Florida Department of Transportation

RON DESANTIS
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719 S. Woodland Blvd.
DeLand, FL 32720

JARED W. PERDUE, P.E.
SECRETARY

October 4, 2023

Alissa S. Lotane,
Director and State Historic Preservation Officer
Florida Division of Historical Resources
Florida Department of State
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Attn: Mr. Benjamin Stewart, Transportation Compliance Review Program

RE: Section 106 Consultation Case Study Report
State Road 5/US 1 Bridge Replacement over Pellicer Creek
Flagler and St. Johns Counties, Florida
Financial Management No.: 447118-1-52-01

Dear Ms. Lotane,

Enclosed, please find one copy of the *Section 106 Consultation Case Study Report for the State Road 5/US 1 Bridge Replacement over Pellicer Creek, Flagler and St. Johns Counties, Florida.* The Florida Department of Transportation (FDOT), District 5, is proposing to replace both bridges carrying State Road (SR) 5/US 1 over Pellicer Creek at the Flagler and St. Johns County line. The project also includes minor roadway work limited to replacing the bridges and modification of the existing drainage system as required to complete proposed roadway reconstruction work. An easement across sovereign submerged lands is required to accommodate construction. The bridges are functionally obsolete, and because rehabilitation and reuse of the structures are not possible given their current condition, the project is proposing the replacement of both bridges to ensure safe travel and maintain connectivity along this portion of SR 5/US 1.

A Phase I cultural resource assessment survey for the preferred alternative was completed by SEARCH in June 2022. The cultural resource assessment survey and subsequent consultation with the State Historic Preservation Officer concluded that one National Register of Historic Places-eligible historic property is within the project area of potential effects. The effects assessment and alternatives analysis addresses project-related effects relative to this NRHP-eligible resource, FDOT Bridge No. 730008 (8FL01008/8SJ08262). Three alternatives in addition to a rehabilitation alternative and no-build alternative were considered prior to choosing the selected alternative.

As a federally funded project, the effects evaluation was conducted to comply with Public Law 113-287 (Title 54 US Code), which incorporates the provisions of the National Historic Preservation Act of 1966, as amended, and the Archeological and Historic Preservation Act of 1974, as amended. The study also meets the regulations for implementing National Historic Preservation Act Section 106 found in 36 Code of Federal Regulations Part 800 (*Protection of Historic Properties*). This study also complies with Chapter 267 of the Florida Statutes and Rule Chapter 1A-46, Florida Administrative Code. SEARCH performed all work in accordance with Part 2, Chapter 8 of the FDOT's Project Development & Environment Manual (revised July 2023) and the Florida Division of Historical Resources' recommendations for such projects as stipulated in *Cultural Resource Management Standards & Operations Manual, Module Three: Guidelines for Use by Historic Preservation Professionals*. The principal investigator for this project meets the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Federal Register 44716-42).

Based on a review of the project plans, it is the district's opinion that the project will result in an adverse effect to FDOT Bridge No. 730008 (8FL01008/8SJ08262). Because construction of the selected alternative will result in an adverse effect to this historic property, FDOT proposes to prepare state equivalent Level III Historic American Engineering Record documentation for 8FL01008/8SJ08262. If your office agrees with this proposed mitigation strategy, FDOT will prepare a draft Memorandum of Agreement to memorialize this commitment and circulate for your review.

I respectfully request your concurrence with the findings of the enclosed report and the proposed mitigation strategy described above.

If you have any questions or need further assistance, please contact Catherine Owen, District Cultural Resource Coordinator, at (386) 943-5383 or me at (386) 943-5436.

Sincerely,

Casey Lyon, MS
Environmental Manager
FDOT, District Five

The Florida State Historic Preservation Officer finds the attached Section 106 Consultation Case Study Report complete and sufficient and ☑ concurs / ☐ does not concur with the recommendations and findings provided in this cover letter for SHPO/FDHR Project File Number 2023-4979B. Or, the SHPO finds the attached document contains _____ insufficient information.

In accordance with the Programmatic Agreement among the ACHP, SHPO and FDOT Regarding Implementation of the Federal-Aid Highway Program in Florida, if providing concurrence with a finding of No Historic Properties Affected for a project as a whole, or to No Adverse Effect on a specific historic property, SHPO shall presume that FDOT may approve the project as de minimis use under Section 4(f) under 23 CFR 774.

SHPO Comments:

Kelly S. Arase for

Alissa S. Lotane, Director
Florida Division of Historical Resources

10.25.2023
Date

SECTION 106 CONSULTATION CASE STUDY REPORT FOR THE STATE ROAD 5/US 1 BRIDGE REPLACEMENT OVER PELLICER CREEK, FLAGLER AND ST. JOHNS COUNTIES, FLORIDA

CONSULTANT:	SEARCH 3117 Edgewater Drive, Orlando, FL 32804
ARCHITECTURAL HISTORIAN AND PRINCIPAL INVESTIGATOR:	Mikel Travisano, MS
CLIENT:	Florida Bridge and Transportation, Inc. and Florida Department of Transportation, District 5
DATE:	October 2023
FINANCIAL MANAGEMENT #:	447118-1-52-01

This Section 106 case study report provides an alternatives analysis and effects assessment for the State Road (SR) 5/US 1 bridge replacement over Pellicer Creek in Flagler and St. Johns Counties, Florida (**Figures 1–2**). The Florida Department of Transportation (FDOT), District 5, is proposing to replace both bridges (FDOT Bridge Nos. 730008 and 730045) carrying SR 5/US 1 over Pellicer Creek at the Flagler and St. Johns County line. The project also includes minor roadway work limited to replacing the bridges, as well as modification of the existing drainage system as required to complete proposed roadway reconstruction work. This project will update the bridge typical section, increasing the inside and outside shoulders 2.0 feet (ft) (0.7 meters [m]) from the existing condition to 6.0 ft (1.8 m) inside shoulders and 10.0 ft (3.0 m) outside shoulders. An easement across sovereign submerged lands is required for construction. The purpose of this project is to replace these two functionally obsolete bridges (FDOT Bridge Nos. 730008 and 730045). Because rehabilitation and reuse of the structures is not possible given their current condition, their replacement will ensure safe travel and maintain connectivity along this portion of SR 5/US 1. This project is federally funded for construction in 2026.

SEARCH completed a cultural resource assessment survey (CRAS) for the preferred alternative in June 2022 (Matusik and Newton 2022). The CRAS and subsequent consultation with the State Historic Preservation Officer (SHPO) concluded that one historic property (i.e., a cultural resource listed in or eligible for listing in the National Register of Historic Places [NRHP]) is located within the project area of potential effects (APE). The SHPO concurrence letter for the 2022 CRAS is included as **Attachment A**. This effects assessment will address project-related effects relative to this NRHP-eligible resource, FDOT Bridge No. 730008 (8FL01008/8SJ08262). The second (northbound) US 1 bridge over Pellicer Creek (FDOT Bridge No. 730045) was excluded from Section 106 consideration based on the provisions of the Program Comment (Federal Register 2012:68793) regarding common post-World War II bridge types, and so was not recorded or evaluated as part of the CRAS for this project.

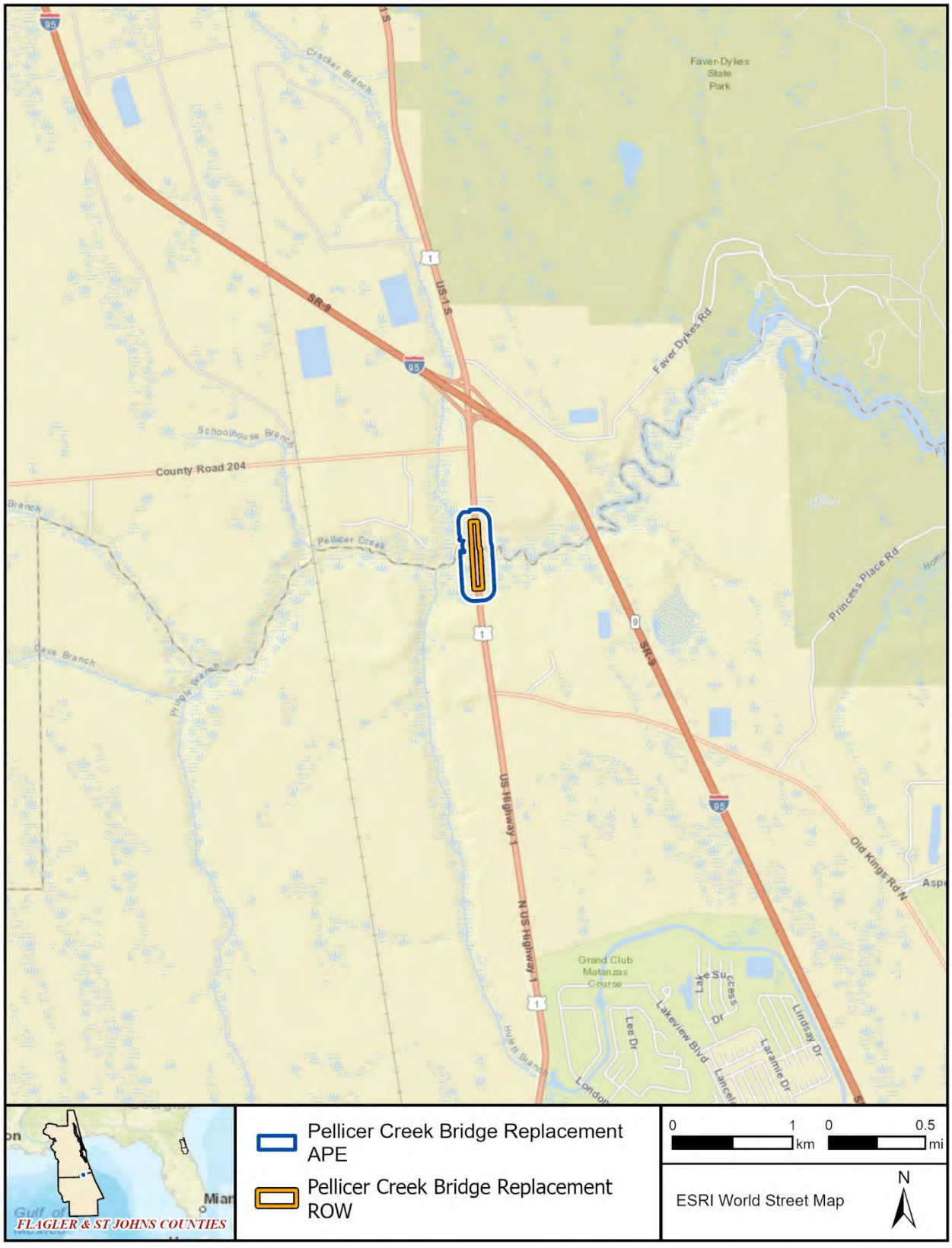

Figure 1. The Pellicer Creek bridge replacement project location in Flagler and St. Johns Counties, Florida.

Figure 2. The Pellicer Creek bridge replacement APE shown on an aerial map of Flagler and St. Johns Counties, Florida.

As a federally funded project, the CRAS and the present effects evaluation were conducted to comply with Public Law 113-287 (Title 54 US Code), which incorporates the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archeological and Historic Preservation Act of 1974, as amended. The study also meets the regulations for implementing NHPA Section 106 found in 36 Code of Federal Regulations (CFR) Part 800 (*Protection of Historic Properties*). This study also complies with Chapter 267 of the Florida Statutes and Rule Chapter 1A-46, Florida Administrative Code. SEARCH performed all work in accordance with Part 2, Chapter 8 of the FDOT's Project Development & Environment Manual (revised July 2023) and the Florida Division of Historical Resources' recommendations for such projects as stipulated in *Cultural Resource Management Standards & Operations Manual, Module Three: Guidelines for Use by Historic Preservation Professionals*. The principal investigator for this project meets the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Federal Register 44716-42).

PROPOSED UNDERTAKING

Project Description

The project consists of replacing the parallel bridges (FDOT Bridge Nos. 730008 and 730045) at SR 5/US 1 over Pellicer Creek in Flagler and St. Johns Counties. This project will update the bridge typical section, increasing the inside and outside shoulders 2.0 ft (0.7 m) from the existing condition to 6.0 ft (1.8 m) inside shoulders and 10.0 ft (3.0 m) outside shoulders. The project also includes roadway work limited to replacing the bridges, as well as modification of the existing drainage system as required to complete proposed roadway reconstruction work. The recommended alternative is Alternative 1B, which was selected based on overall cost, constructability and construction time, and maintenance and right-of-way (ROW) impacts. A discussion of all alternatives considered by the project is included below.

Purpose and Need

The purpose of this project is to replace two functionally obsolete bridges that do not meet current road design standards (FDOT Bridge Nos. 730008 and 730045; Florida Bridge and Transportation, Inc. 2023). Their replacement will ensure safe travel and maintain connectivity along this portion of SR 5/US 1.

Alternatives

The Bridge Development Report (BDR) provides four alternatives that were considered, inclusive of the recommended alternative (1B) (**Attachment B**). The project engineering team also provided SEARCH with information regarding Rehabilitation and No-Build alternatives for the purposes of the present Section 106 Case Study, although this is not included in the BDR. All six alternatives are included in **Table 1**.

Table 1. Matrix Analysis of Bridge Alternatives.

Alternatives	Description of Superstructure	Bridge Length	Span Length	Number of Spans	Description of Substructure	Bridge Cost
1A	Florida I Beams	240.0 ft (73.2 m)	80.0 ft (24.4 m)	3	18.0-in PPC Piles	$6,769,679
1B	Florida I Beams	240.0 ft (73.2 m)	80.0 ft (24.4 m)	3	24.0-in PPC Piles	$7,046,555
2A	Florida Slab Beams	240.0 ft (73.2 m)	60.0 ft (18.3 m)	4	18.0-in PPC Piles	$8,303,265
2B	Florida Slab Beams	240.0 ft (73.2 m)	60.0 ft (18.3 m)	4	24.0-in PPC Piles	$8,603,803
*Rehabilitation	In-kind replacement	No Change	No Change	No Change	Rehabilitation (crutch bent installation)	$8,712,896
*No Build	No Change	No Change	No Change	No Change	No Change	NA

Source: (Florida Bridge and Transportation, Inc. 2023: 3, 20)
*Not included in the BDR.

The BDR also provides an evaluation matrix for rating four bridge alternatives, (1A, 1B, 2A, and 2B). The matrix ranks each alternative from 1-10 using a weighted score and multiplier, with 100 being the highest possible score (Florida Bridge and Transportation, Inc. 2023:23). The scores for each alternative discussed in the BDR are provided in the descriptions below.

Alternative 1A

Alternative 1A uses Florida I Beams and has three spans of 80.0 ft (73.2 m) each. Alternative 1A uses 18.0 in (457.2 mm) Precast Prestressed Concrete (PPC) Piles, while Alternative 1B (discussed below) uses 24.0 in (609.6 mm) PPC piles. While the smaller-diameter piles are easier to drive, they are not as efficient for the required length and will require preplanned pile splices that are more expensive and need a high degree of quality control during installation. The smaller-diameter piles would also likely require pile jackets in the future, while the larger-diameter piles would not. The use of Florida I Beams for Alternative 1A is preferrable for construction time as the Florida Slab Beam Alternatives 2A and 2B would require an additional intermediate bent to support the bridge structure (Florida Bridge and Transportation, Inc. 2023).

Bridge maintenance for all alternatives is similar because concrete bridges are durable with a low-maintenance record. ROW impacts are anticipated for all alternatives. The Florida Slab Beam Alternatives 2A and 2B are preferrable to Alternative 1A for having the profile of the new road and bridge meet the existing road profile; this can be completed faster because of the lower beam depth on Alternatives 2A and 2B.

The cost of Alternative 1A is estimated at $6,769,679, making it the least expensive build alternative. Given the drawbacks regarding maintenance and ROW impacts, Alternative 1A received an 87.0 score and was ranked second among the four build alternatives (Florida Bridge and Transportation, Inc. 2023: 23).

Advantages of Alternative 1A:

- Florida I Beams do not require an additional intermediate bent to support the bridge structure; and
- Least expensive of the four alternatives.

Disadvantages of Alternative 1A:

- 18.0 in (457.2 mm) PPC piles require preplanned pile splices that are more expensive and need a high degree of quality control during installation, and these smaller-diameter piles may require future maintenance (pile jackets) to extend bridge life; and
- Higher depth of Florida I Beams when compared to the Florida Slab Beam may complicate the profile of the new road and bridge meeting the existing road profile.

Alternative 1B

The constructability of Alternative 1B is similar to 1A: it uses Florida I Beams and has three spans of 80.0 ft (73.2 m). The main difference is that Alternative 1B uses 24.0 in (609.6 mm) PPC piles, while Alternative 1B uses 18.0 in (457.2 mm) PPC piles, which are smaller in diameter and easier to drive. However, they are not as efficient for the required length and will require preplanned pile splices that are more expensive and need a high degree of quality control during installation. The use of Florida I Beams for Alternative 1B is preferrable for construction time because the Florida Slab Beam Alternatives 2A and 2B would require an additional intermediate bent to support the bridge structure (Florida Bridge and Transportation, Inc. 2023).

Bridge maintenance for all alternatives is similar because concrete bridges are durable with a low-maintenance record. ROW impacts are anticipated for all alternatives. The Florida Slab Beam Alternatives 2A and 2B are preferrable to Alternative 1B for having the profile of the new road and bridge meet the existing road profile; this can be completed faster because of the lower beam depth on Alternatives 2A and 2B. However, the primary consideration for maintenance and ROW is using 24.0 in (609.6 mm) PPC piles instead of 18.0 in (457.2 mm) PPC piles because the smaller-diameter piles will require preplanned pile splices, and on the existing bridges, they already require pile jackets. Furthermore, it's anticipated that using 24.0 in (609.6 mm) PPC piles will lessen the need for future maintenance (pile jackets) and extend bridge life. Therefore, Alternative 1B has advantages relative to maintenance and ROW impacts.

The cost of Alternative 1B is estimated at $7,046,555, making it the second least expensive option. Alternative 1B received a 91.6 score and was ranked first among the four building alternatives, making it the recommended alternative (Florida Bridge and Transportation, Inc. 2023: 23).

Advantages of Alternative 1B:

- Florida I Beams do not require an additional intermediate bent to support the bridge structure;
- 24.0 in (609.6 mm) PPC piles do not need preplanned pile splices and are more durable than 18.0 in (457.2 mm) PPC piles, lessening the need for future maintenance and extending bridge life; and
- Second least expensive of the four alternatives.

Disadvantages of Alternative 1B:

- Higher depth of Florida I Beams when compared to the Florida Slab Beam may complicate the profile of the new road and bridge meeting the existing road profile.

Alternative 2A

Alternative 2A uses Florida Slab Beams and has three spans of 80.0 ft (73.2 m). Alternative 2A uses 18.0 in (457.2 mm) PPC Piles, while Alternative 2B uses 24.0 in (609.6 mm) PPC piles. While the smaller-diameter piles are easier to drive, they are not as efficient for the required length and will require preplanned pile splices that are more expensive and need a high degree of quality control. In addition, the Florida Slab Beam Alternatives 2A and 2B require an additional intermediate bent to support the bridge structure (Florida Bridge and Transportation, Inc. 2023), which would likely increase construction time when compared to Alternatives 1A and 1B.

Bridge maintenance for all alternatives is similar because concrete bridges are durable with a low-maintenance record. ROW impacts are anticipated for all alternatives. The Florida Slab Beam Alternatives 2A and 2B are preferrable to Alternatives 1A and 1B for having the profile of new road and bridge meet the existing road profile; this can be completed faster because of the lower beam depth on Alternatives 2A and 2B. However, the primary consideration for maintenance and ROW is using 24.0 in (609.6 mm) PPC piles instead of 18.0 in (457.2 mm) PPC piles because the smaller-diameter piles will require preplanned pile splices and will require pile jackets at some point in the future, while the larger diameter piles would not. Therefore, Alternative 2A is at a disadvantage with regard to maintenance and ROW impacts.

The cost of Alternative 2A is estimated at $8,303,265, making it the second most expensive option. Alternative 2A received a 72.4 score and was ranked fourth, the lowest score of all the build alternatives (Florida Bridge and Transportation, Inc. 2023: 23).

Advantages of Alternative 2A:

- Lower depth of Florida Slab Beam when compared to the Florida I Beams is preferrable to Alternatives 1A and 1B for having the profile of new road and bridge meet the existing road profile; this can be completed faster because of the lower beam depth.

Disadvantages of Alternative 2A:

- 18.0 in (457.2 mm) PPC piles require preplanned pile splices that are more expensive and need a high degree of quality control during installation, and these smaller-diameter piles may require future maintenance (pile jackets) to extend bridge life;
- Requires an additional intermediate bent to support the bridge structure; and
- Second most expensive of the four alternatives.

Alternative 2B

The constructability of Alternative 2B is similar to 2A: it uses Florida Slab Beams and has three spans of 80.0 ft (73.2 m). The main difference is that Alternative 2B uses 24.0 in (609.6 mm) PPC piles, while Alternative 2A uses 18.0 in (457.2 mm) PPC piles. While the smaller-diameter piles are easier to drive, they are not as efficient for the required length and will require preplanned pile splices that are more expensive and need a high degree of quality control.

In addition, the Florida Slab Beam Alternatives 2A and 2B require an additional intermediate bent to support the bridge structure (Florida Bridge and Transportation, Inc. 2023), which would likely increase construction time when compared to Alternatives 1A and 1B.

Bridge maintenance for all alternatives is similar because concrete bridges are durable with a low-maintenance record. ROW impacts are anticipated for all alternatives. The Florida Slab Beam Alternatives 2A and 2B are preferrable to Alternatives 1A and 1B for having the profile of new road and bridge meet the existing road profile; this can be completed faster because of the lower beam depth on Alternatives 2A and 2B. Further, it is anticipated that using 24.0 in (609.6 mm) PPC piles will lessen the need for future maintenance (pile jackets) and extend bridge life. Therefore, Alternative 2B has advantages relative to maintenance and ROW impacts.

Finally, the cost of Alternative 2B is estimated at $8,603,803, making it the most expensive option. Alternative 2B received a 78.2 score and was ranked third among the four build alternatives (Florida Bridge and Transportation, Inc. 2023: 23).

Advantages of Alternative 2B:

- Lower depth of Florida Slab Beam when compared to the Florida I Beams is preferrable to Alternatives 1A and 1B for having the profile of new road and bridge meet the existing road profile; this can be completed faster because of the lower beam depth; and
- 24.0 in (609.6 mm) PPC piles do not need preplanned pile splices and are more durable than 18.0 in (457.2 mm) PPC piles, lessening the need for future maintenance to extend bridge life.

Disadvantages of Alternative 2B:

- Requires an additional intermediate bent to support the bridge structure; and
- Most expensive of the four alternatives.

Rehabilitation Alternative

A rehabilitation alternative was not specifically included in the BDR; however, the inspection report and BDR state that FDOT Bridge No. 730008 (8FL01008/8SJ08262) over Pellicer Creek is "functionally obsolete" (**Attachment C**). This designation indicates that the bridge does not meet current road design standards due to narrow shoulder width (the current shoulder width is 2.0 ft [0.7 m], while the standard is 6.0 ft [1.8 m] for the inside shoulder and 10.0 ft [3.0 m] for the outside shoulders). At 96 years old, the bridge is already past its design life of 75 years. Furthermore, FDOT Bridge No. 730008 already has pile jackets installed to extend its service life. Replacing the pile jackets would require extensive work while trying to avoid damage to the original piles, while adding more width to the existing pile jackets would affect the hydraulic opening of the bridge over the creek. Even if repairs were to occur, the substandard shoulders would remain, which would pose a safety hazard per current FDOT standards. As such, the rehabilitation alternative is not a viable option because it does not meet the purpose and need of the project (Florida Bridge and Transportation, Inc. 2023: 23).

No-Build Alternative

A no-build alternative was not specifically included in the BDR because it would require maintaining in service a "functionally obsolete" bridge that is 21 years past its design life. A no-build option would entail no changes or construction to the existing bridge, and no structural elements would be removed or added. The no-build alternative would retain the bridge's substandard 2.0 ft (0.7 m) shoulders and piles that have already been repaired with the installation of pile jackets. As such, the no-build alternative is not a viable option and does not meet the purpose and need of the project (Florida Bridge and Transportation, Inc. 2023: 23).

CRITERIA OF ADVERSE EFFECTS

To evaluate the project-related effects posed by the preferred alternative on the NRHP-eligible historic resource, SEARCH applied the criteria of adverse effects, as described by 36 CFR 800:

(a) Assessment of Adverse Effects

> (1) *Criteria of adverse effects*. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

(2) *Examples of adverse effects*. Adverse effects include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* (36 CFR part 68) and applicable guidelines;

(iii) Removal of the property from its historic location;

(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

(vi) Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

(b) *Finding of no adverse effect*. The agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section or the undertaking is modified or conditions are imposed, such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines, to avoid adverse effects.

NATIONAL REGISTER OF HISTORIC PLACES CONTEXT

Brief Historic Background

Bridge No. 730008 was built in 1927 and exhibits tee-beam construction. The 2012 edition of *Historic Highway Bridges of Florida* discusses historic tee-beam bridges, noting that they were commonly constructed in the 1930s and 1940s as integral cast-in-place reinforced concrete decks and beam stems (Deming et al. 2012). These types of bridges became prevalent during this period because they were relatively easy and cost-effective to build and provided long-lasting durability. While many historic tee-beam bridges were identified and evaluated during the 2012 study, Bridge No. 730008 was not included. However, with a construction date of 1927, Bridge No. 730008 is considered an early example of the type. Furthermore, few bridges from this early date along US 1 are still extant in Florida. Bridge No. 730008 underwent reconstruction in 1948, according to FDOT records. This involved widening the superstructure by 13.3 ft (4.1 m).

The existing outer railing on the bridge was also constructed at this time and is marked with the date "1948." This widening was the last major alteration to the bridge, with some additional minor work in the 1990s and 2000s, including the addition of a vertical face retrofit and the installation of pile jackets on all 18.0 in (457.2 mm) piles on the interior bents. In 1957, US 1 became a divided highway when the eastern lane and the northbound bridge (Bridge No. 730045) were constructed; afterwards, Bridge No. 730008 was utilized solely for southbound traffic.

Historic Resources

8FL01008/8SJ08262, US 1 Southbound over Pellicer Creek Bridge (FDOT Bridge No. 730008)

FDOT Bridge No. 730008 (8FL01008/8SJ08262) (**Figure 3**) is 223.8 ft (68.2 m) long and features seven main spans with no approach spans. The roadway width is 27.9 ft (8.5 m), and the complete width from edge to edge is 32.8 ft (10 m). The bridge carries two lanes of southbound traffic, and the deck and abutment are composed of cast-in-place concrete. The bridge supports feature a standard six-pile bent design. No plaques are present on the bridge, but "H-15" and "1948" are visible on the rail, the latter of which is the year of the bridge's reconstruction.

During the 2022 CRAS, Bridge No. 730008 was determined eligible for the NRHP under Criterion A for its role in Florida's transportation history. Although Bridge No. 730008 is a common bridge type, it remains an early and relatively intact example of a tee-beam bridge from the Florida boom period of the 1920s, an era from which remaining bridges are becoming increasingly rare. Due to its engineering significance as an early representation of a bridge type that was constructed across Florida due to its affordability and constructability, FDOT Bridge No. 730008 (8FL01008/8SJ08262) was also determined eligible for listing in the NRHP under Criterion C.

ASSESSMENT OF EFFECTS

The project proposes replacing FDOT Bridge No. 730008 (8FL01008/8SJ08262) over Pellicer Creek and the construction of a new bridge in its place. The BDR prepared by the project engineering consultant concluded that the only reasonable alternative would be replacement of the bridge (Florida Bridge and Transportation, Inc. 2023; see **Attachment B**). As discussed in the BDR, the bridge must be replaced due to multiple factors related to the age of the structure, the structural capacity and condition of the bridge, and the substandard roadway geometry compared to current FDOT standards.

At present, FDOT Bridge No. 730008 is 96 years old, which is well beyond the 75-year design life for the bridge. Structurally, the bridge has had pile jackets installed as a repair procedure and as a preventative measure to keep the existing piles from deteriorating further. The pile jackets themselves have spalls, voids, and exposed rebar per the most recent inspection reports. Further, the bridge has been labeled as "functionally obsolete," which means it does not meet current

Figure 3. Representative views of Resource 8FL01008/8SJ08262. Deck and roadway, facing southeast (top left); underside with girders and piers, facing southeast (top right); west side of structure, facing south (middle left); railing along east side, facing south (middle right); railing and east side, facing north (bottom left); east side and piers, facing northwest (bottom right).

road design standards due to narrow shoulder width (the current shoulder width is 2.0 ft [0.7 m], and the standard is 6.0 ft [1.8 m] for the inside shoulder and 10.0 ft [3.0 m] for the outside shoulders).

Repairing the bridge is not recommended since the structure is beyond its design life. Replacing the pile jackets would require extensive work while trying to avoid damage to the original piles, while adding more width to the existing pile jackets would affect the hydraulic opening of the bridge over the creek. Even if repairs were to occur, the substandard shoulders would remain, which would pose a safety hazard per today's standards. For these reasons, the rehabilitation and no-build alternatives were dismissed from consideration for not meeting the purpose and need for the undertaking, and the bridge is recommended for replacement.

Because rehabilitation and continued use of this historic property are not feasible given its current condition, SEARCH evaluated project-related effects posed by the four build alternatives. All four build alternatives involve removal and replacement of 8FL01008/8SJ08262, resulting in a total loss of historic fabric. As such, SEARCH recommends that implementation of any of the four build alternatives will result in an adverse effect to NRHP-eligible FDOT Bridge No. 730008 (8FL01008/8SJ08262).

CONCLUSION

This Section 106 case study report provides an alternatives analysis and effects discussion regarding the SR 5/US 1 bridge replacement over Pellicer Creek. Specifically, this document discusses project-related effects relative to NRHP-eligible FDOT Bridge No. 730008 (8FL01008/ 8SJ08262). Based on a review of the project plans and viable alternatives, it is SEARCH's opinion that the project will result in an adverse effect to the historic bridge. As such, SEARCH recommends consultation with the Florida SHPO to develop appropriate mitigation measures to resolve the adverse effect under Section 106 of the NHPA. Once mitigation methods are determined, these commitments should be presented in a Memorandum of Agreement between FDOT and the SHPO.

REFERENCES CITED

Deming, Joan, Kisa Hooks, and Elaine Lund
2012 *The Historic Highway Bridges of Florida. Florida Master Site File Survey No. 20057*. On file, Florida Division of Historical Resources, Tallahassee, and Florida Department of Transportation Environmental Management Office. Electronic document, https://www.fdot.gov/docs/default-source/environment/pubs/Historic-Highway-Bridges-of-Florida-2010-Update.pdf, accessed May, 2022.

Federal Register
2012 Program Comment Issued for Streamlining Section 106 Review for Actions Affecting Post-1945 Concrete and Steel Bridges. US Government Printing Office, Washington, DC.

Florida Bridge and Transportation, Inc.
2023 *Bridge Development Report: SR 5/US 1 over Pellicer Creek Bridge Replacement*. On file, Florida Bridge and Transportation Office, Orlando, Florida.

Matusik, Angela and Jason Newton
2022 *Cultural Resource Assessment Survey of the SR 5 Bridge Replacement over Pellicer Creek, Flagler and St. Johns Counties, Florida*. FMSF No. 28226. On file, Division of Historical Resources, Tallahassee, Florida.

ATTACHMENT A

SHPO CONCURRENCE LETTER FOR THE 2022 CRAS

Florida Department of Transportation

RON DESANTIS
GOVERNOR

719 S. Woodland Blvd.
DeLand, FL 32720

JARED W. PERDUE, P.E.
SECRETARY

June 23, 2022

Timothy A. Parsons, Ph.D.,
Director and State Historic Preservation Officer
Florida Division of Historical Resources
Florida Department of State
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Attn: Ms. Alyssa McManus, Transportation Compliance Review Program

RE: Cultural Resource Assessment Survey
SR 5 Bridge Replacement over Pellicer Creek
Flagler and St. Johns Counties, Florida
Financial Management No.: 447118-1

Dear Dr. Parsons,

Enclosed please find one copy of the report titled *Cultural Resource Assessment Survey of the SR 5 Bridge Replacement over Pellicer Creek, Flagler and St. Johns Counties, Florida.* This report presents the findings of a CRAS conducted in support of proposed bridge replacements in Flagler and St. Johns Counties, Florida. The Florida Department of Transportation (FDOT), District 5, is proposing to replace both bridges carrying State Road (SR) 5 (US 1) over Pellicer Creek at the Flagler and St. Johns County line. The project also includes minor roadway work limited to that necessary to replace the bridges and modification of the existing drainage system as required to complete proposed roadway reconstruction work. The project includes widening of the existing shoulders from 1.2 meters (m) (4.0 feet [ft]) to 1.5 m (5.0 ft) along the roadway segment and 3.0 m (10.0 ft) outside the shoulder on the bridge. An easement across sovereign submerged lands is required to accommodate construction. This project is federally funded for construction in 2026.

The project Area of Potential Effect (APE) was defined as the existing right-of-way (ROW) from approximately 335 m (1,100 ft) south of the Flagler and St. Johns County line to 188 m (617 ft) north of the line. The APE extends to the back or side property lines of parcels adjacent to the ROW or no more than 100 m (330 ft) from the ROW line. SEARCH conducted the archaeological survey within the existing ROW and the architectural survey within the entire APE.

This CRAS was conducted in accordance with the requirements set forth in Section 106 of the National Historic Preservation Act of 1966, as amended, found in 36 CFR Part 800 (Protection of Historic Properties). The studies also comply with Chapter 267 of the Florida Statutes and Rule

Chapter 1A-46, Florida Administrative Code and Section 267.12, Florida Statutes, Chapter 1A-32. All work was performed in accordance with Part 2, Chapter 8 of FDOT's PD&E Manual (revised July 2020), FDOT's Cultural Resources Management Handbook, and the standards stipulated in the Florida Division of Historical Resources' (FDHR) *Cultural Resource Management Standards & Operations Manual, Module Three: Guidelines for Use by Historic Preservation Professionals*. The Principal Investigator for this project meets the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-42). This study also complies with Public Law 113-287 (Title 54 U.S.C.), which incorporates the provisions of the National Historic Preservation Act of 1966, as amended, and the Archeological and Historic Preservation Act of 1974, as amended.

The archaeological survey included the excavation of three shovel tests within the SR 5 (US 1) ROW. SEARCH identified evidence of disturbance from bridge and road construction during subsurface testing. Archaeological testing was not possible along the eastern extent of the ROW due to the presence of multiple marked buried utilities. No archaeological sites, features, or artifact occurrences were encountered during the archaeological survey. No further archaeological work is therefore recommended according to current design. If design changes occur to include areas outside of the current study, additional archaeological consideration may be required.

The architectural survey resulted in identification and evaluation of five historic resources within the Pellicer Creek Bridge Replacement APE, one of which is previously recorded and four of which are newly recorded. The previously recorded resource is a historic roadway (8FL00291/8SJ05271) that was recorded elsewhere within both Flagler and St. Johns Counties but not surveyed within the current project APE. The newly recorded resources consist of one highway bridge (8FL01008/8SJ08262), two buildings (8SJ07379 and 8SJ07380), and one resource group (8SJ07359).

The SHPO evaluated previously recorded resource US 1 (8FL00291/8SJ05271) to be ineligible for listing in the NRHP approximately 3 mi south of the current project area (SEARCH 2018). Based on the results of the current survey, it is the opinion of SEARCH that the segment of US 1 (8FL00291/8SJ05271) within the APE is also ineligible for listing in the NRHP due to loss of historic integrity.

The newly recorded historic bridge, FDOT Bridge No. 730008 (8FL01008/8SJ08262), is one of the oldest remaining bridges along the US 1 corridor in Florida. Based on the current survey, Resource 8FL01008/8SJ08262 is recommended eligible for listing in the NRHP under Criterion A for its role in Florida's transportation history. The bridge is also recommended eligible for listing in the NRHP under Criterion C as a good example of an early tee-beam highway bridge. The three remaining resources within the APE (8SJ07359, 8SJ07379, and 8SJ07380) are recommended ineligible for listing in the NRHP due to a lack of significant historic associations and architectural or landscape distinction.

Contingent upon the SHPO's concurrence with the eligibility recommendations for historic resources presented in this CRAS, a separate Section 106 case study will be prepared to evaluate

any project-related effects to the NRHP-eligible Bridge No. 730008 (8FL01008/8SJ08262). The resolution of project-related effects, if any, will be the subject of further agency consultation.

I respectfully request your concurrence with the findings of the enclosed report.

If you have any questions or need further assistance, please contact Catherine Owen, District Cultural Resource Coordinator, at (386) 943-5383 or me at (386) 943-5411.

Sincerely,

For: William G. Walsh
Environmental Manager
FDOT, District Five

The Florida State Historic Preservation Officer finds the attached Cultural Resource Assessment Survey Report complete and sufficient and ☑ concurs / ☐ does not concur with the recommendations and findings provided in this cover letter for SHPO/FDHR Project File Number 2022-4228. Or, the SHPO finds the attached document contains _____ insufficient information.

In accordance with the Programmatic Agreement among the ACHP, SHPO and FDOT Regarding Implementation of the Federal-Aid Highway Program in Florida, if providing concurrence with a finding of No Historic Properties Affected for a project as a whole, or to No Adverse Effect on a specific historic property, SHPO shall presume that FDOT may approve the project as de minimis use under Section 4(f) under 23 CFR 774.

SHPO Comments:

Kelly L. Chase, DSHPO

Digitally signed by Kelly L. Chase, DSHPO
DN: cn=Kelly L. Chase, DSHPO, o, ou, email=kelly.chase@dos.myflorida.com, c=US
Date: 2022.07.06 10:38:32 -04'00'

7.6.2022

Timothy A. Parsons, PhD, Director
Florida Division of Historical Resources

Date

ATTACHMENT B

2023 BRIDGE DEVELOPMENT REPORT

REDACTED

ATTACHMENT C

BRIDGE REPLACEMENT JUSTIFICATION

Florida Department of Transportation

RON DESANTIS
GOVERNOR

1650 N. Kepler Road
DeLand, Florida 32724

JARED W. PERDUE, P.E.
SECRETARY

September 28th, 2023

Shelley ChinQuee, P.E.
Consultant Project Manager
Florida Department of Transportation

Re: US-1 over Pellicer Creek Bridge Replacement Justification
Bridge Nos. 730008 & 730045
Flagler County

Dear Ms. ChinQuee,

With the US-1 over Pellicer Creek northbound bridge being posted for legal loads and the southbound bridge well past its 75-year design service life, it is the assessment of Structures Maintenance that replacement of the subject bridges is the most prudent option to promote safety and mobility on the US-1 corridor. If these structures are to remain in service, significant rehabilitation efforts would be necessary due to deficient and deteriorating bridge components. Even then, the structures would remain "Functionally Obsolete" with outdated safety features such as post-and-beam traffic railing, narrow shoulder widths, and no bicycle/pedestrian accommodations. Replacement of the structures not only eliminates repair and rehab concerns, but also affords the opportunity to upgrade these features that promote the priorities of the Florida Department of Transportation.

Attached are two documents that further support the replacement assessment from Structures Maintenance. First is a justification report explaining the history of the two structures, rehabilitation efforts to date, and the reasoning behind programming replacement. The second document is a cost estimate for three necessary rehabilitation projects should the bridges be kept in service in lieu of replacement. These rehabilitation projects total over **$8.7 million** with additional yearly repair costs expected for maintenance and upkeep of these outdated structures.

<u>US-1 Northbound over Pellicer Creek</u>	
Replacement of Superstructure	$3,754,221
Crutch Bent Installation (Substructure Rehab)	$3,032,598
<u>US-1 Southbound over Pellicer Creek</u>	
Crutch Bent Installation (Substructure Rehab)	$1,926,077

Sincerely,

Jonathan J. Jastremsky, P.E.
Engineering Section Manager

Matthew C. Hodges, P.E.
Senior Design Project Manager

US-1 over Pellicer Creek Justification Report

US-1 NB over Pellicer Creek (FDOT Bridge #730045) built in 1957 is a is an eleven-span, cast-in-place flat slab superstructure founded on concrete pile bents. The bridge is 34.08-ft wide and 220-ft long having a typical section that consists of two 12-ft lanes, a 2-ft outside shoulder, and a 2-ft inside shoulder.

In 2019 the Load Rating for this bridge was updated due to a FHWA directive to evaluate all interstate bridges and bridges within 1 mile of the interstate for new EV loads (Airport Emergency Vehicles) per current LRFR load rating criteria. The results of this updated load rating analysis concluded that not only did the bridge need to be load posted for the new EV2 and EV3 truck loads, but it also needed to be load posted for SU4, C4, and C5 trucks per current AASHTO and FDOT design criteria. According to the BDR for the Pellicer Creek Bridge Replacement project (FM: 447118-1), the US-1 corridor through this area has an AADT of 14,000 cars with a 17% truck volume. This indicates that this facility is heavily used by the trucking industry for the transport of goods and materials which is significantly impacted by the current load posting at this location.

In addition to being load posted, the bridge is classified as functionally obsolete due to sub-standard traffic barriers and narrow shoulders which impact the safety of the motoring public. Current design criteria call for a minimum 10-ft outside shoulder width and 6-ft inside shoulder width on bridges while there is currently 2-ft shoulder width inside and outside on the existing bridge.

This bridge is currently the only FDOT owned bridge posted for load and considering part of the fundamental mission of the FDOT is to *"provide a safe transportation system that ensures the mobility of people and goods and enhance economic prosperity*" it is a priority to restore trucking mobility through the corridor while embracing the opportunity to replace an aging bridge with outdated safety features.

Additionally, this bridge has a history of settlement affecting the ride quality and potentially impacting the effectiveness of any proposed rehabilitation. A monitoring program was instituted to measure the amount of settlement and track progression. Through that monitoring program, Structures Maintenance determined that the bridge settlement had stabilized and was no longer settling. However, should rehabilitation efforts take place on either northbound or southbound bridges, the work may cause settlement to reinitiate leading to additional rehabilitation scope and cost.

Should it be the priority to repair/retrofit in lieu of replacing the structure, the entire superstructure would need to be replaced to eliminate the need for load posting the bridge. The substructure would also need to be evaluated for rehabilitation as the original prestressed concrete piles were jacketed after significant deterioration in 1985. At the age of 66 years old, the bridge is approaching its intended design life of 75 years. Thus, rehabilitation of this magnitude is not recommended.

US-1 SB over Pellicer Creek (FDOT Bridge #730008) built in 1927 is a is a seven-span, cast-in-place inverted tee-beam superstructure founded on pile bents. The bridge is 33.17-ft wide and 217.44-ft long having a typical section that consists of two 12-ft lanes, a 2-ft outside shoulder, and a 2-ft inside shoulder. With the NB bridge requiring replacement due to Load Posting requirements of the existing structure, it was determined that it was in the Department's best interest to replace both structures simultaneously as this structure is 30 years older than the NB structure, already eclipsing its 75 year design life and exhibiting similar structural deterioration.

The exterior piles at all bents are steel H-piles with concrete jackets. The pile jackets were installed in 1977 after significant deterioration to the original H-piles was documented. Over time, the channel bed has scoured exposing the original steel piles beneath the jackets. In bent 5, pile 5-1 has significant deterioration beneath the jacket

requiring the need for a crutch bent should long-term rehabilitation be considered. Closer investigation at all steel H-pile locations would be necessary to determine the extent of additional deterioration which may necessitate installation of additional crutch bents. The concrete deck exhibits efflorescence in numerous locations indicating evidence of water intrusion and corrosion of the steel reinforcement which will continue to worsen over time. For these reasons, it is not recommended to pursue a long-term rehabilitation of a structure that has eclipsed its intended design life by over 20 years.

Photo 1: Settlement of bridge no. 730045 – US-1 Northbound over Pellicer Creek

US-1 Northbound over Pellicer Creek
Bridge no. 730045

Rehab: Replace deficient superstructure with new flat-slab superstructure

Each Span:

Description	Quantity	Unit	Unit Cost	Extended Cost
Removal of Existing Structure	684	SF	$ 51.86	$ 35,474
Class II Concrete - Superstructure (16" slab)	33.58	CY	$ 1,370.08	$ 46,007
Reinforcing Steel - Bridge Superstructure	4700	LB	$ 1.86	$ 8,754
Concrete Traffic Railing - 36" Single Slope	520	LF	$ 203.59	$ 105,866
Bridge Deck Grooving	75.78	SY	$ 10.00	$ 758
Bridge Deck Expansion Joint	34.08	LF	$ 82.51	$ 2,812
				$ 199,671

Eleven spans and two approach spans @ $199,671 each		$ 2,595,720
Mobilization	15%	$ 389,358
MOT	10%	$ 259,572
Contingency	10%	$ 259,572
Construction Cost		$ 3,504,221
Design Estimate		$ 250,000
Total Rehab Cost		$ 3,754,221

Discussion: The existing flat-slab bridge superstructure is deficient for legal loads causing the bridge to be load posted. Replacement of the superstructure is necessary. This estimate assumes replacing the superstructure with the same roadway width as existing to utilize the substructure in place, meaning this bridge would remain "Functionally Obsolete" even after reconstruction. Widening the road to provide greater shoulder widths could be explored, however this would increase construction costs.

US-1 Northbound over Pellicer Creek
Bridge no. 730045

Rehab: Crutch bents installed at the ten intermediate bents to address historic foundation settlement

Each Bent:

Description	Quantity	Unit	Unit Cost	Extended Cost
18" Prestressed Concrete Piles (100' each, 6x each bent)	600	LF	$ 172.05	$ 103,230
36" Florida I-Beam (50' each, 2x each bent)	100	LF	$ 668.61	$ 66,861
Plain Neoprene Bearing Pad (14x each bent)	0.58	CF	$ 2,414.06	$ 1,408
Class IV Substructure Concrete (pile cap, each side)	11.85	CY	$ 2,083.76	$ 24,696
Stainless Steel Reinforcing - Substructure (pile cap)	600	LB	$ 16.54	$ 9,923
				$ 206,118

Ten bents @ $206,118 per bent		$ 2,061,184
Mobilization	15%	$ 309,178
MOT	10%	$ 206,118
Contingency	10%	$ 206,118
Construction Cost		$ 2,782,598
Design Estimate		$ 250,000
Total Rehab Cost		$ 3,032,598

Discussion: A "crutch bent" is installed to act as a secound foundation, using transverse beams to support the superstructure. Crutch bents have been successfully installed around District 5. However, there are risks for this location including potential negative impacts to the stream flow due to channel constriction and risks to existing structure (during construction) due to historic structure settlement.

US-1 Southbound over Pellicer Creek
Bridge no. 730008

Rehab: Crutch bents installed at the six intermediate bents to address corroding steel H-piles.

Each Bent:

Description	Quantity	Unit	Unit Cost	Extended Cost
18" Prestressed Concrete Piles (100' each, 6x each bent)	600	LF	$ 172.05	$ 103,230
36" Florida I-Beam (50' each, 2x each bent)	100	LF	$ 668.61	$ 66,861
Plain Neoprene Bearing Pad (22x each bent)	0.92	CF	$ 2,414.06	$ 2,213
Class IV Substructure Concrete (pile cap, each side)	11.85	CY	$ 2,083.76	$ 24,696
Stainless Steel Reinforcing - Substructure (pile cap)	600	LB	$ 16.54	$ 9,923
				$ 206,923

Six intermediate bents @ $206,923 per bent		$ 1,241,539
Mobilization	15%	$ 186,231
MOT	10%	$ 124,154
Contingency	10%	$ 124,154
Construction Cost		$ 1,676,077
Design Estimate		$ 250,000
Total Rehab Cost		$ 1,926,077

Discussion: A "crutch bent" is installed to act as a second foundation, using transverse beams to support the superstructure. Crutch bents have been successfully installed around District 5. However, there are risks for this location including existing abandoned timber piles in the channel (from a previous bridge), potential negative impacts to the stream flow due to channel constriction, and risks to the parallel northbound bridge (bridge no. 730045). The northbound bridge has a history of settlement and driving new concrete piles could further damaging that structure. As such, bridge 730045 would also require crutch bents to provide a more robust foundation before rehabilitation could occur at this structure.