



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

August 17, 2017

U.S. Army Corps of Engineers  
151 Patton Avenue, Room 208  
Asheville, NC 28801-5006

ATTN: Ms. Loretta Beckwith  
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permits 23, 33 and Section 401 Water Quality Certification**, for the Proposed Replacement of Bridge 49 on NC 80 over Brown Creek in Yancey County, Division 13, TIP No. B-5864, Federal Aid Project No. BRSTP-0080(6) Debit \$240 from WBS# 48058.1.1.

Dear Ms. Beckwith:

The North Carolina Department of Transportation (NCDOT) proposes to replace bridge number 49 (a Spandrel Filled Arch widened with RC floors on I-beams with a total length of 30.5 feet) on NC 80 over Brown Creek in Yancey County with a new, approximately 50-foot long, single span bridge on existing location, at approximately the same elevation as the existing structure. A temporary 55-foot long by 15-foot wide, one-lane detour bridge will be constructed downstream (east side) of the existing structure. The one-lane temporary on-site bridge will require the use of temporary traffic signals to facilitate an alternating one-lane traffic pattern on NC 80 during construction. There will be 112 linear feet of permanent stream impacts and <0.01 acre (88 linear feet) of temporary impacts.

Please see enclosed copies of the Pre-Construction Notification (PCN), DMS Acceptance Letter, USFWS Concurrence letter, Stormwater Management Plan, Permit Drawings, and Roadway Plan Sheets. A Programmatic Categorical Exclusion (PCE) was completed in October 2016 and distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of January 16, 2018 and a review date of November 28, 2017; however, the let date may advance as additional funding becomes available.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: <http://connect.ncdot.gov/resources/Environmental>. If you have any questions or need additional information, please call Bill Barrett at (919) 707-6103.

Sincerely,



For Philip S. Harris III, P.E., C.P.M.  
Environmental Analysis Unit Head

cc: NCDOT Permit Application Standard Distribution List



## Pre-Construction Notification (PCN) Form

For Nationwide Permits and Regional General Permits

(along with corresponding Water Quality Certifications)

June 28, 2017 Ver 1.8

*Please note: fields marked with a red asterisk \* below are required. You will not be able to submit the form until all mandatory questions are answered.*

Below is a link to the DRAFT online help file.

<http://edocs.deq.nc.gov/WaterResources/0/doc/549884/Page1.aspx>

### A. Processing Information

County (or Counties) where the project is located: \*

Yancey

Is this project a public transportation project? \*

Yes  No

Is this a NCDOT Project? \*

Yes  No

(NCDOT only) T.I.P. or state project number:

B-5864

WBS #

48058.1.1

(for NCDOT use only)

1a. Type(s) of approval sought from the Corps: \*

- Section 404 Permit (wetlands, streams and waters, Clean Water Act)  
 Section 10 Permit (navigable waters, tidal waters, Rivers and Harbors Act)

1b. What type(s) of permit(s) do you wish to seek authorization? \*

- Nationwide Permit (NWP)  
 Regional General Permit (RGP)

Nationwide Permit (NWP) Number: 23 - Categorical Exclusions

Nationwide Permit (NWP) Number: 33 - Temporary Construction

NWP Number Other:

List all NW numbers you are applying for not on the drop down list.

1c. Type(s) of approval sought from the DWR: \*

check all that apply

- 401 Water Quality Certification - Regular  
 Non-404 Jurisdictional General Permit

- 401 Water Quality Certification - Express  
 Riparian Buffer Authorization

**1d. Is this notification solely for the record because written approval is not required?**

**For the record only for DWR 401 Certification:**  Yes  No

**For the record only for Corps Permit:**  Yes  No

**1e. 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.

Yes  No

#### Acceptance Letter Attachment

Click the upload button or drag and drop files here to attach document

B-5864 DMS Acceptance 2017-03-20.pdf

98.38KB

FILE TYPE MUST BE PDF

**1f. Is the project located in any of NC's twenty coastal counties? \***

Yes  No

## B. Applicant Information

**1a. Who is the Primary Contact? \***

NCDOT

**1b. Primary Contact Email: \***

wabarrett@ncdot.gov

**1c. Primary Contact Phone: \***

(xxx)xxx-xxxx

(919)707-6103

**1d. Who is applying for the permit?**

Owner  Applicant (other than owner)  Agent/Consultant

(Check all that apply)

## 2. Owner Information

**2a. Name(s) on recorded deed:**

**2b. Deed book and page no.:**

**2c. Responsible party:**

(for Corporations)

**2d. Address**

Street Address

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

**2e. Telephone Number:**

(xxx)xxx-xxxx

**2f. Fax Number:**

(xxx)xxx-xxxx

**2g. Email Address: \***

pharris@ncdot.gov

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## C. Project Information and Prior Project History

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### 1. Project Information

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**1a. Name of project: \***

Replacement of Bridge 49 over Brown Creek on NC 80.

**1b. Subdivision name:**

(if appropriate)

**1c. Nearest municipality / town: \***

Burnsville

**1d. Driving directions \***

If it is a new project and can not easily be found in a GPS mapping system. Please provide directions.

GPS Mapping

### 2. Project Identification

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**2a. Property Identification Number:**

(tax PIN or parcel ID)

**2b. Property size:**

(in acres)

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**2c. Project Address**

Street Address

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

**2d. Site coordinates in decimal degrees**

Please collect site coordinates in decimal degrees. Use between 4-6 digits (unless you are using a survey-grade GPS device) after the decimal place as appropriate, based on how the location was determined. (For example, most mobile phones with GPS provide locational precision in decimal degrees to map coordinates to 5 or 6 digits after the decimal place.)

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**Latitude: \***

**35.856249**

ex: 34.208504

**Longitude: \***

**-82.199455**

-77.796371

### 3. Surface Waters

**3a. Name of the nearest body of water to proposed project: \***

Brown Creek

**3b. Water Resources Classification of nearest receiving water: \***

C;TR;ORW

[Surface Water Lookup](#)

**3c. What river basin(s) is your project located in? \***

French Broad

[River Basin Lookup](#)

## 4. Project Description

**4a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: \***

Residential and commercial development along the roadway with forestland along Brown Creek.

**4b. Attach an 8 1/2 X 11 excerpt from the most recent version of the USGS topographic map indicating the location of the project site. (for DWR)**

Click the upload button or drag and drop files here to attach document

File type must be pdf

**4c. Attach an 8 1/2 X 11 excerpt from the most recent version of the published County NRCS Soil Survey map depicting the project site. (for DWR)**

Click the upload button or drag and drop files here to attach document

File type must be pdf

**4d. List the total estimated acreage of all existing wetlands on the property:**

0

**4e. List the total estimated linear feet of all existing streams on the property:**

(intermittent and perennial)

848

**4f. Explain the purpose of the proposed project:**

To replace a structurally deficient and functionally obsolete bridge that has reached the end of its useful life.

**4g. Describe the overall project in detail, including the type of equipment to be used:**

The project involves replacing a 30.5-foot bridge with a 50-foot, single-span bridge on the existing alignment with an on-site detour. The temporary detour bridge will be 55 feet in length. Standard road building equipment, such as trucks, dozers, and cranes will be used.

**4h. Please upload project drawings for the proposed project.**

Click the upload button or drag and drop files here to attach document

B-5864 Hydro & Roadway Drawings 2017-03-01.pdf 5.24MB

B-5864 Roadway Plans.pdf 5.98MB

File type must be pdf

## 5. Jurisdictional Determinations

**5a. Have the wetlands or streams been delineated on the property or proposed impact areas? \***

Yes

No

Unknown

**Comments:**

**5b. If the Corps made a jurisdictional determination, what type of determination was made? \***

Preliminary

Approved

Unknown

**Corps AID Number:**

Example: SAW-2017-99999

**5c. If 5a is yes, who delineated the jurisdictional areas?**

**Name (if known):**

5c. If 5a is yes, who delineated the jurisdictional areas?

Agency/Consultant Company:

Other:

5d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.

#### 5d1. Jurisdictional determination upload

Click the upload button or drag and drop files here to attach document

File type must be PDF

## 6. Project History

6a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past? \*

Yes

No

Unknown

## 7. Future Project Plans

7a. Is this a phased project? \*

Yes

No

Are any other NWP(s), regional general permit(s), or individual permits(s) used, or intended to be used, to authorize any part of the proposed project or related activity? This includes other separate and distant crossing for linear projects that require Department of the Army authorization but don't require pre-construction notification.

## D. Proposed Impacts Inventory

### 1. Impacts Summary

1a. Where are the impacts associated with your project? (check all that apply):

Wetlands

Streams-tributaries

Buffers

Open Waters

Pond Construction

### 2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

### 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. Site # - Reason for impact                                    | 3b. Impact type                     | 3c. Type of impact | 3d. Stream name | 3e. Stream Type                                    | 3f. Jurisdiction type | 3g. Stream width        | 3h. Impact length   |
|---|-------------------------------------|--------------------|-----------------|--|-----------------------|-------------------------|---------------------|
| Site 1 - Bridge Abutment Fill<br>Map label (e.g. Road Crossing 1) | P<br>Permanent (P) or Temporary (T) | Rip Rap Fill       | Brown Creek     | Perennial<br>Perennial (PER) or intermittent (INT) | Corps                 | Average<br>25<br>(feet) | 5<br>(linear feet)  |
| Site 1 - Bridge Abutment Fill<br>Map label (e.g. Road Crossing 1) | T<br>Permanent (P) or Temporary (T) | Rip Rap Fill       | Brown Creek     | Perennial<br>Perennial (PER) or intermittent (INT) | Corps                 | Average<br>25<br>(feet) | 68<br>(linear feet) |

| 3a. Site # - Reason for impact                                   | 3b. Impact type                            | 3c. Type of impact | 3d. Stream name            | 3e. Stream Type   | 3f. Jurisdiction type | 3g. Stream width              | 3h. Impact length          |
|--|--|--------------------|----------------------------|---|-----------------------|-------------------------------|----------------------------|
| <b>Site 2 - Roadway Fill</b><br>Map label (e.g. Road Crossing 1) | <b>P</b><br>Permanent (P) or Temporary (T) | <b>Fill</b>        | <b>UT 1 to Brown Creek</b> | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Corps</b>          | Average<br><b>3</b><br>(feet) | <b>83</b><br>(linear feet) |
| <b>Site 2 - Roadway Fill</b><br>Map label (e.g. Road Crossing 1) | <b>T</b><br>Permanent (P) or Temporary (T) | <b>Fill</b>        | <b>UT 1 to Brown Creek</b> | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Corps</b>          | Average<br><b>3</b><br>(feet) | <b>10</b><br>(linear feet) |
| <b>Site 2 - Roadway Fill</b><br>Map label (e.g. Road Crossing 1) | <b>P</b><br>Permanent (P) or Temporary (T) | <b>Fill</b>        | <b>UT 2 to Brown Creek</b> | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Corps</b>          | Average<br><b>4</b><br>(feet) | <b>24</b><br>(linear feet) |
| <b>Site 2 - Roadway Fill</b><br>Map label (e.g. Road Crossing 1) | <b>T</b><br>Permanent (P) or Temporary (T) | <b>Fill</b>        | <b>UT 2 to Brown Creek</b> | <b>Perennial</b><br>Perennial (PER) or intermittent (INT) | <b>Corps</b>          | Average<br><b>4</b><br>(feet) | <b>10</b><br>(linear feet) |

\*\* All Perennial or Intermittent streams must be verified by DWR or delegated local government.

**3i. Total jurisdictional ditch impact in square feet:**

0

**3i. Total permanent stream impacts:**

112

**3i. Total temporary stream impacts:**

88

**3i. Total stream and tributary impacts:**

200

**3j. Comments:**

## 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.

## 5. Pond or Lake Construction

If pond or lake construction is proposed, then complete the chart below.

## 6. Buffer Impacts (for DWR)

If project will impact a protected riparian buffer, then complete the chart below. Individually list all buffer impacts below.

# E. Impact Justification and Mitigation

## 1. Avoidance and Minimization

**1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing the project: \***

The proposed bridge is 20 feet longer than the existing bridge, and will be a single span structure. An on-site detour will be used, and the temporary bridge will span Brown Creek; 3:1 fill slopes where practicable.

**1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques: \***



Design Standards in Sensitive Waters (15A NCAC 04B.0124) will be adhered to throughout the construction of the project to reduce stormwater impacts to the receiving stream due to erosion and runoff.

A Trout Moratorium prohibiting in-stream work and land disturbance within the 25-foot trout buffer will be adhered to from October 15 to April 15.

## 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?

Yes  No

2c. If yes, mitigation is required by (check all that apply):

DWR  Corps

2d. If yes, which mitigation option(s) will be used for this project?

Mitigation bank  Payment to in-lieu fee program  Permittee Responsible Mitigation

## 4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.

Yes

4b. Stream mitigation requested:

(linear feet)

112

4c. If using stream mitigation, stream temperature:

cool

4d. Buffer mitigation requested (DWR only):

(square feet)

4e. Riparian wetland mitigation requested:

(acres)

4f. Non-riparian wetland mitigation requested:

(acres)

4g. Coastal (tidal) wetland mitigation requested:

(acres)

4h. Comments

## F. Stormwater Management and Diffuse Flow Plan (required by DWR)

1a. Does this project require a Stormwater Management Plan?

Yes  No

1b. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan:

See attached permit drawings.

1c. What is the overall percent imperviousness of this project?

%

1d. Who will be responsible for the review of the Stormwater Management Plan? \*

Certified Local Government  DEMLR Stormwater Review  
 DWR 401 & Buffer Permitting Branch  DWR Transportation Permitting Branch

## 2. Diffuse Flow Plan

2a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?

Yes  No

If no, explain why:

## 5. DWR 401 Stormwater Review

5a. Is the Stormwater Management Plan (including BMP Supplemental Forms and Operation and Maintenance Agreements) attached?

Yes  No

### Stormwater Management Plan Upload

Click the upload button or drag and drop files here to attach document

file type must be pdf

## G. Supplementary Information

### 1. Environmental Documentation

1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? \*

Yes  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)? \*

Yes  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.) \*

Yes  No

### NEPA or SEPA Final Approval Letter

Click the upload button or drag and drop files here to attach document

FILE TYPE MUST BE PDF

### 2. Violations (DWR Requirement)

2a. Is the site in violation of DWR Water Quality Certification Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), or DWR Surface Water or Wetland Standards or Riparian Buffer Rules (15A NCAC 2B .0200)? \*

Yes  No

2b. Is this an after-the-fact permit application? \*

Yes  No

2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):

### 3. Cumulative Impacts (DWR Requirement)

3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? \*

Yes  No

3b. 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 (DWR Requirement)

**4a. Describe, in detail, the treatment methods and dispositions (non-discharge or discharge) of wastewater generated from the proposed project. If the wastewater will be treated at a treatment plant, list the capacity available at that plant.**

#### 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? \***

Yes  No

**5b. Have you checked with the USFWS concerning Endangered Species Act impacts? \***

Yes  No

**5c. If yes, indicate the USFWS Field Office you have contacted.**

Asheville

**5d. Is this a DOT project located within Division's 1-8? \***

Yes

No

**5e. Will you cut any trees in order to conduct the work in waters of the U.S.? \***

Yes  No

**5f. Does this project involve bridge maintenance or removal? \***

Yes  No

**5f(1). If yes, have you inspected the bridge for signs of bat use such as staining, guano, bats, etc.? Representative photos of signs of bat use can be found in the NLEB SLOPES, Appendix F, pages 3-7.**

Yes  No

Link to the NLEB SLOPES document: [http://saw-reg.usace.army.mil/NLEB/1-30-17-signed\\_NLEB-SLOPES&apps.pdf](http://saw-reg.usace.army.mil/NLEB/1-30-17-signed_NLEB-SLOPES&apps.pdf)

**If you answered "Yes" to 5f(1), did you discover any signs of bat use? \***

Yes  No  Unknown

**If yes, please show the location of the bridge on the permit drawings/project plans.**

Click the upload button or drag and drop files here to attach document

File must be PDF

**5g. Does this project involve the construction/installation of a wind turbine(s)? \***

Yes  No

**If yes, please show the location of the wind turbine(s) on the permit drawings/project plans.**

Click the upload button or drag and drop files here to attach document

File must be PDF

**5h. Does this project involve (1) blasting, and/or (2) other percussive activities that will be conducted by machines, such as jackhammers, mechanized pile drivers, etc.? \***

Yes  No

**If yes to either, please provide details to include type of percussive activity, purpose, duration, and specific location of this activity on the property.**

Click the upload button or drag and drop files here to attach document

File must be PDF

**5i. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? \***

"USFWS Website:

-The project will have no effect, due to lack of habitat, for spreading avens, Carolina northern flying squirrel, Rock gnome lichen, Roan Mountain bluet, Spruce-fir moss spider, and gray bat.  
-The project will have no effect, but habitat is present, for Virginia spiraea.  
-The project May Affect, but is Not Likely to Adversely Affect the Appalachian elktoe. Concurrence was requested and received (and is attached to this Application) from the USFWS on April 19, 2017.  
-The project is consistent with the 4(d) rule for the Northern long-eared bat, as compliance documentation was provided in the Request for Concurrence to the USFWS. No comments were received from the USFWS."

## 6. Essential Fish Habitat (Corps Requirement)

**6a. Will this project occur in or near an area designated as an Essential Fish Habitat? \***

Yes  No

**6b. What data sources did you use to determine whether your site would impact an Essential Fish Habitat? \***

NMFS County Index

## 7. Historic or Prehistoric Cultural Resources (Corps Requirement)

Link to the State Historic Preservation Office Historic Properties Map (does not include archaeological data: <http://gis.ncdcr.gov/hpweb/>)

**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)? \***

Yes  No

**7b. What data sources did you use to determine whether your site would impact historic or archeological resources? \***

NEPA Documentation

### 7c. Historic or Prehistoric Information Upload

Click the upload button or drag and drop files here to attach document

File must be PDF

## 8. Flood Zone Designation (Corps Requirement)

Link to the FEMA Floodplain Maps: <https://msc.fema.gov/portal/search>

**8a. Will this project occur in a FEMA-designated 100-year floodplain? \***

Yes  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.

### Miscellaneous attachments not previously requested.

Click the upload button or drag and drop files here to attach document

B-5864 Application Cover Letter.pdf 269.39KB

B-5864 USFWS Concurrence 2017-04-19.pdf 179.27KB

File must be PDF

## Signature

\*

By checking the box and signing below, I certify that:

- I have given true, accurate, and complete information on this form;
- I agree that submission of this PCN form is a “transaction” subject to Chapter 66, Article 40 of the NC General Statutes (the “Uniform Electronic Transactions Act”);
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the “Uniform Electronic Transactions Act”);
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the PCN form.

**Full Name: \***

Colin Mellor

**Signature**



*Colin Mellor*



ROY COOPER  
Governor

March 20, 2017

Mr. Philip S. Harris, III, 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: Mitigation Acceptance Letter:

**B-5864**, Replace Bridge 49 over Browns Creek on NC 80, Yancey County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on March 15, 2017, the impacts are located in CU 06010108 of the French Broad River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

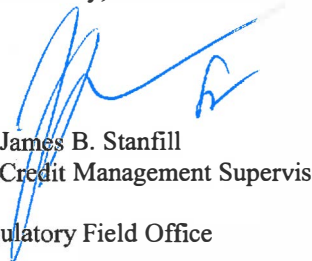
| French Broad<br>06010108<br>NM | Stream |       |      | Wetlands |              |               | Buffer (Sq. Ft.) |        |
|--------------------------------|--------|-------|------|----------|--------------|---------------|------------------|--------|
|                                | Cold   | Cool  | Warm | Riparian | Non-Riparian | Coastal Marsh | Zone 1           | Zone 2 |
| Impacts (feet/acres)           | 0      | 112.0 | 0    | 0        | 0            | 0             | 0                | 0      |

\*Some of the stream and/or wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

The impacts and associated mitigation needs were under projected by the NCDOT in the 2017 impact data. DMS will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. 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.

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

Sincerely,



James B. Stanfill  
Credit Management Supervisor

cc: Ms. Lori Beckwith, USACE – Asheville Regulatory Field Office  
Ms. Amy Chapman, NCDWR  
File: B-5864





# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Asheville Field Office  
160 Zillicoa Street Suite #B  
Asheville, North Carolina 28801

April 19, 2017

Mr. Phillip S. Harris  
North Carolina Department of Transportation  
Project Development and Environmental Analysis Unit  
1598 Mail Service Center  
Raleigh, NC 27699-1598

Subject: Endangered Species Concurrence for the Proposed Replacement of Bridge No. 49 on NC 80 over Brown Creek, Yancey County, North Carolina, TIP Project No B-5864.

Dear Mr. Harris:

We have reviewed your concurrence request and supporting documentation regarding potential impacts to the federally endangered Appalachian elktoe (*Alismidonta raveneliana*) from implementation of the subject project. We provide the following comments in accordance with the provisions of section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 49 over Brown Creek. The replacement structure will be a cored slab bridge that spans Brown Creek. A temporary bridge structure will be used to provide an on-site detour. The project site is about 1.2 miles from the confluence with the South Toe River and the closest occurrence of Appalachian elktoe in the South Toe is 3.1 miles from the project site.

According to the information provided, in July of 2013, a thorough survey of Brown Creek in the area of impact was conducted and no native freshwater mussels were found. Based on the negative survey results and a commitment by NCDOT to use sediment and erosion control measures that adhere to the Design Standards for Sensitive Watersheds, we agree that implementation of this project is "not likely to adversely affect" Appalachian elktoe. Therefore, the requirements under Section 7(c) of the Act are fulfilled. However, obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

If you have questions about these comments please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning these projects, please reference our Log Number 13-054.

Sincerely,  
- - *original signed* - -  
Janet Mizzi  
Field Supervisor



North Carolina Department of Transportation  
 Highway Stormwater Program  
**STORMWATER MANAGEMENT PLAN**  
 FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

**WBS Element:** 48058.1.1      **TIP No.:** B-5864      **County(ies):** Yancey      **Page** 1 **of** 1

**General Project Information**

|  |  |                     |        |                               |  |                      |           |
|--|--|---------------------|--------|-------------------------------|--|----------------------|-----------|
| <b>WBS Element:</b>                    | 48058.1.1  | <b>TIP Number:</b>  | B-5864 | <b>Project Type:</b>          | Bridge Replacement   | <b>Date:</b>         | 2/13/2017 |
| <b>NCDOT Contact:</b>                  | Paul Atkinson, PE  |                     |        | <b>Contractor / Designer:</b> | Craig A. Freeman Jr., PE                                       |                      |           |
| <b>Address:</b>                        | NCDOT Hydraulics<br>1020 Birch Ridge Road<br>Raleigh, NC 27610 |                     |        | <b>Address:</b>               | NCDOT Hydraulics<br>1020 Birch Ridge Road<br>Raleigh, NC 27610 |                      |           |
|  | <b>Phone:</b>  | 919-707-6707        |        |                               | <b>Phone:</b>  | 919-707-6721         |           |
|  | <b>Email:</b>  | patkinson@ncdot.gov |        |                               | <b>Email:</b>  | cafreeman2@ncdot.gov |           |
| <b>City/Town:</b>                      | French Broad   |                     |        | <b>County(ies):</b>           | Yancey   |                      |           |
| <b>River Basin(s):</b>                 | French Broad   |                     |        | <b>CAMA County?</b>           | No   |                      |           |
| <b>Wetlands within Project Limits?</b> | Yes  |                     |        |                               |  |                      |           |

**Project Description**

|  |   |                              |   |   |                  |      |              |      |
|--|---|------------------------------|---|---|------------------|------|--------------|------|
| <b>Project Length (lin. miles or feet):</b>  | 0.065 Miles   | <b>Surrounding Land Use:</b> | Residential and commercial development along the roadway and forestland along Brown Creek |   |                  |      |              |      |
|  | <b>Proposed Project</b>   |                              |   | <b>Existing Site</b>  |                  |      |              |      |
| <b>Project Built-Upon Area (ac.)</b>   | 0.3   | ac.                          | 0.2   | ac.   |                  |      |              |      |
| <b>Typical Cross Section Description:</b>  | Two lane roadway with 11 foot travel lanes and 8 foot grass shoulders. The proposed bridge width is 42 feet overall with 38.5 feet of clear roadway.  |                              |   | Two lane roadway with 11 foot travel lanes and 2 foot grass shoulders. The clear roadway width of the existing bridge is 30 feet. |                  |      |              |      |
| <b>Annual Avg Daily Traffic (veh/hr/day):</b>  | <b>Design/Future:</b>   | 2900                         | <b>Year:</b>  | 2038  | <b>Existing:</b> | 2600 | <b>Year:</b> | 2018 |
| <b>General Project Narrative:<br/>(Description of Minimization of Water Quality Impacts)</b> | B-5864 is the planned replacement of bridge 49 in Yancey County. The existing structure over Brown Creek is a RC Spandrel Filled Arch widened with RC floors on I-beams with a total length of 30.5'. The proposed structure will be a single span 21 inch cored slab structure with an overall length of 50'. A single span was used to minimize stream impacts. The final proposed structure does not require deck drains. The detour structure has a proposed minimum bridge length of 55' and will be a single span structure with no stream impacts. |                              |   |   |                  |      |              |      |

**Waterbody Information**

|  |  |   |                                |  |     |  |  |
|--|--|---|--------------------------------|--|-----|--|--|
| <b>Surface Water Body (1):</b>                           | Brown Creek  |   | <b>NCDWR Stream Index No.:</b> | 7-2-52-28  |     |  |  |
| <b>NCDWR Surface Water Classification for Water Body</b> | <b>Primary Classification:</b>                                   | Class C   |                                |  |     |  |  |
|  | <b>Supplemental Classification:</b>                              | Trout Waters (Tr)   |                                | Waters (ORW)   |     |  |  |
| <b>Other Stream Classification:</b>                      | None   |   |                                |  |     |  |  |
| <b>Impairments:</b>                                      | None   |   |                                |  |     |  |  |
| <b>Aquatic T&amp;E Species?</b>                          | Yes  | Comments: Appalachian Elktoe is mentioned in the CE but states it "May Affect Not Likely To Adversely Affect" |                                |  |     |  |  |
| <b>NRTR Stream ID:</b>                                   | N/A  |   | <b>Buffer Rules in Effect:</b> | N/A  |     |  |  |
| <b>Project Includes Bridge Spanning Water Body?</b>      | Yes  | <b>Deck Drains Discharge Over Buffer?</b>   | No                             | <b>Dissipator Pads Provided in Buffer?</b>   | N/A |  |  |
| <b>Deck Drains Discharge Over Water Body?</b>            | 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) |   |                                |  |     |  |  |

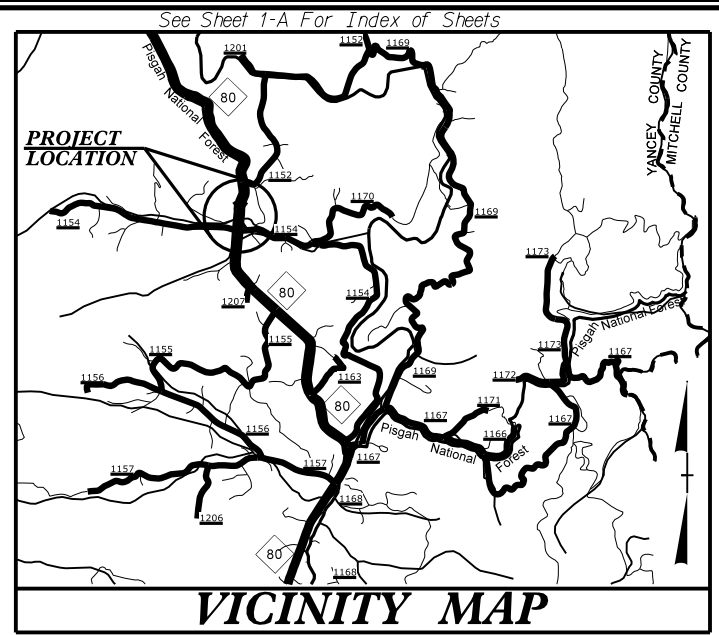


| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | B-5864                      | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 48058.1.1       | BRSTP-0080(6)               | PE          |              |
| 48058.2.2       |                             | RW & UTIL.  |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**PERMIT DRAWING  
 SHEET 1 OF 7**

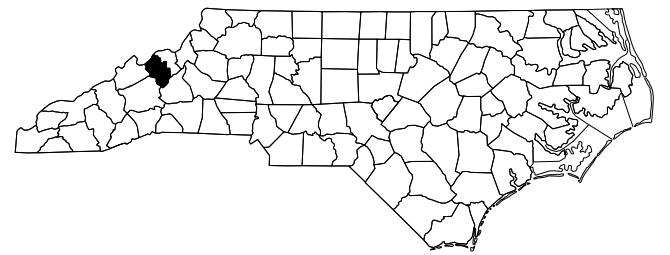
**YANCEY COUNTY**



**LOCATION: BRIDGE NO. 49 OVER BROWNS CREEK ON NC 80**

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

**SURFACE WATER IMPACTS PERMIT**



**TIP PROJECT: B-5864**

**BEGIN TIP PROJECT B-5864**  
 -L- STA. 12 + 25.00

**BEGIN BRIDGE**  
 -L- STA. 13 + 94.88

**BEGIN APPROACH SLAB**  
 -L- STA. 13 + 84.00

**END BRIDGE**  
 -L- STA. 14 + 47.13

**END APPROACH SLAB**  
 -L- STA. 14 + 58.00

**END TIP PROJECT B-5864**  
 -L- STA. 15 + 70.00

← TO BUSICK

-L- (NC 80)

-L- (NC 80)

TO MICAVILLE →

**BEGIN CONSTRUCTION**  
 -L- STA. 10 + 28.00

**BEGIN DETOUR CONSTRUCTION**  
 -L- STA. 10 + 36.71  
 -DET- STA. 10 + 36.71

**END DETOUR BRIDGE**  
 -DET- STA. 14 + 67.50

**END DETOUR CONSTRUCTION**  
 -L- STA. 18 + 14.90  
 -DET- 18 + 24.07

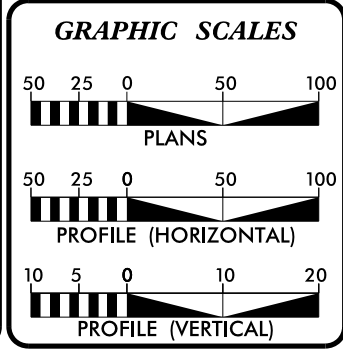
**END CONSTRUCTION**  
 -L- STA. 19 + 75.00

**4**

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.  
 THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.  
 THIS IS NOT A CONTROL OF ACCESS PROJECT.

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

**CONTRACT:**



**DESIGN DATA**

|              |                               |
|--------------|-------------------------------|
| ADT 2018 =   | 2600                          |
| ADT 2038 =   | 2900                          |
| K =          | 9 %                           |
| D =          | 70 %                          |
| T =          | 4 % *                         |
| V =          | 50 MPH                        |
| * TTST =     | 1% DUAL = 3%                  |
| FUNC CLASS = | MAJOR COLLECTOR REGIONAL TIER |

**PROJECT LENGTH**

|                                       |            |
|---------------------------------------|------------|
| LENGTH ROADWAY TIP PROJECT B-5864 =   | 0.055 MILE |
| LENGTH STRUCTURE TIP PROJECT B-5864 = | 0.010 MILE |
| TOTAL LENGTH TIP PROJECT B-5864 =     | 0.065 MILE |

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

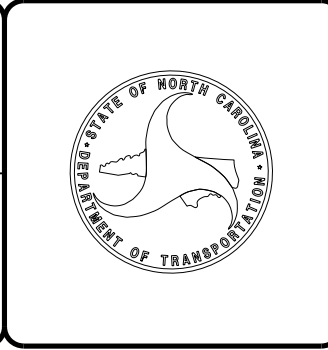
|  |  |
|--|--|
| 2012 STANDARD SPECIFICATIONS           |  |
| RIGHT OF WAY DATE:<br>JANUARY 26, 2017 | KEVIN E. MOORE, PE<br>PROJECT ENGINEER         |
| LETTING DATE:<br>JANUARY 16, 2018      | NATHAN N. ADIMA, PE<br>PROJECT DESIGN ENGINEER |

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.



\$\$\$\$\$SYTIME\$\$\$\$\$  
 \$\$\$DCN\$\$\$  
 \$\$\$USERNAME\$\$\$

|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| B-5864                  | 4                   |
| RW SHEET NO.            |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING  
SHEET 2 OF 7**

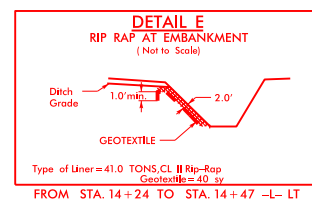
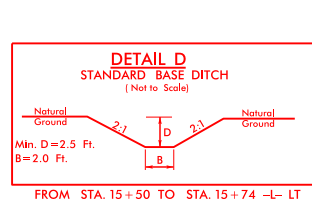
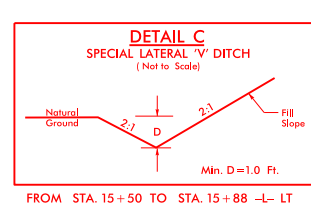
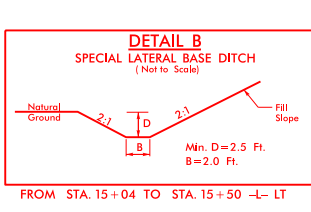
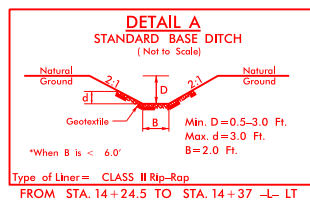
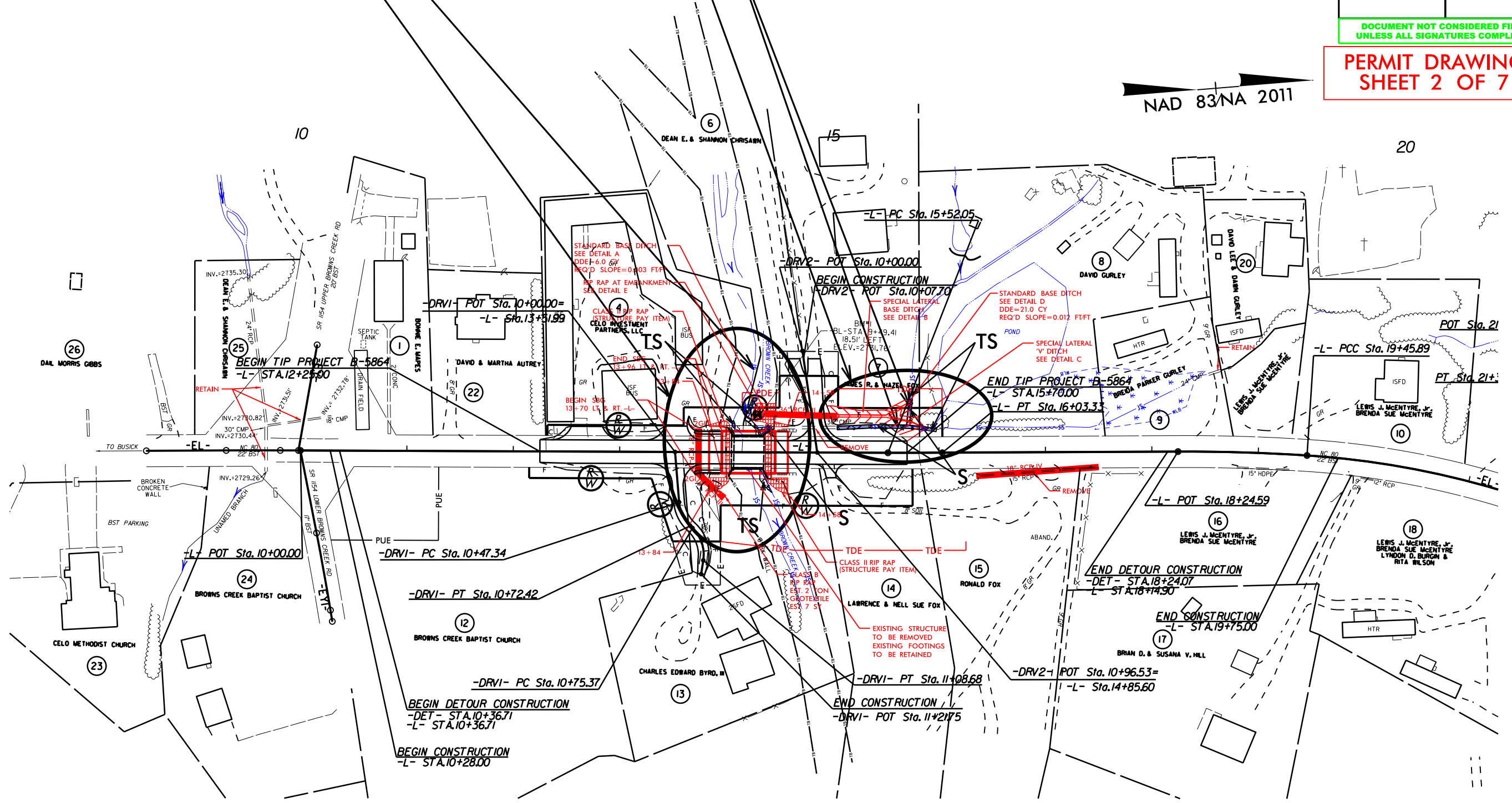
# SITE 1

SEE ENLARGEMENT  
SHEET 4 OF 7

# SITE 2

SEE ENLARGEMENT  
SHEET 5 OF 7

NAD 83/NA 2011



5/ DENOTES IMPACTS IN SURFACE WATER  
15/ DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

B/17/99

2282017  
qnguyen  
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|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| B-5864                  | 4                   |
| RW SHEET NO.            |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING  
SHEET 3 OF 7**

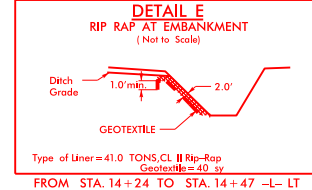
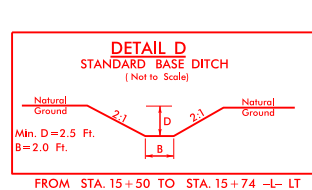
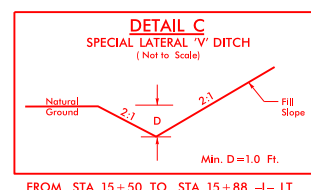
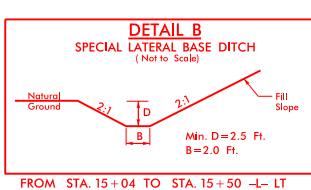
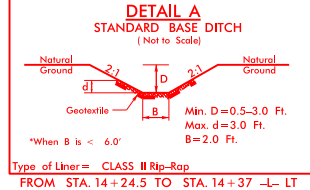
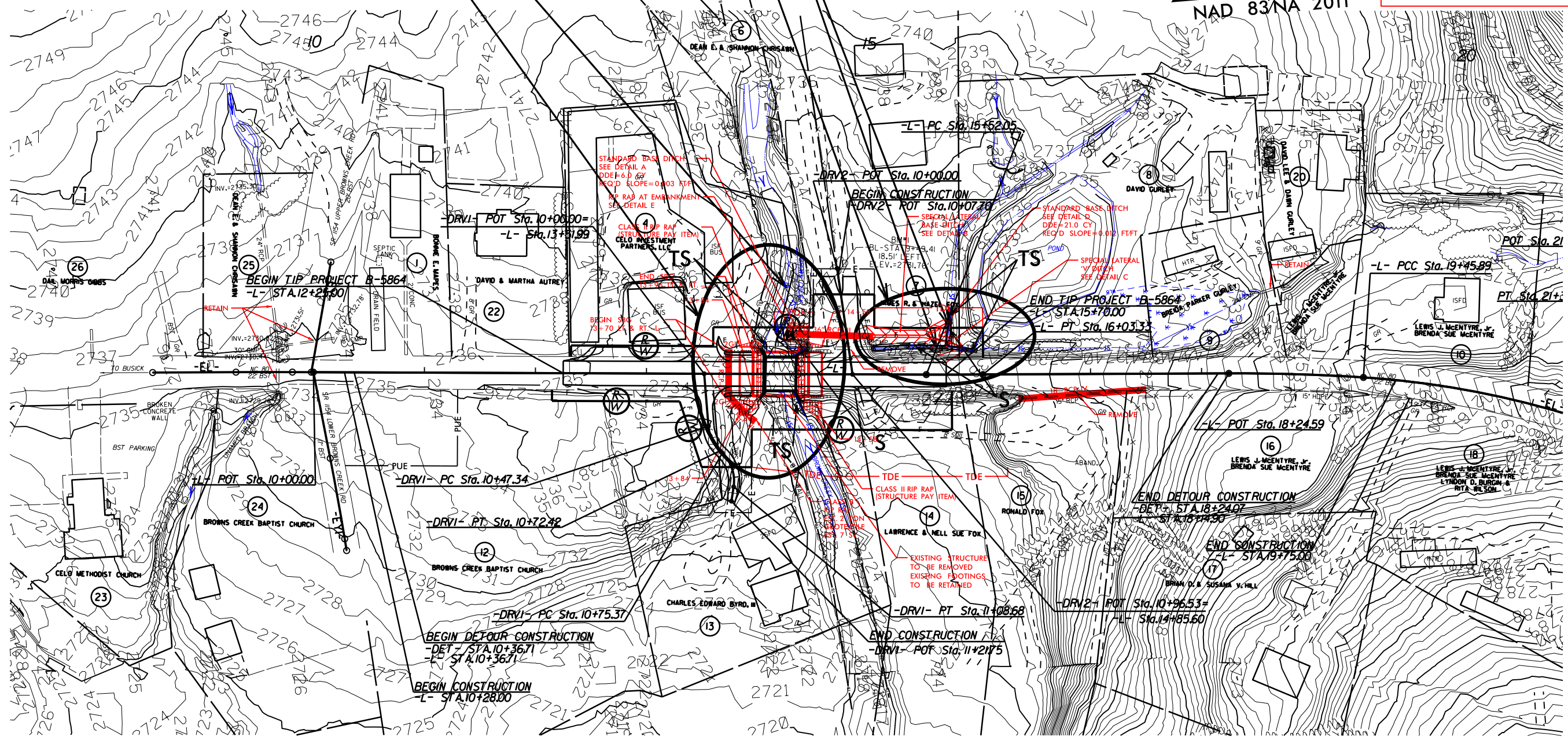
# SITE 1

SEE ENLARGEMENT  
SHEET 4 OF 7

# SITE 2

SEE ENLARGEMENT  
SHEET 5 OF 7

NAD 83/NA 2011



- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

B-17/99

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qfnguyen  
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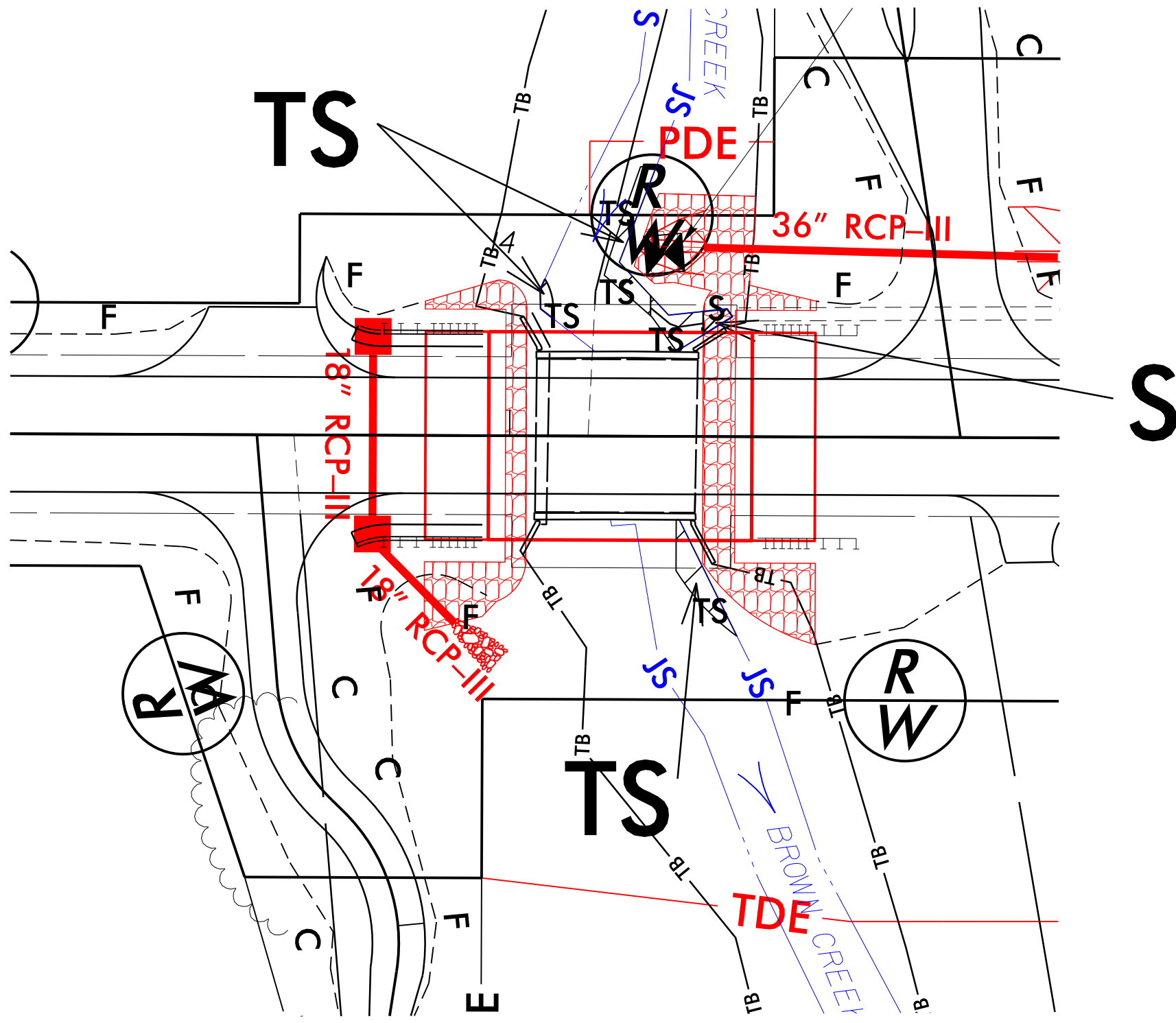
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NAD 83/NA 2011

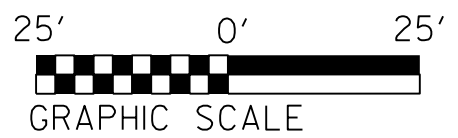
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| PROJECT REFERENCE NO.<br><b>B-5864</b> | SHEET NO.<br><b>4</b> |
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| ROADWAY DESIGN ENGINEER                | HYDRAULICS ENGINEER   |

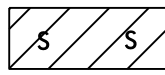

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING  
SHEET 4 OF 7**



REVISIONS



-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER

2/28/2017  
qfnguyen  
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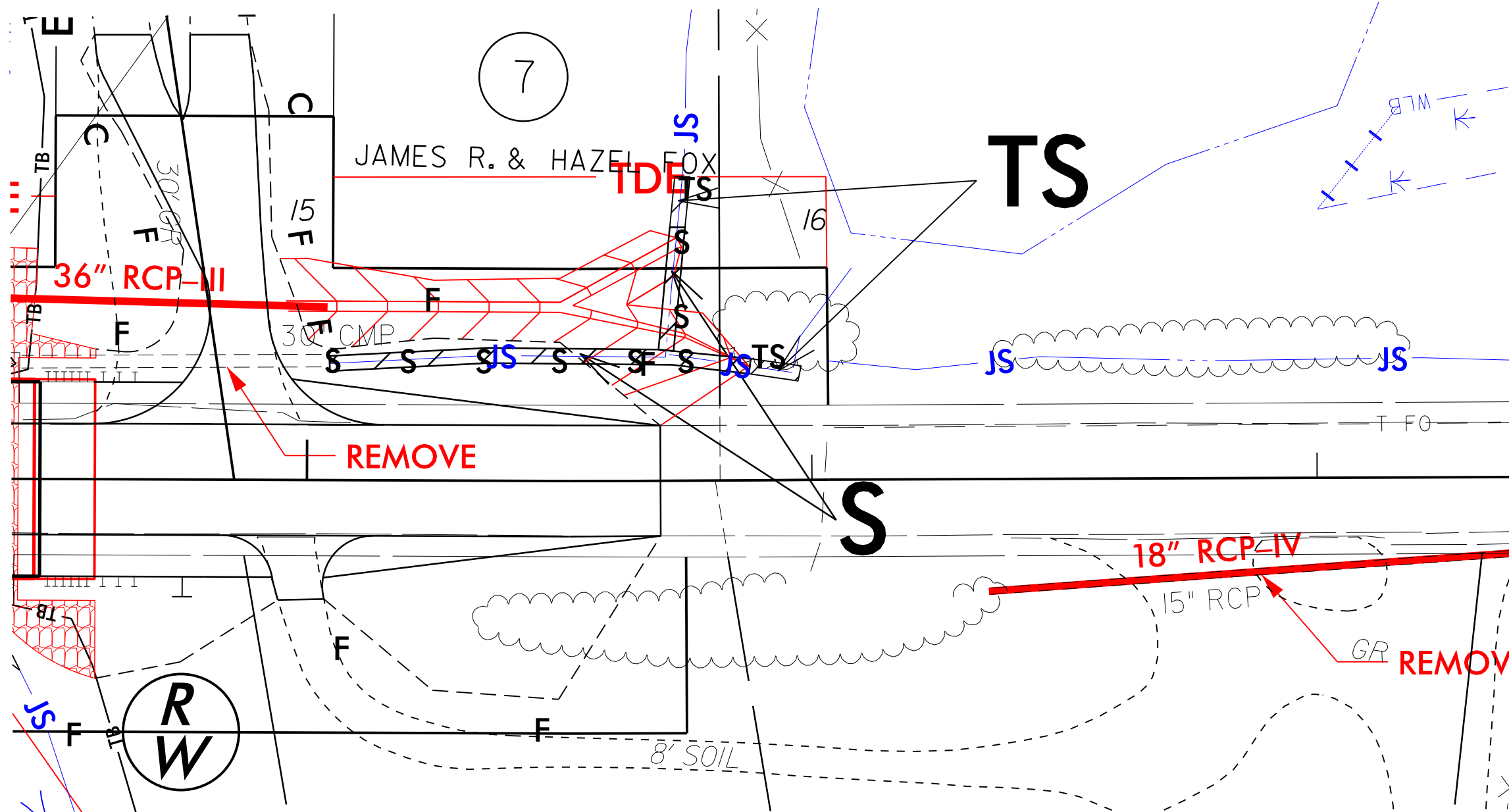
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NAD 83/NA 2011

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| ROADWAY DESIGN ENGINEER         | HYDRAULICS ENGINEER |


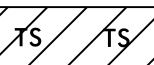
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UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING  
SHEET 5 OF 7



REVISIONS



-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER

2282017  
qtnguyen  
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5/14/99

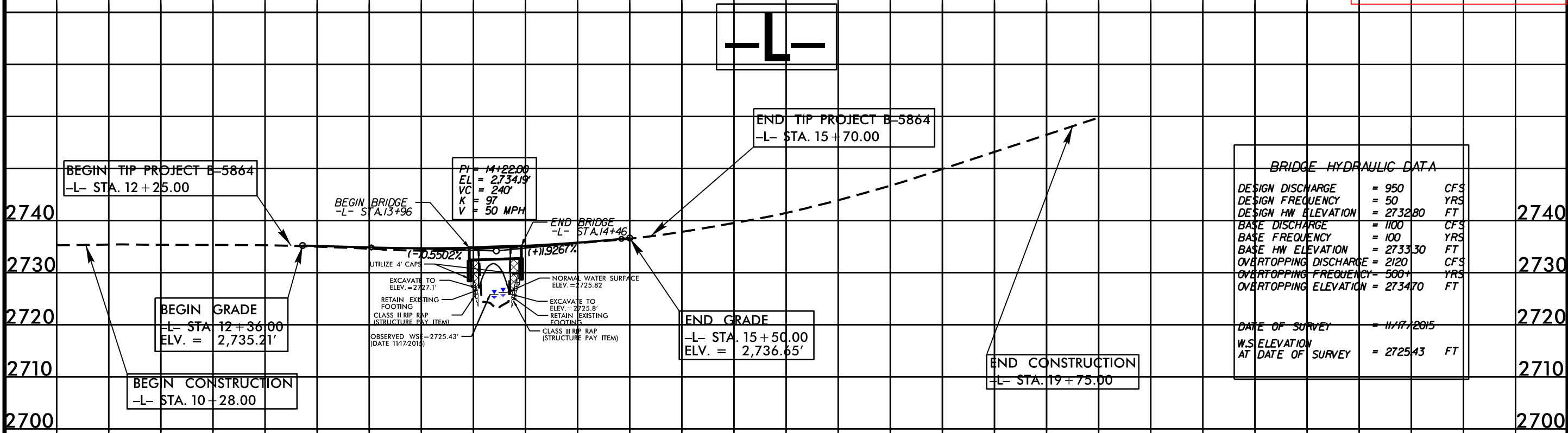
PROJECT REFERENCE NO. SHEET NO.

B-5864 5

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 6 OF 7



PI = 14+22.00  
 EL = 2,734.19  
 VC = 240'  
 K = 97  
 V = 50 MPH

| BRIDGE HYDRAULIC DATA            |              |     |
|----------------------------------|--------------|-----|
| DESIGN DISCHARGE                 | = 950        | CFS |
| DESIGN FREQUENCY                 | = 50         | YRS |
| DESIGN HW ELEVATION              | = 2732.80    | FT  |
| BASE DISCHARGE                   | = 1100       | CFS |
| BASE FREQUENCY                   | = 100        | YRS |
| BASE HW ELEVATION                | = 2733.30    | FT  |
| OVERTOPPING DISCHARGE            | = 2120       | CFS |
| OVERTOPPING FREQUENCY            | = 500+       | YRS |
| OVERTOPPING ELEVATION            | = 2734.70    | FT  |
| DATE OF SURVEY                   | = 11/17/2015 |     |
| W.S. ELEVATION AT DATE OF SURVEY | = 2725.43    | FT  |

29/2017  
 qinguyen  
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**WETLAND AND SURFACE WATER IMPACTS SUMMARY**

| Site No. | Station (From/To)    | Structure Size / Type | WETLAND IMPACTS                 |                             |                             |                                      |                                | SURFACE WATER IMPACTS     |                       |   |                                     |                            |
|----------|----------------------|-----------------------|---------------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|-------------------------------------|----------------------------|
|          |                      |                       | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 1        | 14+05 TO 14+08 -L-LT | RIP RAP ABUTMENT      |                                 |                             |                             |                                      |                                | < 0.01                    |                       |   | **                                  |                            |
| 1        | 14+17 TO 14+27 -L-LT | RIP RAP EMBANKMENT    |                                 |                             |                             |                                      |                                | < 0.01                    |                       |   | 34                                  |                            |
| 1        | 14+26 TO 14+42 -L-LT | RIP RAP ABUTMENT      |                                 |                             |                             |                                      | < 0.01                         | < 0.01                    | 5                     |   | 9                                   |                            |
| 1        | 14+31 TO 14+43 -L-RT | RIP RAP ABUTMENT      |                                 |                             |                             |                                      |                                | < 0.01                    |                       |   | 25                                  |                            |
| 2        | 15+04 TO 15+98 -L-LT | STREAM FILL           |                                 |                             |                             |                                      |                                | < 0.01                    | < 0.01                | 83                                      | 10                                  |                            |
| 2        | 15+71 -L-LT          | STREAM FILL           |                                 |                             |                             |                                      |                                | < 0.01                    | < 0.01                | 24                                      | 10                                  |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|          |                      |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
| TOTALS*: |                      |                       |                                 |                             |                             |                                      |                                | < 0.01                    | < 0.01                | 112                                     | 88                                  | 0                          |

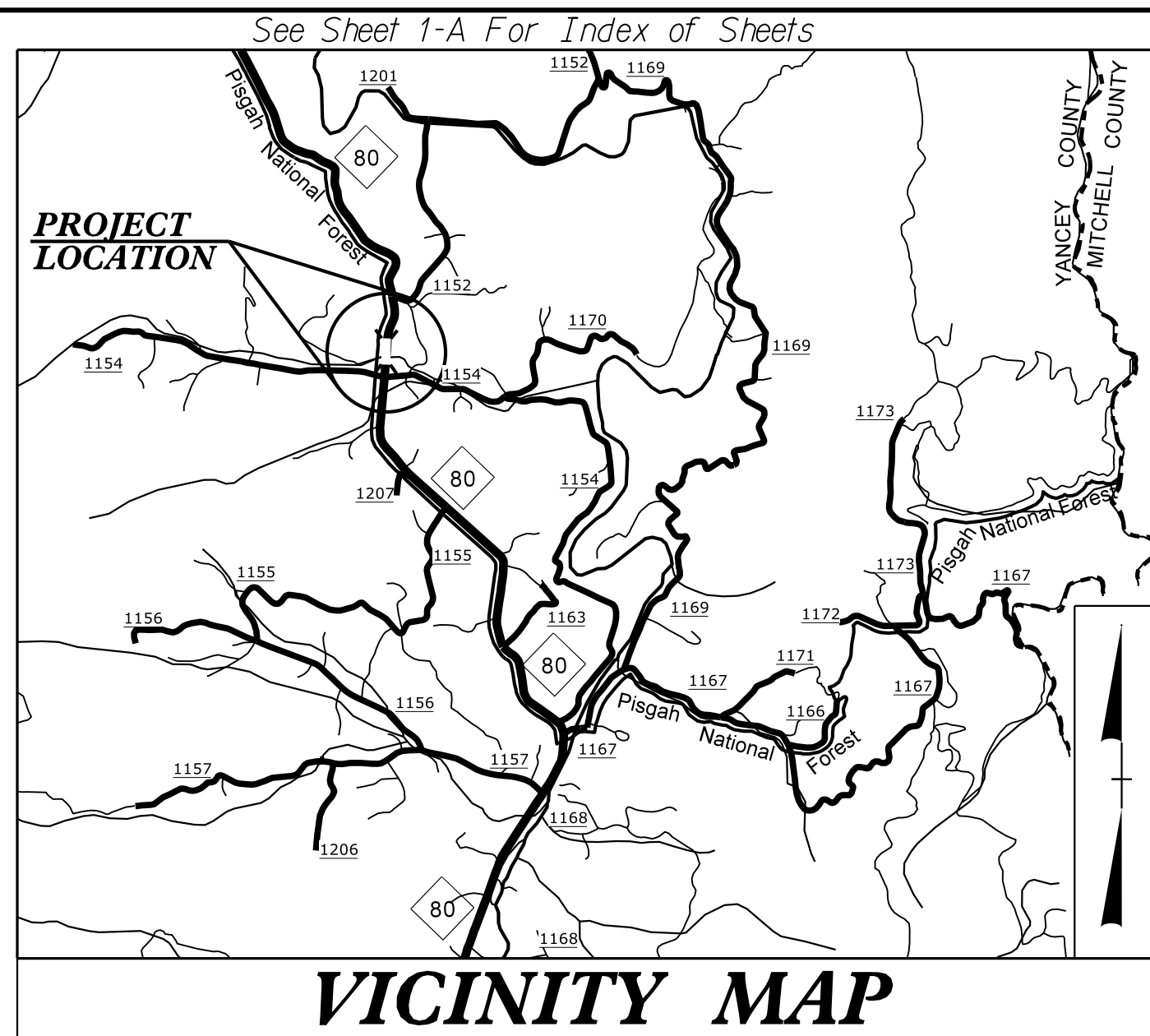
\*Rounded totals are sum of actual impacts

NOTES:  
 \*\* Length of temporary channel impacts are included in the rip rap embankment and rip rap abutment temporary channel impact lengths from sta. 14+17 to 14+42 -L- LT.

NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 3/01/2017  
 YANCEY  
 B-5864  
 48058.1.1

09/08/99

**TIP PROJECT: B-5864**



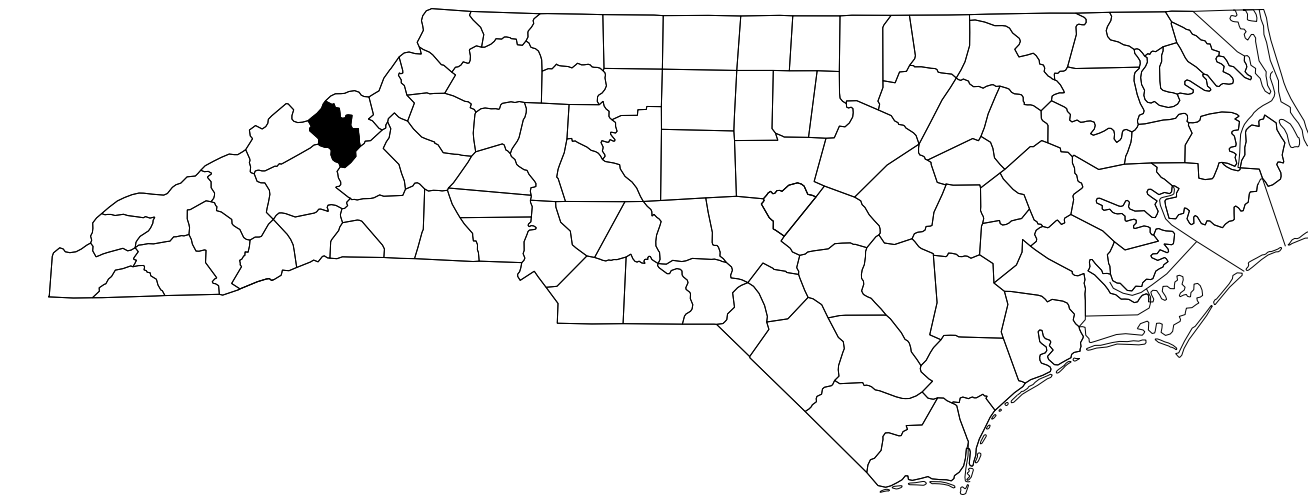
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**YANCEY COUNTY**

**LOCATION: BRIDGE NO. 49 OVER BROWNS CREEK ON NC 80**

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

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | B-5864                      | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 48058.1.1       | BRSTP-0080(6)               | PE          |              |
| 48058.2.2       |                             | R/W & UTIL. |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |



**BEGIN TIP PROJECT B-5864**  
-L- STA. 12 + 25.00

**BEGIN BRIDGE**  
-L- STA. 13 + 94.88

**BEGIN APPROACH SLAB**  
-L- STA. 13 + 84.00

**END BRIDGE**  
-L- STA. 14 + 47.13

**END APPROACH SLAB**  
-L- STA. 14 + 58.00

**END TIP PROJECT B-5864**  
-L- STA. 15 + 70.00

← TO BUSICK

-L- (NC 80)

-L- (NC 80)

TO MICAVILLE →

-DET-

**BEGIN DETOUR BRIDGE**  
-DET- STA. 14 + 12.50

**END DETOUR BRIDGE**  
-DET- STA. 14 + 67.50

**BEGIN CONSTRUCTION**  
-L- STA. 10 + 28.00

**BEGIN DETOUR CONSTRUCTION**  
-L- STA. 10 + 36.71  
-DET- STA. 10 + 36.71

**END DETOUR CONSTRUCTION**  
-L- STA. 18 + 14.90  
-DET- 18 + 24.07

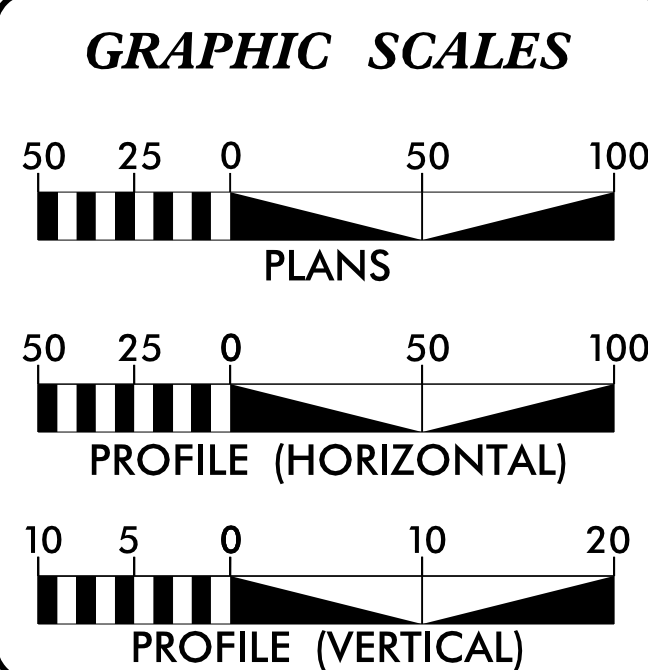
**END CONSTRUCTION**  
-L- STA. 19 + 75.00

4

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.  
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.  
THIS IS NOT A CONTROL OF ACCESS PROJECT.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT:**



**DESIGN DATA**

|              |                               |
|--------------|-------------------------------|
| ADT 2018 =   | 2600                          |
| ADT 2038 =   | 2900                          |
| K =          | 9 %                           |
| D =          | 70 %                          |
| T =          | 4 % *                         |
| V =          | 50 MPH                        |
| * TTST =     | 1% DUAL = 3%                  |
| FUNC CLASS = | MAJOR COLLECTOR REGIONAL TIER |

**PROJECT LENGTH**

|                                       |            |
|---------------------------------------|------------|
| LENGTH ROADWAY TIP PROJECT B-5864 =   | 0.055 MILE |
| LENGTH STRUCTURE TIP PROJECT B-5864 = | 0.010 MILE |
| TOTAL LENGTH TIP PROJECT B-5864 =     | 0.065 MILE |

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

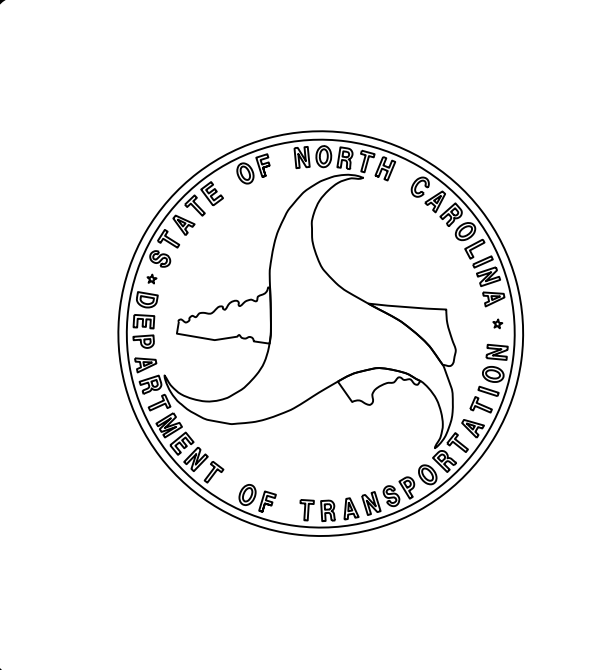
| 2012 STANDARD SPECIFICATIONS | RIGHT OF WAY DATE: | LETTING DATE:    |
|------------------------------|--------------------|------------------|
|                              | JANUARY 26, 2017   | JANUARY 16, 2018 |

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.



25-JAN-2017 13:51 R:\Roadway\Proj\B5864\_Rdy.-tsh.dgn \$\$\$\$USERNAME\$\$\$\$



# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

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

04/05/15

### BOUNDARIES AND PROPERTY:

|                                       |           |
|---------------------------------------|-----------|
| State Line                            | -----     |
| County Line                           | -----     |
| Township Line                         | -----     |
| City Line                             | -----     |
| Reservation Line                      | -----     |
| Property Line                         | -----     |
| Existing Iron Pin                     | ○ EIP     |
| 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 U/G Tank Cap | ○   |
| Sign                          | ○ S |
| Well                          | ○ W |
| Small Mine                    | ✕   |
| Foundation                    | □   |
| Area Outline                  | □   |
| Cemetery                      | □   |
| Building                      | □   |
| School                        | □   |
| Church                        | □   |
| Dam                           | □   |

### HYDROLOGY:

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

### RAILROADS:

|                    |               |
|--------------------|---------------|
| Standard Gauge     | -----         |
| RR Signal Milepost | ○ MILEPOST 35 |
| Switch             | □ SWITCH      |
| RR Abandoned       | -----         |
| RR Dismantled      | -----         |

### RIGHT OF WAY:

|  |             |
|--|-------------|
| Baseline Control Point   | ◆           |
| Existing Right of Way Marker                                   | △           |
| Existing Right of Way Line                                     | -----       |
| Proposed Right of Way Line                                     | ----- R/W   |
| Proposed Right of Way Line with Iron Pin and Cap Marker        | ----- R/W ▲ |
| Proposed Right of Way Line with Concrete or Granite R/W Marker | ----- R/W ▲ |
| Proposed Control of Access Line with Concrete CA Marker        | ----- C/A   |

|  |           |
|--|-----------|
| Existing Control of Access                               | ----- C/A |
| Proposed Control of Access                               | ----- C/A |
| Existing Easement Line                                   | ----- E   |
| Proposed Temporary Construction Easement                 | ----- E   |
| Proposed Temporary Drainage Easement                     | ----- TDE |
| Proposed Permanent Drainage Easement                     | ----- PDE |
| Proposed Permanent Drainage / Utility Easement           | ----- DUE |
| Proposed Permanent Utility Easement                      | ----- PUE |
| Proposed Temporary Utility Easement                      | ----- TUE |
| Proposed Aerial Utility Easement                         | ----- AUE |
| Proposed Permanent Easement with Iron Pin and Cap Marker | ----- ◆   |

### ROADS AND RELATED FEATURES:

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

### VEGETATION:

|              |       |
|--------------|-------|
| Single Tree  | ☼     |
| Single Shrub | ☼     |
| Hedge        | ----- |
| Woods Line   | ----- |

|          |            |
|----------|------------|
| Orchard  | ☼☼☼☼       |
| Vineyard | □ Vineyard |

### EXISTING STRUCTURES:

|  |               |
|--|---------------|
| MAJOR:                                   |               |
| Bridge, Tunnel or Box Culvert            | ----- CONC    |
| Bridge Wing Wall, Head Wall and End Wall | ----- CONC WW |
| MINOR:                                   |               |
| Head and End Wall                        | ----- CONC HW |
| Pipe Culvert                             | -----         |
| Footbridge                               | -----         |
| Drainage Box: Catch Basin, DI or JB      | □ CB          |
| Paved Ditch Gutter                       | -----         |
| Storm Sewer Manhole                      | ⊙             |
| 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              | ⊠       |
| U/G Power Cable Hand Hole      | ●       |
| H-Frame Pole                   | ●●      |
| U/G Power Line LOS B (S.U.E.*) | ----- P |
| U/G Power Line LOS C (S.U.E.*) | ----- P |
| U/G Power Line LOS D (S.U.E.*) | ----- P |

### TELEPHONE:

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

### WATER:

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

### TV:

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

### GAS:

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

### SANITARY SEWER:

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

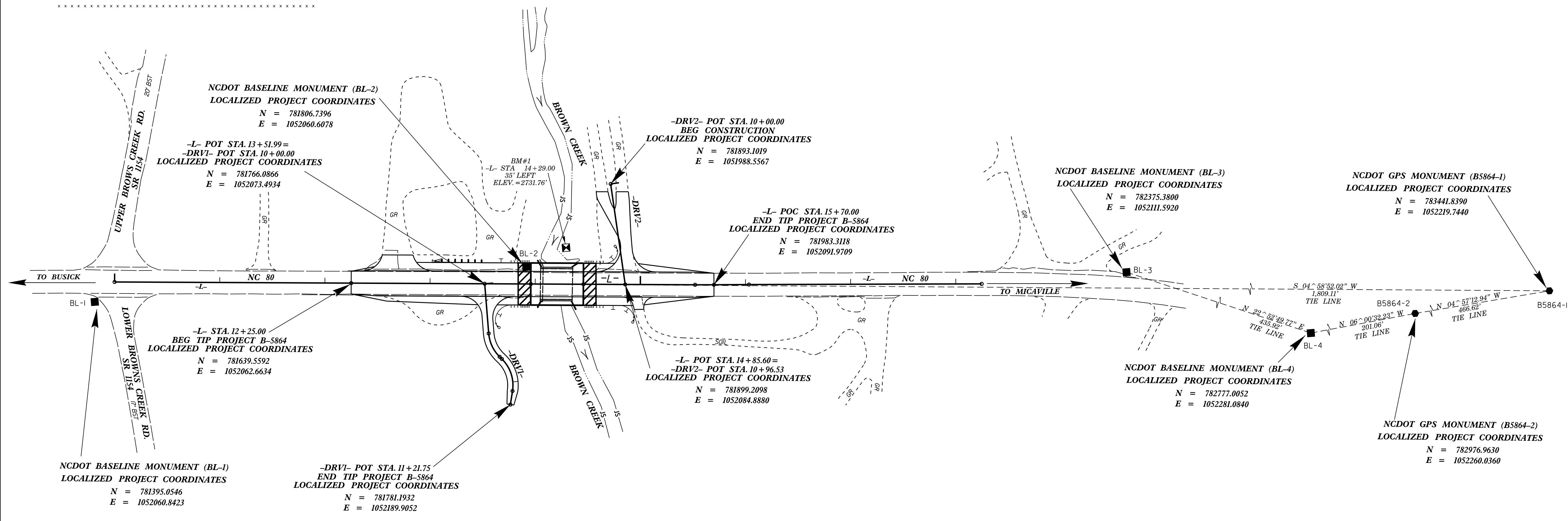
### MISCELLANEOUS:

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

# SURVEY CONTROL SHEET B-5864

| BL | POINT | DESC.   | NORTH       | EAST         | ELEVATION | L STATION              | OFFSET   |
|----|-------|---------|-------------|--------------|-----------|------------------------|----------|
|    | 1     | BL-1    | 781395.0546 | 1052060.8423 | 2733.71   | OUTSIDE PROJECT LIMITS |          |
|    | 2     | BL-2    | 781806.7396 | 1052060.6078 | 2733.50   | 13+91.40               | 16.31 LT |
|    | 3     | BL-3    | 782375.3800 | 1052111.5920 | 2757.12   | OUTSIDE PROJECT LIMITS |          |
|    | 4     | BL-4    | 782777.0052 | 1052281.0840 | 2785.32   | OUTSIDE PROJECT LIMITS |          |
|    | GPS2  | B5864-2 | 782976.9630 | 1052260.0360 | 2796.00   | OUTSIDE PROJECT LIMITS |          |
|    | GPS1  | B5864-1 | 783441.8390 | 1052219.7440 | 2819.91   | OUTSIDE PROJECT LIMITS |          |

\*\*\*\*\*  
 BM1 ELEVATION = 2731.76  
 N 781846 E 1052046  
 L STATION 14+29.00 35 LEFT  
 8" SPIKE IN 36" POPLAR  
 \*\*\*\*\*



**NOTES:**

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B5864\_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 EXISTING HARN MONUMENTATION  
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-5864-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 783441.8390(±) EASTING: 1052219.7440(±) ELEVATION: 2819.91(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99979956

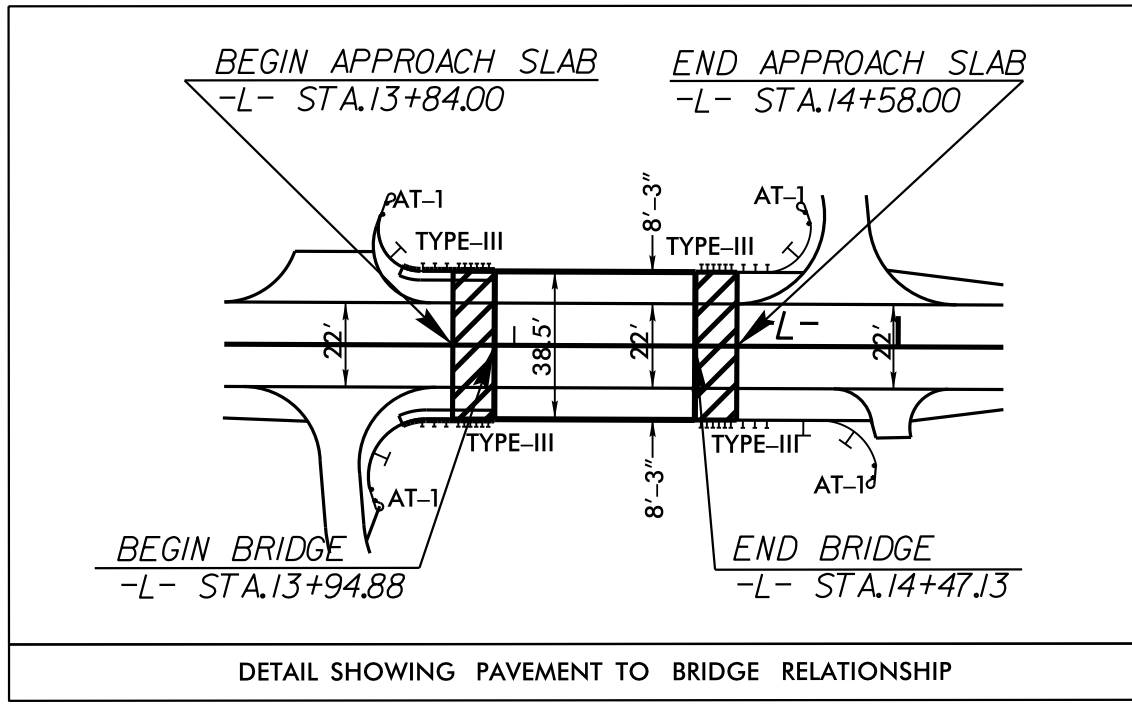
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-5864-1" TO -L- 12+25.00 STATION IS  
 S 04°58'52.02" W 1,809.11'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

6/2/09 25 JAN 2017 13:51 \\s01021101\B5864\_1s\_1c-1.dgn

|  |                     |
|--|---------------------|
| PROJECT REFERENCE NO.  | SHEET NO.           |
| B-5864   | 4                   |
| RW SHEET NO.   |                     |
| ROADWAY DESIGN ENGINEER  | HYDRAULICS ENGINEER |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b> |                     |



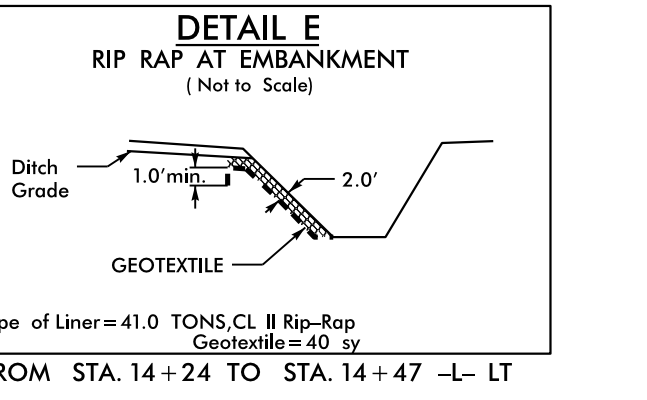
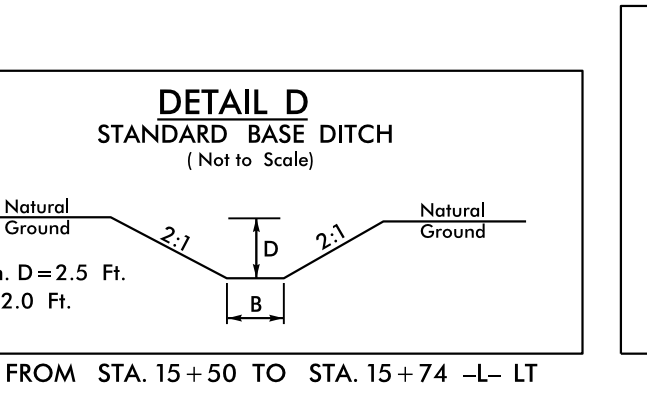
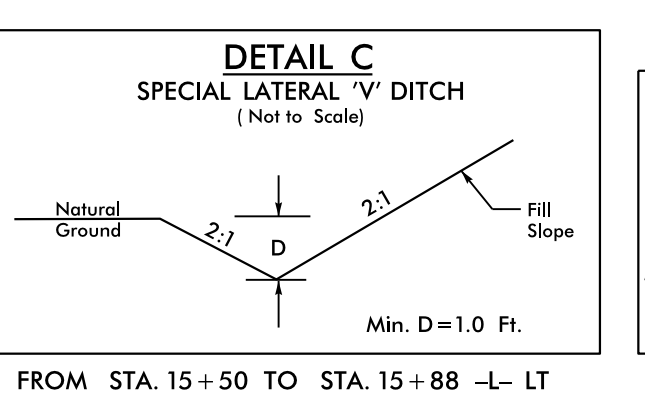
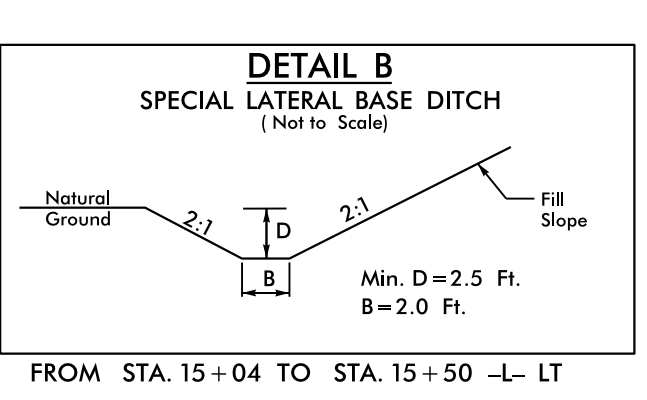
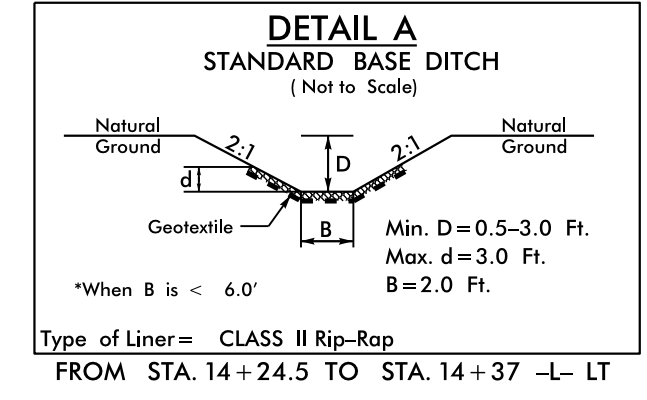
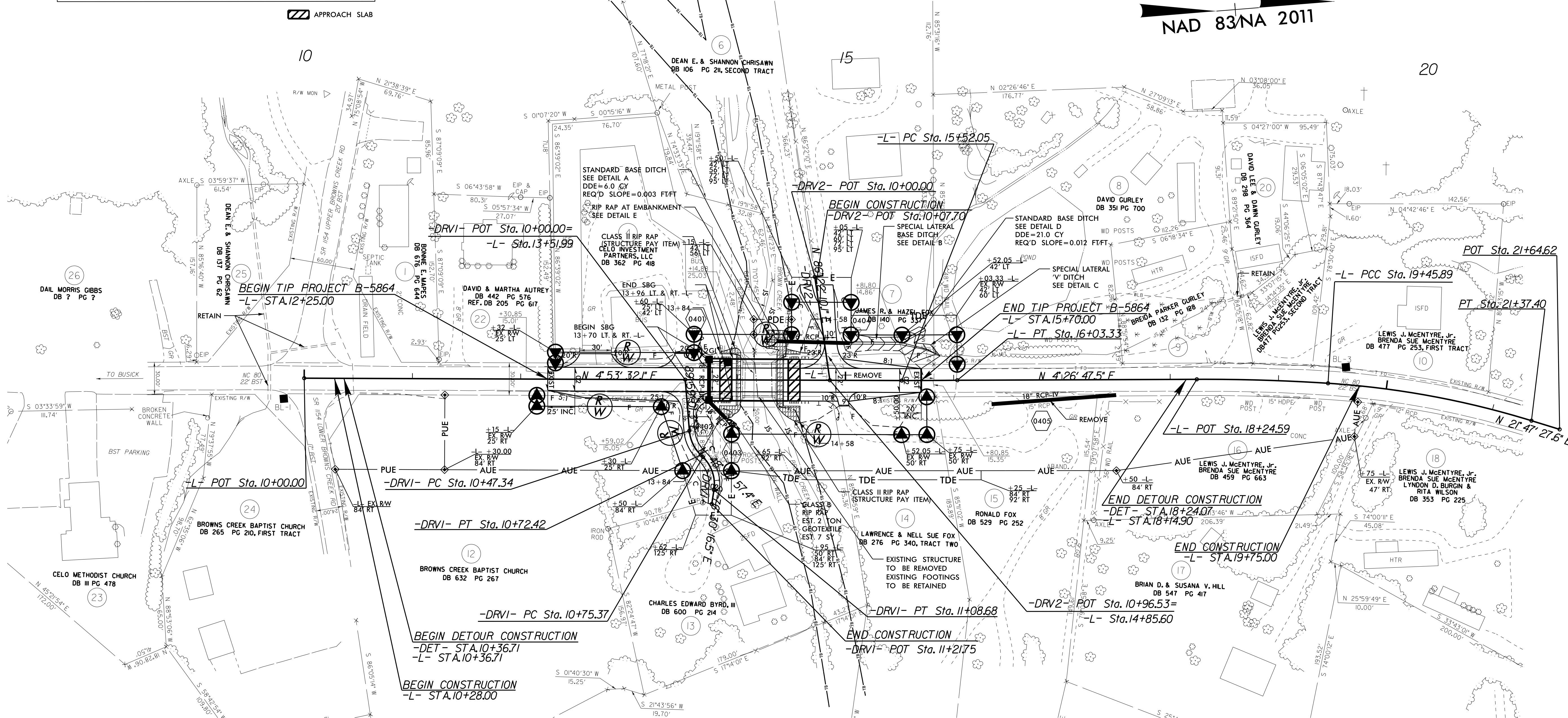
-DRVI-

|  |   |
|--|---|
| PI Sta 10+60.44<br>Δ = 4' 03' 01.3" (LT)<br>D = 163' 42' 08.0"<br>L = 25.08'<br>T = 13.10'<br>R = 35.00'<br>SE = SEE PLANS | PI Sta 10+93.40<br>Δ = 54' 31' 46.1" (RT)<br>D = 163' 42' 08.0"<br>L = 33.31'<br>T = 18.04'<br>R = 35.00'<br>SE = SEE PLANS |
|--|---|

-L-

|   |  |   |
|---|--|---|
| PI Sta 15+77.69<br>Δ = 0' 30' 46.0" (LT)<br>D = 0' 59' 59.7"<br>L = 51.28'<br>T = 25.64'<br>R = 5,730.00'<br>SE = SEE PLANS | PI Sta 18+85.27<br>Δ = 4' 00' 10.7" (RT)<br>D = 3' 18' 00.6"<br>L = 121.30'<br>T = 60.67'<br>R = 1,736.14' | PI Sta 20+42.09<br>Δ = 13' 24' 21.7" (RT)<br>D = 7' 00' 00.0"<br>L = 191.51'<br>T = 96.20'<br>R = 818.51' |
|---|--|---|

NAD 83/NA 2011



SEE SHEETS 5 & 6 FOR PROFILES

8/17/99  
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3:54:00 PM



|  |                          |
|--|--------------------------|
| PROJECT REFERENCE NO.<br><b>B-5864</b>                                   | SHEET NO.<br><b>2B-1</b> |
| RW SHEET NO.   |                          |
| ROADWAY DESIGN ENGINEER  | HYDRAULICS ENGINEER      |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b> |                          |

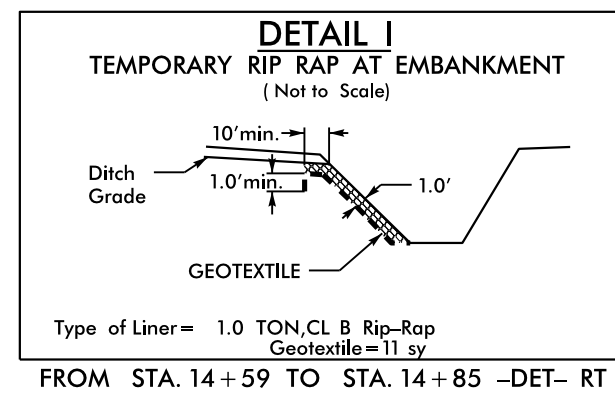
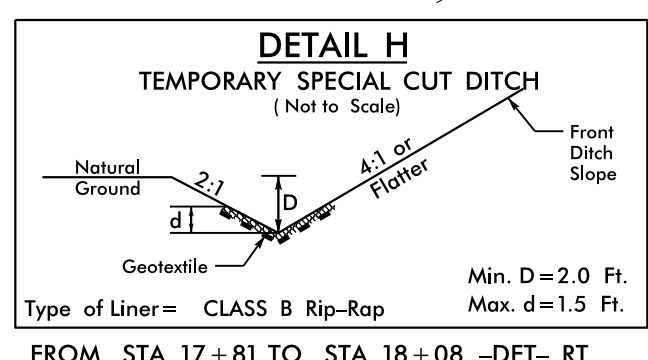
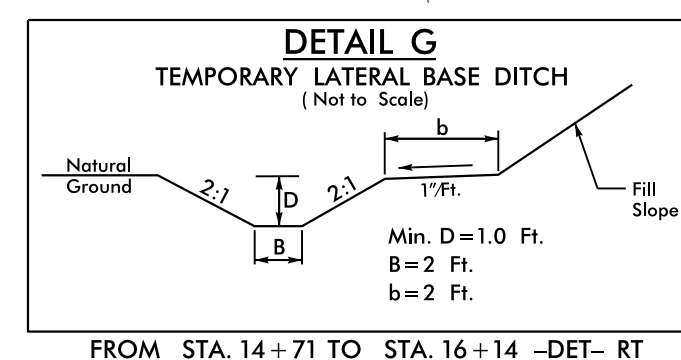
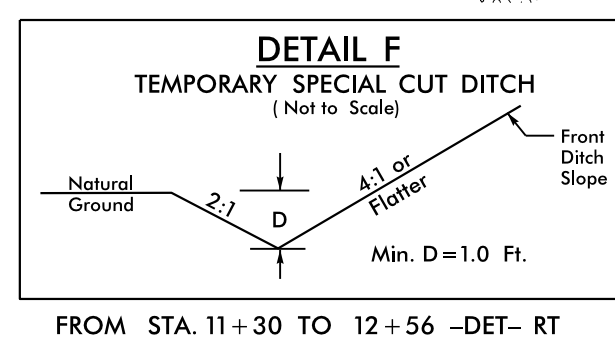
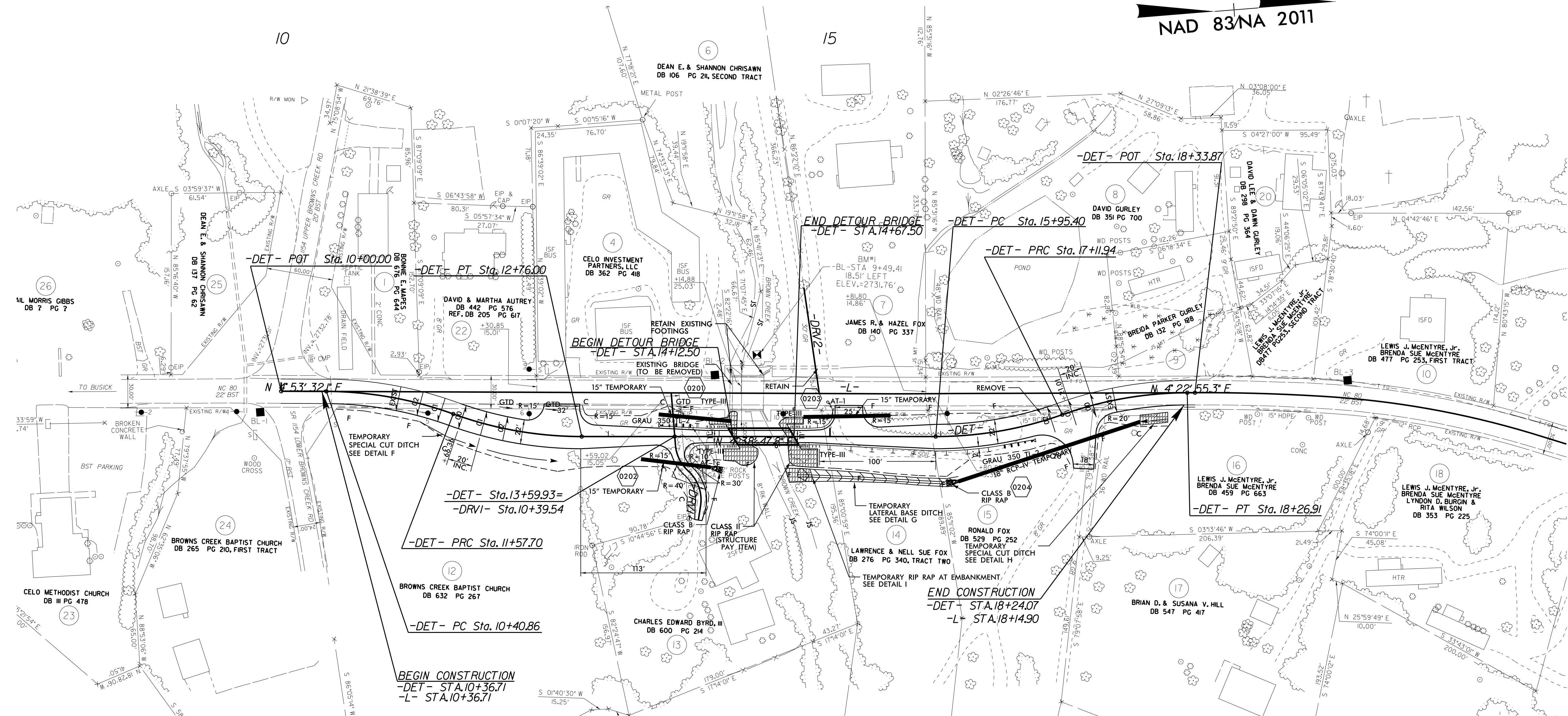
-DET-

|  |  |
|--|--|
| PI Sta 10+99.86<br>Δ = 19° 41' 22.5" (RT)<br>D = 16' 51" 06.1"<br>L = 116.84'<br>T = 59.00'<br>R = 340.00'<br>SE = SEE PLANS | PI Sta 12+17.45<br>Δ = 19° 56' 06.8" (LT)<br>D = 16' 51" 06.1"<br>L = 118.30'<br>T = 59.75'<br>R = 340.00'<br>SE = SEE PLANS |
|--|--|

-DET-

|  |  |
|--|--|
| PI Sta 16+54.25<br>Δ = 19° 38' 18.7" (LT)<br>D = 16' 51" 06.1"<br>L = 116.54'<br>T = 58.85'<br>R = 340.00'<br>SE = SEE PLANS | PI Sta 17+69.98<br>Δ = 19° 22' 26.2" (RT)<br>D = 16' 51" 06.1"<br>L = 114.97'<br>T = 58.04'<br>R = 340.00'<br>SE = SEE PLANS |
|--|--|

NAD 83/NA 2011



FOR -DET- PROFILE SEE SHEET 5

REVISIONS

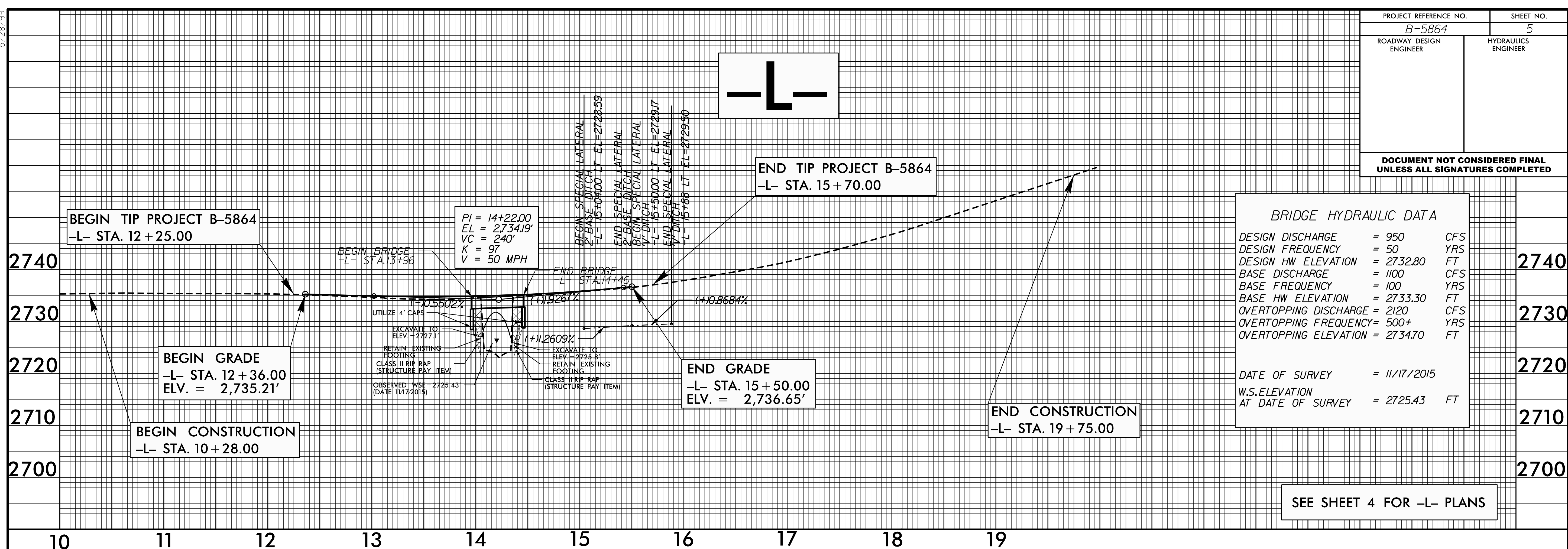
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5/28/99

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>B-5864 | SHEET NO.<br>5      |
| ROADWAY DESIGN ENGINEER         | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

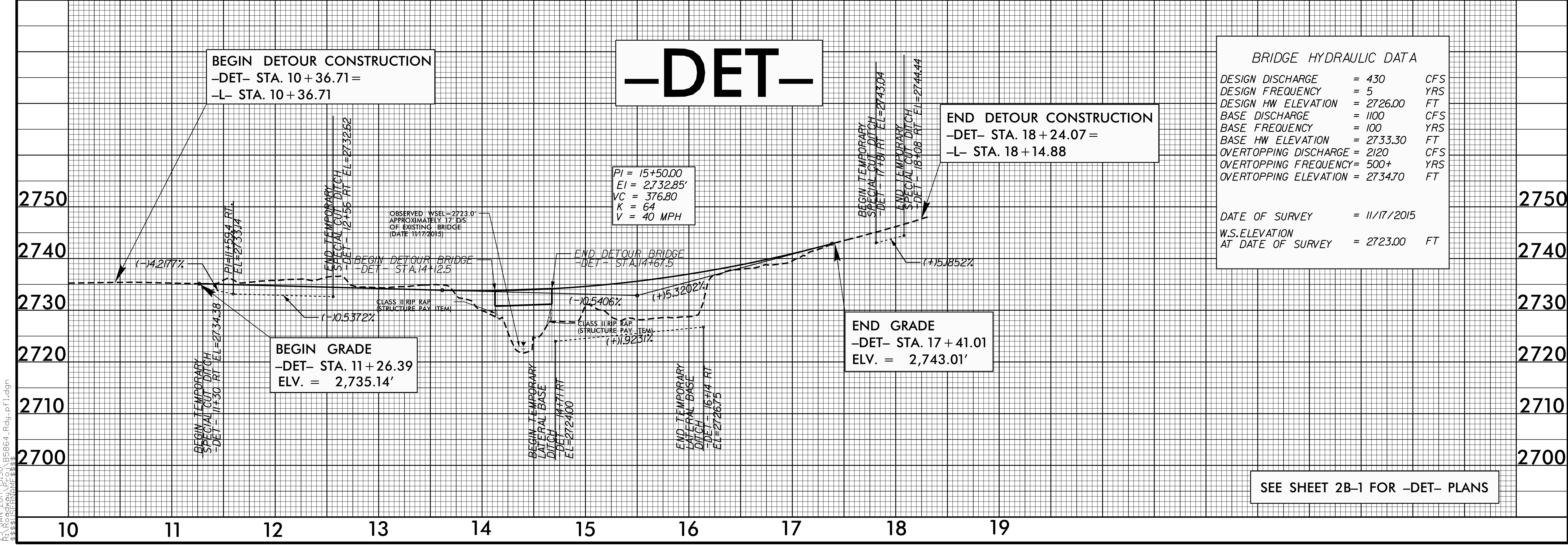


BRIDGE HYDRAULIC DATA

|                       |           |     |
|-----------------------|-----------|-----|
| DESIGN DISCHARGE      | = 950     | CFS |
| DESIGN FREQUENCY      | = 50      | YRS |
| DESIGN HW ELEVATION   | = 2732.80 | FT  |
| BASE DISCHARGE        | = 1100    | CFS |
| BASE FREQUENCY        | = 100     | YRS |
| BASE HW ELEVATION     | = 2733.30 | FT  |
| OVERTOPPING DISCHARGE | = 2120    | CFS |
| OVERTOPPING FREQUENCY | = 500+    | YRS |
| OVERTOPPING ELEVATION | = 2734.70 | FT  |

DATE OF SURVEY = 11/17/2015  
W.S. ELEVATION AT DATE OF SURVEY = 2725.43 FT

SEE SHEET 4 FOR -L- PLANS



BRIDGE HYDRAULIC DATA

|                       |           |     |
|-----------------------|-----------|-----|
| DESIGN DISCHARGE      | = 430     | CFS |
| DESIGN FREQUENCY      | = 5       | YRS |
| DESIGN HW ELEVATION   | = 2726.00 | FT  |
| BASE DISCHARGE        | = 1100    | CFS |
| BASE FREQUENCY        | = 100     | YRS |
| BASE HW ELEVATION     | = 2733.30 | FT  |
| OVERTOPPING DISCHARGE | = 2120    | CFS |
| OVERTOPPING FREQUENCY | = 500+    | YRS |
| OVERTOPPING ELEVATION | = 2734.70 | FT  |

DATE OF SURVEY = 11/17/2015  
W.S. ELEVATION AT DATE OF SURVEY = 2723.00 FT

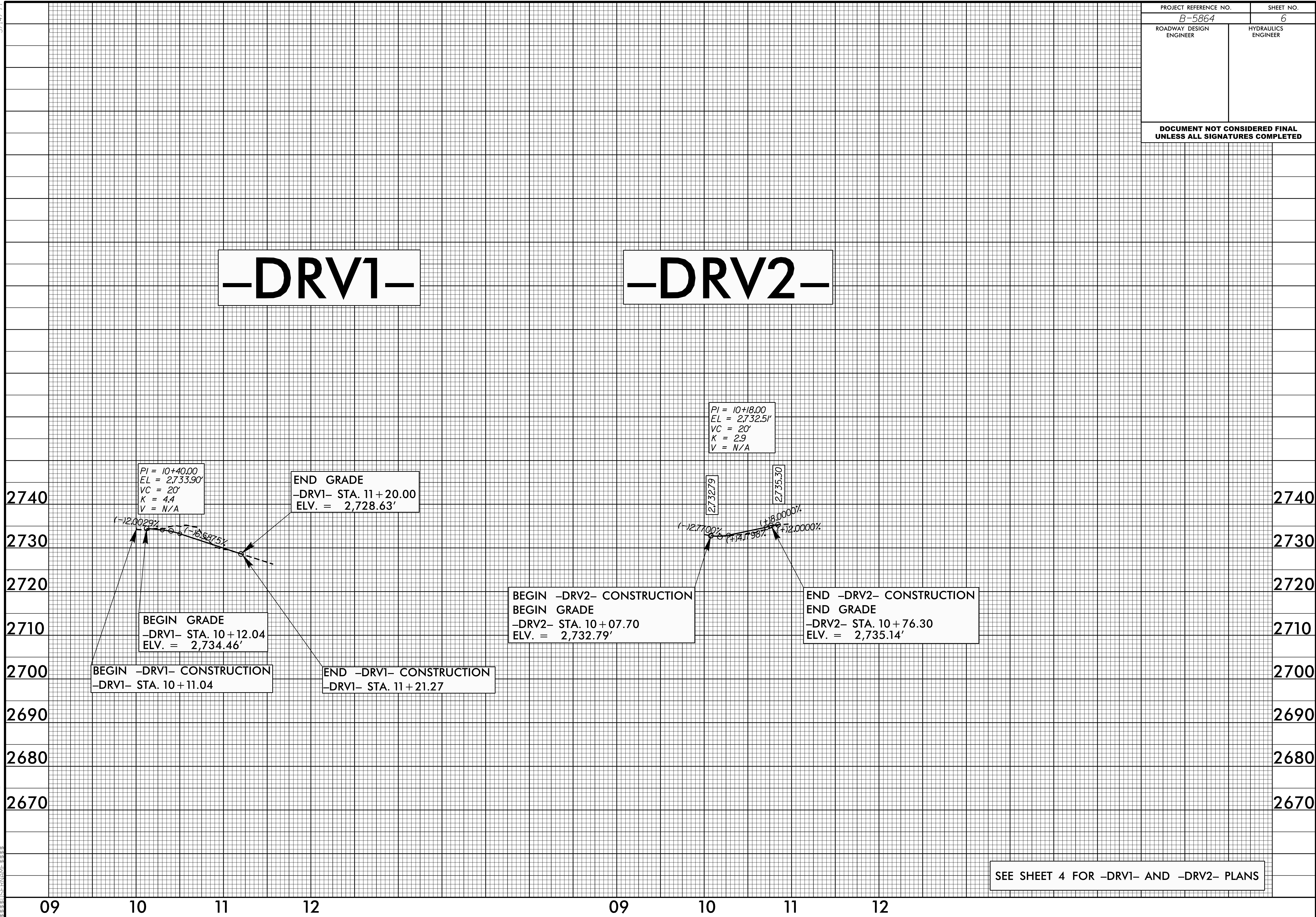
SEE SHEET 2B-1 FOR -DET- PLANS

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|  |                       |
|--|-----------------------|
| PROJECT REFERENCE NO.<br><i>B-5864</i>                                   | SHEET NO.<br><b>6</b> |
| ROADWAY DESIGN ENGINEER  | HYDRAULICS ENGINEER   |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b> |                       |

# -DRV1-

# -DRV2-



SEE SHEET 4 FOR -DRV1- AND -DRV2- PLANS

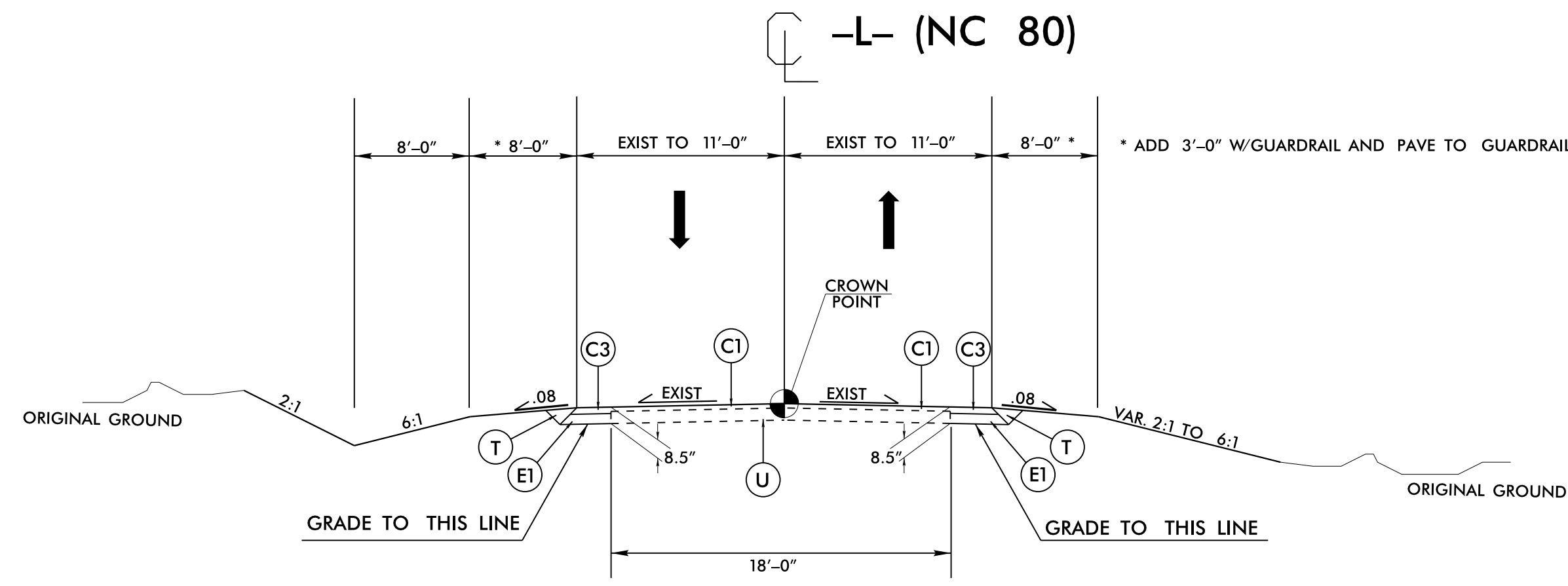
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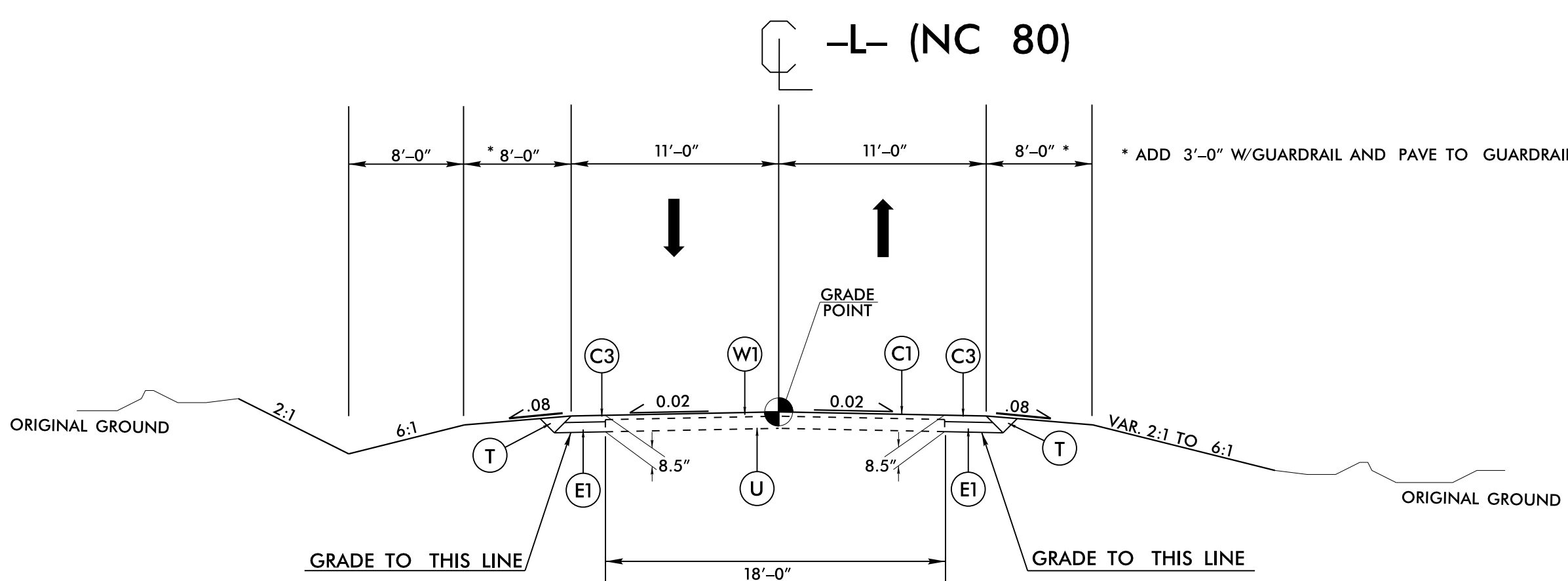
| <b>PAVEMENT SCHEDULE</b><br>(FINAL PAVEMENT DESIGN) |   |
|---|---|
| C1  | PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.  |
| C2  | PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.  |
| C3  | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.  |
| C4  | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.                          |
| E1  | PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 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 5½" IN DEPTH. |
| J1  | 8" AGGREGATE BASE COURSE  |
| P   | PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.  |
| R1  | SHOULDER BERM GUTTER  |
| T   | EARTH MATERIAL  |
| U   | EXISTING PAVEMENT   |
| W1  | VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL)  |
| W2  | VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL)  |

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



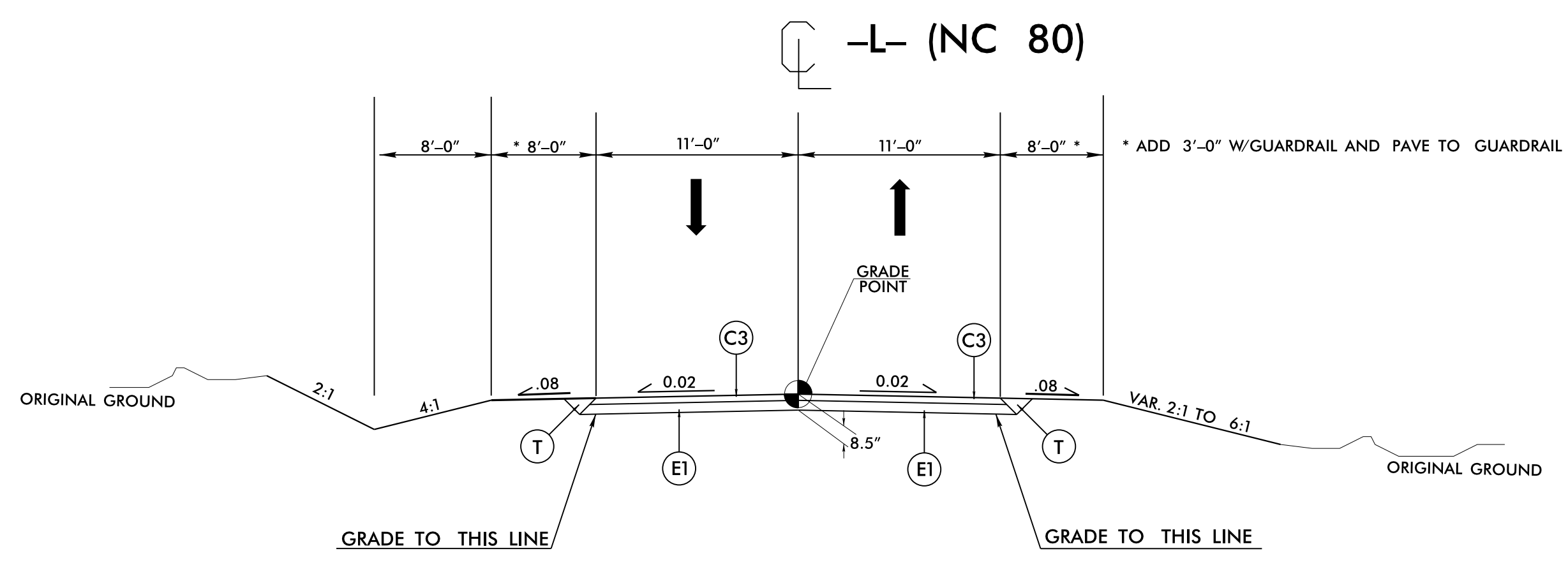
**TYPICAL SECTION NO. 1**

-L- STA. 12+25.00 TO STA. 12+36.00  
-L- STA. 15+50.00 TO STA. 15+70.00



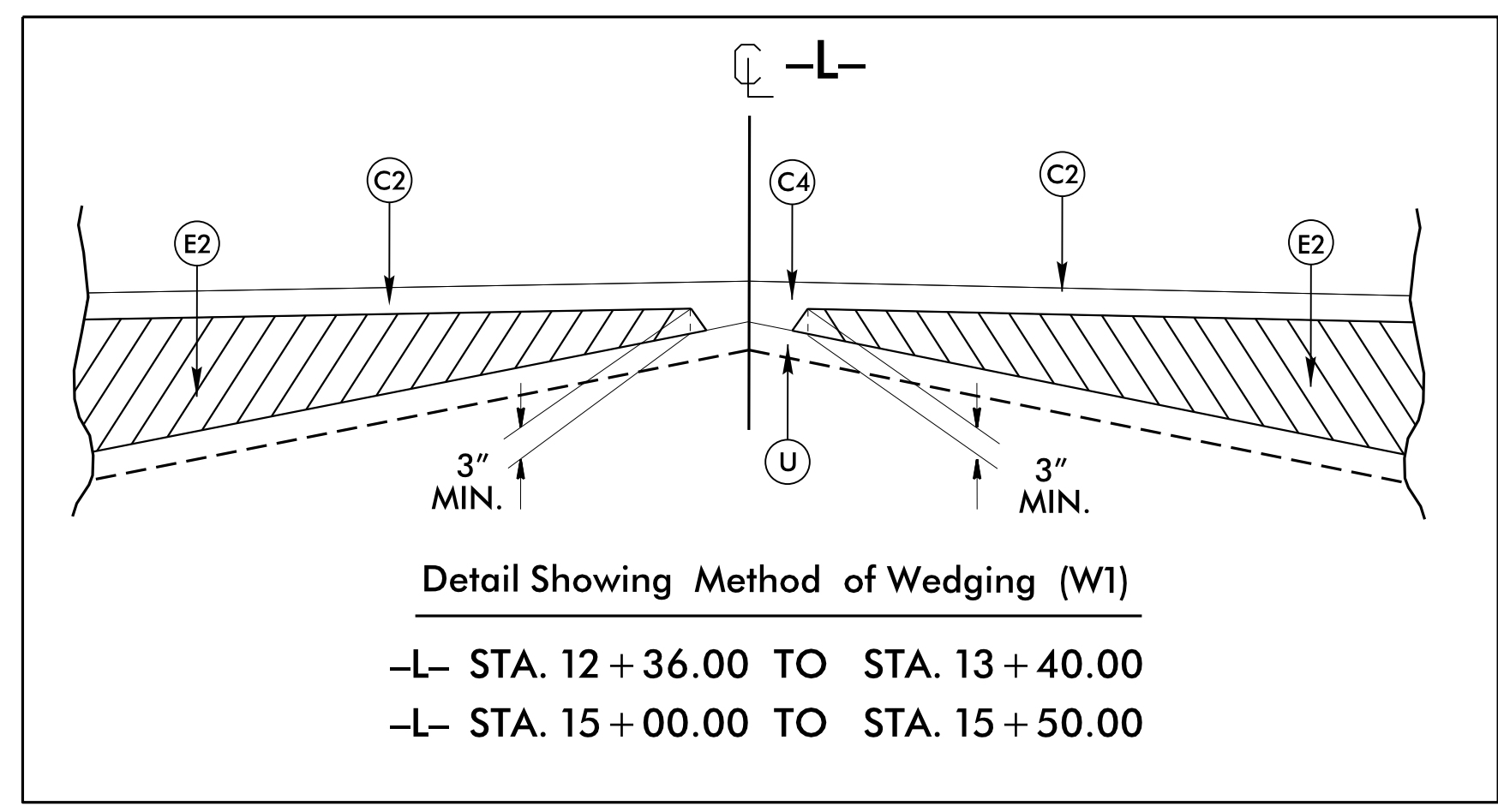
**TYPICAL SECTION NO. 2**

-L- STA. 12+36.00 TO STA. 13+40.00  
-L- STA. 15+00.00 TO STA. 15+50.00

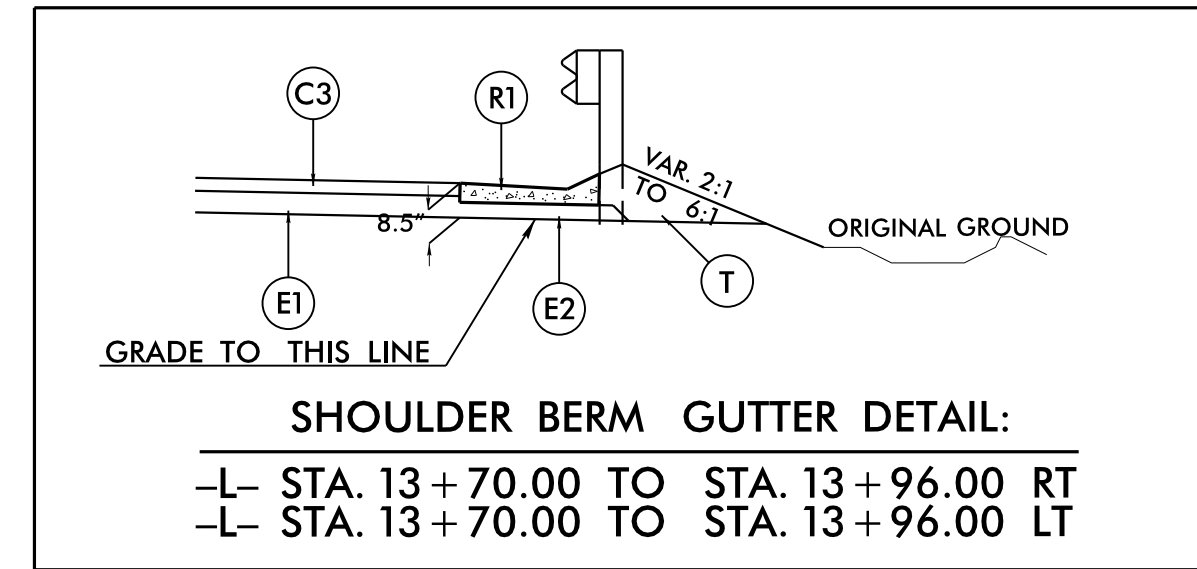


**TYPICAL SECTION NO. 3**

-L- STA. 13+40.00 TO STA. 13+94.88 (BEGIN BRIDGE)  
-L- STA. 14+47.13 (END BRIDGE) TO STA. 15+00.00



Detail Showing Method of Wedging (W1)  
-L- STA. 12+36.00 TO STA. 13+40.00  
-L- STA. 15+00.00 TO STA. 15+50.00



SHOULDER BERM GUTTER DETAIL:  
-L- STA. 13+70.00 TO STA. 13+96.00 RT  
-L- STA. 13+70.00 TO STA. 13+96.00 LT

REVISIONS

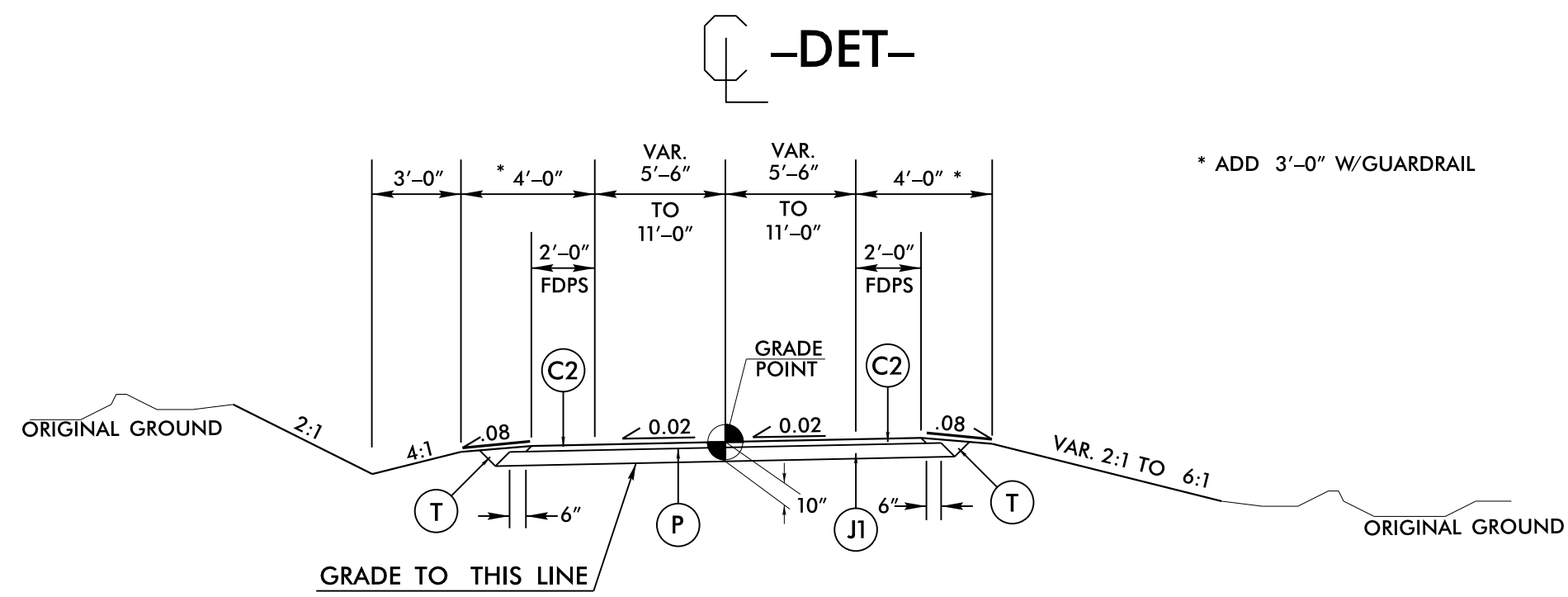
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|  |                     |
|--|---------------------|
| PROJECT REFERENCE NO.<br>B-5864  | SHEET NO.<br>2A-2   |
| RW SHEET NO.   |                     |
| ROADWAY DESIGN ENGINEER  | HYDRAULICS ENGINEER |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b> |                     |

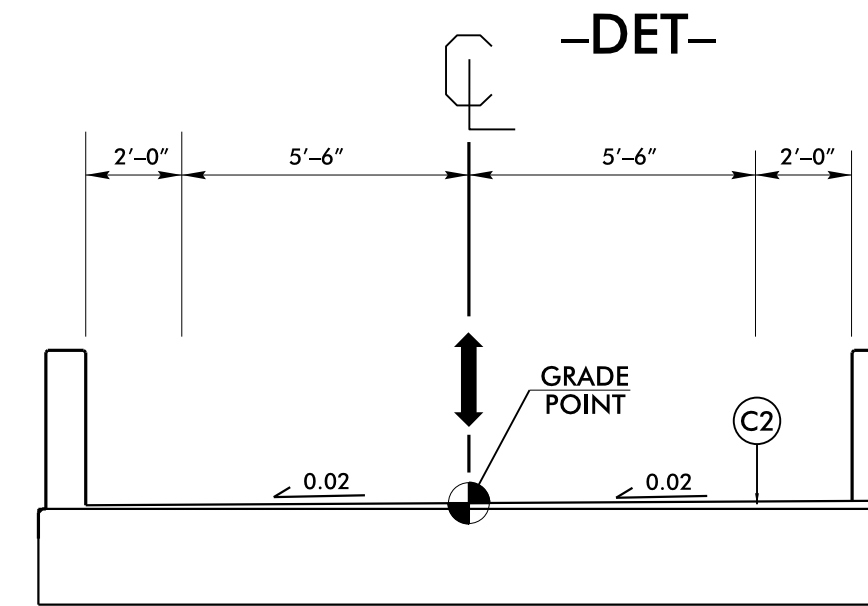
### PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)

|    |                                 |
|----|---------------------------------|
| C1 | 1½" TYPE SF9.5A                 |
| C2 | 2" TYPE SF9.5A                  |
| C3 | 3" TYPE SF9.5A                  |
| C4 | VAR. DEPTH TYPE SF9.5A          |
| E1 | 5½" B25.0B                      |
| E2 | VAR. DEPTH TYPE B25.0B          |
| J1 | 8" AGGREGATE BASE COURSE        |
| P  | PRIME COAT                      |
| T  | EARTH MATERIAL                  |
| U  | EXISTING PAVEMENT               |
| W1 | VARIABLE DEPTH ASPHALT PAVEMENT |
| W2 | VARIABLE DEPTH ASPHALT PAVEMENT |



### TYPICAL SECTION NO. 4

-DET- STA. 10+36.71 TO STA. 14+12.50 (BEGIN BRIDGE)  
 -DET- STA. 14+67.50 (END BRIDGE) TO STA. 18+24.07

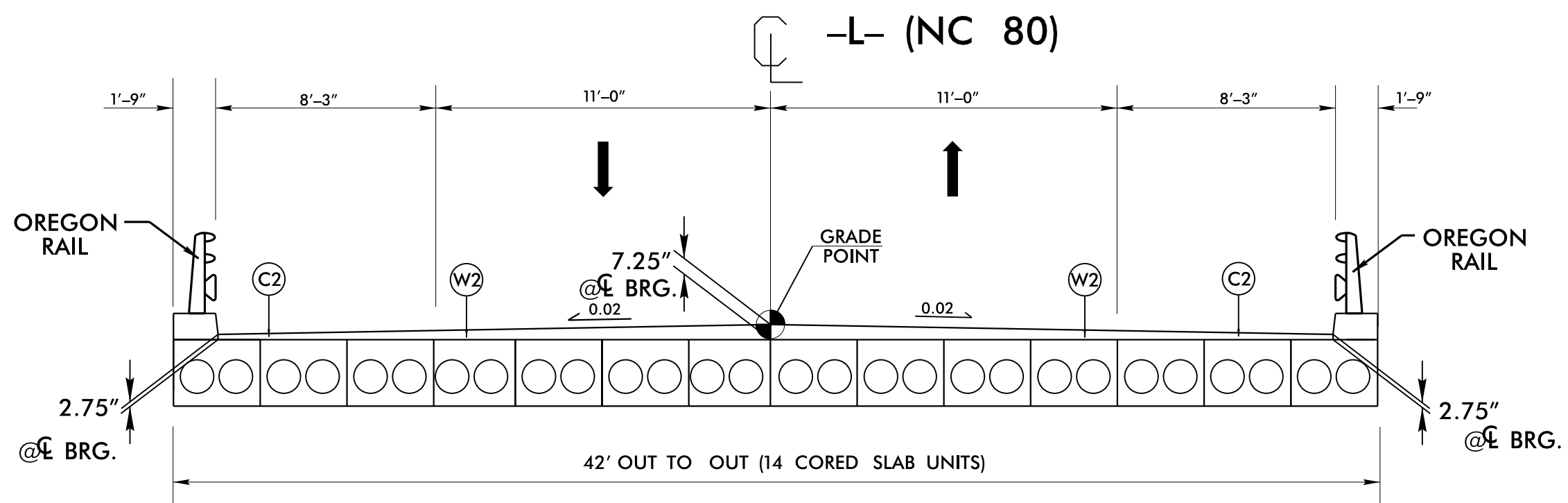


### Detour Bridge (ONE LANE TWO WAY TRAFFIC)

### TYPICAL SECTION OF DETOUR BRIDGE

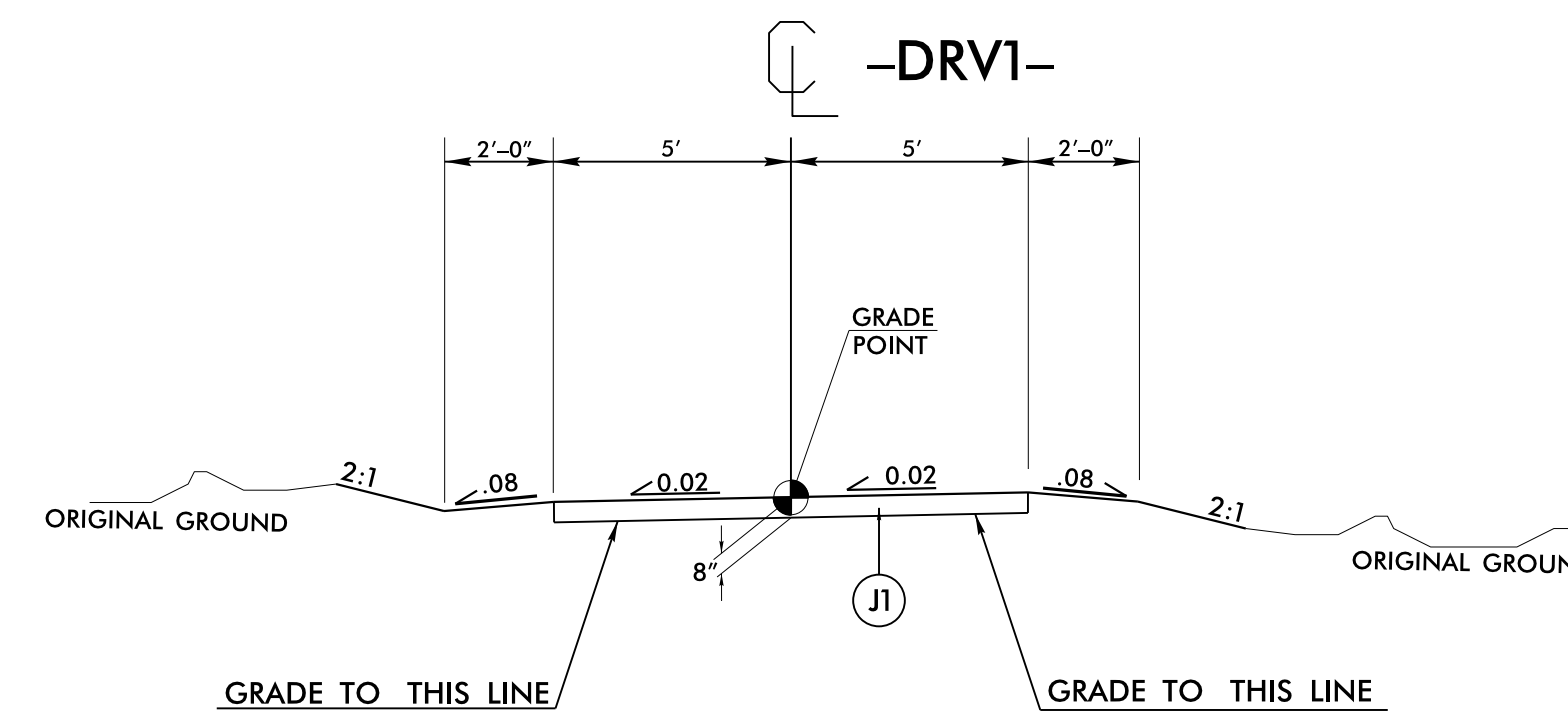
-DET- STA. 14+12.50 (BEGIN DETOUR BRIDGE) TO  
 STA. 14+67.50 (END DETOUR BRIDGE)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



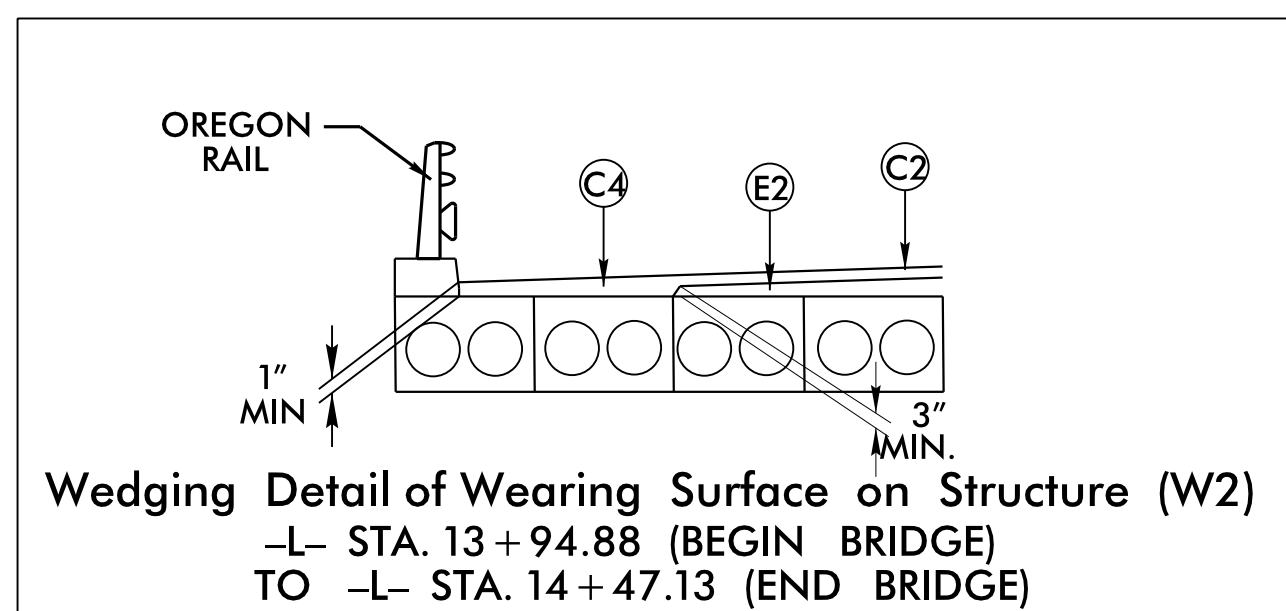
### TYPICAL SECTION OF CORED SLAB BRIDGE

-L- STA. 13+94.88 (BEGIN BRIDGE)  
 TO -L- STA. 14+47.13 (END BRIDGE)

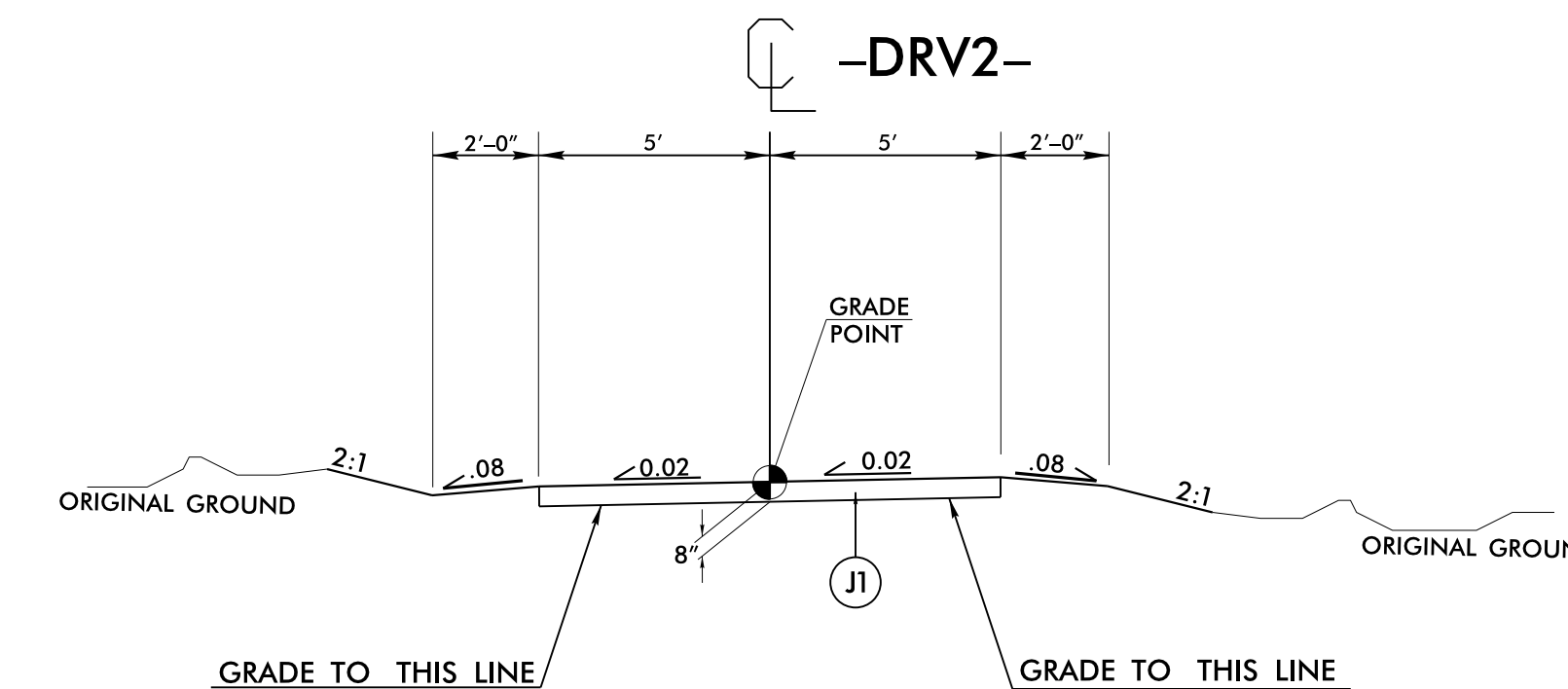


### TYPICAL SECTION NO. 5

-DRV1- STA. 10+11.04 TO STA. 11+21.75



Wedging Detail of Wearing Surface on Structure (W2)  
 -L- STA. 13+94.88 (BEGIN BRIDGE)  
 TO -L- STA. 14+47.13 (END BRIDGE)



### TYPICAL SECTION NO. 6

-DRV2- STA. 10+07.70 TO STA. 10+85.40

REVISIONS

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