

MINIMUM CRITERIA DETERMINATION CHECKLIST

TIP Project No.: B-5626

State Project No.: 45581.1.1

Project Location: Bridge No. 31 on NC 50 over Sandy Run Swamp in Onslow County (Figure 1).

Project Description: NCDOT Bridge Management Unit records indicate Bridge No. 31 is in poor condition with a sufficiency rating of 34.63 out of a possible 100 for a new structure. The 5-span bridge was built in 1956 and is considered structurally deficient. The existing 2-lane bridge is 86 feet long and consists of a reinforced concrete deck over timber joists. The existing bridge has recently been repaired and the repairs have improved the rating. However, the bridge is still deficient, and further rehabilitation of the existing bridge is not practical due to its age and deteriorated condition.

The replacement structure will be a three-span bridge approximately 135 feet long on existing alignment. The bridge will include two 12-foot travel lanes. The proposed improvements to the approach roadway will extend approximately 400 feet from the northeast end of the new bridge and 350 feet from the southwest end of the new bridge. Two-foot paved shoulders will be provided on each side with 6- to 9-foot grassed shoulders where guardrail is included. The roadway is a major collector. It will be designed using NCDOT Sub-Regional Tier design standards with a 60 mile per hour design speed.

Traffic will be detoured off-site during construction (Figure 1). The offsite detour for this project would include SR 1105 and SR 1104 (Haws Run Road and Padgett Road, respectively). The detour for the average road user would result in approximately 8.75 miles of additional travel.

Due to the volume of summer tourist traffic, construction will be planned for the off-season. This will be included as an Environmental Commitment, attached.

Anticipated Permit or Consultation Requirements:

Figure 2 (attached) illustrates the study area for the project.

The proposed bridge will include two sets of piers in Sandy Run Swamp. Additionally, in the southwest quadrant of the bridge, excavation of old causeway and new bank stabilization with Class II riprap will impact approximately 0.01 ac. of jurisdictional wetlands. A Nationwide Permit will be likely be required for impacts to Waters of the U.S. The USACE holds the final discretion as to what permit will be required to authorize project construction. The corresponding 401 Water Quality Certification from the state will likely be applicable.

The bridge is located in Onslow County which is one of 20 North Carolina counties subject to the Coastal Area Management Act (CAMA). However, the Division of Coastal Management has determined that there are no AEC's present within the project study area.

Protected Species:

As of October 4, 2018, the US Fish and Wildlife Service (USFWS) lists fifteen federally protected species for Onslow County. In addition, the National Marine Fisheries Service (NMFS) lists two federally protected species.

Federally protected species listed for Onslow County.

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
<i>Alligator mississippiensis</i>	American alligator	T (S/A)	N/A	Not Required
<i>Acipenser oxyrinchus oxyrinchus</i>	Atlantic sturgeon*	E	No	No Effect
<i>Chelonia mydas</i>	Green sea turtle	T	No	No Effect
<i>Eretmochelys imbricata</i>	Hawksbill sea turtle	E	No	No Effect
<i>Lepidochelys kempii</i>	Kemp's ridley sea turtle	E	No	No Effect
<i>Dermochelys coriacea</i>	Leatherback sea turtle	E	No	No Effect
<i>Caretta caretta</i>	Loggerhead sea turtle**	T	No	No Effect
<i>Charadrius melodus</i>	Piping plover**	T	No	No Effect
<i>Picoides borealis</i>	Red-cockaded woodpecker	E	No	No Effect
<i>Calidris canutus rufa</i>	Rufa red knot	T	No	No Effect
<i>Acipenser brevirostrum</i>	Shortnose sturgeon*	E	No	No Effect
<i>Trichechus manatus</i>	West Indian manatee	E	No	No Effect
<i>Thalictrum cooleyi</i>	Cooley's meadowrue	E	Yes	MANLAA
<i>Carex lutea</i>	Golden sedge	E	Yes	MANLAA
<i>Lindera melissifolia</i>	Pondberry	E	Yes	No Effect
<i>Lysimachia asperulaefolia</i>	Rough-leaved loosestrife	E	Yes	MANLAA
<i>Amaranthus pumilus</i>	Seabeach amaranth	T	No	No Effect

E – Endangered

T – Threatened

T (S/A) - Threatened due to similarity of appearance

N/A – Not Applicable

MANLAA – May Affect-Not Likely to Adversely Affect

* - Species listed by NMFS only

** - Species with Critical Habitat designated in Onslow County

Additional field surveys were conducted during designated seasons for Cooley's meadowrue, golden sedge, pondberry, and rough-leaved loosestrife in appropriate habitats in the project area. Habitat within the project area was not found for the remaining 12 species. These species were given a biological conclusion of No Effect.

Cooley's meadowrue, pondberry, rough-leaved loosestrife, and golden sedge have suitable habitats that exist in roadside ditches and a powerline right-of-way in moist to wet areas in the study area. A survey conducted throughout the areas of suitable habitat in June 2016 concluded that no individuals of any of the four species were observed. However, a review of NCNHP records, updated April 2019, indicates three current occurrences of Cooley's meadowrue and golden sedge, and one occurrence of rough-leaved loosestrife within 1.0 mile of the study area. Therefore, a Biological Conclusion of "**May Affect-Not Likely to Adversely Affect**" has been made for Cooley's meadowrue, rough-leaved loosestrife, and golden sedge.

Northern Long-eared Bat

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) (*Myotis septentrionalis*) 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 Onslow County where B-5626 is located. This level of incidental take is authorized from the effective date of a final listing determination through April 30, 2020.

Estimated Traffic:

2020 ADT	1,217
2040 ADT	1,800
TTST	2%
Dual	4%

Pedestrian and Bicycle Accommodations:

This portion of NC 50 is not a part of a designated bicycle route nor is it listed in the Transportation Improvement Program (TIP) as a bicycle project.

Bridge Demolition:

Bridge No. 31 is constructed of timber, concrete, and steel and should be possible to remove with no resulting debris in the water based on standard demolition practices.

Construction Moratoria:

No waters within the study area were identified by the North Carolina Wildlife Resources Commission (NCWRC) as habitat for anadromous fish in a letter dated February 17, 2016; therefore, no construction moratoria are anticipated for this project.

FEMA Coordination:

Sandy Run Swamp is located in a FEMA Limited Detailed Study Area. Placement of fill in floodplain areas will be required as part of the bridge replacement. NCDOT will coordinate with the NC Floodplain Mapping Program regarding the impacts to the floodplain as stipulated in their joint Memorandum of Agreement (modified 8/12/2016).

Other Considerations:

The property south of the bridge, both to the east and west of the roadway, is owned by the State of North Carolina. The property is managed by the Department of Parks and Recreation and is one of several large tracts forming the Sandy Run Savannas State Natural Area. Use of portions of the State Natural Area are restricted through formal designation as a Dedicated Natural Area [limits in the project vicinity are depicted on the study area map (attached) and will be included on design plans/construction drawings]. Proposed replacement of Bridge No. 31 will not exceed existing right-of-way into the Sandy Run Savannas State Natural Area. This property will not be utilized during construction for the staging of equipment or materials. Construction will be halted and coordination with the State Parks and Recreation Department will be initiated if construction or staging exceeds the existing right of way into a Dedicated Natural Area.

Agency Comments:

None are available.

Public Involvement:

A newsletter was sent to approximately 200 residences adjoining the study area and/or along the detour route in July 2019. The newsletter briefly explained the project, its anticipated schedule, and provided contact information for questions.

PART A: MINIMUM CRITERIA

- | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|
| | YES | NO |
| 1. Is the proposed project listed as a type and class of activity allowed under the Minimum Criteria Rule in which environmental documentation is <u>not</u> required? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

If the answer to number 1 is “no,” then the project does not qualify as a minimum criteria project. A state environmental assessment is required.

If yes, under which category? Category #9

If either category #8, #12(i) or #15 is used complete Part D of this checklist.

PART B: MINIMUM CRITERIA EXCEPTIONS

- | | YES | NO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------|
| 2. Could the proposed activity cause significant changes in land use concentrations that would be expected to create adverse air quality impacts? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Will the proposed activity have secondary impacts or cumulative impacts that may result in a significant adverse impact to human health or the environment? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Is the proposed activity of such an unusual nature or does the proposed activity have such widespread implications, that an uncommon concern for its environmental effects has been expressed to the Department? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Does the proposed activity have a significant adverse effect on wetlands; surface waters such as rivers, streams, and estuaries; parklands; prime or unique agricultural lands; or areas of recognized scenic, recreational, archaeological, or historical value? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Will the proposed activity endanger the existence of a species on the Department of Interior's threatened and endangered species list? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. Could the proposed activity cause significant changes in land use concentrations that would be expected to create adverse water quality or ground water impacts? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. Is the proposed activity expected to have a significant adverse effect on long-term recreational benefits or shellfish, finfish, wildlife, or their natural habitats | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

PART C: COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

- | | YES | NO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|
| 9. Is a federally protected threatened or endangered species, or its habitat, likely to be impacted by the proposed action? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10. Does the action require the placement of temporary or permanent fill in waters of the United States? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 11. Does the project require the placement of a significant amount of fill in high quality or relatively rare wetland ecosystems, such as mountain bogs or pine savannahs? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12. Is the proposed action located in an Area of Environmental Concern, as defined in the coastal Area Management Act? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 13. Does the project require stream relocation or channel changes? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Cultural Resources

- 14. Will the project have an “effect” on a property or site listed on the National Register of Historic Places?
- 15. Will the proposed action require acquisition of additional right of way from publicly owned parkland or recreational areas?

Response to Question 9:

See Federally protected species listed for Onslow County Table on Page 2 and coinciding discussion on Page 3.

Response to Question 10:

The proposed bridge will include two sets of piers in Sandy Run Swamp. Additionally, in the southwest quadrant of the bridge, excavation of old causeway and new bank stabilization with Class II riprap will impact approximately 0.01 ac. of jurisdictional wetlands. Impacts were calculated using the project slope stake limits on the 65% design plans plus 10 feet. A Nationwide Permit will be likely be required for impacts to Waters of the U.S. The USACE holds the final discretion as to what permit will be required to authorize project construction. The corresponding 401 Water Quality Certification from the state will likely be applicable.

PART D:(To be completed when either category #8, 12(i) or #15 of the rules are used.)

- 16. Project length: _____
- 17. Right of Way width: _____
- 18. Project completion date: _____
- 19. Total acres of newly disturbed ground surface: _____
- 20. Total acres of wetland impacts: _____
- 21. Total linear feet of stream impacts: _____
- 22. Project purpose: _____

Prepared by:

8/6/2019

Date

DocuSigned by:

Martha Register

Martha Register

Simpson Engineers & Associates

Approved by:

8/7/2019

Date

DocuSigned by:

Kevin Fischer

Kevin Fischer, PE

Assistant State Structures Engineer – Program Management
and Field Operations NCDOT Structures Management Unit

PROJECT COMMITMENTS:

**Onslow County
Bridge No. 31 on NC 50
Over Sandy Run Swamp
TIP No. B-5626
W.B.S. No. 45581.1.1**

Coordination with Onslow County Schools

Onslow County Schools will be contacted at least one month prior to road closure by NCDOT Division 3 in order to have time to adequately reroute school busses.
Phone: (910) 455-2211

Coordination with Onslow County Emergency Services

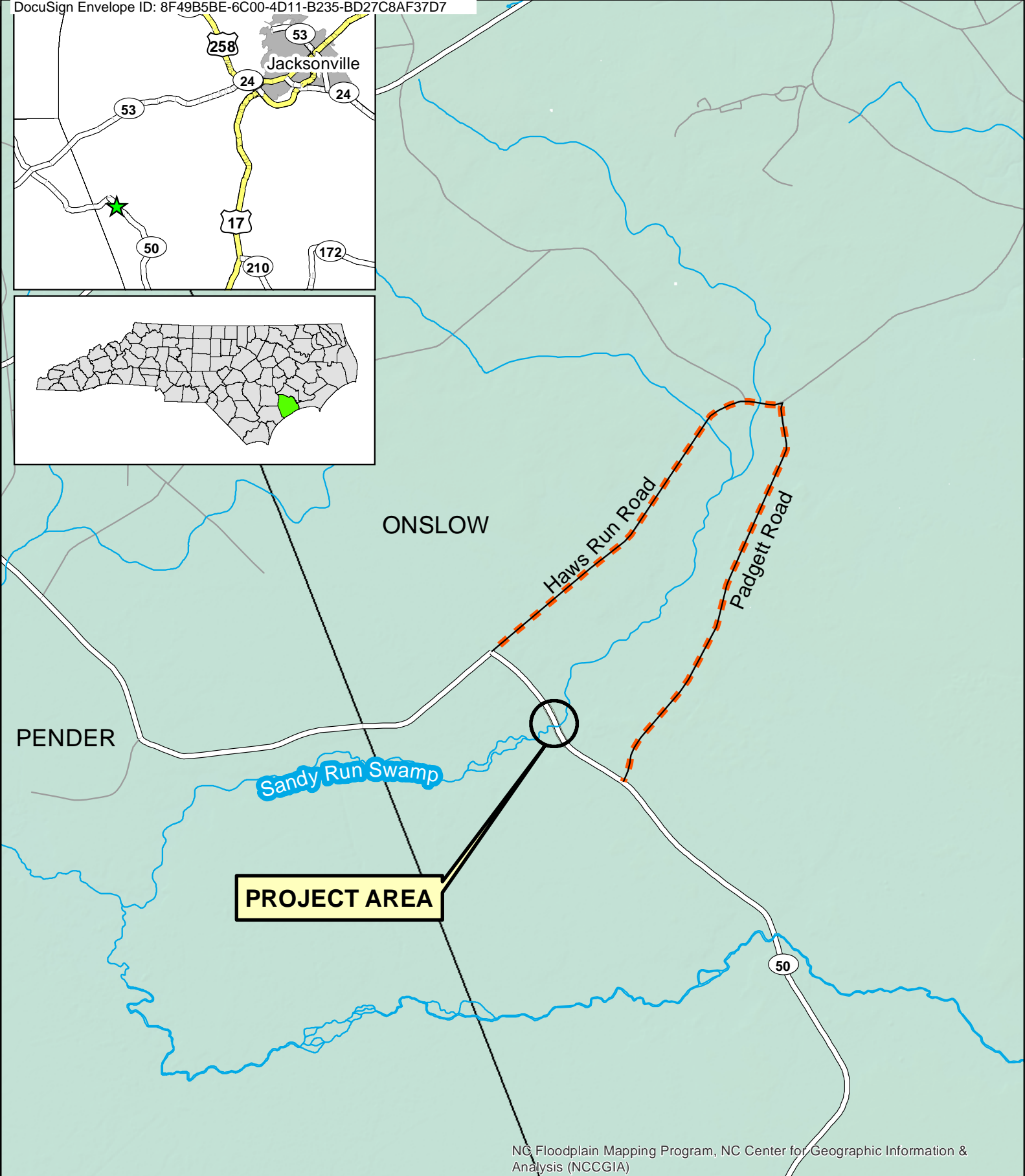
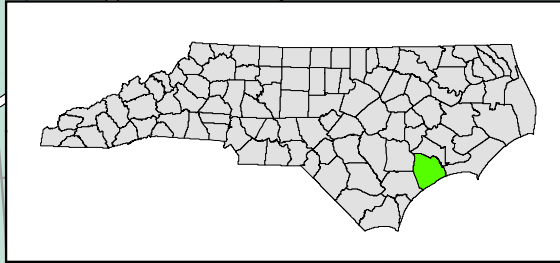
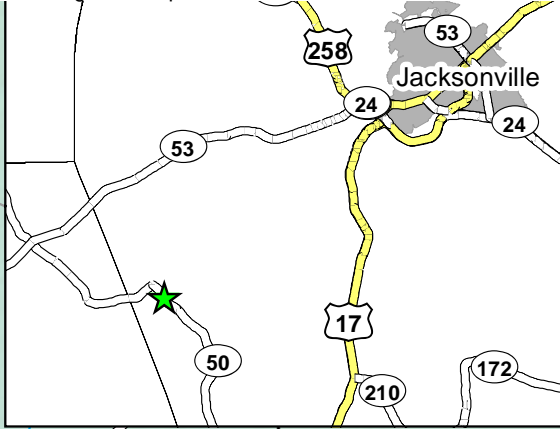
Onslow County Emergency Services will be contacted by NCDOT Division 3 at least one month prior to road closure to make the necessary temporary reassignments to primary response units.
Phone: (910)-347-4270

Sandy Run Savannas State Natural Area

The property on the east and west side of the roadway, south of Sandy Run Swamp, is owned by the State of North Carolina. The property is managed by the Department of Parks and Recreation and is one of several large tracts forming the Sandy Run Savannas State Natural Area. Use of portions of the State Natural Area are restricted through formal designation as a Dedicated Natural Area [limits in the project vicinity are depicted on the study area map (attached) and will be included on design plans/construction drawings]. Proposed replacement of Bridge No. 31 will not exceed existing right-of-way into the Sandy Run Savannas State Natural Area. This property will not be utilized during construction for the staging of equipment or materials. Construction will be halted and coordination with the State Parks and Recreation Department will be initiated if construction or staging exceeds the existing right of way into a Dedicated Natural Area.

Construction Timing

Due to the amount of traffic along NC 50 throughout the summer tourist season, construction of the new structure shall take place during the off-season months of September to May to avoid extensive delays in traffic flow.



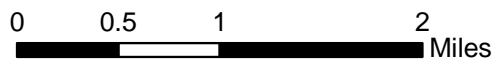
NC Floodplain Mapping Program, NC Center for Geographic Information & Analysis (NCCGIA)



**NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
STRUCTURES MANAGEMENT UNIT**

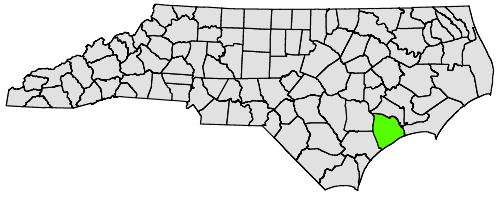
**VICINITY MAP & DETOUR ROUTE
REPLACE BRIDGE NO. 31**

— — — — — Detour Route

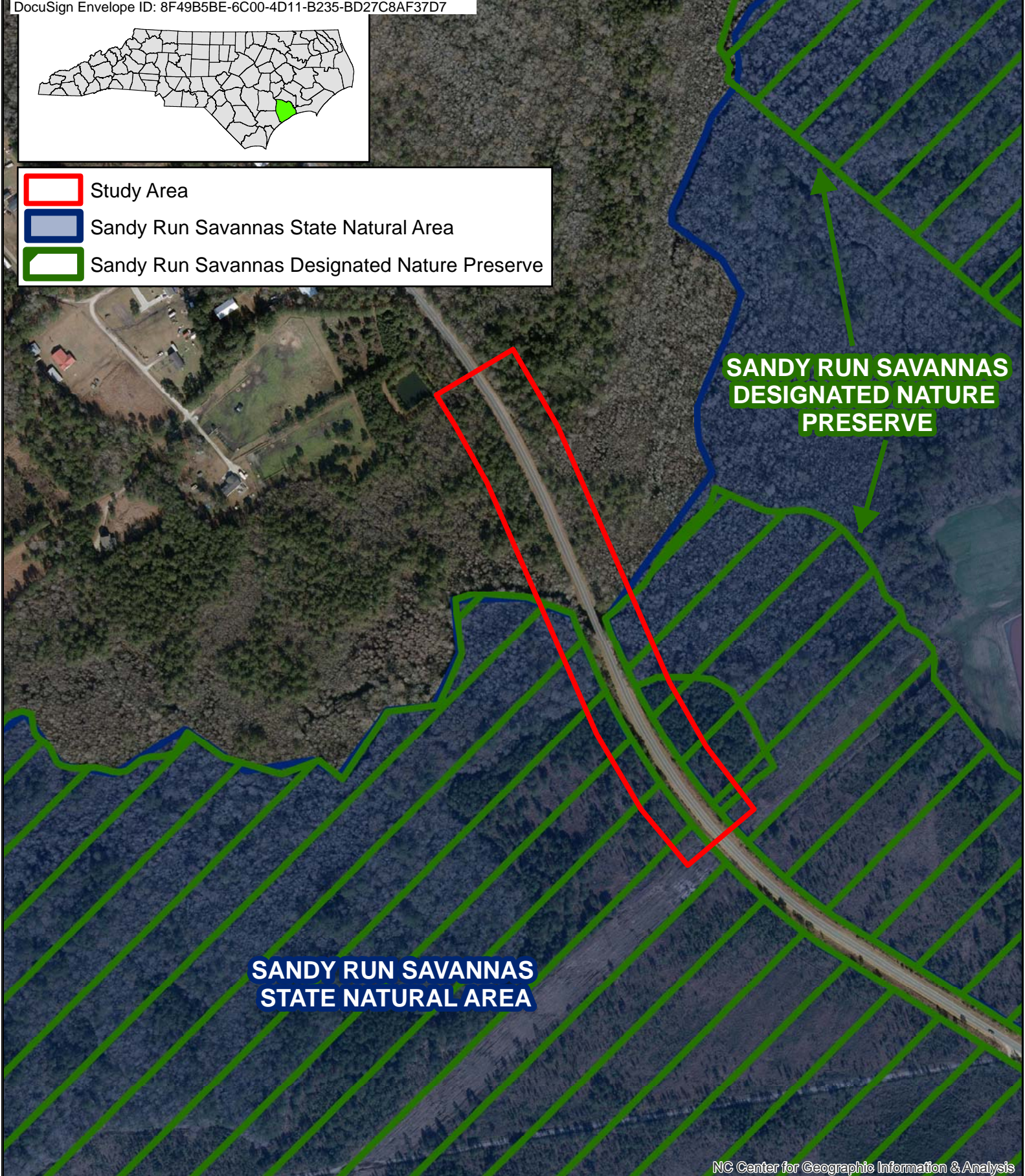


County:	Onslow
Division:	3
STIP:	B-5626
Date:	July 2019

**Figure
1**



- Study Area
- Sandy Run Savannas State Natural Area
- Sandy Run Savannas Designated Nature Preserve



**SANDY RUN SAVANNAS
DESIGNATED NATURE
PRESERVE**

**SANDY RUN SAVANNAS
STATE NATURAL AREA**

NC Center for Geographic Information & Analysis



**NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
STRUCTURES MANAGEMENT UNIT**

**STUDY AREA
REPLACE BRIDGE NO. 31**

0 125 250 500
Feet



County:	Onslow
Division:	3
STIP:	B-5626
Date:	April 12, 2019

**Figure
1**

16-01-010



HISTORIC ARCHITECTURE AND LANDSCAPES NO SURVEY REQUIRED 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-5626	County:	Onslow
WBS No.:	45581.1.1	Document Type:	SMC
Fed. Aid No:	N/A	Funding:	<input checked="" type="checkbox"/> State <input type="checkbox"/> Federal
Federal Permit(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Permit Type(s):	NWP
Project Description: Replace Bridge No. 31 on NC 50 over Sandy Run Swamp.			

SUMMARY OF HISTORIC ARCHITECTURE AND LANDSCAPES REVIEW

Description of review activities, results, and conclusions:

Review of HPO quad maps, HPO GIS information, historic designations roster, and indexes was undertaken on January 7, 2016. Based on this review, there are no existing NR, SL, LD, DE, or SS properties in the Area of Potential Effects, which is 875' from each end of the bridge and 150' from the centerline each way. There are no structures within the APE. Bridge No. 31, built 1956, is not eligible for National Register listing. There are no National Register listed or eligible properties and no survey is required. If design plans change, additional review may be required.

Why the available information provides a reliable basis for reasonably predicting that there are no unidentified significant historic architectural or landscape resources in the project area:

HPO quad maps and GIS information recording NR, SL, LD, DE, and SS properties for the Onslow County survey and Google Maps are considered valid for the purposes of determining the likelihood of historic resources being present. There are no National Register listed or eligible properties within the APE and no survey is required.

SUPPORT DOCUMENTATION

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

FINDING BY NCDOT ARCHITECTURAL HISTORIAN

Historic Architecture and Landscapes -- NO SURVEY REQUIRED

11/7/2016

NCDOT Architectural Historian Date



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-5626** County: **Onslow**
 WBS No: **45581.1.1** Document: **SMC**
 F.A. No: **na** Funding: State Federal
 Federal Permit Required? Yes No Permit Type: **NWP**

Project Description:

The project calls for the replacement of Bridge No. 31 on NC 50 over Sandy Run Swamp in Onslow County. The archaeological Area of Potential Effects (APE) for the project is defined as a 1,750-foot (533.40 m) long corridor running 875 feet (266.70 m) north and 875 feet south along NC 50 from the center of Bridge No. 31. The corridor is approximately 300 feet (91.44 m) wide extending 150 feet (45.72 m) on either side of the road from its present center.

SUMMARY OF ARCHAEOLOGICAL RESOURCES REVIEW: **SURVEY REQUIRED**

Brief description of review activities, results of review, and conclusions:

Bridge No. 31 is located southwest of Jacksonville and north of Holly Ridge near the western boundary of Onslow County, North Carolina. The project area is plotted in the southwest corner of the Haws Run USGS 7.5' topographic quadrangle (Figure 1).

A map review and site file search was conducted at the Office of State Archaeology (OSA) on January 19, 2016. No previously recorded archaeological sites are identified within the APE, but two sites (31ON202 and 31ON203) are located within a mile of the bridge. According to the North Carolina State Historic Preservation Office online data base (HPOWEB 2016), there are no known historic architectural resources within the APE that may yield intact archaeological deposits. Topographic maps, USDA soil survey maps, aerial photographs (NC One Map), historic maps (North Carolina maps website), and the Google Street View application were examined for information on environmental and cultural variables that may have contributed to prehistoric or historic settlement within the project limits and to assess the level of ground disturbance.

Bridge No. 31 and NC 50 are orientated roughly north to south and traverse mostly the Sandy Run Swamp floodplain within the APE (Figure 2). This waterway is part of the Cape Fear drainage basin. A stream terrace is also present south of the bridge within the APE. The project area is forested with minimal disturbance from past timber harvesting.

Soils within the APE consists of Muckalee loam (Mk) within the floodplain and Foreston loamy fine sand (FoA) along the southern terrace according to the to the USDA soil survey maps (see Figure 2). The Muckalee series is a poorly drained soil that is nearly level and subject to frequently flooding. Significant archaeological sites along this soil types are very unlikely due to persistent wetness. The Foreston series, however, is moderately well drained with a slope of less than 2 percent. Archaeological sites have been found on this series within the county due to its relative dryness.

The site files at OSA shows that a project was reviewed along NC 50 within APE, but no ER number could be found to confirm this. It is also not known if an archaeological survey was recommended. Regardless, two known archaeological site (31ON202 and 31ON203) are north of the project limits. These prehistoric sites were identified by the University of North Carolina at Chapel Hill in 1975. They are situated on a stream terrace made up of the Foreston series similar to the southern terrace within the APE. Their eligibility for the National Register has yet to be assessed. Generally, this section of Onslow County rarely yields sites, but presence of two site north of the bridge suggest that it is possible additional sites could be to the south.

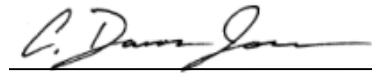
An examination of historic maps shows no significant structures or events occurring within or near the project area. One of the first map in which the project area can accurately be placed is the 1921 *Soil Map for Onslow County* (Figure 3). On this map, no road crossing the swamp within or near the project area is depicted. It is not until the publication of highway maps from the 1950s that a road similar to NC 50 is illustrated. As a result, it is very unlikely any remains of historic features will be encountered.

The preliminary investigation suggests that additional archaeological work is required along the southern terrace within the proposed project area due to dry soils and minimal disturbance. Neighboring sites have been found in a similar setting suggesting additional sites might be present along the southern terrace. Subsurface testing is recommended in order to identify any significant archaeological resources that might be impacted by the proposed replacement of Bridge No. 31 in Onslow County.

SUPPORT DOCUMENTATION

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

FINDING BY NCDOT ARCHAEOLOGIST – *SURVEY REQUIRED*



1/28/16

C. Damon Jones
NCDOT ARCHAEOLOGIST

Date

5/31/16

Proposed fieldwork completion date

16-01-0010



**NO NATIONAL REGISTER OF HISTORIC PLACES
ELIGIBLE OR LISTED ARCHAEOLOGICAL SITES
PRESENT 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-5626** County: **Onslow**
 WBS No: **45581.1.1** Document: **SMC**
 F.A. No: **na** Funding: State Federal

Federal Permit Required? Yes No Permit Type: **NWP 3 or 14**

Project Description:

The project calls for the replacement of Bridge No. 31 on NC 50 over Sandy Run Swamp in Onslow County. The archaeological Area of Potential Effects (APE) for the project is defined as a 1,750-foot (533.40 m) long corridor running 875 feet (266.70 m) north and 875 feet south along NC 50 from the center of Bridge No. 31. The corridor is approximately 300 feet (91.44 m) wide extending 150 feet (45.72 m) on either side of the road from its present center.

SUMMARY OF ARCHAEOLOGICAL FINDINGS

The North Carolina Department of Transportation (NCDOT) Archaeology Group reviewed the subject project and determined:

- There are no National Register listed or eligible ARCHAEOLOGICAL SITES present within the project's area of potential effects. (Attach any notes or documents as needed)
- No subsurface archaeological investigations were required for this project.
- Subsurface investigations did not reveal the presence of any archaeological resources.
- Subsurface investigations did not reveal the presence of any archaeological resources considered eligible for the National Register.
- All identified archaeological sites located within the APE have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.

16-01-0010

Brief description of review activities, results of review, and conclusions:

Bridge No. 31 is located southwest of Jacksonville and north of Holly Ridge near the western boundary of Onslow County, North Carolina. The project area is plotted in the southwest corner of the Haws Run USGS 7.5' topographic quadrangle (Figure 1).

A map review and site file search was conducted at the Office of State Archaeology (OSA) on January 19, 2016. No previously recorded archaeological sites are identified within the APE, but two sites (31ON202 and 31ON203) are located within a mile of the bridge. According to the North Carolina State Historic Preservation Office online data base (HPOWEB 2016), there are no known historic architectural resources within the APE that may yield intact archaeological deposits. Topographic maps, USDA soil survey maps, aerial photographs (NC One Map), historic maps (North Carolina maps website), and the Google Street View application were examined for information on environmental and cultural variables that may have contributed to prehistoric or historic settlement within the project limits and to assess the level of ground disturbance. An archaeological field reconnaissance was carried out on April 19, 2016, to further evaluate the project area.

Bridge No. 31 and NC 50 are orientated roughly north to south and traverse mostly the Sandy Run Swamp floodplain within the APE (Figure 2 and 3). This waterway is part of the Cape Fear drainage basin. A stream terrace is also present south of the bridge within the APE. The project area is forested with a pine plantation to the south (Figure 4). Past timber harvesting activities have dissected the stream terrace especially in the southwest quadrant, where wide and deep gullies run parallel with the road. Hardly any of the original landform is present within the APE west of the road. Also, a large borrow pit is present at the southwestern end of the APE. The basin of the pit contained standing water at the time of the survey.

Soils within the project area consists of Muckalee loam (Mk) within the floodplain and Foreston loamy fine sand (FoA) along the southern terrace according to the to the USDA soil survey maps (see Figure 2). The Muckalee series is a poorly drained soil that is nearly level and subject to frequently flooding. Significant archaeological sites along this soil types are very unlikely due to persistent wetness. The Foreston series, however, is moderately well drained with a slope of less than 2 percent. Archaeological sites have been found on this series within the county due to its relative dryness.

The site files at OSA shows that a project was reviewed along NC 50 within APE, but no ER number could be found to confirm this. It is also not known if an archaeological survey was recommended. Regardless, two known archaeological site (31ON202 and 31ON203) are north of the project limits. These prehistoric sites were identified by the University of North Carolina at Chapel Hill in 1975. They are situated on a stream terrace made up of the Foreston series similar to the southern terrace within the APE. Their eligibility for the National Register has yet to be assessed. Generally, this section of Onslow County rarely yields sites, but presence of two site north of the bridge suggest that it is possible additional sites could be to the south.

An examination of historic maps prior to fieldwork shows no significant structures or events occurring within or near the project area. One of the first map in which the project area can accurately be placed is the 1921 *Soil Map for Onslow County* (Figure 5). No road or crossing over the swamp is depicted on this map near the current bridge. It is not until the publication of highway maps from the 1950s that a road similar to NC 50 is illustrated. As a result, it is very unlikely any remains of historic features will be encountered.

The archaeological field investigation at Bridge No. 31 consisted of a surface inspection followed by subsurface testing. A good portion of the floodplain is covered with standing water, while the remainder is made up of black hydric soil. Areas of obvious ground disturbance includes the borrow pit and adjacent gullies. No shovel test placements (STPs) were carried out in either of these areas, since they are

16-01-0010

unlikely to contain intact cultural deposits. Next, a total of six STPs were excavated at 30-m intervals along the southern stream terrace (see Figure 2). Four were placed in the southeastern quadrant where disturbance was minimal, while only two were dug in the southwest. The soil stratigraphy generally consists of three layers. The upper is a dark grayish brown (10YR 4/2) sand approximately 20 to 25 cm (ca. 8 to 10 in) thick. This is followed by a layer of dark yellowish brown (10YR 4/4) sand that reaches a depth of around 60 to 70 cm (ca. 24 to 28 in) below the surface. The final layer is a brown (10YR 4/3) sand that extends at least 80 cm (ca. 31 in) below the surface. No cultural material was recovered from any of the subsurface test. Upon completion of the fieldwork, the property south of the bridge and on either side of NC 50 was identified as part of the North Carolina State Parks. A state ARPA permit should have been needed prior to testing, but a mistake was made on reading the ownership on the GIS tax parcel layer.

The archaeological investigations for the proposed replacement of Bridge No. 31 show that no significant sites are within the APE and are unlikely to be encountered. This is due to poor soils within the floodplain, ground disturbance in the southwest quadrant, and negative shovel tests. No further archaeological work is required for replacement of Bridge No. 31 in Onslow County. However, additional work might be required should design plans change to encompass property outside of the currently defined APE. If any subsurface testing is to be conducted in a future study south of the bridge, a state ARPA permit will be required as the project falls along property owned by North Carolina State Parks.

SUPPORT DOCUMENTATION

See attached: Map(s) Previous Survey Info Photos Correspondence
Signed:



C. Damon Jones
NCDOT ARCHAEOLOGIST

5/2/16

Date