

PROJ: FRA-71-0296 L & R

ESTIMATED QUANTITIES

Structure File No.: **2506904**

Calculated By: **RLC**

Date: 1/30/2016

Checked By: **CMH**

Date: 8/12/2016

Southbound Bridge

ITEM 202E11203, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

Lump

Basis of Unit Cost:

Deck Volume based on 8 3/4" existing concrete thickness and parapets

$= (7,073 * (8.75 / 12)) / 27 = 191 \text{ Cu Yd}$

Deck

$= (3.37 * 161.31 * 2) / 27 = 40.5 \text{ Cu Yd}$

Parapet & Curb

$= (25 * 1.25 * 24) * 2 / 27 = 56 \text{ Cu Yd}$

Approach Slab

Cost = $287.5 * \$100 = \$28,750$; say \$30,000

Abutment removal

$= 31 \text{ cu yd per abutment (per LYH)}$

Cost = $(31 * 2) * \$150 = 9,300$; say \$10,000

Total Cost = \$38,050; say 50,000 LUMP

ITEM 202E22900, APPROACH SLAB REMOVED

Length 28 ft

Width 24 ft

APPROACH SLAB REMOVED 150.00 SY

ITEM 202E23500, WEARING COURSE REMOVED

Width of Bridge 39.66 ft

Length of Bridge 163.56 ft

WEARING COURSE REMOVED 721 SY

ITEM 507E00100, STEEL PILES HP10X42, FURNISHED

Number of Piles (Abut) 32

Avg. Length of Pile 45 ft

STEEL PILES HP10X42 FURNISHED 1,440 LF

ITEM 507E00150, STEEL PILES HP10X42, DRIVEN

Number of Piles 32

Avg. Length of Pile 40 ft

STEEL PILES HP10X42 DRIVEN 1,280 LF

ITEM 507E00200, STEEL PILES HP12X53, FURNISHED

Number of Piles (Pier) 16
Avg. Length of Pile 45 ft

STEEL PILES HP12X53 FURNISHED 720 LF

ITEM 507E00250, STEEL PILES HP12X53, DRIVEN

Number of Piles 16
Avg. Length of Pile 40 ft

STEEL PILES HP12X53 DRIVEN 640 LF

ITEM 509E10001, EPOXY COATED REINFORCING STEEL, AS PER PLAN

Pier 19,162 lb
Superstructure 92,827 lb
Abutment 12,441 lb

EPOXY COATED REINFORCING STEEL 124,430 LB

ITEM 509E20001, REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN

Estimate 500 lb

REPLACEMENT OF EXISTING REINFORCING STEEL 500 LB

ITEM 510E10000 DOWEL HOLES WITH NONSHRINK, NONMETALIC GROUT

Rear Abut 110 each
Pier 1 172 each
Pier 2 172 each
Fwd Abut 110 each

DOWEL HOLES WITH NONSHRINK, NONMETALIC GROUT 564.00 EACH

ITEM 511E33500, SEMI-INTEGRAL DIAPHRAGM GUIDE

Abutments 2
Pier 0

SEMI-INTEGRAL DIAPHRAGM GUIDE 2 EACH

Item 511E21522, CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE

Width	Varies	ft	
Length	163.56	ft	
Deck Area	11,051.61	ft ²	(Microstation)
Thickness	0.71	ft	
Avg Haunch Thickness	0.17	ft	
Top Flange Width	0.958333	ft	
Top Flange Thickness	0.061667	ft	
Haunch Width	0.75	ft	
Number of Girders	9		
Left Overhang Area	376.17	ft ²	(Microstation)
Right Overhang Area	341.74	ft ²	(Microstation)
Girder Length	156.25	ft	
Width Over Diaphragm	3.25	ft	
Thickness over Diaphragm	0.54	ft	
Diaphragm Length Rear	75.68	ft	
Diaphragm Length Fwd	77.01	ft	
8 1/2" Deck	7,828.22	ft ³	
Additional Left Overhang	85.89192	ft ³	
Additional Right Overhang	78.03011	ft ³	
Additional Haunch	156.252	ft ³	
Haunch Over Flange	224.6123	ft ³	
Additional Over Diaphragm	268.7954	ft ³	
Diaphragm	74	cy	(per LYH)
BRIDGE DECK	394.07	CY	
Cross-sectional Area	4.08	ft ²	(Standard Drawing)
Left Parapet Length	214.43	ft	
Right Parapet Length	213.56	ft	
BRIDGE DECK (PARAPET)	64.73	CY	
CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE	459.00	CY	

Item 511E42012, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS

P1 CAP AREA	237.87	sf
THICKNESS	2.75	ft
VOLUME	654.15	cf

P1 COLUMN AREA	25.88	sf
P1 HEIGHT	15.89	ft
VOLUME	411.07	cf

P2CAP AREA	238.13	sf
THICKNESS	2.75	ft
VOLUME	654.86	cf

P2 COLUMN AREA	25.88	sf
P2 HEIGHT	16.21	ft
VOLUME	419.42	cf

P1 RETROFIT AREA	4.94	sf
RETROFIT HEIGHT	17.15	ft
VOLUME	169.32	cf

P2 RETROFIT AREA	4.94	sf
RETROFIT HEIGHT	17.46	ft
VOLUME	172.43	cf

CLASS QC1 CONCRETE, PIER ABOVE FOOTINGS	92.00	CY
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Item 511E46510, CLASS QC1 CONCRETE, FOOTING

	New		Retrofit	
Footing Width	12.00	ft	9.00	ft
Footing Length	9.00	ft	1.00	ft
Footing Thickness	3.00	ft	2.50	ft

CLASS QC1 CONCRETE, PIER	28.0	CY
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Item 511E43512, CLASS QC1 CONCRETE, WITH QC/QA, ABUTMENT INCLUDING FOOTING

REAR ABUTMENT

Footing thickness front	2.25	ft	(in front of and under stem/wingwall)
Footing thickness back	2.00	ft	(behind back face of stem/wingwall)
Plan Area (front)	237.15	sf	(MicroStation)(in front of and under stem/wingwall)
Plan Area (back)	92.22	sf	(MicroStation)(behind back face of stem/wingwall)
Footing Volume	718.03	ft ³	

Stem Thickness	3.75	ft	
Stem Elevation Area	222.84	sf	(MicroStation)
Stem Volume	835.67	ft ³	

Straight Wing Thickness	2.50	ft	
Straight Wing Elev Area	233.51	sf	(MicroStation)
Straight Wing Volume	583.77	ft ³	

Rear Abutment Total 2137.46 ft³

FORWARD ABUTMENT

Footing thickness front	2.25	ft	(in front of and under stem/wingwall)
Footing thickness back	2.00	ft	(behind back face of stem/wingwall)
Plan Area (front)	258.31	sf	(MicroStation)(in front of and under stem/wingwall)
Plan Area (back)	100.45	sf	(MicroStation)(behind back face of stem/wingwall)
Footing Volume	782.10	ft ³	

Stem Thickness	3.75	ft	
Stem Elevation Area	247.41	sf	(MicroStation)
Stem Volume	927.78	ft ³	

Straight Wing Thickness	2.50	ft	
Straight Wing Elev Area	265.49	sf	(MicroStation)
Straight Wing Volume	663.72	ft ³	

Forward Abutment Total 2373.60 ft³

CLASS QC1 CONCRETE, ABUTMENT	168.00	CY
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Item 512E10050, SEALING OF CONCRETE SURFACES (NON-EPOXY)

REAR ABUTMENT

Stem Elevation Area	108.85	sf	
Straight Wing Elev Area	72.92	sf	
Straight Wing Width	3.00	ft	Top plus back
Straight Wing Length	13.59	ft	
Straight Wing Total Area	113.70	sf	
Straight Wing Elev Area	43.26	sf	
Straight Wing Width	3.00	ft	Top plus back
Straight Wing Length	11.81	ft	
Straight Wing Total Area	78.70	sf	
Rear Abutment Total	301.24	sf	

FORWARD ABUTMENT

Stem Elevation Area	124.67	sf	
Straight Wing Elev Area	65.48	sf	
Straight Wing Width	3.00	ft	Top plus back
Straight Wing Length	13.59	ft	
Straight Wing Total Area	106.25	sf	
Straight Wing Elev Area	63.36	sf	
Straight Wing Width	3.00	ft	Top plus back
Straight Wing Length	15.16	ft	
Straight Wing Total Area	108.84	sf	
Forward Abutment Total	339.77	sf	
Abutment Total	72.00	SY	

PIERS

Existing Pier 1

Stem Area	359.68	sf	
Stem Per Pier	1	each	
Pier Stem Height	7.90	ft	
Pier Stem Width	2.75	ft	
Existing Pier Stem Area	403.12	sf	
Pier 1 Cap Area	801.94	sf	
Side Total Length	31.38	ft	
Side Width	2.75	ft	
Existing Pier Cap Area	888.24	sf	

Proposed Pier 1

Stem Perimeter	23.14	ft	
Stem Per Pier	1	each	
Pier Stem Height	7.14	ft	

Proposed Pier Stem Area 165.22 sf

Pier 1 Cap Area 416.01 sf

Side Total Length 23.69 ft

Side Width 2.75 ft

Proposed Pier Cap Area 481.15 sf

Pier 1 Total 1,937.73 sf

Existing Pier 2

Stem Area 532.12 sf

Stem Per Pier 1 each

Pier Stem Height 11.68 ft

Pier Stem Width 2.75 ft

Existing Pier Stem Area 596.39 sf

Pier 2 Cap Area 794.32 sf

Side Total Length 31.28 ft

Side Width 2.75 ft

Existing Pier Cap Area 880.34 sf

Proposed Pier 2

Stem Perimeter 23.14 ft

Stem Per Pier 1 each

Pier Stem Height 10.93 ft

Proposed Pier Stem Area 252.91 sf

Pier 2 Cap Area 413.52 sf

Side Total Length 23.62 ft

Side Width 2.75 ft

Proposed Pier Cap Area 478.49 sf

Pier 2 Total 2,208.13 sf

Pier Total 461.00 SY

PARAPET

Perimeter 9.44 ft

Left Side 156.87 ft

Right Side 156.25 ft

Perimeter 7.83 ft

Rear Appr Slab 57.31 ft

Fwd Appr Slab 57.57 ft

Parapet Total 429.00 SY

SEALING OF CONCRETE SURFACES (NON-EPOXY)	962.00 SY
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Item 512E33000, TYPE 2 WATERPROOFING

Width (all) 3.00 ft

Rear Abut Length 60.14 ft

Forward Abut Length 60.44 ft

TYPE 2 WATERPROOFING	41.00	SY
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Item 513E10260, STRUCTURAL STEEL MEMBERS, LEVEL 3

GIRDER	WEIGHT (POUNDS)
1	18,836
2	18,836
3	18,836
4	18,836
5	18,836
6	18,836
7	18,836
8	18,836
9	18,836

Total 169,522

CROSS 23,375

FRAMES &
SPLICES

STRUCTURAL STEEL MEMBERS, LEVEL 3	192,896	POUNDS
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Item 513E20000, WELDED STUD SHEAR CONNECTORS

No. of Rows	3
Connector Rows	228
No. Beams	9

No of Connectors 6156

WELDED STUD SHEAR CONNECTORS	6,156	EACH
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Item 516E13600, 1" PREFORMED EXPANSION JOINT FILLER

Parapet Ends 16.32 sf

1" PREFORMED EXPANSION JOINT FILLER	17.00	SF
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Item 516E13900, 2" PREFORMED EXPANSION JOINT FILLER

Wingwall Height	9.98	ft
Wingwall Width	2.5	ft
Footing Height	2.25	ft
Footing Width	6.25	ft
Diaphragm Guide Height	2.00	ft
Diaphragm Guide Width	3.00	ft
Diaphragm Guide Length	3.75	ft
Number of Guides	2	
Rear Diaphragm/Slab Height	8.69	ft
Rear Diaphragm/Slab Width	9.23	ft

FWD Diaphragm/Slab Height	8.67	ft
FWD Diaphragm/Slab Width	9.27	ft

2" PREFORMED EXPANSION JOINT FILLER	253.00	SF
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Item 516E44100, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), 2"-3" TK

Abutments:
 Number of Girders 9
 Bearing Lines 2

Piers:
 Number of Girders 9
 Bearing Lines 2

ELASTOMERIC BEARING	36	EACH
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Item 516E14020, SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL

Total Length Rear	88.77	ft
Total Length Fwd	90.16	ft
Number of Joints	2	

STRUCTURAL EXPANSION JOINT	179.00	FT
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Item 518E12201, SCUPPERS, INCLUDING SUPPORTS, AS PER PLAN

Left Bridge 0

SCUPPERS, INCLUDING SUPPORTS	0	EACH
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Item 518E21200 POROUS BACKFILL WITH GEOTEXTILE FABRIC

REAR ABUTMENT
 Thickness (all) 2 ft
 Stem/Straight Wing 927.57 sf (elev area - microstation)
 Rear Total 1,855.13 cf

FORWARD ABUTMENT
 Thickness (all) 2 ft
 Stem/Straight Wing 954.75 sf (elev area - microstation)
 Forward Total 1909.50 cf

POROUS BACKFILL WITH FILTER FABRIC	139	CY
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Item 518E40000 6" PERFORATED CORRUGATED PLASTIC PIPE

REAR ABUTMENT	100.18	FT
FORWARD ABUTMENT	104.88	FT

6" PERFORATED CORRUGATED PLASTIC PIPE

205 FT

Item 53000400, STRUCTURE, MISC.: CAPSULE ADHESIVE ANCHORS

No Anchors per Retrofit	12
No Retrofits per Pier	2
No of Piers	2
Total Anchors	48

CAPSULE ADHESIVE ANCHORS	48.00	EACH
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Item 607E39900, VANDAL PROTECTION FENCE, 6'STRAIGHT, COATED FABRIC

Left Parapet	162.71	FT
Right Parapet	162.06	FT

VANDAL PROTECTION FENCE	325.00	FT
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