STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

August 18, 2017

MEMORANDUM TO: Mr. Pat Ivey, P.E.
Division 9 Engineer

FROM: for Philip S. Harris, III, P.E., Manager
Environmental Analysis Unit

SUBJECT: Forsyth County; Winston Salem Northern Beltway (Eastern Section) from US 311 to US 158; Federal Aid No. NHF-0918(93); WBS 34839.2.10; **TIP U-2579C.**

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

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

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

Mr. Ron Davenport, P.E. Contracts Management
Ms. Amy Euliss, Division 9 Environmental Officer
Dr. Majed Al-Ghandour, P.E., Programming and TIP
Ms. Laura Sutton, P.E., Roadway Design
Mr. Carl Barclay, P.E., Utilities Unit
Mr. Stephen Morgan, P.E., Hydraulics
Mr. Brian Hanks, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Ms. Beth Harmon, NC Division of Mitigation Services
Ms. Cheterra Sheff, Single Audit Compliance

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

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

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

PROJECT COMMITMENTS

TIP Project No. U-2579C
Winston-Salem Northern Beltway
(Eastern Section) from US 311 to US 158
Forsyth County
Federal-Aid Project No. NHF-0918 (93)
WBS No. 34839.2.10

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

All commitments developed during the project development and design phase have been incorporated into the design. Current status, changes, or additions to the project commitments as shown in the environmental document for the project are printed in *italic* font.

PDEA, Roadway Design, Division 9

1. 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. Design Noise Reports based upon preliminary design were completed for U-2579 AB, B &C in 2009. A Revised Design Noise Report based upon final design will be completed for U-2579C in 2015. Revised Design Noise Reports based upon final design of U-2579AA and AB will be completed prior to Project Letting scheduled for October 2021. All Design Noise Reports are subject to approval by NCDOT and FHWA. The original Date of Public Knowledge of February 15, 2008 will remain unchanged for all sections of U-2579. A revised DNR will be prepared in 2015 for U-2579C under the NCDOT 2011 noise abatement criteria.

   Update 3/28/2017: A DNR for U-2579C was completed in July 2016 under the 2011 NCDOT Traffic Noise Abatement Policy. An Addendum to the DNR will be prepared in 2017 to reflect additional changes that have occurred during the final design process.

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

1. 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 preliminary engineering designs where practicable, but will be further considered during final design.

   Action: The final designs are completed; the above commitments have been addressed.

2. During final design, 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.

3. 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 avoided any impacts to greenways.

4. 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.

Hydraulics Unit

1. 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.

   Action: This commitment has been fulfilled.

2. 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 continue coordination with the NC Floodplain Mapping Program (FMP) until project completion.

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

   Action: This commitment has been fulfilled; no bridge bents are located in creeks.

Roadside Environmental, Division 9

1. 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.

2. 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, Hydraulics

1. 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, Construction Unit

1. 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.

Division 9

1. 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

2. 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.

PDEA-Environmental Analysis Unit

1. The biological conclusion for the Northern long-eared bat is Unresolved. Construction authorization will not be requested until ESA compliance is satisfied for the northern long-eared bat.

   Action: NCDOT has determined that the proposed action does not require separate consultation on the grounds that the proposed action is consistent with the final Section 7 4(d) rule, codified at 50 C.F.R. 17.40(o) and effective February 16, 2016. Section 7 responsibilities are therefore considered fulfilled for NLEB. Notification was made to USFWS on March 30, 2017.

COMMITMENTS FROM PERMITTING

Division 9, Construction Unit

1. UNKNOWN CULTURAL RESOURCES: While accomplishing the authorized work, if the permittee discovers any previously unknown cultural resources, the District Engineer will be immediately notified so that required coordination can be initiated with the North Carolina Division of Cultural Resources.

2. INSTALLATION OF CULVERTS: 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 aquiatic 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 I the placement of the culvert. The following pipes are exempt from this condition:

   - Site 6: 24-inch Reinforced Concrete Pipe (RCP) outlet at station 31+30-Y1-Rt
   - Site 7: 72-inch RCP inlet at station 413+74-L-Lt
   - Site 9: 78-inch CSP inlet at station 21+46-Y1RPD-Rt; 78-inch CSP at station 25+82-Y1RDP-Lt
   - Site 14: 42-inch RCP outlet at station 42+14-Y1-Rt

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

August 17, 2017

Regulatory Division

Action ID: SAW-2017-01232

Mr. Philip S. Harris III, P.E., C.P.M.
Natural Environment Section Head
North Carolina Department of Transportation
Division of Highways
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

In accordance with the written request of August 17, 2017, and the ensuing administrative record, enclosed is a Department of the Army (DA) Permit to authorize the construct of a 1.99 mile long portion of new location roadway known as the Winston-Salem Northern Beltway between US 158 and US-311 in Forsyth County, TIP U-2579C. The project involves the permanent discharge of dredged or fill material into 977 linear feet of stream channel (921 linear feet of permanent loss and 76 linear feet of bank stabilization), 0.88 acre of riparian wetlands (0.79 acre of permanent fill, and 0.09 acre of mechanized clearing), as well as the temporary discharge of dredged or fill material into 199 linear feet of stream channel.

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, 2022**.

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

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

You should address all questions regarding this authorization to Mr. James Lastinger in the Raleigh Regulatory Field Office, telephone number (919) 554-4884, extension 32.

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

Sincerely,

Robert J. Clark
Colonel, U.S. Army
District Commander

Enclosures

Copy Furnished: (with enclosures):

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

Copies Furnished: (with special conditions and plans):

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

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

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

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

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

DEPARTMENT OF THE ARMY PERMIT

Permittee **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**
ATTN: MR. PHILIP S. HARRIS III, P.E., C.P.M.

Permit No. **SAW-2017-01232**

Issuing Office **CESAW-RG-R**

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

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

Project Description: **The project involves construction of 1.99 mile long portion of new location roadway known as the Winston-Salem Northern Beltway between US 158 and US-311 in Forsyth County, TIP U-2579C. The project involves the permanent discharge of dredged or fill material into 977 linear feet of stream channel (921 linear feet of permanent loss and 76 linear feet of bank stabilization), 0.88 acre of riparian wetlands (0.79 acre of permanent fill, and 0.09 acre of mechanized clearing), as well as the temporary discharge of dredged or fill material into 199 linear feet of stream channel.**

Project Location: **The project area is a new alignment linear transportation corridor from US 158 running northwest to a new interchange with US-311 located east of Winston-Salem, Forsyth County, North Carolina. (36.15003°N, -80.1695°W [central point]).**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2022.** If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

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

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

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

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

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

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

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

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

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

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

2. Limits of this authorization.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

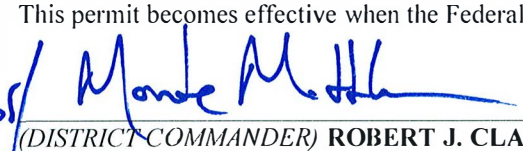
Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

08-17-2017

(PERMITTEE) **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION** *(DATE)*

for **ATTN: MR. PHILIP S. HARRIS III, P.E., C.P.M.**

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

for 

17 Aug 2017

(DISTRICT COMMANDER) **ROBERT J. CLARK, COLONEL** *(DATE)*

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

(TRANSFEREE) *(DATE)*

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

SPECIAL CONDITIONS
ACTION ID: SAW-2017-01232
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
I-74 WINSTON-SALEM NORTHERN BELTWAY TIP NO. U-2579C

WORK LIMITS

1. CONSTRUCTION PLANS: All work authorized by this permit must be performed in strict compliance with the attached plans for U-2579C, Wetland Surface Water Impacts Permit, dated June 13, 2017, Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.

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. James Lastinger of the Raleigh Regulatory Field Office prior to any active construction in waters or wetlands.

5. PRECONSTRUCTION MEETING: The Permittee shall schedule an onsite preconstruction meeting between its representatives, the contractor's representatives and the appropriate Corps of Engineers Project Manager prior to undertaking any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all terms and conditions contained within the Department of the Army permit. The Permittee shall notify the Corps of Engineers Project Manager a minimum of thirty (30) days in advance of the scheduled meeting in order to provide that individual with ample opportunity to schedule and participate in the required meeting.

6. BORROW AND WASTE: To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the 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.

RELATED LAWS

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.

8. The North Carolina Division of Environmental Quality (DEQ) permit/certification number 4123 was issued for this project on July 26, 2017. Special conditions were issued associated with this water quality permit/certification and a copy of these conditions is attached as Exhibit A. These referenced condition are hereby incorporated as special conditions of this permit.

PROJECT MAINTENANCE

9. 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.

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. 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.

12. 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-2017-01232
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
I-74 WINSTON-SALEM NORTHERN BELTWAY TIP NO. U-2579C

13. 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). Fescue will not be planted within wetland areas.

14. EROSION CONTROL MEASURES IN JURISDICTIONAL WATERS:

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

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

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

15. PROHIBITION 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 (i.e. concrete is set and cured).

16. INSTALLATION OF CULVERTS: 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. The following pipes are exempt from this condition:
-site 6: 24-inch Reinforced Concrete Pipe (RCP) outlet at station 31 +30-Y1-Rt
-site 7: 72-inch RCP inlet at station 413+74-L-Lt
-site 9: 78-inch CSP inlet at station 21+46-Y1RPD-Rt; 78-inch CSP at station 25+82-Y1RPD-Lt
-site 14: 42-inch RCP outlet at station 42+15-Y1-Rt

17. AQUATIC PASSAGE: 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.

ESA

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

SECTION 103

19. UNKNOWN CULTURAL RESOURCES: While accomplishing the authorized work, if the permittee discovers any previously unknown cultural resources, the District Engineer will be immediately notified so that required coordination can be initiated with the North Carolina Division of Cultural Resources.

ENFORCEMENT

20. 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. James Lastinger, 3331 Heritage Trade Drive, Suite 105, Wake Forest, North Carolina 27587, and by telephone at: 919-554-4884, extension 32. The Permittee shall reference the following permit number, SAW-2017-01232, on all submittals.

SPECIAL CONDITIONS
ACTION ID: SAW-2017-01232
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
I-74 WINSTON-SALEM NORTHERN BELTWAY TIP NO. U-2579C

21. 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 or 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 permittee's discovery of the violation.

22. 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.

COMPENSATORY MITIGATION

23. 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. (See Exhibit B)

Exhibit B

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

Permittee: North Carolina Department of Transportation **Action ID:** SAW-2017-01232
Project Name: U-2579C/Winston-Salem Northern Beltway/Forsyth/Div 9 **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 Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that to the U.S. Army Corps of Engineers (USACE) Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate mitigation Sponsors.

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

Permitted Impacts and Compensatory Mitigation Requirements:

Permitted Impacts Requiring Mitigation* **8-digit HUC and Basin:** 03040101, Yadkin River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
921				0.88		

*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
1,842				1.76		

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

Section to be completed by the Mitigation Sponsor

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

Mitigation Sponsor Name: _____

Name of Sponsor's Authorized Representative: _____

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

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

Conditions for Transfer of Compensatory Mitigation Credit:

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

Comments/Additional Conditions:

This form is not valid unless signed below by the USACE Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the USACE Project Manager at the address below, and 3) the Wilmington District Mitigation Office, Attn: Todd Tugwell, 3331 Heritage Trade Dr., suite 105, 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: James Lastinger
USACE Field Office: Raleigh Regulatory Field Office
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587
Email: james.c.lastinger@usace.army.mil

USACE Project Manager Signature

August 17, 2017
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.

Environmental Quality

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

S. JAY ZIMMERMAN
Director

July 26, 2017

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

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water with ADDITIONAL CONDITIONS for proposed Winston Salem North Beltway (Eastern Section) from US 311 to US 158 in Forsyth County; Federal Aid Project No. NHP-0918(93); TIP No. U-2579C; WBS 4839.1.9. NCDWR Project No. 20170730.

Dear Mr. Harris:

Attached hereto is a copy of Certification No. WQC004123 issued to The North Carolina Department of Transportation (NCDOT) dated July 26, 2017.

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

Sincerely,

S. Jay Zimmerman, Director
Division of Water Resources

Attachments

Electronic copy only distribution:
James Lastinger, US Army Corps of Engineers, Raleigh Field Office
Amy Euliss, Division 9 Environmental Officer
Rodger Rochelle, NC Department of Transportation
Carla Dagnino, NC Department of Transportation
Chris Militscher, US Environmental Protection Agency
Marella Buncick, US Fish and Wildlife Service
Marla Chambers, NC Wildlife Resources Commission
Beth Harmon, Division of Mitigation Services
File Copy

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Resources (NCDWR) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact 0.88 acres of jurisdictional wetlands and 1,196 linear feet of jurisdictional streams in Forsyth County. The project shall be constructed pursuant to the application dated received June 8, 2017. The authorized impacts are as described below:

Stream Impacts in the Yadkin Pee Dee River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)			Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
		Culvert	Channel Stabilization	Bank Stabilization			
6	68	-	-	-	-	68	-
7A	-	205	-	25	40	270	205
9	-	271	45	-	56	372	316
11	-	317	-	25	23	365	317
12	-	-	-	26	80	106	-
14	-	15	-	-	-	15	-
Total	**68**	**808**	**45**	**76**	**199**	**1,196**	**838**

Total Stream Impact for Project: 1,196 linear feet

Wetland Impacts in the Yadkin Pee Dee River Basin (riverine)

Site	Fill (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)
7	<0.01	<0.01	-	<0.01
7A	0.14	-	-	0.14
11	0.08	0.03	-	0.11
13	0.57	0.05	-	0.65
Total	**0.79**	**0.09**	-	**0.88**

Total Wetland Impact for Project: 0.88 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the Yadkin Pee Dee 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 June 8, 2017. 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 300 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

Stream Mitigation

1. Compensatory mitigation for 838 linear feet of impact to streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Division of Mitigation Service (DMS) (formerly NCEEP), and that the DMS has agreed to implement the mitigation for the project. The DMS has indicated in a letter dated June 2, 2017 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the DMS Mitigation Banking Instrument signed July 28, 2010.

2. Culverts, pipes and channel work shall be installed and constructed as described in the permit application. NCDWR shall be notified if culverts, pipes and channel work cannot be installed and constructed as described in the permit application. Culverts shall be designed to mimic natural stream cross section as closely as possible including flood plain elevations and/or sills and baffles where appropriate. Widening the stream channel should be avoided. [15A NCAC 02H.0506(b)(2)]

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

4. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. [15A NCAC 02H.0506(b)(2)]

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

6. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) as described in the permit application, before entering the stream. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]

General Conditions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

18. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02B.0506(3)]

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

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

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

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

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

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

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

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

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

Mr. Bill Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center

This the 26th day of July 2017

DIVISION OF WATER RESOURCES

S. Jay Zimmerman, Director

WQC No. WQC004123

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

General Project Information

WBS Element:	34839.1.9	**TIP Number:**	U-2579C	**Project Type:**	New Location	**Date:**	1/14/2017
NCDOT Contact:	Stephen Morgan, PE			**Contractor / Designer:**	Sungate Design Group		
Address:	Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699-1590			**Address:**	905 Jones Franklin Rd Raleigh, NC 27606		
Phone:	(919) 707-6739			**Phone:**	(919) 859-2243		
Email:	smorgan@ncdot.gov			**Email:**	belam@sungatedesign.com		
City/Town:	Winston Salem			**County(ies):**	Forsyth		
River Basin(s):	Yadkin-Pee Dee			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	1.99	**Surrounding Land Use:**	Residential, Agricultural, Rural

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	43.6 ac.	5.8 ac.
Typical Cross Section Description:	Three 12ft lanes with 14ft outside shoulders (12ft paved) and 12ft paved inside shoulders in each direction with a 22ft grassed median.	N/A
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 81,670 Year: 2037	Existing: 65,592 Year: 2017

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

I-74 Winston-Salem Northern Beltway from East of US 311 to US 158: Measures have been taken throughout the project to limit impacts to wetlands and surface waters. Two Dry Detention basins will be utilized in the gore areas between the -L- line and Ramps B and C. These basins will serve to attenuate peak stormwater flows, promote settlement of suspended solids and reduce erosive velocities downstream. Further, no deck drains will be used on the Lowery Mill Creek bridge, eliminating potential for direct roadway runoff into surface waters. A rip rap energy dissipator basin will be used at storm drain system outlet, in the Lowery Mill Creek floodplain, to reduce peak flow velocities to Lowery Mill Creek. 2:1 slopes will be used in fill areas to reduce impacts to surrounding wetlands and jurisdictional streams.

Waterbody Information

Surface Water Body (1):	Lowery Mill Creek	**NCDWR Stream Index No.:**	12-94-12-3-(0.5)
NCDWR Surface Water Classification for Water Body	**Primary Classification:**	Water Supply III (WS-III)	
	Supplemental Classification:		
Other Stream Classification:			
Impairments:	None		
Aquatic T&E Species?	No Comments:		
NRTR Stream ID:		**Buffer Rules in Effect:**	N/A

Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

Additional Waterbody Information

Surface Water Body (2):	Frazier Creek		**NCDWR Stream Index No.:**	12-94-12-6-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (4):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (5):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element: **TIP No.:** U-2579C **County(ies):** Forsyth

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
11	473+00 -L- RT 36.146976, -78.578803	(1)Lowery Mill Creek	Riprap Energy Dissipator Basin	Class I	20.7	Pipe	36	56.1	23.9	N/A

Additional Comments

* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element: 34839.1.9 **TIP No.:** U-2579C **County(ies):** Forsyth

Other Best Management Practices

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	BMP Type	Drainage Area (ac)	New Built-Upon Area (ac)	Volume Treated (ac-ft)	Precipitation Depth Treated over NBUA (in)	BMP Associated w/ Buffer Rules?
6	400+00 -L- RT 36.153435, -80.182593	(2)Frazier Creek	Dry Detention Basin	13.4	3.9	1.37	4.44	No
6	400+00 -L- LT 36.154528, -80.181637	(2)Frazier Creek	Dry Detention Basin	7.4	2.0	0.63	3.98	No

Additional Comments

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

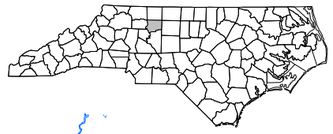
FORSYTH COUNTY

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

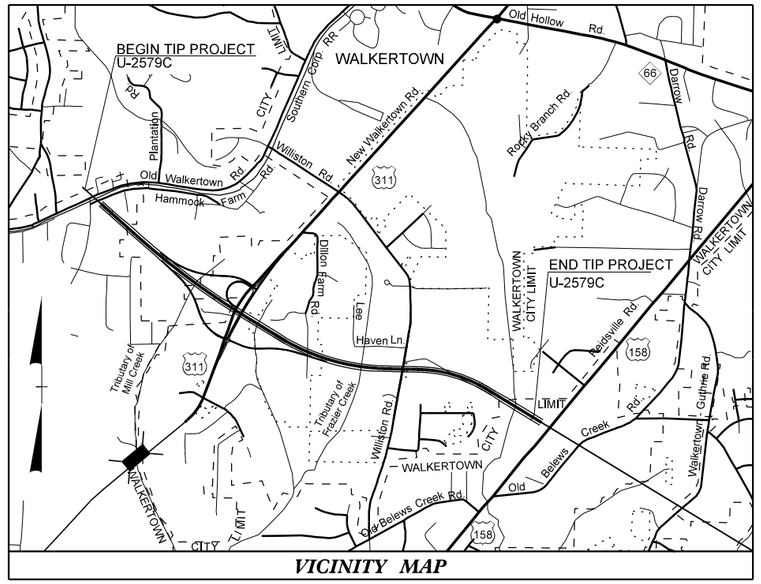
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34839.1.9	N/A	PE
34839.2.6	N/A	R/W
34839.2.GV18	N/A	R/W
34839.2.16	N/A	UTIL
34839.3.GV6	NHP-0918(062)	CONSTR.

LOCATION: ***WINSTON – SALEM NORTHERN BELTWAY (EASTERN SECTION) FROM US 311 TO US 158 (FUTURE I-74)***

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



WETLAND AND SURFACE WATER IMPACTS PERMIT



BEGIN CONSTRUCTION
–L– POT STA. 366 + 00.00

TO SR 2211 BAUX MOUNTAIN ROAD

BEGIN TIP PROJECT U–2579C
–L– POT STA. 373 + 00.00

END BRIDGE
–Y1– POC STA. 30 + 34.05

BEGIN BRIDGE
–Y1– POC STA. 28 + 13.39

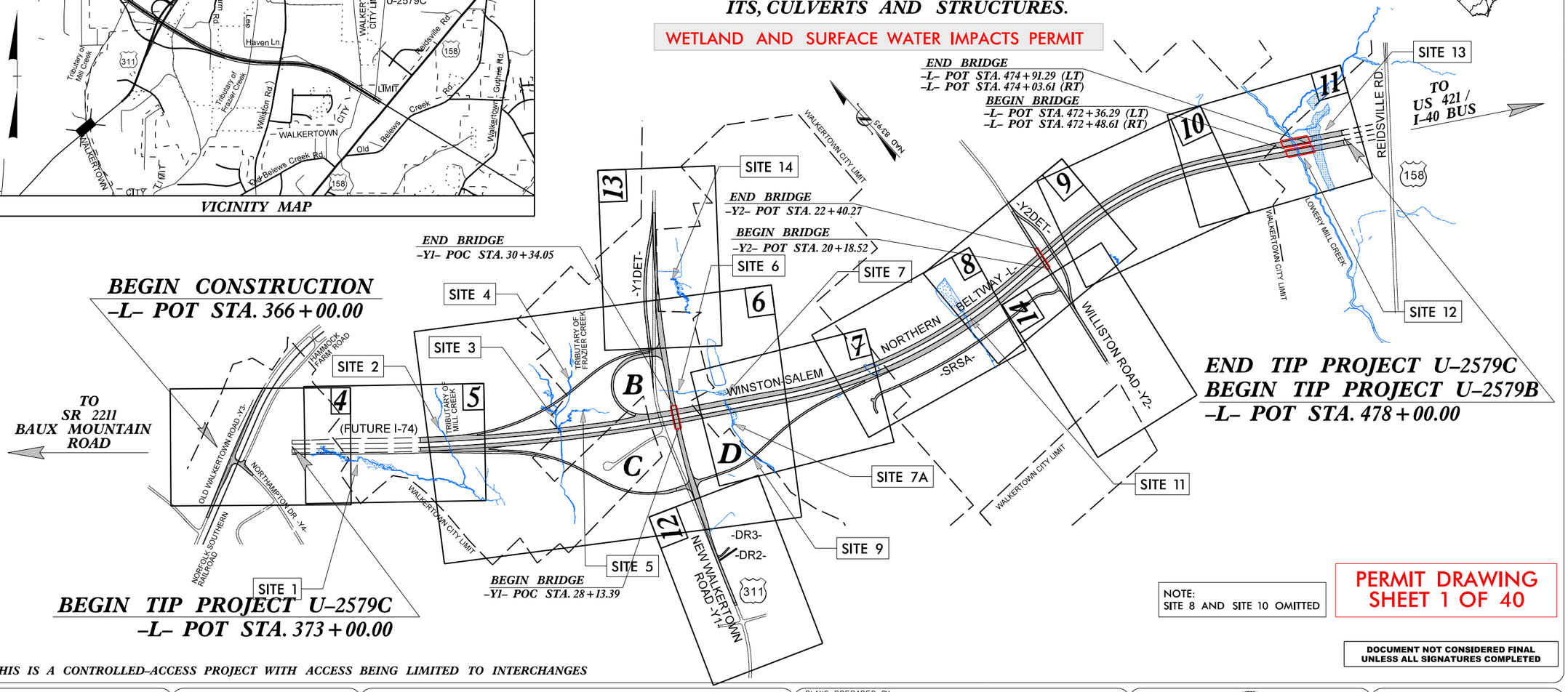
END BRIDGE
–L– POT STA. 474 + 91.29 (LT)
–L– POT STA. 474 + 03.61 (RT)

BEGIN BRIDGE
–L– POT STA. 472 + 36.29 (LT)
–L– POT STA. 472 + 48.61 (RT)

END BRIDGE
–Y2– POT STA. 22 + 40.27

BEGIN BRIDGE
–Y2– POT STA. 20 + 18.52

END TIP PROJECT U–2579C
BEGIN TIP PROJECT U–2579B
–L– POT STA. 478 + 00.00



NOTE:
SITE 8 AND SITE 10 OMITTED

PERMIT DRAWING
SHEET 1 OF 40

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

CONTRACT:

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2017	=	65,592
ADT 2037	=	93,112
K	=	10 %
D	=	60 %
T	=	18 % *
V	=	70 MPH

*(TTST = 12% + DUAL = 6%)
FUNC CLASS = INTERSTATE

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT U-2579C	=	1.989 Miles
LENGTH OF STRUCTURE PROJECT U-2579C	=	0.040 Mile
TOTAL LENGTH OF TIP PROJECT U-2579C	=	1.949 Miles

PLANS PREPARED BY:

&

8601 SIX FORKS RD, SUITE 260
RALEIGH, NC 27615
919-926-4100

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 28, 2015

LETTING DATE: OCTOBER 17, 2017

JASON TALLEY, PE
PROJECT ENGINEER

JARED BOND, PE
PROJECT DESIGN ENGINEER

TATIA L. WHITE, PE, PLS
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026971 ENGINEER JOHNAR G. DALTON

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040418 ENGINEER JARED M. BOND

SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

5/19/2017
U2579C_Hyd_prm_wet_psh_01.dgn
belam

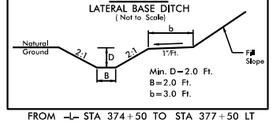
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	2D-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

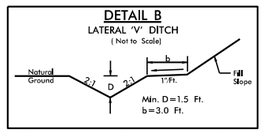
PERMIT DRAWING SHEET 2 OF 40

DETAIL A
LATERAL BASE DITCH
(Not to Scale)



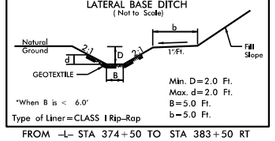
FROM –L– STA 374+50 TO STA 377+50 LT

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



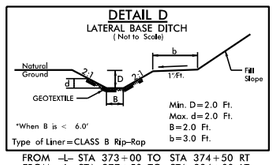
FROM –L– STA 373+00 TO STA 374+50 LT
FROM –Y1DET– STA 24+00 TO STA 29+00 LT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



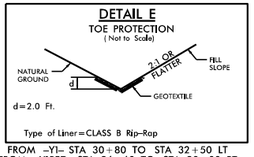
FROM –L– STA 374+50 TO STA 383+50 RT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



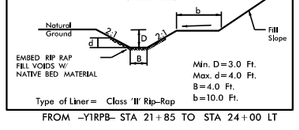
FROM –L– STA 373+00 TO STA 374+50 RT
FROM –L– STA 377+50 TO STA 384+00 LT
FROM –L– STA 385+50 TO STA 386+50 LT
FROM –L– STA 387+00 TO STA 392+00 LT
FROM –L– STA 438+15 TO STA 442+50 RT
FROM –Y1RPB– STA 16+00 TO STA 21+60 LT
FROM –Y1RPC– STA 20+85 TO STA 21+40 RT

DETAIL E
TOE PROTECTION
(Not to Scale)



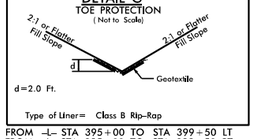
FROM –Y1– STA 30+80 TO STA 32+50 LT
FROM –Y1RPD– STA 26+60 TO STA 28+00 RT
FROM –Y1RPD– STA 26+90 TO STA 30+00 LT
FROM –Y1RPC– STA 17+85 TO STA 20+50 RT
FROM –Y1RPC– STA 21+17 TO STA 24+00 LT
FROM –Y1RPB– STA 22+50 TO STA 24+25 RT
FROM –L– STA 399+50 TO STA 401+00 LT
FROM –L– STA 399+50 TO STA 401+00 RT
FROM –L– STA 413+78 TO STA 414+50 LT
FROM –L– STA 474+86 TO STA 475+80 LT
FROM –Y3– STA 17+00 TO STA 18+70 RT
FROM –SRSA– STA 13+00 TO STA 13+80 LT

DETAIL F
LATERAL BASE CHANNEL
(Not to Scale)



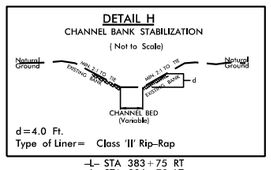
FROM –Y1RPB– STA 21+85 TO STA 24+00 LT

DETAIL G
TOE PROTECTION
(Not to Scale)



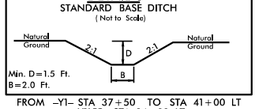
FROM –L– STA 395+00 TO STA 399+50 LT
FROM –L– STA 395+00 TO STA 399+50 RT

DETAIL H
CHANNEL BANK STABILIZATION
(Not to Scale)



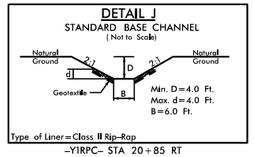
–L– STA 383+75 RT
–L– STA 386+78 LT
–L– STA 388+85 RT
–L– STA 414+19 RT
–Y1RPB– STA 21+75 LT
–SRSA– STA 22+65 RT

DETAIL I
STANDARD BASE DITCH
(Not to Scale)



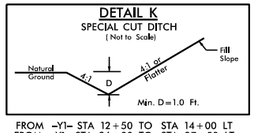
FROM –Y1– STA 37+50 TO STA 41+00 LT
–Y1LPB– STA 14+00 LT
–Y2DET– STA 23+50 LT

DETAIL J
STANDARD BASE CHANNEL
(Not to Scale)



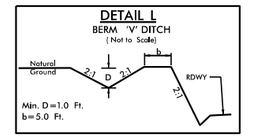
–Y1RPC– STA 20+85 RT

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



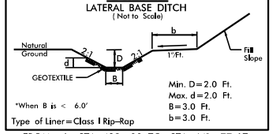
FROM –Y1– STA 12+50 TO STA 14+00 LT
FROM –Y1– STA 26+00 TO STA 27+50 LT
FROM –Y1DET– STA 16+00 TO STA 21+50 LT
FROM –Y1DET– STA 19+50 TO STA 21+50 RT
FROM –Y1LPB– STA 14+00 TO STA 15+00 LT
FROM –Y1RPC– STA 26+00 TO STA 28+50 LT
FROM –Y1RPC– STA 29+75 TO STA 31+00 LT
FROM –L– STA 430+00 TO STA 434+00 LT
FROM –L– STA 469+00 TO STA 470+00 LT
FROM –Y2– STA 14+13 TO STA 17+50 RT
FROM –Y2– STA 15+50 TO STA 16+00 LT
FROM –Y2DET– STA 23+00 TO STA 24+50 RT

DETAIL L
BERM 'V' DITCH
(Not to Scale)



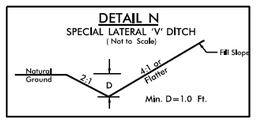
FROM –L– STA 417+00 TO STA 418+50 LT
FROM –L– STA 444+00 TO STA 444+50 RT
FROM –L– STA 451+00 TO STA 454+50 LT
FROM –Y1LPB– STA 13+00 TO STA 14+50 RT

DETAIL M
LATERAL BASE DITCH
(Not to Scale)



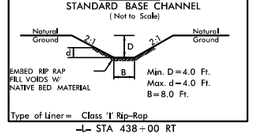
FROM –L– STA 438+00 TO STA 441+77 LT
FROM –Y1RPD– STA 24+50 TO STA 26+40 RT

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



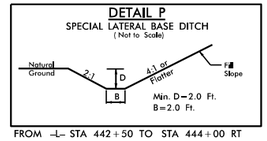
FROM –Y1– STA 39+50 TO STA 42+03 RT
FROM –Y1– STA 43+00 TO STA 46+50 RT
FROM –Y1DET– STA 29+00 TO STA 30+50 LT
FROM –Y2– STA 22+50 TO STA 26+00 LT
FROM –Y2DET– STA 17+50 TO STA 19+50 LT
FROM –Y3– STA 13+30 TO STA 16+00 LT
FROM –Y3– STA 13+25 TO STA 17+00 RT
FROM –Y3– STA 19+60 TO STA 21+40 RT
FROM –Y3– STA 25+30 TO STA 26+50 LT
FROM –Y4– STA 10+10 TO STA 11+20 RT

DETAIL O
STANDARD BASE CHANNEL
(Not to Scale)



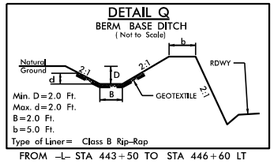
–L– STA 438+00 RT

DETAIL P
SPECIAL LATERAL BASE DITCH
(Not to Scale)



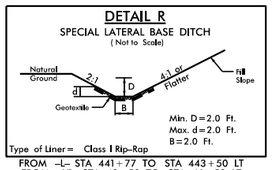
FROM –L– STA 442+50 TO STA 444+00 RT

DETAIL Q
BERM BASE DITCH
(Not to Scale)



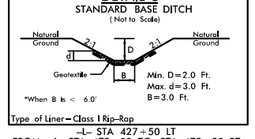
FROM –L– STA 443+50 TO STA 446+60 LT

DETAIL R
SPECIAL LATERAL BASE DITCH
(Not to Scale)



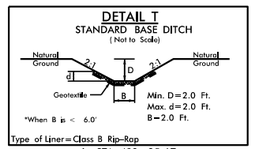
FROM –L– STA 441+77 TO STA 443+50 LT
FROM –Y1– STA 43+50 TO STA 46+50 LT

DETAIL S
STANDARD BASE DITCH
(Not to Scale)



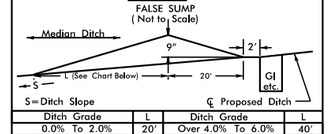
–L– STA 427+50 LT
FROM –L– STA 473+00 TO STA 473+90 RT

DETAIL T
STANDARD BASE DITCH
(Not to Scale)



–L– STA 432+25 LT
FROM –Y1– STA 41+00 TO STA 42+08 LT
–Y1RPD– STA 28+30 RT

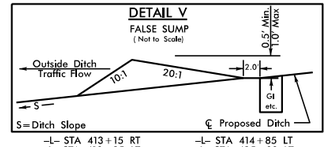
DETAIL U
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

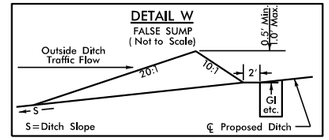
–L– STA 376+15 –L– STA 380+15 –L– STA 384+15
–L– STA 388+15 –L– STA 391+90 –L– STA 396+15
–L– STA 400+15 –L– STA 403+65 –L– STA 413+15
–L– STA 416+85 –L– STA 421+85 –L– STA 427+85
–L– STA 433+00 –L– STA 441+95 –L– STA 451+65
–L– STA 455+15 –L– STA 458+65 –L– STA 462+15
–L– STA 466+15 –L– STA 470+65 –L– STA 471+95

DETAIL V
FALSE SUMP
(Not to Scale)



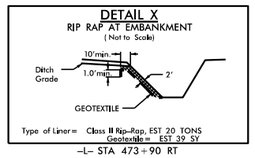
–L– STA 413+15 RT
–L– STA 418+35 LT
–L– STA 427+90 RT
–L– STA 455+15 RT
–L– STA 462+15 RT
–L– STA 470+65 RT
–L– STA 414+85 LT
–L– STA 425+00 LT
–L– STA 451+65 RT
–L– STA 458+65 RT
–L– STA 466+15 RT
–Y1– STA 17+80 LT

DETAIL W
FALSE SUMP
(Not to Scale)



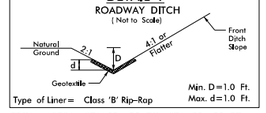
–L– STA 412+65 LT
–L– STA 455+15 LT
–L– STA 462+15 LT
–L– STA 470+15 LT
–L– STA 451+65 LT
–L– STA 458+65 LT
–L– STA 466+15 LT
–Y2– STA 22+85 RT
–SRSA– STA 19+20 LT

DETAIL X
RIP RAP AT EMBANKMENT
(Not to Scale)



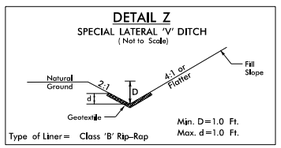
–L– STA 473+90 RT

DETAIL Y
ROADWAY DITCH
(Not to Scale)



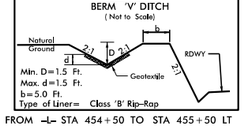
FROM –SRSA– STA 19+50 TO STA 21+50 RT
FROM –SRSA– STA 19+50 TO STA 21+50 LT
FROM –SRSA– STA 24+50 TO STA 29+00 RT
FROM –SRSA– STA 24+50 TO STA 29+00 LT

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



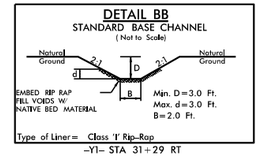
FROM –SRSA– STA 21+50 TO STA 22+55 RT
FROM –SRSA– STA 21+50 TO STA 22+55 LT
FROM –SRSA– STA 22+75 TO STA 24+50 RT
FROM –SRSA– STA 22+80 TO STA 24+50 LT

DETAIL AA
BERM 'V' DITCH
(Not to Scale)



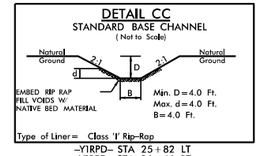
FROM –L– STA 454+50 TO STA 455+50 LT

DETAIL BB
STANDARD BASE CHANNEL
(Not to Scale)



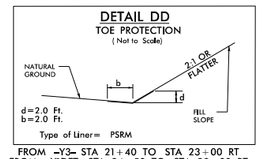
–Y1– STA 31+29 RT

DETAIL CC
STANDARD BASE CHANNEL
(Not to Scale)



–Y1RPD– STA 25+82 LT
–Y1RPD– STA 26+46 RT

DETAIL DD
TOE PROTECTION
(Not to Scale)



FROM –Y3– STA 21+40 TO STA 23+00 RT
FROM –Y1DET– STA 24+50 TO STA 28+00 RT

5/14/99

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

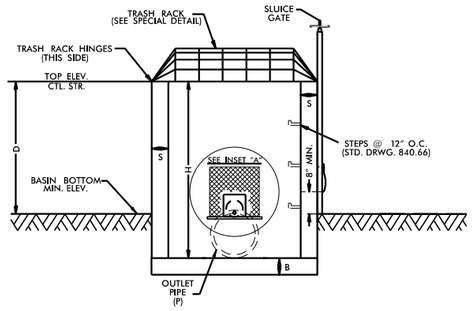
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 3 OF 40

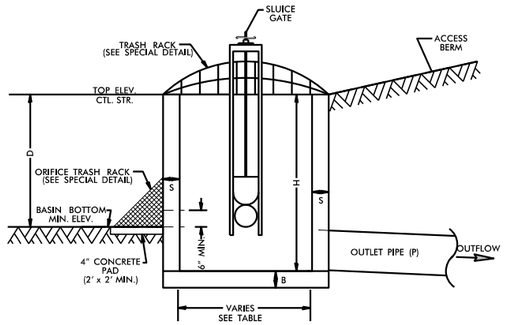
DETAIL EE

DRY DETENTION BASIN DRAWDOWN STRUCTURE

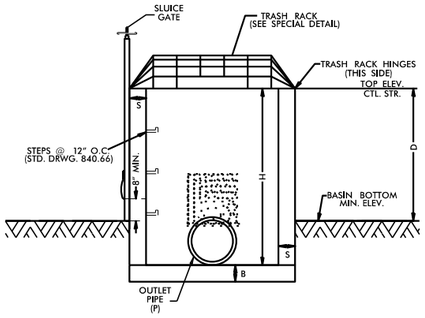
NOT TO SCALE



SIDE 1



SIDE 2



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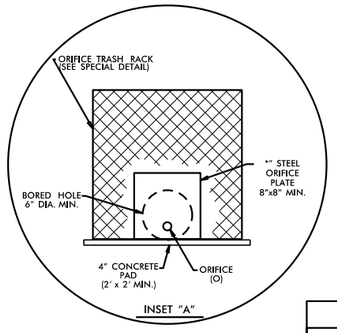
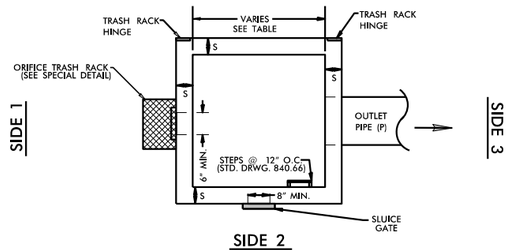


INSET "A"



SIDE 2

PLAN VIEW

TRASH RACK NOT SHOWN FOR CLARITY

NOTES:
1. TOP ELEVATION OF CONTROL STRUCTURE (WEIR ELEVATION) SHOULD BE SET AT THE WQv ELEVATION.
2. 15" MINIMUM DIAMETER FOR OUTLET PIPE.
3. 2" MINIMUM DIAMETER ORIFICE. IF ORIFICE IS GREATER THAN 6", A STEEL PLATE IS NOT REQUIRED.
4. NO BEDDING MATERIAL TO BE USED. THEREFORE, DO NOT FOLLOW STANDARD DRAWINGS FOR METHOD OF PIPE INSTALLATION FOR OUTLET PIPE THROUGH EMBANKMENT.
5. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION. A GATE VALVE MAY BE USED IN LIEU OF THE 8" SLUICE GATE.
6. SLUICE GATE SHALL PROVIDE WATERTIGHT SEAL. PROVIDE ADEQUATE CLEARANCE FOR GATE OPERATION AND FOR PROPER SEATING OF GATE OVER PIPE.
7. SELECT BOX STANDARD AS REQUIRED TO ACCOMMODATE SLUICE GATE AND ORIFICE TRASH RACK WIDTH.
8. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATE.
9. ADJUST FOOTER DIMENSIONS AS NEEDED FOR ANTI-FLOTATION.

MINIMUM DIMENSIONS FOR DRY DETENTION BASIN DRAWDOWN STRUCTURE

STATION	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	BASIN BOTTOM MINIMUM ELEV.	TOP ELEVATION CONTROL STRUCTURE	MAX. STORAGE DEPTH(D) FEET	INV. ELEV. CTL. STR.	CTL. STR. DIMENSIONS (W x L x H)	ORIFICE DIAMETER (O) INCHES	ORIFICE INV. ELEV.	OUTLET PIPE DIAMETER(P) INCHES
400+00 -L- LT	0623	6"	18"	940.0	944.0	4.0	938.0	5' X 5' X 6'	6"	940.0	24
400+08 -L- RT	0609	6"	15"	947.0	950.0	3.0	945.0	5' x 5' x 5'	6"	947.0	24

5/19/2017
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PWTam

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	2D-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

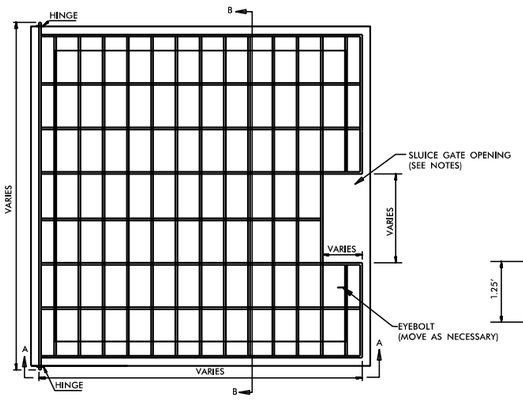
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 4 OF 40

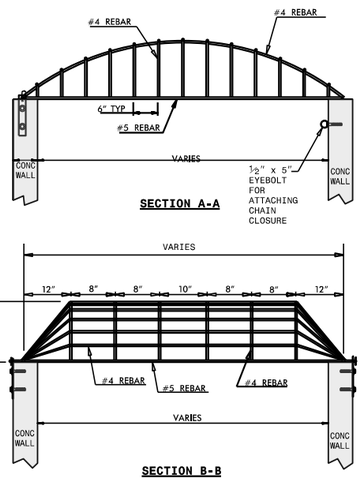
DETAIL FF

REMOVABLE ORIFICE TRASH RACK

NOT TO SCALE



PLAN

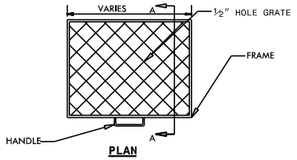


SECTION A-A

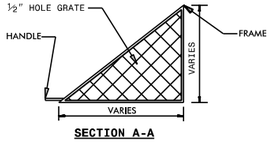
SECTION B-B

REBAR TRASH RACK
NOT TO SCALE

RISER TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A ¼" BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM A-153.
5. PROVIDE OPENING IN TRASH RACK TO ACCOMODATE SLUICE GATE ON THE OUTLET PIPE. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATES.

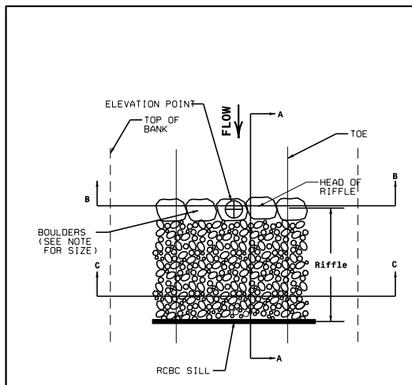


PLAN

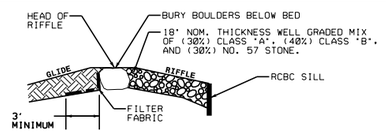


SECTION A-A

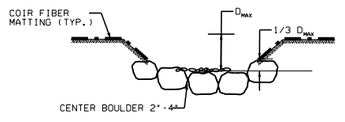
ORIFICE TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. REMOVEABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A-153.



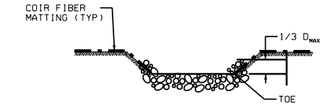
PLAN VIEW



SECTION A-A



SECTION B-B



SECTION C-C

NOTE:
BOULDER SHOULD BE NATIVE STONES OR SHOT ROCK, ANGULAR AND OBLONG, WITH AN AXIS APPROXIMATELY 3.0 L_x, 2.5' W_x, 2.0' D

BOULDERS EST. 15 TONS
CLASS 'B' RIP RAP EST. 25 TONS
CLASS 'A' RIP RAP EST. 20 TONS
NO. 57 STONE EST. 20 TONS
EST. 50 SY GEOTEXTILE FABRIC

REACH	1
Wbkf (ft)	8.0'
Dmax (ft)	2.0'

CONSTRUCTED RIFFLE DETAIL DD

NOT TO SCALE

5/19/2017
U-2579C_Std_prm_wet_psh_03b.dgn
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	2D-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 5 OF 40

DETAIL HH
(NOT TO SCALE)

SINGLE BARREL CULVERT W/SILLS AND BAFFLES

*NOTES:

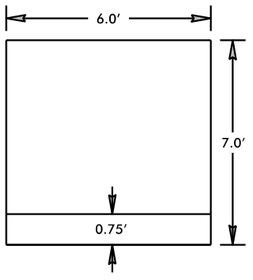
1) NATIVE BED MATERIAL SHALL BE PLACED BETWEEN THE SILLS IN THE CULVERT. NATIVE MATERIALS CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL. IF RIP RAP IS USED, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FACILITATE ANIMAL PASSAGE. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. NATIVE MATERIAL AND RIP RAP ARE SUBJECT TO APPOVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

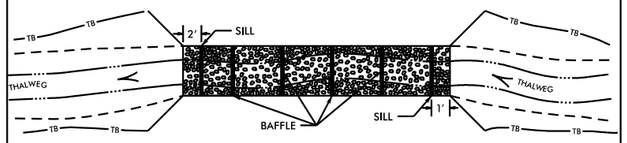
2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOP OF SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET ELEVATION OF SILL/BAFFLES ABOVE BANK FULL.

5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.





NUMBER OF BAFFLES = 16
ON 51 FT CENTERS FROM DOWNSTREAM SILL
(SEE STRUCTURE PLANS)

PLAN VIEW

9/13

6′ X 7′ RCBC AT –L– STA 397+73

DETAIL II
(NOT TO SCALE)

SINGLE BARREL CULVERT W/SILLS

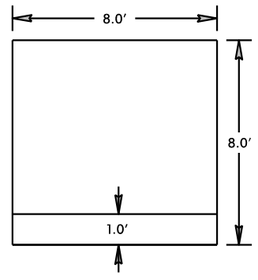
*NOTES:

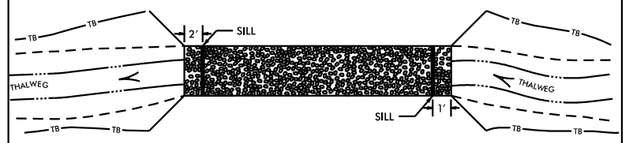
1) NATIVE BED MATERIAL SHALL BE PLACED BETWEEN THE SILLS IN THE CULVERT. NATIVE MATERIALS CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL. IF RIP RAP IS USED, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FACILITATE ANIMAL PASSAGE. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. NATIVE MATERIAL AND RIP RAP ARE SUBJECT TO APPOVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOP OF SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET ELEVATION OF SILL/BAFFLES ABOVE BANK FULL.



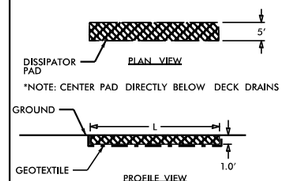


PLAN VIEW

9/13

8′ X 8′ RCBC AT –L– STA 437+97

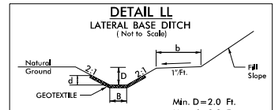
DETAIL JJ
DECK DRAIN DISSIPATOR PAD
(Not to Scale)



Type of Liner = Class B Rip–Rap

FROM –L– STA 472+52 TO STA 472+74 LT
FROM –L– STA 472+96 TO STA 473+08 RT
FROM –L– STA 473+85 TO STA 474+43 LT
FROM –L– STA 474+29 TO STA 474+90 RT

DETAIL LL
LATERAL BASE DITCH
(Not to Scale)

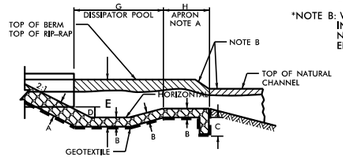


Type of Liner= Class 'I' Rip–Rap

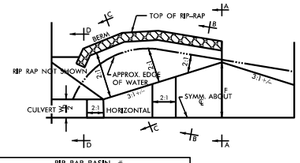
FROM –Y1– STA. 41+00 TO STA. 43+50 LT

DETAIL KK
RIP–RAPPED ENERGY DISSIPATOR BASIN

℄ SECTION



HALF PLAN



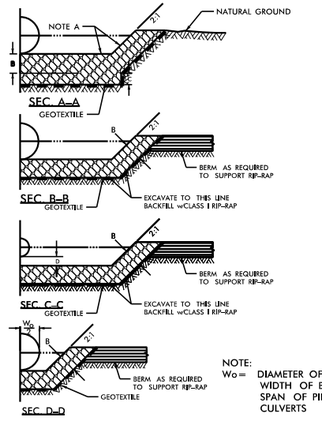
DIM	RIP RAP BASIN # 1	2	3	4	5	6	7	8
A	2′							
B	2′							
C	2′							
D	2′							
E	7′							
F	12′							
G	20′							
H	10′							

CLASS 'I' RIP RAP
EST. 105 TONS
EST. 190 SY GEOTEXTILE FABRIC

*ALL DIMENSIONS APPROXIMATE IN FEET

*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



NOTE:
Wo = DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE–ARCH CULVERTS

5/05

–L– STA 472+75 RT

8/17/99

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

PERMIT DRAWING SHEET 14 OF 40

SCALE: 1" = 200'

MATCHLINE -Y1- STA. 39+50.00 SHEET 13

MATCHLINE -L- STA. 390+00.00 SHEET 5

MATCHLINE -L- STA. 418+75.00 SHEET 7

MATCHLINE -YRPD- STA. 27+00 SHEET 7

MATCHLINE -Y1- STA. 20+00.00 SHEET 12

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

SEE PSH-06B

SEE PSH-06C

SEE PSH-06D

SEE PSH-06E

SITE 3A

SITE 3B

SITE 3C

SITE 4

SITE 5

SITE 6

SITE 7

SITE 7A

NEW WALKERTOWN RD

10,168 / 14,248

3,948 / 4,828 | 2,348 / 3,228

62,504 / 88,744 -L- 65,592 / 93,112 BELTWAY

1,208 / 1,688 | 5,896 / 7,656

10,976 / 15,536

YEAR 2017 ADT AND 2031 ADT

NOTE:
FOR -L- PROFILE, SEE SHEETS 17 & 18
FOR -Y1- PROFILE, SEE SHEETS 22 & 23
FOR -YIRPB- PROFILE, SEE SHEET 24
FOR -YIRPC- PROFILE, SEE SHEETS 25 & 26
FOR -YIRPD- PROFILE, SEE SHEET 27
FOR -YILPB- PROFILE, SEE SHEET 28
FOR -YIDET- PROFILE, SEE SHEET 30
FOR -YIDET- PLAN, SEE SHEETS 2B-5 & 2B-6
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 TO 2D-4
FOR BRIDGE SKETCH, SEE SHEET 2B-1
FOR STRUCTURE PLANS, SEE SHEETS S1-1 TO S1-?
FOR CULVERT PLANS, SEE SHEETS C1-1 TO C1-?

PROP. CONCRETE 5" MONOLITHIC ISLAND

PAVED SHOULDER

6/5/2017
G:\2579C_Hyd_prm_wet_psh_06.dgn
pelam

8/17/99

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

PERMIT DRAWING SHEET 15 OF 40

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

100' 50' 0 100' 200'

SCALE: 1" = 200'

MATCHLINE -Y1- STA. 39+50.00 SHEET 13

SEE PSH-06B

SEE PSH-06C

SEE PSH-06D

SEE PSH-06E

MATCHLINE -L- STA. 390+00.00 SHEET 5

MATCHLINE -L- STA. 418+75.00 SHEET 7

MATCHLINE -Y1- STA. 20+00.00 SHEET 12

MATCHLINE -YRD- STA. 21+00 SHEET 7

SITE 3A

SITE 3B

SITE 3C

SITE 4

SITE 5

SITE 6

SITE 7

SITE 7A

NEW WALKERTOWN RD

	10,168 / 14,248	
3,948 / 4,828		2,348 / 3,228
62,504 / 88,744		65,592 / 93,112 -L- BELTWAY
1,208 / 1,688		5,896 / 7,656
	10,976 / 15,536	

YEAR 2017 ADT AND 2031 ADT

NOTE:
FOR -L- PROFILE, SEE SHEETS 17 & 18
FOR -Y1- PROFILE, SEE SHEETS 22 & 23
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FOR -YIRPD- PROFILE, SEE SHEET 27
FOR -YILPB- PROFILE, SEE SHEET 28
FOR -YIDET- PROFILE, SEE SHEET 30
FOR -YIDET- PLAN, SEE SHEETS 2B-5 & 2B-6
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 TO 2D-4
FOR BRIDGE SKETCH, SEE SHEET 2B-1
FOR STRUCTURE PLANS, SEE SHEETS S1-1 TO S1-?
FOR CULVERT PLANS, SEE SHEETS C1-1 TO C1-?

PROP. CONCRETE 5" MONOLITHIC ISLAND

PAVED SHOULDER

6/5/2017
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Bellam

PROJECT REFERENCE NO.	SHEET NO.
R-2579C	6E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING SHEET 19 OF 40

SCALE: 1" = 50'

REVISIONS 8/17/99

SITE 6

SITE 7

SITE 7A

SEE DETAIL BB
STANDARD BASE CHANNEL
W/EMBEDED CL I RIP RAP
EST 25 TONS
LENGTH = 15'

PROP. WW FENCE

DO NOT BURY
INVERT

24" RCP-IV

JS

Q(10yr) = 8.2 cfs
S = 7.8%
V(10yr) = 14.7 ft/s

T NATURAL GAS EASEMENT

MELVIN R. JR. & SHERIE F. CALDWELL

2GI

18" RCP-III

2GI-A FS 24" RCP-III

10" STEEL

DO NOT BURY
INVERT

HW

SEE DETAIL E
TOE PROTECTION
W/CL B RIP RAP
EST 42 TONS
EST 112 SY GEO

2GI-A

FS

30" RCP-III

JB w/MH

REMOVE

72" RCP-IV

S 58° 33' 31.6" E

2GI

FS

18" RCP-III

15" RCP-IV

2GI

FS

2GI

18" RCP-III

ELBOWS

18" M

BEG. SHOULDER
BERM
GUTTER
-L- STA. 413 + 50 RT

END SHO
BERM GU
-L- STA.

CL B RIP RAP
EST 2 TONS
EST 7 SY GEO

BURY INVERT 1.0'

SEE DETAIL H
CL II RIP RAP

-L- PT Sta. 410+06.22

-L- POC STA. 409+03.84
-Y1- POC STA. 29+24.97
SKEW = 88° 22' 36.67"

33

34

MILDRED H. SELL

WALKERTOWN CITY LIMITS

FORSYTH COUNTY

SANDY DILLON JURISDICTIONAL

EIP

-L-

5/1/2017
C:\STRUCT_Hyd_prm_wet_psh_06e.dgn
bellam

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579C	X-58

PERMIT DRAWING
SHEET 23 OF 40

SITE 7A

WETLAND WETLAND WETLAND WETLAND

FILL IN WETLAND
IMPACTS IN SURFACE WATER
FILL IN WETLAND

D.P. 932.394
913.86
S.S. 919.589
414 + 00.00

D.P. 932.582
925.62
S.S. 926.86
413 + 50.00

S.S. 932.11
936.06
930.769
D.P. 932.896
413 + 00.00

944.11
D.P. 933.338
931.210
412 + 50.00

948.55
S.S. 950.907
D.P. 933.907
932.586
412 + 00.00

5/19/2017
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bejam

6/23/16

0 25	PROJ. REFERENCE NO.	SHEET NO.
	U-2579C	6M

300 200 100 0 100 200 300

413+97 –L–

PERMIT DRAWING
SHEET 25 OF 40

950
940
930
920
910

SITE 7

SITE 7A

INV IN=916.0

72" RCP
SLOPE=1.45%

INV OUT=911.5
BURY 1 FT

5/11/2017
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8/17/99

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

PERMIT DRAWING SHEET 26 OF 40

SCALE: 1" = 100'

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE -L- STA. 418+75.00 SHEET 6

MATCHLINE -L- STA. 427+50.00 SHEET 8

MATCHLINE -YIRPD- STA. 27+00.00 SHEET 9

-L- SC Sta. 420+61.30

10' STEEL
50' PIEDMONT NATURAL GAS EASEMENT

15" RCP-III

2GI

FS

SEE DETAIL V
FALSE SUMP
TOP EL=937.5

SEE DETAIL S
STD. 3' BASE DITCH
W/CL I RIP RAP
EST 83 TONS
EST 145 SY GEO
EST 45 CY DDE

SPECIAL DITCH GRADE
SEE PROFILE

HW

EIP

NCDOT

922

425 -L-

20' EASEMENT FOR PUBLIC ROAD PURPOSES

PROP. WW FENCE

HAROLD M., JR. & PEGGY HOOVER

40A

40

GRADE TO DRAIN

GRADE TO DRAIN

GRADE TO DRAIN

N 72° 46' 16.9" W

-YIRPD- TS Sta. 15+80.00

-YIRPD- SC Sta. 18+20.00

-YIRPD-

41
MANYON L. IDOL, JR.

42
MANYON L. IDOL, JR.

ALDON M. & BRENDA K. IDOL

SPECIAL DITCH GRADE
SEE PROFILE

-SRSA-

15"

38

EXISTING CHANNEL H-H
(Not to Scale)
Natural Ground
4'
4'
0.3' FLOW

SEE DETAIL M
LATERAL 3' BASE DITCH
W/CL I RIP RAP
EST 235 TONS
EST 409 SY GEO
EST 356 CY DDE

SEE DETAIL CC
STANDARD 4' BASE CHANNEL
W/EMBEDDED CL 'I' RIP RAP
EST 50 TONS
LENGTH=20'

18" W/ELBOWS

2GI

DO NOT BURY
INVERT

HW

CAT-1

CAT-1

-YIRPD- SC Sta. 26+87.75

BEGIN SHOULDER BERM GUTTER
-YIRPD- STA. 24+50.00 RT.

-YIRPD- SRS Sta. 24+47.75

-YIRPD- CS Sta. 22+07.75

DO NOT BURY
INVERT

SEE DETAIL CC
STANDARD 4' BASE CHANNEL
W/EMBEDDED CL 'I' RIP RAP
EST 50 TONS
LENGTH=25'

78" CSP 10 GAGE

W/12" RAISED CONCRETE COLLAR

37
MATTHEW D. & PANGELA J. McKINNEY

SITE 9

PDE

25 -YIRPD-

CL B RIP RAP
EST 5 TONS
EST 14 SY GEO

EXISTING CHANNEL I-I
(Not to Scale)
Natural Ground
4'
4'
0.3' FLOW

Q(10yr)=135 cfs
S=1.2%
V(10yr)=9.0 fps

PAVED SHOULDER

NOTE:

FOR -L- PROFILE, SEE SHEET 18
FOR -YIRPD- PROFILE, SEE SHEET 27
FOR -SRSA- PROFILE, SEE SHEET 33

5/11/2017
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PROJECT REFERENCE NO.	SHEET NO.
U-2579C	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 27 OF 40

SCALE: 1" = 100'

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE -L- STA. 418+75.00 SHEET 6

MATCHLINE -L- STA. 427+50.00 SHEET 8

MATCHLINE -YIRPD- STA. 27+00.00 SHEET 9

-L- SC Sta. 420+61.30

10' STEEL

50' PIEDMONT NATURAL GAS EASEMENT

PROP. WW FENCE

15" RCP-III

2GI

FS

EIP

SEE DETAIL Y
FALSE SUMP
TOP EL=937.5

SEE DETAIL S
STD. 3' BASE DITCH
W/CL I RIP RAP
EST 83 TONS
EST 145 SY GEO
EST 45 CY DDE

SPECIAL DITCH GRADE
SEE PROFILE

NCDOT

922

HW

GRADE TO DRAIN

N 72° 46' 16.9" W

-YIRPD- TS Sta. 15+80.00

-YIRPD- SC Sta. 18+20.00

-YIRPD- SRS Sta. 24+47.75

-YIRPD- CS Sta. 22+07.75

-YIRPD-

-SRSA-

SPECIAL DITCH GRADE
SEE PROFILE

SEE DETAIL CC
STANDARD 4' BASE CHANNEL
W/EMBEDDED CL I RIP RAP
EST 50 TONS
LENGTH = 120

EXISTING CHANNEL H-H
(Not to Scale)

SEE DETAIL M
LATERAL 3' BASE DITCH
W/CL I RIP RAP
EST 235 TONS
EST 409 SY GEO
EST 356 CY DDE

DO NOT BURY INVERT

WELDWS

36"

20I

CAT-1

BEGIN SHOULDER BERM GUTTER
-YIRPD- STA. 24+50.00 RT.

DO NOT BURY INVERT

SEE DETAIL CC
STANDARD 4' BASE CHANNEL
W/EMBEDDED CL I RIP RAP
EST 50 TONS
LENGTH = 25

78"x58" 10 GAGE
WELDED SPIRAL PIPE

EXISTING CHANNEL I-I
(Not to Scale)

Q(10yr) = 135 cfs
S = 1.2%
V(10yr) = 9.0 fps

CL B RIP RAP
EST 5 TONS
EST 14 SY GEO

SITE 9

PAVED SHOULDER

NOTE:

FOR -L- PROFILE, SEE SHEET 18
FOR -YIRPD- PROFILE, SEE SHEET 27
FOR -SRSA- PROFILE, SEE SHEET 33

HAROLD M., JR. & PEGGY HOOVER

MANYON L. IDOL, JR.

MANYON L. IDOL, JR.

ALDON M. & BRENDA K. IDOL

MATTHEW D. & TANGELA J. MCKINNEY

5/11/2017
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bellam

6/23/16

0 50	PROJ. REFERENCE NO.	SHEET NO.
	U-2579C	7B

PERMIT DRAWING
SHEET 28 OF 40

300 200 100 0 100 200 300

STA 26+11 –Y1RPD–

960
950
940
930
920
910
900

SITE 9

INV IN = 907.5

78" CSP
SLOPE = 1.4%

INV OUT = 904.0

5/4/2017
U-2579C_Hyd_prm_wet_psh_07b.dgn
belam

8/17/99

RIGHT OF WAY REVISION 5/3/17 - REVISED C/A FROM -L- STA.436+00.00 TO STA.440+00.00 RT. ON PARCELS 932 AND 977; ADDED R/W ON PARCELS 55,922,932,977. AND 978; ADDED TCE ON PARCELS 55 AND 932; ADDED PDE ON PARCEL 55.JMB

5/18/2017
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bsloan

J:\Hyd_prm_wet_psh_08.dgn

50' 25' 0 50' 100'
SCALE: 1"=100'

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 29 OF 40

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FARRELL B. & MARILYN E. BYERS (57)

FARRELL B. & MARILYN BYERS

ROGER J. & TIFFANY M. SKIDMORE (92)

LEE ANN HOLDER & H. HOLDER, JR.

50' PIEDMONT NATURAL GAS EASEMENT

10" STEEL

48" WW

SOND ACCESS EASEMENT

GR 20' ACCESS EASEMENT

-L- STA. 427+50.00 SHEET 7

-L- STA. 440+50.00 SHEET 9

MATCHLINE -L- STA. 427+50.00

MATCHLINE -L- STA. 440+50.00

430 -L-

435 -L-

440 -L-

SEE DETAIL M LATERAL 3' BASE DITCH W/CL I RIP RAP EST 465 TONS EST 811 SY GEO EST 450 CY DDE

SEE DETAIL DD CONSTRUCTED RIFFLE

POND WE=99.3' (POND IS DRAINED)

CL B RIP RAP EST 2 TONS EST 71 SY GEO

EXISTING CHANNEL A-A (Not to Scale)

Sta 438+00 -L- LT
Q(10yr)=20.6 cfs
V(10yr)=2.8 fps
d=1.2 ft
s=1.0%
n=0.055
Liner=Rip Rap

EXISTING CHANNEL B-B (Not to Scale)

1.5' FLOW

SEE DETAIL T STD. 2' BASE DITCH W/CL B RIP RAP EST 44 TONS EST 115 SY GEO EST 29 CY DDE

978 NCDOT

PROP. WW FENCE

932 NCDOT

980 NCDOT

977 NCDOT

922 NCDOT

978 NCDOT

55

SPECIAL DITCH GRADE SEE PROFILE

HW

DRAIN POND

MTL/FIBERGLASS-CLAD LIMITS

SEE DETAIL K SPECIAL CUT DITCH

SEE DETAIL K SPECIAL CUT DITCH

BEGIN SHOULDER BERM GUTTER -L- STA. 436+50' LT

18" W/ELBOWS

1' SILL SEE DETAIL II

SITE 11

MTL CANOPY

2GI

FS

24" RCP-IN

12" RCP-IN

36" RCP-IN

N 72° 45' 16.9" W -YIRPD-

3GI-A

18"

CL I RIP RAP EST 2 TONS EST 8 SY GEO

CL I RIP RAP EST 20 TONS EST 39 SY GEO

SEE DETAIL E TOE PROTECTION W/CL B RIP RAP EST 46 TONS EST 124 SY GEO

-YIRPD- POT Sta. 10+00.00
-L- POC Sta. 430+49.79
(59.00' RT.)

-SRSA- PRC Sta. 12+27.64

CL B RIP RAP EST 3 TONS EST 10 SY GEO

CL B RIP RAP EST 11 TONS EST 28 SY GEO

CL B RIP RAP EST 3 TONS EST 10 SY GEO

CL B RIP RAP EST 3 TONS EST 10 SY GEO

CL B RIP RAP EST 3 TONS EST 10 SY GEO

SEE DETAIL W FAUSE SUMP TOP EL=925.0

Q(10yr)=205 cfs
S=0.59%
V(10yr)=6.7 fps

-SRSA-

20' ACCESS EASEMENT

SEE DETAIL Y LINE ROADWAY DITCH W/CL B RIP RAP EST 196 TONS EST 582 GEO

SEE DETAIL Z SPECIAL LAT 'V' DITCH W/CL B RIP RAP EST 104 TONS EST 206 GEO

SEE DETAIL O STANDARD 8" BASE DITCH W/EMBEDED CL 'I' RIP RAP EST 40 TONS

EXISTING CHANNEL C-C (Not to Scale)

0.5' FLOW

Q(10yr)=205 cfs
S=0.5%
V(10yr)=7.1 fps

SEE DETAIL H CL II RIP RAP ON BANKS ONLY EST 45 TONS LENGTH=25'

PDE

95" X 67" CSPA W/ 3" X 1" COURRGATIONS AND HEADWALL /ENDWALL BURIED 1.0'

SEE DETAIL Y LINE ROADWAY DITCH W/CL B RIP RAP EST 438 TONS EST 1308 GEO

SEE DETAIL Z SPECIAL LAT 'V' DITCH W/CL B RIP RAP EST 169 TONS EST 503 GEO

SEE DETAIL D LATERAL 2' BASE DITCH W/CL B RIP RAP EST 292 TONS EST 768 SY GEO EST CY DDE

PAVED SHOULDER

NOTE:
FOR -L- PROFILE, SEE SHEET 18
FOR -YIRPD- PROFILE, SEE SHEET 27
FOR -SRSA- PROFILE, SEE SHEET 33

8/17/99

RIGHT OF WAY REVISION 5/3/17 - REVISED C/A FROM -L- STA 436+00.00 TO STA 440+00.00 RT. ON PARCELS 932 AND 977; ADDED R/W ON PARCELS 55,922,932,977. AND 978; ADDED TCE ON PARCELS 55 AND 932; ADDED PDE ON PARCEL 55.JMB

5/19/2017
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dsellers

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 30 OF 40

50' 25' 0 50' 100'
SCALE: 1" = 100'

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

SITE 11

MATCHLINE -L- STA. 427+50.00 SHEET 7

MATCHLINE -L- STA. 440+50.00 SHEET 9

-YIRPD- POT Sta. 10+00.00 = -L- POC Sta. 430+49.79 (59.00' RT.)

-SRSA- PRC Sta. 12+27.64

N 72°45'16.9" W

FARRELL B. & MARILYN BYERS

ROGER J. & TIFFANY M. SKIDMORE

LEE ANN HOLDER & H. HOLDER, JR.

NCDOT

PROP. WW FENCE

SEE DETAIL M LATERAL 1 BASE DITCH W/CL I RIP RAP EST 1463 TONS EST 811 SY GEO EST 350 CY DDE

SEE DETAIL DD CONSTRUCTED RIFFLE

CL B RIP RAP EST 2 TONS EST 7 SY GEO

POND WE #937 (POND IS DRAINED)

EXISTING CHANNEL A-A (Not to Scale)

EXISTING CHANNEL B-B (Not to Scale)

EXISTING CHANNEL C-C (Not to Scale)

Sta 438+00 -L- LT
Q(10yr)=20.6 cfs
V(10yr)=2.8 fps
d=1.2 ft
s=1.0%
n=0.055
Liner=Rip Rap

SEE DETAIL T STD. 2' BASE DITCH W/CL B RIP RAP EST 44 TONS EST 115 SY GEO EST 29 CY DDE

SEE DETAIL K SPECIAL CUT DITCH

SPECIAL DITCH GRADE SEE PROFILE

HW

38 DRAIN POND

24" RCP-W

18" RCP-W

36" RCP-W

2GI-A

3GI-A

CL I RIP RAP EST 21 TONS EST 39 SY GEO

CL I RIP RAP EST 2 TONS EST 8 SY GEO

SEE DETAIL E TOE PROTECTION W/CL B RIP RAP EST 48 TONS EST 124 SY GEO

CL B RIP RAP EST 3 TONS EST 10 SY GEO

CL B RIP RAP EST 3 TONS EST 11 TONS EST 28 SY GEO

CL B RIP RAP EST 3 TONS EST 10 SY GEO

CL B RIP RAP EST 3 TONS EST 10 SY GEO

SEE DETAIL V FALSE SUMP TOP EL=925.0

BEGIN SHOULDER BERM GUTTER -L- STA. 436+50 LT

1' SILL SEE DETAIL II

SEE DETAIL Y LINE ROADWAY DITCH W/CL B-RIP RAP EST 196 TONS EST 582 GEO

SEE DETAIL J SPECIAL LAT 'V' DITCH W/CL B RIP RAP EST 104 TONS EST 206 GEO

STANDARD 8' BASE DITCH W/EMBEDED CL I RIP RAP EST 140 TONS

SEE DETAIL H CL II RIP RAP ON BANKS ONLY EST 45 TONS LENGTH=26'

Q(10yr)=205 cfs
S=0.5%
V(10yr)=7.1 fps

Q(10yr)=205 cfs
S=0.59%
V(10yr)=6.7 fps

95" X 67" CSPA W/ 3" X 1" CORRUGATIONS AND HEADWALL ENDWALL BURIED 10"

SEE DETAIL Y LINE ROADWAY DITCH W/CL B RIP RAP EST 438 TONS EST 1308 GEO

SEE DETAIL Z SPECIAL LAT 'V' DITCH W/CL B RIP RAP EST 169 TONS EST 503 GEO

SEE DETAIL D LATERAL 2' BASE DITCH W/CL B RIP RAP EST 292 TONS EST 788 SY GEO EST CY DDE

PAVED SHOULDER

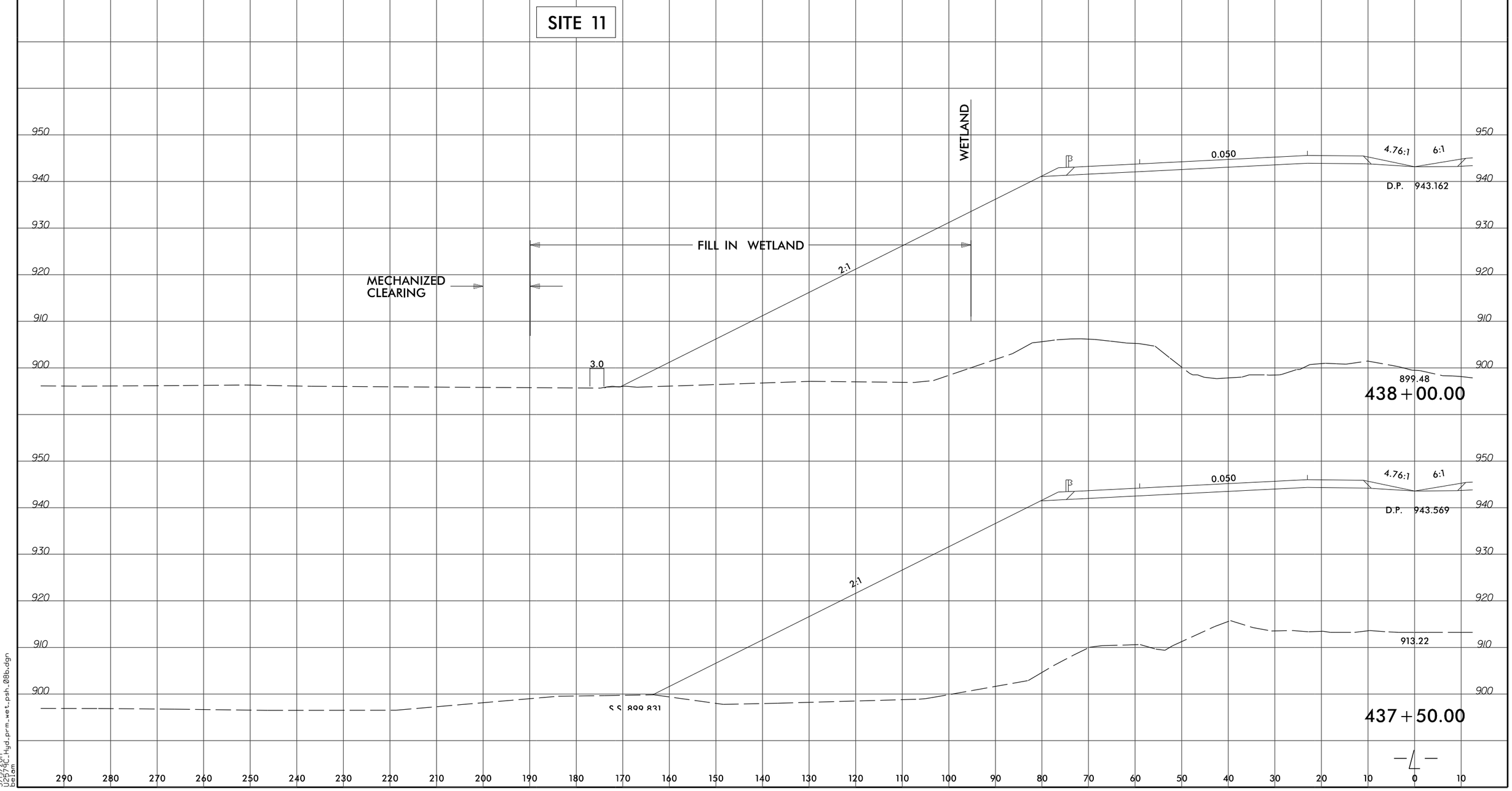
NOTE:
FOR -LH- PROFILE SEE SHEET 18
FOR -YIRPD- PROFILE SEE SHEET 27
FOR -SRSA- PROFILE SEE SHEET 33

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579C	X-149

PERMIT DRAWING
SHEET 31 OF 40

SITE 11



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beiam

6/23/16

0 25	PROJ. REFERENCE NO.	SHEET NO.
	U-2579C	8E

300 200 100 0 100 200 300

437+98 –L–

22+71.06 –SRSA–

PERMIT DRAWING
SHEET 32 OF 40

960
950
940
930
920
910
900
890

SITE 11

INV IN=894.5
BURY 1 FT

8'x8' RCBC
SLOPE=0.59%

INV OUT=892.5
BURY 1 FT

INV IN=892.2
BURY 1 FT

95"x67" CSPA
SLOPE=0.89%

INV OUT=891.8
BURY 1 FT

5/11/2017
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beiam

8/17/99

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 33 OF 40

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 25' 0 50' 100'

SCALE: 1"=100'

MATCHLINE -L- STA. 465+50.00 SHEET 10

MICHAEL WADE WESTMORELAND

60 MICHAEL W. WESTMORELAND & WADE WESTMORELAND

61 FREDERICO B. MORETZ SUSAN K. MORETZ

TOWN OF WALKERTOWN FORSYTH COUNTY

JANE WHICKER & DAN WESTMORELAND

470 -L-

475 -L-

47" W.W. FENCE

CLASS "II" RIP RAP (STRUCTURE PAY ITEM)

SEE DETAIL JJ CL 'B' RIP RAP EST 20 TONS EST 25 SY GEO

NON-MITIGABLE TEMP. SURFACE WATER IMPACTS

BEGIN SHOULDER BERM GUTTER -L- STA 475+00 LT.

SEE DETAIL K SPECIAL CUT DITCH

SEE DETAIL E TOE PROTECTION W/CL B RIP RAP EST 54 TONS EST 146 SY

SITE 13

SHOULDER BERM GUTTER -L- STA 477+56 LT

EXIST. BDO

EXIST. 18" CSP W/ELBOW

EXIST. 2GI

15" RCP-IV

18" RCP-III

36" RCP-III

2GI

2GI-A

FS

S 58° 42' 58.7" E

IMPACTS FOR TEMP. CONST. CROSSING

SEE DETAIL JJ CL 'B' RIP RAP EST 20 TONS EST 25 SY GEO

SITE 12

JANE WHICKER & DAN WESTMORELAND

EXIST. 24"

EXIST. 42"

EXIST. 2GI-A

Q(10yr)=12 cfs
s=0.5%
V(10yr)=0.9 fps

END SHOULDER BERM GUTTER -L- STA 477+50 RT

GRADE 10%

SEE DETAIL KK ENERGY DISSIPATOR

SEE DETAIL S STD. 3' BASE DITCH W/CL I RIP RAP EST 111 TONS EST 194 SY GEO EST 60 CY DDE

SEE DETAIL X BANK STABILIZATION CL II RIP RAP EST 20 TONS EST 39 SY GEO

55' PERMANENT SEWER EASEMENT

Existing Energy Dissipator Basin

PDE EXIST

BEGIN SHOULDER BERM GUTTER -L- STA 475+43 RT.

KIM C. STREETMAN

63

JANE WHICKER DAN WESTMORELAND

WALKERTOWN CITY LIMITS

TOWN OF WALKERTOWN FORSYTH COUNTY

BETH C. DELFOSSE DB 2633 PG 276

BETH C. DELFOSSE

62

WENDY C. SLOAN

LOUISE FRANKLIN

25' ACCESS EASEMENT DB 889 PG 453

48" CMP

48" CONC

WD DN

CONC

60.00'

52' W/LT

358W

Sta 473+75 -L- RT
Q(10yr)=56.1 cfs
V(10yr)=2.5 fps
d=2.7 ft
s=0.5%
n=0.055
Laner=Rap Rap

EXISTING CHANNEL A-A
(Not to Scale)

Natural Ground
0.8d
d
0.8d
Natural Ground
4.5' FLOW
1'
1'

PAVED SHOULDER

NOTE:
FOR -L- PROFILE, SEE SHEETS 19 & 20
FOR BRIDGE SKETCH, SEE SHEET 2B-2
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 TO 2D-4
FOR STRUCTURE PLANS, SEE SHEETS S3-1 TO S3-?
FOR STRUCTURE PLANS, SEE SHEETS S4-1 TO S4-?

5/31/2017
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8/17/99

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 34 OF 40

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SCALE: 1" = 50'

MATCHLINE -L- STA. 465+50.00 SHEET 10

MICHAEL WADE WESTMORELAND

60 MICHAEL W. WESTMORELAND & WADE WESTMORELAND

61 FREDERICO B. MORETZ SUSAN K. MORETZ

JANE WHICKER & DAN WESTMORELAND

TOWN OF WALKERTOWN FORSYTH COUNTY

KIM C. STREETMAN

BETH C. DELFOSSE DB 2633 PG 276

BETH C. DELFOSSE

WENDY C. SLOAN

LOUISE FRANKLIN

47" W.W. FENCE

CLASS I" III RIP RAP (STRUCTURE PAY ITEM)

CLASS "I" RIP RAP (STRUCTURE PAY ITEM)

SEE DETAIL JJ CL "B" RIP RAP EST 20 TONS EST 25 SY GEO

NON-MITIGABLE TEMP. SURFACE WATER IMPACTS

BEGIN SHOULDER BERM GUTTER -L- STA. 475+00 LT.

SEE DETAIL K SPECIAL CUT DITCH

SEE DETAIL E TOE PROTECTION W/CL B RIP RAP EST 54 TONS EST 146 SY

SITE 13

SHOULDER BERM GUTTER -L- STA 477+56 LT

EXIST. BDO.

EXIST. 18" CSP W/ELBOW

EXIST. 2GI

EXIST. 24" RCP

EXIST. 2GI-A

EXIST. 42"

15" RCP-IV

18" RCP-III

36" RCP-III

48" WW

IMPACTS FOR TEMP. CONST. CROSSING

SEE DETAIL JJ CL "B" RIP RAP EST 20 TONS EST 25 SY GEO

SITE 12

GRADE 20%

SEE DETAIL KK ENERGY DISSIPATOR

SEE DETAIL S STD. 3' BASE DITCH W/CL I RIP RAP EST 111 TONS EST 194 SY GEO EST 60 CY DDE

SEE DETAIL X BANK STABILIZATION CL I RIP RAP EST 20 TONS EST 39 SY GEO

Sta 473+75 -L- RT
Q(10yr)=56.1 cfs
V(10yr)=2.5 fps
d=2.7 ft
s=0.5%
n=0.055
Liner=Rap Rap

EXISTING CHANNEL A-A (Not to Scale)

Q(10yr)=12 cfs
s=0.5%
V(10yr)=0.9 fps

END SHOULDER BERM GUTTER -L- STA 477+50 RT

Existing Energy Dissipator Basin

BEGIN SHOULDER BERM GUTTER -L- STA 475+43 RT.

PAVED SHOULDER

NOTE:
FOR -L- PROFILE, SEE SHEETS 19 & 20
FOR BRIDGE SKETCH, SEE SHEET 2B-2
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 TO 2D-4
FOR STRUCTURE PLANS, SEE SHEETS S3-1 TO S3-?
FOR STRUCTURE PLANS, SEE SHEETS S4-1 TO S4-?

5/31/2017
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5/14/99

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

PERMIT DRAWING
SHEET 35 OF 40

940
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790

468 469 470 471 472 473 474 475 476 477 478 479 480 481 482

CL STA 473+70 –L–
1@65', 2@95'
54" REINFORCED CONCRETE GIRDER
W/4' END BENT CAPS
SKEW=75 DEG
ELEV=883.91

884.70
884.70

PI = 477+00.00
EL = 878.24'

(–)1.5597%

(+)1.3500%

SITE 13

50 YR ELEV
=861.8

100 YR ELEV
=862.1

NWSE AND WSE
ON 11-23-16=852.4

SITE 12

5/11/2017
U2579C_Hyd_prm_wet_psh_11b.dgn
bellam

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579C	X-96

PERMIT DRAWING
SHEET 36 OF 40

SITE 13

6:1 6:1 0.021 0.021

D.P. 880.000

3:1

859.45
476+00.00

S.S. 858.373

6:1 6:1 0.021 0.021

D.P. 880.226

FILL IN WETLAND

2:1

MECHANIZED CLEARING

60" RCP

858.24
475+50.00

6:1 6:1 0.021 0.021

2:1

857.98
475+00.00

S.S. 857.500

END BRIDGE
–L– STA. 475+03.61

0.021 0.021

858.29
474+50.00

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

890 880 870 860 900

5/31/2017
U-2579C_Hyd_prm_wet_psh_11c.dgn
beiam

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579C	X-172

PERMIT DRAWING
SHEET 37 OF 40

WETLAND

SITE 13

MECHANIZED CLEARING

FILL IN WETLAND

0.021 0.021 6:1 6:1

D.P. 880.226

2:1

60" RCP

S.S. 859.593

858.24
475+50.00

0.021 0.021 6:1 6:1

2:1

S.S. 858.882

857.98
475+00.00

END BRIDGE
–L– STA. 474+91.29

0.021 0.021

858.29
474+50.00

0.021 0.021

859.19
474+00.00

–L–

5/19/2017
U-2579C_Hyd_prm_wet_psh_11d.dgn
beiam

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 38 OF 40

50' 25' 0 50' 100'
SCALE: 1"=100'

MATCHLINE -Y1- STA. 39+50.00 SHEET 6

SEE DETAIL I
STD 2' BASE DITCH
EST QDE 100 CY

SEE DETAIL LL
LAT 2' BASE DITCH
W/CL 'I' RIP RAP
EST 289 TONS
EST SY GEO
EST QDE 115 CY

SEE DETAIL R
SPEC LAT 2' BASE DITCH
W/CL 'I' RIP RAP
EST 467 TONS
EST 827 SY GEO

SEE DETAIL N
BST SPEC LAT 'V' DITCH

DO NOT BURY INVERT

CL 'I' RIP RAP
EST 15 TONS
EST 30 SY GEO

CL B RIP RAP
EST 2 TONS
EST 7 SY GEO

SEE DETAIL N
SPEC LAT 'V' DITCH

EXISTING CHANNEL A-A
(Not to Scale)
Natural Ground
OW FLOW

Q(10yr) = 30 cfs
S = 1.3%
V(10yr) = 10.6 fps

SITE 14

ROBERT B. STIMPSON
JOHN A. & MARGARET G. FOLK
JOHN H. VANHOY
JOHN H. VANHOY
DONALD G. & GEORGIA B. BARNEYCASTLE
H.V. & BETTY C. JENKINS & JILES CARDWELL
FERRELL CONSTRUCTION COMPANY
FERRELL CO
LINDA F. OVERBY CHURCH
CHRISTOPHER R. ROTHROCK
YVONNE SWAIM KILBOURNE
R. KEITH ROTHROCK
DURA H. DAVIS

FORSYTH COUNTY
WALKERTOWN CITY LIMITS

47" W.W. FENCE

42" RCP-III
JB-wMH
15" RCP-IV
12" RCP
12" RCP-III
15" RCP
30" RCP
72" RCP-III
ISBKAPT
ISBKD
ISFD
HTR
CONC/SOIL (CONC DRAIN FIELD)
72" CHL
8" DIP
100' TAPER TO EXIST.
EXISTING R/W
PUE
AXLE
CONC
SEDIMENT

N 42° 14' 04.0" E
N 42° 10' 42.9" E
US 311 24" BST

END GRADE
-YIDET- POC STA. 31+62.46

S S DENOTES IMPACTS IN SURFACE WATER

PAVED SHOULDER
PROP. CONCRETE 5" MONOLITHIC ISLAND

NOTE:
FOR -Y1- PROFILE, SEE SHEET 23
FOR -YIDET- PROFILE, SEE SHEET 30
FOR -YIDET- PLAN, SEE SHEET 2B-5 & 2B-6
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 TO 2D-4

5/31/2017
U2579C_Hyd_prm_wet_psh_13.dgn
bellam

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 39 OF 40

50' 25' 0 50' 100'
SCALE: 1" = 100'

MATCHLINE -Y1- STA. 39+50.00 SHEET 6

-Y1- 40 LT

-Y1- 25 LT DET

-Y1- 45 RT

-Y1- 50 RT

FORSYTH COUNTY
WALKERTOWN CITY LIMITS

ROBERT B. STIMPSON

JOHN A. & MARGARET G. FOLK

JOHN H. VANHOY

DONALD C. & GEORGIA B. BARNEYCASTLE

H.Y. & BETTY C. JENKINS & JILES CARDWELL

SEE DETAIL L
LAT 2' BASE DITCH
W/CL 'I' RIP RAP
EST 289 TONS
EST 51 SY GEO
EST 105 CY

SEE DETAIL I
STD 2' BASE DITCH
EST 100 CY

SEE DETAIL R
SPEC LAT 2' BASE DITCH
W/CL 'I' RIP RAP
EST 467 TONS
EST 827 SY GEO

47" W.W. FENCE

42" RCP-III

JB-wMH

2GI

15" RCP-IV

12" RCP

30" RCP

SEE DETAIL N
SPEC LAT 'V' DITCH

ISBKAPT

DO NOT BURY INVERT

CL B RIP RAP
EST 2 TONS
EST 7 SY GEO

CL I RIP RAP
EST 15 TONS
EST 30 SY GEO

FERRELL CONSTRUCTION COMPANY

SITE 14

Q(10yr) = 30 cfs
S = 1.3%
V(10yr) = 10.6 fps

EXISTING CHANNEL A-A
(Not to Scale)

LINDA F. OVERBY CHURCH

CHRISTOPHER R. ROTHROCK

YVONNE SWAIM KILBOURNE

R. KEITH ROTHROCK

DURA H. DAVIS

WALKERTOWN CITY LIMITS
FORSYTH COUNTY

100:1 TAPER TO EXIST.

N 42° 14' 04.0" E

N 42° 10' 42.9" E

US 311 24" BST

72" CMP

CONC/SOIL (CONC/DRAIN FIELD)

END GRADE
-YIDET- POC STA. 31+62.46

S S DENOTES IMPACTS IN SURFACE WATER

PAVED SHOULDER

PROP. CONCRETE 5" MONOLITHIC ISLAND

NOTE:
FOR -Y1- PROFILE, SEE SHEET 23
FOR -YIDET- PROFILE, SEE SHEET 30
FOR -YIDET- PLAN, SEE SHEET 2B-5 & 2B-6
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 TO 2D-4

5/31/2017
U2579C_Hyd_prm_wet_psh_13a.dgn
bellam

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)
6	31+27-31+55 -Y1- RT	ROADWAY FILL						< 0.01		53		
		CHANNEL STABILIZATION (Downstream)						< 0.01		15		
7	412+70-413+13 -L- LT	ROADWAY FILL	< 0.01			< 0.01						
7A	412+78-413+69 -L- RT	72" RCP	0.14					0.01	< 0.01	205	40	
		BANK STABILIZATION (Downstream)						< 0.01		25		
9	25+72-26+61 -Y1RPD-	78" CSP						0.02	< 0.01	271	56	
		CHANNEL STABILIZATION						< 0.01		45		
11	437+58-238+22 -L-	8'x8' RCBC / 95" x 67" CSPA	0.08			0.03		0.04	< 0.01	317	23	
		BANK STABILIZATION (Downstream)						< 0.01		25		
12	473+37-473+94 -L- RT	BRIDGE (Temp. Const. Crossing)							0.02		80	
		BANK STABILIZATION						< 0.01		26		
13	474+89-476+00 -L-	ROADWAY FILL	0.57			0.05						
14	42+15 -Y1-	42" RCP CHANNEL STABILIZATION						< 0.01		15		
TOTALS*:			0.79			0.09		0.10	0.04	997	199	0

*Rounded totals are sum of actual impacts

NOTES:

Site 8 Omitted
Site 9: Upstream Channel Stabilization = 0.003 AC / 20 LF, Downstream Channel Stabilization = 0.004 AC / 25 LF
Site 10 Omitted
Site 13: Non-Mitigable Temporary Surface Water Impacts = 0.019 AC / 110 LF

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
May 11, 2017
FORSYTH
U-2579C
34839.3.6

09/08/99

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

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

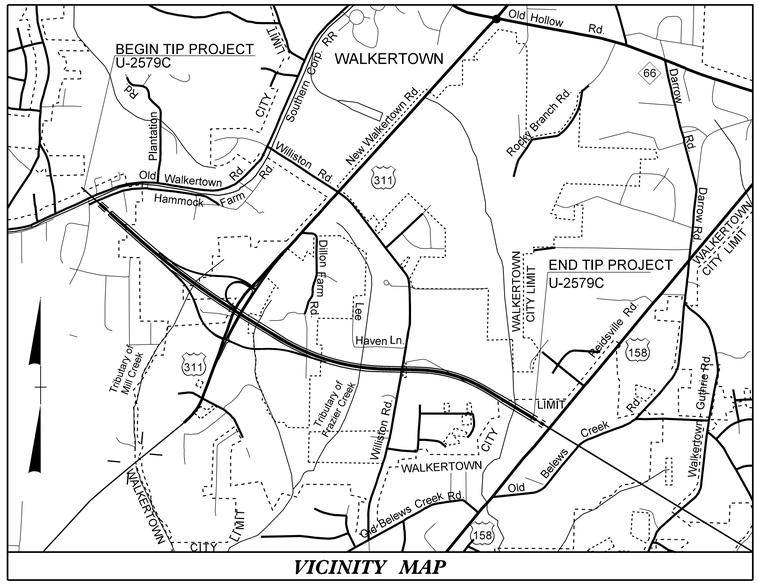
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34839.1.9	N/A	PE
34839.2.6	N/A	R/W
34839.2.GV18	N/A	R/W
34839.2.16	N/A	UTIL
34839.3.GV6	NHP-0918(062)	CONSTR.

LOCATION: ***WINSTON – SALEM NORTHERN BELTWAY (EASTERN SECTION) FROM US 311 TO US 158 (FUTURE I–74)***

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

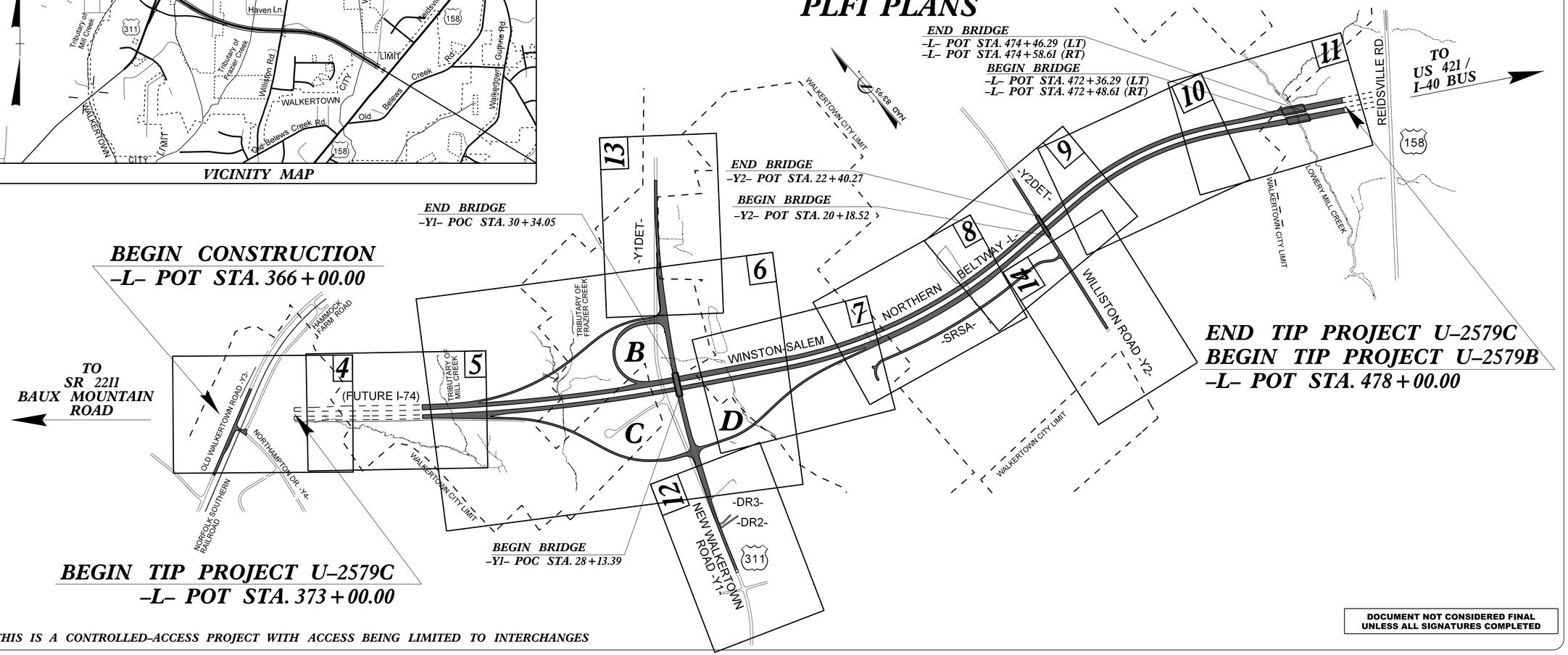
TIP PROJECT: U–2579C

CONTRACT:



VICINITY MAP

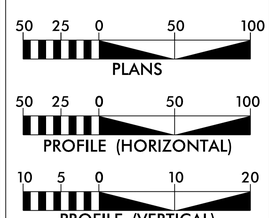
PLFI PLANS



THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 65,592
ADT 2037 = 93,112
DHV = 10 %
D = 60 %
T = 18 % *
V = 70 MPH

* TTST 12 % DUAL 6 %

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT U–2579C = 1.989 Miles
LENGTH OF STRUCTURE PROJECT U–2579C = 0.040 Mile
TOTAL LENGTH OF TIP PROJECT U–2579C = 1.949 Miles

PLANS PREPARED BY:

RS&H & SUNGATE DESIGN GROUP, P.A.
8601 SIX FORKS RD, SUITE 260
RALEIGH, NC 27615
919-926-4100

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 28, 2015

LETTING DATE: OCTOBER 17, 2017

JASON TALLEY, PE
PROJECT ENGINEER

JARED BOND, PE
PROJECT DESIGN ENGINEER

TATIA L. WHITE, PE, PLS
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

13-MAR-2017 18:40
R:\Roadway\Proj\U2579C_rdy_tsh.dgn
$$$$USERNAME$$$$

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Parcel/Sequence Number (123)
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary (WLB)
- Proposed Wetland Boundary (WLB)
- Existing Endangered Animal Boundary (EAB)
- Existing Endangered Plant Boundary (EPB)
- Existing Historic Property Boundary (HPB)
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign (S)
- Well (W)
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch (FLOW)
- False Sump

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line (RW)
- Proposed Right of Way Line with Iron Pin and Cap Marker (RW)
- Proposed Right of Way Line with Concrete or Granite R/W Marker (RW)
- Proposed Control of Access Line with Concrete C/A Marker (C/A)
- Existing Control of Access (C/A)
- Proposed Control of Access (C/A)
- Existing Easement Line (E)
- Proposed Temporary Construction Easement (E)
- Proposed Temporary Drainage Easement (TDE)
- Proposed Permanent Drainage Easement (PDE)
- Proposed Permanent Drainage / Utility Easement (DUE)
- Proposed Permanent Utility Easement (PUE)
- Proposed Temporary Utility Easement (TUE)
- Proposed Aerial Utility Easement (AUE)
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut (C)
- Proposed Slope Stakes Fill (F)
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer (S)

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) (P)
- U/G Power Line LOS C (S.U.E.*) (P)
- U/G Power Line LOS D (S.U.E.*) (P)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Pedestal (T)
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole (HH)
- U/G Telephone Cable LOS B (S.U.E.*) (T)
- U/G Telephone Cable LOS C (S.U.E.*) (T)
- U/G Telephone Cable LOS D (S.U.E.*) (T)
- U/G Telephone Conduit LOS B (S.U.E.*) (TC)
- U/G Telephone Conduit LOS C (S.U.E.*) (TC)
- U/G Telephone Conduit LOS D (S.U.E.*) (TC)
- U/G Fiber Optics Cable LOS B (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS C (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS D (S.U.E.*) (T FO)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) (W)
- U/G Water Line LOS C (S.U.E*) (W)
- U/G Water Line LOS D (S.U.E*) (W)
- Above Ground Water Line (A/G Water)

TV:

- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (HH)
- U/G TV Cable LOS B (S.U.E.*) (TV)
- U/G TV Cable LOS C (S.U.E.*) (TV)
- U/G TV Cable LOS D (S.U.E.*) (TV)
- U/G Fiber Optic Cable LOS B (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS C (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS D (S.U.E.*) (TV FO)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) (G)
- U/G Gas Line LOS C (S.U.E.*) (G)
- U/G Gas Line LOS D (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

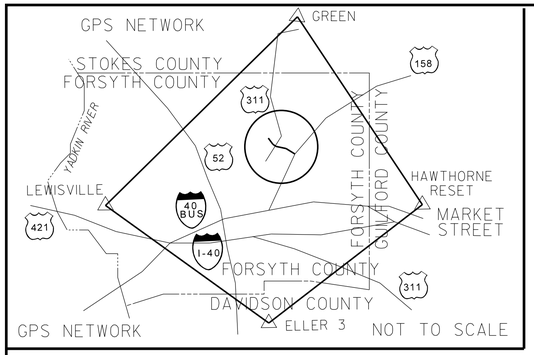
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*) (FSS)
- SS Forced Main Line LOS C (S.U.E.*) (FSS)
- SS Forced Main Line LOS D (S.U.E.*) (FSS)

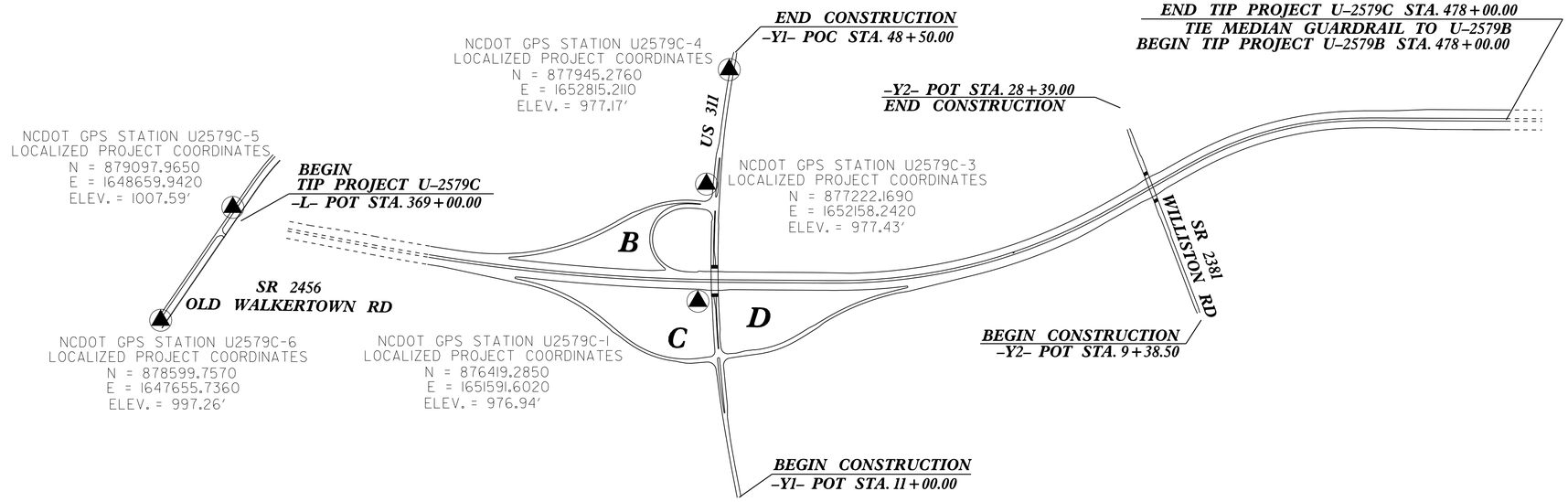
MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (?UTL)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	1C-1
Location and Surveys	

SURVEY CONTROL SHEET U-2579C





NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U2579C_LS_GPSCALIB.HTML
   U2579C_LS_WGS84.TXT
   U2579C_LS_LOCAL.TXT
   U2579C_LS_CONTROL.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

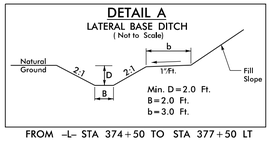
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "U2579C-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 876419.285(ft) EASTING: 1651591.602(ft) ELEVATION: 976.94(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995453
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2579C-1" TO -L- STATION 390+00.00 IS N 49°00'53.54" 3884.0262'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	2D-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

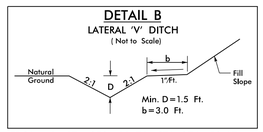
DETAIL A
LATERAL BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
B = 2.0 Ft.
b = 3.0 Ft.

FROM –L– STA 374+50 TO STA 377+50 LT

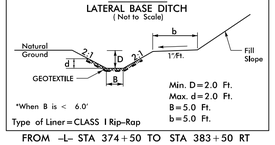
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
b = 3.0 Ft.

FROM –L– STA 373+00 TO STA 374+50 LT
FROM –Y1DET– STA 24+00 TO STA 29+00 LT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



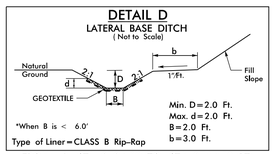
*When B is < 6.0'

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

Type of Liner = CLASS I Rip–Rap

FROM –L– STA 374+50 TO STA 383+50 RT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



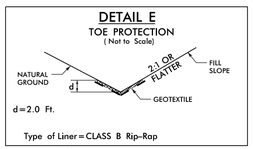
*When B is < 6.0'

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

Type of Liner = CLASS B Rip–Rap

FROM –L– STA 373+00 TO STA 374+50 RT
FROM –L– STA 377+50 TO STA 379+60 LT
FROM –L– STA 379+60 TO STA 384+00 LT
FROM –L– STA 385+50 TO STA 386+50 LT
FROM –L– STA 387+00 TO STA 392+00 LT
FROM –L– STA 393+00 TO STA 394+50 LT
FROM –L– STA 438+15 TO STA 442+50 RT
FROM –Y1RPB– STA 16+00 TO STA 21+60 LT
FROM –Y1RPC– STA 20+75 TO STA 21+35 RT

DETAIL E
TOE PROTECTION
(Not to Scale)

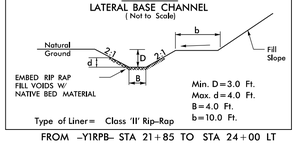


d = 2.0 Ft.

Type of Liner = CLASS B Rip–Rap

FROM –Y1– STA 30+80 TO STA 32+50 LT
FROM –Y1RPD– STA 26+60 TO STA 28+00 RT
FROM –Y1RPD– STA 26+90 TO STA 30+00 LT
FROM –Y1RPC– STA 17+85 TO STA 20+50 RT
FROM –Y1RPC– STA 21+17 TO STA 23+60 LT
FROM –Y1RPB– STA 22+50 TO STA 24+25 RT
FROM –L– STA 399+50 TO STA 401+00 LT
FROM –L– STA 399+50 TO STA 401+00 RT
FROM –L– STA 413+78 TO STA 414+50 LT
FROM –Y3– STA 17+00 TO STA 18+90 RT
FROM –SRSA– STA 13+00 TO STA 13+80 LT

DETAIL F
LATERAL BASE CHANNEL
(Not to Scale)

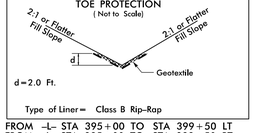


Min. D = 3.0 Ft.
Max. d = 4.0 Ft.
B = 4.0 Ft.
b = 10.0 Ft.

Type of Liner = Class 'II' Rip–Rap

FROM –Y1RPB– STA 21+85 TO STA 24+00 LT

DETAIL G
TOE PROTECTION
(Not to Scale)

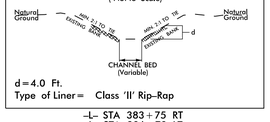


d = 2.0 Ft.

Type of Liner = Class B Rip–Rap

FROM –L– STA 395+00 TO STA 399+50 LT
FROM –L– STA 395+00 TO STA 399+50 RT

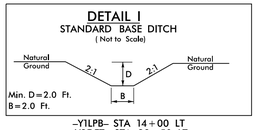
DETAIL H
CHANNEL BANK STABILIZATION
(Not to Scale)



d = 4.0 Ft.
Type of Liner = Class 'II' Rip–Rap

–L– STA 383+75 RT
–L– STA 386+78 LT
–L– STA 389+85 RT
–L– STA 414+19 RT
–Y1RPB– STA 21+75 LT
–SRSA– STA 22+65 RT

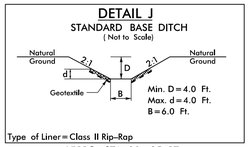
DETAIL I
STANDARD BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
B = 2.0 Ft.

–Y1LPB– STA 14+00 LT
–Y2DET– STA 23+50 LT

DETAIL J
STANDARD BASE DITCH
(Not to Scale)

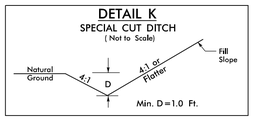


Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B = 6.0 Ft.

Type of Liner = Class II Rip–Rap

–Y1RPC– STA 20+85 RT

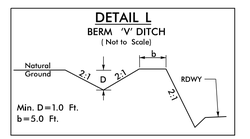
DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.0 Ft.

FROM –Y1– STA 12+50 TO STA 14+00 LT
FROM –Y1– STA 26+00 TO STA 27+50 LT
FROM –Y1DET– STA 16+00 TO STA 21+50 LT
FROM –Y1DET– STA 19+50 TO STA 21+50 RT
FROM –Y1LPB– STA 14+00 TO STA 15+00 LT
FROM –Y1RPC– STA 26+00 TO STA 28+50 LT
FROM –Y1RPC– STA 29+75 TO STA 31+00 LT
FROM –L– STA 430+00 TO STA 432+25 LT
FROM –L– STA 432+25 TO STA 434+00 LT
FROM –L– STA 469+00 TO STA 470+00 LT
FROM –Y2– STA 14+13 TO STA 17+50 RT
FROM –Y2– STA 15+50 TO STA 16+00 LT
FROM –Y2DET– STA 23+00 TO STA 24+50 RT

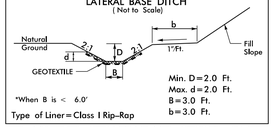
DETAIL L
BERM 'V' DITCH
(Not to Scale)



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

FROM –L– STA 417+00 TO STA 418+50 LT
FROM –L– STA 444+00 TO STA 444+50 RT
FROM –L– STA 451+00 TO STA 545+50 LT
FROM –Y1LPB– STA 13+00 TO STA 14+50 RT

DETAIL M
LATERAL BASE DITCH
(Not to Scale)



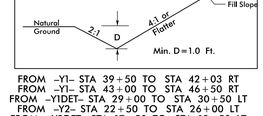
*When B is < 6.0'

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

Type of Liner = Class I Rip–Rap

FROM –L– STA 438+00 TO STA 441+77 LT
FROM –Y1RPD– STA 24+50 TO STA 26+40 RT

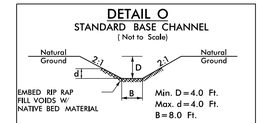
DETAIL N
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

FROM –Y1– STA 39+50 TO STA 42+03 RT
FROM –Y1– STA 43+00 TO STA 46+50 RT
FROM –Y1DET– STA 29+00 TO STA 30+50 LT
FROM –Y2– STA 22+50 TO STA 26+00 LT
FROM –Y2DET– STA 17+50 TO STA 19+50 LT
FROM –Y3– STA 14+00 TO STA 16+50 LT
FROM –Y3– STA 14+00 TO STA 17+00 RT
FROM –Y3– STA 19+50 TO STA 23+00 RT

DETAIL O
STANDARD BASE CHANNEL
(Not to Scale)

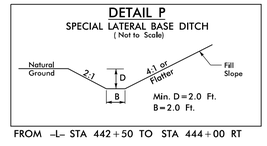


Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B = 8.0 Ft.

Type of Liner = Class 'I' Rip–Rap

–L– STA 438+00 RT

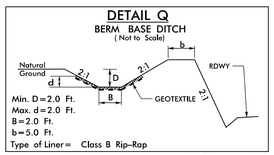
DETAIL P
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
B = 2.0 Ft.

FROM –L– STA 442+50 TO STA 444+00 RT

DETAIL Q
BERM BASE DITCH
(Not to Scale)

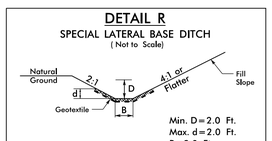


Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.

Type of Liner = Class B Rip–Rap

FROM –L– STA 443+50 TO STA 446+50 LT

DETAIL R
SPECIAL LATERAL BASE DITCH
(Not to Scale)

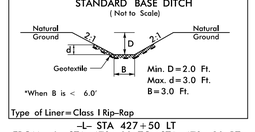


Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 2.0 Ft.

Type of Liner = Class I Rip–Rap

FROM –L– STA 441+77 TO STA 443+50 LT
FROM –Y1– STA 41+00 TO STA 46+50 LT

DETAIL S
STANDARD BASE DITCH
(Not to Scale)



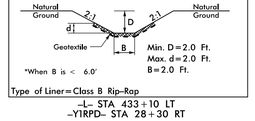
*When B is < 6.0'

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

Type of Liner = Class I Rip–Rap

–L– STA 427+50 LT
FROM –L– STA 473+00 TO STA 473+90 RT

DETAIL T
STANDARD BASE DITCH
(Not to Scale)



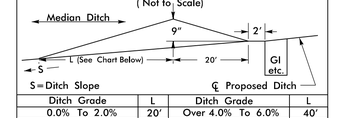
*When B is < 6.0'

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

Type of Liner = Class B Rip–Rap

–L– STA 433+10 LT
–Y1RPD– STA 28+30 RT

DETAIL U
FALSE SUMP
(Not to Scale)

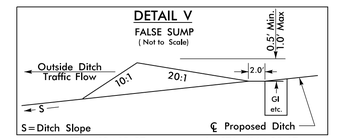


S = Ditch Slope ℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

–L– STA 376+15 –L– STA 380+15 –L– STA 384+15
–L– STA 388+15 –L– STA 391+90 –L– STA 396+15
–L– STA 400+15 –L– STA 403+65 –L– STA 413+15
–L– STA 416+85 –L– STA 421+85 –L– STA 427+85
–L– STA 433+00 –L– STA 441+95 –L– STA 451+65
–L– STA 455+15 –L– STA 448+65 –L– STA 462+15
–L– STA 466+15 –L– STA 470+65 –L– STA 471+95

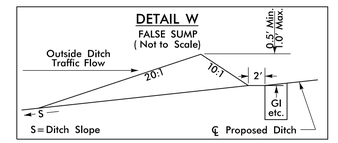
DETAIL V
FALSE SUMP
(Not to Scale)



S = Ditch Slope ℄ Proposed Ditch

–L– STA 413+15 RT –L– STA 414+85 LT
–L– STA 418+35 LT –L– STA 425+00 LT
–L– STA 427+90 RT –L– STA 451+65 RT
–L– STA 455+15 RT –L– STA 458+65 RT
–L– STA 462+15 RT –L– STA 466+15 RT
–L– STA 470+65 RT –Y1– STA 17+80 LT

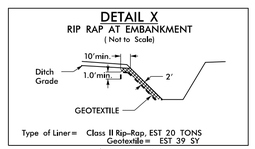
DETAIL W
FALSE SUMP
(Not to Scale)



S = Ditch Slope ℄ Proposed Ditch

–L– STA 412+65 LT –L– STA 451+65 LT
–L– STA 455+15 LT –L– STA 458+65 LT
–L– STA 462+15 LT –L– STA 466+15 LT
–L– STA 470+15 LT –Y2– STA 22+85 RT
–SRSA– STA 19+20 LT

DETAIL X
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = Class II Rip–Rap, EST 20 TONS
Geotextile = EST 39 SY

–L– STA 473+90 RT

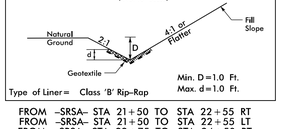
DETAIL Y
ROADWAY DITCH
(Not to Scale)

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

Type of Liner = Class 'B' Rip–Rap

FROM –SRSA– STA 19+50 TO STA 21+50 RT
FROM –SRSA– STA 19+50 TO STA 21+50 LT
FROM –SRSA– STA 24+50 TO STA 29+00 RT
FROM –SRSA– STA 24+50 TO STA 29+00 LT

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

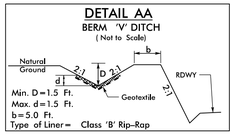


Min. D = 1.0 Ft.
Max. d = 1.0 Ft.

Type of Liner = Class 'B' Rip–Rap

FROM –SRSA– STA 21+50 TO STA 22+55 RT
FROM –SRSA– STA 21+50 TO STA 22+55 LT
FROM –SRSA– STA 22+75 TO STA 24+50 RT
FROM –SRSA– STA 22+80 TO STA 24+50 LT

DETAIL AA
BERM 'V' DITCH
(Not to Scale)

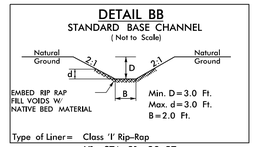


Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
b = 5.0 Ft.

Type of Liner = Class 'B' Rip–Rap

FROM –L– STA 454+50 TO STA 455+50 LT
FROM –Y1– STA 37+50 TO STA 41+00 LT

DETAIL BB
STANDARD BASE CHANNEL
(Not to Scale)

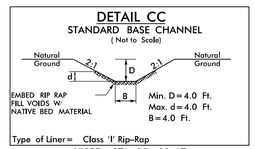


Min. D = 3.0 Ft.
Max. d = 3.0 Ft.
B = 2.0 Ft.

Type of Liner = Class 'I' Rip–Rap

–Y1– STA 31+29 RT

DETAIL CC
STANDARD BASE CHANNEL
(Not to Scale)

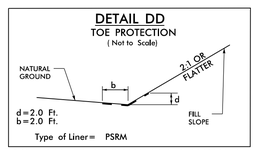


Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B = 4.0 Ft.

Type of Liner = Class 'I' Rip–Rap

–Y1RPD– STA 25+82 LT
–Y1RPD– STA 26+46 RT

DETAIL DD
TOE PROTECTION
(Not to Scale)



d = 2.0 Ft.
b = 2.0 Ft.

Type of Liner = PSRM

FROM –Y1DET– STA 24+50 TO STA 28+00 RT

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y3-	-Y4-
PI Sta 29+34.40	PI Sta 11+82.16
Δ = 30° 12' 45.2" (RT)	Δ = 19° 40' 26.4" (LT)
D = 2° 58' 35.1"	D = 15° 54' 55.8"
L = 1,015.07'	L = 123.62'
T = 519.63'	T = 62.42'
R = 1,925.00'	R = 360.00'
SE = 05	
RO = SEE PLANS	

REVISIONS

RIGHT OF WAY REVISION 7/26/16 - COMBINED PARCELS 5,6,7 & 8 AS ONE PARCEL 5 AND CHANGED PROPERTY OWNER NAMES TO TRUSTEES OF OAK GROVE MARVAIAN CHURCH DB 1131 PG 1486 AND THE BOARD OF PROVINCIAL ELDERS OF THE MORAVIAN CHURCH DB 146 PG 211, RLC

RIGHT OF WAY REVISION 5/3/17 - ADDED PARCELS 94,95,96,97,98,AND 99; ADDED C/A ON PARCELS 94,95, AND 96; ADDED TCE ON PARCELS 95,96,97,98,AND 99, JMB

8/17/99

24-MAY-2017 10:28
R:\$\$USERNAME\$\$\projects\U-2579C_psh_4.dgn
$$USERNAME$$

TIMOTHY W. & SHANNON S. MALONEY DB 1851 PG 2888

S. WALTER & MARILYN SAWYERS DB 3204 PG 1784

DARLYNN & GODOFREDO SORIANO DB 1875 PG 1455

ELMER C. LAWSON PB 17 PG 117

JULIA S. ELLIS

LUTHERAN HOME W S PROP INC DB 2718 PG 2834

OAK GROVE MORAVIAN CHURCH TRUSTEES DB 3182 PG 66

MDC INVESTMENTS LLC DB 2927 PG 2185

JOHN H. MAYFIELD, JR. DB 1448 PG 141

JOHN & PAULINE STYERS DB 1891 PG 791

MT. PLEASANT HOLINESS CHURCH DB 1747 PG 778

MARYANN B. SWEAT DB 1197 PG 1273

LINDA R. SHAW DB 2627 PG 4197

DB 1705 PG 443 FRANCES G. TUCKER

CLARENCE E. & LILLIE M. FARABEE DB 1228 PG 1294

SIGIFREDO & ROSALBA ALFARO DB 2800 PG 3451

OAK GROVE MORAVIAN CHURCH TRUSTEES DB 146 PG 211

OAK GROVE MORAVIAN CHURCH TRUSTEES DB 1131 PG 1486 (TRACT 2)

OAK GROVE MORAVIAN CHURCH TRUSTEES DB 1131 PG 1486 (TRACT 1)

MATCHLINE INSERT -Y3- STA. 15+50.00

BEGIN CONSTRUCTION -Y3- POT STA. 13+25.00

BEGIN CONSTRUCTION -L- POT STA. 366+00.00

BEGIN CONSTRUCTION -Y4- POT STA. 10+10.00

END CONSTRUCTION -Y3- POT STA. 26+50.00

BEGIN TIP PROJECT U-2579C
BEGIN GRADING
-L- POT STA. 373+00.00

-Y3- PC Sta. 24+14.77

-L- POT Sta. 367+89.88
-Y3- POT Sta. 20+43.69

-Y4- PT Sta. 12+43.35

N 25° 29' 38.5" W
-Y4- POT Sta. 12+53.12
-Y3- POT Sta. 19+10.68

-Y4- PC Sta. 11+19.74

-Y4- POT Sta. 10+00.00

N 65° 25' 56.4" E

S 48° 08' 54.4" E

N 5° 49' 12.0" W

BEGIN FUTURE NOISE WALL 0 -NWD- STA. 19+60.00 -L- STA. 373+00.00 74.75' RT.

FUTURE NOISE WALL & SINGLE FACED BARRIER

SEE DETAIL A LATERAL 2' BASE DITCH EST. 1,818 CY DDE

SEE DETAIL B LATERAL V DITCH EST. 139 CY DDE

SEE DETAIL D LATERAL 2' BASE DITCH W/CL B RIP RAP EST 101 TONS EST 265 SY GEO EST 443 CY DDE

SEE DETAIL DD PSRM TOE PROTECTION EST 110 SY

SEE DETAIL E TOE PROTECTION W/CL B RIP RAP EST 177 TONS EST 472 SY GEO

CL B RIP RAP EST 2 TONS EST 7 SY GEO

SEE DETAIL N SPEC LAT 'V' DITCH

PAVED SHOULDER

NOTE:
FOR -L- PROFILE, SEE SHEETS 15 & 16
FOR -Y3- PROFILE, SEE SHEET 32
FOR -Y4- PROFILE, SEE SHEET 32
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 TO 2D-4

MATCHLINE -L- STA. 377+00.00 SHEET 5

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

RIGHT OF WAY REVISION 7/26/16 - COMBINED PARCELS 5,6,7 & 8 AS ONE PARCEL 5 AND CHANGED PROPERTY OWNER NAMES TO TRUSTEES OF OAK GROVE MARAVIAN CHURCH DB 1131 PG 1486 AND THE BOARD OF PROVINCIAL ELDERS OF THE SOUTHERN PROVINCE OF THE MORAVIAN CHURCH DB 146 PG 211. RLC

RIGHT OF WAY REVISION 5/31/17 - ADDED TCE ON PARCEL 9. JMB

8/17/99

APPROXIMATE HISTORIC BOUNDARIES FOR THE HAMMOCK FAMILY FARM

OAK GROVE MORAVIAN CHURCH TRUSTEES
DB 146 PG 211

WINSTON-SALEM CITY LIMITS
FORSYTH COUNTY

OAK GROVE MORAVIAN CHURCH TRUSTEES
DB 1131PG 1486 (TRACT 2)

MARGARET H. HOERNER & MARY E. HAMMOCK
DB 309 PG 239
DB 852 PG 287
DB 550 PG 420

OAK GROVEMORAVIAN CHURCH TRUSTEES
DB 1131PG 1486 (TRACT 1)

STEPHEN N. & DEBRA H. RIERSON
DB 2131PG 720
DB 1821PG 1365

ROGER R. & BARBARA BAILEY
DB 1137 PG 527

BEGIN PAVEMENT
-L- POC STA. 385+00.00

-L- PC Sta. 380+26.43

-YIRPB- TS Sta. 10+00.00 =
-L- POC Sta. 386+77.67
(59.00' LT.)

-YIRPB- SC Sta. 12+40.00

-YIRPC- POT Sta. 10+00.00 =
-L- POC Sta. 388+11.00
(59.00' RT.)

-YIRPC- S 46° 53' 22.0" E

MATCHLINE -L- STA. 377+00.00 SHEET 4

MATCHLINE -L- STA. 390+00.00 SHEET 6

SEE DETAIL D
LATERAL 2' BASE DITCH
W/CL B RIP RAP
EST 141 TONS
EST 371 SY GEO
EST 288 CY DDE

SEE DETAIL D
LATERAL 2' BASE DITCH
W/CL B RIP RAP
EST 296 TONS
EST 777 SY GEO
EST 280 CY DDE

SEE DETAIL D
LATERAL 2' BASE DITCH
W/CL B RIP RAP
EST 68 TONS
EST 177 SY GEO
EST 32 CY DDE

SEE DETAIL D
LATERAL 2' BASE DITCH
W/CL B RIP RAP
EST 336 TONS
EST 883 SY GEO
EST 1,083 CY DDE

SEE DETAIL H
CL II RIP RAP
ON BANKS ONLY
EST 48 TONS
LENGTH=20'

SEE DETAIL H
CL II RIP RAP
ON BANKS ONLY
EST 59 TONS
LENGTH=40'

SEE DETAIL H
CL II RIP RAP
ON BANKS ONLY
EST 48 TONS
LENGTH=25'

SEE DETAIL C
LATERAL 5' BASE DITCH
W/CL I RIP RAP
EST 1252 TONS
EST 2137 SY GEO
EST 8,235 CY DDE

TIE W.W. FENCE TO HEADWALL

PROP. WW FENCE

FUTURE NOISE WALL & SINGLE FACED BARRIER

END FUTURE SHOULDER BERM GUTTER
BEGIN SHOULDER BERM GUTTER
-L- STA. 385+00.00 LT.

300' TAPER

900' FULL LANE

GRADE ONLY

VAR P.S.

14' P.S.

12' P.S.

14'-3" P.S.

S 48° 08' 54.4" E

S 00°21'29" W 141.37'

S 87°42'23" E 148.40'

S 00°28'41" E 220.07'

S 89°58'20" E 226.83'

S 89°39'01" E 75.00'

S 00°41'05" E 155.93'

S 00°21'29" W 325.28'

S 88°22'26" E 200.22'

S 00°20'56" E 100.00'

S 88°49'55" E 60.44'

S 00°20'56" E 100.25'

W2 2.8 x 2" CSP 10 GAGE CORRUGATIONS

60" CSP

24" CSP

18" CSP

JB w/MH

HW

STONE

EIP

CAT-1

GRAU 350 TL-3

BURY INVERT 1.0'

24" W/ELBOWS

15" W/ELBOWS

40' INC TYP.

15" RCP-III

15" RCP-IV

18" RCP-IV

2GI

FS

PAVED SHOULDER

NOTE:
FOR -L- PROFILE SEE SHEETS 16 & 17
FOR -YIRPB- PROFILE SEE SHEET 24
FOR -YIRPC- PROFILE SEE SHEET 25

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

RIGHT OF WAY REVISION 3/7/17 - UPDATED PROPERTY LINE ON PARCEL 39.
RIGHT OF WAY REVISION 3/29/17 - ADDED PUE ON PARCEL 11. JMB
RIGHT OF WAY REVISION 5/31/17 - ADDED TCE ON PARCEL 9. JMB

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APPROXIMATE HISTORIC BOUNDARY FOR THE HAMMOCK FAMILY FARM

100' 0' 100' 200' 300'

-L-
PI Sta 395+20.44
Δ = 10° 24' 37.2" (LT)
D = 17° 32' 57.7"
L = 2,979.79
T = 1,494.08'
R = 164,400.00'
SE = NC
RO = 0

-Y1-
PI Sta 30+99.76
Δ = 28° 13' 10.7" (RT)
D = 17° 37' 25.4"
L = 1,562.39'
T = 1,801.86'
R = 325.60'
SE = NC
RO = 0

-Y1PB-

PI Sta 11+39.92	PI Sta 19+62.95	PI Sta 19+70.10
Θs = 1° 29' 19.1"	Θs = 21° 29' 09.3"	Δ = 139° 33' 19.2" (RT)
Θs = 21° 29' 19.4"	Ls = 260.00'	D = 20° 27' 49.0"
Ls = 260.00'	Lt = 140.26'	L = 682.00'
Lt = 139.92'	St = 70.59'	T = 760.00'
St = 72.18'		R = 280.00'
		SE = 08
		RO = SEE PLANS

-YIRPB-

BK = S 50° 25' 25.0" E	PI Sta 17+55.26	PI Sta 23+27.53	PI Sta 26+47.65	PI Sta 29+42.41
Pts Sta 11+49.51	Δ = 29° 36' 10.2" (LT)	Θs = 3° 3' 13.2"	Θs = 7° 38' 22.0"	Δ = 26° 5' 34.4" (RT)
Θs = 0° 29' 14.0"	D = 2° 56' 17.7"	Ls = 240.00'	Ls = 240.00'	D = 6° 2' 58.3"
Θs = 7° 5' 33.9"	L = 1,007.50'	Lt = 160.01'	Lt = 160.05'	L = 429.91'
Ls = 240.00'	T = 515.26'	St = 80.03'	St = 80.14'	T = 214.90'
Lt = 19.52'	R = 1,950.00'			R = 900.00'
St = 68.57'	SE = 08			SE = 08
	RO = SEE PLANS			RO = SEE PLANS

-YIDET-
PI Sta 13+65.14
Δ = 15° 12' 52.0" (RT)
D = 3° 45' 11.0"
L = 398.37'
T = 200.34'
R = 1,530.00'
SE = 02
RO = SEE PLANS

-YIRPB- SRS Sta. 24+87.50
-YIRPB- SC Sta. 27+27.50
-YIRPB- CS Sta. 22+47.50
-YIRPB- PT Sta. 31+49.41
-YIRPB- POT Sta. 33+09.41=
-Y1- POC Sta. 35+64.00
-YILPB- POT Sta. 22+40.11=
-Y1- POC Sta. 35+44.00
-YILPB- ST Sta. 21+02.00
-YILPB- CS Sta. 18+92.00
-YIDET- PT Sta. 15+63.31
-YILPB- ST Sta. 10+00.00 =
-L- POC Sta. 401+47.15
(590.01 LT.)
-YILPB- STA.0+00.0
BEGIN -YILPB- PAVEMENT
END -L- PAVEMENT
-YIRPB- STA.4+09.73
BEGIN -YIRPB- PAVEMENT
END -L- PAVEMENT
-YIRPB- STA.0+00.0
END -YIRPB- PAVEMENT
BEGIN -L- PAVEMENT
-YIRPC- STA.4+39.45
BEGIN -YIRPC- PAVEMENT
END -L- PAVEMENT
-YIRPC- SC Sta. 16+48.00
-YIRPC- TS Sta. 14+08.00
-YIRPC- CS Sta. 21+17.08
-YIRPC- SRS Sta. 23+57.08
-YIRPC- SC Sta. 25+97.08
-YIRPC- PT Sta. 31+63.36
-YIDET- POT Sta. 10+00.00
-YIDET- PC Sta. 11+65.00
-Y1- POC Sta. 22+91.00
-YIRPC- POT Sta. 33+16.49
-YIRPD- POT Sta. 32+52.32
-YIRPD- SC Sta. 27+71.00
-YIRPD- PT Sta. 29+16.62
-L- POC STA.409+03.84
-Y1- POC STA.29+24.97
SKEW= 88° 22' 36.2"
-L- PT Sta. 410+06.22
-L- TS Sta. 417+61.30
-L- SC Sta. 413+16.61
-L- STA. 390+00.00 SHEET 5
-L- STA. 418+75.00 SHEET 7
MATCHLINE -Y1- STA. 39+50.00 SHEET 13
MATCHLINE -YIRPD- STA. 27+71.00 SHEET 7
MATCHLINE -Y1- STA. 20+00.00 SHEET 12

END APPROACH SLAB
-Y1- POC STA.30+58.22
END BRIDGE
-Y1- POC STA.30+34.05
BEGIN BRIDGE
-Y1- POC STA.28+13.39
BEGIN APPROACH SLAB
-Y1- POC STA.27+89.22

-YIRPD-

PI Sta 28+02.93	Pts Sta 26+07.93
Δ = 15° 59' 28.2" (RT)	Θs = 8° 23' 05.7"
D = 6° 59' 14.2"	Ls = 240.00'
L = 228.86'	Lt = 160.18'
T = 115.18'	St = 80.16'
R = 820.00'	
SE = 08	
RO = SEE PLANS	

-YIRPC-

Pts Sta 15+68.06	PI Sta 18+84.60	Pts Sta 21+97.13	Pts Sta 25+17.26	PI Sta 28+98.04
Θs = 4° 44' 30.2"	Δ = 16° 32' 05.7" (RT)	Θs = 4° 44' 30.2"	Θs = 8° 23' 05.7"	Δ = 39° 54' 05.0" (LT)
Ls = 240.00'	D = 3° 57' 05.2"	Ls = 240.00'	Ls = 240.00'	D = 6° 59' 14.2"
Lt = 160.06'	L = 465.08'	Lt = 160.00'	Lt = 160.18'	L = 566.29'
St = 80.05'	T = 236.60'	St = 80.05'	St = 80.16'	T = 294.96'
	R = 1,450.00'			R = 820.00'
	SE = 08			SE = 08
	RO = SEE PLANS			RO = SEE PLANS

NEW WALKERTOWN RD

10,168 / 14,248		
3,948 / 4,828	2,348 / 3,228	
62,504 / 88,744		65,592 / 93,112 -L- BELTWAY
1,208 / 1,688	5,896 / 7,656	
10,976 / 15,536		

YEAR 2017 ADT
AND 2037 ADT

NOTE:
FOR -L- PROFILE, SEE SHEETS 17 & 18
FOR -Y1- PROFILE, SEE SHEETS 22 & 23
FOR -YIRPB- PROFILE, SEE SHEET 24
FOR -YIRPC- PROFILE, SEE SHEETS 25 & 26
FOR -YIRPD- PROFILE, SEE SHEET 27
FOR -YILPB- PROFILE, SEE SHEET 28
FOR -YIDET- PROFILE, SEE SHEET 30
FOR -YIDET- PLAN, SEE SHEETS 2B-5 & 2B-6
FOR BRIDGE SKETCH, SEE SHEET 2B-1

PROP. CONCRETE 5" MONOLITHIC ISLAND

PAVED SHOULDER

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99 RIGHT OF WAY REVISION 3/7/17 - SHIFTED PROPERTY LINE BETWEEN PARCELS 39 AND 40;UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 40. JMB

RIGHT OF WAY REVISION 5/3/17 - ADDED PDE ON PARCEL 37; REVISED PDE ON PARCEL 38; REVISED R/W ON PARCEL 40; ADDED R/W ON PARCELS 42 AND 922. JMB

-YIRPD-

PIs Sta 22+87.78	PI Sta 20+14.52	PIs Sta 17+40.03
Θs = 3° 31' 33.2"	Δ = 11° 23' 35.4" (LT)	Θs = 3° 31' 33.2"
Ls = 240.00'	D = 2° 56' 17.7"	Ls = 240.00'
LT = 160.03'	L = 387.75'	LT = 160.03'
ST = 80.03'	T = 194.52'	ST = 80.03'
	R = 1,950.00'	
	SE = 08	
	RO = SEE PLANS	

-SRSA-

BK = S 1° 35' 47" W
PI Sta 11+67.27
Δ = 108° 41' 23.6" (RT)
D = 47° 44' 47.3"
L = 227.64'
T = 167.27'
R = 120.00'
SE = RC
RO = SEE PLANS

39 JUDY DILLON DB 2296 PG 2866 (TRACT I) PB 56 PG 160

40 KIMBERLY I. POINDEXTER DB 2910 PG 922 DB 2915 PG 3643 PB 56 PG 160

40A HAROLD M., JR. & PEGGY HOOVER DB 1347 PG 1281 DB 1706 PG 3291 DB 1694 PG 4318

922 NCDOT DB 2691 PG 4240

41 MANYON L. IDOL, JR. DB 2589 PG 2587

42 MANYON L. IDOL, JR. DB 2440 PG 3354

38 CARL J. MILLER DB 1420 PG 1296

37 MATTHEW D. & TANGELA J. McKINNEY DB 2275 PG 5582

ALDON M. & BRENDA K. IDOL DB 1954 PG 143 DB 1719 PG 2908

MATCHLINE -L- STA. 418+75.00 SHEET 6

MATCHLINE -L- STA. 427+50.00 SHEET 8

MATCHLINE -YIRPD- STA. 27+00.00 SHEET 6

-L- SC Sta. 420+61.30

-YIRPD- SC Sta. 18+20.00

-YIRPD- TS Sta. 15+80.00

-YIRPD- SCS Sta. 26+87.75

-YIRPD- SRS Sta. 24+47.75

-YIRPD- CS Sta. 22+07.75

BEGIN -YIRPD- PAVEMENT
END -L- PAVEMENT

BEGIN CONSTRUCTION -SRSA- PC STA. 10+00.00

PROP. WW FENCE

SEE DETAIL S
STD. 3' BASE DITCH
W/CL I RIP RAP
EST 83 TONS
EST 145 SY GEO
EST 45 CY DDE

SEE DETAIL V
FALSE SUMP
TOP EL=937.5

SEE DETAIL M
LATERAL 3' BASE DITCH
W/CL I RIP RAP
EST 235 TONS
EST 409 SY GEO
EST 356 CY DDE

SEE DETAIL CC
STANDARD 4' BASE CHANNEL
W/EMBEDDED CL 'I' RIP RAP
EST 50 TONS
LENGTH=20'

END FENCE
SEE DETAIL CC
STANDARD 4' BASE CHANNEL
W/EMBEDDED CL 'I' RIP RAP
EST 50 TONS
LENGTH=20'

CL B RIP RAP
EST 5 TONS
EST 14 SY GEO

SPECIAL DITCH GRADE
SEE PROFILE

15" RCP CL III

78" CSP 10 GAGE W/3 ROWS 2 2/3" x 1/2" CORRUGATIONS

12' P.S.

4' P.S.

60' INC TYP.

30' INC TYP.

300' TAPER

8:1 TAPER

CAT-1

W/ELBOWS

GRADE TO DRAIN

PDE

FS

HW

EIP

PAVED SHOULDER

NOTE:

FOR -L- PROFILE, SEE SHEET 18
FOR -YIRPD- PROFILE, SEE SHEET 27
FOR -SRSA- PROFILE, SEE SHEET 33

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PROJECT REFERENCE NO.	SHEET NO.
U-2579C	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

RIGHT OF WAY REVISION 5/3/17 - REVISED C/A FROM -L- STA.436+00.00 TO STA.440+00.00 RT. ON PARCELS 932 AND 977; ADDED R/W ON PARCELS 55,922,932,977, AND 978; ADDED TCE ON PARCELS 55 AND 932; ADDED PDE ON PARCEL 55.JMB

8/17/99

FARRELL B. & MARILYN E. BYERS
DB 1658 PG 3455
57

FARRELL B. & MARILYN BYERS
DB 1242 PG 1262

FARRELL B. & MARILYN BYERS
DB 1346 PG 1549

ROGER J. & TIFFANY M. SKIDMORE
DB 2253 PG 3971
92

LEE ANN HOLDER & JEFFREY H. HOLDER, JR.
DB 2264 PG 2181

NCDOT
DB 2864 PG 2268
980

NCDOT
DB 2833 PG 4341
978

NCDOT
DB 2718 PG 2509
932

NCDOT
DB 2817 PG 528
977

NCDOT
DB 2691PG 4240
922

50' PIEDMONT NATURAL GAS EASEMENT
10" STEEL
48" WW
SOD ACCESS EASEMENT
20' ACCESS EASEMENT
S 87°45'37" E 260.72'
S 87°48'43" E 677.58'
S 87°45'37" E 319.51'
S 87°44'30" E 121.20'
S 87°40'02" E 72.42'
S 87°48'43" E 368.00'
S 87°59' 267.5'
N 14°59'40" E 162.73'
N 15°11'51" E 177.37'
N 88°47'40" W 289.80'
S 89°46'01" E 206.02'
S 88°39'36" E 519.58'
S 88°42'30" E 361.00'
N 85°17'38" E 436.13'
S 00°55'53" W 101.76'
S 88°42'50" E 186.55'
N 72° 45' 16.9" W
-YIRPD-
-SRSA-
-L-
MATCHLINE -L- STA. 427+50.00 SHEET 7
MATCHLINE -L- STA. 440+50.00 SHEET 9
430 -L-
435 -L-
440 -L-
15 -SRSA-
20 -SRSA-
25 -SRSA-
SEE DETAIL M
LATERAL 3' BASE DITCH
W/CL I RIP RAP
EST 465 TONS
EST 811 SY GEO
EST 950 CY DDE
SEE DETAIL DD
CONSTRUCTED RIFFLE
CL B RIP RAP
EST 2 TONS
EST 7 SY GEO
SEE DETAIL T
STD. 2' BASE DITCH
W/CL B RIP RAP
EST 44 TONS
EST 115 SY GEO
EST 29 CY DDE
+50.00 -L-
200.00'
PROP. WW FENCE
SPECIAL
DITCH GRADE
SEE PROFILE
SEE DETAIL K
SPECIAL CUT DITCH
DRAIN POND
12" P.S.
14" P.S.
BEGIN SHOULDER BERM GUTTER
-L- STA. 436+50 LT.
8:1 TAPER
CAT-1
GRAU 350 TL-3
GRAU 350 TL-2 (TYP.)
18" W/ELBOWS
1' SILL
SEE DETAIL II
END FENCE
TIE TO WING WALL
REMOVE PIPES
42" RCP-IV
24" RCP-IV
36" RCP-IV
SEE DETAIL E
TOE PROTECTION
W/CL B RIP RAP
EST 46 TONS
EST 124 SY GEO
CL I RIP RAP
EST 2 TONS
EST 8 SY GEO
CL I RIP RAP
EST 20 TONS
EST 39 SY GEO
+00.00 -YIRPD-
141.00
-YIRPD- POT Sta. 10+00.00 =
-L- POC Sta. 430+49.79
(59.00' RT.)
+27.64 -SRSA-
40.00'
-SRSA- PRC Sta. 12+27.64
CL B RIP RAP
EST 3 TONS
EST 10 SY GEO
CL B RIP RAP
EST 11 TONS
EST 28 SY GEO
CL B RIP RAP
EST 3 TONS
EST 10 SY GEO
SEE DETAIL W
FALSE SUMP
TOP EL=925.0
+00.00 -SRSA-
40.00'
50.00'
+45.00 -L-
200.00'
+90.00 -SRSA-
40.00'
70.00'
+40.00 -SRSA-
40.00'
50.00'
70.00'
SEE DETAIL Y
LINE ROADWAY DITCH
W/CL B RIP RAP
EST 196 TONS
EST 582 GEO
SEE DETAIL Z
SPECIAL LAT 'V' DITCH
W/CL B RIP RAP
EST 104 TONS
EST 306 GEO
SEE DETAIL O
STANDARD 8' BASE DITCH
W/EMBEDDED CL 'I' RIP RAP
EST 40 TONS
SEE DETAIL H
CL II RIP RAP
ON BANKS ONLY
EST 45 TONS
LENGTH=25'
SEE DETAIL Y
LINE ROADWAY DITCH
W/CL B RIP RAP
EST 438 TONS
EST 1308 GEO
SEE DETAIL Z
SPECIAL LAT 'V' DITCH
W/CL B RIP RAP
EST 169 TONS
EST 503 GEO
SEE DETAIL D
LATERAL 2' BASE DITCH
W/CL B RIP RAP
EST 292 TONS
EST 768 SY GEO
EST 1,309 CY DDE
95" X 67" CSPA
W/ 3" X 1" COURRGATIONS
BURIED 1.0'
300' TAPER
900' FULL LANE
PROP. WW FENCE
GRAU 350 TL-2 (TYP.)
SEE DETAIL II
+15.00 -L-
200.00'
PAVED SHOULDER

Pls Sta 419+61.31
Θs = 1° 52' 13.3"
Ls = 300.00'
LT = 200.01'
ST = 100.01'

Pl Sta 431+38.42
Δ = 26° 23' 06.6" (LT)
D = 1° 14' 48.9"
L = 2,116.03'
T = 1,077.12'
R = 4,595.00'
SE = 05
RO = SEE PLANS

Pls Sta 442+77.35
Θs = 1° 52' 13.3"
Ls = 300.00'
LT = 200.01'
ST = 100.01'

Pl Sta 20+16.78
Δ = 18° 35' 05.3" (LT)
D = 1° 11' 16.7"
L = 1,564.42'
T = 789.14'
R = 4,823.00'
SE = NC
RO = 0

NOTE:
FOR -L- PROFILE, SEE SHEET 18
FOR -YIRPD- PROFILE, SEE SHEET 27
FOR -SRSA- PROFILE, SEE SHEET 33

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PROJECT REFERENCE NO.	SHEET NO.
U-2579C	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

RIGHT OF WAY REVISION 12/2/16 - ADDED PARCEL 057A (MICHAEL WESTMORELAND) ABOVE PROPERTY LINE OF PARCEL 57 (FERRELL) ON INSET. JMB
RIGHT OF WAY REVISION 5/3/17 - REMOVED REFERENCE TO PARCEL 54 BECAUSE IT IS A TRACT OF PARCEL 55; ADDED R/W ON PARCELS 933, 975, AND 977;
REVISED R/W ON PARCEL 55; REMOVED PUE AND REVISED TCE ON PARCEL 55; ADDED TCE ON PARCEL 60. JMB

FARRELL B. & MARILYN E. BYERS DB 1267 PG 1521

ROGER J. & TIFFANY M. SKIDMORE DB 2253 PG 3971

NCDOT DB 2700 PG 2276

LEE ANN HOLDER & JEFFREY H. HOLDER, JR. DB 2264 PG 2181

NCDOT DB 2864 PG 2268

NCDOT DB 2646 PG 1510

NCDOT DB 2686 PG 2979

NCDOT DB 2756 PG 3561

DALE C. & CATHY S. VANHOY DB 1271 PG 2039

NCDOT DB 2756 PG 4310

NCDOT DB 2664 PG 1842

NCDOT DB 2817 PG 528

SHERRELL D. & LELA L. WHICKER DB 865 PG 331

SHERRELL D. & LELA L. WHICKER DB 848 PG 442

MICHAEL W. WESTMORELAND DB 2703 PG 2866

MICHAEL W. WESTMORELAND & WADE WESTMORELAND DB 2302 PG 3132

MICHAEL W. & ALICE R.H. WESTMORELAND DB 1199 PG 1660

MICHAEL W. WESTMORELAND & WADE WESTMORELAND DB 1714 PG 1517

MATCHLINE -L- STA. 440+50.00 SHEET 8

MATCHLINE -L- STA. 453+50.00 SHEET 10

MATCHLINE -Y2- STA. 26+90.00

MATCHLINE -Y2- STA. 17+00.00 SHEET 14

END GRADE
BEGIN OVERLAY
-Y2- POT STA. 26+50.00

-Y2DET- POT Sta. 28+44.94

END OVERLAY
END CONSTRUCTION
-Y2- POT STA. 28+00.00

-Y2DET- PT Sta. 28+03.31

-Y2DET- PRC Sta. 25+52.48

END APPROACH SLAB
-Y2- POT STA. 22+54.43

END BRIDGE
-Y2- POT STA. 22+40.27

-L- ST Sta. 444+77.34

-L- CS Sta. 441+77.34

END W.W. FENCE TIE TO BRIDGE
-Y2- POT STA. 21+27.27
-L- POT STA. 447+07.91
SKEW = 98° 49' 32.3"

-Y2DET- PC Sta. 23+01.66

-Y2DET- POT STA. 21+63.58 =
-L- POT STA. 448+25.17

-Y2DET- PT Sta. 20+01.66

BEGIN BRIDGE
-Y2- POT STA. 20+18.52

BEGIN APPROACH SLAB
-Y2- POT STA. 20+04.36

-SRSA- POT STA. 31+76.80 =
-Y2- POT STA. 18+10.00

-Y2DET- PRC Sta. 17+50.83

-L- TS Sta. 448+86.48

-L- SC Sta. 453+06.48

-SRSA- PT Sta. 27+92.06

-SRSA- PC Sta. 28+97.00

-SRSA- PT Sta. 30+16.68

-SRSA- PC Sta. 30+69.75

-SRSA- PT Sta. 31+25.60

-SRSA-

PI Sta 29+58.69
Δ = 34° 17' 09.8" (RT)
D = 28° 38' 52.4"
L = 119.68'
T = 61.69'
R = 200.00'
SE = RC
RO = SEE PLANS

PI Sta 30+98.42
Δ = 32° 00' 00.0" (LT)
D = 57° 17' 44.8"
L = 55.85'
T = 28.67'
R = 100.00'
SE = NC

-Y2DET-

PI Sta 18+78.61	PI Sta 24+29.44	PI Sta 26+80.26
Δ = 26° 57' 47.4" (LT)	Δ = 26° 57' 47.3" (LT)	Δ = 26° 57' 47.3" (RT)
D = 10° 44' 58.8"	D = 10° 44' 58.8"	D = 10° 44' 58.8"
L = 250.83'	L = 250.83'	L = 250.83'
T = 127.78'	T = 127.78'	T = 127.78'
R = 533.00'	R = 533.00'	R = 533.00'
SE = 04	SE = 04	SE = RC
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

PAVED SHOULDER

NOTE:
FOR -L- PROFILE, SEE SHEET 18 & 19
FOR BRIDGE SKETCH, SEE SHEET 2B-1
FOR -Y2- PROFILE, SEE SHEET 29
FOR -Y2DET- PLAN, SEE SHEET 2B-7
FOR -Y2DET- PROFILE, SEE SHEET 31
FOR -SRSA- PROFILE, SEE SHEET 33

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mcollins
Roadway Design
Plan Sheet

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

PIs Sta 451+66.55
Θs = 4° 11' 32.5"
Ls = 420.00'
LT = 280.08'
ST = 140.07'

PI Sta 458+53.53
Δ = 21° 35' 01.1" (RT)
D = 1° 59' 46.9"
L = 1,081.14'
T = 547.06'
R = 2,870.00'
SE = 07
RO = SEE PLANS

PIs Sta 465+27.69
Θs = 4° 11' 32.5"
Ls = 420.00'
LT = 280.08'
ST = 140.07'

-L- 455

-L- 460

-L- 465

+00.00 -L-
280.00'

+00.00 -L-
240.00'

+87.62 -L-
200.00'

SEE DETAIL AA
BERM DITCH W/CL B RIP RAP
EST 46 TONS
EST 130 SY GEO

DAYLIGHT DITCH

PROP. WW FENCE

MICHAEL W. WESTMORELAND &
WADE WESTMORELAND
DB 2302 PG 3132

60

CHORD

MATCHLINE -L- STA. 453+50.00 SHEET 9

MATCHLINE -L- STA. 465+50.00 SHEET 11

1001 2GI FS

1002 2GI FS

1003 2GI-A FS

1004 2GI FS

1005 2GI FS

1006 2GI-A FS

1007 2GI FS

1008 2GI FS

1009 2GI-A FS

12'P.S.

15" RCP-IV

24" RCP-III

30" RCP-III

GRAU 350 TL-3

CAT-1

BL-21

36'

46'

10'

50%

60' INC TYP.

+87.62

-L- CS Sta. 463+87.62

+00.00 -L-
250.00'

+87.62 -L-
227.48'

MICHAEL W. WESTMORELAND &
WADE WESTMORELAND
DB 2302 PG 3132

60

N 89°26'50" E
100.00'

N 89°26'50" E
60.00'

POOL

ISBKD

S

PAVED SHOULDER

NOTE:
FOR -L- PROFILE, SEE SHEET 19

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS 8/17/99

MATCHLINE –L– STA. 465+50.00 SHEET 10

60 MICHAEL WADE WESTMORELAND DB 2302 PG 3132

60 MICHAEL W. WESTMORELAND DB 2302 PG 3132

61 FREDERICO B. MORETZ SUSAN K. MORETZ DB 1655 PG 1225

JANE WHICKER & DAN WESTMORELAND DB 2226 PG 1302 DB 2124 PG 2239 DB 107 PG 246 DB 573 PG 367

TOWN OF WALKERTOWN FORSYTH COUNTY

BEGIN APPROACH SLAB –L– POT STA. 472+12.15 LT.

BEGIN BRIDGE –L– POT STA. 472+36.29 LT. –L– POT STA. 472+48.61 RT.

END TIP PROJECT U-2579C
BEGIN TIP PROJECT U-2579B
–L– POT STA. 478+00.00

–L– ST Sta. 468+07.62

CHORD 47" W.W. FENCE

+07.62 –L– 200.00'

+80.00 –L– 200.00'

+78.00 –L– 200.00'

+03.00 –L– 158.00'

47" W.W. FENCE

CLASS "II" RIP RAP (STRUCTURE PAY ITEM)

END 47" W.W. FENCE TIE TO BRIDGE

+70.00 –L– 200.00'

SEE DETAIL JJ CL 'B' RIP RAP EST 20 TONS EST 25 SY GEO

END PROPOSED R/W TIE TO EXISTING R/W TIP PROJECT U-2579B +25.90 –L– 200.00'

CLASS "II" RIP RAP (STRUCTURE PAY ITEM)

BEGIN 47" W.W. FENCE TIE TO BRIDGE

+28.00 –L– 200.00'

BEGIN SHOULDER BERM GUTTER –L– STA. 475+00 LT.

END APPROACH SLAB –L– POT STA. 475+18.83 LT.

END PROPOSED W.W. FENCE TIE TO EXISTING FENCE TIP PROJECT U-2579B +00.00 –L– 200.00'

EXIST. R/W 47" W.W. FENCE

SEE DETAIL E TOE PROTECTION W/CL B RIP RAP EST 54 TONS EST 146 SY GEO

SEE TIP PROJECT U-2579B FOR RIGHT OF WAY PURCHASED UNDER PROJECT U-2579B

END SHOULDER BERM GUTTER –L– STA 477+56 LT

SEE DETAIL K SPECIAL CUT DITCH

60' INC. TYP.

300' TAPER

12" P.S.

CAT-1

TYPE B-77

1284' FULL LANE

50:1 TAPER

25' INC. TYP.

14" P.S.

EXIST. BDO

EXIST. 18" CSP W/ELBOW

EXIST. 2GI

GRAU 350 TL-3

8:1 TAPER

15" RCP-IV

15" RCP-III

18" RCP-III

36" RCP-III

60" RCP-IV

EXIST. 24"

EXIST. 42"

EXIST. 2GI-A

2GI

2GI-A

FS

BL-20

+27.62

+40.00

+38.34 162.67'

+66.38 236.88'

1153' FULL LANE

END SHOULDER BERM GUTTER –L– STA 477+50 RT

SEE TIP PROJECT U-2579B FOR RIGHT OF WAY PURCHASED UNDER PROJECT U-2579B

JB w/MH

GRADE = 0.50%

SEE DETAIL KK ENERGY DISSIPATOR

SEE DETAIL S STD. 3' BASE DITCH W/CL I RIP RAP EST 111 TONS EST 194 SY GEO EST 60 CY DDE

SEE DETAIL X BANK STABILIZATION CL II RIP RAP EST 20 TONS EST 39 SY GEO

Existing Energy Dissipator Basin

PDE EXIST

END PROPOSED W.W. FENCE TIE TO EXISTING FENCE TIP PROJECT U-2579B +00.00 –L– 200.00'

BEGIN SHOULDER BERM GUTTER –L– STA 475+43 RT.

+50.00 –L– 200.00'

JANE WHICKER & DAN WESTMORELAND DB 2226 PG 1302 DB 2124 PG 2239 DB 107 PG 246 DB 573 PG 367

JANE WHICKER DAN WESTMORELAND DB 2226 PG 1302 DB 2124 PG 2239 DB 107 PG 246 DB 573 PG 367

END 47" W.W. FENCE TIE TO BRIDGE

+25.00 –L– 200.00'

BEGIN APPROACH SLAB –L– POT STA. 472+24.47 RT.

END BRIDGE –L– POT STA. 474+91.29 LT. –L– POT STA. 475+03.61 RT.

BEGIN 47" W.W. FENCE TIE TO BRIDGE

END APPROACH SLAB –L– POT STA. 475+27.75 RT.

END PROPOSED R/W TIE TO EXISTING R/W TIP PROJECT U-2579B +63.40 –L– 200.00'

MICHAEL W. WESTMORELAND DB 2302 PG 3132

+07.62 –L– 200.00'

47" W.W. FENCE

63 KIM C. STREETMAN DB 1891PG 1253

62 BETH C. DELFOSSE DB 1891PG 1249

BETH C. DELFOSSE DB 2633 PG 276

48" CMP

36" CMP

WD DK

CONC

OVHD

60.00'

WALKERTOWN CITY LIMITS

CORPORATE LIMITS OF TOWN OF WALKERTOWN

WENDY C. SLOAN DB 1891PG 1257

LOUISE FRANKLIN DB 843 PG 125

TOWN OF WALKERTOWN FORSYTH COUNTY

ACCESS EASEMENT DB 1891PG 1253

230.24'

139.98'

148.29'

182.92'

93.63'

S 89°07'09" E

S 87°39'45" W

N 89°38'14" E 115.07'

N 89°34'13" E 80.19'

N 89°23'04" E 158.12'

N 89°17'31" E 335.95'

S 01°21'44" W 225.52'

N 26°27'46" E 182.92'

N 84°26'57" E 324.83'

S 56° 42' 58.7" E

PAVED SHOULDER

DECK DRAINS REQUIRED
6" X 6" SLOTS ON 12' CENTERS
FROM STA. 472+50 TO STA. 473+18 RT.
AND STA. 474+29 TO STA. 475+13 RT. –L– EBL
FROM STA. 472+26 TO STA. 472+74 LT.
AND STA. 473+85 TO STA. 474+69 LT. –L– WBL

NOTE:
FOR –L– PROFILE, SEE SHEETS 19 & 20
FOR BRIDGE SKETCH, SEE SHEET 2B-2
FOR DRAINAGE DETAILS, SEE SHEETS 2D-1 TO 2D-4
FOR STRUCTURE PLANS, SEE SHEETS S3-1 TO S3-?
FOR STRUCTURE PLANS, SEE SHEETS S4-1 TO S4-?

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PROJECT REFERENCE NO.	SHEET NO.
U-2579C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99 RIGHT OF WAY REVISION 5/3/17 - REVISED TCE ON PARCEL 67; ADDED TCE ON PARCEL 68. JWB

MORINGSTAR BAPTIST CHURCH
DB 3125 PG 1557

WAX & WANE LLC
DB 3074 PG 1113

TERESA G. BROTHERON
DB 2859 PG 3563

DB 1629 PG 625
THURMAN & WANDA SPAINHOUR

CURTIS LEE PARKER
DB 2999 PG 1406

DB 2638 PG 2460
DARYL L. & SHERRY L. MATHERLY

DONALD G. & SALLY T. BARNEYCASTLE
DB 1162 PG 997

DOUGLAS E. & CYNTHIA DONLEY
DB 1880 PG 2609
DB 1299 PG 1547

CHARONA
A.T. REMILLARD
DB 1897 PG 2333

DONNA B. DECKER
DB 3208 PG 3263

71 THURMAN & WANDA SPAINHOUR
DB 2155 PG 561
DB 1666 PG 1448
DB 1512 PG 791
DB 1344 PG 1234

72 PAT R. & KAREN D. FULP
DB 2525 PG 1402

911 NCDOT
DB 2651PG 1090

70

-Y1- PC Sta. 10+36.64
S 68° 21' 47.0" E

-Y1- POT Sta.15+56.95
-DR3- Sta.10+00.00

END C/A
END W.W. FENCE
+56.76 -Y1-
68.65'

PROP. WW FENCE

300' DITCH TRANSITION LT.
SEE -Y1- CROSS SECTIONS

+00.00 -Y1-
65.00'
EXIST. R/W

SEE DETAIL K
SPECIAL CUT DITCH

+03.94 -Y1-
EXIST. R/W

25' INC TYP.

EXISTING R/W

REMOVE

FLOWABLE FILL

PLUG GRAU 350 TL-3

REMOVE

BEGIN +21.65

4'P.S.

REMOVE

N 20° 00' 53.3" E

-Y1- POT Sta. 10+00.00

50' TAPER TO EXIST

GRAU 350 TL-3

4'P.S.

100' TAPER

330' FULL LANE

MATCHLINE -Y1- STA. 20+00.00 SHEET 6

END C/A
BEGIN W.W. FENCE
+08.31 -Y1-
44.71'

PROP. WW FENCE

525' TRANSITION LT & RT.

+24.80 -Y1-
85.69'

+05.00 -Y1-
85.06'

+35.00 -Y1-
142.00'

+75.00 -Y1-
90.00'

DARREL C. & MYRNA C. THROCKMORTON
DB 1348 PG 579

BEGIN CONSTRUCTION
-Y1- POT STA. 10+75.00

+50.00 -Y1-
EXIST. R/W
70.00'

-Y1- PC Sta. 12+95.90

+00.00 -Y1-
70.00'

+80.00 -Y1-
80.11'

-Y1- POT Sta.15+17.08
-DR2- Sta.10+00.00

+04.00 -Y1-
134.00'

-DR3- PT Sta. 10+59.27

CLARENCE SELL
DB 990 PG 188

CL B RIP RAP
EST 5 TONS
EST 14 SY GEO

64 BONNIE S. PEDDYCORD & KIMBERLY I.
DB 1790 PG 704

65

CLARENCE SELL
DB 478 PG 273

S 82° 37' 32.7" E
END CONSTRUCTION
-DR2- Sta.12+10.00

-DR2- POT Sta. 12+15.17

+57.00 -Y1-
219.00'

+91.00 -Y1-
212.00'

66 NANCY S. McGLAMERY
DB 1000 PG 268

N 85° 42' 04.5" E
-DR3- POT Sta. 12+23.22

+83.00 -Y1-
165.81'

END C/A
END CONSTRUCTION
-DR3- Sta.11+50.00

(MARIE W. & WILLIAM F. MOTSINGER)
VICKY MOTSINGER COMBS
DB 2290 PG 4000

69

CL B RIP RAP
EST 2 TONS
EST 7 SY GEO

37 MATTHEW D. & TANGELA J. McKINNEY
DB 2275 PG 5582

JUDY W. HAYES
DB 2018 PG 664

68

MICHAEL L. & KEELY H. GREER
DB 2057 PG 3051

67

RAINBOW TABERNACLE OF FAITH MINISTRIES, INC
DB 2356 PG 2609

JUDSON S. & JESSICA L. MCDONALD
DB 3165 PG 164
DB 862 PG 70
DB 1402 PG 171(EXCEPTION)

KELLY H. GREER
DB 3072 PG 3128

ROBERT L. & RUTHERFORD JOHNSON
DB 1366 PG 392

-DR3-
PI Sta 10+48.15
Δ = 25° 56' 08.0" (LT)
D = 114° 35' 29.6"
L = 22.63'
T = 11.51'
R = 50.00'
SE = NC

PAVED SHOULDER

PROP. CONCRETE 5" MONOLITHIC ISLAND

NOTE:
FOR -Y1- PROFILE, SEE SHEET 22
FOR -DR2- PROFILE, SEE SHEET 32
FOR -DR3- PROFILE, SEE SHEET 33

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PROJECT REFERENCE NO.	SHEET NO.
U-2579C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

8/17/99

RIGHT OF WAY REVISION 7/26/2016 - COMBINED PARCELS 74, 75, AND 76 INTO ONE PARCEL 76. ADDED OWNER NAME TO PARCEL EAST OF PARCEL 79. JMB

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ROBERT B. STIMPSON
DB 1782 PG 7

JOHN A. & MARGARET G. FOLK
DB 2249 PG 351

JOHN H. VANHOY
DB 2204 PG 4472

JOHN H. VANHOY
DB 1648 PG 2308

DONALD G. & GEORGIA B. BARNEYCASTLE
DB 433 PG 181
DB 885 PG 543

H.V. & BETTY C. JENKINS & JILES CARDWELL
DB 1035 PG 40

FERRELL CONSTRUCTION COMPANY
DB 1987 PG 3120

LINDA F. OVERBY CHURCH
DB 1732 PG 751

CHRISTOPHER R. ROTHROCK
DB 2297 PG 3701

DB 1704 PG 979
YVONNE SWAIM KILBOURNE

R. KEITH ROTHROCK
DB 2132 PG 502

DURA H. DAVIS
DB 1144 PG 695

FORSYTH COUNTY
WALKERTOWN CITY LIMITS

-YIDET- PRC Sta. 29+50.71

-YIDET- PT Sta. 33+97.69

-YIDET- POT Sta. 34+26.59

-Y1- POT Sta. 50+01.83

-Y1- PT Sta. 48+58.29

END CONSTRUCTION
-Y1- PT STA. 48+50.00

MATCHLINE -Y1- STA. 39+50.00 SHEET 6

SEE DETAIL AA
DITCH W/CL B RIP RAP
EST 161 TONS
EST 454 SY GEO

SEE DETAIL R
SPEC LAT 2' BASE DITCH
W/CL 'I' RIP RAP
EST 701 TONS
EST 1240 SY GEO

SEE DETAIL N
SPEC LAT 'V' DITCH

CL B RIP RAP
EST 2 TONS
EST 7 SY GEO

CL 'I' RIP RAP
EST 15 TONS
EST 30 SY GEO

PROP. WW FENCE

42" RCP-III

15" RCP-IV

12" RCP

JB w/MH

FLOWABLE FILL

PLUG

C/L BM #2
U2549C-4 TO BM 2
S 3°40'54" E 5'
ELEV. 985.60

N 42° 10' 42.9" E

N 42° 14' 04.0" E

US 311 24' EOST

S 88°33'49" E
237.90'

S 88°52'39" E
334.60'

S 54°27'28" E 90.52'

S 48°19'50" E
239.04'

N 00°00'10" E
90.51'

N 62°43'08" W
74.38'

S 62°21'34" W
220.49'

N 04°46'25" W
138.80'

N 00°50'25" W
137.20'

S 47°30'25" E
392.58'

S 47°30'25" E
200.00'

S 47°23'23" E
398.59'

S 43°24'35" W

S 41°41'45" E

YIDET -

PI Sta 25+97.68	PI Sta 31+74.91
Δ = 17° 43' 55.5" (RT)	Δ = 11° 08' 04.5" (LT)
D = 2° 29' 28.0"	D = 2° 29' 28.0"
L = 711.81'	L = 446.97'
T = 358.77'	T = 224.19'
R = 2,300.00'	R = 2,300.00'
SE = 02	SE = 02
RO = SEE PLANS	RO = SEE PLANS

PAVED SHOULDER

PROP. CONCRETE 5" MONOLITHIC ISLAND

NOTE:
FOR -Y1- PROFILE, SEE SHEET 23
FOR -YIDET- PROFILE, SEE SHEET 30
FOR -YIDET- PLAN, SEE SHEET 2B-5 & 2B-6

PROJECT REFERENCE NO.	SHEET NO.
U-2579C	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99 RIGHT OF WAY REVISION 5/3/17 - ADDED TCE ON PARCEL 60. JMB
RIGHT OF WAY REVISION 5/8/17 - REVISED PUE ON PARCEL 84. JMB

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BEGIN CONSTRUCTION
-Y2- POT STA. 8+93.00

-Y2- POT Sta. 8+50.00

SR 2381 WILLISTON RD 22' BST

84 LEWIS W. & ETHEL C. IDOL
DB 2083 PG 3888
DB 1592 PG 1794

85 THOMAS J. MARTIN & RONDA L. MARTIN
DB 2083 PG 3877

86 EARL W., III & C. LORRAINE KEARNS
DB 2146 PG 2544

87 JULIA L. POWELL
DB 2272 PG 3883

88 JERRY B. LEWIS & DENNIS LEWIS
DB 2235 PG 969

55 SHERRELL D. & LELA L. WHICKER
DB 848 PG 442

89 MICAH W. WOLFINGTON
DB 2163 PG 2085

90 DAVID M. EWALD
DB 1951 PG 2705

91 CHESTER D. STULTZ
DB 2048 PG 574

93 NEIL R. WESTMORELAND
DB 2782 PG 2236
PB 53 PG 32

60 MICHAEL W. WESTMORELAND & WADE WESTMORELAND
DB 2302 PG 3132

-Y2DET- PC Sta. 15+00.00

MATCHLINE -Y2- STA. 17+00.00 SHEET 9

-Y2DET-
PI Sta 16+27.78
Δ = 26° 57' 47.4" (RT)
D = 10° 44' 58.8"
L = 250.83'
T = 127.78'
R = 533.00'
SE = RC

PAVED SHOULDER

NOTE:
FOR -Y2- PROFILE, SEE SHEET 29
FOR -Y2DET- PLAN, SEE SHEET 2B-7
FOR -Y2DET- PROFILE, SEE SHEET 31