ESTIMATED QUANTITIES

Made By: TNL
Date: 6/9/22
Checked By: SW
Date: 7/1/22

ITEM	EXTENSION	TOTAL 02/NHS/BR	UNIT	ESTIMATED QUANTITIES DESCRIPTION	CRA-30-0847L ABUT.	PIERS	SUPER.	GENERAL	SEE SHEET NO.	CRA-30-0847R ABUT.	PIERS	SUPER.	GENERAL	SEE SHEET NO.
202	11203	1	LS	PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LS	3/43				LS	3/43
202	22900	388	SY	APPROACH SLAB REMOVED				255					133	
202	23500	388	SY	WEARING COURSE REMOVED				255					133	
202	98100	280	EACH	REMOVAL MISC.: STEEL BEAM SPLICE BOLTS			280		24/43					
202	98100	1480	EACH	REMOVAL MISC.: DRILLED HOLES IN STEEL BEAMS			840		24/43			640		25/43
503	11100	1	LS	COFFERDAMS AND EXCAVATION BRACING				LS					LS	
503	21100	84	CY	UNCLASSIFIED EXCAVATION	46					38				
509	10000	186932	LB	EPOXY COATED REINFORCING STEEL	5148	2730	101181			4229	3223	70421		
509	30020	10233	FT	NO. 4 GFRP DEFORMED BARS			5302					4931		
510	10001	899	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT, AS PER PLAN	259	258			3/43	202	180			3/43
511	33500	4	EACH	SEMI-INTEGRAL DIAPHRAGM GUIDE	2					2				
511	34446	628	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK			377					251		
511	34450	99	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)			51					48		
511	43210	24	CY	CLASS QC1 CONCRETE, PIER		14					10			
511	45710	116	CY	CLASS QC1 CONCRETE, ABUTMENT	62					54				
512	10100	1004	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	66		463			51		424		
512	71500	222	SY	SPECIAL - URETHANE TOP COAT SEALER		132			3/43		90			3/43
513	10201	17164	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN			11077		3/43			6087		3/43
513	20000	8765	EACH	WELDED STUD SHEAR CONNECTORS			5260					3505		
514	00050	4852	SF	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL			2699					2153		
514	00056	4852	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT			2699					2153		
514	00060	4852	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, INTERMEDIATE COAT			2699					2153		
514	00067	4852	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN			2699		3/43			2153		3/43
514	00504	40	MNHR	GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL			20					20		
514	10000	16	EACH	FINAL INSPECTION REPAIR			9					7		
516	13900	112	SF	2" PREFORMED EXPANSION JOINT FILLER	56					56				
516	14020	280	FT	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL	159					121				
516	44201	24	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN (14.5" X 13" X 3.74")	14				23/43	10				23/43
516	44201	24	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN (16.5" X 13" X 3.90")		14			23/43		10			23/43
516	47001	1	LS	JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				LS	3/43				LS	3/43
518	21200	212	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	125					87				
518	40000	292	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	165					127				
518	40010	60	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	36					24				
519	00100	1994	SF	COMPOSITE FIBER WRAP SYSTEM		1186					807			
519	11101	27	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	19				3/43	8				3/43
526	25000	543	SY	REINFORCED CONCRETE APPROACH SLABS (T=15")				321					222	
526	90020	209	FT	TYPE B INSTALLATION				124					85	
601	21000	1701	SY	CONCRETE SLOPE PROTECTION	997					704				
607	39900	300	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC			150					150		

ESTIMATED QUANTITIES
(Removal)

Made By: TNL
Date: 6/9/22
Checked By: SW
Date: 7/1/22

202-11203 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

Total = 1 LUMP SUM EQ

202-22900 APPROACH SLAB REMOVED

Left Rear Approach

Length = 25.00 ft
Average Width = 44.17 ft
Area = 122.69 sq yd

Left Forward Approach

Length = 25.00 ft
Average Width = 47.70 ft
Area = 132.50 sq yd

Left Bridge Approach Slab Area
= 255 SY

Approach Slab Area = Length x Width
= 388 SY

Right Rear Approach

Length = 25.00 ft
Width = 24.00 ft
Area = 66.67 sq yd

Right Forward Approach

Length = 25.00 ft
Width = 24.00 ft
Area = 66.67 sq yd

Right Bridge Approach Slab Area
= 133 SY

202-23500 WEARING COURSE REMOVED

Left Rear Approach

Length = 25.00 ft
Average Width = 44.17 ft
Area = 122.69 sq yd

Left Forward Approach

Length = 25.00 ft
Average Width = 47.70 ft
Area = 132.50 sq yd

Left Bridge Approach Slab Area
= 255 SY

Approach Slab Area = Length x Width
= 388 SY

Right Rear Approach

Length = 25.00 ft
Width = 24.00 ft
Area = 66.67 sq yd

Right Forward Approach

Length = 25.00 ft
Width = 24.00 ft
Area = 66.67 sq yd

Right Bridge Approach Slab Area
= 133 SY

202-98100 REMOVAL MISC.: STEEL BEAM SPLICE BOLTS

Left Bridge

Fatigue Retrofit Splice 1

Top Flange:	20
Bottom Flange:	20
Subtotal:	**40**
# Beams:	**7**
Total	**280** **EACH**

Right Bridge

None on Right Bridge

ESTIMATED QUANTITIES
(Removal)

Made By: TNL
Date: 6/9/22
Checked By: SW
Date: 7/1/22

202-98100 REMOVAL MISC.: DRILLED HOLES IN STEEL BEAMS

Left Bridge

Fatigue Retrofit Type A

Top Flange:	12
Bottom Flange:	12
Subtotal:	**24**
# Beams:	**7**
Total	**168** EACH

Fatigue Retrofit Type B

Top Flange:	16
Bottom Flange:	16
Subtotal:	**32**
# Beams:	**7**
# Retrofit details per beam:	**3**
Total	**672** EACH

Total Left Bridge: 840

Right Bridge

Fatigue Retrofit Type B

Top Flange:	16
Bottom Flange:	16
Subtotal:	**32**
# Beams:	**5**
# Retrofit details per beam:	**4**
Total	**640** EACH

Total Right Bridge: 640

503-21100 UNCLASSIFIED EXCAVATION

Left Rear Abutment

	SA SFT	Width FT	Volume CY
Left WW	58.2466	2	4.315
Left WW	44.2719	1	1.640
Abutment	326.832	1	12.105
Right WW	53.6741	2	3.976
Right WW	32.48	1	1.203
	Volume =		23.24 CY

Right Rear Abutment

	SA SFT	Width FT	Volume CY
Left WW	51.4872	2	3.814
Left WW	45.04	1	1.668
Abutment	241.72	1	8.953
Right WW	51.2497	2	3.796
Right WW	37.52	1	1.390
	Volume =		19.621 CY

Left Forward Abutment

	SA SFT	Width FT	Volume CY
Left WW	64.97	2	4.813
Left WW	49.71	1	1.841
Abutment	326.832	1	12.105
Right WW	40.0668	2	2.968
Right WW	39.4477	1	1.461
	Volume =		23.19 CY

Right Forward Abutment

	SA SFT	Width FT	Volume CY
Left WW	54.8903	2	4.066
Left WW	50.33	1	1.864
Abutment	241.72	1	8.953
Right WW	31.07	2	2.301
Right WW	43.2314	1	1.601
	Volume =		18.785 CY

Left Bridge Abutment Excavation
= 46 CY

Right Bridge Abutment Excavation
= 38 CY

Total Excavation Volume = Length x Width x Depth
= 84 CY

503-11100 COFFERDAMS AND EXCAVATION BRACING

Total = 1 LUMP SUM

ESTIMATED QUANTITIES
(Rebar)

Made By: TNL
Date: 10/06/2021
Checked By: RLC
Date: 6/9/2022

509-10000 EPOXY COATED REINFORCING STEEL

	LEFT BRIDGE	RIGHT BRIDGE	TOTAL	EQ
ABUTMENTS =	**5148**	**4229**	9377	
PIERS =	**2730**	**3223**	5953	
DECK =	**78432**	**53009**	131441	140470
NEG. MOMENT =	**5617**	**3412**	9029	
PARAPET =	**7645**	**7051**	14696	(NON GRFP BARS)
DIAPHRAGM =	**9487**	**6949**	16436	
SUPERSTRUCTURE =	101181	70421	171602	
APPROACH SLAB =	28017			

509-30020 NO. 4 GFRP DEFORMED BARS

Left Bridge GFRP Bar Length
= **5302** FT

Right Bridge GFRP Bar Length
= **4931** FT

Total GFRP Bar Length =
= **10233** FT

510-10001 DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT, AS PER PLAN

Left Rear Abutment
Number = 128

Right Rear Abutment
Number = 101

Left Rear Pier
Number = 128

Right Rear Pier
Number = 90

Left Forward Pier
Number = 130

Right Forward Pier
Number = 90

Left Forward Abutment
Number = 131

Right Forward Abutment
Number = 101

Left Bridge Dowel Holes
= **517** EACH

Right Bridge Dowel Holes
= **382** EACH

Total Dowel Holes =
= **899** EACH

ESTIMATED QUANTITIES
(Sealing)

Made By: TNL
Date: 5/12/2021
Checked By:SW
Date:7/1/22

512-10100 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

Abutment Wingwall Width = 2.50 ft
Back Face Sealing Height = 0.50 ft

EQ

Left Bridge Rear Abutment Seat

Length = 66.6800 ft
Average Beam Seat Elev. = 1034.93
Toe of Slope Elev. = 1032.77
Sealing Height = 2.16 ft
Area = 16.02 SY

Left Bridge Rear WW A & WW B

	WWA	WWB
Width 1 (ft) =	measured	1.6771
Length 1 (ft) =	in	8.9792
Width 2 (ft) =	cadd	3.5
Length 2 (ft) =		1.979
Width 3 (ft) =		3.5
Length 3 (ft) =		7.00
Front Face Area (SY) =	4.66	3.80
Width 1 (ft) =	2.5000	2.5000
Length 1 (ft) =	1.0000	1.0000
Length 2 (ft) =	1.0208	0.9792
Length 3 (ft) =	7.8262	7.8262
Length 4 (ft) =	1.8125	1.6771
Top Face Area (SY) =	3.10	3.05
Width 1 (ft) =	1	1.00
Length 1 (ft) =	2.0208	1.00
Length 2 (ft) =	7.8262	7.8262
Back Face Area (SY) =	1.09	0.98

Area = 16.69 SY

Right Bridge Rear Abutment Seat

Length = 49.3200 ft
Average Beam Seat Elev. = 1032.8760
Toe of Slope Elev. = 1031.180
Sealing Height = 1.70 ft
Area = 9.29 sq yd

Right Bridge Rear WW E & WW F

	WWE	WWF
Width 1 (ft) =	measured	1.6771
Length 1 (ft) =	in	9.0000
Width 2 (ft) =	cadd	3.5
Length 2 (ft) =		2.000
Width 3 (ft) =		3.5
Length 3 (ft) =		7.00
Front Face Area (SY) =	4.15	3.82
Width 1 (ft) =	2.5000	2.5000
Length 1 (ft) =	1.0000	1.0000
Length 2 (ft) =	0.9896	1.0000
Length 3 (ft) =	7.8262	7.8262
Length 4 (ft) =	1.8333	1.6771
Top Face Area (SY) =	3.10	3.06
Width 1 (ft) =	1	1.00
Length 1 (ft) =	1.9896	1.00
Length 2 (ft) =	7.8262	7.8262
Back Face Area (SY) =	1.09	0.98

Area = 16.19 SY

Left Bridge Forward Abutment Seat

Length = 69.2400 ft
Average Beam Seat Elev. = 1035.93
Toe of Slope Elev. = 1033.82
Sealing Height = 2.11 ft (avg. CJ elev. - top of slope el.)
Area = 16.20 SY

Left Bridge Forward WWC & WWD

	WWC	WWD
Width 1 (ft) =	measured	1.6875
Length 1 (ft) =	in	8.00
Width 2 (ft) =	cadd	3.5
Length 2 (ft) =		1.00
Width 3 (ft) =		3.5
Length 3 (ft) =		7.00
Front Face Area (SY) =	5.31	3.25
Width 1 (ft) =	2.5	2.5000
Length 1 (ft) =	1.0000	1.0000
Length 2 (ft) =	0.9063	0.8646
Length 3 (ft) =	7.8262	7.8262
Length 4 (ft) =	1.833	1.6875
Top Face Area (SY) =	3.09	3.04
Width 1 (ft) =	1	1.00
Length 1 (ft) =	1.0000	1.86
Length 2 (ft) =	7.8262	7.8262
Back Face Area (SY) =	0.98	1.08

Area = 16.74 SY

Right Bridge Forward Abutment Seat

Length = 48.6000 ft
Average Beam Seat Elev. = 1034.0260
Toe of Slope Elev. = 1032.3100
Sealing Height = 1.72 ft (avg. CJ el. - TOS el.)
Area = 9.27 SY

Right Bridge Forward WWG & WWH

	WWG	WWH
Width 1 (ft) =	measured	1.7083
Length 1 (ft) =	in	8.00
Width 2 (ft) =	cadd	3.5
Length 2 (ft) =		1.00
Width 3 (ft) =		3.5
Length 3 (ft) =		7.00
Front Face Area (SY) =	4.71	3.27
Width 1 (ft) =	2.5	2.5000
Length 1 (ft) =	1.0000	1.0000
Length 2 (ft) =	0.8750	0.8854
Length 3 (ft) =	8.2765	7.8262
Length 4 (ft) =	1.813	1.7083
Top Face Area (SY) =	3.20	3.05
Width 1 (ft) =	1	1.00
Length 1 (ft) =	1.0000	1.8854
Length 2 (ft) =	8.2765	7.8262
Back Face Area (SY) =	1.03	1.08

Area = 16.34 SY

Left Bridge Abutment Sealing Area
= **66** SY

Right Bridge Abutment Sealing Area
= **51** SY

ESTIMATED QUANTITIES
(Sealing)

Made By: TNL
Date: 5/12/2021
Checked By:SW
Date:7/1/22

Left Rear End Diaphragm

Length =	66.68	ft
Average Beam CJ Elev. =	1037.35	
Average Top Brg. Elev. =	1035.24	
Average Sealing Height =	2.10	ft
Area =	15.56	sq yd

Right Rear End Diaphragm

Length =	49.32	ft
Average Beam CJ Elev. =	1035.37	
Average Top Brg. Elev. =	1033.19	
Average Sealing Height =	2.18	ft
Area =	11.93	sq yd

Left Forward End Diaphragm

Length =	69.24	ft
Average Beam CJ Elev. =	1038.44	
Average Top Brg. Elev. =	1036.24	
Average Sealing Height =	2.20	ft
Area =	16.94	SY

Right Forward End Diaphragm

Length =	48.60	ft
Average Beam CJ Elev. =	1036.54	
Average Top Brg. Elev. =	1034.34	
Average Sealing Height =	2.20	ft
Area =	11.86	sq yd

Left Bridge Left Parapet & Overhang

Length =	146.375	ft
Typical Sealing Width =	7.896	ft (SBR-1-20)
Typical Parapet Area =	128.42	SY
Transition Length 1 =	10.00	ft
Transition Sealing Width 1 =	6.6513	ft
Transition Length 2 =	2.50	ft
Transition Sealing Width 2 =	6.6513	ft
Transition Length 3 =	1.50	ft
Transition Sealing Width 3 =	6.9778	ft
# of transitions =	2.00	
Transition Area =	20.80	SY
Length =	172.7604	ft
Distance to edge of deck =	0.167	ft
Area =	3.20	SY
Length =	168.4658	ft (measured to FF of WW)
Overhang thickness =	0.917	ft
Area =	17.16	SY
Length =	measured in cadd	ft
B1 Avg. Overhang Width =		ft (w/out half flange width)
Area =	50.92	SY
Left Bridge Left Parapet =	220.50	SY

Right Bridge Left Parapet & Overhang

Length =	134.625	ft
Typical Sealing Width =	7.896	ft (SBR-1-20)
Typical Parapet Area =	118.11	SY
Transition Length 1 =	10.00	ft
Transition Sealing Width 1 =	6.6513	ft
Transition Length 2 =	2.50	ft
Transition Sealing Width 2 =	6.6513	ft
Transition Length 3 =	1.50	ft
Transition Sealing Width 3 =	6.9778	ft
# of transitions =	2.00	
Transition Area =	20.80	SY
Length =	161.0313	ft
Distance to edge of deck =	0.167	ft
Area =	2.98	SY
Length =	156.7525	ft (measured to FF of WW)
Overhang thickness =	0.8958	ft
Area =	15.60	SY
Length =	measured in cadd	ft
B8 Avg. Overhang Width =		ft (w/out half flange width)
Area =	48.82	SY
Left Bridge Left Parapet =	206.32	SY

Left Bridge Right Parapet & Overhang

Length =	145.4375	ft
Typical Sealing Width =	7.896	ft (SBR-1-20)
Typical Parapet Area =	127.60	SY
# of transitions =	2.00	
Transition Area =	20.80	SY
Length =	171.7604	ft
Distance to edge of deck =	0.167	ft
Area =	3.18	SY
Length =	167.5353	ft (measured to FF of WW)
Overhang thickness =	0.917	ft
Area =	17.06	SY
Length =	measured in cadd	ft
B7 Avg. Overhang Width =		ft (w/out half flange width)
Area =	40.97	SY
Left Bridge Right Parapet =	209.62	SY

Right Bridge Right Parapet & Overhang

Length =	134.9375	ft
Typical Sealing Width =	7.896	ft (SBR-1-20)
Typical Parapet Area =	118.39	SY
# of transitions =	2.00	
Transition Area =	20.80	SY
Length =	161.2656	ft
Distance to edge of deck =	0.167	ft
Area =	2.99	SY
Length =	157.0002	ft (measured to FF of WW)
Overhang thickness =	0.8958	ft
Area =	15.63	SY
Length =	measured in cadd	ft
B12 Avg. Overhang Width =		ft (w/out half flange width)
Area =	36.43	SY
Left Bridge Right Parapet =	194.23	SY

Left Bridge Superstructure Sealing Area		
=	**463**	SY

Right Bridge Superstructure Sealing Area		
=	**424**	SY

ESTIMATED QUANTITIES
(Sealing)

Made By: TNL
Date: 5/12/2021
Checked By:SW
Date:7/1/22

Total Concrete Sealing Area = Length x Width
= **1004** SY

512-71500 SPECIAL - URETHANE TOP COAT SEALER

Left Bridge Rear Pier

	North End SFT	Middle SFT	South End SFT
Front Face Area =	59.361	110.846	56.863
End Area =	13.749	0	13.749
Bottom Area =	30.291	42	29.175
Backface Area =	59.361	110.846	56.863

Total Area = 64.7893 SY

Right Bridge Rear Pier

	North End SFT	Middle SFT	South End SFT
Front Face Area =	76.114	0	74.41
End Area =	13.749	0	13.749
Bottom Area =	38.028	0	37.155
Backface Area =	76.114	0	74.41

Total Area = 44.8588 SY

Left Bridge Forward Pier

	North End SFT	Middle SFT	South End SFT
Front Face Area =	62.605	112.161	60.68
End Area =	13.749	0	13.941
Bottom Area =	31.734	42	30.672
Backface Area =	62.605	112.161	60.68

Total Area = 66.9987 SY

Right Bridge Forward Pier

	North End SFT	Middle SFT	South End SFT
Front Face Area =	76.114	0	74.41
End Area =	13.749	0	13.749
Bottom Area =	38.028	0	37.155
Backface Area =	76.114	0	74.41

Total Area = 44.8588 SY

Left Bridge Sealing Area
= **132** SY

Right Bridge Sealing Area
= **90** SY

Total Sealing Area = Height x Width
= **222** SY

519-00100 COMPOSITE FIBER WRAP SYSTEM

Left Bridge Rear Pier

Area = 583.10 sq ft

Right Bridge Rear Pier

Area = 403.73 sq ft

Left Bridge Forward Pier

Area = 602.99 sq ft

Right Bridge Forward Pier

Area = 403.73 sq ft

Left Bridge Fiber Wrap Area
= **1186** SF

Right Bridge Fiber Wrap Area
= **807** SF

Total Fiber Wrap Area = Height x Width
= **1994** SF

ESTIMATED QUANTITIES
(Steel)

Made By: TNL
Date: 5/24/2022
Checked By: Shelby Wilson
Date: 6/29/2022
Updated by: TNL
Date: 8/18/2022

513-10201 STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN

1 **Left Bridge - Type A Flange Retrofit (Beam 1)**

Outside TF Plate T =	0.0521	LFT
Outside TF Plate W =	0.8750	LFT
Outisde TF Plate L =	5.1406	LFT
# per beam =	1.00	
TF Fill Plate T =	0.0365	LFT
TF Fill Plate W =	0.8750	LFT
TF Fill Plate L =	3.8542	LFT
# per beam =	1.00	
Inside Plate T =	0.0521	LFT
Inside Plate W =	0.3750	LFT
Inside Plate L =	5.1406	LFT
# per beam =	4.00	
BF Fill Plate T =	0.0417	LFT
BF Fill Plate W =	0.9583	LFT
BF Fill Plate L =	3.8542	LFT
# per beam =	1.00	
Outside BF Plate T =	0.0469	LFT
Outside BF Plate W =	0.9583	LFT
Outisde BF Plate L =	5.1406	LFT
# per beam =	1.00	
Hole Diameter =	0.0938	LFT
# of holes =	32	
TF OP T =	0.0521	LFT
Volume =	0.0115	CFT
# of holes =	24	
TF Fill Plate T =	0.0365	LFT
Volume =	0.0060	CFT
# of holes =	16	
TF IP T =	0.0521	LFT
Volume =	0.0115	CFT
# of holes =	16	
BF IP T =	0.0521	LFT
Volume =	0.0115	CFT
# of holes =	24	
BF Fill Plate T =	0.0417	LFT
Volume =	0.0069	CFT
# of holes =	32	
BF OP T =	0.0469	LFT
Volume =	0.0104	CFT
Total Volume 1 =	1.09	CFT

EQ

Right Bridge - Type B Flange Retrofit (Beams 8-12)

Outside TF Plate T =	0.0521	LFT
Outside TF Plate W =	0.8750	LFT
Outisde TF Plate L =	2.4583	LFT
# per beam =	4.00	
# of beams =	5.00	
TF Fill Plate T =	0.0365	LFT
TF Fill Plate W =	0.8750	LFT
TF Fill Plate L =	1.2292	LFT
# per beam =	4.00	
# of beams =	5.00	
Inside Plate T =	0.0521	LFT
Inside Plate W =	0.3750	LFT
Inside Plate L =	2.4583	LFT
# per beam =	16.00	
# of beams =	5.00	
BF Fill Plate T =	0.0417	LFT
BF Fill Plate W =	0.9583	LFT
BF Fill Plate L =	1.2292	LFT
# per beam =	4.00	
# of beams =	5.00	
Outside BF Plate T =	0.0469	LFT
Outside BF Plate W =	0.9583	LFT
Outisde BF Plate L =	2.4583	LFT
# per beam =	4.00	
# of beams =	5.00	
Hole Diameter =	0.0938	LFT
# of holes =	16	
TF OP T =	0.0521	LFT
Volume =	0.1150	CFT
# of holes =	8	
TF Fill Plate T =	0.0365	LFT
Volume =	0.0403	CFT
# of holes =	8	
TF IP T =	0.0521	LFT
Volume =	0.1150	CFT
# of holes =	8	
BF IP T =	0.0521	LFT
Volume =	0.1150	CFT
# of holes =	8	
BF Fill Plate T =	0.0417	LFT
Volume =	0.0460	CFT
# of holes =	16	
BF OP T =	0.0469	LFT
Volume =	0.1035	CFT
Total Volume =	9.52	CFT

2 **Left Bridge - Type A Flange Retrofit (Beams 2-7)**

Outside TF Plate T =	0.0521	LFT
Outside TF Plate W =	0.8750	LFT
Outisde TF Plate L =	5.0833	LFT
# per beam =	1.00	

# of beams =	6.00	
TF Fill Plate T =	0.0365	LFT
TF Fill Plate W =	0.8750	LFT
TF Fill Plate L =	3.8542	LFT
# per beam =	1.00	
# of beams =	6.00	
Inside Plate T =	0.0521	LFT
Inside Plate W =	0.3750	LFT
Inside Plate L =	5.0833	LFT
# per beam =	4.00	
# of beams =	6.00	
BF Fill Plate T =	0.0417	LFT
BF Fill Plate W =	0.9583	LFT
BF Fill Plate L =	3.8542	LFT
# per beam =	1.00	
# of beams =	6.00	
Outside BF Plate T =	0.0469	LFT
Outside BF Plate W =	0.9583	LFT
Outisde BF Plate L =	5.0833	LFT
# per beam =	1.00	
# of beams =	6.00	
Hole Diameter =	0.0938	LFT
# of holes =	32	
TF OP T =	0.0521	LFT
Volume =	0.0690	CFT
# of holes =	24	
TF Fill Plate T =	0.0365	LFT
Volume =	0.0362	CFT
# of holes =	16	
TF IP T =	0.0521	LFT
Volume =	0.0690	CFT
# of holes =	16	
BF IP T =	0.0521	LFT
Volume =	0.0690	CFT
# of holes =	24	
BF Fill Plate T =	0.0417	LFT
Volume =	0.0414	CFT
# of holes =	32	
BF OP T =	0.0469	LFT
Volume =	0.0621	CFT
Total Volume 2 =	6.46	CFT

3 **Left Bridge - Type B Flange Retrofit (Beams 1-7)**

Outside TF Plate T =	0.0521	LFT
Outside TF Plate W =	0.8750	LFT
Outisde TF Plate L =	2.4583	LFT
# per beam =	3.00	
# of beams =	7.00	
TF Fill Plate T =	0.0365	LFT
TF Fill Plate W =	0.8750	LFT
TF Fill Plate L =	1.2292	LFT
# per beam =	3.00	

ESTIMATED QUANTITIES
(Steel)

Made By: TNL
Date: 5/24/2022
Checked By: Shelby Wilson
Date: 6/29/2022
Updated by: TNL
Date: 8/18/2022

# of beams =	7.00	
Inside Plate T =	0.0521	LFT
Inside Plate W =	0.3750	LFT
Inside Plate L =	2.4583	LFT
# per beam =	12.00	
# of beams =	7.00	
BF Fill Plate T =	0.0417	LFT
BF Fill Plate W =	0.9583	LFT
BF Fill Plate L =	1.2292	LFT
# per beam =	3.00	
# of beams =	7.00	
Outside BF Plate T =	0.0469	LFT
Outside BF Plate W =	0.9583	LFT
Outisde BF Plate L =	2.4583	LFT
# per beam =	3.00	
# of beams =	7.00	
Hole Diameter =	0.0938	LFT
# of holes =	16	
TF OP T =	0.0521	LFT
Volume =	0.1208	CFT
# of holes =	8	
TF Fill Plate T =	0.0365	LFT
Volume =	0.0423	CFT
# of holes =	8	
TF IP T =	0.0521	LFT
Volume =	0.1208	CFT
# of holes =	8	
BF IP T =	0.0521	LFT
Volume =	0.1208	CFT
# of holes =	8	
BF Fill Plate T =	0.0417	LFT
Volume =	0.0483	CFT
# of holes =	16	
BF OP T =	0.0469	LFT
Volume =	0.1087	CFT
Total Volume 3 =	10.00	CFT
Unit Weight =	490	PCF
Plate Weight =	8594.8	LBS

Unit Weight =	490	PCF
Plate Weight =	4665.465	LBS

4 **Left Bridge - Bolts**

Type A Flange Retrofit

A325 1" diameter

# per TF =	32	
# per BF =	32	
# per retrofit =	64	
# of retrofits/bridge =	7	
total # of bolts =	448	
max. total "clamped" t =	2.7875	in
length to add =	1.5625	in (Per C&MS 513.20 A)
bolt length =	4.5	in
wt/bolt assembly =	2.2	lbs/bolt
total weight =	985.6	lbs

Type B Flange Retrofit

Right Bridge - Bolts

Type B Flange Retrofit

A325 1" diameter

# per TF =	16	
# per BF =	16	
# per retrofit =	32	
# of retrofits/bridge =	20	
total # of bolts =	640	
max. total "clamped" t =	2.7075	in
length to add =	1.5625	in (Per C&MS 513.20 A)
bolt length =	4.5	in
wt/bolt assembly =	2.2	lbs/bolt
total weight =	1408	lbs

ESTIMATED QUANTITIES
(Steel)

Made By: TNL
Date: 5/24/2022
Checked By: Shelby Wilson
Date: 6/29/2022
Updated by: TNL
Date: 8/18/2022

A325 1" diameter

# per TF =	16	
# per BF =	16	
# per retrofit =	32	
# of retrofits/bridge =	21	
total # of bolts =	672	
max. total "clamped" t =	2.7875	in
length to add =	1.5625	in (Per C&MS 513.20 A)
bolt length =	4.5	in
wt/bolt assembly =	2.2	lbs/bolt
total weight =	1478.4	lbs

5

Left Bridge - Welds

Steel Weight =	490	lbs/cft

5/16" Weld
Shop Welds Only

Abutment - HP 12x53

Weld Length =	1.96	ft
# of Welds/end =	4.00	
# of beams =	7.00	
total # of welds =	56.00	
Area of weld =	0.000339	sft
Weld Volume =	0.03729	cft
total weight =	18.27	lbs

Left Bridge Steel Wt. = **11077.00** LB

Right Bridge - Welds

Steel Weight =	490	lbs/cft

5/16" Weld
Shop Welds Only

Abutment - HP 12x53

Weld Length =	1.96	ft
# of Welds/beam =	4.00	
# of beams =	5.00	
total # of welds =	40.00	
Area of weld =	0.000339	sft
Weld Volume =	0.02664	cft
total weight =	13.05	lbs

Right Bridge Steel Wt. = **6087.00** LB

Total Steel Weight =
= **17164** LB

513-20000 WELDED STUD SHEAR CONNECTORS

Left Bridge

Num. Shear Studs Beam 1 =	754
Num. Shear Studs Beams 2-7 =	751
Number of Beams =	6

Left Bridge Shear Connectors
= **5260** EACH

Right Bridge

Num. Shear Studs per Beam =	701
Number of Beams =	5

Right Bridge Shear Connectors
= **3505** EACH

Total Connector Number = Beams x Connectors
= **8765** EACH

ESTIMATED QUANTITIES
(Paint)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

514-00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL

Left Bridge - W36x170

Coated Width (Ends)=	8.74	ft
Coated Width (Fascia)=	4.40	ft
Beam 1 Length =	168.00	ft
Interior Beam Length =	20.00	ft
Beam 7 Length =	167.00	ft
Beam 1 Area =	825.93	sq ft
Interior Beam Area =	174.73	sq ft
Beam 7 Area =	821.53	sq ft

Right Bridge - W36x1 EQ

Coated Width (Ends)=	8.72	ft
Coated Width (Fascia)=	4.40	
Exterior Beam Length =	156.00	ft
Interior Beam Length =	20.00	
Exterior Beam Area =	772.83	sq ft
Exterior Beam Area =	174.43	

Left Bridge Beams

Number of Beam 1 =	1
Number of Interior Beams =	5
Number of Beam 7 =	1

Right Bridge Beams

Number of Exterior Beams =	2
Number of Interior Beams =	3

Left Bridge Steel Area
= 2699 SF

Right Bridge Steel Area
= 2153 SF

Total Steel Area =
= 4852 SF

514-00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT

Left Bridge - W36x170

Coated Width (Ends)=	8.74	ft
Coated Width (Fascia)=	4.40	ft
Beam 1 Length =	168.00	ft
Interior Beam Length =	20.00	ft
Beam 7 Length =	167.00	ft
Beam 1 Area =	825.93	sq ft
Interior Beam Area =	174.73	sq ft
Beam 2 Area =	821.53	sq ft

Right Bridge - W36x160

Coated Width (Ends)=	8.72	ft
Coated Width (Fascia)=	4.40	
Exterior Beam Length =	156.00	ft
Interior Beam Length =	20.00	ft
Exterior Beam Area =	772.83	sq ft
Exterior Beam Area =	174.43	sq ft

Type A

Inside Plate Surface Area =	1.927734375	SFT	Section 1
	0.267740885	SFT	Section 2
	0.0390625	SFT	Section 3
	2.23453776	SFT	
# per beam =	4		
# of beams =	5		
Outside Plate Surface Area =	4.926432292	SFT	Section 1
	0.481933594	SFT	Section 2
	0.08984375	SFT	Section 3
	5.498209635	SFT	
# per beam =	1		
# of beams =	5		

Type B

Inside Plate Surface Area =	0.921875	SFT	Section 1
	0.128038194	SFT	Section 2
	0.0390625	SFT	Section 3
	1.088975694	SFT	
# per beam =	12		
# of beams =	5		

Type B

Inside Plate Surface Area =	0.921875	SFT	Section 1
	0.128038	SFT	Section 2
	0.039063	SFT	Section 3
	1.088976	SFT	
# per beam =	16		
# of beams =	3		
Outside Plate Surface Area =	2.355903	SFT	Section 1
	0.230469	SFT	Section 2
	0.089844	SFT	Section 3
	2.676215	SFT	
# per beam =	4		
# of beams =	3		

Retrofit Area = 84.4 sq ft

ESTIMATED QUANTITIES
(Paint)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

Outside Plate Surface Area =	2.355902778	SFT	Section 1
	0.23046875	SFT	Section 2
	0.08984375	SFT	Section 3
	2.676215278	SFT	

 # per beam = 3
# of beams = 5

Retrofit Area = 177.7 sq ft

Left Bridge Beams

Number of Beam 1 = 1
Number of Interior Beams = 5
Number of Beam 2 = 1

Left Bridge Steel Area
= **2699** SF

Right Bridge Beams

Number of Exterior Beams = 2
Number of Interior Beams = 3

Right Bridge Steel Area
= **2153** SF

Total Steel Area =
= **4852** SF

514-00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT

Left Bridge - W36x170

Coated Width (Ends)= 8.74 ft
Coated Width (Fascia)= 4.40 ft
Beam 1 Length = 168.00 ft
Interior Beam Length = 20.00 ft
Beam 7 Length = 167.00 ft
Beam 1 Area = 825.93 sq ft
Interior Beam Area = 174.73 sq ft
Beam 2 Area = 821.53 sq ft
Retrofit Area = 177.7 sq ft

Left Bridge Beams

Number of Beam 1 = 1
Number of Interior Beams = 5
Number of Beam 2 = 1
Number of Splices = 20

Left Bridge Steel Area
= **2699** SF

Total Steel Area =
= **4852** SF

Right Bridge - W36x160

Coated Width (Ends)= 8.72 ft
Coated Width (Fascia)= 4.40
Exterior Beam Length = 156.00 ft
Interior Beam Length = 20.00 ft
Exterior Beam Area = 772.83 sq ft
Exterior Beam Area = 174.43 sq ft
Retrofit Area = 84.4 sq ft

Right Bridge Beams

Number of Exterior Beams = 2
Number of Interior Beams = 3
Number of Splices = 12

Right Bridge Steel Area
= **2153** SF

514-00067 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN

Left Bridge - W36x170

Coated Width (Ends)= 8.74 ft
Coated Width (Fascia)= 4.40 ft
Beam 1 Length = 168.00 ft
Interior Beam Length = 20.00 ft
Beam 7 Length = 167.00 ft
Beam 1 Area = 825.93 sq ft
Interior Beam Area = 174.73 sq ft
Beam 2 Area = 821.53 sq ft
Retrofit Area = 177.7 sq ft

Left Bridge Beams

Number of Beam 1 = 1
Number of Interior Beams = 5
Number of Beam 2 = 1

Right Bridge - W36x160

Coated Width (Ends)= 8.72 ft
Coated Width (Fascia)= 4.40
Exterior Beam Length = 156.00 ft
Interior Beam Length = 20.00 ft
Exterior Beam Area = 772.83 sq ft
Exterior Beam Area = 174.43 sq ft

Retrofit Area = 84.4 sq ft

Right Bridge Beams

Number of Exterior Beams = 2
Number of Interior Beams = 3

Left Bridge Steel Area
= 2699 SF

Right Bridge Steel Area
= 2153 SF

Total Steel Area =
= 4852 SF

514-00504 GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL

Left Bridge Beams

Number of Hours = 20 hrs

Total Grinding Hours =
= 40 MNHR

Right Bridge Beams

Number of Hours = 20 hrs

514-10000 FINAL INSPECTION REPAIR

Left Bridge Beams

	EXTERIOR	EXTERIOR	INTERIOR
Beams =	1	1	5
Length =	168.00	167.00	20.00
Sum of Length =	435.00		
Spacing =	150.00		
Number =	4		

Right Bridge Beams

	EXTERIOR	INTERIOR
Beams =	2	3
Length =	156.00	20.00
Sum of Length =	372.00	
Spacing =	150.00 ft	
Number =	4	

Left Bridge Crossframes

Number of Crossframes = 88
Percentage 5%

Number = 5

Right Bridge Crossframes

Number of Crossframes = 54
Percentage 5%

Number = 3

Left Bridge Paint Repairs
= 9 EACH

Right Bridge Paint Repairs
= 7 EACH

Total Repair Number =
= 16 EACH

514.21 Final Inspection

A. The Engineer will select locations for coating removal for inspection of surface preparation and dry film thickness. For all structures in which the supporting members are rolled beams or girders, remove a minimum of one location per 150 linear feet (46 m) of beam line for webs and flanges and 5 percent of all cross frame assemblies and other secondary structural members shall be selected for destructive testing. For all other bridge types with structural steel, remove one location for every 1200 square feet (108 m²) of steel surface for destructive testing. Do not perform destructive testing on areas that have been painted with an inorganic zinc prime coat.

ESTIMATED QUANTITIES
(Approaches)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

516-13900 2" PREFORMED EXPANSION JOINT FILLER

Left Rear Approach

Number =	2	
Average Length =	2.69	ft
Average Depth =	5.25	ft
Area =	28.22	sq ft

Right Rear Approach EQ

Number =	2	
Average Length =	2.69	ft
Average Depth =	5.26	ft
Area =	28.27	sq ft

Left Forward Approach

Number =	2	
Average Length =	2.65	ft
Average Depth =	5.26	ft
Area =	27.88	sq ft

Right Forward Approach

Number =	2	
Average Length =	2.65	ft
Average Depth =	5.26	ft
Area =	27.88	sq ft

Left Bridge Joint Filler Area
= **56** SF

Right Bridge Joint Filler Area
= **56** SF

Total Joint Filler Area = Number x Length x Depth
= **112** SF

516-14020 SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL

Left Rear Approach

Number of Vertical Sides =	2	
Vertical Length =	5.25	ft
Horizontal Length =	64.28	ft
Joint Seal Length =	78.00	ft

Right Rear Approach

Number of Vertical Sides =	2	
Vertical Length =	5.25	ft
Horizontal Length =	47.01	ft
Joint Seal Length =	61.00	ft

Left Forward Approach

Number of Vertical Sides =	2	
Vertical Length =	5.25	ft
Horizontal Length =	67.01	ft
Joint Seal Length =	81.00	ft

Right Forward Approach

Number of Vertical Sides =	2	
Vertical Length =	5.25	ft
Horizontal Length =	46.28	ft
Joint Seal Length =	60.00	ft

Left Bridge Joint Seal Length
= **159** LF

Right Bridge Joint Seal Length
= **121** LF

Total Joint Seal Length = Number x Length
= **280** LF

526-25000 REINFORCED CONCRETE APPROACH SLABS (T=15")

Left Rear Approach

		ft
Measured Area =	1395.21	SFT
Area =	155.02	SY

Right Rear Approach

Length =	25.00	ft
Width =	40.00	ft
Area =	111.11	sq yd

Left Forward Approach

Measured Area =	1497.54	SFT
Area =	166.39	SY

Right Forward Approach

Length =	25.00	ft
Width =	40.00	ft
Area =	111.11	sq yd

Left Bridge Approach Slab Area
= **321** SY

Right Bridge Approach Slab Area
= **222** SY

Approach Slab Area = Length x Width
= **543** SY

526-90020 TYPE B INSTALLATION
Measured along skew

Left Rear Approach

Right Rear Approach

ESTIMATED QUANTITIES
(Approaches)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

Length = 60.33 ft

Length = 43.07 ft

Left Forward Approach

Right Forward Approach

Length = 63.53 ft

Length = 42.30 ft

Left Bridge Approach Slab Joint Length
= **124** LF

Right Bridge Approach Slab Joint Length
= **85** LF

Approach Slab Joint Length = Length
= **209** LF

601-21000 CONCRETE SLOPE PROTECTION

Left Rear Approach

Average = 49.4471
Length = 55.29 ft
Width = 79.77 ft
Area = 4410.08 sq ft

Right Rear Approach

Average = 46.16505
Length = 51.61 ft
Width = 61.44 ft
Area = 3171.34 sq ft

Left Forward Approach

Average = 49.4484
Length = 55.28 ft
Width = 82.48 ft
Area = 4559.88 sq ft

Right Forward Approach

Average = 46.1648
Length = 51.61 ft
Width = 61.28 ft
Area = 3162.72 sq ft

Left Bridge Slope Protection Area
= **997** SY

Right Bridge Slope Protection Area
= **704** SY

Total Slope Protection Area = Length x Width
= **1701** SY

607-39900 VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC

Per BDM 309.5.3: 30ft +/- 2.5ft beyond CL of each train track under bridge

Left Bridge, Left Parapet

Length = 75.00 ft

Right Bridge, Left Parapet

Length = 75.00 ft

Left Bridge, Right Parapet

Length = 75.00 ft

Right Bridge, Right Parapet

Length = 75.00 ft

Left Bridge Vandal Fence Length
= **150** FT

Right Bridge Vandal Fence Length
= **150** FT

Total Vandal Fence Length =
= **300** FT

ESTIMATED QUANTITIES
(Bearings)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

516-44201 ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), 14 1/2" x 13" x 3.743", AS PER PLAN

Left Rear Abutment

Number = 7

Right Rear Abutment EQ

Number = 5

Left Forward Abutment

Number = 7

Right Forward Abutment

Number = 5

Left Bridge Bearings
= **14** EACH

Right Bridge Bearings
= **10** EACH

Total Bearings =
= **24** EACH

516-44201 ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), 16.5" x 13" x 3.898", AS PER PLAN

Left Rear Pier

Number = 7

Right Rear Pier

Number = 5

Left Forward Pier

Number = 7

Right Forward Pier

Number = 5

Left Bridge Bearings
= **14** EACH

Right Bridge Bearings
= **10** EACH

Total Bearings =
= **24** EACH

516-47001 JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN

Total = **1** LUMP SUM

ESTIMATED QUANTITIES
(Drainage)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

518-21200 POROUS BACKFILL WITH GEOTEXTILE FABRIC

Width = 2.00 ft

EQ

Left Rear Abutment

Fill Length = 67.302 ft
Average Fill Depth = 9.95 ft
Left Wing Length = 7.00 ft
Average WWA Depth = 10.28 ft
Right Wing Length = 7.00 ft
Average WWB Depth = 7.45 ft
Volume = 59.00 cu yd

Right Rear Abutment

Fill Length = 50.000 ft
Average Fill Depth = 9.56 ft
Left Wing Length = 7.00 ft
Average Left Wing Depth = 9.49 ft
Right Wing Length = 7.00 ft
Average Right Wing Depth = 7.46 ft
Volume = 44.00 cu yd

Left Forward Abutment

Fill Length = 69.875 ft
Average Fill Depth = 11.03 ft
Left Wing Length = 7.00 ft
Average WWC Depth = 10.28 ft
Right Wing Length = 7.00 ft
Average WWD Depth = 7.41 ft
Volume = 66.00 cu yd

Right Forward Abutment

Fill Length = 49.1667 ft
Average Fill Depth = 9.52 ft
Left Wing Length = 7.00 ft
Average Left Wing Depth = 9.40 ft
Right Wing Length = 7.00 ft
Average Right Wing Depth = 7.47 ft
Volume = 43.00 cu yd

Left Bridge Backfill Volume
= **125** CY

Right Bridge Backfill Volume
= **87** CY

Total Backfill Volume = Length x Width x Depth
= **212** CY

518-40000 6" PERFORATED CORRUGATED PLASTIC PIPE

Left Rear Abutment

0.846897
Length = 81.31 ft

Right Rear Abutment

Length = 64.00 ft

Left Forward Abutment

Length = 83.875 ft

Right Forward Abutment

Length = 63.17 ft

Left Bridge Perforated Pipe Length
= **165** LF

Right Bridge Perforated Pipe Length
= **127** LF

Total Pipe Length =
= **292** LF

518-40010 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS

Left Rear Abutment

Length = 18.00 ft

Right Rear Abutment

Length = 12.00 ft

Left Forward Abutment

Length = 18.00 ft

Right Forward Abutment

Length = 12.00 ft

Left Bridge Non-Perforated Pipe Length
= **36** LF

Right Bridge Non-Perforated Pipe Length
= **24** LF

Total Pipe Length = Fill Width + Slope x Depth
= **60** LF

ESTIMATED QUANTITIES
(Concrete)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

511-33500 SEMI-INTEGRAL DIAPHRAGM GUIDE

Left Rear Abutment

Number = 1

Left Forward Abutment

Number = 1

Left Bridge Bearings

= 2 EACH

Total Bearings =

= 4 EACH

Right Rear Abutment EQ

Number = 1

Right Forward Abutment

Number = 1

Right Bridge Bearings

= 2 EACH

511-34446 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK

Left Bridge Deck

Average Length = 172.75 ft
Average Width = 61.00 ft
Thickness = 0.75 ft
Volume = 292.72 cu yd

Left Bridge Left Fascia Beam Haunch

Haunch Depth = 0.28 ft
Average Haunch Area = 458.27 sf
Volume = 4.75 cu yd

Left Bridge Interior Beam Haunch

Number of Beams = 7
Haunch Depth = 1.50 in
Haunch Width = 12.00 in
Haunch Length = 164.88 ft
Volume = 5.34 cu yd

Left Bridge Right Fascia Beam Haunch

Haunch Depth = 0.19 ft
Average Haunch Area = 368.81 sf
Volume = 2.64 cu yd

Left Rear End Diaphragm

Depth 1 = 2.02 ft
Width 1 = 3.25 ft
Depth 2 = 2.16 ft
Width 2 = 3.75 ft
Length = 63.9271 ft
Volume = 34.75 cu yd

Left Forward End Diaphragm

Depth 1 = 2.01 ft
Width 1 = 3.25 ft
Depth 2 = 2.19 ft
Width 2 = 3.75 ft
Length = 66.6354 ft
Volume = 36.38 cu yd

Left Bridge Deck Concrete Volume

= 377 CY

Right Bridge Deck

Average Length = 161.25 ft
Average Width = 43.33 ft
Thickness = 0.73 ft
Volume = 188.69 cu yd

Right Bridge Left Fascia Beam Haunch

Haunch Depth = 0.25 ft
Average Haunch Area = 439.33 sf
Volume = 4.07 cu yd

Right Bridge Interior Beam Haunch

Number of Beams = 5
Haunch Depth = 2.00 in
Average Haunch Width = 12.00 in
Haunch Length = 154.38 ft
Volume = 4.76 cu yd

Right Bridge Right Fascia Beam Haunch

Haunch Depth = 0.25 ft
Average Haunch Area = 327.86 sf
Volume = 3.04 cu yd

Right Rear End Diaphragm

Depth 1 = 2.04 ft
Width 1 = 3.25 ft
Depth 2 = 2.18 ft
Width 2 = 3.75 ft
Length = 46.6354 ft
Volume = 25.54 cu yd

Right Forward End Diaphragm

Depth 1 = 2.02 ft
Width 1 = 3.25 ft
Depth 2 = 2.20 ft
Width 2 = 3.75 ft
Length = 45.9271 ft
Volume = 25.19 cu yd

Right Bridge Deck Concrete Volume

= 251 CY

Total Deck Concrete Volume = Length x Width x Depth

= 628 CY

ESTIMATED QUANTITIES
(Concrete)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

511-34450 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)

Parapet Area = 588.00 sq in
Transition Volume = 1.82 cu yd

Left Bridge Left Parapet

Number of Transitions = 2
Length = 146.38 ft
Volume = 25.78 cu yd

Right Bridge Left Parapet

Number of Transitions = 2
Length = 134.63 ft
Volume = 24.00 cu yd

Left Bridge Right Parapet

Number of Transitions = 2
Length = 145.44 ft
Volume = 25.64 cu yd

Right Bridge Right Parapet

Number of Transitions = 2
Length = 134.94 ft
Volume = 24.05 cu yd

Left Bridge Parapet Concrete Volume
= **51** CY

Right Bridge Parapet Concrete Volume
= **48** CY

Total Parapet Volume = Length x Area
= **99** CY

511-43210 CLASS QC1 CONCRETE, PIER

Pier Cap Width = 3.00 ft

Left Bridge

	Pier 1 Prop. Beam Seat	Beam Seat Width (ft)	Pier 1 Exist. Beam Seat. From 105571_FB001.dgn	Beam Seat Width (ft)	Pier 2 Prop. Beam Seat	Beam Seat Width (ft)	Pier 2 Exist. Beam Seat. From 105571_FB001.dgn	Beam Seat Width (ft)
Beam 1	1037.19	3.5521	1036.199	4.0469	1037.61	3.5521	1036.642	4.0469
Beam 2	1036.79	8.6250	1035.799	8.6250	1037.16	9.6771	1036.222	9.6771
Beam 3	1036.33	9.9427	1035.338	9.9448	1036.71	9.9427	1035.772	9.9448
Beam 4	1035.87	9.9427	1034.913	9.9448	1036.25	9.9427	1035.276	9.9448
Beam 5	1035.40	9.9427	1034.443	9.9448	1035.79	9.9427	1034.841	9.9448
Beam 6	1034.94	9.9427	1033.970	9.9448	1035.34	9.9427	1034.390	9.9448
Beam 7	1034.48	10.5000	1033.504	9.9969	1034.88	10.5000	1033.905	9.9969
Beam 1		3.5521		4.0469		3.5521		4.0469
Beam 2		12.1771		12.6719		13.2292		13.7240
Beam 3		22.1198		22.6167		23.1719		23.6688
Beam 4		32.0625		32.5615		33.1146		33.6135
Beam 5		42.0052		42.5063		43.0573		43.5583
Beam 6		51.9479		52.4510		53.0000		53.5031
Beam 7		62.4479		62.4479		63.5000		63.5000

Height (LFT)	Width (LFT)	Area (SFT)
0.991	3.5521	3.5201
0.591	0.4948	0.2924
0.992	8.1302	8.0611
0.532	0.4948	0.2630
0.992	9.4479	9.3771
0.532	0.4969	0.2646
0.957	9.4458	9.0444
0.488	0.4990	0.2432
0.957	9.4438	9.0377
0.497	0.5010	0.2490
0.970	9.4417	9.1631
0.510	0.5031	0.2568
0.976	9.9969	9.7570
		59.5295

Pier 1 Volume = 178.5885 CFT

Height (LFT)	Width (LFT)	Area (SFT)
0.968	3.5521	3.4384
0.518	0.4948	0.2563
0.938	9.1823	8.6176
0.488	0.4948	0.2417
0.938	9.4479	8.8621
0.478	0.4969	0.2375
0.974	9.4458	9.2002
0.514	0.4990	0.2565
0.949	9.4438	8.9668
0.499	0.5010	0.2503
0.950	9.4417	8.9743
0.491	0.5031	0.2468
0.976	9.9969	9.7520
		59.3005

Pier 2 Volume = 177.9015 CFT

=	6.6144	CYD	=	6.5889	CYD	

Total Left Pier Column = **14.00** **CYD**

Right Bridge

	Pier 1 Prop. Beam Seat	Beam Seat Width (ft)	Pier 1 Exist. Beam Seat. From 105571_FB001.dgn	Beam Seat Width (ft)	Pier 2 Prop. Beam Seat	Beam Seat Width (ft)	Pier 2 Exist. Beam Seat. From 105571_FB001.dgn	Beam Seat Width (ft)
Beam 8	1034.8	3.5521	1033.793	4.0521	1035.23	3.5521	1034.266	4.0521
Beam 9	1034.33	9.9375	1033.308	9.9753	1034.77	9.9375	1033.821	9.9753
Beam 10	1033.86	9.9375	1032.882	9.9753	1034.3	9.9375	1033.354	9.9753
Beam 11	1033.39	9.9375	1032.397	9.9753	1033.84	9.9375	1032.892	9.9753
Beam 12	1032.93	10.6354	1031.934	10.0221	1033.38	10.6354	1032.441	10.0221
Beam 8		3.5521		4.0521		3.5521		4.0521
Beam 9		13.4896		14.0273		13.4896		14.0273
Beam 10		23.4271		24.0026		23.4271		24.0026
Beam 11		33.3646		33.9779		33.3646		33.9779
Beam 12		44.0000		44.0000		44.0000		44.0000

Height (LFT	Width (LFT)	Area (SFT)
1.007	3.5521	3.5784
0.537	0.5000	0.2687
1.023	9.4375	9.6498
0.553	0.5378	0.2971
0.978	9.3997	9.1976
0.509	0.5755	0.2927
0.994	9.3620	9.3011
0.534	0.6133	0.3272
0.996	10.0221	9.9820
		42.8947

Height (LFT	Width (LFT)	Area (SFT)
0.965	3.5521	3.4260
0.505	0.5000	0.2523
0.949	9.4375	8.9562
0.479	0.5378	0.2576
0.947	9.3997	8.8969
0.486	0.5755	0.2800
0.948	9.3620	8.8752
0.488	0.6133	0.2993
0.939	10.0221	9.4158
		40.6591

Pier 1 Volume =	128.6840	CFT	Pier 2 Volume =	121.9773	CFT
=	4.7661	CYD	=	4.5177	CYD

Total Right Pier Column = **10.00** **CYD**

Total Pier Column = **24.00** **CYD**

511-45710 CLASS QC1 CONCRETE, ABUTMENT

Abutment Seat Width = 3.75 ft
Wingwall Width = 2.50 ft
Abutment Pile Cap Width = 0.00 ft
Abutment Pile Cap Depth = 0.00 ft

Left Bridge Rear Abutment Seat

Length 1 = 64.28125 ft
Average Depth 1 = 1.14 ft
Volume 1 = 10.22 cu yd

Area below shear key = 6.7292 SFT
Volume 2 = 0.93 cu yd

Length 3 = 1.985 ft
Average Depth 3 = 4.55 ft
Volume 3 = 1.25 cu yd

Length 4 = 0.6635 ft
Depth 4 = 7.40 ft
Volume 4 = 0.68 cu yd

Right Bridge Rear Abutment Seat

Avg. Prop. Beam Seat El. = 1032.875
Avg. Removal Depth El. = 1031.75
Depth = 1.125 FT
Length = 47.010 FT
Volume 1 = 7.345 CY

Area below Shear Key = 6.828 SFT
Volume 2 = 0.948 CY

Elevation = 1030.73
Top of Footing El. = 1026.15
Length = 1.771 FT
Volume 3 = 1.127 CY

Elevation = 1032.77
Top of Footing El. = 1026.15
Length = 1.052 FT
Volume 4 = 0.967 CY

Left Bridge WWA

Top of WW El. = 1041.53
Elevation = 1038.03

Right Bridge WWE

Top of WW El. = 1039.15
Elevation = 1035.65

ESTIMATED QUANTITIES
(Concrete)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

Length =	1.4948	FT
Volume 1 =	0.4844	CYD
Top of WW El. =	1041.53	
Elevation =	1038.03	
Length =	7.00	FT
Volume 2 =	1.134	CYD
Depth =	1.8125	FT
Length =	8.4948	FT
Volume 3 =	1.4256	CYD
CJ Elevation =	1036.22	
Bottom of WW Elevation =	1027.5	
Length =	8.4948	FT
Volume 4 =	6.8588	CYD

Length =	1.4948	FT
Volume 1 =	0.4844	CY
Top of WW El. =	1039.15	
Elevation =	1035.65	
Length =	7.00	FT
Volume 2 =	1.134	CY
Depth =	1.8333	FT
Length =	8.4948	FT
Volume 3 =	1.4420	CY
CJ Elevation =	1033.82	
Bottom of WW Elevation =	1025.9	
Length =	8.4948	FT
Volume 4 =	6.2295	CY

Left Bridge WWB

Top of WW El. =	1038.7	
Elevation =	1035.2	
Length =	1.4896	FT
Volume 1 =	0.4827	CY
Top of WW El. =	1038.7	
Elevation =	1035.2	
Length =	7.00	FT
Volume 2 =	1.134	CY
Depth =	1.6771	FT
Length =	8.4896	FT
Volume 3 =	1.3183	CY
CJ Elevation =	1033.52	
Bottom of WW Elevation =	1027.5	
Length =	8.4896	FT
Volume 4 =	4.7322	CY

Right Bridge WWF

Top of WW El. =	1037.11	
Elevation =	1033.61	
Length =	1.5000	FT
Volume 1 =	0.4861	CY
Top of WW El. =	1037.11	
Elevation =	1033.61	
Length =	7.00	FT
Volume 2 =	1.134	CY
Depth =	1.6771	FT
Length =	8.50	FT
Volume 3 =	1.3199	CY
CJ Elevation =	1031.93	
Bottom of WW Elevation =	1025.9	
Length =	8.50	FT
Volume 4 =	4.7458	CY

Left Bridge Forward Abutment Seat

Avg. Prop. Beam Seat El. =	1035.935	
Avg. Removal Depth El. =	1034.815	
Depth =	1.12	FT
Length =	67.01042	FT
Volume 1 =	10.424	CY
Area below Shear Key =	7.5868	SFT
Volume 2 =	1.054	CY
Elevation =	1036.23	
Top of Footing El. =	1028.85	
Length =	1.8385	FT
Volume 3 =	1.884	CY
Elevation =	1033.4	
Top of Footing El. =	1028.85	
Length =	1.7135	FT
Volume 4 =	1.083	CY

Right Bridge Forward Abutment Seat

Avg. Prop. Beam Seat El. =	1034.025	
Avg. Removal Depth El. =	1032.925	
Depth =	1.1	FT
Length =	46.28125	FT
Volume 1 =	7.071	CY
Area below Shear Key =	7.0590	SFT
Volume 2 =	0.980	CY
Elevation =	1033.89	
Top of Footing El. =	1027.35	
Length =	1.99	FT
Volume 3 =	1.808	CY
Elevation =	1031.96	
Top of Footing El. =	1027.35	
Length =	0.5675	FT
Volume 4 =	0.363	CY

Left Bridge WWC

Top of WW El. =	1042.63	
Elevation =	1039.13	
Length =	1.4531	FT
Volume 1 =	0.4709	CY
Top of WW El. =	1042.63	
Elevation =	1039.13	
Length =	7.00	FT
Volume 2 =	1.134	CY
Depth =	1.8333	FT
Length =	8.4531	FT
Volume 3 =	1.4349	CY

Right Bridge WWG

Top of WW El. =	1040.25	
Elevation =	1036.75	
Length =	1.4375	FT
Volume 1 =	0.4659	CY
Top of WW El. =	1040.25	
Elevation =	1036.75	
Length =	7.00	FT
Volume 2 =	1.134	CY
Depth =	1.8125	FT
Length =	8.4375	FT
Volume 3 =	1.4160	CY

ESTIMATED QUANTITIES
(Concrete)

Made By: TNL
Date: 10/06/2021
Checked By: SW
Date: 7/1/2022

CJ Elevation =	1037.3	
Bottom of WW Elevation =	1028.6	
Length =	8.4531	FT
Volume 4 =	6.8095	CY

CJ Elevation =	1034.94	
Bottom of WW Elevation =	1027.1	
Length =	8.4375	FT
Volume 4 =	6.1250	CY

Left Bridge WWD

Top of WW El. =	1039.76	
Elevation =	1036.26	
Length =	1.4323	FT
Volume 1 =	0.4642	CY
Top of WW El. =	1039.76	FT
Elevation =	1036.26	FT
Length =	7.00	FT
Volume 2 =	1.134	CY
Depth =	1.6875	FT
Length =	8.4323	FT
Volume 3 =	1.3175	CY
CJ Elevation =	1034.57	
Bottom of WW Elevation =	1028.6	
Length =	8.4323	FT
Volume 4 =	4.6612	CY

Left Bridge Abutment Concrete Volume
= **62** CY

Right Bridge WWH

Top of WW El. =	1038.32	
Elevation =	1034.82	
Length =	1.4427	FT
Volume 1 =	0.4675	CY
Top of WW El. =	1038.32	FT
Elevation =	1034.82	FT
Length =	7.00	FT
Volume 2 =	1.134	CY
Depth =	1.7083	FT
Length =	8.4427	FT
Volume 3 =	1.3355	CY
CJ Elevation =	1033.11	
Bottom of WW Elevation =	1027.1	
Length =	8.4427	FT
Volume 4 =	4.6982	CY

Right Bridge Abutment Concrete Volume
= **54** CY

Total Abutment Volume = Length x Width x Height
= **116** CY

519-11100 PATCHING CONCRETE STRUCTURE

Left Rear Abutment

Area = 0.00 sq ft

Left Rear Pier

Area = 0.00 sq ft

Left Forward Pier

Area = 0.00 sq ft

Left Forward Abutment

Area = 19.00 sq ft

Left Bridge Concrete Patching Area
= **19** SF

Right Rear Abutment

Area = 0.00 sq ft

Right Rear Pier

Area = 0.00 sq ft

Right Forward Pier

Area = 0.00 sq ft

Right Forward Abutment

Area = 8.00 sq ft

Right Bridge Concrete Patching Area
= **8** SF

Total Concrete Patching Area = Width x Height
= **27** SF