

P:\DDT\04\0022_MAH-680-00.68_03.73\105857_Design\Roadway\Sheets\105857_Pavement_Quantities.dgn Sheet 5/27/2021 11:06:24 AM CMT008

LOCATION	STATION		LENGTH FT	WIDTH (AVG.) FT	AREA SF	CADD GENERATED AREA SF	202	204	301	301	304	407	441							
	FROM	TO					PAVEMENT REMOVED SY	SUBGRADE COMPACTION SY	7" ASPHALT CONCRETE BASE CY	9" ASPHALT CONCRETE BASE CY	6" AGGREGATE BASE, AS PER PLAN CY	TACK COAT (0.055 GAL./S.Y.) GAL	3" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22 CY							
FOUR MILE RUN RD.	06+50.00	07+83.00				3375.90	375.10													
	06+50.00	07+00.00	50.00	30.10	1505.00							18.39	13.94							
	06+50.00	07+00.00	50.00	31.27	1563.50				33.78			9.55								
	06+50.00	07+00.00	50.00	32.77	1638.50						30.34									
	06+50.00	07+00.00	50.00	33.10	1655.00					183.89										
	07+00.00	07+83.00	83.00	32.00	2656.00							32.46	24.59							
	07+00.00	07+83.00	83.00	33.17	2753.11					59.48		16.82								
	07+00.00	07+83.00	83.00	34.67	2877.61						53.29									
	07+00.00	07+83.00	83.00	35.00	2905.00					322.78										
	07+83.00	08+03.00	20.00	35.00	700.00						71.00	12.96								
	11+02.77	11+22.77	20.00	35.00	700.00						71.00	12.96								
	11+22.77	12+50.00				3048.93	338.77													
	11+22.77	12+00.00	77.23	32.00	2471.36							30.21	22.88							
	11+22.77	12+00.00	77.23	33.17	2561.72				55.35			15.65								
	11+22.77	12+00.00	77.23	34.67	2677.56						49.58									
11+22.77	12+00.00	77.23	35.00	2703.05					300.34											
12+00.00	12+50.00	50.00	29.80	1490.00							18.21	13.80								
12+00.00	12+50.00	50.00	30.97	1548.50					33.46		9.46									
12+00.00	12+50.00	50.00	32.47	1623.50						30.06										
12+00.00	12+50.00	50.00	32.80	1640.00					182.22											
BELLE VISTA AVE.	02+75.00	04+03.15				5004.26	556.03			108.12		91.74	46.34							
	02+75.00	04+03.15				5283.00					97.83									
	02+75.00	04+03.15				5421.00					602.33									
	04+03.15	04+33.15	30.00	42.33	1269.90						23.52									
	04+03.15	04+33.15	30.00	44.83	1344.90					149.43										
	06+26.73	06+56.73	30.00	47.79	1433.70					30.98	26.55	35.05	13.28							
	06+26.73	06+56.73	30.00	50.23	1506.90					167.43										
	06+56.73	07+00.00				2118.24	235.36			45.76		38.83	19.61							
	06+56.73	07+00.00				2254.00					41.74									
	06+56.73	07+00.00				2320.00					257.78									
I.R. 680	605+01.00	608+06.00				630.80	70.09													
	605+01.00	608+06.00	305.00	1.00	305.00							3.73	2.82							
	605+01.00	608+06.00	305.00	3.17	966.85				26.86			5.91								
	605+01.00	608+06.00	305.00	3.92	1195.60					22.14										
	605+01.00	608+06.00	305.00	4.17	1271.85					141.32										
	606+16.00	608+42.00				579.60	64.40													
	606+16.00	608+42.00	226.00	1.00	226.00							2.76	2.09							
	606+16.00	608+42.00	226.00	3.17	716.42				19.90											
606+16.00	608+42.00	226.00	3.92	885.92					16.41											
606+16.00	608+42.00	226.00	4.17	942.42					104.71											
SUBTOTAL									367	47										
TOTALS CARRIED TO GENERAL SUMMARY							1640	2554	414		417	329	159							

CALCULATED	MGM	CHECKED	TWG
PAVEMENT CALCULATIONS			
MAH-680-0.68 / 3.73			
1	1	1	1

JOB NAME: MAH-680-0.86/3.73
 STRUCTURE TYPE: 3 span steel beam
 BRIDGE: MAH-680-0068



CALCULATED BY: AMR
 CHECKED BY: STK

DATE: 05/24/21
 DATE: 05/24/21

CONSTRUCTION ESTIMATED QUANTITIES - FINAL TRACINGS SUBMITTAL

GENERAL INPUT:

Note: Elevations are at bridge limits.

Skew = 19.28 degrees

ABUTMENTS:

	<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>
Length of diaphragm =	37.43 ft	37.43 ft
Width of diaphragm/breastwall =	3.75 ft	3.75 ft
Width of approach slab =	31.67 ft	31.67 ft
Thickness of approach slab =	1.08 ft	1.08 ft

Top of deck elevations:

Left toe of parapet elevation =	1055.07	1058.25
Right toe of parapet elevation =	1054.96	1058.13
Crown elevation =	1055.27	1058.45
Average top of deck elevation =	1055.10	1058.28
Average approach slab seat elevation =	1054.02	1057.20
Abutment cut line elevation =	1049.25	1052.42
Proposed beam seat elevation =	1049.92	1053.09
Bottom of footing elevation =	1040.20	1048.30
Top of slope elevation =	1049.10	1052.30

	<u>Left wingwall</u>	<u>Right wingwall</u>	<u>Left wingwall</u>	<u>Right wingwall</u>
Construction joint elevation =	1049.25	1049.25	1052.42	1052.42
Wingwall thickness =	1.50 ft	1.50 ft	1.50 ft	1.50 ft
Length of wingwall =	13.25 ft	13.25 ft	13.25 ft	13.25 ft
Beginning of wall elevation =	1054.99	1055.11	1058.22	1058.10
End of wall elevation =	1054.85	1054.97	1058.36	1058.24

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

Deck area = 10236.90 ft²
 Cost to remove deck = \$20.00/ft²
 Quantity of abutment concrete to remove = 30 cu yd
 Cost to remove substructure concrete = \$200.00/yard³
 Total cost = \$211,000
 Quantity = Lump

202E22900 APPROACH SLAB REMOVED

	<u>REAR</u>	<u>FORWARD</u>
Plan area of approach slab removed =	648.00 ft ²	648.00 ft ²
Total Quantity =	144 sq yd	

202E23500 WEARING COURSE REMOVED

Area of asphalt on bridge deck to remove = 8308.20 ft²
 Area of asphalt on approach slabs to remove = 1296.00 ft²
 Total Superstructure = 924 sq yd
 Total General = 144 sq yd
 Total Quantity = 1068 sq yd

503E21300 UNCLASSIFIED EXCAVATION

Amount to excavate = R.A. 8 cu yd F.A. 8 cu yd
 Total Quantity = Lump

509E10000 EPOXY COATED REINFORCING STEEL

Abutments = 3,094 #
 Piers = 2,680 #
 Superstructure = 92,260 #
 Total Quantity = 98,034 #

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

Number of ex #5 vertical bars to salvage = 80 each
 Length of salvaged bar = 2.50 ft
 Embedment depth of #5 bar = 0.67 ft
 Weight of #5 bar = 1.0147 #/ft
 % of bars assumed to be replaced = 50%
 Total Quantity = 129 #

509E30020 NO. 4 GFRP DEFORMED BARS

Total length of parapet bars = 9979 ft
 Total Quantity = 9979 ft

510E10000 DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT

Number of vertical dowels =	<u>R.A.</u> 68 each	<u>F.A.</u> 68 each	<u>PIER 1</u> 46 each	<u>PIER 2</u> 46 each	<u>PIER 3</u> 46 each
Total for abutments =	136 each				
Total for piers =	138 each				
Total Quantity =	274 each				

511E21523 CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE, AS PER PLAN

Deck concrete:

Deck length = bridge limits = 299.77 ft
 Width = 35.33 ft
 Deck plan area = 10,590.87 ft²
 Thickness = 8.50 in
 Deck volume = 7,501.87 ft³

Additional concrete in haunch:

Type of beam (see table to the right) = 8
 Average haunch thickness = 3.75 in
 Flange thickness = 1.26 in
 Haunch width = top flange width = 1.01 ft
 Average haunch area per beam = 0.32 ft²
 Length per beam = 296.50 ft
 Haunch volume per girder line = 93.56 ft³
 No. of beams per span = 5 each
 No. of spans = 1 each
 Total haunch volume = 467.80 ft³

Additional concrete in overhangs:

Average haunch thickness = 3.75 in
 Left overhang from edge of top flange = 3.16 ft
 Right overhang from edge of top flange = 3.16 ft
 Total width of both overhangs from flange = 6.32 ft
 Deck length = bridge limits = 299.77 ft
 Total volume in overhangs = 790.97 ft³

Design: AMP Date: 6-22-21

Check: STK Date: 6-22-21

Additional concrete above abutment diaphragms & between girder flanges:

Beam spacing = 7.00 ft
 Average haunch thickness at abutments = 3.50 in
 Face of diaphragm to approach slab = 3.25 ft
 Distance between top flanges = 7.42 ft
 Total length between flanges = 29.66 ft
 Total length between flanges & end of diaphragms = 38.12 ft
 Volume per abutment = 36.14 ft³
 Total volume for both abutments = 72.27 ft³

	<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>
<u>Diaphragm Concrete:</u>		
Diaphragm thickness =	3.75 ft	3.75 ft
Average diaphragm height =	4.10 ft	4.11 ft
Length of diaphragm =	37.43 ft	37.43 ft
<u>Girder deductions from diaphragm:</u>		
Cross section area of girder =	57.11 in ²	57.11 in ²
Web thickness =	0.77 in	0.77 in
*Area per girder to be deducted =	0.28 ft ²	0.28 ft ²
Face of diaphragm to girder end (along CL beam) =	1.77 ft	1.77 ft
Volume deduction from diaphragm per girder =	0.49 ft ³	0.49 ft ³
Total deduction for all girders =	2.44 ft ³	2.44 ft ³
Total net diaphragm volume =	573.04 ft ³	573.98 ft ³
Total Quantity =	370 cu yd	

511E33501 SEMI-INTEGRAL DIAPHRAGM GUIDE, AS PER PLAN

	<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>
Number of diaphragm guides =	1 each	1 each
Total Quantity =	2 each	

511E34450 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)

Total length of standard parapet on bridge per side = 299.77 ft
 Area of standard outside section = 4.08 ft²
 Number of sides = 2 each
 Quantity of standard section on bridge = 2445.82 ft³

 Volume of parapet transition concrete = 49.14 ft³
 Number of transitions = 4 each

 Parapet reinforcing steel quantity = 1295 lbs

 Total Quantity for Superstructure = 91 cu yd
 Total Quantity for General = 8 cu yd
 Total Quantity = 99 cu yd

511E42510 CLASS QC1 CONCRETE, PIER CAP

	<u>PIER 1</u>	<u>PIER 2</u>	<u>PIER 3</u>
Average height of additional pier cap =	0.41 ft	0.70 ft	0.40 ft
Plan area of pier cap =	96.07 ft ²	96.07 ft ²	96.07 ft ²
Volume of concrete =	39.39 ft ³	67.25 ft ³	38.43 ft ³
Total Quantity =	6 cu yd		

511E44111 CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN

	<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>
<u>Breastwall:</u>		
Cut line elevation =	1049.25	1052.42
Proposed beam seat elevation =	1049.92	1053.09
Height =	0.67 ft	0.67 ft
Length =	37.43 ft	37.43 ft
Width =	3.75 ft	3.75 ft
Breastwall volume =	94.04 ft ³	94.04 ft ³

	<u>Left wingwall</u>	<u>Right wingwall</u>	<u>Left wingwall</u>	<u>Right wingwall</u>
Cross section area of wingwall =	13.18 ft ²			
Length of wingwall for above cross section =	9.25 ft	9.25 ft	9.25 ft	9.25 ft
Length of remaining wingwall =	4.00 ft	4.00 ft	4.00 ft	4.00 ft
Height of wingwall =	4.34 ft	4.46 ft	4.48 ft	4.36 ft
Thickness of wingwall =	1.50 ft			
Total wingwall volume =	296.63 ft ³		269.09 ft ³	
Total volume per abutment =	390.67 ft ³		363.13 ft ³	
Quantity for rear abutment =	15 cu yd			
Quantity for forward abutment =	14 cu yd			
Total Quantity =	29 cu yd			

512E10100 SEALING OF CONCRETE SURFACES (EPOXY URETHANE)

SUPERSTRUCTURE:
Parapet and edge of deck:
 Perimeter of parapet = 7.83 ft
 Slab overhang thickness = 11.25 in
 Distance along bottom of slab = 0.50 ft
 Total perimeter of sealing = 9.27 ft
 Left parapet length = 299.77 ft
 Right parapet length = 299.77 ft
 Total length of sealing = 599.54 ft
 Area of sealing = 5556.24 ft²

	<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>
Average diaphragm Height =	4.10 ft	4.11 ft
Length of diaphragm =	37.43 ft	37.43 ft
Area of diaphragm to seal =	153.46 ft ²	153.71 ft ²

Total area for superstructure = 5863.41 ft²
 Quantity for superstructure = 652 sq yd

Average perimeter of parapet to seal on appr. Slab = 7.24 ft
 Length of parapet on approach slab = 14.00 ft
 Number of locations = 4 each
 Area of sealing = 405.44 ft²

Quantity for approach slabs = 46 sq yd

ABUTMENTS:

	<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>
<u>Breastwall:</u>		
Average beam seat elevation =	1049.25	1052.42
Top of slope elevation =	1049.10	1052.30
Average exposed height =	0.15 ft	0.12 ft
Length of breastwall =	37.43 ft	37.43 ft
Area for breastwall =	5.61 ft ²	4.49 ft ²

	<u>Wingwall 1</u>	<u>Wingwall 2</u>	<u>Wingwall 3</u>	<u>Wingwall 4</u>
Area of wall to seal from CADD =	37.79 ft ²	37.79 ft ²	37.79 ft ²	37.79 ft ²
Length of top of wingwall =	13.25 ft	13.25 ft	13.25 ft	13.25 ft
Wingwall thickness =	1.50 ft	1.50 ft	1.50 ft	1.50 ft
Area =	57.67 ft ²	57.67 ft ²	57.67 ft ²	57.67 ft ²
Total wingwall area per abutment =	115.33 ft ²		115.33 ft ²	
Total area per abutment =	120.94 ft ²		119.82 ft ²	

Quantity for rear abutment = 14 sq yd
Quantity for forward abutment = 14 sq yd

PIERS:

	<u>PIER 1</u>	<u>PIER 2</u>	<u>PIER 3</u>
Length of pier cap =	32.67 ft	32.67 ft	32.67 ft
Average height of pier cap =	3.85 ft	3.85 ft	3.85 ft
Width of pier cap =	3.00 ft	3.00 ft	3.00 ft
Area of underside of pier cap to seal =	67.79 ft ²	67.79 ft ²	67.79 ft ²
Total area of pier cap to seal =	342.43 ft ²	342.45 ft ²	342.45 ft ²
Diameter of column =	3.00 ft	3.00 ft	3.00 ft
Average column height =	12.70 ft	11.64 ft	12.87 ft
Number of columns =	3 each	3 each	3 each
Quantity of pier columns to seal =	359.08 ft ²	329.11 ft ²	363.89 ft ²

Quantity for piers = 232 sq yd

Total Quantity = 958 sq yd

513E10201 | STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN

Weight of crossframe = 6.1 lb/ft
Length of crossframe bay = 21.70 ft
Number of cross frame locations = 24 each

Weight of horizontal crossframe leg = 8.5 lb/ft
Length of horizontal crossframe in waterline bay = 13.88 ft
Total length of vertical members in waterline bay = 4.66 ft
Number of crossframes in waterline bay = 24 each

Total Quantity = 6700 lbs

513E20000 | WELDED STUD SHEAR CONNECTORS

Number of studs per beam line = 588 each
Number of beam lines = 5 each

Total Quantity = 2,940 each

514E00050 | SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL

Width of bottom flange = 1.01 ft
Length of beam over roadway (both directions) = 84.00 ft
Number of beams = 5 each
Quantity of beam bottom flange to paint = 424.10 ft²

Length of beam end to paint = 2.87 ft
Depth of beam = 3.04 ft
Nominal beam measurement = 9.11 ft
Quantity of beam ends to paint = 261.53 ft²

Total Quantity = 686 sq ft

514E00056	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT
Total Quantity = 686 sq ft	
514E00060	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT
Number of new intermediate crossframes to paint = 24 each Length of intermediate crossframe bay = 21.70 ft Perimeter of crossframe to paint = 1.00 ft Quantity for new intermediate crossframe to paint = 520.80 ft ² Number of new waterline crossframe bays to paint = 24 each Length of horizontal piece = 13.88 ft Perimeter of horizontal piece = 1.33 ft Length of diagonal pieces = 4.66 ft Perimeter of diagonal pieces = 1.00 ft Quantity of waterline crossframes to paint = 556.00 ft ² Quantity of paint to be paid for by water line = 1077 sq ft Quantity of paint to be paid for by ODOT = 686 sq ft Total Quantity = 1763 sq ft	
514E00066	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT
Quantity of paint to be paid for by water line = 1077 sq ft Quantity of paint to be paid for by ODOT = 686 sq ft Total Quantity = 1763 sq ft	
514E00504	GRINDING FINIS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL
Amount for each foot of beam = 1 minute/ft Total length of beam to be painted = 448.70 ft Total Quantity = 8 man hr	
514E10000	FINAL INSPECTION REPAIR
Total length of beam to be painted = 448.70 ft Number of new crossframes = 48 each Percent of cross frames to check = 5% Length of beam interval to check = 150.00 ft Quantity to be paid for by water line = 2 each Quantity to be paid for by ODOT = 5 each Total Quantity = 7 each	
516E10010	ARMORLESS PREFORMED JOINT SEAL
Length of seal = 34.96 ft Number of seal locations = 2 each Total Quantity = 70 ft	
516E13600	1" PREFORMED EXPANSION JOINT FILLER
Area of joint filler between concrete parapets at bridge limits = 4.08 ft ² Number of locations = 4 each Total Quantity = 17 ft ²	

516E13900	2" PREFORMED EXPANSION JOINT FILLER																																																
Length of joint filler between wingwall and diaphragm = 3.70 ft Height of joint filler at diaphragm = 4.88 ft Length of joint filler between appr slab and wingwall = 9.46 ft Height of joint filler at appr slab = 1.08 ft Number of locations = 4 each Total Quantity = 114 ft^2																																																	
516E14020	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL																																																
<table border="0"> <thead> <tr> <th></th> <th colspan="2">REAR ABUTMENT</th> <th colspan="2">FORWARD ABUTMENT</th> </tr> </thead> <tbody> <tr> <td>Length of diaphragm along back face =</td> <td colspan="2">37.43 ft</td> <td colspan="2">37.43 ft</td> </tr> <tr> <td></td> <td><u>Wingwall 1</u></td> <td><u>Wingwall 2</u></td> <td><u>Wingwall 3</u></td> <td><u>Wingwall 4</u></td> </tr> <tr> <td>Construction joint elevation =</td> <td>1049.92</td> <td></td> <td>1053.09</td> <td></td> </tr> <tr> <td>Top of wingwall elevation at bottom of approach slab =</td> <td>1053.87</td> <td>1053.99</td> <td>1057.17</td> <td>1057.05</td> </tr> <tr> <td>Number of vertical joints per corner =</td> <td colspan="2">2 each</td> <td colspan="2">2 each</td> </tr> <tr> <td>Height of vertical joint =</td> <td>7.90 ft</td> <td>8.14 ft</td> <td>8.16 ft</td> <td>7.92 ft</td> </tr> <tr> <td>Total Length =</td> <td colspan="2">62.47 ft</td> <td colspan="2">62.51 ft</td> </tr> <tr> <td colspan="5">Total Quantity = 125 ft</td> </tr> </tbody> </table>						REAR ABUTMENT		FORWARD ABUTMENT		Length of diaphragm along back face =	37.43 ft		37.43 ft			<u>Wingwall 1</u>	<u>Wingwall 2</u>	<u>Wingwall 3</u>	<u>Wingwall 4</u>	Construction joint elevation =	1049.92		1053.09		Top of wingwall elevation at bottom of approach slab =	1053.87	1053.99	1057.17	1057.05	Number of vertical joints per corner =	2 each		2 each		Height of vertical joint =	7.90 ft	8.14 ft	8.16 ft	7.92 ft	Total Length =	62.47 ft		62.51 ft		Total Quantity = 125 ft				
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516E42600	ELASTOMERIC BEARING PAD, MISC.: 2" ELASTOMERIC STRIP																																																
Length of diaphragm = 3.97 ft Number of locations = 4 each Total Quantity = 16 ft																																																	
516E44100	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (11.5"X20"X2.4985" WITH A 12.5"X21"X2" LOAD PLATE)																																																
Quantity for piers = 15 each Total Quantity = 15 each																																																	
516E44200	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (10.5"X16"X3.3979" WITH A 11.5"X17.5"X1.5" LOAD PLATE)																																																
Quantity for abutments = 10 each Total Quantity = 10 each																																																	
516E47001	JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN																																																
Number of beam lines = 5 each Number of substructures = 5 each Total number of supports = 25 each Total Quantity = LUMP																																																	

518E21200	POROUS BACKFILL WITH GEOTEXTILE FABRIC				
<u>Abutment:</u>					
		<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>		
Thickness of Porous backfill =		2.00 ft	2.00 ft		
Average approach seat elevation =		1054.02	1057.20		
Bottom of porous backfill elevation =		1048.09	1051.26		
Average height of backfill behind diaphragm =		5.93 ft	5.94 ft		
Length of diaphragm =		37.43 ft	37.43 ft		
Quantity =		443.92 ft ³	444.42 ft ³		
Total Quantity = 33 cu yd					
518E40000	6" PERFORATED CORRUGATED PLASTIC PIPE				
		<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>		
Length of pipe =		39.63 ft	39.63 ft		
Total Quantity = 80 ft					
518E40010	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS				
		<u>Wingwall 1</u>	<u>Wingwall 2</u>	<u>Wingwall 3</u>	<u>Wingwall 4</u>
Length of pipe =		20.00 ft	22.50 ft	19.00 ft	21.50 ft
Total Quantity = 83 ft					
526E15010	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")				
		<u>REAR ABUTMENT</u>	<u>FORWARD ABUTMENT</u>		
Plan area from cad =		688.17 ft ²	688.17 ft ²		
Quantity @ rear abutment = 77 sq yd					
Quantity @ forward abutment = 77 sq yd					
Total Quantity = 154 sq yd					
526E90030	TYPE C INSTALLATION				
Length of installation = 34.96 ft					
Number of locations = 2 each					
Total Quantity = 70 ft					
607E39900	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC				
Length of fencing along left side = 230.00 ft					
Length of fencing along right side = 230.00 ft					
Total Quantity = 460 ft					

BRIDGE NO: MAH-680-0373
 SFN: 5006759
 BRIDGE DESCRIPTION: Belle Vista Ave. Over IR 680



CALCULATED BY: GDJ
 CHECKED BY: ERK

DATE: 5/24/2021
 DATE: 5/24/2021

ESTIMATED QUANTITIES

Note to Designer: Edit Blue Text Only!

ITEM	ITEM EXT.	DESCRIPTION																																																																																																								
ITEM 202	11203	PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN																																																																																																								
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"></td> <td style="width: 20%; text-align: center;">RA</td> <td style="width: 20%; text-align: center;">FA</td> <td style="width: 20%;"></td> </tr> <tr> <td>Backwall thickness =</td> <td style="text-align: center;">1.75 ft</td> <td style="text-align: center;">1.75 ft</td> <td></td> </tr> <tr> <td>Average Backwall height =</td> <td style="text-align: center;">5.32 ft</td> <td style="text-align: center;">5.32 ft</td> <td></td> </tr> <tr> <td>Backwall length =</td> <td style="text-align: center;">68.25 ft</td> <td style="text-align: center;">75.78 ft</td> <td></td> </tr> <tr> <td>Volume =</td> <td style="text-align: center;">635.41 ft³</td> <td style="text-align: center;">705.51 ft³</td> <td></td> </tr> <tr> <td>Corner of Abutment Removal Area =</td> <td style="text-align: center;">2.80 ft²</td> <td style="text-align: center;">2.80 ft²</td> <td></td> </tr> <tr> <td>Removal height =</td> <td style="text-align: center;">6.22 ft</td> <td style="text-align: center;">6.18 ft</td> <td></td> </tr> <tr> <td>Volume =</td> <td style="text-align: center;">17.42 ft³</td> <td style="text-align: center;">17.30 ft³</td> <td></td> </tr> <tr> <td>Wall and railing removal area left side =</td> <td style="text-align: center;">137.00 ft²</td> <td></td> <td></td> </tr> <tr> <td>Wall and railing removal area right side =</td> <td></td> <td style="text-align: center;">66.00 ft²</td> <td></td> </tr> <tr> <td>Thickness =</td> <td style="text-align: center;">1.00 ft</td> <td style="text-align: center;">1.00 ft</td> <td></td> </tr> <tr> <td>Volume =</td> <td style="text-align: center;">137.00 ft³</td> <td style="text-align: center;">66.00 ft³</td> <td></td> </tr> <tr> <td>Total Abutment Removal =</td> <td style="text-align: center;">789.82 ft³</td> <td style="text-align: center;">788.82 ft³</td> <td></td> </tr> <tr> <td>Total Abutment Removal =</td> <td style="text-align: center;">30 CY</td> <td style="text-align: center;">30 CY</td> <td></td> </tr> <tr> <td>Railing length removed =</td> <td style="text-align: center;">65.50 ft</td> <td style="text-align: center;">20.17 ft</td> <td></td> </tr> <tr> <td>Railing thickness =</td> <td style="text-align: center;">1.00 ft</td> <td style="text-align: center;">28.33 ft</td> <td></td> </tr> <tr> <td>Total Railing removal =</td> <td style="text-align: center;">65.50 ft³</td> <td style="text-align: center;">48.50 ft³</td> <td></td> </tr> <tr> <td>Total Railing removal =</td> <td style="text-align: center;">3 CY</td> <td style="text-align: center;">2 CY</td> <td></td> </tr> <tr> <td>Retaining Wall length removed =</td> <td style="text-align: center;">32.58 ft</td> <td style="text-align: center;">28.67 ft</td> <td></td> </tr> <tr> <td>Area of wall removed =</td> <td style="text-align: center;">6.63 ft²</td> <td style="text-align: center;">6.63 ft²</td> <td></td> </tr> <tr> <td>Total retaining wall removal =</td> <td style="text-align: center;">216.03 ft³</td> <td style="text-align: center;">190.06 ft³</td> <td></td> </tr> <tr> <td>Total retaining wall removal =</td> <td style="text-align: center;">9 CY</td> <td style="text-align: center;">8 CY</td> <td></td> </tr> <tr> <td>Total concrete removed =</td> <td style="text-align: center;">42 CY</td> <td style="text-align: center;">40 CY</td> <td></td> </tr> <tr> <td>Deck area =</td> <td style="text-align: center;">8422 ft²</td> <td></td> <td></td> </tr> <tr> <td>Quantity of structural steel =</td> <td style="text-align: center;">329,540 #</td> <td style="text-align: center;">164.77 Tons</td> <td style="text-align: right;">\$190,000.00</td> </tr> <tr> <td colspan="4" style="text-align: center;">Total Quantity = LS</td> </tr> </table>				RA	FA		Backwall thickness =	1.75 ft	1.75 ft		Average Backwall height =	5.32 ft	5.32 ft		Backwall length =	68.25 ft	75.78 ft		Volume =	635.41 ft ³	705.51 ft ³		Corner of Abutment Removal Area =	2.80 ft ²	2.80 ft ²		Removal height =	6.22 ft	6.18 ft		Volume =	17.42 ft ³	17.30 ft ³		Wall and railing removal area left side =	137.00 ft ²			Wall and railing removal area right side =		66.00 ft ²		Thickness =	1.00 ft	1.00 ft		Volume =	137.00 ft ³	66.00 ft ³		Total Abutment Removal =	789.82 ft ³	788.82 ft ³		Total Abutment Removal =	30 CY	30 CY		Railing length removed =	65.50 ft	20.17 ft		Railing thickness =	1.00 ft	28.33 ft		Total Railing removal =	65.50 ft ³	48.50 ft ³		Total Railing removal =	3 CY	2 CY		Retaining Wall length removed =	32.58 ft	28.67 ft		Area of wall removed =	6.63 ft ²	6.63 ft ²		Total retaining wall removal =	216.03 ft ³	190.06 ft ³		Total retaining wall removal =	9 CY	8 CY		Total concrete removed =	42 CY	40 CY		Deck area =	8422 ft ²			Quantity of structural steel =	329,540 #	164.77 Tons	\$190,000.00	Total Quantity = LS			
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ITEM 202	23500	WEARING COURSE REMOVED																																																																																																								
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ITEM 203	10000	EXCAVATION																																																																																																								
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ITEM 204	30010	GRANULAR MATERIAL, TYPE B																																																																																																								
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ITEM 204	50001	GEOTEXTILE FABRIC, AS PER PLAN					
	against diaphragm	left side layer 1	left side layer 2	left side layer 3 & 4	left side layer 5	right side layer 1	right side layer 2
Length =	69.70 ft	12.53 ft	17.22 ft	27.65 ft	21.39 ft	12.53 ft	17.22 ft
Height =	1.00 ft	1.00 ft	1.00 ft	1.00 ft	1.00 ft	0.00 ft	0.00 ft
Lap length =	4.00 ft	4.00 ft	4.00 ft	4.00 ft	4.00 ft	4.00 ft	4.00 ft
number of layers =	5 each	1 each	1 each	2 each	1 each	1 each	1 each
Area =	2091.00 ft ²	75.18 ft ²	103.32 ft ²	331.80 ft ²	128.34 ft ²	50.12 ft ²	68.88 ft ²
	right side layer 3&4	right side layer 5					
Length =	26.73 ft	20.47 ft					
Height =	0.00 ft	0.00 ft					
Lap length =	4.00 ft	4.00 ft					
number of layers =	2 each	1 each					
Area =	213.84 ft ²	81.88 ft ²					
Total Geotextile Quantity = 350 SY							

ITEM 503	21300	UNCLASSIFIED EXCAVATION	
		Rear plan area =	0.00 SQ FT
		Forward plan area =	1,617.38 SQ FT
		Factor for on 2:1 =	1.12
		Total =	68 CY
			\$/CY 45
			Total \$3,100
Total Unclassified Excavation Quantity = LS			

ITEM 509	10000	EPOXY COATED REINFORCING STEEL	
		Pier =	4,241 #
		Abutment =	843 #
		Retaining Wall =	2,860 #
		Diaphragm =	12,187 #
		Superstructure =	68,210 #
		Sidewalk =	11,476 #
		Total Superstructure =	91,873 LB
		Total Pier =	4,241 LB
		Total Abutment =	843 LB
		Total General =	2,860 LB
Total Reinforcing Steel Quantity = 99,817 LB			

ITEM 510	10000	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	
		Abutment	Retaining Wall
Dowels =		50 each	248 each
		Diaphragm	Guide
		48 each	
		Total Dowels Abutment =	98 EACH
		Total Dowels General =	248 EACH
Total Dowel Quantity = 346 EACH			

ITEM 511	21522	CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE	
		<u>Deck concrete:</u>	
		Deck length face/face of diaphragm =	181.86 ft
		Deck thickness =	0.708 ft
		Area of deck =	8066.70 ft ²
		Volume of concrete =	5,713.91 ft ³
		<u>haunch:</u>	
		<u>Range 1</u>	<u>Range 2</u>
		Average haunch thickness =	2.00 in
		Flange thickness =	0.00 in
		Haunch width = top flange width =	16.60 in
		Average haunch per foot per beam =	0.23 ft ²
		Total length =	181.86 ft
		Haunch volume per beam line =	41.93 ft ³
		No. of full haunches =	6.0 each
		Total haunch volume =	251.57 ft ³
			0.00 ft ³

<u>overhangs:</u>			
	Left	Right	Right in area of
Overhang thickness =	12.88 in	12.88 in	12.50 in
Overhang from edge of top flange =	2.10 ft	2.10 ft	
Deck length face/face of diaphragm =	181.86 ft	181.86 ft	
Area of triangle under sidewalk for level construction joint =	0.21 ft ²	0.21 ft ²	
Area of variable width =			5.28 ft ²
Total volume in overhangs =	176.59 ft ³	176.59 ft ³	1.76 ft ³
Deck quantity =		6,320.43 ft ³	
<u>Diaphragm concrete:</u>			
	RA	FA	
Average beam seat elevation =	973.74	967.70	
Average top of diaphragm elevation (approach slab seat elev.) =	977.93	971.29	
Length of diaphragm =	68.58 ft	73.73 ft	
Width of diaphragm =	4.25 ft	4.25 ft	
Volume of diaphragm =	1,220.08 ft ³	1,125.79 ft ³	
<u>above approach slab seat:</u>			
	RA	FA	
Average height above construction joint =	1.42 ft	2.19 ft	
Length of diaphragm =	68.58 ft	73.73 ft	
Face of diaphragm to approach slab =	3.75 ft	3.75 ft	
Volume per abutment =	364.35 ft ³	604.85 ft ³	
Net diaphragm quantity =	3,315.07 ft ³		
<u>Beam deductions for diaphragm:</u>			
Cross sectional area of proposed beams =	82.90 in ²		
Number of beams =	6 each		
Area to be deducted =	3.45 ft ²		
Face of diaphragm to beam end =	2.54 ft		
Number of ends =	2 each		
Total deduction for all beams =	17.55 ft ³		
Total diaphragm quantity =	3,297.52 ft ³		
Total Bridge Deck Quantity =	9,617.95 ft ³		
Total Superstructure Quantity =	357 CY		
ITEM 511	33501	SEMI-INTEGRAL DIAPHRAGM GUIDE, AS PER PLAN	
		RA	FA
	Number =	1 each	1 each
	Total Semi-Integral Diaphragm Guide Quantity = 2 EACH		
ITEM 511	42510	CLASS QC1 CONCRETE, PIER CAP	
	Elevation area =	266.17 ft ²	
	Pier Cap Thickness =	4.00 ft	
	Quantity =	1,064.68 ft ³	
	Total Pier Quantity = 40 CY		
ITEM 511	44110	CLASS QC1 CONCRETE, ABUTMENT NOT INCLUDING FOOTING	
		RA	
	Area of wingwall =	138.97 ft ²	
	Thickness =	1.50 ft	
	Length =		
	Volume =	208.46 ft ³	
		RA	FA
	Abutment Corner Area =	4.26 ft ²	4.26 ft ²
	Corner Height =	6.18 ft	6.29 ft
	Volume =	26.33 ft ³	26.80 ft ³
	Total Abutment Quantity =	261.58 ft ³	
	Total Abutment Quantity = 10 CY		

ITEM 511	51512	CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK					
			RA	FA			
		Cross sectional area of sidewalk =	5.34 ft ²	5.34 ft ²			
		Length =	193.58 ft	187.58 ft			
			1,033.72 ft ³	1,001.68 ft ³			
		Total Sidewalk Quantity =	2,035.39 ft ³				
		Total Sidewalk Quantity =	76 CY				
ITEM 511	53012	CLASS QC2 CONCRETE, MISC.: RETAINING WALLS					
		Retaining Wall A	Retaining Wall A	Retaining Wall B	Retaining Wall C	FA Right	
Railing Area =	2.67 ft ²	3.50 ft ²	2.67 ft ²	2.67 ft ²	3.85 ft ²		
Railing length =	33.17 ft	32.58 ft	28.30 ft	20.17 ft	15.94 ft		
Quantity =	88.44 ft ³	114.04 ft ³	75.47 ft ³	53.78 ft ³	61.36 ft ³		
		Total Quantity Abutment =	3 CY				
		Total Quantity General =	13 CY				
		Total Retaining Walls Quantity =	16 CY				
ITEM 512	10050	SEALING OF CONCRETE SURFACES (NON-EPOXY)					
		on bridge	RA left sidewalk	RA right sidewalk	RA left Type C	RA right Type C	FA left sidewalk
Perimeter of sidewalk =	6.63 ft	6.63 ft	6.63 ft	6.63 ft	6.63 ft	6.63 ft	6.63 ft
Length =	381.16 ft	29.87 ft	29.87 ft	2.79 ft	2.79 ft	2.79 ft	29.87 ft
Area =	2528.08 ft ²	198.12 ft ²	198.12 ft ²	18.50 ft ²	18.50 ft ²	18.50 ft ²	198.12 ft ²
		FA right sidewalk					
Height at toe =	0.67 ft						
Toe length =	7.71 ft						
Plan area =	35.25 ft ²						
Area =	40.39 ft ²						
		Total Non-Epoxy Superstructure =	281 SY				
		Total Non-Epoxy General =	75 SY				
		Total Non-Epoxy Quantity =	356 SY				
ITEM 512	10100	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)					
			RA		FA		
			left	right	left	right	
Abutment elevation area =			3378.21 ft ²		2125.09 ft ²		
Length of top of abutment wingwalls =		52.46 ft	50.88 ft	47.15 ft	86.37 ft		
Top width =		1.50 ft	1.50 ft	1.50 ft	1.50 ft		
Area =		78.69 ft ²	76.32 ft ²	70.73 ft ²	129.56 ft ²		
Corner area =			4.26 ft ²	4.26 ft ²			
Wingwall area =		138.97 ft ²			63.58 ft ²		
Wingwall top length =		20.50 ft					
Wingwall width =		1.50 ft					
Wingwall area =		169.72 ft ²			63.58 ft ²		
Sidewalk bump and railing perimeter =					7.13 ft		
Length to seal =					15.94 ft		
Area =					113.56 ft ²		
Total substructure =		691 SY					
<u>Edge of deck and parapet:</u>		<u>left</u>	<u>right</u>				
Distance under deck =		0.50 ft	0.50 ft				
Cantilever deck slab thickness =		1.07 ft	1.07 ft				
Total perimeter to seal =		1.57 ft	1.57 ft				
Length of deck to seal =		182.90 ft	180.08 ft				
Area =		287.69 ft ²	283.25 ft ²				
Perimeter of sidewalk bump =		1.05 ft	1.05 ft				
Perimeter of parapet =		6.33 ft	6.33 ft				
Total perimeter to seal =		7.38 ft	7.38 ft				
Length of deck to seal =		193.58 ft	188.66 ft				
Area =		1429.27 ft ²	1392.94 ft ²				
		RA	FA				
Diaphragm Area =		205.23 ft ²	338.51 ft ²				
End of diaphragm =		10.11 ft ²	23.71 ft ²				
Total superstructure =		442 SY					

Pier:
 Elevation area = 266.17 ft²
 Cap length = 64.66 ft
 Column diameter = 3.50 ft
 Cap width = 4.00 ft
 Number of columns = 6 each
 Area of bottom of cap = 200.91 ft²
 Cap height at left side = 3.42 ft
 Cap height at right side = 4.79 ft
 Left cap area = 13.68 ft²
 Right cap area = 19.16 ft²
 Column height = 15.17 ft
 Column area = 1000.82 ft²

Total Pier = 197 SY

Parapet on approach slab:

	RA		FA	
	left	right	left	right
Perimeter of railing and sidewalk bump =	7.13 ft	7.13 ft	7.13 ft	
Length =	15.92 ft	29.92 ft	29.92 ft	
Area =	113.41 ft ²	213.16 ft ²	213.16 ft ²	0.00 ft ²

Retaining Wall:

	RA		FA	
	RW A	RW A	RW B	RW C
Perimeter of railing =	6.33 ft	8.00 ft	6.33 ft	6.33 ft
Length =	15.87 ft	32.58 ft	28.30 ft	20.17 ft
Area =	100.51 ft ²	260.67 ft ²	179.25 ft ²	127.72 ft ²

Total general quantity = 135 SY

Quantity for abutment = 691 SY
 Quantity for superstructure = 442 SY
 Quantity for pier = 197 SY
 Quantity for general = 135 SY

Total Sealing Quantity = 1,465 SY

ITEM 513 10241 STRUCTURAL STEEL MEMBERS, LEVEL 2, AS PER PLAN

Area of beam = 82.90 in²
 Length = 186.92 ft
 Number of beams = 6 each
 Total weight of range = 316,364.25 lb

Range 2
 Area of beam = .00 in²
 Length = 43.17 ft
 Number of beams = 0 each
 Total weight of range = 0.00 lb

Range 3
 Area of beam = .00 in²
 Length = 0.00 ft
 Number of beams = 0 each
 Total weight of range = 0.00 lb

	regular x-frame	gasline x-frame
Weight of crossframe angle =	12.80 lb/ft	12.80 lb/ft
Length of straight member =	6.21 ft	6.21 ft
Length of diagonal member =	6.31 ft	1.85 ft
Total length of crossframe members =	18.83 ft	16.12 ft
Number of crossframes =	51 each	13 each
Total weight of crossframes =	12,292.22 lb	2,682.37 lb

	Interior Splice	Fascia Splice
Volume of web flange splice plate =	0.15 ft ³	0.15 ft ³
Number of web plates at splice =	2 each	2 each
	top	
Volume of outside flange splice plates =	0.20 ft ³	0.24 ft ³
Number of outside flange plates at splice =	1 each	1 each
Volume of inside flange splice plates =	0.11 ft ³	0.11 ft ³
Number of inside flange plates at splice =	2 each	2 each
Volume of fill plate =		
Number of fill plates =		

	bottom	bottom
Volume of outside flange splice plates =	0.20 ft ³	0.20 ft ³
Number of outside flange plates at splice =	1 each	1 each
Volume of inside flange splice plates =	0.11 ft ³	0.11 ft ³
Number of inside flange plates at splice =	2 each	2 each
Volume of fill plate =		
Number of fill plates =		

Number of beams =	4 each	2 each																																								
Number of splices per beam =	2 each	2 each																																								
Total volume of splice plates =	9.09 ft ³	4.68 ft ³																																								
Unit weight of steel =	490 lb/ft ³	490 lb/ft ³																																								
Total weight of splice plates =	4,454.09 lb	2,294.60 lb																																								
Connection plate height =	33.960 in																																									
Connection plate width =	7.750 in																																									
Connection plate thickness =	0.375 in																																									
Number of stiffeners =	128 each																																									
Total weight of stiffeners =	3,582.31 lb																																									
Bearing stiffener height =	0.000 in																																									
Bearing stiffener width =	0.000 in																																									
Bearing stiffener thickness =	0.000 in																																									
Number of stiffeners =	0 each																																									
Total weight of stiffeners =	0.00 lb																																									
Top gusset thickness =	0.375 in																																									
Top gusset area =	0.85 ft ²																																									
Number of gussets per cross frame =	2 each																																									
Bottom gusset thickness =	0.375 in																																									
Bottom gusset area =	1.15 ft ²																																									
Number of gussets per cross frame =	2 each																																									
Total weight of gusset plates =	3,132.81 lb																																									
Fill plate thickness =	0.375 in																																									
Fill plate area =	0.68 ft ²																																									
Number of fill plates per cross frame =	1 each																																									
Total weight of gusset plates =	529.71 lb																																									
Total Structural Steel Quantity = 345,400 LB																																										
ITEM 513	20000	WELDED STUD SHEAR CONNECTORS																																								
Number of studs per row = 3 each Number of rows per beam line = 199 each Number of beams = 6 each Total = 3,582 EACH Total Welded Shear Connector Quantity = 3,582 EACH																																										
ITEM 516	10010	ARMORLESS PREFORMED JOINT SEAL																																								
Length along approach slab end = $\frac{RA}{66.27 \text{ ft}}$ $\frac{FA}{67 \text{ FT}}$ Total = 67 FT Total Armorless Preformed Joint Seal Quantity = 67 FT																																										
ITEM 516	12310	SIDEWALK COVER PLATE																																								
Plate width = 1.50 ft Plate length = 8.61 ft Plate thickness = 0.375 in Plate #/ft ² = 15.31 Number of plates = 2 each Weight = 395.46 lb Total Armorless Sidewalk Cover Plate Quantity = 396 LB																																										
ITEM 516	13600	1" PREFORMED EXPANSION JOINT FILLER																																								
<table border="0"> <tr> <td></td> <td>sidewalk</td> <td>railing @ bridge limits</td> <td>retaining wall ends</td> <td>between sidewalk and retaining wall</td> </tr> <tr> <td>Area =</td> <td>5.34 ft²</td> <td>3.59 ft²</td> <td>2.67 ft²</td> <td></td> </tr> <tr> <td>Number of locations =</td> <td>4 each</td> <td>4 each</td> <td>3 each</td> <td></td> </tr> <tr> <td>Height =</td> <td></td> <td></td> <td></td> <td>0.67 ft</td> </tr> <tr> <td>Length =</td> <td></td> <td></td> <td></td> <td>114.22 ft</td> </tr> <tr> <td>Total =</td> <td>22 SF</td> <td>15 SF</td> <td>8 SF</td> <td>77 SF</td> </tr> <tr> <td>Total Superstructure =</td> <td></td> <td>37 SF</td> <td></td> <td></td> </tr> <tr> <td>Total General =</td> <td></td> <td>85 SF</td> <td></td> <td></td> </tr> </table> Total 1" Preformed Expansion Joint Filler Quantity = 122 SF				sidewalk	railing @ bridge limits	retaining wall ends	between sidewalk and retaining wall	Area =	5.34 ft ²	3.59 ft ²	2.67 ft ²		Number of locations =	4 each	4 each	3 each		Height =				0.67 ft	Length =				114.22 ft	Total =	22 SF	15 SF	8 SF	77 SF	Total Superstructure =		37 SF			Total General =		85 SF		
	sidewalk	railing @ bridge limits	retaining wall ends	between sidewalk and retaining wall																																						
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Total Superstructure =		37 SF																																								
Total General =		85 SF																																								
ITEM 516	13900	2" PREFORMED EXPANSION JOINT FILLER																																								
<table border="0"> <tr> <td></td> <td>RA</td> <td>FA</td> </tr> <tr> <td>Length =</td> <td>$\frac{Left}{4.80 \text{ ft}}$ $\frac{Right}{4.80 \text{ ft}}$</td> <td>$\frac{Left}{4.80 \text{ ft}}$ $\frac{Right}{4.75 \text{ ft}}$</td> </tr> <tr> <td>Height =</td> <td>$\frac{Left}{0.59 \text{ ft}}$ $\frac{Right}{0.59 \text{ ft}}$</td> <td>$\frac{Left}{0.59 \text{ ft}}$ $\frac{Right}{3.66 \text{ ft}}$</td> </tr> <tr> <td>Area =</td> <td>46.98 ft² 2.83 ft²</td> <td>2.83 ft² 17.39 ft²</td> </tr> </table> Total 2" Preformed Expansion Joint Filler Quantity = 71 SF				RA	FA	Length =	$\frac{Left}{4.80 \text{ ft}}$ $\frac{Right}{4.80 \text{ ft}}$	$\frac{Left}{4.80 \text{ ft}}$ $\frac{Right}{4.75 \text{ ft}}$	Height =	$\frac{Left}{0.59 \text{ ft}}$ $\frac{Right}{0.59 \text{ ft}}$	$\frac{Left}{0.59 \text{ ft}}$ $\frac{Right}{3.66 \text{ ft}}$	Area =	46.98 ft ² 2.83 ft ²	2.83 ft ² 17.39 ft ²																												
	RA	FA																																								
Length =	$\frac{Left}{4.80 \text{ ft}}$ $\frac{Right}{4.80 \text{ ft}}$	$\frac{Left}{4.80 \text{ ft}}$ $\frac{Right}{4.75 \text{ ft}}$																																								
Height =	$\frac{Left}{0.59 \text{ ft}}$ $\frac{Right}{0.59 \text{ ft}}$	$\frac{Left}{0.59 \text{ ft}}$ $\frac{Right}{3.66 \text{ ft}}$																																								
Area =	46.98 ft ² 2.83 ft ²	2.83 ft ² 17.39 ft ²																																								

ITEM 516	14000	PREFORMED EXPANSION JOINT FILLER, MISC.: 4" THICK																																													
<p>RA Right FA Left</p> <p>Length = 4.80 ft 4.80 ft</p> <p>Height = 5.33 ft 5.49 ft</p> <p>Area = 25.58 ft² 26.35 ft²</p> <p>Total Prefomed Expansion Joint Filler, MISC.: 4" Thick Quantity = 52 SF</p>																																															
ITEM 516	14020	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL																																													
<p>DIAPHRAGM HEIGHTS</p> <table> <tr> <td></td> <td>RA</td> <td>FA</td> <td>RA Diap. Guide</td> <td>FA Diap. Guide</td> </tr> <tr> <td>Length along beam seat =</td> <td>68.26 ft</td> <td>74.78 ft</td> <td>3.50 ft</td> <td>3.50 ft</td> </tr> <tr> <td>Vertical height at wingwall =</td> <td>7.17 ft</td> <td>5.01 ft</td> <td>3.52 ft</td> <td>3.52 ft</td> </tr> <tr> <td>Total =</td> <td>75.43 ft</td> <td>79.79 ft</td> <td>10.52 ft</td> <td>10.52 ft</td> </tr> </table> <p>Total Semi-Integral Abutment Expansion Joint Seal Quantity = 177 FT</p>							RA	FA	RA Diap. Guide	FA Diap. Guide	Length along beam seat =	68.26 ft	74.78 ft	3.50 ft	3.50 ft	Vertical height at wingwall =	7.17 ft	5.01 ft	3.52 ft	3.52 ft	Total =	75.43 ft	79.79 ft	10.52 ft	10.52 ft																						
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ITEM 516	44200	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (12" X 20" X 3.124" WITH A 13" X 21" X 2" LOAD PLATE)																																													
<p>Number of bearings = $\frac{RA}{6}$ EACH</p> <p>Total Bearing Quantity = 6 EACH</p>																																															
ITEM 516	44200	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (16" X 20" X 3.124" WITH A 17" X 21" X 2" LOAD PLATE)																																													
<p>Number of bearings = $\frac{FA}{6}$ EACH</p> <p>Total Bearing Quantity = 6 EACH</p>																																															
ITEM 516	44200	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (12" X 20" X 3.124" WITH A 13" X 26" X 2" LOAD PLATE)																																													
<p>Number of bearings = $\frac{Pier}{6}$ EACH</p> <p>Total Bearing Quantity = 6 EACH</p>																																															
ITEM 517	74501	RAILING, CONCRETE, AS PER PLAN																																													
<table> <tr> <td></td> <td>Left on Bridge</td> <td>Right on Bridge</td> <td>Left RA AS</td> <td>Right RA AS</td> <td>Left FA AS</td> </tr> <tr> <td>Railing Area =</td> <td>2.67 ft²</td> <td>2.67 ft²</td> <td>2.67 ft²</td> <td>2.67 ft²</td> <td>2.67 ft²</td> </tr> <tr> <td>Quantity =</td> <td>193.58 ft</td> <td>188.68 ft</td> <td>15.92 ft</td> <td>29.92 ft</td> <td>29.92 ft</td> </tr> <tr> <td>Quantity =</td> <td>516.21 ft³</td> <td>503.15 ft³</td> <td>42.44 ft³</td> <td>79.78 ft³</td> <td>79.78 ft³</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Total Quantity Superstructure =</td> <td>383 FT</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Total Quantity General =</td> <td>76 FT</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Total Railing Quantity =</td> <td>459 FT</td> <td></td> </tr> </table>							Left on Bridge	Right on Bridge	Left RA AS	Right RA AS	Left FA AS	Railing Area =	2.67 ft ²	2.67 ft ²	2.67 ft ²	2.67 ft ²	2.67 ft ²	Quantity =	193.58 ft	188.68 ft	15.92 ft	29.92 ft	29.92 ft	Quantity =	516.21 ft ³	503.15 ft ³	42.44 ft ³	79.78 ft ³	79.78 ft ³				Total Quantity Superstructure =	383 FT					Total Quantity General =	76 FT					Total Railing Quantity =	459 FT	
	Left on Bridge	Right on Bridge	Left RA AS	Right RA AS	Left FA AS																																										
Railing Area =	2.67 ft ²	2.67 ft ²	2.67 ft ²	2.67 ft ²	2.67 ft ²																																										
Quantity =	193.58 ft	188.68 ft	15.92 ft	29.92 ft	29.92 ft																																										
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			Total Quantity Superstructure =	383 FT																																											
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			Total Railing Quantity =	459 FT																																											
ITEM 518	21200	POROUS BACKFILL WITH GEOTEXTILE FABRIC																																													
<p>Thickness of porous backfill = 2.00 ft</p> <table> <tr> <td></td> <td>RA</td> <td>FA</td> </tr> <tr> <td>Elevation area of backfill behind breastwall =</td> <td>69.40 ft²</td> <td>369.59 ft²</td> </tr> <tr> <td>Quantity behind breastwall =</td> <td>138.80 ft³</td> <td>739.18 ft³</td> </tr> </table> <p>Total Porous Backfill Quantity = 33 CY</p>							RA	FA	Elevation area of backfill behind breastwall =	69.40 ft ²	369.59 ft ²	Quantity behind breastwall =	138.80 ft ³	739.18 ft ³																																	
	RA	FA																																													
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Quantity behind breastwall =	138.80 ft ³	739.18 ft ³																																													
ITEM 519	11101	PATCHING CONCRETE STRUCTURE, AS PER PLAN																																													
<table> <tr> <td></td> <td>RA</td> <td>FA</td> </tr> <tr> <td>Area =</td> <td>147.00 ft²</td> <td>51.00 ft²</td> </tr> </table> <p>Total Patching Quantity = 198 SF</p>							RA	FA	Area =	147.00 ft ²	51.00 ft ²																																				
	RA	FA																																													
Area =	147.00 ft ²	51.00 ft ²																																													
ITEM 526	30011	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17"), AS PER PLAN																																													
<table> <tr> <td></td> <td>Area of sidewalk =</td> <td>5.34 ft²</td> <td>Rebar =</td> <td>19,547 #</td> </tr> <tr> <td></td> <td>Length of sidewalk on approach slab =</td> <td>97.46 ft</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Volume =</td> <td>520 cu yd</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Total Quantity =</td> <td>20 cu yd</td> <td></td> <td></td> </tr> </table> <table> <tr> <td></td> <td>RA</td> <td>FA</td> </tr> <tr> <td>Area from Microstation =</td> <td>1316.00 ft²</td> <td>1463.50 ft²</td> </tr> <tr> <td>Total =</td> <td>309 SY</td> <td></td> </tr> </table> <p>Total Approach Slab Quantity = 309 SY</p>							Area of sidewalk =	5.34 ft ²	Rebar =	19,547 #		Length of sidewalk on approach slab =	97.46 ft				Volume =	520 cu yd				Total Quantity =	20 cu yd				RA	FA	Area from Microstation =	1316.00 ft ²	1463.50 ft ²	Total =	309 SY														
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	RA	FA																																													
Area from Microstation =	1316.00 ft ²	1463.50 ft ²																																													
Total =	309 SY																																														

ITEM 526	90020	TYPE B INSTALLATION																																																																																													
<p style="text-align: right;">Width of joint mesh = 5.00 ft Length = 102.69 ft Total Quantity = 513.45 ft²</p> <p style="text-align: center;">Total Type B Quantity = 58 SY</p>																																																																																															
ITEM 526	90030	TYPE C INSTALLATION																																																																																													
<p style="text-align: right;">Length along approach slab end = ^{RA} 66.27 ft Total = 67 FT</p> <p style="text-align: center;">Total Type C Quantity = 67 FT</p>																																																																																															
ITEM 607	39930	VANDAL PROTECTION FENCE, 12' CURVED, COATED FABRIC																																																																																													
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 15%;">Left on bridge</td> <td style="width: 15%;">Right on bridge</td> <td style="width: 10%;">RA Left AS</td> <td style="width: 10%;">RA Right AS</td> <td style="width: 10%;">RA Right SS</td> <td style="width: 10%;">RW A</td> <td style="width: 10%;">FA Left AS</td> </tr> <tr> <td>Length =</td> <td>193.58 FT</td> <td>189.48 FT</td> <td>14.96 FT</td> <td>30.00 FT</td> <td>3.13 FT</td> <td>30.66 FT</td> <td>30.00 FT</td> </tr> <tr> <td></td> <td>RW B</td> <td>FA Right AS</td> <td>FA Right WW</td> <td>RW C</td> <td colspan="3"></td> </tr> <tr> <td>Length =</td> <td>26.88 FT</td> <td>1.35 FT</td> <td>16.71 FT</td> <td>19.02 FT</td> <td colspan="3"></td> </tr> </table> <p style="text-align: center;">Total Superstructure = 384 FT Total General = 154 FT Total Abutment = 17 FT</p> <p style="text-align: center;">Total Vandal Protection Fence Quantity = 555 FT</p>									Left on bridge	Right on bridge	RA Left AS	RA Right AS	RA Right SS	RW A	FA Left AS	Length =	193.58 FT	189.48 FT	14.96 FT	30.00 FT	3.13 FT	30.66 FT	30.00 FT		RW B	FA Right AS	FA Right WW	RW C				Length =	26.88 FT	1.35 FT	16.71 FT	19.02 FT																																																											
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Length =	26.88 FT	1.35 FT	16.71 FT	19.02 FT																																																																																											
SPECIAL	69098400	SPECIAL - DOMINION ENERGY OHIO STABILIZERS AND SUPPORTS																																																																																													
<table style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">#</td> <td style="text-align: center;">\$/each</td> <td style="text-align: center;">\$</td> </tr> <tr> <td>Install pipe stabilizers =</td> <td style="text-align: center;">13</td> <td style="text-align: center;">\$300</td> <td style="text-align: center;">\$3,900</td> </tr> <tr> <td>Guide gasline through stabilizers =</td> <td style="text-align: center;">1</td> <td style="text-align: center;">\$10,000</td> <td style="text-align: center;">\$10,000</td> </tr> <tr> <td>Install PVC pipe in diaphragm and under approach slab =</td> <td style="text-align: center;">2</td> <td style="text-align: center;">\$2,500</td> <td style="text-align: center;">\$5,000</td> </tr> <tr> <td>Install plate =</td> <td style="text-align: center;">2</td> <td style="text-align: center;">\$300</td> <td style="text-align: center;">\$600</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">\$20,000</td> </tr> </table> <p style="text-align: center;">Total Type Gasline Installation Quantity = LS</p>									#	\$/each	\$	Install pipe stabilizers =	13	\$300	\$3,900	Guide gasline through stabilizers =	1	\$10,000	\$10,000	Install PVC pipe in diaphragm and under approach slab =	2	\$2,500	\$5,000	Install plate =	2	\$300	\$600				\$20,000																																																																
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Install plate =	2	\$300	\$600																																																																																												
			\$20,000																																																																																												
ITEM 840	23000	SELECT GRANULAR BACKFILL																																																																																													
<p style="text-align: right;">Area = 71.26 ft² Width of excavation = 69.70 ft Volume = 4966.68 ft³</p> <p style="text-align: center;">Total Granular Backfill Quantity = 184 CY</p>																																																																																															
ITEM 863	00300	GEOGRID, TYPE P3																																																																																													
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