



CLIENT City of Brecksville  
 PROJECT PJD 104983; Miller Road Interchange  
 SUBJECT Estimated Structure Quantities  
 Stage 3 Design

PROJECT NO. 1162 - Miller Road Interchange  
 COMP. BY SRW DATE 2/21/2022  
 CHECKED BY BPS DATE 2/28/2022

REVISED. BY LAB DATE 6/18/2022  
 CHECKED BY BPS DATE 6/21/2022

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

This item is paid for Lump Sum.

Say: **\$120,000.00**

**ITEM 202 - APPROACH SLAB REMOVED**

Existing approach slab to be removed:

$$\begin{array}{r} \text{Number} \\ 2 \end{array} \times \begin{array}{r} \text{Length (ft)} \\ 20.00 \end{array} \times \begin{array}{r} \text{Width (ft)} \\ 40.00 \end{array} / 9 = 177.78 \text{ SY}$$

Say: **178** SY

**Total for ITEM 202 - APPROACH SLAB REMOVED:**

**178** SY

**ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN**

This item is paid for Lump Sum.

**General:**

Temporary sheeting will be required for phased construction. Estimate area of sheeting required to estimate cost:

$$\begin{array}{r} \text{Number} \\ 2 \end{array} \times \begin{array}{r} \text{Length (ft)} \\ 16.00 \end{array} \times \begin{array}{r} \text{Height (ft)} \\ 28.50 \end{array} / 1 = 912.00 \text{ SF}$$

Total for General: **912.00** SF

Total for General: Say: **915.00** SF

$$\begin{array}{r} \text{Volume (SF)} \\ 912.00 \end{array} \times \begin{array}{r} \text{Cost/SF} \\ \$20.00 \end{array} = \$18,240$$

Estimated cost for excavation bracing:

**Total for ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN:**

Say: **\$20,000.00**

**ITEM 503 - UNCLASSIFIED EXCAVATION**

**Rear Abutment:**

$$\begin{array}{r} \text{Number} \\ 1 \end{array} \times \begin{array}{r} \text{Length (ft)} \\ 28.00 \end{array} \times \begin{array}{r} \text{Width (ft)} \\ 7.75 \end{array} \times 0.5 \times \left( \begin{array}{r} \text{Height (ft)} \\ 6.50 \end{array} + \begin{array}{r} \text{Height (ft)} \\ 6.50 \end{array} \right) / 27 = 52.24 \text{ CY}$$

Total for Rear Abutment: **52.24** CY

Total for Rear Abutment: Say: **53** CY

**Forward Abutment:**

$$\begin{array}{r} \text{Number} \\ 1 \end{array} \times \begin{array}{r} \text{Length (ft)} \\ 28.00 \end{array} \times \begin{array}{r} \text{Width (ft)} \\ 7.75 \end{array} \times 0.5 \times \left( \begin{array}{r} \text{Height (ft)} \\ 6.50 \end{array} + \begin{array}{r} \text{Height (ft)} \\ 6.50 \end{array} \right) / 27 = 52.24 \text{ CY}$$

Total for Forward Abutment: **52.24** CY

Total for Forward Abutment: Say: **53** CY



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**Piers:**

	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)				
Pier 1 Footing:	2	x	11.00	x	11.00	x 0.5 x (	4.00	+	4.00	) /	27	=	35.85 CY
Pier 1 Footing:	1	x	8.41	x	11.00	x 0.5 x (	4.00	+	4.00	) /	27	=	13.70 CY
Pier 2 Footing:	2	x	11.00	x	11.00	x 0.5 x (	4.00	+	4.00	) /	27	=	35.85 CY
Pier 2 Footing:	1	x	8.41	x	11.00	x 0.5 x (	4.00	+	4.00	) /	27	=	13.70 CY
Pier 3 Footing:	2	x	11.00	x	11.00	x 0.5 x (	4.00	+	4.00	) /	27	=	35.85 CY
Pier 3 Footing:	1	x	8.41	x	11.00	x 0.5 x (	4.00	+	4.00	) /	27	=	13.70 CY

Total for Piers: 148.65 CY

Total for Piers: Say: 149 CY

**Total for ITEM 503 - UNCLASSIFIED EXCAVATION:** 255 CY

**ITEM 505 - PILE DRIVING EQUIPMENT MOBILIZATION**

This item is paid for Lump Sum. Say: \$10,000.00

**ITEM 507 - STEEL PILES HP10X42, FURNISHED**

**Rear Abutment:**

	Number		Length (ft)			
Rear Abutment:	8	x	70.00	=	560.00	FT
Total for Rear Abutment:					<u>560.00</u>	FT

Total for Rear Abutment: Say: 560 FT

**Forward Abutment:**

	Number		Length (ft)			
Rear Abutment:	8	x	75.00	=	600.00	FT
Total for Forward Abutment:					<u>600.00</u>	FT

Total for Forward Abutment: Say: 600 FT

**Piers:**

	Number		Length (ft)			
Piers 1&3:	24	x	60.00	=	1440.00	FT
Pier 2:	12	x	50.00	=	600.00	FT

Total for Piers: 2040.00 FT

Total for Piers: Say: 2040 FT

**Total for ITEM 507 - STEEL PILES HP10X42, FURNISHED:** 3200 FT

**ITEM 507 - STEEL PILES HP10X42, DRIVEN**

**Rear Abutment:**

	Number	x	Length (ft)	=	
Rear Abutment:	8		65.00		520.00 FT
Total for Rear Abutment:					<u>520.00</u> FT
Total for Rear Abutment:				Say:	<u>520</u> FT

**Forward Abutment:**

	Number	x	Length (ft)	=	
Rear Abutment:	8		70.00		560.00 FT
Total for Forward Abutment:					<u>560.00</u> FT
Total for Forward Abutment:				Say:	<u>560</u> FT

**Piers:**

	Number	x	Length (ft)	=	
Piers 1,3:	24		55.00		1320.00 FT
Pier 2:	12		45.00		540.00 FT
Total for Piers:					<u>1860.00</u> FT
Total for Piers:				Say:	<u>1860</u> FT

**Total for ITEM 507 - STEEL PILES HP10X42, DRIVEN:** 2940 FT

**ITEM 509 - EPOXY COATED REINFORCING STEEL, AS PER PLAN**

**General:**

Superstructure:	119881	LB
Rear Abutment:	2845	LB
Forward Abutment:	2692	LB
Piers:	23180	LB
Total for General:	<u>148598</u>	LB
Total for General:	Say:	<u>148598</u> LB

**Total for ITEM 509 - EPOXY COATED REINFORCING STEEL, AS PER PLAN:** 148598 LB

**ITEM 509 - REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN**

Estimated quantity for this item: Say: 400 LB

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

Superstructure:	= 724	EACH
Rear Abutment:	= 29	EACH
Forward Abutment:	= 27	EACH

**Total for ITEM 510 - DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT, AS PER PLAN:** 780 EACH

**ITEM 511 - SEMI-INTEGRAL DIAPHRAGM GUIDE**

**Total for ITEM 511 - SEMI-INTEGRAL DIAPHRAGM GUIDE:** 2 EACH

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

**Superstructure:**

	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)				
Bridge Deck	1	x	290.98	x	45.33	x 0.5 x (	0.71	+	0.71	) /	27	=	346.06 CY
Beam Haunch:	6	x	290.98	x	1.33	x 0.5 x (	0.17	+	0.17	) /	27	=	14.37 CY
Beam Haunch:	5.5	x	290.98	x	0.75	x 0.5 x (	0.29	+	0.29	) /	27	=	12.97 CY
Overhang:	1	x	290.98	x	2.00	x 0.5 x (	0.29	+	0.29	) /	27	=	6.29 CY
Sidewalk:	1	x	290.98	x	10.17	x 0.5 x (	0.67	+	1.00	) /	27	=	91.31 CY
Diaphragms:	2	x	30.22	x	3.75	x 0.5 x (	3.00	+	3.00	) /	27	=	25.18 CY
Total for Superstructure:													496.17 CY
Total for Superstructure:												Say:	497 CY
<b>Total for ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK:</b>													<b>497 CY</b>

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

**Superstructure:**

	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)				
Parapet:	2	x	292.00	x	1.00	x 0.5 x (	2.67	+	2.67	) /	27	=	57.68 CY
Total for Superstructure:													57.68 CY
Total for Superstructure:												Say:	58 CY
<b>Total for ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET):</b>													<b>58 CY</b>

**ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS**

**Piers:**

	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)				
Pier Cap:	3	x	3.00	x	25.42	x 0.5 x (	4.50	+	4.83	) /	27	=	39.54 CY
Pier 1 Columns:	3	x	3.14	x	15.48	x 0.5 x (	1.50	+	1.50	) /	27	=	12.16 CY
Pier 2 Columns:	3	x	3.14	x	17.34	x 0.5 x (	1.50	+	1.50	) /	27	=	13.62 CY
Pier 3 Columns:	3	x	3.14	x	13.24	x 0.5 x (	1.50	+	1.50	) /	27	=	10.40 CY
Total for Piers:													75.71 CY
Total for Piers:												Say:	76 CY
<b>Total for ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS:</b>													<b>76 CY</b>



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**ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, ABUTMENTS INCLUDING FOOTING**

**Rear Abutment:**

	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)				
Footing:	1	x	27.00	x	5.75	x 0.5 x (	3.25	+	3.25	) /	27	=	18.69 CY
Breast Wall:	1	x	30.40	x	3.75	x 0.5 x (	3.25	+	3.25	) /	27	=	13.72 CY
Wingwall:	1	x	11.91	x	2.50	x 0.5 x (	3.25	+	3.25	) /	27	=	3.58 CY
Wingwall:	1	x	1.08	x	2.50	x 0.5 x (	5.68	+	5.68	) /	27	=	0.57 CY
Wingwall:	1	x	11.14	x	2.50	x 0.5 x (	5.68	+	2.02	) /	27	=	3.97 CY

Total for Rear Abutment: 40.53 CY

Total for Rear Abutment: Say: 41 CY

**Forward Abutment:**

	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)				
Footing:	1	x	27.00	x	5.75	x 0.5 x (	3.25	+	3.25	) /	27	=	18.69 CY
Breast Wall:	1	x	30.40	x	3.75	x 0.5 x (	3.25	+	3.25	) /	27	=	13.72 CY
Wingwall:	1	x	11.89	x	2.50	x 0.5 x (	3.25	+	3.25	) /	27	=	3.58 CY
Wingwall:	1	x	1.08	x	2.50	x 0.5 x (	5.66	+	5.66	) /	27	=	0.57 CY
Wingwall:	1	x	10.49	x	2.50	x 0.5 x (	5.66	+	1.98	) /	27	=	3.71 CY

Total for Forward Abutment: 40.26 CY

Total for Forward Abutment: Say: 41 CY

**Total for ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, ABUTMENTS INCLUDING FOOTING:** 82 CY

**ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, FOOTING**

**Piers:**

	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)				
Pier 1 Footing:	2	x	9.00	x	9.00	x 0.5 x (	3.00	+	3.00	) /	27	=	18.00 CY
Pier 1 Footing:	1	x	7.41	x	9.00	x 0.5 x (	3.00	+	3.00	) /	27	=	7.41 CY
Pier 2 Footing:	2	x	9.00	x	9.00	x 0.5 x (	3.00	+	3.00	) /	27	=	18.00 CY
Pier 2 Footing:	1	x	7.41	x	9.00	x 0.5 x (	3.00	+	3.00	) /	27	=	7.41 CY
Pier 3 Footing:	2	x	9.00	x	9.00	x 0.5 x (	3.00	+	3.00	) /	27	=	18.00 CY
Pier 3 Footing:	1	x	7.41	x	9.00	x 0.5 x (	3.00	+	3.00	) /	27	=	7.41 CY

Total for Piers: 76.22 CY

Total for Piers: Say: 77 CY

**Total for ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, FOOTING:** 77 CY

**ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)**

**Superstructure:**

	Number		Length (ft)		Perimeter (ft)								
Left Sidewalk:	1	x	290.98	x	9.67	/	9	=	312.53	SY			
Right Sidewalk:	1	x	290.98	x	6.67	/	9	=	215.54	SY			

Total for Superstructure: 528.07 SY

**Total for ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY):** 529 SY

**ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)**

**Superstructure:**

	Number		Length (ft)		Perimeter (ft)					
Bridge Deck Fascia:	2	x	290.98	x	2.83	/	9	=	183.21	SY
Left Parapet:	1	x	290.98	x	6.33	/	9	=	204.76	SY
Right Parapet:	1	x	290.98	x	6.33	/	9	=	204.76	SY
Diaphragms:	2	x	108.76	x	3.00	/	9	=	72.51	SY
Total for Superstructure:									<u>665.24</u>	SY
Total for Superstructure:									Say: <u>665</u>	SY

**Rear Abutment:**

	Number		Length (ft)		Height (ft)		Height (ft)			
Front Face, Abutment Wall:	1	x	108.76	x 0.5 x (	1.75	+	1.75	) /	9	= 21.15 SY
Front Face, Left Wingwall:	1	x	11.91	x 0.5 x (	5.68	+	2.02	) /	9	= 5.09 SY
Top Face, Left Wingwall:	1	x	11.91	x 0.5 x (	2.50	+	2.50	) /	9	= 3.31 SY
Back Face, Left Wingwall:	1	x	11.91	x 0.5 x (	0.50	+	0.50	) /	9	= 0.66 SY
Front Face, Right Wingwall:	1	x	11.91	x 0.5 x (	5.68	+	2.02	) /	9	= 5.09 SY
Top Face, Right Wingwall:	1	x	11.91	x 0.5 x (	2.50	+	2.50	) /	9	= 3.31 SY
Back Face, Right Wingwall:	1	x	11.91	x 0.5 x (	0.50	+	0.50	) /	9	= 0.66 SY
Total for Rear Abutment:									<u>39.27</u>	SY
Total for Rear Abutment:									Say: <u>40</u>	SY

**Forward Abutment:**

	Number		Length (ft)		Height (ft)		Height (ft)			
Front Face, Abutment Wall:	1	x	108.76	x 0.5 x (	1.75	+	1.75	) /	9	= 21.15 SY
Front Face, Left Wingwall:	1	x	11.91	x 0.5 x (	5.68	+	2.02	) /	9	= 5.09 SY
Top Face, Left Wingwall:	1	x	11.91	x 0.5 x (	2.50	+	2.50	) /	9	= 3.31 SY
Back Face, Left Wingwall:	1	x	11.91	x 0.5 x (	0.50	+	0.50	) /	9	= 0.66 SY
Front Face, Right Wingwall:	1	x	11.91	x 0.5 x (	5.68	+	2.02	) /	9	= 5.09 SY
Top Face, Right Wingwall:	1	x	11.91	x 0.5 x (	2.50	+	2.50	) /	9	= 3.31 SY
Back Face, Right Wingwall:	1	x	11.91	x 0.5 x (	0.50	+	0.50	) /	9	= 0.66 SY
Total for Forward Abutment:									<u>39.27</u>	SY
Total for Forward Abutment:									Say: <u>40</u>	SY

**Pier:**

	Number		Pi		Dia. (ft)		Height (ft)		Height (ft)	
Pier 1 Columns:	8	x	3.14	x	3.00	x 0.5 x (	15.48	+	15.48	) / 9 = 129.68 SY
Pier 2 Columns:	8	x	3.14	x	3.00	x 0.5 x (	17.34	+	17.34	) / 9 = 145.27 SY
Pier 3 Columns:	8	x	3.14	x	3.00	x 0.5 x (	13.24	+	13.24	) / 9 = 110.92 SY
	Number		Length (ft)		Height (ft)		Height (ft)			
Pier Cap (Faces):	6	x	80.97	x 0.5 x (	4.50	+	4.50	) /	9	= 242.91 SY
Pier Cap (Ends):	6	x	3.00	x 0.5 x (	4.50	+	4.50	) /	9	= 9.00 SY
Total for Pier:									<u>637.78</u>	SY
Total for Pier:									Say: <u>638</u>	SY

**Total for ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE):**

1383 SY

**ITEM 512 - TYPE 2 WATERPROOFING**

**Rear Abutment:**

	Number		Width (ft)		Height (ft)					
Rear Abutment:	1	x	3.00	x	10.01	/	9	=	3.34	SY
Total for Rear Abutment:									3.34	SY
Total for Rear Abutment:								Say:	<u>4</u>	SY

**Forward Abutment:**

Forward Abutment:	1	x	3.00	x	10.13	/	9	=	3.38	SY
Total for Forward Abutment:									3.38	SY
Total for Forward Abutment:								Say:	<u>4</u>	SY

**Total for ITEM 512 - TYPE 2 WATERPROOFING:** 8 SY

**ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 2**

**Superstructure:**

	Number		Length (ft)		Weight (lb/ft)				
Beams: W33x201	4	x	200.33	x	201	=	161068	LBS	
Beams: W33x221	4	x	86.00	x	221	=	76024	LBS	
Add 10% to account for weight of cross frames, splice plates, and miscellaneous hardware:						=	23709	LBS	
Total for Superstructure:							260801	LBS	
Total for Superstructure:						Say:	<u>261000</u>	LBS	

**Total for ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 2:** 261000 LBS

**ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL**  
**ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT**

**Superstructure:**

	Number		Length (ft)		Perimeter(ft)				
Beams (Original Plans): W36x160	5	x	145.00	x	9.00	=	6525.00	SF	
W36x194	5	x	141.33	x	9.11	=	6436.56	SF	
Beams (Rehabilitation Plans): W33x201	2	x	199.33	x	9.54	=	3803.94	SF	
W33x221	2	x	87.00	x	9.60	=	1670.40	SF	
Add 10% to account for all cross frames and other steel within limits:			10.00%	x	18436	=	1843.59	SF	
Total for Superstructure:							20279.49	SF	
Total for Superstructure:						Say:	<u>20280</u>	SF	

**Total for ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL:** 20280 SF  
**Total for ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT:** 20280 SF



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**ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT**

**ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT**

**Superstructure:**

		Number		Length (ft)		Perimeter(ft)			
Beams (Original Plans):	W36x160	5	x	145.00	x	9.00	=	6525.00	SF
	W36x194	5	x	141.33	x	9.11	=	6436.56	SF
Beams (Rehabilitation Plans):	W33x201	2	x	199.33	x	9.54	=	3803.94	SF
	W33x221	2	x	87.00	x	9.60	=	1670.40	SF
Beams (Proposed):	W33x201	4	x	200.33	x	9.54	=	7646.06	SF
	W33x221	4	x	86.00	x	9.60	=	3302.40	SF
Add 10% to account for all cross frames and other steel within limits:				10.00%	x	29384	=	2938.44	SF
Total for Superstructure:								32322.79	SF
Total for Superstructure:								Say: 32330	SF

**Total for ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT:**

**32330** SF

**Total for ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT:**

**32330** SF

**ITEM 514 - GRINDING FINIS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL**

**Superstructure:** Per BDM 404.2, provide 1 minute for each linear foot of beam/girder to be coated.

		Number		Length (ft)		Time (mnh)			
Girders (Original Plans):	W36x160	5	x	145.00	x	0.02	=	12.08	MNHR
	W36x194	5	x	141.33	x	0.02	=	11.78	MNHR
Girders (Rehabilitation Plans):	W33x201	2	x	199.33	x	0.02	=	6.64	MNHR
	W33x221	2	x	87.00	x	0.02	=	2.90	MNHR
Total for Superstructure:								33.41	MNHR
Total for Superstructure:								Say: 34	MNHR

**Total for ITEM 514 - GRINDING FINIS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL:**

**34** MNHR

**ITEM 514 - FINAL INSPECTION REPAIR**

**Superstructure:** Per CMS 514.21, remove a minimum of one location per 300 linear feet of beam line for webs and flanges and 2.5 percent of all cross frame assemblies and other secondary structural members.

		Number		Length (ft)		Locations			
Girders (Original Plans):	W36x160	5	x	145.00	x	0.003	=	2.42	EACH
	W36x194	5	x	141.33	x	0.003	=	2.36	EACH
Girders (Rehabilitation Plans):	W33x201	2	x	199.33	x	0.003	=	1.33	EACH
	W33x221	2	x	87.00	x	0.003	=	0.58	EACH
Girders (Proposed):	W33x201	4	x	200.33	x	0.003	=	2.67	EACH
	W33x221	4	x	86.00	x	0.003	=	1.15	EACH
Cross Frames (All):				Number		Percent			
				194	x	0.025	=	4.85	EACH
Total for Superstructure:								15.35	EACH
Total for Superstructure:								Say: 16	EACH

**Total for ITEM 514 - FINAL INSPECTION REPAIR:**

**16** EACH





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**ITEM 516 - ARMORLESS PREFORMED JOINT SEAL**

**General:**

Approach Slabs:	Number	x	Length (ft)	=		
	2	x	81.40	=	162.80	FT
Total for General:					162.80	FT
Total for General:				Say:	163	FT
<b>Total for ITEM 516 - ARMORLESS PREFORMED JOINT SEAL:</b>					<b>163</b>	<b>FT</b>

**ITEM 516 - 3/4" PREFORMED EXPANSION JOINT FILLER**

**Piers:**

Between Existing & Proposed Pier Footing:	Number	x	Height (ft)	x	Width (ft)	=		
	3	x	3.00	x	9.00	=	81.00	SF
Total for Piers:							81.00	SF
<b>Total for ITEM 516 - 3/4" PREFORMED EXPANSION JOINT FILLER:</b>							<b>81</b>	<b>SF</b>

**ITEM 516 - 2" PREFORMED EXPANSION JOINT FILLER**

**Superstructure:**

Between diaphragm and wingwalls:	Number	x	Height (ft)	x	Width (ft)	=		
	4	x	5.67	x	2.58	=	58.59	SF
Total for Between diaphragm and wingwalls:							58.59	SF
<b>Total for ITEM 516 - 2" PREFORMED EXPANSION JOINT FILLER:</b>							<b>59</b>	<b>SF</b>

**ITEM 516 - SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL**

**Rear Abutment:**

Length of diaphragm:	Number	x	Length (ft)	=		
	1	x	33.22	=	33.22	FT
Total for Rear Abutment:					33.22	FT
Total for Rear Abutment:				Say:	34	FT

**Forward Abutment**

Length of diaphragm:	Number	x	Length (ft)	=		
	1	x	33.22	=	33.22	FT
Total for Forward Abutment					33.22	FT
Total for Forward Abutment				Say:	34	FT

**Total for ITEM 516 - SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL:** **68** FT



CLIENT City of Brecksville  
 PROJECT PID 104983; Miller Road Interchange  
 SUBJECT Estimated Structure Quantities  
 Stage 3 Design

PROJECT NO. 1162 - Miller Road Interchange  
 COMP. BY SRW DATE 2/21/2022  
 CHECKED BY BPS DATE 2/28/2022

**ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)**  
**AS PER PLAN (LOAD PLATE 13" x 17" x 1.50", NEOPRENE 12" x 16" x 3.55")**

**Superstructure:**

Elastomeric Bearings:	Beams		Locations						
	4	x	2	=	8				EACH
Total for Superstructure:					8				EACH
Total for Superstructure:								Say:	<u>8</u> EACH
<b>Total for ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE):</b>					<u>8</u>				EACH

**ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)**  
**AS PER PLAN (LOAD PLATE 16" x 19" x 1.50", NEOPRENE 15" x 18" x 3.00")**

**Superstructure:**

Elastomeric Bearings:	Beams		Locations						
	4	x	2	=	8				EACH
Total for Superstructure:					8				EACH
Total for Superstructure:								Say:	<u>8</u> EACH
<b>Total for ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE):</b>					<u>8</u>				EACH

**ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)**  
**AS PER PLAN (LOAD PLATE 16" x 27" x 1.50", NEOPRENE 15" x 18" x 3.00")**

**Superstructure:**

Elastomeric Bearings:	Beams		Locations						
	4	x	1	=	4				EACH
Total for Superstructure:					4				EACH
Total for Superstructure:								Say:	<u>4</u> EACH
<b>Total for ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE):</b>					<u>4</u>				EACH

**ITEM 518 - POROUS BACKFILL WITH GEOTEXTILE FABRIC**

**Rear Abutment:**

Abutment Backwall:	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)										
	1	x	43.23	x	2.00	x 0.5 x (	7.18	+	6.60	) /	27	=	22.05						CY
Total for Rear Abutment:													22.05						CY
Total for Rear Abutment:																		Say:	<u>23</u> CY

**Forward Abutment:**

Abutment Backwall:	Number		Length (ft)		Width (ft)		Height (ft)		Height (ft)										
	1	x	43.23	x	2.00	x 0.5 x (	7.20	+	6.75	) /	27	=	22.32						CY
Total for Forward Abutment:													22.32						CY
Total for Forward Abutment:																		Say:	<u>23</u> CY

**Total for ITEM 518 - POROUS BACKFILL WITH GEOTEXTILE FABRIC:** 46 CY



CLIENT City of Brecksville  
 PROJECT PID 104983; Miller Road Interchange  
 SUBJECT Estimated Structure Quantities  
 Stage 3 Design

PROJECT NO. 1162 - Miller Road Interchange  
 COMP. BY SRW DATE 2/21/2022  
 CHECKED BY BPS DATE 2/28/2022

**ITEM 518 - 6" PERFORATED CORRUGATED PLASTIC PIPE**

	Number		Length (ft)	=		
Rear Abutment	1	x	44.00	=	44.00	FT
Forward Abutment	1	x	44.00	=	44.00	FT
					<u>88.00</u>	FT

**Total for ITEM 518 - 6" PERFORATED CORRUGATED PLASTIC PIPE:** 88 FT

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

	Number		Length (ft)	=		
Rear Abutment	1	x	12.00	=	12.00	FT
Forward Abutment	1	x	12.00	=	12.00	FT
					<u>24.00</u>	FT

**Total for ITEM 518 - 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS:** 24 FT

**ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN**

Patching on Rear Abutment:	=	4.00	SF
Patching on Forward Abutment:	=	3.00	SF
Patching on Piers:	=	10.00	SF

**Total for ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN:** 17 SF

**ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T = 13"), AS PER PLAN**

**General:**

	Number		Length (ft)		Width (ft)	+	Width (ft)	/		=		
Approach Slabs:	2	x	20.00	x 0.5 x (	79.00	+	79.00	) /	9	=	351.11	SY

Total for General: 351.11 SY

Total for General: Say: 352 SY

**Total for ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T = 13"), AS PER PLAN:** 352 SY

**ITEM 526 - TYPE C INSTALLATION**

**General:**

	Number		Length (ft)	=		
Approach Slabs:	2	x	81.40	=	162.80	FT

Total for General: 162.80 FT

Total for General: Say: 163 FT

**Total for ITEM 526 - TYPE C INSTALLATION :** 163 FT

**SPECIAL ITEM 530 - STRUCTURAL SURVEY AND MONITORING OF VIBRATION**

This item is paid for Lump Sum. Say: \$10,000.00



CLIENT City of Brecksville  
 PROJECT PID 104983; Miller Road Interchange  
 SUBJECT Estimated Structure Quantities  
 Stage 3 Design

PROJECT NO. 1162 - Miller Road Interchange  
 COMP. BY SRW DATE 2/21/2022  
 CHECKED BY BPS DATE 2/28/2022

**ITEM 601 - SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS**

**Rear Abutment:**

	Slope	Factor	Area (sf)					
Rear Abutment:	2.0 :1	1.12 x	1085.0	/	9	=	134.79	SY
Total:							134.79	SY
Total for Rear Abutment:							Say: <u>135</u>	SY

**Forward Abutment:**

	Slope	Factor	Area (sf)					
Forward Abutment:	2.0 :1	1.12 x	1085.0	/	9	=	134.79	SY
Total:							134.79	SY
Total for Forward Abutment:							Say: <u>135</u>	SY

**Total for ITEM 601 - SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS: 270 SY**

**ITEM 607 - VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC**

**Superstructure:**

	Number	Length (ft)	Length (ft)	Length (ft)				
Left Parapet:	1	x ( 292.00	+ 0.00	+ 0.00	) =	292.00	FT	
Right Parapet:	1	x ( 292.00	+ 0.00	+ 0.00	) =	292.00	FT	
Total for Superstructure:						<u>584.00</u>	FT	
Total for Superstructure:						Say: <u>584</u>	FT	

**Total for ITEM 607 - VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC: 584 FT**

**ITEM 607 - TEMPORARY VANDAL FENCE**

**Superstructure:**

	Number	Length (ft)	Length (ft)	Length (ft)				
Phase 1 Construction:	1	x ( 20.00	+ 292.00	+ 20.00	) =	332.00	FT	
Phase 1 Construction (Bridge Ends):	1	x ( 100.00	+ 0.00	+ 0.00	) =	100.00	FT	
Phase 2 Construction:	1	x ( 20.00	+ 292.00	+ 20.00	) =	332.00	FT	
Phase 2 Construction (Bridge Ends):	1	x ( 100.00	+ 0.00	+ 0.00	) =	100.00	FT	
Total for Superstructure:						<u>864.00</u>	FT	
Total for Superstructure:						Say: <u>864</u>	FT	

**Total for ITEM 607 - TEMPORARY VANDAL FENCE: 864 FT**



CLIENT City of Brecksville  
 PROJECT PJD 104983; Miller Road Interchange  
 SUBJECT Estimated Structure Quantities  
 Stage 3 Design

PROJECT NO. 1162 - Miller Road Interchange  
 COMP. BY SRW DATE 2/21/2022  
 CHECKED BY BPS DATE 2/28/2022

**ITEM 607 - FENCE, MISC.: ALUMINUM LETTERING**

This item is paid for Lump Sum.

**Superstructure:**

In 2016, the similar two "Westlake" signs on Crocker Road were fabricated and installed for \$36,492.

For Stage 3 Cost Estimate, assume price of one sign is:

\$ 20,000

Inflate to year 2023 using: 5.00%

\$28,143

Total for Superstructure:

Say: \$ 30,000

**Total for ITEM 607 - FENCE, MISC.: ALUMINUM LETTERING:**

\$30,000

**ITEM 847 - MICRO SILICA MODIFIED CONCRETE OVERLAY, 1 1/2" THICK**

**Superstructure:**

Existing Bridge Deck:  $1 \times 292.00 \times 0.5 \times (28.67 + 28.67) / 9 = 930.07 \text{ SY}$

Total for Superstructure:

930.07 SY

Total for Superstructure:

Say: 931 SY

**Total for ITEM 847 - MICRO SILICA MODIFIED CONCRETE OVERLAY, 1 1/2" THICK:**

931 SY

**ITEM 847 - MICRO SILICA MODIFIED CONCRETE OVERLAY, MATERIAL ONLY**

**Superstructure:**

Existing Bridge Deck:  $1 \times 0.25 \times 290.98 \times 0.5 \times (28.67 + 28.67) / 27 = 77.24 \text{ CY}$

Total for Superstructure:

77.24 CY

5% estimate for this item:

3.86

Total for Superstructure:

Say: 4 CY

**Total for ITEM 847 - MICRO SILICA MODIFIED CONCRETE OVERLAY, MATERIAL ONLY:**

4 CY

**ITEM 847 - TEST SLAB**

This item is paid for Lump Sum.

Say: \$2,500.00

**ITEM 847 - FULL DEPTH REPAIR**

**Superstructure:**

Existing Bridge Deck:  $1 \times 0.58 \times 290.98 \times 0.5 \times (28.67 + 28.67) / 27 = 180.22 \text{ CY}$

Total for Superstructure:

180.22 CY

1% estimate for this item:

1.80 CY

Total for Superstructure:

Say: 2 CY

**Total for ITEM 847 - FULL DEPTH REPAIR :**

2 CY



CLIENT City of Brecksville  
PROJECT PJD 104983; Miller Road Interchange  
SUBJECT Estimated Structure Quantities  
Stage 3 Design

PROJECT NO. 1162 - Miller Road Interchange  
COMP. BY SRW DATE 2/21/2022  
CHECKED BY BPS DATE 2/28/2022

**ITEM 847 - HAND CHIPPING**

**Superstructure:**

	Number		Length (ft)		Width (ft)		Width (ft)				
Existing Bridge Deck:	1	x	290.98	x 0.5 x (	28.67	+	28.67	) /	9	=	926.83 SY
Total for Superstructure:											<u>926.83</u> SY
6% estimate for this item (5% for materials only + 1% for full depth):											<u>55.61</u> SY
Total for Superstructure:										Say:	<u>56</u> SY
<b>Total for ITEM 847 - HAND CHIPPING:</b>											<u>56</u> SY