SECTION 106 CONSULTATION CASE STUDY REPORT OF US 17/92 FROM IVY MIST TO AVENUE A PROJECT DEVELOPMENT AND ENVIRONMENTAL STUDY OSCEOLA COUNTY, FLORIDA

FINANCIAL MANAGEMENT NO. 437200-2
SEARCH PROJECT NO. 230037

PREPARED FOR

FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT 5
DELAND, FLORIDA

BY

SEARCH

OCTOBER 2024

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated May 26, 2022, and executed by FHWA and FDOT.

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CONTENTS

The Florida Department of Transportation (FDOT) District 5 is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives to widen US 17/92 from the existing two-lane roadway to a four-lane divided roadway from Ivy Mist Lane to Avenue A, a distance of 3.8 miles, in Osceola County. A prior Corridor Planning Study of US 17/92 from County Road (CR) 54 (Ronald Reagan Parkway) in Polk County to 1,900 feet west of Poinciana Boulevard at Avenue A in Osceola County was completed in 2018. This project traverses through the community of Poinciana, and the unincorporated community of Intercession City. **Figure 1** shows the US 17/92 PD&E Study limits (shown in light green) and previous Corridor Planning Study limits (shown in dark blue), along with the limits of adjacent projects mentioned below.
Two related projects overlap the western end of this PD&E Study:

- The segment of US 17/92 from west of Parker Road in Polk County to Ivy Mist Lane in Osceola County is included in the Central Florida Expressway Authority's (CFX) SR 538/Poinciana Parkway Extension to CR 532 project (CFX Project #538-235), which has design completed and construction beginning in 2028. The SR 538/Poinciana Parkway Extension project will include the widening of US 17/92 within these limits, as well as a proposed diverging diamond interchange with US 17/92 southwest of Ivy Mist Lane as shown in teal (see **Figure 1**).
- Adjacent to the western end of the PD&E Study (shown in dark green) is a CFX project (CFX Project #538-235A) widening CR 532/Osceola Polk Line Road from two to four lanes from Old Lake Wilson Road to US 17/92 (see **Figure 1**). This project has completed design and is anticipated to begin construction in 2026.

One recently completed project abuts the eastern limits of this PD&E Study. FDOT District 5 widened US 17/92 from two to four lanes, with limits from 1,900 feet west of Poinciana Boulevard (Avenue A) to CR 535 (Ham Brown Road) in Kissimmee (FPID: 239714-1), shown in purple (see **Figure 1**).

This Section 106 Case Study Report provides an alternative analysis and effects assessment for proposed improvements along 3.8 miles (mi) (6.1 kilometers [km]) of US 17/92 (US 441/State Road [SR] 600/County Road [CR] 532/Orange Blossom Trail [OBT]) in Osceola County, Florida (**Figure 1**). The purpose of this project is to provide needed capacity through the design year 2045 and improve safety along the corridor. The project is needed to meet future traffic demand, provide satisfactory future traffic operations, improve corridor access management, and improve safety along the corridor. Within the project limits, US 17/92 extends through unincorporated areas of Osceola County and portions of Florida Department of Environmental Protection (FDEP) conservation areas and South Florida Water Management District (SFWMD)–managed conservation lands. Detailed descriptions of the project, including existing conditions, alternatives development, and evaluation are included in **Attachment A.**

In 2021, SEARCH conducted a Phase I Cultural Resource Assessment Survey (CRAS) in support of the PD&E Study, under Financial Management (FM) No. 437200-1. The CRAS evaluated resources in a 5.1 mi (8.2 km) corridor from CR 54 (Ronald Reagan Parkway) in Polk County to 1,900 feet (ft) (579.1 meters [m]) west of Poinciana Boulevard at Avenue A in Osceola County. After the completion of the CRAS, the project length was reduced to a 3.8 mi (6.1 km) corridor from Ivy

Mist Lane to Avenue A and the project was reassigned as FM No. 437200-2. The SHPO concurrence with the CRAS is included in **Attachment B**.

To encompass all potential improvements, the area of potential effects (APE) was defined in the CRAS to include the maximum proposed right-of-way (ROW) and the back or side property lines of parcels adjacent to the ROW for no more than 328 ft (100 m). Additionally, the APE included the proposed pond construction footprints plus a 100 ft (30.5 m) buffer for each. The archaeological survey was conducted within the maximum proposed ROW and proposed pond construction footprints. The architectural history survey was conducted throughout the entire US 17/92 APE for both the corridor and ponds.

The CRAS and subsequent consultation with the State Historic Preservation Officer (SHPO) resulted in the identification of nine historic properties (i.e., cultural resources listed or eligible for listing in the National Register of Historic Places [NRHP]) within the APE. The three bridges that are proposed for replacement are part of a newly identified resource group, the Orange Blossom Trail Bridges (8OS03182). The group is comprised of the following resources: 8OS01747, 8OS01748, and 8OS01749 (FDOT Bridge Nos. 920004, 920003, and 920002, respectively); and a 0.3-mile (mi) (0.48-kilometer [km]) section of US 17/92 (8OS02796), also called Orange Blossom Trail. Each of these historic properties was recommended NRHP-eligible under Criterion C. Furthermore, the segment of the South Florida Railroad (8OS02540) within the APE was recommended to remain NRHP eligible under Criteria A and B, and three newly recorded railroad bridges (8OS03176–8OS03178) within the APE were recommended NRHP-eligible under Criterion A as contributing elements to the South Florida Railroad (8OS02540) linear resource. The SHPO concurred with the findings outlined above on December 9, 2021 (see **Attachment B**). This effects assessment will address project-related effects relative to these nine historic properties.

This study also complies with Public Law 113-287 (Title 54 U.S.C.), which incorporates the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archeological and Historic Preservation Act of 1979, as amended. The study also complies with the regulations for implementing NHPA Section 106, found in 36 CFR, Part 800 (*Protection of Historic Properties*). All review work was performed in accordance with Part 2, Chapter 8, of the Florida Department of Transportation's (FDOT) PD&E Manual, and the Florida Division of Historical Resources' (FDHR) recommendations for such projects, as stipulated in the FDHR's *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 effects assessment is also conducted to comply with Chapter 267 of the Florida Statutes and Rules Chapter 1A-46, Florida Administrative Code.

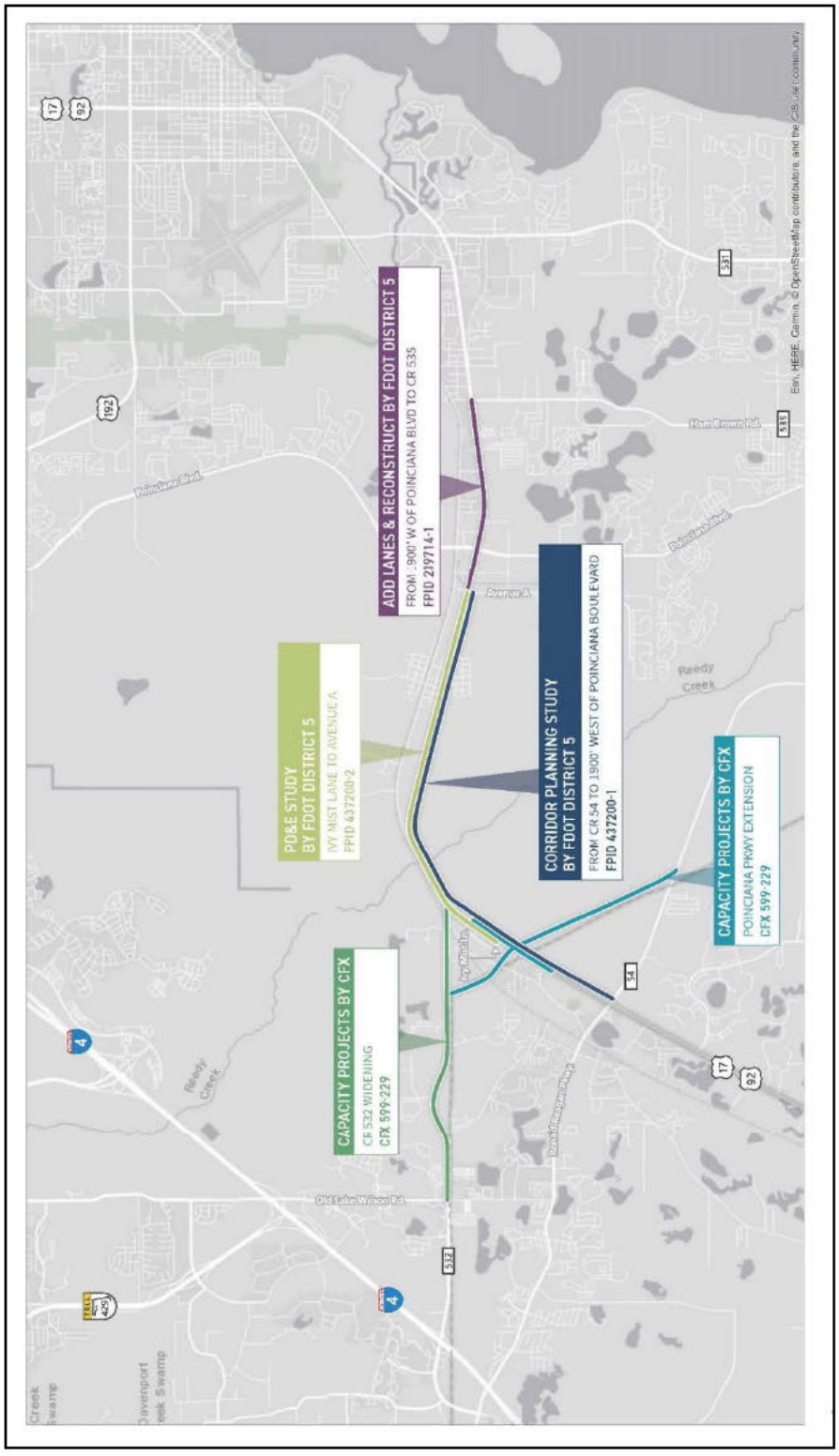

Figure 1. US 17/92 Project Area

PROPOSED UNDERTAKING

Project Description

The project proposes the demolition of the Orange Blossom Trail bridges (8OS03182) to construct a westbound segment of US 17/92 from Ivy Mist Lane to Avenue A. The South Orange Blossom Trail Bridges resource group consists of three contributing bridges and a NHRP-eligible segment of US 17/92. The bridges are recorded in the FMSF as 8OS01747, 8OS01748, and 8OS01749. US 17/92 is recorded in Osceola County as 8OS02796. The new segment would be comprised of a newly constructed second bridge over Reedy Creek and roadway 70 ft (21.3 m) north of the extant US 17/92 Reedy Creek Bridge. After construction of the new westbound segment, the extant US 17/92 bridge would be converted to eastbound traffic only. The proposed westbound US 17/92 Reedy Creek Bridge and roadway would be approximately 53 ft (16 m) wide.

As proposed, the construction of a new bridge to replace the deteriorating Orange Blossom Trail Bridges (8OS03182) avoids impacts to other NRHP-eligible resources including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176–8OS03178), and [redacted] and also avoids further impacts to Fletcher Park to meet the stipulations of the 1999 Florida Department of Environmental Protection (FDEP) / Board of Trustees of Internal Improvement Trust Fund (TIITF) Right of Way (ROW) easement and the 1999 FDEP/TIITF Sovereign Submerged Lands easement. Additionally, impacts to the utility corridor adjacent to the historic US 17/92 bridges would be avoided. The proposed project plans are attached (**Attachment C**).

All historic properties identified in the 2021 CRAS are within the current project limits. No historic properties were removed from this effects assessment due to the shortening of the project limits.

Purpose and Need

The purpose of the project is to provide needed capacity through the design year 2045, and improve safety conditions along the study corridor. The project was originally approved in a National Environmental Policy Act (NEPA) Type 2 Categorical Exclusion (CE) in 1996.

The 1996 CE provided location and design concept acceptance for the phased construction of a new bridge and four-lane widening of US 17/92 from CR 532 to Poinciana Boulevard. The first phase proposed to construct a new two-lane bridge to the south of the historic alignment to carry both eastbound and westbound US 17/92 traffic. This first phase was constructed in 2001. The second phase was the future construction of a two-lane bridge for westbound travel on the historic US 17/92. This would be accomplished by removing and replacing the historic bridges and roadway; however, it would not be undertaken until predicted traffic volumes to support the initiation of Phase 2 were documented.

Recent traffic studies have projected that the corridor will operate below the Level of Service (LOS) "D" starting from the year 2025. Thus, the second phase of the aforementioned project is proposed for implementation. Due to the age of the 1996 environmental determination and that additional capacity is needed, the FDOT is conducting a new NEPA evaluation for FM No. 437200-2 rather than a re-evaluation of the original environmental determination.

NATIONAL REGISTER OF HISTORIC PLACES CONTEXT

Historic properties within the APE were identified in the report entitled Cultural Resources Assessment Survey for US 17/92 from County Road 54 to West of Poinciana Boulevard, Osceola and Polk Counties, Florida (see **Attachment B**).

Historic Resources

There are nine NRHP-eligible historic resources within the APE (**Table 1**; **Figure 2**). The Florida SHPO concurred with the following NHRP evaluations on December 9, 2021.

Table 1. Historic resources within the US 17/92 APE.

Resource Groups			
FMSF No.	**Name**	**Period of Significance**	**SHPO Evaluation**
8OS02540	South Florida Railroad	ca. 1884	Eligible
8OS02796	US 17/92	ca. 1953	Individually ineligible, portion eligible as contributing to 8OS03182
8OS03182	South Orange Blossom Trail Bridges	ca. 1938	Eligible
Bridges			
FMSF No.	**Address/Name**	**Period of Significance/Date**	**SHPO Evaluation**
8OS01747	South Orange Blossom Trail Bridge (FDOT Bridge No. 92004)	ca. 1938	Eligible as contributing to 8OS03182
8OS01748	South Orange Blossom Trail Bridge (FDOT No. 920003)	ca. 1938	Eligible as contributing to 8OS03182
8OS01749	South Orange Blossom Trail Bridge (FDOT No. 920002)	ca. 1938	Eligible as contributing to 8OS03182
8OS03176	CSX Railroad Bridge 1	ca. 1950	Eligible as contributing to 8OS02540
8OS03177	CSX Railroad Bridge 2	ca. 1950	Eligible as contributing to 8OS02540
8OS03178	CSX Railroad Bridge 3	ca. 1950	Eligible as contributing to 8OS02540

Resource Groups

8OS03182, South Orange Blossom Trail Bridges (including 8OS1747–8OS01749); 8OS02796, US 17/92

Resource 8OS03182 (South Orange Blossom Trail Bridges) is a collection of three previously recorded historic bridges (8OS01747–8OS01749) and an abandoned section of historic roadway (US 17/92 8OS02796). The three bridges were originally recorded in 1994 and were

recommended not eligible for inclusion in the NRHP (FAS 1994). The resource groups are eligible for listing in the NRHP under Criterion C for significance in Engineering. Additionally, US 17/92 is eligible for listing in the NHRP under Criterion A for significance in Community Planning & Development. Resources 8OS01747, 8OS01748, and 8OS01749 (FDOT Bridge Nos. 920004, 920003, and 920002, respectively) carry an abandoned section of US 17/92 east-west over Reedy Creek in Section 32 of Township 25 South, Range 28 East, as shown on the 2021 *Intercession City, Fla.* USGS quadrangle map. During the PD&E phase for the previous iteration of the subject project, SEARCH identified that the group of bridges are the only remaining concrete bridges of this type originating from the depression era. While the bridges do not have individual distinction, clusters of this formation are rare.

The ca. 1938 bridges are constructed with cast-in-place concrete decks supported by steel girders on timber pile bents. The following historic properties, 8OS01747, 8OS01748, and 8OS01749, are 175.6 ft (53.5 m), 125.6 ft (38.2 m), and 150.6 ft (45.9 m) in length, respectively. Each of the bridges' edge-to-edge deck width is 26 ft (7.9 m), and the roadway carried by the bridges is 25 ft (7.6 m) wide. There is a post and lintel concrete railing on either side of each bridge. Over time the bridges have been improved, including the addition of W-beam steel guardrails on either side of the roadway attached to each bridge. The bridges' date of construction is stamped on the end posts, and the FDOT bridge numbers are affixed to the railings or end posts. Beyond the stamped 1938 construction dates and bridge numbers, none of the bridges have exceptional distinguishing architectural details or identifying signs. All bridges no longer meet FDOT standards and are well beyond their intended service lives—the timber pile bents are decaying, and the bridges have not been maintained since traffic operations ceased.

The length of the roadway, including the three bridges, is approximately 1,470 ft (447 m), which defines the boundary of the 8OS03182 (Orange Blossom Trail Bridges) resource group. The same delineation serves as the boundary for the contributing portion of the 8OS02796 (US 17/92) resource group. Additional technical and structural information about the bridges and current photographs can be found in the Existing Bridge Conditions Memo produced for FDOT (**Attachment D**).

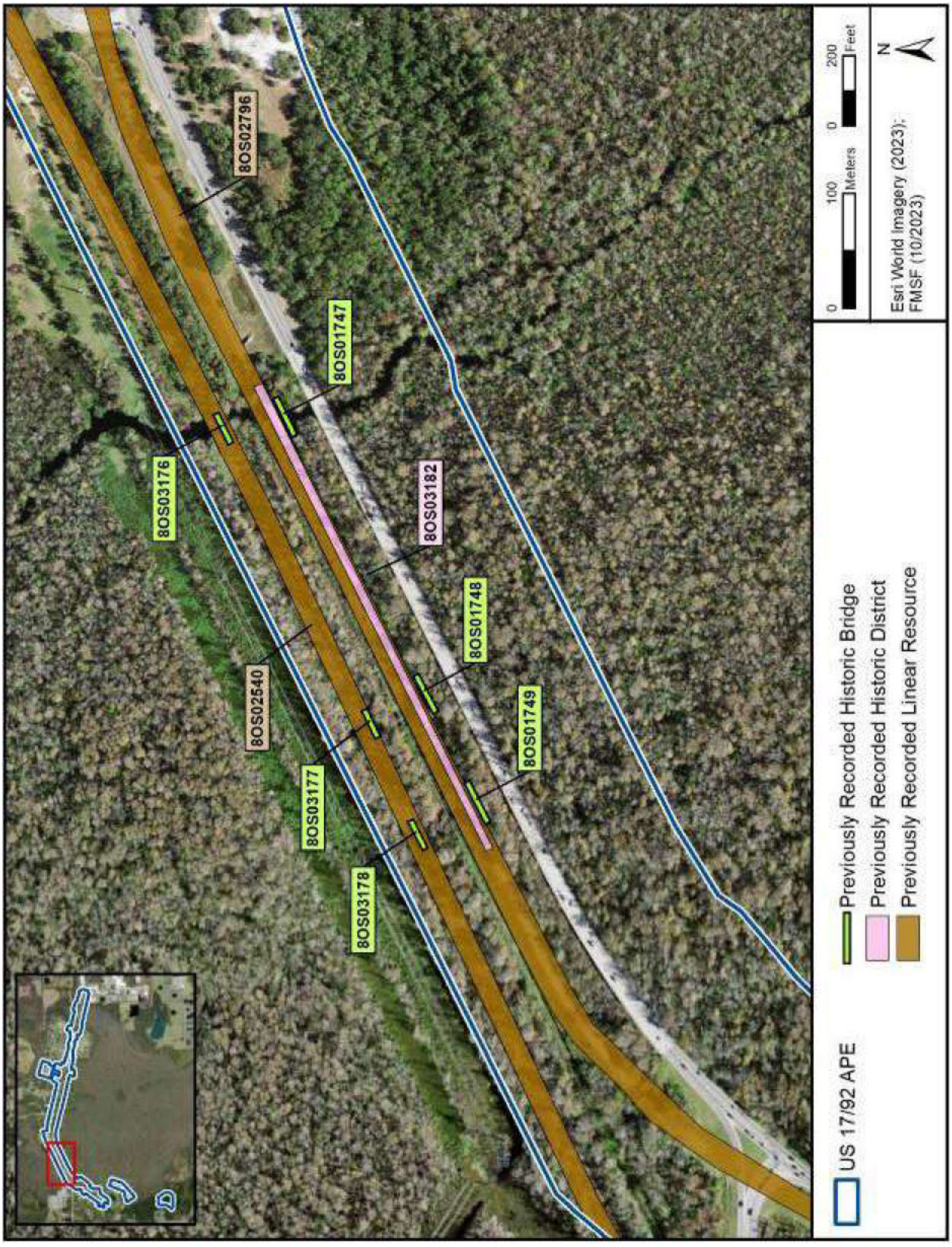

Figure 2. Resources within the APE

8OS02540, South Florida Railroad (including 8OS03176, 8OS03177, and 8OS03178)

The South Florida Railroad (8OS02540) is a previously recorded historic resource within Polk and Osceola Counties. The segment of 8OS02540 within the APE is in Sections 31 and 32 of Township 25 South, Range 28 East, as shown on the 2021 *Intercession City, Fla.* USGS quadrangle map. The South Florida Railroad (8OS02540) travels southwest-northeast for 0.87 mi (1.4 km) through the APE and is carried over water by three bridges (8OS03176, 8OS03177, and 8OS03178). Within the APE, the South Florida Railroad consists of an approximately 30 ft (9 m) wide right-of-way with standard-gauge tracks, timber ties, and gravel ballast flanked by trees and shrubs.

CSX Railroad Bridge 1 (8OS03176) is a four-span, prestressed concrete, tee-beam bridge with a total length of 140 ft (42.67 m). It was constructed ca. 1950 and is part of the CSX railroad network. The bridge is constructed of a concrete deck supported by concrete girders resting atop concrete piers. The deck is approximately 17 ft (5 m) wide, and the railbed is approximately 9 ft (2 m) wide. There is a chain-link fence on either side of the railway attached to the bridge with metal posts. The bridge has no distinguishing details or identifying signs.

CSX Railroad Bridge 2 (8OS03177) is a three-span beam-and-girder bridge with a total length of approximately 61 ft (18 m). It was constructed ca. 1950 by CSX. The bridge is constructed of wood beams supported by wood girders resting atop wood piers. The deck is approximately 17 ft (5 m) wide, and the railbed is approximately 9.0 ft (2.74 m) wide. The bridge has no distinguishing details or identifying signs.

CSX Railroad Bridge 3 (8OS03178) is a four-span beam-and-girder bridge with a total length of approximately 120 ft (36 m). It was constructed ca. 1950 by CSX. The bridge is constructed of wood beams supported by wood girders resting atop wood piers. The deck is approximately 17 ft (5 m) wide, and the railbed is approximately 9 ft (2 m) wide. The bridge has no distinguishing details or identifying signs.

BUILD ALTERNATIVES

The PD&E study evaluates alternatives to meet the project's purpose and need and avoid and minimize environmental impacts. The following alternatives are summarized from the *US 17/92 Section 106-4(f) Engineering Support* document included as **Attachment A**. It is followed by a matrix that summarizes the advantages and disadvantages, in terms of potential impacts, of each alternative.

No Build Alternative

The No-Build Alternative assumes no improvements to the historic US 17/92 resources will be constructed and they will remain in place with no maintenance. The No-Build Alternative assumes US 17/92 will remain as existing (two lanes) within the study limits, which does not address the project's need for additional capacity. Additionally, no maintenance of the historic

US 17/92 resources is programmed (funded) or has occurred since the historic bridges were placed out of service in 2001.

The No Build Alternative carries the scenario of "demolition by neglect," where the historic US 17/92 resources will continue to deteriorate and will eventually collapse into their respective waterways below without costly repair and/or rehabilitation work, a continuous bridge inspection program, and maintenance program. The continued deterioration of the bridge infrastructure may result in impacts to the surrounding wetlands, floodplains, and environment. Providing a No-Build Alternative is anticipated to ultimately result in an adverse effect to the historic US 17/92 bridges due to the continuous deterioration of the bridges.

Rehabilitation

The Rehabilitation Alternative examined the potential to improve the historic US 17/92 resources to a condition that would allow use of the bridges to structurally support the future westbound traffic by providing two travel lanes. This alternative avoids impacts to other NRHP-eligible resources including the South Florida Railroad (8OS02540), the NRHP-eligible CSX Railroad bridges (8OS03176–8OS03178), and [redacted] and avoids the utility corridor just north of the historic bridges, which involves multiple major utilities (electric transmission and distribution, pressurized gas lines, subsurface sewer lines, and buried fiber optic).

The existing cross-section of the three historic bridges and the roadway between the bridges do not meet design standards for the two proposed westbound lanes. Under the Rehabilitation Alternative, the bridges would be widened by 13 ft 8 in at a minimum to meet current FDOT Florida Design Manual criteria for travel lanes and shoulders. This would also require the fill segments in between the bridges to be widened, resulting in additional floodplain impacts and requiring floodplain compensation. Additional timber piles and closer spacing of the timber bents are anticipated to be required, which will increase the obstructions in the waterway.

It is anticipated that the Rehabilitation Alternative would not meet the Secretary of the Interior's Standards for the Treatment of Historic Properties. After rehabilitation, little to none of the historic materials would remain after construction. Due to the needed rehabilitation methods and modifications identified above, the historic bridges would not maintain the characteristics of the surrounding setting (due to increased vertical clearance and removal of fill between bridges). These conditions would result in an adverse effect to historic properties.

Alternative A – Preferred Alternative – Replace the Historic US 17/92 Bridges (Yellow)

Alternative A – (Yellow) (**Figure 3**) is the preferred alternative to meet the project goals. Alternative A proposes to utilize the current US 17/92 bridge structure to accommodate future eastbound traffic (two lanes) and construct a new parallel low-level, fixed-span concrete bridge to accommodate future westbound traffic (two lanes) with a shared-use path along the historic US 17/92 alignment. The new westbound bridge would require the replacement of the historic

US 17/92 bridges and roadway so that it could be constructed at a wider footprint and longer span than the historic bridges to meet current design standards, improve floodplain management, and minimize wetland impacts. The new westbound bridge would maintain a low-level profile similar to the current US 17/92 bridge and increase the vertical clearance by just over one foot to improve the hydraulic bridge opening and flood control.

The purpose of this alternative was to avoid impacts to other NRHP-eligible resources including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176–8OS03178), and [redacted] and avoid further impacts to Fletcher Park, including the cypress trees and other sensitive natural resources, to meet the stipulations of the 1999 FDEP / TIITF ROW easement and the 1999 FDEP/TIITF Sovereign Submerged Lands easement. Additionally, impacts to the utility corridor adjacent to the historic US 17/92 bridges would be avoided. A detailed assessment of effects for the preferred alternative is presented in the Assessment of Effects section of this document.

Alternative B – Widen Current US 17/92 Bridge (Light Blue)

Alternative B (Light Blue) (**Figure 4**) proposes to widen the current US 17/92 bridge structure to accommodate four future travel lanes (two travel lanes eastbound and two travel lanes westbound). The current US 17/92 bridge (FDOT Bridge 920174) is 47 feet wide and only accommodates the two existing travel lanes. To accommodate four lanes and a shared-use path, the existing bridge would be widened to the north and resulting in the bridge being more than 106 feet wide. Alternative B assumes the historic US 17/92 bridges and roadway will remain in place with no maintenance.

The purpose of this alternative was to avoid direct impacts to the historic US 17/92 resources and other NRHP-eligible resources including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176–8OS03178), and [redacted] in addition to avoiding direct impacts to the utility corridor. However, construction activities including pile driving operations and ground disturbance have the potential for indirect effects to the historic US 17/92 resources due to the proximity of the widened bridge to the historic US 17/92 bridges (minimum 43 feet). While specialized construction methods can be employed to minimize risk of indirect impacts to the historic US 17/92 bridges and roadway, the unique setting of large, tall, heavily rooted cypress trees enhances the risk of indirect impacts due to the removal of at least 12 specimen trees for the bridge widening.

Alternative B assumes the historic US 17/92 bridges and roadway will remain in place with no maintenance. It is reasonable to assume the historic bridge structures will continue to deteriorate and eventually collapse, resulting in an adverse effect to the resources due to demolition by neglect. Due to the potential for demolition by neglect, Alternative B is not considered a viable (prudent) alternative and was eliminated from further consideration

Alternative C – New Bridge Between Current US 17/92 and Historic US 17/92 Bridges (Dark Blue)

Alternative C (Dark Blue) (**Figure 5**) proposes to utilize the current US 17/92 bridge structure to accommodate future eastbound traffic (two lanes) and construct a new, separate parallel low-level, fixed-span concrete bridge between the current US 17/92 bridge structure and the historic US 17/92 bridges to accommodate future westbound traffic (two lanes) and a shared-use path. Alternative C assumes the historic US 17/92 bridges and roadway will remain in place with no maintenance.

The purpose of this bifurcated bridge alternative was to reduce costs and avoid direct impacts to the historic US 17/92 resources and other NRHP-eligible resources including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176–8OS03178), and [redacted] Alternative C also avoids impacts with the utility corridor. Because the new westbound bridge would be constructed partially within the historic US 17/92 ROW, Alternative C assumes the historic US 17/92 bridges and roadway would remain in place in areas that are not structurally damaged by the construction of the new bridge. The existing wooden piles that support the historic US 17/92 bridges could be impacted due to the pile driving operations and the removal of the heavily rooted, large cypress trees immediately south of the historic US 17/92 bridges. Although Alternative C would avoid direct impacts to the US 17/92 historic bridges, it is reasonable to assume that any historic bridge structures not damaged during construction will continue to deteriorate and eventually collapse, resulting in an adverse effect to the resources due to demolition by neglect. Due to the potential for demolition by neglect, Alternative C is not considered a viable (prudent) alternative and was eliminated from further consideration.

Alternative D New Bridge between Historic US 17/92 Bridges and CSX Railroad (Pink)

Alternative D (Pink) (**Figure 6**) proposes to utilize the current US 17/92 bridge structure to accommodate future eastbound traffic (two lanes) and construct a new, separate, parallel low-level, fixed-span concrete bridge between the historic US 17/92 bridge structure and the CSX Railroad to accommodate future westbound traffic (two lanes) and a shared-use path. Alternative D assumes the historic US 17/92 bridges and roadway will remain in place with no maintenance.

The purpose of this bifurcated bridge alternative was to avoid direct impacts to the historic US 17/92 resources and avoid involvement with the NRHP-eligible [redacted] and avoid Fletcher Park conservation land to preserve the large cypress trees. However, the US 17/92 bridges would remain in place and continue to deteriorate and eventually collapse, resulting in an adverse effect to the resources due to demolition by neglect. Due to the impacts to railroad operations and cost associated with acquiring CSX ROW, construction, and utility relocates, as well as the continued deterioration of the historic bridge resources, Alternative D is not considered a viable (prudent) alternative and was eliminated from further consideration.

Alternative E – New Bridge south of Current US 17/92 (Orange)

Alternative E (Orange) (**Figure 7**) proposes to utilize the current US 17/92 bridge structure to accommodate future westbound traffic (two lanes) and construct a new, separate parallel low-level, fixed-span concrete bridge south of the current US 17/92 bridge to accommodate future eastbound traffic and a shared-use path. Alternative E assumes the historic US 17/92 bridges and roadway will remain in place with no maintenance.

The purpose of this bifurcated bridge alternative was to avoid direct impacts and adjacent construction to the historic US 17/92 resources and avoid involvement with the NRHP-eligible South Florida Railroad (8OS02540) and the CSX Railroad bridges (8OS03176–8OS03178). However, this results in involvement with the NRHP-eligible [redacted]. Furthermore, the US 17/92 bridges would remain in place and will continue to deteriorate and eventually collapse, resulting in an adverse effect to the resources due to demolition by neglect. Due to the substantial natural environmental impacts associated with Alternative E, impacts to [redacted] and the continued deterioration of the historic bridge resources, Alternative E is not considered a viable (prudent) alternative and was eliminated from further consideration.

ALTERNATIVES ANALYSIS

No alternative avoids adverse effects to the Orange Blossom Trail Bridges (8OS03182) and US 17/92 (8OS02796). This is because rehabilitation of the three roadway bridges that contribute to the Orange Blossom Trail and US 17/92 would be inconsistent with the NPS Standards and Guidelines for the Treatment of Historic Properties; replacement on alignment would require demolition of the three contributing bridges and associated roadway. The replacement off alignment and No-Build alternatives would leave the three bridges in-situ; however, there would be no capital improvement or maintenance to the historic bridges. Therefore, FDOT assumes that the retention of the bridges without a maintenance plan would result in demolition-by-neglect.

An alternative analysis matrix (**Table 2**) presents the criteria used to evaluate the project alternatives in tabular form. Adverse impacts to US 17/92 are unavoidable for all alternatives. The avoidance of potential impacts to additional historic properties and other protected properties were considered when selecting a preferred alternative, which resulted in the least overall impacts to resources while meeting the project's purpose and need.

The preferred alternative for this project is the Alternative A.

Table 2. Matrix of Alternatives Analysis

Evaluation Criteria	No-Build Alternative	Rehabilitation Alternative	Alternative A (Replacement for WB Structure)	Alternative B (Widen Current Bridge)	Alternative C (New Bridge to North)	Alternative D (New Bridge south of CSX)	Alternative E (New Bridge to South)
Purpose & Need							
Accommodates Future Traffic Demand	No	Yes	Yes	Yes	Yes	Yes	Yes
Safety Improved	No	Yes	Yes	Yes	Yes	Yes	Yes
Meets Purpose and Need	No	Yes	Yes	Yes	Yes	Yes	Yes
Proposed Bridge Horizontal Geometry							
Length of Proposed Bridge (feet)	N/A	N/A	2,320	2,275	2,320	2,350	2,290
Width of Proposed Bridge/Widening (feet)	N/A	N/A	53'-8"	47'-10"	53'-8"	53'-8"	53'-8"
Minimum Distance to CSX Bridges (feet)	N/A	N/A	143	219	193	19	334
Minimum Distance from proposed bridge to Historic US 17/92 Bridges (feet)	N/A	N/A	0 (Replacement)	43	18	70	159

Table 2. Matrix of Alternatives Analysis

Evaluation Criteria	No-Build Alternative	Rehabilitation Alternative	Alternative A (Replacement for WB Structure)	Alternative B (Widen Current Bridge)	Alternative C (New Bridge to North)	Alternative D (New Bridge south of CSX)	Alternative E (New Bridge to South)
Proposed Structure Construction Cost (Millions)	N/A	Unknown until Design	$24.0	$28.5	$25.2	$25.5	$24.9
Potential Community Impacts							
Residential Parcels Potentially Impacted	0	0	0	0	0	0	0
Non-Residential Parcels Potentially Impacted	0	0	0	0	0	2	4
Total Number of Parcels Potentially Impacted	0	0	0	0	0	2	4
Potential Relocations	0	0	0	0	0	0	0
TIITF Land Impact Area (acres)	0	0	0	1.6	1.7	0	1.8
ROW Anticipated to be Required (acres)	0	0	0	0[1]	0[1]	4.2	4.9
Potential Environmental Impacts							
Floodplains Impacts	0	Unknown until Design[5]	Enhanced[3]	Negligible[4]	Negligible[4]	Negligible[4]	Negligible[4]
Potential Threatened and Endangered Species Impacts	None	Wood stork	Wood stork	Wood stork	Wood stork	Wood stork	Wood stork
Wetlands Impacts (acres)	0	Unknown until Design	0.8	2.1	2.8	2.6	3.2
Specimen Tree Impacts (Identified Cypress Trees from 2023 Tree Inventory and Impact Report)[2]	0	0	0	12	15	13	6
Direct Historic US 17/92 Bridge Impacts?	No	Yes	Yes	No	No	No	No
Indirect Historic US 17/92 Bridge Impacts?	No	N/A – direct impacts	N/A – direct impacts	Moderate potential due to construction proximity	High potential due to construction proximity	Low	None
Direct Fletcher Park property or TIITF easement Impacts?	No	No – Existing FDOT easement	No – Existing FDOT easement	Yes – New easement required for additional	Yes – New easement required for additional	No – within CSX ROW not Fletcher Park	Yes – New easement required for Cypress Tree

Table 2. Matrix of Alternatives Analysis

Evaluation Criteria	No-Build Alternative	Rehabilitation Alternative	Alternative A (Replacement for WB Structure)	Alternative B (Widen Current Bridge)	Alternative C (New Bridge to North)	Alternative D (New Bridge south of CSX)	Alternative E (New Bridge to South)
				Cypress Tree impacts	Cypress Tree impacts		impacts and increased impact area to Fletcher Park
Utility Corridor Impacts?	No	No	No	No	No	Yes	No
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Direct Historic CSX Railroad Bridge Impacts?	No	No	No	No	No	Yes	No
Avoidance Alternative to NRHP-eligible US 17/92 Historic Bridges?	No – Adverse Effect (deterioration)	No – Direct Effects anticipated	No – Direct Effects anticipated	Not likely – Moderate potential for indirect effects	Not likely – Moderate potential for indirect effects	No – Adverse Effect (deterioration)	No – Adverse Effect (deterioration)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Avoidance Alternative to NRHP-eligible South Florida Railroad?	Yes	Yes	Yes	Yes	Yes	No – Direct impacts	Yes

Table Notes:

1. Easement modification required and approval by FDEP/Tufts University due to additional cypress tree impacts although the land area is within the existing FDEP/TIITF easement.
2. Specimen tree defined as any tree identified in the 2023 Tree Inventory and Impact Report with a breast height diameter of at least 36".
3. The three historic bridges will be removed along with the fill sections between them. One bridge would replace these, reducing the impacts to floodplains.
4. Floodplain impacts caused by pier locations only.
5. Slightly increased floodplain impacts due to raising the roadways.

Because adverse impacts to US 17/92 are unavoidable, FDOT considered the avoidance of potential impacts to additional historic properties and other protected properties when selecting a preferred alternative. The preferred alternative for this project is Alternative A, which will produce the least overall impacts to resources while meeting the project's purpose and need.

ASSESSMENT OF EFFECTS

Criteria of Adverse Effects

To evaluate the project-related effects the recommended alternative poses to historic properties, SEARCH applied the criteria of adverse effects, as described, in part by 36 CFR 800.

Criteria of Adverse Effects:

(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.

Assessment of Effects within the APE

A description of how the construction of the proposed project may potentially affect historic properties in the APE is provided below. Effects to the historic properties were assessed using the aforementioned criteria and evaluated against the historic properties' character and use.

8OS03182, South Orange Blossom Trail Bridges (including 8OS1747–8OS01749)

The construction of the proposed bridge and road would require the demolition of resource 8OS03182 (South Orange Blossom Trail Bridges, including its three contributing bridges, 8OS01747–8OS01749; **Figures 8** and **9**). The removal of the bridges would result in the total loss of the bridge roadway components. Removal of the bridges results in impacts to the features of the bridge so that all seven aspects of integrity are lost. Rehabilitation was considered as a possible measure to minimize harm; however, it was determined that while the bridges could be rehabilitated for transportation use, the action to rehabilitate would not meet the Secretary of the Interior's Standards for the Treatment of Historic Properties.

Under the preferred alternative all aspects of the bridges and resource group in the APE would be lost when the bridges are removed to accommodate new construction, and with there being no meaningful measures to minimize harm, SEARCH recommends the proposed undertaking will ***adversely affect*** NRHP-eligible properties 8OS03182 and 8OS01747–8OS01749.

8OS02796, US 17/92

The construction of the proposed bridge and road would require the removal of a contributing segment of 17/92 (8OS02796), including three bridges and segments of the roadway. The removal of the bridges and roadway section in this segment of 8OS0279 (US 17/92) would impact the character of US 17/92, including its materials and configuration of the segment, in a manner that would diminish integrity of all seven aspects of the resource. A historic segment of the corridor would cease to exist and thus, the ability of US 17/92 to convey its significance in this area would be severely limited. Rehabilitation was considered as a possible measure to minimize harm; however, it was determined that while the bridges could be rehabilitated for transportation use, the action to rehabilitate would not meet the Secretary of the Interior's Standards for the Treatment of Historic Properties.

Under the preferred alternative all aspects of the bridges and resource group in the APE would be lost when the bridges are removed to accommodate new construction, and with there being no meaningful measures to minimize harm, SEARCH recommends the proposed undertaking will ***adversely affect*** the NRHP-eligible property 8OS02796.

Figure 8. Timber Bents showing decay. Source: VHB 2022.

Figure 9. Typical bridge railing that does not meet the Manual for Assessing Safety Hardware (MASH) criteria. Constructing a similar railing to match the design of this historic railing and also meet MASH criteria is not possible. Source: VHB 2022.

8OS02540, South Florida Railroad (including 8OS03176, 8OS03177, and 8OS03178)

The proposed new westbound segment of US 17/92 would be approximately 140 ft (42 m) south of four historic properties: 8OS02540 (South Florida Railroad), 8OS03176, 8OS03177, and 8OS03178 (CSX Railroad Bridges 1, 2, and 3) at its nearest location (**Figures 10** and **11**). No work is proposed within the limits of historic properties 8OS02540, 8OS03176, 8OS03177, and 8OS03178. Although the new US 17/92 bridge and roadway will pose an alteration to the viewshed and will be approximately 27 ft (8 m) wider than the existing bridges (8OS01747–8OS01749), the viewshed will remain consistent with the existing condition in that it will include bridges, roadway, and dense vegetation. Furthermore, the significance and character-defining features of the South Florida Railroad and its associated railroad bridges are expressed in the areas of transportation and commerce, the development of the phosphate mining industry, and as part of the greater rail system within the State of Florida. The proposed project will not diminish these features.

Because none of the proposed improvements will diminish the integrity of 8OS02540 (South Florida Railroad), 8OS03176, 8OS03177, or 8OS03178 (CSX Railroad Bridges 1, 2, and 3), or detract from their ability to display the characteristics that make them eligible for listing in the NRHP, it is the opinion of SEARCH that implementation of the proposed undertaking will have ***no adverse effect*** to these historic properties.

Figure 10. Historic resource, 8OS03176, facing north.

Figure 11. The South Florida Railroad, 8OS03176, facing southwest.

Archaeological Considerations

[redacted]
The site has been determined eligible for listing in the NRHP, but the portion of the site within the APE has been evaluated as not contributing to that eligibility. [redacted] The SHPO concurred with the evaluation that there would be ***no adverse effect*** to the site because the portion of the Beehive Hill (8OS01726) site [redacted] is not contributing to the site's NRHP eligibility (see **Attachment B**).

[redacted] two red ochre fragments were documented during archaeological survey and reburied in the same location [redacted] was not considered to have additional research potential, and the SHPO concurred that it is ineligible for listing in the NRHP and thus does not have a Section 106 finding of effect. However, the site is protected under state and federal regulation [redacted]. Therefore, precautions will be taken to avoid project impacts to this site.

Based on the results of the CRAS, the SHPO considers all identified archaeological resources within the existing and proposed US 17/92 ROW (archaeological APE) not contributing to the

eligibility of known archaeological resources. No additional archaeological work was recommended, but the FDOT, District 5, and Office of Environmental Management (OEM) are continuing consultation with the SHPO, the Bureau of Archaeological Research (BAR), and the consulting Tribal parties pursuant to the requirements of the National Historic Preservation Act (NHPA) concerning the proposed improvements in the vicinity [redacted] This will include the requirement of professional archaeological monitoring during ground-disturbing activities [redacted] Because professional archaeological monitoring will be an obligation listed in the Memorandum of Agreement (MOA), this summary is provided in the Section 106 Case Study.

CONCLUSION

This Section 106 case study report provides a review of the historic properties identified within the US 17/92 project APE, a discussion of their historic context and significance, and an evaluation of the effects the project could have on these historic properties. Based on a review of the proposed PD&E Study concept plans and analysis of all alternative impacts (see **Attachment C**), it is SEARCH's opinion that the construction of the preferred alternative (Alternative A – Replace the Historic US 17/92 Bridges [Yellow]) would result in an ***Adverse Effect*** to historic properties within the APE. A summary of the historic properties and Alternative A-related effects is presented in **Table 3**.

Table 3. Effect Recommendations for Historic Properties within the US 17/92 APE.

Resource Groups			
FMSF No.	**Name**	**Period of Significance**	**Effect Recommendations**
8OS02540	South Florida Railroad	ca. 1884	No adverse effect
8OS02796/ 8PO08622	US 17/92	ca. 1953	Adverse effect
8OS03182	South Orange Blossom Trail Bridges	ca. 1938	Adverse effect
Bridges			
FMSF No.	**Address/Name**	**Period of Significance/Date**	**Effect Recommendations**
8OS01747	South Orange Blossom Trail Bridge (FDOT Bridge No. 92004)	ca. 1938	Adverse effect
8OS01748	South Orange Blossom Trail Bridge (FDOT No. 920003)	ca. 1938	Adverse effect
8OS01749	South Orange Blossom Trail Bridge (FDOT No. 920002)	ca. 1938	Adverse effect
8OS03176	CSX Railroad Bridge 1	ca. 1950	No adverse effect
8OS03177	CSX Railroad Bridge 2	ca. 1950	No adverse effect
8OS03178	CSX Railroad Bridge 3	ca. 1950	No adverse effect

Pending concurrence with the above effects assessment, SEARCH recommends that FDOT continue consultation with the SHPO and OEM to resolve the adverse effects to 8OS01747–8OS01749, 8OS02796/8PO08622, and 8OS03182. Once appropriate mitigation strategies have

been developed, FDOT's commitment to mitigation will be documented in an MOA between FDOT and the SHPO.

REFERENCES CITED

SEARCH

2021 *Cultural Resource Assessment Survey of US 17/92 from County Road 54 to West of Poinciana Boulevard, Osceola and Polk Counties, Florida.* Florida Master Site File Survey Number 28082. On file, Florida Division of Historical Resources, Tallahassee.

US Department of the Interior

1998 *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation*. US Department of the Interior, National Park Service, Cultural Resources. US Government Printing Office, Washington, DC.

Vanasse Hangen Brustlin, Inc. (VHB)

2022 Existing Bridge Conditions Memo. On file, FDOT, District 5, Deland.

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ATTACHMENT A

US 17/92 PROJECT INFORMATION UPDATED BY FDOT

1 Executive Summary

The Florida Department of Transportation (FDOT) District 5 is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives to widen US 17/92 (State Road 600) from the existing two-lane roadway to a four-lane divided roadway from Ivy Mist Lane to Avenue A, a distance of 3.8 miles, in Osceola County. **Figure 1** shows the location map for the project and existing conditions. Within these project limits, US 17/92 extends through unincorporated areas of Osceola County, including the communities of Poinciana and Intercession City and portions of Florida Department of Environmental Protection (FDEP) conservation areas and South Florida Water Management District (SFWMD) managed conservation lands. Current US 17/92 vehicular traffic crosses Reedy Creek utilizing a two-lane bridge that was constructed in 2001 (FDOT Bridge 920174) and spans approximately 2,231-feet long to traverse wetlands associated with the Reedy Creek floodplain.

Prior to the construction of the current US 17/92 bridge (FDOT Bridge 920174), the historic US 17/92 roadway (ca. 1938) crossed Reedy Creek utilizing three historic bridges (FDOT Bridges 920002, 920003, and 920004) on an alignment located just north of, and parallel to, the current bridge easement. Both the historic bridges and the historic US 17/92 elevated roadway section (also called Orange Blossom Trail) connecting the historic bridges, remain in-place and have been abandoned without maintenance since the construction of the US 17/92 alignment in 2001. The length of the historic causeway, including the three bridges, is approximately 1,470-feet and is inaccessible to vehicular traffic.

The environmental determination (Type 2 Categorical Exclusion) that provided location and design concept acceptance for the construction of the current US 17/92 bridge and four-lane widening of US 17/92 from CR 532 to Poinciana Boulevard was approved in 1996. As part of the 1996 environmental determination, two phases for the project were proposed. The first phase proposed to construct a new two-lane bridge to the south of the historic alignment to serve both the eastbound and westbound US 17/92 traffic in the interim condition. This first phase was constructed in 2001. The second phase proposed to construct a future two-lane bridge for westbound travel on the historic US 17/92 alignment by demolishing the historic bridges, when the traffic supported the need for ultimate four-lane widening. This second phase has not been constructed.

Based on recent traffic studies, the study corridor is projected to operate below the Level of Service (LOS) D starting from the year 2025 traffic conditions under the No-Build Alternative. Due to the age of the 1996 environmental determination, the FDOT is conducting a new NEPA evaluation (PD&E Study) to support implementation of the four-lane widening within the study limits rather than a re-evaluation of the original environmental determination.

During the prior 1996 environmental study, the historic US 17/92 bridges were surveyed, recorded, and determined to be ineligible for listing on the National Register of Historic Places (NRHP) based on State Historic Preservation Officer (SHPO) concurrence. SEARCH conducted a Phase I Cultural Resource Assessment Survey (CRAS) in support of the PD&E Study in 2021. As part of the ongoing PD&E Study, the historic US 17/92 bridges were re-evaluated and determined to now be National Register of Historic Places (NRHP)-eligible individually and as contributing elements to an eligible resource group.

The CRAS and subsequent consultation with the SHPO concluded that there are nine historic properties (i.e., cultural resources listed or eligible for listing in the NRHP) within the APE. The US 17/92 project

includes replacing three previously recorded bridges and a section of roadway, which are part of a newly identified resource group identified below. The NRHP-eligible South Orange Blossom Trail Bridges Resource Group (8OS03182) includes the three individually NRHP-eligible historic bridges (8OS01747, 8OS01748, and 8OS01749) and a 0.3-mile NRHP-eligible section of the historic US 17/92 roadway (8OS02796/ 8PO08622) connecting the historic bridges. Each of these historic properties was recommended NRHP-eligible under Criterion C. Furthermore, the segment of the South Florida Railroad (8OS02540) within the APE was recommended to remain NRHP-eligible under Criteria A and B, and three newly recorded railroad bridges (8OS03176–8OS03178) within the APE were recommended NRHP-eligible under Criterion A as contributing elements to the South Florida Railroad (8OS02540) linear resource. The SHPO concurred with the findings outlined above.

The demolition of the historic US 17/92 bridges to accommodate the new westbound two-lane bridge within the historic 100-foot US 17/92 right-of-way (ROW), as originally approved in the 1996 environmental determination, was re-evaluated during this PD&E Study. Six Build Alternatives were developed to consider opportunities for avoidance and minimization of adverse effects to the NRHP-eligible historic resources. The Build Alternatives involved rehabilitation, widening the current US 17/92 bridge (FDOT Bridge 920174) to accommodate the westbound travel lanes, and four alternatives to construct the new westbound structure, either within or outside of the historic US 17/92 alignment. An evaluation of the No-Build Alternative and the six Build Alternatives was performed to compare the alternatives based on purpose and need, engineering considerations and environmental effects.

Based on the evaluation of alternatives, there are no feasible and prudent alternatives that avoid direct impacts to the existing NRHP-eligible resources that did not also cause impacts of an extraordinary magnitude to Fletcher Park and protected cypress trees. Further, based on the evaluation of the existing conditions of the US 17/92 historic roadway (8OS02796/8PO08622) and bridges (8OS01747–8OS01749), the South Orange Blossom Trail Bridges Resource Group (8OS03182) will ultimately suffer indirect adverse effects due to deterioration regardless of which alternative is selected. Based on this analysis, Alternative A which uses the historic US 17/92 alignment that was selected as part of the 1996 environmental document, and avoids impacts of an extraordinary magnitude to the specimen cypress trees in Fletcher Park and avoids all other NRHP-eligible resources within the corridor, is the preferred alternative. Alternative A has the least overall environmental impacts and avoids additional ROW needs, impacts to specimen cypress trees within Fletcher Park, other adjacent NRHP-eligible resources, and the utility corridor. Alternative A addresses FDEP/TIITF easement/deed restrictions, SFWMD commitments, and Osceola County resolutions to protect the cypress trees.

Based on the Section 106 effects assessment of NRHP-eligible resources, FDOT recommends the demolition of the US 17/92 historic bridge resources will constitute an adverse effect to five NRHP-eligible resources including the NRHP-eligible South Orange Blossom Trail Bridges Resource Group (8OS03182), the three individually NRHP-eligible historic bridges (8OS01747–8OS01749), and the 0.3-mile NRHP-eligible section of the historic US 17/92 roadway (8OS02796/8PO08622) located within the boundaries of Resource Group 8OS03182. When referred to as a group, these five NRHP-eligible resources are referred to as the “historic US 17/92 resources” throughout this memorandum.

2 Project Description

The Florida Department of Transportation (FDOT) District 5 is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives to widen US 17/92 (State Road 600) from the existing two-lane roadway to a four-lane divided roadway from Ivy Mist Lane to Avenue A, a distance of 3.8 miles, in Osceola County. The purpose of this project is to provide needed capacity through the design year 2045, enhance regional connectivity, and improve safety conditions along the study corridor. The proposed improvements include the construction of stormwater management and floodplain compensation ponds. **Figure 1** shows the location map for the project and existing conditions.

Within these project limits, US 17/92 extends through unincorporated areas of Osceola County, including the communities of Poinciana and Intercession City and portions of Florida Department of Environmental Protection (FDEP) conservation areas and South Florida Water Management District (SFWMD) managed conservation lands. Reedy Creek, a regulatory floodway, is located within the project limits and consists of the creek channel and adjacent regulated floodplain areas that allow the 100-year floodplain areas surrounding Reedy Creek to be discharged without increasing upstream flood elevations. Current US 17/92 vehicular traffic crosses Reedy Creek utilizing a two-lane bridge that was constructed in 2001 (FDOT Bridge 920174) and spans approximately 2,231-feet long to traverse wetlands associated with the Reedy Creek floodplain.

Prior to the construction of the current US 17/92 bridge (FDOT Bridge 920174), the historic US 17/92 roadway (ca. 1938) crossed Reedy Creek utilizing three historic bridges (FDOT Bridges 920002, 920003, and 920004) on an alignment located just north of, and parallel to, the current bridge easement. Both the historic bridges and the historic US 17/92 roadway section (also called Orange Blossom Trail), remain in-place and have been abandoned without maintenance since the construction of the US 17/92 alignment in 2001. The length of the historic roadway, including the three bridges, is approximately 1,470-feet and is inaccessible to vehicular traffic.

The environmental determination (Type 2 Categorical Exclusion) that provided location and design concept acceptance for the construction of the current US 17/92 bridge and four-lane widening of US 17/92 from CR 532 to Poinciana Boulevard was approved in 1996. As part of the 1996 environmental determination, two phases for the project were proposed. The first phase proposed to construct a new two-lane bridge to the south of the historic alignment to serve both the eastbound and westbound US 17/92 traffic in the interim condition. This first phase was constructed in 2001. The second phase proposed to construct a future two-lane bridge for westbound travel on the historic US 17/92 alignment by demolishing the historic bridges, when the traffic supported the need for ultimate four-lane widening. This second phase has not been constructed.

Based on recent traffic studies, the study corridor is projected to operate below the Level of Service (LOS) D starting from the year 2025 traffic conditions under the No-Build Alternative. Due to the age of the 1996 environmental determination, the FDOT is conducting a new NEPA evaluation (PD&E Study) to support implementation of the four-lane widening within the study limits rather than a re-evaluation of the original environmental determination.

3 Existing Conditions

Within the limits of the current and historic US 17/92 bridges over Reedy Creek, key environmental and engineering resources were considered in alternatives development to evaluate alternatives that meet the purpose and need for the project and result in the least overall harm to the Section 106/Section 4(f) cultural resources. Sensitive environmental features and engineering constraints include cultural, natural, sociocultural, and physical environment resources. **Figure 1** illustrates these existing features and provides an overview of the study area.

3.1 Cultural Resources

3.1.1 Historic US 17/92 Roadway and Bridges

Prior to the construction of the current US 17/92 bridge (FDOT Bridge 920174), the historic US 17/92 roadway (ca. 1938) crossed Reedy Creek utilizing three historic bridges (FDOT Bridges 920002, 920003, and 920004) on an alignment located just north of, and parallel to, the current bridge easement. Both the historic bridges and the historic US 17/92 elevated roadway section (also called Orange Blossom Trail) connecting the historic bridges, remain in-place and have been abandoned without maintenance since the construction of the current US 17/92 alignment in 2001. The three historic US 17/92 bridges (FDOT Bridges 920002, 920003, and 920004; numbered from west to east; respectively 8OS01749, 8OS01748, and 8OS01747) along the historic US 17/92 alignment over Reedy Creek are located approximately 92 feet north of the current US 17/92 bridge. The length of the historic US 17/92 causeway section, including the three historic bridges, is approximately 1,470-feet is inaccessible to vehicular traffic.

Historic US 17/92 Roadway
Source: Field Review (October 12, 2023)

According to the Cultural Resource Assessment Survey (CRAS), these three historic US 17/92 bridges and the abandoned section of historic US 17/92 roadway (8OS02796/8PO08622) are jointly considered NRHP-eligible (South Orange Blossom Trail Bridges Resource Group (8OS03182)) due to their proximity to each other, and their collective significant and distinguishable engineering distinction as 1930s depression-era, unadorned concrete bridges. Additionally, the three bridges have not been moved or relocated since construction, and the setting surrounding the bridges has remained relatively intact besides the addition of the utility corridor further described in Section 3.3.3.

The historic bridges (Resources 8OS01747-8OS01749) are recommended eligible for listing in the NRHP as contributing to the South Orange Blossom Trail Bridges Resource Group (8OS03182). Although the entirety of the historic US 17/92 roadway (8OS02796/8PO08622) within the APE is recommended individually ineligible for the NRHP, a 0.30-mile segment of the roadway within the boundaries of the South Orange Blossom Trail Bridges Resource Group (8OS03182) is also recommended NRHP-eligible as a contributing resource to the South Orange Blossom Trail Bridges Resource Group (8OS03182).

3.1.2 Beehive Hill

The Beehive Hill archaeological site (8OS0726) [redacted] This site has been determined eligible for listing in the NRHP, but the portion of the site within the current US 17/92 [redacted] APE has been evaluated as not contributing to that eligibility. [redacted]

3.1.3 South Florida Railroad and CSX Railroad Bridges

The South Florida Railroad (8OS02540) is an NRHP-eligible linear resource located in Polk and Osceola Counties and is currently owned and maintained by CSX Transportation, Inc. The railroad transverses through the study area and crosses over the three NRHP-eligible CSX Railroad bridges (8OS03176, 8OS03176, and 8OS03178; numbered from east to west) located over the Reedy Creek floodplain. These bridges are located approximately 165 feet north of the historic US 17/92 bridges and within the 100-foot CSX ROW.

CSX Railroad Bridge, Resource 8OS03176
Source: Cultural Resource Assessment Survey (October 2021)

3.2 Natural Environment

3.2.1 Specimen Cypress Trees

Within the area of the current and historic US 17/92 bridges and the surrounding conservation land referred to as Fletcher Park, there are 37 large cypress trees located within the Reedy Creek floodplain. Cypress trees provide critical functions and values to Reedy Creek, wildlife species, and overall environmental quality. Fletcher Park was conveyed to the State of Florida with the deed stipulation that the extremely large cypress trees located throughout the conservation land shall be preserved in perpetuity. As of December 2023, the cypress trees still remain throughout the Fletcher Park conservation land surrounding both the

Specimen Cypress Tree
Source: Field Review (October 12, 2023)

historic and current bridge. Eleven cypress trees were previously removed for construction of the current US 17/92 bridge and the FDOT ROW was acquired through a perpetual ROW easement, and the associated Modification of Deed Restrictions provided by Tufts College, the original grantor. The Modification of Deed Restrictions further stipulated no other cypress trees could be impacted. Any removal of additional cypress trees would require FDEP approval and a supplemental Modification of Deed Restrictions and approval from Tufts College. See **Figure 1**, referenced previously, for the location of the historic US 17/92 resources in relationship to Fletcher Park.

In August 2023, a Tree Inventory and Impact Report was completed within the study area between and surrounding both the current US 17/92 bridge and historic US 17/92 bridges to further evaluate natural resources, specifically the presence of the protected cypress trees and existing land use quality. Based on the 2023 Tree Inventory, 24 cypress trees have a breast height diameter between 36”-48”, six trees have a breast height diameter between 48”-60”, and seven trees have a breast height diameter of at least 60”.

These specimen cypress trees are also extremely important to the community, and the Osceola Board of County Commissioners adopted a resolution on April 11, 1994, opposing removal of any further cypress trees in Fletcher Park. Osceola County adopted a second resolution on December 18, 2023, to demonstrated continued support of preserving the cypress trees surrounding Reedy Creek within Fletcher Park. As part of this resolution, Osceola County indicated that any roadway alignment that encroaches further into Fletcher Park would have an extraordinary negative impact on the cypress trees and the protection of the cypress trees constitutes an overriding public interest.

3.2.2 Reedy Creek Ecosystem

Reedy Creek, a regulatory floodway, flows north to south into Lake Russell and is one of the northernmost water sources for the greater Everglades. Within the study area, the Reedy Creek ecosystem is primarily composed of wetlands and includes multiple sensitive natural environment resources including the regulatory floodway, conservation lands, and the floodplain the existing and proposed bridge structures traverse. The wetlands within the Reedy Creek floodplain have a high ecological value for fish and wildlife, providing habitat for reptiles, amphibians, and various mammals.

Reedy Creek consists of a creek channel and adjacent regulated floodplain areas. These floodplains are beneficial for wildlife by creating a variety of habitats for fish and other animals. In addition, floodplains are important because of storage and conveyance, protection of water quality, and recharge of groundwater. Reedy Creek is located within the Biscayne Sole Source Aquifer and Recharge Zones, which is the principal source of water for most of south Florida.

The overall wetland quality was assessed based on field investigations conducted in July 2023. South of the current US 17/92 bridge within Fletcher Park, the native wetland habitat quality was the highest of the study area. Illegal dumping of household waste was substantial to the south of the bridge and lighting along the bridge can negatively impact wildlife habitat. However, hydrology and vegetation were optimal. This area contained deeper water wetlands associated with Reedy Creek with less groundcover species and sparser tree cover which is expected in deeper water communities.

The lowest quality area of native wetland habitat was in the area between the historic and current US 17/92 bridges. This area had significant dumping and disturbance from the adjacent road corridors, with slightly higher occurrence of invasive species and lower hydrologic functions given the limited water crossings which have altered flow patterns along the historic US 17/92 bridge sections.

The quality of the native wetland habitat in the area north of the utility easement and south of the CSX Railroad was identified as moderate to high. Although the area is adjacent to the CSX Railroad and historic US 17/92 bridges, there was minimal dumping in this system and hydrology was mostly optimal. Some trimming impacts to large trees have occurred through utility maintenance for electrical transmission line clearance. However, the tree species composition within this system was optimal.

As previously mentioned, there are a substantial amount of large cypress trees within Reedy Creek that provide habitat to numerous species. These large trees provide critical functions and values to Reedy Creek, wildlife species, and overall environmental health.

3.3 Sociocultural Environment

3.3.1 Fletcher Park

Fletcher Park refers to a FDEP managed conservation land (cypress preserve) held in title by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (TIITF). The TIITF land is generally located south of the CSX ROW and east of the intersection between US 17/92 and CR 532 (**Figure 1**). This approximately 40-acre conservation area along Reedy Creek was originally purchased and owned by Austin B. Fletcher (1852-1923) as part of his Florida estate. After Fletcher passed away, this property was transferred to Tuft College as the beneficiary to the Fletcher estate.

Fletcher Park Cypress Trees
Source: October 2023 Photograph

In 1935, the Board of Trustees of Tufts College in Massachusetts donated the conservation land to the State of Florida with the deed restriction that it was conveyed "*for the purpose and on condition that the said land shall be forever used for park purposes and that the large cypress trees thereon shall be preserved as a heritage to future generations*." The deed restrictions require that no cypress trees be destroyed. The land became known as Fletcher Park and is managed by FDEP as conservation. Fletcher Park is not accessible to the public and no designated recreation occurs within the property boundaries. In 1935, FDOT acquired ROW from Tufts College and FDEP through Fletcher Park to facilitate construction of the historic US 17/92 bridges within 100 feet of ROW, adjacent to, and south of the CSX ROW, with the stipulation that the remaining large cypress be perpetually protected for future generations. As part of this agreement, two or more durable markers (the monument shown below) were to be placed on site to inform the public that Fletcher Park was donated by Tufts College to preserve the cypress trees for future generations.

In 1999, FDEP authorized a perpetual ROW easement on the TIITF land to FDOT for construction of the current US 17/92 alignment. The easement and the associated Modification of Deed Restrictions provided by Tufts College, the original grantor, limited the number of cypress trees that could be destroyed and further stipulated no other cypress trees could be impacted. The 1999 FDEP easement (3.958 acres) extended across a portion of Fletcher Park to construct the current US 17/92 bridge (FDOT project 92010-3520). The easement extends from the previous ROW line, located 50 feet south of the centerline of the historic US 17/92 bridges, to the southernmost ROW line for the US 17/92 current alignment. The distance between the historic bridge ROW and the centerline of current US 17/92 is approximately 81.2 feet based on FDOT ROW maps. As part of the easement, Tufts University executed a Modification of Restrictions on

the deed to allow for the removal of eleven identified cypress trees to facilitate construction. The executed Modification indicated that the original deed restrictions outside the easement were to remain unchanged. Within the easement executed in April 1999 (Easement Number 30211), an Automatic Reversion clause was included, which states that the easement is subject to automatic termination and reversion to the FDEP when, "in the opinion of Grantor, this easement is not used for the purposes outlined."

The 1994 Categorical Exclusion for SR 600 (US 17/92) from CR 532 to Poinciana Boulevard and the 1996 Preliminary Engineering Report document the future four-lane widening of US 17/92. The preferred typical section that was environmentally cleared in 1994 included replacement of the historic US 17/92 bridges (determined NRHP-ineligible at that time on December 9, 1994) and construction of two separate bridge structures (to support a future 4-laning) over the Reedy Creek floodplain separated by a 100-feet median to minimize impacts to cypress trees. Per the Project Commitments section of the 1996 PER, the existing cypress trees located between the historic US 17/92 bridges and the current US 17/92 bridge (proposed at that time) were to be preserved to satisfy the original deed restrictions, FDEP input, a resolution by Osceola County to protect the cypress trees and based on local and environmental stakeholder input. During subsequent coordination with Tufts University and FDEP, the Modification of Restrictions only approved the removal of cypress trees within the current US 17/92 alignment, and not any cypress trees either to the north or south of the historic bridge and outside the current US 17/92 alignment.

During the 1996 PD&E Study, the monument placed on Fletcher Park in 1935 was determined NRHP-ineligible. As part of the commitments in the 1994 Categorical Exclusion, FDOT was required to relocate the Fletcher Park Monument prior to construction to avoid impacts. This monument was relocated to the Osceola County Welcome Center and History Museum.

Fletcher Park was evaluated for Section 4(f) applicability during the 1996 PD&E Study by FHWA and it was determined that Fletcher Park was not considered a Section 4(f) resource because Fletcher Park has never been managed or utilized as a park and is not listed as a recreational area in the local comprehensive plan. Further, there are no recreational facilities on the property, and it is not used, or accessible, by the public. The purpose of the land donation and designation as a park was to preserve the large cypress trees as a heritage to future generations.

3.3.2 Community Perspective

During the 1996 PD&E Study, collaboration with multiple environmental stakeholders including FDEP, SFWMD, USFWS, FWC, Osceola County, environmental groups, and local citizens was conducted to review alternatives for a new US 17/92 bridge over Reedy Creek. During this collaboration, the primary issue for the bridge location and length was protecting the area's large cypress trees. Osceola County passed a resolution on April 18, 1994, in support of the stipulations in the transfer of Fletcher Park to FDEP, that states the remaining large cypress trees be perpetually protected for further generations. During the public hearing for the 1996 PD&E Study, the majority of the letters, petitions, and voiced concerns were about saving the large cypress trees in the Reedy Creek Area. The preferred alternative identified for the 1996 PD&E Study, ultimate four-lane widening within the historic bridge ROW and demolition of the historic bridges, was identified by agencies and stakeholders as the only "buildable solution".

During the Alternatives Public meeting on October 21, 2021, for the current PD&E Study, a bridge alternative that removed the historic US 17/92 bridges and replaced with a new westbound bridge similar alignment to the 1996 PD&E preferred alternative was shown at the meeting and received no opposition

from the public or local agencies. Osceola County adopted a resolution on December 18, 2023 to show continued support of protecting the cypress trees surrounding Reedy Creek within Fletcher Park.

3.4 Physical Resources

3.4.1 Utility Corridors

A 30-foot-wide utility corridor serving multiple utilities (shown in pink on **Figure 1**, referenced previously) exists between the historic US 17/92 bridges and CSX Railroad. This utility corridor contains significant utility infrastructure including a 69kV Transmission and a 12.47 KV distribution power line owned by Duke Energy, a 20" high pressure natural gas line owned by Kissimmee Utility Authority, a 30" raw water line owned by Toho Water Authority, and a buried fiber optic line owned by CenturyLink. In addition to these four utility lines located within the utility corridor, there is an 8" coated steel gas line owned by TECO Peoples Gas located between the utility corridor and historic US 17/92 alignment.

Utility corridor north of historic US 17/92 bridges
Source: Field Review (April 25, 2022)

Additionally, immediately north of the CSX Railroad is a second utility corridor (shown in peach on **Figure 1**, referenced previously), approximately 100 feet in width. The utility corridor is Sovereign Submerged Lands Easement No. 30565 for the Kissimmee Utility Authority, and was established on November 22nd, 1999 for the construction and operation of an aerial 230 KV electrical transmission line on towers. This utility corridor is located over 200 feet north of the historic US 17/92 bridges.

Finally, a third utility corridor exists north of the Kissimmee Utility Authority utility corridor (shown in blue on **Figure 1**, referenced previously). This 50-foot utility corridor is a Sovereign Submerged Lands Easement No. 41757 created on February 8th, 2016, for Sabal Trail Transmission, LLC. In the existing condition, this utility corridor contains a 36" high pressure natural gas pipeline owned by Sabal Trail Transmission, LLC. This utility corridor is located over 400 feet north of the historic US 17/92 bridges.

3.5 Engineering Existing Conditions

3.5.1 Historic US 17/92 Bridges (1938)

Three historic US 17/92 bridges over Reedy Creek (bridges No. 920002, 920003, and 920004) located approximately 410 feet east of CR 532 (Osceola Polk Line Road) were constructed in 1938 and were left-in-place after traffic was removed in 2001. These historic bridges run parallel to the CSX Railroad that is approximately 165 feet to the north. In the existing condition, the bridges are abandoned, and have been abandoned without maintenance since the construction of the current US 17/92 alignment in 2001.

Historic US 17/92 Bridge 920004
Source: Field Review (April 25, 2022)

Bridge 920002 is a 6-span structure that provided for two 12-foot traffic lanes, two 1-foot shoulders for a clear bridge width of 26 feet, and a 150.5-foot bridge length. The span length for this bridge is 25 feet, except for the end spans that are 24.75 feet long.

Bridge 920003 is a 5-span structure that provided for two 12-foot traffic lanes, two 1-foot shoulders for a clear bridge width of 26 feet, and a 125.5-foot bridge length. The span length for this bridge is 25 feet, except for the end spans that are 24.75 feet long.

Bridge 920004 is a 7-span structure that provided for two 12-foot traffic lanes, two 1-foot shoulders for a clear bridge width of 26 feet, and a 175.5-foot bridge length. The span length for this bridge is 25 feet, except for the end spans that are 24.75 feet long.

The bridges' superstructure consists of concrete deck slabs supported on six steel 21WF @ 59# girders. Timber pile bents are used for the substructure.

The existing (2023) condition of the historic bridges is very poor. The bridge substructures (timber bent caps and timber piles) are heavily deteriorated and the concrete backwall is failing in multiple locations. Heavy corrosion was identified on the steel girders (superstructure) supporting the bridges. Sections of the bridge railing are missing, and most are damaged. FDOT has determined normal maintenance will not address the structural damage, and extensive rehabilitation would be required to address safety issues and current design standards. Without rehabilitation or replacement, continued deterioration of the historic bridges is expected. Ongoing deterioration increases in likelihood with each passing year. It is also reasonably foreseeable that the bridge structures will eventually collapse into their respective waterways and floodplain areas below.

3.5.2 Current US 17/92 Bridge (2001)

South of the three historic US 17/92 bridges is the current US 17/92 bridge built in 2001 (FDOT Bridge 920174), which serves the current US 17/92 eastbound and westbound traffic, with one lane in each direction. According to the latest available inspection from the Florida National Bridge Inventory (NBI), dated July 2019, the bridge was evaluated to be in good condition for the deck, superstructure, and substructure. No value was provided by the NBI for minimum vertical clearance. The bridge is 2,231.3 feet long and consists of 30 spans.

Current US 17/92 Bridge
Source: Google Maps Streetview (November 2022)

The typical section for the bridge varies at the beginning of the bridge, but generally provides for two approximately 12-foot-wide traffic lanes, two approximately 10-foot-wide shoulders. Spans 1 and 2 accommodate an additional traffic lane and have a total bridge width of approximately 58.2 feet. Spans 3 and 4 transition in width between the two widths described previously. The west end of the bridge starts on a horizontal curve, with the rest of the bridge located on a tangent section of US 17/92.

The bridge sufficiency rating is derived by evaluating factors indicative of the structure's ability to remain in service. A rating of 100 percent would represent an entirely sufficient bridge, and a rating of zero percent would represent an entirely deficient bridge. FDOT standards indicate that structures with a sufficiency rating of 80 percent or less require some form of rehabilitation, and those with a rating less than 60 percent require replacement. The latest above water bridge inspection is dated 7/16/2019, and the latest underwater inspection was performed on 7/16/2019. The bridge inspection reports indicate the bridge is in good condition with a sufficiency rating of 79 and a health index of 93.31. The NBI condition rating is 7 for all the bridge elements, indicating the bridge is above the minimum criteria.

The existing load rating was performed in 2001 using the Load Factor Rating (LFR) method. The Minimum Inventory Rating Factor calculated is 1.279, and the Minimum Operating Rating is 2.048.

3.5.3 Bridge Hydraulics

The Reedy Creek regulatory floodway involves regulated floodplain areas that allow the 100-year floodplain areas surrounding Reedy Creek to be discharged without increasing upstream flood elevations. The current US 17/92 bridge, historic US 17/92 bridges, and CSX Railroad bridges traverse wetlands associated with the Reedy Creek floodplain. This floodplain is designated Zone A and defined as having no base flood elevation, and Zone AE, defined as having a base flood elevation determined. The base flood elevation for this project corridor is elevation 67.0 feet.

The historic US 17/92 bridges cross the Reedy Creek floodway. The floodway is located underneath historic US 17/92 bridge 920004 and widens to approximately 70 feet in width located near the main Reedy Creek channel. The historic US 17/92 bridges are channelized at three locations that line up from north to south with the location of the CSX bridges and allow Reedy Creek to flow. Additionally, if the historic bridges were to fail and fall into the water, the collapsed bridges could pose a serious impact by

further restricting the flow between the bridges and increasing flooding issues already identified within the adjacent Intercession City.

The three historic US 17/92 bridges span the Reedy Creek area and are connected by roadway sections raised by fill through the floodplain. The current US 17/92 bridge spans the entire Reedy Creek floodplain. The commitments in the PER from the 1996 PD&E Study state that when the corridor is widened to four lanes and the three historic US 17/92 bridges are removed, the fill between the historic bridges would be removed, and a single bridge was to be constructed to provide the westbound bridge. The current US 17/92 bridge which currently supports two-way traffic was proposed as the ultimate eastbound bridge.

The SFWMD permit also includes a commitment for future four-lane widening along the historic US 17/92 alignment and the demolition of the historic bridges and embankments to remove floodplain encroachment. The removal of this fill (embankment) along with a single westbound bridge across the Reedy Creek floodplain is included in the SFWMD permit (Permit #49-00025-D) approved for the current US 17/92 bridge.

3.5.4 Right of Way

As discussed in Section 3.3.1, the historic US 17/92 bridges are within FDOT ROW. The historic US 17/92 alignment is within a 100 feet ROW corridor, adjacent to, and south of the CSX ROW. The current US 17/92 bridge is within the FDEP/TIITF perpetual easement that extends from the historic 100-foot ROW corridor to the southernmost ROW line for the current US 17/92 alignment. The distance between the historic bridge ROW and the centerline of the current US 17/92 bridge is approximately 81 feet based on FDOT ROW maps. Therefore, the distance between the centerline of the current US 17/92 bridge and the historic bridge ROW is approximately 31 feet. The total ROW width of the current US 17/92 alignment is approximately 214 feet.

A Sovereign Submerged Lands Easement (known as parcel 801 as identified in the FDOT ROW maps from FDOT Project 92010-2520), was also approved by FDEP/TIITF in 1999 that allows FDOT use of the Fletcher Park property, inclusive of the entire area between the historic US 17/92 ROW and the perpetual easement for the current US 17/92 bridge. This easement is subject to the terms of the South Florida Water Management District Permit No. 49-0025-D for construction of the current US 17/92 bridge.

3.5.5 Geotechnical

A Preliminary Soil Survey Report was conducted adjacent to the historic bridges which included four borings to approximately 175 feet below existing grades. The report shows varying limestone depths between 70 and 140 feet with one of borings finding very loose soils between 70 and 115 feet deep. Due to the variability of the limestone depth and the depth of the loose soils, steel piles for the new bridge may be more suitable due to the ability to splice piles.

Due to the loose soils and heavily rooted large cypress trees immediately to the south of the historic US 17/92 bridges, any construction activity adjacent to the historic bridges may impact the substructure of the deteriorating, historic bridges during pile driving operation due to vibration and settlement.

3.5.6 Maintenance

Since the historic bridges were abandoned in 2001, no maintenance has been conducted and there is no plan or funding to continue maintaining these bridges in the future. The bridges are currently deteriorating and some of the railing is breaking off and falling into Reedy Creek. Due to the lack of maintenance on these bridges, FDOT closed access to the historic bridges. Currently, on the west side of the bridges there is a concrete barrier across the road with a no trespassing sign adjacent to it. On the east side of the bridges, there is a chain link fence with a locked gate across the road and a no trespassing sign on the gate. Utility companies may use this gate to access their facilities adjacent to the historic US 17/92 bridges.

Missing Railing on Historic US 17/92 Bridge
Source: Field Review (April 25, 2022)

4 Alternatives Development

Alternatives were developed to address the project purpose and need and provide additional capacity for the design year 2045. The traffic studies conducted for the PD&E Study indicate four lanes are needed throughout the project. Therefore, alternatives were considered that provide four lane capacity on the bridges (two lanes per direction). The development and analysis of the alternatives included the No-Build Alternative and six Build Alternatives for the historic US 17/92 resources (including the Rehabilitation, Avoidance, and Replacement Alternatives). The following provides a summary of the alternatives development process, alternatives considered, and a description of each alternative. **Figures 2 through 6** illustrate the Build Alternatives and **Figure 7** provides a graphical depiction of the alternatives in comparison to each other. A comprehensive evaluation of the alternatives is included in Section 5.0.

The development of alternatives considered avoidance of the historic US 17/92 resources and other NRHP-eligible resources [redacted] These additional NRHP-eligible resources include the South Florida Railroad (8OS02540) and the three NRHP-eligible CSX Railroad bridges (8OS03176-8OS03178) located north of the historic US 17/92 ROW, [redacted]

In addition to the NRHP-eligible cultural resources, alternatives development considered the sensitive environmental resources located immediately adjacent to both the historic US 17/92 and current US 17/92 bridges. Sensitive natural resources include conservation lands and the regulatory floodway, floodplain and wetlands the existing and proposed bridge structures traverse.

Alternatives development also required consideration of existing legal obligations related to previously granted easements and permits, as well as local government resolutions. The construction of the current US 17/92 alignment required a ROW easement from the FDEP-managed conservation land, known as Fletcher Park and held in title by TIITF. See **Figure 1**, referenced previously, for the location of the historic US 17/92 bridges in relationship to Fletcher Park. Although Fletcher Park is not accessible to the public and no designated recreation occurs within the property boundaries, the property was originally conveyed to the State of Florida with the deed stipulation that the land be permanently maintained for park purposes and the large cypress trees located throughout the conservation land shall be preserved in perpetuity (i.e., cypress preserve).

These specimen cypress trees are also extremely important to the community, and the Osceola Board of County Commissioners adopted a resolution on April 11, 1994, opposing removal of any further cypress trees in Fletcher Park. The Osceola County resolution requested FDOT "*minimize the removal of, and damage to, ancient cypress trees located in and around Fletcher State Park,*". Based on recent study coordination with Osceola County, the County indicated opposition to removal of any additional cypress trees and the Osceola County reaffirmed opposing any alignment that further impacts the cypress trees (outside the existing FDOT ROW and easements) in a second resolution in December 2023. Osceola County has indicated any removal of cypress trees preserved within Fletcher Park would likely result in substantial public controversy.

Additionally, removal of additional cypress trees would require FDEP approval and a supplemental Modification of Deed Restrictions and approval from Tufts College. A Sovereign Submerged Lands Easement was also approved by FDEP/TIITF in 1999 that allows FDOT use of the Fletcher Park property, inclusive of the entire area between the historic US 17/92 ROW and the perpetual easement for the current US 17/92 bridge. This easement is subject to the terms of the South Florida Water Management

District (SFWMD) Permit No. 49-0025-D for construction of the current US 17/92 bridge. The SFWMD permit also includes a commitment for future four-lane widening along the historic US 17/92 alignment and the demolition of the historic bridges and embankments to remove floodplain encroachment.

4.1 No-Build Alternative

The No-Build Alternative assumes no improvements to the historic US 17/92 resources will be constructed and they will remain in place with no maintenance. The No-Build Alternative assumes US 17/92 will remain as existing (two lanes) within the study limits, which does not address the project's need for additional capacity. Additionally, no maintenance of the historic US 17/92 resources is programmed (funded) or has occurred since the historic bridges were placed out of service in 2001.

As the historic US 17/92 resources were originally constructed in 1938, the structures are nearly 85 years old and are beyond their reasonable service life. Prior to removing the historic bridges from service, FDOT documented in the *1996 Preliminary Engineering Report* that the bridges were structurally deficient and functionally obsolete. At that time, safety concerns included decaying timber piles and bend caps, cracking concrete deck and damaged bridge rails.

The existing (2023) condition of the historic US 17/92 resources is very poor. The bridge substructures (timber bent caps and timber piles) are heavily deteriorated and the concrete backwall is failing in multiple locations. Heavy corrosion was identified on the steel girders (superstructure) supporting the bridge. Sections of the bridge railing are missing, and most are damaged. FDOT has determined normal maintenance will not address the structural damage and extensive rehabilitation (see Rehabilitation Alternative) would be required to address safety issues and current design standards.

The No-Build Alternative will involve continued deterioration of the historic US 17/92 resources. It is reasonably foreseeable the bridge structures will eventually collapse into their respective waterways and floodplain areas below.

4.2 Build Alternatives

Six Build Alternatives were developed to consider opportunities for avoidance and minimization of adverse effects to the NRHP-eligible historic resources. The Build Alternatives involved rehabilitation, widening the current US 17/92 bridge (FDOT Bridge 920174) to accommodate the westbound travel lanes, and four alternatives to construct the new westbound structure, either within or outside of the historic US 17/92 alignment. The evaluation of the alternatives is documented in Section 5.

4.2.1 Rehabilitation Alternative

The Rehabilitation Alternative examined the potential to improve the historic US 17/92 resources to a condition that would allow use of the bridges to structurally support the future westbound traffic by providing two travel lanes. This alternative avoids impacts to other NRHP-eligible resources including the South Florida Railroad (8OS02540), the NRHP-eligible CSX Railroad bridges (8OS03176-8OS03178), [redacted] avoids further impacts to Fletcher Park to meet the stipulations of the 1999 FDEP easement, and avoids the utility corridor just north of the historic bridges, which involves multiple major utilities (electric transmission and distribution, pressurized gas lines, subsurface sewer lines, and buried fiber optic).

Based on the Existing Bridge Conditions Memo (June 2022), rehabilitation of the historic bridges will require extensive reconstruction of the substructure and superstructure. The timber piles and the timber bent caps that support all substructure elements would need to be replaced due to heavy deterioration. To replace these elements, the entire bridge would need to be removed (the pavement, concrete bridge rails, concrete deck, steel girders, concrete abutment backwalls, timber bent caps, and the timber piles) and reconstructed from the bottom-up. Reconstruction of the bridge could not re-use any of the historic concrete or timber bridge elements. The existing steel girders would be evaluated for deterioration and incorporated if possible. The concrete bridge rail system could not be reconstructed as it does not meet current safety standards (no reinforcement) and would need to be replaced. To maintain the similar historic span arrangement, the existing steel girders (steel beams) would need strengthening before re-use to meet current design standards for load requirements. Strengthening the bridge to appropriate design standards may require the structure depth to increase. This would require the bridges and the roadway (fill) sections in between the bridges to be raised.

4.2.2 Alternative A (Yellow Corridor) – Replace the Historic US 17/92 Bridges

Alternative A (**Figure 2**) proposes to utilize the current US 17/92 bridge structure to accommodate future eastbound traffic (two lanes) and construct a new parallel low-level, fixed-span concrete bridge to accommodate future westbound traffic (two lanes) and a shared use path along the historic US 17/92 alignment. The eastbound bridge would be re-striped to include two 11-foot-wide travel lanes, an 11-foot-wide inside shoulder, and an 11-foot-wide outside shoulder. The new westbound bridge would require replacement of the historic US 17/92 bridges so that it could be constructed at a wider footprint and longer span than the historic bridges to meet current design standards, improve floodplain management, and minimize wetland impacts.

The new westbound bridge would include two 11-foot-wide travel lanes, a 6-foot-wide inside shoulder, a 10-foot-wide outside shoulder, and a 12-foot-wide shared use path. The new bridge would be 2,320-feet in length to span Reedy Creek and the associated floodplains and wetlands. The proposed westbound bridge is 53-feet, 8 inches wide, and would be constructed within the historic US 17/92 ROW (and existing FDEP TIITF sovereign submerged lands easement), approximately 70 feet north of the current US 17/92 bridge, to provide adequate separation for construction and maintenance. The new westbound bridge would maintain a low-level profile similar to the current US 17/92 bridge and increase the vertical clearance by just over one foot to improve the hydraulic bridge opening and flood control.

The purpose of this alternative was to avoid impacts to other NRHP-eligible resources including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176-8OS03178), and [redacted]), and avoid further impacts to Fletcher Park (and the cypress trees) to meet the stipulations of the 1999 FDEP/TIITF ROW easement and the 1999 FDEP/TIITF Sovereign Submerged Lands easement. Additionally, impacts to the utility corridor adjacent to the historic US 17/92 bridges would be avoided.

4.2.3 Alternative B (Light Blue Corridor) – Widen Current US 17/92 Bridge

Alternative B **(Figure 3)** proposes to widen the current US 17/92 bridge structure to accommodate four future travel lanes (two travel lanes eastbound and two travel lanes westbound). The current US 17/92 bridge (FDOT Bridge 920174) is 47-foot-wide and only accommodates the two existing travel lanes.

The required widening to accommodate four travel lanes would increase the total bridge width to 94 feet, 10 inches. The current US 17/92 bridge is sloped to the south and therefore, widening would be accomplished to the north side to avoid reducing the current drift clearance of the bridge above the Reedy Creek floodplain. The widened bridge would have two 11-foot-wide travel lanes, a 6-foot-wide inside shoulder, and an outside shoulder in each direction (10 feet in the westbound direction and 11 feet in the eastbound direction). The eastbound and westbound traffic would be separated by a traffic barrier. A 12-foot-wide shared use path would be constructed along the north side of the westbound travel lanes. The new bridge would be 2,275-feet in length, similar to the current US 17/92 structure.

Alternative B assumes the historic US 17/92 bridges and causeway will remain in place with no maintenance.

The purpose of this alternative was to avoid direct impacts to the historic US 17/92 resources and other NRHP-eligible resources including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176-8OS03178) and [redacted] in addition to avoiding direct impacts to the utility corridor.

4.2.4 Alternative C (Dark Blue Corridor) – New Bridge between Current US 17/92 and Historic US 17/92 Bridges

Alternative C **(Figure 4)** proposes to utilize the current US 17/92 bridge structure to accommodate future eastbound traffic (two lanes) and construct a new parallel low-level, fixed-span concrete bridge between the current US 17/92 bridge structure and the historic US 17/92 bridges to accommodate future westbound traffic (two lanes) and a shared use path. Alternative C assumes the historic US 17/92 bridges and causeway will remain in place with no maintenance.

The eastbound bridge would be re-striped to include two 11-foot-wide travel lanes, an 11-foot-wide inside shoulder, and an 11-foot-wide outside shoulder. The new westbound bridge would include two 11-foot-wide travel lanes, a 6-foot-wide inside shoulder, a 10-foot-wide outside shoulder, and a 12-foot-wide shared use path. The new bridge would be 2,320-feet in length to span the Reedy Creek floodplains and wetlands.

The new westbound bridge is 53-feet, 8 inches wide, and would be constructed partially within the historic US 17/92 ROW, approximately 20 feet minimum north of the current US 17/92 bridge to provide adequate separation for construction and maintenance. The new bridge would maintain a low-level profile and vertical clearance, similar to the current US 17/92 bridge.

The purpose of this bifurcated bridge alternative was to avoid direct impacts to the historic US 17/92 resources and other NRHP-eligible resources including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176-8OS03178), [redacted] and reduce costs. Alternative B also avoids impacts with the utility corridor.

4.2.5 Alternative D (Pink Corridor) – New Bridge between Historic US 17/92 Bridges and CSX Railroad

Alternative D **(Figure 5)** proposes to utilize the current US 17/92 bridge structure to accommodate future eastbound traffic (two lanes) and construct a new parallel low-level, fixed-span concrete bridge between the historic US 17/92 bridge structure and the CSX Railroad to accommodate future westbound traffic (two lanes) and a shared use path. Alternative D assumes the historic US 17/92 bridges and causeway will remain in place with no maintenance.

The eastbound bridge would be re-striped to include two 11-foot-wide travel lanes, an 11-foot-wide inside shoulder, and an 11-foot-wide outside shoulder. The new westbound bridge would include two 11-foot-wide travel lanes, a 6-foot-wide inside shoulder, a 10-foot-wide outside shoulder, and a 12-foot-wide shared use path. The new bridge would be 2,350-feet in length to span the Reedy Creek floodplains and wetlands.

The new westbound bridge would be constructed within the CSX ROW, approximately 194 feet north of the current US 17/92 bridge, to avoid the historic US 17/92 resources and the adjacent major utility corridor. The new bridge would maintain a low-level profile and vertical clearance, similar to the current US 17/92 bridge.

The purpose of this bifurcated bridge alternative was to avoid direct impacts to the historic US 17/92 resources, avoid involvement with the NRHP-eligible [redacted] and avoid impacts to the Fletcher Park conservation land to preserve the large cypress trees.

4.2.6 Alternative E (Orange Corridor) – New Bridge south of Current US 17/92

Alternative E **(Figure 6)** proposes to utilize the current US 17/92 bridge structure to accommodate future westbound traffic (two lanes) and construct a new parallel low-level, fixed-span concrete bridge south of the current US 17/92 bridge to accommodate future eastbound traffic and a shared use path. Alternative E assumes the historic US 17/92 bridges and causeway will remain in place with no maintenance.

The eastbound bridge would be re-striped to include two 11-foot-wide travel lanes, an 11-foot-wide inside shoulder, and an 11-foot-wide outside shoulder. The new westbound bridge would include two 11-foot-wide travel lanes, a 6-foot-wide inside shoulder, a 10-foot-wide outside shoulder, and a 12-foot-wide shared use path. The new westbound bridge would be constructed partially within FDOT ROW and would be 2,290-feet in length to span the Reedy Creek floodplains and wetlands. The new bridge would maintain a low-level profile and vertical clearance, similar to the current US 17/92 bridge.

The purpose of this bifurcated bridge alternative was to avoid direct impacts and adjacent construction to the historic US 17/92 resources, avoid involvement with the NRHP-eligible South Florida Railroad (8OS02540) and the CSX Railroad bridges (8OS03176-8OS03178), and avoid impacts to the Fletcher Park conservation land to preserve the large cypress trees.

5 Evaluation of Alternatives

An evaluation of the No-Build Alternative and the six Build Alternatives was performed to compare the alternatives based on purpose and need, engineering considerations and environmental effects.

5.1 Evaluation Criteria

The following criteria were used to evaluate project alternatives:

- Ability to address Purpose and Need
- Section 106 criteria of the National Historic Preservation Act (NHPA)
- Potential impacts to the social, cultural, natural, and physical environment
- Section 4(f) considerations per 49 U.S.C. 303
- Construction and maintenance costs

The alternatives were evaluated for whether they would avoid NRHP-eligible Section 106 historic properties located in the project area. These 11 historic properties can be grouped as follows:

- South Orange Blossom Trail Bridges Resource Group (8OS03182) including the historic US 17/92 bridges (FDOT Bridges 920002, 920003, and 920004; respectively 8OS01749, 8OS01748, and 8OS01747) and the abandoned section of historic roadway (US 17/92 8OS02796/8PO08622)
- The Beehive Hill site (8OS0726) and the Beehive Hill Redeposited site (80S03133).
- The South Florida Railroad (8OS02540) and three CSX Railroad bridges over Reedy Creek (8OS03176-8OS03178).

The following sections provide a summary of potential impacts associated with each alternative. The evaluation considers impacts to the social, cultural, natural, and physical environment. Engineering factors and estimated costs associated with each alternative were also evaluated. Other engineering considerations for alternatives include utility involvement and construction and maintenance costs. The comparative analysis of all alternatives considered, and potential impacts is presented in an evaluation matrix (Table 1).

Table 1: Alternatives Evaluation Matrix

Evaluation Criteria	No-Build Alternative	Rehabilitation Alternative	Alternative A (Replacement for WB Structure)	Alternative B (Widen Current Bridge)	Alternative C (New Bridge to North)	Alternative D (New Bridge south of CSX)	Alternative E (New Bridge to South)
Purpose & Need							
Accommodates Future Traffic Demand	No	Yes	Yes	Yes	Yes	Yes	Yes
Safety Improved	No	Yes	Yes	Yes	Yes	Yes	Yes
Meets Purpose and Need	No	Yes	Yes	Yes	Yes	Yes	Yes
Proposed Bridge Horizontal Geometry							
Length of Proposed Bridge (feet)	N/A	N/A	2,320	2,275	2,320	2,350	2,290
Width of Proposed Bridge/Widening (feet)	N/A	N/A	53'-8"	47'-10"	53'-8"	53'-8"	53'-8"
Minimum Distance to CSX Bridges (feet)	N/A	N/A	143	219	193	19	334
Minimum Distance from proposed bridge to Historic US 17/92 Bridges (feet)	N/A	N/A	0 (Replacement)	43	18	70	159
Proposed Structure Construction Cost (Millions)	N/A	Unknown until Design	$24.0	$28.5	$25.2	$25.5	$24.9
Potential Community Impacts							
Residential Parcels Potentially Impacted	0	0	0	0	0	0	0
Non-Residential Parcels Potentially Impacted	0	0	0	0	0	2	4
Total Number of Parcels Potentially Impacted	0	0	0	0	0	2	4
Potential Relocations	0	0	0	0	0	0	0
TIITF Land Impact Area (acres)	0	0	0	1.6	1.7	0	1.8
ROW Anticipated to be Required (acres)	0	0	0	0[1]	0[1]	4.2	4.9
Potential Environmental Impacts							
Floodplains Impacts	0	Unknown until Design[5]	Enhanced[3]	Negligible[4]	Negligible[4]	Negligible[4]	Negligible[4]
Potential Threatened and	None	Wood stork	Wood stork	Wood stork	Wood stork	Wood stork	Wood stork

Evaluation Criteria	No-Build Alternative	Rehabilitation Alternative	Alternative A (Replacement for WB Structure)	Alternative B (Widen Current Bridge)	Alternative C (New Bridge to North)	Alternative D (New Bridge south of CSX)	Alternative E (New Bridge to South)
Endangered Species Impacts							
Wetlands Impacts (acres)	0	Unknown until Design	0.8	2.1	2.8	2.6	3.2
Specimen Tree Impacts (Identified Cypress Trees from 2023 Tree Inventory and Impact Report)[2]	0	0	0	12	15	13	6
Direct Historic US 17/92 Bridge Impacts?	No	Yes	Yes	No	No	No	No
Indirect Historic US 17/92 Bridge Impacts?	No	N/A – direct impacts	N/A – direct impacts	Moderate potential due to construction proximity	High potential due to constructio n proximity	Low	None
Direct Fletcher Park property or TIITF easement Impacts?	No	No – Existing FDOT easement	No – Existing FDOT easement	Yes – New easement required for additional Cypress Tree impacts	Yes – New easement required for additional Cypress Tree impacts	No – within CSX ROW not Fletcher Park	Yes – New easement required for Cypress Tree impacts and increased impact area to Fletcher Park
Utility Corridor Impacts?	No	No	No	No	No	Yes	No
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Direct Historic CSX Railroad Bridge Impacts?	No	No	No	No	No	Yes	No
Avoidance Alternative to NRHP-eligible US 17/92 Historic Bridges?	No – Adverse Effect (deterioratio n)	No – Direct Effects anticipated	No – Direct Effects anticipated	Not likely – Moderate potential for indirect effects	Not likely – Moderate potential for indirect effects	No – Adverse Effect (deteriorati on)	No – Adverse Effect (deteriorati on)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Evaluation Criteria	No-Build Alternative	Rehabilitation Alternative	Alternative A (Replacement for WB Structure)	Alternative B (Widen Current Bridge)	Alternative C (New Bridge to North)	Alternative D (New Bridge south of CSX)	Alternative E (New Bridge to South)
Avoidance Alternative to NRHP-eligible South Florida Railroad?	Yes	Yes	Yes	Yes	Yes	No – Direct impacts	Yes

Table Notes:

1. Easement modification required and approval by FDEP/Tufts University due to additional cypress tree impacts although the land area is within the existing FDEP/TIITF easement.
2. Specimen tree defined as any tree identified in the 2023 Tree Inventory and Impact Report with a breast height diameter of at least 36".
3. The three historic bridges will be removed along with the fill sections between them. One bridge would replace these, reducing the impacts to floodplains.
4. Floodplain impacts caused by pier locations only.
5. Slightly increased floodplain impacts due to raising the causeways.

5.2 Alternatives Evaluation

5.2.1 No-Build Alternative

The advantages of the No-Build Alternative include no additional ROW acquisition, no disruption of traffic during construction, and no project cost.

The disadvantage of the No-Build Alternative is not satisfying the project's purpose and the need to address current and future travel demand, improve safety, and provide system linkage for this regionally significant arterial. Consistency with locally adopted plans would not be maintained. Additionally, the No-Build Alternative carries the scenario of "demolition by neglect", where the historic US 17/92 resources will continue to deteriorate and will eventually collapse into their respective waterways below without costly repair and/or rehabilitation work, a continuous bridge inspection program, and maintenance program. The continued deterioration of the bridge infrastructure may result in impacts to the surrounding wetlands, floodplains, and environment. Providing a No-Build Alternative is anticipated to ultimately result in an adverse effect on the historic US 17/92 bridges due to the continuous deterioration of the bridges.

5.2.2 Rehabilitation Alternative

The existing cross-section of the three historic bridges and the causeway (roadway) between the bridges does not meet design standards for the two proposed westbound lanes. The historic bridges would need to be widened 13 feet, 8 inches at a minimum to meet current FDOT Florida Design Manual criteria for travel lanes and shoulders. This would also require the causeway (fill) segments in between the bridges to be widened, resulting in additional floodplain impacts and requiring floodplain compensation. Additional timber piles and closer spacing of the timber bents is anticipated to be required, which will increase the obstructions in the waterway.

Reconstruction of the historic bridges could not re-use any of the historic concrete or timber bridge elements. The existing steel girders would be evaluated for deterioration and incorporated if possible (assuming they can be strengthened, a full bridge load rating is performed, and a favorable load rating is the outcome for all three bridges).

To maintain the similar historic span arrangement, the existing steel girders (steel beams) would need strengthening before re-use to meet current design standards for load requirements. The historic US 17/92 bridges were designed using loading criteria from 1937 (for H-15 State Road Department of Florida Design Specifications (1937)), which equates to today's 15-ton vehicles, and therefore do not meet today's heavier design vehicles and load requirements. Strengthening the bridge to appropriate design standards may require the structure depth to increase, which could impact the bridges' drift clearance. The existing three bridges would need to be nearly wholistically repaired and/or modified to be used and would need to meet current loading, design, and construction specifications that the historic US 17/92 bridges are currently not designed for.

In summary, only the steel girders (beams) could be rehabilitated (strengthened with new materials and potentially raised) and every other superstructure or substructure element, including the historic bridge decks, wood piers, and bridge railings, would require replacement to address design criteria and deteriorated materials. It is anticipated that the Rehabilitation Alternative would have very little or none of the historic materials remaining after construction. Due to the needed rehabilitation methods and

modifications identified above, the historic bridges would not maintain historical bridge characteristics or surrounding setting (due to increased vertical clearance and removal of fill between bridges).

5.2.3 Alternative A (Yellow Corridor) – Replace the Historic US 17/92 Bridges

Alternative A is an avoidance alternative [redacted] and the South Florida Railroad linear resource (8OS02540)/CSX Railroad bridges (8OS03176-8OS03178). This alternative was the original alignment alternative from the 1996 environmental document and is supported by both Osceola County and the FDEP (land manager for TIITF conservation area known as Fletcher Park).

Construction of Alternative A would require impacts to NRHP-eligible Resource Group 8OS03182 including demolition of the historic US 17/92 bridges (8OS01747–8OS01749) and the 0.3-mile NRHP-eligible section of the historic US 17/92 roadway (8OS02796/8PO08622). The reconstruction would involve removal of the existing roadway fill on the historic causeways to remove floodplain encroachment consistent with the prior SFWMD permit (Permit No. 49-00025-D). The proposed bridge in Alternative A is expected to have positive impact to the floodplains and floodplain control since the historic bridges and fill sections between the bridges will be removed, and a single structure would replace them. This satisfies the SFWMD Permit requirement established for the 2001 construction project and is supported by FDEP and local stakeholders.

Alternative A is the only Build Alternative that avoids impacts to the existing cypress trees preserved as part of Fletcher Park, which satisfies the 1994 PD&E commitments, FDEP, Tufts College, and local stakeholders. Additionally, Alternative A will not involve an additional TIITF easement, as the original 1935 easement provides for FDOT use of the existing ROW. All the other Build Alternatives will require FDEP and Acquisition and Restoration Council (ARC) coordination and approval of additional impacts to the cypress trees within the existing easements (but preserved through deed restrictions) or additional impacts to Fletcher Park lands.

Alternative A is expected to involve 0.8 acres of wetlands impacts, which minimizes wetland involvement compared to the other alternatives. While potential effects to species or habitat involves the wood stork, Alternative A has the least overall environmental impacts and avoids impacts to any specimen cypress trees, Fletcher Park, and the utility corridor. It is the least impactful alternative because it is constructed within the footprint of previously constructed roadway ROW.

No additional ROW impacts, SSL easements, or utility relocations are anticipated. The estimated construction cost for Alternative A is $24.0 million, which is lower than the other Build Alternatives.

In summary, Alternative A has the least overall environmental impacts and avoids additional ROW needs, impacts to cypress trees, Fletcher Park, and the utility corridor. Alternative A addresses FDEP/TIITF easement/deed restrictions, SFWMD commitments, and Osceola County resolutions to protect the cypress trees.

Alternative A results in the least overall harm to the natural environment, by cumulatively protecting the cypress trees, providing a net floodplain benefit, and minimizing wetland impacts. However, Alternative A results in replacement and therefore, an adverse effect to the historic US 17/92 resources.

5.2.4 Alternative B (Light Blue Corridor) – Widen Current US 17/92 Bridge

Alternative B is an avoidance alternative to avoid direct impacts to the historic US 17/92 resources and other NRHP-eligible resources including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176-8OS03178) and [redacted] Alternative B would be located approximately a minimum of 219 feet away from the CSX bridges.

The historic US 17/92 bridges and causeway would not be replaced by construction of Alternative B. However, construction activities including pile driving operations and ground disturbance have the potential for indirect effects to the historic US 17/92 resources due to the proximity of the widened bridge to the historic US 17/92 bridges (minimum 43 feet). While specialized construction methods can be employed to minimize risk of indirect impacts, the unique setting (heavily rooted and tall cypress trees) enhances the risk of indirect impacts.

Alternative B assumes the historic US 17/92 bridges and causeway will remain in place with no maintenance. It is reasonably foreseeable the historic bridge structures will continue to deteriorate and eventually collapse.

Construction of Alternative B would require removal of 12 specimen cypress trees and an additional 1.6 acres of impact to Fletcher Park conservation land, which is in violation of the existing 1999 FDEP/TIITF perpetual ROW easement, deed restrictions within the historic Fletcher Park boundary, and the expressed community desires of Osceola County as documented in prior resolutions to preserve and protect the cypress trees. This alternative also increases impacts to high-quality wetlands (2.1 acres) within Fletcher Park, increases wetland mitigation costs, and results in the highest construction cost ($28.5 million dollars) of the alternatives.

Due to the substantial natural environmental impacts associated with Alternative B and the continued deterioration of the historic US 17/92 resources, Alternative B is not considered a viable (prudent) alternative and was eliminated from further consideration

5.2.5 Alternative C (Dark Blue Corridor) – New Bridge between Current US 17/92 and Historic US 17/92 Bridges

Alternative C is an avoidance alternative to avoid direct impacts to the historic US 17/92 resources and other NRHP-eligible resources, including the South Florida Railroad (8OS02540), the CSX Railroad bridges (8OS03176-8OS03178), [redacted] Alternative C is located approximately a minimum of 193 feet away from the CSX bridges.

The existing wooden piles that support the historic US 17/92 bridges would likely be impacted due to the pile driving operations and the removal of the heavily rooted, large cypress trees immediately to the south of the historic US 17/92 bridges. Alternative C is in close proximity (approximately a minimum of 18 feet away) to the historic US 17/92 bridges. While specialized construction methods can be employed to minimize risk of indirect impacts, the unique setting (heavily rooted and tall cypress trees) means that there is a substantial risk of indirect impacts to the historic US 17/92 bridges.

Alternative C assumes the historic US 17/92 bridges and causeway would remain in place in areas that are not structurally damaged by the construction of the new bridge. Although Alternative C would avoid direct impacts to the US 17/92 historic bridges, it is reasonably foreseeable that any historic bridge structures not damaged during construction will continue to deteriorate and eventually collapse.

Construction of Alternative C would require removal of 15 specimen cypress trees and an additional 1.7 acres of impact to Fletcher Park conservation land, which is in violation of the existing 1999 FDEP/TIITF perpetual ROW easement, deed restrictions within the historic Fletcher Park boundary, and the Osceola County resolution to preserve and protect the cypress trees. This alternative also increases impacts to high-quality wetlands (2.8 acres) within Fletcher Park and increases wetland mitigation costs as compared to Alternative B. Alternative C has an estimated construction cost of $25.2 million, which is higher than Alternative A.

Due to the substantial natural environmental impacts associated with Alternative C and the continued deterioration of the historic US 17/92 resources, Alternative C is not considered a viable (prudent) alternative and was eliminated from further consideration.

5.2.6 Alternative D (Pink Corridor) – New Bridge between Historic US 17/92 Bridges and CSX Railroad

Alternative D is an avoidance alternative to avoid direct impacts to the historic US 17/92 resources, avoid involvement with the NRHP-eligible [redacted], and avoid impacts to the Fletcher Park conservation land to preserve the large cypress trees. The historic US 17/92 bridges would be located approximately at a minimum 70 feet away from Alternative D. Alternative D assumes the historic US 17/92 bridges and causeway will remain in place with no maintenance. Although Alternative D would avoid direct impacts to the US 17/92 historic bridges, it is reasonably foreseeable the historic bridge structures will continue to deteriorate and eventually collapse.

Construction of Alternative D would require acquisition of 4.2 acres of ROW from the CSX ROW. The NRHP-eligible South Florida Railroad (80S02540) linear resource and the CSX Railroad bridges (8OS03176-8OS03178) are along the CSX alignment. Alternative D would be constructed within CSX ROW approximately 30 feet from the historic CSX bridge centerline which meets CSX minimum standard horizontal clearance of 25 feet from centerline of track but impacts CSX's maintenance areas surrounding the bridge.

Construction of Alternative D would require removal of 13 specimen cypress trees and result in 2.6 acres of wetlands impacts.

As the westbound proposed bridge crosses the utility corridor twice, impacts to the utility corridor are expected for Alternative D. Approximately 0.4 acres of impact would occur in the utility corridor, and four major utility poles are expected to require relocation, along with impacts to two gas lines, a raw water line, and a buried fiber optic line. Utility relocations costs are anticipated to involve substantial costs. Alternative D has an estimated construction cost of $25.5 million.

Due to the impacts to railroad operations and high cost associated with ROW, construction, and utility relocates, Alternative D is not considered a viable (prudent) alternative and was eliminated from further consideration.

5.2.7 Alternative E (Orange Corridor) – New Bridge south of Current US 17/92

Alternative E is an avoidance alternative to the historic US 17/92 resources bridges (approximately at a minimum 159 feet away) and the South Florida Railroad (8OS02540) and CSX Railroad bridges (8OS03176-8OS03178) approximately at a minimum 334 feet away. Alternative E also avoids impacts to the largest of the specimen trees within Fletcher Park. However, Alternative E results in involvement

with the NRHP-eligible [redacted]

Alternative E assumes the historic US 17/92 bridges and causeway will remain in place with no maintenance. Although Alternative E would avoid direct impacts to the US 17/92 historic bridges, it is reasonably foreseeable the historic bridge structures will continue to deteriorate and eventually collapse.

Four parcels are expected to be impacted for Alternative E, all of which are non-residential and not anticipating any relocations. As such, approximately 4.9 acres of additional ROW would be required. Alternative E is expected to have 3.2 acres of wetlands impacts, which is the most of any alternative.

Alternative E doesn't impact the utility corridor.

Construction of Alternative E would require removal of six specimen cypress trees and an additional 1.8 acres of impact to Fletcher Park/TIITF conservation land in violation of the existing 1999 FDEP/TIITF perpetual ROW easement stipulations, deed restrictions within the historic Fletcher Park boundary, and the Osceola County resolution to preserve and protect the cypress trees. This alternative also increases impacts to high-quality wetlands (3.2 acres) within Fletcher Park and increases wetland mitigation costs as compared to Alternative B.

Due to the substantial natural environmental impacts associated with Alternative E, impacts [redacted] and the continued deterioration of the historic US 17/92 resources, Alternative E is not considered a viable (prudent) alternative and was eliminated from further consideration.

5.2.8 Alternatives Evaluation Matrix

A preliminary evaluation of the No-Build Alternative and the six Build Alternatives was performed to estimate traffic operations, safety, community and environmental impacts, and project cost for comparison.

Each topic within the evaluation matrix is described in the following section. An evaluation matrix, provided in Table 1, outlines the alternatives comparison and potential impacts.

6 Summary of Alternatives Analysis

Table 2 summarizes the ability of each alternative to avoid the NRHP-eligible resources within the portion of the study area surrounding the bridges over Reedy Creek.

Table 2 – NRHP-Eligible Resource Avoidance Analysis

Alternatives	No-Build	Rehabilitation	A	B	C	D	E
South Orange Blossom Trail Bridges Resource Group (8OS03182)	I	D	D	I	I	I	I
South Florida Railroad linear resource (8OS02540) /CSX Railroad bridges (8OS03176-8OS03178)	A	A	A	A	A	I	A
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Table notes:
D – Direct Impacts
I – Indirect Impacts
A – Avoidance Alternative

Based on the evaluation of alternatives, there are no feasible and prudent alternatives that avoid direct impacts to the existing NRHP-eligible resources that did not also cause impacts of an extraordinary magnitude to Fletcher Park and the protected cypress trees. Further, based on the evaluation of the existing conditions of the US 17/92 historic roadway (8OS02796/8PO08622) and bridges (8OS01747–8OS01749), the South Orange Blossom Trail Bridges Resource Group (8OS03182) will ultimately suffer indirect adverse effects due to deterioration regardless of which alternative is selected. Based on this analysis, Alternative A which uses the historic US 17/92 alignment that was selected as part of the 1996 environmental document, and avoids impacts of an extraordinary magnitude to the specimen cypress trees within Fletcher Park and avoids all other adjacent NRHP-eligible resources within the corridor, is the preferred alternative.

ATTACHMENT B

SHPO CONCURRENCE LETTER

Florida Department of Transportation

RON DESANTIS
GOVERNOR

719 South Woodland Boulevard
DeLand, Florida 32720-6834

KEVIN J. THIBAULT, P.E.
SECRETARY

November 3, 2021

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: Mr. Clete Rooney Transportation Compliance Review Program

RE: Cultural Resource Assessment Survey
US 17/92 from County Road 54 to West of Poinciana Boulevard
Osceola and Polk Counties, Florida
Financial Management No.: 437200-1-22-01

Dear Dr. Parsons,

Enclosed please find one copy of the report titled *Cultural Resource Assessment Survey* [CRAS] *for US 17/92 from County Road 54 to West of Poinciana Boulevard, Osceola and Polk Counties, Florida*. This report presents the findings of a CRAS conducted in support of the proposed roadway and pond improvements in Osceola and Polk Counties, Florida. The Florida Department of Transportation (FDOT), District 5, is proposing roadway improvements to US 17/92 from CR 54 to 1,900 feet west of Poinciana Boulevard. The project also includes eleven proposed pond locations. Improvements will occur within the existing and proposed right-of-way and the proposed pond footprints.

The project Area of Potential Effect (APE) was defined as the maximum proposed right-of-way required for the project and was extended to the back or side property lines of parcels adjacent to the right-of-way, or to a distance of no more than 100 meters (330 feet) from the maximum proposed right-of-way. Additionally, the APE includes the proposed pond construction footprints plus a 100-foot (30 meter) buffer of each. The archaeological survey was conducted within the maximum proposed right-of-way and proposed pond construction footprints. The historic structure survey was conducted throughout the US 17/92 APE and the proposed pond footprints.

This CRAS was conducted in accordance with Public Law 113-287 (Title 54 U.S.C.), which incorporates the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, including Section 106 (54 U.S.C. §306108), the Archaeological and Historic Preservation Act of 1979, as amended, 36 CFR Part 800 (Protection of Historic Properties), and

all laws, regulations, and guidelines promulgated by the State of Florida governing cultural resources work, in particular 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).

The archaeological survey included pedestrian survey and documentation of 185 shovel test locations within the US 17/92 right-of-way and proposed pond footprints. As no testing was possible within the previously documented bounds of the No Name (8OS01728), Free Orange (8OS01729), Intercession City NW (8OS01836), Loughman Site (8PO06826), and FSC #5 (8PO07711) archaeological sites, FDOT, District 5's cultural resources consultant, SEARCH, documented existing conditions at these locations. Six shovel tests within the US 17/92 right-of-[redacted] documented three Archaeological Occurrences (AOs) within the US 17/92 right-of-way. No archaeological sites, features, or occurrences were encountered within the US 17/92 Pond Footprints.

[redacted] The FDOT, District 5, and the FDOT Office of Environmental Management (OEM) informed the State Historic Preservation Officer (SHPO) and the State Archaeologist at the Florida Bureau of Archaeological Research (BAR). In compliance with the requirements of Chapters 267 and 872, Florida Statutes, the BAR initiated Tribal notification and consultation according to their established procedures.

In coordination with FDOT, BAR defined an "Area of Exclusion" [redacted] FDOT prepared a draft Archaeological Survey Plan to resume fieldwork within the Area of Exclusion and submitted this document to the SHPO and the BAR for review and comment and to solicit any concerns and/or considerations regarding the proposed survey plan. In compliance with Chapter 872, Florida Statutes, and Section 106 of the National Historic Preservation Act (NHPA), the survey plan was also distributed to the five Federally recognized Indian Tribes affiliated with Florida. Project background and status information was also provided.

All previously and newly identified archaeological resources within the US 17/92 project limits are considered ineligible for listing in the NRHP. However, the FDOT will continue consultation

with the SHPO, the BAR, and the Federally recognized Indian Tribes affiliated with Florida concerning the proposed improvements in the [redacted]
As no ground-disturbing work is proposed in the [redacted] the FDOT anticipates no additional consultation related to this site.

The architectural survey resulted in the identification and evaluation of 91 historic resources within the US 17/92 APE, including 23 previously recorded resources and 68 newly recorded resources. The previously recorded historic resources include three linear resources, three bridges, and 17 structures. The newly recorded historic resources include two resource groups, three bridges, and 63 structures.

One previously recorded resource, the South Florida Railroad (8OS02540), was determined by the SHPO to be eligible for listing in the NRHP on September 6, 2019, under Criterion A for its association with commerce and transportation and under Criterion B for its association with Henry Plant. Of the remaining 22 previously recorded resources, 17 (8OS01733-8OS01738, 8OS01741-8OS01745, 8PO07156-8PO07157, 8PO07718, 8PO08198-8PO08200) were determined ineligible for the NRHP by the SHPO. The SHPO has not evaluated Resources 8OS01747 through 8OS01749. The remaining two resources identified within the project APE (8OS02567 and 8OS02796) had been previously recorded elsewhere in Osceola County but not evaluated within the current APE.

Based on the results of the current survey, it is the opinion of SEARCH that the segment of Resource 8OS02540 within the APE remains eligible for the NRHP under Criteria A and B. Accordingly, three newly recorded railroad bridges (8OS03176-8OS03178) are recommended eligible for listing in the NRHP under Criterion A as contributing elements to the South Florida Railroad (8OS02540) linear resource. In addition, one newly recorded resource group, the South Orange Blossom Trail Bridges (8OS03182), is recommended eligible for listing in the NRHP. Resources 8OS01747–8OS01749 are recommended eligible for listing in the NRHP as contributing to Resource Group 8OS03182. Although the entirety of US Highway 17/92 (8OS02796/8PO08622), also called Orange Blossom Trail, within the APE is recommended individually ineligible for the NRHP, a 0.30-mile (0.48-km) segment of Resource 8OS02796/8PO08622 within the boundaries of 8OS03182 is also recommended NRHP-eligible as a contributing resource to 8OS03182. The remaining 82 resources within the APE are recommended ineligible for the NRHP due to a lack of significant historic associations and architectural and/or engineering distinction.

Given the results of the CRAS, it is the opinion of FDOT that the proposed US 17/92 improvements project will have no effect on archaeological resources listed or eligible for listing in the NRHP. No further archaeological work is recommended. [redacted]

Pending your concurrence with the eligibility recommendations for historic resources presented in the CRAS, a separate Section 106 case study will be prepared to evaluate project-related effects. The resolution of project-related effects, if any, will be the subject of further agency consultation.

This CRAS is being provided concurrently to the Federally recognized Indian Tribes affiliated with Florida.

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,

William G. Walsh
Environmental Manager
FDOT, District Five

Cc: Lindsay Rothrock, FDOT OEM

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 2021-6592. 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: We look forward to further consultation on this project.

Alissa Lotane

Digitally signed by Alissa Lotane
DN: cn=Alissa Lotane, o=Florida Division of Historical Resources, ou=Deputy SHPO, email=Alissa.Lotane@dos.myflorida.com, c=US
Date: 2021.12.09 17:05:27 -05'00'

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

12/9/2021
Date

ATTACHMENT C

PROJECT PLANS

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

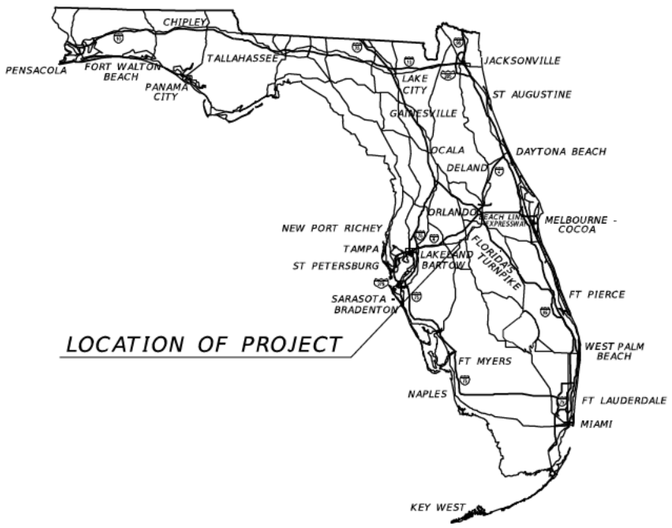
CONTRACT PLANS

FINANCIAL PROJECT ID 437200-2-22-01

OSCEOLA COUNTY (92010000, 92010100)

STATE ROAD NO. 600 (US 17-92)

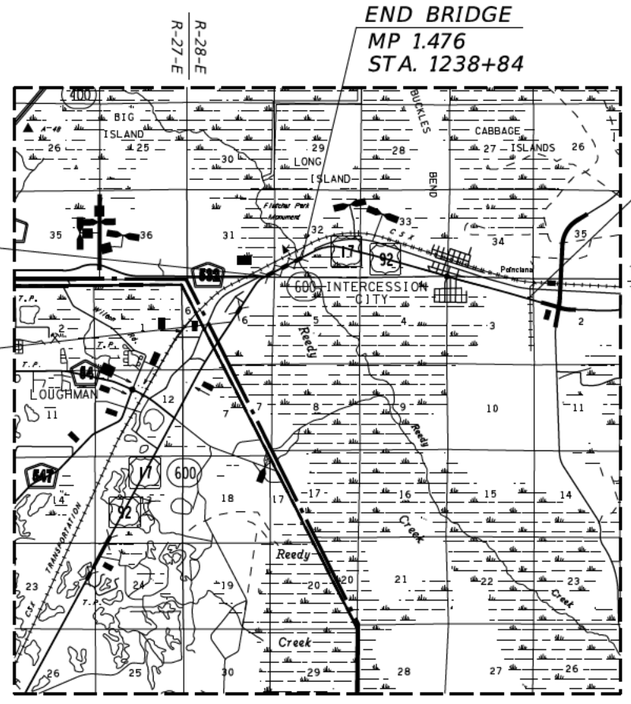
SR 600 (US 17-92) WIDENING FROM IVY MIST LANE TO AVENUE A



LOCATION OF PROJECT

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2-22	CONCEPT PLANS



END BRIDGE
MP 1.476
STA. 1238+84

END PROJECT
MP 4.117
STA. 1385+41

BEGIN BRIDGE
MP 1.052
STA. 1216+00

BEGIN PROJECT
MP 0.299
STA. 1176+53

GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY2022-23 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: http://www.fdot.gov/design/standardplans

APPLICABLE IRs: IR___-___-__

Standard Plans for Bridge Construction are included in the Structures Plans Component

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, July 2022 Standard Specifications for Road and Bridge Construction at the following website: http://www.fdot.gov/programmanagement/Implemented/SpecBooks

ROADWAY PLANS ENGINEER OF RECORD:

KEVIN TYLER FREEMAN, P.E. NO.: 76146
VANASSE HANGEN BRUSTLIN, INC.
225 E ROBINSON STREET, SUITE 300
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIATION: 3932

FDOT PROJECT MANAGER:

DAVID ANDREW GRAEBER, P.E.

SHEET NO.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KEVIN TYLER FREEMAN
P.E. LICENSE NUMBER 76146
VANASSE HANGEN BRUSTLIN, INC.
225 E. ROBINSON STREET
ORLANDO, FL 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	OSCEOLA	437200-2-22-01

US 17-92 PD&E - PREFERRED ALTERNATIVE

SHEET NO.

LEGEND
EXISTING R/W
PROPOSED R/W
EXISTING UTILITY POLE
PARCEL LINE
DRIVEWAY
CURB AND GUTTER
SIDEWALK
PAVED SHOULDER
PROPOSED BRIDGE

0 20 100
Feet

MATCH LINE 1182+00.00

EBENEZER NURSERY

PROPOSED R/W FOR POINCIANA PARKWAY EXTENSION

PROPOSED 24" PIPE CULVERT

PROPOSED 24" PIPE CULVERT

PROPOSED 24" PIPE CULVERT

EXISTING R/W

PROPOSED 24" PIPE CULVERT

SUNDOWN DRIVE

PROPOSED 24" PIPE CULVERT

EXISTING R/W

EXISTING 2'X2' BOX CULVERT

1185

℄ CONST. US 17-92

US 17-92

1190

1195

EXISTING R/W

EXISTING CULVERT TO BE EXTENDED BY POINCIANA PARKWAY EXTENSION PROJECT

PROPOSED 24" PIPE CULVERT

END POINCIANA PARKWAY EXTENSION PROJECT LIMITS

EXISTING 2'X2' BOX CULVERT TO BE EXTENDED

MATCH LINE 1196+00.00

PROPOSED R/W FOR POINCIANA PARKWAY EXTENSION

PROPOSED POND 400 FOR POINCIANA PARKWAY EXTENSION

SEE SHEET 20 FOR JOINT USE POND 1 DETAILS

JOINT USE POND 1 - 6.66 ACRES

PROPOSED R/W FOR POINCIANA PARKWAY EXTENSION

PROPOSED R/W FOR POINCIANA PARKWAY EXTENSION

PROPOSED R/W

PROPOSED R/W

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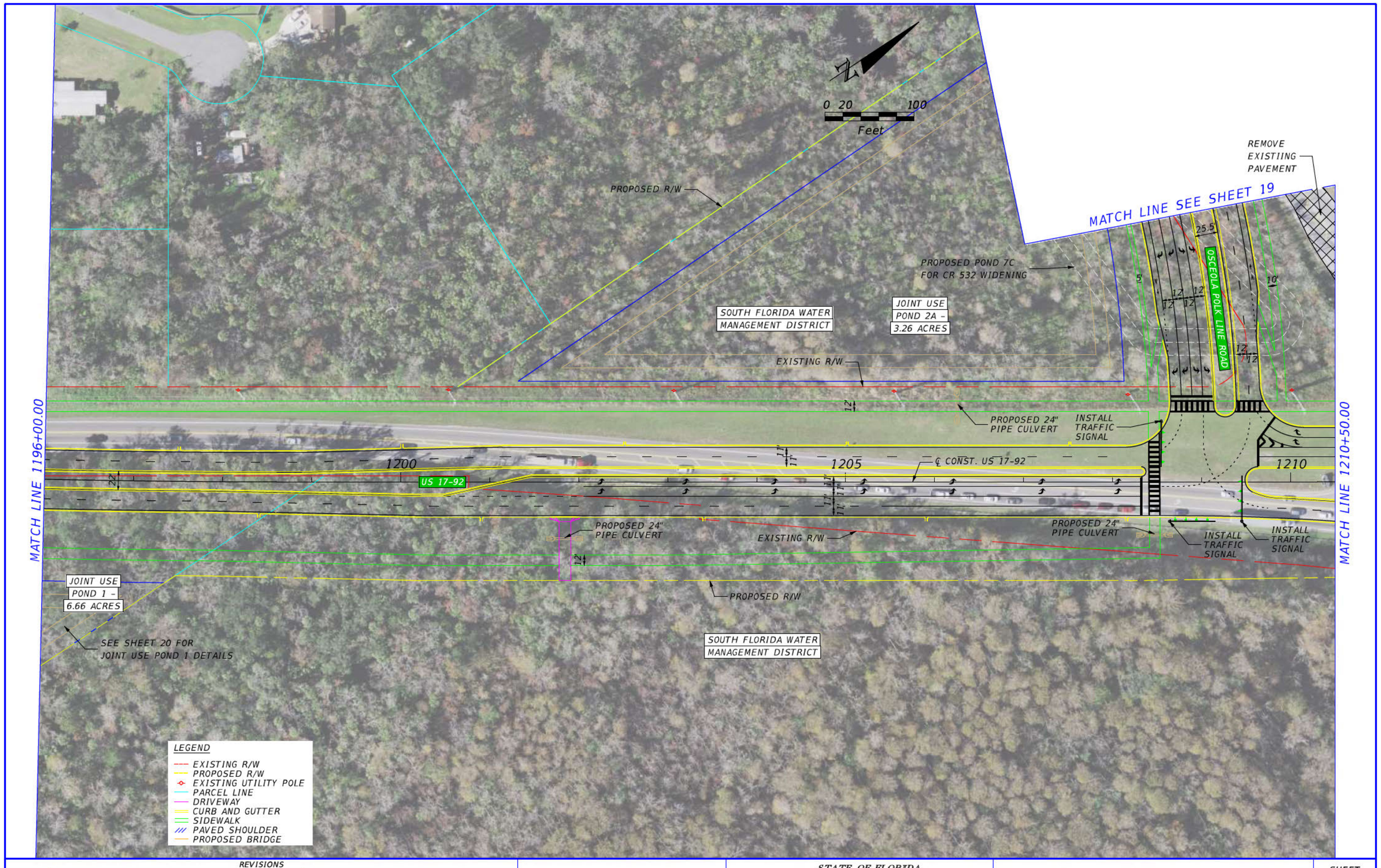
VANASSE HANGEN BRUSTLIN, INC.
225 E. ROBINSON STREET
ORLANDO, FL 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	OSCEOLA	437200-2-22-01

US 17-92 PD&E - PREFERRED ALTERNATIVE

SHEET NO.



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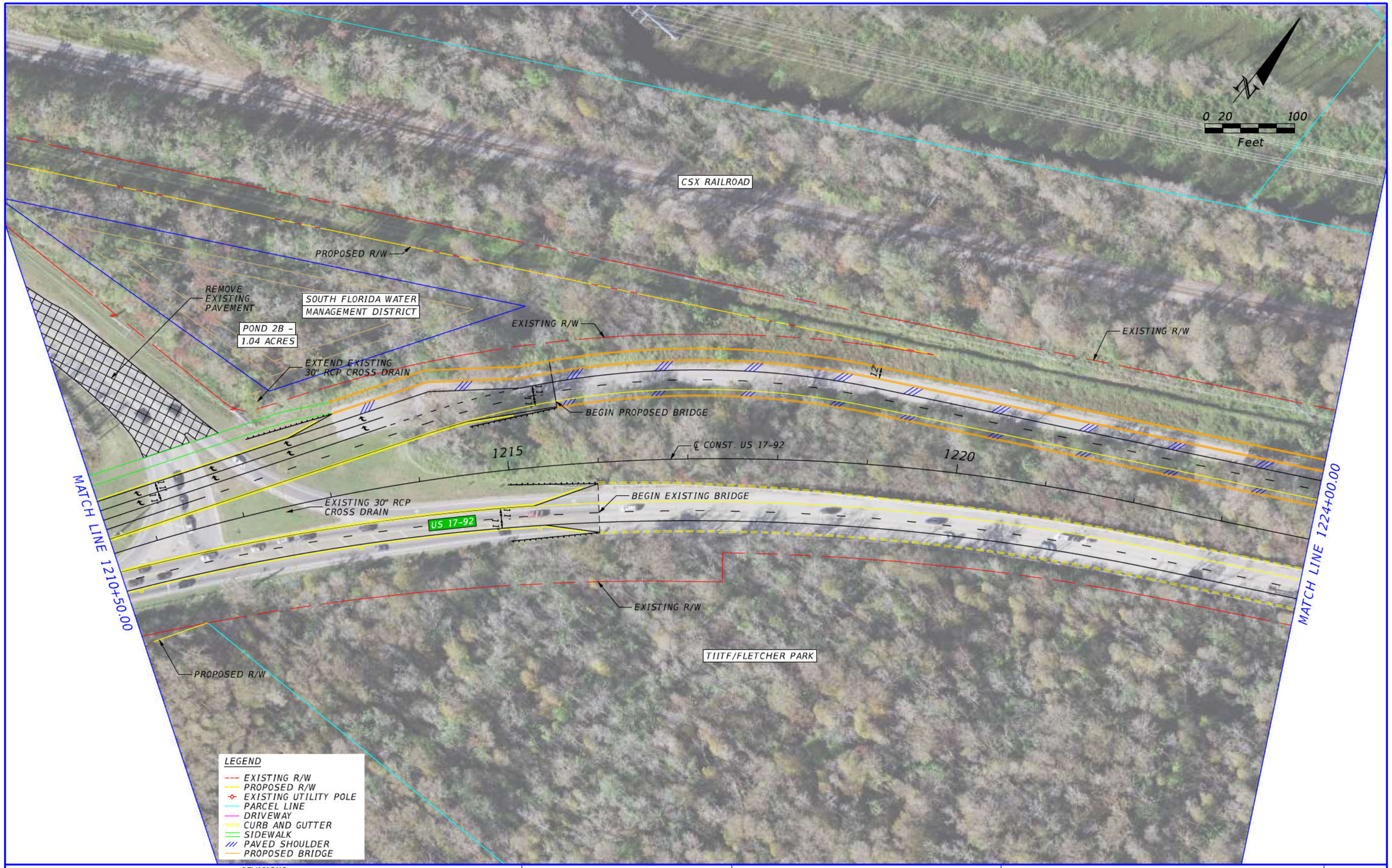

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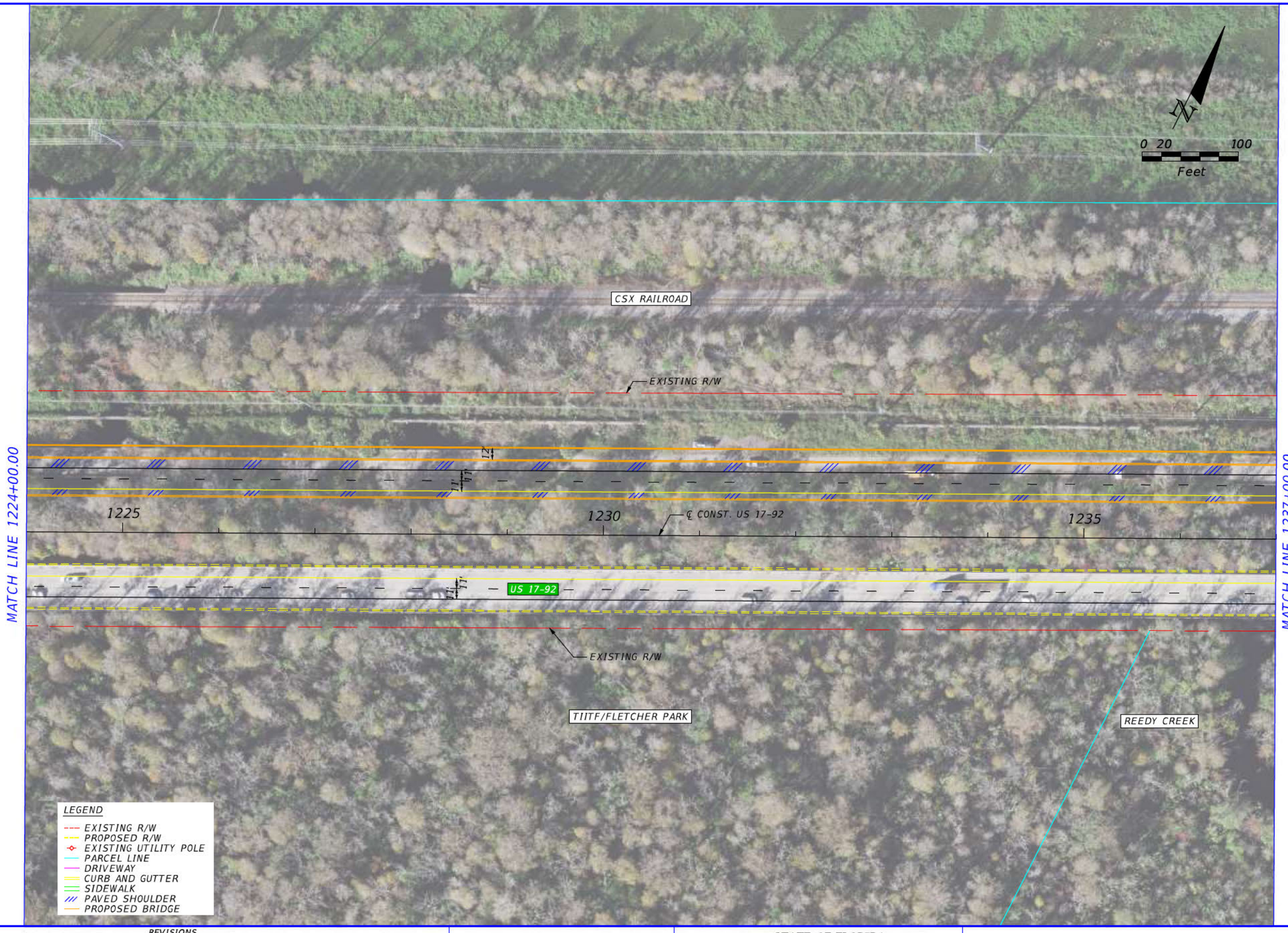

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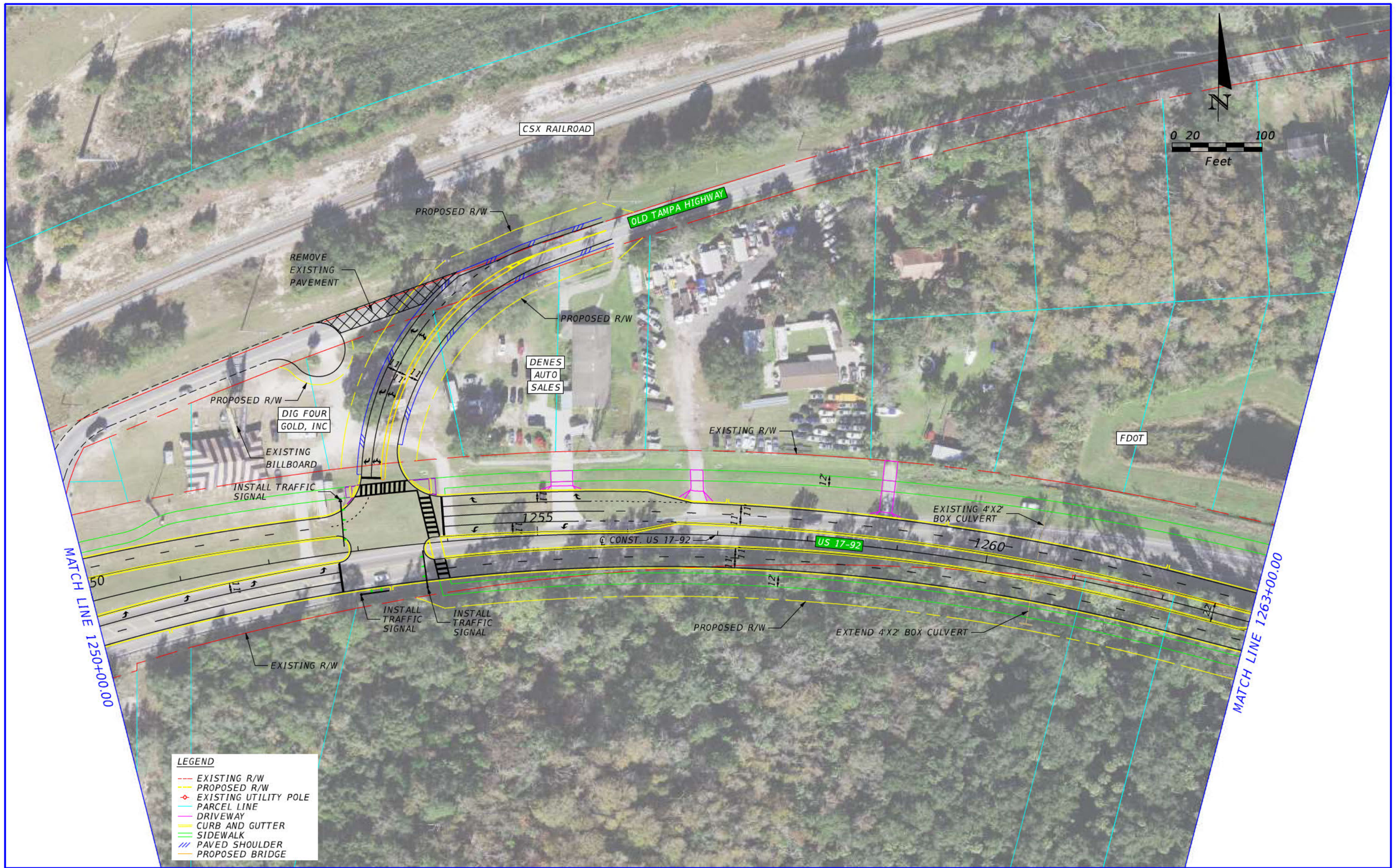

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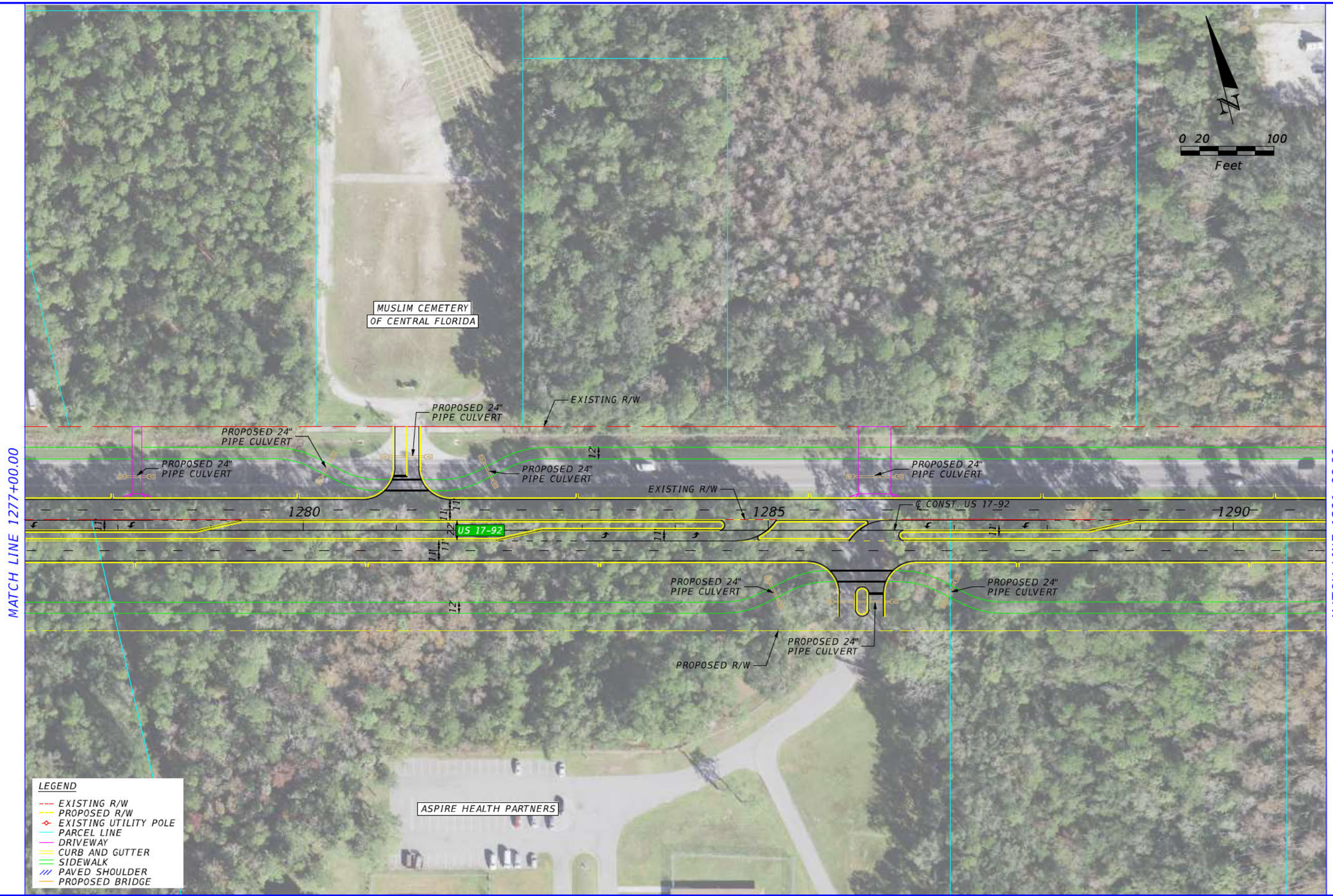

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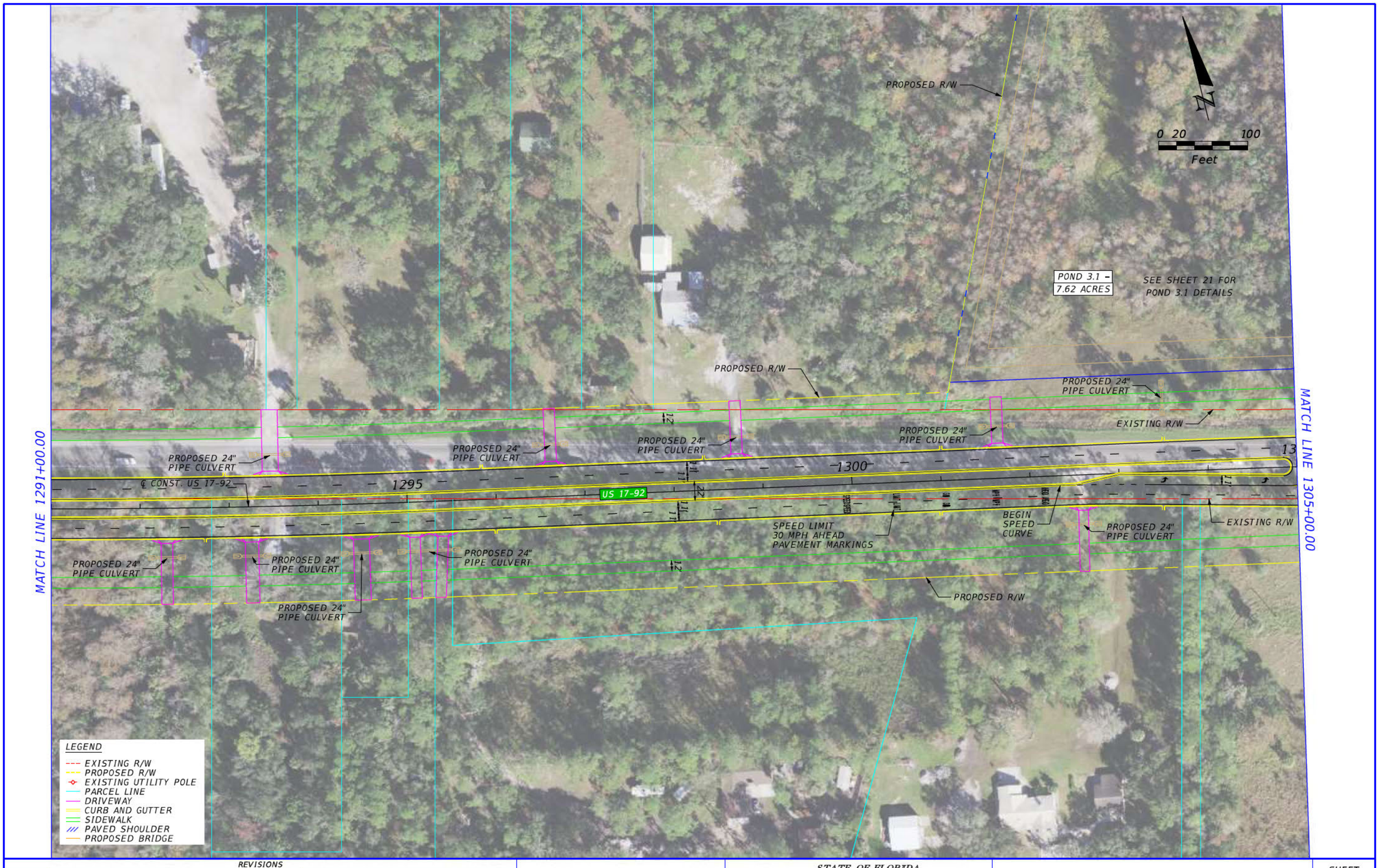

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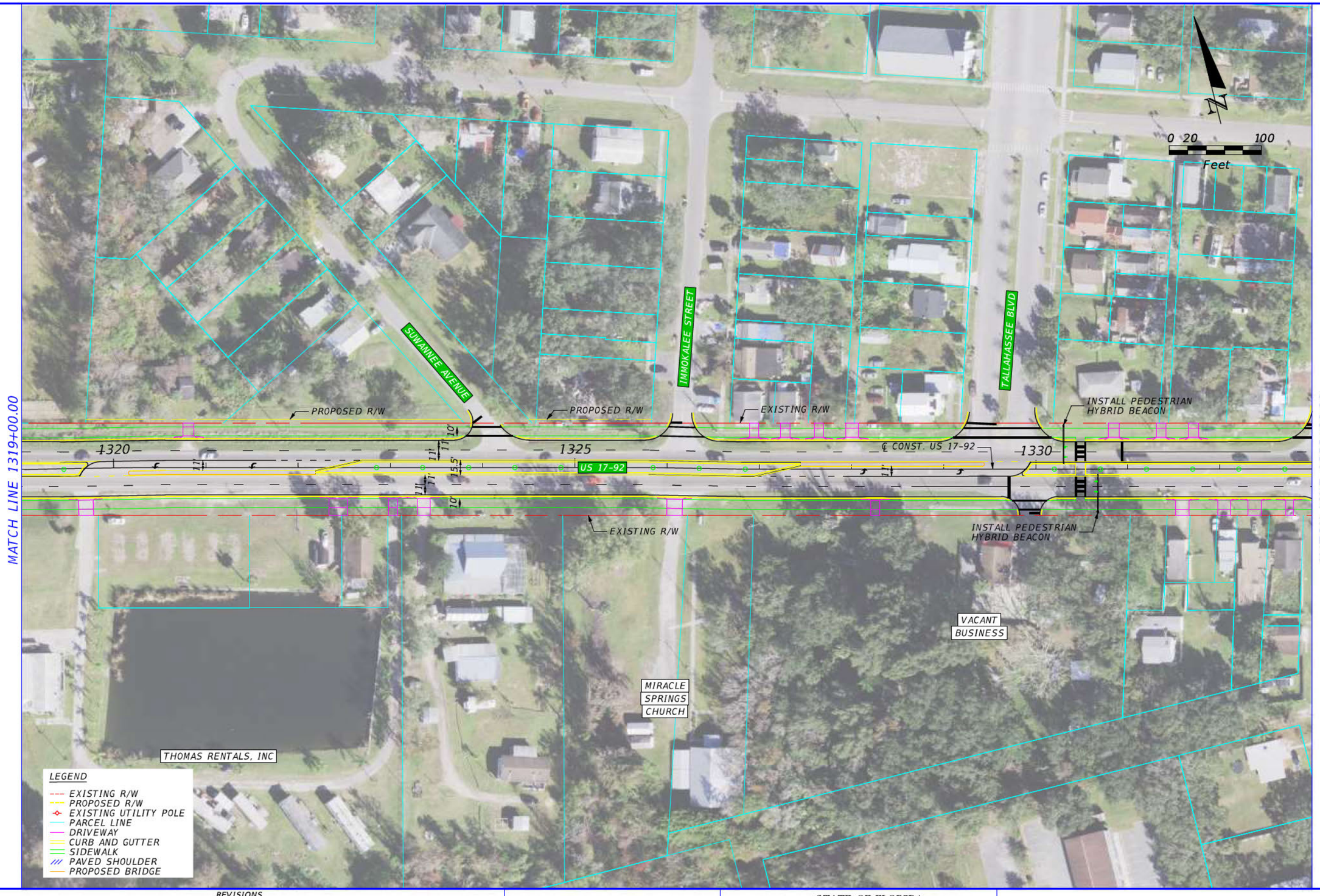

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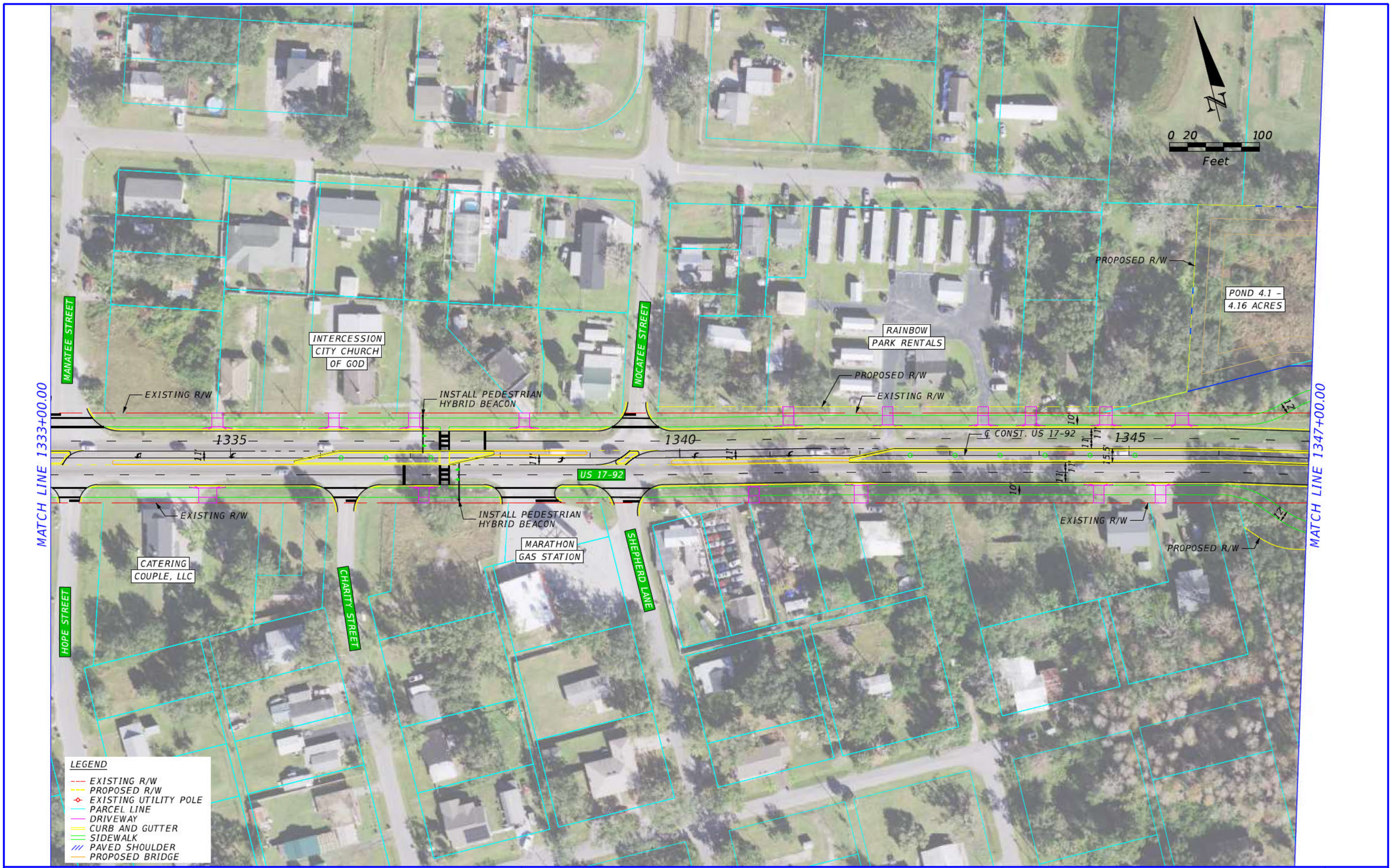

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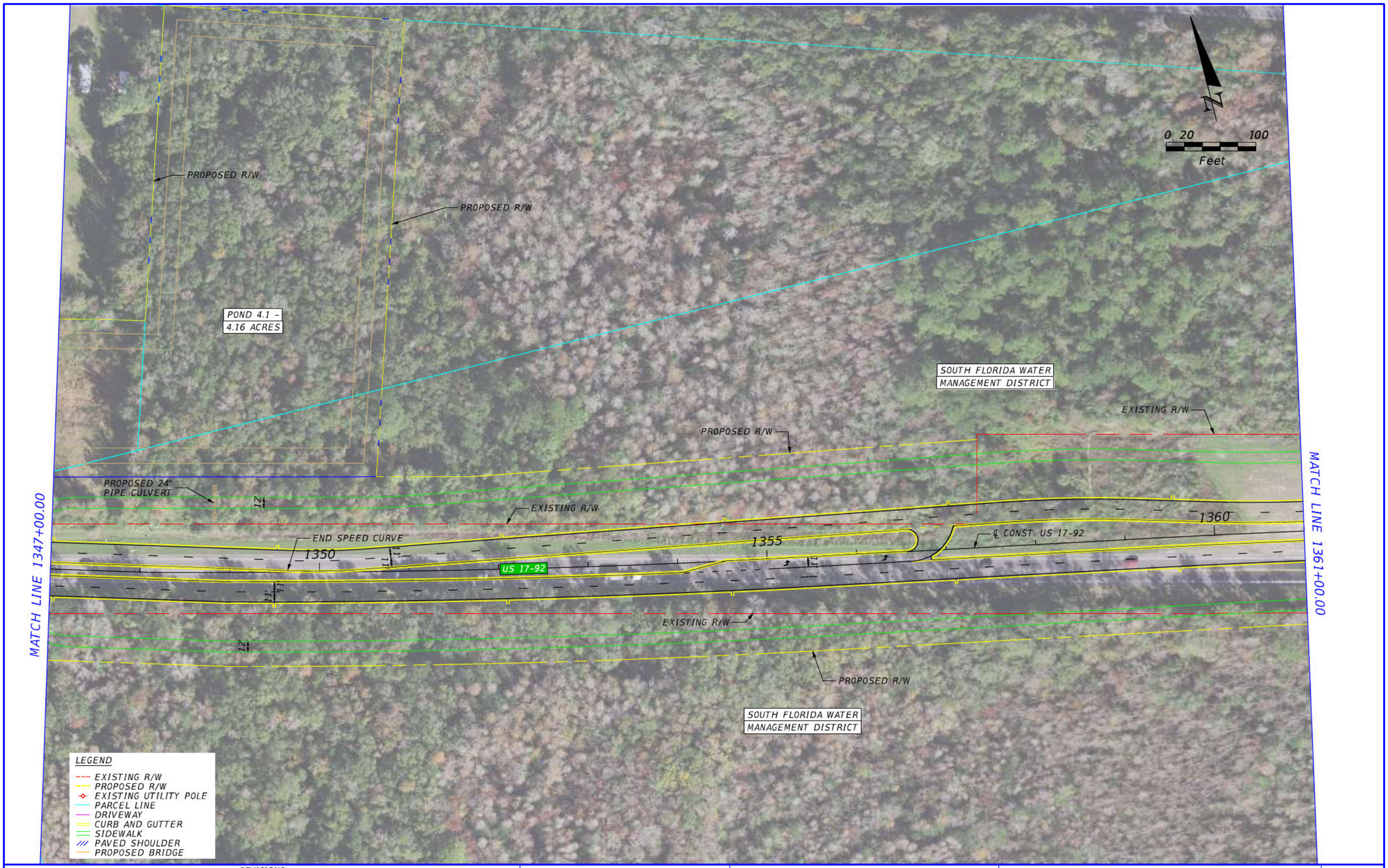

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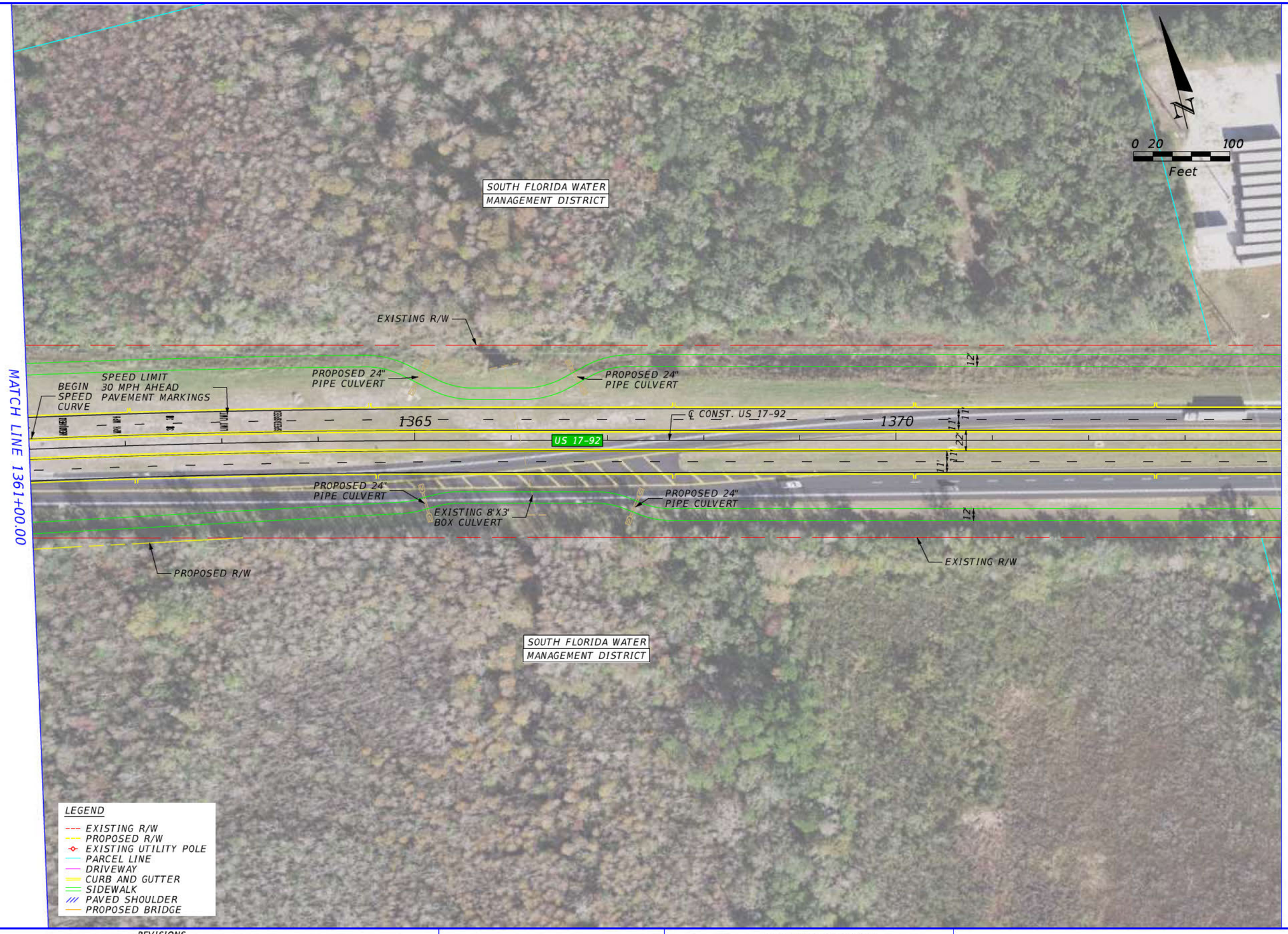

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US 17-92 PD&E - PREFERRED ALTERNATIVE

SHEET NO.

MATCH LINE 1374+00.00

MATCH LINE 1388+00.00

GATORADE

GATORADE

PROPOSED R/W

PROPOSED R/W

EXISTING R/W

EXISTING R/W

EXISTING R/W

EXISTING R/W

EXISTING R/W

AVE A

AVE A

US 17-92

℄ CONST US 17-92

1375

1380

1385

CMC REBAR

JELD-WEN
WINDOWS
& DOORS

0 20 100
Feet

N

LEGEND

- EXISTING R/W
- PROPOSED R/W
- EXISTING UTILITY POLE
- PARCEL LINE
- DRIVEWAY
- CURB AND GUTTER
- SIDEWALK
- PAVED SHOULDER
- PROPOSED BRIDGE

REVISIONS			
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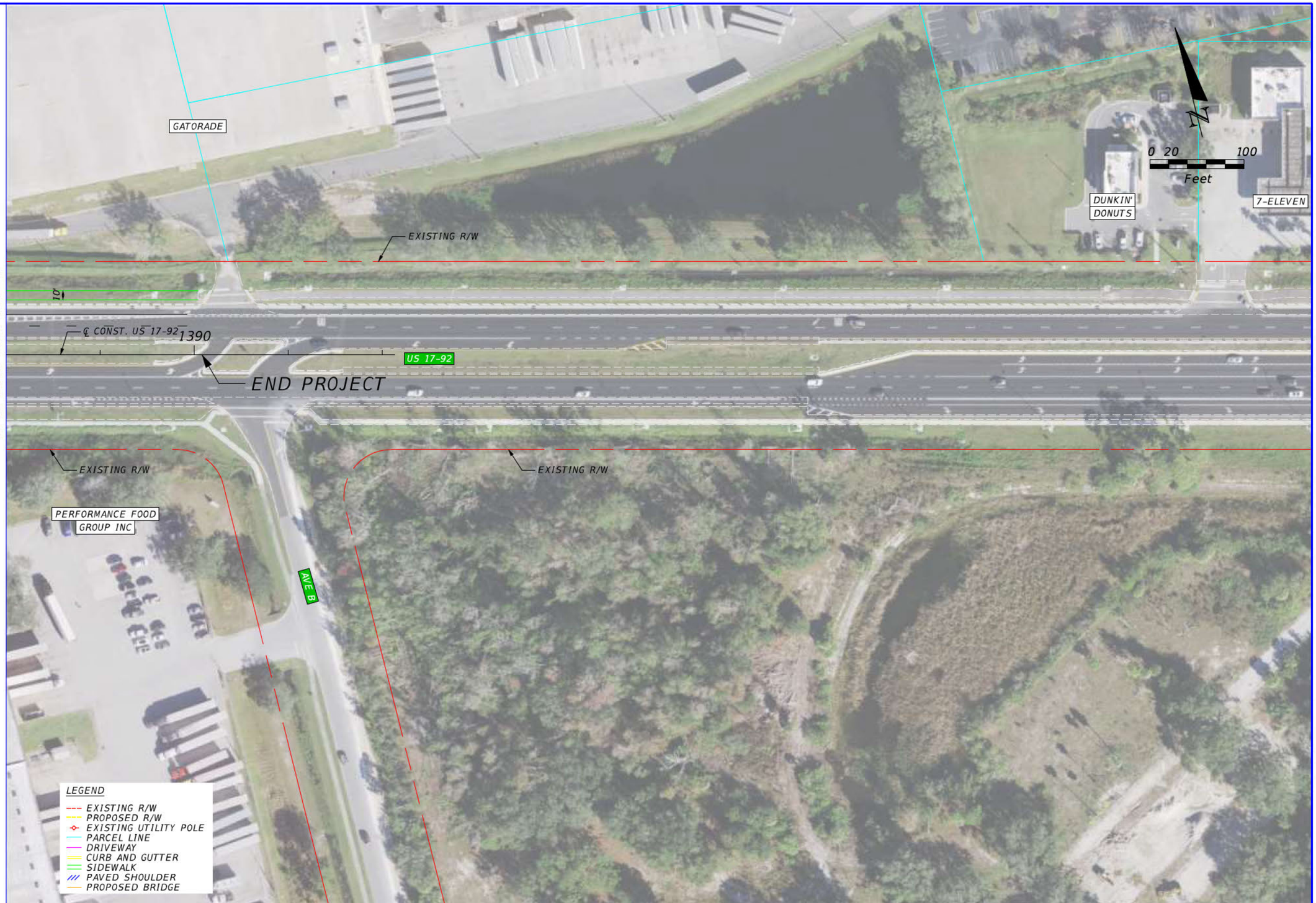
US 17-92 PD&E - PREFERRED ALTERNATIVE

SHEET NO.

MATCH LINE 1388+00.00



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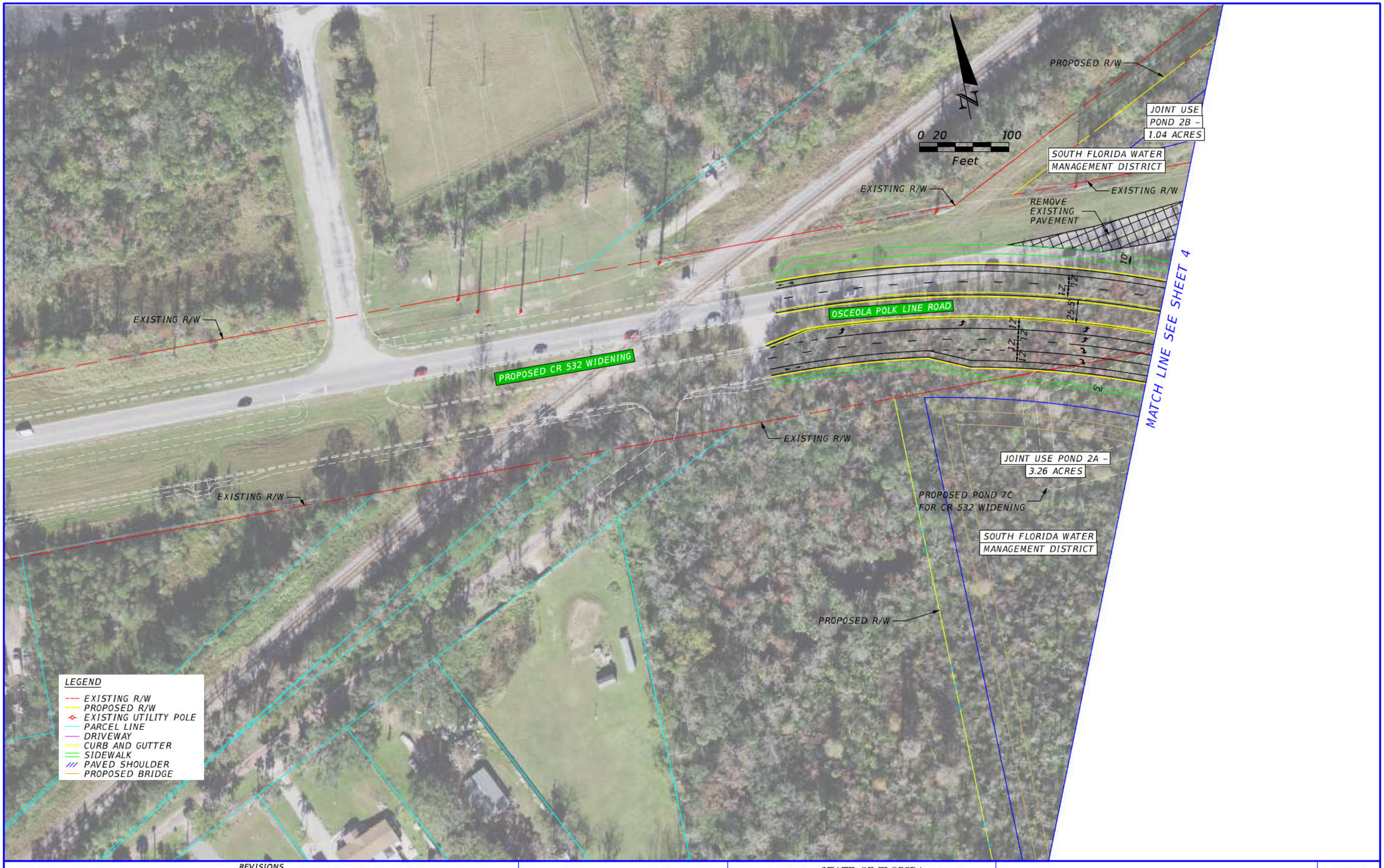

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US 17-92 PD&E - PREFERRED ALTERNATIVE

SHEET NO.

ATTACHMENT D

EXISTING BRIDGE CONDITIONS MEMO

Florida Department of Transportation

US 17/92 PD&E Study

from Ivy Mist Lane to Avenue A in Osceola County, FL

Existing Bridge Conditions Memo

FDOT Office
District Five

Authors
Vanasse Hangen Brustlin, Inc.

Date of Publication
June 2022

Financial Management No. 437200-1-22-01/437200-2-22-01
ETDM No. 14365

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated May 26, 2022, and executed by FHWA and FDOT.

1 Introduction

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to evaluate alternatives to widen US 17/92 from the current two-lane roadway to a four-lane divided roadway. The full project limits are from Ivy Mist Lane to Avenue A in Osceola County, a distance of approximately 3.8 miles. This project traverses through the census-designated community of Poinciana and the unincorporated community of Intercession City.

2 Build Alternatives

2.1 General

2.1.1 Segment 2

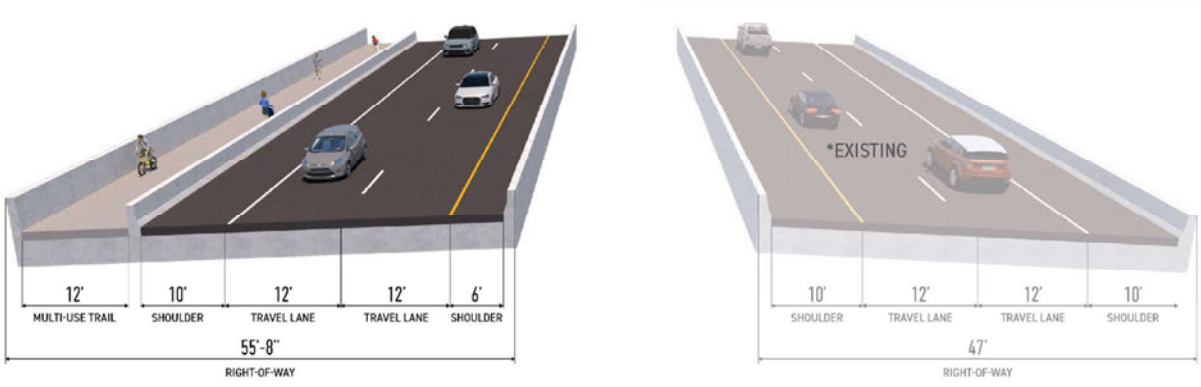
Segment 2 encompasses the study corridor along the Reedy Creek Bridge, for approximately 0.43 mile in length. In this segment there are three abandoned bridges north of the existing US 17/92 bridge that previously served as the US 17/92 Reedy Creek Bridge alignment. This segment is constrained to the existing and former bridge alignments. Additionally, avoidance of large cypress trees and the area of Fletcher Park is essential for the proposed alternative.

2.2 Alternatives

2.2.1 Typical Sections

In Segment 2, eastbound traffic will utilize the existing bridge structure and a new bridge structure will be added for the westbound traffic and a 12-foot-wide multi-use trail. Figure 3 depicts the typical section.

Figure 3: Bridge Typical Section (Segment 2)



2.3 Structures

Segment 2 encompasses the study corridor along the Reedy Creek Bridge, for approximately 0.43 miles in length. In this segment there are three abandoned bridges (Bridge Nos. 920002, 920003, and 92004), north of the existing, in-service US 17/92 bridge (Bridge No. 920174). These bridges previously served as the US 17/92 Reedy Creek bridges prior to the completion of the US 17/92 bridge (Bridge No. 920174) that currently carries a lane of traffic in both the eastbound and westbound traffic, which will become a two-lane eastbound only structure. This segment is constrained to the existing and former bridge alignments. Additionally, avoidance of large cypress trees and the area of Fletcher Park is essential for the proposed alternative.

US 17/92 in this area is classified as a "rural principal arterial other".

920002 Bridge

The 920002 bridge is a 6-span structure that provided for two 12' traffic lanes, two 1' shoulders for a clear bridge width of 26'-0" and a 150'-6" length of bridge. Span lengths are 25'-0" except for the end spans that are 24'-9". Finish grade elevation is a constant 73.0 across the length of the bridge.

920003 Bridge

The 920003 bridge is a 5-span structure that provided for two 12' traffic lanes, two 1' shoulders for a clear bridge width of 26'-0" and a 125'-6" length of bridge. Span lengths are 25'-0" except for the end spans that are 24'-9". Finish grade elevation is a constant 73.0 across the length of the bridge.
(Based on July 2019 limited topside inspection, sections of the left bridge concrete rail (over span 1) are damaged and missing, and the south approach slab is undermined, 2 feet H x 8 feet W.)

920004 Bridge

The 920004 bridge is a 7-span structure that provided for two 12' traffic lanes, two 1' shoulders for a clear bridge width of 26'-0" and a 175'-6" length of bridge. Span lengths are 25'-0" except for the end spans that are 24'-9". Finish grade elevation is a constant 73.0 across the length of the bridge.

Summary of the Bridges

The above three bridges, constructed in 1938, over Reedy Creek (bridge No. 920002, 920003, and 92004) and located approximately 410 feet east of CR 532 previously served as the US 17/92 Reedy Creek bridges prior to the completion of the US 17/92 bridge (Bridge No. 920174) in 2001 that currently carries a lane of traffic for both the eastbound and westbound travel.

The bridges are comprised of short span steel girders with a concrete deck on timber bent caps supported by timber piles that given their age (over 80 years) are all beyond their reasonable and accepted design and serviceably useful life. The bridge superstructure consists of concrete deck slab supported on six steel 21WF @ 59# girders in non-composite action. Some girders span two spans while others only span one. The bridges were designed using loading criteria from 1937 (for H-15 State Road Department of Florida Design Specifications (1937)), which equates to today's 15-ton vehicles, and therefore do not meet today's heavier design vehicles and load requirements. Concrete decks appear visually to be in reasonable condition with only minor cracking/spalling. Steel girders vary in condition with the most concerning issues noted as deep/heavy flange corrosion/rusting.

Timber piles and timber bents are used for supporting all elements of the substructure including the abutments. The abutments have a concrete backwall to retain the backfilled material but are failing in more than one location causing significant loss of material. As can be seen in the photos below, some timber bent caps and timber piles are heavily deteriorated and in very poor condition and would need complete replacement. An underwater inspection was not completed but it would be easily defensible to assert more piles, in addition to the ones that are apparent above the water line, would be of the same very poor condition.

Below is a collection of photos showing the current condition representative of the three abandoned bridges. (More photos, specific to each bridge, are shown in the appendix.)

Erosion under the timber end bent cap that is supported on timber piles at the abutment. This deterioration has had attempted repairs in some locations but indicates the need for a larger hydraulic opening persists.

Typical timber bent showing severely decayed timber piles and timber bent cap. This is typical of the timber piles and timber cap and would be expected for these elements in service beyond their design life.

Large cypress trees are in close proximity to the bridges (appears in background of photo above).

Exterior girder showing signs of heavy corrosion/rusting along the outside flanges. All steel girders show signs of poor maintenance and would, at a minimum, need cleaning and painting.

Bridge rail elevation showing the standard 1930s bridge rail (Standard Index No. 1332) that doesn't meet today's AASHTO/FHWA Manual for Assessing Safety Hardware (MASH) crash criteria due to a lack of reinforcement.

Typical concrete bridge rail post showing typical deterioration and configuration. Replicating a similar railing meeting currently functional and design requirements would not be feasible.

Missing / damaged bridge rail Section showing the apparent lack of reinforcing within the 1930s Bridge Rail System

The existing cross-section of the three bridges does not meet the needs of any of the proposed build alternatives. Each bridge would need to be widened approximately 27' from the current 26'-0" face of rail to face of rail to the proposed 55'-8" out to out to accommodate two lanes of traffic with the proper shoulders (40'-0" travel way) and a 12-foot multi-use trail. This widening on the existing bridges would also increase impacts to the wetlands and floodplains that would include impacts to the large cypress trees and the area of Fletcher Park that have their impacts minimized by the preferred alternative.

Based on the preferred profile, all three bridges would also need to be raised approximately 8.8 feet higher and cross slope added to help with stormwater flow off the bridge. This type of profile modification would only be possible with a complete dismantling of the bridge. The steel girders would be the only elements possible for re-use after they were strengthened for today's loadings. Additional modifications to the roadway profile between the bridges would require walls be installed.

Conclusion and Recommendation for all Three Bridges

Based on the observed condition and understanding the future needs some conclusions are below.

The three bridges would all need the timber piles and the timber bent caps that support all substructure elements replaced due to the heavy deterioration that has taken place since their construction over 80 years ago, which is beyond their reasonable life expectancy. To replace these elements, the entire bridge would need to be removed (the pavement, concrete bridge rails, concrete deck, steel girders, concrete abutment backwalls, timber bent caps, and the timber piles) and reconstructed bottom-up with the only possible re-use elements being the original steel girders (assuming they are strengthened, a full bridge load rating is performed, and a favorable load rating is the outcome for all three bridges). To allow a similar span arrangement the existing steel girders would need strengthening before re-use given that they were designed using loading criteria from 1937 (for H-15 State Road Department of Florida Design Specifications (1937)), which equates to today's 15-ton vehicles, and therefore do not meet today's heavier design vehicles and load requirements.

The concrete bridge rail system could not be reconstructed, practically speaking, as it does not meet crash-worthy standards of the current AASHTO/FHWA Manual for Assessing Safety Hardware (MASH) Criteria. A new concrete bridge rail system would need to be used.

Widening the existing bridges at their current span arrangement (6, 5, or 7-span) versus the proposed, increases the number of obstructions (timber piles and close spacing of the timber bents) in the waterway. This would likely be a concern from water passage through the bridge substructure.

Given the above observations regarding modifications to the typical section and vertical profile and given the current condition of the 1938 constructed bridges as noted above and documented in the included photos, the existing three bridges would need to be nearly wholistically repaired and/or modified to meet any of the proposed build alternatives and still meet current loading, design, and construction specifications.

Therefore, a recommendation for re-use, or even re-purposing, of any of the bridges or any of their structural elements is not a defensible position. The only feasible solution for any of the corridor build alternatives is for full bridge replacement(s).

Appendix

Existing Bridge Condition Photos

(Br. No's: 920002, 920003, 920004)

Bridge No. 920002 – Existing condition photos

Typical bridge approach with overgrowth

Tree growth through bridge railing and deck

Side view along bridge elevation

Typical underside view between girder lines

Abutment embankment washout/erosion

Typical top flange heavy rusting/corrosion

Bridge No. 920003 – Existing condition photos

Bridge approach with overgrowth and missing railing

Fully undermined bridge approach and abutment

Side view along bridge elevation

Typical underside view between girder lines

Attempted/failed mitigation of abutment washout

Typical top flange heavy rusting/corrosion

Bridge No. 920004 – Existing condition photos

Typical bridge approach with overgrowth

Timber bent cap and pile deterioration and repairs

Side view along bridge elevation

Typical underside view with bent cap repairs

Abutment bent cap with exposed piles/erosion

Typical top flange heavy rusting/corrosion