



PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

November 15, 2016

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587

ATTN: Mr. David Bailey
NCDOT Division 7 Project Coordinator

SUBJECT: **Application for Section 404 Nationwide Permit No. 3, Section 401 Water Quality Certification, and Jordan Lake Riparian Buffer Certification** for the replacement of Bridge No. 456 over Brush Creek on SR 2136 (Fleming Road), Division 7, Guilford County, North Carolina. Federal Aid Project No. BRSTP – 2136 (5), TIP Project No. B-5345.

Debit \$240.00 from WBS 46059.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 456 over Brush Creek on SR 2136 (Fleming Road) in Guilford County. The project will consist of replacing the existing three-span, 75-foot structure with a one-span, 85-foot structure on the existing alignment. An on-site detour will be employed.

Proposed stream and wetland impacts on the L-line of the project include 52 linear feet (ft.) of temporary stream impacts due to causeway placement; 21 linear ft. of permanent impacts and 10 linear ft. of temporary impacts due to bank stabilization; and 0.01 ac. of mechanized clearing in wetlands. Proposed stream and wetland impacts associated with the on-site detour include 16 linear ft. of permanent impacts and 10 linear ft. of temporary impacts due to bank stabilization; 0.18 ac. of permanent fill in wetlands; and 0.04 ac. of mechanized clearing in wetlands.

Proposed buffer impacts include Bridge impacts totaling 5,387 square ft. in Zone 1 and 1,203 square ft. in Zone 2; Road Crossing impacts totaling 1,902 square ft. in Zone 1 and 3,008 square ft. in Zone 2; and Impacts Other Than Road Crossings totaling 263 square ft. in Zone 1.

Please find enclosed the Pre-Construction Notification; N.C. Division of Mitigation Services (DMS) mitigation acceptance letter; Permittee Responsible Mitigation Plan to offset mitigable permanent wetland impacts; Stormwater Management Plan; permit drawings; buffer drawings; and roadway plans for the subject project. A Categorical Exclusion (CE) was completed for this project in November 2015.



The proposed let date for this project is June 20, 2017, with a let review date of May 2, 2017. However, the let date may advance as additional funds become available.

A copy of this permit application will be posted on the NCDOT Website at <https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx>, under *Quick Links > Permit Applications*. A copy of the CE is also available at the above website address under *Quick Links > Environmental Documents*. Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jim Mason at either jsmason@ncdot.gov or (919) 707-6136.

Sincerely,



for

Philip S. Harris III, P.E., C.P.M.
Natural Environment Section Head

cc:
NCDOT Permit Application Standard Distribution List



Office Use Only:
 Corps action ID no. _____
 DWQ project no. _____
 Form Version 1.4 January 2009

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

| | | |
|--|---|--|
| 1a. Type(s) of approval sought from the Corps: | <input checked="" type="checkbox"/> Section 404 Permit | <input type="checkbox"/> Section 10 Permit |
| 1b. Specify Nationwide Permit (NWP) number: 3 or General Permit (GP) number: | | |
| 1c. Has the NWP or GP number been verified by the Corps? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 1d. Type(s) of approval sought from the DWQ (check all that apply): | | |
| <input checked="" type="checkbox"/> 401 Water Quality Certification – Regular <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input checked="" type="checkbox"/> Riparian Buffer Authorization | | |
| 1e. Is this notification solely for the record because written approval is not required? | For the record only for DWQ 401 Certification: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | For the record only for Corps Permit: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program. | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below. | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

2. Project Information

| | |
|---|--|
| 2a. Name of project: | Replacement of Bridge No. 456 over Brush Creek on SR 2136 (Fleming Road) |
| 2b. County: | Guilford |
| 2c. Nearest municipality / town: | Greensboro |
| 2d. Subdivision name: | <i>not applicable</i> |
| 2e. NCDOT only, T.I.P. or state project no: | B-5345 |

3. Owner Information

| | |
|--|---|
| 3a. Name(s) on Recorded Deed: | North Carolina Department of Transportation |
| 3b. Deed Book and Page No. | <i>not applicable</i> |
| 3c. Responsible Party (for LLC if applicable): | <i>not applicable</i> |
| 3d. Street address: | 1598 Mail Service Center |
| 3e. City, state, zip: | Raleigh, NC 27699-1598 |
| 3f. Telephone no.: | (919) 707-6136 |
| 3g. Fax no.: | (919) 212-5785 |
| 3h. Email address: | jsmason@ncdot.gov |

| | |
|---|---|
| 4. Applicant Information (if different from owner) | |
| 4a. Applicant is: | <input type="checkbox"/> Agent <input type="checkbox"/> Other, specify: |
| 4b. Name: | <i>not applicable</i> |
| 4c. Business name (if applicable): | |
| 4d. Street address: | |
| 4e. City, state, zip: | |
| 4f. Telephone no.: | |
| 4g. Fax no.: | |
| 4h. Email address: | |
| 5. Agent/Consultant Information (if applicable) | |
| 5a. Name: | <i>not applicable</i> |
| 5b. Business name (if applicable): | |
| 5c. Street address: | |
| 5d. City, state, zip: | |
| 5e. Telephone no.: | |
| 5f. Fax no.: | |
| 5g. Email address: | |

| B. Project Information and Prior Project History | |
|---|--|
| 1. Property Identification | |
| 1a. Property identification no. (tax PIN or parcel ID): | <i>not applicable</i> |
| 1b. Site coordinates (in decimal degrees): | Latitude: 36.140239 (DD.DDDDDD) Longitude: - 79.913884 (-DD.DDDDDD) |
| 1c. Property size: | 2.17 acres |
| 2. Surface Waters | |
| 2a. Name of nearest body of water (stream, river, etc.) to proposed project: | Brush Creek |
| 2b. Water Quality Classification of nearest receiving water: | WS-III, NSW |
| 2c. River basin: | Cape Fear |
| 3. Project Description | |
| 3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Fleming Rd is classified as a Rural Major Collector in the Statewide Functional Classification System and is not a National Highway System Route. Land use within the vicinity primarily consists of forested land and medium density residential. | |
| 3b. List the total estimated acreage of all existing wetlands on the property: 0.23 acres | |
| 3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 213 linear feet (Brush Creek and a UT of Brush Creek [SB]) | |
| 3d. Explain the purpose of the proposed project: To replace a structurally deficient and functionally obsolete bridge | |
| 3e. Describe the overall project in detail, including the type of equipment to be used: The project will consist of replacing the existing three-span, 75-foot structure with a one-span, 85-foot structure on the existing alignment. An on-site detour will be employed. Standard road building equipment, such as trucks, dozers, and cranes will be used. | |
| 4. Jurisdictional Determinations | |
| 4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: Site visit on April 10, 2012 by Thomas Brown (USACE); no JD issued. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown |
| 4b. If the Corps made the jurisdictional determination, what type of determination was made? | <input type="checkbox"/> Preliminary <input type="checkbox"/> Final |
| 4c. If yes, who delineated the jurisdictional areas? Name (if known): Dwayne Huneycutt | Agency/Consultant Company: Michael Baker Engineering Other: |
| 4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. | |
| 5. Project History | |
| 5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown |
| 5b. If yes, explain in detail according to "help file" instructions. | |
| 6. Future Project Plans | |
| 6a. Is this a phased project? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 6b. If yes, explain. | |

| C. Proposed Impacts Inventory | | | | | |
|--|---------------------------------|---|--|---|----------------------------------|
| 1. Impacts Summary | | | | | |
| 1a. Which sections were completed below for your project (check all that apply): | | | | | |
| <input checked="" type="checkbox"/> Wetlands | | <input checked="" type="checkbox"/> Streams - tributaries | | <input checked="" type="checkbox"/> Buffers | |
| <input type="checkbox"/> Open Waters | | <input type="checkbox"/> Pond Construction | | | |
| 2. Wetland Impacts | | | | | |
| If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted. | | | | | |
| 2a. Wetland impact number – Permanent (P) or Temporary (T) | 2b. Type of impact | 2c. Type of wetland (if known) | 2d. Forested | 2e. Type of jurisdiction | 2f. Area of impact (acres) |
| Site 2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Perm. Fill (Wetland WD)I | Bottomland Hardwood Forest | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 0.08 |
| Site 2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Mech. Clearing (Wetland WD)I | Bottomland Hardwood Forest | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | <0.01 |
| Site 3 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Perm. Fill (Wetland WB)I | Bottomland Hardwood Forest | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 0.10 |
| Site 3 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Mech. Clearing (Wetland WB)I | Bottomland Hardwood Forest | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 0.03 |
| Site 4 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Mech. Clearing (Wetland WC)I | Bottomland Hardwood Forest | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 0.01 |
| Site 5 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Mech. Clearing (Wetland WA)I | Bottomland Hardwood Forest | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | <0.01 |
| 2g. Total wetland impacts | | | | | 0.23 ac Perm. 0 ac Temp. |
| 2h. Comments: Rounded totals are sum of actual impacts. Sites 2 and 3 are associated with the on-site detour. | | | | | |

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

| 3a. Stream impact number - Permanent (P) or Temporary (T) | 3b. Type of impact | 3c. Stream name | 3d. Perennial (PER) or intermittent (INT)? | 3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other) | 3f. Average stream width (feet) | 3g. Impact length (linear feet) |
|---|-----------------------------------|--------------------|---|---|------------------------------------|------------------------------------|
| Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T | Temp. Fill (Causeways #1 and #2) | Brush Creek | <input checked="" type="checkbox"/> PER <input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 25 | 52 |
| Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Bank Stabilization (DET.) | Brush Creek | <input checked="" type="checkbox"/> PER <input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 25 | 16 |
| Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T | Temp. Bank Stabil. Impacts (DET.) | Brush Creek | <input checked="" type="checkbox"/> PER <input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 25 | 10 |
| Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Bank Stabilization | Brush Creek | <input checked="" type="checkbox"/> PER <input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 25 | 21 |
| Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T | Temp. Bank Stabil. Impacts | Brush Creek | <input checked="" type="checkbox"/> PER <input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 25 | 10 |
| 3h. Total stream and tributary impacts | | | | | | 37 ft. Perm. 72 ft Temp. |

3i. Comments: Total area of temporary causeway impacts is 0.04 acres.

Causeway #1 blocks more than 50% of the channel. Therefore, 1 @ 30" temporary pipe to be installed with causeway to help convey the average daily flow.

Causeways #1 and #2 should not be in place at the same time. There is an overlap in impact area between the causeways. However, the Total Temporary Surface Water Impacts remain 0.04 acres due to the minimal overlap area.

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

| 4a. Open water impact number – Permanent (P) or Temporary (T) | 4b. Name of waterbody (if applicable) | 4c. Type of impact | 4d. Waterbody type | 4e. Area of impact (acres) |
|--|--|-----------------------|-----------------------|----------------------------------|
| <input type="checkbox"/> P <input type="checkbox"/> T | | | | |
| <input type="checkbox"/> P <input type="checkbox"/> T | | | | |
| <input type="checkbox"/> P <input type="checkbox"/> T | | | | |
| <input type="checkbox"/> P <input type="checkbox"/> T | | | | |
| 4f. Total open water impacts | | | | 0 ac Permanent 0 ac Temporary |

4g. Comments:

| 5. Pond or Lake Construction | | | | | | | | |
|---|--|---|--|---|---------------------------------------|--------|-----------|-----------------------|
| If pond or lake construction proposed, then complete the chart below. | | | | | | | | |
| 5a. Pond ID number | 5b. Proposed use or purpose of pond | 5c. Wetland Impacts (acres) | | | 5d. Stream Impacts (feet) | | | 5e. Upland (acres) |
| | | Flooded | Filled | Excavated | Flooded | Filled | Excavated | Flooded |
| P1 | | | | | | | | |
| P2 | | | | | | | | |
| 5f. Total | | | | | | | | |
| 5g. Comments: | | | | | | | | |
| 5h. Is a dam high hazard permit required? | | <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, permit ID no: | | | | | | |
| 5i. Expected pond surface area (acres): | | | | | | | | |
| 5j. Size of pond watershed (acres): | | | | | | | | |
| 5k. Method of construction: | | | | | | | | |
| 6. Buffer Impacts (for DWQ) | | | | | | | | |
| If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you MUST fill out Section D of this form. | | | | | | | | |
| 6a. Project is in which protected basin? | | | | <input type="checkbox"/> Neuse <input type="checkbox"/> Tar-Pamlico <input checked="" type="checkbox"/> Other: Jordan Lake <input type="checkbox"/> Catawba <input type="checkbox"/> Randleman | | | | |
| 6b. Buffer impact number – Permanent (P) or Temporary (T) | 6c. Reason for impact | 6d. Stream name | 6e. Buffer mitigation required? | 6f. Zone 1 impact (square feet) | 6g. Zone 2 impact (square feet) | | | |
| Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Bridge | Brush Creek | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 5,387 | 1,203 | | | |
| Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Road Crossing | Brush Creek | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 1,902 | 3,008 | | | |
| Site 2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T | Impacts Other Than Road Crossings | Brush Creek | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | 263 | 0 | | | |
| Site <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |
| Site <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |
| 6h. Total buffer impacts | | | | 7,552 | 4,211 | | | |
| 6i. Comments: For impacts associated with Site 1, there are Wetlands in Buffers totaling 155 square feet in Zone 1 and 0 square feet in Zone 2 within the Bridge buffer impacts. | | | | | | | | |
| For impacts associated with Site 1, there are Wetlands in Buffers totaling 158 square feet in Zone 1 and 1,862 square feet in Zone 2 within the Road Crossing buffer impacts. | | | | | | | | |
| For impacts associated with Site 2, there are 115 square feet of Wetlands in Buffers in Zone 1. The wetland impact supersedes the buffer impact and will be counted in the wetland mitigation. Therefore, only 148 square feet on Zone 1 impacts at Site 2 will be considered for mitigation. | | | | | | | | |

| | | |
|---|--|----------|
| D. Impact Justification and Mitigation | | |
| 1. Avoidance and Minimization | | |
| 1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. The proposed bridge is 10 feet longer than the existing bridge; Standard V ditches, Lateral V ditches, and Special Cut ditches will be employed on the detour for stormwater management; Lateral V ditches and a grassed swale will be employed on the L-line; bank stabilization will be installed where one of the V ditches ties into Brush Creek on the detour and where the grassed swale ties into the creek on the L-line to prevent scouring and erosion; no additional permanent fill will occur in Brush Creek. | | |
| 1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Due to the project's location within the Jordan Lake Watershed, Design Standards in Sensitive Watersheds will be employed; NCDOT Best Management Practices for Construction and Maintenance Activities and Best Management Practices for the Protection of Surface Waters will be employed. | | |
| 2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State | | |
| 2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, explain: | |
| 2b. If yes, mitigation is required by (check all that apply): | <input checked="" type="checkbox"/> DWQ <input checked="" type="checkbox"/> Corps | |
| 2c. If yes, which mitigation option will be used for this project? | <input type="checkbox"/> Mitigation bank <input checked="" type="checkbox"/> Payment to in-lieu fee program <input checked="" type="checkbox"/> Permittee Responsible Mitigation | |
| 3. Complete if Using a Mitigation Bank | | |
| 3a. Name of Mitigation Bank: not applicable | | |
| 3b. Credits Purchased (attach receipt and letter) | Type | Quantity |
| 3c. Comments: | | |
| 4. Complete if Making a Payment to In-lieu Fee Program | | |
| 4a. Approval letter from in-lieu fee program is attached. | <input checked="" type="checkbox"/> Yes | |
| 4b. Stream mitigation requested: | 0 linear feet | |
| 4c. If using stream mitigation, stream temperature: | <input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold | |
| 4d. Buffer mitigation requested (DWQ only): | For 148 square feet of Zone 1 impacts | |
| 4e. Riparian wetland mitigation requested: | For 0.23 acres | |
| 4f. Non-riparian wetland mitigation requested: | 0 acres | |
| 4g. Coastal (tidal) wetland mitigation requested: | 0 acres | |
| 4h. Comments: DMS letter covers the mitigation required for impacts to 148 square ft of Zone 1 buffers. | | |
| 5. Complete if Using a Permittee Responsible Mitigation Plan | | |
| 5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan. Please see the attached Permittee Responsible Mitigation Plan to offset impacts to 0.23 acres of riparian wetland impacts. | | |

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?

Yes No

6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.

| Zone | 6c. Reason for impact | 6d. Total impact (square feet) | Multiplier | 6e. Required mitigation (square feet) |
|--|-----------------------------------|--------------------------------------|-------------------|---|
| Zone 1 | Impacts Other Than Road Crossings | 148 | 3 (2 for Catawba) | 444 |
| Zone 2 | --- | 0 | 1.5 | 0 |
| 6f. Total buffer mitigation required: | | | | 444 |

6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).

Payment to in-lieu fee fund (DMS).

6h. Comments:

| E. Stormwater Management and Diffuse Flow Plan (required by DWQ) | |
|---|---|
| 1. Diffuse Flow Plan | |
| 1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: Please see attached permit drawings | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 2. Stormwater Management Plan | |
| 2a. What is the overall percent imperviousness of this project? | N/A |
| 2b. Does this project require a Stormwater Management Plan? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 2c. If this project DOES NOT require a Stormwater Management Plan, explain why: | |
| 2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: Please see attached permit drawings. | |
| 2e. Who will be responsible for the review of the Stormwater Management Plan? | <input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input checked="" type="checkbox"/> DWQ 401 Unit |
| 3. Certified Local Government Stormwater Review | |
| 3a. In which local government's jurisdiction is this project? | not applicable |
| 3b. Which of the following locally-implemented stormwater management programs apply (check all that apply): | <input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other: |
| 3c. Has the approved Stormwater Management Plan with proof of approval been attached? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 4. DWQ Stormwater Program Review | |
| 4a. Which of the following state-implemented stormwater management programs apply (check all that apply): | <input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other: |
| 4b. Has the approved Stormwater Management Plan with proof of approval been attached? | <input type="checkbox"/> Yes <input type="checkbox"/> No N/A |
| 5. DWQ 401 Unit Stormwater Review | |
| 5a. Does the Stormwater Management Plan meet the appropriate requirements? | <input type="checkbox"/> Yes <input type="checkbox"/> No N/A |
| 5b. Have all of the 401 Unit submittal requirements been met? | <input type="checkbox"/> Yes <input type="checkbox"/> No N/A |

| F. Supplementary Information | |
|--|--|
| 1. Environmental Documentation (DWQ Requirement) | |
| 1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 2. Violations (DWQ Requirement) | |
| 2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 2b. Is this an after-the-fact permit application? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s): | |
| 3. Cumulative Impacts (DWQ Requirement) | |
| 3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary. | |
| 4. Sewage Disposal (DWQ Requirement) | |
| 4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable | |

| | | |
|--|---|--|
| 5. Endangered Species and Designated Critical Habitat (Corps Requirement) | | |
| 5a. Will this project occur in or near an area with federally protected species or habitat? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 5b. Have you checked with the USFWS concerning Endangered Species Act impacts? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5c. If yes, indicate the USFWS Field Office you have contacted. | <input checked="" type="checkbox"/> Raleigh <input type="checkbox"/> Asheville | |
| 5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NC Natural Heritage Program data, USFWS website, NCDOT field surveys; No habitat present for small whorled pogonia; no impact to bald eagle; the northern long-eared bat (NLEB) is covered by the Programmatic Biological Opinion for Divisions 1 through 8. | | |
| 6. Essential Fish Habitat (Corps Requirement) | | |
| 6a. Will this project occur in or near an area designated as essential fish habitat? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index | | |
| 7. Historic or Prehistoric Cultural Resources (Corps Requirement) | | |
| 7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation | | |
| 8. Flood Zone Designation (Corps Requirement) | | |
| 8a. Will this project occur in a FEMA-designated 100-year floodplain? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA | | |
| 8c. What source(s) did you use to make the floodplain determination? FEMA Maps | | |
| for <u>Philip S. Harris III, P.E., C.P.M.</u> Applicant/Agent's Printed Name |  Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.) | 11-15-2016 Date |



PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

November 14, 2016

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

Dear Mr. Harris:

Subject: EEP Mitigation Acceptance Letter:

B-5345, Replace Bridge No. 456 over Brush Creek on SR 2136, Division 7,
Guilford County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the buffer mitigation for the subject project. Based on the information supplied by you on November 9, 2016, the buffer impacts are located in CUs 03030002 of the Cape Fear River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

| Stream and Wetlands | River Basin | CU Location | Eco-Region | Stream | | | Wetlands | | | Riparian Buffer | |
|---------------------|-------------|-------------|------------|--------|------|------|----------|--------------|---------------|-----------------|--------|
| | | | | Cold | Cool | Warm | Riparian | Non-Riparian | Coastal Marsh | Zone 1 | Zone 2 |
| Impacts | Cape Fear | 03030002 | CP | 0 | 0 | 0 | 0 | 0 | 0 | 148 | |

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWR's Buffer Authorization Certification, DMS will transfer funds from the NCDOT 2984 Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP Number B-5345. Subsequently, DMS will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program.

If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

Mr. Harris
October 14, 2016
Page Two
NCDOT B-5345

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,



James B. Stanfill
DMS Credit Management Supervisor

Cc: Mr. David Bailey, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NC Division of Water Resources
File: B-5345

Bryan Boulevard Mitigation Site
ONEID 041-006

The Bryan Boulevard Mitigation Site is located in Guilford County within the USGS hydrologic unit 03030002 of the Cape Fear River. NCDOT acquired the 23.93 acre site to mitigate for unavoidable, jurisdictional impacts associated with TIP U-0608. Monitoring requirements were performed from 1996 to 2000 and the site was closed out in 2003. Table 1 shows the final mitigation quantities approved for the site. The site has been placed on the NCDOT On-site Debit Ledger for use within HUC 03030002. Tables 2-4 indicate all mitigation debits that have occurred per regulatory agency approval.

In order to offset unavoidable impacts associated with B-5345, NCDOT will be debiting 0.23 acres of Riparian wetland restoration from the Bryan Blvd mitigation site.

Table 1. Mitigation Quantities Approved

| HUC | Mitigation Type | Starting Amount (Ac) | Additional Notes |
|---------|------------------------------------|----------------------|---------------------|
| 3030002 | Riparian Wetland Restoration (Ac.) | 3.8 | |
| 3030002 | Riparian Wetland Enhancement (Ac.) | 1.9 | NO CREDIT REMAINING |
| 3030002 | Riparian Wetland Creation (Ac.) | 24 | NO CREDIT REMAINING |

Table 2. Mitigation Debts – Riparian Wetland Restoration

| Mitigation Type | Debit Amount (Ac) | Status | Site TIP | Action ID# | NOTES |
|------------------------------|-------------------|-----------|----------|------------|-------|
| Riparian Wetland Restoration | 1 | Close Out | U-608 | 199100369 | |
| Riparian Wetland Restoration | 0.34 | Close Out | U-5538 | 2013-01456 | AICDZ |
| Riparian Wetland Restoration | 0.23 | Close Out | B-5345 | | |

Table 3. Mitigation Debts – Riparian Wetland Enhancement

| Mitigation Type | Debit Amount (Ac) | Status | Site TIP | Action ID# | NOTES |
|------------------------------|-------------------|-----------|----------|------------|-------|
| Riparian Wetland Enhancement | 1.9 | Close Out | U-608 | 199100369 | |

Table 4. Mitigation Debts – Riparian Wetland Creation

| Mitigation Type | Debit Amount (Ac) | Status | Site TIP | Action ID# | NOTES |
|---------------------------|-------------------|-----------|----------|------------|-------|
| Riparian Wetland Creation | 24 | Close Out | U-608 | 199100369 | |



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS



(Version 2.05; Released April 2016)

WBS Element: 46059.1.1 TIP No.: B-5345 County(ies): Guilford Page 1 of 3

General Project Information

| | | | | | | | |
|---------------------------------|--|--------------------|------------------------|---|------------------------------|-------|-----------|
| WBS Element: | 46059.1.1 | TIP Number: | B-5345 | Project Type: | Bridge Replacement | Date: | 5/11/2016 |
| NCDOT Contact: | Christopher Lewis, PE | | Contractor / Designer: | Kimley-Horn & Associates | | | |
| Address: | NCDOT Hydraulics Unit 1020 Birch Ridge Drive Raleigh, NC 27610 | | Address: | 421 Fayetteville Street Suite 600 Raleigh, NC 27601 | | | |
| | Phone: | 919-707-6714 | | Phone: | 919-677-2153 | | |
| | Email: | crlewis2@ncdot.gov | | Email: | jason.lawing@kimley-horn.com | | |
| City/Town: | Greensboro | | County(ies): | Guilford | | | |
| River Basin(s): | Cape Fear | | CAMA County? | No | | | |
| Wetlands within Project Limits? | Yes | | | | | | |

Project Description

| | | | |
|--|--|-----------------------|---|
| Project Length (lin. miles or feet): | 0.14 miles | Surrounding Land Use: | Rural |
| | Proposed Project | | Existing Site |
| Project Built-Upon Area (ac.) | 0.6 ac. | 0.4 ac. | |
| Typical Cross Section Description: | 2 @ 12' wide lanes with typical 4' paved shoulders and side slopes that vary from 2:1 to 3:1 and lateral ditches with 3:1 front slopes and 3:1 back slopes. | | 2 @ 12' wide lanes with grass shoulders |
| Annual Avg Daily Traffic (veh/hr/day): | Design/Future: 9900 | Year: 2040 | Existing: 6450 Year: 2017 |
| General Project Narrative: (Description of Minimization of Water Quality Impacts) | <p>Replacement of Bridge No. 400456 on SR 2136 (Fleming Road) in Guilford County. The existing bridge, overall length (OAL) = 75' and width = 25', will be replaced with a bridge having an OAL = 85' and width of 42'. The new bridge is wider than the existing bridge to provide the required shoulders necessary for roadway and drainage. The roadway is being widened to provide the minimum lanes for safe travel. A detour bridge, overall length 65' and width 28.5', will be constructed east of the existing/proposed bridge. This bridge will be removed and area allowed to re-vegetate once the primary bridge has been replaced. Roadside ditches that were affected due to the detour and mainline fill slopes were replaced in kind. No new roadside ditches were introduced as part of this project.</p> <p>Wetlands on the left (west) side of the roadway should only have a minimal impact. No fill or excavation is anticipated in these wetlands. There are small areas of the wetlands that are located within the proposed PDE. Mechanized clearing has been shown in these areas as a worst case scenario, but ultimately impacts are not anticipated. Wetlands on the right (east) side of the roadway will be impacted due to the detour. The detour roadway embankment will be graded back down to natural ground elevation after the proposed bridge is constructed. This will provide an environment for the wetlands to potentially re-establish over time.</p> <p>Rip rap is placed on the bridge sloping abutments to act as slope stabilization and prevent erosion. Runoff from the bridge is captured on the low side of the bridge in shoulder berm gutter and traffic bearing 2GI's on either side of the road in the roadway sag. The system is designed to outfall outside of buffer zone 2 in the area of an existing wetland that will be disturbed by the detour. Once this wetland is allowed to re-establish it will provide treatment for the system outfall.</p> <p>The roadside ditch on the begin bridge right side that is being replaced due to the detour impacts is being replaced as a grass swale. This ditch will treat the additional impervious area from the paved shoulder on the begin bridge right side. The velocity of the swale entering the wetland is less than 2.0 fps.</p> | | |

Waterbody Information

| | | | | | | | | |
|---|--|--|---------------------------------|--|--|--|--|-----|
| Surface Water Body (1): | Brush Creek | | NCDWR Stream Index No.: | 16-11-4-(1) | | | | |
| NCDWR Surface Water Classification for Water Body | Primary Classification: | | Water Supply III (WS-III) | | | | | |
| | Supplemental Classification: | | Nutrient Sensitive Waters (NSW) | | | | | |
| Other Stream Classification: | | | | | | | | |
| Impairments: | None | | | | | | | |
| Aquatic T&E Species? | No | Comments: | | | | | | |
| NRTR Stream ID: | SA | | Buffer Rules in Effect: | Jordan Lake | | | | |
| 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 2.05; Released April 2016)

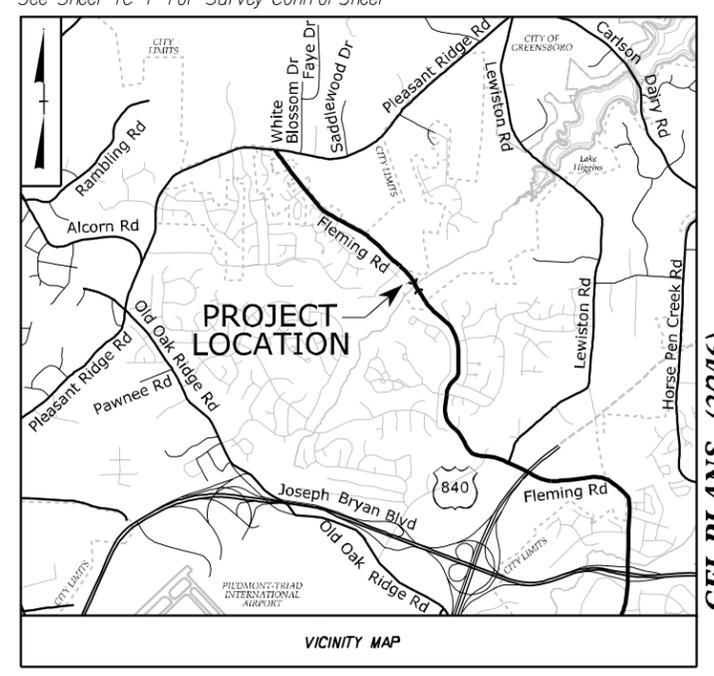
WBS Element: 46059.1.1 **TIP No.:** B-5345 **County(ies):** Guilford **Page** 2 **of** 3

Additional Waterbody Information

| | | | | | |
|--|--|--|--------------------------------|--|-----|
| Surface Water Body (2): | Unnamed Tributary to Brush Creek | | NCDWR Stream Index No.: | N/A | |
| NCDWR Surface Water Classification for Water Body | Primary Classification: | Water Supply III (WS-III) | | | |
| | Supplemental Classification: | Nutrient Sensitive Waters (NSW) | | | |
| Other Stream Classification: | | | | | |
| Impairments: | None | | | | |
| Aquatic T&E Species? | No | Comments: | | | |
| NRTR Stream ID: | SB | | Buffer Rules in Effect: | Jordan Lake | |
| Project Includes Bridge Spanning Water Body? | No | 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) | | | | |

TIP PROJECT: B-5345

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



CFI PLANS (2/2/16)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY

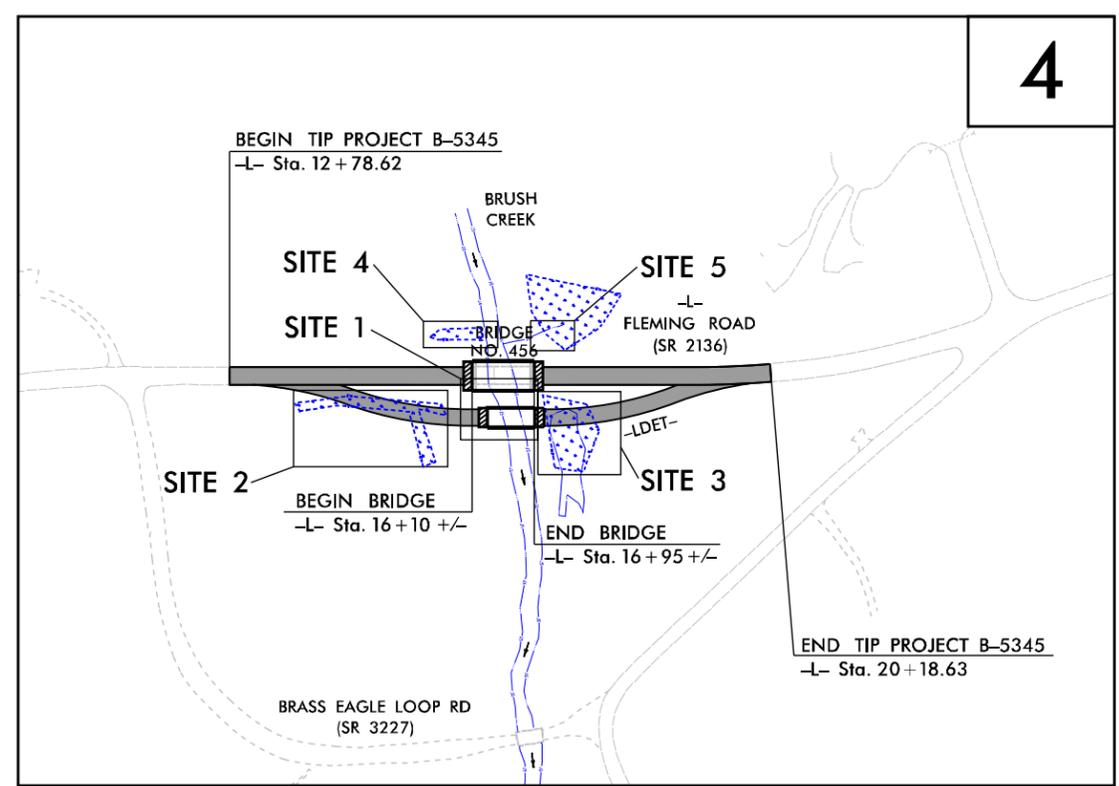
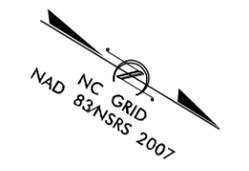
LOCATION: BRIDGE NO. 456 OVER BRUSH CREEK ON SR 2136 (FLEMING ROAD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | B-5345 | 1 | |
| STATE PROJ. NO. | P.A. PROJ. NO. | DESCRIPTION | |
| 46059.1.1 | BRSTP-2136(5) | P.E. | |

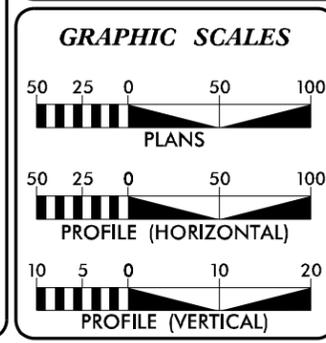
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 1 OF 15



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF GREENSBORO
*DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE AND ASSOCIATED NIGHTTIME STOPPING SIGHT DISTANCE CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

CONTRACT:



DESIGN DATA

| | | |
|----------|---|--------------|
| ADT 2017 | = | 6450 vpd |
| ADT 2040 | = | 9900 vpd |
| K | = | 11% |
| D | = | 60% |
| T | = | 3%* |
| V | = | 50 MPH |
| VDET | = | 40 MPH |
| *TTST | = | 1% DUAL = 2% |

FUNC CLASS = RURAL LOCAL
"SUBREGIONAL TIER"

PROJECT LENGTH

| | | |
|-------------------------------------|---|-------------|
| LENGTH ROADWAY TIP PROJECT B-5345 | = | 0.124 MILES |
| LENGTH STRUCTURE TIP PROJECT B-5345 | = | 0.016 MILES |
| TOTAL LENGTH TIP PROJECT B-5345 | = | 0.140 MILES |

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 17, 2016

LETTING DATE: JUNE 20, 2017

JEFFREY W. MOORE, P.E. PROJECT ENGINEER

CATHERINE A. MURRELL, P.E. PROJECT DESIGN ENGINEER

JAMES A. SPEER, P.E. PROJECT ENGINEER NCDOT ROADWAY DESIGN

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



6/20/2016 K:\RAL_Roadway\01036275 - B-5345\Hydraulics\PERMITS_Environmental\Drawings\2016-06-20\B5345_hyd_perm_wet_tsh.dgn

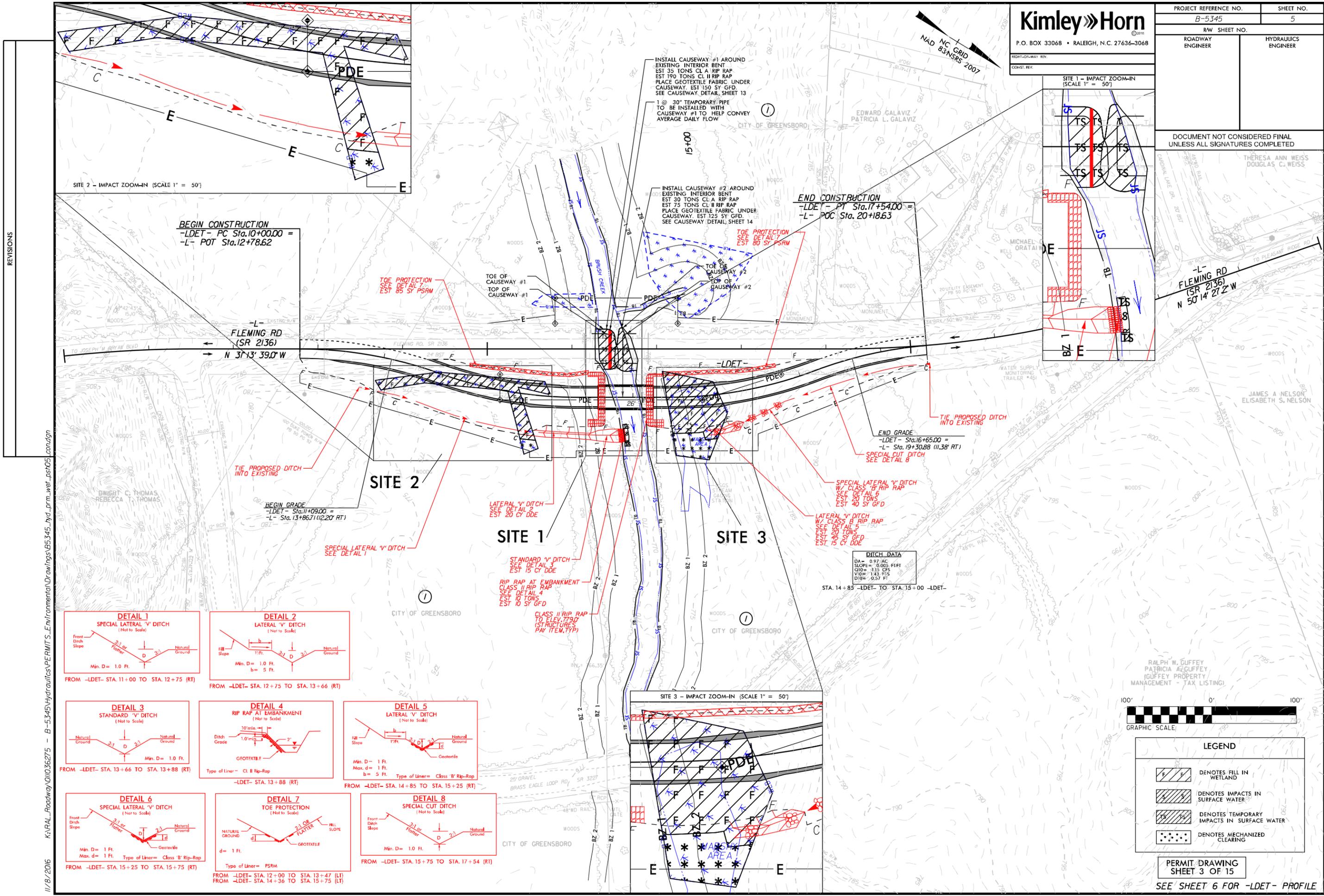
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|---------------------------------|---------------------|
| PROJECT REFERENCE NO. B-5345 | SHEET NO. 5 |
| RW SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY ENGINEER | |

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

THERESA ANN WEISS
 DOUGLAS C. WEISS

JAMES A. NELSON
 ELISABETH S. NELSON

RALPH W. GUFFEY
 PATRICIA A. GUFFEY
 GUFFEY PROPERTY
 MANAGEMENT - TAX LISTING

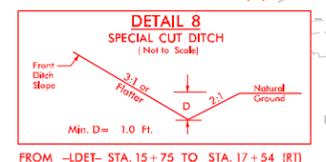
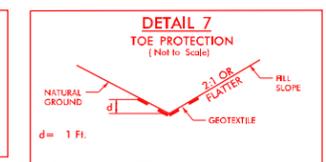
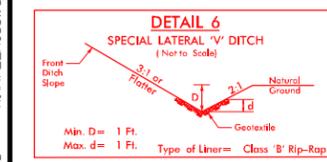
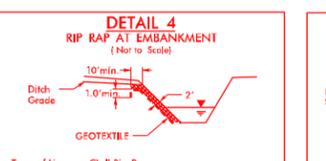
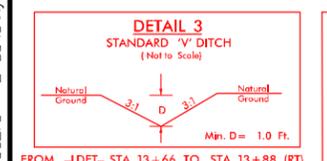
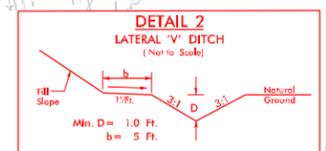
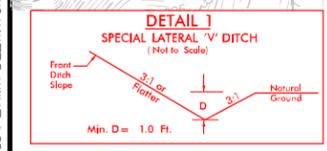


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 -L- POT Sta. 12+78.62

END CONSTRUCTION
 -LDET- PT Sta. 17+54.00 =
 -L- POC Sta. 20+18.63

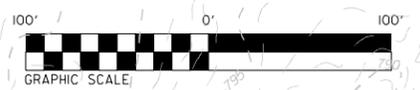
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 -L- Sta. 13+86.71 (12.20' RT)

END GRADE
 -LDET- Sta. 16+65.00 =
 -L- Sta. 19+30.88 (11.38' RT)



DITCH DATA

| |
|--------------------|
| DA = 0.97 AC |
| SLOPE = 0.065 FEET |
| Q10 = 1.15 CFS |
| V10 = 1.43 FPS |
| D10 = 0.57 FT |



LEGEND

| | |
|----------|--|
| [Symbol] | DENOTES FILL IN WETLAND |
| [Symbol] | DENOTES IMPACTS IN SURFACE WATER |
| [Symbol] | DENOTES TEMPORARY IMPACTS IN SURFACE WATER |
| [Symbol] | DENOTES MECHANIZED CLEARING |

REVISIONS

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 11/8/2016

| | |
|-----------------------|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| B-5345 | 4 |
| RW SHEET NO. | |
| ROADWAY ENGINEER | HYDRAULICS ENGINEER |

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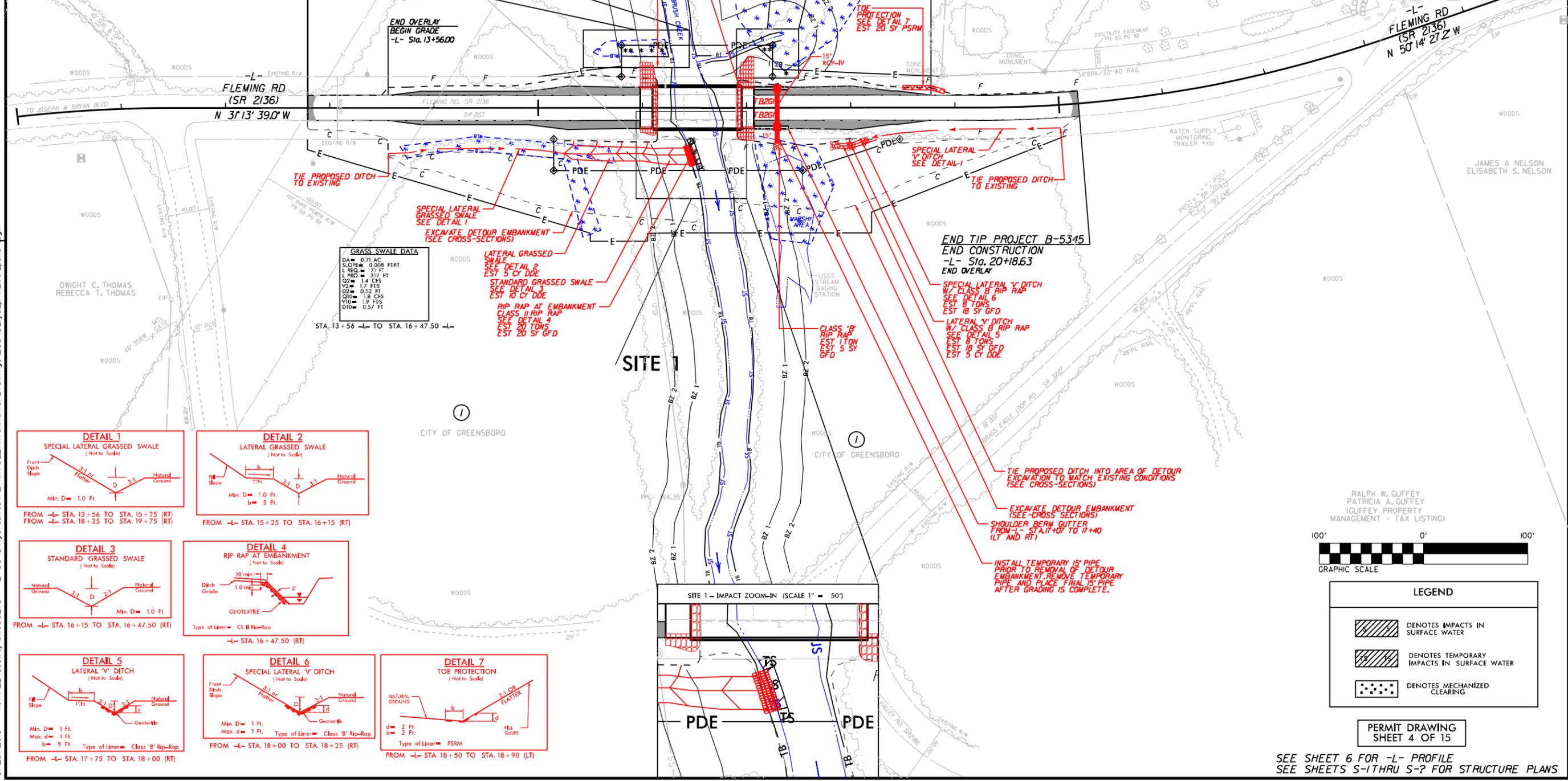
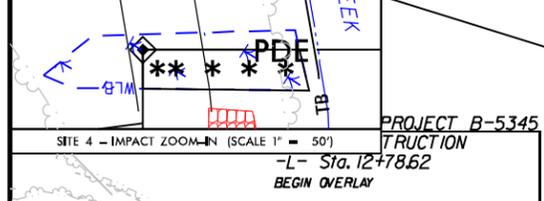
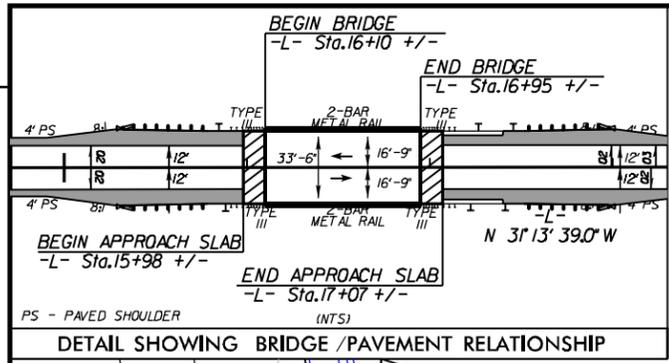
EDWARD GALAVIZ
 PATRICIA L. GALAVIZ

MICHAEL C. BURGER
 ORATAI WONGSIRI

THERESA ANN WEISS
 DOUGLAS C. WEISS

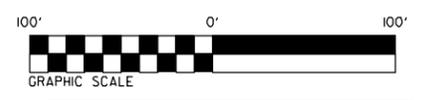
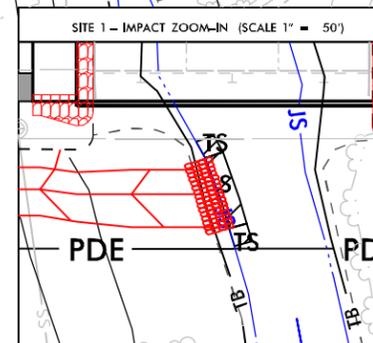
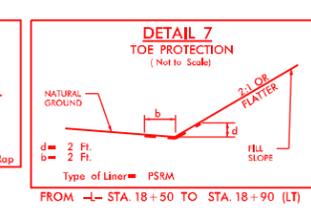
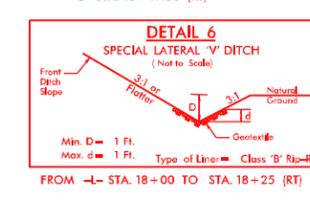
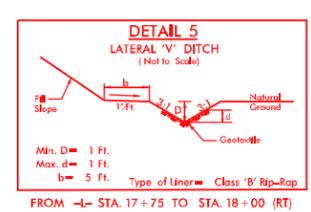
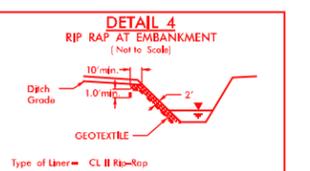
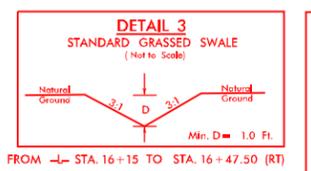
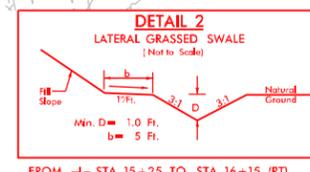
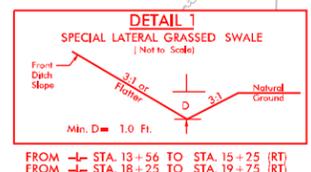
JAMES A. NELSON
 ELISABETH S. NELSON

RALPH W. GUFFEY
 PATRICIA A. GUFFEY
 (GUFFEY PROPERTY MANAGEMENT - TAX LISTING)



GRASS SWALE DATA

| |
|--------------------|
| DA = 0.71 AC |
| SLOPE = 0.068 F1FT |
| L REQ = 71 FT |
| L PRD = 317 FT |
| Q2 = 1.4 CFS |
| V2 = 1.7 F1S |
| LQ2 = 0.52 FT |
| Q10 = 1.8 CFS |
| W10 = 1.9 F1S |
| D10 = 0.57 FT |



LEGEND

| | |
|--|--|
| | DENOTES IMPACTS IN SURFACE WATER |
| | DENOTES TEMPORARY IMPACTS IN SURFACE WATER |
| | DENOTES MECHANIZED CLEARING |

PERMIT DRAWING
 SHEET 4 OF 15

SEE SHEET 6 FOR -L- PROFILE
 SEE SHEETS S-1 THRU S-2 FOR STRUCTURE PLANS

REVISIONS

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 WELL GRATAI WONGSIRI

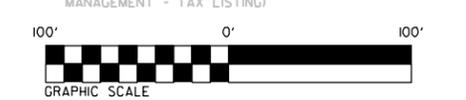
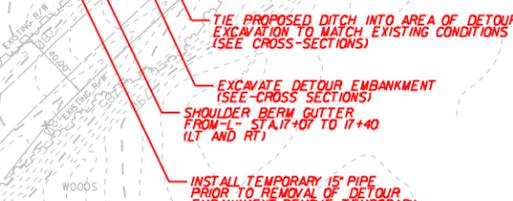
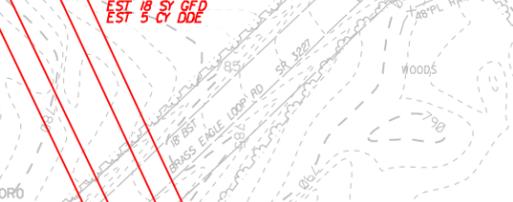
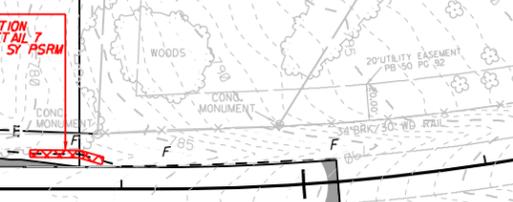
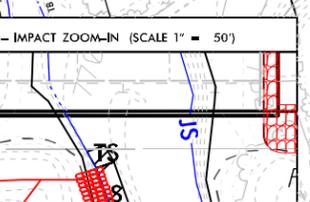
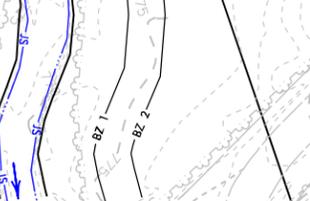
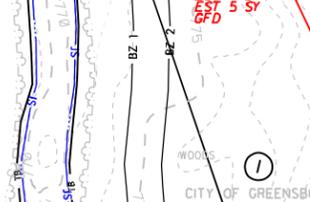
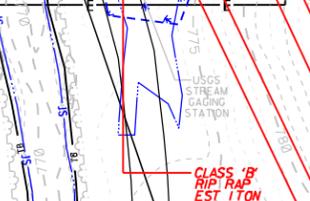
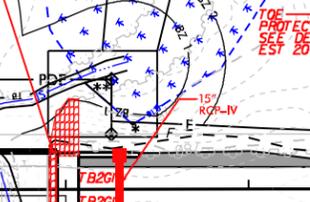
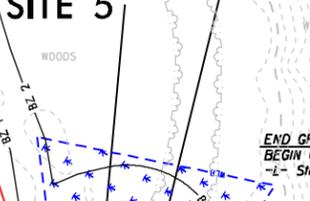
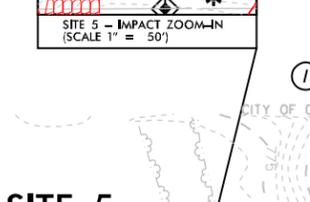
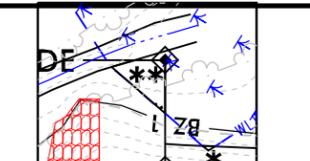
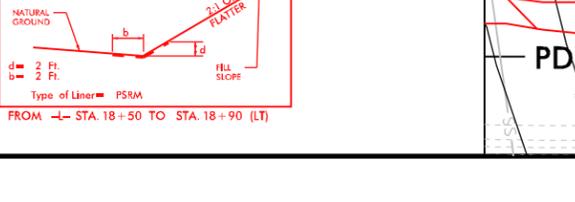
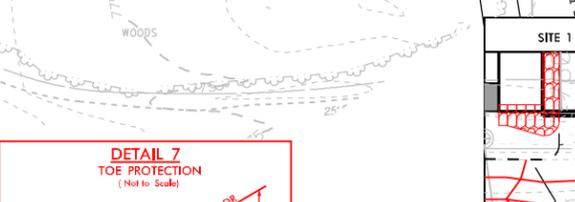
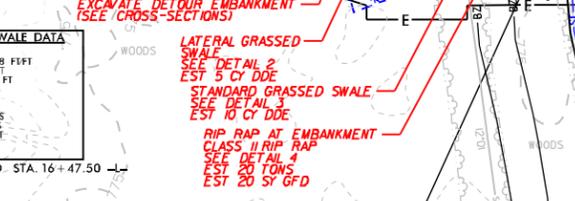
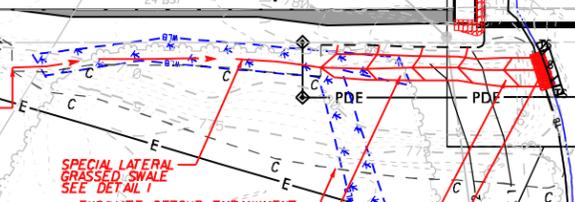
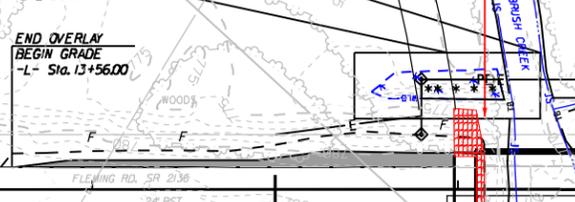
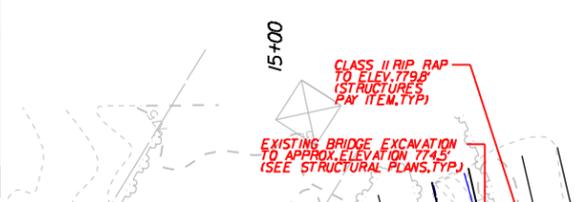
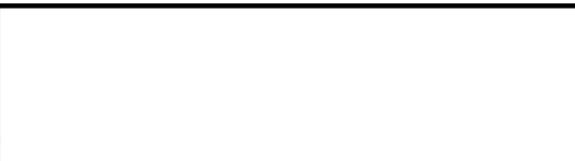
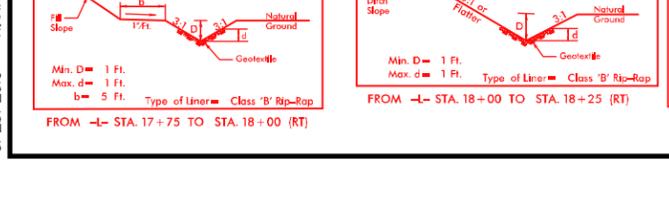
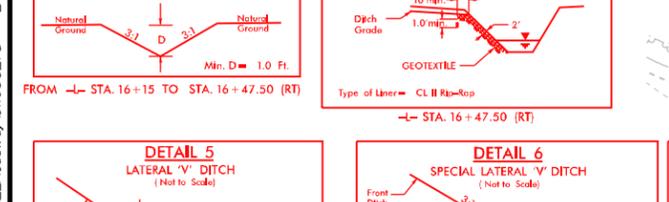
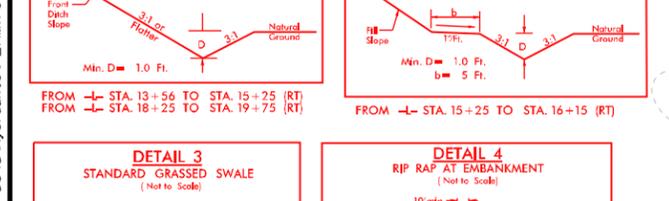
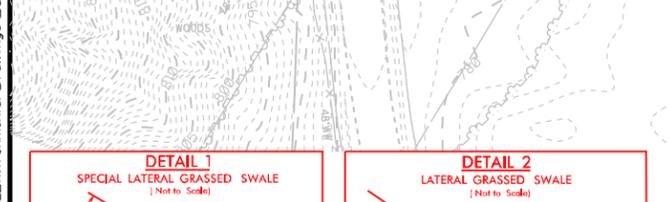
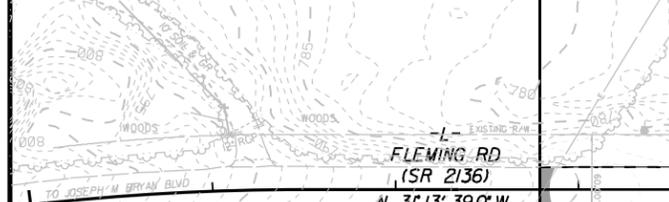
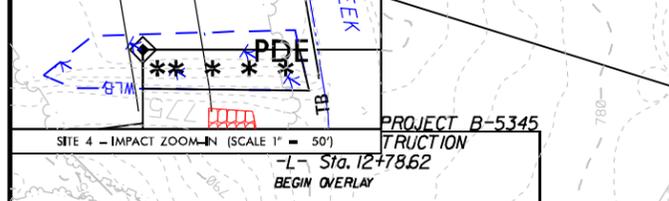
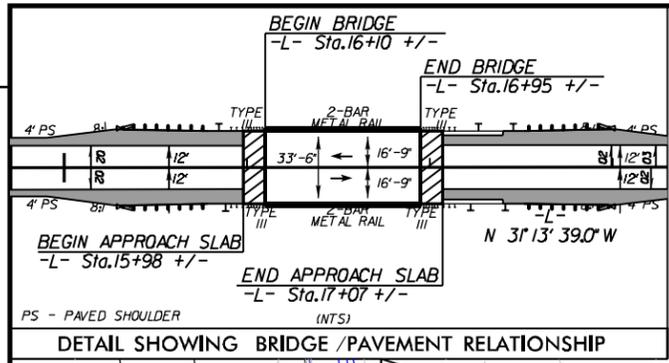
EDWARD GALAVIZ
 PATRICIA L. GALAVIZ

CONCRETE MONUMENT

TO PLEASANT RIDGE RD

FLEMING RD (SR 2136)
 N 50°14'27.2" W

WOODS



| LEGEND | |
|--------|--|
| | DENOTES IMPACTS IN SURFACE WATER |
| | DENOTES TEMPORARY IMPACTS IN SURFACE WATER |
| | DENOTES MECHANIZED CLEARING |

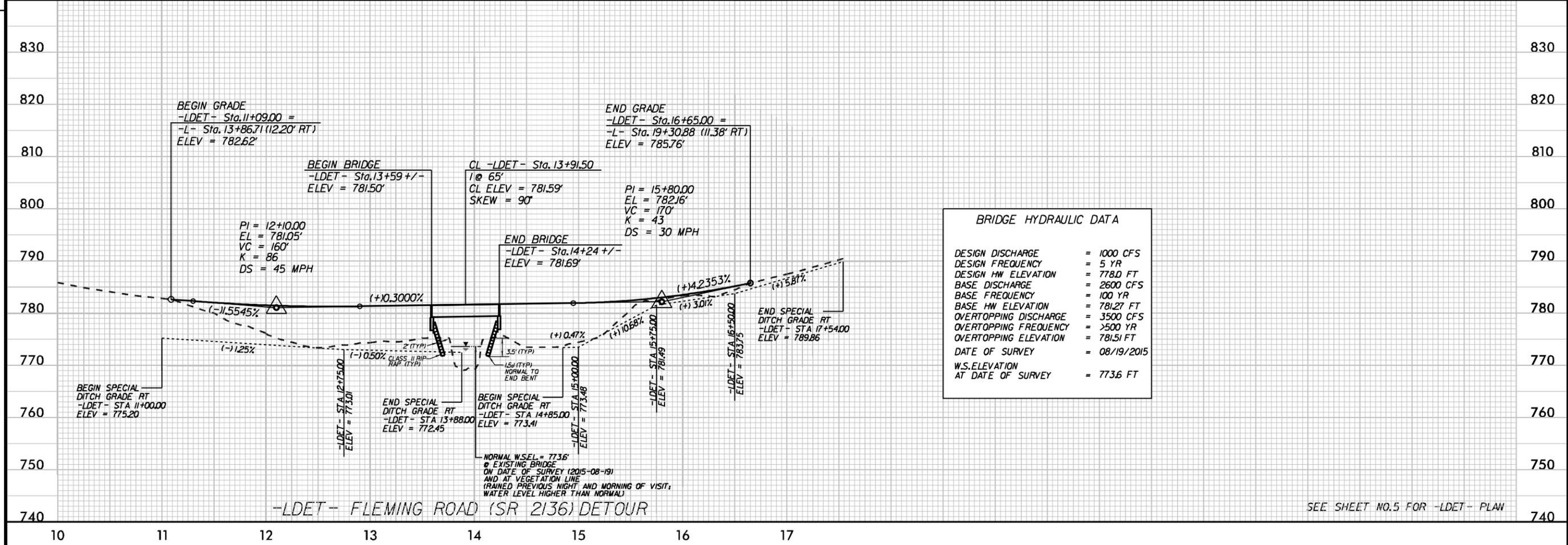
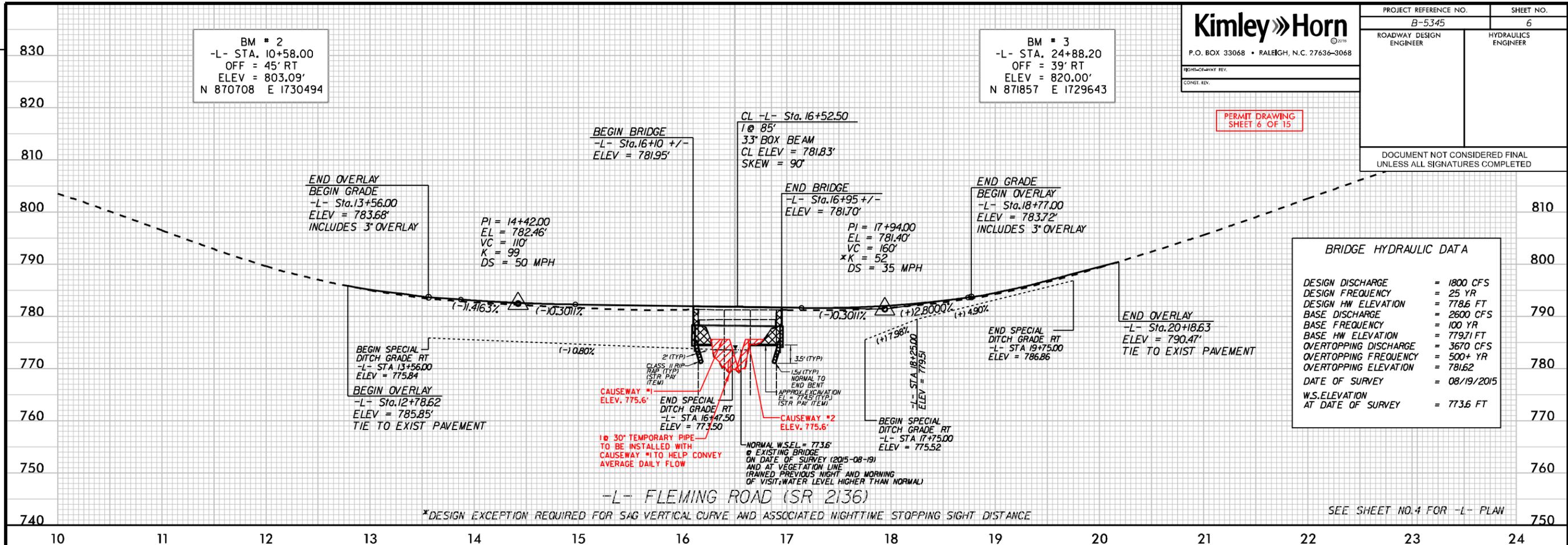
PERMIT DRAWING
 SHEET 5 OF 15

SEE SHEET 6 FOR -L- PROFILE
 SEE SHEETS S-1 THRU S-2 FOR STRUCTURE PLANS

REVISIONS

6/23/2016 K:\PAL_Roadway\01036275 - B-5345\Hydraulics\PERMITS-Environmental\Drawings\B5345_hyd_prm_wet_psd04.candgn

PERMIT DRAWING SHEET 6 OF 15



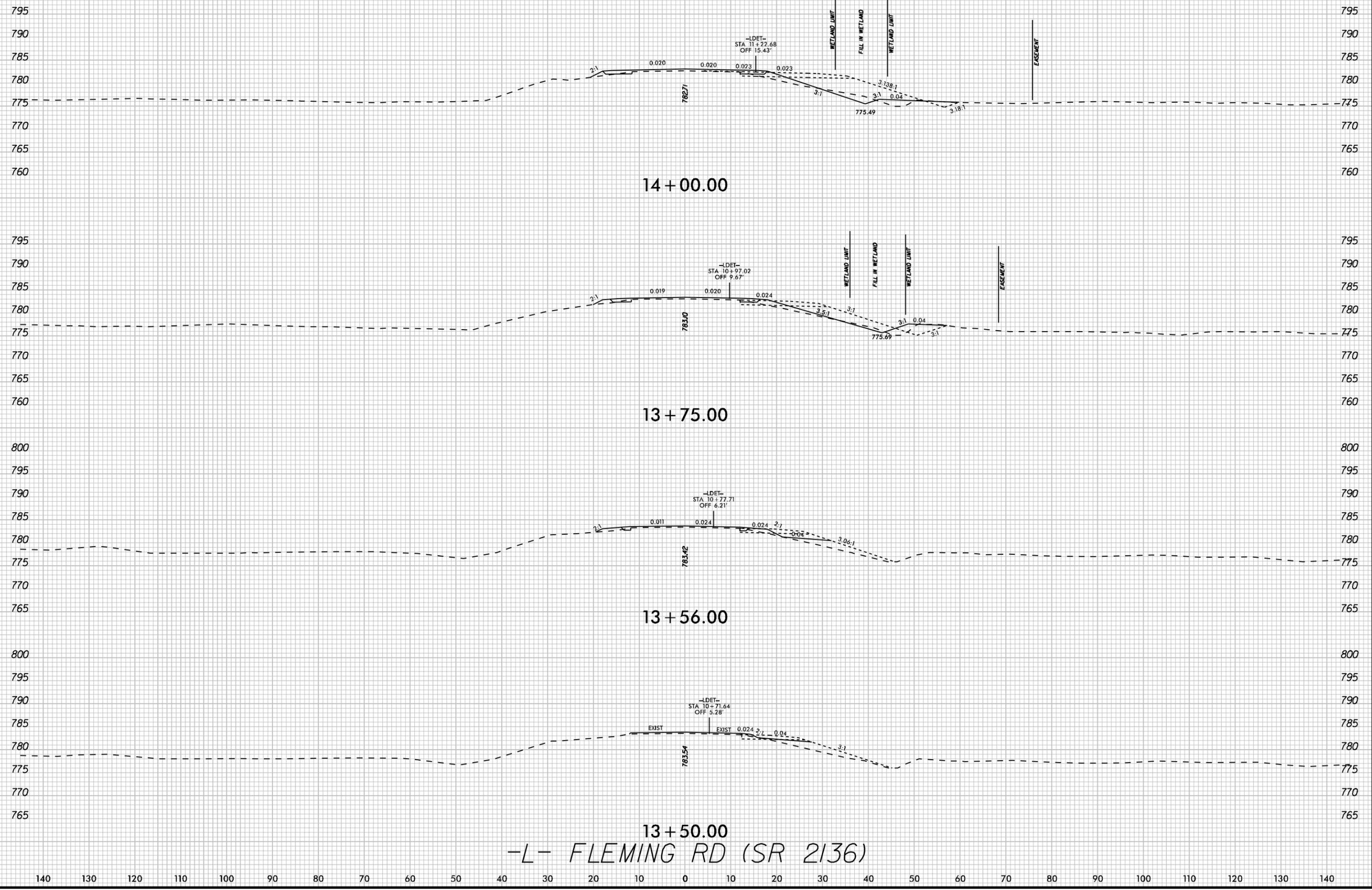
REVISIONS

\$FILE\$

\$DATE\$

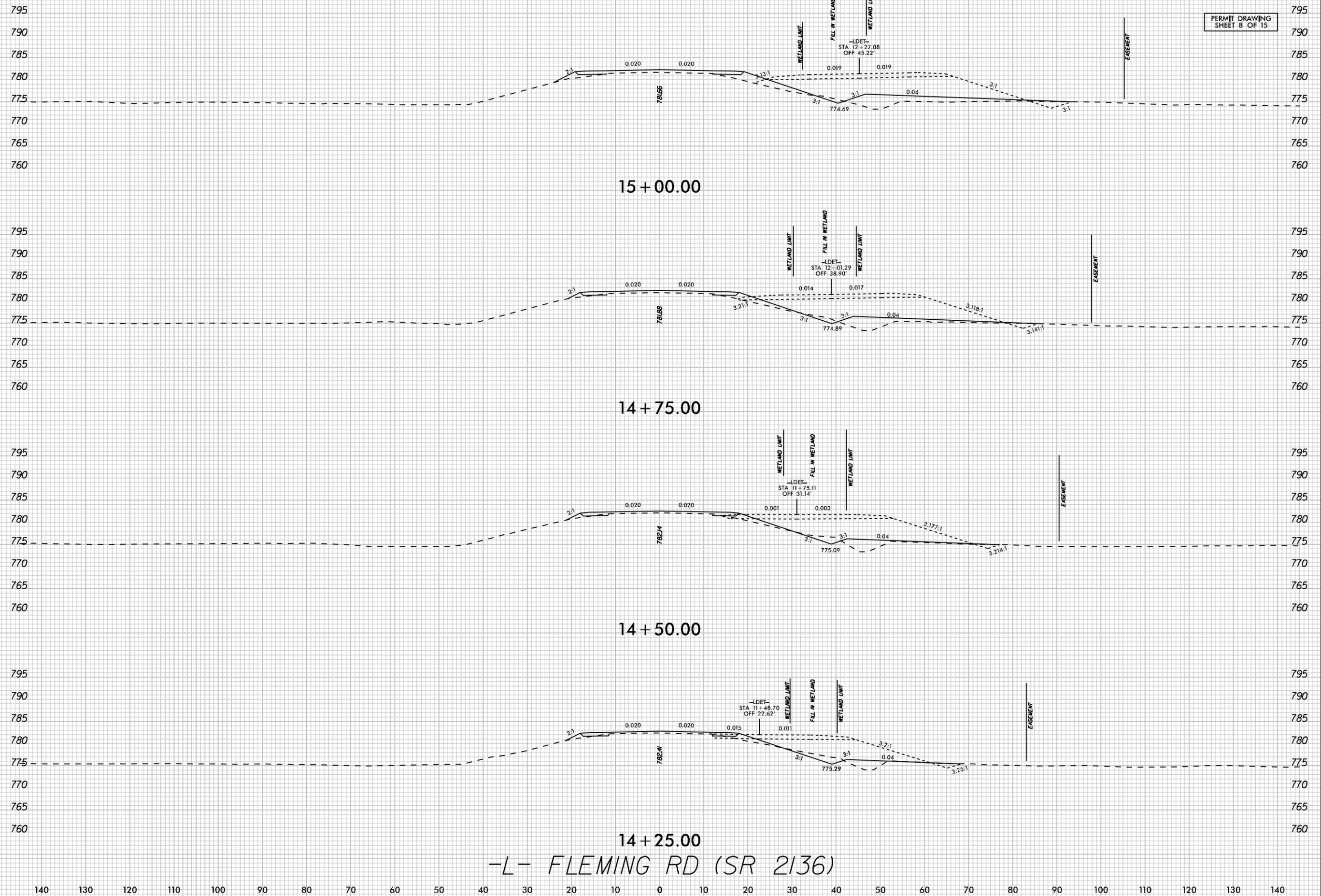
PERMIT DRAWING
SHEET 7 OF 15

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5/10/2016



13+50.00
-L- FLEMING RD (SR 2136)

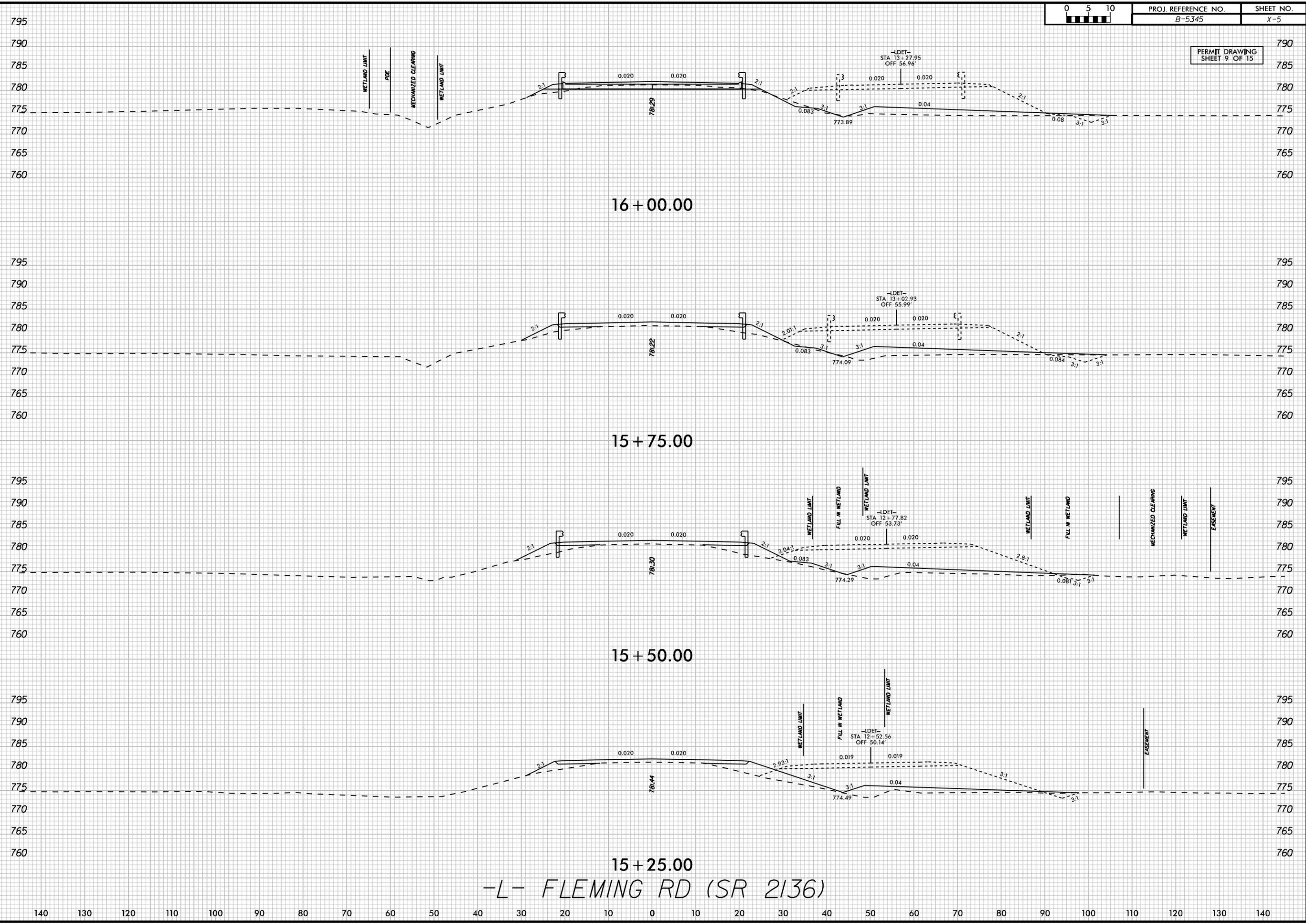
PERMIT DRAWING
SHEET 8 OF 15



14+25.00
-L- FLEMING RD (SR 2136)

K:\PAL_Roadway\01036275 - B-5345\Hydro\Drawings\PERMITS_Environmental\Drawings\B5345_hyd_perm_wet_xpl.L.DET.dgn 5/10/2016

PERMIT DRAWING
SHEET 9 OF 15

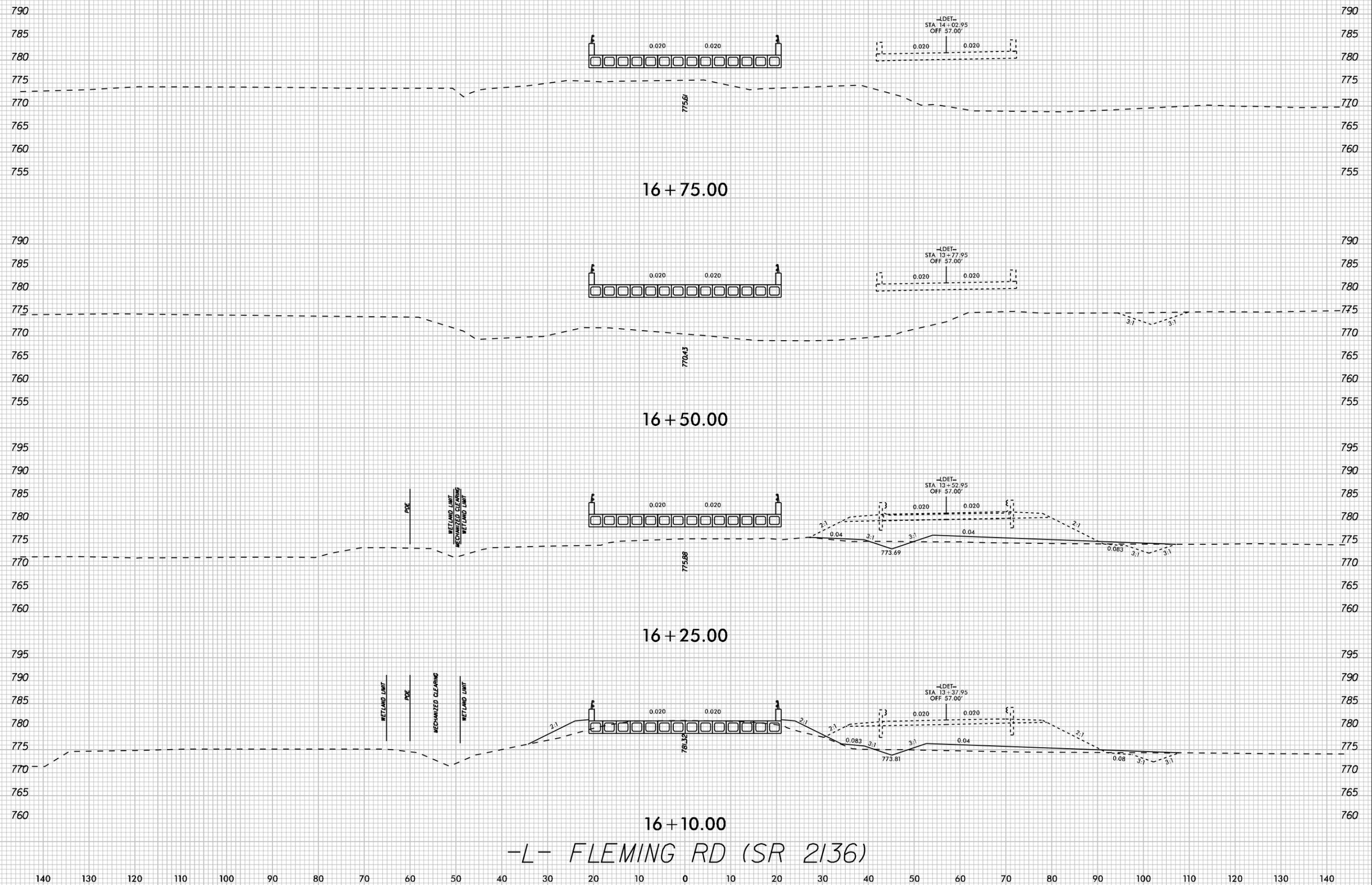


15+25.00
-L- FLEMING RD (SR 2136)

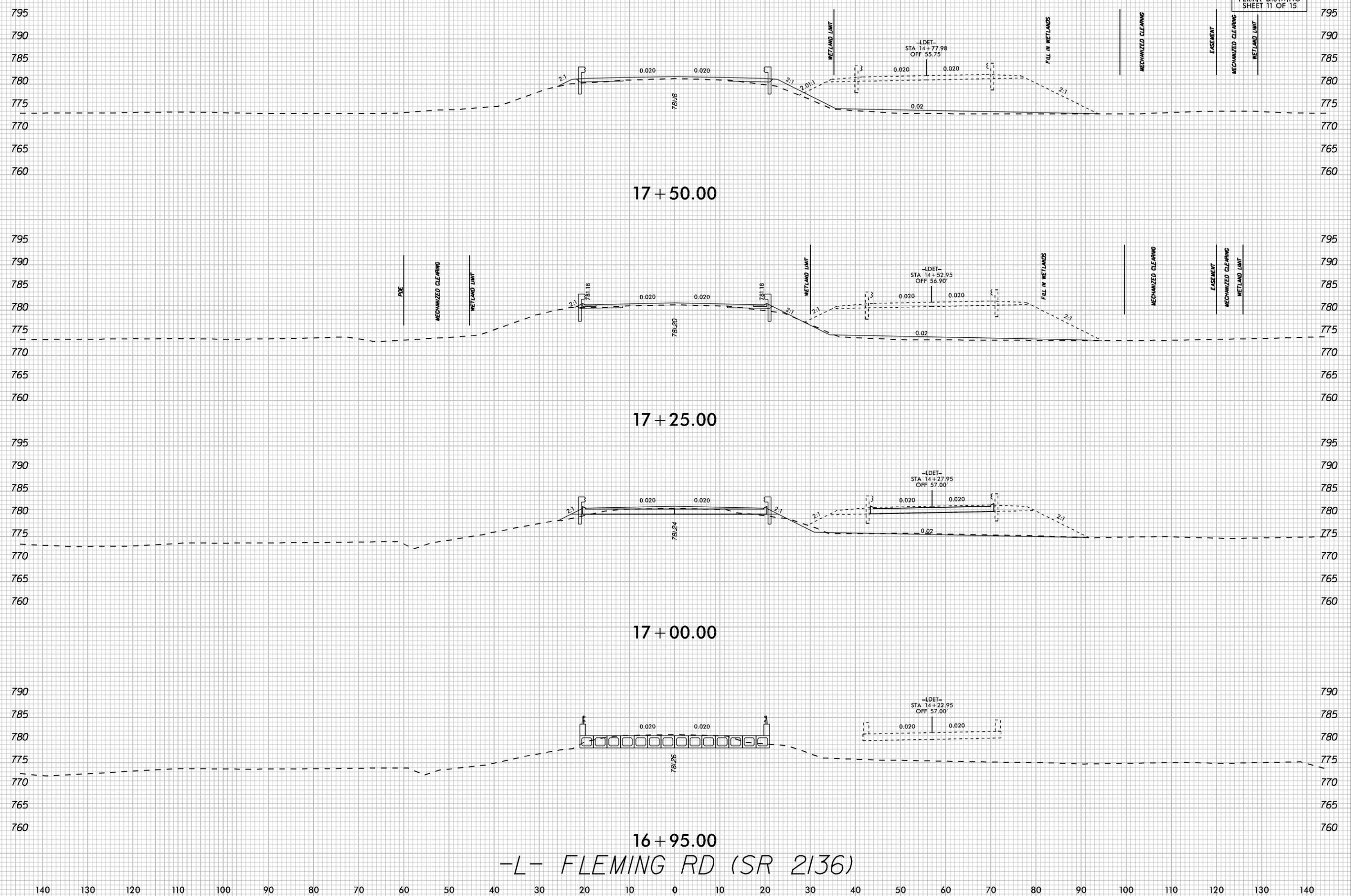
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PERMIT DRAWING
SHEET 10 OF 15

K:\PAL_Roadway\01036275 - B-5345\Hydraulic\PERMITS_Environment\Drawings\B5345_hyd_perm_wet_xpl.LDET.dgn
5/10/2016



PERMIT DRAWING
SHEET 11 OF 15

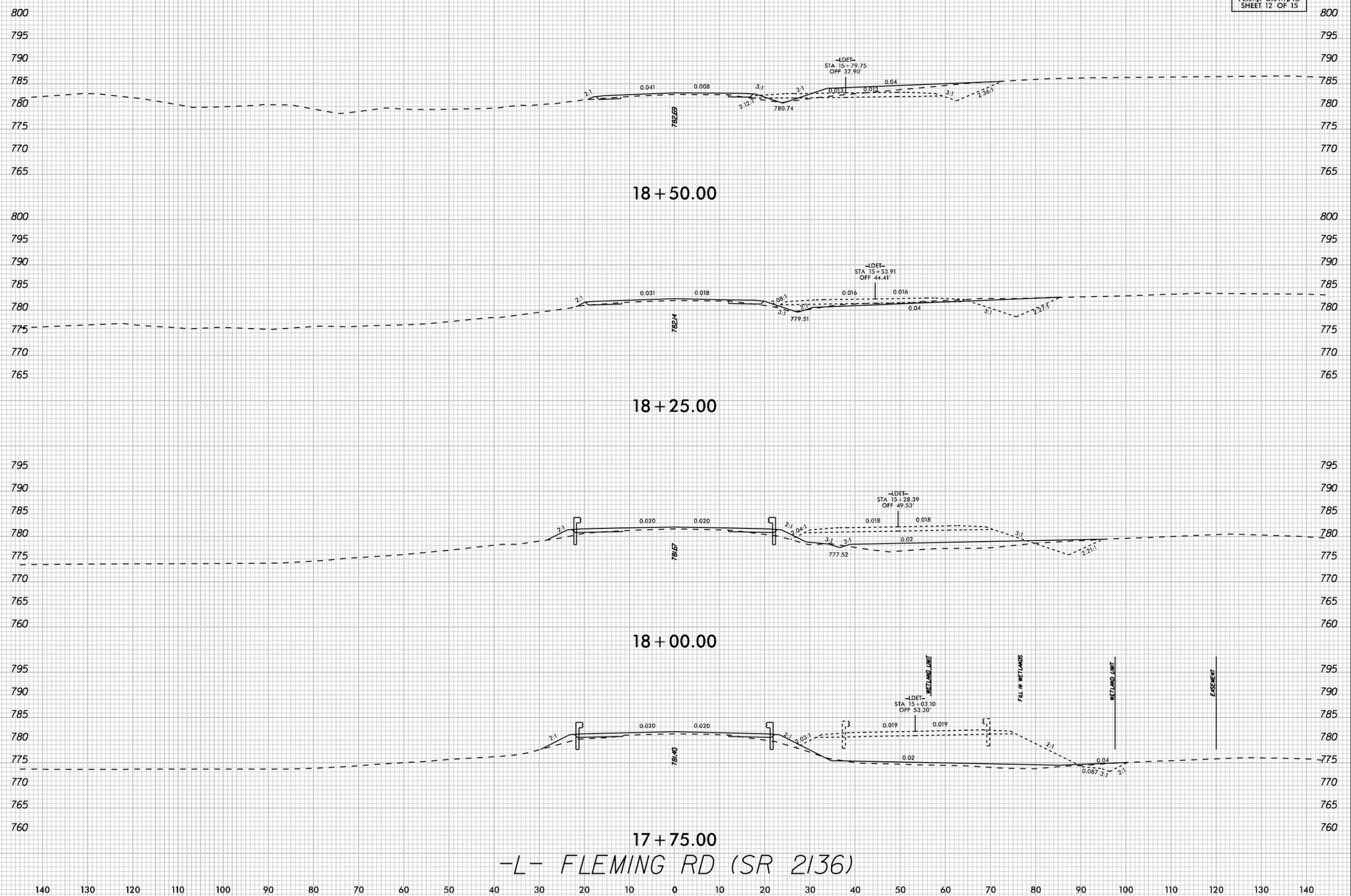


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16+95.00
-L- FLEMING RD (SR 2136)

PERMIT DRAWING
SHEET 12 OF 15

K:\PAL_Roadway\01036275 - B-5345\Hydraulics\PERMITS_Environment\Drawings\B5345_hyd_prm_wet_xpl.LLDET.dgn
5/10/2016



CAUSEWAY NO.1 DETAIL (NOT TO SCALE)

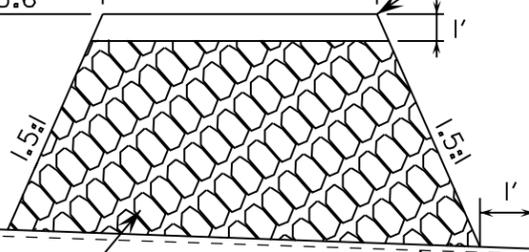
CAUSEWAY WIDTH = 35'

TOP OF CAUSEWAY
ELEV. = 775.6'

WORKPAD
(CLASS 'A' RIP RAP)

ROCK CAUSEWAY
(CLASS II RIP RAP)

GEOTEXTILE FABRIC



QUANTITIES OF ESTIMATES: CAUSEWAY
 VOLUME OF CLASS 'A' RIP RAP= 25 yds³
 AREA OF CLASS 'A' RIP RAP= 0.02 acres
 Estimate 35 Tons Class 'A' Rip Rap
 VOLUME OF CLASS II RIP RAP= 135 yds³
 AREA OF CLASS II RIP RAP= 0.03 acres
 Estimate 190 Tons Class II Rip Rap
 Estimate 150 SY of Geotextile Fabric

PERMIT DRAWING SHEET 13 OF 15

NCDOT

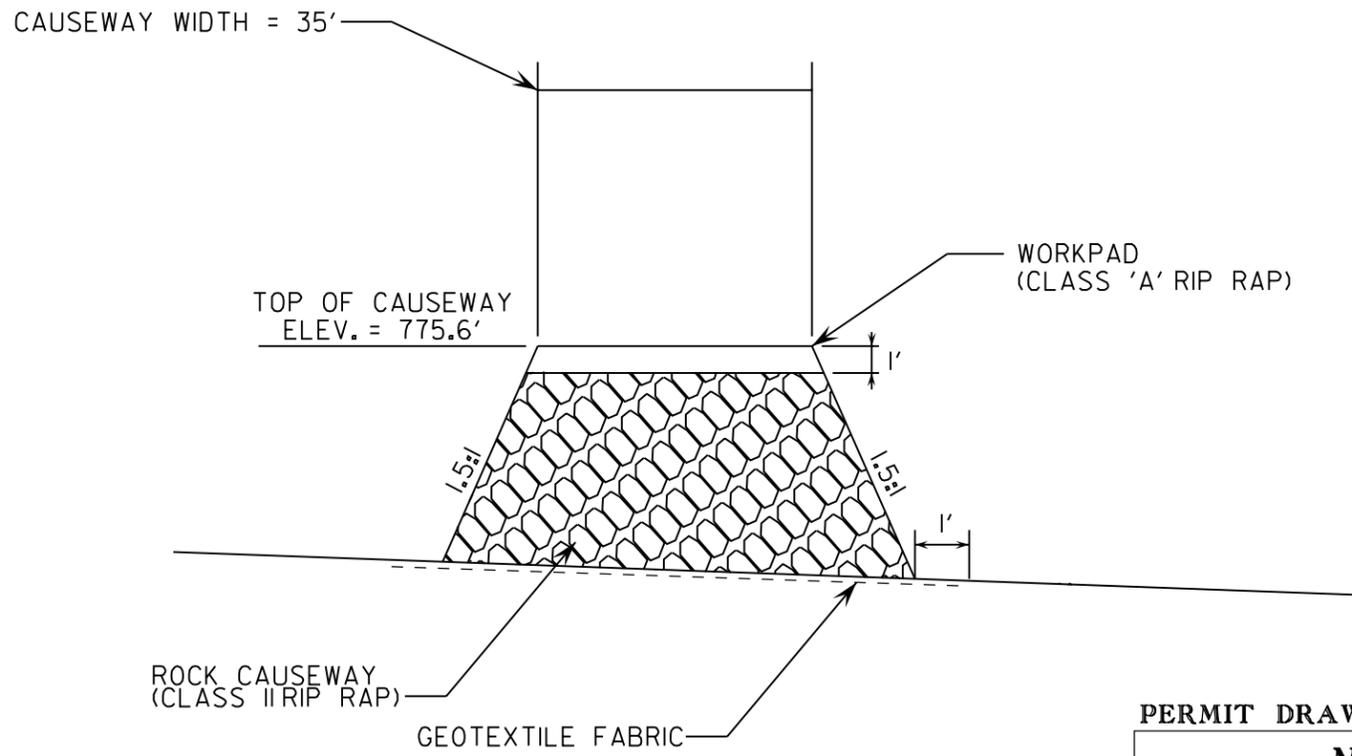
DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: B-5345
 BRIDGE NO. 456 OVER
 BRUSH CREEK ON
 SR 2136 (FLEMING RD)

05 // 04 // 2016

Causeway #1Detail_prm_wet.dgn

5/10/2016

CAUSEWAY NO. 2 DETAIL
(NOT TO SCALE)



Causeway #2 Detail_perm_wet.dgn

5/10/2016

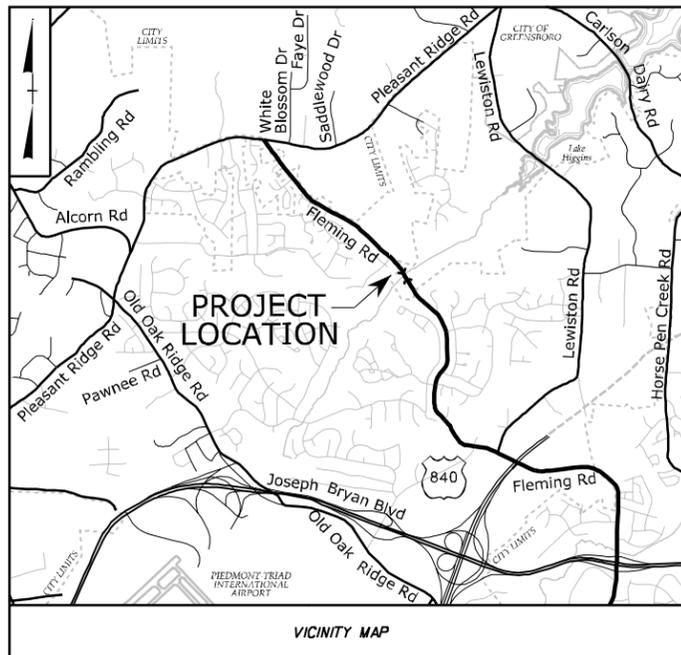
QUANTITIES OF ESTIMATES: CAUSEWAY
 VOLUME OF CLASS 'A' RIP RAP= 20 yds³
 AREA OF CLASS 'A' RIP RAP= 0.01 acres
 Estimate 30 Tons Class 'A' Rip Rap
 VOLUME OF CLASS II RIP RAP= 50 yds³
 AREA OF CLASS II RIP RAP= 0.02 acres
 Estimate 75 Tons Class II Rip Rap
 Estimate 125 SY of Geotextile Fabric

PERMIT DRAWING SHEET 14 OF 15

NCDOT
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: B-5345
 BRIDGE NO. 456 OVER
 BRUSH CREEK ON
 SR 2136 (FLEMING RD)
 05 // 04 // 2016

TIP PROJECT: B-5345

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



CFI PLANS (2/2/16)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY

**LOCATION: BRIDGE NO. 456 OVER BRUSH CREEK
ON SR 2136 (FLEMING ROAD)**

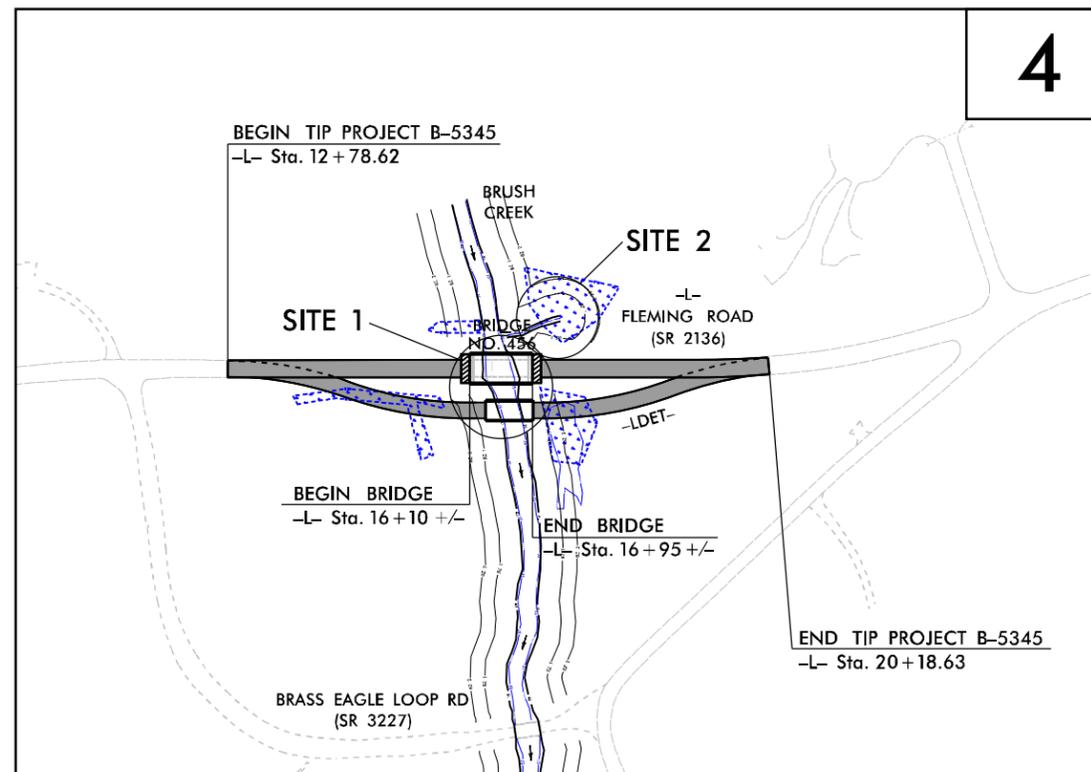
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

BUFFER IMPACTS PERMIT

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | B-5345 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 46059.1.1 | BRSTP-2136(5) | P.E. | |
| | | | |
| | | | |
| | | | |

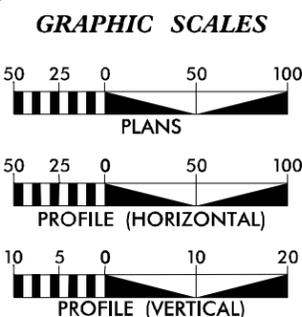
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING
SHEET 1 OF 4



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF GREENSBORO
*DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE AND ASSOCIATED NIGHTTIME STOPPING SIGHT DISTANCE
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

CONTRACT:



DESIGN DATA

| | | |
|--------------------------|--------|----------|
| ADT 2017 | = | 6450 vpd |
| ADT 2040 | = | 9900 vpd |
| K | = | 11% |
| D | = | 60% |
| T | = | 3%* |
| V | = | 50 MPH |
| VDET | = | 40 MPH |
| *TTST = 1% | DUAL = | 2% |
| FUNC CLASS = RURAL LOCAL | | |
| "SUBREGIONAL TIER" | | |

PROJECT LENGTH

| | | |
|-------------------------------------|---|-------------|
| LENGTH ROADWAY TIP PROJECT B-5345 | = | 0.124 MILES |
| LENGTH STRUCTURE TIP PROJECT B-5345 | = | 0.016 MILES |
| TOTAL LENGTH TIP PROJECT B-5345 | = | 0.140 MILES |

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 17, 2016

LETTING DATE: JUNE 20, 2017

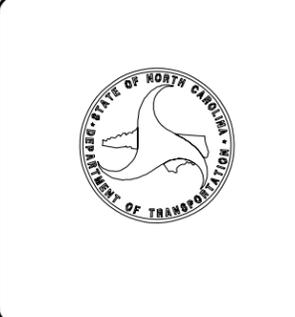
| | |
|---|---|
| <p><u>JEFFREY W. MOORE, P.E.</u> PROJECT ENGINEER</p> <p><u>CATHERINE A. MURRELL, P.E.</u> PROJECT DESIGN ENGINEER</p> <p><u>JAMES A. SPEER, P.E.</u> PROJECT ENGINEER NCDOT ROADWAY DESIGN</p> | <p>HYDRAULICS ENGINEER</p> <p>_____ SIGNATURE: P.E.</p> <p>ROADWAY DESIGN ENGINEER</p> <p>_____ SIGNATURE: P.E.</p> |
|---|---|

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

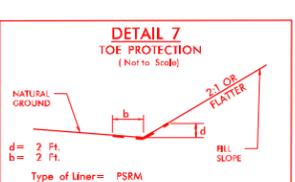
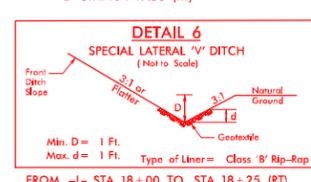
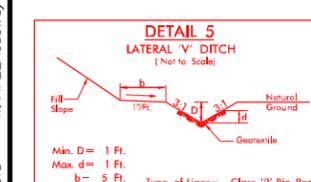
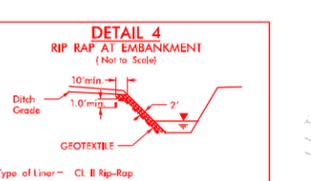
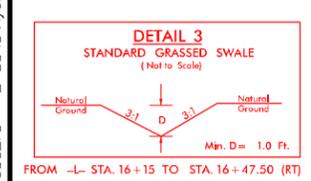
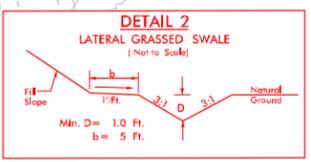
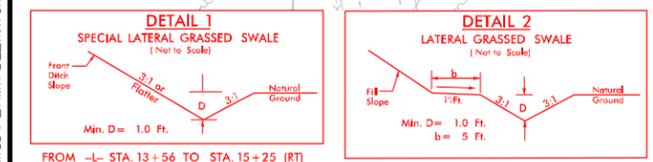
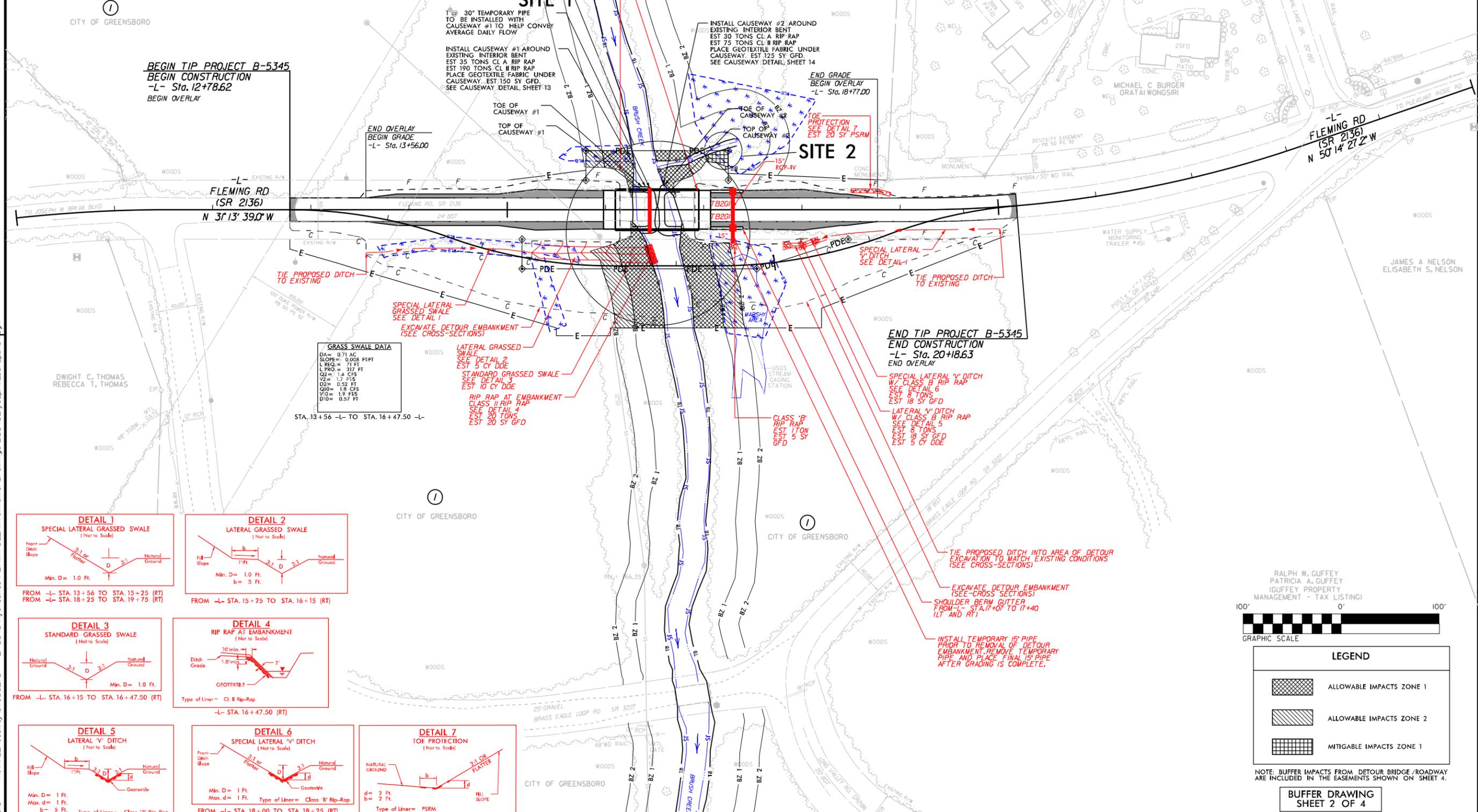
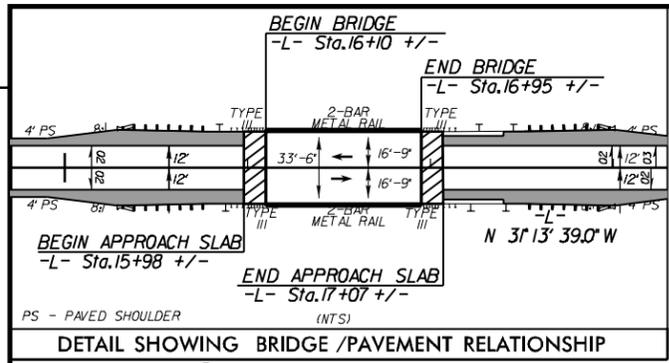
SIGNATURE: P.E.



K:\RAL_Roadway\01036275 - B-5345\Hydraulics\PERMITS_Environmental\Drawings\B5345_hyd_perm_buf_tsh.dgn 11/8/2016

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

THERESA ANN WEISS
 DOUGLAS C. WEISS



RALPH W. GUFFEY
 PATRICIA A. GUFFEY
 (GUFFEY PROPERTY MANAGEMENT - TAX LISTING)

100' 0' 100'
 GRAPHIC SCALE

LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- MITIGABLE IMPACTS ZONE 1

NOTE: BUFFER IMPACTS FROM DETOUR BRIDGE / ROADWAY ARE INCLUDED IN THE EASEMENTS SHOWN ON SHEET 4.

BUFFER DRAWING SHEET 2 OF 4

SEE SHEET 6 FOR -L- PROFILE
 SEE SHEETS S-1 THRU S-2 FOR STRUCTURE PLANS

REVISIONS

11/8/2016 K:\RAL_Roadway\01036275 - B-5345\Hydraulics\PERMITS_Environmental\Drawings\B5345_hyd_prm_buf_psr04.dgn

BUFFER IMPACTS SUMMARY

| SITE NO. | STRUCTURE SIZE / TYPE | STATION (FROM/TO) | IMPACT | | | | | | | | | BUFFER REPLACEMENT | |
|---------------|-----------------------|-------------------------|---------------|--------|-----------------|---------------------------|---------------------------|--------------------------|---------------------------|---------------------------|--------------------------|---------------------------|---------------------------|
| | | | TYPE | | | ALLOWABLE | | | MITIGABLE | | | ZONE 1 (ft ²) | ZONE 2 (ft ²) |
| | | | ROAD CROSSING | BRIDGE | PARALLEL IMPACT | ZONE 1 (ft ²) | ZONE 2 (ft ²) | TOTAL (ft ²) | ZONE 1 (ft ²) | ZONE 2 (ft ²) | TOTAL (ft ²) | | |
| 1 | Road | 15+80/17+41.78 -L- | X | | | 1902 | 3008 | 4910 | | | | | |
| 1 | Bridge | 16+10/16+95 -L- | | X | | 5387 | 1203 | 6590 | | | | | |
| 2 | Road | 17+02.25/17+25 -L- (LT) | | | X | | | | 263 | 0 | 263 | | |
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| | | | | | | | | | | | | | |
| TOTAL: | | | | | | 7289 | 4211 | 11500 | 263 | 0 | 263 | | |

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 GUILFORD COUNTY
 PROJECT: 46059.1.1 (B-5345)

 11/8/2016
 SHEET 3 OF 4

WETLANDS IN BUFFER IMPACTS SUMMARY

| SITE NO. | STATION (FROM/TO) | | WETLANDS IN BUFFERS | |
|---------------|-------------------|-------------------|---------------------------|---------------------------|
| | | | ZONE 1 (ft ²) | ZONE 2 (ft ²) |
| 1 | 15+80 -L- (LT) | 16+25.36 -L- (LT) | 294 | 185 |
| 1 | 17+08.07 -L- (RT) | 17+41.78 -L- (RT) | 19 | 1677 |
| 2 | 17+10.34 -L- (LT) | 17+25 -L- (LT) | 115 | 0 |
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| | | | | |
| TOTAL: | | | 428 | 1862 |

Note:
 Site 1 includes 158 SF of Zone 1 Buffer Impacts in Road Crossings.
 Site 1 includes 1862 SF of Zone 2 Buffer Impacts in Road Crossings.
 Site 1 includes 155 SF of Zone 1 Buffer Impacts in Bridge.
 Site 1 includes 0 SF of Zone 2 Buffer Impacts in Bridge.

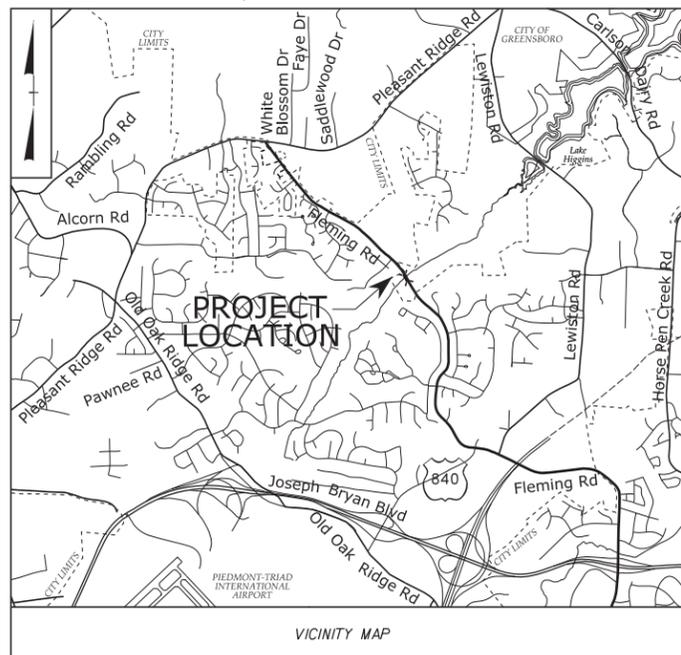
N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

GUILFORD COUNTY
 PROJECT: 46059.1.1 (B-5345)

11/8/2016
 SHEET 4 OF 4

TIP PROJECT: B-5345

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



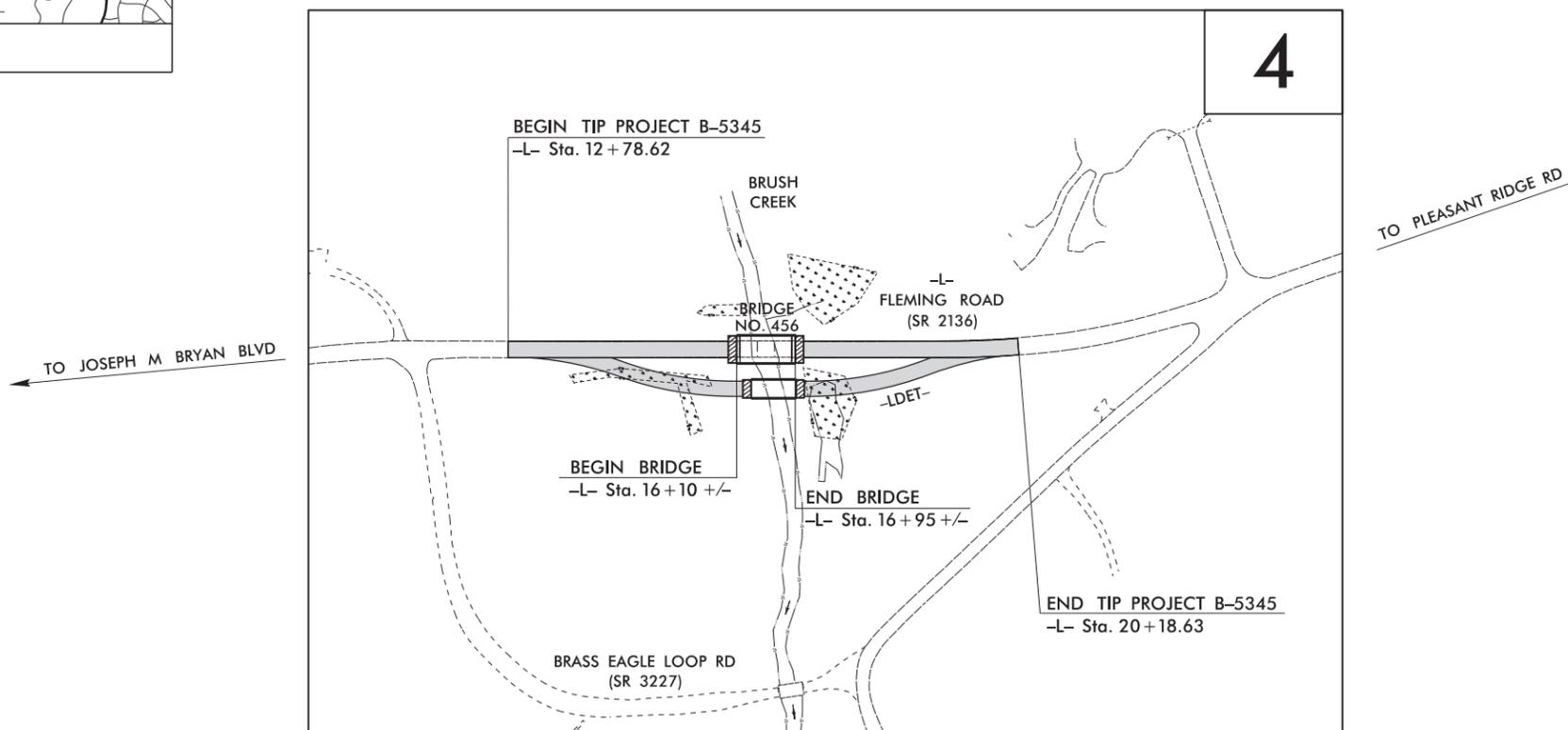
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
GUILFORD COUNTY

LOCATION: BRIDGE NO. 456 OVER BRUSH CREEK
 ON SR 2136 (FLEMING ROAD)

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

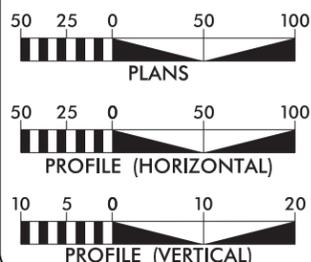
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|--------------|--------------|
| N.C. | B-5345 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 46059.1.1 | BRSTP-2136(5) | P.E. | |
| 46059.2.1 | | RIGHT-OF-WAY | |
| 46059.2.1 | | UTILITIES | |

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF GREENSBORO
 *DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE AND ASSOCIATED NIGHTTIME STOPPING SIGHT DISTANCE
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 6450 vpd
 ADT 2040 = 9900 vpd
 K = 11%
 D = 60%
 T = 3%*
 V = 50 MPH
 VDET = 40 MPH
 *TTST = 1% DUAL = 2%
 FUNC CLASS = RURAL LOCAL
 "SUBREGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5345 = 0.124 MILES
 LENGTH STRUCTURE TIP PROJECT B-5345 = 0.016 MILES
 TOTAL LENGTH TIP PROJECT B-5345 = 0.140 MILES

PLANS PREPARED FOR
 THE NCDOT BY:



2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

JUNE 17, 2016

LETTING DATE:

JUNE 20, 2017

JEFFREY W. MOORE, P.E.
 PROJECT ENGINEER

CATHERINE A. MURRELL, P.E.
 PROJECT DESIGN ENGINEER

JAMES A. SPEER, P.E.
 PROJECT ENGINEER
 NCDOT ROADWAY DESIGN

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.
 ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



CONTRACT:

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 | ○ EP |
| Property Corner | ----- |
| Property Monument | □ EDM |
| Parcel/Sequence Number | ①23 |
| Existing Fence Line | -x-x-x- |
| 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 UG Tank Cap | ○ |
| Sign | ○ |
| Well | ○ |
| 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 | ----- |
| False Sump | ----- |

RAILROADS:

| | |
|--------------------|-------|
| Standard Gauge | ----- |
| RR Signal Milepost | ----- |
| 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 | ----- |
| Proposed Right of Way Line with Iron Pin and Cap Marker | ----- |
| Proposed Right of Way Line with Concrete or Granite R/W Marker | ----- |
| Proposed Control of Access Line with Concrete C/A Marker | ----- |
| Existing Control of Access | ----- |
| Proposed Control of Access | ----- |
| Existing Easement Line | ----- |
| Proposed Temporary Construction Easement | ----- |
| 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 | ----- |

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 | ----- |
| Storm Sewer | ----- S |

UTILITIES:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

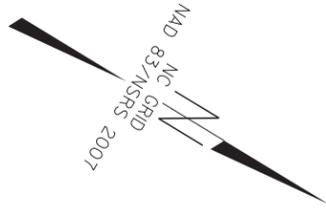
SANITARY SEWER:

| | |
|-------------------------------------|--------------------------|
| Sanitary Sewer Manhole | ----- |
| Sanitary Sewer Cleanout | ----- |
| UG 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:

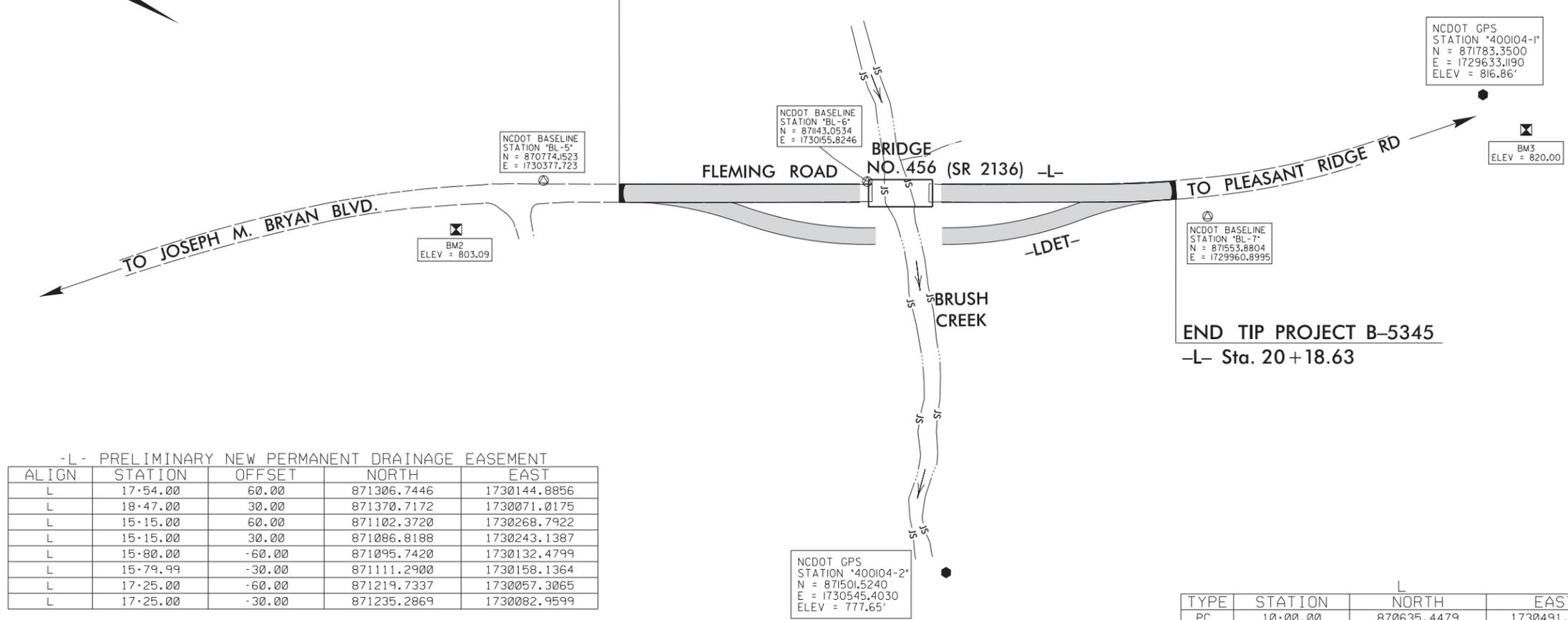
| | |
|--|--------------|
| Utility Pole | ----- |
| Utility Pole with Base | ----- |
| Utility Located Object | ----- |
| Utility Traffic Signal Box | ----- |
| Utility Unknown U/G Line LOS B (S.U.E.*) | ----- TUL |
| UG Tank; Water, Gas, Oil | ----- |
| Underground Storage Tank, Approx. Loc. | -----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

B-5345 SURVEY CONTROL SHEET



BEGIN TIP PROJECT B-5345
-L- Sta. 12 + 78.62

END TIP PROJECT B-5345
-L- Sta. 20 + 18.63



-L- PRELIMINARY NEW PERMANENT DRAINAGE EASEMENT

| ALIGN | STATION | OFFSET | NORTH | EAST |
|-------|----------|--------|-------------|--------------|
| L | 17+54.00 | 60.00 | 871306.7446 | 1730144.8856 |
| L | 18+47.00 | 30.00 | 871370.7172 | 1730071.0175 |
| L | 15+15.00 | 60.00 | 871102.3720 | 1730268.7922 |
| L | 15+15.00 | 30.00 | 871086.8188 | 1730243.1387 |
| L | 15+80.00 | -60.00 | 871095.7420 | 1730132.4799 |
| L | 15+79.99 | -30.00 | 871111.2900 | 1730158.1364 |
| L | 17+25.00 | -60.00 | 871219.7337 | 1730057.3065 |
| L | 17+25.00 | -30.00 | 871235.2869 | 1730082.9599 |

| TYPE | STATION | NORTH | EAST |
|------|----------|-------------|--------------|
| PC | 10+00.00 | 870635.4479 | 1730491.4221 |
| PT | 11+50.25 | 870759.3614 | 1730406.5860 |
| PC | 19+20.50 | 871418.0134 | 1730007.2599 |
| PT | 23+18.71 | 871718.3765 | 1729748.5947 |
| POT | 25+00.00 | 871834.3203 | 1729609.2325 |

BASELINE DATA

| BL POINT | DESC. | NORTH | EAST | ELEVATION | L STATION | OFFSET |
|----------|----------|-------------|--------------|-----------|-----------|----------|
| 5 | BL-5 | 870774.1523 | 1730377.7230 | 790.07 | 11+77.86 | 17.01 LT |
| 6 | BL-6 | 871143.0534 | 1730155.8246 | 780.52 | 16+08.35 | 15.51 LT |
| 7 | BL-7 | 871553.8804 | 1729960.8995 | 794.81 | 20+56.62 | 38.76 RT |
| A1 | 400104-1 | 871783.3500 | 1729633.1190 | 816.86 | 24+49.04 | 23.91 LT |

BENCHMARK DATA

.....
 BM2 ELEVATION = 803.09
 N 870708 E 1730494
 L STATION 10+58.00 45' RIGHT

 BM3 ELEVATION = 820.00
 N 871857 E 1729643
 L STATION 24+88.20 39' RIGHT

DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "400104-2"
 WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 871501.5240(±) EASTING: 1730545.4030(±±) ELEVATION: 777.65(±±)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999608137
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "400104-2" TO -L- STATION 12+78.62 IS
 S 17°59'28" W 664.90'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

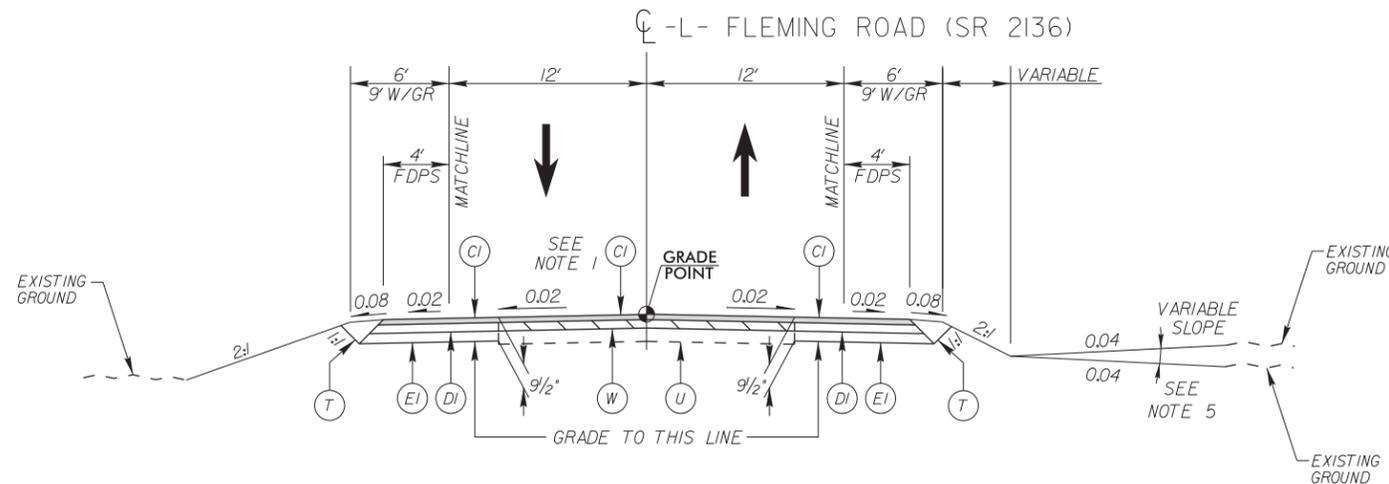
NOTES

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCTHIGHWAYLOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstructhighwaylocation/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B5345_LS_control.txt
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. 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 NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

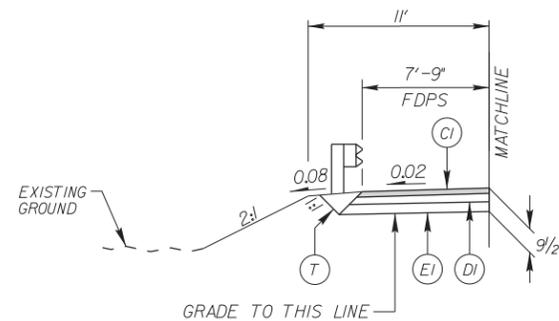
01/14/2016
 05-MAY-2016 11:01 AM
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 \$\$\$\$ USER:RMM \$\$\$\$

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 1

-L- STA 13+56.00 TO STA 16+10 +/- (BEGIN BRIDGE)
-L- STA 16+95 +/- (END BRIDGE) TO STA 18+77.00

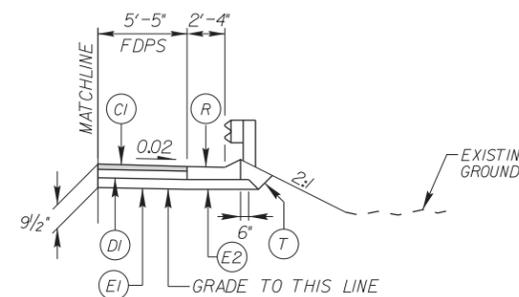


TYPICAL SECTION NO. 1A

USE IN CONJUNCTION WITH GUARDRAIL LOCATIONS AS FOLLOWS:

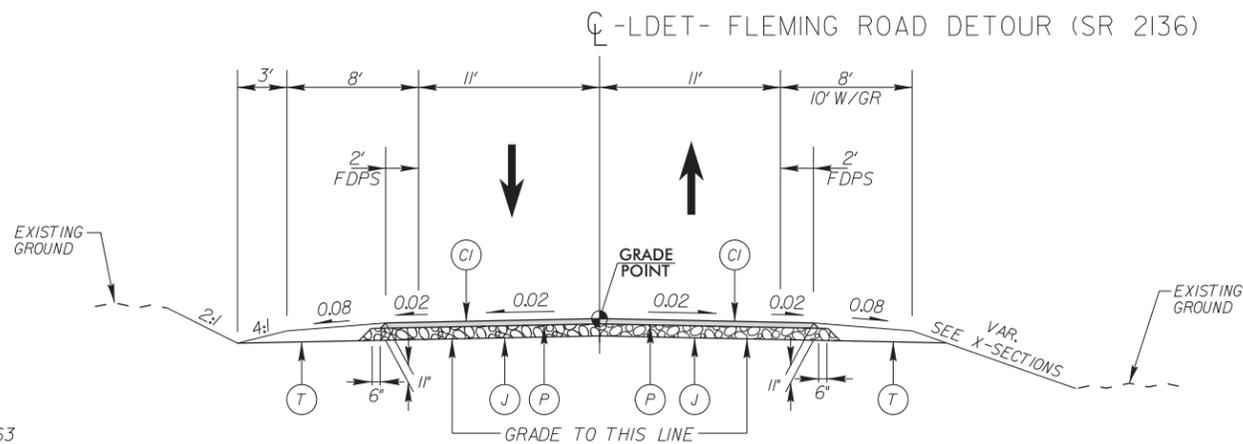
- L- STA 15+28.75 TO STA 16+10.00 (LT)
- L- STA 15+28.75 TO STA 16+10.00 (RT)
- L- STA 16+95.00 TO STA 18+01.25 (LT)
- L- STA 16+95.00 TO STA 18+01.25 (RT)

NOTE: TRANSITION FROM 6' TO 11' SHOULDERS IN THE AREAS OF 8:1 TAPERS



TYPICAL SECTION NO. 1B

-L- STA 17+07.00 TO STA 17+40.00 (LT)
-L- STA 17+07.00 TO STA 17+40.00 (RT)



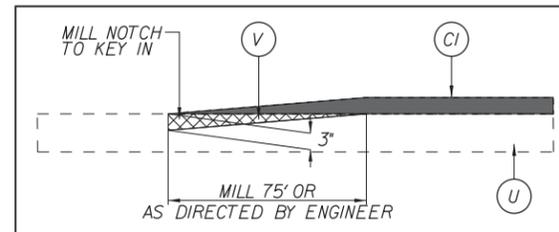
TYPICAL SECTION NO. 2

-LDET- STA 11+09.00 TO STA 13+59 +/- (BEGIN BRIDGE)
-LDET- STA 14+24 +/- (END BRIDGE) TO STA 16+65.00

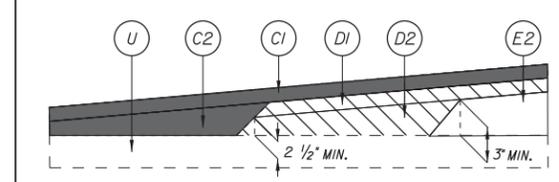
NOTES:

- OVERLAY FROM -L- STA 12+78.62 TO STA 13+56.00 AND FROM -L- STA 18+77.00 TO STA 20+18.63 (3" S9.5B)
- MILL NOTCH TO KEY-IN S9.5B FROM -L- STA 12+78.62 TO STA 13+53.62 AND -L- STA 19+43.63 TO STA 20+18.63
- TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 2
-LDET- STA 10+00.00 TO STA 11+09.00
- TRANSITION FROM TYPICAL SECTION NO. 2 TO EXISTING
-LDET- STA 16+65.00 TO STA 17+54.00
- EXCAVATE DETOUR EMBANKMENT AS SHOWN ON DITCH DETAILS (SHEET 4) AND CROSS SECTIONS.
- PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

| PAVEMENT DESIGN | |
|-----------------|---|
| CI | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS |
| C2 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH |
| DI | PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD. |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH |
| E1 | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| E2 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH |
| J | 8" AGGREGATE BASE COURSE |
| P | PRIME COAT AT THE RATE OF 0.35 GAL PER SQ. YD. |
| R | PROP. SHOULDER BERM GUTTER |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| V | MILLING EXISTING PAVEMENT 0" TO 3" (SEE DETAIL BELOW) |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL BELOW) |



PROFILE KEY-IN DETAIL



WEDGING DETAIL FOR RESURFACING

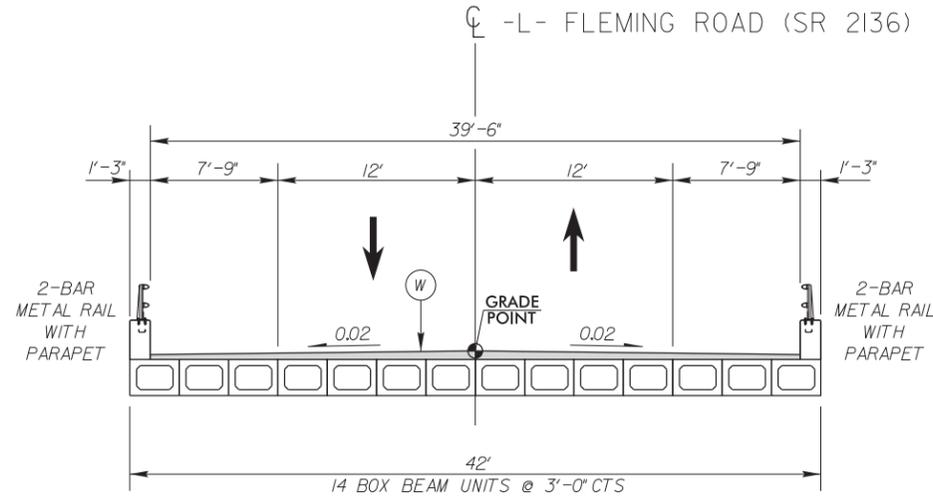
REVISIONS

K:\RAL_Roadway\011036275 - B-5345\Roadway\Pro\B5345_rdy_tjpdgn 5/26/2016

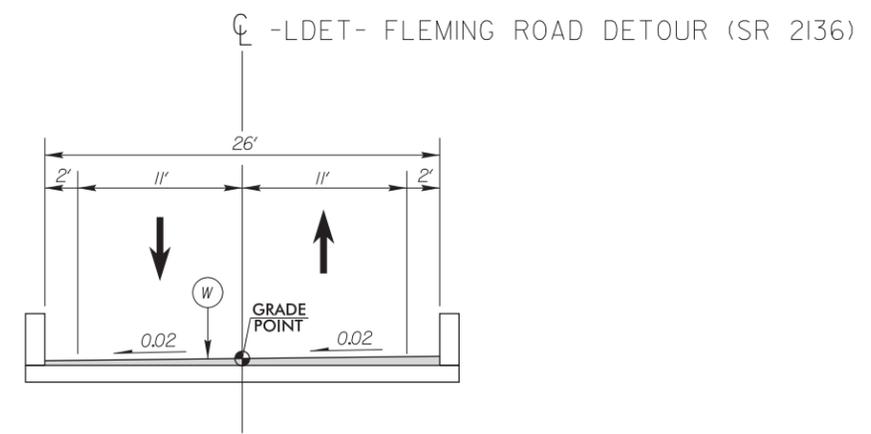
| | |
|---------------------------------|--------------------------|
| PROJECT REFERENCE NO. B-5345 | SHEET NO. 2A-2 |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

| PAVEMENT DESIGN | |
|-----------------|---------------------------------|
| C1 | 3" S9.5B |
| C2 | VAR. DEPTH S9.5B |
| D1 | 2.5" I19.0B |
| D2 | VAR. DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR. DEPTH B25.0B |
| J | 8" AGGREGATE BASE COURSE |
| P | PRIME COAT |
| R | PROP. SHOULDER BERM GUTTER |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| V | MILLING EXISTING PAVEMENT |
| W | VARIABLE DEPTH ASPHALT PAVEMENT |



BRIDGE TYPICAL SECTION NO. 1
 -L- STA 16+10 +/- TO STA 16+95 +/-



BRIDGE TYPICAL SECTION NO. 2
 -LDET- STA 13+59 +/- TO STA 14+24 +/-

REVISIONS

| | |
|-----------------------|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| B-5345 | 4 |
| ROADWAY ENGINEER | HYDRAULICS ENGINEER |
| | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THERESA ANN WEISS
DOUGLAS C. WEISS
DB 6665 PG 143

-L- POT Sta. 25+00.00
-GPS- 400104-1

MICHAEL C BURGER
ORATAI WONGSIRI
WELL DB 7409 PG 2452

EDWARD GALAVIZ
PATRICIA L. GALAVIZ
DB 3230 PG 787

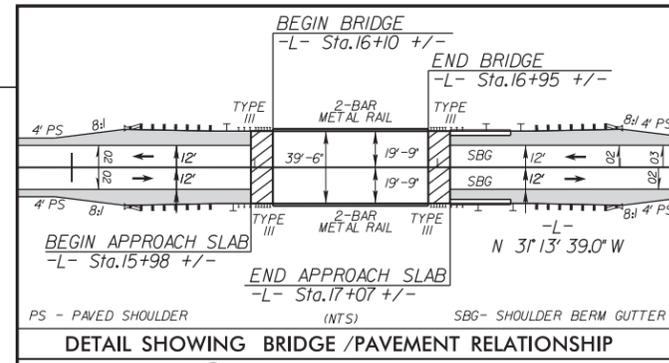
CITY OF GREENSBORO
DB 1655 PG 430
DB 2654 PG 529
DB 1654 PG 583

WOODS

RALPH W. GUFFEY
PATRICIA A. GUFFEY
(GUFFEY PROPERTY MANAGEMENT - TAX LISTING)
DB 4328 PG 1078

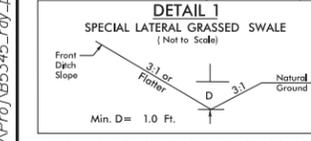
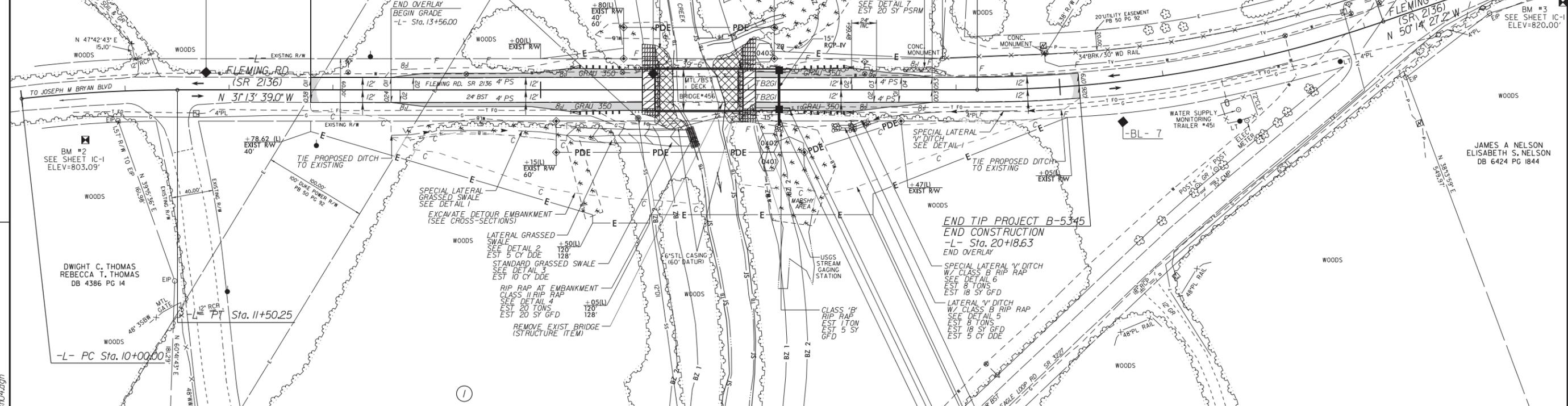
PI Sta 10+75.20 Δ = 6' 20" 21.1" (RT)
D = 4' 13" 08.9"
L = 150.25'
T = 75.20'
R = 1,358.00'
DS = 50 MPH
SE = EXIST
RO = EXIST

PI Sta 21+21.45 Δ = 19' 00" 48.2" (LT)
D = 4' 46" 28.7"
L = 398.22'
T = 200.96'
R = 1,200.00'
DS = 50 MPH
SE = EXIST
RO = EXIST

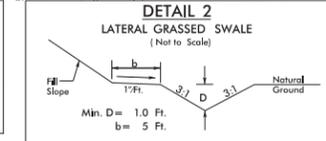


CITY OF GREENSBORO
DB 1655 PG 430
DB 2654 PG 529
DB 1654 PG 583

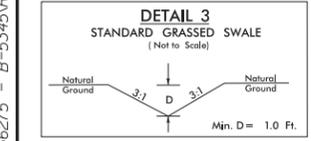
BEGIN TIP PROJECT B-5345
BEGIN CONSTRUCTION
-L- Sta. 12+78.62
BEGIN OVERLAY
-BL- 5



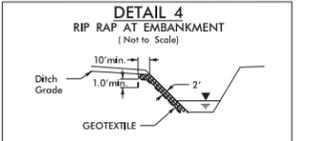
FROM -L- STA. 13+56 TO STA. 15+25 (RT)
FROM -L- STA. 18+25 TO STA. 19+75 (RT)



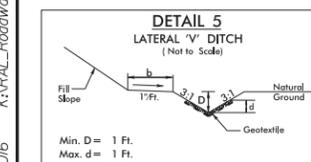
FROM -L- STA. 15+25 TO STA. 16+15 (RT)



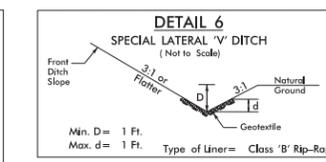
FROM -L- STA. 16+15 TO STA. 16+47.50 (RT)



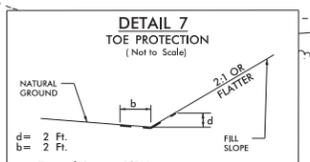
FROM -L- STA. 16+47.50 (RT)



FROM -L- STA. 17+75 TO STA. 18+00 (RT)



FROM -L- STA. 18+00 TO STA. 18+25 (RT)



FROM -L- STA. 18+50 TO STA. 18+90 (LT)

CITY OF GREENSBORO
DB 1655 PG 430
DB 2654 PG 529
DB 1654 PG 583

CITY OF GREENSBORO
DB 1655 PG 430
DB 2654 PG 529
DB 1654 PG 583

CITY OF GREENSBORO
DB 1655 PG 430
DB 2654 PG 529
DB 1654 PG 583

SEE SHEET 6 FOR -L- PROFILE
SEE SHEETS S-1THRU S-? FOR STRUCTURE PLANS

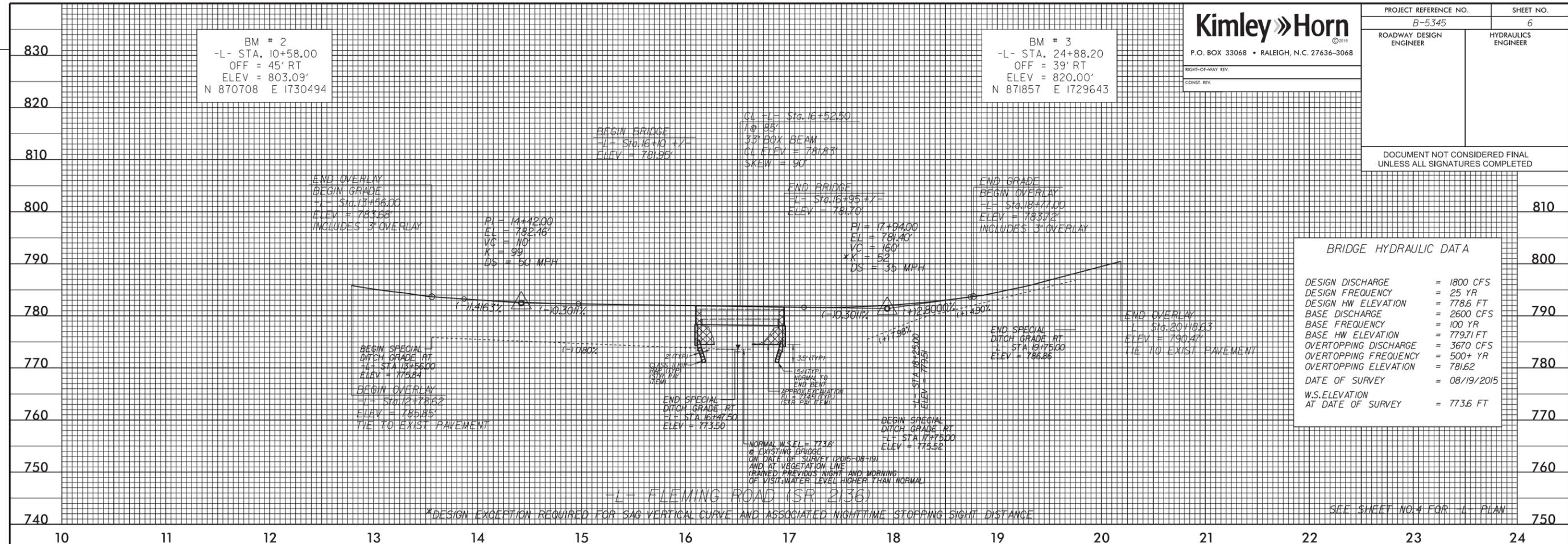
5/26/2016 K:\RAL_Roadway\01036275 - B-5345\Roadway\Proj\B5345_rdy_dsn04.dgn

| | |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO. B-5345 | SHEET NO. 6 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BM # 2
-L- STA. 10+58.00
OFF = 45' RT
ELEV = 803.09'
N 870708 E 1730494

BM # 3
-L- STA. 24+88.20
OFF = 39' RT
ELEV = 820.00'
N 871857 E 1729643

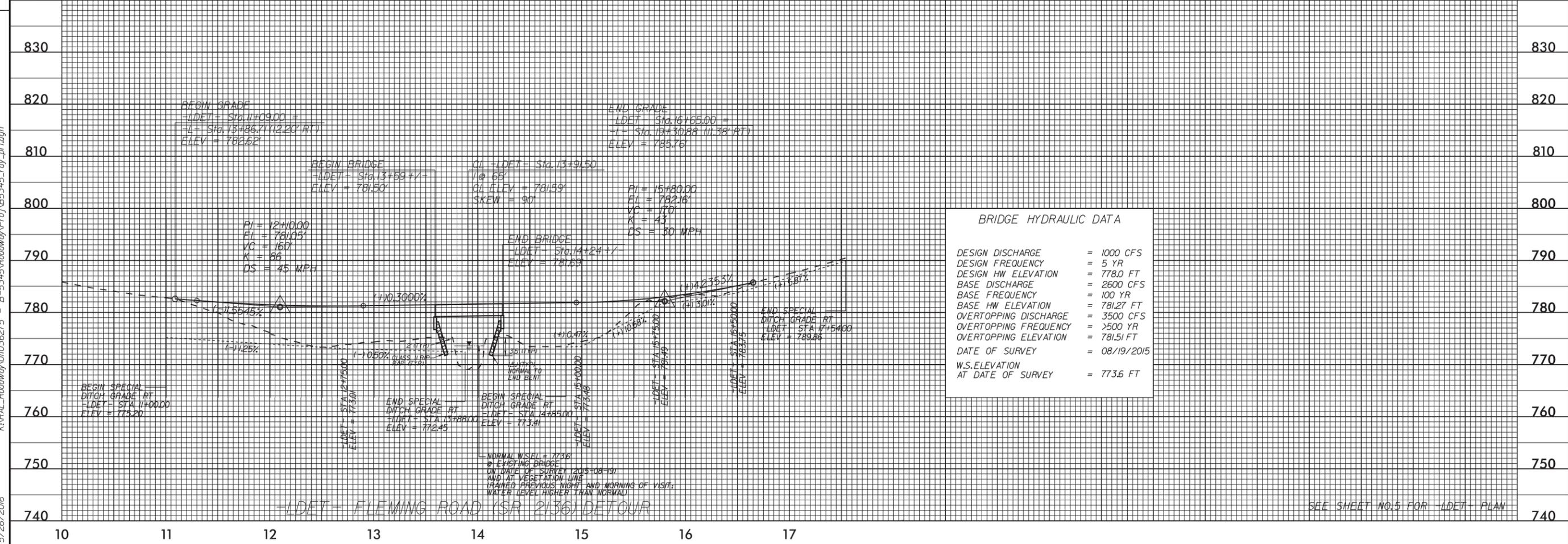


BRIDGE HYDRAULIC DATA

| | |
|----------------------------------|--------------|
| DESIGN DISCHARGE | = 1800 CFS |
| DESIGN FREQUENCY | = 25 YR |
| DESIGN HW ELEVATION | = 778.6 FT |
| BASE DISCHARGE | = 2600 CFS |
| BASE FREQUENCY | = 100 YR |
| BASE HW ELEVATION | = 779.71 FT |
| OVERTOPPING DISCHARGE | = 3670 CFS |
| OVERTOPPING FREQUENCY | = 500+ YR |
| OVERTOPPING ELEVATION | = 781.62 |
| DATE OF SURVEY | = 08/19/2015 |
| W.S. ELEVATION AT DATE OF SURVEY | = 773.6 FT |

*DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE AND ASSOCIATED NIGHTTIME STOPPING SIGHT DISTANCE

SEE SHEET NO. 4 FOR L- PLAN



BRIDGE HYDRAULIC DATA

| | |
|----------------------------------|--------------|
| DESIGN DISCHARGE | = 1000 CFS |
| DESIGN FREQUENCY | = 5 YR |
| DESIGN HW ELEVATION | = 778.0 FT |
| BASE DISCHARGE | = 2600 CFS |
| BASE FREQUENCY | = 100 YR |
| BASE HW ELEVATION | = 781.27 FT |
| OVERTOPPING DISCHARGE | = 3500 CFS |
| OVERTOPPING FREQUENCY | = >500 YR |
| OVERTOPPING ELEVATION | = 781.51 FT |
| DATE OF SURVEY | = 08/19/2015 |
| W.S. ELEVATION AT DATE OF SURVEY | = 773.6 FT |

-LDET- FLEMING ROAD (SR 2136) DETOUR

SEE SHEET NO. 5 FOR LDET PLAN

REVISIONS

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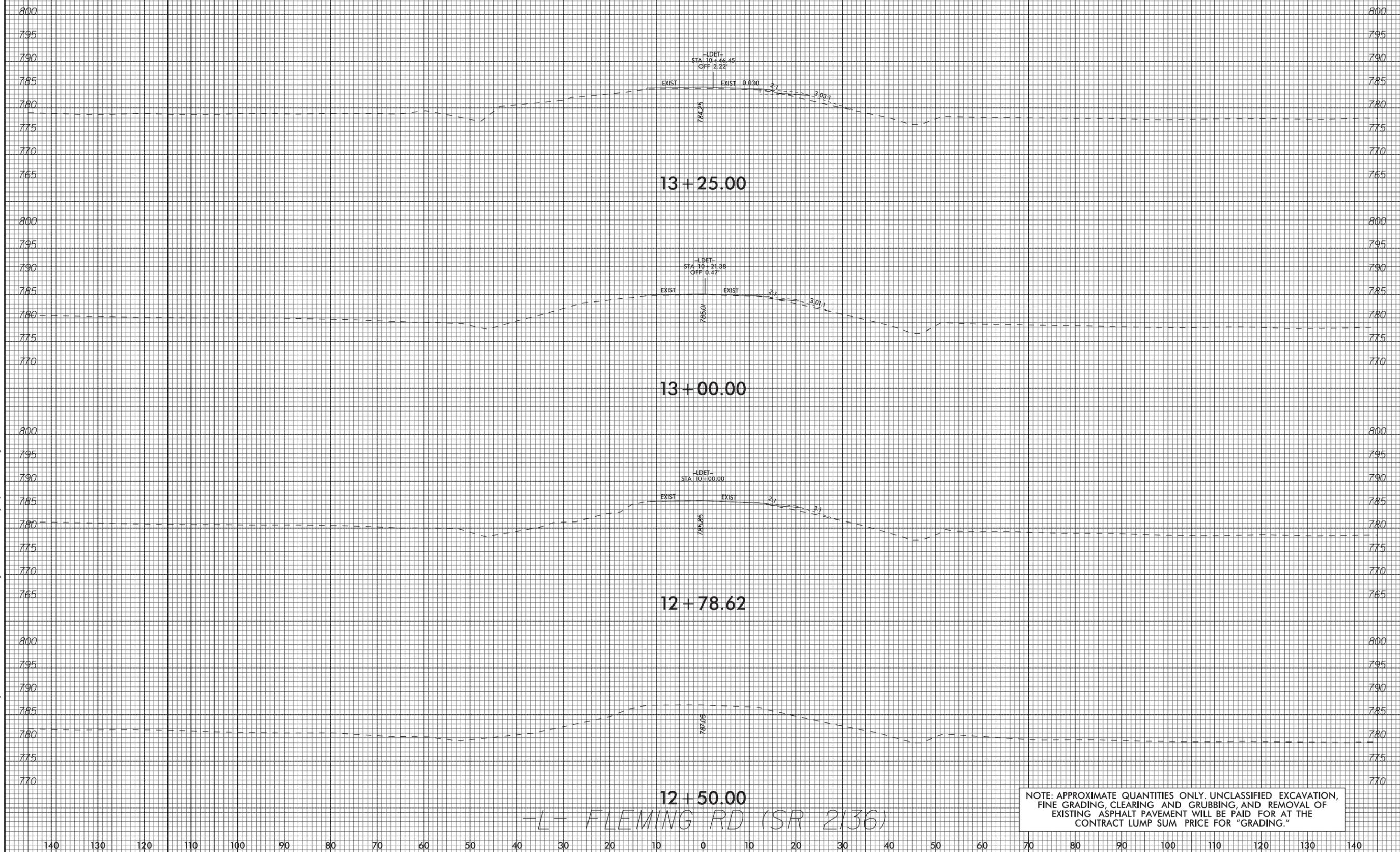
5/26/2016

*B-5345 - REPLACEMENT OF BRIDGE NO. 456
CROSS SECTION INDEX*

-L- FLEMING ROAD (SR 2136)

X-2 THRU X-10

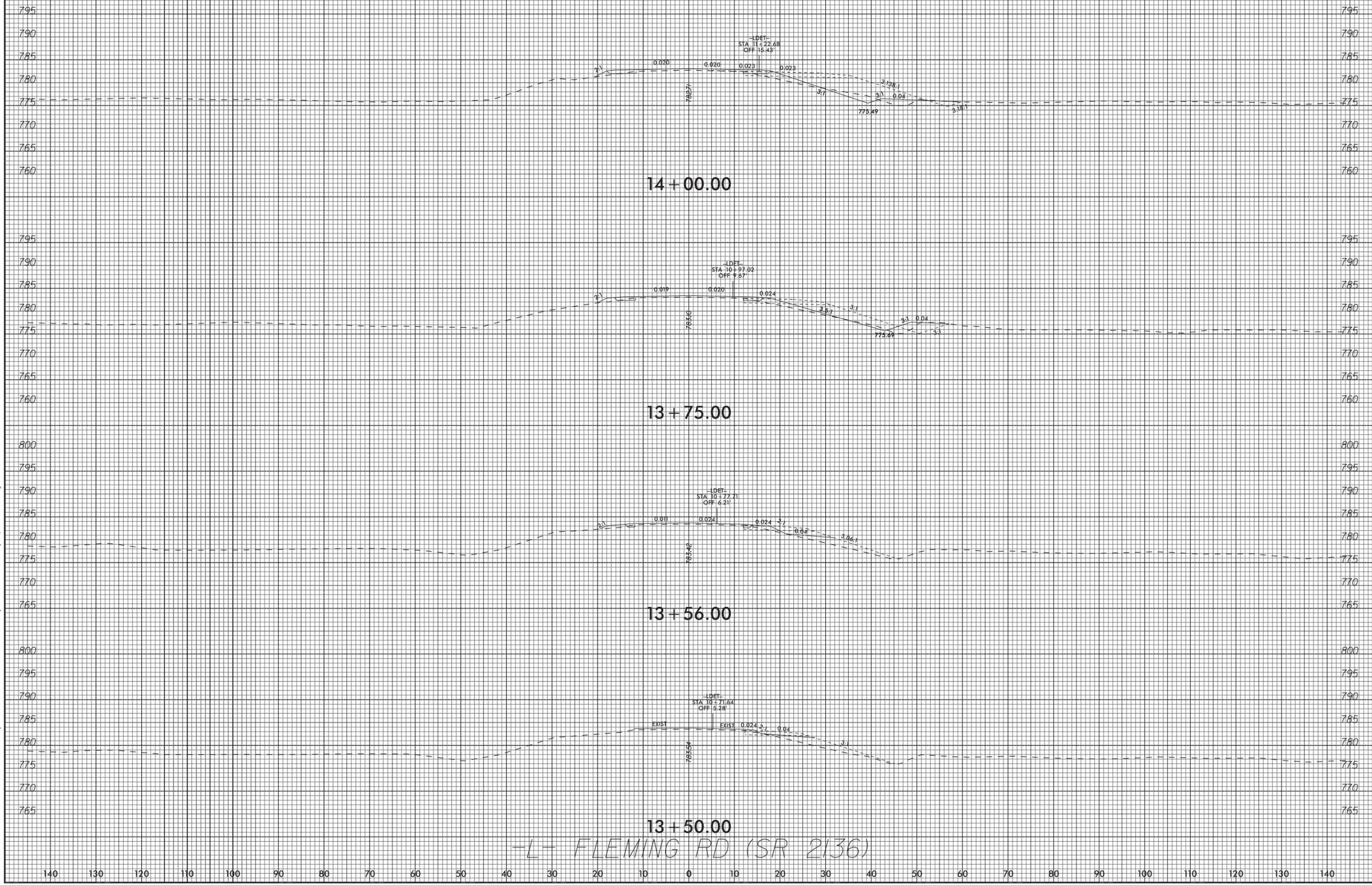
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5/26/2016

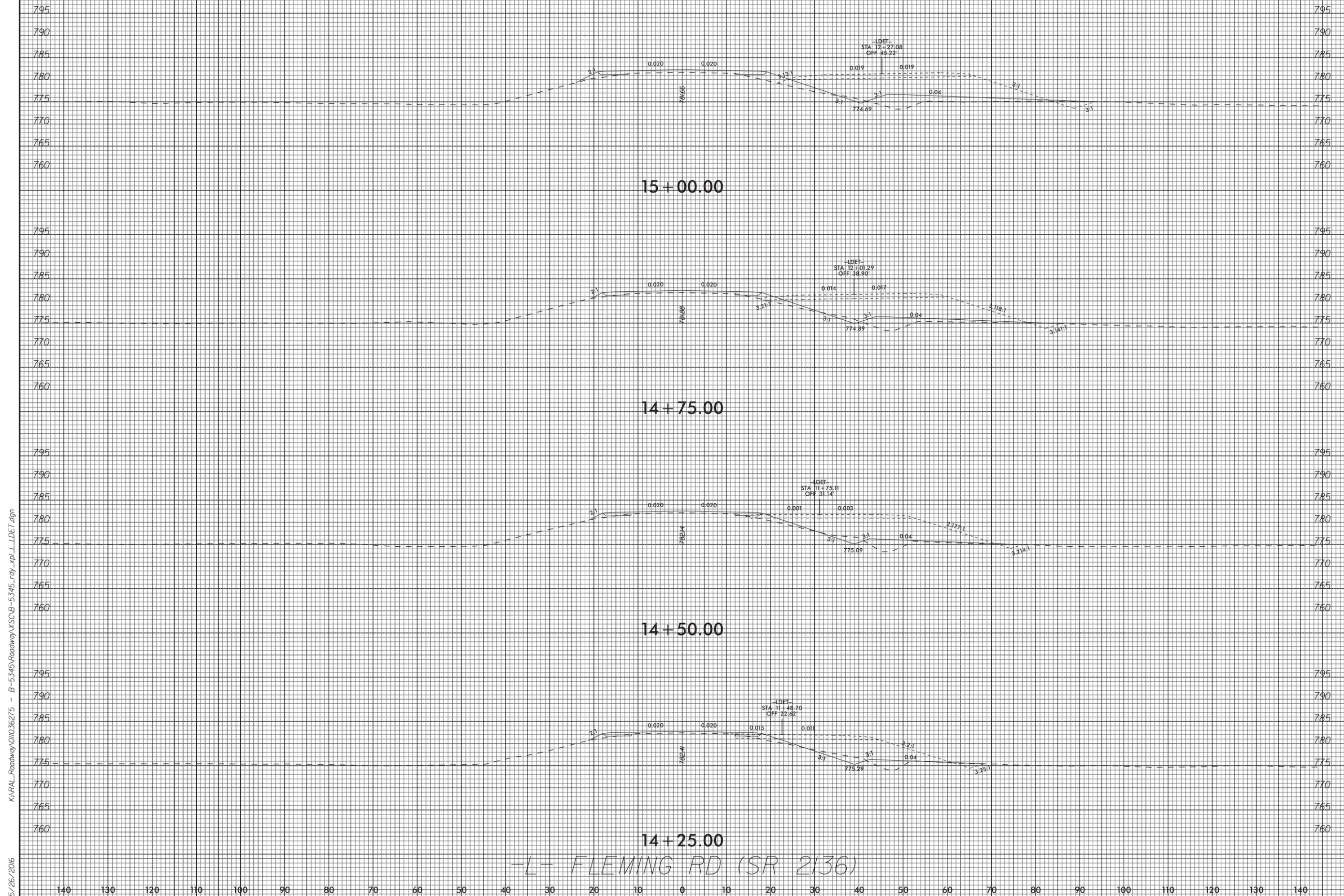


-L- FLEMING RD (SR 2136)

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

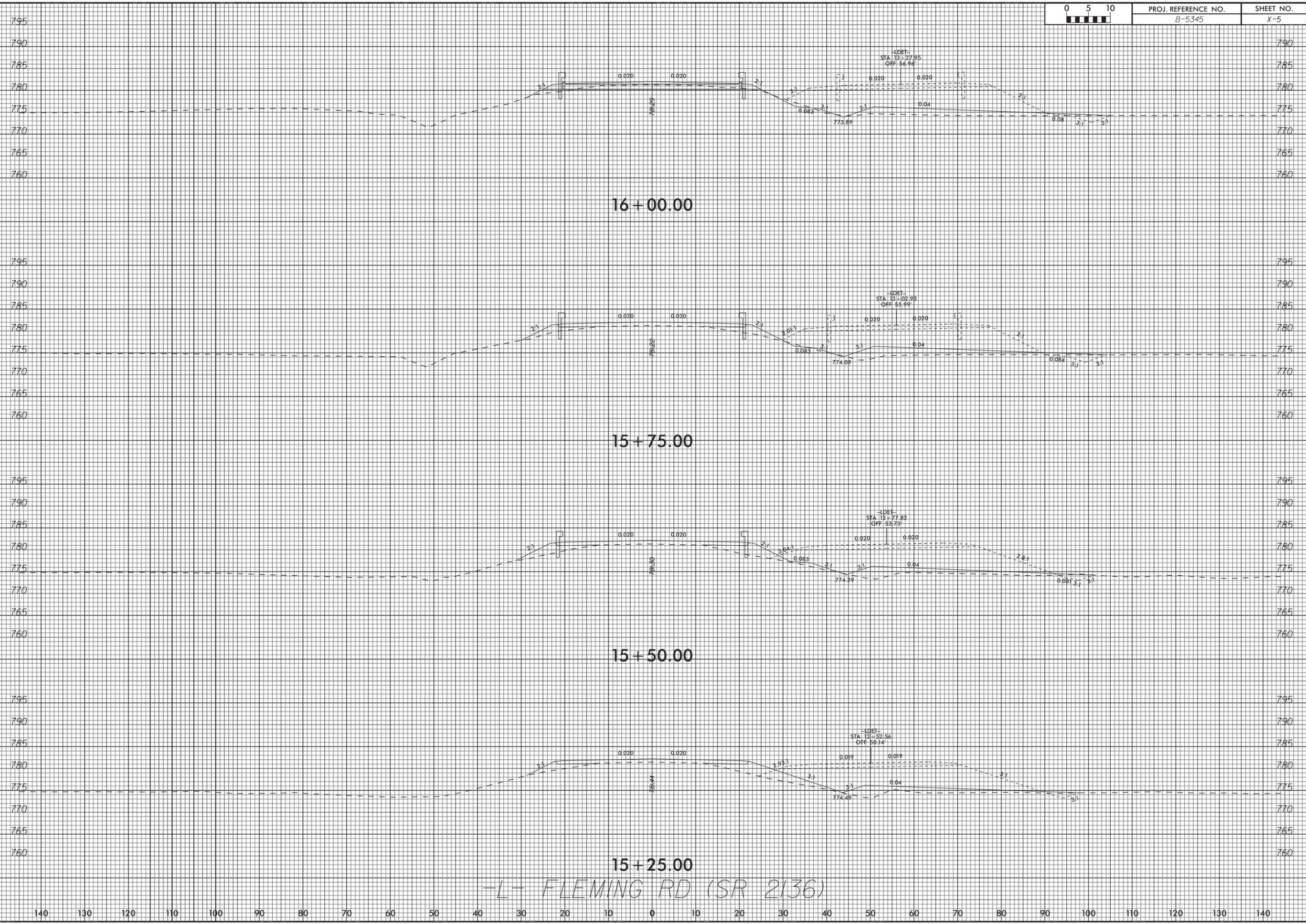
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5/26/2016





-L- FLEMING RD (SR 2136)

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16+00.00

15+75.00

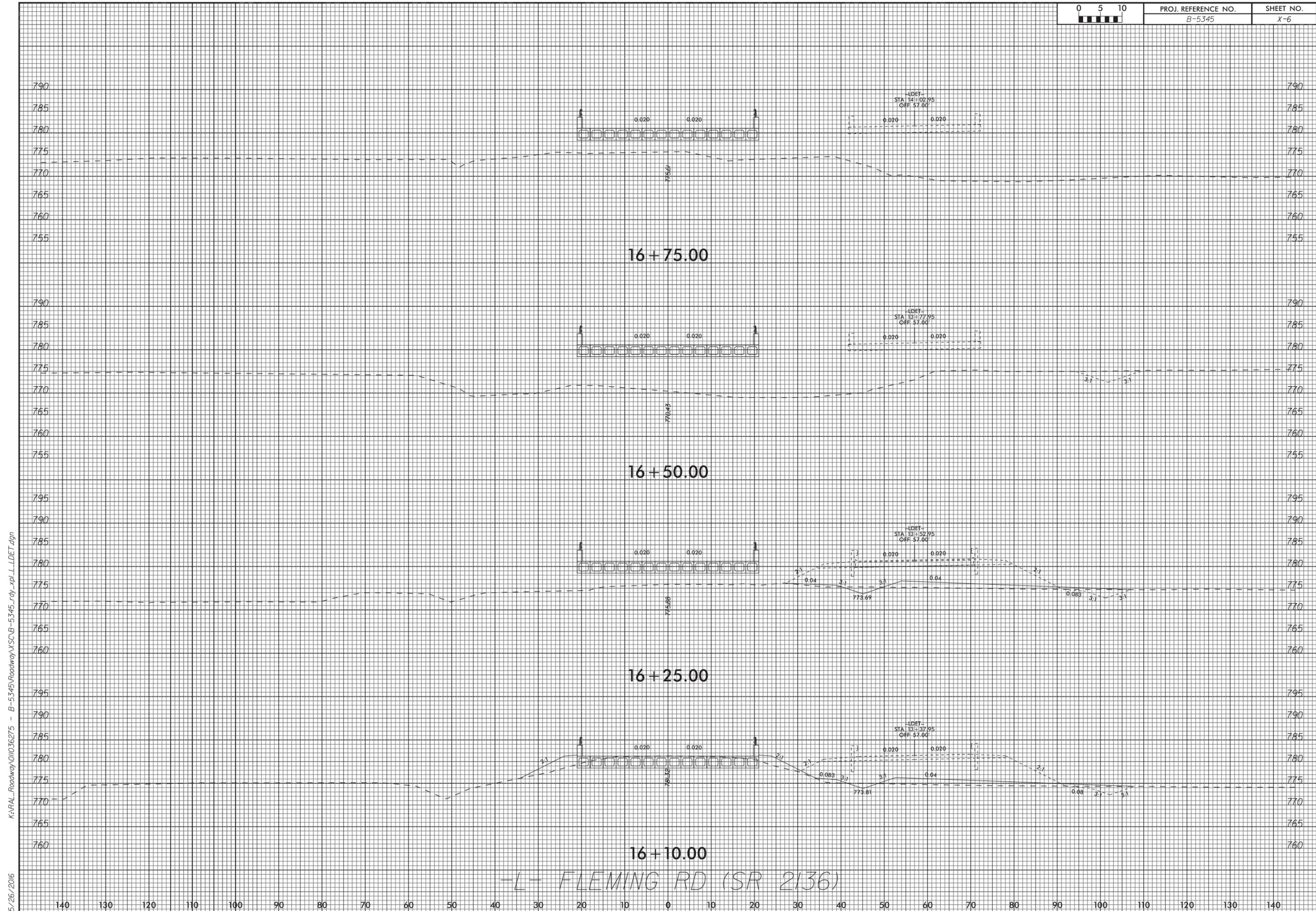
15+50.00

15+25.00

-L- FLEMING RD (SR 2136)

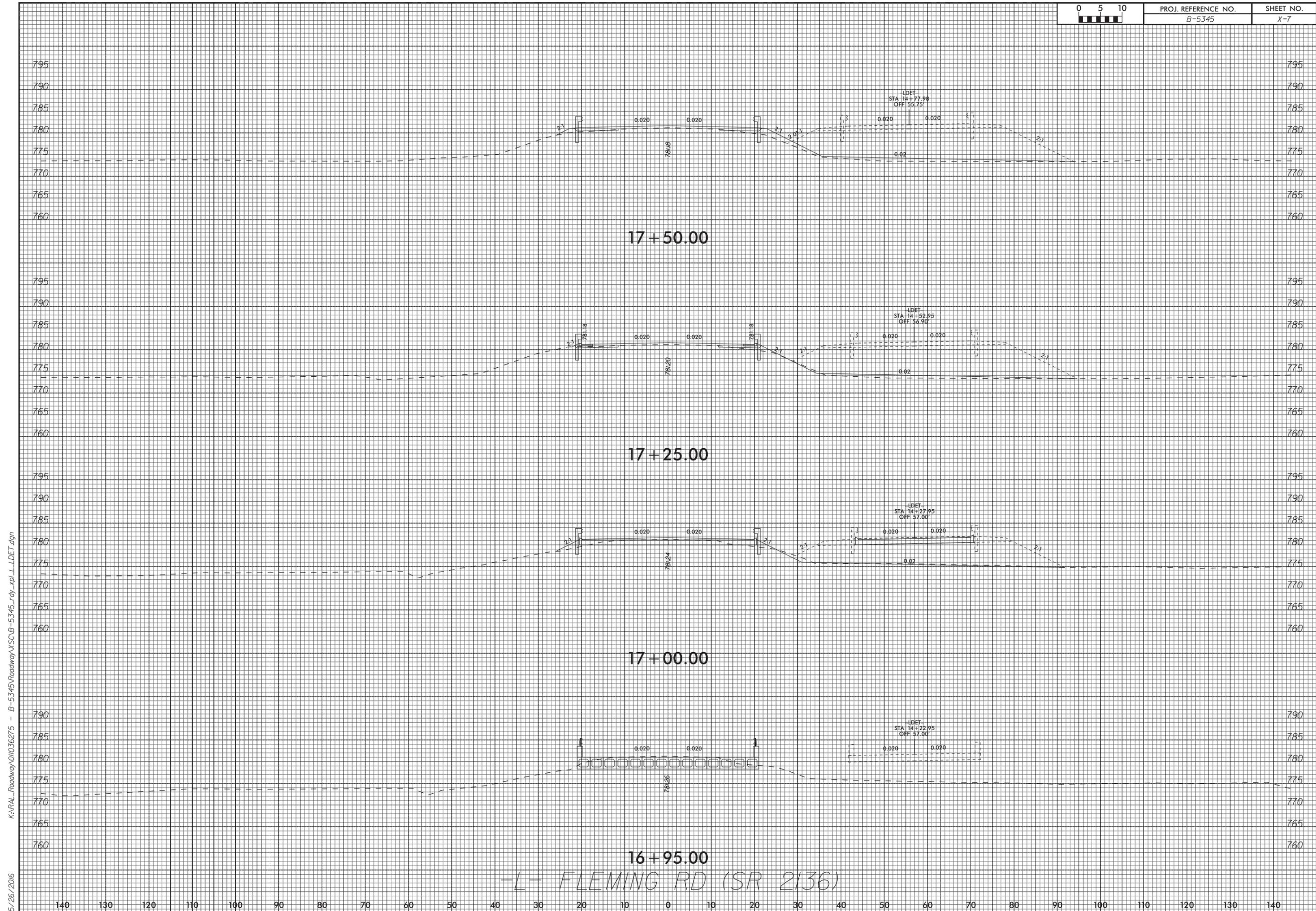
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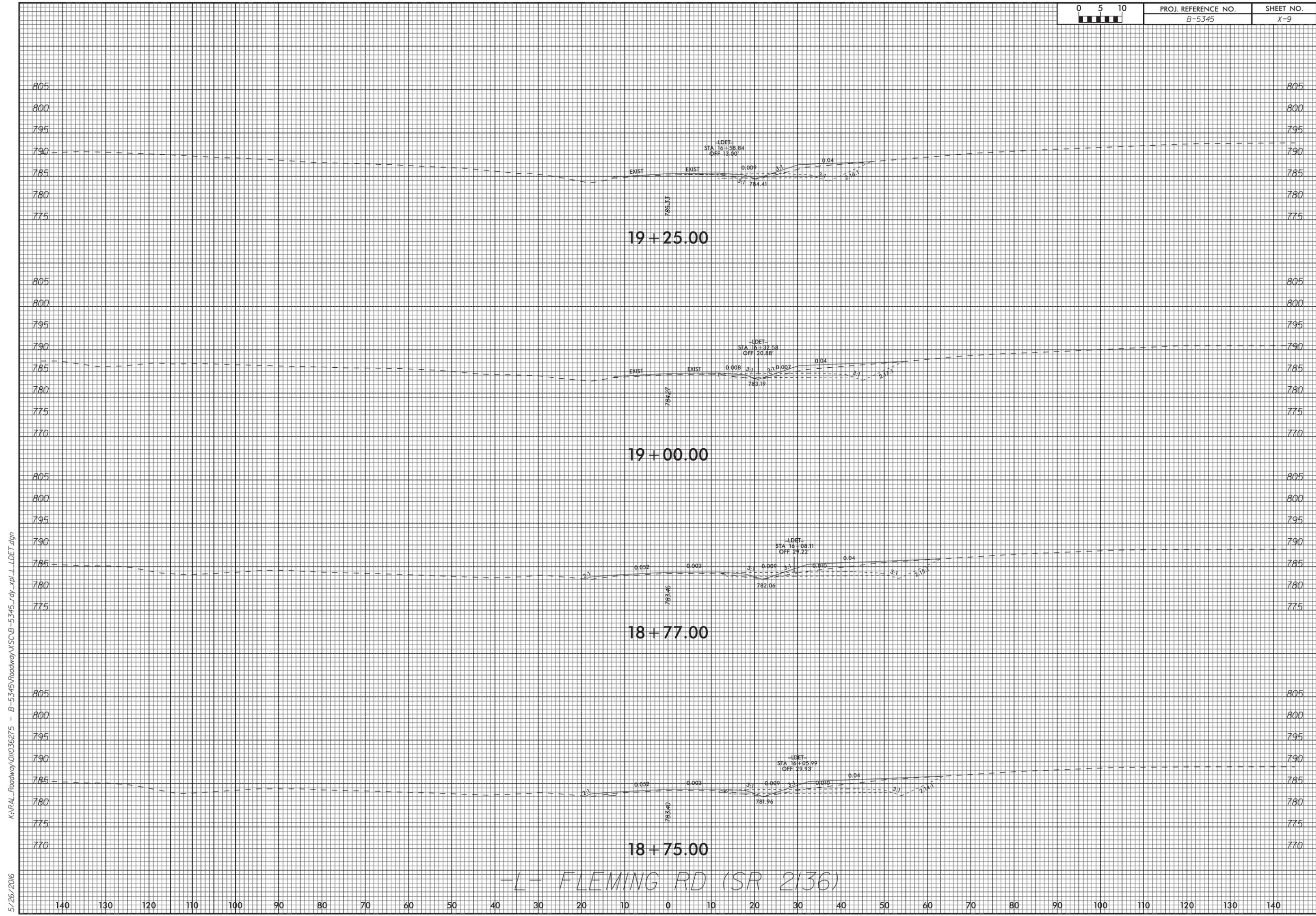
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-L- FLEMING RD (SR 2136)



-L- FLEMING RD (SR 2136)

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-L- FLEMING RD (SR 2136)

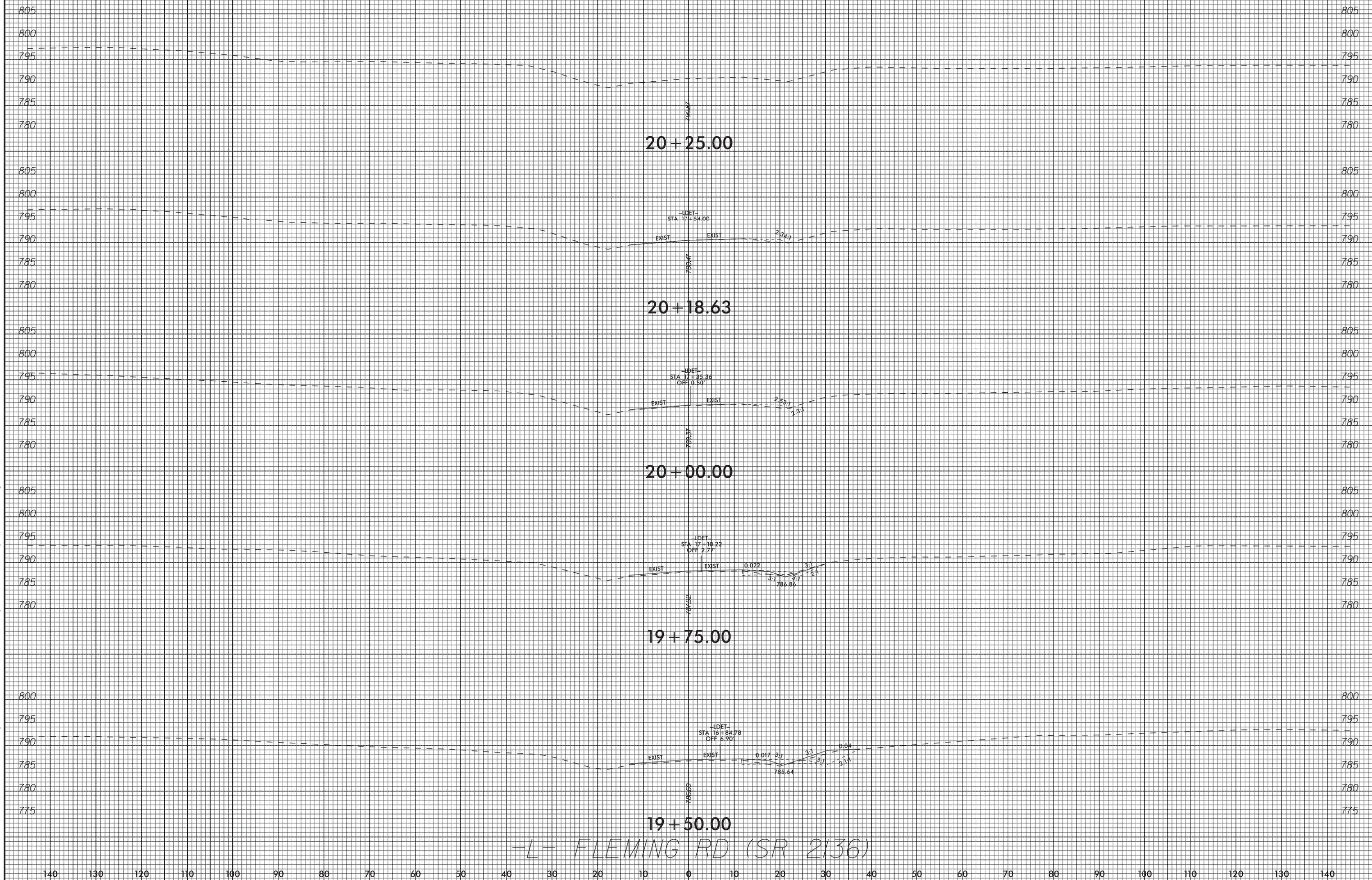
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PROJ. REFERENCE NO.
B-5345

SHEET NO.
X-10

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5/26/2016



-L- FLEMING RD (SR 2136)