0.060 0.060

3:1 3:1

7.32
66+50.00

8/23/99

10242017
cafreeman2
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10/26/2017
cafreeman2
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0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-5014	X-31

PERMIT DRAWING
SHEET 11 OF 41

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

15 10 5 0

WLB SITE 5

3:1 3:1

1.46
73 + 50.00

WLB SITE 5

3:1 3:1

2.04
73 + 00.00

WLB SITE 5

3:1 3:1

2.51
72 + 50.00

WLB SITE 5

0.060 0.060

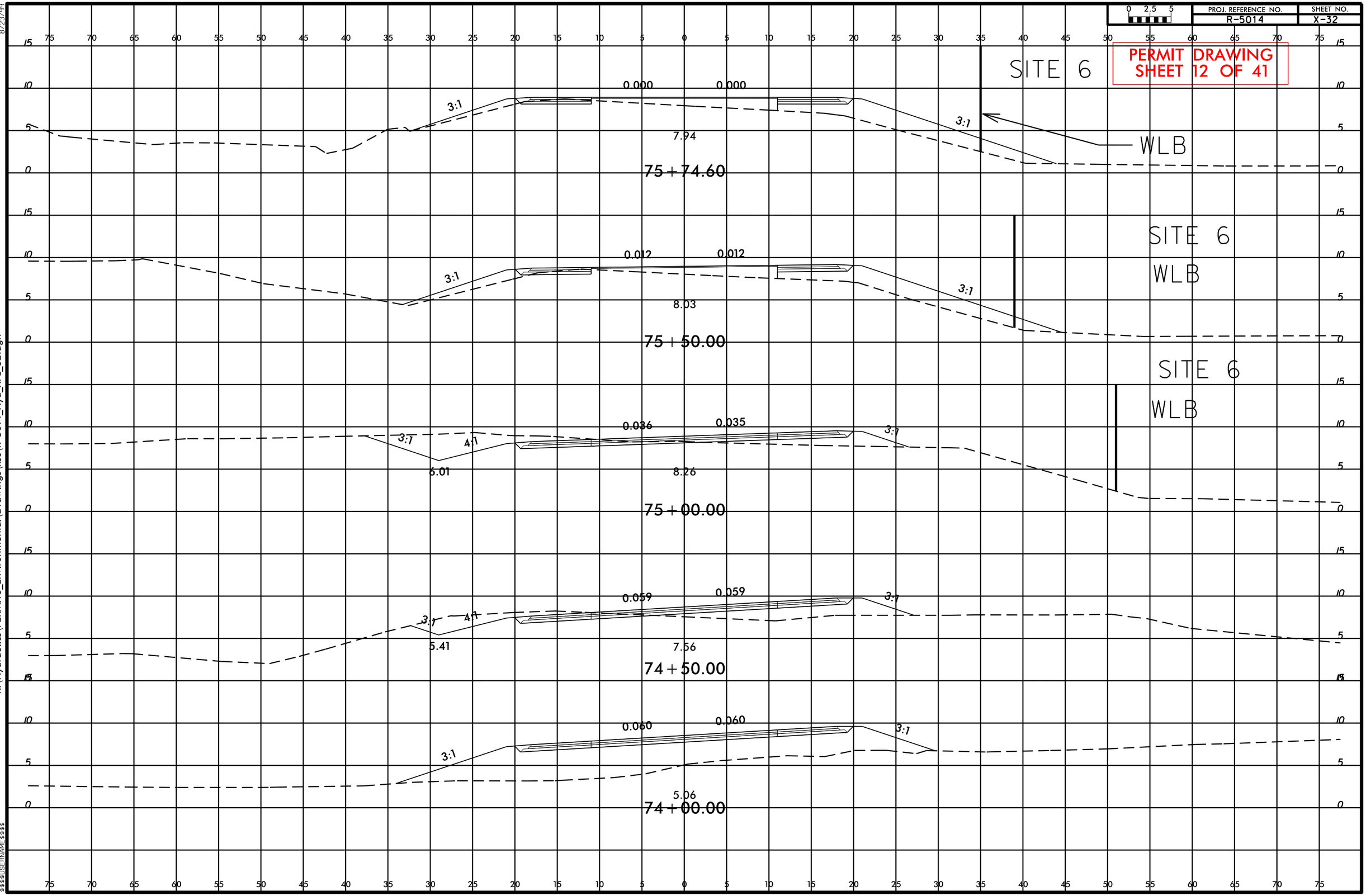
3:1 3:1

1.86
72 + 00.00

PERMIT DRAWING
SHEET 12 OF 41

SITE 6

WLB



SITE 6

WLB

SITE 6

WLB

8/23/99
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$$$$CONDITION$$$$
$$$$SCALE$$$$
$$$$USERNAME$$$$

8/17/99

REVISIONS

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

100' 0' 100'
GRAPHIC SCALE

NAD 83/NA 2011

PERMIT DRAWING
SHEET 13 OF 41

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -L- STA. 80+00.00 SEE SHEET 8

85+00

90+00

MATCH LINE -L- STA. 93+00.00 SEE SHEET 10

(45) LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614

(44) LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614

GARY D. CRANE, JR.
DB 1588 - PG 286
DB 1244 - PG 276

EVELYN G. CARLISLE
DB 1678 - PG 235
PB G - PG 202

ROCKY D. MIDGETTE
DB 1560 - PG 261
DB 1652 - PG 275

(44A)

GRADE TO DRAIN

REMOVE

PROPOSED CURB CUT

SPECIAL CUT DITCH SEE DETAIL 'A'

WILLIAMS DR 180' BST

72' WD

(46) JLS PROPERTIES, LLC
DB 1716 - PG 87

SPECIAL CUT DITCH SEE DETAIL 'C'

EVELYN G. CARLISLE
DB 1678 - PG 235
PB G - PG 202

(47)

LOVER LN 187' BST

SCHOOL HOUSE RUN 180' BST

Collington Cut Mitigation Site

RETAIN AND CLEAN OUT FUNNEL DRAIN

SAV

CAMA

RIP RAP

CURB

COLINGTON RD 264' BST

FUNNEL DRAIN DIR. ONLY

BST PATH

MTL

CONC

2 TONS CL B RIP RAP
7 SY Geotextile

FILL IN WETLAND

HAND CLEARING

SITE 7

(48) TANYA TILLETT CROW
DB 786 - PG 561
PB C - PG 198D

COLINGTON CREEK, LLC
DB 1545 - PG 196

RETAIN AND CLEAN OUT FUNNEL DRAIN

COUNTY OF DARE
DB 1673 - PG 406
PB C - PG 190

LGI LAND NC, LLC
DB 1673 - PG 409
PB C - PG 190

(49) DAVID A. SHAW
DB 1851 - PG 354
PB G - PG 264

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 3:1 — D — 3:1 — Front Ditch Slope

Min. D=1.0 Ft.

FROM -L- STA. 76+73 TO STA. 80+50 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 3:1 — D — 3:1 — Front Ditch Slope

Min. D=0.5 Ft.

FROM -L- STA. 81+25 TO STA. 84+76 RT

NOTE:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 31 FOR -Y3A- PROFILE

1/8/2018
cafreeman2
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PERMIT DRAWING
SHEET 14 OF 41

CALYX
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PROJECT REFERENCE NO.	SHEET NO.
R-5014	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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8/17/99

REVISIONS

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

100' 0' 100'
GRAPHIC SCALE

NAD 83/NA 2011

MATCH LINE -L- STA. 80+00.00 SEE SHEET 8

MATCH LINE -L- STA 93+00.00 SEE SHEET 10

85+00

90+00

45 LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614

44 LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614

GARY D. CRANE, JR.
DB 1588 - PG 286
DB 1244 - PG 276

EVELYN G. CARLISLE
DB 1678 - PG 235
PB G - PG 202

ROCKY D. MIDGETTE
DB 1560 - PG 261
DB 1652 - PG 275

COLINGTON CREEK, LLC
DB 1545 - PG 196

RETAIN AND CLEAN OUT FUNNEL DRAIN

Collington Cut Mitigation Site

SAV

PROPOSED CURB CUT

REMOVE

GRADE TO DRAIN

SPECIAL CUT DITCH SEE DETAIL 'A'

SPECIAL CUT DITCH SEE DETAIL 'C'

2 TONS CLASS B RIP RAP
7.4 SY Geotextile

FILL IN WETLAND

HAND CLEARING

SITE 7

TANYA TILLETT CROW
DB 786 - PG 561
PB C - PG 196D

COUNTY OF DARE
DB 1673 - PG 406
PB G - PG 190

LCI LAND NC, LLC
DB 1673 - PG 409
PB G - PG 190

DAVID A. SHAW
DB 1851 - PG 354
PB G - PG 264

46 JLS PROPERTIES, LLC
DB 1716 - PG 87

47 EVELYN G. CARLISLE
DB 1678 - PG 235
PB G - PG 202

44A

48

49

WILLIAMS DR 180' BST

COLINGTON RD 264' BST

LOVER LN 180' BST

SCHOOL HOUSE RD 180' BST

CAMA

SAV

404

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
Front Ditch Slope
3:1
D
Min. D = 1.0 Ft.

FROM -L- STA. 76+73 TO STA. 80+50 RT.

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
Front Ditch Slope
3:1
D
Min. D = 0.5 Ft.

FROM -L- STA. 81+25 TO STA. 84+76 RT.

NOTE:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 31 FOR -Y3A- PROFILE

1/8/2018
cafreeman2
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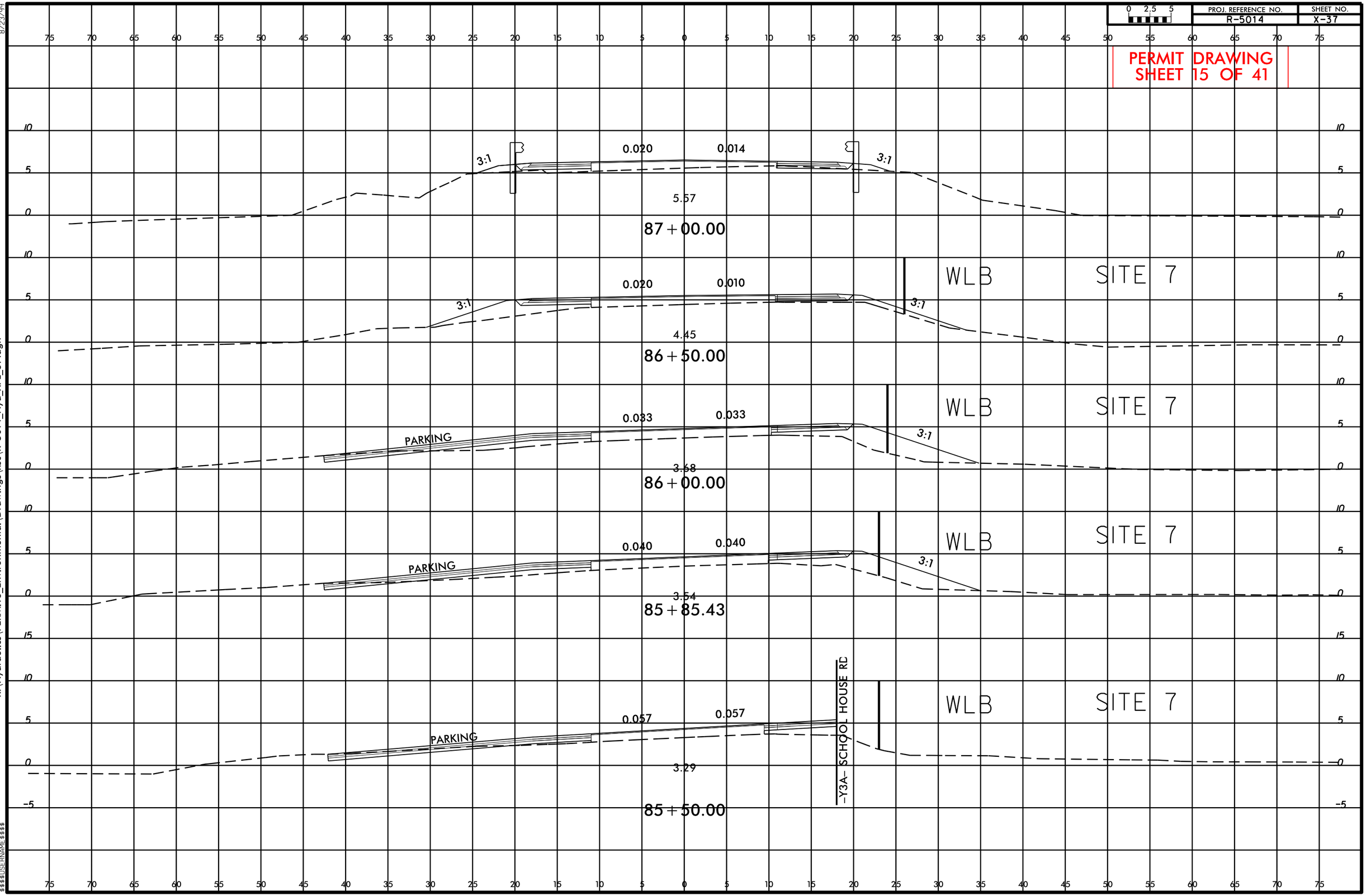
PERMIT DRAWING
SHEET 15 OF 41



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10/24/2017
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$$$$$NAME$$$$$
$$$$$FILENAME$$$$$

8/17/99

REVISIONS

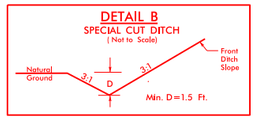
S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 99+76.92 TO STA. 104+10 LT

PERMIT DRAWING SHEET 16 OF 41

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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NAD 83/NA 2011

SEE SHEET 18 OF 41 FOR ENLARGEMENT

50 LGI LAND NC, LLC
DB 1673 - PG 409
PB G - PG 264

53 JANICE WILLIAMS O'NEAL
DB 365 - PG 842

58 JASPER DONNIE GAMIEL
DB 1164 - PG 389
PB D - PG 398

59 MAYNARD R. OUTLAW
DB 1390 - PG 278
PB D - PG 398

65 COLINGTON POINT DEVELOPERS, LLC
DB 1677 - PG 203
PB G - PG 300

66 COLINGTON POINT DEVELOPERS, LLC
DB 1702 - PG 237
PB G - PG 300

95+00

100+00

105+00

62 COLINGTON VENTURES
DB 1880 - PG 59
PB C - PG 197A

63 BRANDON BEASLEY
DB 1832 - PG 450
PB G - PG 399

61 MARK D. NUNEMAKER
DB 1615 - PG 366
PB C - PG 197A

60 WILLIAM JOSEPH MEYERS, JR.
DB 1875 - PG 89
PB C - PG 197A

59 MAYNARD R. OUTLAW
DB 1390 - PG 278
PB D - PG 398

58 COLINGTON CREEK, LLC
DB 1545 - PG 196

57 GARLAND H. DUNSTAN, JR.
DB 1539 - PG 223

56 CHRISTOPHER K. ARCHER
DB 1591 - PG 86

55 GARY GENE BEASLEY
DB 1071 - PG 37

54 CODY JACOB HUDOCK
DB 1798 - PG 164

53 ARBOR

52

51 AVA COL SOL JOHNSON
DB 2018 - PG 531
PB E - PG 345

50

49 DAVID A. SHAW
DB 1851 - PG 354
PB G - PG 264

64 ROBERT SHANE MOORE
DB 2034 - PG 987
PB C - PG 122D

REGINA OUTLAW ZEINER
DB 1810 - PG 242
PB E - PG 345

SITE 8

SITE 9

Q10 = 3.1cfs
V10 = 1.1fps

Q10 = 1.2cfs
V10 = 0.7fps

COLLAR AND EXTEND EXISTING 48" CMP WITH 23 LF OF 48" CAAP

REMOVE WOODEN PIER TO RIGHT OF WAY

COLLAR AND EXTEND EXISTING 48" CMP WITH 23 LF OF 48" CAAP

FILL IN WETLAND

SURFACE WATER IMPACT

HAND CLEARING

COLLAR AND EXTEND EXISTING 48" CMP WITH 2 LF OF 48" CAAP

COLLAR AND EXTEND EXISTING 48" CMP WITH 2 LF OF 48" CAAP

RETAIN

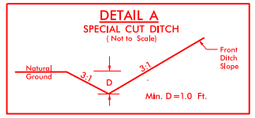
COLLAR AND EXTEND EXISTING 60" CMP WITH 4 LF OF 60" CAAP

FILL IN WETLAND

MATCH LINE -L- STA. 93+00.00 SEE SHEET 9

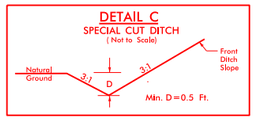
MATCH LINE -L- STA. 107+50.00 SEE SHEET 11

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 95+75 TO STA. 97+25 RT
FROM -L- STA. 96+20 TO STA. 99+76.92 LT
FROM -L- STA. 99+76.92 TO STA. 103+85 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 97+50 TO STA. 98+10 RT
FROM -L- STA. 98+10 TO STA. 99+76.92 RT

100' 0' 100'
GRAPHIC SCALE

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
SEE SHEET 2G-2 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 23 AND 24 FOR -L- PROFILE
SEE SHEET 31 FOR -Y3B- AND -Y3C- PROFILE

1/8/2018
cafreeman2
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8/17/99

REVISIONS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

50 LGI LAND NC, LLC
DB 1673 - PG 409
PB G - PG 264

53 JANICE WILLIAMS O'NEAL
DB 365 - PG 842

58 JASPER DONNIE GAMMEL
DB 1164 - PG 389
PB D - PG 398

59 MAYNARD R. OUTLAW
DB 1390 - PG 278
PB D - PG 398

65 COLINGTON POINT DEVELOPERS, LLC
DB 1677 - PG 203
PB G - PG 300

66 COLINGTON POINT DEVELOPERS, LLC
DB 1702 - PG 237
PB G - PG 300

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope, Min. D = 1.5 Ft.
FROM -L- STA. 99+76.92 TO STA. 104+10 LT

PERMIT DRAWING
SHEET 17 OF 41

CALYX ENGINEERS + CONSULTANTS
6750 TRYON ROAD
CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
NC License # F-1333
Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

95+00

100+00

105+00

62 COLINGTON VENTURES
DB 1880 - PG 59
PB C - PG 197A

63 BRANDON BEASLEY
DB 1832 - PG 450
PB G - PG 399

61 MARK D. NUNEMAKER
DB 1615 - PG 366
PB C - PG 197A

60 WILLIAM JOSEPH MEYERS, JR.
DB 1875 - PG 89
PB C - PG 197A

59 COLINGTON CREEK, LLC
DB 1545 - PG 196

58 COLINGTON CREEK, LLC
DB 1545 - PG 196

57 GARLAND H. DUNSTAN, JR.
DB 1539 - PG 223

56 CHRISTOPHER V. ARCHER
DB 1591 - PG 86

55 GARY GENE BEASLEY
DB 1071 - PG 37

54 CODY JACOB HUDOCK
DB 1798 - PG 164

53

52

51 AVA COL SOL JOHNSON
DB 2018 - PG 531
PB E - PG 345

50

49 DAVID A. SHAW
DB 1851 - PG 354
PB G - PG 264

64 ROBERT SHANE MOORE
DB 2034 - PG 987
PB C - PG 122D

SITE 9

SITE 8

COLLAR AND EXTEND EXISTING 48" CMP WITH 23 LF OF 48" CAAP

REMOVE WOODEN PIER TO RIGHT OF WAY

COLLAR AND EXTEND EXISTING 48" CMP WITH 23 LF OF 48" CAAP

EXTEND EXISTING 48" CMP

FILL IN WETLAND

SURFACE WATER IMPACT

HAND CLEARING

GRADE TO DRAIN

RETAIN

COLLAR AND EXTEND EXISTING 60" CMP WITH 23 LF OF 60" CAAP

COLLAR AND EXTEND EXISTING 48" CMP WITH 2 LF OF 48" CAAP

COLLAR AND EXTEND EXISTING 48" CMP WITH 2 LF OF 48" CAAP

Q10 = 3.1cfs
V10 = 1.1fps

Q10 = 1.2cfs
V10 = 0.7fps

FILL IN WETLAND

HAND CLEARING

COLINGTON CREEK, LLC
DB 1545 - PG 196

MATCH LINE -L- STA. 93+00.00
SEE SHEET 9

MATCH LINE -L- STA. 107+50.00
SEE SHEET 11

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope, Min. D = 1.0 Ft.
FROM -L- STA. 95+75 TO STA. 97+25 RT
FROM -L- STA. 96+20 TO STA. 99+76.92 LT
FROM -L- STA. 101+00 TO STA. 103+85 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope, Min. D = 0.5 Ft.
FROM -L- STA. 97+60 TO STA. 98+10 RT
FROM -L- STA. 98+10 TO STA. 99+76.92 RT

100' 0' 100'
GRAPHIC SCALE

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
SEE SHEET 2G-2 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 23 AND 24 FOR -L- PROFILE
SEE SHEET 31 FOR -Y3B- AND -Y3C- PROFILE

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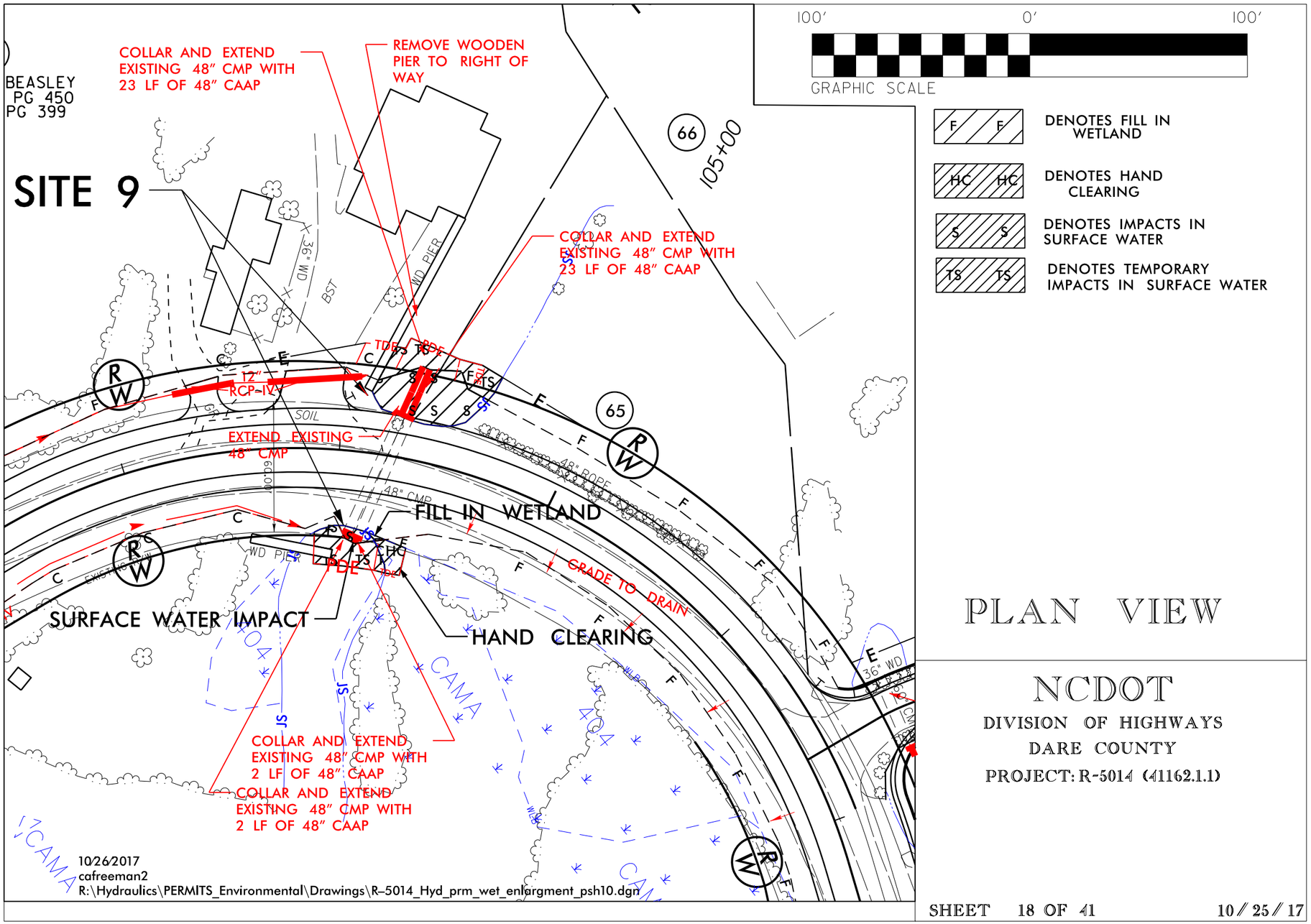

PLAN VIEW

NCDOT

DIVISION OF HIGHWAYS

DARE COUNTY

PROJECT: R-5014 (41162.1.1)

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-5014	X-41

PERMIT DRAWING
SHEET 19 OF 41

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20 15 10 5 0

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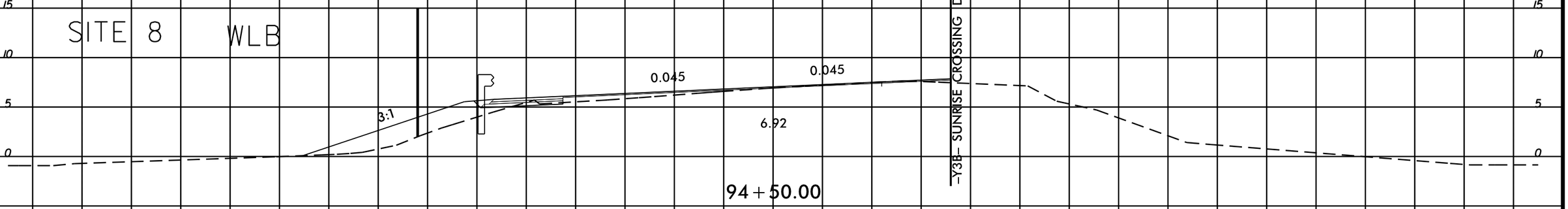
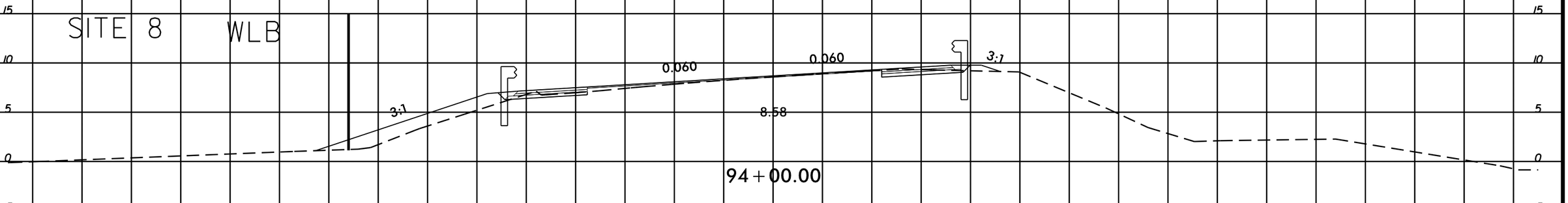


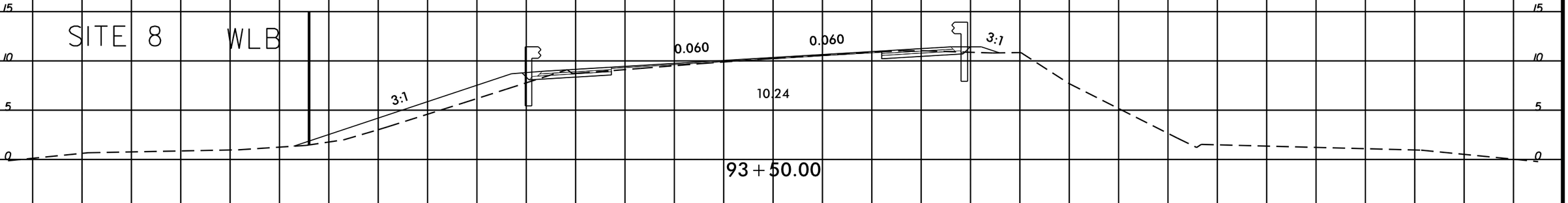
94+50.00

SITE 8 WLB



94+00.00

SITE 8 WLB



93+50.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

20 15 10 5 0

| 10/24/2017
cafreeman2
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PROJ. REFERENCE NO.	SHEET NO.
R-5014	X-46

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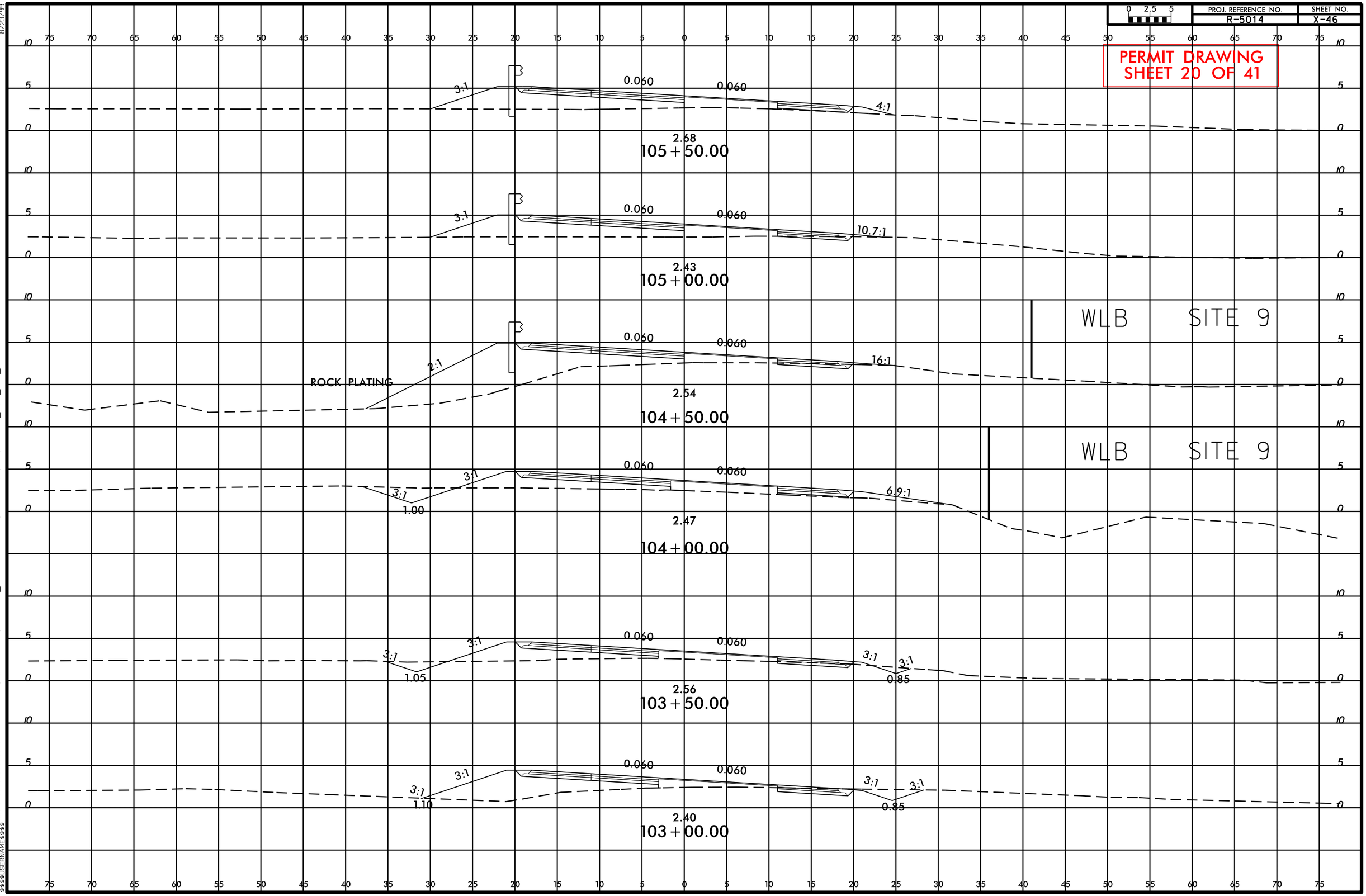
PERMIT DRAWING
SHEET 20 OF 41



8/23/99

10/24/2017
cafreeman2
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$$$$$LEVELS

PERMIT DRAWING
SHEET 21 OF 41

MATCH LINE -L- STA. 107+50.00 SEE SHEET 10

MATCH LINE -L- STA. 125+50.00 SEE SHEET 12

NAD 83/NA 2011

SITE 10

SITE 11

TIE PROPOSED BERM TO FILL SLOPE AT ELEV. 4.1'

SPECIAL CUT DITCH SEE DETAIL 'C'

Q10 = 2.1cfs
V10 = 0.7fps

TIE DITCH TO NATURAL GROUND ELEVATIONS

STANDARD 'V' DITCH
SEE DETAIL M
SLOPE = 0.1000
EST. DDE = 4 CY
3 TONS CL B RIP RAP
10 SY GEOTEXTILE

HAND CLEARING

STANDARD V DITCH
SEE DETAIL 'D'
DDE QTY = 2.9 CY
REQ SLOPE = 0.002 FT/FT

Q10 = 2.0cfs
V10 = 0.7fps

BERM SEE DETAIL N

TIE PROPOSED BERM TO EXISTING BERM

SPECIAL CUT DITCH SEE DETAIL 'A'

SPECIAL CUT DITCH SEE DETAIL 'C'

EXISTING WALL

DO NOT DISTURB WALL

PUMP STATION

CEMETERY

HEADSTONES

STANDARD V DITCH
SEE DETAIL 'D'
DDE QTY = 29.6 CY
REQ SLOPE = 0.008 FT/FT

10 SY GEOTEXTILE
CL B RIP RAP
3 TONS

SPECIAL CUT DITCH SEE DETAIL 'C'

HAND CLEARING IN CAMA WETLAND

EXCAVATION IN CAMA WETLAND

Q10 = 0.7cfs
V10 = 1.3fps

CL B RIP RAP
2 TONS
7 SY GEOTEXTILE

CL B RIP RAP
3 TONS
10 SY GEOTEXTILE

SPECIAL CUT DITCH SEE DETAIL 'C'

SPECIAL CUT DITCH SEE DETAIL 'B'

SPECIAL CUT DITCH SEE DETAIL 'C'

GRADE TO DRAIN

PAVEMENT REMOVAL

NOTES:
DESIGN EXCERTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
SEE SHEET 24 AND 25 FOR -L- AND -LA- PROFILE
SEE SHEET 30 FOR -Y4- AND -Y5- PROFILE
GTD = GRADE TO DRAIN

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.0 Ft.

FROM -L- STA. 109+87 TO STA. 111+67.50 RT.
FROM -LA- STA. 111+67.50 TO STA. 112+00 RT.
FROM -L- STA. 122+50 TO STA. 126+25 RT.

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.5 Ft.

FROM -LA- STA. 115+16 TO STA. 117+97 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=0.5 Ft.

FROM -LA- STA. 112+60 TO STA. 116+00 LT.
FROM -LA- STA. 117+97 TO STA. 120+00 RT.
FROM -L- STA. 124+11 TO STA. 126+72 LT.
FROM -L- STA. 108+00 TO STA. 108+93 RT.
FROM -LA- STA. 117+97 TO STA. 119+50 RT.

DETAIL D
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground
Min. D=1 Ft.

FROM -LA- STA. 117+55 TO STA. 117+97 LT.
FROM -L- STA. 109+66 TO STA. 109+87 RT.

DETAIL M
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground
Min. D=Var., 0-1 FT

FROM -L- STA. 108+93 TO STA. 109+00 RT

DETAIL N
SPECIAL CUT DITCH W/EARTHEN BERM
(Not to Scale)
ROW, Variable, Natural Ground, 3:1, 2:1, Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.0 Ft.
d=1.0 Ft.

FROM -L- STA. 108+25 TO STA. 111+00 LT

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

E E DENOTES EXCAVATION IN WETLAND

100' 0' 100'
GRAPHIC SCALE

64 ROBERT SHANE MOORE
DB 2034 - PG 987
PB C - PG 122D

65 DAVID L. FLOYD
DB 1845 - PG 233
DB 1669 - PG 363

66 COLINGTON POINT DEVELOPERS, LLC
DB 1702 - PG 237
PB G - PG 300

67 STANLEY W. MOORE
DB 898 - PG 262
PB C - PG 122D

68 MARK D. NUNEMAKER
DB 1615 - PG 366
PB C - PG 122D

69 CEMETERY
PB C - PG 122D

70 JUDY M. DEAVER
WB 16E - PG -103
PB C - PG 122D

71 JUDY M. DEAVER
DB 1615 - PG 364
PB C - PG 122D

72 CAROLINA TELEPHONE
DB 1763 - PG 45
PB C - PG 182E

73 JAMES FRANKLIN MOORE
DB 745 - PG 712
PB C - PG 91C

74 MARSHY RIDGE RETREAT
DB 1900 - PG 487
PB C - PG 91C
PB C - PG 111C

75 MILDRED B. BYRUM
DB 1566 - PG 184

76 MURRAY EUGENE BRIDGES
DB 232 - PG 579

77 COLINGTON RD LLC
DB 1948 - PG 144

78 CLAUDE H. EURE
DB 1590 - PG 249

79 JAMES W. SMITH
DB 1878 - PG 198

80 WILLIAM WALTER LADOW, JR.
DB 1907 - PG 271
PB H - PG 65

81 SANDRA JEAN LADOW
DB 1473 - PG 41
PB H - PG 65

82 DAVIE L. FLOYD
DB 1845 - PG 233
DB 1669 - PG 363

83 JIMMIE D. SUMMERELL
DB 12E - PG 172
PB 8 - PG 14

84 CHARLOTTE M. BEASLEY
DB 142 - PG 189
PB 8 - PG 14

COLINGTON PONTE LLC
DB 981 - PG 765

CALYX
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PROJECT REFERENCE NO.	SHEET NO.
R-5014	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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REVISIONS
8/17/99

10/26/2017
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PERMIT DRAWING
SHEET 22 OF 41

MATCH LINE -L- STA. 107+50.00 SEE SHEET 10

MATCH LINE -L- STA. 125+50.00 SEE SHEET 12

NAD 83/NA 2011

SITE 10

SITE 11

DETAIL N
SPECIAL CUT DITCH W/EARTHEN BERM
(Not to Scale)
FROM -L- STA. 108+25 TO STA. 111+00 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
FROM -LA- STA. 115+16 TO STA. 117+97 RT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Min. D=1.0 Ft.
FROM -L- STA. 109+87 TO STA. 111+67.50 RT.
FROM -LA- STA. 111+67.50 TO STA. 112+00 RT.
FROM -L- STA. 122+50 TO STA. 126+25 RT.

DETAIL D
STANDARD 'V' DITCH
(Not to Scale)
Min. D=1 Ft.
FROM -LA- STA. 117+55 TO STA. 117+97 LT.
FROM -L- STA. 109+66 TO STA. 109+87 RT.

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Min. D=0.5' Ft.
FROM -LA- STA. 112+60 TO STA. 116+00 LT.
FROM -LA- STA. 117+97 TO STA. 120+00 LT.
FROM -L- STA. 124+71 TO STA. 126+72 LT.
FROM -L- STA. 108+00 TO STA. 108+99 RT.
FROM -LA- STA. 117+97 TO STA. 119+50 RT.

DETAIL M
STANDARD 'V' DITCH
(Not to Scale)
Min. D=Var., 0-1 FT
FROM -L- STA. 108+93 TO STA. 109+00 RT.

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

E E DENOTES EXCAVATION IN WETLAND

100' 0' 100'
GRAPHIC SCALE

SPECIAL CUT DITCH SEE DETAIL 'C'
Q10=2.1cfs
V10=0.7fps
TIE DITCH TO NATURAL GROUND ELEVATIONS
STANDARD 'V' DITCH SEE DETAIL M
SLOPE= 0.1000
EST. DDE= 4 CY
3 TONS CL B RIP RAP
10 SY GEOTEXTILE
HAND CLEARING
STANDARD 'V' DITCH SEE DETAIL 'D'
DDE QTY = 2.9 CY
REQ SLOPE = 0.002 FT/FT
Q10=2.0cfs
V10=0.7fps
SPECIAL CUT DITCH SEE DETAIL 'A'
TIE PROPOSED BERM TO FILL SLOPE AT ELEV. 4.1'
BERM SEE DETAIL N
TIE PROPOSED BERM TO EXISTING BERM
SPECIAL CUT DITCH SEE DETAIL 'C'
EXISTING WALL
PUMP STATION
DO NOT DISTURB WALL
CEMETERY
HEADSTONES
CEMETERY
PB C - PG 122D
EXCAVATION IN CAMA WETLAND
HAND CLEARING IN CAMA WETLAND
STANDARD 'V' DITCH SEE DETAIL 'D'
DDE QTY = 29.6 CY
REQ SLOPE = 0.007 FT/FT
10 SY GEOTEXTILE
CL B RIP RAP
3 TONS
SPECIAL CUT DITCH SEE DETAIL 'C'
Q10=0.7cfs
V10=1.9fps
CL B RIP RAP
2 TONS
7 SY GEOTEXTILE
CL B RIP RAP
3 TONS
10 SY GEOTEXTILE
SPECIAL CUT DITCH SEE DETAIL 'C'
SPECIAL CUT DITCH SEE DETAIL 'B'
SPECIAL CUT DITCH SEE DETAIL 'A'
GRADE TO DRAIN
PAVEMENT REMOVAL

NOTES:
DESIGN EXCERTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
SEE SHEET 24 AND 25 FOR -L- AND -LA- PROFILE
SEE SHEET 30 FOR -Y4- AND -Y5- PROFILE
GTD = GRADE TO DRAIN

64 ROBERT SHANE MOORE
DB 2034 - PG 987
PB C - PG 122D

66 COLINGTON POINT DEVELOPERS, LLC
DB 1702 - PG 237
PB G - PG 300

67 STANLEY W. MOORE
DB 898 - PG 262
PB C - PG 122D

68 MARK D. NUNEMAKER
DB 1615 - PG 366
PB C - PG 122D

69 CEMETERY
PB C - PG 122D

70 JUDY M. DEAVER
WB 16E - PG -103
PB C - PG 122D

71 JUDY M. DEAVER
DB 1615 - PG 364
PB C - PG 122D

72 CAROLINA TELEPHONE
DB 1763 - PG 45
PB C - PG 182E

73 JAMES FRANKLIN MOORE
DB 745 - PG 712
PB C - PG 91C

74 MARSHY RIDGE RETREAT
DB 1900 - PG 487
PB C - PG 91C
PB C - PG 111C

75 MILDRED B. BYRUM
DB 1566 - PG 184

76 MURRAY EUGENE BRIDGES
DB 232 - PG 579

77 COLLINGTON RD LLC
DB 1948 - PG 144

78 CLAUDE H. EURE
DB 1590 - PG 249

79 JAMES W. SMITH
DB 1878 - PG 198

80 WILLIAM WALTER LADOW, JR.
DB 1907 - PG 271
PB H - PG 65

81 SANDRA JEAN LADOW
DB 1473 - PG 41
PB H - PG 65

82 DAVIE L. FLOYD
DB 1845 - PG 233
DB 1669 - PG 363

83 JIMMIE D. SUMMERELL
DB 12E - PG 172
PB 8 - PG 14

84 CHARLOTTE M. BEASLEY
DB 142 - PG 199
PB 8 - PG 14

COLLINGTON POINTE LLC
DB 1981 - PG 765

ORLANDO MEEKINS LN

COLLINGTON RD
22' BST

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REVISIONS
8/17/99

10/26/2017
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PROJ. REFERENCE NO.	SHEET NO.
R-5014	X-48

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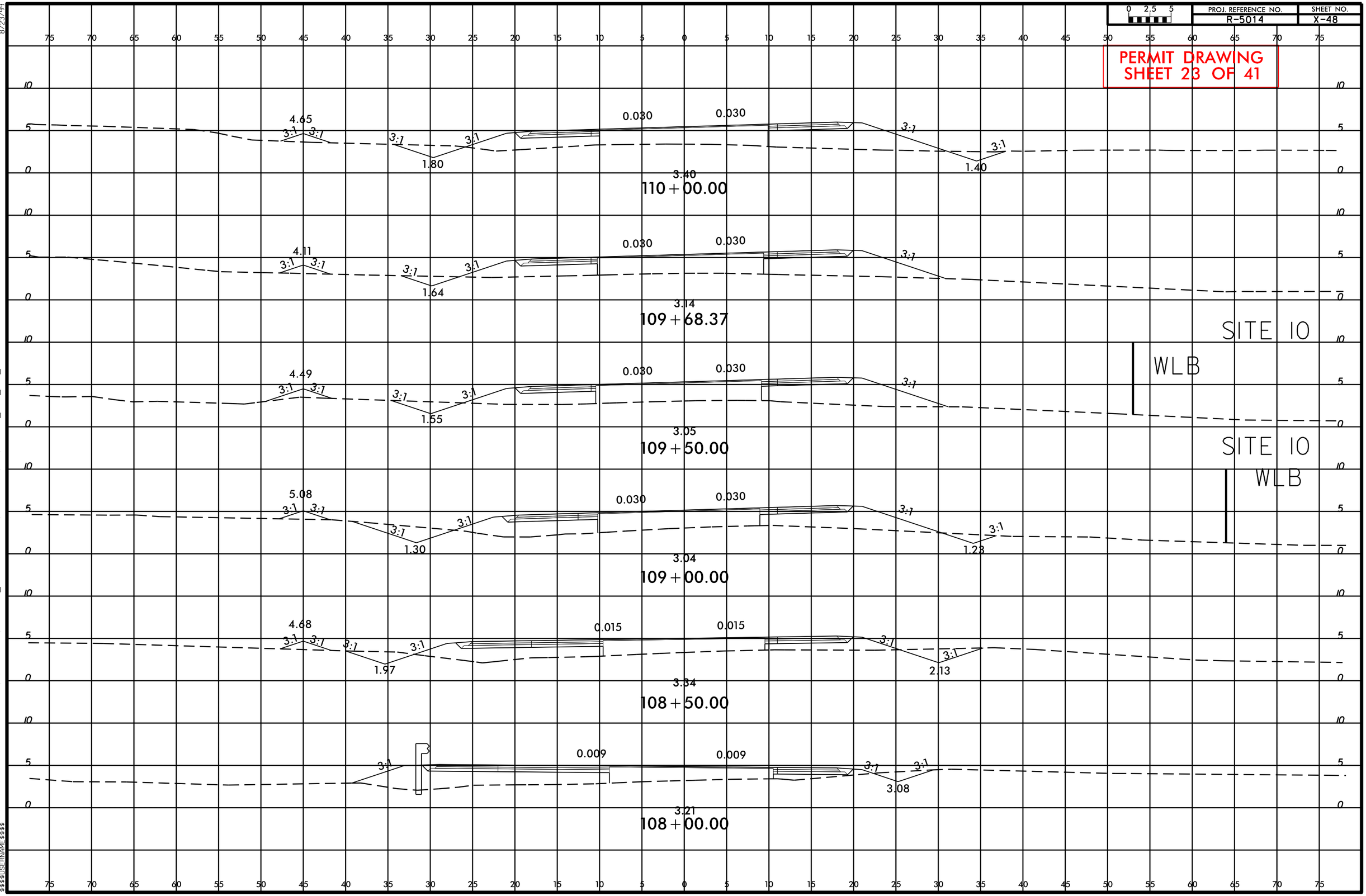
SHEET 23 OF 41



SITE 10
WLB

SITE 10
WLB

10/24/2017
cafreeman2
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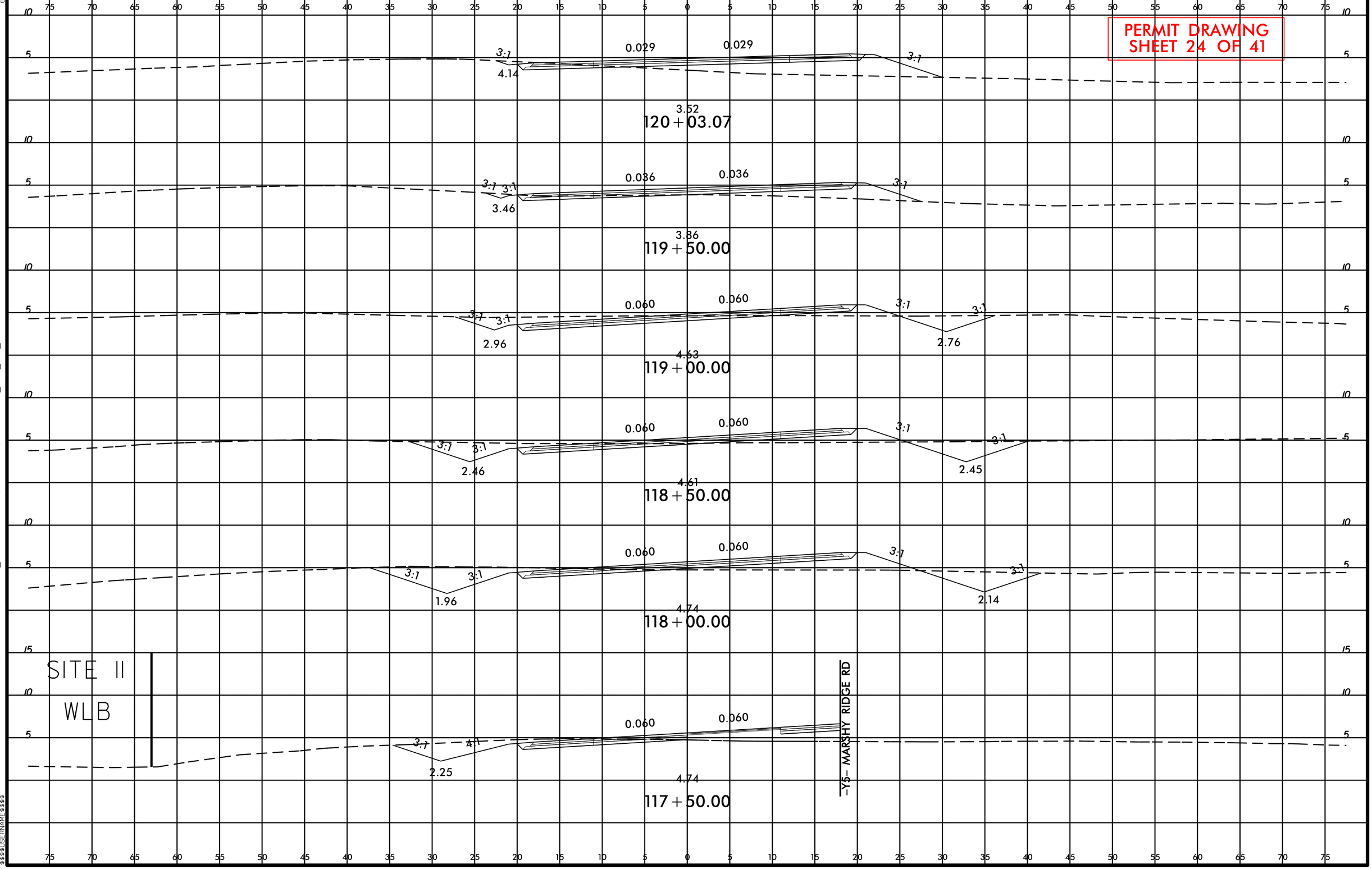
	R-5014	X-53

PERMIT DRAWING
SHEET 24 OF 41



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cafreeman2
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$$$$$ACTIVEATTACH$$$$$
$$$$$ACTIVEDESCR$$$$$
$$$$$ACTIVEUNITS$$$$$
$$$$$ACTIVESCALE$$$$$
$$$$$ACTIVEANGLE$$$$$
$$$$$ACTIVEORIGIN$$$$$
$$$$$ACTIVEVOLUME$$$$$
$$$$$ACTIVEPOINT$$$$$
$$$$$ACTIVEMATRIX$$$$$
$$$$$ACTIVEPERMISSION$$$$$
$$$$$ACTIVEDATE$$$$$
$$$$$ACTIVEAREA$$$$$
$$$$$ACTIVEVOLUME$$$$$
$$$$$ACTIVEPOINT$$$$$
$$$$$ACTIVEMATRIX$$$$$
$$$$$ACTIVEPERMISSION$$$$$
$$$$$ACTIVEDATE$$$$$
$$$$$ACTIVEAREA$$$$$

REVISIONS

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PERMIT DRAWING
SHEET 25 OF 41

NAD 83/NA 2011

130+00

135+00

140+00

MATCH LINE -L- STA. 125+50.00 SEE SHEET 11

MATCH LINE -L- STA. 142+00.00 SEE SHEET 13

SITE 12

SITE 13

SITE 14

SITE 15

COLINGTON CREEK MITIGATION SITE

SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

HAND CLEARING IN CAMA WETLAND

FILL IN CAMA WETLAND

HAND CLEARING

FILL IN WETLAND

REMOVE EXIST. 8" HDPE

SPECIAL LATERAL DITCH SEE DETAIL 'E'

SPECIAL CUT DITCH SEE DETAIL 'C'

SPECIAL CUT DITCH SEE DETAIL 'F'

SPECIAL CUT DITCH SEE DETAIL 'A'

12" RCP-IV

12" DRIVE PIPE
Q10=0.5cfs
V10=1.5fps

Q10=3.8cfs
V10=0.8fps

Q10=2.3cfs
V10=0.8fps

COLLAR AND EXTEND EXIST. 12" RCP APPROX. 2'

COLLAR AND EXTEND EX. 18" CMP WITH APPROX. 8.5' OF 18" CAAP.

TIE DITCH TO NATURAL GROUND ELEVATIONS

RETAIN EXIST. 12" RCP

CONVERT TO TBJB w/MH

TB 2GI-D

SEE SHEET 27 OF 41 FOR ENLARGEMENT

DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
FROM -L- STA. 127+64 TO STA. 129+10 LT
FROM -L- STA. 131+40 TO STA. 134+70 LT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
FROM -L- STA. 129+30 TO STA. 135+10 RT

DETAIL D
STANDARD 'V' DITCH
(Not to Scale)
FROM -L- STA. 137+32 TO STA. 137+65 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
FROM -L- STA. 127+75 TO STA. 129+00 RT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
FROM -L- STA. 135+50 TO STA. 137+32 RT

STANDARD 'V' DITCH SEE DETAIL D
SLOPE= 0.2604%
EST. DDE= 1CY

F F	DENOTES FILL IN WETLAND
S S	DENOTES IMPACTS IN SURFACE WATER
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
HC HC	DENOTES HAND CLEARING

100' 0' 100'
GRAPHIC SCALE

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
SEE SHEET 2G-2 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 25 FOR -L- PROFILE

1/8/2018
cafreeman2
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84 HAROLD E. GESSFORD DB 402 - PG 194 PB 8 - PG 14
85 JOBY LANE BEASLEY DB 772 - PG 743
86 KIMBERLY PAIGE MURRY WB E - PG 353
87 LARRY REID PARKER DB 656 - PG 343
88 GEORGE THOMAS BEASLEY DB 866 - PG 816
89 HAROLD E. GESSFORD DB 402 - PG 194 PB 8 - PG 14
90 CARSON LEE BEASLEY DB 454 - PG 461 PB E - PG 525
91 SANDRA BEASLEY NEAL DB 1823 - PG 222
92 DARRELL BEASLEY DB 1871 - PG 374 PB H - PG 270
93 DALE BEASLEY DB 668 - PG 52 PB H - PG 270
94 ADRIAN S. BRIDGES DB 1143 - PG 287
95 JAMIE S. PARKER, SR. DB 1000 - PG 749
96 DAVID C. CREECH DB 1826 - PG 39 PB F - PG 368
97 JERRY M. CREEF DB 1286 - PG 836 PB F - PG 368
98 BILLY CONRAD BEASLEY DB 844 - PG 762
99 JAME SCOTT PARKER DB 769 - PG 658 DB 647 - PG 105
100 ANDREW R. OTTAVIO DB 1928 - PG 281 PB 1 - PG 97 PB F - PG 368
101 COLINGTON MOBILE HOME PARK DB 1586 - PG 155 PB 1 - PG 97
102 BILLY CONRAD BEASLEY DB 859 - PG 104 PB 1 - PG 97
103 CHESTER W. SMITH, 3RD DB 1359 - PG 315 PB 1 - PG 97
82 DAVIE L. FLOYD DB 1845 - PG 233 DB 1669 - PG 363
84 CHARLOTTE M. BEASLEY DB 142 - PG 189 PB 8 - PG 14

REVISIONS 8/17/99

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NC License # P-1333
Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 26 OF 41

NAD 83/NA 2011

DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Fill Slope
Min. D=Var., 0-1 FT
FROM -L- STA. 127+64 TO STA. 129+10 LT
FROM -L- STA. 131+40 TO STA. 134+70 LT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=Var., 0-1 FT
FROM -L- STA. 129+30 TO STA. 135+10 RT

DETAIL D
STANDARD 'V' DITCH
(NOT to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground
Min. D=Var., 0-0.5 FT
FROM -L- STA. 137+32 TO STA. 137+65 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=0.5 Ft.
FROM -L- STA. 127+75 TO STA. 129+00 RT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.0 Ft.
FROM -L- STA. 135+50 TO STA. 137+32 RT

130+00
135+00
140+00

SITE 12
SITE 13
SITE 14
SITE 15

COLINGTON CREEK MITIGATION SITE

SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
HAND CLEARING
FILL IN WETLAND
HAND CLEARING IN CAMA WETLAND
FILL IN CAMA WETLAND
REMOVE EXIST. 8" HDPE
SPECIAL LATERAL DITCH SEE DETAIL 'E'
SPECIAL CUT DITCH SEE DETAIL 'C'
SPECIAL CUT DITCH SEE DETAIL 'F'
SPECIAL CUT DITCH SEE DETAIL 'A'
STANDARD 'V' DITCH SEE DETAIL D
SLOPE= 0.260%
EST. DDE= 1GY
12" RCP-IV
12" DRIVE PIPE Q10=0.5cfs V10=1.5fps
Q10=3.8cfs V10=0.8fps
Q10=2.3cfs V10=1.2fps
TIE DITCH TO NATURAL GROUND ELEVATIONS
COLLAR AND EXTEND EXIST. 30"x48" RCP APPROX. 8'
COLLAR AND EXTEND EXIST. 24"x38" RCP APPROX. 8.5'
OR 18"CMP WITH APPROX. 8.5' OF 18" CAAP.
RETAIN EXIST. 12" RCP
CONVERT TO TBJB w/MH
TB 2GI-D
CRAB POTS
DRAIN FIELD
WD PIER
RETAINING WALL
COLINGTON RD 23.8' BST
COLINGTON RD 22.2' BST
BEASLEY LANE
CAMA
TDE
SOIL
CONC
RCP-IV
F F
S S
TS TS
HC HC

MATCH LINE -L- STA. 125+50.00 SEE SHEET 11

MATCH LINE -L- STA. 142+00.00 SEE SHEET 13

SEE SHEET 27 OF 41 FOR ENLARGEMENT

DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES HAND CLEARING

100' 0' 100'
GRAPHIC SCALE

84 HAROLD E. GESSFORD DB 402 - PG 194 PB B - PG 14
85 JOBY LANE BEASLEY DB 772 - PG 743
86 KIMBERLY PAIGE MURRY WB E - PG 353
87 LARRY REID PARKER DB 656 - PG 343
88 GEORGE THOMAS BEASLEY DB 866 - PG 816
89 HAROLD E. GESSFORD DB 402 - PG 194 PB B - PG 14
90 CARSON LEE BEASLEY DB 454 - PG 461 PB E - PG 525
91 SANDRA BEASLEY NEAL DB 1823 - PG 222
92 DARRELL BEASLEY DB 1871 - PG 374 PB H - PG 270
93 DALE BEASLEY DB 668 - PG 52 PB H - PG 270
94 ADRIAN S. BRIDGES DB 1143 - PG 287
95 JAME S. PARKER, SR. DB 1000 - PG 749
96 DAVID C. CREECH DB 1826 - PG 39 PB F - PG 368
97 JERRY M. CREEF DB 1256 - PG 336 PB F - PG 368
98 BILLY CONRAD BEASLEY DB 844 - PG 762
99 JAME SCOTT PARKER DB 769 - PG 658 DB 647 - PG 105
100 ANDREW R. OTTAVIO DB 1928 - PG 281 PB I - PG 97 PB F - PG 368
101 COLINGTON MOBILE HOME PARK DB 1586 - PG 155 PB I - PG 97
102 BILLY CONRAD BEASLEY DB 839 - PG 104 PB I - PG 97
103 CHESTER W. SMITH, 3RD DB 1359 - PG 315 PB I - PG 97
82 DAVIE L. FLOYD DB 1845 - PG 233 DB 1669 - PG 363
84 CHARLOTTE M. BEASLEY DB 142 - PG 189 PB B - PG 14

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
SEE SHEET 26-2 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 25 FOR -L- PROFILE

1/8/2018
cafreeman2
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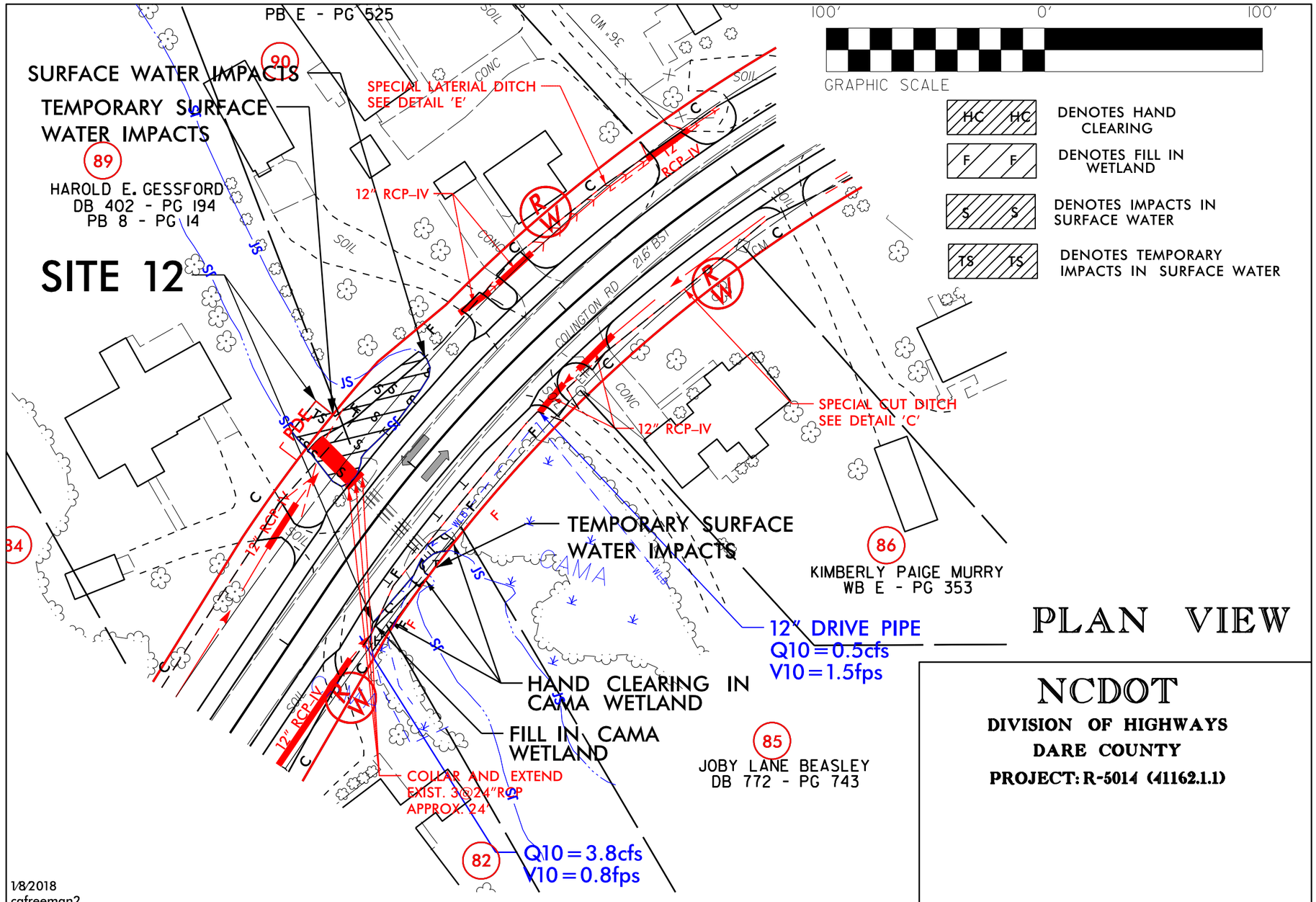
PB E - PG 525
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
90
89
HAROLD E. GESSFORD
DB 402 - PG 194
PB 8 - PG 14
SITE 12
SPECIAL LATERAL DITCH
SEE DETAIL 'E'
12" RCP-IV
12" RCP-IV
SPECIAL CUT DITCH
SEE DETAIL 'C'
12" RCP-IV
COLLINGTON RD
216' BST
TEMPORARY SURFACE WATER IMPACTS
HAND CLEARING IN CAMA WETLAND
FILL IN CAMA WETLAND
COLLAR AND EXTEND EXIST. 3@24"RCP APPROX. 24'
Q10 = 3.8cfs
V10 = 0.8fps
84
82
85
JOBY LANE BEASLEY
DB 772 - PG 743
86
KIMBERLY PAIGE MURRY
WB E - PG 353
12" DRIVE PIPE
Q10 = 0.5cfs
V10 = 1.5fps
100' 0' 100'
GRAPHIC SCALE
HC HC DENOTES HAND CLEARING
F F DENOTES FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PLAN VIEW
NCDOT
DIVISION OF HIGHWAYS
DARE COUNTY
PROJECT: R-5014 (41162.1.1)
SHEET 27 OF 41
1/2/18
1/8/2018
cafreeman2
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-5014	X-57

PERMIT DRAWING
SHEET 28 OF 41

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

10
5

3:1 0.040 0.040 3:1 3:1 1.13

130+98.95

3:1 0.060 0.060 3:1 3:1 1.17

130+50.00

SITE 13 WLB

3:1 0.060 0.060 3:1 3:1 1.22

130+00.00

3:1 0.060 0.060 3:1 3:1 1.27

129+50.00

3:1 3:1 0.060 0.060 3:1 3:1 2.14 2.29

129+00.00

3:1 3:1 0.060 0.060 3:1 3:1 2.09 2.24

128+50.00

10/24/2017
cafreeman2
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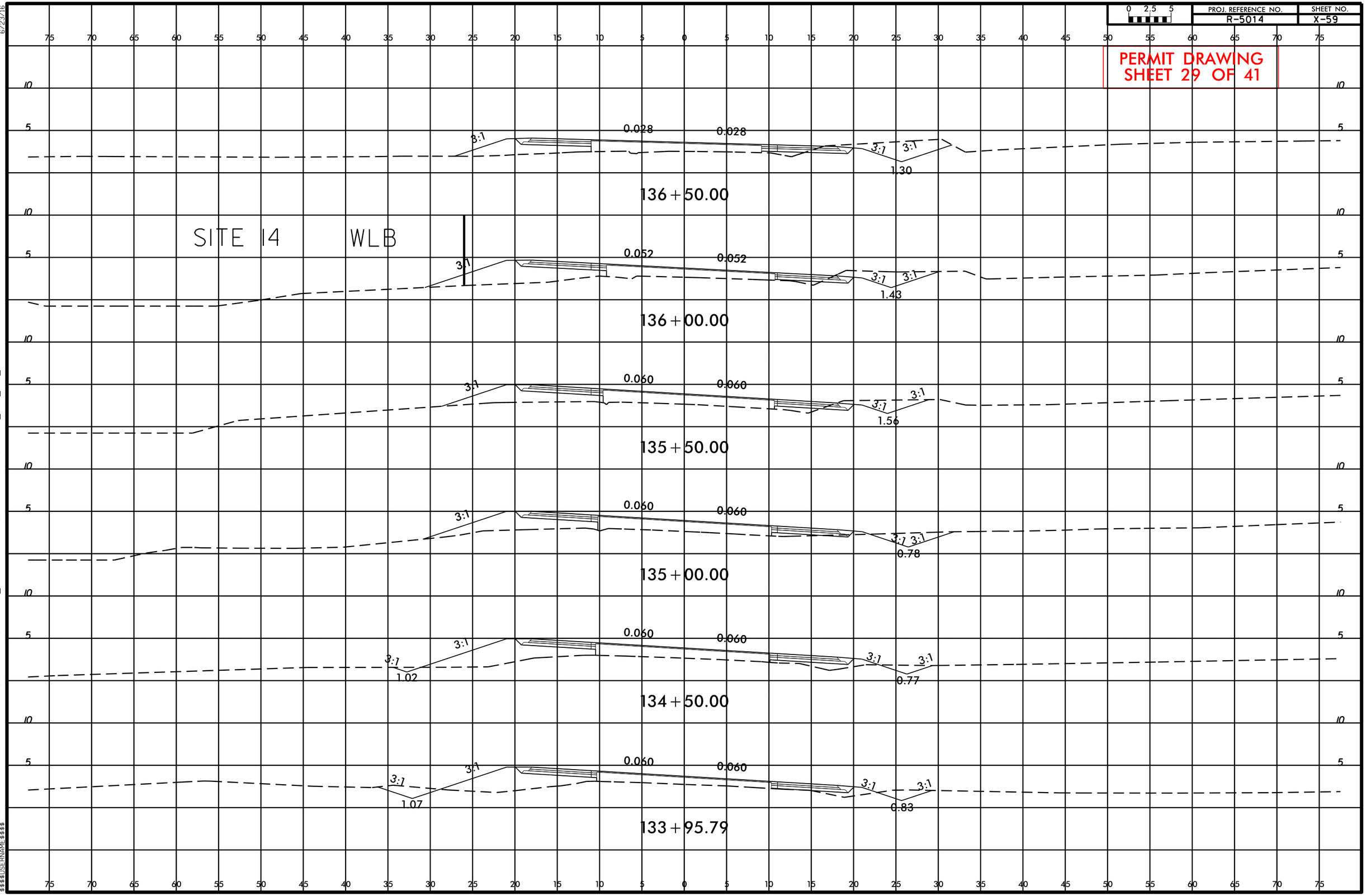
$$$$$SYSTIME$$$$$
$$$$$DESIGNER$$$$$
$$$$$DATE$$$$$
$$$$$FILENAME$$$$$

PERMIT DRAWING
SHEET 29 OF 41



6/23/16
10/24/2017
cafreeman2
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6/23/16

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-5014	X-60

PERMIT DRAWING
SHEET 30 OF 41

SITE 15 WLB

139+00.00

138+50.00

138+00.00

137+50.00

137+08.69

137+00.00

139+00.00	0.040	0.040	4:1	8.6:1
138+50.00	0.040	0.040	4:1	4:1
138+00.00	0.040	0.040		3:1
137+50.00	0.020	0.020	4:1	3:1
137+08.69	0.000	0.000	4:1	3:1, 3:1 (1.15)
137+00.00	0.004	0.004	4:1	3:1, 3:1 (1.17)

10/24/2017
cafreeman2
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$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGNFILE$$$$

8/17/99

REVISIONS

PERMIT DRAWING
SHEET 31 OF 41

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

2:1 SLOPES USING ROCK PLATING FROM L STA. 163+08 TO 173+60 LT.

NAD 83/NA 2011

MATCH LINE -L- STA. 154+50.00 SEE SHEET 13

MATCH LINE -L- STA. 168+00.00 SEE SHEET 15

155+00 160+00 165+00

Creek Site

NC DEPARTMENT OF TRANSPORTATION
DB 357 - PG 709
PB D - PG 328

ARGIE SHULTZ
DB 1221 - PG 301
PB 2 - PG 209

ARGIE SHULTZ
DB 958 - PG 497
PB 2 - PG 209

WALKABOUT, LLC
DB 1781 - PG 7

DABNEY & KIM SHORT
WB E - PG 125

J. FRAZIER EDWARD TTEE
DB 1790 - PG 117

SITE 16

SPECIAL CUT DITCH SEE DETAIL 'C'

12" RCP-IV

TIE DITCH TO NATURAL GROUND ELEVATIONS

Q10=0.48cfs
V10=0.54fps

SURFACE WATER IMPACTS

FILL IN SAV

FILL IN SAV

SURFACE WATER IMPACTS

FILL IN CAMA WETLAND

FILL IN SAV

FILL IN WETLAND

FILL IN SAV

SAV

FILL IN CAMA WETLAND

GRADE TO DRAIN

15" RCP-IV

48" CMP

EXISTING R/W

COLINGTON RD 23.9' BST

SPECIAL CUT DITCH SEE DETAIL 'E'

RETAIN EXIST. 12" CMP

TIE DITCH TO EXIST. 12" CMP INVERT

REMOVE EXIST. 15" RCP

TIE PROP. CUT DITCH TO EXISTING DITCH

SPECIAL CUT DITCH SEE DETAIL 'E'

FAY B. MAJOR
DB 1681 - PG 193
PB 2 - PG 209

12" WD POSTS

15" RCP-IV

SPECIAL CUT DITCH SEE DETAIL 'F'

15" DRIVE PIPE
Q10=1.9cfs
V10=2.0fps

15" RCP-IV

CAMA

WALKABOUT LANE

CREEKSIDE LANE

DABNEY & KIM SHORT
WB E - PG 125
WALKABOUT, LLC
DB 1781 - PG 7

WALKABOUT, LLC
DB 1964 - PG 309

RALPH DEAN BEASLEY HEIRS
WB 14E - PG 240

WILLENE P. SIMPSON
DB 312 - PG 926

JASON B. HILL
TANYA N. HILL
DB 2071 - PG 204

W.E. BENNETT
CHERYL M. JEFFERS
DB 1041 - PG 743
PB 2 - PG 209

J. CARL HAYES
DB 427 - PG 134
PB C - PG 78

DARE COUNTY
DB 922 - PG 519
PB C - PG 78

SITE 17

FILL IN WETLAND

HAND CLEARING

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

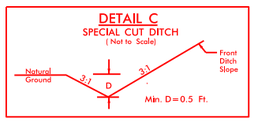
S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HC HC DENOTES HAND CLEARING

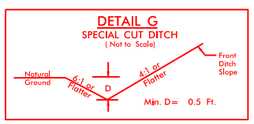
100' 0' 100'
GRAPHIC SCALE

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



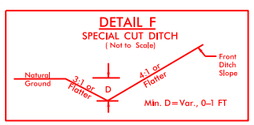
FROM -L- STA. 161+20 TO STA. 162+88 LT

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 155+57 TO STA. 156+14 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 158+00 TO STA. 161+41 RT
FROM -L- STA. 161+80 TO STA. 163+61 RT

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL SSD
SEE SHEET 2G-7 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 26 FOR -L- PROFILE

1/8/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-5014	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 32 OF 41

8/17/99

REVISIONS

2:1 SLOPES USING ROCK PLATING FROM L STA. 163+08 TO 173+60 LT.

NAD 83/NA 2011

155+00 160+00 165+00

MATCH LINE -L- STA. 154+50.00 SEE SHEET 13

MATCH LINE -L- STA. 168+00.00 SEE SHEET 15

SITE 16

SITE 16

SITE 17

Creek Site

NC DEPARTMENT OF TRANSPORTATION
DB 357 - PG 709
PB D - PG 328

ARGIE SHULTZ
DB 1221 - PG 301
PB 2 - PG 209

ARGIE SHULTZ
DB 958 - PG 497
PB 2 - PG 209

WALKABOUT, LLC
DB 1781 - PG 7

DABNEY & KIM SHORT
WB E - PG 125

J. FRAZIER EDWARD TTEE
DB 1790 - PG 117

FAY B. MAJOR
DB 1681 - PG 193
PB 2 - PG 209

WALKABOUT LLC
DB 1964 - PG 309

DABNEY & KIM SHORT
WB E - PG 125
WALKABOUT, LLC
DB 1781 - PG 7

RALPH DEAN BEASLEY HEIRS
WB 14E - PG 240

WILLENE P. SIMPSON
DB 312 - PG 926

JASON B. HILL
TANYA N. HILL
DB 2071 - PG 204

J. CARL HAYES
DB 427 - PG 134
PB C - PG 78

W.E. BENNETT
CHERYL M. JEFFERS
DB 1041 - PG 743
PB 2 - PG 209

DARE COUNTY
DB 922 - PG 519
PB C - PG 78

COLINGTON RD 23.9' BST

SPECIAL CUT DITCH SEE DETAIL 'C'

12" RCP-IV

TIE DITCH TO NATURAL GROUND ELEVATIONS

Q10=0.48cfs
V10=0.54fps

SURFACE WATER IMPACTS

FILL IN SAV

FILL IN CAMA WETLAND

FILL IN WETLAND

FILL IN CAMA WETLAND

15" RCP-IV

SPECIAL CUT DITCH SEE DETAIL 'B'

REMOVE EXIST. 15" RCP

TIE PROP. CUT DITCH TO EXISTING DITCH

SPECIAL CUT DITCH SEE DETAIL 'A'

RETAIN EXIST. 12" CMP

TIE DITCH TO EXIST. 12" CMP INVERT

15" DRIVE PIPE
Q10=1.9cfs
V10=2.0fps

15" RCP-IV

SPECIAL CUT DITCH SEE DETAIL 'F'

FILL IN WETLAND

HAND CLEARING

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HC HC DENOTES HAND CLEARING

100' 0' 100'
GRAPHIC SCALE

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
Front Ditch Slope
Min. D=0.5 Ft.
FROM -L- STA. 161+20 TO STA. 162+88 LT

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
6:1 or Flatter
D
3:1 or Flatter
Front Ditch Slope
Min. D= 0.5 Ft.
FROM -L- STA. 155+57 TO STA. 156+14 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1 or Flatter
D
4:1 or Flatter
Front Ditch Slope
Min. D=Var., 0-1 FT
FROM -L- STA. 158+00 TO STA. 161+41 RT
FROM -L- STA. 161+80 TO STA. 163+61 RT

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL SSD
SEE SHEET 2G-7 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 26 FOR -L- PROFILE

1/8/2018
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6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5014	X-69

PERMIT DRAWING
SHEET 33 OF 41

SITE 16 SAV

ROCK PLATING 2:1

0.020 0.020

3:1

165+50.00

ROCK PLATING 2:1

0.020 0.020

3:1

165+00.00

ROCK PLATING 2:1

0.020 0.020

3:1

164+50.00

SITE 16 SAV

ROCK PLATING 2:1

0.020 0.020

3:1

164+00.00

WLB

SITE 16

SAV

ROCK PLATING 2:1

0.020 0.020

4:1 3:1

2.02

163+50.00

3:1

0.020 0.020

4:1 3:1

1.72

163+00.00

10/24/2017
cafreeman2
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$$$$MODEL$$$$
$$$$LEVEL$$$$
$$$$CELLSCALE$$$$
$$$$ACTIVESCALE$$$$
$$$$ANNOTATIONSCALE$$$$
$$$$ACTIVEANGLE$$$$
$$$$ACTIVEZDEPTH$$$$
$$$$ACTIVEZDELTA$$$$
$$$$ACTIVEPOINT$$$$
$$$$ACTIVEVOLUME$$$$

PERMIT DRAWING
SHEET 34 OF 41

SITE 18

WLB

ROCK PLATING 2:1

0.060 0.060 3:1

168+00.00

0.052 0.052 3:1

ROCK PLATING 2:1

167+50.00

SITE 16

WLB

WLB SITE 17

0.043 0.043 3:1

ROCK PLATING 2:1

167+30.60

WLB

SITE 16 SAV

WLB SITE 17

0.028 0.028 3:1

ROCK PLATING 2:1

167+00.00

0.020 0.004 3:1

ROCK PLATING 2:1

166+50.00

SITE 16 SAV

0.020 0.019 3:1

ROCK PLATING 2:1

166+00.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

10 5

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| 10242017
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$$$$$$FILENAME$$$$$$
$$$$$$USERNAME$$$$$$

8/17/99

REVISIONS

CALYX
ENGINEERS + CONSULTANTS
6750 TRYON ROAD
CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
NC License # F-1333
Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 35 OF 41

NAD 83/NA 2011

MATCH LINE -L- STA. 168+00.00 SEE SHEET 14

MATCH LINE -L- STA. 183+50.00 SEE SHEET 16

SITE 17

SITE 18

SITE 19

SITE 20

SITE 21

HAND CLEARING IN CAMA WETLAND

FILL IN CAMA WETLAND

FILL IN WETLAND

HAND CLEARING

DO NOT DISTURB LARGE OAK TREE

REMOVE EXIST. 15" CMP

REMOVE EXIST. 24" CMP

RETAIN EXIST. 24" CMP

REMOVE EXIST. 15" HDPE

REMOVE EXIST. 12" HDPE

REMOVE EXIST. 24" HDPE

COLLAR AND EXTEND EXIST. 24"CMP WITH APPROX. 13' 24"CMP

15" RCP-IV

18" RCP-IV

24" RCP-IV

SPECIAL CUT DITCH SEE DETAIL 'B'

SPECIAL CUT DITCH SEE DETAIL 'F'

TIE DITCH TO NATURAL GROUND ELEVATIONS

RETAIN EXIST. 15"RCP

RETAIN EXIST. 15" CMP

RETAIN EXIST. DI

DI SEE SPEC. DET. SHEET 2-C2

12" DUCTILE IRON PIPE

REMOVE AND REPLACE WITH TRAFFIC BEARING JB

REMOVE AND REPLACE WITH TRAFFIC BEARING JB

15" RCP-IV

SAV

CAMA

PUE

SBL

BST

CONC

72" PLASTIC

24" WD

PIRATES MOOR DR

BAUM BAY DRIVE 15' BST 60.00'

EXISTING R/W

120 JIMMIE D. SUMMERELL DB 1013 - PG 871

121 D. S. E. INVESTMENT, LLC DB 1888 - PG 423

130 JEFFREY D. JACOBSON DB 848 - PG 693

131 ROBERT CRAIG WHITTEN DB 1734 - PG 2

132 UNITED STATES DEPARTMENT OF INTERIOR DB 78 - PG 206

123 DANIEL P. PARSONS ETAL DB 1711 - PG 490 PB F - PG 300

124 DAVID RANDOLPH PARSONS ETAL DB 1873 - PG 77 PB G - PG 229

125 COLLINGTON CAFE DB 1915 - PG 360

126 STACY NEIL LANCASTER DB 1758 - PG 44

127 DAYSPRING FARMS LLC DB 1923 - PG 435 PB G - PG 229

128 DOUGLAS E. STOVER DB 2052 - PG 534 PB B - PG 70

129 BAUM BAY HARBOR CIVIC ASSOCIATION DB 1207 - PG 586 PB B - PG 70

133 UNITED STATES DEPARTMENT OF INTERIOR DB 78 PG 206

122 ROBERT W. NUSBAUM DB 1794 - PG 16 PB E - PG 23 PB F - PG 300

119 1085 COLLINGTON RD LLC DB 1828 - PG 210 PB A - PG 233 PB A - PG 214

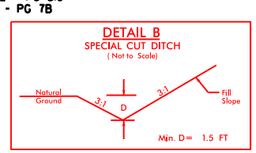
118 GEORGE GARDNER DB 1711 - PG 491 DB 322 - PG 967

117 DWIGHT H. WHELESS DB 607 - PG 357

116 DARE COUNTY DB 922 - PG 519 PB C - PG 7B

DARE COUNTY
DB 922 - PG 519
PB C - PG 7B

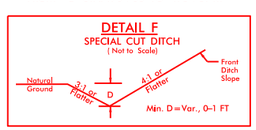
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.5 FT

FROM -L- STA. 170+00 TO 175+31 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



Min. D=Var., 0-1 FT

FROM -L- STA. 177+07 TO STA. 178+39 LT
FROM -L- STA. 176+75 TO STA. 178+80 RT

DETAIL P
SPECIAL CUT DITCH
(Not to Scale)

Min. D=Var., 0-0.5 FT

FROM -L- STA. 180+34 TO STA. 181+18 LT

HC HC DENOTES HAND CLEARING

F F DENOTES FILL IN WETLAND

100' 0' 100'
GRAPHIC SCALE

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS
SEE SHEET 2G-? FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 26 AND 27 FOR -L- PROFILE
GTD = GRADE TO DRAIN

1/8/2018
cafreeman2
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CALYX
ENGINEERS + CONSULTANTS
6750 TRYON ROAD
CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
NC License # P-0333
Formerly Kimley-Horn Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 36 OF 41

8/17/99
REVISIONS

SITE 17
SITE 18
SITE 19
SITE 20
SITE 21

FILL IN CAMA WETLAND
HAND CLEARING IN CAMA WETLAND
FILL IN WETLAND
HAND CLEARING
DO NOT DISTURB LARGE OAK TREE

REMOVE EXIST. 24" HDPE
REMOVE EXIST. 12" HDPE
REMOVE EXIST. 15" HDPE
REMOVE EXIST. 15" CMP
RETAIN EXIST. 24" CMP
RETAIN EXIST. 15"RCP
RETAIN EXIST. 15" CMP
RETAIN EXIST. DI
15" RCP-IV
15"x24" RCP-IV
COLLAR AND EXTEND EXIST. 24"CMP WITH APPROX. 13' 24"CMP
TIE DITCH TO NATURAL GROUND ELEVATIONS
SPECIAL CUT DITCH SEE DETAIL 'B'
SPECIAL CUT DITCH SEE DETAIL 'F'
SPECIAL CUT DITCH SEE DETAIL 'P'
DI SEE SPEC. DET. SHEET 2-C2
12" DUCTILE IRON PIPE
REMOVE AND REPLACE WITH TRAFFIC BEARING JB

-L- STA. 168+00.00
MATCH LINE SEE SHEET 14

-L- STA. 183+50.00
MATCH LINE SEE SHEET 16

170+00
175+00
180+00

NAD 83\NA 2011

JIMMIE D. SUMMERELL
DB 1013 - PG 871

D. S. E. INVESTMENT, LLC
DB 1888 - PG 423

JEFFREY D. JACOBSON
DB 848 - PG 693

DANIEL P. PARSONS ETAL
DB 1711 - PG 490
PB F - PG 300

ROBERT CRAIG WHITTEN
DB 1734 - PG 2

GEORGE GARDNER
DB 1711 - PG 491
DB 322 - PG 967

DWIGHT H. WHELESS
DB 607 - PG 357

DARE COUNTY
DB 922 - PG 519
PB C - PG 7B

DAVID RANDOLPH PARSONS ETAL
DB 1873 - PG 77
PB G - PG 229

COLLINGTON CAFE
DB 1135 - PG 360

STACY NEIL LANCASTER
DB 1758 - PG 44

DAYSPRING FARMS LLC
DB 1923 - PG 435
PB G - PG 229

DOUGLAS E. STOVER
DB 2052 - PG 534
PB B - PG 70

116 DARE COUNTY
DB 922 - PG 519
PB C - PG 7B

119 1085 COLLINGTON RD LLC
DB 1828 - PG 210
PB A - PG 233
PB A - PG 214

122 ROBERT W. NUSBAUM
DB 1794 - PG 16
PB E - PG 23
PB F - PG 300

129 BAUM BAY HARBOR CIVIC ASSOCIATION
DB 1207 - PG 586
PB B - PG 70

131 ROBERT CRAIG WHITTEN
DB 1734 - PG 2

132 UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

133 UNITED STATES DEPARTMENT OF INTERIOR
DB 78 PG 206

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
Fill Slope
Min. D = 1.5 FT
FROM -L- STA. 170+00 TO 175+31 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1 or Flatter
D
3:1 or Flatter
Front Ditch Slope
Min. D = Var., 0-1 FT
FROM -L- STA. 177+07 TO STA. 178+39 LT
FROM -L- STA. 176+75 TO STA. 178+80 RT

DETAIL P
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
10:1 or Flatter
D
10:1 or Flatter
Front Ditch Slope
Min. D = Var., 0-0.5 FT
FROM -L- STA. 180+34 TO STA. 181+18 LT

HC HC DENOTES HAND CLEARING
F F DENOTES FILL IN WETLAND

100' 0' 100'
GRAPHIC SCALE

NOTES:
DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS
SEE SHEET 2G-2 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 26 AND 27 FOR -L- PROFILE
GTD = GRADE TO DRAIN

1/8/2018
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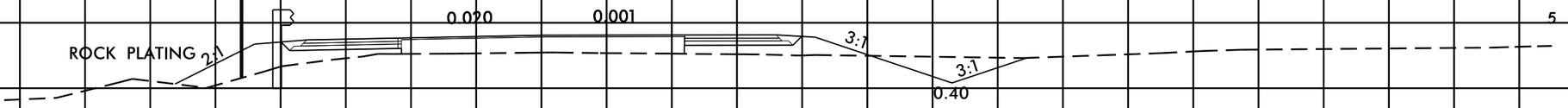
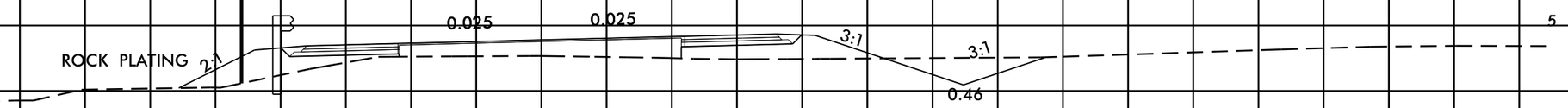
PERMIT DRAWING
SHEET 37 OF 41

SITE 18 WLB



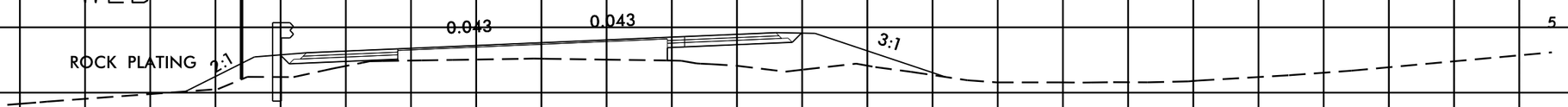
170+50.00

SITE 18 WLB



170+00.00

SITE 18 WLB



169+63.22

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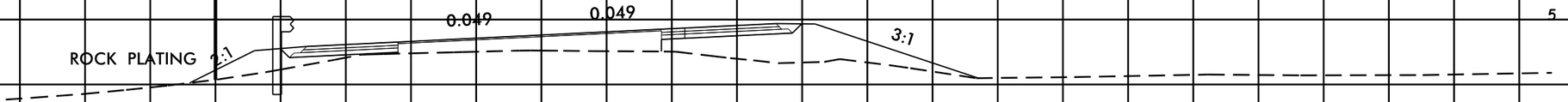
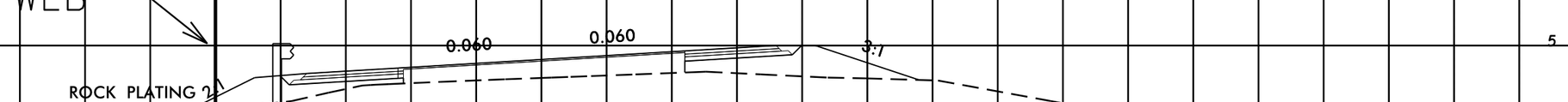


169+50.00

SITE 18 WLB

169+00.00

SITE 18 WLB



168+50.00

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$$$$$$SYSTIME$$$$$$

PERMIT DRAWING
SHEET 38 OF 41

SITE 18 WLB

ROCK PLATING 2:1

0.060 0.060 3:1 3:1 0.29

173+50.00

SITE 18 WLB

ROCK PLATING 2:1

0.043 0.043 3:1 3:1 0.11

172+98.50

SITE 18 WLB

ROCK PLATING 2:1

0.020 0.020 3:1 3:1 0.16

172+50.00

WLB

SITE 18

ROCK PLATING 2:1

0.004 0.020 3:1 3:1 0.22

172+00.00

WLB

SITE 18

ROCK PLATING 2:1

0.020 0.020 3:1 3:1 0.28

171+50.00

SITE 18 WLB

ROCK PLATING 2:1

0.020 0.020 3:1 3:1 0.34

171+00.00

6/23/16
10242017
cafreeman2
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$$$$$$SYSDATE$$$$$$
$$$$$$DESIGNER$$$$$$
$$$$$$DRAWING NAME$$$$$$
$$$$$$DRAWING SCALE$$$$$$

PERMIT DRAWING
SHEET 39 OF 41

SITE 19 WLB

176+50.00

SITE 19 WLB

176+00.00

SITE 19 WLB WLB SITE 20

175+50.00

SITE 19 WLB

175+00.00

174+50.00

174+00.00

6/23/16
10242017
cafreeman2
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6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-5014	X-75

0 2.5 5

PERMIT DRAWING
SHEET 40 OF 41

182 + 00.00

181 + 50.00

181 + 00.00

180 + 50.00

180 + 00.00

179 + 50.00

WLB

SITE 21

10/24/2017
cafreeman2
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WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	L Sta 53+87 to 55+73 Lt	Roadway fill	0.04				0.02					
2	L Sta 56+26 to 56+50 Lt/Rt	Culvert Extension	< 0.01		< 0.01		< 0.01	0.02	0.02	4	8	
3	L Sta 61+37 Rt	Roadway fill	< 0.01				< 0.01					
4	L Sta 66+13 to 70+24 Lt	Roadway fill	0.22				0.05					
5	L Sta 71+55 to 73+86 Rt	Roadway fill / Culvert	0.28				0.03					
6	L Sta 75+16 TO 76+73 Rt	Culvert / Roadway fill	0.02				0.03					
7	L Sta 85+34 to 88+03 Rt	Roadway fill	0.04				0.02					
8	L Sta 93+00 to 96+16 Lt	Roadway fill	0.07				0.04					
9	L Sta 103+90 to104+62 Lt/Rt	Culvert Extension	< 0.01				< 0.01	0.02	0.02			
10	L Sta 108+75 to 109+77 Rt	Tail Ditch					0.02					
11	L Sta 116+55 to 117+54 Lt	Roadway Ditch / Tail Ditch			< 0.01		< 0.01					
12	L Sta 126+78 to 127+40 Lt	Culvert Extension/Roadway fil	< 0.01				< 0.01	0.02	0.01			
13	L Sta 129+64 to 130+19 Lt	Roadway fill	< 0.01				< 0.01					
14	L Sta 135+70 to 136+10 Lt	Roadway fill	< 0.01				< 0.01					
15	L Sta. 139+07 Lt	Roadway fill	< 0.01				< 0.01					
16	L Sta 163+08 to 167+40 Lt	Roadway fill	0.02					< 0.01				
17	L Sta 166+91 to 169+80 Rt	Roadway fill	< 0.01				0.03					
18	L Sta. 167+81 to 173+51 Lt	Roadway fill	0.07				0.03					
19	L Sta 174+77 to 176+84 Lt	Roadway fill	0.05				0.03					
20	L Sta. 175+29 to 175+95 Rt	Roadway fill	< 0.01				0.01					
21	L Sta 179+50 Rt	Roadway fill	< 0.01				< 0.01					
TOTALS*:			0.83		< 0.01		0.33	0.08	0.05	4	8	0

*Rounded totals are sum of actual impacts

NOTES: ***Quantities shown below are included in the above totals***

Site 2: 4 sqft of fill in CAMA wetland due to roadway fill.

Site 5: 0.10 acre total take of wetlands per 4B comment

Site 8: 0.07 acre of fill and 0.04 acre of hand clearing in CAMA wetland due to roadway fill.

Site 11: 7 sqft of excavation in CAMA wetland due to Roadway ditch and 23 sqft of hand clearing in CAMA wetland for tail ditch construction.

Site 12: 7 sqft of fill and 348 sqft of hand clearing in CAMA wetland due to roadway fill.

Sites 14 & 15: 132 sqft of fill and 0.01 acre of hand clearing in CAMA wetland due to roadway fill.

Site 16: 188 sqft of permanent fill in SAV due to 2:1 rock plated roadway fill slope. 653 sqft of fill in CAMA wetland due to roadway fill.

Site 17: 55 sqft of fill and 0.01 acre of hand clearing in CAMA wetland due to roadway fill. 32 sqft of fill in 404 wetland due to roadway fill.

Site 18: 0.07 acre of fill and 0.03 acre of hand clearing in CAMA wetland due to roadway fill.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6/13/2018
DARE
R-5014
41162.1.1

R-5014
PROPOSED UTILITY NARRATIVE
DARE COUNTY

Date: March 19, 2018

Power
Owner: Dominion Power

Contact info: James Pulley (252) 332-1813
james.a.pulley@dom.com

Dominion Power will install a new pole line over a JS mitigation stream from L line station 126+60 left to 127+60 left. This aerial line will not require any poles to be set in wetlands and the minimum attachment at the lowest sag will be 20'.
Dominion Power will install a new pole line over 404 and CAMA wetlands from L line station 166+00 right to 170+00 right. This new line will require a new pole to be set in a 404 wetland at L line station 167+50 right. All other poles are existing and to remain.

Wetland impacts

- Dominion will hand clear .03 acres of wetlands from L line station 86+18 left to 88+48 left.
- Dominion will hand clear .157 of wetlands from L line station 164+54 right to 168+42 right and temp fill less than .01 acres to set a pole.

Phone
Owner: CenturyLink

Contact info: Bruce Herrington (252) 207-2400
bherrington@terratechllc.net

CenturyLink will be installing new underground cable by method of directional drill at the following locations. The locations are 404 and CAMA wetland areas.

- L line station 65+10 left to 71+15 left (404 wetland)
- L line station 74+75 right to 77+10 right (404 wetland)
- L line station 94+00 right to 96+00 right (CAMA wetland)

CATV
Owner: Spectrum

Contact Info: Cindy Muscia (252) 715-2106
cindy.muscia@chartercom.com

Spectrum will be attached to the Dominion poles over the JS mitigation area wetland area described in the Dominion section. They will also be installing underground cable by method of directional drill at L line station 53+75 left to 58+00 left.

Water
Owner: Town of Kill Devil Hills

Contact Info: Steve Albright (252) 480-4086
steve@kdhnc.com

The Town of Kill Devil Hills will be replacing an existing 8" AC waterline with new 8" PVC C900 waterline from L line Station. 210+00 right to 232+00 left. This new line will not impact or be constructed around any environmental wetlands and should not need permitting.
This relocation work will not be done near or around any wetlands.

Water
Owner: Dare County Water

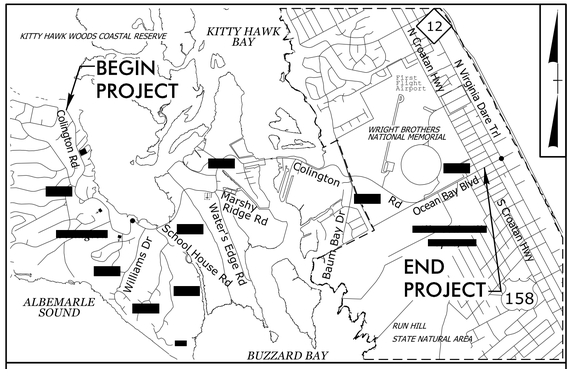
Contact Info: Ken Flatt (252) 475-5990
kenf@darenc.com

Dare County Water has an existing 8" AC water line that will be abandoned and replaced with the NCDOT contractor installing a new 12" PVC water line for most of the project and will need to directional bore sensitive wetland areas at the following locations.

- L line station 88+52 to station 96+63 (CAMA wetland and JS stream)
- L line station 123+99 right to 127+97 right (CAMA wetland)
- L line station 174+30 right to 178+10 right (404 wetland)

09/08/99

TIP PROJECT: R–5014



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
R–5014	UE–1

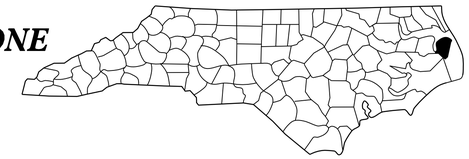
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Utility Permit Drawing
Sheet 1 of 12

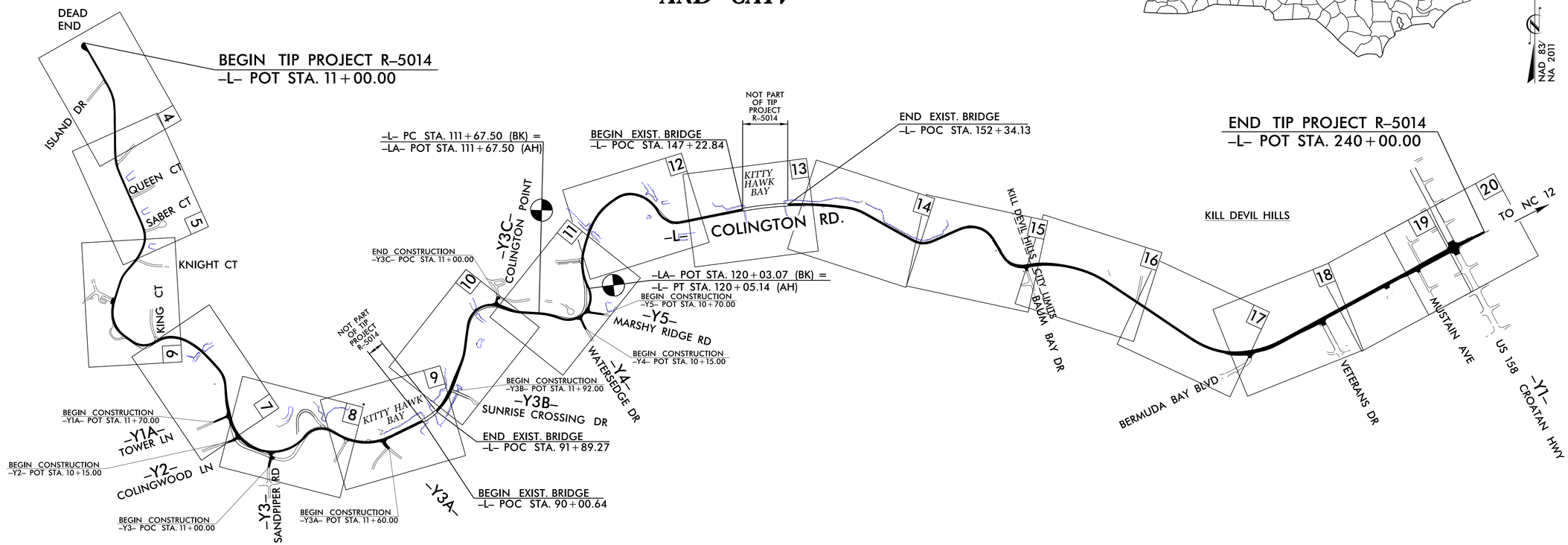
NEU ENVIRONMENTAL PERMIT PLANS DARE COUNTY

LOCATION: SR 1217,COLINGTON RD. FROM DEAD END TO US 158 CROATAN HIGHWAY IN KILL DEVIL HILLS

TYPE OF WORK: RELOCATION OF WATER, POWER, PHONE AND CATV

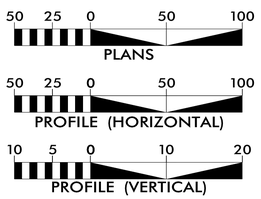


NAD 83/ NA 2011



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UE–1	*NEU TITLE SHEET*
UE–2 THRU UE–7	*NEU PLAN SHEETS*
UE–8 THRU UE–16	*NEU PROFILE SHEETS*

UTILITY OWNERS WITH CONFLICTS

(A) WATER – DARE COUNTY WATER
(B) WATER – KILL DEVIL HILLS
(C) POWER – DOMINION POWER
(D) TELEPHONE – CENTURYLINK
(E) CATV – CHARTER

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699–1555
PHONE (919) 707–6690
FAX (919) 250–4151

BO HEMPHILL P.E.	*UTILITIES REGIONAL ENGINEER*
KELVIN MARTIN	*UTILITIES ENGINEER*
KYLE PLEASANT	*UTILITIES AREA COORDINATOR*
LARRY JAMES JR.	*UTILITIES COORDINATOR*

03-APR-2018 16:55
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-2
DESIGNED BY: KSM	
DRAWN BY: KSM	
CHECKED BY: BH	
APPROVED BY: BH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Utility Permit Drawing
Sheet 2 of 12

NAD 83\NA 2011

REVISIONS

8/17/99

SPECTRUM UNDERGROUND CABLES AND FIBER

END BORE
-L- STA. 58+00
SP-1 STA. 53+43

PROPOSED 12 INCH WATER MAIN

BEGIN BORE
-L- STA. 53+75
SP-1 STA. 10+00

ABANDONED

CENTURYLINK TO ADJUST CABLES

CENTURYLINK TELEPHONE PED

BEGIN BORE
APPROX STA. 65+10

ABANDONED

MATCH LINE -L- STA. 53+00.00
SEE SHEET 6

MATCH LINE -L- STA. 66+50.00
SEE SHEET 8

ALAIN J. TTEE PIRRONE
MONIKA C. TTEE PIRRONE
DB 2110 - PG 24
PB C - PG 167A

LEWIS R. BEASLEY
JANE BEASLEY
DB 1936 - PG 351
PB C - PG 167A

NANCY K. BALONIS
DB 1074 - PG 81

TERRY BEASLEY
DB 864 - PG 210
PB C - PG 111A

WILLIAM T. CAROON
DB 1417 - PG 101
PB C - PG 111A

JASON B. HILL
DB 38 - PG 99
DB 1695 - PG 27

GARLAND H. DUNSTAN, JR.
DB 1722 - PG 90

HARBRINGER LAND & TIMBER, LLC
DB 1932 - PG 176
PB 1 - PG 72

SHINGLE LANDING OF COLINGTON CORP
DB 1614 - PG 12

JOSEPH JONES JR.
DB 2114 - PG 735

GARY LEE KENNEDY
DB 158 - PG 88
PB C - PG 178I

JANE C. BALDWIN
DB 124 - PG 651
DB 36 - PG 299

US CELLULAR

RICHARD A. COHEN
DB 1935 - PG 43
PB C - PG 167A

EDWARD G. COLLIER
DB 1703 - PG 256
PB G - PG 188

ISABEL LOPEZ
BLANDINA LOPEZ

SHINGLE LANDING OF COLINGTON CORP.
DB 1570 - PG 152
PB G - PG 212

COLINGTON RD. 219 BST

3/29/2018
P:\TOPS\0659\082\R-5014\Utilities\permits\R5014_UE2_psh.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-3
DESIGNED BY: KSM	
DRAWN BY: KSM	
CHECKED BY: BH	
APPROVED BY: BH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

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Utility Permit Drawing
Sheet 3 of 12

NAD 83/NSRS 2011

REVISIONS 8/17/99

4/5/2018
P:\UDS\0659\082\R-5014\Utilities\permits\R5014_UE3_psh.dgn
11:12:26 AM

SITE 1
HANDCLEARING IN WETLAND =0.03 ACRES

DENOTES HAND CLEARING

MATCH LINE -L- STA. 80+00.00 SEE SHEET 8

MATCH LINE -L- STA. 93+00.00 SEE SHEET 10

85+00 90+00

45 LIBERTY CHRISTIAN FELLOWSHIP DB 2111 - PG 614

44 LIBERTY CHRISTIAN FELLOWSHIP DB 2111 - PG 614

GARY D. CRANE, JR. DB 1588 - PG 286 DB 1244 - PG 276

EVELYN G. CARLISLE DB 1678 - PG 235 PB G - PG 202

ROCKY D. MIDGETTE DB 1560 - PG 261 DB 1652 - PG 275

PROPOSED CURB CUT

DOMINION AND SPECTRUM JOINT OVERHEAD LINE

Colington Cut Mitigation Site

PROPOSED 12 INCH WATER MAIN

COLINGTON CREEK, LLC DB 1545 - PG 196

DAVID A. SHAW DB 1851 - PG 354 PB G - PG 264

46 JLS PROPERTIES, LLC DB 1716 - PG 87

CENTURYLINK UNDERGROUND TELEPHONE CABLES

ABANDONED

EVELYN G. CARLISLE DB 1678 - PG 235 PB G - PG 202

47

CENTURYLINK TELEPHONE PED

ABANDONED

48 TANYA TILLETT CROW DB 786 - PG 561 PB C - PG 198D

COUNTY OF DARE DB 1673 - PG 406 PB G - PG 190

LGI/LAND NC, LLC DB 1673 - PG 409 PB G - PG 190

PROPOSED 12" WATER MAIN

BEGIN BORE AT L-88+52

COLINGTON FIRE DEPT

PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-4
DESIGNED BY: KSM	
DRAWN BY: KSM	
CHECKED BY: BH	
APPROVED BY: BH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
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NAD 83/NA 2011

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Utility Permit Drawing
Sheet 4 of 12

REVISIONS 8/17/99

50 LGILAND NC, LLC
DB 1673 - PG 409
PB G - PG 264

53 JANICE WILLIAMS O'NEAL
DB 365 - PG 842

58 JASPER DONNIE GAMIEL
DB 1164 - PG 389
PB D - PG 398

59 MAYNARD R. OUTLAW
DB 1390 - PG 278
PB D - PG 398

65 COLINGTON POINT DEVELOPERS, LLC
DB 1677 - PG 203
PB G - PG 300

66 COLINGTON POINT DEVELOPERS, LLC
DB 1702 - PG 237
PB G - PG 300

62 COLINGTON VENTURES
DB 1880 - PG 59
PB C - PG 197A

63 BRANDON BEASLEY
DB 1832 - PG 450
PB C - PG 399

61 MARK D. NUNEMAKER
DB 1615 - PG 366
PB C - PG 197A

64 WILLIAM JOSEPH MEYERS, JR.
DB 1875 - PG 89
PB C - PG 197A

COLINGTON CREEK, LLC
DB 1545 - PG 196

57 GARLAND H. DUNSTAN, JR.
DB 1539 - PG 22

64 ROBERT SHANE MOORE
DB 2034 - PG 987
PB C - PG 122D

56 CHRISTOPHER K. ARCHER
DB 1591 - PG 86

55 GARY GENE BEASLEY
DB 1071 - PG 37

54 CODY JACOB HUDOCK
DB 1798 - PG 164

52 WVA COL SOL JOHNSON
DB 2018 - PG 531
PB E - PG 345

49 DAVID A. SHAW
DB 1851 - PG 354
PB G - PG 264

REGINA OUTLAW ZEINER
DB 1810 - PG 242
PB E - PG 345

PROPOSED 12 INCH WATER MAIN

EXTEND EXISTING 48 CMP

ABANDONED

REM

END BORE AT L-STA. 96+63

END BORE
L STA. 96+00
CL-1 STA. 30+09

BEGIN BORE
L STA. 94+00
CL-1 STA. 10+00

CENTURYLINK UNDERGROUND TELEPHONE CABLES

MATCH LINE -L- STA. 93+00.00 SEE SHEET 10

MATCH LINE -L- STA. 93+00.00 SEE SHEET 9

MATCH LINE -L- STA. 107+50.00 SEE SHEET 11

100+00 95+00 105+00

3/29/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-5
DESIGNED BY: KSM	
DRAWN BY: KSM	
CHECKED BY: BH	
APPROVED BY: BH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

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Utility Permit Drawing
Sheet 5 of 12
4/5/18

REVISIONS

NAD 83/NA 2011

PROPOSED 12 INCH WATER MAIN

REM

ABANDONED

CENTURYLINK UNDERGROUND TELEPHONE CABLES

END BORE AT 127+97

DOMINION AND SPECTRUM JOINT OVERHEAD LINE

MATCH LINE -L- STA. 125+50.00
SEE SHEET UO-09

DOMINION AND SPECTRUM JOINT OVERHEAD LINE

MATCH LINE -L- STA. 142+00.00
SEE SHEET UO-11

130+00

135+00

140+00

CAMA

Coll, Mitig

DAVIE L. FLOYD
DB 1845 - PG 233
DB 1669 - PG 363

CHARLOTTE M. BEASLEY
DB 142 - PG 189
PB 8 - PG 14

GEORGE THOMAS BEASLEY
DB 866 - PG 816

COLINGTON MOBILE HOME PARK
DB 1586 - PG 155
PB 1 - PG 97

CHESTER W. SMITH, 3RD
DB 1359 - PG 315
PB 1 - PG 97

PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-6
THIS SHEET CORRESPONDS TO RDY-	

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

Utility Permit Drawing
Sheet 6 of 12
Revised 7/10/18

5/14/99

CONNECT TO EXISTING 12" WATERLINE

-L- PT Sta. 155+70.42

-L- PC Sta. 156+04.64

-L- PT Sta. 158+45.30

-L- PC Sta. 159+00.77

-L- PT Sta. 161+20.13

-L- PC Sta. 167+30.60

160+00

165+00

NAD 83/NA 2011

MATCH LINE -L- STA. 154+50.00 SEE SHEET 13

MATCH LINE -L- STA. 168+00.00 SEE SHEET 15

SITE 16

SITE 16

SITE 17

REMOVE EXIST. 24" HDPE

Creek Site

NC DEPARTMENT OF TRANSPORTATION
DB 357 - PG 709
PB D - PG 328

ARGIE SHULTZ
DB 1221 - PG 301
PB 2 - PG 209

ARGIE SHULTZ
DB 958 - PG 497
PB 2 - PG 209

J. FRAZIER EDWARD TTEE
DB 1790 - PG 117

WALKABOUT, LLC
DB 1781 - PG 7

DABNEY & KIM SHORT
WB E - PG 125

FAY B. MAJOR
DB 1681 - PG 193
PB 2 - PG 209

WALKABOUT LLC
DB 1964 - PG 309

RALPH DEAN BEASLEY HEIRS
WB 14E - PG 240

WILLENE P. SIMPSON
DB 312 - PG 926

JASON B. HILL
TANYA N. HILL
DB 2071 - PG 204

W.E. BENNETT
CHERYL M. JEFFERS
DB 1041 - PG 743
PB 2 - PG 209

J. CARL HAYES
DB 427 - PG 134
PB C - PG 7B

DARE COUNTY
DB 922 - PG 519
PB C - PG 7B

SPECIAL CUT DITCH SEE DETAIL 'G'

SPECIAL CUT DITCH SEE DETAIL 'C'

SPECIAL CUT DITCH SEE DETAIL 'F'

TIE DITCH TO NATURAL GROUND ELEVATIONS

Q10 = 0.48cfs
V10 = 0.54fps

SURFACE WATER IMPACTS

FILL IN SAV

FILL IN CAMA WETLAND

FILL IN WETLAND

HAND CLEARING

CENTURYLINK TO ADJUST CABLE

REMOVE EXIST. 15" RCP

TIE PROP. CUT DITCH TO EXISTING DITCH

TIE DITCH TO EXIST. 12" CMP INVERT

15" DRIVE PIPE
Q10 = 1.9cfs
V10 = 2.0fps

15" RCP-IV

12" RCP-IV

DOMINION AND SPECTRUM JOINT OVERHEAD LINE

SITE 2

HAND CLEARING IN WETLAND = 0.16 ACRES

FILL IN WETLAND < 0.01

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

10-JUL-2018 11:17
P:\projects\NCDOT\Active\R-5014Revisn\EUPlans\180703\R-5014_Ut_rdy14_UE6_psh.dgn
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PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-7
THIS SHEET CORRESPONDS TO RDY-	

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

Utility Permit Drawing
Sheet 7 of 12
Revised 7/10/18

**ROCK PLATING –L– STA. 163+08 TO 173+60 LT

NO CLAIM IS NECESSARY ON OPEN WATER

SITE 18

SITE 19

SITE 20

SITE 21

SITE 17

SITE 2

FILL IN WETLAND < 0.01'

END GRADE /BEGIN OVERLAY
–L– STA. 183+00.00

DOMINION AND SPECTRUM JOINT OVERHEAD LINE

DO NOT DISTURB LARGE OAK TREE

TIE DITCH TO NATURAL GROUND ELEVATIONS

SPECIAL CUT DITCH SEE DETAIL 'B'

SPECIAL CUT DITCH SEE DETAIL 'F'

SPECIAL CUT DITCH SEE DETAIL 'P'

COLLAR AND EXTEND EXIST. 24"CMP WITH APPROX. 13' 24"CAAP

REMOVE AND REPLACE WITH TRAFFIC BEARING JB

REMOVE EXIST. 15" CMP

REMOVE EXIST. 24" HDPE

REMOVE EXIST. 12" HDPE

ABANDONED

300' SYMMETRICAL WIDENING

12" DUCTILE IRON PIPE

DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

(116) DARE COUNTY
DB 922 - PG 519
PB C - PG 7B

(117) DWIGHT H. WHELESS
DB 607 - PG 357

(118) GEORGE GARDNER
DB 1711 - PG 491
DB 322 - PG 967

(119) 1085 COLLINGTON RD LLC
DB 1828 - PG 210
PB A - PG 233
PB A - PG 214

(120) JIMMIE D. SUMMERELL
DB 1013 - PG 871

(121) D. S. E. INVESTMENT, LLC
DB 1888 - PG 423

(122) ROBERT W. NUSBAUM
DB 1794 - PG 16
PB E - PG 23
PB F - PG 300

(123) DANIEL P. PARSONS ETAL
DB 1711 - PG 490
PB F - PG 300

(124) DAVID RANDOLPH PARSONS ETAL
DB 1873 - PG 77
PB G - PG 229

(125) COLLINGTON CAFE
DB 1355 - PG 360

(126) STACY NEIL LANCASTER
DB 1758 - PG 44

(127) DAYSPRING FARMS LLC
DB 1923 - PG 435
PB G - PG 229

(128) DOUGLAS E. STOVER
DB 2052 - PG 534
PB B - PG 70

(129) BAUM BAY HARBOR CIVIC ASSOCIATION
DB 1207 - PG 586
PB B - PG 70

(130) JEFFREY D. JACOBSON
DB 848 - PG 693

(131) ROBERT CRAIG WHITTEN
DB 1734 - PG 2

(132) UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

(133) UNITED STATES DEPARTMENT OF INTERIOR
DB 78 PG 206

5/14/99

10-JUL-2018 17:17
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5/28/99

POWER

PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-8
DESIGNED BY: KSM	
DRAWN BY: KSM	
CHECKED BY: BH	
APPROVED BY: BH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

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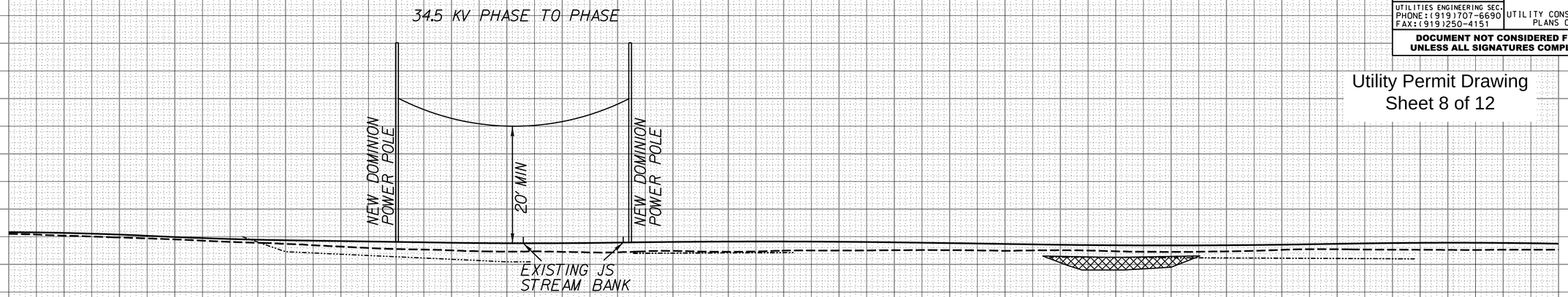
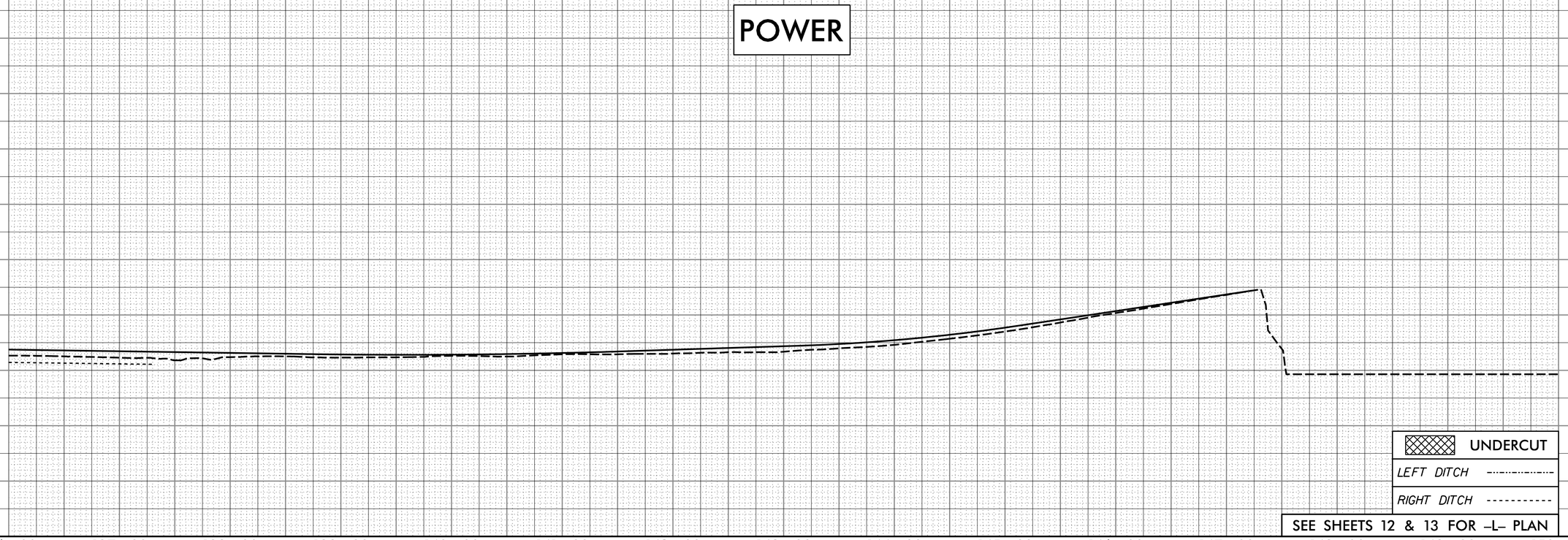
Utility Permit Drawing
Sheet 8 of 12



SEE SHEETS 11 & 12 FOR –L– PLAN

POWER



SEE SHEETS 12 & 13 FOR –L– PLAN

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-9
DESIGNED BY: KSM	
DRAWN BY: KSM	
CHECKED BY: BH	
APPROVED BY: BH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
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Utility Permit Drawing
Sheet 9 of 12

POWER

30 20 10 0 –10 –20 –30

150+00 151+00 152+00 153+00 154+00 155+00 156+00 157+00 158+00 159+00 160+00 161+00 162+00 163+00 164+00

SEE SHEETS 13 & 14 FOR –L– PLAN

POWER

34.5 KV PHASE TO PHASE

EXISTING DOMINION POWER POLE

20' MIN

NEW DOMINION POWER POLE

20' MIN

EXISTING DOMINION POWER POLE

20' MIN

NEW DOMINION POWER POLE

WETLANDS

UNDERCUT

LEFT DITCH

RIGHT DITCH

SEE SHEETS 14 & 15 FOR –L– PLAN

30 20 10 0 –10 –20 –30

164+00 165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00 173+00 174+00 175+00 176+00 177+00 178+00

8/23/2018
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-10
DESIGNED BY: WAW	
DRAWN BY: WAW	
CHECKED BY: BH	
APPROVED BY: BH	
REVISED:	

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC.
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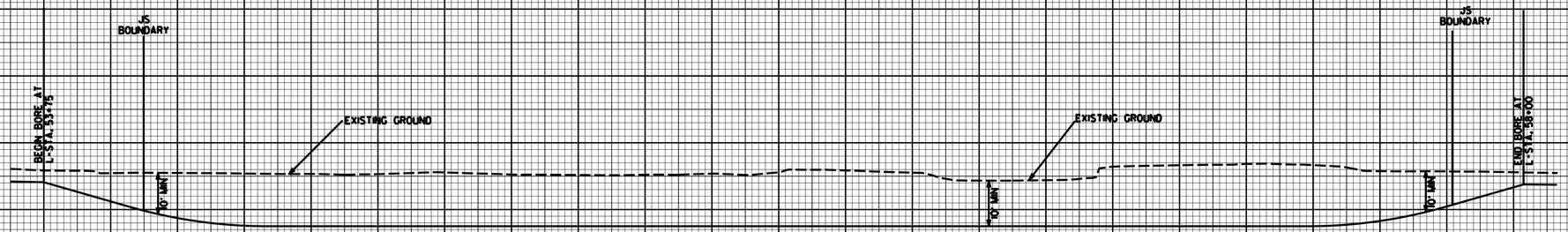
FAX:(919)250-4151

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

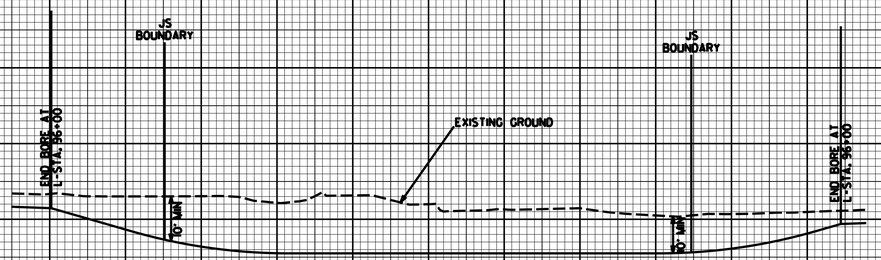
Utility Permit Drawing
Sheet 10 of 12

-SP-1-



CATV 4" CABLE

-CL-1-



TELEPHONE 4" CABLE

10+00 11+00 12+00 13+00 14+00

30 20 10 0 –10 –20 –30 –40 –50

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5014	UE-12
DESIGNED BY: KSM	
DRAWN BY: KSM	
CHECKED BY: BH	
APPROVED BY: BH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
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UTILITY CONSTRUCTION

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Utility Permit Drawing
Sheet 11 of 12

L-STA. 91+20

JS BOUNDARY

EXISTING GROUND

PROPOSED GROUND

80 70 60 50 40 30 20 10 0 –10 –20 –30 –40 –50 –60 –70 –80 –90 –100 –110

2+75 3+00 3+50 4+00 4+50 5+00 5+50

12″ Water Line

5/30/2008
8:16:18 AM
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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
Util 1	-L-86+18 to 88+48	Overhead Power,CATV ,Poles					0.03					
Util 2	L-164+56 to 168+42	Overhead Power,CATV ,Poles		>0.01			0.16					
TOTALS*:			0.00	>0.01	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
14 March 2018
Dare County
R-5014
41162.1.1
SHEET 12 OF 12

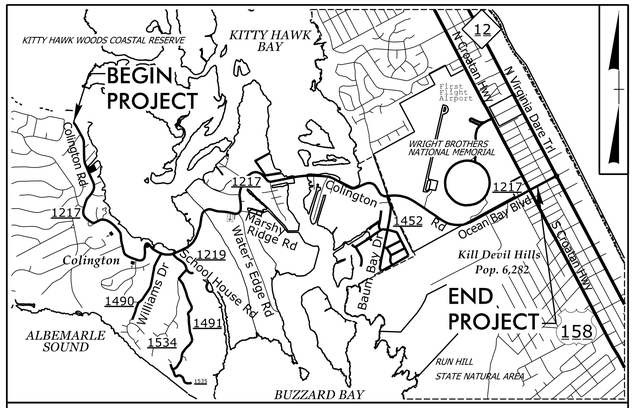
Revised 2013 10 24

09/08/99

TIP PROJECT: R–5014

CONTRACT:

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DARE COUNTY

ROW PLANS

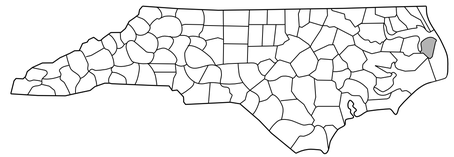
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–5014	1	

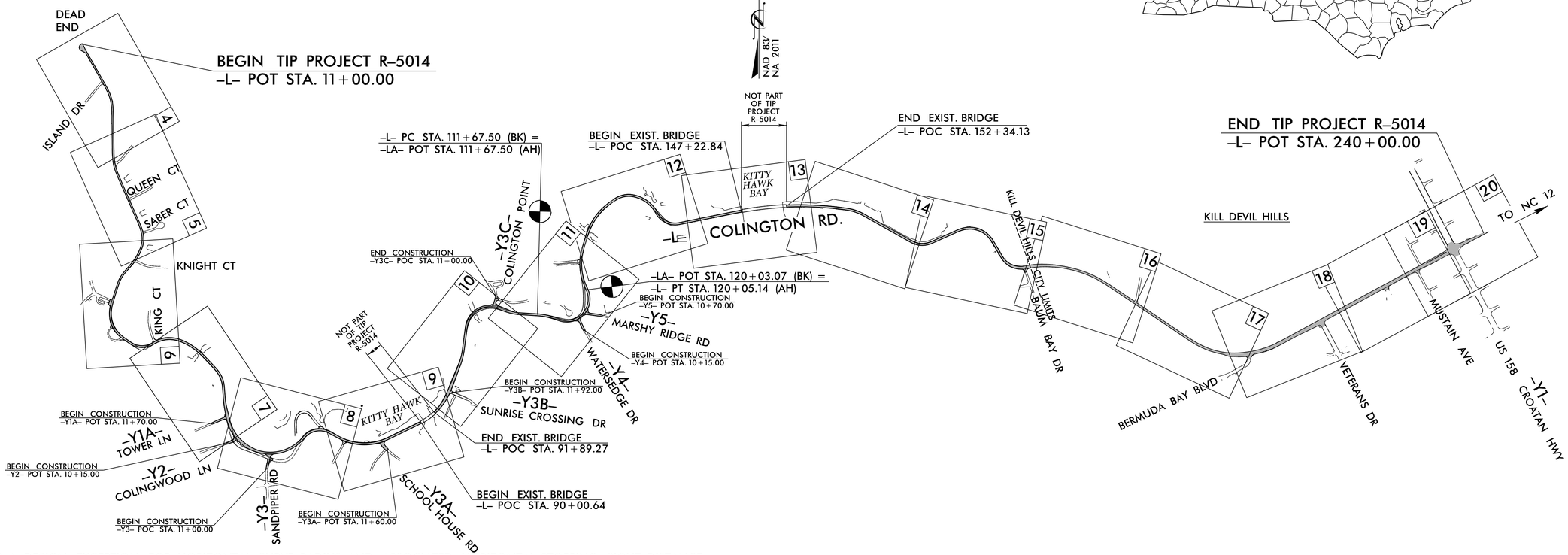
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
41162.1.1	STP–1217(6)	PE
41162.2.1	STP–1217(6)	R/W, UTL.

LOCATION: SR 1217 (COLINGTON RD.) FROM DEAD END TO US 158 CROATAN HIGHWAY IN KILL DEVIL HILLS

TYPE OF WORK: GRADING, DRAINAGE, PAVING & RESURFACING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





THERE IS A DESIGN EXCEPTION FOR HORIZONTAL CURVE RADIUS AND ASSOCIATED HORIZONTAL STOPPING SIGHT DISTANCE.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF KILL DEVIL HILLS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2018 = 13,970
ADT 2038 = 19,300
DHV = 11 %
D = 65 %
T = 3 % *
V = 40 MPH

* TTST =1% DUAL 2%
FUNC CLASS = LOCAL
STATEWIDE TIER

PROJECT LENGTH

TOTAL LENGTH ROADWAY TIP PROJECT R–5014 = 4.204 MILES

Prepared in the Office of:
CALYX ENGINEERS + CONSULTANTS
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 18, 2017

LETTING DATE:
NOVEMBER 20, 2018

JOHNNY BANKS
CALYX E & C PROJECT MANAGER

STEPHEN C. BROWDE, PE
CALYX E & C PROJECT DESIGN ENGINEER

NCDOT CONTACT: GARY LOVERING, PE
ROADWAY DESIGN – PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

9/8/2017
R:\Roadway\Proj\R5014_Rdy_TSH.dgn
jtest

PROJECT REFERENCE NO.	SHEET NO.
R-5014	1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

LIST OF STANDARD DRAWINGS

STANDARD SPECIFICATIONS

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
R-5014	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale ****S.U.E. = Subsurface Utility Engineering***

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

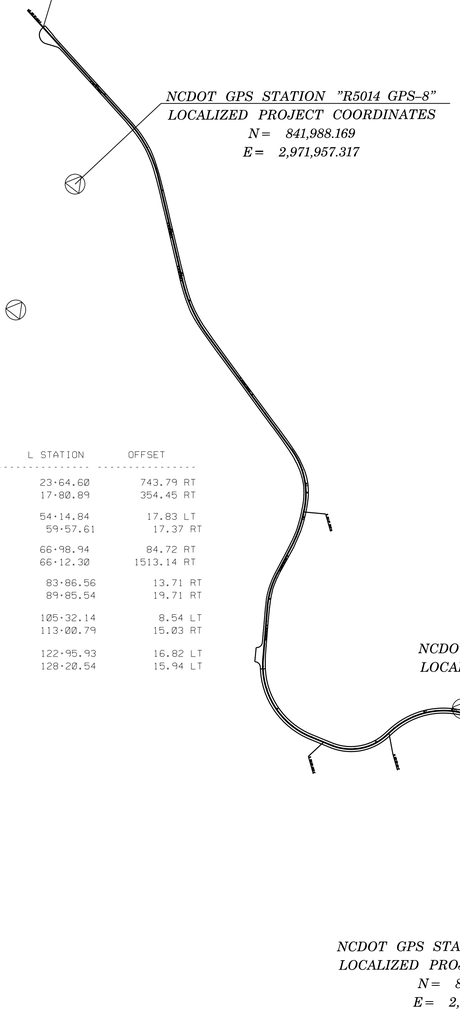
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

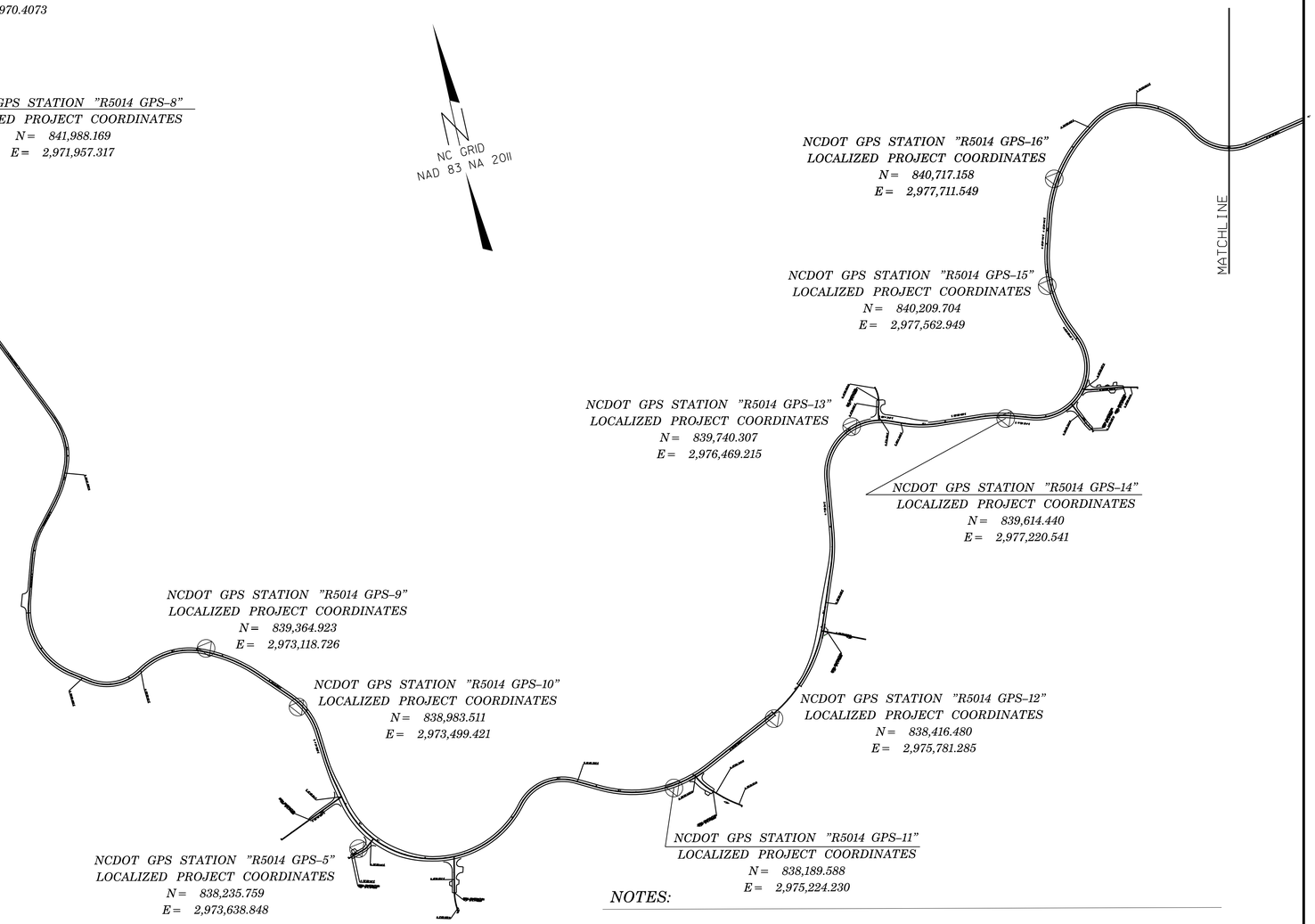
MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
R-5014	1C-1
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET R-5014





CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
R50147	GPS MON R5014-7	841504.5270	2971582.2610	14.42	23+64.60	743.79 RT
R50148	GPS MON R5014-8	841988.1690	2971957.3170	14.73	17+80.89	354.45 RT
R50149	GPS MON R5014-9	839364.9230	2973118.7260	1.96	54+14.84	17.83 LT
R501410	GPS MON R5014-10	838983.5110	2973499.4210	4.29	59+57.61	17.37 RT
R50145	GPS MON R5014-5	838235.7590	2973638.8480	7.45	66+98.94	84.72 RT
R50146	GPS MON R5014-6	837674.2270	2972311.7050	21.59	66+12.30	1513.14 RT
R501411	GPS MON R5014-11	838189.5880	2975224.2300	3.78	83+86.56	13.71 RT
R501412	GPS MON R5014-12	838416.4800	2975781.2850	13.80	89+85.54	19.71 RT
R501413	GPS MON R5014-13	839740.3070	2976469.2150	2.43	105+32.14	8.54 LT
R501414	GPS MON R5014-14	839614.4400	2977220.5410	4.59	113+00.79	15.03 RT
R501415	GPS MON R5014-15	840209.7040	2977562.9490	5.08	122+95.93	16.82 LT
R501416	GPS MON R5014-16	840717.1580	2977711.5490	2.67	128+20.54	15.94 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CENTROID1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 840,300.00(ft) EASTING: 2,980,000.00(ft)
ELEVATION: 6.00(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000332483
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CENTROID1" TO -L- STATION 11+00 IS N 73 ° 24' 49.23" E 8,378.2025
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
TIP R5014_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

PROJECT REFERENCE NO.	SHEET NO.
R–5014	1C–2
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET R–5014

–L– STA 240+00
END CONSTRUCTION
LOCALIZED PROJECT COORDINATES
N = 840,566.837
E = 2,987,724.6954

NCDOT GPS STATION "R5014 GPS–2"
LOCALIZED PROJECT COORDINATES
N = 840,401.002
E = 2,987,475.393

NCDOT GPS STATION "R5014 GPS–1"
LOCALIZED PROJECT COORDINATES
N = 840,782.732
E = 2,988,176.179

NCDOT GPS STATION "R5014 GPS–18"
LOCALIZED PROJECT COORDINATES
N = 840,550.147
E = 2,981,789.103

NCDOT GPS STATION "R5014 GPS–17"
LOCALIZED PROJECT COORDINATES
N = 840,649.796
E = 2,980,939.748

NCDOT GPS STATION "R5014 GPS–3"
LOCALIZED PROJECT COORDINATES
N = 840,851.362
E = 2,979,912.511

NCDOT GPS STATION "R5014 GPS–4"
LOCALIZED PROJECT COORDINATES
N = 840,718.607
E = 2,979,090.807

MATCHLINE

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
R50144	GPS MON R5014-4	840718.6070	2979090.8070	2.78	144+16.88	36.72 RT
R50143	GPS MON R5014-3	840851.3620	2979912.5110	12.78	152+54.83	21.58 RT
R501417	GPS MON R5014-17	840649.7960	2980939.7480	2.30	163+33.17	18.50 RT
R501418	GPS MON R5014-18	840550.1470	2981789.1030	3.26	172+45.69	28.48 RT
R50142	GPS MON R5014-2	840401.0020	2987475.3930	7.61	237+01.84	27.50 RT
R50141	GPS MON R5014-1	840782.7320	2988176.1790	6.93	119+21.95	10544.96 RT

NC GRID
NAD 83 NA 2011

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CENTROID1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 840,300.00(ft) EASTING: 2,980,000.00(ft)
ELEVATION: 6.00(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000332483
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"CENTROID1" TO -L- STATION 11+00 IS
N 73 ° 24′ 49.23″ E 8,378.2025
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
TIP R5014_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

PROJECT REFERENCE NO.	SHEET NO.
R-5014	1C-3
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET R-5014

PRELIMINARY RIGHT OF WAY TABLES

ALIGN	STATION	OFFSET	NORTH	EAST
L	42+30.33	-30.29	839794.30620	2972350.13244
L	42+30.35	-40.00	839791.39633	2972359.39405
L	42+66.10	-40.00	839757.27363	2972348.75285
L	42+95.09	40.00	839749.78581	2972264.06399
L	45+06.63	40.00	839518.17853	2972285.91430
L	46+88.38	40.00	839361.15369	2972410.94088
L	46+96.11	40.00	839356.13324	2972417.97748
L	46+96.11	-40.00	839421.78108	2972463.69795
L	47+92.93	40.00	839300.80054	2972497.42706
L	47+92.93	-40.00	839366.44838	2972543.14753
L	48+55.96	40.00	839267.29193	2972563.08088
L	49+70.63	45.00	839250.74782	2972696.52389
L	50+52.64	45.00	839283.11206	2972788.47468
L	50+52.64	-40.00	839357.04682	2972746.53841
L	50+61.32	-40.00	839361.32689	2972754.08429
L	50+85.31	45.00	839299.23071	2972816.89229
L	51+21.91	-40.00	839391.39098	2972811.54421
L	52+18.07	-40.00	839419.64476	2972914.86934
L	52+70.33	-45.00	839427.48032	2972973.29793
L	53+93.00	45.00	839315.59501	2973074.31547
L	53+93.00	-45.00	839398.87137	2973108.44825
L	56+98.52	45.00	839154.55706	2973308.40585
L	56+98.52	-45.00	839216.20851	2973373.97336
L	58+94.19	45.00	839012.00704	2973442.44199
L	58+94.19	-40.00	839070.23341	2973504.36686
L	61+21.58	45.00	838835.28172	2973520.78828
L	61+21.58	-40.00	838842.07007	2973605.51677
L	62+57.15	45.00	838700.14321	2973531.61541
L	62+57.15	-40.00	838706.93156	2973616.34391
L	63+83.95	-40.00	838587.38436	2973634.64063
L	63+83.95	45.00	838568.52016	2973551.76034
L	64+10.00	45.00	838543.12121	2973557.54134
L	64+47.56	67.05	838501.60969	2973544.37970
L	64+92.60	-45.00	838482.55042	2973663.62953
L	64+94.91	63.44	838455.94786	2973558.48056
L	65+20.00	45.00	838433.58903	2973583.33862
L	66+08.27	45.00	838343.82790	2973618.28569
L	74+57.05	-45.00	838227.68343	2974355.96618
L	75+52.05	45.00	838225.42838	2974486.40403
L	75+74.60	45.00	838244.11424	2974502.46915
L	78+34.34	-45.00	838394.22320	2974712.03108
L	78+92.44	45.00	838290.10504	2974734.15543
L	78+92.44	-45.00	838369.42989	2974776.67093
L	80+18.96	-45.00	838309.66499	2974888.17947
L	80+18.96	45.00	838230.34014	2974845.66397
L	80+52.92	45.00	838214.01116	2974878.31764
L	81+10.73	45.00	838190.55191	2974935.84315
L	81+25.00	-34.61	838261.30650	2974975.04811
L	84+48.00	45.00	838169.81606	2975293.04788
L	84+83.18	67.20	838157.93838	2975335.83429
L	86+97.47	40.00	838272.08759	2975530.74175
L	89+73.08	40.00	838392.53007	2975778.73693
L	92+08.44	40.00	838535.98800	2975980.27814
L	94+69.40	40.00	838761.25486	2976136.28544
L	95+16.80	45.00	838805.50594	2976159.92596
L	97+22.56	-40.00	839028.04729	2976153.67806
L	97+92.01	-40.00	839092.95449	2976178.38212
L	97+92.01	45.00	839062.71893	2976257.82273
L	99+76.92	45.00	839251.81356	2976305.43928
L	99+76.92	-40.00	839262.80658	2976221.15314
L	102+37.06	45.00	839509.76419	2976339.08247
L	102+37.06	-40.00	839520.75720	2976254.79633
L	104+97.62	45.00	839678.65055	2976459.98581
L	105+28.89	45.00	839688.72831	2976483.89765
L	107+19.81	45.00	839685.56834	2976638.96132
L	107+19.81	-40.00	839764.48569	2976670.53747
L	107+90.36	-45.00	839742.92018	2976737.89505
L	107+90.36	45.00	839659.36064	2976704.46149
L	109+68.37	-45.00	839707.13166	2976896.90625
L	109+68.37	45.00	839617.30544	2976891.31603
L	111+67.50	-45.00	839694.76306	2977095.65032
L	111+67.50	45.00	839604.93684	2977090.06009

ALIGN	STATION	OFFSET	NORTH	EAST
L	113+43.98	-45.00	839659.71344	2977279.67105
L	113+43.98	45.00	839574.12141	2977251.85013
L	114+28.56	-45.00	839633.56799	2977360.10845
L	114+28.56	45.00	839547.97596	2977332.28754
L	116+00.00	45.00	839553.65031	2977530.56454
L	116+14.68	56.50	839549.95299	2977551.30632
L	116+55.79	60.64	839571.20908	2977597.50066
L	116+75.00	45.00	839597.57343	2977607.01349
L	117+01.47	-45.00	839682.41331	2977567.26847
L	117+18.00	45.00	839632.39392	2977643.83387
L	117+36.67	54.51	839643.60346	2977665.40741
L	117+78.76	61.50	839683.50337	2977699.16486
L	118+00.00	45.00	839713.83770	2977695.27093
L	120+05.14	45.00	839949.15195	2977692.68971
L	120+52.13	45.00	839992.03861	2977673.47368
L	120+80.95	-45.00	839983.78666	2977579.36007
L	124+78.95	-45.00	840403.37110	2977561.09222
L	124+78.95	45.00	840377.94192	2977647.42505
L	126+29.10	-45.00	840547.40484	2977603.51710
L	126+29.10	45.00	840521.97566	2977689.84992
L	127+25.00	-45.00	840643.03011	2977638.95997
L	127+63.00	-40.00	840677.13315	2977661.01062
L	130+98.95	45.00	840872.59533	2977941.24749
L	130+98.95	-40.00	840942.11204	2977892.33504
L	131+55.98	-45.00	840979.02247	2977936.10491
L	131+55.98	45.00	840905.41655	2977987.89456
L	133+88.11	45.00	840940.51547	2978172.63614
L	133+88.11	-45.00	841027.98615	2978193.82296
L	133+95.79	45.00	840938.70806	2978180.09812
L	133+95.79	-45.00	841026.17874	2978201.28494
L	137+08.69	45.00	840775.38565	2978391.34420
L	137+08.69	-45.00	840817.91215	2978470.66316
L	137+43.69	-45.00	840793.91166	2978485.88051
L	138+20.15	-40.00	840746.60935	2978527.25509
L	139+70.22	40.00	840630.07010	2978645.62577
L	139+70.69	45.00	840625.07703	2978646.23021
L	140+15.58	40.00	840635.63832	2978698.16841
L	140+15.58	-40.00	840714.04248	2978682.26912
L	141+85.12	40.00	840669.33269	2978864.32548
L	145+81.40	-40.00	840826.49331	2979236.79798
L	156+05.69	45.00	840822.80620	2980259.97825
L	156+83.47	-30.00	840892.43392	2980342.43004
L	156+86.20	-45.00	840907.16739	2980346.37778
L	158+45.30	45.00	840801.15871	2980495.24766
L	158+45.30	-45.00	840890.41846	2980506.76706
L	159+00.77	45.00	840794.05852	2980550.26452
L	159+00.77	-45.00	840883.31827	2980561.78392
L	161+20.13	45.00	840730.90281	2980740.98451
L	161+20.13	-45.00	840809.39653	2980785.01560
L	161+59.79	-35.00	840781.27291	2980814.71115
L	161+65.38	45.00	840708.76808	2980780.44385
L	161+83.79	45.00	840699.76253	2980796.49794
L	163+30.42	-35.00	840697.79729	2980963.52219
L	163+31.53	-30.00	840692.89295	2980962.04504
L	167+30.60	45.00	840432.24139	2981273.40483
L	169+63.22	45.00	840420.07424	2981537.81459
L	170+84.60	-30.00	840537.99029	2981618.15497
L	170+91.00	-45.00	840554.29594	2981617.89343
L	172+98.50	45.35	840556.23921	2981844.20483
L	172+98.50	-45.00	840638.76399	2981807.42560
L	177+36.46	-45.00	840498.10496	2982245.50158
L	177+36.46	45.00	840452.59289	2982167.85719
L	179+38.79	-45.00	840323.54851	2982347.81967
L	179+38.79	45.00	840278.03644	2982270.17527
L	181+92.00	45.00	840132.73969	2982516.80283
L	182+22.35	65.00	840114.15126	2982554.54524
L	182+37.96	-45.00	840225.27153	2982556.49513
L	182+59.11	-45.00	840228.64850	2982577.37725
L	182+61.70	-30.00	840214.25428	2982582.32826
L	231+50.00	-47.80	840205.10860	2986954.02174
L	231+66.29	70.00	840109.18544	2987024.32165
L	231+72.40	-60.00	840226.47934	2986967.93555
L	231+95.00	50.00	840140.42218	2987040.08204
L	232+20.12	-60.00	840249.15242	2987009.93380
L	232+45.00	-50.00	840252.17055	2987036.57472

ALIGN	STATION	OFFSET	NORTH	EAST
L	45+11.00	-40.00	839546.17802	2972360.97999
L	46+05.00	-48.00	839481.08471	2972410.78071
L	47+21.00	-47.00	839413.30176	2972488.12134
L	48+44.00	-40.00	839346.32690	2972580.17287
L	51+19.05	-61.93	839410.16276	2972799.74490
L	52+22.84	-47.00	839427.23217	2972919.39018
L	52+72.21	-52.00	839434.41067	2972975.65364
L	53+93.00	-58.00	839410.90018	2973113.37854
L	53+93.00	-45.00	839398.87137	2973108.44825
L	56+10.00	45.00	839211.32548	2973247.99019
L	56+10.00	65.00	839195.93113	2973235.22249
L	56+37.00	-54.00	839268.57232	2973333.18656
L	56+37.00	-45.00	839261.86664	2973327.18374
L	56+50.00	65.00	839171.94602	2973262.54949
L	56+50.00	45.00	839186.60262	2973276.15773
L	56+62.00	-54.00	839250.29242	2973352.90233
L	56+62.00	-45.00	839243.80062	2973346.66883
L	84+33.00	59.00	838152.71948	2975280.03433
L	84+33.00	45.00	838166.44575	2975277.27946
L	84+83.18	67.20	838157.93838	2975335.83429
L	103+90.00	53.00	839618.98983	2976396.02463
L	103+90.00	45.00	839624.18523	2976389.94123
L	104+20.00	-40.00	839704.31863	2976349.16536
L	104+24.00	-55.00	839718.55453	2976342.48886
L	104+25.00	45.00	839644.97210	2976410.21352
L	104+25.00	53.00	839639.02082	2976415.55975
L	104+44.00	-40.00	839722.22295	2976370.18735
L	104+44.00	-50.00	839730.12169	2976364.05465
L	107+50.00	60.00	839660.42753	2976661.41645
L	107+50.00	45.00	839674.35412	2976666.98871
L	109+69.00	56.00	839606.28762	2976891.26048
L	112+04.00	51.00	839595.96700	2977123.39301
L	113+97.00	45.00	839557.73191	2977302.27299
L	114+99.00	45.00	839533.68351	2977413.88953
L	115+17.00	50.00	839528.76152	2977435.32222
L	116+14.79	76.50	839531.83791	2977559.78338
L	122+47.00	-45.00	840156.74425	2977537.80268
L	123+22.00	-55.00	840237.49831	2977524.91005
L	123+75.00	-51.00	840294.71538	2977532.93653
L	124+32.00	-50.00	840355.50265	2977543.84230
L	125+45.00	-53.00	840468.98936	2977572.08014
L	126+45.00	-45.00	840563.57900	2977608.48144
L	126+70.00	-55.00	840592.15553	2977607.61649
L	126+70.00	-45.00	840588.77477	2977617.02767
L	126+95.00	-45.00	840613.64931	2977626.46811
L	126+95.00	-55.00	840617.36396	2977617.18365
L	127+15.00	-45.00	840633.29633	2977634.65624
L	127+71.00	-50.00	840689.31988	2977656.11445
L	127+71.00	-40.00	840684.62105	2977664.94174
L	129+84.00	45.00	840803.77403	2977858.74741
L	129+84.00	52.00	840798.78462	2977863.65717
L	130+32.00	45.00	840834.15482	2977891.81568
L	138+25.00	45.00	840673.87226	2978483.01005
L	138+58.00	84.00	840619.23141	2978499.69630
L	139+71.00	54.00	840616.08305	2978646.73232
L	141+78.00	47.00	840661.05756	2978858.74007
L	141+78.00	40.00	840667.91793	2978857.34888
L	166+06.00	45.00	840493.20073	2981164.73331
L	166+06.00	50.00	840488.83997	2981162.28713
L	167+55.00	47.00	840417.57153	2981298.35734
L	168+61.00	70.00	840369.54359	2981421.05122
L	172+35.00	61.00	840516.09524	2981792.57493
L	173+72.00	45.00	840574.78089	2981903.65760
L	180+81.00	45.00	840164.51170	2982390.77633
L	180+85.00	65.00	840144.43117	2982386.23857
L	182+05.00	52.70	840125.07519	2982532.36502

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CENTROID1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 840,300.00(ft) EASTING: 2,980,000.00(ft) ELEVATION: 6.00(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000332483

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CENTROID1" TO -L- STATION 11+00 IS N 73 ° 24' 49.23" E 8,378.2025

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
TIP R5014_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

8/17/99

REVISIONS

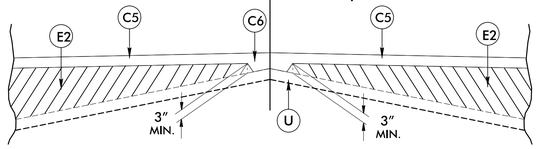
PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN) *MAY 23,2016*

C1	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5″ OR GREATER THAN 2″ DEPTH.
C4	PROP. APPROX. 2.5″ ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C5	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1″ OR GREATER THAN 1.5″ DEPTH.
D1	PROP. APPROX. 2.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ OR GREATER THAN 4″ DEPTH.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ IN DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5″ IN DEPTH OR LESS THAN 3″
L	PROP. APPROX. 3″ CLASS IV AGGREGATE STABILIZATION
R1	5″ MONOLITHIC ISLAND (KEYED IN)
R2	2′-6″ CURB & GUTTER
S	4″ CONCRETE WITH WELDED WIRE MESH
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VARIABLE DEPTH MILLING - 0″ TO 3″
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

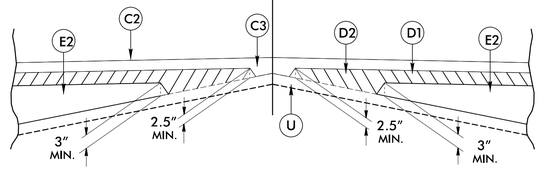
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

–Y1A– (TOWER LANE)
–Y2– (COLLINGWOOD LANE)
–Y3– (SANDPIPER DRIVE)
–Y3A– (SCHOOL HOUSE ROAD)
–Y3B– (SUNRISE CROSSING DRIVE)
–Y3C– (COLLINGTON POINT)
–Y4– (WATERSEDGE DRIVE)
–Y5– (MARSHY RIDGE ROAD)

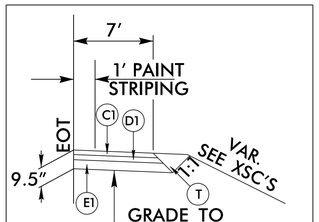


Detail Showing Method of Wedging

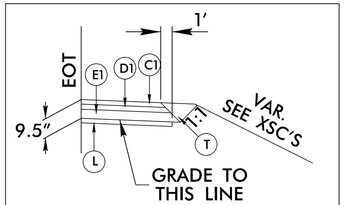
℄ –L– SR 1217 (COLINGTON RD)



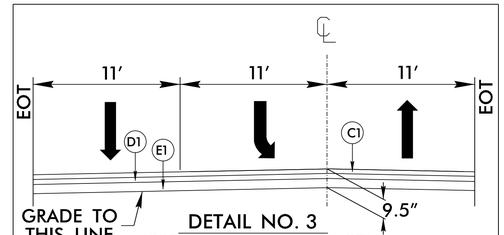
Detail Showing Method of Wedging



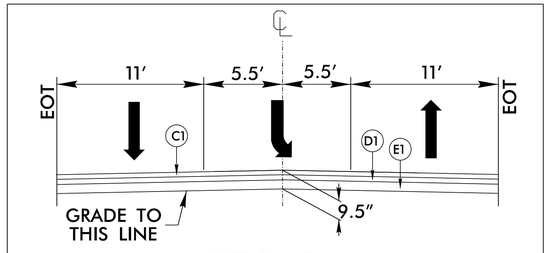
*DETAIL NO. 1
USE DETAIL NO. 1 WITH TYPICAL SECTIONS 2 & 3



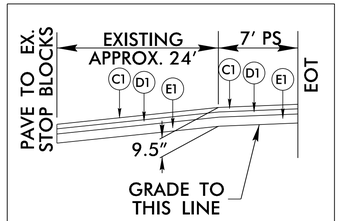
DETAIL NO. 2
USE DETAIL NO. 2 WITH TYPICAL SECTIONS 2, 3, 6, & 7 AT THE DISCRETION OF THE ENGINEER



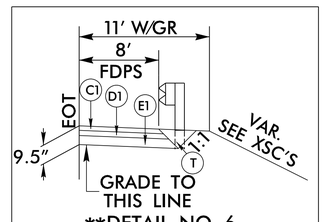
DETAIL NO. 3
USE DETAIL NO. 3 WITH TYPICAL SECTIONS 2 AND 3 AT COLINGTON RD / SUNRISE CROSSING DR INTERSECTION



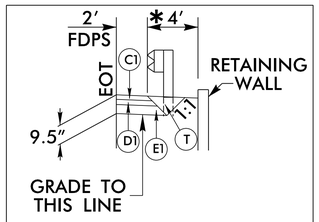
DETAIL NO. 4
USE DETAIL NO. 4 WITH TYPICAL SECTIONS 2 AND 3 AT COLINGTON RD /BAUM BAY DR INTERSECTION
COLINGTON RD /COLINGWOOD LN INTERSECTION
COLINGTON RD /TOWER LN INTERSECTION



DETAIL NO. 5
USE DETAIL NO. 5 WITH TYPICAL SECTION NO. 2
–L– STA. 84+46.00 TO
–L– STA. 86+04.00 LT

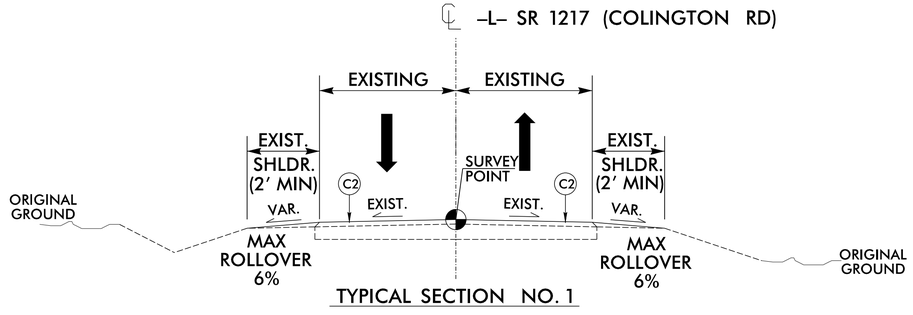


**DETAIL NO. 6
USE DETAIL NO. 6 WITH TYPICAL SECTIONS 2, 3, 6 & 7



***DETAIL NO. 7
USE DETAIL NO. 7:
–Y3C– STA. 10+34.71 LT
TO –Y3C– STA. 10+58.63 LT
–Y3C– STA. 10+53.74 RT
TO –L– STA. 107+27.22 LT

*8′ POSTS WITH 6′–3″ SPACING



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
–L– STA. 11+00.00 TO –L– STA. 43+10.00
–L– STA. 209+96.72 TO –L– STA. 229+00.00

NOTE:
TRANSITION FROM TYP. 1 TO TYP. 2
–L– STA. 41+98.74 TO 43+10.00.
TRANSITION FROM 2 TO 3 LANES.
TRANSITION FROM TYP. 2 TO TYP. 1
–L– STA. 182+12.50 TO 183+00.00.

CALYX ENGINEERS + CONSULTANTS
6750 TRYON ROAD
CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
NC License # F-1333
Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R–5014	2A–1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

9/18/2017
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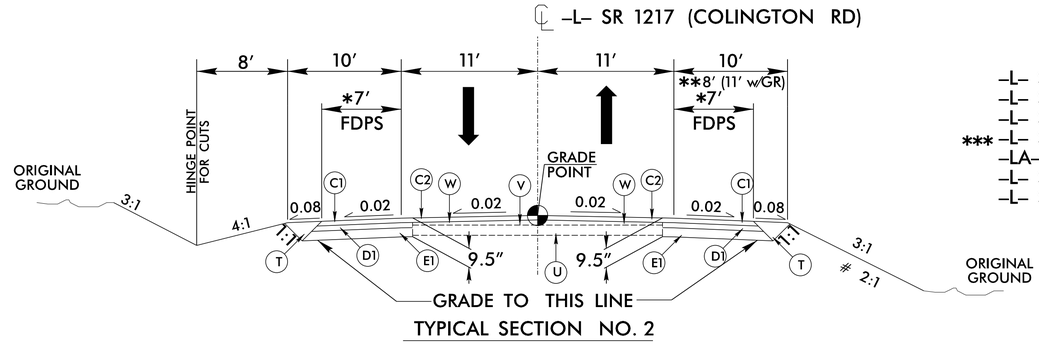
dgnt

PAV'T SCHEDULE	
C1	3″ S9.5B
C2	1½″ S9.5B
C3	VAR. S9.5B
C4	2½″ SF9.5A
C5	1½″ SF9.5A
C6	VAR. SF9.5A
D1	2½″ I19.0B
D2	VAR. I19.0B
E1	4″ B25.0B
E2	VAR. B25.0B
L	3″ STAB. AGG.
R1	MON. ISLAND
R2	2′-6″ C&G
S	4″ CONC.
T	EARTH MAT.
U	EX. PAV'T
V	VAR. MILL 0″-3″
W	WEDGING

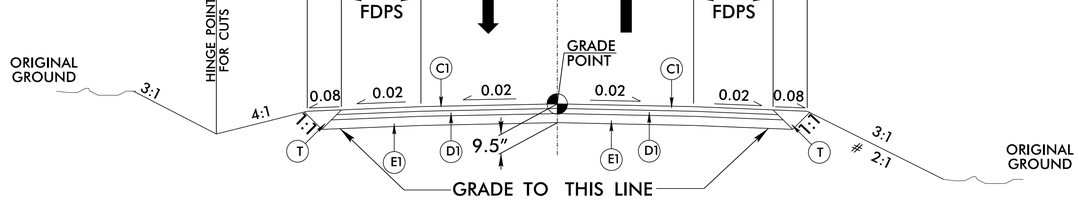


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

–L– STA. 43+10.00 TO –L– STA. 48+50.00
–L– STA. 50+00.00 TO –L– STA. 66+00.00
–L– STA. 75+25.00 TO –L– STA. 90+00.64 (EXISTING BRIDGE)
*** –L– STA. 91+89.27 (EXISTING BRIDGE) TO –L– STA. 111+67.50 (EQUALITY)
–LA– STA. 111+67.50 (EQUALITY) TO –LA– STA. 117+34.00
–L– STA. 121+00.00 TO –L– STA. 147+22.84 (EXISTING BRIDGE)
–L– STA. 152+34.13 (EXISTING BRIDGE) TO –L– STA. 182+57.16

NOTE:
SEE PLANS FOR TURN LANES AND TAPERS.
USE DETAILS NO. 1 THRU 5 WITH TYPICAL NO. 2
MILL AS NEEDED.
* SEE DETAIL NO. 1
** SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL PRESENT
*** SEE DETAIL NO. 7
# 2:1 FILL SLOPES USED WHERE ROCK PLATING REQUIRED AND SAV PRESENT



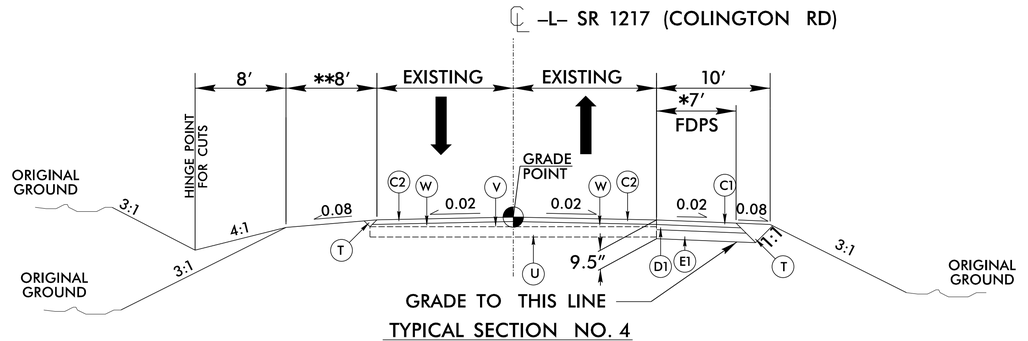
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–L– STA. 48+50.00 TO –L– STA. 50+00.00
–L– STA. 66+00.00 TO –L– STA. 75+25.00
–LA– STA. 117+34.00 TO –LA– STA. 120+03.07 (EQUALITY)
–L– STA. 120+05.14 (EQUALITY) TO –L– STA. 121+00.00

NOTE:
SEE PLANS FOR TURN LANES AND TAPERS.
USE DETAILS NO. 1, 2 & 4 WITH TYPICAL NO. 3
MILL AS NEEDED.

* SEE DETAIL NO. 1
** SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL PRESENT
# 2:1 FILL SLOPES USED WHERE ROCK PLATING REQUIRED AND SAV PRESENT



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

–L– STA. 182+57.16 TO –L– STA. 183+00.00

NOTE:
* SEE DETAIL NO. 1
** SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL PRESENT

REVISIONS

8/17/99

9/18/2017
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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PAV'T SCHEDULE	
C1	3″ S9.5B
C2	1½″ S9.5B
C3	VAR. S9.5B
C4	2½″ SF9.5A
C5	1½″ SF9.5A
C6	VAR. SF9.5A
D1	2½″ I19.0B
D2	VAR. B25.0B
E1	4″ B25.0B
E2	VAR. B25.0B
L	3″ STAB. AGG.
R1	MON. ISLAND
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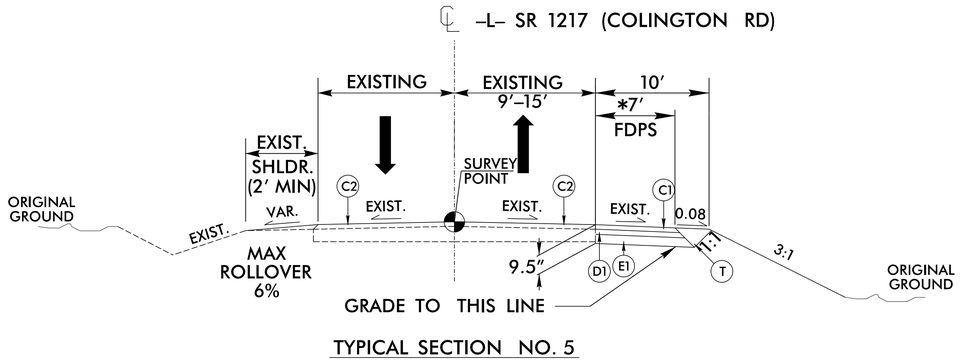
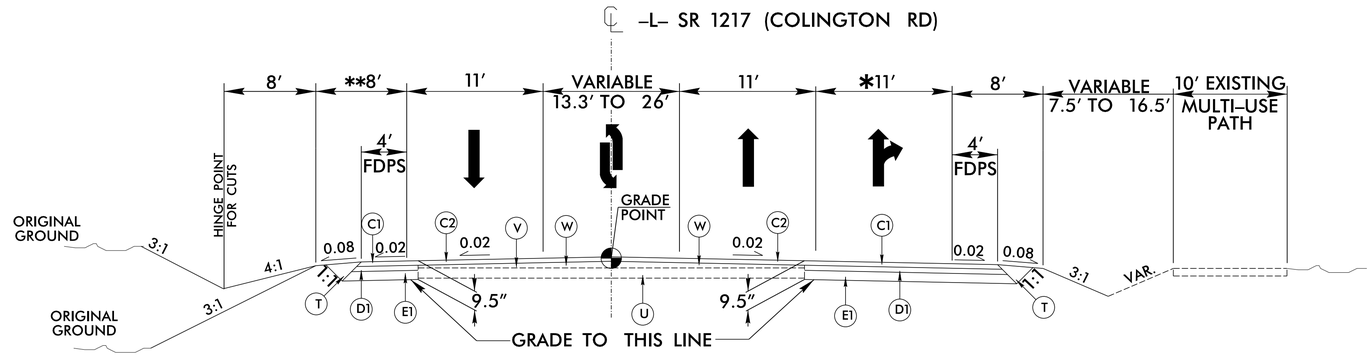
S	4″ CONC.
T	EARTH MAT.
U	EX. PAV'T
V	VAR. MILL 0″-3″
W	WEDGING



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
–L– STA. 183+00.00 TO –L– STA. 209+96.72

NOTE:
* SEE DETAIL NO. 1

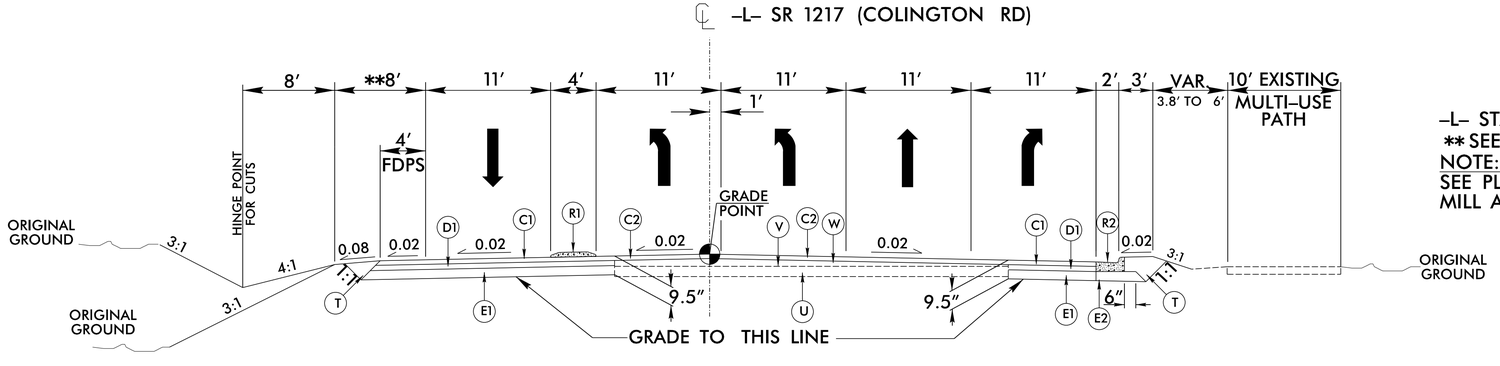


TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
–L– STA. 229+00.00 TO –L– STA. 233+32.00

* TRANSITION FROM 0′ TO 11′
–L– STA. 229+00.00 TO –L– STA. 230+00.00
** SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL

NOTE:
SEE PLANS FOR TURN LANES AND TAPERS. MILL AS NEEDED.



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7
–L– STA. 233+32.00 TO –L– STA. 235+77.02
** SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL

NOTE:
SEE PLANS FOR TURN LANES AND TAPERS. MILL AS NEEDED.

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PROJECT REFERENCE NO.	SHEET NO.
R–5014	2A–3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS 8/17/99

9/18/2017
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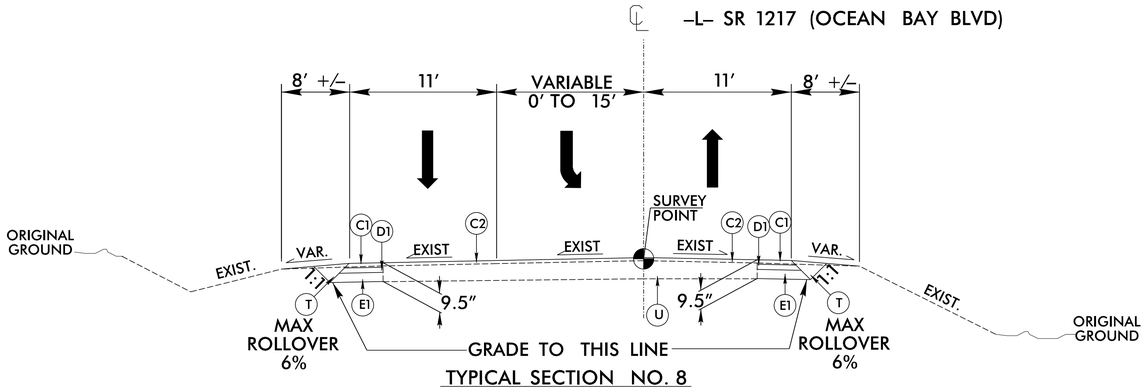
eat

PROJECT REFERENCE NO.	SHEET NO.
R-5014	2A-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAV'T SCHEDULE	
C1	3" S9.5B
C2	1½" S9.5B
C3	VAR. S9.5B
C4	2½" SF9.5A
C5	1½" SF9.5A
C6	VAR. SF9.5A
D1	2½" I19.0B
D2	VAR. B25.0B
E1	4" B25.0B
E2	VAR. B25.0B
L	3" STAB. AGG.
R1	MON. ISLAND
R2	2'-6" C&G
S	4" CONC.
T	EARTH MAT.
U	EX. PAV'T
V	VAR. MILL 0"-3"
W	WEDGING



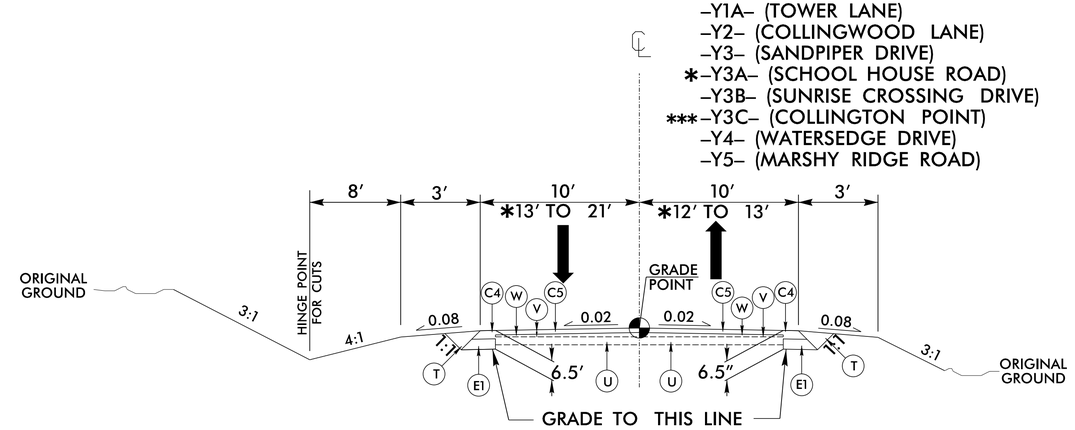
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

–L– STA. 237+87.00 TO –L– STA. 240+00.00

NOTE:
SEE PLANS FOR TURN LANES AND TAPERS.

–Y1A– (TOWER LANE)
–Y2– (COLLINGWOOD LANE)
–Y3– (SANDPIPER DRIVE)
*–Y3A– (SCHOOL HOUSE ROAD)
–Y3B– (SUNRISE CROSSING DRIVE)
***–Y3C– (COLLINGTON POINT)
–Y4– (WATERSEDGE DRIVE)
–Y5– (MARSHY RIDGE ROAD)

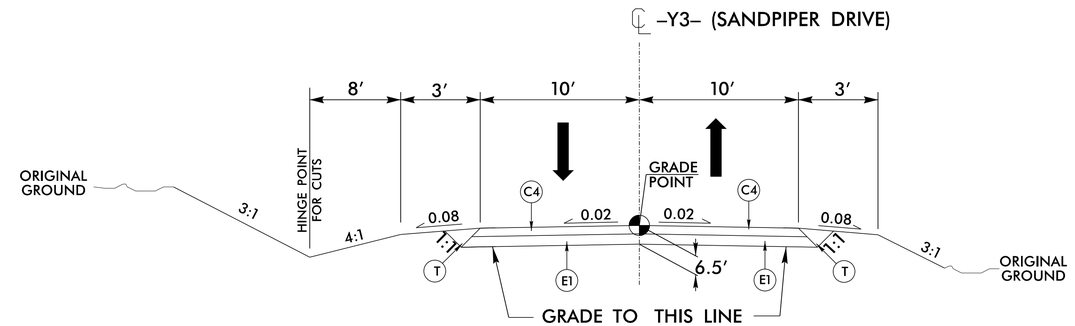


TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

–Y1A– STA. 11+70.00 TO –Y1A– STA. 13+39.82
–Y2– STA. 10+15.00 TO –Y2– STA. 11+34.31
–Y3– STA. 11+00.00 TO –Y3– STA. 12+31.39
*–Y3A– STA. 11+60.00 TO –Y3A– STA. 12+63.62
–Y3B– STA. 11+92.00 TO –Y3B– STA. 12+03.27
***–Y3C– STA. 10+11.01 TO –Y3C– STA. 11+00.00
–Y4– STA. 10+15.00 TO –Y4– STA. 11+56.10
–Y5– STA. 10+70.00 TO –Y5– STA. 12+55.03

NOTE:
SEE PLANS FOR TAPERS.
MILL AS NEEDED.
*** SEE DETAIL NO. 7

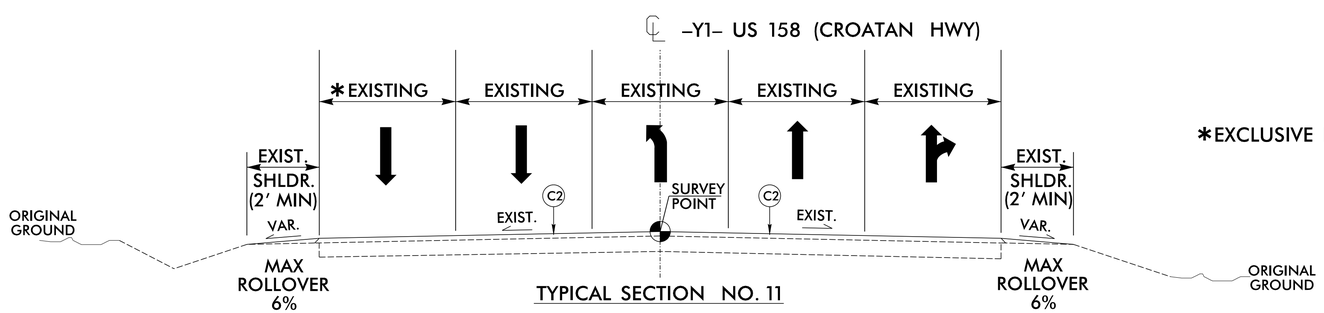


TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

–Y3– STA. 12+31.39 TO –Y3– STA. 12+59.93

NOTE:
SEE PLANS FOR TAPERS.



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

–Y1– STA. 12+16.76 TO –Y1– STA. 13+87.34

*EXCLUSIVE RIGHT TURN LANE ON SOUTHBOUND US 158

NOTE:
SEE PLANS FOR TAPERS.
MILL AS NEEDED.

REVISIONS

8/17/99

9/18/2017
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tast

CALYX
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6750 TRYON ROAD
CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
NC License # F-1333
Formerly McBay Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

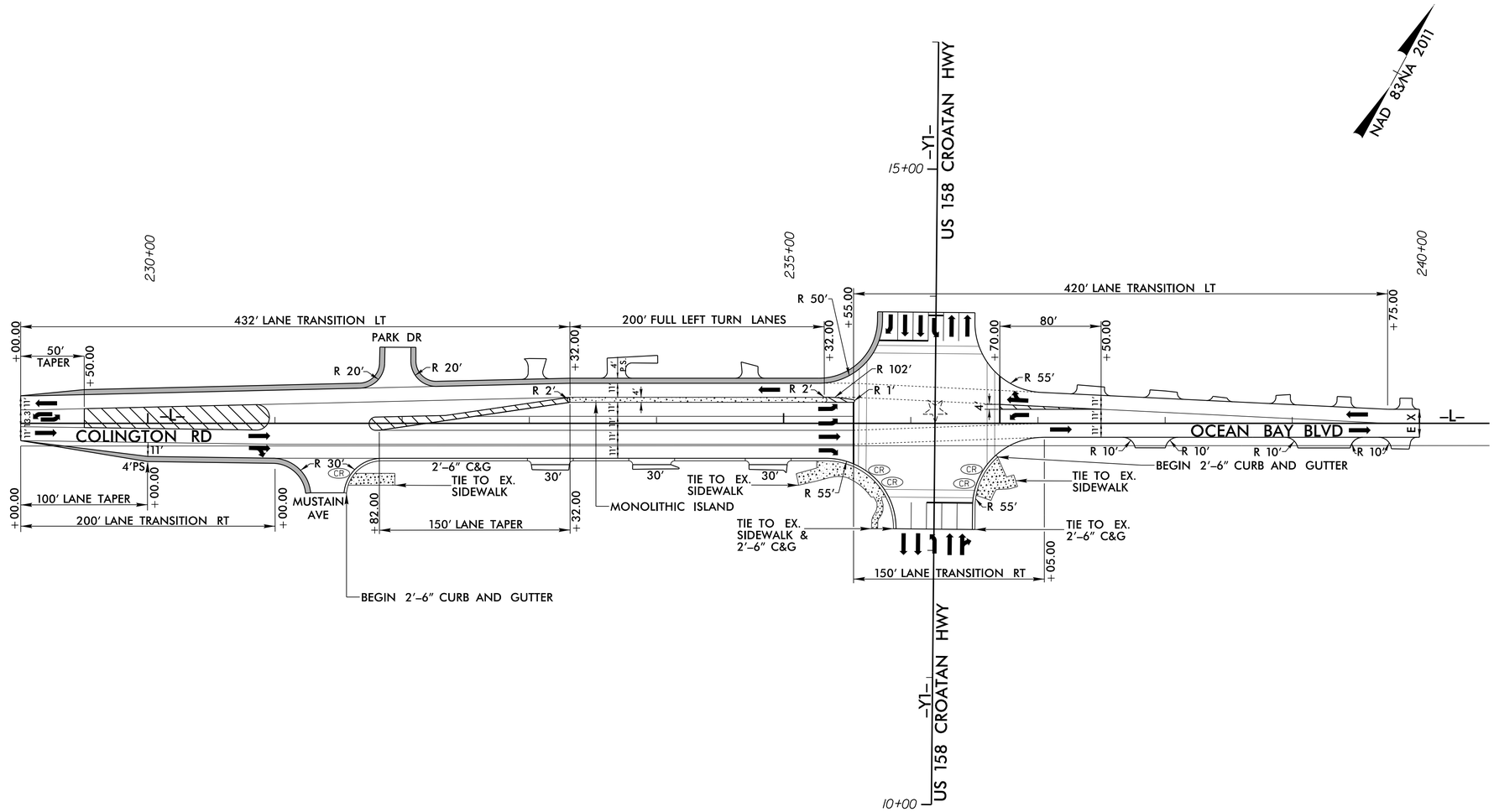
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

INTERSECTION DETAIL

–L– (COLINGTON RD /OCEAN BAY BLVD.) & –Y1– (US 158 CROATAN HWY)



SIDEWALK / CONCRETE ISLAND

EXISTING TRAFFIC SIGNAL

NOTES:
DRIVEWAY RADII ARE 5' UNLESS OTHERWISE NOTED
SEE SHEETS 19 AND 20 ROADWAY PLANS

8/18/2017
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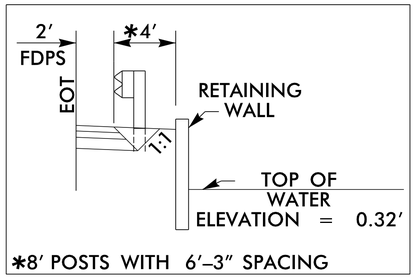
tes1

PROPOSED RETAINING WALLS –WALL1– AND –WALL2–

RETAINING WALL #1 (–WALL1–) LENGTH = 42.18′
RETAINING WALL #2 (–WALL2–) LENGTH = 99.90′



*8′ POSTS WITH 6′–3″ SPACING

BEGIN RETAINING WALL #1
–WALL1– POT STA. 10+00.00
–Y3C– STA. 10+67.06 (16.00′ LT)

REMOVE EX RETAINING WALL

–Y3C– COLINGTON POINTE DR

LEXINGTON LN

BEGIN RETAINING WALL #2
–WALL2– PC STA. 10+00.00
–Y3C– STA. 10+69.88 (41.66′ RT)

REMOVE EX RETAINING WALL

COLLAR AND EXTEND EXISTING 60″ CMP WITH 6 LF OF 60″ CAAP

END RETAINING WALL #1
–WALL1– PC STA. 10+42.18
–Y3C– STA. 10+28.84 (21.33′ LT)

END RETAINING WALL #2
–WALL2– POT STA. 10+99.90
–L– STA. 107+38.88 (35.00′ LT)

NAD 83\NA 2011

20′ 0′ 20′ 40′
10′
(ENGLISH)

CALYX ENGINEERS + CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
R-5014	2B-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

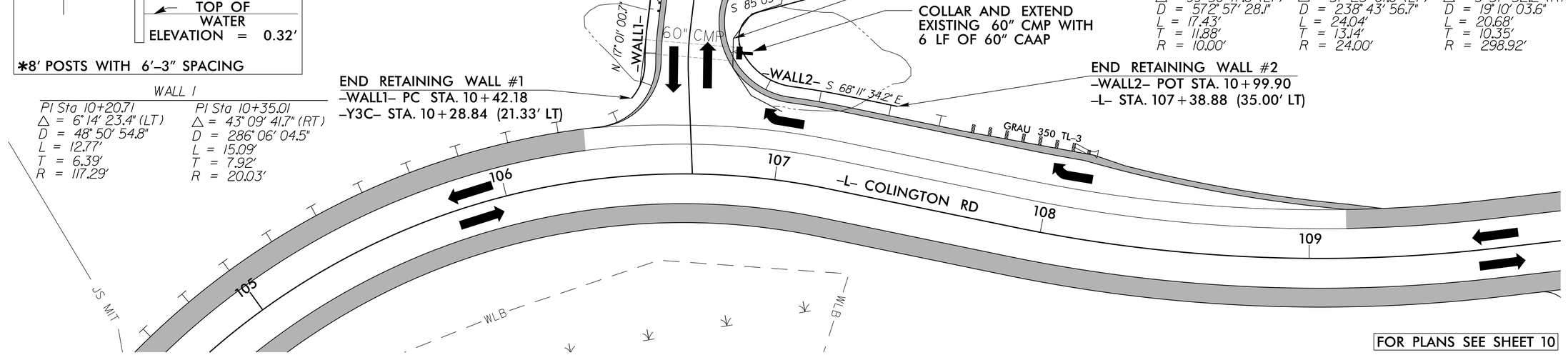
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WALL 1

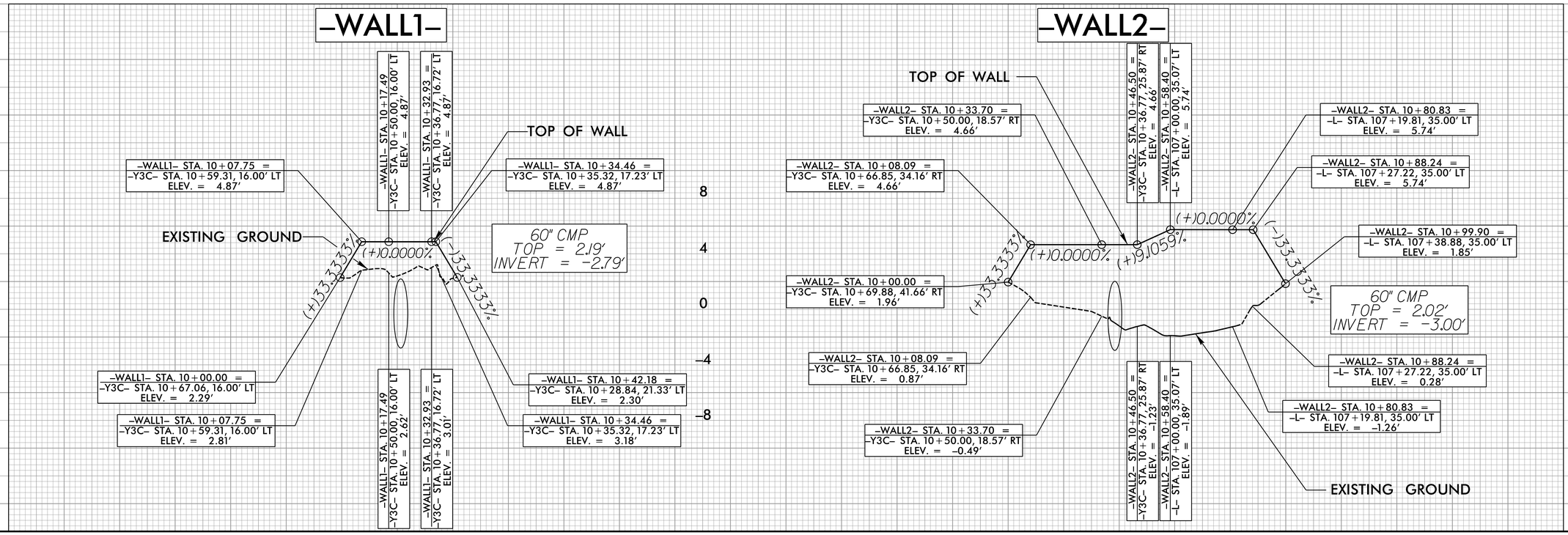
PI Sta 10+20.71	PI Sta 10+35.01
△ = 6° 14′ 23.4″ (LT)	△ = 43° 09′ 41.7″ (RT)
D = 48° 50′ 54.8″	D = 286° 06′ 04.5″
L = 12.77′	L = 15.09′
T = 6.39′	T = 7.92′
R = 117.29′	R = 20.03′

WALL 2

PI Sta 10+30.53	PI Sta 10+49.21	PI Sta 10+70.46
△ = 99° 50′ 17.6″ (LT)	△ = 57° 23′ 01.0″ (LT)	△ = 3° 57′ 52.2″ (RT)
D = 572° 57′ 28.1″	D = 238° 43′ 56.7″	D = 19° 10′ 03.6″
L = 17.43′	L = 24.04′	L = 20.68′
T = 11.88′	T = 13.14′	T = 10.35′
R = 10.00′	R = 24.00′	R = 298.92′



FOR PLANS SEE SHEET 10



8/8/2017
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PROJECT REFERENCE NO.	SHEET NO.
R-5014	2C-1

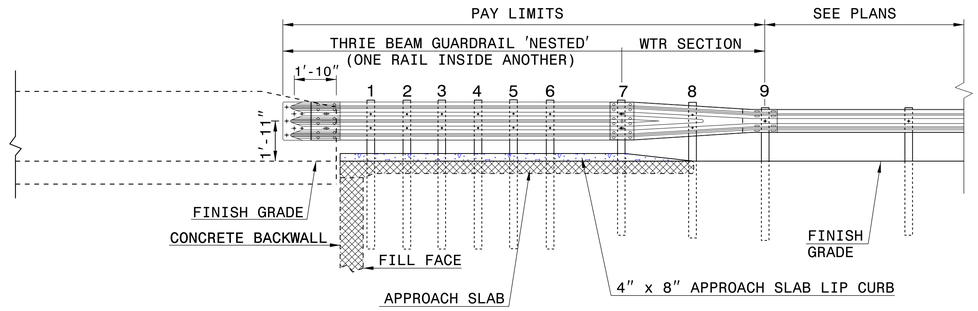
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

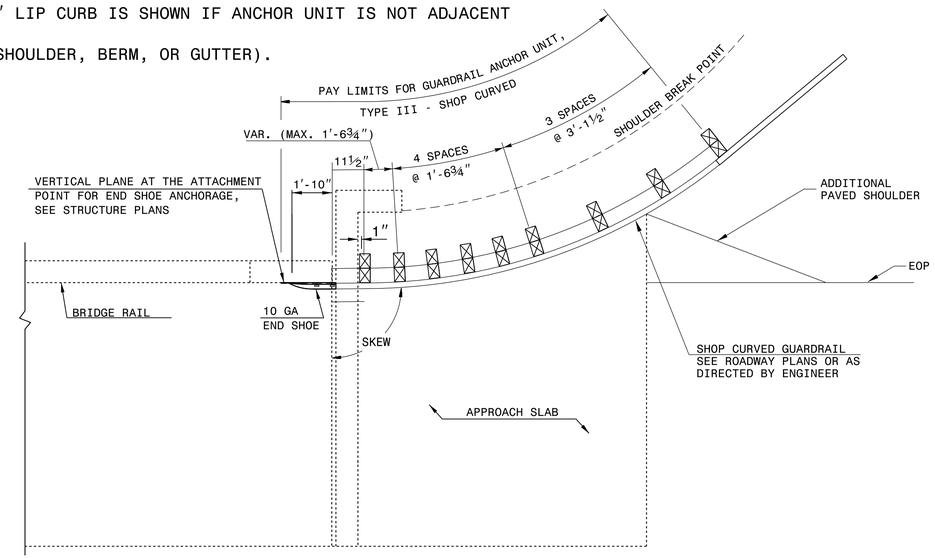
TYPE III SC



ELEVATION

SEE ROADWAY PLANS FOR END TREATMENT

NOTE:
- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
- -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- -USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
- -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- -SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

TYPE III SC

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NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: T.S.Spell DATE: 5-29-09
CHECKED BY: DATE:
FILE SPEC.: ward:\usr\details\stand\862stds\typeiiisc.dgn

5/14/99

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5014	2C-2

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

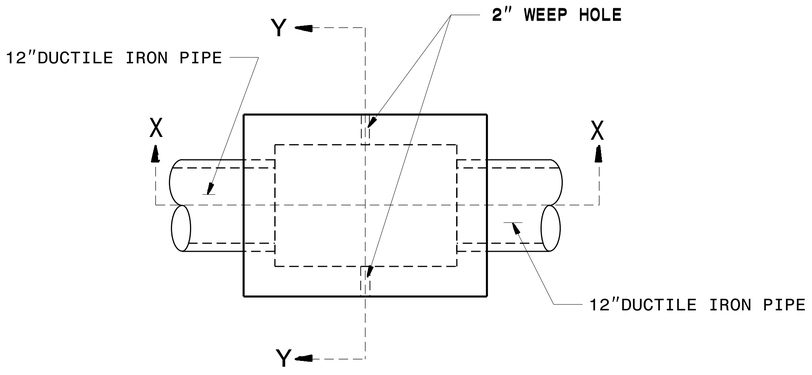
ENGLISH DETAIL DRAWING FOR

SPECIAL CONCRETE DROP INLET

12" DUCTILE IRON PIPE

SHEET 1 OF 1

840D14



PLAN

WITH GRATE & FRAME REMOVED

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

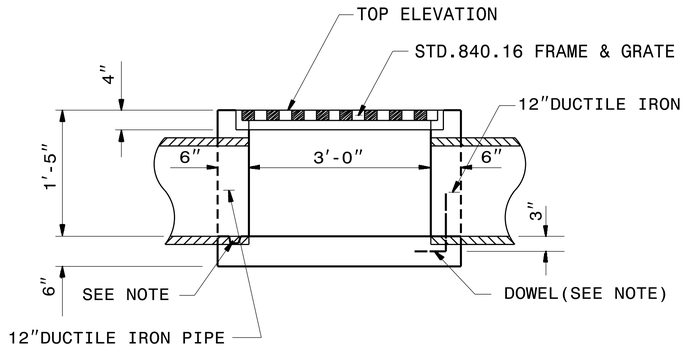
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

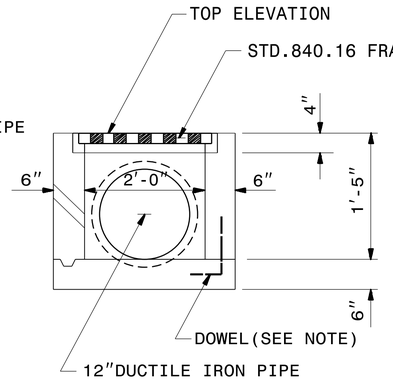
INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

CHAMFER ALL EXPOSED CORNERS 1".

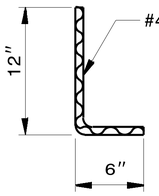
DRAWING NOT TO SCALE.



SECTION X-X



SECTION Y-Y



DOWEL

STATE OF
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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

SPECIAL CONCRETE DROP INLET

12" DUCTILE IRON PIPE

SHEET OF

840D14

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGNFILE$$$$

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joey S. Howerton

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CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SPECIAL CONCRETE DROP INLET

ORIGINAL BY: E.E. WARD DATE: 3-4-02
MODIFIED BY: rnbritt DATE: 09-27-2016
CHECKED BY: DATE:
FILE SPEC. :details/nbritt/english/rural/r5014_840d14min.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5014	2C-3

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 1 OF 2 **840D02**

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

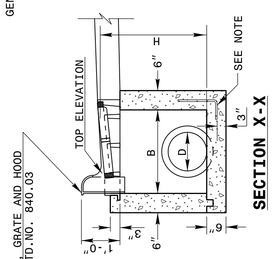
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

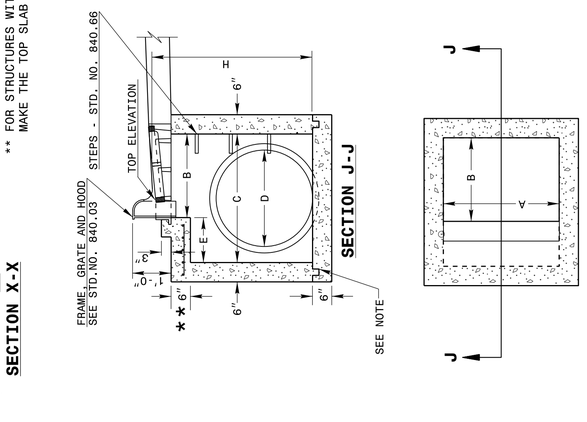
FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

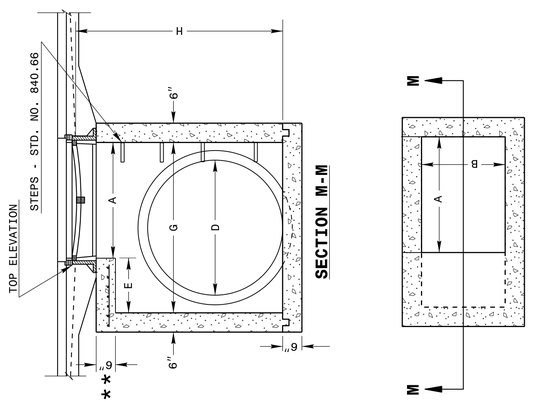
CONSTRUCT WITH PIPE CROWNS MATCHING.

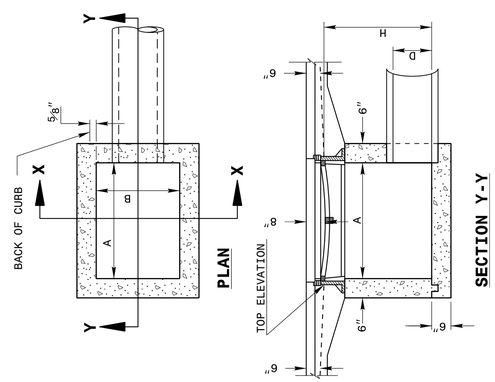
CHAMFER ALL EXPOSED CORNERS 1".

** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.









STATE OF
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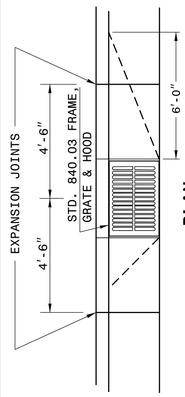
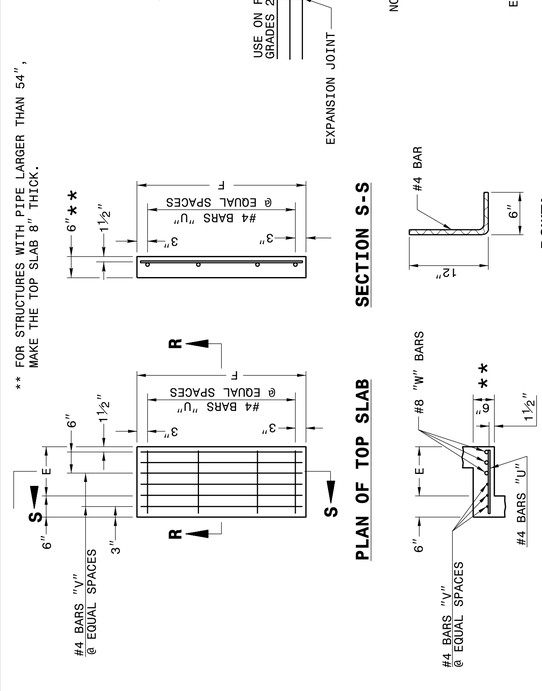
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH
CONCRETE CATCH BASIN
12" THRU 84" PIPE

SHEET 2 OF 2 **840D02**





* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

PIPE	DIMENSIONS OF BOX AND PIPE					COVER DIMENSION		BARS-U			CU.YDS. CONC. IN BOX		DEDUCTIONS ONE PIPE	
	SPAN	WIDTH	WIDTH	SPAN	MIN. HEIGHT						TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H	
D	A	B	C	G	H	E	F	NO.	LENGTH				C.M.	R.C.
12"	3'-0"	2'-2"	--	--	2'-0"	--	--	--	--		--	0.235	0.772	0.026
15"	3'-0"	2'-2"			2'-3"						--	0.235	0.829	0.026
18"	3'-0"	2'-2"			2'-6"						--	0.235	0.887	0.049
24"	3'-0"	2'-2"			3'-1"						--	0.235	1.001	0.085
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-10"	1'-2"	4'-4"	4	1'-5"	2	0.123	0.347	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-6"	1'-8"	4'-10"	4	1'-11"	3	0.161	0.432	1.714	0.132	0.178
42"	3'-0"	2'-2"	4'-5"	4'-5"	4'-11"	2'-2"	5'-5"	5	2'-5"	4	0.200	0.543	1.738	0.180	0.243
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	2'-10"	6'-0"	5	3'-1"	4	0.235	0.667	2.052	0.235	0.317
54"	3'-0"	2'-2"	5'-7"	5'-7"	6'-0"	3'-5"	6'-7"	6	3'-8"	5	0.289	0.802	2.387	0.297	0.401
60"	3'-0"	2'-2"	6'-3"	6'-3"	6'-6"	4'-1"	7'-3"	6	4'-4"	5	0.340	0.973	2.722	0.363	0.546
66"	3'-0"	2'-2"	6'-11"	6'-11"	7'-0"	4'-9"	7'-11"	7	5'-0"	6	0.391	1.160	3.057	0.440	0.655
72"	3'-0"	2'-2"	7'-6"	7'-6"	7'-6"	5'-3"	8'-6"	7	5'-6"	6	0.442	1.340	3.392	0.524	0.774
78"	3'-0"	2'-2"	8'-1"	8'-1"	8'-0"	5'-11"	9'-1"	8	6'-2"	7	0.493	1.530	3.727	0.615	0.893
84"	3'-0"	2'-2"	8'-9"	8'-9"	8'-6"	6'-7"	9'-9"	8	6'-10"	7	0.544	1.760	4.062	0.713	1.010

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel E. Howerton

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.: s:Special Details/jhowerton/840d02.dgn

$$$$SYSTIME$$$$
$$$$SYSTIME$$$$
$$$$RNAME$$$$
$$$$USERNAME$$$$
$$$$USERNAME$$$$

COMPUTED BY: CALYX E+C DATE: 09-08-2017
CHECKED BY: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK (IN CUBIC YARDS)

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
-L- 11+00.00	-L- 43+10.00	41	0	0	0	41
SUBTOTALS:		**41**	**0**	**0**	**0**	**41**
-L- 43+10.00	-L- 73+10.00	1,772	2,358	7,918	6,146	2,358
-Y1A- 11+70.00	-Y1A- 13+39.82	23		181	158	
-Y2- 10+15.00	-Y2- 11+34.31	1		35	34	
-Y3- 11+00.00	-Y3- 12+59.93	3		172	169	
SUBTOTALS:		**1,799**	**2,358**	**8,306**	**6,507**	**2,358**
-L- 73+10.00	-L- 90+00.64 (BRIDGE)	636	581	3,245	2,609	581
-Y3A- 11+60.00	-Y3A- 12+63.62	4		49	45	
SUBTOTALS:		**640**	**581**	**3,294**	**2,654**	**581**
-L- 91+89.27 (BRIDGE)	-L- 111+67.50 (EQUALITY)	1,101		2,998	1,937	40
-Y3B- 11+92.00	-Y3B- 12+10.27	28		1		27
-Y3C- 10+18.02	-Y3C- 11+00.00	2		36	34	
SUBTOTALS:		**1,131**	**0**	**3,035**	**1,971**	**67**
-LA- 111+67.50 (EQUALITY)	-LA- 120+03.07 (EQUALITY)	983	10	749		244
-Y4- 10+15.00	-Y4- 11+54.92	3		46	43	
-Y5- 10+70.00	-Y5- 12+55.65	7		117	110	
SUBTOTALS:		**993**	**10**	**912**	**153**	**244**
-L- 120+05.14 (EQUALITY)	-L- 147+22.84 (BRIDGE)	870	179	2,571	1,761	239
SUBTOTALS:		**870**	**179**	**2,571**	**1,761**	**239**
-L- 152+34.13 (BRIDGE)	-L- 183+00.00	1,213	44	3,541	2,328	44
SUBTOTALS:		**1,213**	**44**	**3,541**	**2,328**	**44**
-L- 183+00.00	-L- 209+96.72	354		459	105	0
SUBTOTALS:		**354**	**0**	**459**	**105**	**0**
-L- 209+96.72	-L- 235+77.02	263		696	433	
SUBTOTALS:		**263**	**0**	**696**	**433**	**0**
-L- 236+49.02	-L- 240+00.00	16		0	0	16
SUBTOTALS:		**16**	**0**	**0**	**0**	**16**
PROJECT TOTALS:		**7,320**	**3,172**	**22,814**	**15,912**	**3,590**
MATERIAL FOR SHOULDER CONSTRUCTION				1,612	1,612	
LOSS DUE TO CLEARING & GRUBBING						
ADDITIONAL UNDERCUT			6,000	7,800	7,800	6,000
LESS SELECT GRANULAR MATERIAL				-4,124	-4,124	
WASTE IN LIEU OF BORROW					-318	-318
PROJECT TOTALS:		7,320	9,172	28,102	20,882	9,272
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					1,044	
GRAND TOTALS:		7,320			21,926	
SAY:		**7,350**			**21,950**	

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

PROJECT NO. R-5014

SHEET NO. 3B-1

COMPUTED BY: CALYX E+C DATE: 01-18-2017
CHECKED BY: _____ DATE: _____

PROJECT NO.	SHEET NO.
R-5014	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL
-L-	48+50.00	50+00.00	CL	237.12
-L-	66+00.00	75+25.00	CL	2031.36
-LA-	116+96.64	120+03.07	CL	653.51
-L-	120+05.14	121+00.00	CL	252.21
-L-	11+00.00	111+67.50	LT	1005.74
-LA-	111+67.50	120+03.07	LT	247.43
-L-	120+05.14	240+00.00	LT	970.17
-L-	11+00.00	111+67.50	RT	1371.52
-L-	120+05.14	240+00.00	RT	945.21
		TOTAL:		7,714.28
		SAY:		7,720

PAVEMENT BREAKING SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT BREAKUP
-L-	48+50.00	50+00.00	CL	267.56
-L-	66+00.00	66+83.22	LT	117.31
-LA-	116+96.64	117+34.00	LT	18.07
		TOTAL:		402.94
		SAY:		410

GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-2	GREU, TL-3	AT-1	SHOP CURVED TYPE III	EA	G	NG		
-L-	56+06.00	56+93.50	LT	87.50			56+44.00		8	11	25	25	0.5	0.5	2								
-L-	55+95.00	56+95.00	RT	100			56+35.00		8	11	25	25	0.5	0.5	2								
-L-	86+95.46	89+95.46 (BRG)	LT	300				89+95.46 (BRG)	6	9		100		2		1						339.23	
-L-	86+95.46	89+95.46 (BRG)	RT	300			89+95.46 (BRG)		4.5	7.5	175		3.5			1						324.07	
-L-	91+94.55 (BRG)	96+19.55	LT	425			91+94.55 (BRG)		5	8		150		3		1						430.79	
-L-	91+94.55 (BRG)	94+57.05	RT	262.50				91+94.55 (BRG)	5.5	8.5	125			2.5				1				305.15	
-L-	94+93.23	95+93.23	RT	100			94+93.23 (BRG)		8	11	50		1			1		1				86.71	
-L- / -Y3C-	-L-103+99.56	-Y3C- 10+65.25	LT	262.50	50		104+28.00		8	11							2						
-Y3C-/-L-	-Y3C- 10+77.00	-L- 108+15.00	LT	118.75	62.5		107+39.00		2	6		50		1		1	1						
-L-	126+59.75	127+59.75	LT	100			126+78.00		8	11	25	25	0.5	0.5	2								
-L-	126+11.25	127+56.00	RT	143.75			126+75.00		8	11	25	25	0.5	0.5	2								
-L-	140+41.35	147+16.35 (BRG)	LT	675				147+16.35 (BRG)	5	8		150		3		1						692.52	
-L-	144+91.35	147+16.35 (BRG)	RT	225			147+16.35 (BRG)		5	8	150			3		1						243.25	
-L-	152+38.00 (BRG)	156+38.00	LT	400			152+40.27 (BRG)		5	8	150			3		1						418.09	
-L-	152+40.27 (BRG)	153+52.77	RT	112.5				152+40.27 (BRG)	5	8		100		2		1						37.79	
-L-	162+87.50	171+75.00	LT	887.5			171+00.00		8	11	50	50	1	1		2							
SUBTOTALS:				4500	112.5										8	11	3	2				2877.60	
	LESS ANCHOR DEDUCTIONS:																						
	GREU, TL-2	8 @ 25ft		200.00																			
	GREU, TL-3	11 @ 50ft		550.00																			
	AT-1	3 @ 6.25ft		18.75																			
	SHOP CURVED TYPE III	2 @ 18.75ft		37.50																			
	ANCHOR TOTALS:			806.25																			
	GUARDRAIL TOTAL:			3806.25	112.5																		
	SAY:			3,825	125																		

ADDITIONAL GUARDRAIL POSTS=5 EA

ESTEWART7

COMPUTED BY: C. F. - NCDOT DATE: 11-14-16

CHECKED BY: A.E.V. - CALYX DATE: 09-06-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-5014	3D-1

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C.A.A. PIPE SIZE 12 | 15 | 18 | 24 | 36 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 12" DUCTILE IRON PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 (TYPE D) | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO T.B.J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 650.10 (PER EACH) | BERM DITCH OUTLET STD. 650.11 (PER EACH) | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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ESTEWART7

COMPUTED BY: C. F. - NCDOT DATE: 11-14-16

CHECKED BY: A.E.V. - CALYX DATE: 09-06-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-5014	3D-2

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | % MINIMUM REQUIRED SLOPE | C.A.A. PIPE 12 | 15 | 18 | 24 | 36 | 48 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 12" DUCTILE IRON PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 (TYPE D) | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO T.B.J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 650.10 (PER EACH) | BERM DITCH OUTLET STD. 650.11 (PER EACH) | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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ESTEWART7

COMPUTED BY: C. F. - NCDOT DATE: 11-14-16

CHECKED BY: A.E.V. - CALYX DATE: 09-06-17

PROJECT NO.	SHEET NO.
R-5014	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C.A.A. PIPE SIZE 12 | 15 | 18 | 24 | 36 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 12" DUCTILE IRON PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.06 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 (TYPE D) | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO T.B.J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 650.10 (PER EACH) | BERM DITCH OUTLET STD. 650.11 (PER EACH) | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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ESTEWART7

COMPUTED BY: C. F. - NCDOT DATE: 11-14-16

CHECKED BY: A.E.V. - CALYX DATE: 09-06-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-5014	3D-4

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | % MINIMUM REQUIRED SLOPE | C.A.A. PIPE 12 | 15 | 18 | 24 | 36 | 48 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 12" DUCTILE IRON PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 (TYPE D) | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO T.B.J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 650.10 (PER EACH) | BERM DITCH OUTLET STD. 650.11 (PER EACH) | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

ESTEWART7

COMPUTED BY:	C. F. - NCDOT	DATE:	11-14-16
CHECKED BY:	A.E.V. - CALYX	DATE:	09-06-17

PROJECT NO.	SHEET NO.
R-5014	3D-5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & OVER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C.A.A PIPE SIZE 54 | C.A.A PIPE SIZE 60 | C.A.A PIPE SIZE 66 | C.A.A PIPE SIZE 72 | C.A.A PIPE SIZE 78 | C.A.A PIPE THICKNESS OR GAUGE | R. C. PIPE CLASS III SIZE 54 | R. C. PIPE CLASS III SIZE 60 | R. C. PIPE CLASS III SIZE 66 | R. C. PIPE CLASS III SIZE 72 | R. C. PIPE CLASS III SIZE 78 | R. C. PIPE CLASS III THICKNESS OR GAUGE | R. C. PIPE CLASS IV SIZE 54 | R. C. PIPE CLASS IV SIZE 60 | R. C. PIPE CLASS IV SIZE 66 | R. C. PIPE CLASS IV SIZE 72 | R. C. PIPE CLASS IV SIZE 78 | R. C. PIPE CLASS IV THICKNESS OR GAUGE | R. C. PIPE CLASS V SIZE 54 | R. C. PIPE CLASS V SIZE 60 | R. C. PIPE CLASS V SIZE 66 | R. C. PIPE CLASS V SIZE 72 | R. C. PIPE CLASS V SIZE 78 | R. C. PIPE CLASS V SIZE 84 | R. C. PIPE CLASS V THICKNESS OR GAUGE | STRUCTURAL PLATE PIPE SIZE 60 | STRUCTURAL PLATE PIPE SIZE 66 | STRUCTURAL PLATE PIPE SIZE 72 | STRUCTURAL PLATE PIPE THICKNESS OR GAUGE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

PROJ. REFERENCE NO.	SHEET NO.
R-5014	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	6	JEANNE M. LAURO
2	6	CYNTHIA STEVENS
3	6	THOMAS P. MAGNANELLI, SR.
4	6	DEBORAH H. STOKES CLINKSCALES
5	6	DEBORAH STOKES CLINKSCALES
6	6	STEVE P. KING
7	6	JOAN E. CASTEEL
8	6	COLINGTON HARBOUR ASSOCIATION INC
9	6	STEVEN R. HAMM
10	6	JOYCE L. JORDAN
11	6	JOHN W. DEMPEWOLF
12	6	HOLLISTYNE CREECY BLUITT
13	6	WILLIAM A. WILLFORD
14	6	CARLYN ANN LAUGHLIN
15	6	ROBBIE PAETOW
16	6	JEFFREY JUSTIN MITCHELL & NATALIE KAYLIN MITCHELL
17	6	MARGARETTE M. UMPHLETT
18	6	CARL E. WORSLEY, JR.
19	6	BEASLEY BEASLEY & BEASLEY
20	6	BJ DEVELOPMENTS
21	6	WILLIAM J. WEATHERLY - NO CLAIM
22	6	BJ DEVELOPMENTS
23	6 & 7	ALAIN J. TTEE PIRRONE & MONIKA C. TTEE PIRRONE
24	7	LEWIS R. BEASLEY & JUNE E. BEASLEY
25	7	NANCY K. BALONIS
26	7	TERRY BEASLEY
27	7	WILLIAM T. CAROON
28	6 & 7	RICHARD A. COHEN
29	7	JOSEPH JONES JR.
30	7	GARY LEE KENNEDY
31	7	JANE C. BALDWIN
32	7	JASON B. HILL
33	7	GARLAND H. DUNSTAN, JR.
34	7	SHINGLE LANDING OF COLINGTON CORP
35	7	US CELLULAR
36	7 & 8	EDWARD G. COLLIER
37	7	ISABEL LOPEZ AND BLANDINA LOPEZ
38	8	LUIS RODRIGEZ JR.
40	7 & 8	HARBRINGER LAND & TIMBER, LLC
41	8	COLINGTON HARBOUR ASSOC.
42	8	NANCY Z. ROTEN
43	8	COLINGTON UNITED CHURCH
44	8 & 9	LIBERTY CHRISTIAN FELLOWSHIP
44A	9	GARY D. CRANE, JR.
45	8 & 9	LIBERTY CHRISTIAN FELLOWSHIP
46	9	JLS PROPERTIES, LLC
47	9	EVELYN G. CARLISLE
48	9	TANYA TILLETT CROW
49	9 & 10	DAVID A. SHAW
50	10	LGI LAND NC, LLC
51	10	AVA COL SOL JOHNSON
52	10	REGINA OUTLAW ZEINER
53	10	JANICE WILLIAMS O'NEAL
54	10	CODY JACOB HUDOCK
55	10	GARY GENE BEASLEY
56	10	CHRISTOPHER K. ARCHER
57	10	GARLAND H. DUNSTAN, JR.
58	10	JASPER DONNIE GAMIEL
59	10	MAYNARD R. OUTLAW

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
60	10	WILLIAM JOSEPH MEYERS, JR.
61	10	MARK D. NUNEMAKER
62	10	COLINGTON VENTURES
63	10	BRANDON BEASLEY
64	10 & 11	ROBERT SHANE MOORE
65	10	COLINGTON POINT DEVELOPERS, LLC
66	10 & 11	COLINGTON POINT DEVELOPERS, LLC
67	11	STANLEY W. MOORE
68	11	MARK D. NUNEMAKER
69	11	CEMETERY
70	11	JUDY M. DEAVER
71	11	JUDY M. DEAVER
72	11	CAROLINA TELEPHONE
73	11	JAMES FRANKLIN MOORE
74	11	MARSHY RIDGE RETREAT
75	11	MILDRED B. BYRUM
76	11	MURRAY EUGENE BRIDGES
77	11	COLLINGTON RD LLC
78	11	CLAUDE H. EURE
79	11	JAMES M. SMITH
80	11	WILLIAM WALTER LADOW, JR.
81	11	SANDRA JEAN LADOW
82	11 & 12	DAVIE L. FLOYD
83	11	JIMMIE D. SUMMERELL
84	11 & 12	CHARLOTTE M. BEASLEY
85	12	JOBY LANE BEASLEY
86	12	KIMBERLY PAIGE MURRY
87	12	LARRY REID PARKER
88	12	GEORGE THOMAS BEASLEY
89	12	HAROLD E. GESSFORD
90	12	CARSON LEE BEASLEY
91	12	SANDRA BEASLEY NEAL
92	12	DARRELL BEASLEY
93	12	DALE BEASLEY
94	12	ADRIAN S. BRIDGES
95	12	JAMIE S. PARKER, SR.
96	12	DAVID C. CREECY
97	12	JERRY M. CREEF
98	12	BILLY CONRAD BEASLEY
99	12 &13	JAMIE SCOTT PARKER
100	12	ANDREW R. OTTAVIO
101	12	COLINGTON MOBILE HOME PARK
102	12	BILLY CONRAD BEASLEY
103	12 &13	CHESTER W. SMITH, 3RD
104	13	ROBERT J. LUNDEN
105	14	RALPH DEAN BEASLEY HEIRS
106	14	WALKABOUT LLC
107	14	DABNEY & KIM SHORT, WALKABOUT LLC
108	14	DABNEY & KIM SHORT, WALKABOUT LLC
109	14	ARGIE SHULTZ
110	14	ARGIE SHULTZ
111	14	J. FRAZIER EDWARD TTEE
112	14	FAY B. MAJOR
113	14	W.E. BENNETT & CHERYL M. JEFFERS
114	14	JASON B. HILL & TANYA N. HILL
115	14	J. CARL HAYES
116	14 &15	DARE COUNTY
117	15	DWIGHT H. WHELESS
118	15	GEORGE GARDNER
119	15	1085 COLLINGTON RD LLC

PROJ. REFERENCE NO.	SHEET NO.
R-5014	3P-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
120	15	JIMMIE D. SUMMERELL
121	15	D. S. E. INVESTMENT, LLC
122	15	ROBERT W. NUSBAUM
123	15	DANIEL P. PARSONS ETAL
124	15	DAVID RANDOLPH PARSONS ETAL
125	15	COLINGTON CAFE
126	15	STACY NEIL LANCASTER
127	15	DAYSPRING FARMS LLC
128	15	DOUGLAS E. STOVER
129	15	BAUM BAY HARBOR CIVIC ASSOCIATION
130	15	JEFFREY D. JACOBSON
131	15	ROBERT CRAIG WHITTEN
132	15, 16, 17, 18 & 19	UNITED STATES DEPARTMENT OF INTERIOR
133	15, 16 & 17	UNITED STATES DEPARTMENT OF INTERIOR
134	19	LOI NGOC TRAN
135	19	JOSEPH ANDREW LIVERMAN
136	19	MICHAEL A. MCVAUGH
137	20	CHRISTOPHER ALLEN HEDGEPETH
138	20	JOEY O. FERGUSON
139	20	JOEY FERGUSON
140	19 & 20	WADDINGTON CORP.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

EMARTIN-7

COMPUTED BY:	C. F. - NCDOT	DATE:	11-14-16
CHECKED BY:	A.E.V. - CALYX	DATE:	09-06-17

PROJECT NO.	SHEET NO.
R-5014	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C.A.A. PIPE 12 | 15 | 18 | 24 | 36 | 48 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 12" DUCTILE IRON PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A 0' THRU 5' EACH | B 5' THRU 10' LIN. FT. | 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 (TYPE D) | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO T.B.J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | FLOWABLE FILL C.Y. | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

EMARTIN-7

COMPUTED BY:	C. F. - NCDOT	DATE:	11-14-16
CHECKED BY:	A.E.V. - CALYX	DATE:	09-06-17

PROJECT NO.	SHEET NO.
R-5014	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C.A.A. PIPE SIZE 12 | 15 | 18 | 24 | 36 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 12" DUCTILE IRON PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | B 5' THRU 10' LIN. FT. | 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 (TYPE D) | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO T.B.J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | CY FLOWABLE FILL | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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EMARTIN-7

COMPUTED BY:	C. F. - NCDOT	DATE:	11-14-16
CHECKED BY:	A.E.V. - CALYX	DATE:	09-06-17

PROJECT NO.	SHEET NO.
R-5014	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C.A.A. PIPE SIZE 12 | 15 | 18 | 24 | 36 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 12" DUCTILE IRON PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | B: 5' THRU 10' LIN. FT. | 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 (TYPE D) | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO T.B.J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | CY FLOWABLE FILL | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

EMARTIN-7

COMPUTED BY:	C. F. - NCDOT	DATE:	11-14-16
CHECKED BY:	A.E.V. - CALYX	DATE:	09-06-17

PROJECT NO.	SHEET NO.
R-5014	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C.A.A. PIPE SIZE 12 | 15 | 18 | 24 | 36 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 12" DUCTILE IRON PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | B 5' THRU 10' LIN. FT. | 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I.(W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I.(W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I.(W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I.(W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I.(N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I.(N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I.(N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I.(N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 (TYPE D) | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING D.I. TO T.B.J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | | 15" C.S. ELBOW | 18" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | CY FLOWABLE FILL | CY CONCRETE COLLARS CL. "B" STD. 840.72 | CY CONCRETE AND BRICK PIPE PLUG STD. 840.71 | LIN. FT. PIPE REMOVAL | REMARKS |
|---|---|---|---

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-5014	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CALYX ENGINEERS + CONSULTANTS
6750 TRYON ROAD
CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
NC License # F-1333
Formerly Mulkey Engineers & Consultants

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83NA 2011

-L-
PI Sta 18+06.15
Δ = 28° 57' 13.8" (RT)
D = 10° 15' 00.0"
L = 282.48'
T = 144.32'
R = 558.98'
SE = EXIST.
V = EXIST.

BEGIN TIP PROJECT R-5014
-L- POT STA. 11+00.00
BEGIN OVERLAY

POT Sta.10+00.00

15+00

-L- PC Sta. 16+61.82

-L- PT Sta. 19+44.30

20+00

MATCH LINE -L- STA. 23+00.00
SEE SHEET 5

PL=WATER'S EDGE

LARRY WARD OSTRANDER
DB 1358 - PG 465

DONALD DOUGH
DB 68 - PG 97
DB 45 - PG 496

MIKEY BUCK HAYWOOD
DB 1290 - PG 576

LARS S. OSTRANDER
DB 1312 - PG 401

MARK A. KASTEN
DB 935 - PG 878

NIGEL M. BLACKMORE
DB 1745 - PG 26

MICHAEL B. MIDGETTE
DB 1355 - PG 380
DB 1580 - PG 475
PB C - PG 50A

CEMETERY
DB 1355 - PG 380
PB C - PG 50A

PHIL RAY HAYWOOD
DB 1372 - PG 281

PHIL RAY HAYWOOD
DB 187 - PG 812

TAMARA L. RESPASS &
ADRIAN S. BRIDGES
DB 946 - PG 712
PB G - PG 325

ADRIAN S. BRIDGES ETAL
DB 1362 - PG 489
PB G - PG 325

LINDA W. HERRON
DB 2026 - PG 398

ELOUISE M. PERRY
WB 14E- PG 334

WILLIAM S. FRASCA
DB 1201- PG 205

COLINGTON RD 160' BST

EXISTING R/W

PPS MON R5014-8

NOTES:
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 21 FOR -L- PROFILE

8/16/2017
R:\Roadway\Proj\R5014_rdy_psh_04.dgn
tes

8/17/99

REVISIONS

8/16/2017
K:\Roadway\Proj\R5014_rdy_psh_05.dgn
tesla

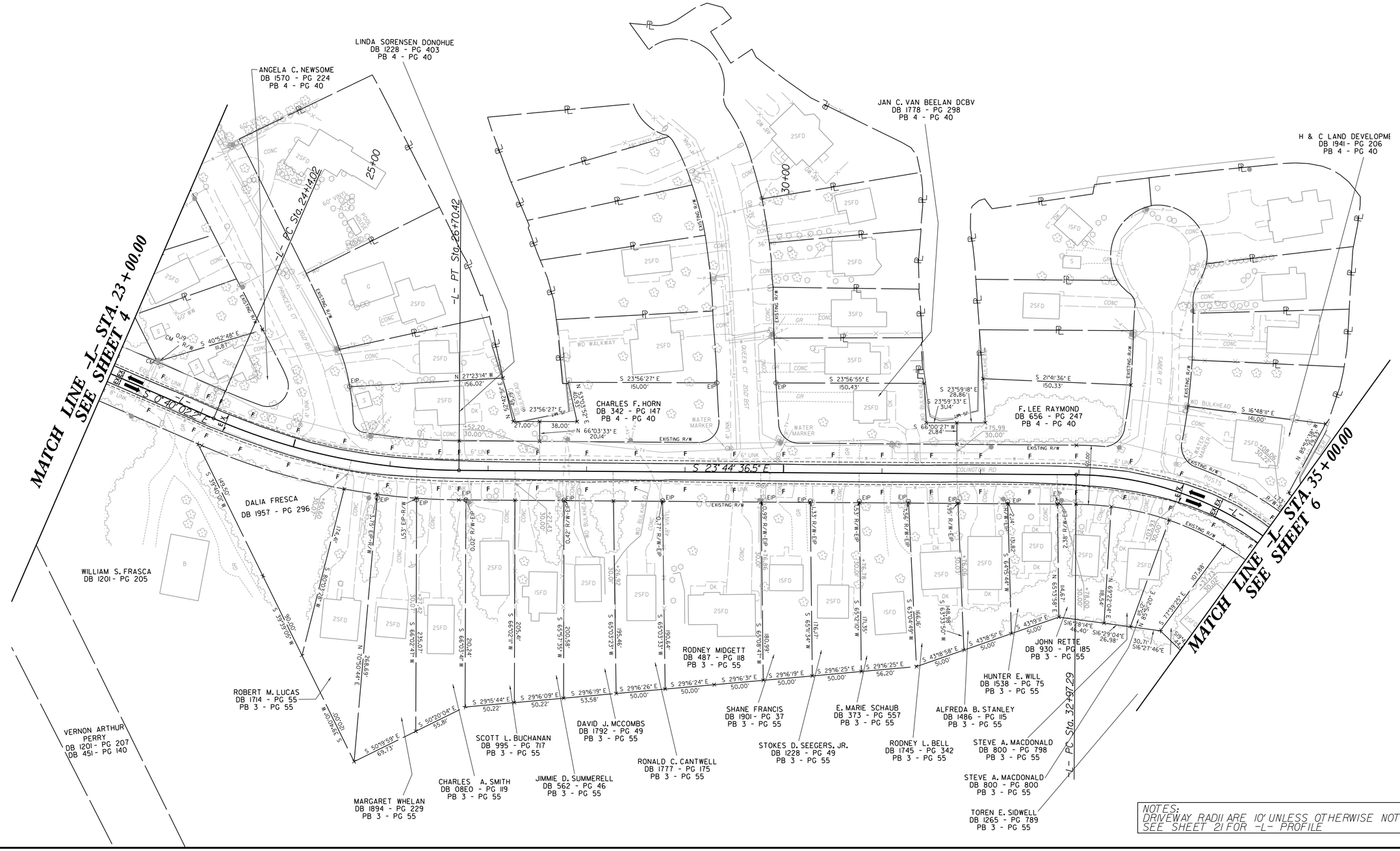
CALYX ENGINEERS + CONSULTANTS	PROJECT REFERENCE NO.	SHEET NO.
6750 TRYON ROAD CARY, NC 27518 phone: 919.851.1912 CALYXengineers.com NC License # F-1333 Formerly Mulkey Engineers & Consultants	R-5014	5
	RW SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-L-

PI Sta 25+43.98	PI Sta 34+44.90
△ = 23° 04' 34.3" (LT)	△ = 48° 32' 06.7" (RT)
D = 9° 00' 00.0"	D = 17° 30' 00.0"
L = 256.40'	L = 277.34'
T = 129.96'	T = 147.61'
R = 636.62'	R = 327.40'
SE = EXIST.	SE = EXIST.
V = EXIST.	V = EXIST.



PROJECT REFERENCE NO.	SHEET NO.
R-5014	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CALYX ENGINEERS + CONSULTANTS
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CARY, NC 27518
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Formerly Mulkey Engineers & Consultants

NAD 83/NA 2011

REVISIONS

8/17/99 RIGHT OF WAY REVISION - 2/28/2018 - ADDED PERMANENT UTILITY EASEMENT TO PARCELS 10,11,12 AND 13.

MATCH LINE -L- STA. 35+00.00 SEE SHEET 5

MATCH LINE -L- STA. 53+00.00 SEE SHEET 7

-L- PT Sta. 35+17.64

-L- PC Sta. 35+39.56

-L- PT Sta. 37+49.16

-L- PC Sta. 38+83.34

-L- PT Sta. 40+37.08

-L- PC Sta. 40+72.49

END OVERLAY /BEGIN GRADE -L- STA. 43+10.00

-L- PC Sta. 42+66.10

-L- PT Sta. 46+96.11

-L- PC Sta. 47+92.92

-L- PC Sta. 50+52.64

-L- PT Sta. 50+85.31

S 24° 47' 30.2" W

S 17° 19' 12.5" W

N 60° 26' 16.1" E

S 55° 08' 40.9" E

TRAFFIC DATA		
800 / 900	-L- SR 1217 (COLINGTON RD.)	7300 / 9300
100 / 100	6600 / 8500	
6700 / 8600		
COLINGTON DRIVE	YEAR 2018 ADT / YEAR 2038 ADT	

-L-

PI Sta 34+44.90
△ = 48° 32' 06.7" (RT)
D = 17° 30' 00.0"
L = 277.34'
T = 147.61'
R = 327.40'
SE = EXIST.
V = EXIST.

PI Sta 36+73.83
△ = 15° 35' 19.6" (RT)
D = 10° 17' 00.0"
L = 151.59'
T = 76.27'
R = 557.17'
SE = EXIST.
V = EXIST.

PI Sta 39+61.27
△ = 23° 03' 37.3" (LT)
D = 15° 00' 00.0"
L = 153.74'
T = 77.92'
R = 381.97'
SE = EXIST.
V = EXIST.

PI Sta 45+15.24
△ = 72° 27' 53.4" (LT)
D = 16° 51' 06.1"
L = 430.02'
T = 249.14'
R = 340.00'
SE = 6%
R0 = 126'
* V = 35 MPH

PI Sta 49+38.45
△ = 64° 25' 02.9" (LT)
D = 24° 48' 12.1"
L = 259.71'
T = 145.52'
R = 231.00'
SE = 6%
R0 = 126'
** V = 30 MPH

PI Sta 52+50.59
△ = 51° 50' 58.6" (RT)
D = 16° 51' 06.1"
L = 307.68'
T = 165.28'
R = 340.00'
SE = 6%
R0 = 126'
* V = 35 MPH

NOTES:
* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
** DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL SSD
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 21 AND 22 FOR -L- PROFILE
GTD = GRADE TO DRAIN

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.0 Ft.

FROM -L- STA. 42+50 TO STA. 47+27 LT
FROM -L- STA. 47+27 TO STA. 50+70 LT
FROM -L- STA. 51+17 TO STA. 52+00 LT
FROM -L- STA. 47+36 TO STA. 47+80 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Front Ditch Slope
Min. D=1.5 Ft.

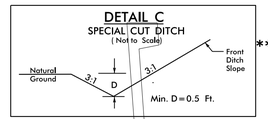
FROM -L- STA. 43+00 TO STA. 47+36 RT
FROM -L- STA. 49+55 TO STA. 52+00 RT

R-5014 Roadway Prog\R5014_rdy_psh_06.dgn
8/16/2018
mbrooks

-L-

PI Sta 52+50.59	PI Sta 55+48.13	PI Sta 60+12.41	PI Sta 63+20.66	PI Sta 74+83.10
△ = 51° 50' 58.6" (RT)	△ = 24° 28' 32.5" (RT)	△ = 38° 39' 22.3" (RT)	△ = 8° 14' 30.6" (LT)	△ = 127° 49' 20.5" (LT)
D = 16° 51' 06.1"	D = 8° 00' 39.4"	D = 17° 00' 00.0"	D = 6° 30' 00.0"	D = 11° 48' 48.8"
L = 307.68'	L = 305.53'	L = 227.39'	L = 126.80'	L = 1,082.00'
T = 165.28'	T = 155.13'	T = 118.21'	T = 63.51'	T = 990.50'
R = 340.00'	R = 715.22'	R = 337.03'	R = 881.47'	R = 485.00'
SE = 6%	SE = 6%	SE = 6%	SE = 5%	SE = 6%
R0 = 126'	R0 = 126'	R0 = 126'	R0 = 105'	R0 = 126'
* V = 35 MPH	V = 45 MPH	* V = 30 MPH	V = 50 MPH	V = 40 MPH

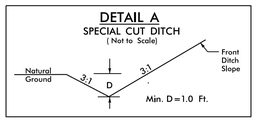
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 52+00 TO STA. 53+93 LT

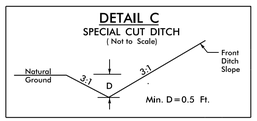
**ROCK PLATING -L- STA. 56+30 TO 56+75 LT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 52+00 TO STA. 56+28 RT
FROM -L- STA. 56+54 TO STA. 59+90 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



FROM -Y1A- STA. 12+00 TO STA. 13+15 RT

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Formerly Malkey Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

REVISIONS

8/17/99 RIGHT OF WAY REVISION - 2/5/2018 - ADDED DRIVEWAY PIPE ON PARCEL 23.

RIGHT OF WAY REVISION - 9/28/2017 - ADJUSTED RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 30 AND 31.

05-FEB-2018 12:03
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$$USER$$
$$$$

PAVEMENT REMOVAL

NOTES:
* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
** SEE SHEET 2G-? FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 22 AND 23 FOR -L- PROFILE
SEE SHEET 31 FOR -Y1A- PROFILE

CALYX ENGINEERS + CONSULTANTS	PROJECT REFERENCE NO.	SHEET NO.
6750 TRYON ROAD CARY, NC 27518 phone: 919.851.1912 CALYXengineers.com NC License # F-1333 Formerly Mulkey Engineers & Consultants	R-5014	8
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

NAD 83/NA 2011

MATCH LINE -L- STA. 66+50.00 SEE SHEET 7

MATCH LINE -L- STA. 80+00.00 SEE SHEET 9

-L- POC Sta. 67+23.30 = -Y2- POT Sta. 11+57.81

-L- POC Sta. 71+44.00 = -Y3- POT Sta. 12+78.30

-L- PRC Sta. 75+74.60

-L- PT Sta. 78+92.44

-Y2- PC Sta. 10+88.16

-Y2- PT Sta. 11+07.72

-Y3- PC Sta. 10+34.67

-Y3- PT Sta. 11+08.92

BEGIN CONSTRUCTION -Y2- STA. 10+15.00

-Y2- POT Sta. 10+00.00

BEGIN CONSTRUCTION -Y3- STA. 11+00.00

GPS MON R5014-5

N 72° 20' 11.4" E

S 61° 48' 36.6" E

N 12° 01' 27.7" E

S 43° 48' 09" E 271.13'

S 46° 39' 07" E 459.56'

S 60° 10' 48" W 281.02'

N 2° 09' 19.6" W

S 31° 41' 55" E 320.16'

N 52° 31' 53" W 284.04'

S 53° 49' 43" W 45.33'

S 53° 37' 29" W 20.09'

S 64° 50' 00" W 10.42'

S 83° 10' 50" W 8.51'

S 05° 49' 49" E 32.10'

S 78° 21' 00" E 149.25'

S 87° 22' 41" W 122.44'

N 10° 37' 27" W 212.15'

N 94° 28' 34" W 83.80'

N 67° 06' 48" W 100.14'

S 37° 17' 36" W 36.39'

S 52° 56' 12" W 90.39'

S 34° 33' 40" W 22.13'

S 14° 16' 32" W 42.15'

S 37° 44' 55" E 320.16'

N 85° 44' 25" W 99.00'

S 74° 42' 38" E 38.90'

N 43° 38' 56" W 89.94'

N 25° 58' 15" W 89.94'

N 33° 32' 30" E 15.29'

N 36° 27' 45" E 23.69'

N 36° 27' 45" E 64.34'

S 04° 44' 25" E 72.00'

S 05° 44' 25" E 150.57'

S 13° 40' 15" E 89.58'

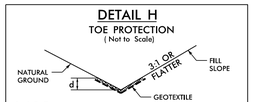
S 13° 40' 15" E 72.40'

S 43° 38' 56" E 89.94'

S 25° 58' 15" E 89.94'

S 33° 32' 30" W 253.63'

DETAIL H
TOE PROTECTION
(Not to Scale)

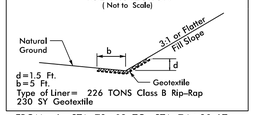


d=1.5 Ft.

Type of Liner= Class B Rip-Rap
25 SY Geotextile

FROM -L- STA. 74+30 TO STA. 74+53 LT

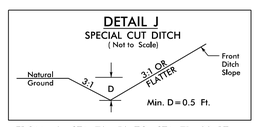
DETAIL I
TOE PROTECTION
(Not to Scale)



d=1.5 Ft.
b=5 Ft.
Type of Liner= 226 TONS Class B Rip-Rap
230 SY Geotextile

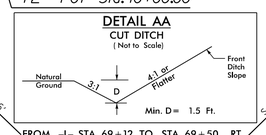
FROM -L- STA. 72+18 TO STA. 74+30 LT

DETAIL J
SPECIAL CUT DITCH
(Not to Scale)



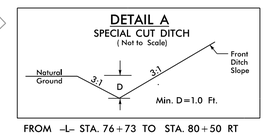
FROM -L- STA. 70+50 TO STA. 71+00 RT

DETAIL AA
CUT DITCH
(Not to Scale)



FROM -L- STA. 69+12 TO STA. 69+50 RT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 76+73 TO STA. 80+50 RT

PAVEMENT REMOVAL

NOTES:
* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEETS 22 AND 23 FOR -L- PROFILE
SEE SHEET 30 FOR -Y2- AND -Y3- PROFILE
GTD = GRADE TO DRAIN

-L-	-Y2-	-Y3-
PI Sta 74+83.10	PI Sta 77+64.46	PI Sta 10+98.07	PI Sta 10+71.99
Δ = 127° 49' 20.5" (LT)	Δ = 78° 50' 05.0" (RT)	Δ = 22° 24' 42.8" (LT)	Δ = 14° 10' 47.4" (RT)
D = 11° 48' 48.8"	D = 24° 48' 12.1"	D = 114° 35' 29.6"	D = 19° 05' 54.9"
L = 1,082.00'	L = 317.84'	L = 19.56'	L = 74.25'
T = 990.50'	T = 189.86'	T = 9.91'	T = 37.31'
R = 485.00'	R = 231.00'	R = 50.00'	R = 300.00'
SE = 6%	SE = 6%	SE = EXIST.	SE = EXIST.
RO = 126'	RO = 126'		
V = 40 MPH	* V = 30 MPH		

8/21/2017
K:\Roadway\Proj\r-5014_rdy_psh_08.dgn
tesla

8/17/99

REVISIONS

CALYX
ENGINEERS + CONSULTANTS
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CARY, NC 27518
phone: 919.851.1912
CALYXengineers.com
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PROJECT REFERENCE NO.	SHEET NO.
R-5014	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-L-

PI Sta 8.3+25.29
Δ = 54° 05' 38.6" (LT)
D = 9° 32' 57.5"
L = 566.47'
T = 306.34'
R = 600.00'
SE = 6%
RO = 126'
V = 40 MPH

PI Sta 92+55.51
Δ = 43° 15' 31.2" (LT)
D = 8° 00' 00.0"
L = 540.73'
T = 283.99'
R = 716.20'
SE = 6%
RO = 126'
V = 45 MPH

MATCH LINE -L- STA. 80+00.00 SEE SHEET 8

MATCH LINE -L- STA. 93+00.00 SEE SHEET 10

-L- PC Sta. 80+18.96

-L- POC Sta. 85+03.96 = -Y3A- POT Sta. 12+81.93

-L- PT Sta. 85+85.43

-L- PC Sta. 89+71.52

90+00

85+00

45 LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614

44 LIBERTY CHRISTIAN FELLOWSHIP
DB 2111 - PG 614

GARY D. CRANE, JR.
DB 1588 - PG 286
DB 1244 - PG 276

EVELYN G. CARLISLE
DB 1678 - PG 235
PB G - PG 202

ROCKY D. MIDGETTE
DB 1560 - PG 261
DB 1652 - PG 275

JLS PROPERTIES, LLC
DB 1716 - PG 87

EVELYN G. CARLISLE
DB 1678 - PG 235
PB G - PG 202

COLINGTON CREEK, LLC
DB 1545 - PG 196

DAVID A. SHAW
DB 1851 - PG 354
PB G - PG 264

COUNTY OF DARE
DB 1673 - PG 406
PB G - PG 190

LGI LAND, NC, LLC
DB 1673 - PG 409
PB G - PG 190

TANYA TILLETT CROW
DB 786 - PG 561
PB C - PG 198D

GPS MON R5014-11

GPS MON R5014-12

TIE TO EX. BST PATH
-L- STA. 86+49.87, 33.44' LT

RETAIN AND CLEAN OUT FUNNEL DRAIN

REMOVE EX.GR

SAV

TIE GR TO EXISTING STRUCTURE ANCHOR UNIT

NOT PART OF TIP PROJECT R-5014
TIE PVMT TO CONC. APPROACH SLAB
-L- STATION 90+00.64
-L- STATION 91+89.27

PROPOSED CURB CUT

SPECIAL CUT DITCH SEE DETAIL 'A'

SPECIAL CUT DITCH SEE DETAIL 'C'

GRADE TO DRAIN

REMOVE

2 TONS CL B RIP RAP
7 SY Geotextile

PUE

-Y3A- PC Sta. 11+65.40
N 47° 04' 34.4" W
-Y3A- PT Sta. 11+20.45
N 28° 59' 53.0" W
-Y3A- PT Sta. 12+60.06
-Y3A- PC Sta. 10+33.76
N 55° 21' 17.1" W
-Y3A- POT Sta. 10+00.00
BEGIN CONSTRUCTION
-Y3A- STA. 11+60.00

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
Front Ditch Slope
Min. D = 1.0 Ft.
FROM -L- STA. 76+73 TO STA. 80+50 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
Front Ditch Slope
Min. D = 0.5 Ft.
FROM -L- STA. 81+25 TO STA. 84+76 RT

S 74°14'09" W
272.76'

-Y3A-

PI Sta 10+77.18
Δ = 8° 16' 42.7" (RT)
D = 9° 32' 57.5"
L = 86.69'
T = 43.42'
R = 600.00'
SE = 2%
RO = 42'
* V = 30 MPH

PI Sta 12+13.12
Δ = 18° 04' 41.4" (RT)
D = 19° 05' 54.9"
L = 94.66'
T = 47.73'
R = 300.00'
SE = 2%
RO = 42
* V = 30 MPH

NOTE:
* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 31 FOR -Y3A- PROFILE

8/16/2017
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REVISIONS

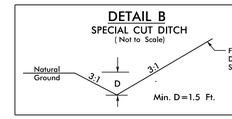
-L-

PI Sta 92+55.51
△ = 43° 15' 31.2" (LT)
D = 8° 00' 00.0"
L = 540.73'
T = 283.99'
R = 716.20'
SE = 6%
RO = 126'
V = 45 MPH

PI Sta 98+84.89
△ = 13° 24' 22.6" (LT)
D = 7° 15' 00.0"
L = 184.91'
T = 92.88'
R = 790.29'
SE = 5%
RO = 105'
V = 45 MPH

PI Sta 105+78.55
△ = 104° 22' 34.7" (RT)
D = 21° 37' 15.8"
L = 482.75'
T = 341.49'
R = 265.00'
SE = 6%
RO = 126'
✳ V = 30 MPH

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 99+76.92 TO STA. 104+10 LT

PROJECT REFERENCE NO.	SHEET NO.
R-5014	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NC License # F-1333
Formerly McBay Engineers & Consultants

NAD 83/NA 2011

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50 LGI LAND NC, LLC
DB 1673 - PG 409
PB G - PG 264

53 JANICE WILLIAMS O'NEAL
DB 365 - PG 842

58 JASPER DONNIE GAMIEL
DB 1164 - PG 389
PB D - PG 398

59 MAYNARD R. OUTLAW
DB 1390 - PG 278
PB D - PG 398

65 COLINGTON POINT DEVELOPERS, LLC
DB 1677 - PG 203
PB G - PG 300

66 COLINGTON POINT DEVELOPERS, LLC
DB 1702 - PG 237
PB G - PG 300

62 COLINGTON VENTURES
DB 1880 - PG 59
PB C - PG 197A

61 MARK D. NUNEMAKER
DB 1615 - PG 366
PB C - PG 197A

63 BRANDON BEASLEY
DB 1832 - PG 450
PB G - PG 399

60 WILLIAM JOSEPH MEYERS, JR.
DB 1875 - PG 89
PB C - PG 197A

COLINGTON CREEK, LLC
DB 1545 - PG 196

57 GARLAND H. DUNSTAN, JR.
DB 1539 - PG 223

64 ROBERT SHANE MOORE
DB 2034 - PG 987
PB C - PG 122D

56 CHRISTOPHER K. ARCHER
DB 1591 - PG 86

55 GARY GENE BEASLEY
DB 1071 - PG 37

54 CODY JACOB HUDOCK
DB 1798 - PG 164

52

51 AVA COL SOL JOHNSON
DB 2018 - PG 531
PB E - PG 345

50

49 DAVID A. SHAW
DB 1851 - PG 354
PB G - PG 264

REGINA OUTLAW ZEINER
DB 1810 - PG 242
PB E - PG 345

-L- POC Sta.94+81.31 =
-Y3B- POT Sta.12+21.27

-L- PT Sta.95+12.26

-L- PC Sta.97+92.01

-L- PT Sta.99+76.92

-L- PC Sta.102+37.06

-L- POC Sta.106+89.43 =
-Y3C- POT Sta.10+00.00

-L- PT Sta.107+19.81

-L- PC Sta.107+38.88

-Y3B- POT Sta.10+00.00

-Y3C- POT Sta.11+65.72
N 13° 20' 55.8" W

-Y3C- PT Sta.11+56.61
END CONSTRUCTION
-Y3C- STA. 11+00.00
+10.00 -Y3C-
25.00' LT

-Y3C- PC Sta.10+77.11
N 17° 01' 00.7" E
BEGIN RET. WALL
-Y3C- 10+67.06

-Y3C- PT Sta.10+52.74
END RET. WALL
-Y3C- 10+28.84

BEGIN RET. WALL
-Y3C- 10+69.88
COLLAR AND EXTEND EXISTING 60" CMP WITH 6 LF OF 60" CAAP
+00.00 -Y3C-
45.00' RT

-Y3C- PC Sta.10+36.77

-Y3B- POT Sta.10+00.00

MATCH LINE -L- STA. 93+00.00
SEE SHEET 9

MATCH LINE -L- STA. 107+50.00
SEE SHEET 11

**ROCK PLATING
-L- STA. 104+10 TO 104+65 LT

COLLAR AND EXTEND EXISTING 48" CMP WITH 23 LF OF 48" CAAP

REMOVE WOODEN PIER TO RIGHT OF WAY

COLLAR AND EXTEND EXISTING 48" CMP WITH 2 LF OF 48" CAAP

EXTEND EXISTING 48" CMP

SPECIAL CUT DITCH SEE DETAIL 'A'

SPECIAL CUT DITCH SEE DETAIL 'B'

SPECIAL CUT DITCH SEE DETAIL 'C'

GRADE TO DRAIN

RETAIN

TIE GR TO EXIST. BRIDGE

BEGIN CONSTRUCTION
-Y3B- STA. 11+92.00

N 20° 50' 13.6" E

N 66° 28' 04.0" W
-Y3B-

N 7° 25' 51.1" E

225' TAPER LT

100' TAPER

300' TAPER LT

12" RCP-IV

15" RCP-IV

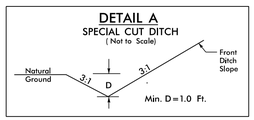
18" RCP-IV

24" RCP-IV

-Y3C-

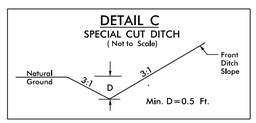
PI Sta 10+44.77	PI Sta 11+17.82
△ = 9° 09' 11.6" (RT)	△ = 30° 21' 56.6" (LT)
D = 57° 17' 44.8"	D = 38° 11' 49.9"
L = 15.98'	L = 79.50'
T = 8.00'	T = 40.71'
R = 100.00'	R = 150.00'
SE = EXIST.	SE = EXIST.

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 95+75 TO STA. 97+25 RT
FROM -L- STA. 96+20 TO STA. 99+76.92 LT
FROM -L- STA. 99+76.92 TO STA. 103+85 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 97+50 TO STA. 98+10 RT
FROM -L- STA. 98+10 TO STA. 99+76.92 RT

NOTES:
✳ DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
✳✳ SEE SHEET 2G-? FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 23 AND 24 FOR -L- PROFILE
SEE SHEET 31 FOR -Y3B- AND -Y3C- PROFILE

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8/17/99

REVISIONS

MATCH LINE -L- STA. 107+50.00 SEE SHEET 10

MATCH LINE -L- STA. 125+50.00 SEE SHEET 12

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
R-5014	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DETAIL N
SPECIAL CUT DITCH W/EARTHEN BERM
(Not to Scale)

ROW, Variable, Natural Ground, 3:1, d, D, Front Ditch Slope

Min. D=1.0 Ft.
d=1.0 Ft.

FROM -L- STA. 108+25 TO STA. 111+00 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 3:1, D, Front Ditch Slope

Min. D=1.5 Ft.

FROM -LA- STA. 115+16 TO STA. 117+97 RT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 3:1, D, Front Ditch Slope

Min. D=1.0 Ft.

FROM -L- STA. 109+87 TO STA. 111+67.50 RT.
FROM -LA- STA. 111+67.50 TO STA. 112+00 RT.
FROM -L- STA. 122+50 TO STA. 126+25 RT.

DETAIL D
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, Natural Ground

Min. D=1 Ft.

FROM -LA- STA. 117+55 TO STA. 117+97 LT.
FROM -L- STA. 109+66 TO STA. 109+87 RT.

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, Front Ditch Slope

Min. D=0.5 Ft.

FROM -LA- STA. 112+60 TO STA. 116+00 LT.
FROM -LA- STA. 117+97 TO STA. 120+00 LT.
FROM -L- STA. 124+11 TO STA. 126+72 LT.
FROM -L- STA. 108+00 TO STA. 108+97 RT.
FROM -LA- STA. 117+97 TO STA. 119+50 RT.

DETAIL M
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, Natural Ground

Min. D=Var., 0-1 FT

FROM -L- STA. 108+93 TO STA. 109+00 RT

-L-

PI Sta 108+80.13	PI Sta 122+74.92
△ = 18° 14' 45.7" (LT)	△ = 40° 32' 51.9" (RT)
D = 10° 15' 00.0"	D = 9° 30' 00.0"
L = 178.01'	L = 426.82'
T = 89.76'	T = 222.79'
R = 558.98'	R = 603.11'
SE = 6%	SE = 6%
R0 = 126'	R0 = 126'
V = 40 MPH	V = 40 MPH

-LA-

PI Sta 119+60.71	PI Sta 112+38.08
△ = 128° 57' 18.5" (LT)	△ = 11° 15' 30.5" (RT)
D = 23° 28' 54.8"	D = 8° 11' 06.4"
L = 549.17'	L = 137.55'
T = 511.04'	T = 69.00'
R = 244.00'	R = 700.00'
SE = 6%	SE = 6%
R0 = 126'	R0 = 126'
* V = 30 MPH	V = 45 MPH

-Y4-

PI Sta 10+44.05
△ = 8° 21' 37.3" (RT)
D = 28° 38' 52.4"
L = 29.18'
T = 14.62'
R = 200.00'
SE = EXIST.

-Y5-

PI Sta 10+80.00	PI Sta 12+43.44
△ = 5° 00' 58.3" (LT)	△ = 15° 06' 26.7" (RT)
D = 8° 11' 06.4"	D = 57° 17' 44.8"
L = 61.28'	L = 26.37'
T = 30.66'	T = 13.26'
R = 700.00'	R = 100.00'
SE = EXIST.	SE = EXIST.

PAVEMENT REMOVAL

NOTES:
* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS. DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
SEE SHEET 24 AND 25 FOR -L- AND -LA- PROFILE
SEE SHEET 30 FOR -Y4- AND -Y5- PROFILE
GTD = GRADE TO DRAIN

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REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM -L- STA. 127+64 TO STA. 129+10 LT
FROM -L- STA. 131+40 TO STA. 134+70 LT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)

FROM -L- STA. 129+30 TO STA. 135+10 RT

DETAIL D
STANDARD 'V' DITCH
(Not to Scale)

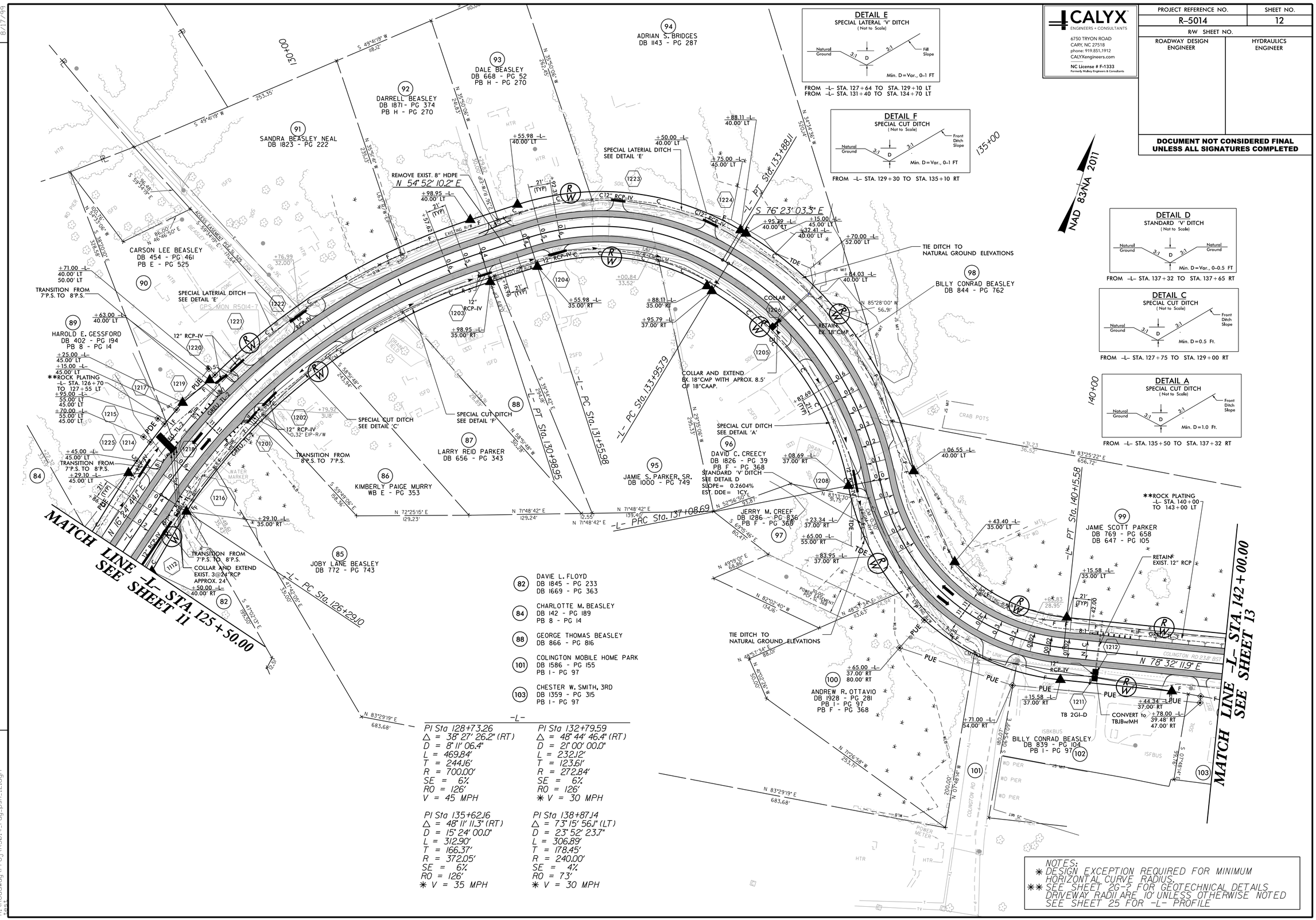
FROM -L- STA. 137+32 TO STA. 137+65 RT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)

FROM -L- STA. 127+75 TO STA. 129+00 RT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

FROM -L- STA. 135+50 TO STA. 137+32 RT



-L-

PI Sta 128+73.26	PI Sta 132+79.59
△ = 38° 27' 26.2" (RT)	△ = 48° 44' 46.4" (RT)
D = 8° 11' 06.4"	D = 21° 00' 00.0"
L = 469.84'	L = 232.12'
T = 244.16'	T = 123.61'
R = 700.00'	R = 272.84'
SE = 6%	SE = 6%
RO = 126'	RO = 126'
V = 45 MPH	* V = 30 MPH
PI Sta 135+62.16	PI Sta 138+87.14
△ = 48° 11' 11.3" (RT)	△ = 73° 15' 56.1" (LT)
D = 15° 24' 00.0"	D = 23° 52' 23.7"
L = 312.90'	L = 306.89'
T = 166.37'	T = 178.45'
R = 372.05'	R = 240.00'
SE = 6%	SE = 4%
RO = 126'	RO = 73'
* V = 35 MPH	* V = 30 MPH

NOTES:
* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.
** SEE SHEET 26-? FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 25 FOR -L- PROFILE

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REVISIONS

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Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/NA 2011

-L-
PI Sta 151+21.17
Δ = 14° 36' 20.0" (RT)
D = 1° 37' 00.0"
L = 903.44'
T = 454.18'
R = 3,544.07'
SE = 2%
RO = 42'
V = 80 MPH

145+00

150+00

MATCH LINE -L- STA. 142 + 00.00
SEE SHEET 12

MATCH LINE -L- STA. 154 + 50.00
SEE SHEET 14

PL=WATER'S EDGE

**ROCK PLATING -L- STA. 140+00 TO 143+00 LT

99
JAMIE SCOTT PARKER
DB 769 - PG 658
DB 647 - PG 105

S 64°36'47" E
229.52'

RETAIN EXISTING 24" RCP

80.98 -L- 35.00' LT

REMOVE EX. GR

21' (TYP)

+80.66

TIE GR TO EXISTING STRUCTURE ANCHOR UNIT

NOT PART OF TIP PROJECT R-5014
TIE PAVEMENT TO EXISTING APPROACH SLAB
-L- STATION 147+22.84
-L- STATION 152+34.13

DEPARTMENT OF TRANSPORTATION
DB 764 - PG 156

REMOVE EX. GR

PL=WATER'S EDGE

+05.41
37.54'

N 16°34'58" W
19.58'

RIP RAP

CONC HEAD WALL

FIBER OPTIC MARKER

JS MH

EXISTING R/W

WLB

RETAIN & CLEAN OUT FUNNEL DRAIN

TUNNEL DRAIN

RIP RAP

12" DIP ATTACHED TO BRIDGE

-L-

N 78° 32' 11.9" E

COLINGTON RD 23.8' BST

+48.50 -L- 30.00' RT

+49.37 -L- 43.00' RT

REMOVE EX. GR

104

TIE GR TO EXISTING STRUCTURE ANCHOR UNIT

+07.91 -L- 37.46' RT

GREU, TL-3

REMOVE EX. GR

RETAIN & CLEAN OUT FUNNEL DRAIN

RETAIN EXIST. 15" CMP

GPS MON R5014-3

103

+16.24
56.87'

+15.91
42.15'

GPS MON R5014-4

EIP

ISFD

S 07°48'14" E
95.36'

97.18'

HERMON L. BUNCH JR
DB 2069 - PG 95

80.49'

S 05°48'14" E

DALE BEACHAM
DB 1755 - PG 426

90.30'

S 05°49'45" E

ISFBUS

+99.70 -L- 74.99' RT

CONC

N 83°45'03" E
145.49'

+99.28 -L- 30.00' RT

2SFBUS

80.93'

S 05°48'14" E 72.26'

MAE B. LUNDEN
DB 1645 - PG 107
PB 1 - PG 97

PL=WATER'S EDGE

WD PIER

ROBERT J. LUNDEN
DB 1667 - PG 383
DB 1382 - PG 191

WILLIAM RIVES POARCH
DB 1875 - PG 203

CHESTER W. SMITH, 3RD
DB 1359 - PG 315
PB 1 - PG 97

-L PC Sta. 146+66.99

DANA BRUCE BEASLEY
DB 968 - PG 160

+14.06 -L- 97.79' RT

HTR

ROSSPECK RD

S 16°01'59" W
139.00'

S 82°13'04" W
71.30'

S 82°13'04" W
38.70'

WILLENE P. SIMPSON
DB 312 - PG 926

S 35°55'56" E
180.00'

S 19°47'04" W
260.00'

NOTES:
**SEE SHEET 2G-? FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 25 AND 26 FOR -L- PROFILE

8/16/2017
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8/17/99

REVISIONS

-L-	PI Sta 151+21.17	PI Sta 157+25.02	PI Sta 160+11.81	PI Sta 168+56.10
	△ = 14° 36' 20.0" (RT)	△ = 4° 12' 41.2" (RT)	△ = 21° 56' 11.8" (RT)	△ = 53° 18' 40.2" (LT)
	D = 1° 37' 00.0"	D = 1° 45' 00.0"	D = 10° 00' 00.0"	D = 22° 55' 05.9"
	L = 903.44'	L = 240.65'	L = 219.37'	L = 232.61'
	T = 454.18'	T = 120.38'	T = 111.04'	T = 125.49'
	R = 3,544.07'	R = 3,274.04'	R = 572.96'	R = 250.00'
	SE = 2%	SE = 2%	SE = 6%	SE = 6%
	RO = 42°	RO = 42°	RO = 126°	RO = 126°
	V = 80 MPH	V = 80 MPH	V = 40 MPH	* V = 30 MPH

CALYX ENGINEERS + CONSULTANTS	PROJECT REFERENCE NO.	SHEET NO.
6750 TRYON ROAD CARY, NC 27518 phone: 919.851.1912 CALYXengineers.com NC License # F-1333 Formerly Mulkey Engineers & Consultants	R-5014	14
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCH LINE -L- STA. 154+50.00 SEE SHEET 13

MATCH LINE -L- STA. 168+00.00 SEE SHEET 15

155+00 160+00 165+00

NAD 83/NA 2011

-L- PT Sta. 155+70.42 | -L- PC Sta. 156+04.64 | -L- PT Sta. 158+45.30 | -L- PC Sta. 159+00.77 | -L- PT Sta. 161+20.13

**ROCK PLATING -L- STA. 163+08 TO 173+60 LT

NO CLAIM IS NECESSARY ON OPEN WATER

NC DEPARTMENT OF TRANSPORTATION
DB 357 - PG 709
PB D - PG 328

ARGIE SHULTZ
DB 1221 - PG 301
PB 2 - PG 209

ARGIE SHULTZ
DB 958 - PG 497
PB 2 - PG 209

WALKABOUT, LLC
DB 1781 - PG 7

DABNEY & KIM SHORT
WB E - PG 125

J. FRAZIER EDWARD TTEE
DB 1790 - PG 117

FAY B. MAJOR
DB 1681 - PG 193
PB 2 - PG 209

WALKABOUT LLC
DB 1964 - PG 309

DABNEY & KIM SHORT
WB E - PG 125
WALKABOUT, LLC
DB 1781 - PG 7

RALPH DEAN BEASLEY HEIRS
WB 14E - PG 240

WILLENE P. SIMPSON
DB 312 - PG 926

W.E. BENNETT
CHERYL M. JEFFERS
DB 1041 - PG 743
PB 2 - PG 209

JASON B. HILL
TANYA N. HILL
DB 2071 - PG 204

J. CARL HAYES
DB 427 - PG 134
PB C - PG 7B

DARE COUNTY
DB 922 - PG 519
PB C - PG 7B

GPS MON R5014-17

REMOVE EX. GR

RETAIN EXIST. 12" CMP

SPECIAL CUT DITCH SEE DETAIL 'G'

TIE DITCH TO EXIST. 12" CMP INVERT

REMOVE EXIST. 15" RCP

TIE PROP. CUT DITCH TO EXISTING DITCH

SPECIAL CUT DITCH SEE DETAIL 'F'

SPECIAL CUT DITCH SEE DETAIL 'F'

12" RCP-IV

TIE DITCH TO NATURAL GROUND ELEVATIONS

15" RCP-IV

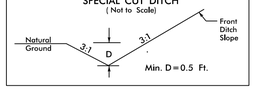
15" RCP-IV

SPECIAL CUT DITCH SEE DETAIL 'F'

SAV

PUE

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 161+20 TO STA. 162+88 LT

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)

FROM -L- STA. 155+57 TO STA. 156+14 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)

FROM -L- STA. 158+00 TO STA. 161+41 RT
FROM -L- STA. 161+80 TO STA. 163+61 RT

NOTES:
* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL SSD
** SEE SHEET 26-2 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 26 FOR -L- PROFILE

8/4/2017
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tgs

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Formerly McKoy Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
R-5014	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS
RIGHT OF WAY REVISION - 02/05/2018 - PLACED NOTE, DO NOT DISTURB SIGN ON PARCEL 129.
RIGHT OF WAY REVISION - 06/01/2018 - ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 133.

MATCH LINE -L- STA. 168+00.00
SEE SHEET 14

MATCH LINE -L- STA. 183+50.00
SEE SHEET 16

NAD 83/NA 2011

-L- PC Sta. 172+98.50

-L- PT Sta. 169+63.22

-L- PT Sta. 177+36.46

-L- PC Sta. 179+38.79

-L- PT Sta. 182+37.96

END GRADE /BEGIN OVERLAY
-L- STA. 183+00.00

** ROCK PLATING -L- STA. 163+08 TO 173+60 LT

NO CLAIM IS NECESSARY ON OPEN WATER

HISTORIC PROPERTY BOUNDARY

TIE DITCH TO NATURAL GROUND ELEVATIONS

SPECIAL CUT DITCH SEE DETAIL 'B'

SPECIAL CUT DITCH SEE DETAIL 'F'

COLLAR AND EXTEND EXIST. 24"CMP WITH APPROX. 13' 24" CAAP

RETAIN EXIST. 15"RCP

RETAIN 15" CMP

300' SYMMETRICAL WIDENING

12" DUCTILE IRON PIPE

ROBERT CRAIG WHITTEN
DB 1734 - PG 2

DI SEE SPEC. DET. SHEET 2-C2

RETAIN EXIST. DI

RETAIN EXIST. 15"CMP

REMOVE EXIST. 15" CMP

REMOVE EXIST. 24" CMP

REMOVE EXIST. 15" HDPE

REMOVE EXIST. 12" HDPE

REMOVE AND REPLACE WITH TRAFFIC BEARING JB

DO NOT DISTURB LARGE OAK TREE

DO NOT DISTURB SIGN

SAV

GPS MON R504 DP

120 JIMMIE D. SUMMERELL
DB 1013 - PG 871

121 D. S. E. INVESTMENT, LLC
DB 1888 - PG 423

122 DANIEL P. PARSONS ETAL
DB 1711 - PG 490
PB F - PG 300

123 DAVID RANDOLPH PARSONS ETAL
DB 1873 - PG 77
PB G - PG 229

124 COLLINGTON CAFE
DB 1315 - PG 360

125 STACY NEIL LANCASTER
DB 1758 - PG 44

126 DAYSPRING FARMS LLC
DB 1923 - PG 435
PB G - PG 229

127 DOUGLAS E. STOVER
DB 2052 - PG 534
PB B - PG 70

128 ROBERT CRAIG WHITTEN
DB 1734 - PG 2

129 JEFFREY D. JACOBSON
DB 848 - PG 693

130 UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

131 UNITED STATES DEPARTMENT OF INTERIOR
DB 78 PG 206

132 BAUM BAY HARBOR CIVIC ASSOCIATION
DB 1207 - PG 586
PB B - PG 70

133 DARE COUNTY
DB 922 - PG 519
PB C - PG 7B

116 DARE COUNTY
DB 922 - PG 519
PB C - PG 7B

117 DWIGHT H. WHELESS
DB 607 - PG 357

118 GEORGE GARDNER
DB 1711 - PG 491
DB 322 - PG 967

119 1085 COLLINGTON RD LLC
DB 1828 - PG 210
PB A - PG 233
PB A - PG 214

122 ROBERT W. NUSBAUM
DB 1794 - PG 16
PB E - PG 23
PB F - PG 300

129 BAUM BAY HARBOR CIVIC ASSOCIATION
DB 1207 - PG 586
PB B - PG 70

131 ROBERT CRAIG WHITTEN
DB 1734 - PG 2

132 UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

133 UNITED STATES DEPARTMENT OF INTERIOR
DB 78 PG 206

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Fill Slope
Min. D= 1.5 FT
FROM -L- STA. 170+00 TO 175+31 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1 or Flatter, D, 4:1 or Flatter, Front Ditch Slope
Min. D=Var., 0-1 FT
FROM -L- STA. 177+07 TO STA. 178+39 LT
FROM -L- STA. 176+75 TO STA. 178+80 RT

DETAIL P
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 10:1 or Flatter, D, 10:1 or Flatter, Front Ditch Slope
Min. D=Var., 0-0.5 FT
FROM -L- STA. 180+34 TO STA. 181+18 LT

PI Sta 168+56.10	PI Sta 175+66.94	PI Sta 181+09.39	PI Sta 187+68.88
Δ = 53°18'40.2" (LT)	Δ = 83°38'37.6" (RT)	Δ = 68°48'32.2" (LT)	Δ = 43°02'44.8" (RT)
D = 22°55'05.9"	D = 19°05'54.9"	D = 23°00'00.0"	D = 4°30'00.0"
L = 232.61'	L = 437.96'	L = 299.17'	L = 956.57'
T = 125.49'	T = 268.44'	T = 170.60'	T = 502.13'
R = 250.00'	R = 300.00'	R = 249.11'	R = 1,273.24'
SE = 6%	SE = 6%	SE = 6%	SE = EXIST.
R0 = 126'	R0 = 126'	R0 = 126'	V = 55 MPH
* V = 30 MPH	* V = 30 MPH	* V = 30 MPH	

NOTES:
* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS
** SEE SHEET 2G-2 FOR GEOTECHNICAL DETAILS
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 26 AND 27 FOR -L- PROFILE
GTD = GRADE TO DRAIN

5/30/2018
R:\5014roadway\Proj\R5014_rdy_psh_15.dgn
rlbarnes

8/17/99

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-L-
PI Sta 187+68.88
△ = 43° 02' 44.8" (RT)
D = 4° 30' 00.0"
L = 956.57'
T = 502.13'
R = 1,273.24'
SE = EXIST.
V = 55 MPH

185+00

190+00

195+00

132
UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

MATCH LINE -L- STA. 183+50.00
SEE SHEET 15

APPROX. 340' EXISTING LANE TRANSITION

BST WALK

IN CONDUIT

+70.00

EXISTING R/W

+00.00 -L-
35.00' RT

+50.00 -L-
30.00' RT

WATER MARKER

WLD

DTM

LENOIR ST

COLLINGTON RD

21.0' BST

24" WD POST'S

TIE TO EXISTING MULTI-USE PATH
-L- STA. 195+48.22

-L- PT Sta. 192+23.32

S 56° 08' 25.2" E

-L-

EX. R/W

10'

EX. BK.

MATCH LINE -L- STA. 196+50.00
SEE SHEET 17

133
UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

NOTES:
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 27 FOR -L- PROFILE

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tstevens

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	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99 RIGHT OF WAY REVISION - 06/01/2018 - ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 133.

NAD 83/NA 2011

-L-
PI Sta 209+11.27
△ = 62° 13' 20.7" (LT)
D = 6° 05' 00.0"
L = 1,022.83'
T = 568.41'
R = 941.85'
SE = EXIST.
V = 50 MPH

200+00

205+00

MATCH LINE -L- STA. 196+50.00
SEE SHEET 16

MATCH LINE -L- STA. 209+50.00
SEE SHEET 18

(132)
UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

(133)
UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

-L- PC Sta 203+42.86

S 56° 08' 25.2" E

EXISTING R/W

APPROX. 265' EXISTING LANE TRANSITION

APPROX. 75' EXISTING TAPER

APPROX. 170' EXISTING TURN LANE

+00.00 -L- 30.00' RT

+35.00

+50.00 -L- 52.00' RT

+00.00 -L- 48.00' RT

HISTORIC PROPERTY BOUNDARY

HISTORIC PROPERTY BOUNDARY

NOTES:
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 27 AND 28 FOR -L- PROFILE

6/30/2018
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chandler

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	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/NA 2011

8/17/99

REVISIONS

RIGHT OF WAY REVISION - 06/01/2018 - ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 133.

-L-
PI Sta 209+11.27
Δ = 62° 13' 20.7" (LT)
D = 6° 05' 00.0"
L = 1,022.83'
T = 568.41'
R = 941.85'
SE = EXIST.
V = 50 MPH

210+00

215+00

220+00

(132) UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

MATCH LINE -L- STA. 209+50.00
SEE SHEET 17

-L- PT Sta. 213+65.69

MATCH LINE -L- STA. 221+50.00
SEE SHEET 19

APPROX. 265' EXISTING LANE TRANSITION

APPROX. 100' EXISTING TURN LANE

APPROX. 100' EXISTING TAPER

APPROX. 150' EXISTING TAPER

APPROX. 60' EX. TURN LANE

APPROX. 120' EXISTING TURN LANE

HISTORIC PROPERTY BOUNDARY

R 70' F

R 40'

(133)

N 61° 38' 14.1" E

N 62°42'51" E 49.4'

S 27°20'09" E

S 61°25'06" W 48.16'

CM 0.71' FROM R/W

CM 0.07' FROM R/W

EXISTING R/W

EXISTING R/W (PCD) SL 881

BERMUDA BAY BLVD.

TOWNHALL DR

VETERANS DRIVE

FIBER OPTIC MARKER

POWER METER

FSS VALVE

FSS AIR RELEASE VALVE

WATER METER

CROSSWALK WARNING SIGNAL

TELEPHONE SIGNAL BOOSTER

GAS MARKER

ISFBUS

ISBKBUS

ISBLK

END PROP. PAVED SHOULDER

+53.91 -L- 52.00' RT

DARE COUNTY
DB 503 - PG 862

COUNTY OF DARE
DB 1463 - PG 405
PB C - PG 93H
PB D - PG 89

TOWN OF KILL DEVIL HILLS
DB 1775 - PG 353

TOWN OF KILL DEVIL HILLS
DB 776 - PG 297
PB C - PG 19E
PB C - PG 93H

TRAFFIC DATA			
12100 / 16700	-L- SR 1217 (COLINGTON RD.)		13100 / 18100
	200 / 300	1200 / 1700	
	1400 / 2000		
BERMUDA BAY BLVD.		YEAR 2018 ADT YEAR 2038 ADT	

TRAFFIC DATA			
13100 / 18100	-L- SR 1217 (COLINGTON RD.)		14000 / 19300
	1600 / 2200	2500 / 3400	
	4100 / 5600		
VETERANS DR.		YEAR 2018 ADT YEAR 2038 ADT	

EXISTING TRAFFIC SIGNAL

NOTES:
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
SEE SHEET 28 FOR -L- PROFILE

5/30/2018
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rlbrock

8/17/99

REVISIONS

RIGHT OF WAY REVISION - 06/01/2018 - ADJUSTED ROW ON PARCEL 134,135 & 140, ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 134,135 & 136

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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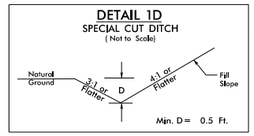
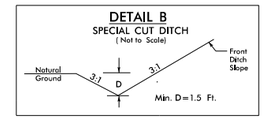
DETAIL 1D
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 229+00 TO 230+50 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 231+00 TO STA. 234+60 LT

NAD 83/NA 2011

END OVERLAY – BEGIN GRADE
-L- STA. 229+00.00

MATCH LINE -L- STA. 221+50.00
SEE SHEET 18

MATCH LINE -L- STA. 233+50.00
SEE SHEET 20

225+00

230+00

(132) UNITED STATES DEPARTMENT OF INTERIOR
DB 78 - PG 206

(134) LOI NGOC TRAN
DB 1599 - PG 54
PB A - PG 372

(135) JOSEPH ANDREW LIVERMAN
DB 282 - PG 364
PB A - PG 372

(136) MICHAEL A. MCVAUGH
DB 1744 - PG 420
PB A - PG 372

(140) WADDINGTON CORP
DB 712 - PG 224
PB I - PG 126

DARE COUNTY
DB 503 - PG 862

ACCORDING TO GIS RECORDS DARE COUNTY & THE TOWNOF KILL DEVIL HILLS HAVE JOINT POSSESSION OF THIS PROPERTY

TOWN OF KILL DEVIL HILLS
DB 776 - PG 297
PB C - PG 19E
PB C - PG 93H

SIDEWALK / CONCRETE ISLAND

GTD = GRADE TO DRAIN

NOTES:
DRIVEWAY RADII ARE 5' UNLESS OTHERWISE NOTED
SEE SHEET 28 FOR -L- PROFILE
SEE SHEET 2B-1 FOR INTERSECTION DETAIL

5/30/2018
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rfarmer

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	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99 RIGHT OF WAY REVISION - 06/01/2018 - ADJUST CONSTRUCTION EASEMENT ON PARCELS 137,138,139

SVEN OLSEN
DB 1878 - PG 125
PB A - PG 372

JOANNE WILLIAMS
DB 1480 - PG 320
PB A - PG 372

ELVIN E. WHITLEY
DB 1235 - PG 268
PB A - PG 372

137 CHRISTOPHER ALLEN HEDGEPETH
DB 1652 - PG 425
PB A - PG 372

138 JOEY O. FERGUSON
DB 1641 - PG 220
PB A - PG 372

139 JOEY FERGUSON
DB 1641 - PG 220
PB A - PG 372

140 WADDINGTON CORP
DB 712 - PG 224
PB 1 - PG 126

WILLIAM JOHN CROWLEY
DB 1806 - PG 102
PB 1 - PG 126

DONALD WOODSON
DB 1820 - PG 463
PB 1 - PG 126

BRUCE MOSEBERTH
DB 1546 - PG 478
PB 1 - PG 126

BRUCE MOSEBERTH
DB 1519 - PG 29
PB 1 - PG 126

ROBERT S. MILLER TRUSTEE
DB 1220 - PG 588
PB 1 - PG 126

ANN ROGERS ADAMS
DB 1730 - PG 8
PB 1 - PG 126

MICHAEL D. SMITH
DB 865 - PG 456
PB 1 - PG 126

SUE ANNE (JACKSON) HOWELL
DB 241 - PG 770
PB 1 - PG 126

RAYMOND E. SCHMIDT
DB 1491 - PG 257
PB 1 - PG 126

LUCILLE W. LAMBERT
DB 1037 - PG 866
PB 1 - PG 126

LESLIE B. WHITE
DB 1699 - PG 53
PB 1 - PG 126

NAD 83/NA 2011

-Y1- POT Sta. 16+00.03

15+00
END GRADE –
BEGIN OVERLAY
-L- STA. 235+77.02

235+00

240+00

-Y1- N 27° 48' 46" W

END CONSTRUCTION
-Y1- STA. 13+87.34

END TIP PROJECT R-5014
-L- POT STA. 240+00.00
END OVERLAY
-L- POT Sta. 240+55.05

MATCH LINE -L- STA. 233+50.00
SEE SHEET 19

-Y1- POT Sta. 13+00.01 =
-L- POT Sta. 236+19.02

BEGIN CONSTRUCTION
-Y1- STA. 12+16.76

-Y1- POT Sta. 10+00.00

NATIONAL RETAIL PROPERTIES, LP
DB 1706 - PG 6
PB 1 - PG 126

SOUTHERN BANK & TRUST CO.
DB 1203 - PG 738
PB 1 - PG 126

OVERRUN II
DB 1860 - PG 265
PB 1 - PG 126

JOHN E. BEST
PB 1 - PG 126

RUTH M. TAYLOR
DB 1812 - PG 262
PB 1 - PG 126

ROBERT STEVEN TERRELL TTEE
DB 1851 - PG 325
PB 1 - PG 126

ERIC CSIZMESIA
DB 1815 - PG 61
PB 1 - PG 126

GILBERT A. STEPPE
DB 560 - PC 101
PB 1 - PG 126

TRAFFIC DATA		
US 158 S. CROATAN HWY -Y1-	32800 / 44400	
-L- SR 1217 COLINGTON RD.	12500 / 17600	
	6500 / 9200 (NB)	630 / 710 (EB)
	4400 / 6300 (WB)	630 / 710 (SB)
-L- SR 1217 OCEAN BAY BLVD.	2800 / 3300	
-Y1- US 158 S. CROATAN HWY	30800 / 41500	
	YEAR 2018 ADT	YEAR 2038 ADT

SIDEWALK / CONCRETE ISLAND

EXISTING TRAFFIC SIGNAL

NOTES:
DRIVEWAY RADII ARE 5' UNLESS OTHERWISE NOTED
SEE SHEET 28 AND 29 FOR -L- PROFILE
SEE SHEET 29 FOR -Y1- PROFILE
SEE SHEET 2B-1 FOR INTERSECTION DETAIL

8/30/2018
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5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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-L-

BEGIN 1.5" OVERLAY
-L- STA. 11+00.00
ELEV. = 6.96'

30 20 10 0 –10 –20 –30

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

SEE SHEETS 4 & 5 FOR -L- PLAN

-L-

30 20 10 0 –10 –20 –30

24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00

SEE SHEETS 4, 5 & 6 FOR -L- PLAN

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5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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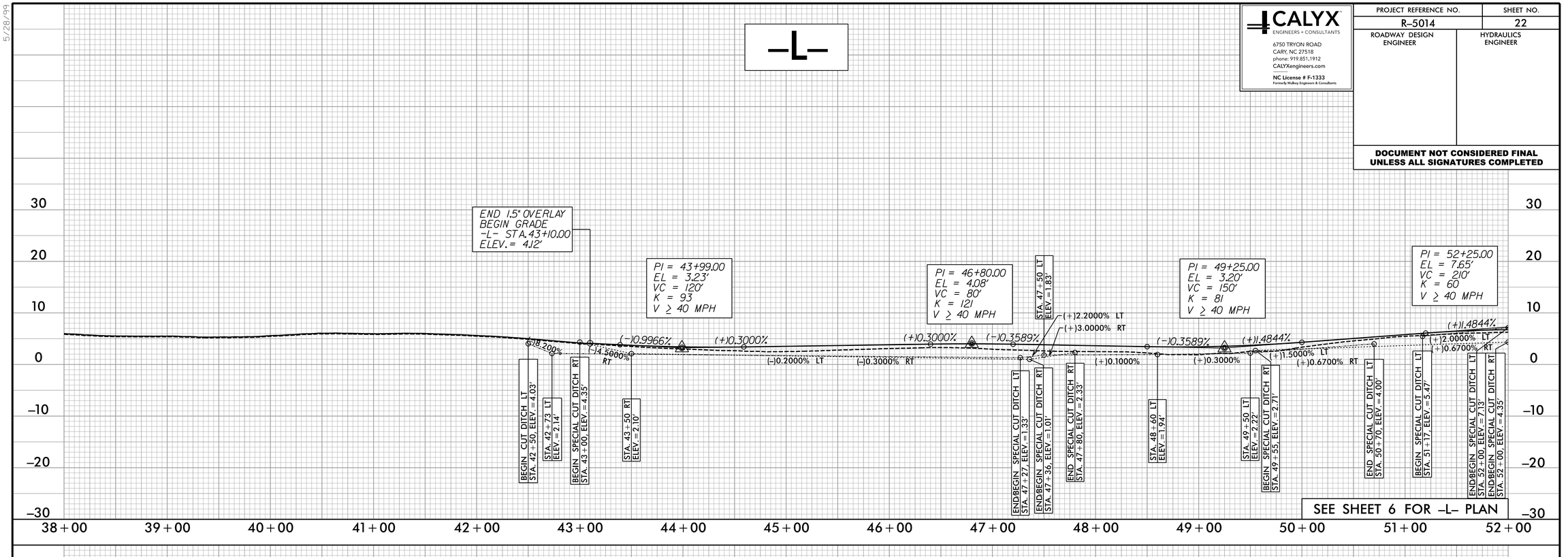
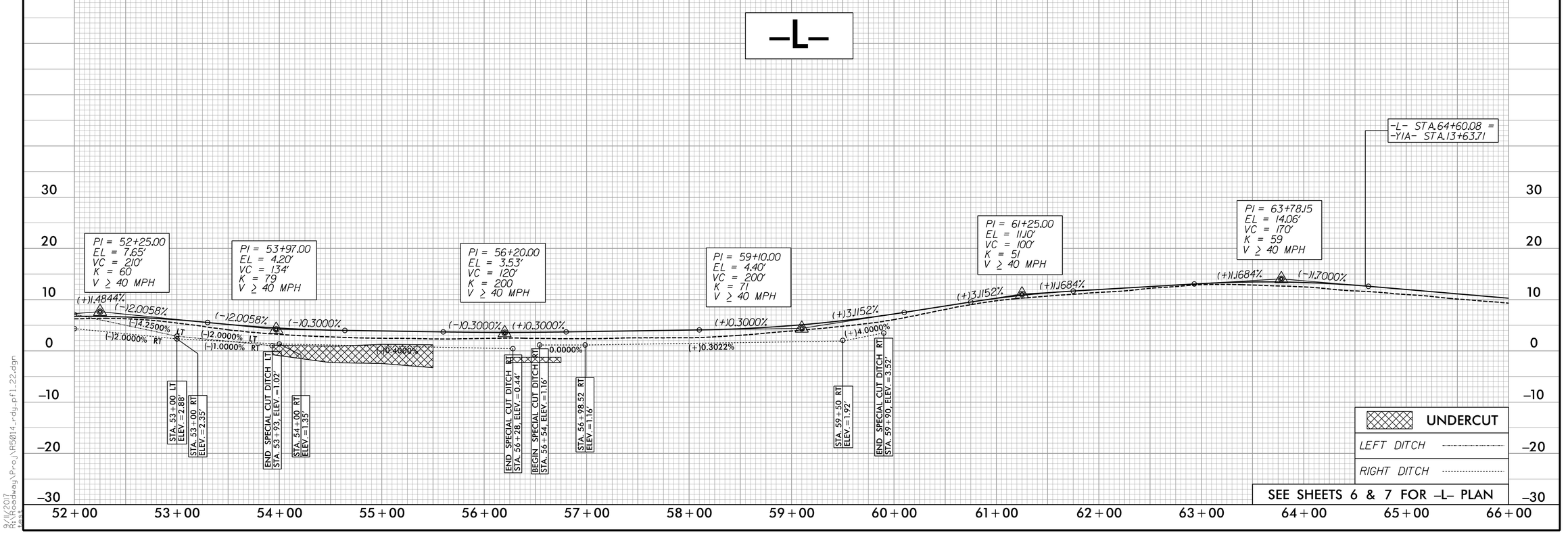


SEE SHEET 6 FOR -L- PLAN



SEE SHEETS 6 & 7 FOR -L- PLAN

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5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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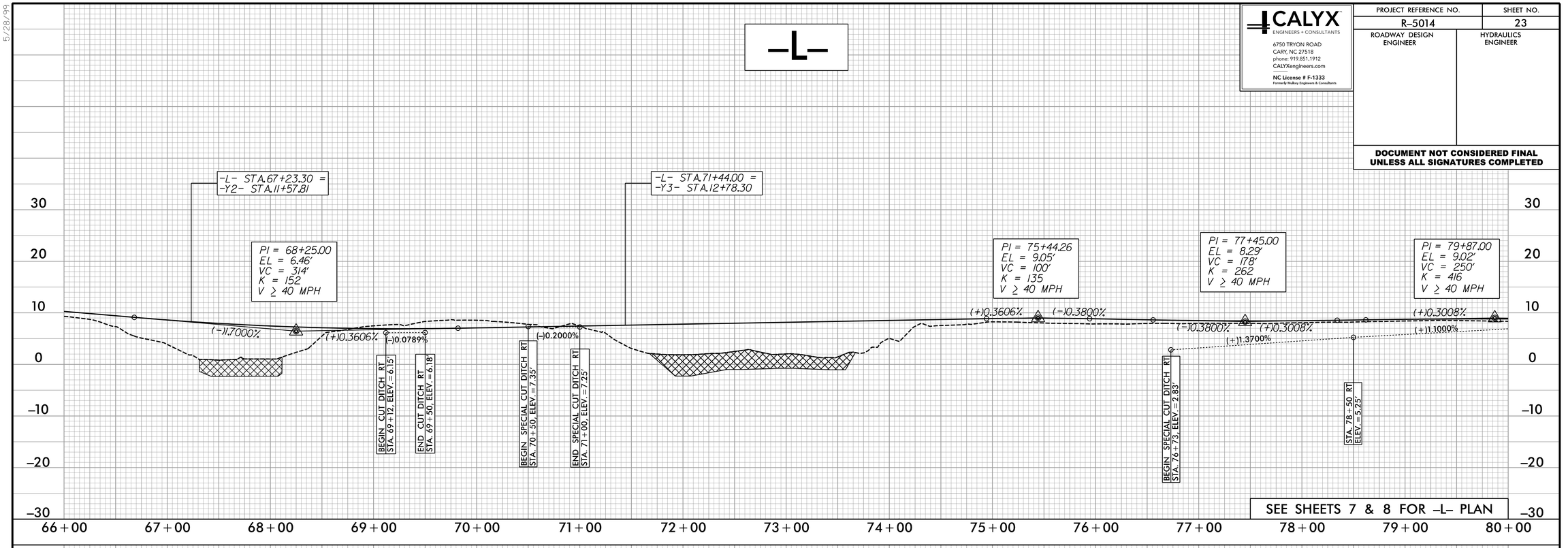

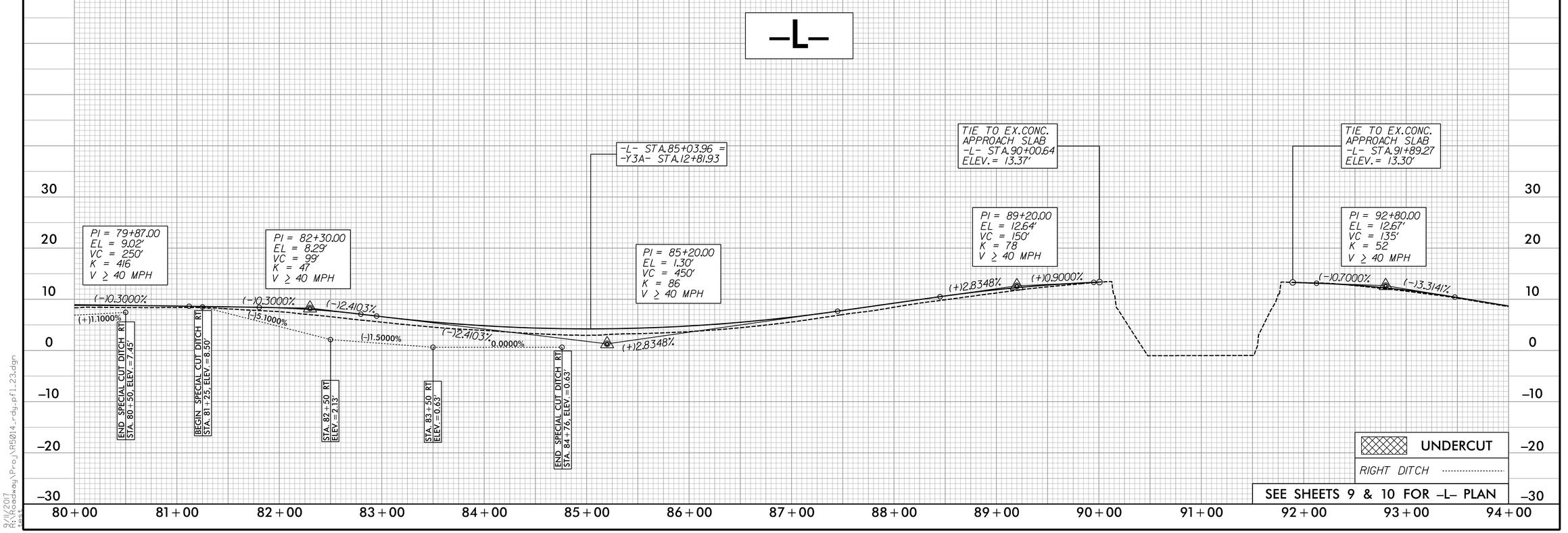

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tesla

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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–L–

–L– STA.94+81.31 = –Y3B– STA.12+21.27

–L– STA.106+69.43 = –Y3C– STA.10+00.00

PI = 95+29.00
EL = 4.42'
VC = 185'
K = 64
V ≥ 40 MPH

PI = 97+80.00
EL = 3.32'
VC = 120'
K = 72
V ≥ 40 MPH

PI = 99+73.00
EL = 5.70'
VC = 160'
K = 73
V ≥ 40 MPH

PI = 102+40.00
EL = 3.18'
VC = 120'
K = 96
V ≥ 40 MPH

(–)3.3141%
(–)0.4345%
(+)0.1000% RT
(+)0.1000% LT
4.0000% RT
(–)0.4348%
(+)11.2287%
(–)2.6000% RT
(+)2.0000% RT
(+)0.5000% LT
(+)11.2287%
(–)0.9441%
(+)1.8000% LT
(–)3.4000% RT
(–)0.3300% LT
(–)0.6000% RT
(–)0.9441%
(+)0.3006%
(–)0.9000% LT
0.0000% RT
(–)0.1000% LT

BEGIN SPECIAL CUT DITCH RT
STA. 95+75, ELEV.=2.18'
BEGIN SPECIAL CUT DITCH LT
STA. 96+20, ELEV.=1.00'
STA. 97+00 RT
ELEV.=2.31'
END SPECIAL CUT DITCH RT
STA. 97+25, ELEV.=3.31'
BEGIN SPECIAL CUT DITCH RT
STA. 97+50, ELEV.=2.45'
STA. 98+00 LT
ELEV.=1.20'
END BEGIN SPECIAL CUT DITCH RT
STA. 98+10, ELEV.=0.89'
STA. 99+50 LT
ELEV.=1.95'
END BEGIN SPECIAL CUT DITCH RT
STA. 99+76.92, ELEV.=4.23'
BEGIN SPECIAL CUT DITCH LT
STA. 99+76.92, ELEV.=2.43'
STA. 100+50 RT
ELEV.=1.75'
STA. 102+00 RT
ELEV.=0.85'
STA. 102+50 LT
ELEV.=1.55'
STA. 103+00 LT
ELEV.=1.10'
END SPECIAL CUT DITCH RT
STA. 103+85, ELEV.=0.85'
END SPECIAL CUT DITCH LT
STA. 104+10, ELEV.=0.99'

30 20 10 0 –10 –20 –30

94+00 95+00 96+00 97+00 98+00 99+00 100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00

SEE SHEETS 10 & 11 FOR –L– PLAN

–L–

PIPE HYDRAULIC DATA
Sta.108+99

DRAINAGE AREA	= 0.45	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2.0	CFS
DESIGN HW ELEVATION	= 2.3	FT
100 YEAR DISCHARGE	= 2.4	CFS
100 YEAR HW ELEVATION	= 2.4	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 10	CFS
OVERTOPPING ELEVATION	= 4.2	FT

–LA–

PIPE HYDRAULIC DATA
Sta.118+00

DRAINAGE AREA	= 1.02	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 3.8	CFS
DESIGN HW ELEVATION	= 3.3	FT
100 YEAR DISCHARGE	= 4.4	CFS
100 YEAR HW ELEVATION	= 3.4	FT
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING DISCHARGE	= 16	CFS
OVERTOPPING ELEVATION	= 6.83	FT

–L–

BEGIN SPECIAL CUT DITCH RT
STA. 108+00, ELEV.=3.08'
18" RCP-IV
–L– STA. 108+99, ELEV.=1.27'
STA. 109+00 LT
ELEV.=1.30'
END SPECIAL CUT DITCH
W/EARTHEN BERM LT
STA. 111+00, ELEV.=3.80'
–L– STA.111+67.50 (BK) =
–LA– STA.111+67.50 (AH)
ELEV. = 5.96'
STA. 110+00 LT
ELEV.=1.8'
PI = 112+82.00
EL = 6.31'
VC = 150'
K = 142
V ≥ 40 MPH
–L– STA.116+38.79 =
–Y4– STA.11+74.16
PI = 116+00.00
EL = 3.90'
VC = 150'
K = 78
V ≥ 40 MPH
–L– STA.117+31.88 =
–Y5– STA.12+73.67
PI = 117+80.00
EL = 5.98'
VC = 130'
K = 61
V ≥ 40 MPH
18" RCP-IV
–L– STA. 118+00, ELEV.=1.96'
PI = 119+40.00
EL = 4.43'
VC = 110'
K = 64
V ≥ 40 MPH
–LA– STA.120+03.07 (BK) =
–L– STA.120+05.14 (AH)
ELEV = 4.90'
PI = 122+00.00
EL = 6.35'
VC = 250'
K = 149
V ≥ 40 MPH

(–)1.9072% RT
(–)1.3333% LT
(+)0.500%
(+)0.2000% RT
(+)2.000% LT
(+)0.3000% RT
(+)2.0000% RT
(+)0.3006%
(–)0.7555%
(–)2.0357%
(–)0.7750%
(–)0.7555%
(+)11.1557%
(–)0.0925%
(+)11.1557%
(–)0.9705%
(+)0.9800% LT
(+)0.6078% RT
(–)0.9705%
(+)0.7419%
(+)11.3379%
(+)0.7419%
(+)0.7419%

BEGIN SPECIAL CUT DITCH
W/EARTHEN BERM LT
STA. 108+25, ELEV.=2.30'
END SPECIAL CUT DITCH RT
STA. 108+97, ELEV.=1.23'
BEGIN SPECIAL CUT DITCH RT
STA. 109+87, ELEV.=1.30'
STA. 110+35 RT
ELEV.=1.47'
STA. 111+00 RT
ELEV.=1.67'
END SPECIAL CUT DITCH RT
–LA– STA. 112+00, ELEV.=3.67'
BEGIN SPECIAL CUT DITCH LT
STA. 112+60, ELEV.=6.00'
STA. 114+00 LT
ELEV.=3.15'
BEGIN SPECIAL CUT DITCH RT
–LA– STA. 115+16, ELEV.=2.40'
END SPECIAL CUT DITCH LT
STA. 116+00, ELEV.=1.59'
BEGIN SPECIAL CUT DITCH LT
–LA– STA. 117+97, ELEV.=1.93'
END BEGIN SPECIAL CUT DITCH RT
–LA– STA. 117+97, ELEV.=2.14'
–LA– STA. 119+50 LT
ELEV.=3.43'
END SPECIAL CUT DITCH RT
–LA– STA. 119+50, ELEV.=3.07'
END SPECIAL CUT DITCH LT
–LA– STA. 120+00, ELEV.=4.10'

UNDERCUT
LEFT DITCH
RIGHT DITCH

30 20 10 0 –10 –20 –30

108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00

SEE SHEETS 11 FOR –L– PLAN

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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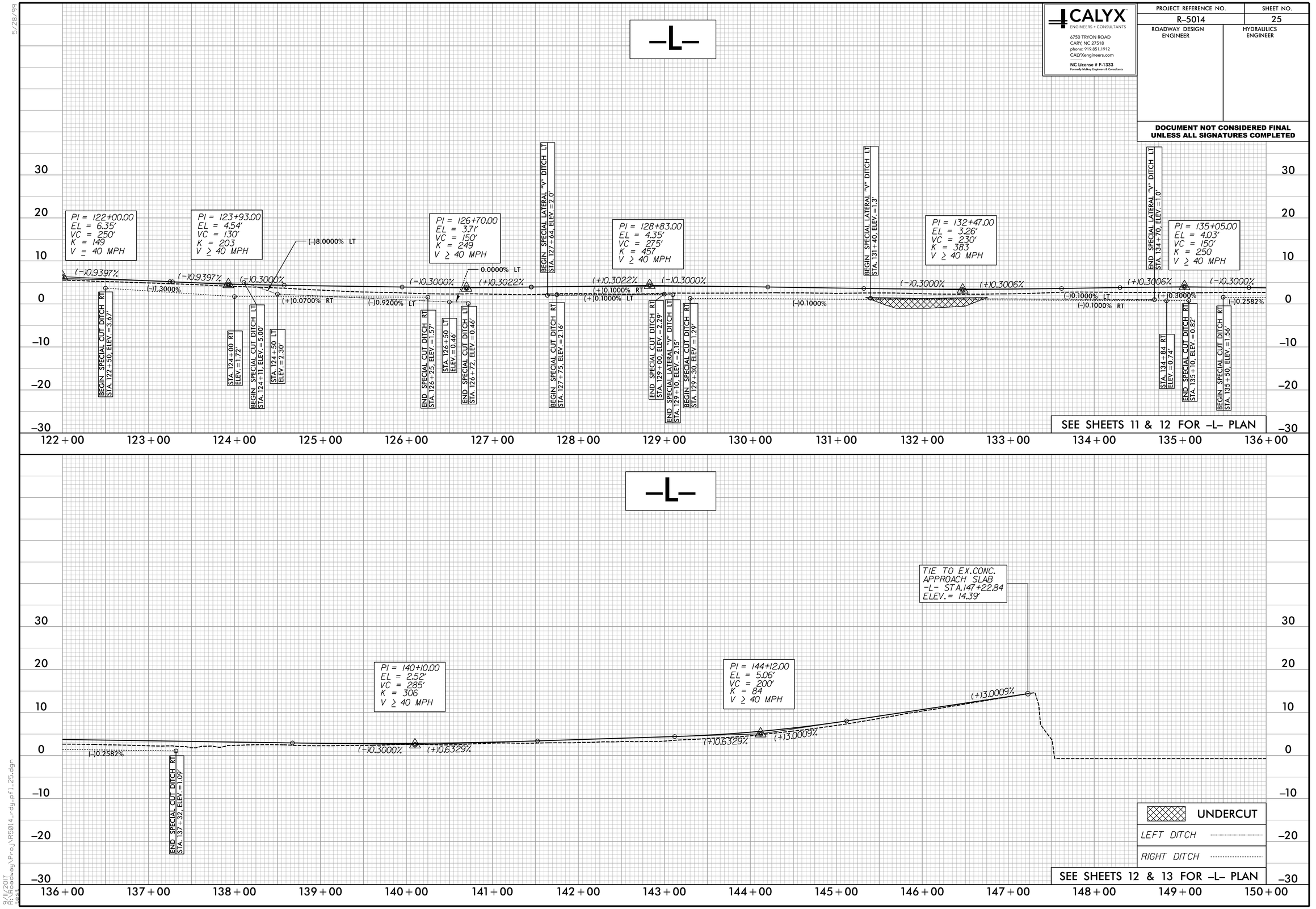

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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-L-

TIE TO EX.CONC. APPROACH SLAB -L- STA.152+34.13 ELEV.= 13.57'

PI = 152+90.00
EL = 12.06'
VC = 80'
K = 96
V ≥ 40 MPH

PI = 154+58.00
EL = 6.12'
VC = 190'
K = 69
V ≥ 40 MPH

PI = 159+75.00
EL = 2.18'
VC = 250'
K = 116
V ≥ 40 MPH

PI = 161+88.00
EL = 5.14'
VC = 125'
K = 59
V ≥ 40 MPH

PI = 164+50.00
EL = 3.22'
VC = 238'
K = 213
V ≥ 40 MPH

(-)2.7000% (-)3.5342% (-)3.5342% (-)0.7632% (+)0.1000% (-)0.7632% (+)1.3894% (+)0.1000% (+)1.3894% (-)0.7319% (-) 0.1000% LT (-)0.1000% RT (-)0.7319%

BEGIN SPECIAL CUT DITCH RT STA. 155+57, ELEV.=2.60'
END SPECIAL CUT DITCH RT STA. 156+14, ELEV.=2.66'
BEGIN SPECIAL CUT DITCH RT STA. 158+00, ELEV.=0.86'
BEGIN SPECIAL CUT DITCH LT STA. 161+20, ELEV.=2.17'
END SPECIAL CUT DITCH RT STA. 161+41, ELEV.=1.20'
BEGIN SPECIAL CUT DITCH RT STA. 161+80, ELEV.=2.19'
END SPECIAL CUT DITCH LT STA. 162+88, ELEV.=2.00'
END SPECIAL CUT DITCH RT STA. 163+61, ELEV.=2.01'

30 20 10 0 -10 -20 -30

150+00 151+00 152+00 153+00 154+00 155+00 156+00 157+00 158+00 159+00 160+00 161+00 162+00 163+00 164+00

SEE SHEETS 13 & 14 FOR -L- PLAN

-L-

PIPE HYDRAULIC DATA
Sta.172+85

DRAINAGE AREA	= 2.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 11.8	CFS
DESIGN HW ELEVATION	= 2.3	FT
100 YEAR DISCHARGE	= 13.9	CFS
100 YEAR HW ELEVATION	= 2.8	FT
OVERTOPPING FREQUENCY	= 50(+/-)	YRS
OVERTOPPING DISCHARGE	= 12.7	CFS
OVERTOPPING ELEVATION	= 2.5	FT

PI = 164+50.00
EL = 3.22'
VC = 238'
K = 213
V ≥ 40 MPH

PI = 167+50.00
EL = 4.38'
VC = 95'
K = 109
V ≥ 40 MPH

PI = 169+05.00
EL = 3.61'
VC = 200'
K = 253
V ≥ 40 MPH

PI = 177+50.00
EL = 6.15'
VC = 150'
K = 151
V ≥ 40 MPH

EXTENDING EXIST. 24" CMP 13LF W/24" CMP -L- STA. 172+85, ELEV.=-0.55'

(-)0.7319% (+)0.3854% (+)0.3854% (-)0.4918% (-)0.4918% (+)0.3000% (-)0.3000% (+)0.4141% (+)0.3000% (+)1.2959% (+)1.0455% LT (+)0.1000% RT (+)2.8900% RT

BEGIN SPECIAL CUT DITCH RT STA. 170+00, ELEV.=0.46'
STA. 173+04 RT ELEV.=0.1'
END SPECIAL CUT DITCH RT STA. 175+31, ELEV.=1.04'
BEGIN SPECIAL CUT DITCH LT STA. 177+07, ELEV.=4.00'
BEGIN SPECIAL CUT DITCH RT STA. 176+75, ELEV.=3.00'
STA. 177+60 RT ELEV.=3.09'

UNDERCUT
LEFT DITCH
RIGHT DITCH

30 20 10 0 -10 -20 -30

164+00 165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00 173+00 174+00 175+00 176+00 177+00 178+00

SEE SHEETS 14 & 15 FOR -L- PLAN

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R-5014	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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–L–

PI = 177+50.00
EL = 6.15'
VC = 150'
K = 151
V ≥ 40 MPH

END SPECIAL CUT DITCH LT
STA. 178+39, ELEV. = 5.38'

PI = 179+55.00
EL = 8.81'
VC = 110'
K = 58
V ≥ 40 MPH

PI = 181+04.00
EL = 7.91'
VC = 120'
K = 133
V ≥ 55 MPH

END GRADE
BEGIN 1.5" OVERLAY
–L– STA. 183+00.00
ELEV. = 8.50'

(+)11.0455% LT
(+)2.8900% RT

(+)11.2959%
(–)0.6025%
(–)0.6025%
(+)0.3022%
(+)0.3022%
(–)0.1000%

END SPECIAL CUT DITCH RT
STA. 178+80, ELEV. = 6.55'

BEGIN SPECIAL CUT DITCH LT
STA. 180+34, ELEV. = 5.98'

END SPECIAL CUT DITCH LT
STA. 181+18, ELEV. = 5.90'

30 20 10 0 –10 –20 –30

178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00 187+00 188+00 189+00 190+00 191+00 192+00

SEE SHEETS 15 & 16 FOR –L– PLAN

–L–

30 20 10 0 –10 –20 –30

192+00 193+00 194+00 195+00 196+00 197+00 198+00 199+00 200+00 201+00 202+00 203+00 204+00 205+00 206+00

LEFT DITCH
RIGHT DITCH

SEE SHEETS 16 & 17 FOR –L– PLAN

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PROJECT REFERENCE NO.	SHEET NO.
R-5014	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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–L–

30 20 10 0 –10 –20 –30

206+00 207+00 208+00 209+00 210+00 211+00 212+00 213+00 214+00 215+00 216+00 217+00 218+00 219+00 220+00

SEE SHEETS 17 & 18 FOR –L– PLAN

–L–

END 1.5" OVERLAY
BEGIN GRADE
–L– STA. 229+00.00
ELEV. = 9.37'

PI = 230+81.00
EL = 9.92'
VC = 310'
K = 515
V ≥ 50 MPH

(+)0.3022% (–)0.3000%

(–)0.8500%

(–)0.3043%

BEGIN SPECIAL CUT DITCH LT
STA. 229+00, ELEV. = 8.00'

STA. 230+00 LT
ELEV. = 7.15'

END/BEGIN SPECIAL CUT DITCH LT
STA. 231+00, ELEV. = 6.85'

LEFT DITCH

RIGHT DITCH

30 20 10 0 –10 –20 –30

220+00 221+00 222+00 223+00 224+00 225+00 226+00 227+00 228+00 229+00 230+00 231+00 232+00 233+00 234+00

SEE SHEETS 18, 19 & 20 FOR –L– PLAN

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R-5014	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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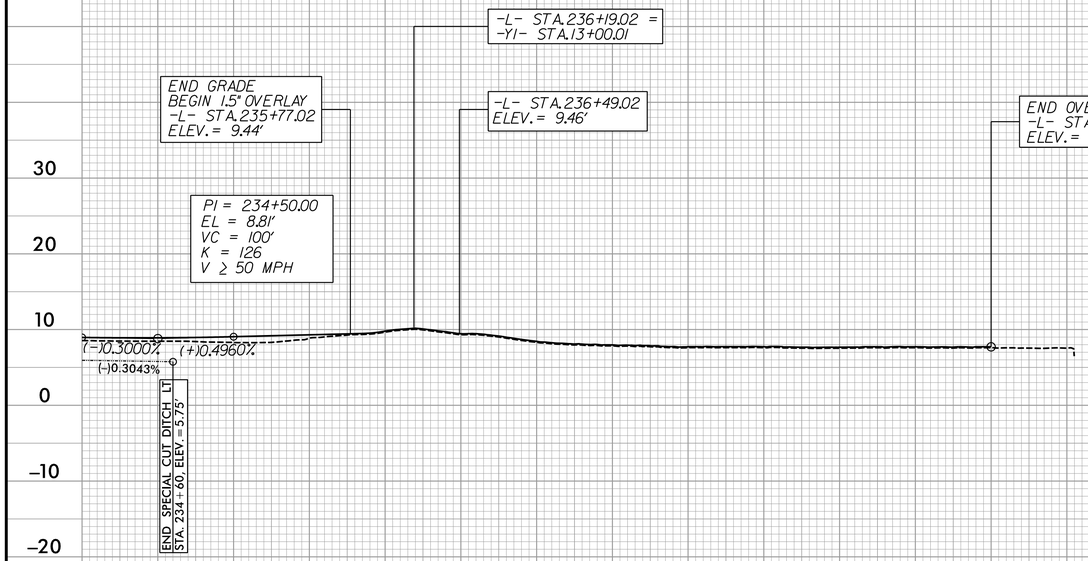
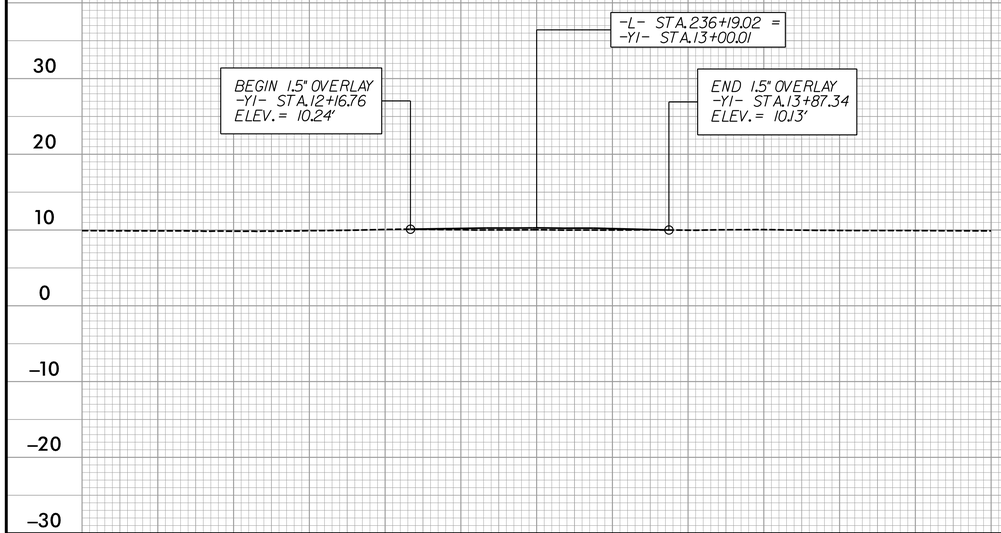
-L-



LEFT DITCH

SEE SHEETS 20 FOR -L- PLAN

-Y1-



SEE SHEETS 20 FOR -Y1- PLAN

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–Y2–

PI = 10+52.00
EL = 8.02'
VC = 62'
K = 17
V = 20 MPH

PI = 11+08.60
EL = 9.96'
VC = 51'
K = 12
V = 25 MPH

BEGIN GRADE
–Y2– STA.10+15.00
ELEV. = 8.13'

END GRADE
–Y2– STA.11+34.31 =
–L– STA.67+23.30,(23.5' RT)
ELEV. = 9.70'

(+)3.4242%
(–)10.3000%
(–)11.0000%

30 20 10 0 –10 –20 –30

10+00 11+00

–Y3–

PI = 11+53.00
EL = 10.72'
VC = 90'
K = 24
V = 30 MPH

BEGIN GRADE
–Y3– STA.11+00.00
ELEV. = 9.77'

END GRADE
–Y3– STA.12+59.93 =
–L– STA.71+40.38,(18' RT)
ELEV. = 8.68'

(+)11.7949%
(–)11.9090%

30 20 10 0 –10 –20 –30

10+00 11+00 12+00

SEE SHEET 8 FOR –Y2– AND –Y3– PLAN

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PROJECT REFERENCE NO.	SHEET NO.
R–5014	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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–Y4–

PI = 11+25.00
EL = 5.98'
VC = 55
K = 30
V = 35 MPH

BEGIN GRADE
–Y4– STA.10+15.00
ELEV. = 5.63'

END GRADE
–Y4– STA.11+56.10 =
–LA– STA.116+38.08,(18' RT)
ELEV. = 5.51'

(+)10.3171%
(–)11.5074%

30 20 10 0 –10 –20 –30

10+00 11+00

–Y5–

PI = 11+20.00
EL = 4.07'
VC = 90'
K = 37
V = 30 MPH

PI = 12+10.00
EL = 7.03'
VC = 90'
K = 20
V = 30 MPH

BEGIN GRADE
–Y5– STA.10+70.00
ELEV. = 3.65'

END GRADE
–Y5– STA.12+55.03 =
–LA– STA.117+36.56,(18' RT)
ELEV. = 6.52'

(+)10.8500%
(+)3.2794%
(–)11.1248%

30 20 10 0 –10 –20 –30

10+00 11+00 12+00

SEE SHEET 11 FOR –Y4– AND –Y5– PLAN

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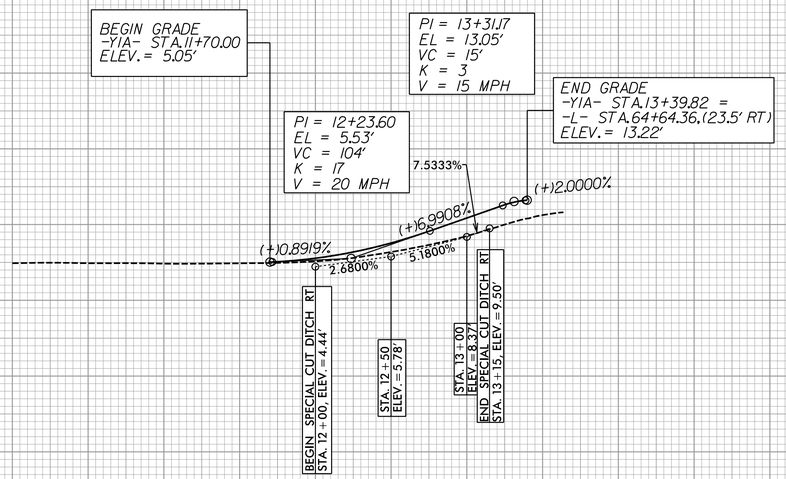
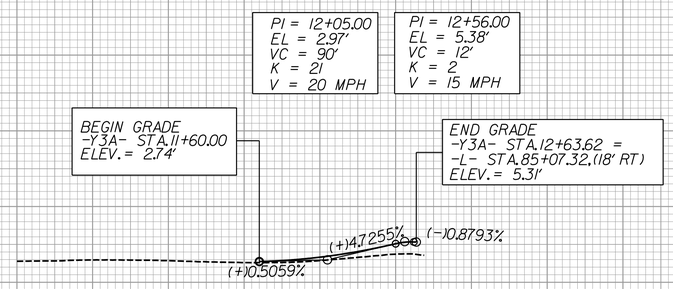
–Y1A–



–Y3A–



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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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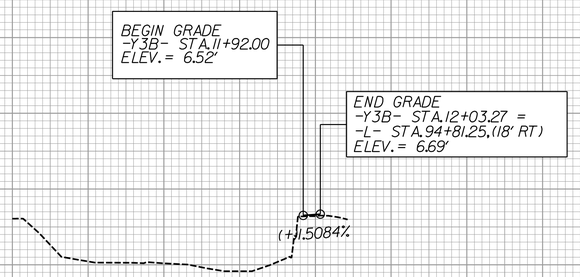
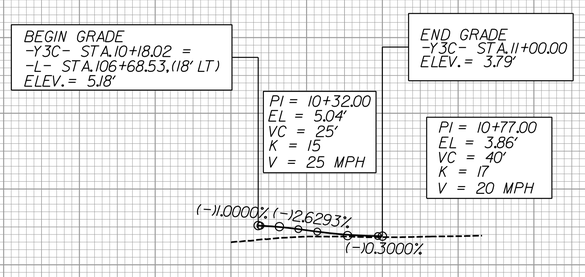
RIGHT DITCH .....

SEE SHEET 7 FOR –Y1A–
SEE SHEET 9 FOR –Y3A–

–Y3B–



–Y3C–



SEE SHEET 10 FOR –Y3B– AND –Y3C– PLAN

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