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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: STRUCTURE REMOVED

ITEM EXTENSION
 202 11003
 STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

Type

Length	Avg. Width	Total Area	Cost	Total Cost
FT	FT	SF	\$/SF	\$
1551	102	158202	\$40.00	\$6,328,080

Total Cost * (1.15) Inflation Factor = \$7,277,292

TOTAL	\$7,300,000	LS
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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: APPROACH SLAB REMOVED

ITEM EXTENSION
 202 22900
 APPROACH SLAB REMOVED

*Refer to Existing 1987 Rehab Plans for SUM-8

Type	Length	Width	Surface Area	Surface Area
	FT	FT	SF	SY
SUM-8-0199L/R				
REAR (SOUTH)	25.00	83.00	2075.00	230.56
FORWARD (NORTH)	25.00	102.25	2556.25	284.03
FORWARD EXTRA AREA	25.00	4.54	113.54	6.31

SB TOTAL = 257
 NB TOTAL = 264

TOTAL	521	SY
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ITEM EXTENSION
203 20001
EMBANKMENT, AS PER PLAN

SUM-8-0199L (SB)

Location			Length	End Area	Fill Volume	
			FT	SF	CF	CY
Rear Abutment	STA.	223+92.34	-	1980	-	-
	STA.	224+00.00	7.66	2175	15914	589
	STA.	224+50.00	50.00	3027	130050	4817
	STA.	224+62.64	12.64	3061	38476	1425
	STA.	224+92.34	29.70	2697	85506	3167
Forward Abutment	STA.	241+11.84	-	1087	-	-
	STA.	241+41.84	30.00	920	30105	1115
	STA.	242+00.00	58.16	540	42457	1572
	STA.	242+11.84	11.84	549	6447	239

SB TOTAL	12924	CY
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SUM-8-0199R (NB)

Location			Length	End Area	Fill Volume	
			FT	SF	CF	CY
Rear Abutment	STA.	523+79.89	-	62	-	-
	STA.	524+00.00	20.11	152	2152	80
	STA.	524+20.64	20.64	276	4417	164
	STA.	524+50.00	29.36	267	7971	295
	STA.	524+89.81	39.81	299	11266	417
	STA.	525+11.89	22.08	558	9461	350
Forward Abutment	STA.	540+99.89	-	11	-	-
	STA.	541+29.89	30.00	164	2625	97
	STA.	541+50.00	20.11	162	3278	121
	STA.	541+99.89	49.89	52	5338	198

NB TOTAL	1722	CY
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TOTAL	14646	CY
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Job no: 08326
Design: ATM Date: 09/01/21
Check: DEA Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: COFFERDAMS, APP

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
503 11101
COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN

Type

Total
\$

PIERS 1 to 5 **

GF TOTAL **\$387,500**

Subtotal = **\$387,500**

Subtotal * (1.15) Inflation Factor = \$445,625

TOTAL = \$450,000 LS

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Job no: 08326
 Design: ATM Date: 09/02/21
 Check: DEA Date: 10/29/21
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: UNCLASSIFIED EXCAVATION

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
 503 21101

UNCLASSIFIED EXCAVATION, AS PER PLAN

Type	Volume
	CY

SUM-8-0199L
 Piers 1 to 5** GF TOTAL = 2491.00

SUM-8-0199R
 Piers 1 to 5** GF TOTAL = 1821.00

Length	Width	T/Ex. Gr.	B/Ftg.	Volume
FT	FT	EL	EL	CY

SUM-8-0199L
 RA 18.17 204.66 1015.63 1001.00 2014.56

Length	Width	T/Ex. Gr.	B/Ftg.	Volume
FT	FT	EL	EL	CY

SUM-8-0199R
 RA 18.17 204.66 1027.92 1004.00 3293.80
 FA 17.42 211.54 1029.76 1011.00 2559.94

SB TOTAL = 4506 CY
 NB TOTAL = 7675 CY

TOTAL = 12,181 CY

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Job no: 08326
Design: ATM Date: 08/31/21
Check: DEA Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: ROCK EXCAVATION

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
503 31100
ROCK EXCAVATION

Boring #	T/Rock EL
B-005-1-16	1014.60
B-006-0-15	1002.00
B-005-2-16	996.80

B/Footing	1001.00	FT
Length	283.59	FT

Slope	0.063
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**line drawn connecting ends of Ftg. @ T/Rock Elevs.*

SUM-8-0199L/R

Type	TRIANGULAR AREA			Width FT	Volume CF	Volume CY
	Length FT	Height FT	Area SF			
	NB REAR ABUTMENT	216.68	14.60			

PIER 1 (GF QUANTITY) **

	Length FT	Height FT	Width FT	Volume CF	Volume CF
	NB	41.50	3.00	23.50	2925.75
GF TOTAL =	1900		70.37		

SB TOTAL = 0 CY
NB TOTAL = 829 CY

TOTAL = 829 CY

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Job no: 08326
 Design: DEA Date: 04/26/21
 Check: ATM Date: 09/01/21
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: LAUNCHING PIT EXCAVATION

ITEM 503 EXTENSION 31500
 STRUCTURAL EXCAVATION, MISC.: LAUNCHING PIT
 *Does not include quantity at abutment for Unclassified Excavation

Earthwork

	Length*	Width	Depth	Volume	Unit Cost	Total Cost
	FT	FT	FT	CY	\$/CY	\$
Excavation Stage 1	367.50	100.00	10.00	6806	\$20	\$136,111
Excavation Stage 2	367.50	119.25	12.00	19478	\$20	\$389,550

Sheet Pile and Soldier Pile Walls

	Length	Avg. Height	Area	Unit Cost	Total Cost
	FT	FT	SF	\$/SF	\$
Sheet Pile	284.17	31.57	8971	\$50	\$448,557.08
Solider Pile Lagging Wall	41.67	20.00	833	\$70	\$58,334

Subtotal = \$1,032,552
 Subtotal * (1.15) Inflation Factor = \$1,187,435
TOTAL = \$1,190,000 LS



ITEM EXTENSION
 503 31500
 STRUCTURAL EXCAVATION, MISC.: RECEIVING PIT

*Does not include quantity at abutment
 for Unclassified Excavation

Earthwork

	Length*	Width	Depth	Volume	Unit Cost	Total Cost
	FT	FT	FT	CY	\$/CY	\$
Excavation Stage 1	137.50	27.50	14.00	980	\$20	\$19,606
Excavation Stage 2	137.50	118.75	15.00	9071	\$20	\$181,424

Soldier Pile Walls

	Length	Avg Height	Area	Unit Cost	Total Cost
	FT	FT	SF	\$/SF	\$
Stage 1 Soldier Pile			5734	\$70	\$401,384
Section 1	50.00	11.00	550		
Section 2	130.00	22.00	2860		
Section 3	40.00	33.00	1320		
Section 4	13.44	39.00	524		
Section 5	24.00	20.00	480		
Stage 2 Soldier Pile	160.00	20.00	3200	\$70	\$224,000

Subtotal = \$826,414

Subtotal * (1.15) Inflation Factor = \$950,377

TOTAL = \$960,000 LS

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Job no: 08326
 Design: ATM Date: 04/26/21
 Check: DEA Date: 10/29/21
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: PILE DRIVING EQ. MOBILIZATION

ITEM EXTENSION
 505 11100

PILE DRIVING EQUIPMENT MOBILIZATION

Type	Location	Pile Type	Cost per Type
SUM-8-0199L/R			
	Forward Abutment	14" CIP	\$15,000.00
	Pier 5	16" CIP	\$15,000.00
		SB TOTAL =	\$15,000.00
		NB TOTAL =	\$15,000.00
		Subtotal =	\$30,000
	Subtotal * (1.15) Inflation Factor = \$34,500		
	TOTAL = \$34,500 LS		

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: CIP PILES

ITEM EXTENSION
 507 00600
 14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN

Type	Piles	Length	Total Length
FA	#	FT	FT
SUM-8-0199L/R			
NB	53	35.00	1855
SB	40	55.00	2200
SB TOTAL =		2200	CY
NB TOTAL =		1855	CY
TOTAL =		4,055	FT

ITEM EXTENSION
 507 00650
 14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED

Type	Piles	Length	Total Length
FA	#	FT	FT
SUM-8-0199L/R			
NB	53	40.00	2120
SB	40	60.00	2400
SB TOTAL =		2400	CY
NB TOTAL =		2120	CY
TOTAL =		4,520	FT

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: 16" CIP PILES

ITEM EXTENSION
507 00700

****see PDF sheets 58-61 for Pier Calculations**

16" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN

Type	Piles	Length	Total Length
	#	FT	FT
SUM-8-0199L			
RA			
Pier 1			0
Pier 2			0
Pier 3			0
Pier 4			0
Pier 5	46	85	3910
FA			0
SUM-8-0199R			
RA			
Pier 1			0
Pier 2			0
Pier 3			0
Pier 4			0
Pier 5	46	75	3450
FA			0
SB TOTAL =		3910	CY
NB TOTAL =		3450	CY
TOTAL =		7,360	FT

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: 16" CIP PILES

ITEM EXTENSION
507 00750

****see PDF sheets 59-62 for Pier Calculations**

16" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED

Type	Piles	Length	Total Length
	#	FT	FT
SUM-8-0199L			
RA	-	-	0
Pier 1	-	-	0
Pier 2	-	-	0
Pier 3	-	-	0
Pier 4	-	-	0
Pier 5	46	90	4140
FA	-	-	0
SUM-8-0199R			
RA	-	-	0
Pier 1	-	-	0
Pier 2	-	-	0
Pier 3	-	-	0
Pier 4	-	-	0
Pier 5	46	80	3680
FA	-	-	0
SB TOTAL =		4140	CY
NB TOTAL =		3680	CY
TOTAL =		7,820	FT

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: REINFORCING STEEL

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
 509 10000
 EPOXY COATED STEEL REINFORCEMENT

Weight	
Location	LB

SUM-8-0199L

Deck 1,521,628
 Parapet 38,460
 Piers** 1,245,219 (GF total)
 Rear Abutment 124,549
 Rear Abutment Monument 11,017
 Forward Abutment 46,968
 Rear Abutment Trough 8,305
 Forward Abutment Trough 10,312
SB TOTAL = 3,006,458 CY

Weight	
Location	LB

SUM-8-0199R

Deck 1,507,217
 Parapet 36,452
 Piers** 1,236,580 (GF total)
 Rear Abutment 158,109
 Forward Abutment 56,025
 Rear Abutment Trough 12,602
 Forward Abutment Trough 9,142
NB TOTAL = 3,016,127 CY

TOTAL = 6,022,585 LB

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Job no: 08326
Design: DBL Date: 08/22/19
Check: ATM Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: GFRP BARS

ITEM EXTENSION
509 30020

NO. 4 DEFORMED GFRP REINFORCEMENT

Location	Length (FT)		Total
	SUM-8-0199L	UM-8-0199	FT
Parapets	53,782	53,366	107,148

SB TOTAL = 53782 FT
NB TOTAL = 53366 FT

TOTAL = 107,148 FT

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: DOWEL HOLES

****see PDF sheets 58-61 for Pier Calculations**

ITEM EXTENSION
 510 10000

DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT

		Total
Location	Each	

SUM-8-0199L

Pier 5** 220

SB TOTAL = 220 EACH

		Total
Location	Each	

SUM-8-0199R

Pier 5** 220

NB TOTAL = 220 EACH

TOTAL = 440 EACH

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Job no: 08326
Design: ATM Date: 08/31/21
Check: DEA Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: BRIDGE DECK

ITEM EXTENSION
511 34447
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN

Type	Area	Thickness	Volume
	SF	IN	CY
SUM-8-0199L			
Deck	128,237	10.5	4156
Haunch			269

	Volume	Volume	Number	Total	
	CF	CY	#	CY	
Light Pilaster	16.16	0.60	11	7	
SB TOTAL =				4,432	CY

SUM-8-0199R			
Deck	125,927	10.5	4081
Haunch			278

	Volume	Volume	Number	Total	
	CF	CY	#	CY	
Light Pilaster	16.16	0.60	11	7	
TRUSS PILASTER	16.16	0.6	4	2	
NB TOTAL =				4,368	CY

TOTAL = 8,800 CY

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Job no: 08326
Design: ATM Date: 08/15/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: DECK PARAPET

ITEM EXTENSION
511 34450

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

Type	Area	Length	Volume
	SF	FT	CY
SUM-8-0199L			
Left RA	4.08	32.25	4.88
Left Bridge Deck	4.08	1611.46	243.71
Left FA	4.08	32.25	4.88
Right RA	4.08	32.35	4.89
Right Bridge Deck	4.08	1611.55	243.72
Right FA	4.08	32.25	4.88
Light Pilaster			6.58
			Gen. Sub= 20.00
			Super. Sub = 495.00
			SB TOTAL = 515

SUM-8-0199R			
Left RA	4.08	32.25	4.88
Left Bridge Deck	4.08	1579.95	238.94
Left FA	4.08	32.25	4.88
Right RA	4.08	32.25	4.88
Right Bridge Deck	4.08	1579.95	238.94
Right FA	4.08	32.25	4.88
Truss Pilaster			1.20
Light Pilaster			6.58
			Gen. Sub= 20.00
			Super. Sub = 486.00
			NB TOTAL = 506

TOTAL = 1021 CY

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Job no: 08326
 Design: ATM Date: 09/10/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: PIER ABOVE FOOTINGS

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
 511 42012
 CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS

Type	Column Volume	
	CY	
SUM-8-0199L		
Piers 1-5	GF TOTAL =	1570.00
	SB TOTAL =	1570 CY
SUM-8-0199R		
Piers 1-5	GF TOTAL =	1649.00
	NB TOTAL =	1649 CY
	TOTAL =	3219 CY



ITEM EXTENSION
511 44112
CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING

Type	Avg. Beam Seat	Avg. T/Backwall	B/Ftg.	Ftg. Thickness	Length	Backwall Thickness	Stem Thickness	Volume
	EL	EL	EL	FT	FT	FT	FT	CY
SUM-8-0199L								
RA Backwall	1027.8	1037.64	1001.00	3.75	84.50	2.25	7.33	70.0
FA Backwall	1018.42	1027.97	1011.00	3.00	80.42	2.25	7.16	64.0
FA Stem	1018.42	-	1011.00	3.00	80.42	-	7.16	94.3

	Length	Beginning Height	Ending Height	Backwall Width	Volume of Trough Backwall	Avg. Area	Length	Volume of Trough	Total Volume
	FT	FT	FT	FT	CY	SF	FT	CY	CY
RA Trough	87.48	0.41	2.10	2.75	11.19	3.31	87.48	10.73	21.93
FA Trough	80.43	3.74	2.19	2.75	24.29	2.76	80.43	8.22	32.51

	Width (FT)	Length (FT)	Height (FT)	Number	Volume (CY)
RA Support Pedestal	5.75	1.50	31.50	13.00	130.81
FA Support Pedestal	5.25	1.50	13.93	13.00	52.82
SB TOTAL =					466.32

Avg. Beam Seat	Avg. T/Backwall	B/Ftg.	Ftg. Thickness	Length	Backwall Thickness	Stem Thickness	Volume
EL	EL	EL	FT	FT	FT	FT	CY

SUM-8-0199R								
RA Backwall	1027.49	1037.66	1001.00	3.75	85.17	2.25	7.33	73.0
FA Backwall	1018.38	1028.55	1011.00	3.00	80.42	2.25	7.16	69.0
FA Stem	1018.38	-	1011.00	3.00	80.42	-	7.16	93.4

	Length	Beginning Height	Ending Height	Backwall Width	Volume of Trough Backwall	Avg. Area	Length	Volume of Trough	Total Volume
	FT	FT	FT	FT	CY	SF	FT	CY	CY
RA Trough	82.52	2.08	0.49	2.75	10.81	3.31	82.52	10.12	20.93
FA Trough	80.43	3.76	2.21	2.75	24.45	2.76	80.43	8.22	32.68

	Width (FT)	Length (FT)	Height (FT)	Number	Volume (CY)
RA Support Pedestal	5.75	1.50	31.50	13.00	130.81
FA Support Pedestal	5.25	1.50	13.93	13.00	52.82
NB TOTAL =					472.64

Rear Abutment						
	Length	Height	Thickness	Volume	Volume	
	FT	FT	FT	CF	CY	
West CHEWALL	4.00	12.50	10.21	510.50	18.91	SB ABUT TOTAL = 495 CY
East CHEWALL	4.00	30.00	10.00	1200.00	44.44	
West CURWALL	1.00	34.50	7.33	252.99	9.37	NB ABUT TOTAL = 526 CY
East CURWALL	1.00	34.60	7.33	253.62	9.39	
				SUB =	82.12	TOTAL = 1021 CY

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Job no: 08326
Design: ATM Date: 09/10/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: MASS CONCRETE

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
511 45602
CLASS QC4 MASS CONCRETE, SUBSTRUCTURE WITH QC/QA

Type	Avg. Beam Seat	B/Ftg.	Ftg. Thickness	Length	Stem Thickness	Volume
	EL	EL	FT	FT	FT	CY

SUM-8-0199L

RA Stem	1027.80	1001.00	3.75	84.50	7.33	529
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SUM-8-0199R

RA Stem	1027.49	1001.00	3.75	85.17	7.33	526
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SUM-8-0199L PIER FOOTINGS GF TOTALS

PIER 1	216.8
PIER 2	252.8
PIER 3	252.8
PIER 4	346.7
PIER 5	475.9
GF TOTAL =	1545.00

SUM-8-0199R PIER FOOTINGS GF TOTALS

PIER 1	216.8
PIER 2	252.8
PIER 3	252.8
PIER 4	346.7
PIER 5	475.9
GF TOTAL =	1545.00

SB ABUT TOTAL =	529	CY
SB PIER TOTAL =	1545	CY
NB ABUT TOTAL =	526	CY
NB PIER TOTAL =	1545	CY

TOTAL = 4145 CY

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Job no: 08326
Design: ATM Date: 09/10/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: MASS CONCRETE, APP

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**

511 45603

CLASS QC4 MASS CONCRETE, SUBSTRUCTURE WITH QC/QA, AS PER PLAN

Type

Volume
CY

SUM-8-0199L

GF TOTAL = 4999.00

SUM-8-0199R

GF TOTAL = 4854.00

SB PIER TOTAL = 4999 CY

NB PIER TOTAL = 4854 CY

TOTAL = 9853 CY



ITEM EXTENSION
511 46012

CLASS QC1 CONCRETE WITH QC/QA, RETAINING/WINGWALL NOT INCLUDING FOOTING

Type	Length	Average Height		Avg. Area	Thickness	Volume	Volume
	FT	FT	FT	SF	FT	CF	CY
RA		Left	Right				
		<i>Looking @ abut.</i>					
East WW (NB)							
Section B-B (top)	14.67	12.62	18.23	226.23	2.25	509.03	18.9
Section B-B (bot)	14.67	16.50	16.50	242.00	3.75	907.50	33.6
Section D-D	14.33	21.95	29.12	365.99	2.25	823.48	30.5
Section E-E	8.00	17.70	21.95	158.60	2.25	356.85	13.2
Center WW (NB)							
Section B-B (top)	46.25	17.98	18.04	832.96	2.25	1874.17	69.4
Section B-B (bot)	46.25	16.50	16.50	763.13	3.75	2861.72	106.0
Section C-C monument pedestals	10.58	29.76	29.76	314.96	2.25	708.66	52.5
West WW (SB)							
Section B-B (top)	14.83	12.89	19.82	242.54	2.25	545.73	20.2
Section B-B (bot)	14.83	16.50	16.50	244.70	3.75	917.61	34.0
Section D-D	14.49	22.25	29.39	374.13	2.25	841.80	31.2
Section E-E	12.68	18.36	22.25	257.47	2.25	579.30	21.5

Length	Height		Avg. Area	Thickness	Volume	Volume
FT	FT	FT	SF	FT	CF	CY

FA		Left	Right				
		<i>Looking @ abut.</i>					
West WW (SB)	25.75	7.50	15.44	295.35	2.25	664.54	24.61
Center WW (NB)	39.42	16.08	16.11	634.41	2.25	1427.43	52.87
East WW (NB)	28.00	17.18	7.75	349.02	2.25	785.30	29.09

(NB includes center portion of wingwalls)

SB ABUT TOTAL = 131
NB ABUT TOTAL = 406

TOTAL = 537 CY

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Job no: 08326
 Design: ATM Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: FOOTING

ITEM EXTENSION
 511 46512
 CLASS QC1 CONCRETE WITH QC/QA, FOOTING

Type	DEPTH	WIDTH	Footing Thickness	Volume
	FT	FT	FT	CY
SUM-8-0199L (SB)				
FA	12.67	87.98	3.00	123.82
	2.75	87.98	3.25	29.12
WEST WW	12.42	22.38	3.25	33.44
	3.00	22.38	3.00	7.46
RA	12.17	89.14	3.75	150.62
	4.00	89.14	4.00	52.82
WEST WW	12.17	35.52	3.75	60.03
	4.00	35.52	4.00	21.05
SUM-8-0199R (NB)				
FA	12.67	123.56	3.00	173.90
	2.75	123.56	3.25	40.90
EAST WW	12.42	24.85	3.25	37.14
	3.00	24.85	3.00	8.28
RA	12.17	115.52	3.75	195.21
	4.00	115.52	4.00	68.46
EAST WW	16.17	44.55	3.75	100.03

SB TOTAL = 479 CY
 NB TOTAL = 624 CY

TOTAL = 1103 CY

ms consultants, inc.
engineers, architects, planners



Job no: 08326
 Design: ATM Date: 09/01/21
 Check: DEA Date: 10/29/21
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: FILL CONCRETE

ITEM EXTENSION

511 53010

CLASS QC1 CONCRETE, MISC.: FILL CONCRETE

****BELOW REAR ABUTMENT FOOTING****

Length	Width	Avg. Depth	Volume
FT	FT	FT	CY

SUM-8-0199L

169.25 18.17 1.00 113.88

SUM-8-0199R

0.00 0.00 0.00 0.00

SB TOTAL = **114** CY
 NB TOTAL = **0** CY

TOTAL = 114 CY

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engineers, architects, planners



Job no: 08326
 Design: ATM Date: 08/31/21
 Check: DEA Date: 10/29/21
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: MONUMENT

ITEM EXTENSION
 511 53010
 CLASS QC1 CONCRETE, MISC.: MONUMENT

Location: Southbound Rear Abutment				
STEP	HEIGHT	AREA	VOLUME	VOLUME
#	FT	SF	CF	CY
1	39.00	22.76	887.72	32.88
2	20.00	24.79	495.76	18.36
3	15.50	7.03	108.93	4.03
4	16.50	5.86	96.71	3.58
5	30.00	9.21	276.24	10.23
6	22.00	17.75	390.46	14.46
7	8.00	6.44	51.55	1.91
8	18.00	2.74	49.30	1.83
9	4.83	13.41	64.81	2.40
10	15.00	10.50	157.50	5.83
11	17.17	7.35	126.12	4.67
12	20.00	6.79	135.84	5.03
13	27.00	20.00	540.00	20.00
14	3.00	195.79	587.36	21.75

TOTAL	147	CY
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Job no: 08326
Design: ATM Date: 08/31/21
Check: DEA Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: FOOTING APRON

****see PDF sheets 58-61 for Pier Calculations**

ITEM EXTENSION
511 53010

CLASS QC1 CONCRETE, MISC.: FOOTING APRON

SUM-8-0199L (SB)

		VOLUME
LOCATION		CY
PIER 5**		250

SUM-8-0199R (NB)

		VOLUME
LOCATION		CY
PIER 5**		250

TOTAL 500 CY



ITEM EXTENSION
 512 10050
 SEALING OF CONCRETE SURFACES (NON-EPOXY)

		Average		Length	Width	Area	
		Elevations	Elevations				
		TOP	BOT	FT	FT	SY	
FORWARD ABUTMENT							
<i>BACKWALLS</i>							
SB	FA	1028.60	1018.40	80.42		91.10	
NB	FA	1028.51	1018.66	80.42		88.04	
<i>BRIDGE SEAT</i>							
SB	FA	1018.40	1015.43	80.42	4.92	70.47	
NB	FA	1018.66	1015.43	80.42	4.92	72.80	
<i>WINGWALLS</i>							
SB	FA	-	-	-	-	29.31	(CAD measured areas)
NB	FA	-	-	-	-	35.19	(CAD measured areas)
<i>MEDIAN WALL</i>							
NB	FA	1030.08	1015.67	39.42		63.12	

			Length	Surface	Area
			FT	FT	SY
SB	Inside of deck/parapet		3352.11	4.41	1644
NB	Inside of deck/parapet		3288.90	4.41	1613

SB total = 1835 SY **NB total = 1872** SY

TOTAL = 3707 SY



ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**

512 10051

SEALING OF CONCRETE SURFACES (NON-EPOXY), AS PER PLAN

Parapet Surface (ft) = 7.92
Dist. to Edge

Type	Deck Thick.	NB	SB	Additional
	1.417	0.25	0.25	0.5

SUM-8-0199L (SB)

	Length	Surface	Area
	FT	FT	SY
Outside of deck/parapet	3352.11	5.67	2110.59

	Average Elevations			
	TOP	BOT	Width	Area
	FT	FT	FT	SY
RA Backwall	1037.60	1027.63	82.00	90.79
RA Bridge Seat	1027.63	1005.75	82.00	199.38
RA Wingwalls	-	-	-	129.51 (CAD measured area)

GF PIER TOTAL** = 4810

SUM-8-0199R (NB)

	Length	Surface	Area
	FT	FT	SY
Outside of deck/parapet	3288.90	5.67	2070.79

	Average Elevations			
	TOP	BOT	Width	Area
	FT	FT	FT	SY
RA Backwall	1037.66	1027.63	82.00	91.35
RA Bridge Seat	1027.63	1005.75	82.00	199.38
RA Wingwalls	-	-	-	106.19 (CAD measured area)
Median Wall	1039.26	1005.75	46.25	172.20

REAR ABUTMENT MONUMENT				
Section	View	CAD Areas	Sides	Area
		SF	#	SY
Section A-A	Front view	670	2	148.89
Section C-C	Side view	385	2	85.56
	Top View	196	1	21.75
Subtotal =				256.20

GF PIER TOTAL** = 4770

SB ABUT	420	SY	NB ABUT	825	SY
SB PIERS	4810	SY	NB PIERS	4770	SY
SB SUPER	2111	SY	NB SUPER	2071	SY
SB TOTAL =	7341	SY	NB TOTAL =	7666	SY

TOTAL = 15007 SY



ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**

512 10001
SEALING OF CONCRETE SURFACES, AS PER PLAN

SUM-8-0199L (SB)

	Elevations		Width	Area
	TOP	BOT	FT	SY
RA Backwall	1037.60	1027.63	82.00	90.79
RA Bridge Seat	1027.63	1005.75	82.00	199.38
RA Wingwalls	-	-	-	129.51

GF PIER TOTAL** = 1388.00

SUM-8-0199R (NB)

	Elevations		Width	Area
	TOP	BOT	FT	SY
RA Backwall	1037.66	1027.63	82.00	91.35
RA Bridge Seat	1027.63	1005.75	82.00	199.38
RA Wingwalls	-	-	-	106.19
Median Wall	1039.26	1005.75	46.25	172.20

GF PIER TOTAL** = 1388.00

SB ABUT	420	SY	NB ABUT	569	SY
SB PIERS	1388	SY	NB PIERS	1388	SY

SB total =	1808	SY	NB total =	1957	SY
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TOTAL =	3765	SY
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ITEM EXTENSION
 512 33000
 TYPE 2 WATERPROOFING

Type

		Width	Height	Area	
		FT	FT	SY	
SUM-8-0199R (NB)					
NB	1	3.00	33.33	11.11	
NB	2	3.00	33.083	11.03	
NB	3	3.00	33.13	11.04	
NB	1	3.00	14.00	4.67	
NB	2	3.00	14.42	4.81	
NB	3	3.00	14.71	4.90	
RA		3.00	82.50	55.00	(2 sets of WTR. PRF.)
FA		3.00	80.42	53.61	(2 sets of WTR. PRF.)
SUM-8-0199L (SB)					
SB	4	3.00	15.75	5.25	
SB	4	3.00	34.63	11.54	
RA		3.00	87.47	58.31	(2 sets of WTR. PRF.)
FA		3.00	80.42	53.61	(2 sets of WTR. PRF.)

SB TOTAL = 129

NB TOTAL = 156

TOTAL = 285 SY

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Job no: 08326
Design: ATM Date: 08/27/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: STRUCTURAL STEEL

ITEM EXTENSION
513 10401

STRUCTURAL STEEL MEMBERS, HYBRID GIRDER, LEVEL SIX (6) FABRICATION, AS PER PLAN
See Structural Steel Worksheet (PDF Sheets 62 to 72) for detailed calculations

TOTAL = 15,852,754 LB



ITEM EXTENSION
513 20000
WELDED STUD SHEAR CONNECTORS

Shear stud quantities along girders from following spreadsheets:

SUM-8-0199L				SUM-8-0199R			
	# rows of Shear studs	Shear studs/row	# Shear Studs		# rows of Shear studs	Shear studs/row	# Shear Studs
Girder 6	1016	3	3048	Girder 12	988	3	2964
Girder 5	1322	3	3966	Girder 11	1324	3	3972
Girder 4	1318	3	3954	Girder 10	1324	3	3972
Girder 3	1318	3	3954	Girder 9	1324	3	3972
Girder 2	1322	3	3966	Girder 8	1324	3	3972
Girder 1	990	3	2970	Girder 7	985	3	2955
Joint Support Beam (SUM8-0199L only)				21			
SB SUPER SUBTOTAL = 21879 EACH				NB SUPER SUBTOTAL = 21807 EACH			

SUM-8-0199L				SUM-8-0199R					
# of studs/row = 2.00				From: RA/FA sheets > Section G-G/F-F > "DELTA" in Legend					
	Max. Spacing FT	Backwall Length FT	# shear studs		Max. Spacing FT	Backwall Length FT	# shear studs		
RA	2	84.381	84	Bottom Plate	RA	2	79.333	79	Bottom Plate
	2	79.333	79			2	79.333	79	
FA	2	84.381	84	Top Plate	FA	2	79.333	79	Top Plate
	2	79.333	79			2	79.333	79	
SB ABUT SUBTOTAL = 326 EACH				NB ABUT SUBTOTAL = 316 EACH					

SUM-8-0199L/R						
	Length of Top Chord (ft)	Edge Distance (ft)	Spacing (ft)	# of Xframes/bridge	Shear studs/row	# of Shear studs/bridge
RA End Xframes	11.34	0.50	0.58	5	3	270
FA End Xframes	12.74	0.50	0.58	5	3	315
RA Overhang					3	270
FA Overhang					3	270
SB SUBTOTAL = 1125 EACH						1125
NB SUBTOTAL = 1125 EACH						1125

SB ABUT TOTAL = 326 EACH
SB SUPER TOTAL = 23004 EACH
NB ABUT TOTAL = 316 EACH
NB SUPER TOTAL = 22932 EACH

TOTAL = 46578 EACH

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Job no: 08326
Design: DBL Date: 12/17/20
Check: ATM Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: STR. STEEL: MONUMENT

ITEM EXTENSION UNIT
513 90000 LB
STRUCTURAL STEEL, MISC.: MONUMENT

Plate Girder

Plates

Amount	Height	Width	Thick.	Volume	Unit Weight	Weight	
#	ft	ft	ft	ft^3	lb/ft^3	lb	
1	49.00	2.79	0.07	9.97	490.00	4887.45	
2	49.00	4.63	0.07	16.52	490.00	16194.24	
1	49.00	3.33	0.07	11.91	490.00	5835.76	
1	4.81	3.33	0.07	1.17	490.00	573.16	COVER PLATE
1	4.81	3.33	0.07	1.17	490.00	573.16	BASE PLATE

Subtotal 28063.77

Angles

Amount	Height	Leg 1	Leg 2	Thick.	Volume	Unit Weight	Weight
#	ft	ft	ft	ft	ft^3	lb/ft^3	lb
8	0.71	0.25	0.21	0.04	0.01	490.00	6.63
2	49.00	0.25	0.21	0.04	0.94	490.00	458.52

Subtotal 465.15

Rolled Beams

Shape	Height	Unit Weight	Weight
#	ft	lb/ft	lb
W36x135	36.00	135.00	4860.00
W24x90	28.00	90.00	2520.00

Subtotal 7380.00

TOTAL 35,909 LB

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engineers, architects, planners



Job no: 08326
Design: ATM Date: 04/26/21
Check: DEA Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: STR. STEEL: ERECTION

ITEM	EXTENSION	UNIT
513	95020	LUMP

STRUCTURAL STEEL, MISC.: STRUCTURAL STEEL ERECTION EQUIPMENT

*per GLG EMAIL

SUM-8-0199L/R

Structural Steel =	15,852,754	LB
Cost =	\$0.28	\$/LB

Subtotal = \$4,438,771

Subtotal * (1.15) Inflation Factor = \$5,104,587

TOTAL \$5,110,000 LS



ITEM EXTENSION
514 00060
FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT

SUM-8-0199L @ RA

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 1	10		27.82		278.18	
Girder 2	10		27.73		277.28	
Girder 3	10		25.67		256.67	
Girder 4	10		25.67		256.67	
Girder 5	10		25.67		256.67	
*Girder 6	10		25.67		256.67	

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25		661.23				
WT12x73	13.34	3.11	41.47		207.33				
Stiffeners	0.833	9.83	16.39		81.94				
					1045.55			*Conting.	
					SUB =	2628			

SUM-8-0199R @ RA

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 7	10		25.67		256.67	
Girder 8	10		25.66		256.58	
Girder 9	10		25.56		255.58	
Girder 10	10		25.51		255.08	
Girder 11	10		25.51		255.08	
*Girder 12	10		25.51		255.08	

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25		661.23				
WT12x73	13.34	3.11	41.47		207.33				
Stiffeners	0.833	9.83	16.39		81.94				
					1045.55			*Conting.	
					SUB =	2580			

SUM-8-0199L @ FA

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 1	10		27.82		278.18	
Girder 2	10		27.73		277.28	
Girder 3	10		25.67		256.67	
Girder 4	10		25.67		256.67	
Girder 5	10		25.67		256.67	
*Girder 6	10		25.67		256.67	

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25		661.23				
WT12x73	13.34	3.11	41.47		207.33				
Stiffeners	0.833	9.83	16.39		81.94				
					1045.55			*Conting.	
					SUB =	2628			

SUM-8-0199R @ FA

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 7	10		25.67		256.67	
Girder 8	10		25.66		256.58	
Girder 9	10		25.56		255.58	
Girder 10	10		25.51		255.08	
Girder 11	10		25.51		255.08	
*Girder 12	10		25.51		255.08	

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25		661.23				
WT12x73	13.34	3.11	41.47		207.33				
Stiffeners	0.833	9.83	16.39		81.94				
					1045.55			*Conting.	
					SUB =	2580			

SUM-8-0199L @ Piers

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 1	200		25.67		5133.33	
Girder 2	200		25.67		5133.33	
Girder 3	200		25.67		5133.33	
Girder 4	200		25.67		5133.33	
Girder 5	200		25.67		5133.33	
*Girder 6	200		25.67		5133.33	

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
INTER. XFRAMES	52.34	2.53	132.25		1322.46			*2 SIDES	
WT8x33.5	52.34	2.53	132.25		1322.46				
Stiffeners	0.833	9.83	16.39		163.89				
					1634.98			*Conting.	

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
PIER XFRAMES	63.84	2.53	161.30		806.51				
WT8x33.5	63.84	2.53	161.30		806.51				
WT12x73	13.34	3.11	41.47		207.33				
Stiffeners	0.833	9.83	16.39		81.94				
					1205.36			*Conting.	

	Width		Perimeter		Area		Total		*Conting.
	FT	FT	FT	SF	SF	SF	SF		
LAT BRACING	20.5	2.53	51.80		207.19				
WT8x38.5	20.5	2.53	51.80		207.19				
					227.91			*Conting.	
					SUB =	3068			

SUM-8-0199R @ Piers

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 7	200		25.67		5133.33	
Girder 8	200		25.67		5133.33	
Girder 9	200		25.67		5133.33	
Girder 10	200		25.67		5133.33	
Girder 11	200		25.67		5133.33	
*Girder 12	200		25.67		5133.33	

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
INTER. XFRAMES	52.34	2.53	132.25		1322.46			*2 SIDES	
WT8x33.5	52.34	2.53	132.25		1322.46				
Stiffeners	0.833	9.83	16.39		163.89				
					1634.98			*Conting.	

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
PIER XFRAMES	63.84	2.53	161.30		806.51				
WT8x33.5	63.84	2.53	161.30		806.51				
WT12x73	13.34	3.11	41.47		207.33				
Stiffeners	0.833	9.83	16.39		81.94				
					1205.36			*Conting.	

	Width		Perimeter		Area		Total		*Conting.
	FT	FT	FT	SF	SF	SF	SF		
LAT BRACING	20.5	2.53	51.80		207.19				
WT8x38.5	20.5	2.53	51.80		207.19				
					227.91			*Conting.	
					SUB =	3068			

SB SUPER TOTAL = 39124 SF
NB SUPER TOTAL = 39028 SF

TOTAL = 78152 SF



ITEM EXTENSION
514 00066
FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

SUM-8-0199L @ RA

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 1	10	27.82	27.82	278.18		
Girder 2	10	27.73	27.73	277.28		
Girder 3	10	25.67	25.67	256.67		
Girder 4	10	25.67	25.67	256.67		
Girder 5	10	25.67	25.67	256.67		
*Girder 6	10	25.67	25.67	256.67		

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25	661.23					
WT12x73	13.34	3.11	41.47	207.33					
Stiffeners	0.833	9.83	16.39	81.94					
				1045.55				*Conting.	
								SUB = 2628	

SUM-8-0199R @ RA

	Shear studs		Weight		Area	
	FT	FT	FT	SF	SF	SF
*Girder 7	10	25.67	25.67	256.67		
Girder 8	10	25.66	25.66	256.58		
Girder 9	10	25.56	25.56	255.58		
Girder 10	10	25.51	25.51	255.08		
Girder 11	10	25.51	25.51	255.08		
*Girder 12	10	25.51	25.51	255.08		

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25	661.23					
WT12x73	13.34	3.11	41.47	207.33					
Stiffeners	0.833	9.83	16.39	81.94					
				1045.55				*Conting.	
								SUB = 2580	

SUM-8-0199L @ FA

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 1	10	27.82	27.82	278.18		
Girder 2	10	27.73	27.73	277.28		
Girder 3	10	25.67	25.67	256.67		
Girder 4	10	25.67	25.67	256.67		
Girder 5	10	25.67	25.67	256.67		
*Girder 6	10	25.67	25.67	256.67		

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25	661.23					
WT12x73	13.34	3.11	41.47	207.33					
Stiffeners	0.833	9.83	16.39	81.94					
				1045.55				*Conting.	
								SUB = 2628	

SUM-8-0199R @ FA

	Shear studs		Weight		Area	
	FT	FT	FT	SF	SF	SF
*Girder 7	10	25.67	25.67	256.67		
Girder 8	10	25.66	25.66	256.58		
Girder 9	10	25.56	25.56	255.58		
Girder 10	10	25.51	25.51	255.08		
Girder 11	10	25.51	25.51	255.08		
*Girder 12	10	25.51	25.51	255.08		

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25	661.23					
WT12x73	13.34	3.11	41.47	207.33					
Stiffeners	0.833	9.83	16.39	81.94					
				1045.55				*Conting.	
								SUB = 2580	

SUM-8-0199L @ Piers

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 1	200	25.67	5133.33			
Girder 2	200	25.67	5133.33			
Girder 3	200	25.67	5133.33			
Girder 4	200	25.67	5133.33			
Girder 5	200	25.67	5133.33			
*Girder 6	200	25.67	5133.33			

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25	1322.46					
Stiffeners	0.833	9.83	16.39	163.89					
				1634.98				*Conting.	

PIER

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	63.84	2.53	161.30	806.51					
WT12x73	13.34	3.11	41.47	207.33					
Stiffeners	0.833	9.83	16.39	81.94					
				1205.36				*Conting.	

LAT BRACING

	Width		Perimeter		Area		Total	
	FT	FT	FT	SF	SF	SF	SF	
WT8x38.5	20.5	2.53	51.80	207.19				
				227.91			*Conting.	
							SUB = 3068	

SUM-8-0199R @ Piers

	Length		Width		Area	
	FT	FT	FT	SF	SF	SF
*Girder 7	200	25.67	5133.33			
Girder 8	200	25.67	5133.33			
Girder 9	200	25.67	5133.33			
Girder 10	200	25.67	5133.33			
Girder 11	200	25.67	5133.33			
*Girder 12	200	25.67	5133.33			

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	52.34	2.53	132.25	1322.46					
Stiffeners	0.833	9.83	16.39	163.89					
				1634.98				*Conting.	

PIER

	Width		Perimeter		Area		Total		*5 BAYS
	FT	FT	FT	SF	SF	SF	SF		
WT8x33.5	63.84	2.53	161.30	806.51					
WT12x73	13.34	3.11	41.47	207.33					
Stiffeners	0.833	9.83	16.39	81.94					
				1205.36				*Conting.	

LAT BRACING

	Width		Perimeter		Area		Total	
	FT	FT	FT	SF	SF	SF	SF	
WT8x38.5	20.5	2.53	51.80	207.19				
				227.91			*Conting.	
							SUB = 3068	

SB SUPER TOTAL = 39124 SF
NB SUPER TOTAL = 39028 SF

TOTAL = 78152 SF

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engineers, architects, planners



Job no: 08326
 Design: ATM Date: 01/10/23
 Check: DEA Date: 01/10/23
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: FIELD PAINT, MISC.

ITEM EXTENSION
 514 27700

FIELD PAINTING, MISC.: MONUMENT DECORATIVE STEEL

Element	Length	Painted Surface	# of plates	Area
	FT	FT	#	SF
Box girder web plates	49	9.32	2	913.65
Box girder Front plate	49	5.73	1	280.77
Box girder Back plate	49	1.94	1	94.96
Cap / base plate	3.33	4.81	2	32.08
W36x135	36	9.75	1	351.00
S24x90	28	6.81	1	190.68

Intermediate Coat 1863 SF
 Finish Coat 1863 SF

NB SUPER TOTAL = 3727 SF

UNIT COST = \$6.00 \$/SF

TOTAL = 3727 SF

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Job no: 08326
Design: ATM Date: 08/16/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: EXPANSION JOINT, APP

ITEM EXTENSION
516 12400
SPECIAL - MODULAR EXPANSION JOINT

Type	Length
	FT
SUM-8-0199L	
RA	83.31
FA	78.33
SB TOTAL =	162 FT
SUM-8-0199R	
RA	78.33
FA	78.33
NB TOTAL =	157 FT
TOTAL =	319 FT

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Job no: 08326
Design: ATM Date: 08/16/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: 1" P.E.J.F

****see PDF sheets 58-61 for Pier Calculations**

ITEM EXTENSION
516 13600
1" PREFORMED EXPANSION JOINT FILLER

Type	Side	Height	Width	Area
		FT	FT	SF

SUM-8-0199L

RA	Left	16.50	3.75	61.88
		19.79	2.25	44.53
	Right	15.44	2.25	34.74

SB PIER SUBTOTAL = 129
SB ABUT SUBTOTAL = 142
SB TOTAL = 271 FT

SUM-8-0199R

RA	Right	16.50	3.75	61.88
		18.23	2.25	41.02
FA	Right	17.18	2.25	38.66
	Left	16.11	2.25	36.25
FA	Right	16.10	2.25	36.23

NB PIER SUBTOTAL = 129
NB ABUT SUBTOTAL = 215
NB TOTAL = 344 FT

TOTAL = 615 SF

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Job no: 08326
 Design: ATM Date: 08/16/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: 2" P.E.J.F

ITEM EXTENSION
 516 13900
 2" PREFORMED EXPANSION JOINT FILLER

Location	Height	Width	Area
	FT	FT	SF

SUM-8-0199R				
RA	Middle Wall	17.73	2.25	39.89
		16.50	3.75	61.88
NB TOTAL =				102 SF

SUM-8-0199L				
RA	Middle Wall	17.72	2.25	39.87
		16.50	3.75	61.88
SB TOTAL =				102 SF

TOTAL =	204 SF
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Job no: 08326
Design: DBL Date: 08/22/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: VANDAL FENCE

ITEM EXTENSION
517 75000
RAILING, ALUMINUM

****see PDF sheets 58-61 for Pier Calculations**

Type	Length	
	FT	
SUM-8-0199L		
PIER 5	107.00	
SB TOTAL =	107	
SUM-8-0199R		
PIER 5	109.00	
NB TOTAL =	109	
TOTAL = 216 FT		

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: RAILING WITH FENCE

ITEM EXTENSION
 517 76300

RAILING, MISC.: DECORATIVE RAILING WITH CHAIN LINK FENCE, AS PER PLAN

Type	Length
	FT
SUM-8-0199L	
Left Bridge Deck	1608.96
Right Bridge Deck	1609.05
SB TOTAL =	3218
SUM-8-0199R	
Left Bridge Deck	1577.45
Right Bridge Deck	1577.45
NB TOTAL =	3155
TOTAL = 6373 FT	

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: SCUPPERS/DOWNSPOUTS

ITEM EXTENSION
 518 12200
 SCUPPERS, INCLUDING SUPPORTS

Type

SUM-8-0199L

Station	Side	Number	Station	Side	Number
226+88	LT	1	225+73	RT	1
227+63	LT	1	226+88	RT	1
229+35	LT	1	227+63	RT	1
230+96	LT	1	229+35	RT	1
232+65	LT	1	230+96	RT	1
234+50	LT	1	232+65	RT	1
236+35	LT	1	234+50	RT	1
238+20	LT	1	236+35	RT	1
239+50	LT	1	238+20	RT	1
240+80	LT	1	239+50	RT	1
			240+80	RT	1

TOTAL = 21 EACH

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
 518 51101
 8" PIPE DOWNSPOUT, INCLUDING SPECIALS, AS PER PLAN

Location	Side	Length
		FT

SUM-8-0199L

PIER 1	L	142
		252
PIER 2	L	297
		297

TOTAL = 988 FT



ITEM EXTENSION
 518 21200
 POROUS BACKFILL WITH GEOTEXTILE FABRIC

NorthBound

RA Wingwall

	Length	Width	Height (Avg)	Volume (CY)
Above 1'-6" seat	14.67	1.50	13.84	11.28
Behind abutment seat	37.00	2.00	24.76	67.86
Vertical	2.00	9.33	34.73	24.01
TOTAL				103

Rear Abutment

	Length	Width	Height (Avg)	Volume (CY)
Cheekwall	4.00	2.00	34.73	10.29
Pedestal Faces to Backfill Limit	80.51	2.00	31.10	185.50
Pedestal Bays (5.5')	55.00	5.75	31.10	364.33
Pedestal Bays (3.0')	6.00	5.75	31.10	39.75
TOTAL				600

Forward Abutment

	Length	Width	Height (Avg)	Volume (CY)
Pedestal Faces to Backfill Limit	80.42	2.00	10.54	62.80
Pedestal Bays (5.5')	55.00	5.25	10.54	112.75
Pedestal Bays (3.0')	6.00	5.25	10.54	12.30
TOTAL				188

FA Wingwall

	Length	Width	Height (Avg)	Volume (CY)
WW	28.00	2.00	12.47	25.85

TOTAL	916.72	CY
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Median Wall

Rear Abutment

	Length	Width	Height	Volume (CY)
Horiz. by NB Joint	0.55	6.04	34.54	4.21
Angled Portion	33.54	2.00	34.54	85.81
Horiz. by SB Joint	2.00	11.83	34.54	30.27

TOTAL 120

Forward Abutment

	Length	Width	Height	Volume (CY)
Wall	39.42	2.50	16.11	58.80

TOTAL 179.09 CY

SouthBound

RA Wingwall

	Length	Width	Height (Avg)	Volume (CY)
Above 1'-6" seat	14.83	1.50	18.92	15.59
Behind abutment seat	42.00	2.00	28.82	89.67

TOTAL 105

Rear Abutment

	Length	Width	Height (Avg)	Volume (CY)
Horiz. Cheekwall	4.00	2.00	36.05	10.68
Angled Cheekwall	8.08	2.00	35.89	21.49
Pedestal Faces to Backfill Limit	85.56	2.00	30.57	193.72
Pedestal Bays	66.00	5.75	30.57	429.63

TOTAL 656

Forward Abutment

	Length	Width	Height (Avg)	Volume (CY)
Pedestal Faces to Backfill Limit	80.42	2.00	10.01	59.63
Pedestal Bays (5.5')	55.00	5.25	10.01	107.05
Pedestal Bays(3.0')	6.00	5.25	10.01	11.68

TOTAL 167

FA Wingwall

	Length	Width	Height (Avg)	Volume (CY)
WW	25.75	2.00	11.47	21.88

TOTAL 949.34 CY

SB Total 949 CY

NB Total 1096 CY

Grand Total 2045 CY

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Job no: 08326
Design: DBL Date: 08/22/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: 10" P.C.P.P.

ITEM EXTENSION
518 42000
8" PERFORATED CORRUGATED PLASTIC PIPE

		Length
		FT
SUM-8-0199L		
	RA	132.87
	FA	107.93
	SB TOTAL =	241 FT
SUM-8-0199R		
	RA	173.43
	FA	145.51
	NB TOTAL =	319 FT
	TOTAL =	560 FT

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: 10" N.P.C.P.P.

ITEM EXTENSION
 518 42010

8" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS

			Length	Length to Outlet
			FT	FT
SUM-8-0199L				
	SB	RA	35	
	SB	FA	146.00	21.00
	SB TOTAL =		202	
SUM-8-0199R				
	NB	FA		56.99
	NB	RA	221.67	38.35
	NB TOTAL =		317	
			TOTAL = 519 FT	

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Job no: 08326
Design: ATM Date: 09/10/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: DRILLED SHAFTS, 48" DIA.

ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
524 94904
DRILLED SHAFTS, 48" DIAMETER, INTO BEDROCK

Type	Total Length	
	FT	
SUM-8-0199L		
	GF TOTAL =	304
	SB TOTAL =	304 FT
SUM-8-0199R		
	GF TOTAL =	328
	NB TOTAL =	328 FT
		TOTAL = 632 FT

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engineers, architects, planners



Job no: 08326
 Design: ATM Date: 09/10/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: DRILLED SHAFTS, 54" DIA.

****see PDF sheets 58-61 for Pier Calculations**

ITEM EXTENSION
 524 94906

DRILLED SHAFTS, 54" DIAMETER, ABOVE BEDROCK

Type	Total Length	
	FT	
SUM-8-0199L		
	GF TOTAL =	856
	SB TOTAL =	856 FT
SUM-8-0199R		
	GF TOTAL =	528
	NB TOTAL =	528 FT
TOTAL =		1,384 FT

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Job no: 08326
 Design: DBL Date: 08/22/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: APPROACH SLABS

ITEM EXTENSION
 526 30010

REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17")

Type	AVG		
	LENGTH	WIDTH	AREA
	FT	FT	SY
SUM-8-0199L			
Rear	30	84.97	283.23
Forward	30	79.33	264.44
SB TOTAL =			548 FT
SUM-8-0199R			
Rear	30	79.77	265.90
Forward	30	79.33	264.43
NB TOTAL =			530 FT
TOTAL =			1078 SY

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Job no: 08326
Design: DBL Date: 08/22/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: TYPE A INSTALLATION

ITEM EXTENSION
526 90010
TYPE A INSTALLATION

Type	Length	
	FT	
SUM-8-0199L		
Rear	87.03	
Forward	79.33	
SB TOTAL =	167	FT
SUM-8-0199R		
Rear	79.78	
Forward	79.33	
NB TOTAL =	159	FT
TOTAL =	326	FT



ITEM EXTENSION ****see PDF sheets 58-61 for Pier Calculations**
 530 13000
 SPECIAL - FORM LINER

SUM-8-0199R (NB)

Rear Abutment

Location	Beam Seat	T/Ftg. Elev.	CLR. From T/Wall	Height	Length	Area
Girder #	ELEV.	ELEV.	FT	FT	FT	SF
G12	1027.16	1004.75	1.48	20.93	15.13	316.58
G11	1027.53	1004.75	1.48	21.30	15.08	321.28
G10/G9	1027.77	1004.75	1.48	21.54	19.08	411.06
G8	1027.53	1004.75	1.48	21.30	15.08	321.28
G7	1027.16	1004.75	1.48	20.93	15.13	316.58
Sub Tot.						1686.78

Median Wall

Start WW	End WW	T/Ftg.	CLR. From B/Wall	Avg. Height	Width	Area
ELEV.	ELEV.	EL.	FT	FT	FT	SF
1039.23	1039.29	1005.00	0.00	34.26	44.55	1526.35
Sub Tot.						1526.35

Piers**	16443	SF
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Parapet

SPAN	HEIGHT	LENGTH	AREA (1 SIDE)	TOT. AREA
#	FT	FT	SF	SF
1	2.50	200.00	500.00	1000.00
2	2.50	200.00	500.00	1000.00
3	2.50	200.00	500.00	1000.00
4	2.50	200.00	500.00	1000.00
5	2.50	200.00	500.00	1000.00
6	2.50	160.00	400.00	800.00
Sub Tot.				5800.00

NB TOTAL	25456	SF
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SUM-8-0199L (SB)

Rear Abutment

Location	Beam Seat	T/Ftg. Elev.	CLR. From T/Wall	Height	Length	Area
Girder #	ELEV.	ELEV.	FT	FT	FT	SF
G6	1027.44	1004.75	1.48	21.21	20.09	426.19
G5	1027.83	1004.75	1.48	21.60	15.08	325.80
G4/G3	1028.07	1004.75	1.48	21.84	19.08	416.79
G2	1027.83	1004.75	1.48	21.60	15.08	325.80
G1	1027.44	1004.75	1.48	21.21	15.13	320.81
					Sub Tot.	1815.40

Piers**	16460	SF
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Parapet

SPAN	HEIGHT	LENGTH	AREA (1 SIDE)	TOT. AREA
#	FT	FT	SF	SF
1	2.50	200.00	500.00	1000.00
2	2.50	280.00	700.00	1400.00
3	2.50	280.00	700.00	1400.00
4	2.50	200.00	500.00	1000.00
5	2.50	200.00	500.00	1000.00
6	2.50	160.00	400.00	800.00
			Sub Tot.	6600.00

SB TOTAL	24875	SF
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Job no: 08326
Design: ATM Date: 04/26/21
Check: DEA Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: BRIDGE MONITORING

ITEM EXTENSION
530 00200

STRUCTURE, MISC.: BRIDGE CONSTRUCTION MONITORING

PER GLG: The monitoring was based on an estimate based on monitoring from Ironton-Russell Bridge, but it's so different that it was really just feel. I-R bridge had a cost based on a certain number of gages, inclinometers, etc. and we kind of

Subtotal = \$250,000

Subtotal * (1.15) Inflation Factor = \$287,500

TOTAL = \$287,500 LS

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Job no: 08326
Design: ATM Date: 04/26/21
Check: DEA Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: AESTHETIC LIGHTING

ITEM EXTENSION
530 00200
STRUCTURE, MISC.: AESTHETIC LIGHTING

The additional cost information from HLB is included with the submission. The amount in the estimate was increased by approximately 20% for the color changing lighting for the bridge monument.

Subtotal = \$2,000,000
Subtotal * (1.15) Inflation Factor = \$2,300,000

TOTAL = \$2,300,000 LS

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Job no: 08326
Design: ATM Date: 04/26/21
Check: DEA Date: 10/29/21
Office: Columbus
Project: SUM-8-0199L/R
Element: VIBRATION MONITORING

ITEM EXTENSION
530 00200
STRUCTURAL SURVEY AND MONITORING OF VIBRATION

Cost taken from District 6, 6A project with similar details.

Subtotal = \$10,000
Subtotal * (1.15) Inflation Factor = \$11,500
TOTAL = \$11,500 LS

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Job no: 08326
 Design: ATM Date: 08/15/19
 Check: ELP Date: 09/17/19
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: CRUSHED AGG. SLOPE PROT.

ITEM EXTENSION
 601 20010

CRUSHED AGGREGATE SLOPE PROTECTION

Thickness	Length	Width	Total	Total
(FT)	(FT)	(FT)	(CF)	(CY)

FORWARD ABUT.

SB	1.0	95.95	108.386	10399.42	385
NB	1.0	121.95	108.524	13234.94	490

SB TOTAL = 385
NB TOTAL = 490

TOTAL = 875 CY

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engineers, architects, planners



Job no: 08326
 Design: ATM Date: 09/02/21
 Check: DEA Date:
 Office: Columbus
 Project: SUM-8-0199L/R
 Element: TEMP MSE WALL

ITEM EXTENSION
 867 00100

TEMPORARY WIRE FACED MECHANICALLY STABILIZED EARTH WALL

Rear Abutment

	Length	Max Height	Area	Unit Cost	Cost
	FT	FT	SF	\$/SF	\$
MSE	44	34	1484.78	\$120	\$178,173.60
SB TOTAL =					\$179,000

Forward Abutment

	Length	Max Height	Area	Unit Cost	Cost
	FT	FT	SF	\$/SF	\$
MSE	15	19	285.00	\$120	\$34,200.00
NB TOTAL =					\$35,000

Subtotal = \$214,000

Subtotal * (1.15) Inflation Factor = \$246,100

TOTAL COST = \$250,000

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Job no: 08326
Design: DBL Date: 08/22/19
Check: ELP Date: 09/17/19
Office: Columbus
Project: SUM-8-0199L/R
Element: BEARINGS

ITEM EXTENSION
869 00101
HIGH LOAD MULTI-ROTATIONAL (HLMR) BEARING, AS PER PLAN

Type	Number EACH
SUM-8-0199L	
REAR	6
PIER 1	6
PIER 2	6
PIER 3	6
PIER 4	6
PIER 5	6
FORWARD	6
SUM-8-0199R	
REAR	6
PIER 1	6
PIER 2	6
PIER 3	6
PIER 4	6
PIER 5	6
FORWARD	6
SB TOTAL =	42
NB TOTAL =	42
TOTAL =	84 EACH

Calculation	Pier Quantities:
Description	SUM-8-1.75 (NB & SB Bridges)

GF Job No:
•062368

Bridge SFN
•7700370/7700371

Calculated
•AH, 8/16/19

Checked
•RSN, 9/9/2019

Updated
•AH, 9/9/2019

Verified
•RSN, 9/9/2019

Level 2 Review
•CTM, 9/12/2019

Compliance Update
•EFD, 10/20/2021

Reinforcing quantities are based on Stage 3 reinforcing calculations.

INPUT: Pier Data used in quantity calculation (yellow-cells indicate inputs)

Pier Capital = 26250.00 CF (CAD)	Vol: Door Deduction = 36.00 CF	Formliner (Column) = 14.33 FT
Area: Solid Pier Base = 314.00 SF	Pedestals (6 Total) = 150.00 SF	Formliner SF (Pier Capital) = 1790.00 SF
Area: Hollow Column = 181.00 SF	Height: Pier Capital = 53.00 FT	
Pier Capital (Pier 5 NB) = 23110.00 CF (CAD)	Perimeter: Column Sealing = 86.00 FT	Formliner SF (Pier 5 Capital NB) = 1505.00 SF
	Pier 5 Sealing = 121.00 FT	

EFD CHECK 3/23

Investigate Roundup to 0.1 EACH A501 Bars ALL changed to doweled

		Formliner Update										PS Capital								
		T/Cap EL.	T/Ftg EL.	B/Ftg EL.	Ftg Plan Area (SF)	No. of Shafts	54" Shaft Length (Avg, FT)	48" Socket Length (Avg, FT)	16" Pile Length (Driven, FT)	Form Liner Height (FT)	Shoring (SF)	Shoring Unit Cost	Rock Excavation Volume (CF)	Unclassified Excavation Volume (CF)	Height of Solid Capital Base (FT)	TOP OF ROCK (Per Geo)	Drilled Shaft Tip Elevation (Per Geo)	Min Rock Socket Length		
Pier 1	NB	1022.57	960.25	954.25	975.25	8.000	0.00	6.00	0.000	9.320	0		4441	9151	9.320	958.8	948.25	6.00		
	SB	1022.80	958.00	952.00	975.25	8.000	19.00	16.00	0.000	11.800	1200	\$ 50.00	0	11093	11.800	933	917	16.00		
Pier 2	NB	1020.79	885.25	878.75	1050.00	8.000	23.10	6.00	0.000	82.540	1400	\$ 50.00	0	7406	0.000	855.7	849.7	6.00		
	SB	1020.79	880.75	874.25	1050.00	8.000	11.60	8.00	0.000	87.040	1700	\$ 50.00	0	10369	0.000	862.7	855.2	7.50		
Pier 3	NB	1019.32	871.50	865.00	1050.00	8.000	20.40	8.00	0.000	94.820	0		0	9480	0.000	844.6	836.6	8.00		
	SB	1018.85	873.25	866.75	1050.00	8.000	29.10	7.00	0.000	92.600	0		0	9776	0.000	837.7	831.2	6.50		
Pier 4	NB	1017.64	880.00	872.50	1248.00	8.000	21.00	21.00	0.000	84.640	0		0	14637	0.000	851.5	830.5	21.00		
	SB	1017.53	894.00	886.50	1248.00	8.000	45.40	7.00	0.000	70.530	0		0	23001	0.000	841.1	834.6	6.50		
Pier 5	NB	1016.23	973.23	965.23	1606.00	46.000	0.00	0.00	75.000	0.000	2050	\$ 25.00	0	8418	0.000					
	SB	1016.18	963.18	955.18	1606.00	46.000	0.00	0.00	85.000	0.000	3000	\$ 40.00	0	12948	0.000					
Total SF:											9350	\$ 41.31								

Calculation	Pier Quantities:
Description	SUM-8-1.75 (NB & SB Bridges)
GF Job No: •062368	Bridge SFN •7700370/7700371
Calculated •AH, 8/16/19	Checked •RSN, 9/9/2019
Updated •AH, 9/9/2019	Verified •RSN, 9/9/2019
Level 2 Review •CTM, 9/12/2019	Compliance Update •EPD, 10/20/2021

OUTPUT: Quantities carried to plans (yellow-cells indicate inputs)

		Pier Capital	Pedestal	Hollow Column	Footing	Reinforcing	48" Shaft	54" Shaft							
		Class QC4 Mass Concrete, Substructure with QC/QA (CY)	Class QC1 Concrete with QC/QA (CY)	Class QC1 Concrete with QC/QA, Pier above Footings (CY)	Class QC4 Mass Concrete, Substructure with QC/QA (CY)	Epoxy Coated Reinforcing Steel (LBS)	Drilled Shafts, 48" Dia, Into Bedrock (FT)	Drilled Shafts, 54" Dia, Above Bedrock (FT)	16" CIP Reinforced Concrete Piles, Driven (FT)	16" CIP Reinforced Concrete Piles, Furnished, APP (FT)	Special - Form Liner (SF)	Sealing of Concrete Surfaces, APP (SY)	Cofferdams and Excavation Bracing (LS)	Rock Excavation (CY)	Unclassified Excavation (CY)
		511E45602	511E42512	511E42012	511E45602	509E10000	524E94904	524E94906	507E00700	507E00751	530E13000	512E10001	503E11100	503E31100	503E21100
Pier 1	NB	1,080.7	18.1	0.0	216.8		48.00	0	0	0	2,057	263	\$ -	165	339
	SB	1,109.5	18.1	0.0	216.8		128.00	152.00	0	0	2,128	263	\$ 60,000	0	411
Pier 2	NB	972.3	18.1	517.4	252.8		48.00	184.80	0	0	4,156	263	\$ 70,000	0	275
	SB	972.3	18.1	547.5	252.8		64.00	92.80	0	0	4,285	263	\$ 85,000	0	385
Pier 3	NB	972.3	18.1	599.7	252.8		64.00	163.20	0	0	4,508	263	\$ -	0	352
	SB	972.3	18.1	584.8	252.8		56.00	232.80	0	0	4,445	263	\$ -	0	363
Pier 4	NB	972.3	18.1	531.5	346.7		168.00	168.00	0	0	4,216	263	\$ -	0	543
	SB	972.3	18.1	436.9	346.7		56.00	363.20	0	0	3,812	263	\$ -	0	852
Pier 5	NB	856.0	18.1	0.0	475.9		0	0	3,450	3,680	1,505	336	\$ 52,500	0	312
	SB	972.3	18.1	0.0	475.9		0	0	3,910	4,140	1,790	336	\$ 120,000	0	480
NB		4,854	91	1,649	1,545		328.00	516.00	3,450	3,680	16,443	1,388	\$ 122,500	165	1,821
SB		4,999	91	1,570	1,545	See Reinf. Tables in Plans	304.00	841.00	3,910	4,140	16,460	1,388	\$ 265,000	0	2,491
Total		9,853.0	181.0	3,219.0	3,090.0		632.00	1,357.00	7,360	7,820	32,903	2,776	\$ 387,500	165	4,312

OUTPUT: Quantities carried to plans (yellow-cells indicate inputs or custom formulas)

		Special - Structure, Misc.: Access Door - Piers (LS)	Special - Structure, Misc.: Ladders and Platforms - Piers (LS)	Special - Structure, Misc.: Ladder Safety Device - Piers (LS)	Drilled Shafts, Misc.: Shaft Inspection Device (LS)	Drilled Shafts, Misc.: Thermal Integrity Profiling (Each)	Dowel Holes with Nonshrink, nonmetallic Grout (Each)	Sealing of Concrete Surfaces NON-EPOXY (SY)	Structure Drainage, Misc.: Pier Drainage and Ventilation (EACH)	1" PEJF (SF)	Low Strength Mortar Backfill (CY)	Class QC1 Concrete, Misc.: Footing Apron (CY)	Granular Material, Type B (CY)	Aggregate Base (CY)	Railing, Aluminum (FT)	Special - Structures, Misc.: Interior Lighting - Piers (LS)
		530E00200	530E00200	530E00200	524E95200	524E95100	510E10000	512E10050	518E62100	516E13600	613E41200	511E53010	203E35110	304E20000	517E75000	530E00200
Pier 1	NB				\$ 1,000.00	8		572								
	SB				\$ 1,000.00	8		597								
Pier 2	NB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,245	1					40		\$ 20,000
	SB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,288	1					40		\$ 20,000
Pier 3	NB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,362	1					40		\$ 20,000
	SB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,341	1					40		\$ 20,000
Pier 4	NB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,265	1					50		\$ 20,000
	SB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,130	1					50		\$ 20,000
Pier 5	NB						612	318		129	300	250	100		109	
	SB						612	449		129	400	250	100		107	
NB		\$ 21,000.00	\$ 120,000.00	\$ 15,000.00	\$ 4,000.00	32	612	4,770	3	129	300	250	100	130	109	\$ 60,000.00
SB		\$ 21,000.00	\$ 120,000.00	\$ 15,000.00	\$ 4,000.00	32	612	4,810	3	129	400	250	100	130	107	\$ 60,000.00
Total		\$ 42,000.00	\$ 240,000.00	\$ 30,000.00	\$ 8,000.00	64	1,224	9,580	6	258	700	500	200	260	216	\$ 120,000.00

INFLATION FACTOR = \$48,300

INFLATION FACTOR = \$276,000

INFLATION FACTOR = \$34,500

INFLATION FACTOR = \$9,200

INFLATION FACTOR = \$138,000

Calculation	Pier Quantities:
Description	SUM-8-1.75 (NB & SB Bridges)
GF Job No: •062368	Bridge SFN •7700370/7700371
Calculated •AH, 8/16/19	Checked •RSN, 9/9/2019
Updated •AH, 9/9/2019	Verified •RSN, 9/9/2019
Level 2 Review •CTM, 9/12/2019	Compliance Update •EPD, 10/20/2021

OUTPUT: Quantities carried to plans (yellow-cells indicate inputs)

		Pier Capital	Pedestal	Hollow Column	Footing	Reinforcing	48" Shaft	54" Shaft							
		Class QC4 Mass Concrete, Substructure with QC/QA (CY)	Class QC1 Concrete with QC/QA (CY)	Class QC1 Concrete with QC/QA, Pier above Footings (CY)	Class QC4 Mass Concrete, Substructure with QC/QA (CY)	Epoxy Coated Reinforcing Steel (LBS)	Drilled Shafts, 48" Dia, Into Bedrock (FT)	Drilled Shafts, 54" Dia, Above Bedrock (FT)	16" CIP Reinforced Concrete Piles, Driven (FT)	16" CIP Reinforced Concrete Piles, Furnished, APP (FT)	Special - Form Liner (SF)	Sealing of Concrete Surfaces, APP (SY)	Cofferdams and Excavation Bracing (LS)	Rock Excavation (CY)	Unclassified Excavation (CY)
		511E45602	511E42512	511E42012	511E45602	509E10000	524E94904	524E94906	507E00700	507E00751	530E13000	512E10001	503E11100	503E31100	503E21100
Pier 1	NB	1,080.7	18.1	0.0	216.8		48.00	0	0	0	2,057	263	\$ -	165	339
	SB	1,109.5	18.1	0.0	216.8		128.00	152.00	0	0	2,128	263	\$ 60,000	0	411
Pier 2	NB	972.3	18.1	517.4	252.8		48.00	184.80	0	0	4,156	263	\$ 70,000	0	275
	SB	972.3	18.1	547.5	252.8		64.00	92.80	0	0	4,285	263	\$ 85,000	0	385
Pier 3	NB	972.3	18.1	599.7	252.8		64.00	163.20	0	0	4,508	263	\$ -	0	352
	SB	972.3	18.1	584.8	252.8		56.00	232.80	0	0	4,445	263	\$ -	0	363
Pier 4	NB	972.3	18.1	531.5	346.7		168.00	168.00	0	0	4,216	263	\$ -	0	543
	SB	972.3	18.1	436.9	346.7		56.00	363.20	0	0	3,812	263	\$ -	0	852
Pier 5	NB	856.0	18.1	0.0	475.9		0	0	3,450	3,680	1,505	336	\$ 52,500	0	312
	SB	972.3	18.1	0.0	475.9		0	0	3,910	4,140	1,790	336	\$ 120,000	0	480
NB		4,854	91	1,649	1,545	See Reinf. Tables in Plans	328.00	516.00	3,450	3,680	16,443	1,388	\$ 122,500	165	1,821
SB		4,999	91	1,570	1,545		304.00	841.00	3,910	4,140	16,460	1,388	\$ 265,000	0	2,491
Total		9,853.0	181.0	3,219.0	3,090.0		632.00	1,357.00	7,360	7,820	32,903	2,776	\$ 387,500	165	4,312

OUTPUT: Quantities carried to plans (yellow-cells indicate inputs or custom formulas)

		Special - Structure, Misc.: Access Door - Piers (LS)	Special - Structure, Misc.: Ladders and Platforms - Piers (LS)	Special - Structure, Misc.: Ladder Safety Device - Piers (LS)	Drilled Shafts, Misc.: Shaft Inspection Device (LS)	Drilled Shafts, Misc.: Thermal Integrity Profiling (Each)	Dowel Holes with Nonshrink, nonmetallic Grout (Each)	Sealing of Concrete Surfaces NON-EPOXY (SY)	Structure Drainage, Misc.: Pier Drainage and Ventilation (EACH)	1" PEJF (SF)	Low Strength Mortar Backfill (CY)	Class QC1 Concrete, Misc.: Footing Apron (CY)	Granular Material, Type B (CY)	Aggregate Base (CY)	Railing, Aluminum (FT)	Special - Structures, Misc.: Interior Lighting - Piers (LS)
		530E00200	530E00200	530E00200	524E95200	524E95100	510E10000	512E10050	518E62100	516E13600	613E41200	511E53010	203E35110	304E20000	517E75000	530E00200
Pier 1	NB				\$ 1,000.00	8		572								
	SB				\$ 1,000.00	8		597								
Pier 2	NB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,245	1					40		\$ 20,000
	SB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,288	1					40		\$ 20,000
Pier 3	NB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,362	1					40		\$ 20,000
	SB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,341	1					40		\$ 20,000
Pier 4	NB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,265	1					50		\$ 20,000
	SB	\$ 7,000.00	\$ 40,000.00	\$ 5,000.00	\$ 1,000.00	8		1,130	1					50		\$ 20,000
Pier 5	NB						220	318		129	300	250	100		109	
	SB						220	449		129	400	250	100		107	
NB		\$ 21,000.0	\$ 120,000.0	\$ 15,000.0	\$ 4,000.0	32	220	4,770	3	129	300	250	100	130	109	\$ 60,000.00
SB		\$ 21,000.0	\$ 120,000.0	\$ 15,000.0	\$ 4,000.0	32	220	4,810	3	129	400	250	100	130	107	\$ 60,000.00
Total		\$ 42,000.0	\$ 240,000.0	\$ 30,000.0	\$ 8,000.00	64	440	9,580	6	258	700	500	200	260	216	\$ 120,000.00

INFLATION FACTOR = \$48,300
 INFLATION FACTOR = \$276,000
 INFLATION FACTOR = \$34,500
 INFLATION FACTOR = \$9,200

INFLATION FACTOR = \$138,000

AVERAGE PEDESTAL HEIGHT

SB PEDESTAL SEAT ELEVATION

GIRDER	PIER					
	1	2	3	4	5	
1	1025.45	1023.50	1021.32	1020.12	1018.99	
2	1025.68	1023.69	1021.69	1020.52	1019.27	
3	1025.92	1023.93	1021.93	1020.76	1019.51	
4	1025.92	1023.93	1021.93	1020.76	1019.51	
5	1025.68	1023.69	1021.69	1020.52	1019.27	
6	1025.45	1023.50	1021.32	1020.12	1018.99	
Average	1025.68	1023.71	1021.65	1020.47	1019.26	<i>1022.15</i>
Cap	1022.80	1020.79	1018.85	1017.53	1016.18	<i>1019.23</i>
PedHt	2.88	2.92	2.80	2.94	3.08	2.92

NB PEDESTAL SEAT ELEVATION

GIRDER	PIER					
	1	2	3	4	5	
1	1025.23	1023.45	1021.74	1020.06	1018.98	
2	1025.44	1023.70	1022.15	1020.43	1019.23	
3	1025.69	1023.94	1022.39	1020.67	1019.47	
4	1025.69	1023.94	1022.39	1020.67	1019.47	
5	1025.44	1023.70	1022.15	1020.43	1019.23	
6	1025.23	1023.45	1021.74	1020.06	1018.98	
Average	1025.45	1023.70	1022.09	1020.39	1019.23	<i>1022.17</i>
Cap	1022.57	1020.79	1019.32	1017.64	1016.23	<i>1019.31</i>
PedHt	2.88	2.91	2.77	2.75	3.00	2.86

assume 3.25 ft to be conservative and cover any cross slope

3.25

CONCRETE APON APPROXIMATE CONCRETE VOLUME

NB Apron Concrete

Footing area	1606	1611.25 cf
pier column area	317	
apron heighth	1.25	

Parapet	width	1.5	210.3 cf
	length	50.62	
	height	2.77	

East side	thickness	2.50	1125.0 cf
	area	450	

West side	thickness	2.50	1125.0 cf
	area	450	

South side	thickness	2.50	2150.0 cf
	area	860	

Total	6221.575 cf
	230.4287 CY

SB Apron Concrete

Footing area	1606	1611.25 cf
pier column area	317	
apron heighth	1.25	

Parapet	width	1.5	538.3 cf
	length	52.62	
	height	6.82	

East side	thickness	2.50	1025.0 cf
	area	410	

West side	thickness	2.50	1325.0 cf
	area	530	

South side	thickness	2.50	2250.0 cf
	area	900	

Total	6749.55 cf
	249.9834 CY

ms consultants, inc.
engineers, architects, planners



Job no: 08326
Design: ATM/DBL Date: 08/22/19
Check: ELP Date: 09/13/19
Office: Columbus
Project: SUM-8-0199L/R
Element: STRUCTURAL STEEL

TOTAL POUNDS OF STRUCTURAL STEEL* = 16,032,153 LBS

*Based on weight of Structural Steel = 490 lbs/cf
SB total = 8,253,152 lbs
NB total = 7,779,001 lbs

SOUTHBOUND GIRDERS

Total Volume = 13192.68 CF

Total Weight = 6464413 LBS

*Per Girder, Total Volume and Weight Calculated for all girders

Top Flange

	<u>Thickness (FT)</u>	<u>Width (FT)</u>	<u>Total Length (FT)</u>	<u>Volume (CF)</u>
3.25	0.2708	2.50	50.00	33.85
1.75	0.1458	2.00	157.50	45.94
1.75	0.1458	2.50	130.00	47.40
1	0.0833	2.00	340.25	56.71
2.75	0.2292	2.50	40.00	22.92
2.5	0.2083	2.50	130.00	67.71
1.25	0.1042	2.00	685.63	142.84
1.5	0.1250	2.50	40.00	12.50
1.5	0.1250	2.00	60.00	15.00

***Subtotal Volume = 436.25**

Bottom Flange

	<u>Thickness (FT)</u>	<u>Width (FT)</u>	<u>Total Length (FT)</u>	<u>Volume (CF)</u>
1.25	0.1042	2.50	1065.88	277.57
1.5	0.1250	2.50	147.50	46.09
1.75	0.1458	2.50	40.00	14.58
2.25	0.1875	2.50	130.00	60.94
2.75	0.2292	2.50	165.00	94.53
3	0.2500	2.50	40.00	25.00
3.5	0.2917	2.50	50.00	36.46

***Subtotal Volume = 534.11**

Web

	<u>Thickness (FT)</u>	<u>Width (FT)</u>	<u>Avg. Total Length (FT)</u>	<u>Volume (CF)</u>
	0.0729	9.83	502.5	360.30
	0.0729	10.05	82.125	60.16
	0.0729	9.42	137.75	94.64
	0.0833	9.83	791	648.18
	0.0833	10.05	120	100.46

***Subtotal Volume = 1228.42**

NORTHBOUND GIRDERS

Total Volume = 12477.72 CF

Total Weight = 6114083 LBS

*Per Girder, Total Volume and Weight Calculated for all girders

Top Flange

	<u>Thickness (FT)</u>	<u>Width (FT)</u>	<u>Total Length (FT)</u>	<u>Volume (CF)</u>
1	0.0833	2.00	236.00	39.33
1.25	0.1042	2.00	695.88	144.97
1.25	0.1042	2.50	80.00	20.83
1.5	0.1250	2.00	40.00	10.00
1.5	0.1250	2.50	70.00	21.88
1.75	0.1458	2.00	120.00	35.00
1.75	0.1458	2.50	120.00	43.75
2.5	0.2083	2.50	170.00	88.54
3.25	0.2708	2.50	40.00	27.08

***Subtotal Volume = 432.64**

Bottom Flange

	<u>Thickness (FT)</u>	<u>Width (FT)</u>	<u>Total Length (FT)</u>	<u>Volume (CF)</u>
1.25	0.1042	2.50	847.75	220.77
1.5	0.1250	2.50	164.13	51.29
1.75	0.1458	2.50	110.00	40.10
2	0.1667	2.50	120.00	50.00
2.25	0.1875	2.50	120.00	56.25
2.75	0.2292	2.50	80.00	45.83
3	0.2500	2.50	90.00	56.25
3.5	0.2917	2.50	40.00	29.17

***Subtotal Volume = 493.09**

Web

	<u>Thickness (FT)</u>	<u>Width (FT)</u>	<u>Avg. Total Length (FT)</u>	<u>Volume (CF)</u>
	0.0729	9.83	1020	731.35
	0.0729	9.80	84.125	60.10
	0.0729	10.05	147.75	108.24
	0.0833	9.83	320	262.22

***Subtotal Volume = 1153.89**

WELDS**Total Weight = 23612 LBS****SB total 12603.58 LBS****NB total 11008.39 LBS****SOUTHBOUND**

<u>Weld Location</u>	<u>Weld Length/Member (FT)</u>	<u>Weld Size</u>	<u>Volume (CF)</u>	<u>#/Members</u>	<u>Total Weight (LBS)</u>
Girders (remaining)	5562.26	0.026	1.8861	6	5545.06
Girders Bot. Flange (RA to FS3)	644.24	0.042	0.5592	6	1644.15
Girders Bot. Flange (FS3 to FS5)	327.00	0.036	0.2173	6	638.94
Pier Bearing Stiffeners	24.17	0.026	0.0082	120	481.84
Jacking Stiffeners	19.67	0.026	0.0067	132	431.33
Intermediate Stiffeners	21.92	0.026	0.0074	6	21.85
Crossframe Connections	24.17	0.026	0.0082	516	2071.91
Abutment Stiffeners	24.17	0.026	0.0082	24	96.37
Intermediate Crossframes	16.93	0.026	0.0057	546	1536.17
Pier Crossframes	20.93	0.026	0.0071	25	86.95
RA Crossframes	30.00	0.026	0.0102	5	24.92
FA Crossframes	29.00	0.026	0.0098	5	24.09

Subtotal = 12603.58**NORTHBOUND**

<u>Weld Location</u>	<u>Weld Length (FT)</u>	<u>Weld Size</u>	<u>Volume (CF)</u>	<u>#/Members</u>	<u>Total Weight (LBS)</u>
Girders (remaining)	5279.25	0.026	1.7901	6	5262.92
Girders Bot. Flange (RA to FS3)	648.25	0.042	0.5627	6	1654.39
Girders Bot. Flange (FS3 to FS5)	360.00	0.036	0.2393	6	703.42
Pier Bearing Stiffeners	24.17	0.026	0.0082	120	481.84
Jacking Stiffeners	19.67	0.026	0.0067	132	431.33
Intermediate Stiffeners	21.92	0.026	0.0074	6	21.85
Crossframe Connections	24.17	0.026	0.0082	492	1975.54
Abutment Stiffeners	24.17	0.026	0.0082	24	96.37
Intermediate Crossframes	16.93	0.026	0.0057	87	244.77
Pier Crossframes	20.93	0.026	0.0071	25	86.95
RA Crossframes	30.00	0.026	0.0102	5	24.92
FA Crossframes	29.00	0.026	0.0098	5	24.09

Subtotal = 11008.39

CROSSFRAMES

Total Weight = 1776817 LBS

SOUTHBOUND

Intermediate Crossframes (Pier Crossframes assumed to be similar)

	<u>Unit Weight</u> <u>(LB/FT)(LB/FT^3)</u>	<u>Length (FT)/</u> <u>Volume(FT^3)</u>	<u>Members/F</u> <u>rame</u>	<u>Number of</u> <u>Bays</u>	<u># Frames/Bay</u>	<u>Total Weight</u> <u>(LBS)</u>
Top Chord	33.5	13.25	1	5	91	201963.13
Diagonal	33.5	8.42	2	5	91	256805.64
Bottom Chord	33.5	13.33	1	5	91	203231.30
Gusset "A"	490	0.18	2	5	91	80262.00
Gusset "B"	490	0.11	2	5	91	50600.73
Welded conn.	490	0.37	1	5	91	82250.71
Subtotal =						875113.51

End Crossframes

	<u>Unit Weight (LBS/FT)</u>	<u>Length (FT)</u>	<u>Members/F</u> <u>rame</u>	<u>Number of</u> <u>Bays</u>	<u># Frames/Bay</u>	<u>Total Weight</u> <u>(LBS)</u>
Top Chord	73	12.74	1	5	2	9300.20
Diagonal	33.5	7.82	4	5	2	10484.16
Bottom Chord	33.5	12.94	1	5	2	4335.57
Vertical	33.5	7.21	1	5	2	2414.01
Gusset "C"	490	0.0619	2	5	2	606.18
Gusset "D"	490	0.1795	2	5	2	1759.49
Top outside welded conn.	490	0.2174	2	5	2	2130.23
Top middle welded conn.	490	0.0835	1	5	2	409.25
Bottom welded conn.	490	0.3668	1	5	2	1797.27
Subtotal =						33236.36
SB TOTAL (LBS) =						908349.87

NORTHBOUND

Intermediate Crossframes (Pier Crossframes assumed to be similar)

	<u>Unit Weight (LBS/FT)</u>	<u>Weight (LBS)</u>	<u>Members/F</u> <u>rame</u>	<u>Number of</u> <u>Bays</u>	<u># Frames/Bay</u>	<u>Total Weight</u> <u>(LBS)</u>
Top Chord	33.5	13.25	1	5	87	193085.63
Diagonal	33.5	8.42	2	5	87	245400.90
Bottom Chord	33.5	13.33	1	5	87	194251.43
Gusset "A"	490	0.18	2	5	87	76734.00
Gusset "B"	490	0.11	2	5	87	46893.00
Welded conn.	490	0.37	1	5	87	78865.50
Subtotal =						835230.45

End Crossframes

	<u>Unit Weight (LBS/FT)</u>	<u>Length (FT)</u>	<u>Members/F</u> <u>rame</u>	<u>Number of</u> <u>Bays</u>	<u># Frames/Bay</u>	<u>Total Weight</u> <u>(LBS)</u>
Top Chord	73	12.74	1	5	2	9300.20
Diagonal	33.5	7.82	4	5	2	10484.16
Bottom Chord	33.5	12.94	1	5	2	4335.57
Vertical	33.5	7.21	1	5	2	2414.01
Gusset "C"	490	0.0619	2	5	2	606.18
Gusset "D"	490	0.1795	2	5	2	1759.49
Top outside welded conn.	490	0.2174	2	5	2	2130.23
Top middle welded conn.	490	0.0835	1	5	2	409.25
Bottom welded conn.	490	0.3668	1	5	2	1797.27
Subtotal =						33236.36
NB TOTAL (LBS) =						868466.81

CROSSFRAME BOLTS

Total Number =	43960	BOLTS
Total Weight =	71215	LBS

SB TOTAL BOLTS **22420**
SB TOTAL WEIGHT **36320** LBS

NB TOTAL BOLTS **21540**
NB TOTAL WEIGHT **34895** LBS

SOUTHBOUND

<u>Crossframe Type</u>	<u>Number of Bolts/crossframe</u>	<u>Number of Crossframes/Bay</u>	<u># of Bays</u>	<u>Total Number of Bolts</u>
Intermediate	44	91	5	20020
Pier	44	5	5	1100
Rear Abutment	216	1	5	1080
Forward Abutment	44	1	5	220
Subtotal =				22420

NORTHBOUND

<u>Crossframe Type</u>	<u>Number of Bolts/crossframe</u>	<u>Number of Crossframes/Bay</u>	<u># of Bays</u>	<u>Total Number of Bolts</u>
Intermediate	44	87	5	19140
Pier	44	5	5	1100
Rear Abutment	216	1	5	1080
Forward Abutment	44	1	5	220
Subtotal =				21540

STIFFENERS**Total Weight = 490366 LBS**

* At exterior girders

SOUTHBOUND

<u>Type/Location</u>	<u>Volume (CF)</u>	<u>Stiffeners/G</u> <u>irder</u>	<u>Number of</u> <u>Girders</u>	<u>Total</u> <u>Stiffeners</u>	<u>Total Weight</u> <u>(LBS)</u>
Abutment Bearing	1.02	4	6	24	12045.83
Jacking	1.02	22	6	132	66252.08
Inter. Transverse	0.43	1	6	6	1254.77
Crossframe Conn.	0.43	86	6	516	107910.59
Pier Bearing	1.02	20	6	120	60229.17
Subtotal =					247692.45

NORTHBOUND

<u>Type/Location</u>	<u>Volume (CF)</u>	<u>Stiffeners/G</u> <u>irder</u>	<u>Number of</u> <u>Girders</u>	<u>Total</u> <u>Stiffeners</u>	<u>Total Weight</u> <u>(LBS)</u>
Abutment Bearing	1.02	4	6	24	12045.83
Jacking	1.02	22	6	132	66252.08
Inter. Transverse	0.43	1	6	6	1254.77
Crossframe Conn.	0.43	82	6	492	102891.49
Pier Bearing	1.02	20	6	120	60229.17
Subtotal =					242673.35

LATERAL BRACING

Total Weight =	329063 LBS
SB TOTAL	LBS
NB TOTAL	LBS

SOUTHBOUND

Lateral Members

	Crossframe Spacing (FT)	Weight (LBS/FT)	Length (FT)	Total Lateral Members	Total Weight (LBS)
	13.75	38.50	15.96	57	35017.42
	15.00	38.50	18.45	4	2841.55
	21.25	38.50	22.38	5	4308.15
	22.19	38.50	23.20	11	9825.79
	23.50	38.50	24.36	6	5627.00
	24.17	38.50	24.79	6	5725.66
	25.00	38.50	28.50	7	7680.75
<i>Temporary Bracing</i>					
Top	15.00	44.50	21.27	16	15144.24
Bottom	15.00	44.50	21.27	20	18930.30
Top	24.17	44.50	28.49	24	30427.32
Bottom	24.17	44.50	28.49	30	38034.15

Subtotal = 173562.32

NORTHBOUND

Lateral Members

	Crossframe Spacing (FT)	Weight (LBS/FT)	Length (FT)	Total Lateral Members	Total Weight (LBS)
	13.75	38.50	15.96	42	25802.31
	15.00	38.50	18.45	8	5683.09
	21.25	38.50	22.38	7	6031.41
	22.67	38.50	23.62	6	5456.91
	23.50	38.50	24.36	5	4689.17
	23.75	38.50	24.58	11	10410.05
	24.17	38.50	24.79	8	7634.21
<i>Temporary Bracing</i>					
Top	24.17	44.50	24.79	24	26471.88
Bottom	24.17	44.50	24.79	30	33089.84

Subtotal = 125268.87

SOUTHBOUND		Gusset Plates			
Connection Type	Area (SF)	Thickness (FT)	Volume (CF)	# of Gusset Plates	Total Weight (LBS)
Type "A"	2.958	0.052	0.154	77	5813
Type "B"	2.279	0.052	0.119	97	5640
Abutment	2.550	0.052	0.133	12	781
Subtotal =					12234.90

NORTHBOUND		Gusset Plates			
Connection Type	Area (SF)	Thickness (FT)	Volume (CF)	# of Gusset Plates	Total Weight (LBS)
Type "A"	2.958	0.052	0.1540781	79	5964
Type "B"	2.279	0.052	0.1186719	50	2907
Abutment	2.550	0.052	0.1328333	12	781
Subtotal =					9652.89

SOUTHBOUND		Bolted Connections		
Connection Type	# of Bolts/Guss et Plate	# of Gusset Plates	Total Weight (LBS)	
Type "A"	18.00	77	2024	
Type "B"	17.00	97	2408	
Abutment	17.00	12	298	
Subtotal =			4728.94	

NORTHBOUND		Bolted Connections		
Connection Type	# of Bolts/Guss et Plate	# of Gusset Plates	Total Weight (LBS)	
Type "A"	18.00	79	2076	
Type "B"	17.00	50	1241	
Abutment	17.00	12	298	
Subtotal =			3614.96	

FIELD SPLICES

Total Volume = 1006.04 CF

Total Weight = 492958 LBS

SOUTHBOUND

<i>Top Flange</i>	<u>Volume (CF)</u>	<u>Number of Field Splices</u>	<u>Number of Splices/Field Splice Location</u>	<u>Total Volume (CF)</u>
Outer	0.5642	17	6	57.55
Inner	0.5924	17	6	60.43
SUB =				117.98

<i>Bottom Flange</i>	<u>Volume (CF)</u>	<u>Number of Field Splices</u>	<u>Number of Splices/Field Splice Location</u>	<u>Total Volume (CF)</u>
Outer	1.6168	17	6	164.91
Inner	1.7461	17	6	178.10
SUB =				343.01

<i>Web</i>	<u>Volume (CF)</u>	<u>Number of Field Splices</u>	<u>Number of Splices/Field Splice Location</u>	<u>Total Volume (CF)</u>
Typical	0.5454	17	6	55.63
SB#17	0.5290	1	6	3.17
SB#6-7	0.7711	2	6	9.25
SUB =				58.81
SB TOTAL (LBS) =				254702.05

NORTHBOUND

<i>Top Flange</i>	<u>Volume (CF)</u>	<u>Number of Field Splices</u>	<u>Number of Splices/Field Splice Location</u>	<u>Total Volume (CF)</u>
Outer	0.5642	16	6	54.17
Inner	0.5924	16	6	56.88
SUB =				111.04

<i>Bottom Flange</i>	<u>Volume (CF)</u>	<u>Number of Field Splices</u>	<u>Number of Splices/Field Splice Location</u>	<u>Total Volume (CF)</u>
Outer	1.6168	16	6	155.21
Inner	1.7461	16	6	167.63
SUB =				322.83

<i>Web</i>	<u>Volume (CF)</u>	<u>Number of Field Splices</u>	<u>Number of Splices/Field Splice Location</u>	<u>Total Volume (CF)</u>
Typical	0.5454	16	6	52.36
SUB =				52.36
NB TOTAL (LBS) =				238255.69

FIELD SPLICE BOLTS

Total Number =	94224	BOLTS
Total Weight =	152643	LBS
SB TOTAL BOLTS	49296	
SB TOTAL WEIGHT	79860	LBS
NB TOTAL BOLTS	44928	
NB TOTAL WEIGHT	72783	LBS

SOUTHBOUND

<i>Web</i>	<u>Number of Bolts/Field</u>	<u>Number of Splices/Field</u>	<u># of Splices</u>	<u>Total Number of Bolts</u>
	<u>Splice</u>	<u>Splice Location</u>		
Typical	132	6	15	11880
FS #6 and #7	198	6	2	2376
FS #17	128	6	1	768
Subtotal =				15024

<i>Top Splice</i>	<u>Number of Bolts/Field</u>	<u>Number of Splices/Field</u>	<u># of Splices</u>	<u>Total Number of Bolts</u>
	<u>Splice</u>	<u>Splice Location</u>		
Outer	60	6	17	6120
Inner	60	6	17	6120
Subtotal =				12240

<i>Bottom Splice</i>	<u>Number of Bolts/Field</u>	<u>Number of Splices/Field</u>	<u># of Splices</u>	<u>Total Number of Bolts</u>
	<u>Splice</u>	<u>Splice Location</u>		
Outer	108	6	17	11016
Inner	108	6	17	11016
Subtotal =				22032

NORTHBOUND

<i>Web</i>	<u>Number of Bolts/Field</u>	<u>Number of Splices/Field</u>	<u># of Splices</u>	<u>Total Number of Bolts</u>
	<u>Splice</u>	<u>Splice Location</u>		
Typical	132	6	16	12672
Subtotal =				12672

<i>Top Splice</i>	<u>Number of Bolts/Field</u>	<u>Number of Splices/Field</u>	<u># of Splices</u>	<u>Total Number of Bolts</u>
	<u>Splice</u>	<u>Splice Location</u>		
Outer	60	6	16	5760
Inner	60	6	16	5760
Subtotal =				11520

<i>Bottom Splice</i>	<u>Number of Bolts/Field</u>	<u>Number of Splices/Field</u>	<u># of Splices</u>	<u>Total Number of Bolts</u>
	<u>Splice</u>	<u>Splice Location</u>		
Outer	108	6	16	10368
Inner	108	6	16	10368
Subtotal =				20736

FIELD SPLICE FILL PLATES

Total Volume = 60.58 CF
Total Weight = 29686 LBS

SOUTHBOUND					
<i>Top Flange</i>					
	<u>Thickness (in)</u>	<u>Width (in)</u>	<u>Length (in)</u>	<u>Number</u>	<u>Volume (CF)</u>
FS1	0.5000	24.0000	16.0000	6.00	0.67
FS4	0.5000	24.0000	16.0000	6.00	0.67
FS6	1.2500	24.0000	16.0000	6.00	1.67
FS7	1.2500	24.0000	16.0000	6.00	1.67
FS10	0.2500	24.0000	16.0000	6.00	0.33
FS11	0.2500	24.0000	16.0000	6.00	0.33
FS12	0.7500	24.0000	16.0000	6.00	1.00
FS13	0.2500	24.0000	16.0000	6.00	0.33
FS14	0.2500	24.0000	16.0000	6.00	0.33
FS15	0.2500	24.0000	16.0000	6.00	0.33
FS16	0.2500	24.0000	16.0000	6.00	0.33
				Subtotal Volume =	7.67

NORTHBOUND					
<i>Top Flange</i>					
	<u>Thickness (in)</u>	<u>Width (in)</u>	<u>Length (in)</u>	<u>Number</u>	<u>Volume (CF)</u>
FS1	0.5000	24.0000	16.0000	6.00	0.67
FS3	0.5000	24.0000	16.0000	6.00	0.67
FS5	1.2500	24.0000	16.0000	6.00	1.67
FS6	1.2500	24.0000	16.0000	6.00	1.67
FS11	0.2500	24.0000	16.0000	6.00	0.33
FS12	0.5000	24.0000	16.0000	6.00	0.67
FS14	0.2500	24.0000	16.0000	6.00	0.33
FS15	0.2500	24.0000	16.0000	6.00	0.33
FS16	0.2500	24.0000	16.0000	6.00	0.33
				Subtotal Volume =	6.67

<i>Bottom Flange</i>					
	<u>Thickness (in)</u>	<u>Width (in)</u>	<u>Length (in)</u>	<u>Number</u>	<u>Volume (CF)</u>
FS2	1.0000	30.0000	37.0000	6.00	3.85
FS4	1.0000	30.0000	37.0000	6.00	3.85
FS5	0.2500	30.0000	37.0000	6.00	0.96
FS6	1.2500	30.0000	37.0000	6.00	4.82
FS7	1.2500	30.0000	37.0000	6.00	4.82
FS10	0.5000	30.0000	37.0000	6.00	1.93
FS11	0.2500	30.0000	37.0000	6.00	0.96
FS12	0.2500	30.0000	37.0000	6.00	0.96
				Subtotal Volume =	22.16

<i>Bottom Flange</i>					
	<u>Thickness (in)</u>	<u>Width (in)</u>	<u>Length (in)</u>	<u>Number</u>	<u>Volume (CF)</u>
FS1	0.5000	30.0000	37.0000	6.00	1.93
FS2	0.2500	30.0000	37.0000	6.00	0.96
FS3	1.0000	30.0000	37.0000	6.00	3.85
FS5	1.5000	30.0000	37.0000	6.00	5.78
FS6	1.5000	30.0000	37.0000	6.00	5.78
FS8	0.2500	30.0000	37.0000	6.00	0.96
FS9	0.2500	30.0000	37.0000	6.00	0.96
FS11	0.5000	30.0000	37.0000	6.00	1.93
FS12	0.5000	30.0000	37.0000	6.00	1.93
				Subtotal Volume =	24.09

TOTAL (LBS) = 14615.78125

TOTAL (LBS) = 15070.05208

MISCELLANEOUS STEEL COMPONENTS

Total Weight = 87298 LBS

SOUTHBOUND

Bumper Attachment

<u>Type</u>	<u>Length (FT)</u>	<u>Volume (CF)</u>	<u>#/Girder</u>	<u># of Girders</u>	<u>Total Weight (LBS)</u>
Bumper (L8X6X1)	0.92	-	2	6	486.20
8" x 1/2" Stiffener	0.58	0.0162	4	6	190.56
Subtotal =					676.76

NORTHBOUND

Bumper Attachment

<u>Type</u>	<u>Length (FT)</u>	<u>Weight (LBS)</u>	<u>#/Girder</u>	<u># of Girders</u>	<u>Total Weight (LBS)</u>
Bumper (L8X6X1)	0.92	-	2	6	486.20
8" x 1/2" Stiffener	0.58	0.0162	4	6	190.56
Subtotal =					676.76

SOUTHBOUND

Aesthetic Lighting Attachment

<u>Type</u>	<u>Length (FT)</u>	<u>Volume (CF)</u>	<u>#/Girder</u>	<u># of Girders</u>	<u>Total Weight (LBS)</u>
Lighting (L6X6X1/2)	1.167	-	5	6.00	686.20
Subtotal =					686.20

NORTHBOUND

Aesthetic Lighting Attachment

<u>Type</u>	<u>Length (FT)</u>	<u>Volume (CF)</u>	<u>#/Girder</u>	<u># of Girders</u>	<u>Total Weight (LBS)</u>
Lighting (L6X6X1/2)	1.167	-	5	6.00	686.20
Subtotal =					686.20

SOUTHBOUND

Handhold Bar

<u>Type</u>	<u>Length (FT)</u>	<u>Weight (LBS/FT)</u>	<u># of runs</u>	<u>Total Weight (LBS)</u>
1" dia. Handhold bar	1599.500	2.67	10	42706.65
Subtotal =				42706.65

NORTHBOUND

Handhold Bar

<u>Type</u>	<u>Length (FT)</u>	<u>Weight (LBS/FT)</u>	<u>#/Girder</u>	<u>Total Weight (LBS)</u>
1" dia. Handhold bar	1568.000	2.67	10	41865.60
Subtotal =				41865.60