SR 9/I-95 AT LANTANA ROAD

Palm Beach County, Florida

FPID No.: 413258-1-22-02 | ETDM# 14338

PD&E Study

Bridge Analysis Report

FDOT

July 2020

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TECHNICAL REPORT COVERSHEET

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ENVIRONMENTAL
MANAGEMENT
06/17

BRIDGE ANALYSIS REPORT

Florida Department of Transportation

District Four

SR 9/I-95 at Lantana Road Interchange PD&E Study

Limits of Project: From North of Hypoluxo Road to South of 6th Avenue S (MP 18.420 to MP 19.158)

Palm Beach County, Florida

Financial Management Number: 413258-1-22-02

ETDM Number: 14338

July 12, 2020

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

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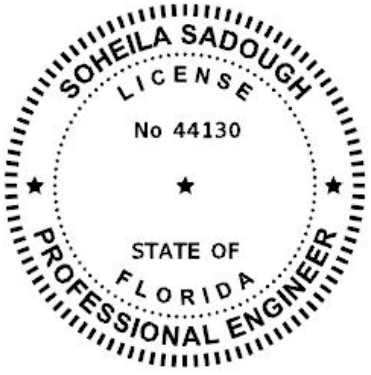

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1.0 INTRODUCTION

The Florida Department of Transportation (FDOT), District Four, is conducting a Project Development and Environment (PD&E) Study that proposes improvements to SR 9/I-95 at Lantana Road Interchange from High Ridge Road to Andrew Redding Road. The primary purpose of this Bridge Analysis Report is to identify the existing bridges within the study area and evaluate the condition of these bridges. The report will also evaluate the three (3) proposed alternatives as part of the PD&E Study to identify the proposed bridge improvements for each alternative to accommodate the proposed roadway improvements at SR 9/I-95 Lantana Road Interchange.

1.1 PROJECT BACKGROUND

SR 9/I-95 is the main Interstate Highway on the East Coast of the United States serving areas from Florida to Maine. Within the State of Florida, SR 9/I-95 is a major state transportation resource critical in the facilitation of statewide travel, and is included in the Strategic Intermodal System (SIS) established by the Florida Legislature in 2003, for its role in supporting the State's economy and mobility.

SR 9/I-95 has experienced increasing traffic volumes since its completion in Palm Beach County in 1980: fueled largely by population and economic growth within the County. The FDOT has responded to this increased transportation demand with various interventions to improve operations and safety along the SR 9/I-95 mainline including, adding a High Occupancy Vehicle (HOV) lane and auxiliary lanes from south of Linton Boulevard to north of PGA Boulevard in the 1990s and 2000s, and minor interchange improvements at eight interchange locations within this segment of SR 9/I-95.

In December 2015, the FDOT completed the SR 9/I-95 Interchange Master Plan for Palm Beach County to identify short-term and long-term needs at the interchange locations within the County through the 2040 design year horizon. This Master Plan included design concepts to address traffic spillback onto SR 9/I-95, improve interchange operations, reduce congestion, and increase safety at 17 interchanges from Linton Boulevard to Northlake Boulevard. SR 9/I-95 at Lantana Road Interchange was one of the interchange locations evaluated as part of the I-95 Interchange Master Plan.

A Concept Development Report (CDR) was completed for this interchange as part of the I-95 Interchange Master Plan Study for Palm Beach County. The CDR identified several preliminary short-term and long-term improvements at the SR 9/I-95 at Lantana Road Interchange including:

- Dual right-turn lanes for the SR 9/I-95 southbound off-ramp
- Dual eastbound left-turn lanes from Lantana Road to the SR 9/I-95 northbound on-ramp
- Additional westbound through lane between the SR 9/I-95 southbound off-ramp and High Ridge Road
- Additional eastbound through lane between the SR 9/I-95 northbound off-ramp and Andrew Redding Road
- Improvements at various intersections along Lantana Road including High Ridge Road, Andrew Redding Road, Sunset Road and Shopping Center Drive

Within Palm Beach County, the Transportation Planning Agency (TPA) adopted a vision to transform the County into a place where bicycling is a safe and convenient transportation option and an attractive form of recreation for residents and visitors alike by 2035. In keeping with this vision, Palm Beach County adopted the Master Comprehensive Bicycle Transportation Plan (MCBTP) with recommendations to include/improve bicycle facilities throughout Palm Beach County. Lantana Road from Jog Road to Dixie Highway was identified as one of the corridors for inclusion in the Priority Bicycle Network.

This PD&E Study is being conducted to evaluate concepts that improve interchange operations and safety, accommodate future transportation demand at the Lantana Road Interchange, and provide bicycle accommodations along Lantana Road within the project limits.

1.2 PROJECT DESCRIPTION

The SR 9/I-95 at Lantana Road interchange is located within the Town of Lantana in Palm Beach County, Florida, between the 6th Avenue South (1.54 miles to the north) and the Hypoluxo Road (1.04 miles to the south) interchanges. The interchange provides access to the Palm Beach County Park/Lantana Airport, Hypoluxo Island, Lantana Scrub Natural Area, and the Lantana Lake Worth Health Center. The study interchange is a typical diamond interchange and the limits along Lantana Road extend from High Ridge Road to Andrew Redding Road. The South Florida Rail Corridor (SFRC) Railroad runs parallel along the west side of SR 9/I-95 in this area and crosses below an elevated section of Lantana Road.

SR 9/I-95 near the Lantana Road interchange is a ten-lane divided urban interstate, providing four general purpose lanes and one High Occupancy Vehicle (HOV) lane in each direction. Auxiliary lanes are provided in both the northbound and southbound direction within the study area. At the Lantana Road interchange, SR 9/I-95 crosses below an elevated section of Lantana Road. SR 9/I-95 is a SIS designated highway as well as an emergency evacuation route.

Within the project limits, Lantana Road is primarily a four-lane urban principal arterial under the jurisdiction of Palm Beach County, with two through lanes in each direction. At the interchange location, Lantana Road is elevated over SR 9/I-95 and the SFRC Railroad. There is one dedicated left-turn lane in each direction to access the SR 9/I-95 on-ramps and two through lanes in each direction. A single free-flow right-turn lane is also provided in both eastbound and westbound directions along Lantana Road to serve the SR 9/I-95 on-ramps. Sidewalks are provided along both sides of Lantana Road; however, bicycle lanes do not exist. The segment of Lantana Road from SR 9/I-95 to SR 5/US-1 is designated as an emergency evacuation route.

Land use adjacent to the interchange is predominantly commercial with some industrial, institutional and residential uses. The adjacent signalized intersections within the project limits are: High Ridge Road west of SR 9/I-95 southbound ramps, and Shopping Center Drive and Andrew Redding Road east of SR 9/I-95 northbound ramps.

The proposed improvements will include operational and safety improvements to the Interchange including capacity improvements along Lantana Road, additional turning lanes at the SR 5/I-95 ramp terminal intersections and signal improvements. The project will also include improvements to sidewalks, ADA ramps, guide signs, and designated bicycle lanes. The project location map is shown in **Figure 1-1**.

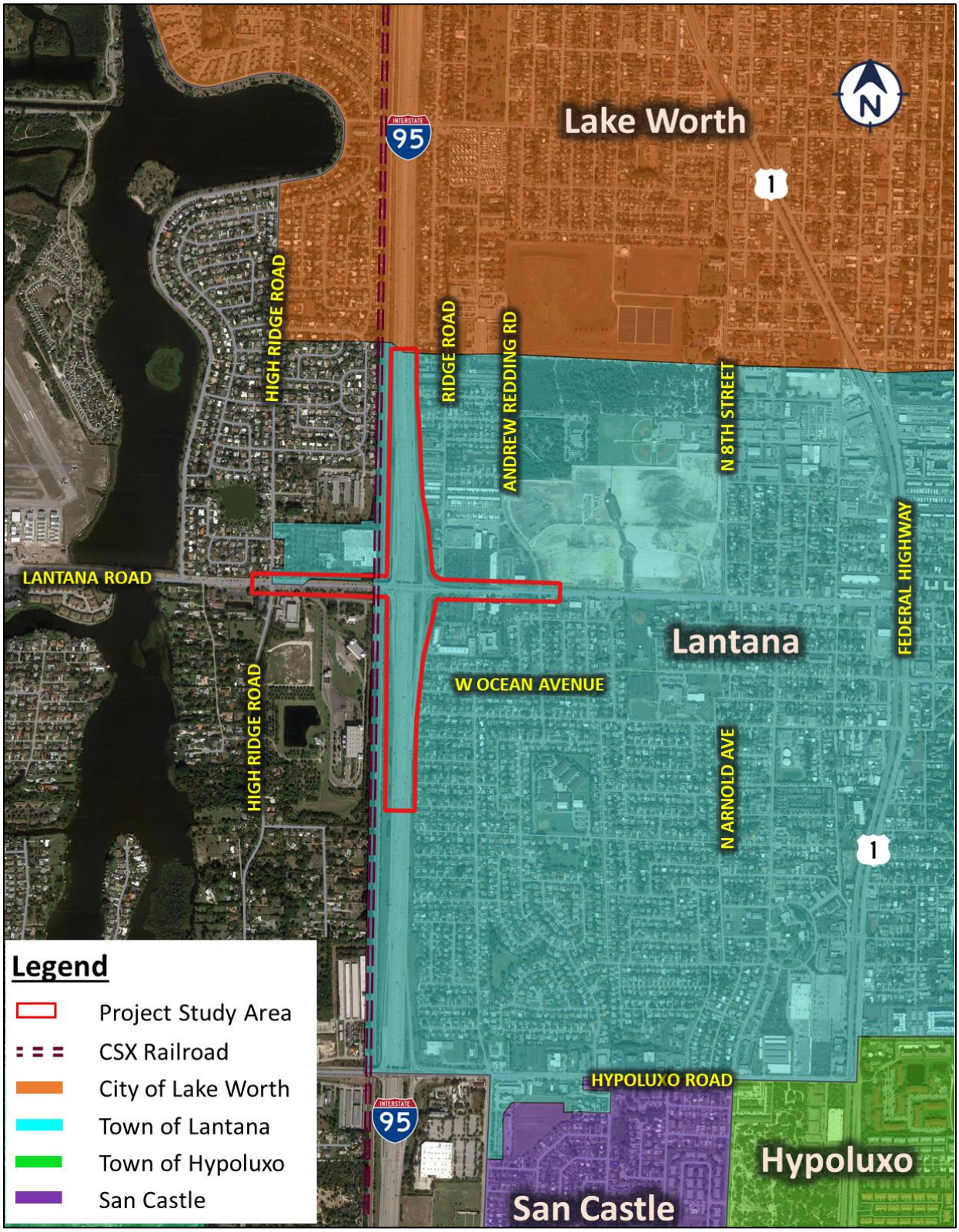

Figure 1-1 Project Location Map

1.3 PURPOSE AND NEED

The primary purpose of this interchange project is to improve the local and regional transportation network while also providing enhanced multimodal interrelationships at the SR 9/I-95/Lantana Road interchange. Additional features that will be improved include capacity and transportation demand, safety, and emergency evacuation. The study will evaluate alternatives that eliminate traffic spillback onto SR 9/I-95, enhance interchange operations and safety, reduce congestion, while providing for multimodal accommodations at this interchange location. The study will also consider accommodation for potential extension of I-95 Managed Lanes through Palm Beach County. The needs for this project are further described in the following sections:

1.3.1 Transportation Network

Lantana Road is a county roadway (CR 812) that provides access to the Town of Lantana and Hypoluxo Island via East Ocean Avenue (Lantana) Bridge. To the west, Lantana Road provides access to the Palm Beach County Park/Lantana Airport and the City of Atlantis. Although Lantana Road is not a designated road in the state's SIS, SR 9/I-95 is a part of the SIS system. The SIS includes Florida's important transportation facilities that support the State's economy and mobility. Improved interchange operations at Lantana Road will help to reduce traffic spillback onto I-95 thereby enhancing connectivity among the local and regional network.

1.3.2 Multimodal Interrelationships

The SR 9/I-95 at Lantana Road interchange accommodates east-west sidewalks on the north and south sides of Lantana Road, from High Ridge Road to Shopping Center Drive, extending beyond both intersections. Bicycle lanes are not provided in both directions along Lantana Road within the project limits. The TPA Master Comprehensive Bicycle Transportation Plan (MCBTP) includes recommendations to improve bicycle facilities throughout Palm Beach County. The MCBTP recommends a "Detailed Corridor Study" along Lantana Road. Additionally, the MCBTP designates segments of High Ridge Road as "Bike Level of Service (LOS) Threshold Met" and "Shoulder Candidate." As part of the study, provision of bike lanes would be evaluated along Lantana Road.

Four schools are located within approximately one mile of the interchange: Barton Elementary School, Lantana Elementary School, Lantana Middle School, and Palm Beach Maritime Academy. There are no Palm Tran transit bus stops within the project limits. However, bus stops are located on Lantana Road west of High Ridge Road and east of Andrew Redding Road. Adding

improvements to bicycle and pedestrian facilities at the intersections within the study area will increase the safety of the local community pedestrian users traveling the corridor.

1.3.3 Capacity and Transportation Demand

The SR 9/I-95 southbound ramps within the study area currently operate at an overall LOS E during the A.M. peak hours, while the northbound ramps operate at a LOS C. During the P.M. peak hours, the southbound ramps operate at LOS D, and the northbound ramps operate LOS C. If no improvements are made to the I-95/Lantana Road interchange, it is forecasted that by 2045, both the southbound and northbound ramps will operate at LOS F for both the A.M. and P.M. peak hours.

Due to the current need to increase capacity, the proposed interchange improvements are included in the Palm Beach County TPA 2040 Long Range Transportation Plan (LRTP) as part of the 2020-2040 Desires Plan. Funding for Design (Preliminary Engineering and PD&E) are planned to be available in 2026-2030 and Construction in 2031-2040. The interchange improvements are also included in the SIS Cost Feasible Plan 2024-2040. The interchange is also included in the I-95 Interchange Master Plan.

1.3.4 Safety

Crash data from 2014 to 2018 for SR 9/I-95 (Roadway ID: 93220000) from south of Lantana Road to the north of Lantana Road, SR 9/I-95 Ramps at Lantana Road (Roadway ID: 93220037, 93220038, 93220039, and 93220040), and Lantana Road (Roadway ID: 93530000) from High Ridge Road to Andrew Redding Road (MP 2.80 to MP 3.50) was obtained from the FDOT State Safety Office GIS (SSOGis) Query Tool on the Traffic Safety Web Portal. Based on the crash analysis, 313 crashes occurred on the SR 9/I-95 mainline, 157 crashes occurred on the SR 9/I-95 ramps at Lantana Road interchange and 172 crashes occurred on Lantana Road within the study area from 2014 to 2018. The predominant crash types that occurred within the study area were rear-end collisions, sideswipe collisions, and angled collisions. Crashes of these types are typically attributed to congested conditions along the arterials and interchange ramps and terminals. As such, providing capacity improvements for different modes of transportation within the study area will help to improve safety by alleviating congestion.

1.3.5 Emergency Evacuation

Based on Palm Beach County's Evacuation Routes and Zones Map, Lantana Road is classified as an evacuation route from SR 9/I-95 to SR 5/US-1. Therefore, improvements to the interchange of I-95 and Lantana Road, along with improvements to nearby intersections, will decrease evacuation times by increasing connectivity between eastern and western towns/cities and SR 9/I-95. Additionally, emergency response times will be decreased by the proposed improvements.

1.4 PLANNED AND ONGOING ADJACENT PROJECTS

Transportation plans from the state, county, city and municipal level were reviewed to identify projects that impact the SR 9/I-95 at Lantana Road PD&E Study Area. Transportation plans that were reviewed as part of this study include: FDOT District 4 Five Year Work Program, Palm Beach County TPA 2040 LRTP, Palm Beach County Transportation Improvement Program (TIP) and Palm Beach County MCBTP. A number of planned or ongoing projects were identified within the influence area of the SR 9/I-95 at Lantana Road PD&E Study. **Table 1-1** below provides a summary of these projects.

Table 1-1 Ongoing and Adjacent Projects

Project #	Project Name	Work Mix	Fiscal Year
427516-2	SR 9/I-95 From Gateway Boulevard to Lantana Road	Resurfacing	2020
444202-1	I-95 Managed Lanes from Linton Blvd. to 6th Ave	PD&E Study	2024
413257-1	SR 9/I-95 at Hypoluxo Road	PD&E	2020
436963-1	SR 9/I-95 at 6th Avenue South	PD&E / P.E.	2020
444340-1	SR 9 @ 6th Avenue South	Landscaping	2022
20230001	Lantana Road from Hagen Ranch to SR 9/I-95	Resurfacing	2023
N/A	Water Town Commons Development	Mixed-Use Development	Ongoing

Lantana Road is also included as a priority corridor in the Palm Beach County adopted MCBTP), with recommendations for bicycle lanes along Lantana Road from Jog Road to Dixie Highway.

2.0 EXISTING STRUCTURES

2.1 EXISTING STRUCTURAL CHARACTERISTICS

There are 3 bridges along the Lantana Road project corridor that were evaluated as part of this PD&E Study. The locations of these bridges are shown in **Figure 2-1** below and a summary of the general geometry and structural information pertaining to the bridges are summarized in **Table 2-1.** These three bridges were originally constructed in 1975; however, the two ramp bridges were recently widened in 2014. The existing structures plan are provided in **Appendix C**.

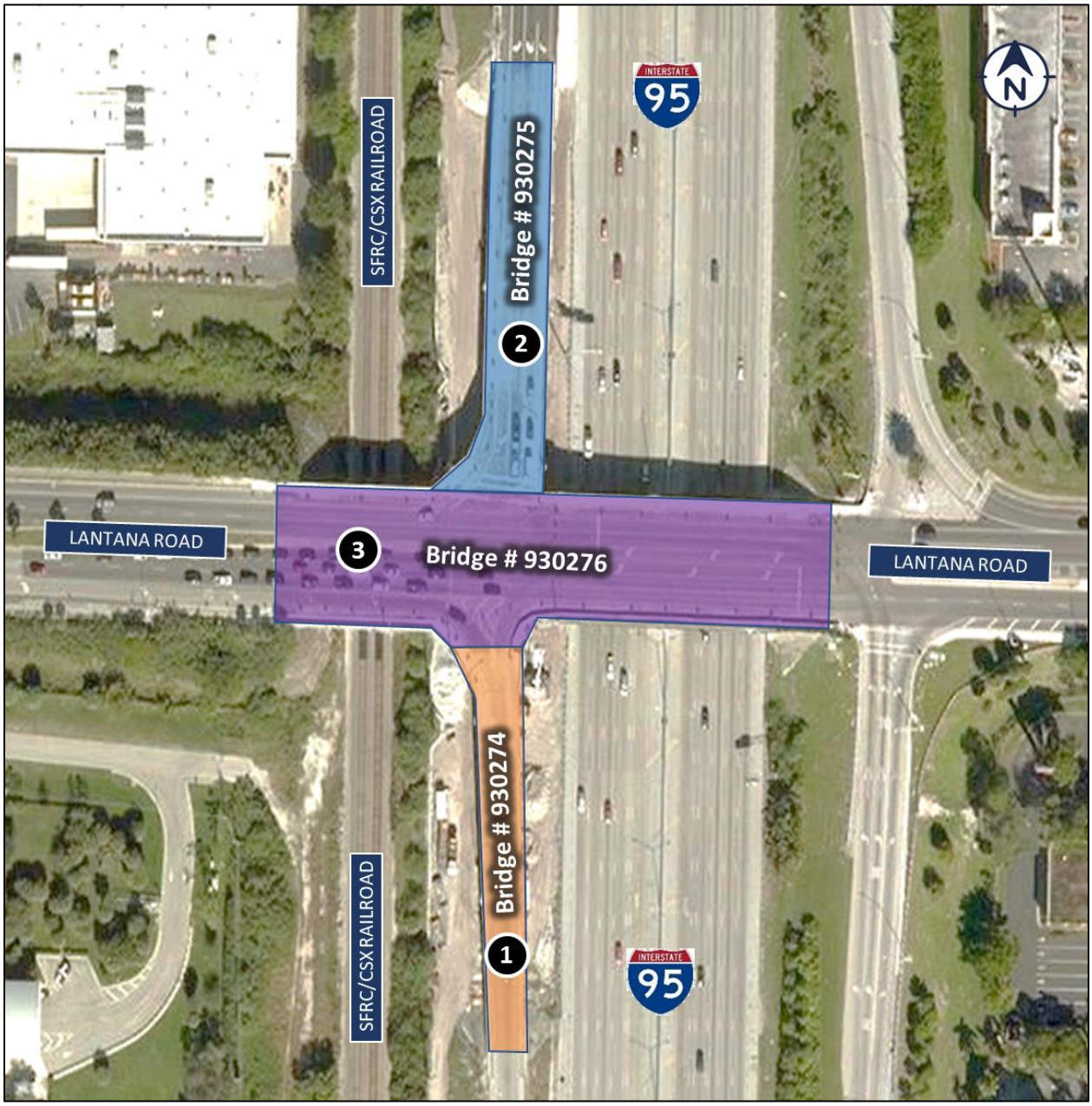

Figure 2-1 Existing Bridge Structures

2.1.1 Type of Structure

The superstructure for bridges 930274 (Bridge 1), 930275 (Bridge 2), and 930276 (Bridge 3) consists of a cast-in-place (CIP) deck supported on AASHTO beams. The substructures for the bridges consist of multicolumn piers or pile bents supported by squares pre-stressed 18" concrete piles.

2.1.2 Condition of Existing Structures

FDOT performs bi-annual inspections and evaluations of all bridge structures under its jurisdiction, as part of the "National Bridge Inventory (NBI) and Structural Inventory and Appraisal Program" required by FHWA. The term structurally deficient means that the bridge should undergo a series of repairs. All structurally deficient bridge structures must be repaired or replaced within six years of being designated as a structurally deficient structure. The term functionally obsolete means that the bridge section does not meet the latest road design standards. The functionally obsolete rating is not associated with its structural capacity. Health index is a tool that measures the overall condition of a bridge; the lower the health index, the more work that is needed in order to bring the bridge to an ideal condition. Sufficiency Rating is a tool used to determine whether a bridge that is structurally deficient or functionally obsolete should be repaired or replaced. The Sufficiency Rating considers several factors with only about half of which relate to the condition of the bridge itself. The Sufficiency Rating is not a direct reflection of the bridges' ability to carry traffic loads. The Bridge Load Rating indicates the reserved capacity of the bridge to carry live loads. Bridges are rated at three different stress levels, referred to as Operating Rating, Inventory Rating, and Legal Rating.

The latest available Bridge Load Rating Reports and Bridge Inspection Reports were obtained for the existing bridges, and a review of the existing reports indicated that all bridges have an acceptable Sufficiency Rating varying from 90.7 to 100.0 and health indexes varying from 99.61 to 99.92 with no structural deficiency. A review of the Bridge Load Rating Reports and existing bridge plans also showed that all the bridges had an inventory rating factor greater than 1. These values are shown on **Table 2-1**.

2.1.3 Vertical Clearance

The primary purpose of having adequate vertical clearance to structures going over roadways and railroads consists of providing safe passage to tall design vehicles or rail cars beneath these structures. The January 2019 FDOT FDM specifies that the highest point on the roadway below a bridge structure has to measure a minimum of 16.5-ft to the lowest point (low member) beneath

the structure. This includes provisions for a future underpass resurfacing of 6" over the existing pavement elevation. For railroad underpasses, a minimum 23.5-ft vertical clearance is recommended which includes allowance for 12" of railroad track adjustments. The South Florida Rail Corridor (SFRC) however, has a greater clearance requirement set at 24.25-ft.

AASHTO requires a minimum vertical clearance of 16-ft for structures passing over roadway including auxiliary lanes and the usable width of shoulders. Further guidance allows a minimum vertical clearance of 14-ft in highly urbanized areas provided there is an alternate facility with the minimum 16-ft clearance. For railroad underpasses, AASHTO recommends a minimum vertical clearance of 23-ft.

An evaluation of the existing bridges within the project limits indicates that the Lantana Road Bridge over SR 9/I-95 (#930276) does not meet the FDOT vertical clearance requirements over SR 9/I-95 and the SFRC/CSX Railroad and the AASHTO vertical clearance requirements for railroad underpass.

2.1.4 Horizontal Clearance

The horizontal clearance underneath the existing bridges is the lateral distance from the roadway edge of travel lane to the bridge abutment or piers. The horizontal clearance requirements for roadside features and objects are based on providing the required clear zone. Both the FDM and AASHTO require bridge piers and abutment walls to be placed outside the clear zone unless shielded by a crashworthy barrier. A field review of the project corridor indicated that bridges 930274, 930275, and 930276 are adequately protected by barrier wall and/or guardrail.

2.1.5 Historical Significance

The existing bridges within the project study area were reviewed to determine if any are considered historic or possess any substantial community value. As previously mentioned, the existing bridges were originally constructed in 1975 and the two ramp bridges were widened in 2014. based on the Cultural Resources Assessment Survey (CRAS) Report prepared for this study, none of these bridges are either non-historic or have non-historic reconstruction dates and not eligible for listing in the National Register of Historic Places (NRHP).

Table 2-1 Existing Bridge Characteristics

Bridge No.	Location/Description	Bridge No.	Min. Vertical Clearance (ft)	Superstructure Type	Substructure Type	Bridge Width ft)	Bridge Length (ft)	No. of Spans	Max. Span Length (ft)	Load Rating	Sufficiency Rating (SR)	Health Index (HI)	Bridge Railings	Substructure	Restriction	Deficiency	Year Built/ Reconstructed
1	SB I-95 On-Ramp from Lantana Road	930274	N/A	AASHTO Type II & III Beams	Pier/Bents/18" Prest. Piles	35’-6” to 91’-6” (out to out)	319'-1"	6	67’-6”	1.583	100.0	99.92	Standard	Good	Open, No Restriction	N/A	1975/2014
2	SB I-95 Off-Ramp to Lantana Road	930275	N/A	AASHTO Type II & III Beams	Pier/Bents/18" Prest. Piles	55’-5” to 110’-4 ½” (out to out)	322'-6"	6	67’-6”	1.619	100.0	99.61	Standard	Good	Open, No Restriction	N/A	1975/2014
3	CR 812 Lantana Rd over I-95/SR 9 & SFRC Railroad (SFRC)	930276	16'-1" (Roadway)[1] 22’-10 ⅛” (Railroad)[1]	AASHTO Type II & IV Beams	Pier/Bents/18" Prest. Piles	100'-9" (out to out)	471'-0"	6	100'-5"	1.056	90.7	99.86	Standard	Good	Open, No Restriction	N/A	1975

Notes:

- (1) Values extracted from Existing Plans
- NBI Bridge Condition; Deck, Superstructure and Substructure: Satisfactory to Very Good
- Load Rating; IRF (Inventory Rating Factor)
- Vertical clearance values in red do not meet the FDOT FDM recommended minimum of 16.5-ft (roadway over roadway), 23.5-ft (roadway over railroad), SFRC recommended minimum 24.25-ft (roadway over railroad)

Definitions:

- Load Rating - indicates the live-load capacity of the bridge based on current conditions
- Sufficiency Rating - a measure used to determine whether a bridge that is structurally deficient or functionally obsolete should be repaired or just replaced
- F.O.= Functionally Obsolete - refers to a bridge that does not meet current roadway design standards
- Health Index - a measure used to indicate overall conditions of a bridge. A Health Index below 85 generally indicates that some repairs are needed.

3.0 DESIGN CRITERIA

Several design standards and manuals were consulted to establish the final design criteria for this PD&E Study. The design criteria are based on design parameters outlined in the current editions of the following publications:

- Florida Design Manual, FDOT, January 2019
- Design Standards, FDOT, 2019-20
- Project Development and Environment Manual, FDOT, 2019
- Standard Specifications for Road and Bridge Construction, FDOT, 2019
- Structures Design Manual, FDOT, 2019
- AASHTO LRFD Bridge Design Soecifications, 8th Edition, 2017
- Utility Accommodation Manual, FDOT, 2017

4.0 LANTANA ROAD OVER SFRC AND SR 9/I-95

4.1 EXISTING CONDITION

Bridge No. 930276 carries Lantana Road eastbound and westbound traffic over SFRC Railroad and SR 9/I-95. The existing bridge is six span structure with a total bridge length of 471'-00" with maximum span length of 100'-5" long (See **Figure 4-1**). The existing superstructure consists of AASHTO TYPE II and IV Beams. Bridge was built in 1975.

The existing bridge typical section consists of three traffic lanes, 5'-0" bike lanes on north and south respectively and 6'-0" raised sidewalks on both sides. The out to out width of each bridge is 100'-9". The existing vertical clearance of 16'-6" over I-95 and a sub-stndard vertical clearance of 22'-10 1/8 " over SFRC railroad.

The existing bridge substructure consists of end bents and multi-column piers. The end bents are supported on 18" square prestressed concrete piles. The intermediate piers consist of multi-column frames with four 3'-6" diameter columns supported on pile caps. The existing bridge also supports bridge mounted signal pole and bridge mounted light poles.

Figure 4-1 Existing Conditions - Lantana Road Bridge Over SR 9/I-95 (930276)

4.2 PROPOSED CONDITION

4.2.1 BUILD ALTERNATIVE 1 – TIGHT URBAN DIAMOND INTERCHANGE (TUDI)

Build Alternative 1 considered for this PD&E Study is generally based on the preliminary conceptual design recommended as part of the I-95 Interchange Master Plan Study (see **Figure 4-2**, Plan view).

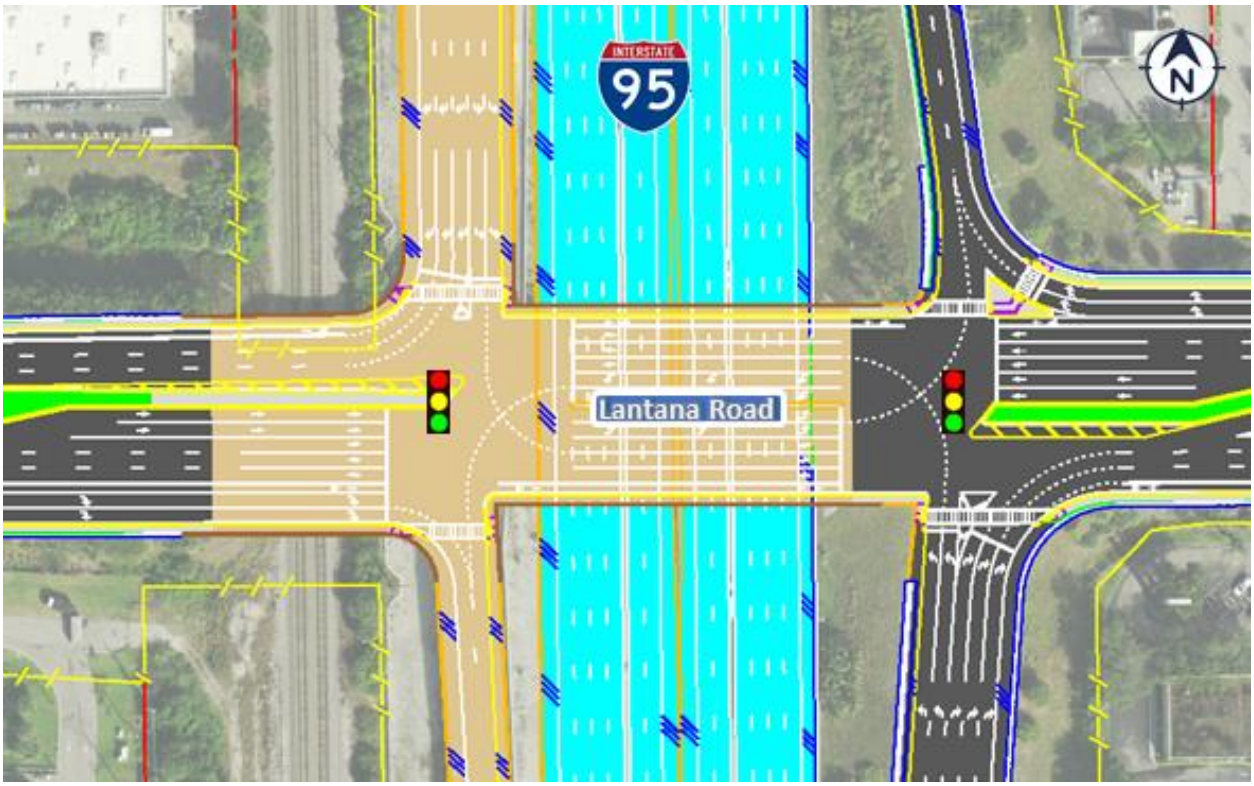

Figure 4-2 Build Alternative 1: Bridge Over SFRC Railroad and SR 9/I-95 - Plan View

As shown in **Figure 4-3** the proposed condition consists of five 11’-0” lanes, 5’-10” bike lne and 6’-0” sidewalk in each direction. The proposed improvements will require a bridge widening of 31’-2” and 29’-5” eastbound and westbound respectively. The cost estimate for the bridge widening under Build Alternative 1 is provided in **Appendix B**.

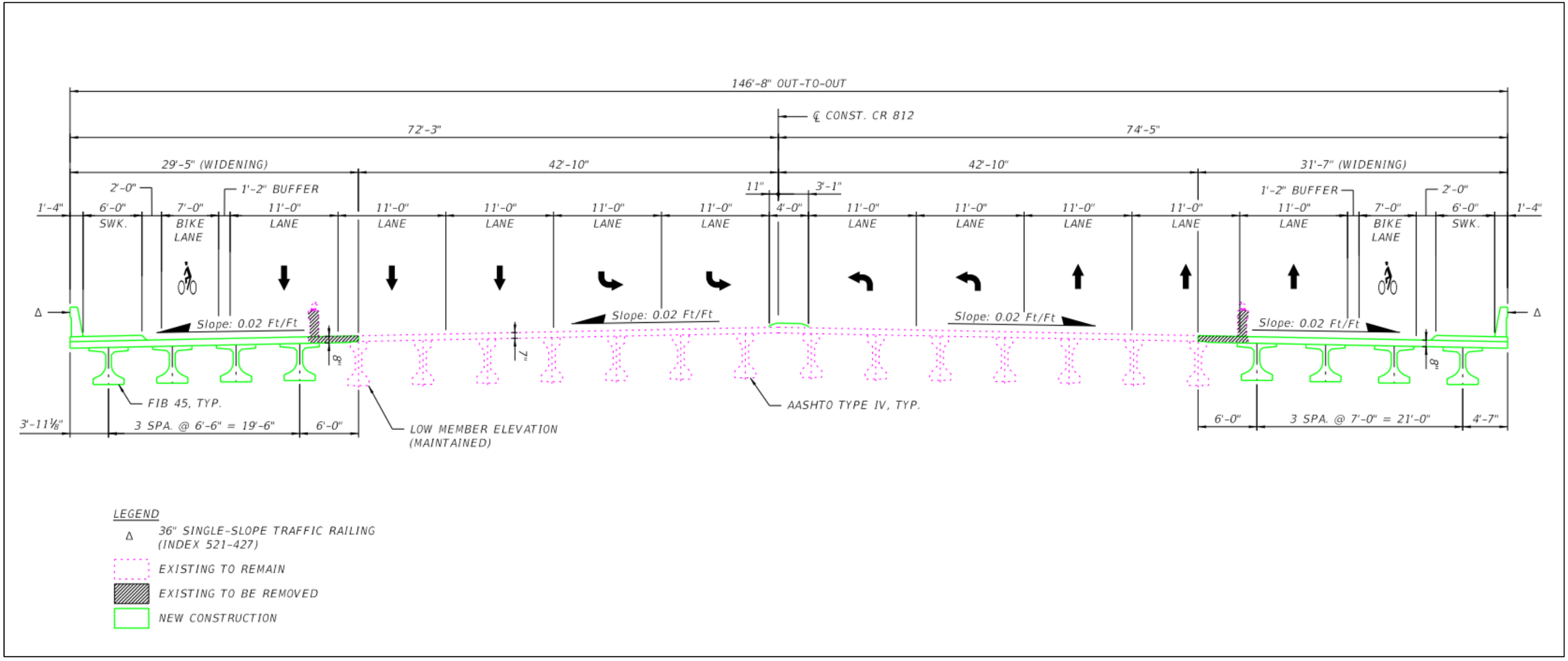

Figure 4-3 Build Alternative 1: Bridge Over SFRC Railroad and SR 9/I-95 - Typical Section

4.2.1.1 SUPERSTRUCTURE

The superstructure options for the proposed widening are limited to Florida I-Girders (FIB) per Structures Design Guidelines (SDG) section 7.6 (See **Figure 4-4**). Four lines of FIB-45 spaced at 6'-6" and 7'-0"will be required on north and south sides respectively to accommodate the proposed widening. The depth of a FIB-45 beam is 9 inches shallower than the existing AASHTO and therefore enables the widening without further reducing the existing minimum vertical clearance under the bridge. While FIB-36 beams are also a feasible option, FIB-45 beams were selected to limit the difference in height between the existing and proposed girders because of aesthetics concerns. Using only one lineof girders would either result in a large overhang or a tributary spacing for the existing exterior beam that would exceed the existing beam spacing and therefore this option was eliminated.

The existing deck will be saw cut along the center line of the exterior beam. The concrete will be removed without damaging the existing reinforcement to allow for lapping of the transverse reinforcement. Because of the close proximity to the signalized intersection east of the bridge, widening of the bridge might require that the signal heads be mounted on the bridge similar to existing condition. Similarly light pole pilasters will be installed on the widening bridge area.

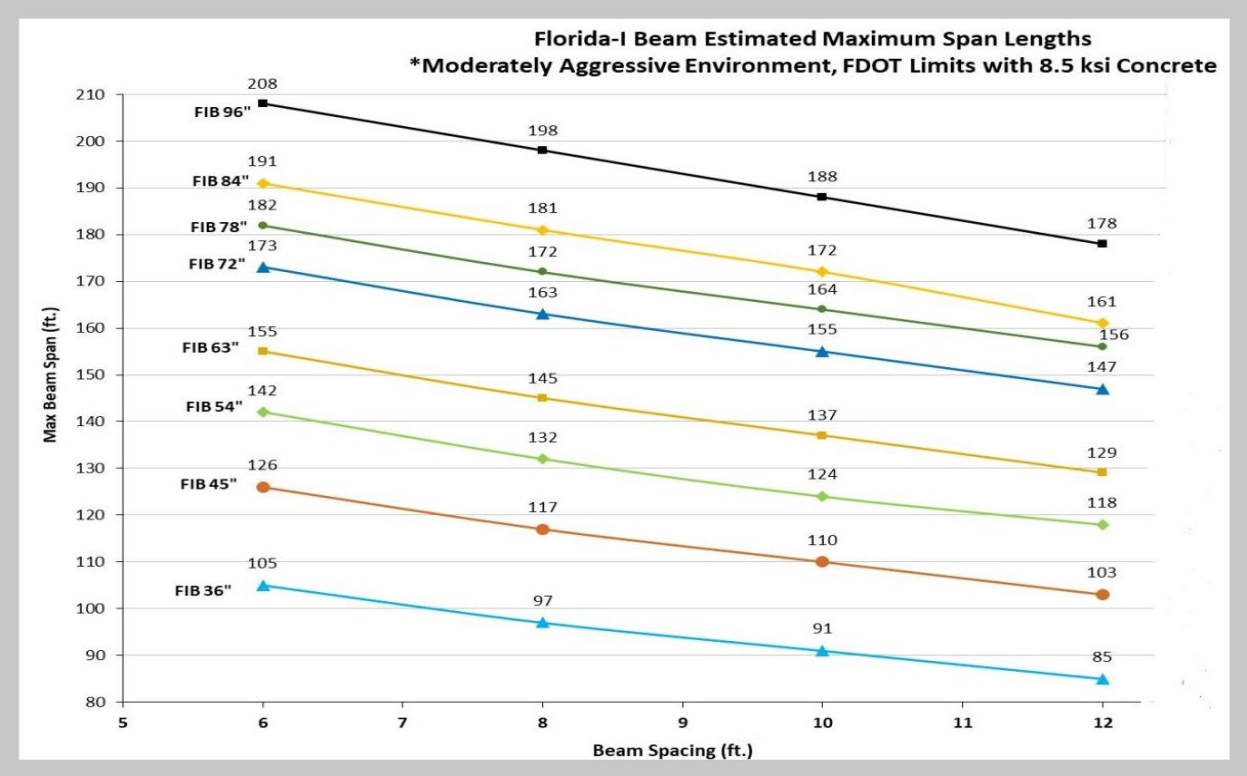

Figure 4-4 Estimated Beam Span Lengths

4.2.1.2 SUBSTRUCTURE

Three additional 18" SQ prestressed concrete piles will be required in order to extend the existing end bents. One independent hammer head column will be proposed at the intermediate pier. Because of the space constraints in the roadway below, the diameter of the proposed columns will be kept at 3'-6". The new columns will require design for Vehicle Collision Forces in accordance with the American Association of State Highway and Transportation Officials (AASHTO) LRFD Section 3.5.6. Similarly, the existing piers, which are only 36 in diameter and are not shielded, will have to be analyzed for vehicle collision forces. Shielding of the existing columns may be required. 36" single slope traffic railings will be provided on the widened portions. No need for retaining wall is identified at this location. Existing slope embankment infront of the end bents will be extended.

4.2.1.3 MAINTENANCE OF TRAFFIC

Widening of the bridge over SFRC railroad and SR 9/I-95 can be accomplished in three phases consistent with the roadway MOT. To minimize the impact to motorist, the construction will be completed in three sequences: eastbound and westbound as depicted in **Figure 4-5**.

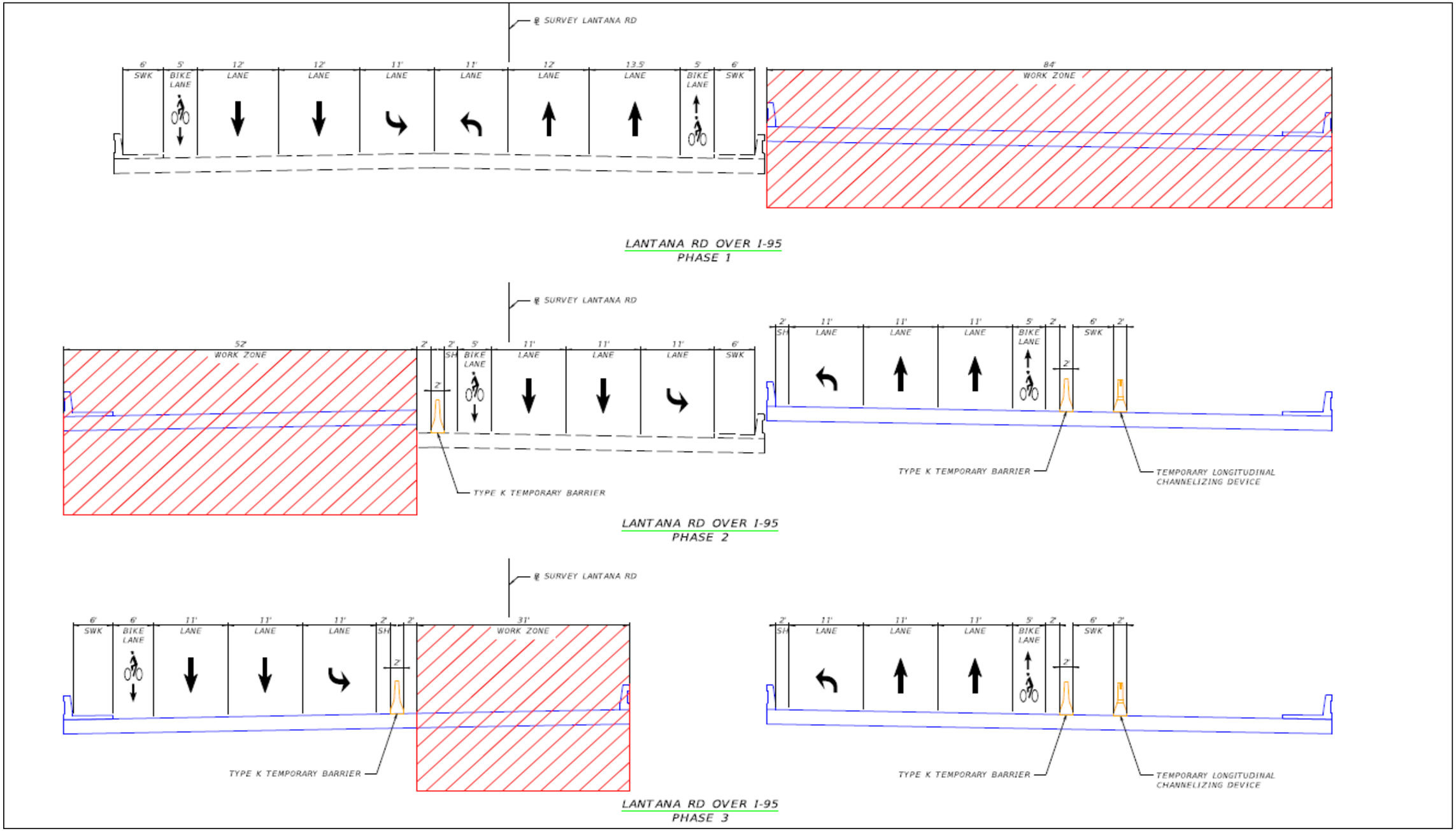

Figure 4-5 Build Alternative 1: Bridge Over SFRC Railroad and SR 9/I-95 - MOT

4.2.2 BUILD ALTERNATIVE 2 - DIVERGING DIAMOND INTERCHANGE (DDI)

Build Alternative 2 reconfigures the existing Tight Diamond Interchange into a Diverging Diamond Interchange (DDI) configuration (see **Figure 4-6**) .

Figure 4-6 Build Alternative 2: Bridges Over SFRC Railroad and SR 9/I-95 - Plan View

As shown in **Figure 4-7** and **Figure 4-8** the proposed condition consists of two separate bridges for westbound and northbound traffic. The proposed improvements will require replacing existing bridge over SFRC Railroad and SR 9/I-95 with two independent bridges. The cost estimate for the bridge widening under Build Alternative 2 is provided in **Appendix B**

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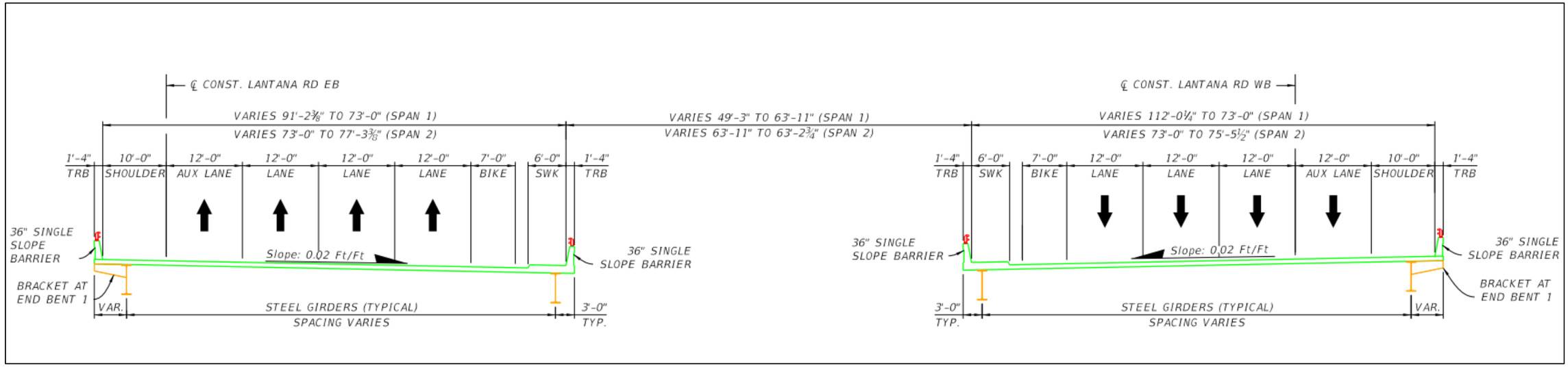


Figure 4-7 Build Alternative 2: Bridge Over SR 9/I-95 - Typical Section

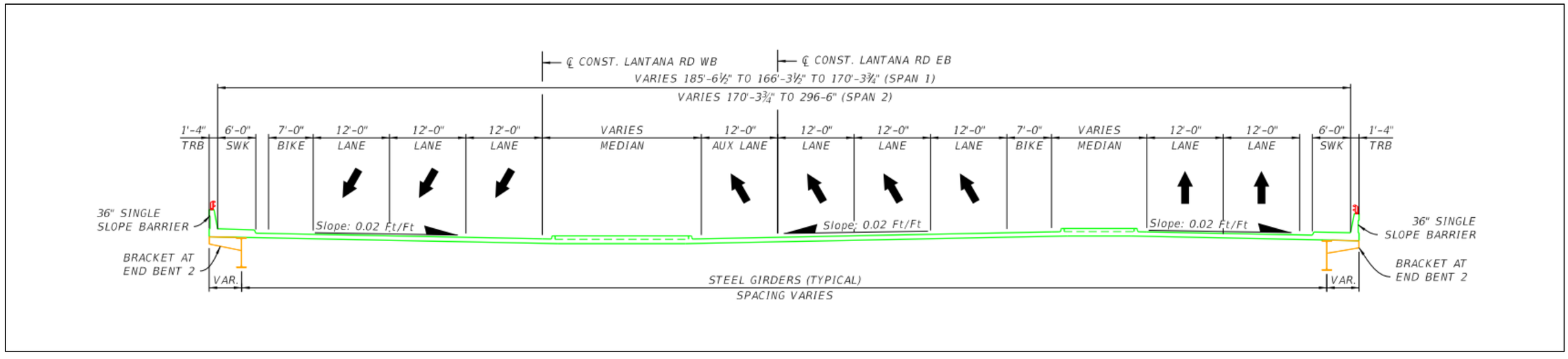


Figure 4-8 Build Alternative 2: Bridge Over SFRC Railroad - Typical Section

4.2.2.1 SUPERSTRUCTURE

The superstructure options for the proposed bridges over SR 9/ I-95 due to geometry would be gurved Steel Plate I-Girders. The depth of proposed plate I- girders would be about 4'-6" meting AASHTO Section 2.5.2.6.3 and similar to the existing AASHTO IV and therefore enables the proposed bridge not reducing the existing minimum vertical clearance under the bridge.

Because of the close proximity to the signalized intersection west of the bridge over SFRC Railroad, it might require that the signal heads be mounted on the bridge similar to existing condition. Similarly light pole pilasters will be installed on the new bridges.

The proposed superstructure options for the proposed bridges over SFRC railroad due to span length and geometry would be gurved Steel Plate I-Girders. The depth of proposed plate I-girders would be about 4'-6" meting AASHTO Section 2.5.2.6.3 and similar to the existing AASHTO IV and therefore enables the proposed bridge to provide 23'-6" minimum vertical clearance required over railroad per FDM Table 260.6.1.

4.2.2.2 SUBSTRUCTURE

18" SQ prestressed concrete piles could be be for the foundations. Hammer head column will be proposed at the intermediate pier. Because of the space constraints in the roadway below, the diameter of the proposed columns would be about 4'-0". The new columns will require design for Vehicle Collision Forces in accordance with the American Association of State Highway and Transportation Officials (AASHTO) LRFD Section 3.5.6. No need for retaining wall is identified at this location. Existing slope embankment infront of the end bents will be extended.

4.2.2.3 MAINTENANCE OF TRAFFIC

Construction of new bridges over SFRC railroad and SR 9/I-95 can be accomplished in three phases consistent with the roadway MOT and similar to build Alt-1.

4.2.3 BUILD ALTERNATIVE 3 – SINGLE POINT URBAN INTERCAHNGE (SPUI)

Build Alternative 3 reconfigures the existing tight diamond interchange into a Single Point Urban Interchange (SPUI) configuration (see **Figure 4-9**).

Figure 4-9 Build Alternative 3: Bridges Over SFRC Railroad and SR 9/I-95 - Plan View

As shown in **Figure 4-10** the proposed improvements will require replacing existing bridge over SFRC Railroad and SR 9/I-95 with two independent bridges. The cost estimate for the bridge widening under Build Alternative 1 is provided in **Appendix B.**

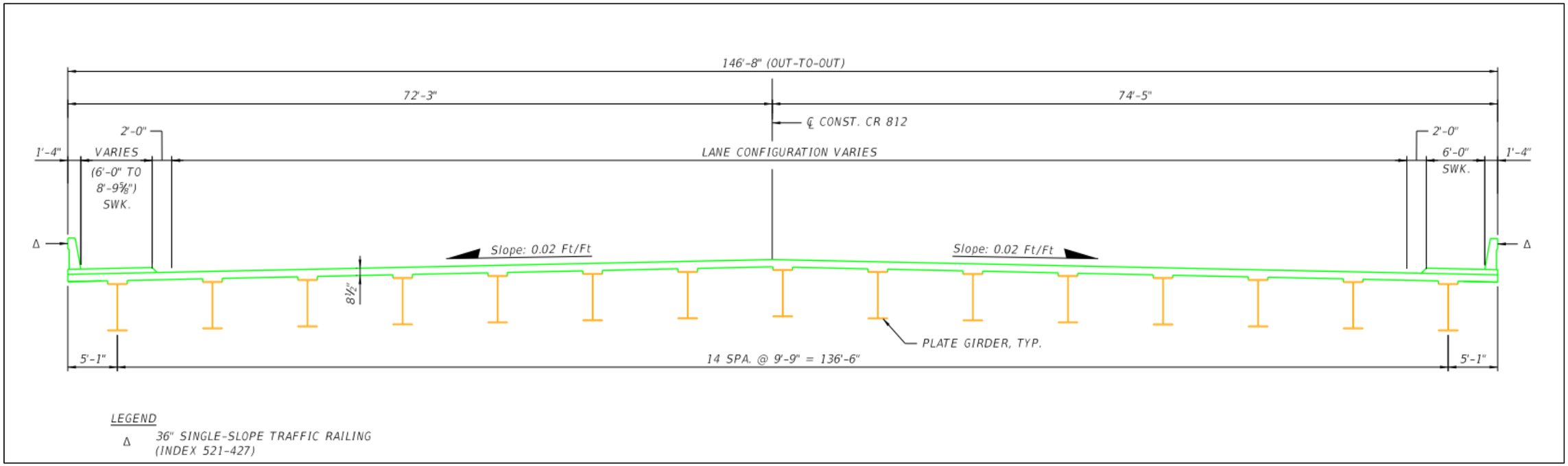


Figure 4-10 Lantana Road Bridge Over SR 9/I-95 (930276) Typical Section

4.2.3.1 SUPERSTRUCTURE

The superstructure options for the proposed new bridges over SFRC Railroad and SR 9/ I-95 due to span lengths and geometry would be gurved Steel Plate I-Girders.

Fifthen lines steel plate I- girders will be required to accommodate the proposed bridge section.The depth of proposed plate I- girders would be about 4'-6" meting AASHTO Section 2.5.2.6.3 and similar to the existing AASHTO IV and therefore enables the proposed bridge without further reducing the existing minimum vertical clearance under the bridge over SR 9/ I-95 and provide 23'-6" minimum vertical clearance required over railroad per FDM Table 260.6.1.

Because of the close proximity to the signalized intersection west of the bridge over SFRC Railroad, it might require that the signal heads be mounted on the bridge similar to existing condition. Similarly light pole pilasters will be installed on the new bridges.

4.2.3.2 SUBSTRUCTURE

18" SQ prestressed concrete piles could be be for the foundations. Hammer head column will be proposed at the intermediate pier. Because of the space constraints in the roadway below, the diameter of the proposed columns would be about 4'-0". The new columns will require design for Vehicle Collision Forces in accordance with the American Association of State Highway and Transportation Officials (AASHTO) LRFD Section 3.5.6. No need for retaining wall is identified at this location. Existing slope embankment infront of the end bents will be extended.

4.2.3.3 MAINTENANCE OF TRAFFIC

Construction of new bridges over SFRC railroad and SR 9/I-95 can be accomplished in three phases consistent with the roadway MOT and similar to Build Alternative 1.

5.0 I-95 SB ON-RAMP AND I-95 SB OFF-RAMP

5.1 EXISTING CONDITION

Bridges Numbers 930274 and 930275 carries traffic for SR 9/I-95 SB On-Ramp and SB Off-Ramp to/from Lantana Road respectively. The existing bridges are six span structures with a total bridge length of 319'-00"for the SB On-Ramp (Ramp J) and 322'-6" for the SB Off-Ramp (Ramp K) with maximum span length of 67'-6" long. The existing superstructure consists of AASHTO TYPE II and III Beams. Bridges were built in 1975 and were later retrofitted (SB On-Ramp - Ramp J) or widened (SB Off-Ramp-Ramp K) in 2014.

The existing SB On-Ramp bridge (930274 – Ramp J – See **Figure 5-1**) typical section consists of one lane of traffic, with 6'-0" shoulders on both sides. The out to out width of bridge varies from 35'-6" to 91'-6". The existing bridge substructure consists of end bents and multi-column piers. The end bents are supported on 18" Square prestressed concrete piles. The intermediate piers consist of multi-column frames with four 3'-0" diameter columns supported on pile caps.

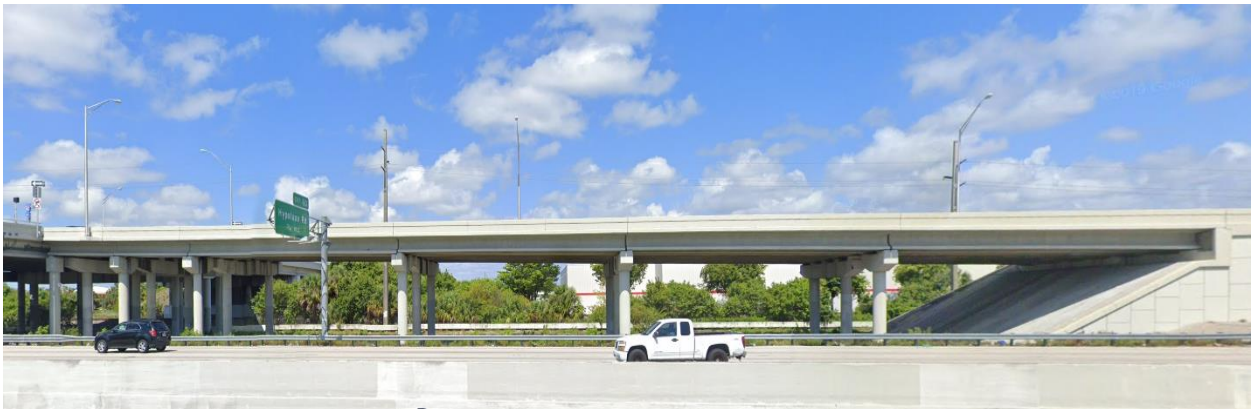


Figure 5-1 Existing Conditions - SR 9/I-95 SB Off-Ramp Bridge (930274)

The existing SB Off-Ramp bridge (930275 – Ramp K – See **Figure 5-2**) typical section consists of three lanes of traffic, with 6'-0" shoulders on east and variable shoulder on the west side. The out to out width of bridge varies from 55'-5" to 110'-4 ½". The existing bridge substructure consists of end bents and multi-column piers. The end bents are supported on 18" Suuare prestressed concrete piles. The intermediate piers consist of multi-column frames with four 3'-0" diameter columns supported on pile caps.

Figure 5-2 Existing Conditions - SR 9/I-95 SB On-Ramp Bridge (930275)

5.2 PROPOSED CONDITION

For Build Alternative 1, the existing ramp bridges will be widening to accommodate the additional lanes. For Build Alternatives 2 and 3, existing ramp bridges for the southbound on and off ramps would be replaced with embankment and MSE walls. Temporary sheet pile wall systems will be required in front of the Permanent Mechanically Stabilized Earth (MSE) as well on the new fill to allow for the phased Construction of the proposed MSE walls as shown in **Figure 5-3.**

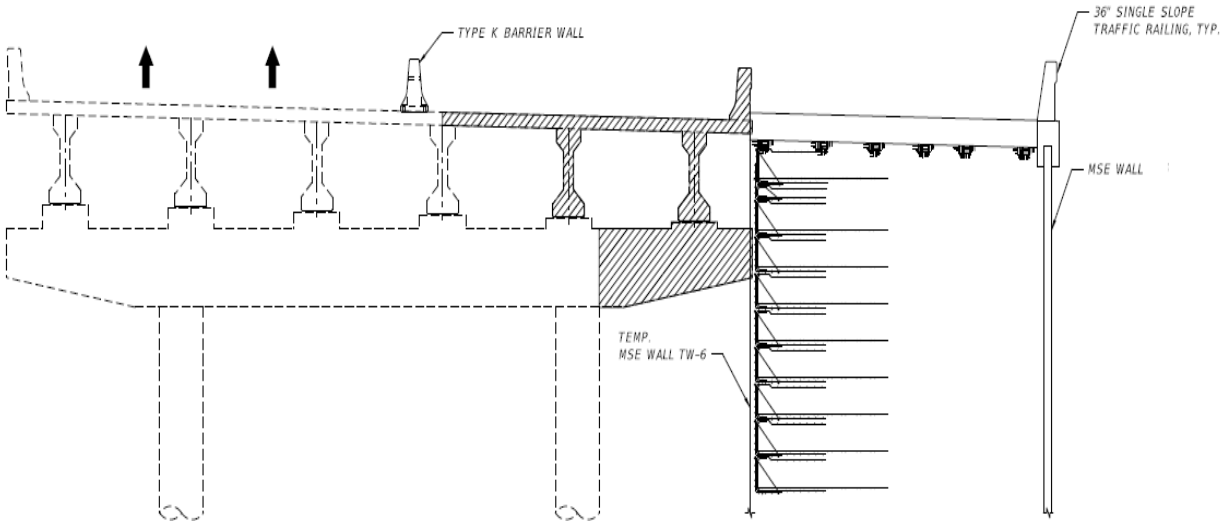


Figure 5-3 Ramp Bridge Replacement with MSE Walls

6.0 PREFERRED ALTERNATIVE

Based on the analysis and evaluation of several key evaluation parameters including traffic operations, safety benefits, access impacts, utility impacts, right of way impacts, environmental impacts, construction costs as well as public comments, Build Alternative 2 with the Diverging Diamond Interchange (DDI) configuration had the highest score due to the significantly higher safety and traffic operational benefits it provides to offset its relatively higher construction cost. As such, Build Alternative 2 is recommended as the Preferred Alternative for this PD&E Study.

The diverging diamond concept requires drivers to briefly cross to the left, or opposite side of the road at carefully designed crossover intersections. Drivers travel for a short distance, then cross back to the traditional or right side of the road. This unconventional design allows free-flow movements for the left and right-turns to and from the I-95 ramps onto Lantana Road without crossing the path of opposing traffic. The crossover is made at the signal where the opposing traffic flows split the signal green time. The major advantage of this type of interchange is that the left-turning vehicles do not require a signal phase which makes this a two-phased signal system with more green time for the opposing traffic.

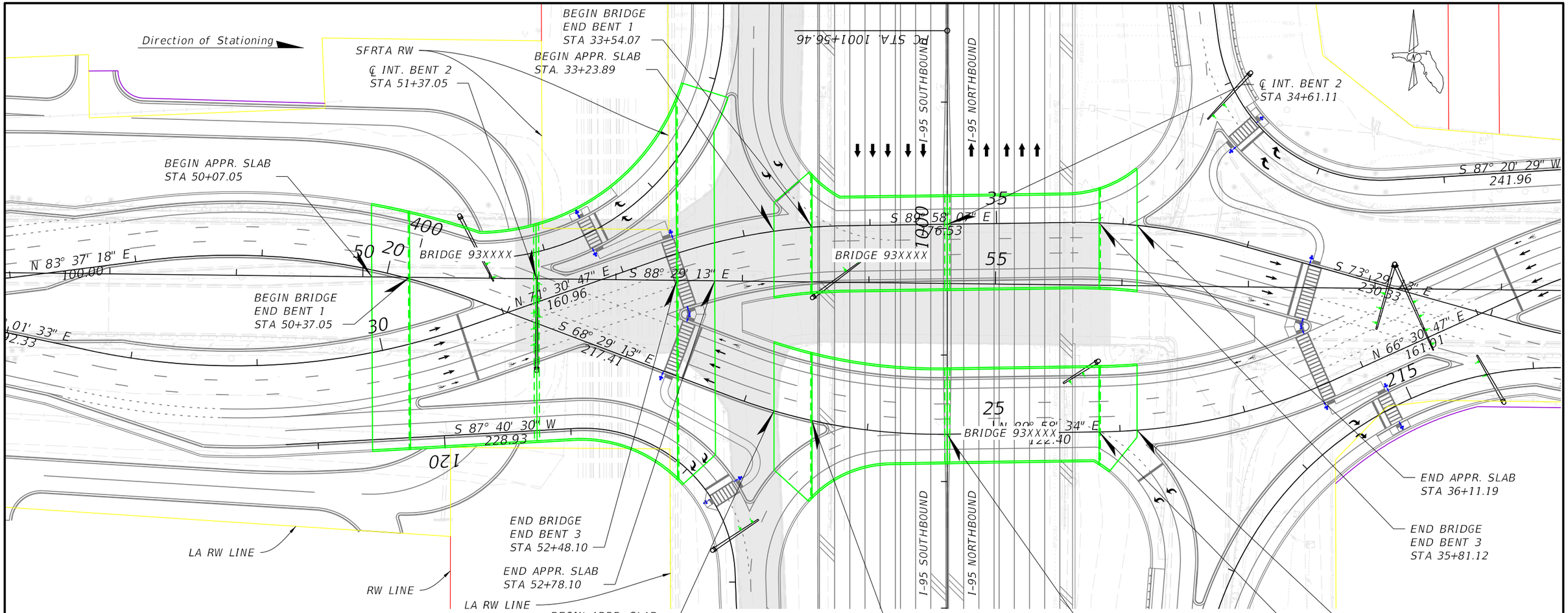
The proposed improvements under the Preferred Alternative involve, replacing the existing single Lantana Road bridge over I-95 and SFRC Railroad with two separate bridges over SR 9/I-95 and SFRC Railroad. In addition, an underpass road that connects Sunset Road and the existing Solid Waste Authority (SWA) service road underneath the reconstructed Lantana Road Bridge over SFRC Railroad will also be provided. The existing ramp bridges for the southbound on and off ramps will also be replaced with embankment and MSE walls.

Table 6-1 summarizes the proposed bridge improvements. The proposed bridge plan, elevation and typical sections for the Preferred Build are provided in **Appendix A**.

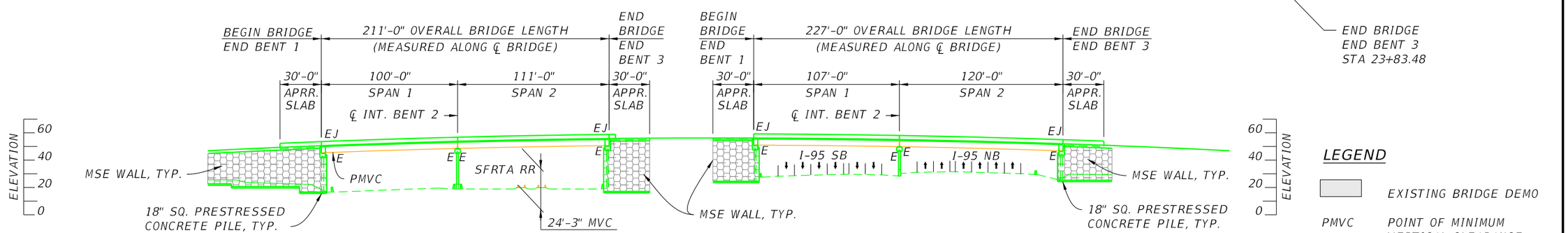
Table 6-1 Recommended Bridge Structure Treatments								
#	Location	Bridge Number	Proposed Improvement	Bridge Width (ft)	Bridge Length (ft)	Depth of Structure (ft)	Minimum Vertical Clearance (ft)	Super-structure Type
1	Lantana Road Over SR 9/I-95 and SFRC Railroad	930276	Replace with new bridge over I-95	73'-0" to 112'-0¼"	227'-0"	5'-5"	16'-6"	18' Square Prestressed Concrete Piles
			Replace with new bridge over SFRC	170'-3¾" to 296'-6"	211'-0"	5'-5"	24'-3"	
2	Lantana Road SB On-Ramp Bridge	930274	Replace existing bridge with embankment and MSE Walls	-	-	-	-	-
3	Lantana Road SB Off-Ramp Bridge	930275	Replace existing bridge with embankment and MSE Walls	-	-	-	-	-

APPENDIX A

(PROPOSED BRIDGE PLANS FOR PREFERRED ALTERNATIVE)



PLAN



ELEVATION

LEGEND

	EXISTING BRIDGE DEMO
PMVC	POINT OF MINIMUM VERTICAL CLEARANCE
E	EXPANSION BEARING
EJ	EXPANSION JOINT

BRIDGE NO. 93XXXX, 93XXXX, & 93XXXX

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SOHEILA SADOUGH, P.E.
P.E. LICENSE NUMBER 44130
ASA CONSULTANTS, INC.
510 SHOTGUN ROAD, SUITE 402
SUNRISE, FL 33326

DRAWN BY: CMR 05-20
CHECKED BY: SS 05-20
DESIGNED BY: SS 05-20
CHECKED BY: RA 05-20

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

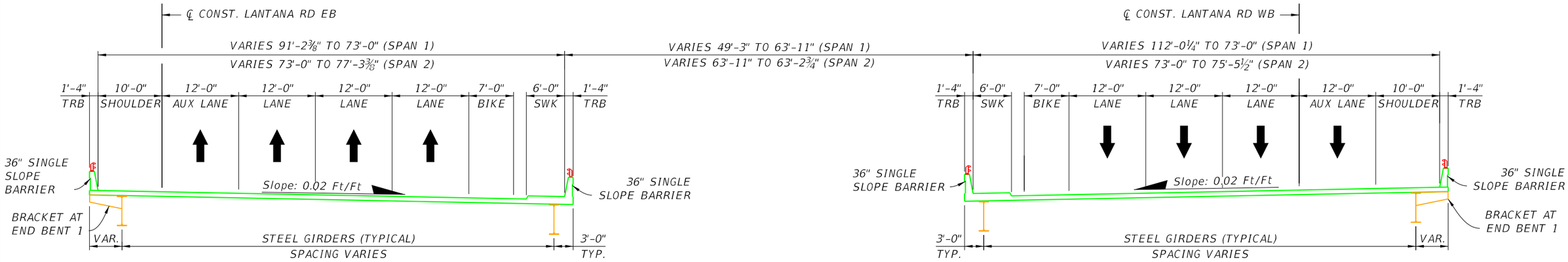
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413258-1-22-02

SHEET TITLE: PLAN AND ELEVATION

REF. DWG. NO.

PROJECT NAME: I-95 AT LANTANA ROAD INTERCHANGE

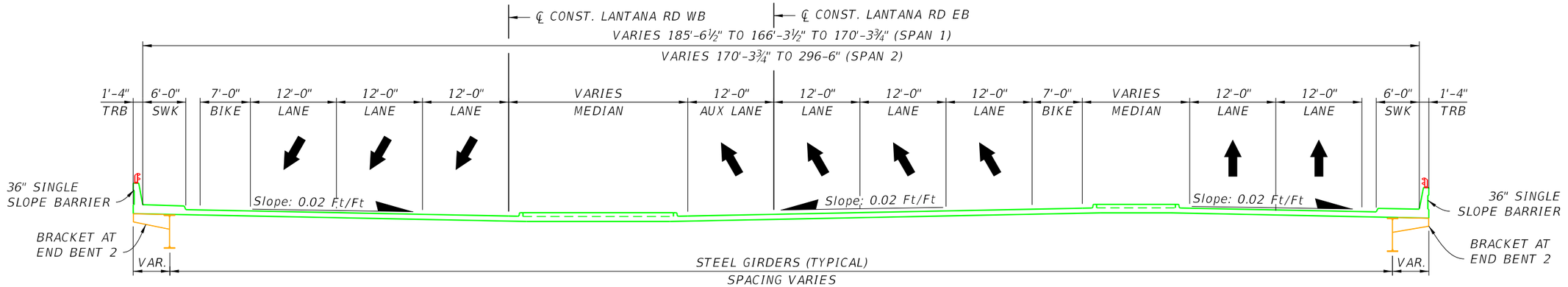
SHEET NO. BR-1



TYPICAL SECTION

LANTANA ROAD OVER SR 9 / I-95

STA. 53+53.94 TO STA. 55+82.96



TYPICAL SECTION

LANTANA ROAD OVER SFRC/CSX RAILROAD

STA. 50+38.06 TO STA. 52+47.08

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SOHEILA SADOUGH, P.E.
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SUNRISE, FL 33326

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DESIGNED BY: SS 05-20
CHECKED BY: RA 05-20

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413258-1-22-02

SHEET TITLE: TYPICAL SECTION

REF. DWG. NO.:

PROJECT NAME: I-95 AT LANTANA ROAD INTERCHANGE

SHEET NO.: BR-2

APPENDIX B

(COST COMPARISIONS)

Lanatana Road Bridge over SFRC Railroad							
Build Alternative/Superstructure	Width of New Construction (FT)	Bridge Length (FT)	New Bridge/ Widening	Area (SF)	Phased Construction Y or N	Unit Cost/SF [1]	Total Cost
Build Alt 1/ FIB Girders	61.00	110.0	Widening	6,710.00	Y	$150	$1,006,500.0
Build Alt 2/ Steel Girder	180.00	110.0	New Bridge	19,800.00	Y	$165	$3,267,000.0
Build Alt 3/ Steel Girder	159.25	110.00	New Bridge	17,517.50	Y	$165	$2,890,387.5
Note 1: 20% increase for phased Construction							

Lanatana Road Bridge over SR 9/I-95							
Build Alternative/Superstructure	Width of New Construction (FT)	Bridge Length (FT)	New Bridge/ Widening	Area (SF)	Phased Construction Y or N	Unit Cost/SF [1]	Total Cost
Build Alt 1/ FIB Girders	61.00	319.0	Widening	19,459.00	Y	$150	$2,918,850.0
Build Alt 2/ Steel Girders	167.33	230.0	New Bridge	38,486.82	Y	$165	$6,350,325.3
Build Alt 3/ Steel Girders	146.67	230.0	New Bridge	33,733.41	Y	$165	$5,566,012.7
Note 1: 20% increase for phased Construction							

Existing Bridge Demolition- Bridge No. 930276					
Build Alternative	Demolition length (FT)	Demolition Width (FT))	Area (SF)	Unit Cost	Demolition Cost
Build Alt 1	471.0	12.25	5769.75	$ 40.00	$ 230,790.00
Build Alt 2	471.0	100.4167	47296.2657	$ 40.00	$ 1,891,850.6
Build Alt 3	471.0	100.4167	47296.2657	$ 40.00	$ 1,891,850.6

Existing Bridge Demolition- Bridge No. 930274					
Build Alternative	Demolition length (FT)	Demolition Width (FT))	Area (SF)	Unit Cost	Demolition Cost
Build Alt 1	319.1	40.0	12763.332	$ 40.00	$ 510,533.28
Build Alt 2	319.1	40.0	12763.332	$ 40.00	$ 510,533.28
Build Alt 3	319.1	40.0	12763.332	$ 40.00	$ 510,533.28

Existing Bridge Demolition- Bridge No. 930275					
Build Alternative	Demolition length (FT)	Demolition Width (FT))	Area (SF)	Unit Cost	Demolition Cost
Build Alt 1	322.5	60.0	19350	$ 40.00	$ 774,000.00
Build Alt 2	322.5	60.0	19350	$ 40.00	$ 774,000.00
Build Alt 3	322.5	60.0	19350	$ 40.00	$ 774,000.00

MSE Wall Quantities (Ramp J)					
Build Alternative	length (FT)	Height (FT)	AREA (SF)	Unit Cost	Total Cost
Build Alt 1	814.5	15	12217.5	$ 26.00	$ 317,655.0
Build Alt 2	814.5	15	12217.5	$ 26.00	$ 317,655.0
Build Alt 3	814.5	15	12217.5	$ 26.00	$ 317,655.0

MSE Wall Quantities (Ramp K)					
Build Alternative	length (FT)	Height (FT)	AREA (SF)	Unit Cost	Total Cost
Build Alt 1	855.5	15	12832.5	$ 26.00	$ 333,645.0
Build Alt 2	855.5	15	12832.5	$ 26.00	$ 333,645.0
Build Alt 3	855.5	15	12832.5	$ 26.00	$ 333,645.0

APPENDIX C

(EXISTING BRIDGE PLANS)

INDEX OF STRUCTURE PLANS

SHEET NO.	SHEET DESCRIPTION

FOR INDEX OF DRAWINGS, SEE SHEET B-2

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

Final "As-Builts" Plans

~~CONTRACT PLANS~~

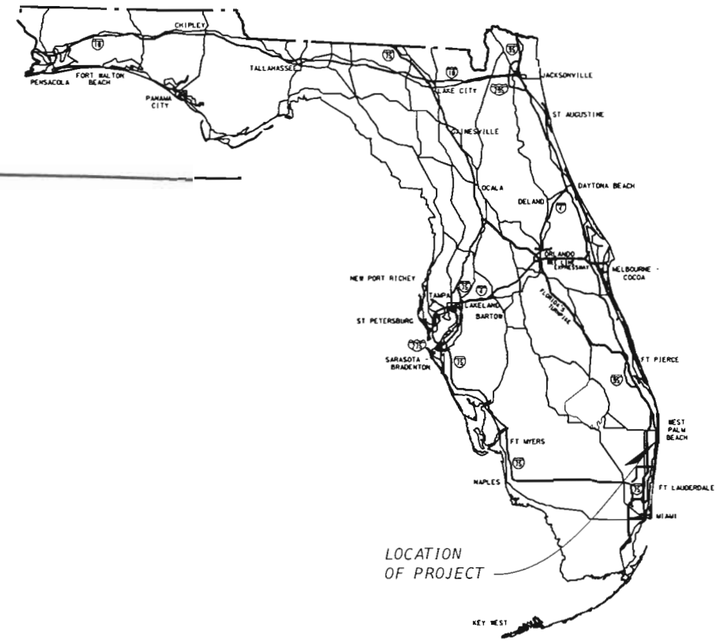
FINANCIAL PROJECT ID 429198-1-52-01

(FEDERAL FUNDS)

PALM BEACH COUNTY (93220)

STATE ROAD NO. 9

STRUCTURE PLANS



STRUCTURE SHOP DRAWINGS
TO BE SUBMITTED TO:

LUIS M. VARGAS, P.E.
URS CORPORATION SOUTHERN
7650 CORPORATE CENTER DRIVE
SUITE 400
MIAMI, FL 33126-1220
(305) 262-7466
P.E. No. 46962

PLANS PREPARED BY:

URS

URS CORPORATION SOUTHERN
7650 CORPORATE CENTER DRIVE, SUITE 400
MIAMI, FL 33126-1220

CONTRACT NO. C-9079
VENDOR No. VF-592087895-001
CERTIFICATE OF AUTHORIZATION
No. EB 00000002

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

COVER SHEET REVISIONS		
DATE	BY	DESCRIPTION

STRUCTURE PLANS
ENGINEER OF RECORD: LUIS M. VARGAS, PE

P.E. NO.: 46962

FDOT PROJECT MANAGER: BETSY JEFFERS, P.E.

FISCAL YEAR	SHEET NO.
13	B-1

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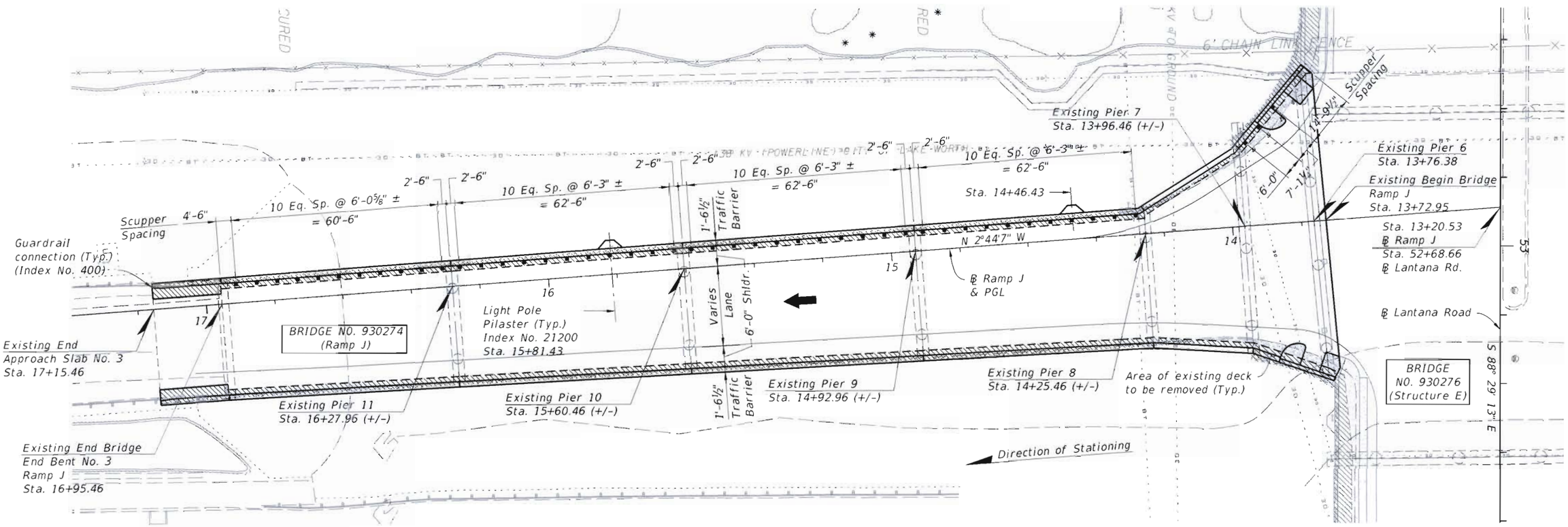

PLAN
(Ramp J)

LEGEND

- Area of existing deck and approach slab to be removed.
- Area of existing raised sidewalk to be removed to a level below adjacent exsiting deck and prepared for resurfacing.

NOTES

1. For additional information, refer to Roadway Plans.
2. For Utility information, refer to Utility Adjustment Plans.
3. Scupper spacing given along gutter line.

Bridge No. 930274
RAMP J - TRAFFIC RAILING RETROFIT

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7650 Corporate Centre Drive, Suite 400
Miami, FL 33126-1220
Tel: (305) 262-7466
C.A. No. EB 00000002
L.M. Vargas, P.E. No. 46962

DRAWN BY: MAR 07-12
CHECKED BY: JAR 07-12
DESIGNED BY: PCG 07-12
CHECKED BY: JAR 07-12

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: PLAN
REF. DWG. NO.
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO. B1-1

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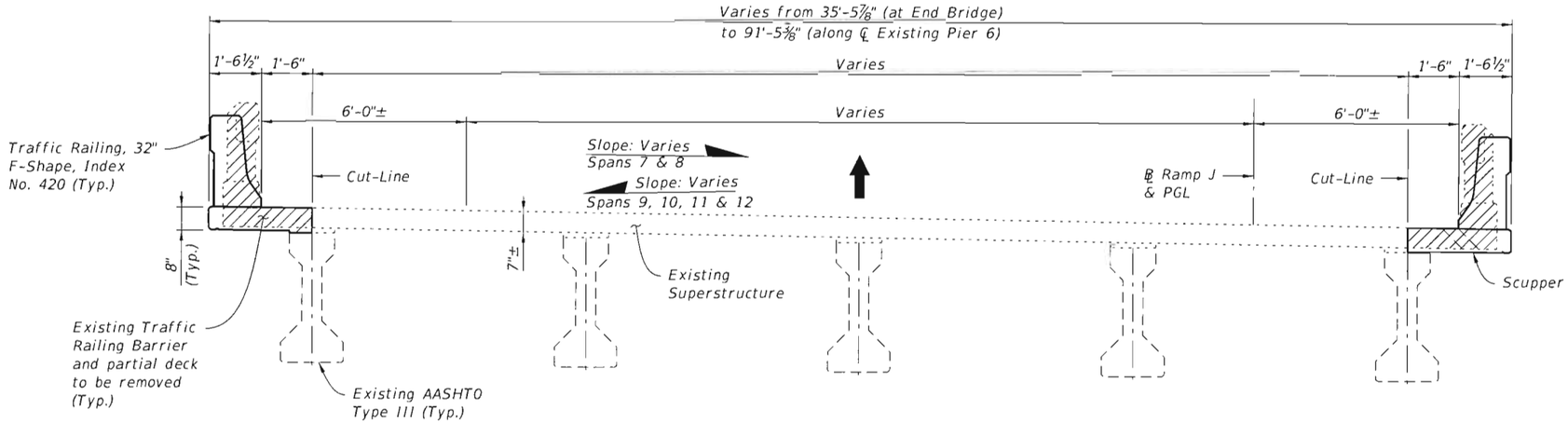

TYPICAL SECTION

NOTE: *New deck overhangs shall match existing bridge deck cross-slope.*

Bridge No. 930274
RAMP J - TRAFFIC RAILING RETROFIT

REVISIONS					
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URS Corporation Southern
7650 Corporate Centre Drive, Suite 400
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CHECKED BY: JAR 07-12			
DESIGNED BY: PCG 07-12	ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CHECKED BY: JAR 07-12	9	PALM BEACH	429198-1-52-01

SHEET TITLE: TYPICAL SECTION
REF. DWG. NO.:
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO.: B1-5

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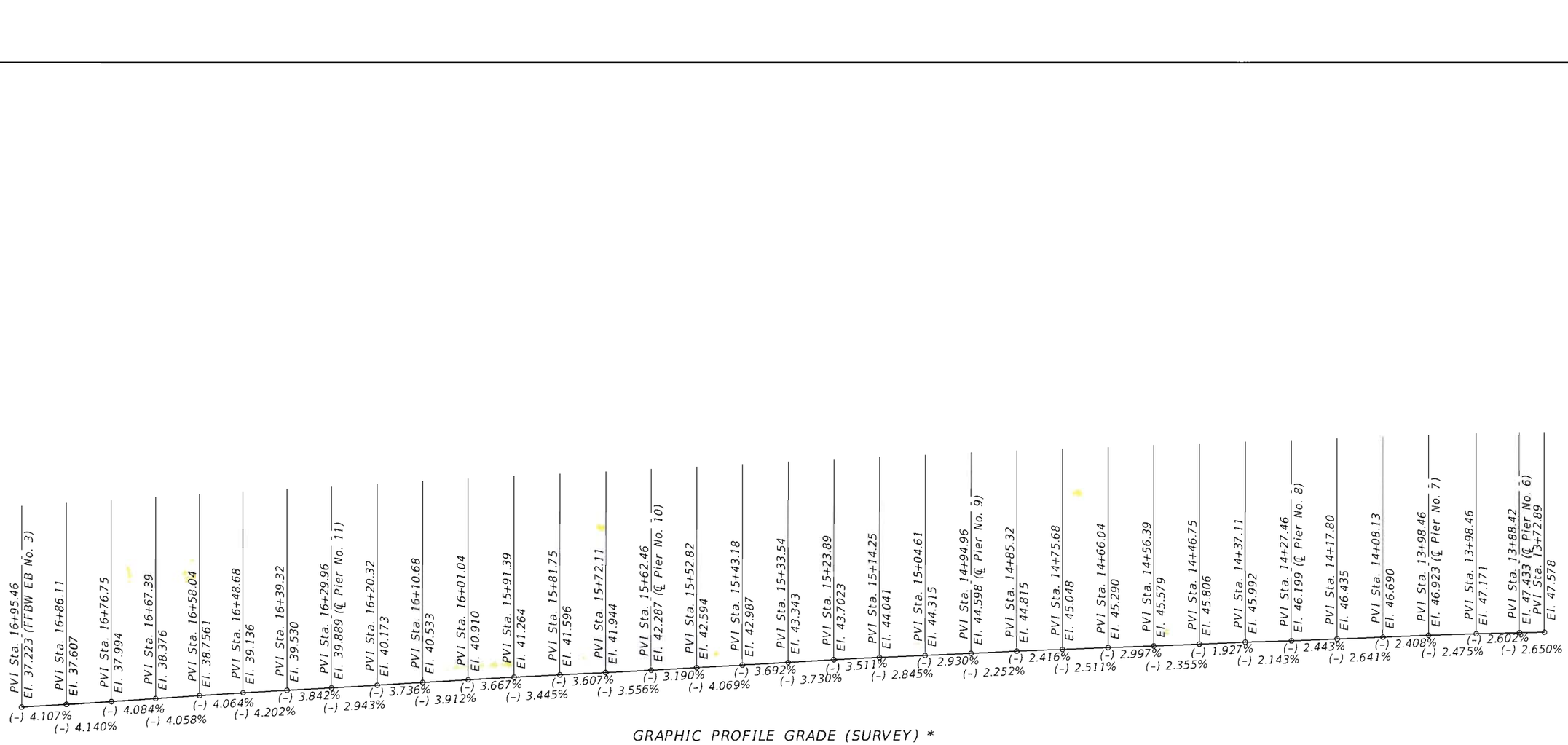

*GRAPHIC PROFILE GRADE (SURVEY) **
ALONG ℄ RAMP J

** Profiles used to compute Finish Grade Elevations, based on Surveyed information*

Bridge No. 930274
RAMP J - TRAFFIC RAILING RETROFIT

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 Corporate Centre Drive,
Suite 400
Miami, FL 33126-1220
Tel: (305) 262-7466
C.A. No. EB 00000002
L.M. Vargas, P.E. No. 46962

DRAWN BY:	MAR 07-12
CHECKED BY:	JAR 07-12
DESIGNED BY:	PCG 07-12
CHECKED BY:	JAR 07-12

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: PROFILE GRADES (1 OF 2)
REF. DWG. NO.:
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO.: B1-2

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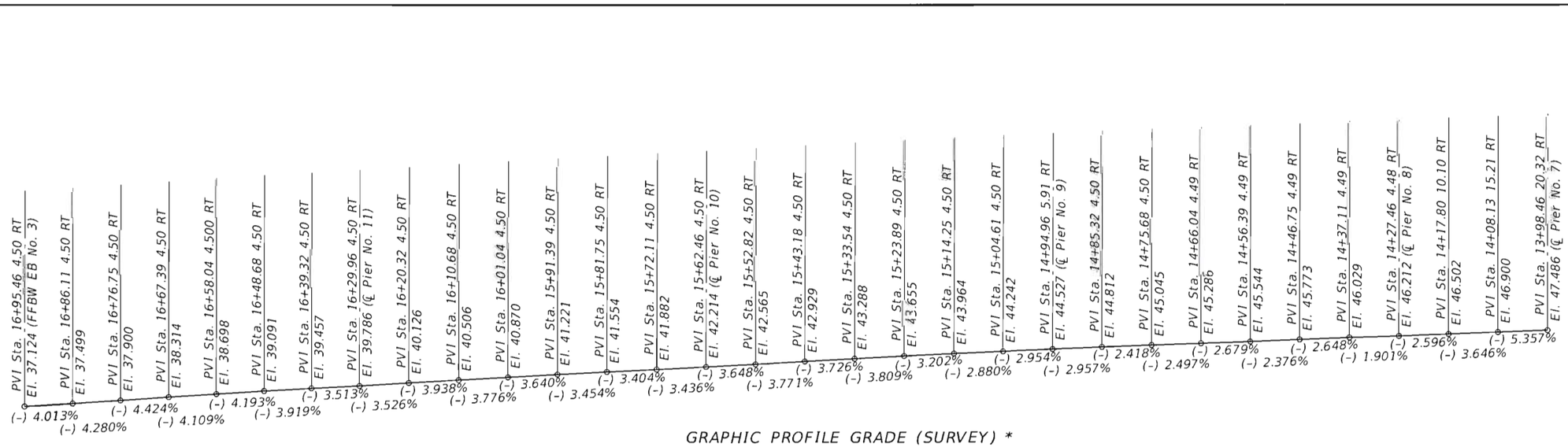
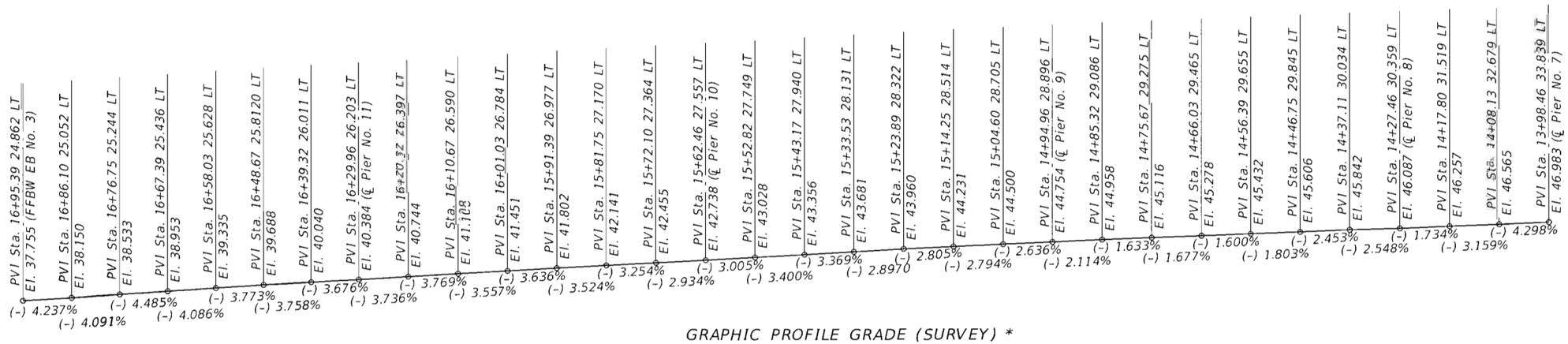


*GRAPHIC PROFILE GRADE (SURVEY) **
EXISTING BRIDGE (℄ RIGHT EXTERIOR BEAM)



*GRAPHIC PROFILE GRADE (SURVEY) **
EXISTING BRIDGE (℄ LEFT EXTERIOR BEAM)

** Profiles used to compute Finish Grade Elevations, based on Surveyed information*

Bridge No. 930274
RAMP J - TRAFFIC RAILING RETROFIT

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 Corporate Centre Drive,
Suite 400
Miami, FL 33126-1220
Tel: (305) 262-7466
C.A. No. EB 00000002
L.M. Vargas, P.E. No. 46962

DRAWN BY: MAR 07-12
CHECKED BY: JAR 07-12
DESIGNED BY: PCG 07-12
CHECKED BY: JAR 07-12

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: PROFILE GRADES (2 OF 2)
REF. DWG. NO.
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO. B1-3

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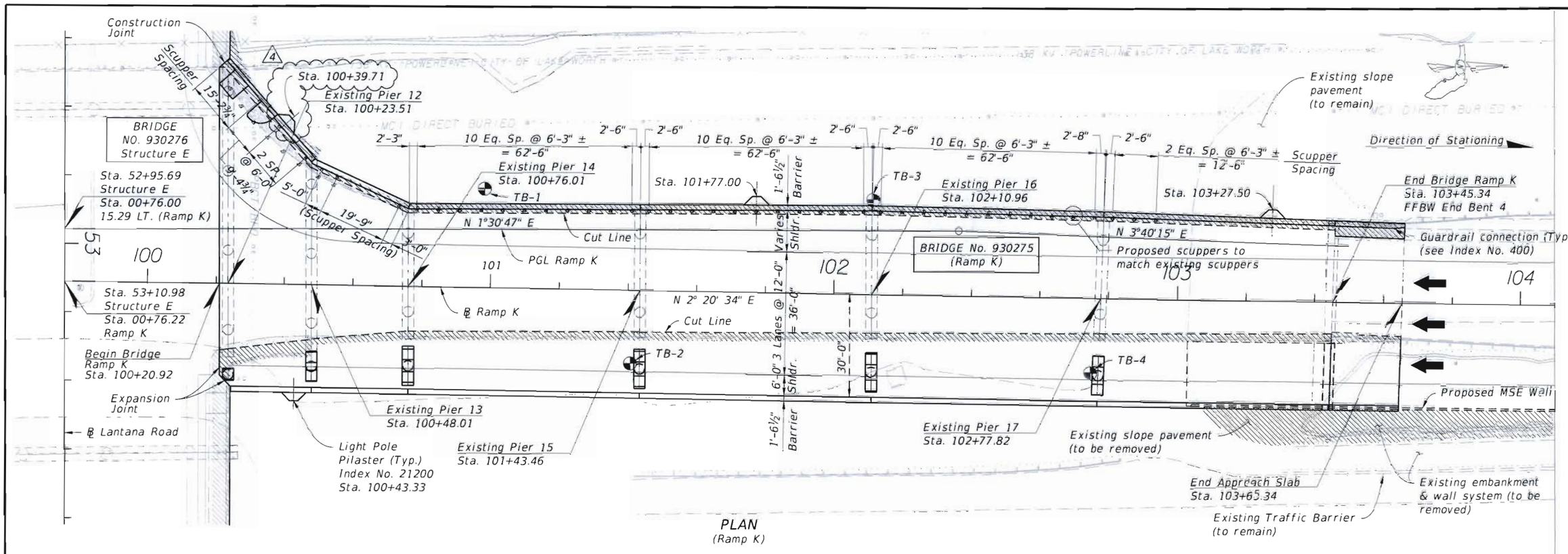
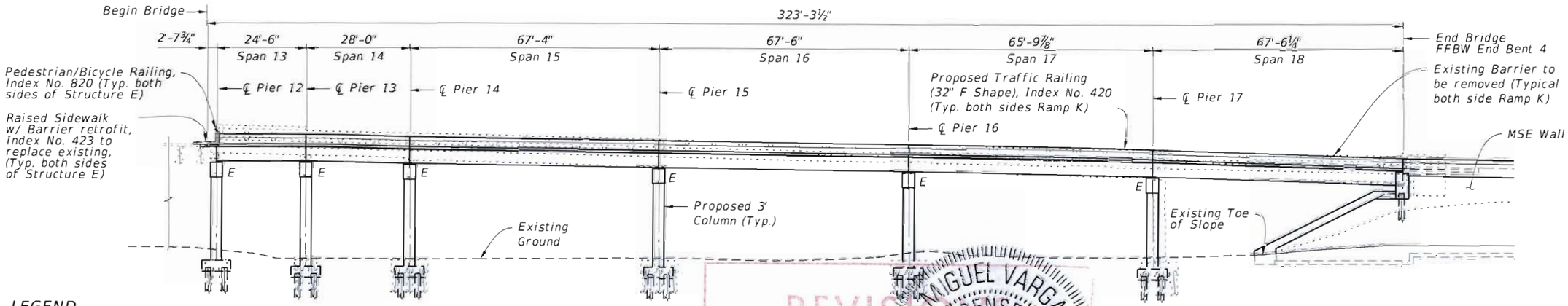


PLAN
(Ramp K)



ELEVATION

REVISIONS
APPROVED BY:
DATE:

LUIS MIGUEL VARGAS LICENSE No. 46962 STATE OF FLORIDA PROFESSIONAL ENGINEER

LEGEND

Area of Existing Deck and Approach Slab to be removed.

Area of Existing Raised Sidewalk to be removed to a level below adjacent Existing Deck and prepared for resurfacing.

Approximate Boring location, refer to Report Of Core Borings for location

NOTES

1. For additional information, refer to Roadway Plans.
2. For Utility information, refer to Utility Adjustment Plans.
3. Supper Dimensions given along gutter line.

Bridge No. 930275
RAMP K - WIDENING AND TRAFFIC RAILING RETROFIT

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
7/17/14	JAR	4 Added Pilaster			

URS
URS Corporation Southern
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Tel: (305) 262-7466
C.A. No. EB 00000002
L.M. Vargas, P.E. No. 46962

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CHECKED BY: JAR 07-12
DESIGNED BY: PCG 07-12
CHECKED BY: JAR 07-12

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: PLAN AND ELEVATION
REF. DWG. NO.
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO. B2-1

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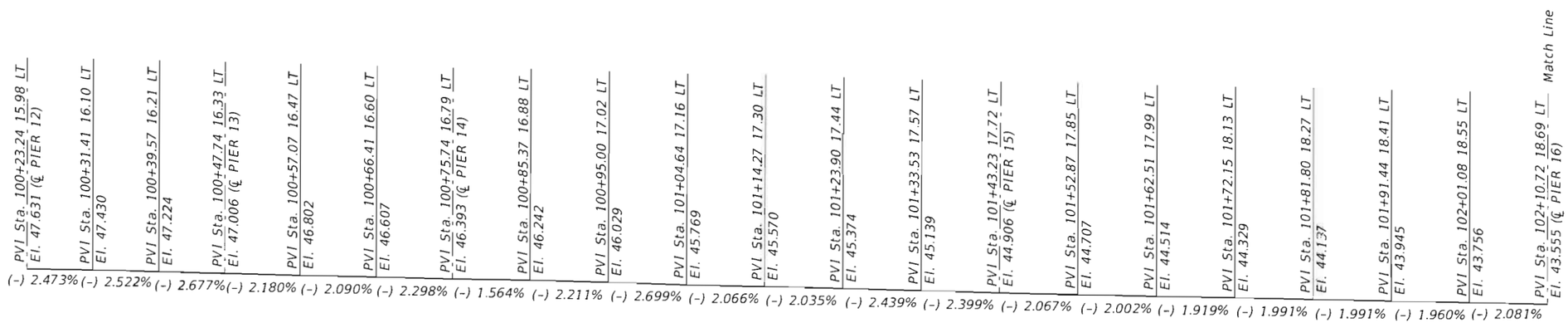
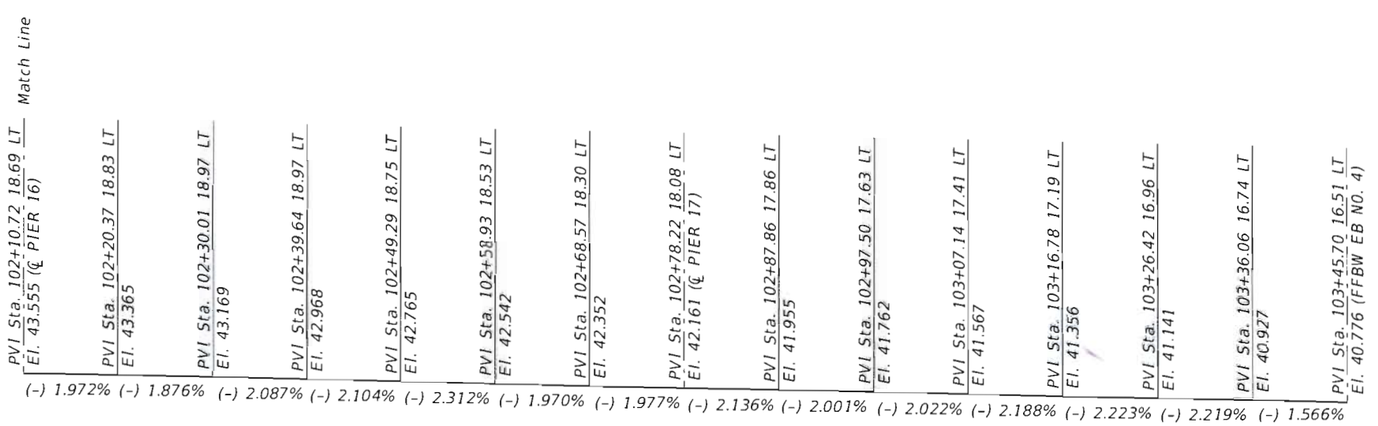


GRAPHIC PROFILE GRADE RAMP K (SURVEY) *



GRAPHIC PROFILE GRADE RAMP K (SURVEY) *

* Profiles used to compute Finish Grade Elevations, based on Surveyed information

Bridge No. 930275

RAMP K - WIDENING AND TRAFFIC RAILING RETROFIT

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: PROFILE GRADES (1 OF 2)

REF. DWG. NO.:

PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC

SHEET NO.: B2-2

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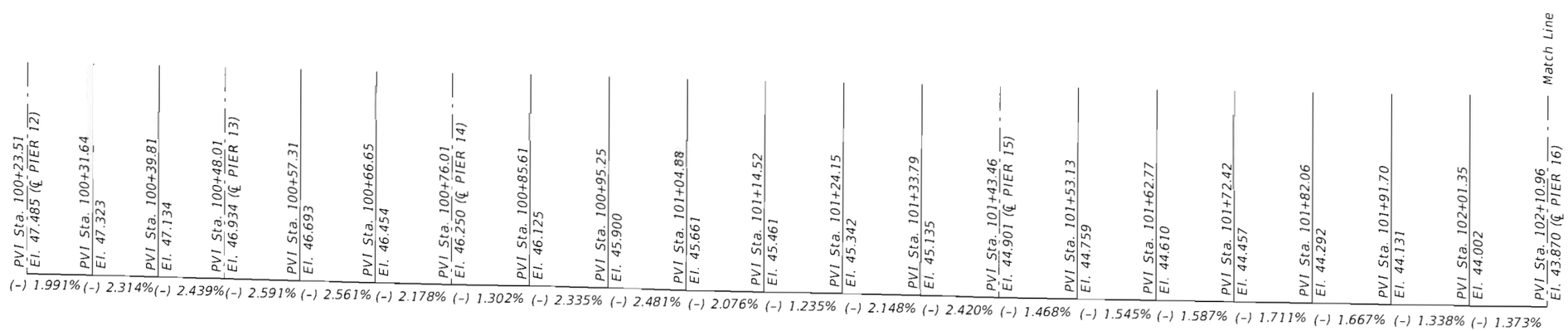
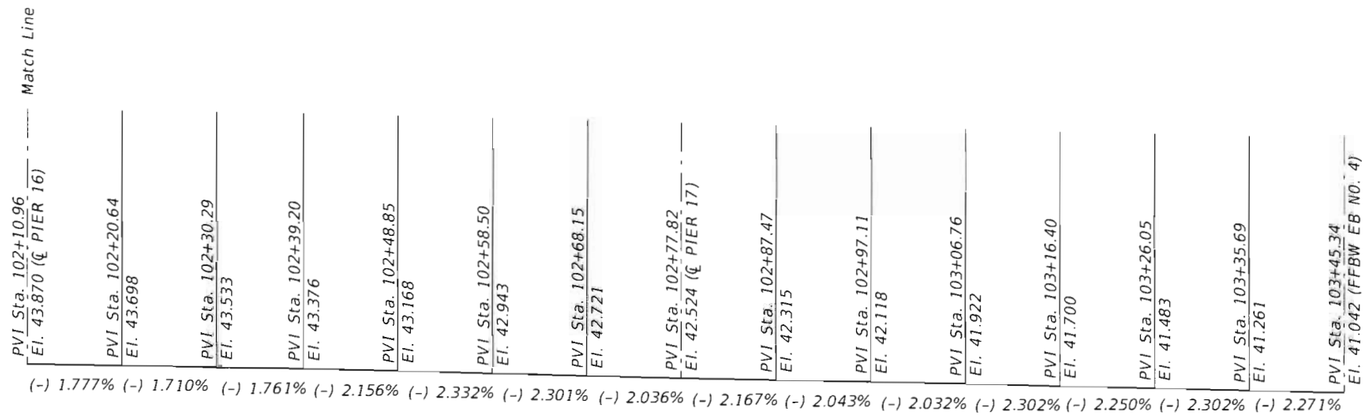


GRAPHIC PROFILE GRADE (SURVEY) *
ALONG ℄ RAMP K



GRAPHIC PROFILE GRADE (SURVEY) *
ALONG ℄ RAMP K

* Profiles used to compute Finish Grade Elevations, based on Surveyed information

Bridge No. 930275
RAMP K - WIDENING AND TRAFFIC RAILING RETROFIT

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: PROFILE GRADES (2 OF 2)
REF. DWG. NO.:
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO.: B2-3

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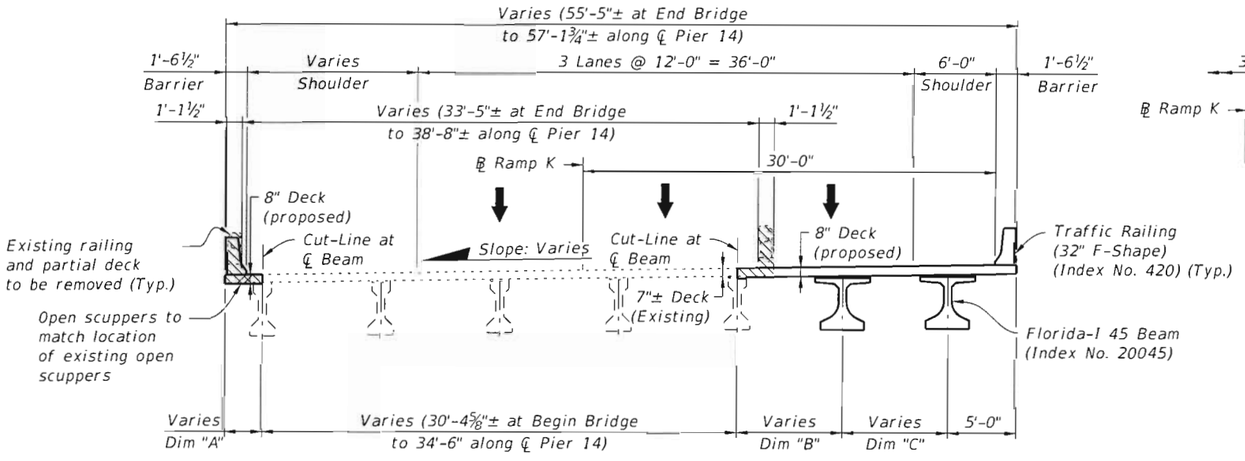
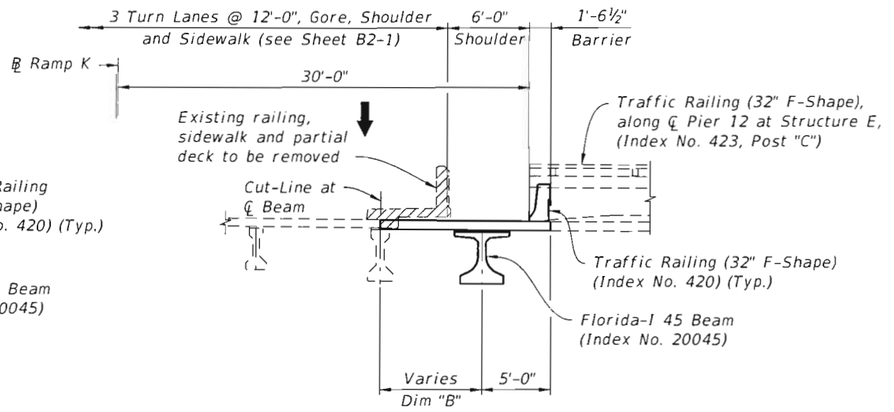
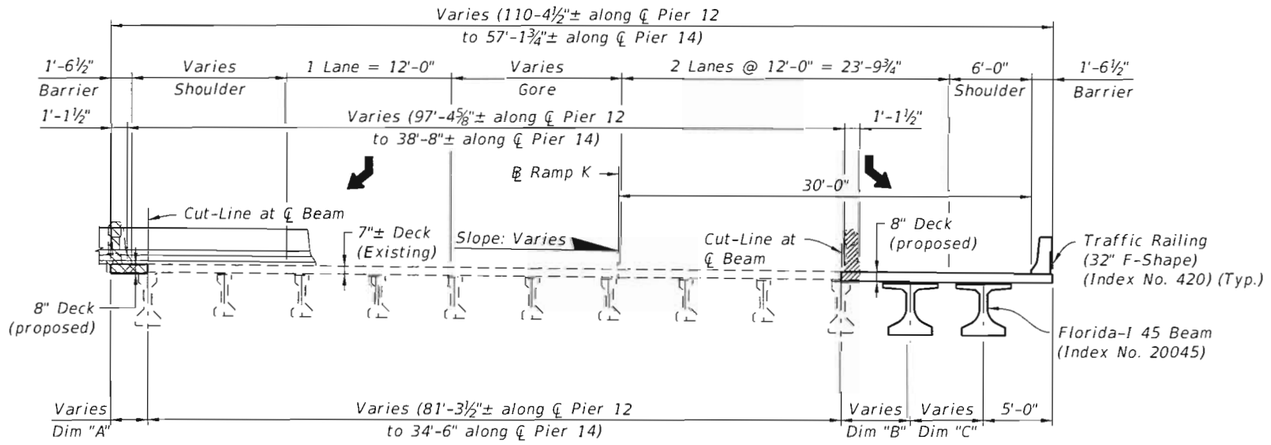


TYPICAL SECTION
(Spans 15 thru 18)



PARTIAL TYPICAL SECTION
(Span 13)



TYPICAL SECTION
(Span 14)

DIMENSIONS OF BEAM SPACINGS				
Location		Dim "A"	Dim "B"	Dim "C"
SPAN 13	℄ Pier 12	4'-4¼"	7'-4⅝16"	N/A
	℄ Pier 13	4'-4¼"	10'-6¹³⁄₁₆"	N/A
SPAN 14	℄ Pier 13	3'-11¹⁵⁄₁₆"	5'-4¹⁄₁₆"	5'-3⁹⁄₁₆"
	℄ Pier 14	2'-11¹⁵⁄₁₆"	6'-9⅜"	6'-8¼"
SPAN 15	℄ Pier 14	2'-8½"	6'-8¹¹⁄₁₆"	6'-8¼"
	℄ Pier 15	2'-8½"	7'-2¹⁵⁄₁₆"	7'-2⅜"
SPAN 16	℄ Pier 15	2'-8½"	7'-1⅞"	7'-2⅜"
	℄ Pier 16	2'-8½"	7'-7¾"	7'-7⅞"
SPAN 17	℄ Pier 16	2'-8½"	7'-8"	7'-7⅞"
	℄ Pier 17	2'-8½"	8'-1⅜"	8'-1¹¹⁄₁₆"
SPAN 18	℄ Pier 17	2'-8½"	8'-2¹⁄₁₆"	8'-1¹¹⁄₁₆"
	℄ FFBW EB4	2'-8½"	8'-7⅝"	8'-7⁹⁄₁₆"

NOTES

1. New deck widening shall match Existing Bridge Deck cross-slope.
2. Dimensions of Beam spacing are taken at intersection of ℄ Beam and ℄ Piles.

Bridge No. 930275
RAMP K - WIDENING AND TRAFFIC RAILING RETROFIT

REVISIONS

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CHECKED BY: JAR 07-12

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: TYPICAL SECTION
REF. DWG. NO.
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO. B2-5

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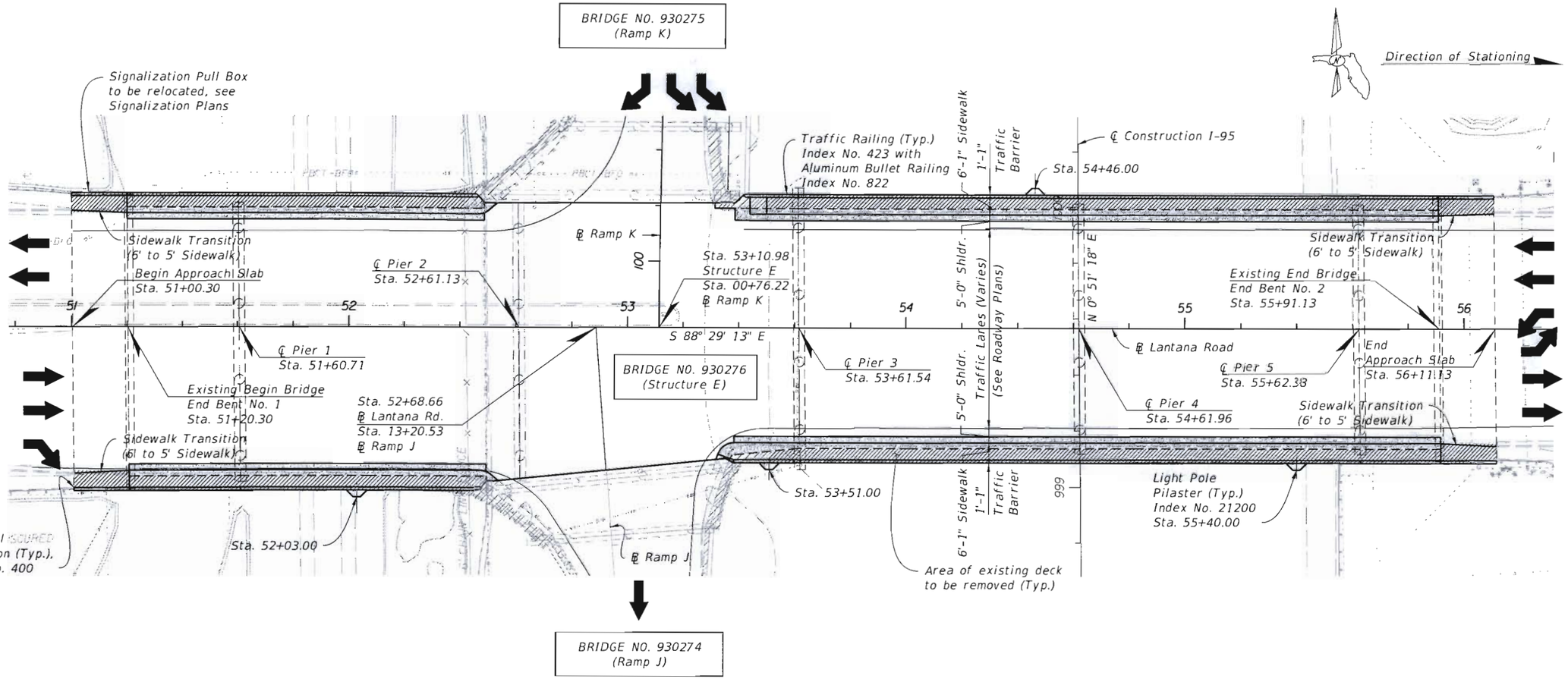

PLAN
(Structure E)

LEGEND

Area of Existing Deck and Approach Slab to be removed.

Area of Existing Raised Sidewalk and deck to be removed to a level below adjacent Existing Deck and prepared for resurfacing. See Superstructure Plan and detail sheets, B3-11 thru B3-16.

Bridge No. 930276
TRAFFIC RAILING RETROFIT

REVISIONS					
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: PLAN
REF. DWG. NO.
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO. B3-1

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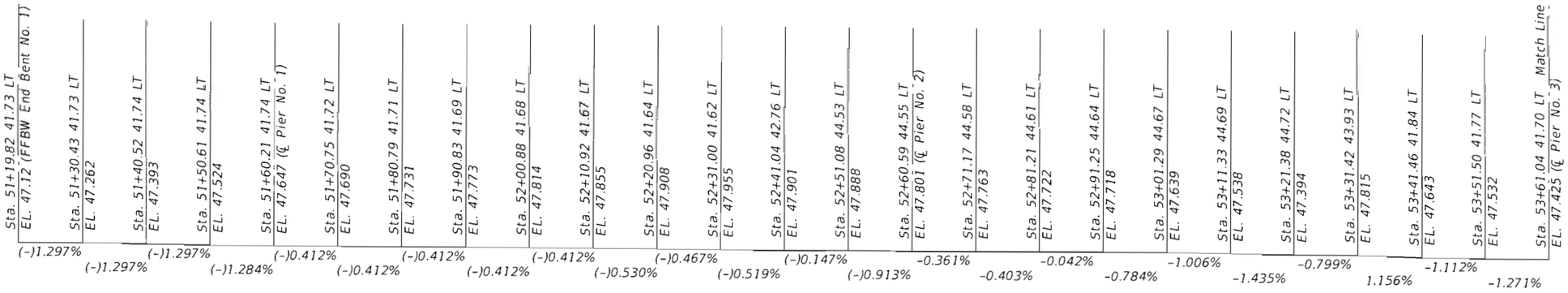
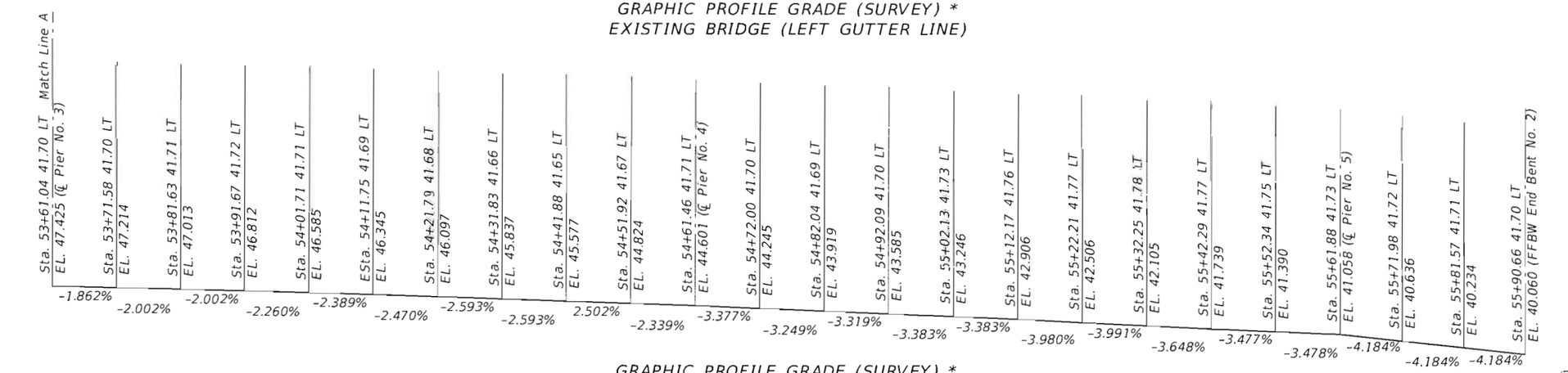


GRAPHIC PROFILE GRADE (SURVEY) *
EXISTING BRIDGE (LEFT GUTTER LINE)



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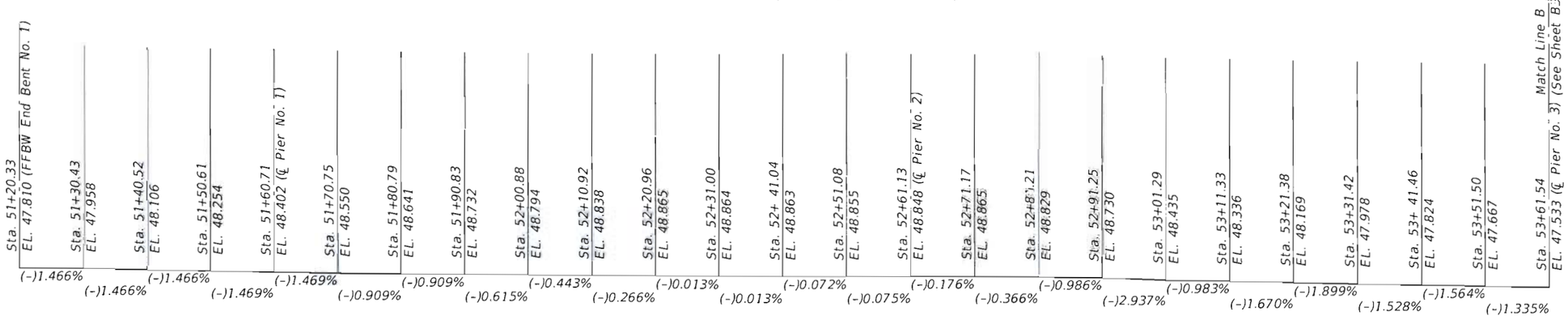
EXISTING BRIDGE (LEFT GUTTER LINE)



GRAPHIC PROFILE GRADE (SURVEY) *
ALONG ℄ LANTANA RD.

* Profiles used to compute Finish Grade Elevations, based on Surveyed information

Bridge No. 930276
TRAFFIC RAILING RETROFIT

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: PROFILE GRADES (1 OF 2)
REF. DWG. NO:
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO: B3-2

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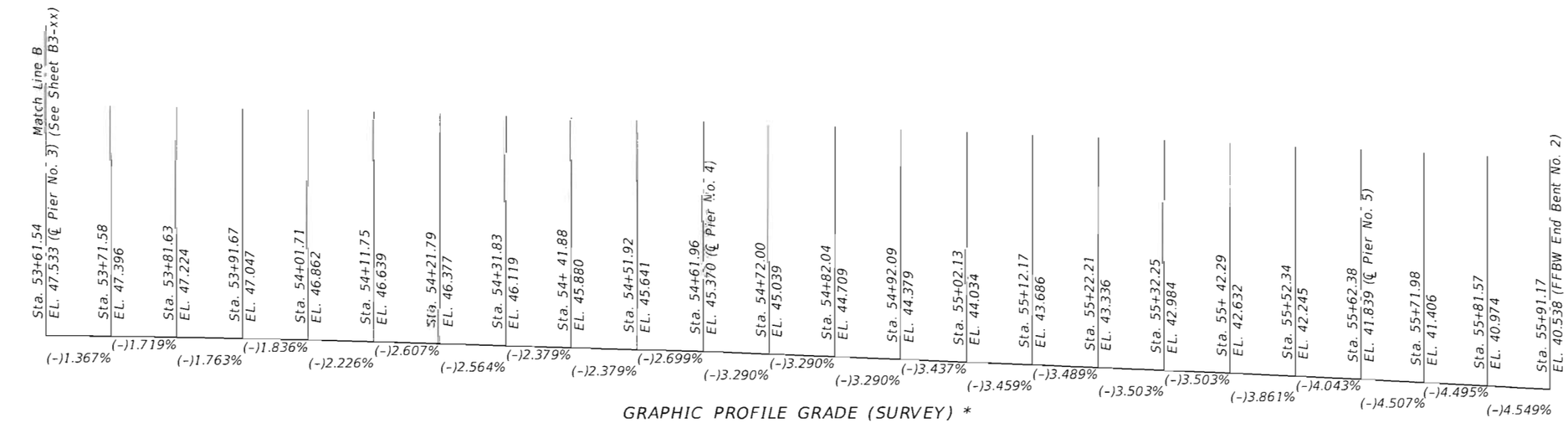
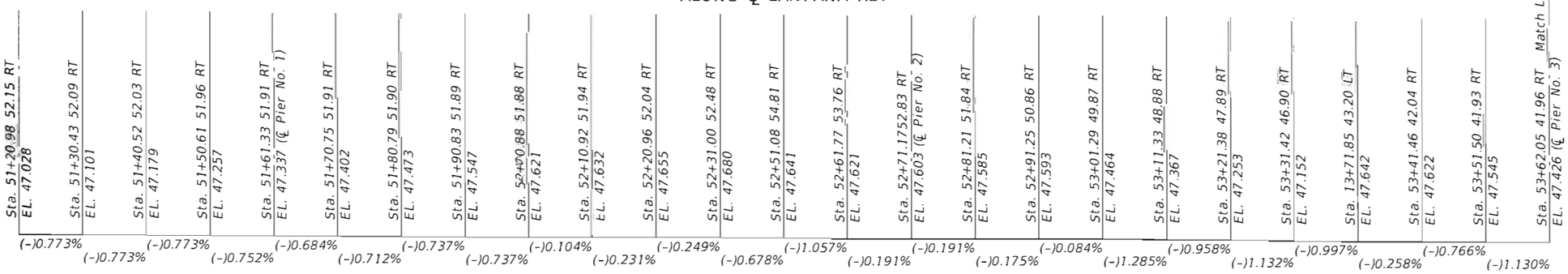
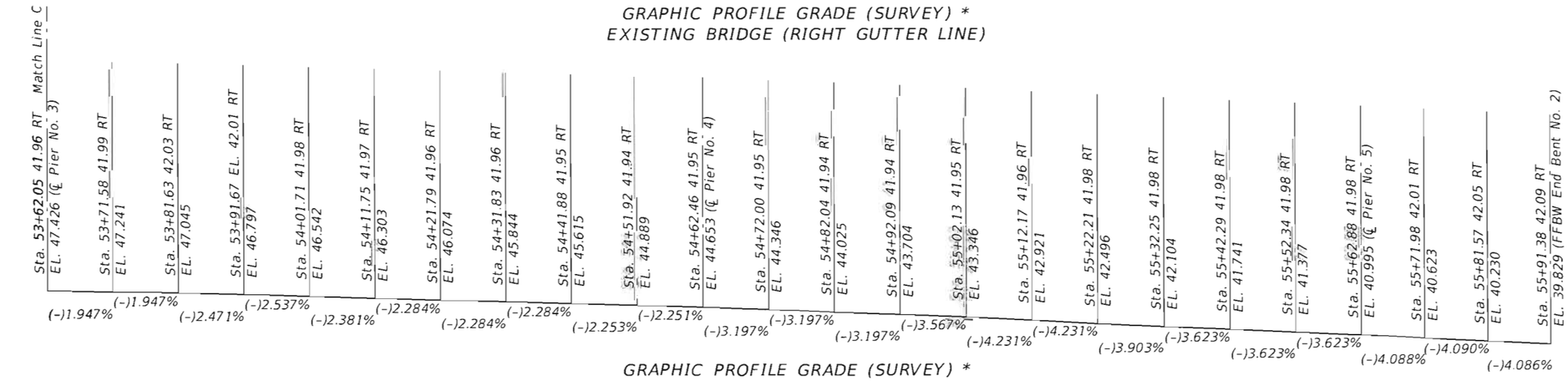


GRAPHIC PROFILE GRADE (SURVEY) *
ALONG ℄ LANTANA RD.



GRAPHIC PROFILE GRADE (SURVEY) *
EXISTING BRIDGE (RIGHT GUTTER LINE)



GRAPHIC PROFILE GRADE (SURVEY) *
EXISTING BRIDGE (RIGHT GUTTER LINE)

* Profiles used to compute Finish Grade Elevations, based on Surveyed information

Bridge No. 930276
TRAFFIC RAILING RETROFIT

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9	PALM BEACH	429198-1-52-01

SHEET TITLE: PROFILE GRADES (2 OF 2)
REF. DWG. NO.
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO. B3-3

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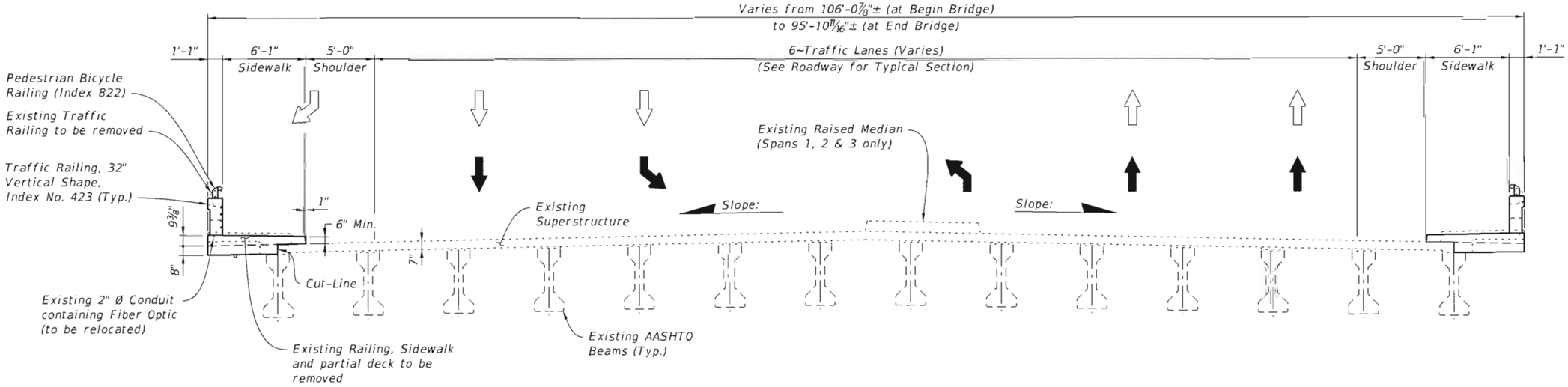

TYPICAL SECTION

LEGEND

⇧ Lane markers at Spans 1, 2 and 3

⬆ Lane markers at Spans 4, 5 and 6

NOTE: New deck overhangs shall match existing bridge deck cross-slope.

Bridge No. 930276
TRAFFIC RAILING RETROFIT

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	PALM BEACH	429198-1-52-01

SHEET TITLE: TYPICAL SECTION
REF. DWG. NO.:
PROJECT NAME: CR 812 (LANTANA RD.) OVER I-95 AND SFRC
SHEET NO.: B3-5

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