Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

January 29, 2016

N.C. Dept. of Environmental Quality
Division of Coastal Management
400 Commerce Avenue
Morehead City, 28557

ATTN: Mr. Stephen Lane
NCDOT Coordinator

Dear Sir:

Subject: **Application for CAMA Major Development Permit** for the proposed replacement of Bridge No. 163 over Mulberry Branch (Swamp) on SR 1349 (Bridgers Rd) in Brunswick County, North Carolina; TIP No. B-4440; Federal Aid Project No. BRZ-1349 (1); Debit $475 from WBS No. 38367.1.1

The North Carolina Department of Transportation (NCDOT) proposes to replace the 41-foot, 2-span Bridge No. 163 with an 85-foot, 2-span bridge. Bridge No. 163 will be replaced on the existing alignment while traffic will be detoured off-site during construction. Permanent impacts to riparian wetlands are 0.08 acre.

Please see enclosed copies of the Division of Coastal Management Major Permit Forms 1,2, and 5, permit drawings, stormwater management plan, permit drawings, utility drawings, and design plans for the above referenced project. The Programmatic Categorical Exclusion (PCE) was completed in October 2012 and distributed shortly thereafter. Additional copies are available at the NCDOT website: http://207.4.62.65/PDEA/EnvironmentalDocs/.

This project calls for a letting date of August 16, 2016 and a review date of June 28, 2016. The project schedule may be advanced if funding becomes available.

Regulatory Approvals

Section 404 Permit: Application submitted under a separate letter.

Section 401 Permit: Application submitted under a separate letter.

CAMA Major Permit: NCDOT requests that the proposed work be authorized under a Coastal Area Management Act Major Permit. The landowner return receipts will be forwarded as soon as they are available. Authorization to debit the $475 Permit Application Fee from WBS Element 38367.1.1 is hereby given.

A copy of this permit application and its distribution list will be posted at the NCDOT Website at https://connect.ncdot.gov/resources/Environmental. If you have any questions or need additional information, please contact John Merritt at jsmerritt@ncdot.gov or (919) 707-6140.

Sincerely,

for Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

cc: NCDOT Permit Application Standard Distribution List

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) B-4440		
Applicant 1: First Name Richard	MI	Last Name Hancock, P.E.		
Applicant 2: First Name	MI	Last Name		
If additional applicants, please attach an additional page(s) with names listed.				
Mailing Address 1548 Mail Service Center		PO Box	City Raleigh	State NC
ZIP 27610	Country USA	Phone No. 919 - 707 - 6000 ext.	FAX No. - -	
Street Address *(if different from above)* PDEA-Century Center Building B, 1020 Birch Ridge Road		City Raleigh	State NC	ZIP 27610-
Email jsmerritt@ncdot.gov				

2. Agent/Contractor Information

Business Name				
Agent/ Contractor 1: First Name	MI	Last Name		
Agent/ Contractor 2: First Name	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. #
Brunswick			SR 1349
Subdivision Name	**City**	**State**	**Zip**
	Shallotte	NC	28470 -

Phone No.	Lot No.(s) *(if many, attach additional page with list)*
- - ext.	, , , ,
a. In which NC river basin is the project located? Lumber	b. Name of body of water nearest to proposed project Mulberry Branch
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. Shallotte River
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. Town of Shallote, NC

4. Site Description

a. Total length of shoreline on the tract (ft.)	b. Size of entire tract (sq.ft.)
NA	26136
c. Size of individual lot(s) NA, , , *(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)* 8.3 ☐NHW or ☒NWL

e. Vegetation on tract

Vegetation grades from low lying riverine swamp forest with bald cypress, and water tupelo to upland forest constising of red mapple, sweetgum and loblolly pine

f. Man-made features and uses now on tract

Bridge and associated roadway approaches

g. Identify and describe the existing land uses adjacent to the proposed project site.

Commercial and undeveloped

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

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? NCDOT (Reference CE)

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.

None

o. Describe existing drinking water supply source.

None

p. Describe existing storm water management or treatment systems.

None

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.

B-4440 is the planned replacement of bridge 163 in Brunswick County. The project lies within a CAMA county but no CAMA wetlands are involved. The existing structure over Mulberry Branch is a dual span bridge with RC floors on I-beams with a total length of 41'. The proposed structure will be a dual span 21" Cored Slab structure with an overall length of 85'. The final proposed structure does not require deck drains. All stormwater drainage structure outlets were designed to be placed outside of wetland boundaries. 3:1 fill slopes were used in wetland areas to minimize impacts.

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

d. List all development activities you propose.

Removal of the existing bridge. Installation of the new bridge. Grading, paving, clearing, ditch work, excavation and fill associated with the roadway and bridge work.

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? 0.6 ☐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.

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?	☐Yes ☒No ☐NA

If yes, attach a mitigation proposal.

<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	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 01-29-2016 Print Name RICHARD W. HANCOCK for

Signature

Please indicate application attachments pertaining to your proposed project.

☒DCM MP-2 Excavation and Fill Information ☒DCM MP-5 Bridges and Culverts

☐DCM MP-3 Upland Development

☐DCM MP-4 Structures Information

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:
Mulberry Branch

c. Type of bridge (construction material):
The proposed bridge is a two span 21" cored slab bridge

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

e. (i) Will proposed bridge replace an existing bridge? ☒Yes ☐No
If yes,
(ii) Length of existing bridge: 41'
(iii) Width of existing bridge: 24'
(iv) Navigation clearance underneath existing bridge: 5.5'
(v) Will all, or a part of, the existing bridge be removed?
(Explain) All of the existing bridge is proposed to be removed

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: 85'

h. Width of proposed bridge: 48'

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: The existing bridge has a navigational clearance of 5.5' but the proposed bridge will have a navigational clearance of 6'

k. Navigation clearance underneath proposed bridge: 6'

l. Have you contacted the U.S. Coast Guard concerning their approval? ☒Yes ☐No
If yes, explain: Advanced Approval has been applied for

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

n. Height of proposed bridge above wetlands: 4'

2. CULVERTS

☒ *This section not applicable*

a. Number of culverts proposed: _____

b. Water body in which the culvert is to be placed:

< Form continues on back>

c. Type of culvert (construction material):

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: _____

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. _____

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 78 s.f. ☐None

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

Excavation was required for the spill through abutment and ditching.

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: Excavated soil will be stored under proposed roadbed, compacted and used for roadbed fill on both approach slabs.

(ii) Dimensions of the spoil disposal area: N/A

(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. 164'X13'

(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: _____

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

(iv) Purpose of fill:

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 _____ ☐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: All utility lines inside project limits currently within construcion limits will be adjusted as necessary or relocated away from construction before porject is let.

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?

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

Cranes, pile driving equipment, grading equipment, bull dozers, and large 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.

01-29-2016

Date

B-4440

Project Name

for RICHARD W. HANCOCK

Applicant Name

Applicant Signature

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

WBS Element:	38367.1.1	TIP No.:	B-4440	County(ies):	Brunswick	Page	1	of	1

General Project Information

WBS Element:	38367.1.1	**TIP Number:**	B-4440	**Project Type:**	Bridge Replacement	**Date:**	9/10/2015
NCDOT Contact:	Paul Atkinson, PE			**Contractor / Designer:**	Craig A. Freeman Jr., PE		
	Address: NCDOT Hydraulics 1020 Birch Ridge Road Raleigh, NC 27610				**Address:** NCDOT Hydraulics 1020 Birch Ridge Road Raleigh, NC 27610		
	Phone: 919-707-6707				**Phone:** 919-707-6721		
	Email: patkinson@ncdot.gov				**Email:** cafreeman2@ncdot.gov		
City/Town:	Shallote			**County(ies):**	Brunswick		
River Basin(s):	Lumber			**CAMA County?**	Yes		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	597 feet	**Surrounding Land Use:**	Commercial and rural residential		
	Proposed Project			**Existing Site**	
Project Built-Upon Area (ac.)	0.6 ac.			0.4 ac.	
Typical Cross Section Description:	Two lane roadway with 12 foot travel lanes and 4 foot paved shoulders. Proposed bridge width is now 45.5 feet across to allow for future sidewalk installation.			Two lane roadway with 12 foot travel lanes. Existing bridge width is 24 feet across.	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 6,432	Year: 2036		Existing: 3,792	Year: 2016
General Project Narrative: (Description of Minimization of Water Quality Impacts)	B-4440 is the planned replacement of bridge 163 in Brunswick County. The project lies within a CAMA county but no CAMA wetlands are involved. The existing structure over Mulberry Branch is a dual span bridge with RC floors on I-beams with a total length of 41'. The proposed structure will be a dual span 21" Cored Slab structure with an overall length of 85'. The final proposed structure does not require deck drains. All stormwater drainage structure outlets were designed to be placed outside of wetland boundaries. 3:1 fill slopes were used in wetland areas to minimize impacts.				

Waterbody Information

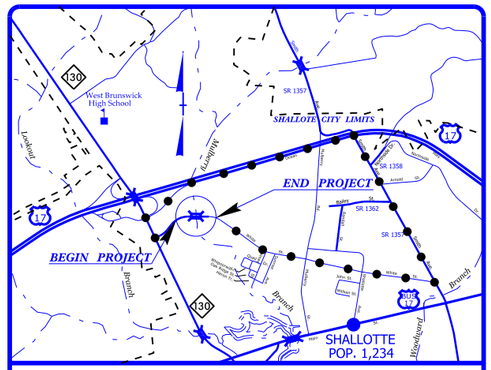
Surface Water Body (1):	Mulberry Swamp		**NCDWR Stream Index No.:**	15-25-2-7		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Swamp Waters (Sw)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	N/A			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	No	(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: B-4440

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

(NOT TO SCALE)

OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

LOCATION: REPLACE BRIDGE NO. 163 OVER MULBERRY SWAMP ON SR 1349

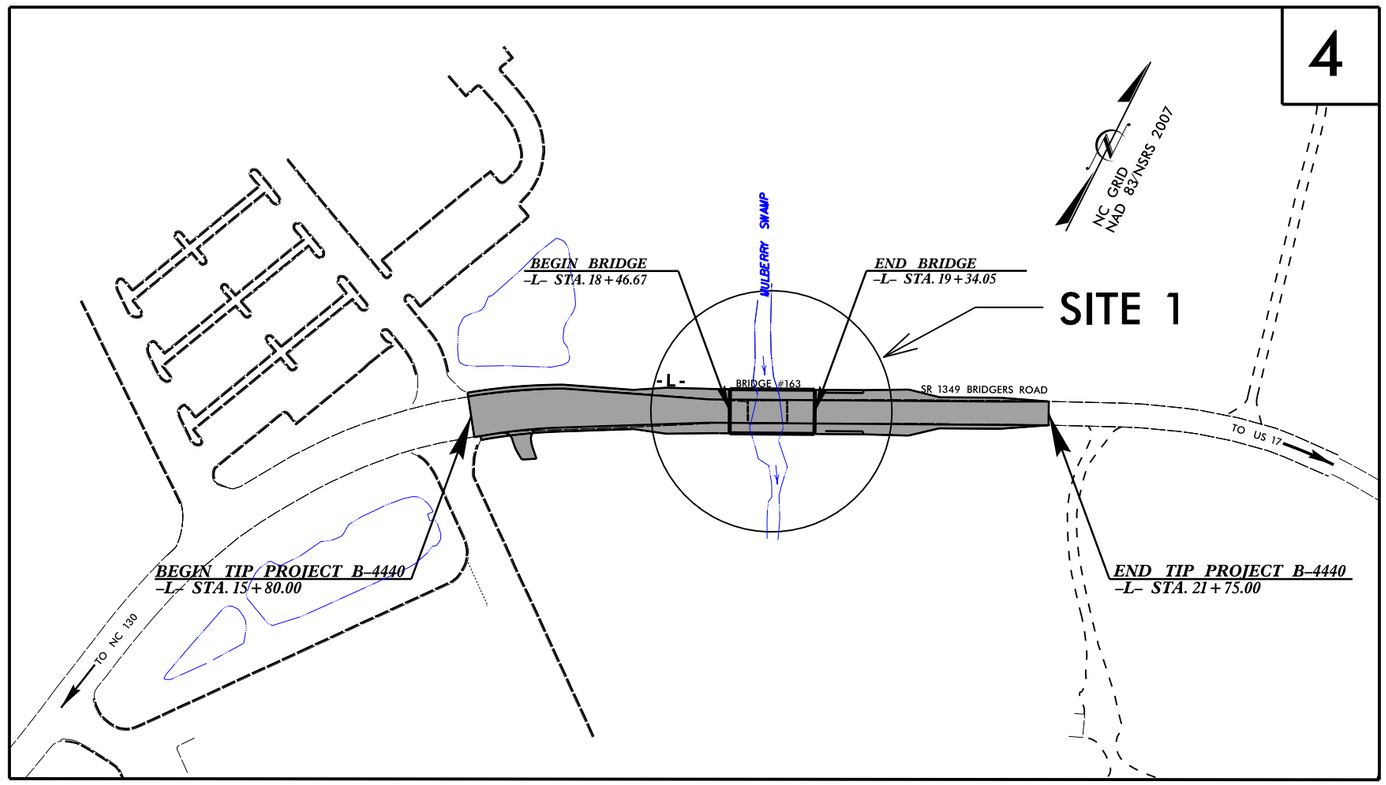
WETLAND AND SURFACE WATER IMPACTS PERMIT

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

PERMIT DRAWING
SHEET 1 OF 8

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4440	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38367.1.1	BRZ-1349(1)	P.E.
38367.2.FD1	BRZ-1349(1)	R/W & UTIL.



THIS PROJECT IS WITHIN THE SHALLOTTE MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2016 = 3,792
ADT 2036 = 6,432
K = 11 %
D = 55 %
T = 7 % *
V = 40 MPH
*(TTST 1% + DUAL 6%)
FUNC CLASS = RURAL LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4440 = 0.097 MI
LENGTH STRUCTURE TIP PROJECT B-4440 = 0.016 MI
TOTAL LENGTH OF TIP PROJECT B-4440 = 0.113 MI

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 19, 2015

LETTING DATE: AUGUST 16, 2016

GARY LOVERING, PE
PROJECT ENGINEER

SUSAN C. LANCASTER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

9/17/2015
miyork
R:\Hydraulics\PERMITS_Environmental\Drawings\B-4440_Rdy_tsh_wet.dgn
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$

9/10/2015
mjyork
R:\Hydraulics\PERMITS_Environmental\Drawings\B-4440_Hyd_prm_wet.dgn

REVISIONS

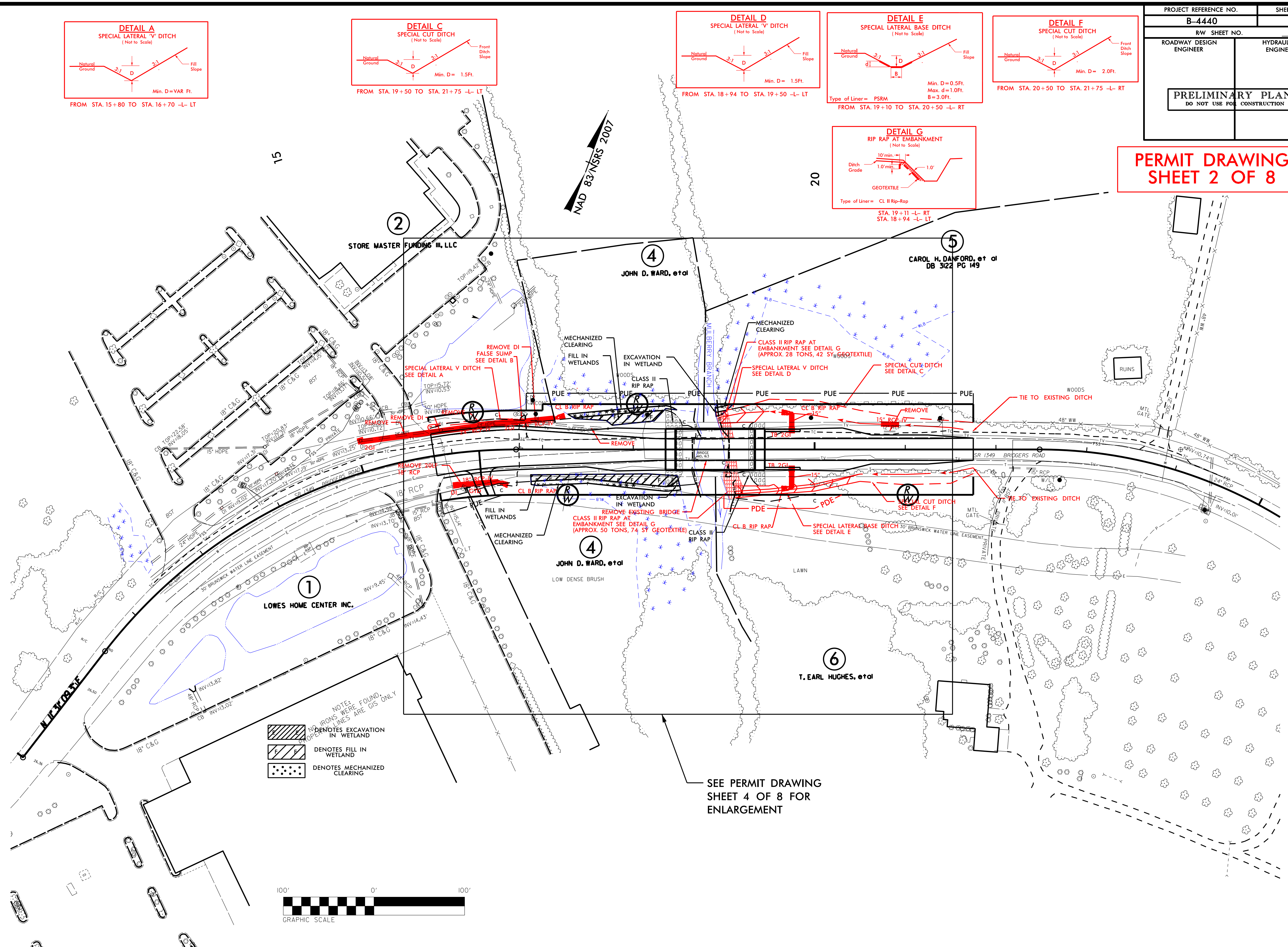
DESIGN REVISION (4/15/15): ADDED A DRIVEWAY ON PARCEL 3. DDL
RW REVISION (4/28/15): COMBINED PARCELS 3 AND 4 INTO PARCEL 4, ADDED A DRIVEWAY ON PARCEL 4, AND ADDED A DO NOT DISTURB POND NOTE TO PARCEL 2. SCL
RW REVISION (5/06/15): MODIFIED PUE ON NORTHWEST CORNER OF BRIDGE. JDG
RW REVISION (7/31/15): CHANGED OWNER'S NAME, DEED BOOK NUMBER, AND PAGE NUMBER ON PARCEL 5. DDL

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4440	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 2 OF 8



DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D=VAR Ft.
FROM STA. 15+80 TO STA. 16+70 -L- LT
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.5Ft.
FROM STA. 19+50 TO STA. 21+75 -L- LT
DETAIL D
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.5Ft.
FROM STA. 18+94 TO STA. 19+50 -L- LT
DETAIL E
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D=0.5Ft.
Max. d=1.0Ft.
B=3.0Ft.
Type of Liner= PSRM
FROM STA. 19+10 TO STA. 20+50 -L- RT
DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 2.0Ft.
FROM STA. 20+50 TO STA. 21+75 -L- RT
DETAIL G
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner= CL II Rip-Rap
STA. 19+11 -L- RT
STA. 18+94 -L- LT
NAD 83/NSRS 2007
STORE MASTER FUNDING III, LLC
JOHN D. WARD, et al
CAROL H. DANFORD, et al
DB 3122 PG 149
LOWES HOME CENTER INC.
T. EARL HUGHES, et al
MECHANIZED CLEARING
FILL IN WETLANDS
EXCAVATION IN WETLAND
CLASS II RIP RAP
REMOVE DI
FALSE SUMP
SEE DETAIL B
SPECIAL LATERAL V DITCH
SEE DETAIL A
CLASS II RIP RAP AT EMBANKMENT SEE DETAIL G (APPROX. 28 TONS, 42 SY GEOTEXTILE)
SPECIAL LATERAL V DITCH SEE DETAIL D
SPECIAL CUT DITCH SEE DETAIL C
TIE TO EXISTING DITCH
REMOVE EXISTING BRIDGE
CLASS II RIP RAP AT EMBANKMENT SEE DETAIL G (APPROX. 50 TONS, 74 SY GEOTEXTILE)
SPECIAL CUT DITCH SEE DETAIL F
SPECIAL LATERAL BASE DITCH SEE DETAIL E
MILBERRY BRANCH
SR 1349 BRIDGERS ROAD
LOW DENSE BRUSH
LAWN
WOODS
RUINS
NOTE: NO IRONS WERE FOUND. PROPERTY LINES ARE GIS ONLY
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
GRAPHIC SCALE
100' 0' 100'

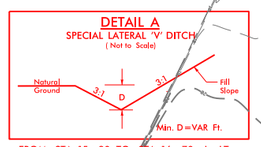
SEE PERMIT DRAWING SHEET 4 OF 8 FOR ENLARGEMENT

PROJECT REFERENCE NO.	SHEET NO.
B-4440	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

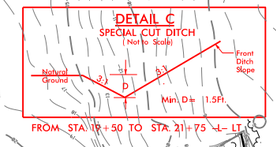
PERMIT DRAWING SHEET 3 OF 8

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



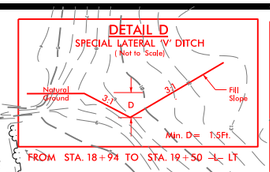
FROM STA. 15+80 TO STA. 16+70 -L- LT

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



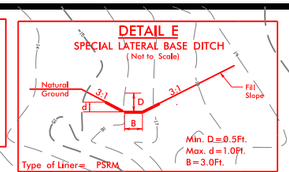
FROM STA. 19+50 TO STA. 21+75 -L- LT

DETAIL D
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



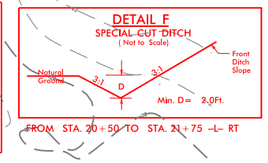
FROM STA. 18+94 TO STA. 19+50 -L- LT

DETAIL E
SPECIAL LATERAL BASE DITCH
(Not to Scale)



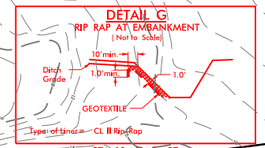
Type of Liner= PSRM
FROM STA. 19+10 TO STA. 20+50 -L- RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 20+50 TO STA. 21+75 -L- RT

DETAIL G
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of liner= CL II Rip-Rap
STA. 19+11 -L- RT
STA. 18+94 -L- LT

NAD 83/NSRS 2007

STORE MASTER FUNDING III, LLC

JOHN D. WARD, et al

CAROL H. DANFORD, et al
DB 3122 PG 149

LOWES HOME CENTER INC.

T. EARL HUGHES, et al

SR 1349 BRIDGERS ROAD

RUINS

MECHANIZED CLEARING

FILL IN WETLANDS

EXCAVATION IN WETLAND

CLASS II RIP RAP

CL B RIP RAP

SPECIAL LATERAL V DITCH SEE DETAIL A

SPECIAL LATERAL V DITCH SEE DETAIL D

SPECIAL CUT DITCH SEE DETAIL C

SPECIAL LATERAL BASE DITCH SEE DETAIL E

CLASS II RIP RAP AT EMBANKMENT, SEE DETAIL G (APPROX. 28 TONS, 42 SY GEOTEXTILE)

REMOVE EX. FALSE SUMP SEE DETAIL B

REMOVE EXISTING BRIDGE

CLASS II RIP RAP AT EMBANKMENT, SEE DETAIL G (APPROX. 50 TONS, 74 SY GEOTEXTILE)

TIE TO EXISTING DITCH

REMOVE

WOODS

LOW DENSE BRUSH

LAWN

MTL GATE

30' BRUNSWICK WATER LINE EASEMENT

PUE

PDE

NOTE: NO IRONS WERE FOUND, PROPERTY LINES ARE GIS ONLY

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE PERMIT DRAWING SHEET 4 OF 8 FOR ENLARGEMENT

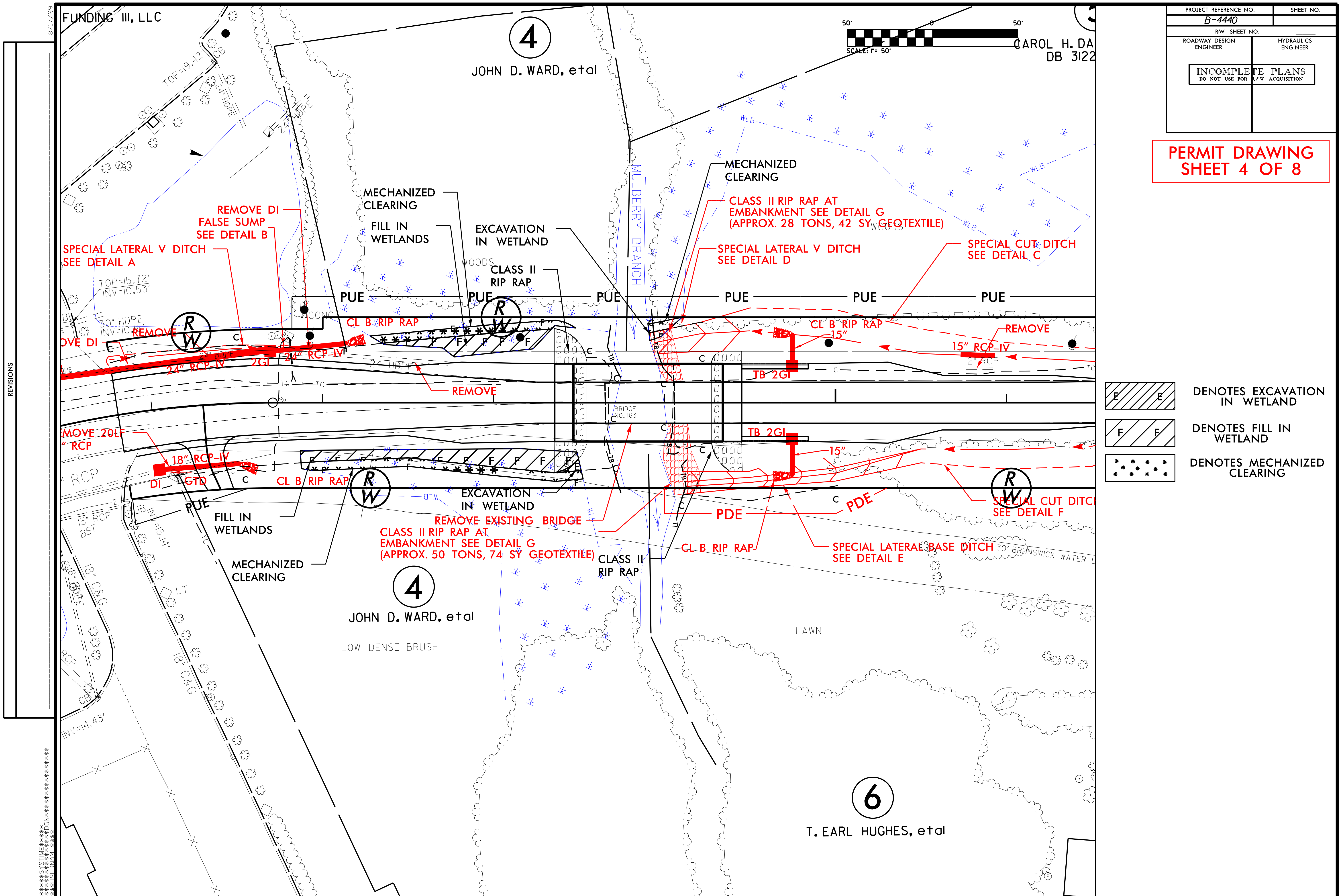
100' 0' 100'
GRAPHIC SCALE

REVISIONS

8/17/99 DESIGN REVISION (4/15/15): ADDED A DRIVEWAY ON PARCEL 3. DDL
R/W REVISION (4/28/15): COMBINED PARCELS 3 AND 4 INTO PARCEL 4, ADDED A DRIVEWAY ON PARCEL 4, AND ADDED A DO NOT DISTURB POND NOTE TO PARCEL 2. SCL
R/W REVISION (5/06/15): MODIFIED PUE ON NORTHWEST CORNER OF BRIDGE. JDG
R/W REVISION (7/31/15): CHANGED OWNER'S NAME, DEED BOOK NUMBER, AND PAGE NUMBER ON PARCEL 5. DDL

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$

9/10/2015
miyork
R:\Hydraulics\PERMITS_Environmental\Drawings\B-4440_Hyd_prm_wet_con.dgn


PROJECT REFERENCE NO.
SHEET NO.
B-4440
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PERMIT DRAWING
SHEET 4 OF 8
FUNDING III, LLC
JOHN D. WARD, etal
CAROL H. DA
DB 3122
MECHANIZED CLEARING
FILL IN WETLANDS
EXCAVATION IN WETLAND
CLASS II RIP RAP
REMOVE DI
FALSE SUMP
SEE DETAIL B
SPECIAL LATERAL V DITCH
SEE DETAIL A
CLASS II RIP RAP AT
EMBANKMENT SEE DETAIL G
(APPROX. 28 TONS, 42 SY GEOTEXTILE)
SPECIAL LATERAL V DITCH
SEE DETAIL D
SPECIAL CUT DITCH
SEE DETAIL C
MULBERRY BRANCH
PUE
CL B RIP RAP
REMOVE
15" RCP-IV
24" RCP-IV
TB 2GI
BRIDGE NO. 163
REMOVE 20LF
RCP
18" RCP-IV
GTD
EXCAVATION IN WETLAND
FILL IN WETLANDS
MECHANIZED CLEARING
REMOVE EXISTING BRIDGE
CLASS II RIP RAP AT
EMBANKMENT SEE DETAIL G
(APPROX. 50 TONS, 74 SY GEOTEXTILE)
CLASS II RIP RAP
PDE
SPECIAL CUT DITCH
SEE DETAIL F
SPECIAL LATERAL BASE DITCH
SEE DETAIL E
30' BRUNSWICK WATER
LOW DENSE BRUSH
LAWN
T. EARL HUGHES, etal
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
9/10/2015
mlyork
R:\Hydraulics\PERMITS_Environmental\Drawings\B-4440_Hyd_prm_wet_zoomed_in.dgn

PROJ. REFERENCE NO.	SHEET NO.
B-4440	X-1

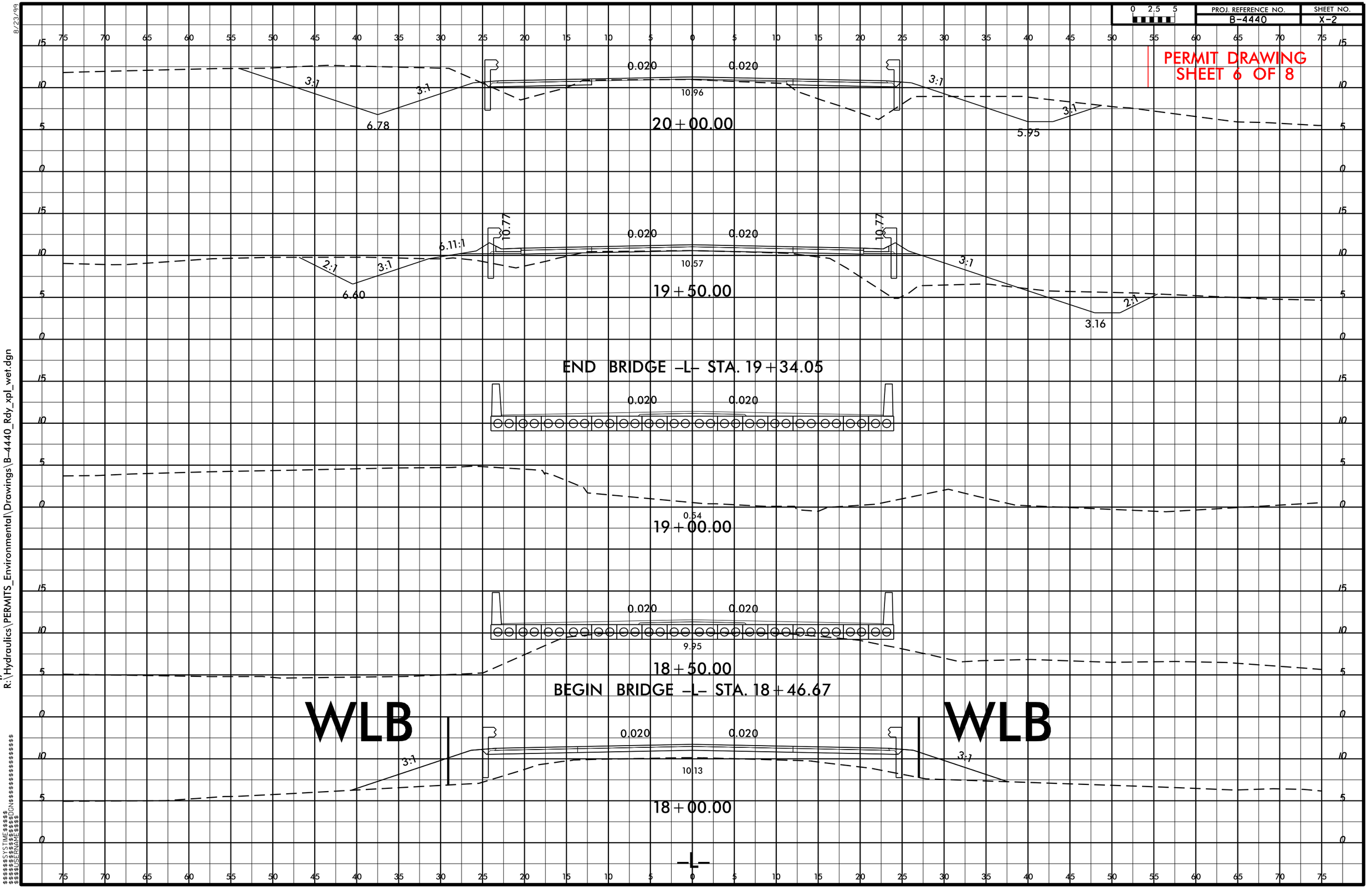
PERMIT DRAWING
SHEET 5 OF 8

8/23/99

9/10/2015
miyork
R:\Hydraulics\PERMITS_Environmental\Drawings\B-4440_Rdy_xpl_wet.dgn

$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PERMIT DRAWING
SHEET 6 OF 8



PROJECT REFERENCE NO.	SHEET NO.
B–4440	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 7 OF 8

DITCH LEGEND	
LEFT DITCH	— - - — -
RIGHT DITCH	- - - - - - - -

–L–

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	1,300	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	8.7	FT
BASE DISCHARGE	=	1,700	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	9.47	FT
OVERTOPPING DISCHARGE	=	2,700	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	11.2	FT

FOR –L– PLAN SEE SHEET 4

FOR STRUCTURE PLANS SEE SHEETS S–1 THROUGH S–?

5/14/99

9/9/2015
miyork
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WETLAND PERMIT IMPACT 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. 16+87 to 19+10	Roadway	0.05		< 0.01	0.03						
1	-L- Sta. 18+91 to 19+06	Bank Stabilization								71		
TOTALS*:			0.05		< 0.01	0.03				71	0	0

*Rounded totals are sum of actual impacts

NOTES:
Bridge pier permanent surface water impacts <0.01 acres.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/10/15
BRUNSWICK COUNTY
B-4440
38367.1.1
SHEET 8 OF 8

Utility Owners:

Power (Distribution): Brunswick EMC-contact	Josh Winslow 910-755-4080 Josh.winslow@bemc.org
Telephone/CATV: ATMC-contact	Phil Hill (Byers Engineering) 910-279-7499 byersphill@gmail.com pshill@atmc.net
Water: Town of Shallotte-contact	Albert Hughes 910-279-2766 shallottepwd@atmc.net
Water: Brunswick County Public Utilities-contact	William Pinnix 910-253-2408 William.pinnix@brunswickcountync.gov Cory Sumner 910-520-4473 Cory.sumner@brunswickcountync.gov
Sanitary Sewer: Town of Shallotte-contact	Albert Hughes 910-279-2766 shallottepwd@atmc.net

General Utility Relocation:

All utility lines inside project limits currently within construction limits will be adjusted as necessary or relocated away from construction before project is let.

Existing Utilities:

- **Power** (Distribution): Existing power lines run overhead on poles crossing SR1349 from the south side to the north side at Station 22+00, then runs along the north side of the project and parallel to SR1349 and near Station 16+90 it turns 90 degrees and runs down an easement behind the movie theaters.

- **Telephone & CATV**: Existing copper telephone lines and cable tv lines run underground, one each along the north side and one each along the south side of SR1349 with three perpendicular crossings, cable tv at Station 15+90, telephone at Station 16+75, and cable tv at Station 18+10.

- **Water**: Existing 6" DIP on the south side and parallel to SR1349 and under existing pavement from the beginning of the project to approximately Station 17+50 is abandonned. Existing Brunswick County 24" DIP waterline which is the main feed to south Brunswick County on the south side of SR1349 inside of its own 31 foot easement, outside of existing pavement. Existing Town of Shallotte 12" AC waterline on the south side of SR 1349 and under pavement from the beginning of the project to approximately Station 17+00.

- **Sanitary Sewer Force Main**: Two existing Sanitary Sewer Force mains on the north side of SR1349, both outside of the project limits. One crosses the road perpendicularly and runs down the west side of a private driveway at Station 22+20 and one that remains on the north side of the road and stops at the movie theater property.

Proposed Utility Relocation:

- **Power** (Distribution)**:** Overhead power lines and power poles will relocate to a position 10 feet farther north and parallel to SR1349 to avoid conflict with bridge construction with an additional 15 feet of PUE and tree clearing. The relocated power line will cross SR1349 diagonally at Station 22+25.

- **Telephone & CATV:** proposed telephone and cable tv line will be direct bored under the stream on the north side of SR1349 from Station 16+90 to Station 21+25, one foot inside of the new right of way line. The existing telephone and cable tv lines within these stations will be abandoned in place.

- **Water:** 593 linear feet of proposed 12" DIP Town of Shallotte waterline will be installed with 417 linear feet of trenchless installation by direct bore under the stream on the south side of the project from approximately Station 15+80 to Station 21+80. The existing 6" DIP Town of Shallotte waterline has previously been abandoned in place. The existing 12" AC Town of Shallotte water line within the project boundaries will be either removed or abandoned in place.

- **Sanitary Sewer Force Main:** Existing Sanitary Sewer Force main is not in conflict and will remain in place.

09/08/99

TIP PROJECT: B–4440

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4440	1	

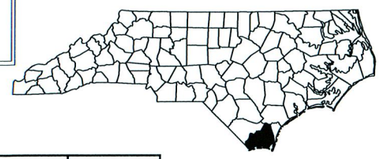
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38367.1.1	BRZ–1349(1)	P.E.
38367.2.FD1	BRZ–1349(1)	R/W & UTIL.

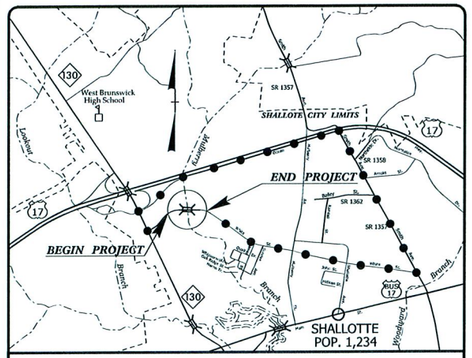
Utility Permit Drawing
Sheet 1 of 4

LOCATION: REPLACE BRIDGE NO. 163 OVER MULBERRY SWAMP ON SR 1349

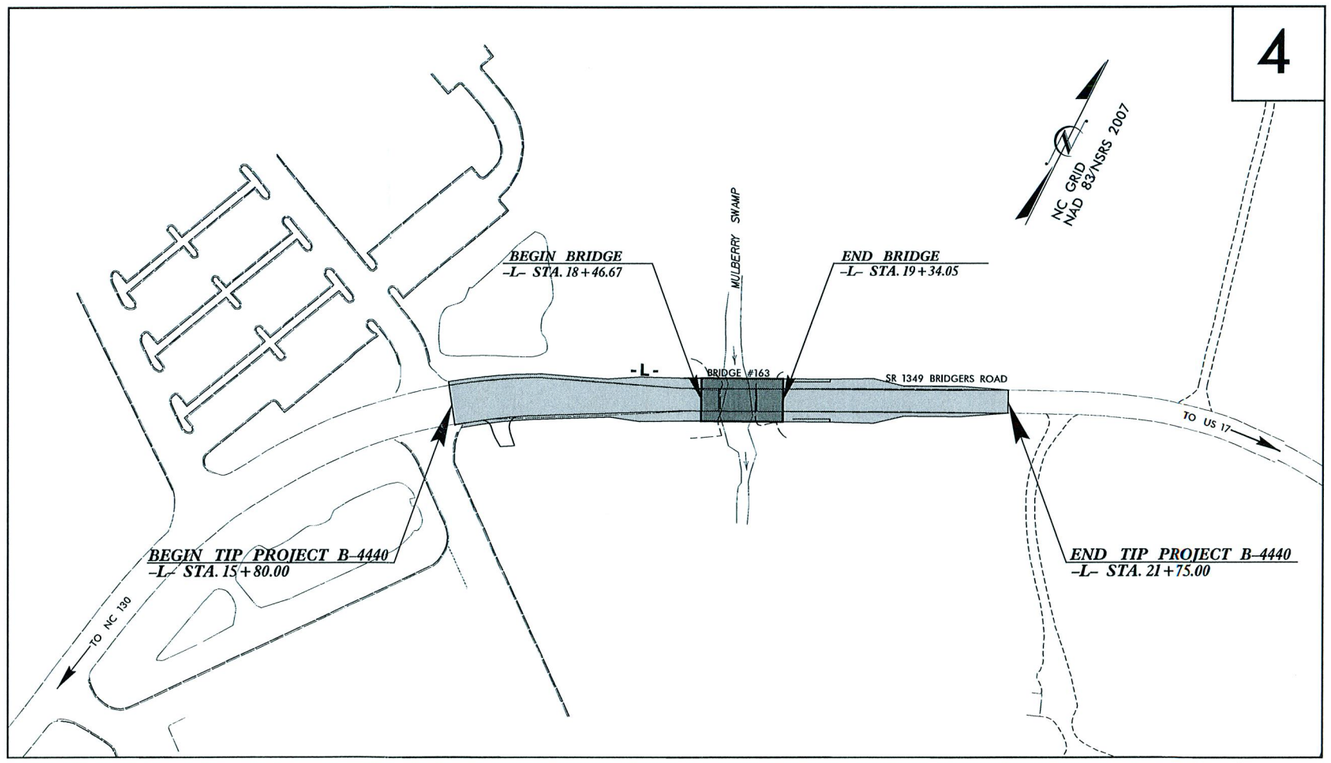
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

NES PERMIT PLANS (September 22, 2015)





VICINITY MAP
(NOT TO SCALE)
OFF–SITE DETOUR



THIS PROJECT IS WITHIN THE SHALLOTTE MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2016 = 3,792
ADT 2036 = 6,432
K = 11 %
D = 55 %
T = 7 % *
V = 40 MPH
*(TTST 1% + DUAL 6%)
FUNC CLASS = RURAL LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4440 = 0.097 MI
LENGTH STRUCTURE TIP PROJECT B–4440 = 0.016 MI
TOTAL LENGTH OF TIP PROJECT B–4440 = 0.113 MI

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 19, 2015

LETTING DATE: AUGUST 16, 2016

GARY LOVERING, PE
PROJECT ENGINEER

SUSAN C. LANCASTER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION • SEAL

9/17/2015
R:\Utilities\Engineering\NEU\B-4440_ut_tsh_UE01.psh.dgn
USERNAME

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NES PERMIT PLANS
(September 22, 2015)

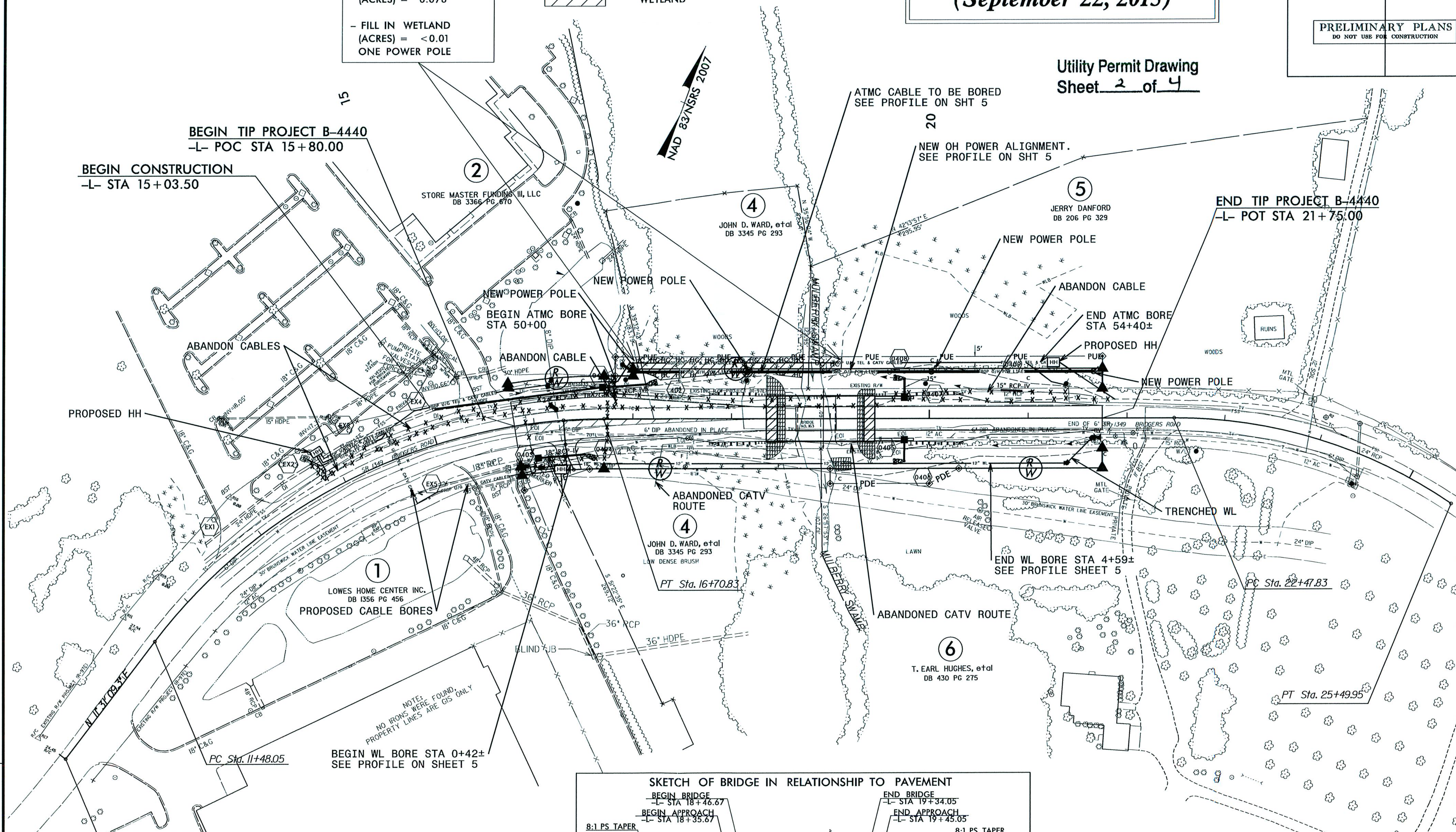
Utility Permit Drawing
Sheet 2 of 4

SITE 1

- HAND CLEARING (ACRES) = 0.076
- FILL IN WETLAND (ACRES) = <0.01
ONE POWER POLE

HC HC — DENOTES HAND CLEARING

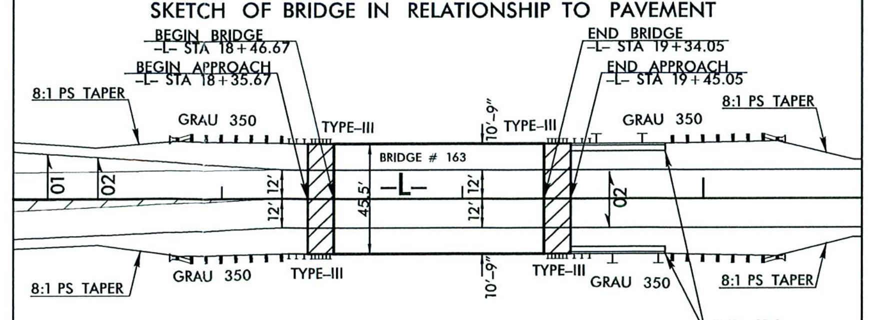
F F — DENOTES FILL IN WETLAND



NAD 83/NSRS 2007
BEGIN TIP PROJECT B-4440
-L- POC STA 15+80.00
BEGIN CONSTRUCTION
-L- STA 15+03.50
STORE MASTER FUNDING III, LLC
DB 3366 PG 670
JOHN D. WARD, etal
DB 3345 PG 293
JERRY DANFORD
DB 206 PG 329
END TIP PROJECT B-4440
-L- POT STA 21+75.00
ATMC CABLE TO BE BORED
SEE PROFILE ON SHT 5
NEW OH POWER ALIGNMENT.
SEE PROFILE ON SHT 5
NEW POWER POLE
ABANDON CABLE
END ATMC BORE
STA 54+40±
PROPOSED HH
BEGIN ATMC BORE
STA 50+00
ABANDON CABLES
PROPOSED HH
ABANDONED CATV ROUTE
TRENCHED WL
END WL BORE STA 4+59±
SEE PROFILE SHEET 5
PC Sta. 22+47.83
PT Sta. 16+70.83
LOWES HOME CENTER INC.
DB 1356 PG 456
PROPOSED CABLE BORES
T. EARL HUGHES, etal
DB 430 PG 275
PT Sta. 25+49.95
NOTE: NO IRONS WERE FOUND, PROPERTY LINES ARE GIS ONLY
BEGIN WL BORE STA 0+42±
SEE PROFILE ON SHEET 5
PC Sta. 11+48.05
POT Sta. 10+00.00
MULBERRY SWAMP
BRIDGERS ROAD
WOODS
LAWN
RUINS

-L-	
PI Sta 14+29.22	PI Sta 24+03.47
Δ = 52° 16' 42.0" (RT)	Δ = 33° 56' 28.7" (RT)
D = 10° 00' 00.0"	D = 11° 14' 04.1"
L = 522.78'	L = 302.12'
T = 281.17'	T = 155.64'
R = 572.96'	R = 510.00'

SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT



(NOT TO SCALE)

APPROACH SLAB
FOR -L- PROFILE SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S-? TO S-?

REVISIONS

DESIGN REVISION (4/15/15): ADDED A DRIVEWAY ON PARCEL 3. DDL
RW REVISION (4/28/15): COMBINED PARCELS 3 AND 4 INTO PARCEL 4, ADDED A DRIVEWAY ON PARCEL 4, AND ADDED A DO NOT DISTURB POND NOTE TO PARCEL 2. SCL
RW REVISION (5/06/15): MODIFIED PUE ON NORTHWEST CORNER OF BRIDGE. JDG

8/17/99

9/18/2015
R:\Utilities\Engineering\NEU\B4440_ut_rdy4_UE02_psh.dgn

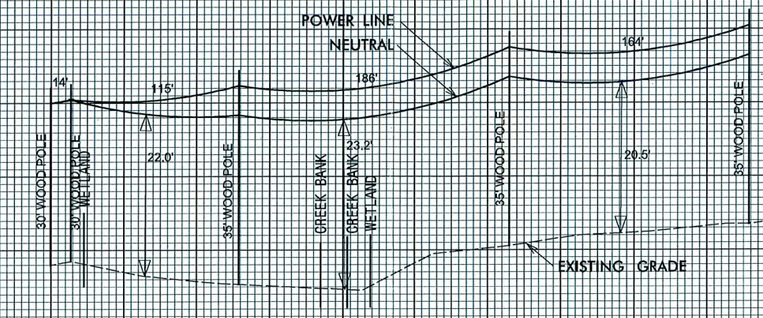
51499

PROJECT REFERENCE NO.	SHEET NO.
B-4440	5

NES PERMIT PLANS
(September 22, 2015)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

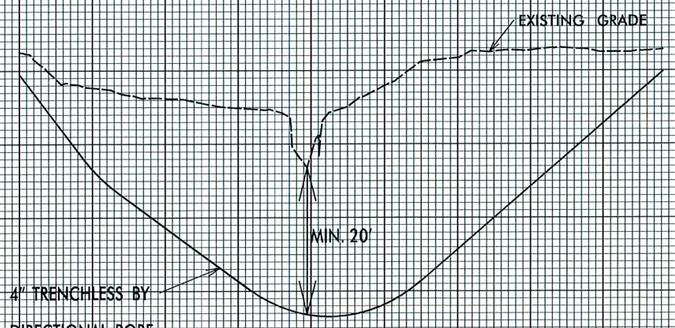
Utility Permit Drawing
Sheet 3 of 4



BRUNSWICK EMC PROFILE

40 30 20 10 0 -10 -20

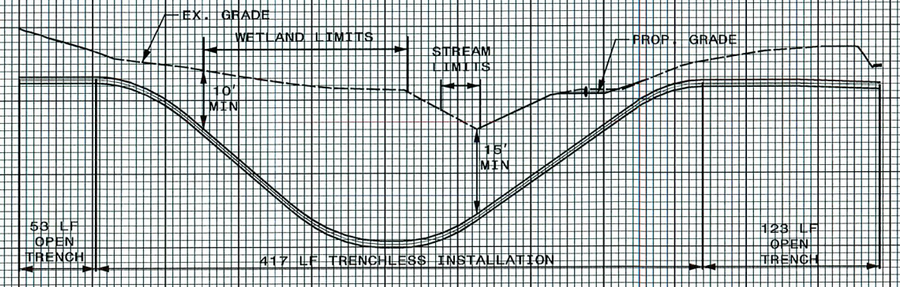
16+80 17+20 17+60 18+00 18+40 18+80 19+20 19+60 20+00 20+40 20+80 21+20 21+60



ATMC PROFILE

20 10 0 -10 -20

50+00 50+40 50+80 51+20 51+60 52+00 52+40 52+80 53+20 53+60 54+00 54+40



WATER LINE PROFILE

20 10 0 -10 -20

0+00 0+40 0+80 1+20 1+60 2+00 2+40 2+80 3+20 3+60 4+00 4+40 4+80 5+20 5+60 6+00

9/17/2015
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USER:MAJF

WETLAND PERMIT IMPACT 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-17+02 TO 19+12	Aerial Power line					0.08					
1	-L-18+16	Power Pole	<0.01									
TOTALS:			<0.01	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00

Note :

Utility Permit Drawing
Sheet 4 of 4

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRUNSWICK COUNTY
TIP PROJECT (B-4440)

9/22/2015

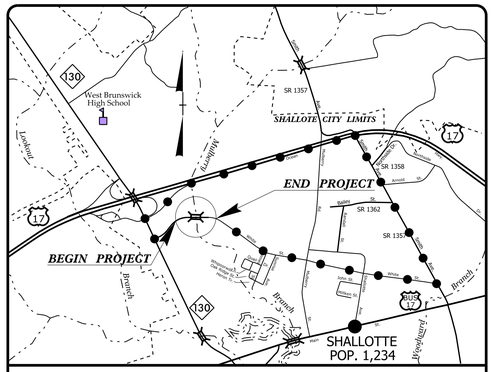
ATN Revised 3/31/05

09/08/99

TIP PROJECT: B–4440

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

(NOT TO SCALE)

OFF–SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

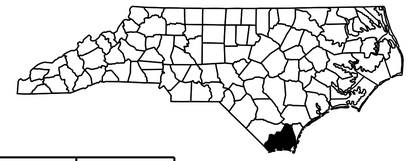
BRUNSWICK COUNTY

LOCATION: REPLACE BRIDGE NO. 163 OVER MULBERRY SWAMP ON SR 1349

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4440	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38367.1.1	BRZ–1349(1)	P.E.
38367.2.FD1	BRZ–1349(1)	RW & UTIL.



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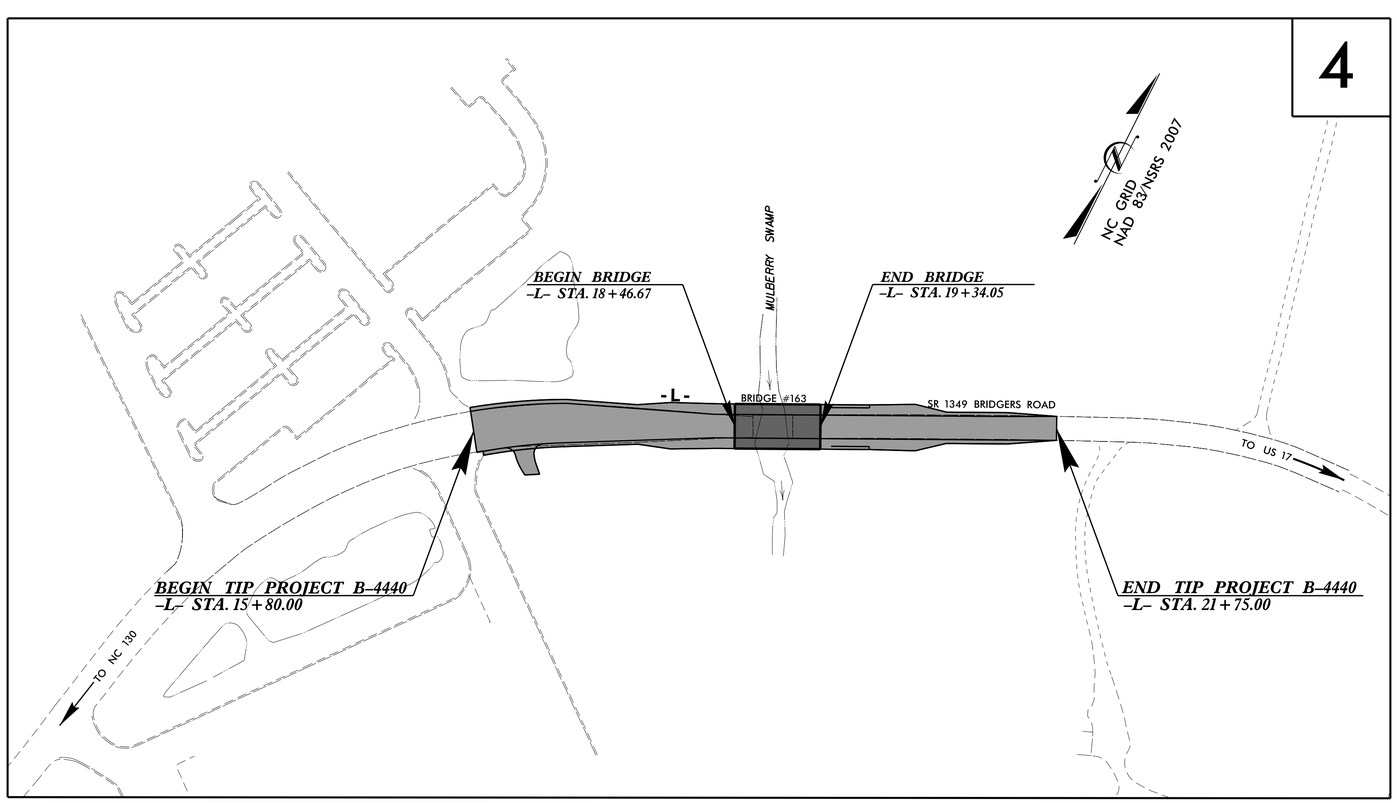

THIS PROJECT IS WITHIN THE SHALLOTTE MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2016 = 3,792
ADT 2036 = 6,432
K = 11 %
D = 55 %
T = 7 % *
V = 40 MPH
*(TTST 1% + DUAL 6%)
FUNC CLASS = RURAL LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4440 = 0.097 MI
LENGTH STRUCTURE TIP PROJECT B–4440 = 0.016 MI
TOTAL LENGTH OF TIP PROJECT B–4440 = 0.113 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 19, 2015

LETTING DATE: AUGUST 16, 2016

GARY LOVERING, PE
PROJECT ENGINEER

SUSAN C. LANCASTER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

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$$$$USERNAME$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-4440	1B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (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
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?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 (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
B-4440	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

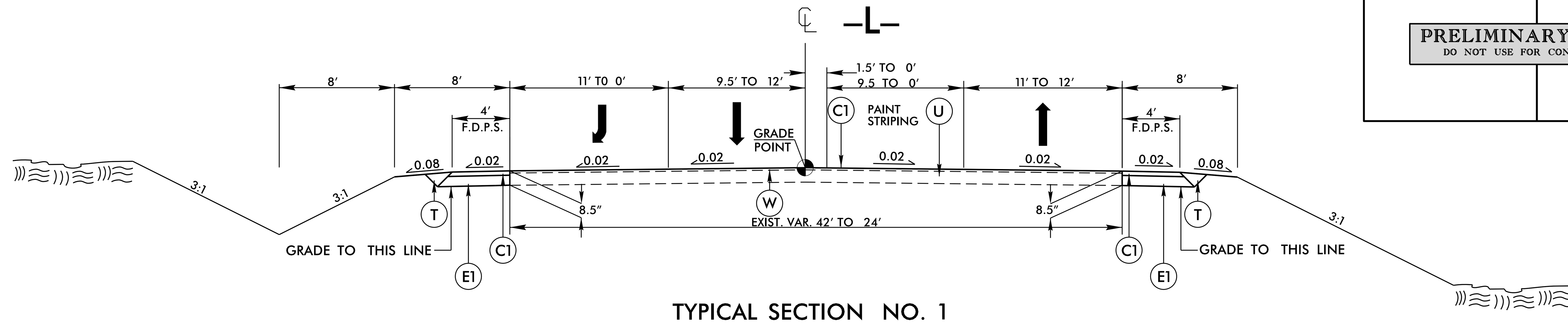
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN

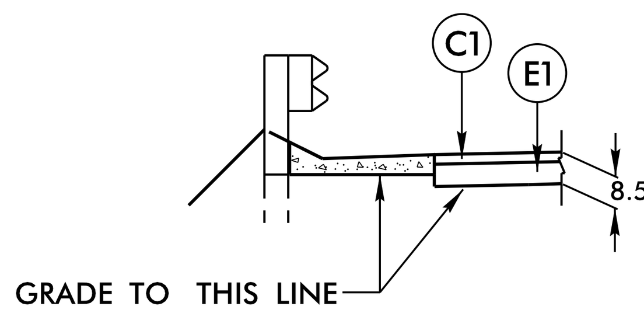
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 2.5" DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 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" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5.5" DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIALBE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING).

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



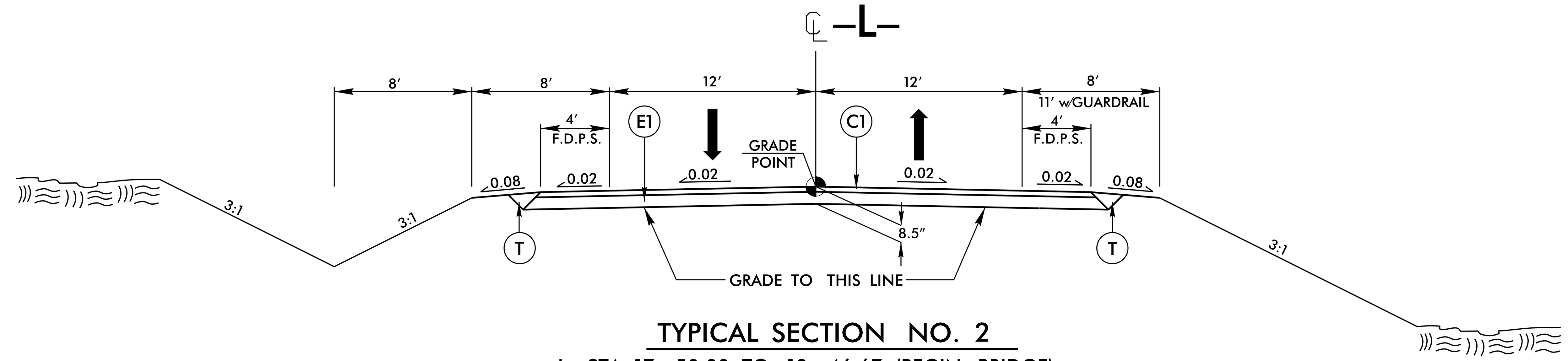
TYPICAL SECTION NO. 1

-L- STA. 15+80.00 TO 17+50.00



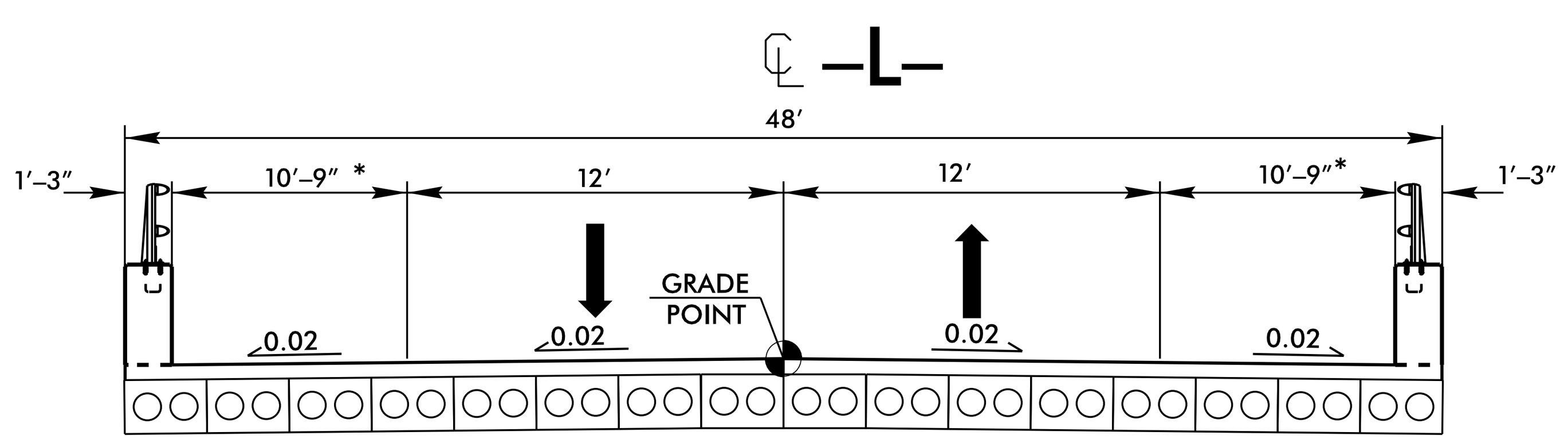
DETAIL SHOWING SHOULDER BERM GUTTER

-L- STA. 19+45.05 TO -L- STA. 19+84.05 (LT)
-L- STA. 19+45.05 TO -L- STA. 19+84.05 (RT)



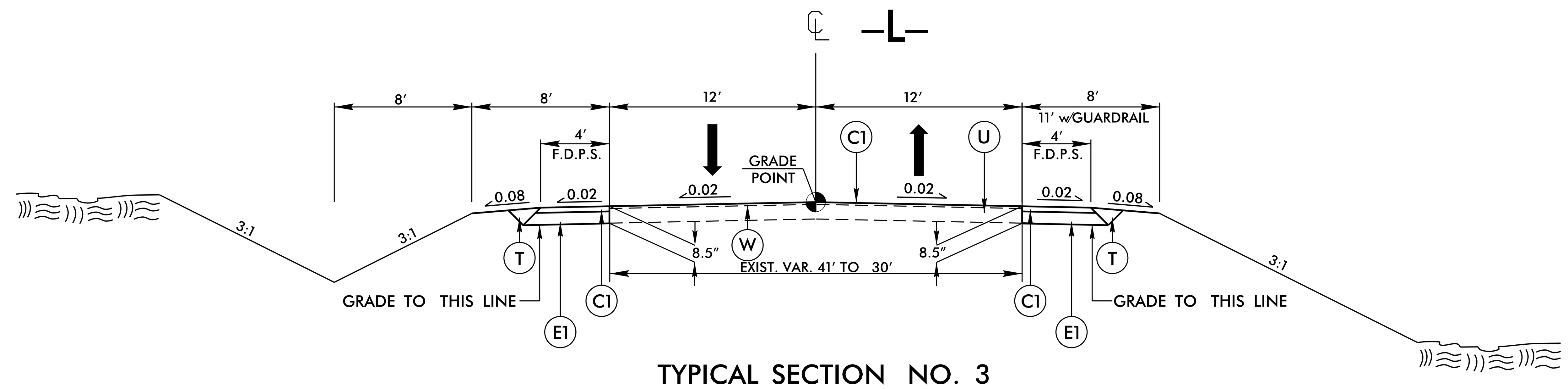
TYPICAL SECTION NO. 2

-L- STA. 17+50.00 TO 18+46.67 (BEGIN BRIDGE)
-L- STA. 19+34.05 (END BRIDGE) TO 19+88.94
* PAVE TO FACE OF GUARDRAIL



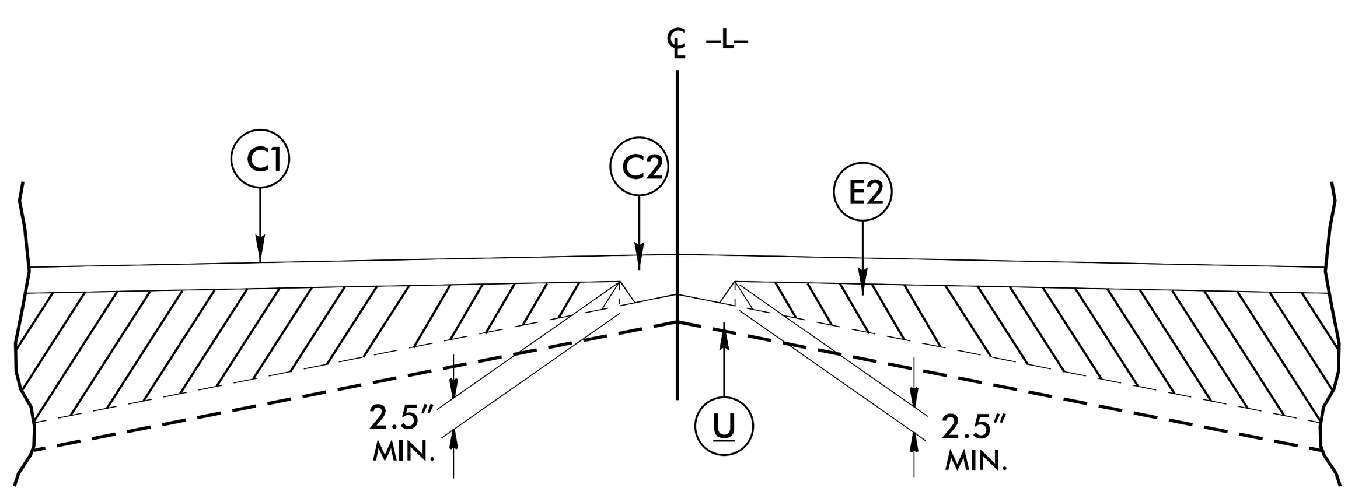
TYPICAL SECTION NO. 4

-L- STA. 18+46.67 TO 19+34.05
* Future sidewalk



TYPICAL SECTION NO. 3

-L- STA. 19+88.94 TO 21+75
* PAVE TO FACE OF GUARDRAIL



Detail Showing Method of Wedging

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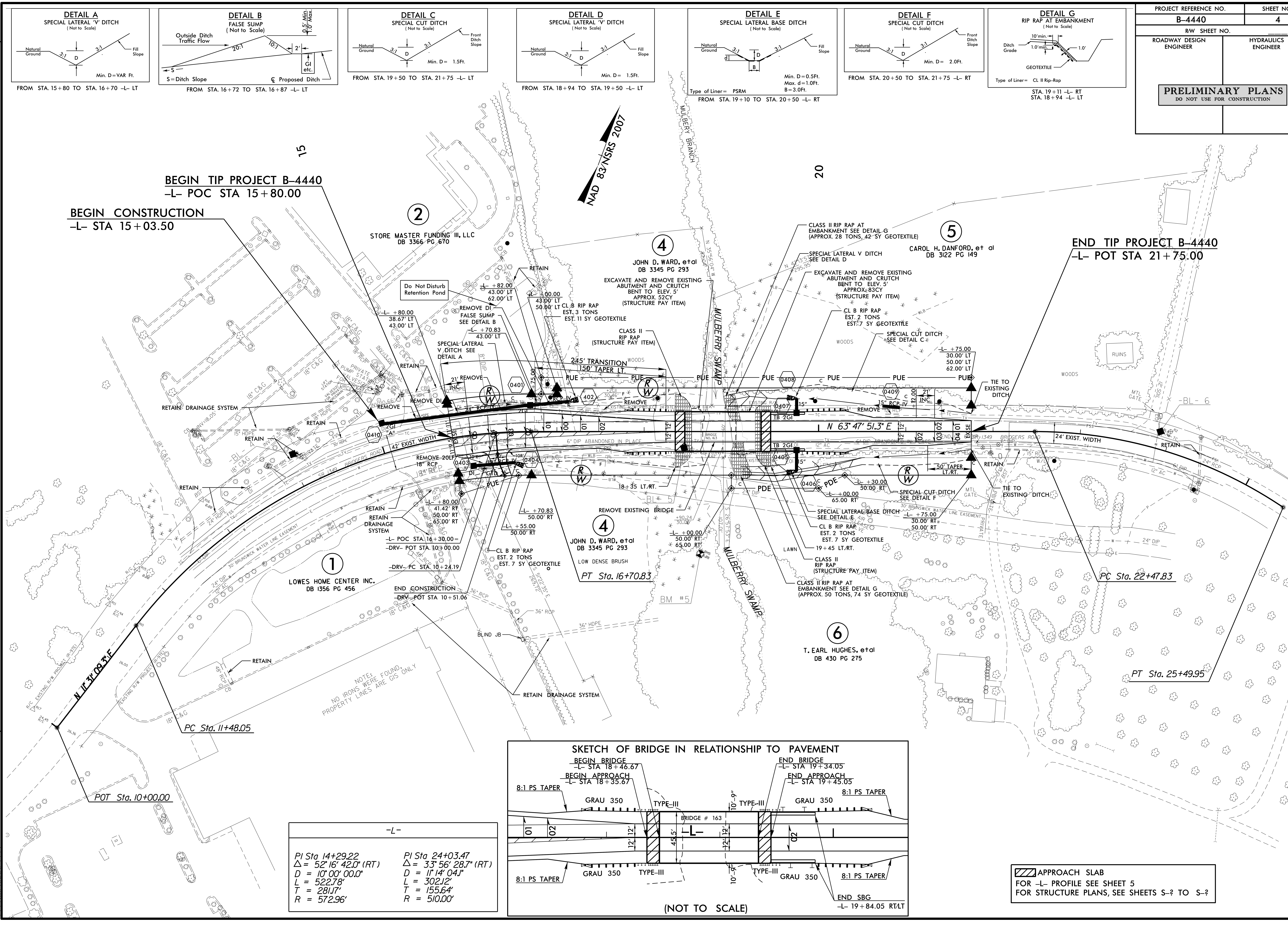
PROJECT REFERENCE NO.	SHEET NO.
B-4440	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

DESIGN REVISION (4/15/15): ADDED A DRIVEWAY ON PARCEL 3. DDL
R/W REVISION (4/28/15): COMBINED PARCELS 3 AND 4 INTO PARCEL 4 ADDED A DRIVEWAY ON PARCEL 4, AND ADDED A DO NOT DISTURB POND NOTE TO PARCEL 2. SCL
R/W REVISION (5/06/15): MODIFIED PUE ON NORTHWEST CORNER OF BRIDGE. JDG
R/W REVISION (7/31/15): CHANGED OWNER'S NAME, DEED BOOK NUMBER, AND PAGE NUMBER ON PARCEL 5. DDL

8/17/99



DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D = VAR Ft.
FROM STA. 15+80 TO STA. 16+70 -L- LT
DETAIL B
FALSE SUMP
(Not to Scale)
S = Ditch Slope
℄ Proposed Ditch
FROM STA. 16+72 TO STA. 16+87 -L- LT
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1.5Ft.
FROM STA. 19+50 TO STA. 21+75 -L- LT
DETAIL D
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D = 1.5Ft.
FROM STA. 18+94 TO STA. 19+50 -L- LT
DETAIL E
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Type of Liner = PSRM
Min. D = 0.5Ft. Max. d = 1.0Ft. B = 3.0Ft.
FROM STA. 19+10 TO STA. 20+50 -L- RT
DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 2.0Ft.
FROM STA. 20+50 TO STA. 21+75 -L- RT
DETAIL G
RIP RAP AT EMBANKMENT
(Not to Scale)
GEOTEXTILE
Type of Liner = CL II Rip-Rap
STA. 19+11 -L- RT
STA. 18+94 -L- LT
NAD 83/NSRS 2007
BEGIN TIP PROJECT B-4440
-L- POC STA 15+80.00
BEGIN CONSTRUCTION
-L- STA 15+03.50
END TIP PROJECT B-4440
-L- POT STA 21+75.00
STORE MASTER FUNDING III, LLC
DB 3366 PG 670
JOHN D. WARD, etal
DB 3345 PG 293
CAROL H. DANFORD, et al
DB 3122 PG 149
LOWES HOME CENTER INC.
DB 1356 PG 456
T. EARL HUGHES, etal
DB 430 PG 275
MULBERRY SWAMP
MULBERRY BRANCH
Do Not Disturb Retention Pond
EXCAVATE AND REMOVE EXISTING ABUTMENT AND CRUTCH BENT TO ELEV. 5' APPROX. 52CY (STRUCTURE PAY ITEM)
EXCAVATE AND REMOVE EXISTING ABUTMENT AND CRUTCH BENT TO ELEV. 5' APPROX. 83CY (STRUCTURE PAY ITEM)
CLASS II RIP RAP AT EMBANKMENT SEE DETAIL G (APPROX. 28 TONS, 42 SY GEOTEXTILE)
CLASS II RIP RAP AT EMBANKMENT SEE DETAIL G (APPROX. 50 TONS, 74 SY GEOTEXTILE)
REMOVE EXISTING BRIDGE
245' TRANSITION
150' TAPER LT
N 63° 47' 51.3" E
N 11° 31' 09.3" E
PC Sta. 11+48.05
POT Sta. 10+00.00
PT Sta. 16+70.83
PC Sta. 22+47.83
PT Sta. 25+49.95
RETAIN DRAINAGE SYSTEM
NOTE: NO IRONS WERE FOUND. PROPERTY LINES ARE GIS ONLY
SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT
BEGIN BRIDGE -L- STA 18+46.67
BEGIN APPROACH -L- STA 18+35.67
END BRIDGE -L- STA 19+34.05
END APPROACH -L- STA 19+45.05
8:1 PS TAPER
GRAU 350
TYPE-III
BRIDGE # 163
END SBG -L- 19+84.05 RT/LT
(NOT TO SCALE)
-L-
PI Sta 14+29.22
Δ = 52° 16' 42.0" (RT)
D = 10° 00' 00.0"
L = 522.78'
T = 281.17'
R = 572.96'
PI Sta 24+03.47
Δ = 33° 56' 28.7" (RT)
D = 11° 14' 04.1"
L = 302.12'
T = 155.64'
R = 510.00'
APPROACH SLAB
FOR -L- PROFILE SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S-? TO S-?

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DITCH LEGEND	
LEFT DITCH	-·-·-·-·-
RIGHT DITCH	----------

PROJECT REFERENCE NO.	SHEET NO.
B-4440	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 17+10.00
EL = 12.00'
VC = 179'
K = 64
V = 40 mph

℄ STA. 18+90.36 -L-
1@45' 1@40' 21" CORED SLAB
℄ ELEV. = 11.45'
SKEW = 90 DEGREES

PI = 20+20.00
EL = 11.06'
VC = 129'
K = 64
V = 40 mph

BEGIN GRADE -L- STA. 15+80.00
EL =16.03'

BEGIN BRIDGE
-L- STA. 18+46.67

END BRIDGE
-L- STA 19+34.05

END GRADE -L- STA. 21+75.00
EL =13.72'

7-1.5:1 (-)3.5000%

(-)3.1000%

(-)3.7800%

(-)0.9000%

(-)0.3026%

(-)0.3026%

(+)1.7148%

(+)2.7200%

(+)1.2720%

(+) 3.1981%

(+) 4.0357%

BEGIN DITCH
STA.15+80 -L- LT.
ELEV.= 15.85

PI=16+00 LT.
EI = 14.78

PI=16+50 LT.
EI = 12.89

END DITCH
STA.16+70 -L- LT.
ELEV.= 12.13

CLASS II RIP RAP
KEY IN 3.5' TYP.

EXCAVATE AND REMOVE
EXISTING ABUTMENT AND CRUTCH
BENT TO ELEV.=5.0' APPROX. 52CY
(STRUCTURE PAY ITEM)
NWS=2.9' (MAR. 19, 2014)

BEGIN DITCH
STA.18+94 -L- LT.
ELEV.= 3.39

BEGIN DITCH
STA.19+10 -L- RT.
ELEV.= 3.00

CLASS II RIP RAP
KEY IN 3.5' TYP.

EXCAVATE AND REMOVE
EXISTING ABUTMENT AND CRUTCH
BENT TO ELEV.=5.0' APPROX. 83CY
(STRUCTURE PAY ITEM)

PI=20+00 LT.
EI = 6.78

PI=20+50 RT.
EI = 8.65

END DITCH
STA.21+75 -L- RT.
ELEV.= 10.24

END DITCH
STA.21+75 -L- LT.
ELEV.= 11.54

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1,300	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 8.7	FT
BASE DISCHARGE	= 1,700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 9.47	FT
OVERTOPPING DISCHARGE	= 2,700	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 11.2	FT

FOR -L- PLAN SEE SHEET 4

FOR STRUCTURE PLANS SEE SHEETS S-1 THROUGH S-?

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40 30 20 10 0

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24