Summary Report

Polk Parkway (SR 570) Painting of Bridges 160257, 160258, and 164507
Financial Project No. 431123-1-52-01
Contract E8N37

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Bridge Typical Section and Lighting Plans:
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Project Scope of Work

Polk Parkway (SR 570) Bridge Painting at MP 6.664 and at MP 16.360.
The Scope of Work consisted of painting bridges 164507 (CR 542 over EB & WB Polk Parkway), 160257 (WB Polk Parkway over SR 37 Florida Ave.), and 160258 (EB Polk Parkway over SR 37 Florida Ave). The Scope also included replacement of the under deck lighting at structures 160257 & 160258.

Contract Time

Original Contract Time:	255 days
Time Extensions for Weather Impacts:	7 days
Time Extensions for Holidays and Special Events:	6 days
Other Time Extensions:	0 days
Total Time Extensions:	13 days
Total Allowable Contract Time:	268 days

Project completed on Day 267 of 268 Allowable Days.

Time Analysis: 99.6% of original contract time.

Contract Amount

Original Contract Amount: $383,488.00

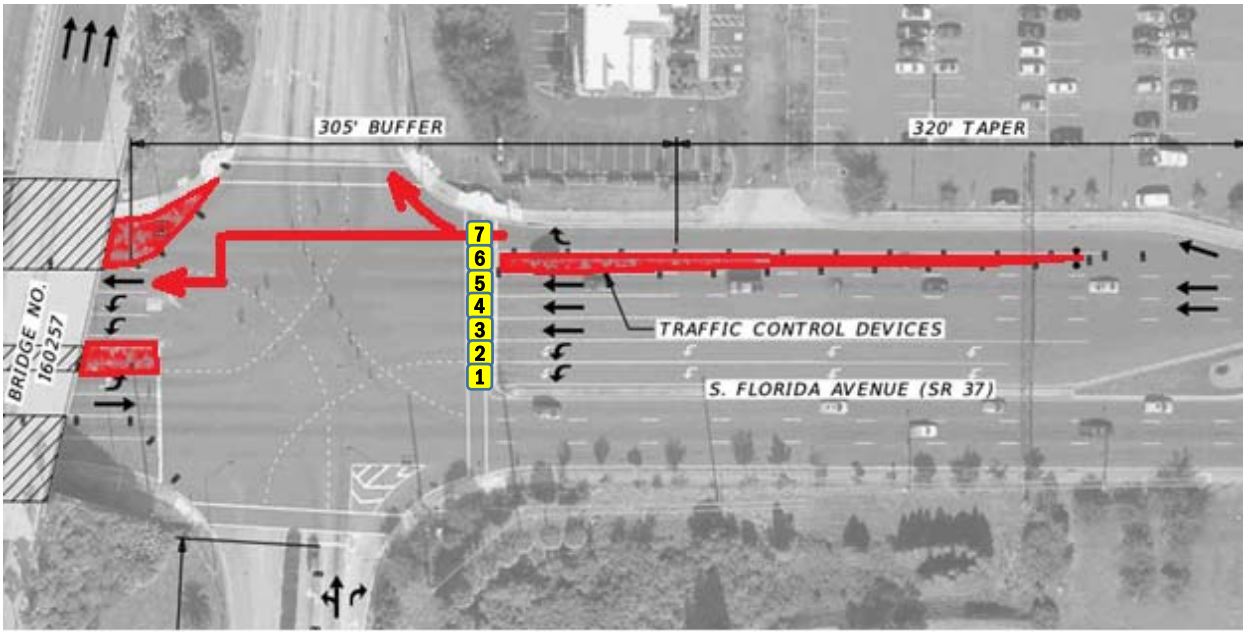
- There were no Supplemental Agreements on this project.
- There was one $0.00 Work Order.
- There was one $1,719.00 Work Order (Class V application at K Ville)
- There was one -$2,214.98 Work Order (Lump Sum deduction: Structural design for lighting)
- Original Contract Amount remained unchanged.

Total Amount Paid to Contractor: $ 358,051.68, 6.63% under Original Contract Amount

Lessons Learned

1) MOT/Traffic Control Plan – Lane Closure Conflict # 1 – Phase 1, SB South Florida

Issue Summary
During TCP Phase 1, traffic traveling southbound on Florida Avenue in Lane 7 (image below) had the option to turn right to go eastbound on North Parkway Frontage Road or continue straight below the bridge. The MOT plans appeared to assume Lane 7 was a right-turn only lane. No signage established Lane 7 as a 'Right Turn Only' movement. If this plan was implemented, SB traffic in Lane 7 would enter the work zone.

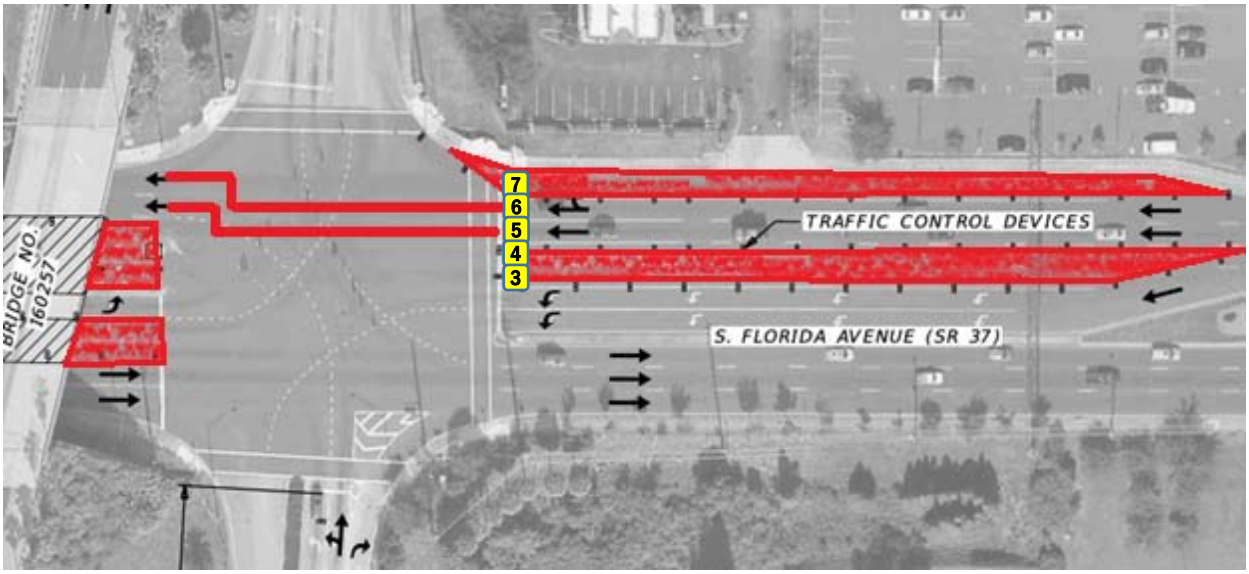


Resolution
The CEI staff directed the Contractor to close Lane 7 along with the specified Lane 6 closure. Drivers turning right onto North Parkway Frontage Road did so from Lane 5. CEI contacted the EOR the next day to inform her of this issue and confirmed the acceptability of the change.

Lessons Learned / Recommendations
We recommend MOT plans & logic are field verified prior to final document distribution.

2) <u>MOT/Traffic Control Plan - Lane Closure Conflict # 2 – Phase 2, SB South Florida</u>

Issue Summary
During TCP Phase 2, the MOT plan showed Lane Nos. 6 and 5 as open thru-lanes with the Lane 7 and Lane Nos. 3 and 4 closed. However, the open thru-lane below the bridge did not line up and the driver in Lane 5 would have been forced to quickly change lanes (to Lane 6) to avoid the work zone. This lane change could have resulted in the traveler in Lane 6 being cut off, potentially causing an accident.



Resolution
The CEI staff directed the Contractor to close Lane 5 and open Lane 7, which allowed the thru-lanes prior to the intersection/ bridge to line up with the thru-lanes below the bridge. CEI contacted the EOR the next day to inform her of this issue and confirmed the acceptability of the change.

Lessons Learned / Recommendations
We recommend MOT plans & logic are field verified prior to final document distribution.

3) <u>Pendant Lighting Design</u>

Issue Summary
Bridge painting Contractors are typically not versed in lighting work. Within this lump sum contract's scope, the Contractor was required to provide several items for the underdeck lighting: Engineering drawings for structural supports, calculations, photometrics, and drawings (plan note shown below).

2. PRIOR TO ANY EQUIPMENT ORDER, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL EQUIPMENT SPECIFICATION OR DESIGN DATA FOR ALL MATERIAL PROPOSED FOR THE PROJECT. THESE MUST SPECIFICALLY INCLUDE:
A) LUMINAIRE MANUFACTURER
B) STRUCTURAL SUPPORT SYSTEM FOR UNDERDECK LUMINAIRES: CALCULATIONS AND SHOP DRAWINGS SIGNED AND SEALED BY A LICENSED FLORIDA PROFESSIONAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
C) ELECTRICAL EQUIPMENT
D) LUMINAIRE PHOTOMETRICS

As the lighting portion of the project approached, the Contractor realized he did not fully understand his contractual requirements. Having limited experience with lighting design, the Contractor was unable to locate an engineer to provide the calculations and shop drawings. All of the Engineers approached by the Contractor declined to perform this lighting design, given this project's small lighting scope concurrently with the resurgence of work statewide.

Resolution
The FTE Construction PM coordinated with FTE Production, to transfer the lighting design responsibilities from the Contractor to the EOR. A subsequent plan revision was provided by the EOR, which included luminaire attachment details and notes.

The CEI executed Work Order 3, deducting the EOR's post design costs from the Contractors Estimate No. 4 payment (-$2,214.98).

Lessons Learned / Recommendations
We recommend excluding specialized work such as pendant lighting replacement, when bridge painting is the primary scope of work. A separate lighting contract could be let prior to the painting work.

A secondary recommendation is to include the lighting design with the necessary calculations and drawings during the design/production stage of the plans, especially when the project's scope of work will involve a specialty Contractor (i.e. bridge painter) as the prime Contractor. A pre-bid meeting could be held to review this aspect of the contract documents.

4) Concrete Cleaning Resulted in Removal of Existing Class V Coating

Issue Summary
New Class V coating was excluded from the original contract, but was needed once the existing coating was damaged by pressure washing.

The scope of work called for the concrete surfaces to be cleaned in accordance with FDOT Standard Specification Section 400-19, which includes removal of loose coatings (see below):

400-19 Cleaning and Coating Concrete Surfaces of Existing Structures.

For the purposes of this article, an existing structure is one that was in service prior to the start of the project to which this specification applies. For existing structures, clean concrete surfaces that are designated in the Contract Documents as receiving Class 5 applied finish coating by pressure washing prior to the application of coating. Use pressure washing equipment producing a minimum working pressure of 2,500 psi when measured at or near the nozzle. Do not damage or gouge uncoated concrete surfaces or previously coated concrete surfaces during cleaning operations. Remove all previously applied coating that is no longer adhering to the concrete or that is peeling, flaking or delaminating. Ensure that after the pressure wash cleaning and the removal of non-adherent coating, that the cleaned surfaces are free of efflorescence, grime, mold, mildew, oil or any other contaminants that might prevent proper adhesion of the new coating. After cleaning has been successfully completed, apply Class 5 Applied Finish Coating in accordance with 400-15.2.6 or as otherwise specified in the Plans.

The existing Class V on the coping at the K-Ville Bridge (Bridge No. 164507) was poorly adhered in multiple spots, and the resulting cleaned surface had a very inconsistent or aged appearance. See both photos below, for the cleaned surface appearance.

Resolution
The TPK Construction and Maintenance Engineers reviewed the newly cleaned surfaces, and agreed to improve this appearance by applying new Class V finish. The CEI executed Work Order 2, which included application of Class V to the coping on both directions.

Lessons Learned / Recommendations
We recommend including new Class V application wherever pressure washing of existing Class V is performed, or at least at a minimum when adhesion of the existing Class V is identified to be inconsistent during the pre-design condition assessment. This new class V work can be deleted whenever the pressure washing does not damage the existing Class V.
We believe this type of adhesion issue would be more prevalent on concrete which does not receive a rubbed/texturized finish (i.e. pre-cast MSE wall coping).

5) Protection of elastomeric bearing pads

Issue Summary
During the Final Inspection, the Structures Maintenance personnel noted that the elastomeric bearing pads had been painted along with the girders, and the paint on the pads was exhibiting cracking due to the expansion and contraction of the bridge.

Existing painted condition

New painted condition

Resolution
The Structures Maintenance Office was informed that the bearing pads had been painted in a previous painting cycle.
To maintain consistency in color with the newly painted bridge elements, the Contractor repainted the bearing pads during this painting contract. This approach ensured all exposed steel surfaces were thoroughly painted. Taping the bearing pads in small cavities could potentially overlap the steel, preventing a complete coverage.

Lessons Learned / Recommendations
To prevent an initial paint application, emphasize the protection of elastomeric bearing pads on painting projects for new bridges.

6) Conflicting structures with new underdeck lights

Issue Summary:
The plans called for new pendant hung lights to be installed 2’ from edge of travel lane (EOTL). This location conflicted with existing cross braces.

Resolution
The EOR allowed the light to be moved to 5'-0" from face of curb. The decision to install over the sidewalk was based on ease of future access and visibility for pedestrian traffic. The change in this offset dimension is reflected in the Final "As-built" plans as field revision 2.

Lessons Learned / Recommendations
Field verify potential conflicts for placement of new lights.

Appendix A - Summary of Contract Changes

Work Orders

Work Order 1 - Increased Acquisition Time/Flexible start time from 100 to 133 Calendar days	$0.00
Work Order 2 – Application of Class V to the concrete coping on Bridge No. 166507 (K-Ville over SR 570) on both the NB and SB sides.	$1719.00
Work Order 3 – Reimbursement for design calculations and plans for the structural support system for underdeck luminaires at Bridge Nos. 160257 & 160258.	($2214.98)
Overall change to Original Contract Amount:	($ 495.98)

Appendix B - Summary of RFI's

RFI 01 – Lighting
Submitted 02/09/2015
The plans do not designate and/or show the attachment process of the light fixtures and strapping of conduits. The ceiling of the bridge is a metal pan filled with concrete; I need to know what type of screws will be used for the attachment process.

The plans show that the installation and removal shall be done in two working days/nights. The time allocated for such an installation is not enough. Is there additional time in which we may be granted for the installation process?

Senior Project Engineer's Recommendation to EOR:
Per General Note 2, b, Sheet 27 of the Contract Plans, The lighting plan sheets require shop drawings for the luminaires, miscellaneous equipment and support/mounting hardware. **Recommendation**: Contractor needs to retain lighting sub-contractor and/or specialty engineer to produce required shop drawings for review and approval.

Removal of existing underdeck lighting and Installation of new underdeck lighting is included in original scope of work for the contract. Plans do not give direction nor limit removal and installation time to two working days/nights. **Recommendation**: Contractors accepted baseline schedule indicates two days for this activity; adjustment to the activity duration would need to be made and reflected in a CPM revision.

EOR Response
The lighting plan sheets require shop drawings for the luminaires, miscellaneous equipment and support/mounting hardware. The plans do not depict the installation process for the fixtures and the conduit strapping as this is a means and methods. On similar project wedge anchors/expansion anchors have been used for installation into the concrete deck. Shop drawings should be submitted for this process for the EOR's review.

RFI 01 closed on 02/24/2015

RFI 02 – Lighting (DUPLICATE)
Submitted 02/09/2015
The plans do not designate and/or show the attachment process of the light fixtures and strapping of conduits. The ceiling of the bridge is a metal pan filled with concrete; I need to know what type of screws will be used for the attachment process.

The plans show that the installation and removal shall be done in two working days/nights. The time allocated for such an installation is not enough. Is there additional time in which we may be granted for the installation process?

Senior Project Engineer's Response:
Duplicate of RFI# 01

RFI 02 Closed on 09/03/2015

RFI 03 – Lighting- Placement of pendant lighting
Submitted 09/01/2015

Lighting Plan Sheet #28, NOTES: #1, and Lighting Detail Sheet #29, Section B-B Longitudinal Section indicates that the Underdeck Luminaire UD13, UD15, UD16 & UD18 shall be positioned off of South Florida Avenue, and Setback 2'-0" from the Edge of the Traffic Lane (EOTL), directly over the existing curb. Currently there is a bridge support obstructing this location. Please provide a revised Luminaire mounting location, which will allow adequate clearance for the Longitudinal and Transverse Bracing.

EOR's Response:
The first 1 of 2 redundant supports shall be aligned parallel to the cross frame support, and shall have a minimum offset of 3' from the existing cross frame for all underdeck fixtures. The second redundant support shall be perpendicular to the existing cross frame and shall extend away from any nearby cross frame members. We shall be extending the setback from 2'-0" from edge of travel to 5'-0" from face of curb UD13, UD15, UD16, & UD18. (Luminaire will be over the sidewalk). The change in this offset dimension is reflected in the Final "As-built" plans as field revision 2.

RFI 03 Closed on 09/16/2015

RFI 04 – Lighting- Placement of pendant lighting (DUPLICATE)
Submitted 09/01/2015

Lighting Plan Sheet #28, NOTES: #1, and Lighting Detail Sheet #29, Section B-B Longitudinal Section indicates that the Underdeck Luminaire UD13, UD15, UD16 & UD18 shall be positioned off of South Florida Avenue, and Setback 2'-0" from the Edge of the Traffic Lane (EOTL), directly over the existing

curb. Currently there is a bridge support obstructing this location. Please provide a revised Luminaire mounting location, which will allow adequate clearance for the Longitudinal and Transverse Bracing.

Senior Project Engineer's Recommendation to EOR:
Duplicate RFI# 03

RFI 03 Closed on 09/03/2

Appendix C - Summary of Shop Drawings

No.	Spec Section / Pay Item	Division	Date Submitted	Title	Resolution Date	Days Elapsed
1	560 Coating New Structural Steel	RDWY DIV II Incidental Construction	01-12-15	561 Containment Plan and Calculations (Signed & Sealed)	01-22-15	10
1.1	560 Coating New Structural Steel	RDWY DIV II Incidental Construction	01-22-15	561 Containment Plan and Calculations (Signed & Sealed)	02-09-15	18
1.2	560 Coating New Structural Steel	RDWY DIV II Incidental Construction	02-10-15	561 Containment Plan and Calculations (Signed & Sealed)	02-16-15	6
1.3	560 Coating New Structural Steel	RDWY DIV II Incidental Construction	03-30-15	561 Containment Plan (Signed & Sealed)	03-30-15	0
1.3	VOID	VOID	03-27-15	VOID 561 Containment Plan and Calculations VOID	03-30-15	3
2	560 Coating New Structural Steel	RDWY DIV II Incidental Construction	01-13-15	560 Bridge Paint Color Samples	02-03-15	21
3	560 Coating New Structural Steel	RDWY II - Incidental Construction	01-13-15	560 Environmental Health and Safety Plan (Includes Pollution and Waste Management Plan)	01-23-15	10
3.1	560 Coating New Structural Steel	RDWY II - Incidental Construction	02-02-15	560 Environmental Health and Safety Plan (Includes Pollution and Waste Management Plan)	02-23-15	10
4	560 Coating New Structural Steel	RDWY DIV II - Incidental Construction	01-13-15	560 Bridge Structural Coating System Product Data	01-29-15	16

4.1	560 Coating New Structural Steel	RDWY DIV II - Incidental Construction	01-30-15	560 Bridge Structural Coating System Product Data	02-20-15	21
5	561 Coating Existing Structural Steel	RDWY DIV II - Incidental Construction	01-13-15	561 Quality Control Plan	01-23-15	10
5.1	561 Coating Existing Structural Steel	RDWY DIV II - Incidental Construction	02-18-15	561 Quality Control Plan	02-20-15	2
5.2	VOID	VOID	02-25-15	VOID 561 Quality Control Plan VOID	02-27-15	2
6	715 Highway Lighting System	RDWY DIV II - Signing, Pavement Marking and Lighting	02-11-15	715 Under Deck Luminaires Product Data	02-24-15	13
7	715 Highway Lighting System	RDWY DIV II - Signing, Pavement Marking and Lighting	08-03-15	715 Under Deck Luminaires Product Data	08-07-15	4
7	VOID	VOID	08-12-15	715 Under Deck Luminaires Product Data	08-12-15	0
7.1	715 Highway Lighting System	RDWY DIV II - Signing, Pavement Marking and Lighting	08-12-15	715 Under Deck Luminaires Product Data	08-14-15	2