Bridge Assessment Report

Submitted to:
Monroe County
Engineering Department
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Executive Summary

Monroe County (the County) owns and maintains 27 bridges from North Key Largo to Key West. Bridge type varies from location to location, but the primary elements of each bridge are reinforced or prestressed concrete. Due to the extremely aggressive environment of the Florida Keys, most of these bridges are experiencing ongoing deterioration. Some recent repair projects have helped to maintain and preserve the County owned inventory and there will likely be several additional repair or replacement projects over the years as the bridge inventory continues to age.

Kisinger Campo and Associates Corp. (KCA) has been tasked with creating this Bridge Assessment Report for the County. The purpose of this Bridge Assessment Report is to assist County Engineers with budgeting, planning and prioritizing the needs of future bridge repair projects. In addition, we will advise the County on the preferred repair alternatives that will achieve the maximum potential of the bridge preservation and maintenance work program. Finally, we will group smaller and nearby repairs into logical bridge project sets and estimate the time that a bridge should remain in service before a replacement structure should be considered.

After first gathering all available plans, inspection reports and other documentation a field inspection was conducted at each bridge site. Cost estimates were then created for a bridge repair alternate, a bridge replacement alternate, and when feasible, a bridge widening alternate. A Bridge Matrix was created that includes all pertinent information for each bridge and is a valuable tool in assessing and planning the future work program. An individual assessment and recommendation was created for each bridge and finally the recommended repairs were prioritized and grouped into separate projects when applicable. All of the electronic files that have been gathered or created have been filed under their corresponding bridge number and included on the CD attached to the front cover of this report.
# Table of Contents

Executive Summary ........................................................................................................................................ 1  
1.0 Introduction ........................................................................................................................................... 4  
2.0 Bridge Location Maps ............................................................................................................................ 5  
3.0 Bridge Matrix ......................................................................................................................................... 10  
4.0 Bridge Recommendations ....................................................................................................................... 12  
4.1 Garrison Bight (Bridge # 904025) ........................................................................................................ 12  
4.2 Geiger Key (Bridge # 904110) ................................................................................................................ 12  
4.3 Similar Sound (Bridge # 904120) ........................................................................................................... 13  
4.4 Bay Point (Bridge # 904140) .................................................................................................................. 13  
4.5 Shore Drive (Bridge # 904152) ............................................................................................................... 14  
4.6 Sugarloaf Boulevard (Bridge # 904153) ................................................................................................. 14  
4.7 Sugarloaf Creek (Sammy’s Creek) (Bridge # 904155) ......................................................................... 15  
4.8 Old SR 4A (CR 939) (Bridge # 904160) ................................................................................................. 15  
4.9 Caribbean Drive (Bridge # 904250) ...................................................................................................... 16  
4.10 Watson Boulevard (Bridge # 904305) ................................................................................................. 16  
4.11 Fern Avenue (Bridge # 904307) ......................................................................................................... 17  
4.12 SR 940 – Leg A (Watson Boulevard) (Bridge # 904310) .................................................................... 17  
4.13 No Name Key Bridge (Bridge # 904320) ............................................................................................ 18  
4.14 Tom’s Harbor Channel (Bridge # 904600) ......................................................................................... 18  
4.15 Truman Bridge (Bridge # 904602) ...................................................................................................... 19  
4.16 Bimini Drive (Bridge # 904603) .......................................................................................................... 19  
4.17 Harbor Drive (Bridge # 904604) ........................................................................................................... 20  
4.18 Seaview Drive (Bridge # 904606) ....................................................................................................... 21  
4.19 Valois Boulevard (Bridge # 904908) ................................................................................................... 21
Appendices

Appendix A – Duck Key Bridge Replacement Presentation

Appendix B – Cost Estimates
1.0 Introduction
1.0 Introduction

Monroe County owns and maintains 27 bridges from north Key Largo to Key West. All of the bridges in the current Monroe County inventory were built in 1955 or thereafter. The majority of the inventory consists of reinforced or prestressed concrete flat slab bridges. There are also six AASHTO Beam Bridges, one high level bridge with a fracture critical steel main span (at Card Sound), and one aluminum truss pedestrian bridge (at Ocean Bay Drive). Many of the bridges are short single span bridges over small canals that connect residential areas. The bridges with multiple spans are all founded on pile bents with prestressed concrete piles, except for the high spans of the Card Sound Bridge which are founded on multi-column piers. Typical end bents are founded on prestressed concrete piles or at some locations founded directly on the natural rock that the residential canals were cut out of.

The extremely aggressive environment of the Florida Keys has contributed to the deterioration of the County bridges over the years. All county bridges span a salt water body and are susceptible to salt spray and splashing due to storm and wave action. In addition, fisherman often contribute to the saltwater exposure by spilling water onto the bridge decks. Some bridges are close enough to the water line that they are likely overtopped by saltwater in a storm event. This constant salt water exposure allows chlorides to permeate through the concrete elements and into the reinforcing steel, causing the steel reinforcing to corrode and expand, eventually spalling the concrete and accelerating additional deterioration. Paint systems on steel elements will also eventually fail, resulting in steel element corrosion and section loss.

A well-executed maintenance plan can help to slow the inevitable bridge deterioration, preserve the bridge inventory, and prolong the remaining service life of each bridge. However, the expected service life of any bridge in this extremely aggressive environment will most likely be limited to 75 years with careful maintenance. Repairs will become more frequent and repair costs will become larger as the structure ages. At some point, the costs associated with the increasingly frequent repairs will escalate and bridge replacement becomes the preferred alternative.

The purpose of this Bridge Assessment Report is to assist County Engineers with budgeting, planning and prioritizing the needed bridge repair projects. In addition, Kisinger Campo and Associates Corp. (KCA) will advise the county on the preferred repair alternatives that will achieve the maximum potential of the bridge preservation and maintenance work program. These well planned and timely repair projects can also help avoid more costly, quick response, emergency repair projects in the future. The final goal of this report is to estimate the time that a bridge can remain in service before a replacement structure should be considered.
2.0 Bridge Location Maps
2.0 Bridge Location Maps

The following sheets show the locations of all of the Monroe County Owned Bridges. They are labeled by bridge name and bridge number on the enlarged maps for the Lower Keys, Middle Keys and Upper Keys. For specific information about each bridge, see Section 3.0 Bridge Matrix.
3.0 Bridge Matrix
### 3.0 Bridge Matrix

A Bridge Matrix was created that includes all of the pertinent information for each bridge. It is a valuable tool in assessing and planning the future bridge work program as you can quickly see all of the important information for each bridge and compare it to the other bridges in the inventory. The following is a brief explanation of some of the information:

- **NBI Rating** – National Bridge Inventory (NBI) structural evaluation of each component. NBI Ratings are taken from the Bridge Inspection Reports for each bridge component; deck, superstructure, substructure and channel. Scale of 0-9 (9 = Superior, 0 = Bridge Closed).
- **NBI Average Ranking** – Average of the individual NBI ratings of each bridge component
- **Operating Rating** – The maximum permissible live load that can be placed on the bridge. Allowing unlimited usage at the Operating Rating level will reduce the life of the bridge.
- **Posting** – Determines if bridge posting is required for load capacity less than that of the legal loads. (5 = No Posting Required)
- **Design Load** – Original load that the bridge was designed for.
- **Sufficiency Rating** – Calculated based on 55% structural evaluation, 30% obsolescence of its design and 15% on the importance to the public. A score of 80 or less is required for federal repair funding and a score of 50 or less is required for federal replacement funding.
- **Health Index** – Is the ratio of the current condition of each element to the perfect condition expressed as a score from 0-100.
- **Structurally Deficient** – A bridge is classified as structurally deficient if the deck, superstructure or substructure is rated in "poor" condition (0 to 4 on the NBI rating scale). A bridge can also be classified as structurally deficient if its load carrying capacity is significantly below current design standards or if a waterway below frequently overtops the bridge during floods.
- **Functionally Obsolete** – Deck Geometry rated 3 or less (bridge is too narrow) or under clearance of less than 15 feet.
BRIDGE MATRIX
MONROE COUNTY
NBI
Average
Ranking

Bridge No.

Structure Location

Key

Year
Built
(27)

Structure
Length
(49)

Deck
Width
(52)

NBI
Deck
(58)

NBI
Super.
(59)

NBI
Sub.
(60)

6.0

904025

GARRISON BIGHT

KEY WEST

1965

177 ft

41 ft

6

7

5

8

6.3

904110

GEIGER KEY

GEIGER KEY

1955

125 ft

32 ft

6

7

6

5.0

904120

SIMILAR SOUND

BIG COPPIT KEY

1957

51 ft

34 ft

5

5

8.0

904140

BAY POINT

SADDLEBUNCH KEY

1975

22 ft

21 ft

9

8.0

904152

SHORE DRIVE

SUGARLOAF KEY

1991

35 ft

30 ft

5.3

904153

SUGARLOAF BOULEVARD

SUGARLOAF KEY

1961

123 ft

6.7

904155

SUGARLOAF CREEK

SUGARLOAF KEY

1968

5.3

904160

OLD S.R. 4A (CR 939)

SUGARLOAF KEY

6.5

904250

CARIBBEAN DRIVE

7.0

904305

6.3

NBI
Operating
Channel
Rating
(61)
(64)

8/29/2014

Posting
(70)

Design
Load
(31)

Sufficiency
Rating

Health
Index

Functionally
Obsolete

Structurally
Deficient

Repair Cost
Estimate

Replacement
Cost Estimate

Structure
Replacement
Cost per SF

Widening Cost
Estimate

Main Span
Material
(43A)

52.9 tons

5

HS 20

61.4

86.19

YES

NO

$1,126,841

$3,175,460

$287

N/A

5

7

55.4 tons

5

HS 20

87.1

71.24

NO

NO

$482,279

$1,475,478

$261

N/A

1

5

7

53.2 tons

5

HS 20

43.8

62.95

YES

NO

$452,516

$829,183

$287

N/A

1

9

6

8

51.1 tons

5

HL 93

68.9

94.77

YES

NO

$41,760

$360,309

$261

N/A

1

Some spall and crack repair; missing anchor cable lock nuts on guardrails

8

8

8

8

61.8 tons

5

HS 20

89.8

99.94

NO

NO

$7,327

$629,547

$261

N/A

5

Good Condition - Seal asphalt cracks, Paint steel base plates

26 ft

5

6

5

7

58 tons

5

HS 20

62.1

76.93

NO

NO

$819,478

$1,386,823

$290

N/A

5

200 ft

29 ft

7

7

6

7

52.8 tons

5

HS 20

71.9

85.76

NO

NO

$436,800

$2,177,760

$261

N/A

5

1968

82 ft

30 ft

5

5

6

6

56.9 tons

5

HS 20

84.3

55.12

NO

NO

$187,621

$1,069,882

$261

N/A

5

SUMMERLAND KEY

1960

24 ft

27 ft

N/A

6

7

6

58.5 tons

5

HS 20

65.7

70.76

NO

NO

$23,668

$527,209

$261

N/A

1

WATSON BOULEVARD

BIG PINE KEY

1960

26 ft

27 ft

7

7

7

7

57.2 tons

5

HS 20

77.7

100.00

YES

NO

$64,556

$545,048

$261

N/A

5

904307

FERN AVENUE

BIG PINE KEY

1960

26 ft

28 ft

6

6

7

8

59.2 tons

5

HS 20

77.8

98.39

YES

NO

$49,967

$545,987

$261

N/A

5

8.3

904310

S.R. 940 - LEG A (WATSON
BOULEVARD)

BIG PINE KEY

1965

28 ft

32 ft

9

9

7

7

53.6 tons

5

HL 93

71.3

98.75

NO

NO

$6,724

$581,664

$261

N/A

5

4.2

904320

NO NAME KEY*

NO NAME KEY

1967

2231 ft

34 ft

5

6

3

7

35.6 tons

5

HS 20

6.0

51.99

NO

YES

$2,997,676

$20,400,000

$267

$10,600,000.00

5

7.7

904600

TOM'S HARBOR CHANNEL

DUCK KEY

1967

247 ft

34 ft

8

8

7

7

48.2 tons

5

HL 93

63.0

94.00

NO

NO

$24,731

$2,863,229

$287

N/A

5

7.0

904602

TRUMAN BRIDGE

DUCK KEY

1955

77 ft

26 ft

N/A

7

7

7

43.5 tons

5

HS 20

63.4

75.49

NO

NO

$159,439

$1,304,881

$316

$528,627.00

1

5.8

904603

BIMINI DRIVE

DUCK KEY

1955

43 ft

26 ft

6

6

7

5

58 tons

5

HS 20

71.7

77.98

NO

NO

$136,739

$904,624

$383

$391,447.00

5

5.5

904604

HARBOR DRIVE

DUCK KEY

1955

56 ft

27 ft

7

5

6

5

54.6 tons

5

HS 20

60.3

77.52

NO

NO

$438,791

$1,012,932

$315

$429,920.00

5

5.8

904606

SEAVIEW DRIVE

DUCK KEY

1955

56 ft

26 ft

7

6

6

5

54.6 tons

5

HS 20

72.6

78.62

NO

NO

$104,213

$1,012,932

$315

$429,920.00

5

6.0

904908

VALOIS BOULEVARD

KEY LARGO

1995

52 ft

31 ft

6

6

6

8

39.2 tons

5

HS 20

66.6

94.14

NO

NO

$129,660

$791,034

$261

N/A

5

Spall repair, expansion joints, seal longitudinal asphalt cracks

6.3

904910

BAHAMA ROAD

KEY LARGO

1962

24 ft

20 ft

7

5

7

8

56.5 tons

5

HS 20

80.8

96.23

NO

NO

$76,479

$525,331

$261

N/A

1

Significant spall repiar on concrete beams, methacrylate sealer for deck.

7.0

904980

STEAM BOAT CREEK

KEY LARGO

1968

316 ft

38 ft

7

7

7

7

57.5 tons

5

HS 20

70.7

96.32

NO

NO

$107,613

$3,438,279

$261

N/A

5

6.3

904982

TUBBY'S CREEK

KEY LARGO

1969

101 ft

38 ft

6

6

7

8

48.9 tons

5

H 20

69.5

94.60

NO

NO

$121,001

$1,311,487

$261

N/A

5

7.3

904984

MOSQUITO CREEK

KEY LARGO

1969

101 ft

38 ft

7

7

8

8

48.9 tons

5

H 20

69.5

99.05

NO

NO

$118,037

$1,300,950

$261

N/A

5

6.7

904986

SAUNDER'S CREEK

KEY LARGO

1969

101 ft

36 ft

7

7

6

7

63.7 tons

5

HS 20

93.0

96.46

NO

NO

$61,522

$1,249,208

$261

N/A

5

5.7

904990

CARD SOUND BRIDGE *

KEY LARGO

1969

2775 ft

38-33ft

6

6

5

7

66.6 tons

5

HS 20

56.6

78.87

NO

NO

$4,876,999

$32,600,000

$240

$10,200,000.00

3&5

6.0

N/A

OCEAN BAY DRIVE

KEY LARGO

N/A

18 ft

30 ft

6

6

6

8

N/A

N/A

N/A

N/A

N/A

N/A

N/A

$117,289

$468,998

$261

N/A

1

Not on NBI schedule; Significant spall repair on arch and railings.

N/A

PEDESTRIAN BRIDGE (OCEAN
BAY DRIVE)

KEY LARGO

N/A

63 ft

8 ft

9

9

8

8

N/A

N/A

N/A

N/A

N/A

N/A

N/A

$2,948

N/A

N/A

N/A

3

Not on NBI schedule; Aluminum truss pedestrian bridge in good condition,
add expansion joints and missing anchorage hardware

8.7

*Duck Key Widening Costs were extrapolated from The Truman Bridge Widening Report (Metric Engineering)
*No Name Key Bridge Costs from previous Design Development Report
*Card Sound Bridge Costs from previous Design Development Report

Posting:
5 - At/Above Legal Loads

Comments
Major spall and crack repair; missing and damaged timber in fender system;
sagging and disconnected conduits; steel corrosion on bearing plates and
lower fender hardware; navagational light lids loose; minor undermining;
four expansion joints
Finish superstructure replacement: major spall and crack repair; missing
object marker
Superstructure replacement; major spall and crack repair; three expansion
joints

Major spall and crack repair; erosion on slope; four expansion joints;
consider methacrylate monomer on deck
Major spall repair; crack repair; longitudinal asphalt cracks, abutment slope
settlement; abutment slope erosion, eight expansion joints
Major spall repair; crack repair; longitudinal asphalt cracks, abutment slope
erosion, four expansion joints
Minor spall and crack repair; underwater void; paint steel base plates
Some spall and crack repair, longitudinal asphalt cracks, two expansion
joints; minor undermining and erosion
Minor spall and crack repair; two expansion joints; two missing object
markers
Good Condition - New deck and railing; minor erosion at abutments
Bridge repair project underway - extensive deck repair, CP pile jackets,
substructure metalizing, spall/delamination repair
Minor undermining and scour; one joint replacement, minor spall and crack
repair in beam ends and diaphragms
Large void in retaining wall; undermining under each bent and abutment;
minor spall and crack repair; four expansion joints
Significant spall repair; underming both ends; replace one guardrail post; two
expansion joints; steel corrosion of reinforcing steel plates
Major delamination repair in retaining walls; two expansion joints; major
undermining; steel corrosion in reinforcing steel plates
Some spall repair; underming both ends; two expansion joints; steel corrosion
of reinforcing steel plates

Spall repair, crack repair and expansion joint rehab. Possible future pile
jacket job (not included in repair estimate).
Spall repair, concrete crack repair, longitudinal asphalt crack sealing and
expansion joint rehab.
Spall repair, concrete crack repair, longitudinal asphalt crack sealing and
expansion joint rehab.
Substructure spall repair, some superstructure spall repair and guard rail
replacement.
Repair project awaiting funding - extensive substructure repair, pile jackets,
substructure metalizing, spall repair, steel paint system

Main Span Material:
1 - Reinforced Concrete
3 - Steel
5 - Prestressed Concrete

Figure 1 - Bridge Matrix

11
G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\Excel\Bridge_Priority_8-1-2014.xlsx


4.0 Individual Bridge Recommendations
4.0 Bridge Recommendations

The following recommendations were made after a thorough review of the bridge inspection reports, available plans, other available reports/documentation and a site visit. Estimated repair quantities are based on current deficiencies and present day unit costs. A multiplier of 2.0 was used to increase spall repair deficiency sizes to allow for the additional quantity that may be realized during construction. In addition, historical bridge replacement unit costs were increased by 40% to account for the additional cost of construction in Monroe County. It is possible that the estimated repair and replacement costs could increase with time as deficiency quantities increase and unit costs change.

4.1 Garrison Bight (Bridge # 904025)

This bridge services Palm Avenue over Garrison Bight in Key West. It was constructed in 1965, has a Sufficiency Rating of 61.4 and a Health Index of 86.19. This AASHTO Beam Bridge is considered functionally obsolete as a result of the substandard barriers. The bridge is undergoing deterioration of the deck, railings, beams, bents and fender system. In addition, the approach roadway pavement is failing due to high truck and traffic volume.

The repair cost is estimated to be $1,126,841 and the replacement cost is estimated to be $3,175,460. It is estimated that a repair project would extend the service life of the bridge for 15-20 years. The recommended course of action is to start a repair project by 2017, complete a PD&E evaluation by the year 2027 with the goal of replacing the bridge by 2030.

4.2 Geiger Key (Bridge # 904110)

This bridge services Boca Chica Road (CR 941) over Geiger Key Cut in Geiger Key. It was constructed in 1955, has a Sufficiency Rating of 87.1 and a Health Index of 71.24. This reinforced beam bridge was partially re-decked in 2011. This project replaced the outside portions of the deck, the exterior beams and upgraded the barriers to crash tested F-Shape Barriers. In addition, typical spall repairs were completed on the other bridge elements. It is now developing new deficiencies in the beams and bents. In addition, the portion of the deck that was not replaced is rapidly delaminating along the interface with the recently cast concrete. A future repair project should include the replacement of the portions of the deck and beams that have not yet been replaced. This would eliminate the accelerated deterioration that is occurring in the deck as a result of the halo effect (increased corrosive activity adjacent to recent concrete repairs).
The repair cost is estimated to be $482,279 and the replacement cost is estimated to be $1,475,478. It is estimated that a repair project would extend the service life of the bridge for 10-15 years. The recommended course of action is to start a repair project by 2018 with the goal of replacing the bridge by 2025. However, it should be noted that this bridge only services three residences and was recently repaired. Therefore, the county may consider a reduced priority in the work program as long as careful monitoring of the ongoing deck deterioration is continued.

### 4.3 Similar Sound (Bridge # 904120)

This bridge services Boca Chica Road (CR 941) over Similar Sound Local Canal in Big Coppitt Key. It was constructed in 1957, has a Sufficiency Rating of 43.8 and a Health Index of 62.95. It currently exhibits extensive spalling and delamination in the deck, reinforced concrete beams and diaphragms. Additionally, there are many spalled/delaminated areas associated with the bents, piles and retaining walls. A repair project for this bridge has recently been let through the FDOT District 6 Maintenance Office. The repair project will consist of conventional spall repair of the damaged elements. Careful monitoring of this bridge should be continued after the repair project to evaluate any halo effect that may occur, as it is currently occurring on the superstructure of the nearby Geiger Key Bridge that recently underwent similar repairs.

The repair project that is scheduled to begin in 2015 is estimated to be $650,000. A superstructure replacement is estimated to be $452,516 and the bridge replacement cost is estimated to be $829,183. It is estimated that a repair project would extend the service life of the bridge for 10-15 years. Therefore, the recommended course of action is to complete the scheduled repair project with the goal of replacing the bridge by the year 2025.

### 4.4 Bay Point (Bridge # 904140)

This bridge services Palm Drive over Bay Point Canal in Saddle Bunch Key. It was constructed in 1975, has a Sufficiency Rating of 68.9 and a Health Index of 94.77. The superstructure of this short flat slab bridge was replaced in 2009. It currently exhibits some end bent spalling, approach slab delaminations and expansion joint header delaminations. All deficiencies are minor in nature at this time.

The repair cost is estimated to be $41,760 and the replacement cost is estimated to be $360,309. It is estimated that the remaining service life of the bridge is 35-40 years with future minor repairs. Any repair project on this bridge will be very small in scale and a low priority at this time.
Therefore, the recommended course of action is to start a repair project by 2025 and attempt to make it part of other bridge repair projects in the area to increase the size of the contract.  

4.5 Shore Drive (Bridge # 904152)  

This bridge services Shore Drive over a canal in Sugarloaf Key. It was constructed in 1991, has a Sufficiency Rating of 89.8 and a Health Index of 99.94. This newer prestressed slab unit bridge currently exhibits only minor asphalt cracks and minor corrosion of the railing base plates. The curb and traffic railing are non-crash tested sub-standard barriers. However, due to the low traffic volume and low speed limit, it can be considered a lower priority. The repair cost is estimated to be $7,327 and the replacement cost is estimated to be $629,547. It is estimated that the remaining service life of the bridge is 50-55 years with future minor repairs. Any repair project on this bridge will be very small in scale and a low priority at this time. Therefore, the recommended course of action is to start a repair project by 2025 and attempt to make it part of other bridge repair projects in the area to increase the size of the contract.  

4.6 Sugarloaf Boulevard (Bridge # 904153)  

This bridge services Sugarloaf Boulevard over an un-named channel in Sugarloaf Key. It was constructed in 1961, has a Sufficiency Rating of 62.1 and a Health Index of 76.93. This AASHTO Beam Bridge currently exhibits extensive spalling and delamination in the deck, beams, diaphragms and bent caps. Repairing or replacing this bridge should be considered a near term priority. Due to the extensive nature of the deck deficiencies and the sub-standard barriers, a deck replacement is a better solution than conventional spall repair, however the four beam typical section has no center line beam. Therefore a deck replacement is difficult without a temporary widening or temporary bridge resulting in a higher level of permitting and cost. In addition, the substructure requires extensive repairs as the bent caps are also exhibiting full length spall/delaminations. As a result, a bridge replacement option is the more logical solution when compared to a deck replacement option.  

The repair alternate for this bridge assumes conventional spall repair for all concrete elements as a deck replacement is not considered a viable option due to the reasons listed above. The repair cost is estimated to be $819,478 and the replacement cost is estimated to be $1,386,823. It is estimated that a repair project would extend the service life of the bridge for 15-20 years. The recommended course of action for this bridge is to forego the bridge repair option and move directly to replacement. This would incur a higher cost initially, but eliminate the need for an
intermediate repair project and be a long term solution with an estimated 75 year design life. The replacement concept assumed for the cost estimate includes a sidewalk and crash tested barriers, resulting in great safety improvement for the community. In addition, modern bridge construction and materials would allow for the channel to be spanned entirely from abutment to abutment, eliminating the need for intermediate pile bents in the water. Not only will this be a safety improvement for channel navigation, but it will eliminate the inevitable maintenance of pile bents in a saltwater environment. It is recommended to begin design and permitting of a bridge replacement in the very near future with the goal of replacing this bridge by 2020 in order to avoid a costly repair project that will only slightly extend the service life of the bridge.

4.7 Sugarloaf Creek (Sammy’s Creek) (Bridge # 904155)

This bridge services Old State Road 4A (CR 939) over Sugarloaf Creek (Sammy’s Creek) in Sugarloaf Key. It was constructed in 1968, has a Sufficiency Rating of 71.9 and a Health Index of 85.76. This prestressed slab unit bridge is currently undergoing deterioration of the slab units, railings, bents, piles and slope protection. In addition, the asphalt overlay is cracked at the interface between the slab units, allowing water and debris to pass through the asphalt and into the superstructure. This bridge services very little traffic as there are only a two residences located to the west of Sugarloaf Creek.

The repair cost is estimated to be $436,800 and the replacement cost is estimated to be $2,177,760. It is estimated that a repair project would extend the service life of the bridge for 20-25 years. The recommended course of action is to start a repair project by 2025, with the goal of replacing the bridge by 2035.

4.8 Old SR 4A (CR 939) (Bridge # 904160)

This bridge services Old State Road 4A (CR 939) over an un-named Sugarloaf Canal in Sugarloaf Key. It was constructed in 1968, has a Sufficiency Rating of 84.3 and a Health Index of 55.12. This prestressed slab unit bridge is currently undergoing deterioration of the slab units, railings, bents, piles and slope protection. In addition, the asphalt overlay has several areas of fire damage and is cracked at the interface between the slab units, allowing water and debris to pass through the asphalt and into the superstructure. This bridge is closed to traffic but it can be accessed by walking east approximately 0.25 miles from Sugarloaf Boulevard.

The repair cost is estimated to be $187,621 and the replacement cost is estimated to be $1,069,882. It is estimated that a repair project would extend the service life of the bridge for
20-25 years. However, full demolition and removal of this structure should be considered as this bridge is currently closed to traffic and the approach roadway is no longer maintained. Demolition cost is estimated at $88,560. The recommended course of action is to demolish and remove the bridge. This is the most cost effective alternative and it will eliminate any future repair costs.

4.9 Caribbean Drive (Bridge # 904250)

This bridge services Caribbean Drive over Summerland Key Cove in Summerland Key. It was constructed in 1960, has a Sufficiency Rating of 65.7 and a Health Index of 70.76. This concrete arch bridge currently exhibits some spalling and honey combing of the arch underside, cracking of the curbs and sidewalks, cracking of the asphalt overlay, corrosion of the railing connection hardware and undermining along the channel edge. All deficiencies are minor in nature at this time. The curb and railing system are sub-standard and the arch superstructure appears to be founded directly on the natural rock.

The repair cost is estimated to be $23,668 and the replacement cost is estimated to be $527,209. It is estimated that the remaining service life of the bridge is 20-25 years with future minor repairs. Any repair project on this bridge will be very small in scale and a low priority at this time. Therefore, the recommended course of action is to start a repair project by 2025 and attempt to make it part of other bridge repair projects in the area to increase the size of the contract.

Assuming that the bridge remains in service for a significant time, the County may consider a barrier upgrade as part of an overall bridge safety improvement project. The estimated cost of a barrier upgrade is $250,295. This cost is inflated due to the utility impacts and the possible bridge strengthening required to upgrade the barriers. The relative low cost of bridge replacement will likely make a barrier upgrade project economically unfeasible and a bridge replacement would be the preferred alternative for improving safety.

4.10 Watson Boulevard (Bridge # 904305)

This bridge services Watson Boulevard over Watson Cut in Big Pine Key. It was constructed in 1960, has a Sufficiency Rating of 77.7 and a Health Index of 100.00. This prestressed slab unit bridge currently exhibits delaminations in the curbs, cracks in the asphalt overlay and undermining along the channel edge. All deficiencies are minor in nature at this time.

The repair cost is estimated to be $64,556 and the replacement cost is estimated to be $545,048. It is estimated that the remaining service life of the bridge is 20-25 years with future minor
repairs. Any repair project on this bridge will be very small in scale and a low priority at this time. Therefore, the recommended course of action is to start a repair project by 2025 and attempt to make it part of other bridge repair projects in the area to increase the size of the contract.

4.11 Fern Avenue (Bridge # 904307)

This bridge services Fern Avenue over Joe’s Canal in Big Pine Key. It was constructed in 1960, has a Sufficiency Rating of 77.8 and a Health Index of 98.39. This prestressed slab unit bridge currently exhibits spalls in the sidewalk, spalls in the curb, spalls in the slab units, cracks in the asphalt overlay and voids along the natural rock abutments. All deficiencies are fairly minor in nature at this time. However, it is recommended to seal the cracks in the asphalt overlay in an effort to reduce the ongoing prestressed slab unit deterioration.

The repair cost is estimated to be $49,967 and the replacement cost is estimated to be $545,987. It is estimated that the remaining service life of the bridge is 20-25 years with future minor repairs. Any repair project on this bridge will be very small in scale and a low priority at this time. Therefore, the recommended course of action is to start a repair project by 2025 and attempt to make it part of other bridge repair projects in the area to increase the size of the contract.

4.12 SR 940 – Leg A (Watson Boulevard) (Bridge # 904310)

This bridge services SR 940 – Leg A (Watson Boulevard) over an un-named channel in Big Pine Key. It was constructed in 1965, has a Sufficiency Rating of 71.3 and a Health Index of 98.75. The superstructure of this bridge was replaced in 2014. It consists of a prestressed slab unit superstructure with a cast in place reinforced concrete deck. Standard F-Shape barriers and 15’ approach slabs were also constructed. Except for minor modifications and a new coating, the existing substructure has remained in place. Currently, the only deficiencies are the voids in the natural rock below the abutments.

The repair cost is estimated to be $6,724 and the replacement cost is estimated to be $581,664. It is estimated that the remaining service life of the bridge is 35-40 years with future minor repairs. The newly constructed superstructure is supported by the existing 50 year old abutments. Plans are not available for the existing foundations. As a result, it is difficult to increase the remaining service life of the bridge beyond 35-40 years.
4.13 No Name Key Bridge (Bridge # 904320)

This bridge services SR 4A (Watson Boulevard) over Bogie Channel in Big Pine Key/No Name Key. It was constructed in 1967, has a Sufficiency Rating of 6.0 and a Health Index of 51.99. A $2.9 M bridge repair project will begin in 2014 on this AASHTO Beam Bridge. The repair plans include extensive deck repair, cathodic protection pile jackets, substructure metalizing, spall/delamination repair and joint repair.

The low bid repair cost is $2,997,676 and the replacement cost is estimated to be $20,400,000. Although a major repair project is currently underway for this bridge, it will likely continue to see accelerated deterioration due to the exposed low level geometry of the bridge and the additional salt water exposure from fishing activities that are frequently occurring on the bridge. It is highly likely that future major repair projects will be required for the bridge to remain in service. It is estimated that the remaining service life of the bridge is 10 years with the repair project that is underway. The recommended course of action is to complete the current repair project, evaluate and satisfy the NEPA requirements by the year 2020 with the goal of replacing the bridge by 2025. See the No Name Key Design Development Report that was submitted to Monroe County on August 2012 for a more in depth discussion of repair and replacement alternatives.

4.14 Tom’s Harbor Channel (Bridge # 904600)

This bridge services Duck Key Drive over Tom’s Harbor Channel in Duck Key. It was constructed in 1967, has a Sufficiency Rating of 63.0 and a Health Index of 94.00. This AASHTO Beam Bridge was repaired in 2013. The repairs included a deck replacement, ADA compliant sidewalks, crash tested barriers, spall/delamination repair, cathodic protection pile jackets, expansion joints, steel bearing painting and a Class 5 finish applied to some concrete elements. A few end beam/diaphragm spalls remain. In addition, there is some undermining and scour occurring at the slope protection that should be addressed.

The repair cost is estimated to be $24,731 and the replacement cost is estimated to be $2,863,229. Taking into account the recent repair project, it is estimated that the remaining service life of the bridge is 20-25 years. The recommended course of action is to start a small repair project by 2025, evaluate and satisfy the NEPA requirements by the year 2030 with the goal of replacing the bridge by 2035.
4.15  Truman Bridge (Bridge # 904602)

This bridge services Duck Key Drive over Duck Key Channel in Duck Key. It was constructed in 1955, has a Sufficiency Rating of 63.4 and a Health Index of 75.49. This triple arch bridge with decorative pineapple railing is the first of several signature bridges associated with the Duck Key neighborhood. The bridge is a very narrow, two lane bridge with a very steep vertical curve that limits the sight distance of the user. This results in an undesirable condition for pedestrians and oversized vehicles that use the bridge. It is currently exhibiting spalling and cracking of the arches and retaining walls. There is a large spall that is releasing approach fill at the toe of the north wall and there is a large amount of scour and undermining present at all abutments and intermediate piers. A portion of the decorative railing was replaced after a recent vehicle strike.

The repair cost is estimated to be $159,439 and the replacement cost is estimated to be $1,304,881. The estimated cost to widen the structure to accommodate pedestrian facilities is $528,627 (See the Metric Engineering Widening Report). It is estimated that the remaining service life of the bridge is 20-25 years. As a result of the safety concerns previously described, the recommended course of action is to move forward with a bridge replacement with the goal of beginning construction by 2020. The replacement design should only begin after first evaluating and satisfying the NEPA requirements due to the historic nature of the bridge. If the county elects not to move forward with a bridge replacement, this bridge should be programed for scour countermeasures and bridge repairs by the year 2020.

See Appendix A for the Duck Key Bridge Replacement Presentation.

4.16  Bimini Drive (Bridge # 904603)

This bridge services Bimini Drive over Sam’s Canal in Duck Key. It was constructed in 1955, has a Sufficiency Rating of 71.7 and a Health Index of 77.98. This concrete channel beam bridge with a low arch and decorative papaya railings is the second signature bridge associated with Duck Key. The bridge is a very narrow, two lane bridge with a very steep vertical curve that limits the sight distance of the user. This results in an undesirable condition for pedestrians and oversized vehicles that use the bridge. The channel beams were previously strengthened with through bolted steel plates. The most current inspection report noted movement in the plates with passing vehicles so it is unclear what effect they have on current bridge load capacity.

The bridge is currently exhibiting significant spalls, delaminations and cracks in the channel beam flanges, abutments, railings and retaining walls. In addition, the through bolted steel plates are corroded, the natural rock abutments are scoured and undermined, the approach asphalt is cracked and settled near both abutments and the guardrail is damaged from a vehicle strike.
The repair cost is estimated to be $136,739 and the replacement cost is estimated to be $904,624. The estimated cost to widen the structure to accommodate pedestrian facilities is $391,447. It is estimated that the remaining service life of the bridge is 15-20 years. As a result of the safety concerns previously described, the recommended course of action is to move forward with a bridge replacement with the goal of beginning construction by 2020. The replacement design should only begin after first evaluating and satisfying the NEPA requirements due to the historic nature of the bridge. If the county elects to not move forward with a bridge replacement, this bridge should be programmed for bridge repairs and scour countermeasures by the year 2020. The ongoing deterioration of the concrete channel beams should be closely monitored until a replacement or repair project can be completed.

See Appendix A for the Duck Key Bridge Replacement Presentation.

4.17 Harbor Drive (Bridge # 904604)

This bridge services Harbor Drive over Joe’s Canal in Duck Key. It was constructed in 1955, has a Sufficiency Rating of 60.3 and a Health Index of 77.52. This concrete channel beam bridge has a low arch and a decorative lace and papaya railing. It is the third signature bridge associated with Duck Key. The bridge is a very narrow, two lane bridge with a very steep vertical curve that limits the sight distance of the user. This results in an undesirable condition for pedestrians and oversized vehicles that use the bridge. The channel beams were previously strengthened with through bolted steel plates.

The bridge is currently exhibiting significant spalls, delaminations and cracks in the channel beam flanges, abutments and railings. There are very large delaminations associated with the retaining walls. In addition, the through bolted steel plates are heavily corroded and the bridge asphalt is cracked and settled. The undermining extends to the point to where the abutment piles are visible. This bridge exhibits more undermining than the other Duck Key bridges, possibly due to higher flow velocities through this canal.

The repair cost is estimated to be $438,791 and the replacement cost is estimated to be $1,012,932. The estimated cost to widen the structure to accommodate pedestrian facilities is $429,920. It is estimated that the remaining service life of the bridge is 15-20 years. As a result of the safety concerns previously described, the recommended course of action is to move forward with a bridge replacement with the goal of beginning construction by 2020. The replacement design should only begin after first evaluating and satisfying the NEPA requirements due to the historic nature of the bridge. If the county elects to not move forward with a bridge replacement, this bridge should be programmed for bridge repairs and scour countermeasures by
the year 2020. The ongoing deterioration of the concrete channel beams and abutment undermining should be closely monitored until a replacement or repair project can be completed.

4.18 Seaview Drive (Bridge # 904606)

This bridge services Seaview Drive over Duck Key Canal in Duck Key. It was constructed in 1955, has a Sufficiency Rating of 72.6 and a Health Index of 78.62. This concrete channel beam bridge has a low arch and a cylindrical column and pineapple railing. It is the fourth signature bridge associated with Duck Key. The bridge is a very narrow, two lane bridge with a very steep vertical curve that limits the sight distance of the user. This results in an undesirable condition for pedestrians and oversized vehicles that use the bridge. The channel beams were previously strengthened with through bolted steel plates.

The bridge is currently exhibiting significant spalls, delaminations and cracks in the channel beam flanges, abutments, railings and retaining walls. In addition, the through bolted steel plates are corroded and the natural rock abutments are scoured and undermined.

The repair cost is estimated to be $104,213 and the replacement cost is estimated to be $1,012,932. The estimated cost to widen the structure to accommodate pedestrian facilities is $429,920. It is estimated that the remaining service life of the bridge is 15-20 years. As a result of the safety concerns previously described, the recommended course of action is to move forward with a bridge replacement with the goal of beginning construction by 2020. The replacement design should only begin after first evaluating and satisfying the NEPA requirements due to the historic nature of the bridge. If the county elects to not move forward with a bridge replacement, this bridge should be programed for bridge repairs and scour countermeasures by the year 2020. The ongoing deterioration of the concrete channel beams should be closely monitored until a replacement or repair project can be completed.

4.19 Valois Boulevard (Bridge # 904908)

This bridge services Valois Boulevard over a Canal in Key Largo. It was constructed in 1995, has a Sufficiency Rating of 66.6 and a Health Index of 94.14. This prestressed flat slab bridge currently exhibits some spalling on the underside of the slab units, railings, curbs and end bent caps. There are also bridge length longitudinal cracks at the slab unit joints on the asphalt overlay. These cracks are allowing water and debris to pass through the asphalt and into the bridge superstructure.
The repair cost is estimated to be $129,660 and the replacement cost is estimated to be $791,034. It is estimated that the remaining service life of the bridge is 35-40 years with future minor repairs. Any repair project on this bridge will be somewhat small in scale. Therefore, the recommended course of action is to start a repair project by 2018 and attempt to make it part of other bridge repair projects in the area to increase the size of the contract.

4.20 Bahama Road (Bridge # 904910)

This bridge services Bahama Road over Doug’s Canal in Key Largo. It was constructed in 1962, has a Sufficiency Rating of 80.8 and a Health Index of 96.23. This reinforced concrete beam bridge currently exhibits some significant spalling on the underside of the beams with large areas of reinforcing exposed. There is also map cracking present on the exposed concrete riding surface of the deck. This bridge would be a good candidate for a methacrylate sealer. The end bents are not visible through the natural rock abutments.

The repair cost is estimated to be $76,479 and the replacement cost is estimated to be $525,331. It is estimated that the remaining service life of the bridge is 20-25 years, with some significant near term repairs. Any repair project on this bridge will be somewhat small in scale. Therefore, the recommended course of action is to start a repair project by 2018 and attempt to make it part of other bridge repair projects in the area to increase the size of the contract.

4.21 Steam Boat Creek (Bridge # 904980)

This bridge services Card Sound Road (CR 905A) over Steam Boat Creek in North Key Largo. It was constructed in 1968, has a Sufficiency Rating of 70.7 and a Health Index of 96.32. This AASHTO Beam Bridge was repaired in 2006. The repairs included spall repair and slope protection repair. Additional deficiencies have developed since this previous repair. Currently, the bridge has spalls and delaminations developing on the railings, sidewalks, beams, caps and piles. In addition, the expansion joints are in need of rehabilitation as the asphalt overlay at the expansion joints is failing and settling into the open joints.

The repair cost is estimated to be $107,613 and the replacement cost is estimated to be $3,438,279. It is estimated that the remaining service life of the bridge is 20-25 years. The recommended course of action is to start a full repair project by 2025, evaluate and satisfy the NEPA requirements by the year 2030 with the goal of replacing the bridge by 2035. Additionally, it is recommended to include this bridge as part of a small expansion joint rehabilitation project.
as soon as possible. This will minimize water and debris intrusion into the bridge superstructure and help to minimize future repairs.

4.22 Tubby’s Creek (Bridge # 904982)

This bridge services Card Sound Road (CR 905A) over Tubby’s Creek in North Key Largo. It was constructed in 1969, has a Sufficiency Rating of 69.5 and a Health Index of 94.60. This Prestressed Slab Unit Bridge was repaired in 2006. The repairs included pile jackets, spall repair and slope protection repair. Additional deficiencies have developed since this previous repair. Currently, the bridge has spalls and delaminations developing on the railings, sidewalks, prestressed slab units and caps. In addition, the expansion joints are in need of rehabilitation as the asphalt overlay at the expansion joints is failing and settling into the open joints.

The repair cost is estimated to be $121,001 and the replacement cost is estimated to be $1,311,487. It is estimated that the remaining service life of the bridge is 20-25 years. The recommended course of action is to start a full repair project by 2025, evaluate and satisfy the NEPA requirements by the year 2030 with the goal of replacing the bridge by 2035. Additionally, it is recommended to include this bridge as part of a small expansion joint rehabilitation project as soon as possible. This will minimize water and debris intrusion into the bridge superstructure and help to minimize future repairs.

4.23 Mosquito Creek (Bridge # 904984)

This bridge services Card Sound Road (CR 905A) over Mosquito Creek in North Key Largo. It was constructed in 1969, has a Sufficiency Rating of 69.5 and a Health Index of 99.05. This Prestressed Slab Unit Bridge was repaired in 2006. The repairs included pile jackets and spall repair. Additional deficiencies have developed since this previous repair. Currently, the bridge has spalls and delaminations developing on the railings, sidewalks, prestressed slab units and caps. In addition, the expansion joints are in need of rehabilitation as the asphalt overlay at the expansion joints is failing and settling into the open joints.

The repair cost is estimated to be $118,037 and the replacement cost is estimated to be $1,300,950. It is estimated that the remaining service life of the bridge is 20-25 years. The recommended course of action is to start a full repair project by 2025, evaluate and satisfy the NEPA requirements by the year 2030 with the goal of replacing the bridge by 2035. Additionally, it is recommended to include this bridge as part of a small expansion joint rehabilitation project.
as soon as possible. This will minimize water and debris intrusion into the bridge superstructure and help to minimize future repairs.

4.24  Saunders Creek (Bridge # 904986)

This bridge services Card Sound Road (CR 905A) over Saunders Creek in North Key Largo. It was constructed in 1969, has a Sufficiency Rating of 93.0 and a Health Index of 96.46. A superstructure replacement was completed on this Prestressed Slab Unit Bridge in 2006. Additional repairs included pile jackets and substructure spall repair. Additional deficiencies have developed since this previous repair. Currently, the bridge has spalls and delaminations developing on the new cast in place concrete deck and the prestressed slab units. In addition, the bent caps are now spalling and delaminating and the guard rails are heavily corroded. The repair cost is estimated to be $61,522 and the replacement cost is estimated to be $1,249,208. It is estimated that the remaining service life of the bridge is 20-25 years. The recommended course of action is to start a full repair project by 2025, evaluate and satisfy the NEPA requirements by the year 2030 with the goal of replacing the bridge by 2035.

4.25  Card Sound Bridge (Bridge # 904990)

This bridge services Card Sound Road (CR 905A) over Barnes Sound/Card Sound in North Key Largo. It was constructed in 1969, has a Sufficiency Rating of 56.6 and a Health Index of 78.87. Repair plans are currently in the final phase of production and permitting has been completed for the repairs. The repair plans include extensive substructure repair, substructure metalizing, steel girder paint system and repairs, spall/delamination repair, joint repair and fender system repair.

The repair cost is estimated to be $4,876,999 and the replacement cost is estimated to be $32,600,000. The estimated cost of a bridge widening to accommodate pedestrian traffic is $10,200,000. Although a major repair project is currently planned for this bridge, it will likely continue to see accelerated deterioration due to the exposed geometry of the bridge. It is highly likely that future major repair projects will be required for the bridge to remain in service. It is estimated that the remaining service life of the bridge is 10-15 years with the repair project that is underway. The recommended course of action is to complete the current repair project, evaluate and satisfy the NEPA requirements by the year 2025 with the goal of replacing the bridge by 2030. See the Card Sound Design Development Report that was submitted to Monroe County on October 2013 for a more in depth discussion of repair, widening and replacement alternatives.
4.26 Ocean Bay Drive (No Inspection Report)

This bridge services Ocean Bay Drive over a Canal in Key Largo. It was likely constructed in the 1980’s based on the time of construction of the nearby homes. This arch bridge spans only 18’ and it does not meet the minimum 20’ span requirements to be eligible for a bridge inspection report by the FDOT. During a recent field review, significant spalling and delaminations were noted on the sides of the arch, undersides of the arch and at the abutments with some areas of exposed reinforcing steel. In addition, the railings are delaminated and the asphalt riding surface is cracking.

The repair cost is estimated to be $117,289 and the replacement cost is estimated to be $468,998. It is estimated that the remaining service life of the bridge is 20-25 years, with some significant near term repairs. Any repair project on this bridge will be somewhat small in scale. Therefore, the recommended course of action is to start a repair project by 2018 and attempt to make it part of other bridge repair projects in the area to increase the size of the contract.

4.27 Ocean Bay Drive - Pedestrian Bridge (No Inspection Report)

This bridge services the Ocean Bay Drive pedestrian traffic over a Canal in Key Largo. Located adjacent to the Ocean Bay Drive vehicular bridge, this aluminum truss pedestrian bridge was recently constructed and is in very good condition. It is not eligible for a bridge inspection report by the FDOT as it only services pedestrian traffic. During a recent field inspection, it was noted that no expansion joints were present and some of the anchorage hardware was missing.

The repair cost is estimated to be $2,948 to add the expansion joints and replace the missing hardware. It is estimated that the remaining service life of the bridge is over 50 years since this bridge was recently constructed using corrosion resistant materials. Any repair project on this bridge will be somewhat small in scale. Therefore, the recommended course of action is to complete these small repairs as part of the same repair contract as the adjacent Ocean Bay Drive Vehicular Bridge.
5.0 Work Program Priority
5.0 Work Program Priority

5.1 Priority Ranking

This purpose of this section is to prioritize the bridge maintenance, repair and replacement projects that were proposed in the previous section. This will help the County allocate funding to the most needed repairs and set budgets for future bridge projects. See Figure 2 on the following page for the list of County owned bridges, in order based on Priority Ranking. The priority ranking closely follows the NBI Average Ranking that was calculated from the Bridge Inspection Reports, however, it allows for some engineering judgment to account for additional considerations such as bridge safety, bridge age, bridge location and bridge usage or average daily traffic. Some bridges were also shifted in the rankings so that they are logically grouped with similar bridge repairs of nearby bridges. This table also includes the recommended timeframe for beginning a rehabilitation or replacement project.
<table>
<thead>
<tr>
<th>Priority Ranking</th>
<th>NBI Average Ranking</th>
<th>Bridge No.</th>
<th>Structure Location</th>
<th>Start Repair or Replacement Project Within (Years)</th>
<th>Estimated Remaining Service Life (Years)</th>
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<td>PEDESTRIAN BRIDGE (OCEAN BAY DRIVE)</td>
<td>2030+</td>
<td>50 +</td>
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</table>

*Card Sound Road Bridges – Joint rehabilitation project in 2016. Full repair project in 2025.

Figure 2 – Priority Ranking
5.2  Project Grouping

Some of the recommended repair projects are somewhat small in scope or very similar in nature. By grouping smaller or similar projects together that are nearby, the County may realize a construction savings as mobilization per bridge site will be reduced and the total project cost will be larger, possibly attracting additional contractors resulting in more competitive bidding. Below are some recommended groupings for future projects:

**Card Sound Bridges - Mosquito Creek (904984), Tubby’s Creek (904982) and Steam Boat Creek (904980):**

Three of the smaller bridges along Card Sound Road are exhibiting severe expansion joint deterioration. This is exposing the superstructure and substructure to water and debris from the road above. In an effort to preserve these heavily traveled bridges, it is recommended to begin an expansion joint rehabilitation project for the Mosquito Creek, Tubby’s Creek and Steam Boat Creek Bridges in the near future. This can be a smaller repair project, independent from the full repair project, projected in 2025.

**Duck Key Bridges – Truman Bridge (904602), Bimini Drive (904603), Harbor Drive (904604) and Seaview Drive (904606):**

These Duck Key Bridges are ranked high in the priority rankings due to their age, deterioration and safety concerns. Replacing the structures would not only provide the community with a much needed safety improvement for pedestrians and oversized vehicles, but it would also provide new structures with a 75 year design life. However, replacing the bridges will be costly and it would first require the satisfaction of all of the NEPA requirements due to the historical significance of the bridges. The estimated construction date is set at 2020 to allow for the NEPA process, bridge replacement design and permitting.

A bridge repair project should be started soon if replacement is determined to not be a viable alternative at this time due to budget constraints. These bridges have been grouped together for a repair project due to their location, bridge type and similar repairs.

**Key Largo Bridges – Bahama Road (904910), Ocean Bay Drive and Valois Boulevard (904908)**

The repairs recommended for these bridges are fairly small in scale, but still needed to keep these small bridges in service. It is recommended to group these bridges together under one
construction project in an effort to attract additional interest from contractors. The repairs are similar and the bridge sites are within nine miles of each other.

**Big Pine Key Bridges – Fern Avenue (904307) and Watson Boulevard (904305)**

The repairs recommended for these two bridges are fairly small in scale, but still needed to keep these small bridges in service. It is recommended to group these bridges together under one construction project in an effort to attract additional interest from contractors. The bridges are similar, the repairs are similar and the bridge sites are approximately 700’ from each other.
Duck Key Bridge Replacements

Bimini Drive Bridge

Truman Bridge
Existing Utilities – Bimini Drive

Overhead Electric

Bridge Mounted Utilities
Existing Utilities – Truman Bridge

Bridge Mounted Utilities

Overhead Electric and Bridge Mounted Utilities
Right-of-way Encroachments

Residential Landscape in R/W

Boat in R/W
Con/Span Replacement Option

- Precast Elements
- Accelerates Construction
- Similar Arched Aesthetics

Bimini Drive Bridge
Con/Span Replacement Option

Truman Bridge

Wall Treatment/Decorative Railing Example
• Fill between con/span top slab and asphalt/base
• Utilities hidden under raised concrete sidewalk
• Sidewalk also acts as utility shock pad
• Utilities can be accessed by removing sidewalk while both travel lanes remain open
Florida-I Beam Replacement Option

- Decorative fascia to conceal modified Florida-I Beams
- Fascia can be shaped to resemble existing arch
- Add texture as desired for aesthetics
• Use modified Florida-I Beams to match existing structure depth and profile
• Attach utilities to underside of deck
• Utilities accessible for maintenance
Construction Sequence (Existing)

Existing Bimini Drive Bridge
(Truman Bridge Construction Sequence Similar)
Phase 1

- Reduce bridge to one lane with temporary traffic signal
- Demolish portion of existing bridge
Construction Sequence (2)

Phase 2

- Construct half of the proposed bridge
- Shift single lane of traffic to new bridge
- Demolish remaining portion of existing bridge
Construction Sequence (3)

Phase 3 - Final

- Complete construction of proposed bridge
- Shift traffic to final configuration
# Table of Contents

1.0 Garrison Bight (904025)
   1.1 Repair Cost Estimate (904025)
   1.2 Replacement Cost Estimate (904025)

2.0 Geiger Key (904110)
   2.1 Repair Cost Estimate (904110)
   2.2 Replacement Cost Estimate (904110)

3.0 Similar Sound (904120)
   3.1 Repair Cost Estimate (904120)
   3.2 Replacement Cost Estimate (904120)

4.0 Bay Point (904140)
   4.1 Repair Cost Estimate (904140)
   4.2 Replacement Cost Estimate (904140)

5.0 Shore Drive (904152)
   5.1 Repair Cost Estimate (904152)
   5.2 Replacement Cost Estimate (904152)

6.0 Sugarloaf Boulevard (904153)
   6.1 Repair Cost Estimate (904153)
   6.2 Replacement Cost Estimate (904153)

7.0 Sugarloaf Creek (904155)
   7.1 Repair Cost Estimate (904155)
   7.2 Replacement Cost Estimate (904155)

8.0 Old S.R. 4A (CR 939) (904160)
   8.1 Repair Cost Estimate (904160)
   8.2 Replacement Cost Estimate (904160)
Appendix B – Cost Estimates

9.0 Caribbean Drive (904250)
   9.1 Repair Cost Estimate (904250)
   9.2 Replacement Cost Estimate (904250)

10.0 Watson Boulevard (904305)
   10.1 Repair Cost Estimate (904305)
   10.2 Replacement Cost Estimate (904305)

11.0 Fern Avenue (904307)
   11.1 Repair Cost Estimate (904307)
   11.2 Replacement Cost Estimate (904307)

12.0 S.R. 940 – Leg A (Watson Boulevard) (904310)
   12.1 Repair Cost Estimate (904310)
   12.2 Replacement Cost Estimate (904310)

13.0 No Name Key (904320)
   13.1 Repair Cost Estimate (904320)
   13.2 Replacement Cost Estimate (904320)

14.0 Tom’s Harbor Channel (904600)
   14.1 Repair Cost Estimate (904600)
   14.2 Replacement Cost Estimate (904600)

15.0 Truman Bridge (904602)
   15.1 Repair Cost Estimate (904602)
   15.2 Widening Cost Estimate (904602)
   15.3 Replacement Cost Estimate (904602)

16.0 Bimini Drive (904603)
   16.1 Repair Cost Estimate (904603)
   16.2 Widening Cost Estimate (904603)
   16.3 Replacement Cost Estimate (904603)
17.0 Harbor Drive (904604)
   17.1 Repair Cost Estimate (904604)
   17.2 Widening Cost Estimate (904604)
   17.3 Replacement Cost Estimate (904604)

18.0 Seaview Drive (904606)
   18.1 Repair Cost Estimate (904606)
   18.2 Widening Cost Estimate (904606)
   18.3 Replacement Cost Estimate (904606)

19.0 Valois Boulevard (904908)
   19.1 Repair Cost Estimate (904908)
   19.2 Replacement Cost Estimate (904908)

20.0 Bahama Road (904910)
   20.1 Repair Cost Estimate (904910)
   20.2 Replacement Cost Estimate (904910)

21.0 Steam Boat Creek (904980)
   21.1 Repair Cost Estimate (904980)
   21.2 Replacement Cost Estimate (904980)

22.0 Tubby’s Creek (904982)
   22.1 Repair Cost Estimate (904982)
   22.2 Replacement Cost Estimate (904982)

23.0 Mosquito Creek (904984)
   23.1 Repair Cost Estimate (904984)
   23.2 Replacement Cost Estimate (904984)

24.0 Saundor’s Creek (904986)
   24.1 Repair Cost Estimate (904986)
   24.2 Replacement Cost Estimate (904986)
25.0 Card Sound Bridge (904990)
   25.1 Repair Cost Estimate (904990)
   25.2 Replacement Cost Estimate (904990)

26.0 Ocean Bay Drive
   26.1 Repair Cost Estimate (Ocean Bay Drive)
   26.2 Replacement Cost Estimate (Ocean Bay Drive)

27.0 Pedestrian Bridge (Ocean Bay Drive)
   27.1 Repair Cost Estimate (Pedestrian Bridge)

28.0 Miscellaneous Calculations
Bridge Assessment Report
Monroe County
Appendix B – Cost Estimates

1.0 Garrison Bight (904025)
1.1 Repair Cost Estimate (904025)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Quantity</th>
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* Pay Item 561-1 includes the cost of painting the all prestressed beam steel bearing assemblies.

CONTINGENCIES 20%  $187,806.77
TOTAL  $1,126,840.59
**ENGINEER'S ESTIMATE**

**FINANCIAL PROJECT ID #:**

**PROJECT DESCRIPTION:** Palm Avenue Causeway, Key West

**PAY ITEM SPEC YEAR:** 2014

**SUBMITTAL TYPE:** Completed Plans to District Specs

**COUNTY:** Monroe

**DATE:** June 5, 2014

**ENGINEERING CONSULTANT FIRM:** Kisinger Campo & Associates

**CONTACT NAME:** Richard Harrison, P.E.

**PHONE NUMBER:** (813) 871-5331

**FILE VERSION:** EE_02-14_Rev20

**PAGE NUMBER:** 1 of 2

### COMPONENT GROUPS

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<th>Component Group</th>
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**COMPONENT SUB-TOTAL** $79,977.36

- (102-1) MOT (Maintenance of Traffic) 5% $3,998.87
  **SUB-TOTAL** $83,976.23

- (101-1) MOB (Mobilization) 7% $5,878.34
  **SUB-TOTAL** $89,854.56

- PU (Project Unknowns) 5% $4,492.73
  **SUB-TOTAL** $94,347.29

- (999-25) Initial Contingency (Do Not Bid) 5% $4,717.36

**PROJECT GRAND TOTAL** $99,064.66

---

**NOTES:**

---

FDOT-D7

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6/5/2014
## 200-Roadway

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### Component Total

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**FDOT-07**

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6/5/2014
## 300-Signing & Pavement Markings

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### Component Total

- **Total:** $2,235.96
### 104- 11

**FLOATING TURBIDITY BARRIER**

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<th>Description</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
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<tr>
<td>Perimeter around fender</td>
<td>120</td>
<td>5</td>
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<tr>
<td>5 ft working zone around fender</td>
<td>5</td>
<td>5</td>
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</tr>
<tr>
<td><strong>Total barrier needed</strong></td>
<td><strong>130</strong></td>
<td><strong>15</strong></td>
<td><strong>290.00</strong></td>
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Number of bents: 2
Layers of barrier around work area (double): 2

LENGTH: 1180 LF
TOTAL LENGTH: 1180 LF

### 339- 1

**MISCELLANEOUS ASPHALT PAVEMENT**

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<th>Weight (TN)</th>
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### 401- 70- 3

**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

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<td>Beams &amp; Diaphragms</td>
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<td>Prestressed Piles</td>
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<td>Bent Caps</td>
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### 411- 1

**EPOXY MATERIAL FOR CRACK INJECTION- STRUCTURES REHAB**

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411- 1  
**ASPHALT EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

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411- 2  
**CRACKS INJECT & SEAL-STRUCTURES REHAB**

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<td>Abutments</td>
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</table>

411- 2  
**ASPHALT CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td>51.0</td>
</tr>
<tr>
<td>51.0</td>
</tr>
<tr>
<td>TOTAL LENGTH: 51 LF</td>
</tr>
</tbody>
</table>

413-151  
**METHACRYLATE MONOMER**

<table>
<thead>
<tr>
<th>Location</th>
<th>Width (ft)</th>
<th>Span (ft)</th>
<th>Surface area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Deck</td>
<td>41.00</td>
<td>177.00</td>
<td>7257.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume (GA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 SF / GA</td>
</tr>
<tr>
<td>72.6</td>
</tr>
<tr>
<td>TOTAL AREA: 73 GA</td>
</tr>
</tbody>
</table>
## 413-154
CLEANING AND SEALING CONCRETE SURFACES: PENETRANT SEALER OR

<table>
<thead>
<tr>
<th>Location</th>
<th>Width (ft)</th>
<th>Span (ft)</th>
<th>Surface area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Deck</td>
<td>41.00</td>
<td>177.00</td>
<td>7257.0</td>
</tr>
</tbody>
</table>

TOTAL AREA: 7,257.0 SF

## 415-1-4
REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/ft³)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>108.0</td>
<td>6</td>
</tr>
</tbody>
</table>

TOTAL WEIGHT: 648 LB

*Based on similar estimates

## 415-1-5
REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/ft³)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>221.2</td>
<td>6</td>
</tr>
</tbody>
</table>

TOTAL WEIGHT: 1328 LB

*Based on similar estimates

## 485-76
WRAP PILE CLUSTERS

<table>
<thead>
<tr>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assume 20 locations will need to be replaced</td>
</tr>
</tbody>
</table>

TOTAL QUANTITY: 20 EA
**457- 2-221**
CATHODIC PROTECTION INTEGRAL PILE JACKET, STRUCTURAL, 16.1" TO 30.0", GALVANIC

<table>
<thead>
<tr>
<th>Bent</th>
<th>Pile</th>
<th>Use (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>20.00</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>20.00</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>20.00</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>20.00</td>
</tr>
</tbody>
</table>

TOTAL LENGTH: 80 LF

**458- 1- 21**
BRIDGE DECK EXPANSION JOINT, REHABILITATION

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-3</td>
<td>4</td>
<td>163.00</td>
</tr>
</tbody>
</table>

TOTAL LENGTH: 163 LF

**460- 1- 13**
STRUCTURAL STEEL REHAB-BOLT, NUT, WASH & PLT

*Bolts are 7/8in diameter, Assume 20% need to be replaced.

<table>
<thead>
<tr>
<th>Type</th>
<th>Number per Fender</th>
<th>Number of Bolts per Cluster</th>
<th>Length (in)</th>
<th>Weight (lb/ft)*</th>
<th>Total Weight (lb)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Pile Cluster</td>
<td>16</td>
<td>6</td>
<td>30</td>
<td>2.5</td>
<td>595.2</td>
</tr>
<tr>
<td>3-Pile Cluster</td>
<td>6</td>
<td>6</td>
<td>20</td>
<td>2.5</td>
<td>148.8</td>
</tr>
</tbody>
</table>

Number of Fenders: 2
Percent to Replace: 20.00%

TOTAL WEIGHT: 298 LB

**470- 1**
TREATED TIMBER, STRCUTURAL

<table>
<thead>
<tr>
<th>Type</th>
<th>FBM per Board</th>
<th>Boards</th>
<th>Total FBM*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fender Deck</td>
<td>0.333</td>
<td>100</td>
<td>33.3</td>
</tr>
<tr>
<td>Whalers</td>
<td>12.000</td>
<td>20</td>
<td>240.0</td>
</tr>
<tr>
<td>Clearance Marker</td>
<td>60</td>
<td>10</td>
<td>600.0</td>
</tr>
</tbody>
</table>

TOTAL WEIGHT: 873.3 MB
### 510-1  NAVIGATION LIGHTS - FIXED BRIDGE

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of lights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fender System</td>
<td>6</td>
</tr>
<tr>
<td>On Girders</td>
<td>2</td>
</tr>
</tbody>
</table>

**TOTAL LIGHTS:** 8 EA  
**LUMP SUM:** 1 LS

### 530-1  RIPRAP, SAND-CEMENT

<table>
<thead>
<tr>
<th>Location</th>
<th>Height (ft)</th>
<th>Length (ft)</th>
<th>Depth (ft)</th>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under Northwest Seawall</td>
<td>2.00</td>
<td>4</td>
<td>2.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>

0.6  
**TOTAL VOLUME:** 1 CY

### 561-1  COATING EXISTING STRUCTURAL STEEL

*Total weight estimated by images

<table>
<thead>
<tr>
<th>Number</th>
<th>Weight of Plate (lb)</th>
<th>Total Weight (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Steel (Bearing Sole Plates): 36</td>
<td>50.0</td>
<td>1800.0</td>
</tr>
</tbody>
</table>

0.9  
**TOTAL WEIGHT:** 1 TN

### 630-2-15  CONDUIT, FURNISH & INSTALL, BRIDGE MOUNT

*Total length taken from existing bridge plans.

<table>
<thead>
<tr>
<th>Location</th>
<th>Total Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Side - Span 2</td>
<td>60.0</td>
</tr>
<tr>
<td>South Fender - Pile 3-5</td>
<td>100.0</td>
</tr>
<tr>
<td>South Fender - Southeast Lights</td>
<td>100.0</td>
</tr>
</tbody>
</table>

260.0  
**TOTAL WEIGHT:** 260 LF
1.2 Replacement Cost Estimate (904025)
CONSTRUCTION COST ESTIMATE
for
GARRISON BIGHT BRIDGE REPLACEMENT
Bridge #904025
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for medium simple span Florida I-Beam Bridge</td>
<td>$145.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>3%</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>20%</td>
</tr>
<tr>
<td>Increase by 75% due to work in Monroe County (FIB Construction)</td>
<td>75%</td>
</tr>
<tr>
<td>Cost per Square Foot</td>
<td>$287.10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Length (ft)</td>
<td>177.40</td>
</tr>
<tr>
<td>Bridge Width (ft)</td>
<td>40.75</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>7229</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$2,075,460.26</td>
</tr>
<tr>
<td>Approach Slab and Approach Roadway</td>
<td>$300,000.00</td>
</tr>
<tr>
<td>Complex Traffic Control with Detours</td>
<td>$200,000.00</td>
</tr>
<tr>
<td>Non-Composite Fender System</td>
<td>$600,000.00</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$3,175,460.26</strong></td>
</tr>
</tbody>
</table>
2.0 Geiger Key (904110)
2.1 Repair Cost Estimate (904110)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Notes</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1</td>
<td>LS</td>
<td></td>
<td>$46,372.96</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1</td>
<td>LS</td>
<td></td>
<td>$46,372.96</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>1128</td>
<td>LF</td>
<td>$15.00</td>
<td>$16,920.00</td>
</tr>
<tr>
<td>110-3</td>
<td>REMOVAL OF EXISTING STRUCTURE</td>
<td>1781</td>
<td>LS/SF</td>
<td>$43.98</td>
<td>$78,339.38</td>
</tr>
<tr>
<td>539-1</td>
<td>MISCELLANEOUS ASPHALT PAVEMENT</td>
<td>2</td>
<td>TN</td>
<td>$241.58</td>
<td>$483.16</td>
</tr>
<tr>
<td>400-4-4</td>
<td>CONCRETE CLASS IV, SUPERSTRUCTURE</td>
<td>70</td>
<td>CY</td>
<td>$994.36</td>
<td>$69,605.20</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>127.0</td>
<td>CF</td>
<td>$558.33</td>
<td>$70,997.91</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>61</td>
<td>GA</td>
<td>$145.00</td>
<td>$8,881.20</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>4</td>
<td>GA</td>
<td>$145.00</td>
<td>$57,390.00</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>474</td>
<td>LF</td>
<td>$80.00</td>
<td>$37,920.00</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>30</td>
<td>LF</td>
<td>$80.00</td>
<td>$2,400.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>11280</td>
<td>LB</td>
<td>$1.50</td>
<td>$17,070.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>711</td>
<td>LB</td>
<td>$1.50</td>
<td>$1,066.50</td>
</tr>
<tr>
<td>455-1-11</td>
<td>BRIDGE DECK EXPANSION JOINT, NEW CONSTRUCTION, F&amp;A POURED JOINT W/ BACKER ROD</td>
<td>86</td>
<td>LF</td>
<td>$57.74</td>
<td>$4,936.77</td>
</tr>
<tr>
<td>705-10-3</td>
<td>OBJECT MARKER, TYPE 3</td>
<td>1</td>
<td>EA</td>
<td>$159.67</td>
<td>$159.67</td>
</tr>
<tr>
<td></td>
<td>CONTINGENCIES 20%</td>
<td></td>
<td></td>
<td></td>
<td>$80,379.80</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>$482,278.77</td>
</tr>
</tbody>
</table>
### 104-11 FLOWING TURBIDITY BARRIER

<table>
<thead>
<tr>
<th>Pile Bents</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>32</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>42</td>
<td>13.5</td>
<td>111.00</td>
</tr>
</tbody>
</table>

Number of bents: 4
Layers of barrier around work area (double): 2

LENGTH: 888 LF

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>32</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>42</td>
<td>9</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2
Layers of barrier around work area (double): 2

LENGTH: 240 LF

TOTAL LENGTH: 1128 LF

### 110-3 REMOVAL OF EXISTING STRUCTURE

<table>
<thead>
<tr>
<th>Area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center portion of bridge</td>
</tr>
<tr>
<td>1781.3</td>
</tr>
</tbody>
</table>

TOTAL AREA: 1781 SF 1 LS

### 339-1 MISCELLANEOUS ASPHALT PAVEMENT

<table>
<thead>
<tr>
<th>Weight (TN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement</td>
</tr>
<tr>
<td>1.7</td>
</tr>
</tbody>
</table>

TOTAL WEIGHT: 1.7 TN
## 400-4-4  
**Concrete Class IV, Superstructure**

<table>
<thead>
<tr>
<th>Volume (cy)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>44.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>26.0</td>
</tr>
<tr>
<td><strong>Total Volume:</strong></td>
<td>70.0</td>
</tr>
</tbody>
</table>

## 401-70-3  
**Restore Spalled Areas, Latex Modified Mortar-Acrylic**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>6.6</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>1.2</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>93.8</td>
</tr>
<tr>
<td>Abutments</td>
<td>23.4</td>
</tr>
<tr>
<td>Approach Slabs</td>
<td>2.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total Volume:</strong></td>
<td>127.0</td>
</tr>
</tbody>
</table>

## 411-1  
**Epoxy Material for Crack Injection-Structures Rehab**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prestressed Piles</td>
<td>11.3</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>26.3</td>
</tr>
<tr>
<td>Abutments</td>
<td>16.3</td>
</tr>
<tr>
<td>Approach Slabs</td>
<td>1.3</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Total Volume:</strong></td>
<td>61.0</td>
</tr>
</tbody>
</table>

## 411-1  
**(Asphalt) Epoxy Material for Crack Injection-Structures Rehab**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>3.8</td>
</tr>
<tr>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td><strong>Total Volume:</strong></td>
<td>4.0</td>
</tr>
</tbody>
</table>

---

G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\904110\904110 Repair Quantity.xlsx
### 411-2 CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prestressed Piles</td>
<td>85.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>200.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>127.0</td>
</tr>
<tr>
<td>Approach Slabs</td>
<td>12.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>50.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>474 LF</strong></td>
</tr>
</tbody>
</table>

### 411-2 (ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>30.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>30 LF</strong></td>
</tr>
</tbody>
</table>

### 415-1-4 REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinfrcing steel</td>
<td>1896.8</td>
<td>11379.8</td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td><strong>11380 LB</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Based on similar estimates*

### 415-1-5 REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinfrcing steel from spall repair</td>
<td>118.4</td>
<td>710.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>710.4</td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td><strong>711 LB</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Based on similar estimates*
### 458-1-11
**BRIDGE DECK EXPANSION JOINT, NEW CONSTRUCTION, F&S Poured Joint W/**

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Number of joints</th>
<th>Width (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-5</td>
<td>5</td>
<td>6</td>
<td>14.250</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 86 LF

### 705-10-3
**OBJECT MARKER, TYPE 3**

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of markers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwest corner</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL POSTS:** 1 EA
2.2 Replacement Cost Estimate (904110)
CONSTRUCTION COST ESTIMATE
for
GEIGER KEY BRIDGE REPLACEMENT
Bridge #904110
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>GEIGER KEY #904110</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Reinforced Concrete Flat Slab Bridge</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
</tr>
<tr>
<td><strong>Cost per Square Foot</strong></td>
</tr>
</tbody>
</table>

| Bridge Length (ft) | 125.2 |
| Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft) | 36 |
| Deck Area (sf) | 4507 |
| **Bridge Cost** | $1,175,477.76 |
| **Approach work, approach slab, and incidental items** | $300,000.00 |
| **TOTAL** | **$1,475,477.76** |
3.0 Similar Sound (904120)
3.1 Repair Cost Estimate (904120)
CONSTRUCTION COST ESTIMATE
for
SIMILAR SOUND BRIDGE REPAIR
Bridge #904120
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1</td>
<td>LS</td>
<td>$43,511.18</td>
<td>$43,511.18</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1</td>
<td>LS</td>
<td>$43,511.18</td>
<td>$43,511.18</td>
</tr>
<tr>
<td>104-1-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>478</td>
<td>LF</td>
<td>$15.00</td>
<td>$7,170.00</td>
</tr>
<tr>
<td>110-3</td>
<td>REMOVAL OF EXISTING STRUCTURE</td>
<td>1741</td>
<td>LS/SF</td>
<td>$42.98</td>
<td>$76,560.38</td>
</tr>
<tr>
<td>400-4-4</td>
<td>CLASS IV CONCRETE, SUPERSTRUCTURE</td>
<td>62</td>
<td>CY</td>
<td>$2,000.00</td>
<td>$124,000.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>72.2</td>
<td>CF</td>
<td>$358.33</td>
<td>$40,311.43</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>6</td>
<td>GA</td>
<td>$145.00</td>
<td>$906.25</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>52</td>
<td>LF</td>
<td>$80.00</td>
<td>$4,160.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>10044</td>
<td>LB</td>
<td>$1.50</td>
<td>$15,066.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>434</td>
<td>LB</td>
<td>$1.50</td>
<td>$651.00</td>
</tr>
<tr>
<td>458-1-11</td>
<td>BRIDGE DECK EXPANSION JOINT, NEW CONSTRUCTION, F&amp;Poured Joint with Backer Rod</td>
<td>102</td>
<td>LF</td>
<td>$57.74</td>
<td>$5,889.48</td>
</tr>
<tr>
<td>521-5-1</td>
<td>CONCRETE TRAFFIC RAILING, BRIDGE 32' F-SHAPE</td>
<td>102</td>
<td>LF</td>
<td>$150.00</td>
<td>$15,360.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20% $75,419.38
TOTAL $452,516.28

*Includes SUPERSTRUCTURE REPLACEMENT
(More cost effective than S.S. SPALL REPAIR)
### 104-11

**FLOATING TURBIDITY BARRIER**

<table>
<thead>
<tr>
<th>Pile Bents</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>34</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>44</td>
<td>13.5</td>
<td>115.00</td>
</tr>
</tbody>
</table>

Number of bends: 1

Layers of barrier around work area (double): 2

LENGTH: 230 LF

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>34</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>44</td>
<td>9</td>
<td>62.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2

Layers of barrier around work area (double): 2

LENGTH: 248 LF

TOTAL LENGTH: 478 LF

### 110-3

**REMOVAL OF EXISTING STRUCTURE**

<table>
<thead>
<tr>
<th>Area (SF)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire bridge span</td>
<td>1740.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1740.8</td>
<td></td>
</tr>
<tr>
<td>TOTAL AREA:</td>
<td>1741</td>
<td>SF</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>LS</td>
</tr>
</tbody>
</table>

### 400-4-4

**CLASS IV CONCRETE, SUPERSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume (cy)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>43.0</td>
<td></td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>19.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>62.0</td>
<td></td>
</tr>
<tr>
<td>TOTAL VOLUME:</td>
<td>62.0</td>
<td>CY</td>
</tr>
</tbody>
</table>

G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\904120\904120 Repair Quantity.xlsx
### 401-70-3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR-ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prestressed Piles</td>
<td>3.6</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>4.2</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>10.8</td>
</tr>
<tr>
<td>Abutments</td>
<td>53.4</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
<td><strong>72.2 CF</strong></td>
</tr>
</tbody>
</table>

### 411-1
**EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prestressed Piles</td>
<td>1.3</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>5.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
<td><strong>6 GA</strong></td>
</tr>
</tbody>
</table>

### 411-2
**CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Length (LF)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prestressed Piles</td>
<td>9.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>3.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>40.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>52 LF</strong></td>
</tr>
</tbody>
</table>

### 415-1-4
**REINFORCING STEEL-SUPERSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density*(lb/ft)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>1674.0</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td><strong>10044 LB</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Based on similar estimates
# Reinforcing Steel-Substructure

<table>
<thead>
<tr>
<th>Volume concrete</th>
<th>Steel density*</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(cf)</td>
<td>(lb/cf)</td>
<td></td>
</tr>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>72.2</td>
<td>6</td>
</tr>
</tbody>
</table>

TOTAL WEIGHT: 434 LB

*Based on similar estimates

---

# Bridge Deck Expansion Joint, New Construction, F&I
POURED JOINT WITH BACKER ROD

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Number of joints</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-2</td>
<td>2</td>
<td>3</td>
<td>102.00</td>
</tr>
</tbody>
</table>

TOTAL LENGTH: 102 LF

---

# Concrete Traffic Railing, Bridge 32" F-Shape

<table>
<thead>
<tr>
<th>Number of Railings</th>
<th>Length of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-2</td>
<td>2</td>
<td>102.400</td>
</tr>
</tbody>
</table>

TOTAL LENGTH: 102 LF
3.2 Replacement Cost Estimate (904120)
CONSTRUCTION COST ESTIMATE
for
SIMILAR SOUND BRIDGE REPLACEMENT
Bridge #904120
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for medium simple span Florida I-Beam Bridge</td>
<td>$145.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>3% 4.35</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>20%  $29.00</td>
</tr>
<tr>
<td>Increase by 75% due to work in Monroe County (FIB Construction)</td>
<td>75%  $108.75</td>
</tr>
<tr>
<td><strong>Cost per Square Foot</strong></td>
<td><strong>$287.10</strong></td>
</tr>
<tr>
<td>Bridge Length (ft)</td>
<td>51.2</td>
</tr>
<tr>
<td>Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft)</td>
<td>36</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>1843</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$529,182.72</td>
</tr>
<tr>
<td>Approach work, approach slab, and incidental items</td>
<td>$300,000.00</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$829,182.72</strong></td>
</tr>
</tbody>
</table>
4.0 Bay Point (904140)
4.1 Repair Cost Estimate (904140)
## Construction Cost Estimate

### Bay Point Bridge Repair

**Bridge #904140**

**Monroe County, Florida**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td><strong>Mobilization</strong> 15% 1 LS</td>
<td></td>
<td>$4,015.34</td>
<td></td>
</tr>
<tr>
<td>102-1</td>
<td><strong>Maintenance of Traffic (# Days)</strong> 1 LS</td>
<td></td>
<td>$4,015.34</td>
<td></td>
</tr>
<tr>
<td>401-70-3</td>
<td><strong>Restore Spalled Areas, Latex Modified Mortar, Acrylic</strong> 41.2 CF</td>
<td></td>
<td>$558.33</td>
<td>$23,003.20</td>
</tr>
<tr>
<td>411-1</td>
<td><strong>Epoxy Material for Crack Injection-Structures Rehab</strong> 4 GA</td>
<td></td>
<td>$145.00</td>
<td>$534.75</td>
</tr>
<tr>
<td>411-2</td>
<td><strong>Cracks Inject &amp; Seal-Structures Rehab</strong> 30 LF</td>
<td></td>
<td>$80.00</td>
<td>$2,400.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td><strong>Reinforcing Steel-Superstructure</strong> 20 LB</td>
<td></td>
<td>$1.50</td>
<td>$30.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td><strong>Reinforcing Steel-Substructure</strong> 228 LB</td>
<td></td>
<td>$1.50</td>
<td>$342.00</td>
</tr>
<tr>
<td>460-1-13</td>
<td><strong>Struct Steel Rehab-Bolt, Nut, Wash &amp; Plt</strong> 3 LB</td>
<td></td>
<td>$150.00</td>
<td>$450.00</td>
</tr>
</tbody>
</table>

**Contingencies: 20%**

**Total: $41,759.56**
401-70-3  
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR-ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
</table>
| Approach Slabs | 3.2  
| Abutments | 38.0  
| TOTAL VOLUME: | 41.2 CF  

411-1  
**EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
</table>
| Approach Slabs | 2.5  
| Abutments | 1.3  
| TOTAL VOLUME: | 4 GA  

411-2  
**CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
</table>
| Approach Slabs | 20.0  
| Abutments | 10.0  
| TOTAL LENGTH: | 30 LF  

415-1-4  
**REINFORCING STEEL-SUPERSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/ft³)</th>
<th>Steel (lb)</th>
</tr>
</thead>
</table>
| Reinforcing steel | 3.2  | 6  | 19.2  
| TOTAL WEIGHT: | 20 LB  

*Based on similar estimates
### REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.0</td>
<td>6</td>
<td>226.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>228.0</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 228 LB

*Based on similar estimates

### STRUCTURAL STEEL REHAB-BOLT, NUT, WASH & PLT

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Lock Nuts</th>
<th>Weight (lb)</th>
<th>Total Weight (lb)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guardrail Lock Nuts</td>
<td>3</td>
<td>1.0</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.0</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 3 LB
4.2 Replacement Cost Estimate (904140)
CONSTRUCTION COST ESTIMATE
for
BAY POINT BRIDGE REPLACEMENT
Bridge #904140
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>BAY POINT #904140</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Reinforced Concrete Flat Slab Bridge</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
</tr>
</tbody>
</table>

Cost per Square Foot $260.80

---

Bridge Length (ft) 22.4
Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft) 36
Deck Area (sf) 806
Bridge Cost $210,309.12
Approach work, approach slab, and incidental items $150,000.00

TOTAL $360,309.12
5.0 Shore Drive (904152)
5.1 Repair Cost Estimate (904152)
## CONSTRUCTION COST ESTIMATE

for

SHORE DRIVE BRIDGE REPAIR

Bridge #904152

MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1</td>
<td>LS</td>
<td>$25.20</td>
<td>$25.20</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1</td>
<td>LS</td>
<td>$25.20</td>
<td>$25.20</td>
</tr>
<tr>
<td>111-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>8 GA</td>
<td>$145.00</td>
<td>$1,160.00</td>
<td></td>
</tr>
<tr>
<td>111-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>60 LF</td>
<td>$80.00</td>
<td>$4,800.00</td>
<td></td>
</tr>
<tr>
<td>561-1</td>
<td>COATING EXISTING STRUCTURAL STEEL</td>
<td>1 LS</td>
<td>$168.00</td>
<td>$168.00</td>
<td></td>
</tr>
</tbody>
</table>

**CONTINGENCIES 20% $1,221.18**

**TOTAL** $7,327.08

* Pay Item 561-1 includes the cost of painting the ruling steel hardware.
### 411-1  (ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Material</th>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>7.5</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME: 8 GA**

### 411-2  (ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Material</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>60.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH: 60 LF**

### 561-1  COATING EXISTING STRUCTURAL STEEL

<table>
<thead>
<tr>
<th>Material</th>
<th>Number of plates</th>
<th>Weight (lb)</th>
<th>Total Weight (ton)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Steel</td>
<td>28</td>
<td>6.0</td>
<td>168.0</td>
</tr>
</tbody>
</table>

Convert to tons: 0.1

**TOTAL WEIGHT: 0 TN**
5.2 Replacement Cost Estimate (904152)
# CONSTRUCTION COST ESTIMATE

for

SHORE DRIVE BRIDGE REPLACEMENT

Bridge #904152

MONROE COUNTY, FLORIDA

---

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>SHORE DRIVE #904152</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use cost for short simple span Prestressed Slab Unit Bridge</strong></td>
</tr>
<tr>
<td><strong>Increase by 3% due to construction over open water</strong></td>
</tr>
<tr>
<td><strong>Increase by 20% due to phased construction</strong></td>
</tr>
<tr>
<td><strong>Increase by 40% due to work in Monroe County</strong></td>
</tr>
</tbody>
</table>

**Cost per Square Foot** **$260.80**

| Bridge Length (ft) | **35.1** |
| Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft) | **36** |
| Deck Area (sf) | **1,264** |

**Bridge Cost** **$329,546.88**

**Approach work, approach slab, and incidental items** **$300,000.00**

**TOTAL** **$629,546.88**
6.0 Sugarloaf Boulevard (904153)
6.1 Repair Cost Estimate (904153)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% - 1 -</td>
<td>LS</td>
<td>$78,795.93</td>
<td></td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% - 1 -</td>
<td>LS</td>
<td>$78,795.93</td>
<td></td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>616 - LF</td>
<td>$15.00</td>
<td>$9,240.00</td>
<td></td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>805.2 - CF</td>
<td>$358.33</td>
<td>$449.967.32</td>
<td></td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>31 - GA</td>
<td>$145.00</td>
<td>$4,531.25</td>
<td></td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>247 - LF</td>
<td>$80.00</td>
<td>$19,760.00</td>
<td></td>
</tr>
<tr>
<td>413-151</td>
<td>METHACRYLATE MONOMER</td>
<td>32 - GA</td>
<td>$123.00</td>
<td>$3,952.80</td>
<td></td>
</tr>
<tr>
<td>413-154</td>
<td>CLEANING AND SEALING CONCRETE SURFACES, PENETRANT SEALER OR METHACRYLATES</td>
<td>3167.3 - SF</td>
<td>$0.98</td>
<td>$3,103.91</td>
<td></td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>4060 - LB</td>
<td>$1.50</td>
<td>$6,090.00</td>
<td></td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>772 - LB</td>
<td>$1.50</td>
<td>$1,158.00</td>
<td></td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, Poured Joint with Backer Rod</td>
<td>103 - LF</td>
<td>$120.00</td>
<td>$12,360.00</td>
<td></td>
</tr>
<tr>
<td>530-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>24.0 - CY</td>
<td>$650.00</td>
<td>$15,600.00</td>
<td></td>
</tr>
</tbody>
</table>

**CONTINGENCIES 20%**  $136,579.61

**TOTAL**  $819,477.65
## 104-11 FLOATING TURBIDITY BARRIER

### Pile Bents

<table>
<thead>
<tr>
<th></th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>26</td>
<td>3.5</td>
<td>99.00</td>
</tr>
<tr>
<td>5 ft working zone</td>
<td>5</td>
<td>5</td>
<td>99.00</td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>36</td>
<td>13.5</td>
<td>99.00</td>
</tr>
</tbody>
</table>

- Number of bents: 2
- Layers of barrier around work area (double): 2

LENGTH: 396 LF

### Abutments

<table>
<thead>
<tr>
<th></th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>27</td>
<td>4</td>
<td>55.00</td>
</tr>
<tr>
<td>5 ft working zone</td>
<td>5</td>
<td>5</td>
<td>55.00</td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>37</td>
<td>9</td>
<td>55.00</td>
</tr>
</tbody>
</table>

- Number of abutments: 2
- Layers of barrier around work area (double): 2

LENGTH: 220 LF

TOTAL LENGTH: 616 LF

## 401-70-3 RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC

### Volume (cf)

<table>
<thead>
<tr>
<th>Description</th>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>670.8</td>
</tr>
<tr>
<td>Approach Slabs</td>
<td>0.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>5.8</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>1.2</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>125.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>2.4</td>
</tr>
<tr>
<td>Abutments</td>
<td>0.0</td>
</tr>
</tbody>
</table>

805.2

TOTAL VOLUME: 805.2 CF
### 411-1  EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th></th>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>8.8</td>
</tr>
<tr>
<td>Approach Slabs</td>
<td>10.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>3.8</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>3.8</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>1.3</td>
</tr>
<tr>
<td>Abutments</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
<td><strong>31.3</strong></td>
</tr>
</tbody>
</table>

### 411-2  CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th></th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>70.0</td>
</tr>
<tr>
<td>Approach Slabs</td>
<td>80.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>27.0</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>28.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>14.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>28.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>247.0</strong></td>
</tr>
</tbody>
</table>
### 413-151 METHACRYLATE MONOMER

<table>
<thead>
<tr>
<th>Location</th>
<th>Width (ft)</th>
<th>Span (ft)</th>
<th>Surface area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Deck</td>
<td>25.75</td>
<td>123.00</td>
<td>3167.3</td>
</tr>
</tbody>
</table>

Volume (GA)

| 100 SF / GA | 31.7 |    |

**TOTAL AREA:** 32 GA

### 413-154 CLEANING AND SEALING CONCRETE SURFACES: PENETRANT SEALER OR

<table>
<thead>
<tr>
<th>Location</th>
<th>Width (ft)</th>
<th>Span (ft)</th>
<th>Surface area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Deck</td>
<td>25.75</td>
<td>123.00</td>
<td>3167.3</td>
</tr>
</tbody>
</table>

**TOTAL AREA:** 3,167.3 SF
**Kisinger Campo & Associates, Corp.**

---

**Project**: Sugarloaf Boulevard Repair  
**Subject**: Estimated Quantities  
**Calcs**: JWG  
**Check**:  
**Date**: 05/14  
**Date**: 7/14

### 415-1-4 REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>676.6</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT**: 4060 LB

*Based on similar estimates

### 415-1-5 REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>128.6</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT**: 772 LB

*Based on similar estimates

### 458-1-21 BRIDGE DECK EXPANSION JOINT, REHABILITATION

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-3</td>
<td>4</td>
<td>25.750</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH**: 103 LF

### 530-1 RIPRAP, SAND-CEMENT

<table>
<thead>
<tr>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Erosion</td>
</tr>
</tbody>
</table>

23.3

**TOTAL VOLUME**: 24 CY
6.2 Replacement Cost Estimate (904153)
**Bridge Development Report Cost Estimating**
*Effective 01/01/2014*

**Step One: Estimate Component Items**
Utilizing the cost provided herein, develop the cost estimate for each bridge type under consideration.

### A. Bridge Substructure

1. **Prestressed Concrete Piling, (furnished and installed)**

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; (Driven Battered)</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$100</td>
<td>350</td>
<td>$35,000</td>
</tr>
<tr>
<td>24&quot; (Driven Battered)</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Battered)</td>
<td>$185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy mild steel reinforcing in pile head (each)</td>
<td>$250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When silica fume, metakaolin or ultrafine fly ash is used add $6/LF to the piling cost.

**Subtotal** $35,000

2. **Steel Piling, (furnished and installed)**

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 x 73 H Section</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 x 89 H Section</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; Pipe Pile</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20&quot; Pipe Pile</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; Pipe Pile</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; Pipe Pile</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**
### 3. Drilled Shaft (Total in-place cost)

<table>
<thead>
<tr>
<th>Dia. (on land, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, permanent casing)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$2,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$2,400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal

### 4. Cofferdam Footing (Cofferdam and Seal Concrete)

Prorate the cost provided herein based on area and depth of water. A cofferdam footing having the following attributes cost $600,000: Area 63 ft x 37.25 ft; Depth of seal 5 ft; Depth of water over footing 16 ft.

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Footing</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cofferdam Footing</td>
<td>$600,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Cost of seal concrete included in pay item 400-3-20 or 400-4-200.

Subtotal

### 5. Substructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Bent Concrete ¹</td>
<td>$1,200</td>
<td>42</td>
<td>$50,400</td>
</tr>
<tr>
<td>Wall Concrete ¹</td>
<td>$1,200</td>
<td>92,444444444</td>
<td>$110,933</td>
</tr>
<tr>
<td>Seal Concrete ¹</td>
<td>$410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulkhead Concrete ¹</td>
<td>$975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell Fill ¹</td>
<td>$30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riprap</td>
<td>$800</td>
<td>27,777777778</td>
<td>$22,222</td>
</tr>
</tbody>
</table>

1 Admixtures: For Calcium Nitrite add $40/cy (@4.5 gal/cy) and for silica fume, metakaolin or ultrafine fly ash add $40/cy (@ 60 lb./cy)

Subtotal $183,556
### 6. Substructure Reinforcing and Post-tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$1.50</td>
<td>21,900</td>
<td>$32,850</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand</td>
<td>$4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$32,850</strong></td>
</tr>
</tbody>
</table>

**Substructure Subtotal** $251,406

### B. Walls

#### 1. Retaining Walls

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE Walls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>$26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sheet Pile Walls, Prestressed Concrete</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10&quot; x 30&quot;</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12&quot; x 30&quot;</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sheet Pile Walls, Steel</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Cantilever Wall</td>
<td>$24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Anchored Wall</td>
<td>$50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Cantilever Wall</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Anchored Wall</td>
<td>$35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic Railings with Junction Slabs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F Shape or Vertical Face</td>
<td>$145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F Shape or Vertical Face</td>
<td>$165</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Includes the cost of anchors, water steel, miscellaneous steel for permanent/temporary walls and concrete face for permanent walls.

**Subtotal**

### 2. Noise Wall

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Wall</td>
<td>$25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Walls Subtotal**

### C. Bridge Superstructure

#### 1. Bearing Type

<table>
<thead>
<tr>
<th>Neoprene Bearing Pads</th>
<th>Cost per Cubic Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene Bearing Pads</td>
<td>$900</td>
<td>5.69</td>
<td><strong>$5,121</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multirotational Bearings (Capacity in kips)</th>
<th>Cost per Each</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- 250</td>
<td>$6,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>251- 500</td>
<td>$7,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>501- 750</td>
<td>$8,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>751-1000</td>
<td>$9,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1001-1250</td>
<td>$9,900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1251-1500</td>
<td>$10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1501-1750</td>
<td>$11,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1751-2000</td>
<td>$12,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;2000</td>
<td>$15,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** **$5,121**
## 2. Bridge Girders

<table>
<thead>
<tr>
<th>Structural Steel (includes coating)</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolled Wide Flange Sections, straight ¹</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled Wide Flange Sections, curved ¹</td>
<td>$1.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Straight ¹</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Curved ¹</td>
<td>$1.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Straight ¹</td>
<td>$1.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Curved ¹</td>
<td>$2.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prestressed Concrete Girders and Slabs</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fl. Inverted Tee 16&quot; ²</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 20&quot;</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 24&quot; ²</td>
<td>$105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 48&quot; ²</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 54&quot;</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 63&quot;</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 72&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x12&quot;)</td>
<td>$150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x15&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x12&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x15&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x12&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x15&quot;)</td>
<td>$180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AASHTO Type II Beam</td>
<td>$98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 36 ³</td>
<td>$235</td>
<td>490</td>
<td>$115,150</td>
</tr>
<tr>
<td>Florida-I; 45 ³</td>
<td>$235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 54 ³</td>
<td>$210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 63 ³</td>
<td>$220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 72 ³</td>
<td>$230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 78 ³</td>
<td>$235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 84 ³</td>
<td>$270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 96 ³</td>
<td>$350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 78</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 84</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ When weathering steel (uncoated) is used, reduce the price by $0.04 per pound. Inorganic zinc coating systems have an expected life cycle of 20 years.

² Price is based on ability to furnish products without any conversions of casting beds and without purchasing o forms. If these conditions do not exist, add the following cost: Inverted Tee - $202,000; Fl. Tub - $403,000

³ The prices of Florida-I Beams range in value from large quantity (low price) to small quantity (high price).
### C. Bridge Superstructure (continued)

#### 3. Cast-in-Place Superstructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Girder Concrete, Straight</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girder Concrete, Curved</td>
<td>$1,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deck Concrete</td>
<td>$1,200</td>
<td>89,72222222</td>
<td>$107,667</td>
</tr>
<tr>
<td>Precast Deck Overlay Concrete Class IV</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$107,667</strong></td>
</tr>
</tbody>
</table>

#### 4. Concrete for Precast Segmental Box Girders, Cantilever Construction

<table>
<thead>
<tr>
<th>Concrete Cost by Deck Area</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 300,000 SF</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 300,000 SF AND ≤ 500,000 SF</td>
<td>$1,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 500,000 SF</td>
<td>$1,150</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$27,590</strong></td>
</tr>
</tbody>
</table>

#### 5. Reinforcing and Post-Tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$1.50</td>
<td>18,393</td>
<td>$27,590</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; longitudinal</td>
<td>$2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; transverse</td>
<td>$4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$27,590</strong></td>
</tr>
</tbody>
</table>

#### 6. Railings and Barriers

<table>
<thead>
<tr>
<th>Traffic Railings 1</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot; F-Shape</td>
<td>$70</td>
<td>165</td>
<td>$11,550</td>
</tr>
<tr>
<td>32&quot; F-Shape Median</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F-Shape</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Vertical Face</td>
<td>$90</td>
<td>165</td>
<td>$14,850</td>
</tr>
<tr>
<td>42&quot; Vertical Face</td>
<td>$115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Corral</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Retrofit</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Panel Retrofit</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Face Retrofit</td>
<td>$100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pedestrian/Bicycle Railings:**

<table>
<thead>
<tr>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decorative Concrete Railing</td>
<td>$150</td>
<td></td>
</tr>
<tr>
<td>Single Bullet Railing 1</td>
<td>$27</td>
<td></td>
</tr>
<tr>
<td>Double Bullet Railing 1</td>
<td>$36</td>
<td></td>
</tr>
<tr>
<td>Triple Bullet Railing 1</td>
<td>$45</td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 1)</td>
<td>$86</td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 3)</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (42&quot;) aluminum (Type 1)</td>
<td>$63</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) steel</td>
<td>$95</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) aluminum (Type 1)</td>
<td>$80</td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: **$26,400**

1 Combine cost of Bullet Railings with Concrete Parapet or Traffic Railing, as appropriate.
### 7. Expansion Joints

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip Seal</td>
<td>$400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &lt;6&quot;</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &gt;6&quot;</td>
<td>$1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 6&quot;</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 8&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 12&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $281,927

### D. Miscellaneous Items

#### 1. Bridge Deck Grooving and Planing

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grooving - Deck Thickness less than 8.5&quot;</td>
<td>$4.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grooving and Planing- Deck Thickness 8.5&quot;+</td>
<td>$14</td>
<td>3570</td>
<td>$49,980</td>
</tr>
</tbody>
</table>

Grooving and Planing Subtotal: $49,980

#### 2. Detour Bridges

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrow Detour Bridge 1</td>
<td>$55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Detour Bridge Subtotal

1 Using FDOT supplied components. The cost is for the bridge proper and does not include approach work, surfacing, or guardrail.

#### 3. Approach Slab

<table>
<thead>
<tr>
<th>Approach Slab Material</th>
<th>Cost per Unit</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast-in-Place Concrete (per Sq. Yard)</td>
<td>$800</td>
<td>80</td>
<td>$64,000</td>
</tr>
<tr>
<td>Reinforcing Steel (per Pound)</td>
<td>$1.00</td>
<td>3,778</td>
<td>$3,778</td>
</tr>
<tr>
<td>Railing Type per Superstructure Section 6 (per Lin. Foot)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approach Slab Subtotal: $67,778

Unadjusted Total: $651,091
Step Two: Estimate Conditional Variables and Cost per Square Foot

After developing the total cost estimate utilizing the unit cost, modify the cost to account for site condition variables. If appropriate, the cost will be modified by the following variables:

<table>
<thead>
<tr>
<th>Conditional Variables</th>
<th>% Increase/Decrease</th>
<th>Cost (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For construction over open water, floodplains that flood frequently or other similar areas, increase cost by 3%</td>
<td>3%</td>
<td>$19,533</td>
</tr>
<tr>
<td>Phased construction, increase by 20%.¹</td>
<td>20%</td>
<td>$130,218.12</td>
</tr>
<tr>
<td>Unit cost increase for work in Monroe County</td>
<td>40%</td>
<td>$260,436.23</td>
</tr>
<tr>
<td>Mobilization</td>
<td>15%</td>
<td>$97,663.59</td>
</tr>
<tr>
<td>Maintenance of Traffic</td>
<td>15%</td>
<td>$97,663.59</td>
</tr>
<tr>
<td>Approach Work, Demo and Incidental Items</td>
<td>20%</td>
<td>$130,218.12</td>
</tr>
</tbody>
</table>

¹ Phased construction is defined as construction over traffic or construction requiring multiple phases to complete the construction of the entire cross section of the bridge. The 20 percent premium is applied to the affected units of the superstructure and/or substructure.

| Substructure Subtotal         | $251,406 |
| Superstructure Subtotal       | $281,927 |
| Walls Subtotal                |          |
| Grooving and Planing Subtotal | $49,980  |
| Detour Bridge Subtotal        |          |
| Approach Slab Subtotal        | $67,778  |
| Conditional Variables         | $735,732 |
| **Total Cost**                | **$1,386,823** |

**Total Square Feet of Deck** 3420

**Cost per Square Foot (not including Approach Slab)** $290
**Design Aid for Determination of Reinforcing Steel**

In the absence of better information, use the following quantities of reinforcing steel pounds per cubic yard of

<table>
<thead>
<tr>
<th>Location</th>
<th>Pounds of Steel per Cubic Yard</th>
<th>Cubic Yds.</th>
<th>Tot. Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Abutments</td>
<td>135</td>
<td>162.22222222</td>
<td>21,900</td>
</tr>
<tr>
<td>Pile Bents</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &gt;25'</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &lt;25'</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &gt;25'</td>
<td>215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &lt;25'</td>
<td>195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bascule Piers</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Deck Slabs</td>
<td>205</td>
<td>89.72222222</td>
<td>18,393</td>
</tr>
<tr>
<td>Isotropic Deck Slabs</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Pier Seg</td>
<td>225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Typ. Seg</td>
<td>165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.I.P. Flat Slabs @ 30ft &amp; 15&quot; Deep</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Slab</td>
<td>200</td>
<td>18.89</td>
<td>3,778</td>
</tr>
</tbody>
</table>
Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot.

<table>
<thead>
<tr>
<th>Bridge Superstructure Type</th>
<th>Total Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Short Span Bridges:</td>
<td></td>
</tr>
<tr>
<td>Reinforced Concrete Flat Slab - Simple Span¹</td>
<td>$115</td>
</tr>
<tr>
<td>Pre-cast Concrete Slab - Simple Span¹</td>
<td>$110</td>
</tr>
<tr>
<td>Medium Span Bridges:</td>
<td></td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Simple Span¹</td>
<td>$125</td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Continuous Span¹</td>
<td>$135</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Simple Span¹</td>
<td>$90</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Continuous Span¹</td>
<td>$95</td>
</tr>
<tr>
<td>Concrete Deck / Steel Box Girder¹ -</td>
<td></td>
</tr>
<tr>
<td>Span range from 150' to 280' (for curvature, add 15% premium)</td>
<td>$140</td>
</tr>
<tr>
<td>Segmental Concrete Box Girders - Cantilever Construction</td>
<td>$140</td>
</tr>
<tr>
<td>Movables Bridge - Bascule Spans &amp; Piers</td>
<td>$1,800</td>
</tr>
</tbody>
</table>

Demolition Costs:

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Total Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical</td>
<td>$35</td>
</tr>
<tr>
<td>Bascule</td>
<td>$60</td>
</tr>
</tbody>
</table>

- Increase the cost by twenty percent for phased construction

Estimated Cost per Square Foot: $290
7.0 Sugarloaf Creek (904155)
7.1 Repair Cost Estimate (904155)
<table>
<thead>
<tr>
<th>Item Description and Number</th>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>001:1 -</td>
<td>MOBILIZATION</td>
<td>LS</td>
<td>1</td>
<td>15%</td>
<td>$41,000.00</td>
</tr>
<tr>
<td>002:11 -</td>
<td>MAINTENANCE OF TRAFFIC (90 DAYS)</td>
<td>LS</td>
<td>1</td>
<td>10%</td>
<td>$41,000.00</td>
</tr>
<tr>
<td>019:11 -</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>CY</td>
<td>1</td>
<td>100%</td>
<td>$164.67</td>
</tr>
<tr>
<td>019:70:3 -</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>LF</td>
<td>1088</td>
<td>15%</td>
<td>$16,200.00</td>
</tr>
<tr>
<td>011:1 -</td>
<td>EPOXY MATERIAL FOR CRACK INJECTIONS, STRUCTURES REBAR</td>
<td>GA</td>
<td>100</td>
<td>10%</td>
<td>$558.33</td>
</tr>
<tr>
<td>011:1 -</td>
<td>EPOXY MATERIAL FOR CRACK INJECTIONS, STRUCTURES REBAR</td>
<td>LF</td>
<td>64</td>
<td>10%</td>
<td>$145.00</td>
</tr>
<tr>
<td>011:1 -</td>
<td>EPOXY MATERIAL FOR CRACK INJECTIONS, STRUCTURES REBAR</td>
<td>LF</td>
<td>42</td>
<td>10%</td>
<td>$137.50</td>
</tr>
<tr>
<td>015:1-4 -</td>
<td>CRACKS INJECT &amp; SEAL STRUCTURES REBAR</td>
<td>LF</td>
<td>50</td>
<td>10%</td>
<td>$200.00</td>
</tr>
<tr>
<td>015:1-5 -</td>
<td>REINFORCING STEEL, SUBSTRUCTURE</td>
<td>LF</td>
<td>50</td>
<td>10%</td>
<td>$350.00</td>
</tr>
<tr>
<td>015:1-21 -</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, Poured Joint with Backer Rod</td>
<td>LF</td>
<td>75</td>
<td>10%</td>
<td>$500.00</td>
</tr>
<tr>
<td>015:1-21 -</td>
<td>HEALING &amp; SUPER-DURABLE</td>
<td>CY</td>
<td>75</td>
<td>10%</td>
<td>$500.00</td>
</tr>
<tr>
<td>015:1-21 -</td>
<td>HEALING &amp; SUPER-DURABLE</td>
<td>CY</td>
<td>75</td>
<td>10%</td>
<td>$500.00</td>
</tr>
</tbody>
</table>

TOTAL: $34,793.87
### 104-11
**FLOATING TURBIDITY BARRIER**

#### Pile Bents

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>30</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Total barrier needed</strong></td>
<td>40</td>
<td>13.5</td>
<td>107.0</td>
</tr>
</tbody>
</table>

- Number of bents: 4
- Layers of barrier around work area (double): 2

\[ \text{LENGTH: } 856 \text{ LF} \]

#### Abutments

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>30</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Total barrier needed</strong></td>
<td>40</td>
<td>9</td>
<td>58.06</td>
</tr>
</tbody>
</table>

- Number of abutments: 2
- Layers of barrier around work area (double): 2

\[ \text{LENGTH: } 232 \text{ LF} \]

**TOTAL LENGTH: 1088 LF**

### 121-70
**FLOWABLE FILL**

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (ft)</th>
<th>Height (ft)</th>
<th>Depth (ft)</th>
<th>Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gap in Abutment 6 slope</td>
<td>30</td>
<td>0.25</td>
<td>1.5</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Assume 100% additional quantity: 1.0

\[ \text{TOTAL VOLUME: } 0.8 \text{ CY} \]

### 401-70-3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

<table>
<thead>
<tr>
<th>Description</th>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>8.4</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>1.6</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>82.4</td>
</tr>
<tr>
<td>Abutments</td>
<td>7.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
</tr>
</tbody>
</table>

\[ \text{TOTAL VOLUME: } 100.0 \text{ CF} \]
### 411-1  
**EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Material</th>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>3.8</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>0.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 5 Gal

### 411-1  
**(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Material</th>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>163.8</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 164 Gal

### 411-2  
**CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Material</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>30.0</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>0.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>12.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 42 LF

### 411-2  
**(ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Material</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>1260.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 1260 LF
### 415-1-4  REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>8.4</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 51 LB

*Based on similar estimates

---

### 415-1-5  REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>9.1 6</td>
<td>549.6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 550 LB

*Based on similar estimates

---

### 455-1-21  BRIDGE DECK EXPANSION JOINT, REHABILITATION

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-5</td>
<td>6 30,000</td>
<td>180,000</td>
</tr>
<tr>
<td>Approach Slabs (Longitudinal)</td>
<td>2 32,500</td>
<td>65,000</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 245 LF

---

### 530-1  RIPRAPH, SAND-CEMENT

<table>
<thead>
<tr>
<th>Location</th>
<th>Total Volume (CF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast Slope Protection</td>
<td>74.1</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 75 CY
7.2 Replacement Cost Estimate (904155)
# CONSTRUCTION COST ESTIMATE

for

**SUGARLOAF CREEK BRIDGE REPLACEMENT**

*Bridge #904155*

MONROE COUNTY, FLORIDA

---

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

## SUGARLOAF CREEK #904155

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost (in $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
<td>160.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>4.80</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>32.00</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
<td>64.00</td>
</tr>
</tbody>
</table>

**Cost per Square Foot**  260.80

---

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Length (ft)</td>
<td>200</td>
</tr>
<tr>
<td>Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W)+1.08'(S)</td>
<td>36</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>7200</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>1,877,760.00</td>
</tr>
<tr>
<td>Approach work, approach slab, and incidental items</td>
<td>300,000.00</td>
</tr>
</tbody>
</table>

**TOTAL**  2,177,760.00

---

G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\904155\904155 Replacement Cost.xlsx
8.0 Old S.R. 939 (CR 939) (904160)
8.1 Repair Cost Estimate (904160)
## CONSTRUCTION COST ESTIMATE
for
OLD S.R. 4A (CR 939) BRIDGE REPAIR
Bridge #904160
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Notes</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$15.00</td>
<td>$18,040.46</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$18,040.46</td>
<td></td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>352</td>
<td>LF</td>
<td>$5,280.00</td>
<td></td>
</tr>
<tr>
<td>339-1</td>
<td>MISCELLANEOUS ASPHALT PAVEMENT</td>
<td>1</td>
<td>TN</td>
<td>$257.69</td>
<td></td>
</tr>
<tr>
<td>401-1-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>60.6</td>
<td>CF</td>
<td>$33,834.88</td>
<td></td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>8</td>
<td>GA</td>
<td>$1,087.50</td>
<td></td>
</tr>
<tr>
<td>411-1-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>64</td>
<td>GA</td>
<td>$9,243.75</td>
<td></td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>60</td>
<td>LF</td>
<td>$4,800.00</td>
<td></td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>492</td>
<td>LF</td>
<td>$39,360.00</td>
<td></td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL SUPERSTRUCTURE</td>
<td>304</td>
<td>LB</td>
<td>$456.00</td>
<td></td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL SUBSTRUCTURE</td>
<td>60</td>
<td>LB</td>
<td>$90.00</td>
<td></td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURRED JOINT WITH BACKER ROD</td>
<td>118</td>
<td>LF</td>
<td>$14,160.00</td>
<td></td>
</tr>
<tr>
<td>530-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>18.0</td>
<td>CY</td>
<td>$11,700.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>CONTINGENCIES 20%</strong></td>
<td></td>
<td></td>
<td></td>
<td>$31,270.13</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td>$187,620.78</td>
</tr>
</tbody>
</table>
### 104-11
**Floating Turbidity Barrier**

<table>
<thead>
<tr>
<th>Bents</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>60</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>70</td>
<td>9</td>
<td>88.00</td>
</tr>
</tbody>
</table>

Number of bents: 2
Layers of barrier around work area (double): 2

LENGTH: **352** LF
TOTAL LENGTH: **352** LF

### 339-1
**Miscellaneous Asphalt Pavement**

<table>
<thead>
<tr>
<th>Settlement (Fire Damage)</th>
<th>Weight (TN)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>1.1</td>
</tr>
</tbody>
</table>

TOTAL WEIGHT: **1.1** TN

### 401-70-3
**Restore Spalled Areas, Latex Modified Mortar- Acrylic**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>14.6</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>36.0</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>0.2</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>2.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>7.8</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: **60.6** CF

### 411-1
**Epoxy Material for Crack Injection-Structures Rehab**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>0.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>5.0</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>0.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>2.5</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: **8** GA
### 411-1 (ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>63.8</td>
</tr>
<tr>
<td></td>
<td>63.8</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
<td><strong>64</strong> GA</td>
</tr>
</tbody>
</table>

### 411-2 CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Length (LF)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>2.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>40.0</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>0.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>2.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>16.0</td>
</tr>
<tr>
<td></td>
<td>60.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>60</strong> LF</td>
</tr>
</tbody>
</table>

### 411-2 (ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Length (LF)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>492.0</td>
</tr>
<tr>
<td></td>
<td>492.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>492</strong> LF</td>
</tr>
</tbody>
</table>

### 415-1-4 REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.6</td>
<td>6</td>
<td>303.6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 304 LB

*Based on similar estimates

### 415-1-5 REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0</td>
<td>6</td>
<td>60.0</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 60 LB
# Kisinger Campo & Associates, Corp.

**Project:** Old S.R. 939 Repair  
**Subject:** Estimated Quantities  

Calcs: JWG  
Date: 05/14  
Check: JLL  
Date: 07/14

*Based on similar estimates*

## 458-1-21  
**BRIDGE DECK EXPANSION JOINT, REHABILITATION,**

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-3</td>
<td>4</td>
<td>29.500</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 118 LF

## 530-1  
**RIPRAP, SAND-CEMENT**

<table>
<thead>
<tr>
<th>Location</th>
<th>Length (ft)</th>
<th>Area (SF)</th>
<th>Total Volume (CF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abutment 1 Bank</td>
<td>60</td>
<td>4.0</td>
<td>240.0</td>
</tr>
<tr>
<td>Abutment 4 Bank</td>
<td>60</td>
<td>4.0</td>
<td>240.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17.8</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 18 CY
8.2 Replacement Cost Estimate (904160)
CONSTRUCTION COST ESTIMATE
for
OLD S.R. 4A (CR 939) BRIDGE REPLACEMENT
Bridge #904160
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
<td>$160.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>3%</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>20%</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
<td>40%</td>
</tr>
</tbody>
</table>

Cost per Square Foot $260.80

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Length (ft)</td>
<td>82</td>
</tr>
<tr>
<td>Bridge Width: 24'(Lanes) + 4'(Shldr.) + 5'(S/W) 1.08' + 1.54'(Barriers) (ft)</td>
<td>36</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>2952</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$769,881.60</td>
</tr>
<tr>
<td>Approach work, approach slab, and incidental items</td>
<td>$300,000.00</td>
</tr>
</tbody>
</table>

TOTAL $1,069,881.60
9.0 Caribbean Drive (904250)
9.1 Repair Cost Estimate (904250)
## CONSTRUCTION COST ESTIMATE

for

CARIBBEAN DRIVE BRIDGE REPAIR

Bridge #904250

MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Notes</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Price</th>
<th>Total Amount Per item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$2,275.76</td>
<td>$2,275.76</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$2,275.76</td>
<td>$2,275.76</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>224</td>
<td>LF</td>
<td>$3,360.00</td>
<td>$3,360.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>3.6</td>
<td>CF</td>
<td>$2,009.99</td>
<td>$2,009.99</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>4</td>
<td>GA</td>
<td>$543.75</td>
<td>$543.75</td>
</tr>
<tr>
<td>411-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>5</td>
<td>GA</td>
<td>$725.00</td>
<td>$725.00</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>25</td>
<td>LF</td>
<td>$2,000.00</td>
<td>$2,000.00</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>40</td>
<td>LF</td>
<td>$3,200.00</td>
<td>$3,200.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>22</td>
<td>LB</td>
<td>$33,000.00</td>
<td>$33,000.00</td>
</tr>
<tr>
<td>530-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>2</td>
<td>CY</td>
<td>$1,300.00</td>
<td>$1,300.00</td>
</tr>
<tr>
<td>561-1</td>
<td>COATING EXISTING STRUCTURAL STEEL</td>
<td>1.0</td>
<td>LS</td>
<td>$2,000.00</td>
<td>$2,000.00</td>
</tr>
</tbody>
</table>

**CONTINGENCIES 20%**

TOTAL $22,667.91

*Pay Item 561-1 includes the cost of painting railing base plates.*
**104-11**

**FLOATING TURBIDITY BARRIER**

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>28</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>38</td>
<td>9</td>
<td>56.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2
Layers of barrier around work area (double): 2

**LENGTH:** 224 LF
**TOTAL LENGTH:** 224 LF

---

**401-70-3**

**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>3.6</td>
</tr>
<tr>
<td>3.6</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 3.6 CF

---

**411-1**

**EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>3.8</td>
</tr>
<tr>
<td>3.8</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 4 GA

---

**411-1**

**(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td>5.0</td>
</tr>
<tr>
<td>5.0</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 5 GA

---

**411-2**

**CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>25.0</td>
</tr>
<tr>
<td>25.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 25 LF
### 411- 2
**(ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>40.0</td>
</tr>
<tr>
<td>TOTAL LENGTH:</td>
<td>40 LF</td>
</tr>
</tbody>
</table>

### 415- 1- 5
**REINFORCING STEEL-SUBSTRUCTURE**

<table>
<thead>
<tr>
<th>Description</th>
<th>Concrete Volume (cf)</th>
<th>Steel Density (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>3.6</td>
<td>6</td>
<td>21.6</td>
</tr>
<tr>
<td>TOTAL WEIGHT:</td>
<td>22 LB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Based on similar estimates*

### 530- 1
**RIPRAP, SAND-CEMENT**

<table>
<thead>
<tr>
<th>Description</th>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underwater Void</td>
<td>2.000</td>
</tr>
<tr>
<td>TOTAL VOLUME:</td>
<td>2 CY</td>
</tr>
</tbody>
</table>

### 561- 1
**COATING EXISTING STRUCTURAL STEEL**

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>Steel (lb)</th>
<th>Total Weight (ton)*</th>
<th>Convert to tons:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Steel (Coat Entire Railing)</td>
<td>20</td>
<td>100.0</td>
<td>2000.0</td>
<td>1.0</td>
</tr>
<tr>
<td>TOTAL WEIGHT:</td>
<td>1.00000 TN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Total weight estimate based on images.*
9.2 Replacement Cost Estimate (904250)
# CONSTRUCTION COST ESTIMATE

for

CARIBBEAN DRIVE BRIDGE REPLACEMENT
Bridge #904250
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>CARIBBEAN DRIVE #904250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
</tr>
</tbody>
</table>

Cost per Square Foot $260.80

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Length (ft)</td>
<td>24.2</td>
</tr>
<tr>
<td>Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft)</td>
<td>36</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>871</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$227,208.96</td>
</tr>
<tr>
<td>Approach work, approach slab, and incidental items</td>
<td>$300,000.00</td>
</tr>
</tbody>
</table>

TOTAL $527,208.96
CONSTRUCTION COST ESTIMATE
for
OLD S.R. 4A (CR 939) BARRIER REPLACEMENT
Bridge #904160
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Quantity</th>
<th>Unit</th>
<th>Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>50%</td>
<td>LS</td>
<td>$49,077.50</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTANENCE OF TRAFFIC (# OF DAYS)</td>
<td>20%</td>
<td>LS</td>
<td>$19,631.00</td>
</tr>
<tr>
<td>110-3</td>
<td>REMOVAL OF EXISTING STRUCTURES</td>
<td>399</td>
<td>SF</td>
<td>$45.00</td>
</tr>
<tr>
<td>400-4-4</td>
<td>CLASS IV CONCRETE, SUPERSTRUCTURE</td>
<td>11</td>
<td>CY</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>421-5-1</td>
<td>CONCRETE TRAFFIC RAILING, BRIDGE 32&quot; F SHAPE</td>
<td>168</td>
<td>LF</td>
<td>$150.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 50% $83,431.75
TOTAL $250,295.25

* CLASS IV CONCRETE USED TO REBUILD/STRENGTHEN OVERHANGS  *
* HIGH CONTINGENCY AND MOBILIZATION TO ACCOUNT FOR SMALL JOB WITH UTILITY IMPACTS/ADJUSTMENTS  *
10.0 Watson Boulevard (904305)
10.1 Repair Cost Estimate (904305)
## CONSTRUCTION COST ESTIMATE
for
WATSON BOULEVARD BRIDGE REPAIR
Bridge #904305
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Notes</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1 -</td>
<td>LS</td>
<td></td>
<td>$6,207.29</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1 -</td>
<td>LS</td>
<td></td>
<td>$6,207.29</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>224 -</td>
<td>LF</td>
<td></td>
<td>$3,360.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>17.4 -</td>
<td>CF</td>
<td></td>
<td>$9,714.94</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>4 -</td>
<td>GA</td>
<td></td>
<td>$543.75</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>24 -</td>
<td>GA</td>
<td></td>
<td>$3,443.75</td>
</tr>
<tr>
<td>411-1-1</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>26 -</td>
<td>LF</td>
<td></td>
<td>$2,080.00</td>
</tr>
<tr>
<td>411-2-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>186 -</td>
<td>LF</td>
<td></td>
<td>$18,880.00</td>
</tr>
<tr>
<td>415-1-1</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>105 -</td>
<td>LB</td>
<td></td>
<td>$157.50</td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURED JOINT WITH BACKER ROD</td>
<td>55 -</td>
<td>LF</td>
<td></td>
<td>$6,552.00</td>
</tr>
<tr>
<td>530-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>1 -</td>
<td>CY</td>
<td></td>
<td>$650.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20% $10,759.30
TOTAL $64,555.83
### 104-11 FLOATING TURBIDITY BARRIER

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>28</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>38</td>
<td>9</td>
<td>56.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2  
Layers of barrier around work area (double): 2  
LENGTH: 224 LF  
TOTAL LENGTH: 224 LF

### 401-70-3 RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR-ACRYLIC

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 17.4 CF

### 411-1 EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 4 GA

### 411-1 (ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 24 GA
## CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Material</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>20.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>26.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td>26 LF</td>
</tr>
</tbody>
</table>

## (ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Material</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>186.0</td>
</tr>
<tr>
<td></td>
<td>186.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td>186 LF</td>
</tr>
</tbody>
</table>

## REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Material</th>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>17.4</td>
<td>6</td>
<td>104.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td>105 LB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Based on similar estimates

## BRIDGE DECK EXPANSION JOINT, REHABILITATION

<table>
<thead>
<tr>
<th>Number of joints</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span 1</td>
<td>2</td>
<td>27.300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>54.600</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td>55 LG</td>
<td></td>
</tr>
</tbody>
</table>

## RIPRAP, SAND-CEMENT

<table>
<thead>
<tr>
<th>Description</th>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Undermining</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
<td>1 CY</td>
</tr>
</tbody>
</table>
10.2 Replacement Cost Estimate (904305)
CONSTRUCTION COST ESTIMATE
for
WATSON BOULEVARD BRIDGE REPLACEMENT
Bridge #904305
MONROE COUNTY, FLORIDA

| Replacement Cost is based on FDOT Historical Bridge Cost per square foot |
| WATSON BOULEVARD #904305 |
| Use cost for short simple span Prestressed Slab Unit Bridge $160.00 |
| Increase by 3% due to construction over open water 3% 4.80 |
| Increase by 20% due to phased construction 20% $32.00 |
| Increase by 40% due to work in Monroe County 40% $64.00 |
| Cost per Square Foot $260.80 |

| Bridge Length (ft) 26.1 |
| Bridge Width: 24' (Lanes) + 4' (Shldr.) + 5'(S/W) 1.08' + 1.54' (Barriers) (ft) 36 |
| Deck Area (sf) 940 |
| Bridge Cost $245,047.68 |
| Approach work, approach slab, and incidental items $300,000.00 |
| TOTAL $545,047.68 |
11.0 Fern Avenue (904307)
11.1 Repair Cost Estimate (904307)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Quantity</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1 LS</td>
<td></td>
<td></td>
<td>$4,804.50</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1 LS</td>
<td></td>
<td></td>
<td>$4,804.50</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>3.2 CF</td>
<td></td>
<td>$558.33</td>
<td>$1,786.66</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>6 GA</td>
<td></td>
<td>$145.00</td>
<td>$870.00</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>24 GA</td>
<td></td>
<td>$145.00</td>
<td>$3,443.75</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>48 LF</td>
<td></td>
<td>$80.00</td>
<td>$3,840.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>187 LF</td>
<td></td>
<td>$80.00</td>
<td>$14,960.00</td>
</tr>
<tr>
<td>458-1-21</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>20 LB</td>
<td></td>
<td>$1.50</td>
<td>$30.00</td>
</tr>
<tr>
<td>705-10-3</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, Poured JOINT WITH BACKER ROD</td>
<td>56 LF</td>
<td></td>
<td>$120.00</td>
<td>$6,744.00</td>
</tr>
<tr>
<td>705-10-3</td>
<td>OBJECT MARKER, TYPE 3</td>
<td>2 EA</td>
<td></td>
<td>$159.67</td>
<td>$319.34</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20% $8,327.80
TOTAL $49,966.79
<table>
<thead>
<tr>
<th>Project: Fern Avenue Repair</th>
<th>Calcs: JWG</th>
<th>Date: 05/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject: Estimated Quantities</td>
<td>Check:</td>
<td>Date: 7/14</td>
</tr>
</tbody>
</table>

### 401-70-3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
</tr>
</tbody>
</table>

### 411-1
**EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
</tr>
</tbody>
</table>

### 411-1
**(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
</tr>
</tbody>
</table>

### 411-2
**CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
</tr>
</tbody>
</table>

### 411-2
**(ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
</tr>
</tbody>
</table>
### 415-1-4  REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Reinforcing steel</th>
<th>Volume concrete (cf)</th>
<th>Steel density (lb/ft³)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.2</td>
<td>6</td>
<td>19.2</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 20 LB

*Based on similar estimates*

### 458-1-21  BRIDGE DECK EXPANSION JOINT, REHABILITATION

<table>
<thead>
<tr>
<th>Span 1</th>
<th>Number of joints</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>28.100</td>
<td>56.200</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 56 LF

### 705-10-3  OBJECT MARKER, TYPE 3

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of markers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast corner</td>
<td>1</td>
</tr>
<tr>
<td>Southwest corner</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**TOTAL POSTS:** 2 EA
11.2 Replacement Cost Estimate (904307)
CONSTRUCTION COST ESTIMATE

for

FERN AVENUE BRIDGE REPLACEMENT
Bridge #904307
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>FERN AVENUE #904307</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
</tr>
</tbody>
</table>

Cost per Square Foot $260.80

| Bridge Length (ft) | 26.2 |
| Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft) | 36 |
| Deck Area (sf) | 943 |
| Bridge Cost | $245,986.56 |
| Approach work, approach slab, and incidental items | $300,000.00 |

TOTAL $545,986.56
12.0 S.R. 940 – Leg A (Watson Boulevard) (904310)
12.1 Repair Cost Estimate (904310)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Quantity</th>
<th>Unit</th>
<th>Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS *</td>
<td>$646.59</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS *</td>
<td>$646.59</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>244 *</td>
<td>LF *</td>
<td>$15.00</td>
</tr>
<tr>
<td>130-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>1 *</td>
<td>CY *</td>
<td>$650.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CONTINGENCIES 20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TOTAL</td>
</tr>
</tbody>
</table>
### FLOATING TURBIDITY BARRIER

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutments</td>
<td>33</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutments</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>43</td>
<td>9</td>
<td>61.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2
Layers of barrier around work area (double): 2

**LENGTH:** 244 LF

**TOTAL LENGTH:** 244 LF

### RIPRAP, SAND-CEMENT

<table>
<thead>
<tr>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Erosion</td>
</tr>
<tr>
<td>0.2</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 1 CY
12.2 Replacement Cost Estimate (904310)
CONSTRUCTION COST ESTIMATE
for
S.R. 940 - LEG A (WATSON BOULEVARD) BRIDGE REPLACEMENT
Bridge #904310
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>S.R. 940 - LEG A (WATSON BOULEVARD) #904310</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
</tr>
</tbody>
</table>

Cost per Square Foot | $260.80 |

| Bridge Length (ft) | 30 |
| Bridge Width: 24' (Lanes) + 4' (Shldr.) + 5' (S/W) 1.08' + 1.54' (Barriers) (ft) | 36 |
| Deck Area (sf) | 1080 |

Bridge Cost | $281,664.00 |
Approach work, approach slab, and incidental items | $300,000.00 |

TOTAL | $581,664.00 |
13.0 No Name Key (904320)
13.1 Repair Cost Estimate (904320)
### CONSTRUCTION COST ESTIMATE

for

FPID # 430121-1-58-01
NO NAME KEY BRIDGE REPAIR
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101- 1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$553,669.08</td>
</tr>
<tr>
<td>102- 1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$553,669.08</td>
</tr>
<tr>
<td>104- 11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>6827</td>
<td>LF</td>
<td>$15.00</td>
</tr>
<tr>
<td>400-142- 3</td>
<td>CATHODIC PROTECTION SYSTEM, ZINC ALUMINUM SPRAY</td>
<td>12514</td>
<td>SF</td>
<td>$55.00</td>
</tr>
<tr>
<td>401- 70- 3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>3346.6</td>
<td>CF</td>
<td>$558.33</td>
</tr>
<tr>
<td>411- 1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>25</td>
<td>GA</td>
<td>$145.00</td>
</tr>
<tr>
<td>411- 2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>100</td>
<td>LF</td>
<td>$80.00</td>
</tr>
<tr>
<td>415- 1- 4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>18482</td>
<td>LB</td>
<td>$1.50</td>
</tr>
<tr>
<td>415- 1- 5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>1598</td>
<td>LB</td>
<td>$1.50</td>
</tr>
<tr>
<td>455- 81-101</td>
<td>CATHODIC PROTECTION, F&amp;R, PILE, ZINC ANODE ASSEMBLY</td>
<td>12</td>
<td>EA</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>457- 2-121</td>
<td>CATHODIC PROTECTION INTEGRAL PIKE JACKET, NON-STRUCTURAL, 16.1&quot; to 30&quot; GALVANIC SYSTEM</td>
<td>141</td>
<td>LF</td>
<td>$2,300.00</td>
</tr>
<tr>
<td>457- 2-221</td>
<td>CATHODIC PROTECTION INTEGRAL PIKE JACKET, STRUCTURAL, 16.1&quot; to 30&quot; GALVANIC SYSTEM</td>
<td>154</td>
<td>LF</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>458- 1- 21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURED JOINT WITH BACKER ROD</td>
<td>1610</td>
<td>LF</td>
<td>$120.00</td>
</tr>
<tr>
<td>561- 1</td>
<td>COATING EXISTING STRUCTURAL STEEL</td>
<td>1</td>
<td>LS</td>
<td>$69,700.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 15% $719,769.80
TOTAL $5,518,235.13

QUANTITIES FROM REPAIR PLANS.

ACTUAL LOW BID = $2,997,676.
13.2 Replacement Cost Estimate (904320)
4. Recommendations

The six alternatives previously described are as follows:

- Alternative 1 – Repair Existing Structure in Kind
- Alternative 2 – Superstructure Replacement in Kind (Spans 16-28)
- Alternative 3 – Superstructure Replacement with Vertical Face Retrofit (Spans 16-28)
- Alternative 4 – Superstructure Replacement for Entire Bridge
- Alternative 5 – Deck Replacement for Entire Bridge
- Alternative 6 – Bridge Replacement

In an effort to simplify the selection of the preferred alternative, a decision matrix was created. See Table 1 below for a decision matrix of all alternatives.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Cost</th>
<th>Environmental Impacts</th>
<th>Permitting Delays</th>
<th>Vehicular/Pedestrian Impacts</th>
<th>Estimated Service Life</th>
<th>Exceptions Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$7.4 M</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>$6.7 M</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>Barrier &amp; Sidewalk</td>
</tr>
<tr>
<td>3</td>
<td>$8.1 M</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>Sidewalk</td>
</tr>
<tr>
<td>4</td>
<td>$10.6 M</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>$11.6 M</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>$14.6 M - $20.4 M</td>
<td>Very High</td>
<td>Very High</td>
<td>Low</td>
<td>Very High</td>
<td>No</td>
</tr>
</tbody>
</table>

The decision matrix gives a better view of the alternatives. It is very important to permit this project within the schedule limits so that the project can be funded the next fiscal year with available funds. In addition, as this bridge is the only access to No Name Key, vehicular and pedestrian impacts should be avoided. As a result, the preferred alternative is Alternative 1 – Repair Existing Structure in Kind. This will have the least amount of anticipated permitting delays, environmental impacts and vehicular and pedestrian impacts. In addition, through coordination with the FDOT District 6 Maintenance Office, it has been determined that repairing...
the bridge in kind will not require processing an exception for both the obsolete post and beam railing and the non-compliant ADA sidewalks. However, this alternative will have a limited estimated service life of 10 to 12 years.

Alternatives 2 and 3 would provide a slightly longer estimated service life for close to the same cost as Alternative 1. However, the permitting delays due to the environmental impacts could delay the project past the scheduled funding timeframe. In addition, bridge closures would be required that would negatively impact the residents of No Name Key.

Alternatives 4 and 5 will provide ADA compliant sidewalks and crash tested barriers. However, there is a high possibility of long permitting delays that may extend outside of the funding limits. In addition, there is a significantly greater cost for these two alternatives even though the estimated service life of the bridge will still be controlled by the life of the substructure. Rather than spending approximately $10 M to $12 M repairing the bridge with a relatively short estimated service life, it would be more feasible to replace the bridge (Alternative 6) for an estimated cost of $14 M to $20 M. This would provide approximately a 75 year service life.

Alternative 6 (Bridge Replacement) is the best long term solution. Obtaining approvals and permitting a bridge replacement will be a long process. Consideration should be given to ensure that the estimated permitting duration does not exceed the usable life span of the repaired bridge when this alternative is pursued in the future.

The short term solution is to repair the bridge in kind to allow adequate time for a bridge replacement to be funded, permitted and designed. The proposed repairs consist of the following:

- Spall, delamination and crack repair for all elements
- Clean and replace all joints
- Clean and paint all exposed portions of bearing assemblies
- Non-structural pile jackets installed on all piles with cracks, pop out spalls or corrosion bleed out
- Structural pile jackets installed on all piles with large delaminations or exposed strands

Design Development Report
No Name Key Bridge Repair
Monroe County, Florida
- Bulk zinc anode assemblies will be installed on exposed steel H-pile tips
- All bent caps will receive a metalized coating after spall repair procedures

The total cost of these repairs including mobilization and maintenance of traffic is estimated to be $7,371,000.
14.0 Tom's Harbor Channel (904600)
14.1 Repair Cost Estimate (904600)
## Construction Cost Estimate

**For**

**Tom's Harbor Channel Bridge Repair**

*Bridge #904600*

**Monroe County, Florida**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Notes</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>Mobilization</td>
<td>15%</td>
<td>LS</td>
<td></td>
<td>$2,378.00</td>
</tr>
<tr>
<td>102-1</td>
<td>Maintenance of Traffic (# Days)</td>
<td>15%</td>
<td>LS</td>
<td></td>
<td>$2,378.00</td>
</tr>
<tr>
<td>104-11</td>
<td>Floating Turbidity Barrier</td>
<td></td>
<td>LF</td>
<td>$15.00</td>
<td>$3,780.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>Restore Spalled Areas, Latex Modified Mortar, Acrylic</td>
<td>10.0</td>
<td>CF</td>
<td>$558.33</td>
<td>$5,583.30</td>
</tr>
<tr>
<td>415-1-4</td>
<td>Reinforcing Steel-Superstructure</td>
<td>60</td>
<td>LB</td>
<td>$1.50</td>
<td>$90.00</td>
</tr>
<tr>
<td>458-1-21</td>
<td>Bridge Deck Expansion Joint, Rehabilitation, Poured Joint with Backer Rod</td>
<td>10</td>
<td>LF</td>
<td>$120.00</td>
<td>$1,200.00</td>
</tr>
<tr>
<td>530-1</td>
<td>Riprap, Sand-Cement</td>
<td></td>
<td>CY</td>
<td>$650.00</td>
<td>$5,200.00</td>
</tr>
<tr>
<td></td>
<td><strong>Contingencies 20%</strong></td>
<td></td>
<td></td>
<td></td>
<td>$4,121.86</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$24,731.15</strong></td>
</tr>
</tbody>
</table>
### 104-11
**FLOATING TURBIDITY BARRIER**

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutments</td>
<td>35</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bents</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>45</td>
<td>9</td>
<td>63.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2
Layers of barrier around work area (double): 2

Length: 252 LF
Total Length: 252 LF

### 401-70-3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beams and Diaphragms</td>
</tr>
</tbody>
</table>

Total Volume: 10.0 CF

### 415-1-4
**REINFORCING STEEL-SUPERSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/ft³)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>10.0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

Total Weight: 60 LB

*Based on similar estimates

### 458-1-21
**BRIDGE DECK EXPANSION JOINT, REHABILITATION**

<table>
<thead>
<tr>
<th>Number of joints</th>
<th>Width of repair (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint 3</td>
<td>10.000</td>
<td>10.000</td>
</tr>
</tbody>
</table>

Total Length: 10 LF
| Existing Undermining | 8.0 CY |

**TOTAL VOLUME:** 8 CY
14.2 Replacement Cost Estimate (904600)
CONSTRUCTION COST ESTIMATE
for
TOM'S HARBOR CHANNEL BRIDGE REPLACEMENT
Bridge #904600
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>TOM'S HARBOR CHANNEL #904600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for medium simple span Florida I-Beam Bridge</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
</tr>
<tr>
<td>Increase by 75% due to work in Monroe County (FIB Construction)</td>
</tr>
</tbody>
</table>

Cost per Square Foot $287.10

| Bridge Length (ft) | 248 |
| Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft) | 36 |
| Deck Area (sf) | 8928 |
| Bridge Cost | $2,563,228.80 |
| Approach work, approach slab, and incidental items | $300,000.00 |

TOTAL $2,863,228.80
15.0 Truman Bridge (904602)
15.1 Repair Cost Estimate (904602)
# CONSTRUCTION COST ESTIMATE

for

TRUMAN BRIDGE REPAIR  
Bridge #904602  
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1</td>
<td>LS</td>
<td>$15,330.63</td>
<td></td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1</td>
<td>LS</td>
<td>$15,330.63</td>
<td></td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>668</td>
<td>LF</td>
<td>$15.00</td>
<td>$10,020.00</td>
</tr>
<tr>
<td>121-70</td>
<td>FLOWABLE FILL</td>
<td>7</td>
<td>CY</td>
<td>$200.00</td>
<td>$1,422.22</td>
</tr>
<tr>
<td>400-8-5</td>
<td>CLASS V CONCRETE, SUBSTRUCTURE</td>
<td>2</td>
<td>CY</td>
<td>$942.10</td>
<td>$2,095.56</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>6.8</td>
<td>CF</td>
<td>$558.33</td>
<td>$3,796.44</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>5</td>
<td>GA</td>
<td>$145.00</td>
<td>$725.00</td>
</tr>
<tr>
<td>411-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>14</td>
<td>GA</td>
<td>$145.00</td>
<td>$1,993.50</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>40</td>
<td>LF</td>
<td>$80.00</td>
<td>$3,200.00</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>105</td>
<td>LF</td>
<td>$80.00</td>
<td>$8,400.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>486</td>
<td>LB</td>
<td>$1.50</td>
<td>$729.00</td>
</tr>
<tr>
<td>530-1</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, Poured JOINT WITH BACKER ROD</td>
<td>165</td>
<td>LF</td>
<td>$120.00</td>
<td>$12,624.00</td>
</tr>
<tr>
<td>530-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>88</td>
<td>CY</td>
<td>$650.00</td>
<td>$57,260.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20%  
TOTAL $159,438.31
## 104-11

**FLOATING TURBIDITY BARRIER**

### Pile Bents

<table>
<thead>
<tr>
<th></th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>27</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>37</td>
<td>19</td>
<td>112.00</td>
</tr>
</tbody>
</table>

Number of bents: 2

Layers of barrier around work area (double): 2

LENGTH: 448 LF

### Abutments

<table>
<thead>
<tr>
<th></th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutments</td>
<td>27</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>37</td>
<td>9</td>
<td>55.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2

Layers of barrier around work area (double): 2

LENGTH: 220 LF

TOTAL LENGTH: 668 LF

## 121-70

**FLOWABLE FILL**

<table>
<thead>
<tr>
<th></th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Height (ft)</th>
<th>Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Void in northeast retaining wall</td>
<td>4.0</td>
<td>4.0</td>
<td>6.0</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Assume 100% additional quantity: 1.0

TOTAL VOLUME: 7.1 CY

## 400-8-5

**CLASS V CONCRETE, SUBSTRUCTURE**

<table>
<thead>
<tr>
<th></th>
<th>Depth (ft)</th>
<th>Width (ft)</th>
<th>Height (ft)</th>
<th>Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Void in northeast retaining wall</td>
<td>1.5</td>
<td>4</td>
<td>5</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Assume 100% additional quantity: 1.0

TOTAL VOLUME: 2.2 CY
### 401-70-3  
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR-ACRYLIC**

<table>
<thead>
<tr>
<th>Type</th>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footers</td>
<td>2.0</td>
</tr>
<tr>
<td>Arches</td>
<td>3.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>6.8</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME: 6.8 CF**

### 411-1  
**EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Type</th>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footers</td>
<td>2.5</td>
</tr>
<tr>
<td>Arches</td>
<td>0.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>0.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>5.0</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME: 5 GA**

### 411-1  
**(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Type</th>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>13.8</td>
</tr>
<tr>
<td></td>
<td>13.8</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME: 14 GA**

### 411-2  
**CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Type</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footers</td>
<td>20.0</td>
</tr>
<tr>
<td>Arches</td>
<td>0.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>0.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>40.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH: 40 LF**

### 411-2  
**(ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Type</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>105.0</td>
</tr>
<tr>
<td></td>
<td>105.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH: 105 LF**
**415- 1- 5**

**REINFORCING STEEL-SUBSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume concrete (cy)</th>
<th>Steel density* (lb/cy)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinf steel from spall repair</td>
<td>0.3</td>
<td>162</td>
</tr>
<tr>
<td>Reinf steel for wall void</td>
<td>2.2</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL WEIGHT: 486 LB

*Based on similar estimates

**458- 1- 21**

**BRIDGE DECK EXPANSION JOINT, REHABILITATION,**

<table>
<thead>
<tr>
<th>Number of joints</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-3</td>
<td>4</td>
<td>26.300</td>
</tr>
</tbody>
</table>

TOTAL LENGTH: 105 LF

**530- 1**

**RIPRAP, SAND-CEMENT**

<table>
<thead>
<tr>
<th>Existing Undermining</th>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>87.4</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 88 CY
15.2 Widening Cost Estimate (904602)
## CONSTRUCTION COST ESTIMATE

for

TRUMAN BRIDGE WIDENING

Bridge #904602

MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Additional Information</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$47,483.34</td>
<td>$47,483.34</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$47,483.34</td>
<td>$47,483.34</td>
</tr>
<tr>
<td>109-71-3</td>
<td>FIELD OFFICE</td>
<td>180.0</td>
<td>DA</td>
<td>$50,00</td>
<td>$9,000.00</td>
</tr>
<tr>
<td>110-1-1</td>
<td>CLEARING &amp; GRUBBING (ASSUME 5%)</td>
<td>1.1</td>
<td>LS</td>
<td>$3,707.45</td>
<td>$3,707.45</td>
</tr>
<tr>
<td>120-1</td>
<td>REGULAR EXCAVATION</td>
<td>145.07</td>
<td>CY</td>
<td>$13.00</td>
<td>$1,885.87</td>
</tr>
<tr>
<td>120-6</td>
<td>EMBANKMENT</td>
<td>26.67</td>
<td>CY</td>
<td>$22.00</td>
<td>$585.33</td>
</tr>
<tr>
<td>522-1</td>
<td>SIDEWALK CONCRETE, 4” THICK</td>
<td>480.0</td>
<td>SY</td>
<td>$51.25</td>
<td>$24,600.00</td>
</tr>
<tr>
<td>527-1</td>
<td>DETECTABLE WARNING ON EXISTING WALKING SURFACE, RETROFIT</td>
<td>1.0</td>
<td>EA</td>
<td>$75.00</td>
<td>$75.00</td>
</tr>
<tr>
<td>536-8</td>
<td>GUARDRAIL BRIDGE ASSEMBLY</td>
<td>4.0</td>
<td>EA</td>
<td>$1,400.00</td>
<td>$5,600.00</td>
</tr>
<tr>
<td>536-1-1</td>
<td>GUARDRAIL - ROADWAY</td>
<td>520.0</td>
<td>LF</td>
<td>$21.00</td>
<td>$10,920.00</td>
</tr>
<tr>
<td>536-1-5</td>
<td>GUARDRAIL - ROADWAY, THREBEAM</td>
<td>175.0</td>
<td>LF</td>
<td>$30.00</td>
<td>$5,250.00</td>
</tr>
<tr>
<td>536-73</td>
<td>GUARDRAIL REMOVAL</td>
<td>300.0</td>
<td>LF</td>
<td>$8.00</td>
<td>$2,400.00</td>
</tr>
<tr>
<td>536-85-22</td>
<td>GUARDRAIL END ANCHORAGE ASSEMBLY - FLARED</td>
<td>4.0</td>
<td>EA</td>
<td>$2,800.00</td>
<td>$11,440.00</td>
</tr>
<tr>
<td>570-1-2</td>
<td>PERFORMANCE TUBE, SOD</td>
<td>800.0</td>
<td>SY</td>
<td>$3.90</td>
<td>$3,120.00</td>
</tr>
<tr>
<td>700-20-11</td>
<td>SINGLE POST SIGN, FAIL, LESS THAN 12 SF</td>
<td>1.0</td>
<td>AS</td>
<td>$340.00</td>
<td>$340.00</td>
</tr>
<tr>
<td>700-20-60</td>
<td>SINGLE POST SIGN, REMOVE</td>
<td>1.0</td>
<td>AS</td>
<td>$13.64</td>
<td>$13.64</td>
</tr>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>4.0</td>
<td>EA</td>
<td>$3.20</td>
<td>$12.80</td>
</tr>
<tr>
<td>711-11-123</td>
<td>THERMOPLASTIC, STANDARD, WHITE, SOLID, 12”</td>
<td>60.0</td>
<td>LF</td>
<td>$2.55</td>
<td>$153.00</td>
</tr>
<tr>
<td>711-11-125</td>
<td>THERMOPLASTIC, STANDARD, WHITE, SOLID, 24”</td>
<td>12.0</td>
<td>LF</td>
<td>$8.50</td>
<td>$69.60</td>
</tr>
<tr>
<td>110-3</td>
<td>REMOVAL OF EXISTING STRUCTURE</td>
<td>320.0</td>
<td>SF</td>
<td>$50.00</td>
<td>$16,000.00</td>
</tr>
<tr>
<td>400-2-4</td>
<td>CONCRETE CLASS II (SUPERSTRUCTURE)</td>
<td>27.3</td>
<td>CY</td>
<td>$1,500.00</td>
<td>$40,972.22</td>
</tr>
<tr>
<td>400-4-5</td>
<td>CONCRETE CLASS IV (SUBSTRUCTURE)</td>
<td>19.3</td>
<td>CY</td>
<td>$2,000.00</td>
<td>$38,630.81</td>
</tr>
<tr>
<td>400-147</td>
<td>COMPOSITE NEOPRENE PADS</td>
<td>4.5</td>
<td>CF</td>
<td>$650.00</td>
<td>$2,625.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL (SUPERSTRUCTURE)</td>
<td>1760</td>
<td>LB</td>
<td>$1.00</td>
<td>$1,760.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL (SUBSTRUCTURE)</td>
<td>2600</td>
<td>LB</td>
<td>$1.10</td>
<td>$2,860.00</td>
</tr>
<tr>
<td>460-2-1</td>
<td>STRUCTURAL STEEL (CARBON)</td>
<td>26133</td>
<td>LB</td>
<td>$2.70</td>
<td>$60,106.67</td>
</tr>
<tr>
<td>521-5-4</td>
<td>CONCRETE TRAFFIC RAILING BARRIER (VERTICAL FACE)</td>
<td>160</td>
<td>LF</td>
<td>$150.00</td>
<td>$24,000.00</td>
</tr>
<tr>
<td>521-6-1</td>
<td>PC DECORATIVE PEDESTRIAN RAILING</td>
<td>220</td>
<td>LF</td>
<td>$150.00</td>
<td>$33,000.00</td>
</tr>
<tr>
<td>HELICAL PILES</td>
<td></td>
<td>12</td>
<td>EA</td>
<td>$2,000.00</td>
<td>$24,000.00</td>
</tr>
<tr>
<td>RDWY REWORK WITHIN BRIDGE LIMITS (INCL. 3/4” FC-5, 3” ASPH CONC &amp; OPT BASE 09)</td>
<td>12</td>
<td>SY</td>
<td>$100.00</td>
<td>$1,185.19</td>
<td></td>
</tr>
</tbody>
</table>

CONTINGENCIES: 20%  
TOTAL: $528,627.00
15.3 Replacement Cost Estimate (904602)
Step One: Estimate Component Item

Utilizing the cost provided herein, develop the cost estimate for each bridge type under consideration.

A. Bridge Substructure

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$75</td>
<td>720</td>
<td>$54,000</td>
</tr>
<tr>
<td>18&quot; (Driven Battered)</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Battered)</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Battered)</td>
<td>$185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy mild steel reinforcing in pile head (each)</td>
<td>$250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When silica fume, metakaolin or ultrafine fly ash is used add $6/LF to the piling cost.

Subtotal $54,000

B. Steel Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 x 73 H Sector</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 x 89 H Sector</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; Pipe Pile</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20&quot; Pipe Pile</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; Pipe Pile</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; Pipe Pile</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal

3. Drilled Shaft (Total in-place cost)

<table>
<thead>
<tr>
<th>Dia. (on land, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, permanent casing)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$2,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$2,400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal
### A. Bridge Substructure (continued)

#### 4. Cofferdam Footing (Cofferdam and Seal Concrete)
Prorate the cost provided herein based on area and depth of water. A cofferdam footing having the following attributes cost $600,000: Area 63 ft x 37.25 ft; Depth of seal 5 ft; Depth of water over footing 16 ft

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Footing</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cofferdam Footing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Cost of seal concrete included in pay item 400-3-20 or 400-4-200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 5. Substructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bent Concrete</td>
<td>$800</td>
<td>44.44</td>
<td>$35,552</td>
</tr>
<tr>
<td>Wall Concrete</td>
<td>$800</td>
<td>251.85</td>
<td>$201,480</td>
</tr>
<tr>
<td>Seal Concrete</td>
<td>$410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulkhead Concrete</td>
<td>$975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell Fill</td>
<td>$30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riprap</td>
<td>$800</td>
<td>25.69</td>
<td>$20,552</td>
</tr>
</tbody>
</table>

1 Admixtures: For Calcium Nitrite add $40/cy (@4.5 gal/cy) and for silica fume, metakaolin or ultrafine fly ash add $40/cy (@ 60 lb/cy)

**Subtotal**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$237,032</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 6. Substructure Reinforcing and Post-tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.90</td>
<td>46,119</td>
<td>$41,507</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strands</td>
<td>$4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$41,507</td>
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<td></td>
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</tbody>
</table>

**Substructure Subtotal**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$332,539</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### B. Walls

#### 1. Retaining Walls

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE Walls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>$26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Sheet Pile Walls, Prestressed Concrete</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10&quot; x 30&quot;</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Cantilever Wall</td>
<td>$24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Anchored Wall 1</td>
<td>$50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Cantilever Wall</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Anchored Wall 1</td>
<td>$35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Railings with Junction Slabs</td>
<td>$145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F Shape or Vertical Fac</td>
<td>$165</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Includes the cost of anchors, waler steel, miscellaneous steel for permanent/temporary walls and concrete face for permanent walls.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$237,032</td>
<td></td>
</tr>
</tbody>
</table>

#### 2. Noise Wall

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Wall</td>
<td>$25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Walls Subtotal**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$332,539</td>
<td></td>
</tr>
</tbody>
</table>
### C. Bridge Superstructure

#### 1. Bearing Type

<table>
<thead>
<tr>
<th>Neoprene Bearing Pads</th>
<th>Cost per Cubic Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene Bearing Pad</td>
<td>$900</td>
<td>14.24</td>
<td>$12,816</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multitotional Bearings (Capacity in kips)</th>
<th>Cost per Each</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- 250</td>
<td>$6,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>251- 500</td>
<td>$7,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>501- 750</td>
<td>$8,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>751-1000</td>
<td>$9,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1001-1250</td>
<td>$9,900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1251-1500</td>
<td>$10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1501-1750</td>
<td>$11,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1751-2000</td>
<td>$12,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;2000</td>
<td>$15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$12,816</strong></td>
</tr>
</tbody>
</table>

#### 2. Bridge Girders

<table>
<thead>
<tr>
<th>Structural Steel (includes coating)</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolled Wide Flange Sections, straight¹</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled Wide Flange Sections, curved¹</td>
<td>$1.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Straight¹</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Curved¹</td>
<td>$1.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Straight¹</td>
<td>$1.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Curved¹</td>
<td>$2.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prestressed Concrete Girders and Slab</strong></td>
<td><strong>Cost per Lin. Foot</strong></td>
<td><strong>Quantity</strong></td>
<td><strong>Cost</strong></td>
</tr>
<tr>
<td>FL Inverted Tee 16²</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL Inverted Tee 20&quot;</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL Inverted Tee 24²</td>
<td>$105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL Tub (U-Beam) 48²</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL Tub (U-Beam) 54&quot;</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL Tub (U-Beam) 63&quot;</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL Tub (U-Beam) 72&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x12&quot;)</td>
<td>$150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x15&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x12&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x15&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x12&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x15&quot;)</td>
<td>$180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AASHTO Type II Beam</td>
<td>$98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLorida-I; 36²</td>
<td>$200</td>
<td>385</td>
<td><strong>$77,000</strong></td>
</tr>
<tr>
<td>Florida-I; 45²</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 54²</td>
<td>$210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 63²</td>
<td>$220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 72³</td>
<td>$230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 78³</td>
<td>$235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 84³</td>
<td>$270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLorida-I; 96³</td>
<td>$350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 7l</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 8l</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ When weathering steel (uncoated) is used, reduce the price by $0.04 per pound. Inorganic zinc coating systems have an expected life cycle of 20 years.

² Price is based on ability to furnish products without any conversions of casting beds and without purchasing forms. If these conditions do not exist, add the following cost: Inverted Tee - $202,000; FL Tub - $403,000

³ The prices of Florida-I Beams range in value from large quantity (low price) to small quantity (high price).
### 3. Cast-in-Place Superstructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Girder Concrete, Straight</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girder Concrete, Curved</td>
<td>$1,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deck Concrete</td>
<td>$750</td>
<td>109.66</td>
<td>$82,238</td>
</tr>
<tr>
<td>Precast Deck Overlay Concrete Class 1</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** $82,238

### 4. Concrete for Precast Segmental Box Girders, Cantilever Construction

<table>
<thead>
<tr>
<th>Concrete Cost by Deck Area:</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 300,000 SF</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 300,000 SF AND ≤ 500,000 SF</td>
<td>$1,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 500,000 SF</td>
<td>$1,150</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**

### 5. Reinforcing and Post-Tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.60</td>
<td>22,478</td>
<td>$13,487</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; longitudinal</td>
<td>$2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; transvers</td>
<td>$4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bar</td>
<td>$6.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** $13,487

### 6. Railings and Barriers

<table>
<thead>
<tr>
<th>Traffic Railings(^1)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot; F-Shape</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F-Shape Mediar</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F-Shape</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Vertical Fasc</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; Vertical Fasc</td>
<td>$115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Corral</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Retrofi</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Panel Retrofi</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Face Retrofi</td>
<td>$100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pedestrian/Bicycle Railings:**

<table>
<thead>
<tr>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decorative Concrete Railings(^1)</td>
<td>$150</td>
<td>274</td>
</tr>
<tr>
<td>Single Bullet Railings(^1)</td>
<td>$27</td>
<td></td>
</tr>
<tr>
<td>Double Bullet Railings(^1)</td>
<td>$36</td>
<td></td>
</tr>
<tr>
<td>Triple Bullet Railings(^1)</td>
<td>$45</td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 1)</td>
<td>$86</td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 3)</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (42&quot;) aluminum (Type 1)</td>
<td>$63</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) stee</td>
<td>$95</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) aluminum (Type 1)</td>
<td>$80</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Combine cost of Bullet Railings with Concrete Parapet or Traffic Railings as appropriate.

**Subtotal** $41,100
### 7. Expansion Joints

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip Seal</td>
<td>$400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &lt;6'</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &gt;6'</td>
<td>$1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 6&quot;</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 8&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 12&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $226,640

### D. Miscellaneous Items

1. **Bridge Deck Grooving and Planing**

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grooving - Deck Thickness less than 8.5</td>
<td>$4.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grooving and Planing - Deck Thickness 8.5&quot;</td>
<td>$14</td>
<td>231</td>
<td>$3,234</td>
</tr>
</tbody>
</table>

Grooving and Planing Subtotal: $3,234

2. **Detour Bridges**

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrow Detour Bridge&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Detour Bridge Subtotal: $55

1 Using FDOT supplied components. The cost is for the bridge proper and does not include approach work, surfacing, or guardrail.

3. **Approach Slab**

<table>
<thead>
<tr>
<th>Approach Slab Material</th>
<th>Cost per Unit</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast-in-Place Concrete (per Sq. Yard)</td>
<td>$800</td>
<td>59.26</td>
<td>$47,408</td>
</tr>
<tr>
<td>Reinforcing Steel (per Pound)</td>
<td>$1.00</td>
<td>2,798</td>
<td>$2,798</td>
</tr>
</tbody>
</table>

Approach Slab Subtotal: $50,206

Unadjusted Total: $62,620

### Step Two: Estimate Conditional Variables and Cost per Square Foot

After developing the total cost estimate utilizing the unit cost, modify the cost to account for site condition variables. If appropriate, the cost will be modified by the following variables:
### Conditional Variables

<table>
<thead>
<tr>
<th>Condition</th>
<th>% Increase/Decrease</th>
<th>Cost (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For construction over open water, floodplains that flood frequently or other similar areas, increase cost by 3%</td>
<td>3%</td>
<td>$18,379</td>
</tr>
<tr>
<td>Phased construction, increase by 20%</td>
<td>20%</td>
<td>$122,524.05</td>
</tr>
<tr>
<td>Unit cost increase for work in Monroe County</td>
<td>40%</td>
<td>$245,048.10</td>
</tr>
<tr>
<td>Mobilization</td>
<td>15%</td>
<td>$91,893.04</td>
</tr>
<tr>
<td>Maintenance of Traffic</td>
<td>15%</td>
<td>$91,893.04</td>
</tr>
<tr>
<td>Approach Work/Utility Adjustment/Debris</td>
<td>20%</td>
<td>$122,524.05</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113%</strong></td>
<td><strong>$592,261</strong></td>
</tr>
</tbody>
</table>

1 Phased construction is defined as construction over traffic or construction requiring multiple phases to complete the construction of the entire cross section of the bridge. The 20 percent premium is applied to the affected units of the superstructure and/or substructure.

### Design Aid for Determination of Reinforcing Steel

In the absence of better information, use the following quantities of reinforcing steel pounds per cubic yard of concrete.

<table>
<thead>
<tr>
<th>Location</th>
<th>Pounds of Steel per Cubic Yard</th>
<th>Cubic Yds.</th>
<th>Total Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Abutments</td>
<td>135</td>
<td>321.98</td>
<td>43,467</td>
</tr>
<tr>
<td>Pile Bents</td>
<td>145</td>
<td>18.29</td>
<td>2,652</td>
</tr>
<tr>
<td>Single Column Piers &gt;25</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &lt;25</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &gt;25</td>
<td>215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &lt;25</td>
<td>195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basque Piers</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Deck Slabs</td>
<td>205</td>
<td>109.65</td>
<td>22,478</td>
</tr>
<tr>
<td>Isotropic Deck Slabs</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Pier Seg</td>
<td>225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Typ. Seg</td>
<td>165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.I.P. Flat Slabs @ 30ft &amp; 15&quot; Deep</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Slab</td>
<td>200</td>
<td>13.99</td>
<td>2,798</td>
</tr>
</tbody>
</table>
Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot. These total cost numbers are calculated exclusively for the bridge cost as defined in the General Section of this chapter. Price computed by Steps 1 and 2 should be generally within the range of cost as supplied herein. If the cost falls outside the provided range, good justification must be provided.

<table>
<thead>
<tr>
<th>Bridge Superstructure Type</th>
<th>Total Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td><strong>Short Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Reinforced Concrete Flat Slab - Simple Span</td>
<td>$115</td>
</tr>
<tr>
<td>Precast Concrete Slab - Simple Span</td>
<td>$110</td>
</tr>
<tr>
<td><strong>Medium Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Simple Span</td>
<td>$125</td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Continuous Span</td>
<td>$135</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Simple Span</td>
<td>$90</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Continuous Span</td>
<td>$95</td>
</tr>
<tr>
<td>Concrete Deck / Steel Box Girder - Span range from 150' to 280' (for curvature, add 15% premium)</td>
<td>$140</td>
</tr>
<tr>
<td>Segmental Concrete Box Girders - Cantilever Construction - Span range from 150' to 280'</td>
<td>$140</td>
</tr>
<tr>
<td>Movable Bridge - Bascule Spans &amp; Piers</td>
<td>$1,800</td>
</tr>
<tr>
<td><strong>Demolition Costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Typical</td>
<td>$35</td>
</tr>
<tr>
<td>Bascule</td>
<td>$60</td>
</tr>
<tr>
<td><strong>Project Type</strong></td>
<td></td>
</tr>
<tr>
<td>Widening (Construction Only)</td>
<td></td>
</tr>
<tr>
<td>Estimated Cost per Square Foot</td>
<td>$310</td>
</tr>
</tbody>
</table>

1 Increase the cost by twenty percent for phased construction.
PILES

\[(6 \text{ / BENT}) \times (4 \text{ BENTS}) = 24 \text{ PILES} \times 30 \text{ LF / PILE} = 720 \text{ LF}\]

BENTS

\[40' \text{ wide} \times 2.5' \text{ high} \times 3' \text{ thick} = 300 \text{ cf} \times 4 \text{ BENTS} = 1200 \text{ cf} \times \frac{1}{27} = 44.44 \text{ cu} \]

WALLS

ABUTMENTS \Rightarrow 2 \text{ BREAST WALLS}: 40' \text{ wide} \times 20' \text{ high} \times 1.5' \text{ thick} = 1200 \text{ cf}

2 \text{ walls} \times 1200 \text{ cf} = \frac{2400 \text{ cf}}{27} = 88.89 \text{ cu}

4 \text{ WING WALLS}: 20' \text{ wide} \times 20' \text{ high} \times 1.5' \text{ thick} = 600 \text{ cf}

4 \text{ walls} \times 600 \text{ cf} = \frac{2400 \text{ cf}}{27} = 88.89 \text{ cu}

INTERMEDIATE BENTS \Rightarrow 2 \text{ BENTS}: [100' \text{ perimeter} \times 20' \text{ high} \times 0.5' \text{ thick}] \times 2

\[\frac{2000 \text{ cf}}{27} = 74.07 \text{ cu}\]

TOTAL = 251.85 \text{ cu}
NEOPRENE PADS

(ASSUME TYPE C FOR MODERATE HEIGHT)

\[ 2 \frac{7}{16}'' = 0.2135' \]

\[ 0.2135' \times (\frac{10}{12}) \times (2.667') = (\frac{4745 \text{ cf}}{\text{pad}}) \times 30 \]

\[ \text{pad} = 14.24 \text{ cf} \]

FIB - 3.6

3' SPAN BRIDGE \[ \Rightarrow \frac{77'}{3} = 25.67' / \text{span} \]

\[ (5 \text{ beams/span})(3 \text{ spans}) \times (25.67') = 385 \text{ LF} \]

DECK CONCRETE

ROADWAY \[ \Rightarrow (\frac{3.5}{12})' \times 39' \times 77' \]

\[ = 2127.125 \text{ cf} \]

SIDEWALK \[ \Rightarrow 2 \times [0.5' \times 6' \times (77' + 2(30))] \]

\[ = 822 \text{ cf} \]

CURB \[ \Rightarrow 2 \times [0.667' \times 0.5' \times (77' + 2(30))] \]

\[ = 11.417 \text{ cf} \]

TOTAL \[ = \frac{2960.54 \text{ cf}}{27} = 109.65 \text{ cf} \]
APPROACH SLABS

40' wide x 20' long = 800 sf x \( \frac{1}{9} \text{ sf} \) = 88.89 \( \text{ sy} \) x 2 slabs

= \( \frac{177.78 \text{ sy}}{59.26 \text{ cy}} \)

GROOVING

77' x 27' = 2079 x \( \frac{1}{9} \) = 231 \( \text{ sy} \)
## Bridge Development Report Cost Estimating

**Effective 01/01/2014**

### Step One: Estimate Component Items

Utilizing the cost provided herein, develop the cost estimate for each bridge type under consideration.

### A. Bridge Substructure

<table>
<thead>
<tr>
<th>1. Prestressed Concrete Piling, (furnished and installed)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$75</td>
<td>720</td>
<td>$54,000</td>
</tr>
<tr>
<td>18&quot; (Driven Battered)</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Battered)</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Battered)</td>
<td>$185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy mild steel reinforcing in pile head (excl)</td>
<td>$250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>$54,000</strong></td>
<td></td>
</tr>
</tbody>
</table>

1 When silica fume, metakaolin or ultrafine fly ash is used add $6/LF to the piling cost.

<table>
<thead>
<tr>
<th>2. Steel Piling, (furnished and installed)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 x 73 H Section</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 x 89 H Section</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; Pipe Pile</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20&quot; Pipe Pile</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; Pipe Pile</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; Pipe Pile</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3. Drilled Shaft (Total in-place cost)

#### Dia. (on land, casing salvaged)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Dia. (in water, casing salvaged)

<table>
<thead>
<tr>
<th>Dia.</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Dia. (in water, permanent casing)

<table>
<thead>
<tr>
<th>Dia.</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$2,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$2,400</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A. Bridge Substructure (continued)

4. Cofferdam Footing (Cofferdam and Seal Concrete)

Prorate the cost provided herein based on area and depth of water. A cofferdam footing having the following attributes cost $600,000: Area 63 ft x 37.25 ft; Depth of seal 5 ft; Depth of water over footing 16 ft.

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Footing</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cofferdam Footing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Cost of seal concrete included in pay item 400-3-20 or 400-4-200.

5. Substructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footing Concrete</td>
<td>$800</td>
<td>168.89</td>
<td>$135,112</td>
</tr>
<tr>
<td>Seal Concrete</td>
<td>$410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulkhead Concrete</td>
<td>$975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell Fill</td>
<td>$30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riprap</td>
<td>$650</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Admixtures: For Calcium Nitrite add $40/cy (@4.5 gal/cy) and for silica fume, metakaolin or ultrafine fly ash add $40/cy (@ 60 lb./cy)

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.90</td>
<td>22,800</td>
<td>$20,520</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strands</td>
<td>$4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal $209,632

B. Walls

1. Retaining Walls

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE Walls</td>
<td>$26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sheet Pile Walls, Prestressed Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>10&quot; x 30&quot;</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12&quot; x 30&quot;</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sheet Pile Walls, Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Cantilever Wall</td>
<td>$24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Anchored Wall</td>
<td>$50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Cantilever Wall</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Anchored Wall</td>
<td>$35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Traffic Railings with Junction Slabs

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot; F Shape or Vertical Faces</td>
<td>$145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F Shape or Vertical Faces</td>
<td>$165</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Includes the cost of anchors, water steel, miscellaneous steel for permanent/temporary walls and concrete face for permanent walls.

Subtotal

2. Noise Wall

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Wall</td>
<td>$25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Walls Subtotal
### C. Bridge Superstructure

#### 1. Bearing Type
<table>
<thead>
<tr>
<th>Neoprene Bearing Pad:</th>
<th>Cost per Cubic Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene Bearing Pad:</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multirotational Bearings (Capacity in kips)</td>
<td>Cost per Each</td>
<td>Quantity</td>
<td>Cost</td>
</tr>
<tr>
<td>1-250</td>
<td>$6,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>251-500</td>
<td>$7,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>501-750</td>
<td>$8,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>751-1000</td>
<td>$9,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1001-1250</td>
<td>$10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1251-1500</td>
<td>$11,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1751-2000</td>
<td>$12,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;2000</td>
<td>$15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 2. Bridge Girders

**Structural Steel (includes coating):**

<table>
<thead>
<tr>
<th></th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolled Wide Flange Sections, straight 1</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled Wide Flange Sections, curve 1</td>
<td>$1.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Straight 1</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Curved 1</td>
<td>$1.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Straight 1</td>
<td>$1.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Curved 1</td>
<td>$2.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Prestressed Concrete Girders and Slab:**

<table>
<thead>
<tr>
<th></th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fl. Inverted Tee 16&quot;</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 20&quot;</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 24&quot;</td>
<td>$105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 48&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 54&quot;</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 63&quot;</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 72&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x12&quot;)</td>
<td>$150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x15&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x12&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x15&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x12&quot;)</td>
<td>$180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x15&quot;)</td>
<td>$180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AASHTO Type II Beam</td>
<td>$98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I: 36&quot; 1</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I: 45&quot; 1</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I: 54&quot; 1</td>
<td>$210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I: 63&quot; 1</td>
<td>$220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I: 72&quot; 1</td>
<td>$230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I: 78&quot; 1</td>
<td>$235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I: 84&quot; 1</td>
<td>$270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I: 96&quot; 1</td>
<td>$350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunching Florida-I: 71&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunching Florida-I: 81&quot;</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When weathering steel (uncoated) is used, reduce the price by $0.04 per pound. Inorganic zinc coating systems have an expected life cycle of 20 years.
2 Price is based on ability to furnish products without any conversions of casting beds and without purchasing forms. If these conditions do not exist, add the following cost: Inverted Tee - $202,000; Fl. Tub - $403,000
3 The prices of Florida-I Beams range in value from large quantity (low price) to small quantity (high price).
### 3. Cast-in-Place Superstructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Girder Concrete, Straight</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girder Concrete, Curve</td>
<td>$1,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidewalk &amp; Curb Concrete</td>
<td>$750</td>
<td>29.6</td>
<td>$22,200</td>
</tr>
<tr>
<td>Precast Deck Overlay Concrete Class I</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** $22,200

### 4. Concrete for Precast Segmental Box Girders, Cantilever Construction

<table>
<thead>
<tr>
<th>Concrete Cost by Deck Area</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 300,000 SF</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 300,000 SF AND ≤ 500,000 SF</td>
<td>$1,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 500,000 SF</td>
<td>$1,150</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**

### 5. Reinforcing and Post-Tensioning Stee

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.60</td>
<td>6,068</td>
<td>$3,641</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; longitude</td>
<td>$2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; transvers</td>
<td>$4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bar</td>
<td>$6.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** $3,641

### 6. Railings and Barriers

<table>
<thead>
<tr>
<th>Traffic Railings(^1)</th>
<th>Cost per L. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot; F-Shape</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F-Shape Mediar</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F-Shape</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Vertical Face</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; Vertical Face</td>
<td>$115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Corrals</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thre Beam Retrofit</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thre Beam Panel Retrofit</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Face Retrofit</td>
<td>$100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pedestrian/Bicycle Railings:</th>
<th>Cost per L. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decorative Concrete Railin</td>
<td>$150</td>
<td>274</td>
<td>$41,100</td>
</tr>
<tr>
<td>Single Bullet Railin(^1)</td>
<td>$27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double Bullet Railin(^1)</td>
<td>$36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triple Bullet Railin(^1)</td>
<td>$45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picket Railin (42&quot;) steel (Type 1)</td>
<td>$66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picket Railin (42&quot;) steel (Type 3)</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railin (42&quot;) aluminum (Type 1)</td>
<td>$63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railin (54&quot;) steel</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railin (54&quot;) aluminum (Type 1)</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Combine cost of Bullet Railings with Concrete Parapet or Traffic Railing, as appropriate.
### 7. Expansion Joints

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lnin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip Seal</td>
<td>$400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &lt;6'</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &gt;6'</td>
<td>$1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 6&quot;</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 8&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 12&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**

**Superstructure Subtotal** $66,941

### D. Miscellaneous Items

#### 1. Bridge Deck Grooving and Planing

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grooving - Deck Thickness less than 8.5&quot;</td>
<td>$4.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grooving and Planing - Deck Thickness 8.5&quot;</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grooving and Planing Subtotal**

#### 2. Detour Bridge

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrow Detour Bridge¹</td>
<td>$55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Detour Bridge Subtotal**

#### 3. Approach Slab

<table>
<thead>
<tr>
<th>Approach Slab Material</th>
<th>Cost per Unit</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast-in-Place Concrete (per Sq. Yard)</td>
<td>$350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinforcing Steel (per Pound)</td>
<td>$0.60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Approach Slab Subtotal**

#### 4. Con/Span Arch and Walls

<table>
<thead>
<tr>
<th>Con/Span Materials Estimate</th>
<th>Contingencies &amp; Installation</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precast Arch</td>
<td>50%</td>
<td>$597,000</td>
</tr>
</tbody>
</table>

**Con/Span Subtotal** $597,000

**Unadjusted Total** $873,573

---

**Step Two: Estimate Conditional Variables and Cost per Square Foot**

After developing the total cost estimate utilizing the unit cost, modify the cost to account for site condition variables. If appropriate, the cost will be modified by the following variables:
Substructure Subtotal $209,632
Superstructure Subtotal $66,941
Con/Span Arch and Walls Subtotal $597,000
Walls Subtotal
Grooving and Planing Subtotal
Detour Bridge Subtotal
Approach Slab Subtotal $594,030
Conditional Variables & Misc
Total Cost $1,467,603

Total Square Feet of Deck 3003

Cost per Square Foot (not including Approach Slab) $358

Design Aid for Determination of Reinforcing Steel
In the absence of better information, use the following quantities of reinforcing steel pounds per cubic yard of

<table>
<thead>
<tr>
<th>Location</th>
<th>Pounds of Steel per Cubic Yard</th>
<th>Cubic Yds.</th>
<th>Tot. Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spread Footing</td>
<td>135</td>
<td>168.89</td>
<td>22,800</td>
</tr>
<tr>
<td>Pile Bents</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &gt;25</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &lt;25</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &gt;25</td>
<td>215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &lt;25</td>
<td>195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseule Pier</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Deck Slabs</td>
<td>205</td>
<td>29.6</td>
<td>6,068</td>
</tr>
<tr>
<td>Isotropic Deck Slab</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Pier Sq.</td>
<td>225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Typ. Sq.</td>
<td>165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.I.P. Flat Slabs @ 30ft &amp; 15&quot; Deepl</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Slab</td>
<td>200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot.

<table>
<thead>
<tr>
<th>Bridge Superstructure Type</th>
<th>Total Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td><strong>Short Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Reinforced Concrete Flat Slab - Simple Span¹</td>
<td>$115</td>
</tr>
<tr>
<td>Pre-cast Concrete Slab - Simple Span¹</td>
<td>$110</td>
</tr>
<tr>
<td><strong>Medium Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Simple Span¹</td>
<td>$125</td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Continuous Span¹</td>
<td>$135</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Simple Span¹</td>
<td>$90</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Continuous Span¹</td>
<td>$95</td>
</tr>
<tr>
<td>Concrete Deck / Steel Box Girder¹ -</td>
<td></td>
</tr>
<tr>
<td>Span range from 150' to 280' (for curvature, add 15% premium)</td>
<td>$140</td>
</tr>
<tr>
<td>Segmental Concrete Box Girder - Cantilever Construction</td>
<td>$140</td>
</tr>
<tr>
<td>Span range from 150' to 280'</td>
<td></td>
</tr>
<tr>
<td>Movable Bridge - Bascula Spans &amp; Piers</td>
<td>$1,800</td>
</tr>
<tr>
<td><strong>Deemed Adequate Costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Typical</td>
<td>$35</td>
</tr>
<tr>
<td>Bascula</td>
<td>$60</td>
</tr>
<tr>
<td><strong>Project Type</strong></td>
<td></td>
</tr>
<tr>
<td>Widening (Construction Only)</td>
<td>$85</td>
</tr>
</tbody>
</table>

¹ Increase the cost by twenty percent for phased construction

*Estimated Cost per Square Foot:* $358
FOOTING

5' x 3' spread @ face of each arch. \( \Rightarrow \) 10' x 6' = 240'

\[
5' \times 3' \times 240' = 3600 \text{ cf} \times \frac{1 \text{ cu ft}}{27 \text{ cf}} = 133.33 \text{ cu ft}
\]

\[
3' \times 2' \text{ spread @ wingwalls} \Rightarrow 10' \times 4' = 160'
\]

\[
3' \times 2' \times 160' = 960 \text{ cf} \times \frac{1 \text{ cu ft}}{27 \text{ cf}} = 35.56 \text{ cu ft}
\]

\[\{ \text{Total Volume} = 168.89 \text{ cu ft}\]\n
SIDEWALKS

LENGTH = Bridge span + Approaches

= 77' + 2(30) = 137'

Width = 5' sidewalk + 1' under railing = 6'

Depth = 0.333'

Volume = \(2(137' \times 6' \times 0.333')\)

\[V = 548 \text{ cf} \times \frac{1 \text{ cu ft}}{27 \text{ cf}} = 20.30 \text{ cu ft}\]

CURBS

\[
\text{Volume} = \text{Area} \times \text{Length}
\]

Area = \(\Box - \triangle\) \(\Rightarrow\) 1.5' x 0.667' = 1.55 SF

0.167' x 0.5' = 0.0833 SF

Length = 77' + 2(30) = 137'

\[0.91667 \text{ SF}\]

\[V = 2(L \times A) = 2(137' \times 0.91667 \text{ SF}) = 251.167 \text{ cf} \times \frac{1 \text{ cu ft}}{27 \text{ cf}} = 9.30 \text{ cu ft}\]
DECORATIVE RAILING

\[
\text{LENGTH} = \text{Bridge Span} + \text{Approaches} = \left[ 77 + 2(30) \right] \times 2 \text{ railings}
\]

Cost/LF = $150

\[ = 274 \text{ LF} \]
16.0 Bimini Drive (904603)
16.1 Repair Cost Estimate (904603)
## CONSTRUCTION COST ESTIMATE
for
**BIMINI DRIVE BRIDGE REPAIR**
Bridge #904603
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$13,147.99</td>
<td>$13,147.99</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$13,147.99</td>
<td>$13,147.99</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>216</td>
<td>LF</td>
<td>$15.00</td>
<td>$3,240.00</td>
</tr>
<tr>
<td>339-1</td>
<td>MISCELLANEOUS ASPHALT PAVEMENT</td>
<td>1</td>
<td>TN</td>
<td>$241.58</td>
<td>$193.26</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>60.2</td>
<td>CF</td>
<td>$558.33</td>
<td>$33,611.47</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>142</td>
<td>LB</td>
<td>$1.50</td>
<td>$213.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>220</td>
<td>LB</td>
<td>$1.50</td>
<td>$330.00</td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURED JOINT WITH BACKER ROD</td>
<td>52</td>
<td>LF</td>
<td>$120.00</td>
<td>$6,180.00</td>
</tr>
<tr>
<td>530-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>29</td>
<td>CY</td>
<td>$650.00</td>
<td>$18,850.00</td>
</tr>
<tr>
<td>530-2</td>
<td>GUARDRAIL POST REPLACEMENT, REGULAR</td>
<td>1</td>
<td>EA</td>
<td>$100.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>561-1</td>
<td>COATING EXISTING STRUCTURAL STEEL</td>
<td>1</td>
<td>LS</td>
<td>Total @ $8000/T</td>
<td>$24,935.56</td>
</tr>
</tbody>
</table>

* Pay Item 561-1 includes the cost of painting the reinforcing steel plates along the beams of the span.
* Unit cost for Pay Item 561-1 was increased to account for the additional cost of containment and access.

CONTINGENCIES 20% $22,789.85
TOTAL $136,739.13
**104-11**

**FLOATING TURBIDITY BARRIER**

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutments</td>
<td>26</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>36</td>
<td>9</td>
<td>54.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2
Layers of barrier around work area (double): 2

**LENGTH: 216 LF**

**TOTAL LENGTH: 216 LF**

**339-1**

**MISCELLANEOUS ASPHALT PAVEMENT**

<table>
<thead>
<tr>
<th>Weight (TN)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>0.8</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT: 0.8 TN**

**401-70-3**

**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>3.6</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>6.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>14.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>36.6</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME: 60.2 CF**

**415-1-4**

**REINFORCING STEEL-SUPERSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>23.6</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT: 142 LB**

*Based on similar estimates*
**415- 1- 5**

**REINFORCING STEEL-SUBSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>36.6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT: 220 LB**

*Based on similar estimates

**458- 1- 21**

**BRIDGE DECK EXPANSION JOINT, REHABILITATION,**

<table>
<thead>
<tr>
<th>Number of joints</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span 1</td>
<td>2</td>
<td>51.500</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH: 52 LF**

**530- 1**

**RIPRAP, SAND-CEMENT**

<table>
<thead>
<tr>
<th>Existing Undermining</th>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28.8</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME: 29 CY**

*Heavy vegetation growth in southwest slope protection

**538-83-1**

**GUARDRAIL POST REPLACEMENT, REGULAR**

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post 6</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL POSTS: 1 EA**
## COATING EXISTING STRUCTURAL STEEL

<table>
<thead>
<tr>
<th>Structural Steel (Reinforcing Steel Plates)</th>
<th>Number</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Height (ft)</th>
<th>Total Weight (ton)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom</td>
<td>4</td>
<td>40</td>
<td>0.8</td>
<td>0.0417</td>
<td>1.4</td>
</tr>
<tr>
<td>End</td>
<td>8</td>
<td>1.5</td>
<td>1.0</td>
<td>0.0417</td>
<td>0.1</td>
</tr>
<tr>
<td>Side</td>
<td>16</td>
<td>2.5</td>
<td>4</td>
<td>0.0417</td>
<td>1.6</td>
</tr>
</tbody>
</table>

TOTAL WEIGHT: 3 TON

*Weight calculation based on specific material properties and dimensions provided.
16.2 Widening Cost Estimate (904603)
### CONSTRUCTION COST ESTIMATE

for  
**BIMINI DRIVE BRIDGE WIDENING**  
*Bridge #904603*  
**MONROE COUNTY, FLORIDA**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Code</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Estimated Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1.0</td>
<td>LS</td>
<td>$34,292.97</td>
<td></td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1.0</td>
<td>LS</td>
<td>$34,292.97</td>
<td></td>
</tr>
<tr>
<td>109-71-3</td>
<td>FIELD OFFICE</td>
<td>180.0</td>
<td>DA</td>
<td>$9,000.00</td>
<td></td>
</tr>
<tr>
<td>110-1-1</td>
<td>PERMITS</td>
<td>1.0</td>
<td>LS</td>
<td>$20,000.00</td>
<td></td>
</tr>
<tr>
<td>120-1</td>
<td>REGULAR EXCAVATION</td>
<td>145.07</td>
<td>CY</td>
<td>$1,885.87</td>
<td></td>
</tr>
<tr>
<td>120-6</td>
<td>EMBANKMENT</td>
<td>26.67</td>
<td>CY</td>
<td>$853.31</td>
<td></td>
</tr>
<tr>
<td>522-1</td>
<td>SIDEWALK CONCRETE, 4&quot; THICK</td>
<td>480.0</td>
<td>SY</td>
<td>$24,600.00</td>
<td></td>
</tr>
<tr>
<td>527-1</td>
<td>DETECTABLE WARNING ON EXISTING WALKING SURFACE, RETROFIT</td>
<td>1.0</td>
<td>EA</td>
<td>$750.00</td>
<td>$750.00</td>
</tr>
<tr>
<td>536-8</td>
<td>GUARDRAIL BRIDGE ASSEMBLY</td>
<td>4.0</td>
<td>EA</td>
<td>$1,400.00</td>
<td>$5,600.00</td>
</tr>
<tr>
<td>536-1-1</td>
<td>GUARDRAIL - ROADWAY</td>
<td>520.0</td>
<td>LF</td>
<td>$10,920.00</td>
<td></td>
</tr>
<tr>
<td>536-1-5</td>
<td>GUARDRAIL - ROADWAY, THRIE BEAM</td>
<td>175.0</td>
<td>LF</td>
<td>$5,250.00</td>
<td>$10,920.00</td>
</tr>
<tr>
<td>536-73</td>
<td>GUARDRAIL REMOVAL</td>
<td>300.0</td>
<td>LF</td>
<td>$2,400.00</td>
<td></td>
</tr>
<tr>
<td>536-85-22</td>
<td>GUARDRAIL END ANCHORAGE ASSEMBLY - FLARED</td>
<td>4.0</td>
<td>EA</td>
<td>$11,440.00</td>
<td>$28,600.00</td>
</tr>
<tr>
<td>570-1-2</td>
<td>PERFORMANCE TURF, SOD</td>
<td>800.0</td>
<td>SY</td>
<td>$3,120.00</td>
<td></td>
</tr>
<tr>
<td>700-20-11</td>
<td>SINGLE POST SIGN, F&amp;I, LESS THAN 12 SF</td>
<td>1.0</td>
<td>AS</td>
<td>$340.00</td>
<td>$340.00</td>
</tr>
<tr>
<td>700-20-60</td>
<td>SINGLE POST SIGN, REMOVE</td>
<td>1.0</td>
<td>AS</td>
<td>$13.64</td>
<td>$13.64</td>
</tr>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>4.0</td>
<td>EA</td>
<td>$12.80</td>
<td>$12.80</td>
</tr>
<tr>
<td>711-11-123</td>
<td>THERMOPLASTIC, STANDARD, WHITE, SOLID, 12&quot;</td>
<td>60.0</td>
<td>LF</td>
<td>$153.00</td>
<td>$153.00</td>
</tr>
<tr>
<td>711-11-125</td>
<td>THERMOPLASTIC, STANDARD, WHITE, SOLID, 24&quot;</td>
<td>12.0</td>
<td>LF</td>
<td>$69.60</td>
<td>$69.60</td>
</tr>
<tr>
<td>110-3</td>
<td>REMOVAL OF EXISTING STRUCTURE</td>
<td>320.0</td>
<td>SF</td>
<td>$16,000.00</td>
<td>$16,000.00</td>
</tr>
<tr>
<td>400-2-4</td>
<td>CONCRETE CLASS II (SUPERSTRUCTURE)</td>
<td>15.3</td>
<td>CY</td>
<td>$1,750.00</td>
<td>$22,750.00</td>
</tr>
<tr>
<td>400-4-5</td>
<td>CONCRETE CLASS IV (SUPERSTRUCTURE)</td>
<td>12.9</td>
<td>CY</td>
<td>$25,750.00</td>
<td>$25,750.00</td>
</tr>
<tr>
<td>400-147</td>
<td>COMPOSITE NEOPRENE PADS</td>
<td>4.5</td>
<td>CF</td>
<td>$2,925.00</td>
<td></td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL (SUPERSTRUCTURE)</td>
<td>986</td>
<td>LB</td>
<td>$986.37</td>
<td>$986.37</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL (SUBSTRUCTURE)</td>
<td>1735</td>
<td>LB</td>
<td>$1,908.64</td>
<td>$1,908.64</td>
</tr>
<tr>
<td>460-2-1</td>
<td>STRUCTURAL STEEL (CARBON)</td>
<td>14593</td>
<td>LB</td>
<td>$33,563.91</td>
<td></td>
</tr>
<tr>
<td>521-5-4</td>
<td>CONCRETE TRAFFIC RAILING BARRIER (VERTICAL FACE)</td>
<td>90</td>
<td>LF</td>
<td>$13,500.00</td>
<td>$13,500.00</td>
</tr>
<tr>
<td>521-6-1</td>
<td>P/C DECORATIVE PEDESTRIAN RAILING</td>
<td>152</td>
<td>LF</td>
<td>$22,800.00</td>
<td>$22,800.00</td>
</tr>
<tr>
<td>HELICAL PILES</td>
<td>HELICAL PILES</td>
<td>8</td>
<td>EA</td>
<td>$16,000.00</td>
<td>$16,000.00</td>
</tr>
<tr>
<td>RDWY REWORK WITHIN BRIDGE LIMITS (INCL. 3/4&quot; FC-5, 3&quot; ASPH CONC &amp; OPT BASE 09)</td>
<td>12</td>
<td>SY</td>
<td>$1,185.13</td>
<td>$1,185.13</td>
<td></td>
</tr>
</tbody>
</table>

**CONTINGENCIES 20%**

**TOTAL**

$391,447.00

---

**EXTRAPOLATED FROM TRUMAN BRIDGE WIDENING COST**

G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\904603\Cost Estimates\904603 Widening Cost.xlsx
16.3 Replacement Cost Estimate (904603)
Step One: Estimate Component Items
Utilizing the cost provided herein, develop the cost estimate for each bridge type under consideration.

A. Bridge Substructure

### 1. Prestressed Concrete Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$75</td>
<td>360</td>
<td>$27,000</td>
</tr>
<tr>
<td>18&quot; (Driven Battered)</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Battered)</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Battered)</td>
<td>$185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy mild steel reinforcing in pile head (each)</td>
<td>$250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When silica fume, metakaolin or ultrafine fly ash is used add $6/LF to the piling cost.

Subtotal $27,000

### 2. Steel Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 x 73 H Section</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 x 89 H Section</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; Pipe Pile</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20&quot; Pipe Pile</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; Pipe Pile</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; Pipe Pile</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal

G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\904603\Cost Estimates\904603 Replacement Cost.xls
### 3. Drilled Shaft (Total in-place cost)

<table>
<thead>
<tr>
<th>Dia. (on land, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, permanent casing)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$2,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$2,400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A. Bridge Substructure (continued)

### 4. Cofferdam Footing (Cofferdam and Seal Concrete)

Prorate the cost provided herein based on area and depth of water. A cofferdam footing having the following attributes cost $600,000: Area 63 ft x 37.25 ft; Depth of seal 5 ft; Depth of water over footing 16 ft.

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Footing</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cofferdam Footing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Cost of seal concrete included in pay item 400-3-20 or 400-4-200.

**Subtotal**

### 5. Substructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Bent Concrete</td>
<td>$800</td>
<td>22.22</td>
<td>$17,776</td>
</tr>
<tr>
<td>Wall Concrete</td>
<td>$800</td>
<td>177.78</td>
<td>$142,224</td>
</tr>
<tr>
<td>Seal Concrete</td>
<td>$410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulkhead Concrete</td>
<td>$975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell Fill</td>
<td>$30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riprap</td>
<td>$800</td>
<td>25.69</td>
<td>$20,552</td>
</tr>
</tbody>
</table>

1 Admixtures: For Calcium Nitrite add $40/cy (@4.5 gal/cy) and for silica fume, metakaolin or ultrafine fly ash add $40/cy (@ 60 lb./cy)

**Subtotal** $180,552
### 6. Substructure Reinforcing and Post-tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.90</td>
<td>30,468</td>
<td>$27,421</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand</td>
<td>$4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $27,421

### B. Walls

#### 1. Retaining Walls

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSE Walls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>$26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sheet Pile Walls, Prestressed Concrete</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10&quot; x 30&quot;</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12&quot; x 30&quot;</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sheet Pile Walls, Steel</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Cantilever Wall</td>
<td>$24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Anchored Wall ^1</td>
<td>$50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Cantilever Wall</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Anchored Wall ^1</td>
<td>$35</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traffic Railings with Junction Slabs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F Shape or Vertical Face</td>
<td>$145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F Shape or Vertical Face</td>
<td>$165</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $27,421

^1 Includes the cost of anchors, water steel, miscellaneous steel for permanent/temporary walls and concrete face for permanent walls.

#### 2. Noise Wall

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Wall</td>
<td>$25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $25

### C. Bridge Superstructure

#### 1. Bearing Type

<table>
<thead>
<tr>
<th>Neoprene Bearing Pads</th>
<th>Cost per Cubic Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene Bearing Pads</td>
<td>$900</td>
<td>5.69</td>
<td>$5,121</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multirotational Bearings (Capacity in kips)</th>
<th>Cost per Each</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- 250</td>
<td>$6,000</td>
<td></td>
<td>$6,000</td>
</tr>
<tr>
<td>251- 500</td>
<td>$7,000</td>
<td></td>
<td>$7,000</td>
</tr>
<tr>
<td>501- 750</td>
<td>$8,000</td>
<td></td>
<td>$8,000</td>
</tr>
<tr>
<td>751-1000</td>
<td>$9,500</td>
<td></td>
<td>$9,500</td>
</tr>
<tr>
<td>1001-1250</td>
<td>$9,900</td>
<td></td>
<td>$9,900</td>
</tr>
<tr>
<td>1251-1500</td>
<td>$10,000</td>
<td></td>
<td>$10,000</td>
</tr>
<tr>
<td>1501-1750</td>
<td>$11,000</td>
<td></td>
<td>$11,000</td>
</tr>
<tr>
<td>1751-2000</td>
<td>$12,500</td>
<td></td>
<td>$12,500</td>
</tr>
<tr>
<td>&gt;2000</td>
<td>$15,000</td>
<td></td>
<td>$15,000</td>
</tr>
</tbody>
</table>

Subtotal: $5,121
## 2. Bridge Girders

<table>
<thead>
<tr>
<th>Structural Steel (includes coating)</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolled Wide Flange Sections, straight¹</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled Wide Flange Sections, curved¹</td>
<td>$1.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Straight¹</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Curved¹</td>
<td>$1.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Straight¹</td>
<td>$1.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Curved¹</td>
<td>$2.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Prestressed Concrete Girders and Slabs

<table>
<thead>
<tr>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fl. Inverted Tee 16&quot;²</td>
<td>$80</td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 20&quot;</td>
<td>$90</td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 24&quot;²</td>
<td>$105</td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 48&quot;²</td>
<td>$700</td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 54&quot;</td>
<td>$750</td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 63&quot;</td>
<td>$800</td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 72&quot;</td>
<td>$900</td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x12&quot;)</td>
<td>$150</td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x15&quot;)</td>
<td>$160</td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x12&quot;)</td>
<td>$160</td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x15&quot;)</td>
<td>$170</td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x12&quot;)</td>
<td>$170</td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x15&quot;)</td>
<td>$180</td>
<td></td>
</tr>
<tr>
<td>AASHTO Type II Beam</td>
<td>$98</td>
<td></td>
</tr>
<tr>
<td>Florida-I; 36³</td>
<td>$200</td>
<td>215</td>
</tr>
<tr>
<td>Florida-I; 45³</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td>Florida-I; 54³</td>
<td>$210</td>
<td></td>
</tr>
<tr>
<td>Florida-I; 63³</td>
<td>$220</td>
<td></td>
</tr>
<tr>
<td>Florida-I; 72³</td>
<td>$230</td>
<td></td>
</tr>
<tr>
<td>Florida-I; 78³</td>
<td>$235</td>
<td></td>
</tr>
<tr>
<td>Florida-I; 84³</td>
<td>$270</td>
<td></td>
</tr>
<tr>
<td>Florida-I; 96³</td>
<td>$350</td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 78</td>
<td>$700</td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 84</td>
<td>$800</td>
<td></td>
</tr>
</tbody>
</table>

1 When weathering steel (uncoated) is used, reduce the price by $0.04 per pound. Inorganic zinc coating systems have an expected life cycle of 20 years.

2 Price is based on ability to furnish products without any conversions of casting beds and without purchasing o forms. If these conditions do not exist, add the following cost: Inverted Tee - $202,000; Fl. Tub - $403,000

3 The prices of Florida-I Beams range in value from large quantity (low price) to small quantity (high price).
C. Bridge Superstructure (continued)

### 3. Cast-in-Place Superstructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Girder Concrete, Straight</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girder Concrete, Curved</td>
<td>$1,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deck Concrete</td>
<td>$750</td>
<td>67.2</td>
<td>$50,400</td>
</tr>
<tr>
<td>Precast Deck Overlay Concrete Class IV</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** $50,400

### 4. Concrete for Precast Segmental Box Girders, Cantilever Construction

<table>
<thead>
<tr>
<th>Concrete Cost by Deck Area</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\leq 300,000$ SF</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$&gt; 300,000$ SF AND $\leq 500,000$ SF</td>
<td>$1,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$&gt; 500,000$ SF</td>
<td>$1,150</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**

### 5. Reinforcing and Post-Tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.60</td>
<td>13,776</td>
<td>$8,266</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; longitudinal</td>
<td>$2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; transverse</td>
<td>$4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** $8,266

### 6. Railings and Barriers

#### Traffic Railings

<table>
<thead>
<tr>
<th>Traffic Railings</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot; F-Shape</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F-Shape Median</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F-Shape</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Vertical Face</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; Vertical Face</td>
<td>$115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Corral</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Retrofit</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Panel Retrofit</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Face Retrofit</td>
<td>$100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Pedestrian/Bicycle Railings

<table>
<thead>
<tr>
<th>Pedestrian/Bicycle Railings</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decorative Concrete Railing</td>
<td>$150</td>
<td>206</td>
<td>$30,900</td>
</tr>
<tr>
<td>Single Bullet Railing&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double Bullet Railing&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triple Bullet Railing&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 1)</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 3)</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (42&quot;) aluminum (Type 1)</td>
<td>$63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) steel</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) aluminum (Type 1)</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup> Combine cost of Bullet Railings with Concrete Parapet or Traffic Railing, as appropriate.

**Subtotal** $30,900
### 7. Expansion Joints

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip Seal</td>
<td>$400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &lt;6&quot;</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &gt;6&quot;</td>
<td>$1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 6&quot;</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 8&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 12&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $137,687

### D. Miscellaneous Items

#### 1. Bridge Deck Grooving and Planing

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grooving - Deck Thickness less than 8.5&quot;</td>
<td>$4.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grooving and Planing - Deck Thickness 8.5&quot;+</td>
<td>$14</td>
<td>129</td>
<td>$1,806</td>
</tr>
</tbody>
</table>

Grooving and Planing Subtotal: $1,806

#### 2. Detour Bridges

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrow Detour Bridge ¹</td>
<td>$55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Using FDOT supplied components. The cost is for the bridge proper and does not include approach work, surfacing, or guardrail.

Detour Bridge Subtotal: $55

#### 3. Approach Slab

<table>
<thead>
<tr>
<th>Approach Slab Material</th>
<th>Cost per Unit</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast-in-Place Concrete (per Sq. Yard)</td>
<td>$800</td>
<td>59.3</td>
<td>$47,440</td>
</tr>
<tr>
<td>Reinforcing Steel (per Pound)</td>
<td>$1.00</td>
<td>2,800</td>
<td>$2,800</td>
</tr>
<tr>
<td>Railing Type per Superstructure Section 6 (per Lin. Foot)</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approach Slab Subtotal: $50,240

Unadjusted Total: $424,706
Step Two: Estimate Conditional Variables and Cost per Square Foot

After developing the total cost estimate utilizing the unit cost, modify the cost to account for site condition variables. If appropriate, the cost will be modified by the following variables:

<table>
<thead>
<tr>
<th>Conditional Variables</th>
<th>% Increase/ Decrease</th>
<th>Cost (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For construction over open water, floodplains that flood frequently or other similar areas, increase cost by 3 %.</td>
<td>3%</td>
<td>$12,741</td>
</tr>
<tr>
<td>Phased construction, increase by 20 %.</td>
<td>20%</td>
<td>$84,941.24</td>
</tr>
<tr>
<td>Unit cost increase for work in Monroe County</td>
<td>40%</td>
<td>$169,882.49</td>
</tr>
<tr>
<td>Mobilization</td>
<td>15%</td>
<td>$63,705.93</td>
</tr>
<tr>
<td>Maintenance of Traffic</td>
<td>15%</td>
<td>$63,705.93</td>
</tr>
<tr>
<td>Approach Work/Utility Adjustment/Demo</td>
<td>20%</td>
<td>$84,941.24</td>
</tr>
<tr>
<td></td>
<td>113%</td>
<td>$479,918</td>
</tr>
</tbody>
</table>

1 Phased construction is defined as construction over traffic or construction requiring multiple phases to complete the construction of the entire cross section of the bridge. The 20 percent premium is applied to the affected units of the superstructure and/or substructure.

Substructure Subtotal: $234,973
Superstructure Subtotal: $137,687
Walls Subtotal: $1,806
Grooving and Planing Subtotal: $1,806
Detour Bridge Subtotal: $50,240
Approach Slab Subtotal: $479,918
Conditional Variables: $479,918
Total Cost: $904,624

Total Square Feet of Deck: 1677

Cost per Square Foot (not including Approach Slab): $383
Design Aid for Determination of Reinforcing Steel

In the absence of better information, use the following quantities of reinforcing steel pounds per cubic yard of:

<table>
<thead>
<tr>
<th>Location</th>
<th>Pounds of Steel per Cubic Yd.</th>
<th>Cubic Yds.</th>
<th>Tot. Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Abutments</td>
<td>135</td>
<td>225.69</td>
<td>30,468</td>
</tr>
<tr>
<td>Pile Bents</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &gt;25'</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &lt;25'</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &gt;25'</td>
<td>215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &lt;25'</td>
<td>195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bascule Piers</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Deck Slabs</td>
<td>205</td>
<td>67.2</td>
<td>13,776</td>
</tr>
<tr>
<td>Isotropic Deck Slabs</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Pier Seg</td>
<td>225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Typ. Seg</td>
<td>165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.I.P. Flat Slabs @ 30 ft &amp; 15'' Deep</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Slab</td>
<td>200</td>
<td>14.00</td>
<td>2,800</td>
</tr>
</tbody>
</table>
Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot.

<table>
<thead>
<tr>
<th>Bridge Superstructure Type</th>
<th>Total Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td><strong>Short Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Reinforced Concrete Flat Slab - Simple Span</td>
<td>$115</td>
</tr>
<tr>
<td>Pre-cast Concrete Slab - Simple Span</td>
<td>$110</td>
</tr>
<tr>
<td><strong>Medium Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Simple Span</td>
<td>$125</td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Continuous Span</td>
<td>$135</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Simple Span</td>
<td>$90</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Continuous Span</td>
<td>$95</td>
</tr>
<tr>
<td>Concrete Deck / Steel Box Girder - Span range from 150' to 280' (for curvature, add 15% premium)</td>
<td>$140</td>
</tr>
<tr>
<td>Segmental Concrete Box Girders - Cantilever Construction - Span range from 150' to 280'</td>
<td>$140</td>
</tr>
<tr>
<td>Movable Bridge - Bascule Spans &amp; Piers</td>
<td>$1,800</td>
</tr>
<tr>
<td><strong>Demolition Costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Typical</td>
<td>$35</td>
</tr>
<tr>
<td>Bascule</td>
<td>$60</td>
</tr>
<tr>
<td><strong>Project Type</strong></td>
<td></td>
</tr>
<tr>
<td>Widening (Construction Only)</td>
<td>$85</td>
</tr>
</tbody>
</table>

1 Increase the cost by twenty percent for phased construction

Estimated Cost per Square Foot: $383
PILES

\[(6 \text{ BENTS}) \times (2 \text{ BENTS}) = 12 \text{ PILES} \times 30 \text{ LF/PILE} = 360 \text{ LF}\]

END BENTS

\[10' \text{ wide} \times 2.5' \text{ high} \times 3' \text{ thick} = 300 \text{ cf} \times 2 \text{ BENTS} = 600 \text{ cf} \times \frac{1}{27} = 22.22 \text{ cu} \]

WALLS

- 2 BREAST WALLS: 10' wide x 20' high x 1.5' thick = 1200 cf
  \[2 \text{ walls} \times 1200 \text{ cf} = \frac{2400 \text{ cf}}{27} = 88.89 \text{ cu} \]

- 4 WING WALLS: 20' wide x 20' high x 1.5' thick = 600 cf
  \[4 \text{ walls} \times 600 \text{ cf} = \frac{2400 \text{ cf}}{27} = 88.89 \text{ cu} \]

TOTAL = 177.78 cu

NEOPRENE PADS

(ASSUME TYPE C FOR MODERATE HEIGHT)

\[2\frac{9}{16}'' = 0.2135'\]

\[0.2135' \times \left(\frac{10}{12}\right) \times (2.667') = (0.1715 \text{ cf/pad})(12 \text{ pads}) = 5.69 \text{ cf}\]
**FIB - 36**

1 SPAN BRIDGE ⇒ \( \frac{43'}{1} = 43' / \text{span} \)

\((5 \text{ BEAMS} / \text{SPAN})(1 \text{ SPAN}) \times 43' = 215 \text{ LF} \)

**DECK CONCRETE**

ROADWAY ⇒ \( \left( \frac{9.5'}{12} \right) \times 39' \times 43' \)

= 1187.875 \( \text{cf} \)

SIDEWALK ⇒ \( 2 \times \left[ 0.5' \times 0.1 \times \left( 43' + 2(30') \right) \right] \)

= 618 \( \text{cf} \)

CURB ⇒ \( \frac{1}{2} \times \left[ 0.5' \times 0.1 \times 0.1667 \times \left( 43' + 2(30') \right) \right] \times \frac{1}{2} \)

= 8.583 \( \text{cf} \)

TOTAL = \( \frac{1814.46 \text{ cf}}{27} = 67.20 \text{ cu} \)

**APPROACH SLABS**

40' wide \( \times \) 20' long = \( 800 \text{ sf} \times \frac{1.84}{9}\text{ sf} = 88.89 \text{ sq} \) \( \times \) 2 slabs

= 177.78 \( \text{ sq} \) = 59.3 \( \text{ cu} \)

**GROOVING**

\( \frac{1}{2}' \times 27' = 2161 \text{ sf} \times \frac{1}{9} = 129 \text{ sq} \)
## Bridge Development Report Cost Estimating

**Effective 01/01/2014**

### Step One: Estimate Component Items

Utilizing the cost provided herein, develop the cost estimate for each bridge type under consideration.

### A. Bridge Substructure

#### 1. Prestressed Concrete Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; (Driven Battered)</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Battered)</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Battered)</td>
<td>$185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy mild steel reinforcing in pile head (each)</td>
<td>$250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. When silica fume, metakaolin or ultrafine fly ash is used add $6/LF to the piling cost.

Subtotal: $27,000

#### 2. Steel Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 x 73 H Section</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 x 89 H Section</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; Pipe Pile</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20&quot; Pipe Pile</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; Pipe Pile</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; Pipe Pile</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal

#### 3. Drilled Shaft, (Total in-place cost)

**Dia. (on land, casing salvaged)**

<table>
<thead>
<tr>
<th>Dia.</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dia. (in water, casing salvaged)**

<table>
<thead>
<tr>
<th>Dia.</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dia. (in water, permanent casing)**

<table>
<thead>
<tr>
<th>Dia.</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$2,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$2,400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal
### A. Bridge Substructure (continued)

#### 4. Cofferdam Footing (Cofferdam and Seal Concrete)

Prorate the cost provided herein based on area and depth of water. A cofferdam footing having the following attributes cost $600,000: Area 63 ft x 37.25 ft; Depth of seal 5 ft; Depth of water over footing 16 ft

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Footing</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cofferdam Footing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Cost of seal concrete included in pay item 400-3-20 or 400-4-200.</td>
<td>Subtotal</td>
<td></td>
</tr>
</tbody>
</table>

#### 5. Substructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footing Concrete ²</td>
<td>$800</td>
<td>65.19</td>
<td>$52,152</td>
</tr>
<tr>
<td>Seal Concrete</td>
<td>$410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulkhead Concrete ²</td>
<td>$975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell Fill ²</td>
<td>$30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riprap</td>
<td>$650</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Admixtures: For Calcium Nitrite add $40/cy (@4.5 gal/cy) and for silica fume, metakaolin or ultrafine fly ash add $40/cy (@ 60 lbs/cy)

Subtotal $52,152

#### 6. Substructure Reinforcing and Post-tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.90</td>
<td>8,801</td>
<td>$7,921</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand</td>
<td>$4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal $7,921

Substructure Subtotal $87,073

### B. Walls

#### 1. Retaining Walls

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE Walls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>$26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet Pile Walls, Prestressed Concrete</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10&quot; x 30&quot;</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12&quot; x 30&quot;</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet Pile Walls, Steel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Cantilever Wall</td>
<td>$24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Anchored Wall ²</td>
<td>$50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Cantilever Wall</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Anchored Wall ²</td>
<td>$35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Traffic Railings with Junction Slabs | Cost per Lin. Foot | Quantity | Cost |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot; F Shape or Vertical Face</td>
<td>$145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F Shape or Vertical Face</td>
<td>$165</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Includes the cost of anchors, water steel, miscellaneous steel for permanent/temporary walls and concrete face for permanent walls.

Subtotal

#### 2. Noise Wall

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Wall</td>
<td>$25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Walls Subtotal
### C. Bridge Superstructure

#### 1. Bearing Type

<table>
<thead>
<tr>
<th>Neoprene Bearing Pads</th>
<th>Cost per Cubic Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene Bearing Pads</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multirotational Bearings (Capacity in kips)</th>
<th>Cost per Each</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- 250</td>
<td>$6,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>251- 500</td>
<td>$7,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>501- 750</td>
<td>$8,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>751-1000</td>
<td>$9,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1001-1250</td>
<td>$9,900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1251-1500</td>
<td>$10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1501-1750</td>
<td>$11,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1751-2000</td>
<td>$12,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;2000</td>
<td>$15,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal
## 2. Bridge Girders

<table>
<thead>
<tr>
<th>Structural Steel (includes coating)</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolled Wide Flange Sections, straight</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled Wide Flange Sections, curved</td>
<td>$1.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Straight</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Curved</td>
<td>$1.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Straight</td>
<td>$1.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Curved</td>
<td>$2.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prestressed Concrete Girders and Slabs</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fl. Inverted Tee 16&quot;  2</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 20&quot;</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 24&quot;  2</td>
<td>$105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 48&quot;  2</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 54&quot;</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 63&quot;</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 72&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x12&quot;)</td>
<td>$150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x15&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x12&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x15&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x12&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x15&quot;)</td>
<td>$180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AASHTO Type II Beam</td>
<td>$98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 36  3</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 45  3</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 54  3</td>
<td>$210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 63  3</td>
<td>$220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 72  3</td>
<td>$230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 78  3</td>
<td>$235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 84  3</td>
<td>$270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 96  3</td>
<td>$350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 78</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 84</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When weathering steel (uncoated) is used, reduce the price by $0.04 per pound. Inorganic zinc coating systems have an expected life cycle of 20 years.

2 Price is based on ability to furnish products without any conversions of casting beds and without purchasing of forms. If these conditions do not exist, add the following cost: Inverted Tee - $202,000; Fl. Tub - $403,000

**Subtotal**
### C. Bridge Superstructure (continued)

#### 3. Cast-in-Place Superstructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Girder Concrete, Straight</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girder Concrete, Curved</td>
<td>$1,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidewalk &amp; Curb Concrete</td>
<td>$750</td>
<td>22.25</td>
<td>$16,688</td>
</tr>
<tr>
<td>Precast Deck Overlay Concrete Class IV</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $16,688

#### 4. Concrete for Precast Segmental Box Girders, Cantilever Construction

<table>
<thead>
<tr>
<th>Concrete Cost by Deck Area</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 300,000 SF</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 300,000 SF AND ≤ 500,000 SF</td>
<td>$1,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 500,000 SF</td>
<td>$1,150</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal

#### 5. Reinforcing and Post-Tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.60</td>
<td>4,561</td>
<td>$2,737</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; longitudinal</td>
<td>$2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; transvers</td>
<td>$4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $2,737

#### 6. Railings and Barriers

<table>
<thead>
<tr>
<th>Traffic Railings 1</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot; F-Shape</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F-Shape Median</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F-Shape</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Vertical Face</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; Vertical Face</td>
<td>$115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Corral</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Retrofit</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Panel Retrofit</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Face Retrofit</td>
<td>$100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pedestrian/Bicycle Railings:

<table>
<thead>
<tr>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decorative Concrete Railing</td>
<td>$150</td>
<td>206</td>
</tr>
<tr>
<td>Single Bullet Railing 1</td>
<td>$27</td>
<td></td>
</tr>
<tr>
<td>Double Bullet Railing 1</td>
<td>$36</td>
<td></td>
</tr>
<tr>
<td>Triple Bullet Railing 1</td>
<td>$45</td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 1)</td>
<td>$86</td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 3)</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (42&quot;) aluminum (Type 1)</td>
<td>$63</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) steel</td>
<td>$95</td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) aluminum (Type 1)</td>
<td>$80</td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $30,900

1 Combine cost of Bullet Railings with Concrete Parapet or Traffic Railing, as appropriate.
<table>
<thead>
<tr>
<th><strong>7. Expansion Joints</strong></th>
<th><strong>Cost per Lin. Foot</strong></th>
<th><strong>Quantity</strong></th>
<th><strong>Cost</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip Seal</td>
<td>$400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &lt;6&quot;</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &gt;6&quot;</td>
<td>$1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 6&quot;</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 8&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 12&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td>$50,324</td>
</tr>
</tbody>
</table>

**D. Miscellaneous Items**

<table>
<thead>
<tr>
<th><strong>1. Bridge Deck Grooving and Planing</strong></th>
<th><strong>Cost per Sq. Yard</strong></th>
<th><strong>Quantity</strong></th>
<th><strong>Cost</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grooving - Deck Thickness less than 8.5&quot;</td>
<td>$4.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grooving and Planing- Deck Thickness 8.5&quot;+</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grooving and Planing Subtotal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2. Detour Bridges</strong></th>
<th><strong>Cost per Sq. Foot</strong></th>
<th><strong>Quantity</strong></th>
<th><strong>Cost</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrrow Detour Bridge</td>
<td>$55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Using FDOT supplied components. The cost is for the bridge proper and does not include approach work, surfacing, or guardrail.

<table>
<thead>
<tr>
<th><strong>3. Approach Slab</strong></th>
<th><strong>Cost per Unit</strong></th>
<th><strong>Quantity</strong></th>
<th><strong>Cost</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast-in-Place Concrete (per Sq. Yard)</td>
<td>$350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinforcing Steel (per Pound)</td>
<td>$0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Railing Type per Superstructure Section 6 (per Lin. Foot)</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Approach Slab Subtotal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>4. Con/Span Arch and Walls</strong></th>
<th><strong>Contingencies &amp; Installation</strong></th>
<th><strong>Cost</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Con/Span Materials Estimate</td>
<td>$255,000</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Con/Span Subtotal</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Unadjusted Total** $519,897
### Step Two: Estimate Conditional Variables and Cost per Square Foot

After developing the total cost estimate utilizing the unit cost, modify the cost to account for site condition variables. If appropriate, the cost will be modified by the following variables:

<table>
<thead>
<tr>
<th>Conditional Variables &amp; Misc.</th>
<th>% Increase/Decrease</th>
<th>Cost (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For construction over open water, floodplains that flood frequently or other similar areas, increase cost by 3%.</td>
<td>3%</td>
<td>$15,597</td>
</tr>
<tr>
<td>Phased construction, increase by 20%.</td>
<td>20%</td>
<td>$103,979.37</td>
</tr>
<tr>
<td>Mobilization</td>
<td>15%</td>
<td>$77,984.53</td>
</tr>
<tr>
<td>Maintenance of Traffic</td>
<td>15%</td>
<td>$77,984.53</td>
</tr>
<tr>
<td>Approach Work and Utility Adjustment</td>
<td>15%</td>
<td>$77,984.53</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68%</strong></td>
<td><strong>$353,530</strong></td>
</tr>
</tbody>
</table>

1 Phased construction is defined as construction over traffic or construction requiring multiple phases to complete the construction of the entire cross section of the bridge. The 20 percent premium is applied to the affected units of the superstructure and/or substructure.

| Substructure Subtotal | $87,073 |
| Superstructure Subtotal | $50,324 |
| Con/Span Arch and Walls Subtotal | $382,500 |
| Walls Subtotal | |
| Grooving and Planing Subtotal | |
| Detour Bridge Subtotal | |
| Approach Slab Subtotal | |
| Conditional Variables & Misc. | $353,530 |
| **Total Cost** | **$873,427** |

Total Square Feet of Deck: 1677

Cost per Square Foot (not including Approach Slab): $381
Design Aid for Determination of Reinforcing Steel

In the absence of better information, use the following quantities of reinforcing steel pounds per cubic yard of concrete.

<table>
<thead>
<tr>
<th>Location</th>
<th>Pounds of Steel per Cubic Yard</th>
<th>Cubic Yds.</th>
<th>Tot. Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spread Footing</td>
<td>135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pile Bents</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &gt;25'</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &lt;25'</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &gt;25'</td>
<td>215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &lt;25'</td>
<td>195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bascule Piers</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Deck Slabs</td>
<td>205</td>
<td>22.25</td>
<td>4,561</td>
</tr>
<tr>
<td>Isotropic Deck Slabs</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Pier Seg</td>
<td>225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Typ. Seg</td>
<td>165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.I.P. Flat Slabs @ 30ft &amp; 15&quot; Deep</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Slab</td>
<td>200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot.

<table>
<thead>
<tr>
<th>Bridge Superstructure Type</th>
<th>Total Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td><strong>Short Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Reinforced Concrete Flat Slab - Simple Span ¹</td>
<td>$115</td>
</tr>
<tr>
<td>Pre-cast Concrete Slab - Simple Span ¹</td>
<td>$110</td>
</tr>
<tr>
<td><strong>Medium Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Simple Span ¹</td>
<td>$125</td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Continuous Span ¹</td>
<td>$135</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Simple Span ¹</td>
<td>$90</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Continuous Span ¹</td>
<td>$95</td>
</tr>
<tr>
<td>Concrete Deck / Steel Box Girder ¹ - Span range from 150' to 280' (for curvature, add 15% premium)</td>
<td>$140</td>
</tr>
<tr>
<td>Segmental Concrete Box Girder - Cantilever Construction</td>
<td></td>
</tr>
<tr>
<td>Span range from 150' to 280'</td>
<td>$140</td>
</tr>
<tr>
<td>Movable Bridge - Bascule Spans &amp; Piers</td>
<td>$1,800</td>
</tr>
</tbody>
</table>

### Demolition Costs:

- **Typical**: $35 to $60
- **Bascule**: $60 to $70

### Project Type

- Widening (Construction Only): $85 to $160

---

1 Increase the cost by twenty percent for phased construction

---

**Estimated Cost per Square Foot**: $381
5' x 2' spread footing => 80' (40' EF)  
3' x 2' spread footing => 160' (40' ea. wingwall)

£ 6 x 2 ends = 12 piles x .75 Ft = 900 LF

\[
5 \times 2 \times 80 = 800 \text{ cf} \times \frac{1 \text{ cy}}{27 \text{ cf}} = 29.63 \text{ cy}
\]
\[
3 \times 2 \times 160 = 960 \text{ cf} \times \frac{1 \text{ cy}}{27 \text{ cf}} = 35.56 \text{ cy}
\]

Footing Conc. = 65.19 cy

Decorative Railing => LENGTH = Bridge Span + 2 * Approaches

\[
\left[ 43' + 2 \left( 30' \right) \right] \times 2 \text{ railings}
\]

Length = 206 LF

Cost per LF = $150

Sidewalks => LENGTH = Bridge Span + Approaches

= 43' + 2(30') = 103'

Depth = 0.333'

Width = 5' sidewalk + 1' under railing = 6'

Volume = 2 \left[ 103' \times 0.33' \times 6' \right] = 413 \text{ cf} \times \frac{1 \text{ cy}}{27 \text{ cf}} = 15.26 \text{ cy}
Curbs

Volume

Area \Rightarrow \square - \bigtriangleup \Rightarrow 1.5' \times 0.667' = 1 \text{ SF}

0.1667' \times 0.5' = 0.0833 \text{ SF}

\frac{0.1667 \text{ SF}}{0.91667 \text{ SF}}

Length \Rightarrow 43' + 2(30') = 103'

V = 2(L \times A) = 2(103 \times 0.91667)

V = 188.83 \text{ cf} \times \frac{1 \text{ cu}}{27 \text{ cf}} = 6.99 \text{ cu}

Rebar calcs included in spreadsheet.
17.0 Harbor Drive (904604)
17.1 Repair Cost Estimate (904604)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Notes</th>
<th>Quantity</th>
<th>Unit</th>
<th>Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$15.00</td>
<td>$42,191.46</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$15.00</td>
<td>$42,191.46</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>220</td>
<td>LF</td>
<td>$15.00</td>
<td>$3,306.50</td>
</tr>
<tr>
<td>339-1</td>
<td>MISCELLANEOUS ASPHALT PAVEMENT</td>
<td>1</td>
<td>TN</td>
<td>$241.58</td>
<td>$241.58</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>358.8</td>
<td>CF</td>
<td>$558.33</td>
<td>$200,358.80</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>9</td>
<td>GA</td>
<td>$145.00</td>
<td>$1,266.75</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>14</td>
<td>LF</td>
<td>$80.00</td>
<td>$1,880.00</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>27</td>
<td>LF</td>
<td>$80.00</td>
<td>$2,160.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>233</td>
<td>LB</td>
<td>$1.50</td>
<td>$349.50</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>1920</td>
<td>LB</td>
<td>$1.50</td>
<td>$2,880.00</td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURED JOINT WITH BACKER ROD</td>
<td>53</td>
<td>LF</td>
<td>$120.00</td>
<td>$6,384.00</td>
</tr>
<tr>
<td>530-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>45</td>
<td>CY</td>
<td>$650.00</td>
<td>$29,250.00</td>
</tr>
<tr>
<td>561-1</td>
<td>COATING EXISTING STRUCTURAL STEEL</td>
<td>1</td>
<td>LS</td>
<td></td>
<td>$73,131.87</td>
</tr>
</tbody>
</table>

* Pay Item 561-1 includes the cost of painting the reinforcing steel plates along the beams of the span.  
* Unit cost for Pay Item 561-1 was increased to account for the additional cost of containment and access.  

CONTINGENCIES 20%  
TOTAL  
$438,791.21
## 104-11
**FLOATING TURBIDITY BARRIER**

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutments</td>
<td>27</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutments</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>37</td>
<td>9</td>
<td>55.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2  
Layers of barrier around work area (double): 2

**LENGTH:** 220 LF  
**TOTAL LENGTH:** 220 LF

## 339-1
**MISCELLANEOUS ASPHALT PAVEMENT**

<table>
<thead>
<tr>
<th>Weight (TN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 0.6 TN

## 401-70-3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
</tr>
<tr>
<td>Retaining Walls</td>
</tr>
<tr>
<td>Abutments</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 358.8 CF

## 411-1
**EPOXY MATERIAL FOR CRACK INJECTION- STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
</tr>
<tr>
<td>Retaining Walls</td>
</tr>
<tr>
<td>Abutments</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 9 GA
**Kisinger Campo & Associates, Corp.**

**Project:** Harbor Drive Repair  
**Subject:** Estimated Quantities

<table>
<thead>
<tr>
<th>Calcs</th>
<th>Date : 05/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check: S.E.</td>
<td>Date: 05/14</td>
</tr>
</tbody>
</table>

### 411-1
(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td>3.8</td>
</tr>
<tr>
<td>3.8</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 4 GA

### 411-2
CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>20.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>0.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
</tr>
<tr>
<td>4.0</td>
</tr>
<tr>
<td>Retaining Walls</td>
</tr>
<tr>
<td>30.0</td>
</tr>
<tr>
<td>Abutments</td>
</tr>
<tr>
<td>20.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 74 LF

### 411-2
(ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td>27.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 27 LF

### 415-1-4
REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinf steel</td>
<td>38.8</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 233 LB

*Based on similar estimates
### 415- 1- 5
**REINFORCING STEEL-SUBSTRUCTURE**

<table>
<thead>
<tr>
<th></th>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>320.0</td>
<td>6</td>
<td>1920.0</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 1920 LB

*Based on similar estimates

### 458- 1- 21
**BRIDGE DECK EXPANSION JOINT, REHABILITATION,**

<table>
<thead>
<tr>
<th>Number of joints</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span 1</td>
<td>2</td>
<td>53.200</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 53 LF

### 530- 1
**RIPRAP, SAND-CEMENT**

<table>
<thead>
<tr>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.4</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 45 CY

### 561- 1
**COATING EXISTING STRUCTURAL STEEL**

<table>
<thead>
<tr>
<th>Structural Steel (Reinforcing Steel Plates)</th>
<th>Number</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Height (ft)</th>
<th>Total Weight (ton)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom</td>
<td>4</td>
<td>54</td>
<td>0.8</td>
<td>0.0417</td>
<td>1.8</td>
</tr>
<tr>
<td>End</td>
<td>8</td>
<td>1.5</td>
<td>1.0</td>
<td>0.0417</td>
<td>0.1</td>
</tr>
<tr>
<td>Side</td>
<td>16</td>
<td>2.5</td>
<td>4</td>
<td>0.0417</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 3.6 TN

**TOTAL WEIGHT:** 4 TN
17.2 Widening Cost Estimate (904604)
## CONSTRUCTION COST ESTIMATE
for
HARBOR DRIVE BRIDGE WIDENING
Bridge #904604
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1.0</td>
<td>LS</td>
<td>$37,992.77</td>
<td></td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1.0</td>
<td>LS</td>
<td>$37,992.77</td>
<td></td>
</tr>
<tr>
<td>109-71-3</td>
<td>FIELD OFFICE</td>
<td>180.0</td>
<td>DA</td>
<td>$30.00</td>
<td>$5,400.00</td>
</tr>
<tr>
<td></td>
<td>PERMITS</td>
<td>1.0</td>
<td>LS</td>
<td>$20,000.00</td>
<td></td>
</tr>
<tr>
<td>110-1-1</td>
<td>CLEARING &amp; GRUBBING (ASSUME 5%)</td>
<td>1.1</td>
<td>LS</td>
<td>$3,370.41</td>
<td>$3,707.45</td>
</tr>
<tr>
<td>120-1</td>
<td>REGULAR EXCAVATION</td>
<td>143.07</td>
<td>CY</td>
<td>$13.00</td>
<td>$1,865.87</td>
</tr>
<tr>
<td>120-6</td>
<td>EMBANKMENT</td>
<td>26.67</td>
<td>CY</td>
<td>$32.00</td>
<td>$853.33</td>
</tr>
<tr>
<td>522-1</td>
<td>SIDEWALK CONCRETE, 4&quot; THICK</td>
<td>480.0</td>
<td>SY</td>
<td>$51.25</td>
<td>$24,600.00</td>
</tr>
<tr>
<td>527-1</td>
<td>DETECTABLE WARNING ON EXISTING WALKING SURFACE, RETROFIT</td>
<td>1.0</td>
<td>EA</td>
<td>$750.00</td>
<td>$750.00</td>
</tr>
<tr>
<td>536-8</td>
<td>GUARDRAIL BRIDGE ASSEMBLY</td>
<td>4.0</td>
<td>EA</td>
<td>$1,400.00</td>
<td>$5,600.00</td>
</tr>
<tr>
<td>536-1-1</td>
<td>GUARDRAIL - ROADWAY</td>
<td>502.0</td>
<td>LF</td>
<td>$21.00</td>
<td>$10,620.00</td>
</tr>
<tr>
<td>536-1-5</td>
<td>GUARDRAIL - ROADWAY, THRIE BEAM</td>
<td>175.0</td>
<td>LF</td>
<td>$30.00</td>
<td>$5,250.00</td>
</tr>
<tr>
<td>536-73</td>
<td>GUARDRAIL REMOVAL</td>
<td>300.0</td>
<td>LF</td>
<td>$8.00</td>
<td>$2,400.00</td>
</tr>
<tr>
<td>536-85-22</td>
<td>GUARDRAIL END ANCHORAGE ASSEMBLY - FLARED</td>
<td>4.0</td>
<td>EA</td>
<td>$2,860.00</td>
<td>$11,440.00</td>
</tr>
<tr>
<td>570-1-2</td>
<td>PERFORMANCE TURF, SOD</td>
<td>800.0</td>
<td>SY</td>
<td>$3.90</td>
<td>$3,120.00</td>
</tr>
<tr>
<td>700-20-11</td>
<td>SINGLE POST SIGN, 12&quot; LES THAN 12 SF</td>
<td>1.0</td>
<td>AS</td>
<td>$34.00</td>
<td>$34.00</td>
</tr>
<tr>
<td>700-20-60</td>
<td>SINGLE POST SIGN, REMOVE</td>
<td>1.0</td>
<td>AS</td>
<td>$13.64</td>
<td>$13.64</td>
</tr>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>4.0</td>
<td>EA</td>
<td>$3.20</td>
<td>$12.80</td>
</tr>
<tr>
<td>711-11-123</td>
<td>THERMOPLASTIC, STANDARD, WHITE, SOLID, 12&quot;</td>
<td>60.0</td>
<td>LF</td>
<td>$2.35</td>
<td>$153.00</td>
</tr>
<tr>
<td>711-11-125</td>
<td>THERMOPLASTIC, STANDARD, WHITE, SOLID, 24&quot;</td>
<td>12.0</td>
<td>LF</td>
<td>$5.80</td>
<td>$69.60</td>
</tr>
<tr>
<td>110-3</td>
<td>REMOVAL OF EXISTING STRUCTURE</td>
<td>265.0</td>
<td>SF</td>
<td>$5.00</td>
<td>$1,325.00</td>
</tr>
<tr>
<td>400-2-4</td>
<td>CONCRETE CLASS II (SUPERSTRUCTURE)</td>
<td>20.2</td>
<td>CY</td>
<td>$1,500.00</td>
<td>$20,300.00</td>
</tr>
<tr>
<td>400-4-5</td>
<td>CONCRETE CLASS IV (SUBSTRUCTURE)</td>
<td>12.9</td>
<td>CY</td>
<td>$2,000.00</td>
<td>$25,800.00</td>
</tr>
<tr>
<td>400-147</td>
<td>COMPOSITE NEOPRENE PADS</td>
<td>4.5</td>
<td>CF</td>
<td>$650.00</td>
<td>$2,925.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL (SUPERSTRUCTURE)</td>
<td>1.303</td>
<td>LB</td>
<td>$1.00</td>
<td>$1,302.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL (SUBSTRUCTURE)</td>
<td>1.735</td>
<td>LB</td>
<td>$1.10</td>
<td>$1,908.00</td>
</tr>
<tr>
<td>460-2-1</td>
<td>STRUCTURAL STEEL (CARBON)</td>
<td>19.54</td>
<td>LB</td>
<td>$2.30</td>
<td>$44,494.54</td>
</tr>
<tr>
<td>521-5-4</td>
<td>CONCRETE TRAFFIC RAILING BARRIER (VERTICAL FACE)</td>
<td>120</td>
<td>LF</td>
<td>$150.00</td>
<td>$18,000.00</td>
</tr>
<tr>
<td>521-6-1</td>
<td>P/C DECORATIVE PEDESTRIAN RAILING</td>
<td>180</td>
<td>LF</td>
<td>$150.00</td>
<td>$27,000.00</td>
</tr>
<tr>
<td></td>
<td>HELICAL PILES</td>
<td>8</td>
<td>EA</td>
<td>$2,000.00</td>
<td>$16,000.00</td>
</tr>
<tr>
<td></td>
<td>RDWY REWORK WITHIN BRIDGE LIMITS (INCL. 3/4&quot; FC-5, 3&quot; ASPH CONC &amp; OPT BASE-09)</td>
<td>12</td>
<td>SY</td>
<td>$100.00</td>
<td>$1,185.19</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20% $71,653.26
TOTAL $429,920.00
17.3 Replacement Cost Estimate (904604)
### 1. Prestressed Concrete Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$75</td>
<td>420</td>
<td>$31,500</td>
</tr>
<tr>
<td>18&quot; (Driven Battered)</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Battered)</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Battered)</td>
<td>$185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy mild steel reinforcing in pile head (each)</td>
<td>$250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When silica fume, metakaolin or ultrafine fly ash is used add $6/LF to the piling cost.

**Subtotal** $31,500

### 2. Steel Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 x 73 H Section</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 x 89 H Section</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; Pipe Pile</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20&quot; Pipe Pile</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; Pipe Pile</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; Pipe Pile</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**
### 3. Drilled Shaft (Total in-place cost)

<table>
<thead>
<tr>
<th>Dia. (on land, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, permanent casing)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$2,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$2,400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal

### A. Bridge Substructure (continued)

### 4. Cofferdam Footing (Cofferdam and Seal Concrete)

Prorate the cost provided herein based on area and depth of water. A cofferdam footing having the following attributes cost $600,000: Area 63 ft x 37.25 ft; Depth of seal 5 ft; Depth of water over footing 16 ft.

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Footing</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cofferdam Footing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Cost of seal concrete included in pay item 400-3-20 or 400-4-200.

### Subtotal

### 5. Substructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Bent Concrete</td>
<td>$800</td>
<td>22.22</td>
<td>$17,776</td>
</tr>
<tr>
<td>Wall Concrete</td>
<td>$800</td>
<td>177.78</td>
<td>$142,224</td>
</tr>
<tr>
<td>Seal Concrete</td>
<td>$410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulkhead Concrete</td>
<td>$975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell Fill</td>
<td>$30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riprap</td>
<td>$800</td>
<td>25.69</td>
<td>$20,562</td>
</tr>
</tbody>
</table>

1 Admixtures: For Calcium Nitrite add $40/cy (@4.5 gal/cy) and for silica fume, metakaolin or ultrafine fly ash add $40/cy (@ 60 lb/cy)

Subtotal $180,562
### 6. Substructure Reinforcing and Post-tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.90</td>
<td>30,468</td>
<td>$27,421</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand</td>
<td>$4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$27,421</strong></td>
</tr>
</tbody>
</table>

**Substructure Subtotal** | **$239,473**

### B. Walls

#### 1. Retaining Walls

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSE Walls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>$26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sheet Pile Walls, Prestressed Concrete</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10&quot; x 30&quot;</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12&quot; x 30&quot;</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sheet Pile Walls, Steel</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Cantilever Wall</td>
<td>$24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Anchored Wall ¹</td>
<td>$50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Cantilever Wall</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Anchored Wall ¹</td>
<td>$35</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traffic Railings with Junction Slabs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F Shape or Vertical Face</td>
<td>$145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F Shape or Vertical Face</td>
<td>$165</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Includes the cost of anchors, water steel, miscellaneous steel for permanent/temporary walls and concrete face for permanent walls.

**Subtotal**

### 2. Noise Wall

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Wall</td>
<td>$25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**

**Walls Subtotal**

### C. Bridge Superstructure

#### 1. Bearing Type

<table>
<thead>
<tr>
<th>Neoprene Bearing Pads</th>
<th>Cost per Cubic Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$900</td>
<td>5.69</td>
<td><strong>$5,121</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multirotational Bearings (Capacity in kips)</th>
<th>Cost per Each</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- 250</td>
<td>$6,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>251- 500</td>
<td>$7,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>501- 750</td>
<td>$8,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>751-1000</td>
<td>$9,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1001-1250</td>
<td>$9,900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1251-1500</td>
<td>$10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1501-1750</td>
<td>$11,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1751-2000</td>
<td>$12,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;2000</td>
<td>$15,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** | **$5,121**
## 2. Bridge Girders

<table>
<thead>
<tr>
<th>Structural Steel (includes coating)</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolled Wide Flange Sections, straight</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled Wide Flange Sections, curved</td>
<td>$1.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Straight</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Curved</td>
<td>$1.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Straight</td>
<td>$1.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Curved</td>
<td>$2.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Prestressed Concrete Girders and Slabs

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fl. Inverted Tee 16'</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 20'</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 24'</td>
<td>$105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 48'</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 54'</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 63'</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 72'</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x12&quot;)</td>
<td>$150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x15&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x12&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x15&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x12&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x15&quot;)</td>
<td>$180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AASHTO Type II Beam</td>
<td>$98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 36</td>
<td>$200</td>
<td>336</td>
<td>$67,200</td>
</tr>
<tr>
<td>Florida-I; 45</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 54</td>
<td>$210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 63</td>
<td>$220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 72</td>
<td>$230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 78</td>
<td>$235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 84</td>
<td>$270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 96</td>
<td>$350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 78</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 84</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When weathering steel (uncoated) is used, reduce the price by $0.04 per pound. Inorganic zinc coating systems have an expected life cycle of 20 years.

2 Price is based on ability to furnish products without any conversions of casting beds and without purchasing o forms. If these conditions do not exist, add the following cost: Inverted Tee - $202,000; Fl. Tub - $403,000

3 The prices of Florida-I Beams range in value from large quantity (low price) to small quantity (high price).
### C. Bridge Superstructure (continued)

#### 3. Cast-in-Place Superstructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Girder Concrete, Straight</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girder Concrete, Curved</td>
<td>$1,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deck Concrete</td>
<td>$750</td>
<td>87.51</td>
<td>$65,633</td>
</tr>
<tr>
<td>Precast Deck Overlay Concrete Class IV</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$65,633</strong></td>
</tr>
</tbody>
</table>

#### 4. Concrete for Precast Segmental Box Girders, Cantilever Construction

<table>
<thead>
<tr>
<th>Concrete Cost by Deck Area</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 300,000 SF</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 300,000 SF AND ≤ 500,000 SF</td>
<td>$1,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 500,000 SF</td>
<td>$1,150</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$65,633</strong></td>
</tr>
</tbody>
</table>

#### 5. Reinforcing and Post-Tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.60</td>
<td>17,940</td>
<td>$10,764</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; longitudinal</td>
<td>$2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; transverse</td>
<td>$4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$10,764</strong></td>
</tr>
</tbody>
</table>

#### 6. Railings and Barriers

<table>
<thead>
<tr>
<th>Traffic Railings</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot; F-Shape</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F-Shape Median</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; F-Shape</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Vertical Face</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42&quot; Vertical Face</td>
<td>$115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; Corral</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Retrofit</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Panel Retrofit</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Face Retrofit</td>
<td>$100</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pedestrian/Bicycle Railings:</strong></td>
<td></td>
<td></td>
<td><strong>$34,800</strong></td>
</tr>
<tr>
<td>Decorative Concrete Railing</td>
<td>$150</td>
<td>232</td>
<td></td>
</tr>
<tr>
<td>Single Bullet Railing</td>
<td>$27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double Bullet Railing</td>
<td>$36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triple Bullet Railing</td>
<td>$45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 1)</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 3)</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (42&quot;) aluminum (Type 1)</td>
<td>$63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) steel</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) aluminum (Type 1)</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$34,800</strong></td>
</tr>
</tbody>
</table>

1 Combine cost of Bullet Railings with Concrete Parapet or Traffic Railing, as appropriate.
### 7. Expansion Joints

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip Seal</td>
<td>$400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &lt;6&quot;</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &gt;6&quot;</td>
<td>$1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 6&quot;</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 8&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 12&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal

Superstructure Subtotal $183,517

### D. Miscellaneous Items

#### 1. Bridge DeckGrooving and Planing

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grooving - Deck Thickness less than 8.5&quot;</td>
<td>$4.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grooving and Planing- Deck Thickness 8.5&quot;+</td>
<td>$14</td>
<td>166</td>
<td>$2,324</td>
</tr>
</tbody>
</table>

Grooving and Planing Subtotal $2,324

#### 2. Detour Bridges

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrow Detour Bridge(^1)</td>
<td>$55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Using FDOT supplied components. The cost is for the bridge proper and does not include approach work, surfacing, or guardrail.

Detour Bridge Subtotal

#### 3. Approach Slab

<table>
<thead>
<tr>
<th>Approach Slab Material</th>
<th>Cost per Unit</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast-in-Place Concrete (per Sq. Yard)</td>
<td>$800</td>
<td>59.3</td>
<td>$47,440</td>
</tr>
<tr>
<td>Reinforcing Steel (per Pound)</td>
<td>$1.00</td>
<td>2,800</td>
<td>$2,800</td>
</tr>
<tr>
<td>Railing Type per Superstructure Section 6 (per Lin. Foot)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approach Slab Subtotal $50,240

Unadjusted Total $475,555
Step Two: Estimate Conditional Variables and Cost per Square Foot

After developing the total cost estimate utilizing the unit cost, modify the cost to account for site condition variables. If appropriate, the cost will be modified by the following variables:

<table>
<thead>
<tr>
<th>Conditional Variables</th>
<th>% Increase/Decrease</th>
<th>Cost (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For construction over open water, floodplains that flood frequently or other similar areas, increase cost by 3%.</td>
<td>3%</td>
<td>$14,267</td>
</tr>
<tr>
<td>Phased construction, increase by 20%.</td>
<td>20%</td>
<td>$95,110.97</td>
</tr>
<tr>
<td>Unit cost increase for work in Monroe County</td>
<td>40%</td>
<td>$190,221.94</td>
</tr>
<tr>
<td>Mobilization</td>
<td>15%</td>
<td>$71,333.23</td>
</tr>
<tr>
<td>Maintenance of Traffic</td>
<td>15%</td>
<td>$71,333.23</td>
</tr>
<tr>
<td>Approach Work, Demo and Incidental Items</td>
<td>20%</td>
<td>$95,110.97</td>
</tr>
<tr>
<td></td>
<td>113%</td>
<td>$537,377</td>
</tr>
</tbody>
</table>

1 Phased construction is defined as construction over traffic or construction requiring multiple phases to complete the construction of the entire cross section of the bridge. The 20 percent premium is applied to the affected units of the superstructure and/or substructure.

<table>
<thead>
<tr>
<th>Substructure Subtotal</th>
<th>$239,473</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superstructure Subtotal</td>
<td>$183,517</td>
</tr>
<tr>
<td>Walls Subtotal</td>
<td></td>
</tr>
<tr>
<td>Grooving and Planing Subtotal</td>
<td>$2,324</td>
</tr>
<tr>
<td>Detour Bridge Subtotal</td>
<td></td>
</tr>
<tr>
<td>Approach Slab Subtotal</td>
<td>$60,240</td>
</tr>
<tr>
<td>Conditional Variables</td>
<td>$537,377</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td><strong>$1,012,932</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Square Feet of Deck</th>
<th>2301</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost per Square Foot (not including Approach Slab)</strong></td>
<td><strong>$315</strong></td>
</tr>
</tbody>
</table>
In the absence of better information, use the following quantities of reinforcing steel pounds per cubic yard of

<table>
<thead>
<tr>
<th>Location</th>
<th>Pounds of Steel per Cubic Yard</th>
<th>Cubic Yds.</th>
<th>Tot. Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Abutments</td>
<td>135</td>
<td>225.69</td>
<td>30,468</td>
</tr>
<tr>
<td>Pile Bents</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &gt;25'</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &lt;25'</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &gt;25'</td>
<td>215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &lt;25'</td>
<td>195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bascule Piers</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Deck Slabs</td>
<td>205</td>
<td>87.51</td>
<td>17,940</td>
</tr>
<tr>
<td>Isotropic Deck Slabs</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Pier Seg</td>
<td>225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Typ. Seg</td>
<td>165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.I.P. Flat Slabs @ 30ft &amp; 15&quot; Deep</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Slab</td>
<td>200</td>
<td>14.00</td>
<td>2,800</td>
</tr>
</tbody>
</table>
**Step Three: Cost Estimate Comparison to Historical Bridge Cost**

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot.

<table>
<thead>
<tr>
<th>Bridge Superstructure Type</th>
<th>Total Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td><strong>Short Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Reinforced Concrete Flat Slab - Simple Span¹</td>
<td>$115</td>
</tr>
<tr>
<td>Pre-cast Concrete Slab - Simple Span¹</td>
<td>$110</td>
</tr>
<tr>
<td><strong>Medium Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Simple Span¹</td>
<td>$125</td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Continuous Span¹</td>
<td>$135</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Simple Span¹²</td>
<td>$90</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Continuous Span¹</td>
<td>$95</td>
</tr>
<tr>
<td>Concrete Deck / Steel Box Girder¹ -</td>
<td></td>
</tr>
<tr>
<td>Span range from 150' to 280' (for curvature, add 15% premium)</td>
<td>$140</td>
</tr>
<tr>
<td>Segmental Concrete Box Girders - Cantilever Construction</td>
<td>$140</td>
</tr>
<tr>
<td>Span range from 150' to 280'</td>
<td></td>
</tr>
<tr>
<td>Movable Bridge - Bascule Spans &amp; Piers</td>
<td>$1,800</td>
</tr>
<tr>
<td><strong>Demolition Costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Typical</td>
<td>$35</td>
</tr>
<tr>
<td>Bascule</td>
<td>$60</td>
</tr>
<tr>
<td><strong>Project Type</strong></td>
<td></td>
</tr>
<tr>
<td>Widening (Construction Only)</td>
<td>$85</td>
</tr>
</tbody>
</table>

¹ Increase the cost by twenty percent for phased construction

Estimated Cost per Square Foot: $315
18.0 Seaview Drive (904606)
18.1 Repair Cost Estimate (904606)
## CONSTRUCTION COST ESTIMATE

for

SEAVIEW DRIVE BRIDGE REPAIR

Bridge #904606

MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$10,020.52</td>
<td></td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$10,020.52</td>
<td></td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>220</td>
<td>LF</td>
<td>$3,300.00</td>
<td></td>
</tr>
<tr>
<td>401-1</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>18.8</td>
<td>CF</td>
<td>$10,496.60</td>
<td></td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>3</td>
<td>GA</td>
<td>$360.00</td>
<td></td>
</tr>
<tr>
<td>411-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>10</td>
<td>GA</td>
<td>$1,450.00</td>
<td></td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>20</td>
<td>LF</td>
<td>$1,600.00</td>
<td></td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>73</td>
<td>LF</td>
<td>$5,840.00</td>
<td></td>
</tr>
<tr>
<td>415-1</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>76</td>
<td>LB</td>
<td>$114.00</td>
<td></td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>38</td>
<td>LB</td>
<td>$57.00</td>
<td></td>
</tr>
<tr>
<td>458-1</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, Poured Joint with Backer Rod</td>
<td>52</td>
<td>LF</td>
<td>$6,259.20</td>
<td></td>
</tr>
<tr>
<td>500-1</td>
<td>RIPRAP, SAND-CEMENT</td>
<td>13</td>
<td>CY</td>
<td>$8,580.00</td>
<td></td>
</tr>
<tr>
<td>561-1</td>
<td>COATING EXISTING STRUCTURAL STEEL</td>
<td>1</td>
<td>LS</td>
<td>$28,746.07</td>
<td></td>
</tr>
</tbody>
</table>

* Pay Item 561-1 includes the cost of painting the reinforcing steel plates along the beams of the span.

* Unit cost for Pay Item 561-1 was increased to account for the additional cost of containment and access.
104-11
FLOATING TURBIDITY BARRIER

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>27</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>37</td>
<td>9</td>
<td>55.00</td>
</tr>
</tbody>
</table>

Number of abutments 2
Layers of barrier around work area (double) 2

LENGTH: 220 LF
TOTAL LENGTH: 220 LF

401-70-3
RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
</tr>
<tr>
<td>Footers</td>
</tr>
<tr>
<td>Abutments</td>
</tr>
</tbody>
</table>

18.8
TOTAL VOLUME: 18.8 CF

411-1
EPOXY MATERIAL FOR CRACK INJECTION STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
</tr>
<tr>
<td>Retaining Walls</td>
</tr>
<tr>
<td>Abutments</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 3 GA

411-1
(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 10 GA
### 411- 2

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>0.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>0.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>20.0</td>
</tr>
<tr>
<td>Footers</td>
<td>0.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>20.0</strong></td>
</tr>
</tbody>
</table>

#### 411- 2

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>73.0</td>
</tr>
<tr>
<td></td>
<td>73.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>73.0</strong></td>
</tr>
</tbody>
</table>

### 415- 1- 4

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>12.6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75.6</td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td><strong>78</strong></td>
<td><strong>LB</strong></td>
</tr>
</tbody>
</table>

*Based on similar estimates*

### 415- 1- 5

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>6.2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37.2</td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td><strong>38</strong></td>
<td><strong>LB</strong></td>
</tr>
</tbody>
</table>

*Based on similar estimates*
### 458-1-21
**BRIDGE DECK EXPANSION JOINT, REHABILITATION,**

<table>
<thead>
<tr>
<th>Number of joints</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span 1</td>
<td>2</td>
<td>26.080</td>
</tr>
<tr>
<td></td>
<td></td>
<td>52.160</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH: 52 LF**

### 530-1
**RIPRAP, SAND-CEMENT**

<table>
<thead>
<tr>
<th>Total Volume (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Undermining</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**TOTAL VOLUME: 13.2 CY**

### 561-1
**COATING EXISTING STRUCTURAL STEEL**

<table>
<thead>
<tr>
<th>Structural Steel (Reinforcing Steel Plates)</th>
<th>Number</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Height (ft)</th>
<th>Total Weight (ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom</td>
<td>4</td>
<td>54</td>
<td>0.8</td>
<td>0.0417</td>
<td>1.8</td>
</tr>
<tr>
<td>End</td>
<td>8</td>
<td>1.5</td>
<td>1.0</td>
<td>0.0417</td>
<td>0.1</td>
</tr>
<tr>
<td>Side</td>
<td>16</td>
<td>2.5</td>
<td>4</td>
<td>0.0417</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT: 4 TN**
18.2 Widening Cost Estimate (904606)
## CONSTRUCTION COST ESTIMATE

for

SEAVIEW DRIVE BRIDGE WIDENING

Bridge #904606

MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Price Per Unit</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1.0</td>
<td>LS</td>
<td>$37,992.27</td>
<td>$37,992.27</td>
</tr>
<tr>
<td>102-2</td>
<td>MAINTENANCE OF TRAFFIC (#DAYS)</td>
<td>15% 1.0</td>
<td>LS</td>
<td>$37,992.27</td>
<td>$37,992.27</td>
</tr>
<tr>
<td>109-71-3</td>
<td>FIELD OFFICE</td>
<td>186.0 DA</td>
<td>CY</td>
<td>$50.00</td>
<td>$9,000.00</td>
</tr>
<tr>
<td>110-1-1</td>
<td>PERMITS</td>
<td>1.0</td>
<td>LS</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>120-1</td>
<td>CLEARING &amp; GRUBBING (ASSUME 5%)</td>
<td>1.1</td>
<td>SY</td>
<td>$3,707.45</td>
<td>$3,707.45</td>
</tr>
<tr>
<td>120-6</td>
<td>REGULAR EXCAVATION</td>
<td>145.07 CY</td>
<td>CY</td>
<td>$1,885.87</td>
<td>$267,123.71</td>
</tr>
<tr>
<td>522-1</td>
<td>EMBANKMENT</td>
<td>26.67 CY</td>
<td>CY</td>
<td>$553.33</td>
<td>$14,584.62</td>
</tr>
<tr>
<td>527-1</td>
<td>SIDEWALK CONCRETE, 4&quot; THICK</td>
<td>480.0 SY</td>
<td>SY</td>
<td>$51.25</td>
<td>$24,600.00</td>
</tr>
<tr>
<td>536-8</td>
<td>DETECTABLE WARNING ON EXISTING WALKING SURFACE, RETROFIT</td>
<td>1.0 EA</td>
<td>EA</td>
<td>$750.00</td>
<td>$750.00</td>
</tr>
<tr>
<td>536-1-1</td>
<td>GUARDRAIL BRIDGE ASSEMBLY</td>
<td>4.0 EA</td>
<td>EA</td>
<td>$1,400.00</td>
<td>$5,600.00</td>
</tr>
<tr>
<td>536-1-5</td>
<td>GUARDRAIL - ROADWAY</td>
<td>520.0 LF</td>
<td>LF</td>
<td>$21,000.00</td>
<td>$19,200.00</td>
</tr>
<tr>
<td>536-6-73</td>
<td>GUARDRAIL - ROADWAY, TURF BEAM</td>
<td>175.0 LF</td>
<td>LF</td>
<td>$5,250.00</td>
<td>$2,625.00</td>
</tr>
<tr>
<td>536-85-22</td>
<td>GUARDRAIL REMOVAL</td>
<td>300.0 LF</td>
<td>LF</td>
<td>$8.00</td>
<td>$2,400.00</td>
</tr>
<tr>
<td>536-85-22</td>
<td>GUARDRAIL END ANCHORAGE ASSEMBLY - FLARED</td>
<td>4.0 EA</td>
<td>EA</td>
<td>$2,860.00</td>
<td>$11,440.00</td>
</tr>
<tr>
<td>570-1-2</td>
<td>PERFORMANCE TURF, SOD</td>
<td>800.0 SY</td>
<td>SY</td>
<td>$2,990.00</td>
<td>$3,200.00</td>
</tr>
<tr>
<td>700-20-11</td>
<td>SINGLE POST SIGN, F&amp;L LESS THAN 12 SF</td>
<td>1.0 AS</td>
<td>AS</td>
<td>$340.00</td>
<td>$340.00</td>
</tr>
<tr>
<td>700-20-60</td>
<td>SINGLE POST SIGN, REMOVE</td>
<td>1.0 AS</td>
<td>AS</td>
<td>$13.64</td>
<td>$13.64</td>
</tr>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>4.0 EA</td>
<td>EA</td>
<td>$12.80</td>
<td>$51.20</td>
</tr>
<tr>
<td>711-11-123</td>
<td>THERMOPLASTIC, STANDARD, WHITE, SOLID, 12&quot;</td>
<td>60.0 LF</td>
<td>LF</td>
<td>$153.00</td>
<td>$9,180.00</td>
</tr>
<tr>
<td>711-11-125</td>
<td>THERMOPLASTIC, STANDARD, WHITE, SOLID, 24&quot;</td>
<td>12.0 LF</td>
<td>LF</td>
<td>$69.60</td>
<td>$835.20</td>
</tr>
<tr>
<td>711-3-3</td>
<td>REMOVAL OF EXISTING STRUCTURE</td>
<td>263.0 SF</td>
<td>SF</td>
<td>$13,250.00</td>
<td>$3,423.00</td>
</tr>
<tr>
<td>400-2-4</td>
<td>CONCRETE CLASS II (SUPERSTRUCTURE)</td>
<td>20.2 CY</td>
<td>CY</td>
<td>$30,000.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>400-4-5</td>
<td>CONCRETE CLASS IV (SUBSTRUCTURE)</td>
<td>12.9 CY</td>
<td>CY</td>
<td>$25,800.00</td>
<td>$25,800.00</td>
</tr>
<tr>
<td>400-147</td>
<td>COMPOSITE NEOPRENE PADS</td>
<td>4.5 LF</td>
<td>CF</td>
<td>$650.00</td>
<td>$650.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL (SUPERSTRUCTURE)</td>
<td>1303 LB</td>
<td>LB</td>
<td>$1,302.86</td>
<td>$1,302.86</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL (SUBSTRUCTURE)</td>
<td>1735 LB</td>
<td>LB</td>
<td>$1,908.50</td>
<td>$1,908.50</td>
</tr>
<tr>
<td>460-2-1</td>
<td>STRUCTURAL STEEL (CARBON)</td>
<td>19345 LB</td>
<td>LB</td>
<td>$44,394.54</td>
<td>$44,394.54</td>
</tr>
<tr>
<td>521-5-4</td>
<td>CONCRETE TRAFFIC RAILING BARRIER (VERTICAL FACE)</td>
<td>120 LF</td>
<td>LF</td>
<td>$18,000.00</td>
<td>$18,000.00</td>
</tr>
<tr>
<td>521-6-1</td>
<td>PIC DECORATIVE PEDESTRIAN RAILING</td>
<td>180 LF</td>
<td>LF</td>
<td>$27,000.00</td>
<td>$27,000.00</td>
</tr>
<tr>
<td>H32-3-3</td>
<td>HELICAL PILES</td>
<td>8 EA</td>
<td>EA</td>
<td>$16,000.00</td>
<td>$16,000.00</td>
</tr>
<tr>
<td>RDWY REWORK WITHIN BRIDGE LIMITS (INCL. 3/4&quot; FC-5, 3&quot; ASPH CONC &amp; OPT BASE)</td>
<td>12 SY</td>
<td>SY</td>
<td>$1,185.19</td>
<td>$1,185.19</td>
<td></td>
</tr>
</tbody>
</table>

CONTINGENCIES: 20% $71,653.26

TOTAL: $429,920.00
18.3 Replacement Cost Estimate (904606)
### 1. Prestressed Concrete Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$75</td>
<td>420</td>
<td>$31,500</td>
</tr>
<tr>
<td>18&quot; (Driven Battered)</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; (Driven Battered)</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Plumb or 1&quot; Batter)</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; (Driven Battered)</td>
<td>$185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy mild steel reinforcing in pile head (each)</td>
<td>$250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When silica fume, metakaolin or ultrafine fly ash is used add $6/LF to the piling cost.

**Subtotal** $31,500

### 2. Steel Piling, (furnished and installed)

<table>
<thead>
<tr>
<th>Size of Piling</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 x 73 H Section</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 x 89 H Section</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18&quot; Pipe Pile</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20&quot; Pipe Pile</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24&quot; Pipe Pile</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30&quot; Pipe Pile</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**
### 3. Drilled Shaft (Total in-place cost)

<table>
<thead>
<tr>
<th>Dia. (on land, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, casing salvaged)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$1,650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$1,900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dia. (in water, permanent casing)</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ft</td>
<td>$625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 ft</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ft</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 ft</td>
<td>$990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 ft</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ft</td>
<td>$2,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 ft</td>
<td>$2,400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal:

### A. Bridge Substructure (continued)

### 4. Cofferdam Footing (Cofferdam and Seal Concrete¹)

Prorate the cost provided herein based on area and depth of water. A cofferdam footing having the following attributes cost $600,000: Area 63 ft x 37.25 ft; Depth of seal 5 ft; Depth of water over footing 16 ft

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Footing</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cofferdam Footing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Cost of seal concrete included in pay item 400-3-20 or 400-4-200.

Subtotal:

### 5. Substructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Bent Concrete ¹</td>
<td>$800</td>
<td>22.22</td>
<td>$17,776</td>
</tr>
<tr>
<td>Wall Concrete ¹</td>
<td>$800</td>
<td>177.78</td>
<td>$142,224</td>
</tr>
<tr>
<td>Seal Concrete ¹</td>
<td>$410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulkhead Concrete ¹</td>
<td>$975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell Fill ¹</td>
<td>$30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riprap</td>
<td>$800</td>
<td>25.69</td>
<td>$20,552</td>
</tr>
</tbody>
</table>

¹ Admixtures: For Calcium Nitrite add $40/cy (@4.5 gal/cy) and for silica fume, metakaolin or ultrafine fly ash add $40/cy (@ 60 lb./cy)

Subtotal: $180,552
6. Substructure Reinforcing and Post-tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand</td>
<td>$4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$27,421</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Substructure Subtotal $239,473

B. Walls

1. Retaining Walls

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>$26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet Pile Walls, Prestressed Concrete</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10&quot; x 30&quot;</td>
<td>$120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet Pile Walls, Steel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Cantilever Wall</td>
<td>$24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Anchored Wall 1</td>
<td>$50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Cantilever Wall</td>
<td>$14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Anchored Wall 1</td>
<td>$35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic Railings with Junction Slabs</td>
<td>$145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32&quot; F Shape or Vertical Face</td>
<td>$165</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Includes the cost of anchors, water steel, miscellaneous steel for permanent/temporary walls and concrete face for permanent walls.

2. Noise Wall

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Wall</td>
<td>$25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Walls Subtotal

C. Bridge Superstructure

1. Bearing Type

<table>
<thead>
<tr>
<th>Neoprene Bearing Pads</th>
<th>Cost per Cubic Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene Bearing Pads</td>
<td>$900</td>
<td>5.69</td>
<td>$5,121</td>
</tr>
<tr>
<td>Multirotational Bearings (Capacity in kips)</td>
<td>Cost per Each</td>
<td>Quantity</td>
<td>Cost</td>
</tr>
<tr>
<td>1- 250</td>
<td>$6,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>251- 500</td>
<td>$7,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>501- 750</td>
<td>$8,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>751-1000</td>
<td>$9,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1001-1250</td>
<td>$9,900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1251-1500</td>
<td>$10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1501-1750</td>
<td>$11,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1751-2000</td>
<td>$12,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000+</td>
<td>$15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td>$5,121</td>
</tr>
</tbody>
</table>
## 2. Bridge Girders

<table>
<thead>
<tr>
<th>Structural Steel (includes coating)</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolled Wide Flange Sections, straight</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled Wide Flange Sections, curved</td>
<td>$1.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Straight</td>
<td>$1.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate Girders, Curved</td>
<td>$1.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Straight</td>
<td>$1.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girders, Curved</td>
<td>$2.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prestressed Concrete Girders and Slabs</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fl. Inverted Tee 16&quot; 2</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 20&quot;</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Inverted Tee 24&quot; 2</td>
<td>$105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 48&quot; 2</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 54&quot;</td>
<td>$750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 63&quot;</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fl. Tub (U-Beam) 72&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x12&quot;)</td>
<td>$150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (&lt;48&quot;x15&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x12&quot;)</td>
<td>$160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (48&quot;x15&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x12&quot;)</td>
<td>$170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Flat Slab (60&quot;x15&quot;)</td>
<td>$180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AASHTO Type II Beam</td>
<td>$98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 36 3</td>
<td>$200</td>
<td>336</td>
<td>$67,200</td>
</tr>
<tr>
<td>Florida-I; 45 3</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 54 3</td>
<td>$210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 63 3</td>
<td>$220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 72 3</td>
<td>$230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 78 3</td>
<td>$235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 84 3</td>
<td>$270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida-I; 96 3</td>
<td>$350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 78</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haunched Florida-I; 84</td>
<td>$800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 When weathering steel (uncoated) is used, reduce the price by $0.04 per pound. Inorganic zinc coating systems have an expected life cycle of 20 years.

2 Price is based on ability to furnish products without any conversions of casting beds and without purchasing o- forms. If these conditions do not exist, add the following cost: Inverted Tee - $202,000; Fl. Tub - $403,000

3 The prices of Florida-I Beams range in value from large quantity (low price) to small quantity (high price).
### 3. Cast-in-Place Superstructure Concrete

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Girder Concrete, Straight</td>
<td>$950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Girder Concrete, Curved</td>
<td>$1,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deck Concrete</td>
<td>$750</td>
<td>87.51</td>
<td>$65,633</td>
</tr>
<tr>
<td>Precast Deck Overlay Concrete Class IV</td>
<td>$600</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$65,633</strong></td>
</tr>
</tbody>
</table>

### 4. Concrete for Precast Segmental Box Girders, Cantilever Construction

<table>
<thead>
<tr>
<th>Concrete Cost by Deck Area</th>
<th>Cost per Cubic Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 300,000 SF</td>
<td>$1,250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 300,000 SF AND ≤ 500,000 SF</td>
<td>$1,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 500,000 SF</td>
<td>$1,150</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$10,764</strong></td>
</tr>
</tbody>
</table>

### 5. Reinforcing and Post-Tensioning Steel

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Pound</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing Steel</td>
<td>$0.60</td>
<td>17,940</td>
<td>$10,764</td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; longitudinal</td>
<td>$2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Strand; transverse</td>
<td>$4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-tensioning Steel, Bars</td>
<td>$6.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$10,764</strong></td>
</tr>
</tbody>
</table>

### 6. Railings and Barriers

#### Traffic Railings

<table>
<thead>
<tr>
<th>Traffic Railings ¹</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>32” F-Shape</td>
<td>$70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32” F-Shape Median</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42” F-Shape</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32” Vertical Face</td>
<td>$90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42” Vertical Face</td>
<td>$115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32” Corral</td>
<td>$130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Retrofit</td>
<td>$140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrie Beam Panel Retrofit</td>
<td>$110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Face Retrofit</td>
<td>$100</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pedestrian/Bicycle Railings:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decorative Concrete Railing ¹</td>
<td>$150</td>
<td>232</td>
<td>$34,800</td>
</tr>
<tr>
<td>Single Bullet Railing ¹</td>
<td>$27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double Bullet Railing ¹</td>
<td>$36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triple Bullet Railing ¹</td>
<td>$45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 1)</td>
<td>$86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picket Railing (42&quot;) steel (Type 3)</td>
<td>$200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (42&quot;) aluminum (Type 1)</td>
<td>$63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) steel</td>
<td>$95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel/Picket Railing (54&quot;) aluminum (Type 1)</td>
<td>$80</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>$34,800</strong></td>
</tr>
</tbody>
</table>

¹ Combine cost of Bullet Railings with Concrete Parapet or Traffic Railing, as appropriate.
### 7. Expansion Joints

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Lin. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip Seal</td>
<td>$400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &lt;6&quot;</td>
<td>$850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger Joint &gt;6&quot;</td>
<td>$1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 6&quot;</td>
<td>$500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 8&quot;</td>
<td>$700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular 12&quot;</td>
<td>$900</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal**

**Superstructure Subtotal** $183,517

### D. Miscellaneous Items

#### 1. Bridge Deck Grooving and Planing

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Yard</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grooving - Deck Thickness less than 8.5&quot;</td>
<td>$4.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grooving and Planing- Deck Thickness 8.5&quot;+</td>
<td>$14</td>
<td>166</td>
<td>$2,324</td>
</tr>
</tbody>
</table>

**Grooving and Planing Subtotal** $2,324

#### 2. Detour Bridges

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Sq. Foot</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acror Detour Bridge(^1)</td>
<td>$55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Using FDOT supplied components. The cost is for the bridge proper and does not include approach work, surfacing, or guardrail.

**Detour Bridge Subtotal**

#### 3. Approach Slab

<table>
<thead>
<tr>
<th>Approach Slab Material</th>
<th>Cost per Unit</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast-in-Place Concrete (per Sq. Yard)</td>
<td>$800</td>
<td>59.3</td>
<td>$47,440</td>
</tr>
<tr>
<td>Reinforcing Steel (per Pound)</td>
<td>$1.00</td>
<td>2,800</td>
<td>$2,800</td>
</tr>
<tr>
<td>Railing Type per Superstructure Section 6 (per Lin. Foot)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Approach Slab Subtotal** $50,240

**Unadjusted Total** $475,555
### Step Two: Estimate Conditional Variables and Cost per Square Foot

After developing the total cost estimate utilizing the unit cost, modify the cost to account for site condition variables. If appropriate, the cost will be modified by the following variables:

<table>
<thead>
<tr>
<th>Conditional Variables</th>
<th>% Increase/Decrease</th>
<th>Cost (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For construction over open water, floodplains that flood frequently or other similar areas, increase cost by 3%</td>
<td>3%</td>
<td>$14,267</td>
</tr>
<tr>
<td>Phased construction, increase by 20%</td>
<td>20%</td>
<td>$95,110.97</td>
</tr>
<tr>
<td>Unit cost increase for work in Monroe County</td>
<td>40%</td>
<td>$190,221.94</td>
</tr>
<tr>
<td>Mobilization</td>
<td>15%</td>
<td>$71,333.23</td>
</tr>
<tr>
<td>Maintenance of Traffic</td>
<td>15%</td>
<td>$71,333.23</td>
</tr>
<tr>
<td>Approach Work, Demo and Incidental Items</td>
<td>20%</td>
<td>$95,110.97</td>
</tr>
<tr>
<td></td>
<td>113%</td>
<td>$537,377</td>
</tr>
</tbody>
</table>

1 Phased construction is defined as construction over traffic or construction requiring multiple phases to complete the construction of the entire cross section of the bridge. The 20 percent premium is applied to the affected units of the superstructure and/or substructure.

| Substructure Subtotal                                                                 | $239,473            |
| Superstructure Subtotal                                                               | $183,517            |
| Walls Subtotal                                                                       | $2,324              |
| Grooving and Planing Subtotal                                                         | $2,324              |
| Detour Bridge Subtotal                                                                | $50,240             |
| Approach Slab Subtotal                                                                | $537,377            |
| Conditional Variables                                                                 |                     |
|                                                                                       | Total Cost: $1,012,932 |
|                                                                                       | Total Square Feet of Deck: 2301 |
|                                                                                       | Cost per Square Foot (not including Approach Slab): $315 |

G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\904606\Cost Estimates\904606 Replacement Cost.xls
Design Aid for Determination of Reinforcing Steel

In the absence of better information, use the following quantities of reinforcing steel pounds per cubic yard of:

<table>
<thead>
<tr>
<th>Location</th>
<th>Pounds of Steel per Cubic Yd</th>
<th>Cubic Yds.</th>
<th>Tot. Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Abutments</td>
<td>135</td>
<td>225.69</td>
<td>30,468</td>
</tr>
<tr>
<td>Pile Bents</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &gt;25'</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Column Piers &lt;25'</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &gt;25'</td>
<td>215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Column Piers &lt;25'</td>
<td>195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bascule Piers</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Deck Slabs</td>
<td>205</td>
<td>87.51</td>
<td>17,940</td>
</tr>
<tr>
<td>Isotropic Deck Slabs</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Pier Seg</td>
<td>225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Box Girders, Typ. Seg</td>
<td>165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.I.P. Flat Slabs @ 30ft &amp; 15&quot; Deep</td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach Slab</td>
<td>200</td>
<td>14.00</td>
<td>2,800</td>
</tr>
</tbody>
</table>
Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot.

<table>
<thead>
<tr>
<th>Bridge Superstructure Type</th>
<th>Total Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td><strong>Short Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Reinforced Concrete Flat Slab - Simple Span</td>
<td>$115</td>
</tr>
<tr>
<td>Pre-cast Concrete Slab - Simple Span</td>
<td>$110</td>
</tr>
<tr>
<td><strong>Medium Span Bridges:</strong></td>
<td></td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Simple Span</td>
<td>$125</td>
</tr>
<tr>
<td>Concrete Deck / Steel Girder - Continuous Span</td>
<td>$135</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Simple Span</td>
<td>$90</td>
</tr>
<tr>
<td>Concrete Deck / Prestressed Girder - Continuous Span</td>
<td>$95</td>
</tr>
<tr>
<td>Concrete Deck / Steel Box Girder</td>
<td>$140</td>
</tr>
<tr>
<td>- Span range from 150’ to 280’ (for curvature, add 15% premium)</td>
<td></td>
</tr>
<tr>
<td>Segmental Concrete Box Girders - Cantilever Construction</td>
<td>$140</td>
</tr>
<tr>
<td>- Span range from 150’ to 280’</td>
<td></td>
</tr>
<tr>
<td>Movable Bridge - Bascule Spans &amp; Piers</td>
<td>$1,800</td>
</tr>
<tr>
<td><strong>Demolition Costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Typical</td>
<td>$35</td>
</tr>
<tr>
<td>Bascule</td>
<td>$60</td>
</tr>
<tr>
<td><strong>Project Type</strong></td>
<td></td>
</tr>
<tr>
<td>Widening (Construction Only)</td>
<td>$85</td>
</tr>
</tbody>
</table>

1 Increase the cost by twenty percent for phased construction

Estimated Cost per Square Foot: $375
19.0 Valois Boulevard (904908)
19.1 Repair Cost Estimate (904908)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Notes</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$12,467.34</td>
<td>$12,467.34</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$12,467.34</td>
<td>$12,467.34</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>232</td>
<td>LF</td>
<td>$15.00</td>
<td>$3,480.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>11.6</td>
<td>CF</td>
<td>$558.33</td>
<td>$6,676.63</td>
</tr>
<tr>
<td>411-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>53</td>
<td>GA</td>
<td>$145.00</td>
<td>$7,612.50</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>400</td>
<td>LF</td>
<td>$145.00</td>
<td>$58,000.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>69</td>
<td>LB</td>
<td>$1.50</td>
<td>$103.50</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>2</td>
<td>LB</td>
<td>$1.50</td>
<td>$3.00</td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURED JOINT WITH BACKER ROD</td>
<td>62</td>
<td>LF</td>
<td>$120.00</td>
<td>$7,440.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20% $21,610.06 TOTAL $129,660.38
### 104-11 FLOATING TURBIDITY BARRIER

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>30</td>
<td>4</td>
<td>58.00</td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td>10.0</td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>40</td>
<td>9</td>
<td>58.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2
Layers of barrier around work area (double): 2

LENGTH: 232 LF
TOTAL LENGTH: 232 LF

### 401-70-3 RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR-ACRYLIC

<table>
<thead>
<tr>
<th>Volume (cf)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>1.4</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>10.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>0.2</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 11.6 CF

### 411-1 (ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>52.5</td>
</tr>
<tr>
<td></td>
<td>52.5</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 53 GA

### 411-2 (ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Length (LF)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>400.0</td>
</tr>
<tr>
<td></td>
<td>400.0</td>
</tr>
</tbody>
</table>

TOTAL LENGTH: 400 LF
### 415-1-4 REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>11.4</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT: 69 LB**

*Based on similar estimates

### 415-1-5 REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>0.2</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT: 2 LB**

*Based on similar estimates

### 458-1-21 BRIDGE DECK EXPANSION JOINT, REHABILITATION

<table>
<thead>
<tr>
<th>Number of joints</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span 1</td>
<td>2</td>
<td>31.000</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH: 62 LF**
19.2 Replacement Cost Estimate (904908)
CONSTRUCTION COST ESTIMATE
for
VALOIS BOULEVARD BRIDGE REPLACEMENT
Bridge #904908
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>VALOIS BOULEVARD #904908</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
</tr>
</tbody>
</table>

Cost per Square Foot: $260.80

| Bridge Length (ft) | 52.3 |
| Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft) | 36 |
| Deck Area (sf) | 1883 |
| Bridge Cost | $491,034.24 |
| Approach work, approach slab, and incidental items | $300,000.00 |

TOTAL: $791,034.24
20.0 Bahama Road (904910)
20.1 Repair Cost Estimate (904910)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Quantity</th>
<th>Unit</th>
<th>Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$7,353.77</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>1</td>
<td>LS</td>
<td>$7,353.77</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>65.8</td>
<td>CF</td>
<td>$36,738.11</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>9</td>
<td>GA</td>
<td>$126,728.78</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>5</td>
<td>GA</td>
<td>$725.00</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>68</td>
<td>LF</td>
<td>$5,440.00</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>40</td>
<td>LF</td>
<td>$3,200.00</td>
</tr>
<tr>
<td>413-151</td>
<td>METHACRYLATE MONOMER</td>
<td>5</td>
<td>GA</td>
<td>$590.40</td>
</tr>
<tr>
<td>413-154</td>
<td>CLEANING AND SEALING CONCRETE SURFACES: PENETRANT SEALER OR METHACRYLATES</td>
<td>480</td>
<td>SF</td>
<td>$470.40</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>395</td>
<td>LB</td>
<td>$592.50</td>
</tr>
</tbody>
</table>

**CONTINGENCIES 20%**  $12,746.54

**TOTAL**  $76,479.26
### 401-70-3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
</tr>
</tbody>
</table>

### 411-1
**EPoxy Material for Crack Injection-Structures Rehab**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
</tr>
</tbody>
</table>

### 411-1
**(Asphalt) Epoxy Material for Crack Injection-Structures Rehab**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
</tr>
</tbody>
</table>

### 411-2
**Cracks Inject & Seal-Structures Rehab**

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
</tr>
</tbody>
</table>
# 411-2
(ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td>40.0</td>
</tr>
<tr>
<td>40.0</td>
</tr>
<tr>
<td>TOTAL LENGTH: 40 LF</td>
</tr>
</tbody>
</table>

## 413-151
METHACRYLATE MONOMER

<table>
<thead>
<tr>
<th>Location</th>
<th>Width (ft)</th>
<th>Span (ft)</th>
<th>Surface area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Deck</td>
<td>20.00</td>
<td>24.00</td>
<td>480.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>480.0</td>
</tr>
<tr>
<td>Volume (GA)</td>
<td>100 SF / GA</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>TOTAL AREA:</td>
<td>5 GA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## 413-154
CLEANING AND SEALING CONCRETE SURFACES: PENETRANT SEALER OR

<table>
<thead>
<tr>
<th>Location</th>
<th>Width (ft)</th>
<th>Span (ft)</th>
<th>Surface area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Deck</td>
<td>20.00</td>
<td>24.00</td>
<td>480.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>480.0</td>
</tr>
<tr>
<td>TOTAL AREA:</td>
<td>480.0</td>
<td></td>
<td>SF</td>
</tr>
</tbody>
</table>
### 415-1-4  
**REINFORCING STEEL-SUPERSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/lf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>65.8</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 395 LB

*Based on similar estimates*
20.2 Replacement Cost Estimate (904910)
## CONSTRUCTION COST ESTIMATE

for

**BAHAMA ROAD BRIDGE REPLACEMENT**

**Bridge #904910**

**MONROE COUNTY, FLORIDA**

---

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

### BAHAMA ROAD #904910

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
<td>$160.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>4.80</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>$32.00</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
<td>$64.00</td>
</tr>
</tbody>
</table>

Cost per Square Foot **$260.80**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Length (ft)</td>
<td>24</td>
</tr>
<tr>
<td>Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft)</td>
<td>36</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>864</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$225,331.20</td>
</tr>
<tr>
<td>Approach work, approach slab, and incidental items</td>
<td>$300,000.00</td>
</tr>
</tbody>
</table>

**TOTAL** **$525,331.20**

---

G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\904910\904910 Replacement Cost.xlsx
21.0 Steam Boat Creek (904980)
21.1 Repair Cost Estimate (904980)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$10,347.36</td>
<td>$10,347.36</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$10,347.36</td>
<td>$10,347.36</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>1264</td>
<td>LF</td>
<td>$15.00</td>
<td>$18,960.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>26.6</td>
<td>CF</td>
<td>$585.33</td>
<td>$14,851.58</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>1</td>
<td>GA</td>
<td>$145.00</td>
<td>$181.25</td>
</tr>
<tr>
<td>411-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>3</td>
<td>GA</td>
<td>$145.00</td>
<td>$362.50</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>10</td>
<td>LF</td>
<td>$80.00</td>
<td>$800.00</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>20</td>
<td>LF</td>
<td>$80.00</td>
<td>$1,600.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>108</td>
<td>LB</td>
<td>$1.50</td>
<td>$162.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>52</td>
<td>LB</td>
<td>$1.50</td>
<td>$78.00</td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURED JOINT WITH BACKER ROD</td>
<td>267</td>
<td>LF</td>
<td>$120.00</td>
<td>$31,987.20</td>
</tr>
</tbody>
</table>

**CONTINGENCIES 20%**

**TOTAL**

$107,612.74
## 104-11 FLOATING TURBIDITY BARRIER

### Pile Bents

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>39</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>49</td>
<td>13.5</td>
<td>125.00</td>
</tr>
</tbody>
</table>

Number of bents: 4
Layers of barrier around work area (double): 2

LENGTH: 1000 LF

### Abutments

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutment</td>
<td>39</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>49</td>
<td>8.5</td>
<td>66.00</td>
</tr>
</tbody>
</table>

Number of abutments: 2
Layers of barrier around work area (double): 2

LENGTH: 264 LF
TOTAL LENGTH: 1264 LF

## 401-70-3 RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC

### Volume (cf)

- Railing: 2.8
- Concrete Deck: 15.0
- Beams & Diaphragms: 0.2
- Prestressed Piles: 2.6
- Bent Caps: 3.8
- Abutments: 2.2

TOTAL VOLUME: 26.6 CF

## 411-1 EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

### Volume (Gal)

- Railing: 1.3
- Concrete Deck: 0.0
- Beams & Diaphragms: 0.0
- Prestressed Piles: 0.0
- Bent Caps: 0.0
- Abutments: 0.0

TOTAL VOLUME: 1.3 GA
# 411-1 (Asphalt) Epoxy Material for Crack Injection-Structures Rehab

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
<td>3 GA</td>
<td></td>
</tr>
</tbody>
</table>

# 411-2 Cracks Inject & Seal-Structures Rehab

<table>
<thead>
<tr>
<th>Length (LF)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Abutments</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td>10 LF</td>
<td></td>
</tr>
</tbody>
</table>

# 411-2 (Asphalt) Cracks Inject & Seal-Structures Rehab

<table>
<thead>
<tr>
<th>Length (LF)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td>20 LF</td>
<td></td>
</tr>
</tbody>
</table>

# 415-1-4 Reinforcing Steel-Superstructure

<table>
<thead>
<tr>
<th>Volume concrete</th>
<th>Steel density*</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.0</td>
<td>6</td>
<td>108.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td>108 LB</td>
<td></td>
</tr>
</tbody>
</table>

*Based on similar estimates
### Reinforcing Steel-Substructure

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>8.6</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 52 lb

*Based on similar estimates

### Bridge Deck Expansion Joint, Rehabilitation

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-6</td>
<td>38,080</td>
<td>266.560</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 267 LF
21.2 Replacement Cost Estimate (904980)
CONSTRUCTION COST ESTIMATE
for
STEAM BOAT CREEK BRIDGE REPLACEMENT
Bridge #904980
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
<td>$160.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>3% 4.80</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>20% 32.00</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
<td>40% 64.00</td>
</tr>
</tbody>
</table>

Cost per Square Foot: $260.80

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Length (ft)</td>
<td>316</td>
</tr>
<tr>
<td>Bridge Width (ft)</td>
<td>38.08</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>12033</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$3,138,279.42</td>
</tr>
<tr>
<td>Approach work, approach slab, and incidentals</td>
<td>$300,000.00</td>
</tr>
</tbody>
</table>

TOTAL: $3,438,279.42

G:\1201316 Monroe County On Call Eng Srvs\Structures\Task 1 - Bridge Inventory\904980\904980 Replacement Cost.xlsx
22.0 Tubby’s Creek (904982)
22.1 Repair Cost Estimate (904982)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>$11,634.73</td>
<td>$11,634.73</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>$11,634.73</td>
<td>$11,634.73</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>495</td>
<td>LF</td>
<td>$15.00</td>
<td>$7,428.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>40.8</td>
<td>CF</td>
<td>$558.33</td>
<td>$22,779.86</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>3</td>
<td>GA</td>
<td>$145.00</td>
<td>$435.00</td>
</tr>
<tr>
<td>411-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>35</td>
<td>GA</td>
<td>$145.00</td>
<td>$5,075.00</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>17</td>
<td>LF</td>
<td>$80.00</td>
<td>$1,360.00</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>272</td>
<td>LF</td>
<td>$80.00</td>
<td>$21,760.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>233</td>
<td>LB</td>
<td>$1.50</td>
<td>$349.50</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>12</td>
<td>LB</td>
<td>$1.50</td>
<td>$18.00</td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, Poured Joint with Backer Rod</td>
<td>154</td>
<td>LF</td>
<td>$120.00</td>
<td>$18,432.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20%  
TOTAL $121,001.19  

G:\1201316 Monroe County On Call Eng Svs\Structures\Task 1 - Bridge Inventory\904982\904982 Repair Quantity.xlsx
### 104-11
**FLOATING TURBIDITY BARRIER**

<table>
<thead>
<tr>
<th>Pile Bents</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>36.4</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>48.4</td>
<td>13.5</td>
<td>123.80</td>
</tr>
</tbody>
</table>

Number of bents: 2  
Layers of barrier around work area (double): 2

**LENGTH:** 495 LF  
**TOTAL LENGTH:** 495 LF

### 401-70-3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR-ACRYLIC**

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Bent Caps</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 40.8 CF

### 411-1
**EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Bent Caps</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 3 GA

### 411-1
**(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 35 GA
# Kisinger Campo & Associates, Corp.

**Project:** Tubby's Creek Repair  
**Subject:** Estimated Quantities  
**Calcs:** JWG  
**Check:**  
**Date:** 05/14  
**Date:** 7/14

## 411-2 CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Material</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>10.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>7.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>17.0</strong></td>
</tr>
</tbody>
</table>

## 411-2 (ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Material</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>272.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>272.0</strong></td>
</tr>
</tbody>
</table>

## 415-1-4 REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete</th>
<th>Steel density*</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(cf)</td>
<td>(lb/cf)</td>
<td></td>
</tr>
<tr>
<td>Reinforcing steel</td>
<td>38.8</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td><strong>233.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Based on similar estimates

## 415-1-5 REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete</th>
<th>Steel density*</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(cf)</td>
<td>(lb/cf)</td>
<td></td>
</tr>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>2.0</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL WEIGHT:</strong></td>
<td><strong>12.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Based on similar estimates
### 458-1-21

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-3</td>
<td>38.400</td>
<td>153.600</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 154 LF
22.2 Replacement Cost Estimate (904982)
CONSTRUCTION COST ESTIMATE
for
TUBBY'S CREEK BRIDGE REPLACEMENT
Bridge #904982
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>TUBBY'S CREEK #904982</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
<td>$160.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>3%</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>20%</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
<td>40%</td>
</tr>
</tbody>
</table>

Cost per Square Foot: $260.80

<table>
<thead>
<tr>
<th>Bridge Length (ft)</th>
<th>101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Width (ft)</td>
<td>38.4</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>3878</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$1,011,486.72</td>
</tr>
<tr>
<td>Approach work, approach slab, incidental items</td>
<td>$300,000.00</td>
</tr>
</tbody>
</table>

TOTAL $1,311,486.72
23.0 Mosquito Creek (904984)
23.1 Repair Cost Estimate (904984)
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Quantity</th>
<th>Estimated Unit</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1 LS</td>
<td>$11,349.71</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1 LS</td>
<td>$11,349.71</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>246 LF</td>
<td>$15.00 $3,690.00</td>
</tr>
<tr>
<td>301-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>37.6 CF</td>
<td>$558.33 $20,993.21</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>9 GA</td>
<td>$145.00 $1,268.75</td>
</tr>
<tr>
<td>411-1</td>
<td>(ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>34 GA</td>
<td>$145.00 $4,893.75</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>70 LF</td>
<td>$80.00 $5,600.00</td>
</tr>
<tr>
<td>411-2</td>
<td>(ASPHALT) CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>258 LF</td>
<td>$80.00 $20,640.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>203 LB</td>
<td>$1.50 $304.50</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>23 LB</td>
<td>$1.50 $34.50</td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POUR ED JOINT WITH BACKER ROD</td>
<td>152 LF</td>
<td>$120.00 $18,240.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20% $19,672.82
TOTAL $118,036.94
104-11  FLOATING TURBIDITY BARRIER

<table>
<thead>
<tr>
<th>Pile Bents</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>38</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>48</td>
<td>13.5</td>
<td>123.00</td>
</tr>
</tbody>
</table>

Number of bents: 1
Layers of barrier around work area (double): 2

LENGTH: 246 LF
TOTAL LENGTH: 246 LF

401-70-3  RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC

<table>
<thead>
<tr>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Bent Caps</td>
</tr>
<tr>
<td>TOTAL VOLUME:</td>
</tr>
</tbody>
</table>

411-1  EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
</tr>
<tr>
<td>Concrete Deck</td>
</tr>
<tr>
<td>Bent Caps</td>
</tr>
<tr>
<td>TOTAL VOLUME:</td>
</tr>
</tbody>
</table>

411-1  (ASPHALT) EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>TOTAL VOLUME:</td>
</tr>
</tbody>
</table>
### 411-2  CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Description</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>20.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>50.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 70 LF

### 411-2  (ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th>Material</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>258.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 258 LF

### 415-1-4  REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Material</th>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>33.8</td>
<td>6</td>
<td>202.8</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 203 LB

*Based on similar estimates

### 415-1-5  REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Material</th>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>3.8</td>
<td>6</td>
<td>22.8</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 23 LB

*Based on similar estimates
### BRIDGE DECK EXPANSION JOINT, REHABILITATION,

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spans 1-3</td>
<td>4</td>
<td>36.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>152.000</td>
</tr>
</tbody>
</table>

TOTAL LENGTH: 152 LF
23.2 Replacement Cost Estimate (904984)
CONSTRUCTION COST ESTIMATE
for
MOSQUITO CREEK BRIDGE REPLACEMENT
Bridge #904984
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
<td>$160.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>3%</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>20%</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
<td>40%</td>
</tr>
</tbody>
</table>

Cost per Square Foot $260.80

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Length (ft)</td>
<td>101</td>
</tr>
<tr>
<td>Bridge Width (ft)</td>
<td>38</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>3838</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$1,009,950.40</td>
</tr>
<tr>
<td>Approach work, approach slab,</td>
<td>$300,000.00</td>
</tr>
<tr>
<td>and incidental items</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL $1,309,950.40
24.0 Saunders' Creek (904986)
24.1 Repair Cost Estimate (904986)
## CONSTRUCTION COST ESTIMATE

for

SAUNDER'S CREEK BRIDGE REPAIR

Bridge #904986

MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Details</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15%</td>
<td>LS</td>
<td>1</td>
<td>$5,915.56</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15%</td>
<td>LS</td>
<td>1</td>
<td>$5,915.56</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>728</td>
<td>LF</td>
<td>1</td>
<td>$10,920.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>302</td>
<td>CF</td>
<td>$558.33</td>
<td>$21,186.54</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>8</td>
<td>GA</td>
<td>$145.00</td>
<td>$1,087.50</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>51</td>
<td>LF</td>
<td>$80.00</td>
<td>$4,080.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>8</td>
<td>LB</td>
<td>$1.50</td>
<td>$12.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>228</td>
<td>LB</td>
<td>$1.50</td>
<td>$342.00</td>
</tr>
<tr>
<td>536-1-3</td>
<td>GUARDRAIL REPLACEMENT</td>
<td>44</td>
<td>LF</td>
<td>$25.35</td>
<td>$1,109.06</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20% $10,253.65

TOTAL $61,521.87
## 104-11
### Floating Turbidity Barrier

<table>
<thead>
<tr>
<th>Pile Bents</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>36</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>46</td>
<td>13.5</td>
<td>119.00</td>
</tr>
<tr>
<td>Number of bents</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Layers of barrier around work area (double)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LENGTH:</td>
<td>476</td>
<td>LF</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abutments</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around abutments</td>
<td>36</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around abutment</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>46</td>
<td>8.5</td>
<td>63.00</td>
</tr>
<tr>
<td>Number of abutments</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Layers of barrier around work area (double)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LENGTH:</td>
<td>252</td>
<td>LF</td>
<td></td>
</tr>
<tr>
<td>TOTAL LENGTH:</td>
<td>728</td>
<td>LF</td>
<td></td>
</tr>
</tbody>
</table>

## 401-70-3
### Restore Spalled Areas, Latex Modified Mortar - Acrylic

<table>
<thead>
<tr>
<th></th>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>1.2</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>31.2</td>
</tr>
<tr>
<td>Abutments</td>
<td>6.8</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 39.2 CF

## 411-1
### Epoxy Material for Crack Injection-Structures Rehab

<table>
<thead>
<tr>
<th></th>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>5.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>2.5</td>
</tr>
<tr>
<td>Abutments</td>
<td>0.0</td>
</tr>
</tbody>
</table>

TOTAL VOLUME: 8 GA
**411- 2**  
CRACKS INJECT & SEAL-STRUCTURES REHAB

<table>
<thead>
<tr>
<th></th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Deck</td>
<td>36.0</td>
</tr>
<tr>
<td>Bent Caps</td>
<td>15.0</td>
</tr>
<tr>
<td>Abutments</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 51 LF

**415- 1- 4**  
REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>1.2</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 8 LB

*Based on similar estimates

**415- 1- 5**  
REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>38.0</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 228 LB

*Based on similar estimates

**536- 1- 3**  
GUARDRAIL PANEL REPLACEMENT

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of panels</th>
<th>Length (ft)</th>
<th>Total length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>2</td>
<td>6.25</td>
<td>12.5</td>
</tr>
<tr>
<td>Southeast</td>
<td>5</td>
<td>6.25</td>
<td>31.25</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 43.75 LF
24.2 Replacement Cost Estimate (904986)
CONSTRUCTION COST ESTIMATE
for
SAUNDER'S CREEK BRIDGE REPLACEMENT
Bridge #904986
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
<td>$160.00</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
<td>3%</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
<td>20%</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
<td>40%</td>
</tr>
</tbody>
</table>

Cost per Square Foot: $260.80

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Length (ft)</td>
<td>101.1</td>
</tr>
<tr>
<td>Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft)</td>
<td>36</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>3640</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$949,207.68</td>
</tr>
<tr>
<td>Approach work, approach slab, and incidental items</td>
<td>$300,000.00</td>
</tr>
</tbody>
</table>

TOTAL: $1,249,207.68
25.0 Card Sound Bridge (904990)
25.1 Repair Cost Estimate (904990)
## CONSTRUCTION COST ESTIMATE

**for**

FPID # 431917-1-58-01  
CARD SOUND BRIDGE REPAIR  
MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Material</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1</td>
<td>LS</td>
<td>$489,958.11</td>
<td></td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1</td>
<td>LS</td>
<td>$489,958.11</td>
<td></td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBDITY BARRIER</td>
<td>9132</td>
<td>LF</td>
<td>$15.00</td>
<td>$136,980.00</td>
</tr>
<tr>
<td>100-4-5</td>
<td>CONCRETE CLASS IV, SUBSTRUCTURE</td>
<td>16.4</td>
<td>CY</td>
<td>$2,000.00</td>
<td>$32,700.00</td>
</tr>
<tr>
<td>400-142-3</td>
<td>CATHODIC PROTECTION SYSTEM, ZINC ALUMINUM SPRAY</td>
<td>21065</td>
<td>SF</td>
<td>$55.00</td>
<td>$1,158,596.03</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>3095.0</td>
<td>CF</td>
<td>$558.33</td>
<td>$1,169,701.35</td>
</tr>
<tr>
<td>411-1</td>
<td>EPOXY MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB</td>
<td>45</td>
<td>GA</td>
<td>$145.00</td>
<td>$6,525.00</td>
</tr>
<tr>
<td>411-2</td>
<td>CRACKS INJECT &amp; SEAL- STRUCTURES REHAB</td>
<td>345</td>
<td>LF</td>
<td>$80.00</td>
<td>$27,600.00</td>
</tr>
<tr>
<td>413-151</td>
<td>METHACRYLATE MONOMER</td>
<td>31</td>
<td>GA</td>
<td>$123.00</td>
<td>$3,833.50</td>
</tr>
<tr>
<td>413-154</td>
<td>CLEANING AND SEALING CONCRETE SURFACES. PENETRANT SEALER OR METHACRYLATES</td>
<td>3116.7</td>
<td>SF</td>
<td>$0.98</td>
<td>$3,054.34</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>4032</td>
<td>LB</td>
<td>$1.50</td>
<td>$6,048.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>13095</td>
<td>LB</td>
<td>$1.50</td>
<td>$19,642.50</td>
</tr>
<tr>
<td>455-76</td>
<td>WRAP PILE CLUSTERS</td>
<td>50</td>
<td>EA</td>
<td>$1,500.00</td>
<td>$75,000.00</td>
</tr>
<tr>
<td>457-2-221</td>
<td>CATHODIC PROTECTION INTEGRAL PILE JACKET, STRUCTURAL, 16.1&quot; to 30&quot; GALVANIC SYSTEM</td>
<td>21</td>
<td>LF</td>
<td>$2,500.00</td>
<td>$52,500.00</td>
</tr>
<tr>
<td>458-1-21</td>
<td>BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURED JOINT WITH BACKER ROD</td>
<td>1295</td>
<td>LF</td>
<td>$120.00</td>
<td>$155,430.00</td>
</tr>
<tr>
<td>460-1-13</td>
<td>STRUCT STEEL REHAB-BOLT, NUT, WASH &amp; PLT</td>
<td>380</td>
<td>LB</td>
<td>$150.00</td>
<td>$57,060.00</td>
</tr>
<tr>
<td>460-1-15</td>
<td>STRUCT STEEL-REHAB, MISC</td>
<td>970</td>
<td>LB</td>
<td>$50.00</td>
<td>$48,500.00</td>
</tr>
<tr>
<td>470-1</td>
<td>TREATED TIMBER, STRUCTURAL</td>
<td>3.8</td>
<td>MB</td>
<td>$10,500.00</td>
<td>$39,766.65</td>
</tr>
<tr>
<td>561-1</td>
<td>COATING EXISTING STRUCTURAL STEEL</td>
<td>1</td>
<td>LS</td>
<td>134 Total @ $2000/T</td>
<td>$267,200.00</td>
</tr>
<tr>
<td>5630-2-15</td>
<td>CONDUIT, FURNISH &amp; INSTALL, BRIDGE MOUNT</td>
<td>250</td>
<td>LF</td>
<td>$25.00</td>
<td>$6,250.00</td>
</tr>
</tbody>
</table>

**Contingencies 15%** $636,945.54  
**Total** $4,876,999.12

* Pay Item 561-1 includes the cost of painting the structural steel spans, associated bearings and all prestressed beam steel bearing assemblies.
## 104-11

### FLOATING TURBIDITY BARRIER

<table>
<thead>
<tr>
<th>Pile Bents</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>31.5</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>41.5</td>
<td>13.5</td>
<td>110.00</td>
</tr>
<tr>
<td>Number of bents</td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Layers of barrier around work area (double)</td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

LENGTH: 2420 LF

<table>
<thead>
<tr>
<th>Approach Piers</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around pier</td>
<td>30</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around pier</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>40</td>
<td>19</td>
<td>118.00</td>
</tr>
<tr>
<td>Number of piers</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Layers of barrier around work area (double)</td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

LENGTH: 4720 LF

<table>
<thead>
<tr>
<th>Main Channel Piers w/ Fender System</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around fender</td>
<td>224</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5 ft working zone around fender</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total barrier needed</td>
<td>234</td>
<td>15</td>
<td>498.00</td>
</tr>
<tr>
<td>Number of piers</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Layers of barrier around work area (double)</td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

LENGTH: 1992 LF

TOTAL LENGTH: 9132 LF
# PROJECT: Card Sound Bridge Repair

## SUBJECT: Estimated Quantities

<table>
<thead>
<tr>
<th>Item</th>
<th>Volume (cy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>0.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>0.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>0.0</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>0.0</td>
</tr>
<tr>
<td>Footings</td>
<td>0.0</td>
</tr>
<tr>
<td>Struts</td>
<td>0.0</td>
</tr>
<tr>
<td>Columns</td>
<td>0.0</td>
</tr>
<tr>
<td>Pier Caps</td>
<td>0.0</td>
</tr>
<tr>
<td>End Bents</td>
<td>0.0</td>
</tr>
<tr>
<td>Fender System</td>
<td>16.4</td>
</tr>
</tbody>
</table>

**TOTAL VOLUME:** 16.4 CY

G:\1201302 Card Sound Bridge Repair|Structures\Excel|Deficiencies for Plans 5_1_14.xlsx
### CATHODIC PROTECTION SYSTEM, ZINC ALUMINUM SPRAY

#### Pile Bent Caps
Bent caps sprayed on all sides and bottom (note: 5–24 in piles per bent)

<table>
<thead>
<tr>
<th>Number of caps to be metalized</th>
<th>Length cap (ft)</th>
<th>Width cap (ft)</th>
<th>Height of cap (ft)</th>
<th>Surface Area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>31.50</td>
<td>3.50</td>
<td>3.00</td>
<td>3302.75</td>
</tr>
</tbody>
</table>

**AREA:** 3303 SF

#### Footings
Footings sprayed on top and all sides from the waterline up.

<table>
<thead>
<tr>
<th>Number of footings to be metalized</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Height (ft)</th>
<th>Surface Area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>9.00</td>
<td>9.00</td>
<td>2.00</td>
<td>7455.70</td>
</tr>
<tr>
<td>4</td>
<td>14.00</td>
<td>9.00</td>
<td>2.00</td>
<td>808.38</td>
</tr>
</tbody>
</table>

**AREA:** 8264 SF

#### Struts
Struts sprayed on all sides.

<table>
<thead>
<tr>
<th>Number of struts to be metalized</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Height (ft)</th>
<th>Surface Area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>12.00</td>
<td>3.50</td>
<td>2.50</td>
<td>3744.00</td>
</tr>
<tr>
<td>4</td>
<td>13.00</td>
<td>4.50</td>
<td>2.50</td>
<td>728.00</td>
</tr>
</tbody>
</table>

**AREA:** 4472 SF

#### Columns
Columns sprayed on the bottom 8'.

<table>
<thead>
<tr>
<th>Number of columns to be metalized</th>
<th>Diameter (ft)</th>
<th>Height (ft)</th>
<th>Surface Area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>3.50</td>
<td>8.00</td>
<td>4574.16</td>
</tr>
<tr>
<td>4</td>
<td>4.50</td>
<td>8.00</td>
<td>452.39</td>
</tr>
</tbody>
</table>

**AREA:** 5027 SF

**TOTAL AREA:** 21065 SF
### 401-70- 3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

<table>
<thead>
<tr>
<th>Item</th>
<th>Volume (cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>82.6</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>565.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>24.4</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>2.4</td>
</tr>
<tr>
<td>Footings</td>
<td>536.6</td>
</tr>
<tr>
<td>Struts</td>
<td>210.0</td>
</tr>
<tr>
<td>Columns</td>
<td>483.2</td>
</tr>
<tr>
<td>Pier Caps</td>
<td>41.2</td>
</tr>
<tr>
<td>End Bents</td>
<td>0.2</td>
</tr>
<tr>
<td>Fender System</td>
<td>149.4</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
<td><strong>2095.0 CF</strong></td>
</tr>
</tbody>
</table>

### 411-1
**EPoxy MATERIAL FOR CRACK INJECTION-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Item</th>
<th>Volume (Gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>0.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>5.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>0.0</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>2.5</td>
</tr>
<tr>
<td>Footings</td>
<td>1.3</td>
</tr>
<tr>
<td>Struts</td>
<td>0.0</td>
</tr>
<tr>
<td>Columns</td>
<td>10.0</td>
</tr>
<tr>
<td>Pier Caps</td>
<td>26.3</td>
</tr>
<tr>
<td>End Bents</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTAL VOLUME:</strong></td>
<td><strong>45 GA</strong></td>
</tr>
</tbody>
</table>
### 411-2
**CRACKS INJECT & SEAL-STRUCTURES REHAB**

<table>
<thead>
<tr>
<th>Location</th>
<th>Length (LF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing</td>
<td>0.0</td>
</tr>
<tr>
<td>Concrete Deck</td>
<td>38.0</td>
</tr>
<tr>
<td>Beams &amp; Diaphragms</td>
<td>0.0</td>
</tr>
<tr>
<td>Prestressed Piles</td>
<td>18.0</td>
</tr>
<tr>
<td>Footings</td>
<td>9.0</td>
</tr>
<tr>
<td>Struts</td>
<td>0.0</td>
</tr>
<tr>
<td>Columns</td>
<td>80.0</td>
</tr>
<tr>
<td>Pier Caps</td>
<td>200.0</td>
</tr>
<tr>
<td>End Bents</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTAL LENGTH:</strong></td>
<td><strong>345.0</strong></td>
</tr>
</tbody>
</table>

### 413-151
**METHACRYLATE MONOMER**

<table>
<thead>
<tr>
<th>Location</th>
<th>Width (ft)</th>
<th>Span (ft)</th>
<th>Surface area (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Deck</td>
<td>31.17</td>
<td>100.00</td>
<td>3116.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Volume (GA)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 SF / GA</td>
<td>31.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL AREA:</strong></td>
<td><strong>31</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 413-154
**CLEANING AND SEALING CONCRETE SURFACES: PENETRANT SEALER OR METHACRYlates**

<table>
<thead>
<tr>
<th>Location</th>
<th>Width (ft)</th>
<th>Span (ft)</th>
<th>Surface area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Deck</td>
<td>31.17</td>
<td>100.00</td>
<td>3116.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL AREA:</strong></td>
<td><strong>3,116.7</strong></td>
<td></td>
<td><strong>SF</strong></td>
</tr>
</tbody>
</table>
### REINFORCING STEEL-SUPERSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>672.0</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 4032 LB

*Based on similar estimates

### REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel from spall repair</td>
<td>1423.0</td>
<td>6</td>
</tr>
<tr>
<td>Reinforcing steel from fender pile replacement</td>
<td></td>
<td>4557.0</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 13095 LB

*Based on similar estimates

### WRAP PILE CLUSTERS

<table>
<thead>
<tr>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assume 50 locations will need to be replaced</td>
</tr>
</tbody>
</table>

**TOTAL QUANTITY:** 50 EA
### 457-2-221
CATHODIC PROTECTION INTEGRAL PILE JACKET, STRUCTURAL, 16.1" TO 30.0"

<table>
<thead>
<tr>
<th>Bent</th>
<th>Pile</th>
<th>Top of Jacket El.</th>
<th>Bottom of Jacket El.</th>
<th>Length (ft)</th>
<th>Use (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>2</td>
<td>-0.750</td>
<td>-6.300</td>
<td>5.55</td>
<td>6.00</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>-0.750</td>
<td>-7.100</td>
<td>6.35</td>
<td>7.00</td>
</tr>
<tr>
<td>25</td>
<td>3</td>
<td>-0.750</td>
<td>-8.700</td>
<td>7.95</td>
<td>8.00</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 21 LF

### 455-1-21
BRIDGE DECK EXPANSION JOINT, REHABILITATION, Poured Joint with Backer Rod

<table>
<thead>
<tr>
<th>Spans 1-7 and 35-40</th>
<th>Number of Spans</th>
<th>Width of Bridge (ft)</th>
<th>Total Length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td>38.250</td>
<td>497.250</td>
</tr>
<tr>
<td>Spans 8-19 and 35-34</td>
<td>24</td>
<td>33.250</td>
<td>798.000</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 1295 LF

### 460-1-13
STRUCTURAL STEEL REHAB-BOLT, NUT, WASH & PLT

*Bolts are 7/8in diameter. Assume 20% need to be replaced.*

<table>
<thead>
<tr>
<th>Type</th>
<th>Number per Fender</th>
<th>Number of Bolts per Cluster</th>
<th>Length (in)</th>
<th>Weight (lb/ft)*</th>
<th>Total Weight (lb)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Pile Cluster</td>
<td>25</td>
<td>4</td>
<td>30</td>
<td>2.5</td>
<td>620.0</td>
</tr>
<tr>
<td>3-Pile Cluster</td>
<td>10</td>
<td>8</td>
<td>20</td>
<td>2.5</td>
<td>330.7</td>
</tr>
</tbody>
</table>

**Number of Fenders:**
- 2
- Percent to Replace: 20.00%

**TOTAL WEIGHT:** 350 LB
460-1-15

**STRUCTURAL STEEL - REHAB, MISC.**

<table>
<thead>
<tr>
<th>Span</th>
<th>Member</th>
<th>Steel Repair (lb)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>LATERAL BRACING</td>
<td>60.0</td>
</tr>
<tr>
<td>S20 THRU 22</td>
<td>VERTICAL WEB STIFFENERS</td>
<td>400.0</td>
</tr>
<tr>
<td>20</td>
<td>G20-2</td>
<td>153.1</td>
</tr>
<tr>
<td>21</td>
<td>G21-2</td>
<td>153.1</td>
</tr>
<tr>
<td>21</td>
<td>G21-1</td>
<td>50.0</td>
</tr>
<tr>
<td>22</td>
<td>G22-2</td>
<td>153.1</td>
</tr>
</tbody>
</table>

969.4

TOTAL WEIGHT: 970 LB

470-1

**TREATED TIMBER, STRUCTURAL**

*Replace 100% of "F" boards and 10% of all other board types. Use quantities from original plans.*

<table>
<thead>
<tr>
<th>Board</th>
<th>FBM (from original plans)</th>
<th>Total FBM*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2133</td>
<td>213.3</td>
</tr>
<tr>
<td>B</td>
<td>6400</td>
<td>640.0</td>
</tr>
<tr>
<td>C</td>
<td>6400</td>
<td>640.0</td>
</tr>
<tr>
<td>D</td>
<td>1633</td>
<td>163.3</td>
</tr>
<tr>
<td>E</td>
<td>928</td>
<td>92.8</td>
</tr>
<tr>
<td>F</td>
<td>1925</td>
<td>1925.0</td>
</tr>
<tr>
<td>G</td>
<td>896</td>
<td>89.6</td>
</tr>
<tr>
<td>T</td>
<td>233</td>
<td>23.3</td>
</tr>
</tbody>
</table>

3787.3

TOTAL WEIGHT: 3.8 MB

561-1

**COATING EXISTING STRUCTURAL STEEL**

*Total weight taken from existing bridge plans.*

<table>
<thead>
<tr>
<th></th>
<th>Total Weight (ton)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Steel (Carbon)</td>
<td>108.6</td>
</tr>
<tr>
<td>Structural Steel (Steel Span Bearing Shoe Assembly)</td>
<td>2.9</td>
</tr>
<tr>
<td>Structural Steel (Prestressed Beam Shoes)</td>
<td>22.1</td>
</tr>
</tbody>
</table>

133.6

TOTAL WEIGHT: 134 TN
**CONDUIT, FURNISH & INSTALL, BRIDGE MOUNT**

*Total weight taken from existing bridge plans.

<table>
<thead>
<tr>
<th></th>
<th>Total Weight (ton)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Fender</td>
<td>100.0</td>
</tr>
<tr>
<td>South Fender</td>
<td>150.0</td>
</tr>
<tr>
<td></td>
<td>250.0</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT: 250 LF**
25.2 Replacement Cost Estimate (904990)
4. Recommendations

The three bridge alternatives previously described are as follows:

- Alternative 1 – Repair Existing Bridge in Kind
- Alternative 2 – Widen Existing Bridge to Accommodate Sidewalk
- Alternative 3 – Bridge Replacement

See Table 1 below for a summary of the bridge alternatives.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Estimated Service Life</th>
<th>Estimated Cost</th>
<th>Permitting Delays</th>
<th>Time Required for Permitting and Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-15 Years</td>
<td>$5.7 M</td>
<td>Low</td>
<td>6 Months</td>
</tr>
<tr>
<td>2</td>
<td>5-10 Years from the Time of Sidewalk Construction</td>
<td>$10.2 M</td>
<td>High</td>
<td>2-4 Years</td>
</tr>
<tr>
<td>3</td>
<td>75 Years</td>
<td>$25.1 M - $32.6 M</td>
<td>High</td>
<td>4-6 Years</td>
</tr>
</tbody>
</table>

The four fender system alternatives previously described are as follows:

- Fender Alternative 1 – Repair fender system in kind. Spall repair for concrete piles. Replace all timber and attachment hardware.
- Fender Alternative 2 – Replace fender system in kind. Replace all precast concrete piles. Replace all timber and attachment hardware.
- Fender Alternative 3 – Replace fender system timber with composite lumber. Replace all precast concrete piles and attachment hardware in kind.
- Fender Alternative 4 – Replace fender system with all composite fender system using polymeric piles and composite lumber.

See Table 2 below for a summary of the fender system alternatives.
26.0 Ocean Bay Drive
26.1 Repair Cost Estimate (Ocean Bay Drive)
## CONSTRUCTION COST ESTIMATE

for

OCEAN BAY DRIVE BRIDGE REPAIR

MONROE COUNTY, FLORIDA

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Location</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>MOBILIZATION</td>
<td>15% 1</td>
<td>LS</td>
<td></td>
<td>$11,277.79</td>
</tr>
<tr>
<td>102-1</td>
<td>MAINTENANCE OF TRAFFIC (# DAYS)</td>
<td>15% 1</td>
<td>LS</td>
<td></td>
<td>$11,277.79</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>354 LF</td>
<td></td>
<td>$15.00</td>
<td>$5,310.00</td>
</tr>
<tr>
<td>401-70-3</td>
<td>RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR, ACRYLIC</td>
<td>122.6 CF</td>
<td></td>
<td>$558.33</td>
<td>$68,451.26</td>
</tr>
<tr>
<td>411-2</td>
<td>ASPHALT CRACKS INJECT &amp; SEAL-STRUCTURES REHAB</td>
<td>4.0 LF</td>
<td></td>
<td>$80.00</td>
<td>$320.00</td>
</tr>
<tr>
<td>415-1-4</td>
<td>REINFORCING STEEL-SUPERSTRUCTURE</td>
<td>592 LB</td>
<td></td>
<td>$1.50</td>
<td>$888.00</td>
</tr>
<tr>
<td>415-1-5</td>
<td>REINFORCING STEEL-SUBSTRUCTURE</td>
<td>144 LB</td>
<td></td>
<td>$1.50</td>
<td>$216.00</td>
</tr>
</tbody>
</table>

CONTINGENCIES 20% $19,548.17

TOTAL $117,289.00
### 104-11
**FLOATING TURBIDITY BARRIER**

<table>
<thead>
<tr>
<th>Pile Bents</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Perimeter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter around bent</td>
<td>30</td>
<td>3.5</td>
<td>88.50</td>
</tr>
<tr>
<td>5 ft working zone around bent</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Total barrier needed</strong></td>
<td>40</td>
<td>8.5</td>
<td>88.50</td>
</tr>
</tbody>
</table>

- Number of bents: 2
- Layers of barrier around work area (double): 2

**LENGTH:** 354 LF  
**TOTAL LENGTH:** 354 LF

### 401-70-3
**RESTORE SPALLED AREAS, LATEX MODIFIED MORTAR- ACRYLIC**

**Volume (cf)**
- Railing: 50.0
- Concrete Deck: 48.6
- Abutments: 24.0
- **TOTAL VOLUME:** 122.6 CF

### 411-2
**(ASPHALT) CRACKS INJECT & SEAL-STRUCTURES REHAB**

**Length (LF)**
- Asphalt: 4.0
- **TOTAL LENGTH:** 4.0 LF

### 415-1-4
**REINFORCING STEEL-SUPERSTRUCTURE**

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcing steel</td>
<td>98.6</td>
<td>591.6</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 592 LB

*Based on similar estimates
### REINFORCING STEEL-SUBSTRUCTURE

<table>
<thead>
<tr>
<th>Volume concrete (cf)</th>
<th>Steel density* (lb/cf)</th>
<th>Steel (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.0</td>
<td>6</td>
<td>144.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>144.0</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 144 LB

*Based on similar estimates*
26.2 Replacement Cost Estimate (Ocean Bay Drive)
CONSTRUCTION COST ESTIMATE
for
OCEAN BAY DRIVE BRIDGE REPLACEMENT
MONROE COUNTY, FLORIDA

Replacement Cost is based on FDOT Historical Bridge Cost per square foot

<table>
<thead>
<tr>
<th>OCEAN BAY DRIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cost for short simple span Prestressed Slab Unit Bridge</td>
</tr>
<tr>
<td>Increase by 3% due to construction over open water</td>
</tr>
<tr>
<td>Increase by 20% due to phased construction</td>
</tr>
<tr>
<td>Increase by 40% due to work in Monroe County</td>
</tr>
</tbody>
</table>

Cost per Square Foot $260.80

<table>
<thead>
<tr>
<th>Bridge Length (ft)</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Width: 24'(Lanes)+4'(Shldr.)+5'(S/W) 1.08'+1.54'(Barriers) (ft)</td>
<td>36</td>
</tr>
<tr>
<td>Deck Area (sf)</td>
<td>648</td>
</tr>
<tr>
<td>Bridge Cost</td>
<td>$168,998.40</td>
</tr>
<tr>
<td>Approach work, approach slab, and incidental items</td>
<td>$300,000.00</td>
</tr>
</tbody>
</table>

TOTAL $468,998.40
27.0 Pedestrian Bridge (Ocean Bay Drive)
27.1 Repair Cost Estimate (Pedestrian Bridge – Ocean Bay Drive)
# Construction Cost Estimate

for

**Pedestrian Bridge (Ocean Bay Drive) Repair**

**Monroe County, Florida**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item Description and Notes</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Total Amount Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-1</td>
<td>Mobilization</td>
<td>15% 1 *</td>
<td>LS</td>
<td>$283.50</td>
<td>$283.50</td>
</tr>
<tr>
<td>102-1</td>
<td>Maintenance of Traffic (# Days)</td>
<td>15% 1 *</td>
<td>LS</td>
<td>$283.50</td>
<td>$283.50</td>
</tr>
<tr>
<td>458-1-21</td>
<td>Bridge Deck Expansion Joint, Rehabilitation, Poured Joint with Backer Rod</td>
<td>12 * LF</td>
<td>$120.00</td>
<td>$1,440.00</td>
<td></td>
</tr>
<tr>
<td>460-1-13</td>
<td>Structural Steel Rehab Bolt, Nut, Wash &amp; Plt</td>
<td>3 * LB</td>
<td>$150.00</td>
<td>$450.00</td>
<td></td>
</tr>
</tbody>
</table>

**Contingencies 20%**

**Total**

$2,948.40
### 458-1-21  
**BRIDGE DECK EXPANSION JOINT, REHABILITATION,**

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>Width of bridge (ft)</th>
<th>Total length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span 1</td>
<td>2</td>
<td>6.000</td>
</tr>
</tbody>
</table>

**TOTAL LENGTH:** 12 LF

### 460-1-13  
**STRUCTURAL STEEL REHAB-BOLT, NUT, WASH & PLT**

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Bolts</th>
<th>Weight (lb)</th>
<th>Total Weight (lb)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Pile Cluster</td>
<td>2</td>
<td>1.5</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**TOTAL WEIGHT:** 3 LB
28.0 Miscellaneous Calculations
<table>
<thead>
<tr>
<th>Bridge No.</th>
<th>Structure Location</th>
<th>Present Day Repair Cost</th>
<th>Present Day Replacement Cost</th>
<th>Year of Repair Project</th>
<th>Future Repair Cost</th>
<th>Year of Replacement Project</th>
<th>Future Replacement Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>904025</td>
<td>GARRISON BIGHT</td>
<td>$1,126,841</td>
<td>$3,175,460</td>
<td>2017</td>
<td>$1,499,825</td>
<td>2030</td>
<td>$6,931,631</td>
</tr>
<tr>
<td>904110</td>
<td>GEIGER KEY</td>
<td>$482,279</td>
<td>$1,475,478</td>
<td>2018</td>
<td>$706,104</td>
<td>2025</td>
<td>$2,523,568</td>
</tr>
<tr>
<td>904120</td>
<td>SIMILAR SOUND</td>
<td>$452,516</td>
<td>$829,183</td>
<td>2015</td>
<td>$497,768</td>
<td>2025</td>
<td>$1,418,184</td>
</tr>
<tr>
<td>904140</td>
<td>BAY POINT</td>
<td>$41,760</td>
<td>$360,309</td>
<td>2025</td>
<td>$119,145</td>
<td>2050</td>
<td>$2,086,844</td>
</tr>
<tr>
<td>904152</td>
<td>SHORE DRIVE</td>
<td>$7,327</td>
<td>$629,547</td>
<td>2025</td>
<td>$20,905</td>
<td>2065</td>
<td>$7,580,229</td>
</tr>
<tr>
<td>904153</td>
<td>SUGARLOAF BOULEVARD</td>
<td>$819,478</td>
<td>$1,386,823</td>
<td>2016</td>
<td>$991,568</td>
<td>2016</td>
<td>$1,528,972</td>
</tr>
<tr>
<td>904155</td>
<td>SUGARLOAF CREEK</td>
<td>$436,800</td>
<td>$2,177,760</td>
<td>2025</td>
<td>$1,246,241</td>
<td>2035</td>
<td>$6,067,158</td>
</tr>
<tr>
<td>904160</td>
<td>OLD S.R. 4A (CR 939)</td>
<td>$187,621</td>
<td>$1,069,882</td>
<td>2018</td>
<td>$274,696</td>
<td>2018</td>
<td>$2,980,650</td>
</tr>
<tr>
<td>904250</td>
<td>CARIBBEAN DRIVE</td>
<td>$23,668</td>
<td>$527,209</td>
<td>2025</td>
<td>$67,527</td>
<td>2015</td>
<td>$1,468,784</td>
</tr>
<tr>
<td>904305</td>
<td>WATSON BOULEVARD</td>
<td>$64,556</td>
<td>$345,048</td>
<td>2025</td>
<td>$184,185</td>
<td>2035</td>
<td>$1,518,482</td>
</tr>
<tr>
<td>904307</td>
<td>FERN AVENUE</td>
<td>$49,967</td>
<td>$545,987</td>
<td>2025</td>
<td>$142,561</td>
<td>2035</td>
<td>$1,521,098</td>
</tr>
<tr>
<td>904310</td>
<td>S.R. 940 - LEG A (WATSON BOULEVARD)</td>
<td>$6,724</td>
<td>$581,664</td>
<td>2030</td>
<td>$30,895</td>
<td>2050</td>
<td>$3,368,891</td>
</tr>
<tr>
<td>904320</td>
<td>NO NAME KEY</td>
<td>$2,997,676</td>
<td>$20,400,000</td>
<td>2014</td>
<td>$2,997,676</td>
<td>2025</td>
<td>$34,890,923</td>
</tr>
<tr>
<td>904600</td>
<td>TOM'S HARBOR CHANNEL</td>
<td>$24,731</td>
<td>$2,863,229</td>
<td>2025</td>
<td>$70,561</td>
<td>2035</td>
<td>$7,976,848</td>
</tr>
<tr>
<td>904602</td>
<td>TRUMAN BRIDGE</td>
<td>$159,439</td>
<td>$1,304,881</td>
<td>2017</td>
<td>$212,213</td>
<td>2020</td>
<td>$1,748,666</td>
</tr>
<tr>
<td>904603</td>
<td>BIMINI DRIVE</td>
<td>$136,739</td>
<td>$904,624</td>
<td>2017</td>
<td>$182,000</td>
<td>2020</td>
<td>$1,212,283</td>
</tr>
<tr>
<td>904604</td>
<td>HARBOR DRIVE</td>
<td>$438,791</td>
<td>$1,012,932</td>
<td>2017</td>
<td>$584,031</td>
<td>2020</td>
<td>$1,357,426</td>
</tr>
<tr>
<td>904606</td>
<td>SEAVIEW DRIVE</td>
<td>$104,213</td>
<td>$1,012,932</td>
<td>2017</td>
<td>$138,708</td>
<td>2020</td>
<td>$1,357,426</td>
</tr>
<tr>
<td>904908</td>
<td>VALOIS BOULEVARD</td>
<td>$129,660</td>
<td>$791,034</td>
<td>2018</td>
<td>$189,836</td>
<td>2050</td>
<td>$4,581,525</td>
</tr>
<tr>
<td>904910</td>
<td>BAHAMA ROAD</td>
<td>$76,479</td>
<td>$525,331</td>
<td>2018</td>
<td>$111,973</td>
<td>2035</td>
<td>$1,463,553</td>
</tr>
<tr>
<td>904980</td>
<td>STEAM BOAT CREEK</td>
<td>$107,613</td>
<td>$3,438,279</td>
<td>2025</td>
<td>$307,032</td>
<td>2035</td>
<td>$9,578,918</td>
</tr>
<tr>
<td>904982</td>
<td>TUBBY'S CREEK</td>
<td>$121,001</td>
<td>$1,311,487</td>
<td>2025</td>
<td>$345,231</td>
<td>2035</td>
<td>$3,653,753</td>
</tr>
<tr>
<td>904984</td>
<td>MOSQUITO CREEK</td>
<td>$118,037</td>
<td>$1,300,950</td>
<td>2025</td>
<td>$336,773</td>
<td>2035</td>
<td>$3,624,399</td>
</tr>
<tr>
<td>904986</td>
<td>SAUNDER'S CREEK</td>
<td>$61,522</td>
<td>$1,249,208</td>
<td>2025</td>
<td>$175,529</td>
<td>2035</td>
<td>$3,480,246</td>
</tr>
<tr>
<td>904990</td>
<td>CARD SOUND BRIDGE</td>
<td>$4,876,999</td>
<td>$32,600,000</td>
<td>2015</td>
<td>$5,364,699</td>
<td>2030</td>
<td>$71,161,712</td>
</tr>
<tr>
<td>N/A</td>
<td>OCEAN BAY DRIVE</td>
<td>$117,289</td>
<td>$468,998</td>
<td>2018</td>
<td>$171,723</td>
<td>2035</td>
<td>$1,306,612</td>
</tr>
<tr>
<td>N/A</td>
<td>PEDESTRIAN BRIDGE (OCEAN BAY DRIVE)</td>
<td>$2,948</td>
<td>N/A</td>
<td>2030</td>
<td>$13,548</td>
<td>2065</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Current Year = 2014
Compound Rate (Repair) = 10.0% Accounts for annual increase of construction unit costs and growth of repair quantities.
Compound Rate (Replacement) = 5.0% Accounts for annual increase of construction unit costs.