STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

July 28, 2014

MEMORANDUM TO: Mr. Pat Ivey, PE
Division 9 Engineer

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

SUBJECT: Forsyth County; Winston Salem Northern Beltway from US 158 to I-40 Business/US 421; Federal Aid Project No. FSTR HPPNHF-0918(46); WBS Element 34839.1.1; **TIP U-2579B**

Attached are the U.S. Army Corps of Engineers (USACE) Section 404 Individual Permit and the N.C. Division of Water Resources (NCDWR) Section 401 Water Quality Certification for the above referenced project. All environmental permits have been received for the construction of this project.

A copy of this permit package has been posted on the NCDOT website at: https://connect.ncdot.gov/resources/Environmental, under *Quick Links > Issued Permits*

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

Mr. Eric Midkiff, P.E., Project Development & Environmental Analysis Unit
Ms. Amy Euliss, Division Environmental Officer
Dr. Majed Al-Ghandour, P.E., Programming and TIP
Mr. Glenn Mumford, P.E., Roadway Design Unit
Mr. Robert Memory, Utilities Unit
Mr. Jay Twisdale, P.E., Hydraulics Unit
Mr. Tom Koch, P.E., Structure Design Unit
Mr. Mark Staley, Roadside Environmental Unit
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Kevin Bowen, P.E., State Bridge Construction Engineer
Mr. Clarence Coleman, P.E., FHWA
Dr. Cynthia Van Der Wiele, US EPA
Ms. Beth Harmon, NC EEP
Ms. LeiLani Paugh, ICI/Onsite Mitigation Group
Mr. Randy Griffin, NES Engineering Group

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6100
FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

LOCATION:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610-4328

PROJECT COMMITMENTS

TIP Project No. U-2579B
Winston-Salem Northern Beltway
from US 158 to I-40 Business/US 421
Forsyth County
WBS Element 34839.1.1

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Project Development and Environmental Analysis Unit, Roadway Design, and Division 9

A design noise study will be prepared for the selected alternative. The date of public knowledge for noise abatement purposes is the date the Record of Decision (ROD) is signed. Projects let for construction on or after July 13, 2011 shall be reviewed under NCDOT 2011 noise analysis criteria; however, the original date of public knowledge shall remain unchanged.

Action: The ROD was signed in February 2008. A design noise study has been completed for U-2579AB, B, and C. Design noise study was completed December 3, 2009. The request to update the noise study under NCDOT 2011 policy has been placed and underway.

Roadway Design, Utility Unit, Division 9, Right of Way Branch, and GeoEnvironmental Section

NCDOT will continue to work with residents of affected communities to develop mitigation strategies for community impacts. The following options will be considered during final design to minimize impacts to communities/subdivisions: construction of noise abatement barriers landscaping or vegetative screens based on NCDOT policies and guidelines. These types of options already have been incorporated into the Project R-2247, Project U-2579, and Project U-2579A preliminary engineering designs where practicable, but will be further considered during final design.

Action: The preliminary designs are completed; NCDOT will continue to coordinate with residents until final design is complete.

During final design for Projects R-2247, U-2579, and U-2579A, all utility providers and railroad operators would be coordinated with to ensure that the proposed design and construction of the project would not substantially disrupt service.

This is a standard commitment.

The development of this project will be further coordinated with the City of Winston Salem and Forsyth County Parks and Recreation Departments to minimize any conflicts with future parks and greenways planning. Provisions will be considered to maintain the future viability of any impacted proposed greenways.

Action: Roadway Design coordinated with the city of Winston Salem and will continue to

coordinate during final design.

NCDOT will coordinate with the NCDENR Division of Waste Management regarding the Reynolds Auto Junkyard and other solid waste sites along the selected alternatives for Projects R-2247, U-2579, and U-2579A. Impacted sites will be remediated as required.

Action: The GeoEnvironmental Section of the Geotechnical Engineering Unit will coordinate with the Right of Way Branch to provide acquisition recommendations for potentially contaminated parcels. This coordination will occur prior to the parcel being acquired. Prior to construction the GeoEnvironmental Section will also coordinate with the NCDENR Division of Waste Management to address contaminated soil and ground water that may be encountered during construction.

NCDOT will consider wildlife crossings where appropriate in the vicinity of stream crossings, which will allow animals to cross under the Beltway.

Action: No special wildlife crossings are proposed. Opportunities for wildlife to cross exist along streams under bridges and through culverts. Also, small wildlife can use floodplain drains which are provided in the B and C projects.

NCDOT will coordinate with the Town of Kemersville regarding the compatibility of the Beltway design with the proposed Big Mill Farm Road interchange at US 421. This coordination will take place once all relevant design information has been obtained regarding the design of the Big Mill Farm Road interchange.

Action: Roadway Design coordinated and will continue to coordinate until project completion.

Hydraulics Unit

All bridges and culverts located in designated FEMA flood zones will be designed such that an increase in flood elevation would not exceed the lesser of 0.5 foot for the 100-year flood event or the elevation needed to protect structures.

This commitment will be fulfilled during final design.

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).

The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP) until project completion.

NCDOT will avoid installing bridge bents in creeks to the maximum extent practicable.

This commitment will be fulfilled during final design.

Roadside Environmental and Division 9

During design and construction, efforts will be made to minimize the impact to existing vegetative buffers and natural areas. NCDOT will prepare a post construction landscape

design/corridor plan to mitigate construction impacts and integrate enhancements, while remaining sensitive to the environment and to the safety of the traveling public.

This is standard commitment; post construction plans will be prepared.

NCDOT will incorporate sediment and erosion control measures according to the Design Standards in Sensitive Watersheds for all construction in high quality water (HQW) zones in compliance with 15a NCAC 04B.0124.

Action: There are no qualifying factors present at this section.

Roadway Design and Hydraulics Unit

Generally, 2:1 slopes will be used where possible to minimize culvert length, and NCDOT will shorten culvert lengths where possible and daylight systems between culverts where possible in interchange areas.

Action: The current plans show side slopes near streams and wetlands are mostly 2:1 to minimize impact.

Division 9

A pre-construction survey will be done in areas of possible concern regarding structural damage to assess a pre-construction condition.

This commitment will be done prior to initiation of construction.

NCDOT will coordinate with local media during the construction of the project to alert the public of traffic restrictions and construction-related activities.

This commitment will be implemented during construction

This 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.

This commitment will be fulfilled after the completion of the project.

COMMITMENTS FROM PERMITTING

Natural Environment Section-Engineering Group, Roadside Environmental, and Division 9

USACE 404 Special Conditions:

17.B.1. The Permittee shall fully implement the compensatory mitigation plan, entitled, Mitigation Plan Winston-Salem Northern Beltway Forsyth County, North Carolina, T.I.P. Number U-2579B, dated August 22, 2013. Activities prescribed by this plan shall be initiated prior to, or concurrently with, commencement of any construction activities within jurisdictional areas authorized by this permit. The permittee shall (reestablish, rehabilitate, enhance, establish) 450 linear feet of streams in accordance with the plan with the following conditions:

a) The permittee, NCDOT, is the party responsible for the implementation, performance and long term management of the compensatory mitigation project.

b) Any changes or modifications to your mitigation plan shall be approved by the Corps.

c) The permittee shall maintain the entire mitigation site in its natural condition, as altered by the work in the mitigation plan, in perpetuity. Prohibited activities within the mitigation site specifically include, but are not limited to: Filling; grading; excavating; earth movement of any kind; construction of roads, walkways, buildings, signs, or any other structure; any activity that may alter the drainage patterns on the property; the destruction, cutting, removal, mowing, or other alteration of vegetation on the property; disposal or storage of any garbage, trash, debris or other waste material; graze or water animals, or use for any agricultural or horticultural purpose; or any other activity which would result in the property being adversely impacted or destroyed, except as specifically authorized by this permit.

d) All mitigation areas shall be monitored for a minimum of 5 years or until deemed successful by the Corps in accordance with the monitoring requirements included in the mitigation plan.

NCDWR 401 Special Conditions:

3. Compensatory mitigation for 450 linear feet of impacts to jurisdictional streams shall be provided by draining a pond (Site 20) and restoring the stream that forms in the relic pond. The on-site stream restoration shall be constructed in accordance with your Mitigation Plan dated August 22, 2013 that was submitted as part of the 401 Individual Water Quality Certification application dated January 21, 2014.

4. The Permittee will notify DWR when draining of the pond will commence.

5. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase.

6. Please be reminded that an as-built for the stream restoration shall be submitted to the North Carolina Division of Water Resources 401 Wetlands Unit within 60 days following completion of the restoration project. If the parameters of this condition are not met, then the Permittee shall supply additional stream mitigation for the 450 linear feet of impacts.

7. The stream restoration should at least have a 50-foot wide native wooded buffer planted on both sides of the stream to the greatest extent possible and as practicable given site· specific constraints.

8. Coir fiber matting (or other organic matting material) should be used if necessary for site stabilization.

9. Natural channel construction techniques should be employed if possible within the channel that forms in the relic pond to ensure that the jurisdictional stream channel upstream and downstream of the drained pond remains stable and that no secondary impacts occur within the channels as a result of draining the pond.

10. If stream that forms in the relic pond does not stabilize by year 2, the Permittee should submit a plan to DWR describing how the Permittee intends to correct the problem and restabilize the stream channel.

11. The Permittee shall note the presence of invasive vegetation in the monitoring reports and treat as needed.

12. The Permittee shall adhere to performance standards and monitoring requirements as outlined in the Mitigation Plan dated August 22, 2013 as was submitted in the original application dated January 21, 2014 and include the following:

a) Visually monitor all stream bank and buffer vegetative plantings to assess stream bank stability and buffer success.

b) Buffer plantings shall be monitored quantitatively with representative plots that cover a minimum of four plots or 2% of the buffer.

c) Woody stems should be counted and recorded and provided as part of the annual monitoring report.

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

REPLY TO
ATTENTION OF

June 17, 2014

RECEIVED
JUN 23 2014
OFFICE OF NATURAL ENVIRONMENT

Regulatory Division/1200A

Action ID: SAW-2008-03183

Mr. Richard W. Hancock, PE
North Carolina Department of Transportation
Project Development and Environmental Analysis
Natural Environment Section
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Hancock:

In accordance with your written request of January 21, 2014, and the ensuing administrative record, enclosed is a Department of the Army (DA) Permit to authorize the permanent fill impacts to approximately 9,800 linear feet of jurisdictional stream channel, an additional 1,553 linear feet of temporary stream channel impact, permanently impact 1.96 acres of jurisdictional wetlands, and 4.36 acres of open water impact (ponds) associated with the NCDOT TIP No. U-2579B; Winston-Salem Northern Beltway Eastern Section B; from US 158 to I-40 Bus/US 421, east of Winston-Salem, Forsyth 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, 2019.

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.

Printed on Recycled Paper

You should address all questions regarding this authorization to Mr. John Thomas in the Raleigh Regulatory Field Office, telephone number (919) 554-4884, extension 25.

Thank you in advance for completing our Customer Survey Form. This can be accomplished by visiting our web-site at http://regulatory.usacesurvey.com and completing the survey on-line. We value your comments and appreciate you taking the time to complete a survey each time you interact with our office.

Sincerely,

for Steven A. Baker
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, MD 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. Fritz Rohde
Habitat Conservation Division – Atlantic Branch
101 Pivers Island Road
Beaufort, North Carolina 28516

Mr. Todd Bowers
Wetlands Regulatory Section
U.S. Environmental Protection Agency – Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 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

RECEIVED
JUN 11 2014
RALEIGH REGULATORY
FIELD OFFICE

DEPARTMENT OF THE ARMY PERMIT

Permittee: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION - ATTN: MR. RICHARD HANCOCK

Permit No: SAW-2008-03183

Issuing Office: USAED, WILMINGTON

Project Description: The project identified as TIP No. U-2579B, consists of construction on new alignment an eastern section of the proposed Winston-Salem Northern Beltway from US 158 to I-40 Bus/US 421. The new road alignment will consist in each direction 3 12-foot lanes plus 1 12-foot future lane with a 12-foot paved shoulder and a 22-foot grassed median. The road alignment will be a control access freeway with interchanges at US 158 and I-40 Bus/US 421. There will also be widening and merge lane improvements located east and west on the existing I-40 Bus/US 421 alignment at the proposed freeway interchange. The estimated length of the project is 4.06 miles. This project is included in the North Carolina Department of Transportation's Transportation Improvement Program (TIP). Total jurisdictional stream impacts within the Yadkin River Basin (HUC 030040101) include 9,800 linear feet of permanent stream channel impacts, which includes bank stabilization, and 1,553 linear feet of temporary stream channel impact. There will be a total of 1.96 acres of jurisdictional wetlands impact and 4.36 acres of open water impact (ponds) in the same Yadkin River Basin.

In order to compensate for impacts associated with this permit, NCDOT will provide onsite mitigation of 450 feet of warm water stream by restoring one stream channel at a proposed drained pond site (Permit Site No. 20) and payment to the North Carolina Ecosystem Enhancement Program (NCEEP) for 16,863 warm stream mitigation units within the Yadkin River Basin (Cataloging Unit 03040101), to mitigate for permanent loss impacts to 9,494 linear feet of streams with more than minimal function. NCDOT will provide payment to the NCEEP for 3.92 riparian wetland mitigation units within the Yadkin River Basin (Cataloging Unit 03040101) for permanent loss impacts to 1.96 acre of riparian wetlands.

Project Location: The project corridor for TIP No. U-2579B is a new alignment linear transportation corridor from US 158 running southeast to a new interchange with I-40 Bus / US 421 that includes widening up-grades at the existing I-40 Bus / US 421 alignment associated with the proposed new interchange, located east of Winston-Salem, Forsyth County, North Carolina.

Project Length: 4.06 miles Nearest Town: Winston -Salem; River Basin: Yadkin River; Nearest Waterways: Kerners Mill Creek & Lowery Creek LATITUDE & LONGITUDE: Latitude North: 36.1178311; Longitude West: -80.1380434.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2019**. 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.

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

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.

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.

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

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

(PERMITTEE) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ATTN: RICHARD W. HANCOCK

06/04/2014
(DATE)

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

for *(DISTRICT Commander)* STEVEN A. BAKER, COLONEL

17 Jun 2014
(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-2008-03183
North Carolina Department of Transportation; TIP U-2579B

WORK LIMITS

1. CONSTRUCTION PLANS: Except as authorized by this permit or any USACE 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, or shall any activities take place that cause the degradation of waters or wetlands. There shall be no excavation from, waste disposal into, or degradation of, jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and fill activities connected with this project. In addition, 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, into, or out of waters or wetlands or to reduce the reach of waters or wetlands.

2.UNAUTHORIZED DREDGE OR FILL: Except as authorized by this permit or any USACE 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.

3. 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.

4. DEVIATION FROM PERMITTED PLANS: The permittee shall 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, Mr. John Thomas, Raleigh Regulatory Field Office, prior to any active construction in waters or wetlands.

5. PRECONSTRUCTION MEETING: The permittee shall schedule and attend a preconstruction meeting between its representatives, the contractors representatives, and the Corps of Engineers, Raleigh 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 provide the USACE, Raleigh Field Office, NCDOT Project Manager, with a copy of the final permit plans at least two weeks prior to the preconstruction meeting along with a description of any changes that have been made to the project's design, construction methodology or construction timeframe. The permittee shall schedule the preconstruction meeting for a time frame when the USACE, NCDCM, and NCDWQ Project Managers can attend. The permittee shall invite the Corps, NCDCM, and NCDWQ Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting.

RELATED LAWS

6. WATER QUALITY CERTIFICATION: The North Carolina Division of Water Quality (DWQ) permit/certification number WQC003987 was issued for this project on April 11, 2014. Special conditions were issued associated with this water quality permit/certification and a copy of these conditions is attached as Exhibit A. These referenced conditions are hereby incorporated as special conditions of this permit.

7. 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.

PROJECT MAINTENANCE

8. 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.

9. 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.

Special Conditions
Action ID SAW-2008-03183
North Carolina Department of Transportation; TIP U-2579B

10. 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.

11. SILT-FENCING: The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. 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).

12. 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.

13. EROSION CONTROL MEASURES IN WETLANDS: The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

ENFORCEMENT

14. REPORTING ADDRESS: All reports, documentation and correspondence required by the conditions of this permit shall be submitted to the following address: U.S. Army Corps of Engineers, Regulatory Division, Raleigh Regulatory Field Office, c/o Mr. John Thomas, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587, and by telephone at: 919-554-4884, ext. 25. The Permittee shall reference the following permit number, SAW-2008-03183, on all submittals.

15. REPORTING VIOLATIONS OF THE CLEAN WATER ACT AND RIVERS AND HARBORS ACT: Violation of these conditions or violation of Section 404 of the Clean Water Act of Section 10 of the Rivers and Harbors Act must be reported in writing to the Wilmington District U.S. Army Corps of Engineers within 24 hours of the permitee's discovery of the violation.

16. 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.

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17. COMPENSATORY MITIGATION:

A. In Lieu Fee: 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.

B. Permittee Responsible Mitigation:

1. The Permittee shall fully implement the compensatory mitigation plan, entitled, Mitigation Plan Winston-Salem Northern Beltway Forsyth County, North Carolina, T.I.P. Number U-2579B, dated August 22, 2013. Activities prescribed by this plan shall be initiated prior to, or concurrently with, commencement of any construction activities within jurisdictional areas authorized by this permit. The permittee shall (re-establish, rehabilitate, enhance, establish) 450 linear feet of streams in accordance with the plan with the following conditions:

   a) The permittee, NCDOT, is the party responsible for the implementation, performance and long term management of the compensatory mitigation project.

   b) Any changes or modifications to your mitigation plan shall be approved by the Corps.

c) The permittee shall maintain the entire mitigation site in its natural condition, as altered by the work in the mitigation plan, in perpetuity. Prohibited activities within the mitigation site specifically include, but are not limited to: Filling; grading; excavating; earth movement of any kind; construction of roads, walkways, buildings, signs, or any other structure; any activity that may alter the drainage patterns on the property; the destruction, cutting, removal, mowing, or other alteration of vegetation on the property; disposal or storage of any garbage, trash, debris or other waste material; graze or water animals, or use for any agricultural or horticultural purpose; or any other activity which would result in the property being adversely impacted or destroyed, except as specifically authorized by this permit.

d) All mitigation areas shall be monitored for a minimum of 5 years or until deemed successful by the Corps in accordance with the monitoring requirements included in the mitigation plan.

2. Remedial Mitigation Plan: If the compensatory mitigation fails to meet the performance standards 5 years after completion of the compensatory mitigation objectives, the compensatory mitigation will be deemed unsuccessful. Within 60 days of notification by the Corps that the compensatory mitigation is unsuccessful, the Permittee shall submit to the Corps an alternate compensatory mitigation proposal to fully offset the functional loss that occurred as a result of the project. The alternate compensatory mitigation proposal may be required to include additional mitigation to compensate for the temporal loss of wetland function associated with the unsuccessful compensatory mitigation activities. The Corps reserves the right to fully evaluate, amend, and approve or reject the alternate compensatory mitigation proposal. Within 120 days of Corps approval, the Permittee will complete the alternate compensatory mitigation proposal.

3. Mitigation Release: The Permittee's responsibility to complete the required compensatory mitigation, as set forth in the Compensatory Mitigation Special Condition of this permit will not be considered fulfilled until mitigation success has been demonstrated and written verification has been provided by the Corps. A mitigation area which has been released will no longer require monitoring or reporting by the Permittee; however the Permittee, Successors and subsequent Transferees remain perpetually responsible to ensure that the mitigation area(s) remain in a condition appropriate to offset the authorized impacts in accordance with the approved mitigation and monitoring plan and the general and special conditions of this permit.

Special Conditions
Action ID SAW-2008-03183
North Carolina Department of Transportation; TIP U-2579B

CONCRETE CONDITION

18. 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).

NC DOT STANDARD PERMIT CONDITIONS

19. 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.

20. TEMPORARY FILLS: Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

21. BORROW AND WASTE:

A. 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 USACE 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 USACE before approving any borrow or waste sites that are within 400 feet of any streams or wetlands.

B. To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent waters and wetlands, 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 of Engineers with appropriate maps indicating the locations of proposed borrow or waste sites as soon as such information is available. The permittee will coordinate with the Corps of Engineers before approving any borrow or waste sites that are within 400 feet of any stream or wetland. All jurisdictional wetland delineations on borrow and waste areas shall be verified by the Corps of Engineers and shown on the approved reclamation plans. The permittee shall ensure that all such areas comply with the Special Condition 1 above, of this permit and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This documentation will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with Special Condition 1 above. All information will be available to the Corps of Engineers upon request. The permittee shall require its contractors to complete and execute reclamation plans for each waste and borrow site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the Corps of Engineers within 30 days of the completion of the reclamation work.

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

Permittee: NC Department of Transportation, Div. of Highways **Action ID:** SAW-2008-03183
Project Name: Winston-Salem Northern Beltway Eastern Section B; TIP No. U-2579B **County: Forsyth**

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 Ecosystem Enhancement Program (NCEEP), 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:** 03040101, Yadkin River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
9,044				1.96		

*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:** 03040101, Yadkin River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
16,863				3.92		

Mitigation Site Debited: NCEEP

(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCEEP, list NCEEP. If the NCEEP 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 NCEEP), 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: John Thomas
USACE Field Office: Raleigh Regulatory Field Office
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587
Email: **john.t.thomas.jr@usace.army.mil**

USACE Project Manager Signature

June 02, 2014
Date of Signature

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.

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at our website at http://regulatory.usacesurvey.com/ to complete the survey online.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: **NC Dept. of Transportation** **Attn: Mr. Richard W. Hancock, PE**	File Number: **SAW-2008-03183**	Date: **June 2, 2014**

Attached is:	See Section below
☒ INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐ PERMIT DENIAL	C
☐ APPROVED JURISDICTIONAL DETERMINATION	D
☐ PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: **District Engineer, Wilmington Regulatory Div.** **Attn: Mr. John Thomas** **3331 Heritage Trade Drive** **Raleigh, North Carolina 27587** **Phone: (919) 554-4884, extension 25**	If you only have questions regarding the appeal process you may also contact: **Mr. Jason Steele, Administrative Appeal Review Officer** **CESAD-PDO** **U.S. Army Corps of Engineers, South Atlantic Division** **60 Forsyth Street, Room 10M15** **Atlanta, Georgia 30303-8801** **Phone: (404) 562-5137**

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: John Thomas, 69 Darlington Avenue, Wilmington, North Carolina 28403

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

REPLY TO
ATTENTION OF

July 02, 2014

RECEIVED
JUN - 8 2014
OFFICE OF NATURAL ENVIRONMENT

Regulatory Division/1200A

Action ID: SAW-2008-03183

Mr. Richard W. Hancock, PE
North Carolina Department of Transportation
Project Development and Environmental Analysis
Natural Environment Section
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Hancock:

Reference is made to your Department of the Army (DA) permit issued on June 17, 2014, that authorized permanent discharge of fill impacts to 9,800 linear feet of jurisdictional stream channel, an additional 1,553 linear feet of temporary stream channel impact, permanently impact 1.96 acres of jurisdictional wetlands, and 4.36 acres of open water impact (ponds) associated with the NCDOT TIP No. U-2579B; Winston-Salem Northern Beltway Eastern Section B; from US 158 to I-40 Bus/US 421, east of Winston-Salem, Forsyth County, North Carolina.

Reference also your written request of June 24, 2014, for a modification to your DA permit to authorize changes to impacts to jurisdictional waters as defined by plans included in your request associated with proposed construction changes for Site 23 (an additional 68 feet of temporary stream impacts) and Site 28 (an additional 340 feet of bank stabilization). These changes are associated with adding a retaining wall to keep the widening of US 421 out of Smith Creek.

We have determined that the proposed changes/modifications to the construction plans including temporary/permanent impacts to jurisdictional waters are minor. Therefore, a supplemental public notice is not necessary. The permit is hereby modified to include the change in impacts to jurisdictional waters as described in the referenced provided construction plans included with your June 24, 2014, modification request. It is understood that all other conditions of the original permit remain applicable, including the permit expiration date of December 31, 2019.

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If the permitted work is not completed on or before the date herein specified, the authorization, if not previously revoked or specifically further extended, will cease and become null and void. If additional time is required to complete the project, you should contact this office with a request for an additional time extension.

Should you have questions, please contact Mr. John Thomas, Raleigh Regulatory Field Office, telephone (919) 554-4884 extension 25.

Sincerely,

For Steven A. Baker
Colonel, U.S. Army
District Commander

CC:
NC DOT / Div 9
Amy Euliss
375 Silas Creek Parkway
Winston-Salem, North Carolina 27127

BCF:
CESAW-RG
CESAW-RG-R/Thomas
CESAW-RG-R/Compliance file

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NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

John E. Skvarla, III
Secretary

July 28, 2014

Mr. Richard W. Hancock, P.E., Manager
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 with ADDITIONAL CONDITIONS for proposed Winston-Salem Northern Beltway Eastern Section from US 158 to I-40 Bus/US421, Forsyth County, TIP U-2579B; NCDWR Project No. 2014-0090v2.

Dear Mr. Hancock:

Attached hereto is a modification of Certification No. 3987 issued to The North Carolina Department of Transportation (NCDOT) originally dated April 11, 2014. This modification includes the revisions as requested in your application dated June 10, 2014 along with other modifications and editorial revisions. *This modification replaces the previous certifications dated April 11, 2014 and July 25, 2014.*

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

Sincerely,

Thomas A. Reeder, Director
Division of Water Resources

Attachments

cc: John Thomas, US Army Corps of Engineers, Raleigh Field Office (electronic copy only)
Amy Euliss, Division 9 Environmental Officer (if applicable)
Cynthia Van Der Wiele, Environmental Protection Agency (electronic copy only)
Marla Chambers, NC Wildlife Resources Commission (electronic copy only)
Jason Elliott, NCDOT, Natural Environment Section (electronic copy only)
Jim Stanfill, Ecosystem Enhancement Program
Dave Wanucha, NCDWR Winston-Salem Regional Office
File Copy

Transportation and Permitting Unit
1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-733-1290
Internet: www.ncwaterquality.org

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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 1.96 acres of jurisdictional wetlands, permanently impact 10,140 linear feet of streams, temporarily impact 1,809 linear feet of streams and permanently impact 4.36 acres of open water/pond impacts. The project shall be constructed pursuant to the original application dated January 21, 2014 and the application for revisions dated June 10, 2014. The authorized impacts for the entire project are as summarized and described below:

Wetland Impacts in the Yadkin River Basin

Permit Site No.	JD Package ID	Permanent Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Total Impacts (ac)	Impacts Requiring Mitigation (ac)
1	ES-W16	0.03	<0.01	0.02	0.06	0.06
6	ES-W18	0.03	-	<0.01	0.04	0.04
7	ES-W13	0.52	-	0.01	0.53	0.53
9	ES-W14	0.03	-	0.01	0.04	0.04
10	ES-W19	0.01	-	-	0.01	0.01
13	ESE-W1	0.33	-	-	0.33	0.33
14	ESE-W2	0.04	-	-	0.04	0.04
15	ESE-W3	0.18	-	-	0.18	0.18
17	ESE-W16	0.09	-	<0.01	0.10	0.10
19	ESE-W4	0.47	-	0.01	0.48	0.48
21	ES-W17	0.02	-	-	0.02	0.02
22	ESE-W22	0.01	-	-	0.01	0.01
24A	ESE-W20	0.03	-	-	0.03	0.03
24A	ESE-W21	0.03	-	-	0.03	0.03
27B	ESE-W17	0.05	-	-	0.05	0.05
29	No ID	-	-	<0.01	<0.01	<0.01
TOTALS (ac)		**1.87**	**<0.01**	**0.08**	**1.96**	**1.96**

Notes: Totals are rounded based upon sum of actual impacts. All permanent impacts require 2:1 USACE mitigation.

Open Water/Pond Impacts in the Yadkin River Basin

Permit Site No.	Permanent Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
7	0.59	0.59
15	2.38	2.38
16	0.16	0.16
20 (On-site mitigation)	0.85	0.85
26	0.38	0.38
Total	**4.36**	**4.36**

Total Open Water Impacts for Project: 4.36 acres.

Stream Impacts in the Yadkin River Basin

Permit Site No.	Stream Name/JD Packet ID	I/P Flow Status	Impact Type	Permanent Impacts (ft)	Impacts requiring USACE mitigation (ft)	USACE Mitigation Ratio[1]	Impacts requiring NCDWR mitigation (ft)	Temp Impacts (ft)
1	UT to Lowery Mill Creek/ ES-S45	I	Fill	142	142	1:1	0[3]	0
2	UT to Lowery Mill Creek/ ES-S36	I	Fill	109	109	1:1	0[3]	0
		P	Fill	208	208	2:1	208	0
		P	BS	10	0[2]	-	10	37
3	UT to Lowery Mill Creek/ ES-S35	P	Fill	438	438	2:1	438	33
3A	UT to Lowery Mill Creek/ ES-S35	P	Temp Detour	0	0	-	0	545
3B	UT to Lowery Mill Creek/ ES-S47	P	Temp Detour	0	0	-	0	194
4	UT to Lowery Mill Creek/ ES-S37	P	Fill	493	493	2:1	493	18
		P	BS	9	0[2]	-	9	31
5	UT to Lowery Mill Creek/ ES-S38	P	Fill	740	740	2:1	740	22
5A	UT to Lowery Mill Creek/ ES-S39	I	Fill	306	306	1:1	0[3]	0
6	UT to Martin Mill Creek/ ES-S40	P	Fill	312	312	2:1	312	42
8	UT to Martin Mill Creek/ ES-S42	P	Fill	442	442	2:1	442	53
			BS	58	0[2]	-	58	44
10	UT to Martin Mill Creek/ ES-S43	P	Fill	783	783	2:1	783	22

Permit Site No.	Stream Name/JD Packet ID	I/P Flow Status	Impact Type	Permanent Impacts (ft)	Impacts requiring USACE mitigation (ft)	USACE Mitigation Ratio[1]	Impacts requiring NCDWR mitigation (ft)	Temp Impacts (ft)
10A	UT to Martin Mill Creek/ ES-S44	P	Fill	684	684	2:1	684	0
11	Kerners Mill Creek/ ESE-S1	P	Fill	808	808	2:1	808	57
11A	Kerners Mill Creek/ ESE-S1	P	Fill	223	223	2:1	223	41
12	UT to Kerners Mill Creek/ ESE-S30	I	Fill	88	88	1:1	0[3]	205
14	UT to Smith Creek/ ESE-S3	I	Fill	688	688	1:1	0[3]	0
15	UT to Smith Creek/ ESE-S31	P	Fill	332	332	2:1	332	0
15A	UT to Smith Creek/ ESE-S32	I	Fill	108	108	1:1	0[3]	0
16	UT to Smith Creek/ ESE-S36	I	Fill	104	104	1:1	0[3]	0
17	UT to Fishers Branch/ ESE-S5	P	Fill	928	928	2:1	928	0
18	Fishers Branch/ ESE-S4	P	Fill	377	377	2:1	377	67
			BS	80	0[2]	-	80	59
20	UT to Fishers Branch/ ESE-S7	P	Fill	163	163	2:1	163	0
23	Smith Creek/ ESE-S29	P	Fill	100	100	2:1	100	32
			BS	54	0[2]	-	54	89

Permit Site No.	Stream Name/JD Packet ID	I/P Flow Status	Impact Type	Permanent Impacts (ft)	Impacts requiring USACE mitigation (ft)	USACE Mitigation Ratio[1]	Impacts requiring NCDWR mitigation (ft)	Temp Impacts (ft)
23A	UT to Smith Creek/ ESE-S43	I	Fill	57	57	1:1	0[3]	0
23B	UT to Smith Creek/ ESE-S38	P	Fill	135	135	2:1	0[4]	0
24	UT to Smith Creek/ ESE-S40	P	Fill	202	202	2:1	202	0
25	UT to Smith Creek/ ESE-S41	I	Fill	73	73	1:1	0[3]	0
			BS	21	0[2]	-	0[3]	16
27A	UT to Smith Creek/ ESE-S24	P	Fill	205	205	2:1	205	0
27B	UT to Smith Creek/ ESE-S33	P	Fill	130	130	2:1	0[4]	14
27C	UT to Smith Creek/ ESE-S34	P	Fill	116	116	2:1	0[4]	0
28	Smith Creek/ ESE-S29	P	BS	365	0[2]	-	365	188
30	Smith Creek/ ESE-S29	P	BS	28	0[2]	-	0[4]	0
31	Martin Mill Creek/ ES-S41	P	BS	21	0[2]	-	0[4]	0
TOTALS (ft)				**10,140**	**9,494**	-	**7,830**	**1,809**

Notes: P = Perennial; I = Intermittent; BS = Bank Stabilization. Underlined values reflect June 10, 2014 impact modifications. [1]Determined by USACE during final JD packet review. [2]Mitigation for bank stabilization not required by USACE. [3]Intermittent streams grandfathered from NCDWR mitigation. [4]Mitigation not required by NCDWR (less than 150 linear feet of steam).

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 January 24, 2014 and the subsequent modification request dated June 10, 2014. 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.

Project Specific Condition(s) of Certification:

1. At locations where ponds will be drained, proper measures need to be employed to drain the ponds so that impact to aquatic species is limited. If pond draining techniques create significant disturbance to native aquatic species, additional measures such as collection and relocation may be necessary to prevent a significant fish kill. Natural channel construction techniques should be employed, if possible and where applicable, to ensure that the jurisdictional stream channel above and below the drained pond remains stable, and that no secondary impacts occur within the channel as a result of draining the ponds.

Stream and Wetland Mitigation--Payment to North Carolina Ecosystem Enhancement Program (EEP)

2. Compensatory mitigation for impacts to 7,830 linear feet of streams at a replacement ratio of 1:1 is required. However, on-site compensatory mitigation for 450 linear feet of impacts to jurisdictional streams shall be provided as outlined below, resulting in 7,380 linear feet remaining that need mitigation. In addition, compensatory mitigation for impacts to 1.96 acres of riparian wetlands is required. We understand that you have chosen to perform compensatory mitigation for impacts to wetlands and streams through EEP and that EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated January 17, 2014 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-reference project, in accordance with the EEP Mitigation Banking Instrument signed July 28, 2010.

On-Site Stream Mitigation

3. Compensatory mitigation for 450 linear feet of impacts to jurisdictional streams shall be provided by draining a pond (Site 20) and restoring the stream that forms in the relic pond. The on-site stream restoration shall be constructed in accordance with your Mitigation Plan dated August 22, 2013 that was submitted as part of the 401 Individual Water Quality Certification application dated January 21, 2014.
4. The Permittee will notify DWR when draining of the pond will commence.
5. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase.
6. Please be reminded that an as-built for the stream restoration shall be submitted to the North Carolina Division of Water Resources 401 Wetlands Unit within 60 days following completion of the restoration project. If the parameters of this condition are not met, then the Permittee shall supply additional stream mitigation for the 450 linear feet of impacts.
7. The stream restoration should at least have a 50-foot wide native wooded buffer planted on both sides of the stream to the greatest extent possible and as practicable given site specific constraints.
8. Coir fiber matting (or other organic matting material) should be used if necessary for site stabilization.
9. Natural channel construction techniques should be employed if possible within the channel that forms in the relic pond to ensure that the jurisdictional stream channel upstream and downstream of the drained pond remains stable and that no secondary impacts occur within the channels as a result of draining the pond.
10. If stream that forms in the relic pond does not stabilize by year 2, the Permittee should submit a plan to DWR describing how the Permittee intends to correct the problem and restabilize the stream channel.
11. The Permittee shall note the presence of invasive vegetation in the monitoring reports and treat as needed.
12. The Permittee shall adhere to performance standards and monitoring requirements as outlined in the Mitigation Plan dated August 22, 2013 as was submitted in the original application dated January 21, 2014 and include the following:
    a) Visually monitor all stream bank and buffer vegetative plantings to assess stream bank stability and buffer success.
    b) Buffer plantings shall be monitored quantitatively with representative plots that cover a minimum of four plots or 2% of the buffer.
    c) Woody stems should be counted and recorded and provided as part of the annual monitoring report.

General Conditions of Certificate

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

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

3. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.

4. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.

5. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.

6. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.

7. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.

8. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.

9. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.

10. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.

11. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.

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

13. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification.

14. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.

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

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

17. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery.

18. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer or designate shall complete and return the enclosed "Certification of Completion Form" to notify NCDWR when all work included in the 401 Certification has been completed.

19. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction.

20. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.

21. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:

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

22. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.

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 DENR as follows:

Mr. Lacy Presnell, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center

This the 28th day of July 2014

DIVISION OF WATER RESOURCES

Thomas A. Reeder, Director
Division of Water Resources

WQC No. 3987

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

John E. Skvarla, III
Secretary

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, 1650 Mail Service Center, Raleigh, NC, 27699-1650. 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 _____

Transportation and Permitting Unit
1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-733-1290
Internet: www.ncwaterquality.org

One North Carolina Naturally

An Equal Opportunity \ Affirmative Action Employer

Mitigation Plan
Winston Salem Northern Beltway
Forsyth County, North Carolina
T.I.P. Number U-2579B
WBS No. 34839.1.1
August 22, 2013

1.0 BASELINE INFORMATION

Transportation Improvement Project (TIP) U-2579B involves the construction of a new section of highway known as the Winston Salem Northern Beltway in Forsyth County. The proposed construction of U-2579B involves unavoidable impacts to jurisdictional resources within USGS hydrologic unit 03040101 of the Upper Pee Dee River Basin. NCDOT proposes to offset a portion of these impacts with on-site mitigation.

TIP U-2579B is located in the Central Piedmont Ecoregion. The topography in the project study area is generally characterized as rolling hills with moderately steep slopes along the drainage ways. Elevations in the study area range from 850 to 900 feet above mean sea level (USGS 1971). The project study area and surrounding area consists of low density rural, residential, commercial, agricultural, and forested areas.

The mitigation site selection and mitigation work plan sections of this plan will refer to the identification labels given the affected jurisdictional resources in the associated permit drawings.

2.0 OBJECTIVES

The goal of the proposed onsite mitigation is to offset and mitigate for a portion of the impacts from the construction of U-2579B by restoring the natural flow regime to the stream channel through the removal of the dam and establishment of riparian buffer areas. This mitigation will result in a total of 450 linear feet of stream restoration.

3.0 SITE SELECTION

The proposed mitigation site is located within the proposed right-of-way for U-2579B. The site was evaluated both internally as well as discussed and reviewed with regulatory personnel during concurrence meetings and a field visit on August 1, 2013 with Amy Euliss of DWQ and Marella Buncick of the USFWS. The existing site conditions are described in this section.

U-2579B Mitigation Site 1-UT to Fisher Branch (ONE ID #034-004)

This site is located on plan sheet 19 from approximately Station 687+80 to 691+56 and coincides with Permit Drawing Site 20. An USACE Stream Quality Assessment Worksheet was not completed for this site because the site is currently a pond. UT to Fishers Branch has a NCDWQ Best usage classification of WS-III. The proposed work to UT to Fishers Branch includes the removal of the concrete dam on the UT to Fishers Branch. UT to Fisher Branch is a jurisdictional perennial stream where it enters NCDOT Right of Way. After the stream enters NCDOT Right of Way it becomes a pond that has been created by the construction of a concrete dam that is over 50 years old. The dam will be covered by roadway fill and therefore will be removed. The majority of the pond has an intact wooded buffer with some incidental clearing near the dam for access to the pond and dam.

4.0 MITIGATION WORK PLAN

The mitigation site will be constructed along with the construction of its associated section of the roadway project. Following the successful completion of the pond draining and stabilization, the site will be replanted with appropriate native tree species. The stream restoration areas will be stabilized by planting a mix of live stakes on three foot centers and matting with coir fiber on the banks as necessary. Reforestation plans are attached and can be found in Appendix A.

Native seed and mulch will be applied on all disturbed areas within the mitigation sites for stabilization purposes according to guidance and standard procedures of NCDOT's Roadside Environmental Unit. An as-built report will be submitted within 60 days of completion of the project.

The Natural Environment Section shall be contacted to provide construction assistance to ensure that each mitigation area is constructed appropriately.

U-2579B- Mitigation Site 1

The pond associated with this mitigation area, will be drained as part of the construction of U-2579B. The stream mitigation will be conducted within the drained pond. The Contractor will develop a Pond Drainage Plan for this pond and submit the plan to the Engineer at the preconstruction conference for approval. The Pond Drainage Plan shall include but not be limited to procedures and rate of water drawdown, sediment control measures, water quality monitoring, fish and wildlife relocation plan, shall address procedures avoiding the inundation of a receiving body of water with deoxygenated or nutrient rich water resulting in impacts to aquatic life or algae bloom and procedures for maintaining downstream channel stability

After the pond is drained, a natural flow regime will be restored. An evaluation of the stream channel will be conducted following dam removal. If any stabilization is needed on the channel it will be conducted at that time. Reforestation of the stream buffer will be conducted following any required channel work. Based on preliminary measurements, NCDOT will restore 450 ft. of the stream system within this drained pond area.

5.0 PERFORMANCE STANDARDS

An As-built will be submitted within 60 days of completion of the project. The As-built will document changes in the dimension, pattern, profile, vegetation plantings, and structures of the constructed channels.

Success for vegetation monitoring within the riparian buffer areas are based on the survival of at least 260 stems of five year old trees at year five. Assessment of channel stability will be based on the survival of riparian vegetation and lack of significant bank erosion, channel widening or down-cutting.

6.0 MONITORING REQUIREMENTS

All of the mitigation sites will be monitored according to the April 2003 Stream Mitigation Guidelines. The following components of Level 1 monitoring will be performed each year of the 5-year monitoring period: reference photos, plant survival (i.e., identify specific problem areas (missing, stressed, damaged or dead plantings), estimated causes and proposed/required remedial action); visual inspection of channel stability. Physical measurements of channel stability/morphology will not be performed. A monitoring report will be submitted within 60 days after completing the monitoring.

7.0 DETERMINATION OF CREDITS

NCDOT proposes to supplement mitigation provided by EEP with 450 feet of onsite stream mitigation. NCDOT proposes a 1:1 mitigation ratio for a total of 450 feet of stream credits.

An as-built report will be submitted within 60 days of completion of the each mitigation site to verify actual mitigation areas constructed and planted. The success of the mitigation areas and determination of final credits will be based upon successful completion and closeout of the monitoring period.

7.1 CREDIT RELEASE SCHEDULE

NCDOT proposes immediate, full release of the proposed mitigation to offset the unavoidable impacts associated with U-2579B.

8.0 GEOGRAPHIC SERVICE AREA

The proposed Geographic Service Area (GSA) for the mitigation sites is composed of the 8-digit Hydrologic Cataloging Unit (HUC) 03040101.

9.0 SITE PROTECTION INSTRUMENT

The mitigation area is within the NCDOT Right-of-Way for the project. It will be managed to prohibit all use inconsistent with the use as a mitigation property, including any activity that would materially alter the biological integrity or functional and educational value of the site, consistent with the mitigation plan.

The site will be placed on the Natural Environment Section's (NES) Mitigation GeoDatabase. This database is provided to all NCDOT personnel as a record of mitigation sites and their attributes, including prohibited activities. NCDOT is held by virtue of the permit associated with these mitigation sites and the associated roadway impacts to protect the sites in perpetuity.

10.0 MAINTENANCE PLAN

The mitigation sites will be held by NCDOT and placed on the NES Mitigation GeoDatabase. Once monitoring is completed and the sites are closed out, they will be placed in the NCDOT Stewardship Program for long term maintenance and protection.

If an appropriate third party recipient is identified in the future, then the transfer of the property will include a conservation easement or other measure to protect the natural features and mitigation value of the site in perpetuity.

11.0 LONG TERM ADAPTIVE MANAGEMENT PLAN

The sites will be managed by NCDOT according to the mitigation plan. Encroachments into the areas will be investigated and appropriate measures taken to minimize any negative effects. In the event that unforeseen issues arise that affect the management of the site, any remediation will be addressed by NCDOT in coordination with the Interagency Review Team.

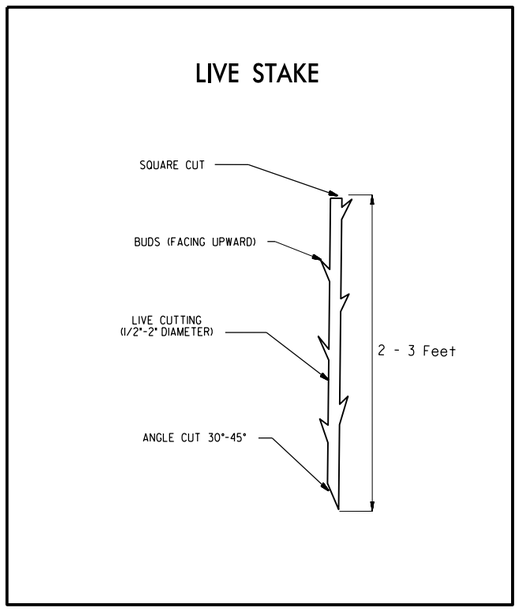
12.0 FINANCIAL ASSURANCES

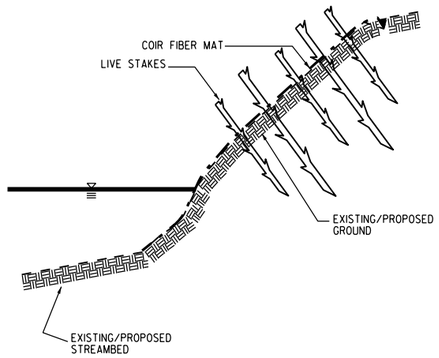
NCDOT is held by permit conditions associated with U-2579B to construct, monitor, and steward the mitigation sites. NCDOT has established funds for each project and within each Division to monitor mitigation sites and protect them in perpetuity.

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	RF-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PLANTING DETAILS

LIVE STAKES PLANTING DETAIL

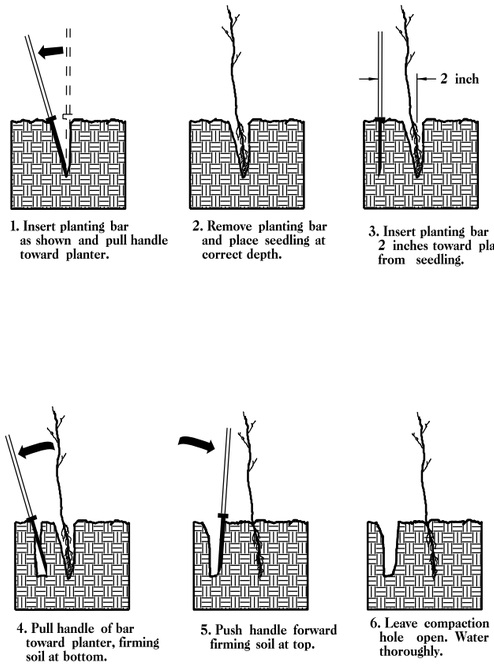




BANK STABILIZATION WITH LIVE STAKES

NOTE:
LIVE STAKES SHALL BE SPACED APPROXIMATELY 4 FEET ON CENTER
LIVE STAKES SHALL BE DRIVEN UNTIL APPROXIMATELY ¾ OF LIVE STAKE IS WITHIN GROUND

BAREROOT PLANTING DETAIL DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

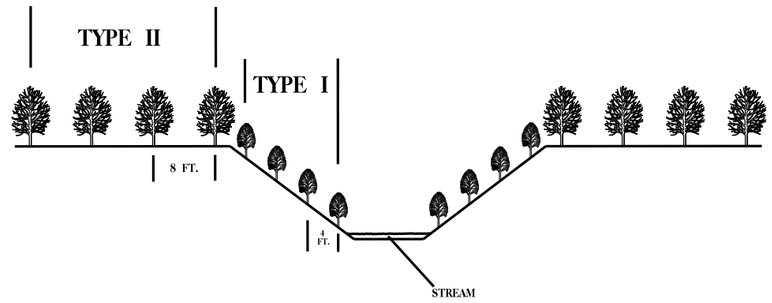
ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

☐ TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.

☐ TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

☐ NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"

STREAMBANK REFORESTATION TYPICAL



STREAMBANK REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

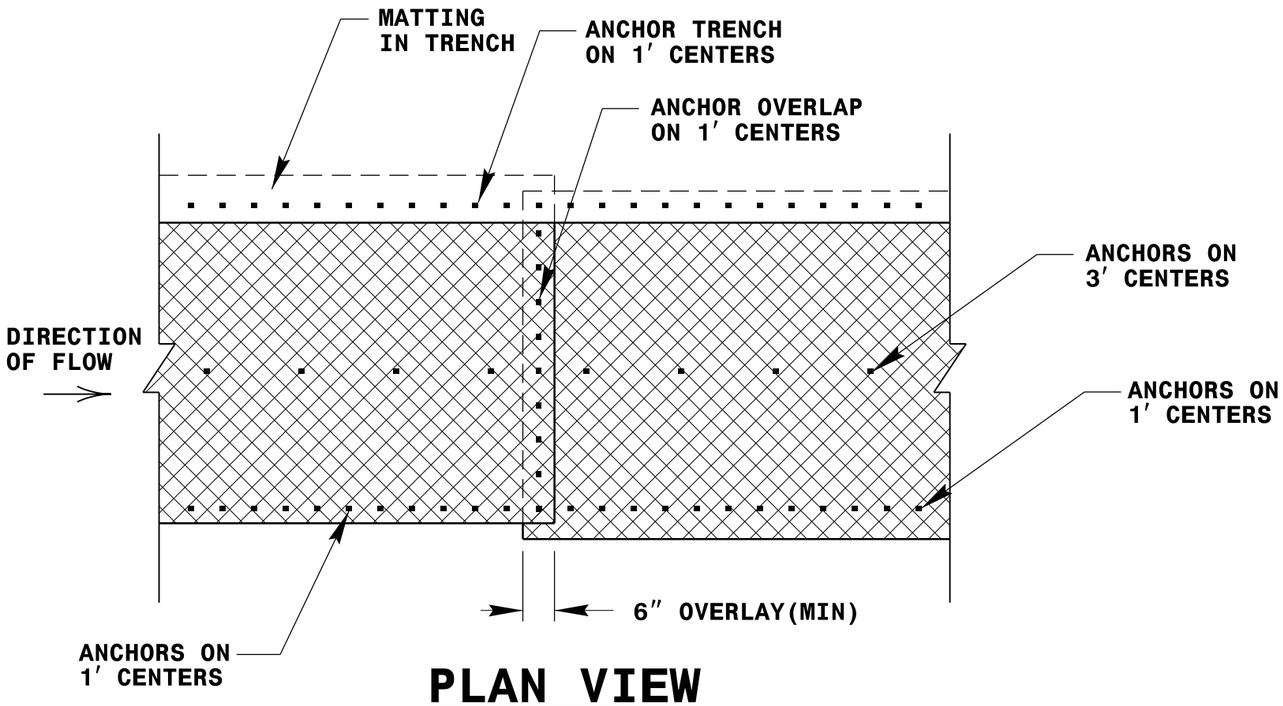
TYPE 1			
50%	SALIX NIGRA	BLACK WILLOW	2 ft – 3 ft LIVE STAKES
50%	CORNUS AMOMUM	SILKY DOGWOOD	2 ft – 3 ft LIVE STAKES
TYPE 2			
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	QUERCUS PHELLOS	WILLOW OAK	12 in – 18 in BR
25%	QUERCUS NIGRA	WATER OAK	12 in – 18 in BR

☐ SEE PLAN SHEETS FOR AREAS TO BE PLANTED

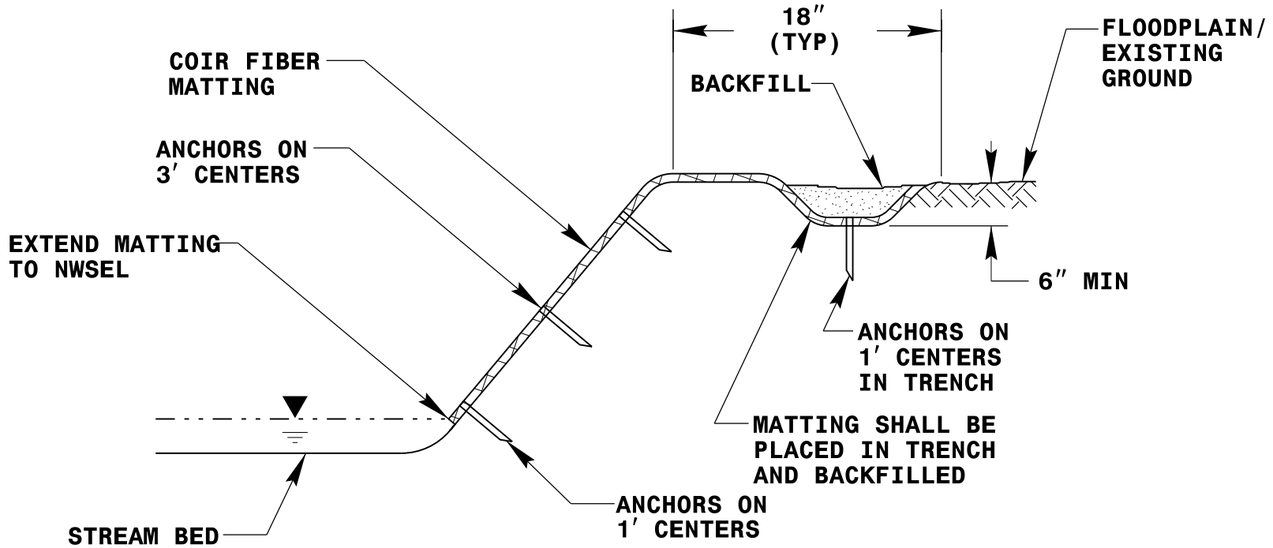
STREAMBANK REFORESTATION DETAIL SHEET 1 OF 2

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

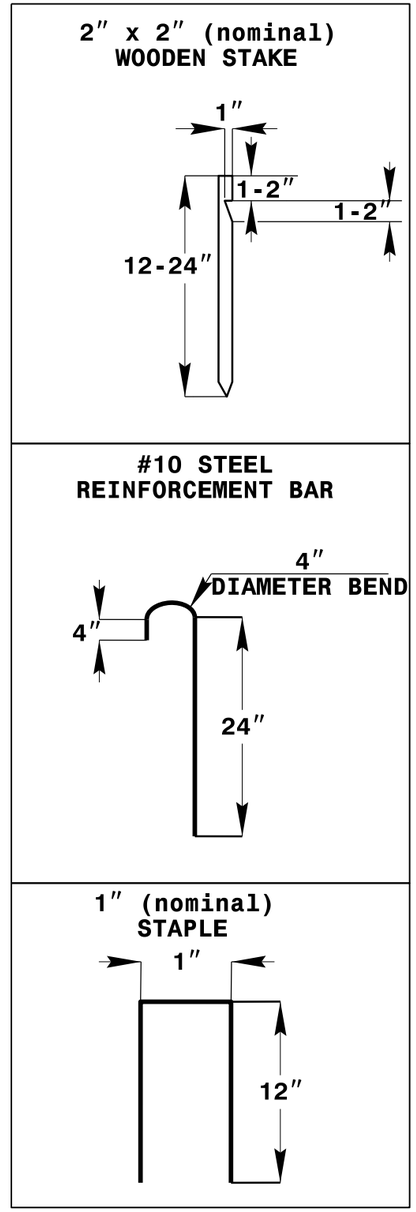
PROJECT REFERENCE NO.	SHEET NO.
U-2579B	RF-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



PLAN VIEW



TYPICAL CROSS SECTION



ANCHOR OPTIONS

COIR FIBER MATTING DETAIL

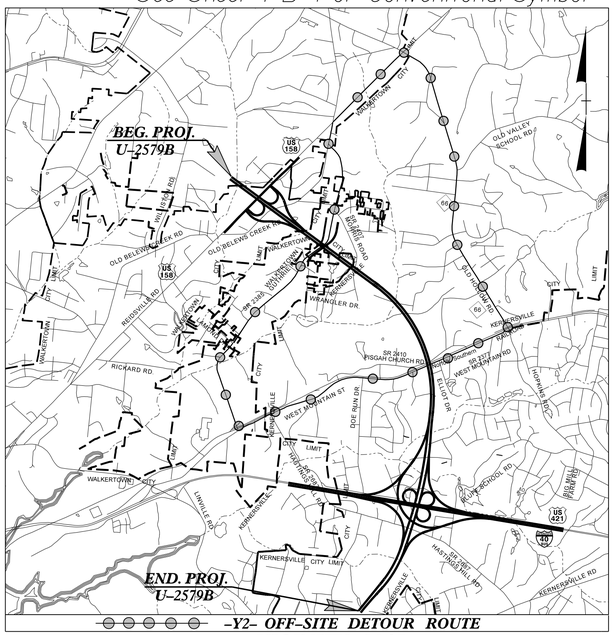
NOT TO SCALE

STREAMBANK REFORESTATION
DETAIL SHEET 2 OF 2
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

09/08/99

TIP PROJECT: U-2579B

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
FORSYTH COUNTY

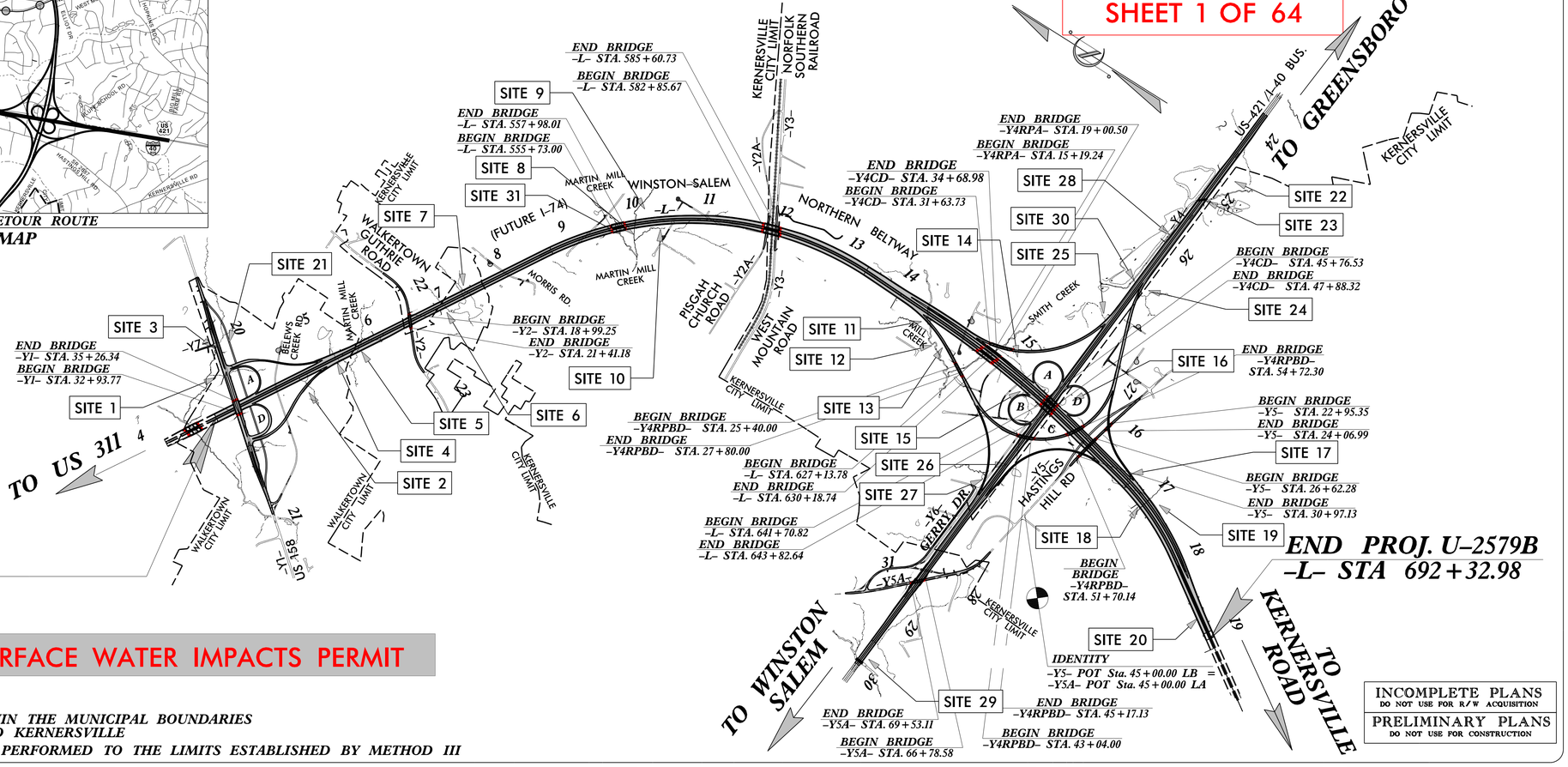
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2579B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34839.1.1	N/A	PE
34839.2.10	FSTR HPPNHF-0918(46)	R\W
34839.2.5		R\W UTIL

LOCATION: ***WINSTON SALEM NORTHERN BELTWAY (EASTERN SECTION) (FUTURE I-74) FROM US 158 TO I-40 BUS/US 421***

TYPE OF WORK: ***WIDENING, GRADING, PAVING, DRAINAGE, SIGNING, SIGNALS, CULVERTS AND STRUCTURES.***

PERMIT DRAWING
SHEET 1 OF 64



WETLAND AND SURFACE WATER IMPACTS PERMIT

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF WALKERTOWN AND KERNERSVILLE

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2010 = 53,560
ADT 2030 = 79,880
DHV = 10 %
D = 60 %
T = 18 % *
V = 70 MPH
* TTST 12 % DUAL 6 %
FUNC CLASS = INTERSTATE

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT U-2579B = 3.86 Miles.
LENGTH OF STRUCTURE PROJECT U-2579B = 0.19 Miles.
TOTAL LENGTH OF PROJECT U-2579B = 4.06 Miles.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 19, 2012

LETTING DATE:
OCTOBER 21, 2014

TONY HOUSER, PE
PROJECT ENGINEER

LEE ANN MOORE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

6/4/2014
U2579B_Hyd_prm_wet_psh01.dgn
jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50' 25' 0 50' 100'

PERMIT DRAWING SHEET 2 OF 64

REVISED 6-4-14

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 1

SITE 2

MATCHLINE – Y1 – STA. 23+65 SHEET 20

MATCHLINE – L – STA. 475+00 SHEET 4

MATCHLINE – L – STA. 500+83 SHEET 6

MATCHLINE – Y1 – STA. 44+00 SHEET 21

DETAIL #12 LATERAL BASE DITCH (Not to Scale)

DETAIL #13 LATERAL BERM DITCH (Not to Scale)

DETAIL #1 FALSE CUT (Not to Scale)

DETAIL #7 STANDARD "V" DITCH (Not to Scale)

DETAIL #8 STANDARD BASE DITCH (Not to Scale)

DETAIL #33 "TEE" DITCH (Not to Scale)

DETAIL #2 SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE)

TRAFFIC DIAGRAM
US 158 (REIDSVILLE ROAD)

2010 ADT / 2030 ADT

-Y1-: 17,480 / 26,440

-L-: 53,560 / 79,880 BELTWAY

3,400 / 5,800	3,460 / 6,580	DHV = 10%	
55,960 / 83,480		DIR = 60%	
3,680 / 6,240	1,220 / 1,860	TTST = 12%	
15,520 / 22,160		DUAL = 6%	

DHV = 10%
DIR = 60%
TTST = 5%
DUAL = 3%

REVISIONS

RIGHT OF WAY REVISION,11/5/12 – PARCEL NUMBER 3 REMOVED

8/17/99

6/4/2014
u2579b_hyd_prm_wet_psh05.dgn
bpowell

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50' 25' 0 50' 100'

PERMIT DRAWING SHEET 3 OF 64

REVISED 6-4-14

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 1

SITE 2

MATCHLINE - Y1 - STA. 23+65 SHEET 20

MATCHLINE - L - STA. 475+00 SHEET 4

MATCHLINE - L - STA. 500+83 SHEET 6

MATCHLINE - Y1 - STA. 44+00 SHEET 21

DETAIL #12 LATERAL BASE DITCH (NOT to Scale)

DETAIL #2 SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE)

DETAIL #3 FILL CUT (NOT to Scale)

DETAIL #7 STANDARD "V" DITCH (NOT to Scale)

DETAIL #8 STANDARD TRAP DITCH (NOT to Scale)

DETAIL #33 TAIL DITCH (NOT to Scale)

TRAFFIC DIAGRAM
US 158 (REIDSVILLE ROAD)
-Y1-

2010 ADT 17,480
2030 ADT 26,440

3,400 / 5,800 — 3,460 / 6,580
55,960 / 83,480 — 53,560 / 79,880 -L- BELTWAY
3,680 / 6,240 — 1,220 / 1,860
15,520 / 22,160

DHV = 10%
DIR = 60%
TTST = 12%
DUAL = 6%

DHV = 10%
DIR = 60%
TTST = 5%
DUAL = 3%

REVISIONS

RIGHT OF WAY REVISION, 11/5/12 - PARCEL NUMBER 3 REMOVED

8/17/99

6/4/2014
u2579b_hyd_prm_wet_psh05_con.dgn
jaxvan

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	05-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 4 OF 64

REVISIONS

8/17/99

PEGG DEVELOPMENT & REALTY CO.

FILL IN WETLAND

MECHANIZED CLEARING

FREDERICO B. MORETZ
SUSAN K. MORETZ

TAIL DITCH
SEE DETAIL #8
EST. DDE 20 CY

CLASS 'B' RIP RAP
EST 15 TONS
EST 37 SY GEO

EXCAVATION

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

15" CSP W/ 2 ELBOWS AND ROD AND LUG CONNECTORS

SITE 1

END SBG
STA 28+10 –Y1– RT

2GI W/NARROW SLOT FLAT GRATE

COLLAR

42" RCP-W

RETAIN AND EXTEND

REMOVE HW

JB w/Slab Lid

42"

IMPACTS IN SURFACE WATER

HW

LATERAL 2' BASE
SEE DETAIL#3

N 55° 32' 17.4" W

N 51° 58' 01.0" W

S 39° 49' 20.3" W

150.00'

EXISTING R/W

TOWN OF WALKERTOWN
FORSYTH COUNTY

PUE

TDE

PDE

60" WW

48" CONC

42" RCP

20 (–ILPA–)

25 12.5 0 25 50
PLANS

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

6/2/2014
u2579b_hyd_prm_wet_psh05_SITE1.dgn
(bmoyer)

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	05-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 5 OF 67

REVISIONS

8/17/99

SITE 2

15" RCP-III

30" RCP-III

FS

2GI

2GI-A

JB w/MH

IMPACTS IN SURFACE WATER

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP (BANKS ONLY)
SEE DETAIL #33
EST 8 TONS
EST 21 SY GEO

TEMP IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

3SBW

4SBW

GRAU-350

CAT-1

PUE

TDE

PDE

R/W

C/A

DAN T. WESTM

25 12.5 0 25 50
PLANS

5/29/2014
U2579B_hyd_prm_wet_psh05_SITE2.dgn
bar (6)

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	05-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 6 OF 64

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
PLANS

IMPACTS IN SURFACE WATER

SITE 3

TEMP IMPACTS IN SURFACE WATER

CLASS 'I' RIP RAP

FLOODPLAIN BENCH
SEE DETAIL, SHEET 2-XX

2@7'x6'-RCBC

END SBG
STA 24+00
-Y1- LT

TOE PROTECTION W/
CLASS "B" RIPRAP
EST 172 TONS
EST 463 SY GEO
SEE DETAIL#

TAIL DITCH
SEE DETAIL #8
EST. DDE 20 CY

PEGG DEVELOPMENT
& REALTY CO.

DARRELL
STEPHA

FREDERICO B. MORETZ
SUSAN K. MORETZ

TOWN OF WALKERTOWN
FORSYTH COUNTY

S 39° 49' 20.3" W

N 55° 32' 17.4" W

48" CONC

60" WW

25BOX

GRAU-350

PUE

MTL

6/2/2014
u2579b_hyd_prm_wet_psh05_SITE3.dgn
User: xsi

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 7 OF 64

REVISIONS

8/17/99

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

POND
W.E. 897.3

DETAIL #14
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, 1'/Ft., Fill Slope, d1, Geotextile

Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 505+50 TO 507+55 -L- LT

DETAIL #32
TAIL DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground, d1, Geotextile, B

Min. D= 2.0Ft.
Max. d= 2.0Ft.
B= 3.0Ft.

Type of Liner= Class I Rip-Rap

STA. 503+13 -L- RT.
STA. 504+33 -L- RT.

505

510

TOWN OF WALKERTOWN
FORSYTH COUNTY

LATERAL 'V' DITCH W/CLASS 'B' RIP RAP
EST. 117 TONS
W/316 SY GEO
SEE DETAIL#14

LATERAL 'V' DITCH
SEE DETAIL#4

BEGIN SBG
STA 500+99.79 -L- LT

HW

SITE 4

DAN T. WESTMORELAND

GOSPEL LIGHT BAPTIST CHURCH

TO BE REMOVED W/ CLASS 'B' RIP RAP
EST. 86 TONS
EST. 231 SY GEO
SEE DETAIL#6

END SBG
STA 509+50 -L- LT

2GI W/FLAT GRATE

15" RCP-IV

N 54° 42' 58.7" W

48" RCP-CD

2GI

FS

2GI-A

30" RCP-III

S 58° 42' 58.7" E

SITE 5A

8" DIP

GRAU-350

18" RCP-IV

SPRING BOX

STONE

SITE 5

BEGIN SBG
STA. 501+50 -L- RT

END SBG
STA 510+35 -L- RT

30" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP
EST 8 TONS
EST 21 SY GEO

54" RCP-III

B w/MH

w/MH

18" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP
EST 3 TONS
EST 10 SY GEO

54" RCP-III

REMOVE

FORSYTH COUNTY
TOWN OF WALKERTOWN

CHORD

TDE

CLASS 'I' RIP RAP (BANKS ONLY)
SEE DETAIL #32
EST. 26 TONS
EST. 50 SY GEO

TAIL DITCH
SEE DETAIL#9
EST. DDE 20CY

TAIL DITCH
SEE DETAIL#7
EST. DDE 10CY

CLASS 'I' RIP RAP (BANKS ONLY)
SEE DETAIL #32
EST. 26 TONS
EST. 50 SY GEO

TAIL DITCH
SEE DETAIL#9
EST. DDE 10CY

DAN WESTMORELAND
KAREN WESTMORELAND

LATERAL 2' BASE DITCH W/CLASS 'B' RIP RAP
EST. 336 TONS
W/ 883 SY GEO
SEE DETAIL#12

FILL SLOPE SHOULD BE 4:1 OR FLATTER
SEE XSC STA 510+50 TO 512+00 -L- RT

ROBERT J. DILLON
ILENA B. DILLON

DETAIL #7
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground, Min. D= 2 Ft.

FROM STA. 11+48 TO 11+52 -Y1RPD- LT

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground, Min. D= 2 Ft., B= 3 Ft.

FROM STA. 504+03 TO 504+38 -L- RT

DETAIL #6
TOE PROTECTION
(Not to Scale)

Natural Ground, d, 2:1 OR FLATTER, Fill Slope, Geotexile, d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 507+60 TO 509+10 -L- LT

DETAIL #12
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d1, D, 2:1, b, P/Ft., Fill Slope, Geotextile, B

•When B Is < 6.0'

Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 507+00 TO 512+00 -L- RT

MATCHLINE -L- STA. 500+83 SHEET 5

MATCHLINE -L- STA. 512+00 SHEET 7

6/6/2014
u2579b_hyd_prm_wet_psh06.dgn
bhaney

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 8 OF 64

REVISIONS 8/17/99

MATCHLINE – L – STA. 500+83 SHEET 5

MATCHLINE – L – STA. 512+00 SHEET 7

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

POND W.E. 897.3

DETAIL #14
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, 2d, T, 2d, 1 V/Ft., b, Fill Slope, d1, Geotextile, D, B

Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 505+50 TO 507+55 -L- LT

DETAIL #32
TAIL DITCH
(Not to Scale)

Natural Ground, 2d, d1, Geotextile, TD, B, 2d, Natural Ground

Min. D= 2.0Ft.
Max. d= 2.0Ft.
B= 3.0Ft.

Type of Liner= Class I Rip-Rap

STA. 503+13 -L- RT.
STA. 504+33 -L- RT.

LATERAL 'V' DITCH W/CLASS 'B' RIP RAP
EST. 117 TONS
W/316 SY GEO
SEE DETAIL#14

LATERAL 'V' DITCH
SEE DETAIL#4

BEGIN SBG
STA 500+99.79 -L- LT

HW

SITE 4

DAN T. WESTMORELAND

GOSPEL LIGHT W/ GLASS ISF IGHURCH

EST. 86 TONS
EST. 231 SY GEO
SEE DETAIL#6

END SBG
STA 509+50 -L- LT

2GI W/FLAT GRATE

15" RCP-IV

N 54° 42' 58.7" W

48" RCP-CD

2GI

FS

2GI-A

30" RCP-III

S 58° 42' 58.7" E

SITE 5A

8" DIP

GRAU-350

SPRING BOX

18" RCP-IV

STONE

BEGIN SBG
STA. 501+50 -L- RT

END SBG
STA 510+35 -L- RT

30" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP
EST 8 TONS
EST 21 SY GEO

54" RCP-III

18" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP
EST 3 TONS
EST 10 SY GEO

REMOVE

CHORD

TDE

FORSYTH COUNTY

TOWN OF WALKERTOWN

TAIL DITCH
SEE DETAIL#7
EST. DDE 10CY

CLASS 'I' RIP RAP (BANKS ONLY)
SEE DETAIL #32
EST. 26 TONS
EST. 50 SY GEO

TAIL DITCH
SEE DETAIL#9
EST. DDE 20CY

TAIL DITCH
SEE DETAIL#9
EST. DDE 10CY

DAN WESTMORELAND
KAREN WESTMORELAND

LATERAL 2' BASE DITCH W/CLASS 'B' RIP RAP
EST. 336 TONS
W/883 -SY GEO
SEE DETAIL#12

FILL SLOPE SHOULD BE 4:1 OR FLATTER
SEE XSC STA 510+50 TO 512+00 -L- RT

ROBERT J. DILLON
ILENA B. DILLON

DETAIL #7
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground, 2d, T, 2d, D, Natural Ground

Min. D= 2 Ft.

FROM STA 11+48 TO 11+52 -YIRPD- LT

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2d, D, 2d, Natural Ground, B

Min. D= 2 Ft.
B= 3 Ft.

FROM STA 504+03 TO 504+38 -L- RT

DETAIL #6
TOE PROTECTION
(Not to Scale)

Natural Ground, d1, 2d OR FLATTER, Fill Slope, Geotextile

d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 507+60 TO 509+10 -L- LT

DETAIL #12
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2d, d1, Geotextile, D, B, 2d, b, 1 V/Ft., Fill Slope

Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.

*When B is < 6.0'

Type of Liner= Class 'B' Rip-Rap

FROM STA 507+00 TO 512+00 -L- RT

6/2/2014
u2579b_hyd_prm_wet_psh06_con.dgn
dan.vehi

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 9 OF 64

REVISIONS

8/17/99

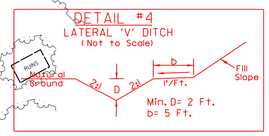
MATCHLINE – L – STA. 512+00 SHEET 6

MATCHLINE – L – STA. 524+62 SHEET 8

MATCHLINE – Y2 – STA. 15+61 SHEET 22

MATCHLINE – Y2 – STA. 24+81 SHEET 23

DETAIL #4
LATERAL 'V' DITCH
(Not to Scale)



FROM STA 511+75 TO 512+50 -L- LT
FROM STA 512+50 TO 513+45 -L- LT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

GOSPEL LIGHT BAPTIST CHURCH

SPECIAL DITCH GRADE SEE PROFILE FOR GRADE

ROBERT J. DILLON
ILENA B. DILLON

16' ACCESS EASEMENT DB 1848 PG 287

LATERAL 'V' DITCH SEE DETAIL#4

END W.W.FENCE

15" CSP W/ 2 ELBOWS

18' ACCESS EASEMENT

2GI

FS

15" RCP-II

TBDI

15" RCP-IV

SBG – STA 18+60 -Y2- LT&RT TO BEGIN APPROACH SLAB

BEGIN W.W.FENCE

RONALD H. WALKER
WILMA JEAN DILLON WALKER

24" RCP-III

30" RCP-III

2GI-A

24" RCP-III

15" RCP-III

ISFD JB W/MH

S 58° 42' 58.7" E

CAT-I

GRAU-350

PUE

SOIL

HTR

TWS

W

S

GR

CONC

520

SITE 6

TOE PROTECTION W/ CLASS "B" RIPRAP
EST. 51 TONS
EST. 139 SY GEO
SEE DETAIL#6

HEAD DITCH SEE DETAIL #9
EST. DDE 6CY

HW

BEGIN SBG
STA 521+50 -L- LT

18" RCP-III

48" RCP-IV

20 (-Y2-)

BEGIN SBG
STA 522+00 -L- RT

CLASS 'I' RIP RAP
EST 17 TONS
EST 38 SY GEO

WLB

WET/BTBJ POND

PDE

THE TABOR FAMILY TRUST

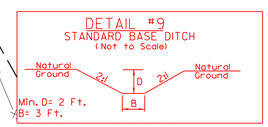
TOE PROTECTION W/ CLASS "B" RIPRAP
EST 69 TONS
EST 185 SY GEO
SEE DETAIL#6

S 49° 21' 01.0" W

JAMES DAVID DILLON

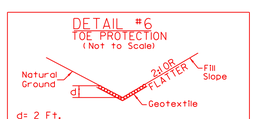
ROBERT JEFFREY BARBER

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 522+42 TO 522+45 -L- LT

DETAIL #6
TOE PROTECTION
(Not to Scale)



FROM STA 522+00 TO 523+20 -L- RT
FROM STA 522+60 TO 523+50 -L- LT

6/2/2014
u2579b_hyd_prm_wet_psh07.dgn
ahayes

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 10 OF 64

REVISIONS

8/17/99

MATCHLINE – L – STA. 512+00 SHEET 6

MATCHLINE – L – STA. 524+62 SHEET 8

MATCHLINE – Y2 – STA. 15+61 SHEET 22

MATCHLINE – Y2 – STA. 24+81 SHEET 23

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DETAIL #4
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground 2:1 D 2:1 Fill Slope 1':Ft. b

Min. D= 2 Ft.
b= 5 Ft.

FROM STA 511+75 TO 512+50 -L- LT
FROM STA 512+50 TO 513+45 -L- LT

GOSPEL LIGHT BAPTIST CHURCH

SPECIAL DITCH GRADE SEE PROFILE FOR GRADE

ROBERT J. DILLON
ILENA B. DILLON

16' ACCESS EASEMENT DB 1848 PG 287

LATERAL 'V' DITCH SEE DETAIL#4

END W.W.FENCE

15" CSP W/ 2 ELBOWS

2GI FS 15" RCP-III TBDI

15" RCP-IV TBDI

SBG – STA 18+60 -Y2- LT&RT TO BEGIN APPROACH SLAB

BEGIN W.W.FENCE

RONALD H. WALKER
WILMA JEAN DILLON WALKER

24" RCP-III

30" RCP-III

2GI-A

24" RCP-III

15" RCP-III

ISFD JB WMH

S 58°42'58.7" E

CAT-I

2GI

FS

15" RCP-III

BEGIN SBG
STA 521+50 -L- LT

SITE 6

TOE PROTECTION W/ CLASS "B" RIPRAP
EST. 51 TONS
EST. 139 SY GEO
SEE DETAIL#6

HEAD DITCH
SEE DETAIL #9
EST. DDE 6CY

HW

48" RCP-IV

18" RCP-III

18" RCP-III

GRAU-350

20 (-Y2-)

BEGIN W.W.FENCE

RONALD H. WALKER
WILMA D. WALKER

15" CSP W/ 2 ELBOWS

END W.W.FENCE

15" RCP-III

FORSYTH COUNTY
TOWN OF WALKERTOWN

TYPE III

GRAU 350

S 49°21'00" W

PUE

PDE

THE TABOR FAMILY TRUST

BEGIN SBG
STA 522+00 -L- RT

CLASS 'I' RIP RAP
EST 17 TONS
EST 38 SY. GEO

WE-878X
POND 12" RCP
18" RCP

TOE PROTECTION W/ CLASS "B" RIPRAP
EST 69 TONS
EST 185 SY GEO
SEE DETAIL#6

SPECIAL DITCH GRADE SEE PROFILE FOR GRADE

ROBERT J. DILLON
ILENA B. DILLON

JAMES DAVID DILLON

ROBERT JEFFREY BARBER

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)

Natural Ground 2:1 D 2:1 Natural Ground B

Min. D= 2 Ft.
B= 3 Ft.

FROM STA 522+42 TO 522+45 -L- LT

DETAIL #6
TOE PROTECTION
(Not to Scale)

Natural Ground d 2:1 OR FLATTER Fill Slope Geotextile

d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 522+00 TO 523+20 -L- RT
FROM STA 522+60 TO 523+50 -L- LT

6/6/2014
u2579b_hyd_prm_wet_psh07_con.dgn
tbarnes

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 11 OF 64

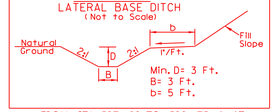
REVISIONS 8/17/99

F F DENOTES FILL IN WETLAND

P P DENOTES IMPACTS IN SURFACE WATER (POND)

DENOTES MECHANIZED CLEARING

DETAIL #5
LATERAL BASE DITCH
(Not to Scale)



FROM STA 527+08 TO 528+75 -L- LT

THE TABOR FAMILY TRUST

SITE 7

NCDOT
(RONALD H. WALKER)
(WILMA JEAN DILLON WALKER)

TOWN OF WALKERTOWN
FORSYTH COUNTY

525

530

535

LATERAL 3' BASE DITCH SEE DETAIL#5

CLASS I RIP RAP EST. 3 TONS

CLASS 'B' RIP RAP EST 8 TONS EST 21 SY GEO

30" CSP W/ 2 ELBOWS AND ROD AND LUG CONNECTORS

END SBG
STA 528+75 -L- LT

2GI W/FLAT GRATE

GRAU-350

WE 878.2' POND

WE 877.9' POND

+24.47 -L-
241.05'

+90.00 -L-
280.00'

JOSEPH R. DANIELS

MICHAEL L. MCCASKILL
SUSANNA L. MCCASKILL

EILEEN P. CHAMBERS

THE TABOR FAMILY TRUST

MILDRED C. GOFF
ELBERT S. GOFF

MORRIS RD
SR 2407

S 58° 42' 58.7" E

MATCHLINE – L – STA. 524+62 SHEET 7

MATCHLINE – L – STA. 537+00 SHEET 9

15" RCP-IV

18" RCP-III

24" RCP-III

30" RCP-IV

12" RCP

2GI-A

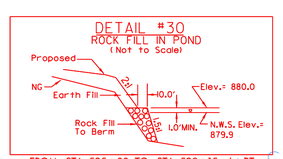
2GI

FS

ROCK FILL IN POND SEE DETAIL#30

END SBG
STA 528+46.90 -L- RT

DETAIL #30
ROCK FILL IN POND
(Not to Scale)



FROM STA. 525+00 TO STA. 528+15 -L- RT

REMOVE

-L- +33.00
307.00

-L- +40.08
299.33'

-L- +95.46
356.05'

PAVED SHOULDER
PAVEMENT TO BE OBLITERATED

NOTE:
FOR -L- PROFILE, SEE SHEET 34

6/2/2014
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DRAFTER

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 12 OF 64

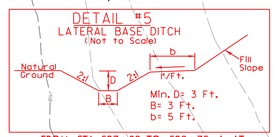
REVISIONS 8/17/99

F F DENOTES FILL IN WETLAND

P P DENOTES IMPACTS IN SURFACE WATER (POND)

DENOTES MECHANIZED CLEARING

DETAIL #5
LATERAL BASE DITCH
(Not to Scale)



FROM STA 527+08 TO 528+75 -L- LT

THE TABOR FAMILY TRUST

SITE 7

NCDOT
(RONALD H. WALKER)
(WILMA JEAN DILLON WALKER)

LATERAL 3' BASE DITCH SEE DETAIL#5

CLASS I RIP RAP EST. 3 TONS

CLASS 'B' RIP RAP EST 8 TONS EST 21 SY GEO

30" CSP W/ 2 ELBOWS AND ROD AND LUG CONNECTORS

END SBG STA 528+75 -L- LT

2GI W/FLAT GRATE

GRAU-350

WE 878.2' POND

FORSYTH COUNTY
TOWN OF WALKERTOWN

MATCHLINE - L - STA. 524+62 SHEET 7

MATCHLINE - L - STA. 537+00 SHEET 9

18" RCP-III | 24" RCP-III | 24" RCP-III | 18" RCP-III | 24" RCP-III

15" RCP-IV | 15" RCP-IV | 30" RCP | 30" RCP | 12" RCP

2GI-A | 2GI-A | 2GI-A | 2GI

FS

S 58° 42' 58.7" E

2GI W/FLAT GRATE

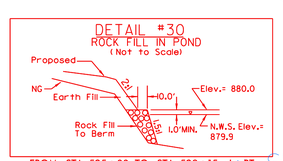
2GI W/FLAT GRATE

END SBG STA 528+46.90 -L- RT

ROCK FILL IN POND SEE DETAIL#30

PDE — PDE — PDE — PDE — PDE

DETAIL #30
ROCK FILL IN POND
(Not to Scale)



FROM STA. 525+00 TO STA. 528+15 -L- RT

THE TABOR FAMILY TRUST

WE 877.9' POND

JOSEPH R. DANIELS

MICHAEL L. MCCASKILL
SUSANNA L. MCCASKILL

EILEEN P. CHAMBERS

MILDRED C. GOFF
ELBERT S. GOFF

WILLARD AMBROSE HILTON
ELLEN JANE POPE HILTON

+90.00 -L-
280.00'

+24.47 -L-
241.05'

-L- +33.00
307.00'

-L- 40.08
299.33'

-L- +95.46
356.05'

SR 2407 MORRIS RD

REMOVE

PAVED SHOULDER
PAVEMENT TO BE OBLITERATED

NOTE:
FOR -L- PROFILE, SEE SHEET 34

6/2/2014
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DRAWN BY:

8/17/99

REVISIONS

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 13 OF 64

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE – L – STA. 549+39 SHEET 9

MATCHLINE – L – STA. 561+61 SHEET 11

550

560

WESTON BROOKE TRAIL

SR 2575

DANNY CAUDILL
CHARLENE L. CAUDILL

WE 852.2 POND

DAVID WHITE
MELISSA WHITE

03 DEVELOPEMENT LLC

DANNY T. CAUDILL

DANNY CAUDILL

SPECIAL DITCH GRADE
SEE PROFILE FOR GRADE
+75.00 –L– 200.00'

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL#10

REMOVE

CHORD

SITE 9

TDE

FLOODPLAIN BENCH
SEE DETAIL SHEET 2-XX

SILL

SITE 8
2@10'x6' RCBC

SHUGART ENTERPRISES LLC

2GI

FS

15" RCP-III

42" RCP-III

2GI-A

MCF

2GI W/FLAT GRATE

15" RCP-IV

BEGIN SBG
STA 554+22.53 –L– RT
END SBG AT BEGIN
APPROACH SLAB

15" CSP W/ 2 ELBOWS

42" CSP

18" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CRAIG SMITH
KATHY SMITH

BRIAN MICHAEL MILCH

BRENDA L. CHESMAR AND MARY C. CHESMAR

SITE 10

PSH
SEE DETAIL SHEET 2-XX

TAIL DITCH
SEE DETAIL#17
EST. DDE +/- 54 CY

CLASS 'I' RIP RAP

TAIL DITCH
SEE DETAIL#9
EST. DDE 4CY

FLOODPLAIN BENCH
SEE DETAIL SHEET 2-XX

60" RCP-III

CLASS I RIP RAP
(BANKS ONLY)
SEE DETAIL 32
EST 40 TONS
EST 75 SY GEO

ENERGY DISSIPATOR BASIN
W/OUTLET CHANNEL
EST. CLASS I RIPRAP +/- 88 TONS
EST. DDE +/- 102 CY
EST. GEO +/- 89 SY
SEE DETAIL, SHEET 2-XX

SITE 31

DANNY CAUDILL

NCDOT
(CHRISTOPHER WILSON)
(SUSAN WILSON)

DANNY CAUDILL
38

CHARLES LEWIS, ET AL

MARGARET LUCINDA ROBBINS LINVILLE

BRADLEY FRITZ CARRIER AND RANDI MARIE CARRIER

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2H, D, 2H, Natural Ground, B

Min. D= 2 Ft.
B= 3 Ft.

FROM STA. 560+70 TO 560+97 –L– RT

DETAIL #10
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2H, D, As Per Flatter, Fill Slope, B

Min. D= 2 Ft.
B= 2 Ft.

FROM STA 552+50 TO 553+40 –L– LT

DETAIL #17
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2H, D, 2H, Natural Ground, d, Geotextile, B

Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 3.0 Ft.

*When B Is < 6.0'

Type of Liner= Class 'I' Rip-Rap

FROM STA. 556+30 TO STA. 557+25 –L– RT

DETAIL 32
TAIL DITCH
(Not to Scale)

Natural Ground, 2H, D, 2H, Natural Ground, d, Geotextile, B

Min. D= 2.0Ft.
Max. d= 2.0Ft.
B= 3.0Ft.

Type of Liner= Class IRip-Rap

6/2/2014
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tbrown

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 14 OF 64

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

MATCHLINE – L – STA. 549+39 SHEET 9

MATCHLINE – L – STA. 561+61 SHEET 11

WESTON BROOKE TRAIL

DANNY CAUDILL
CHARLENE L. CAUDILL

WE 852.2 POND

DAVID WHITE
MELISSA WHITE

03 DEVELOPEMENT LLC

DANNY T. CAUDILL

DANNY CAUDILL

SPECIAL DITCH GRADE
SEE PROFILE FOR GRADE
+75.00 -L- 200.00'

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL #10

REMOVE

SITE 9

SITE 8
2@10'x6' RCBC

FLOODPLAIN BENCH
SEE DETAIL SHEET 2-XX

SHUGART ENTERPRISES LLC

2GI
FS
15" RCP-III
42" RCP-III
2GI-A
2GI W/FLAT GRATE
15" RCP-IV
MCF
B-77
GRAU-350
BEGIN SBG
STA 554+22.53 -L- RT
END SBG AT BEGIN
APPROACH SLAB
15" CSP W/ 2 ELBOWS
42" CSP
18" CSP W/ 2 ELBOWS AND ROD AND LUG CONNECTORS

CRAIG SMITH
KATHY SMITH

SITE 10

BRIAN MICHAEL MILCH

BRENDA L. CHESMAR AND MARY C. CHESMAR

TAIL DITCH
SEE DETAIL #9
EST. DDE 4CY

PSH
SEE DETAIL SHEET 2-XX

CLASS 'I' RIP RAP

FLOODPLAIN BENCH
SEE DETAIL SHEET 2-XX

60" RCP-III

CLASS I RIP RAP (BANKS ONLY)
SEE DETAIL 32
EST 40 TONS
EST 75 SY GEO

TAIL DITCH
SEE DETAIL#17
EST. DDE +/- 54 CY

ENERGY DISSIPATOR BASIN
W/OUTLET CHANNEL
EST. CLASS I RIPRAP +/- 88 TONS
EST. DDE +/- 102 CY
EST. GEO +/- 89 SY
SEE DETAIL, SHEET 2-XX

SITE 31

DANNY CAUDILL

NCDOT
(CHRISTOPHER WILSON)
(SUSAN WILSON)

CHARLES LEWIS, ET AL

MARGARET LUCINDA ROBBINS LINVILLE

BRADLEY FRITZ CARRIER AND RANDI MARIE CARRIER

CHORD

TDE

PUE

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, B, 2:1, Natural Ground
Min. D= 2 Ft.
B= 3 Ft.
FROM STA. 560+70 TO 560+97 -L- RT

DETAIL #10
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, B, As or Flatter, Fill Slope
Min. D= 2 Ft.
B= 2 Ft.
FROM STA 552+50 TO 553+40 -L- LT

DETAIL #17
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2:1, d, Geotextile, D, B, 2:1, Natural Ground
Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 3.0 Ft.
•When B is < 6.0'
Type of Liner= Class 'I' Rip-Rap
FROM STA. 556+30 TO STA. 557+25 -L- RT

DETAIL 32
TAIL DITCH
(Not to Scale)
Natural Ground, 2:1, d, Geotextile, D, B, 2:1, Natural Ground
Min. D= 2.0Ft.
Max. d= 2.0Ft.
B= 3.0Ft.
Type of Liner= Class I Rip-Rap

6/2/2014
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8/17/99

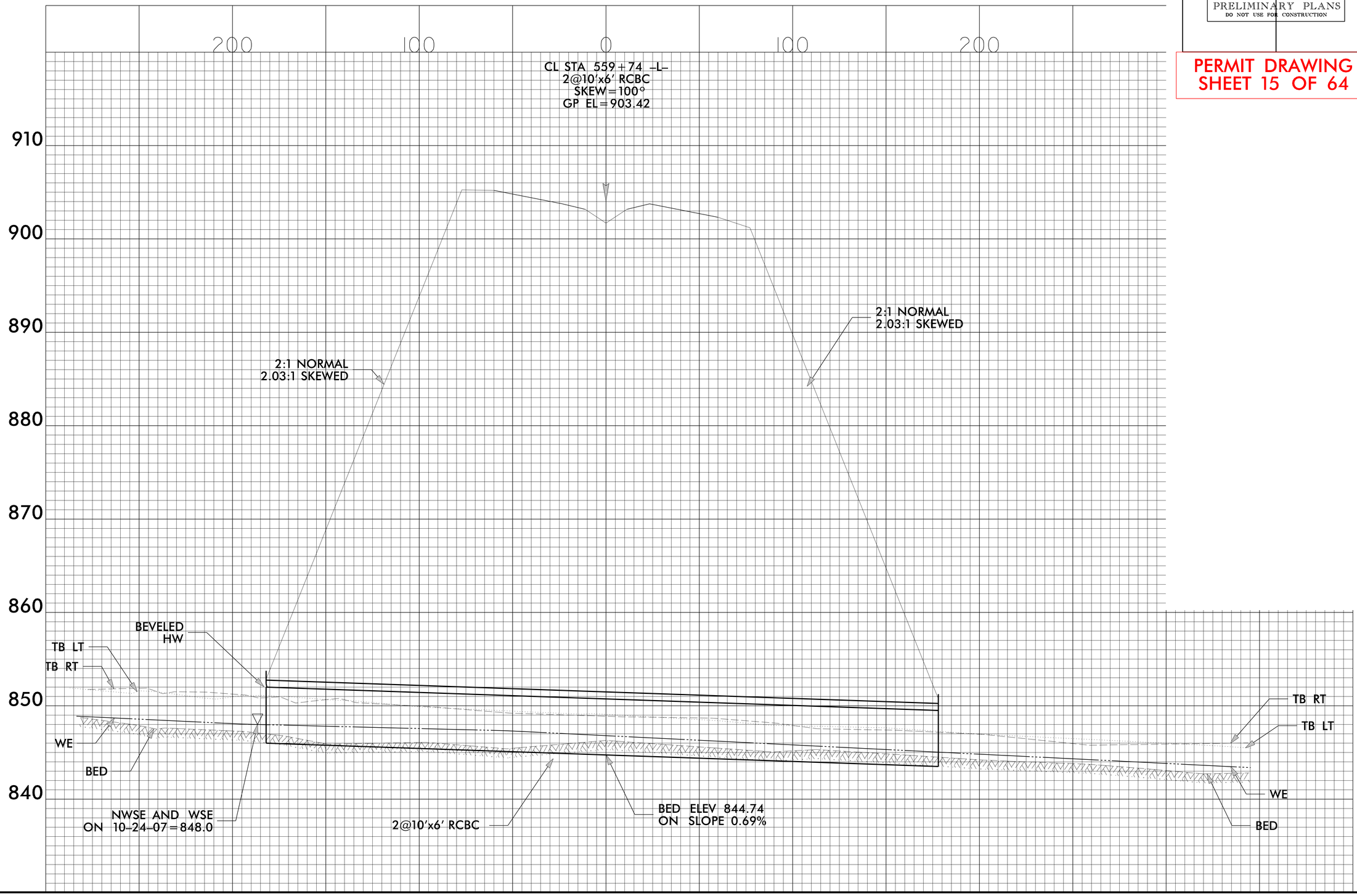
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 15 OF 64



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barvel

PERMIT DRAWING SHEET 16 OF 64

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AREA U/C

REVISIONS 8/17/99

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

CHARLIE MARTIN

SECRETARY OF VETERANS AFFAIRS

DAVID KEITH MCDUFFIE
EMILY EBERT MCDUFFIE

TOWN OF KERNERSVILLE
FORSYTH COUNTY

WINSTON-SALEM/FORSYTH COUNTY BOARD OF EDUCATION

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MABEL S. ROBBINS

RICHARD KEVIN WOOD
MELINDA ANDERSON WOOD

RICHARD R. ROBBINS
BONNIE M. ROBBINS

SHUGART ENTERPRISES LLC

SHUGART ENTERPRISES LLC

STANLEY R. STIGALL

KAYE ROBBINS FULP
MELODY ROBBINS ANDERSON

JAMES R. PAIGE SR.
&
HELEN R. PAIGE

EDWARD RICHARDSON

JONATHAN L. BRITT &
APRIL L. CRAFFORD

ELLSWORTH MESSERSMITH, JR.
AMY MESSERSMITH

RONALD L. SCOTT, JR.
KIMBERLY D. SCOTT

KEITH OELER &
MICHELL OELKER

CLAY M. HOWARD
NICOLE A. HOWARD

BOBBY D. HOLLOWAY
LISA HOLLOWAY

SHUGART ENTERPRISES, LLC

DAVID SCOTT THOMAS &
TAMMY THOMAS

CECIL K. ANDERSON &
MELODY R. ANDERSON

MATCHLINE – L – STA. 561+61 SHEET 10

MATCHLINE – L – STA. 574+36 SHEET 12

SITE 10

SITE 10A

CHORD

565

550

DETAIL #3
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, Fill Slope, B

Min. D= 2 Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA 566+75 TO 569+25 -L- LT

LATERAL 2' BASE DITCH SEE DETAIL#3

LATERAL 3' BASE DITCH W/CLASS 'B' RIP RAP
EST. 231 TONS
W/600 SY GEO
SEE DETAIL#13

LATERAL 3' BASE DITCH SEE DETAIL#11

CLASS 'B' RIP RAP
EST 5 TONS
EST 14 SY GEO

REMOVE

24" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

42" RCP CD

18" RCP-IV

15" RCP-IV

2GI W/FLAT GRATE

2GI

FS

HW

BEGIN JS

CAT-1

GRAU-350

60" RCP-IV

60" RCP-III

4OTCB

JB w/MH

TOE PROTECTION W/ CLASS "B" RIPRAP
EST 232 TONS
EST 625 SY GEO
SEE DETAIL#6

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

LATERAL 3' BASE DITCH W/CLASS "B" RIPRAP
SEE DETAIL#24
EST. 106 TONS
EST. 258 SY GEO

DETAIL #6
TOE PROTECTION
(Not to Scale)

Natural Ground, d, 2:1 FLATTER, Fill Slope, Geotextile

d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 561+45 TO 565+50 -L- RT

DETAIL #24
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, Fill Slope, d, B, Geotextile

1':1Ft.

Min. D= 2 Ft.
B= 3 Ft.
b= 10 Ft.
d= 5 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 567+00 TO 568+70 -L- RT

DETAIL #13
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, Fill Slope, d, B, Geotextile

1':1Ft.

Min. D= 2 Ft.
Max. d= 2 Ft.
B= 3 Ft.
b= 5 Ft.

•When B is < 6.0'

Type of Liner= Class 'B' Rip-Rap

FROM STA 569+30 TO 572+50 -L- LT

DETAIL #11
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, Fill Slope, B

1':1Ft.

Min. D= 2 Ft.
B= 3 Ft.
b= 5 Ft.

FROM STA 572+50 TO 576+60 -L- LT

6/2/2014
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USER: ksh

PERMIT DRAWING SHEET 17 OF 64

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

CHARLIE MARTIN

SECRETARY OF VETERANS AFFAIRS

DAVID KEITH MCDUFFIE
EMILY EBERT MCDUFFIE

WINSTON-SALEM/FORSYTH COUNTY BOARD OF EDUCATION

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NICOLE A. HOWARD

BOBBY D. HOLLOWAY
LISA HOLLOWAY

SHUGART ENTERPRISES, LLC

DAVID SCOTT THOMAS &
TAMMY THOMAS

CECIL K. ANDERSON &
MELODY R. ANDERSON

MATCHLINE – L – STA. 561+61 SHEET 10

MATCHLINE – L – STA. 574+36 SHEET 12

SITE 10

SITE 10A

CHORD

LATERAL 2' BASE DITCH SEE DETAIL#3

LATERAL 3' BASE DITCH W/CLASS 'B' RIP RAP EST. 231 TONS W/600 SY GEO SEE DETAIL#13

LATERAL 3' BASE DITCH SEE DETAIL#11

CLASS 'B' RIP RAP EST 5 TONS EST 14 SY GEO

24" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

42" RCP CD

18" RCP-IV

15" RCP-IV

2GI W/FLAT GRATE

REMOVE

60" RCP-IV

60" RCP-III

4OTCB

JB w/MH

TOE PROTECTION W/ CLASS "B" RIPRAP EST 232 TONS EST 625 SY GEO SEE DETAIL#6

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

LATERAL 3' BASE DITCH W/CLASS "B" RIPRAP SEE DETAIL#24 EST 106 TONS EST 258 SY GEO

DETAIL #3
LATERAL BASE DITCH
(Not to Scale)

Natural Ground | 2d | d | 2d | D | B | Fill Slope | 1'/Ft.

Min. D= 2 Ft.
B= 2 Ft.
D= 5 Ft.

FROM STA 566+75 TO 569+25 -L- LT

DETAIL #6
TOE PROTECTION
(Not to Scale)

Natural Ground | d | 2d OR FLATTER | Fill Slope | Geotextile

d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 561+45 TO 565+50 -L- RT

DETAIL #24
LATERAL BASE DITCH
(Not to Scale)

Natural Ground | 2d | D | d | 2d | b | Fill Slope | 1'/Ft. | B | Geotextile

Min. D= 2 Ft.
B= 3 Ft.
D= 10 Ft.
d= 5 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 567+00 TO 568+70 -L- RT

DETAIL #13
LATERAL BASE DITCH
(Not to Scale)

Natural Ground | 2d | D | 2d | b | Fill Slope | 1'/Ft. | d | Geotextile | B

Min. D= 2 Ft.
Max. d= 2 Ft.
B= 3 Ft.
D= 5 Ft.

*When B Is < 6.0'

Type of Liner= Class 'B' Rip-Rap

FROM STA 569+30 TO 572+50 -L- LT

DETAIL #11
LATERAL BASE DITCH
(Not to Scale)

Natural Ground | 2d | D | 2d | b | Fill Slope | 1'/Ft. | B

Min. D= 2 Ft.
B= 3 Ft.
D= 5 Ft.

FROM STA 572+50 TO 576+60 -L- LT

6/2/2014
u2579b_hyd_prm_wet_pshll_con.dgn
tbrown

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 18 OF 64

REVISIONS

RIGHT OF WAY REVISION.11/5/12 - PARCEL 98 ADJUSTED ON PLANS TO MAKE IT VISIBLE
RIGHT OF WAY REVISION.11/5/12 - PARCEL 98A ADDED

8/17/99

6/2/2014
u2579b_hyd_prm_wet_psh15.dgn
tbarnes

DETAIL #5 LATERAL BASE DITCH (Not to Scale)
FROM STA 630+50 TO 633+35 -L- RT

DETAIL #14 LATERAL "V" DITCH (Not to Scale)
FROM STA 679+50 TO 671+25 -L- LT

DETAIL #17 STANDARD BASE DITCH (Not to Scale)
FROM STA 627+85 TO 628+85 -L- RT

DETAIL #8 STANDARD BASE DITCH (Not to Scale)
FROM STA 23+43 TO 23+49 -YADD- LT
FROM STA 18+00 TO 18+88 -YARPBD- RT

DETAIL #6 TOE PROTECTION (Not to Scale)
FROM BOX CULVERT TO STA 418+25 -L- LT
FROM STA 418+25 TO 419+50 -L- LT
FROM STA 421+00 TO 424+50 -L- RT
FROM STA 16+50 TO BOX CULVERT -YARPBD- RT
FROM STA 20+20 TO 23+50 -YARPBD- RT
FROM STA 24+00 TO 25+40 -YARPBD- LT

DETAIL #16 MEDIAN CHANNEL (Not to Scale)
FROM STA 19+98 TO 21+22 -YARPBD- RT

DETAIL #25 STANDARD BASE DITCH (Not to Scale)
FROM STA 19+29 TO 21+12 -YARPBA- LT

TRAFFIC DIAGRAM

2010 ADT 47,720
2030 ADT 61,160

DHV = 10%
DIR = 60%
TTST = 12%
DUAL = 6%

32,600 / 43,800 — 5,360 / 7,280
53,560 / 79,880 — 24,660 / 36,980
-L- BELTLINE
6,600 / 11,800 — 4,940 / 5,420
21,300 / 27,300

DHV = 10%
DIR = 60%
TTST = 6%
DUAL = 5%

-Y4- (US 421/I-40 BUS.)

8/17/99

REVISIONS

RIGHT OF WAY REVISION.11/5/12 - PARCEL 9B ADJUSTED ON PLANS TO MAKE IT VISIBLE
RIGHT OF WAY REVISION.11/5/12 - PARCEL 98A ADDED

6/2/2014
u2579b_hyd_prm_wet_psh15_con.dgn
jpatel

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 19 OF 64

S / S DENOTES IMPACTS IN SURFACE WATER

F / F DENOTES FILL IN WETLAND

TS — TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE -L- STA 608+92 SHEET 14

MATCHLINE -L- STA 633+00 SHEET 16

MATCHLINE -YARP8D- STA 12+21 SHEET 10

MATCHLINE -YARP8D- STA 21+50 SHEET 18

SITE 11

SITE 12

SITE 13

SITE 14

SITE 11A

DETAIL #5 LATERAL BASE DITCH (Not to Scale)
FROM STA 630+50 TO 633+33 -L- RT

DETAIL #14 LATERAL V DITCH (Not to Scale)
FROM STA 619+50 TO 621+25 -L- LT

DETAIL #17 STANDARD BASE DITCH (Not to Scale)
FROM STA 627+83 TO 628+85 -L- RT

DETAIL #8 STANDARD BASE DITCH (Not to Scale)
FROM STA 23+43 TO 23+49 -YADL- LT
FROM STA 18+00 TO 18+88 -YARP8D- RT

DETAIL #6 TOE PROTECTION (Not to Scale)
FROM BOX CULVERT TO STA 618+35 -L- LT
FROM STA 621+00 TO 621+50 -L- RT
FROM STA 625+00 TO 626+00 -L- RT
FROM STA 16+50 TO BOX CULVERT -YARP8D- RT
FROM STA 20+20 TO 20+50 -YARP8D- RT
FROM STA 24+00 TO 25+40 -YARP8D- LT

DETAIL #16 DRIVEWAY CROSSING (Not to Scale)
FROM STA 19+98 TO 21+22 -YARP8D- RT

DETAIL #25 STANDARD BASE DITCH (Not to Scale)
FROM STA 19+29 TO 21+12 -YARP8D- LT

TRAFFIC DIAGRAM

2010 ADT / 2030 ADT

47,720 / 61,160

DHV = 10%
DIR = 60%
TTST = 12%
DUAL = 6%

32,600 / 43,800 — 5,360 / 7,280

53,560 / 79,880 — 24,660 / 36,980

-L- BELTLINE

6,600 / 11,800 — 4,940 / 5,420

DHV = 10%
DIR = 60%
TTST = 6%
DUAL = 5%

21,300 / 27,300

-Y4- (US 421/I-40 BUS.)

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	15-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 20 OF 64

REVISIONS

8/17/99

PENNSTON CORP.

BRENT L. YOKLEY
KAREN R. YOKLEY

NCDOT
(JOHN A. GAITHER)
(DEBORAH B. GAITHER)

RONALD J. MORRISON
GINA MORRISON

KENWORTH FITZGERALD HOLNESS
&
LYNNAE'DARBY HOLNESS

NCDOT
(JAMES D. RICH)
(DIANE RICH)

HELEN ELLIOTT

JAMES R. KARR
REBECCA KARR

NCDOT
(CLIFFORD T. PRANKE)
(DONNA PRANKE)

POPE L.E. BUILDING CO. INC.

JOHN

SITE 11

SITE 12

SITE 13

SITE 11A

TOE PROTECTION W/ CLASS "B" RIPRAP
EST 20 TONS
EST 64 SY GEO
SEE DETAIL#6

HEAD DITCH
SEE DETAIL#8
EST. DDE 18 CY

LATERAL V-DITCH
W/CLASS B RIPRAP
EST. 100 TONS
W/328 SY GEO
SEE DETAIL#14

TOE PROTECTION W/
CLASS "B" RIPRAP
EST. 57 TONS
EST. 154 SY GEO
SEE DETAIL#6

36" CSP W/2 ELBOWS
AND ROD AND LUG
CONNECTORS

REMOVE

CHORD

SILL

FLOODPLAIN
BENCH
SEE DETAIL
SHEET 2-XX

2GI-A
W/FLAT
GRATE

2GI-A W/FLAT
GRATE

2GI W/FLAT
GRATE

2GI

3GI-A

18" RCP-IV

24" RCP-IV

30" RCP-IV

3@10'x9' RCBC

48" RCP-CD

15" RCP-IV

18" RCP-III

15" RCP-III

FS

TDE

PDE

TS

S

F

JS MT

SHOULDER BERM GUTTER
STA. 626+30 -L- RT
TO BEGIN APPROACH SLAB

SHOULDER BERM GUTTER
STA 24+00 -Y4RPBD- LT
TO BEGIN APPROACH SLAB

GRADE TO DRAIN

GRADE TO DRAIN WITH
COMBINATION OF
CUT AND FILL

TOE PROTECTION W/
CLASS "B" RIPRAP
EST 80 TONS
EST 216 SY GEO
SEE DETAIL #6

15" CSP W/2 ELBOWS
AND ROD AND LUG
CONNECTORS

PSH
SEE DETAIL
SHEET 2-XX

15" CSP W/
2 ELBOWS AND
ROD AND LUG
CONNECTORS

CLASS 'I'
RIP RAP

FILL IN
EXISTING
CHANNEL

TOE PROTECTION W/
CLASS "B" RIPRAP
EST 101 TONS
EST 272 SY GEO
SEE DETAIL#6

3@10'X9' RCBC

TAIL DITCH
SEE DETAIL #8
EST. DDE 40 CY

30' BASE CHANNEL
DDE= 200 CY

-L- 85.00 -Y4RPBD-
1414' & 236'

+40 -Y4RPBD-
141' & 222'

CHANNEL CHANGE
SEE DETAIL #34
CLASS 'I' RIP RAP
EST. 375 TONS

15 (-Y4RPBD-)

20 (-Y4RPBD-)

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
PLANS

6/2/2014
u2579b_hyd_prm_wet_psh15_SITE11.dgn
bpowell

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	15-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 21 OF 64

S S DENOTES IMPACTS IN SURFACE WATER

50 25 0 50 100
PLANS

R/W

C/A

MATCHLINE -YARPA- STA.20+50

MATCHLINE -L- STA.633+00 SHEET 16

BERDINA 2 SMW FLAT GRATE

15" CSP

CLASS 'B'
RIP RAP
EST 1 TONS
EST 5 SY GEO

SITE 14

JOHN R. CROTTS
GLADYS L. CROTTS

SANDRA F.

MCF

TYPE M350

2GI

FS

15" RCP-III

18" RCP-III

REMOVE

B-77

GRAU-350

SCRUB

SMITH CREEK

REVISIONS

8/17/99

6/2/2014
u2579b_hyd_prm_wet_psh15_SITE14.dgn
ppr_gri

8/17/99

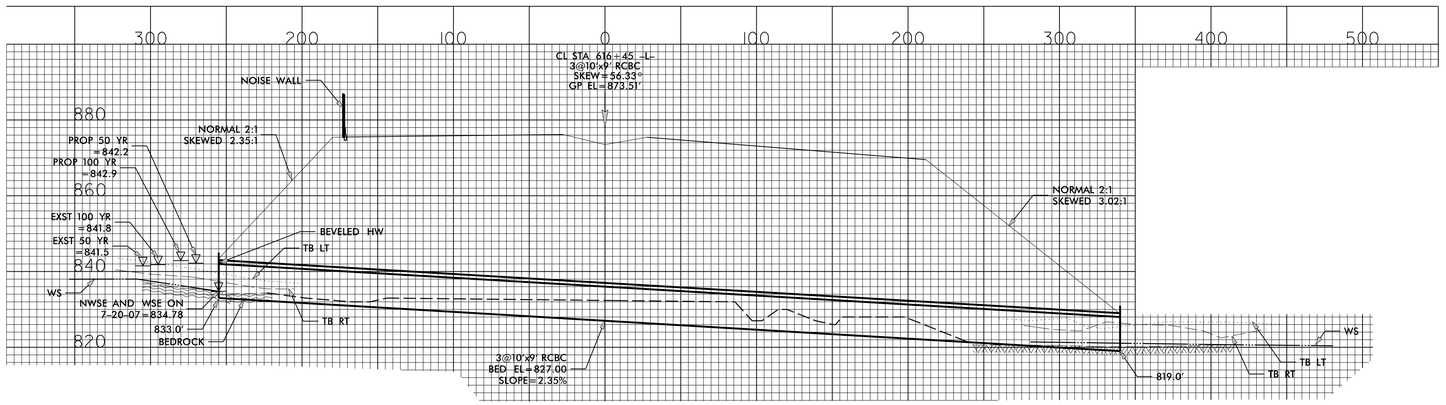
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 22 OF 64



6/2/2014
u2579b_hyd_prm_wet_psh15A_Lsta615.dgn
bbryan

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

RIGHT OF WAY REVISION,11/5/12 - PLANS ADJUSTED SO THAT PARCEL 98 IS VISBLE ON PLANS

DENOTES IMPACTS IN SURFACE WATERS (POND)

DENOTES FILL IN WETLAND

MATCHLINE -Y4RPA- STA.26+95 SHEET 27

MATCHLINE -Y4- STA.82+26 SHEET 27

MATCHLINE -Y4RPBD- STA.63+00.00 SHEET 27

MATCHLINE -Y5- STA.18+00.00 SHEET 27

MATCHLINE -L- STA.633+00 SHEET 15

MATCHLINE -L- STA.656+51 SHEET 17

MATCHLINE -Y4RPB- STA.19+60 SHEET 28

MATCHLINE -Y4- STA.102+90 SHEET 28

MATCHLINE -Y5RPA- STA.32+21 SHEET 15

MATCHLINE -Y5RPA- STA.50+50 SHEET 15

SITE 14

SITE 15

SITE 15A

SITE 16

TRAFFIC DIAGRAM			
2010 ADT	47,720		
2030 ADT	61,60		
DHV = 10%			
DIR = 60%	32,600		5,360
TTST = 12%	43,800		7,280
DUAL = 6%			
	53,560		24,660
	79,880		36,980
-L- BELTLINE	6,600		4,940
	11,800		5,420
DHV = 10%			
DIR = 60%			
TTST = 6%			21,300
DUAL = 5%			27,300

-Y4- (US 421/I-40 BUS.)

PERMIT DRAWING
SHEET 23 OF 64

6/2/2014
u2579b_hyd_prm_wet_pshl6.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DENOTES IMPACTS IN SURFACE WATERS (POND)

DENOTES FILL IN WETLANDS

MATCHLINE –Y4RPA– STA.26+95 SHEET 27

MATCHLINE –Y4– STA.82+26 SHEET 27

MATCHLINE –Y4RPBD– STA.63+00.00 SHEET 27

MATCHLINE –Y5– STA.18+00.00 SHEET 27

MATCHLINE –L– STA.633+00 SHEET 15

MATCHLINE –L– STA.656+51 SHEET 17

MATCHLINE –Y4RPB– STA.32+21 SHEET 15

MATCHLINE –Y4RPB– STA.95+60 SHEET 28

MATCHLINE –Y4– STA.102+90 SHEET 28

MATCHLINE –Y5– STA.38+50 SHEET 28

SITE 14

SITE 15

SITE 15A

SITE 16

TRAFFIC DIAGRAM				
2010 ADT		47,720		
2030 ADT		61,160		
DHV = 10%				
DIR = 60%	32,600		5,360	
TTST = 12%	43,800		7,280	
DUAL = 6%				
	53,560			24,660
	79,880			36,980
-L- BELTLINE	6,600		4,940	
	11,800		5,420	
DHV = 10%				
DIR = 60%			21,300	
TTST = 6%			27,300	
DUAL = 5%				

-Y4- (US 421/I-40 BUS.)

PERMIT DRAWING
SHEET 24 OF 64

REVISIONS

RIGHT OF WAY REVISION,11/5/12 - PLANS ADJUSTED SO THAT PARCEL 98 IS VISBLE ON PLANS

8/17/99

6/2/2014
u2579b_hyd_prm_wet_pshl6_con.dgn
jpowell

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	16-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 25 OF 64

REVISIONS

8/17/99

MATCHLINE – L – STA.633+00 SHEET 15

MATCHLINE – YARPA – STA.20+

SITE 14

SITE 15

SITE 15A

SITE 16

DOROTHY T. BAKER

DOROTHY A. BAKER

REX LANIER PEDDYCORD
FAYE GARDNER PEDDYCORD

EVA TAYLOR

LOUIS D. REECE

TED E. SWAIM JR.

NCDOT
(FORMERLY - GRIFFIN FAMILY PRESERVATION TR

SHREVE

BERDINA SMITH

SYKES

TOE PROTECTION W/ CLASS "I" RIPRAP
EST 32 TONS
EST 66 SY GEO
SEE DETAIL#27

CLASS 'I' RIP RAP
EST 4 TONS
EST 14 SY GEO

CLASS 'I' RIP RAP
EST 2 TONS
EST 8 SY GEO

18" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

LATERAL 3' BASE DITCH
SEE DETAIL#5

TRENCHLESS INSTALLATION 48" WELDED STEEL

CLASS 'I' RIP RAP
EST 30 TONS
EST 60 SY GEO

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

LATERAL 3' BASE DI
W/CLASS 'B' RIP RA
EST. 148 TONS
W/385 SY GEO
SEE DETAIL#13

SHOULDER BERM GUTTER
STA 640+50 -L- LT
TO BEGIN APPROACH SLAB

SHOULDER BERM GUTTER
STA. 640+50 -L- RT TO
BEGIN APPROACH SLAB

2GI W/FLAT GRATE

FILL W/FLOWABLE MATERIAL

REMOVE

REMOVE FES

RETAIN

CONVERT TO JB w/MH

JB w/MH

PLUG

TOE PROTECTIO
TO STA 50+00
SEE DETAIL #6

CLASS 'B' RIP RAP
EST 1 TONS
EST 5 SY GEO

CLASS 'B' RIP RAP
EST 5 TONS

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

CLASS 'B' RIP RAP EST 3 TONS EST 11 SY GEO

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER (POND)

50 25 0 50 100
PLANS

6/6/2014
u2579b_hyd_prm_wet_pshi6_SITE15.dgn
(kbryan)

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

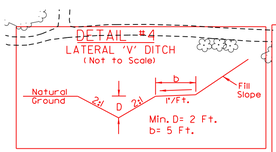
PERMIT DRAWING SHEET 26 OF 64

REVISIONS

8/17/99

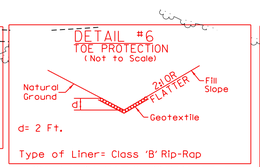
6/2/2014
u2579b_hyd_prm_wet_psh17.dgn
bbryan

DETAIL #4
LATERAL 'V' DITCH
(Not to Scale)



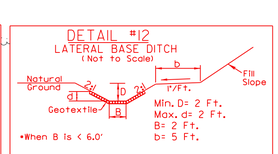
FROM STA 18+25 TO 19+25 -Y4RPD- LT

DETAIL #6
TOE PROTECTION
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap
FROM STA 659+00 TO 661+00 -L- RT

DETAIL #12
LATERAL BASE DITCH
(Not to Scale)



*When B Is < 6.0'
Type of Liner= Class 'B' Rip-Rap
FROM STA 657+60 TO 663+80 -L- LT

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

GROUP GGK, LLC

FORSYTH COUNTY
CITY OF WINSTON-SALEM

BOBBY F. GORDON
BETSY GORDON

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 417 TONS
W/957 SY GEO
SEE DETAIL#12

LATERAL 3' BASE DITCH
W/CLASS 'I' RIP RAP
EST. 209 TONS
W/544 SY GEO
SEE DETAIL #21

CLASS 'B' RIP RAP
EST 3 TONS
EST 10 SY GEO

CLASS 'B' RIP RAP
EST 8 TONS
EST 21 SY GEO

LATERAL V-DITCH
SEE DETAIL#4

REX L. PEDDYCORD
FAYE G. PEDDYCORD

GLENN D. HART

SITE 19

24' BASE CHANNEL
+/-165 CY

FLOODPLAIN BENCH
SEE DETAIL
SHEET 2-XX

1' SILL
2' SILL

N 21° 53' 49.7" E

S 12° 57' 10.0" W

ATTENUATOR TYPE 350

3@12'x10' RCBC

MATCHLINE -L- STA.656+51 SHEET 16

MATCHLINE -L- STA.668+17 SHEET 18

SITE 18

SITE 17

SPRING BOX

KENNETH ANDREW HOLDER

JB w/MH

CHARLES SPENCER LADD JR.
REBECCA WHITLEY LADD

TOE PROTECTION W/
CLASS "B" RIPRAP
EST. 114 TONS
EST 309 SY GEO
SEE DETAIL#6

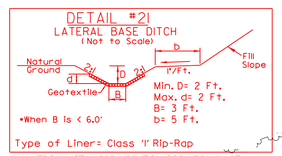
BEGIN SBG
STA 666+25 -L- RT

2' SILL
1' SILL
36' BASE CHANNEL
DDE= +/-285 CY

CL 'I' RIP RAP

30' ACCESS EASEMENT DB 1538 PG 142

DETAIL #21
LATERAL BASE DITCH
(Not to Scale)



*When B Is < 6.0'
Type of Liner= Class 'I' Rip-Rap
FROM STA 663+80 TO 666+70 -L- LT

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 27 OF 64

REVISIONS

8/17/99

6/2/2014
u2579b_hyd_prm_wet_psh17_con.dgn
bbryant

DETAIL #4
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, 1'/Ft., Fill Slope
Min. D= 2 Ft.
b= 5 Ft.

FROM STA 18+25 TO 19+25 -Y4RPD- LT

DETAIL #6
TOE PROTECTION
(Not to Scale)

Natural Ground, d, 2:1 OR FLATTER, Fill Slope
Geotextile
d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap
FROM STA 659+00 TO 661+00 -L- RT

DETAIL #12
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, Geotextile, D, 2:1, B, b, 1'/Ft., Fill Slope
Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.
*When B Is < 6.0'

Type of Liner= Class 'B' Rip-Rap
FROM STA 657+60 TO 663+80 -L- LT

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

MATCHLINE -L- STA.656+51 SHEET 16

MATCHLINE -L- STA.668+17 SHEET 18

GROUP GGK, LLC

FORSYTH COUNTY
CITY OF WINSTON-SALEM

BOBBY F. GORDON
BETSY GORDON

20' SANITARY SEWER EASEMENT

GLENN D. HART

REX L. PEDDYCORD
FAYE G. PEDDYCORD

KENNETH ANDREW HOLDER

CHARLES SPENCER LADD JR.
REBECCA WHITLEY LADD

SITE 19

SITE 18

SITE 17

CLASS 'B' RIP RAP
EST 3 TONS
EST 10 SY GEO

LATERAL V-DITCH
SEE DETAIL #4

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 417 TONS
W/957 SY GEO
SEE DETAIL#12

LATERAL 3' BASE DITCH
W/CLASS 'I' RIP RAP
EST. 209 TONS
W/544 SY GEO
SEE DETAIL #21

CLASS 'B' RIP RAP
EST 8 TONS
EST 21 SY GEO

FLOODPLAIN BENCH
SEE DETAIL
SHEET 2-XX

24' BASE CHANNEL
+/-165 CY

36' BASE CHANNEL
DDE+ +/-285 CY

CL 'I' RIP RAP

TOE PROTECTION W/
CLASS 'B' RIPRAP
EST. 114 TONS
EST 309 SY GEO
SEE DETAIL#6

BEGIN SBG
STA 666+25 -L- RT

ATTENUATOR
TYPE 350

3@12'x10' RCBC

18" RCP-III
24" RCP-III
30" RCP-III
36" RCP-III
15" RCP-III
30" RCP-IV
36" RCP-IV
48" RCP-IV
72" RCP-III

2GI
2GI-A
FS
CAT-I

8" DIP
SPRING BOX
JB-wMH
1' SILL
2' SILL

2GI W/FLAT GRATE FOR RCP-IV

S 12° 57' 10.0" W
N 21° 53' 49.7" E

CHORD
660
665
70 (-Y4CD-)
15 (-Y4RPD-)

DETAIL #21
LATERAL BASE DITCH
(Not To Scale)

Natural Ground, 2:1, d, Geotextile, D, 2:1, B, b, 1'/Ft., Fill Slope
Min. D= 2 Ft.
Max. d= 2 Ft.
B= 3 Ft.
b= 5 Ft.
*When B Is < 6.0'

Type of Liner= Class 'I' Rip-Rap
FROM STA 663+80 TO 666+70 -L- LT

30' ACCESS EASEMENT DB 1538, PG 142

SCRUB

8/17/99

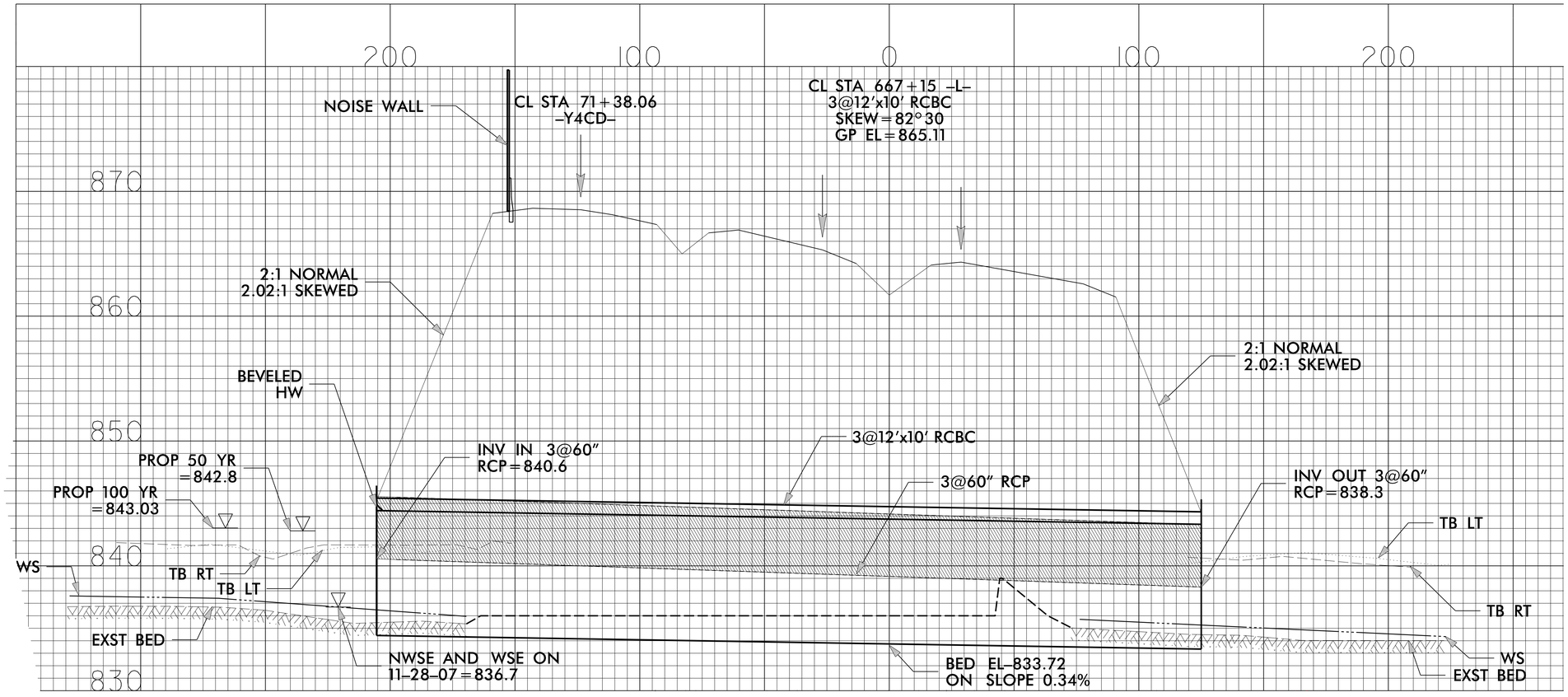
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 28 OF 64



6/2/2014
u2579b_hyd_prm_wet_psh17A_Lsta667.dgn
barvel

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 29 OF 64

REVISIONS 8/17/99

KEYSTONE GROUP INC.

GANESHWAR SHIVCHARRAN

ANDREW S. MANGIACAPRE AND HOLDEN M. SIZEMORE

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NCDOT
(WILLIAM LEWIS WEAVIL)
(REBECCA HINE WEAVIL)

GLENN D. HART

75 (-Y4CD-)

80 (-Y4CD-)

85 (-Y4CD-)

670 675 680

CHORD

SITE 19

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

BERM DITCH STA 671+50 TO 674+00 -L- LT

BERM DITCH STA 671+50 – 672+50 -L- LT

SPECIAL DITCH GRADE SEE PROFILE FOR GRADE

30" CSP W/ELBOW

GRAU 350 TL-3

TYPE B-77

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

2GI W/FLAT GRATE

END SBG STA 669+00 -L- RT

CLASS 'I' RIP RAP
EST 26 TONS
EST 50 SY GEO

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

TAIL DITCH
SEE DETAIL #7
EST. DDE 12CY

TAIL DITCH
SEE DETAIL#25
EST. DDE 170CY
CLASS 'I' RIP RAP
EST. 125 TONS
W/313 SY GEO

20' SANITARY SEWER EASEMENT

+25.00 -L-
230.00'

DETAIL #25
STANDARD BASE DITCH
(Not to Scale)

Natural Ground 2H D 2H Natural Ground
d B
Geotextile
Min. D= 3 Ft.
Max. d= 3 Ft.
B= 4 Ft.
*When B is < 6.0'

Type of Liner= Class 'I' Rip-Rap
FROM STA. 667+88 TO 669+14 -L- RT

DETAIL #7
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground 2H D 2H Natural Ground
Min. D= 2 Ft.

FROM STA. 668+51 TO STA. 668+53 -L-

MATCHLINE -L- STA.668+17 SHEET 17

MATCHLINE -L- STA.681+04 SHEET 19

S 34°00' 18.6" W

6/2/2014
u2579b_hyd_prm_wet_psh18.dgn
dbrown

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 30 OF 64

REVISIONS

8/17/99

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

KEYSTONE GROUP INC.

GANESHWAR SHIVCHARRAN

ANDREW S. MANGIACAPRE AND HOLDEN M. SIZEMORE

NCDOT
(WILLIAM LEWIS WEAVIL)
(REBECCA HINE WEAVIL)

GLENN D. HART

75 (-Y4CD-)

80 (-Y4CD-)

85 (-Y4CD-)

670

675

680

CHORD

SITE 19

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

2GI W/FLAT GRATE

15" RCP-III

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

TYPE B-77

BERM DITCH STA 671+50 TO 674+00 -L- LT

30"

2OTCB

BERM DITCH STA 671+50 - 672+50 -L- LT

SPECIAL DITCH GRADE SEE PROFILE FOR GRADE

30" CSP W/ELBOW

GRAU 350 TL-3

30" RCP-III

36" RCP-III

42" RCP-III

48" RCP-III

24" RCP-III

18" RCP-III

2GI-A

END SBG STA 669+00 -L- RT

CLASS 'I' RIP RAP
EST 26 TONS
EST 50 SY GEO

TAIL DITCH
SEE DETAIL #7
EST. DDE 12CY

TAIL DITCH
SEE DETAIL #25
EST. DDE 170CY
CLASS 'I' RIP RAP
EST. 125 TONS
W/313 SY GEO

+25.00 -L-
230.00'

DETAIL #25
STANDARD BASE DITCH
(Not to Scale)

Natural Ground
Geotextile
Min. D= 3 Ft.
Max. d= 3 Ft.
B= 4 Ft.
*When B is < 6.0'

Type of Liner= Class 'I' Rip-Rap
FROM STA. 667+88 TO 669+14 -L- RT

DETAIL #7
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground
Min. D= 2 Ft.

FROM STA. 668+51 TO STA. 668+53 -L-

S 34°00'18.6" W

MATCHLINE -L- STA.668+17 SHEET 17

MATCHLINE -L- STA.681+04 SHEET 19

6/2/2014
u2579b_hyd_prm_wet_psh18_con.dgn
jdavis

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 31 OF 64

8/17/99

REVISIONS

MATCHLINE –L– STA.681+04 SHEET 18

S S DENOTES IMPACTS IN SURFACE WATER

P P DENOTES IMPACTS IN SURFACE WATER (POND)

RANDY NELSON WEAVIL
MARCIA S. WEAVIL

JNDY NELSON WEAVIL
MARCIA S WEAVIL

PATTY WEAVIL MABE
GLENDA JUNE COCKERHAM

SHELBA J. TALLEY
JONAH R. MOTSINGER

WANDA L. BOOTH

CHARLES JERRY HART

BOBBY LEE MOORE

FRANCIS L. MANUEL
BILLIE MANUEL

685

690

695

90 (-Y4CD-1)

PERMANENT MITIGATION AREA: SEE MITIGATION PLANS IN PERMIT PACKAGE FOR DETAILS

ONCE POND IS DRAINED, PIPE INVERT MAY BE ADJUSTED BY MITIGATION SPECIALIST AND VERIFIED BY ENGINEER

SITE 20

SPECIAL DITCH GRADE SEE PROFILE FOR GRADE

ROCK CROSS VANE SEE DETAIL SHEET NO. 2D-1

ROCK CROSS VANE SEE DETAIL SHEET NO. 2D-1

42" CSP W/ELBOW

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

15" W/2 ELBOWS AND ROD AND LUG CONNECTORS

BDO

2GI-A

8:1 TAPER

CAT-1

42" RCP-IV

2GI W/ FLAT GRATE

BEGIN SBG STA 687+90 –L– LT

END SBG STA 690+50 –L– LT

GRAU-350

18" RCP-III

18" RCP-IV

15" RCP-IV

S 34°00'18.6" W

BEGIN SBG STA 686+50 –L– RT

15"

2GI W/FLAT GRATE

END SBG STA 692+33 –L– RT

15" W/2 ELBOWS AND ROD AND LUG CONNECTORS

18" W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP EST 2 TONS EST 8 SY GEO

PSH SEE DETAIL, SHEET 2D-1

ROCK FILL IN POND SEE DETAIL #31

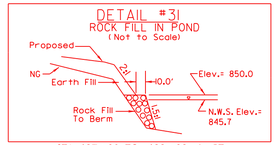
REVISE FILL SLOPE 2.75:1 STA 688+00 –L– RT

CLASS 'I' RIP RAP EST 77 TONS EST 114 SY GEO

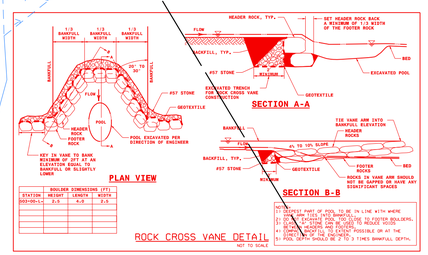
CHORD

CHARLES JERRY HART

DETAIL #31
ROCK FILL IN POND
(Not to Scale)



STA 687+90 TO 688+98 –L– RT



6/24/2014
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dcrowell

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 32 OF 64

REVISIONS 8/17/99

S S DENOTES IMPACTS IN SURFACE WATER

P P DENOTES IMPACTS IN SURFACE WATER (POND)

RANDY NELSON WEAVIL
MARCIA S. WEAVIL

JNDY NELSON WEAVIL
MARCIA S WEAVIL

PATTY WEAVIL MABE
GLENDA JUNE COCKERHAM

SHELBA J. TALLEY
JONAH R. MOTSINGER

WANDA L. BOOTH

CHARLES JERRY HART

BOBBY LEE MOORE

FRANCIS L. MANUEL
BILLIE MANUEL

PERMANENT MITIGATION AREA: SEE MITIGATION PLANS IN PERMIT PACKAGE FOR DETAILS

ONCE POND IS DRAINED, PIPE INVERT MAY BE ADJUSTED BY MITIGATION SPECIALIST AND VERIFIED BY ENGINEER

SITE 20

SPECIAL DITCH GRADE SEE PROFILE FOR GRADE

ROCK CROSS VANE SEE DETAIL SHEET NO. 2D-1

ROCK CROSS VANE SEE DETAIL SHEET NO. 2D-1

42" CSP W/ELBOW

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

15" W/2 ELBOWS AND ROD AND LUG CONNECTORS

BDO

2GI-A

BEGIN SBG STA 687+90 -L- LT

END SBG STA 690+50 -L- LT

2GI W/ FLAT GRATE

42" RCP-IV

15" RCP-IV

18" RCP-III

GRAU-350

S 34°00'18.6" W

BEGIN SBG STA 686+50 -L- RT

END SBG STA 692+33 -L- RT

18" W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP EST 2 TONS EST 8 SY GEO

15" W/2 ELBOWS AND ROD AND LUG CONNECTORS

PSH SEE DETAIL, SHEET 2D-1

ROCK FILL IN POND SEE DETAIL 3I

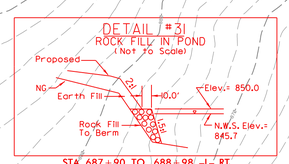
REVISE FILL SLOPE 2.75:1 STA 688+00 -L- RT

CLASS 'I' RIP RAP EST 77 TONS EST 114 SY GEO

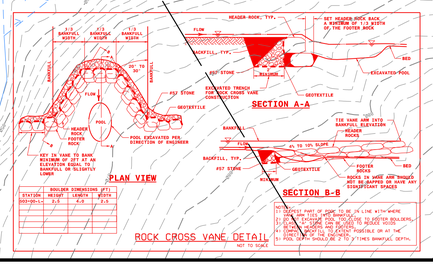
CHORD

MATCHLINE -L- STA. 681+04 SHEET 18

DETAIL #3I
ROCK FILL IN POND
(Not To Scale)



STA 687+90 TO 688+98 -L- RT



6/27/2014
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dcogdill

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 33 OF 64

REVISIONS

8/17/99

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

DONALD ROBER JONES

CAROL JONES MITCHELL
BILLY RAY MITCHELL

PLAINSMAN DEVELOPMENT CORP

REBECCA W. FREEMAN

TOWN OF WALKERTOWN
FORSYTH COUNTY

BEGIN W.W.FENCE

SITE 3A

SITE 3B

SITE 3

SITE 21

CLASS 'B' RIP RAP
EST 3 TONS
EST 11 SY GEO

REMOVE

24" CSP W/ELBOW

BDO

2GI

24" RCP-III

NARROW SLOT GRATES

HEAD DITCH
SEE DETAIL#18
EST. DDE=24CY

ALVIN L. LINDSAY

JAMES R. MYERS, III
MARY MYERS

CLAUDE DICKERSON, JR.
NANCY FLINCHUM

JAMES R. MYERS III &
MARY B. MYERS

JAMES N. WHICKER
FRANCES B. WHICKER

WAYNE E. PHILLIPS, JR.
MARY ANN PHILLIPS

REBECCA ANN FREEMAN

S 39° 49' 20.3" W

S 79° 36' 04.1" E

S 69° 30' 22.1" E

N 49° 22' 56.9" E

S 49° 58' 57.1" E

BEGIN SBG
STA 18+50 -Y1- LT

PSH
SEE DETAIL
SHEET 2-XX

15" CSP W/2 ELBOWS
AND ROD AND LUG CONNECTORS

15" RCP-IV
NARROW SLOT
W/FLAT GRATE

CLASS 'B' RIPRAP
EST. 3 TONS

SPECIAL 2' CUT BASE DITCH
SEE DETAIL#19

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 165 TONS
W/432 SY GEO
SEE DETAIL#12

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 151 TONS
W/397 SY GEO
SEE DETAIL#3

FLOODPLAIN BENCH
SEE DETAIL
SHEET 2-XX

SILL

TOE PROTECTION
SEE DETAIL#6

2GI NARROW SLOT
W/FLAT GRATE

2@7'x6'
RCBC

BEGIN SBG
STA 22+75 -Y1- RT

CLASS 'B' RIP RAP
EST 11 TONS
EST 28 SY GEO

"END W.W. FENCE"

MATCHLINE -Y1- STA. 23+65 SHEET 5

RAMOND F. HARDY
MEARL LEASE HARDY, TRUSTEES

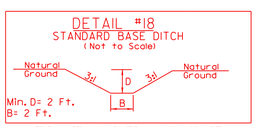
MARSHALL S. BROWN

KEITH E. STRAUSS
REBECCA C. STRAUSS

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 114 TONS
W/300 SY GEO
SEE DETAIL#12

TERRY K. CUSTER
JACQUELINE CUSTER

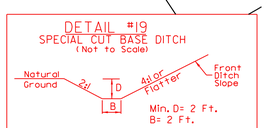
DETAIL #18
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2 Ft.
B= 2 Ft.

FROM STA. 11+31 TO 11+51 -Y1- RT

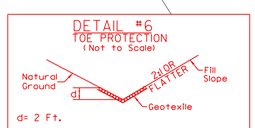
DETAIL #19
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 2 Ft.
B= 2 Ft.

FROM STA 17+00 TO 19+00 -Y1- RT

DETAIL #6
TOE PROTECTION
(Not to Scale)

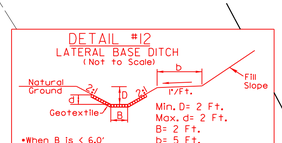


d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 23+00 TO 26+00 -Y1- LT

DETAIL #12
LATERAL BASE DITCH
(Not to Scale)



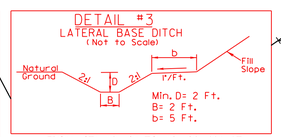
Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.

*When B Is < 6.0'

Type of Liner= Class 'B' Rip-Rap

FROM STA 19+35 TO 21+80 -Y1- RT
FROM STA 22+90 TO 24+60 -Y1- RT

DETAIL #3
LATERAL BASE DITCH
(Not to Scale)



Min. D= 2 Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA 10+65 TO 12+90 -Y7- LT

6/2/2014
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jhayes

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 34 OF 64

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

REVISIONS 8/17/99

DONALD ROBER JONES

CAROL JONES MITCHELL
BILLY RAY MITCHELL

PLAINSMAN DEVELOPMENT CORP

TOWN OF WALKERTOWN
FORSYTH COUNTY

REBECCA W. FREEMAN

SITE 3A

SITE 3B

SITE 3

SITE 21

CLASS 'B' RIP RAP
EST 3 TONS
EST 11 SY GEO

BEGIN WW-FENCE

REMOVE

24" CSP W/ELBOW

BDO

HEAD DITCH
SEE DETAIL#18
EST. DDE=24CY

NARROW SLOT GRATES

S 39° 49' 20.3" W

PUE

ALVIN L. LINDSAY

JAMES R. MYERS, III
MARY MYERS

JAMES N. WHICKER
FRANCES B. WHICKER

CLAUDE DICKERSON, JR.
NANCY FLINCHUM

JAMES R. MYERS III &
MARY B. MYERS

WAYNE E. PHILLIPS, JR.
MARY ANN PHILLIPS

REBECCA ANN FREEMAN

S 79° 36' 04.1" E

SPECIAL 2' CUT BASE DITCH
SEE DETAIL#19

S 69° 30' 22.1" E

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 165 TONS
W/432 SY GEO
SEE DETAIL#12

BEGIN SBG
STA 18+50 -Y1- LT

CLASS 'B' RIPRAP
EST. 3 TONS

PSH
SEE DETAIL
SHEET 2-XX

15" CSP W/2 ELBOWS
AND ROD AND LUG CONNECTORS

15" RCP-IV
NARROW SLOT
W/FLAT GRATE

FLOODPLAIN
BENCH
SEE DETAIL
SHEET 2-XX

SILL

TOE PROTECTION
SEE DETAIL#6

2GI NARROW SLOT
W/FLAT GRATE

2@7'x6'
RCBC

BEGIN SBG
STA 22+23 -Y1- RT
2GI NARROW SLOT
W/FLAT GRATE

CLASS 'B' RIP RAP
EST 11 TONS
EST 28 SY GEO

END WW-FENCE

MATCHLINE -Y1- STA. 23+65 SHEET 5

RAMOND F. HARDY
MEARLEASE HARDY, TRUSTEES

N 49° 22' 56.9" E

MARSHALL S. BROWN

S 49° 58' 57.7" E

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 151 TONS
W/397 SY GEO
SEE DETAIL#3

KEITH E. STRAUSS
REBECCA C. STRAUSS

LATERAL 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 124 TONS
W/300 SY GEO
SEE DETAIL#12

TERRY K. CUSTER
JACQUELINE CUSTER

GRAU-350

DETAIL #18
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, Natural Ground; B

Min. D= 2 Ft.
B= 2 Ft.

FROM STA. 11+31 TO 11+51 -Y1- RT

DETAIL #19
SPECIAL CUT BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 4:1 or Flatter, Front Ditch Slope; B

Min. D= 2 Ft.
B= 2 Ft.

FROM STA 17+00 TO 19+00 -Y1- RT

DETAIL #6
TOE PROTECTION
(Not to Scale)

Natural Ground, d, 2:1 OR FLATTER, Fill Slope; Geotextile

d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 23+00 TO 26+00 -Y1- LT

DETAIL #12
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, Geotextile, D, 2:1, b, 1':1Ft., Fill Slope; B

Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.

*When B Is < 6.0'

Type of Liner= Class 'B' Rip-Rap

FROM STA 19+35 TO 21+80 -Y1- RT
FROM STA 22+90 TO 24+60 -Y1- RT

DETAIL #3
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, 1':1Ft., Fill Slope; B

Min. D= 2 Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA 10+65 TO 12+90 -Y7- LT

6/2/2014
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jbryson

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

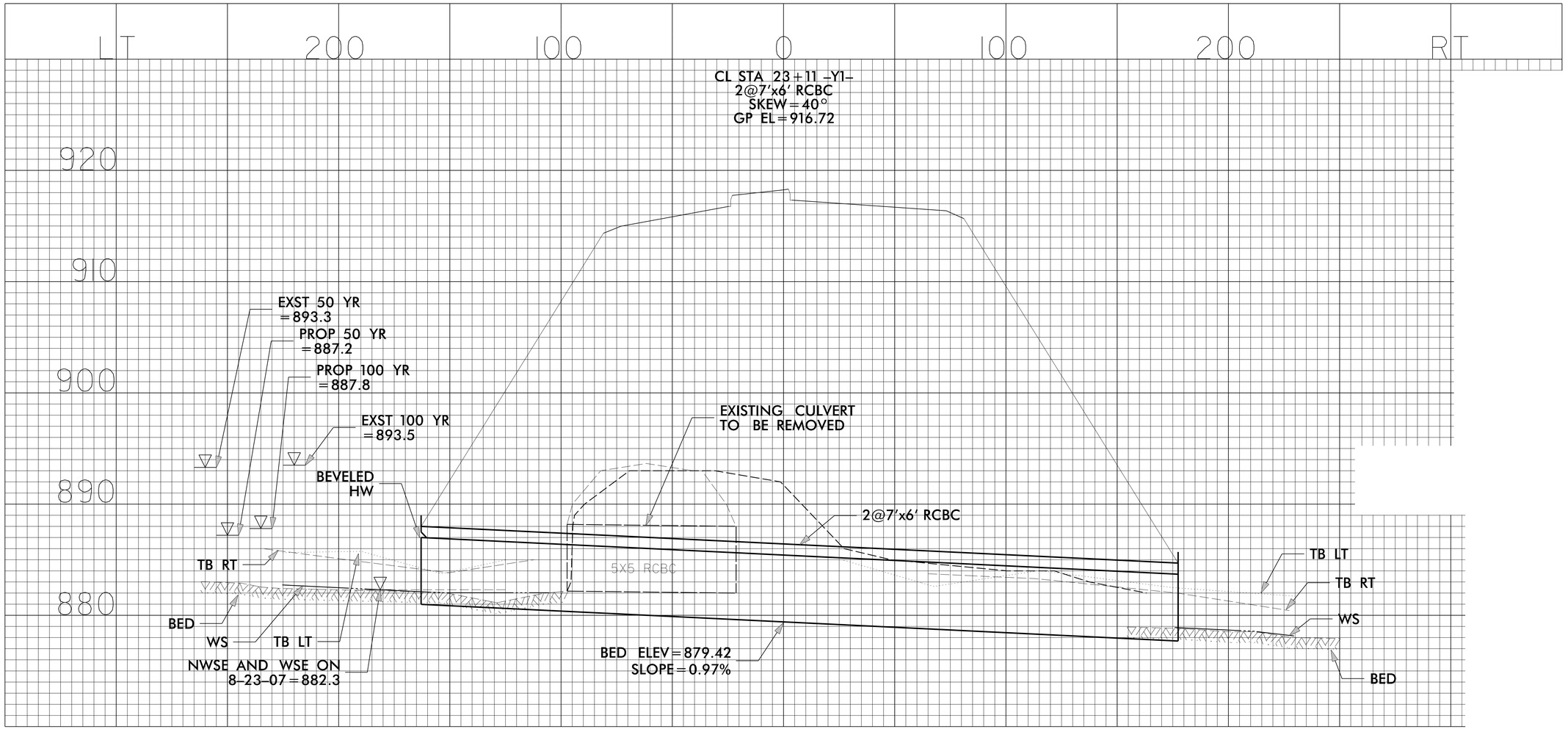
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 35 OF 64

REVISIONS

8/17/99



6/2/2014
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tbarnett

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 36 OF 64

DENOTES FILL IN WETLAND

SITE 22

MATCHLINE -Y4 STA. 30+50 SHEET 24

MATCHLINE -Y4- STA. 43+65 SHEET 26

ARNOLD G. KING
HELEN H. PRINCE

LINDA MAYES HOPKINS

FORSYTH COUNTY
TOWN OF KERNERSVILLE

20' SANITARY SEWER EASEMENT

CLASS 'I' RIP RAP
EST 20 TONS
EST 39 SY GEO

TAIL DITCH
SEE DETAIL#9
EST. DDE 17CY

TDE

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIP RAP
EST 2 TONS
EST 5 SY GEO

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

PSH
SEE DETAIL SHEET 2-XX

24" RCP-III
42" RCP-III
JB w/MH
2GI FS
15" RCP-III
COLLAR
24" RCP-III
REMOVE FES
RETAIN AND EXTEND
TRENCHLESS INSTALLATION
36" WELDED STEEL
RETAIN
Conv. OTCB To 2GI
I-40 BUS EBL US 421 SBL 26' BST
I-40 BUS WBL US 421 NBL 26' BST
N 85° 33' 45.8" W
BEGIN SBG
STA 41+00 -Y4- LT
CAT-I
2GI W/FLAT GRATE
GRAU-350
REMOVE
FILL W/FLOWABLE MATERIAL
18" RCP-III
18" CMP
60° CHL
RETAIN AND EXTEND
COLLAR
REMOVE FES
24" RCP
15" RCP-III
DITCH BLOCK
MIN. HEIGHT 1.0'
HW
36" RCP-III
HEAD DITCH
SEE DETAIL#9
EST. DDE 40CY
R/W MON
EXISTING R/W
BEGIN SBG
STA 39+50 -Y4- RT
CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO
TOE PROTECTION W/
CLASS "I" RIPRAP
EST 380 TONS
EST 779 SY GEO
SEE DETAIL#27

THOMAS W. PRINCE
ARNOLD G. KING

CHARLES LEO RECORD
KRISTI R. RECORD

HA T. DAM
WELL
SHED

THOMAS W. PRINCE
ARNOLD G. KING

THEODORE R. MEAD
AMY J. MEAD

DAVID D. WEAVER

TIMOTHY A. KUBIAK
SUSAN E. KUBIAK

HOMAS W. PRINCE
ARNOLD G. KING

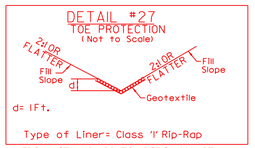
20' STORM SEWER EASEMENT
18" RCP
30" C&G
EIP 48" CONC
15" CONC
48" CONC
25BKD
BRENT
BRK WD

POND
W.E. 8597
FISH HATCHERY

PAVED SHOULDER

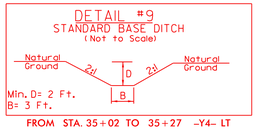
NOTE :
1.FOR - Y4EB - PROFILE SEE SHEET 50
2.FOR - Y4WB - PROFILE SEE SHEET 55

DETAIL #27
TOE PROTECTION
(Not to Scale)



d= 1Ft.
Type of Liner= Class 'I' Rip-Rap
FROM STA. 40+30 TO RCBC -Y4- RT

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2 Ft.
B= 3 Ft.
FROM STA. 35+02 TO 35+27 -Y4- LT

6/2/2014
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mbrown

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 37 OF 64

8/17/99

REVISIONS

MATCHLINE -Y4 STA. 30+50 SHEET 24

MATCHLINE -Y4- STA. 43+65 SHEET 26

F F DENOTES FILL IN WETLAND

SITE 22

ARNOLD G. KING
HELEN H. PRINCE

LINDA MAYES HOPKINS

FORSYTH COUNTY
TOWN OF KERNERSVILLE

CLASS 'I' RIP RAP
EST 20 TONS
EST 39 SY GEO

TAIL DITCH
SEE DETAIL#9
EST. DDE 17CY

TDE

24" RCP-III

42" RCP-III

JB w/MH

2GI FS 15" RCP-III

COLLAR

24" RCP-III

REMOVE FES

RETAIN AND EXTEND

TRENCHLESS INSTALLATION
36" WELDED STEEL

I-40 BUS EBL US 421 SBL 26' BST

N 85° 33' 45.8" W

RETAIN

Conv. OTCB To 2GI

FST

RETAIN AND EXTEND

COLLAR

REMOVE FES

FS

2GI

35" RCP-III

24" RCP-III

HW

JB w/MH

36" RCP-III

DITCH BLOCK
MIN. HEIGHT 1.0'

HEAD DITCH
SEE DETAIL#9
EST. DDE 40CY

TDE

I-40 BUS WBL US 421 NBL 26' BST

N 85° 33' 45.8" W

RETAIN AND EXTEND

REMOVE FES

COLLAR

24" RCP

GRAU-350

FS

2GI

15" RCP-III

18" RCP-III

60° CHC

BEGIN SBG
STA 39+50 -Y4- RT

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

15" CSP W/2 ELBOWS
AND ROD AND LUG
CONNECTORS

CLASS 'B' RIP RAP
EST 2 TONS
EST 5 SY GEO

2GI

FS

CAT-I

BEGIN SBG
STA 41+00 -Y4- LT

15" CSP W/2 ELBOWS
AND ROD AND LUG
CONNECTORS

PSH
SEE DETAIL
SHEET 2-XX

2GI W/FLAT GRATE

GRAU-350

CAT-I

REMOVE

2GI

FS

18" RCP-III

18" CMP

FILL W/FLOWABLE
MATERIAL

2GI W/FLAT GRATE

TOE PROTECTION W/
CLASS "I" RIPRAP
EST 380 TONS
EST 779 SY GEO
SEE DETAIL#27

THOMAS W. PRINCE
ARNOLD G. KING

CHARLES LEO RECORD
KRISTI R. RECORD

HA T. DAM

THOMAS W. PRINCE
ARNOLD G. KING

THEODORE R. MEAD
AMY J. MEAD

DAVID D. WEAVER

TIMOTHY A. KUBIAK
SUSAN E. KUBIAK

HOMAS W. PRINCE
ARNOLD G. KING

POND
W.E. BISSY
FISH HATCHERY

PAVED SHOULDER

DETAIL #27
TOE PROTECTION
(Not to Scale)

Type of Liner= Class 'I' Rip-Rap

FROM STA. 40+30 TO RCBC -Y4- RT

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)

Natural Ground
Fill Slope
Geotextile
Min. D= 2 Ft.
B= 3 Ft.

FROM STA. 35+02 TO 35+27 -Y4- LT

NOTE :
1.FOR - Y4EB - PROFILE SEE SHEET 50
2.FOR - Y4WB - PROFILE SEE SHEET 55

6/2/2014
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cbarnes

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 38 OF 64

REVISED 5-18-14

REVISIONS

8/17/99

MATCHLINE -Y4- STA. 43+65 SHEET 25

MATCHLINE -Y4- STA. 56+61 SHEET 27

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

SITE 23A

SITE 23

SITE 23B

SITE 28

HAROLD DAVID HOPKINS, JR.

LINDA MAYES HOPKINS

HAROLD D. CRANFILL
PATTIE CRANFILL

JERRY M. PEGRAM
NANCY B. PEGRAM

AWRENCE E. POPE

RONALD LEE ANGEL SR.

LYNN ANGEL BERRY
JAMES LEON BERRY

POND
W.E. 855.6

POND
W.E. 855.7

POND
W.E. 847.2
FISH HATCHERY

SMITH CREEK

HEAD DITCH
SEE DETAIL #7
EST. DDE 5CY

CLASS 'I'
RIP RAP

TAIL DITCH
SEE DETAIL#17
EST. DDE 235CY
CLASS 'I' RIP RAP
EST. 206 TONS
535 SY GEO

EARTH BERM
SEE DETAIL#16

PSH
SEE DETAIL
SHEET 2D-1

END SBG
STA. 46+00 -Y4- LT

2GI W/FLAT GRATE

SGRAU+350

I-40 BUS EBL US 421 SBL 26' BST

I-40 BUS WBL US 421 NBL 26' BST

N 85° 33' 45.8" W

REMOVE

FILL W/FLOWABLE MATERIAL

SILT IN THIS BARREL

TOE PROTECTION W/
CLASS "I" RIPRAP
EST 380 TONS
EST 729 SY GEO
SEE DETAIL#27

CLASS 'I'
RIP RAP

CLASS II RIPRAP
SEE CROSS-SECTIONS FOR RIPRAP PLACEMENT

TOE PROTECTION W/
CLASS "B" RIPRAP
EST 46 TONS
EST 123 SY GEO
SEE DETAIL#6

CLASS 'B'
RIP RAP
EST 2 TONS
EST 7 SY GEO

LATERAL 2' BASE DITCH
SEE DETAIL#3

CLASS 'B'
RIP RAP
EST 8 TONS
EST 21 SY GEO

Conv. OTCB To 2GI

RETAIN

REMOVE FES

REMOVE 18" EXST PIPE

REVISE FILL SLOPES TO 1.5:1
W/ROCK PLATING
STA 50+00 TO 50+50 -Y4- RT
SEE DETAIL, SHEET 2G-1

CLASS 'B'
RIP RAP
EST 2 TONS
EST 7 SY GEO

CLASS II RIPRAP
SEE CROSS-SECTIONS FOR RIPRAP PLACEMENT

PLUG

REMOVE
EX DI

GRADE TO DRAIN TI

TRENCHLESS INSTALLATION 36" WELDED STEEL

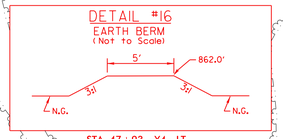
END SBG
STA. 55+50 -Y4- RT

CLASS 'B' RIPRAP
EST 11 TONS
EST 28 SY GEO

TAIL DITCH
SEE DETAIL #9
EST. DDE 8 CY

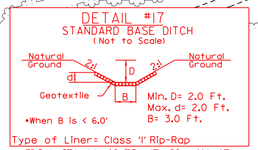
PAVED SHOULDER

DETAIL #16
EARTH BERM
(Not to Scale)



STA. 47+93 -Y4- LT

DETAIL #17
STANDARD BASE DITCH
(Not to Scale)

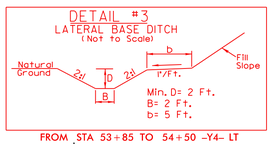


*When B Is < 6.0'
Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 3.0 Ft.

Type of Liner= Class 'I' Rip-Rap

FROM STA. 44+68 TO 47+53 -Y4- LT

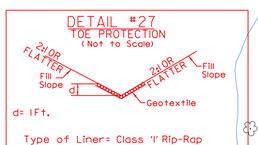
DETAIL #3
LATERAL BASE DITCH
(Not to Scale)



Min. D= 2 Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA 53+85 TO 54+50 -Y4- LT

DETAIL #27
TOE PROTECTION
(Not to Scale)

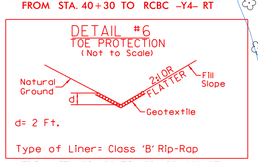


d= 1Ft.

Type of Liner= Class 'I' Rip-Rap

FROM STA. 40+30 TO RCBC -Y4- RT

DETAIL #6
TOE PROTECTION
(Not to Scale)

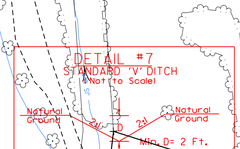


d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA. 53+05 TO 53+85 -Y4- LT

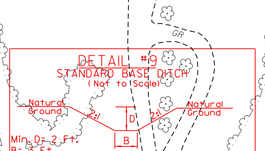
DETAIL #7
STANDARD 'V' DITCH
(Not to Scale)



Min D= 2 Ft.

FROM STA. 55+14 TO STA. 45+18 -Y4- LT

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2 Ft.
B= 5 Ft.

FROM STA. 55+83 TO 55+95 -Y4- RT

NOTE :
1. FOR -Y4EB- PROFILE SEE SHEET 50-51
2. FOR -Y4WB- PROFILE SEE SHEET 55-56

6/2/2014
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tbarnett

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 39 OF 64

REVISED 5-18-14

8/17/99

REVISIONS

MATCHLINE -Y4- STA. 43+65 SHEET 25

MATCHLINE -Y4- STA. 56+61 SHEET 27

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

SITE 23A

SITE 23

SITE 23B

SITE 28

HAROLD DAVID HOPKINS, JR.

LINDA MAYES HOPKINS

HAROLD D. CRANFILL
PATTIE CRANFILL

JERRY M. PEGRAM
NANCY B. PEGRAM

AWRENCE E. POPE

RONALD LEE ANGEL SR.

LYNN ANGEL BERRY
JAMES LEON BERRY

POND
W.E. 855.6

POND
W.E. 855.7

POND
W.E. 847.2
FISH HATCHERY

SMITH CREEK

HEAD DITCH
SEE DETAIL #7
EST. DDE 5CY

CLASS 'I'
RIP RAP

TAIL DITCH
SEE DETAIL#17
EST. DDE 235CY
CLASS 'I' RIP RAP
EST. 206 TONS
535 SY GEO

EARTH BERM
SEE DETAIL#16

END SBG
STA. 46+00 -Y4- LT

2GI W/FLAT GRATE

REMOVE

FILL W/FLOWABLE MATERIAL

SILT IN THIS BARREL

TOE PROTECTION W/
CLASS "I" RIPRAP
EST 380 TONS
EST 779 SY GEO
SEE DETAIL#27

CLASS 'I'
RIP RAP

CLASS II RIPRAP
SEE CROSS-SECTIONS FOR RIPRAP PLACEMENT

TOE PROTECTION W/
CLASS "B" RIPRAP
EST 46 TONS
EST 123 SY GEO
SEE DETAIL#6

CLASS 'B'
RIP RAP
EST 2 TONS
EST 7 SY GEO

LATERAL 2' BASE DITCH
SEE DETAIL#3

CLASS 'B'
RIP RAP
EST 8 TONS
EST 21 SY GEO

Conv. OTCB To 2GI

REMOVE 18" EXST PIPE

RETAIN

REMOVE FES

REVISE FILL SLOPES TO 1.5:1
W/ROCK PLATING
STA 50+00 TO 50+50 -Y4- RT
SEE DETAIL SHEET 2G-1

PLUG

REMOVE EX DI

GRADE TO DRAIN TY

TRENCHLESS INSTALLATION OF 36" WELDED STEEL

END SBG
STA. 55+50 -Y4- RT

CLASS 'B' RIPRAP
EST 11 TONS
EST 28 SY GEO

TAIL DITCH
SEE DETAIL #9
EST. DDE 8 CY

CLASS II RIPRAP
SEE CROSS-SECTIONS FOR RIPRAP PLACEMENT

PAVED SHOULDER

DETAIL #16
EARTH BERM
(Not to Scale)

STA. 47+93 -Y4- LT

DETAIL #17
STANDARD BASE DITCH
(Not to Scale)

*When B is < 6.0'

Type of Liner: Class 'I' Rip-Rap

FROM STA. 44+68 TO 47+53 -Y4- LT

DETAIL #3
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 53+85 TO 54+50 -Y4- LT

DETAIL #27
TOE PROTECTION
(Not to Scale)

d= 1Ft.

Type of Liner= Class 'I' Rip-Rap

FROM STA. 40+30 TO RCBC -Y4- RT

DETAIL #6
TOE PROTECTION
(Not to Scale)

d= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA. 53+05 TO 53+85 -Y4- LT

DETAIL #7
STANDARD 'V' DITCH
(Not to Scale)

Min. D= 2 Ft.

FROM STA. 45+14 TO STA. 45+78 -Y4- LT

DETAIL #9
STANDARD BASE DITCH
(Not to Scale)

Min. D= 2 Ft.
B= 8 Ft.

FROM STA. 55+83 TO 55+95 -Y4- RT

NOTE :
1. FOR -Y4EB- PROFILE SEE SHEET 50-51
2. FOR -Y4WB- PROFILE SEE SHEET 55-56

6/2/2014
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mbarnes

8/17/99

REVISIONS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

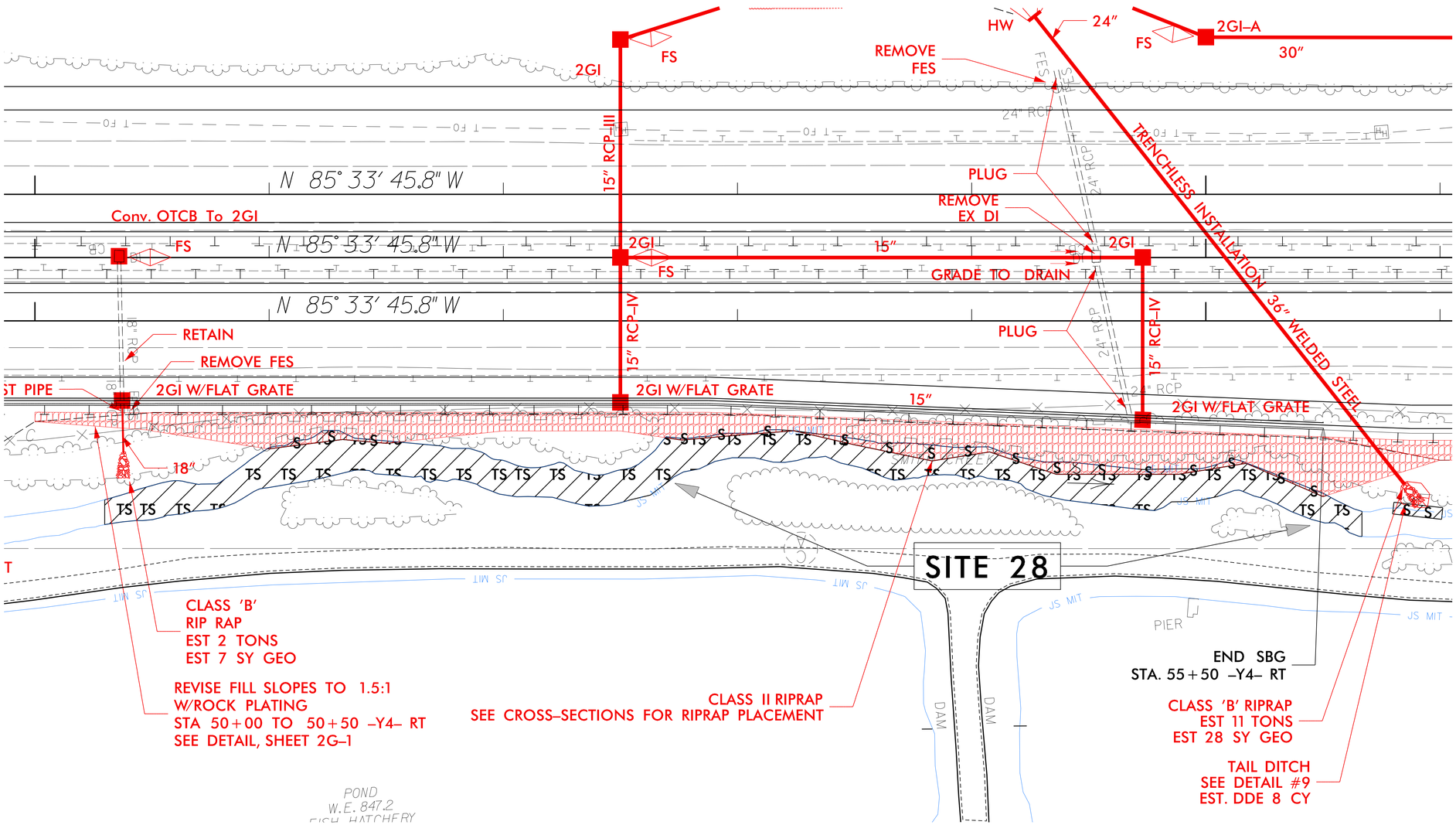
25 12.5 0 25 50
PLANS

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	26-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 40 OF 64

REVISED 5-18-14



CLASS 'B'
RIP RAP
EST 2 TONS
EST 7 SY GEO

REVISE FILL SLOPES TO 1.5:1
W/ROCK PLATING
STA 50+00 TO 50+50 -Y4- RT
SEE DETAIL, SHEET 2G-1

CLASS II RIPRAP
SEE CROSS-SECTIONS FOR RIPRAP PLACEMENT

END SBG
STA. 55+50 -Y4- RT

CLASS 'B' RIPRAP
EST 11 TONS
EST 28 SY GEO

TAIL DITCH
SEE DETAIL #9
EST. DDE 8 CY

6/6/2014
u2579b_hyd_prm_wet_psh26_SITE28.dgn
(barnes)

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

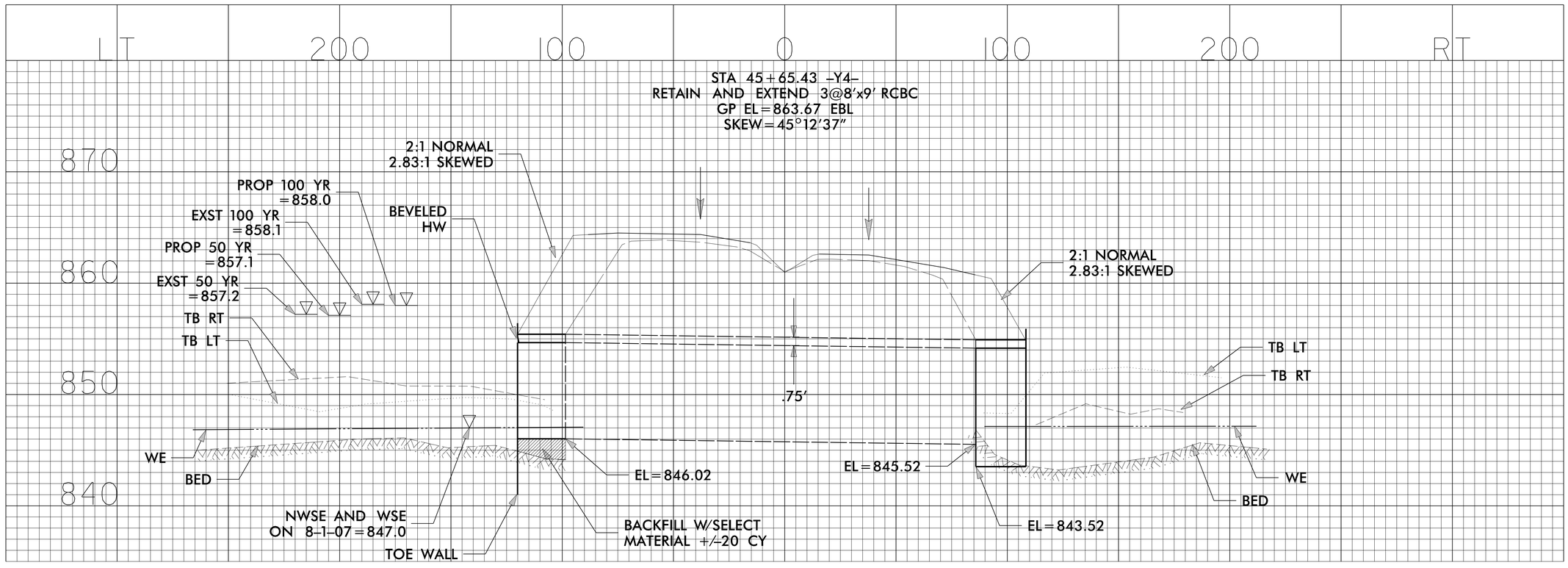
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 41 OF 64

REVISIONS

8/17/99



6/6/2014
u2579b_hyd_prm_wet_psh26A_Y4sta46.dgn
(harvel)

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 42 OF 64

REVISIONS

8/17/99

DETAIL #17 STANDARD BASE DITCH (Not to Scale)
Min. Dr. 2.0 Ft, Max. Dr. 2.0 Ft, Br. 3.0 Ft.
Type of Liner= Class 'I' Rip-Rap
FROM STA. 73+23 TO 73+48 -Y14- LT

DETAIL #20 SPECIAL LATERAL 'V' DITCH (Not to Scale)
Min. Dr. 2 Ft, Max. Dr. 2 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA. 70+50 TO 73+45 -Y14RPBD- RT

DETAIL #14 LATERAL 'V' DITCH (Not to Scale)
Min. Dr. 2 Ft, Max. Dr. 2 Ft, Br. 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA. 73+23 TO 73+00 -Y14- LT

DETAIL #9 STANDARD BASE DITCH (Not to Scale)
Min. Dr. 2 Ft, Br. 3 Ft.
FROM STA. 37+36 TO 37+46 -Y4- LT

DETAIL #8 STANDARD BASE DITCH (Not to Scale)
Min. Dr. 2 Ft, Br. 2 Ft.
FROM STA. 65+22 TO STA. 65+81 -Y4- LT
FROM STA. 75+36 TO 75+48 -Y14RPBD- RT

DETAIL #4 LATERAL 'V' DITCH (Not to Scale)
Min. Dr. 2 Ft, Br. 5 Ft.
FROM STA. 65+28 TO 65+80 -Y4- LT

DETAIL #6 TOE PROTECTION (Not to Scale)
Dr. 2 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA. 31+23 TO 32+00 -Y14RPA- LT

DETAIL 35 STANDARD BASE DITCH (Not to Scale)
Type of Liner= CLASS 'I' RIPRAP
FROM STA. 64+30 TO STA. 64+38 -Y4- RT

DETAIL #34 BERM DITCH (Not to Scale)
Min. Dr=1.5 Ft, Max. Dr=1.5 Ft.
Type of Liner= CLASS 'B' RIPRAP
FROM STA. 67+20 TO STA. 70+50 -Y14PBD- RT

DETAIL #26 STANDARD BASE DITCH (Not to Scale)
Min. Dr. 2 Ft, Br. 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA. 73+48 TO 73+71 -Y4- LT

DETAIL #12 LATERAL BASE DITCH (Not to Scale)
Min. Dr. 2 Ft, Max. Dr. 2 Ft, Br. 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA. 71+23 TO 72+00 -Y4- LT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

SITE 24A
SITE 24
SITE 30
SITE 25

MATCHLINE -Y4- STA.36+61 SHEET 26

MATCHLINE -Y4- STA.82+26 SHEET 16

MATCHLINE -Y14RPA- STA.26+95 SHEET 16

HASTINGS HILL LTD PARTNERSHIP

SMITH CREEK

RONALD LEE ANGEL SR.

JEFFREY WAYNE MASTEN

JOAN G. DICKEY

VINCENT GLENN BAKER

NCDOT (BILL G. BROCK)

6/2/2014
u2579b_hyd_prm_wet_psh27.dgn
(kbarnes)

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 43 OF 64

REVISIONS 8/17/99

DETAIL #17 STANDARD BASE DITCH (Not to Scale)
Min. Dr 2.0 Ft, Min. Br 2.0 Ft, Sr 3.0 Ft.
Type of Liner= Class 'I' Rip-Rap
FROM STA 73+23 TO 73+48 -Y14- LT

DETAIL #20 SPECIAL LATERAL 'V' DITCH (Not to Scale)
Min. Dr 2 Ft, Min. Br 2 Ft, Sr 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA 70+50 TO 73+23 -Y14RPBD- RT

DETAIL #14 LATERAL 'V' DITCH (Not to Scale)
Min. Dr 2 Ft, Min. Br 2 Ft, Sr 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA 73+23 TO 73+00 -Y14- LT

DETAIL #9 STANDARD BASE DITCH (Not to Scale)
Min. Dr 2 Ft, Br 3 Ft.
FROM STA 37+36 TO 37+46 -Y4- LT

DETAIL #8 STANDARD BASE DITCH (Not to Scale)
Min. Dr 2 Ft, Br 2 Ft.
FROM STA 65+22 TO STA 65+81 -Y4- LT
FROM STA 75+36 TO 75+48 -Y4RPBD- RT

DETAIL #4 LATERAL 'V' DITCH (Not to Scale)
Min. Dr 2 Ft, Sr 5 Ft.
FROM STA 65+28 TO 65+80 -Y4- LT

DETAIL #6 TOE PROTECTION (Not to Scale)
Dr 2 Ft, Slope 150%
Type of Liner= Class 'B' Rip-Rap
FROM STA 31+23 TO 32+00 -Y4RPA- LT

DETAIL 35 STANDARD BASE DITCH (Not to Scale)
Type of Liner= CLASS 'I' RIPRAP
FROM STA 64+30 TO STA 64+38 -Y4- RT

DETAIL #34 BERM DITCH (Not to Scale)
Type of Liner= CLASS 'I' RIPRAP
FROM STA 67+20 TO STA 70+50 -Y4RPBD- RT

DETAIL #26 STANDARD BASE DITCH (Not to Scale)
Min. Dr 2 Ft, Min. Br 2 Ft, Sr 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA 73+48 TO 73+71 -Y4- LT

DETAIL #12 LATERAL BASE DITCH (Not to Scale)
Min. Dr 2 Ft, Min. Br 2 Ft, Sr 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA 71+23 TO 72+00 -Y4- LT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

SITE 24A
SITE 24
SITE 30
SITE 25

MATCHLINE -Y4- STA 36+61 SHEET 26
MATCHLINE -Y4- STA 82+26 SHEET 16
MATCHLINE -Y4RPA- STA 26+95 SHEET 16
MATCHLINE -Y4RPBD- STA 63+00 SHEET 16
MATCHLINE -Y4RPBD- STA 63+00 SHEET 27

6/2/2014
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(kbarnes)

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	27-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 44 OF 64

REVISIONS 8/17/99

LATERAL 'V' DITCH W/CLASS 'B' RIP RAP
STA 81+24 TO 83+07 –Y4 RPBD– RT
SEE DETAIL#20

25 12.5 0 25 50
PLANS

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

SITE 24A

SPECIAL DITCH GRADE
SEE PROFILE FOR GRADE

NCDOT
(MARK A. BROWN)
(GINA C. BROWN)

HEAD DITCH
SEE DETAIL#8
EST. DDE 10CY

SITE 24

CLASS 'B'
RIP RAP
EST 2 TONS
EST 7 SY GEO

15" CSP W/2 ELBOWS
AND ROD AND LUG
CONNECTORS

CLASS 'B'
RIP RAP
EST 2 TONS
EST 7 SY GEO

15" RCP–III
2GI W/
FLAT
GRATE

HW

30" RCP–III

COLLAR
REMOVE FES

60" CHL

2GI
FS
15" RCP–III
2GI W/
FLAT GRATE

2GI
15" RCP–III
FS
2GI

9' BST

I–40 BUS EBL US 421 SBL 24' BST

I–40 BUS WBL US 421 NBL 24' BST

REMOVE
FS
2GI
15" RCP–III

REMOVE
FS
2GI
15" RCP–III

RETAIN AND EXTEND
RETAIN AND EXTEND

PLUG

REMOVE FES
COLLAR

REMOVE FES

18" RCP–III
30" RCP–III

SITE 24

ENDWALL
SEE DETAIL SHEET

TAIL DITCH
SEE DETAIL #35
EST. DDE 16CY

SITE 30

CLASS 'II'
RIP RAP
EST 32 TONS
EST 35 SY GEO

CLASS 'B'
RIP RAP

TRENCHLESS INSTALLATION 42" WELDED STEEL

SCRUB

CREEK

CAT-I

6/2/2014
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bar_vsi

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	27-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 45 OF 64

REVISIONS

8/17/99

5° 33' 45.8" W

5° 33' 45.8" W

5° 33' 45.8" W

Conv. OTCB To 2GI

FS

RETAIN AND EXTEND

RETAIN AND EXTEND

REMOVE FES

COLLAR

REMOVE FES

FS

18" CMP

18" CSP

30" RCP

GRAU-350

2GI W/
FLAT GRATE

SP W/
AND
LUG
CTORS

CLASS 'B'
RIP RAP
EST 2 TONS
EST 7 SY GEO

R/W

CLASS 'B'
RIP RAP
EST 2 TONS
EST 7 SY GEO

SHOULDER BERM GUTTER
STA.37+00 TO STA.40+00
-Y4RPA- LT

30" RCP-III

TAIL DITCH
SEE DETAIL#9
EST. DDE 12CY

CLASS 'I'
RIP RAP
EST 11 TONS
EST 22 SY GEO

CAT

MT

JB w/MH

18" RCP-III

2GI

24" RCP-III

CLASS 'B'
RIP RAP
EST 3 TONS
EST 11 SY GEO

SITE 25

R/W

CA

EIP

60.00'

EXISTING R/W

EXISTING R/W

SCRUB

US MT

JOAN G. DICKEY

40 (-Y4RPA-)

35 (-Y4RPA-)

SPECIAL DITCH GRADE
SEE PROFILE FOR GRADE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
PLANS

6/2/2014
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bpryan

8/17/99

REVISIONS

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

P P DENOTES IMPACTS IN SURFACE WATER (POND)

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 46 OF 64

MATCHLINE -YS- STA.102+90 SHEET 16

MATCHLINE -YS- STA.38+50 SHEET 16

MATCHLINE -YA- STA.124+70 SHEET 29

MATCHLINE -YB- STA.123+95 SHEET 29

MATCHLINE -YB- STA.19+00 SHEET 16

MATCHLINE -YA- STA.23+94.15 SHEET 29

SITE 26

SITE 27A

SITE 27B

SITE 27C

SITE 27D

SITE 27E

ABNAK & SIMMONS

SADE S. WEAVIL

BRIAN O. SIMMONS TAMMY R. SIMMONS

BERGER CONSTRUCTION COMPANY, INC.

KAREN MANNING

ROYCE B. SMITH PEGGY E. SMITH

ANTHONY GURLEY

DONALD J. BROWN

IRVIN MAURICE JOHNSON

JACK BEN MILLER SUSAN P. MILLER

THOMAS E. RHONDA FAYE

SAMUEL LARRY STEPHENS

SHANNON WILSON NELSON JILL WHITE NELSON

WADE SMITH JR.

WADE SMITH

TIMOTHY D. LYNCH KIMBERLY J. LYNCH

PERRIN BLACK SOPHIA BLACK

DANIEL A. MCKENZIE

EDWARD GUNTER

ALEJANDRO ROCHA

JOEL A. FARMEY

BARRY D. HUFF DORIS M. DUMAS

DONNIE ORLANDO HOLT CARLA DESHAZO HOLT

JOSEPH GONZALEZ YVONNE L. GONZALEZ

TERESA A. TYSON JOHN TYSON

CHANNO INGRAM RACQUEL INGRAM

MICHAEL J. FISCHER CHARISSA FISCHER

RONALD W. RAYLE CATHY P. RAYLE

DONALD R. NEWSOM CHRISTINA R. NEWSOM

JOHN H. WOOD

KELVIN L. MAYFIELD TALEONA L. MAYFIELD

ROBERT W. ROBBINS SHERESE R. ROBBINS

KIP J. MILLER

WADE WESSLEY SMITH JR.

WATSON BROTHERS, INC.

NCDOT [TOD W. SHELLEY] JENNIFER S. SHELLEY

SOE RUN HOMEOWNERS ASSOCIATION

MICHAEL J. ROUTH

NCDOT GARY D. PEGG TINA T. PEGG

STEPHEN PEGG SHERRI D. BERRIER

MICHAEL A. HESTER DONNA L. HESTER

HENRIETTA J. STEWART

WILLIAM L. MURRAY KIM L. CASHWELL-MURRAY

MICHAEL G. THOMPSON KELLY THOMPSON

ERIC J. YARBROUGH LEIGH YARBROUGH

CAROL M. WESTMORELAND

TIMOTHY A. GRAHAM ALYCE W. GRAHAM

JAMES ALLAN WATKINS ANN FLYNN WATKINS

JEFFREY DALE MORGAN CATHERINE BINGHAM MORGAN

JEFFREY DALE M CATHERINE BINGHAM

JOHN AVE LAVONDA F.

JOHN AVERY GADDY LAVONDA FAYE GADDY

MICHAEL FLEMING KAREN FLEMING

JERRY G. GOSSARD NANCY W. GOSSARD

WILLIAM R. SHELLEY BRENDA C. SHELLEY

DETAIL #12 DEL DITCH
Not to Scale

DETAIL #8 SOE PROTECTION
Not to Scale

DETAIL #7 STANDARD "V" DITCH
Not to Scale

DETAIL #12 LATERAL BASE DITCH
Not to Scale

DETAIL #16 SPECIAL LATERAL "V" DITCH
Not to Scale

DETAIL # LATERAL BASE DITCH
Not to Scale

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tbrown

8/17/99

REVISIONS

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

P P DENOTES IMPACTS IN SURFACE WATER (POND)

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 47 OF 64

MATCHLINE -Y5- STA 98+50 SHEET 16

MATCHLINE -Y5- STA 102+90 SHEET 16

MATCHLINE -Y6- STA 124+70 SHEET 29

MATCHLINE -Y6- STA 123+94.15 SHEET 29

MATCHLINE -Y8B- STA 119+00 SHEET 15A

SITE 26

SITE 27A

SITE 27B

SITE 27C

SITE 27D

ABNAK & SIMMONS

SADE S. WEAVIL

BRIAN O. SIMMONS TAMMY R. SIMMONS

BERGER CONSTRUCTION COMPANY, INC.

KAREN MANNING

ROYCE B. SMITH PEGGY E. SMITH

ANTHONY GURLEY

DONALD J. BROWN

IRVIN MAURICE JOHNSON

THOMAS E. RHONDA FAYE

JACK BEN MILLER SUSAN P. MILLER

SAMUEL LARRY STEPHENS

SHANNON WILSON NELSON JILL WHITE NELSON

WADE SMITH JR.

WADE SMITH

TIMOTHY D. LYNCH KIMBERLY J. LYNCH

PERRIN BLACK SOPHIA BLACK

DANIEL A. MCKENZIE

EDWARD GUNTER

ALEJANDRO ROCHA

JOEL A. FARMEY

CHINNO INGRAM RACQUEL INGRAM

BARRY D. HUFF DORIS W. DUMAS

JOSEPH GONZALEZ IRMA T. GONZALEZ

DONNIE ORLANDO HOLT CARLA DESANZO HOLT

TERESA A. TYSON JOHN TYSON

MICHAEL J. FISCHER CHARISSA FISCHER

RONALD W. RAYLE SR. CATHY W. RAYLE

DONALD G. NEWSOM CHRISTINA R. NEWSOM

JOHN H. WOOD

KELVIN L. MAYFIELD TALEONA L. MAYFIELD

ROBERT R. ROBBINS SHERESE R. ROBBINS

KIP J. MILLER

WADE WESSLEY SMITH JR.

WATSON BROTHERS, INC.

NCDOT (100 ft SHIELDS) (JENNIFER S. SHIELDS)

SOE RUN HOMEOWNERS ASSOCIATION

NCDOT (GARY D. PEGG ITNA T. PEGG)

STEPHEN PEGG SHERRI D. BERRIER

MICHAEL A. HESTER DONNA L. HESTER

TIMOTHY A. GRAHAM ALYCE M. GRAHAM

JAMES ALLAN WATKINS ANN FLYNN WATKINS

CAROL M. WESTMORELAND

JEFFREY DALE MORGAN CATHERINE BINGHAM MORGAN

JEFFREY DALE M CATHERINE BINGHAM

JOHN JAY LAVONDA T.

MICHAEL J. ROUTH

HENRIETTA J. STEWART

WILLIAM L. MURRAY KIM L. CASWELL-MURRAY

MICHAEL G. THOMPSON KELLY THOMPSON

ERIC J. YARBROUGH LEIGH YARBROUGH

JOHN AVERY GADDY LAYONDA FAYE GADDY

MICHAEL FLEMING KAREN FLEMING

JERRY G. GOSSARD NANCY W. GOSSARD

WILLIAM R. SHELLEY BRENDA C. SHELLEY

DETAIL #12 SIDE DITCH (Not To Scale)

DETAIL #8 FOR PROTECTION (Not To Scale)

DETAIL #7 STANDARD "V" DITCH (Not To Scale)

DETAIL #12 LATERAL SIDE DITCH (Not To Scale)

DETAIL #6 SPECIAL LATERAL "V" DITCH

DETAIL # LATERAL SIDE DITCH (Not To Scale)

Type of Liner: Class 'B' Rip-Rap

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PROJECT REFERENCE NO.	SHEET NO.
U-2579B	28-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 48 OF 64

REVISIONS

8/17/99

WADE SMITH

DENOTES IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER (POND)

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

MATCHLINE –Y4– STA.102+90 SHEET 16

Class 'B' Rip-Rap FROM STA 644+00 TO 646+05 -L- LT

SITE 26

SITE 27A

SITE 27B

SITE 27C

LATERAL 2' BASE DITCH W/CLASS 'B' RIP RAP EST. 121 TONS W/318 SY GEO SEE DETAIL#12

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

TOE PROTECTION W/ CLASS "B" RIPRAP EST 63 TONS EST 170 SY GEO SEE DETAIL#6

CLASS 'B' RIP RAP EST 8 TONS EST 21 SY GEO

HEAD DITCH SEE DETAIL#7 EST. DDE 5CY

BERM DITCH STA 110+85 TO 111+75 -Y4- LT

CLASS 'B' RIP RAP EST 3 TONS EST. 10 SY GEO

15" CSP W/ 2 ELBOWS AND ROD AND LUG CONNECTORS

LATERAL 2' BASE DITCH W/CLASS 'B' RIP RAP EST. 94 TONS W/247 SY GEO SEE DETAIL#12

LATERAL 2' BASE DITCH SEE DETAIL#3

CLASS 'I' RIP RAP (BANKS ONLY) SEE DETAIL#32 EST. DDE) +/- 15 CY EST. 33 TONS EST. 62 SY

CLASS 'B' RIP RAP EST 2 TONS EST. 7 SY GEO

BARRY D. HUFF
DORIS M. DUMAS

DONNIE ORLANDO HOLT
CARLA DESHAZO HOLT

WADE SMITH JR.

MICHAEL J. FISCHER
CHARISSA FISCHER

RONALD W. RAYLE, JR.
CATHY P. RAYLE

JOSEPH GONZALI
YVONNE L. GONAL

TERESA A. TYSON
JOHN TYSON

DONALD R. NEWSOM
CHRISTINA R. NEWSOM

WADE WESSLEY SMITH JR.

WATSON BROTHERS, INC.

WADE SMITH

NCDOT
(GARY D. PEGG)
(TINA Y. PEGG)

DOE RUN HOMEOWNERS ASSOCIATION

TOWN OF KERNERSVILLE

GRAU 350 TL-3

N 85° 33' 45.8" W

N 81° 33' 45.8" W

110 (-Y4-)

105 (-Y4-)

115 (-Y4-)

40 (-Y4RPC-)

35 (-Y4RPC-)

30 (-Y4RPB-)

35 (-Y6-)

6/2/2014
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DW:xeu

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 49 OF 64

REVISIONS 8/17/99

MATCHLINE -Y4- STA.137+32 SHEET 29

DENOTES MECHANIZED CLEARING

SITE 29

GERALD W. MCGEE

MACK D. WILLIAMS
JENNIFER WILLIAMS

FRANK J. PERRY JR.
CAROL PERRY

NORMAN G. MORRELL
LINDA M. MORRELL

TOMMY MILLS GUNN
PEGGY PAULINE GUNN

CITY OF WINSTON-SALEM

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIPRAP PLACE BETWEEN END OF PIPE AND WLB EST 2 TONS EST 7 SY GEO

1.5:1 FILL SLOPES W/ROCK PLATING STA 139+00 TO 140+00 -Y4- LT SEE DETAIL SHEET 2-YY

1.5:1 FILL SLOPES W/ROCK PLATING STA 140+00 TO 142+00 -Y4- LT SEE DETAIL SHEET 2-YY

1.5:1 FILL SLOPES W/ROCK PLATING STA 142+00 TO 142+50 -Y4- LT SEE DETAIL SHEET 2-YY

PSM SEE DETAIL SHEET 2-XX

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

2GI W/ FLAT GRATE

15" RCP-IV

TYPE B-77

30:1 TAPER

N 85° 33' 45.8" W

I-40 BUS EAST US 421 SOUTH 24' BST

I-40 BUS WEST US 421 NORTH 24' BST

Conv. OTCB To 2GI

RETAIN AND EXTEND

REMOVE 8ft OF EXIST. 18" CMP

50:1 TRANSITION PROP. GUARDRAIL TIE TO EXISTING

18" RCP-III

18" CMP

18" CSP ELBOW

18" CSP

DAYLIGHT

CLASS 'B' RIP RAP EST. 3 TONS

TAIL DITCH SEE DETAIL#8 EST. DDE 25CY

CLASS 'B' RIP RAP EST 3 TONS EST 10 SY GEO

LATERAL 'V' DITCH W/CLASS 'B' RIP RAP EST. 156 TONS W/386 SY GEO SEE DETAIL#14

G.P. SWISHER HEIRS

30' SANITARY SEWER EASEMENT

UNKNOWN TYPE UNDERGROUND

SALEM CREEK

CITY OF WINSTON-SALEM
TOWN OF KERNERSVILLE

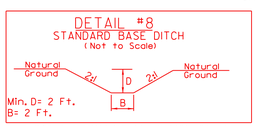
THE FORSYTH COUNTY BOARD OF EDUCATION

TOWN OF KERNERSVILLE
CITY OF WINSTON-SALEM

PAVED SHOULDER

NOTE :
1. FOR -Y4EB- PROFILE, SEE SHEET 54
2. FOR -Y4WB- PROFILE, SEE SHEET 59

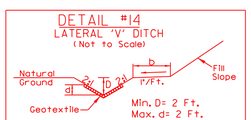
DETAIL #8
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2 Ft.
B= 2 Ft.

FROM STA. 140+48 TO 141+20 -Y4- RT

DETAIL #14
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 138+00 TO 140+50 -Y4- RT

6/2/2014
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kbrown

PROJECT REFERENCE NO.	SHEET NO.
U-2579B	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 50 OF 64

REVISIONS 8/17/99

MATCHLINE -Y4- STA.137+32 SHEET 29

DENOTES MECHANIZED CLEARING

SITE 29

GERALD W. MCGEE

MACK D. WILLIAMS
JENNIFER WILLIAMS

FRANK J. PERRY JR.
CAROL PERRY

NORMAN G. MORRELL
LINDA M. MORRELL

TOMMY MILLS GUNN
PEGGY PAULINE GUNN

CITY OF WINSTON-SALEM

G.P. SWISHER HEIRS

THE FORSYTH COUNTY BOARD OF EDUCATION

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

CLASS 'B' RIPRAP PLACE BETWEEN END OF PIPE AND WLB EST 2 TONS EST 7 SY GEO

1.5:1 FILL SLOPES W/ROCK PLATING STA.140+00 TO 142+00 -Y4- LT SEE DETAIL, SHEET 2-YY

1.5:1 FILL SLOPES W/ROCK PLATING STA 142+00 TO 142+50 -Y4- LT SEE DETAIL, SHEET 2-YY

1.5:1 FILL SLOPES W/ROCK PLATING STA 139+00 TO 140+00 -Y4- LT SEE DETAIL, SHEET 2-YY

PSH SEE DETAIL, SHEET 2-XX

15" CSP W/2 ELBOWS AND ROD AND LUG CONNECTORS

2GI W/ FLAT GRATE

15" RCP-IV

30:1 TAPER

TYPE B-77

N 85° 33' 45.8" W

Conv. OTCB To 2GI

FS

RETAIN AND EXTEND

GRAU-350

18" RCP-III

REMOVE 8ft OF EXIST. 18" CMP

50:1 TRANSITION PROP. GUARDRAIL TIE TO EXISTING

18" CSP

ELBOW

DAYLIGHT

CLASS 'B' RIP RAP EST. 3 TONS

CLASS 'B' RIP RAP EST 3 TONS EST 10 SY GEO

TAIL DITCH SEE DETAIL#8 EST. DDE 25CY

LATERAL 'V' DITCH W/CLASS 'B' RIP RAP EST. 156 TONS W/386 SY GEO SEE DETAIL#14

I-40 BUS EAST US 421 SOUTH 24' BST

I-40 BUS WEST US 421 NORTH 24' BST

60" WW&ISBW

EXISTING R/W

SALEM CREEK

CITY OF WINSTON-SALEM
TOWN OF KERNERSVILLE

PAVED SHOULDER

NOTE :
1. FOR -Y4EB- PROFILE, SEE SHEET 54
2. FOR -Y4WB- PROFILE, SEE SHEET 59

DETAIL #8
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2d, D, 2d, Natural Ground, B

Min. D= 2 Ft.
B= 2 Ft.

FROM STA. 140+48 TO 141+20 -Y4- RT

DETAIL #14
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, d, 2d To 2d, b, 1'/Ft., Fill Slope, Geotextile

Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA 138+00 TO 140+50 -Y4- RT

6/2/2014
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kbrown

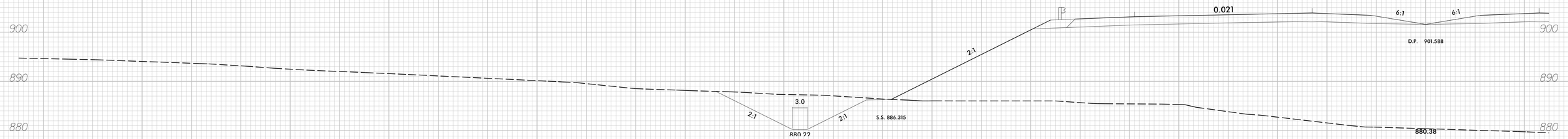
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-180

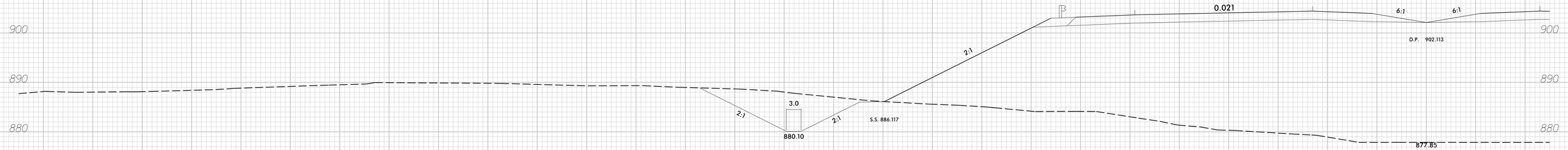
280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20

PERMIT DRAWING
SHEET 51 OF 64

910 900 890 880 870

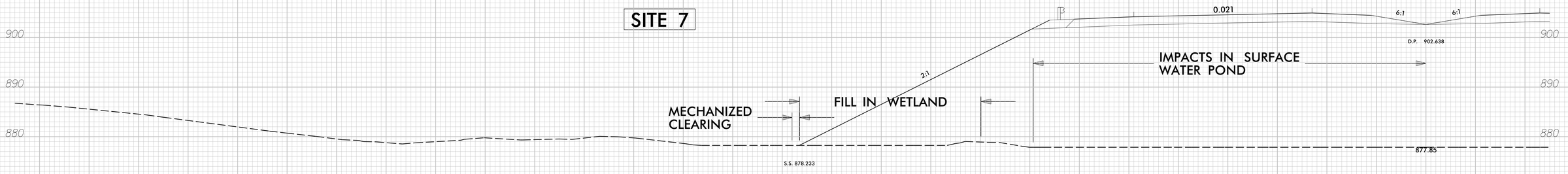


528+00.0000

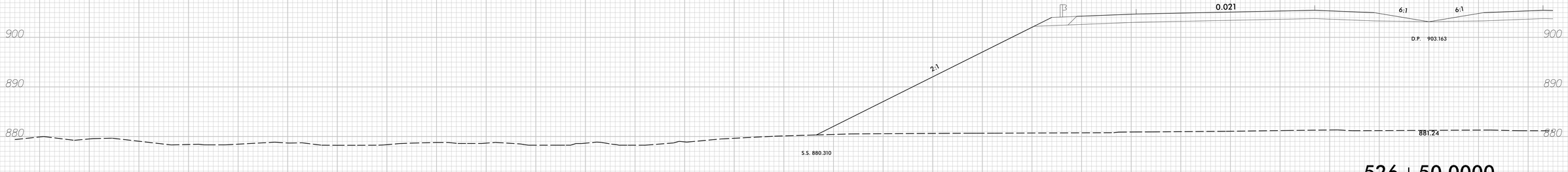


527+50.0000

SITE 7



527+00.0000



526+50.0000

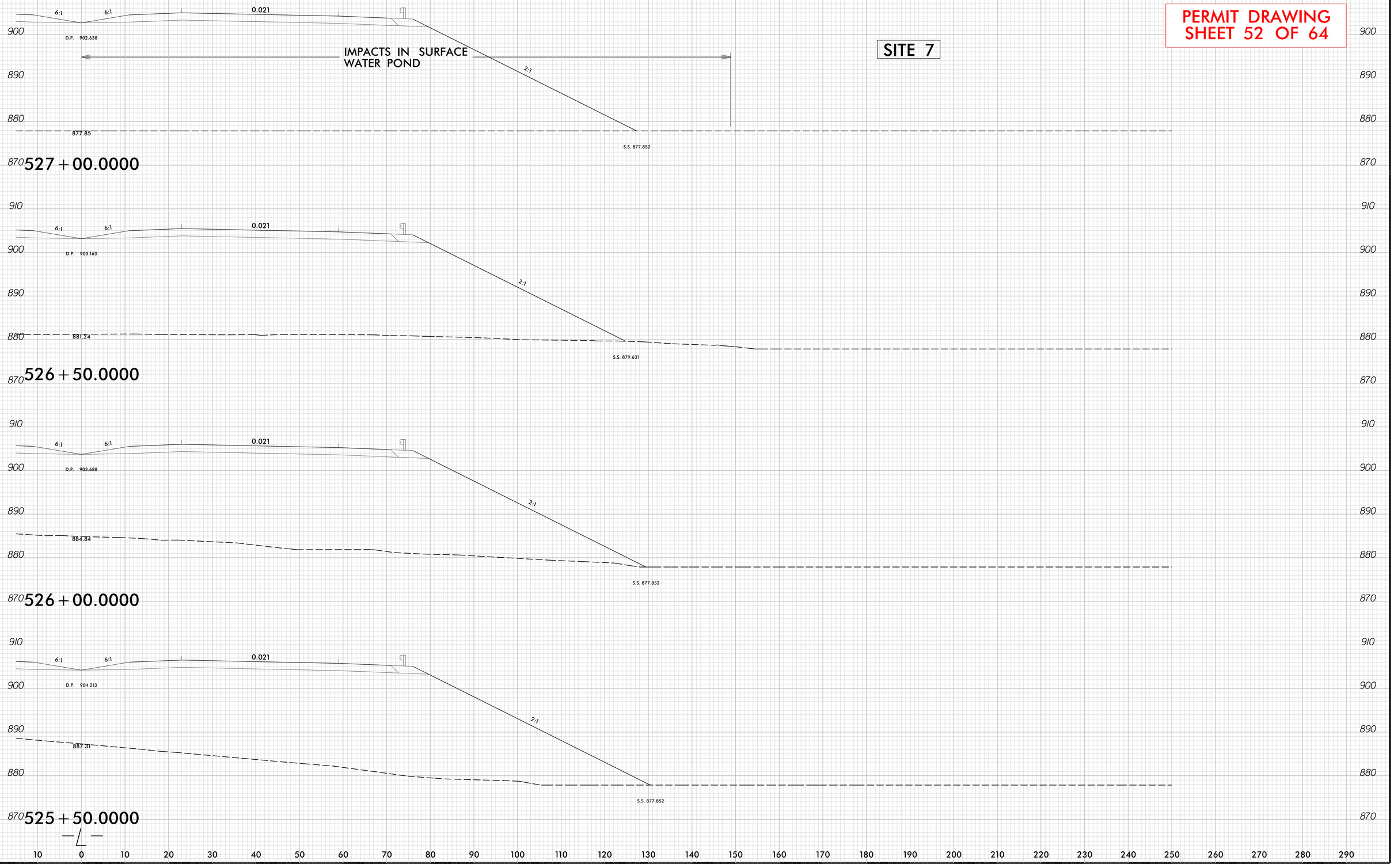
6/2/2014
U2579B_Hyd_prm_wet_xpl_01_L527LT.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-30

PERMIT DRAWING
SHEET 52 OF 64

SITE 7



6/2/2014
U2579B_Hyd_prm_wet_xpl_02_L527RT.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-97

PERMIT DRAWING
SHEET 53 OF 64

SITE 13

621+00.0000

6:1 6:1 0.021 4:1

D.P. 868.351

844.36

S.P. 60
–L– 621+00.0000
–Y4RPBD– 20+45.0000
ELEV. 854.175

FILL IN WETLAND

L

– Y4RPBD –
STA 20+94.7573

620+50.0000

6:1 6:1 0.021 4:1

D.P. 868.360

836.19

S.P. 59
–L– 620+50.0000
–Y4RPBD– 20+00.0000
ELEV. 854.934

L

– Y4RPBD –
STA 20+41.3720

620+00.0000

6:1 6:1 0.021 4:1

D.P. 868.507

835.13

S.P. 58
–L– 620+00.0000
–Y4RPBD– 19+54.0000
ELEV. 856.187

L

– Y4RPBD –
STA 19+88.3503

880 870 860 850 840 830 820

20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280

6/2/2014
U2579B_Hyd_prm_wet_xpl_03_L621RT.dgn
harvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-547

PERMIT DRAWING
SHEET 54 OF 64

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

880 870 860 850 840 830 820 810

0.048 0.048

4:1

S.S. 843.290

830.13

2:1

S.S. 824.953

21+34.0000

SITE 13

0.050 0.050

S.P. 61
-L- 621+50.0000
-Y4RPBD 20+89.0000
ELEV. 853.863

4:1

D.P. 846.692

4:1

2:1

FILL IN WETLAND

824.01

S.S. 826.097

20+89.0000

-Y4RPBD-

6/2/2014
U2579B_Hyd_prm_wet_xpl_04_Y4RPBD-2100.dgn
harvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-278

PERMIT DRAWING
SHEET 55 OF 64

280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20

890
880
870
860

MATCHLINE A

360 350 340 330 320 310 300 290 280

930

SITE 15

920
910
900
890
880
870
860
850
840
830

905.38

0.091 0.090 0.030 0.021 0.021 0.021

4.667:1

6:1 6:1 6:1 6:1

D.P. 906.374

D.P. 906.565

– Y4LPA –
STA 12+36.0460

– Y4CD –
STA 42+14.890218

MATCHLINE A

IMPACTS TO SURFACE WATER POND

847.58

638+00.0000

930

280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20

6/2/2014
U2579B_Hyd_prm_wet_xpl_05_L638LT.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-114

SITE 15

PERMIT DRAWING
SHEET 56 OF 64

SP 155
–Y4LPB– 13+29.00
–L– 638+00.00
ELEV. 902.013

902.213

– Y4LPB –
STA 13+14.1394

6:1 6:1 0.021 4:1 4:1 0.078 0.076 5.967:1

D.P. 906.565

D.P. 901.522

IMPACTS TO SURFACE WATER POND

FILL IN WETLAND

847.58

638+00.0000

MATCHLINE A

MATCHLINE A

S.S. 877.459

6:1 6:1 0.021 4:1 4:1

D.P. 905.280

D.P. 895.634

S.P. 82
–L– 637+50.0000
–Y4LPB– 13+29.0000
ELEV. 896.628

847.72

637+50.0000

6/2/2014
U2579B_Hyd_prm_wet_xpl_06_L638RT.dgn
jfarvay

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-417

PERMIT DRAWING
SHEET 57 OF 64

280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20

SITE 16

920 910 900 890 880 870 860 850

S.P. 103
–L– 644+50.00
–Y4EB– 89+00.00
ELEV. 893.117

IMPACTS IN SURFACE WATER POND

3:1

875.122

4:1

– Y4EB –
STA 89+00.0000

S

0.021 0.021 0.021 4:1 5.037:1 0

893.32

D.P. 893.233

89+00.0000

920 910 900 890 880 870 860 850

– Y4LPD –
STA 24+59.5689

– Y4EB –
STA 88+50.0000

S

895.38

0.024 0.021 0.021 4:1 5.034:1 0

893.45

D.P. 893.279

4:1

S.S. 865.342

88+50.0000

920 910 900 890 880 870 860 850

280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20

–Y4–

6/2/2014
U2579B_Hyd_prm_wet_xpl_07_Y4-8900.dgn
jfarvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-303

PERMIT DRAWING
SHEET 58 OF 64

669+00.0000

– NWCD2 –
STA 15+60.80

– Y4CD –
STA 73+43.368547

S.S. 857.553
4:1
853.690
4:1
0.040
0.040
6:1
6:1
D.P. 859.983
0.050
7:1
6:1
D.P. 857.872
844.28

SITE 19

668+50.0000

– NWCD2 –
STA 15+09.18

– Y4CD –
STA 72+92.116637

2:1
FILL IN WETLAND
0.040
0.040
6.51:1
6.51:1
D.P. 861.278
0.050
7:1
6:1
D.P. 859.084
840.71

668+00.0000

– NWCD2 –
STA 14+57.55

– Y4CD –
STA 72+40.863283

2:1
0.040
0.040
7.62:1
7.62:1
D.P. 862.786
0.050
7:1
6:1
D.P. 860.431
840.18

280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20

880 870 860 850 840 830 890

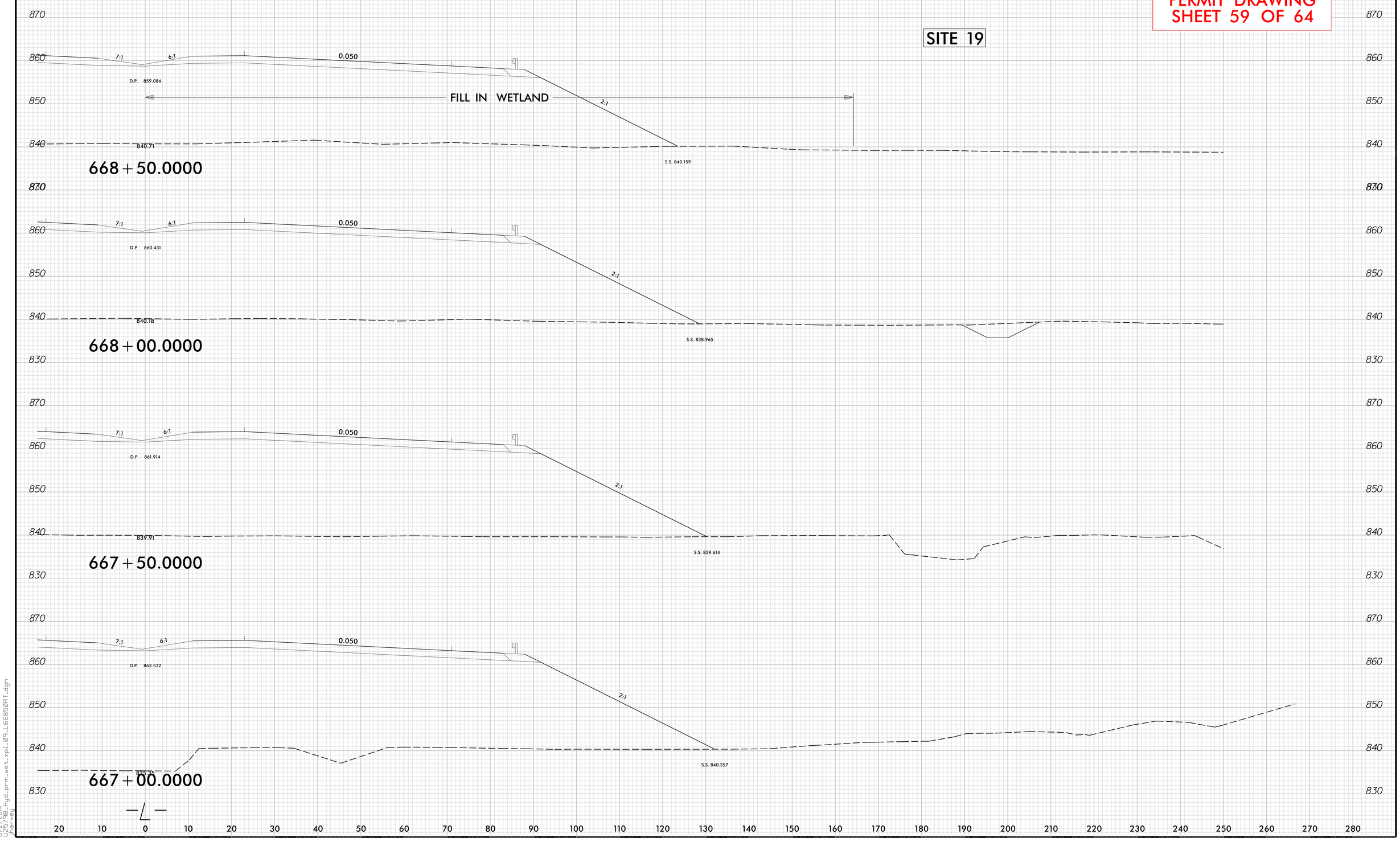
6/22/2014
U2579B_Hyd_prm_wet_xpl08_L66850LT.dgn
harvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-131

PERMIT DRAWING
SHEET 59 OF 64

SITE 19



6/2/2014
U2579B_Hyd_prm_wet_xpl_09_L66850RT.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-389

280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20

PERMIT DRAWING
SHEET 60 OF 64

900 890 880 870 860 850

SITE 22

– Y4EB –
STA 40+50.0000

FILL IN WETLAND

3:1

0.021 0.021 0.021 4.207:1 5:1 0

874.63

D.P. 874.580

S.S. 854.844

40+50.0000

– Y4EB –
STA 40+00.0000

4:1

0.021 0.021 0.021 4.216:1 5:1 0

876.11

D.P. 875.927

S.S. 866.974

40+00.0000

– Y4EB –
STA 39+50.0000

5:1

0.021 0.021 0.021 4.213:1 5:1 0

877.41

D.P. 877.300

S.S. 874.635

39+50.0000

–Y4–

6/2/2014
U2579B_Hyd_prm_wet_xpl_10_Y4-4050.dgn
harvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-427

PERMIT DRAWING
SHEET 61 OF 64

280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20

910 900 890 880 870 860

– NWY41 –
STA 11+47.20

– Y4RPC –
STA 31+01.1294

– Y4EB –
STA 105+00.0000
S1

4:1 0.048 0.048 4:1 6:1 0.021 0.021 4:1 6.437:1 0
882.14

D.P. 882.269

105+00.0000

SITE 26

– Y4EB –
STA 104+50.0000
S1

5:1 5:1 0.021 0.021 4:1 6.484:1 0
882.03

S.P. 118
–Y4EB– 104+50.00
–Y4RPC– 30+55.00
ELEV. 882.876

D.P. 882.531

104+50.0000

IMPACTS IN SURFACE
WATER POND

– Y4EB –
STA 104+00.0000
S1

S.P. 117
–Y4EB– 104+00.00
–Y4RPC– 30+06.00
ELEV. 883.452

6:1 0.021 0.021 4:1 6.399:1 0
883.17

4:1 881.909

D.P. 882.896

104+00.0000

– Y4EB –
STA 103+50.0000
S1

4:1 6:1 0.021 0.021 0.021 4:1 6.196:1 0
883.31

S.P. 116
–Y4EB– 103+50.00
–Y4RPC– 29+57.00
ELEV. 885.136

882.242

D.P. 883.267

103+50.0000

–Y4–

6/2/2014
U2579B_Hyd_prm_wet_xpl.11_Y4-10400.dgn
harvel

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-462

PERMIT DRAWING
SHEET 61a OF 64

– Y4WB –
STA 51+50.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

0.021 0.021 0.021

850.00

D.P. 850.613

IMPACTS IN SURFACE WATER

TEMP IMPACTS
IN SURFACE WATER

CLASS II RIP RAP

51+50.0000

– Y4WB –
STA 51+00.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

0.021 0.021 0.021

850.70

D.P. 851.094

IMPACTS IN SURFACE WATER

TEMP IMPACTS
IN SURFACE WATER

2.00'

CLASS II RIP RAP

51+00.0000

SITE 28

– Y4WB –
STA 50+50.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

0.021 0.021 0.021

851.24

D.P. 851.649

2.00'

TEMP IMPACTS
IN SURFACE WATER

50+50.0000

– Y4WB –
STA 50+00.0000

0.021 0.021 0.021

851.96

D.P. 852.280

4:1

S.S. 852.073

50+00.0000

–Y4–

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-463

PERMIT DRAWING
SHEET 61b OF 64

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

870
860
850
840
830

– Y4WB –
STA 53+00.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

R/W

0.021 0.021 0.021

849.09

D.P. 849.622

IMPACTS IN SURFACE WATER

TEMP. IMPACTS
IN SURFACE WATER

2.00'

53+00.0000

SITE 28

– Y4WB –
STA 52+50.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

0.021 0.021 0.021

849.27

D.P. 849.878

2.00'

CLASS II RIP RAP

TEMP IMPACTS
IN SURFACE WATER

52+50.0000

– Y4WB –
STA 52+00.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

0.021 0.021 0.021

849.68

D.P. 850.208

2.00'

CLASS II RIP RAP

TEMP IMPACTS
IN SURFACE WATER

52+00.0000

–Y4–

6/2/2014
U2579B_Hyd_prm_wet_xpl13_Y4-5250.dgn
jharvey

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-464

PERMIT DRAWING
SHEET 61c OF 64

– Y4WB –
STA 55+00.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

IMPACTS IN SURFACE WATER

TEMP IMPACTS
IN SURFACE WATER

0.021 0.021 0.021

848.87

D.P. 849.353

CLASS II RIP RAP

55+00.0000

– Y4WB –
STA 54+50.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

IMPACTS IN SURFACE WATER

TEMP IMPACTS
IN SURFACE WATER

0.021 0.021 0.021

847.68

D.P. 849.307

2.00'

CLASS II RIP RAP

54+50.0000

SITE 28

– Y4WB –
STA 54+00.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

IMPACTS IN SURFACE WATER

TEMP IMPACTS
IN SURFACE WATER

0.021 0.021 0.021

848.67

D.P. 849.337

2.00'

CLASS II RIP RAP

54+00.0000

– Y4WB –
STA 53+50.0000

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

IMPACTS IN SURFACE WATER

TEMP IMPACTS
IN SURFACE WATER

0.021 0.021 0.021

848.87

D.P. 849.442

2.00'

CLASS II RIP RAP

53+50.0000

–Y4–

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579B	X-465

PERMIT DRAWING
SHEET 61d OF 64

– Y4WB –
STA 57+00.0000

0.021 0.021 0.021

849.87

D.P. 850.284

1.5:1

S.S. 844.895

57+00.0000

– Y4WB –
STA 56+50.0000

0.021 0.021 0.021

849.54

D.P. 849.939

1.5:1

S.S. 844.837

56+50.0000

– Y4WB –
STA 56+00.0000

0.021 0.021 0.021

849.30

D.P. 849.668

1.5:1

S.S. 844.390

56+00.0000

SITE 28

– Y4WB –
STA 55+50.0000

IMPACTS IN SURFACE WATER

RETAINING WALL
FROM STA. 50+50.00 TO STA. 55+50.00

TEMP IMPACTS
IN SURFACE WATER

0.021 0.021 0.021

848.97

D.P. 849.473

CLASS II RIP RAP

2.00'

55+50.0000

–Y4–

6/2/2014
U2579B_Hyd_prm_wet_xpl15_Y4-5550.dgn
jfarr-vdot

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)	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)
1	28+00 -Y1-	ROAD FILL	0.03		< 0.01	0.02		0.02		142		
2	16+00 -Y1RPD-	ROAD FILL - INTERMITTENT						0.01		109		
		ROAD FILL - PERENNIAL						0.02		208		
		STREAMBANK STABILIZATION						< 0.01	< 0.01	10	37	
3	21+56-25+22 -Y1-	2 @ 7'x6' RCBC						0.06	< 0.01	438	33	
3A	17+36-21+53 -Y1-	DETOUR - ROAD FILL							0.08		545	
3B	20+55-21+32 -Y1-	DETOUR - ROAD FILL							0.03		194	
4	501+51-503+21 -L-	ROAD FILL						0.03	< 0.01	493	18	
		STREAMBANK STABILIZATION						< 0.01	< 0.01	9	31	
5	503+85-507+80 -L-	ROAD FILL						0.05	< 0.01	740	22	
5A	507+39-509+64 -L-	ROAD FILL						0.01		306		
6	523+00 -L-	ROAD FILL	0.03			< 0.01		0.02	< 0.01	312	42	
7	527+00 -L-	ROAD FILL	0.52			0.01						
		ROAD FILL-POND						0.59				
8	559+75 -L-	2 @ 10'x6' RCBC						0.06	< 0.01	442	53	
		STREAMBANK STABILIZATION						< 0.01	< 0.01	58	44	
9	560+75 -L-	ROAD FILL	0.03			0.01						
10	560+50-568+74 -L-	ROAD FILL	0.01					0.07	< 0.01	783	22	
10A	566+84-572+75 -L-	ROAD FILL						0.05		684		
11	615+00 -L-	3 @ 10'x9' RCBC						0.43	0.02	808	57	
11A	19+76-21+44 -Y4RPBD-	CHANNEL CHANGE						0.08	0.01	223	41	
12	15+84-18+86 -Y4RPBD-	CHANNEL CHANGE						0.01	0.02	88	205	
SUBTOTALS*:			0.62		< 0.01	0.05		1.53	0.19	5853	1344	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6-2-14
U-2579B FORSYTH COUNTY
WINSTON SALEM NORTHERN BELTWAY
(EASTERN SECTION) (FUTURE I-74)

ATN Revised 3/12/13

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)	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)
13	20+00-21+40 -Y4RPBD-	ROAD FILL	0.33									
14	629+95-635+90 -L-	ROAD FILL	0.04					0.05		688		
15	636+32-641+55 -L-	ROAD FILL	0.18					0.04		332		
		ROAD FILL-POND						2.38				
15A	644+00-645+00 -L-	ROAD FILL						< 0.01		108		
16	643+56-644+61 -L-	ROAD FILL						< 0.01		104		
		ROAD FILL-POND						0.16				
17	663+65-667+00 -L-	ROAD FILL	0.09			< 0.01		0.06		928		
18	667+15 -L-	3 @ 12'x10' RCBC						0.06	0.02	377	67	
		STREAMBANK STABILIZATION						0.02	0.01	80	59	
19	668+50 -L-	ROAD FILL	0.47			0.01						
20	687+80-691+59 -L-	ROAD FILL						0.03		163		
		ROAD FILL-POND						0.85				450
21	22+50 -Y1-	ROAD FILL	0.02									
22	40+50 -Y4-	OUTLET PAD	0.01									
23	45+65 -Y4-	CULVERT EXTENSION						0.06	0.01	100	32	
		STREAMBANK STABILIZATION						0.02	0.06	54	89	
23A	44+95-45+18 -Y4-	ROAD FILL						< 0.01		57		
23B	45+07-46+34 -Y4-	ROAD FILL						0.01		135		
24	80+73-81+57-Y4RPBD-	ROAD FILL						0.02		202		
24A	80+50-81+51-Y4RPBD-	ROAD FILL	0.06									
25	37+31 -Y4RPA-	30" RCP						< 0.01		73		
		STREAMBANK STABILIZATION						< 0.01	< 0.01	21	16	
SUBTOTALS*:			1.20			0.02		3.77	0.09	3422	263	450

*Rounded totals are sum of actual impacts

NOTES:
Revised: 5-18-14

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6-2-14
U-2579B FORSYTH COUNTY
WINSTON SALEM NORTHERN BELTWAY
(EASTERN SECTION) (FUTURE I-74)

ATN Revised 3/12/13

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)	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)
26	29+16-31+12 -Y4RPC-	ROAD FILL-POND						0.38				
27A	104+62 - 107+53 -Y4-	ROAD FILL						0.02		205		
27B	107+60 -Y4-	42" WELDED STEEL	0.05					0.01	< 0.01	130	14	
27C	107+58 - 108+44 -Y4-	30" RCP						< 0.01		116		
28	50+50 - 56+00 -Y4- Rt	STREAMBANK STABILIZATION						0.02	0.15	365	188	
29	145+62 -Y4-	ROAD FILL				< 0.01						
30	64+34 -Y4-	STREAMBANK STABILIZATION						< 0.01		28		
31	557+28 -L-	STREAMBANK STABILIZATION						< 0.01		21		
SUBTOTALS*:			0.05			< 0.01		0.44	0.16	865	202	
SUBTOTALS FROM PAGE 1*:			0.62		< 0.01	0.05		1.53	0.19	5853	1344	
SUBTOTALS FROM PAGE 2*:			1.20			0.02		3.77	0.09	3422	263	450
TOTALS*:			1.87		< 0.01	0.08		5.73	0.44	10140	1809	450

*Rounded totals are sum of actual impacts

NOTES:
Revised: 5-18-14

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6-2-14
U-2579B FORSYTH COUNTY
WINSTON SALEM NORTHERN BELTWAY
(EASTERN SECTION) (FUTURE I-74)
SHEET 64 OF 64

ATN Revised 3/12/13