BRIDGE: CUY-480-0647 **SFN:** 1812831

CALCULATED BY: ERK **DATE:** 06/03/19
CHECKED BY: MTJ **DATE:** 06/07/19

CARPENTER MARTY transportation

ESTIMATED QUANTITIES

ITEM	ITEM EXT.	DESCRIPTION
514E00050		SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL

Main Girders

	WESTBOUND	EASTBOUND	
Webs:			*See sheet 32/53 of original plans*
Elevation area =	16,440.28 ft^2	16,805.33 ft^2	
Number of girders =	3 each	3 each	
Number of sides =	2 each	2 each	
Area =	98,641.70 ft^2	100,831.96 ft^2	
Top flanges:			*See sheet 32/53 of original plans*
Exterior top flange width =	20.00 in	20.00 in	
Interior top flange width =	24.00 in	24.00 in	
Top flange length=	1474.00 ft	1510.00 ft	
Number of exterior girders =	2 each	2 each	*Girders GA, GC, GD, GF*
Number of interior girders =	1 each	1 each	*Girders GB, GE*
Area =	7,861.33 ft^2	8,053.33 ft^2	
Bottom flanges:			*See sheet 32/53 of original plans*
Exterior bottom flange width =	20.00 in	20.00 in	
Interior bottom flange width =	24.00 in	24.00 in	
Bottom flange length=	1478.08 ft	1514.02 ft	
Number of exterior girders =	2 each	2 each	*Girders GA, GC, GD, GF*
Number of interior girders =	1 each	1 each	*Girders GB, GE*
Area =	15,766.21 ft^2	16,149.51 ft^2	

Intermediate Stiffeners: *See sheet 33/53 of original plans*

	WESTBOUND	EASTBOUND	
Total stiffener length (exterior) span 1 =	91.14 ft	130.93 ft	*Girders GA, GF*
Total stiffener length (exterior) span 2 =	176.28 ft	176.28 ft	*Girders GA, GF*
Total stiffener length (exterior) span 3 =	185.43 ft	185.43 ft	*Girders GA, GF*
Total stiffener length (exterior) span 4 =	208.63 ft	208.63 ft	*Girders GA, GF*
Total stiffener length (exterior) span 5 =	208.63 ft	208.63 ft	*Girders GA, GF*
Total stiffener length (exterior) span 6 =	208.63 ft	208.63 ft	*Girders GA, GF*
Total stiffener length (exterior) span 7 =	185.43 ft	185.43 ft	*Girders GA, GF*
Total stiffener length (exterior) span 8 =	145.21 ft	145.21 ft	*Girders GA, GF*
Total stiffener length (exterior) span 9 =	62.34 ft	62.34 ft	*Girders GA, GF*
Total stiffener length (interior) span 1 =	232.77 ft	332.22 ft	*Girders GB, GC,GD, GE*
Total stiffener length (interior) span 2 =	444.39 ft	444.39 ft	*Girders GB, GC,GD, GE*
Total stiffener length (interior) span 3 =	464.30 ft	464.30 ft	*Girders GB, GC,GD, GE*
Total stiffener length (interior) span 4 =	522.24 ft	522.24 ft	*Girders GB, GC,GD, GE*
Total stiffener length (interior) span 5 =	522.24 ft	522.24 ft	*Girders GB, GC,GD, GE*
Total stiffener length (interior) span 6 =	522.24 ft	522.24 ft	*Girders GB, GC,GD, GE*
Total stiffener length (interior) span 7 =	464.30 ft	464.30 ft	*Girders GB, GC,GD, GE*
Total stiffener length (interior) span 8 =	363.74 ft	363.74 ft	*Girders GB, GC,GD, GE*
Total stiffener length (interior) span 9 =	160.23 ft	160.23 ft	*Girders GB, GC,GD, GE*
Exterior girder Stiffener width =	9.00 in	9.00 in	*Girders GA, GF*
Exterior girder Stiffener thickness =	0.56 in	0.56 in	*Girders GA, GF*
Interior girder Stiffener width =	8.00 in	8.00 in	*Girders GB, GC,GD, GE*
Interior girder Stiffener thickness =	0.50 in	0.50 in	*Girders GB, GC,GD, GE*
Exterior girder stiffener area =	7994.47 ft^2	8209.86 ft^2	*Girders GA, GF*
Interior girder stiffener area =	20330.46 ft^2	20877.46 ft^2	*Girders GB, GC,GD, GE*
Area =	28,324.93 ft^2	29,087.32 ft^2	

Longitudinal Stiffeners:

	WESTBOUND	EASTBOUND	
Top:			*See sheet 34/53 of original plans*
Length span 1 =	63.13 ft	102.92 ft	
Length span 2 =	107.33 ft	107.33 ft	
Length span 3 =	96.25 ft	96.25 ft	
Length span 4 =	110.08 ft	110.08 ft	
Length span 5 =	110.83 ft	110.83 ft	
Length span 6 =	110.08 ft	110.08 ft	
Length span 7 =	99.75 ft	99.75 ft	
Length span 8 =	96.25 ft	96.25 ft	
Length span 9 =	49.92 ft	49.92 ft	
Stiffener width =	5.00 in	5.00 in	
Stiffener thickness =	0.38 in	0.38 in	
Number of sides (exterior) =	1 each	1 each	*Girders GA, GF*
Number of exterior girders =	1 each	1 each	*Girders GA, GF*
Number of sides (interior) =	2 each	2 each	*Girders GB, GC,GD, GE*
Number of interior girders =	2 each	2 each	*Girders GB, GC,GD, GE*
Area =	3646.92 ft^2	3818.94 ft^2	
Bottom:			*See sheet 34/53 of original plans*
Length span 1 =	48.20 ft	51.92 ft	
Length span 2 =	96.37 ft	96.37 ft	
Length span 3 =	103.68 ft	103.68 ft	
Length span 4 =	99.22 ft	99.22 ft	
Length span 5 =	107.44 ft	107.44 ft	
Length span 6 =	99.25 ft	99.25 ft	
Length span 7 =	103.69 ft	103.69 ft	
Length span 8 =	81.52 ft	81.52 ft	
Length span 9 =	41.20 ft	41.20 ft	
Stiffener width =	5.00 in	5.00 in	
Stiffener thickness =	0.38 in	0.38 in	
Number of sides (exterior) =	1 each	1 each	*Girders GA, GF*
Number of exterior girders =	1 each	1 each	*Girders GA, GF*
Number of sides (interior) =	2 each	2 each	*Girders GB, GC,GD, GE*
Number of interior girders =	2 each	2 each	*Girders GB, GC,GD, GE*
Area =	3374.33 ft^2	3390.42 ft^2	

Stringers: *See Sheet 40/53 of original plans*

	WESTBOUND	EASTBOUND	
12WF45			
Flange width =	8.04 in	8.04 in	
Beam depth =	12.06 in	12.06 in	
Total stringer length =	1469.25 ft	1505.25 ft	*S-6 and S-7*
Area =	5,907.12 ft^2	6,051.86 ft^2	
21WF55			
Flange width =	8.22 in	8.22 in	
Beam depth =	20.80 in	20.80 in	
Total stringer length =	5533.33 ft	5677.33 ft	*S-2, S-3, S-4, S-5, S-8, S-9, S-10, S-11*
Area =	30,546.30 ft^2	31,341.24 ft^2	
21WF62			
Flange width =	8.24 in	8.24 in	
Beam depth =	20.99 in	20.99 in	
Total stringer length =	343.67 ft	343.67 ft	*S-2, S-3, S-4, S-5, S-8, S-9, S-10, S-11 @ hinge top gap*
Area =	1,910.22 ft^2	1,910.22 ft^2	
22'-2" Exterior			
Elevation area =	31.01 ft^2	31.01 ft^2	
Top flange length =	22.17 ft	22.17 ft	
Bottom flange length =	22.21 ft	22.21 ft	
Flange thickness =	0.38 in	0.38 in	
Flange width =	6.50 in	6.50 in	
Area per section =	98.09 ft^2	98.09 ft^2	
Number of sections =	59 each	59 each	*S-1 and S-12*
Area =	5,787.19 ft^2	5,787.19 ft^2	
22'-6" Exterior			
Elevation area =	31.46 ft^2	31.46 ft^2	
Top flange length =	22.50 ft	22.50 ft	
Bottom flange length =	22.54 ft	22.54 ft	
Flange thickness =	0.38 in	0.38 in	
Flange width =	6.50 in	6.50 in	
Area per section =	99.54 ft^2	99.54 ft^2	
Number of sections =	3 each	3 each	*S-1 and S-12*
Area =	298.61 ft^2	298.61 ft^2	

19'-9" Exterior			
Elevation area =		27.72 ft^2	
Top flange length =		19.75 ft	
Bottom flange length =		19.80 ft	
Flange thickness =		0.38 in	
Flange width =		6.50 in	
Area per section =		87.59 ft^2	
Number of sections =		2 each	*S-12*
Area =		175.17 ft^2	
15'-0" End Exterior			
Elevation area =	22.05 ft^2		
Top flange length =	15.00 ft		
Bottom flange length =	15.01 ft		
Flange thickness =	0.38 in		
Flange width =	6.50 in		
Area per section =	68.48 ft^2		
Number of sections =	1 each		*S-1*
Area =	68.48 ft^2		
21'-6.5" End Exterior			
Elevation area =	31.59 ft^2	31.59 ft^2	
Top flange length =	21.54 ft	21.54 ft	
Bottom flange length =	21.55 ft	21.55 ft	
Flange thickness =	0.38 in	0.38 in	
Flange width =	6.50 in	6.50 in	
Area per section =	98.18 ft^2	98.18 ft^2	
Number of sections =	2 each	2 each	*S-1 and S-12*
Area =	196.37 ft^2	196.37 ft^2	
21'-5" End Exterior			
Elevation area =	31.40 ft^2	31.40 ft^2	
Top flange length =	21.42 ft	21.42 ft	
Bottom flange length =	21.43 ft	21.43 ft	
Flange thickness =	0.38 in	0.38 in	
Flange width =	6.50 in	6.50 in	
Area per section =	97.62 ft^2	97.62 ft^2	
Number of sections =	2 each	2 each	*S-1 and S-12*
Area =	195.23 ft^2	195.23 ft^2	
15'-2" End Exterior			
Elevation area =	22.29 ft^2	22.29 ft^2	
Top flange length =	15.17 ft	15.17 ft	
Bottom flange length =	15.18 ft	15.18 ft	
Flange thickness =	0.38 in	0.38 in	
Flange width =	6.50 in	6.50 in	
Area per section =	69.24 ft^2	69.24 ft^2	
Number of sections =	1 each	1 each	*S-1 and S-12*
Area =	69.24 ft^2	69.24 ft^2	
11'-6" End Exterior			
Elevation area =		16.94 ft^2	
Top flange length =		11.50 ft	
Bottom flange length =		11.52 ft	
Flange thickness =		0.38 in	
Flange width =		6.50 in	
Area per section =		52.59 ft^2	
Number of sections =		1 each	*S-12*
Area =		52.59 ft^2	
Total stringer area =	44,978.76 ft^2	46,077.72 ft^2	
Floor beams:			*See sheet 39/53 of original plans*
	WESTBOUND	EASTBOUND	
Elevation area =	204.26 ft^2	204.26 ft^2	
Bottom of top flange length =	71.23 ft	71.23 ft	
Top of top flange length =	42.06 ft	42.06 ft	
Top flange width =	10.00 in	10.00 in	
Bottom flange length =	70.23 ft	70.23 ft	
Bottom flange width =	10.00 in	10.00 in	
Total length of stiffeners =	81.72 ft	81.72 ft	
Width of stiffeners =	4.50 in	4.50 in	
Number of floor beams =	69 each	71 each	*All floor beams except 32*
Area per floor beam =	681.28 ft^2	681.28 ft^2	
Area =	47,008.06 ft^2	48,370.61 ft^2	

See sheet 39/53 of original plans, Detail "Z"

Extended floor beam (32):

	WESTBOUND	EASTBOUND	
Elevation area =	211.48 ft^2	211.48 ft^2	
Bottom of top flange length =	73.73 ft	73.73 ft	
Top of top flange length =	42.06 ft	42.06 ft	
Top flange width =	10.00 in	10.00 in	
Bottom flange length =	72.66 ft	72.66 ft	
Bottom flange width =	10.00 in	10.00 in	
Total length of stiffeners =	84.92 ft	84.92 ft	
Width of stiffeners =	4.50 in	4.50 in	
Number of floor beams =	1 each	1 each	*Floor beam 32*
Area per floor beam =	704.25 ft^2	704.25 ft^2	
Area =	704.25 ft^2	704.25 ft^2	

See sheets 30/53, 31/53, 37/53 of original plans

Bottom lateral bracing:

	WESTBOUND	EASTBOUND
Beam section =	ST 6 WF13.5	ST 6 WF13.5
Beam flange width =	6.50 in	6.50 in
Beam height =	5.98 in	5.98 in
Length of member =	33.79 ft	33.80 ft
Number of members =	116 each	116 each
Length of member =	29.58 ft	27.97 ft
Number of members =	2 each	2 each
Length of member =	33.38 ft	33.38 ft
Number of members =	4 each	4 each
Length of member =	33.30 ft	33.30 ft
Number of members =	4 each	4 each
Length of member =	34.01 ft	34.01 ft
Number of members =	6 each	6 each
Length of member =	29.67 ft	29.67 ft
Number of members =	2 each	2 each
Length of member =		32.25 ft
Number of members =		4 each
Area =	9,378.00 ft^2	9,642.06 ft^2

See sheets 29/53, 30/53, 31/53 and 37/53 of original plans

Floor beam struts:

	WESTBOUND	EASTBOUND
Beam section =	8WF31	8WF31
Beam flange width =	8.00 in	8.00 in
Beam height =	8.00 in	8.00 in
Length of member =	25.50 ft	25.50 ft
Number of members =	140 each	144 each
Area =	9,520.00 ft^2	9,792.00 ft^2

See sheet 29/53 of original plans

Vertical bracing:

	WESTBOUND	EASTBOUND
Beam section =	ST 5 WF 10.5	ST 5 WF 10.5
Beam flange width =	5.75 in	5.75 in
Beam height =	5.13 in	5.13 in
Total length of members =	733.41 ft	753.30 ft
Area =	1,329.30 ft^2	1,365.36 ft^2

See sheet 29/53 of original plans

Stringer cross frames:

	WESTBOUND	EASTBOUND
Cross frame member section =	L3x3x5/16	L3x3x5/16
Angle leg length =	3.00 in	3.00 in
Angle leg length =	3.00 in	3.00 in
Length of straight member =	8.50 ft	8.50 ft
Length of diagonal member =	8.64 ft	8.64 ft
Area per cross frame =	25.78 ft^2	25.78 ft^2
Number of cross frames =	134 each	138 each
Area =	3,454.52 ft^2	3,557.64 ft^2

Knee braces: *See sheet 35/53 of original plans*

	EXTERIOR GIRDER (GA, GC, GD, GF)	INTERIOR GIRDER (GB, GE)
Knee brace 1 Elevation area =	12.53 ft^2	11.92 ft^2
Knee brace 1 Flange length =	10.68 ft	9.91 ft
Knee brace 1 Flange width =	10.00 in	10.00 in
Knee brace 1 area =	171.41 ft^2	80.70 ft^2
Knee brace 8 Elevation area =	25.23 ft^2	25.25 ft^2
Knee brace 8 Flange length =	20.57 ft	19.80 ft
Knee brace 8 Flange width =	10.00 in	10.00 in
Knee brace 8 area =	338.98 ft^2	167.00 ft^2
Knee brace 16, 24, 34, 43, 53, 61 Elevation area =	29.05 ft^2	29.25 ft^2
Knee brace 16, 24, 34, 43, 53, 61 Flange length =	23.55 ft	22.79 ft
Knee brace 16, 24, 34, 43, 53, 61 Flange width =	10.00 in	10.00 in
Knee brace 16, 24, 34, 43, 53, 61 area =	2,336.34 ft^2	1,157.75 ft^2
Knee brace 68 Elevation area =	20.15 ft^2	19.92 ft^2
Knee brace 68 Flange length =	16.59 ft	15.82 ft
Knee brace 68 Flange width =	10.00 in	10.00 in
Knee brace 68 area =	271.83 ft^2	132.41 ft^2
Knee brace 72 Elevation area =	9.98 ft^2	9.25 ft^2
Knee brace 72 Flange length =	8.75 ft	7.98 ft
Knee brace 72 Flange width =	10.00 in	10.00 in
Knee brace 72 area =	138.18 ft^2	63.59 ft^2
Average intermediate knee brace Elevation area =	15.77 ft^2	15.61 ft^2
Average intermediate knee brace Flange length =	14.08 ft	13.30 ft
Average intermediate knee brace Flange width =	10.00 in	10.00 in
Average intermediate knee brace area =	220.06 ft^2	106.76 ft^2
Number of intermediate knee braces =	118 each	
Area =	43,424.11 ft^2	

Total area = 598,253.53 ft^2
Contigency (2%) = 11,965.07 ft^2
Total with contingency = 610,218.60 ft^2

Total Quantity = 610300 SF

514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT

Total Quantity = 610300 SF

514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT

Total Quantity = 610300 SF

514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

Total Quantity = 610300 SF

514E00504 GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL

Length of girder to grind = 1474.00 ft
Number of girders = 3 each
Length of girder to grind = 1510.00 ft
Number of girders = 3 each
Total length of stringers to grind = 17879.83 ft
Length of floor beam to grind = 69.83 ft
Number of floor beams = 140 each
Length of floor beam to grind = 72.33 ft
Number of floor beams = 2 each
Total length of beams for grinding = 36753.17 ft
Additional 5% for bracing = 1837.66 ft

Total time for griding = 643.18 manhours

Total Quantity = 650 MNHR

514E10000	FINAL INSPECTION REPAIR

Length of beam to inspect =	1474.00 ft
Number of beams =	3 each
Length of beam to inspect =	1510.00 ft
Number of beams =	3 each
Total length of stringers to inspect =	17879.83 ft
Length of floor beam to inspect =	69.83 ft
Number of floor beams =	140 each
Length of floor beam to inspect =	72.33 ft
Number of floor beams =	2 each
Total length of beams for inspection =	36753.17 ft
Per CMS, inspection every =	150.00 ft
Quantity of inspections for beams =	246 each
Number of cross frames =	970 each
Per CMS, inspection for 5% of cross frames =	5%
Quantity of inspections for cross frames =	49 each
Total Quantity =	300 EACH