TECHNICAL MEMORANDUM FOR BRIDGE REPLACEMENT FOUR-LANE ALTERNATIVES

Bridge Replacement at Upper Manatee River Road over Mill Creek

Contract No. 15-0909JE - Work Assignment No. 10
County CIP No. 6030662

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Technical Memorandum for Bridge Replacement Four-Lane Alternatives

Upper Manatee River Road over Mill Creek

(Existing Bridge No. 134023)

Contract No.: 15-0909JE, Work Assignment No. 10

County C.I.P. No.: 6030662

Prepared For: Manatee County

Prepared by: Kisinger Campo & Associates, Corp.

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1.0 Introduction

Upper Manatee River Road is a two-lane, undivided roadway in central Manatee County, between Parrish and Lakewood Ranch. The portion of Upper Manatee River Road considered in this Bridge Replacement Study extends from west to east, connecting Fort Hamer Road and North Rye Road. The existing Bridge No. 134023 spans over Mill Creek, located approximately 3.2 miles northeast of SR-64. Refer to **Figure 1-1** for the approximate bridge location. The existing bridge is a four-span, simply supported, prestressed concrete channel beam superstructure. Manatee County proposes this Technical Memorandum for Bridge Replacement (Memo) to evaluate factors and alternatives associated with the replacement of the existing bridge and approach roadways and replacement of an adjacent 42" diameter potable water main (PWM), located on the south side of the bridge.

Figure 1-1: Project Location Plan View

The proposed bridge replacement considered within this Memo includes two bridge typical section alternatives. Both alternatives are intended to allow for the future widening of Upper Manatee River Road from its current two lane configuration to a four lane configuration without need of future widening of the proposed bridge. Bridge alternatives considered commonly include 11'-0" travel lanes and 5'-0" sidewalks. Shoulder width, barrier type, and overall bridge width varies by alternative. Lateral alignment of the proposed bridge will depend on several factors including the typical section considered and construction methods utilized.

As part of the bridge improvements, the roadway vertical profile will be maintained where possible and the proposed superstructure depths will closely match that of the existing bridge. The existing bridge utilizes four prestressed concrete sheet pile wingwalls with concrete bulkhead caps. The proposed

condition will provide similar slope stability using prestressed concrete sheet pile walls along the east and west bank of Mill Creek within the project area. The approach roadway horizontal alignment and vertical profile will be adjusted as necessary for the proposed typical section improvements and will extend to a point at which the improvements can be safely transitioned back to the existing approach roadway sections.

Important factors to be considered during the design and construction of the bridge replacement include, but are not limited to, available right-of-way, environmental impacts, construction phasing or detours, removal or replacement of existing sheet pile wall, bridge replacement cost, and total time of construction.

This Memo evaluates the feasibility of two bridge superstructure alternatives. A recommended course of action is provided based on constructability concerns and cost analysis. The bridge superstructure configurations that are considered include:

- Four-Span Continuous Cast-in-Place (CIP) Concrete Slab Superstructure
- Four Spans of Simply Supported 12" Florida Slab Beam (FSB) Superstructure

Both proposed superstructure alternatives provide improved traffic capacity and bicyclist/pedestrian safety. The proposed replacement alternative will be constructed at the approximate location of the existing bridge. The proposed construction sequence and phasing alternatives are discussed further in Section **4.3**. Alternatives for the final disposition of the 42" PWM are also discussed in Section **4.5**.

A foundation of 18" square prestressed concrete piles have been estimated in the generation of bridge replacement cost estimates. Discussion of alternative bridge substructure is included in Section **4.2.2**.

A concurrent Memo is being conducted for the replacement of Bridge No. 134024, Upper Manatee River Road over Gates Creek, which is located approximately 1 mile west of Mill Creek. Additional consideration will be given to construction phasing related to concurrent bridge replacement projects for these two structures and the impacts imposed on residences with single access points located along Upper Manatee River Road between these two bridges.

2.0 Existing Conditions

2.1 Existing Bridge

Upper Manatee River Road over Mill Creek (Bridge No. 134023) is a four-span, simply supported, prestressed concrete channel beam superstructure. The substructure consists of a reinforced concrete pile bent cap founded on 12" square prestressed concrete piles. All piles at this structure have had cathodic protection integral pile jackets which were installed in August of 2010. The bridge was constructed in 1963 and carries two 11'-0" traffic lanes and two 3'-0" shoulders, with a total curb-to-curb width of 28'-0". The approach roadways are supported by prestressed concrete sheet pile backwalls and wingwalls which angle back to tie into the embankment fill. Refer to **Figure 2-1** for the existing bridge typical section.

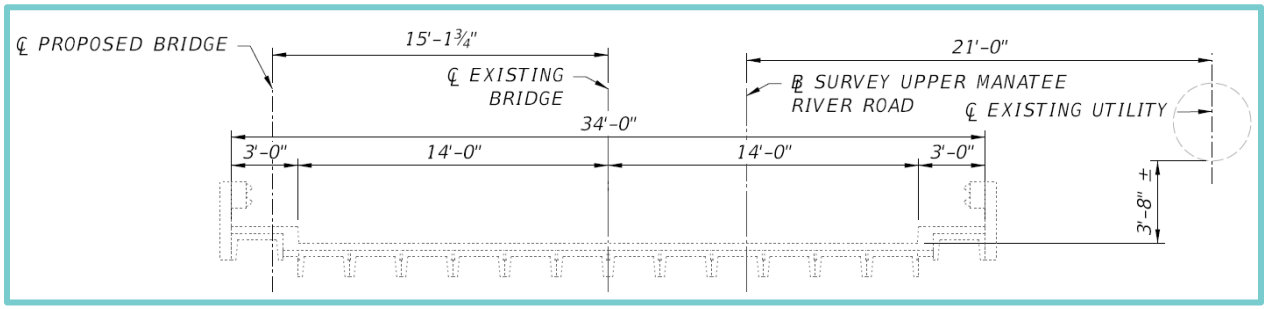

Figure 2-1: Existing Bridge Typical Section

Note: The pipe offsets shown above are approximate and founded on the 1995 As-Builts plans titled "South County Water Transmission Main, Phase I, 42" – Water Treatment Plant to S.R. 64", by others.

With the installation of the pile jackets in 2010, the Sufficiency Rating (SR) of the bridge showed some improvement, increasing from 45.8 in 2010, prior to the jacket installation, to 59.5 in 2011. The bridge was removed from the Structurally Deficient bridge list in 2011, but remained coded as Functionally Obsolete. The bridge SR has further decreased over time due to continued bridge deterioration and updates to the bridge's load rating analysis to the current rating of 21.8. It is anticipated that the bridge SR will continue to decrease over time with additional bridge deterioration.

The bridge was most recently inspected by the Florida Department of Transportation on March 24, 2020. A copy of this Routine Inspection Report is included as **Appendix E** to this Memo. During this most recent Routine Inspection, the bridge was found to have National Bridge Inspection (NBI) ratings of 7 Good for the Deck and Channel and 6 Satisfactory for the Superstructure and Substructure. This bridge is currently coded as Functionally Obsolete, due to lateral clearances over the deck (Deck Geometry - Intolerable). This bridge is currently posted for Load for Florida Single Unit Legal Load (SU Truck) at 19 tons, Truck Tractor Semi-Trailer Legal Load (C Truck) at 25 tons, and Single Unit Truck with One Trailer Legal Load (ST Truck) at 30 tons. The most recent Bridge Load Rating is dated January 6, 2012.

2.2 Existing Roadway

Upper Manatee River Road, within the project limits runs along a west to east alignment which is classified as an Urban Collector roadway. This section of Upper Manatee River Road begins at a three-way signal-controlled intersection with Fort Hamer Road, and runs east as a two-lane, two-way road for

approximately 3.9 miles before terminating at North Rye Road with a stop-controlled T-intersection. The surrounding area is primarily low-density residential. The roadway section generally consists of two 11' travel lanes with unpaved shoulders of no more than 6'. Roadside features include intermittent sidewalks and ditches, numerous residential driveway connections, and overhead utilities. County records indicate a 40' deeded right-of-way line on each side of Upper Manatee River Road. The posted speed limit on Upper Manatee River Road is 45 miles per hour (MPH), and the Annual Average Daily Traffic (AADT) is 10,500 with a current level of service grade of D. Traffic counts approximately doubled in the 20-year period from 2000 to 2020, growing from 2532 vehicles per day (VPD) to 5478 VPD, and are expected to continue increasing.

2.3 Existing Utilities

Constructed in 1995, the 42" PWM aerial crossings over Mill Creek is part of a water transmission main that conveys potable water from the Lake Manatee Water Treatment Plant to the intersection of S.R. 64 and Upper Manatee River Road. The aerial crossing is supported on the south side of the bridge by concrete piles with reinforced concrete caps. Lateral support is provided for the utility by connection to the bridge bent caps. The PWM extends 164' over Mill Creek, with 45 degree bends at either channel bank, which return the utility underground. Based on a review of photos taken during a site visit in October 2020 by KCA, the aerial crossings are constructed of prestressed concrete cylinder pipe (PCCP) which consists of a concrete core, a thin steel cylinder, high tensile prestressing wire and an exterior concrete mortar. Refer to **Photo 2-1** for photographic representation of the 42" PWM.

Photo 2-1 – 42" PWM Spanning Mill Creek South of Bridge No. 134023

PCCP is known for its resistance to corrosion, high internal pressures and external loadings, and its ability to be rapidly and economically installed. There are two types of PCCP. Lined-cylinder Pipe (LCP) was first manufactured in 1942 and Embedded-cylinder Pipe (ECP) in 1953. The main difference between the two is how they are constructed. The cross section of the LCP is layered from the inside out as follows: concrete

core, steel cylinder, prestressing wires, cement mortar. With the ECP, the steel cylinder is embedded in the concrete core and the prestressing wires wrap around the concrete core instead of the steel cylinder. Based on the photos, the aerial crossings at Mill Creek uses LCP.

The 42" PWM appears to be in good condition, approaching 30 years of service. No leaking or settling was observed. Joint repairs have been performed at some point (Refer to **Photo 2-2**) and the concrete mortar does show signs of distress from the elements, with hairline cracks in the mortar which allow rainwater to pull calcium out of the mortar to form the stalagmites (Refer to **Photo 2-3** & **Photo 2-4**). There is also evidence pipe straps once secured the pipes to the concrete saddles but have since been removed.

Photo 2-2 – Past joint repair at 42" PWM

The existing pile and pipe support systems at both crossings consists of independent concrete piles and pile caps anchored to the ends of the existing concrete bridge substructure for lateral support. Record drawings reviewed indicated the concrete piles are 12" square prestressed concrete assemblies with CIP reinforced concrete pile caps. These pile caps were constructed with the top surface cradled to provide support of the bottom of the pipe and allow for a neoprene bearing pad between the outside face of pipe and the concrete. The record drawings reviewed indicated both the piles and the bearing pads to be installed in conformance with requirements of Florida Department of Transportation (FDOT) specifications and installed to an embedment depth in the creek bed to provide a minimum 20 ton vertical allowable load capacity. Cathodic protection pile jackets were installed on the 42" PWM support piling in conjunction with the bridge piling repairs conducted in August 2010.

Other known existing utilities in the project area include two 4" fiberglass gas line utilities attached to south barrier rail posts, Verizon buried fiber optic cable located south of the bridge, and overhead electric and telecommunication line located approximately 20' south of the bridge coping.

Photo 2-3 – Typical mortar cracks in 42" PWM surface

Photo 2-4 – Calcified stalagmite growth at joints

3.0 Design Considerations

The Scope of Services for this Memo does not include the development of detailed structural, roadway, or utility analysis. No survey or geotechnical data has been collected for the completion of this Memo. This Memo and the cost estimates for each alternative included are founded on Engineering Judgement, assumptions made in accordance with standard engineering practice, and observations made during field review of the project site.

3.1 Bridge Design Considerations

Cost estimates were developed assuming that final bridge design will be completed in accordance with the current edition of the American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications, supplemented by the January 2021 Florida Department of Transportation (FDOT) Structures Design Manual (SDM). Engineering assumptions related to proposed bridge construction were made in accordance with these manuals. Other specific design criteria to be followed during final design include the most current editions of the following:

- AASHTO LRFD Bridge Design Specifications, Customary U.S. Units, 9th Edition
- FDOT Structures Manual, January 2021 Edition, Topic No. 625-020-018, with subsequent Structures Design Bulletins
- FDOT Standard Specifications for Road and Bridge Construction, July 2021 Edition
- FDOT FY2020-21 Standard Plans for Road and Bridge Construction, Topic No. 625-010-003, with subsequent design interims.
- FDOT Design Manual, January 2021 Edition, Topic Nos. 625-000-002, with subsequent Roadway Design Bulletins.
- Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (2018) ("Florida Greenbook"), Topic No. 625-000-015.

Based on comments during initial scoping and subsequent project meetings, 11'-0" traffic lanes, 4'-0" bike lanes, and 5'-0" sidewalks have been included on both sides of the proposed bridge typical sections. Currently, the approach roadway does not utilize bike lanes or sidewalks, but in the future, connectivity along the length of Upper Manatee County River Road may be achieved without necessary widening of the proposed bridge.

When selecting structural alternatives for consideration, a review of the project location, existing geometric and structural conditions, and similar replacements were considered. Due to the existing low level bridge, two alternatives are implemented into the cost analysis. In consideration of the existing minimum vertical clearance, a four-span continuous CIP flat slab superstructure and a 12" Florida Slab Beam (FSB) superstructure were selected for cost estimate generation. Both superstructure alternatives include similar superstructure depths to the existing 19" thick superstructure; however, minor approach roadway infilling will be required to meet modified roadway profiles due to the differing superstructure depths and to offset modifications to the proposed bridge low member elevation resulting from increased bridge width and bridge cross slope.

Future survey and geotechnical investigations will help determine final bridge low member elevation and optimal substructure alternatives.

3.2 Bridge Typical Section

Two bridge superstructure alternatives have been considered which allow for the future widening of Upper Manatee River Road from its current two lane configuration to a proposed four lane configuration without the need for future widening of the replacement bridge. The proposed typical sections include a Rural and one Urban section in accordance with the FDOT Design Manual (FDM) Figures 260.1.2 and 260.1.3, respectively.

3.2.1 Rural Typical Section

The proposed rural bridge typical section is based on Figure 260.1.2 of the FDM for Undivided Arterials and Collectors and includes two 11'-0" travel lanes, two 12'-8" shoulders, two interior 36" single-slope traffic barriers (1'-4" wide), two 5'-0" sidewalks, and two exterior 36" single-slope traffic barriers (1'-4" wide). Refer to **Figure 3-1** for the proposed rural typical section. The resultant curb-to-curb and out-to-out dimensions are 47'-4" and 62'-8", respectively.

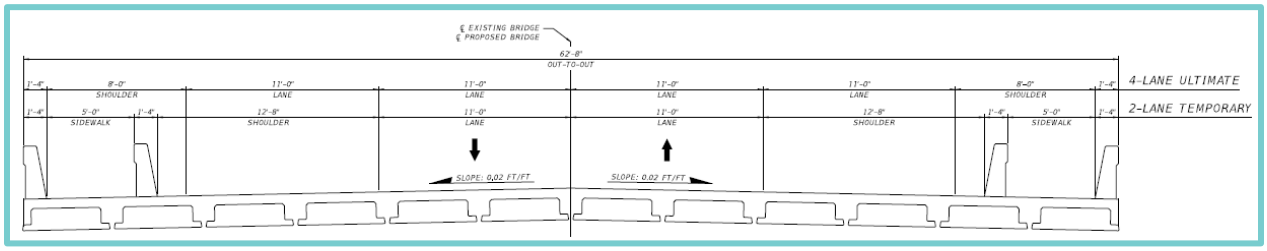

Figure 3-1 – Rural Typical Section, Florida Slab Beam (CIP Continuous Slab Similar)

Upon completion of construction of this proposed typical section, a portion of the 12'-8" shoulder would be utilized for bicycle facilities in order to provide an equivalent level of service to the proposed urban typical section alternative.

Future widening of Upper Manatee River Road to a four lane condition could be accomplished through the removal of the interior 36" single slope traffic railing. This barrier removal would increase the bridge curb-to-curb width to 60'-0", allowing for four 11'-0" travel lanes and two 8'-0" shoulders per FDM requirements. Although no widening of the bridge would be required during a future four lane condition along Upper Manatee River Road, the construction of a separate pedestrian structure would be required to maintain pedestrian access across Mill Creek under this typical section alternative.

3.2.2 Urban Typical Section

The proposed urban typical section is based on Figure 260.1.3 of the FDM for Curbed Arterials and Collectors with design speeds of 45MPH or less. Manatee County considers Upper Manatee River Road as an urban roadway. Upper Manatee River Road has a posted speed limit of 45 MPH within the project limits and it is assumed that curb and gutter will be extended beyond the bridge limits for an unknown distance to allow for this typical section. This proposed typical section allows for reduced bridge width when compared to Undivided Arterial typical sections and thus is intended to save the County in overall bridge and Right-of-Way acquisition costs under the four lane ultimate condition of the roadway.

The proposed bridge replacement includes four 11’-0” traffic lanes, two 4’-0” bike lanes, two 1’-4” shoulders, two 5’-0” raised sidewalks with 2” vertical end transitions, and two 32” vertical shape traffic railing (1’-1” wide). The resultant curb-to-curb and out-to-out dimensions are 54’-8” and 67’-2”, respectively, as shown in **Figure 3-2**.

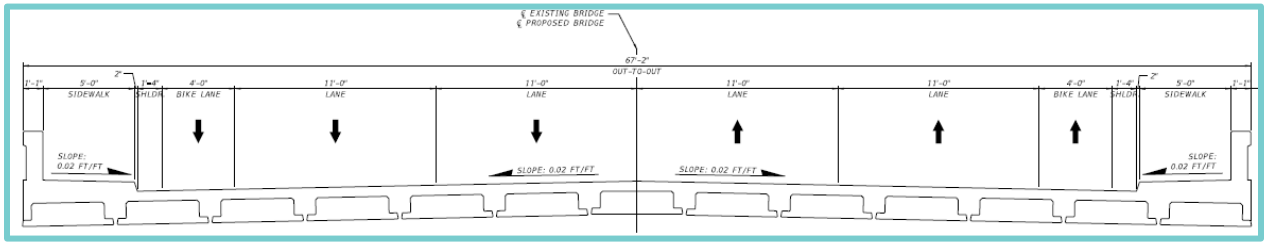

Figure 3-2 - Urban Typical Section, Florida Slab Beam (CIP Continuous Slab Similar)

Upon completion of construction of this proposed typical section, only two interior traffic lanes would be utilized. Future widening of Upper Manatee River road to a four lane condition could be accomplished with no modifications to the bridge, with the exception of restriping of the deck.

3.3 Roadway Design Considerations

Roadway typical sections were developed in conjunction with the above bridge sections and will route traffic back to the existing two-lane configuration from the proposed four-lane configuration of the bridge while laying the groundwork for future roadway expansion. The proposed urban section will consist of 11’ travel lanes, 4’ paved shoulders serving as bike lanes, Type F curb & gutter and a 5’ sidewalk each direction on both sides of the proposed bridge. The proposed rural section will consist of 11’ travel lanes and 15’ paved shoulders with guardrail placed to shield the bridge approaches and 5’ sidewalks. The proposed 11’ travel lane width matches the existing lane widths of Upper Manatee River Road and is in accordance with Florida Greenbook, Table 3-10 minimum lane width requirements for roadways with 50 MPH or lower design speeds. The proposed design speed of 45 MPH will be considered for final roadway improvements. From 2000 to 2020, the traffic volume along Upper Manatee River Road has more than doubled and is anticipated to continue to increase over time.

To accommodate the roadway typical and maintain the existing waterline location, the proposed centerline roadway alignment will be shifted to the north. This avoids R/W and overhead utility impacts along the south side of the roadway. But the proposed improvements will require additional R/W along the north side. Also, the proposed footprint is anticipated to impact the residential parcel on the northeast corner and the adjacent side street intersection.

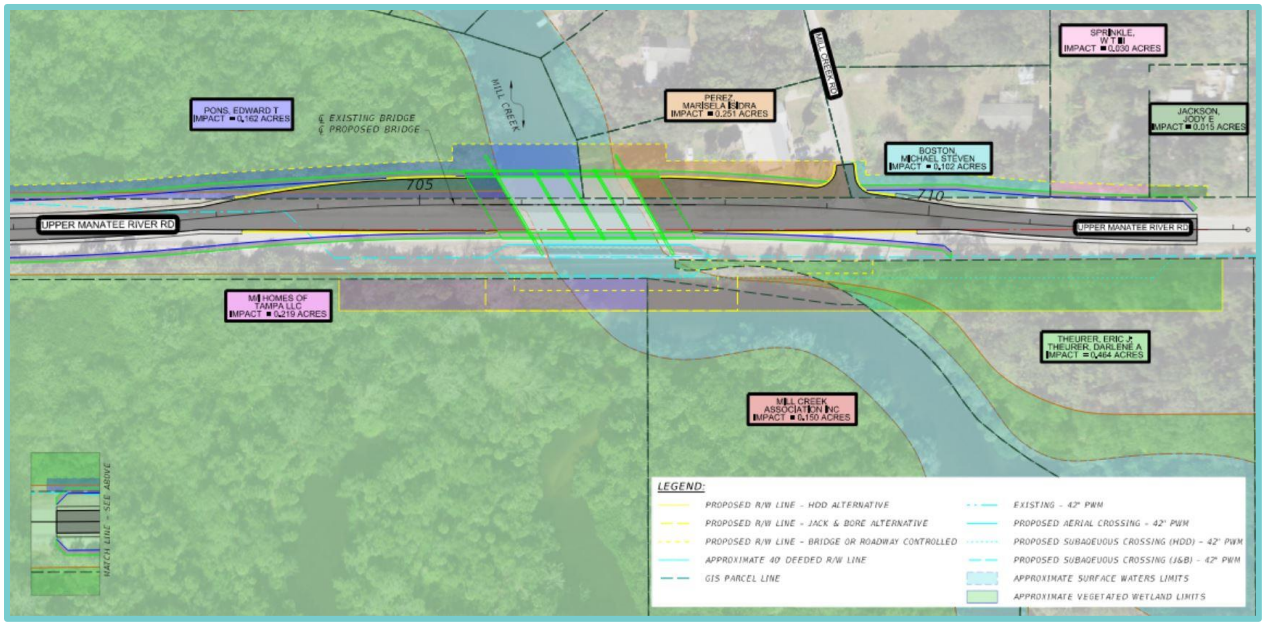

Figure 3-3 – Proposed Roadway Plan

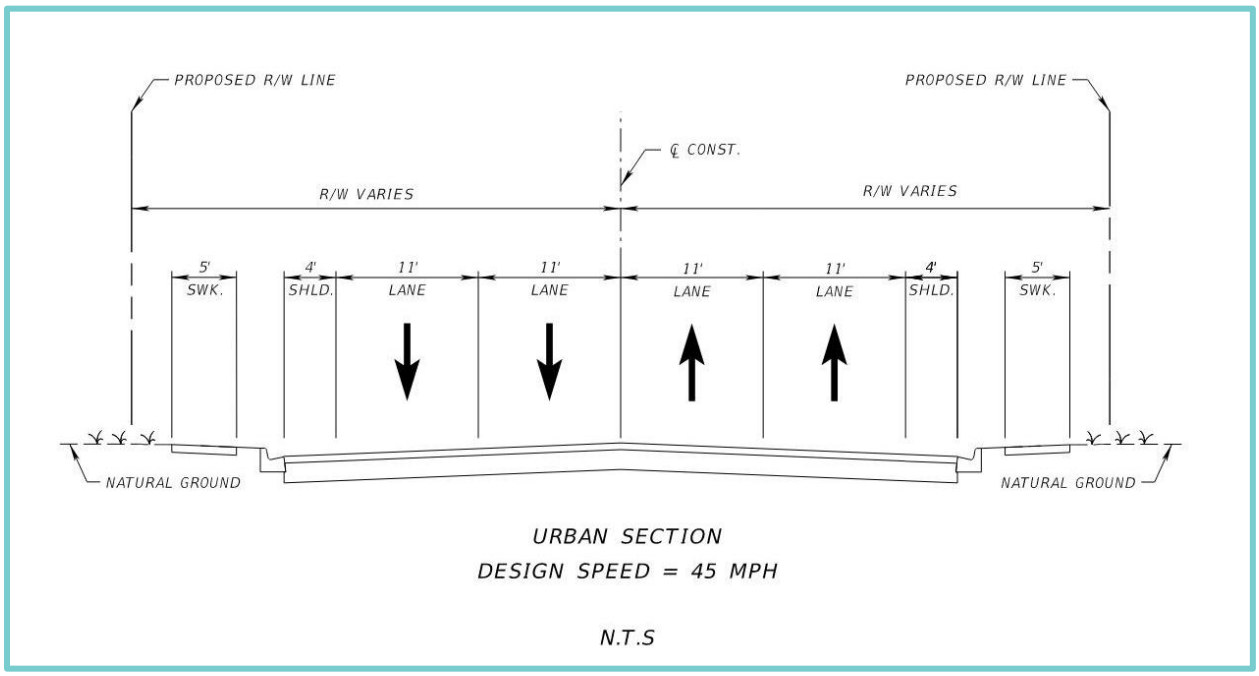

Figure 3-4 – Roadway Urban Typical Section

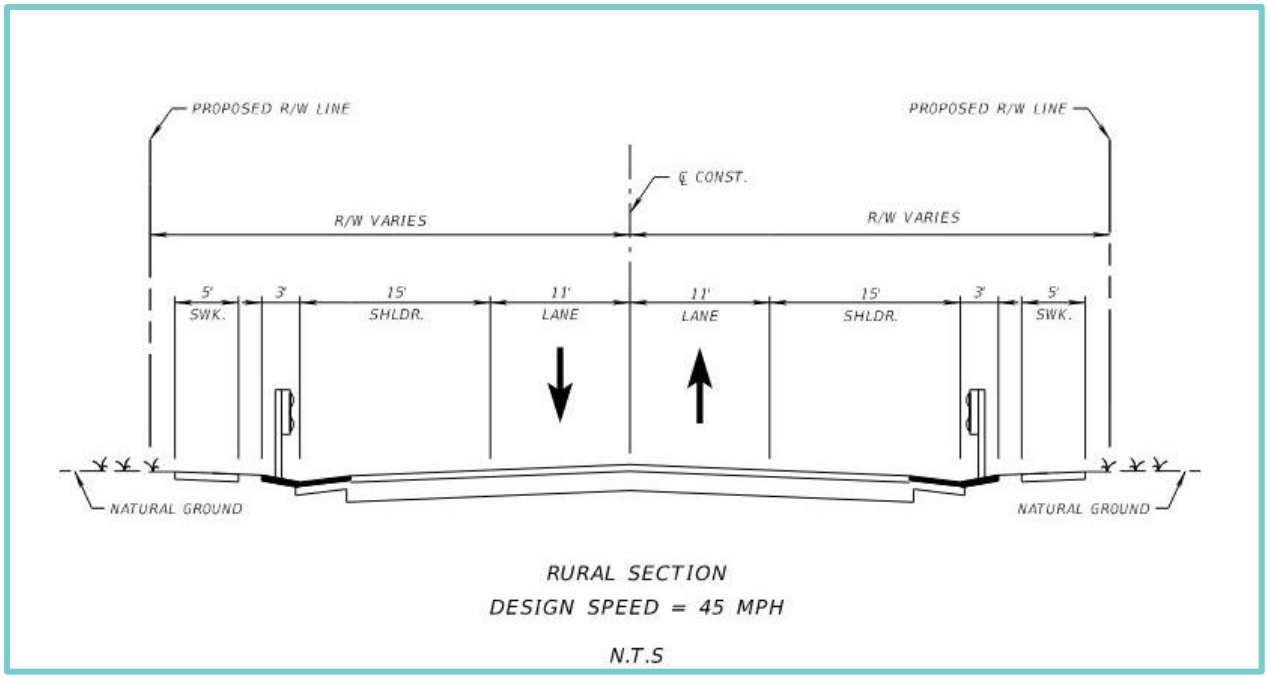

Figure 3-5 – Roadway Rural Typical Section

Since the existing roadway does not feature bike lanes, the proposed 4' paved shoulder/bike lane will be sufficient for current conditions. The outside lane or wide shoulder will be tapered in to match existing conditions as well. The existing roadway also lacks sidewalks or other pedestrian facilities; proposed sidewalks will be shifted away from the roadway and will terminate at the project limits. The proposed roadway footprint at the approaches on both sides of the bridge will enable future roadway improvements along this corridor to tie in with minimal throughway cost. This is an important consideration in light of the increases in traffic volume and anticipated growth discussed in Section **2.2**.

Two alternatives were evaluated for temporary traffic control during construction. Each alternative would be used for the full duration of construction work. Alternatives considered include:

- Alternative 1: Full closure of Upper Manatee River Road with a detour using County Road 64 and Rye Road.
- Alternative 2: A phased approach utilizing a portion of the existing bridge to maintain two-way traffic.

The existing overhead utilities in the southern portion of the project area are located within 30' of the centerline of the existing roadway and must be temporarily de-energized and relocated during construction. The 42" PWM on the south side of the existing bridge was considered to stay in place during construction. This utility will need to be braced to the proposed bridge. If any additional existing facilities are identified during construction, coordination with utility owners will be required to protect, relocate, or remove them as needed.

3.4 Environmental Considerations

Coordination with state and federal agencies will be necessary during the design phase of this project. Specific identification of environmental impacts related to the proposed bridge replacement alternatives is not included in the scope of services for this Memo. Anticipated agency coordination includes the Florida Department of Environmental Protection (FDEP), the Southwest Florida Water Management District (SWFWMD), and the United States Army Corps of Engineers (USACE). Mill Creek is a USACE Retained Waterway.

The bridge alternatives included within this Memo are intended to meet or exceed the existing hydraulic opening beneath Upper Manatee River Road. Hydraulic analysis will need to be conducted during final design to determine the downstream impacts related to the bridge and possible 42" PWM replacement and the permitting ramifications related to these impacts (if any).

Additional coordination with environmental resource agencies during the permitting process may be required. These agencies include the U.S. Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FWC). Anticipated surface waters and vegetated wetlands and the associated costs of wetlands mitigation have been estimated as part of this Memo. Refer to **Table 5-1 – Alternatives Evaluation Matrix** and **Appendix A** for further information.

Initial permitting should be conducted early within the project design phase. Permitting often becomes the critical path in terms of design and construction timelines. Permitting efforts are not included in the construction timelines provided with this report.

During a field review conducted in October 2020, visible and audible evidence of bats residing within the beam diaphragm areas was observed. A bat exclusion project will need to be considered and executed prior to any construction activities at Bridge No. 134023.

4.0 Alternatives Considered

4.1 Bridge Superstructure Alternatives

The bridge superstructure alternatives considered include a cast-in-place continuous reinforced concrete slab and a 12" Florida Slab Beam with 6.5" CIP reinforced concrete topping. These alternatives were selected based on cost, constructability, and estimated construction schedule. The span configuration for the replacement of Bridge 134023 matches the existing bridge. However, in an effort to reduce the surface water impacts on the northwest corner of the proposed bridge, the phase constructed alternatives will include an additional 10-feet to the westernmost span. Refer to **Appendix A** for detailed construction cost estimates and **Appendix B** for detailed construction time calculations for each bridge alternative.

4.1.1 CIP Continuous Flat Slab Superstructure

The use of a CIP continuous slab allows for a reduced superstructure depth when compared to a simply supported alternative. This provides benefits in cost saving due to reduced construction materials and allowing for a roadway profile and low bridge member elevation which closely match the existing bridge. Span configuration for the four-span CIP continuous superstructure will match the existing span lengths of four 30'-0"spans for all construction alternatives except the phase construction alternative, which will have a span configuration of 40'-0", 30'-0", 30'-0", and 30'-0". These span arrangements are anticipated to be optimal as it maintains or increases the existing hydraulic opening for the channel and allows for equivalent future supports of the 42" PWM to the proposed bridge substructure.

The proposed superstructure depth is assumed based on Table 2.5.2.6.3-1 of the AASHTO LRFD Bridge Design Specifications. A minimum slab depth of 20" is used in the generation of construction cost estimates for this Memo, and the superstructure depth increased to the centerline of the bridge, in accordance with the roadway cross-slope. The proposed superstructure depth for the reinforced concrete slab is 1" deeper than the existing bridge, requiring minor adjustment to the current vertical profile to maintain the existing low member elevation for all construction alternatives.

4.1.2 12" Florida Slab Beam Superstructure

The 12" FSB superstructure alternative will consist of a the same span configurations as the CIP continuous Flat Slab Superstructure. 12" FSB superstructure was selected over other similar FSB alternatives due to its ability to efficiently maintain the existing spans and have the capacity to support the proposed phase construction spans while remaining the most cost effective FSB depth. This superstructure depth is 1/2" shallower than the existing superstructure. This superstructure alternative will not require infilling of the approach roadways to maintain the current bridge low member elevation.

The FSB alternative will ultimately reduce the total construction time as the precast beams will be able to be set and used as bottom forms for the concrete deck. The reinforcing steel can be tied and placed on the beams with minimal formwork required to form the coping, accelerating construction of the superstructure.

4.2 Bridge Substructure Alternatives

A similar bridge substructure is required for both superstructure alternatives. The bridge substructure is anticipated to utilize 18" square prestressed concrete pile foundations and reinforced concrete bent caps. Additional consideration will be given to the use of 48" drilled shafts as a foundation alternative. The approach roadway fill will be maintained with concrete sheet pile walls at each abutment backwall and at all four corners of the structure.

Bridge replacement cost estimates assume 16'-0" of concrete retaining wall at all four corners of the structure, with additional backwall length in accordance with the proposed increase in bridge width.

All foundation arrangements and lengths are based on engineering judgement and ultimately will need to be revised during final design with the completion of geotechnical investigation at the project site. Additionally, other foundation alternatives may be considered with the provided geotechnical analysis.

The 3' x 3' reinforced concrete pile cap was assumed to efficiently transfer the superstructure loads to the foundation piles. The width of the cap allows enough space for the typical 4" reinforcing clear cover to the edge of the cap, and 3" reinforcing clear cover to the edge of the embedded pile tip, while using a 1" diameter #8 longitudinal reinforcing bar and a 5/8" diameter #5 transverse tie reinforcing bar.

4.2.1 Four Span Arrangement, Piles

In order to support a four span superstructure, this alternative includes a total of five 3' x 3' reinforced concrete bent caps, including two abutments and three intermediate bent caps. Due to the relatively short span length, 18" prestressed concrete piles spaced at 8-0" are assumed at each abutment intermediate bent, each with a pile length of 70'. Concrete sheet pile wall will be installed in front of the proposed bridge piling and embedded into the proposed abutment caps.

4.2.2 Four Span Arrangement, Drilled Shafts

At the request of County staff, this additional substructure alternative has been considered, which will utilize 48" diameter drilled shaft foundations. This Memo assumes an equivalent superstructure, walls and bent caps to the single-span 18" square prestressed concrete pile foundation alternative for the generation of cost estimates. Cost estimates for this alternative should be revised prior to design to account for increased end bent sizing to accommodate the drilled shaft width. Additionally, effects on the hydraulic opening for this alternative are not considered.

This alternative has been included in order to provide an alternative to driven piles. The installation of drilled shaft foundations is anticipated to have less vibratory impacts on the adjacent 42" PWM. Drilled shaft length requirements vary widely and are heavily dependent upon soil conditions. The estimated cost of drilled shaft foundations is $550 per linear foot of required shaft, in accordance with FDOT Structures Design Guidelines (SDG) Chapter 9. Assuming six drilled shafts per bent, drilled shaft lengths would need to exceed 21' in length prior to increasing the overall bridge construction costs estimated in **Appendix A**.

4.3 Bridge Construction Phasing Alternatives

Final horizontal alignment of the proposed bridge is dependent on the bridge typical section selected and the construction phasing methods utilized. This Memo considers a phased construction and a detoured alternative for the Urban Typical Section and only a detoured alternative for the Rural Typical Section.

Construction cost estimates, right-of-way acquisition estimates, and environmental impact estimates have been developed for the adjustment of the 42" PWM resulting from the proposed four lane bridge replacement alternatives. Refer to **Appendix C** for bridge typical sections, plan views, and estimated right-of-way impacts for each alternative. Bridge phasing alternatives are presented with pros and cons of each alternative below. Refer to **Appendix B** for detailed construction time calculations for each alternative considered.

4.3.1 Phased Construction Alternative (Urban Typical Section Only)

Refer to Section **4.4.2** for detailed information related to the roadway considerations for this phasing alternative. Refer to **Figure 4-1** for the phased construction alternative cross section.

Pros:

- Utilizes the existing bridge during the first phase of construction, allowing an equivalent level of service to the existing bridge during all construction operations.
- Allows for concurrent construction with Bridge No. 134024 along Upper Manatee River Road.

Cons:

- Longer overall construction duration when compared to a detour alternative. Approximate construction duration factor of 1.5.
- Higher construction cost due to additional construction phases.
- Largest Right-of-Way and Environmental Impacts

4.3.2 Complete Detour Alternative

Refer to Section **4.4.2** for detailed information related to the roadway considerations for this phasing alternative. Refer to **Figure 4-2** and **Figure 4-3** for the detoured urban and rural bridge cross sections, respectively.

Pros:

- Fastest construction duration.
- Maintains existing centerline of roadway of Upper Manatee River Road.
- Lower construction cost.

Cons:

- Cannot be completed concurrently with Bridge No. 134024 replacement.
- Decreased level of service along Upper Manatee River Road for the construction duration.
- Increased driving distance for travelers due to detour.

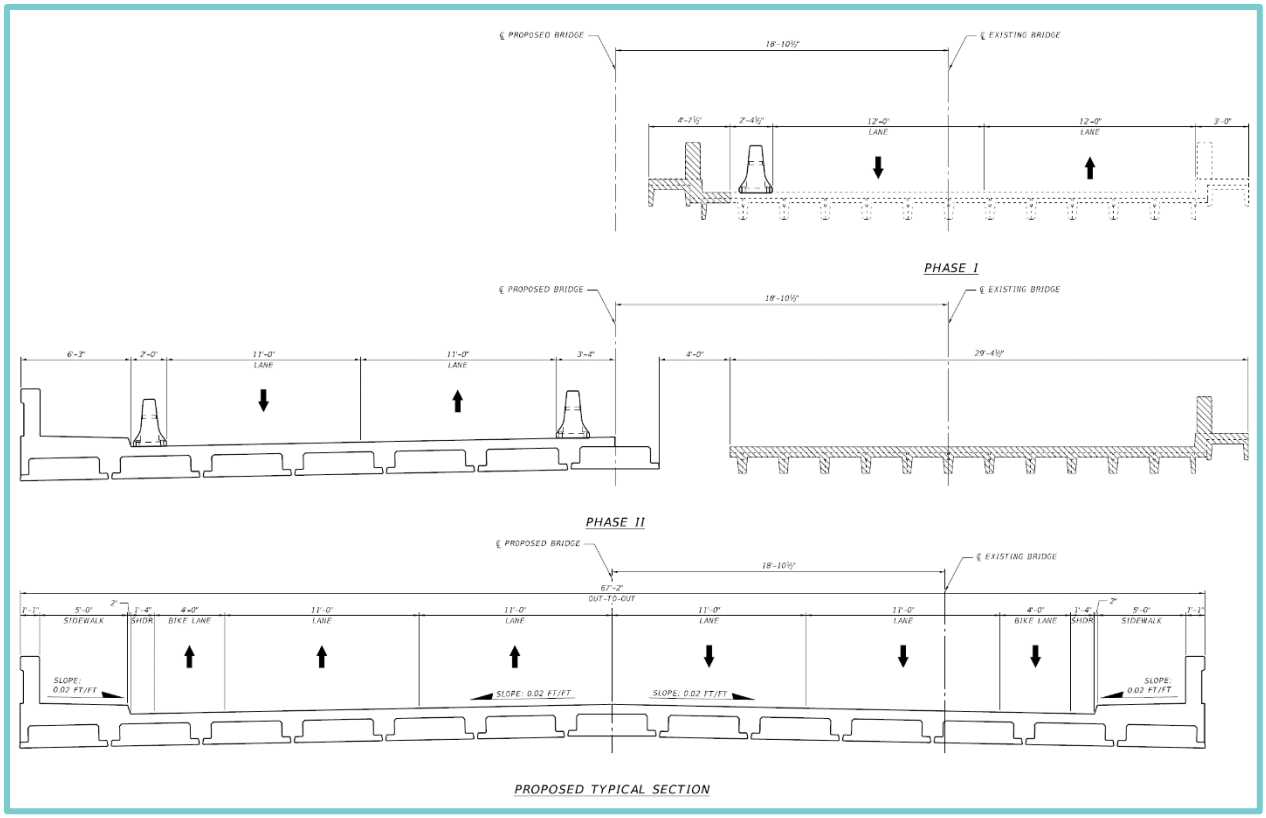

Figure 4-1 – Phased Construction Alternative (Urban Typical Section Only)

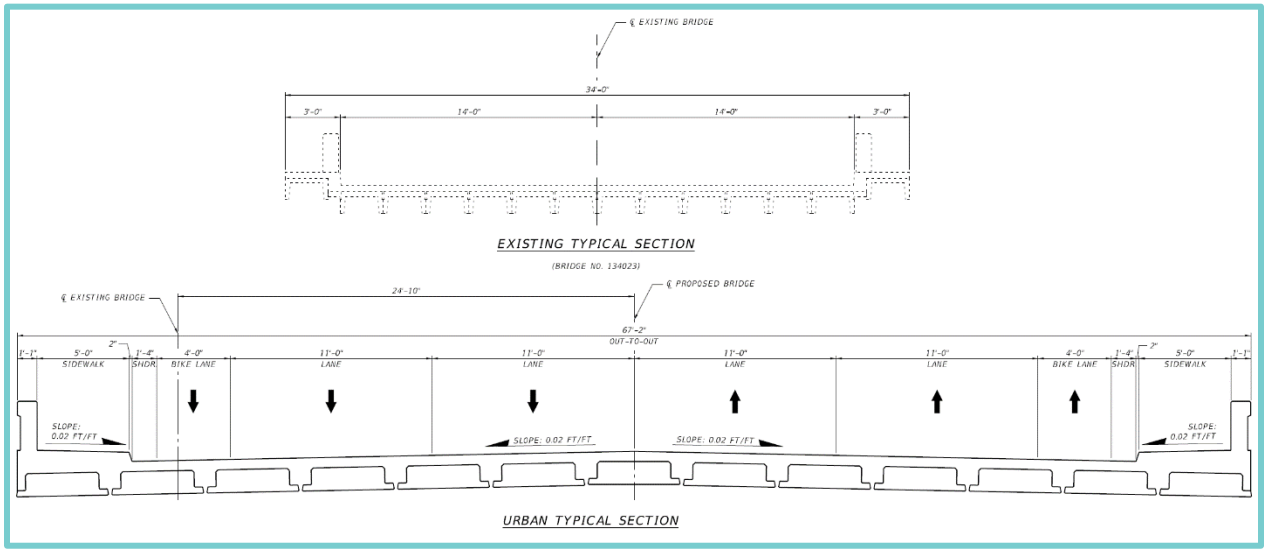

Figure 4-2 –Detoured Construction Alternative (Urban Typical Section)

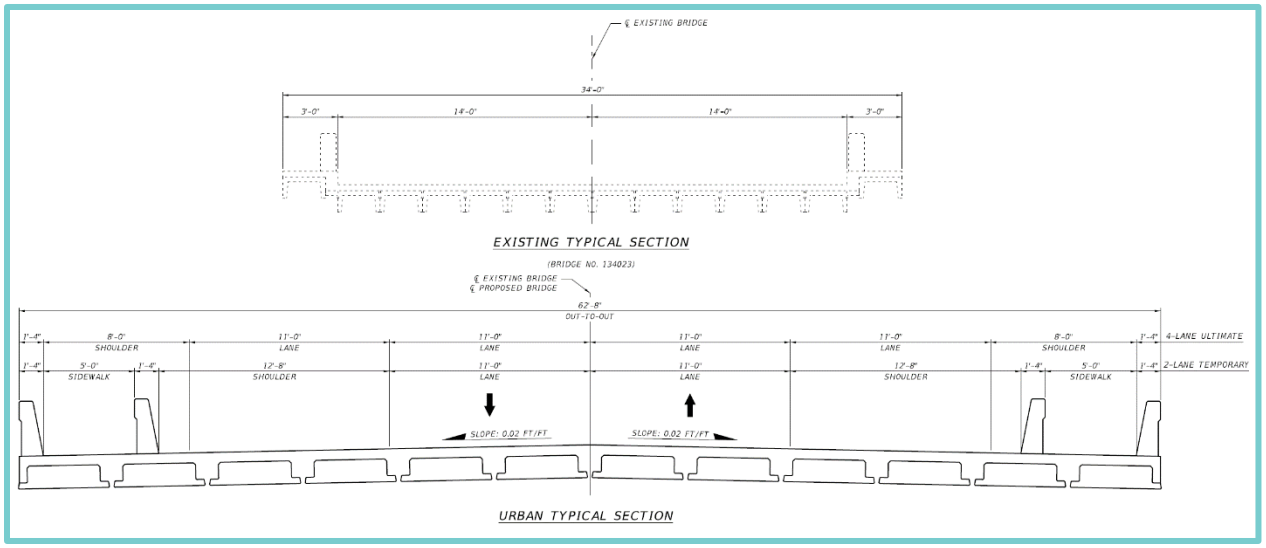

Figure 4-3 – Detoured Construction Alternative (Rural Typical Section)

4.4 Roadway Phasing Alternatives

4.4.1 Complete Detour Alternative

A traffic detour route was considered that would eliminate any ability for the motorist to traverse East West along the Upper Manatee River Road across the bridge construction site. The detour routes were evaluated to ensure the local residential roadway won't be overwhelmed with the addition of the re-routed traffic. Considering the constraints, the shortest available detour route is depicted in **Figure 4-4**.

Detour length is the total additional travel along equivalent service roadways for a vehicle which would result from closing a bridge. The proposed work zone detour, traverses through the north-south section of Upper Manatee River Road (at the west end), SR 64, and Rye Road E (at the east end). The distance along Upper Manatee River Road from Fort Hamer Road to North Rye Road is approximately 3.9 miles. The shortest equivalent detour route includes traveling south on Upper Manatee River Road from Fort Hamer Road to SR-64, traveling east on SR-64 to Rye Road East, then traveling northeast on Rye Road East to Upper Manatee River Road. The total distance of this route is approximately 7.1 miles. The standard total detour length is therefore 3.2 miles.

Figure 4-4 – Upper Manatee River Road Detour

The "worst case" detour route, beginning at the nearest side street to the work area and ending at the nearest side street on the opposite side, is 10.8 miles in length. Gene Witt Elementary School and East Manatee Fire Rescue Station 3 are located on Rye Road East, which is used in the detour route. The increase in traffic volume from the detour is expected to have a negative impact on the operational effectiveness of both facilities, but not on the overall safety of the roadway. The closure itself may marginally increase response times from Fire Rescue Station 3 to locations on the opposite side of the work area. In the "worst case" scenario of an incident immediately west of the work area, the distance traveled from Fire Rescue Station 3 would increase from 4.1 miles using Rye Road East and approaching from the east to 6.9 miles using Rye Road East/SR 64 and approaching from the west. The additional 2.8 miles of travel could potentially add several minutes to response times.

4.4.2 Phased Construction Alternative

This alternative will allow for traffic to be maintained with minimal disruption, at the cost of introducing a permanent shift in the roadway alignment. Phased construction of the proposed bridge replacement would be achieved by partially constructing the proposed bridge and shifting traffic onto it in a temporary two-lane two-way condition. This condition would be maintained during removal of the existing structure and completion of the proposed bridge. A reduced work zone speed limit of 35 miles per hour is proposed and assumed for this alternative to improve safety and reduce impacts on the existing roadway and surrounding properties.

Phase 1 of construction will consist of constructing the proposed bridge to a condition as shown in **Figure 4-1** and placing Type K temporary concrete barrier per FDOT Standard Plan 102-110 to provide a temporary two-lane two-way roadway. In Phase 2, temporary pavement will be constructed to support a temporary diversion per FDOT Standard Plan 102-620 onto the partially-constructed proposed bridge, and traffic will be shifted onto the new structure until the project is completed.

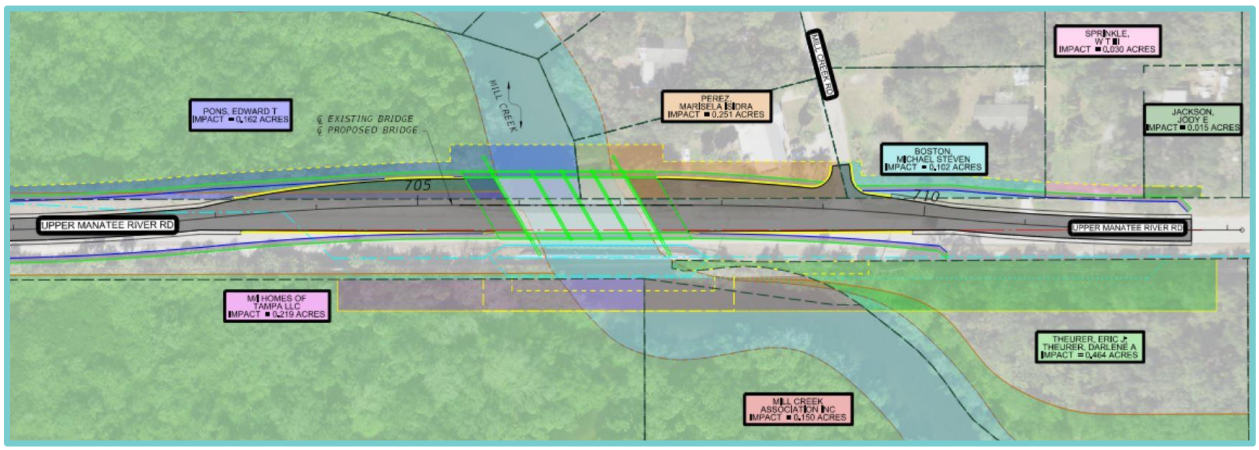

Figure 4-5 – Upper Manatee River Road Phased Alignment

4.5 Potable Water Main Alternatives

Two alternatives are considered related to the disposition of the 42" Potable Water Main located on the south side of Upper Manatee River Road at Mill Creek. These alternatives include replacement via subaqueous crossing beneath Mill Creek and replacement via aerial crossing over Mill Creek. Construction cost estimates for the Potable Water Main Alternatives were generated using recent bid tabs from similar work and consider a 30% contingency.

4.5.1 Relocation, Subaqueous Crossing Alternative

Relocation of the 42" PWM utilizing a subaqueous channel crossing would require a 5' minimum depth of cover to accommodate open cut installation or use of jacking pipe, such as Meyer Polycrete (no casing required) installed by either jack and bore or microtunnel. This would require the bottom of the main to be at elevation -17' or at a depth of 25' below grade. Jack and bore installation with a casing would require an additional 2" of depth to accommodate the 60" casing, and horizontal directional drilling (HDD) would likely require an additional depth of 20' to 25'. Additionally, HDD installation would extend the installation length considerably as the required geometry to accommodate the entry and exit angles and bending radius of the pipe would drive the entry and exit points well beyond the creek. The subaqueous crossing would need 20' of separation from existing or future substructure depending upon the selected installation method. Preliminary costs associated with the subaqueous crossings are estimated to be approximately $3,900,000 for open cut, $4,070,000 for jack and bore, and $4,900,000 for horizontal directional drill.

4.5.2 Relocation, Aerial Crossing Alternative

For bridge alternatives requiring the replacement of the 42" PWM, the installation of a new aerial crossing supported by piles is considered. This alternative includes the installation of new supporting elements within Mill Creek for the replacement aerial crossing. It is possible long span ductile iron (DI) pipe

construction and jointing techniques may be utilized to position pipe supports closer to the creek banks and avoid potential obstructions in the center of Mill Creek. Other common pipe materials for aerial crossings include steel or PCCP.

The proposed independent pipe support system assemblies could consist of four prestressed concrete piles installed in a 2 x 2 array, with each pile embedded into the existing creek bottom. A geotechnical engineering subconsultant should be utilized during the design to determine pile embedment depths in addition to vertical, lateral, and uplift load capacities.

Piles should be topped with a CIP reinforced concrete pile cap assembly integral to each pile and provide a cradled profile in the top surface for pipe support. Neoprene bearing pads should be installed between the outside of the pipe and the concrete, and 316 stainless-steel straps and anchors to hold the pipe to the concrete pile caps.

Piles should be laterally braced in two directions with pressure treated or composite timbers anchored to the exterior faces of the piles in a cross braced and horizontal linear pattern above and below the water surface line. Anchor assemblies should include 316 stainless-steel bolts and hardware.

Connection of the new main to the existing can occur by cutting and adding a new fitting and spool between the two or via wet tap and line stop. Both options are discussed further below.

If there is the opportunity to take the existing main out of service, the connection can be made by cutting the existing main and adding a new fitting and spool. If it is decided to use DI or steel pipe for the new aerial crossing, this fitting will need to be a transition fitting. The record drawings show an isolation valve just east of Mill Creek and west of Gates Creek which could allow the complete main to be taken out of service. This would require the valves to properly isolate and their location accommodates the needed offset improvements. Further, consideration would have to be given to any water service interruption the outage may cause along with dewatering the main which is estimated to be approximately 389,000 gallons, refilling, flushing and bacteriological analysis prior to placing it back into service.

The new aerial crossing would need to be constructed to the fullest extent possible, pressure tested, chlorinated, flushed, and receive passing bacteriological results prior to being placed into service.

Preliminary cost estimates to relocate the transmission main are provided in **Appendix A**. Due to the uncertainty of taking the existing main out of service, the estimates consider the use of wet taps and line stops. Due to its readily available pricing, DI pipe was used as the material for the estimates. The total estimated construction cost for this alternative, including 30% contingency for unknowns is $3,088,358.

5.0 Conclusions and Recommendations

Quantities have been prepared for the two superstructure alternatives and each associated typical section and construction phasing alternative. Detailed quantities and cost estimates were developed for the two-lane bridge replacement alternatives under a separate Technical Memorandum. Refer to the two-lane Memo for a description of how the cost estimates were developed. This four lane Memo utilizes the cost per square foot from the two lane Memo for the determination of bridge replacement costs. An Alternatives Evaluation Matrix for this project, including cost estimates, estimated Right-of-Way acquisition, estimated wetland mitigation costs, and estimated construction time is provided in **Table 5-1**. Refer to **Appendix A** for cost estimates, estimated right-of-way impacts, and wetland mitigation estimates. Refer to **Appendix B** for calculated construction time estimates.

Based on the findings of this Memo, construction of a 15" Florida Slab Beam superstructure with the proposed rural typical section, replacement of the 42" PWM with an aerial crossing and constructed under a complete detour of Upper Manatee Road is the most economically feasible alternative. However, it is recommended that this alternative be rejected in lieu of the equivalent urban typical section alternative. The reasons for this recommendation provided below:

- The use of the Urban typical section leads to an estimated 1.5 month savings in construction time, reducing the overall length of service reduction along Upper Manatee River Road.
- The rural typical section, under the future four lane ultimate condition of Upper Manatee River Road would require the future construction of a pedestrian bridge to maintain pedestrian access across Mill Creek. It is anticipated that the cost of a future pedestrian bridge would exceed the 2% cost difference estimated between these alternatives. Refer to **Table 5-1**.

In addition to having a lower estimated cost of construction, the FSB alternative will allow for faster construction compared to the Continuous Flat Slab superstructure alternative and therefore have reduced traffic interruption along Upper Manatee River Road. The FSB superstructure serves as form work for the cast-in-place topping, accelerating construction. The total estimated fee for the recommended alternative, including construction, design, construction engineering and inspection (CEI), right-of-way acquisition, and wetland mitigation is **$9,754,949**. Approximately 39% of the overall estimate project cost is associated with the replacement of the 42" PWM.

The cost estimates generated within this Memo have been completed with minimal site specific supplemental data, such as geotechnical investigation, field survey, and subsurface utility engineering. Engineering judgement and assumptions were made in order to supplement this lack of site specific data. The cost estimates provided are subject to change based on final design.

Alternatives Evaluation Matrix

Evaluation Criteria	Bridge and Roadway																							
	Flat Slab Bridge												Urban Typical Section											
	Rural Typical Section				Urban Typical Section								Rural Typical Section				Urban Typical Section							
	Full Detour				Full Detour				Phased Construction				Full Detour				Full Detour				Phased Construction			
Estimated Total Project Cost (in dollars)																								
Roadway Construction	$315,491				$299,331				$464,949				$315,491				$299,331				$464,949			
Bridge Construction	$1,592,603				$1,706,238				$1,706,238				$1,395,371				$1,494,843				$1,494,843			
Incidental Bridge (1)	$923,900				$965,983				$965,983				$923,900				$965,983				$965,983			
Phased Construction (2)	$0				$0				$518,878				$0				$0				$477,830			
Maintenance of Traffic (M.O.T.)	$96,932				$92,230				$129,285				$93,797				$89,095				$109,119			
Mobilization & Contingency (3)	$849,598				$891,465				$1,096,814				$790,429				$828,047				$1,021,082			
Bridge and Roadway Construction Subtotal	$3,778,524				$3,955,246				$4,882,147				$3,518,988				$3,677,297				$4,533,806			
Bridge and Roadway Design Estimate (4)	$906,846				$949,259				$1,171,715				$844,557				$882,551				$1,088,113			
42" Potable Water Main																								
Evaluation Criteria	Remain and Rehab	Replace; Aerial Crossing	Replace, HDD Subaq. Crossing	Replace, J&B Subaq. Crossing	Remain and Rehab	Replace; Aerial Crossing	Replace, HDD Subaq. Crossing	Replace, J&B Subaq. Crossing	Remain and Rehab	Replace; Aerial Crossing	Replace, HDD Subaq. Crossing	Replace, J&B Subaq. Crossing	Remain and Rehab	Replace; Aerial Crossing	Replace, HDD Subaq. Crossing	Replace, J&B Subaq. Crossing	Remain and Rehab	Replace; Aerial Crossing	Replace, HDD Subaq. Crossing	Replace, J&B Subaq. Crossing	Remain and Rehab	Replace; Aerial Crossing	Replace, HDD Subaq. Crossing	Replace, J&B Subaq. Crossing
Utility Construction Subtotal	N/A	$3,090,000	$4,900,000	$4,070,000	$257,000	$3,090,000	$4,900,000	$4,070,000	$257,000	$3,090,000	$4,900,000	$4,070,000	$257,000	$3,090,000	$4,900,000	$4,070,000	$257,000	$3,090,000	$4,900,000	$4,070,000	$257,000	$3,090,000	$4,900,000	$4,070,000
Utility Design Estimate	N/A	$154,500	$245,000	$203,500	$38,550	$154,500	$245,000	$203,500	$38,550	$154,500	$245,000	$203,500	$38,550	$154,500	$245,000	$203,500	$38,550	$154,500	$245,000	$203,500	$38,550	$154,500	$245,000	$203,500
Construction Subtotal	N/A	$6,868,524	$8,678,524	$7,848,524	$4,212,246	$7,045,246	$8,855,246	$8,025,246	$5,139,147	$7,972,147	$9,782,147	$8,952,147	$3,775,988	$6,608,988	$8,418,988	$7,588,988	$3,934,297	$6,767,297	$8,577,297	$7,747,297	$4,790,806	$7,623,806	$9,433,806	$8,603,806
Design Subtotal	N/A	$1,061,346	$1,151,846	$1,110,346	$987,809	$1,103,759	$1,194,259	$1,152,759	$1,210,265	$1,326,215	$1,416,715	$1,375,215	$883,107	$999,057	$1,089,557	$1,048,057	$921,101	$1,037,051	$1,127,551	$1,086,051	$1,126,663	$1,242,613	$1,333,113	$1,291,613
Construction Engineering & Inspection Fee (5)	N/A	$1,098,964	$1,214,993	$1,098,793	$1,010,939	$1,127,239	$1,239,734	$1,123,534	$1,233,395	$1,275,544	$1,369,501	$1,253,301	$906,237	$1,057,438	$1,178,658	$1,062,458	$944,231	$1,082,768	$1,200,822	$1,084,622	$1,149,793	$1,219,809	$1,320,733	$1,204,533
Estimated Property Impacts																								
Business Impacts																								
Number of Business Relocations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential Impacts																								
Number of Impacted Parcels	N/A	6	6	6	N/A	6	6	6	N/A	5	8	6	N/A	6	6	6	N/A	6	6	6	N/A	5	8	6
Total Right-of-Way Impacts																								
Acres of R/W Acquisition Required	N/A	0.443	1.181	0.582	N/A	0.409	1.152	0.549	N/A	0.798	1.125	0.808	N/A	0.443	1.181	0.582	N/A	0.409	1.152	0.549	N/A	0.798	1.125	0.808
Estimated Cost of R/W Acquisition	N/A	$846,278	$1,071,309	$888,662	N/A	$840,789	$1,067,345	$883,478	N/A	$930,741	$1,030,450	$933,790	N/A	$846,278	$1,071,309	$888,662	N/A	$840,789	$1,067,345	$883,478	N/A	$930,741	$1,030,450	$933,790
Estimated Environmental Impacts																								
Square Footage of Surface Water Impacts	N/A	4225	5140	4356	N/A	4792	5663	4879	N/A	5576	5837	5706	N/A	4225	5140	4356	N/A	4792	5663	4879	N/A	5576	5837	5706
Square Footage of Vegetated Wetlands Impacts	N/A	0	1568	523	N/A	87	1699	653	N/A	4966	6186	5271	N/A	0	1568	523	N/A	87	1699	653	N/A	4966	6186	5271
Estimated Cost of Environmental Impacts	N/A	$23,280	$39,912	$27,864	N/A	$27,044	$43,758	$31,710	N/A	$67,428	$77,884	$70,402	N/A	$23,280	$39,912	$27,864	N/A	$27,044	$43,758	$31,710	N/A	$67,428	$77,884	$70,402
Construction Duration Estimate																								
Estimated Construction Duration (Months)	**22**				**20.5**				**30**				**21**				**19.5**				**29.5**			
Preliminary Estimate of Total Project Costs	**N/A**	**$9,898,392**	**$12,156,585**	**$10,974,189**	**N/A**	**$10,144,078**	**$12,400,343**	**$11,216,728**	**N/A**	**$11,572,075**	**$13,676,697**	**$12,584,855**	**N/A**	**$9,535,040**	**$11,798,424**	**$10,616,028**	**N/A**	**$9,754,949**	**$12,016,774**	**$10,833,158**	**N/A**	**$11,084,397**	**$13,195,986**	**$12,104,144**
Preliminary Roadway Cost Per Square Foot	**58.21**				**55.23**				**85.78**				**58.21**				**55.23**				**85.78**			
Preliminary Bridge Cost Per Square Foot (6)	**293.84**				**314.80**				**314.80**				**257.45**				**275.80**				**275.80**			
Preliminary Total Construction Cost Multiplie	**N/A**	**1.04**	**1.27**	**1.15**	**N/A**	**1.06**	**1.30**	**1.18**	**N/A**	**1.21**	**1.43**	**1.32**	**N/A**	**1.00**	**1.24**	**1.11**	**N/A**	**1.02**	**1.26**	**1.14**	**N/A**	**1.16**	**1.38**	**1.27**

(1) Incidental Bridge includes demolition of the existing bridge & sheet pile walls and the construction of new concrete sheet pile walls.
(2) Phased Construction is 20% of the sum of Bridge Construction and Incidental Bridge.
(3) Mobilization and Contingency are each taken as a percentage of the sum of Roadway Construction, Bridge Construction, and Incidental Bridge. The percentages used are 20% and 10%, respectively.
(4) Bridge and Roadway design is estimated at 24% of the total bridge and roadway construction cost. Utility design is estimated at 15% of the total utility cost for the remain in-place alternative and 5% for all other alternatives.
(5) Construction Engineering & Inspection for the aerial crossing replacement and subaqueous replacement alternatives taken as 16%, and 14% of the total construction cost, respectively.
(6) Preliminary Bridge and Roadway Cost Per Square Foot calculated by dividing Roadway and Bridge Construction by bridge deck area seen in Appendix C.

Table 5-1 – Alternatives Evaluation Matrix

Appendix A: Construction Cost Estimates

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Bridge Alternatives Cost Summary
Upper Manatee River Road
Mill Creek - Addendum

KISINGER CAMPO & ASSOCIATES

Designed By: BAH 09/2021
Checked By: SAB 09/2021

Detailed quantities and associated construction cost estimates were developed for the two-lane bridge replacement alternatives as part of the Technical Memorandum for Bridge Replacement at Upper Manatee River Road over Mill Creek. These detailed calculations have been used for the determination of average cost per square foot for bridge replacement (bridge elements only) and average costs per linear foot of bulkhead seawall installation. These average costs are utilized within this Addendum for the determination of bridge replacement costs for the four-lane alternatives considered.

Table 1-1: Bridge Cost Summary

Typical Section Alternative	Superstructure Alternative	Bridge Cost Per Square Foot [1]	Bridge Length, ft	Bridge Width, ft	Incidental Structures Cost [2]	Total Bridge Cost Estimate [3]	Cost Factor
Rural	Flat Slab	$202.04	120.00	62.67	$923,900	$2,516,503	1.09
	FSB 15	$176.57				$2,319,271	1.00
Urban	Flat Slab	$202.04		67.17	$965,983	$2,672,221	1.15
	FSB 15	$176.57				$2,460,826	1.06
Urban with Alignment Shift	Flat Slab	$202.04		67.17	$965,983	$3,191,098	1.38
	FSB 15	$176.57				$2,938,656	1.27

[1] Bridge Cost Per Square Foot includes the cost of construction of superstructure, substructure, and bridge deck grooving.

[2] Incidental structures cost includes the cost of construction of concrete sheet pile walls and approach slabs, and demolition of the existing structure.

[3] Total Bridge Cost includes bridge and incidental structures costs, as well as a 3% multiplier for over water construction for all alternatives, and a 20% multiplier for phased construction for the Urban with Alignnment Shift alternative.

Detour - Rural Section, No Shift

Pay Item No.	Pay Item	Unit	Quantity	Unit Cost	Line Item Cost
	Traffic Control				
102-1	Maintenance of Traffic	LS/DA	1/660	$ 27,500.00	$ 27,500.00
102-60	Work Zone Sign	ED	96360	$ 0.25	$ 24,090.00
102-99	Portable Changeable Message Sign, Temporary	ED	4002	$ 11.00	$ 44,022.00
102-115	Type III Barricade	ED	2640	$ 0.50	$ 1,320.00
				TCP Total	**$ 96,932.00**
	Roadway Construction				
110-1-1	Clearing and Grubbing	AC	2.46	$ 27,000.00	$ 66,420.00
120-1	Regular Excavation	CY	1600	$ 8.00	$ 12,800.00
120-6	Embankment	CY	1750	$ 5.00	$ 8,750.00
160-4	Type B Stabilization	SY	2654	$ 9.00	$ 23,888.70
285-701	Optional Base, Base Group 01	SY	288	$ 20.00	$ 5,766.54
285-709	Optional Base, Base Group 09	SY	2575	$ 20.00	$ 51,493.42
334-1-13	Superpave Asphaltic Conc, Traffic C	TN	265.43	$ 115.00	$ 30,524.45
337-7-83	Asphalt Concrete Friction Course, Traffic C, FC-12.5, PG 76-22	TN	199.07	$ 140.00	$ 27,870.15
339-1	Miscellaneous Asphalt Pavement	TN	24.7	$ 220.00	$ 5,434.00
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	573	$ 50.00	$ 28,650.00
536-1-1	Guardrail - Roadway, General TL-3	LF	661	$ 25.00	$ 16,525.00
536-85-24	Guardrail End Treatment - Parallel Approach Terminal	EA	4	$ 3,000.00	$ 12,000.00
570-1-2	Performance Turf, Sod	SY	1351	$ 3.50	$ 4,728.89
				Rdwy Total	$ 294,851.15
				S&PM Markup (7%)	$ 20,639.58
				Grand Total	**$ 412,422.73**

Detour - Urban Section, No Shift

Pay Item No.	Pay Item	Unit	Quantity	Unit Cost	Line Item Cost
	Traffic Control				
102-1	Maintenance of Traffic	LS/DA	1/585	$ 27,500.00	$ 27,500.00
102-60	Work Zone Sign	ED	85410	$ 0.25	$ 21,352.50
102-99	Portable Changeable Message Sign, Temporary	ED	3552	$ 11.00	$ 39,072.00
102-115	Type III Barricade	ED	2340	$ 0.50	$ 1,170.00
				TCP Total	**$ 89,094.50**
	Roadway Construction				
110-1-1	Clearing and Grubbing	AC	2.43	$ 27,000.00	$ 65,610.00
120-1	Regular Excavation	CY	1600	$ 8.00	$ 12,800.00
120-6	Embankment	CY	1750	$ 5.00	$ 8,750.00
160-4	Type B Stabilization	SY	2654	$ 9.00	$ 23,888.70
285-701	Optional Base, Base Group 01	SY	140	$ 20.00	$ 2,800.00
285-709	Optional Base, Base Group 09	SY	2575	$ 20.00	$ 51,493.42
334-1-13	Superpave Asphaltic Conc, Traffic C	TN	265.4	$ 115.00	$ 30,524.45
337-7-83	Asphalt Concrete Friction Course, Traffic C, FC-12.5, PG 76-22	TN	199.1	$ 140.00	$ 27,870.15
520-1-10	Concrete Curb & Gutter, Type F	LF	835	$ 32.00	$ 26,720.00
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	497	$ 50.00	$ 24,850.00
570-1-2	Performance Turf, Sod	SY	1269	$ 3.50	$ 4,441.50
				Rdwy Total	$ 279,748.22
				S&PM Markup (7%)	$ 19,582.38
				Grand Total	**$ 388,425.10**

Phased - Urban Section, Alignment Shift (Index 102-608)

Pay Item No.	Pay Item	Unit	Quantity	Unit Cost	Line Item Cost
	Traffic Control				
102-1	Maintenance of Traffic	LS/DA	1/885	$ 27,500.00	$ 27,500.00
0102-2200	Special Detour - Temporary Pavement	LS/SY	2976	$ 17.50	$ 52,080.00
0102-2300	Special Detour - Temporary	LS/CY	500	$ 25.00	$ 12,500.00
102-60	Work Zone Sign	ED	14160	$ 0.25	$ 3,540.00
102-71-15	Temporary Barrier, F&I, Anchored	LF	750	$ 25.00	$ 18,750.00
102-74-1	Channelizing Device - Types I, II, DI, VP, Drum, or LCD	ED	36285	$ 0.15	$ 5,442.75
102-89-1	Temporary Crash Cushion, Redirective Option	LO	2	$ 1,100.00	$ 2,200.00
102-115	Type III Barricade	ED	7080	$ 0.50	$ 3,540.00
102-913-21	Removable Tape, White Solid, 6"	GM	0.461	$ 12,000.00	$ 5,533.14
102-913-31	Removable Tape, Yellow Solid, 6"	GM	0.461	$ 12,000.00	$ 5,533.14
				TCP Total	**$ 109,119.02**
	Roadway Construction				
110-1-1	Clearing and Grubbing	AC	3.72	$ 27,000.00	$ 100,440.00
120-1	Regular Excavation	CY	1925	$ 8.00	$ 15,400.00
120-6	Embankment	CY	2150	$ 5.00	$ 10,750.00
160-4	Type B Stabilization	SY	4148	$ 9.00	$ 37,332.90
285-701	Optional Base, Base Group 01	SY	529	$ 20.00	$ 10,582.74
285-709	Optional Base, Base Group 09	SY	4024	$ 20.00	$ 80,473.14
334-1-13	Superpave Asphaltic Conc, Traffic C	TN	414.8	$ 115.00	$ 47,703.15
337-7-83	Asphalt Concrete Friction Course, Traffic C, FC-12.5, PG 76-22	TN	311.108	$ 140.00	$ 43,555.05
520-1-10	Concrete Curb & Gutter, Type F	LF	937	$ 32.00	$ 29,984.00
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	1006	$ 50.00	$ 50,300.00
570-1-2	Performance Turf, Sod	SY	2289	$ 3.50	$ 8,011.11
				Rdwy Total	$ 434,532.09
				S&PM Markup (7%)	$ 30,417.25
				Grand Total	**$ 574,068.36**

Detour - Rural Section, No Shift

Pay Item No.	Pay Item	Unit	Quantity	Unit Cost	Line Item Cost
	Traffic Control				
102-1	Maintenance of Traffic	LS/DA	1/630	$ 27,500.00	$ 27,500.00
102-60	Work Zone Sign	ED	91980	$ 0.25	$ 22,995.00
102-99	Portable Changeable Message Sign, Temporary	ED	3822	$ 11.00	$ 42,042.00
102-115	Type III Barricade	ED	2520	$ 0.50	$ 1,260.00
				TCP Total	**$ 93,797.00**
	Roadway Construction				
110-1-1	Clearing and Grubbing	AC	2.46	$ 27,000.00	$ 66,420.00
120-1	Regular Excavation	CY	1600	$ 8.00	$ 12,800.00
120-6	Embankment	CY	1750	$ 5.00	$ 8,750.00
160-4	Type B Stabilization	SY	2654	$ 9.00	$ 23,888.70
285-701	Optional Base, Base Group 01	SY	288	$ 20.00	$ 5,766.54
285-709	Optional Base, Base Group 09	SY	2575	$ 20.00	$ 51,493.42
334-1-13	Superpave Asphaltic Conc, Traffic C	TN	265.43	$ 115.00	$ 30,524.45
337-7-83	Asphalt Concrete Friction Course, Traffic C, FC-12.5, PG 76-22	TN	199.07	$ 140.00	$ 27,870.15
339-1	Miscellaneous Asphalt Pavement	TN	24.7	$ 220.00	$ 5,434.00
522-1	Concrete Sidewalk and Driveways, 4" Thick	SY	573	$ 50.00	$ 28,650.00
536-1-1	Guardrail - Roadway, General TL-3	LF	661	$ 25.00	$ 16,525.00
536-85-24	Guardrail End Treatment - Parallel Approach Terminal	EA	4	$ 3,000.00	$ 12,000.00
570-1-2	Performance Turf, Sod	SY	1351	$ 3.50	$ 4,728.89
				Rdwy Total	$ 294,851.15
				S&PM Markup (7%)	$ 20,639.58
				Grand Total	**$ 409,287.73**

McKIM&CREED

Remain and Rehabilitate					
Item No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
Structural					
1	Saw Cut Exist. Conc. Strut to Bridge	25	CF	$150	$3,750
2	Rout Exposed Rebar & Grout Patch	27	EA	$150	$4,050
3	Mobilization Pile Contractor	1	LS	$15,000	$15,000
4	Temporary Steel Piles	390	LS	$200	$78,000
5	Temporary Pile Bracing	1	LS	$7,500	$7,500
6	Remove Temporary Piles & Bracing	1	LS	$12,500	$12,500
6	Reattach Exist. Pipe Suppt. to New Bridge	1	LS	$15,000	$15,000
8	Anchor Assemblies	1	LS	$2,000	$2,000
Mechanical					
1	Epoxy Coating System	2,376	SF	$25	$59,400
				Subtotal:	$197,200
				30% Contingency:	$59,160
				Total:	$256,360

Replace and Relocate					
Item No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
Structural					
1	Remove Exist. Conc. Pipe Suppt. / Pile Cap	250	CF	$70	$17,500
2	Mobilization Pile Contractor	1	LS	$15,000	$15,000
3	Remove Exist. Conc. Piles	3	EA	$5,000	$15,000
4	Precast Reinforced Concrete Piles	1040	LS	$250	$260,000
5	CIP Reinf. Conc. Pipe Suppt. / Pile Cap	40	CY	$1,500	$60,000
6	2x P.T. Pile Bracing	1	LS	$6,000	$6,000
7	Anchor Assemblies	1	LS	$3,000	$3,000
Mechanical					
1	Remove Exist. PCCP Pipe	200	LF	$100	$20,000
2	42" Class 53 FL DI Pipe	200	LF	$1,000	$200,000
3	DI Fittings	6	Ton	$20,000	$112,760
4	Wet Tap	2	EA	$275,000	$550,000
6	Line Stop	2	EA	$500,000	$1,000,000
7	Reverse Deadman	45	CY	$1,000	$45,000
8	Air Release/Vacuum Valve	1	EA	$12,000	$12,000
9	Epoxy Coating System	2,376	SF	$25	$59,400
				Subtotal:	$2,375,660
				30% Contingency:	$712,698
				Total:	$3,088,358

KISINGER CAMPO & ASSOCIATES

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - FOUR LANE ALTERNATIVES

DESIGNED BY: BAH 09/2021
CHECKED BY: SAB 09/2021

Description: Mill Creek Environmental Impact Estimates Estimates

Surface waters and vegetated wetlands have been approximated based on the U.S. Fish & Wildlife Service (FWS) National Wetlands Inventory Wetlands Mapper tool on their website (https://www.fws.gov/wetlands/data/Mapper.html). Environmental impacts are approximated based on developed CAD drawings for this project.

For the purposes of this analysis, bridge and roadway elements which impact surface waters and vegetated wetlands have been quantified. No additional quantity for side slopes or other adjacent modifications have been made. Estimated impacts for the utility adjustments are based on the length of pipe effecting environmental resources, multiplied by 5.5ft. (pipe diameter + 2ft.).

Mitigation costs within this analysis are founded on the published Mitigation Bank Pricing Schedule, Effective Spring/Summer 2021 from Mitigation Marketing. Unit prices used are from the Tampa Bay Mitigation Bank, which is the closest available data source. This analysis utilizes a fee of $225,000 per credit for Vegetated Wetland Impacts and $120,000 per credit for Surface Water Impacts. Credits are equivalent to one acre disturbed multiplied a Uniform Mitigation Assessment Method (UMAM) factor. UMAM factors for Vegetated Wetlands and Surface Waters are estimated as 0.7 and 0.5, respectively.

Impacted Resource	Base Credit Rate	UMAM Factor	Cost per Acre
Vegetated Wetland	$225,000	0.7	$322,000
Surface Waters	$120,000	0.5	$240,000

No Alignment Shift, Rural Bridge Section w/ 42" PWM Aerial Crossing				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	South End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	Utility	0.000	$322,000.00	$0
Surface Waters	North End of Bridge	0.042	$240,000.00	$10,080
Surface Waters	South End of Bridge	0.038	$240,000.00	$9,120
Surface Waters	Utility	0.017	$240,000.00	$4,080
Total		0.097		$23,280

No Alignment Shift, Rural Bridge Section w/ 42" PWM Subaqueous Crossing (J&B)				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	South End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	Utility	0.012	$322,000.00	$3,864
Surface Waters	North End of Bridge	0.042	$240,000.00	$10,080
Surface Waters	South End of Bridge	0.038	$240,000.00	$9,120
Surface Waters	Utility	0.020	$240,000.00	$4,800
Total		0.112		$27,864

No Alignment Shift, Rural Bridge Section w/ 42" PWM Subaqueous Crossing (HDD)				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	South End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	Utility	0.036	$322,000.00	$11,592
Surface Waters	North End of Bridge	0.042	$240,000.00	$10,080
Surface Waters	South End of Bridge	0.038	$240,000.00	$9,120
Surface Waters	Utility	0.038	$240,000.00	$9,120
Total		0.154		$39,912

Description: Mill Creek Environmental Impact Estimates Estimates

No Alignment Shift, Urban Bridge Section w/ 42" PWM Aerial Crossing				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge	0.001	$322,000.00	$322
Veg. Wetland	South End of Bridge	0.001	$322,000.00	$322
Veg. Wetland	Utility	0.000	$322,000.00	$0
Surface Waters	North End of Bridge	0.048	$240,000.00	$11,520
Surface Waters	South End of Bridge	0.044	$240,000.00	$10,560
Surface Waters	Utility	0.018	$240,000.00	$4,320
Total		0.112		$27,044

No Alignment Shift, Urban Bridge Section w/ 42" PWM Subaqueous Crossing (J&B)				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge	0.001	$322,000.00	$322
Veg. Wetland	South End of Bridge	0.001	$322,000.00	$322
Veg. Wetland	Utility	0.013	$322,000.00	$4,186
Surface Waters	North End of Bridge	0.048	$240,000.00	$11,520
Surface Waters	South End of Bridge	0.044	$240,000.00	$10,560
Surface Waters	Utility	0.020	$240,000.00	$4,800
Total		0.127		$31,710

No Alignment Shift, Urban Bridge Section w/ 42" PWM Subaqueous Crossing (HDD)				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge	0.001	$322,000.00	$322
Veg. Wetland	South End of Bridge	0.001	$322,000.00	$322
Veg. Wetland	Utility	0.037	$322,000.00	$11,914
Surface Waters	North End of Bridge	0.048	$240,000.00	$11,520
Surface Waters	South End of Bridge	0.044	$240,000.00	$10,560
Surface Waters	Utility	0.038	$240,000.00	$9,120
Total		0.169		$43,758

Description: Mill Creek Environmental Impact Estimates Estimates

Alignment Shift, Urban Bridge Section w/ 42" PWM Aerial Crossing				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge and Roadway	0.114	$322,000.00	$36,708
Veg. Wetland	South End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	Utility	0.000	$322,000.00	$0
Surface Waters	North End of Bridge	0.113	$240,000.00	$27,120
Surface Waters	South End of Bridge	0.000	$240,000.00	$0
Surface Waters	Utility	0.015	$240,000.00	$3,600
Total		0.242		$67,428

Alignment Shift, Urban Bridge Section w/ 42" PWM Subaqueous Crossing (J&B)				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge and Roadway	0.114	$322,000.00	$36,708
Veg. Wetland	South End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	Utility	0.007	$322,000.00	$2,254
Surface Waters	North End of Bridge	0.113	$240,000.00	$27,120
Surface Waters	South End of Bridge	0.000	$240,000.00	$0
Surface Waters	Utility	0.018	$240,000.00	$4,320
Total		0.252		$70,402

Alignment Shift, Urban Bridge Section w/ 42" PWM Subaqueous Crossing (HDD)				
Impacted Resource	Impact Source	Impact Area	Mitigation Rate	Impact Mitigation Cost
Veg. Wetland	North End of Bridge and Roadway	0.114	$322,000.00	$36,708
Veg. Wetland	South End of Bridge	0.000	$322,000.00	$0
Veg. Wetland	Utility	0.028	$322,000.00	$9,016
Surface Waters	North End of Bridge	0.113	$240,000.00	$27,120
Surface Waters	South End of Bridge	0.000	$240,000.00	$0
Surface Waters	Utility	0.021	$240,000.00	$5,040
Total		0.276		$77,884

KISINGER CAMPO & ASSOCIATES

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - FOUR LANE ALTERNATIVES

DESIGNED BY: SAB 09/2021
CHECKED BY: BAH 09/2021

Description: Mill Creek R/W Estimates

Based on data obtained from Manatee County's GIS database, there are seven parcels which are effected by the proposed bridge replacement activities at Upper Manatee River Road over Mill Creek. Based on a field review, R/W impacts are not anticipated effect dwelling structures, with the exception of the northeast parcel immediately adjacent to the bridge. The parcels are listed as follows:

Parcel 1 - E. Pons, Northwest Corner of Bridge
Parcel 2 - M. Perez, Northeast Corner of Bridge
Parcel 3 - M. Boston, 2nd Parcel Northeast of Bridge
Parcel 4 - W. Sprinkle, 3rd Parcel Northeast of Bridge
Parcel 5 - J. Jackson, 4th Parcel Northeast of Bridge
Parcel 6 - M/I Homes of Tampa, Southwest Corner of Bridge
Parcel 7 - Hidden Oaks of Manatee County HOA, Southeast Corner of Bridge
Parcel 8 - Mill Creek Association, Southeast Corner of Bridge

The total amount of estimated required Right-of-Way acquisition varies according to the bridge replacement and 42" Potable Water Main replacement selected. The total quantities of estimated R/W acquisition have been taken from the CAD drawings developed for this project. Manatee County has provided an anticipated cost per square foot of R/W acquisition at $7.00 per square foot. This value will be utilized for the determination of acquisition overall costs. For alternatives which effect dwelling structures at a parcel, it is assumed that the entire parcel must be acquired and that a 35% increase in acquisition cost is included for anticipated legal fees.

No Alignment Shift, Rural Bridge Section w/ 42" PWM Aerial Crossing				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.124	No	$7.00	$37,810.23
2	0.158	Yes	$110.33	$759,375.00
3	0.079	No	$7.00	$24,088.77
4	0.000	No	$7.00	$0.00
5	0.000	No	$7.00	$0.00
6	0.032	No	$7.00	$9,757.48
7	0.016	No	$7.00	$4,878.74
8	0.034	No	$7.00	$10,367.32
Total	0.443			$846,277.54

No Alignment Shift, Rural Bridge Section w/ 42" PWM Subaqueous Crossing (J&B)				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.124	No	$7.00	$37,810.23
2	0.158	Yes	$110.33	$759,375.00
3	0.079	No	$7.00	$24,088.77
4	0.000	No	$7.00	$0.00
5	0.000	No	$7.00	$0.00
6	0.114	No	$7.00	$34,761.02
7	0.073	No	$7.00	$22,259.25
8	0.034	No	$7.00	$10,367.32
Total	0.582			$888,661.58

No Alignment Shift, Rural Bridge Section w/ 42" PWM Subaqueous Crossing (HDD)				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.124	No	$7.00	$37,810.23
2	0.158	Yes	$110.33	$759,375.00
3	0.079	No	$7.00	$24,088.77
4	0.000	No	$7.00	$0.00
5	0.000	No	$7.00	$0.00
6	0.216	No	$7.00	$65,862.98
7	0.153	No	$7.00	$46,652.94
8	0.451	No	$7.00	$137,519.46
Total	1.181			$1,071,309.38

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - FOUR LANE ALTERNATIVES

DESIGNED BY: SAB 09/2021
CHECKED BY: BAH 09/2021

Description: Mill Creek R/W Estimates

No Alignment Shift, Urban Bridge Section w/ 42" PWM Aerial Crossing				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.151	No	$7.00	$46,043.10
2	0.142	Yes	$122.77	$759,375.00
3	0.010	No	$7.00	$3,049.21
4	0.000	No	$7.00	$0.00
5	0.000	No	$7.00	$0.00
6	0.041	No	$7.00	$12,501.77
7	0.023	No	$7.00	$7,013.19
8	0.042	No	$7.00	$12,806.69
Total	0.409			$840,788.96

No Alignment Shift, Urban Bridge Section w/ 42" PWM Subaqueous Crossing (J&B)				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.151	No	$7.00	$46,043.10
2	0.142	Yes	$122.77	$759,375.00
3	0.010	No	$7.00	$3,049.21
4	0.000	No	$7.00	$0.00
5	0.000	No	$7.00	$0.00
6	0.123	No	$7.00	$37,505.31
7	0.081	No	$7.00	$24,698.62
8	0.042	No	$7.00	$12,806.69
Total	0.549			$883,477.92

No Alignment Shift, Urban Bridge Section w/ 42" PWM Subaqueous Crossing (HDD)				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.151	No	$7.00	$46,043.10
2	0.142	Yes	$122.77	$759,375.00
3	0.010	No	$7.00	$3,049.21
4	0.000	No	$7.00	$0.00
5	0.000	No	$7.00	$0.00
6	0.232	No	$7.00	$70,741.72
7	0.153	No	$7.00	$46,652.94
8	0.464	No	$7.00	$141,483.43
Total	1.152			$1,067,345.40

KISINGER CAMPO & ASSOCIATES

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - FOUR LANE ALTERNATIVES

DESIGNED BY: SAB 09/2021
CHECKED BY: BAH 09/2021

Description: Mill Creek R/W Estimates

Alignment Shift, Urban Bridge Section w/ 42" PWM Aerial Crossing				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.421	No	$7.00	$128,371.82
2	0.236	Yes	$73.87	$759,375.00
3	0.100	No	$7.00	$30,492.12
4	0.030	No	$7.00	$9,147.64
5	0.011	No	$7.00	$3,354.13
6	0.000	No	$7.00	$0.00
7	0.000	No	$7.00	$0.00
8	0.000	No	$7.00	$0.00
Total	0.798			$930,740.71

Alignment Shift, Urban Bridge Section w/ 42" PWM Subaqueous Crossing (J&B)				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.421	No	$7.00	$128,371.82
2	0.236	Yes	$73.87	$759,375.00
3	0.100	No	$7.00	$30,492.12
4	0.030	No	$7.00	$9,147.64
5	0.011	No	$7.00	$3,354.13
6	0.000	No	$7.00	$0.00
7	0.000	No	$7.00	$0.00
8	0.010	No	$7.00	$3,049.21
Total	0.808			$933,789.92

Alignment Shift, Urban Bridge Section w/ 42" PWM Subaqueous Crossing (HDD)				
Parcel No.	Total R/W Req. (AC)	Dwelling Effected?	Unit Cost ($/SF)	R/W Acquisition Fee
1	0.421	No	$7.00	$128,371.82
2	0.236	Yes	$73.87	$759,375.00
3	0.100	No	$7.00	$30,492.12
4	0.030	No	$7.00	$9,147.64
5	0.011	No	$7.00	$3,354.13
6	0.061	No	$7.00	$18,600.19
7	0.039	No	$7.00	$11,891.93
8	0.227	No	$7.00	$69,217.11
Total	1.125			$1,030,449.94

Appendix B: Construction Time Calculations

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KISINGER CAMPO & ASSOCIATES

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Rural Section, Detour

Note: This construction time calculations is based on engineering judgement, assuming construction operations which are typical for the bridge type and detoured construction. Field conditions which are unknown at this time are not accounted for.

Phase I - Detour and Bridge Demolition							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Mobilization	Mobilize	-	4	-	1	20	Transport equipment to site.
MOT	Maintenance of Traffic Setup	-	2	-	1	10	Setup detour signage.
Clearing and Grubbing	Clear and Grub	-	1	-	1	5	Clear channel and approaches.
Demolition	Demo of Existing Bridge	-	5	-	1	25	Complete demo.
					Total:	60	

KISINGER CAMPO & ASSOCIATES

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Rural Section, Detour

Phase II - Install Replacement Bridge							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Sheet Pile Walls	Grading	2	1	-	1	7	
	Install Sheet Piling	1	3	-	2	32	
	Install Wall Cap Reinforcing	2	1	-	2	14	
	Install Wall Cap Concrete	2	1	-	2	14	Assumes substructure construction begins prior to sheet pile cap reaching full strength.
Substructure	Install Piling	3	1	-	5	40	
	Install Cap Reinforcing	-	1	-	5	25	
	Inst. Cap Concrete	1	1	-	5	28	Assumes cap fully cured before superstruction installation.
Superstructure	Inst. Bearing Pads	3	-	-	5	15	
	Install Deck Forms	3	1	-	4	32	
	Install Deck Reinforcing	-	2	-	4	40	
	Install Deck Concrete	3	1	-	4	32	
	Install Appr. Slabs	-	3	-	2	30	
	Install Barrier Reinforcing	3	1	-	4	32	Assumes installation prior to full deck cure.
	Install Barrier Concrete	3	1	-	4	32	Assumes installation prior to full deck cure.
	Deck Grooving	-	1	-	1	5	
	Install Guardrail	2	1	-	1	7	
	Stripe Deck and Approaches	2	-	-	1	2	
Site Restoration	Sodding and Site Cleaning	-	2	-	1	10	
Demobilization	Demobilize	-	1	-	1	5	
MOT	Remove MOT Setup	-	1	-	1	5	
					Total:	407	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Rural Section, Detour

Working Day Total:	467	(Sum of Phases I & II)
Time Multiplier:	1.4	(5 Day Work Week + No Holidays)
Month Total:	22	
Use:	**660 Days**	22 Months x (30 Day/Month)

Note: Construction time calculations assume that approach roadway work and utility work is performed concurrently with bridge work.

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Urban Section, Detour

Note: This construction time calculations is based on engineering judgement, assuming construction operations which are typical for the bridge type and detoured construction. Field conditions which are unknown at this time are not accounted for.

Phase I - Detour and Bridge Demolition							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Mobilization	Mobilize	-	4	-	1	20	Transport equipment to site.
MOT	Maintenance of Traffic Setup	-	2	-	1	10	Setup detour signage.
Clearing and Grubbing	Clear and Grub	-	1	-	1	5	Clear channel and approaches.
Demolition	Demo of Existing Bridge	-	5	-	1	25	Complete demo.
					Total:	60	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Urban Section, Detour

Phase II - Install Replacement Bridge							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Sheet Pile Walls	Grading	2	1	-	1	7	
	Install Sheet Piling	1	3	-	2	32	
	Install Wall Cap Reinforcing	2	1	-	2	14	
	Install Wall Cap Concrete	2	1	-	2	14	Assumes substructure construction begins prior to sheet pile cap reaching full strength.
Substructure	Install Piling	3	1	-	5	40	
	Install Cap Reinforcing	-	1	-	5	25	
	Inst. Cap Concrete	1	1	-	5	28	Assumes cap fully cured before superstruction installation.
Superstructure	Inst. Bearing Pads	3	-	-	5	15	
	Install Deck Forms	3	1	-	4	32	
	Install Deck Reinforcing	-	2	-	4	40	
	Install Deck Concrete	3	1	-	4	32	Includes sidewalk. See Barrier notes below.
	Install Appr. Slabs	-	3	-	2	30	
	Install Barrier Reinforcing	3	1	-	2	16	Assumes installation prior to full deck cure.
	Install Barrier Concrete	3	1	-	2	16	Assumes installation prior to full deck cure.
	Deck Grooving	-	1	-	1	5	
	Install Guardrail	2	1	-	1	7	
	Stripe Deck and Approaches	2	-	-	1	2	
Site Restoration	Sodding and Site Cleaning	-	2	-	1	10	
Demobilization	Demobilize	-	1	-	1	5	
MOT	Remove MOT Setup	-	1	-	1	5	
					Total:	375	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Urban Section, Detour

Working Day Total:	435	(Sum of Phases I & II)
Time Multiplier:	1.4	(5 Day Work Week + No Holidays)
Month Total:	20.5	
Use:	**615 Days**	20.5 Months x (30 Day/Month)

Note: Construction time calculations assume that approach roadway work and utility work is performed concurrently with bridge work.

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Urban Section, Phased

Note: This construction time calculations is based on engineering judgement, assuming construction operations which are typical for the bridge type and phased construction. Field conditions which are unknown at this time are not accounted for.

Phase I - Project Setup							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Mobilization	Mobilize	-	4	-	1	20	Transport initial equipment to site.
MOT	Maintenance of Traffic Setup	-	2	-	1	10	Setup signage.
Clearing and Grubbing	Clear and Grub	-	1	-	1	5	Clear channel and approaches.
Demolition Prep	Install Temp. Sheet Pile	-	1	-	2	10	
					Total:	45	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Urban Section, Phased

Phase II - Install Partial Replacement Bridge							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Sheet Pile Walls	Grading	-	1	-	1	5	
	Install Sheet Piling	-	2	-	2	20	Includes temp. walls.
	Install Wall Cap Reinforcing	3	-	-	2	6	
	Install Wall Cap Concrete	-	1	-	2	10	Assumes substructure construction begins prior to sheet pile cap reaching full strength.
Substructure	Install Piling	-	1	-	5	25	
	Install Cap Reinforcing	-	1	-	5	25	
	Inst. Cap Concrete	1	1	-	5	28	Assumes cap fully cured before superstruction installation.
Superstructure	Inst. Bearing Pads	2	-	-	4	8	
	Install Deck Forms	2	1	-	4	28	
	Install Deck Reinforcing	-	1	-	4	20	
	Install Deck Concrete	2	1	-	4	28	Includes sidewalk. See Barrier notes below.
	Install Appr. Slabs	-	2	-	2	20	
	Install Barrier Reinforcing	-	2	-	1	10	Assumes installation prior to full deck cure.
	Install Barrier Concrete	-	1	-	1	5	Assumes installation prior to full deck cure.
	Deck Grooving	-	1	-	1	5	
MOT	Install Temp. Barrier	-	1	-	1	5	Anchored Type K-Barrier.
	Adjust Maintenance of Traffic Setup	-	3	-	1	15	
					Total:	263	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Urban Section, Phased

Phase III - Demolition of Existing Bridge and Finalize Replacement Bridge							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Demolition	Demo of Existing Bridge	-	6	-	1	30	Complete demo.
Sheet Pile Walls	Grading	-	1	-	1	5	
	Install Sheet Piling	-	2	-	2	20	Tie to existing walls.
	Install Wall Cap Reinforcing	-	1	-	2	10	Additional day for coupling.
	Install Wall Cap Concrete	-	1	-	2	10	Assumes substructure construction begins prior to sheet pile cap reaching full strength.
Substructure	Install Piling	-	1	-	5	25	
	Install Cap Reinforcing	1	1	-	5	30	Additional days for coupling.
	Inst. Cap Concrete	1	1	-	5	28	Assumes cap fully cured before superstruction installation.
Superstructure	Inst. Bearing Pads	2	-	-	4	8	
	Install Deck Forms	-	1	-	4	20	
	Install Deck Reinforcing	2	1	-	4	28	Additional days for coupling.
	Install Deck Concrete	2	1	-	4	28	Includes sidewalk. See Barrier notes below.
	Install Appr. Slabs	-	2	-	2	20	
	Install Barrier Reinforcing	-	2	-	1	10	Assumes installation prior to full deck cure.
	Install Barrier Concrete	-	1	-	1	5	Assumes installation prior to full deck cure.
	Deck Grooving	-	1	-	1	5	
	Install Guardrail	2	1	-	1	7	
MOT	Remove Temp. Barrier	3	-	-	1	3	Includes sealing of dowel holes.
	Restripe Bridge Deck	2	-	-	1	2	Includes approaches
	Remove MOT Setup	-	2	-	1	10	
Site Restoration	Sodding and Site Cleaning	-	2	-	2	20	
Demobilization	Demobilize	-	1	-	1	5	
					Total:	329	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Flat Slab Bridge, 4-Lane Urban Section, Phased

Working Day Total:	637	(Sum of Phases I, II, & III)
Time Multiplier:	1.4	(5 Day Work Week + No Holidays)
Month Total:	30	
Use:	**900 Days**	30 Months x (30 Day/Month)

Note: Construction time calculations assume that approach roadway work and utility work is performed concurrently with bridge work.

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Rural Section, Detour

Note: This construction time calculations is based on engineering judgement, assuming construction operations which are typical for the bridge type and detoured construction. Field conditions which are unknown at this time are not accounted for.

Phase I - Detour and Bridge Demolition							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Mobilization	Mobilize	-	4	-	1	20	Transport equipment to site.
MOT	Maintenance of Traffic Setup	-	2	-	1	10	Setup detour signage.
Clearing and Grubbing	Clear and Grub	-	1	-	1	5	Clear channel and approaches.
Demolition	Demo of Existing Bridge	-	5	-	1	25	Complete demo.
					Total:	60	

KISINGER CAMPO & ASSOCIATES

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Rural Section, Detour

Phase II - Install Replacement Bridge							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Sheet Pile Walls	Grading	2	1	-	1	7	
	Install Sheet Piling	1	3	-	2	32	
	Install Wall Cap Reinforcing	2	1	-	2	14	
	Install Wall Cap Concrete	2	1	-	2	14	Assumes substructure construction begins prior to sheet pile cap reaching full strength.
Substructure	Install Piling	3	1	-	5	40	
	Install Cap Reinforcing	-	1	-	5	25	
	Inst. Cap Concrete	1	1	-	5	28	Assumes cap fully cured before superstruction installation.
Superstructure	Inst. Bearing Pads	3	-	-	5	15	
	Install FSBs	-	1	-	4	20	
	Install Back Rod and Deck Reinf.	2	1	-	4	28	
	Install Deck Concrete	3	1	-	4	32	Includes sidewalk. See Barrier notes below.
	Install Appr. Slabs	-	3	-	2	30	
	Install Barrier Reinforcing	3	1	-	4	32	Assumes installation prior to full deck cure.
	Install Barrier Concrete	3	1	-	4	32	Assumes installation prior to full deck cure.
	Deck Grooving	-	1	-	1	5	
	Install Guardrail	2	1	-	1	7	
	Stripe Deck and Approaches	2	-	-	1	2	
Site Restoration	Sodding and Site Cleaning	-	2	-	1	10	
Demobilization	Demobilize	-	1	-	1	5	
MOT	Remove MOT Setup	-	1	-	1	5	
					Total:	383	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Rural Section, Detour

Working Day Total:	443	(Sum of Phases I & II)
Time Multiplier:	1.4	(5 Day Work Week + No Holidays)
Month Total:	21	
Use:	**630 Days**	21 Months x (30 Day/Month)

Note: Construction time calculations assume that approach roadway work and utility work is performed concurrently with bridge work.

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Urban Section, Detour

Note: This construction time calculations is based on engineering judgement, assuming construction operations which are typical for the bridge type and detoured construction. Field conditions which are unknown at this time are not accounted for.

Phase I - Detour and Bridge Demolition							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Mobilization	Mobilize	-	4	-	1	20	Transport equipment to site.
MOT	Maintenance of Traffic Setup	-	2	-	1	10	Setup detour signage.
Clearing and Grubbing	Clear and Grub	-	1	-	1	5	Clear channel and approaches.
Demolition	Demo of Existing Bridge	-	5	-	1	25	Complete demo.
					Total:	60	

KISINGER CAMPO & ASSOCIATES

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Urban Section, Detour

Phase II - Install Replacement Bridge							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Sheet Pile Walls	Grading	2	1	-	1	7	
	Install Sheet Piling	1	3	-	2	32	
	Install Wall Cap Reinforcing	2	1	-	2	14	
	Install Wall Cap Concrete	2	1	-	2	14	Assumes substructure construction begins prior to sheet pile cap reaching full strength.
Substructure	Install Piling	3	1	-	5	40	
	Install Cap Reinforcing	-	1	-	5	25	
	Inst. Cap Concrete	1	1	-	5	28	Assumes cap fully cured before superstruction installation.
Superstructure	Inst. Bearing Pads	3	-	-	5	15	
	Install FSBs	-	1	-	4	20	
	Install Back Rod and Deck Reinf.	2	1	-	4	28	
	Install Deck Concrete	3	1	-	4	32	Includes sidewalk. See Barrier notes below.
	Install Appr. Slabs	-	3	-	2	30	
	Install Barrier Reinforcing	3	1	-	2	16	Assumes installation prior to full deck cure.
	Install Barrier Concrete	3	1	-	2	16	Assumes installation prior to full deck cure.
	Deck Grooving	-	1	-	1	5	
	Install Guardrail	2	1	-	1	7	
	Stripe Deck and Approaches	2	-	-	1	2	
Site Restoration	Sodding and Site Cleaning	-	2	-	1	10	
Demobilization	Demobilize	-	1	-	1	5	
MOT	Remove MOT Setup	-	1	-	1	5	
					Total:	351	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Urban Section, Detour

Working Day Total:	411	(Sum of Phases I & II)
Time Multiplier:	1.4	(5 Day Work Week + No Holidays)
Month Total:	19.5	
Use:	**585 Days**	19.5 Months x (30 Day/Month)

Note: Construction time calculations assume that approach roadway work and utility work is performed concurrently with bridge work.

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Urban Section, Phased

Note: This construction time calculations is based on engineering judgement, assuming construction operations which are typical for the bridge type and phased construction. Field conditions which are unknown at this time are not accounted for.

Phase I - Project Setup							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Mobilization	Mobilize	-	4	-	1	20	Transport initial equipment to site.
MOT	Maintenance of Traffic Setup	-	2	-	1	10	Setup signage.
Clearing and Grubbing	Clear and Grub	-	1	-	1	5	Clear channel and approaches.
Demolition Prep	Install Temp. Sheet Pile	-	1	-	2	10	
					Total:	45	

KISINGER CAMPO & ASSOCIATES

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Urban Section, Phased

Phase II - Install Partial Replacement Bridge							
Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Sheet Pile Walls	Grading	-	1	-	1	5	
	Install Sheet Piling	-	2	-	2	20	Includes temp. walls.
	Install Wall Cap Reinforcing	3	-	-	2	6	
	Install Wall Cap Concrete	-	1	-	2	10	Assumes substructure construction begins prior to sheet pile cap reaching full strength.
Substructure	Install Piling	-	1	-	5	25	
	Install Cap Reinforcing	-	1	-	5	25	
	Inst. Cap Concrete	-	1	-	5	25	Assumes cap achieves 28 day comp. strength in 25 days.
Superstructure	Inst. Bearing Pads	2	-	-	4	8	
	Install FSBs	-	1	-	4	20	
	Install Backer Rod and Deck Reinf.	2	1	-	4	28	
	Install Deck Concrete	2	1	-	4	28	Includes sidewalk. See Barrier notes below.
	Install Appr. Slabs	-	2	-	2	20	
	Install Barrier Reinforcing	-	1	-	1	5	Assumes installation prior to full deck cure.
	Install Barrier Concrete	-	1	-	1	5	Assumes installation prior to full deck cure.
	Deck Grooving	-	1	-	1	5	
MOT	Install Temp. Barrier	-	1	-	1	5	Anchored Type K-Barrier.
	Adjust Maintenance of Traffic Setup	-	3	-	1	15	
					Total:	255	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Urban Section, Phased

Phase III - Demolition of Existing Bridge and Finalize Replacement Bridge

Activity	Item	Time			Number	Working Days	Notes
		Day(s)	Week(s)	Month(s)			
Demolition	Demo of Existing Bridge	-	6	-	1	30	Complete demo.
Sheet Pile Walls	Grading	-	1	-	1	5	
	Install Sheet Piling	-	2	-	2	20	Tie to existing walls.
	Install Wall Cap Reinforcing	-	1	-	2	10	Additional days for coupling.
	Install Wall Cap Concrete	-	1	-	2	10	Assumes substructure construction begins prior to sheet pile cap reaching full strength.
Substructure	Install Piling	-	1	-	5	25	
	Install Cap Reinforcing	2	1	-	5	35	Additional days for coupling.
	Inst. Cap Concrete	-	1	-	5	25	Assumes cap achieves 28 day comp. strength in 25 days.
Superstructure	Inst. Bearing Pads	2	-	-	4	8	
	Install FSBs	-	1	-	4	20	
	Install Backer Rod and Deck Reinf.	2	1	-	4	28	Additional days for coupling.
	Install Deck Concrete	2	1	-	4	28	Includes sidewalk. See Barrier notes below.
	Install Appr. Slabs	-	2	-	2	20	
	Install Barrier Reinforcing	-	1	-	1	5	Assumes installation prior to full deck cure.
	Install Barrier Concrete	-	1	-	1	5	Assumes installation prior to full deck cure.
	Deck Grooving	-	1	-	1	5	
	Install Guardrail	2	1	-	1	7	
MOT	Remove Temp. Barrier	3	-	-	1	3	Includes sealing of dowel holes.
	Restripe Bridge Deck	3	-	-	1	3	Includes approaches
	Remove MOT Setup	-	1	-	1	5	
Site Restoration	Sodding and Site Cleaning	-	2	-	2	20	
Demobilization	Demobilize	-	1	-	1	5	
					Total:	322	

MANATEE COUNTY
UPPER MANATEE RIVER ROAD
MILL CREEK - ADDENDUM

DESIGNED BY: SAB 08/2021
CHECKED BY: JHJ 09/21

Description: Construction Time Calculation - Florida Slab Beam Bridge, 4-Lane Urban Section, Phased

Working Day Total:	622	(Sum of Phases I, II, & III)
Time Multiplier:	1.4	(5 Day Work Week + No Holidays)
Month Total:	29.5	
Use:	**885 Days**	29.5 Months x (30 Day/Month)

Note: Construction time calculations assume that approach roadway work and utility work is performed concurrently with bridge work.

Appendix C: Exhibits

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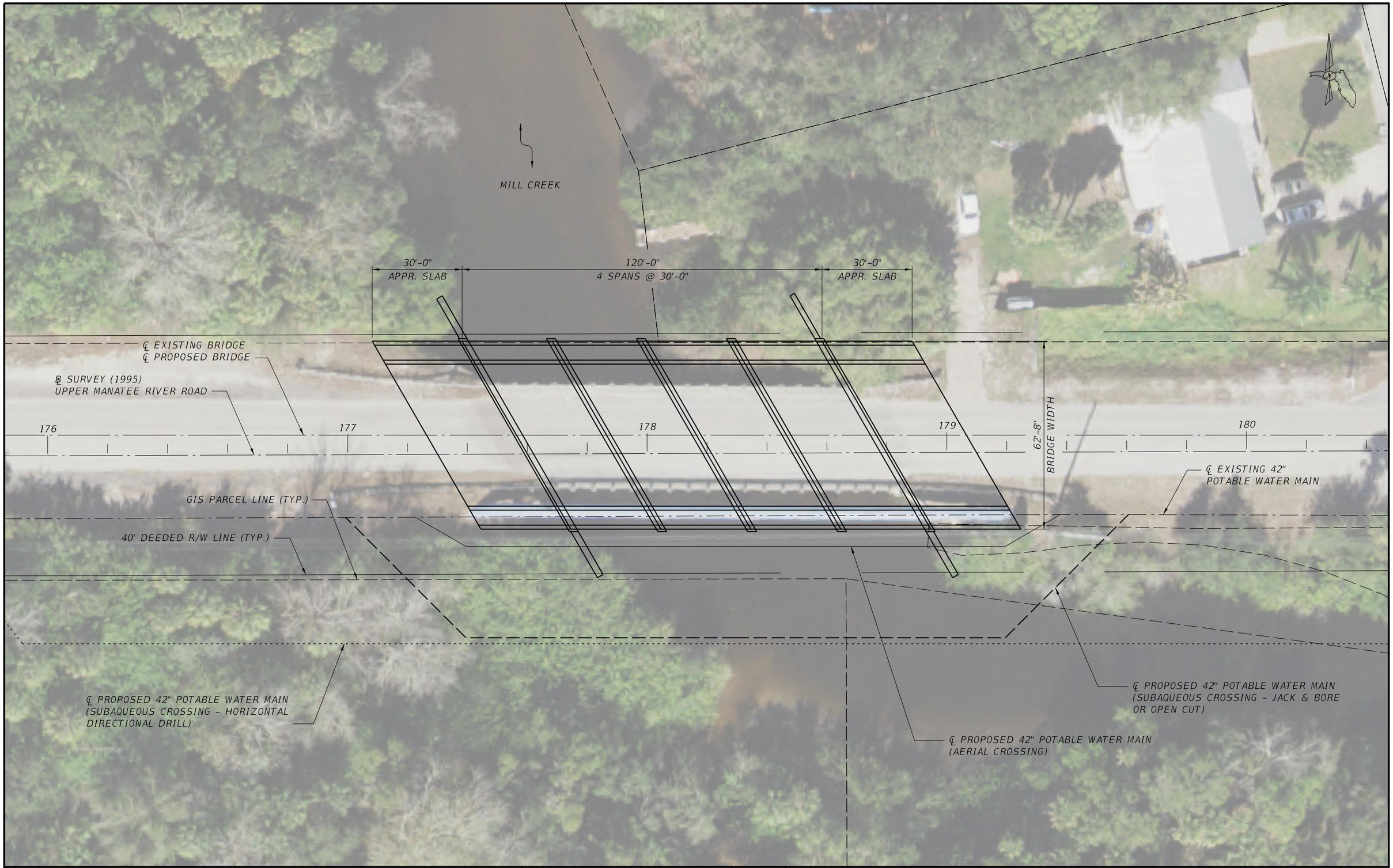

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
PLAN VIEW
DETOUR - FUTURE FOUR LANE RURAL

REF. DWG. NO.

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

SHEET NO.

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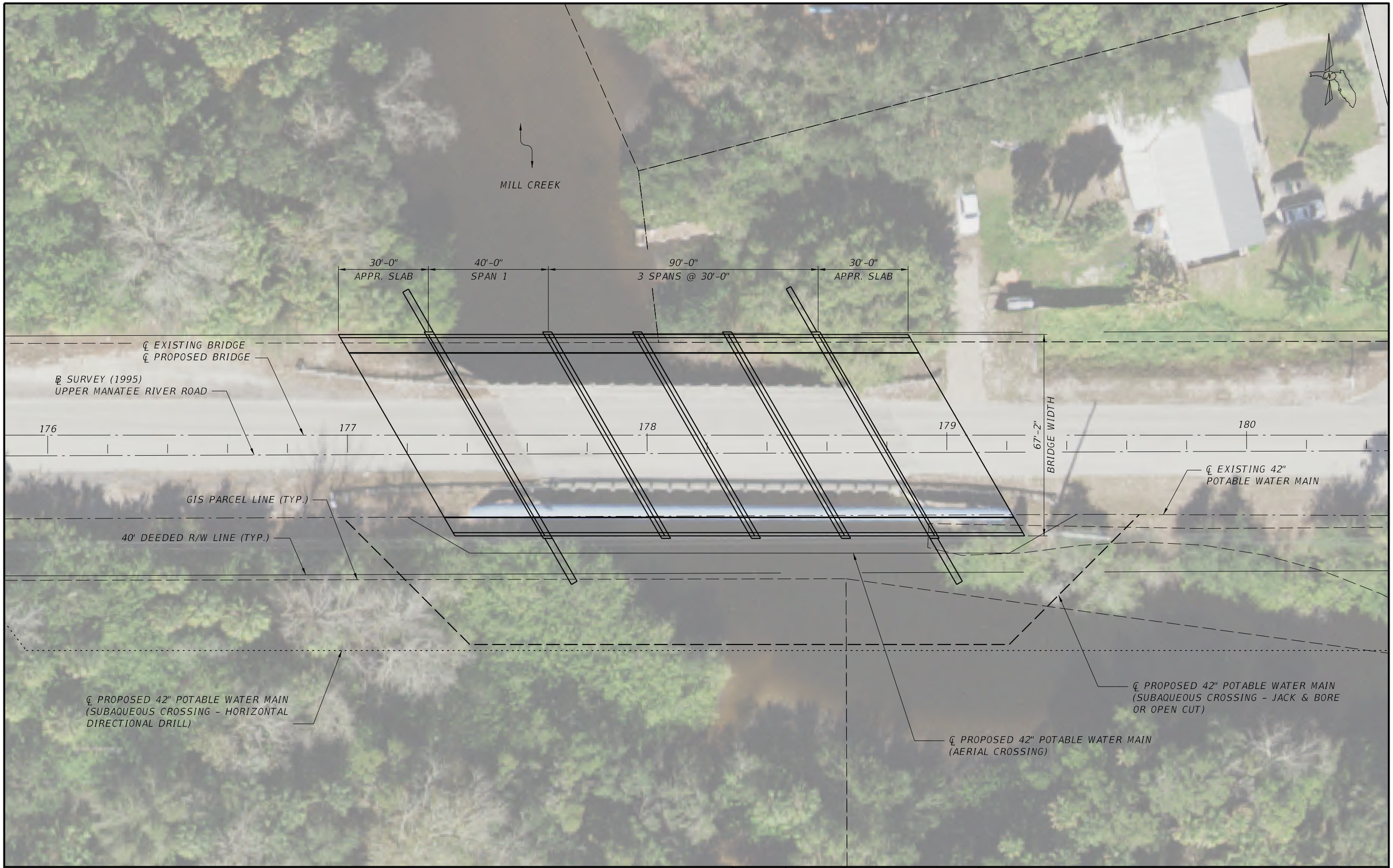

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
PLAN VIEW
DETOUR - FUTURE FOUR LANE URBAN

REF. DWG. NO.

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

SHEET NO.

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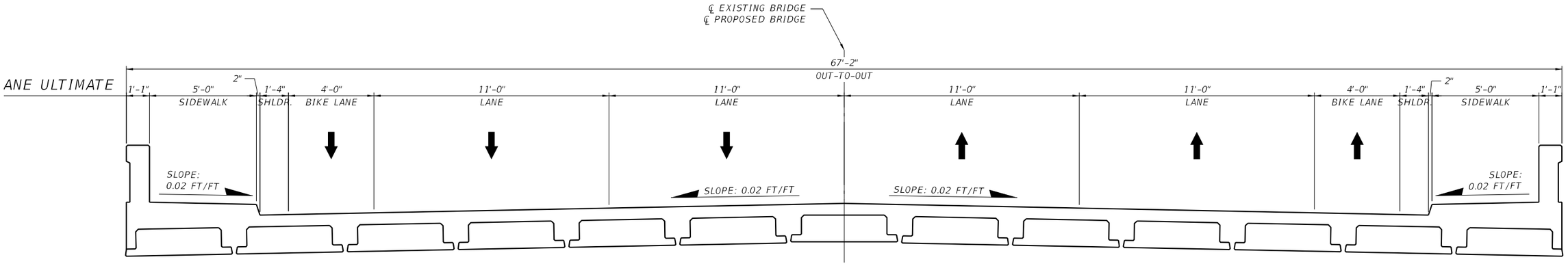
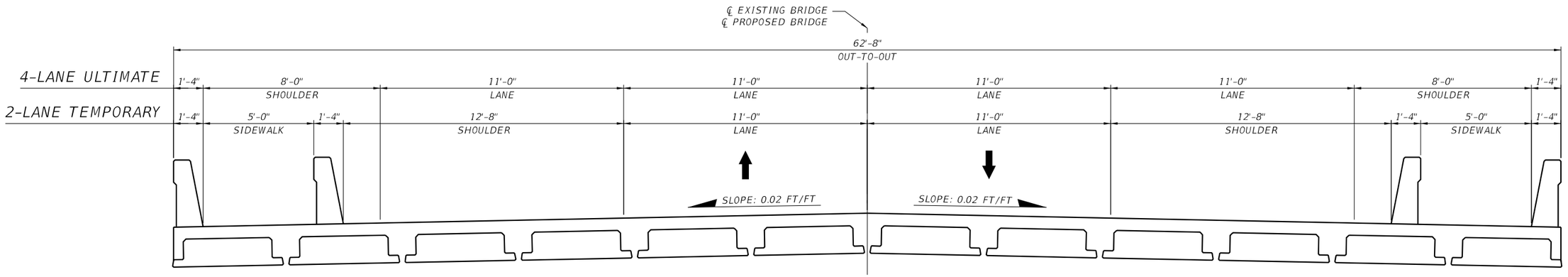


URBAN TYPICAL SECTION



CROWNED ARTERIAL (RURAL) TYPICAL SECTION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
TYPICAL SECTION
FULL DETOUR

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

REF. DWG. NO.

SHEET NO.

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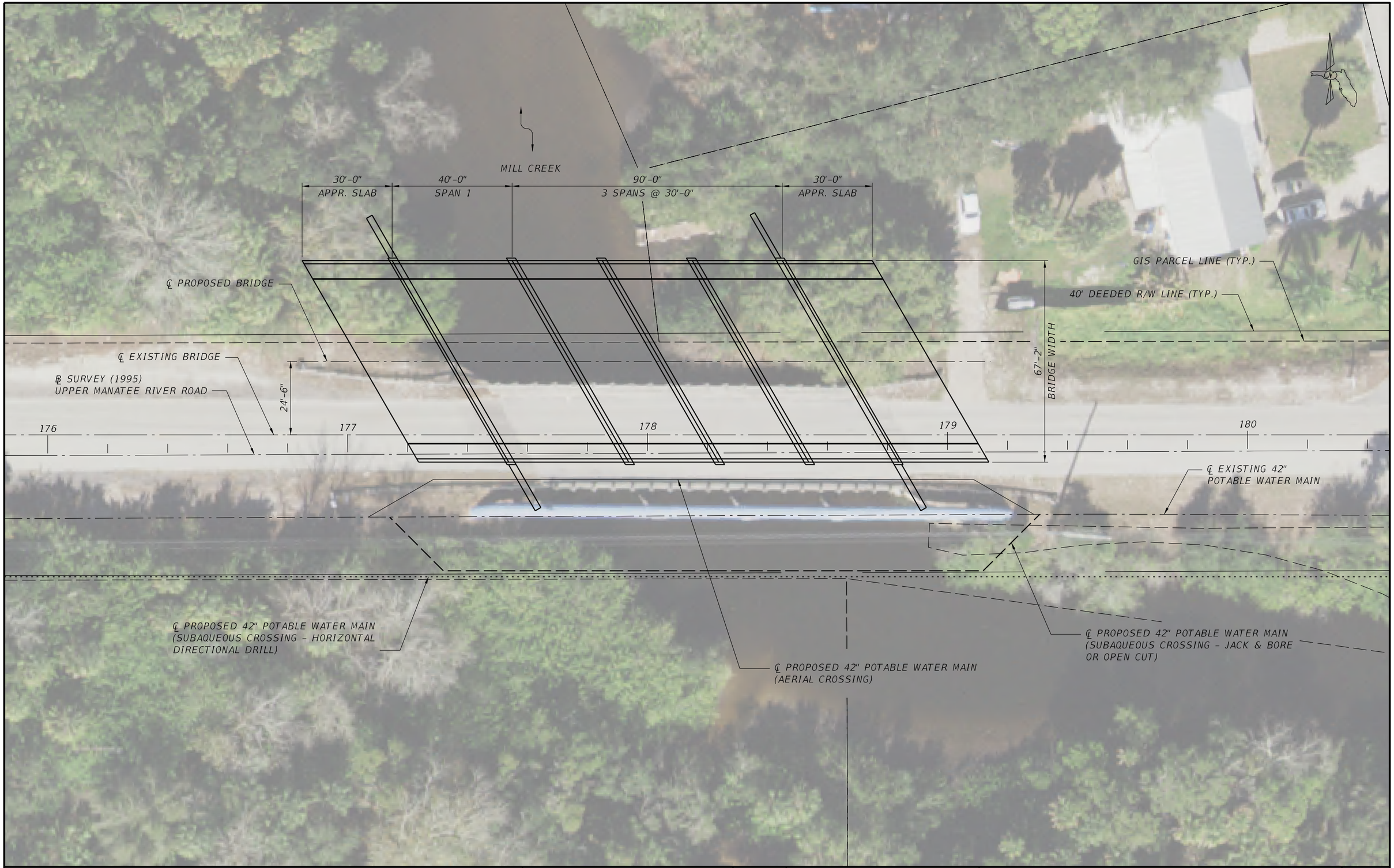

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
PLAN VIEW
PHASED - FUTURE FOUR LANE URBAN

REF. DWG. NO.

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

SHEET NO.

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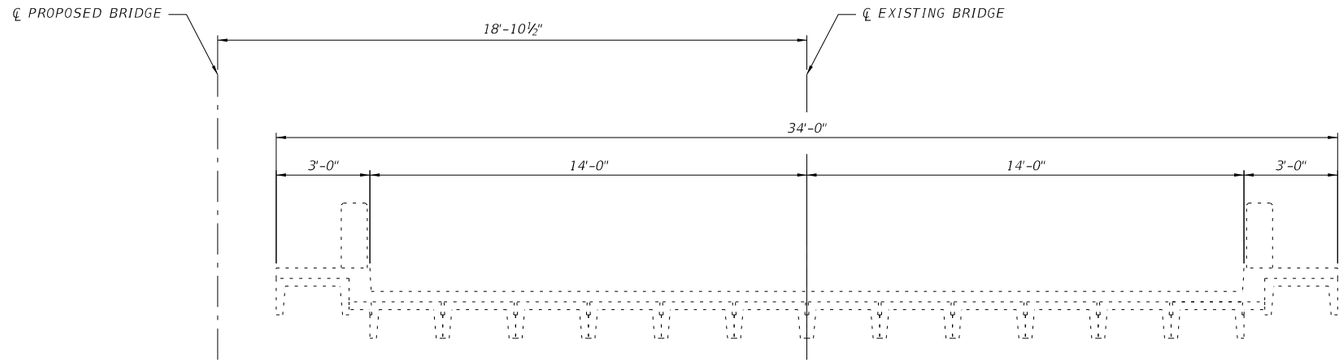
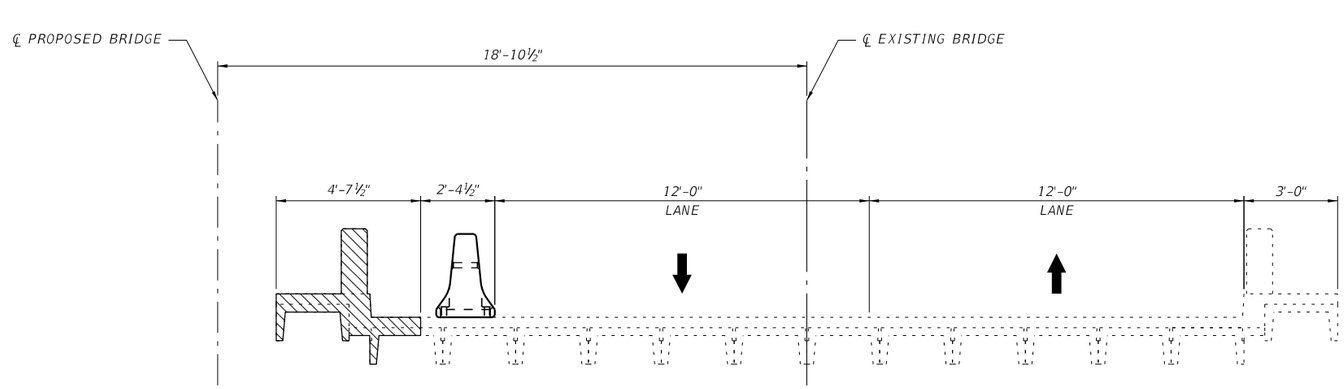


EXISTING TYPICAL SECTION

(BRIDGE NO. 134023)



PHASE I

(BRIDGE NO. 134023)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
TYPICAL SECTION
PHASED CONSTRUCTION (1 OF 2)

REF. DWG. NO.

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

SHEET NO.

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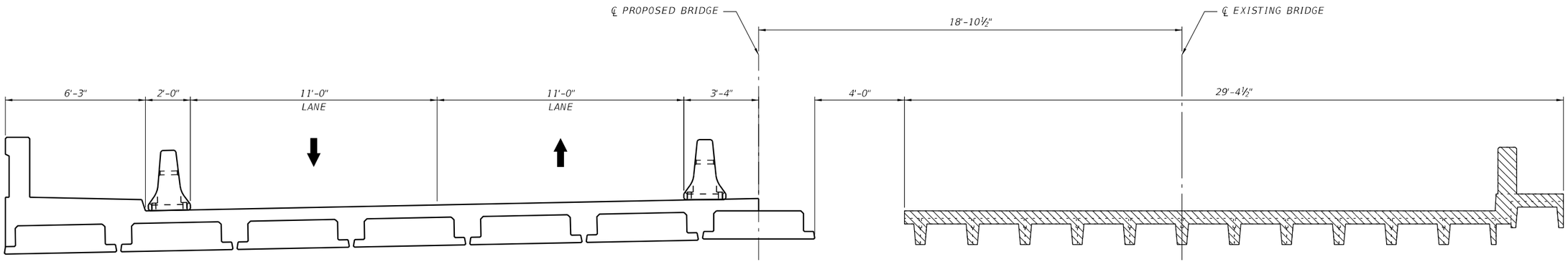

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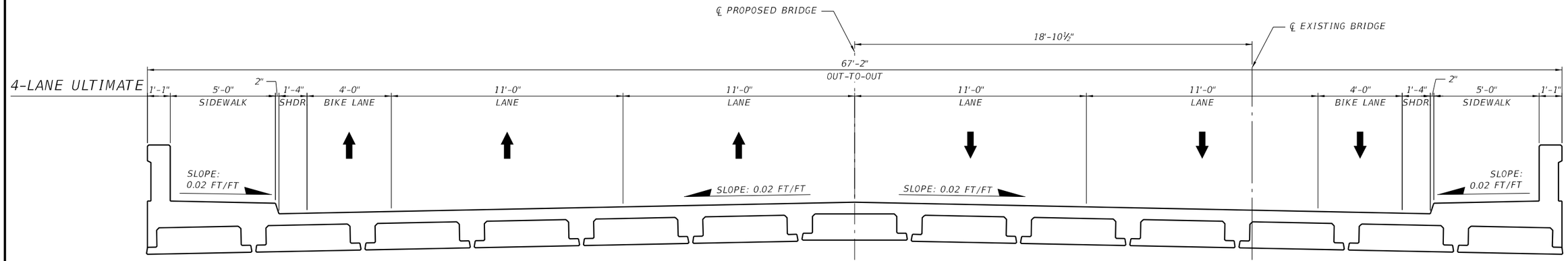

PROPOSED TYPICAL SECTION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
TYPICAL SECTION
PHASED CONSTRUCTION (2 OF 2)

REF. DWG. NO.

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

SHEET NO.

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PONS, EDWARD T
IMPACT = 0.122 ACRES

MILL CREEK

PEREZ,
MARISELA ISIDRA
IMPACT = 0.150 ACRES

BOSTON,
MICHAEL STEVEN
IMPACT = 0.082 ACRES

275'-0" ±

500'-0" ±

173 174 175 176 177 178 179 180 181 182 183 184 185

5'-9" MIN.

20'-0" MIN.

APPROX. TOP OF
CHANNEL BANK
180'-0" ±

185'-0"

260'-0" ±

APPROX. TOP OF
CHANNEL BANK

300'-0"

865'-0" ±

M/I HOMES OF
TAMPA LLC
IMPACT = 0.204 ACRES

HIDDEN OAKS OF
MANATEE COUNTY HOA INC.
IMPACT = 0.141 ACRES

MILL CREEK
ASSOCIATION INC.
IMPACT = 0.442 ACRES

LEGEND:

- PROPOSED R/W LINE - HDD ALTERNATIVE
- PROPOSED R/W LINE - JACK & BORE ALTERNATIVE
- PROPOSED R/W LINE - BRIDGE OR ROADWAY CONTROLLED
- APPROXIMATE 40' DEEDED R/W LINE
- GIS PARCEL LINE
- EXISTING - 42" PWM
- PROPOSED AERIAL CROSSING - 42" PWM
- PROPOSED SUBAQEUOUS CROSSING (HDD) - 42" PWM
- PROPOSED SUBAQEUOUS CROSSING (J&B) - 42" PWM
- APPROXIMATE SURFACE WATERS LIMITS
- APPROXIMATE VEGETATED WETLAND LIMITS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
PLAN VIEW - PROJECT LIMITS
FUTURE FOUR LANE RURAL - DETOUR

REF. DWG. NO.

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

SHEET NO.

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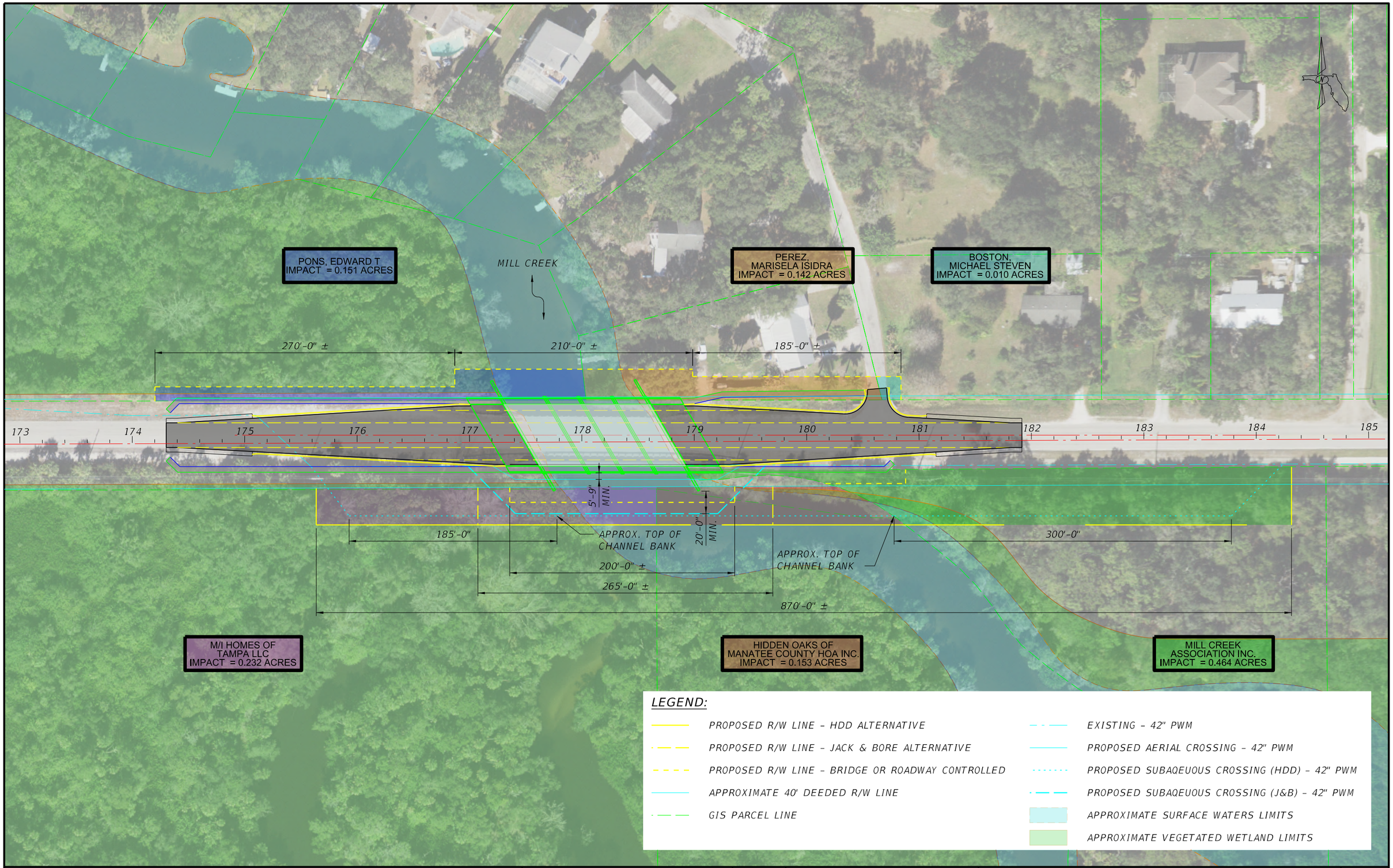

LEGEND:

- PROPOSED R/W LINE - HDD ALTERNATIVE
- PROPOSED R/W LINE - JACK & BORE ALTERNATIVE
- PROPOSED R/W LINE - BRIDGE OR ROADWAY CONTROLLED
- APPROXIMATE 40' DEEDED R/W LINE
- GIS PARCEL LINE
- EXISTING - 42" PWM
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- PROPOSED SUBAQEUOUS CROSSING (HDD) - 42" PWM
- PROPOSED SUBAQEUOUS CROSSING (J&B) - 42" PWM
- APPROXIMATE SURFACE WATERS LIMITS
- APPROXIMATE VEGETATED WETLAND LIMITS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
PLAN VIEW - PROJECT LIMITS
FUTURE FOUR LANE URBAN - DETOUR

REF. DWG. NO.

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

SHEET NO.

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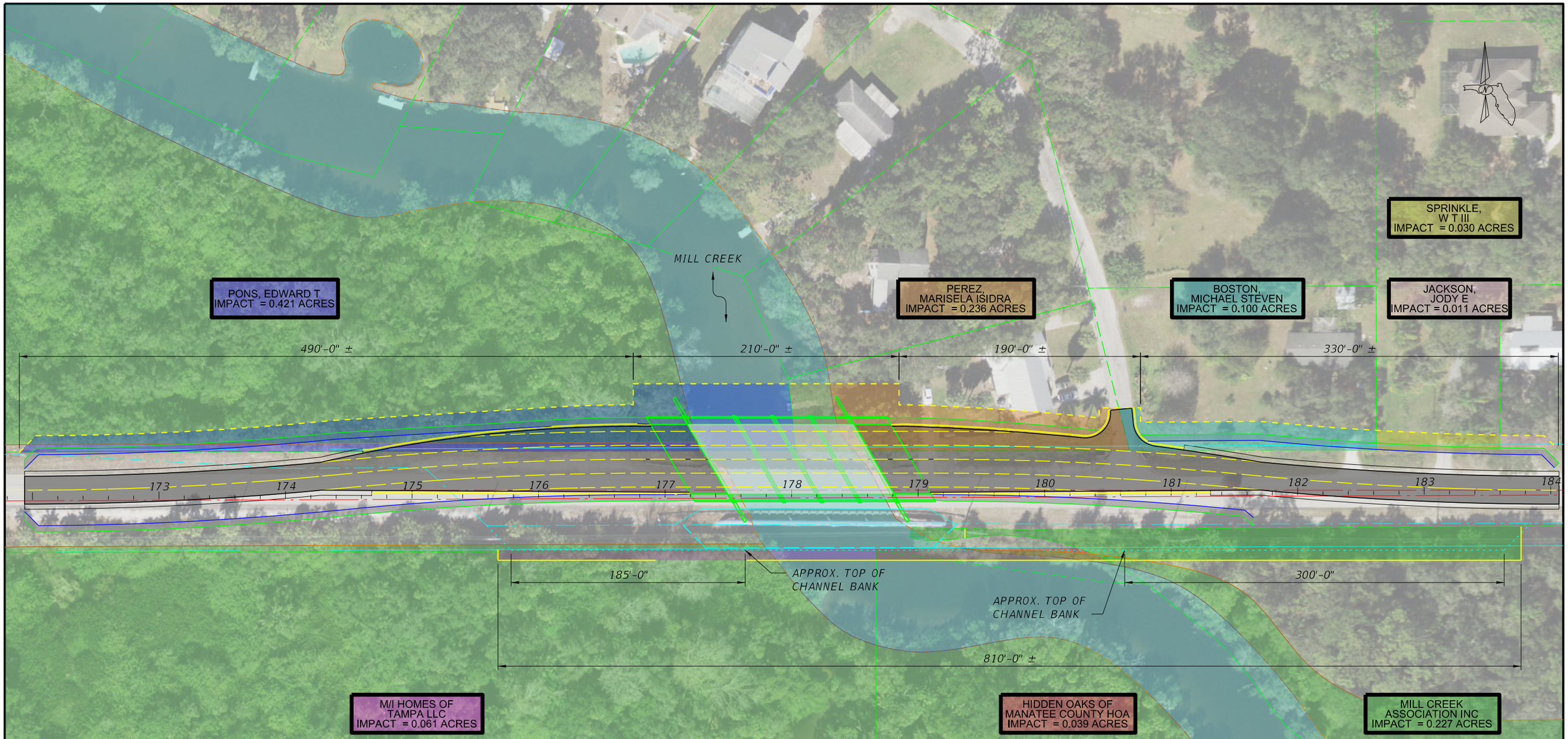

LEGEND:

- PROPOSED R/W LINE - HDD ALTERNATIVE
- PROPOSED R/W LINE - JACK & BORE ALTERNATIVE
- PROPOSED R/W LINE - BRIDGE OR ROADWAY CONTROLLED
- APPROXIMATE 40' DEEDED R/W LINE
- GIS PARCEL LINE
- EXISTING - 42" PWM
- PROPOSED AERIAL CROSSING - 42" PWM
- PROPOSED SUBAQEUOUS CROSSING (HDD) - 42" PWM
- PROPOSED SUBAQEUOUS CROSSING (J&B) - 42" PWM
- APPROXIMATE SURFACE WATERS LIMITS
- APPROXIMATE VEGETATED WETLAND LIMITS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

MANATEE COUNTY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	MANATEE	N/A

SHEET TITLE:
PLAN VIEW - PROJECT LIMITS
FUTURE FOUR LANE URBAN - PHASED

REF. DWG. NO.

PROJECT NAME:
UPPER MANATEE RIVER ROAD
BRIDGE DEVELOPMENT REPORT

SHEET NO.

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Appendix D: Existing Bridge Plans

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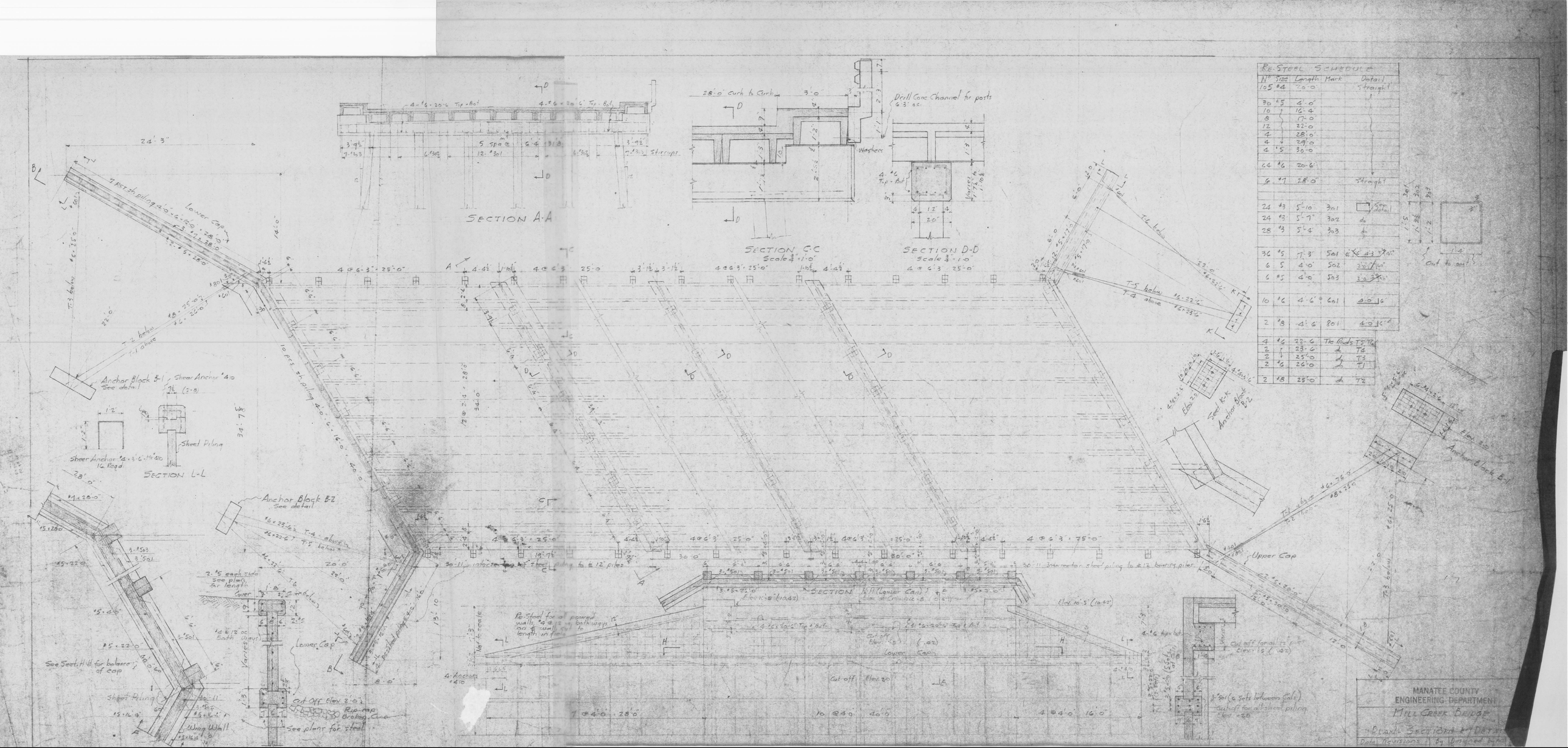
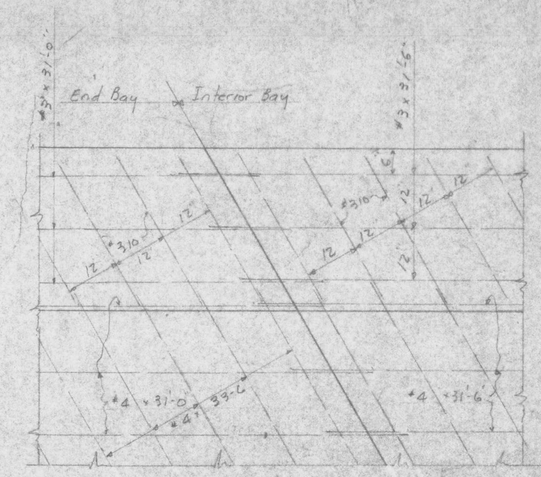


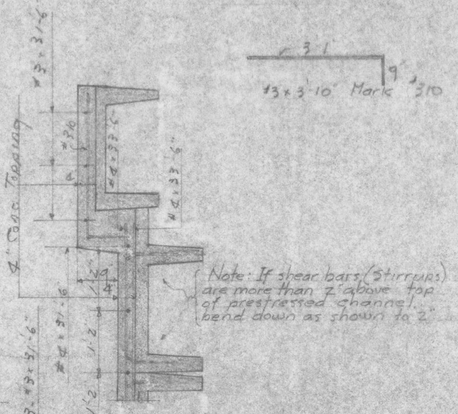
RE-STEEL SCHEDULE

No	Size	Length	Mark	Detail
105	#4	7'-0"		Straight
30	#5	4'-0"		
10	"	16'-4"		
8	"	17'-0"		
12	"	22'-0"		
4	"	28'-0"		
4	"	29'-0"		
4	#5	30'-0"		
44	#6	20'-6"		
6	#7	28'-0"		Straight
24	#3	5'-10"	301	Str. Detail
24	#3	5'-7"	302	"
28	#3	5'-4"	303	"
36	#5	7'-3"	501	6 @ 4'-3" c to c
6	5	4'-0"	502	2'-0" c to c
6	#5	4'-0"	503	3'-0" c to c
10	#6	4'-6"	601	2'-0" c to c
2	#8	4'-6"	801	4'-0" c to c
4	#6	22'-6"	T6 Loads	T5 T6
2	"	23'-6"	"	T6
2	"	25'-0"	"	T3
2	"	26'-0"	"	T1
2	#8	25'-0"	"	T2

BAR SCHEDULE

No	Size	Length	Mark	Detail	Total Length	Unit Weight	Total Weight
208	#4	33'-6"			6968		
50	#4	31'-6"			1575		
50	#4	31'-0"			1550		
72	#4	15'-0"			1080		
					11173	.668	7464
12	#3	31'-0"			372		
12	#3	31'-6"			378		
					750	.376	282
208	#3	3'-10"	310		797	.376	300





26 - #3 Mk 310

26 - #3 Mk 310

26 - #3 Mk 310

26 - #3 Mk 310

3 - #3 x 31'-0"

3 - #3 x 31'-6"

3 - #3 x 31'-6"

3 - #3 x 31'-0"

A

12" o.c.

Top Batt.

26 - #4 x 33'-6" do 26 - do

25 - #4 x 31'-0" on ℄ Topping 12" o.c.

24 - #4 x 15'-0" on ℄ Topping

25 - #4 x 31'-6" on ℄ Topping 12" o.c.

26 - #4 x 33'-6" do 26 - do

25 - #4 x 31'-6" on ℄ Topping 12" o.c.

24 - #4 x 15'-0" on ℄ Topping

25 - #4 x 31'-0" on ℄ Topping 12" o.c.

26 - #4 x 33'-6" do 26 - do

7'-6"

7'-6"

26 - #3 Mk 310
30'-11"
End Bay

26 - #3 Mk 310
30'-0"
Interior Bay

26 - #3 Mk 310
30'-0"
Interior Bay

26 - #3 Mk 310
30'-11"
End Bay

26'-0"

MANATEE COUNTY
ENGINEERING DEPARTMENT

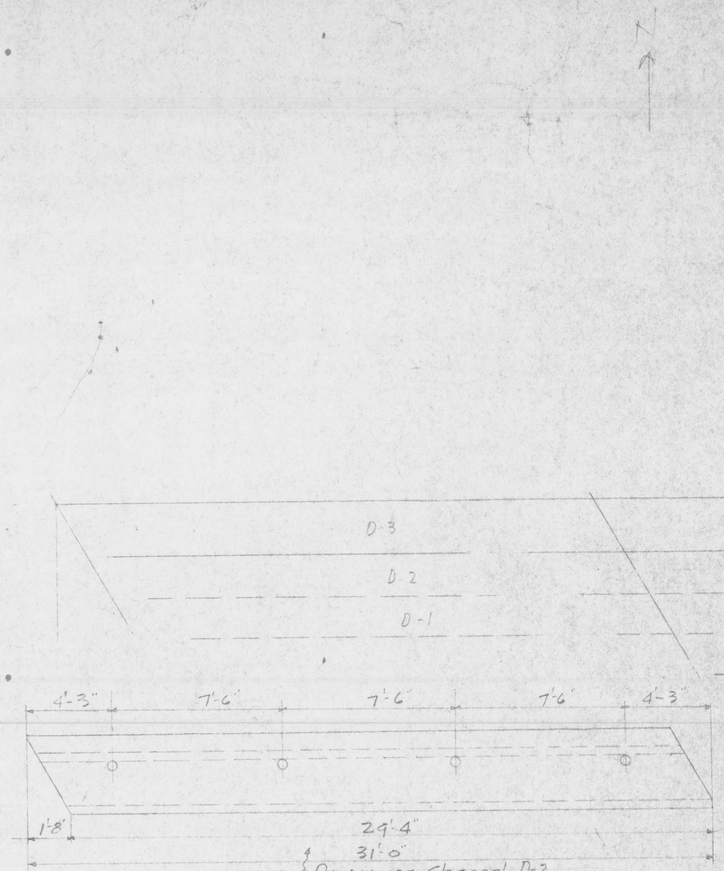
MILL CREEK BRIDGE
BRN - 13 4023
RE-STEEL FOR DECK TOPPING

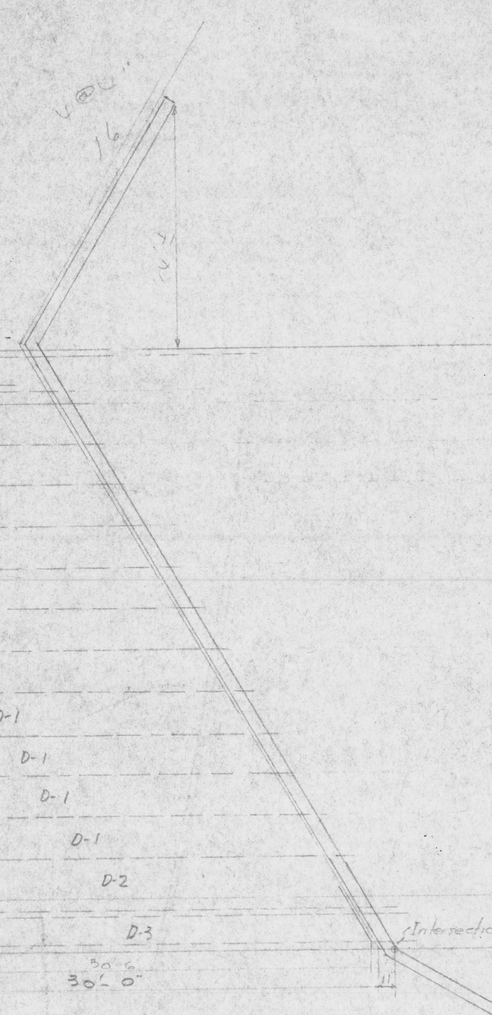
Date	Revisions	By

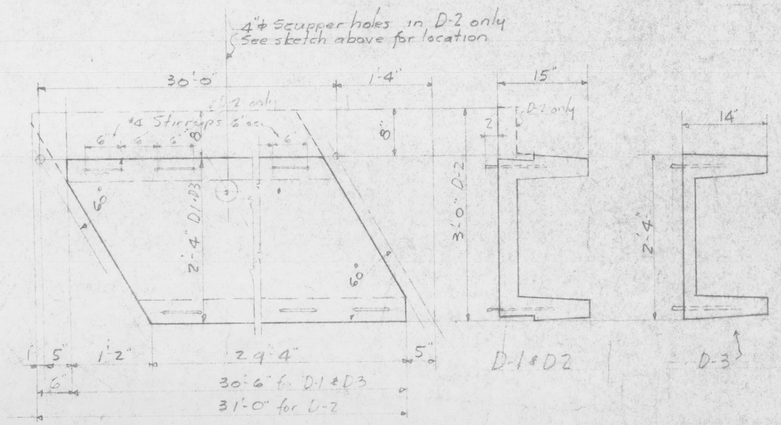
Designed by KG
Drawn by
Date
Approved by

Sheet

63-287







PLAN OF Channel D-2
Showing 4" dia holes for scuppers

Prestressed Bridge Deck Schedule					
Mark	Nº Req'd	Width	Length	Design Loading	Shape
D-1	40	2'-4"	30'-6"	H-15	⊓
D-2	8	3'-0"	31'-0"	H-15	⊤⊓
D-3	8	2'-4"	30'-6"	150#/□'	⊓

4" ϕ Scupper holes in D-2 only
See sketch above for location

Diagram of Skew Bridge (34 x 120) Showing Marking of Deck Channels
Not to scale
Note: All channels not marked are D-1

63-287

21-T34-19E

MANATEE COUNTY HIGHWAY DEPT
ENGINEERING DIVISION

MILL CREEK BRIDGE (Proj 287)
Prestressed Deck Channels

Date	Revisions	by	Designed by	Scale
12-21-62	Channel D-2	F.C.S.	Drawn by F.C.S.	
			Date 12-20-62	Sheet No.
			Approved by	

63-287

Appendix E: Bridge Inspection Report

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BRIDGE INSPECTION REPORT

PREPARED FOR: FLORIDA DEPARTMENT OF TRANSPORTATION

BRIDGE OWNER: MANATEE COUNTY

DBi

INSPECTED BY:

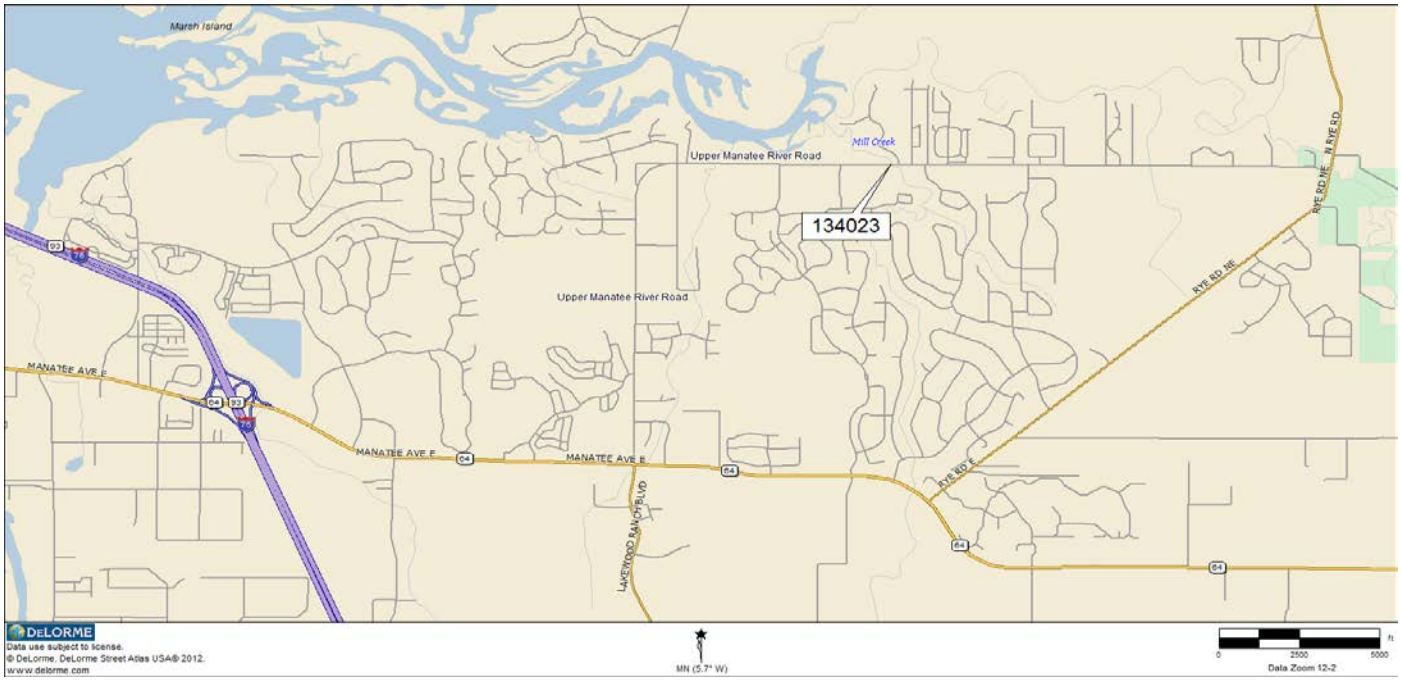
KCA

BRIDGE NO. 134023 **CONTENTS OF REPORT** **INSPECTION DATE:** 03/24/2020

	BrM Report		U/W Inspection Report
	CIDR	*	Fracture Critical Data
	Scour Elevation (Profile)	*	Load Rating Analysis Summary
*	Addendum (Element Notes & Photos/Sketches)		

*This section is not included in this report.

Upper Manatee River Rd. over Mill Creek **3.2 Mi. Northeast of SR-64**



FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

BY:	Kisinger Campo & Associates	STRUCTURE NAME:	UPPER MANATEE RIVER RD OVER MILL CREEK
OWNER:	2 County Hwy Agency	YEAR BUILT:	1963
MAINTAINED BY:	2 County Hwy Agency	SECTION NO.:	13 000 007
STRUCTURE TYPE:	5 Prestressed Concrete - 22 Channel Beam	MP:	3.357
LOCATION:	3.2 MI. NE OF SR-64	ROUTE:	00000
SERV. TYPE ON:	5 Highway-pedestrian	FACILITY CARRIED:	UP.MANATEE RIV RD
SERV. TYPE UNDER:	5 Waterway	FEATURE INTERSECTED:	MILL CREEK

[X] FUNCTIONALLY OBSOLETE [ ] STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Regular NBI

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 3/24/2020 UNDERWATER: 2/20/2020

SUFFICIENCY RATING: 21.8
HEALTH INDEX: 79.82

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

BY:	Kisinger Campo & Associates	STRUCTURE NAME:	UPPER MANATEE RIVER RD OVER MILL CREEK
OWNER:	2 County Hwy Agency	YEAR BUILT:	1963
MAINTAINED BY:	2 County Hwy Agency	SECTION NO.:	13 000 007
STRUCTURE TYPE:	5 Prestressed Concrete - 22 Channel Beam	MP:	3.357
LOCATION:	3.2 MI. NE OF SR-64	ROUTE:	00000
SERV. TYPE ON:	5 Highway-pedestrian	FACILITY CARRIED:	UP.MANATEE RIV RD
SERV. TYPE UNDER:	5 Waterway	FEATURE INTERSECTED:	MILL CREEK

☐ THIS BRIDGE CONTAINS FRACTURE CRITICAL COMPONENTS

☐ THIS BRIDGE IS SCOUR CRITICAL

☐ THIS REPORT IDENTIFIES DEFICIENCIES WHICH REQUIRE PROMPT CORRECTIVE ACTION

☒ FUNCTIONALLY OBSOLETE ☐ STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Regular NBI

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 3/24/2020 UNDERWATER: 2/20/2020

OVERALL NBI RATINGS:

DECK:	7 Good	CHANNEL:	7 Minor Damage
SUPERSTRUCTURE:	6 Satisfactory	CULVERT:	N N/A (NBI)
SUBSTRUCTURE:	6 Satisfactory	SUFF. RATING:	21.8
PERF. RATING:	Good	HEALTH INDEX:	79.82

FIELD PERSONNEL / TITLE / NUMBER: **INITIALS**

Snorek, Aaron - Bridge Inspector (CBI #00573) (lead) Aaron M Snorek Digitally signed by Aaron M Snorek Date: 2020.05.01 11:45:23 -04'00'

McMinn, Brice - Bridge Inspector (CBI#00405) _____

Hoogland, Keith - Bridge Inspector (CBI #00341) - Lead Diver _____

Myers, Jared - Diver _____

Andrion, Luis - Tender _____

REVIEWING BRIDGE INSPECTION SUPERVISOR:

Rothman, David - Bridge Inspector (CBI #00056) David A Rothman Digitally signed by David A Rothman Date: 2020.05.01 14:11:42 -04'00'

CONFIRMING REGISTERED PROFESSIONAL ENGINEER:

Cochran, Robert - PE #45177 Kisinger Campo & Associates
4524 Oak Fair Blvd.
Certificate of Authorization #2317
Tampa FL 33610

SIGNATURE: Robert P Cochran Digitally signed by Robert P Cochran Date: 2020.05.04 08:20:29 -04'00'

DATE: _____

ROBERT PAUL COCHRAN LICENSE No. 45177 STATE OF FLORIDA PROFESSIONAL ENGINEER

The official record of this package has been electronically signed and sealed using a Digital Signature as required by 61G15-23.004 F.A.C. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

All Elements

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	12 / 4	Re Concrete Deck	4177	100	0	.	0	.	0	.	4177 sq.ft
0	510 / 4	Wearing Surfaces	3381	95.37	164	4.63	0	.	0	.	3545 sq.ft
0	3220 / 4	Crack (Wearing Surface)	0	.	164	100	0	.	0	.	164 sq.ft

Element Inspection Notes:

12/4 Note: There are two 5in. diameter fiberglass conduit utilities bolted to the right bridge rail posts. There are three 4in. diameter PVC conduits suspended with 1/2in diameter threaded rods that are spaced at 6ft. intervals below the north sidewalk. Anchorage types are unknown. The deck top is not visible due to an asphalt overlay.

INCIDENTAL:
The traffic face of the right sidewalk has a 12in. x 5in. x 1in. spall at Abutment 1.

510/4 CS2 3220 = The asphalt overlay has transverse cracks up to full roadway witdth x 1/64in. wide along the skew over both abutments and intermediate bents. (164SF)

3220/4 Refer to Parent Element

MISCELLANEOUS : Channel

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8290 / 4	Channel	0	.	1	100	0	.	0	.	1 (EA)
0	9140 / 4	Debris	0	.	1	100	0	.	0	.	1 (EA)

Element Inspection Notes:

8290/4 The following was noted by the underwater inspectors:
CS2 9140 = There is debris (logs and branches) throughout the channel, not effecting the flow. (1EA)

9140/4 Refer to Parent Element

MISCELLANEOUS : Other Elements

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8475 / 4	R/Conc Walls	0	.	0	.	167	100	0	.	167 ft
0	1080 / 4	Delamination/Spall/Patched Area	0	.	0	.	7	100	0	.	7 ft
0	1120 / 4	Efflorescence/Rust Staining	0	.	0	.	2	100	0	.	2 ft
0	1190 / 4	Abrasion(PSC/RC)	0	.	0	.	158	100	0	.	158 ft

Element Inspection Notes:

8475/4 Note: This element represents the abutment retaining walls (backwalls) and wingwalls at all four corner of the structure. The east wall and strut had less than 3ft. of water this inspection and was not quantified in the underwater report.

CS3 1080 = The top of the northwest wingwall cap at Abutment 1 is spalled/delaminated 3ft. x 19in. x 2in. Refer to photo 1. REPAIR (3FT)

The top of the southwest wingwall cap at Abutment 1 is cracked 1/32in. wide.

The top of southwest wingwall has an 18in. long x 6in. wide delamination. Refer to photo 2. REPAIR

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

The northwest wingwall has intermittent vertical cracks 5ft. long x 1/32in. wide.

CS3 1080 = The east strut has an 8in. x 7in. (full width) x 2in. spall/delamination in the bottom face between Piles 5-1 and 5-2. (1FT)

The following was noted by the underwater inspectors:
CS3 1190 = The wingwalls and struts have scale damage (loss of aggregate) up to 1/2in. deep. Refer to photo 3. (158FT)

CS3 1120 = The west and east struts along the backwalls and wingwalls have isolated corrosion bleed out. Refer to photo 4. (2FT)

The west strut have intermittent horizontal cracks up to 16in. long x 1/32in. wide along the bottom edges.

The west strut has a 4ft. 8in. long x 3in. wide (full width) delamination in the bottom face between Piles 1-5 and 1-6.

CS3 1080 = The west backwall has a 12in. x 3in. x 24in. spall at the joint between Piles 1-1 and 1-2, 6in. below the strut with backfill leakage. Refer to photo 5. (1FT)

CS3 1080 = The first joint south of the southwest wingwall transition has a 4in. x 20in. x 4in. spalled area, 24in. below the strut and extending down, that a ruler can penetrate up to 11in. due to backfill leakage. (1FT)

CS3 1080 = The first joint from the northwest wingwall transition has a 10in. x 4in. x 4in. spall at the joint with 12in. of penetration (partially buried), 31in. below the strut. (1FT)

INCIDENTAL:
The joints are open up to 1in. wide with backfill leakage.

At the transition joint to the southwest and northwest wingwalls, the grout in the joint stops 20in. below the strut, leaving the joints open up to 6in. wide on the outside and 1/4in. wide on the inside. A ruler can penetrate through the joint 12in. into soft backfill with leakage.

1080/4 Refer to Parent Element

1120/4 Refer to Parent Element

1190/4 Refer to Parent Element

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	215 / 4	Re Conc Abutment	82	96.47	0	.	3	3.53	0	.	85 ft
0	1080 / 4	Delamination/Spall/Patched Area	0	.	0	.	3	100	0	.	3 ft

Element Inspection Notes:

215/4 Note: This element represents the abutment caps only. For comments relating to the retaining walls (backwalls), refer to Element 8475 R/Conc Walls.

CS1 = The abutment caps have intermittent vertical cracks 1/64in. wide.

CS3 1080 = Abutment 1 cap has a 3ft. x 2ft. x 8in. spall/delamination at the north end

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

below Beam 1-1 at the utilities. Refer to photo 6. REPAIR (3FT)

1080/4 Refer to Parent Element

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	226 / 4	Pre Conc Pile	3	100	0	.	0	.	0	.	3 (EA)

Element Inspection Notes:

226/4 Note: This element represents the three piles supporting the cap extension for the utility pipe on the south side of the structure of Bents 2 through 4 (Piles 2-7, 3-7 and 4-7). The piles have pile jackets with cathodic protection.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	227 / 4	Re Conc Pile	0	.	27	84.38	5	15.63	0	.	32 (EA)
0	1080 / 4	Delamination/Spall/Patched Area	0	.	0	.	2	100	0	.	2 (EA)
0	1090 / 4	Exposed Rebar	0	.	0	.	3	100	0	.	3 (EA)
0	1190 / 4	Abrasion(PSC/RC)	0	.	27	100	0	.	0	.	27 (EA)

Element Inspection Notes:

227/4 Note: This element represents the seven 12in. piles at Bents 1 and 5 and six 12in. piles at each of Bents 2 through 4. All reinforced concrete piles have pile jackets with cathodic protection.

CS2 1190 = The piles at Bent 5 have scale damage (loss of matrix) up to 1/8in. deep below the jackets. (6EA)

CS3 1080 = Pile 5-6 northwest corner has a 9in. x 5in. x 1-1/2in. spall at bottom of jacket. (1EA)

The following was noted by the underwater inspectors:
CS2 1190 = The piles have scale damage (loss of matrix) up to 1/8in. deep below the jackets. (21EA)

CS3 1090 = Pile 1-3 southeast corner has a 12in. x 9in. x 2in. spall with 3in. of exposed steel having 80% section remaining at the bottom of the jacket. REPAIR (1EA)

CS3 1090 = Pile 1-4 northeast corner has a 10in. x 5in. x 2in. spall with 2in. of exposed steel having 80% section remaining at the bottom of the jacket. REPAIR (1EA)

CS3 1090 = Pile 1-7 northeast corner has a 10in. x 6in. x 2in. spall with 4in. of exposed steel having 90% section remaining at the bottom of the jacket. Refer to photo 7. REPAIR (1EA)

CS3 1080 = Pile 3-6 northwest corner below the jacket has a 12in. x 6in. x 2-1/2in. spall - NEW. (1EA)

1080/4 Refer to Parent Element

1090/4 Refer to Parent Element

1190/4 Refer to Parent Element

SUBSTRUCTURE : Substructure

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	234 / 4	Re Conc Pier Cap	154	100	0	.	0	.	0	.	154 ft

Element Inspection Notes:

234/4 CS1 = The caps have intermittent vertical cracks 1/64in. wide.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8298 / 4	Pile Jacket Bare	35	100	0	.	0	.	0	.	35 (EA)
0	520 / 4	Conc Re Prot Sys	1680	100	0	.	0	.	0	.	1680 sq.ft

Element Inspection Notes:

8298/4 Note: This element represents the structural pile jackets with cathodic protection. The jackets are square fiberglass-formed concrete filled and start approximately 12in. below the cap and extend down 6ft. 2in.

520/4 Note: The anodes at Jackets 4-1, 4-2, 4-3, 4-4 and Bent 5 are buried.

CS1 = The exposed anodes have 90% or more section remaining.

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	109 / 4	Pre Opn Conc Girder/Beam	837	49.24	862	50.71	1	0.06	0	.	1700 ft
0	1080 / 4	Delamination/Spall/Patched Area	0	.	12	92.31	1	7.69	0	.	13 ft
0	1110 / 4	Cracking (PSC)	0	.	850	100	0	.	0	.	850 ft

Element Inspection Notes:

109/4 CS2 1110 = The channel beams along the fillets have intermittent longitudinal cracks up to 3ft. long x up to 0.008in. wide. Refer to photo 8.(850FT)

CS2 1080 = The channel beams have ten intermittent spalls up to 5in. x 4in. x 1/2in. at isolated locations throughout. (10FT)

CS3 1080 = Beam 3-2 has a 6in. diameter x 1/4in. deep spall with exposed steel with no measurable section loss in the bottom face of the top flange, adjacent to the eastern most scupper, at Bent 4. Refer to photo 9. REPAIR (1FT)

CS2 1080 = Beam 3-14 has a 17in. long x 5in. wide delamination in the left leg at Bent 4. (2FT)

INCIDENTAL:
The intermediate diaphragms have spalls/delaminations up to 6in. x 4in. x 1/4in. and intermittent diagonal cracks up to 1/16in. wide.

There are numerous bats between the beams.

1080/4 Refer to Parent Element

1110/4 Refer to Parent Element

FLORIDA DEPARTMENT OF TRANSPORTATION
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Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	333 / 4	Other Bridge Railing	214	88.07	29	11.93	0	.	0	.	243 ft
0	1000 / 4	Corrosion	0	.	20	100	0	.	0	.	20 ft
0	1010 / 4	Cracking	0	.	5	100	0	.	0	.	5 ft
0	1090 / 4	Exposed Rebar	0	.	4	100	0	.	0	.	4 ft
0	8518 / 4	Galvanized Steel	600	96.77	20	3.23	0	.	0	.	620 sq.ft
0	3440 / 4	Eff (Stl Protect Coat)	0	.	20	100	0	.	0	.	20 sq.ft

Element Inspection Notes:

333/4 Note: The bridge rails are comprised of steel guardrail panels, timber cushion blocks and concrete posts bolted to the outside edges of the deck.

CS2 1000 = The bridge rail panels and hardware have minor surface corrosion intermittently throughout. (20SF)

CS1 = The concrete bridge rail posts have intermittent vertical and horizontal cracks up to 1/32in. wide throughout.

CS2 1090 = Post 1-1 Left has exposed lack of cover steel in the top face. REPAIR (1FT)

CS2 1010 = Post 1-2 Right has full height (4ft.) vertical cracks up to 1/16in. wide and is delaminated the full height x 8in. wide. REPAIR (1FT)

CS2 1010 = Post 2-2 Right has a horizontal crack up to 1/16in. wide on the west face at the top of the sidewalk. REPAIR (1FT)

CS2 1010 = Post 2-5 Right has full height vertical cracks 1/32in. wide and is delaminated full height x 8in. wide. REPAIR (1FT)

CS2 1090 = Posts 3-4 and 3-5 Right in the top face have exposed lack of cover steel. REPAIR (2FT)

CS2 1010 = Post 3-5 Right has a vertical crack up to 1/16in. wide in the top of the east and south faces and a horizontal crack in the top face. REPAIR (1FT)

CS2 1090 = Post 4-3 Left has exposed lack of cover steel in the top face. REPAIR (1FT)

CS2 1010 = Post 4-4 Right has full height cracks x 1/16in. wide and is delaminated full height x 8in. wide with exposed lack of cover steel in the top face. Refer to photo 10. REPAIR (1FT)

1000/4 Refer to Parent Element

1010/4 Refer to Parent Element

1090/4 Refer to Parent Element

8518/4 CS2 3440 = The galvanizing is substantially effective in the corroded areas noted above. (20SF)

3440/4 Refer to Parent Element

Total Number of Elements*: 10
*excluding defects/protective systems

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Structure Notes

BRIDGE OWNER: MANATEE COUNTY

Structure inventoried from west to east.

TRAFFIC RESTRICTION: Based on the load rating analysis dated 01/06/12, posting is required for the SU, C and ST-5 type vehicles as follows: SU = 21 tons, C = 28 tons and ST5 = 33 tons. This structure is posted at both approaches as follows: SU = 19 tons, C = 25 tons and ST5 = 30 tons. Refer to posting sign photos.

This structure is on a 12 month inspection frequency due to the NBI rating for SIA Item 70, Posting, is coded a 1.

Asphalt thickness = 3-1/2in.

INSPECTION NOTES: RDMZ 3/24/2020

Sufficiency Rating Calculation Accepted by KNKCARX at 4/29/2020 8:37 AM

LOAD CAPACITY EVALUATION:
The findings of this inspection reveal no reason to warrant a new analysis; therefore, the current load rating results still govern.

The following elements were inspected underwater by the divers:
8290 Channel
8475 R/Conc Walls
226 Pre Conc Pile
227 Re Conc Pile
520 Conc Re Prot Sys

The NBI rating for SIA Item 59 Superstructure is coded a 6- Satisfactory due to cracking.

The NBI rating for SIA Item 60 Substructure is coded a 6-Satisfactory due to abrasion.

NON-STRUCTURAL ITEMS:

APPROACH ROADWAYS:
The approach roadways have map cracking up to 1/4in. wide throughout.

APPROACH GUARDRAILS:
The timber posts are heavily deteriorated and weathered throughout all four approach guardrails.

The guardrail end terminals at all four corners of the structure are missing reflective tape. Refer to photo 11. REPAIR

The northeast end terminal has minor impact damage.

There is minor damage to the top rail at the southwest approach guardrail.

STRIPING:
The roadway striping across the structure is faded.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 1 - Element 8475 R/Conc Walls

Spall/delamination in the northwest wingwall cap at Abutment 1

REPAIR RECOMMENDATION:
Repair spall-delamination in the northwest wingwall cap at Abutment 1.

FLORIDA DEPARTMENT OF TRANSPORTATION
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Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 2 - Element 8475 R/Conc Walls

Delamination in the southwest wingwall cap

REPAIR RECOMMENDATION:
Repair delamination in the southwest wingwall cap at Abutment 1.

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Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 3 - Element 8475 R/Conc Walls

Typical wingwall scale damage (loss of aggregate) up to 1/2in. deep

REPAIR RECOMMENDATION:
None

FLORIDA DEPARTMENT OF TRANSPORTATION
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Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 4 - Element 8475 R/Conc Walls

Typical area of corrosion bleed out at the west backwall strut

REPAIR RECOMMENDATION:
None

FLORIDA DEPARTMENT OF TRANSPORTATION
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Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 5 - Element 8475 R/Conc Walls

Spall in the west backwall at the joint between Piles 1-1 and 1-2, 6in. below the strut with backfill leakage

REPAIR RECOMMENDATION:
None

FLORIDA DEPARTMENT OF TRANSPORTATION
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Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 6 - Element 215 Re Conc Abutment

Spall/delamination at the north end of Abutment 1 cap

REPAIR RECOMMENDATION:
Repair spall-delamination in the north end of Abutment 1 cap.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
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Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

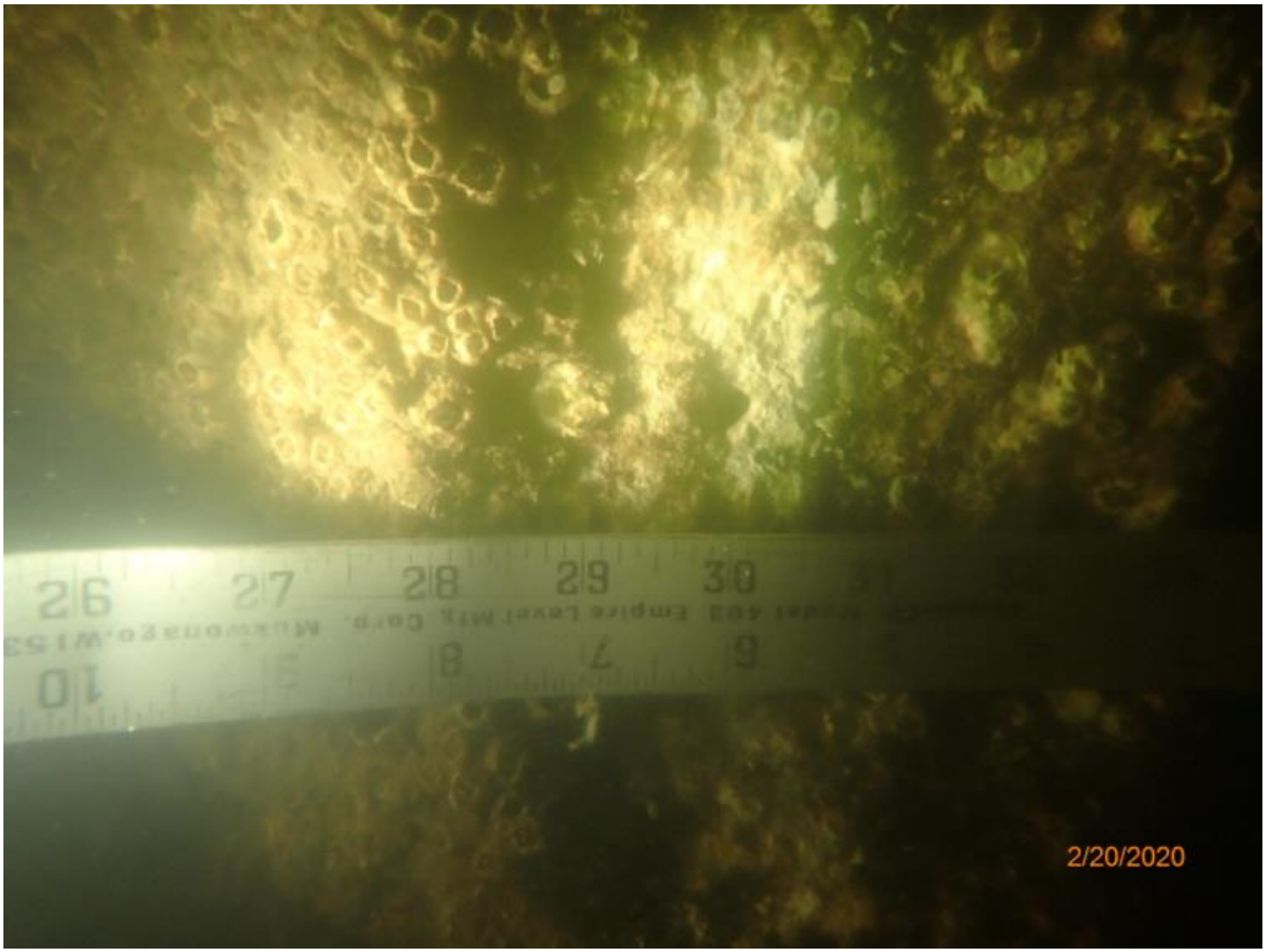

Photo 7 - Element 227 Re Conc Pile

Spall with exposed steel in the northeast corner of Pile 1-7

REPAIR RECOMMENDATION:
Repair Piles 1-3 1-4 and 1-7.

FLORIDA DEPARTMENT OF TRANSPORTATION
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Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 8 - Element 109 Pre Opn Conc Girder/Beam

Typical longitudinal crack along channel beam fillet areas in Beam 1-5

REPAIR RECOMMENDATION:
None

FLORIDA DEPARTMENT OF TRANSPORTATION
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Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 9 - Element 109 Pre Opn Conc Girder/Beam

Spall with exposed steel in Beam 3-2

REPAIR RECOMMENDATION:
Repair spall with exposed steel in Beam 3-2.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 10 - Element 333 Other Bridge Railing

Post 4-4 right typical full height delamination

REPAIR RECOMMENDATION:
Repair Posts 1-1 and 4-3 left and Posts 1-2 2-2 2-5 3-4 3-5 and 4-4 right.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

Photo 11 - Inspection Notes

Missing reflective tape on the guardrail end terminals

REPAIR RECOMMENDATION:
Install reflective tape on the four guardrail end terminals.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

West Posting Sign

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Inspection

Structure ID: 134023

DISTRICT: D1 - Bartow **INSPECTION DATE: 3/24/2020 RDMZ**

East Posting Sign

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report

REPORT ID: INSP005 | **CIDR** | **DATE PRINTED: 5/1/2020**

Structure ID: 134023

Description

Structure Unit Identification

Bridge/Unit Key: 134023 0
Structure Name: UPPER MANATEE RIVER RD OVER MILL CREEK
Description: Spans 1 thru 4
Type: M - Main

Roadway Identification

NBI Structure No (8): 134023
Position/Prefix (5): 1 - Route On Structure
Kind Hwy (Rte Prefix): 4 County Hwy
Design Level of Service: 1 Mainline
Route Number/Suffix: 00000 / 0 N/A (NBI)
Feature Intersect (6): MILL CREEK
Critical Facility: Not Defense-crit
Facility Carried (7): UP.MANATEE RIV RD
Mile Point (11): 3.357
Latitude (16): 027d30'49.2" Long (17): 082d24'32.8"

Roadway Traffic and Accidents

Lanes (28): 2 Medians: 0 Speed: 45 mph
ADT Class: 4 ADT Class 4
Recent ADT (29): 7299 Year (30): 2018
Future ADT (114): 12664 Year (115): 2040
Truck % ADT (109): 6
Detour Length (19): 6.2 mi
Detour Speed: 45 mph
Accident Count: -1 Rate:

Roadway Classification

Nat. Hwy Sys (104): 0 Not on NHS
National base Net (12): 0 - Not on Base Network
LRS Inventory Rte (13a): 13 000 007 Sub Rte (13b): 00
Functional Class (26): 17 Urban Collector
Federal Aid System: ON
Defense Hwy (100): 0 Not a STRAHNET hwy
Direction of Traffic (102): 2 2-way traffic
Emergency: [ ]

Roadway Clearances

Vertical (10): 99.99 ft Appr. Road (32): 23.6 ft
Horiz. (47): 32 ft Roadway (51): 29.2 ft
Truck Network (110): 0 Not part of natl netwo
Toll Facility (20): 3 On free road
Fed. Lands Hwy (105): 0 N/A (NBI)
School Bus Route: [X]
Transit Route: [ ]

NBI Project Data

Proposed Work (075A): Not Applicable (P)
Work To Be Done By (075B): Not Applicable (P)
Improvement Length (076): 0 ft

Improvement Cost (094): $ 0.00
Roadway Improvement Cost (095): $ 0.00
Total Cost (096): $ 0.00
Year of Estimate (097):

NBI Rating

Channel (61): 7 Minor Damage
Deck (58): 7 Good
Superstructure (59): 6 Satisfactory
Substructure (60): 6 Satisfactory

Culvert (62): N N/A (NBI)
Waterway (71): 9 Above Desirable
Unrepaired Spalls: -1 sq.ft.
Review Required: [X]

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report

REPORT ID: INSP005 | **CIDR** | **DATE PRINTED: 5/1/2020**

Structure ID: 134023

Structure Identification

Admin Area: Sarasota/Manatee
District (2): D1 - Bartow
County (3): (13)Manatee
Place Code (4): No city involved
Location (9): 3.2 MI. NE OF SR-64
Border Br St/Reg (98): Not Applicable (P) Share: 0 %
Border Struct No (99):
FIPS State/Region (1): 12 Florida Region 4-Atlanta
NBIS Bridge Len (112): Y - Meets NBI Length

Parallel Structure (101): No || bridge exists
Temp. Structure (103): Not Applicable (P)
Maint. Resp. (21): 2 County Hwy Agency
Owner (22): 2 County Hwy Agency
Historic Signif. (37): 5 Not eligible for NRHP

Geometrics

Spans in Main Unit (45): 4
Approach Spans (46): 0
Length of Max Span (48): 31.5 ft
Structure Length (49): 121.4 ft
Total Length: 121.4 ft
Deck Area: 4177 sqft
Structure Flared (35): 0 No flare

Age and Service

Year Built (27): 1963
Year Reconstructed (106): 0
Type of Service On (42a): 5 Highway-pedestrian
Under (42b): 5 Waterway
Fracture Critical Details: Not Applicable

Structure Type and Material

Curb/Sidewalk (50): Left: 1.9 ft Right: 1.9 ft
Bridge Median (33): 0 No median
Main Span Material (43A): 5 Prestressed Concrete
Appr Span Material (44A): Not Applicable
Main Span Design (43B): 22 Channel Beam
Appr Span Design (44B): Not Applicable

Deck Type and Material

Deck Width (52): 34.4 ft
Skew (34): 30 deg
Deck Type (107): 1 Concrete-Cast-in-Place
Surface (108): 6 Bituminous
Membrane: 0 None
Deck Protection: None

Appraisal

Structure Appraisal

Open/Posted/Closed (41): P Posted for load
Deck Geometry (68): 2 Intolerable - Replace
Underclearances (69): N Not applicable (NBI)
Approach Alignment (72): 8-No Speed Red thru Curv
Bridge Railings (36a): 0 Substandard
Transitions (36b): 0 Substandard

Approach Guardrail (36c): 0 Substandard
Approach Guardrail Ends (36d): 0 Substandard
Scour Critical (113): 5 Stable w/in footing

Navigation Data

Navigation Control (38): Permit Not Required
Nav Vertical Clr (39): 0 ft
Nav Horizontal Clr (40): 0 ft
Min Vert Lift Clr (116): 0 ft
Pier Protection (111): Not Applicable (P)

NBI Condition Rating

Sufficiency Rating: 21.8
Health Index: 79.82
Structural Eval (67): 3 Intolerable - Correct
Deficiency: Functionally Obsolete

Minimum Vertical Clearance

Over Structure (53): 99.99 ft
Under (reference) (54a): N Feature not hwy or RR
Under (54b): 0 ft

Minimum Lateral Underclearance

Reference (55a): N Feature not hwy or RR
Right Side (55b): 0 ft
Left Side (56): 0 ft

Schedule

Current Inspection

Inspection Date: 03/24/2020
Inspector: KNKCAAS - Aaron Snorek
Bridge Group: E1N92
Alt. Bridge Group:
Primary Type: Regular NBI
Review Required: [X]

Next Inspection Date Scheduled

NBI: 03/24/2022
Element: 03/24/2021
Fracture Critical:
Underwater: 02/20/2022
Other/Special: 03/24/2021
Inventory Photo Update Due: 03/13/2022

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report

REPORT ID: INSP005
Structure ID: 134023
CIDR
DATE PRINTED: 5/1/2020

Schedule Cont.

Inspection Types Performed NBI [X] Element [X] Fracture Critical [ ] Underwater [X] Other Special [X]

Inspection Intervals	Required (92)	Frequency (92)	Last Date (93)	Inspection Resources	
Fracture Critical	[ ]	mos		Crew Hours:	4
Underwater	[X]	24 mos	02/20/2020	Flagger Hours:	0
Other Special	[X]	12 mos	03/24/2020	Helper Hours:	0
NBI		24 mos (91)	03/24/2020 (90)	Snooper Hours:	0
				Special Crew Hours:	3
				Special Equip Hours:	0

Bridge Related

General Bridge Information

Parallel Bridge Seq:
Channel Depth: 7.2 ft
Radio Frequency: -1
Phone Number:
Exception Date:
Exception Type: Unknown
Accepted By Maint: 01/01/1963
Warranty Expiration: 00/00/0000
Performance Rating: Good

Bridge Rail 1: Steel guard/concret post
Bridge Rail 2: Not applicable-No rail
Electrical Devices: No electric service
Culvert Type: Not applicable
Maintenance Yard: Not FDOT Maintained
FIHS ON / OFF: No Routes on FIHS
Previous Structure:
2nd Previous Structure:
Replacement Structure:

Permitted Utilities: Power [ ] Water [ ] Gas [ ] Fiber Optic [X] Sewage [ ] Other [X] 4" Dia. PVC & 5" Dia. FBRGLS

Bridge Load Rating Information

Inventory Type (065): 1 LF Load Factor
Operating Type (063): 1 LF Load Factor
Original Design Load (031): 2 M 13.5 (H 15)
Date: 01/06/2012
Initials: SLC
Load Rating Rev. Recom.: No
Load Rating Plans Status: Design or Construction

Inventory Rating (066): 7.9 tons
Operating Rating (064): 28.8 tons
FL120 Permit Rating: -1.0 tons
HS20/FL120 Max Span Rating: 28.8 tons
Dynamic Impact in Percent: 30 %
Governing Span Length: 32.8 ft
Minimum Span Length:
Distribution Method: AASHTO formula

Load Rating Notes:

LEGAL LOADS

SU2: 20.4 tons
SU3: 21.8 tons
SU4: 21.4 tons
C3: 31.4 tons
C4: 28.6 tons
C5: 31.2 tons
ST5: 33.2 tons
Posting (070): 1 30.0-39.9%below
Open/Posted/Closed (041): P Posted for load

POSTING

Recom. SU Posting: 21 tons
Recom. C Posting: 28 tons
Recom. ST5 Posting: 33 tons
Actual SU Posting: 19 tons
Actual C Posting: 25 tons
Actual ST5 Posting: 30 tons
Actual Blanket Posting: 99 tons
Emergency Vehicle: 1 EV inapplicable

FLOOR BEAM (FB) FB Present: No

FB Span Length, Gov: 0.0 ft
FB Spacing, Gov: 0.0 ft
FB OPR Rating: 0.0 tons
FB SU4 OPR Rating: 0.0 tons
FB FL120 Rating: 0.0 tons

SEGMENTAL (SEG)

SEG Wing-Span: -1.0 ft
SEG Web-to-Web Span: -1.0 ft
SEG Transverse HL93 Operating: -1.00 RF

Bridge Scour and Storm Information

Pile Driving Record: No pile driving records
Foundation Type: No foundation details
Mode of Flow: Tidal
Rating Scour Eval: Low Risk - High
Highest Scour Eval: Phase III completed
Scour Evaluation Method: Standard Scour Eval

Scour Recommended I: Stop scour evaluations
Scour Recommended II: Perform add'l monitoring
Scour Recommended III: No recommendation
Scour Elevation: 999 ft
Action Elevation: 999 ft
Storm Frequency: 100

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report

REPORT ID: INSP005
Structure ID: 134023
CIDR
DATE PRINTED: 5/1/2020

Elements

Inspection Date: 03/24/2020 **RDMZ**

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	12 / 4	Re Concrete Deck	4177	100	0	.	0	.	0	.	4177 sq.ft
0	510 / 4	Wearing Surfaces	3381	95.37	164	4.63	0	.	0	.	3545 sq.ft
0	3220 / 4	Crack (Wearing Surface)	0	.	164	100	0	.	0	.	164 sq.ft

MISCELLANEOUS : Channel

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8290 / 4	Channel	0	.	1	100	0	.	0	.	1 (EA)
0	9140 / 4	Debris	0	.	1	100	0	.	0	.	1 (EA)

MISCELLANEOUS : Other Elements

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8475 / 4	R/Conc Walls	0	.	0	.	167	100	0	.	167 ft
0	1080 / 4	Delamination/Spall/Patched Area	0	.	0	.	7	100	0	.	7 ft
0	1120 / 4	Efflorescence/Rust Staining	0	.	0	.	2	100	0	.	2 ft
0	1190 / 4	Abrasion(PSC/RC)	0	.	0	.	158	100	0	.	158 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	215 / 4	Re Conc Abutment	82	96.47	0	.	3	3.53	0	.	85 ft
0	1080 / 4	Delamination/Spall/Patched Area	0	.	0	.	3	100	0	.	3 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	226 / 4	Pre Conc Pile	3	100	0	.	0	.	0	.	3 (EA)

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	227 / 4	Re Conc Pile	0	.	27	84.38	5	15.63	0	.	32 (EA)
0	1080 / 4	Delamination/Spall/Patched Area	0	.	0	.	2	100	0	.	2 (EA)
0	1090 / 4	Exposed Rebar	0	.	0	.	3	100	0	.	3 (EA)
0	1190 / 4	Abrasion(PSC/RC)	0	.	27	100	0	.	0	.	27 (EA)

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	234 / 4	Re Conc Pier Cap	154	100	0	.	0	.	0	.	154 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8298 / 4	Pile Jacket Bare	35	100	0	.	0	.	0	.	35 (EA)
0	520 / 4	Conc Re Prot Sys	1680	100	0	.	0	.	0	.	1680 sq.ft

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	109 / 4	Pre Opn Conc Girder/Beam	837	49.24	862	50.71	1	0.06	0	.	1700 ft
0	1080 / 4	Delamination/Spall/Patched Area	0	.	12	92.31	1	7.69	0	.	13 ft
0	1110 / 4	Cracking (PSC)	0	.	850	100	0	.	0	.	850 ft

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report

REPORT ID: INSP005
Structure ID: 134023
CIDR
DATE PRINTED: 5/1/2020

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	333 / 4	Other Bridge Railing	214	88.07	29	11.93	0	.	0	.	243 ft
0	1000 / 4	Corrosion	0	.	20	100	0	.	0	.	20 ft
0	1010 / 4	Cracking	0	.	5	100	0	.	0	.	5 ft
0	1090 / 4	Exposed Rebar	0	.	4	100	0	.	0	.	4 ft
0	8518 / 4	Galvanized Steel	600	96.77	20	3.23	0	.	0	.	620 sq.ft
0	3440 / 4	Eff (Stl Protect Coat)	0	.	20	100	0	.	0	.	20 sq.ft

Total Number of Elements*: 10
*excluding defects/protective systems

Inspection Information

Inspection Date: 03/24/2020 **Type:** Regular NBI
Inspector: KNKCAAS - Aaron Snorek

Inspection Notes: Sufficiency Rating Calculation Accepted by KNKCARX at 4/29/2020 8:37 AM

LOAD CAPACITY EVALUATION:
The findings of this inspection reveal no reason to warrant a new analysis; therefore, the current load rating results still govern.

The following elements were inspected underwater by the divers:
8290 Channel
8475 R/Conc Walls
226 Pre Conc Pile
227 Re Conc Pile
520 Conc Re Prot Sys

The NBI rating for SIA Item 59 Superstructure is coded a 6- Satisfactory due to cracking.

The NBI rating for SIA Item 60 Substructure is coded a 6-Satisfactory due to abrasion.

NON-STRUCTURAL ITEMS:

APPROACH ROADWAYS:
The approach roadways have map cracking up to 1/4in. wide throughout.

APPROACH GUARDRAILS:
The timber posts are heavily deteriorated and weathered throughout all four approach guardrails.

The guardrail end terminals at all four corners of the structure are missing reflective tape. Refer to photo 11. REPAIR

The northeast end terminal has minor impact damage.

There is minor damage to the top rail at the southwest approach guardrail.

STRIPING:
The roadway striping across the structure is faded.

Structure Notes

BRIDGE OWNER: MANATEE COUNTY

Structure inventoried from west to east.

TRAFFIC RESTRICTION: Based on the load rating analysis dated 01/06/12, posting is required for the SU, C and ST-5 type vehicles as follows: SU = 21 tons, C = 28 tons and ST5 = 33 tons. This structure is posted at both approaches as follows: SU = 19 tons, C = 25 tons and ST5 = 30 tons. Refer to posting sign photos.

This structure is on a 12 month inspection frequency due to the NBI rating for SIA Item 70, Posting, is coded a 1.

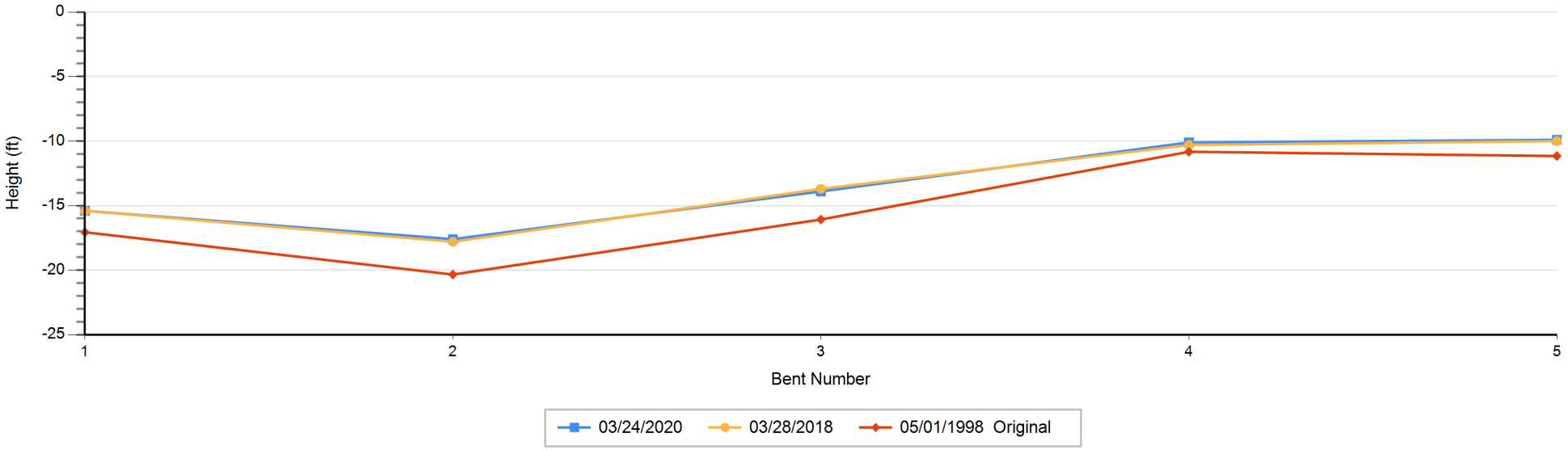
Asphalt thickness = 3-1/2in.

Schedule Notes

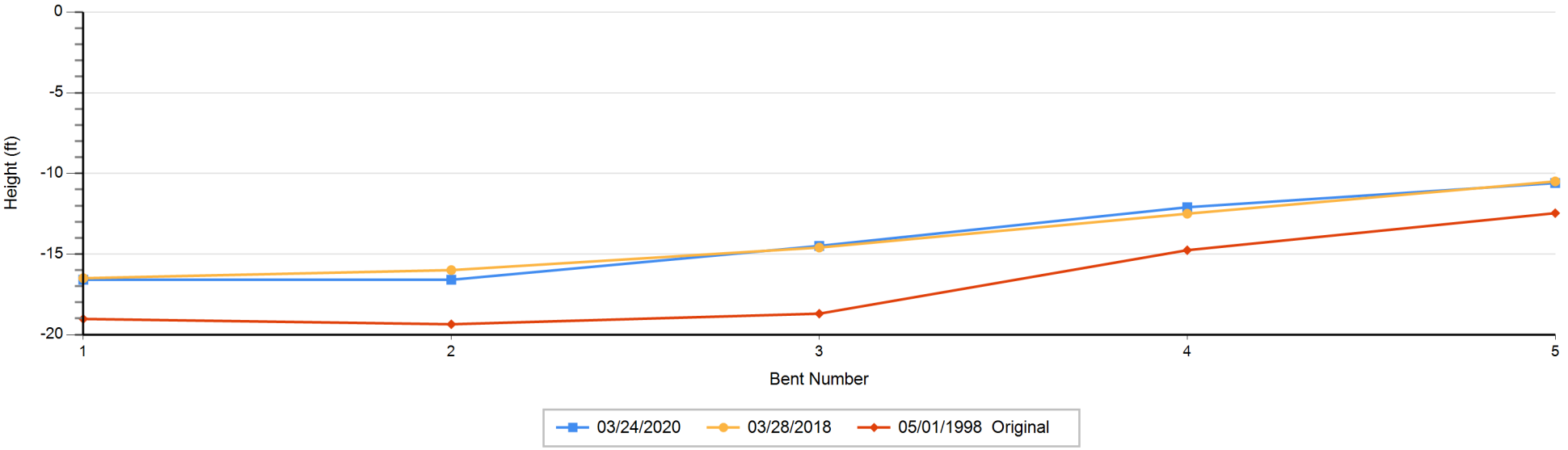
FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Bridge Profile

DATE PRINTED: 5/1/2020 10:41:57 AM

Left Profile by Inspection



Right Profile by Inspection



FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Bridge Profile

DATE PRINTED: 5/1/2020 10:41:57 AM

Profile Data - Numerical Summary

Inspection Date and Key: 3/24/2020 RDMZ

Bent #	Left Height	Right Height
1	15.40	16.60
2	17.60	16.60
3	13.90	14.50
4	10.10	12.10
5	9.90	10.60

(All Heights are in Feet)

Air Temp:

Profile Notes:

Measurements referenced from top of curb.
Waterline taken at Bent 2: Left and Right = 10.4ft.

Inspection Date and Key: 3/28/2018 QAKV

Bent #	Left Height	Right Height
1	15.40	16.50
2	17.80	16.00
3	13.70	14.60
4	10.30	12.50
5	10.00	10.50

Air Temp:

Profile Notes:

Measurements referenced from the top of the curb.
Waterline was taken at Bent 2: Left and Right = 11.0ft.

FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report
Bridge Profile

DATE PRINTED: 5/1/2020 10:41:57 AM

Profile Data - Numerical Summary

Inspection Date and Key: 5/1/1998 STRT

(Original Inspection)

Bent #	Left Height	Right Height
1	17.06	19.03
2	20.34	19.36
3	16.08	18.70
4	10.83	14.76
5	11.15	12.47

(All Heights are in Feet)

Air Temp:

Profile Notes:

The original ground line measurements, dated 5/1/98, were actually taken on and obtained from the previous routine inspection report dated 5/93.

Routine Underwater Bridge Inspection Report
BOLT UNDERWATER SERVICES, INC.
for
KISINGER CAMPO & ASSOCIATES, CORP.

NBI Structure ID. (8): **134023** Underwater Date (93): 02/20/20

Structure/Roadway Identification:		**Underwater Inspection Details:**	
District (2):	01	Special Crew Hours:	3.0
County (3):	Manatee	Max. Depth:	8ft. at Bent 1
Feature Intersected (6):	Mill Creek	Type of Dive Insp.:	Level II (SCUBA)
Facility Carried (7):	Up Manatee River Rd.	Type of Boat Used:	N/A
		Water Type/Marine Growth:	Brackish – Algae/Barnacles

Previous Inspection:

Lead Diver:	**C.B.I. No.:**	**Inspection Date:**
Qualls, Dion C.	00470	02/26/18

Inspection Personnel:

Field Personnel:	**Title**	**P.E./C.B.I. No.:**	**Duty:**	**Signature:**
Hoogland, Keith S.	SUCBI	00341/Lead	Dive	Keith S Hoogland Digitally signed by Keith S Hoogland DN: c=US, o=Bolt Underwater Services, ou=A01427D000001658C162BC90000329B, cn=Keith S Hoogland Date: 2020.03.05 09:10:32 -05'00'
Myers, Jared M.	SI		Dive	
Andrion, Luis A.	AUBIT		Tend	

8290 CHANNEL **1** EA. = **CS-2:** 1EA.

CS2 9140 = There is debris (logs and branches) throughout the channel, not affecting flow. (1EA)

8475 R/CONC WALLS **59** FT. = **CS-3:** 59FT.

NOTE: This element represents the abutment retaining walls (backwalls) and wingwalls with struts at the west end of the structure.

CS3 1190 = The wingwalls and struts have scale (loss of aggregate) up to ½in. deep. (54FT)

CS3 1120 = The west strut along the backwalls and wingwalls have isolated areas of corrosion bleedout. (2FT)

West strut along the bottom edge has intermittent horizontal cracks, up to 16in. x 1/32in.

West strut, bottom face between Piles 1-5 and 1-6, delamination, 4ft. 8in. x 3in.

CS3 1080 = West backwall: At the joint between Piles 1-1 and 1-2, 6in. below the strut, spall, 12in. x 3in. x 24in. into soft earth, with backfill leakage. (1FT)

CS3 1080 = SW wingwall: 1st joint south of transition, 24in. below the strut extending down, spalled area, 4in. x 20in. x 4in. and a ruler can penetrate 11in. into the backfill material with backfill leakage. (1FT)

CS3 1080 = NW wingwall: 1st joint from transition, 31in. below the strut, spall at the joint, 10in. x 4in. x 4in., with 12in. of penetration (partially buried). (1FT)

INCIDENTAL:
The joints are open up to 1in. wide with backfill leakage.

At the transition joint to the SW and NW wingwalls, the grout in the joint stops 20in. below the strut, leaving the joints open up to 6in. wide on the outside and ¼in. wide on the inside. A ruler can penetrate through the joint 12in. into soft earth backfill material, with backfill leakage.

NOTE: The east wall and strut had less than 3ft. of water this inspection and was not quantified in the underwater report.

226 PRE CONC PILE **3** EA. = **CS-1:** 3EA.

NOTE: This element represents the three piles supporting the cap extension for the utility pipe on the south side of the structure of Bents 2 through 4 (Piles 2-7, 3-7 and 4-7). The piles have pile jackets with cathodic protection.

227 RE CONC PILE **25** EA. = **CS-2:** 21EA. **CS-3:** 4EA.

NOTE: This element represents the seven 12in. piles at Bent 1 and six 12in. piles at each of Bents 2 through 4. All reinforced concrete piles have pile jackets with cathodic protection.

CS2 1190 = The piles have scale (loss of matrix) up to 1/8in. deep below the jackets. (21EA)

CS3 1090 = Pile 1-3: SE corner below jacket, spall, 12in. x 9in. x 2in., with 3-½in. of exposed steel; 80% section remaining. (1EA)

CS3 1090 = Pile 1-4: NE corner below jacket, spall, 10in. x 5in. x 2in., 2in. of exposed steel; 80% section remaining. (1EA)

CS3 1090 = Pile 1-7: NE corner below jacket, spall, 10in. x 6in. x 2in., 4in. of exposed steel; 90% section remaining. (1EA)

CS3 1080 = Pile 3-6: NW corner below jacket, spall, 12in. x 6in. x 2-½in. – NEW. (1EA)

NOTE: Bent 5 has less than 3ft. of water this inspection and was not quantified in the underwater report.

Cleaning Log: Piles 3-3, 3-4, 3-5 and 3-6.

8298 PILE JACKET BARE **28** EA. = **CS-1:** 28EA.

NOTE: This element represents the jackets with cathodic protection on Piles 1 through 7 of Bents 1 through 4.

520 CONC RE PROT SYS **1470** SF. = **CS-1:** 1470SF.

NOTE: The anodes at Jackets 4-1, 4-2, 4-3 and 4-4 are buried.

CS-1 = The exposed anodes have 90% or more section remaining.

INSPECTION NOTES: Divers inspected Channel, Walls, Bents 2 through 4 each with one 12in. pre-stressed concrete pile, Bent 1 with seven 12in. reinforced concrete piles, Bents 2 through 4 each with six 12in. reinforced concrete piles and Jackets.
STRUCTURE NOTES: Structure inventoried west to east.

PHOTO LOG:
No. 1: Structure ID
No. 2: North elevation
No. 3: SW wingwall joint, spall
No. 4: Pile 1-7 NE corner spall below jacket with exposed steel
No. 5: West backwall strut, typical area of corrosion bleedout
No. 6: West backwall strut, typical horizontal crack
No. 7: SW wingwall, typical scale
No. 8: West backwall between Piles 1-1 and 1-2, spall
No. 9: Pile 3-6 NW corner, spall
No. 10: Bent 5 backwall, less than 3ft. of water