

ROUTE	STATION		WIDTH	SIDE	LENGTH	SURFACE AREA (CA = CADD GENERATED AREA)	442	407	442		302	452	304	206	206	206	206	206	254		441	441	302	202	
							T=1.50"	DEPTH	T=1.75"		T=7.50"	DEPTH	T=6.00"	DEPTH	T=12.00"	T=14.00"	DEPTH		DEPTH		T=1.50"	T=1.75"	T=6.00"	DEPTH	
							ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (447), AS PER PLAN	NON-TRACKING TACK COAT (0.055 GAL/SY)	ASPHALT CONCRETE INTERMEDIATE COURSE, 12.5 MM, TYPE A (446)		ASPHALT CONCRETE BASE, PG64-22, (449), AS PER PLAN	11.5" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	AGGREGATE BASE	CEMENT	CEMENT STABILIZED SUBGRADE, 12 INCHES DEEP	CEMENT STABILIZED SUBGRADE, 14 INCHES DEEP	TEST ROLLING	CURING COAT		PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN		ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446) PG64-22, AS PER PLAN	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (446)	ASPHALT CONCRETE BASE, PG64-22, (449), AS PER PLAN	PAVEMENT REMOVED
FROM	TO	FT	FT	SF	CY	GAL	CY	CY	SY	CY	TON	SY	SY	HOUR	SY	SY	SY	SY	CY	CY	CY	SY			
SUM-77 SOUTHBOUND																									
IR77	1013+19.91	1025+18.00	NA	LT	1198.1	CA=17347.3	80.4	212.1	93.7		401.6		321.3	49.9	1927.5		1	1927.5							
IR77	1024+74.55	1025+18.00	NA	LT	43.5	CA=356.7	1.7	4.4	2		8.3		6.7	1.1	39.7		0.1	39.7							
IR77	1025+18.00	1026+08.13	NA	LT	90.2	CA=3731.3	17.3	45.7	20.2		86.4		69.1	10.8	414.6		0.3	414.6							
IR77	1028+12.15	1029+35.11	8	LT	123.0	983.7	4.6	12.1	5.4		22.8		18.3	2.9	109.3		0.1	109.3							
IR77	1028+16.36	1028+92.07	NA	LT	75.8	CA=2722.4	12.7	33.3	14.8		63.1		50.5	7.9	302.5		0.2	302.5							
IR77	1028+92.07	1030+77.63	NA	LT	185.6	CA=5151.0	23.9	63	27.9		119.3		95.4	14.9	572.4		0.3	572.4							
IR77	1028+95.00	1036+97.98	2.5	LT	808.5	2021.3		12.4	11		53.1		52.5	8.2	314.5		0.2	314.5							
IR77	1028+92.07	1066+75.00	36	LT	3783.0	136185.5	630.5	1664.5	735.6		3152.5		2522	391.6	15131.8		7.6	15131.8							
IR77	1028+92.07	1066+75.00	12	LT	3783.0	45395.2	210.2	554.9	245.2		1050.9		840.7	130.6	5044		2.6	5044							
IR77	1029+35.11	1029+85.13	NA	LT	50.1	CA=355.7	1.7	4.4	2		8.3		6.6	1.1	39.6		0.1	39.6							
IR77	1029+85.13	1030+73.50	6	LT	88.4	530.3	2.5	6.5	2.9		12.3		9.9	1.6	59		0.1	59							
IR77	1030+77.63	1066+75.00	10	LT	3597.4	35973.7	166.6	439.7	194.4		832.8		666.2	103.5	3997.1		2	3997.1							
IR77	1066+75.00	1068+75.00	NA	LT	200.0	CA=7241.8	33.6	88.6	39.2		167.7		134.2	20.9	804.7		0.5	804.7							
IR77	1066+75.00	1068+75.00	NA	LT	200.0	CA=2531.3	11.8	31	13.7		58.6		46.9	7.3	281.3		0.2	281.3							
IR77	1066+75.00	1068+75.00	NA	LT	200.0	CA=2370.9	11	29	12.9		54.9		44	6.9	263.5		0.2	263.5							
SUM-77 NORTHBOUND																									
IR77	1012+78.85	1026+40.00	NA	RT	1361.2	CA=17891	82.9	218.7	96.7		414.2		331.4	51.5	1987.9		1	1987.9							
IR77	1026+40.00	1027+02.72	NA	RT	62.8	CA=2113.4	9.8	25.9	11.5		49		39.2	6.1	234.9		0.2	234.9							
IR77	1029+16.97	1029+69.55	NA	RT	52.6	CA=1524.7	7.1	18.7	8.3		35.3		28.3	4.4	169.5		0.1	169.5							
IR77	1029+69.55	1068+75.00	36	RT	3905.5	140596.2	651	1718.4	759.4		3254.6		2603.7	404.3	15621.8		7.9	15621.8							
IR77	1029+69.55	1068+75.00	12	RT	3905.5	46865.4	217	572.8	253.2		1084.9		867.9	134.8	5207.3		2.7	5207.3							
IR77	1029+69.55	1066+75.00	10	RT	3705.5	37054.5	171.6	452.9	200.2		857.8		686.2	106.6	4117.2		2.1	4117.2							
IR77	1066+75.00	1068+75.00	NA	RT	200.0	CA=2362.4	11	28.9	12.8		54.7		43.8	6.8	262.5		0.2	262.5							
SR-21 (BRECKSVILLE RD)																									
21	495+60.00	495+73.38	NA	LT/RT	13.4	CA=702	3.3	8.6	3.8						78		0.1	78		78					
21	495+73.38	498+70.19	24	LT/RT	296.9	7123.5		87.1					132	23.9	791.5		0.4	791.5			33	38.5	132		
21	495+73.38	506+05.74	6	RT	1032.4	6194.2		75.8					114.8	20.8	688.3		0.4	688.3			28.7	33.5	114.8		
21	495+73.38	497+16.16	NA	LT	142.8	CA=2255		27.6					41.8	7.6	250.6		0.2	250.6			10.5	12.2	41.8		
21	496+00.88	497+16.16	NA	LT	115.3	CA=2067.6		25.3					38.3	7	229.8		0.2	229.8			9.6	11.2	38.3		
21	497+16.16	498+70.19	NA	LT	154.1	CA=2803.3		34.3					52	9.5	311.5		0.2	311.5			13	15.2	52		
21	497+22.49	498+70.19	6	RT	147.8	886.3		10.9					16.5	3	98.5		0.1	98.5			4.2	4.8	16.5		
21	497+31.30	499+95.48	2.5	RT	262.5	656.3		4.1					17.1	3.1	102.1		0.1	102.1				4.1	13.8		
21	497+94.39	500+54.07	2.5	LT	262.5	656.3		4.1					17.1	3.1	102.1		0.1	102.1				4.1	12.2		
21	498+70.19	503+11.58	36	LT/RT	441.4	15890.1		194.3					294.3	53.3	1765.6		0.9	1765.6			73.6	85.9	294.3		
21	498+70.19	503+11.58	6	LT	441.4	2648.4		32.4					49.1	8.9	294.3		0.2	294.3			12.3	14.4	49.1		
SR-21 (BRECKSVILLE RD) - RAMP G																									
G	10008+56.05	10020+57.11	3	LT	1201.1	3603.2							400.4	66.8	10.4	400.4		0.3	400.4						
G	10008+56.05	10020+57.11	16	LT	1201.1	19217.0							2135.3	355.9	55.3	2135.3		1.1	2135.3						
G	10008+56.05	10020+57.11	6	RT	1201.1	7206.4							800.8	133.5	20.8	800.8		0.5	800.8						
REMOVAL MISC CONCRETE PAVEMENT																									
IR77	1028+40.51	1066+75.00	24	LT	3834.5	92027.8																	10225.4		
IR77	1029+38.55	1066+75.00	24	RT	3736.5	89674.8																	9963.9		
G	10007+90.64	10023+17.10	NA	LT	1526.5	CA=25439																	2826.6		
SR-21	495+73.38	503+11.58	NA	LR/RT	738.3	CA=32986.30																	3665.2		
SR-21	503+11.58	506+05.74	6	RT	294.2	1765.0																	196.2		
FOR STEP DETAIL QUANTITIES SEE SHEET 2 & 3																									
SUBTOTAL							2362.2	6742.4	2766.8		11843.1	3336.5	10814	1700.4	60239.1	4712.3	34.5	64951.4		78		184.9	223.9	764.8	26877.3
TOTALS CARRIED TO SUBSUMMARY							2363	6743	2767		11844	3337	10814	1701	60240	4713	34.5	64952		78		185	224	765	26878

Calculation	Bridge Quantities: SUM-77-3227L					
Description	Stage 2 Quantities					
GF Job No: 67490	Bridge SFN 7704712	Calculated • RSN 10/20/21	Checked SAT 10/28/21	Updated RSN 01/09/22	Verified SAT 02/03/22	Final Rev RSN 04/29/2022

This calculation will use ODOT Bid Elements.
Reinforcing ratios will be used to determine reinforcing until the Stage 3 reinforcing calculations are complete.

INPUT: Superstructure

General and Existing Data

Minimum Concrete Deck Thickness:	8.500 in	Outside Parapet Area:	4.06 sf
Total Number of Girder Lines:	3 Girders	Approach Slab Parapet Perimeter:	7.82 ft
Length of Bridge Limits:	233.94 ft	Outside Parapet/Deck Ovhg Perimeter:	9.44 ft
		Right Parapet Length (not include App Slabs):	233.95
		Right Parapet Length (include Approaches):	300.95
Existing Rear Abutment:	12 cy	Girder H Flange Width:	12.10 in
Existing Forward Abutment:	12 cy	Girder H Flange Thickness:	1.16 in
Existing Approach Slabs:		Girder H Web Depth:	34.18 in
CIP Deck Reinforcing Ratio:	270 lb/cy	Abutment & W.W. Reinforcing Ratio:	120 lb/cy
Pier Cap Reinforcing Ratio:	200 lb/cy	Footing Reinforcing Ratio:	140 lb/cy
Pier Wall & Abutment Backwall Reinforcing Ratio:	300 lb/cy	Parapet/Curb Reinforcing Ratio:	170 lb/cy

Superstructure Specific Data

Design Girder Length:	227.33 ft	C/C Bearing	Deck Width, Out-Out:	20.08 ft	normal to align.
Girder Projection Length after BRG:	1.00 ft		Skew:	47.022 deg	0.82069 rad
Splice Top Flange External:	0.269 cf		Girder Flange Width:	14.077 in	
Splice Top Flange Internal:	0.264 cf		Girder Flange Thickness:	1.283 in	
Splice Bottom Flange External:	0.269 cf		Girder Web Depth:	25.455 in	
Splice Bottom Flange Internal:	0.264 cf		Girder Web Thickness:	0.756 in	
Splice Web:	0.209 cf		Girder Paint Perimeter:	94.2 in	
Filler Plate Top Flange:	0.100 cf		Girder Weight:	189.40 plf	
Filler Plate Bottom Flange:	0.100 cf		Intermediate Dprm Connx Plate Height:	25.440 in	
Concrete Deck CAD Area:	4,698 sf		Intermediate Dprm Connx Plate Thickness:	0.375 in	
Concrete Haunch Area:	0.20 sf		Intermediate Dprm Connx Plate Width:	8.000 in	
Overhang CAD Area:	0.39 sf		Typical Stiffener Clip Area:	1.250 SqIn	
End Area above Diaphragm:	1 sf		Intermediate Dprm Connx Plate Paint Area:	424 SqIn	
APP Slab CAD Area:	3,928 sf		# of Intermediate Dprm Connx Plates:	92	
			Number of Int Diaphragms:	46	

INPUT: Substructure

Rear Abutment

Stem Thickness:	3.75 ft	Wingwall Thickness:	1.50 ft
Diaph Thickness:	3.75 ft	Wingwall CAD Area:	147 sf
RA Footing CAD Area:	205 sf	Wingwall Length:	15.00 ft
RA Footing Thickness:	3.00 ft	RA Diaph CAD Sealing Area Limit:	95 sf
RA Stem CAD Plan Area:	100 sf		
RA Diaph CAD Area:	86 sf		
Beam Seat EL:	1026.75 ft		
Top/Footing EL:	1021.68 ft		

Forward Abutment

Stem Thickness:	3.75 ft	Wingwall CAD Area:	143 sf
Diaph Thickness:	3.75 ft	Wingwall Thickness:	1.50 ft
FA Footing CAD Area:	210 sf	Wingwall Length:	15.00 ft
FA Footing Thickness:	3.00 ft		
RA Stem CAD Plan Area:	100 sf		

Calculation	Bridge Quantities: SUM-77-3227L					
Description	Stage 2 Quantities					
GF Job No: 67490	Bridge SFN 7704712	Calculated • RSN 10/20/21	Checked SAT 10/28/21	Updated RSN 01/09/22	Verified SAT 02/03/22	Final Rev RSN 04/29/2022

FA Diaph CAD Area:	86 sf	FA Diaph CAD Sealing Area Limit:	96 sf
Beam Seat EL.:	1030.15 ft		
Top/Footing EL.:	1025.16 ft		

Pier 1+2

Cap thickness:	3.00 ft	Footing Length:	21.00 ft
Cap CAD Area:	78.00 sf	Foundation Width:	8.50 ft
Wall Stem Thickness:	3.00 ft	Foundation Thickness:	3.00 ft
Wall Section CAD Area:	46 sf	Ex. Footing Width and Length:	8.50 ft
Bottom/Cap Pier 1 EL.:	1025.47 ft		
Bottom/Cap Pier 2 EL.:	1026.75 ft		
Top/Footing El. Pier 1:	1005.50 ft		
Top/Footing El. Pier 2:	1012.20 ft		

Quantities

202E 11003	STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	(LS) = 100,000	0
Structure Demolition			
Deck:	448 sf	X \$25 /sf	\$ 12,000
RA Removed:	12 cy	X \$150 /cy	\$ 2,000
FA Removed:	12 cy	X \$150 /cy	\$ 2,000
202E 22900	APPROACH SLAB REMOVED	(SY) = 334	0
APP Slabs:	2999 sf	/(9 sf/sy)= 333 sy	
(EXISTING CAD AREA)			
503E 21101	UNCLASSIFIED EXCAVATION, AS PER PLAN	(CY) = 398	(CHECK UNIT OF MEASURE)
Pier 1:	10.50 ft	X	23.00 ft
Width			Length
			8.73 ft
			Avg Depth
			/(27 cf/cy)= 78.1 cy
Pier 2:	10.50 ft	X	23.00 ft
Width			Length
			5.03 ft
			Avg Depth
			/(27 cf/cy)= 45.0 cy
FA+wingwall:	7.75 ft	X	28.25 ft
Width			Length
	5.75 ft	X	7.50 ft
Width			Length
			6.32 ft
			Avg Depth
			/(27 cf/cy)= 51.2 cy
			/(27 cf/cy)= 10.1 cy
RA+wingwall:	7.75 ft	X	31.00 ft
Width			Length
	5.75 ft	X	11.00 ft
Width			Length
			6.94 ft
			Avg Depth
			/(27 cf/cy)= 61.8 cy
			/(27 cf/cy)= 16.3 cy
Existing Pier Excavation			
Ex Pier 1:	8.50 ft	X	8.50 ft
Width			Length
			7.07 sf
			Area of Pier Column
			30.42 ft
			Total Depth
			/(27 cf/cy)= 73.4 cy
Ex Pier 2:	8.50 ft	X	8.50 ft
Width			Length
			7.07 sf
			Area of Pier Column
			25.44 ft
			Total Depth
			/(27 cf/cy)= 61.4 cy
507E 00500	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	(FT) = 850	0
FA:	10	X	45 ft Long
			= 450 ft
RA:	10	X	40 ft Long
			= 400 ft
507E 00550	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	(FT) = 950	0
FA:	10	X	50 ft Long
			= 500 ft
RA:	10	X	45 ft Long
			= 450 ft
507E 00600	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	(FT) = 840	0
Pier 1:	12	X	35 ft Long
			= 420 ft
Pier 2:	12	X	35 ft Long
			= 420 ft
507E 00650	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	(FT) = 960	0
Pier 1:	12	X	40 ft Long
			= 480 ft
Pier 2:	12	X	40 ft Long
			= 480 ft
505E 11101	PILE DRIVING EQUIPMENT MOBILIZATION, AS PER PLAN	(LS)	0
All Piles:	Lump Sum		
509E 10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	(LB) = 76,765	0

	Calculation	Bridge Quantities: SUM-77-3227L		
	Description	Stage 2 Quantities		
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		Verified SAT 02/03/22	Final Rev RSN 04/29/2022	

	Deck:	X	270 lb/cy		=		40,489 lb
	Diaphragm:	X	140 lb/cy		=		3,718 lb
	Parapet:	X	170 lb/cy		=		9,921 lb
	RA, FA & Wingwalls (w/o footing):	X	120 lb/cy	UPDATED FROM CALCULATED REINFORCING	=		2,339 lb
	RA, FA & Wingwalls (only footing):	X	140 lb/cy		=		4,037 lb
	Pier:	X	200 lb/cy		=		10,438 lb
	Pier Footing:	X	140 lb/cy		=		5,823 lb
510E 20001	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN					LB 300	#N/A
510E 10001	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT, AS PER PLAN					(EACH) = 22	()
	Rear Abutment:		11				
	Forward Abutment:		11				
	Deck:		0				
	Diaphragm:		0				
511E 34446	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					(CY) = 158	(CHECK UNIT OF MEASURE)
	Deck - Above Haunch:		4,698 sf <small>CAD Area</small>	X	8.50 in <small>Thickness</small>	/(27 cf/cy)=	123 cy
	Deck - Haunch:	229.33 ft <small>Length</small>	X	0.20 sf <small>Area</small>	X	3 <small># of Haunches</small>	/(27 cf/cy)= 5.0 cy
	Deck - Overhang:	229.33 ft <small>Length</small>	X	0.39 sf <small>Area</small>	X	1 <small># of Haunches</small>	/(27 cf/cy)= 3.3 cy
	Deck - Ends above Diaphragm:	29.79 ft <small>Length</small>	X	1.00 sf <small>Area</small>	X	2 <small>Rear and Forward</small>	/(27 cf/cy)= 2.2 cy
	RA, Diaph:	86.00 sf <small>CAD Area</small>	X	3.75 ft <small>Thickness</small>		/(27 cf/cy)=	11.9 cy
	FA, Diaph:	86.00 sf <small>CAD Area</small>	X	3.75 ft <small>Thickness</small>		/(27 cf/cy)=	11.9 cy
511E 34451	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN					(CY) = 46	(CHECK UNIT OF MEASURE)
	Curb/Parapet:	300.95 ft	X	4.06 sf		/(27 cf/cy)=	45.3 cy
511E 40512	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					(CY) = 77	(WALLS)
	Pier Cap 1:	3.00 ft <small>WIDTH</small>	X	78.00 sf <small>CAD Area</small>		/(27 cf/cy)=	8.7 cy
	Pier Wall 1:	19.97 ft <small>Height</small>	X	46.00 sf <small>CAD Area</small>		/(27 cf/cy)=	34.0 cy
	Pier Cap 2:	3.00 ft <small>WIDTH</small>	X	78.00 sf <small>CAD Area</small>		/(27 cf/cy)=	8.7 cy
	Pier Wall 2:	14.55 ft <small>Height</small>	X	46.00 sf <small>CAD Area</small>		/(27 cf/cy)=	24.8 cy
511E 46512	CLASS QC1 CONCRETE WITH QC/QA, FOOTING					(CY) = 86	()
	Pier 1 Footing:	8.50 ft	X	21.00 ft	X	3.00 ft	/(27 cf/cy)= 19.8 cy
	Pier 2 Footing:	8.50 ft	X	21.00 ft	X	3.00 ft	/(27 cf/cy)= 19.8 cy
	FA Footing (CAD area):	210.00 sf	X	3.00 ft		/(27 cf/cy)=	23.3 cy
	RA, Footing (CAD Area):	205.25 sf	X	3.00 ft		/(27 cf/cy)=	22.8 cy
511E 44112	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING					(CY) = 54	()
	RA, Stem:	100.00 sf <small>CAD Area (Plan)</small>	X	5.07 ft <small>Height of stem</small>		/(27 cf/cy)=	18.8 cy
	RA, Wingwall:	146.85 sf <small>CAD Area</small>	X	1.50 ft <small>Thickness</small>		/(27 cf/cy)=	8.2 cy
	FA, Stem:	100.00 sf	X	4.99 ft		/(27 cf/cy)=	18.5 cy



This calculation will use ODOT Bid Elements.

Reinforcing ratios will be used to determine reinforcing until the Stage 3 reinforcing calculations are complete.

INPUT: Superstructure

General and Existing Data

Minimum Concrete Deck Thickness:	8.500 in	Outside Parapet Area:	4.06 sf
Total Number of Girder Lines:	3 Girders	Approach Slab Parapet Perimeter:	7.82 ft
Length of Bridge Limits:	216.83 ft	Outside Parapet/Deck Ovhg Perimeter:	9.44 ft
Existing Rear Abutment:	11 cy	Left Parapet Length (not include App Slabs):	216.83
Existing Forward Abutment:	12 cy	Left Parapet Length (include Approaches):	272.82
Existing Approach Slabs:		Girder J Flange Width:	12.10 in
CIP Deck Reinforcing Ratio:	270 lb/cy	Girder J Flange Thickness:	1.16 in
Pier Cap Reinforcing Ratio:	200 lb/cy	Girder J Web Depth:	34.18 in
Pier Wall & Abutment Backwall Reinforcing Ratio:	300 lb/cy	Abutment & W.W. Reinforcing Ratio:	120 lb/cy
		Footing Reinforcing Ratio:	140 lb/cy
		Parapet/Curb Reinforcing Ratio:	170 lb/cy

Superstructure Specific Data

Design Girder Length:	210.75 ft	C/C Bearing	Deck Width, Out-Out:	20.58 ft	normal to align.
Girder Projection Length after BRG:	1.00 ft		Skew:	47.022 deg	0.82069 rad
Splice Top Flange External:	0.154 cf		Girder Flange Width:	12.037 in	
Splice Top Flange Internal:	0.145 cf		Girder Flange Thickness:	0.965 in	
Splice Bottom Flange External:	0.154 cf		Girder Web Depth:	34.005 in	
Splice Bottom Flange Internal:	0.145 cf		Girder Web Thickness:	0.661 in	
Splice Web:	0.243 cf		Girder Paint Perimeter:	104.7 in	
Filler Plate Top Flange:	0.049 cf		Girder Weight:	156.91 plf	
Filler Plate Bottom Flange:	0.049 cf		Intermediate Dprm Connx Plate Height:	34.005 in	
Concrete Deck CAD Area:	4,463 sf		Intermediate Dprm Connx Plate Thickness:	0.375 in	
Concrete Haunch Area:	0.17 sf		Intermediate Dprm Connx Plate Width:	8.000 in	
Overhang CAD Area:	0.37 sf		Typical Stiffener Clip Area:	1.250 SqIn	
End Area above Diaphragm:	1 sf		Intermediate Dprm Connx Plate Paint Area:	567 SqIn	
APP Slab CAD Area:	3,012 sf		# of Intermediate Dprm Connx Plates:	80	
			Number of Int Diaphragms:	40	

INPUT: Substructure

Rear Abutment

Stem Thickness:	3.75 ft	Wingwall Thickness:	1.50 ft
Diaph Thickness:	3.75 ft	Wingwall CAD Area:	104 sf
RA Footing CAD Area:	188 sf	Wingwall Length:	13.00 ft
RA Footing Thickness:	3.00 ft	RA Diaph CAD Sealing Area Limit:	92 sf
RA Stem CAD Plan Area:	92 sf	Wingwall CAD Sealing Area:	37 sf
RA Diaph CAD Area:	102 sf		
Beam Seat EL.:	1035.94 ft		
Top/Footing EL.:	1032.67 ft		
RA Stem CAD Area:	50 sf		

Forward Abutment

Stem Thickness:	3.75 ft	Wingwall CAD Sealing Area:	36 sf
Diaph Thickness:	3.75 ft	Wingwall CAD Area:	104 sf
FA Footing CAD Area:	206 sf	Wingwall Thickness:	1.50 ft
FA Footing Thickness:	3.00 ft	Wingwall Length:	15.00 ft
RA Stem CAD Plan Area:	95 sf		

GF Job No:
67490

Bridge SFN
7704747

Calculated
RSN 10/27/21

Checked
SAT 10/28/21

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RSN 04/29/2022

FA Diaph CAD Area: 102 sf
Beam Seat EL.: 1039.76 ft
Top/Footing EL.: 1036.17 ft
FA Diaph CAD Area: 75 sf

FA Diaph CAD Sealing Area Limit: 88 sf

Pier 1+2

Cap thickness: 3.00 ft
Cap CAD Area: 80.30 sf
Cap Length: 20.00 ft
Wall Stem Thickness: 3.00 ft
Wall Section CAD Area: 43 sf
Bottom/Cap Pier 1 EL.: 1034.03 ft
Bottom/Cap Pier 2 EL.: 1035.52 ft
Top/Footing EL. Pier 1: 1010.40 ft
Top/Footing EL. Pier 2: 1016.90 ft

Footing Length: 21.00 ft
Foundation Width: 8.50 ft
Foundation Thickness: 3.00 ft
Ex. Footing Width and Length: 9.00 ft

Quantities

202E 11003	STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	(LS) = 100,000	0
Structure Demolition			
Deck:	527 sf	X \$25 /sf	\$ 14,000
RA Removed:	11 cy	X \$150 /cy	\$ 2,000
FA Removed:	12 cy	X \$150 /cy	\$ 2,000
202E 22900	APPROACH SLAB REMOVED	(SY) = 235	0
APP Slabs:	2110 sf		/(9 sf/sy)= 234 sy
503E 21101	UNCLASSIFIED EXCAVATION, AS PER PLAN	(CY) = 449	(CHECK UNIT OF MEASURE)
Pier 1:	10.50 ft Width	X 23.00 ft Length	9.46 ft Avg Depth /(27 cf/cy)= 84.6 cy
Pier 2:	10.50 ft Width	X 23.00 ft Length	6.42 ft Avg Depth /(27 cf/cy)= 57.4 cy
FA+wingwall:	7.75 ft Width	X 28.25 ft Length	11.50 ft Avg Depth /(27 cf/cy)= 93.3 cy
	5.75 ft Width	X 7.50 ft Length	11.50 ft Avg Depth /(27 cf/cy)= 18.4 cy
RA+wingwall:	7.75 ft Width	X 28.00 ft Length	11.33 ft Avg Depth /(27 cf/cy)= 91.1 cy
	5.75 ft Width	X 11.00 ft Length	11.33 ft Avg Depth /(27 cf/cy)= 26.5 cy
Existing Pier Excavation			
Ex Pier 1:	9.00 ft Width	X 9.00 ft Length	7.07 sf Area of Pier Column 15.52 ft Total Depth /(27 cf/cy)= 42.5 cy
Ex Pier 2:	9.00 ft Width	X 9.00 ft Length	7.07 sf Area of Pier Column 12.52 ft Avg Depth /(27 cf/cy)= 34.3 cy
507E 00500	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	(FT) = 840	0
FA:	12	X 35 ft Long	= 420 ft
RA:	12	X 35 ft Long	= 420 ft
507E 00550	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	(FT) = 960	0
FA:	12	X 40 ft Long	= 480 ft
RA:	12	X 40 ft Long	= 480 ft
507E 00600	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	(FT) = 840	0
Pier 1:	12	X 35 ft Long	= 420 ft
Pier 2:	12	X 35 ft Long	= 420 ft
507E 00650	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	(FT) = 960	0
Pier 1:	12	X 40 ft Long	= 480 ft
Pier 2:	12	X 40 ft Long	= 480 ft
505E 11101	PILE DRIVING EQUIPMENT MOBILIZATION, AS PER PLAN	(LS)=	0
All Piles:	Lump Sum		
509E 10001	EPOXY COATED REINFORCING STEEL, AS PER PLAN	(LB) = 72,051	0
Deck:	X	270 lb/cy	= 35,962 lb

	Calculation	Bridge Quantities: SUM-77-3227R		
	Description	<i>Stage 2 Quantities</i>		
GF Job No: 67490	Bridge SFN 7704747	Calculated • RSN 10/27/21	Checked SAT 10/28/21	Updated RSN 01/10/22
			Verified SAT 02/04/22	Final Rev RSN 04/29/2022

Diaphragm:	X	140 lb/cy		=	3,477 lb
Parapet:	X	170 lb/cy		=	8,807 lb
RA, FA & Wingwalls (w/o footing):	X	120 lb/cy	UPDATED FROM CALCULATED REINFORCING	=	1,958 lb
RA, FA & Wingwalls (only footing):	X	140 lb/cy		=	3,688 lb
Pier:	X	200 lb/cy		=	11,509 lb
Pier Footing:	X	140 lb/cy		=	6,650 lb

510E 10001	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT, AS PER PLAN (EACH) = 22		()
Rear Abutment:	11		
Forward Abutment:	11		

510E 20001	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	LB	300		#N/A
511E 34446	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	(CY) =	155		(CHECK UNIT OF MEASURE)
Deck - Above Haunch:	4,463 sf <small>CAD Area</small>	X	8.50 in <small>Thickness</small>	/(27 cf/cy)=	117 cy
Deck - Haunch:	212.75 ft <small>Length</small>	X	0.17 sf <small>Area</small>	X	3 <small># of Haunches</small>
Deck - Overhang:	212.75 ft <small>Length</small>	X	0.37 sf <small>Area</small>	X	1 <small># of Haunches</small>
Deck - Ends above Diaphragm:	27.80 ft <small>Length</small>	X	1.00 sf <small>Area</small>	X	2 <small>Rear and Forward</small>
RA, Diaph:	102.00 sf <small>CAD Area</small>	X	3.75 ft <small>Thickness</small>	/(27 cf/cy)=	14.2 cy
FA, Diaph:	102.00 sf <small>CAD Area</small>	X	3.75 ft <small>Thickness</small>	/(27 cf/cy)=	14.2 cy

511E 34451	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN	(CY) =	42		(CHECK UNIT OF MEASURE)
Curb/Parapet:	272.82 ft	X	4.06 sf	/(27 cf/cy)=	41.0 cy

511E 40512	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS	(CY) =	86		(WALLS)
Pier Cap 1:	3.00 ft <small>WIDTH</small>	X	80.30 sf <small>CAD Area</small>	/(27 cf/cy)=	8.9 cy
Pier Wall 1:	23.63 ft <small>Height</small>	X	43.00 sf <small>CAD Area</small>	/(27 cf/cy)=	37.6 cy
Pier Cap 2:	3.00 ft <small>WIDTH</small>	X	80.30 sf <small>CAD Area</small>	/(27 cf/cy)=	8.9 cy
Pier Wall 2:	18.62 ft <small>Height</small>	X	43.00 sf <small>CAD Area</small>	/(27 cf/cy)=	29.7 cy

511E 46512	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	(CY) =	84		()
Pier 1 Footing:	8.50 ft	X	21.00 ft	X	3.00 ft
Pier 2 Footing:	8.50 ft	X	21.00 ft	X	3.00 ft
FA Footing:	206.00 sf	X	3.00 ft	/(27 cf/cy)=	22.9 cy
RA, Footing:	188.00 sf	X	3.00 ft	/(27 cf/cy)=	20.9 cy

511E 44112	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING	(CY) =	38		()
RA, Stem:	92.00 sf <small>CAD Area</small>	X	3.75 ft <small>Thickness</small>	/(27 cf/cy)=	12.8 cy
RA, Wingwall:	104.00 sf <small>CAD Area</small>	X	1.50 ft <small>Thickness</small>	/(27 cf/cy)=	5.8 cy
FA, Stem:	95.00 sf <small>CAD Area</small>	X	3.75 ft <small>Thickness</small>	/(27 cf/cy)=	13.2 cy

Calculation	Bridge Quantities: SUM-77-3227R
Description	<i>Stage 2 Quantities</i>

GF Job No: 67490	Bridge SFN 7704747	Calculated • RSN 10/27/21	Checked SAT 10/28/21	Updated RSN 01/10/22	Verified SAT 02/04/22	Final Rev RSN 04/29/2022
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	<small>CAD Area</small>		<small>Thickness</small>			
FA, Wingwall	104.00 sf	X	1.50 ft		/(27 cf/cy)=	5.8 cy
	<small>CAD Area</small>		<small>Thickness</small>			

512E 10101	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	(SY) =	582	0
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Parapet & Deck Underside:	216.8 ft	X	9.44 ft	/(9 sf/sy)= 227 sy
Approach Slab Parapets:	56.0 ft	X	7.82 ft	/(9 sf/sy)= 49 sy

RA, Stem:	40 sf			/(9 sf/sy)= 4 sy
RA, WingWall:	37 sf			/(9 sf/sy)= 4.1 sy
RA, Wingwall top + sides + back:	20 sf			/(9 sf/sy)= 2 sy
RA, Diaphragm without fillet area:	85 sf			/(9 sf/sy)= 9 sy
FA Stem:	25 sf			/(9 sf/sy)= 3 sy
FA, WingWall:	38 sf			/(9 sf/sy)= 4 sy
FA, Wingwall top + sides + back:	31 sf			/(9 sf/sy)= 3 sy
FA, Diaphragm without fillet area:	88 sf			

Pier 1 - Wall:	569 sf			/(9 sf/sy)= 63 sy
Pier 1 - Cap:	161 sf			/(9 sf/sy)= 18 sy
	2.55 ft	X	3.00 ft	/(9 sf/sy)= 2 sy
Pier 2 - Wall:	535 sf			/(9 sf/sy)= 59 sy
Pier 2 - Cap:	161 sf			/(9 sf/sy)= 18 sy
	2.55 ft	X	3.00 ft	/(9 sf/sy)= 2 sy

Existing Pier Column Sealing

Pier 1:	9.42 ft	X	58.50 ft	/(9 sf/sy)= 61 sy
	<small>perimeter</small>		<small>total height</small>	
Pier 2:	9.42 ft	X	49.78 ft	/(9 sf/sy)= 52 sy
	<small>perimeter</small>		<small>total height</small>	

512E 33000	TYPE 2 WATERPROOFING	(SY) =	7	<small>(CHECK UNIT OF MEASURE)</small>
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Rear Wingwall:	10 ft	Along WW	3.0 ft	width of sealing	=	3.3 SY
Forward Wingwall:	10 ft	Along WW	3.0 ft	width of sealing	=	3.3 SY

512E 74000	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES	(SY) =	610.0	0
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Pier 1	9.425 ft	X	102.8 ft	968.4	322.8 sy
	<small>perimeter</small>		<small>height</small>		
Pier 2	9.425 ft	X	91.2 ft	859.3	286.4 sy
	<small>perimeter</small>		<small>height</small>		

513E 10260	STRUCTURAL STEEL MEMBERS, LEVEL 3	(LB) =	115,881	<small>(CHECK UNIT OF MEASURE)</small>
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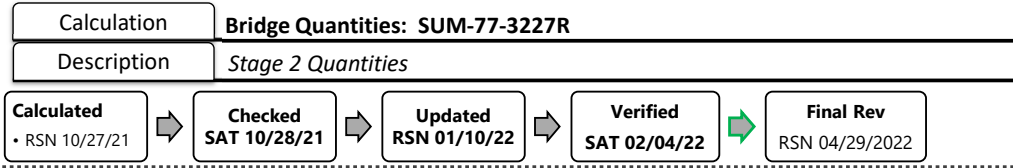
Girder Weight:	<small>Length</small>				
section 1,5,9	213 ft	X	156.91 lb	X	3 girder(s) = 100,147
Bolts:	960 each	X	109 lb/100		= 1,046
Washers:	960 each	X	9 lb/100		= 90
Int Xframes:(3.5x3.5x3/8)	19.11 ft	X	X 7.20 lb/ft	X	= 3,715
Int Xframes(4x4x1/2):	12.67 ft	X	X 11.30 lb/ft	X	= 1,861
Int Xframes Plate:	0.06 cf		X 490 lb/cf	X	= 2,258
	<small>Volume</small>			<small>numbers</small>	
Splice Weight:	11.25 cf		X 490 lb/cf		5,513.78
	<small>Volume/all</small>				
Splice Bolts:	1056 each	X	109 lb/100		= 1,151.04
Splice Washers:	1056 each	X	9 lb/100		= 99.26

513E 20000	WELDED STUD SHEAR CONNECTORS	(EACH) =	1,764	0
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G4:	196	X	3	588 Each
G5:	196	X	3	588 Each
G6:	196	X	3	588 Each
	<small>Rows of studs</small>		<small>Studs per Row</small>	

514E 00060	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	(SF) =	5,570	0
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104.7 in	X	212.75 ft	X	3.0 each
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514E 00066	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			(SF) =	5,570		0
514E 00504	GRINDING FINNS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL			(MNHR) =	2		0
Grinding Time Per Foot	30.0 sec/ft	X	212.25 ft			=	1.8 ManHours
	<small>Time is halved since only one side of existing beam is ground</small>		<small>Beam Length</small>				
514E 10000	FINAL INSPECTION REPAIR			(EACH) =	4		0
	Inspection Repair per 150 ft.		4.255		4		
514E 27800	FIELD PAINTING, MISC.:			(LS) =	1		(ADD SUPPLEMENTAL DESCRIPTION)
					1		
516E 10010	ARMORLESS PREFORMED JOINT SEAL			(FT) =	160		0
	Rear Sleeper Slab:	80 ft		=			80.0 ft
	Forward Sleeper Slab:	80 ft		=			80.0 ft
		<small>Length</small>					
516E 13600	1" PREFORMED EXPANSION JOINT FILLER			(SF) =	25		0
	App Slab Parapets:	6.14 sf	X	4		=	24.6 sf
		<small>CAD Area</small>		<small>Number of Joints</small>			
516E 13900	2" PREFORMED EXPANSION JOINT FILLER			(SF) =	86		0
	RA Wingwall:	17.81 sf	+	23.125 sf		=	40.9 sf
	FA Wingwall:	17.81 sf	+	26.875 sf		=	44.7 sf
						=	0.0 sf
516E 44100	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)			(EACH) =	12		(2"-3" TK, SPECIFY DIMENSIONS)
	Total # required:	12	each	piers			
		<small>pers</small>					
516E 14020	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL			(FT) =	66		0
	RA Abutment:	33 ft					
	FA Abutment:	33 ft					
518E 21200	POROUS BACKFILL WITH GEOTEXTILE FABRIC			(CY) =	39		(CHECK UNIT OF MEASURE)
	Rear Abutment:	200 sf	X	2.0 ft		/(27 cf/cy)=	14.8 cy
		<small>CAD Area</small>		<small>width</small>			
	Rear Wingwall:	60 sf	X	2.0 ft		/(27 cf/cy)=	4.4 cy
		<small>CAD Area</small>		<small>width</small>			
	Forward Abutment:	200 sf	X	2.0 ft		/(27 cf/cy)=	14.8 cy
		<small>CAD Area</small>		<small>width</small>			
	Forward Wingwall:	60 sf	X	2.0 ft		/(27 cf/cy)=	4.4 cy
		<small>CAD Area</small>		<small>Width</small>			
518E 40000	6" PERFORATED CORRUGATED PLASTIC PIPE			(FT) =	78		0
	FA+Wingwall:	38 ft					38 ft
	RA+Wingwall:	40 ft					40 ft
518E 40010	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS			(FT) =	60		0
	RA Wingwall:	30 ft					30 ft
	FA Wingwall:	30 ft					30 ft
519E 00100	SPECIAL - COMPOSITE FIBER WRAP SYSTEM			(SF) =	1,285		0
	Pier 1	9.425 ft	X	74.0 ft			697.4 sf
		<small>perimeter</small>		<small>height</small>			
	Pier 2	9.425 ft	X	62.3 ft			587.2 sf
		<small>perimeter</small>		<small>height</small>			
519E 11100	PATCHING CONCRETE STRUCTURE			(SF) =	129		0
	Existing Pier Columns	1,285.0 sf	X	10 %			128.5 sf
				<small>10% of total column surface area</small>			
523E 20001	DYNAMIC LOAD TESTING, AS PER PLAN			(EACH) =	4		0



	RA: 1			1 each
	Pier 1: 1			1 each
	Pier 2: 1			1 each
	FA: 1			1 each
523E 20501	RESTRIKE, AS PER PLAN		(EACH) = 4	0
	RA: 1			1 each
	Pier 1: 1			1 each
	Pier 2: 1			1 each
	FA: 1			1 each
526E 25010	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=15")		(SY) = 335	0
	App Slabs: 3,012.00 sf		/(9 sf/sy) =	334.7 sy
526E 90030	TYPE C INSTALLATION		(FT) = 160	0
	160.0 ft Length RA & FA			
601E 20000	CRUSHED AGGREGATE SLOPE PROTECTION		(SY) = 430	0
	RA + Wingwall: 2,274 sf		/(9 sf/sy) =	252.6 cy
	FA + Wingwall: 1,595 sf		/(9 sf/sy) =	177.2 cy

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	CAD Area (Plan)		Height of stem			
	CAD Area		Thickness			
FA, Wingwall	143.00 sf	X	1.50 ft		/(27 cf/cy)=	7.9 cy
	CAD Area		Thickness			

512E 10101 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN (SY) = 675 0

Parapet & Deck Underside:	234.0 ft	X	9.44 ft	/(9 sf/sy)=	245 sy
Approach Slab Parapets:	67.0 ft	X	7.82 ft	/(9 sf/sy)=	58 sy

RA, Stem:	86 sf			/(9 sf/sy)=	10 sy
RA, WingWall:	147 sf			/(9 sf/sy)=	16.3 sy
RA, Wingwall top + sides + back:	23 sf			/(9 sf/sy)=	3 sy
RA, Diaphragm without fillet area:	95 sf			/(9 sf/sy)=	11 sy
FA Stem + Diaphragm:	55 sf			/(9 sf/sy)=	6 sy
FA, WingWall:	33 sf			/(9 sf/sy)=	4 sy
FA, Wingwall top + sides + back:	35 sf			/(9 sf/sy)=	4 sy
FA, Diaphragm without fillet area:	104 sf			/(9 sf/sy)=	12 sy

Pier 1 - Wall:	477 sf			/(9 sf/sy)=	53 sy
Pier 1 - Cap:	156 sf			/(9 sf/sy)=	17 sy
	2.55 ft	X	3.00 ft	X	2
Pier 2 - Wall:	452 sf			/(9 sf/sy)=	50 sy
Pier 2 - Cap:	156 sf			/(9 sf/sy)=	17 sy
	2.55 ft	X	3.00 ft	X	2

Existing Pier Column Sealing

Pier 1:	9.42 ft perimeter	X	82.44 ft total height	/(9 sf/sy)=	86 sy
Pier 2:	9.42 ft perimeter	X	76.02 ft total height	/(9 sf/sy)=	80 sy

512E 33000 TYPE 2 WATERPROOFING (SY) = 7 (CHECK UNIT OF MEASURE)

Rear Wingwall:	10 ft	Along WW	3.0 ft	width of sealing	=	3.3 SY
Forward Wingwall:	10 ft	Along WW	3.0 ft	width of sealing	=	3.3 SY

512E 74000 REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES (SY) = 357.0 0

Pier 1	9.425 ft perimeter	X	61.4 ft height	579.1	193.0 sy
Pier 2	9.425 ft perimeter	X	52.0 ft height	490.3	163.4 sy

513E 10260 STRUCTURAL STEEL MEMBERS, LEVEL 3 (LB) = 151,800 (CHECK UNIT OF MEASURE)

Girder Weight:	Length					
section 1,5,9	229 ft	X	189.40 lb	X	3 girder(s)	130,304
Bolts:	1104 each	X	109 lb/100			= 1,203
Washers:	1104 each	X	9 lb/100			= 104
Int Xframes(MC18x42.7):	6.25 ft	X	X 43 lb/ft	X	16	= 4,270
Int Xframes(4x4x1/2):	12.00 ft	X	X 11.30 lb/ft	X	30	= 4,068
Int Xframes Plate:	0.04 cf		X 490 lb/cf	X	92	1,926
	Volume				numbers	
Splice Weight:	17.70 cf		X 490 lb/cf			8,674.05
	Volume/all					
Splice Bolts:	1056 each	X	109 lb/100			= 1,151.04
Splice Washers:	1056 each	X	9 lb/100			= 99.26

513E 20000 WELDED STUD SHEAR CONNECTORS (EACH) = 1,989 0

G1:	221	X	3	663 Each
G2:	221	X	3	663 Each
G3:	221	X	3	663 Each

Rows of studs Studs per Row

Calculation	Bridge Quantities: SUM-77-3227L					
Description	Stage 2 Quantities					
GF Job No: 67490	Bridge SFN 7704712	Calculated • RSN 10/20/21	Checked SAT 10/28/21	Updated RSN 01/09/22	Verified SAT 02/03/22	Final Rev RSN 04/29/2022

513E 95020	STRUCTURAL STEEL, MISC.:			(LS) =	SUM-77-3227L SHOP DRAWINGS
514E 00060	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT			(SF) = 5,401	0
Proposed Beams	94.2 in	X	229.33 ft	X	3.0 each
514E 00066	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			(SF) = 5,401	0
514E 00504	GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL			(MNHR) = 2	0
Grinding Time Per Foot	30.0 sec/ft	X	228.83 ft	=	1.9 ManHours
	<small>Time is halved since only one side of existing beam is used</small>		<small>Beam Length</small>		
514E 10000	FINAL INSPECTION REPAIR			(EACH) = 5	0
	Inspection Repair per 150 ft.		4.58668	5	
514E 27800	FIELD PAINTING, MISC.:			(LS) = 1	(ADD SUPPLEMENTAL DESCRIPTION)
				1	
516E 10010	ARMORLESS PREFORMED JOINT SEAL			(FT) = 227	0
Rear Sleeper Slab:	110 ft			=	110.0 ft
Forward Sleeper Slab:	117 ft			=	117.0 ft
	<small>Length</small>				
516E 13600	1" PREFORMED EXPANSION JOINT FILLER			(SF) = 25	0
App Slab Parapets:	6.14 sf	X	4	=	24.6 sf
	<small>CAD Area</small>		<small>Number of Joints</small>		
516E 13900	2" PREFORMED EXPANSION JOINT FILLER			(SF) = 99	0
RA Wingwall:	17.81 sf	+	26.875 sf	=	44.7 sf
FA Wingwall:	17.81 sf	+	28.750 sf	=	46.6 sf
FA Wingwall and Roadway Barrier:	7.39 sf			=	7.4 sf
516E 44100	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)			(EACH) = 9	(2"-3" TK, SPECIFY DIMENSIONS)
14"x9.50x2.96 bearing with	3	each			
15"x10.5" load plate					
18"x13"x.259" with 19"x14" load plate	6	each			
516E 44200	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)			(EACH) = 3	(3"-4" TK, SPECIFY DIMENSIONS)
Total # required:	3	each			
516E 14020	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL			(FT) = 108	0
RA Abutment:	54 ft				
FA Abutment:	54 ft				
518E 21200	POROUS BACKFILL WITH GEOTEXTILE FABRIC			(CY) = 39	(CHECK UNIT OF MEASURE)
Rear Abutment:	200 sf	X	2.0 ft	/(27 cf/cy)=	14.8 cy
	<small>CAD Area</small>		<small>width</small>		
Rear Wingwall:	60 sf	X	2.0 ft	/(27 cf/cy)=	4.4 cy
	<small>CAD Area</small>		<small>width</small>		
Forward Abutment:	200 sf	X	2.0 ft	/(27 cf/cy)=	14.8 cy
	<small>CAD Area</small>		<small>width</small>		
Forward Wingwall:	60 sf	X	2.0 ft	/(27 cf/cy)=	4.4 cy
	<small>CAD Area</small>		<small>Width</small>		
518E 40000	6" PERFORATED CORRUGATED PLASTIC PIPE			(FT) = 90	0
FA+Wingwall:	45 ft				45 ft
RA+Wingwall:	45 ft				45 ft
518E 40010	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS			(FT) = 60	0
RA Wingwall:	30 ft				30 ft
FA Wingwall:	30 ft				30 ft
519E 00100	SPECIAL - COMPOSITE FIBER WRAP SYSTEM			(SF) = 2,020	0

Calculation	Bridge Quantities: SUM-77-3227L					
Description	Stage 2 Quantities					
GF Job No: 67490	Bridge SFN 7704712	Calculated • RSN 10/20/21	Checked SAT 10/28/21	Updated RSN 01/09/22	Verified SAT 02/03/22	Final Rev RSN 04/29/2022

Pier 1	9.425 ft <small>perimeter</small>	X	112.9 ft <small>height</small>	1,063.7 sf
Pier 2	9.425 ft <small>perimeter</small>	X	101.4 ft <small>width</small>	955.7 sf

519E 11100	PATCHING CONCRETE STRUCTURE	(SF) =	202	0
Existing Pier Columns	2,020.0 sf	X	10 % <small>10% of total column surface area</small>	202.0 sf

523E 20001	DYNAMIC LOAD TESTING, AS PER PLAN	(EACH) =	4	0
RA:	1			1 each
Pier 1:	1			1 each
Pier 2:	1			1 each
FA:	1			1 each

523E 20501	RESTRIKE, AS PER PLAN	(EACH) =	4	0
RA:	1			1 each
Pier 1:	1			1 each
Pier 2:	1			1 each
FA:	1			1 each

526E 25010	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=15")	(SY) =	437	0
App Slabs:	3,928.00 sf		/(9 sf/sy)=	436.4 sy

526E 90030	TYPE C INSTALLATION	(FT) =	227	0
	227.0 ft <small>Length</small>		RA & FA	

601E 20000	CRUSHED AGGREGATE SLOPE PROTECTION	(SY) =	487	0
RA + Wingwall:	2,501 sf		/(9 sf/sy)=	277.9 cy
FA + Wingwall:	1,878 sf		/(9 sf/sy)=	208.6 cy