



# Appendix Q

## US Coast Guard Navigation Report

June 2021



# TECHNICAL MEMORANDUM: NAVIGATION REPORT

Prepared for:



Prepared by:



OCTOBER 2019

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# 1.0 INTRODUCTION

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The Navigation Report was prepared to assist the South Carolina Department of Transportation (SCDOT) in conjunction with the Federal Highway Administration (FHWA) in preparation of the forthcoming United States Coast Guard (USCG) Bridge Permit Application and the Environmental Assessment (EA) regarding infrastructure improvements along the US 278 corridor between Bluffton and Hilton Head Island in Beaufort County. The project, known as US 278 Corridor Improvements, includes studying the US 278 corridor from Moss Creek Drive to Spanish Wells Road to address structural deficiencies at existing eastbound Mackay Creek, to increase capacity, and reduce congestion. The eastbound Mackay Creek Bridge is structurally deficient and is scheduled to be replaced. The remaining three bridges in the study area – one westbound bridge over Mackay Creek and the two bridges over Skull Creek – would also be evaluated for potential improvements. In addition, access to Pinckney Island National Wildlife Refuge and the C.C. Haigh, Jr. boat ramp would potentially be improved as well. The permitting improvement provisions found in the 2014 Memorandum of Understanding between the USCG and FHWA requires applicants to prepare a navigation report to analyze the navigational impacts of the bridge design alternatives. This report will be provided to the USCG Bridge Program to assist with determining the reasonable navigational clearance on Mackay Creek and Skull Creek (if the existing Skull Creek facility is replaced).

The USCG Bridge Program ensures marine safety, security, and stewardship and has the authority to approve the location and plans of all new bridges, modifications of existing bridges, international bridges, and causeways in or over navigable waterways of the United States. In accordance with 33 CFR 116.01, “all bridges are obstructions to navigation and are tolerated only as long as they serve the needs of land transportation while allowing for the reasonable needs of navigation.” Pursuant to the Rivers and Harbors Act, “No bridge shall at any time unreasonably obstruct the free navigation of any navigable waterway of the United States.” In addition, per the International Bridge Act of 1972, “No bridge erected or maintained under the provisions of Section 491 to 498 of this title, shall at any time unreasonably obstruct the free navigation of the waterway over which it is constructed.”

The main objective of the bridge permitting process is to determine vertical and horizontal clearance of the structure spanning the navigation channel. USCG has jurisdiction over this permitting process as directed by 33 U.S.C. 401, 491, 525-533, the International Bridge Act of 1972 and additional Congressional acts. For the USCG to issue a permit for a structure to be built over “Navigable Waters of the U.S.,” the structure must meet the reasonable needs of current and foreseeable future navigation. These needs have been considered in this Navigational Report. This study and its recommendations are based on current facts and circumstances and may be amended if facts and circumstances surrounding the project change over time or are discovered during the permit application and public notice process.

## 2.0 EXISTING FACILITY

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The Mackay Creek bridges (Karl S. Bowers bridge) are located along US 278 and connect the Moss Creek area of Hilton Head to Pinckney Island. These bridges carry two lanes of traffic in each direction across Mackay Creek. The eastbound lanes are 2,190 feet in length and were constructed in 1956. The westbound lanes are 2,231 feet in length and were constructed in 1983. The roadway width, curb to curb, on the eastbound and westbound bridges is 36.1 feet.

The Skull Creek bridges (J. Wilton Graves bridge) are located along US 278 and connect Pinckney Island to Hilton Head Island. These bridges carry two lanes of traffic in each direction across Skull Creek. The eastbound and westbound lanes are 2,821.9 feet in length and were constructed in 1982. The roadway width, curb to curb, on the eastbound and westbound bridges is 36.1 feet.

US 278, within the project study area, is primarily a four-lane divided highway.



Figure 2-1: Mackay Creek and Skull Creek bridges

## 3.0 PROPOSED PROJECT OVERVIEW

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SCDOT in cooperation with FHWA and Beaufort County is proposing to make improvements to the US 278 corridor between Bluffton and Hilton Head Island. (Figure 3-1)

The purpose of this project is to address structural deficiencies at existing eastbound MacKay Creek, to increase capacity, and reduce congestion along US 278 from Moss Creek Drive to Spanish Wells Road.

Additional studies from Spanish Wells Road to the Cross Island Parkway will be conducted to identify improvements needed between these two roadways. As a part of the corridor improvements project, the eastbound Mackay Creek Bridge (traveling onto Hilton Head Island) would be replaced as a part of

SCDOT’s bridge replacement program. Meanwhile, the remaining three bridges in the study area—one westbound bridge (away from Hilton Head Island) over Mackay Creek and the two bridges over Skull Creek—would also be studied for potential improvements. In addition, the access to Pinckney Island National Wildlife Refuge and the C.C. Haigh, Jr. boat ramp would also be studied for possible improvements. SCDOT will move this important project forward through the planning phase with an environmental assessment (EA), with the eventual goal of acquiring right-of-way and construction. SCDOT will develop the EA, a process that will include reviewing alternatives and comparing the beneficial and negative impacts on the natural and human environments.

Efforts will be focused on community involvement and communication to ensure the successful development of the environmental process. Because of the major roles state and federal resource agencies play, the project team will work closely with them in completing the environmental review process.

On November 6, 2018, the residents of Beaufort County voted to increase their local option sales tax by an additional one-percent to support various proposed infrastructure projects, including the US 278 Corridor Improvements project. These dollars generated locally by this new sales tax will be combined with other state and federal transportation funds to fully fund this project.

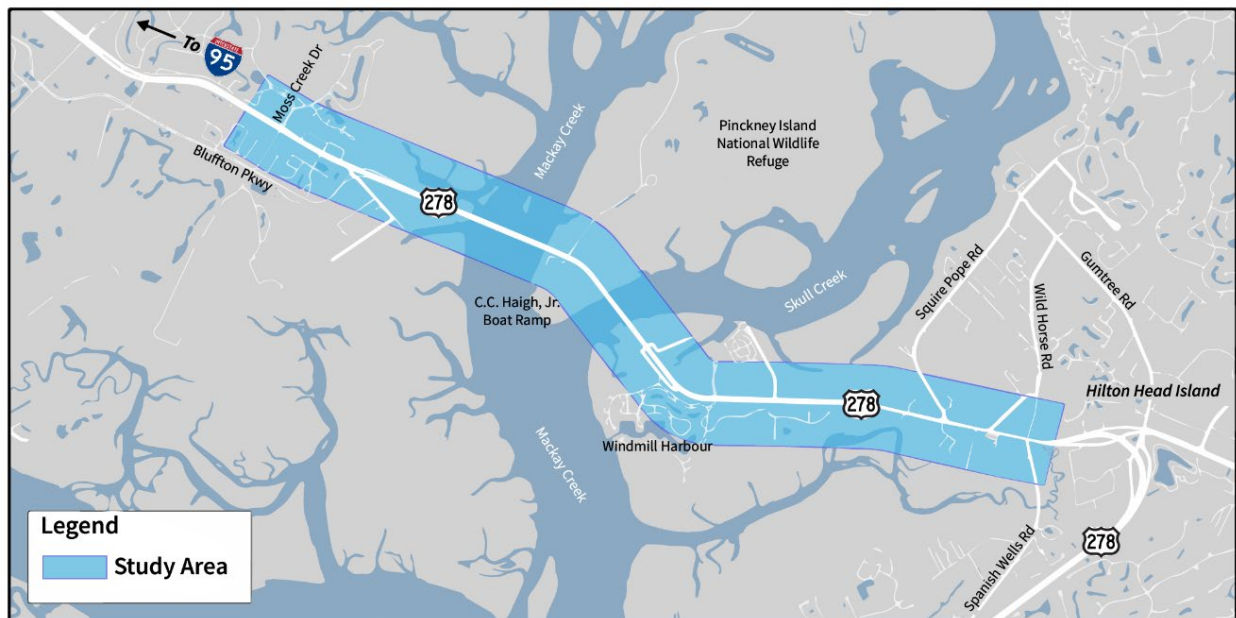


Figure 3-1: US 278 Corridor Improvements Corridor Project Study Area

## 4.0 BRIDGE CHARACTERISTICS

The existing bridges over Mackay Creek have a horizontal clearance of 60 feet and a vertical clearance of 24.9 feet according to the National Bridge Inventory (NBI) show in Table 4-1. Both bridges are stringer/multi-beam or girder with one span in the main unit and fifty-four approach spans. The Mackay Creek eastbound bridge, built in 1956, is a concrete deck with a width of 39.4 feet out to out. The bridge deck is in satisfactory condition and the bridge superstructure and substructure are in poor condition. The

Mackay Creek westbound bridge, built in 1983, is a concrete deck with a width of 39.4 feet out to out. The bridge is in satisfactory condition. There are no vehicular restrictions are the Mackay Creek bridges.

The existing bridges over Skull Creek have a horizontal clearance of 125 feet and a vertical clearance of 64.9 feet according to the NBI shown in Table 4-1. Both bridges are stringer/multi-beam or girder with five spans in the main unit. The eastbound bridge has twenty-seven approach spans and the westbound bridge has twenty-one approach spans. The Skull Creek bridges, both built in 1982, have a concrete deck with a width of 39.4 feet out to out. The bridges are in satisfactory condition and without any vehicular restrictions.

Overhead power lines run parallel to the Mackay Creek bridges to the north. Overhead power lines run parallel to the Skull Creek bridges to the north and south.

**Table 4-1: Creek Crossings in the US 278 Navigation Impact Study Area**

Bridge	Route	Bridge Type	Horizontal Clearance	Vertical Clearance
Mackay Creek	US 278 EBL	Fixed	60.0 ft	24.9 ft
Mackay Creek	US 278 WBL	Fixed	60.0 ft	24.9 ft
Skull Creek	US 278 EBL	Fixed	125.0 ft	64.9 ft
Skull Creek	US 278 WBL	Fixed	125.0 ft	64.9 ft

*FHWA LTBP InfoBridge – National Bridge Inventory (NBI) 2018*

## 5.0 WATERWAY CHARACTERISTICS

Skull Creek is approximately 6 miles in length, tidally influenced, and part of the Intracoastal Waterway. Skull Creek flows from the Port Royal Sound to the Calibouge Sound on the east side of Pinckney Island. Mackay Creek is also approximately 6 miles in length and tidally influenced, but is not part of the Intracoastal Waterway. Mackay Creek runs parallel to Skull Creek on the west side of Pinckney Island and flows from the Port Royal Sound into the Intracoastal Waterway. The NOAA recorded tide and water level datums at Pinckney Island, Mackay Creek SC (Station ID 8668944), Ribaut Island, Skull Creek SC (Station ID 8668918) and Skull Creek South SC (Station ID 8669133) are shown in Table 5-1.

**Table 5-1: Tides/Water Level Datums**

Station ID	Mean High Water (MHW)	Mean Low Water (MLW)	Mean Tide Level (TL)	Mean Diurnal Tide Level (DTL)
8668944	N/A	N/A	N/A	N/A
8668918	7.03 ft	0.20 ft	3.62 ft	3.70 ft
8669133	7.50 ft	0.23 ft	3.86 ft	3.95 ft

*NOAA Tide Predictions – August 2019*



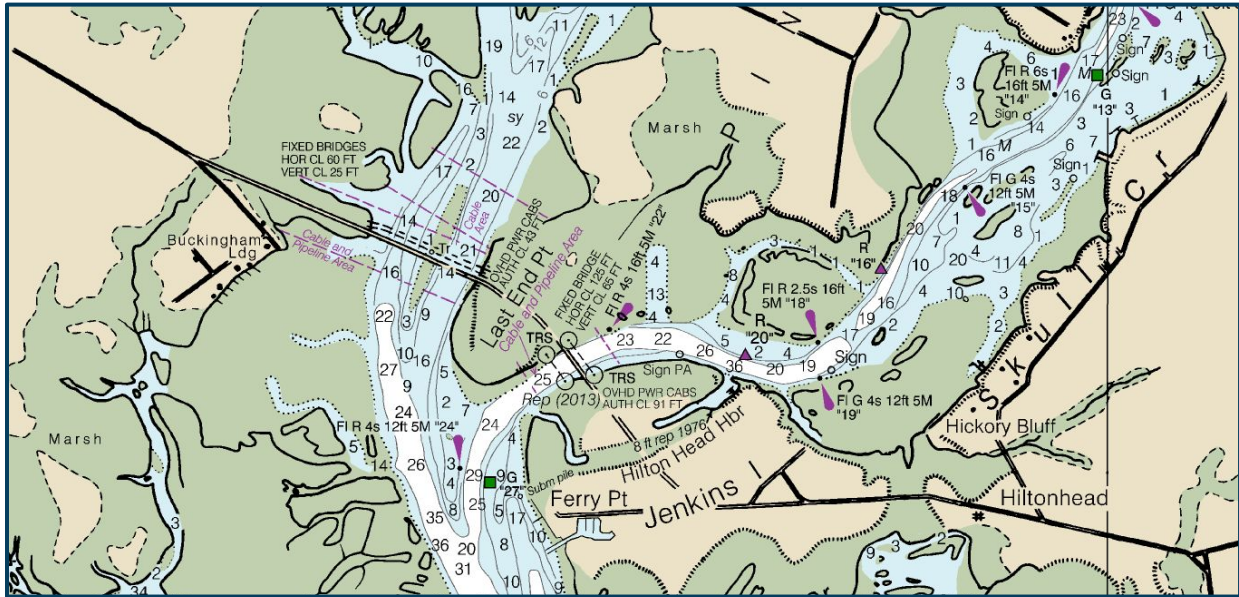


Figure 5-1: NOAA Nautical Chart # 11516

## 6.0 NAVIGATION

Mackay Creek and Skull Creek are used primarily by recreational vessels. Public boat ramps and private docks were identified along both creeks.

### 6.1 PUBLIC BOAT RAMPS

The C.C. Haigh, Jr. Boat Landing is a public boat ramp managed by Beaufort County. The landing is located off US 278 on Pinckney Island and offers a two-lane launch, floating docks, parking lot and picnic area. Fishing is allowed off the docks.



Figure 6-1: C.C. Haigh, Jr. Boat Landing

## 6.2 PRIVATE DOCKS

Using aerial imagery, there are approximately 53 residential docks and 6 marine related businesses near the project study area.

## 6.3 EMERGENCY OPERATIONS

The USCG, SCDNR, Beaufort County Office of Emergency Management, and Hilton Head Island Fire and Rescue all conduct emergency operations in Mackay Creek and Skull Creek. Beaufort Water Search and Rescue (BWSAR), a volunteer organization, also assists these agencies in emergency response.

# 7.0 RECOMMENDATIONS

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The proposed project does not anticipate a decrease in the vertical or horizontal clearances of the current bridge structures or the proposed widening, but further evaluation is required.

## 7.1 HORIZONTAL CLEARANCE

Horizontal clearance will need to be confirmed after the selection of the Preferred Alternative. According to the National Bridge Inventory the existing horizontal clearances are 60 feet at Mackay Creek and 125 feet at Skull Creek. The proposed horizontal clearances are 60 feet at Mackay Creek and 125 feet at Skull Creek.

## 7.2 VERTICAL CLEARANCE

The vertical clearance of the existing bridges would not decrease in the proposed project and would not prohibit a vessel from travelling along Mackay Creek or Skull Creek. The proposed vertical clearance for the bridges over Mackay Creek is 25 feet from M.H. Tide. The proposed vertical clearance for the bridges over Skull Creek is 65 feet from M.H. Tide.

## 7.3 CONSTRUCTION

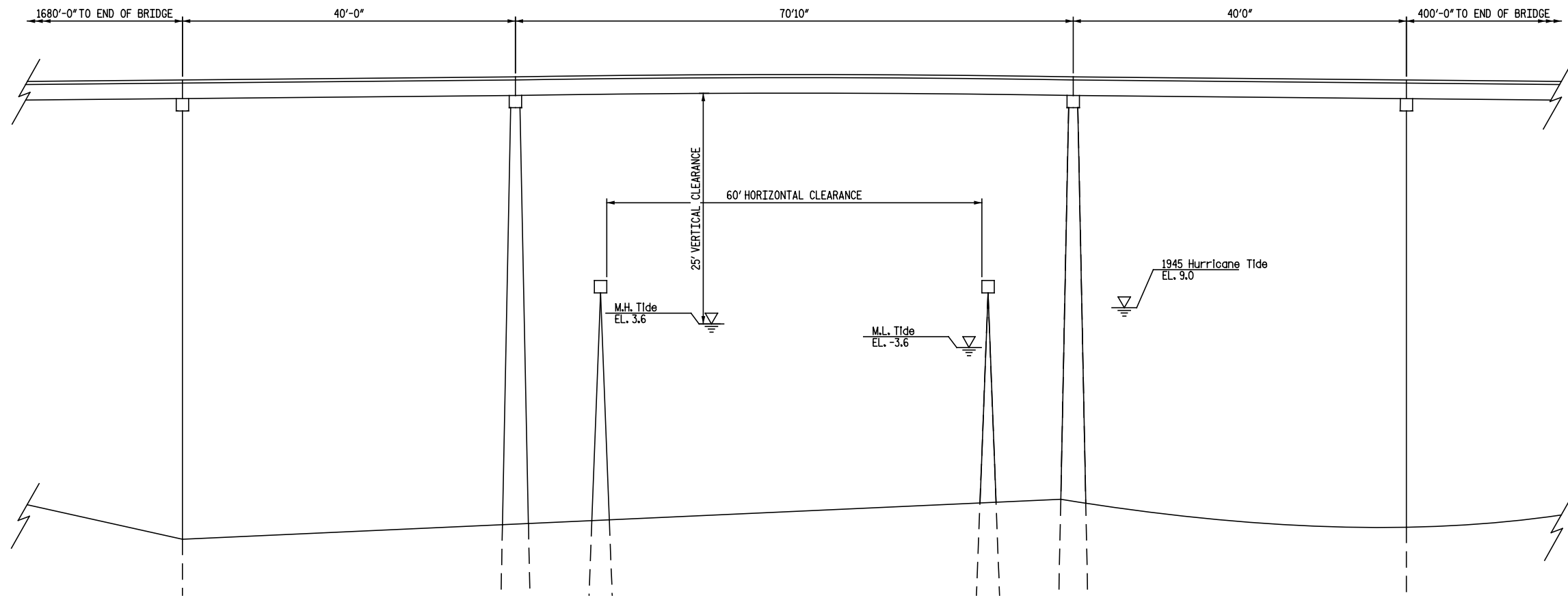
During construction there is potential for temporary closure. If a closure is necessary, it would be advertised 30 days in advance and the navigation channel would be accessible to the maximum feasible extent. Waterway users would experience minimal impacts and mitigation is not recommended.

# APPENDIX

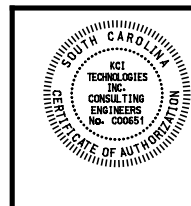
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## CONCEPTUAL BRIDGE CLEARANCES FOR MACKAY CREEK AND SKULL CREEK

BRIDGE PLANS ID	SECRET NO.
X	



\$USERNAM\$ \$DATE\$ \$TIME\$ \$FILES\$



PLAN OF  
 CLEARANCES  
 FOR BRIDGE  
 OVER  
 MACKEY CREEK

REV.			
REV.			
REV.			
REVIEWED			
QUAN.			
DR.	JES	6-19	
DES.			
BY	CEL	DATE	

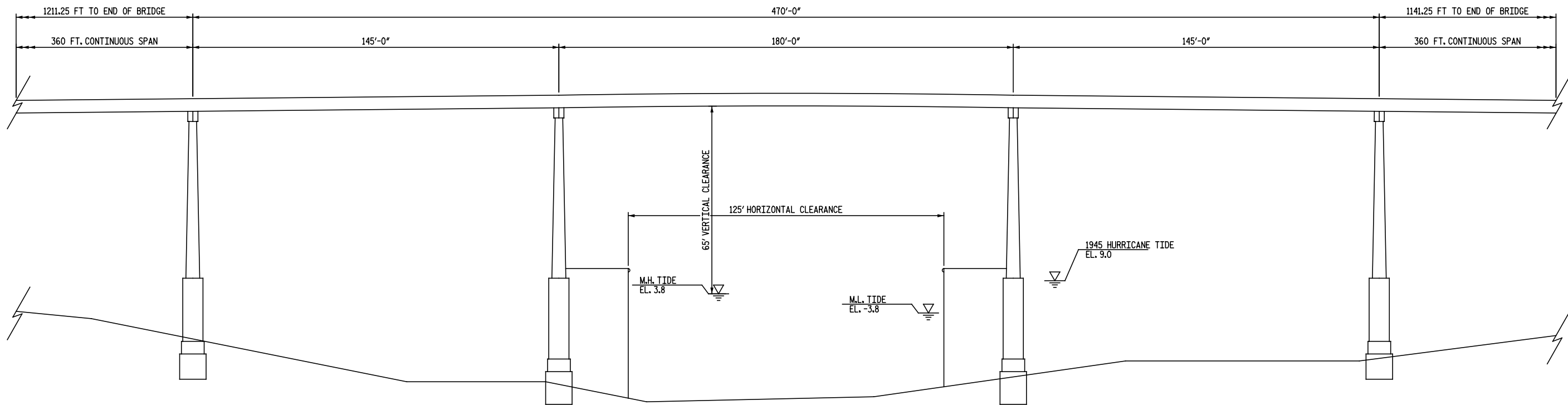
**KCI TECHNOLOGIES**  
ENGINEERS | PLANNERS | SCIENTISTS | CONSTRUCTION MANAGERS

**SOUTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**

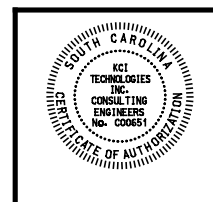
**U.S. 278 OVER MACKEY CREEK**

COUNTY	BEAUFORT	ROUTE	U.S. 278
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BRIDGE PLANS ID	SECRET NO.
X	



\$USERNAMES \$DATES \$FILES \$TIMES



PLAN OF CLEARANCES FOR BRIDGE OVER SKULL CREEK

REV.			
REV.			
REV.			
REVIEWED			
QUAN.			
DR.	JES	8-19	
DES.			
BY	CEL	DATE	

**KCI TECHNOLOGIES**  
ENGINEERS | PLANNERS | SCIENTISTS | CONSTRUCTION MANAGERS

**SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION**

**U.S. 278 OVER SKULL CREEK**

COUNTY: BEAUFORT ROUTE: U.S. 278

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**Date:** Thursday, November 21, 2019 1:26:59 PM  
**Attachments:** [US 278 Navigation Report Final October 2019.pdf](#)

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Shane,

I have reviewed the Navigation Report for the proposed US 278 Corridor Improvement Project. The project corridor crosses Mackay Creek and Skull Creek. Skull Creek is also part of the Atlantic Intracoastal Waterway (AICW) at the location of the US 278 crossing (J Wilton Graves Bridge).

According to the Navigation Report, the navigational clearance at Mackay Creek and Skull Creek (AICW) would equal or exceed the existing clearance:

1. Mackay Creek – Proposed minimum horizontal clearance 60 ft. Proposed minimum vertical clearance 25 ft. above Mean High Water (MHW)
2. Skull Creek (AICW) - Proposed minimum horizontal clearance 125 ft. Proposed minimum vertical clearance 65 ft. above Mean High Water (MHW)

The Coast Guard has made a preliminary determination that the proposed clearance, as stated above, will meet the reasonable needs of navigation for these waterways. Please note that this preliminary determination does not constitute an approval or final agency action. The Coast Guard can only make a final determination after processing a complete bridge permit application.

Refer to the Coast Guard Bridge Permit Application Guide located at <https://go.usa.gov/xRFk2> to make application for a Coast Guard bridge permit.

Thank you,

Randall Overton, M.P.A.  
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Coast Guard Seventh District Bridge Administration  
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**From:** Jeffrey.Belcher@dot.gov <Jeffrey.Belcher@dot.gov>  
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russell.chandler@threeoaksengineering.com

**Subject:** [Non-DoD Source] FHWA South Carolina: Navigation Study; US 278 Corridor, Beaufort County

**Importance:** High

Randall,

Attached is the Navigation Study for the US 278 Corridor Improvements Project for your review/comment. This project involves improvements/replacements of the existing bridges over Mackay and Skull Creeks. Any questions, please let me know.

Much thanks,

*J. Shane Belcher*

*Environmental Specialist*

*Federal Highway Administration*

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