Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

October 4, 2016

MEMORANDUM TO: Mr. Louis Mitchell, P.E.
Division10 Engineer

FROM: Philip S. Harris, III, P.E., Manager
Natural Environment Section
Project Development and Environmental Analysis Unit

SUBJECT: Cabarrus County; Kannapolis – NC3 from Proposed West side bypass to SR 1691; Federal Aid No. STP-0003(6);WBS 39010.1.1; **TIP U-3440**

Attached are the US Army Corps of Engineers Individual Permit and N.C. Division of Water Resources (NCDWR) Water Quality Certification. All environmental permits have been received for the construction of the north section of the 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:

Mr. Randy Garris, P.E. State Contract Officer
Mr. Larry Thompson, Division Environmental Officer
Mr. Clarence Coleman, P.E., FHWA
Dr. Majed Al-Ghandour, P.E., Programming and TIP
Ms. Brenda Moore, P.E., Roadway Design
Mr. Tom Koch, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Undrea Major, PDEA
Mr. Philip Ayscue, Office of Inspector General
Ms. Beth Harmon, Division of Mitigation Services
Mr. Stephen R. Morgan, PE, Hydraulics

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

October 4, 2016

Regulatory Division

Action ID: SAW-2012-00417

North Carolina Department of Transportation,
Project Development and Environmental Analysis Unit
Attn: Mr. Phillip S. Harris, III, P.E., C.P.M.
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

In accordance with the written request of June 15, 2016 and the ensuing administrative record, enclosed is a Department of the Army (DA) Permit to authorize the discharge of fill material into waters of the US associated with the NC 3 (Mooresville Road) Improvement Project (TIP# U-3440) located along existing NC 3, authorized impacts include the permanent impact to 2,067 linear feet of stream channel (of which 255 linear feet is bank stabilization), the temporary impact to 398 lf of stream channel and the permanent impact to 0.05 acres of wetland in Kannapolis, Cabarrus County, North Carolina.

Any deviation in the authorized work will likely require modification of this permit. If a change in the authorized work is necessary, you should promptly submit revised plans to the Corps showing the proposed changes. You may not undertake the proposed changes until the Corps notified you that your permit has been modified.

Carefully read your permit. The general and special conditions are important. Your failure to comply with these conditions could result in a violation of Federal law. Certain significant general conditions require that:

a. You must complete construction before December 31, 2021.

b. You must notify this office in advance as to when you intend to commence and complete work.

c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

You should address all questions regarding this authorization to Ms. Crystal Amschler, in the Asheville Regulatory Field Office, telephone number (828) 271-7890, extension 231.

Thank you in advance for completing our Customer Survey Form. This can be accomplished by visiting our web-site at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0 and completing the survey on-line. We value your comments and appreciate your taking the time to complete a survey each time you interact with our office.

Sincerely,

for Kevin P. Landers Sr.
Colonel, U.S. Army
District Commander

Enclosures

Copy Furnished (with enclosures):

Chief, Source Data Unit
NOAA/National Ocean Service
Attn: Sharon Tear N/CS261
1315 East-West Hwy., Rm 7316
Silver Spring, Maryland 20910-3282

Copies Furnished with special conditions and plans:

Mr. Pete Benjamin
U.S. Fish and Wildlife Service
Raleigh Ecological Service Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Kenneth Riley, Ph.D.
Habitat Conservation Division
National Marine Fisheries Service Southeast Region
101 Pivers Island Road
Beaufort, North Carolina 28516

Mr. Todd Bowers
Oceans, Wetlands and Streams Protection Branch
Wetlands and Streams Regulatory Section
U.S. Environmental Protection Agency – Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303-8931

Mr. Doug Huggett
Division Coastal Management
N.C. Department of Environment and Natural Resources
400Commerce Avenue
Morehead City, North Carolina 28557

Dr. Pace Wilber
Habitat Conservation Division – Atlantic Branch
NOAA Fisheries Service
219 Fort Johnston Road
Charleston, South Carolina 29412

PROJECT COMMITMENTS

T.I.P Project No. U-3440
NC 3 (Moorseville Road)
Kannapolis Parkway to Dale Earnhardt Boulevard/Loop Road (SR 1691)
Cabarrus County
WBS Element No. 39010

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Project Development & Environmental Analysis Unit
A Memorandum of Agreement (MOA) has been completed between North Carolina Department of Transportation (NCDOT), the United States Army Corps of Engineers (USACE), and the North Carolina Historic Preservation Office (NC-HPO). The MOA is included in Appendix B of ~~this~~ *the* Finding of No Significant Impact Document. The MOA covers terms for the proposed project construction, impacts and mitigation for the historic resources.

City of Kannapolis / NCDOT
A Municipal Agreement between NCDOT and the City of Kannapolis will be made to cover the terms of cost sharing for the construction cost and maintenance of sidewalks on both sides of NC 3.

- *This Municipal Agreement was fully executed on August 10, 2016.*

Hydraulics Unit
The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT's Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). NCDOT will comply with all stormwater requirements through the Post-Construction Stormwater Program under the Department's NPDES Stormwater Permit (NC000250).

Division 10
The project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as built construction plans to the 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.

[continued on next page]

COMMITMENTS FROM PERMITTING

Division Construction, Roadside Environmental Unit

NCDWR WQC Specific Conditions

1. Channel relocations shall be completed and stabilized, and approved on site by NCDWR staff, prior to diverting water into the new channel. Stream banks shall be matted with coir-fiber matting. Vegetation used for bank stabilization shall be limited to native riparian vegetation, and should include establishment of a vegetated buffer on both sides of the relocated channel to the maximum extent practical. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested. Once the stream has been turned into the new channel, it may be necessary to relocate stranded fish to the new channel to prevent fish kills. [15A NCAC 02H .0506(b)(3

2. 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 the NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact the 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)]

3. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage. [15A NCAC 02H.0506(b)(2)]

4. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed. [15A NCAC 02H.0506(b)(2)]

5. For the streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species. [15A NCAC 02H.0506(b)(2)]

6. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species. [15A NCAC 02H.0506(b)(2)]

7. In areas where the receiving stream and embankments meet, Class II riprap shall be used to ensure bank stabilization of the heavily impacted urban streams. [15A NCAC 02H.0506(b)(2)]

DEPARTMENT OF THE ARMY PERMIT

Permittee: **NORTH CAROLINA DEPARTMENT OF TRANSPORATION (NCDOT)**
ATTN: MR. PHILIP S. HARRIS III, P.E., C.P.M.

Permit No.: **SAW-2012-00417**

Issuing Office: **CESAW-RG-A**

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: The NC 3 (Mooresville Road) Improvement Project (TIP# U-3440) involves the widening of existing NC 3 beginning at Kannapolis Parkway and extending 2.6 miles to terminate at Dale Earnhardt Boulevard/Loop Road in Kannapolis, Cabarrus County, North Carolina. The project will result in the permanent impact to 2,067 linear feet of stream channel (of which 255 linear feet is bank stabilization), the temporary impact to 398 lf of stream channel and the permanent impact to 0.05 acres of wetland

Project Location: The proposed project is located along NC 3 (Mooresville Road) Improvement Project (TIP# U-3440) is located along existing NC 3 (Mooresville Road) and begins at Kannapolis Parkway and extends 2.6 miles to terminate at Dale Earnhardt Boulevard/Loop Road in Kannapolis, Cabarrus County, North Carolina. The project corridor is adjacent to Irish Buffalo Creek and tributaries of Irish Buffalo Creek.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2021**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit,

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

*U.S. GOVERNMENT PRINTING OFFICE: 1986 - 717-425

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

10/04/2016

(PERMITTEE) **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**
ATTN: PHILIP S. HARRIS III, P.E., C.P.M. *(DATE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

04 Oct 2016

(DISTRICT COMMANDER) **KEVIN P. LANDERS, SR., COLONEL** *(DATE)*

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) *(DATE)*

*U.S. GOVERNMENT PRINTING OFFICE: 1986 - 717-425

SPECIAL CONDITIONS
ACTION ID. SAW-2012-00417
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NC 3 MOORESVILLE ROAD TIP No. U-3440

1. **CONSTRUCTION PLANS:** All work authorized by this permit must be performed in strict compliance with the attached plans, which are a part of this permit. Any modification to these plans must be approved by the US Army Corps of Engineers (Corps) prior to implementation.

2. **PLANS:** The permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Asheville Regulatory Field Office prior to any active construction in waters or wetlands.

3. **UNAUTHORIZED DREDGE OR FILL:** Except as authorized by this permit or any Corps approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

4. **MAINTAIN CIRCULATION AND FLOW OF WATERS:** Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

5. **PRE-CONSTRUCTION MEETINGS:** The permittee shall schedule and attend a preconstruction meeting between its representatives, the contractors representatives, and the Corps of Engineers, Asheville Field Office, NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all the terms and conditions contained with this Department of Army Permit. The permittee shall schedule the preconstruction meeting for a time frame when the Corps, and NCDWR Project Managers can attend. The permittee shall invite the Corps, and NCDWR Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedules and participate in the required meeting.

SPECIAL CONDITIONS
ACTION ID. SAW-2012-00417
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NC 3 MOORESVILLE ROAD - TIP No. U-3440

6. **THREATED AND ENDANGERED SPECIES:** All necessary precautions and measures will be implemented so that any activity will not kill, injure, capture, harass, or otherwise harm any protected federally listed species. While accomplishing the authorized work, if the permittee discovers or observes a damaged or hurt listed endangered or threatened species, the District Engineer will be immediately notified to initiate the required Federal coordination.

7. **CULVERTS:**

   A. Unless otherwise requested in the applicant's application and depicted on the approved work plans, culverts greater than 48 inches in diameter will be buried at least one foot below the bed of the stream. Culverts 48 inches in diameter and less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain existing channel slope. The bottom of the culvert must be placed at a depth below the natural stream bottom to provide for passage during drought or low flow conditions. Destabilizing the channel and head cutting upstream should be considered in the placement of the culvert.

   B. Measures will be included in the construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a pipe or culvert should not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed opening should be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level.

8. **SEDIMENT AND EROSION CONTROL:**

   A. During the clearing phase of the project, heavy equipment must not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.

   B. No fill or excavation impacts for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless the impacts are included on the plan drawings and specifically authorized by this permit.

C. The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades on those areas, prior to project completion.

D. The permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to assure compliance with the appropriate turbidity water quality standard. 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 assure compliance with the appropriate turbidity water quality standards. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4). Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures must be inspected and maintained regularly, especially following rainfall events. All fill material must be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

9. **WATER CONTAMINATION:** All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-3300 or (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

10. **TEMPORARY FILLS:** The permittee shall remove all temporary fills placed in waters of the U.S., to include authorized sediment and erosion control measures, and shall restore natural grades in these areas, prior to project completion. Affected upland areas must be revegetated with native vegetation within 60 days of completion of project construction. If vegetation cannot be planted due to the time of the year, all disturbed areas will be seeded with a native mix appropriate for the impacted area, and vegetation will be planted in the fall. A native seed mix may contain non-invasive small grain annuals (e.g., millet and rye grain) to ensure adequate cover while native vegetation becomes established.

SPECIAL CONDITIONS
ACTION ID. SAW-2012-00417
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NC 3 MOORESVILLE ROAD - TIP No. U-3440

11. **BORROW AND WASTE:** To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the Corps with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the permittee has that information. The permittee will coordinate with the Corps before approving any borrow or waste sites that are within 400 feet of any streams or wetlands.

12. **MITIGATION:** In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.

13. **CULTURAL RESOURCES:** The Permittee shall fully implement the Memorandum of Agreement between the Permittee, the North Carolina State Historic Preservation Officer and the Wilmington District US Army Corps of Engineers, signed October and November 2014, which is incorporated herein by reference and attached to this permit.

14. **SUBMERGED CULTRUAL RESOURCES:** If submerged cultural resources are encountered during the operation, the District Engineer will be immediately notified so that coordination can be initiated with the Underwater Archeology Unit (UAU) of the Department of Cultural Resources. In emergency situations, the permittee should immediately contact Mr. Chris Southerly at Fort Fisher (910/458-9042), so that a full assessment of the artifacts can be made.

15. **COMPLIANCE INSPECTION:** A representative of the Corps of Engineers will periodically and randomly inspect the work for compliance with these conditions. Deviations from these procedures may result in an administrative financial penalty and/or directive to cease work until the problem is resolved to the satisfaction of the Corps.

16. **NCDWR 401 Cert**: In accordance with 33 U.S.C. 1341(d), all conditions of the North Carolina Division of Water Resources 401 Water Quality Certification No. 4070 Dated September 30, 2016 are hereby incorporated as special conditions of this permit.

SPECIAL CONDITIONS
ACTION ID. SAW-2012-00417
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NC 3 MOORESVILLE ROAD - TIP No. U-3440

17. **PROHIBITIONS ON CONCRETE:** The permittee shall take measures to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with any water in or entering into waters of the United States. Water inside coffer dams or casings that has been in contact with concrete shall only be returned to waters of the United States when it no longer poses a threat to aquatic organisms (concrete is set and cured).

18. **NOTIFICATION OF CONSTRUCTION COMMENCEMENT AND COMPLETION:** The permittee shall advise the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

19. **CLEAN FILL:** Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act.

20. **PERMIT DISTRIBUTION:** The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, shall be available at the project site during construction and maintenance of this project.

21. **PERMIT REVOCATION:** The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

22. **MISCELLANEOUS:**

a. Violations of these conditions or violations of Section 404 of the Clean Water must be reported in writing to the Wilmington District U.S. Army Corps of Engineers within 24 hours of the permittee's discovery of the violation.

b. All conditions of the NCDENR Sediment and Erosion plan are hereby incorporated as special conditions of this permit.

c. Cleared wetland areas shall be re-vegetated with a wetland seed mix or a mix of native woody species. Fescue grass or any invasive species such as Lespedeza, shall not be used within the wetland areas.

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: North Carolina Department of Transportation **Action ID:** SAW-2012-00417
Project Name: The NC 3 (Mooresville Road) Improvement Project (TIP# U-3440) **County:** Cabarrus

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that to the U.S. Army Corps of Engineers (USACE) Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate mitigation Sponsors.

Instructions to Sponsor: The Sponsor must verify that the mitigation requirements (credits) shown below are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether or not they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated bank ledger to the Permittee, the USACE Project Manager, and the Wilmington District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements:

Permitted Impacts Requiring Mitigation* **8-digit HUC and Basin:** 03040105, Yadkin River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
1,812						

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03040105, Yadkin River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
3,624						

Mitigation Site Debited: NCDMS
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the USACE, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: _____

Name of Sponsor's Authorized Representative: _____

_____ _____
Signature of Sponsor's Authorized Representative **Date of Signature**

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the USACE is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the USACE is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. For authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by the Sponsor must be provided to the USACE within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the USACE has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the USACE Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the USACE, the Sponsor must obtain case-by-case approval from the USACE Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the USACE administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions:

This form is not valid unless signed below by the USACE Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the USACE Project Manager at the address below, and 3) the Wilmington District Mitigation Office, Attn: Todd Tugwell, 11405 Falls of Neuse Road, Wake Forest, NC 27587 (email: todd.tugwell@usace.army.mil).*** Questions regarding this form or any of the permit conditions may be directed to the USACE Project Manager below.

USACE Project Manager: Crystal Amschler
USACE Field Office: Asheville Regulatory Field Office
US Army Corps of Engineers
151 Patton Avenue, Room 208
Asheville, North Carolina 28801-5006

Email:

AMSCHLER.CRYSTAL.CAMILLE.1238614178

Digitally signed by AMSCHLER.CRYSTAL.CAMILLE.1238614178
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=AMSCHLER.CRYSTAL.CAMILLE.1238614178
Date: 2016.09.30 11:57:54 -04'00'

USACE Project Manager Signature | **Date of Signature** Click here to enter a date.

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

MEMORANDUM OF AGREEMENT
AMONG THE UNITED STATES ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION,
AND
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
FOR
WIDENING OF NC 3 FROM KANNAPOLIS PARKWAY TO LOOP ROAD IN KANNAPOLIS, CABARRUS COUNTY, NORTH CAROLINA
NCDOT TIP U-3440

WHEREAS, the United States Army Corps of Engineers (USACE) is considering the issuance of a permit to the North Carolina Department of Transportation (NCDOT) for the widening of NC 3 in Cabarrus County, North Carolina (the Undertaking); and

WHEREAS, the USACE has determined that the Undertaking will have an adverse effect upon the Juniper-Pine-Mooresville-Chestnut Mill Village and Frog Hollow Mill Village, two historic districts determined eligible for listing in the National Register of Historic Places (NRHP); and

WHEREAS, the USACE has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the USACE has notified the Advisory Council on Historic Preservation (Council) of the adverse effect and the Council has declined to comment or participate in the consultation; and

WHEREAS, NCDOT has participated in the consultation and has been invited by the USACE and North Carolina SHPO to be a signatory to this Memorandum of Agreement (MOA); and

WHEREAS, the City of Kannapolis (City) has participated in the consultation and has been invited by the USACE and North Carolina SHPO to be a concurring party to this MOA;

NOW, THEREFORE, the USACE, NCDOT and the North Carolina SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the Undertaking on the historic property.

STIPULATIONS

The USACE shall ensure that the following measures are made part of any permit issued to NCDOT for the Undertaking:

I. Photographic Recordation

Prior to the initiation of construction, NCDOT will record the existing conditions of Juniper-Pine-Mooresville-Chestnut Mill Village Historic District and Frog Hollow Mill Village Historic District located adjacent to or affected by the project area in accordance with the attached Historic Structures and Landscape Recordation Plan (Appendix A).

The results of the photographic recordation will be submitted to the North Carolina SHPO in advance of any work taking place. The SHPO shall have fifteen (15) days from receipt of the materials to review and comment. If no comments are received by NCDOT after the 15 days, work may commence.

Copies of the documentation will be deposited in the files of the North Carolina SHPO, NCDOT Historic Architecture Group, and the City.

II. Conduct Oral History and Gather Documentary Materials

NCDOT will work with the residents of the two historic districts and Kannapolis History Associates to compile a collective history of the former mill villages. NCDOT will work in consultation with the SHPO to develop a scope of work for a contract with a cultural resources consultant. NCDOT will draft the scope of work and provide it to SHPO and the City, who will have ten (10) days to offer comments. At a minimum, the consultant will be responsible for the following tasks:

1. Gathering oral histories from residents of the Juniper-Pine-Mooresville-Chestnut Mill Village and Frog Hollow Mill Villages. The consultant will determine the number and content of the interviews as well as the interviewees.
2. Providing training to residents of the Kannapolis community in how to conduct oral history projects and gather documentary materials.
3. Compiling documentary materials and digitizing images such as photos, scrapbooks, and other artifacts.
4. Preparing the materials so that they may be deposited at the North Carolina State Archives for public access.

III. Develop an Interpretive Exhibit

NCDOT, in consultation with the SHPO and in cooperation with the City, will develop an interpretive exhibit, which explores the history of Kannapolis as a mill town including mill housing. The exhibit will utilize the oral histories, historic photographs, and other gathered materials to convey the history of Canon Mills and its relationship with the workers and residents of Kannapolis, giving special attention to the history and development of the City's many mill villages. The location of the exhibit and the duration of its availability to the public will be determined among the NCDOT, SHPO, and the City. The exhibit materials will be collected and donated to

the City for their use within twelve (12) months after the consultant receives the notice to proceed with the documentation project.

IV. Retaining Walls

Any retaining walls constructed within the boundaries of the historic district will be stamped and stained or painted to resemble bricks. NCDOT will provide design plans and visual representations of the retaining walls to the USACE, SHPO, and the City for comment prior to construction.

V. Pedestrian Crosswalk

1. To maintain the historic and long-term connectivity between the historic districts, which straddle both sides of NC 3, NCDOT shall install and maintain a pedestrian crosswalk at the intersections of NC 3 and Loop Road/Dale Earnhardt Boulevard.

2. NCDOT shall also install a crosswalk at NC 3 and existing Pine Street. Pine Street will become a cul-de-sac. Therefore, NCDOT will create a pedestrian tie-in from Pine Street to the sidewalk on the opposite side of NC 3. NCDOT will provide design plans to USACE, SHPO, and the City for comment prior to construction.

3. NCDOT will provide the USACE, SHPO, and City with visual representation of the sidewalk, median, and pavement treatments for comment prior to construction. Both crosswalks will be stamped and stained to resemble bricks paving.

VI. Unanticipated Discovery

In accordance with 36 CFR 800.11(a), if NCDOT identifies additional cultural resource(s) during construction and determine them to be eligible for the NRHP, all work will be halted within the limits of the NRHP-eligible resource(s) and the USACE and North Carolina SHPO contacted. If after consultation with the Signatory Parties additional mitigation is determined necessary, the NCDOT, in consultation with the Signatory Parties, will develop and implement appropriate protection/mitigation measures for the resource(s). Inadvertent or accidental discovery of human remains will be handled in accordance with North Carolina General Statutes 65 and 70.

VII. Dispute Resolution

Should any of the Signatory or Parties object within (30) days to any plans or documentation provided for review pursuant to this Agreement, the USACE shall consult with the objecting party(ies) to resolve the objection. If the USACE or the objecting party(ies) determines that the objection cannot be resolved, the USACE will forward all documentation relevant to the dispute to the Council. Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

1. Provide the USACE with recommendations, which the USACE will take into account in reaching a final decision regarding the dispute, or

2. Notify the USACE that it will comment pursuant to 36 CFR Section

800.7(c) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by the USACE in accordance with 36 CFR Section 800.7 (c) (4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; USACE and NCDOT's responsibility to carry out all of the actions under this agreement that are not the subject of the dispute will remain unchanged.

VIII. Amendments

Should any of the Signatory Parties to this MOA believe that its terms cannot be carried out or that an amendment to the terms must be made, that party(ies) shall immediately consult with the other party(ies) to develop amendments in accordance with 36 CFR 800.6(c)(7). If an amendment cannot be agree upon, the dispute resolution process set forth in Stipulation IV will be followed.

IX. Termination

Any of the Signatory Party(ies) may terminate the agreement by providing notice to the other parties, provided that the signatories will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. Termination of this MOA will require compliance with 36 CFR 800. This MOA may be terminated by the execution of a subsequent MOA that explicitly terminates or supersedes its terms.

X. Duration

Unless terminated pursuant to Stipulation VI above, this MOA will be in effect until USACE, in consultation with the other Signatory Parties, determines that all of its terms have satisfactorily been fulfilled or if NCDOT is unable or decides not to construct the Undertaking.

Execution of this MOA by USACE, NCDOT, and the North Carolina SHPO, and implementation of its terms, evidence that USACE has afforded the Council an opportunity to comment on the Undertaking, and that USACE has taken into account the effects of the Undertaking on the historic properties.

AGREED:

By: _____ Date: 14 Nov 2014

Kevin P. Landers, Sr., Colonel
US Army District Commander
United States Army Corps of Engineers, Wilmington District

By: _____ Date: 10/22/14

Kevin Cherry, Ph.D.
North Carolina State Historic Preservation Officer
North Carolina Department of Cultural Resources

By: _____ Date: 10/20/14

Robert Andrew Joyner, P.E.
Human Environment Section Head
North Carolina Department of Transportation

MEMORANDUM OF AGREEMENT
AMONG THE UNITED STATES ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION,
AND
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
FOR
WIDENING OF NC 3 FROM KANNAPOLIS PARKWAY TO LOOP ROAD IN KANNAPOLIS, CABARRUS COUNTY, NORTH CAROLINA
NCDOT TIP U-3440

FILED:

By: _____ Date: _____
Advisory Council on Historic Preservation

MEMORANDUM OF AGREEMENT
AMONG THE UNITED STATES ARMY CORPS OF ENGINEERS,
THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION,
AND
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
FOR
WIDENING OF NC 3 FROM KANNAPOLIS PARKWAY TO LOOP ROAD IN KANNAPOLIS, CABARRUS COUNTY, NORTH CAROLINA
NCDOT TIP U-3440

Execution of this Memorandum of Agreement by FHWA, NCDOT, the North Carolina SHPO, and the EBCI, its subsequent filing with the Council, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the Undertaking, and that FHWA has taken into account the effects of the Undertaking on the historic properties.

CONCUR:

Mike Legg
City Manager, City of Kannapolis

Date: 10-28-14

APPENDIX A

Historic Structures and Landscape Recordation Plan For Widening of NC 3 from Kannapolis Parkway to Loop Road in Kannapolis, Cabarrus County, North Carolina NCDOT TIP U-3440

Photographic Requirements

- Elevations and oblique views of the 34 properties affected by the U-3440 project within the historic districts of Juniper-Pine-Mooresville-Chestnut Mill Village and Frog Hollow Mill Village.
- Representative streetscapes within the affected areas of historic districts.

Photographic Format

- Color digital images (all views). Images are to be shot on a SLR digital camera with a minimum resolution of 6 megabyte pixels, at a high quality (preferably RAW) setting, to be saved in TIF format as the archival masters and labeled according to the State Historic Preservation Office standards.
- Images provided to the City will be in JPEG format.
- All processing to be done to archival standards.
- Labeled map with a key to the shots and photographs
- The accompanying printed inventory of the images – including subject, location, date, and photographer information for each image – is to be completed according to the State Historic Preservation Office standards.

Copies and Curation

- One (1) set of all above mentioned photographic documentation, including a compact disc of labeled images, will be deposited with the North Carolina Office of Archives and History/Historic Preservation Office to be made a permanent part of the statewide survey and iconographic collection.
- One (1) contact sheet shall be deposited in the files of the Historic Architecture Group of NCDOT.
- One (1) set of all above mentioned photographic documentation, including a compact disc of labeled images, will be deposited with the City of Kannapolis for their records.

Environmental Quality

PAT MCCRORY
Governor
DONALD R. VAN DER VAART
Secretary
JAY ZIMMERMAN
DWR Director

September 30, 2016

Mr. Philip S. Harris, III, P.E., CPM
Natural Environment Section Head
Project Development and Environmental Analysis
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed improvements to Highway 3 in Cabarrus County, TIP U-3440.
NCDWR Project No. 20160605

Dear Mr. Harris:

Attached hereto is a copy of Certification No. WQC004070 issued to The North Carolina Department of Transportation (NCDOT) dated September 30, 2016.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

S. Jay Zimmerman, Director
Division of Water Resources

Attachments

Electronic copy only distribution:
Crystal Amschler, US Army Corps of Engineers, Asheville Field Office
Larry Thompson, Division 10 Environmental Officer
Rodger Rochelle, NC Department of Transportation
Carla Dagnino, NC Department of Transportation
Dr. Cynthia Van Der Wiele, US Environmental Protection Agency
Marella Buncick, US Fish and Wildlife Service
Marla Chambers, NC Wildlife Resources Commission
Beth Harmon, Division of Mitigation Services
File Copy

401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Resources (NCDWR) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact 0.05 acres of jurisdictional wetlands, and 2043 linear feet of jurisdictional streams in Cabarrus County. The project shall be constructed pursuant to the application dated received June 16, 2016 as well as the modifications submitted on September 22, 2016 from the Division of Water Resources additional information request. The authorized impacts are as described below:

Stream Impacts in the Yadkin River Basin

Site	Temporary Fill in Perennial Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Bank Stabilization (linear ft)	Permanent Bank Stabilization (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
S1		300			300	300
MB	51	214			265	214
IBC	96		63	37	196	0 (<150 lf)
S2	22	251			273	251
S3		126	9	54	189	180
S4		181	27	59	267	240
S5		105	18	24	147	0 (< 150 lf)
S6	10	318	17	15	360	333
S7-1	31	24	8	12	150	36
S7-2		265	10	42	317	307
S7-3		170	36	12	218	182
Total	210	1954	188	255	2682	2043

Total Stream Impact for Project: 2682 linear feet

DWR Mitigation Impact Totals: 2043 linear feet

Wetland Impacts in the Yadkin River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
WA	0.05						0.05
Total							0.05

Total Wetland Impact for Project: 0.05 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the Yadkin **River Basin** in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated received June 16, 2016. Should your project change, you are required to 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 any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

Specific Conditions

1. Channel relocations shall be completed and stabilized, and approved on site by NCDWR staff, prior to diverting water into the new channel. Stream banks shall be matted with coir-fiber matting. Vegetation used for bank stabilization shall be limited to native riparian vegetation, and should include establishment of a vegetated buffer on both sides of the relocated channel to the maximum extent practical. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested. Once the stream has been turned into the new channel, it may be necessary to relocate stranded fish to the new channel to prevent fish kills. [15A NCAC 02H .0506(b)(3)]

2. 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 down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by the NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact the 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)]

3. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage. [15A NCAC 02H.0506(b)(2)]

4. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed. [15A NCAC 02H.0506(b)(2)]

5. For the streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species. [15A NCAC 02H.0506(b)(2)]

6. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species. [15A NCAC 02H.0506(b)(2)]

7. In areas where the receiving stream and embankments meet, Class II riprap shall be used to ensure bank stabilization of the heavily impacted urban streams. [15A NCAC 02H.0506(b)(2)]

General Conditions

1. 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]

2. 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)]

3. 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)]

4. 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)]

5. 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)]

6. 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)]

7. 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)]

8. 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)]

9. 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)]

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

11. 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]

12. 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)]

13. 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)]

14. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization, including all non-commercial borrow and waste sites associated with the project, 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]

15. 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.

16. 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)]

17. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer 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)]

18. Native riparian vegetation **(ex. Salix nigra, juncus spp., carex spp, et al)** 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.0506(b)(2)]

19. 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)

20. 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.

21. 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)

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

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 the 30th day of September 2016

DIVISION OF WATER RESOURCES

S. Jay Zimmerman, Director

WQC No. 004070

Environmental Quality

PAT MCCRORY
Governor
DONALD R. VAN DER VAART
Secretary
JAY ZIMMERMAN
DWR Director

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 _____

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: U-3440 **County(ies):** Cabarrus

General Project Information

Project No.:	U-3440	**Project Type:**	Roadway Relocation	**Date:**	9/7/2016
NCDOT Contact:	Stephen Morgan, PE	**Contractor / Designer:**	John Shirley, PE / Stantec Consulting Inc.		
Address:	Design Support Group 1020 Birch Ridge Drive Raleigh, NC 27610	**Address:**	801 Jones Franklin Road Suite 300 Raleigh NC 27606		
Phone:	919-707-6739	**Phone:**	919-851-1919		
Email:	smorgan@ncdot.gov	**Email:**	john.shirley@stantec.com		
City/Town:	Kannapolis	**County(ies):**	Cabarrus		
River Basin(s):	Yadkin-Pee Dee	**CAMA County?**	No		
Primary Receiving Water:	Irish Buffalo Creek	**NCDWQ Stream Index No.:**	13-17-9-(2)		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**	Class C			
	Supplemental:	None			
Other Stream Classification:					
303(d) Impairments:	None				
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	2.646 miles	**Surrounding Land Use:**	urban		
	Proposed Project		**Existing Site**		
Project Built-Upon Area (ac.)	31.25 ac.		20.00 ac.		
Typical Cross Section Description:	Typical cross section varies however along the -L- line there is double 11' travel lanes on left and right of the project with 5' bike lanes on both sides of the road.				
Average Daily Traffic (veh/hr/day):	Design/Future:	16800/23900	Existing:	16800/2015	
General Project Narrative:	The NCDOT proposed to improve NC 3 (Mooresville Road) from the Kannaplolis Parkway to Dale Earnhardt Boulevard/ Loop Road (SR 1691). The proposed improvements will widen Mooresville Road to a four lane divided facilty. The typical section will consist of two 11 foot travel lanes and a 5 foot bicycle lane in each direction, with a 23.5 foot wide grass median. Sidewalks are proposed on both sides of the proposed facility for the entire length of the project. The project is approximately 2.6 miles in length.				

References

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: U-3440 **County(ies):** Cabarrus

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
6	L37+00 LT L40+15 LT	Stream	Perennial	Miller Branch	S1	N/A	C	None	Fill	N/A	
6	L40+61 RT	Stream	Perennial	Miller Branch	MB	N/A	C	None	Culvert	N/A	
8	L68+25	Stream	Perennial	Irish Buffalo Creek	IBC	13-17-9-(2)	C	None	Fill	N/A	
8	L70+31	Wetland	Wetland	Tributary to Irish Buffalo Creek	WA	N/A	C	None	Fill	N/A	
8	L73+02	Stream	Perennial	Tributary to Irish Buffalo Creek	S2	N/A	C	None	Fill	N/A	
9	86+12	Stream	Perennial	Tributary to Irish Buffalo Creek	S3	N/A	C	None	Culvert	N/A	
10	97+30	Stream	Perennial	Tributary to Irish Buffalo Creek	S4	N/A	C	None	Culvert	N/A	
11	L109+75	Stream	Perennial	Tributary to Irish Buffalo Creek	S5	N/A	C	None	Culvert	N/A	
12	L117+50	Stream	Perennial	Irish Buffalo Creek Tributary 3	S6	N/A	C	None	Fill	N/A	
12	Y15 12+25	Stream	Perennial	Tributary to Irish Buffalo Creek Tributary 3	S7-1	N/A	C	None	Culvert	N/A	
12	L126+30	Stream	Perennial	Tributary to Irish Buffalo Creek Tributary 3	S7-2	N/A	C	None	Stabilization	N/A	
12	L134+38	Stream	Perennial	Tributary to Irish Buffalo Creek Tributary 3	S7-3	N/A	C	None	Fill	N/A	

* List all stream and surface water impact locations regardless of jurisdiction or size.

Equalizer Pipes to be noted as a minimization of impacts.

All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

See Attachment

References

Description of Minimization of Impacts or Mitigation

Site S1: Includes channel relocation rather than piping. Site MB: Pipe outfall located 80' from stream channel in riprap lined ditch. Box culvert includes baffles with low flow channel and sills to retain native bed material. Site IBC: Pipe outfalls located 200'-300' from channel. Bridge bents located on top of banks to prevent permanent surface water impacts. Site S2: Includes stream channel relocation rather than piping. Site S3: Includes riprap on banks only at pipe inlet and outlet to minimize permanent surface water impacts. Site S4: Includes riprap on banks only at pipe outlet to minimize permanent surface water impacts. Pipe buried 1' below channel bed. Site S5: Includes riprap on banks only at pipe inlet and outlet to minimize permanent surface water impacts. Site S6: Box culvert includes baffles with low flow channel and sills to retain native bed material. Pipe outfall located 140' from channel. Site S7-1: Pipe outfall located 40' from channel. Site S7-2: Includes riprap on banks only at pipe inlet and outlet to minimize permanent surface water impacts. Site S7-3: Includes riprap on banks only at pipe outlet to minimize permanent surface water impacts.

09/08/15

TIP PROJECT: U-3440

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

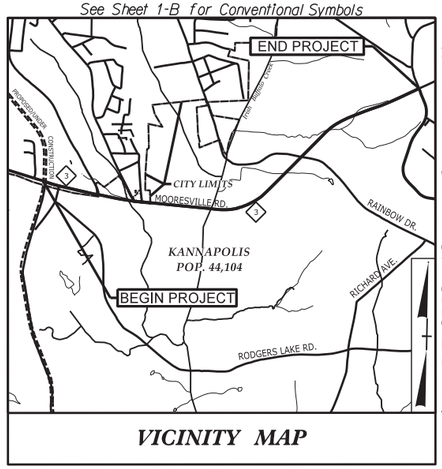
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3440	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
39010.1.1	STP-0003(6)	PE	

PERMIT DRAWING
SHEET 1 OF 23

LOCATION: NC 3, PROPOSED WEST SIDE BYPASS TO SR 1691 (LOOP ROAD) IN KANNAPOLIS

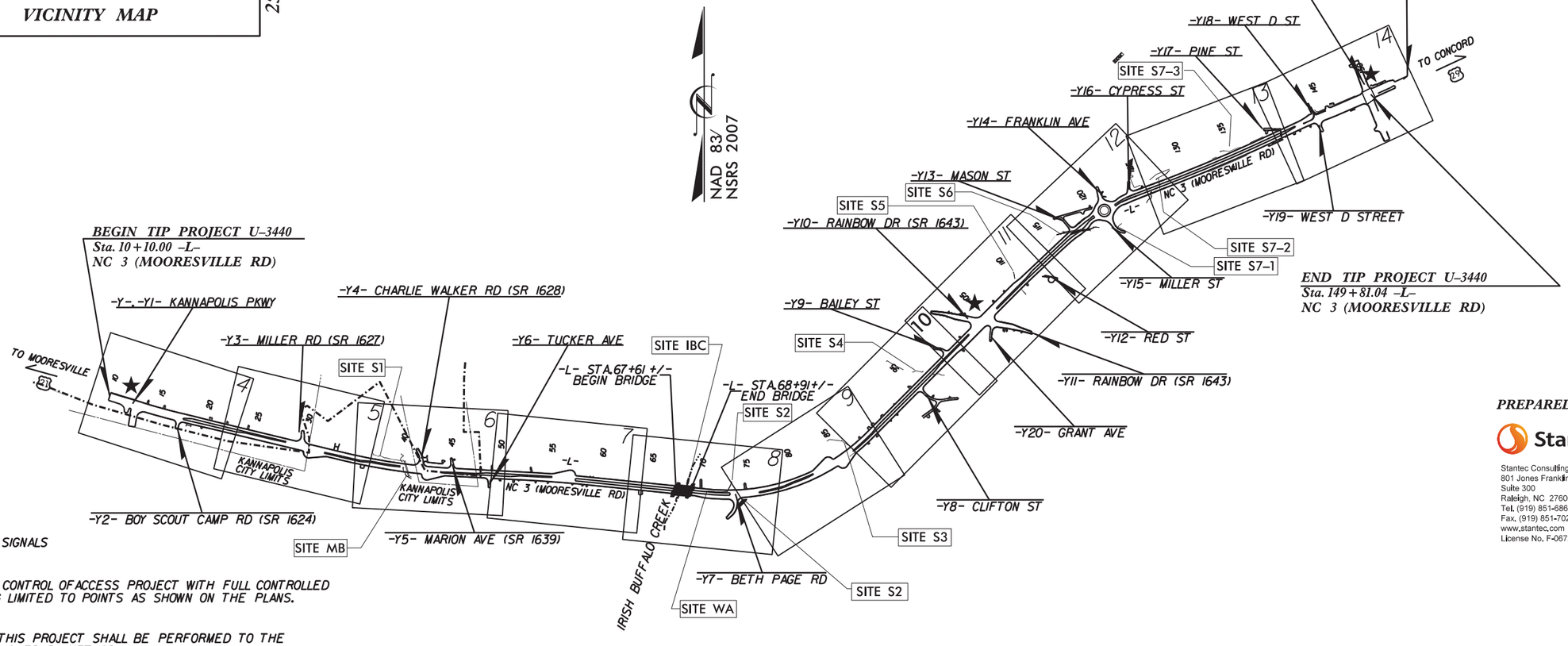
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND SIGNALS

WETLAND AND SURFACE WATER IMPACTS PERMIT



VICINITY MAP

NAD 83/
NSRS 2007



★ REVISED SIGNALS

THIS IS A NO CONTROL OF ACCESS PROJECT WITH FULL CONTROLLED ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PREPARED BY:

Stantec

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2015	=	16,800
ADT 2035	=	23,900
DHV	=	12 %
D	=	60 %
T	=	9 % *
V	=	50 MPH
HIST. AREA V	=	40 MPH

*(TTST 7% + DUALS 2%)

FUNC CLASS = MINOR ARTERIAL

REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3440	=	2.621 MILES
LENGTH STRUCTURE TIP PROJECT U-3440	=	0.025 MILE
TOTAL LENGTH TIP PROJECT U-3440	=	2.646 MILES

Prepared for the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 29, 2015

LETTING DATE: OCTOBER 18, 2016

MICHAEL LINDGREN, P.E.
PROJECT ENGINEER

MICHAEL LITTLEFIELD, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT: BRENDA MOORE, PE
ROADWAY DESIGN ENGINEERING COORDINATION SECTION ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

20150407
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U-3440_Permit Drawings_20150407.pdf

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NOTE: SEE SHEET 15 THRU 16 FOR -L- PROFILE
SEE SHEET 21 FOR -Y4-, -Y5-, & -Y6- PROFILE
SEE SHEET 2-G FOR -Y4- INTERSECTION DETAIL

-Y4- (CHARLIE WALKER ROAD)
2015 ADT 3600
2035 ADT 2900
1500/1100 2100/1800
-L- (NC 3) 14200 22900 14800 23600

NAD 83/NSRS 2007

50 25 0 50 100

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PROJECT REFERENCE NO.	SHEET NO.
U-3440	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 2 OF 23

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S DENOTES IMPACTS IN SURFACE WATER

KANNAPOLIS CITY LIMITS

SITE S1

SITE MB

4A WEST OAKS II, LLC

5 BEAVER, KERRY D.

6 VSP BUSINESS, LLC

7 BARR, PAUL K.

8 CRAINSHAW, WAYNE M.

9 MARBURGER, KENNETH D.

10 CRAINSHAW, RANDY C.

12 WILKINSON, JIMMY R.

HERBERT, BARBARA L.

SR 1628 CHARLIE WALKER RD

NC 3 MOORESVILLE RD 24' BST

NC 3 MOORESVILLE RD 22' BST

NC 3 MOORESVILLE RD 25' BST

MATCHLINE -L- STA 36+00.00 SEE SHEET 5

MATCHLINE -L- STA 50+00.00 SEE SHEET 7

LATERAL 3' BASE DITCH
LINE WITH CL 1 RIP RAP
EST. 101 TONS
EST. 136 CY DDE
EST. 183 SY GEOTEXTILE
SEE DETAIL 6A

LATERAL 3' BASE DITCH
LINE WITH CL B RIP RAP
EST. 231 TONS
EST. 1184 CY DDE
EST. 337 SY
SEE DETAIL 6A

CHANNEL CLEANOUT
CL. 1 RIP RAP
EST. 90 TONS
EST. 44 CY DDE

TEMPORARY SURFACE WATER IMPACTS

LATERAL 3' BASE DITCH
LINE WITH CL 1 RIP RAP
EST. 79 TONS
EST. 399 CY DDE
EST. 143 SY GEOTEXTILE
SEE DETAIL 6B

CL. 1 RIP RAP
EST. 24 TONS
EST. 13 CY DDE
SEE DETAIL 6B

CHANNEL CLEANOUT

TEMPORARY SURFACE WATER IMPACTS

MILLER BRANCH

BERM DITCH
SEE DETAIL 6C

CL. B RIP RAP
2 TONS
GEOTEXTILE 7 SY

TIE TO EXISTING DITCH

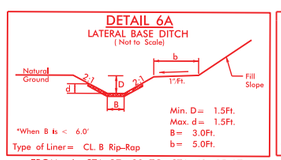
I

II

2015 ADT
2035 ADT
-Y5- (MARION AVE.)
300/400
100/100 200/300
-L- (NC 3) 14800 23600 14900 23800

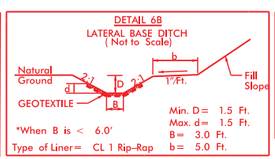
-L- (NC 3) 14900 23800 15100 23900
100/100 200/300
200/300
2015 ADT
2035 ADT
-Y6- (TUCKER AVE.)

DETAIL 6A
LATERAL BASE DITCH
(Not to Scale)



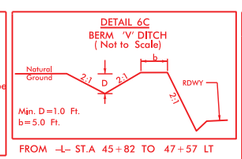
*When B is < 6.0'
Min. D= 1.5Ft.
Max. d= 1.5Ft.
B= 3.0Ft.
b= 5.0Ft.
Type of Liner= CL B Rip-Rap
FROM -L- STA. 37+00 TO STA. 40+15 LT

DETAIL 6B
LATERAL BASE DITCH
(Not to Scale)



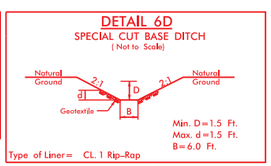
*When B is < 6.0'
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3.0 Ft.
b= 5.0 Ft.
Type of Liner= CL 1 Rip-Rap
FROM -L- STA. 40+35 TO 41+31 LT
FROM -L- STA. 40+30 TO 41+05 RT

DETAIL 6C
BERM 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.
b=5.0 Ft.
FROM -L- ST.A 45+82 TO 47+57 LT

DETAIL 6D
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=6.0 Ft.
Type of Liner= CL 1 Rip-Rap
FROM -L- STA. 40+88 TO STA. 41+09 RT

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2015HEC
13340
13340 Permit Drawings 20150407.pdf

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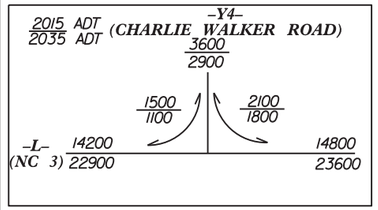
NOTE: SEE SHEET 15 THRU 16 FOR -L- PROFILE
SEE SHEET 21 FOR -Y4-, -Y5-, & -Y6- PROFILE
SEE SHEET 2-G FOR -Y4- INTERSECTION DETAIL



NAD 83/NSRS 2007

50 25 0 50 100

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PROJECT REFERENCE NO.	SHEET NO.
U-3440	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 3 OF 23

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

KANNAPOLIS CITY LIMITS

HERBERT, BARBARA L.

5 BEAVER, KERRY D.

6 VSP BUSINESS, LLC

7 BARR, PAUL K.

10

SITE S1

4A WEST OAKS II, LLC

LATERAL 3' BASE DITCH LINE WITH CL 1 RIP RAP
EST. 101 TONS
EST. 136 CY DDE
EST. 183 SY GEOTEXTILE
SEE DETAIL 6B

LATERAL 3' BASE DITCH LINE WITH CL B RIP RAP
EST. 231 TONS
EST. 1184 CY DDE
EST. 337 SY
SEE DETAIL 6A

CHANNEL CLEANOUT
CL 1 RIP RAP
EST. 90 TONS
EST. 44 CY DDE

TEMPORARY SURFACE WATER IMPACTS

MATCHLINE -L- STA 36+00.00 SEE SHEET 5

+00.00
60.00' RT
75.00' RT

SITE MB

LATERAL 3' BASE DITCH LINE WITH CL 1 RIP RAP
EST. 79 TONS
EST. 399 CY DDE
EST. 143 SY GEOTEXTILE
SEE DETAIL 6B

CL 1 RIP RAP
EST. 24 TONS
EST. 13 CY DDE
SEE DETAIL 6B

CHANNEL CLEANOUT

TEMPORARY SURFACE WATER IMPACTS

MILLER BRANCH

RETAIN

CRAINSHAW, RANDY C.

8 CRAINSHAW, WAYNE M.

9 MARBURGER, KENNETH D.

BERM DITCH SEE DETAIL 6C

24" CSP

CL B RIP RAP
2 TONS
GEOTEXTILE 7 SY

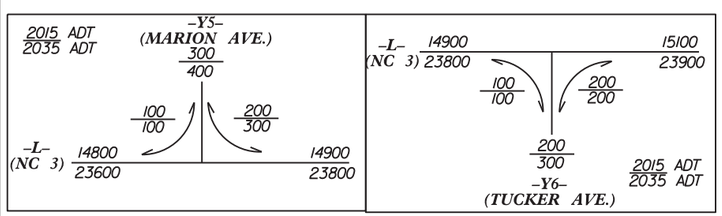
TIE TO EXISTING DITCH

12 WILKINSON, JIMMY R.

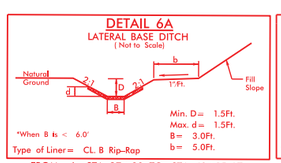
MATCHLINE -L- STA 50+00.00 SEE SHEET 7

1

11



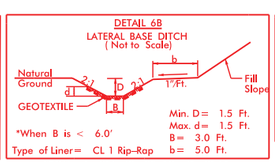
DETAIL 6A
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap

FROM -L- STA. 37+00 TO STA. 40+15 LT

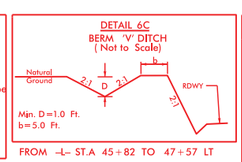
DETAIL 6B
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CL 1 Rip-Rap

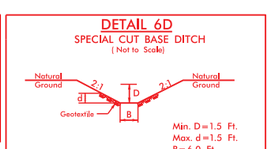
FROM -L- STA. 40+35 TO 41+31 LT
FROM -L- STA. 40+30 TO 41+05 RT

DETAIL 6C
BERM 'V' DITCH
(Not to Scale)



FROM -L- ST.A 45+82 TO 47+57 LT

DETAIL 6D
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner= CL 1 Rip-Rap

FROM -L- STA. 40+88 TO STA. 41+09 RT

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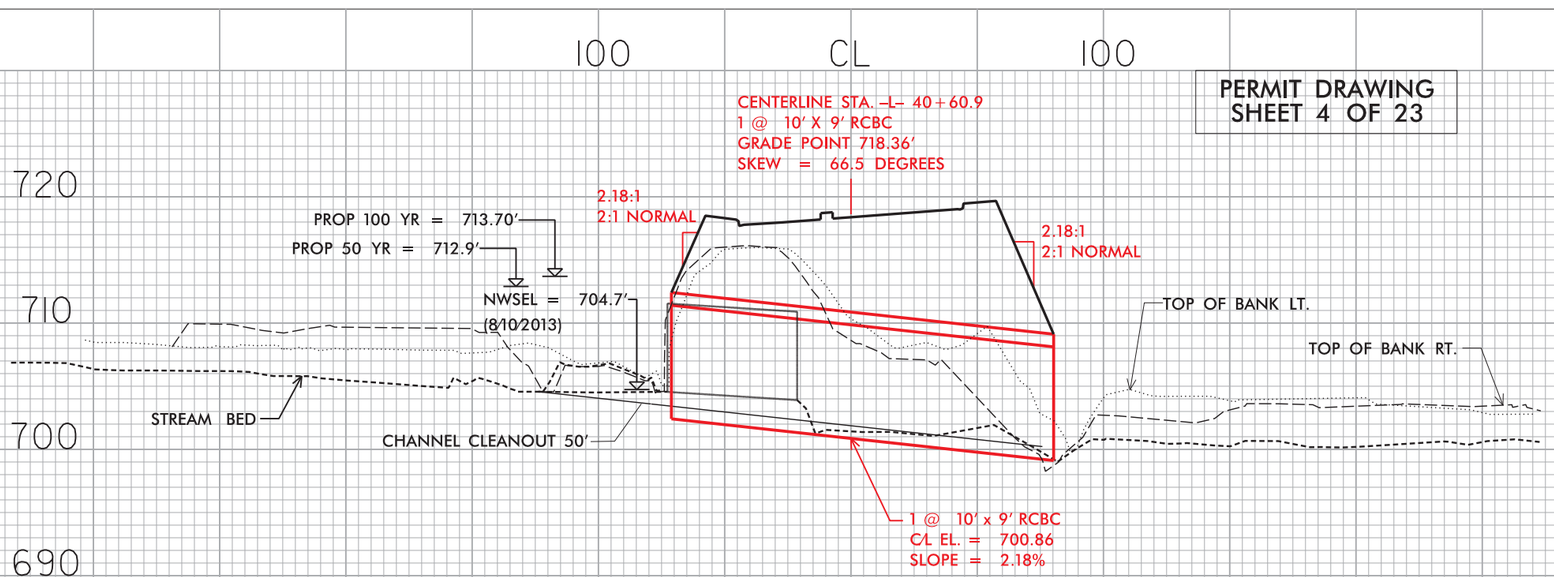
13340 Permit Drawings 20150407.pdf

PERMIT DRAWING
SHEET 4 OF 23



NCDOT PERFORMANCE TABLE

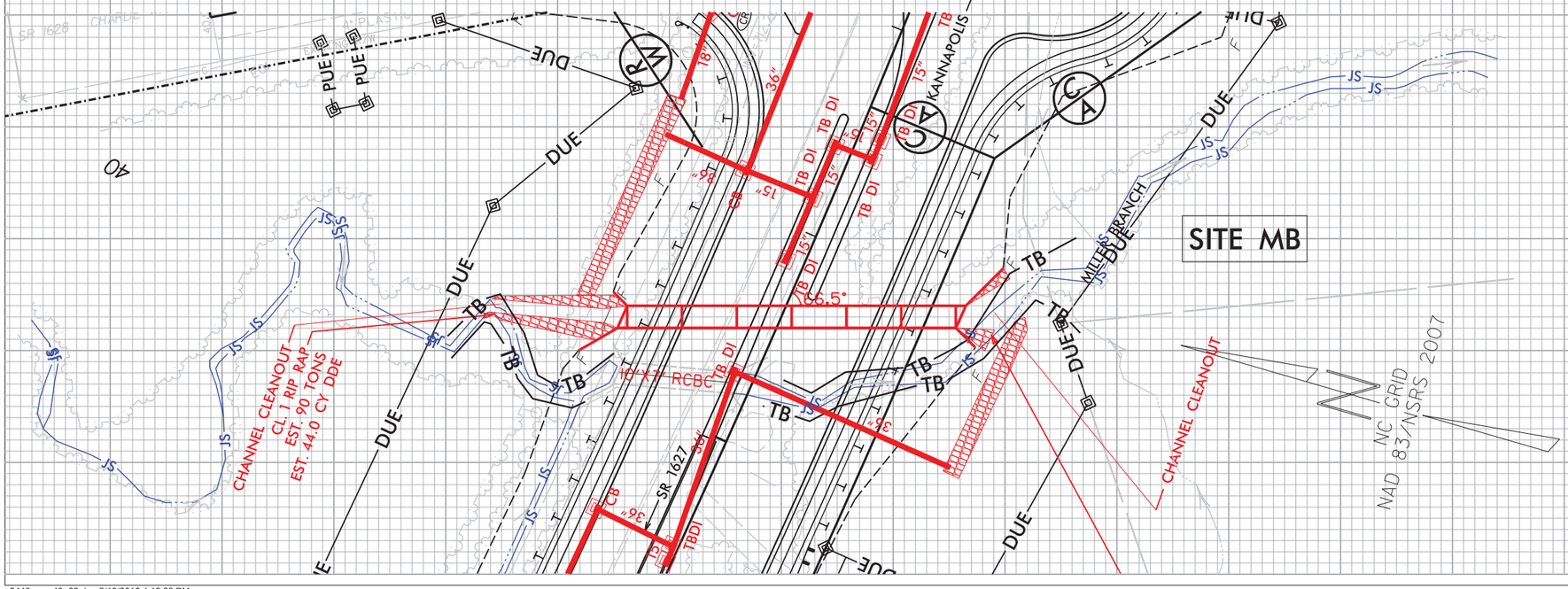
FREQUENCY	10yr.	25yr.	50yr.	100yr.	500yr.
NATURAL	708.4	709.1	709.4	709.52	709.6
EXISTING	711.2	713.3	714.8	715.82	716.5
REVISED	710.1	712.1	712.9	713.70	716.5

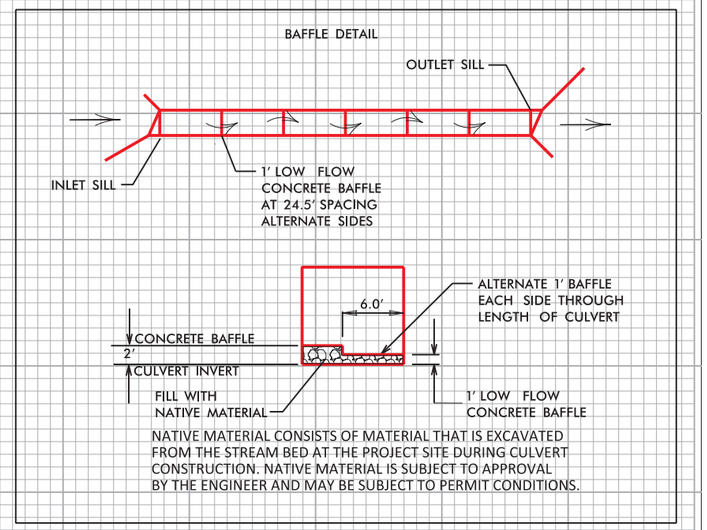
@SECTION REV. 6773; CE 6800
38' (REV) 18' (CE) U/S FROM C/L OF CULVERT

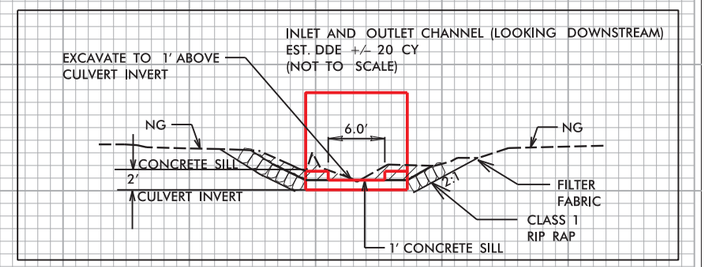
FEMA PERFORMANCE TABLE

	100yr.
DUPLICATE EFFECTIVE	N/A
CORRECTED EFFECTIVE	712.87
REVISED	711.63

@SECTION REV. 6773; CE 6800
38' (REV) 18' (CE) U/S FROM C/L OF CULVERT







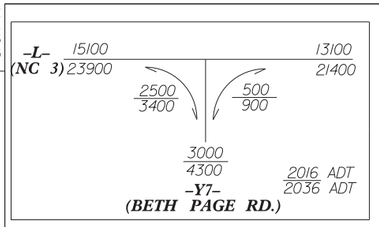
NOTES:
1. THE EDGE OF THE LOW FLOW CHANNEL SHALL BE ARMORED WITH BOULDERS. THE DEPTH OF ARMOR PROTECTION SHOULD EXTEND 1.5' BELOW THE STREAM BED LINED WITH COIR FIBER MATTING.

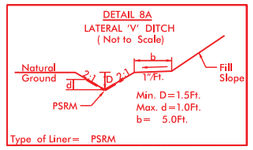
2. EDGE ARMOR CAN BE NATURAL STREAM BOULDERS OR EXTRACTED FROM CLASS I RIP RAP OR SHOT ROCK MATERIAL AND CAN BE CUBICAL OR RECTANGULAR IN NATURE.

3. ACCEPTABLE BOULDERS FOR THE EDGE ARMOR SHALL HAVE THE FOLLOWING MINIMUM DIMENSIONS; 3'X2'X1'. UNSUITABLE EDGE ARMOR MATERIAL THAT REMAINS FROM CLASS I RIP RAP OR SHOT ROCK STORES, MAY BE USED IN BACK FILL OF THE OVER BANK AREA OR DISCARDED.

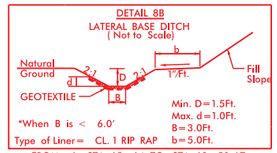
8/17/99

REVISIONS

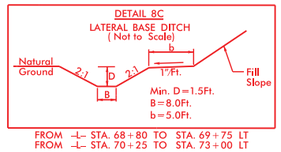




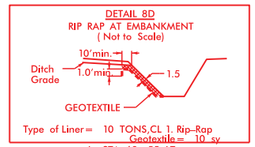
FROM -L- STA. 69+44 TO STA. 73+00 RT



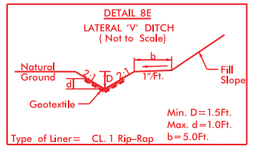
FROM -L- STA. 65+64 TO STA. 68+50 LT
FROM -L- STA. 65+36 TO STA. 67+56 RT



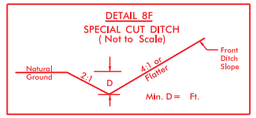
FROM -L- STA. 68+80 TO STA. 69+75 LT
FROM -L- STA. 70+25 TO STA. 73+00 LT



-L- STA. 68+55 LT
-L- STA. 67+56 RT
-L- STA. 67+95 RT



FROM -L- STA. 67+90 to 69+44 RT



FROM -Y7- STA. 11+38 TO 12+00 RT

PERMIT DRAWING SHEET 5 OF 23

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-3440	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

50 25 0 50 100

NAD 83/NSRS 2007

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

SITE IBC

SITE WA

SITE S2

(10) CAROLINAS CASTLE & COOKE REALTY LLC

(14) OVERCASH TRUSTEE, EDWARD C.

(21) WILKINSON, LESTER L.

(22) HAMMONDS, WADE L.

(20) BAKER, JERRY H.

(19) WILKINSON, LESTER L.

(19A) CITY OF KANNAPOLIS

LINE WITH CL 1 RIP RAP
EST. 252 TONS
EST. 81 CY DDE
EST. 473 SY GEOTEXTILE
SEE DETAIL 8B

TEMPORARY SURFACE WATER IMPACTS

CL. 1 RIP RAP AT EMBANKMENT
EST. 10 SY GEOTEXTILE
SEE DETAIL 8D

LATERAL 8' BASE DITCH
EST. 162 CY DDE
SEE DETAIL 8C

PLACE RIPRAP ON BANKS ONLY. KEY IN 12" BELOW DITCH BOTTOM.

LATERAL 8' BASE DITCH
EST. 297 CY DDE
SEE DETAIL 8C

CL. B RIP RAP
EST. 5 TONS
EST. 14 SY GEOTEXTILE

BANK STABILIZATION

RIP RAP
16 TONS
GEOTEXTILE 50 SY

JB w/SLAB LID

REMOVE

LATERAL 3' BASE DITCH
LINE WITH CL 1 RIP RAP
EST. 194 TONS
EST. 188 CY DDE
EST. 364 SY GEOTEXTILE
SEE DETAIL 8B

LATERAL V DITCH
LINE WITH CL 1 RIP RAP
EST. 126 TONS
EST. 169 CY DDE
EST. 203 SY GEOTEXTILE
SEE DETAIL 8E

LATERAL V DITCH
LINE WITH PSRM
EST. 176 SY
EST. 276 CY DDE
SEE DETAIL 8A

SPECIAL CUT DITCH
SEE DETAIL 8F

CL. B RIP RAP
EST. 8 TONS
EST. 21 SY GEOTEXTILE

TIE TO EXIST. DITCH

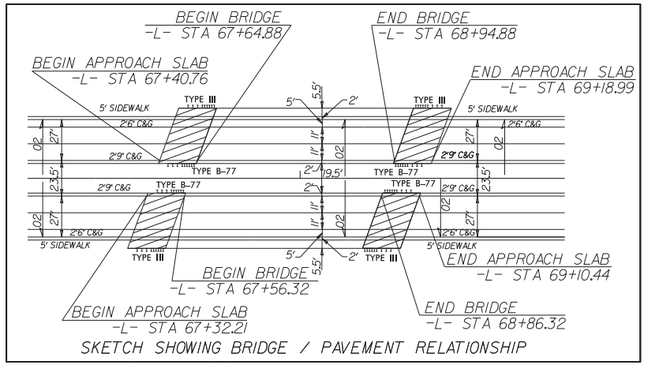
MATCHLINE -L- STA 63+50.00 SEE SHEET 7

MATCHLINE -L- STA 76+00.00 SEE SHEET 9

NC 3 MOORESVILLE RD 24' BST

SANITARY SEWER R/W

60.00'



SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP

8/17/99

REVISIONS

PERMIT DRAWING SHEET 6 OF 23

PROJECT REFERENCE NO.	SHEET NO.
U-3440	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 50 100

NAD 83/NSRS 2007

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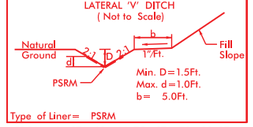
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

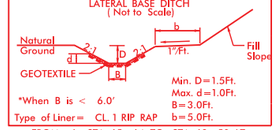
-L- 15100 13100
(NC 3) 23900 21400
2500 500
3400 900
3000
4300
2016 ADT
2036 ADT
-Y7-
(BETH PAGE RD.)

DETAIL 8A
LATERAL 'V' DITCH
(Not to Scale)



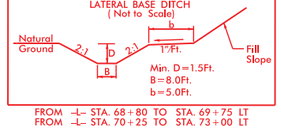
Type of Liner= PSRM
FROM -L- STA. 69+44 TO STA. 73+00 RT

DETAIL 8B
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'
Type of Liner= CL. 1 RIP RAP
FROM -L- STA. 65+64 TO STA. 68+50 LT
FROM -L- STA. 65+36 TO STA. 67+56 RT

DETAIL 8C
LATERAL BASE DITCH
(Not to Scale)

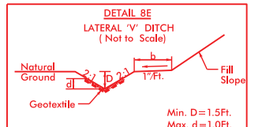


FROM -L- STA. 68+80 TO STA. 69+75 LT
FROM -L- STA. 70+25 TO STA. 73+00 LT

DETAIL 8D
RIP RAP AT EMBANKMENT
(Not to Scale)

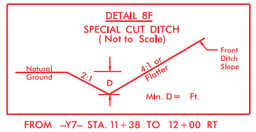
Type of Liner= 10 TONS,CL 1, Rip-Rap
Geotextile = 10 sy
-L- STA. 68+55 LT
-L- STA. 67+56 RT
-L- STA. 67+95 RT

DETAIL 8E
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL. 1 Rip-Rap
FROM -L- STA. 67+90 to 69+44 RT

DETAIL 8F
SPECIAL CUT DITCH
(Not to Scale)



FROM -Y7- STA. 11+38 TO 12+00 RT

SITE IBC

SITE WA

SITE S2

10

14

21

22

20

OVERCASH TRUSTEE, EDWARD C.

CAROLINAS CASTLE & COOKE REALTY LLC

WILKINSON, LESTER L.

HAMMONDS, WADE L.

BAKER, JERRY H.

PUBLIC SERVICE CO. OF NC INC

CITY OF KANNAPOLIS

LINE WITH CL. 1 RIP RAP
EST. 252 TONS
EST. 81 CY DDE
EST. 473 SY GEOTEXTILE
SEE DETAIL 8B

TEMPORARY SURFACE WATER IMPACTS

CL. 1 RIP RAP AT EMBANKMENT
EST. 10 SY GEOTEXTILE
SEE DETAIL 8D

LATERAL 8' BASE DITCH
EST. 162 CY DDE
SEE DETAIL 8C

PLACE RIPRAP ON BANKS ONLY. KEY IN 12" BELOW DITCH BOTTOM.

CL. B RIP RAP
EST. 5 TONS
EST. 14 SY GEOTEXTILE

LATERAL 8' BASE DITCH
EST. 297 CY DDE
SEE DETAIL 8C

BANK STABILIZATION

RIP RAP
6 TONS
GEOTEXTILE 50 SY

LATERAL 3' BASE DITCH
LINE WITH CL. 1 RIP RAP
EST. 194 TONS
EST. 188 CY DDE
EST. 364 SY GEOTEXTILE
SEE DETAIL 8B

LATERAL V DITCH
LINE WITH CL. 1 RIP RAP
EST. 126 TONS
EST. 169 CY DDE
EST. 203 SY GEOTEXTILE
SEE DETAIL 8E

LATERAL V DITCH
LINE WITH PSRM
EST. 176 SY
EST. 276 CY DDE
SEE DETAIL 8A

CL. B RIP RAP
EST. 8 TONS
EST. 21 SY GEOTEXTILE

SPECIAL CUT DITCH
SEE DETAIL 8F

TIE TO EXIST. DITCH

MATCHLINE -L- STA 63+50.00 SEE SHEET 7

MATCHLINE -L- STA 76+00.00 SEE SHEET 9

NC 3 MOORESVILLE RD 24' BST

SANITARY SEWER R/W

BUFFALO CREEK

SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP

BEGIN BRIDGE
-L- STA 67+64.88

END BRIDGE
-L- STA 68+94.88

BEGIN APPROACH SLAB
-L- STA 67+40.76

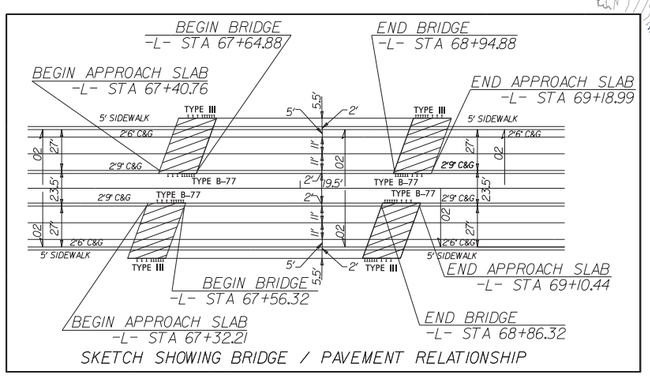
END APPROACH SLAB
-L- STA 69+18.99

BEGIN BRIDGE
-L- STA 67+56.32

END BRIDGE
-L- STA 68+86.32

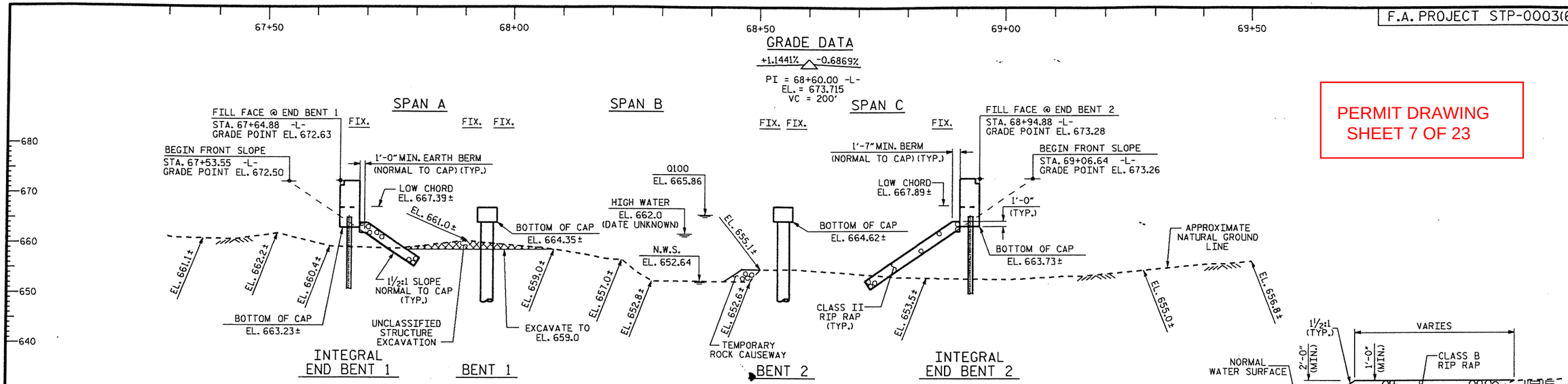
BEGIN APPROACH SLAB
-L- STA 67+32.21

END APPROACH SLAB
-L- STA 69+10.44



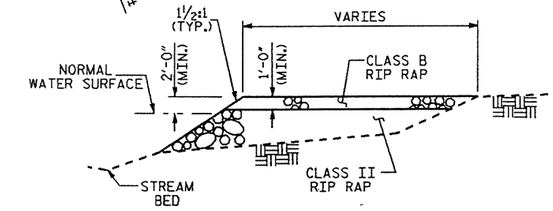
F.A. PROJECT STP-0003(6)

PERMIT DRAWING
SHEET 7 OF 23

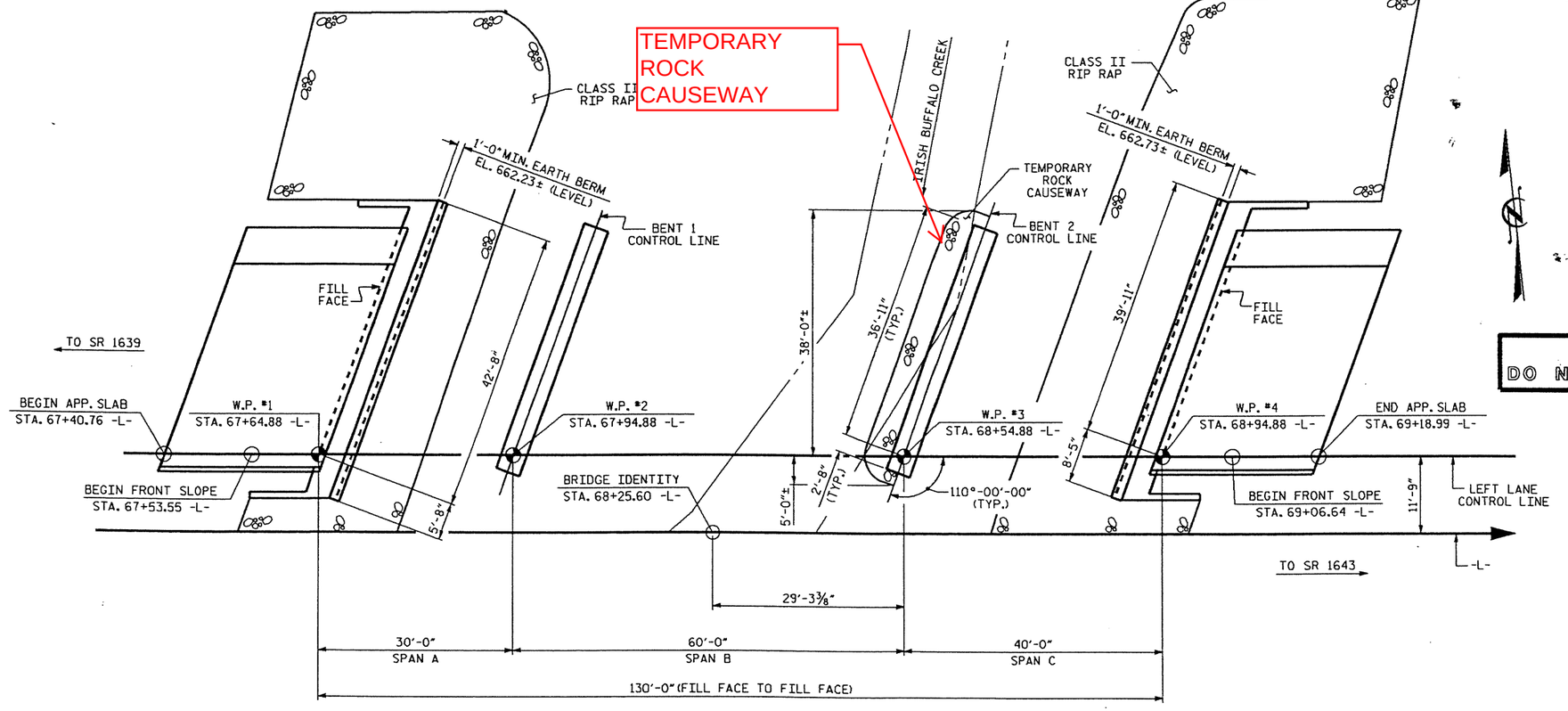


SECTION ALONG LEFT LANE CONTROL LINE

(SECTION TAKEN AT RIGHT ANGLE TO END BENTS & BENTS)



DETAIL OF TEMPORARY
ROCK CAUSEWAY



PLAN

(PILES & COLUMNS NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. U-3440
CABARRUS COUNTY
STATION: 68+25.60 -L-

SHEET 1 OF 2 BRIDGE No. 402

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING
FOR BRIDGE OVER IRISH
BUFFALO CREEK ON NC 3
BETWEEN SR 1639 AND SR 1643
(LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			

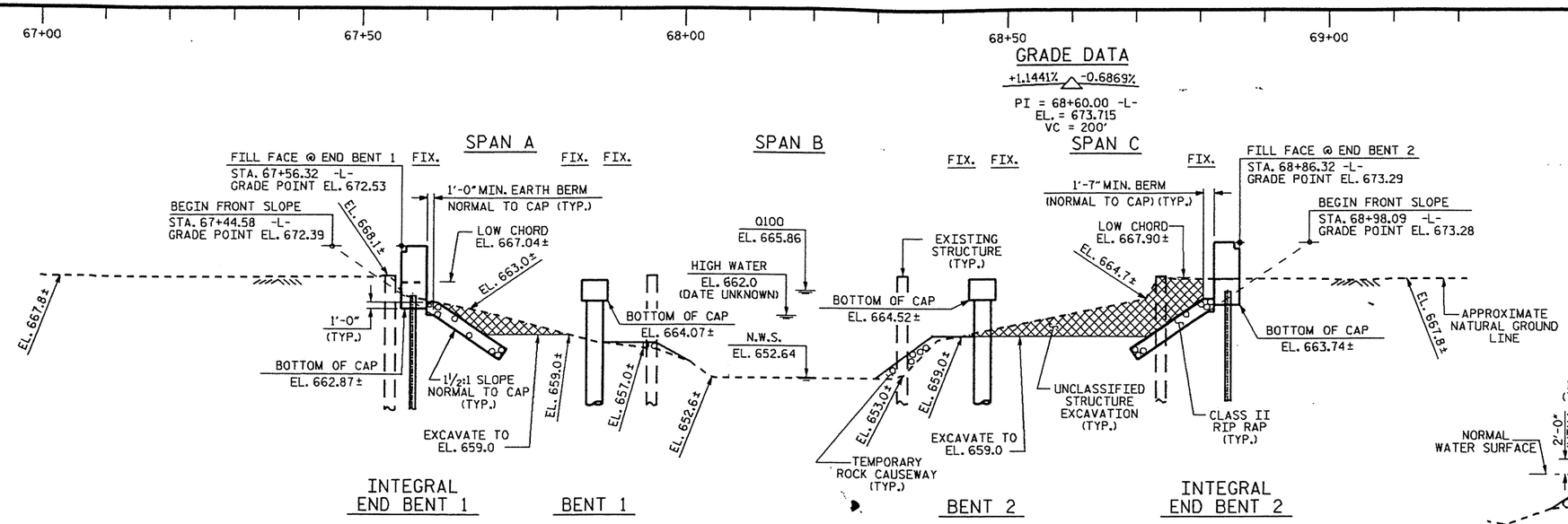
STR. #1

DRAWN BY : T. H. CARROLL DATE : 6/3/14
CHECKED BY : R. P. PATEL DATE : 6/9/14
DESIGN ENGINEER OF RECORD: T. H. CARROLL DATE : 6/19/14

29-OCT-2015 12:24
R:\Structures\Plans\Str02\U3440_SD_PGD_02.dgn

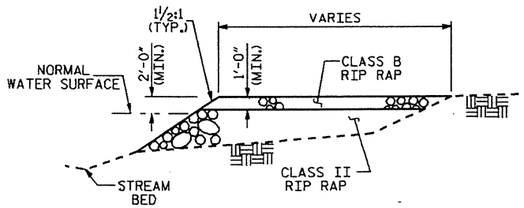
F.A. PROJECT STP-0003(6)

PERMIT DRAWING
SHEET 8 OF 23

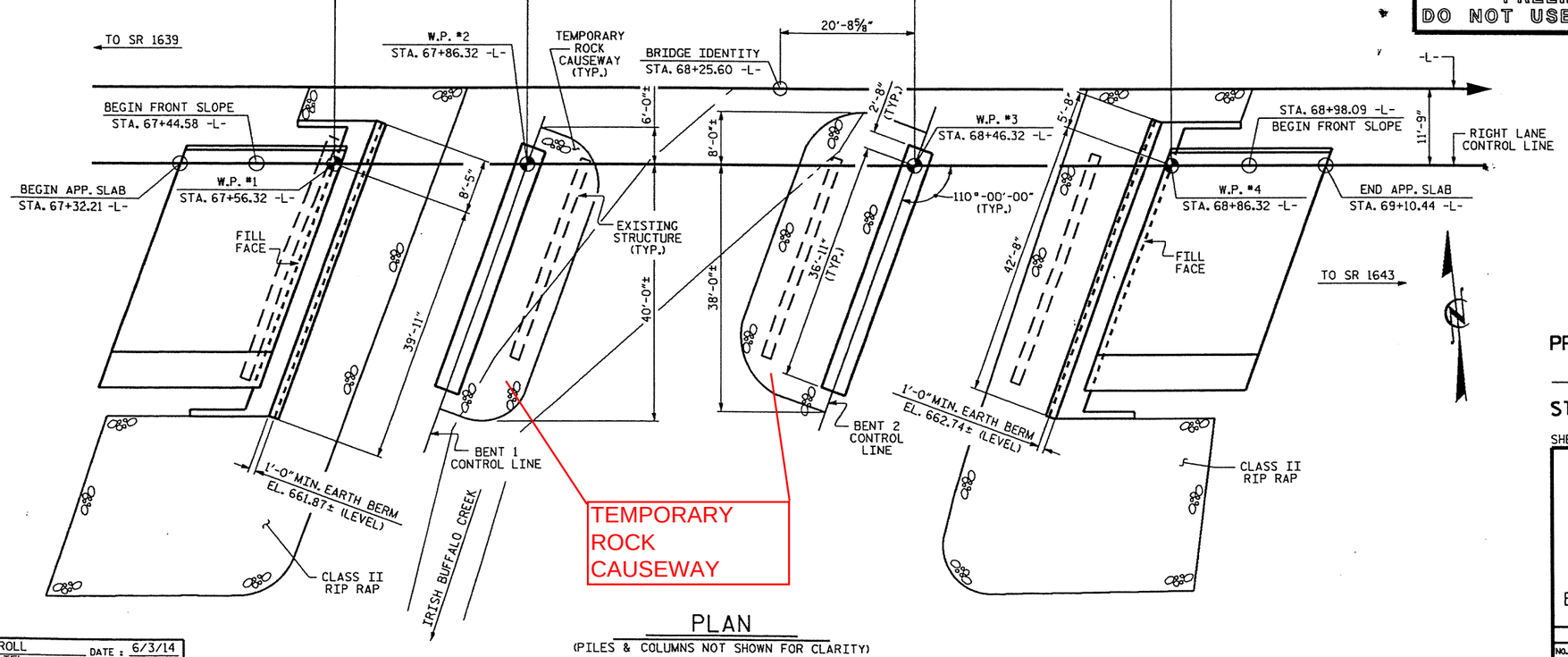


SECTION ALONG RIGHT LANE CONTROL LINE

(SECTION TAKEN AT RIGHT ANGLE TO END BENTS & BENTS)



DETAIL OF TEMPORARY ROCK CAUSEWAY



PLAN

(PILES & COLUMNS NOT SHOWN FOR CLARITY)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

PROJECT NO. U-3440

CABARRUS COUNTY

STATION: 68+25.60 -L-

SHEET 1 OF 2 REPLACES BRIDGE No. 36

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY

GENERAL DRAWING

FOR BRIDGE OVER IRISH BUFFALO CREEK ON NC 3 BETWEEN SR 1639 AND SR 1643 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			

STR. #2

DRAWN BY : T. H. CARROLL DATE : 6/3/14
CHECKED BY : R. P. PATEL DATE : 6/9/14
DESIGN ENGINEER OF RECORD: T. H. CARROLL DATE : 6/19/14

29-OCT-2015 12:22
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drsmith

5/28/99

PERMIT DRAWING
SHEET 9 OF 23

-L-

PROJECT REFERENCE NO.	SHEET NO.
U-3440	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel: (919) 851-6866
Fax: (919) 851-7024
www.stantec.com
License No: F-0672

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 4700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 664.7	FT
BASE DISCHARGE	= 5200	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 665.31	FT
OVERTOPPING DISCHARGE	= 13200	CFS
OVERTOPPING FREQUENCY	= 500 ++	YRS
OVERTOPPING ELEVATION	= 670.5	FT
DATE OF SURVEY	= 8/10/2013	
W.S. ELEVATION AT DATE OF SURVEY	= 652.64	FT

BM #8
NCSHC 7-LB-5 1973
41.02' RT. OF -L- STA 68+67.09
ELEV. 667.83'

BM #9
RR SPIKE IN BASE OF 36" OAK
39.01' LT. OF -L- STA 76+26.55
ELEV. 685.04'

LATERAL V DITCH -L- STA 67+90.00 RT
ELEV. = 656.3'

-L- STA. 67+60.60
BEGIN BRIDGE

PI = 66+00.00
EL = 663.89

PI = 68+60.00
EL = 673.95'
VC = 200'
K = 109

END 3' LATERAL BASE DITCH
-L- STA. 68+50.00 LT
ELEV. = 655.0'

-L- STA. 68+90.60
END BRIDGE

IRISH BUFFALO CREEK
SITE IBC

PI = 69+00.00
EL = 658.50

PI = 73+55.00
EL = 670.55'
VC = 650'
K = 85
V = 45mph

END LATERAL V DITCH -L- STA. 73+00.00 RT
ELEV. = 669.17'

BETH PAGE ROAD
-L- STA. 73+53.39 =
-Y7- STA. 10+00.00

PROPOSED GRADE
EXISTING GROUND

PI = 79+65.00
EL = 713.20'
VC = 570'
K = 97

BEGIN LATERAL V DITCH -L- STA. 77+58.00 RT
ELEV. = 691.08

END LATERAL V DITCH -L- STA. 78+51.00 RT
ELEV. = 699.25'

BEGIN 8' BASE DITCH
-L- STA. 70+25.00 LT
ELEV. = 656.33'

END 8' BASE DITCH
-L- STA. 73+00.00 LT
ELEV. = 657.40'

FOR -L- PLAN VIEW SEE SHEETS 8 THRU 9

BM #10
RR SPIKE IN BASE OF 14" OAK
58.61' LT. OF -L- STA 82+86.14
ELEV. 716.60'

BM #11
RR SPIKE IN BASE OF POWER POLE
60.33' LT. OF -L- STA 90+54.31
ELEV. 715.30'

PI = 83+80.00
EL = 717.85'
VC = 260'
K = 142

PI = 86+00.00
EL = 716.30'
VC = 180'
K = 165

PI = 87+80.00
EL = 717.00'
VC = 180'
K = 250

PI = 90+45.00
EL = 716.12'
VC = 160'
K = 217

PI = 92+00.00
EL = 716.75'
VC = 150'
K = 1182

PI = 93+50.00
EL = 717.55'
VC = 150'
K = 668

PROPOSED GRADE
EXISTING GROUND

PIPE HYDRAULIC DATA

-L- Sta. 86+12 (Str. 0909)

DRAINAGE AREA	= 27	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 70	CFS
DESIGN HW ELEVATION	= 706.1	FT
100 YEAR DISCHARGE	= 82	CFS
100 YEAR HW ELEVATION	= 706.6	FT
OVERTOPPING FREQUENCY	= 500 ++	YRS
OVERTOPPING DISCHARGE	= 210	CFS
OVERTOPPING ELEVATION	= 718.5	FT

42"

FOR -L- PLAN VIEW SEE SHEETS 9 THRU 10

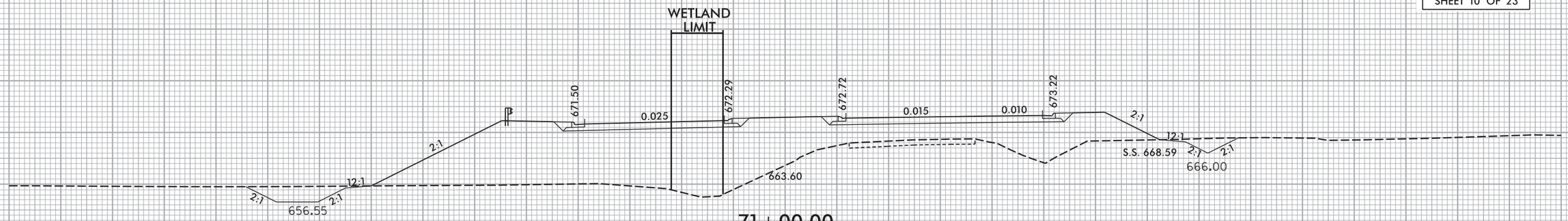
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3440	X-42

PERMIT DRAWING
SHEET 10 OF 23

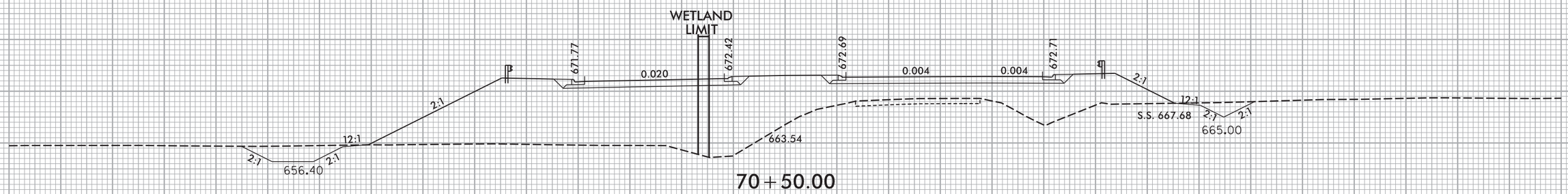
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

690 680 670 660 650

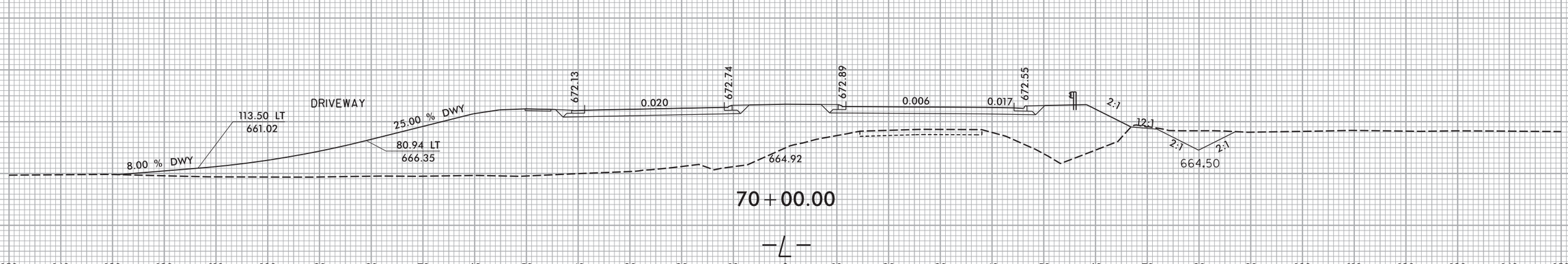


71+00.00

SITE WA



70+50.00



70+00.00

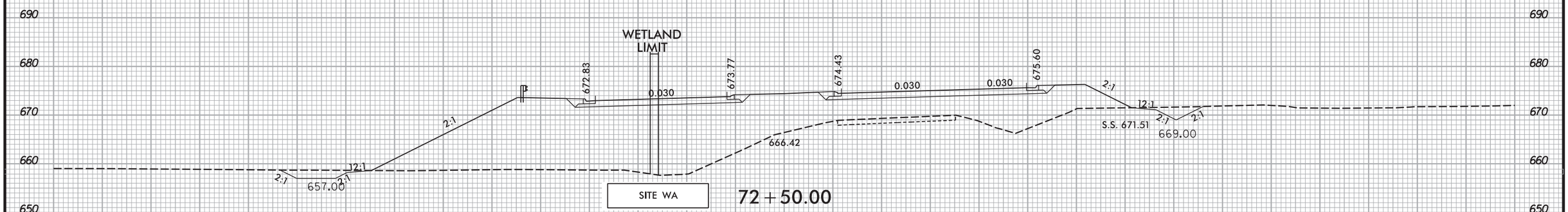
20150407
SIMMONS
U3440_Permit Drawings_20150407.pdf

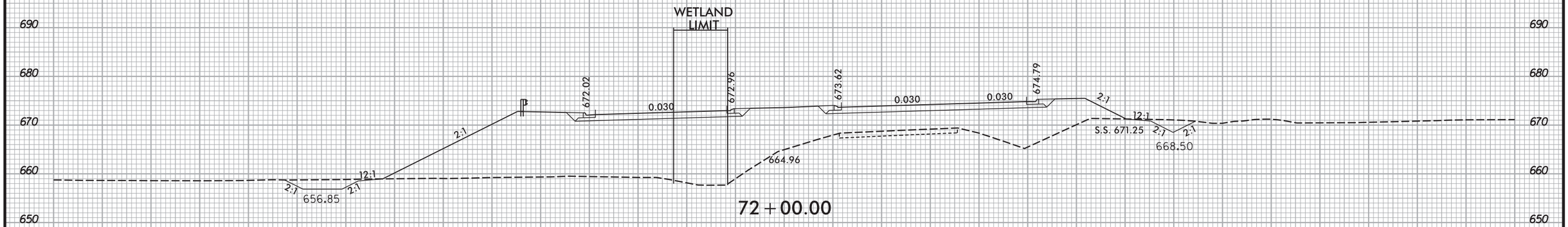
U-3440_rdy_xpl_L.dgn 12/21/2015 1:10:31 PM

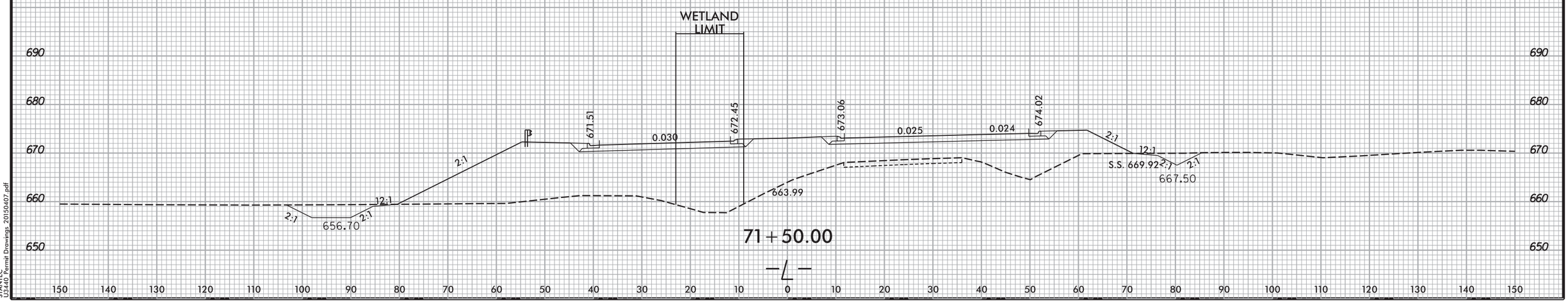
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3440	X-43

PERMIT DRAWING
SHEET 11 OF 23







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S234077
U3440 Permit Drawings 20150407.pdf

U-3440_rdy_xpl_L.dgn 12/21/2015 1:11:20 PM

8/17/99

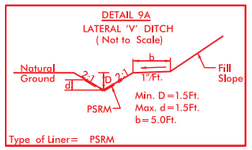
REVISIONS

PERMIT DRAWING
SHEET 12 OF 23

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

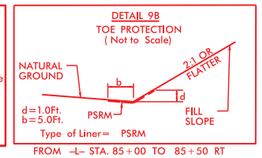
DETAIL 9A
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 77+58 TO 78+51 RT

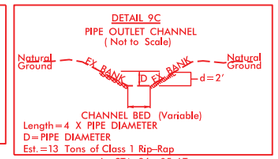
DETAIL 9B
TOE PROTECTION
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 85+00 TO 85+50 RT

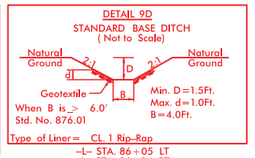
DETAIL 9C
PIPE OUTLET CHANNEL
(Not to Scale)



Est.=13 Tons of Class 1 Rip-Rap

-L- STA. 86+05 LT

DETAIL 9D
STANDARD BASE DITCH
(Not to Scale)

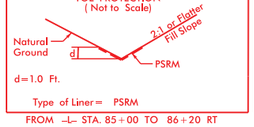


Type of Liner= CL 1 Rip-Rap

-L- STA. 86+05 LT

-L- STA. 86+24 RT

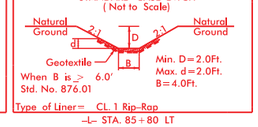
DETAIL 9E
TOE PROTECTION
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 85+00 TO 86+20 RT

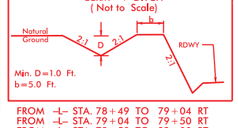
DETAIL 9F
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL 1 Rip-Rap

-L- STA. 85+80 LT

DETAIL 9G
BERM 'V' DITCH
(Not to Scale)



FROM -L- STA. 78+49 TO 79+04 RT
FROM -L- STA. 79+04 TO 79+50 RT
FROM -L- STA. 79+50 TO 82+00 RT
FROM -L- STA. 82+00 TO 84+00 RT

80

OVERCASH TRUSTEE, JOE L.

85

-L-
PI Sta 80+28.76
Δ = 50° 54' 39.2" (LT)
D = 2° 51' 53.2"
L = 1,777.13'
T = 952.04'
R = 2,000.00'
RO = 1.44°
e = .03

50 25 0 50 100

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

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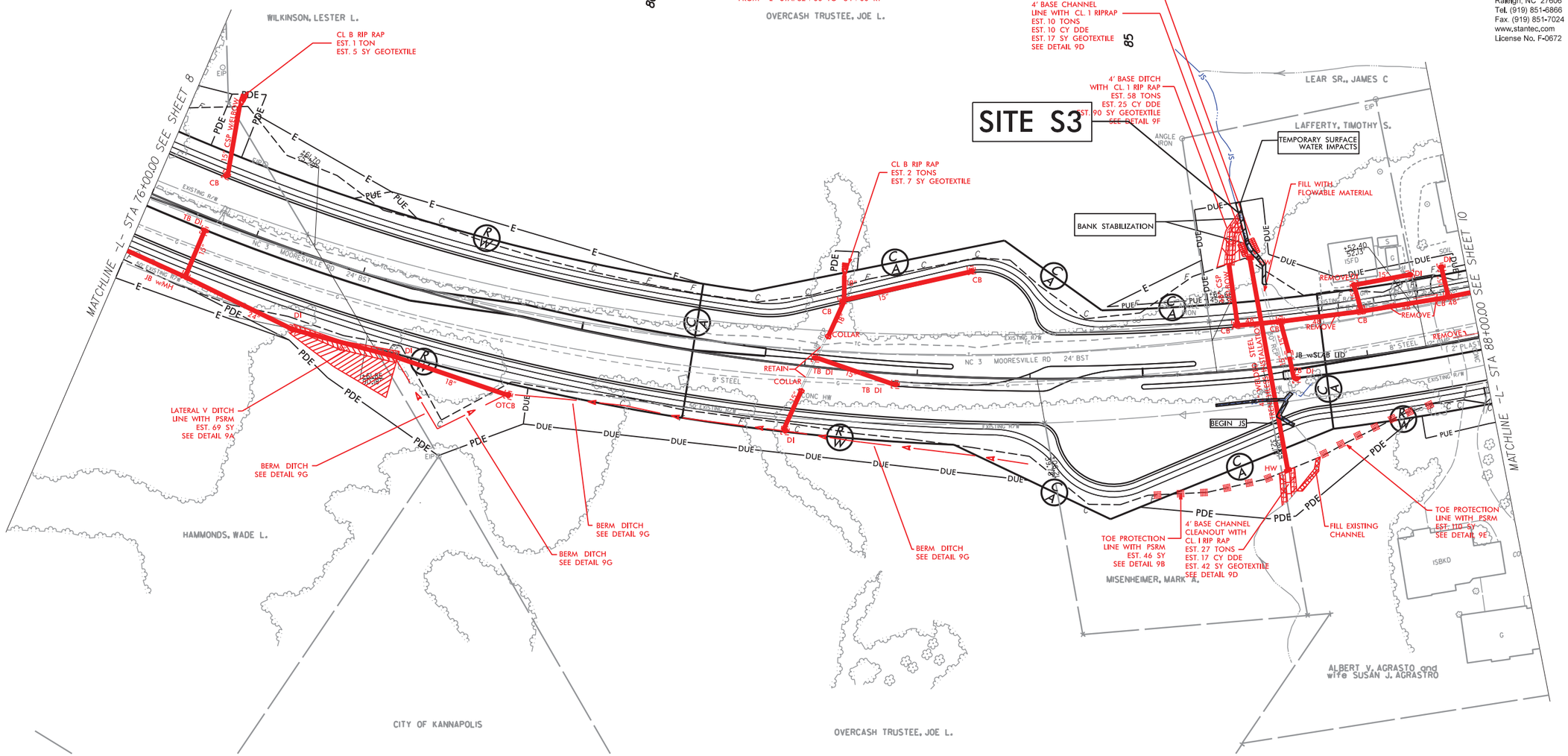

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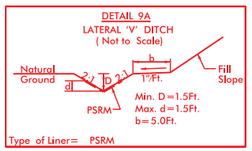
REVISIONS

PERMIT DRAWING
SHEET 13 OF 23

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

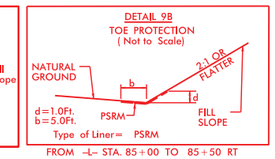
S S DENOTES IMPACTS IN SURFACE WATER

DETAIL 9A
LATERAL 'V' DITCH
(Not to Scale)



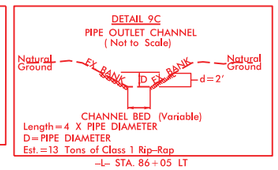
Type of Liner= PSRM
FROM -L- STA. 77+58 TO 78+51 RT

DETAIL 9B
TOE PROTECTION
(Not to Scale)



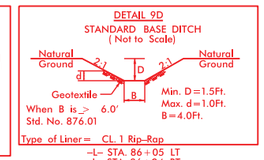
Type of Liner= PSRM
FROM -L- STA. 85+00 TO 85+50 RT

DETAIL 9C
PIPE OUTLET CHANNEL
(Not to Scale)



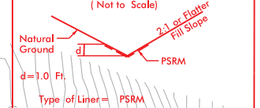
-L- STA. 86+05 LT

DETAIL 9D
STANDARD BASE DITCH
(Not to Scale)



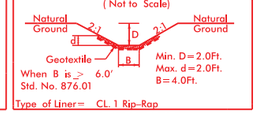
Type of Liner= CL 1 Rip-Rap
-L- STA. 86+05 LT
-L- STA. 86+24 RT

DETAIL 9E
TOE PROTECTION
(Not to Scale)



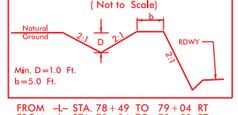
Type of Liner= PSRM
FROM -L- STA. 85+00 TO 86+20 RT

DETAIL 9F
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL 1 Rip-Rap
-L- STA. 85+80 LT

DETAIL 9G
BERM 'V' DITCH
(Not to Scale)



FROM -L- STA. 78+49 TO 79+04 RT
FROM -L- STA. 79+04 TO 79+50 RT
FROM -L- STA. 79+50 TO 82+00 RT
FROM -L- STA. 82+00 TO 84+00 RT

-L-
PI Sta 80+28.76
Δ = 50° 54' 39.2" (LT)
D = 2° 51' 53.2"
L = 1,777.13'
T = 952.04'
R = 2,000.00'
RO = 1.44°
e = .03

50 25 0 50 100

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PERMIT DRAWING SHEET 14 OF 23

NAD 83/NSRS 2007

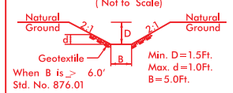
50 25 0 50 100

18 IS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S — DENOTES IMPACTS IN SURFACE WATER

SITE S4

DETAIL 10A
STANDARD BASE DITCH
(Not to Scale)

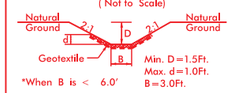


Type of Liner= C. II Rip-Rap
-L- STA. 96+65 LT

DETAIL 10B
TOE PROTECTION
(Not to Scale)

Type of Liner= CL. B Rip-Rap
FROM -L- STA. 96+50 TO 99+00 LT
FROM -L- STA. 97+00 TO 97+86 RT

DETAIL 10C
STANDARD BASE DITCH
(Not to Scale)

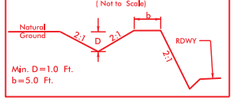


Type of Liner= CL. 1 Rip-Rap
-L- STA. 96+15 LT

DETAIL 10D
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 12 TONS,CL B Rip-Rap
Geotextile= 16sy
STA. 98+05 RT

DETAIL 10E
BERM 'V' DITCH
(Not to Scale)



FROM -L- STA. 92+35 TO 94+10 RT
FROM -L- STA. 94+10 TO 95+15 RT
FROM -L- STA. 96+00 TO 97+00 RT

DETAIL 10F
CUT DITCH
(Not to Scale)

Type of Liner= CL B Rip-Rap
FROM Y8 STA. 10+50 TO STA. 13+00 LT
FROM Y8 STA. 10+50 TO STA. 12+00 RT
FROM Y8A STA. 10+80 TO STA. 12+00 RT
FROM Y8A STA. 11+50 TO STA. 12+00 LT

NOTE: DRIVEWAY RADII ARE 5FT UNLESS OTHERWISE NOTED

3' BASE DITCH CHANNEL CLEANOUT WITH CL. II RIP RAP EST. 41 TONS EST. 12 CY DDE EST. 55 SY GEOTEXTILE SEE DETAIL 10A

3' BASE DITCH LINE WITH CL. 1 RIPRAP EST. 25 TONS EST. 9 CY DDE EST. 50 SY GEOTEXTILE SEE DETAIL 10C

CL. II RIP RAP TOE PROTECTION LINE CL. B RIP RAP EST. 87 TONS EST. 262 SY GEOTEXTILE SEE DETAIL 10B

TEMPORARY SURFACE WATER IMPACTS

BANK STABILIZATION

BANK STABILIZATION

TEMPORARY SURFACE WATER IMPACTS

BERM DITCH SEE DETAIL 10E

BERM DITCH SEE DETAIL 10E

LINE DITCH WITH CL B RIP RAP EST. 87 TONS EST. 296 SY GEOTEXTILE, SEE DETAIL 10F

LINE DITCH WITH CL B RIP RAP EST. 70 TONS EST. 237 SY GEOTEXTILE, SEE DETAIL 10F

LINE DITCH WITH CL B RIP RAP EST. 42 TONS EST. 143 SY GEOTEXTILE RIPRAP SEE DETAIL 10F

TOE PROTECTION LINE CL B RIP RAP EST. 30 TONS EST. 90 SY GEOTEXTILE SEE DETAIL 10B

BURY PIPE 1' BELOW

CL. B RIPRAP BANK PROTECTION SEE DETAIL 10D

FILL AND PLUG

REMOVE

PLUG

PLUG AND ABANDON WITHIN ROW

POSS. JB LOC. APPROX

+35.00 90.00' LT

+24.76 75.36' RT

+10.00 60.00' LT

LEAR SR., JAMES C

LAFFERTY, TIMOTHY S.

OVERCASH TRUSTEE, JOE L.

LOVE, WILLIAM E.

THREATT, DAVID L.

VANPELT, CLARENCE R.

UNKNOWN

BROCK TRUSTEE, DOROTHY P.

SPRAGUE, RHONDA W.

BREWER, WAYNE C.

BICKERSTA

MISENHEIMER, MARK A.

BROWN, LIRCEY L.

BROWN, PHILIP L.

PRICE JR, JAMES H

MUNDAY, T. M.

ROBIE, DANIEL C.

MCGINNIS, JIMMIE D.

BCA PROPERTY MGMT, LLC

FERGUSON, SHARON C.

THOMAS E. BARNHARDT

BARRY S. HALE

JONATHAN H. MILLS

ANDREW SCIARRINO
JOYCE I. SCIARRINO

ALBERT V. AGRASTO and wife SUSAN J. AGRASTRO

NC 3 MOORESVILLE RD 24' BST

	2016 ADT	2036 ADT
-L- (NC 3)	13100 / 21400	13300 / 21600
-Y8- (CLIFTON ST.)	50/50, 200/200, 200/200	
-Y9- (BAILEY ST.)	100/100, 50/50, 100/100	
-L- (NC 3)	13300 / 21600	13400 / 21700

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U-3440	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 15 OF 23

SITE S4

NAD 83/NSRS 2007

50 25 0 50 100

18 15 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

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DETAIL 10A
STANDARD BASE DITCH
(Not to Scale)

When B is > 6.0' Std. No. 876.01

Min. D=1.5Ft.
Max. d=1.0Ft.
B=5.0Ft.

Type of Liner= C. II Rip-Rap
-L- STA. 96+65 LT

DETAIL 10B
TOE PROTECTION
(Not to Scale)

d=1.0Ft.

Type of Liner= CL. B Rip-Rap
FROM -L- STA. 96+50 TO 99+00 LT
FROM -L- STA. 97+00 TO 97+86 RT

DETAIL 10C
STANDARD BASE DITCH
(Not to Scale)

Min. D=1.5Ft.
Max. d=1.0Ft.
B=3.0Ft.

*When B is < 6.0'

Type of Liner= CL. 1 Rip-Rap
-L- STA. 96+15 LT

DETAIL 10D
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 12 TONS,CL B Rip-Rap
Geotextile= 16sy
STA. 98+05 RT

DETAIL 10E
BERM 'V' DITCH
(Not to Scale)

Min. D=1.0 Ft.
b=5.0 Ft.

FROM -L- STA. 92+35 TO 94+10 RT
FROM -L- STA. 94+10 TO 95+15 RT
FROM -L- STA. 96+00 TO 97+00 RT

DETAIL 10F
CUT DITCH
(Not to Scale)

Min. D=1.0 Ft.
Max. d=1.0 Ft.

Type of Liner= CL B Rip-Rap
FROM Y8 STA. 10+50 TO STA. 13+00 LT
FROM Y8 STA. 10+50 TO STA. 12+00 RT
FROM Y8A STA. 10+80 TO STA. 12+00 RT
FROM Y8A STA. 11+50 TO STA. 12+00 LT

NOTE: DRIVEWAY RADII ARE 5FT UNLESS OTHERWISE NOTED

-L- (NC 3) 13100 21400 | 13300 21600
-Y8- (CLIFTON ST.) 2016 ADT 2036 ADT
-Y9- (BAILEY ST.) 2016 ADT 2036 ADT
-L- (NC 3) 13300 21600 | 13400 21700

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U-3440	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 16 OF 23

50 25 0 50 100

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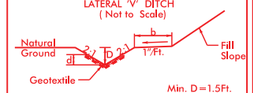
SITE S5

DETAIL 11A
LATERAL 'V' DITCH
(Not to Scale)

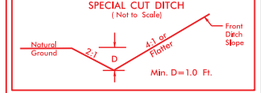


Min. D=1.5Ft.
Max. d=1.0Ft.
Type of Liner= CL. B Rip-Rap b=5.0Ft.
FROM –Y10– STA. 13+50 TO 15+35 RT

DETAIL 11B
PIPE OUTLET CHANNEL
(Not to Scale)

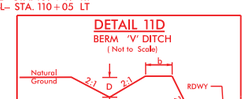
CHANNEL BED (Variable)
Length=4 X PIPE DIAMETER
D=PIPE DIAMETER
Est.=6 Tons of Class I Rip-Rap
–L– STA. 109+49 RT
–L– STA. 110+05 LT

DETAIL 11C
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.0 Ft.
FROM –Y10– STA. 13+00 TO 13+50 RT
FROM –Y10– STA. 13+00 TO 14+00 LT

DETAIL 11D
BERM 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.
b=5.0 Ft.
–L– STA. 106+00 TO 107+74 RT
–L– STA. 107+74 TO 108+47 RT
–L– STA. 110+38 TO 113+00 RT

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MATCHLINE –L– STA 100+00.00 SEE SHEET 10

MATCHLINE –L– STA 113+25.00 SEE SHEET 12

TIE TO EXISTING DITCHES LT & RT

SPECIAL CUT DITCH SEE DETAIL 11C

LATERAL V-DITCH LINE WITH CL B RIP RAP EST. 64 TONS, 59.0 CY DDE EST. 194 SY GEOTEXTILE SEE DETAIL 11A

PIPE OUTLET CHANNEL WITH CL I RIP RAP SEE DETAIL 11B

CL B RIP RAP EST. 3 TONS EST. 11 SY GEOTEXTILE

BANK STABILIZATION

TEMPORARY SURFACE WATER IMPACTS

PLUG & FILL WITH FLOWABLE MATERIAL

BERM DITCH SEE DETAIL 11D

STANDARD V DITCH LINE WITH CL B RIP RAP –L– STA. 109+51 TO 109+64 RT SEE DETAIL 11F

LINE DITCH WITH CL B RIP RAP EST. 102 TONS EST. 348 SY GEOTEXTILE SEE DETAIL 11E

LINE DITCH WITH CL B RIP RAP EST. 109 TONS EST. 372 SY GEOTEXTILE SEE DETAIL 11E

DETAIL 11F
STANDARD 'V' DITCH
(Not to Scale)

Min. D=1.5 Ft.
Max. d=1.5 Ft.
Type of Liner= CL. B Rip-Rap
FROM –L– STA. 109+54 TO STA. 109+64RT

DETAIL 11E
CUT DITCH
(Not to Scale)

Min. D=1.0 Ft.
Max. d=1.0 Ft.
Type of Liner= CL B Rip-Rap
FROM Y11 STA. 11+70 TO STA. 14+50 LT
FROM Y11 STA. 11+35 TO STA. 14+50 RT

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TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 17 OF 23

50 25 0 50 100

PROJECT REFERENCE NO.	SHEET NO.
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SITE S5

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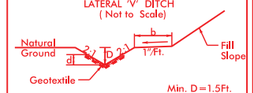
DETAIL 11A
LATERAL 'V' DITCH
(Not to Scale)

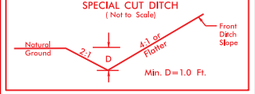


Type of Liner= CL. B Rip-Rap b=5.0Ft.
FROM –Y10– STA. 13+50 TO 15+35 RT

DETAIL 11B
PIPE OUTLET CHANNEL
(Not to Scale)

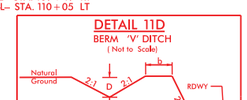
CHANNEL BED (Variable)
Length=4 X PIPE DIAMETER
D=PIPE DIAMETER
Est.=6 Tons of Class I Rip-Rap
–L– STA. 109+49 RT
–L– STA. 110+05 LT

DETAIL 11C
SPECIAL CUT DITCH
(Not to Scale)



FROM –Y10– STA. 13+00 TO 13+50 RT
FROM –Y10– STA. 13+00 TO 14+00 LT

DETAIL 11D
BERM 'V' DITCH
(Not to Scale)



–L– STA. 106+00 TO 107+74 RT
–L– STA. 107+74 TO 108+47 RT
–L– STA. 110+38 TO 113+00 RT

TIE TO EXISTING DITCHES LT & RT

SPECIAL CUT DITCH SEE DETAIL 11C

LATERAL V-DITCH LINE WITH CL B RIP RAP EST. 64 TONS, 59.0 CY DDE EST. 194 SY GEOTEXTILE SEE DETAIL 11A

PIPE OUTLET CHANNEL WITH CL I RIP RAP SEE DETAIL 11B

CL B RIP RAP EST. 13 TONS EST. 11 SY GEOTEXTILE

BANK STABILIZATION

TEMPORARY SURFACE WATER IMPACTS

PLUG & FILL WITH FLOWABLE MATERIAL

BERM DITCH SEE DETAIL 11D

PIPE OUTLET CHANNEL WITH CL I RIP RAP SEE DETAIL 11B

STANDARD V DITCH LINE WITH CL B RIP RAP –L– STA. 109+51 TO 109+64 RT SEE DETAIL 11F

LINE DITCH WITH CL B RIP RAP EST. 102 TONS EST. 348 SY GEOTEXTILE SEE DETAIL 11E

LINE DITCH WITH CL B RIP RAP EST. 109 TONS EST. 372 SY GEOTEXTILE SEE DETAIL 11E

DETAIL 11F
STANDARD 'V' DITCH
(Not to Scale)

Type of Liner= CL. B Rip-Rap
FROM –L– STA. 109+54 TO STA. 109+64RT

DETAIL 11E
CUT DITCH
(Not to Scale)

Type of Liner= CL B Rip-Rap
FROM Y11 STA. 11+70 TO STA. 14+50 LT
FROM Y11 STA. 11+35 TO STA. 14+50 RT

MATCHLINE –L– STA 100+00.00 SEE SHEET 10

MATCHLINE –L– STA 113+25.00 SEE SHEET 12

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STANTEC
U3440_Permit Drawings_20150407.pdf

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3440	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 18 OF 23

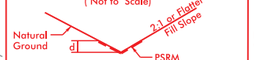
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007

50 25 0 50 100

DETAIL 12A
TOE PROTECTION
(Not to Scale)



d=1.0Ft.

Type of Liner= PSRM

FROM –L– 117+90 TO 120+10 LT
FROM –Y13– 12+25 TO 13+00 LT

DETAIL 12B
TOE PROTECTION
(Not to Scale)

d=1.0Ft.

Type of Liner= CL. B Rip-Rap

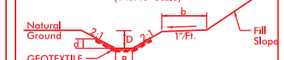
FROM –L– STA. 117+50 TO 118+00 RT
FROM –L– STA. 125+12 TO 125+31 RT
FROM –L– STA. 125+41 TO 127+00 RT

DETAIL 12C
PIPE OUTLET CHANNEL
(Not to Scale)

CHANNEL BED (Variable)
Length=4 X PIPE DIAMETER
D=PIPE DIAMETER
Est.=15 Tons of Class II Rip-Rap

FROM –L– STA. 125+36 RT

DETAIL 12D
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'
Min. D=2.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.
b=5.0 Ft. MIN VARIES

Type of Liner=CL B Rip-Rap

FROM –L– STA. 118+00 TO 119+35 RT

DETAIL 12E
STANDARD BASE DITCH
(Not to Scale)

*When B is < 6.0'
Min. D=2.0 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.

Type of Liner= CL B Rip-Rap

FROM Y15 STA. 11+68 TO 12+10 LT

DETAIL 12F
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 10 TONS,CL I Rip-Rap
Geotextile= 12sy

Y15 STA. 12+10 LT

DETAIL 12G
BERM 'V' DITCH
(Not to Scale)

–L– STA. 113+00 TO 114+00 RT
–L– STA. 114+00 TO 115+50 RT

DETAIL 12H
PIPE OUTLET CHANNEL
(Not to Scale)

CHANNEL BED (Variable)
Length=4 X PIPE DIAMETER
D=PIPE DIAMETER
Est.=17 Tons of Class 1 Rip-Rap

FROM –Y15– STA. 12+27 RT

SITE S6

SITE S7–1

SITE S7–2

BANK STABILIZATION

CL. II RIP RAP
EST. 37 TONS
EST. 19 CY DDE

CL. 1 RIP RAP
EST. 37 TONS
EST. 19 CY DDE

CL. 1 RIP RAP
OUTLET PROTECTION

CL. 1 RIP RAP
EST. 6 TONS
EST. 12 SY GEOTEXTILE

FLOODPLAIN BENCH

BUFFALO CREEK TRIBUTARY 2

TOE PROTECTION
–Y13– STA. 12+25 TO 13+00 LT
LINE WITH PSRM
EST. 54 SY
SEE DETAIL 12A

TOE PROTECTION
–L– STA. 117+90 TO 120+10 LT
LINE WITH PSRM
EST. 109 SY
SEE DETAIL 12A

TOE PROTECTION
LINE WITH CL B RIP RAP
EST. 17 TONS
EST. 52 SY GEOTEXTILE
SEE DETAIL 12B

CHANNEL TIE–IN WITH FLOODPLAIN BENCH
2' LATERAL BASE DITCH
LINE WITH CL B RIP RAP
EST. 91 TONS, 175 CY DDE
EST. 238 SY GEOTEXTILE
SEE DETAIL 12D

CL. 1 RIPRAP
TO EL. 402.0
EST. 55.0 CY DDE

PIPE OUTLET CHANNEL
WITH CL. I RIP RAP
EST. 17 TONS
SEE DETAIL 12H

2' BASE DITCH
LINE WITH CL B RIP RAP
EST. 24 TONS, 17 CY DDE
EST. 64 SY GEOTEXTILE
SEE DETAIL 12E

CL 1 RIPRAP
BANK STABILIZATION
SEE DETAIL 12F

TOE PROTECTION LINED WITH CL B RIP RAP
EST. 7 TONS
EST. 20 SY GEOTEXTILE
SEE DETAIL 12B

PIPE OUTLET CHANNEL
WITH CL II RIP RAP
EST. 15 TONS
SEE DETAIL 12C

TOE PROTECTION
LINE WITH CL B RIP RAP
EST. 55 TONS
EST. 166 SY GEOTEXTILE
SEE DETAIL 12B

TEMPORARY SURFACE WATER IMPACTS

SURFACE WATER IMPACT STREAM REALIGNMENT

DIV OF WORLD MISSIONS OF THE METHODIST CHURCH

PREMIER PROPERTIES LLC.

ROBERT W. SMITH

TAMARA ANN GAINEY

SCOTT W. HELMS

BIM D. HILTON
DORA B. HILTON

HARRY L. SMITH

ROY L. BIGGERSTAFF

DINNER UNKNOWN

GULLEDGE, B.

COOPER, JIMMY R.

NAIRN, RICHARD B.

FOIL, FRANK E.

BEAVER, GEORGE L.

WATTS, BILLY E.

MORGAN, PATRICIA

SAFRIT, JUDY J.

DAVID MILLER REALTY & INVESTMENT, INC.

MILLER, GILDA C.

CHEEK, JEFFREY G.

CHEEK, JEFFREY L.

UNKNOWN

SELLERS JR., EDWARD H.

LINN, BOBBIE S.

BIGGERSTAFF ROY L.

CORRELL, KATHY A.

WILLIAMSON, JOSEPH E.

JACKSON, ROBERT A.

WILLIAM P. MILLER DB 9916 PG 001

ESTATE OF MINNIE B STROUD

DOSSETT, EDWARD B.

LEWIS, ALICE B.

VARGAS, JAVIER

BROWN, JEROME W.

THOMPSON, STEPHEN P.

POWELL, JAMES

BAILEY, W. SON

MATCHLINE –L– STA 113+25.00 SEE SHEET 11

MATCHLINE –L– STA 126+50.00 SEE SHEET 13

–Y13–
PI Sta 11+73.86
△ = 65° 56' 54.4" (RT)
D = 71° 37' 11.0"
L = 92.08'
T = 51.90'
R = 80.00'
RO = SEE PLANS
e = SEE PLANS

–RABT– (CIRCLE)
PI Sta 0+00.00
△ = 360° 00' 00.0" (RT)
D = 93° 55' 39.0"
L = 383.27'
T = 0.00'
R = 61.00'
RO = SEE PLANS
e = SEE PLANS

*SEE DETAIL SHEET 2C–2 FOR CURB AND GUTTER 10' TRANSITION TO PAVED SHOULDER

SCGR = SHOPCURVED GAURDRAIL

–L–
PI Sta 120+71.54
△ = 22° 22' 58.0" (RT)
D = 2° 51' 53.2"
L = 781.31'
T = 395.70'
R = 2,000.00'
RO = 104'
e = .025

–Y15–
PI Sta 12+49.25
△ = 55° 36' 22.2" (LT)
D = 38° 11' 49.9"
L = 145.58'
T = 79.10'
R = 150.00'
RO = SEE PLANS
e = SEE PLANS

–Y14– (FRANKLIN AVE.)

2016 ADT / 2036 ADT		
	2400 / 3400	
1900 / 2400		500 / 1000
–L– (NC 3) 12800 / 20400		11800 / 19400
50 / 50		200 / 200
	200 / 200	

–Y15– (MILLER ST.) 2016 ADT / 2036 ADT

–Y13– (MASON ST.)

2016 ADT / 2036 ADT		
	200 / 200	
50 / 50		50 / 50
–L– (NC 3) 12800 / 20400		11800 / 19400

–Y16– (CYPRESS AVE.)

2016 ADT / 2036 ADT		
	50 / 50	
50 / 50		50 / 50
–L– (NC 3) 11800 / 19400		11800 / 19400

NOTE: SEE SHEETS 18 THRU 19 FOR –L– PROFILE
SEE SHEET 23 FOR –Y13–,–Y14–,& –Y15– PROFILE
SEE SHEET 24 FOR –Y16– & –DR3– PROFILE
SEE SHEET 25 FOR –RABT– PROFILE
SEE SHEET 2B–2 FOR –DR3– DETAIL
SEE SHEET 2B–4 FOR –L–,–Y14–,& –Y15– ROUNDABOUT DETAIL
SEE CULVERT SHEETS C2–1 THRU C2–8

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3440	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 19 OF 23

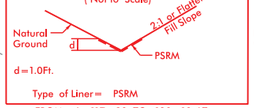
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007

50 25 0 50 100

DETAIL 12A
TOE PROTECTION
(Not to Scale)

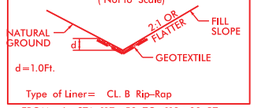


d=1.0Ft.

Type of Liner= PSRM

FROM –L– 117+90 TO 120+10 LT
FROM –Y13– 12+25 TO 13+00 LT

DETAIL 12B
TOE PROTECTION
(Not to Scale)

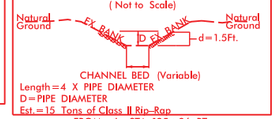


d=1.0Ft.

Type of Liner= CL. B Rip-Rap

FROM –L– STA. 117+50 TO 118+00 RT
FROM –L– STA. 125+12 TO 125+31 RT
FROM –L– STA. 125+41 TO 127+00 RT

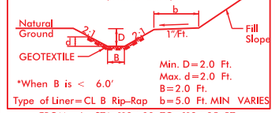
DETAIL 12C
PIPE OUTLET CHANNEL
(Not to Scale)



Length=4 X PIPE DIAMETER
D=PIPE DIAMETER
Est.=15 Tons of Class II Rip-Rap

FROM –L– STA. 125+36 RT

DETAIL 12D
LATERAL BASE DITCH
(Not to Scale)



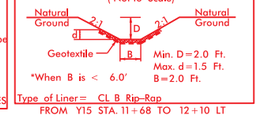
*When B is < 6.0'

Min. D=2.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.
b=5.0 Ft. MIN. VARIES

Type of Liner=CL B Rip-Rap

FROM –L– STA. 118+00 TO 119+35 RT

DETAIL 12E
STANDARD BASE DITCH
(Not to Scale)



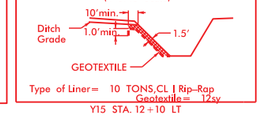
*When B is < 6.0'

Min. D=2.0 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.

Type of Liner= CL B Rip-Rap

FROM Y15 STA. 11+68 TO 12+10 LT

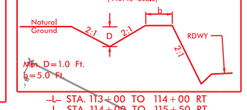
DETAIL 12F
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 10 TONS, CL I Rip-Rap
Geotextile= 12sy

Y15 STA. 12+10 LT

DETAIL 12G
BERM 'V' DITCH
(Not to Scale)



–L– STA. 113+00 TO 114+00 RT
–L– STA. 114+00 TO 115+50 RT

DETAIL 12H
PIPE OUTLET CHANNEL
(Not to Scale)

Length=4 X PIPE DIAMETER
D=PIPE DIAMETER
Est.=17 Tons of Class 1 Rip-Rap

FROM –Y15– STA. 12+27 RT

SITE S6

SITE S7–1

SITE S7–2

BANK STABILIZATION

TOE PROTECTION
–Y13– STA. 12+25 TO 13+00 LT
LINE WITH PSRM
EST. 54 SY
SEE DETAIL 12A

TOE PROTECTION
–L– STA. 117+90 TO 120+10 LT
LINE WITH PSRM
EST. 102 SY
SEE DETAIL 12A

CL. II RIP RAP
EST. 37 TONS
EST. 19 CY DDE

CL. I RIP RAP
EST. 4 TONS
EST. 12 SY
GEOTEXTILE

CL. 1 RIP RAP
EST. 37 TONS
EST. 19 CY DDE

CL. 1 RIP RAP
OUTLET
PROTECTION

FLOODPLAIN BENCH

CHANNEL TIE-IN WITH FLOODPLAIN BENCH

2' LATERAL BASE DITCH
LINE WITH CL. B RIP RAP
EST. 91 TONS, 175 CY DDE
EST. 238 SY GEOTEXTILE
SEE DETAIL 12D

CL. 1 RIP-RAP
TO EL. 702.0
EST. 55.0 CY DDE

TOE PROTECTION
LINE WITH CL. B RIP RAP
EST. 17 TONS
EST. 52 SY GEOTEXTILE
SEE DETAIL 12B

SURFACE WATER IMPACT
STREAM REALIGNMENT

TEMPORARY SURFACE WATER IMPACTS

PIPE OUTLET CHANNEL
WITH CL. I RIP RAP
EST. 17 TONS
SEE DETAIL 12H

2' BASE DITCH
LINE WITH CL. B RIP RAP
EST. 24 TONS, 17 CY DDE
EST. 64 SY GEOTEXTILE
SEE DETAIL 12E

CL. 1 RIPRAP
BANK STABILIZATION
SEE DETAIL 12F

TOE PROTECTION LINED
WITH CL. B RIP RAP
EST. 7 TONS
EST. 20 SY GEOTEXTILE
SEE DETAIL 12B

PIPE OUTLET CHANNEL
WITH CL. II RIP RAP
EST. 15 TONS
SEE DETAIL 12C

TOE PROTECTION
LINE WITH CL. B RIP RAP
EST. 58 TONS
EST. 166 SY GEOTEXTILE
SEE DETAIL 12B

BERM DITCH
SEE DETAIL 12G

BERM DITCH
SEE DETAIL 12G

LEWIS, ALICE B.
VARGAS, JAVIER
THOMPSON, STEPHEN P.
BROWN, JEROME W.
POWELL, JAMES
CHEEK, JEFFREY G.
CHEEK, JEFFREY L.
MILLER, GILDA C.
DAVID MILLER REALTY & INVESTMENT, INC.
SAFRIT, JUDY J.
CORRELL, KATHY J.
SELLERS JR., EDWARD H.
BAILEY, M. SON
UNKNOWN
BEAVER, GEORGE L.
WATTS, BILLY E.
MORGAN, PATRICIA
FOIL, FRANK E.
WILLIAMSON, JOSEPH EL
JACKSON, ROBERT A.
JACKSON, ROBERT A.
ESTATE OF MINNIE B STROUD
DIV OF WORLD MISSIONS OF THE METHODIST CHURCH
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COOPER, JIMMY R.
NAIRN, RICHARD B.
SCOTT W. HELMS
TAMARA ANN GAINEY

MATCHLINE –L– STA 113+25.00 SEE SHEET 11

MATCHLINE –L– STA 126+50.00 SEE SHEET 13

–Y14–
(FRANKLIN AVE.)

	2400 / 3400	
1900 / 2400		500 / 1000
–L– (NC 3) 12800 / 20400		11800 / 19400
50 / 50		200 / 200
	200 / 200	

2016 ADT
2036 ADT

–Y15–
(MILLER ST.)

–Y13–
(MASON ST.)

2016 ADT
2036 ADT

	200 / 200	
50 / 50		50 / 50
–L– (NC 3) 12800 / 20400		11800 / 19400

–L–
PI Sta 120+71.54
△ = 22° 22' 58.0" (RT)
D = 2° 51' 53.2"
L = 781.31'
T = 395.70'
R = 2,000.00'
RO = 104'
e = .025

–Y15–
PI Sta 12+49.25
△ = 55° 36' 22.2" (LT)
D = 38° 11' 49.9"
L = 145.58'
T = 79.10'
R = 150.00'
RO = SEE PLANS
e = SEE PLANS

–Y13–
PI Sta 11+73.86
△ = 65° 56' 54.4" (RT)
D = 71° 37' 11.0"
L = 92.08'
T = 51.90'
R = 80.00'
RO = SEE PLANS
e = SEE PLANS

–RABT– (CIRCLE)
PI Sta 0+00.00
△ = 360° 00' 00.0" (RT)
D = 93° 55' 39.0"
L = 383.27'
T = 0.00'
R = 61.00'
RO = SEE PLANS
e = SEE PLANS

*SEE DETAIL SHEET 2C-2 FOR CURB AND GUTTER 10' TRANSITION TO PAVED SHOULDER

SCGR = SHOPCURVED GAURDRAIL

–Y16–
(CYPRESS AVE.)

2016 ADT
2036 ADT

	50 / 50	
50 / 50		50 / 50
–L– (NC 3) 11800 / 19400		11800 / 19400

NOTE: SEE SHEETS 18 THRU 19 FOR –L– PROFILE
SEE SHEET 23 FOR –Y13–, –Y14– & –Y15– PROFILE
SEE SHEET 24 FOR –Y16– & –DR3– PROFILE
SEE SHEET 25 FOR –RABT– PROFILE
SEE SHEET 2B-2 FOR –DR3– DETAIL
SEE SHEET 2B-4 FOR –L–, –Y14– & –Y15– ROUNDABOUT DETAIL
SEE CULVERT SHEETS C2-1 THRU C2-8

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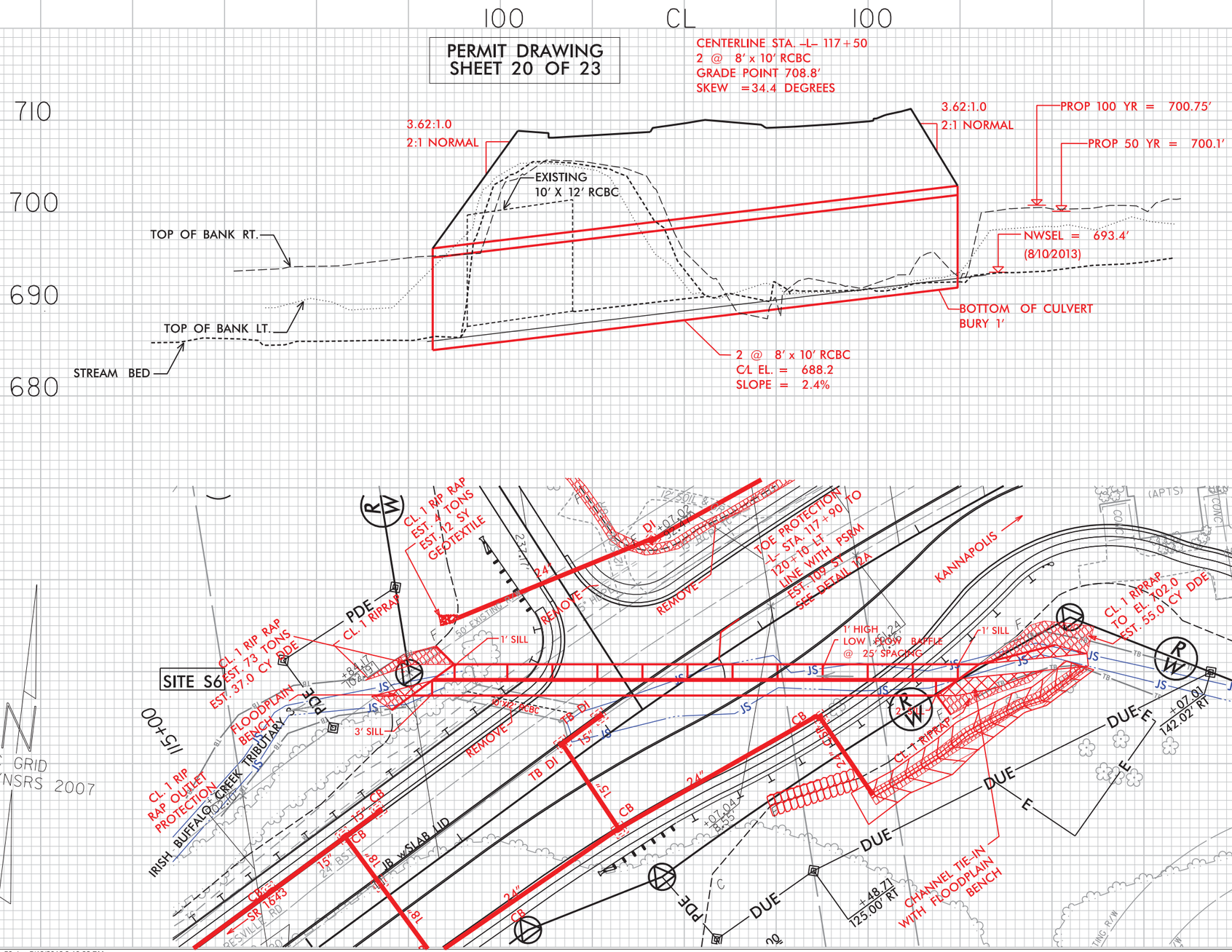
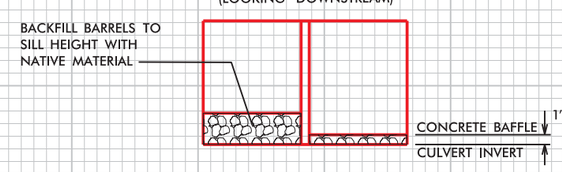
PERMIT DRAWING
SHEET 20 OF 23



NCDOT PERFORMANCE TABLE					
	FREQUENCY				
	10yr.	25yr.	50yr.	100yr.	500yr.
NATURAL	697.8	698.9	699.6	699.87	700.4
EXISTING	697.8	699.2	699.6	700.28	702.2
PROPOSED	697.6	699.4	700.1	700.75	702.2
@SECTION 3757;CE 3770 204 FT. US FROM C/L OF REVISED CULVERT					

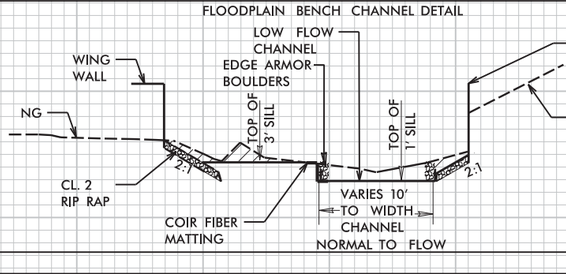
FEMA PERFORMANCE TAB	
	100y
DUPLICATE EFFECTIVE	NA
CORRECTED EFFECTIVE	700.0
REVISED	700.4
@SECTION 3757; CE 377 204 FT.US FROM C/L OF REV. C	

BAFFLE DETAIL
(LOOKING DOWNSTREAM)

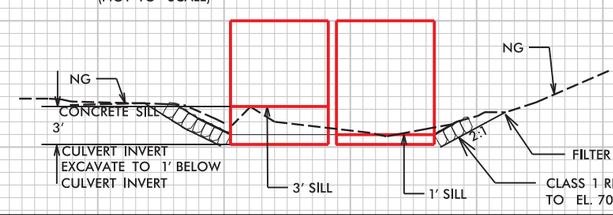


NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

FLOODPLAIN BENCH CHANNEL DETAIL



INLET /OUTLET SILL AND
CHANNEL CLEANOUT (LOOKING DOWNSTREAM)
(NOT TO SCALE)



NOTES:
1. THE EDGE OF THE LOW FLOW CHANNEL SHALL BE ARMORED WITH BOULDERS. THE DEPTH OF ARMOR PROTECTION SHOULD EXTEND 1.5' BELOW THE STREAM BED LINED WITH COIR FIBER MATTING.

2. EDGE ARMOR CAN BE NATURAL STREAM BOULDERS OR EXTRACTED FROM CLASS I RIP RAP OR SHOT ROCK MATERIAL AND CAN BE CUBICAL OR RECTANGULAR IN NATURE.

3. ACCEPTABLE BOULDERS FOR THE EDGE ARMOR SHALL HAVE THE FOLLOWING MINIMUM DIMENSIONS; 3'X2'X1'. UNSUITABLE EDGE ARMOR MATERIAL THAT REMAINS FROM CLASS I RIP RAP OR SHOT ROCK STORES, MAY BE USED IN BACK FILL OF THE OVER BANK AREA OR DISCARDED.

8/17/99

REVISIONS

PERMIT DRAWING
SHEET 21 OF 23

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

50 25 0 50 100

-L-
PI Sta 133+14.77
Δ = 3° 55' 58.4" (LT)
D = 0° 21' 29.2"
L = 1,098.27'
T = 549.35'
R = 16,000.00'
e = NC (.02)

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
U-3440	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L- STA 126+50.00 SEE SHEET 12

MATCHLINE -L- STA 140+00.00 SEE SHEET 14

SITE S7-2

SITE S7-3

ABERNATHY, JAMES E.
FREEMAN, JOHNSIE S.
ABERNATHY, OPAL S.
MOORE, NORMAN R.
UNKNOWN OWNER
IPS ESTATES, U.W.
RUBINSTEIN, BRIAN
BARBER, FRANK LEE
DALRYMPLE, JOHN W.
DAVIS SR, KENNETH L.
MURPH, MERLE D.
MCGINNIS, JIMMIE D
WATTS, BILLY E.
HARVEY, EL ZENA
ISENHOUR, DENNIS C.
REYNOLDS, CAROLYN P.
LABARGE, SHERRY L.
EURY, IRA D.
JENNIE M. LINGERFELT
JACOBS, GRACE D.
LINGERFELT, JENNIE M.
HILTON, BIM D.
MOORE, ALVIN W.
COOPER, JIMMY R.
BUTLER BUILDERS OF NORTH CAROLINA INC

TOE PROTECTION LINE WITH CL. B RIP RAP EST. 55 TONS EST. 167 SY GEOTEXTILE SEE DETAIL 13A

TOE PROTECTION LINE WITH CL. B RIP RAP EST. 10 TONS EST. 42 SY GEOTEXTILE SEE DETAIL 13E

TEMPORARY SURFACE WATER IMPACTS

BANK STABILIZATION

LATERAL 3' BASE DITCH LINE WITH PRSM EST. 54 SY SEE DETAIL 13B

PIPE OUTLET CHANNEL WITH CL. B RIP RAP EST. 10 TONS EST. 42 SY GEOTEXTILE SEE DETAIL 13E

TOE PROTECTION LINE WITH PSRM EST. 158 SY SEE DETAIL 13C

PAVED DITCH AT RETAINING WALL SEE DETAIL 13D

FILL WITH FLOWABLE MATERIAL

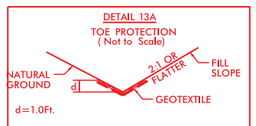
NC 3 MOORESVILLE RD 24' BST

SR 1135 FRANK ST 22' BST

SR 1130 PLACEMENT AVE 18' BST

SR 1134 BEN AVE 16' BST

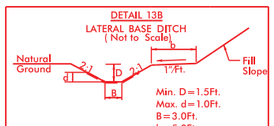
DETAIL 13A
TOE PROTECTION
(Not to Scale)



Type of Liner = CL. B Rip-Rap

FROM -L- STA 125+41 TO 127+00 RT
FROM -L- STA 126+40 TO 128+00 LT

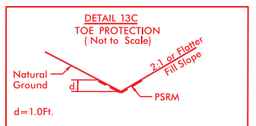
DETAIL 13B
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = PSRM

FROM -L- STA. 134+30 TO 134+80 LT

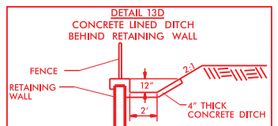
DETAIL 13C
TOE PROTECTION
(Not to Scale)



Type of Liner = PSRM

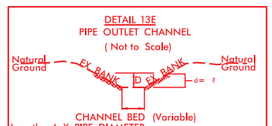
FROM -L- STA. 135+48 TO 137+20 LT

DETAIL 13D
CONCRETE LINED DITCH
BEHIND RETAINING WALL



FROM -L- STA. 131+92 RT TO 136+25 RT

DETAIL 13E
PIPE OUTLET CHANNEL
(Not to Scale)



Length = 4 X PIPE DIAMETER.
D = PIPE DIAMETER
Est.=10 Tons of Class B Rip-Rap

-L- STA. 128+20 LT
-L- STA. 134+38 LT

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8/17/99

REVISIONS

PERMIT DRAWING
SHEET 22 OF 23

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

50 25 0 50 100

-L-
PI Sta 133+14.77
Δ = 3° 55' 58.4" (LT)
D = 0° 21' 29.2"
L = 1,098.27'
T = 549.35'
R = 16,000.00'
e = NC (.02)

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
U-3440	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Stantec

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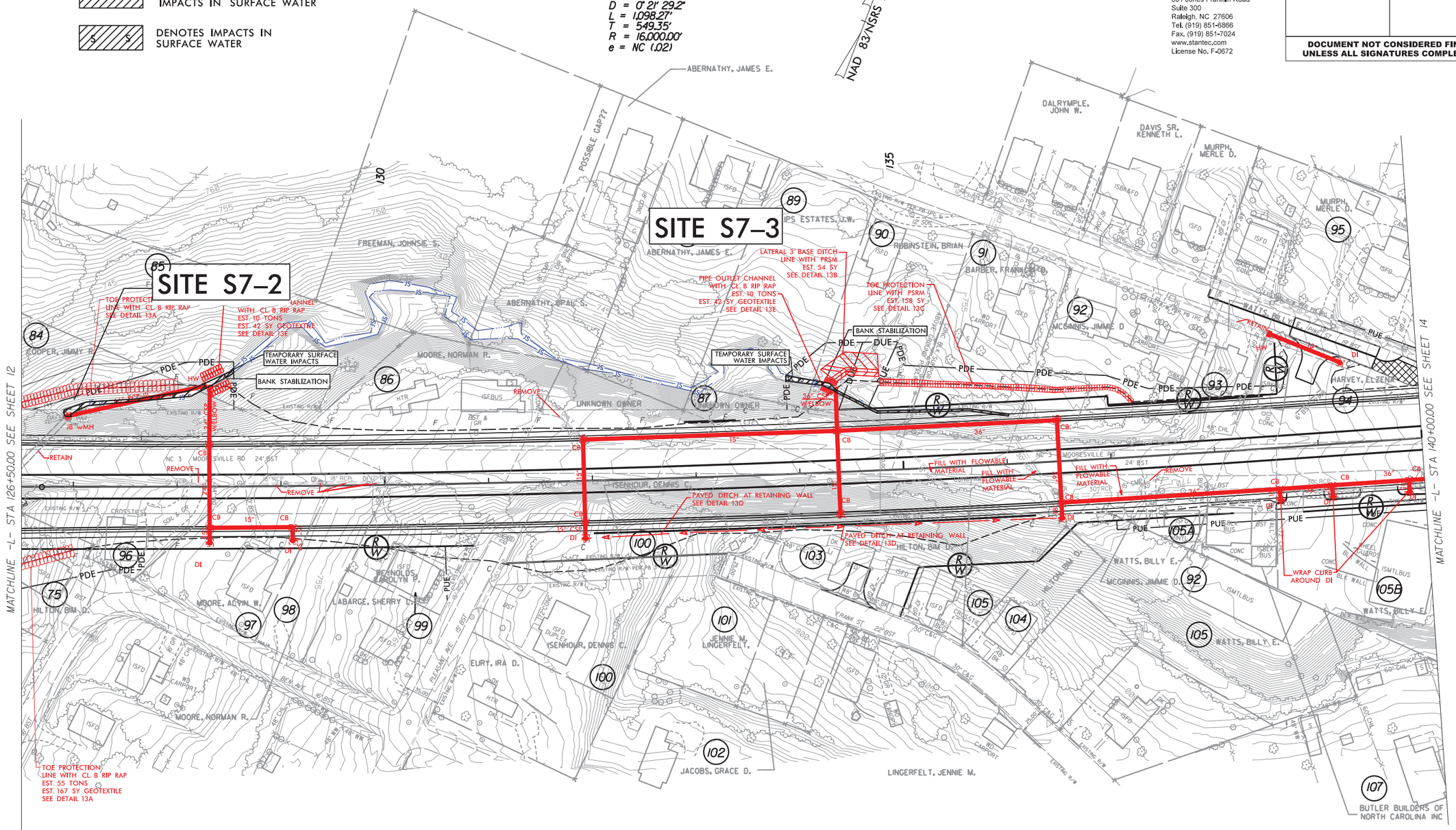
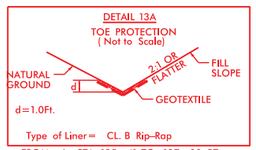
www.stantec.com
License No. F-0672

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

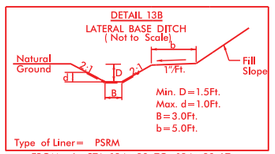


DETAIL 13A
TOE PROTECTION
(Not to Scale)



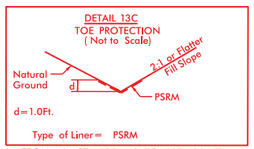
Type of Liner= CL. B Rip-Rap
FROM -L- STA 125+41 TO 127+00 RT
FROM -L- STA 126+40 TO 128+00 LT

DETAIL 13B
LATERAL BASE DITCH
(Not to Scale)



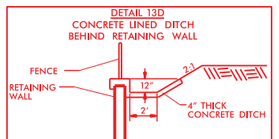
Min. D=1.5Ft.
Max. d=1.0Ft.
B=3.0Ft.
b=5.0Ft.
Type of Liner= PSRM
FROM -L- STA. 134+30 TO 134+80 LT

DETAIL 13C
TOE PROTECTION
(Not to Scale)



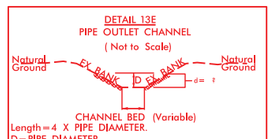
d=1.0Ft.
Type of Liner= PSRM
FROM -L- STA. 135+48 TO 137+20 LT

DETAIL 13D
CONCRETE LINED DITCH
BEHIND RETAINING WALL



FROM -L- STA. 131+92 RT TO 136+25 RT

DETAIL 13E
PIPE OUTLET CHANNEL
(Not to Scale)



CHANNEL BED (Variable)
Length=4 X PIPE DIAMETER.
D=PIPE DIAMETER
Est.=10 Tons of Class B Rip-Rap
-L- STA. 128+20 LT
-L- STA. 134+38 LT

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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill in Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Temp Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
S1	L 37+00 TO 40+15 LT	ROAD FILL							0.02		300		
MB	L 40+61	10' X 9' RCBC							0.03	< 0.01	214	51	
IBC	L 68+25	BRIDGE								0.01		96	
IBC	L 68+55 LT	BANK STABILIZATION							< 0.01	0.02	13	47	
IBC	L 67+61 RT	BANK STABILIZATION							< 0.01	< 0.01	24	16	
WA	L 70+30 TO 72+56 LT	ROAD FILL	0.05										
S2	L72+70 TO 73+16 LT	ROAD FILL							0.02	< 0.01	109	22	
S3	L 86+12	42" WELDED STEEL							< 0.01		126	0	
S3	L 86+12 LT	BANK STABILIZATION							< 0.01	< 0.01	54	9	
S4	L 97+30	66" WELDED STEEL							0.01		181		
S4	L 96+43 LT	BANK STABILIZATION							< 0.01	< 0.01	47	18	
S4	L 97+92 RT	BANK STABILIZATION							< 0.01	< 0.01	12	9	
S5	L 109+75	36" WELDED STEEL							0.01		105		
S5	L 110+07 LT	BANK STABILIZATION							< 0.01	< 0.01	12	12	
S5	L 109+46 RT	BANK STABILIZATION							< 0.01	< 0.01	12	6	
S6	L 117+50	2-8' X 10' RCBC							0.08		246		
S6	L115+79 LT	BANK STABILIZATION							< 0.01	< 0.01	15	17	
S6	L119+23 RT	STREAM REALIGNMENT							0.01	< 0.01	72	10	
S7-1	Y15 12+25	48" RCP							< 0.01	< 0.01	24	31	
S7-1	Y15 12+25	BANK STABILIZATION							< 0.01	< 0.01	12	8	
S7-2	L 126+30	66" RCP							0.03		265		
S7-2	L 125+15 RT	BANK STABILIZATION							< 0.01		20		
S7-2	L 128+55 LT	BANK STABILIZATION							< 0.01	< 0.01	22	10	
S7-3	L 134+38	ROAD FILL							< 0.01		170		
S7-3	L 134+38	BANK STABILIZATION							< 0.01	< 0.01	12	36	
TOTALS*:			0.05						0.25	0.06	2067	399	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
U-3440 05/13/2016
CABARRUS COUNTY
WBS - 39010.1.1 (U-3440)

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