STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

March 8, 2017

MEMORANDUM TO: Mr. Mike Mills, P.E.
Division 7 Engineer

FROM: for Philip S. Harris, III, P.E., Manager
Natural Environment Section

SUBJECT: Orange County; Replacement of Bridge No. 85 on SR 1005 (Old Greensboro Rd.) over Phil's Creek ; Federal Aid No. BRSTP-1005(31); WBS 46062.1.1; **TIP B-5348.**

Attached is the N.C. Division of Water Resources (NCDWR) Jordan Lake Buffer Authorization. All environmental permits have been received for the construction of this project.

A copy of this permit package will be posted on the NCDOT website at:
https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx
Quick Links>Permit Documents> Issued Permits.

cc: w/o attachment (see website for attachments)

Mr. Andy Gay, P.E. Contracts Management
Ms. Jerry Parker, Division 7 Environmental Officer
Dr. Majed Al-Ghandour, P.E., Programming and TIP
Ms. Brenda Moore, P.E., Roadway Design
Mr. Carl Barclay, P.E., Utilities Unit
Mr. Matt Lauffer, P.E., Hydraulics
Mr. Brian Hanks, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Brian Yamamoto, P.E., Project Development

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
NATURAL ENVIRONMENT SECTION
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

PROJECT COMMITMENTS

T.I.P. Project No. B-5348
Replacement of Bridge No. 85 over Phil's Creek on SR 1005 (Old Greensboro Road)
Orange County
Federal Aid Project No. BRSTP – 1005 (31)
WBS Element No. 46062.1.1

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Division 7 Construction, Resident Engineer's Office – Offsite Detour

In order to have time to adequately reroute school busses, Chapel Hill-Carrboro City Schools will be contacted at (919) 942-5045, at least one month prior to road closure.

In order to allow Emergency Management Services (EMS) time to prepare for road closure, the NCDOT Resident Engineer will notify the Orange County Emergency Services Director at (919) 245-6100, at least one month prior to road closure.

Hydraulic Unit – FEMA Coordination

The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of the project, with regard to applicability of the NCDOT Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

Division 7 Construction - FEMA

This project involves construction activities, in or adjacent to, FEMA-regulated stream(s). Therefore, NCDOT Division 7 staff shall submit sealed, as-built construction plans to the NCDOT Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built, as shown, in the construction plans, both horizontally and vertically.

Hydraulic Unit, Natural Environment Section – Buffer Rules

The Jordan Lake Watershed Buffer Rules apply to this project.

All Design Groups/Division Resident Construction Engineer – Restoration

When concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters, due to the potential for elevated pH and possible aquatic life and fish kills.

A clear bank (riprap free) area of at least 10 feet should remain on each side of the stream underneath the bridge.

COMMITMENTS FROM PERMITTING

No additional project commitments were added during permitting.

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

S. JAY ZIMMERMAN
Director

February 28, 2017
Orange County
NCDWR Project No. 20170168
Bridge 85 on SR 1005
TIP Project B-5348
Federal Aid Project BRSTP-1005(31)
WBS 46062.1.1

APPROVAL of JORDAN LAKE WATERSHED BUFFER AUTHORIZATION, with ADDITIONAL CONDITIONS

Mr. Philip S. Harris III
NCDOT Natural Environment Section Head
1598 MSC
Raleigh, NC 27699-1598

Dear Mr. Harris:

You have our approval, in accordance with the conditions listed below, for the following Jordan Lake Watershed Buffer impacts for the purpose of replacing Bridge 85 over Phil's Creek (High Quality Waters – HQW) in Orange County as described in your application:

Jordan Lake Riparian Buffer Impacts

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (using 3:1 ratio)		Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (using 1.5:1 ratio)
Bridge	4,027	-	-	-		469	-	-	-
Road Crossing	1,268	-	-	-		2,082	-	-	-
Utilities	-	-	-	-		300	-	-	-
Totals	**5,295**	-	-	-		**2,851**	-	-	-

Total Buffer Impact for Project: 8,146 square feet.

The project shall be constructed in accordance with your application dated received February 8, 2017. This approval is valid for Jordan Lake Riparian Buffer Rules (15A NCAC 2B .0267). In addition, you should acquire any other federal, state or local permits before you proceed with your project including (but not limited to) Sediment and Erosion Control, Non-Discharge and Water Supply Watershed regulations.

This approval is valid solely for the purpose and design described in your application (unless modified below). Should your project change, you must notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If total wetland fills for this project (now or in the future) exceed one acre, or of total impacts to streams (now or in the future) exceed 150 linear feet, compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC 2B .0267. For this approval to remain valid, you must adhere to the conditions listed in the attached certification(s) and any additional conditions listed below.

Project Specific Conditions

1. All stormwater runoff shall be directed as sheetflow through stream buffers at non-erosive velocities, unless otherwise approved by this certification. [15A NCAC 2B.0267]

2. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular NCDOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated with native woody species before the next growing season following completion of construction. [15A NCAC 2B.0267]

3. Pursuant to 15A NCAC 2B.0267, sediment and erosion control devices shall not be placed in Zone 1 of any Jordan Lake Buffer without prior approval by the NCDWR. At this time, the NCDWR has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.

4. Any modifications to this 401 Water Quality Certification that propose additional stream impacts or increased impervious surface requiring additional stormwater management may be subject the Jordan Water Supply Nutrient Strategy (15A NCAC02B .0267).

5. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species. [15A NCAC 02H .0506(b)(2)

6. As a condition of this 401 Water Quality Certification, the bridge demolition and construction must be accomplished in strict compliance with the most recent version of NCDOT's Best Management Practices for Construction and Maintenance Activities. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]

7. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. To meet the requirements of NCDOT's National Pollutant Discharge Elimination System (NPDES) permit NCS000250 please refer to the most recent version of the North Carolina Department of Transportation Stormwater Best Management Practices Toolbox manual for approved measures. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]

8. NCDOT shall be in compliance with NPDES Permit NCS000250 issued to NCDOT, including the applicable requirements of General Permit for Construction Activities (NCG010000). Please note extra protections per Design Standards in Sensitive Watersheds (15A NCAC 4B.0124[a]-[e])

General Conditions

1. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]

2. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills. [15A NCAC 02B.0200]

3. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers. [15A NCAC 02H.0506(b)(2)]

4. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]

5. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage. [15A NCAC 02H.0506(b)(2)]

6. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

7. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water. [15A NCAC 02H.0506(b)(3) and (c)(3)]

8. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream. [15A NCAC 02H.0506(b)(3)]

9. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. [15A NCAC 02H.0506(b)(3)]

10. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification. [15A NCAC 02H.0506(b)(3)]

11. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]

12. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification. [15A NCAC 02B.0200]

13. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. [15A NCAC 02H.0506(b)(2)]

14. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

15. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification. [15A NCAC 02H.0501 and .0502]

16. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.

17. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery. [15A NCAC 02B.0506(b)(2)]

18. Upon completion of the project (including any impacts at associated borrow or waste sites), NCDOT (or appointee) shall complete and return the enclosed "Certification of Completion Form" to notify the NCDWR when all work included in the 401 Certification has been completed. [15A NCAC 02H.0502(f)]

19. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02B.0267(10)]

20. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities. [15A NCAC 02H.0506(b)(3) and (c)(3)]

21. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3]):

    a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
    b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
    c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
    d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

22. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. [15A NCAC 02H.0506(b)(3) and (c)(3)]

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.
The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919) 431-3000, Facsimile: (919) 431-3100

A copy of the petition must also be served on DEQ as follows:

Mr. Sam M.Hayes, General Counsel
Department of Environmental Quality
1601 Mail Service Center

This letter completes the review of the Division of Water Resources under Section 401 of the Clean Water Act. If you have any questions, please contact Dave Wanucha at (336)776-9703 or Dave.Wanucha@ncdenr.gov.

Sincerely,

S. Jay Zimmerman, Director
Division of Water Resources

Electronic copy only distribution:

Jerry Parker, NCDOT Division 7 Environmental Officer

Nicole Thomson, NCDOT Division 7 Environmental Assistant *(njthomson2@ncdot.gov)*
James Mason, NCDOT Natural Environment Section *(jsmason@ncdot.gov)*
File Copy

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

S. JAY ZIMMERMAN
Director

Environmental Quality

NCDWR Project No.: _____ **County:** _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Resources, 1617 Mail Service Center, Raleigh, NC, 27699-1617. This form may be returned to NCDWR by the applicant, the applicant's authorized agent, **or** the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date:_____

Engineer's Certification

_____ Partial _____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

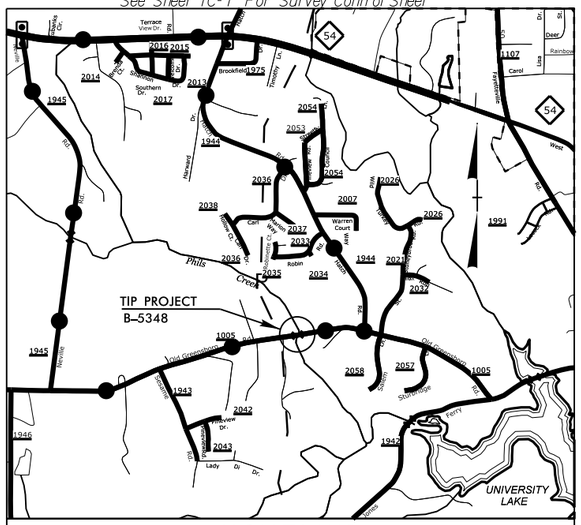
Signature _____ Registration No. _____

Date _____

09/26/99

TIP PROJECT: B-5348

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



VICINITY MAP

OFFSITE DETOUR

TEMPORARY TRAFFIC SIGNALS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ORANGE COUNTY

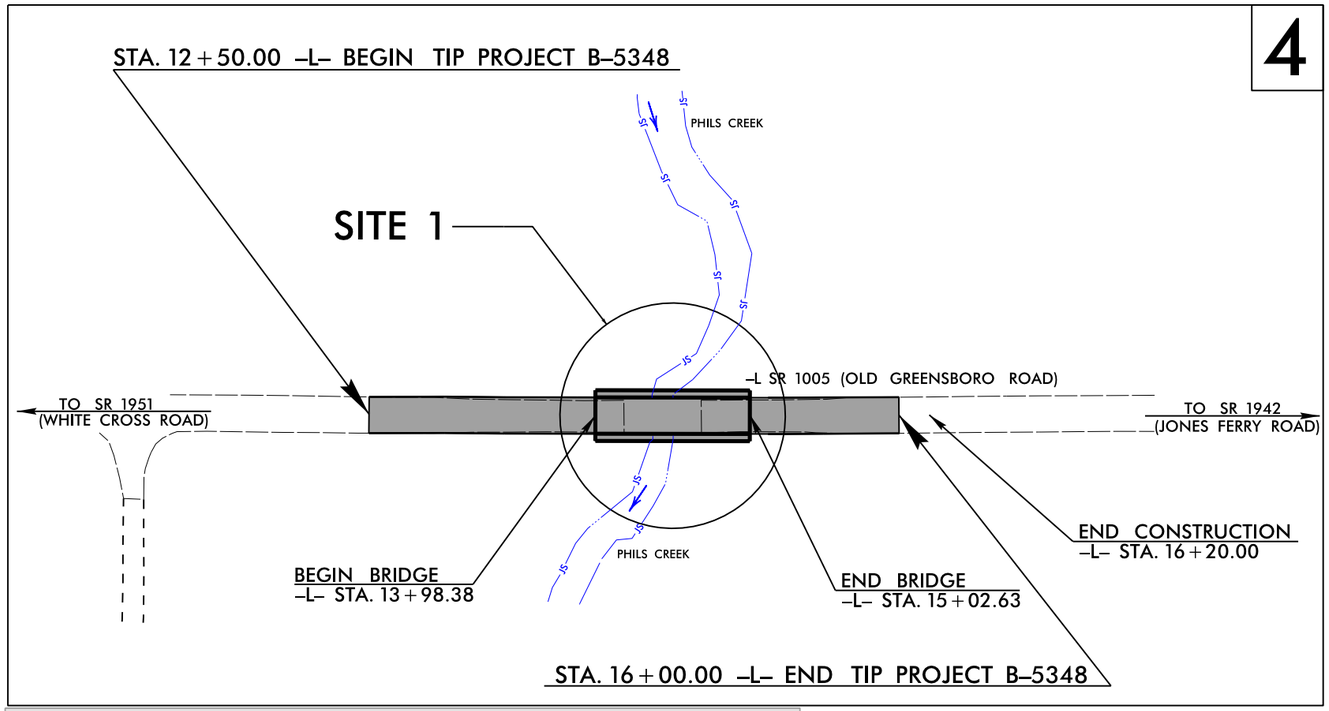
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5348	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46062.1.1	BRSTP-1005(31)	P.E.
46062.2.1		R/W & UTILITIES

LOCATION: BRIDGE NO. 85 OVER PHILS CREEK ON SR 1005 (OLD GREENSBORO ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, TEMPORARY TRAFFIC SIGNALS AND STRUCTURE

4



NAD 83 NA 2011

BUFFER IMPACTS PERMIT

*DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVES AND ASSOCIATED NIGHTTIME STOPPING SIGHT DISTANCE.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

BUFFER DRAWING SHEET 1 OF 5

CONTRACT:

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 2017 = 4,575
ADT 2035 = 5,800
K = 9 %
D = 65 %
T = 3 % *
V = 50 MPH
* TTST = 1% DUAL = 2%

FUNC CLASS = COLLECTOR

"SUB-REGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5348 = 0.046 MI.
LENGTH STRUCTURE TIP PROJECT B-5348 = 0.020 MI.
TOTAL LENGTH OF TIP PROJECT B-5348 = 0.066 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 19, 2016

LETTING DATE:
AUGUST 15, 2017

JAMES A. SPEER, PE
PROJECT ENGINEER

DANIEL W. GARDNER, JR., PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

8/22/2016
mkelly
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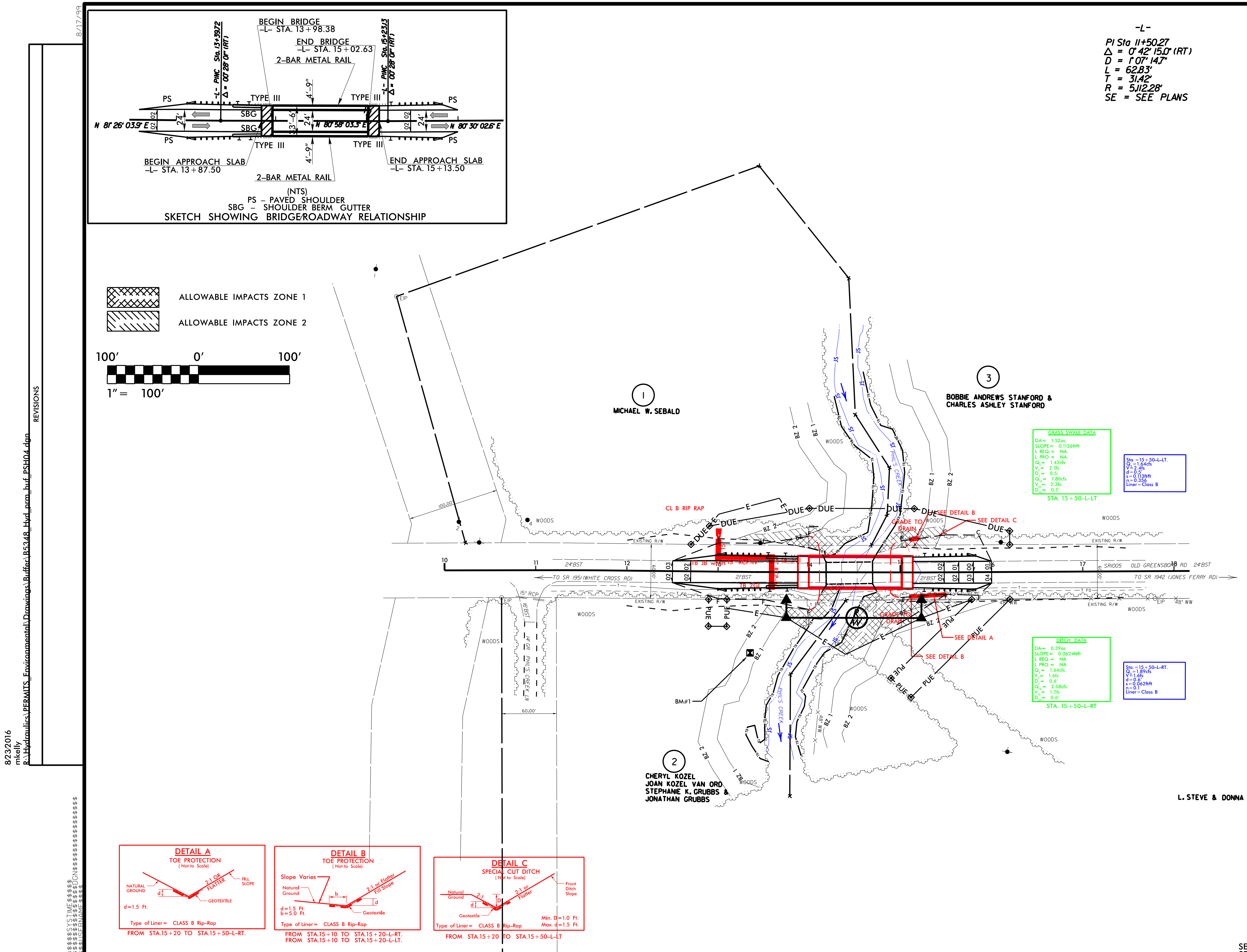
$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5348	4

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BEGIN BRIDGE
-L- STA. 13+98.38
END BRIDGE
-L- STA. 15+02.63
2-BAR METAL RAIL
-L- PINC Sta. 13+39.72
Δ = 00° 28' 0" (RT)
-L- PINC Sta. 15+23.13
Δ = 00° 28' 0" (RT)
TYPE III
PS
SBG
N 81° 26' 03.9" E
N 80° 58' 03.5" E
N 80° 30' 02.6" E
BEGIN APPROACH SLAB
-L- STA. 13+87.50
END APPROACH SLAB
-L- STA. 15+13.50
(NTS)
PS - PAVED SHOULDER
SBG - SHOULDER BERM GUTTER
SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP
-L-
PI Sta 11+50.27
Δ = 0° 42' 15.0" (RT)
D = 1° 07' 14.7"
L = 62.83'
T = 31.42'
R = 5,112.28'
SE = SEE PLANS
NAD 83 / NA 2011
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
100' 0' 100'
1" = 100'
MICHAEL W. SEBALD
BOBBIE ANDREWS STANFORD & CHARLES ASHLEY STANFORD
CHERYL KOZEL
JOAN KOZEL VAN ORD
STEPHANIE K. GRUBBS &
JONATHAN GRUBBS
L. STEVE & DONNA HARWARD
GRASS SWALE DATA
STA. 15+50-L-LT
DITCH DATA
STA. 15+50-L-RT
CL B RIP RAP
SEE DETAIL A
SEE DETAIL B
SEE DETAIL C
GRADE TO DRAIN
PHIL'S CREEK
SR1005 OLD GREENSBORO RD
TO SR 1951 (WHITE CROSS RD)
TO SR 1942 (JONES FERRY RD)
EXISTING R/W
WOODS
BM#1
DETAIL A
TOE PROTECTION
(Not to Scale)
NATURAL GROUND
2:1 OR FLATTER
FILL SLOPE
GEOTEXTILE
d=1.5 Ft.
Type of Liner= CLASS B Rip-Rap
FROM STA.15+20 TO STA.15+50-L-RT.
DETAIL B
TOE PROTECTION
(Not to Scale)
Slope Varies
Natural Ground
2:1 or Flatter Fill Slope
Geotextile
d=1.5 Ft.
b=5.0 Ft.
Type of Liner= CLASS B Rip-Rap
FROM STA.15+10 TO STA.15+20-L-RT.
FROM STA.15+10 TO STA.15+20-L-LT.
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
2:1 or Flatter
Front Ditch Slope
Geotextile
Min. D=1.0 Ft.
Max. d=1.5 Ft.
Type of Liner= CLASS B Rip-Rap
FROM STA.15+20 TO STA.15+50-L-LT
REVISIONS
8/23/2016
mkelly
R:\Hydraulics\PERMITS_Environmental\Drawings\Buffer\B5348_Hyd_prm_buf_PSH04.dgn

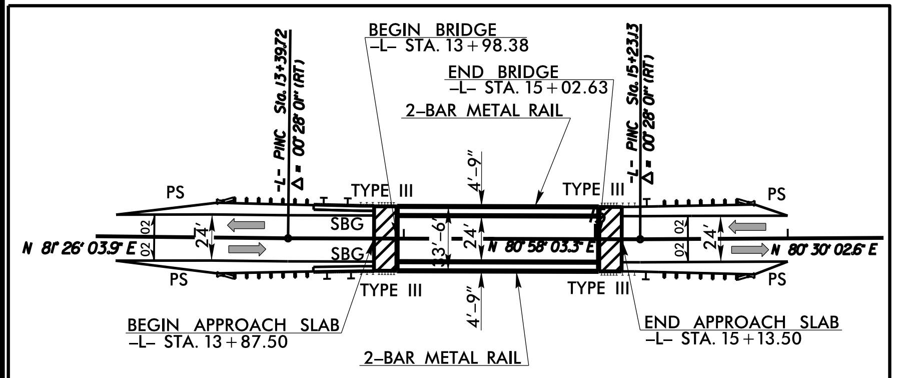
PERMIT DRAWING
SHEET 2 OF 5

SEE SHEET 5 FOR PROFILE
SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

PROJECT REFERENCE NO.	SHEET NO.
B-5348	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-
PI Sta 11+50.27
Δ = 0° 42' 15.0" (RT)
D = 1° 07' 14.7"
L = 62.83'
T = 31.42'
R = 5,112.28'
SE = SEE PLANS



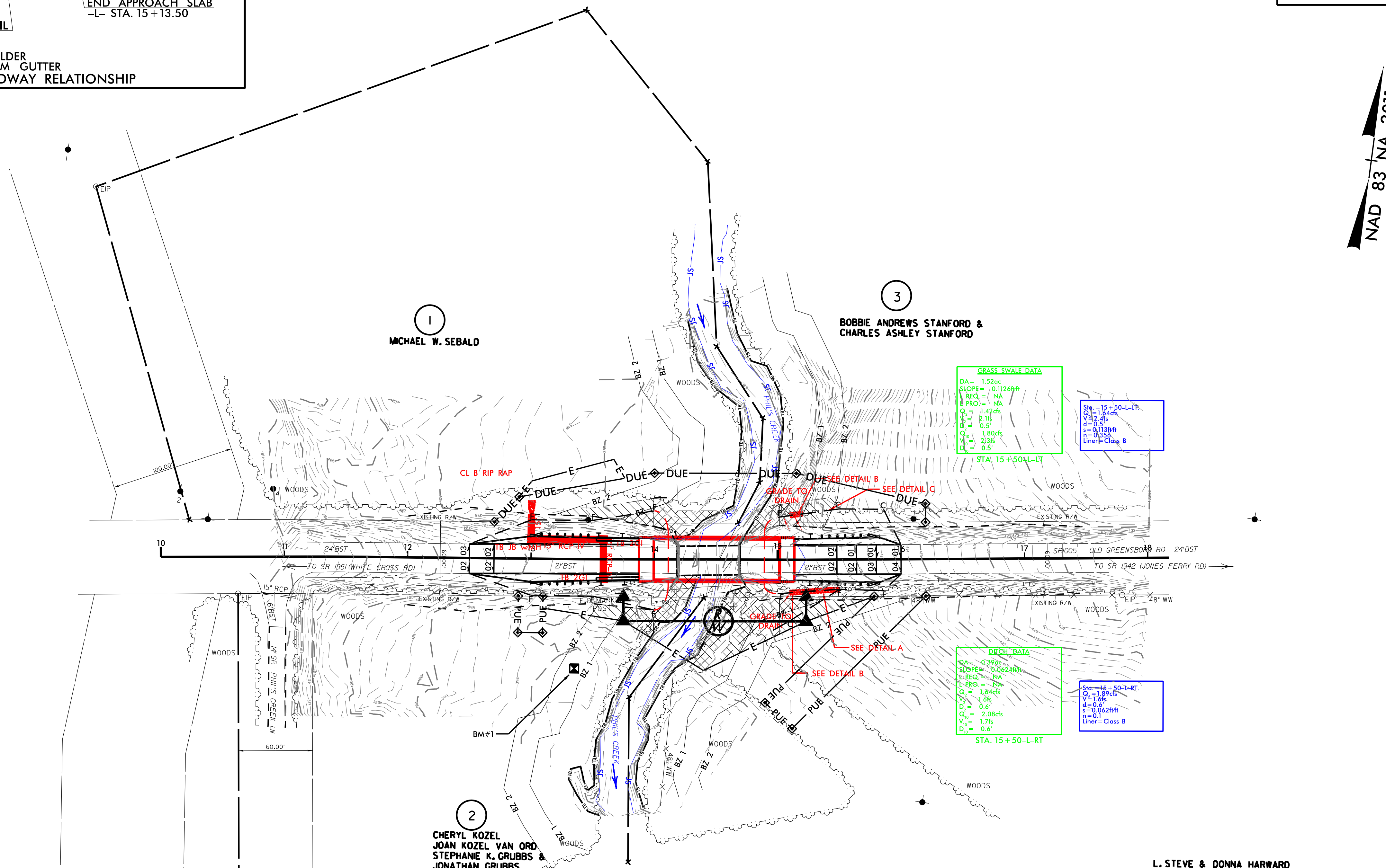
(NTS)
PS – PAVED SHOULDER
SBG – SHOULDER BERM GUTTER
SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP

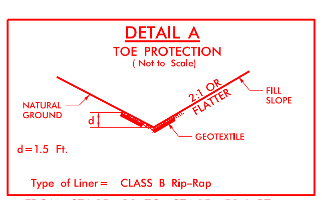
ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

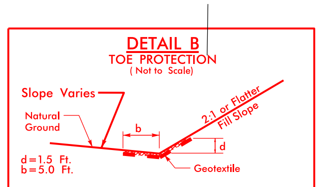
100' 0' 100'

1" = 100'

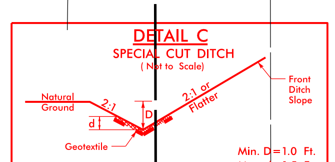




FROM STA.15+20 TO STA.15+50-L-RT.



FROM STA.15+10 TO STA.15+20-L-RT.
FROM STA.15+10 TO STA.15+20-L-LT.



FROM STA.15+20 TO STA.15+50-L-LT

PERMIT DRAWING
SHEET 3 OF 5

SEE SHEET 5 FOR PROFILE
SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

REVISIONS

8/23/2016
mkelly
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5348	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	1730	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	396.30	FT
BASE DISCHARGE	=	2440	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	397.42	FT
OVERTOPPING DISCHARGE	=	6300	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	403.04	FT
	=		
DATE OF SURVEY	=	10-29-15	
W.S. ELEVATION AT DATE OF SURVEY	=	387.50+/-	FT

*DESIGN EXCEPTIONS REQUIRED FOR SAG VERTICAL CURVES AND ASSOCIATED NIGHTTIME STOPPING SIGHT DISTANCE

BM1 ELEVATION = 395.89'
N 784473 E 1965526
BL STATION 9+23.00 78' RIGHT
R/R SPIKE IN BASE OF 18" PINE

BM2 ELEVATION = 449.69'
N 784750 E 1966247
BL STATION 16+77.00 81' RIGHT
R/R SPIKE IN BASE OF 24" POPLAR

PERMIT DRAWING
SHEET 4 OF 5

DITCH LEGEND
LEFT DITCH — - - —

SEE SHEET 4 FOR PLAN VIEW

5/14/99

8/22/2016
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$$$$USERNAME$$$$

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1		13+18/15+78	X			1268	2082	3350					
1		13+99/15+02		X		4027	469	4496					
TOTAL:						5295	2551	7846	0.0	0.0	0.0		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

ORANGE COUNTY
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SHEET 5 OF 5

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PROJECT REFERENCE NO.	SHEET NO.
B-5348	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

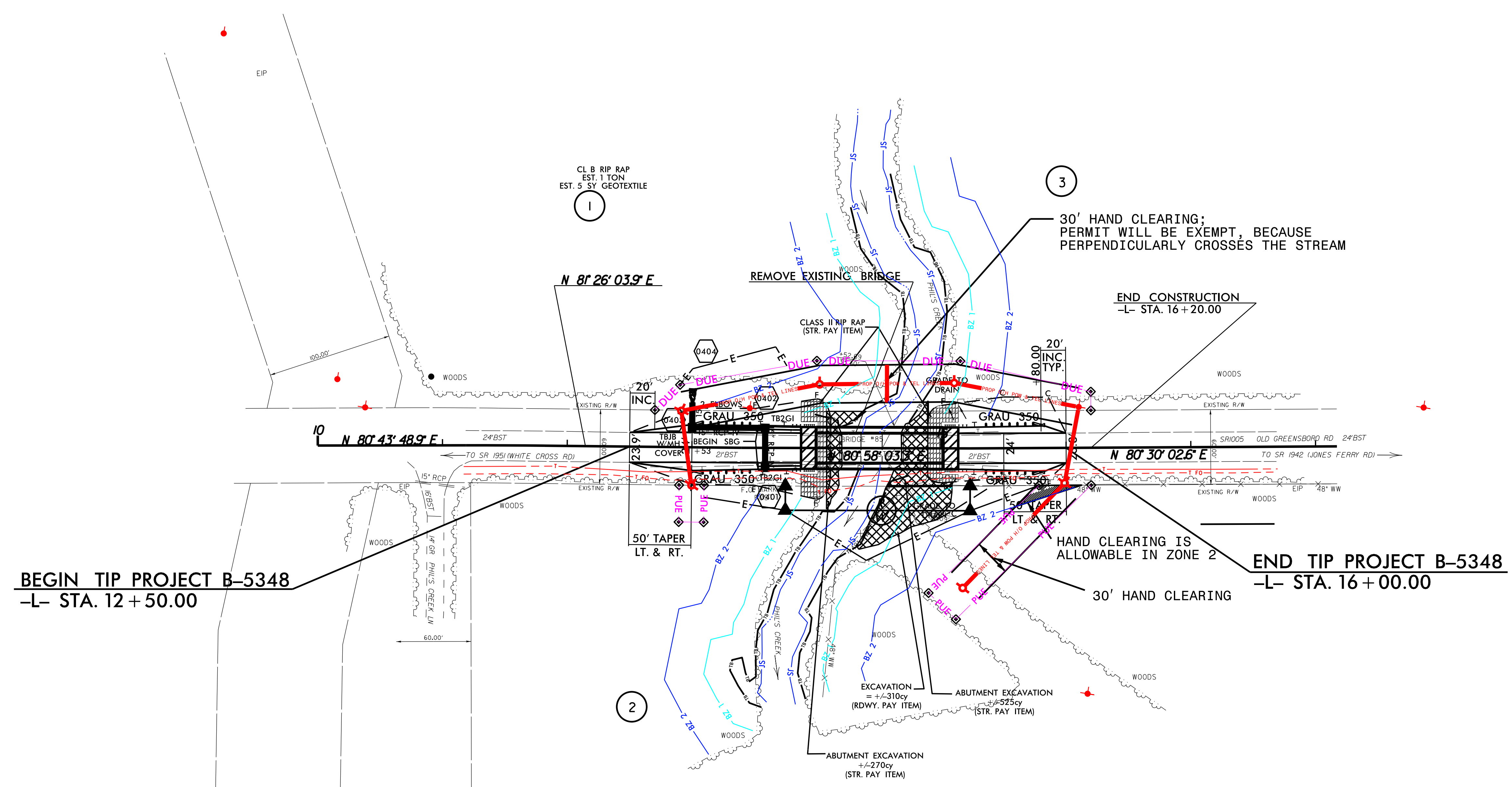
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY RELOCATION BY OTHERS
POWER POLES AND LINE
CREATED AUGUST 17,2016
REVISED JANUARY 17, 2017

-L-
PI Sta 11+50.27
Δ = 0° 42' 15.0" (RT)
D = 1° 07' 14.7"
L = 62.83'
T = 31.42'
R = 5,112.28'
SE = SEE PLANS

NAD 83 NA 2011

REVISIONS



CL B RIP RAP
EST. 1 TON
EST. 5 SY GEOTEXTILE
N 81° 26' 03.9" E
REMOVE EXISTING BRIDGE
CLASS II RIP RAP (STR. PAY ITEM)
30' HAND CLEARING;
PERMIT WILL BE EXEMPT, BECAUSE
PERPENDICULARLY CROSSES THE STREAM
END CONSTRUCTION
-L- STA. 16+20.00
N 80° 43' 48.9" E
N 80° 58' 03.5" E
N 80° 30' 02.6" E
GRAU 350
BEGIN TIP PROJECT B-5348
-L- STA. 12+50.00
END TIP PROJECT B-5348
-L- STA. 16+00.00
HAND CLEARING IS
ALLOWABLE IN ZONE 2
30' HAND CLEARING
50' TAPER
LT. & RT.
20' INC.
20' INC. TYP.
TO SR 1951 (WHITE CROSS RD)
TO SR 1942 (JONES FERRY RD)
SR1005 OLD GREENSBORO RD 24' BST
EXCAVATION = +/-310cy (RDWY. PAY ITEM)
ABUTMENT EXCAVATION +/-525cy (STR. PAY ITEM)
ABUTMENT EXCAVATION +/-270cy (STR. PAY ITEM)
WOODS
PHILS CREEK

ALLOWABLE IMPACTS ZONE 2 : 300 SQFT(114.6 FEET)

Utility Buffer Drawings
Sheet 1 of 2

8/17/99
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BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	O/H POWER LINE	-L- 15+59 / 16+12					300	300					
TOTAL:						0	300	300					

NOTES:
1. North side of bridge hand clearing will be exempt because line perpendicularly crosses the stream and impact is less than 150 linear feet (Impact is 30 linear ft).
2.South side of bridge hand clearing will be allowable in zone 2 and is considered impact other than perpendicular crossing.

N.C. DEPT. OF TRANSPORTATION
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SHEET 2 OF 2

Utility Buffer Drawings

Rev. May 2006