APPENDIX “F” TO SPECIAL PROVISIONS

STRUCTURES LOAD RATING CALCULATIONS

LOAD RATING CALCULATIONS

FOR

Project Number:

PW Project No. 20200315, EDP-MT-20200315

Rehabilitation Design

For

Matheson Hammock Park Road (Bridge No.874294) over Matheson Hammock Canal

MIAMI-DADE

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

1/18/2022

THIS LOAD RATING IS PROVIDED AT THIS TIME FOR INFORMATION ONLY. A FORMAL COMPLETE LOAD RATING OF THE EXISTING "AS-BUILT" REHABILITATED BRIDGE WILL BE PROVIDED AFTER CONSTRUCTION TO CONFIRM THAT THE CURRENT BRIDGE POSTING CAN BE REMOVED.

Table of Contents

Bridge No.	**874294**	**Analysis Method:** **LRFR-LRFD**	**FDOT Bridge Load Rating Summary Form (Page 1 of 1)**
Location	**Matheson Hammock Road over Matheson Hammock Canal**		
Description	**Simply-supported 30'-40'-30', Prestressed voided slab beams 36"x17"**		

Rating Type	Rating Type	Gross Axle Weight (tons)	Moment/Shear/Service		Dead Load Factor	Live Load Factor	Live Load Distrib. Factor (axles)	Rating Factor	Span No. - Girder No., Interior/Exterior, %Span Length	RF·Weight (tons)
Level	**Vehicle**	**Weight**	**Member Type**	**Limit**	**DC**	**LL**	**LLDF**	**RF**	**Governing Location**	**RATING**
Inventory	HL93	36	Prestressed	Strength, Moment	1.25/0.90	1.75	0.256	0.700	Span 2 - Slab Unit 2-8, 0.5L	25.2
Operating	HL93	36	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	0.908	Span 2 - Slab Unit 2-8, 0.5L	32.7
Permit	FL120	60	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	0.833	Span 2 - Slab Unit 2-8, 0.5L	50.0
Permit Max Span	FL120	60	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	0.833	Span 2 - Slab Unit 2-8, 0.5L	50.0
Legal	SU2	17	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	1.896	Span 2 - Slab Unit 2-8, 0.5L	32.2
	SU3	33	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	1.009	Span 2 - Slab Unit 2-8, 0.5L	33.3
	SU4	35	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	1.000	Span 2 - Slab Unit 2-8, 0.5L	35.0
	C3	28	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	1.768	Span 2 - Slab Unit 2-8, 0.5L	49.5
	C4	36.7	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	1.251	Span 2 - Slab Unit 2-8, 0.5L	45.9
	C5	40	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	1.213	Span 2 - Slab Unit 2-8, 0.5L	48.5
	ST5	40	Prestressed	Strength, Moment	1.25/0.90	1.35	0.256	1.258	Span 2 - Slab Unit 2-8, 0.5L	50.3
Emergency Vehicle (EV)	EV2	28.75	Member Type	Limit Test	NA	NA				-1
	EV3	43	Member Type	Limit Test	NA	NA				-1

Original Design Load	HS20 or HS20-S16-44	
Rating Type, *Analysis*	LRFR-LRFD	
Distribution Method	AASHTO Formula	
Impact Factor	33.0%	(axle loading)
FL120 Gov. Span Length	40.0	(feet)
Minimum Span Length	30.0	(feet)
Recommended Posting	At/Above legal loads. Posting Not Required.	
Recommended SU Posting	99	(tons)
Recommended C Posting	99	(tons)
Recommended ST5 Posting	99	(tons)
Owner	02 County Highway Agency	
Location	Neither interstate traffic nor within 1 mile reasonable access to an interstate	
EV Posting	No. EV posting is not recommended. The FAST Act does not apply	
Floor Beam Present?	No	
Segmental Bridge?	No	
Project No. & Reason	432907-1-72-02 Deterioration	
Plans Status	Built	

Performed by: Yves R. Amisial, E.I. Date: 01/04/22

Checked by: Maria A. Pena, PE Date: 01/07/22

P.E. Seal

This item has been digitally signed and sealed by

Sybille Bayard, PE

2021.09.13 11:30:02 - 4'00'

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.

CONSOR Engineers, LLC.
10651 N Kendall Drive, Suite #117
Miami, FL 33176
Certificate of Authorization: 6876
Sybille Bayard, PE No. 56038
sbayard@consoreng.com

Comments:

This 04-13-2021 summary follows the FDOT Bridge Load Rating Manual (BLRM), and the FDOT BMS Coding Guide.

*Recommended SU Posting levels for Florida SU trucks adequately restricts AASHTO SU trucks; see BLRM Chapter 7.

Introduction

Bridge 874294, constructed in 1967, carries Matheson Hammock Road over Matheson Hammock Canal in Miami-Dade County. According to the the latest NBIS inspection report dated 04/06/2020 and subsequent interim reports, the ADT for this section of roadway is around 736 vehicles per day with a truck percentage of 1%.

Bridge Configuration

The bridge superstructure consists of three simply-supported prestressed concrete 17"x36" sonovoid slab units. There is evidence at the bridge site of reflective longitudinal cracks in the asphalt wearing surface across the bridge indicating that the slab units are acting independently due to possible deterioration or broken transverse post-tensioned cables. The span configuration is 30.0 feet – 40.0 feet – 30.0 feet, with 11 prestressed slab units in each span. A variable asphalt wearing surface is present along the bridge spans.

Analysis Approach

This current load rating was performed using Load and Resistance Factor Rating (LRFR) methodology from the AASHTOWare Bridge Rating (Version 6.8.4) software. The previous load rating was performed on January 13, 2020 using LRFR methodology and Smart Bridge Suite Version 3.1 software. Since the most recent inspection (performed on 4/26/2021 by Marlin Engineering, Inc.) rated the deck and superstructure as "3 Serious", and the substructure as "4 Poor", this current load rating was performed using a Condition Factor of 0.85 for signification deteriorated prestressed slab units, and a Condition Factor of 0.90 for non-deteriorated prestressed slab units per AASHTO MBE Table 6A.4.2.3-1.

Moreover, given the damage sustained by the controlling interior slab units 2-8 and 2-9 in span no. 2 (severed strand), and as per the 2007 Revision to Publication 238 Bridge Safety Inspection Manual from the Pennsylvania Department of Transportation, under section 6.6.3.3.1I, the following conservative assumptions were considered in the analysis:

> "*Load ratings of beams with deteriorated and/or damaged prestressing strands are to be based on the following procedures:*
>
> - *Visually observed strands + 25% - Deduct 100% of all exposed strands plus an additional 25% (125% of the total area of the exposed strands) from capacity calculations.*
> - *Strands adjacent to or intersecting a crack shall be considered ineffective in the region immediately adjacent to the crack.*
> - *If significant strand loss is noted (>20%), especially for fascia beams, contact BQAD for further instructions.*
> - *For beams with no exposed strands but which appear to have internal damage (as evidenced by bottom flange cracking with rust and/or delamination), contact BQAD for further instructions.*
> - *For fascia beams with Capacity/Dead Load < 1.5 or an Operating Rating < 1.5 based on a conventional analysis, an analysis that considers biaxial stresses will be performed by BQAD.*
> - *These analysis methods may also be applicable to other pre-stressed box beam bridges*"

Therefore, a load rating analysis was performed to evaluate the existing capacity of the slab units within all three spans and provide recommendations for repair and strengthening as needed.

Evaluation of Rehabilitated Bridge (Repaired Condition)

Additional analysis was conducted to evaluate the existing slab units assuming the replacement of the transverse post-tensioning system and the repair of cracks, delamination and spalls noted in the inspection report. The slab units were analyzed as integral, assuming a live load distribution factor in accordance with the AASHTO LRFD, Section 4.6.2.2.

The following assumptions were made:

1. Assume a condition factor of 0.9 for all slab units.

For Slab Units 2-8 and 2-9 assume 100% section loss of a total of 7 strands in addition to the condition factor of 0.9.

References

This current load rating was performed in accordance with the following manuals, specifications, and software:

- FDOT Structures Manual, January 2021 (SM) (Volume 1 - Structures Design Guidelines - (SDG))
- AASHTO LRFD Bridge Design Specifications, 9th Edition (AASHTO)
- FDOT Bridge Load Rating Manual, January 2021 (BLRM)
- The Manual for Bridge Evaluation, 3rd Edition 2018 (MBE) with 2019 Interims
- PCI Design Handbook, 8th Edition (PCI)
- AASHTOWare Bridge Rating, Version 6.8.4.
- Commonwealth of Pennsylvania Department of Transportation, Revision to Publication 238 Bridge Safety Inspection Manual, 2007.

It should be noted that the 2021 BLRM uses the 9th Edition of the AASHTO LRFD design specifications, and that AASHTOWare Bridge Rating Version 6.8.4 uses the 8th Edition of the AASHTO LRFD design specifications. However, since this bridge uses normal weight concrete and does not have prestressed slab units subjected to significant torsion, the applicable portions of the design codes have not changed between the two editions. Therefore, the software still meets the BLRM requirements for evaluating flexure and shear.

Conclusions

Rehabilitated Bridge (Repaired Condition)

The complete evaluation of all non-deteriorated slab units and repaired deteriorated slab units is shown in Appendix B. The interior and exterior slab units were both evaluated for vehicular live loads. By observations, the SU4 legal truck is the controlling live load; the resulting LRFR rating factors are summarized in the table below.

SUMMARY OF LRFR LOAD RATING RESULTS – SONOVOID SLAB UNITS (w/ Concrete Repairs and Post Tensioning Restored)								
Vehicle	**Condition Factor**	**Member Condition**	**Live Load Type**	**Limit State**	**Controlling Member**	**Controlling Location** (% Span)	**Controlling Limit State**	**Rating Factor**
SU 4	0.90	Non-Deteriorated	Axle Load	Legal	Interior Unit (Span 1)	50.0	STRENGTH-I Concrete Flexure	1.387
		Non-Deteriorated			Interior Unit (Span 2)	50.0	STRENGTH-I Concrete Flexure	1.461
		Deteriorated (repaired)			Interior Unit (Unit 1-6 or 1-8)	50.0	STRENGTH-I Concrete Flexure	1.387
		Deteriorated (repaired)			Interior Unit (Unit 2-8 or 2-9)	50.0	STRENGTH-I Concrete Flexure	0.931

Figure 1-4.2 Summary of LRFR Load Rating Results for Rehabilitated Sonovoid Slab Units with Concrete Repairs completed, and Post Tensioning restored.

As indicated above, the deteriorated slab units in Span 2 (2-8 & 2-9) did not achieve a minimum rating factor of 1.0 even when analyzed as integral. Consequently, the remaining capacity that is required to satisfy a minimum LRFR legal rating of 1.0 was computed as a final step in the evaluation process to determine the level of strengthening required to restore the bridge to a non-posted stated, as shown in the table below.

LOAD RATING SUMMARY - (Assuming Post Tensioning)					
Span 2 - INTERIOR Unit 2-8 (LRFR) - SU4					
Location	Condition Factor	Existing Flexural Capacity (kip-ft) **	Existing Shear Capacity (kip) **	Required Flexural Capacity (kip-ft) *	Required Shear Capacity (kip) *
0.00	0.90	135.08	-	-	-
1.12		-	94.16	-	-
1.48		293.46	89.01	-	-
3.85		344.64	70.05	-	-
7.7		344.64	70.05	-	-
11.55		344.64	49.78	-	-
15.4		344.64	38.99	359.34	-
19.25		344.64	-38.35	368.62	-
23.1		344.64	-38.99	359.34	-
26.95		344.64	-53.70	-	-
30.8		344.64	-70.05	-	-
34.65		344.64	-70.05	-	-
37.02		293.46	-89.01	-	-
37.39		-	-94.28	-	-
38.5		108.44	-	-	-

* Minimum Required capacity to meet a minimum Inventory Rating Factor of 1.1, conservatively.

** Existing condition assumes the removal of 7 strands, and 1 exterior stirrup leg to account for the controlling deterioration along the bottom face of the slab units.

Figure 1-4.3 Required Capacity of Rehabilitated Slab Units to satisfy LRFR Legal Rating.

APPENDIX A – AASHTOWARE BrR BRIDGE RATING INPUT

A.1 – SUMMARY OF LOAD RATING PARAMETERS

CONSOR	Project No:	D210107FL.00	Calculated by:	YRA	Date:	9/21/2021
	Bridge No.:	874294	Checked by:	HGD	Date:	9/24/2021
	Feature Carried:	Matheson Hammock Park			Page:	1 of 1

SUMMARY OF DEFICIENCIES

SONOVOID SLABS (UNDERSIDE) - SPAN 1

BEAM NO.	LOCATION	DEFICIENCY
1-1	EB1	Outward location with 1/4" height difference to top of cap
1-6	9-ft from EB1	15" x 6" x 1/2" - spall w/ exposed rebar / minor section loss
	EB1 / East	5'L x 6"W delamination with associated 1/16" cracks
	Pier 2 / East	9'L x 12"W delamination with associated 1/16" cracks
1-7	EB1 / East	24"L x 12"W spall/delamination with associated 1/32" cracks
	Pier 2 / East	7'L x 4"W delamination with associated 1/16" cracks
1-8	EB1 / West	15'L x 15"W delamination with associated 1/4" cracks
	9'' from EB1 / West	4' x 6" x 2" - spall
	Pier 2 / East	4'L x 15"W delamination with associated 1/32" cracks
	Pier 2	8'L x 3'W delamination with associated 1/16" cracks
1-9	EB1	36"L x 24"W x 2.5" spall/delamination with exposed stirrup (no loss)
	Pier 2 / West	9'L x 10"W delamination with associated 1/16" cracks

SONOVOID SLABS (UNDERSIDE) - SPAN 2

BEAM NO.	LOCATION	DEFICIENCY
2-6	Pier 2 / East	30"L x 4"W delamination
2-7	Pier 2 / West	24"L x 4"W delamination
	full length	16"W delamination with associated 1/4" cracks
2-8	Pier 2	36"L x full width with associated cracks
	Pier 2 / West	15' x 18"W (average) delamination with associated 1/4" cracks
	Midspan	15'x34"x4" with 7 exposed and corroded transverse rebars w/ 60% section remaining and 5 exposed and corroded strands (3 broken strands) - 0% section remaining
	Pier 3 / West	15' x 18"W (average) delamination with associated 1/4" cracks
2-9	Pier 2 / West	5'L x 5" delamination with associated 1/4" cracks
	Midspan	15'x12"x2" spall/delamination with 2 strands and 7 transverse rebars having up to 90% section remaining

SONOVOID SLABS (UNDERSIDE) - SPAN 3

BEAM NO.	LOCATION	DEFICIENCY
3-6	Pier 3 / East	24"L x 6"W delamination with associated 1/16" crack
	~10' from EB 4 / East	42"L x 8" W with associated 1/16" cracks
3-7	Pier 3	8'L x 15"W delamination with associated cracks
	Midspan	3'L x 30" W
	EB 4	12'L x 36"W unsound repair / hollow sounding
3-8	Pier 3	8'L x 3'W x 1" with associated cracks
	EB4	42"' x 30"W unsound repair/ delamination with associated 1/16" cracks
	5.5' from EB 4	74"' x 36"W unsound repair/ delamination with associated 1/16" cracks

SUBSTRUCTURE

COMPONENT	LOCATION	DEFICIENCY
PIER CAPS	PIER 2 / South Face	48"L X 17" H X 3/4" Spall / Delamination over column 2-2
	PIER 2 / North Face	20"L x 12" H delamination over column 2-2
	PIER 3 / bottom / North F	2~ 30"L x 24"W unsound repairs with 1/64" associated cracks between columns 3-1 and 3-2.
	PIER 3 / top & Bottom / N	3'L x 16" delamination between columns 3-1 and 3-2
COLUMNS	Column 2-2	55"H x 32"W x 4"D spall delamination with exposed longitudinal rebars and 5 stirrups (up to 80% remaining)
	Column 2-2	Delamination (entire column height / circumference) with associated 1/4" cracks
	Columns 2-1, 3-1, 3-2	Delamination (entire length) with associated 1/16" cracks (full height)

CONSOR	Project No:	D210107FL.00	Calculated by:	YRA	Date:	9/21/2021
	Bridge No.:	874294	Checked by:	MAP	Date:	12/29/2021
	Feature Carried:	Matheson Hammock Road			Page:	1 of 4

SPAN 1 OR 3 - SUPPLEMENTAL CALCULATIONS - LOADING PARAMETERS

Bridge Type: Prestressed Voided Slab Unit - 17"x36"
Standard Drawing:

Total Superimposed Dead Load:	**1.396 k/ft**
Bridge Railing/ Guardrail Dead Load:	0.148 k/ft
Curb/Sidewalk Dead Load:	1.248 k/ft
Attached Utility Dead Load:	0.000 k/ft
Asphalt W.S. Dead Load (DW):	0.379 k/ft

Number of Spans = 3
Structure Length = 100 ft.
Brg.-to-Brg. Span Length = 28.2917 ft. (Assumed at Centerline of 1/4"x6" wide asbestos graphite pads)
Analyzed Span Length = 30.00 ft.
Clear Roadway Width = 26.00 ft.
Wearing Surface: Yes — A 1.0-inch wearing surface is present at the supports, and 1.5-in present at midspan.
The wearing surface dead loads are calculated by BrR and included in the analysis.

Location	Thickness	Average Thickness		
Begin span	1.00 in	1.167 in	0.040833	4.085469
Mid Span	1.50 in			
End Span	1.00 in			

Bridge Railing/Guardrail: Yes — Bridge Railing is present.
Per SCDOT Load Rating guidance, guardrail dead loads are applied only to fascia beams.
Curb/Sidewalk: Yes — A curbs or sidewalks are present. See below for curb/sidewalk dimensions and dead load calculations.
Parapet: No — No parapets are present.
Attached Utilities: Yes — See below for dead load calculations.

Rail 1 Type: Other — Metal Posts and Pipes - Assume 10 lb/ft per SDG Table 2.2-1, Bullet Railing — **0.010 k/ft**
10 lb/ft

Rail 2 Type: Rect. Conc. Beam — Rectangular Concrete Beam Guardrail — **0.125 k/ft**
125 lb/ft

Rail Post: **0.013 k/ft**

Concrete	Quantity	Length/Height	Shape	Area (Standard shapes per AISC 7-14)
150 pcf	3 / span	0.83 ft	Rect. 10x10	100.00 in^2
150 pcf	2 / span	0.83 ft	Rect. 8x10	80.00 in^2

Rail Blockout: none

Curb/Sidewalk: (South End) — **0.325 k/ft**

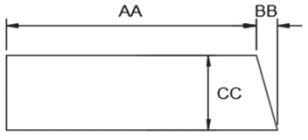
AA	29.0 in
BB	1.0 in
CC	10.563 in

- Superstructure is modeled withouth the sidewalk overhang, that is removing the additional 6" of overhang.
- To account for the actual weight of curb/sidewalk, compute an equivalent Thickness of sidewalk corresponding to a rectangulan sidewalk with an equivalent with of:

Equiv. Width of Sidewalk = 24 in (Equivalent width of rectangular sidewalk inputed in AASHTOWare software)

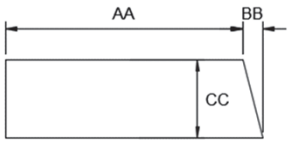
Equiv. CC = **12.9831** in (Equivalent thickness of rectangular sidewalk inputed in AASHTOWare software)

Typical Curb/Sidewalk Section



Curb/Sidewalk: (North End) — **0.923 k/ft**

AA	77.0 in
BB	1.0 in
CC	11.4 in



- Superstructure is modeled withouth the sidewalk overhang, that is removing the additional 6" of overhang.
- The 1-ft utility opening will be neglected, leaving 1-ft of additional solid sidewalk material assumed to account for the weight of utilities and attachements at the opening. The resulting width of sidewalk to be inputed in the sofware shall be:

Equiv. Width of Sidewalk = 60 in (Equivalent width of rectangular sidewalk inputed in AASHTOWare software)

- No information is available on the utilities and attachements along the North side of the bridge.
- The Concrete sidewalk will be assumed to be solid at the location of the utility opening to account for the weight of the utilities and attachments, conservatively.
- Assume weight of sidewalk taken by the exterior slab units.

Diaphragm:

Width of Slab Unit = 36 in
Depth of Slab Unit = 17 in
No. of Voids = 2.0000
Diameter of Voids = 10.0000 in

	Begin Span				
	Start Dist. From Left End* (FT)	Diaphragm Spacing (FT)	No. of Spaces	Width/ Thickness (IN)	Diaphragm Weight (KIP)
Span 1, Begin	0.00	1.00	1	24.0	**0.3272**
Span 1, 1/4 Point	1.00	6.25	1	12.0	**0.1636**
Span 1, 3/4 Point	7.25	15.00	1	12.0	**0.1636**
Span 1, End	22.25	6.25	1	24.0	**0.3272**
Span 3, Begin	0.00	1.00	1	24.0	**0.3272**
Span 3, 1/4 Point	1.00	6.25	1	12.0	**0.1636**
Span 3, 3/4 Point	7.25	15.00	1	12.0	**0.1636**
Span 3, End	22.25	6.25	1	24.0	**0.3272**

LLDF (Post-Tensioned - LFD): (Assuming Members are sufficiently connected to act as a unit, meaning accounting for effective post tensioning)

For Interior/Exterior Slab Units: (Moment & Shear) ***[AASHTO LFD 3.23.4.3]***

S = 3.0 ft. (Width of precast member)
W = 34.0 ft. (Assumed total width of Bridge Superstructure - ignore opening at the N end sidewalk)
L = 28.291667 ft. (Brg.-to-Brg. Span Length - Span 2)
NL = 2.0 (Number of traffic lanes)
Nb = 11.0 (Number of concrete slab units)
μ = 0.2 (Assumed Poisson's Ratio for concrete slab units)

I = 13330.10 in^4 (Moment of Inertia of Slab Unit - from BrM software)
J = 14593.77 in^4 (Saint-Venant Torsion constant - from BrM software)

CONSOR	Project No:	D210107FL.00	Calculated by:	YRA	Date:	9/21/2021
	Bridge No.:	874294	Checked by:	MAP	Date:	12/29/2021
	Feature Carried:	Matheson Hammock Road			Page:	3 of 4

K = $[(1+\mu)\cdot I/J]^{1/2}$ = 1.04694

C = $if\left[\frac{W}{L}<1, K\left(\frac{W}{L}\right), K\right]$ = 1.04694

D = $(5.75-0.5N_L)+0.7N_L(1-0.2C)^2$ = 5.6251

LLDF (INT-M) = S/D = **0.5333** (Live Load Distribution Fraction for Moment)

LLDF (Post-Tensioned - LRFR): (Assuming Members are sufficiently connected to act as a unit, meaning accounting for effective post tensioning)

LLDF(INT - OneLane) = 0.296

(LLDF for One lane loaded for Moment and Shear computed for Interior Slab unit in AASHTOWare BrR in accordance with AASHTO LRFD Tables 4.6.2.2.2b-1 and 4.6.2.2.2d-1)

LLDF(INT - MultiLane) = 0.273

(LLDF for Multi lanes loaded for Moment and Shear computed for Interior Slab unit in AASHTOWare BrR in accordance with AASHTO LRFD Tables 4.6.2.2.2b-1 and 4.6.2.2.2d-1)

For Exterior Slab Units: (Moment) ***[AASHTO LRFD Table 4.6.2.2.2d-1]***

$d_{e,G11}$ = -1.0 ft.

(Horizontal distance from centerline of exterior web of exterior beam/slab unit along the south end at deck level to interior edge of curb or traffic barrier) - (Ext.web = 5"; outboard of curb) - limited to -1.0 since de computed is = 1.8' per AASHTO LRFD 4.6.2.2.2d.

$d_{e,G1}$ = -1.0 ft.

(Horizontal distance from centerline of exterior web of exterior slab unit along the south end at deck level to interior edge of curb or traffic barrier) - (Ext. web = 5"; outboard of curb) - limited to -1.0 since d_e computed is = 4.8' per AASHTO LRFD 4.6.2.2.2d.

- One Design Lane Loaded:

$e_{OneLane\_G1}$ = $1.125+\frac{d_{e,G1}}{30}\geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G1)

$e_{OneLane\_G11}$ = $1.125+\frac{d_{e,G11}}{30}\geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G11)

LLDF (EXT.G1-$M_{OneLane}$) = $e\cdot LLDF(INT-M)$ = **0.2960** (Live Load Distribution Fraction for Moment for One lane Loaded - Unit G1)

LLDF (EXT.G11-$M_{OneLane}$) = $e\cdot LLDF(INT-M)$ = **0.2960** (Live Load Distribution Fraction for Moment for One lane Loaded - Unit G11)

- Two or More Design Lanes Loaded:

$e_{OneLane\_G1}$ = $1.04+\frac{d_{e,G1}}{25}\geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G1)

$e_{OneLane\_G11}$ = $1.04+\frac{d_{e,G11}}{25}\geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G11)

LLDF (EXT.-$M_{MultiLane}$) = $e\cdot LLDF(INT-M)$ = **0.2730** (Live Load Distribution Fraction for Moment for Multi-Lanes Loaded - Unit G1)

LLDF (EXT.-$M_{MultiLane}$) = $e\cdot LLDF(INT-M)$ = **0.2730** (Live Load Distribution Fraction for Moment for Multi-Lanes Loaded - Unit G11)

CONSOR	Project No:	D210107FL.00	Calculated by:	YRA	Date:	9/21/2021
	Bridge No.:	874294	Checked by:	MAP	Date:	12/29/2021
	Feature Carried:	Matheson Hammock Road			Page:	4 of 4

For Exterior Slab Units: (Shear) ***[AASHTO LRFD Table 4.6.2.2.3b-1]***

$d_{e,G1}$ = -1.0 ft. (Horizontal distance from centerline of exterior web of exterior slab unit along the south end at deck level to interior edge of curb or traffic barrier) - (Ext. web = 5"; outboard of curb) - limited to -1.0 since d_e computed is = 4.8' per AASHTO LRFD 4.6.2.2.2d.

$d_{e,G11}$ = -1.0 ft. (Horizontal distance from centerline of exterior web of exterior beam/slab unit along the south end at deck level to interior edge of curb or traffic barrier) - (Ext.web = 5"; outboard of curb)

b = 36.0 in. (Width of precast member)

- One Design Lane Loaded:

$e_{OneLane\_G1} = 1.25 + \frac{d_{e,G1}}{20} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G1)

$e_{OneLane\_G11} = 1.25 + \frac{d_{e,G11}}{20} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G11)

LLDF (EXT.G1-$M_{OneLane}$) = $e_{OneLane\_G1} \cdot LLDF(INT,V)$ = **0.2960** (Live Load Distribution Fraction for Shear for One lane Loaded - Unit G1)

LLDF (EXT.G11-$M_{OneLane}$) = $e_{OneLane\_G11} \cdot LLDF(INT,V)$ = **0.2960** (Live Load Distribution Fraction for Shear for One lane Loaded - Unit G11)

- Two or More Design Lanes Loaded:

$e_{MultiLane\_G1} = 1.0 + \left(\frac{d_{e,G1} + \frac{b}{12} - 2.0}{40}\right)^{0.5} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G1)

$e_{MultiLane\_G11} = 1.0 + \left(\frac{d_{e,G11} + \frac{b}{12} - 2.0}{40}\right)^{0.5} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G11)

LLDF (EXT.-$M_{MultiLane}$) = $e_{MultiLane\_G1} \cdot LLDF(INT,V)$ = **0.2730** (Live Load Distribution Fraction for Shear for Multi-Lanes Loaded - Unit G1)

LLDF (EXT.-$M_{MultiLane}$) = $e_{MultiLane\_G11} \cdot LLDF(INT,V)$ = **0.2730** (Live Load Distribution Fraction for Shear for Multi-Lanes Loaded - Unit G11)

LLDF (Exist.Condition - LFD): (Assuming Slab Members acting independently - no effective post tensioning)

S = 3.0 ft. (Width of precast member)
W = 34.0 ft. (Assumed total width of Bridge Superstructure - ignore opening at the N end sidewalk)
L = 28.291667 ft. (Brg.-to-Brg. Span Length - Span 2)
NL = 2.0 (Number of traffic lanes)
Nb = 11.0 (Number of concrete slab units)

D = 3.0000 (Assumed equal to Precast member width since slab unit will behave indepedently. Therefore, individual unit can be assumed to take on the full wheel load)

LLDF (INT - LFD) = S/D = **1.0000** (Live Load Distribution Fraction for Moment and Shear)

LLDF (Exist.Condition - LRFR): (Assuming Slab units acting independently - no effective post tensioning)

LLDF (INT - OneLane - LRFR) = 0.5 x Axle = **0.5000** (Live Load Distribution Fraction for Moment and Shear - Half of Axle Load)

LLDF (INT - OneLane - LRFR) = 0.5 x 1.2 x Axle = **0.6000** (Live Load Distribution Fraction for Moment and Shear - Half of Axle Load)

Analysis Case: A) For the purpose of the Load Rating, the following Cases were assumed for AASHTOWare BrR runs:
- *Case 1:* Run model to account for the condition where the slab units have been rehabilitated with Post Tensioning.
- *Case 2:* Run model to account for the existing condition without repairs.

B) Per current inspection report, the following are assumed in the analysis to account for the deterioration of the slab unit 1-8:
- West edge of slab unit intermittently delaminated with efflorescence and corrosion bleed-out and associated spalling.
- Assume a condition factor of 0.85 to account for the analysis of the worst case deteriorated slab unit from spans 1 & 3.

SPAN 2 - SUPPLEMENTAL CALCULATIONS - LOADING PARAMETERS

Bridge Type: Prestressed Voided Slab Unit - 17"x36"
Standard Drawing:

Total Superimposed Dead Load:	**1.395 k/ft**
Bridge Railing/ Guardrail Dead Load:	0.147 k/ft
Curb/Sidewalk Dead Load:	1.248 k/ft
Attached Utility Dead Load:	0.000 k/ft
Asphalt W.S. Dead Load (DW):	0.420 k/ft
Asphalt W.S. Dead Load per Slab Unit (DW):	0.038 k/ft

Number of Spans:	3	
Number of Sonovoids:	11	
Structure Length:	100	ft.
Brg.-to-Brg. Span Length:	38.5	ft. (Assumed at Centerline of 1/4"x6" wide asbestos graphite pads)
Analyzed Span Length:	40.00	ft.
Clear Roadway Width:	26.00	ft.
Slab Unit Width:	36.00	in.
Wearing Surface:	Yes	A 1.0-inch wearing surface is present at the supports, and 1.875-in present at midspan. The wearing surface dead loads are calculated by BrR and included in the analysis.

Location	Thickness	Average Thickness
Begin span	1.00 in	1.292 in
Mid Span	1.88 in	
End Span	1.00 in	

Bridge Railing/Guardrail:	Yes	Bridge Railing is present. Per SCDOT Load Rating guidance, guardrail dead loads are applied only to fascia beams.
Curb/Sidewalk:	Yes	A curbs or sidewalks are present. See below for curb/sidewalk dimensions and dead load calculations.
Parapet:	No	No parapets are present.
Attached Utilities:	Yes	See below for dead load calculations.

Rail 1 Type: Other — 10 lb/ft — Metal Posts and Pipes - Assume 10 lb/ft per SDG Table 2.2-1, Bullet Railing — **0.010 k/ft**

Rail 2 Type: Rect. Conc. Beam — 125 lb/ft — Rectangular Concrete Beam Guardrail — **0.125 k/ft**

Rail Post: — **0.012 k/ft**

Concrete	Quantity	Length/Height	Shape	Area (Standard shapes per AISC 7-14)
150 pcf	4 / span	0.83 ft	Rect. 10x10	100.00 in^2
150 pcf	2 / span	0.83 ft	Rect. 8x10	80.00 in^2

Rail Blockout: none

Curb/Sidewalk: (South End) — **0.325 k/ft**

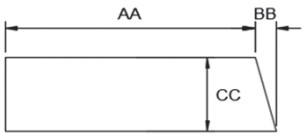
AA	29.0 in	
BB	1.0 in	
CC	10.6 in	

- Superstructure is modeled withouth the sidewalk overhang, that is removing the additional 6" of overhang.
- To account for the actual weight of curb/sidewalk, compute an equivalent Thickness of sidewalk corresponding to a rectangulan

Equiv. Width of Sidewalk = 24 in (Equivalent width of rectangular sidewalk inputed in AASHTOWare software)

Equiv. CC = **12.9831** in (Equivalent thickness of rectangular sidewalk inputed in AASHTOWare software)

Typical Curb/Sidewalk Section

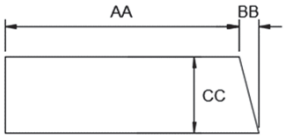


Curb/Sidewalk: (North End)		
	AA	77.0 in
	BB	1.0 in
	CC	11.4 in

0.923 k/ft

- Superstructure is modeled withouth the sidewalk overhang, that is removing the additional 6" of overhang.
- The 1-ft utility opening will be neglected, leaving 1-ft of additional solid sidewalk material assumed to account for the weight of utilities and

Equiv. Width of Sidewalk = 60 in (Equivalent width of rectangular sidewalk inputed in AASHTOWare software)



- No information is available on the utilities and attachements along the North side of the bridge.
- The Concrete sidewalk will be assumed to be solid at the location of the utility opening to account for the weight of the utilities and attachments, conservatively.
- Assume weight of sidewalk taken by the exterior slab units.

Diaphragm:

Width of Slab Unit =	36	in
Depth of Slab Unit =	17	in
No. of Voids =	2.0000	
Diameter of Voids =	10.0000	in

	Begin Span				
	Start Dist. From Left End* (FT)	Diaphragm Spacing (FT)	No. of Spaces	Width/ Thickness (FT)	Diaphragm Weight (KIP)
Span 2, Begin	0.00	1.00	1	2.0	**0.3272**
Span 2, 1/4 Point	1.00	8.96	1	1.0	**0.1636**
Span 2, 3/4 Point	9.96	20.00	1	1.0	**0.1636**
Span 2, End	29.9583	8.96	1	2.0	**0.3272**

LLDF (Post-Tensioned - LFD): (Assuming Members are sufficiently connected to act as a unit, meaning accounting for effective post tensioning)

For Interior Slab Units: ***[AASHTO LRFD Table 4.6.2.2.2b-1]***

S =	3.0	ft.	(Width of precast member)
W =	34.0	ft.	(Assumed total width of Bridge Superstructure - ignore opening at the N end sidewalk)
L =	38.5	ft.	(Brg.-to-Brg. Span Length - Span 2)
NL =	2.0		(Number of traffic lanes)
Nb =	11.0		(Number of concrete slab units)
μ =	0.2		(Assumed Poisson's Ratio for concrete slab units)
I =	13330.10	in^4	(Moment of Inertia of Slab Unit - from BrM software)
J =	14593.77	in^4	(Saint-Venant Torsion constant - from BrM software)

K = $[(1+\mu)\cdot I/J]^{1/2}$ = 1.04694

C = $if\left[\frac{W}{L} < 1, K\left(\frac{W}{L}\right), K\right]$ = 0.92457

D = $(5.75 - 0.5N_L) + 0.7N_L(1 - 0.2C)^2$ = 5.6801

LLDF (INT - LFD) = S/D = **0.5282** (Live Load Distribution Fraction for Moment and Shear)

For Exterior Slab Units: ***[AASHTO LRFD Table 4.6.2.2.2d-1]***

d_e = 3.0 ft. (Width of precast member)

LLDF (Post-Tensioned - LRFR): (Assuming Members are sufficiently connected to act as a unit, meaning accounting for effective post tensioning)

LLDF(INT - OneLane) = 0.254 (LLDF for One lane loaded for Moment and Shear computed for Interior Slab unit in AASHTOWare BrR in

LLDF(INT - MultiLane) = 0.256 (LLDF for Multi lanes loaded for Moment and Shear computed for Interior Slab unit in AASHTOWare BrR in

For Exterior Slab Units: (Moment) ***[AASHTO LRFD Table 4.6.2.2.2d-1]***

$d_{e,G11}$ = -1.0 ft. (Horizontal distance from centerline of exterior web of exterior beam/slab unit along the south end at deck

$d_{e,G1}$ = -1.0 ft. (Horizontal distance from centerline of exterior web of exterior slab unit along the south end at deck level to

- One Design Lane Loaded:

$e_{OneLane\_G1}$ = $1.125 + \frac{d_{e,G1}}{30} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G1)

$e_{OneLane\_G11}$ = $1.125 + \frac{d_{e,G11}}{30} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G11)

LLDF (EXT.G1-$M_{OneLane}$) = $e_{OneLane\_G1} \cdot LLDF(INT, M)$ = **0.2540** (Live Load Distribution Fraction for Moment for One lane Loaded - Unit G1)

LLDF (EXT.G11-$M_{OneLane}$) = $e_{OneLane\_G11} \cdot LLDF(INT, M)$ = **0.2540** (Live Load Distribution Fraction for Moment for One lane Loaded - Unit G11)

- Two or More Design Lanes Loaded:

$e_{MultiLane\_G1}$ = $1.04 + \frac{d_{e,G1}}{25} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G1)

$e_{MultiLane\_G11}$ = $1.04 + \frac{d_{e,G11}}{25} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G11)

LLDF (EXT.-$M_{MultiLane}$) = $e_{MultiLane\_G1} \cdot LLDF(INT, M)$ = **0.2560** (Live Load Distribution Fraction for Moment for Multi-Lanes Loaded - Unit G1)

LLDF (EXT.-$M_{MultiLane}$) = $e_{MultiLane\_G11} \cdot LLDF(INT, M)$ = **0.2560** (Live Load Distribution Fraction for Moment for Multi-Lanes Loaded - Unit G11)

For Exterior Slab Units: (Shear) ***[AASHTO LRFD Table 4.6.2.2.3b-1]***

$d_{e,G1}$ = -1.0 ft. (Horizontal distance from centerline of exterior web of exterior slab unit along the south end at deck level to

$d_{e,G11}$ = -1.0 ft. (Horizontal distance from centerline of exterior web of exterior beam/slab unit along the south end at deck

b = 36.0 in. (Width of precast member)

- One Design Lane Loaded:

$e_{OneLane\_G1} = 1.25 + \frac{d_{e,G1}}{20} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G1)

$e_{OneLane\_G11} = 1.25 + \frac{d_{e,G11}}{20} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G11)

LLDF (EXT.G1-$M_{OneLane}$) = $e_{OneLane\_G1} \cdot LLDF(INT,V)$ = **0.2540** (Live Load Distribution Fraction for Shear for One lane Loaded - Unit G1)

LLDF (EXT.G11-$M_{OneLane}$) = $e_{OneLane\_G11} \cdot LLDF(INT,V)$ = **0.2540** (Live Load Distribution Fraction for Shear for One lane Loaded - Unit G11)

- Two or More Design Lanes Loaded:

$e_{MultiLane\_G1} = 1.0 + \left(\frac{d_{e,G1} + \frac{b}{12} - 2.0}{40}\right)^{0.5} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G1)

$e_{MultiLane\_G11} = 1.0 + \left(\frac{d_{e,G11} + \frac{b}{12} - 2.0}{40}\right)^{0.5} \geq 1.0$ = 1.000 (Correction factor for LL distribution on exterior slab unit G11)

LLDF (EXT.-$M_{MultiLane}$) = $e_{MultiLane\_G1} \cdot LLDF(INT,V)$ = **0.2560** (Live Load Distribution Fraction for Shear for Multi-Lanes Loaded - Unit G1)

LLDF (EXT.-$M_{MultiLane}$) = $e_{MultiLane\_G11} \cdot LLDF(INT,V)$ = **0.2560** (Live Load Distribution Fraction for Shear for Multi-Lanes Loaded - Unit G11)

LLDF (Exist.Condition - LFD): (Assuming Members acting independently - no effective post tensioning)

S = 3.0 ft. (Width of precast member)
W = 34.0 ft. (Assumed total width of Bridge Superstructure - ignore opening at the N end sidewalk)
L = 38.5 ft. (Brg.-to-Brg. Span Length - Span 2)
NL = 2.0 (Number of traffic lanes)
Nb = 11.0 (Number of concrete slab units)

D = 3.0000 (Assumed equal to Precast member width since slab unit will behave indepedently. Therefore, individual unit can be assumed to take on the full wheel load)

LLDF (LFD) = S/D = **1.0000** (Live Load Distribution Fraction for Moment and Shear)

LLDF (Exist.Condition - LRFR): (Assuming Slab units acting independently - no effective post tensioning)

LLDF (INT - OneLane - LRFR) = 0.5 x Axle = **0.5000** (Live Load Distribution Fraction for Moment and Shear - Half of Axle Load)

LLDF (INT - OneLane - LRFR) = 0.5 x 1.2 x Axle = **0.6000** (Live Load Distribution Fraction for Moment and Shear - Half of Axle Load)

Analysis Case: A) For the purpose of the Load Rating, the following Cases were assumed for AASHTOWare BrR runs:
- *Case 1:* Run model for non deteriorated units to account for the condition where the slab units have been rehabilitated.
- *Case 2:* Run model for non-deteriorated and deteriorated units to account for the existing condition without repairs.
- *Case 3:* Run model for deteriorated units to account for the condition where the slab units have been rehabilitated, but no strands have been replaced.

B) Per current inspection report, the following are assumed in the analysis to account for the deterioration of the slab unit 2-8:
- 5 exposed strands, with 3 broken: Remove a total of 5 strands from the bottom layer of strands.
- Assume 50% of the adjacent strands along the same layer have been affected to account for the potential of damage in the adjacent strands. That is: Remove 1 additional strand from the bottom layer of strands.
- Assume 50% of the adjacent strands at the next layer have been affected to account for the potential of damage in the adjacent strands. That is: Remove 1 additional strand from the next layer of strands.
- Per recommendation from "Structural Technologies" on 10/01/2021, assume exterior stirrup leg to be deteriorated. In BrR, use 2 legs of shear reinforcement, conservatively for the critical case.

A.2 – LRFR LOAD RATING ANALYSIS INPUT

Username: BrR
Date: Wednesday, September 22, 2021 11:21:02

Bridge ID 874294D Matheson Hmck Bridge over Matheson Hammock Canal

NBI Structure ID (8): 874294D
Description: Rating by YRA, from As-built plans [LAST UPDATED: 9/22/2021]

DETERIORATED MODEL:
Three spans (30'-40'-30') non-composite PS Concrete voided slab unit superstructure comprised of eleven (11) 17"x36" units. Deck width is 35'-0" out-to-out with a 26'-0" clear roadway width. Wearing surface is present along the bridge with an average thickness of 1.167" along end spans 1 and 3, and 1.292" for interior span 2.
Per current inspection report, the following controlling cases apply:
- Prestressed slab unit 1-8 displaying severe cracking with corrosion stain along the bottom face of the slab unit.
- Prestressed slab unit 2-8 displaying the worst deterioration: Five (5) exposed strands with three (3) broken.

The load rating analysis for the prestressed voided slab units was initially performed using the Load and Resistance factor Rating methodology in accordance with the AASHTO LRFD Bridge Design Specifications (9th edition, 2020), the Manual for Bridge Evaluation (3rd edition with interims through 2019), and the FDOT Bridge Load Rating Manual (January 2021). However, the resulting design and legal rating factors were less than 1, which granted the need to evaluate the structure using the Load Factor Rating methodology.

Description

Location:	Matheson Hammock Park
Total Length:	100.33 *(ft)*
Facility Carried:	Matheson Hmk Road
Route Number:	00000
Feature Intersected:	Matheson Hammock Canal
Mi Post:	0.08 *(mi)*
Units:	US Customary
Year Built:	1967
Recent ADTT:	11
District:	District 6
County:	
Owner:	County Hwy Agency
National Highway System:	0 Not on NHS
Functional Class:	09 Rural Local

Global Reference Point

X Coordinate:	0.000 *(ft)*
Y Coordinate:	0.000 *(ft)*
Elevation:	*(ft)*
Longitude:	80.26 *(Degrees)*
Latitude:	25.68 *(Degrees)*

Materials

No steel materials.

Concrete

Name:	**Class P (5000)**
Description:	Class 5000 cement concrete
Specified compressive strength at 28 days (f'c):	5.000 *(ksi)*
Initial specified compressive strength (f'ci):	4.000 *(ksi)*
Coefficient of thermal expansion:	0.0000060000 *(1/F)*
Density (for dead loads):	0.150 *(kcf)*
Density (for modulus of elasticity):	0.145 *(kcf)*
Std Modulus of elasticity (Ec):	4074.28 *(ksi)*
LRFD Modulus of elasticity (Ec):	4291.19 *(ksi)*
Poisson's ratio:	0.200
Modulus of rupture:	0.537 *(ksi)*
Shear factor:	1.000
Composition of concrete:	Normal
Std Initial modulus of elasticity (Eci):	3644.15 *(ksi)*
LRFD Initial modulus of elasticity (Eci):	3986.55 *(ksi)*
Splitting tensile strength (fct):	*(ksi)*

Name:	**Class A (3000)**
Description:	Class A cement concrete (3000 psi)
Specified compressive strength at 28 days (f'c):	3.000 *(ksi)*
Initial specified compressive strength (f'ci):	*(ksi)*
Coefficient of thermal expansion:	0.0000060000 *(1/F)*
Density (for dead loads):	0.150 *(kcf)*
Density (for modulus of elasticity):	0.145 *(kcf)*
Std Modulus of elasticity (Ec):	3150.39 *(ksi)*
LRFD Modulus of elasticity (Ec):	3617.02 *(ksi)*
Poisson's ratio:	0.200
Modulus of rupture:	0.416 *(ksi)*
Shear factor:	1.000
Composition of concrete:	Normal
Std Initial modulus of elasticity (Eci):	*(ksi)*
LRFD Initial modulus of elasticity (Eci):	*(ksi)*
Splitting tensile strength (fct):	*(ksi)*

Reinforcing Steel

Name:	**Grade 40**
Description:	40 ksi reinforcing steel
Specified yield strength (Fy):	40.000 *(ksi)*
Modulus of elasticity (Es):	29000.00 *(ksi)*
Ultimate strength (Fu):	70.000 *(ksi)*
Type:	Plain

Prestressing Strand

Name:	**7/16" (7W-250) SR**
Description:	Stress relieved 7/16"/Seven Wire/fpu = 250

Specified yield strength (Fy):	212.500 *(ksi)*
Ultimate Tensile strength (Fu):	250.000 *(ksi)*
Modulus of elasticity (Es):	28500.00 *(ksi)*
Load per unit length:	0.367 *(lb/ft)*
Cross sectional area (A):	0.108 *(in^2)*
Nominal diameter (d):	0.4375 *(in)*
Transfer length (Std):	21.8750 *(in)*
Transfer length (LRFD):	26.2500 *(in)*
Type:	Stress Relieved
Epoxy coated:	FALSE

No timber materials.

Beam Shapes

Steel Shapes

No steel shapes.

Prestressed Shapes

No prestressed I shapes.

Prestressed Box Shapes

Name:	**17"x36" PSU**
Description:	17"x36" Prestressed Slab Unit for units E thru G
Type:	Circular Void
Nominal Depth:	17.0000 *(in)*
Depth (d):	17.0000 *(in)*
Top flange width:	35.0000 *(in)*
Bottom flange width:	36.0000 *(in)*
Three-void (D1, D2, D1) shape:	FALSE
Circular void diamater:	10.0000 *(in)*
Distance to CG of void(s) from bottom:	9.0000 *(in)*
Number of circular voids:	2
Center to center distance of voids:	16.0000 *(in)*
Vertical location of shear key:	2.0000 *(in)*
Shear key height:	6.0000 *(in)*
Shear key depth:	1.5000 *(in)*
Nominal load:	457.107 *(lb/ft)*
Cross sectional area:	438.822 *(in^2)*
Ixx:	13330.101 *(in^4)*
CG from bottom:	8.1667 *(in)*
Bottom Sxx:	1632.246 *(in^3)*
Top Sxx:	1509.078 *(in^3)*

Volume/Surface Ratio: 3.175 *(in)*
Half Depth Area for Positive Flexure: *(in^2)*
Half Depth Area for Negative Flexure: *(in^2)*
St. Venant's Torsional Constant: 14593.772 *(in^4)*

Strand Grid

Row Number	Number of Strands	Vertical Location *(in)*	Horizontal Spacing *(in)*
1	16	2.5000	2.0000
2	6	4.5000	2.0000
3	16	14.5000	2.0000

No prestressed U shapes.

No prestressed tee shapes.

Timber Shapes

No timber shapes.

Appurtenances

No concrete railings.

Railings

Name: **Conc Guardrail w/ metal Post and Rail**
Description: Conc. Post and beam guardrail with post and tube rail mounted
Effective Wind Height: 36.0000 *(in)*
Railing Load: 0.166 *(kip/ft)*
Distance From Edge to Centroid: 5.0000 *(in)*
Width: 10.0000 *(in)*

Impact

Standard Impact Factor
Type: Standard - AASHTO
LRFD Dynamic Load Allowance
Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Factors

Factors - LFD

Name: 2002 AASHTO Std. Specifications
Description: AASHTO Standard Specifications for Highway Bridges, 17th Edition, 2002

Load Factors

Load Group	Gamma D		(L+I)n	(L+I)p	CF	E	B
Inventory	1.300	1.000	1.670	0.000	1.000	1.000	1.000
Operating	1.300	1.000	1.000	0.000	1.000	1.000	1.000

Load Group	SF	W	WL	LF	R+S+T	EQ	ICE
Inventory	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Operating	1.000	0.000	0.000	0.000	0.000	0.000	0.000

Resistance Factors

Reinforced concrete:
Flexure: 0.900

Reinforced concrete:
Shear: 0.850

Prestressed concrete:
Flexure: 1.000

Prestressed concrete:
Shear: 0.900

Prestressed concrete:
Flexure in Non-P/S Components: 0.900

Steel:
Flexure: 1.000

Steel:
Shear: 1.000

Steel:
Bearing Stiffeners: 1.000

Name: 2002 AASHTO Std. Specifications(CD=0.90)

Description: AASHTO Standard Specifications for Highway Bridges, 17th Edition, 2002

Load Factors

Load Group	Gamma D		(L+I)n	(L+I)p	CF	E	B
Inventory	1.300	1.000	1.670	0.000	1.000	1.000	1.000
Operating	1.300	1.000	1.000	0.000	1.000	1.000	1.000

Load Group	SF	W	WL	LF	R+S+T	EQ	ICE
Inventory	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Operating	1.000	0.000	0.000	0.000	0.000	0.000	0.000

Resistance Factors

Reinforced concrete:
Flexure: 0.810

Reinforced concrete:
Shear: 0.765

Prestressed concrete:
Flexure: 0.900

Prestressed concrete:
Shear: 0.810

Prestressed concrete:
Flexure in Non-P/S Components: 0.810

Steel:
Flexure: 0.900
Steel:
Shear: 0.900
Steel:
Bearing Stiffeners: 0.900

Name: 2002 AASHTO Std. Specifications(CD=0.85)
Description: AASHTO Standard Specifications for Highway Bridges, 17th Edition, 2002

Load Factors

Load Group	Gamma D		(L+I)n	(L+I)p	CF	E	B
Inventory	1.300	1.000	1.670	0.000	1.000	1.000	1.000
Operating	1.300	1.000	1.000	0.000	1.000	1.000	1.000

Load Group	SF	W	WL	LF	R+S+T	EQ	ICE
Inventory	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Operating	1.000	0.000	0.000	0.000	0.000	0.000	0.000

Resistance Factors
Reinforced concrete:
Flexure: 0.765
Reinforced concrete:
Shear: 0.723
Prestressed concrete:
Flexure: 0.850
Prestressed concrete:
Shear: 0.765
Prestressed concrete:
Flexure in Non-P/S Components: 0.765
Steel:
Flexure: 0.850
Steel:
Shear: 0.850
Steel:
Bearing Stiffeners: 0.850

No LRFD Factors specified.

Bridge Alternatives End Span 1 (or 3) - Bridge Alt.

Reference Line
Reference Line Length: *(ft)*
Starting Station: *(ft)*
Bearing: N 90^ 0' 0.00" E
Global Positioning
Distance: 0.000 *(ft)*

Offset: 0.000 *(ft)*
Elevation: *(ft)*

Structures
Name: Exist. EXT Span 1(or 3) SuperStr
Description:

Structure Alternatives
Name: Exist. END Span 1(or 3) Alt.
Description:
Superstructure Definition: End Span 1 (or 3) - PS Conc PSU

Bridge Alternatives INT Span 2 - Bridge Alt.

Reference Line
Reference Line Length: *(ft)*
Starting Station: *(ft)*
Bearing: N 90^ 0' 0.00" E
Global Positioning
Distance: 0.000 *(ft)*
Offset: 0.000 *(ft)*
Elevation: *(ft)*

Structures
Name: Exist. INT Span 2 Superstruct.
Description:

Structure Alternatives
Name: Exist. INT Span 2 Alt.
Description:
Superstructure Definition: INT Span 2 - PS Conc PSU

Superstructure Definition End Span 1 (or 3) - PS Conc PSU

Definition
Units: US Customary
Number of spans: 1
Number of girders: 11

Span	Length *(ft)*
1	28.2917

Frame Structure Simplified Definition:

Support	Frame Connection
1	
2	

Girder Spacing Display Type: Perpendicular

Average Humidity: 70.000 *(%)*

Analysis

Default Library Factors

Factor Override

Analysis Module

Analysis Method: ASD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Structure Framing Plan Details

Layout

Support	Skew *(Degrees)*
1	0.0000
2	0.0000

Girder Spacing Orientation: Perpendicular

Girder Bay	Girder Spacing Start *(ft)*	End *(ft)*

1	3.0000	3.0000
2	3.0000	3.0000
3	3.0000	3.0000
4	3.0000	3.0000
5	3.0000	3.0000
6	3.0000	3.0000
7	3.0000	3.0000
8	3.0000	3.0000
9	3.0000	3.0000
10	3.0000	3.0000

Diaphragms

Girder Bay 1
Girder Bay 2
Girder Bay 3
Girder Bay 4
Girder Bay 5
Girder Bay 6
Girder Bay 7
Girder Bay 8
Girder Bay 9
Girder Bay 10

Structure Typical Section

Deck

Left start width:	18.00 *(ft)*
Left end width:	18.00 *(ft)*
Right start width:	15.00 *(ft)*
Right end width:	15.00 *(ft)*
Left start overhang:	1.50 *(ft)*
Left end overhang:	1.50 *(ft)*

Deck (Cont'd)

Deck concrete:	
Total deck thickness:	*(in)*
Deck crack control parameter:	*(kip/in)*
Sustained modular ratio factor:	3.000

Railing

Name	Load Case	Measure To	Measured From	Distance At Start	Distance At End	Front Face Orientation
Conc Guar...	DC1 - R...		Left Ed...	0.00	0.00	Right
Conc Guar...	DC1 - R...		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From		At Start
60.0000	11.4375	Class A...	DC1 - C...		Left Ed...	0.00	...
24.0000	10.5630	Class A...	DC1 - C...		Right E...	0.00	...

Lane Position

Offset Left Start:	-13.00 *(ft)*
Offset Left End:	-13.00 *(ft)*

Offset Right Start: 0.00 *(ft)*
Offset Right End: 0.00 *(ft)*
Offset Left Start: 13.00 *(ft)*
Offset Left End: 13.00 *(ft)*
Offset Right Start: 0.00 *(ft)*
Offset Right End: 0.00 *(ft)*

Wearing Surface

Wearing surface material: Asphalt
Description: Asphalt Wearing Surface
Wearing surface thickness: 1.1670 *(in)*
Wearing surface density: 145.000 *(pcf)*
Load case: DW - A.W.S.

Load Case Description

Load Case Name	Description	Stage	Type	Time *(Days)*
DC1 - Railing	DC acting on non-comp...	Non-composite (Sta...	D,DC	
DC1 - Curb	DC acting on non-comp...	Non-composite (Sta...	D,DC	
DW - A.W.S.	DW acting on long-ter...	Composite (long te...	D,DW	

Superstructure Loads

DL Distribution

Stage 1 Dead Load Distribution: Tributary Area
Stage 2 Dead Load Distribution: Uniformly to All Girders

Stiffener Definitions

Stress Limits

Name: **PS Conc Stress Limits**
Description:
Concrete material: Class P (5000)
Initial allowable tension (LFD): 0.190 *(ksi)*
Initial allowable compression (LFD): 2.400 *(ksi)*
Final allowable slab compression (LFD): *(ksi)*
Final allowable tension (LFD): 0.425 *(ksi)*
Final allowable DL compression (LFD): 2.000 *(ksi)*
Final allowable compression (LFD): 3.000 *(ksi)*
Final allowable compression (LL + 1/2(Pe+DL)) (LFD): 2.000 *(ksi)*
Initial allowable tension (LRFD): 0.190 *(ksi)*
Initial allowable compression (LRFD): 2.600 *(ksi)*
Final allowable slab compression (LRFD): *(ksi)*
Final allowable tension (LRFD): 0.425 *(ksi)*
Final allowable DL compression (LRFD): 2.250 *(ksi)*
Final allowable compression (LRFD): 3.000 *(ksi)*
Final allowable compression (LL + 1/2(Pe+DL)) (LRFD): 2.000 *(ksi)*

Prestress Properties

Name: **PS Strands Properties**

General Pretress Data

Prestressing Strand:	7/16" (7W-250) SR
Loss Method:	AASHTO Approximate
Jacking stress ratio:	0.700
Transfer stress ratio:	
Transfer time:	24.0 *(Hours)*
AASHTO - Dead load percent:	0.0 *(%)*

Loss Data - PCI

PCI - Maturity coefficient:	
PCI - Ultimate creep loss:	*(ksi)*
PCI - Ultimate shrinkage loss:	*(ksi)*
PCI - Additional time 1:	*(Days)*
PCI - Additional time 2:	*(Days)*
PCI - Additional time 3:	*(Days)*
PCI - Additional time 4:	*(Days)*
PCI - Additional time 5:	*(Days)*
PCI - Additional time 6:	*(Days)*
PCI - Additional time 7:	*(Days)*
PCI - Additional time 8:	*(Days)*
PCI - Additional time 9:	*(Days)*
PCI - Additional time 10:	*(Days)*

Loss Data - Lump-sum

Lump-sum - Composite loss:	*(ksi)*
Lump-sum - Continuous loss:	*(ksi)*
Lump-sum - Final loss:	*(ksi)*

Shear Reinforcement Definitions - Vertical

Name:	**#4 Bent Shear Reinf.**
Vertical Reinforcement:	Grade 40
Vertical Rebar:	4
Number of legs (Vertical):	3.00
Inclination angle alpha (Vertical):	90.0 *(Degrees)*

Shear Reinforcement Definitions - Horizontal

Name:	**#3 - 2'-7" long**
Reinforcement (Horz. 1):	Grade 40
Rebar (Horz. 1):	3
Number of legs (Horz. 1):	1.00
Inclination angle alpha (Horz. 1):	90.0 *(Degrees)*
Reinforcement (Horz. 2):	
Rebar (Horz. 2):	
Number of legs (Horz. 2):	
Inclination angle alpha (Horz. 2):	90.0 *(Degrees)*

Member G1

Link with: None
Description:

Existing: 17"x36" EXT PSU -
Current: 17"x36" EXT PSU -

Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" EXT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD

Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors
Factor Override
LRFD:
LFD: 2002 AASHTO Std. Specifications(CD=0.85)
ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials
Deck concrete: Class A (3000)
Deck reinforcement: Grade 40
Beam concrete: Class P (5000)
Beam reinforcement: Grade 40
Stirrup reinforcemt: Grade 40
Prestressing strand: 7/16" (7W-250) SR

Impact
Standard Impact Factor
Type: Standard - AASHTO
LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.100	0.100	0.100	0.100
Multi-Lane	0.100	0.100	0.100	0.100

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	28.292	Deflectio...	0.100	0.100
0.00	28.292	Moment	0.100	0.100
0.00	28.292	Shear	0.100	0.100

Shrinkage/Time

Deck curing method: Moist-cured
Deck drying time: 3.000 *(Days)*
Consider deck differential shrinkage loads: FALSE
Beam Curing method: Steam-cured
Curing time: 20.00 *(Days)*
Service life: 75.00 *(Years)*
Analysis time: 54.00 *(Years)*
Composite time: 60.00 *(Days)*
Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right Projection *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	29.50

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Right Support Distance	Bar Count	Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1	Left Right	1	1	Straight/Debonded			
1	Left Right	1	2	Straight/Debonded			
1	Left Right	1	3	Straight/Debonded			
1	Left Right	1	6	Straight/Debonded			
1	Left Right	1	7	Straight/Debonded			
1	Left Right	1	8	Straight/Debonded			
1	Left Right	1	9	Straight/Debonded			
1	Left Right	1	10	Straight/Debonded			
1	Left Right	1	11	Straight/Debonded			

	Left Right			
1		1	14	Straight/Debonded
	Left Right			
1		1	15	Straight/Debonded
	Left Right			
1		1	16	Straight/Debonded
	Left Right			
1		3	1	Straight/Debonded
	Left Right			
1		3	16	Straight/Debonded
	Left Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636
1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.62	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Composite Length *(ft)*
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.62	1	8.0000	

#3 - 2'-7" long	1	27.29	4	6.0000

Member G2

Link with: None
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU

Description:
Description
Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method:	ASD
Analysis Module:	AASHTO ASD
Analysis Module Component:	
Properties:	

Analysis Method:	LFD
Analysis Module:	AASHTO LFD
Analysis Module Component:	
Properties:	

Analysis Method:	LRFD
Analysis Module:	AASHTO LRFD
Analysis Module Component:	
Properties:	

Analysis Method:	LRFR
Analysis Module:	AASHTO LRFR
Analysis Module Component:	
Properties:	

Analysis Method:	Distribution Factors
Analysis Module:	Legacy BrR Dist Fact
Analysis Module Component:	
Properties:	

Default rating method:	LRFR
LRFD shear computation method:	General Procedure

Factors

Factor Override

LRFD:	
LFD:	2002 AASHTO Std. Specifications(CD=0.85)

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)

Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.167	0.167	0.167	0.167
Multi-Lane	0.167	0.167	0.167	0.167

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	28.292	Deflectio...	0.167	0.200
0.00	28.292	Moment	0.167	0.200
0.00	28.292	Shear	0.167	0.200

Shrinkage/Time

Deck curing method:	Moist-cured
Deck drying time:	3.000 *(Days)*
Consider deck differential shrinkage loads:	FALSE
Beam Curing method:	Steam-cured
Curing time:	20.00 *(Days)*
Service life:	75.00 *(Years)*
Analysis time:	54.00 *(Years)*
Composite time:	60.00 *(Days)*
Continuous time:	45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	29.50

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Right Support Distance
	Bar	Bar				

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1		1	1	Straight/Debonded			
	Left						
	Right						
1		1	2	Straight/Debonded			
	Left						
	Right						
1		1	3	Straight/Debonded			
	Left						
	Right						
1		1	6	Straight/Debonded			
	Left						
	Right						
1		1	7	Straight/Debonded			
	Left						
	Right						
1		1	8	Straight/Debonded			
	Left						

1	Right	1	9	Straight/Debonded
	Left			
1	Right	1	10	Straight/Debonded
	Left			
1	Right	1	11	Straight/Debonded
	Left			
1	Right	1	14	Straight/Debonded
	Left			
1	Right	1	15	Straight/Debonded
	Left			
1	Right	1	16	Straight/Debonded
	Left			
1	Right	3	1	Straight/Debonded
	Left			
1	Right	3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636
1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.62	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.62	1	8.0000	
#3 - 2'-7" long	1	27.29	4	6.0000	

Member G3

Link with: None
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD: 2002 AASHTO Std. Specifications(CD=0.85)

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		

Stirrup
Timber NA

Default Materials

Deck concrete: Class A (3000)
Deck reinforcement: Grade 40
Beam concrete: Class P (5000)
Beam reinforcement: Grade 40
Stirrup reinforcemt: Grade 40
Prestressing strand: 7/16" (7W-250) SR

Impact

Standard Impact Factor
Type: Standard - AASHTO
LRFD Dynamic Load Allowance
Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	1.000	1.000	1.000	1.000
Multi-Lane	1.000	1.000	1.000	1.000

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	28.292	Deflectio...	0.500	0.600
0.00	28.292	Moment	0.500	0.600
0.00	28.292	Shear	0.500	0.600

Shrinkage/Time

Deck curing method: Moist-cured
Deck drying time: 3.000 *(Days)*
Consider deck differential shrinkage loads: FALSE
Beam Curing method: Steam-cured
Curing time: 20.00 *(Days)*
Service life: 75.00 *(Years)*
Analysis time: 54.00 *(Years)*
Composite time: 60.00 *(Days)*
Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape	Concrete Material	Prestress Properties	Left	Right

	Use	n		Projection	
	Projection	Creep			
				(in)	*(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	0	-0.750	29.50

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Distance
	Bar	Bar				

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1		1	1	Straight/Debonded			
	Left Right						
1		1	2	Straight/Debonded			
	Left Right						
1		1	3	Straight/Debonded			
	Left Right						

1		1	6	Straight/Debonded
	Left			
	Right			
1		1	7	Straight/Debonded
	Left			
	Right			
1		1	8	Straight/Debonded
	Left			
	Right			
1		1	9	Straight/Debonded
	Left			
	Right			
1		1	10	Straight/Debonded
	Left			
	Right			
1		1	11	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636
1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance	Number Spaces	Spacing	Extends into Deck

		(ft)		(in)	
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.62	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.62	1	8.0000	
#3 - 2'-7" long	1	27.29	4	6.0000	

Member G4

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G5

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection

1
2

Pedestrian load: *(lb/ft)*

Member G6

Link with: G3
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G7

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G8

Link with: G9
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G9

Link with: None
Description:

Existing: 17"x36" INT PSU - w/ Post Tensioning -
Current: 17"x36" INT PSU - w/ Post Tensioning -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU - w/ Post Tensioning

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD: 2002 AASHTO Std. Specifications(CD=0.90)

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		

Stirrup
Timber NA

Default Materials

Deck concrete: Class A (3000)
Deck reinforcement: Grade 40
Beam concrete: Class P (5000)
Beam reinforcement: Grade 40
Stirrup reinforcemt: Grade 40
Prestressing strand: 7/16" (7W-250) SR

Impact

Standard Impact Factor
Type: Standard - AASHTO
LRFD Dynamic Load Allowance
Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.533	0.000	0.533	0.182
Multi-Lane	0.533	0.000	0.533	0.364

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	28.292	Moment	0.296	0.273
0.00	28.292	Shear	0.296	0.273
0.00	28.292	Deflectio...	0.109	0.182

Shrinkage/Time

Deck curing method: Moist-cured
Deck drying time: 3.000 *(Days)*
Consider deck differential shrinkage loads: FALSE
Beam Curing method: Steam-cured
Curing time: 20.00 *(Days)*
Service life: 75.00 *(Years)*
Analysis time: 54.00 *(Years)*
Composite time: 60.00 *(Days)*
Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape	Concrete Material	Prestress Properties	Left	Right

	Use	n		Projection	
	Projection	Creep			
				(in)	*(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	0	-0.750	29.50

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Distance
	Bar	Bar				

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1		1	1	Straight/Debonded			
	Left Right						
1		1	2	Straight/Debonded			
	Left Right						
1		1	3	Straight/Debonded			
	Left Right						

1		1	6	Straight/Debonded
	Left			
	Right			
1		1	7	Straight/Debonded
	Left			
	Right			
1		1	8	Straight/Debonded
	Left			
	Right			
1		1	9	Straight/Debonded
	Left			
	Right			
1		1	10	Straight/Debonded
	Left			
	Right			
1		1	11	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636
1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance	Number Spaces	Spacing	Extends into Deck

		(ft)		(in)	
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.62	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.62	1	8.0000	
#3 - 2'-7" long	1	27.29	4	6.0000	

Member G10

Link with: G9
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G11

Link with: G1
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection

1
2

Pedestrian load: *(lb/ft)*

Superstructure Definition INT Span 2 - PS Conc PSU

Definition

Units: US Customary
Number of spans: 1
Number of girders: 11

Span	Length *(ft)*
1	38.5000

Frame Structure Simplified Definition:

Support	Frame Connection
1	
2	

Girder Spacing Display Type: Perpendicular
Average Humidity: 70.000 *(%)*

Analysis

Default Library Factors
Factor Override
Analysis Module
Analysis Method: ASD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Structure Framing Plan Details

Layout

Support	Skew *(Degrees)*
1	0.0000
2	0.0000

Girder Spacing Orientation: Perpendicular

Girder Bay	Girder Spacing Start *(ft)*	End *(ft)*
1	3.0000	3.0000
2	3.0000	3.0000
3	3.0000	3.0000
4	3.0000	3.0000
5	3.0000	3.0000
6	3.0000	3.0000
7	3.0000	3.0000
8	3.0000	3.0000
9	3.0000	3.0000
10	3.0000	3.0000

Diaphragms

Girder Bay 1
Girder Bay 2
Girder Bay 3
Girder Bay 4
Girder Bay 5
Girder Bay 6
Girder Bay 7
Girder Bay 8
Girder Bay 9
Girder Bay 10

Structure Typical Section

Deck

Left start width:	18.00 *(ft)*
Left end width:	18.00 *(ft)*
Right start width:	15.00 *(ft)*
Right end width:	15.00 *(ft)*
Left start overhang:	1.50 *(ft)*
Left end overhang:	1.50 *(ft)*

Deck (Cont'd)

Deck concrete:

Total deck thickness: *(in)*

Deck crack control parameter: *(kip/in)*

Sustained modular ratio factor: 3.000

Railing

Name	Load Case	Measure To	Measured From	Distance At Start	Distance At End	Front Face Orientation
Conc Guar...	DC1 - R...		Left Ed...	0.00	0.00	Right
Conc Guar...	DC1 - R...		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start	
60.0000	11.4375	Class A...	DC1 - C...		Left Ed...	0.00	...
24.0000	10.5630	Class A...	DC1 - C...		Right E...	0.00	...

Lane Position

Offset Left Start: -13.00 *(ft)*

Offset Left End: -13.00 *(ft)*

Offset Right Start: 0.00 *(ft)*

Offset Right End: 0.00 *(ft)*

Offset Left Start: 13.00 *(ft)*

Offset Left End: 13.00 *(ft)*

Offset Right Start: 0.00 *(ft)*

Offset Right End: 0.00 *(ft)*

Wearing Surface

Wearing surface material: Asphalt

Description: Asphalt Wearing Surface

Wearing surface thickness: 1.1670 *(in)*

Wearing surface density: 145.000 *(pcf)*

Load case: DW - A.W.S.

Load Case Description

Load Case Name	Description	Stage	Type	Time *(Days)*
DC1 - Railing	DC acting on non-comp...	Non-composite (Sta...	D,DC	
DC1 - Curb	DC acting on non-comp...	Non-composite (Sta...	D,DC	
DW - A.W.S.	DW acting on long-ter...	Composite (long te...	D,DW	

Superstructure Loads

DL Distribution

Stage 1 Dead Load Distribution: Tributary Area

Stage 2 Dead Load Distribution: Uniformly to All Girders

Stiffener Definitions

Stress Limits

Name: **PS Conc Stress Limits**

Description:

Concrete material:	Class P (5000)	
Initial allowable tension (LFD):	0.190	*(ksi)*
Initial allowable compression (LFD):	2.400	*(ksi)*
Final allowable slab compression (LFD):		*(ksi)*
Final allowable tension (LFD):	0.425	*(ksi)*
Final allowable DL compression (LFD):	2.000	*(ksi)*
Final allowable compression (LFD):	3.000	*(ksi)*
Final allowable compression (LL + 1/2(Pe+DL)) (LFD):	2.000	*(ksi)*
Initial allowable tension (LRFD):	0.190	*(ksi)*
Initial allowable compression (LRFD):	2.600	*(ksi)*
Final allowable slab compression (LRFD):		*(ksi)*
Final allowable tension (LRFD):	0.425	*(ksi)*
Final allowable DL compression (LRFD):	2.250	*(ksi)*
Final allowable compression (LRFD):	3.000	*(ksi)*
Final allowable compression (LL + 1/2(Pe+DL)) (LRFD):	2.000	*(ksi)*

Prestress Properties

Name: **PS Strands Properties**

General Pretress Data

Prestressing Strand:	7/16" (7W-250) SR
Loss Method:	AASHTO Approximate
Jacking stress ratio:	0.700
Transfer stress ratio:	
Transfer time:	24.0 *(Hours)*
AASHTO - Dead load percent:	0.0 *(%)*

Loss Data - PCI

PCI - Maturity coefficient:	
PCI - Ultimate creep loss:	*(ksi)*
PCI - Ultimate shrinkage loss:	*(ksi)*
PCI - Additional time 1:	*(Days)*
PCI - Additional time 2:	*(Days)*
PCI - Additional time 3:	*(Days)*
PCI - Additional time 4:	*(Days)*
PCI - Additional time 5:	*(Days)*
PCI - Additional time 6:	*(Days)*
PCI - Additional time 7:	*(Days)*
PCI - Additional time 8:	*(Days)*
PCI - Additional time 9:	*(Days)*
PCI - Additional time 10:	*(Days)*

Loss Data - Lump-sum

Lump-sum - Composite loss:	*(ksi)*
Lump-sum - Continuous loss:	*(ksi)*
Lump-sum - Final loss:	*(ksi)*

Shear Reinforcement Definitions - Vertical

Name: **#4 Bent Shear Reinf.**

Vertical Reinforcement:	Grade 40
Vertical Rebar:	4
Number of legs (Vertical):	3.00

Inclination angle alpha (Vertical): 90.0 *(Degrees)*

Shear Reinforcement Definitions - Horizontal

Name: **#3 - 2'-7" long**
Reinforcement (Horz. 1): Grade 40
Rebar (Horz. 1): 3
Number of legs (Horz. 1): 1.00
Inclination angle alpha (Horz. 1): 90.0 *(Degrees)*
Reinforcement (Horz. 2):
Rebar (Horz. 2):
Number of legs (Horz. 2):
Inclination angle alpha (Horz. 2): 90.0 *(Degrees)*

Member G1

Link with: None
Description:

Existing: 17"x36" EXT PSU -
Current: 17"x36" EXT PSU -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				

Member Alternative 17"x36" EXT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD: 2002 AASHTO Std. Specifications(CD=0.90)

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		

PS Moment Cap.	
Reinforcement	
Bearing Stiffener	
Stirrup	
Timber	NA

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.100	0.100	0.100	0.100
Multi-Lane	0.100	0.100	0.100	0.100

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Deflectio...	0.100	0.100
0.00	38.500	Moment	0.100	0.100
0.00	38.500	Shear	0.100	0.100

Shrinkage/Time

Deck curing method:	Moist-cured	
Deck drying time:	3.000 *(Days)*	
Consider deck differential shrinkage loads:		FALSE
Beam Curing method:	Steam-cured	
Curing time:	20.00 *(Days)*	
Service life:	75.00 *(Years)*	
Analysis time:	54.00 *(Years)*	
Composite time:	60.00 *(Days)*	
Continuous time:	45.0 *(Days)*	

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material Bar	Left Support Distance Bar	Bar Count	Bar Size	Right Support Material Count	Distance Size

<u>Prestressing Force Information</u>

<u>Strand Layout</u>

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1	Left Right	1	1	Straight/Debonded			
1	Left Right	1	2	Straight/Debonded			

1		1	3	Straight/Debonded
	Left			
	Right			
1		1	4	Straight/Debonded
	Left			
	Right			
1		1	5	Straight/Debonded
	Left			
	Right			
1		1	6	Straight/Debonded
	Left			
	Right			
1		1	7	Straight/Debonded
	Left			
	Right			
1		1	8	Straight/Debonded
	Left			
	Right			
1		1	9	Straight/Debonded
	Left			
	Right			
1		1	10	Straight/Debonded
	Left			
	Right			
1		1	11	Straight/Debonded
	Left			
	Right			
1		1	12	Straight/Debonded
	Left			
	Right			
1		1	13	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		2	1	Straight/Debonded
	Left			
	Right			
1		2	2	Straight/Debonded
	Left			
	Right			
1		2	3	Straight/Debonded
	Left			

	Right			
1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			
	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.96...	20.00	1	1.0000	0.1636
1	29.96...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE
#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance	Number Spaces	Spacing	Composite Length

		(ft)		(in)	(ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G2

Link with: None
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU

Description:
Description
Material Type: Prestressed Concrete

Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*
Analysis Module
Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors
Factor Override
LRFD:
LFD: 2002 AASHTO Std. Specifications(CD=0.90)
ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.167	0.167	0.167	0.167
Multi-Lane	0.167	0.167	0.167	0.167

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Deflectio...	0.167	0.200
0.00	38.500	Moment	0.167	0.200
0.00	38.500	Shear	0.167	0.200

Shrinkage/Time

Deck curing method:	Moist-cured
Deck drying time:	3.000 *(Days)*
Consider deck differential shrinkage loads:	FALSE
Beam Curing method:	Steam-cured
Curing time:	20.00 *(Days)*
Service life:	75.00 *(Years)*
Analysis time:	54.00 *(Years)*
Composite time:	60.00 *(Days)*
Continuous time:	45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use	Concrete Material n	Prestress Properties	Left Projection	Right
	Projection	Creep			

				(in)	(in)
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL (in)	Support Distance on Right, SR (in)
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance (ft)	Length (ft)
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	(in)
Deck cohesion factor:	0.400 (ksi)
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Distance Bar Count	Distance Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance (ft)	Debond Distance (in)	Harp Curvature (in)
1	Left Right	1	1	Straight/Debonded			
1	Left Right	1	2	Straight/Debonded			
1	Left Right	1	3	Straight/Debonded			
1	Left Right	1	4	Straight/Debonded			

1		1	5	Straight/Debonded
	Left			
	Right			
1		1	6	Straight/Debonded
	Left			
	Right			
1		1	7	Straight/Debonded
	Left			
	Right			
1		1	8	Straight/Debonded
	Left			
	Right			
1		1	9	Straight/Debonded
	Left			
	Right			
1		1	10	Straight/Debonded
	Left			
	Right			
1		1	11	Straight/Debonded
	Left			
	Right			
1		1	12	Straight/Debonded
	Left			
	Right			
1		1	13	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		2	1	Straight/Debonded
	Left			
	Right			
1		2	2	Straight/Debonded
	Left			
	Right			
1		2	3	Straight/Debonded
	Left			
	Right			
1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			

	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.95...	20.00	1	1.0000	0.1636
1	29.95...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE
#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Composite Length *(ft)*
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G3

Link with: None
Description:

Existing: 17"x36" INT PSU - w/ Conc Repair Only -
Current: 17"x36" INT PSU - w/ Conc Repair Only -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU - w/ Conc Repair Only

Description:
Description
Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*
Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors
Factor Override
LRFD:
LFD: 2002 AASHTO Std. Specifications(CD=0.90)
ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials
Deck concrete: Class A (3000)
Deck reinforcement: Grade 40
Beam concrete: Class P (5000)
Beam reinforcement: Grade 40

Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	1.000	1.000	1.000	1.000
Multi-Lane	1.000	1.000	1.000	1.000

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Deflectio...	0.500	0.600
0.00	38.500	Moment	0.500	0.600
0.00	38.500	Shear	0.500	0.600

Shrinkage/Time

Deck curing method:	Moist-cured
Deck drying time:	3.000 *(Days)*
Consider deck differential shrinkage loads:	FALSE
Beam Curing method:	Steam-cured
Curing time:	20.00 *(Days)*
Service life:	75.00 *(Years)*
Analysis time:	54.00 *(Years)*
Composite time:	60.00 *(Days)*
Continuous time:	45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support	Support Distance	Support Distance

Number	on Left, SL *(in)*	on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Right Support Distance	Bar Count	Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1		1	1	Straight/Debonded			
	Left						
	Right						
1		1	2	Straight/Debonded			
	Left						
	Right						
1		1	3	Straight/Debonded			
	Left						
	Right						
1		1	4	Straight/Debonded			
	Left						
	Right						
1		1	5	Straight/Debonded			
	Left						
	Right						
1		1	12	Straight/Debonded			
	Left						
	Right						

1		1	13	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		2	1	Straight/Debonded
	Left			
	Right			
1		2	2	Straight/Debonded
	Left			
	Right			
1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			
	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.96...	20.00	1	1.0000	0.1636

1	29.95...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE
#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G4

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G5

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G6

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G7

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G8

Link with: None

Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:

Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors
Factor Override
LRFD:
LFD: 2002 AASHTO Std. Specifications(CD=0.85)
ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials
Deck concrete: Class A (3000)
Deck reinforcement: Grade 40
Beam concrete: Class P (5000)
Beam reinforcement: Grade 40
Stirrup reinforcemt: Grade 40
Prestressing strand: 7/16" (7W-250) SR

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 *(%)*

All other limit states: 33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	1.000	1.000	1.000	1.000
Multi-Lane	1.000	1.000	1.000	1.000

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Deflectio...	0.500	0.600
0.00	38.500	Moment	0.500	0.600
0.00	38.500	Shear	0.500	0.600

Shrinkage/Time

Deck curing method: Moist-cured

Deck drying time: 3.000 *(Days)*

Consider deck differential shrinkage loads: FALSE

Beam Curing method: Steam-cured

Curing time: 20.00 *(Days)*

Service life: 75.00 *(Years)*

Analysis time: 54.00 *(Years)*

Composite time: 60.00 *(Days)*

Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		

2

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Distance	Bar Count	Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1		1	1	Straight/Debonded			
	Left						
	Right						
1		1	2	Straight/Debonded			
	Left						
	Right						
1		1	3	Straight/Debonded			
	Left						
	Right						
1		1	4	Straight/Debonded			
	Left						
	Right						
1		1	5	Straight/Debonded			
	Left						
	Right						
1		1	12	Straight/Debonded			
	Left						
	Right						
1		1	13	Straight/Debonded			
	Left						
	Right						

1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		2	1	Straight/Debonded
	Left			
	Right			
1		2	2	Straight/Debonded
	Left			
	Right			
1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			
	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.96...	20.00	1	1.0000	0.1636
1	29.95...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE
#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G9

Link with: G8
Description:

Existing: 17"x36" INT PSU - w/ Conc. Repair + Post Tensioning -
Current: 17"x36" INT PSU - w/ Conc. Repair + Post Tensioning -
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G10

Link with: None
Description:

Existing: 17"x36" INT PSU - w/ Conc. Repair + Post Tensioning -
Current: 17"x36" INT PSU - w/ Conc. Repair + Post Tensioning -
Number of Spans: 1

Span Number	Span Length (ft)

1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU - w/ Conc. Repair + Post Tensioning

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD

Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors
Factor Override
LRFD:
LFD: 2002 AASHTO Std. Specifications(CD=0.90)
ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials
Deck concrete: Class A (3000)
Deck reinforcement: Grade 40
Beam concrete: Class P (5000)
Beam reinforcement: Grade 40
Stirrup reinforcemt: Grade 40
Prestressing strand: 7/16" (7W-250) SR

Impact
Standard Impact Factor
Type: Standard - AASHTO
LRFD Dynamic Load Allowance
Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.527	0.000	0.527	0.182
Multi-Lane	0.527	0.000	0.527	0.364

LRFD

Distance (ft)	Length (ft)	Type	1 Lane	Multi-Lane
0.00	38.500	Moment	0.254	0.256
0.00	38.500	Shear	0.254	0.256
0.00	38.500	Deflectio...	0.109	0.182

Shrinkage/Time

Deck curing method: Moist-cured
Deck drying time: 3.000 *(Days)*
Consider deck differential shrinkage loads: FALSE
Beam Curing method: Steam-cured
Curing time: 20.00 *(Days)*
Service life: 75.00 *(Years)*
Analysis time: 54.00 *(Years)*
Composite time: 60.00 *(Days)*
Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use	Concrete Material n	Prestress Properties	Left Projection (in)	Right Projection (in)
	Projection	Creep			
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL (in)	Support Distance on Right, SR (in)
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance (ft)	Length (ft)
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Right Support Distance
	Bar	Bar				

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1		1	1	Straight/Debonded			
	Left						
	Right						
1		1	2	Straight/Debonded			
	Left						
	Right						
1		1	3	Straight/Debonded			
	Left						
	Right						
1		1	4	Straight/Debonded			
	Left						
	Right						
1		1	5	Straight/Debonded			
	Left						
	Right						
1		1	12	Straight/Debonded			
	Left						
	Right						
1		1	13	Straight/Debonded			
	Left						
	Right						
1		1	14	Straight/Debonded			
	Left						
	Right						
1		1	15	Straight/Debonded			
	Left						
	Right						
1		1	16	Straight/Debonded			
	Left						

	Right			
1		2	1	Straight/Debonded
	Left			
	Right			
1		2	2	Straight/Debonded
	Left			
	Right			
1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			
	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.96...	20.00	1	1.0000	0.1636
1	29.95...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE

#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Composite Length *(ft)*
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G11

Link with: G1
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Username: BrR
Date: Wednesday, September 22, 2021 10:06:29

Bridge ID 874294 Matheson Hmck Bridge over Matheson Hammock Canal

NBI Structure ID (8): 874294
Description: Rating by YRA, from As-built plans, 9/14/2021

Three spans (30'-40'-30') non-composite PS Concrete voided slab unit superstructure comprised of eleven (11) 17"x36" units. Deck width is 35'-0" out-to-out with a 26'-0" clear roadway width. Wearing surface is present along the bridge with an average thickness of 1.167" along end spans 1 and 3, and 1.292" for interior span 2.
The load rating analysis for the prestressed voided slab units was initially performed using the Load and Resistance factor Rating methodology in accordance with the AASHTO LRFD Bridge Design Specifications (9th edition, 2020), the Manual for Bridge Evaluation (3rd edition with interims through 2019), and the FDOT Bridge Load Rating Manual (January 2021). However, the resulting design and legal rating factors were less than 1, which granted the need to evaluate the structure using the Load Factor Rating methodology.

Description

Location:	Matheson Hammock Park
Total Length:	100.33 *(ft)*
Facility Carried:	Matheson Hmk Road
Route Number:	00000
Feature Intersected:	Matheson Hammock Canal
Mi Post:	0.08 *(mi)*
Units:	US Customary
Year Built:	1967
Recent ADTT:	11
District:	District 6
County:	
Owner:	County Hwy Agency
National Highway System:	0 Not on NHS
Functional Class:	09 Rural Local

Global Reference Point

X Coordinate:	0.000 *(ft)*
Y Coordinate:	0.000 *(ft)*
Elevation:	*(ft)*
Longitude:	80.26 *(Degrees)*
Latitude:	25.68 *(Degrees)*

Materials

No steel materials.

Concrete

Name: **Class P (5000)**
Description: Class 5000 cement concrete
Specified compressive strength at 28 days (f'c): 5.000 *(ksi)*

Initial specified compressive strength (f'ci):	4.000 *(ksi)*
Coefficient of thermal expansion:	0.0000060000 *(1/F)*
Density (for dead loads):	0.150 *(kcf)*
Density (for modulus of elasticity):	0.145 *(kcf)*
Std Modulus of elasticity (Ec):	4074.28 *(ksi)*
LRFD Modulus of elasticity (Ec):	4291.19 *(ksi)*
Poisson's ratio:	0.200
Modulus of rupture:	0.537 *(ksi)*
Shear factor:	1.000
Composition of concrete:	Normal
Std Initial modulus of elasticity (Eci):	3644.15 *(ksi)*
LRFD Initial modulus of elasticity (Eci):	3986.55 *(ksi)*
Splitting tensile strength (fct):	*(ksi)*

Name:	**Class A (3000)**
Description:	Class A cement concrete (3000 psi)
Specified compressive strength at 28 days (f'c):	3.000 *(ksi)*
Initial specified compressive strength (f'ci):	*(ksi)*
Coefficient of thermal expansion:	0.0000060000 *(1/F)*
Density (for dead loads):	0.150 *(kcf)*
Density (for modulus of elasticity):	0.145 *(kcf)*
Std Modulus of elasticity (Ec):	3150.39 *(ksi)*
LRFD Modulus of elasticity (Ec):	3617.02 *(ksi)*
Poisson's ratio:	0.200
Modulus of rupture:	0.416 *(ksi)*
Shear factor:	1.000
Composition of concrete:	Normal
Std Initial modulus of elasticity (Eci):	*(ksi)*
LRFD Initial modulus of elasticity (Eci):	*(ksi)*
Splitting tensile strength (fct):	*(ksi)*

Reinforcing Steel

Name:	**Grade 40**
Description:	40 ksi reinforcing steel
Specified yield strength (Fy):	40.000 *(ksi)*
Modulus of elasticity (Es):	29000.00 *(ksi)*
Ultimate strength (Fu):	70.000 *(ksi)*
Type:	Plain

Prestressing Strand

Name:	**7/16" (7W-250) SR**
Description:	Stress relieved 7/16"/Seven Wire/fpu = 250
Specified yield strength (Fy):	212.500 *(ksi)*
Ultimate Tensile strength (Fu):	250.000 *(ksi)*
Modulus of elasticity (Es):	28500.00 *(ksi)*
Load per unit length:	0.367 *(lb/ft)*
Cross sectional area (A):	0.108 *(in^2)*
Nominal diameter (d):	0.4375 *(in)*
Transfer length (Std):	21.8750 *(in)*
Transfer length (LRFD):	26.2500 *(in)*

Type:	Stress Relieved
Epoxy coated:	FALSE

No timber materials.

Beam Shapes

Steel Shapes

No steel shapes.

Prestressed Shapes

No prestressed I shapes.

Prestressed Box Shapes

Name:	**17"x36" PSU**
Description:	17"x36" Prestressed Slab Unit for units E thru G
Type:	Circular Void
Nominal Depth:	17.0000 *(in)*
Depth (d):	17.0000 *(in)*
Top flange width:	35.0000 *(in)*
Bottom flange width:	36.0000 *(in)*
Three-void (D1, D2, D1) shape:	FALSE
Circular void diamater:	10.0000 *(in)*
Distance to CG of void(s) from bottom:	9.0000 *(in)*
Number of circular voids:	2
Center to center distance of voids:	16.0000 *(in)*
Vertical location of shear key:	2.0000 *(in)*
Shear key height:	6.0000 *(in)*
Shear key depth:	1.5000 *(in)*
Nominal load:	457.107 *(lb/ft)*
Cross sectional area:	438.822 *(in^2)*
Ixx:	13330.101 *(in^4)*
CG from bottom:	8.1667 *(in)*
Bottom Sxx:	1632.246 *(in^3)*
Top Sxx:	1509.078 *(in^3)*
Volume/Surface Ratio:	3.175 *(in)*
Half Depth Area for Positive Flexure:	*(in^2)*
Half Depth Area for Negative Flexure:	*(in^2)*
St. Venant's Torsional Constant:	14593.772 *(in^4)*

Strand Grid

Row Number	Number of Strands	Vertical Location *(in)*	Horizontal Spacing *(in)*
1	16	2.5000	2.0000

2	6	4.5000	2.0000
3	16	14.5000	2.0000

No prestressed U shapes.

No prestressed tee shapes.

Timber Shapes

No timber shapes.

Appurtenances

No concrete railings.

Railings

Name: **Conc Guardrail w/ metal Post and Rail**
Description: Conc. Post and beam guardrail with post and tube rail mounted
Effective Wind Height: 36.0000 *(in)*
Railing Load: 0.166 *(kip/ft)*
Distance From Edge to Centroid: 5.0000 *(in)*
Width: 10.0000 *(in)*

Impact

Standard Impact Factor
Type: Standard - AASHTO
LRFD Dynamic Load Allowance
Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Factors

Factors - LFD

Name: 2002 AASHTO Std. Specifications
Description: AASHTO Standard Specifications for Highway Bridges, 17th Edition, 2002

Load Factors

Load Group	Gamma D		(L+I)n	(L+I)p	CF	E	B
Inventory	1.300	1.000	1.670	0.000	1.000	1.000	1.000
Operating	1.300	1.000	1.000	0.000	1.000	1.000	1.000

Load Group	SF	W	WL	LF	R+S+T	EQ	ICE
Inventory	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Operating	1.000	0.000	0.000	0.000	0.000	0.000	0.000

Resistance Factors

Reinforced concrete:	
Flexure:	0.900
Reinforced concrete:	
Shear:	0.850
Prestressed concrete:	
Flexure:	1.000
Prestressed concrete:	
Shear:	0.900
Prestressed concrete:	
Flexure in Non-P/S Components:	0.900
Steel:	
Flexure:	1.000
Steel:	
Shear:	1.000
Steel:	
Bearing Stiffeners:	1.000
Name:	2002 AASHTO Std. Specifications(CF=0.9)
Description:	AASHTO Standard Specifications for Highway Bridges, 17th Edition, 2002

Load Factors

Load Group	Gamma D		(L+I)n	(L+I)p	CF	E	B
Inventory	1.300	1.000	1.670	0.000	1.000	1.000	1.000
Operating	1.300	1.000	1.000	0.000	1.000	1.000	1.000

Load Group	SF	W	WL	LF	R+S+T	EQ	ICE
Inventory	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Operating	1.000	0.000	0.000	0.000	0.000	0.000	0.000

Resistance Factors

Reinforced concrete:	
Flexure:	0.810
Reinforced concrete:	
Shear:	0.765
Prestressed concrete:	
Flexure:	0.900
Prestressed concrete:	
Shear:	0.810
Prestressed concrete:	
Flexure in Non-P/S Components:	0.810
Steel:	
Flexure:	0.900
Steel:	
Shear:	0.900
Steel:	
Bearing Stiffeners:	0.900
Name:	2002 AASHTO Std. Specifications(CF=0.95)
Description:	AASHTO Standard Specifications for Highway Bridges,

17th Edition, 2002

Load Factors

Load Group	Gamma D		(L+I)n	(L+I)p	CF	E	B
Inventory	1.300	1.000	1.670	0.000	1.000	1.000	1.000
Operating	1.300	1.000	1.000	0.000	1.000	1.000	1.000

Load Group	SF	W	WL	LF	R+S+T	EQ	ICE
Inventory	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Operating	1.000	0.000	0.000	0.000	0.000	0.000	0.000

Resistance Factors

Reinforced concrete: Flexure:	0.855
Reinforced concrete: Shear:	0.807
Prestressed concrete: Flexure:	0.950
Prestressed concrete: Shear:	0.855
Prestressed concrete: Flexure in Non-P/S Components:	0.855
Steel: Flexure:	0.950
Steel: Shear:	0.950
Steel: Bearing Stiffeners:	0.950
Name:	2002 AASHTO Std. Specifications(CF=0.85)
Description:	AASHTO Standard Specifications for Highway Bridges, 17th Edition, 2002

Load Factors

Load Group	Gamma D		(L+I)n	(L+I)p	CF	E	B
Inventory	1.300	1.000	1.670	0.000	1.000	1.000	1.000
Operating	1.300	1.000	1.000	0.000	1.000	1.000	1.000

Load Group	SF	W	WL	LF	R+S+T	EQ	ICE
Inventory	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Operating	1.000	0.000	0.000	0.000	0.000	0.000	0.000

Resistance Factors

Reinforced concrete: Flexure:	0.765
Reinforced concrete: Shear:	0.723
Prestressed concrete: Flexure:	0.850
Prestressed concrete:	

Shear:	0.765
Prestressed concrete:	
Flexure in Non-P/S Components:	0.765
Steel:	
Flexure:	0.850
Steel:	
Shear:	0.850
Steel:	
Bearing Stiffeners:	0.850

No LRFD Factors specified.

Bridge Alternatives End Span 1 (or 3) - Bridge Alt.

Reference Line
Reference Line Length: *(ft)*
Starting Station: *(ft)*
Bearing: N 90^ 0' 0.00" E
Global Positioning
Distance: 0.000 *(ft)*
Offset: 0.000 *(ft)*
Elevation: *(ft)*

Structures
Name: Exist. EXT Span 1(or 3) SuperStr
Description:

Structure Alternatives
Name: Exist. END Span 1(or 3) Alt.
Description:
Superstructure Definition: End Span 1 (or 3) - PS Conc PSU

Bridge Alternatives INT Span 2 - Bridge Alt.

Reference Line
Reference Line Length: *(ft)*
Starting Station: *(ft)*
Bearing: N 90^ 0' 0.00" E
Global Positioning
Distance: 0.000 *(ft)*
Offset: 0.000 *(ft)*
Elevation: *(ft)*

Structures
Name: Exist. INT Span 2 Superstruct.

Description:

Structure Alternatives
Name: Exist. INT Span 2 Alt.
Description:
Superstructure Definition: INT Span 2 - PS Conc PSU

Superstructure Definition End Span 1 (or 3) - PS Conc PSU

Definition
Units: US Customary
Number of spans: 1
Number of girders: 11

Span	Length *(ft)*
1	28.2917

Frame Structure Simplified Definition:

Support	Frame Connection
1	
2	

Girder Spacing Display Type: Perpendicular
Average Humidity: 70.000 *(%)*
Analysis
Default Library Factors
Factor Override
Analysis Module
Analysis Method: ASD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:

Analysis Module Component:
Properties:

Default rating method: LFD

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 *(%)*

All other limit states: 33.0 *(%)*

Structure Framing Plan Details

Layout

Support	Skew *(Degrees)*
1	0.0000
2	0.0000

Girder Spacing Orientation: Perpendicular

Girder Bay	Girder Spacing Start *(ft)*	End *(ft)*
1	3.0000	3.0000
2	3.0000	3.0000
3	3.0000	3.0000
4	3.0000	3.0000
5	3.0000	3.0000
6	3.0000	3.0000
7	3.0000	3.0000
8	3.0000	3.0000
9	3.0000	3.0000
10	3.0000	3.0000

Diaphragms

Girder Bay 1
Girder Bay 2
Girder Bay 3
Girder Bay 4
Girder Bay 5
Girder Bay 6
Girder Bay 7
Girder Bay 8
Girder Bay 9
Girder Bay 10

Structure Typical Section

Deck

Left start width: 18.00 *(ft)*

Left end width: 18.00 *(ft)*

Right start width: 15.00 *(ft)*
Right end width: 15.00 *(ft)*
Left start overhang: 1.50 *(ft)*
Left end overhang: 1.50 *(ft)*

Deck (Cont'd)
Deck concrete:
Total deck thickness: *(in)*
Deck crack control parameter: *(kip/in)*
Sustained modular ratio factor: 3.000

Railing

Name	Load Case	Measure To	Measured From	Distance At Start	Distance At End	Front Face Orientation
Conc Guar...	DC1 - R...		Left Ed...	0.00	0.00	Right
Conc Guar...	DC1 - R...		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From		At Start
60.0000	11.4375	Class A...	DC1 - C...		Left Ed...	0.00	...
24.0000	10.5630	Class A...	DC1 - C...		Right E...	0.00	...

Lane Position
Offset Left Start: -13.00 *(ft)*
Offset Left End: -13.00 *(ft)*
Offset Right Start: 0.00 *(ft)*
Offset Right End: 0.00 *(ft)*
Offset Left Start: 13.00 *(ft)*
Offset Left End: 13.00 *(ft)*
Offset Right Start: 0.00 *(ft)*
Offset Right End: 0.00 *(ft)*

Wearing Surface
Wearing surface material: Asphalt
Description: Asphalt Wearing Surface
Wearing surface thickness: 1.1670 *(in)*
Wearing surface density: 145.000 *(pcf)*
Load case: DW - A.W.S.

Load Case Description

Load Case Name	Description	Stage	Type	Time *(Days)*
DC1 - Railing	DC acting on non-comp...	Non-composite (Sta...	D,DC	
DC1 - Curb	DC acting on non-comp...	Non-composite (Sta...	D,DC	
DW - A.W.S.	DW acting on long-ter...	Composite (long te...	D,DW	

Superstructure Loads
DL Distribution
Stage 1 Dead Load Distribution: Tributary Area
Stage 2 Dead Load Distribution: Uniformly to All Girders

Stiffener Definitions

Stress Limits

Name: **PS Conc Stress Limits**
Description:
Concrete material: Class P (5000)

Initial allowable tension (LFD):	0.190	*(ksi)*
Initial allowable compression (LFD):	2.400	*(ksi)*
Final allowable slab compression (LFD):		*(ksi)*
Final allowable tension (LFD):	0.425	*(ksi)*
Final allowable DL compression (LFD):	2.000	*(ksi)*
Final allowable compression (LFD):	3.000	*(ksi)*
Final allowable compression (LL + 1/2(Pe+DL)) (LFD):	2.000	*(ksi)*
Initial allowable tension (LRFD):	0.190	*(ksi)*
Initial allowable compression (LRFD):	2.600	*(ksi)*
Final allowable slab compression (LRFD):		*(ksi)*
Final allowable tension (LRFD):	0.425	*(ksi)*
Final allowable DL compression (LRFD):	2.250	*(ksi)*
Final allowable compression (LRFD):	3.000	*(ksi)*
Final allowable compression (LL + 1/2(Pe+DL)) (LRFD):	2.000	*(ksi)*

Prestress Properties

Name: **PS Strands Properties**
General Pretress Data

Prestressing Strand:	7/16" (7W-250) SR
Loss Method:	AASHTO Approximate
Jacking stress ratio:	0.700
Transfer stress ratio:	
Transfer time:	24.0 *(Hours)*
AASHTO - Dead load percent:	0.0 *(%)*

Loss Data - PCI

PCI - Maturity coefficient:	
PCI - Ultimate creep loss:	*(ksi)*
PCI - Ultimate shrinkage loss:	*(ksi)*
PCI - Additional time 1:	*(Days)*
PCI - Additional time 2:	*(Days)*
PCI - Additional time 3:	*(Days)*
PCI - Additional time 4:	*(Days)*
PCI - Additional time 5:	*(Days)*
PCI - Additional time 6:	*(Days)*
PCI - Additional time 7:	*(Days)*
PCI - Additional time 8:	*(Days)*
PCI - Additional time 9:	*(Days)*
PCI - Additional time 10:	*(Days)*

Loss Data - Lump-sum

Lump-sum - Composite loss:	*(ksi)*
Lump-sum - Continuous loss:	*(ksi)*
Lump-sum - Final loss:	*(ksi)*

Shear Reinforcement Definitions - Vertical

Name: **#4 Bent Shear Reinf.**

Vertical Reinforcement:	Grade 40
Vertical Rebar:	4
Number of legs (Vertical):	3.00
Inclination angle alpha (Vertical):	90.0 *(Degrees)*

Shear Reinforcement Definitions - Horizontal

Name:	**#3 - 2'-7" long**
Reinforcement (Horz. 1):	Grade 40
Rebar (Horz. 1):	3
Number of legs (Horz. 1):	1.00
Inclination angle alpha (Horz. 1):	90.0 *(Degrees)*
Reinforcement (Horz. 2):	
Rebar (Horz. 2):	
Number of legs (Horz. 2):	
Inclination angle alpha (Horz. 2):	90.0 *(Degrees)*

Member G1

Link with: None
Description:

Existing:	17"x36" EXT PSU -
Current:	17"x36" EXT PSU -
Number of Spans:	1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" EXT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD: 2002 AASHTO Std. Specifications(CF=0.9)

ASD Factors

	Inventory	Operating
Structural steel		

Concrete	
PS Concrete Comp.	
PS Concrete Tens.	
PS Moment Cap.	
Reinforcement	
Bearing Stiffener	
Stirrup	
Timber	NA

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.010	0.010	0.010	0.010
Multi-Lane	0.010	0.010	0.010	0.010

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	28.292	Deflectio...	0.010	0.010
0.00	28.292	Moment	0.010	0.010
0.00	28.292	Shear	0.010	0.010

Shrinkage/Time

Deck curing method:	Moist-cured	
Deck drying time:	3.000	*(Days)*
Consider deck differential shrinkage loads:	FALSE	
Beam Curing method:	Steam-cured	
Curing time:	20.00	*(Days)*
Service life:	75.00	*(Years)*
Analysis time:	54.00	*(Years)*
Composite time:	60.00	*(Days)*
Continuous time:	45.0	*(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	29.50

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span	Material Bar No.	Left Support Distance Bar Count	Bar Size	Right Support Material Bar Count	Distance Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1	Left Right	1	1	Straight/Debonded			

1		1	2	Straight/Debonded
	Left			
	Right			
1		1	3	Straight/Debonded
	Left			
	Right			
1		1	6	Straight/Debonded
	Left			
	Right			
1		1	7	Straight/Debonded
	Left			
	Right			
1		1	8	Straight/Debonded
	Left			
	Right			
1		1	9	Straight/Debonded
	Left			
	Right			
1		1	10	Straight/Debonded
	Left			
	Right			
1		1	11	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636

1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.63	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.63	1	8.0000	
#3 - 2'-7" long	1	27.29	4	6.0000	

Member G2

Link with: None
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:

LFD: 2002 AASHTO Std. Specifications(CF=0.9)

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.167	0.017	0.017	0.017
Multi-Lane	0.167	0.017	0.017	0.017

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	28.292	Deflectio...	0.167	0.200
0.00	28.292	Moment	0.167	0.200
0.00	28.292	Shear	0.167	0.200

Shrinkage/Time

Deck curing method: Moist-cured

Deck drying time: 3.000 *(Days)*
Consider deck differential shrinkage loads: FALSE
Beam Curing method: Steam-cured
Curing time: 20.00 *(Days)*
Service life: 75.00 *(Years)*
Analysis time: 54.00 *(Years)*
Composite time: 60.00 *(Days)*
Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	29.50

Slab Interface

Deck interface type: Monolithic
Interface width: *(in)*
Deck cohesion factor: 0.400 *(ksi)*
Deck friction factor: 1.400

Continuity Diaphragm

Span No.	Material Bar	Left Support Distance Bar	Bar Count	Bar Size	Right Support Material Count	Distance Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1	Left Right	1	1	Straight/Debonded			
1	Left Right	1	2	Straight/Debonded			
1	Left Right	1	3	Straight/Debonded			
1	Left Right	1	6	Straight/Debonded			
1	Left Right	1	7	Straight/Debonded			
1	Left Right	1	8	Straight/Debonded			
1	Left Right	1	9	Straight/Debonded			
1	Left Right	1	10	Straight/Debonded			
1	Left Right	1	11	Straight/Debonded			
1	Left Right	1	14	Straight/Debonded			
1	Left Right	1	15	Straight/Debonded			
1	Left Right	1	16	Straight/Debonded			
1	Left Right	3	1	Straight/Debonded			
1	Left Right	3	16	Straight/Debonded			

Deck Profile

Interior Diaphragms

Span	Start Distance (ft)	Spacing (ft)	No of Spaces	Thickness (in)	Weight (kip)
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636
1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.63	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.63	1	8.0000	
#3 - 2'-7" long	1	27.29	4	6.0000	

Member G3

Link with: None
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors
Factor Override
LRFD:
LFD: 2002 AASHTO Std. Specifications(CF=0.9)
ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact
Standard Impact Factor
Type: Standard - AASHTO
LRFD Dynamic Load Allowance
Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Live Load Distribution
Standard

	Distribution Factor (Wheels)			
Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	1.000	1.000	1.000	1.000
Multi-Lane	1.000	1.000	1.000	1.000

LRFD

Distance (ft)	Length (ft)	Type	1 Lane	Multi-Lane
0.00	28.292	Moment	0.500	0.600
0.00	28.292	Shear	0.500	0.600
0.00	28.292	Deflectio...	0.500	0.600

Shrinkage/Time

Deck curing method: Moist-cured
Deck drying time: 3.000 *(Days)*
Consider deck differential shrinkage loads: FALSE
Beam Curing method: Steam-cured
Curing time: 20.00 *(Days)*
Service life: 75.00 *(Years)*
Analysis time: 54.00 *(Years)*
Composite time: 60.00 *(Days)*
Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection (in)	Right (in)
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL (in)	Support Distance on Right, SR (in)
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance (ft)	Length (ft)
PS Conc Stress Lim...	0	-0.750	29.50

Slab Interface

Deck interface type: Monolithic
Interface width: *(in)*
Deck cohesion factor: 0.400 *(ksi)*
Deck friction factor: 1.400

Continuity Diaphragm

	Left Support	Right Support

Span No.	Material Bar	Distance Bar	Bar Count	Bar Size	Material Count	Distance Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1	Left Right	1	1	Straight/Debonded			
1	Left Right	1	2	Straight/Debonded			
1	Left Right	1	3	Straight/Debonded			
1	Left Right	1	6	Straight/Debonded			
1	Left Right	1	7	Straight/Debonded			
1	Left Right	1	8	Straight/Debonded			
1	Left Right	1	9	Straight/Debonded			
1	Left Right	1	10	Straight/Debonded			
1	Left Right	1	11	Straight/Debonded			
1	Left Right	1	14	Straight/Debonded			
1	Left Right	1	15	Straight/Debonded			
1	Left Right	1	16	Straight/Debonded			
1	Left Right	3	1	Straight/Debonded			

	Left Right			
1		3	16	Straight/Debonded
	Left Right			

Deck Profile

Interior Diaphragms

Span	Start Distance (ft)	Spacing (ft)	No of Spaces	Thickness (in)	Weight (kip)
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636
1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.63	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.63	1	8.0000	
#3 - 2'-7" long	1	27.29	4	6.0000	

Member G4

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span	Span Length

Number	(ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G5

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G6

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G7

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G8

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G9

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G10

Link with: None
Description:

Existing: 17"x36" INT PSU - (w/ Post Tensioning) -
Current: 17"x36" INT PSU - (w/ Post Tensioning) -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU - (w/ Post Tensioning)

Description:
Description
Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*
Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors
Factor Override
LRFD:
LFD: 2002 AASHTO Std. Specifications(CF=0.9)
ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials
Deck concrete: Class A (3000)
Deck reinforcement: Grade 40
Beam concrete: Class P (5000)
Beam reinforcement: Grade 40

Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.533	0.000	0.533	0.182
Multi-Lane	0.533	0.000	0.533	0.364

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	28.292	Moment	0.296	0.273
0.00	28.292	Shear	0.296	0.273
0.00	28.292	Deflectio...	0.109	0.182

Shrinkage/Time

Deck curing method:	Moist-cured
Deck drying time:	3.000 *(Days)*
Consider deck differential shrinkage loads:	FALSE
Beam Curing method:	Steam-cured
Curing time:	20.00 *(Days)*
Service life:	75.00 *(Years)*
Analysis time:	54.00 *(Years)*
Composite time:	60.00 *(Days)*
Continuous time:	45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support	Support Distance	Support Distance

Number	on Left, SL (in)	on Right, SR (in)
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance (ft)	Length (ft)
PS Conc Stress Lim...	0	-0.750	29.50

Slab Interface

Deck interface type:	Monolithic
Interface width:	(in)
Deck cohesion factor:	0.400 (ksi)
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Distance	Bar Count	Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance (ft)	Debond Distance (in)	Harp Curvature (in)
1		1	1	Straight/Debonded			
	Left						
	Right						
1		1	2	Straight/Debonded			
	Left						
	Right						
1		1	3	Straight/Debonded			
	Left						
	Right						
1		1	6	Straight/Debonded			
	Left						
	Right						
1		1	7	Straight/Debonded			
	Left						
	Right						
1		1	8	Straight/Debonded			
	Left						
	Right						

1		1	9	Straight/Debonded
	Left			
	Right			
1		1	10	Straight/Debonded
	Left			
	Right			
1		1	11	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636
1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.63	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.63	1	8.0000	
#3 - 2'-7" long	1	27.29	4	6.0000	

Member G11

Link with: None
Description:

Existing: 17"x36" EXT PSU (w/ Post Tensioning) -
Current: 17"x36" EXT PSU (w/ Post Tensioning) -
Number of Spans: 1

Span Number	Span Length (ft)
1	28.291666

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" EXT PSU (w/ Post Tensioning)

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD: 2002 AASHTO Std. Specifications(CF=0.9)

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		

Timber	NA

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

Distribution Factor (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.100	0.100	0.100	0.100
Multi-Lane	0.100	0.100	0.100	0.100

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	28.292	Deflectio...	0.100	0.100
0.00	28.292	Moment	0.100	0.100
0.00	28.292	Shear	0.100	0.100

Shrinkage/Time

Deck curing method:	Moist-cured
Deck drying time:	3.000 *(Days)*
Consider deck differential shrinkage loads:	FALSE
Beam Curing method:	Steam-cured
Curing time:	20.00 *(Days)*
Service life:	75.00 *(Years)*
Analysis time:	54.00 *(Years)*
Composite time:	60.00 *(Days)*
Continuous time:	45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use	Concrete Material n	Prestress Properties	Left	Right

	Projection	Creep		Projection (in)	Projection (in)
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	6.0000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL (in)	Support Distance on Right, SR (in)
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance (ft)	Length (ft)
PS Conc Stress Lim...	1	0.000	29.50

Slab Interface

Deck interface type:	Monolithic
Interface width:	(in)
Deck cohesion factor:	0.400 (ksi)
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material Bar	Left Support Distance Bar	Bar Count	Bar Size	Right Support Material Bar Count	Right Support Distance Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance (ft)	Debond Distance (in)	Harp Curvature (in)
1	Left	1	1	Straight/Debonded			
	Right						
1	Left	1	2	Straight/Debonded			
	Right						
1	Left	1	3	Straight/Debonded			
	Right						
1		1	6	Straight/Debonded			

	Left Right			
1		1	7	Straight/Debonded
	Left Right			
1		1	8	Straight/Debonded
	Left Right			
1		1	9	Straight/Debonded
	Left Right			
1		1	10	Straight/Debonded
	Left Right			
1		1	11	Straight/Debonded
	Left Right			
1		1	14	Straight/Debonded
	Left Right			
1		1	15	Straight/Debonded
	Left Right			
1		1	16	Straight/Debonded
	Left Right			
1		3	1	Straight/Debonded
	Left Right			
1		3	16	Straight/Debonded
	Left Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	6.25	1	1.0000	0.1636
1	7.25...	15.00	1	1.0000	0.1636
1	22.25...	6.25	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck

#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	8.0000	FALSE
#4 Bent Shear R...	1	2.88	19	15.0000	FALSE
#4 Bent Shear R...	1	26.62	1	8.0000	FALSE
#4 Bent Shear R...	1	27.29	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Composite Length *(ft)*
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	8.0000	
#3 - 2'-7" long	1	2.88	19	15.0000	
#3 - 2'-7" long	1	26.62	1	8.0000	
#3 - 2'-7" long	1	27.29	4	6.0000	

Superstructure Definition INT Span 2 - PS Conc PSU

Definition

Units: US Customary
Number of spans: 1
Number of girders: 11

Span	Length *(ft)*
1	38.5000

Frame Structure Simplified Definition:

Support	Frame Connection
1	
2	

Girder Spacing Display Type: Perpendicular
Average Humidity: 70.000 *(%)*

Analysis

Default Library Factors
Factor Override
Analysis Module
Analysis Method: ASD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module:
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 *(%)*

All other limit states: 33.0 *(%)*

Structure Framing Plan Details

Layout

Support	Skew *(Degrees)*
1	0.0000
2	0.0000

Girder Spacing Orientation: Perpendicular

Girder Bay	Girder Spacing Start *(ft)*	End *(ft)*
1	3.0000	3.0000
2	3.0000	3.0000
3	3.0000	3.0000
4	3.0000	3.0000
5	3.0000	3.0000
6	3.0000	3.0000
7	3.0000	3.0000
8	3.0000	3.0000
9	3.0000	3.0000
10	3.0000	3.0000

Diaphragms

Girder Bay 1
Girder Bay 2
Girder Bay 3
Girder Bay 4
Girder Bay 5
Girder Bay 6
Girder Bay 7

Girder Bay 8
Girder Bay 9
Girder Bay 10

Structure Typical Section

Deck

Left start width:	18.00 *(ft)*
Left end width:	18.00 *(ft)*
Right start width:	15.00 *(ft)*
Right end width:	15.00 *(ft)*
Left start overhang:	1.50 *(ft)*
Left end overhang:	1.50 *(ft)*

Deck (Cont'd)

Deck concrete:	
Total deck thickness:	*(in)*
Deck crack control parameter:	*(kip/in)*
Sustained modular ratio factor:	3.000

Railing

Name	Load Case	Measure To	Measured From	Distance At Start	Distance At End	Front Face Orientation
Conc Guar...	DC1 - R...		Left Ed...	0.00	0.00	Right
Conc Guar...	DC1 - R...		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From		At Start
60.0000	11.4375	Class A...	DC1 - C...		Left Ed...	0.00	...
24.0000	10.5630	Class A...	DC1 - C...		Right E...	0.00	...

Lane Position

Offset Left Start:	-13.00 *(ft)*
Offset Left End:	-13.00 *(ft)*
Offset Right Start:	0.00 *(ft)*
Offset Right End:	0.00 *(ft)*
Offset Left Start:	13.00 *(ft)*
Offset Left End:	13.00 *(ft)*
Offset Right Start:	0.00 *(ft)*
Offset Right End:	0.00 *(ft)*

Wearing Surface

Wearing surface material:	Asphalt
Description:	Asphalt Wearing Surface
Wearing surface thickness:	1.1670 *(in)*
Wearing surface density:	145.000 *(pcf)*
Load case:	DW - A.W.S.

Load Case Description

Load Case Name	Description	Stage	Type	Time *(Days)*
DC1 - Railing	DC acting on non-comp...	Non-composite (Sta...	D,DC	
DC1 - Curb	DC acting on non-comp...	Non-composite (Sta...	D,DC	
DW - A.W.S.	DW acting on long-ter...	Composite (long te...	D,DW	

Superstructure Loads

DL Distribution

Stage 1 Dead Load Distribution: Tributary Area

Stage 2 Dead Load Distribution: Uniformly to All Girders

Stiffener Definitions

Stress Limits

Name: **PS Conc Stress Limits**

Description:

Concrete material: Class P (5000)

Initial allowable tension (LFD):	0.190	*(ksi)*
Initial allowable compression (LFD):	2.400	*(ksi)*
Final allowable slab compression (LFD):		*(ksi)*
Final allowable tension (LFD):	0.425	*(ksi)*
Final allowable DL compression (LFD):	2.000	*(ksi)*
Final allowable compression (LFD):	3.000	*(ksi)*
Final allowable compression (LL + 1/2(Pe+DL)) (LFD):	2.000	*(ksi)*
Initial allowable tension (LRFD):	0.190	*(ksi)*
Initial allowable compression (LRFD):	2.600	*(ksi)*
Final allowable slab compression (LRFD):		*(ksi)*
Final allowable tension (LRFD):	0.425	*(ksi)*
Final allowable DL compression (LRFD):	2.250	*(ksi)*
Final allowable compression (LRFD):	3.000	*(ksi)*
Final allowable compression (LL + 1/2(Pe+DL)) (LRFD):	2.000	*(ksi)*

Prestress Properties

Name: **PS Strands Properties**

General Pretress Data

Prestressing Strand:	7/16" (7W-250) SR
Loss Method:	AASHTO Approximate
Jacking stress ratio:	0.700
Transfer stress ratio:	
Transfer time:	24.0 *(Hours)*
AASHTO - Dead load percent:	0.0 *(%)*

Loss Data - PCI

PCI - Maturity coefficient:	
PCI - Ultimate creep loss:	*(ksi)*
PCI - Ultimate shrinkage loss:	*(ksi)*
PCI - Additional time 1:	*(Days)*
PCI - Additional time 2:	*(Days)*
PCI - Additional time 3:	*(Days)*
PCI - Additional time 4:	*(Days)*
PCI - Additional time 5:	*(Days)*
PCI - Additional time 6:	*(Days)*
PCI - Additional time 7:	*(Days)*
PCI - Additional time 8:	*(Days)*
PCI - Additional time 9:	*(Days)*

PCI - Additional time 10: *(Days)*

Loss Data - Lump-sum

Lump-sum - Composite loss: *(ksi)*

Lump-sum - Continuous loss: *(ksi)*

Lump-sum - Final loss: *(ksi)*

Shear Reinforcement Definitions - Vertical

Name: **#4 Bent Shear Reinf.**

Vertical Reinforcement: Grade 40

Vertical Rebar: 4

Number of legs (Vertical): 3.00

Inclination angle alpha (Vertical): 90.0 *(Degrees)*

Shear Reinforcement Definitions - Horizontal

Name: **#3 - 2'-7" long**

Reinforcement (Horz. 1): Grade 40

Rebar (Horz. 1): 3

Number of legs (Horz. 1): 1.00

Inclination angle alpha (Horz. 1): 90.0 *(Degrees)*

Reinforcement (Horz. 2):

Rebar (Horz. 2):

Number of legs (Horz. 2):

Inclination angle alpha (Horz. 2): 90.0 *(Degrees)*

Member G1

Link with: None

Description:

Existing: 17"x36" EXT PSU -

Current: 17"x36" EXT PSU -

Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" EXT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR

LRFD shear computation method: General Procedure

Factors
Factor Override

	Inventory	Operating
LRFD:		
LFD:		

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

	Distribution Factor (Wheels)			
Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.100	0.100	0.100	0.100
Multi-Lane	0.100	0.100	0.100	0.100

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Deflectio...	0.100	0.100
0.00	38.500	Moment	0.100	0.100
0.00	38.500	Shear	0.100	0.100

Shrinkage/Time

Deck curing method:	Moist-cured	
Deck drying time:	3.000	*(Days)*
Consider deck differential shrinkage loads:	FALSE	
Beam Curing method:	Steam-cured	
Curing time:	20.00	*(Days)*
Service life:	75.00	*(Years)*
Analysis time:	54.00	*(Years)*
Composite time:	60.00	*(Days)*
Continuous time:	45.0	*(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic	
Interface width:		*(in)*
Deck cohesion factor:	0.400	*(ksi)*
Deck friction factor:	1.400	

Continuity Diaphragm

Span No.	Material Bar	Left Support Distance Bar	Bar Count	Bar Size	Right Support Material Count	Distance Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1		1	1	Straight/Debonded			
	Left						
	Right						
1		1	2	Straight/Debonded			
	Left						
	Right						
1		1	3	Straight/Debonded			
	Left						
	Right						
1		1	4	Straight/Debonded			
	Left						
	Right						
1		1	5	Straight/Debonded			
	Left						
	Right						
1		1	6	Straight/Debonded			
	Left						
	Right						
1		1	7	Straight/Debonded			
	Left						
	Right						
1		1	8	Straight/Debonded			
	Left						
	Right						
1		1	9	Straight/Debonded			
	Left						
	Right						
1		1	10	Straight/Debonded			
	Left						
	Right						
1		1	11	Straight/Debonded			
	Left						
	Right						
1		1	12	Straight/Debonded			
	Left						
	Right						
1		1	13	Straight/Debonded			
	Left						
	Right						
1		1	14	Straight/Debonded			
	Left						
	Right						
1		1	15	Straight/Debonded			
	Left						

	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		2	1	Straight/Debonded
	Left			
	Right			
1		2	2	Straight/Debonded
	Left			
	Right			
1		2	3	Straight/Debonded
	Left			
	Right			
1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			
	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.96...	20.00	1	1.0000	0.1636
1	29.96...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear	Span	Start	Number	Spacing	Extends into

Reinforcement	No	Distance (ft)	Spaces	(in)	Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE
#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G2

Link with: None
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free

2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

	Distribution Factor (Wheels)			
Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.167	0.167	0.167	0.167
Multi-Lane	0.167	0.167	0.167	0.167

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Deflectio...	0.167	0.200
0.00	38.500	Moment	0.167	0.200
0.00	38.500	Shear	0.167	0.200

Shrinkage/Time

Deck curing method:	Moist-cured	
Deck drying time:	3.000 *(Days)*	
Consider deck differential shrinkage loads:	FALSE	
Beam Curing method:	Steam-cured	
Curing time:	20.00 *(Days)*	
Service life:	75.00 *(Years)*	

Analysis time: 54.00 *(Years)*
Composite time: 60.00 *(Days)*
Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Right Support Distance	Bar Count	Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*

1		1	1	Straight/Debonded
	Left			
	Right			
1		1	2	Straight/Debonded
	Left			
	Right			
1		1	3	Straight/Debonded
	Left			
	Right			
1		1	4	Straight/Debonded
	Left			
	Right			
1		1	5	Straight/Debonded
	Left			
	Right			
1		1	6	Straight/Debonded
	Left			
	Right			
1		1	7	Straight/Debonded
	Left			
	Right			
1		1	8	Straight/Debonded
	Left			
	Right			
1		1	9	Straight/Debonded
	Left			
	Right			
1		1	10	Straight/Debonded
	Left			
	Right			
1		1	11	Straight/Debonded
	Left			
	Right			
1		1	12	Straight/Debonded
	Left			
	Right			
1		1	13	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		2	1	Straight/Debonded
	Left			

	Right			
1		2	2	Straight/Debonded
	Left			
	Right			
1		2	3	Straight/Debonded
	Left			
	Right			
1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			
	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.95...	20.00	1	1.0000	0.1636
1	29.95...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE

#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Composite Length *(ft)*
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G3

Link with: None
Description:

Existing: 17"x36" INT PSU -
Current: 17"x36" INT PSU -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				

Member Alternative 17"x36" INT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD: 2002 AASHTO Std. Specifications(CF=0.9)

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		

PS Moment Cap.
Reinforcement
Bearing Stiffener
Stirrup
Timber NA

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 *(%)*
All other limit states: 33.0 *(%)*

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	1.000	1.000	1.000	1.000
Multi-Lane	1.000	1.000	1.000	1.000

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Deflectio...	0.500	0.600
0.00	38.500	Moment	0.500	0.600
0.00	38.500	Shear	0.500	0.600

Shrinkage/Time

Deck curing method: Moist-cured
Deck drying time: 3.000 *(Days)*
Consider deck differential shrinkage loads: FALSE
Beam Curing method: Steam-cured
Curing time: 20.00 *(Days)*
Service life: 75.00 *(Years)*
Analysis time: 54.00 *(Years)*
Composite time: 60.00 *(Days)*
Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material Bar	Left Support Distance Bar	Bar Count	Bar Size	Right Support Material Count	Distance Size

<u>Prestressing Force Information</u>

<u>Strand Layout</u>

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1	Left Right	1	1	Straight/Debonded			
1	Left Right	1	2	Straight/Debonded			

1		1	3	Straight/Debonded
	Left			
	Right			
1		1	4	Straight/Debonded
	Left			
	Right			
1		1	5	Straight/Debonded
	Left			
	Right			
1		1	6	Straight/Debonded
	Left			
	Right			
1		1	7	Straight/Debonded
	Left			
	Right			
1		1	8	Straight/Debonded
	Left			
	Right			
1		1	9	Straight/Debonded
	Left			
	Right			
1		1	10	Straight/Debonded
	Left			
	Right			
1		1	11	Straight/Debonded
	Left			
	Right			
1		1	12	Straight/Debonded
	Left			
	Right			
1		1	13	Straight/Debonded
	Left			
	Right			
1		1	14	Straight/Debonded
	Left			
	Right			
1		1	15	Straight/Debonded
	Left			
	Right			
1		1	16	Straight/Debonded
	Left			
	Right			
1		2	1	Straight/Debonded
	Left			
	Right			
1		2	2	Straight/Debonded
	Left			
	Right			
1		2	3	Straight/Debonded
	Left			

	Right			
1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			
	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.96...	20.00	1	1.0000	0.1636
1	29.95...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE
#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance	Number Spaces	Spacing	Composite Length

		(ft)		(in)	(ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G4

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G5

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G6

Link with: G3
Description:

Existing:
Current:

Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G7

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G8

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G9

Link with: G3
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G10

Link with: None
Description:

Existing: 17"x36" INT PSU - w/ post Tensioning -
Current: 17"x36" INT PSU - w/ post Tensioning -
Number of Spans: 1

Span Number	Span Length *(ft)*
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal *(in)*	Vertical *(in)*	Rotational *(Radians)*	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation *(kip/ft)*	Y Translation *(kip/ft)*	Z Rotation *(kip-in/rad)*	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" INT PSU - w/ post Tensioning

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD: 2002 AASHTO Std. Specifications(CF=0.9)

ASD Factors

	Inventory	Operating

Structural steel	
Concrete	
PS Concrete Comp.	
PS Concrete Tens.	
PS Moment Cap.	
Reinforcement	
Bearing Stiffener	
Stirrup	
Timber	NA

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.527	0.000	0.527	0.182
Multi-Lane	0.527	0.000	0.527	0.364

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Moment	0.254	0.256
0.00	38.500	Shear	0.254	0.256
0.00	38.500	Deflectio...	0.109	0.182

Shrinkage/Time

Deck curing method:	Moist-cured	
Deck drying time:	3.000 *(Days)*	
Consider deck differential shrinkage loads:		FALSE
Beam Curing method:	Steam-cured	
Curing time:	20.00 *(Days)*	
Service life:	75.00 *(Years)*	
Analysis time:	54.00 *(Years)*	
Composite time:	60.00 *(Days)*	

Continuous time: 45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material	Left Support Distance	Bar Count	Bar Size	Right Support Material	Right Support Distance	Bar Count	Bar Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1	Left	1	1	Straight/Debonded			

1	Right	1	2	Straight/Debonded
1	Left Right	1	3	Straight/Debonded
1	Left Right	1	4	Straight/Debonded
1	Left Right	1	5	Straight/Debonded
1	Left Right	1	6	Straight/Debonded
1	Left Right	1	7	Straight/Debonded
1	Left Right	1	8	Straight/Debonded
1	Left Right	1	9	Straight/Debonded
1	Left Right	1	10	Straight/Debonded
1	Left Right	1	11	Straight/Debonded
1	Left Right	1	12	Straight/Debonded
1	Left Right	1	13	Straight/Debonded
1	Left Right	1	14	Straight/Debonded
1	Left Right	1	15	Straight/Debonded
1	Left Right	1	16	Straight/Debonded
1	Left Right	2	1	Straight/Debonded
1	Left Right	2	2	Straight/Debonded

	Left Right			
1		2	3	Straight/Debonded
	Left Right			
1		2	4	Straight/Debonded
	Left Right			
1		2	5	Straight/Debonded
	Left Right			
1		2	6	Straight/Debonded
	Left Right			
1		3	1	Straight/Debonded
	Left Right			
1		3	7	Straight/Debonded
	Left Right			
1		3	10	Straight/Debonded
	Left Right			
1		3	16	Straight/Debonded
	Left Right			

Deck Profile

Interior Diaphragms

Span	Start Distance (ft)	Spacing (ft)	No of Spaces	Thickness (in)	Weight (kip)
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.96...	20.00	1	1.0000	0.1636
1	29.95...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE
#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance (ft)	Number Spaces	Spacing (in)	Composite Length (ft)
#3 - 2'-7" long	1	0.21	4	6.0000	
#3 - 2'-7" long	1	2.21	1	10.5000	
#3 - 2'-7" long	1	3.08	27	15.0000	
#3 - 2'-7" long	1	36.83	1	10.5000	
#3 - 2'-7" long	1	37.71	4	6.0000	

Member G11

Link with: None
Description:

Existing: 17"x36" EXT PSU -
Current: 17"x36" EXT PSU -
Number of Spans: 1

Span Number	Span Length (ft)
1	38.500000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative 17"x36" EXT PSU

Description:

Description

Material Type: Prestressed Concrete
Girder Type: PS Precast Box
Member units: US Customary
Girder property input method: Schedule based
Additional Self Load: *(kip/ft)*
Additional Self Load %: 1.0 *(%)*

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: Legacy BrR Dist Fact
Analysis Module Component:
Properties:

Default rating method: LRFR
LRFD shear computation method: General Procedure

Factors

Factor Override

LRFD:
LFD: 2002 AASHTO Std. Specifications(CF=0.9)

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		

Reinforcement	
Bearing Stiffener	
Stirrup	
Timber	NA

Default Materials

Deck concrete:	Class A (3000)
Deck reinforcement:	Grade 40
Beam concrete:	Class P (5000)
Beam reinforcement:	Grade 40
Stirrup reinforcemt:	Grade 40
Prestressing strand:	7/16" (7W-250) SR

Impact

Standard Impact Factor

Type:	Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 *(%)*
All other limit states:	33.0 *(%)*

Live Load Distribution

Standard

	Distribution Factor (Wheels)			
Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.100	0.100	0.100	0.100
Multi-Lane	0.100	0.100	0.100	0.100

LRFD

Distance *(ft)*	Length *(ft)*	Type	1 Lane	Multi-Lane
0.00	38.500	Deflectio...	0.100	0.100
0.00	38.500	Moment	0.100	0.100
0.00	38.500	Shear	0.100	0.100

Shrinkage/Time

Deck curing method:	Moist-cured
Deck drying time:	3.000 *(Days)*
Consider deck differential shrinkage loads:	FALSE
Beam Curing method:	Steam-cured
Curing time:	20.00 *(Days)*
Service life:	75.00 *(Years)*
Analysis time:	54.00 *(Years)*
Composite time:	60.00 *(Days)*
Continuous time:	45.0 *(Days)*

Beam Details

Span Details

Span	Prestress Shape Use Projection	Concrete Material n Creep	Prestress Properties	Left Projection *(in)*	Right *(in)*
1	17"x36" PSU TRUE	Class P (5000... 6.64...	PS Strands Pr...	8.5000	8.5000

Continuous Support Details

Support Number	Support Distance on Left, SL *(in)*	Support Distance on Right, SR *(in)*
1		
2		

Stress Limit Ranges

Stress Limit	Span	Start Distance *(ft)*	Length *(ft)*
PS Conc Stress Lim...	1	0.000	39.92

Slab Interface

Deck interface type:	Monolithic
Interface width:	*(in)*
Deck cohesion factor:	0.400 *(ksi)*
Deck friction factor:	1.400

Continuity Diaphragm

Span No.	Material Bar	Left Support Distance Bar	Bar Count	Bar Size	Right Support Material Count	Distance Size

Prestressing Force Information

Strand Layout

Span	Pos.	Row No.	Col. No.	Config. Type	Harp Distance *(ft)*	Debond Distance *(in)*	Harp Curvature *(in)*
1	Left Right	1	1	Straight/Debonded			
1	Left Right	1	2	Straight/Debonded			
1		1	3	Straight/Debonded			

	Left Right			
1		1	4	Straight/Debonded
	Left Right			
1		1	5	Straight/Debonded
	Left Right			
1		1	6	Straight/Debonded
	Left Right			
1		1	7	Straight/Debonded
	Left Right			
1		1	8	Straight/Debonded
	Left Right			
1		1	9	Straight/Debonded
	Left Right			
1		1	10	Straight/Debonded
	Left Right			
1		1	11	Straight/Debonded
	Left Right			
1		1	12	Straight/Debonded
	Left Right			
1		1	13	Straight/Debonded
	Left Right			
1		1	14	Straight/Debonded
	Left Right			
1		1	15	Straight/Debonded
	Left Right			
1		1	16	Straight/Debonded
	Left Right			
1		2	1	Straight/Debonded
	Left Right			
1		2	2	Straight/Debonded
	Left Right			
1		2	3	Straight/Debonded
	Left Right			

1		2	4	Straight/Debonded
	Left			
	Right			
1		2	5	Straight/Debonded
	Left			
	Right			
1		2	6	Straight/Debonded
	Left			
	Right			
1		3	1	Straight/Debonded
	Left			
	Right			
1		3	7	Straight/Debonded
	Left			
	Right			
1		3	10	Straight/Debonded
	Left			
	Right			
1		3	16	Straight/Debonded
	Left			
	Right			

Deck Profile

Interior Diaphragms

Span	Start Distance *(ft)*	Spacing *(ft)*	No of Spaces	Thickness *(in)*	Weight *(kip)*
1	0.00...	1.00	1	2.0000	0.3272
1	1.00...	8.96	1	1.0000	0.1636
1	9.96...	20.00	1	1.0000	0.1636
1	29.96...	8.96	1	1.0000	0.1636

Shear Reinforcement Ranges - Vertical

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Extends into Deck
#4 Bent Shear R...	1	0.21	4	6.0000	FALSE
#4 Bent Shear R...	1	2.21	1	10.5000	FALSE
#4 Bent Shear R...	1	3.08	27	15.0000	FALSE
#4 Bent Shear R...	1	36.83	1	10.5000	FALSE
#4 Bent Shear R...	1	37.71	4	6.0000	FALSE

Shear Reinforcement Ranges - Horizontal

Shear Reinforcement	Span No	Start Distance *(ft)*	Number Spaces	Spacing *(in)*	Composite Length *(ft)*

#3 - 2'-7" long	1	0.21	4	6.0000
#3 - 2'-7" long	1	2.21	1	10.5000
#3 - 2'-7" long	1	3.08	27	15.0000
#3 - 2'-7" long	1	36.83	1	10.5000
#3 - 2'-7" long	1	37.71	4	6.0000

APPENDIX B – AASHTOWARE BrR RATING OUTPUT

Bridge Name: Matheson Hmck Bridge over Matheson Hammock Canal
NBI Structure ID: 874294
Bridge ID: 874294

Analyzed By: BrR
Analyze Date: Wednesday, October 06, 2021 15:45:03
Analysis Engine: AASHTO LRFR Engine Version 6.8.4.3002
Analysis Preference Setting: None

Report By: BrR
Report Date: Wednesday, October 06, 2021 15:45:44

Structure Definition Name: End Span 1 (or 3) - PS Conc PSU
Member Name: G10
Member Alternative Name: 17"x36" INT PSU - (w/ Post Tensioning)

Report by Action: ☑ **Flexure** ☑ **Concrete Stresses** ☑ **Shear** ☑ **Critical**

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
HL-93 (US)
Truck + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location							Inventory Rating	Inventory Load Rating	Operating Rating	Operating Load Rating
(ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Factor	(Ton)	Factor	(Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
0.00	0.0	Concrete Stresses	ksi	0.70	-0.00	0.00	99.000	3564.00		
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**20.37**	**3.351**	**120.64**	**4.344**	**156.39**
1.69	6.0	Flexure	kip-ft	243.32	13.52	33.69	3.841	138.27	4.979	179.24
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**19.81**	**3.141**	**113.07**	**4.072**	**146.57**
1.69	6.0	Concrete Stresses	ksi	1.63	0.10	0.25	7.736	278.50		
2.83	10.0	Flexure	kip-ft	284.36	21.61	53.30	2.759	99.33	3.577	128.76
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**18.60**	**2.590**	**93.25**	**3.358**	**120.88**
2.83	10.0	Concrete Stresses	ksi	1.63	0.16	0.39	4.700	169.19		
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**90.83**	**1.615**	**58.13**	**2.093**	**75.35**
5.66	20.0	Shear	kip	85.08	5.11	15.62	2.878	103.61	3.731	134.31
5.66	20.0	Concrete Stresses	ksi	1.63	0.28	0.67	2.527	90.96		
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**112.61**	**1.227**	**44.18**	**1.591**	**57.27**
8.49	30.0	Shear	kip	59.51	3.30	12.71	2.491	89.69	4.720	169.93
8.49	30.0	Concrete Stresses	ksi	1.63	0.37	0.83	1.907	68.64		
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**118.63**	**1.123**	**40.43**	**1.456**	**52.41**
11.32	40.0	Shear	kip	54.86	1.65	9.84	3.066	110.39	6.250	225.00
11.32	40.0	Concrete Stresses	ksi	1.63	0.42	0.87	1.736	62.51		
14.15	**50.0**	**Flexure**		**304.65**	**59.54**	**109.11**	**1.206**	**43.40**	**1.563**	**56.26**

			kip-ft							
14.15	50.0	Shear	kip	-64.58	-0.00	-7.03	5.251	189.03	8.967	322.81
14.15	50.0	Concrete Stresses	ksi	1.63	0.44	0.80	1.861	67.00		
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**118.63**	**1.123**	**40.43**	**1.456**	**52.41**
16.98	60.0	Shear	kip	-54.87	-1.65	-9.84	3.066	110.38	6.249	224.98
16.98	60.0	Concrete Stresses	ksi	1.63	0.42	0.87	1.737	62.51		
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**112.61**	**1.228**	**44.19**	**1.591**	**57.29**
19.80	70.0	Shear	kip	-59.53	-3.30	-12.71	2.492	89.71	4.720	169.91
19.80	70.0	Concrete Stresses	ksi	1.63	0.37	0.83	1.907	68.66		
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**90.83**	**1.615**	**58.13**	**2.093**	**75.36**
22.63	80.0	Shear	kip	-85.08	-5.12	-15.62	2.878	103.60	3.730	134.30
22.63	80.0	Concrete Stresses	ksi	1.63	0.28	0.67	2.527	90.97		
25.46	90.0	Flexure	kip-ft	291.74	21.57	53.30	2.839	102.20	3.680	132.49
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-18.60**	**2.502**	**90.07**	**3.243**	**116.75**
25.46	90.0	Concrete Stresses	ksi	1.63	0.16	0.39	4.701	169.23		
26.81	94.8	Flexure	kip-ft	256.36	11.90	29.83	4.626	166.53	5.996	215.87
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-20.03**	**3.106**	**111.81**	**4.026**	**144.94**
26.81	94.8	Concrete Stresses	ksi	1.63	0.09	0.22	8.804	316.93		
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-20.35**	**3.262**	**117.43**	**4.228**	**152.22**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
28.29	100.0	Concrete Stresses	ksi	0.82	-0.00	0.00	99.000	3564.00		

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
HL-93 (US)
Tandem + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location					**Inventory Rating**	**Inventory Load Rating**	**Operating Rating**	**Operating Load Rating**
(ft)	**Percent**	**Units**	**Capacity**	**LL**	**Factor**	**(Ton)**	**Factor**	**(Ton)**

		Limit State			DL + Adj-LL*					
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
0.00	0.0	Concrete Stresses	ksi	0.70	-0.00	0.00	99.000	3564.00		
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**19.93**	**3.425**	**123.31**	**4.440**	**159.85**
1.69	6.0	Flexure	kip-ft	243.32	13.52	33.11	3.907	140.67	5.065	182.34
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**19.47**	**3.196**	**115.05**	**4.143**	**149.13**
1.69	6.0	Concrete Stresses	ksi	1.63	0.10	0.24	7.870	283.33		
2.83	10.0	Flexure	kip-ft	284.36	21.61	52.96	2.777	99.96	3.599	129.57
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**18.48**	**2.607**	**93.85**	**3.379**	**121.65**
2.83	10.0	Concrete Stresses	ksi	1.63	0.16	0.39	4.729	170.26		
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**93.28**	**1.572**	**56.60**	**2.038**	**73.37**
5.66	20.0	Shear	kip	85.08	5.11	16.06	2.801	100.82	3.630	130.69
5.66	20.0	Concrete Stresses	ksi	1.63	0.28	0.69	2.460	88.57		
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**120.96**	**1.143**	**41.13**	**1.481**	**53.32**
8.49	30.0	Shear	kip	53.03	3.30	13.69	2.042	73.50	4.381	157.72
8.49	30.0	Concrete Stresses	ksi	1.63	0.37	0.89	1.775	63.90		
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**135.99**	**0.980**	**35.27**	**1.270**	**45.71**
11.32	40.0	Shear	kip	45.04	1.65	11.37	2.159	77.74	4.245	152.83
11.32	40.0	Concrete Stresses	ksi	1.63	0.42	1.00	1.515	54.53		
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**138.38**	**0.951**	**34.23**	**1.232**	**44.37**
14.15	50.0	Shear	kip	-44.95	-0.00	-9.11	2.818	101.46	5.444	195.99
14.15	50.0	Concrete Stresses	ksi	1.63	0.44	1.02	1.467	52.83		
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**135.99**	**0.980**	**35.27**	**1.270**	**45.72**
16.98	60.0	Shear	kip	-45.04	-1.65	-11.37	2.159	77.73	4.245	152.83
16.98	60.0	Concrete Stresses	ksi	1.63	0.42	1.00	1.515	54.53		
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**120.96**	**1.143**	**41.14**	**1.481**	**53.33**
19.80	70.0	Shear	kip	-53.04	-3.30	-13.69	2.042	73.50	4.381	157.70
19.80	70.0	Concrete Stresses	ksi	1.63	0.37	0.89	1.775	63.92		
22.63	**80.0**	**Flexure**		**304.65**	**38.37**	**93.28**	**1.572**	**56.61**	**2.038**	**73.38**

			kip-ft							
22.63	80.0	Shear	kip	-85.08	-5.12	-16.06	2.800	100.81	3.630	130.68
22.63	80.0	Concrete Stresses	ksi	1.63	0.28	0.69	2.461	88.58		
25.46	90.0	Flexure	kip-ft	291.74	21.57	52.96	2.857	102.85	3.703	133.32
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-18.48**	**2.518**	**90.64**	**3.264**	**117.50**
25.46	90.0	Concrete Stresses	ksi	1.63	0.16	0.39	4.730	170.30		
26.81	94.8	Flexure	kip-ft	256.36	11.90	29.27	4.715	169.73	6.112	220.02
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-19.65**	**3.166**	**113.97**	**4.104**	**147.74**
26.81	94.8	Concrete Stresses	ksi	1.63	0.09	0.22	8.973	323.03		
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-19.91**	**3.334**	**120.01**	**4.321**	**155.57**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
28.29	100.0	Concrete Stresses	ksi	0.82	-0.00	0.00	99.000	3564.00		

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
C 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**2772.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**11.15**	**8.238**	**230.67**
1.69	6.0	Flexure	kip-ft	243.32	13.52	18.41	9.462	264.94
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**10.91**	**7.679**	**215.03**
2.83	10.0	Flexure	kip-ft	284.36	21.61	29.33	6.749	188.96
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**10.37**	**6.254**	**175.13**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**51.10**	**3.864**	**108.18**
5.66	20.0	Shear	kip	85.08	5.11	9.03	6.703	187.69
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**65.30**	**2.849**	**79.78**
8.49	30.0	Shear	kip	85.08	3.30	7.69	8.095	226.66
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**71.93**	**2.493**	**69.81**
11.32	40.0	Shear	kip	85.08	1.65	6.36	10.048	281.34
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**70.99**	**2.495**	**69.85**

14.15	50.0	Shear	kip	-85.08	-0.00	-5.02	13.040	365.13
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**71.93**	**2.493**	**69.82**
16.98	60.0	Shear	kip	-85.08	-1.65	-6.36	10.047	281.31
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**65.30**	**2.850**	**79.80**
19.80	70.0	Shear	kip	-85.08	-3.30	-7.69	8.094	226.64
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**51.10**	**3.864**	**108.20**
22.63	80.0	Shear	kip	-85.08	-5.12	-9.03	6.702	187.67
25.46	90.0	Flexure	kip-ft	291.74	21.57	29.33	6.944	194.42
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-10.37**	**6.041**	**169.14**
26.81	94.8	Flexure	kip-ft	256.36	11.90	16.28	11.410	319.48
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-11.01**	**7.610**	**213.09**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-11.15**	**8.018**	**224.49**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**2772.00**

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
C 4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3628.35**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**15.66**	**5.867**	**215.02**
1.69	6.0	Flexure	kip-ft	243.32	13.52	25.63	6.797	249.10
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**15.19**	**5.516**	**202.17**
2.83	10.0	Flexure	kip-ft	284.36	21.61	40.46	4.892	179.30
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**14.30**	**4.534**	**166.17**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**71.13**	**2.775**	**101.72**
5.66	20.0	Shear	kip	85.08	5.11	12.57	4.815	176.48
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**92.01**	**2.022**	**74.11**
8.49	30.0	Shear	kip	85.08	3.30	10.84	5.745	210.55
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**103.09**	**1.739**	**63.75**
11.32	40.0	Shear	kip	85.08	1.65	9.11	7.010	256.93
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**104.38**	**1.697**	**62.18**
14.15	50.0	Shear	kip	-85.08	-0.00	-7.38	8.869	325.04
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**103.09**	**1.740**	**63.76**
16.98	60.0	Shear	kip	-85.08	-1.65	-9.11	7.010	256.90
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**92.01**	**2.022**	**74.12**

19.80	70.0	Shear	kip	-85.08	-3.30	-10.84	5.744	210.53
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**71.13**	**2.776**	**101.73**
22.63	80.0	Shear	kip	-85.08	-5.12	-12.57	4.815	176.46
25.46	90.0	Flexure	kip-ft	291.74	21.57	40.46	5.034	184.49
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-14.30**	**4.379**	**160.50**
26.81	94.8	Flexure	kip-ft	256.36	11.90	22.74	8.167	299.32
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-15.38**	**5.447**	**199.65**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-15.65**	**5.711**	**209.30**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3628.35**

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
C 5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3960.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**15.73**	**5.842**	**233.70**
1.69	6.0	Flexure	kip-ft	243.32	13.52	25.93	6.717	268.67
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**15.37**	**5.451**	**218.06**
2.83	10.0	Flexure	kip-ft	284.36	21.61	41.23	4.802	192.06
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**14.57**	**4.450**	**178.00**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**71.33**	**2.768**	**110.72**
5.66	20.0	Shear	kip	85.08	5.11	12.61	4.802	192.09
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**90.30**	**2.060**	**82.42**
8.49	30.0	Shear	kip	85.08	3.30	10.64	5.854	234.15
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**98.14**	**1.827**	**73.09**
11.32	40.0	Shear	kip	85.08	1.65	8.67	7.364	294.57
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**103.05**	**1.719**	**68.74**
14.15	50.0	Shear	kip	-85.08	-0.00	-6.71	9.756	390.22
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**98.14**	**1.827**	**73.10**
16.98	60.0	Shear	kip	-85.08	-1.65	-8.67	7.364	294.54
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**90.30**	**2.061**	**82.43**
19.80	70.0	Shear	kip	-85.08	-3.30	-10.64	5.853	234.13
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**71.33**	**2.768**	**110.73**
22.63	80.0	Shear	kip	-85.08	-5.12	-12.61	4.802	192.07
25.46	90.0	Flexure	kip-ft	291.74	21.57	41.23	4.940	197.62

25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-14.57**	**4.298**	**171.92**
26.81	94.8	Flexure	kip-ft	256.36	11.90	22.94	8.096	323.85
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-15.51**	**5.400**	**216.01**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-15.72**	**5.686**	**227.44**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3960.00**

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
FL120 Span < 200ft
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Permit Rating Factor	Permit Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**5940.00**
1.69	**6.0**	**Flexure**	**kip-ft**	**243.32**	**13.52**	**40.86**	**4.618**	**277.07**
2.83	**10.0**	**Flexure**	**kip-ft**	**284.36**	**21.61**	**64.51**	**3.324**	**199.45**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**109.25**	**1.958**	**117.46**
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**134.22**	**1.502**	**90.10**
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**139.42**	**1.393**	**83.60**
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**125.17**	**1.533**	**91.97**
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**139.42**	**1.394**	**83.61**
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**134.22**	**1.502**	**90.12**
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**109.25**	**1.958**	**117.47**
25.46	**90.0**	**Flexure**	**kip-ft**	**291.74**	**21.57**	**64.51**	**3.420**	**205.22**
26.81	**94.8**	**Flexure**	**kip-ft**	**256.36**	**11.90**	**36.20**	**5.560**	**333.58**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**5940.00**

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
ST 5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location	Legal Rating	Legal Load Rating

(ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Factor	(Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3960.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**15.36**	**5.983**	**239.30**
1.69	6.0	Flexure	kip-ft	243.32	13.52	25.26	6.895	275.80
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**14.97**	**5.596**	**223.84**
2.83	10.0	Flexure	kip-ft	284.36	21.61	39.92	4.958	198.33
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**14.11**	**4.595**	**183.81**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**67.83**	**2.911**	**116.42**
5.66	20.0	Shear	kip	85.08	5.11	11.99	5.050	201.99
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**83.72**	**2.222**	**88.89**
8.49	30.0	Shear	kip	85.08	3.30	9.86	6.314	252.56
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**93.25**	**1.923**	**76.92**
11.32	40.0	Shear	kip	85.08	1.65	7.74	8.252	330.08
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**93.59**	**1.892**	**75.69**
14.15	50.0	Shear	kip	-85.08	-0.00	-6.08	10.765	430.60
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**93.25**	**1.923**	**76.93**
16.98	60.0	Shear	kip	-85.08	-1.65	-7.74	8.251	330.04
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**83.72**	**2.223**	**88.91**
19.80	70.0	Shear	kip	-85.08	-3.30	-9.86	6.313	252.53
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**67.83**	**2.911**	**116.44**
22.63	80.0	Shear	kip	-85.08	-5.12	-11.99	5.049	201.97
25.46	90.0	Flexure	kip-ft	291.74	21.57	39.92	5.102	204.07
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-14.11**	**4.438**	**177.53**
26.81	94.8	Flexure	kip-ft	256.36	11.90	22.37	8.303	332.11
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-15.13**	**5.538**	**221.51**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-15.35**	**5.823**	**232.91**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3960.00**

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
SU 2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**1683.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**10.65**	**8.625**	**146.63**

1.69	6.0	Flexure	kip-ft	243.32	13.52	17.56	9.917	168.59
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**10.41**	**8.049**	**136.83**
2.83	10.0	Flexure	kip-ft	284.36	21.61	27.92	7.091	120.54
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**9.87**	**6.572**	**111.72**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**48.27**	**4.090**	**69.54**
5.66	20.0	Shear	kip	85.08	5.11	8.53	7.097	120.64
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**61.05**	**3.047**	**51.81**
8.49	30.0	Shear	kip	85.08	3.30	7.19	8.658	147.19
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**66.26**	**2.706**	**46.01**
11.32	40.0	Shear	kip	85.08	1.65	5.86	10.907	185.42
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**63.91**	**2.771**	**47.11**
14.15	50.0	Shear	kip	-85.08	-0.00	-4.52	14.485	246.24
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**66.26**	**2.707**	**46.01**
16.98	60.0	Shear	kip	-85.08	-1.65	-5.86	10.906	185.40
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**61.05**	**3.048**	**51.82**
19.80	70.0	Shear	kip	-85.08	-3.30	-7.19	8.657	147.18
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**48.27**	**4.091**	**69.54**
22.63	80.0	Shear	kip	-85.08	-5.12	-8.53	7.096	120.63
25.46	90.0	Flexure	kip-ft	291.74	21.57	27.92	7.296	124.03
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-9.87**	**6.347**	**107.90**
26.81	94.8	Flexure	kip-ft	256.36	11.90	15.54	11.954	203.21
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-10.51**	**7.973**	**135.54**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-10.65**	**8.394**	**142.71**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**1683.00**

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
SU 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3267.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**18.97**	**4.842**	**159.80**
1.69	6.0	Flexure	kip-ft	243.32	13.52	31.22	5.579	184.12
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**18.50**	**4.528**	**149.43**
2.83	10.0	Flexure	kip-ft	284.36	21.61	49.37	4.009	132.31
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**17.45**	**3.716**	**122.62**

5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**84.06**	**2.349**	**77.51**
5.66	20.0	Shear	kip	85.08	5.11	14.86	4.075	134.48
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**104.05**	**1.788**	**59.01**
8.49	30.0	Shear	kip	85.08	3.30	12.26	5.080	167.65
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**116.56**	**1.538**	**50.77**
11.32	40.0	Shear	kip	85.08	1.65	9.66	6.609	218.10
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**118.00**	**1.501**	**49.53**
14.15	50.0	Shear	kip	-85.08	-0.00	-7.38	8.869	292.67
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**116.56**	**1.539**	**50.77**
16.98	60.0	Shear	kip	-85.08	-1.65	-9.66	6.609	218.08
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**104.05**	**1.788**	**59.02**
19.80	70.0	Shear	kip	-85.08	-3.30	-12.26	5.080	167.63
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**84.06**	**2.349**	**77.52**
22.63	80.0	Shear	kip	-85.08	-5.12	-14.86	4.075	134.46
25.46	90.0	Flexure	kip-ft	291.74	21.57	49.37	4.125	136.14
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-17.45**	**3.589**	**118.44**
26.81	94.8	Flexure	kip-ft	256.36	11.90	27.65	6.719	221.73
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-18.69**	**4.482**	**147.89**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-18.96**	**4.713**	**155.53**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3267.00**

Detailed Rating Results
17"x36" INT PSU - (w/ Post Tensioning)
SU 4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3465.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**19.76**	**4.649**	**162.71**
1.69	6.0	Flexure	kip-ft	243.32	13.52	32.50	5.359	187.56
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**19.26**	**4.349**	**152.22**
2.83	10.0	Flexure	kip-ft	284.36	21.61	51.35	3.855	134.94
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**18.15**	**3.573**	**125.06**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**87.11**	**2.266**	**79.32**
5.66	20.0	Shear	kip	85.08	5.11	15.40	3.932	137.62
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**111.07**	**1.675**	**58.63**
8.49	30.0	Shear	kip	85.08	3.30	12.64	4.926	172.42

11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**127.15**	**1.410**	**49.36**
11.32	40.0	Shear	kip	84.27	1.65	9.99	6.330	221.56
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**127.65**	**1.387**	**48.56**
14.15	50.0	Shear	kip	-85.08	-0.00	-7.78	8.408	294.29
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**127.15**	**1.411**	**49.37**
16.98	60.0	Shear	kip	-84.29	-1.65	-9.99	6.331	221.58
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**111.07**	**1.675**	**58.64**
19.80	70.0	Shear	kip	-85.08	-3.30	-12.64	4.926	172.40
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**87.11**	**2.267**	**79.33**
22.63	80.0	Shear	kip	-85.08	-5.12	-15.40	3.932	137.61
25.46	90.0	Flexure	kip-ft	291.74	21.57	51.35	3.967	138.84
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-18.15**	**3.451**	**120.79**
26.81	94.8	Flexure	kip-ft	256.36	11.90	28.79	6.452	225.84
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-19.46**	**4.304**	**150.63**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-19.75**	**4.525**	**158.36**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3465.00**

Note:
*Adj-LL is only applicable for Permit load rating.

Bridge Name: Matheson Hmck Bridge over Matheson Hammock Canal
NBI Structure ID: 874294
Bridge ID: 874294

Analyzed By: BrR
Analyze Date: Wednesday, October 06, 2021 15:34:40
Analysis Engine: AASHTO LRFR Engine Version 6.8.4.3002
Analysis Preference Setting: None

Report By: BrR
Report Date: Wednesday, October 06, 2021 15:35:19

Structure Definition Name: INT Span 2 - PS Conc PSU
Member Name: G10
Member Alternative Name: 17"x36" INT PSU - w/ post Tensioning

Report by Action: ☑ **Flexure** ☑ **Concrete Stresses** ☑ **Shear** ☑ **Critical**

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
HL-93 (US)
Truck + Lane
Impact: With Impact
Lane: Single Lane

Span 2

Location							Inventory Rating	Inventory Load Rating	Operating Rating	Operating Load Rating
(ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Factor	(Ton)	Factor	(Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**182.46**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
0.00	0.0	Concrete Stresses	ksi	1.08	-0.00	0.00	99.000	3564.00		
1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**20.86**	**2.720**	**97.92**	**3.526**	**126.94**
1.48	3.8	Flexure	kip-ft	408.30	16.29	30.61	7.243	260.75	9.389	338.01
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**20.57**	**2.598**	**93.53**	**3.368**	**121.24**
1.48	3.8	Concrete Stresses	ksi	2.45	0.12	0.23	12.955	466.37		
3.85	10.0	Flexure	kip-ft	462.73	39.60	73.09	3.231	116.30	4.188	150.76
3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**18.70**	**2.093**	**75.36**	**2.714**	**97.69**
3.85	10.0	Concrete Stresses	ksi	2.45	0.29	0.54	5.026	180.94		
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**124.85**	**1.715**	**61.73**	**2.223**	**80.02**
7.70	20.0	Shear	kip	79.93	6.89	15.71	2.594	93.38	3.363	121.05
7.70	20.0	Concrete Stresses	ksi	2.45	0.52	0.92	2.633	94.80		
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**156.13**	**1.271**	**45.76**	**1.648**	**59.32**
11.55	30.0	Shear	kip	79.93	4.49	12.85	3.304	118.93	4.283	154.17
11.55	30.0	Concrete Stresses	ksi	2.45	0.68	1.15	1.931	69.51		
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**172.00**	**1.100**	**39.61**	**1.426**	**51.34**
15.40	40.0	Shear	kip	70.23	2.24	10.26	3.754	135.16	5.567	200.41
15.40	40.0	Concrete Stresses	ksi	2.45	0.77	1.26	1.659	59.71		
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**171.21**	**1.087**	**39.14**	**1.409**	**50.74**

19.25	50.0	Shear	kip	-71.82	0.00	-7.73	5.308	191.08	7.657	275.64
19.25	50.0	Concrete Stresses	ksi	2.45	0.81	1.26	1.635	58.85		
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**172.00**	**1.100**	**39.61**	**1.426**	**51.34**
23.10	60.0	Shear	kip	-70.23	-2.24	-10.26	3.754	135.16	5.567	200.41
23.10	60.0	Concrete Stresses	ksi	2.45	0.77	1.26	1.659	59.71		
26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**156.13**	**1.335**	**48.06**	**1.730**	**62.30**
26.95	70.0	Shear	kip	-80.21	-4.49	-12.85	3.316	119.38	4.299	154.75
26.95	70.0	Concrete Stresses	ksi	2.45	0.68	1.15	1.931	69.51		
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**124.85**	**1.715**	**61.73**	**2.223**	**80.02**
30.80	80.0	Shear	kip	-79.93	-6.89	-15.71	2.594	93.38	3.363	121.05
30.80	80.0	Concrete Stresses	ksi	2.45	0.52	0.92	2.633	94.80		
34.65	90.0	Flexure	kip-ft	462.73	39.60	73.09	3.231	116.30	4.188	150.76
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-18.70**	**2.093**	**75.36**	**2.714**	**97.69**
34.65	90.0	Concrete Stresses	ksi	2.45	0.29	0.54	5.026	180.94		
37.02	96.2	Flexure	kip-ft	408.30	16.29	30.61	7.243	260.75	9.389	338.01
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-20.57**	**2.598**	**93.53**	**3.368**	**121.24**
37.02	96.2	Concrete Stresses	ksi	2.45	0.12	0.23	12.955	466.37		
37.39	**97.1**	**Shear**	**kip**	**-112.75**	**-10.73**	**-20.87**	**2.720**	**97.93**	**3.526**	**126.95**
38.50	**100.0**	**Flexure**	**kip-ft**	**157.45**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
38.50	100.0	Concrete Stresses	ksi	1.08	0.00	0.00	99.000	3564.00		

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
HL-93 (US)
Tandem + Lane
Impact: With Impact
Lane: Single Lane

Span 2

Location							Inventory Rating	Inventory Load Rating	Operating Rating	Operating Load Rating
(ft)	**Percent**	**Limit State**	**Units**	**Capacity**	**DL + Adj-LL***	**LL**	**Factor**	**(Ton)**	**Factor**	**(Ton)**

0.00	**0.0**	**Flexure**	**kip-ft**	**182.46**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
0.00	0.0	Concrete Stresses	ksi	1.08	-0.00	0.00	99.000	3564.00		
1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**18.65**	**3.044**	**109.57**	**3.945**	**142.04**
1.48	3.8	Flexure	kip-ft	408.30	16.29	27.43	8.082	290.94	10.476	377.14
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**18.43**	**2.901**	**104.43**	**3.760**	**135.37**
1.48	3.8	Concrete Stresses	ksi	2.45	0.12	0.20	14.455	520.38		
3.85	10.0	Flexure	kip-ft	462.73	39.60	66.60	3.545	127.63	4.596	165.45
3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**17.02**	**2.301**	**82.82**	**2.982**	**107.36**
3.85	10.0	Concrete Stresses	ksi	2.45	0.29	0.49	5.516	198.56		
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**117.65**	**1.820**	**65.51**	**2.359**	**84.92**
7.70	20.0	Shear	kip	79.93	6.89	14.77	2.758	99.29	3.575	128.71
7.70	20.0	Concrete Stresses	ksi	2.45	0.52	0.86	2.795	100.61		
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**153.13**	**1.296**	**46.66**	**1.680**	**60.48**
11.55	30.0	Shear	kip	79.93	4.49	12.60	3.372	121.38	4.371	157.35
11.55	30.0	Concrete Stresses	ksi	2.45	0.68	1.13	1.969	70.87		
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**173.06**	**1.093**	**39.36**	**1.417**	**51.02**
15.40	40.0	Shear	kip	69.26	2.24	10.48	3.623	130.44	5.451	196.25
15.40	40.0	Concrete Stresses	ksi	2.45	0.77	1.27	1.648	59.34		
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**177.43**	**1.049**	**37.77**	**1.360**	**48.96**
19.25	50.0	Shear	kip	-66.70	0.00	-8.43	4.523	162.82	7.025	252.91
19.25	50.0	Concrete Stresses	ksi	2.45	0.81	1.30	1.577	56.78		
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**173.06**	**1.093**	**39.36**	**1.417**	**51.02**
23.10	60.0	Shear	kip	-69.26	-2.24	-10.48	3.623	130.44	5.451	196.25
23.10	60.0	Concrete Stresses	ksi	2.45	0.77	1.27	1.648	59.34		
26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**153.13**	**1.361**	**49.00**	**1.764**	**63.52**
26.95	70.0	Shear	kip	-80.21	-4.49	-12.60	3.384	121.84	4.387	157.94
26.95	70.0	Concrete Stresses	ksi	2.45	0.68	1.13	1.969	70.87		
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**117.65**	**1.820**	**65.51**	**2.359**	**84.92**
30.80	80.0	Shear	kip	-79.93	-6.89	-14.77	2.758	99.29	3.575	128.71
30.80	80.0		ksi	2.45	0.52	0.86	2.795	100.61		

		Concrete Stresses								
34.65	90.0	Flexure	kip-ft	462.73	39.60	66.60	3.545	127.63	4.596	165.45
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-17.02**	**2.301**	**82.82**	**2.982**	**107.36**
34.65	90.0	Concrete Stresses	ksi	2.45	0.29	0.49	5.516	198.56		
37.02	96.2	Flexure	kip-ft	408.30	16.29	27.43	8.082	290.94	10.476	377.14
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-18.43**	**2.901**	**104.43**	**3.760**	**135.37**
37.02	96.2	Concrete Stresses	ksi	2.45	0.12	0.20	14.455	520.38		
37.39	**97.1**	**Shear**	**kip**	**-112.75**	**-10.73**	**-18.65**	**3.044**	**109.58**	**3.946**	**142.05**
38.50	**100.0**	**Flexure**	**kip-ft**	**157.45**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
38.50	100.0	Concrete Stresses	ksi	1.08	0.00	0.00	99.000	3564.00		

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
C 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**182.46**	**0.00**	**0.00**	**99.000**	**2772.00**
1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**11.46**	**6.669**	**186.74**
1.48	3.8	Flexure	kip-ft	408.30	16.29	16.68	17.893	501.00
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**11.27**	**6.382**	**178.70**
3.85	10.0	Flexure	kip-ft	462.73	39.60	38.88	8.175	228.91
3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**10.10**	**5.218**	**146.10**
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**63.23**	**4.558**	**127.63**
7.70	20.0	Shear	kip	79.93	6.89	8.21	6.680	187.05
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**81.45**	**3.280**	**91.85**
11.55	30.0	Shear	kip	79.93	4.49	7.05	8.107	226.99
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**91.86**	**2.773**	**77.64**
15.40	40.0	Shear	kip	79.93	2.24	5.89	10.068	281.90
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**91.12**	**2.750**	**77.00**
19.25	50.0	Shear	kip	79.93	0.00	4.73	12.989	363.70
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**91.86**	**2.773**	**77.64**
23.10	60.0	Shear	kip	-79.93	-2.24	-5.89	10.068	281.90

26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**81.45**	**3.445**	**96.45**
26.95	70.0	Shear	kip	-80.21	-4.49	-7.05	8.137	227.84
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**63.23**	**4.558**	**127.63**
30.80	80.0	Shear	kip	-79.93	-6.89	-8.21	6.680	187.05
34.65	90.0	Flexure	kip-ft	462.73	39.60	38.88	8.175	228.91
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-10.10**	**5.218**	**146.10**
37.02	96.2	Flexure	kip-ft	408.30	16.29	16.68	17.893	501.00
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-11.27**	**6.382**	**178.70**
37.39	**97.1**	**Shear**	**kip**	**-112.75**	**-10.73**	**-11.46**	**6.670**	**186.75**
38.50	**100.0**	**Flexure**	**kip-ft**	**157.45**	**0.00**	**0.00**	**99.000**	**2772.00**

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
C 4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**182.46**	**0.00**	**0.00**	**99.000**	**3628.35**
1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**16.06**	**4.756**	**174.32**
1.48	3.8	Flexure	kip-ft	408.30	16.29	23.41	12.747	467.17
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**15.83**	**4.547**	**166.63**
3.85	10.0	Flexure	kip-ft	462.73	39.60	55.34	5.744	210.50
3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**14.37**	**3.666**	**134.35**
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**93.36**	**3.087**	**113.13**
7.70	20.0	Shear	kip	79.93	6.89	12.12	4.524	165.81
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**114.05**	**2.343**	**85.86**
11.55	30.0	Shear	kip	79.93	4.49	9.87	5.790	212.19
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**126.11**	**2.020**	**74.03**
15.40	40.0	Shear	kip	79.93	2.24	8.19	7.244	265.51
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**128.76**	**1.946**	**71.32**
19.25	50.0	Shear	kip	79.93	0.00	6.69	9.192	336.87
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**126.11**	**2.020**	**74.03**
23.10	60.0	Shear	kip	-79.93	-2.24	-8.19	7.244	265.51
26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**114.05**	**2.460**	**90.16**
26.95	70.0	Shear	kip	-80.21	-4.49	-9.87	5.811	212.98
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**93.36**	**3.087**	**113.13**
30.80	80.0	Shear	kip	-79.93	-6.89	-12.12	4.524	165.81

34.65	90.0	Flexure	kip-ft	462.73	39.60	55.34	5.744	210.50
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-14.37**	**3.666**	**134.35**
37.02	96.2	Flexure	kip-ft	408.30	16.29	23.41	12.747	467.17
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-15.83**	**4.547**	**166.63**
37.39	**97.1**	**Shear**	**kip**	**-112.75**	**-10.73**	**-16.06**	**4.757**	**174.33**
38.50	**100.0**	**Flexure**	**kip-ft**	**157.45**	**0.00**	**0.00**	**99.000**	**3628.35**

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
C 5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**182.46**	**0.00**	**0.00**	**99.000**	**3960.00**
1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**16.08**	**4.750**	**190.02**
1.48	3.8	Flexure	kip-ft	408.30	16.29	23.46	12.722	508.90
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**15.86**	**4.538**	**181.51**
3.85	10.0	Flexure	kip-ft	462.73	39.60	55.39	5.739	229.54
3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**14.39**	**3.663**	**146.51**
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**92.41**	**3.119**	**124.75**
7.70	20.0	Shear	kip	79.93	6.89	12.00	4.571	182.83
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**114.81**	**2.327**	**93.08**
11.55	30.0	Shear	kip	79.93	4.49	9.94	5.751	230.04
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**128.28**	**1.986**	**79.42**
15.40	40.0	Shear	kip	79.93	2.24	8.24	7.203	288.14
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**132.83**	**1.886**	**75.46**
19.25	50.0	Shear	kip	79.93	0.00	6.32	9.727	389.09
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**128.28**	**1.986**	**79.42**
23.10	60.0	Shear	kip	-79.93	-2.24	-8.24	7.203	288.14
26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**114.81**	**2.444**	**97.75**
26.95	70.0	Shear	kip	-80.21	-4.49	-9.94	5.773	230.90
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**92.41**	**3.119**	**124.75**
30.80	80.0	Shear	kip	-79.93	-6.89	-12.00	4.571	182.83
34.65	90.0	Flexure	kip-ft	462.73	39.60	55.39	5.739	229.54
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-14.39**	**3.663**	**146.51**
37.02	96.2	Flexure	kip-ft	408.30	16.29	23.46	12.722	508.90
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-15.86**	**4.538**	**181.51**

37.39	97.1	Shear	kip	-112.75	-10.73	-16.08	4.751	190.03
38.50	100.0	Flexure	kip-ft	157.45	0.00	0.00	99.000	3960.00

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
FL120 Span < 200ft
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Permit Rating Factor	Permit Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	182.46	0.00	0.00	99.000	5940.00
1.48	3.8	Flexure	kip-ft	408.30	16.29	35.85	9.016	540.99
3.85	10.0	Flexure	kip-ft	462.73	39.60	85.33	4.036	242.14
7.70	20.0	Flexure	kip-ft	462.73	70.46	144.69	2.158	129.47
11.55	30.0	Flexure	kip-ft	462.73	92.31	179.27	1.615	96.87
15.40	40.0	Flexure	kip-ft	462.73	105.27	196.07	1.407	84.45
19.25	50.0	Flexure	kip-ft	462.73	109.59	193.35	1.404	84.24
23.10	60.0	Flexure	kip-ft	462.73	105.27	196.07	1.407	84.45
26.95	70.0	Flexure	kip-ft	480.13	92.31	179.27	1.695	101.73
30.80	80.0	Flexure	kip-ft	462.73	70.46	144.69	2.158	129.47
34.65	90.0	Flexure	kip-ft	462.73	39.60	85.33	4.036	242.14
37.02	96.2	Flexure	kip-ft	408.30	16.29	35.85	9.016	540.99
38.50	100.0	Flexure	kip-ft	157.45	0.00	0.00	99.000	5940.00

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
ST 5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	182.46	0.00	0.00	99.000	3960.00

1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**14.69**	**5.201**	**208.03**
1.48	3.8	Flexure	kip-ft	408.30	16.29	21.47	13.898	555.92
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**14.52**	**4.957**	**198.29**
3.85	10.0	Flexure	kip-ft	462.73	39.60	51.52	6.170	246.79
3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**13.38**	**3.938**	**157.51**
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**88.86**	**3.243**	**129.72**
7.70	20.0	Shear	kip	79.93	6.89	11.54	4.753	190.12
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**112.03**	**2.385**	**95.39**
11.55	30.0	Shear	kip	79.93	4.49	9.70	5.894	235.75
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**125.93**	**2.023**	**80.91**
15.40	40.0	Shear	kip	79.93	2.24	7.86	7.549	301.96
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**128.11**	**1.956**	**78.24**
19.25	50.0	Shear	kip	79.93	0.00	6.02	10.217	408.69
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**125.93**	**2.023**	**80.91**
23.10	60.0	Shear	kip	-79.93	-2.24	-7.86	7.549	301.96
26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**112.03**	**2.504**	**100.17**
26.95	70.0	Shear	kip	-80.21	-4.49	-9.70	5.916	236.64
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**88.86**	**3.243**	**129.72**
30.80	80.0	Shear	kip	-79.93	-6.89	-11.54	4.753	190.12
34.65	90.0	Flexure	kip-ft	462.73	39.60	51.52	6.170	246.79
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-13.38**	**3.938**	**157.51**
37.02	96.2	Flexure	kip-ft	408.30	16.29	21.47	13.898	555.92
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-14.52**	**4.957**	**198.28**
37.39	**97.1**	**Shear**	**kip**	**-112.75**	**-10.73**	**-14.69**	**5.201**	**208.05**
38.50	**100.0**	**Flexure**	**kip-ft**	**157.45**	**0.00**	**0.00**	**99.000**	**3960.00**

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
SU 2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**182.46**	**0.00**	**0.00**	**99.000**	**1683.00**
1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**9.87**	**7.737**	**131.52**
1.48	3.8	Flexure	kip-ft	408.30	16.29	14.44	20.659	351.20
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**9.77**	**7.369**	**125.27**
3.85	10.0	Flexure	kip-ft	462.73	39.60	34.85	9.121	155.07

3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**9.05**	**5.822**	**98.97**
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**60.77**	**4.742**	**80.62**
7.70	20.0	Shear	kip	79.93	6.89	7.89	6.950	118.15
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**77.77**	**3.436**	**58.41**
11.55	30.0	Shear	kip	79.93	4.49	6.73	8.491	144.34
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**85.84**	**2.968**	**50.45**
15.40	40.0	Shear	kip	79.93	2.24	5.57	10.644	180.94
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**84.98**	**2.949**	**50.13**
19.25	50.0	Shear	kip	79.93	0.00	4.41	13.927	236.76
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**85.84**	**2.968**	**50.45**
23.10	60.0	Shear	kip	-79.93	-2.24	-5.57	10.644	180.94
26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**77.77**	**3.608**	**61.33**
26.95	70.0	Shear	kip	-80.21	-4.49	-6.73	8.523	144.88
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**60.77**	**4.742**	**80.62**
30.80	80.0	Shear	kip	-79.93	-6.89	-7.89	6.950	118.15
34.65	90.0	Flexure	kip-ft	462.73	39.60	34.85	9.122	155.07
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-9.05**	**5.822**	**98.97**
37.02	96.2	Flexure	kip-ft	408.30	16.29	14.44	20.659	351.20
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-9.77**	**7.369**	**125.27**
37.39	**97.1**	**Shear**	**kip**	**-112.75**	**-10.73**	**-9.88**	**7.737**	**131.54**
38.50	**100.0**	**Flexure**	**kip-ft**	**157.45**	**0.00**	**0.00**	**99.000**	**1683.00**

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
SU 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**182.46**	**0.00**	**0.00**	**99.000**	**3267.00**
1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**18.08**	**4.225**	**139.42**
1.48	3.8	Flexure	kip-ft	408.30	16.29	26.43	11.289	372.52
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**17.87**	**4.026**	**132.87**
3.85	10.0	Flexure	kip-ft	462.73	39.60	63.47	5.008	165.27
3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**16.49**	**3.197**	**105.48**
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**109.61**	**2.629**	**86.76**
7.70	20.0	Shear	kip	79.93	6.89	14.24	3.853	127.16
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**138.43**	**1.930**	**63.69**

11.55	30.0	Shear	kip	79.93	4.49	11.98	4.770	157.41
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**156.17**	**1.631**	**53.83**
15.40	40.0	Shear	kip	79.93	2.24	9.73	6.094	201.11
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**159.70**	**1.569**	**51.78**
19.25	50.0	Shear	kip	79.93	0.00	7.48	8.215	271.09
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**156.17**	**1.631**	**53.83**
23.10	60.0	Shear	kip	-79.93	-2.24	-9.73	6.094	201.11
26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**138.43**	**2.027**	**66.89**
26.95	70.0	Shear	kip	-80.21	-4.49	-11.98	4.788	158.00
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**109.61**	**2.629**	**86.76**
30.80	80.0	Shear	kip	-79.93	-6.89	-14.24	3.853	127.16
34.65	90.0	Flexure	kip-ft	462.73	39.60	63.47	5.008	165.27
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-16.49**	**3.196**	**105.48**
37.02	96.2	Flexure	kip-ft	408.30	16.29	26.43	11.289	372.52
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-17.87**	**4.026**	**132.87**
37.39	**97.1**	**Shear**	**kip**	**-112.75**	**-10.73**	**-18.08**	**4.225**	**139.43**
38.50	**100.0**	**Flexure**	**kip-ft**	**157.45**	**0.00**	**0.00**	**99.000**	**3267.00**

Detailed Rating Results
17"x36" INT PSU - w/ post Tensioning
SU 4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**182.46**	**0.00**	**0.00**	**99.000**	**3465.00**
1.12	**2.9**	**Shear**	**kip**	**112.73**	**10.73**	**18.95**	**4.032**	**141.10**
1.48	3.8	Flexure	kip-ft	408.30	16.29	27.70	10.774	377.09
1.48	**3.8**	**Shear**	**kip**	**106.69**	**10.52**	**18.72**	**3.843**	**134.50**
3.85	10.0	Flexure	kip-ft	462.73	39.60	66.43	4.785	167.47
3.85	**10.0**	**Shear**	**kip**	**79.93**	**9.14**	**17.26**	**3.054**	**106.89**
7.70	**20.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**114.49**	**2.517**	**88.10**
7.70	20.0	Shear	kip	79.93	6.89	14.87	3.689	129.12
11.55	**30.0**	**Flexure**	**kip-ft**	**462.73**	**92.31**	**147.43**	**1.812**	**63.43**
11.55	30.0	Shear	kip	79.93	4.49	12.48	4.580	160.30
15.40	**40.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**168.68**	**1.510**	**52.85**
15.40	40.0	Shear	kip	79.93	2.24	10.10	5.877	205.68
19.25	**50.0**	**Flexure**	**kip-ft**	**462.73**	**109.59**	**171.55**	**1.461**	**51.12**

19.25	50.0	Shear	kip	79.93	0.00	7.71	7.976	279.15
23.10	**60.0**	**Flexure**	**kip-ft**	**462.73**	**105.27**	**168.68**	**1.510**	**52.85**
23.10	60.0	Shear	kip	-79.93	-2.24	-10.10	5.877	205.68
26.95	**70.0**	**Flexure**	**kip-ft**	**480.13**	**92.31**	**147.43**	**1.903**	**66.61**
26.95	70.0	Shear	kip	-80.21	-4.49	-12.48	4.597	160.90
30.80	**80.0**	**Flexure**	**kip-ft**	**462.73**	**70.46**	**114.49**	**2.517**	**88.10**
30.80	80.0	Shear	kip	-79.93	-6.89	-14.87	3.689	129.12
34.65	90.0	Flexure	kip-ft	462.73	39.60	66.43	4.785	167.47
34.65	**90.0**	**Shear**	**kip**	**-79.93**	**-9.14**	**-17.26**	**3.054**	**106.89**
37.02	96.2	Flexure	kip-ft	408.30	16.29	27.70	10.774	377.09
37.02	**96.2**	**Shear**	**kip**	**-106.69**	**-10.52**	**-18.72**	**3.843**	**134.50**
37.39	**97.1**	**Shear**	**kip**	**-112.75**	**-10.73**	**-18.95**	**4.032**	**141.12**
38.50	**100.0**	**Flexure**	**kip-ft**	**157.45**	**0.00**	**0.00**	**99.000**	**3465.00**

Note:
*Adj-LL is only applicable for Permit load rating.

Bridge Name: Matheson Hmck Bridge over Matheson Hammock Canal
NBI Structure ID: 874294D
Bridge ID: 874294D

Analyzed By: BrR
Analyze Date: Wednesday, October 06, 2021 11:44:40
Analysis Engine: AASHTO LRFR Engine Version 6.8.4.3002
Analysis Preference Setting: None

Report By: BrR
Report Date: Wednesday, October 06, 2021 11:45:40

Structure Definition Name: End Span 1 (or 3) - PS Conc PSU
Member Name: G9
Member Alternative Name: 17"x36" INT PSU - w/ Conc Repair + Post Tensioning

Report by Action: ☑ **Flexure** ☑ **Concrete Stresses** ☑ **Shear** ☑ **Critical**

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
HL-93 (US)
Truck + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location							Inventory Rating	Inventory Load Rating	Operating Rating	Operating Load Rating
(ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Factor	(Ton)	Factor	(Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
0.00	0.0	Concrete Stresses	ksi	0.70	-0.00	0.00	99.000	3564.00		
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**20.37**	**3.351**	**120.64**	**4.344**	**156.39**
1.69	6.0	Flexure	kip-ft	243.32	13.52	33.69	3.841	138.27	4.979	179.24
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**19.81**	**3.141**	**113.07**	**4.072**	**146.57**
1.69	6.0	Concrete Stresses	ksi	1.63	0.10	0.25	7.736	278.50		
2.83	10.0	Flexure	kip-ft	284.36	21.61	53.30	2.759	99.33	3.577	128.76
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**18.60**	**2.590**	**93.25**	**3.358**	**120.88**
2.83	10.0	Concrete Stresses	ksi	1.63	0.16	0.39	4.700	169.19		
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**90.83**	**1.615**	**58.13**	**2.093**	**75.35**
5.66	20.0	Shear	kip	85.08	5.11	15.62	2.878	103.61	3.731	134.31
5.66	20.0	Concrete Stresses	ksi	1.63	0.28	0.67	2.527	90.96		
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**112.61**	**1.227**	**44.18**	**1.591**	**57.27**
8.49	30.0	Shear	kip	59.51	3.30	12.71	2.491	89.69	4.720	169.93
8.49	30.0	Concrete Stresses	ksi	1.63	0.37	0.83	1.907	68.64		
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**118.63**	**1.123**	**40.43**	**1.456**	**52.41**
11.32	40.0	Shear	kip	54.86	1.65	9.84	3.066	110.39	6.250	225.00
11.32	40.0	Concrete Stresses	ksi	1.63	0.42	0.87	1.736	62.51		
14.15	**50.0**	**Flexure**		**304.65**	**59.54**	**109.11**	**1.206**	**43.40**	**1.563**	**56.26**

			kip-ft							
14.15	50.0	Shear	kip	-64.58	-0.00	-7.03	5.251	189.03	8.967	322.81
14.15	50.0	Concrete Stresses	ksi	1.63	0.44	0.80	1.861	67.00		
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**118.63**	**1.123**	**40.43**	**1.456**	**52.41**
16.98	60.0	Shear	kip	-54.87	-1.65	-9.84	3.066	110.38	6.249	224.98
16.98	60.0	Concrete Stresses	ksi	1.63	0.42	0.87	1.737	62.51		
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**112.61**	**1.228**	**44.19**	**1.591**	**57.29**
19.80	70.0	Shear	kip	-59.53	-3.30	-12.71	2.492	89.71	4.720	169.91
19.80	70.0	Concrete Stresses	ksi	1.63	0.37	0.83	1.907	68.66		
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**90.83**	**1.615**	**58.13**	**2.093**	**75.36**
22.63	80.0	Shear	kip	-85.08	-5.12	-15.62	2.878	103.60	3.730	134.30
22.63	80.0	Concrete Stresses	ksi	1.63	0.28	0.67	2.527	90.97		
25.46	90.0	Flexure	kip-ft	291.74	21.57	53.30	2.839	102.20	3.680	132.49
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-18.60**	**2.502**	**90.07**	**3.243**	**116.75**
25.46	90.0	Concrete Stresses	ksi	1.63	0.16	0.39	4.701	169.23		
26.81	94.8	Flexure	kip-ft	256.36	11.90	29.83	4.626	166.53	5.996	215.87
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-20.03**	**3.106**	**111.81**	**4.026**	**144.94**
26.81	94.8	Concrete Stresses	ksi	1.63	0.09	0.22	8.804	316.93		
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-20.35**	**3.262**	**117.43**	**4.228**	**152.22**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
28.29	100.0	Concrete Stresses	ksi	0.82	-0.00	0.00	99.000	3564.00		

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
HL-93 (US)
Tandem + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location					**Inventory Rating**	**Inventory Load Rating**	**Operating Rating**	**Operating Load Rating**
(ft)	**Percent**	**Units**	**Capacity**	**LL**	**Factor**	**(Ton)**	**Factor**	**(Ton)**

		Limit State			DL + Adj-LL*					
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
0.00	0.0	Concrete Stresses	ksi	0.70	-0.00	0.00	99.000	3564.00		
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**19.93**	**3.425**	**123.31**	**4.440**	**159.85**
1.69	6.0	Flexure	kip-ft	243.32	13.52	33.11	3.907	140.67	5.065	182.34
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**19.47**	**3.196**	**115.05**	**4.143**	**149.13**
1.69	6.0	Concrete Stresses	ksi	1.63	0.10	0.24	7.870	283.33		
2.83	10.0	Flexure	kip-ft	284.36	21.61	52.96	2.777	99.96	3.599	129.57
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**18.48**	**2.607**	**93.85**	**3.379**	**121.65**
2.83	10.0	Concrete Stresses	ksi	1.63	0.16	0.39	4.729	170.26		
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**93.28**	**1.572**	**56.60**	**2.038**	**73.37**
5.66	20.0	Shear	kip	85.08	5.11	16.06	2.801	100.82	3.630	130.69
5.66	20.0	Concrete Stresses	ksi	1.63	0.28	0.69	2.460	88.57		
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**120.96**	**1.143**	**41.13**	**1.481**	**53.32**
8.49	30.0	Shear	kip	53.03	3.30	13.69	2.042	73.50	4.381	157.72
8.49	30.0	Concrete Stresses	ksi	1.63	0.37	0.89	1.775	63.90		
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**135.99**	**0.980**	**35.27**	**1.270**	**45.71**
11.32	40.0	Shear	kip	45.04	1.65	11.37	2.159	77.74	4.245	152.83
11.32	40.0	Concrete Stresses	ksi	1.63	0.42	1.00	1.515	54.53		
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**138.38**	**0.951**	**34.23**	**1.232**	**44.37**
14.15	50.0	Shear	kip	-44.95	-0.00	-9.11	2.818	101.46	5.444	195.99
14.15	50.0	Concrete Stresses	ksi	1.63	0.44	1.02	1.467	52.83		
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**135.99**	**0.980**	**35.27**	**1.270**	**45.72**
16.98	60.0	Shear	kip	-45.04	-1.65	-11.37	2.159	77.73	4.245	152.83
16.98	60.0	Concrete Stresses	ksi	1.63	0.42	1.00	1.515	54.53		
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**120.96**	**1.143**	**41.14**	**1.481**	**53.33**
19.80	70.0	Shear	kip	-53.04	-3.30	-13.69	2.042	73.50	4.381	157.70
19.80	70.0	Concrete Stresses	ksi	1.63	0.37	0.89	1.775	63.92		
22.63	**80.0**	**Flexure**		**304.65**	**38.37**	**93.28**	**1.572**	**56.61**	**2.038**	**73.38**

			kip-ft							
22.63	80.0	Shear	kip	-85.08	-5.12	-16.06	2.800	100.81	3.630	130.68
22.63	80.0	Concrete Stresses	ksi	1.63	0.28	0.69	2.461	88.58		
25.46	90.0	Flexure	kip-ft	291.74	21.57	52.96	2.857	102.85	3.703	133.32
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-18.48**	**2.518**	**90.64**	**3.264**	**117.50**
25.46	90.0	Concrete Stresses	ksi	1.63	0.16	0.39	4.730	170.30		
26.81	94.8	Flexure	kip-ft	256.36	11.90	29.27	4.715	169.73	6.112	220.02
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-19.65**	**3.166**	**113.97**	**4.104**	**147.74**
26.81	94.8	Concrete Stresses	ksi	1.63	0.09	0.22	8.973	323.03		
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-19.91**	**3.334**	**120.01**	**4.321**	**155.57**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
28.29	100.0	Concrete Stresses	ksi	0.82	-0.00	0.00	99.000	3564.00		

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
C 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**2772.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**11.15**	**8.238**	**230.67**
1.69	6.0	Flexure	kip-ft	243.32	13.52	18.41	9.462	264.94
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**10.91**	**7.679**	**215.03**
2.83	10.0	Flexure	kip-ft	284.36	21.61	29.33	6.749	188.96
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**10.37**	**6.254**	**175.13**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**51.10**	**3.864**	**108.18**
5.66	20.0	Shear	kip	85.08	5.11	9.03	6.703	187.69
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**65.30**	**2.849**	**79.78**
8.49	30.0	Shear	kip	85.08	3.30	7.69	8.095	226.66
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**71.93**	**2.493**	**69.81**
11.32	40.0	Shear	kip	85.08	1.65	6.36	10.048	281.34
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**70.99**	**2.495**	**69.85**

14.15	50.0	Shear	kip	-85.08	-0.00	-5.02	13.040	365.13
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**71.93**	**2.493**	**69.82**
16.98	60.0	Shear	kip	-85.08	-1.65	-6.36	10.047	281.31
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**65.30**	**2.850**	**79.80**
19.80	70.0	Shear	kip	-85.08	-3.30	-7.69	8.094	226.64
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**51.10**	**3.864**	**108.20**
22.63	80.0	Shear	kip	-85.08	-5.12	-9.03	6.702	187.67
25.46	90.0	Flexure	kip-ft	291.74	21.57	29.33	6.944	194.42
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-10.37**	**6.041**	**169.14**
26.81	94.8	Flexure	kip-ft	256.36	11.90	16.28	11.410	319.48
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-11.01**	**7.610**	**213.09**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-11.15**	**8.018**	**224.49**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**2772.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
C 4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3628.35**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**15.66**	**5.867**	**215.02**
1.69	6.0	Flexure	kip-ft	243.32	13.52	25.63	6.797	249.10
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**15.19**	**5.516**	**202.17**
2.83	10.0	Flexure	kip-ft	284.36	21.61	40.46	4.892	179.30
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**14.30**	**4.534**	**166.17**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**71.13**	**2.775**	**101.72**
5.66	20.0	Shear	kip	85.08	5.11	12.57	4.815	176.48
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**92.01**	**2.022**	**74.11**
8.49	30.0	Shear	kip	85.08	3.30	10.84	5.745	210.55
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**103.09**	**1.739**	**63.75**
11.32	40.0	Shear	kip	85.08	1.65	9.11	7.010	256.93
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**104.38**	**1.697**	**62.18**
14.15	50.0	Shear	kip	-85.08	-0.00	-7.38	8.869	325.04
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**103.09**	**1.740**	**63.76**
16.98	60.0	Shear	kip	-85.08	-1.65	-9.11	7.010	256.90
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**92.01**	**2.022**	**74.12**

19.80	70.0	Shear	kip	-85.08	-3.30	-10.84	5.744	210.53
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**71.13**	**2.776**	**101.73**
22.63	80.0	Shear	kip	-85.08	-5.12	-12.57	4.815	176.46
25.46	90.0	Flexure	kip-ft	291.74	21.57	40.46	5.034	184.49
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-14.30**	**4.379**	**160.50**
26.81	94.8	Flexure	kip-ft	256.36	11.90	22.74	8.167	299.32
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-15.38**	**5.447**	**199.65**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-15.65**	**5.711**	**209.30**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3628.35**

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
C 5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3960.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**15.73**	**5.842**	**233.70**
1.69	6.0	Flexure	kip-ft	243.32	13.52	25.93	6.717	268.67
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**15.37**	**5.451**	**218.06**
2.83	10.0	Flexure	kip-ft	284.36	21.61	41.23	4.802	192.06
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**14.57**	**4.450**	**178.00**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**71.33**	**2.768**	**110.72**
5.66	20.0	Shear	kip	85.08	5.11	12.61	4.802	192.09
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**90.30**	**2.060**	**82.42**
8.49	30.0	Shear	kip	85.08	3.30	10.64	5.854	234.15
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**98.14**	**1.827**	**73.09**
11.32	40.0	Shear	kip	85.08	1.65	8.67	7.364	294.57
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**103.05**	**1.719**	**68.74**
14.15	50.0	Shear	kip	-85.08	-0.00	-6.71	9.756	390.22
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**98.14**	**1.827**	**73.10**
16.98	60.0	Shear	kip	-85.08	-1.65	-8.67	7.364	294.54
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**90.30**	**2.061**	**82.43**
19.80	70.0	Shear	kip	-85.08	-3.30	-10.64	5.853	234.13
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**71.33**	**2.768**	**110.73**
22.63	80.0	Shear	kip	-85.08	-5.12	-12.61	4.802	192.07
25.46	90.0	Flexure	kip-ft	291.74	21.57	41.23	4.940	197.62

25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-14.57**	**4.298**	**171.92**
26.81	94.8	Flexure	kip-ft	256.36	11.90	22.94	8.096	323.85
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-15.51**	**5.400**	**216.01**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-15.72**	**5.686**	**227.44**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3960.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
FL120 Span < 200ft
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Permit Rating Factor	Permit Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**5940.00**
1.69	**6.0**	**Flexure**	**kip-ft**	**243.32**	**13.52**	**40.86**	**4.618**	**277.07**
2.83	**10.0**	**Flexure**	**kip-ft**	**284.36**	**21.61**	**64.51**	**3.324**	**199.45**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**109.25**	**1.958**	**117.46**
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**134.22**	**1.502**	**90.10**
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**139.42**	**1.393**	**83.60**
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**125.17**	**1.533**	**91.97**
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**139.42**	**1.394**	**83.61**
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**134.22**	**1.502**	**90.12**
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**109.25**	**1.958**	**117.47**
25.46	**90.0**	**Flexure**	**kip-ft**	**291.74**	**21.57**	**64.51**	**3.420**	**205.22**
26.81	**94.8**	**Flexure**	**kip-ft**	**256.36**	**11.90**	**36.20**	**5.560**	**333.58**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**5940.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
ST 5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location	Legal Rating	Legal Load Rating

(ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Factor	(Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3960.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**15.36**	**5.983**	**239.30**
1.69	6.0	Flexure	kip-ft	243.32	13.52	25.26	6.895	275.80
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**14.97**	**5.596**	**223.84**
2.83	10.0	Flexure	kip-ft	284.36	21.61	39.92	4.958	198.33
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**14.11**	**4.595**	**183.81**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**67.83**	**2.911**	**116.42**
5.66	20.0	Shear	kip	85.08	5.11	11.99	5.050	201.99
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**83.72**	**2.222**	**88.89**
8.49	30.0	Shear	kip	85.08	3.30	9.86	6.314	252.56
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**93.25**	**1.923**	**76.92**
11.32	40.0	Shear	kip	85.08	1.65	7.74	8.252	330.08
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**93.59**	**1.892**	**75.69**
14.15	50.0	Shear	kip	-85.08	-0.00	-6.08	10.765	430.60
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**93.25**	**1.923**	**76.93**
16.98	60.0	Shear	kip	-85.08	-1.65	-7.74	8.251	330.04
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**83.72**	**2.223**	**88.91**
19.80	70.0	Shear	kip	-85.08	-3.30	-9.86	6.313	252.53
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**67.83**	**2.911**	**116.44**
22.63	80.0	Shear	kip	-85.08	-5.12	-11.99	5.049	201.97
25.46	90.0	Flexure	kip-ft	291.74	21.57	39.92	5.102	204.07
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-14.11**	**4.438**	**177.53**
26.81	94.8	Flexure	kip-ft	256.36	11.90	22.37	8.303	332.11
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-15.13**	**5.538**	**221.51**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-15.35**	**5.823**	**232.91**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3960.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
SU 2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**1683.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**10.65**	**8.625**	**146.63**

1.69	6.0	Flexure	kip-ft	243.32	13.52	17.56	9.917	168.59
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**10.41**	**8.049**	**136.83**
2.83	10.0	Flexure	kip-ft	284.36	21.61	27.92	7.091	120.54
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**9.87**	**6.572**	**111.72**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**48.27**	**4.090**	**69.54**
5.66	20.0	Shear	kip	85.08	5.11	8.53	7.097	120.64
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**61.05**	**3.047**	**51.81**
8.49	30.0	Shear	kip	85.08	3.30	7.19	8.658	147.19
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**66.26**	**2.706**	**46.01**
11.32	40.0	Shear	kip	85.08	1.65	5.86	10.907	185.42
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**63.91**	**2.771**	**47.11**
14.15	50.0	Shear	kip	-85.08	-0.00	-4.52	14.485	246.24
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**66.26**	**2.707**	**46.01**
16.98	60.0	Shear	kip	-85.08	-1.65	-5.86	10.906	185.40
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**61.05**	**3.048**	**51.82**
19.80	70.0	Shear	kip	-85.08	-3.30	-7.19	8.657	147.18
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**48.27**	**4.091**	**69.54**
22.63	80.0	Shear	kip	-85.08	-5.12	-8.53	7.096	120.63
25.46	90.0	Flexure	kip-ft	291.74	21.57	27.92	7.296	124.03
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-9.87**	**6.347**	**107.90**
26.81	94.8	Flexure	kip-ft	256.36	11.90	15.54	11.954	203.21
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-10.51**	**7.973**	**135.54**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-10.65**	**8.394**	**142.71**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**1683.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
SU 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3267.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**18.97**	**4.842**	**159.80**
1.69	6.0	Flexure	kip-ft	243.32	13.52	31.22	5.579	184.12
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**18.50**	**4.528**	**149.43**
2.83	10.0	Flexure	kip-ft	284.36	21.61	49.37	4.009	132.31
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**17.45**	**3.716**	**122.62**

5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**84.06**	**2.349**	**77.51**
5.66	20.0	Shear	kip	85.08	5.11	14.86	4.075	134.48
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**104.05**	**1.788**	**59.01**
8.49	30.0	Shear	kip	85.08	3.30	12.26	5.080	167.65
11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**116.56**	**1.538**	**50.77**
11.32	40.0	Shear	kip	85.08	1.65	9.66	6.609	218.10
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**118.00**	**1.501**	**49.53**
14.15	50.0	Shear	kip	-85.08	-0.00	-7.38	8.869	292.67
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**116.56**	**1.539**	**50.77**
16.98	60.0	Shear	kip	-85.08	-1.65	-9.66	6.609	218.08
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**104.05**	**1.788**	**59.02**
19.80	70.0	Shear	kip	-85.08	-3.30	-12.26	5.080	167.63
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**84.06**	**2.349**	**77.52**
22.63	80.0	Shear	kip	-85.08	-5.12	-14.86	4.075	134.46
25.46	90.0	Flexure	kip-ft	291.74	21.57	49.37	4.125	136.14
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-17.45**	**3.589**	**118.44**
26.81	94.8	Flexure	kip-ft	256.36	11.90	27.65	6.719	221.73
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-18.69**	**4.482**	**147.89**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-18.96**	**4.713**	**155.53**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3267.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc Repair + Post Tensioning
SU 4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**88.32**	**0.00**	**0.00**	**99.000**	**3465.00**
1.17	**4.1**	**Shear**	**kip**	**129.09**	**7.72**	**19.76**	**4.649**	**162.71**
1.69	6.0	Flexure	kip-ft	243.32	13.52	32.50	5.359	187.56
1.69	**6.0**	**Shear**	**kip**	**118.17**	**7.42**	**19.26**	**4.349**	**152.22**
2.83	10.0	Flexure	kip-ft	284.36	21.61	51.35	3.855	134.94
2.83	**10.0**	**Shear**	**kip**	**92.75**	**6.76**	**18.15**	**3.573**	**125.06**
5.66	**20.0**	**Flexure**	**kip-ft**	**304.65**	**38.40**	**87.11**	**2.266**	**79.32**
5.66	20.0	Shear	kip	85.08	5.11	15.40	3.932	137.62
8.49	**30.0**	**Flexure**	**kip-ft**	**304.65**	**50.23**	**111.07**	**1.675**	**58.63**
8.49	30.0	Shear	kip	85.08	3.30	12.64	4.926	172.42

11.32	**40.0**	**Flexure**	**kip-ft**	**304.65**	**57.22**	**127.15**	**1.410**	**49.36**
11.32	40.0	Shear	kip	84.27	1.65	9.99	6.330	221.56
14.15	**50.0**	**Flexure**	**kip-ft**	**304.65**	**59.54**	**127.65**	**1.387**	**48.56**
14.15	50.0	Shear	kip	-85.08	-0.00	-7.78	8.408	294.29
16.98	**60.0**	**Flexure**	**kip-ft**	**304.65**	**57.20**	**127.15**	**1.411**	**49.37**
16.98	60.0	Shear	kip	-84.29	-1.65	-9.99	6.331	221.58
19.80	**70.0**	**Flexure**	**kip-ft**	**304.65**	**50.19**	**111.07**	**1.675**	**58.64**
19.80	70.0	Shear	kip	-85.08	-3.30	-12.64	4.926	172.40
22.63	**80.0**	**Flexure**	**kip-ft**	**304.65**	**38.37**	**87.11**	**2.267**	**79.33**
22.63	80.0	Shear	kip	-85.08	-5.12	-15.40	3.932	137.61
25.46	90.0	Flexure	kip-ft	291.74	21.57	51.35	3.967	138.84
25.46	**90.0**	**Shear**	**kip**	**-89.88**	**-6.76**	**-18.15**	**3.451**	**120.79**
26.81	94.8	Flexure	kip-ft	256.36	11.90	28.79	6.452	225.84
26.81	**94.8**	**Shear**	**kip**	**-118.33**	**-7.55**	**-19.46**	**4.304**	**150.63**
27.11	**95.8**	**Shear**	**kip**	**-125.83**	**-7.72**	**-19.75**	**4.525**	**158.36**
28.29	**100.0**	**Flexure**	**kip-ft**	**86.22**	**0.00**	**0.00**	**99.000**	**3465.00**

Note:
*Adj-LL is only applicable for Permit load rating.

Bridge Name: Matheson Hmck Bridge over Matheson Hammock Canal
NBI Structure ID: 874294D
Bridge ID: 874294D

Analyzed By: BrR
Analyze Date: Wednesday, October 06, 2021 10:33:34
Analysis Engine: AASHTO LRFR Engine Version 6.8.4.3002
Analysis Preference Setting: None

Report By: BrR
Report Date: Wednesday, October 06, 2021 10:41:31

Structure Definition Name: INT Span 2 - PS Conc PSU
Member Name: G10
Member Alternative Name: 17"x36" INT PSU - w/ Conc. Repair + Post Tensioning

Report by Action: ☑ **Flexure** ☑ **Concrete Stresses** ☑ **Shear** ☑ **Critical**

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
HL-93 (US)
Truck + Lane
Impact: With Impact
Lane: Single Lane

Span 2

Location							Inventory Rating	Inventory Load Rating	Operating Rating	Operating Load Rating
(ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Factor	(Ton)	Factor	(Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
0.00	0.0	Concrete Stresses	ksi	0.86	-0.00	0.00	99.000	3564.00		
1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**20.86**	**2.212**	**79.64**	**2.868**	**103.23**
1.12	2.9	Shear	kip	445.93	-5.24	67.36	6.698	241.12	9.343	336.35
1.48	3.8	Flexure	kip-ft	293.46	16.30	30.61	5.099	183.55	6.609	237.94
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**20.57**	**2.107**	**75.84**	**2.731**	**98.32**
1.48	3.8	Shear	kip	436.13	4.78	85.59	5.040	181.43	7.371	265.36
1.48	3.8	Concrete Stresses	ksi	1.77	0.12	0.23	9.193	330.96		
3.85	10.0	Flexure	kip-ft	344.64	39.61	73.09	2.307	83.06	2.991	107.68
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**18.70**	**1.791**	**64.49**	**2.322**	**83.60**
3.85	10.0	Shear	kip	424.83	54.28	180.89	2.049	73.75	2.753	99.11
3.85	10.0	Concrete Stresses	ksi	1.77	0.29	0.54	3.451	124.23		
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**124.85**	**1.174**	**42.27**	**1.522**	**54.79**
7.70	20.0	Shear	kip	44.94	6.90	15.71	1.321	47.56	2.897	104.28
7.70	20.0	Shear	kip	424.83	93.06	265.36	1.250	45.01	1.664	59.89
7.70	20.0	Concrete Stresses	ksi	1.77	0.52	0.92	1.711	61.60		
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**156.13**	**0.839**	**30.20**	**1.087**	**39.15**
11.55	30.0	Shear	kip	30.63	4.49	12.85	1.112	40.04	2.168	78.03
11.55	30.0	Shear	kip	424.83	120.65	313.56	0.970	34.92	1.283	46.19
11.55	30.0	Concrete Stresses	ksi	1.77	0.68	1.15	1.193	42.96		
15.40	**40.0**	**Flexure**		**344.64**	**105.30**	**172.00**	**0.708**	**25.48**	**0.917**	**33.03**

			kip-ft							
15.40	40.0	Shear	kip	26.59	2.24	10.26	1.325	47.69	2.415	86.93
15.40	40.0	Shear	kip	424.83	135.52	336.40	0.860	30.96	1.138	40.96
15.40	40.0	Concrete Stresses	ksi	1.77	0.77	1.26	0.989	35.61		
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**171.21**	**0.693**	**24.95**	**0.898**	**32.34**
19.25	50.0	Shear	kip	-26.93	0.00	-7.73	1.990	71.66	3.511	126.41
19.25	50.0	Shear	kip	424.83	137.84	329.53	0.871	31.35	1.120	40.33
19.25	50.0	Concrete Stresses	ksi	1.77	0.81	1.26	0.962	34.63		
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**172.00**	**0.708**	**25.48**	**0.917**	**33.03**
23.10	60.0	Shear	kip	-26.59	-2.24	-10.26	1.325	47.69	2.415	86.93
23.10	60.0	Shear	kip	424.83	135.52	336.40	0.860	30.96	1.138	40.96
23.10	60.0	Concrete Stresses	ksi	1.77	0.77	1.26	0.989	35.61		
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**156.13**	**0.903**	**32.50**	**1.170**	**42.13**
26.95	70.0	Shear	kip	-34.86	-4.49	-12.85	1.300	46.81	2.412	86.83
26.95	70.0	Shear	kip	441.60	118.83	312.68	1.032	37.16	1.367	49.23
26.95	70.0	Concrete Stresses	ksi	1.77	0.68	1.15	1.193	42.96		
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**124.85**	**1.174**	**42.27**	**1.522**	**54.79**
30.80	80.0	Shear	kip	-44.94	-6.90	-15.71	1.321	47.56	2.897	104.28
30.80	80.0	Shear	kip	424.83	93.06	265.36	1.250	45.01	1.664	59.89
30.80	80.0	Concrete Stresses	ksi	1.77	0.52	0.92	1.711	61.60		
34.65	90.0	Flexure	kip-ft	344.64	39.61	73.09	2.307	83.06	2.991	107.68
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-18.70**	**1.791**	**64.49**	**2.322**	**83.60**
34.65	90.0	Shear	kip	424.83	54.28	180.89	2.049	73.75	2.753	99.11
34.65	90.0	Concrete Stresses	ksi	1.77	0.29	0.54	3.451	124.23		
37.02	96.2	Flexure	kip-ft	293.46	16.30	30.61	5.099	183.56	6.610	237.94
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-20.57**	**2.107**	**75.84**	**2.731**	**98.32**
37.02	96.2	Shear	kip	436.13	4.78	85.59	5.040	181.43	7.371	265.36
37.02	96.2	Concrete Stresses	ksi	1.77	0.12	0.23	9.193	330.97		
37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-20.86**	**2.215**	**79.73**	**2.871**	**103.36**
37.38	97.1	Shear	kip	446.33	-5.46	66.97	6.747	242.88	9.399	338.38
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
38.50	100.0	Concrete Stresses	ksi	0.86	0.00	0.00	99.000	3564.00		

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
HL-93 (US)
Tandem + Lane
Impact: With Impact
Lane: Single Lane

Span 2

Location							Inventory Rating	Inventory Load Rating	Operating Rating	Operating Load Rating
(ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Factor	(Ton)	Factor	(Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
0.00	0.0	Concrete Stresses	ksi	0.86	-0.00	0.00	99.000	3564.00		
1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**18.64**	**2.475**	**89.11**	**3.209**	**115.51**
1.12	2.9	Shear	kip	445.93	-3.06	57.34	7.831	281.92	10.728	386.19
1.48	3.8	Flexure	kip-ft	293.46	16.30	27.43	5.689	204.81	7.375	265.49
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**18.43**	**2.352**	**84.68**	**3.049**	**109.77**
1.48	3.8	Shear	kip	436.13	4.78	72.19	5.975	215.10	8.391	302.09
1.48	3.8	Concrete Stresses	ksi	1.77	0.12	0.20	10.258	369.29		
3.85	10.0	Flexure	kip-ft	344.64	39.61	66.60	2.532	91.16	3.282	118.17
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**17.02**	**1.969**	**70.88**	**2.552**	**91.88**
3.85	10.0	Shear	kip	424.83	54.28	162.82	2.276	81.93	3.071	110.55
3.85	10.0	Concrete Stresses	ksi	1.77	0.29	0.49	3.787	136.33		
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**117.65**	**1.246**	**44.86**	**1.615**	**58.15**
7.70	20.0	Shear	kip	49.78	6.90	14.77	1.592	57.31	3.080	110.88
7.70	20.0	Shear	kip	424.83	92.32	249.52	1.333	47.98	1.778	64.00
7.70	20.0	Concrete Stresses	ksi	1.77	0.52	0.86	1.816	65.37		
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**153.13**	**0.855**	**30.79**	**1.109**	**39.92**
11.55	30.0	Shear	kip	31.38	4.49	12.60	1.169	42.09	2.286	82.29
11.55	30.0	Shear	kip	424.83	120.44	307.44	0.990	35.64	1.311	47.21
11.55	30.0	Concrete Stresses	ksi	1.77	0.68	1.13	1.217	43.80		
15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**173.06**	**0.703**	**25.32**	**0.912**	**32.82**
15.40	40.0	Shear	kip	26.38	2.24	10.48	1.285	46.27	2.342	84.31

15.40	40.0	Shear	kip	424.83	135.61	338.85	0.854	30.73	1.130	40.67
15.40	40.0	Concrete Stresses	ksi	1.77	0.77	1.27	0.983	35.39		
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**177.43**	**0.669**	**24.07**	**0.867**	**31.20**
19.25	50.0	Shear	kip	-25.78	0.00	-8.43	1.748	62.93	3.074	110.67
19.25	50.0	Shear	kip	424.83	138.07	342.40	0.838	30.15	1.082	38.96
19.25	50.0	Concrete Stresses	ksi	1.77	0.81	1.30	0.928	33.42		
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**173.06**	**0.703**	**25.32**	**0.912**	**32.82**
23.10	60.0	Shear	kip	-26.38	-2.24	-10.48	1.285	46.27	2.342	84.31
23.10	60.0	Shear	kip	424.83	135.61	338.85	0.854	30.73	1.130	40.67
23.10	60.0	Concrete Stresses	ksi	1.77	0.77	1.27	0.983	35.39		
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**153.13**	**0.920**	**33.13**	**1.193**	**42.95**
26.95	70.0	Shear	kip	-35.63	-4.49	-12.60	1.362	49.04	2.533	91.17
26.95	70.0	Shear	kip	441.60	118.62	306.50	1.054	37.94	1.398	50.31
26.95	70.0	Concrete Stresses	ksi	1.77	0.68	1.13	1.217	43.80		
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**117.65**	**1.246**	**44.86**	**1.615**	**58.15**
30.80	80.0	Shear	kip	-49.78	-6.90	-14.77	1.592	57.31	3.080	110.88
30.80	80.0	Shear	kip	424.83	92.32	249.52	1.333	47.98	1.778	64.00
30.80	80.0	Concrete Stresses	ksi	1.77	0.52	0.86	1.816	65.37		
34.65	90.0	Flexure	kip-ft	344.64	39.61	66.60	2.532	91.16	3.282	118.17
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-17.02**	**1.969**	**70.88**	**2.552**	**91.88**
34.65	90.0	Shear	kip	424.83	54.28	162.82	2.276	81.93	3.071	110.55
34.65	90.0	Concrete Stresses	ksi	1.77	0.29	0.49	3.787	136.33		
37.02	96.2	Flexure	kip-ft	293.46	16.30	27.43	5.689	204.81	7.375	265.49
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-18.43**	**2.352**	**84.68**	**3.049**	**109.77**
37.02	96.2	Shear	kip	436.13	4.78	72.19	5.975	215.10	8.391	302.09
37.02	96.2	Concrete Stresses	ksi	1.77	0.12	0.20	10.258	369.29		
37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-18.65**	**2.478**	**89.22**	**3.212**	**115.65**
37.38	97.1	Shear	kip	446.33	-3.18	57.07	7.877	283.57	10.795	388.61
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**3564.00**	**99.000**	**3564.00**
38.50	100.0	Concrete Stresses	ksi	0.86	0.00	0.00	99.000	3564.00		

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning

C 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**2772.00**
1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**11.45**	**5.424**	**151.88**
1.12	2.9	Shear	kip	445.93	14.71	18.70	23.057	645.59
1.48	3.8	Flexure	kip-ft	293.46	16.30	16.68	12.596	352.68
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**11.27**	**5.175**	**144.91**
1.48	3.8	Shear	kip	436.13	19.99	24.38	17.070	477.97
3.85	10.0	Flexure	kip-ft	344.64	39.61	38.88	5.839	163.49
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**10.10**	**4.465**	**125.03**
3.85	10.0	Shear	kip	424.83	54.28	58.80	6.302	176.46
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**63.23**	**3.121**	**87.39**
7.70	20.0	Shear	kip	70.05	6.90	8.21	5.755	161.13
7.70	20.0	Shear	kip	424.83	92.25	90.04	3.694	103.43
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**81.45**	**2.165**	**60.61**
11.55	30.0	Shear	kip	70.05	4.49	7.05	7.029	196.82
11.55	30.0	Shear	kip	424.83	119.98	116.90	2.608	73.02
15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**91.86**	**1.784**	**49.94**
15.40	40.0	Shear	kip	70.05	2.24	5.89	8.778	245.79
15.40	40.0	Shear	kip	424.83	136.02	132.69	2.176	60.94
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**91.12**	**1.753**	**49.08**
19.25	50.0	Shear	kip	70.05	0.00	4.73	11.384	318.75
19.25	50.0	Shear	kip	424.83	140.50	132.96	2.139	59.88
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**91.86**	**1.784**	**49.94**
23.10	60.0	Shear	kip	-70.05	-2.24	-5.89	8.778	245.79
23.10	60.0	Shear	kip	424.83	136.02	132.69	2.177	60.94
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**81.45**	**2.329**	**65.22**
26.95	70.0	Shear	kip	-70.42	-4.49	-7.05	7.069	197.94
26.95	70.0	Shear	kip	441.60	119.34	116.31	2.771	77.58
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**63.23**	**3.121**	**87.39**
30.80	80.0	Shear	kip	-70.05	-6.90	-8.21	5.755	161.13
30.80	80.0	Shear	kip	424.83	92.25	90.04	3.694	103.43
34.65	90.0	Flexure	kip-ft	344.64	39.61	38.88	5.839	163.49
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-10.10**	**4.465**	**125.03**
34.65	90.0	Shear	kip	424.83	54.28	58.80	6.302	176.46

37.02	96.2	Flexure	kip-ft	293.46	16.30	16.68	12.596	352.68
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-11.27**	**5.175**	**144.91**
37.02	96.2	Shear	kip	436.13	19.99	24.38	17.071	477.98
37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-11.45**	**5.430**	**152.05**
37.38	97.1	Shear	kip	446.33	14.60	18.58	23.237	650.64
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**2772.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
C 4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**3628.35**
1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**16.06**	**3.868**	**141.77**
1.12	2.9	Shear	kip	445.93	8.71	31.65	13.814	506.27
1.48	3.8	Flexure	kip-ft	293.46	16.30	23.41	8.973	328.87
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**15.83**	**3.687**	**135.12**
1.48	3.8	Shear	kip	436.13	14.06	39.54	10.674	391.20
3.85	10.0	Flexure	kip-ft	344.64	39.61	55.34	4.102	150.34
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**14.37**	**3.137**	**114.97**
3.85	10.0	Shear	kip	424.83	54.28	92.85	3.991	146.27
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**93.36**	**2.114**	**77.47**
7.70	20.0	Shear	kip	70.05	6.90	12.12	3.897	142.84
7.70	20.0	Shear	kip	424.83	89.96	139.88	2.394	87.74
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**114.05**	**1.546**	**56.66**
11.55	30.0	Shear	kip	70.05	4.49	9.87	5.020	183.98
11.55	30.0	Shear	kip	424.83	116.31	165.94	1.859	68.14
15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**126.11**	**1.299**	**47.62**
15.40	40.0	Shear	kip	59.28	2.24	8.19	5.304	194.41
15.40	40.0	Shear	kip	424.83	133.38	182.99	1.593	58.37
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**128.76**	**1.240**	**45.46**
19.25	50.0	Shear	kip	-57.11	0.00	-6.69	6.568	240.71
19.25	50.0	Shear	kip	424.83	138.44	187.41	1.528	56.01
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**126.11**	**1.299**	**47.62**
23.10	60.0	Shear	kip	-59.28	-2.24	-8.19	5.304	194.41
23.10	60.0	Shear	kip	424.83	133.38	182.99	1.593	58.37

26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**114.05**	**1.664**	**60.97**
26.95	70.0	Shear	kip	-70.42	-4.49	-9.87	5.049	185.03
26.95	70.0	Shear	kip	441.60	115.66	165.11	1.974	72.35
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**93.36**	**2.114**	**77.47**
30.80	80.0	Shear	kip	-70.05	-6.90	-12.12	3.897	142.84
30.80	80.0	Shear	kip	424.83	89.96	139.88	2.394	87.74
34.65	90.0	Flexure	kip-ft	344.64	39.61	55.34	4.102	150.34
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-14.37**	**3.137**	**114.97**
34.65	90.0	Shear	kip	424.83	54.28	92.85	3.991	146.27
37.02	96.2	Flexure	kip-ft	293.46	16.30	23.41	8.973	328.87
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-15.83**	**3.687**	**135.12**
37.02	96.2	Shear	kip	436.13	14.06	39.54	10.674	391.21
37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-16.06**	**3.873**	**141.93**
37.38	97.1	Shear	kip	446.33	8.60	31.48	13.905	509.61
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**3628.35**

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
C 5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**3960.00**
1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**16.08**	**3.863**	**154.53**
1.12	2.9	Shear	kip	445.93	8.69	31.72	13.785	551.38
1.48	3.8	Flexure	kip-ft	293.46	16.30	23.46	8.956	358.24
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**15.86**	**3.680**	**147.19**
1.48	3.8	Shear	kip	436.13	14.02	39.64	10.648	425.91
3.85	10.0	Flexure	kip-ft	344.64	39.61	55.39	4.099	163.94
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**14.39**	**3.134**	**125.37**
3.85	10.0	Shear	kip	424.83	54.28	92.95	3.987	159.47
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**92.41**	**2.136**	**85.42**
7.70	20.0	Shear	kip	70.05	6.90	12.00	3.938	157.50
7.70	20.0	Shear	kip	424.83	89.96	138.23	2.423	96.90
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**114.81**	**1.536**	**61.43**
11.55	30.0	Shear	kip	70.05	4.49	9.94	4.987	199.46
11.55	30.0	Shear	kip	424.83	116.22	167.09	1.847	73.88

15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**128.28**	**1.277**	**51.09**
15.40	40.0	Shear	kip	57.66	2.24	8.24	5.123	204.94
15.40	40.0	Shear	kip	424.83	133.39	186.01	1.567	62.67
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**132.83**	**1.202**	**48.09**
19.25	50.0	Shear	kip	-54.70	0.00	-6.32	6.658	266.30
19.25	50.0	Shear	kip	424.83	139.00	192.50	1.485	59.39
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**128.28**	**1.277**	**51.09**
23.10	60.0	Shear	kip	-57.66	-2.24	-8.24	5.123	204.94
23.10	60.0	Shear	kip	424.83	133.39	186.01	1.567	62.67
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**114.81**	**1.652**	**66.10**
26.95	70.0	Shear	kip	-70.42	-4.49	-9.94	5.015	200.60
26.95	70.0	Shear	kip	441.60	115.57	166.25	1.961	78.44
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**92.41**	**2.136**	**85.42**
30.80	80.0	Shear	kip	-70.05	-6.90	-12.00	3.938	157.50
30.80	80.0	Shear	kip	424.83	89.96	138.23	2.423	96.90
34.65	90.0	Flexure	kip-ft	344.64	39.61	55.39	4.099	163.94
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-14.39**	**3.134**	**125.37**
34.65	90.0	Shear	kip	424.83	54.28	92.95	3.987	159.47
37.02	96.2	Flexure	kip-ft	293.46	16.30	23.46	8.956	358.24
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-15.86**	**3.680**	**147.19**
37.02	96.2	Shear	kip	436.13	14.02	39.64	10.648	425.91
37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-16.08**	**3.868**	**154.72**
37.38	97.1	Shear	kip	446.33	8.57	31.55	13.876	555.03
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**3960.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
FL120 Span < 200ft
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Permit Rating Factor	Permit Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**5940.00**
1.12	**2.9**	**Shear**	**kip**	**445.93**	**0.11**	**50.24**	**8.873**	**532.40**
1.48	**3.8**	**Flexure**	**kip-ft**	**293.46**	**16.30**	**35.85**	**6.347**	**380.83**
1.48	3.8	Shear	kip	436.13	5.52	61.36	7.018	421.08
3.85	10.0	Flexure	kip-ft	344.64	39.61	85.33	2.882	172.94
3.85	**10.0**	**Shear**	**kip**	**424.83**	**54.28**	**141.29**	**2.623**	**157.36**

7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**144.69**	**1.478**	**88.65**
7.70	20.0	Shear	kip	424.83	89.96	209.42	1.599	95.94
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**179.27**	**1.065**	**63.93**
11.55	30.0	Shear	kip	424.83	117.79	246.37	1.246	74.78
15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**196.07**	**0.905**	**54.32**
15.40	40.0	Shear	kip	424.83	132.33	262.21	1.116	66.93
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**193.35**	**0.895**	**53.69**
19.25	50.0	Shear	kip	424.83	137.71	257.32	1.116	66.95
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**196.07**	**0.905**	**54.32**
23.10	60.0	Shear	kip	424.83	132.33	262.21	1.116	66.93
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**179.27**	**1.146**	**68.79**
26.95	70.0	Shear	kip	441.60	116.18	245.09	1.328	79.67
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**144.69**	**1.478**	**88.65**
30.80	80.0	Shear	kip	424.83	89.96	209.42	1.599	95.94
34.65	90.0	Flexure	kip-ft	344.64	39.61	85.33	2.882	172.94
34.65	**90.0**	**Shear**	**kip**	**424.83**	**54.28**	**141.29**	**2.623**	**157.36**
37.02	**96.2**	**Flexure**	**kip-ft**	**293.46**	**16.30**	**35.85**	**6.347**	**380.83**
37.02	96.2	Shear	kip	436.13	5.52	61.36	7.018	421.09
37.38	**97.1**	**Shear**	**kip**	**446.33**	**-0.01**	**50.00**	**8.926**	**535.58**
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**5940.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
ST 5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**3960.00**
1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**14.69**	**4.229**	**169.18**
1.12	2.9	Shear	kip	445.93	10.50	27.85	15.637	625.49
1.48	3.8	Flexure	kip-ft	293.46	16.30	21.47	9.784	391.34
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**14.52**	**4.020**	**160.79**
1.48	3.8	Shear	kip	436.13	15.76	35.17	11.951	478.03
3.85	10.0	Flexure	kip-ft	344.64	39.61	51.52	4.406	176.26
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**13.38**	**3.370**	**134.79**
3.85	10.0	Shear	kip	424.83	54.28	84.94	4.363	174.50
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**88.86**	**2.221**	**88.83**

7.70	20.0	Shear	kip	70.05	6.90	11.54	4.094	163.78
7.70	20.0	Shear	kip	424.83	89.96	132.11	2.535	101.39
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**112.03**	**1.574**	**62.95**
11.55	30.0	Shear	kip	70.05	4.49	9.70	5.110	204.41
11.55	30.0	Shear	kip	424.83	116.53	162.91	1.893	75.70
15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**125.93**	**1.301**	**52.05**
15.40	40.0	Shear	kip	59.67	2.24	7.86	5.566	222.66
15.40	40.0	Shear	kip	424.83	133.78	182.35	1.596	63.85
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**128.11**	**1.247**	**49.86**
19.25	50.0	Shear	kip	-58.06	0.00	-6.02	7.422	296.87
19.25	50.0	Shear	kip	424.83	139.22	185.71	1.538	61.52
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**125.93**	**1.301**	**52.05**
23.10	60.0	Shear	kip	-59.67	-2.24	-7.86	5.566	222.66
23.10	60.0	Shear	kip	424.83	133.78	182.35	1.596	63.85
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**112.03**	**1.694**	**67.74**
26.95	70.0	Shear	kip	-70.42	-4.49	-9.70	5.140	205.58
26.95	70.0	Shear	kip	441.60	115.89	162.09	2.009	80.38
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**88.86**	**2.221**	**88.83**
30.80	80.0	Shear	kip	-70.05	-6.90	-11.54	4.094	163.78
30.80	80.0	Shear	kip	424.83	89.96	132.11	2.535	101.39
34.65	90.0	Flexure	kip-ft	344.64	39.61	51.52	4.406	176.26
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-13.38**	**3.370**	**134.79**
34.65	90.0	Shear	kip	424.83	54.28	84.94	4.363	174.50
37.02	96.2	Flexure	kip-ft	293.46	16.30	21.47	9.784	391.35
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-14.52**	**4.020**	**160.79**
37.02	96.2	Shear	kip	436.13	15.76	35.17	11.951	478.03
37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-14.69**	**4.235**	**169.38**
37.38	97.1	Shear	kip	446.33	10.39	27.69	15.745	629.81
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**3960.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
SU 2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**1683.00**

1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**9.87**	**6.291**	**106.96**
1.12	2.9	Shear	kip	445.93	16.77	14.32	29.967	509.43
1.48	3.8	Flexure	kip-ft	293.46	16.30	14.44	14.543	247.23
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**9.77**	**5.975**	**101.58**
1.48	3.8	Shear	kip	436.13	21.95	19.35	21.406	363.90
3.85	10.0	Flexure	kip-ft	344.64	39.61	34.85	6.515	110.75
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**9.05**	**4.982**	**84.70**
3.85	10.0	Shear	kip	424.83	54.28	50.46	7.344	124.85
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**60.77**	**3.247**	**55.20**
7.70	20.0	Shear	kip	70.05	6.90	7.89	5.987	101.78
7.70	20.0	Shear	kip	424.83	92.66	86.20	3.853	65.51
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**77.77**	**2.267**	**38.54**
11.55	30.0	Shear	kip	70.05	4.49	6.73	7.362	125.15
11.55	30.0	Shear	kip	424.83	120.40	111.36	2.734	46.47
15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**85.84**	**1.909**	**32.45**
15.40	40.0	Shear	kip	70.05	2.24	5.57	9.280	157.76
15.40	40.0	Shear	kip	424.83	136.44	123.89	2.328	39.57
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**84.98**	**1.879**	**31.95**
19.25	50.0	Shear	kip	70.05	0.00	4.41	12.206	207.50
19.25	50.0	Shear	kip	424.83	140.92	124.00	2.290	38.92
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**85.84**	**1.909**	**32.45**
23.10	60.0	Shear	kip	-70.05	-2.24	-5.57	9.280	157.76
23.10	60.0	Shear	kip	424.83	136.44	123.89	2.328	39.57
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**77.77**	**2.440**	**41.47**
26.95	70.0	Shear	kip	-70.42	-4.49	-6.73	7.404	125.87
26.95	70.0	Shear	kip	441.60	119.75	110.79	2.905	49.38
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**60.77**	**3.247**	**55.20**
30.80	80.0	Shear	kip	-70.05	-6.90	-7.89	5.987	101.78
30.80	80.0	Shear	kip	424.83	92.66	86.20	3.853	65.51
34.65	90.0	Flexure	kip-ft	344.64	39.61	34.85	6.515	110.75
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-9.05**	**4.982**	**84.69**
34.65	90.0	Shear	kip	424.83	54.28	50.46	7.344	124.85
37.02	96.2	Flexure	kip-ft	293.46	16.30	14.44	14.543	247.23
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-9.77**	**5.975**	**101.58**
37.02	96.2	Shear	kip	436.13	21.95	19.35	21.406	363.90
37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-9.87**	**6.299**	**107.09**
37.38	97.1	Shear	kip	446.33	16.66	14.21	30.232	513.94
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**1683.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
SU 3
Axle Load
Impact: With Impact

Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**3267.00**
1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**18.08**	**3.436**	**113.37**
1.12	2.9	Shear	kip	445.93	6.08	37.39	11.765	388.24
1.48	3.8	Flexure	kip-ft	293.46	16.30	26.43	7.947	262.24
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**17.87**	**3.265**	**107.75**
1.48	3.8	Shear	kip	436.13	11.39	46.35	9.163	302.38
3.85	10.0	Flexure	kip-ft	344.64	39.61	63.47	3.577	118.04
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**16.49**	**2.735**	**90.27**
3.85	10.0	Shear	kip	424.83	54.28	109.65	3.379	111.52
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**109.61**	**1.800**	**59.41**
7.70	20.0	Shear	kip	70.05	6.90	14.24	3.319	109.54
7.70	20.0	Shear	kip	424.83	89.96	168.00	1.993	65.78
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**138.43**	**1.274**	**42.03**
11.55	30.0	Shear	kip	55.12	4.49	11.98	3.177	104.85
11.55	30.0	Shear	kip	424.83	115.19	202.93	1.526	50.35
15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**156.17**	**1.049**	**34.63**
15.40	40.0	Shear	kip	43.05	2.24	9.73	3.180	104.94
15.40	40.0	Shear	kip	424.83	132.50	225.69	1.295	42.74
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**159.70**	**1.000**	**33.00**
19.25	50.0	Shear	kip	-41.98	0.00	-7.48	4.315	142.38
19.25	50.0	Shear	kip	424.83	138.48	230.42	1.243	41.01
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**156.17**	**1.049**	**34.63**
23.10	60.0	Shear	kip	-43.05	-2.24	-9.73	3.180	104.94
23.10	60.0	Shear	kip	424.83	132.50	225.69	1.295	42.74
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**138.43**	**1.371**	**45.23**
26.95	70.0	Shear	kip	-58.59	-4.49	-11.98	3.401	112.22
26.95	70.0	Shear	kip	441.60	113.94	201.66	1.625	53.62
30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**109.61**	**1.800**	**59.41**
30.80	80.0	Shear	kip	-70.05	-6.90	-14.24	3.319	109.54
30.80	80.0	Shear	kip	424.83	89.96	168.00	1.993	65.78
34.65	90.0	Flexure	kip-ft	344.64	39.61	63.47	3.577	118.04
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-16.49**	**2.735**	**90.27**
34.65	90.0	Shear	kip	424.83	54.28	109.65	3.379	111.52
37.02	96.2	Flexure	kip-ft	293.46	16.30	26.43	7.947	262.24
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-17.87**	**3.265**	**107.75**
37.02	96.2	Shear	kip	436.13	11.39	46.35	9.163	302.38

37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-18.08**	**3.440**	**113.51**
37.38	97.1	Shear	kip	446.33	5.96	37.19	11.840	390.72
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**3267.00**

Detailed Rating Results
17"x36" INT PSU - w/ Conc. Repair + Post Tensioning
SU 4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 2

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	**0.0**	**Flexure**	**kip-ft**	**135.08**	**0.00**	**0.00**	**99.000**	**3465.00**
1.12	**2.9**	**Shear**	**kip**	**94.16**	**10.73**	**18.94**	**3.279**	**114.75**
1.12	2.9	Shear	kip	445.93	4.95	39.82	11.074	387.60
1.48	3.8	Flexure	kip-ft	293.46	16.30	27.70	7.584	265.45
1.48	**3.8**	**Shear**	**kip**	**89.01**	**10.52**	**18.72**	**3.116**	**109.07**
1.48	3.8	Shear	kip	436.13	10.28	49.20	8.656	302.96
3.85	10.0	Flexure	kip-ft	344.64	39.61	66.43	3.417	119.61
3.85	**10.0**	**Shear**	**kip**	**70.05**	**9.14**	**17.26**	**2.613**	**91.47**
3.85	10.0	Shear	kip	424.83	54.28	115.78	3.200	112.02
7.70	**20.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**114.49**	**1.724**	**60.33**
7.70	20.0	Shear	kip	70.05	6.90	14.87	3.178	111.23
7.70	20.0	Shear	kip	424.83	89.96	176.43	1.898	66.43
11.55	**30.0**	**Flexure**	**kip-ft**	**344.64**	**92.34**	**147.43**	**1.196**	**41.86**
11.55	30.0	Shear	kip	49.78	4.49	12.48	2.722	95.28
11.55	30.0	Shear	kip	424.83	116.12	216.90	1.423	49.81
15.40	**40.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**168.68**	**0.971**	**34.00**
15.40	40.0	Shear	kip	38.99	2.24	10.10	2.757	96.49
15.40	40.0	Shear	kip	424.83	132.50	243.11	1.202	42.09
19.25	**50.0**	**Flexure**	**kip-ft**	**344.64**	**109.62**	**171.55**	**0.931**	**32.58**
19.25	50.0	Shear	kip	-38.35	0.00	-7.71	3.827	133.94
19.25	50.0	Shear	kip	424.83	138.59	246.79	1.160	40.60
23.10	**60.0**	**Flexure**	**kip-ft**	**344.64**	**105.30**	**168.68**	**0.971**	**34.00**
23.10	60.0	Shear	kip	-38.99	-2.24	-10.10	2.757	96.49
23.10	60.0	Shear	kip	424.83	132.50	243.11	1.202	42.09
26.95	**70.0**	**Flexure**	**kip-ft**	**362.07**	**92.34**	**147.43**	**1.287**	**45.04**
26.95	70.0	Shear	kip	-53.70	-4.49	-12.48	2.964	103.73
26.95	70.0	Shear	kip	441.60	114.73	215.57	1.516	53.07

30.80	**80.0**	**Flexure**	**kip-ft**	**344.64**	**70.48**	**114.49**	**1.724**	**60.33**
30.80	80.0	Shear	kip	-70.05	-6.90	-14.87	3.178	111.23
30.80	80.0	Shear	kip	424.83	89.96	176.43	1.898	66.43
34.65	90.0	Flexure	kip-ft	344.64	39.61	66.43	3.417	119.61
34.65	**90.0**	**Shear**	**kip**	**-70.05**	**-9.14**	**-17.26**	**2.613**	**91.47**
34.65	90.0	Shear	kip	424.83	54.28	115.78	3.200	112.02
37.02	96.2	Flexure	kip-ft	293.46	16.30	27.70	7.584	265.45
37.02	**96.2**	**Shear**	**kip**	**-89.01**	**-10.52**	**-18.72**	**3.116**	**109.07**
37.02	96.2	Shear	kip	436.13	10.28	49.20	8.656	302.96
37.38	**97.1**	**Shear**	**kip**	**-94.28**	**-10.73**	**-18.95**	**3.283**	**114.89**
37.38	97.1	Shear	kip	446.33	4.83	39.62	11.144	390.04
38.50	**100.0**	**Flexure**	**kip-ft**	**108.44**	**0.00**	**0.00**	**99.000**	**3465.00**

Note:
*Adj-LL is only applicable for Permit load rating.

CONSOR

Project #:	D210107FL00.00
Designed By:	YRA
Design Date:	Nov-21
Checked By:	MP
Check Date:	Nov-21

Matheson Hmk Road over Matheson Hammock Canal
SUMMARY OF DEAD LOAD MOMENT & SHEAR REACTIONS (SPAN 2)

DEAD LOAD MOMENT REACTIONS FROM AASHTOWARE BrR (SPAN 2)								
Location	Self Weight (Slab Unit) (KIP-FT)	% of DC Slab Unit (KIP-FT)	Self Weight (Interior diagrams) (KIP-FT)	DC - Railing (KIP-FT)	DC - Curb/ Sidewalk (KIP-FT)		**Total DC Selfweight of Slab Unit alone (per Slab Unit)** (KIP-FT)	**Total DC (Railing + Sidewalk) per Slab Unit** (KIP-FT)	**Total DC per Slab Unit** (KIP-FT)
0	0	0	0	0	0		0	0	0.00
1.48	12.5	0.1	0.3	0.7	2.6		12.9	3.3	16.20
3.85	30.5	0.3	0.7	1.8	6.3		31.5	8.1	39.60
7.7	54.2	0.5	1.4	3.2	11.2		56.1	14.4	70.50
11.55	71.1	0.7	1.6	4.2	14.7		73.4	18.9	92.30
15.4	81.3	0.8	1.6	4.8	16.8		83.7	21.6	105.30
19.25	84.7	0.8	1.6	5	17.5		87.1	22.5	109.60
23.1	81.3	0.8	1.6	4.8	16.8		83.7	21.6	105.30
26.95	71.1	0.7	1.6	4.2	14.7		73.4	18.9	92.30
30.8	54.2	0.5	1.4	3.2	11.2		56.1	14.4	70.50
34.65	30.5	0.3	0.7	1.8	6.3		31.5	8.1	39.60
37.02	12.5	0.1	0.3	0.7	2.6		12.9	3.3	16.20
38.5	0	0	0	0	0		0	0	0.00

** Existing condition assumes the removal of 7 strands, and 1 exterior stirrup leg to account for the controlling deterioration along the bottom face of the slab units.

CONSOR

Project #:	D210107FL00.00
Designed By:	YRA
Design Date:	Nov-21
Checked By:	MP
Check Date:	Nov-21

Matheson Hmk Road over Matheson Hammock Canal
SUMMARY OF DEAD LOAD MOMENT & SHEAR REACTIONS (SPAN 2)

DEAD LOAD SHEAR REACTIONS FROM AASHTOWARE BrR (SPAN 2)								
Location	Self Weight (Slab Unit) (KIP)	% of DC Slab Unitx (KIP)	Self Weight (Interior diagrams) (KIP)	DC - Railing (KIP)	DC - Curb/ Sidewalk (KIP)	**Total DC Selfweight of Slab Unit alone (per Slab Unit)** (KIP)	**Total DC (Railing + Sidewalk) per Slab Unit** (KIP)	**Total DC per Slab Unit** (KIP)
0	8.8	0.09	0.49	0.52	1.82	9.38	2.34	11.72
1.48	8.12	0.08	0.16	0.48	1.68	8.36	2.16	10.52
3.85	7.04	0.07	0.16	0.41	1.45	7.27	1.86	9.13
7.7	5.28	0.05	0.16	0.31	1.09	5.49	1.4	6.89
11.55	3.52	0.04	0	0.21	0.73	3.56	0.94	4.50
15.4	1.76	0.02	0	0.1	0.36	1.78	0.46	2.24
19.25	0	0	0	0	0	0	0	0.00
23.1	-1.76	-0.02	0	-0.1	-0.36	-1.78	-0.46	-2.24
26.95	-3.52	-0.04	0	-0.21	-0.73	-3.56	-0.94	-4.50
30.8	-5.28	-0.05	-0.16	-0.31	-1.09	-5.49	-1.4	-6.89
34.65	-7.04	-0.07	-0.16	-0.41	-1.45	-7.27	-1.86	-9.13
37.02	-8.12	-0.08	-0.16	-0.48	-1.68	-8.36	-2.16	-10.52
38.5	-8.8	-0.09	-0.49	-0.52	-1.82	-9.38	-2.34	-11.72

** Existing condition assumes the removal of 7 strands, and 1 exterior stirrup leg to account for the controlling deterioration along the bottom face of the slab units.

CONSOR

Project #:	D210107FL00.00
Designed By:	YRA
Design Date:	Nov-21
Checked By:	MP
Check Date:	Nov-21

Matheson Hmk Road over Matheson Hammock Canal
SUMMARY OF DESIGN CAPACITY

LOAD RATING SUMMARY - CONTROLLING LEGAL LOAD
(Assuming Post Tensioning)

Span 2 - INTERIOR PSU-8 (LRFR) - SU4

Location	Condition Factor	Unfactored DL (kip-ft)	Unfactored SU4 Truck LL (kip-ft)	Operating Rating Factor	Existing Flexural Capacity (kip-ft) **	Existing Shear Capacity (kip) **	Required Flexural Capacity (kip-ft) *	Required Shear Capacity (kip) *
0.00	0.90	0	0	99	135.08	-	-	-
1.12		-	-	-	-	94.16	-	-
1.48		16.30	27.70	7.58	293.46	89.01	-	-
3.85		39.61	66.43	3.42	344.64	70.05	-	-
7.7		70.48	114.49	1.72	344.64	70.05	-	-
11.55		92.34	147.43	1.20	344.64	49.78	-	-
15.4		105.30	168.68	0.97	344.64	38.99	359.34	-
19.25		109.62	171.55	0.93	344.64	-38.35	368.62	-
23.1		105.30	168.68	0.97	344.64	-38.99	359.34	-
26.95		92.34	147.43	1.29	344.64	-53.70	-	-
30.8		70.48	114.49	1.72	344.64	-70.05	-	-
34.65		39.61	66.43	3.42	344.64	-70.05	-	-
37.02		16.30	27.70	7.58	293.46	-89.01	-	-
37.39		-	-	-	-	-94.28	-	-
38.5		0.00	0.00	99.00	108.44	-	-	-

* Minimum Required capacity to meet a minimin Inventory Rating Factor of 1.1, conservatively.

** Existing condition assumes the removal of 7 strands, and 1 exterior stirrup leg to account for the controlling deterioration along the bottom face of the slab units.

CONSOR

Project #:	D210107FL00.00
Designed By:	YRA
Design Date:	Nov-21
Checked By:	MP
Check Date:	Nov-21

Matheson Hmk Road over Matheson Hammock Canal
SUMMARY OF DESIGN CAPACITY

Notes:

1) Gross Section Properties from AASHTOWare Bridge Rating Software:

PS Box Beam - Circular Void

Name:	17"x36" PSU	
Description:	17"x36" Prestressed Slab Unit (Typ.)	
Si Or Us Type:	US Customary	
Box Beam Type:	Circular Void	
Top Width:	35.0000	in
Number Circular Voids:	2	
Three Void Box Shape Indicator:	FALSE	
Ctc Distance Voids:	16.0000	in
Void Diameter:	10.0000	in
Interior Void Diameter:		in
Exterior Void Diameter:		in
Depth:	17.0000	in
Distance To Cg Void Bot:	9.0000	in
Bot Width:	36.0000	in
Shear Key Vertical Loc:	2.0000	in
Shear Key Height:	6.0000	in
Shear Key Depth:	1.5000	in
Area:	438.822	in^2
Nominal Weight Or Mass:	457.107	lb/ft
Ixx:	13330.101	in^4
Distance Y To Cg:	8.1667	in
Sxx Top:	1509.078	in^3
Sxx Bot:	1632.246	in^3
Nominal Depth:	17.0000	in
Volume Surface Ratio:	3.175	in
Half Depth Area Pos Flex:		in^2
Half Depth Area Neg Flex:		in^2
St Venant Torsional Constant:	14593.772	in^4

CONSOR

Project #:	D210107FL00.00
Designed By:	YRA
Design Date:	Nov-21
Checked By:	MP
Check Date:	Nov-21

Matheson Hmk Road over Matheson Hammock Canal
SUMMARY OF DESIGN CAPACITY

Concrete Material

Name:	Class P (5000)	
Description:	Class 5000 cement concrete	
Si Or Us Type:	US Customary	
28 Day Compressive Strength:	5.000	ksi
Initial Compressive Strength:	4.000	ksi
Density For DL:	0.150	kcf
Density For Modulus Of Elasticity:	0.145	kcf
Std Modulus Of Elasticity:	4074.28	ksi
Std Initial Modulus Of Elasticity:	3644.15	ksi
Coefficient Of Thermal Expansion:	0.0000060000	1/F
Poissons Ratio:	0.200	
Composition Type:	Normal	
Modulus Of Rupture:	0.537	ksi
Shear Factor:	1.000	

Reinforcing Steel Material

Name:	Grade 40	
Description:	40 ksi reinforcing steel	
Si Or Us Type:	US Customary	
Yield Strength:	40.000	ksi
Modulus Of Elasticity:	29000.00	ksi
Ultimate Strength:	70.000	ksi
Reinforcing Bar Type:	Plain	

Prestress Strand Material

Name:	7/16" (7W-250) SR	
Description:	Stress relieved 7/16"/Seven Wire/fpu = 250	
Si Or Us Type:	US Customary	
Strand Diameter:	0.4375	in
Strand Area:	0.108	in^2
Strand Type:	Stress Relieved	
Ultimate Tensile Strength:	250.000	ksi
Yield Strength:	212.500	ksi
Modulus Of Elasticity:	28500.00	ksi
Transfer Length Std:	21.8750	in
Transfer Length LRFD:	26.2500	in
Unit Load Per Length:	0.367	lb/ft
Epoxy Coated Indicator:	FALSE	

APPENDIX C – SONOVOID SLAB UNIT STRENGTHENING – CFRP EVALUATION

OBJECTIVE

Design of externally bonded Carbon FRP reinforcement in order to increase the Flexural Capacity of Sonovoid Slab Units 2-8 and 2-9, Bridge No.874294. Load rate CFRP strengthened slab units using LRFR Strength II for controlling FL-Legal Truck (SU4).

CODES AND SPECIFICATIONS

- "FDOT Bridge Load Rating Manual, "Florida Department of Transportation (FDOT) ", January 2021, FDOT BLRM , 2021 edition used for project consistency
- "FDOT Structures Design Guidelines (SDG). Structures Manual Vol.1", January 2021, FDOT
- "AASHTO LRFD Bridge Design Specifications, "American Association of State Highway and Transportation Officials (AASHTO), 9th Edition 2020
- "Fiber Reinforced Polymer Guidelines (FRPG). Structures Design Manual Vol.4", January 2021, FDOT
- "Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures ", ACI 440.2R-08, ACI, 2008

Assumptions/Notes:

1. Assume all prestressing strands are bonded for flexural analysis
2. Calculations are an addendum to the AASHTOWare BrR Analysis
3. CFRP Strengthening will use the U-Wrap Method described in (ACI 440.2R-08, Chapter 11) and Flexural Strengthing analysis techniques in (ACI 440.2R-08, Chapter 10)

Procedure:

1. Input Original Beam Geometry, Material Properties, Strength and Load Effects
2. AASHTOWARE BrR Refined Analysis Results Input
    a. Moment
3. FRP Reinforcement Properties
4. Design of Externally Bonded FRP Reinforcement
    a. Development Length of FRP
    b. Flexural Capacity
    c. Service Check
    d. FRP Fatigue Check
5. Calculate HL93 Inventory, HL93 Operating, FL120 Permit, and the 7 Florida Legal Loads Ratings
6. Summary

Legend:

INPUT <------Data Input

OUTPUT <------Reference Checks and Design Results Output

INPUT DATA

Resistance factor for FRP (ACI 440.2R-08, Table 11.1) $\psi_f := 0.85$

System Factor (FDOT BLRM Table 6A.4.2.4-1) $\phi_S := 1.0$

Condition Factor (AASHTO MBE 6A.4.2.3) $\phi_C := 0.90$

Load Factors per Table 6A.4.2.2-1 FDOT Load Rating Manual, January 2021

Load factor for Dead Load $\gamma_{DC} := 1.25$

Load factor for Dead Load of Wearing Surface $\gamma_{DW} := 1.5$

Load factor for Live Load - Inventory (1.75) and FL-120 (1.35) $\gamma_{INV} := 1.75$

Load factor for Live Load - Operating $\gamma_{OPT} := 1.35$

Load factor for Live Load - FL-120 $\gamma_{FL120} := 1.35$

Load factor for Live Load - Legal - Operating $\gamma_{FLSU\_OPT} := 1.35$

Material Properties

Concrete Information:

Correction factor for source of aggregate. (AASHTO 5.4.2.4-1. & FDOT SDG. 1.4.1-A) $K_1 := 1.0$

Nominal compressive strength of concrete Slab Unit (non-composite). $f'_{c\_bm} := 5.0 \cdot ksi$

Slab Unit concrete strength at final (FDOT BLRM Table 6A.5.2.1-1) $fc := 5.0ksi$

Deck Slab concrete strength at final (FDOT BLRM Table 6A.5.2.1-1) $fcslab := 0ksi$

Weight of concrete and humidity (AASHTO Table 3.5.1-1 & FDOT SDG 1.4.1-A & 4.6.6) $w_c := 0.145 \frac{kip}{ft^3}$ $Humidity := 75$

Modulus of elasticity for normalweight concrete Deck Slab. (AASHTO 5.4.2.4-2).

$$E_c := 120000 \cdot K_1 \cdot \left(w_c \cdot \frac{ft^3}{kip} \right)^{2.0} \cdot \left(fcslab \cdot \frac{1}{ksi} \right)^{0.33} \cdot ksi = 0 \cdot ksi$$

Modulus of elasticity for normalweight concrete Slab Unit. (AASHTO 5.4.2.4-2).

$$E_{c\_bm} := 120000 \cdot K_1 \cdot \left(w_c \cdot \frac{ft^3}{kip} \right)^{2.0} \cdot \left(f'_{c\_bm} \cdot \frac{1}{ksi} \right)^{0.33} \cdot ksi = 4.291 \times 10^3 \cdot ksi$$

Modular Ratio $n_{trans} := \frac{E_c}{E_{c\_bm}} = 0$

Concrete cracking stress (AASHTO 5.4.2.6) $f_r := 0.24 \cdot \sqrt{\frac{f'_{c\_bm}}{ksi}} \cdot ksi = 0.537 \cdot ksi$

Geometry Information:

Span length (CL bearing to CL bearing, Span 2) $L_{Span} := 38.50ft$ *(See Asbuilt Plans, PG. 8 of 13 of pdf)*

Slab Section Properties - **[Not Applicable to this Design]**

Deck thickness (Assumed for Asphalt W.S.) $t_{slab} := 0in$

Effective Deck Width $b_s := 0.0ft$

Transformed Width $b_{transf} := n_{trans} \cdot b_s = 0 \cdot in$

Height of the section (Slab Unit + Deck Slab) $h_c := 17in + t_{slab} = 17 \cdot in$

Tranformed Area $A_{ts} := t_{slab} \cdot b_{transf} = 0 \cdot in^2$

Slab Unit Properties

	Non-composite	**(Tranformed) Composite**
Slab Unit height	$h_{nc} := 17in$	$h_c = 17 \cdot in$
Size of Void	$d_{void} := 10in$	
Bottom flange width	$b_{f\_bot} := 36in$	
Top flange width	$b_{f\_top} := 35in$	
Web width (assume effective web width)	$b_w := b_{f\_top} - 2 \cdot 1in - 2 \cdot \left(\frac{\pi \cdot d_{void}}{4}\right)$	$b_w = 17.292 \cdot in$
Cross sectional area (From AASHTOWARE BrR)	$A_{nc} := 438.822in^2$	$A := A_{nc} + b_{transf} \cdot t_{slab}$ $A = 438.822 \cdot in^2$
Moment of inertia	$I_{nc} := 13330.101in^4$	$I := 13330.101in^4$
C.G (from bottom)	$y_{b\_nc} := 8.1667in$	$y_b := 8.1667in$
Top fiber to C.G.	$y_{t\_nc} := h_{nc} - y_{b\_nc} = 8.833 \cdot in$	$y_t := h_c - y_b = 8.833 \cdot in$
Section modulus at top fiber	$S_{t\_nc} := \frac{I_{nc}}{y_{t\_nc}} = 1.509 \times 10^3 \cdot in^3$	$S_t := \frac{I}{y_t} = 1.509 \times 10^3 \cdot in^3$
Section modulus at top of slab unit once section becomes composite	$S_{top\_girder\_c} := \frac{I}{y_t - t_{slab}} = 1.509 \times 10^3 \cdot in^3$	

Section modulus at bottom fiber

$$S_{b\_nc} := \frac{I_{nc}}{y_{b\_nc}} = 1.632 \times 10^3 \cdot in^3 \qquad S_b := \frac{I}{y_b} = 1.632 \times 10^3 \cdot in^3$$

Radius of gyration

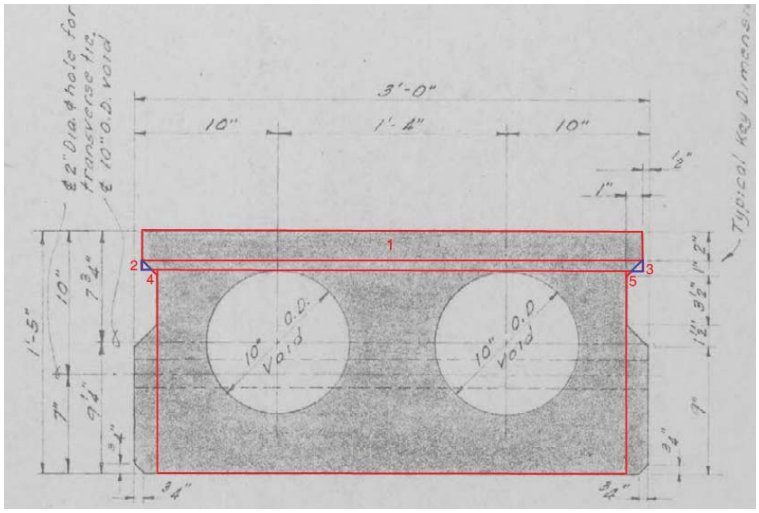
$$r := \sqrt{\frac{I_{nc}}{A_{nc}}} = 5.512 \cdot in$$

Slab Unit/Girder Dimensions (For Nominal Bending Strength)

Slab Unit Dimensions (Used for Flexural Design):

17"x36" Slab Unit:

Base	*Height*
$b_1 := 35in$	$h_1 := 2.0in$
$b_2 := 0.75in$	$h_2 := 0.75in$
$b_3 := 0.75in$	$h_3 := 0.75in$
$b_4 := 0.25in$	$h_4 := 0.25in$
$b_5 := 0.25in$	$h_5 := 0.25in$



Slab Unit/Girder Dimensions (For Nominal Bending Strength)

Steel Information:

Strand Info: (7/16" seven-wire strand, Grade 250)

Strand diameter. (7/16")

$$d_s := 0.4375in$$

Strand area.

$$A_s := 0.108in^2$$

Specified tensile strength of prestressing steel (ksi). (MBE Table 6A.5.2.3-1)

$$f_{pu} := 250ksi$$

Yield strength of prestressing steel (ksi).

$$f_{py} := 0.9 \cdot f_{pu} = 225 \cdot ksi$$

Modulus of elasticity for prestressing strands (ksi). (MBE Table 6A.5.2.3-1)

$$E_p := 28500ksi$$

Total number of strands at critical section

$$N_{Total\_str} := 15$$

Area of existing prestressing steel.

$$A_{ps} := N_{Total\_str} \cdot A_s = 1.62 \cdot in^2$$

Total Losses to prestresing steel (Assumed).

$$\Delta f_{pT} := 0.75 \cdot f_{pu} \cdot 13.43\% = 25.181 \cdot ksi$$

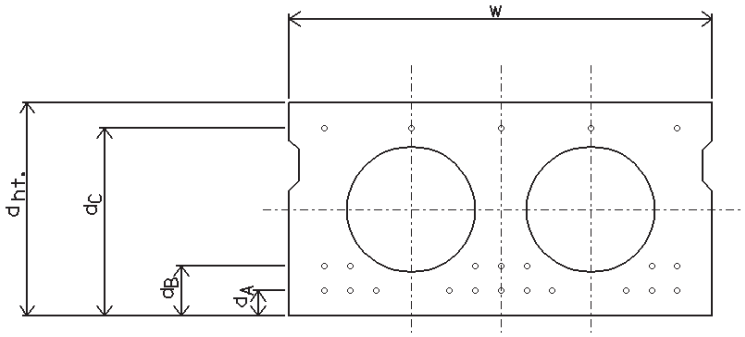
Effective stress in prestressing steel after losses. $f_{pe} := 0.75 f_{pu} - \Delta f_{pT} = 162.319 \cdot ksi$

Effective force in prestressing steel after losses. $P_{pe} := A_{ps} \cdot f_{pe} = 262.956 \cdot kip$

Effective prestress strain. $\varepsilon_{pe} := \frac{f_{pe}}{E_p} = 0.0057$

Strand Layout - Interior Units 2-8 & 2-9:

(Note: Assumed strand layout for Design, accounting for removal of severed/deteriorated strands per damages reported in the most current Inspection Reports, plus 50% of the adjacent strands)



Strand Locations (Measured inches From the Bottom)

"Location"	"From Bottom"	"No. Strands""
"Top Row"	14.5	4
"3rd Row"	6.5	0
"2nd Row"	4.5	5
"Bottom Row"	2.5	10

C.G. of PS to bottom fiber of slab unit at mid-span

$$y_{ps} := \frac{A_s \cdot \left(d_{strand_{3,2}} \cdot d_{strand_{3,1}}\,in + d_{strand_{4,2}} \cdot d_{strand_{4,1}}\,in \right)}{\left(d_{strand_{3,2}} + d_{strand_{4,2}} \right) \cdot A_s} = 3.17 \cdot in$$

Prestressing strand eccentricity. $e_{nc} := y_{b\_nc} - y_{ps} = 5.00 \cdot in$ $e := y_b - y_{ps} = 5.00 \cdot in$

Distance from the extreme compression fiber to the centoid of prestressing tendons. $d_{p\_nc} := h_{nc} - y_{ps} = 13.83 \cdot in$ $d_p := h_c - y_{ps} = 13.83 \cdot in$

Area of transverse reinforcement #4 stirrups (Assume 3-legs of Transverse reinforcement) $A_v := 3(0.2)\,in^2 = 0.6 \cdot in^2$

Yield strength of stirrups (FDOT BLRM Table 6A.5.2.2-1) $f_y := 40ksi$

AASHTOWARE BrR-Inputs (Moment)

B. Moments (AASHTOWARE BrR Analysis Results):

(Note: Final Condition ensures that repaired structure satisfies a minimum Rating Factor of 1.0 for all Legal Loads)

Design Dead Load Moment Reactions:

$g := 0$

$M_g := (87.1\,kip\cdot ft)$ — Moment due to self weight of the slab unit (Midspan). (Total DC Self weight moment from AASHTOWare BrR)

$M_{pre\_DC} := (0\,kip\cdot ft)$ — Moment due to additional precast components

$M_{pc} := (0\,kip\cdot ft)$ — Moment due dead load of deck slab [Not Applicable]

$M_c := (22.5\,kip\cdot ft)$ — Moment due to additional structural components (Total DC Railing & Sidewalk/Curb moment from AASHTOWare BrR)

$M_{DC} := M_g + M_{pre\_DC} + M_{pc} + M_c = (109.6)\cdot kip\cdot ft$ — Dead load moment from structural components and non-structural attachments.

$M_{DW} := (8.68\,kip\cdot ft)$ — Moment due to existing wearing surface DL.

Design Live Load Distribution Factors:

$LLDF_{M\_HL93} := (0.256)$ — Live load distribution factor for HL93 moment from AASHTOWare BrR Refined Analysis (Note: Distribution Factor assuming post-tensioning is repaired/restored)

$LLDF_{M\_FL.Permit} := (0.256)$ — Live load distribution factor for Permit moment from AASHTOWare BrR Refined Analysis (Note: Distribution Factor assuming post-tensioning is repaired/restored)

$LLDF_{M\_FL.Legal} := (0.256)$ — Live load distribution factor for Legal moment from AASHTOWare BrR Refined Analysis (Note: Distribution Factor assuming post-tensioning is repaired/restored)

Design Live Load Moment Reactions:

$M_{LL\_HL93} := (177.43\,kip\cdot ft)$ — Live load moment from controlling HL-93 truck.

$M_{LL\_FL120} := (193.35\,kip\cdot ft)$ — Live load moment from FL120 Permit truck.

$M_{LL\_SU2} := (84.98\,kip\cdot ft)$ — Live load moment from SU2 FL-Legal truck.

$M_{LL\_SU3} := (159.7\,kip\cdot ft)$ — Live load moment from SU3 FL-Legal truck.

$M_{LL\_SU4} := (171.55 kip \cdot ft)$ Live load moment from controlling FL-Legal truck: SU4.

$M_{LL\_C3} := (91.12 kip \cdot ft)$ Live load moment from C3 FL-Legal truck.

$M_{LL\_C4} := (128.76 kip \cdot ft)$ Live load moment from C4 FL-Legal truck.

$M_{LL\_C5} := (132.83 kip \cdot ft)$ Live load moment from C5 FL-Legal truck.

$M_{LL\_ST5} := (128.11 kip \cdot ft)$ Live load moment from ST5 FL-Legal truck.

Controlling Live load moment FL-Legal truck: (SU4)

$$M_{LL\_FL.Legal} := \left(\max\left(M_{LL\_SU2}, M_{LL\_SU3}, M_{LL\_SU4}, M_{LL\_C3}, M_{LL\_C4}, M_{LL\_C5}, M_{LL\_ST5}\right)\right) = (171.55) kip \cdot ft$$

Design Load Combinations:
(Note: Final Condition ensures that repaired structure satisfies a minimum Rating Factor of 1.0 for all Legal Loads)

Service:

$M_{Ser\_HL93} := 1.0 \cdot M_{DC} + 1.0 \cdot M_{DW} + 1.0 \cdot M_{LL\_HL93} = (295.7) \cdot kip \cdot ft$ Service moment (Service I) - Design. AASHTO LRFD Table 3.4.1-1.

$M_{Ser\_FL120} := 1.0 \cdot M_{DC} + 1.0 \cdot M_{DW} + 1.0 \cdot M_{LL\_FL120} = (311.6) \cdot kip \cdot ft$ Service moment (Service I) - Permit. AASHTO LRFD Table 3.4.1-1.

$M_{Ser\_FL.Legal} := 1.0 \cdot M_{DC} + 1.0 \cdot M_{DW} + 1.0 \cdot M_{LL\_SU4} = (289.8) \cdot kip \cdot ft$ Service moment (Service I) - Controlling FL-Legal. AASHTO LRFD Table 3.4.1-1.

Strength:

$M_{Str\_HL93.inv} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + \gamma_{INV} \cdot M_{LL\_HL93} = (460.5) \cdot kip \cdot ft$ Inv. Strength moment (Strength I) - Design. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_HL93.op} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + \gamma_{OPT} \cdot M_{LL\_HL93} = (389.6) \cdot kip \cdot ft$ Op. Strength moment (Strength I) - Design. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_FL120} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + 1.35 \cdot M_{LL\_FL120} = (411) \cdot kip \cdot ft$ Strength moment (Strength II) - Permit. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_SU2} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + 1.35 \cdot M_{LL\_SU2} = (264.7) \cdot kip \cdot ft$ Strength moment (Strength I) - SU2 Legal. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_SU3} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + 1.35 \cdot M_{LL\_SU3} = (365.6) \cdot kip \cdot ft$ Strength moment (Strength I) - SU3 Legal. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_SU4} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + 1.35 \cdot M_{LL\_SU4} = (381.6) \cdot kip \cdot ft$ Strength moment (Strength I) - SU4 Legal. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_C3} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + 1.35 \cdot M_{LL\_C3} = (273) \cdot kip \cdot ft$ Strength moment (Strength I) - C3 Legal. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_C4} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + 1.35 \cdot M_{LL\_C4} = (323.8) \cdot kip \cdot ft$

Strength moment (Strength I) - C4 Legal. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_C5} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + 1.35 \cdot M_{LL\_C5} = (329.3) \cdot kip \cdot ft$

Strength moment (Strength I) - C5 Legal. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_ST5} := 1.25 \cdot M_{DC} + 1.5 \cdot M_{DW} + 1.35 \cdot M_{LL\_ST5} = (323) \cdot kip \cdot ft$

Strength moment (Strength I) - ST5 Legal. AASHTO LRFD Table 3.4.1-1.

$M_{Str\_FL.Legal} := \left(\max\left(M_{Str\_SU2}, M_{Str\_SU3}, M_{Str\_SU4}, M_{Str\_C3}, M_{Str\_C4}, M_{Str\_C5}, M_{Str\_ST5}\right)\right) = (381.6)\, kip \cdot ft$

Strength moment (Strength I) - Controlling Legal. AASHTO LRFD Table 3.4.1-1.

$\phi M_{n\_no\_wrap} := (344.64 kip \cdot ft)$

Capacity of member before FRP wrap is applied

AASHTOWARE BrR-Inputs (Moment)

3. CFRP Reinforcement Properties

The amount of the CFRP reinforcement and its material properties are given as per net-fiber.

Thickness of the CFRP strip *(V-Wrap™ - C200HM)*

$t_f := 0.04in$

Ultimate tensile strength of the CFRP

$f_{fu\_pre} := 155ksi$

Rupture strain

$\varepsilon_{fu\_pre} := 0.011$

Modulus of elasticity of CFRP

$E_f := 14 \cdot 10^6 psi = 14000 \cdot ksi$

Number of plies of CFRP sheets (Per preliminary recommendations)

$n := 2$

Width of the CFRP sheet (36" per preliminary recommendation from Structural Technologies)

$w_f := 36in$

CFRP orientation

$\alpha_f := 90deg$

Spacing of CFRP [Not Applicable]

$s_{FRP} := 0in$

Area of FRP for shear . (ACI 440.2R Eq. 11-4) [Not Applicable]

$A_{fv} := 0in^2$

Area of FRP for flexure (U-wrap)

$A_{ff} := n \cdot t_f \cdot b_{f\_bot} = 2.88 \cdot in^2$

Environmental reduction factor for CFRP. (ACI 440.2R Table 9.1)

$C_E := 0.85$

Design ultimate tensile strength of CFRP. (ACI 440.2R Eq. 9-3)

$f_{fu} := C_E \cdot f_{fu\_pre} = 131.75 \cdot ksi$

Ultimate rupture strain of CFRP reinforcement. (ACI 440.2R Eq. 9-4)

$\varepsilon_{fu} := C_E \cdot \varepsilon_{fu\_pre} = 0.0093 \cdot \frac{in}{in}$

4. DESIGN OF EXTERNALLY BONDED FRP REINFORCEMENT (ACI 440.2R-08, Chapter 11)

The CFRP sheets will be applied along the bottom face of the deteriorated slab units, along the full length and across the entire width of the slab units.

FRP Strength Criteria (Moment)

$$Check\_FRP\_Stength\_Criteria\_Moment_g := \begin{cases} \text{"OK"} & \text{if} \left| \begin{array}{l} \left(\left(\phi M_{n\_no\_wrap_g} \geq 1.1\, M_{DC_g} + 1.0\, M_{LL\_HL93_g}\right)\right) \\ \left(\left(\phi M_{n\_no\_wrap_g} \geq 1.1 \cdot M_{DC_g} + 1.0\, M_{LL\_FL.Legal_g}\right)\right) \end{array} \right. \\ \text{"Not Good"} & \text{otherwise} \end{cases}$$

[NOT APPLICABLE]

FDOT FRPG Section 4.2.C
(For multiple girder Strengthening)

Check_FRP_Stength_Criteria_Moment = ("OK")

FRP Strength Criteria (Moment)

CFRP Development Length

FRP Reinforcement - Development Length

Determine length of CFRP needed to develop full bond capacity. Overlap length of CFRP sheets must be provided by manufactor ACI 440.2R-08 13.2

$$l_{df} := 0.057 \cdot \sqrt{\frac{n \cdot E_f \cdot t_f}{\sqrt{\frac{f'_{c\_bm}}{psi}} \cdot psi \cdot in}} \cdot in = 7.174 \cdot in$$

Development length needed to develop full bond strength of CFRP ACI 440.2R-08 (13-2)

CFRP Development Length

Ultimate Flexural Strength Pt.1

FRP Reinforcement - Flexural Capacity

Design material properties:

$$f_{fu} = 131.75 \cdot ksi$$

$$\varepsilon_{fu} = 9.35 \times 10^{-3}$$

Area of the CFRP reinforcement

$$A_{fv} = 5.76 \cdot in^2$$

Effective depth of CFRP (ACI 440.2R-08 Fig 11.2)

$$d_{vFRP} := \left(d_p - t_{slab} - 2in\right) = 11.833 \cdot in$$

Active bond length (ACI 440.2R-08 11.4.1.2)

$$L_e := \frac{2500in}{\left(n \cdot \frac{t_f}{in} \cdot \frac{E_f}{psi}\right)^{0.58}} = 0.775 \cdot in$$

Bond reduction coefficients (ACI 440.2R-08 11.4.1.2)

$$k_1 := \left(\frac{fc}{psi \cdot 4000}\right)^{\frac{2}{3}} = 1.16 \qquad k_2 := \frac{d_{vFRP} - L_e}{d_{vFRP}} = 0.934 \quad \text{for U-Wrap}$$

$$\kappa_v := \frac{k_1 \cdot k_2 \cdot \frac{L_e}{in}}{468 \cdot \varepsilon_{fu}} = 0.192$$

$$\kappa_m := \min\left(0.75, \kappa_v\right) = 0.192$$

Effective strain of the CFRP reinforcement (ACI 440.2R-08 11.4.1.2)

$$\varepsilon_{fe} := \min\left(\kappa_v \cdot \varepsilon_{fu}, 0.004\right) = 0.0018$$

Effective strength of the CFRP reinforcement (ACI 440.2R Eq. 11-5)

$$f_{fe} := \varepsilon_{fe} \cdot E_f = 25.145 \cdot ksi$$

Determine the existing state of strain

Determine strain at soffit during installation of CFRP. Tension is positive and compression is negative.

$$\varepsilon_{bi} := \frac{-P_{pe}}{E_{c\_bm} \cdot A_{nc}} + \frac{-P_{pe} \cdot e_{nc} + M_g + M_{pc}}{E_{c\_bm} \cdot S_{b\_nc}} + \frac{M_c}{E_{c\_bm} \cdot S_b} = \left(-1.396 \times 10^{-4}\right)$$

Determine the design strain of the FRP system

Determine strain at which debonding of CFRP may occur

$$\varepsilon_{fd} := \min\left(0.083 \cdot \sqrt{\frac{f'_{c\_bm} \cdot psi \cdot in}{n \cdot E_f \cdot t_f \cdot psi}}, 0.9 \cdot \varepsilon_{fu}\right) = 5.546 \times 10^{-3}$$

ACI 440.2R-08 (10-2)

Determine flexure capacity of section

The determination of flexural capacity for prestressed slab units repaired with CFRP wraps makes use of strain compatability which is an iterative process. Each iteration involves the assumption of a neutral axis depth. Once an assumption is made, the strains in the compressive concrete face, CFRP wrap, and strands are determined based on a linear strain relationship. The calculated strains are then converted into compressive and tensile forces that are used to check if equilibrium within the cross section is obtained, iterations continue until equilibrium is reached. **It is assumed all strands are bonded at the section of interest**.

Guess neutral axis depth (reasonable guess is 0.1*depth of section):

$c_i := (6.475in)$

Assumed depth from top of section to neutral axis

Determine the effective level of strain in the CFRP reinforcement:

$d_f := h_c = 17 \cdot in$

Depth from top of section to CFRP reinforcement

$\varepsilon_{fe} :=$ for $i \in g$

$$\varepsilon_{fe_i} \leftarrow \min\left[0.003 \cdot \left(\frac{d_f - c_i}{c_i}\right) - \varepsilon_{bi_i}, \varepsilon_{fd}\right]$$

Strain in CFRP reinforcement
ACI 440.2R-08 (10-16)

$\varepsilon_{fe} = \left(5.016 \times 10^{-3}\right)$

Controlling_Failure := for $i \in g$

$$\text{Controlling\_Failure}_i \leftarrow \text{"CFRP debonding/rupture controls"} \quad \text{if} \quad \left|\varepsilon_{fe_i}\right| = \varepsilon_{fd}$$

$$\text{Controlling\_Failure}_i \leftarrow \text{"Concrete crushing controls"} \quad \text{otherwise}$$

Controlling_Failure = ("Concrete crushing controls")

Determine strain at extreme compression fiber based on controlling failure type:

$\varepsilon_c :=$ for $i \in g$

$$\varepsilon_{c_i} \leftarrow \left(\varepsilon_{fe_i} + \varepsilon_{bi_i}\right) \cdot \frac{c_i}{d_f - c_i} \quad \text{if} \quad \varepsilon_{fe_i} = \varepsilon_{fd}$$

CFRP debonding/rupture

$$\varepsilon_{c_i} \leftarrow 0.003 \quad \text{otherwise}$$

Concrete crushing

$\varepsilon_c = \left(3 \times 10^{-3}\right)$

Strain at extreme compression fiber

Calculate the strain in the exisitng prestressing steel:

Net tensile strain in prestressing steel beyond decompression, at nominal strength

$$\varepsilon_{pnet} := \text{for } i \in g$$

$$\varepsilon_{pnet_i} \leftarrow \left(\varepsilon_{fe_i} + \varepsilon_{bi_i}\right)\cdot\left(\frac{d_p - c_i}{d_f - c_i}\right) \quad \text{if } \varepsilon_{fe_i} = \varepsilon_{fd}$$

$$\varepsilon_{pnet_i} \leftarrow 0.003\cdot\frac{d_p - c_g}{c_g} \quad \text{otherwise}$$

CFRP debonding/rupture
ACI 440.2R-08 (10-23b)

Concrete crushing
ACI 440.2R-08 (10-23a)

$$\varepsilon_{pnet} = \left(3.409 \times 10^{-3}\right)$$

$$\varepsilon_{ps} := \text{for } i \in g \qquad = \left(9.359 \times 10^{-3}\right)$$

$$\varepsilon_{ps_i} \leftarrow \min\left[\varepsilon_{pe} + \frac{P_{pe}}{A_{nc}\cdot E_{c\_bm}}\cdot\left(1 + \frac{e_{nc}^2}{r^2}\right) + \varepsilon_{pnet_i}, 0.035\right]$$

Strain in prestressing steel
ACI 440.2R-08 (10-22)

$$\text{Check\_steel\_rupture}_g := \begin{cases} \text{"Need to consider steel rupture"} & \text{if } \varepsilon_{ps_g} \geq 0.035 \\ \text{"Steel rupture does not control OK"} & \text{otherwise} \end{cases}$$

Check if steel rupture controls
ACI 440.2R-08 (10-22)

$\text{Check\_steel\_rupture} = (\text{"Steel rupture does not control OK"})$

Calculate the stress level in prestressing steel and CFRP:

$$f_{ps_g} := \left(\begin{cases} 28500\cdot\varepsilon_{ps} & \text{if } \varepsilon_{ps_g} \leq 0.0076 \\ 250 - \dfrac{0.04}{\varepsilon_{ps_g} - 0.0064} & \text{otherwise} \end{cases}\right)\cdot ksi$$

Stress in prestressing steel (applicable for Grade 250 ksi steel)
ACI 440.2R-08 (10-24b)

$$f_{ps_g} = 236.483\cdot ksi$$

$$f_{fe} := E_f\cdot\varepsilon_{fe} = (70.224)\cdot ksi$$

Stress in CFRP Reinforcement
ACI 440.2R-08 (10-21)

Calculate the internal force resultants and check equilibrium:

Use Whitney Stress Block to model stress if concrete crushing controls. If CFRP debonding/rupture controls use approximate stress block factors based on parabolic stress-strain relationship for concrete (see ACI 440.2R-08 15.5 Step 9)

$$\beta_{1_g} := \begin{cases} \text{if } \varepsilon_{fe_g} = \varepsilon_{fd} \\ \quad \varepsilon'_c \leftarrow \dfrac{1.7 \cdot f'_{c\_bm}}{E_{c\_bm}} \\ \quad \beta_1 \leftarrow \dfrac{4 \cdot \varepsilon'_c - \varepsilon_{c_g}}{6 \cdot \varepsilon'_c - 2 \cdot \varepsilon_{c_g}} \\ \text{if } \varepsilon_{c_g} = 0.003 \\ \quad \beta_1 \leftarrow \max\left(0.85 - \dfrac{f'_{c\_bm} - 4000\text{psi}}{1000 \cdot \text{psi}} \cdot 0.05, 0.65\right) \text{ if } f'_{c\_bm} > 4000\text{psi} \\ \quad \beta_1 \leftarrow 0.85 \text{ if } f'_{c\_bm} \le 4000\text{psi} \end{cases}$$

Approximate stress block β factor based on parabolic stress-strain relationship ACI 440.2R-08 15.5 Step 9

Stress block β factor based on Whitney Stress Block

$$\beta_1 = (0.8)$$

$$\beta_{1_g} = 0.8$$

$$\alpha_{1_g} := \begin{cases} \alpha_1 \leftarrow 0.85 \text{ if } \varepsilon_{c_g} = 0.003 \\ \text{otherwise} \\ \quad \varepsilon'_c \leftarrow \dfrac{1.7 \cdot f'_{c\_bm}}{E_{c\_bm}} \\ \quad \alpha_1 \leftarrow \dfrac{3 \cdot \varepsilon'_c \cdot \varepsilon_{c_g} - \left(\varepsilon_{c_g}\right)^2}{3 \cdot \beta_{1_g} \cdot \varepsilon'^2_c} \end{cases}$$

Stress block α factor based on Whitney Stress Block

Approximate stress block α factor based on parabolic stress-strain relationship ACI 440.2R-08 15.5 Step 9

$$\alpha_1 = (0.85)$$

$$\alpha_{1_g} = 0.85$$

Ultimate Flexural Strength Pt.1

Strain Compatability Calcs

$$fw_{transf} := \frac{b_1\cdot\left(h_1 + h_2\right) - \left(2\cdot\frac{1}{2}\cdot b_2\cdot h_2\right)}{b_1\cdot\left(h_1 + h_2\right)}\cdot b_1 = 34.795\cdot in$$

Use transformed girder flange width if stress block lies on or beyond first tapered section of girder flange

$Ten\_Com :=$ for $i \in g$

Stress block in deck

if $\beta 1_i\cdot c_i \le t_{slab}$

$Com_i \leftarrow \alpha 1_i\cdot f'c\_bm\cdot b_{transf}\cdot\beta 1_i\cdot c_i$

$Ten_i \leftarrow A_{ps}\cdot f_{ps_i} + A_{ff}\cdot f_{fe_i}$

Stress block in top of flange

if $\beta 1_i\cdot c_i > t_{slab} \wedge \beta 1_i\cdot c_i \le h_1 + t_{slab}$

$Com_i \leftarrow \alpha 1_i\cdot f'c\_bm\cdot b_{transf}\cdot t_{slab} + \alpha 1_i\cdot f'c\_bm\cdot b_1\cdot\left(\beta 1_i\cdot c_i - t_{slab}\right)$

$Ten_i \leftarrow A_{ps}\cdot f_{ps_i} + A_{ff}\cdot f_{fe_i}$

Stress block in first tapered section of flange

if $\beta 1_i\cdot c_i > h_1 + t_{slab} \wedge \beta 1_i\cdot c_i \le h_1 + h_2 + t_{slab}$

$Com_i \leftarrow \alpha 1_i\cdot f'c\_bm\cdot b_{transf}\cdot t_{slab} + \alpha 1_i\cdot f'c\_bm\cdot fw_{transf}\cdot\left(\beta 1_i\cdot c_i - t_{slab}\right)$

$Ten_i \leftarrow A_{ps}\cdot f_{ps_i} + A_{ff}\cdot f_{fe_i}$

Stress block in second tapered section of flange

if $\beta 1_i\cdot c_i > h_1 + h_2 + t_{slab} \wedge \beta 1_i\cdot c_i \le h_1 + h_2 + h_4 + t_{slab}$

$Com_i \leftarrow \alpha 1_i\cdot f'c\_bm\cdot b_{transf}\cdot t_{slab} + \alpha 1_i\cdot f'c\_bm\cdot\left(h_1 + h_2\right)\cdot fw_{transf} + \alpha 1_i\cdot f'c\_bm\cdot\left(\beta 1_i\cdot c_i - t_{slab} - h_1 - h_2\right)\cdot\left(b_w + b_4\right)$

$Ten_i \leftarrow A_{ps}\cdot f_{ps_i} + A_{ff}\cdot f_{fe_i}$

Stress block in web

if $\beta 1_i\cdot c_i > h_1 + h_2 + h_4 + t_{slab}$

$Com_i \leftarrow \alpha 1_i\cdot f'c\_bm\cdot b_{transf}\cdot t_{slab} + \alpha 1_i\cdot f'c\_bm\cdot\left(h_1 + h_2\right)\cdot fw_{transf} + \alpha 1_i\cdot f'c\_bm\cdot\left(h_4\cdot b_w + h_4\cdot b_4\right) \ldots$
$+ \alpha 1_i\cdot f'c\_bm\cdot\left[\beta 1_i\cdot c_i - t_{slab} - \left(h_1 + h_2 + h_4\right)\right]\cdot b_w$

$Ten_i \leftarrow A_{ps}\cdot f_{ps_i} + A_{ff}\cdot f_{fe_i}$

return augment(Ten, Com)

Strain Compatability Calcs

Ultimate Flexural Capacity Pt.2

$Ten\_Com = (585.349 \quad 585.521)\cdot kip$ Check if section is in equilibrium

Tension Compression

Equilibrium := for $i \in g$

$Equilibrium_i \leftarrow$ "Equilibrium achieved" if $\left|\frac{Ten\_Com_{i,0} - Ten\_Com_{i,1}}{Ten\_Com_{i,0}}\right| \le 1\%$

$Equilibrium_i \leftarrow$ "Equilibrium not achieved, adjust c value" if $\left|\frac{Ten\_Com_{i,0} - Ten\_Com_{i,1}}{Ten\_Com_{i,0}}\right| > 1\%$

return Equilibrium

Equilibrium = ("Equilibrium achieved")

Nominal flexural strength:

$M_{np} := \overrightarrow{\left[A_{ps}\cdot f_{ps}\cdot\left(d_p - \frac{\beta_1\cdot c}{2}\right)\right]} = (358.946)\cdot kip\cdot ft$

Prestressing steel contribution to flexural strength

Percent difference of calculated nominal strength of section without CFRP vs Conspan flexural capacity.
Use nominal section strength for check since AASHTO uses ϕ = 1.0 and ACI use ϕ = 0.9

$\overrightarrow{\left|\frac{M_{np_g} - \phi M_{n\_no\_wrap_g}}{\phi M_{n\_no\_wrap_g}}\right|} = 4.151\cdot\%$

$M_{nf} := \overrightarrow{\left[A_{ff}\cdot f_{fe}\cdot\left(d_f - \frac{\beta_1\cdot c}{2}\right)\right]} = (242.864)\cdot kip\cdot ft$

CFRP contribution to flexural strength

Design flexural strength:

$\phi_g :=$ $\phi \leftarrow 0.9$ if $\varepsilon_{ps_g} \ge 0.013$

$\phi \leftarrow 0.65 + \frac{0.25\cdot\left(\varepsilon_{ps_g} - 0.010\right)}{0.013 - 0.010}$ if $\varepsilon_{ps_g} > 0.010 \wedge \varepsilon_{ps_g} < 0.013$

$\phi \leftarrow 0.65$ if $\varepsilon_{ps_g} \le 0.01$

Strength reduction factor
ACI 440.2R-08 (10-19)

$\phi = (0.65)$

$\phi M_n := \overrightarrow{\left[\phi\cdot\left(M_{np} + \psi_f\cdot M_{nf}\right)\right]} = (367.497)\cdot kip\cdot ft$

Design strength of composite section with CFRP wrap
ACI 440.2R-08 (10-26)

Ultimate Flexural Capacity Pt.2

Service I

FRP Reinforcement - Service Check

Check service stresses using Service I load combinations: SDG Vol 4. 4.2

Check if section will crack under service loads

$$f_D := \frac{-P_{pe}}{A_{nc}} + \frac{-P_{pe}\cdot e_{nc} + M_g + M_{pc}}{S_{b\_nc}} + \frac{M_c}{S_b} = (-0.599)\cdot ksi$$

Stress at soffit due to dead load. Tension is positive and compression is negative

Check if section is cracked due to live load moment:

$$Is\_section\_cracked := \text{for } i \in g$$

$$Is\_section\_cracked_i \leftarrow \text{"Section is cracked; CFRP Strengthening Required"} \quad \text{if } f_{D_i} + \frac{M_{LL\_FL.Legal_i}}{S_b} \geq f_r$$

$$Is\_section\_cracked_i \leftarrow \text{"Section is not cracked OK"} \quad \text{otherwise}$$

$$Is\_section\_cracked = (\text{"Section is cracked; CFRP Strengthening Required"})$$

Check stress in prestressing steel

Strain in prestressing steel. Tension is positive and compression is negative.

$$\varepsilon_{ps\_s} := \varepsilon_{pe} - \frac{P_{pe}}{A_{nc}\cdot E_{c\_bm}}\cdot\left(1 + \frac{e_{nc}^2}{r^2}\right) + \frac{(M_g + M_{pc})\cdot e_{nc}}{I_{nc}\cdot E_{c\_bm}} + \frac{(M_c + M_{LL\_FL.Legal})\cdot e}{I\cdot E_{c\_bm}} = \left(5.736 \times 10^{-3}\right)$$

$$f_{ps\_s} := \text{for } i \in g$$

$$f_{ps\_s_i} \leftarrow 28500\cdot\varepsilon_{ps\_s_i}\cdot ksi \quad \text{if } \varepsilon_{ps\_s_i} \leq 0.0076$$

$$f_{ps\_s_i} \leftarrow \left(250 - \frac{0.04}{\left|\varepsilon_{ps\_s_i}\right| - 0.0064}\right)\cdot ksi \quad \text{if } \varepsilon_{ps\_s_i} > 0.0076$$

Stress in prestressing steel (applicable for 250 grade steel) ACI 440.2R-08 (10-24b)

$f_{ps\_s} = (163.468)\cdot ksi$

$Check\_steel\_stress := \text{for } i \in g$

$Check\_steel\_stress_i \leftarrow \text{"OK"} \quad \text{if} \quad \left|f_{ps\_s_i}\right| \le 0.82\cdot f_{py} \wedge \left|f_{ps\_s_i}\right| \le 0.74\cdot f_{pu}$

$Check\_steel\_stress_i \leftarrow \text{"NOT OK"} \quad \text{otherwise}$

Check if stress in prestressing steel satisfies ACI 440.2R-08 (10-20a) & (10-20b)

$Check\_steel\_stress = (\text{"OK"})$

Check compressive stress in concrete

Tension is positive and compression is negative

Check top of precast slab unit:

$$f_{c\_top\_gir} := \frac{-P_{pe}}{A_{nc}} + \frac{P_{pe}\cdot e_{nc} - M_g - M_{pc}}{S_{t\_nc}} - \frac{M_c}{S_{top\_girder\_c}} - \frac{M_{LL\_FL.Legal}}{S_{top\_girder\_c}} = (-1.964)\cdot ksi$$

Stress at top of precast girder

$Check\_top\_girder\_stress := \text{for } i \in g$

$Check\_top\_girder\_stress_i \leftarrow \text{"OK"} \quad \text{if} \quad \left|f_{c\_top\_gir_i}\right| \le 0.45\cdot f'_{c\_bm}$

$Check\_top\_girder\_stress_i \leftarrow \text{"NOT OK"} \quad \text{otherwise}$

$Check\_top\_girder\_stress = (\text{"OK"})$

Check top of deck: - **[NO DECK PRESENT; CHECK NOT APPLICABLE]**

$$f_{c\_top\_deck} := \text{if}\left(t_{slab} = 0in, 0ksi, \frac{M_c}{S_t}\cdot n - \frac{M_{LL\_FL.Legal}}{S_t}\cdot n\right) = 0\cdot ksi$$

Stress at top of deck

$Check\_top\_deck\_stress := \text{if}\left(t_{slab} = 0in, \text{"NOT APPLICABLE"}, \text{for } i \in g\right.$

$Check\_top\_deck\_stress_i \leftarrow \text{"OK"} \quad \text{if} \quad \left|f_{c\_top\_deck_i}\right| \le 0.45\cdot fcslab$

$\left.Check\_top\_deck\_stress_i \leftarrow \text{"NOT OK"} \quad \text{otherwise}\right)$

$Check\_top\_deck\_stress = \text{"NOT APPLICABLE"}$

Check stress in CFRP

Tension is positive and compression is negative

$$f_{f\_s} := \frac{E_f}{E_{c\_bm}} \cdot \left(f_D + \frac{M_{LL\_FL.Legal}}{S_b} \right) - \varepsilon_{bi} \cdot E_f = (4.115) \cdot ksi$$

Stress in CFRP

Check that stress in CFRP satisfies ACI 440.2R-08 Table 10.1

$$Check\_FRP\_stress := \text{for } i \in g$$
$$Check\_FRP\_stress_i \leftarrow \text{"OK"} \quad \text{if} \quad \left| f_{f\_s_i} \right| \le 0.55 \cdot f_{fu}$$
$$Check\_FRP\_stress_i \leftarrow \text{"Not OK"} \quad \text{otherwise}$$

$Check\_FRP\_stress = (\text{"OK"})$

Service I

FRP Fatigue Check

FRP Reinforcement - Fatigue

SDG Vol4. 4.2 states that the standard fatigue truck from LRFD should be used to check fatigue stresses in CFRP composite. By inspection, the standard fatigue truck will produce lower stresses within the section when compared to the truck used for the Service I stress check. If Service I is satisfied, no further analysis is required.
(Refer to ACI 440.2R-08 10.2.9)

FRP Fatigue Check

Summary:

The Flexural Loading Rating (LR) controlled by SU4 Legal Strength loading which produced a LR of 0.931 was increased by CFRP strengthening along the bottom face of the slab unit length. The CFRP strengthening design consisted of U-wrap method plies which are 36" wide (C200HM) along the controlling sections. The strengthened section resulted in a flexural load rating shown below:

Number of Plies for U-Wrap Shear

$n = 2$

Width of Plies

$w_f = 36 \cdot in$

FRP Development Length

$l_{df} = 7.174 \cdot in$

FRP Stress Check

$Check\_FRP\_stress = (\text{"OK"})$

Rating Factor (Moment)

RATING FACTOR FOR CONTROLLING TRUCK LOADING MOMENT

Design Rating Factors:
(Note: Final Condition ensures that repaired structure satisfies a minimum Rating Factor of 1.0 for all Legal Loads)

$$RF_{OPT.moment\_HL93} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_HL93}}$$

$$RF_{INV.moment\_HL93} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{INV} \cdot M_{LL\_HL93}}$$

$$RF_{OPT.moment\_FL120} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_FL120}}$$

$$RF_{OPT.moment\_SU2} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_SU2}}$$

$$RF_{OPT.moment\_SU3} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_SU3}}$$

$$RF_{OPT.moment\_SU4} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_SU4}}$$

$$RF_{OPT.moment\_C3} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_C3}}$$

$$RF_{OPT.moment\_C4} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_C4}}$$

$$RF_{OPT.moment\_C5} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_C5}}$$

$$RF_{OPT.moment\_ST5} := \frac{\phi M_n - \left(\gamma_{DC} \cdot M_{DC} + \gamma_{DW} \cdot M_{DW}\right)}{\gamma_{OPT} \cdot M_{LL\_ST5}}$$

LRFR Load Rating Summary Table					
Rating Type		Gross Axle Weight (tons)	Limit	Rating Factor	Rating Factor - Weight (tons)
Vehicle	Rating Level	Weight		RF *	Rating *
HL93	Inventory	36	Moment Strength	0.700	25.2
HL 93	Operating	36	Moment Strength	0.908	32.7
FL120	Permit	60	Moment Strength	0.833	50.0
FL120	Permit	60	Moment Strength	0.833	50.0
SU2	Legal	17	Moment Strength	1.896	32.2
SU3		33	Moment Strength	1.009	33.3
SU 4		35	Moment Strength	0.990	34.7
C3		28	Moment Strength	1.768	49.5
C4		36.7	Moment Strength	1.251	45.9
C5		40	Moment Strength	1.213	48.5
ST5		40	Moment Strength	1.257	50.3

* Per FDOT BLRM, Sectio 7.4 - Posting Avoidance, Rating results for SU4 Legal load computed based on the approximate AASHTO distribution equations may be rounded-up by up to 5%.

Rating Factor (Moment)

CONSOR

Project #: D210107FL00.00
Designed By: YRA
Design Date: Jan-22
Checked By: MAP
Check Date: Jan-22

Matheson Hmk Road over Matheson Hammock Canal
SUMMARY OF LOAD RATING RESULTS

Load Factors:

DL =	1.25	(Load Factor for Dead Load per FDOT BLRM Table 6A.4.2.2-1)
DW =	1.5	(Load Factor for Dead Load from Wearing Surface per FDOT BLRM Table 6A.4.2.2-1)
LL-INV =	1.75	(Load Factor for Desing Inventory Live Load per FDOT BLRM Table 6A.4.2.2-1)
LL-OPE =	1.35	(Load Factor for Operating Live Load per FDOT BLRM Table 6A.4.2.2-1)
$Factor_{PA}$ =	5%	(Rounding up Factor for Posting Avoidance per FDOT BLRM Section 7.4)

SUMMARY OF LRFR RATINGS - SONOVOID SLAB UNITS (w/ Concrete Repairs and Post Tensioning Restored)

Rating Type		Gross Axle Weight (tons)	Moment/Shear/ Service		Condition Factor	Live Load Distribution Factor	Design Flexural Strength (kip-ft) **	Unfactored DL Moment (kip-ft)	Unfactored DW Moment (kip-ft)	Unfactored LL Moment (kip-ft)	Rating Factor	Governing Location		Rating Factor - Weight (tons)
Vehicle	Rating Level	Weight	Member Type	Limit		LLDF	ϕMn	[DC + Attachmetns]	[DW]	[LL + IM]	RF *	Controlling Member [Span # - (Member #)]	Controlling Location (% Span)	Rating *
HL93	Inventory	36	Prestressed Concrete	Moment Strength	0.9	0.256	367.50	109.6	8.68	177.43	**0.700**	2 - 8	50.0	**25.2**
HL 93	Operating	36	Prestressed Concrete	Moment Strength		0.256					**0.908**	2 - 8	50.0	**32.7**
FL120	Permit	60	Prestressed Concrete	Moment Strength		0.256				193.35	**0.833**	2 - 8	50.0	**50.0**
FL120	Permit	60	Prestressed Concrete	Moment Strength		0.256					**0.833**	2 - 8	50.0	**50.0**
SU2	Legal	17	Prestressed Concrete	Moment Strength		0.256				84.98	**1.896**	2 - 8	50.0	**32.2**
SU3		33	Prestressed Concrete	Moment Strength		0.256				159.7	**1.009**	2 - 8	50.0	**33.3**
SU 4		35	Prestressed Concrete	Moment Strength		0.256				171.55	**0.990**	2 - 8	50.0	**34.7**
C3		28	Prestressed Concrete	Moment Strength		0.256				91.12	**1.768**	2 - 8	50.0	**49.5**
C4		36.7	Prestressed Concrete	Moment Strength		0.256				128.76	**1.251**	2 - 8	50.0	**45.9**
C5		40	Prestressed Concrete	Moment Strength		0.256				132.83	**1.213**	2 - 8	50.0	**48.5**
ST5		40	Prestressed Concrete	Moment Strength		0.256				128.11	**1.258**	2 - 8	50.0	**50.3**

* Per FDOT BLRM, Sectio 7.4 - Posting Avoidance, Rating results for SU4 Legal load computed based on the approximate AASHTO distribution equations may be rounded-up by up to 5%.

** Design Flexural Strength including strengthening repairs using the CFRP wraps (Refer to Appendix C).

APPENDIX D – LRFR BRIDGE RATING MATHCAD QUCIK CHECK

CONSOR ENGINEERS, LLC.

Job No.: D210107FL.00
Designer: YRA Date: 1/2022
Reviewer: MAP Date: 1/2022

Mathcad Check for VIRTIS LRFD Moment Analysis

Bridge No: 874294
Description: Simply-supported, Prestressed Concrete Sonovoid Slab Units Bridge
Analysis Method: LRFD, HL93 Vehicle, 2 lane

ASSUMPTIONS

CONTROLLING MEMBER: Slab Unit 2-8
GOVERNING LIMIT STATE AND LOCATION: Strength I, Moment @ 0.5L

VIRTIS COMPUTED MOMENTS

$MU := 367.5kip \cdot ft$ Factored Ultimate Moment (Capacity)

$MDC_{self} := 87.1 \cdot kip \cdot ft$ *Dead Load Moment from Selfweight only*

$MDW := 8.68 \cdot kip \cdot ft$ *Wearing Surface Moment*

$MLT := 0 \cdot kip \cdot ft$ *Design Truck Load Moment*

$MLL := 177.43 \cdot kip \cdot ft$ *Controlling Legal Load Moment*

$MDC_{attachment} := 22.5 \cdot kip \cdot ft$ *Dead Load Moment from Attachments (Curb/Sidewalk + Railing)*

FACTORS

$\phi s := 1.0$ *System Factor*

$\phi c := 0.90$ *Condition Factor*

$\gamma DC := 1.25$ *Dead Load Load Factor*

$\gamma DW := 1.5$ *Wearing Surface Load Factor*

$\gamma Linv := 1.75$ *Inventory Live Load Factor*

$\gamma Lopt := 1.35$ *Operating Live Load Factor*

$\phi moment := 0.90$ *Nominal Moment Reduction Factor*

DESIGN STRENGTH

$$Mn := \frac{MU}{(\phi s \cdot \phi c \cdot \phi moment)} \qquad Mn = 453.7\,kip \cdot ft$$

$\phi Mn := \phi moment \cdot (Mn)$ $\phi Mn = 408.33 \cdot kip \cdot ft$

REQUIRED STRENGTH

$$Mu := \gamma DC \cdot \left(MDC_{self} + MDC_{attachment}\right) + \gamma DW \cdot MDW + \gamma Linv \cdot (MLL)$$

$Mu = 460.52 \cdot kip \cdot ft$

RATINGS

$$Rinventory := \frac{\left[\phi s \cdot \phi c \cdot \phi Mn - \left[\gamma DC \cdot \left(MDC_{self} + MDC_{attachment}\right) + \gamma DW \cdot MDW\right]\right]}{\gamma Linv \cdot (MLL)}$$

$$Roperating := \frac{\left[\phi s \cdot \phi c \cdot \phi Mn - \left[\gamma DC \cdot \left(MDC_{self} + MDC_{attachment}\right) + \gamma DW \cdot MDW\right]\right]}{\gamma Lopt \cdot (MLL)}$$

Rinventory = 0.7

Roperating = 0.91

APPENDIX E – AS-BUILT BRIDGE PLANS

MATHESON HAMMOCK PARK

DADE COUNTY, FLORIDA

BRIDGE AND APPROACH ROAD

As Built Plans

INDEX TO DRAWINGS

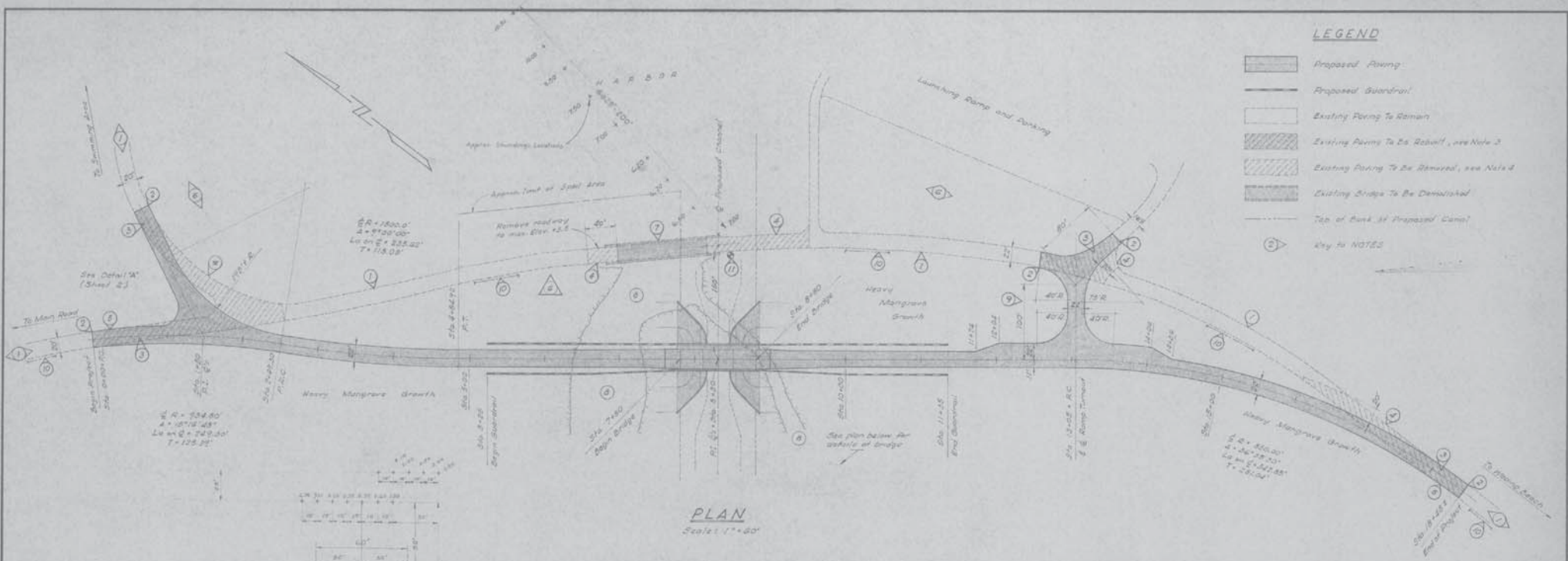
Sheet No.	Description
1.	APPROACH ROAD PLAN
2.	PROFILE
3.	CROSS SECTIONS
4.	" "
5.	BRIDGE PLAN & ELEVATION
6.	END & INTERMEDIATE BENTS
7.	SUPERSTRUCTURE
8.	PRESTRESSED SLAB UNITS
9.	APPROACH SLAB - PILING
10.	MISCELLANEOUS DETAILS
11.	BULKHEAD PLAN
12.	" DETAILS

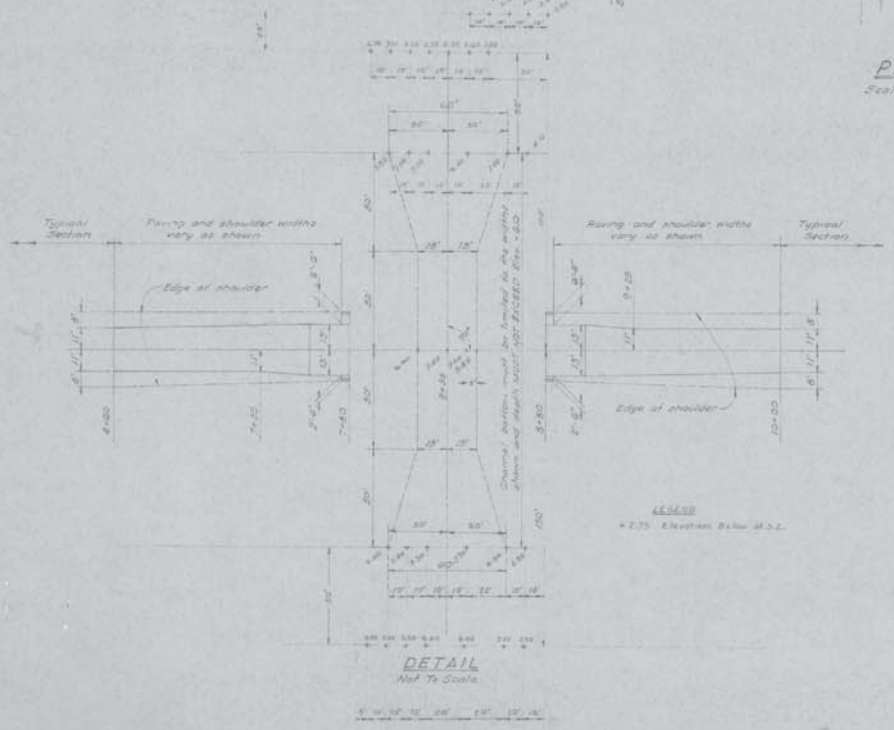
SITE NUMBER 294

HART - REYNOLDS & ASSOCIATES, INC.

CONSULTING ENGINEERS

CORAL GABLES, FLORIDA





DETAIL
Not To Scale

NOTES

1. Existing paving to remain.
2. Meet existing paving.
3. Remove existing base course under proposed paving. Construct new 8" base course with 1" asphaltic concrete surface, in accordance with typical project construction, on existing sub-base.
4. Remove existing roadway and embankment to elevation of adjacent ground. Where these areas are contiguous to project paving, shape to road cross-section.
5. Provide 50' long uniform transition of pavement and shoulder widths as required to match existing cross-section at limits of new construction.
6. Spoil Areas. To be cleared under another Project. All muck removed from roadway and all materials, except wood, resulting from bridge demolition and pavement removal shall be placed in these areas. See specifications.
7. Demolish existing bridge. See Specifications.
8. Existing drainage channel.
9. Turnout to be graded to provide smooth connection between existing pavement and new road. Engineer will establish grades in field.
10. Existing 4" cement-asbestos pipe water main. See Specifications.
11. Test boring location. See boring log on Sheet 5.

All Elevations refer to Mean Sea Level, U.S.C.&G.S. Datum

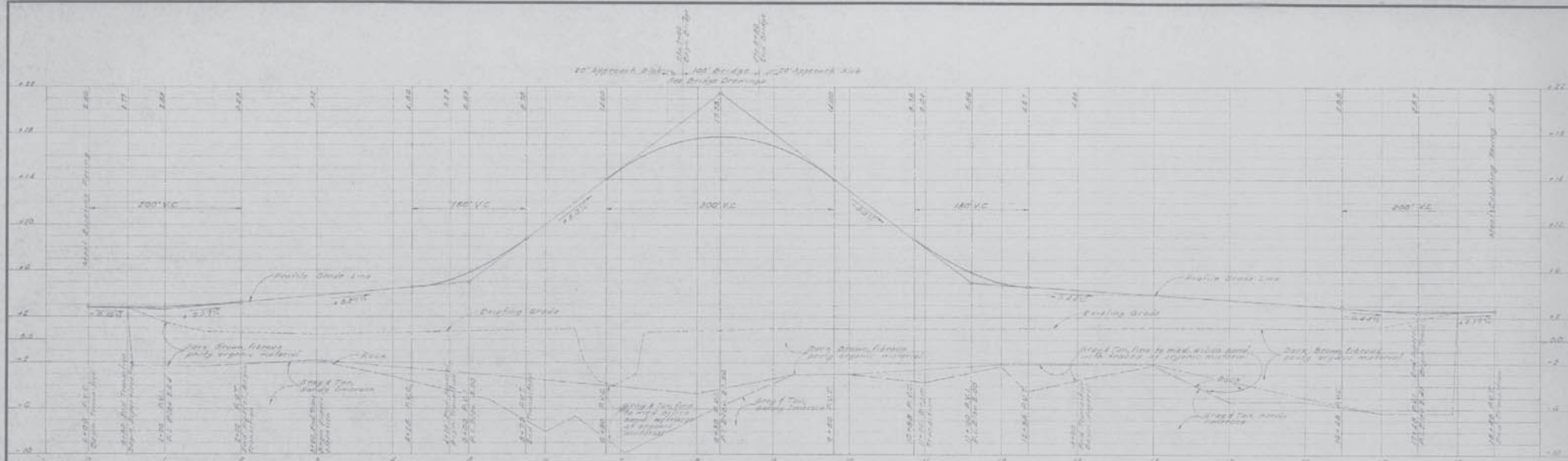
Date	Mark	By	Description
4-19-61		F.M.	As built channel soundings

REVISIONS

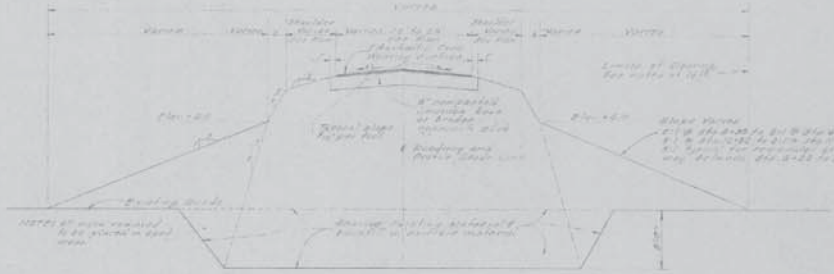
HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

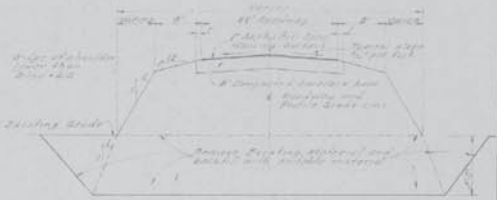
Design: C.L.R.	Drawn: C.L.R.	Checked: R.L.H.	No. 1
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: 1" = 60'	APPROACH ROAD PLAN		of 12 Sheets



DETAIL A



TYPICAL SECTIONS



TYPICAL SECTIONS

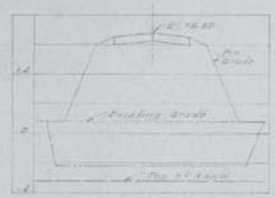
Date	Mark	By	Description

REVISIONS

HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

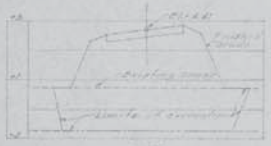
MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Design: C.L.R.	Drawn: O.F.C.	Checked: R.L.H.	No. 2
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: PROFILE HORIZ. 1"=40' VERT. 1"=4'	PROFILE		of 12 Sheets



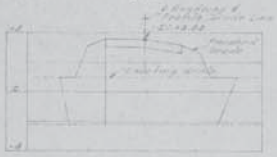
5+30

5+00



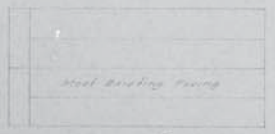
4+80

3+00

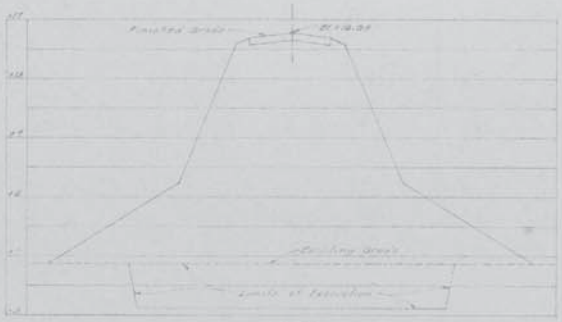


2+80

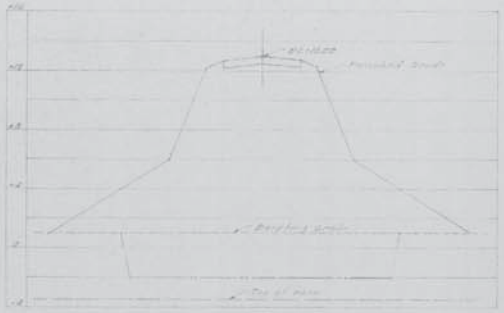
0+90



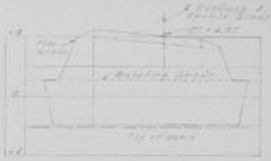
0+00



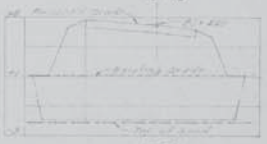
7+30



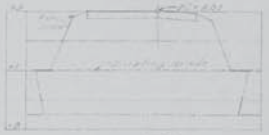
10+00



12+70

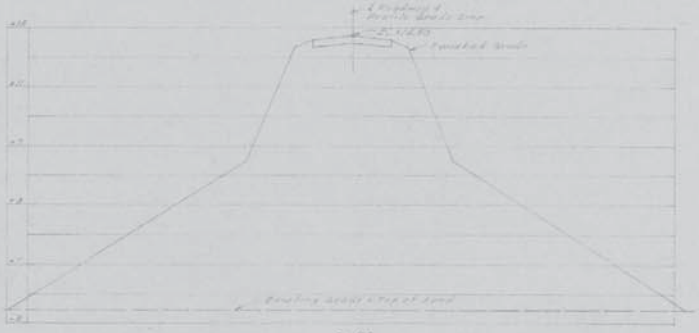


12+50

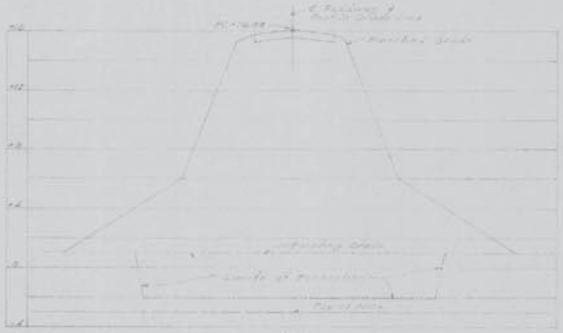


12+00

11+70

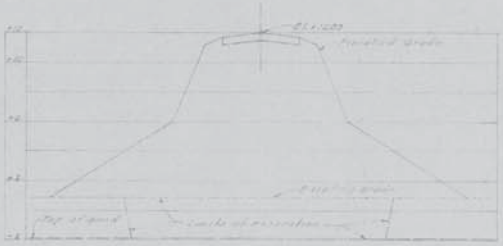


6+90

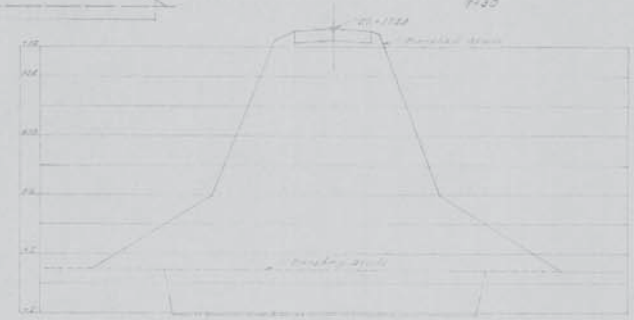


9+30

11+70

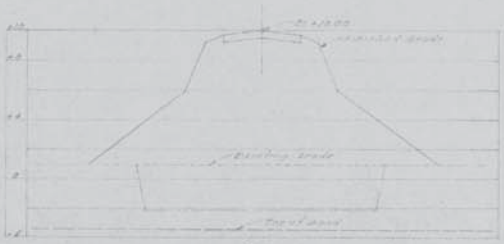


6+40



11+30

14+00



6+00

7+25

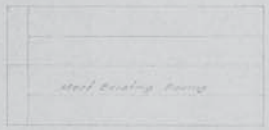
Date	Mark	By	Description

REVISIONS

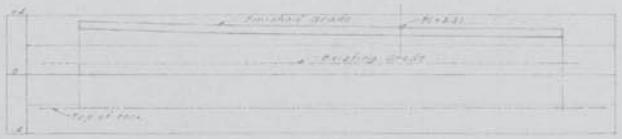
HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

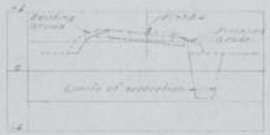
Design: C.L.R.	Drawn: D.F.C.	Checked: R.L.H.	No. 3
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: HORIZ. 1"=20' VERT. 1"=4'	CROSS SECTIONS		of 12 Sheets



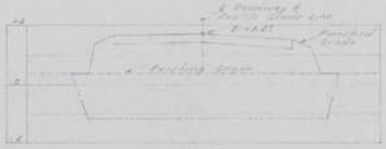
12+45



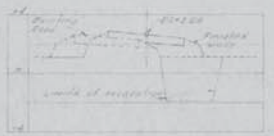
1+60



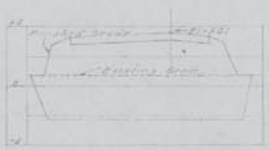
18+00



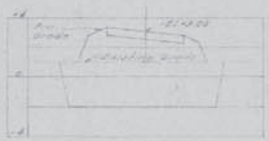
1+60



17+00

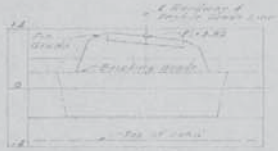


1+40

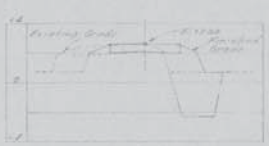


16+00

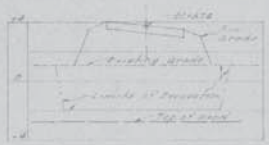
1+00



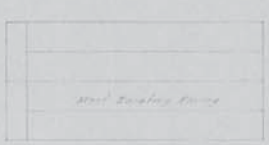
15+00



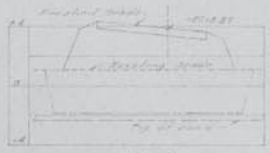
0+60



14+35



0+00



14+15

ROAD TO
BEACH FACILITIES

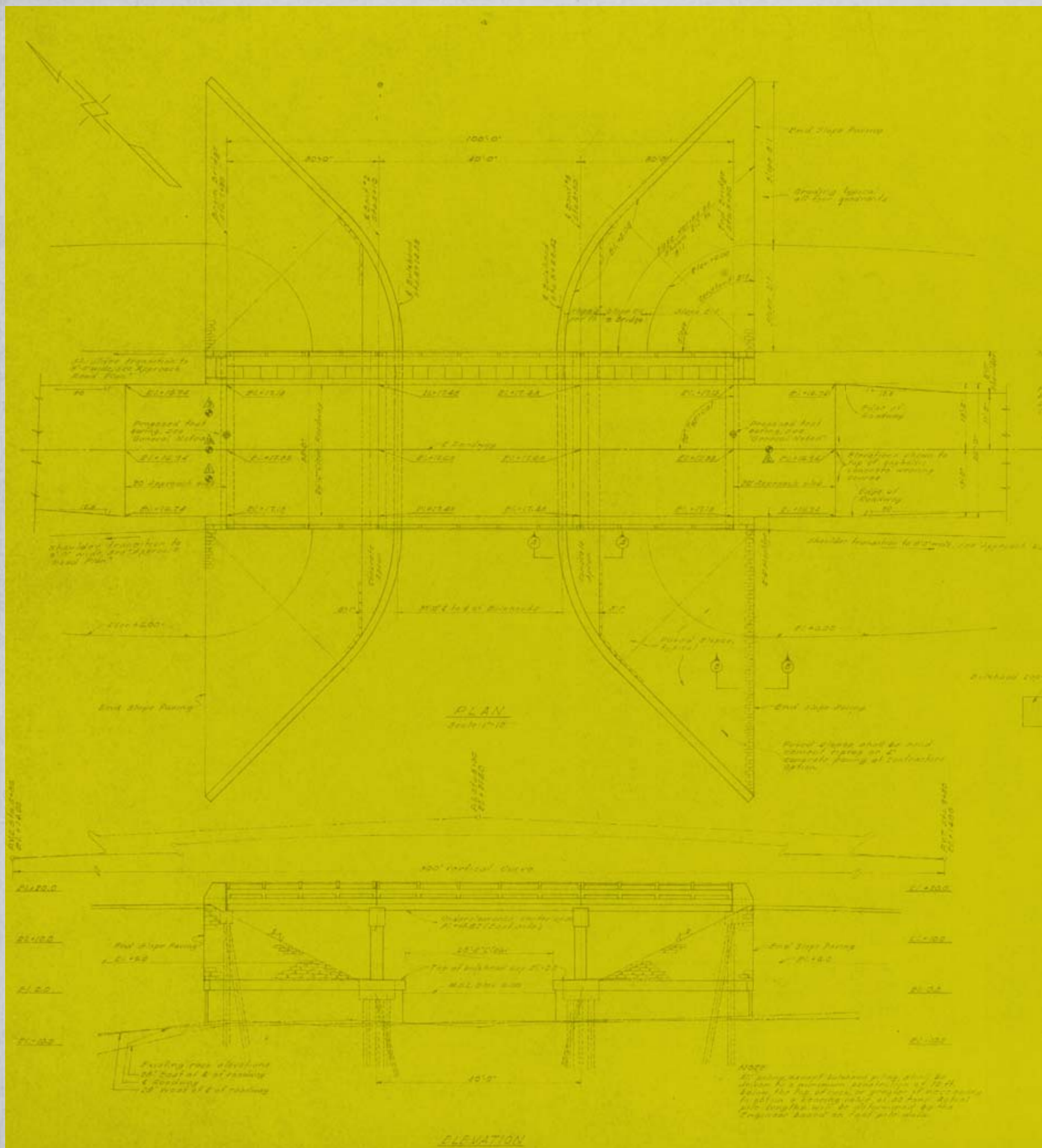
Date	Mark	By	Description

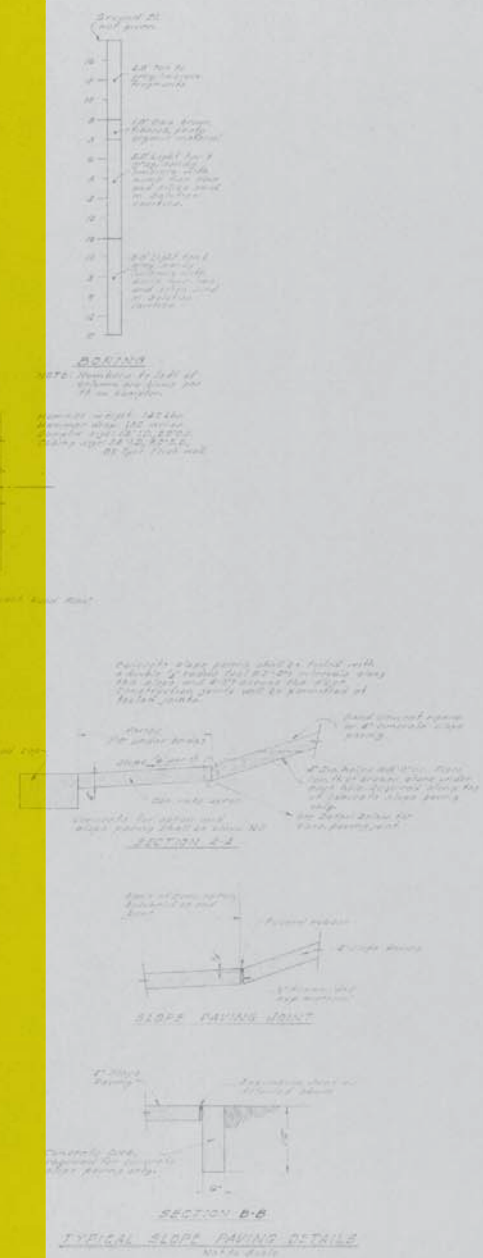
REVISIONS

HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Design: C. L. R.	Drawn: O. F. C.	Checked: H. L. H.	No. 4
Approved:	Date: JUNE 1961	Project No. 61-01	
Scales: HORIZ 1"=20' VERT 1"=4'	CROSS SECTIONS		of 12 Sheets





GENERAL NOTES:

DESIGN LOADING: H20-44

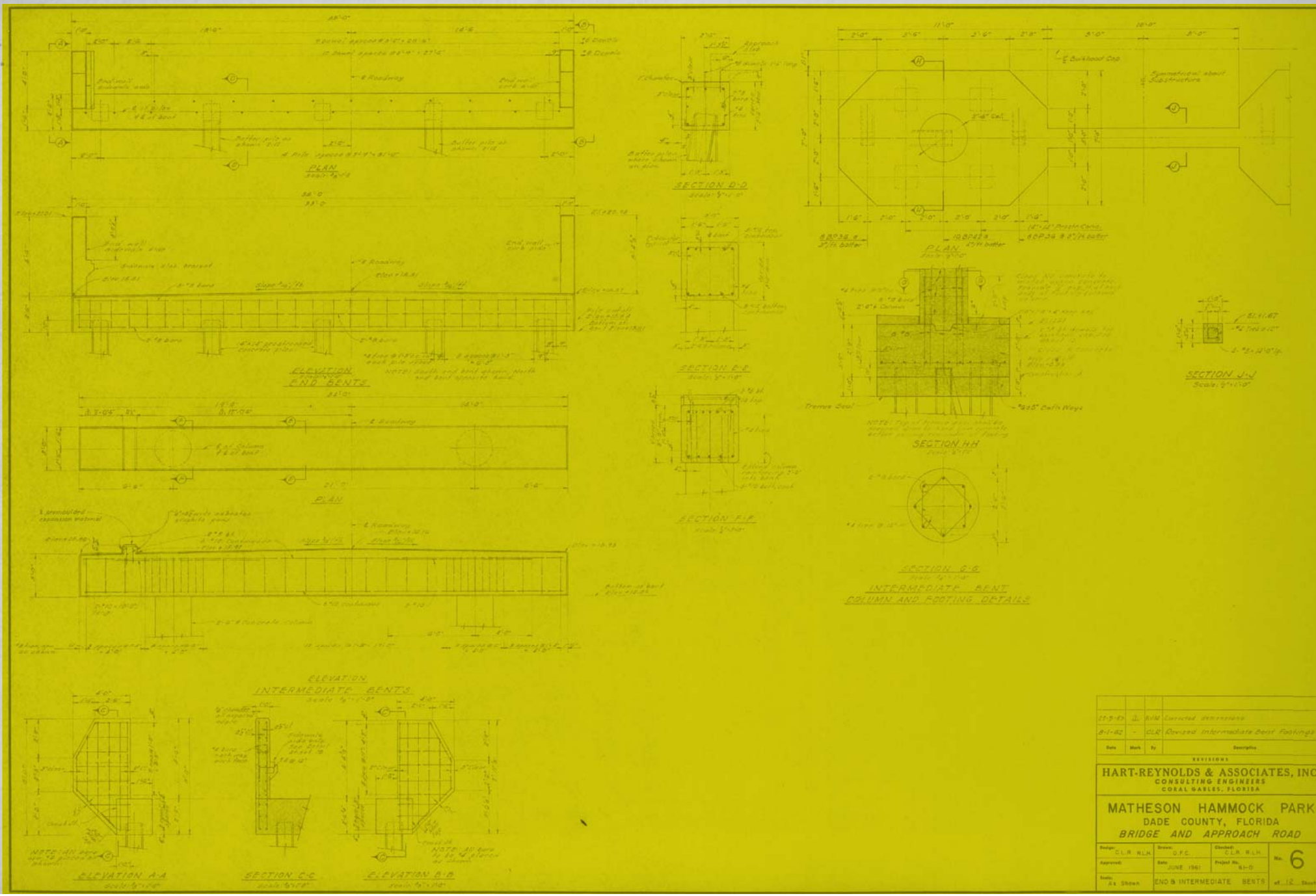
Date	Mark	By	Description
7-7-1965	–	RLH	Added new boring locations
8-1-1962	–	CLR	Revised intermediate Bent Footing

REVISIONS

HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Design: C.L.R. R.L.H.	Drawn: D.F.C.	Checked: C.L.R. R.L.H.	No. 5
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: As Shown	BRIDGE PLAN & ELEVATION		of 12 Sheets



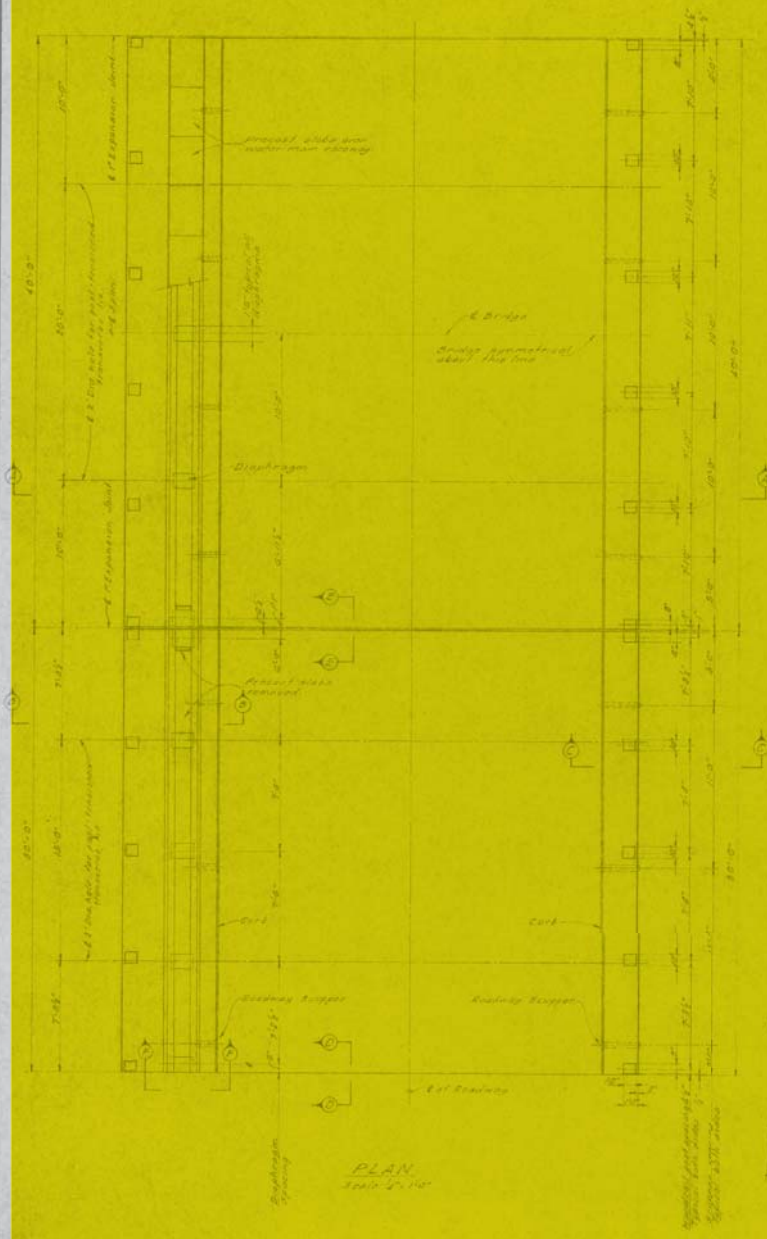
Date	Mark	By	Description
11-9-61	1	RHH	Corrected dimensions
8-1-62	-	CLR	Revised intermediate bent footings

REVISIONS

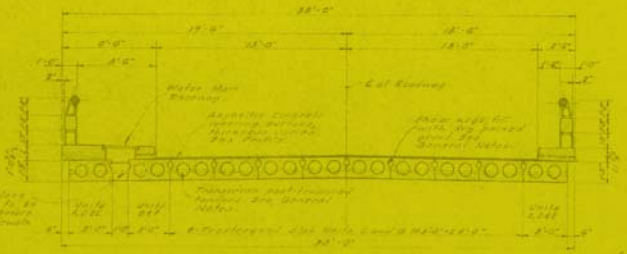
HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

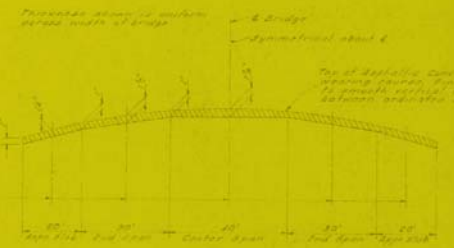
Design: C.L.R. R.L.H.	Drawn: D.F.C.	Checked: C.L.R. R.L.H.	No. 6
Approved:	Date: JUNE 1961	Project No.: 61-0	
Scale: As Shown	END & INTERMEDIATE BENTS		of 12 Sheets



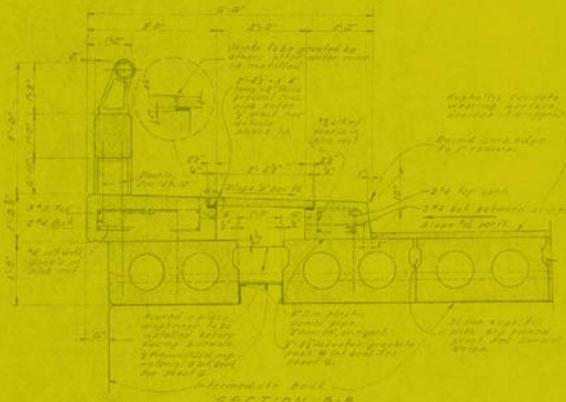
PLAN



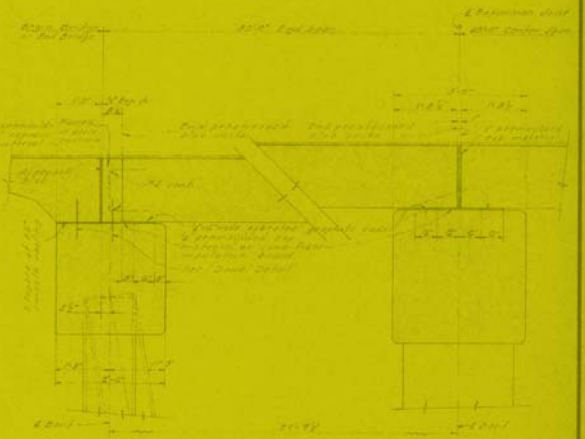
SECTION A-A



PROFILE OF WEARING COURSE



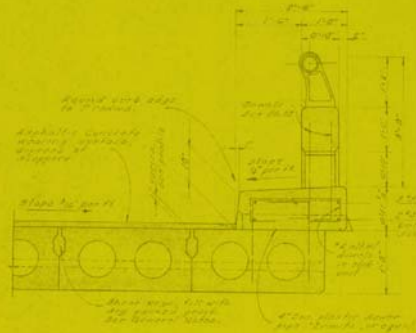
SECTION B-B



SECTION D-D
AT END BENT

SECTION E-E
AT INTERMEDIATE BENT

SECTION C-C



SECTION F-F

DOWEL DETAIL

Date	Mark	By	Description

REVISIONS

HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Design: C.L.R. R.L.H.	Drawn: D.F.C.	Checked: C.L.R. R.L.H.	Dwg. No. 7
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: As Shown	SUPERSTRUCTURE		of 17 Sheets

BRIDGE SLAB SCHEDULE			
UNIT DESIG.	NO. UNITS	LENGTH	REMARKS
A	2	24'-6"	Exterior with sidewalk dowels
B_1	1	24'-6"	Interior with curb dowels
B_2	1	24'-6"	" " " "
C	16	24'-6"	Interior
D	2	24'-6"	Exterior, with sidewalk dowels
E	2	24'-11"	" " " "
F	1	24'-11"	Interior, with curb dowels
G	2	24'-11"	Interior

NOTE: Omit shear key on outside face of all exterior slabs.

GENERAL NOTES:

PALLETS: All prestressed slabs shall be cast on concrete finished pallets.

SIDE FORMS: Wood side forms may be used.

CONCRETE: Concrete for prestressed slabs shall be Class P.

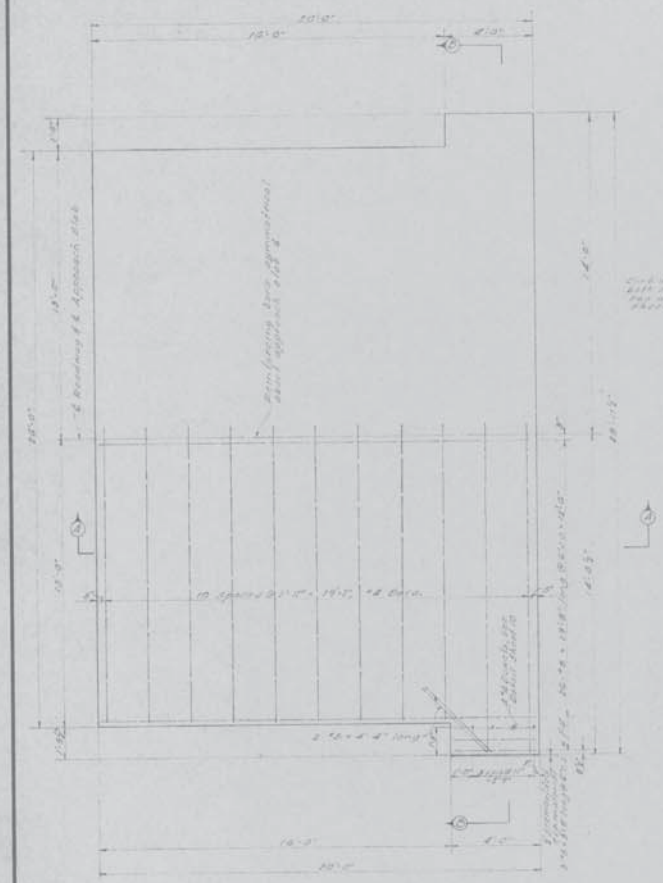
Date	Mark	By	Description

REVISIONS

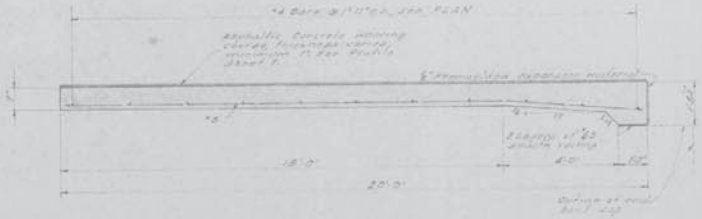
HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

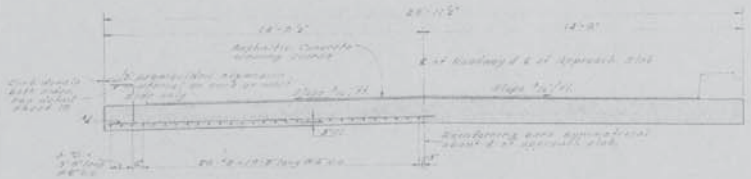
Design: C.L.R. R.L.H.	Drawn: D.F.C.	Checked: C.L.R. R.L.H.	No. 8
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: As Shown	PRESTRESSED SLAB UNITS		of 12 Sheets



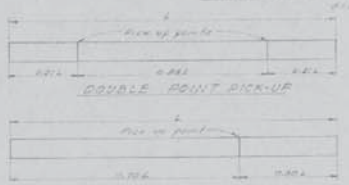
APPROACH SLAB PLAN



APPROACH SLAB SECTION A-A



APPROACH SLAB SECTION B-B



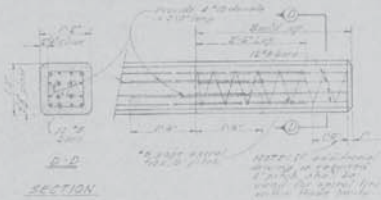
DOUBLE POINT PICK-UP

SINGLE POINT PICK-UP

PILE POINT PICK-UP

NOTE:

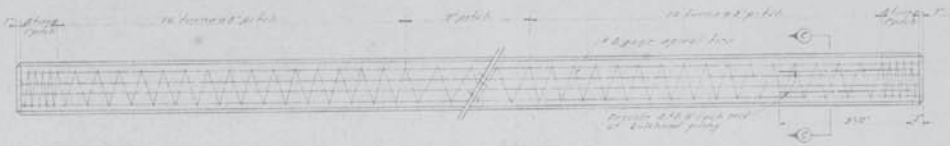
GENERAL NOTES:



B-B SECTION

BUILD-UP

SECTION C-C



ELEVATION

14"-16" PRESTRESSED CONCRETE PILES

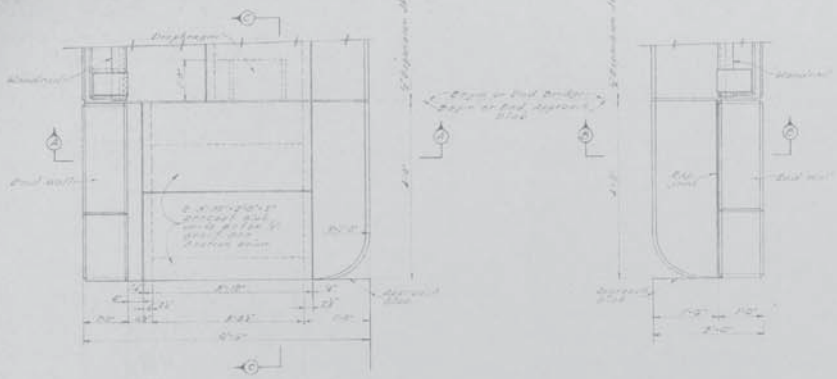
Date	Mark	By	Description		

REVISIONS

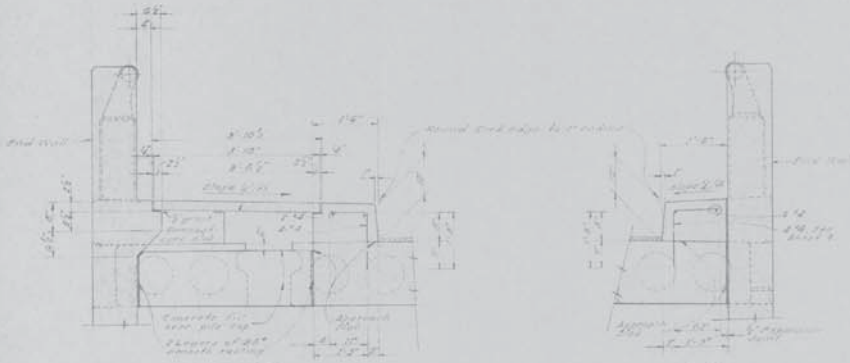
HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Design: C.L.R. R.L.H.	Drawn: D.F.C.	Checked: C.L.R. R.L.H.	No. 9
Approved:	Date: JUNE 1961	Project No. 61-01	
Scales: As Shown	APPROACH SLAB - PILING		of 12 Sheets



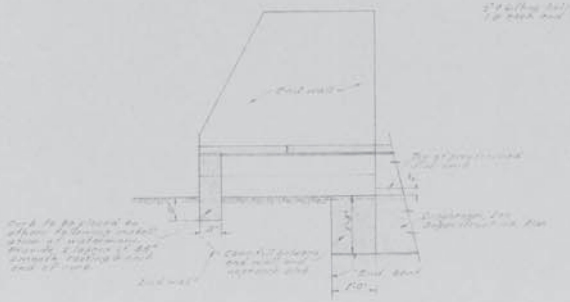
PLAN



A-A

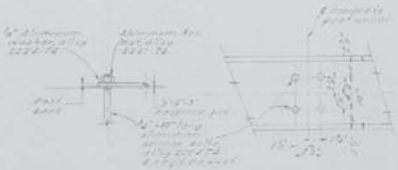
B-B

SECTIONS

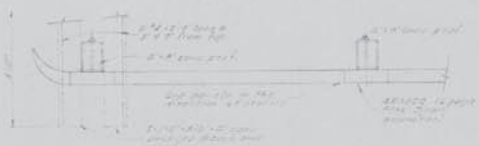


SECTION C-C

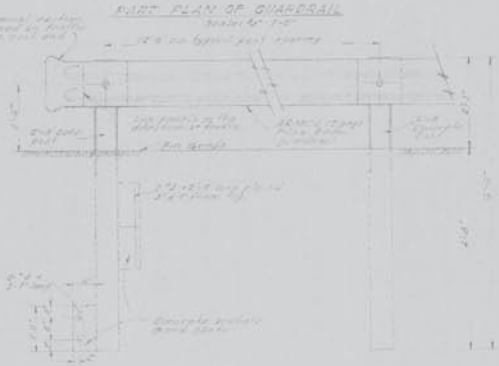
SIDEWALK AND CURB EXTENSIONS



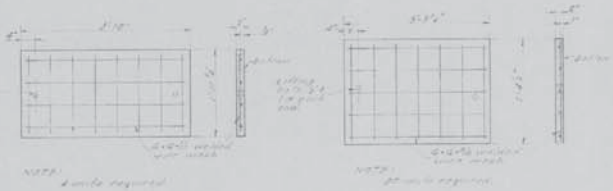
HANDRAIL POST ANCHORAGE DETAIL



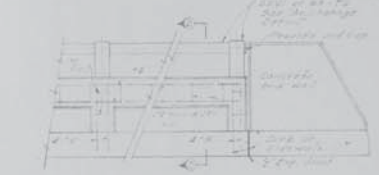
PART PLAN OF GUARDRAIL



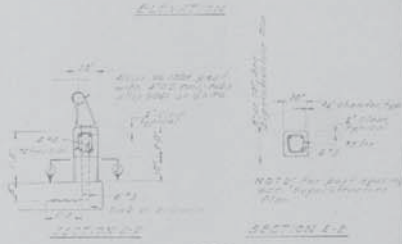
PART ELEVATION OF GUARDRAIL



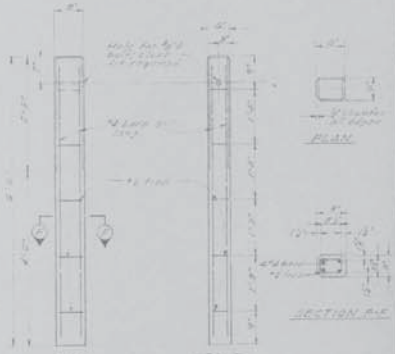
PRECAST SIDEWALK SLABS



ELEVATION



HANDRAIL DETAILS



ELEVATIONS

GUARDRAIL POST DETAILS

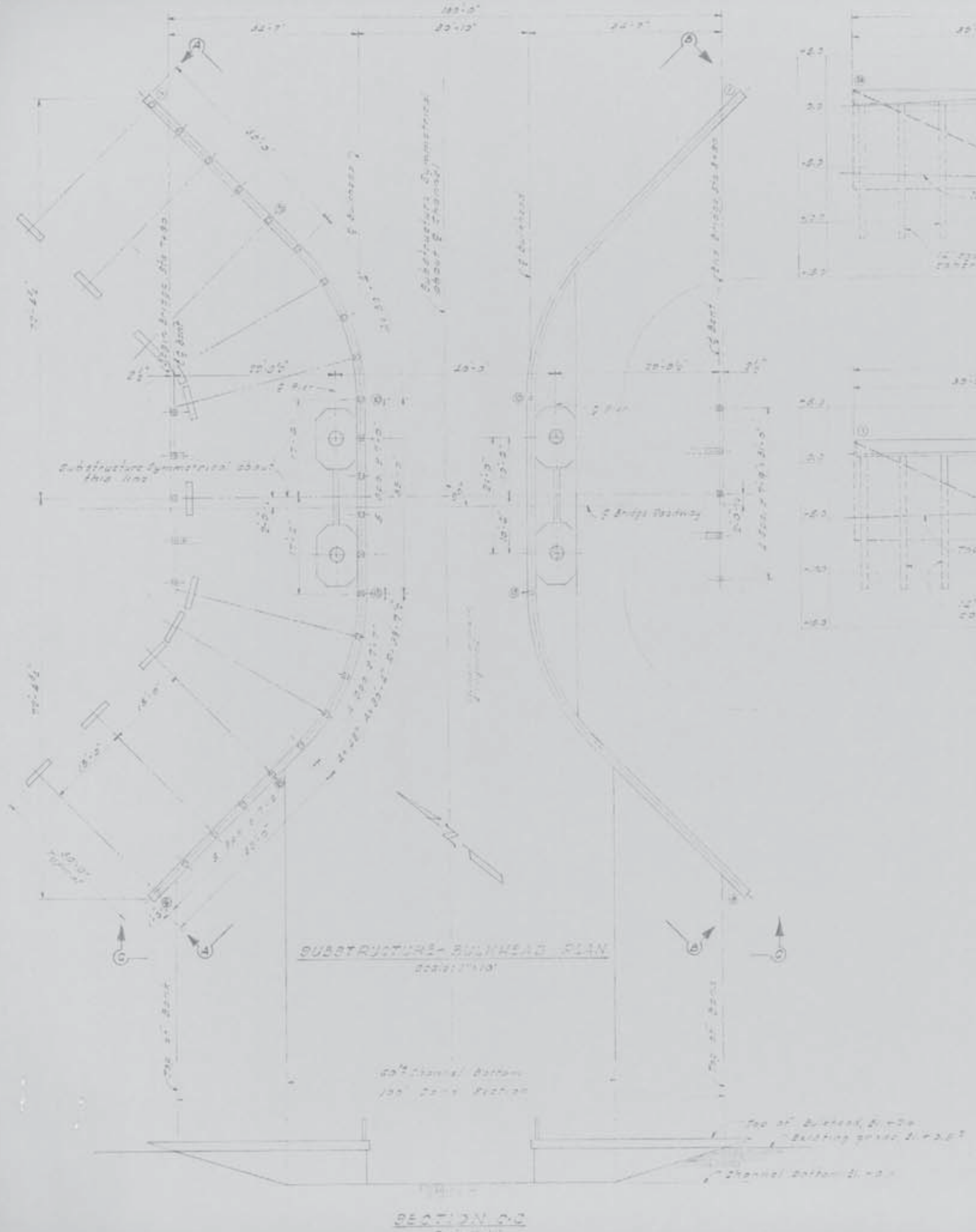
Date	Mark	By	Description

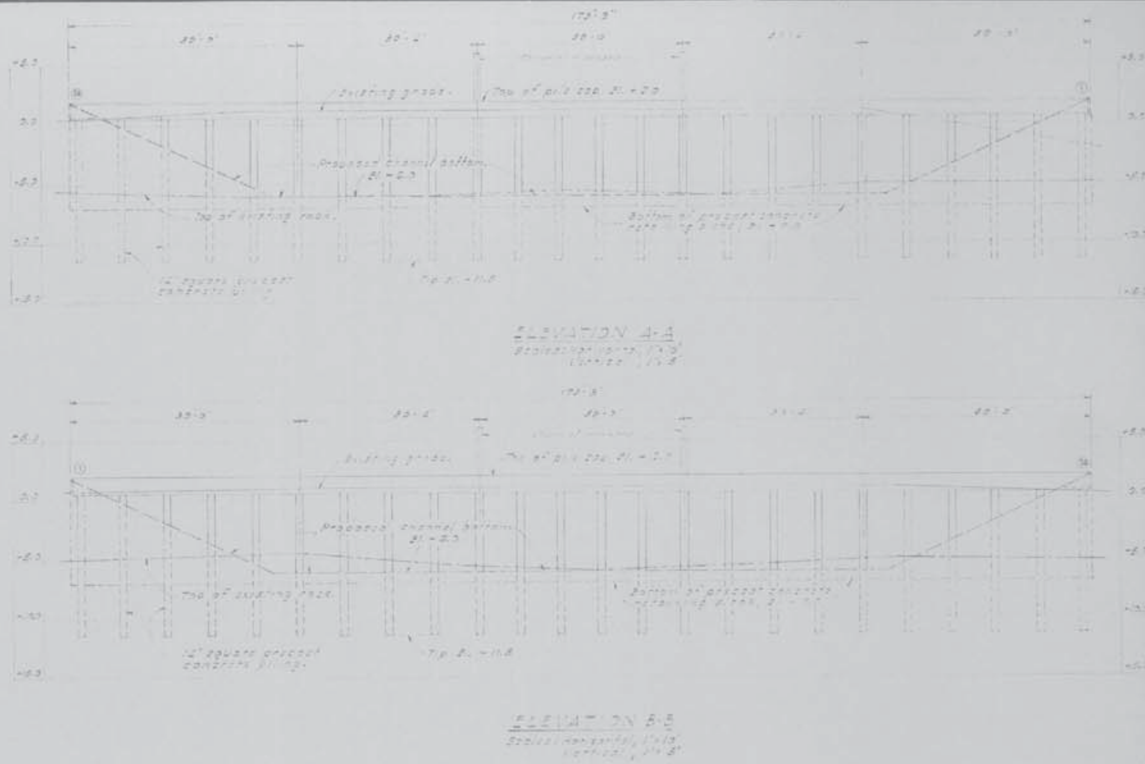
REVISIONS

HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Design: C.J.R. R.L.H.	Drawn: D.F.C.	Checked: C.J.R. R.L.H.	No. 10
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: As Shown	MISCELLANEOUS DETAILS		of 12 Sheets





AS BUILT DATA BULKHEAD PILING

No.	N. SIDE L	N. SIDE TIP EL.	N. SIDE DRIVEN	S. SIDE L	S. SIDE TIP EL.	S. SIDE DRIVEN
1	16'	-15.2	6/15	14'	-12.1	7/7
2	16'	-15.0		17'	-14.1	*
3	16'	-14.0		14'	-12.4	
4	20'	-14.0		14'	-12.8	
5	16'	-12.8		14'	-12.1	
6	14'	-12.2		14'	-12.7	
7	14'	-12.2		14'	-12.4	
8	14'	-12.2		16'	-14.3	
9	14'	-12.1	6/12	14'	-12.4	7/12
10	16'	-15.9	6/16	14'	-11.8	7/5
11	16'	-13.0		14'	-12.1	
12	16'	-13.5		14'	-11.7	
13	16'	-13.1		14'	-12.0	
14	16'	-13.4		14'	-11.8	
15	16'	-13.2	6/16	16'	-13.8	7/5
16	14'	-12.1	6/18	18'	-14.5	7/14
17	14'	-12.1		13'-6"	-12.3	*
18	14'	-11.8		14'	-11.1	
19	14'	-11.6		14'	-12.2	
20	14'	-11.9		14'	-12.3	
21	14'	-11.9		14'	-12.4	
22	14'	-12.1		14'	-12.3	
23	14'	-11.8		16'	-14.7	**
24	14'	-12.1	6/9	14'	-12.1	7/16

* S.R.D. Piles sent to replace 2-16" piles which were lost

** Salvaged portion of bridge pile broken off during driving on N. End Bent.

① Indicates Bulkhead Pile Number

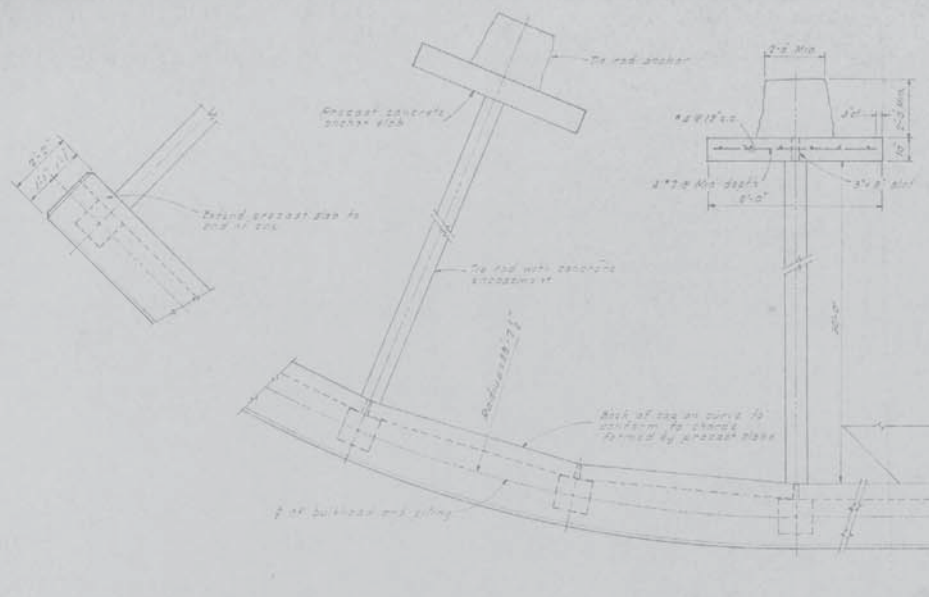
Date	Mark	By	Description
[illegible]	-	R.L.H.	Added Bulkhead Piling As Built Data
[illegible]	-	C.L.R.	Revised Intermediate Bent Footings

REVISIONS

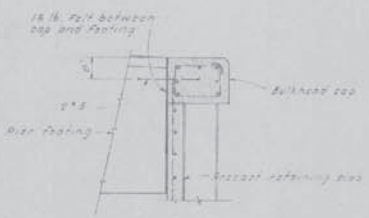
HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

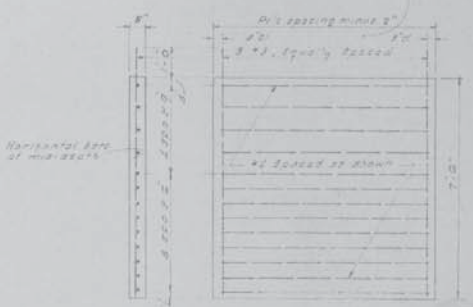
Design: C.L.R. R.L.H.	Drawn: R.L.H.	Checked: C.L.R. R.L.H.	No. 11
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: As Shown	BULKHEAD PLAN		of 12 Sheets



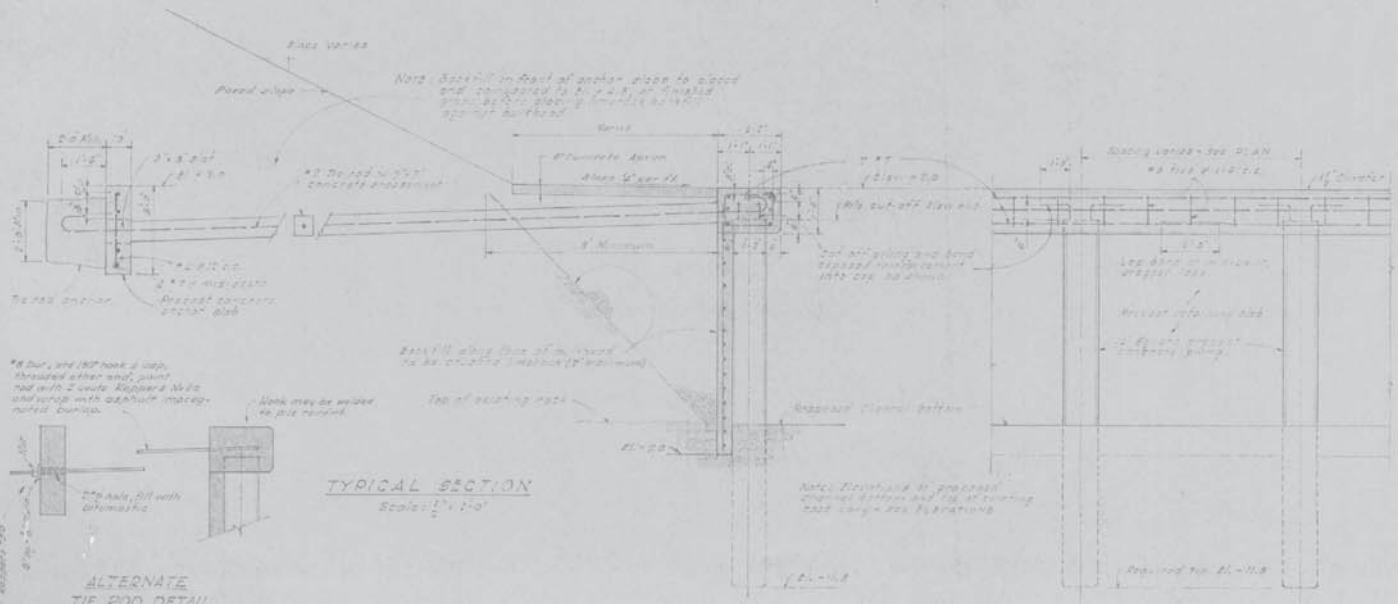
PART PLAN



SECTION A-A



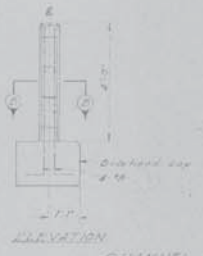
PRECAST RETAINING SLAB DETAIL



TYPICAL SECTION

ALTERNATE TIE ROD DETAIL

TYPICAL ELEVATION



ELEVATION

SECTION B-B

CHANNEL MARKER DETAIL

Date	Mark	By	Description
5-4-62	-	CLR	ADDED ALTERNATE TIE ROD DETAIL

REVISIONS

HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Design: CLR, RLH	Drawn: RLH	Checked: CLR, RLH
Approved:	Date: JUNE 1961	Project No. 61-01
Scale: As Shown	BULKHEAD DETAILS	No. 12 of 12 Sheets

APPENDIX F – FDOT BRIDGE INSPECTION REPORT AND SUBSEQUENT INTERIM REPORTS

FDOT	**BRIDGE INSPECTION REPORT** PREPARED FOR: FDOT District 6 BRIDGE OWNER: MIAMI-DADE COUNTY INSPECTION TYPE: Regular NBI CONTRACT No. CA611	Inspected by: **Marlin Engineering, Inc.**
Bridge No. 874294	**REPORT CONTAINS**	**Inspection Date: 4-06-2020**

☒ BrM Inspection Report ☒ Bridge Profile ☐ Fracture Critical Data ☐ Addendum
☒ CIDR Information ☒ UW Inspection Report ☒ Load Rating Summary Sheet ☐ Mechanical and Electrical Data

Matheson Hammock Road over Matheson Hammock Canal	**Facility Carried & Location**	**Matheson Hammock Park**

Location Map		**Detour Length = N/A**

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

BY:	Marlin Engineering, Inc.	STRUCTURE NAME:	Not recorded
OWNER:	2 County Hwy Agency	YEAR BUILT:	1967
MAINTAINED BY:	2 County Hwy Agency	SECTION NO.:	87 000 757
STRUCTURE TYPE:	5 Prestressed Concrete - 01 Slab	MP:	0.080
LOCATION:	Matheson Hammock Park	ROUTE:	00000
SERV. TYPE ON:	5 Highway-pedestrian	FACILITY CARRIED:	Matheson Hmk Road
SERV. TYPE UNDER:	5 Waterway	FEATURE INTERSECTED:	Matheson Hammock Canal

☐ FUNCTIONALLY OBSOLETE ☒ STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Regular NBI

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 4/6/2020 UNDERWATER: 4/6/2020

SUFFICIENCY RATING: 15.5
HEALTH INDEX: 86.68

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

BY:	Marlin Engineering, Inc.	STRUCTURE NAME:	Not recorded
OWNER:	2 County Hwy Agency	YEAR BUILT:	1967
MAINTAINED BY:	2 County Hwy Agency	SECTION NO.:	87 000 757
STRUCTURE TYPE:	5 Prestressed Concrete - 01 Slab	MP:	0.080
LOCATION:	Matheson Hammock Park	ROUTE:	00000
SERV. TYPE ON:	5 Highway-pedestrian	FACILITY CARRIED:	Matheson Hmk Road
SERV. TYPE UNDER:	5 Waterway	FEATURE INTERSECTED:	Matheson Hammock Canal

[ ] THIS BRIDGE CONTAINS FRACTURE CRITICAL COMPONENTS

[ ] THIS BRIDGE IS SCOUR CRITICAL

[X] THIS REPORT IDENTIFIES DEFICIENCIES WHICH REQUIRE PROMPT CORRECTIVE ACTION

[ ] FUNCTIONALLY OBSOLETE [X] STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Regular NBI

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 4/6/2020 UNDERWATER: 4/6/2020

OVERALL NBI RATINGS:

DECK:	3 Serious	CHANNEL:	6 Bank Slumping
SUPERSTRUCTURE:	3 Serious	CULVERT:	N N/A (NBI)
SUBSTRUCTURE:	4 Poor	SUFF. RATING:	15.5
PERF. RATING:	Poor	HEALTH INDEX:	86.68

FIELD PERSONNEL / TITLE / NUMBER:	INITIALS
Porras, Omar - Senior Diver Bridge Inspector (CBI#0368) (lead)	
Gomez, Hiram - Bridge Inspector Assistance	
Jacob Popp - Bridge Inspector Assistance, Diver	
Burgos, Daniel - Bridge Inspector Assistance, Diver	
Campo, Luis - Bridge Inspector Assistant	

REVIEWING BRIDGE INSPECTION SUPERVISOR:

Rego, Alexis - Bridge Inspector (CBI#00409) _____

CONFIRMING REGISTERED PROFESSIONAL ENGINEER:

Vers, Julie - Structural Design Manager (P.E. # 77896) Marlin Engineering
1700 NW 66 Avenue
Suite 106
Plantation Florida 33313

SIGNATURE: _____

DATE: _____

The official record of this package has been electronically signed and sealed by Julie A. Vers, P.E. on the date adjacent to the seal as required by Rule 61G15-23.004, F.A.C.. 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 with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

All Elements

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8099 / 3	PS Conc Slab (Sonovoid)	3178	89.88	114	3.22	244	6.9	0	.	3536 (SF)
0	1080 / 3	Delamination/Spall/Patched Area	0	.	114	59.07	79	40.93	0	.	193 (SF)
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 (SF)
0	1100 / 3	Exposed Prestressing	0	.	0	.	20	100	0	.	20 (SF)
0	1110 / 3	Cracking (PSC)	0	.	0	.	144	100	0	.	144 (SF)
0	510 / 3	Wearing Surfaces	1929	73.23	0	.	705	26.77	0	.	2634 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	705	100	0	.	705 sq.ft

Element Inspection Notes:

8099/3 Notes: The top of the slab units is not visible due to an asphalt overlay. The width of the sonovoid slab units was field verified to be 3ft. wide.

SECONDARY:
_Object markers and centerline raised pavement markers are missing on the structure. Refer to Photo 01. NO CHANGE.
_Sidewalk panels are loose and moves under pedestrian load. Refer to Photo 02. NO CHANGE.
_The slab unit joints show evidence of water seepage. NO CHANGE. NCAR.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Replace the southern utility access panel of Span 1.
_Shim all sidewalk panels throughout the structure.
_Rehab/replace slab units 1-7, 1-8, 2-7, 2-8, 3-7 and 3-8.
_Clean efflorescence on slab units 1-6 and 1-7 to monitor the cracks.
_Repair cracks on slab units 1-6, 1-9, 2-6, 2-9, 3-6.
_Repair spalled/delaminated areas on slab units 1-6, 1-9, 2-6, 2-9, and 3-6 as needed.

CORRECTIVE ACTION EVALUATION:
_The recommendation noted above was completed.
_The recommendation noted above was not completed. Recommendation will be repeated.
_The recommendation noted above was not completed. Recommendation will be repeated
_The recommendation noted above was not completed. Recommendation will be repeated.
_The recommendation noted above was not completed. Recommendation will be repeated

Refer to Defects 1080, 1090, 1100, and 1110 for additional deficiencies.

1080/3 CS-3:
_Slab Unit 1-8 east edge has a spall/delamination 4ft. L x 15in. W x 2in. D and associated cracks with corrosion bleed-out near mid-span. Previously noted a delamination with associated cracks. (Total 8 SF) Refer to Photo 03. INCREASE.
_Slab Unit 1-9, center line has a spall/delamination up to 36in. L x 24in. W x 2in. D over Abutment 1. (Total 6 SF) Refer to Photo 04. NO CHANGE.
_Slab Unit 3-7 has an unsound repaired area 11ft. L x 2ft. W starting from Abutment 4 with hollow sounding throughout and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out. (Total 22 SF) Refer to Photo 05. NO CHANGE.
_Slab Unit 3-8 has a spall/delamination up to 7ft. L x 3ft. W x 1in. D and associated cracks with corrosion bleed-out starting at Pier 3. (Total 21 SF) Refer to Photo 06. NO CHANGE.
_Slab Unit 3-8 west edge has an unsound repaired area 11ft. L x 18in. W starting from Abutment 4 with hollow sounding throughout and associated cracks up to 1/16in. W with efflorescence. (Total 22 SF) NO CHANGE.

CS-2:

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

_Slab Unit 1-6, east edge has a delamination up to full length x 12in. W starting at Pier 2 cap. Previously noted as 3in. W. (Total 30 SF) INCREASE.
_Slab Unit 1-7, east edge has a delamination 7ft. L x 4in. W, starting at Pier 2 cap. (Total 7 SF) NEW.
_Slab Unit 1-9, west edge has a delamination up to 10ft. L x 14in. W, starting at Pier 2 cap. (Total 10 SF) NO CHANGE.
_Slab Unit 2-6, east edge has a delamination 30in. L x 4in. W starting at Pier 2 cap. (Total 3 SF). Refer to Photo 07. NO CHANGE.
_Slab Unit 2-7, west edge has a delamination up to 24in. L x 4in. W starting at Pier 2 cap. (Total 2 SF) Refer to Photo 07. NO CHANGE.
_Slab Unit 2-8 west half has two delaminated areas up to 15ft. L x 18in. W (average width) at south and north ends. (Total 60 SF). Refer to Photo 08. NO CHANGE.
_Slab Unit 3-6 has a delamination up to 24in. L x 6in. W on the east edge over Pier 3. (Total 2 SF) NO CHANGE.

1090/3 CS-3:
_Slab Unit 1-6 exhibits a spall with exposed rebar up to 15in. L x 6in. W x 1/2in. D with evidence of previous failed repair, at 9ft. from Abutment 1. (Total 1 SF) Refer to Photo 09. NO CHANGE.

1100/3 CS-3:
_Slab Unit 2-8 has a spall 10ft. L x 24in. W x up to 4in. D at mid-span with 6 exposed and corroded transverse rebars with up to 60% section remaining and 5 exposed and corroded prestressing strands with up to 0% section remaining (2 broken threads). (Total 20 SF) Refer to Photos 08 and 10. NO CHANGE.

1110/3 CS-3:
_Slab Unit 1-6 east edge has a delamination area full length x 12in. W with associated cracks up to 1/16in. W with efflorescence throughout. Previously noted as a delamination full length x 3in. W. (Total 30 SF) INCREASE.
_Slab Unit 1-7 east edge has a spall/delamination 24in. L x 12in. W with associated cracks up to 1/32in. W with efflorescence and corrosion bleed-out over Abutment 1. No corrosion bleed out was previously noted. (Total 2 SF) Refer to Photo 11. INCREASE.
_Slab Unit 1-8 west edge is intermittently delaminated up to 15ft. L x 15in. W with associated cracks up to 1/8in. W with efflorescence and corrosion bleed-out, starting at Abutment 1. (Total 15 SF) Refer to Photo 11. NO CHANGE.
_Slab Unit 1-8 has a delaminated area up to 7ft. L x 3ft. W and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out. (Total 21 SF) NO CHANGE.
_Slab Unit 1-9 west edge has a delaminated area 8ft. L x 10in. W and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out, starting near the 3/4 point and extending to Pier 2 cap. (Total 8 SF) NO CHANGE.
_Slab Unit 2-7 east edge is intermittently cracked/delaminated up to span length x 16in. W (average width). (Total 38 SF) NO CHANGE.
_Slab Unit 2-9 west edge has a delaminated area up to 5ft. L x 5in. W with associated cracking up to 1/4in. wide, starting at the Pier 2 cap. (Total 5 SF). NO CHANGE.
_Slabs Unit 3-7 has two delaminated areas, one starting at Pier 3 up to 8ft. L x 15in. W (average width) with associated cracks, and the second, near mid-span up to 3ft. L x 30in. W. (Total 25 SF) NO CHANGE.

510/3 PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Repair the asphalt overlay over the expansion joints and slab unit joints as needed.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.

Refer to Defect 3220 for deficiencies.

3220/3 CS-3:

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

_The asphalt overlay has longitudinal cracks up to span length x 1/4in. W with associated rutting over the slab unit joints with upheaving up to 1in. H at the shoulders, possibly indicating independent slab units movement. (Total 600 SF) Refer to Photo 12. NO CHANGE.

_The asphalt overlay has transverse cracks up to roadway width x 1/4in. W with rutting and upheaving up to 3in. H and vegetation growth over the expansion joints. (Total 105 SF) Refer to Photo 13. NO CHANGE.

DECKS : Joints

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	301 / 3	Pourable Joint Seal	0	.	0	.	104	74.29	36	25.71	140 ft
0	2310 / 3	Leakage	0	.	0	.	104	100	0	.	104 ft
0	2330 / 3	Seal Damage	0	.	0	.	0	.	36	100	36 ft

Element Inspection Notes:

301/3 Note: The roadway joints are not visible due to an asphalt overlay.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Clean and seal the expansion joints.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.

Refer to Defects 2310 and 2330 for deficiencies.

2310/3 CS-3:
_There is evidence of moderate to heavy water seepage through the expansion joints on bents and abutment caps. (Total 104 LF) Refer to Photo 14. NO CHANGE. NCAR.

2330/3 CS-4:
_The sealant along the sidewalk expansion joints has deteriorated. (Total 36 LF) Refer to Photo 15. NO CHANGE.

MISCELLANEOUS : Channel

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8290 / 3	Channel	0	.	0	.	1	100	0	.	1 (EA)
0	9150 / 3	Bank Erosion	0	.	0	.	1	100	0	.	1 (EA)

Element Inspection Notes:

8290/3 FROM THE 2020 UNDERWATER INSPECTION:

Divers conducting the Underwater Inspection. Refer to Photo 16.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Repair undermining areas at the north seawall.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.

Refer to Defect 9150 for deficiencies.

9150/3 CS-3:
_There are two areas of undermining up to 22ft. L x 3in. H x 21in. of penetration with backfill migration under the north seawall, below Slab Units 2-2 and 2-5. Previously noted

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

undermining up to 22ft. L x 9in. H x 21in. of penetration. (Total 1 ea.) Refer to Photo 17. NO CHANGE.

MISCELLANEOUS : Other Elements

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	321 / 3	Re Conc Approach Slab	1410	100	0	.	0	.	0	.	1410 sq.ft
0	510 / 3	Wearing Surfaces	957	91.14	0	.	93	8.86	0	.	1050 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	93	100	0	.	93 sq.ft

Element Inspection Notes:

321/3 Note: The approach slabs are not visible due to an asphalt overlay.

SECONDARY:
_There are several approach roadway guardrails posts spalled/delaminated up to 14in. H x 3.5in. W x 1-1/4in D with exposed and corroded rebars at the following locations: NW guardrail, Posts 1, 2, 3, and 4, SW guardrail, Posts 2 and 4 from the bridge, SE guardrail, Post 1 from the bridge. Post 4 in NW guardrail was not previously noted. Refer to Photo 18. INCREASE.
_The approach guardrail panels exhibit moderate to heavy corrosion with numerous corrosion holes throughout. Refer to Photo 19. NO CHANGE.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Replace the approach guardrail panels and posts.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.

510/3 Refer to Defect 3220 for deficiencies.

3220/3 CS-3:
_The asphalt over the north approach slab has two longitudinal ravel cracks up to slab length x 1/8in. W in Lanes 1 and Lane 2. Previously noted cracks up to 1/16in. W (Total 40 SF) INCREASE. NCAR.
_The asphalt in both approach slab to approach roadway transitions has a transverse crack up to roadway width x 1/4in. W. (Total 53 SF) NO CHANGE. NCAR.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	205 / 3	Re Conc Column	0	.	0	.	4	100	0	.	4 each
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 each
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	3	100	0	.	3 each

Element Inspection Notes:

205/3 Note: At high tide, the seawater reaches the lower section of the columns.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Repair delaminated areas in columns.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.

Refer to Defects 1090 and 1130 for deficiencies.

1090/3 CS-3:
_Column 2-2, south face has a spall/delamination up to 7ft. H x 3ft. W x 3in. D with one

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

exposed rebar and one stirrup, having areas of up to 80% section remaining. Additionally, there are areas of delamination around the column circumference covering the entire column height with associated cracks up to 1/4in. W. No exposed rebar was previously noted. (Total 1 ea.) Refer to Photo 20. INCREASE.

1130/3 CS-3:
_Columns 2-1, 3-1, and 3-2 have delaminated areas along their entire length with associated cracks up to full height x 1/16in. W, as a result of corrosion of the steel reinforcement. (Total 3 ea.) Refer to Photo 21. NO CHANGE.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	215 / 3	Re Conc Abutment	65	92.86	0	.	5	7.14	0	.	70 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	0	.	5	100	0	.	5 ft

Element Inspection Notes:

215/3 Refer to Defect 1080 for deficiencies.

1080/3 CS-3:
_Abutment 4 cap has a spall/delamination up to 5ft. L x full height x 2in. D with associated cracks up to 1/16in. W under Slab Units 3-10 and 3-11. (Total 5 LF) Refer to Photo 22. NEW.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	234 / 3	Re Conc Pier Cap	49	72.06	12	17.65	7	10.29	0	.	68 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	12	63.16	7	36.84	0	.	19 ft

Element Inspection Notes:

234/3 SECONDARY:
_Bents 2 and 3 caps have vegetation growth along the west end. Refer to Photo 23. NO CHANGE.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Remove vegetation from west end of caps.
_Repair delaminations in Pier 2 and 3 caps.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.

Refer to Defect 1080 for additional deficiencies.

1080/3 CS-3:
_Bent 2 cap has a spall/delamination up to 3ft. L x 16in. H x 1 in. D on the south face over Column 2-2, and on the same location, north face a delamination 20in. L x 12in. H. Previously noted only a delamination 3ft. L x 16in. H. (Total 3 LF) Refer to Photo 24. INCREASE.
_Bent 3 cap, bottom and north faces has two unsound repaired areas with multidirectional cracks up to 1/64in. W. No unsound concrete with cracks was previously noted. (Total 4 LF) INCREASE.

CS-2:
_Pier 3 cap has intermittent delaminated areas up to 3ft. L x 16in. H between Columns 3-1 and 3-2, along the top and bottom north edges. Previously noted delaminations up to 3ft. L

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

x 16in. H totaling 5 LF. (Total 12 LF) INCREASE.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8393 / 3	Bulkhead Seawall Any Materia	0	.	0	.	354	100	0	.	354 ft
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	314	100	0	.	314 ft
0	6000 / 3	Scour	0	.	0	.	40	100	0	.	40 ft

Element Inspection Notes:

8393/3 Note: This element represents the concrete seawall that lines both sides of the channel. The seawall is underwater during high tide. The seawalls have a total of 44 piles; 22 piles at each seawall.

SECONDARY:
_The brackets and fasteners attaching the clearance gauges to the seawalls exhibit heavy to severe corrosion. Refer to Photo 25.

FROM THE 2020 UNDERWATER INSPECTION:

SECONDARY:
_SE and NW clearance gauges have moderate decay at bottom 3ft. Refer to Photo 26. NO CHANGE.
_The south seawall has two open joints up to 4in. W with backfill leakage behind Piles 15 and 18 from west. Refer to Photo 27. NO CHANGE.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Clean & seal cracks & repair delaminations/spalls in seawall caps.
_Seal open joints at the south seawall behind Piles 15 and 18.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.

Refer to Defects 1130 and 6000 for additional deficiencies.

1130/3 CS-3:
_The seawall caps on the north and south walls have up to 1/4in W cracks, with associated delaminations/spalls throughout their entire lengths. (Total 314 LF) Refer to Photo 28. NO CHANGE.
_The south seawall at Pile 13, SE corner has a spall 14in. H x 3-1/2in. W x 1in. D, 3ft. 9in. below cap. NO CHANGE. NCAR.
_South seawall piles have vertical cracks up to 31in. L x 1/8in. W, some with corrosion bleed out as follows: NO CHANGE. NCAR.
-Pile 3, NE corner has a crack, and west, north and east faces have cracks with corrosion bleed out.
-Pile 4, north face has a crack with corrosion bleed out.
-Pile 16, east face has a crack with corrosion bleed out.
-Pile 17, west, north and east faces have cracks with corrosion bleed out.
-Piles 19, 20 and 21, SW and SE corners have cracks.

_North seawall piles have vertical cracks intermittently throughout, up to 34in. L x 1/16in. W, some with corrosion bleed out as follows: NO CHANGE. NCAR.
-Piles 5 and 6, SW and SE corners have cracks with corrosion bleed out.
-Pile 3, SW corner has a crack.
-Pile 4, NW corner has a crack.
-Piles 7, 8, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23 have cracks in the SW and SE corners.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

-Pile 11, SE corner has a crack.

6000/3 From the 2020 Underwater Inspection:

CS-3:
_There are two areas of undermining up to 22ft. L x 9in. H x 21in. of penetration with backfill migration under the north seawall, below Slab Units 2 and 5. Refer to Element 8290 for related comments and recommended corrective actions. (Total 40 LF) NO CHANGE.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8394 / 3	R/Conc Abut Slope Protection	3968	73.81	0	.	1408	26.19	0	.	5376 (SF)
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	320	100	0	.	320 (SF)
0	4000 / 3	Settlement	0	.	0	.	1088	100	0	.	1088 (SF)

Element Inspection Notes:

8394/3 Note: At high tide, the seawater reaches the lower section of the concrete slope pavement.

SECONDARY:
_There is vegetation growth in the joints between the panels of slope protection in several locations. NO CHANGE. NCAR.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Repair settled & fractured sections of slope pavement.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.

Refer to Defects 1130 and 4000 for additional deficiencies.

1130/3 CS-3:
_The slope pavement has multidirectional cracks up to 5ft. L x 1/8in. W along the NE corner near the toe. (Total 320 SF) NO CHANGE. NCAR.

4000/3 CS-3:
_The top slope pavement section along the SW and NW corners has settled up to 4in. H. (Total 933 SF) NO CHANGE.
_The slope protection toe has a fractured and settled area of 15ft. x 7ft. x 2ft deep at the NW corner behind the seawall cap. Possibly due to water reaching this area at high tide, no undermining or backfill migration are noted in the channel adjacent area. (Total 105 SF) Refer to Photo 29. NO CHANGE.
_The SW slope protection toe has 5 fractured panels that have settled up to 3in. H. Possibly due to water reaching this area at high tide, no undermining or backfill migration are noted in the channel adjacent area. (Total 50 SF) Refer to Photo 30. NO CHANGE.

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	333 / 3	Other Bridge Railing	167	83.5	33	16.5	0	.	0	.	200 ft
0	1000 / 3	Corrosion	0	.	30	100	0	.	0	.	30 ft
0	1020 / 3	Connection	0	.	3	100	0	.	0	.	3 ft

Element Inspection Notes:

333/3 Note: This element represents the concrete post and beam bridge rail with

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

aluminum handrail on top across both sides of the structure.

CS-1:
_The concrete bridge rail beams have 1/64in W cracks at the junctures with the posts in several locations. NO CHANGE. NCAR.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Replace the approach guardrail panels and posts.
_Replace the missing railing nuts on left side of Bent 3.
_Clean & coat the corroded nuts of railing.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.

Refer to Defects 1000 and 1020 for additional deficiencies.

1000/3 CS-2:
_The rail anchor bolt nuts and washers have moderate corrosion at random locations: 25 nuts at west railing, and 5 nuts at east railing. (Total 30 LF) Refer to Photo 31. NO CHANGE.

1020/3 CS-2:
_There are several missing anchor bolt nuts at the aluminium rail posts at the following locations: (Total 3 ea.) Refer to Photo 32. INCREASE.

_West rail, Post 1-1 is missing 1 of 4 nuts. NEW.
_West rail, Post 2-6 is missing 2 of 4 nuts. NO CHANGE.
_East rail, Post 1-5 is missing 1 of 4 nuts. NEW.

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

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Inspector Recommendations

UNIT: 0 **DECKS**

ELEMENT/ENV: 301:2330 / 3 Seal Damage **ELEM CATEGORY: Joints**

CONDITION STATE		PRIORITY
4	MMS Quantity: 36 lf Element Estimated Quantity: 36 ft	3

WORK ORDER RECOMMENDATION:
Install new sealant along the sidewalk expansion joints. Photo 15

ELEMENT/ENV: 8099 / 3 PS Conc Slab (Sonovoid) **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
1 , 2 , 3	MMS Quantity: 4 sf Element Estimated Quantity: 4 (SF)	3

WORK ORDER RECOMMENDATION:
Replace missing object markers at the four corners of the bridge. Photo 01

1 , 2 , 3	MMS Quantity: 300 sf Element Estimated Quantity: 300 (SF)	3

WORK ORDER RECOMMENDATION:
Properly secure the sidewalk panels. Photo 02

ELEMENT/ENV: 8099:510:3220 / 3 Crack (Wearing Surface) **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
3	MMS Quantity: 600 sf Element Estimated Quantity: 600 sq.ft	0

WORK ORDER RECOMMENDATION:
Monitor the slab units for independent movement. Photo 12

3	MMS Quantity: 600 sf Element Estimated Quantity: 600 sq.ft	3

WORK ORDER RECOMMENDATION:
Repair cracks on the asphalt along the slab unit joints. Photo 12

3	MMS Quantity: 105 sf Element Estimated Quantity: 105 sq.ft	3

WORK ORDER RECOMMENDATION:
Clean and repair cracks and rutting along the expansion joints. Photo 13

ELEMENT/ENV: 8099:1080 / 3 Delamination/Spall/Patched Area **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
2 , 3	MMS Quantity: 338 sf Element Estimated Quantity: 338 (SF)	3

WORK ORDER RECOMMENDATION:
Repair spalls delaminations and cracks along the underside of the slabs units. Photos 03 to 11

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Inspector Recommendations

UNIT: 0 **DECKS**

ELEMENT/ENV: 8099:1100 / 3 Exposed Prestressing **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
3	MMS Quantity: 20 sf Element Estimated Quantity: 20 (SF)	3

WORK ORDER RECOMMENDATION:

Clean and coat exposed prestressing and reinforce Slab Unit 2-8. Photos 08 and 10

UNIT: 0 **MISCELLANEOUS**

ELEMENT/ENV: 321 / 3 Re Conc Approach Slab **ELEM CATEGORY: Other Elements**

CONDITION STATE		PRIORITY
1	MMS Quantity: 80 sf Element Estimated Quantity: 80 sq.ft	3

WORK ORDER RECOMMENDATION:

Replace all the approach guardrail panels. Photo 19

1	MMS Quantity: 7 sf Element Estimated Quantity: 7 sq.ft	3

WORK ORDER RECOMMENDATION:

Replace spalled and delaminated posts along the roadway approach guardrails. Photo 18

ELEMENT/ENV: 8290:9150 / 3 Bank Erosion **ELEM CATEGORY: Channel**

CONDITION STATE		PRIORITY
3	MMS Quantity: 8 mh Element Estimated Quantity: 1 (EA)	3

WORK ORDER RECOMMENDATION:

Repair undermining areas at the north seawall. Photo 17

UNIT: 0 **SUBSTRUCTURE**

ELEMENT/ENV: 205:1090 / 3 Exposed Rebar **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
3	MMS Quantity: 16 mh Element Estimated Quantity: 1 each	3

WORK ORDER RECOMMENDATION:

Remove any loose concrete and repair delaminations and spalls along the Column 2-2. Photo 20

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Inspector Recommendations

UNIT: 0 **SUBSTRUCTURE**

ELEMENT/ENV: 205:1130 / 3 Cracking (RC and Other) **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
3	MMS Quantity: 8 mh Element Estimated Quantity: 4 each	3

WORK ORDER RECOMMENDATION:

Install cathodic protection to Bents 2 and 3 columns. Photos 20 and 21

3	MMS Quantity: 80 mh Element Estimated Quantity: 4 each	3

WORK ORDER RECOMMENDATION:

Repair delaminations and seal cracks along Bents 2 and 3 columns. Photo 21

ELEMENT/ENV: 215:1080 / 3 Delamination/Spall/Patched Area **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
3	MMS Quantity: 8 mh Element Estimated Quantity: 5 ft	3

WORK ORDER RECOMMENDATION:

Repair spall/delamination on Abutment 4 cap under Slab Units 3-10 and 3-11. Photo 22

ELEMENT/ENV: 234 / 3 Re Conc Pier Cap **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
1 , 2 , 3	MMS Quantity: 2 mh Element Estimated Quantity: 2 ft	3

WORK ORDER RECOMMENDATION:

Remove vegetation growing on west end of Bents 2 and 3 caps. Photo 23

ELEMENT/ENV: 234:1080 / 3 Delamination/Spall/Patched Area **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
2 , 3	MMS Quantity: 16 mh Element Estimated Quantity: 19 ft	3

WORK ORDER RECOMMENDATION:

Repair spalls and delaminations along Bents 2 and 3 caps. Photo 24

ELEMENT/ENV: 8393 / 3 Bulkhead Seawall Any Material **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
3	MMS Quantity: 8 mh Element Estimated Quantity: 4 ft	3

WORK ORDER RECOMMENDATION:

Replace the clearance gauges and hardware on the seawall at both sides of the channel. Photos 25 and 26

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Inspector Recommendations

UNIT: 0 **SUBSTRUCTURE**

ELEMENT/ENV: 8393 / 3 Bulkhead Seawall Any Material **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
3	MMS Quantity: 8 mh Element Estimated Quantity: 2 ft	3

WORK ORDER RECOMMENDATION:

Seal open joints at the south seawall behind Piles 15 and 18. Photo 27

ELEMENT/ENV: 8393:1130 / 3 Cracking (RC and Other) **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
3	MMS Quantity: 40 mh Element Estimated Quantity: 314 ft	3

WORK ORDER RECOMMENDATION:

Repair delaminations and spalls along the seawall caps. Photo 28

ELEMENT/ENV: 8394:4000 / 3 Settlement **ELEM CATEGORY: Substructure**

CONDITION STATE		PRIORITY
3	MMS Quantity: 160 mh Element Estimated Quantity: 1088 (SF)	3

WORK ORDER RECOMMENDATION:

Repair settled and fractured areas along the slope protections. Photos 29 and 30

UNIT: 0 **SUPERSTRUCTURE**

ELEMENT/ENV: 333:1000 / 3 Corrosion **ELEM CATEGORY: Superstructure**

CONDITION STATE		PRIORITY
2	MMS Quantity: 30 lf Element Estimated Quantity: 30 ft	3

WORK ORDER RECOMMENDATION:

Clean and paint or replace corroded hardware along the bridge aluminium rail. Photo 31

ELEMENT/ENV: 333:1020 / 3 Connection **ELEM CATEGORY: Superstructure**

CONDITION STATE		PRIORITY
2	MMS Quantity: 3 lf Element Estimated Quantity: 3 ft	3

WORK ORDER RECOMMENDATION:

Replace missing nuts at the aluminium rail post connections. Photo 32

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Structure Notes

BRIDGE OWNER: MIAMI-DADE COUNTY

Bridge inventoried from south to north.

P/S Slab Units on R/Conc Caps and Abutments over P/Conc Columns. (3 spans)

Element 227/3 Re Conc Pile notes have been replaced by Element 205/3 Re Conc Column on 10/29/2019.

TRAFFIC RESTRICTIONS:
Based on the current load rating analysis dated 1/13/2020, it is recommended that this bridge be posted for the SU, C and ST5 type vehicles as follows: SU = 11 tons, C = 16 tons, ST5 = 18 tons. The bridge is currently posted for SU = 11 tons, C = 16 tons, ST5 = 18 tons. Refer to posting signs Photos 33 and 34.

REVIEWED BY:

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

INSPECTION NOTES: GZJW 4/6/2020

Sufficiency Rating Calculation Accepted by knmeira at 5/13/2020 9:36:35 AM

The Deck and Superstructure are coded 3 (Serious) due to spalls and delaminations along more than 25% of any of the slab units. Slabs Units 1-6, 2-7, and 2-8 meet this criteria. (04/06/2020)

The Substructure NBI Rating is coded 4 (Poor) due to the significant deterioration of Column 2-2. (04/06/2020)

The Channel NBI Rating was lowered from 7 to 6 due to areas of undermining on the channel below the North seawall. (04/06/2020)

LOAD CAPACITY EVALUATION:
Since the current load rating dated 1/13/2020, there is no indication that deterioration, geometric changes or additional dead load have occurred that would warrant a new load rating analysis. This only applies to this inspection dated 04/06/2020 per Julie A.Vers, P.E.

The structure is on a 6 months inspection frequency due to NBI Rating 3 for SIA Items 58 Deck and 59 Superstructure.

Element 8475 R/Conc Walls was replaced by 8393 Bulkhead Seawall Any Material during this inspection cycle. All previous notes were transferred accordingly. (04/06/2020)

The following elements were inspected underwater by the divers:
8290 Channel
8393 Bulkhead Seawall Any Material

LEGEND:
NCAR: NO CORRECTIVE ACTION RECOMMENDED.
RT: Right
LT: Left
NC: No Change
INC: Increase
CAT: Corrective Action Taken
L: Long
W: Wide
H: High
D: Deep
UW: Underwater
S.L.: Section Loss
in.: Inches
ft.: Feet

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 01 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Object markers and centerline raised pavement markers are missing on the structure.

WORK ORDER RECOMMENDATION:
Replace missing object markers at the four corners of the bridge.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 02 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Sidewalk panels are loose and moves under pedestrian load.

WORK ORDER RECOMMENDATION:
Properly secure the sidewalk panels.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 03 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 1-8 east edge has a spall/delamination 4ft. L x 15in. W x 2in. D and associated cracks with corrosion bleed-out near mid-span.

WORK ORDER RECOMMENDATION:
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 04 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 1-9, center line has a spall/delamination up to 36in. L x 24in. W x 2in. D over Abutment 1.

WORK ORDER RECOMMENDATION:
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 05 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 3-7 has an unsound repaired area 11ft. L x 2ft. W starting from Abutment 4 with hollow sounding throughout and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out.

WORK ORDER RECOMMENDATION:
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 06 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 3-8 has a spall/delamination up to 7ft. L x 3ft. W x 1in. D and associated cracks with corrosion bleed-out starting at Pier 3.

WORK ORDER RECOMMENDATION:
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 07 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Units 2-6 and 2-7, east and west edges have delaminations up to 30in. L x 4in. W, starting at Pier 2 cap.

WORK ORDER RECOMMENDATION:
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 08 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 2-8 west half has two delaminated areas up to 15ft. L x 18in. W (average width) at south and north ends, and at midspan has a spall 10ft. L x 24in. W x up to 4in. D with exposed strands. Refer to Photo 10 for additional information.

WORK ORDER RECOMMENDATION:
Clean and coat exposed prestressing and reinforce Slab Unit 2-8.
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 09 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 1-6 exhibits a spall with exposed rebar up to 15in. L x 6in. W x 1/2in. D with evidence of previous failed repair, at 9ft. from Abutment 1.

WORK ORDER RECOMMENDATION:
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 10 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 2-8 has a spall 10ft. L x 24in. W x up to 4in. D at mid-span with 6 exposed and corroded transverse rebars with up to 60% section remaining and 5 exposed and corroded prestressing strands with up to 0% section remaining (2 broken threads).

WORK ORDER RECOMMENDATION:
Clean and coat exposed prestressing and reinforce Slab Unit 2-8.
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 11 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 1-7 east edge has a spall/delamination 24in. L x 12in. W with associated cracks up to 1/32in. W with efflorescence and corrosion bleed-out over Abutment 1. Slab Unit 1-8 west edge is intermittently delaminated up to 15ft. L x 15in. W with associated cracks up to 1/8in. W with efflorescence and corrosion bleed-out, starting at Abutment 1.

WORK ORDER RECOMMENDATION:
Repair spalls delaminations and cracks along the underside of the slabs units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 12 Element/Env 8099/ 510/3: PS Conc Slab (Sonovoid)/ Wearing Surfaces

The asphalt overlay has longitudinal cracks up to span length x 1/4in. W with associated rutting over the slab unit joints with upheaving up to 1in. H at the shoulders, possibly indicating independent slab units movement.

WORK ORDER RECOMMENDATION:
Repair cracks on the asphalt along the slab unit joints.
Monitor the slab units for independent movement.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 13 Element/Env 8099/ 510/3: PS Conc Slab (Sonovoid)/ Wearing Surfaces

The asphalt overlay has transverse cracks up to roadway width x 1/4in. W with rutting and upheaving up to 3in. H and vegetation growth over the expansion joints.

WORK ORDER RECOMMENDATION:
Clean and repair cracks and rutting along the expansion joints.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 14 Element/Env 301/3: Pourable Joint Seal

There is evidence of moderate to heavy water seepage through the expansion joints on bents and abutment caps.

WORK ORDER RECOMMENDATION:
None.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 15 Element/Env 301/3: Pourable Joint Seal

The sealant along the sidewalk expansion joints has deteriorated.

WORK ORDER RECOMMENDATION:
Install new sealant along the sidewalk expansion joints.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 16 Element/Env 8290/3: Channel

Divers conducting the Underwater Inspection.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

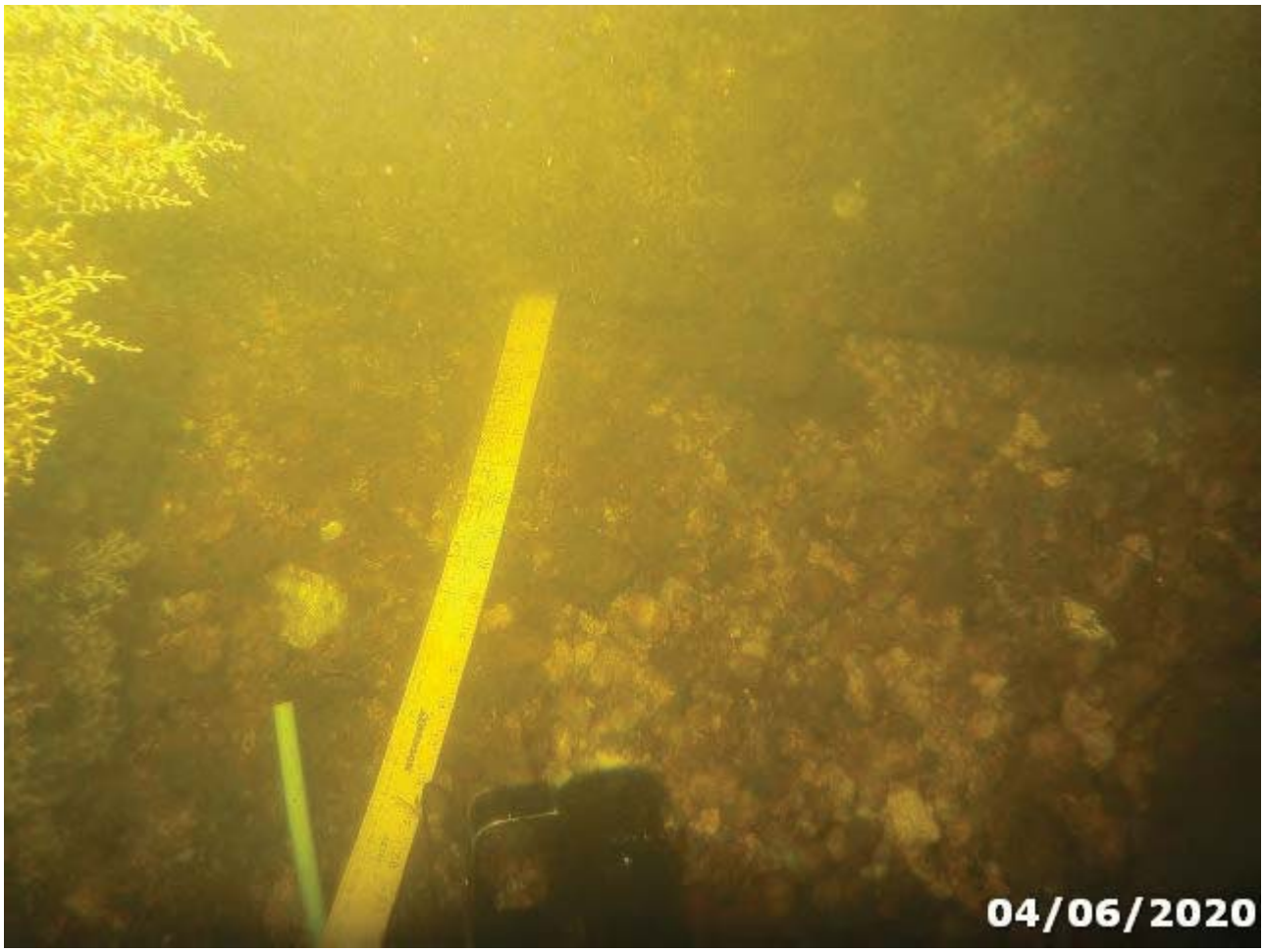


Photo 17 Element/Env 8290/3: Channel

There are two areas of undermining up to 22ft. L x 3in. H x 21in. of penetration with backfill migration under the north seawall, below Slab Units 2-2 and 2-5.

WORK ORDER RECOMMENDATION:
Repair undermining areas at the north seawall.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 18 Element/Env 321/3: R/Conc Approach Slab

There are several approach roadway guardrails posts spalled/delaminated up to 14in. H x 3.5in. W x 1-1/4in D with exposed and corroded rebars. Shown Post 1 at NW approach guardrail.

WORK ORDER RECOMMENDATION:
Replace spalled and delaminated posts along the roadway approach guardrails.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 19 Element/Env 321/3: R/Conc Approach Slab

The approach guardrail panels exhibit moderate to heavy corrosion with numerous corrosion holes throughout.

WORK ORDER RECOMMENDATION:
Replace all the approach guardrail panels.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 20 Element/Env 205/3: Re Conc Column

Column 2-2, south face has a spall/delamination up to 7ft. H x 3ft. W x 3in. D with one exposed rebar and one stirrup, having areas of up to 80% section remaining. Additionally, there are areas of delamination around the column circumference covering the entire column height with associated cracks up to 1/4in. W.

WORK ORDER RECOMMENDATION:
Remove any loose concrete and repair delaminations and spalls along the Column 2-2.
Install cathodic protection to Bents 2 and 3 columns.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 21 Element/Env 205/3: Re Conc Column

Columns 2-1, 3-1, and 3-2 have delaminated areas along their entire length with associated cracks up to full height x 1/16in. W, as a result of corrosion of the steel reinforcement.

WORK ORDER RECOMMENDATION:
Install cathodic protection to Bents 2 and 3 columns.
Repair delaminations and seal cracks along Bents 2 and 3 columns.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 22 Element/Env 215/3: Re Conc Abutment

Abutment 4 cap has a spall/delamination up to 5ft. L x full height x 2in. D with associated cracks up to 1/16in. W under Slab Units 3-10 and 3-11.

WORK ORDER RECOMMENDATION:
Repair spall/delamination on Abutment 4 cap under Slab Units 3-10 and 3-11.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 23 Element/Env 234/3: Re. Concrete Pier Cap

Bents 2 and 3 caps have vegetation growth along the west end.

WORK ORDER RECOMMENDATION:
Remove vegetation growing on west end of Bents 2 and 3 caps.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 24 Element/Env 234/3: Re. Concrete Pier Cap

Bent 2 cap has a spall/delamination up to 3ft. L x 16in. H x 1 in. D on the south face over Column 2-2, and on the same location, north face a delamination 20in. L x 12in. H.

WORK ORDER RECOMMENDATION:
Repair spalls and delaminations along Bents 2 and 3 caps.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 25 Element/Env 8393/3: Bulkhead Seawall Any Material

The brackets and fasteners attaching the clearance gauges to the seawalls exhibit heavy to severe corrosion.

WORK ORDER RECOMMENDATION:
Replace the clearance gauges and hardware on the seawall at both sides of the channel.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 26 Element/Env 8393/3: Bulkhead Seawall Any Material

SE and NW clearance gauges have moderate decay at bottom 3ft.

WORK ORDER RECOMMENDATION:
Replace the clearance gauges and hardware on the seawall at both sides of the channel.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

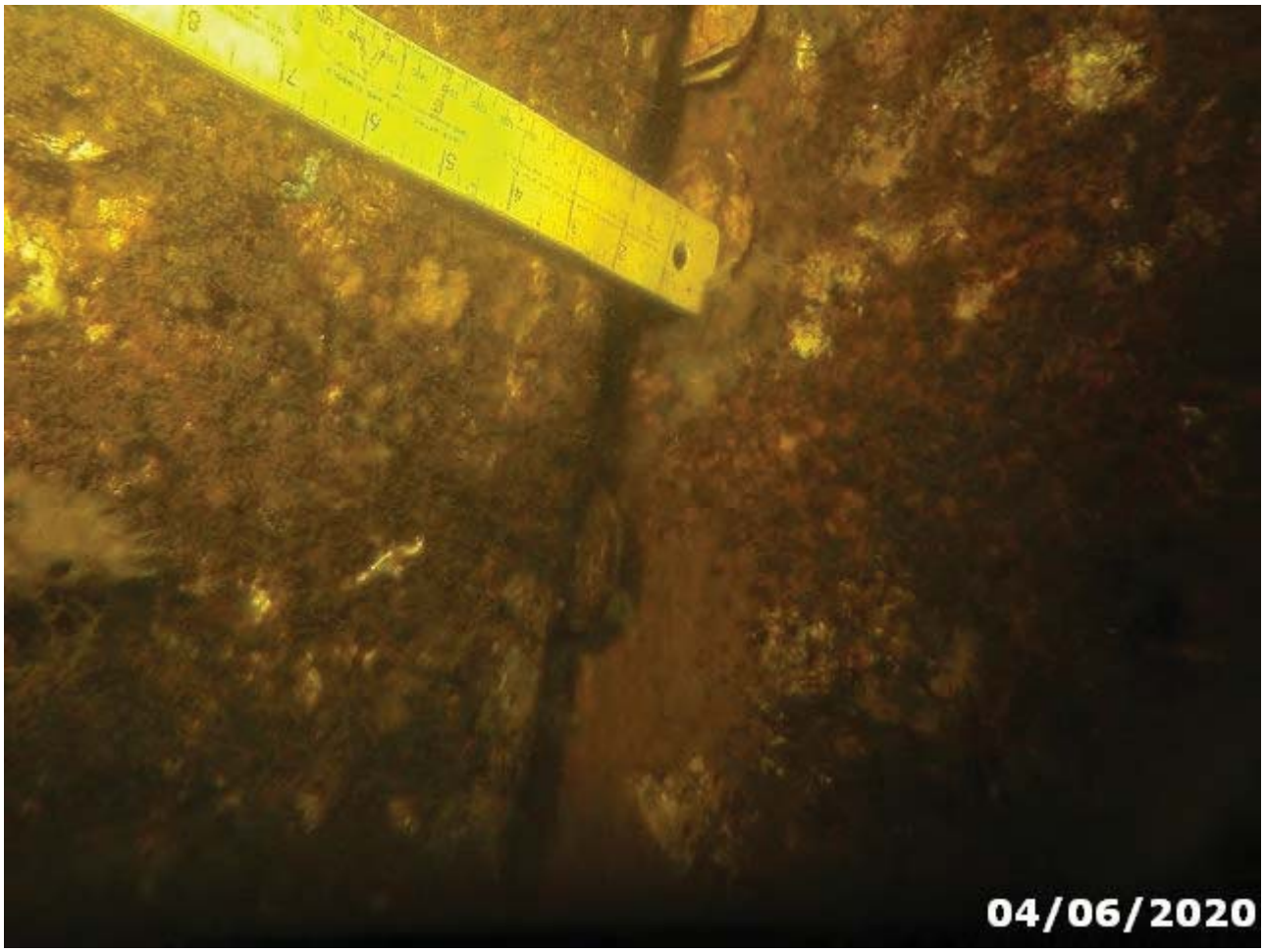


Photo 27 Element/Env 8393/3: Bulkhead Seawall Any Material

The south seawall has two open joints up to 4in. W with backfill leakage behind Piles 15 and 18 from west.

WORK ORDER RECOMMENDATION:
Seal open joints at the south seawall behind Piles 15 and 18.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 28 Element/Env 8393/3: Bulkhead Seawall Any Material

The seawall caps on the north and south walls have up to 1/4in W cracks, with associated delaminations/spalls throughout their entire lengths.

WORK ORDER RECOMMENDATION:
Repair delaminations and spalls along the seawall caps.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 29 Element/Env 8394/3: R/Conc Abut Slope Protection

The slope protection toe has a fractured and settled area of 15ft. x 7ft. x 2ft deep at the NW corner behind the seawall cap. The channel water reach this area at high tide.

WORK ORDER RECOMMENDATION:
Repair settled and fractured areas along the slope protections.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 30 Element/Env 8394/3: R/Conc Abut Slope Protection

The SW slope protection toe has 5 fractured panels that have settled up to 3in. H. The channel water reach this area at high tide.

WORK ORDER RECOMMENDATION:
Repair settled and fractured areas along the slope protections.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 31 Element/Env 333/3: Other Bridge Railing

The rail anchor bolt nuts and washers have moderate corrosion at random locations: 25 nuts at west railing, and 5 nuts at east railing.

WORK ORDER RECOMMENDATION:
Clean and paint or replace corroded hardware along the bridge aluminium rail.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 32 Element/Env 333/3: Other Bridge Railing

There are several missing anchor bolt nuts at the aluminium rail posts: west rail, Posts 1-1 and 2-6; and east rail, Post 1-5.

WORK ORDER RECOMMENDATION:
Replace missing nuts at the aluminium rail post connections.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 33 STRUCTURE NOTES: South Approach Posting Sign

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

Photo 34 STRUCTURE NOTES: North Approach Posting Sign

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

SCOUR EVALUATION

Channel looking West

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Inspection

Structure ID: 874294

DISTRICT: D6 - Miami **INSPECTION DATE: 4/6/2020 GZJW**

SCOUR EVALUATION

Channel looking East

F. FIELD PREPARATION and CHECKLIST

Structure ID: 874294

Inspection Date: 04/06/2020 Underwater: 04/06/2020

A. Tools and Equipment

Full Size Cargo Van:	Yes:	X	No:		Pick-up Truck:	Yes:	X	No:
Automobile:	Yes:		No:	X				
Camera:	Yes:	X	No:		Video:	Yes:	__	No: X
NDT Equipment:	Yes:		No:	X				
NDT Type:	N/A							
Binoculars:	Yes:		No:	X				
Diving Performed:	Yes:	X	No:		Max Depth: 10.6 ft.		Current: Moderate	

Dive Mode: SCUBA

Hand Tools:

1. Standard Inspection Tools
2. Chipping Hammer
3. Inspection Hand Tools
4. Flashlight
5. Folding Rulers

Other:

B. Services

Flag Crew: N/A Snooper: N/A

Electrician: N/A Other:_____

C. Scheduling (Brief Explanation)

Routine Inspection, no special scheduling needed.

Man Hours: 0 hrs. Dive Time: 2 hrs. Travel Time: 1 hr. Office Time: 1 hr.

D. Site Conditions

Boat Needed: NO Type of Boat: N/A

Location of Boat Ramp: N/A
Lengthy Travel Required: N/A
Difficult Access: NO
Water Obviously Polluted: NO
Water quality is fair: Yes
Strong Water Current: Yes

Other: N/A

E. UNDERWATER ELEMENTS INSPECTED:

- 8290 Channel – 1ea.
- 8393 Bulkhead Seawall Any Material – 354 ft.

Bridge No.	874294	**Analysis Method:** LRFR-LRFD	**FDOT Bridge Load Rating Summary Form (Page 1 of 1)**
Location	Matheson hammock Road over matheson Hammock Canal		
Description	3 Spans, 2-30'&1-40', Prestressed voided slab beams 36"x17"		

Rating Type	Rating Type	Gross Axle Weight (tons)	Moment/Shear/Service		Dead Load Factor	Live Load Factor	Live Load Distrib. Factor (axles)	Rating Factor	Span No. - Girder No., Interior/Exterior, %Span Length	RF·Weight (tons)
Level	**Vehicle**	**Weight**	**Member Type**	**Limit**	**DC**	**LL**	**LLDF**	**RF**	**Governing Location**	**RATING**
Inventory	HL93	36	Prestressed	Service	1.00	0.80	0.600	0.210	Central span, midspan	7.6
Operating	HL93	36	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.330	Central span, midspan	11.9
Permit	FL120	60	Prestressed	Strength, Shear	1.25/0.90	1.35	0.500	0.270	Central span, 1/4 point	16.2
Permit Max Span	FL120	60	Prestressed	Strength, Shear	1.25/0.90	1.35	0.500	0.270	Central span, 1/4 point	16.2
Legal	SU2	17	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.690	Central span, midspan	11.7
	SU3	33	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.370	Central span, midspan	12.2
	SU4	35	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.340	Central span, midspan	11.9
	C3	28	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.650	Central span, midspan	18.2
	C4	36.7	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.460	Central span, midspan	16.9
	C5	40	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.440	Central span, midspan	17.6
	ST5	40	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.460	Central span, midspan	18.4
Emergency Vehicle (EV)	EV2	28.75	Prestressed	NA	NA	NA	0.600			-1
	EV3	43	Prestressed	NA	NA	NA	0.600			-1

Original Design Load	HS20 or HS20-S16-44		Performed by:	Mengyuan Chen	Date: 01/13/20
Rating Type, *Analysis*	LRFR-LRFD		Checked by:	Juan A. Sobrino	Date: 01/13/20
Distribution Method	Others		Sealed By:	Juan A. Sobrino	Date: 01/13/20
Impact Factor	33.0%	(axle loading)	FL P.E. No.:	73121	
FL120 Gov. Span Length	38.3	(feet)	Cert. Auth. No.:	27244	
Minimum Span Length	28.3	(feet)	Phone & email:	(+1) 305 648 00 10, miami@pedelta.com	
Recommended Posting	> 39.9% below (0.000-0.600) (Required)		Company:	Pedelta Inc.	
Recommended SU Posting*	11	(tons)	Address:	2000 Ponce de Leon Blvd., Suite 624, Coral Gables, Florida 33134, USA	
Recommended C Posting	16	(tons)			
Recommended ST5 Posting	18	(tons)			
Owner	02 County Highway Agency				
Location	Neither interstate traffic nor within 1 mile reasonable access to an interstate				
EV Posting	No. EV posting is not recommended. The FAST Act does not apply				
Floor Beam Present?	No				
Segmental Bridge?	No				
Project No. & Reason	432907-1-72-02	Deterioration			
Plans Status	Built				

P.E. Civil, Construction, Structural Engineer

Juan Sobrino

Digitally signed by Juan Sobrino
Date: 2020.01.13 15:58:25 -05'00'

Juan A. Sobrino, State of Florida, Professional Engineer, License No 73121.
This document has been electronically signed and sealed by Juan A. Sobrino on January 13th, 2020 using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

This 10-11-2019 summary follows the FDOT Bridge Load Rating Manual (BLRM), and the FDOT BMS Coding Guide.
*Recommended SU Posting levels for Florida SU trucks adequately restricts AASHTO SU trucks; see BLRM Chapter 7.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR/Bridge Profile Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 5/18/2020**

Description

Structure Unit Identification

Bridge/Unit Key: 874294 0
Structure Name:
Description: SPANS 1 THRU 3
Type: M - Main

Roadway Identification

NBI Structure No (8): 874294
Position/Prefix (5): 1 - Route On Structure
Kind Hwy (Rte Prefix): 4 County Hwy
Design Level of Service: 8 Service Road
Route Number/Suffix: 00000 / 0 N/A (NBI)
Feature Intersect (6): Matheson Hammock Canal
Critical Facility: Not Defense-crit
Facility Carried (7): Matheson Hmk Road
Mile Point (11): 0.08
Latitude (16): 025d40'44.2" Long (17): 080d15'43.8"

Roadway Traffic and Accidents

Lanes (28): 2 Medians: 0 Speed: 15 mph
ADT Class: 2 ADT Class 2
Recent ADT (29): 736 Year (30): 2014
Future ADT (114): 1168 Year (115): 2036
Truck % ADT (109): 1
Detour Length (19): 99 mi
Detour Speed:
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): 87 000 757 Sub Rte (13b): 00
Functional Class (26): 09 Rural Local
Federal Aid System: OFF
Defense Hwy (100): 0 Not a STRAHNET hwy
Direction of Traffic (102): 2 2-way traffic
Emergency: [X]

Roadway Clearances

Vertical (10): 99.99 ft Appr. Road (32): 26.25 ft
Horiz. (47): 26.25 ft Roadway (51): 26.25 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: [ ]
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): 6 Bank Slumping
Deck (58): 3 Serious
Superstructure (59): 3 Serious
Substructure (60): 4 Poor

Culvert (62): N N/A (NBI)
Waterway (71): 8 Equal Desirable
Unrepaired Spalls: -1 sq.ft.
Review Required: [X]

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR/Bridge Profile Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 5/18/2020**

Structure Identification

Admin Area: Miami-Dade
District (2): D6 - Miami
County (3): (87)Miami-Dade
Place Code (4): South Miami Heights
Location (9): Matheson Hammock Park
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): 3
Approach Spans (46): 0
Length of Max Span (48): 38.3 ft
Structure Length (49): 100.33 ft
Total Length: 140.33 ft
Deck Area: 3536 sqft
Structure Flared (35): 0 No flare

Age and Service

Year Built (27): 1967
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: 1.5 ft Right: 5.5 ft
Bridge Median (33): 0 No median
Main Span Material (43A): 5 Prestressed Concrete
Appr Span Material (44A): Not Applicable (P)
Main Span Design (43B): 01 Slab
Appr Span Design (44B): 00 Other (NBI)

Deck Type and Material

Deck Width (52): 35.25 ft
Skew (34): 0 deg
Deck Type (107): 2 Concrete Precast Panel
Surface (108): 6 Bituminous
Membrane: 0 None
Deck Protection: None

Appraisal

Structure Appraisal

Open/Posted/Closed (41): P Posted for load
Deck Geometry (68): 5 Above Tolerable
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): U Unknown Foundation

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): 1 Not Required

NBI Condition Rating

Sufficiency Rating: 15.5
Health Index: 86.68
Structural Eval (67): 3 Intolerable - Correct
Deficiency: Structurally Deficient

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: 04/06/2020
Inspector: KNMEIOP - Omar Porras
Bridge Group: CA611
Alt. Bridge Group:
Primary Type: Regular NBI
Review Required: [X]

Next Inspection Date Scheduled

NBI: 04/06/2022
Element: 10/06/2020
Fracture Critical:
Underwater: 04/06/2022
Other/Special: 10/06/2020
Inventory Photo Update Due: 04/06/2024

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR/Bridge Profile Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 5/18/2020**

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	04/06/2020	Flagger Hours:	0
Other Special	[X]	6 mos	04/06/2020	Helper Hours:	0
NBI		24 mos (91)	04/06/2020 (90)	Snooper Hours:	0
				Special Crew Hours:	3
				Special Equip Hours:	0

Bridge Related

General Bridge Information

Parallel Bridge Seq:
Channel Depth: 10.6 ft
Radio Frequency: -1
Phone Number:
Exception Date:
Exception Type: Unknown
Accepted By Maint: 01/01/1967
Warranty Expiration: 00/00/0000
Performance Rating: Poor

Bridge Rail 1: Conc parapet-alum-rail
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 [X] Gas [ ] Fiber Optic [ ] Sewage [X] Other [ ]

Bridge Load Rating Information

Inventory Type (065): 3 LRFR Load & Res. Fact
Operating Type (063): 3 LRFR Load & Res. Fact
Original Design Load (031): HL 93
Date: 01/13/2020
Initials: JA
Load Rating Rev. Recom.: No
Load Rating Plans Status: Field Measurements

Inventory Rating (066): 7.6 tons
Operating Rating (064): 11.9 tons
FL120 Permit Rating: 16.2 tons
HS20/FL120 Max Span Rating: 16.2 tons
Dynamic Impact in Percent: 33 %
Governing Span Length: 38.3 ft
Minimum Span Length: 28.3 ft
Distribution Method: Others

Load Rating Notes:

LEGAL LOADS

SU2: 11.7 tons
SU3: 12.2 tons
SU4: 11.9 tons
C3: 18.2 tons
C4: 16.9 tons
C5: 17.6 tons
ST5: 18.4 tons
Posting (070): 2 20.0-29.9%below
Open/Posted/Closed (041): P Posted for load

POSTING

Recom. SU Posting: 11 tons
Recom. C Posting: 16 tons
Recom. ST5 Posting: 18 tons
Actual SU Posting: 11 tons
Actual C Posting: 16 tons
Actual ST5 Posting: 18 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: Unknown
Mode of Flow: Tidal
Rating Scour Eval: Unknown
Highest Scour Eval: Unknown
Scour Evaluation Method:

Scour Recommended I: Unknown
Scour Recommended II: Unknown
Scour Recommended III: Unknown
Scour Elevation: -1 ft
Action Elevation: -1 ft
Storm Frequency: -1

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR/Bridge Profile Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 5/18/2020**

Elements

Inspection Date: 04/06/2020 **GZJW**

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8099 / 3	PS Conc Slab (Sonovoid)	3178	89.88	114	3.22	244	6.9	0	.	3536 (SF)
0	1080 / 3	Delamination/Spall/Patched Area	0	.	114	59.07	79	40.93	0	.	193 (SF)
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 (SF)
0	1100 / 3	Exposed Prestressing	0	.	0	.	20	100	0	.	20 (SF)
0	1110 / 3	Cracking (PSC)	0	.	0	.	144	100	0	.	144 (SF)
0	510 / 3	Wearing Surfaces	1929	73.23	0	.	705	26.77	0	.	2634 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	705	100	0	.	705 sq.ft

DECKS : Joints

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	301 / 3	Pourable Joint Seal	0	.	0	.	104	74.29	36	25.71	140 ft
0	2310 / 3	Leakage	0	.	0	.	104	100	0	.	104 ft
0	2330 / 3	Seal Damage	0	.	0	.	0	.	36	100	36 ft

MISCELLANEOUS : Channel

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8290 / 3	Channel	0	.	0	.	1	100	0	.	1 (EA)
0	9150 / 3	Bank Erosion	0	.	0	.	1	100	0	.	1 (EA)

MISCELLANEOUS : Other Elements

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	321 / 3	Re Conc Approach Slab	1410	100	0	.	0	.	0	.	1410 sq.ft
0	510 / 3	Wearing Surfaces	957	91.14	0	.	93	8.86	0	.	1050 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	93	100	0	.	93 sq.ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	205 / 3	Re Conc Column	0	.	0	.	4	100	0	.	4 each
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 each
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	3	100	0	.	3 each

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	215 / 3	Re Conc Abutment	65	92.86	0	.	5	7.14	0	.	70 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	0	.	5	100	0	.	5 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	234 / 3	Re Conc Pier Cap	49	72.06	12	17.65	7	10.29	0	.	68 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	12	63.16	7	36.84	0	.	19 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8393 / 3	Bulkhead Seawall Any Material	0	.	0	.	354	100	0	.	354 ft
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	314	100	0	.	314 ft

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 **Inspection/CIDR/Bridge Profile Report with PDF attachment(s)**

Structure ID: 874294 **CIDR** **DATE PRINTED: 5/18/2020**

0	6000 / 3	Scour	0	.	0	.	40	100	0	.	40 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8394 / 3	R/Conc Abut Slope Protection	3968	73.81	0	.	1408	26.19	0	.	5376 (SF)
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	320	100	0	.	320 (SF)
0	4000 / 3	Settlement	0	.	0	.	1088	100	0	.	1088 (SF)

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	333 / 3	Other Bridge Railing	167	83.5	33	16.5	0	.	0	.	200 ft
0	1000 / 3	Corrosion	0	.	30	100	0	.	0	.	30 ft
0	1020 / 3	Connection	0	.	3	100	0	.	0	.	3 ft

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

Inspection Information

Inspection Date: 04/06/2020 **Type:** Regular NBI

Inspector: KNMEIOP - Omar Porras

Inspection Notes: Sufficiency Rating Calculation Accepted by knmeira at 5/13/2020 9:36:35 AM

The Deck and Superstructure are coded 3 (Serious) due to spalls and delaminations along more than 25% of any of the slab units. Slabs Units 1-6, 2-7, and 2-8 meet this criteria. (04/06/2020)

The Substructure NBI Rating is coded 4 (Poor) due to the significant deterioration of Column 2-2. (04/06/2020)

The Channel NBI Rating was lowered from 7 to 6 due to areas of undermining on the channel below the North seawall. (04/06/2020)

LOAD CAPACITY EVALUATION:
Since the current load rating dated 1/13/2020, there is no indication that deterioration, geometric changes or additional dead load have occurred that would warrant a new load rating analysis. This only applies to this inspection dated 04/06/2020 per Julie A.Vers, P.E.

The structure is on a 6 months inspection frequency due to NBI Rating 3 for SIA Items 58 Deck and 59 Superstructure.

Element 8475 R/Conc Walls was replaced by 8393 Bulkhead Seawall Any Material during this inspection cycle. All previous notes were transferred accordingly. (04/06/2020)

The following elements were inspected underwater by the divers:
8290 Channel
8393 Bulkhead Seawall Any Material

LEGEND:
NCAR: NO CORRECTIVE ACTION RECOMMENDED.
RT: Right
LT: Left
NC: No Change
INC: Increase
CAT: Corrective Action Taken
L: Long
W: Wide
H: High
D: Deep
UW: Underwater
S.L.: Section Loss
in.: Inches
ft.: Feet

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR/Bridge Profile Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 5/18/2020**

Structure Notes

BRIDGE OWNER: MIAMI-DADE COUNTY

Bridge inventoried from south to north.

P/S Slab Units on R/Conc Caps and Abutments over P/Conc Columns. (3 spans)

Element 227/3 Re Conc Pile notes have been replaced by Element 205/3 Re Conc Column on 10/29/2019.

TRAFFIC RESTRICTIONS:
Based on the current load rating analysis dated 1/13/2020, it is recommended that this bridge be posted for the SU, C and ST5 type vehicles as follows: SU = 11 tons, C = 16 tons, ST5 = 18 tons. The bridge is currently posted for SU = 11 tons, C = 16 tons, ST5 = 18 tons. Refer to posting signs Photos 33 and 34.

REVIEWED BY:

Schedule Notes

The structure is on a 6 months inspection frequency due to NBI Rating 3 for SIA Items 58 Deck and 59 Superstructure.

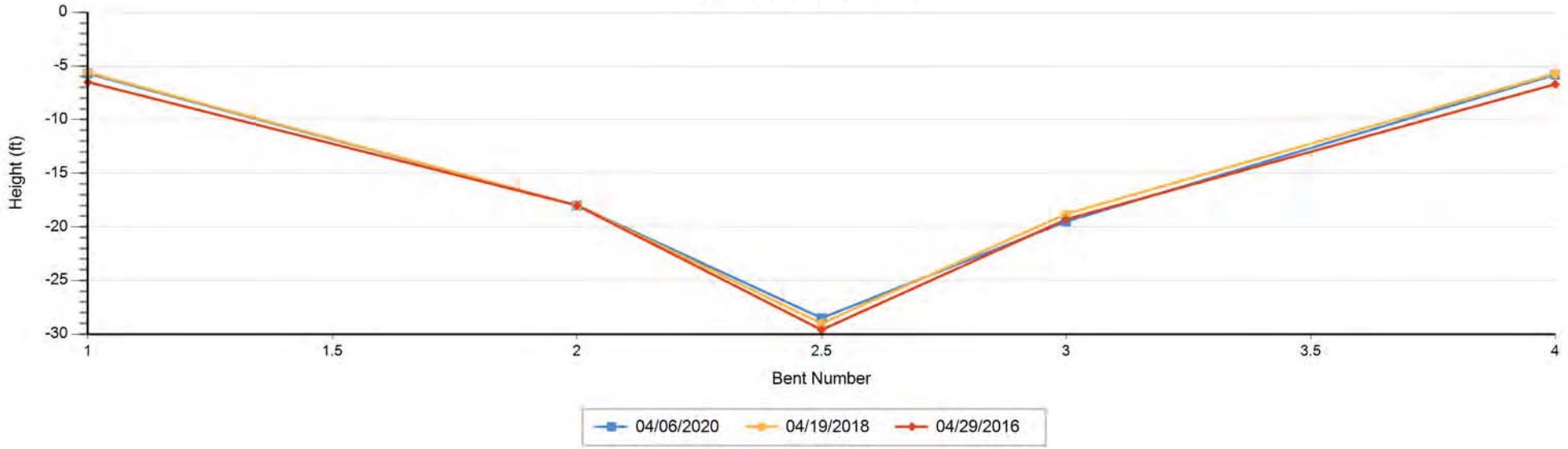
FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM

Inspection/CIDR/Bridge Profile Report with PDF attachment(s)

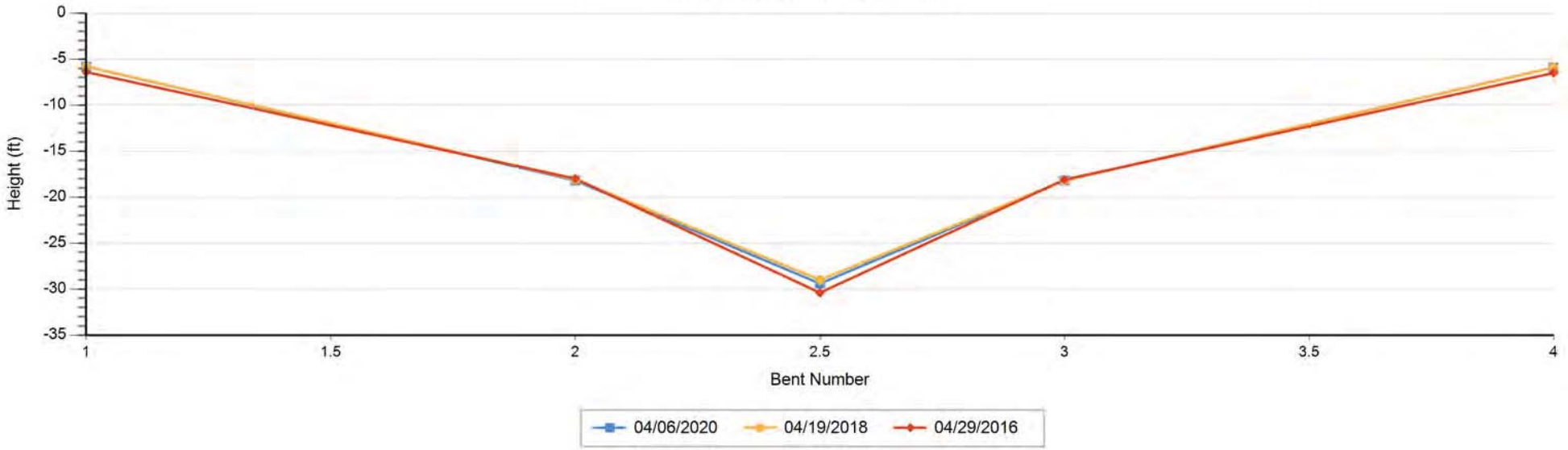
Bridge Profile

DATE PRINTED: 5/18/2020 12:12:35 PM

Left Profile by Inspection



Right Profile by Inspection



FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Bridge Profile

DATE PRINTED: 5/18/2020 12:12:35 PM

Profile Data - Numerical Summary

Inspection Date and Key: 4/6/2020 GZJW

Bent #	Left Height	Right Height
1	5.70	5.80
2	18.00	18.20
2.5	28.50	29.40
3	19.50	18.20
4	5.80	5.90

(All Heights are in Feet)

Air Temp: 82

Profile Notes:

Measurements were referenced from the top of the concrete barriers.
Waterline taken at mid channel: Left = 18.7 ft. and Right = 18.8 ft.
Maximum channel depth: 10.6 ft.

Inspection Date and Key: 4/19/2018 ODLG

Bent #	Left Height	Right Height
1	5.60	5.80
2	18.00	18.10
2.5	29.00	29.00
3	18.80	18.20
4	5.70	5.90

Air Temp: 74

Profile Notes:

Measurements were referenced from the top of the concrete barriers.
Waterline taken at mid channel: Left = 18.3 ft. and Right = 18.4 ft.
Maximum channel depth: 10.7 ft.

FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR/Bridge Profile Report with PDF attachment(s)
Bridge Profile

DATE PRINTED: 5/18/2020 12:12:35 PM

Profile Data - Numerical Summary

Inspection Date and Key: 4/29/2016 MQSY

Bent #	Left Height	Right Height
1	6.50	6.40
2	18.00	18.00
2.5	29.60	30.40
3	19.30	18.10
4	6.70	6.50

(All Heights are in Feet)

Air Temp: 1

Profile Notes:

Measurements referenced from the top of the concrete bridge rail.
Waterline at C/L of Channel = 19.2ft.
Water depth = 11.2ft.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
STRUCTURE LEVEL INVENTORY REPORT

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

Bridge Number - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

Typical Bridge Rail - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

Southeast Oncoming Transition - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

Northwest Oncoming Transition - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

Southwest Off-Going Transition - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

Northeast Off-Going Transition - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

South Approach Looking North - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

South Approach Looking South - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

North Approach Looking South - 4/25/2014

BRIDGE ID : 874294 **Structure Inventory Photo Due Date : 04/06/2024**

North Approach Looking North - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

West Elevation - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

East Elevation - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

Typical Underside - 4/25/2014

BRIDGE ID : 874294

Structure Inventory Photo Due Date : 04/06/2024

Channel Looking West - 4/25/2014

BRIDGE ID : 874294

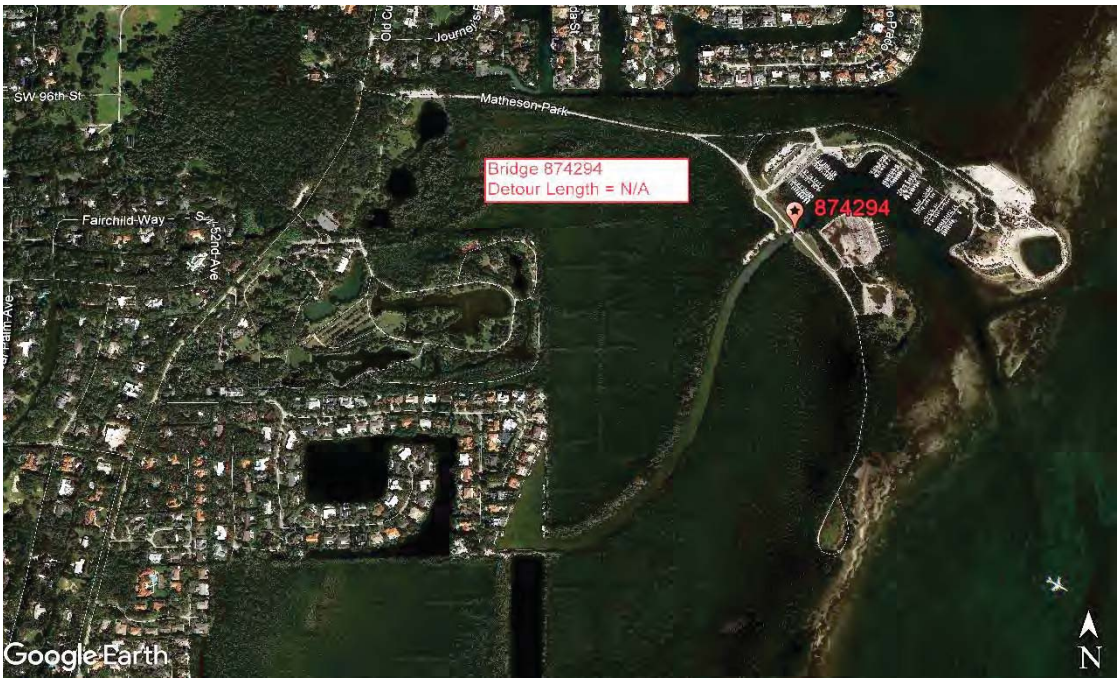
Structure Inventory Photo Due Date : 04/06/2024

Channel Looking East - 4/25/2014

FDOT	**BRIDGE INSPECTION REPORT** PREPARED FOR: FDOT District 6 BRIDGE OWNER: Miami-Dade County INSPECTION TYPE: Interim CONTRACT No. CA611	Inspected by: **LARS Engineering, Inc.**
Bridge No. 874294	**REPORT CONTAINS**	**Inspection Date: 10-22-20**

☒ BrM Inspection Report	☐ Bridge Profile	☐ Fracture Critical Data	☐ Addendum
☒ CIDR Information	☐ UW Inspection Report	☒ Load Rating Summary Sheet	☐ Mechanical and Electrical Data

Matheson Hammock Road over Matheson Hammock Canal	**Facility Carried & Location**	**Matheson Hammock Park**



Location Map		**Detour Length = 3.13 mi.**

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

BY:	LARS Engineering, Inc.	STRUCTURE NAME:	Not recorded
OWNER:	2 County Hwy Agency	YEAR BUILT:	1967
MAINTAINED BY:	2 County Hwy Agency	SECTION NO.:	87 000 757
STRUCTURE TYPE:	5 Prestressed Concrete - 01 Slab	MP:	0.080
LOCATION:	Matheson Hammock Park	ROUTE:	00000
SERV. TYPE ON:	5 Highway-pedestrian	FACILITY CARRIED:	Matheson Hmk Road
SERV. TYPE UNDER:	5 Waterway	FEATURE INTERSECTED:	Matheson Hammock Canal

☐ FUNCTIONALLY OBSOLETE ☒ STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Interim

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 10/22/2020 UNDERWATER: 4/6/2020

SUFFICIENCY RATING: 15.5
HEALTH INDEX: 85.67

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

BY:	LARS Engineering, Inc.	STRUCTURE NAME:	Not recorded
OWNER:	2 County Hwy Agency	YEAR BUILT:	1967
MAINTAINED BY:	2 County Hwy Agency	SECTION NO.:	87 000 757
STRUCTURE TYPE:	5 Prestressed Concrete - 01 Slab	MP:	0.080
LOCATION:	Matheson Hammock Park	ROUTE:	00000
SERV. TYPE ON:	5 Highway-pedestrian	FACILITY CARRIED:	Matheson Hmk Road
SERV. TYPE UNDER:	5 Waterway	FEATURE INTERSECTED:	Matheson Hammock Canal

[ ] THIS BRIDGE CONTAINS FRACTURE CRITICAL COMPONENTS

[ ] THIS BRIDGE IS SCOUR CRITICAL

[X] THIS REPORT IDENTIFIES DEFICIENCIES WHICH REQUIRE PROMPT CORRECTIVE ACTION

[ ] FUNCTIONALLY OBSOLETE [X] STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Interim

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 10/22/2020 UNDERWATER: 4/6/2020

OVERALL NBI RATINGS:

DECK:	3 Serious	CHANNEL:	6 Bank Slumping
SUPERSTRUCTURE:	3 Serious	CULVERT:	N N/A (NBI)
SUBSTRUCTURE:	4 Poor	SUFF. RATING:	15.5
PERF. RATING:	Poor	HEALTH INDEX:	85.67

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

Marquez, Loren - Professional Engineer (P.E. # 85631) (lead) _____

Lledias, Jorge - Bridge Inspector Assistant _____

REVIEWING BRIDGE INSPECTION SUPERVISOR:

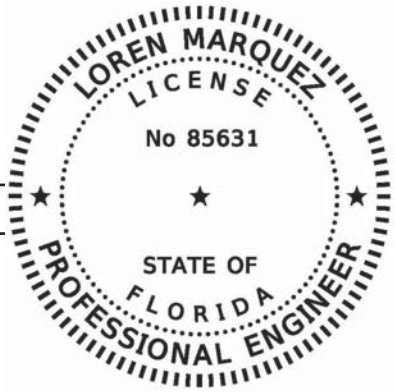
Leon, Adrian - Professional Engineer (P.E. #83827) _____

CONFIRMING REGISTERED PROFESSIONAL ENGINEER:

Marquez, Loren - Professional Engineer (P.E. # 85631) LARS Engineering, Inc.
7225 NW 25th Street
Suite 211
Miami Florida 33122

SIGNATURE: _____

DATE: _____



The official record of this package has been electronically signed and sealed by Loren Marquez, P.E. on the date adjacent to the seal as required by Rule 61G15-23.004, F.A.C. 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 Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

All Elements

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8099 / 3	PS Conc Slab (Sonovoid)	3122	88.29	5	0.14	409	11.57	0	.	3536 (SF)
0	1080 / 3	Delamination/Spall/Patched Area	0	.	5	45.45	6	54.55	0	.	11 (SF)
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 (SF)
0	1100 / 3	Exposed Prestressing	0	.	0	.	20	100	0	.	20 (SF)
0	1110 / 3	Cracking (PSC)	0	.	0	.	292	100	0	.	292 (SF)
0	1900 / 3	Distortion	0	.	0	.	90	100	0	.	90 (SF)
0	510 / 3	Wearing Surfaces	1629	61.85	0	.	1005	38.15	0	.	2634 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	1005	100	0	.	1005 sq.ft

Element Inspection Notes:

8099/3 Notes: The top of the slab units is not visible due to an asphalt overlay. The width of the sonovoid slab units was field verified to be 3ft. wide.

SECONDARY:
_Object markers and centerline raised pavement markers are missing on the structure. (14 SF). – NO CHANGE. Refer to Photo 01.

_Sidewalk panels are loose and move under pedestrian load. (300 SF). – NO CHANGE.

_The slab unit joints show evidence of water seepage. – NO CHANGE. NCAR.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
1_Replace missing object markers at the four corners of the bridge.
2_Properly secure the sidewalk panels.
3_Repair spalls, delaminations, and cracks along the underside of the slab units.
4_Clean and coat exposed prestressing and reinforce Slab Unit 2-8.

CORRECTIVE ACTION EVALUATION:
1_Work not completed. Recommendation will be repeated.
2_Work not completed. Recommendation will be repeated.
3_Work not completed. Recommendation will be repeated.
4_Work not completed. Recommendation will be repeated.

For additional deficiencies refer to Defects 1080, 1090, 1100, 1110, and 1900.

1080/3 CS-3:
_Slab Unit 1-9, center line has a spall/delamination up to 36in. L x 24in. W x 2.5in. D over Abutment 1, with an exposed stirrup. (6 SF). – INCREASE. Refer to Photo 02.

CS-2:
_Slab Unit 2-6, east edge has a delamination 30in. L x 4in. W starting at Pier 2 cap. (3 SF). – NO CHANGE.

_Slab Unit 2-7, west edge has a delamination up to 24in. L x 4in. W starting at Pier 2 cap. (2 SF). – NO CHANGE.

1090/3 CS-3:
_Slab Unit 1-6 exhibits a spall with exposed rebar up to 11in. L x 5in. W x 1/8in. D with minor section loss and evidence of previous failed repair, at 9ft. from Abutment 1. (1

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

SF). – NO CHANGE. Refer to Photo 03.

1100/3 CS-3:
_Slab Unit 2-8 has a spall 10ft. L x 24in. W x up to 4in. D at mid-span with 6 exposed and corroded transverse rebars with up to 60% section remaining and 5 exposed and corroded prestressing strands with up to 0% section remaining (2 broken threads). (20 SF). – NO CHANGE. Refer to Photo 04.

1110/3 CS-3:
_Slab Unit 1-6 east edge has two delamination areas, one up to 5ft. L x 6in. W starting at Abutment 1 and the other starting at Pier Cap 2 up to 9ft. L x 12in. W with associated cracks up to 1/16in. W with efflorescence throughout. (Previously noted as a delamination full length x 12in. W.) (14 SF). – DECREASE. Refer to Photos 05 and 06.

_Slab Unit 1-7 east edge has a spall/delamination 24in. L x 12in. W with associated cracks up to 1/32in. W with efflorescence and corrosion bleed-out over Abutment 1. (2 SF). – NO CHANGE. Refer to Photo 07.

_Slab Unit 1-7, east edge has a delamination 7ft. L x 4in. W, with an associated crack of up to 1/16in. starting at Pier 2 cap. (7 SF). – INCREASE. Refer to Photo 08.

_Slab Unit 1-8 west edge is intermittently delaminated up to 15ft. L x 15in. W starting at Abutment 1 with associated cracks up to 1/4in. W with efflorescence and corrosion bleed-out and associated spalling up to 4ft. L x 6in. W x 2in. D approximately 10ft from Abutment 1. (Spalling was previously noted as spall/delamination on the east edge) (19 SF). – INCREASE. Refer to Photos 09 and 10.

_Slab Unit 1-8 east edge has a delamination 4ft. L x 15in. W and associated cracks up to 1/32in. W with efflorescence and corrosion bleed-out, 9ft. from Pier Cap 2. (Previously noted as spall/delamination near mid-span). (5 SF). – DECREASE. Refer to Photo 11.

_Slab Unit 1-8 has a delaminated area up to 8ft. L x 3ft. W and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out starting at Pier Cap 2. (24 SF). – INCREASE. Refer to Photo 12.

_Slab Unit 1-9 west edge has a delaminated area 9ft. L x 10in. W and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out, starting near the 3/4 point and extending to Pier 2 cap. (9 SF). – NO CHANGE. Refer to Photo 13.

_Slab Unit 2-7 east edge is intermittently cracked/delaminated up to span length x 16in. W (average width) with up to 1/4in. W cracks. (38 SF). – NO CHANGE. Refer to Photo 14.

_Slab Unit 2-8 west half has two delaminated areas up to 15ft. L x 18in. W (average width) at south and north ends, with associated cracks of up to 1/4in. W. (60 SF). – NO CHANGE. Refer to Photo 15.

_Slab Unit 2-9 west edge has a delaminated area up to 5ft. L x 5in. W with associated cracking up to 1/4in. wide, starting at the Pier 2 cap. (5 SF). – NO CHANGE.

_Slab Unit 3-6 has a delamination up to 24in. L x 6in. W on the east edge over Pier 3, with an associated crack of up to 1/16in. W. (2 SF). – INCREASE. Refer to Photo 16.

_Slab Unit 3-6 east edge has a delaminated area up to 42in. L x 8in. W with associated cracks up to 1/16in. W. (4 SF). – NEW. Refer to Photo 17.

_Slabs Unit 3-7 has two delaminated areas, one starting at Pier 3 up to 8ft. L x 15in. W (average width) with associated cracks, and the second, near mid-span up to 3ft. L x 30in. W. (25 SF). – NO CHANGE. Refer to Photos 18 and 19.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

_Slab Unit 3-7 has an unsound repaired area 12ft. L x up to slab width (3ft.) starting from Abutment 4 with hollow sounding throughout and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out. (30 SF). – INCREASE. Refer to Photo 20.

_Slab Unit 3-8 has a spall/delamination up to 8ft. L x 3ft. W x 1in. D and associated cracks with corrosion bleed-out starting at Pier 3. (24 SF). – INCREASE. Refer to Photo 21.

_Slab Unit 3-8 has an unsound repair/delamination up to 42in. L x 30in. W with associated cracks up to 1/16in. W with efflorescence starting at Abutment 4. (9 SF). – INCREASE. Refer to Photo 22.

_Slab Unit 3-8 has an unsound repair/delamination up to 74in. L x up to slab width (3ft.) with associated cracks up to 1/16in. W with efflorescence starting 5.5ft. from Abutment 4. (15 SF). – INCREASE. Refer to Photo 23.

1900/3 CS-3:
_Slab Unit 1-1 exhibits a slight outward rotation at Abutment 1 with up to 1/4in. height difference in reference to the top of the cap, potentially indicating shear key failure. (90 SF). – NO CHANGE. Refer to Photo 24.

510/3 PREVIOUS RECOMMENDED CORRECTIVE ACTION:
1_Monitor the slab units for independent movement.
2_Repair cracks on the asphalt along the slab unit joints.
3_Clean and repair cracks and rutting along the expansion joints.

CORRECTIVE ACTION EVALUATION:
1_Work not completed. Recommendation will be repeated.
2_Work not completed. Recommendation will be repeated.
3_Work not completed. Recommendation will be repeated.

For deficiencies refer to Defect 3220.

3220/3 CS-3:
_The asphalt overlay has longitudinal cracks up to span length x 1/4in. W with associated 1in. W rutting over the slab unit joints and upheaving up to 1in. H at the shoulders, possibly indicating independent slab unit movement. (600 SF). – NO CHANGE. Refer to Photos 25 and 26.

_The asphalt overlay at Spans 1 and 2 has multi-directional cracking up to 1/2in. W on Lane 2 (NB), worse condition is on Span 1 which has a 19.5ft L x 11ft. W area with hollow-sounding starting 1 ft. from the right sidewalk. (300 SF). – NEW. Refer to Photo 27.

_The asphalt overlay has transverse cracks up to roadway width x 1/4in. W with rutting and upheaving up to 3in. W and vegetation growth over the expansion joints. (105 SF). – NO CHANGE. Refer to Photo 28.

Total Number of Elements*: 1
*excluding defects/protective systems

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

Inspector Recommendations

UNIT: 0 **DECKS**

ELEMENT/ENV: 8099 / 3 PS Conc Slab (Sonovoid) **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
1 , 2 , 3	MMS Quantity: 14 sf Element Estimated Quantity: 14 (SF)	3

WORK ORDER RECOMMENDATION:

_Replace missing object markers at the four corners of the bridge and provide missing RPMs throughout the bridge. Refer to Photo 01.

1 , 2 , 3	MMS Quantity: 300 sf Element Estimated Quantity: 300 (SF)	3

WORK ORDER RECOMMENDATION:

_Properly secure the sidewalk panels.

ELEMENT/ENV: 8099:510:3220 / 3 Crack (Wearing Surface) **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
3	MMS Quantity: 900 sf Element Estimated Quantity: 900 sq.ft	3

WORK ORDER RECOMMENDATION:

_Seal cracks on the asphalt along the slab unit joints and multi-directional cracks on Lane 2 (NB) in Spans 1 and 2. Refer to Photos 25, 26, and 27.

3	MMS Quantity: 105 sf Element Estimated Quantity: 105 sq.ft	3

WORK ORDER RECOMMENDATION:

_Clean and seal cracks and rutting along the expansion joints. Refer to Photo 28.

3	MMS Quantity: 600 sf Element Estimated Quantity: 600 sq.ft	3

WORK ORDER RECOMMENDATION:

_Monitor cracks along slab unit joints for independent movement of the slab units. Refer to Photos 25 and 26.

ELEMENT/ENV: 8099:1080 / 3 Delamination/Spall/Patched Area **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
2 , 3	MMS Quantity: 303 sf Element Estimated Quantity: 303 (SF)	3

WORK ORDER RECOMMENDATION:

_Repair spalls, delaminations, and cracks along the underside of the slab units. Refer to Photos 02 and 05 through 23.

ELEMENT/ENV: 8099:1090 / 3 Exposed Rebar **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
3	MMS Quantity: 1 sf Element Estimated Quantity: 1 (SF)	3

WORK ORDER RECOMMENDATION:

_Clean and coat exposed rebar and repair spall along the underside of slab unit 1-6, 9ft. from Abutment 1. Refer to Photo 03.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

Inspector Recommendations

UNIT: 0 **DECKS**

ELEMENT/ENV: 8099:1100 / 3 Exposed Prestressing **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
3	MMS Quantity: 20 sf Element Estimated Quantity: 20 (SF)	3

WORK ORDER RECOMMENDATION:

_Clean and coat exposed prestressing and reinforce Slab Unit 2-8. Refer to Photo 04.

ELEMENT/ENV: 8099:1900 / 3 Distortion **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE		PRIORITY
3	MMS Quantity: 90 sf Element Estimated Quantity: 90 (SF)	3

WORK ORDER RECOMMENDATION:

_Monitor slab unit 1-1 for possible independent movement on the slab unit. Refer to Photo 24.

Structure Notes

BRIDGE OWNER: MIAMI-DADE COUNTY

Bridge inventoried from south to north. (Entrance on North end, boat ramp on South end).

P/S Slab Units on R/Conc Caps and Abutments over P/Conc Columns. (3 spans)

Element 227/3 Re Conc Pile notes have been replaced by Element 205/3 Re Conc Column on 10/29/2019.

Element 8475/3 R/Conc Walls notes have been replaced by Element 8393/3 Bulkhead Seawall Any Material on 04/06/2020.

The NBI Rating for Deck and Superstructure are coded 3 (Serious) due to spalls and delaminations along more than 25% of any of the slab units. Slabs Units 1-6, 2-7, and 2-8 meet this criteria. (04/06/2020).

The Substructure NBI Rating is coded 4 (Poor) due to the significant deterioration of Column 2-2. (04/06/2020).

The Channel NBI Rating was lowered from 7 to 6 due to areas of undermining on the channel below the North seawall. (04/06/2020).

TRAFFIC RESTRICTIONS:
Based on the current load rating analysis dated 1/13/2020, it is recommended that this bridge be posted for the SU, C and ST5 type vehicles as follows: SU = 11 tons, C = 16 tons, ST5 = 18 tons. The bridge is currently posted for SU = 11 tons, C = 16 tons, ST5 = 18 tons. Refer to posting signs Photos 29 and 30.

REVIEWED BY:

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

INSPECTION NOTES: MIGV 10/22/2020

Sufficiency Rating Calculation Accepted by KNLREJP at 11/18/2020 2:56:35 PM

This Interim inspection (10/22/2020) was conducted to evaluate Element 8099 PS Conc Slab (Sonovoid), for the status of the entire structure refer to the last Regular NBI Inspection (04/06/2020).

LOAD CAPACITY EVALUATION:
Since the current load rating dated 1/13/2020, there is no indication that deterioration, geometric changes or additional dead load have occurred that would warrant a new load rating analysis. This only applies to this inspection dated 10/22/2020 per Loren Marquez, P.E.

The structure is on a 6 months inspection frequency due to NBI Rating 3 for SIA Items 58 Deck and 59 Superstructure.

The Deck and Superstructure are coded 3 (Serious) due to spalls and delaminations along more than 25% of any of the slab units. Slabs Units 1-6, 2-7, and 2-8 meet this criteria. (10/22/2020).

LEGEND:
NCAR: NO CORRECTIVE ACTION RECOMMENDED
RT: Right
LT: Left
L: Long
W: Wide
H: High
D: Deep
in.: Inches
ft.: Feet
LF: Linear Feet
SF: Square Feet
NE: Northeast
NW: Northwest
SE: Southeast
SW: Southwest

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 01: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Object markers and centerline raised pavement markers are missing on the structure.

REPAIR RECOMMENDATION:
Replace missing object markers at the four corners of the bridge and provide missing RPMs throughout the bridge.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 02: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-9, center line has a spall/delamination up to 36in. L x 24in. W x 2.5in. D over Abutment 1, with an exposed stirrup.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 03: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-6 exhibits a spall with exposed rebar up to 11in. L x 5in. W x 1/8in. D with minor section loss and evidence of previous failed repair, at 9ft. from Abutment 1.

REPAIR RECOMMENDATION:
Clean and coat exposed rebar and repair spall along the underside of slab unit 1-6, 9ft. from Abutment 1.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 04: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 2-8 has a spall 10ft. L x 24in. W x up to 4in. D at mid-span with 6 exposed and corroded transverse rebars with up to 60% section remaining and 5 exposed and corroded prestressing strands with up to 0% section remaining (2 broken threads).

REPAIR RECOMMENDATION:
Clean and coat exposed prestressing and reinforce Slab Unit 2-8.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 05: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-6 east edge has two delamination areas, one up to 5ft. L x 6in. W starting at Abutment 1 and the other starting at Pier Cap 2 up to 9ft. L x 12in. W with associated cracks up to 1/16in. W with efflorescence throughout.
(Abutment 1 shown).

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 06: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-6 east edge has two delamination areas, one up to 5ft. L x 6in. W starting at Abutment 1 and the other starting at Pier Cap 2 up to 9ft. L x 12in. W with associated cracks up to 1/16in. W with efflorescence throughout.
(Pier Cap 2 shown).

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 07: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-7 east edge has a spall/delamination 24in. L x 12in. W with associated cracks up to 1/32in. W with efflorescence and corrosion bleed-out over Abutment 1.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

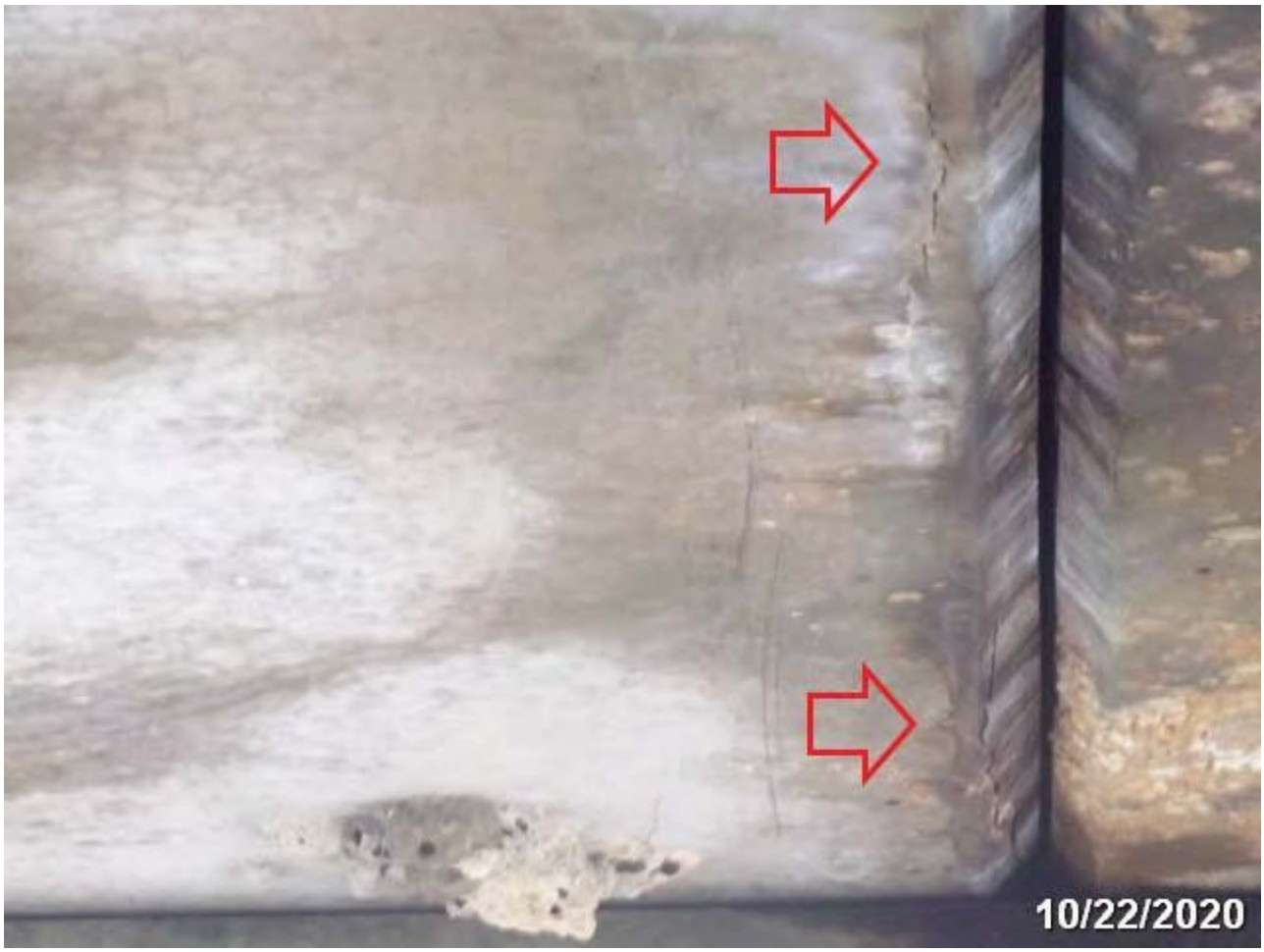


PHOTO 08: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-7, east edge has a delamination 7ft. L x 4in. W, with an associated crack of up to 1/16in. starting at Pier 2 cap.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 09: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-8 west edge is intermittently delaminated up to 15ft. L x 15in. W starting at Abutment 1 with associated cracks up to 1/4in. W with efflorescence and corrosion bleed-out and associated spalling up to 4ft. L x 6in. W x 2in. D approximately 10ft from Abutment 1.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 10: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-8 west edge is intermittently delaminated up to 15ft. L x 15in. W starting at Abutment 1 with associated cracks up to 1/4in. W with efflorescence and corrosion bleed-out and associated spalling up to 4ft. L x 6in. W x 2in. D approximately 10ft from Abutment 1.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 11: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-8 east edge has a delamination 4ft. L x 15in. W and associated cracks up to 1/32in. W with efflorescence and corrosion bleed-out, 9ft. from Pier Cap 2.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 12: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-8 has a delaminated area up to 8ft. L x 3ft. W and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out starting at Pier Cap 2.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 13: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-9 west edge has a delaminated area 9ft. L x 10in. W and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out, starting near the 3/4 point and extending to Pier 2 cap.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 14: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 2-7 east edge is intermittently cracked/delaminated up to span length x 16in. W (average width) with up to 1/4in. W cracks.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 15: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 2-8 west half has two delaminated areas up to 15ft. L x 18in. W (average width) at south and north ends, with associated cracks of up to 1/4in. W.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 16: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 3-6 has a delamination up to 24in. L x 6in. W on the east edge over Pier 3, with an associated crack of up to 1/16in. W.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 17: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 3-6 east edge has a delaminated area up to 42in. L x 8in. W with associated cracks up to 1/16in. W.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 18: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slabs Unit 3-7 has two delaminated areas, one starting at Pier 3 up to 8ft. L x 15in. W (average width) with associated cracks, and the second, near mid-span up to 3ft. L x 30in. W.
(Pier 3 shown).

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 19: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slabs Unit 3-7 has two delaminated areas, one starting at Pier 3 up to 8ft. L x 15in. W (average width) with associated cracks, and the second, near mid-span up to 3ft. L x 30in. W.
(Mid-span shown).

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 20: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 3-7 has an unsound repaired area 12ft. L x up to slab width (3ft.) starting from Abutment 4 with hollow-sounding throughout and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 21: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 3-8 has a spall/delamination up to 8ft. L x 3ft. W x 1in. D and associated cracks with corrosion bleed-out starting at Pier 3.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 22: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 3-8 has an unsound repair/delamination up to 42in. L x 30in. W with associated cracks up to 1/16in. W with efflorescence starting at Abutment 4.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 23: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 3-8 has an unsound repair/delamination up to 74in. L x up to slab width (3ft.) with associated cracks up to 1/16in. W with efflorescence starting 5.5ft. from Abutment 4.

REPAIR RECOMMENDATION:
Repair spalls, delaminations, and cracks along the underside of the slab units.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 24: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

Slab Unit 1-1 exhibits a slight outward rotation at Abutment 1 with up to 1/4in. height difference in reference to the top of the cap, potentially indicating shear key failure.

REPAIR RECOMMENDATION:
Monitor slab unit 1-1 for possible independent movement of the slab unit.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 25: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

The asphalt overlay has longitudinal cracks up to span length x 1/4in. W with associated 1in. W rutting over the slab unit joints and upheaving up to 1in. H at the shoulders, possibly indicating independent slab unit movement.

REPAIR RECOMMENDATION:
1) Monitor cracks along slab unit joints for independent movement of the slab units.
2) Seal cracks on the asphalt along the slab unit joints and multi-directional cracks on Lane 2 (NB) in Spans 1 and 2.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 26: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

The asphalt overlay has longitudinal cracks up to span length x 1/4in. W with associated 1in. W rutting over the slab unit joints and upheaving up to 1in. H at the shoulders, possibly indicating independent slab unit movement.

REPAIR RECOMMENDATION:
1) Monitor cracks along slab unit joints for independent movement of the slab units.
2) Seal cracks on the asphalt along the slab unit joints and multi-directional cracks on Lane 2 (NB) in Spans 1 and 2.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 27: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

The asphalt overlay at Spans 1 and 2 has multi-directional cracking up to 1/2in. W on Lane 2 (NB), worse condition is on Span 1 which has a 19.5ft L x 11ft. W area with hollow-sounding starting 1 ft. from the right sidewalk.

REPAIR RECOMMENDATION:
Seal cracks on the asphalt along the slab unit joints and multi-directional cracks on Lane 2 (NB) in Spans 1 and 2.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 28: ELEMENT/ENV: 8099/3 PS Conc Slab (Sonovoid)

The asphalt overlay has transverse cracks up to roadway width x 1/4in. W with rutting and upheaving up to 3in. W and vegetation growth over the expansion joints.

REPAIR RECOMMENDATION:
Clean and seal cracks and rutting along the expansion joints.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 29: STRUCTURE NOTES

South Approach Posting Sign.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 10/22/2020 MIGV**

PHOTO 30: STRUCTURE NOTES

North Approach Posting Sign.

Bridge No.	874294	**Analysis Method:** LRFR-LRFD	**FDOT Bridge Load Rating Summary Form (Page 1 of 1)**
Location	Matheson hammock Road over matheson Hammock Canal		
Description	3 Spans, 2-30'&1-40', Prestressed voided slab beams 36"x17"		

Rating Type	Rating Type	Gross Axle Weight (tons)	Moment/Shear/Service		Dead Load Factor	Live Load Factor	Live Load Distrib. Factor (axles)	Rating Factor	Span No. - Girder No., Interior/Exterior, %Span Length	RF·Weight (tons)
Level	**Vehicle**	**Weight**	**Member Type**	**Limit**	**DC**	**LL**	**LLDF**	**RF**	**Governing Location**	**RATING**
Inventory	HL93	36	Prestressed	Service	1.00	0.80	0.600	0.210	Central span, midspan	7.6
Operating	HL93	36	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.330	Central span, midspan	11.9
Permit	FL120	60	Prestressed	Strength, Shear	1.25/0.90	1.35	0.500	0.270	Central span, 1/4 point	16.2
Permit Max Span	FL120	60	Prestressed	Strength, Shear	1.25/0.90	1.35	0.500	0.270	Central span, 1/4 point	16.2
Legal	SU2	17	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.690	Central span, midspan	11.7
	SU3	33	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.370	Central span, midspan	12.2
	SU4	35	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.340	Central span, midspan	11.9
	C3	28	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.650	Central span, midspan	18.2
	C4	36.7	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.460	Central span, midspan	16.9
	C5	40	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.440	Central span, midspan	17.6
	ST5	40	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.460	Central span, midspan	18.4
Emergency Vehicle (EV)	EV2	28.75	Prestressed	NA	NA	NA	0.600			-1
	EV3	43	Prestressed	NA	NA	NA	0.600			-1

Original Design Load	HS20 or HS20-S16-44		Performed by:	Mengyuan Chen	Date: 01/13/20
Rating Type, *Analysis*	LRFR-LRFD		Checked by:	Juan A. Sobrino	Date: 01/13/20
Distribution Method	Others		Sealed By:	Juan A. Sobrino	Date: 01/13/20
Impact Factor	33.0%	(axle loading)	FL P.E. No.:	73121	
FL120 Gov. Span Length	38.3	(feet)	Cert. Auth. No.:	27244	
Minimum Span Length	28.3	(feet)	Phone & email:	(+1) 305 648 00 10, miami@pedelta.com	
Recommended Posting	> 39.9% below (0.000-0.600) (Required)		Company:	Pedelta Inc.	
Recommended SU Posting*	11	(tons)	Address:	2000 Ponce de Leon Blvd., Suite 624, Coral Gables, Florida 33134, USA	
Recommended C Posting	16	(tons)			
Recommended ST5 Posting	18	(tons)			
Owner	02 County Highway Agency				
Location	Neither interstate traffic nor within 1 mile reasonable access to an interstate				
EV Posting	No. EV posting is not recommended. The FAST Act does not apply				
Floor Beam Present?	No				
Segmental Bridge?	No				
Project No. & Reason	432907-1-72-02	Deterioration			
Plans Status	Built				

Engineer

Juan Sobrino

Digitally signed by Juan Sobrino
Date: 2020.01.13 15:58:25 -05'00'

Juan A. Sobrino, State of Florida, Professional Engineer, License No 73121.
This document has been electronically signed and sealed by Juan A. Sobrino on January 13th, 2020 using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

This 10-11-2019 summary follows the FDOT Bridge Load Rating Manual (BLRM), and the FDOT BMS Coding Guide.
*Recommended SU Posting levels for Florida SU trucks adequately restricts AASHTO SU trucks; see BLRM Chapter 7.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 11/24/2020**

Description

Structure Unit Identification

Bridge/Unit Key: 874294 0
Structure Name:
Description: SPANS 1 THRU 3
Type: M - Main

Roadway Identification

NBI Structure No (8): 874294
Position/Prefix (5): 1 - Route On Structure
Kind Hwy (Rte Prefix): 4 County Hwy
Design Level of Service: 8 Service Road
Route Number/Suffix: 00000 / 0 N/A (NBI)
Feature Intersect (6): Matheson Hammock Canal
Critical Facility: Not Defense-crit
Facility Carried (7): Matheson Hmk Road
Mile Point (11): 0.08
Latitude (16): 025d40'44.2" Long (17): 080d15'43.8"

Roadway Traffic and Accidents

Lanes (28): 2 Medians: 0 Speed: 15 mph
ADT Class: 2 ADT Class 2
Recent ADT (29): 736 Year (30): 2014
Future ADT (114): 1168 Year (115): 2041
Truck % ADT (109): 1
Detour Length (19): 99 mi
Detour Speed:
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): 87 000 757 Sub Rte (13b): 00
Functional Class (26): 09 Rural Local
Federal Aid System: OFF
Defense Hwy (100): 0 Not a STRAHNET hwy
Direction of Traffic (102): 2 2-way traffic
Emergency: [X]

Roadway Clearances

Vertical (10): 99.99 ft Appr. Road (32): 26.25 ft
Horiz. (47): 26.25 ft Roadway (51): 26.25 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: [ ]
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): 6 Bank Slumping
Deck (58): 3 Serious
Superstructure (59): 3 Serious
Substructure (60): 4 Poor

Culvert (62): N N/A (NBI)
Waterway (71): 8 Equal Desirable
Unrepaired Spalls: -1 sq.ft.
Review Required: [X]

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 11/24/2020**

Structure Identification

Admin Area: Miami-Dade
District (2): D6 - Miami
County (3): (87)Miami-Dade
Place Code (4): South Miami Heights
Location (9): Matheson Hammock Park
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): 3
Approach Spans (46): 0
Length of Max Span (48): 38.3 ft
Structure Length (49): 100.33 ft
Total Length: 140.33 ft
Deck Area: 3536 sqft
Structure Flared (35): 0 No flare

Age and Service

Year Built (27): 1967
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: 1.5 ft Right: 5.5 ft
Bridge Median (33): 0 No median
Main Span Material (43A): 5 Prestressed Concrete
Appr Span Material (44A): Not Applicable (P)
Main Span Design (43B): 01 Slab
Appr Span Design (44B): 00 Other (NBI)

Deck Type and Material

Deck Width (52): 35.25 ft
Skew (34): 0 deg
Deck Type (107): 2 Concrete Precast Panel
Surface (108): 6 Bituminous
Membrane: 0 None
Deck Protection: None

Appraisal

Structure Appraisal

Open/Posted/Closed (41): P Posted for load
Deck Geometry (68): 5 Above Tolerable
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): U Unknown Foundation

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): 1 Not Required

NBI Condition Rating

Sufficiency Rating: 15.5
Health Index: 85.67
Structural Eval (67): 3 Intolerable - Correct
Deficiency: Structurally Deficient

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: 10/22/2020
Inspector: KNLRELM - Loren Marquez
Bridge Group: CA611
Alt. Bridge Group:
Primary Type: Interim
Review Required: [X]

Next Inspection Date Scheduled

NBI: 04/06/2022
Element: 04/06/2021
Fracture Critical:
Underwater: 04/06/2022
Other/Special: 04/06/2021
Inventory Photo Update Due: 04/06/2024

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005

Inspection/CIDR Report with PDF attachment(s)

Structure ID: 874294

CIDR

DATE PRINTED: 11/24/2020

Schedule Cont.

Inspection Types Performed NBI ☐ Element ☒ Fracture Critical ☐ Underwater ☐ Other Special ☒

Inspection Intervals	Required (92)	Frequency (92)	Last Date (93)	Inspection Resources	
Fracture Critical	☐	mos		Crew Hours:	4
Underwater	☒	24 mos	04/06/2020	Flagger Hours:	0
Other Special	☒	6 mos	10/22/2020	Helper Hours:	0
NBI		24 mos (91)	04/06/2020 (90)	Snooper Hours:	0
				Special Crew Hours:	3
				Special Equip Hours:	0

Bridge Related

General Bridge Information

Parallel Bridge Seq:
Channel Depth: 10.6 ft
Radio Frequency: -1
Phone Number:
Exception Date:
Exception Type: Unknown
Accepted By Maint: 01/01/1967
Warranty Expiration: 00/00/0000
Performance Rating: Poor

Bridge Rail 1: Conc parapet-alum-rail
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 ☐ Sewage ☒ Other ☐

Bridge Load Rating Information

Inventory Type (065): 3 LRFR Load & Res. Fact
Operating Type (063): 3 LRFR Load & Res. Fact
Original Design Load (031): HL 93
Date: 01/13/2020
Initials: JS
Load Rating Rev. Recom.: No
Load Rating Plans Status: Field Measurements

Inventory Rating (066): 7.6 tons
Operating Rating (064): 11.9 tons
FL120 Permit Rating: 16.2 tons
HS20/FL120 Max Span Rating: 16.2 tons
Dynamic Impact in Percent: 33 %
Governing Span Length: 38.3 ft
Minimum Span Length: 28.3 ft
Distribution Method: Others

Load Rating Notes:

LEGAL LOADS

SU2: 11.7 tons
SU3: 12.2 tons
SU4: 11.9 tons
C3: 18.2 tons
C4: 16.9 tons
C5: 17.6 tons
ST5: 18.4 tons
Posting (070): 2 20.0-29.9%below
Open/Posted/Closed (041): P Posted for load

POSTING

Recom. SU Posting: 11 tons
Recom. C Posting: 16 tons
Recom. ST5 Posting: 18 tons
Actual SU Posting: 11 tons
Actual C Posting: 16 tons
Actual ST5 Posting: 18 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: Unknown
Mode of Flow: Tidal
Rating Scour Eval: Minimal Risk
Highest Scour Eval: Unknown
Scour Evaluation Method:

Scour Recommended I: Unknown
Scour Recommended II: Unknown
Scour Recommended III: Unknown
Scour Elevation: -1 ft
Action Elevation: -1 ft
Storm Frequency: -1

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 11/24/2020**

Elements

Inspection Date: 10/22/2020 **MIGV**

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8099 / 3	PS Conc Slab (Sonovoid)	3122	88.29	5	0.14	409	11.57	0	.	3536 (SF)
0	1080 / 3	Delamination/Spall/Patched Area	0	.	5	45.45	6	54.55	0	.	11 (SF)
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 (SF)
0	1100 / 3	Exposed Prestressing	0	.	0	.	20	100	0	.	20 (SF)
0	1110 / 3	Cracking (PSC)	0	.	0	.	292	100	0	.	292 (SF)
0	1900 / 3	Distortion	0	.	0	.	90	100	0	.	90 (SF)
0	510 / 3	Wearing Surfaces	1629	61.85	0	.	1005	38.15	0	.	2634 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	1005	100	0	.	1005 sq.ft

DECKS : Joints

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	301 / 3	Pourable Joint Seal	0	.	0	.	104	74.29	36	25.71	140 ft
0	2310 / 3	Leakage	0	.	0	.	104	100	0	.	104 ft
0	2330 / 3	Seal Damage	0	.	0	.	0	.	36	100	36 ft

MISCELLANEOUS : Channel

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8290 / 3	Channel	0	.	0	.	1	100	0	.	1 (EA)
0	9150 / 3	Bank Erosion	0	.	0	.	1	100	0	.	1 (EA)

MISCELLANEOUS : Other Elements

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	321 / 3	Re Conc Approach Slab	1410	100	0	.	0	.	0	.	1410 sq.ft
0	510 / 3	Wearing Surfaces	957	91.14	0	.	93	8.86	0	.	1050 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	93	100	0	.	93 sq.ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	205 / 3	Re Conc Column	0	.	0	.	4	100	0	.	4 each
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 each
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	3	100	0	.	3 each

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	215 / 3	Re Conc Abutment	65	92.86	0	.	5	7.14	0	.	70 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	0	.	5	100	0	.	5 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	234 / 3	Re Conc Pier Cap	49	72.06	12	17.65	7	10.29	0	.	68 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	12	63.16	7	36.84	0	.	19 ft

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 11/24/2020**

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8393 / 3	Bulkhead Seawall Any Material	0	.	0	.	354	100	0	.	354 ft
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	314	100	0	.	314 ft
0	6000 / 3	Scour	0	.	0	.	40	100	0	.	40 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8394 / 3	R/Conc Abut Slope Protection	3968	73.81	0	.	1408	26.19	0	.	5376 (SF)
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	320	100	0	.	320 (SF)
0	4000 / 3	Settlement	0	.	0	.	1088	100	0	.	1088 (SF)

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	333 / 3	Other Bridge Railing	167	83.5	33	16.5	0	.	0	.	200 ft
0	1000 / 3	Corrosion	0	.	30	100	0	.	0	.	30 ft
0	1020 / 3	Connection	0	.	3	100	0	.	0	.	3 ft

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

Inspection Information

Inspection Date: 10/22/2020 **Type:** Interim

Inspector: KNLRELM - Loren Marquez

Inspection Notes: Sufficiency Rating Calculation Accepted by KNLREJP at 11/18/2020 2:56:35 PM

This Interim inspection (10/22/2020) was conducted to evaluate Element 8099 PS Conc Slab (Sonovoid), for the status of the entire structure refer to the last Regular NBI Inspection (04/06/2020).

LOAD CAPACITY EVALUATION:
Since the current load rating dated 1/13/2020, there is no indication that deterioration, geometric changes or additional dead load have occurred that would warrant a new load rating analysis. This only applies to this inspection dated 10/22/2020 per Loren Marquez, P.E.

The structure is on a 6 months inspection frequency due to NBI Rating 3 for SIA Items 58 Deck and 59 Superstructure.

The Deck and Superstructure are coded 3 (Serious) due to spalls and delaminations along more than 25% of any of the slab units. Slabs Units 1-6, 2-7, and 2-8 meet this criteria. (10/22/2020).

LEGEND:
NCAR: NO CORRECTIVE ACTION RECOMMENDED
RT: Right
LT: Left
L: Long
W: Wide
H: High
D: Deep
in.: Inches
ft.: Feet
LF: Linear Feet
SF: Square Feet
NE: Northeast
NW: Northwest
SE: Southeast
SW: Southwest

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 11/24/2020**

Structure Notes

BRIDGE OWNER: MIAMI-DADE COUNTY

Bridge inventoried from south to north. (Entrance on North end, boat ramp on South end).

P/S Slab Units on R/Conc Caps and Abutments over P/Conc Columns. (3 spans)

Element 227/3 Re Conc Pile notes have been replaced by Element 205/3 Re Conc Column on 10/29/2019.

Element 8475/3 R/Conc Walls notes have been replaced by Element 8393/3 Bulkhead Seawall Any Material on 04/06/2020.

The NBI Rating for Deck and Superstructure are coded 3 (Serious) due to spalls and delaminations along more than 25% of any of the slab units. Slabs Units 1-6, 2-7, and 2-8 meet this criteria. (04/06/2020).

The Substructure NBI Rating is coded 4 (Poor) due to the significant deterioration of Column 2-2. (04/06/2020).

The Channel NBI Rating was lowered from 7 to 6 due to areas of undermining on the channel below the North seawall. (04/06/2020).

TRAFFIC RESTRICTIONS:
Based on the current load rating analysis dated 1/13/2020, it is recommended that this bridge be posted for the SU, C and ST5 type vehicles as follows: SU = 11 tons, C = 16 tons, ST5 = 18 tons. The bridge is currently posted for SU = 11 tons, C = 16 tons, ST5 = 18 tons. Refer to posting signs Photos 29 and 30.

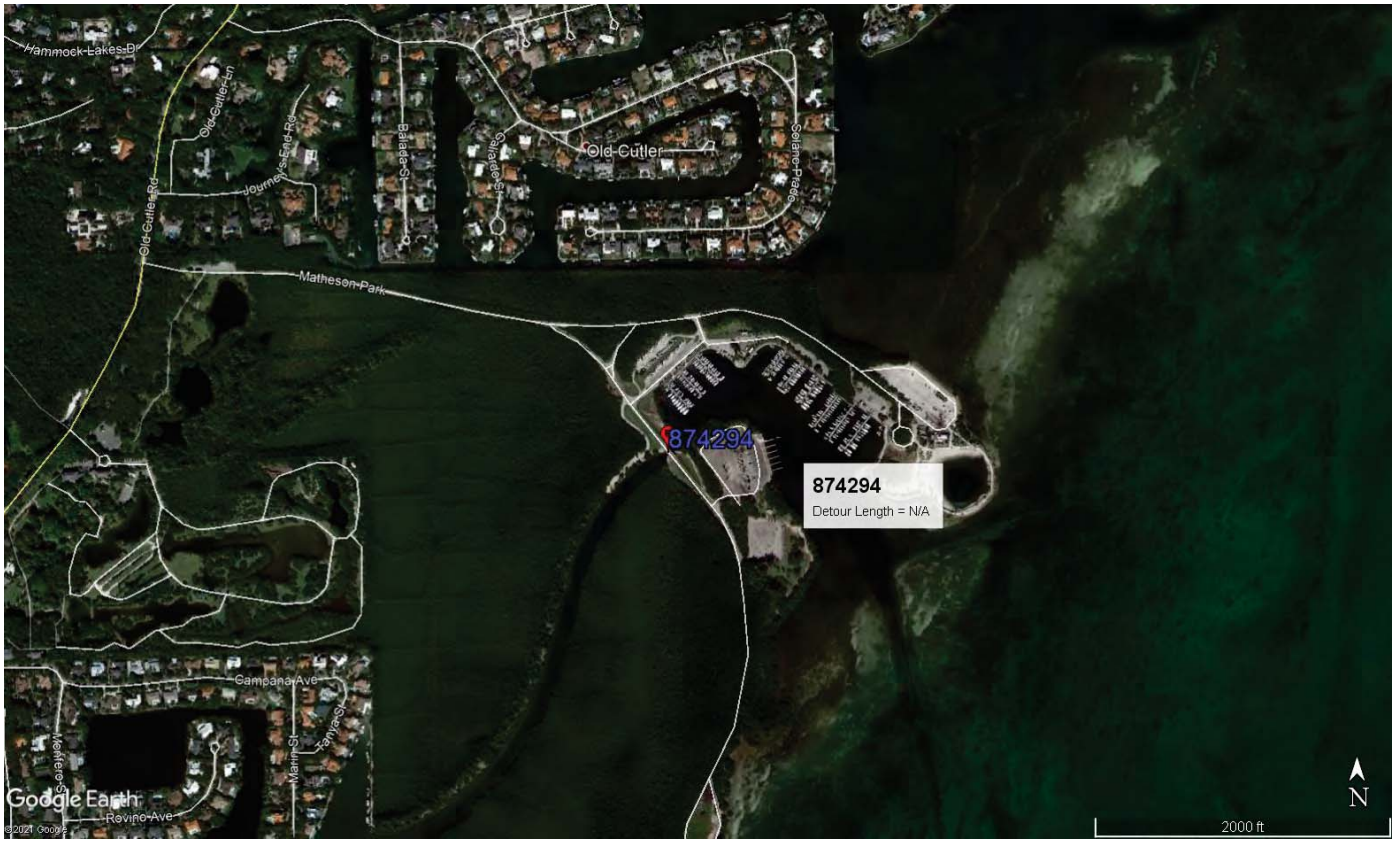
REVIEWED BY:

Schedule Notes

FDOT	**BRIDGE INSPECTION REPORT** PREPARED FOR: FDOT District 6 BRIDGE OWNER: MIAMI-DADE COUNTY INSPECTION TYPE: Interim CONTRACT No. CA611	Inspected by: **Marlin Engineering, Inc.**
Bridge No. 874294	**REPORT CONTAINS**	**Inspection Date: 04-26-21**

☒ BrM Inspection Report	☐ Bridge Profile	☐ Fracture Critical Data	☐ Addendum
☒ CIDR Information	☐ Underwater Inspection	☒ Load Rating Summary Sheet	☐ Mechanical and Electrical Data

Matheson Hmk Road over Matheson Hammock Canal	**Facility Carried & Location**	**Matheson Hammock Park**



Location Map		**Detour Length = N/A**

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

BY:	Marlin Engineering, Inc.	STRUCTURE NAME:	Not recorded
OWNER:	2 County Hwy Agency	YEAR BUILT:	1967
MAINTAINED BY:	2 County Hwy Agency	SECTION NO.:	87 000 757
STRUCTURE TYPE:	5 Prestressed Concrete - 01 Slab	MP:	0.080
LOCATION:	Matheson Hammock Park	ROUTE:	00000
SERV. TYPE ON:	5 Highway-pedestrian	FACILITY CARRIED:	Matheson Hmk Road
SERV. TYPE UNDER:	5 Waterway	FEATURE INTERSECTED:	Matheson Hammock Canal

☐ FUNCTIONALLY OBSOLETE ☒ STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Interim

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 4/26/2021 UNDERWATER: 4/6/2020

SUFFICIENCY RATING: 15.5
HEALTH INDEX: 85.48

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

BY:	Marlin Engineering, Inc.	STRUCTURE NAME:	Not recorded
OWNER:	2 County Hwy Agency	YEAR BUILT:	1967
MAINTAINED BY:	2 County Hwy Agency	SECTION NO.:	87 000 757
STRUCTURE TYPE:	5 Prestressed Concrete - 01 Slab	MP:	0.080
LOCATION:	Matheson Hammock Park	ROUTE:	00000
SERV. TYPE ON:	5 Highway-pedestrian	FACILITY CARRIED:	Matheson Hmk Road
SERV. TYPE UNDER:	5 Waterway	FEATURE INTERSECTED:	Matheson Hammock Canal

[ ] THIS BRIDGE CONTAINS FRACTURE CRITICAL COMPONENTS

[ ] THIS BRIDGE IS SCOUR CRITICAL

[X] THIS REPORT IDENTIFIES DEFICIENCIES WHICH REQUIRE PROMPT CORRECTIVE ACTION

[ ] FUNCTIONALLY OBSOLETE [X] STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Interim

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 4/26/2021 UNDERWATER: 4/6/2020

OVERALL NBI RATINGS:

DECK:	3 Serious	CHANNEL:	6 Bank Slumping
SUPERSTRUCTURE:	3 Serious	CULVERT:	N N/A (NBI)
SUBSTRUCTURE:	4 Poor	SUFF. RATING:	15.5
PERF. RATING:	Poor	HEALTH INDEX:	85.48

FIELD PERSONNEL / TITLE / NUMBER:	INITIALS
Guzman, Armando - Bridge Inspector (CBI#00407) (lead)	
Montersil, Jonathan - Assistant Bridge Inspector	
Rego, Alexis - Bridge Inspector (CBI#00409)	
Campo, Luis - Bridge Inspector (CBI #00619)	
Alfonso, Rene - Bridge Inspector Assistance	

REVIEWING BRIDGE INSPECTION SUPERVISOR:

Rego, Alexis - Bridge Inspector (CBI#00409) _____

CONFIRMING REGISTERED PROFESSIONAL ENGINEER:

Vers, Julie - Structural Design Manager (P.E. # 77896) Marlin Engineering
1700 NW 66 Avenue
Suite 106
Plantation Florida 33313

SIGNATURE: _____

DATE: _____

The official record of this package has been electronically signed and sealed by Julie A. Vers, P.E. on the date adjacent to the seal as required by Rule 61G15-23.004, F.A.C.. 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 Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

All Elements

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8099 / 3	PS Conc Slab (Sonovoid)	3099	87.64	14	0.4	423	11.96	0	.	3536 (SF)
0	1080 / 3	Delamination/Spall/Patched Area	0	.	14	70	6	30	0	.	20 (SF)
0	1100 / 3	Exposed Prestressing	0	.	0	.	35	100	0	.	35 (SF)
0	1110 / 3	Cracking (PSC)	0	.	0	.	292	100	0	.	292 (SF)
0	1900 / 3	Distortion	0	.	0	.	90	100	0	.	90 (SF)
0	510 / 3	Wearing Surfaces	1734	65.83	0	.	900	34.17	0	.	2634 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	900	100	0	.	900 sq.ft

Element Inspection Notes:

8099/3 Notes: The top of the slab units is not visible due to an asphalt overlay. The width of the sonovoid slab units was field verified to be 3ft. wide.

SECONDARY:
_Centerline raised pavement markers are missing along the structure. Previously missing object markers were installed. Refer to Photo 01. NO CHANGE.

_Sidewalk concrete panels are loose and move under pedestrian load. (Total 300 SF). Refer to Photo 02. NO CHANGE.

_The underside of the slab unit joints and bent caps show evidence of water seepage. NO CHANGE. NCAR.

_There is one exposed piece of corroded scrap metal on Slab Unit 1-6 underside at 9ft. from Abutment 1. Previously documented under Defect 1090 as a spall with exposed rebar having minor section loss. Refer to Photo 03. NO CHANGE.

Refer to Defects 1080, 1100, 1110, and 1900 for additional deficiencies

PREVIOUS RECOMMENED CORRECTIVE ACTION:
_Replace missing object markers at the four corners of the bridge and provide missing RPMs throughout the bridge.
_Properly secure the sidewalk panels.
_Monitor slab unit 1-1 for possible independent movement on the slab unit.
_Clean and coat exposed prestressing and reinforce Slab Unit 2-8.
_Repair spalls, delaminations, and cracks along the underside of the slab units
_Clean and coat exposed rebar and repair spall along the underside of slab unit 1-6, 9ft. from Abutment 1.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was partially completed. Recommendation will be issued to provide missing RPMs.
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.

1080/3 CS-3:
_Slab Unit 1-9 exhibits a spall/delamination up to 36in. L x 24in. W x 2.5in. D over Abutment 1, with an exposed stirrup, no measurable section loss. (Total 6 SF). Refer to Photo 04. NO CHANGE.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

CS-2:
_Slab Unit 2-6, east edge exhibits a delamination 30in. L x 4in. W starting at Pier 2 cap. (Total 3 SF). NO CHANGE.

_Slab Unit 2-7, west edge exhibits a delamination up to 24in. L x 4in. W starting at Pier 2 cap. (Total 2 SF). NO CHANGE.

_Slab Unit 2-8 underside exhibits a delamination up to full width x 36in. L with associated cracks and rust staining, starting at Bent 2 cap. (Total 9 SF). Refer to Photo 05. NEW.

1100/3 CS-3:
_Slab Unit 2-8, midspan has a spall 15ft. L x 24in. W x up to 4in. D with 7 exposed and corroded transverse rebars with up to 60% section remaining and 5 exposed and corroded prestressing strands with up to 0% section remaining (3 broken strands). Previously noted a spall 10ft. L x 24in. W x up to 4in. D with 5 exposed strands, 2 broken threads, and 6 exposed transverse rebars. (Total 20 SF). Refer to Photo 06. INCREASE.

_Slab Unit 2-9, midspan has a spall/delamination up to 15ft. L x 12in. W x 2in. D with 2 prestressing strands and 7 transverse rebars having up to 90% section remaining. (Total 15 SF). Refer to Photo 06. NEW.

1110/3 CS-3:
_Slab Unit 1-6 east edge has two delamination areas, one up to 5ft. L x 6in. W starting at Abutment 1 and the other starting at Pier Cap 2 up to 9ft. L x 12in. W with associated cracks up to 1/16in. W with efflorescence throughout. (Total 14 SF). NO CHANGE.

_Slab Unit 1-7 east edge has a spall/delamination 24in. L x 12in. W with associated cracks up to 1/32in. W with efflorescence and corrosion bleed-out over Abutment 1. (Total 2 SF). NO CHANGE.

_Slab Unit 1-7, east edge has a delamination 7ft. L x 4in. W, with an associated crack of up to 1/16in. starting at Pier 2 cap. (Total 7 SF). NO CHANGE.

_Slab Unit 1-8 west edge is intermittently delaminated up to 15ft. L x 15in. W starting at Abutment 1 with associated cracks up to 1/4in. W with efflorescence and corrosion bleed-out and associated spalling up to 4ft. L x 6in. W x 2in. D approximately 10ft from Abutment 1. (Total 19 SF). Refer to Photo 07. NO CHANGE.

_Slab Unit 1-8 east edge has a delamination 4ft. L x 15in. W and associated cracks up to 1/32in. W with efflorescence and corrosion bleed-out, 9ft. from Pier Cap 2. (Total 5 SF). NO CHANGE.

_Slab Unit 1-8 has a delaminated area up to 8ft. L x 3ft. W and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out starting at Pier Cap 2. (Total 24 SF). NO CHANGE.

_Slab Unit 1-9 west edge has a delaminated area 9ft. L x 10in. W and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out, starting near the 3/4 point and extending to Pier 2 cap. (Total 9 SF). NO CHANGE.

_Slab Unit 2-7 east edge is intermittently cracked/delaminated up to span length x 16in. W (average width) with up to 1/4in. W cracks. (Total 38 SF). NO CHANGE.

_Slab Unit 2-8 west half has two delaminated areas up to 15ft. L x 18in. W (average width) at south and north ends, with associated cracks of up to 1/4in. W. (Total 60 SF). NO CHANGE.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

_Slab Unit 2-9 west edge has a delaminated area up to 5ft. L x 5in. W with associated cracking up to 1/4in. wide, starting at the Pier 2 cap. (Total 5 SF). NO CHANGE.

_Slab Unit 3-6 has a delamination up to 24in. L x 6in. W on the east edge over Pier 3, with an associated crack of up to 1/16in. W. (Total 2 SF). NO CHANGE.

_Slab Unit 3-6 east edge has a delaminated area up to 42in. L x 8in. W with associated cracks up to 1/16in. W. (Total 4 SF). NO CHANGE.

_Slabs Unit 3-7 has two delaminated areas, one starting at Pier 3 up to 8ft. L x 15in. W (average width) with associated cracks, and the second, near mid-span up to 3ft. L x 30in. W. (Total 25 SF). NO CHANGE.

_Slab Unit 3-7 has an unsound repaired area 12ft. L x up to slab width (3ft.) starting from Abutment 4 with hollow sounding throughout and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out. (Total 30 SF). Refer to Photo 08. NO CHANGE.

_Slab Unit 3-8 has a spall/delamination up to 8ft. L x 3ft. W x 1in. D and associated cracks with corrosion bleed-out starting at Pier 3. (Total 24 SF). Refer to Photo 09. NO CHANGE.

_Slab Unit 3-8 has an unsound repair/delamination up to 42in. L x 30in. W with associated cracks up to 1/16in. W with efflorescence starting at Abutment 4. (Total 9 SF). NO CHANGE.

_Slab Unit 3-8 has an unsound repair/delamination up to 74in. L x up to slab width (3ft.) with associated cracks up to 1/16in. W with efflorescence starting 5.5ft. from Abutment 4. (Total 15 SF). NO CHANGE.

1900/3 CS-3:
_Slab Unit 1-1 exhibits a slight outward rotation at Abutment 1 with up to 1/4in. height difference in reference to the top of the cap, potentially indicating shear key failure. (Total 90 SF). Refer to Photo 10. NO CHANGE. NCAR.

510/3 For deficiencies refer to Defect 3220.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Clean and seal cracks and rutting along the expansion joints.
_Seal cracks on the asphalt along the slab unit joints and multi-directional cracks on Lane 2 (NB) in Spans 1 and 2.
_Monitor cracks along slab unit joints for independent movement of the slab units.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was completed.
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.

3220/3 CS-3:
_The asphalt overlay has longitudinal cracks up to span length x 1/4in. W with associated 1in. W rutting over the slab unit joints and upheaving up to 1in. H at the shoulders, possibly indicating independent slab unit movement. (Total 600 SF). Refer to Photo 11. NO CHANGE.

_The asphalt overlay at Spans 1 and 2 has multi-directional cracking up to 1/2in. W on Lane 2 (NB), worse condition is on Span 1 which has a hollow-sounding area 19.5ft L x 11ft. W, starting 1 ft. from the right sidewalk. (Total 300 SF). Refer to Photo 12. NO CHANGE.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	205 / 3	Re Conc Column	0	.	0	.	4	100	0	.	4 each
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 each
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	3	100	0	.	3 each

Element Inspection Notes:

205/3 Note: At high tide, the seawater reaches the lower section of the columns.

Refer to Defects 1090 and 1130 for deficiencies.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Remove any loose concrete and repair delaminations and spalls along the Column 2-2.
_Repair delaminations and seal cracks along Bents 2 and 3 columns.
_Install cathodic protection to Bents 2 and 3 columns.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.
_The corrective action noted above was not completed. Recommendation will be repeated.

1090/3 CS-3:
_Column 2-2, south face has a spall/delamination up to 55in. H x 32in. W x 4in. D with two exposed longitudinal rebars and five stirrups, having areas of up to 80% section remaining. Additionally, there are areas of delamination around the column circumference covering the entire column height with associated cracks up to 1/4in. W as a consequence of corrosion of the steel reinforcement. Previously noted as a spall/delamination 7ft. H x 3ft. W x 3in. D with one exposed rebar and one stirrup. (Total 1 ea.) Refer to Photos 13, 14, and 15. INCREASE.

1130/3 CS-3:
_Columns 2-1, 3-1, and 3-2 have delaminated areas along their entire length with associated cracks up to full height x 1/16in. W, as a result of corrosion of the steel reinforcement. (Total 3 ea.) NO CHANGE.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	234 / 3	Re Conc Pier Cap	48	70.59	12	17.65	8	11.76	0	.	68 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	12	60	8	40	0	.	20 ft

Element Inspection Notes:

234/3 Refer to Defect 1080 for additional deficiencies.

PREVIOUS RECOMMENDED CORRECTIVE ACTION:
_Remove vegetation growing on west end of Bents 2 and 3 caps.
_Repair spalls and delaminations along Bents 2 and 3 caps.

CORRECTIVE ACTION EVALUATION:
_The corrective action noted above was completed.
_The corrective action noted above was not completed. Recommendation will be repeated.

1080/3 CS-3:
_Bent 2 cap, south face has a spall/delamination up to 48in. L x 17in. H x 3/4 in. D over Column 2-2, and on the same location, north face a delamination 20in. L x 12in. H. Previously noted in the south face as a spall/delamination up to 3ft. L x 16in. H x 1 in.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

D. (Total 4 LF) Refer to Photos 16 and 17. INCREASE.

_Bent 3 cap, bottom and north faces has two unsound repaired areas up to 30in. L x 24in. W with multidirectional cracks up to 1/64in. W between Columns 3-1 and 3-2. (Total 4 LF) Refer to Photo 18. NO CHANGE.

CS-2:
_Pier 3 cap has intermittent delaminated areas up to 3ft. L x 16in. H between Columns 3-1 and 3-2, along the top and bottom north edges. (Total 12 LF) Refer to Photo 18. NO CHANGE.

Total Number of Elements*: 3
*excluding defects/protective systems

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Inspector Recommendations

UNIT: 0 **DECKS**

ELEMENT/ENV: 8099 / 3 PS Conc Slab (Sonovoid) **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE			PRIORITY
1 , 2 , 3	MMS Quantity: 300 sf	Element Estimated Quantity: 300 (SF)	3

WORK ORDER RECOMMENDATION:

Properly secure the sidewalk concrete panels. Photo 02

CONDITION STATE			PRIORITY
1 , 2 , 3	MMS Quantity: 10 sf	Element Estimated Quantity: 10 (SF)	3

WORK ORDER RECOMMENDATION:

Replace missing raised pavement markers along the centerline of the structure. Photo 01

ELEMENT/ENV: 8099:510:3220 / 3 Crack (Wearing Surface) **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE			PRIORITY
3	MMS Quantity: 600 sf	Element Estimated Quantity: 600 sq.ft	3

WORK ORDER RECOMMENDATION:

Monitor the slab units for independent movement. Photo 11

CONDITION STATE			PRIORITY
3	MMS Quantity: 900 sf	Element Estimated Quantity: 900 sq.ft	3

WORK ORDER RECOMMENDATION:

Seal cracks on the asphalt along the slab unit joints and multi-directional cracks on Lane 2 (NB) in Spans 1 and 2. Photos 11 and 12

ELEMENT/ENV: 8099:1080 / 3 Delamination/Spall/Patched Area **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE			PRIORITY
2 , 3	MMS Quantity: 298 sf	Element Estimated Quantity: 298 (SF)	3

WORK ORDER RECOMMENDATION:

Clean and coat exposed steel and repair spalls and delaminations along the underside of sonovoid slabs. Photos 03 to 05 and 07 to 09

ELEMENT/ENV: 8099:1100 / 3 Exposed Prestressing **ELEM CATEGORY: Decks/Slabs**

CONDITION STATE			PRIORITY
3	MMS Quantity: 35 sf	Element Estimated Quantity: 35 (SF)	2

WORK ORDER RECOMMENDATION:

Clean and coat exposed prestressing strands and rebars, repair spalls and reinforce the Slab units 2-8 and 2-9. Photo 06

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Inspector Recommendations

UNIT: 0 **SUBSTRUCTURE**

ELEMENT/ENV: 205:1090 / 3 Exposed Rebar **ELEM CATEGORY: Substructure**

CONDITION STATE			PRIORITY
3	MMS Quantity: 40 mh	Element Estimated Quantity: 1 each	2

WORK ORDER RECOMMENDATION:

Clean and coat exposed rebars, repair spalls/delaminations and reinforce Column 2-2. Photos 13 to 15

ELEMENT/ENV: 205:1130 / 3 Cracking (RC and Other) **ELEM CATEGORY: Substructure**

CONDITION STATE			PRIORITY
3	MMS Quantity: 40 mh	Element Estimated Quantity: 4 each	3

WORK ORDER RECOMMENDATION:

Repair delaminations and seal cracks along Bents 2 and 3 columns. Photos 13 to 15

3	MMS Quantity: 80 mh	Element Estimated Quantity: 4 each	3

WORK ORDER RECOMMENDATION:

Install jackets with cathodic protection to Bents 2 and 3 columns. Photos 13 to 15

ELEMENT/ENV: 234:1080 / 3 Delamination/Spall/Patched Area **ELEM CATEGORY: Substructure**

CONDITION STATE			PRIORITY
2 , 3	MMS Quantity: 40 mh	Element Estimated Quantity: 20 ft	2

WORK ORDER RECOMMENDATION:

Repair spalls and delaminations along Bents 2 and 3 caps. Photos 16 to 18

Structure Notes

BRIDGE OWNER: MIAMI-DADE COUNTY

Bridge inventoried from south to north. (Entrance on North end, boat ramp on South end).

P/S Slab Units on R/Conc Caps and Abutments over P/Conc Columns. (3 spans)

TRAFFIC RESTRICTIONS:
Based on the current load rating analysis dated 1/13/2020, the bridge is posted for the SU, C and ST5 type vehicles as follows: SU = 11 tons, C = 16 tons, ST5 = 18 tons. Refer to posting signs Photos 19 and 20.

REVIEWED BY:

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

INSPECTION NOTES: HIXS 4/26/2021

Sufficiency Rating Calculation Accepted by knmeira at 5/5/2021 3:15 PM.

The structure is on a 6 months inspection frequency due to NBI Rating 3 for SIA Items 58 Deck and 59 Superstructure. (04/26/2021).

This Interim inspection (04/26/2021) was conducted to evaluate Element 8099 PS Conc Slab (Sonovoid), Element 234 Re Conc Pier Cap and Element 205 Re Conc Column, for the status of the entire structure refer to the last Regular NBI Inspection (04/06/2020).

The Deck and Superstructure are coded 3 (Serious) due to spalls and delaminations along more than 25% of any of the slab units. Slabs Units 1-6, 2-7, and 2-8 meet this criteria. (04/26/2021).

The Substructure NBI Rating is coded 4 (Poor) due to extensive spalls with exposed rebars along Column 2-2, and delaminations and cracks along the columns and pier caps throughout the structure. (04/26/2021).

LOAD CAPACITY EVALUATION:
Since the current load rating dated 1/13/2020, there is no indication that deterioration, geometric changes or additional dead load have occurred that would warrant a new load rating analysis. This only applies to this inspection dated 04/26/2021 per Julie A. Vers, P.E.

LEGEND:
NCAR: NO CORRECTIVE ACTION RECOMMENDED
RT: Right
LT: Left
L: Long
W: Wide
H: High
D: Deep
in.: Inches
ft.: Feet
LF: Linear Feet
SF: Square Feet
NE: Northeast
NW: Northwest
SE: Southeast
SW: Southwest

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 01 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Centerline raised pavement markers are missing along the structure. Previously missing object markers were installed.

WORK ORDER RECOMMENDATION:
Replace missing raised pavement markers along the centerline of the structure.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 02 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Sidewalk concrete panels are loose and move under pedestrian load.

WORK ORDER RECOMMENDATION:
Properly secure the sidewalk concrete panels.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 03 Element/Env 8099/3: PS Conc Slab (Sonovoid)

There is one exposed piece of corroded scrap metal on Slab Unit 1-6 underside at 9ft. from Abutment 1.

WORK ORDER RECOMMENDATION:
Clean and coat exposed steel and repair spalls and delaminations along the underside of sonovoid slabs.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 04 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 1-9 exhibits a spall/delamination up to 36in. L x 24in. W x 2.5in. D over Abutment 1, with an exposed stirrup, no measurable section loss.

WORK ORDER RECOMMENDATION:
Clean and coat exposed steel and repair spalls and delaminations along the underside of sonovoid slabs.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 05 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 2-8 underside exhibits a delamination up to full width x 36in. L with associated cracks and rust staining, starting at Bent 2 cap.

WORK ORDER RECOMMENDATION:
Clean and coat exposed steel and repair spalls and delaminations along the underside of sonovoid slabs.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 06 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 2-8, midspan has a spall 15ft. L x 24in. W x up to 4in. D with 7 exposed and corroded transverse rebars with up to 60% section remaining and 5 exposed and corroded prestressing strands with up to 0% section remaining (3 broken strands).
Slab Unit 2-9, midspan has a spall/delamination up to 15ft. L x 12in. W x 2in. D with 2 prestressing strands and 7 transverse rebars having up to 90% section remaining.

WORK ORDER RECOMMENDATION:
Clean and coat exposed prestressing strands and rebars, repair spalls and reinforce the Slab units 2-8 and 2-9.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 07 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 1-8 west edge is intermittently delaminated up to 15ft. L x 15in. W starting at Abutment 1 with associated cracks up to 1/4in. W with efflorescence and corrosion bleed-out and associated spalling up to 4ft. L x 6in. W x 2in. D approximately 10ft from Abutment 1.

WORK ORDER RECOMMENDATION:
Clean and coat exposed steel and repair spalls and delaminations along the underside of sonovoid slabs.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 08 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 3-7 has an unsound repaired area 12ft. L x up to slab width (3ft.) starting from Abutment 4 with hollow sounding throughout and associated cracks up to 1/16in. W with efflorescence and corrosion bleed-out.

WORK ORDER RECOMMENDATION:
Clean and coat exposed steel and repair spalls and delaminations along the underside of sonovoid slabs.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 09 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 3-8 has a spall/delamination up to 8ft. L x 3ft. W x 1in. D and associated cracks with corrosion bleed-out starting at Pier 3.

WORK ORDER RECOMMENDATION:
Clean and coat exposed steel and repair spalls and delaminations along the underside of sonovoid slabs.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 10 Element/Env 8099/3: PS Conc Slab (Sonovoid)

Slab Unit 1-1 exhibits a slight outward rotation at Abutment 1 with up to 1/4in. height difference in reference to the top of the cap, potentially indicating shear key failure. No anti-rotation block is in place.

WORK ORDER RECOMMENDATION:
None.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 11 Element/Env 8099/ 510/3: PS Conc Slab (Sonovoid)/ Wearing Surfaces

The asphalt overlay has longitudinal cracks up to span length x 1/4in. W with associated 1in. W rutting over the slab unit joints and upheaving up to 1in. H at the shoulders, possibly indicating independent slab unit movement.

WORK ORDER RECOMMENDATION:
_Seal cracks on the asphalt along the slab unit joints and multi-directional cracks on Lane 2 (NB) in Spans 1 and 2.
_Monitor the slab units for independent movement.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 12 Element/Env 8099/ 510/3: PS Conc Slab (Sonovoid)/ Wearing Surfaces

The asphalt overlay at Spans 1 and 2 has multi-directional cracking up to 1/2in. W on Lane 2 (NB), worse condition is on Span 1 which has a hollow-sounding area 19.5ft L x 11ft. W, starting 1 ft. from the right sidewalk.

WORK ORDER RECOMMENDATION:
Seal cracks on the asphalt along the slab unit joints and multi-directional cracks on Lane 2 (NB) in Spans 1 and 2.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 13 Element/Env 205/3: Re Conc Column

Column 2-2, south face has a spall/delamination up to 55in. H x 32in. W x 4-3/4in. D with two exposed longitudinal rebars and five stirrups, having areas of up to 80% section remaining.

WORK ORDER RECOMMENDATION:
_Clean and coat exposed rebars, repair spalls/delaminations and reinforce Column 2-2.
_Repair delaminations and seal cracks along Bents 2 and 3 columns.
_Install jackets with cathodic protection to Bents 2 and 3 columns.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 14 Element/Env 205/3: Re Conc Column

Spall/delamination with exposed reinforcement having up to 80% remaining in south face of Column 2-2. (close up view)

WORK ORDER RECOMMENDATION:
_Clean and coat exposed rebars, repair spalls/delaminations and reinforce Column 2-2.
_Repair delaminations and seal cracks along Bents 2 and 3 columns.
_Install jackets with cathodic protection to Bents 2 and 3 columns.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 15 Element/Env 205/3: Re Conc Column

Areas of delamination around the column circumference covering the entire column height with associated cracks up to 1/4in. W as a consequence of corrosion of the steel reinforcement.

WORK ORDER RECOMMENDATION:
_Clean and coat exposed rebars, repair spalls/delaminations and reinforce Column 2-2.
_Repair delaminations and seal cracks along Bents 2 and 3 columns.
_Install jackets with cathodic protection to Bents 2 and 3 columns.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 16 Element/Env 234/3: Re. Concrete Pier Cap

Bent 2 cap, south face has a spall/delamination up to 48in. L x 17in. H x 3/4 in. D over Column 2-2, and on the same location, north face a delamination 20in. L x 12in. H. (south view)

WORK ORDER RECOMMENDATION:
Repair spalls and delaminations along Bents 2 and 3 caps.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 17 Element/Env 234/3: Re. Concrete Pier Cap

Bent 2 cap, south face has a spall/delamination up to 48in. L x 17in. H x 3/4 in. D over Column 2-2, and on the same location, north face a delamination 20in. L x 12in. H. (bottom view)

WORK ORDER RECOMMENDATION:
Repair spalls and delaminations along Bents 2 and 3 caps.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 18 Element/Env 234/3: Re. Concrete Pier Cap

Areas of unsound repairs on the bottom face of Pier 3 cap, intermittent delaminated areas up to 3ft. L x 16in. H between Columns 3-1 and 3-2, along the top and bottom north edges.

WORK ORDER RECOMMENDATION:
Repair spalls and delaminations along Bents 2 and 3 caps.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 19: STRUCTURE NOTES

North Approach Posting Sign

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
(INTERIM INSPECTION REPORT)

Structure ID: 874294 **Inspection**

DISTRICT: D6 - Miami **INSPECTION DATE: 4/26/2021 HIXS**

Photo 20: STRUCTURE NOTES

South Approach Posting Sign

Bridge No.	874294	**Analysis Method:** LRFR-LRFD	**FDOT Bridge Load Rating Summary Form (Page 1 of 1)**
Location	Matheson hammock Road over matheson Hammock Canal		
Description	3 Spans, 2-30'&1-40', Prestressed voided slab beams 36"x17"		

Rating Type	Rating Type	Gross Axle Weight (tons)	Moment/Shear/Service		Dead Load Factor	Live Load Factor	Live Load Distrib. Factor (axles)	Rating Factor	Span No. - Girder No., Interior/Exterior, %Span Length	RF·Weight (tons)
Level	**Vehicle**	**Weight**	**Member Type**	**Limit**	**DC**	**LL**	**LLDF**	**RF**	**Governing Location**	**RATING**
Inventory	HL93	36	Prestressed	Service	1.00	0.80	0.600	0.210	Central span, midspan	7.6
Operating	HL93	36	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.330	Central span, midspan	11.9
Permit	FL120	60	Prestressed	Strength, Shear	1.25/0.90	1.35	0.500	0.270	Central span, 1/4 point	16.2
Permit Max Span	FL120	60	Prestressed	Strength, Shear	1.25/0.90	1.35	0.500	0.270	Central span, 1/4 point	16.2
Legal	SU2	17	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.690	Central span, midspan	11.7
	SU3	33	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.370	Central span, midspan	12.2
	SU4	35	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.340	Central span, midspan	11.9
	C3	28	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.650	Central span, midspan	18.2
	C4	36.7	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.460	Central span, midspan	16.9
	C5	40	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.440	Central span, midspan	17.6
	ST5	40	Prestressed	Strength, Moment	1.25/0.90	1.35	0.600	0.460	Central span, midspan	18.4
Emergency Vehicle (EV)	EV2	28.75	Prestressed	NA	NA	NA	0.600			-1
	EV3	43	Prestressed	NA	NA	NA	0.600			-1

Original Design Load	HS20 or HS20-S16-44		Performed by:	Mengyuan Chen	Date: 01/13/20
Rating Type, *Analysis*	LRFR-LRFD		Checked by:	Juan A. Sobrino	Date: 01/13/20
Distribution Method	Others		Sealed By:	Juan A. Sobrino	Date: 01/13/20
Impact Factor	33.0%	(axle loading)	FL P.E. No.:	73121	
FL120 Gov. Span Length	38.3	(feet)	Cert. Auth. No.:	27244	
Minimum Span Length	28.3	(feet)	Phone & email:	(+1) 305 648 00 10, miami@pedelta.com	
Recommended Posting	> 39.9% below (0.000-0.600) (Required)		Company:	Pedelta Inc.	
Recommended SU Posting*	11	(tons)	Address:	2000 Ponce de Leon Blvd., Suite 624, Coral Gables, Florida 33134, USA	
Recommended C Posting	16	(tons)			
Recommended ST5 Posting	18	(tons)			
Owner	02 County Highway Agency				
Location	Neither interstate traffic nor within 1 mile reasonable access to an interstate				
EV Posting	No. EV posting is not recommended. The FAST Act does not apply				
Floor Beam Present?	No				
Segmental Bridge?	No				
Project No. & Reason	432907-1-72-02	Deterioration			
Plans Status	Built				

Engineer

Juan Sobrino

Digitally signed by Juan Sobrino
Date: 2020.01.13 15:58:25 -05'00'

Juan A. Sobrino, State of Florida, Professional Engineer, License No 73121.
This document has been electronically signed and sealed by Juan A. Sobrino on January 13th, 2020 using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

This 10-11-2019 summary follows the FDOT Bridge Load Rating Manual (BLRM), and the FDOT BMS Coding Guide.
*Recommended SU Posting levels for Florida SU trucks adequately restricts AASHTO SU trucks; see BLRM Chapter 7.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 6/25/2021**

Description

Structure Unit Identification

Bridge/Unit Key: 874294 0
Structure Name:
Description: SPANS 1 THRU 3
Type: M - Main

Roadway Identification

NBI Structure No (8): 874294
Position/Prefix (5): 1 - Route On Structure
Kind Hwy (Rte Prefix): 4 County Hwy
Design Level of Service: 8 Service Road
Route Number/Suffix: 00000 / 0 N/A (NBI)
Feature Intersect (6): Matheson Hammock Canal
Critical Facility: Not Defense-crit
Facility Carried (7): Matheson Hmk Road
Mile Point (11): 0.08
Latitude (16): 025d40'44.2" Long (17): 080d15'43.8"

Roadway Traffic and Accidents

Lanes (28): 2 Medians: 0 Speed: 15 mph
ADT Class: 2 ADT Class 2
Recent ADT (29): 736 Year (30): 2020
Future ADT (114): 1168 Year (115): 2042
Truck % ADT (109): 1
Detour Length (19): 99 mi
Detour Speed:
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): 87 000 757 Sub Rte (13b): 00
Functional Class (26): 09 Rural Local
Federal Aid System: OFF
Defense Hwy (100): 0 Not a STRAHNET hwy
Direction of Traffic (102): 2 2-way traffic
Emergency: [X]

Roadway Clearances

Vertical (10): 99.99 ft Appr. Road (32): 26.25 ft
Horiz. (47): 26.25 ft Roadway (51): 26.25 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: [ ]
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): 6 Bank Slumping
Deck (58): 3 Serious
Superstructure (59): 3 Serious
Substructure (60): 4 Poor

Culvert (62): N N/A (NBI)
Waterway (71): 8 Equal Desirable
Unrepaired Spalls: -1 sq.ft.
Review Required: [X]

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 6/25/2021**

Structure Identification

Admin Area: Miami-Dade
District (2): D6 - Miami
County (3): (87)Miami-Dade
Place Code (4): South Miami Heights
Location (9): Matheson Hammock Park
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): 3
Approach Spans (46): 0
Length of Max Span (48): 38.3 ft
Structure Length (49): 100.33 ft
Total Length: 140.33 ft
Deck Area: 3536 sqft
Structure Flared (35): 0 No flare

Age and Service

Year Built (27): 1967
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: 1.5 ft Right: 5.5 ft
Bridge Median (33): 0 No median
Main Span Material (43A): 5 Prestressed Concrete
Appr Span Material (44A): Not Applicable (P)
Main Span Design (43B): 01 Slab
Appr Span Design (44B): 00 Other (NBI)

Deck Type and Material

Deck Width (52): 35.25 ft
Skew (34): 0 deg
Deck Type (107): 2 Concrete Precast Panel
Surface (108): 6 Bituminous
Membrane: 0 None
Deck Protection: None

Appraisal

Structure Appraisal

Open/Posted/Closed (41): P Posted for load
Deck Geometry (68): 5 Above Tolerable
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): U Unknown Foundation

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): 1 Not Required

NBI Condition Rating

Sufficiency Rating: 15.5
Health Index: 85.48
Structural Eval (67): 3 Intolerable - Correct
Deficiency: Structurally Deficient

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: 04/26/2021
Inspector: KNMEIAG - Armando Guzman
Bridge Group: CA611
Alt. Bridge Group:
Primary Type: Interim
Review Required: [X]

Next Inspection Date Scheduled

NBI: 04/26/2022
Element: 10/26/2021
Fracture Critical:
Underwater: 04/26/2022
Other/Special: 10/26/2021
Inventory Photo Update Due: 04/26/2024

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — DATE PRINTED: 6/25/2021

Schedule Cont.

Inspection Types Performed NBI ☐ Element ☒ Fracture Critical ☐ Underwater ☐ Other Special ☒

Inspection Intervals	Required (92)	Frequency (92)	Last Date (93)	Inspection Resources	
Fracture Critical	☐	mos		Crew Hours:	2
Underwater	☒	24 mos	04/06/2020	Flagger Hours:	0
Other Special	☒	6 mos	04/26/2021	Helper Hours:	0
NBI		24 mos (91)	04/06/2020 (90)	Snooper Hours:	0
				Special Crew Hours:	3
				Special Equip Hours:	0

Bridge Related

General Bridge Information

Parallel Bridge Seq:
Channel Depth: 10.6 ft
Radio Frequency: -1
Phone Number:
Exception Date:
Exception Type: Unknown
Accepted By Maint: 01/01/1967
Warranty Expiration: 00/00/0000
Performance Rating: Poor

Bridge Rail 1: Conc parapet-alum-rail
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 ☐ Sewage ☒ Other ☐

Bridge Load Rating Information

Inventory Type (065): 3 LRFR Load & Res. Fact
Operating Type (063): 3 LRFR Load & Res. Fact
Original Design Load (031): HL 93
Date: 01/13/2020
Initials: JS
Load Rating Rev. Recom.: No
Load Rating Plans Status: Field Measurements

Inventory Rating (066): 7.6 tons
Operating Rating (064): 11.9 tons
FL120 Permit Rating: 16.2 tons
HS20/FL120 Max Span Rating: 16.2 tons
Dynamic Impact in Percent: 33 %
Governing Span Length: 38.3 ft
Minimum Span Length: 28.3 ft
Distribution Method: Others

Load Rating Notes:

LEGAL LOADS

SU2: 11.7 tons
SU3: 12.2 tons
SU4: 11.9 tons
C3: 18.2 tons
C4: 16.9 tons
C5: 17.6 tons
ST5: 18.4 tons
Posting (070): 2 20.0-29.9%below
Open/Posted/Closed (041): P Posted for load

POSTING

Recom. SU Posting: 11 tons
Recom. C Posting: 16 tons
Recom. ST5 Posting: 18 tons
Actual SU Posting: 11 tons
Actual C Posting: 16 tons
Actual ST5 Posting: 18 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: Unknown
Mode of Flow: Tidal
Rating Scour Eval: Minimal Risk
Highest Scour Eval: Unknown
Scour Evaluation Method:

Scour Recommended I: Unknown
Scour Recommended II: Unknown
Scour Recommended III: Unknown
Scour Elevation: -1 ft
Action Elevation: -1 ft
Storm Frequency: -1

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 6/25/2021**

Elements

Inspection Date: 04/26/2021 **HIXS**

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8099 / 3	PS Conc Slab (Sonovoid)	3099	87.64	14	0.4	423	11.96	0	.	3536 (SF)
0	1080 / 3	Delamination/Spall/Patched Area	0	.	14	70	6	30	0	.	20 (SF)
0	1100 / 3	Exposed Prestressing	0	.	0	.	35	100	0	.	35 (SF)
0	1110 / 3	Cracking (PSC)	0	.	0	.	292	100	0	.	292 (SF)
0	1900 / 3	Distortion	0	.	0	.	90	100	0	.	90 (SF)
0	510 / 3	Wearing Surfaces	1734	65.83	0	.	900	34.17	0	.	2634 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	900	100	0	.	900 sq.ft

DECKS : Joints

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	301 / 3	Pourable Joint Seal	0	.	0	.	104	74.29	36	25.71	140 ft
0	2310 / 3	Leakage	0	.	0	.	104	100	0	.	104 ft
0	2330 / 3	Seal Damage	0	.	0	.	0	.	36	100	36 ft

MISCELLANEOUS : Channel

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8290 / 3	Channel	0	.	0	.	1	100	0	.	1 (EA)
0	9150 / 3	Bank Erosion	0	.	0	.	1	100	0	.	1 (EA)

MISCELLANEOUS : Other Elements

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	321 / 3	Re Conc Approach Slab	1410	100	0	.	0	.	0	.	1410 sq.ft
0	510 / 3	Wearing Surfaces	957	91.14	0	.	93	8.86	0	.	1050 sq.ft
0	3220 / 3	Crack (Wearing Surface)	0	.	0	.	93	100	0	.	93 sq.ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	205 / 3	Re Conc Column	0	.	0	.	4	100	0	.	4 each
0	1090 / 3	Exposed Rebar	0	.	0	.	1	100	0	.	1 each
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	3	100	0	.	3 each

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	215 / 3	Re Conc Abutment	65	92.86	0	.	5	7.14	0	.	70 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	0	.	5	100	0	.	5 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	234 / 3	Re Conc Pier Cap	48	70.59	12	17.65	8	11.76	0	.	68 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	12	60	8	40	0	.	20 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8393 / 3	Bulkhead Seawall Any Material	0	.	0	.	354	100	0	.	354 ft
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	314	100	0	.	314 ft

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 6/25/2021**

0	6000 / 3	Scour	0	.	0	.	40	100	0	.	40 ft

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8394 / 3	R/Conc Abut Slope Protection	3968	73.81	0	.	1408	26.19	0	.	5376 (SF)
0	1130 / 3	Cracking (RC and Other)	0	.	0	.	320	100	0	.	320 (SF)
0	4000 / 3	Settlement	0	.	0	.	1088	100	0	.	1088 (SF)

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	333 / 3	Other Bridge Railing	167	83.5	33	16.5	0	.	0	.	200 ft
0	1000 / 3	Corrosion	0	.	30	100	0	.	0	.	30 ft
0	1020 / 3	Connection	0	.	3	100	0	.	0	.	3 ft

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

Inspection Information

Inspection Date: 04/26/2021 **Type:** Interim

Inspector: KNMEIAG - Armando Guzman

Inspection Notes: Sufficiency Rating Calculation Accepted by knmeira at 5/5/2021 3:15 PM.

The structure is on a 6 months inspection frequency due to NBI Rating 3 for SIA Items 58 Deck and 59 Superstructure. (04/26/2021).

This Interim inspection (04/26/2021) was conducted to evaluate Element 8099 PS Conc Slab (Sonovoid), Element 234 Re Conc Pier Cap and Element 205 Re Conc Column, for the status of the entire structure refer to the last Regular NBI Inspection (04/06/2020).

The Deck and Superstructure are coded 3 (Serious) due to spalls and delaminations along more than 25% of any of the slab units. Slabs Units 1-6, 2-7, and 2-8 meet this criteria. (04/26/2021).

The Substructure NBI Rating is coded 4 (Poor) due to extensive spalls with exposed rebars along Column 2-2, and delaminations and cracks along the columns and pier caps throughout the structure. (04/26/2021).

LOAD CAPACITY EVALUATION:
Since the current load rating dated 1/13/2020, there is no indication that deterioration, geometric changes or additional dead load have occurred that would warrant a new load rating analysis. This only applies to this inspection dated 04/26/2021 per Julie A. Vers, P.E.

LEGEND:
NCAR: NO CORRECTIVE ACTION RECOMMENDED
RT: Right
LT: Left
L: Long
W: Wide
H: High
D: Deep
in.: Inches
ft.: Feet
LF: Linear Feet
SF: Square Feet
NE: Northeast
NW: Northwest
SE: Southeast
SW: Southwest

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM

REPORT ID: INSP005 — **Inspection/CIDR Report with PDF attachment(s)**

Structure ID: 874294 — **CIDR** — **DATE PRINTED: 6/25/2021**

Structure Notes

BRIDGE OWNER: MIAMI-DADE COUNTY

Bridge inventoried from south to north. (Entrance on North end, boat ramp on South end).

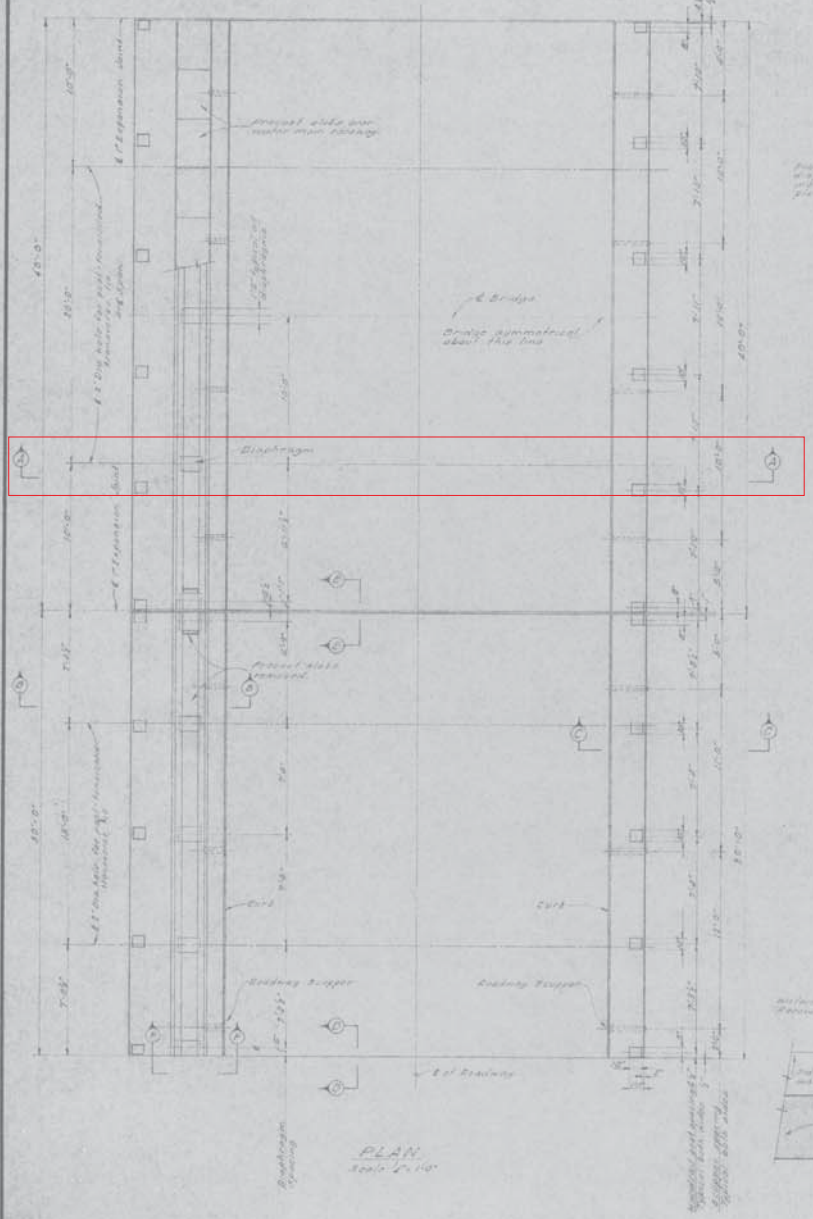
P/S Slab Units on R/Conc Caps and Abutments over P/Conc Columns. (3 spans)

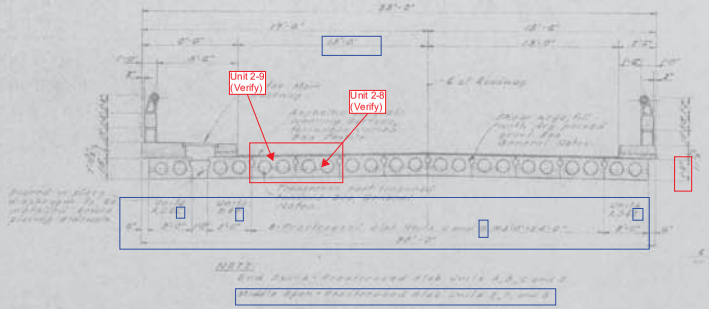
TRAFFIC RESTRICTIONS:
Based on the current load rating analysis dated 1/13/2020, the bridge is posted for the SU, C and ST5 type vehicles as follows: SU = 11 tons, C = 16 tons, ST5 = 18 tons. Refer to posting signs Photos 19 and 20.

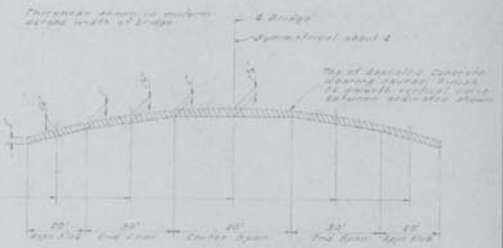
REVIEWED BY:

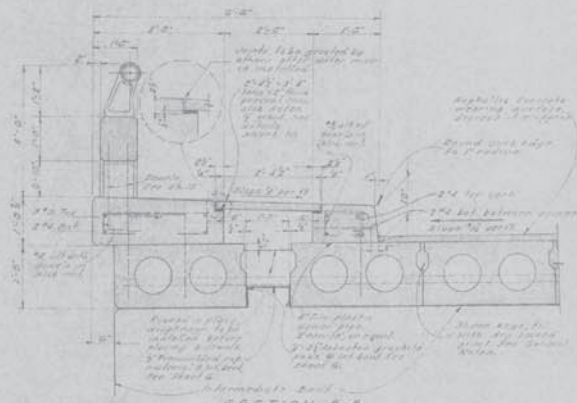
Schedule Notes

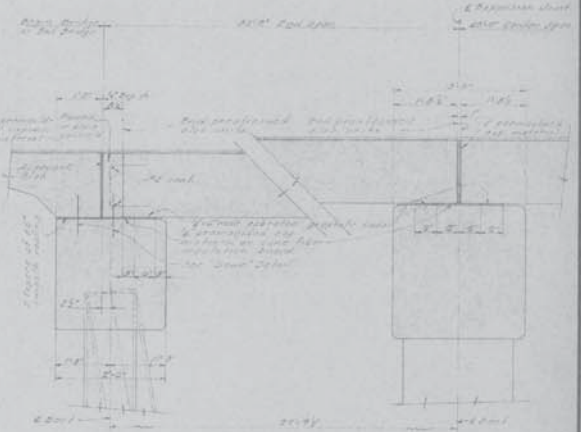
APPENDIX G – STRUCTURAL TECHNOLOGIES, LLC., PRELIMINARY BRIDGE REPAIR RECOMMENDATIONS

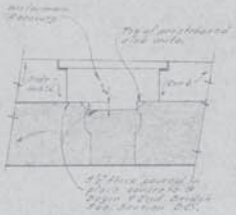


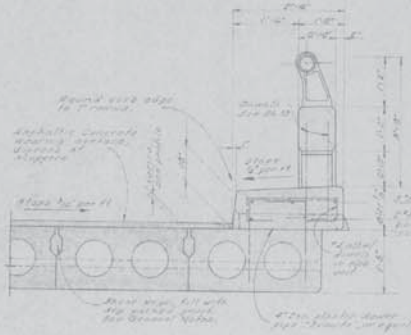












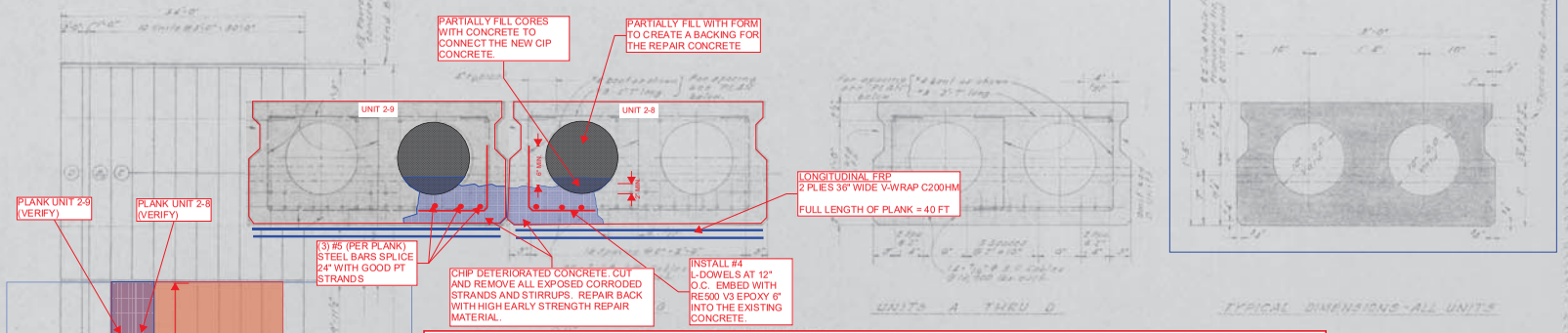
Date	Mark	By	Description

REVISIONS

HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Design: C.L.R. W.L.H.	Drawn: D.F.C.	Checked: C.L.R. W.L.H.	No. 7
Approved:	Date: JUNE 1961	Project No. 61-01	
Scale: As Shown	SUPERSTRUCTURE		of 17 Sheets



2021-10-01 MATHESON HAMMOCK ROAD OVER MH CANAL

PROPOSED REPAIR/STRENGTHENING

1. (2) PLANKS - UNIT 2-8 AND UNIT 2-9 AT SECOND SPAN.

2. REMOVE ALL DELAMINATED/SPALLED CONCRETE DOWN TO SOUND CONCRETE. THE EXTENT/LENGTH OF REPAIR WILL BE DEPENDENT ON THE DAMAGE/COROSSION IN THE STRANDS (REFER TO ITEM 4).

3. CUT AND REMOVE SIGNIFICANTLY CORRODED STEEL. EXPOSE AT A MIN. 3 FT OF SOUND PRESTRESSING STRANDS ON BOTH ENDS OF THE REPAIR AREA. NOTE THERE ARE UP TO (7) PT STRANDS AFFECTED BY DAMAGED/REPAIR WHICH NEEDS TO BE EXPOSED.

4. APPLY CORROSION INHIBITORS TO ALL EXPOSED STEEL TO PREVENT FUTURE CORROSION.

5. INSTALL NEW LONGITUDINAL STEEL AND L-DOWELS, AS SHOWN. SPLICE LONGITUDINAL STEEL WITH THE PT STRANDS 30".

6. PARTIALLY FILL THE CORES WITH FOAM MATERIAL AS SHOWN TO CREATE A BACKING FOR THE REPAIR CONCRETE.

7. FORM AND PUMP HIGH EARLY STRENGTH CONCRETE REPAIR MATERIAL WITH MIN. F'C-6000 PSI.

8. INSTALLV-WRAP FRP REINFORCEMENT AS SHOWN.

9. APPLY 2 COATS OF TSTRATA TC TO BOTTOM OF THE TWO UNITS (CONCRTE AND FRP).

BRIDGE FRAMING PLAN

BRIDGE SLAB SCHEDULE

UNIT DESIG.	NO. UNITS	LENGTH	REMARKS
A	2	39'-6"	Exterior, with sidewalk dowels
B_1	1	39'-6"	Interior, with curb dowels
B_2	1	39'-6"	" " "
C	18	39'-6"	Interior
D	2	39'-6"	Exterior, with sidewalk dowels
E	2	39'-6"	" " "
F	1	39'-6"	Interior, with curb dowels
J	2	39'-6"	Interior

NOTE: Omit three key on outside face of all exterior slabs.

PLAN - PRESTRESSED UNITS

ELEVATION - PRESTRESSED UNITS

HART-REYNOLDS & ASSOCIATES, INC.
CONSULTING ENGINEERS
CORAL GABLES, FLORIDA

MATHESON HAMMOCK PARK
DADE COUNTY, FLORIDA
BRIDGE AND APPROACH ROAD

Designed: C.L.R. R.L.H. | Drawn: D.F.C. | Checked: C.L.R. R.L.H.
Approved: | Date: JUNE 1961 | Project No. 61-01
Scale: As Shown | PRESTRESSED SLAB UNITS | No. 8 of 12 Sheets