

Type I and II Ground Disturbing Categorical Exclusion Action Classification Form

STIP Project No.	B-5662
WBS Element	45617.1.1
Federal Project No.	N/A

A. Project Description:

The proposed project involves replacing Bridge No. 93 on NC 561 over Conoconnara Swamp in Halifax County (see Vicinity Map).

Bridge No. 93 will be replaced on the existing alignment. The replacement structure will have a minimum clear roadway width of 32 feet. The bridge will include two 12-foot lanes and a minimum of four-foot shoulders on each side. The proposed bridge length of 90 feet is based on preliminary design information and is set by hydraulic requirements. The roadway grade of the new structure will be approximately the same as the existing structure.

The approach roadway will extend approximately 424 feet from the north end of the proposed bridge and 506 feet from the south end. The approach roadway will consist of two 12-foot lanes with six-foot shoulders and nine-foot with guardrail. The existing right-of-way width is variable. It is anticipated that Permanent Drainage Easement (PDE) and Temporary Construction Easement (TCE) are needed to build the project.

Due to high traffic volumes caused by different transportation users including truck-trailers, traffic will be detoured on-site during the construction period. The on-site detour will include two ten-foot lanes with a minimum of two-foot wide shoulders on each side. The proposed detour bridge will be 90 feet long with two spans, like the proposed bridge. Acquisition of right of way is expected in Fall of 2019 and construction in June 2020.

B. Description of Need and Purpose:

The structure length of the Bridge No. 93 is 68 feet with a deck width of 32 feet. The NCDOT Bridge Management Unit records indicate the existing structure has a sufficiency rating of 30.55 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to a substructure rating of 4 out of a possible 9. It was built in 1939 and has reached the end of its useful life. Replacement of the bridge is needed to provide safe access and mobility in the study area.

C. Categorical Exclusion Action Classification:

TYPE I A

D. Proposed Improvements

28. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings, if the actions meet the constraints in 23 CFR 771.117(e)(1-6).

E. Special Project Information:

Project Cost

The latest estimated costs are as follows:

Right of Way Acquisition -	\$3,400
Utilities -	\$0
Construction -	\$3,450,000
Total -	\$3,453,400

Anticipated Permit or Consultation Requirements: A Nationwide Permit or General Permit will likely be applicable. The USACE holds the final discretion as to what permit will be required to authorize project construction. If a Section 404 permit is required, then a Section 401 Water Quality Certification (WQC) from the NCDWR will be needed.

Estimated Traffic:

Current Year (2020):	1,150 vpd
Design Year (2040)	1,400 vpd
TTST	5%
Duals	7%

Crash Rates:

Summary of Crashes in the Vicinity of Bridge (2010-2014)

<u>Total Crashes</u>	<u>Type(s) of Crashes</u>
1	Property Damage Only Crashes

Cultural Resources: This project was reviewed and cleared by NCDOT’s cultural resources staff under the Programmatic Agreement for Minor Transportation Projects in North Carolina among the Federal Highway Administration, North Carolina Department of Transportation, North Carolina State Historic Preservation Office, North Carolina Office of State Archaeology, and Advisory Council on Historic Preservation. No archaeological survey was required, and a survey was conducted for historic resources that concluded that no historic properties are present or affected by this project (see Attachment 1).

Bicycle and Pedestrian Accommodations: There is no presence of bicycle, pedestrian, greenway, or transit facilities, therefore, no bicycle or pedestrian accommodations are proposed for the project.

Design Exceptions: A design exception is anticipated for this project for horizontal curve and horizontal stopping sight distance.

Alternatives Considered:

No Build – The no-build alternative would result in eventually closing the road, which is anticipated to cause considerable disruption to users of NC 561.

Rehabilitation – The superstructure of the bridge is prestressed concrete channel with steel piles. The bridge was built in 1939. The concrete and steel joists within the bridge are reaching the end of their useful life. Rehabilitation would require replacing the joists which would constitute effectively replacing the bridge.

Off-site Detour - An off-site detour was evaluated due to low traffic volumes served by NC 561. The off-site detour route would include SR 1137 (Dyke Smith Road) and SR 1700 (Rodell Barrow Road); however, an on-site detour was preferred for this project.

On-site Detour (Recommended) – The detour would be constructed west of the existing bridge location. The proposed detour roadway would consist of two ten-foot lanes with four-foot shoulders. The temporary bridge would have two ten-foot lanes with a minimum of two-foot wide shoulders on each side.

Staged Construction – Staged construction was considered; however, an on-site detour was preferred.

New Alignment – Given that the alignment for NC 561 is acceptable, a new alignment was not considered as an alternative.

Public Involvement: A landowner notification letter was sent to all property owners affected directly by this project on February 16, 2016, and property owners were invited to comment. No comments have been received to date

F. Project Impact Criteria Checklists:

<u>Type I & II - Ground Disturbing Actions</u>			
<u>FHWA APPROVAL ACTIVITIES THRESHOLD CRITERIA</u>			
If any of questions 1-7 are marked "yes" then the CE will require FHWA approval.		Yes	No
1	Does the project require formal consultation with U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Does the project result in impacts subject to the conditions of the Bald and Golden Eagle Protection Act (BGPA)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Does the project generate substantial controversy or public opposition, for any reason, following appropriate public involvement?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Does the project cause disproportionately high and adverse impacts relative to low-income and/or minority populations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Does the project involve a residential or commercial displacement, or a substantial amount of right of way acquisition?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Does the project require an Individual Section 4(f) approval?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Does the project include adverse effects that cannot be resolved with a Memorandum of Agreement (MOA) under Section 106 of the National Historic Preservation Act (NHPA) or have an adverse effect on a National Historic Landmark (NHL)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If any of questions 8 through 31 are marked "yes" then additional information will be required for those questions in Section G.			
<u>Other Considerations</u>		Yes	No
8	Does the project result in a finding of "may affect not likely to adversely affect" for listed species, or designated critical habitat under Section 7 of the Endangered Species Act (ESA)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Is the project located in anadromous fish spawning waters?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	Does the project impact waters classified as Outstanding Resource Water (ORW), High Quality Water (HQW), Water Supply Watershed Critical Areas, 303(d) listed impaired water bodies, buffer rules, or Submerged Aquatic Vegetation (SAV)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11	Does the project impact waters of the United States in any of the designated mountain trout streams?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12	Does the project require a U.S. Army Corps of Engineers (USACE) Individual Section 404 Permit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	Will the project require an easement from a Federal Energy Regulatory Commission (FERC) licensed facility?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14	Does the project include a Section 106 of the NHPA effects determination other than a no effect, including archaeological remains?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Other Considerations (continued)</u>		Yes	No
15	Does the project involve hazardous materials and/or landfills?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16	Does the project require work encroaching and adversely affecting a regulatory floodway or work affecting the base floodplain (100-year flood) elevations of a water course or lake, pursuant to Executive Order 11988 and 23 CFR 650 subpart A?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17	Is the project in a Coastal Area Management Act (CAMA) county and substantially affects the coastal zone and/or any Area of Environmental Concern (AEC)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18	Does the project require a U.S. Coast Guard (USCG) permit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19	Does the project involve construction activities in, across, or adjacent to a designated Wild and Scenic River present within the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
20	Does the project involve Coastal Barrier Resources Act (CBRA) resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
21	Does the project impact federal lands (e.g. U.S. Forest Service (USFS), USFWS, etc.) or Tribal Lands?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
22	Does the project involve any changes in access control?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
23	Does the project have a permanent adverse effect on local traffic patterns or community cohesiveness?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
24	Will maintenance of traffic cause substantial disruption?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
25	Is the project inconsistent with the STIP or the Metropolitan Planning Organization's (MPO's) Transportation Improvement Program (TIP) (where applicable)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
26	Does the project require the acquisition of lands under the protection of Section 6(f) of the Land and Water Conservation Act, the Federal Aid in Fish Restoration Act, the Federal Aid in Wildlife Restoration Act, Tennessee Valley Authority (TVA), or other unique areas or special lands that were acquired in fee or easement with public-use money and have deed restrictions or covenants on the property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
27	Does the project involve Federal Emergency Management Agency (FEMA) buyout properties under the Hazard Mitigation Grant Program (HMGP)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
28	Does the project include a <i>de minimis</i> or programmatic Section 4(f)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
29	Is the project considered a Type I under the NCDOT's Noise Policy?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
30	Is there prime or important farmland soil impacted by this project as defined by the Farmland Protection Policy Act (FPPA)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
31	Are there other issues that arose during the project development process that affected the project decision?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

G. Additional Documentation as Required from Section F

Question 1. The US Fish and Wildlife Service has developed a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT

program is “May Affect, Likely to Adversely Affect”. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Halifax County, where TIP B-5662 is located.

Question 8. The Atlantic sturgeon is a large fish that occurs in major river systems along the eastern seaboard of the United States. No known occurrences of Atlantic sturgeon were found within 1.0 miles of the study area. The Biological Conclusion for this species was unresolved in the Natural Resources Technical Report. The NCDOT Environmental Coordination and Permitting Group coordinated with the National Marine Fisheries Service, who concurred on June 28, 2018 that the project will have No Effect on Atlantic sturgeon.

H. Project Commitments

**Halifax County
Bridge No. 93 on NC 561 over Conoconnara Swamp
WBS No. 45617.1.1
TIP No. B-5662**

No commitments identified.


I. Categorical Exclusion Approval

STIP Project No.	<u>B-5662</u>
WBS Element	<u>45617.1.1</u>
Federal Project No.	<u>N/A</u>

Prepared By:

9/5/2019

Date

DocuSigned by:

7AB1E75A70BE4E5...
 Dewayne L. Sykes, P.E. – Roadway Practice Lead
 KCI Associates of NC, PA

Prepared For:

North Carolina Department of Transportation Structures Management Unit

Reviewed By:

9/6/2019

Date

DocuSigned by:

8C1643E6874A457...
 Philip S. Harris, PE, CPM – Environmental Analysis Unit Head
 North Carolina Department of Transportation



Approved

If all of the threshold questions (1 through 7) of Section F are answered “no,” NCDOT approves this Categorical Exclusion.

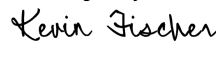


Certified

If any of the threshold questions (1 through 7) of Section F are answered “yes,” NCDOT certifies this Categorical Exclusion.

9/6/2019

Date

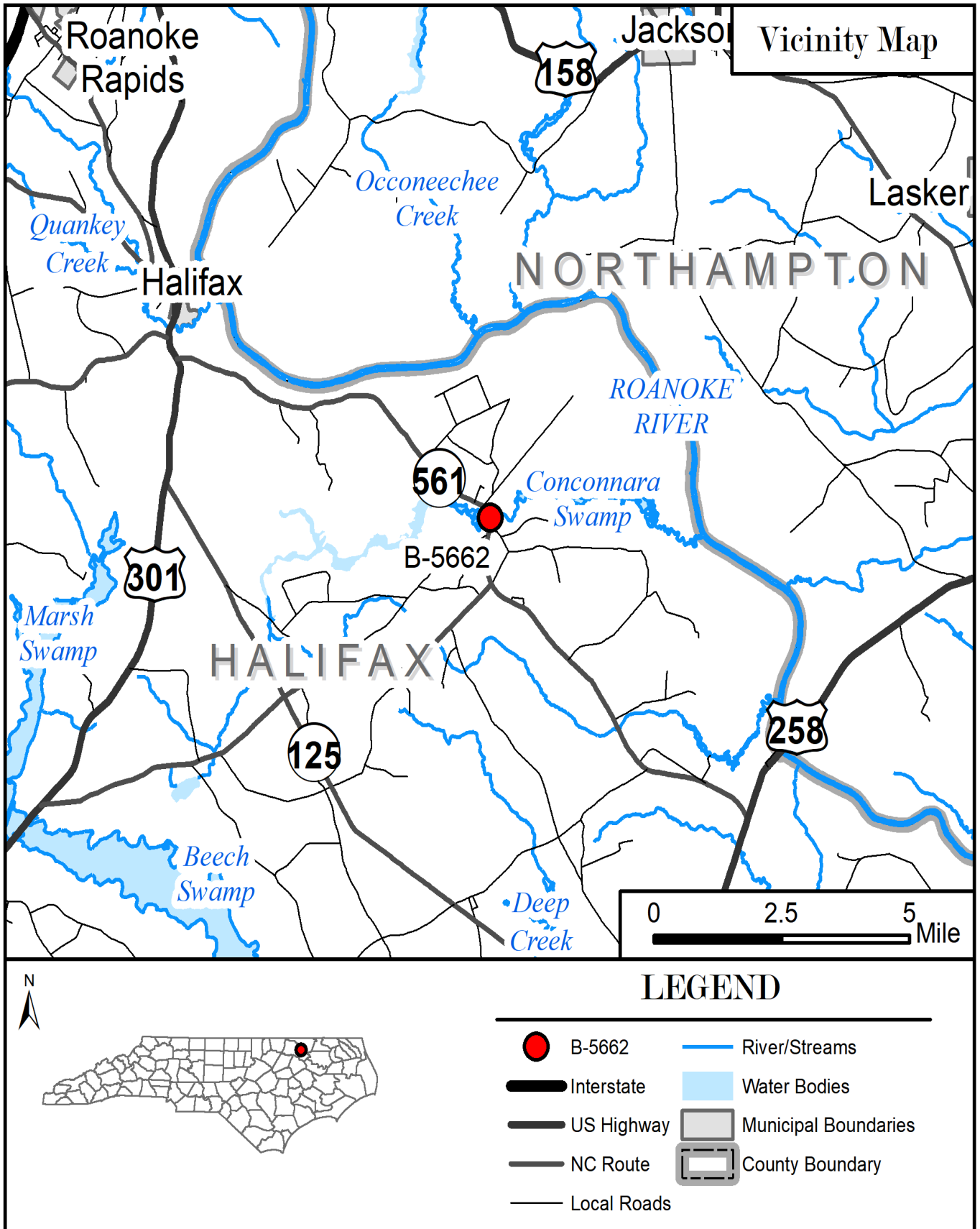
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ED19A18D98EC496...
 Kevin Fischer, PE
 Project Engineer – PEF/Program Mgt.
 North Carolina Department of Transportation

FHWA Approved: For Projects Certified by NCDOT (above), FHWA signature required.

Date

N/A
 John F. Sullivan, III, PE, Division Administrator
 Federal Highway Administration

Vicinity Map



Jurisdictional Features Map

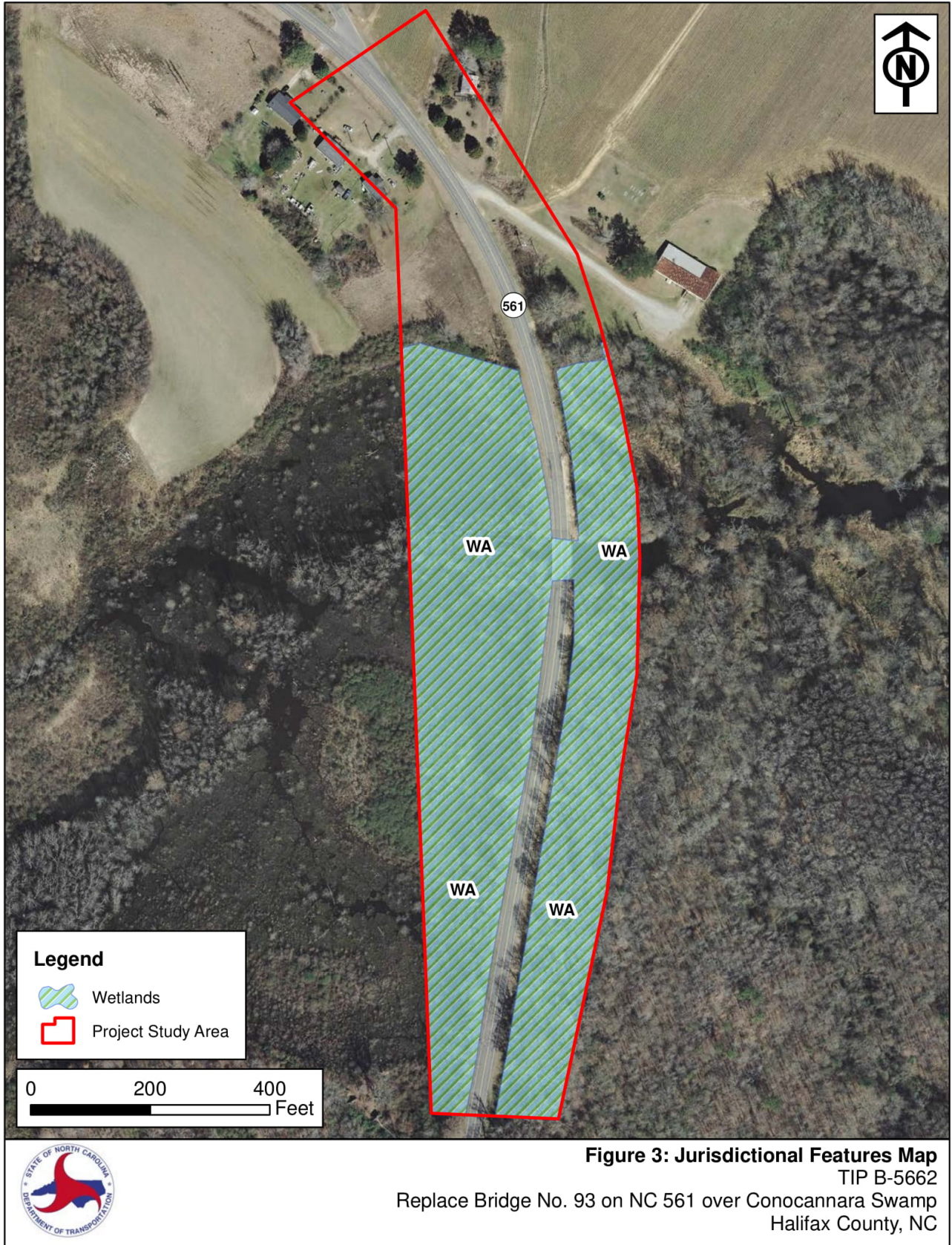


Figure 3: Jurisdictional Features Map

TIP B-5662

Replace Bridge No. 93 on NC 561 over Conocannara Swamp

Halifax County, NC

Attachments:

- 1. Cultural Resources**
- 2. Design Sheet**

16-01-0021**NO ARCHAEOLOGICAL SURVEY REQUIRED FORM**

This form only pertains to ARCHAEOLOGICAL RESOURCES for this project. It is not valid for Historic Architecture and Landscapes. You must consult separately with the Historic Architecture and Landscapes Group.

**PROJECT INFORMATION**

Project No: **B-5662** *County:* **Halifax**
WBS No: **45617.1.1** *Document:* **SMC**
F.A. No: **N/A** *Funding:* State Federal

Federal Permit Required? Yes No *Permit Type:* **NWP**

Project Description: The NCDOT proposes to replace Bridge No. 93 on NC 561 over Conoconnara Swamp in Halifax County. Bridge No. 93 was built in 1939, and is considered to be structurally deficient and functionally obsolete. The Proposed Study Area for the project will be centered on the bridge and measure 1,800 feet in length. It will extend 125 feet east of the centerline and between 100 and 250 feet west of the centerline to account for possible realignment or on-site detour. Overall, the Study Area will encompass about 570,337 square feet (13.09 acres), inclusive of the existing roadway and structure to be replaced.

SUMMARY OF CULTURAL RESOURCES REVIEW***Brief description of review activities, results of review, and conclusions:***

A map review and site file search was conducted at the Office of State Archaeology (OSA) on Friday, January 15, 2016. A reconnaissance of the Study Area was also conducted on Monday, February 1, 2016. No archaeological surveys have been conducted along this particular stretch of NC 561, and no archaeological sites have been recorded within one-half (1/2) mile of the proposed project. Digital copies of HPO's maps (Boones Crossroads Quadrangle) as well as the HPOWEB GIS Service (<http://gis.ncdcr.gov/hpoweb/>) were last reviewed on Wednesday, February 3, 2016. There are no known historic architectural resources located within the Study Area for which intact archaeological deposits would be anticipated within the footprint of the proposed project. However, the Study Area is located within the Tillery Resettlement District (HX0541 – a New Deal-era farm/housing program). In addition, topographic maps, historic maps (NCMaps website), USDA soil survey maps, and aerial photographs were utilized and inspected to gauge environmental factors that may have contributed to historic or prehistoric settlement within the project limits, and to assess the level of modern, slope, agricultural, hydrological, and other erosive-type disturbances within and surrounding the archaeological APE.

Brief Explanation of why the available information provides a reliable basis for reasonably predicting that there are no unidentified historic properties in the APE:

This is a State-funded project that will require a Federal permit. The need for temporary and/or permanent easements has not been determined; however, the overall dimensions of the Study Area will capture any necessary easements. At this time, we are in compliance with NC GS 121-12a, since there are no eligible (i.e. National Register-listed) archaeological resources located within the project's Study Area that would require our attention. Based on the sheer size of the Study Area, activities may take place beyond the NCDOT's existing 100-ft ROW. From an environmental perspective, the Study Area straddles the Conoconnara Swamp within the Roanoke River floodplain and is composed of three (3) soil

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types: State fine sandy loam, 2-6% slopes (StB), Altavista fine sandy loam, 0-3% slopes, rarely flooded (AaA), and Chewacla and Wehadkee soils, 0-1% slopes, frequently flooded (CwA). The somewhat poorly drained/poorly drained soil conditions within the Study Area are not favorable for containing intact archaeological sites/resources. Most of the Study Area consists of standing water and swampy terrain. Preservation of archaeological materials within such soil types is likely to be poor. Although soil conditions to the north are listed as moderately well-drained and well-drained, observations in the field show that much of this landform has been subjected to erosion with exposed subsoil and standing water throughout the agricultural fields. Unfortunately, the Office of State Archaeology (OSA) has not reviewed any projects within the vicinity of Bridge No. 93 for environmental compliance.

Because of the Study Area's inclusion within the Tillery Resettlement District, a reconnaissance of its surroundings was conducted. In the 1930s and 1940s, President Franklin Roosevelt instituted his New Deal Resettlement Program, offering African American families the opportunity to purchase land. The Tillery Resettlement Farm was one of approximately 113 rural Resettlement "experiments" conducted by the U.S. Government during this time. It was also one of the largest Resettlement Projects in North Carolina and one of only 15 African American projects in the United States. The Resettlement Farm, whose name was changed to Roanoke Farms in 1936, spread over 18,000 acres. The Farm was eventually segregated with white settlers located in west Halifax and African American settlers located in Tillery. Although plans for 300 farmsteads were approved, at its peak, Roanoke Farms provided homes for approximately 150 African American families and about 110 white families. The Tillery section of the Resettlement Farm is located on 4 large sections in southeast Halifax County. The first, and largest section of the farm, was constructed beginning in 1935, near Caledonia Prison. The next section of the Farm, with construction also beginning around 1935, was located near the Conoconnara Swamp. It was here that the original Tillery Community Center (which burned in 1940) and the cooperative store (the current Tillery Community Center building) stood. The Tillery section of the Resettlement Farm also had a grist mill and a potato curing house. All of these structures are located at the corner of Conoconnara Road and Community Center Road (old NC 561).

As a result of the reconnaissance survey, two (2) small cemeteries were located and identified adjacent to and outside the Study Area, both of which would not be considered eligible for the National Register of Historic Places (NRHP). Neither cemetery is depicted on the USGS quad maps, nor have they been recorded with the Office of State Archaeology. Located along an old alignment for a previous crossing of Conoconnara Swamp is a small plot of land consisting of at least fifteen (15) burials, ranging in time from 1969 to 2013 (based on time of death). Arranged in three distinct (perhaps familial rows), those within the confines of the cemetery may have direct ties to not only the African American families who took part in the Resettlement program based on the generation they represent but also the Tillery Chapel Baptist Church that once stood nearby but has since relocated to its current location along Community Center Road. Located at the intersection of Conoconnara Road and Community Center Road behind where a residential structure once stood are two (2) recent graves (2009 and 2015) associated with the Johnson Family. The two (2) graves represent a mother and son, who chose to be buried behind their house, according to a neighbor. Based solely on names, there may be a familial connection between the Johnson Family and the Tillery Family buried in the first cemetery just discussed. Online references could not be located for either cemetery so a brief recordation of each location was conducted. Additional documentation on the NCDOT's part would not be necessary as long as both cemeteries are not impacted by the proposed project. Further review of historic maps indicated the presence of a mid-20th century school building (present in 1936, but gone by 1962) and an early to mid-20th century church (present in 1910/1919 and still standing by 1980 but not in use) adjacent to the northern limits of the Study Area. The school building is no longer standing; the church may have been transformed into a residence. In either case, neither would be considered for archaeological investigations based on their timeframe. Based on the nature of the proposed project, current soil conditions, and the field reconnaissance, it is believed that the current Study Area, as depicted, is unlikely to contain intact and significant archaeological resources. No archaeological survey is required for this project. If design plans change or

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are made available prior to construction, then additional consultation regarding archaeology will be required. At this time, no further archaeological work is recommended. Both cemeteries should be avoided and no staging areas are to be placed within the boundaries (i.e. parcel lines) of either cemetery. If either cemetery is to be impacted by the proposed project, then additional consultation will be required and compliance with applicable State statutes (NC GS 65 and/or NC GS 70, Article 2) may be necessary. If archaeological materials are uncovered during project activities, then such resources will be dealt with according to the procedures set forth for "unanticipated discoveries," to include notification of NCDOT's Archaeology Group.

SUPPORT DOCUMENTATION

See attached: Map(s) Previous Survey Info Photos Correspondence
 Photocopy of County Survey Notes Other:

FINDING BY NCDOT ARCHAEOLOGIST

NO ARCHAEOLOGY SURVEY REQUIRED

Paul J Mohler

February 3, 2016

NCDOT ARCHAEOLOGIST

Date

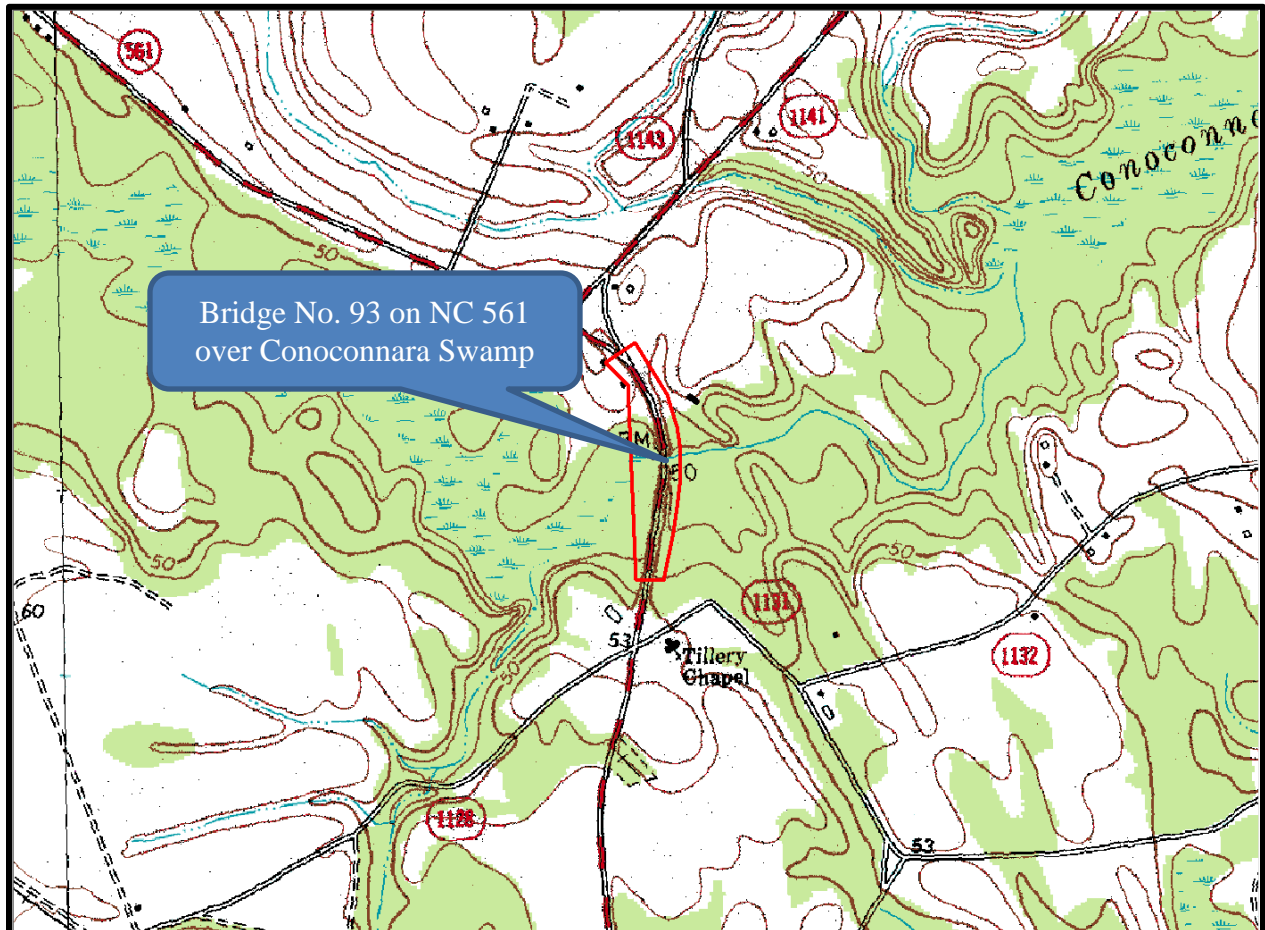


Figure 1: Boones Crossroads, NC (USGS 1974).

16-01-0021



HISTORIC ARCHITECTURE AND LANDSCAPES NO HISTORIC PROPERTIES PRESENT OR AFFECTED FORM

This form only pertains to Historic Architecture and Landscapes for this project. It is not valid for Archaeological Resources. You must consult separately with the Archaeology Group.

PROJECT INFORMATION

Project No.:	B-5662	County:	Halifax
WBS No.:	45617.1.1	Document Type:	
Fed. Aid No.:		Funding:	X State Federal
Federal Permit(s):	X Yes <input type="checkbox"/> No	Permit Type(s):	NWP
Project Description: Replace Bridge No. 93 on NC 561 over Conocannara Swamp (no off-site detour planned).			

SUMMARY OF HISTORIC ARCHITECTURE AND LANDSCAPES REVIEW

- There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- There are no properties within the project's area of potential effects.
- There are properties over fifty years old within the area of potential effects, but they do not meet the criteria for listing on the National Register.
- X There are no historic properties present or affected by this project. (Attach any notes or documents as needed.)

REVIEW ACTIVITIES, RESULTS, AND CONCLUSIONS: HPOWeb reviewed on 26 January 2016 and yielded one SL and no NR, SS, DE, or LD properties in the Area of Potential Effects (APE). Halifax County current GIS mapping, aerial photography, and tax information indicated an APE of mostly wetland and woodland with cleared residential resources, dating from the 1920s to the 1980s, and cultivated fields at the northern end (viewed 26 January 2016). APE extends 1000 feet from either end of the existing bridge (N-S) and 300 feet west and 200 feet east of the NC 561 centerline to encompass proposed construction.

The APE is contained within the study-listed Tillery Resettlement Historic District (HX0541). Two domestic resources dating from the 1920s and the 1950s are altered, unexceptional examples of their types. A cemetery, located about 450 feet north of the existing bridge and 175 feet east of the NC 561 centerline (Parcel No. 0619664), contains above-ground features dating from 1969 to 2013. Constructed in 1939, Bridge No. 93 is not eligible for the National Register according to the NCDOT historic bridge survey as it is not representative of any distinctive engineering or aesthetic type.

The comprehensive county architectural survey (1986-88), as well as later studies recorded no properties in the APE; the Tillery Resettlement District (HX0541) was study-listed in 1988. No National Register-listed properties are located within the APE. Google Maps "Street View" confirmed the presence and relative placement of architectural and landscape resources in the APE (viewed 26 January 2016). On-site investigation conducted on 1 February 2016 also confirmed the nature and location of resources.

A finding of "no historic properties affected" will satisfy both GS 121-12(a) and Section 106 compliance requirements.

Should the design of the project change, please notify NCDOT Historic Architecture as additional review may be necessary.

SUPPORT DOCUMENTATION

X Map(s) Previous Survey Info. Photos Correspondence Design Plans

FINDING BY NCDOT ARCHITECTURAL HISTORIAN

Historic Architecture and Landscapes – **NO HISTORIC PROPERTIES PRESENT OR AFFECTED**

Vanessa C. Patrick

NCDOT Architectural Historian

5 February 2016

Date

B-5662, Bridge No. 93 Replacement, Halifax County
WBS No. 45617.1.1
Tracking No. 16-01-0021

B-5662 HALIFAX COUNTY

REPLACE BRIDGE NO. 93 OVER CONOCONNARA SWAMP ON NC 561

REPLACE IN PLACE WITH OFFSITE DETOUR

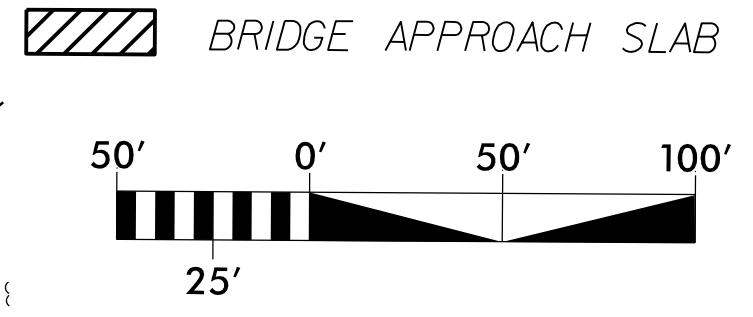
PROJECT REFERENCE NO. B-5662		SHEET NO.	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

PI Sta 10+84.56 Δ = 0° 10' 01.5" (LT) D = 0° 05' 55.6" L = 169.12' T = 84.56' R = 58,000.00' DS = 60 MPH	PI Sta 15+10.79 Δ = 14° 55' 31.0" (LT) D = 4° 18' 28.6" L = 346.46' T = 174.22' R = 1,330.00' DS = 60 MPH	PI Sta 18+22.36 Δ = 13° 48' 58.6" (LT) D = 4° 58' 56.1" L = 277.31' T = 139.33' R = 1,150.00' DS = 55 MPH	PI Sta 21+52.29 Δ = 18° 57' 08.9" (LT) D = 4° 58' 56.1" L = 380.40' T = 191.95' R = 1,150.00'
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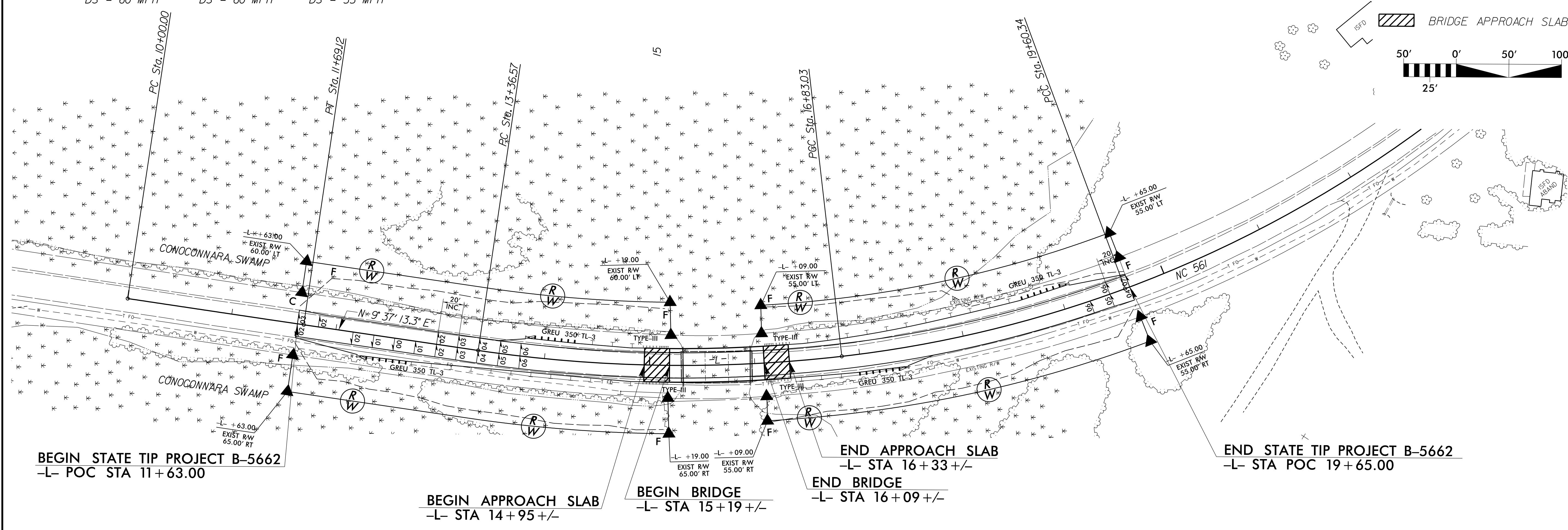


PT Sta. 21+70.27
PT Sta. 19+60.34

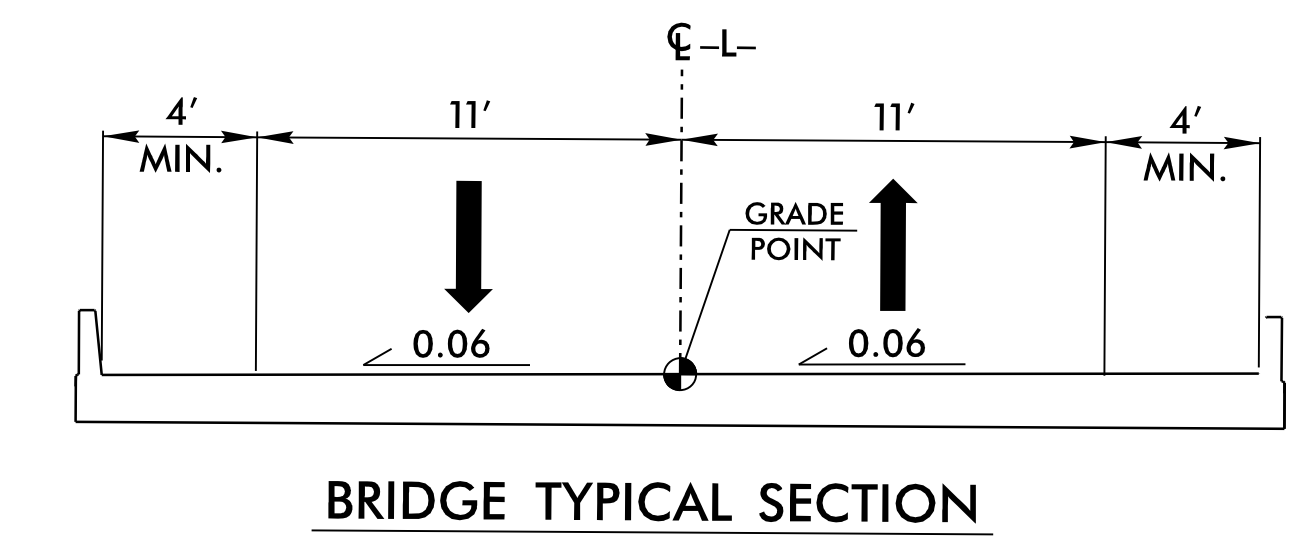
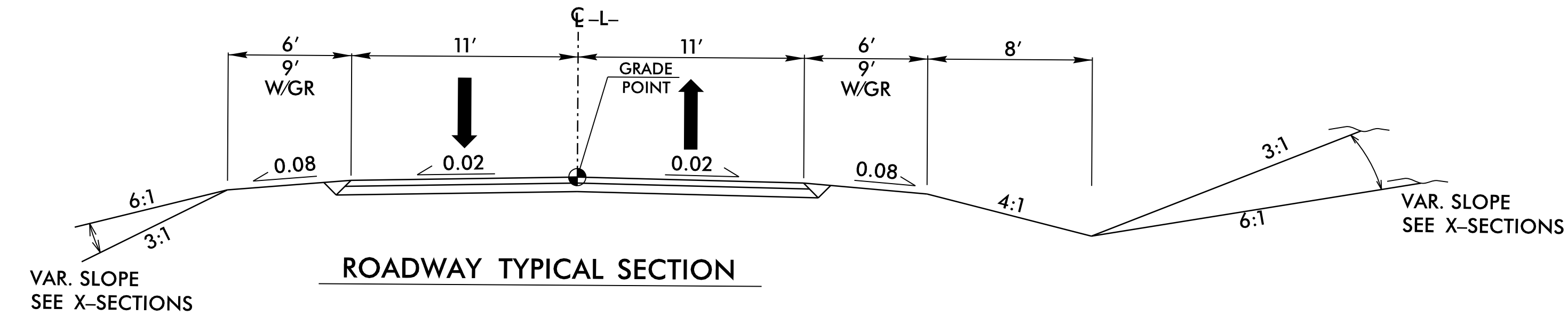
FOR -L- PROFILE SEE SHEET 5



REVISIONS



ANTICIPATED DESIGN DATA	
DESIGN STANDARDS	= AASHTO
DESIGN SPEED	= 60 MPH
ADT 2017	= 1100
ADT 2040	= 1400
K	= 10%
D	= 55%
DUAL	= 7%
TTST	= 5%
MIN. RADIUS	= 1330'
MAX. GRADE	= 5%
K sag	= 136
K crest	= 151
SE MAX.	= 0.06
CLASSIFICATION	= MAJOR COLLECTOR /REGIONAL TIER
TERRAIN	= LEVEL
DESIGN EXCEPTION	= HORIZONTAL CURVE RADIUS



06-DEC-2017 15:45
 P:\7\kgl\cwt\gcs\corp\kci.com\kci\data\Documents\Projects\2017\2417201482.04DL B-5662\Roadway\B-5662_Rdu.psd.dgn
 8/17/19 15:45

8/17/99

B-5662 HALIFAX COUNTY

REPLACE BRIDGE NO. 93 OVER CONOCONNARA SWAMP ON NC 561

REPLACE IN PLACE WITH ONSITE DETOUR

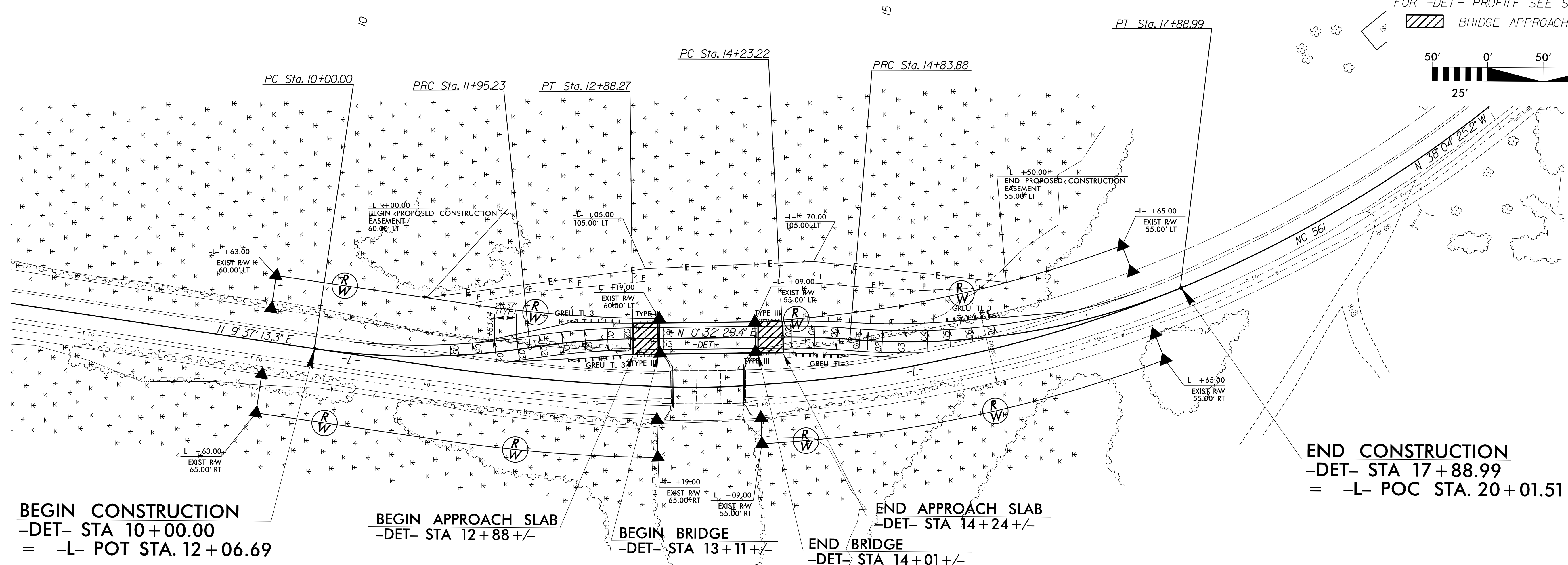
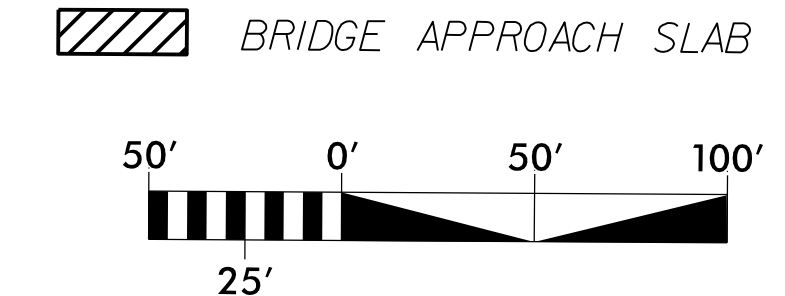


PROJECT REFERENCE NO. <i>B-5662</i>	SHEET NO. <i>5</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> INCOMPLETE PLANS <small>DO NOT USE FOR R/W ACQUISITION</small> </div>	
DOCUMENT NOT CONSIDERED FINAL <small>UNLESS ALL SIGNATURES COMPLETED</small>	

-DET-

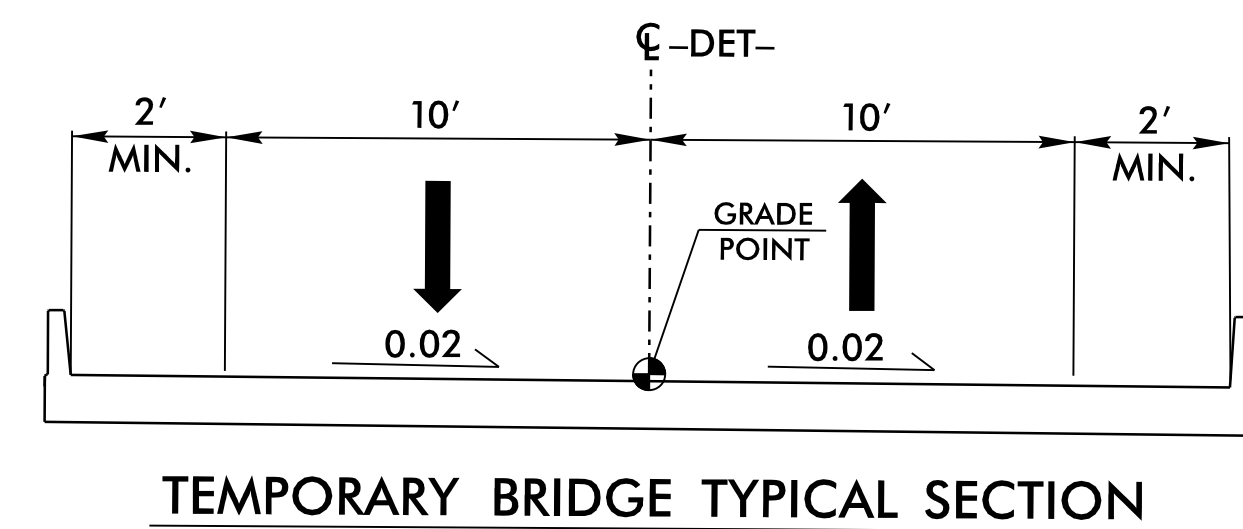
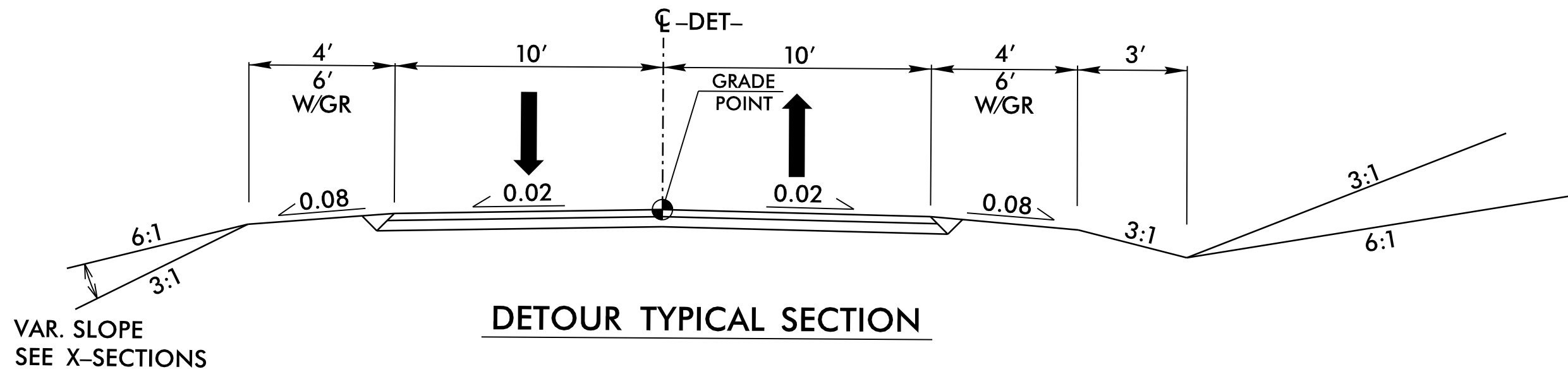
PI Sta 10+98.37 Δ = 17° 20' 34.2" (LT) D = 8' 52' 59.0" L = 195.23' T = 98.37' R = 645.00'	PI Sta 12+41.83 Δ = 8' 15' 50.3" (RT) D = 8' 52' 59.0" L = 93.03' T = 46.60' R = 645.00'	PI Sta 14+53.57 Δ = 5' 23' 19.2" (RT) D = 8' 52' 59.0" L = 60.66' T = 30.35' R = 645.00'	PI Sta 16+39.34 Δ = 27' 06' 09.7" (LT) D = 8' 52' 59.0" L = 305.11' T = 155.46' R = 645.00'
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FOR -L- PROFILE SEE SHEET 6
FOR -DET- PROFILE SEE SHEET 7



DETOUR DESIGN DATA

DESIGN STANDARDS	=	AASHTO
DESIGN SPEED	=	45 MPH
ADT 2017	=	1100
ADT 2040	=	1400
K	=	10%
D	=	55%
DUAL	=	7%
TTST	=	5%
MIN. RADIUS	=	645'
MAX. GRADE	=	5%
K sag	=	136
K crest	=	151
SE MAX.	=	0.06
CLASSIFICATION	=	MAJOR COLLECTOR /REGIONAL TIER
TERRAIN	=	LEVEL



REVISIONS

07-JAN-2019 15:36
M:\2017\201701492\04 FSM 2017 Div 4 and 6 Br\dgs\2417201492\04 D1 B-5662\Roadway\Pro\B-5662_Rdu.psb.DET.dgn