

ESTIMATED QUANTITIES						CALCULATED BY: RG CHECKED BY: ERM				2/6/2024 2/13/2024	
ITEM ODOT	EXT.	PARTICIPATION 01/BRO/10	TOTAL	UNIT	DESCRIPTION	CUY-00014-06.930					REF. SHEET
						ABUTMENTS		PIERS	SUPER- STRUCTURE	GENERAL	
						REAR	FORWARD				
202	11003	LS	LS		STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN					LS	
202	22900	293	293	SY	APPROACH SLAB REMOVED					293	
503	11101	LS	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN					LS	
503	21101	5,467	5,467	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	1,813	1,877	1,777			
505	11100	LS	LS		PILE DRIVING EQUIPMENT MOBILIZATION					LS	
507	00700	4,220	4,220	FT	16" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	2,500		1,720			
507	00750	5,275	5,275	FT	16" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	3,125		2,150			
507	93300	211	211	EACH	STEEL POINTS OR SHOES	125		86			
509	10000	1,063,710	1,063,710	LB	EPOXY COATED STEEL REINFORCEMENT	257,117	283,149	166,187	357,257		
511	34446	1,035	1,035	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK				1,035		
511	34450	111	111	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)				95	16	
511	41012	1,035	1,035	CY	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS			1,035			
511	44112	1,504	1,504	CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING	756	748				
511	45602	568	568	CY	CLASS QC4 MASS CONCRETE, SUBSTRUCTURE WITH QC/QA	307	260				
511	46512	1,899	1,899	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	703	874	322			
511	51512	369	369	CY	CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK				329	40	
512	10050	894	894	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)				894		
512	10100	4,519	4,519	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	1,128	1,127	1,273	991		
513	10280	1,518,413	1,518,413	LB	STRUCTURAL STEEL MEMBERS, LEVEL 4				1,518,413		
513	20000	15,350	15,350	EACH	WELDED STUD SHEAR CONNECTORS				15,350		
514	00060	10,796	10,796	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT				10,796		
514	00066	10,796	10,796	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT				10,796		
514	10000	7	7	EACH	FINAL INSPECTION REPAIR				7		
516	10010	374	374	FT	ARMORLESS PREFORMED JOINT SEAL					374	
516	11210	330	330	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL				330		
516	13600	337	337	SF	1" PREFORMED EXPANSION JOINT FILLER					337	
516	13900	437	437	SF	2" PREFORMED EXPANSION JOINT FILLER	219	218				
516	44100	11	11	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRE. 18" x 18" x 2.31" WITH 19" x 19" x 1.5" LOAD PLATE	11					
516	44300	9	9	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRE. 18" x 18" x 5.94" WITH 19" x 19" x 1.5" LOAD PLATE		9				
516	44200	9	9	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRE. 19" x 26" x 3.94" WITH 20" x 27" x 1.5" LOAD PLATE			9			
516	44200	9	9	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRE. 19" x 26" x 3.94" WITH 20" x 34" x 1.5" LOAD PLATE			9			
516	47000	LS	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE					LS	
518	20000	2,099	2,099	SY	PREFABRICATED GEOCOMPOSITE DRAIN	1,073	1,026				
518	21200	69	69	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	36	33				
518	40000	455	455	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	238	217				
518	40010	70	70	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	30	40				
523	20000	3	3	EACH	DYNAMIC LOAD TESTING	1		2			
526	30001	642	642	SY	REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN					642	
526	90030	374	374	FT	TYPE C INSTALLATION					374	
607	39901	951	951	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN				812	139	
SPECIAL	20365000	4	4	EACH	SETTLEMENT PLATFORM	1	2			1	
SPECIAL	53014000	LS	LS		STRUCTURAL SURVEY AND MONITORING OF VIBRATION					LS	

Structure Geometry (Single Bridge)**SUPERSTRUCTURE**

<u>Deck</u>		
Deck Span Lengths	ft	180.00
Deck Span End overhangs	ft	1.958
Total Deck Length	ft	183.92
Deck Width	ft	29.101
Deck Thickness	in	8.500
Exterior Overhang	ft	0.641
Interior Overhang	ft	1.375
Average Haunch Thickness	in	2.500
Roadway Width	ft	26.000
Skew	deg	5.533

Sidewalk and Median

Sidewalk Width	ft	7.167
Sidewalk Walkway Width	ft	6.000
Sidewalk Thickness	in	8.500
Sidewalk Curb Height	in	8.000
Sidewalk Beam Width	ft	1.000
Sidewalk Beam Height	ft	0.849
Median Width	ft	1.958
Median Thickness	in	8.000

Beams (30WF124)

Total Depth	in	30.200
Flange Width	in	10.500
Flange Thickness	in	0.930
Web Thickness	in	0.585
Web Height	in	28.340
Number of Beams	no	5

Approach Slab (Both Bridges)

Approach Slab Width	ft	68.000
Approach Slab Length	ft	15.000
Approach Slab Thickness	in	12.000
Sidewalk Width	ft	14.333
Sidewalk & Median Height	in	8.000
Median Avg Width	ft	2.970
Median Length on Approach	ft	5.000

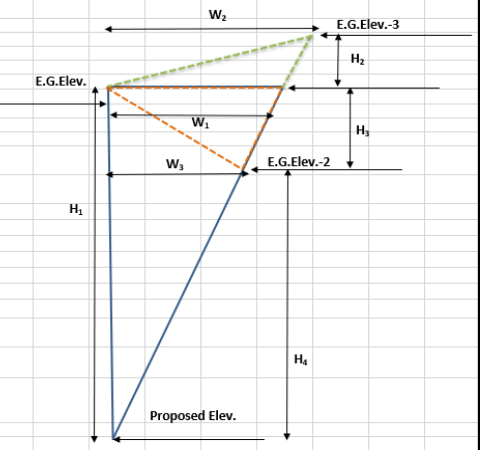
SUBSTRUCTURE

<u>Abutment Seat</u>		
Seat Width (At Beams)	ft	3.500
Seat Elv Area (At Beams)	sf	44.564 per abutment
Seat Width (At Ends)	ft	1.500
Seat Elv Area (At Ends)	sf	34.242
Avg New Seat Height	ft	1.167
Wingwall height	ft	6.378
Wingwall length	ft	4.667
<u>Diaphragm</u>		
Dia Width (At Beams)	ft	4.000
Dia Elv Area (At Beams)	sf	101.412 Excluding deck, sidewalk and haunches
Dia Width (At Ends)	ft	1.500
Dia Elv Area (At Ends)	sf	18.625
Total Abutment Length	ft	70.325
Wingwall Length	ft	4.838

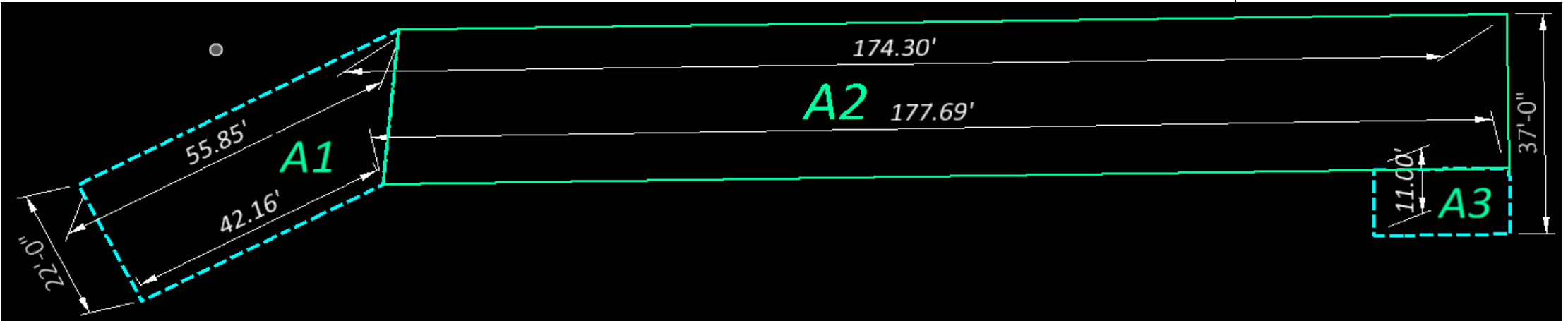
Rear Abutment

Points from NW End		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	aa	bb	cc	dd
	E.G. Elev. (ft)	813.09	813.06	813.22	813.72	813.97	814.21	814.34	814.52	814.65	814.74	814.81	814.89	815	815.13	815.22	815.27	815.29	815.32	815.43	815.45	815.42	815.4	815.58	815.72	815.73	815.73	815.74	816.17	816.12	815.97
	E.G. Elev.-2(ft)	812.91	812.89	0	0	0	814.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	814.98	0	0	815.66	0	0	0	815.82	0	0
	E.G. Elev.-3(ft)	0	0	813.4	813.82	814.03	0	814.37	814.56	814.73	814.87	815	815.09	815.19	815.35	815.4	815.39	815.4	815.41	815.44	815.47	0	815.39	815.61	0	815.73	815.81	815.78	0	816.41	816.25
	Proposed Ground Elev. (ft)	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	
	Gap between points (ft)	0	5	10	10	10	10	7.1	10.52	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	7	10	10	10
	H ₁ (ft)	4.59	4.56	4.72	5.22	5.47	5.71	5.84	6.02	6.15	6.24	6.31	6.39	6.5	6.63	6.72	6.77	6.79	6.82	6.93	6.95	6.92	6.9	7.08	7.22	7.23	7.23	7.24	7.67	7.62	7.47
	H ₂ (ft)	0	0	0.18	0.1	0.06	0	0.03	0.04	0.08	0.13	0.19	0.2	0.19	0.22	0.18	0.12	0.11	0.09	0.01	0.02	0	0	0.03	0	0	0.08	0.04	0	0.29	0.28
	H ₃ (ft)	0.18	0.17	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.44	0	0	0.06	0	0	0	0.35	0	0
	W ₁ (ft)	4.59	4.56	4.72	5.22	5.47	5.71	5.84	6.02	6.15	6.24	6.31	6.39	6.5	6.63	6.72	6.77	6.79	6.82	6.93	6.95	6.92	6.9	7.08	7.22	7.23	7.23	7.24	7.67	7.62	7.47
W ₂ (ft)	0	0	4.9	5.32	5.53	0	5.87	6.06	6.23	6.37	6.5	6.59	6.69	6.85	6.9	6.89	6.9	6.91	6.94	6.97	0	0	7.11	0	0	7.31	7.28	0	7.91	7.75	
W ₃ (ft)	4.41	4.39	0	0	0	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.48	0	0	7.16	0	0	7.32	0	0	
Area for sloped excavation (ft ²)	10.1	10.0	11.6	13.9	15.1	16.3	17.1	18.2	19.2	19.9	20.5	21.1	21.7	22.7	23.2	23.3	23.4	23.6	24.0	24.2	22.4	23.8	25.2	25.8	26.1	26.4	26.4	28.1	30.1	28.9	
Volume for sloped Excavation (yd ³)	0.0	1.9	4.3	5.1	5.6	6.0	4.5	7.1	7.1	7.4	7.6	7.8	8.1	8.4	8.6	8.6	8.7	8.7	8.9	9.0	8.3	8.8	9.3	9.6	9.7	9.8	6.8	10.4	11.2	10.7	

Points from SW End		a'	b'	c'	d'	e'	f'	g'	h'	i'	j'	k'	l'	m'	n'	o'	p'	q'	r'	s'	t'	u'	v'	w'	x'
	Existing Ground Elev. (ft)	813.93	813.91	813.87	813.87	814	814.09	814.16	814.23	814.31	814.38	814.47	814.57	814.67	814.77	814.87	814.99	815.18	815.4	815.6	815.83	816.05	815.81	815.81	815.97
	E.G. Elev.-2(ft)	0	0	0	0	813.93	814.02	814.09	814.19	814.28	814.38	0	0	0	0	0	814.98	815.13	815.36	815.59	815.82	0	0	815.64	815.86
	E.G. Elev.-3(ft)	814.04	814	813.97	813.95	0	0	0	0	0	814.48	814.58	814.68	814.78	814.88	0	0	0	0	0	0	816.06	815.98	0	0
	Proposed Ground Elev. (ft)	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5
	Gap between points (ft)	0	5.01	10	10	10	7.93	8.46	10	10	10	10	10	10	10	10	10	10	10	10	10	10	13.9	10	20
	H ₁ (ft)	5.43	5.41	5.37	5.37	5.5	5.59	5.66	5.73	5.81	5.88	5.97	6.07	6.17	6.27	6.37	6.49	6.68	6.9	7.1	7.33	7.55	7.31	7.31	7.47
	H ₂ (ft)	0.11	0.09	0.1	0.08	0	0	0	0	0	0	0.01	0.01	0.01	0.01	0.01	0	0	0	0	0	0.01	0.17	0	0
	H ₃ (ft)	0	0	0	0	0.07	0.07	0.07	0.04	0.03	0	0	0	0	0	0	0.01	0.05	0.04	0.01	0.01	0	0	0.17	0.11
	W ₁ (ft)	5.43	5.41	5.37	5.37	5.5	5.59	5.66	5.73	5.81	5.88	5.97	6.07	6.17	6.27	6.37	6.49	6.68	6.9	7.1	7.33	7.55	7.31	7.31	7.47
W ₂ (ft)	5.54	5.5	5.47	5.45	0	0	0	0	0	0	5.98	6.08	6.18	6.28	6.38	0	0	0	0	0	7.56	7.48	0	0	
W ₃ (ft)	0	0	0	0	5.43	5.52	5.59	5.69	5.78	0	0	0	0	0	0	6.48	6.63	6.86	7.09	7.32	0	0	7.14	7.36	
Elev. Difference (ft)	5.43	5.41	5.37	5.37	5.50	5.59	5.66	5.73	5.81	5.88	5.97	6.07	6.17	6.27	6.37	6.49	6.68	6.90	7.10	7.33	7.55	7.31	7.31	7.47	
Area for sloped excavation (ft ²)	15.0	14.9	14.7	14.6	14.9	15.4	15.8	16.3	16.8	17.3	17.9	18.5	19.1	19.7	20.3	21.0	22.1	23.7	25.2	26.8	28.5	27.3	26.1	27.5	
Volume for sloped Excavation (yd ³)	0.0	2.8	5.4	5.4	5.5	4.5	5.0	6.0	6.2	6.4	6.6	6.8	7.1	7.3	7.5	7.8	8.2	8.8	9.3	9.9	10.6	14.1	9.7	20.4	



Non-sloped Excavation (footing with 1' offset)			
	A1	A2	A3
Area (ft ²)	1101.7	4595.9	237.8
Average Depth for Excavation (ft)	5.3	6.6	7.5
Volume for non-sloped Excavation (yd ³)	216.3	1121.2	65.9



Total Excavation for Rear Abutment (yd ³)	1813.0
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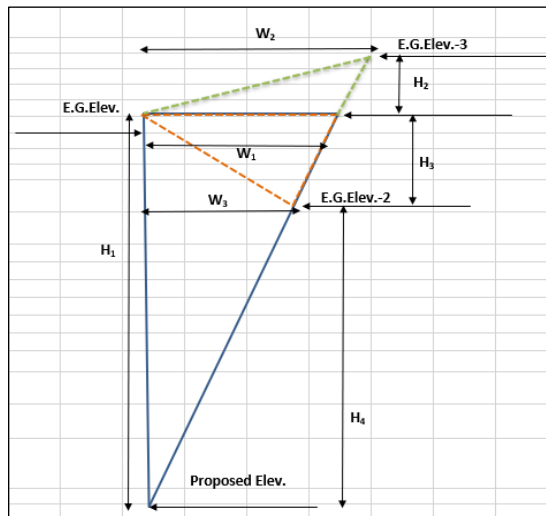
Forward Abutment

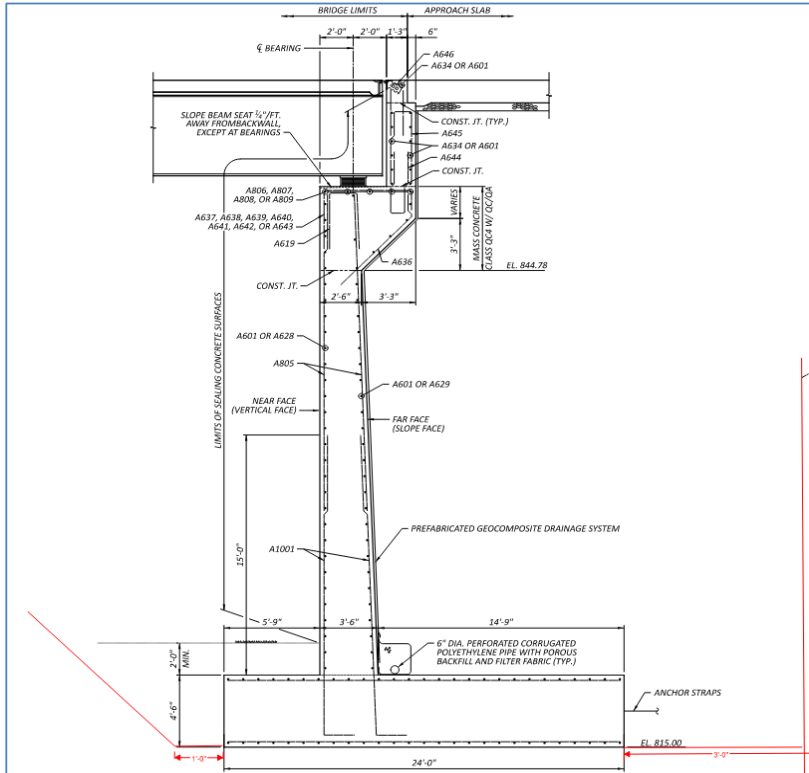
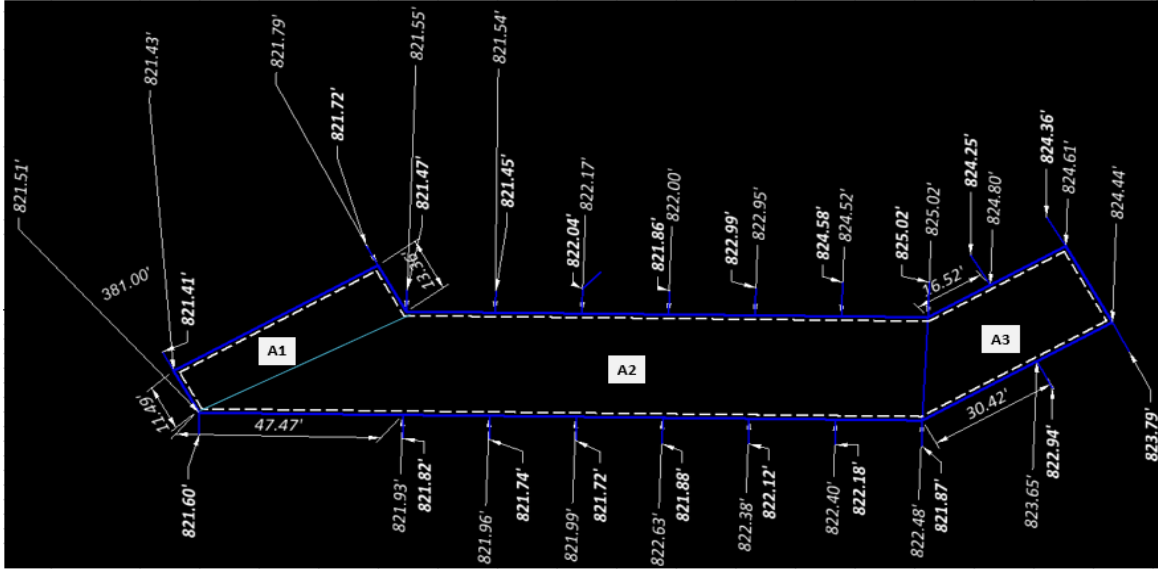
Points from NW End		a	b	c	d	e	f	g	h	i	j
	E.G. Elev. (ft)	821.79	821.55	821.54	822.17	822	822.95	824.52	825.02	824.8	824.61
	E.G. Elev.-2(ft)	821.72	821.47	821.45	822.04	821.86	0	0	825.02	824.25	824.36
	E.G. Elev.-3(ft)	0	0	0	0	0	822.99	824.58	0	0	0
	Proposed Ground Elev. (ft)	815	815	815	815	815	815	815	815	815	815
	Gap between points (ft)	0	13.36	20	20	20	20	20	20	16.52	20
	H ₁ (ft)	6.79	6.55	6.54	7.17	7	7.95	9.52	10.02	9.8	9.61
	H ₂ (ft)	0	0	0	0	0	0.04	0.06	0	0	0
	H ₃ (ft)	0.07	0.08	0.09	0.13	0.14	0	0	0	0.55	0.25
	W ₁ (ft)	6.79	6.55	6.54	7.17	7	7.95	9.52	10.02	9.8	9.61
	W ₂ (ft)	0	0	0	0	0	7.99	9.58	0	0	0
	W ₃ (ft)	6.72	6.47	6.45	7.04	6.86	0	0	0	9.25	9.36
Area for sloped excavation (ft ²)	22.8	21.2	21.1	25.2	24.0	31.8	45.6	50.2	45.3	45.0	
Volume for sloped Excavation (yd ³)	0.0	10.5	15.6	18.7	17.8	23.5	33.8	37.2	27.7	33.3	

Points from SW End		a'	b'	c'	d'	e'	f'	g'	h'	i'	j'	k'
	Existing Ground Elev. (ft)	821.43	821.51	821.93	821.96	821.99	822.63	822.38	822.4	822.48	823.65	824.44
	Proposed Ground Elev. (ft)	815	815	815	815	815	815	815	815	815	815	815
	Gap between points (ft)	0	11.49	47.47	20	20	20	20	20	20	30.42	20
	H ₁ (ft)	6.43	6.51	6.93	6.96	6.99	7.63	7.38	7.4	7.48	8.65	9.44
	W ₁ (ft) (outside of typ 1' offset)	2	2	2	2	2	2	2	2	2	2	2
	Area for excavation (ft ²)	12.9	13.0	13.9	13.9	14.0	15.3	14.8	14.8	15.0	17.3	18.9
Volume for Excavation (yd ³)	0.0	5.5	24.4	10.3	10.4	11.3	10.9	11.0	11.1	19.5	14.0	

Non-slopped Excavation (footing with 1' offset)			
	A1	A2	A3
Area (ft ²)	690.0	3740.4	956.4
Average Depth for Excavation (ft)	6.6	7.5	9.2
Volume for non-slopped Excavation (yd ³)	167.9	1037.7	324.7

Total Excavation for Forward Abutment (yd³)	1877.0
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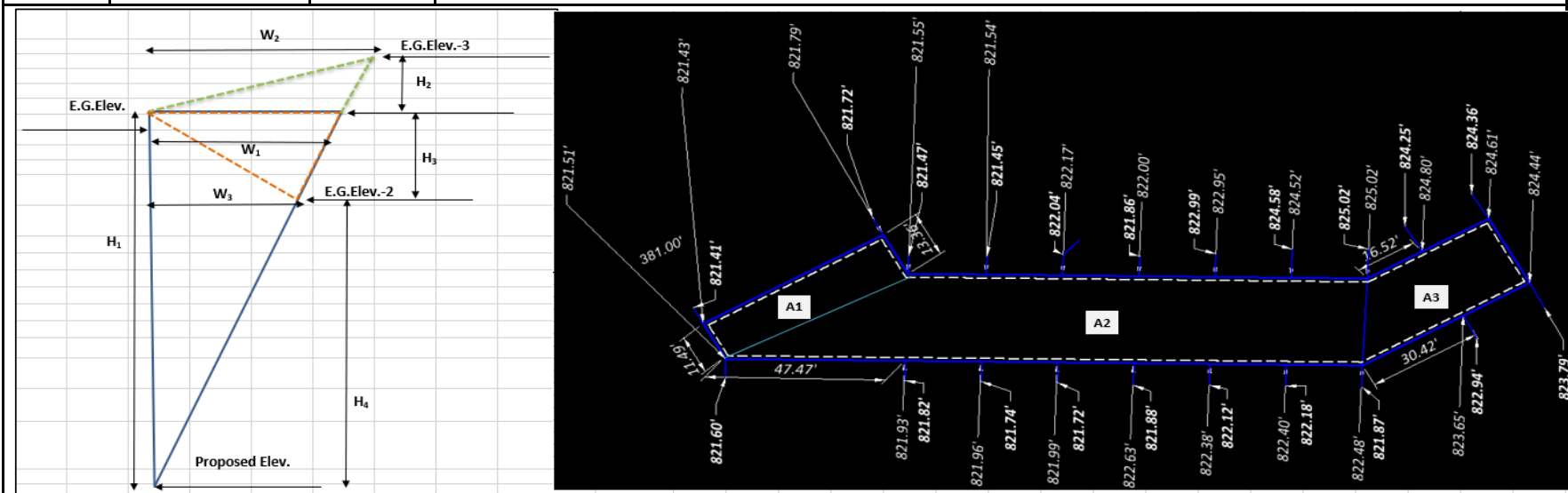
Forward Abutment

Points from NW End		a	b	c	d	e	f	g	h	i	j
	E.G. Elev. (ft)	821.79	821.55	821.54	822.17	822	822.95	824.52	825.02	824.8	824.61
	E.G. Elev.-2(ft)	821.72	821.47	821.45	822.04	821.86	0	0	825.02	824.25	824.36
	E.G. Elev.-3(ft)	0	0	0	0	0	822.99	824.58	0	0	0
	Proposed Ground Elev. (ft)	815	815	815	815	815	815	815	815	815	815
	Gap between points (ft)	0	13.36	20	20	20	20	20	20	16.52	20
	H ₁ (ft)	6.79	6.55	6.54	7.17	7	7.95	9.52	10.02	9.8	9.61
	H ₂ (ft)	0	0	0	0	0	0.04	0.06	0	0	0
	H ₃ (ft)	0.07	0.08	0.09	0.13	0.14	0	0	0	0.55	0.25
	W ₁ (ft)	6.79	6.55	6.54	7.17	7	7.95	9.52	10.02	9.8	9.61
	W ₂ (ft)	0	0	0	0	0	7.99	9.58	0	0	0
	W ₃ (ft)	6.72	6.47	6.45	7.04	6.86	0	0	0	9.25	9.36
Area for sloped excavation (ft ²)	22.8	21.2	21.1	25.2	24.0	31.8	45.6	50.2	45.3	45.0	
Volume for sloped Excavation (yd ³)	0.0	10.5	15.6	18.7	17.8	23.5	33.8	37.2	27.7	33.3	

Points from SW End		a'	b'	c'	d'	e'	f'	g'	h'	i'	j'	k'
	Existing Ground Elev. (ft)	821.43	821.51	821.93	821.96	821.99	822.63	822.38	822.4	822.48	823.65	824.44
	E.G. Elev.-2(ft)	821.41	0	821.82	821.74	821.72	821.88	822.12	822.18	821.87	822.94	823.79
	E.G. Elev.-3(ft)	0	821.6	0	0	0	0	0	0	0	0	0
	Proposed Ground Elev. (ft)	815	815	815	815	815	815	815	815	815	815	815
	Gap between points (ft)	0	11.49	47.47	20	20	20	20	20	20	30.42	20
	H ₁ (ft)	6.43	6.51	6.93	6.96	6.99	7.63	7.38	7.4	7.48	8.65	9.44
	H ₂ (ft)	0	0.09	0	0	0	0	0	0	0	0	0
	H ₃ (ft)	0.02	0	0.11	0.22	0.27	0.75	0.26	0.22	0.61	0.71	0.65
	W ₁ (ft)	6.43	6.51	6.93	6.96	6.99	7.63	7.38	7.4	7.48	8.65	9.44
	W ₂ (ft)	0	6.6	0	0	0	0	0	0	0	0	0
	W ₃ (ft)	6.41	0	6.82	6.74	6.72	6.88	7.12	7.18	6.87	7.94	8.79
Elev. Difference (ft)	6.43	6.51	6.93	6.96	6.99	7.63	7.38	7.40	7.48	8.65	9.44	
Area for sloped excavation (ft ²)	20.6	21.5	23.6	23.5	23.5	26.2	26.3	26.6	25.7	34.3	41.5	
Volume for sloped Excavation (yd ³)	0.0	9.1	41.5	17.4	17.4	19.4	19.5	19.7	19.0	38.7	30.7	

Non-sloped Excavation (footing with 1' offset)			
	A1	A2	A3
Area (ft ²)	690.0	3740.4	956.4
Average Depth for Excavation (ft)	6.6	7.5	9.2
Volume for non-sloped Excavation (yd ³)	167.9	1037.7	324.7

Total Excavation for Forward Abutment (yd³)	1981.0
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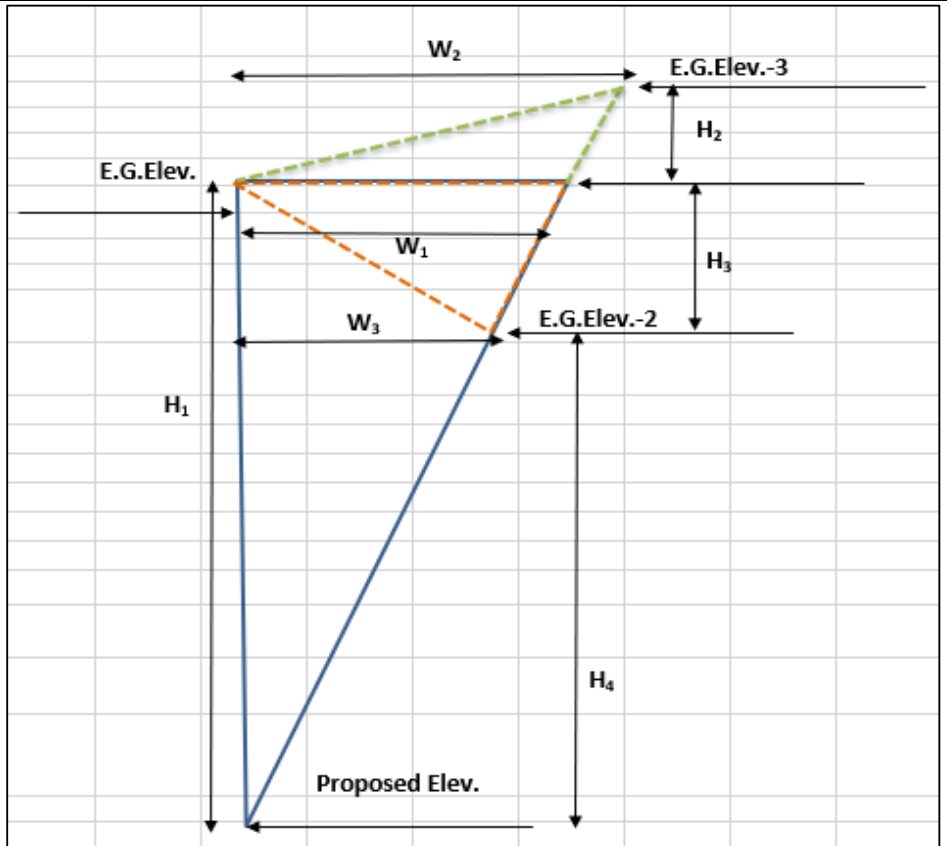
Pier-1

		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	
Points from NW End	Existing Ground Elev. (ft)	820.26	821.03	820.86	820.45	819.76	819.35	819.55	820.03	820.51	820.4	819.9	819.55	820.37	821.03	821.01	821	821.08	821.23	821.2	
	Proposed Ground Elev. (ft)	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	
	Excavation Depth (ft)	9.26	10.03	9.86	9.45	8.76	8.35	8.55	9.03	9.51	9.4	8.9	8.55	9.37	10.03	10.01	10	10.08	10.23	10.2	
	Gap between points (ft)	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	12
	Width (ft)	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Pier-1																					
		a'	b'	c'	d'	e'	f'	g'	h'	i'	j'	k'	l'	m'	n'	o'	p'	q'	r'	s'	
Points from SW End	Existing Ground Elev. (ft)	815.83	815.91	815.96	816	816.04	816.06	816.07	816.07	816.07	816.01	815.87	815.78	816.49	817.6	818.13	818.62	819.1	818.44	817.32	
	Proposed Ground Elev. (ft)	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	811	
	Excavation Depth (ft)	4.83	4.91	4.96	5	5.04	5.06	5.07	5.07	5.07	5.01	4.87	4.78	5.49	6.6	7.13	7.62	8.1	7.44	6.32	
	Gap between points (ft)	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	12
	Width (ft)	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	Excavation (yd ³)	0.0	49.8	49.4	48.2	46.0	44.7	45.4	47.0	48.6	48.0	45.9	44.4	49.5	55.4	57.1	58.7	60.6	58.9	66.1	
	Total Excavation for Pier-1 (yd ³)	924.0																			

Pier-2

		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	
Points from NW End	E.G. Elev. (ft)	819.54	820.12	820.51	819.92	820.67	820.8	820.52	821.11	820.42	822.09	821.45	821.55	821.64	821.8	821.97	822.13	821.53	821.15	821.36	
	E.G. Elev.-2(ft)	818.92	819.45	819.85	819.89	0	0	0	0	0	820.98	820.95	821.05	821.21	821.36	821.51	821.67	821.12	821.08	821.14	
	E.G. Elev.-3(ft)	0	0	0	0	820.7	821.04	820.54	821.2	820.83	0	0	0	0	0	0	0	0	0	0	
	Proposed Ground Elev. (ft)	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815
	Gap between points (ft)	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	7.88
	H ₁ (ft)	4.54	5.12	5.51	4.92	5.67	5.8	5.52	6.11	5.42	7.09	6.45	6.55	6.64	6.8	6.97	7.13	6.53	6.15	6.36	
	H ₂ (ft)	0	0	0	0	0.03	0.24	0.02	0.09	0.41	0	0	0	0	0	0	0	0	0	0	0
	H ₃ (ft)	0.62	0.67	0.66	0.03	0	0	0	0	0	1.11	0.5	0.5	0.43	0.44	0.46	0.46	0.41	0.07	0.22	
	W ₁ (ft)	4.54	5.12	5.51	4.92	5.67	5.8	5.52	6.11	5.42	7.09	6.45	6.55	6.64	6.8	6.97	7.13	6.53	6.15	6.36	
	W ₂ (ft)	0	0	0	0	5.7	6.04	5.54	6.2	5.83	0	0	0	0	0	0	0	0	0	0	0
	W ₃ (ft)	3.92	4.45	4.85	4.89	0	0	0	0	0	5.98	5.95	6.05	6.21	6.36	6.51	6.67	6.12	6.08	6.14	
	Elev. Difference (ft)	4.54	5.12	5.51	4.92	5.67	5.80	5.52	6.11	5.42	7.09	6.45	6.55	6.64	6.80	6.97	7.13	6.53	6.15	6.36	

	Area for sloped excavation (ft ²)	8.9	11.4	13.4	12.0	16.2	17.5	15.3	18.9	15.8	21.2	19.2	19.8	20.6	21.6	22.7	23.8	20.0	18.7	19.5	Pier-2
	Volume for sloped Excavation (yd ³)	0.0	4.2	4.9	4.5	6.0	6.5	5.7	7.0	5.9	7.9	7.1	7.3	7.6	8.0	8.4	8.8	7.4	6.9	5.7	
Points from SW End		a'	b'	c'	d'	e'	f'	g'	h'	i'	j'	k'	l'	m'	n'	o'	p'	q'	r'	s'	
	Existing Ground Elev. (ft)	822.1	822.15	822.2	822.21	822.2	822.19	822.39	823.16	823.31	822.81	822.7	822.79	822.89	822.87	823.07	823.17	823.19	823.22	823.21	
	Proposed Ground Elev. (ft)	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	815	
	Gap between points (ft)	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	7.88
	Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
	Excavation (yd ³)	0.0	36.4	37.7	35.9	38.1	38.5	38.3	42.3	40.7	44.1	41.9	42.5	43.1	43.5	44.6	45.3	43.6	42.6	34.0	
	Total Excavation for Pier-2 (yd ³)	853.0																			



CUY-00014-06.930		Calc.: RG 2/13/23		
Item 507-16" C.I.P. Piles		Checked: ERM 2/13/23		
	Location			
	Rear abutment	Pier 1	Pier 2	Fwd. Abutment
No. Driven	125	44	42	
No. Furnished	125	44	42	
Estimated Length (ft)	20	20	20	
Order Length (ft)	25	25	25	
Total Length for Driven (ft)	2500	880	840	
Total Length for Furnished (ft)	3125	1100	1050	

Deck:

Deck Area	sq ft	34197.42	(CAD Measured)
Deck Thickness	in	9.00	
Deck Volume	cu ft	25648.07	



Haunch:

Left Overhang	sq ft	1194.99	(CAD Measured)
Thickness	in	3.63	
Volume	cu ft	360.99	
Right Overhang	sq ft	1172.88	(CAD Measured)
Thickness	in	3.63	
Volume	cu ft	354.31	

Girder Legnths	(feet)						
	Brg. Oh	vary L	over P1	span 02	over P2	span 03	Brg. Oh
G1	1.92	103.599	68.000	93.000	68.000	96.00	2.17
G2	1.92	106.438	68.000	93.000	68.000	96.00	2.17
G3	1.92	109.271	68.000	93.000	68.000	96.00	2.17
G4	1.92	112.109	68.000	93.000	68.000	96.00	2.17
G5	1.92	114.948	68.000	93.000	68.000	96.00	2.17
G6	1.92	117.781	68.000	93.000	68.000	96.00	2.17
G7	1.92	120.620	68.000	93.000	68.000	96.00	2.17
G8	1.92	123.453	68.000	93.000	68.000	96.00	2.17
G9	1.92	126.292	68.000	93.000	68.000	96.00	2.17

Girder Legnths	L 1+2	thick. (in)	width(in)	volume(cf)	L 3	thick. (in)	width(in)	volume(cf)	L 4	thick. (in)	width(in)	volume(cf)	L 5	thick. (in)	width(in)	volume(cf)	L 6+7	thick. (in)	width(in)	volume(cf)
G1	105.519	3.644	18	48.1	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
G2	108.358	3.644	18	49.4	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
G3	111.191	3.644	18	50.6	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
G4	114.029	3.644	18	51.9	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
G5	116.868	3.644	18	53.2	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
G6	119.701	3.644	18	54.5	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
G7	122.540	3.644	18	55.8	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
G8	125.373	3.644	18	57.1	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
G9	128.212	3.644	18	58.4	68.000	2.144	18	18.2	93.000	3.644	18	42.4	68.000	2.144	18	18.2	98.167	3.644	18	44.7
				sum= 479.1				sum= 164.0				sum= 381.3				sum= 164.0				sum= 402.4

Deck Volume	25648.07	cu ft
Left Overhang	360.99	cu ft
Right Overhang	354.31	cu ft
Haunch Volume	1590.8	cu ft

Grand Total **cu yd** **1035.37**

Ext. 34450 Item 511- Class QC2 Concrete with QC/QA, Bridge Deck (Parapet)

Modified Bridge Rail BR-2-15 (3' tall):

Side	Length ft	Area sq ft	Parapet
			Volume cu yd
Left	404.00	3.00	44.89
Right	408.00	3.00	45.33
Total			91.00

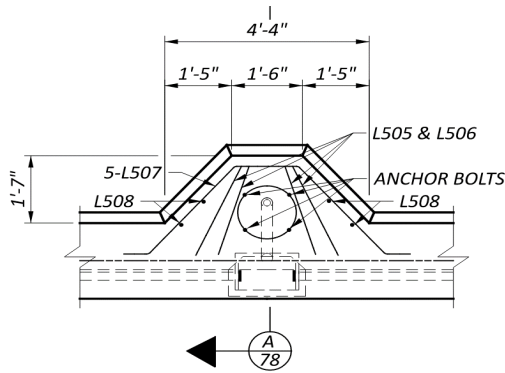
(Measured length on CAD, excl. approaches slabs)

Light Post (4):

Side	Area sq ft	Height	Volume cu yd
Left-(1)	4.6188	5.675	0.97
Right-(1)	4.6188	5.675	0.97
Total			3.88

(Measured on CAD)

**Added 2 more pilasters at Tracings*



Ext. 34450 Item 511- Class QC2 Concrete with QC/QA, Bridge Deck (Parapet)

Modified Bridge Rail BR-2-15 (3' tall):

Side	Length ft	Area sq ft	Parapet
			Volume cu yd
Left-Rear	46.00	3.00	5.11
Right-Rear	20.33	3.00	2.26
Left-Fwd	36.20	3.00	4.02
Right-Fwd	36.20	3.00	4.02
Total			15.41

(Measured length on CAD, only approach slabs)

Pier-1 Beam Seats										
	A	B	C	D	E	F	G	H	J	
Length (ft)	26.00	18.67	18.67	18.67	18.67	18.67	18.67	18.67	9.58	
Width (ft)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	
Top El. (ft)	845.85	846.43	846.99	847.53	848.04	848.27	848.44	848.59	848.72	
Bottom El. (ft)	842.35	842.35	842.35	842.35	842.35	842.35	842.35	842.35	842.35	
Height (ft)	3.50	4.08	4.64	5.18	5.69	5.92	6.09	6.24	6.37	Total
Volume (yd3)	11.80	9.87	11.23	12.53	13.77	14.32	14.74	15.10	7.91	111.28

Pier-1 Stem	
Length (ft)	166.25
Width (ft)	2.5
Height (ft)	28.35
Volume (yd ³)	436.41

Grand Total (yd³)	547.68
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Pier-2 Beam Seats										
	A	B	C	D	E	F	G	H	J	
Length (ft)	17.08	18.67	18.67	18.67	18.67	18.67	18.67	16.25	12.00	
Width (ft)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
Top El. (ft)	849.2	849.56	849.9	850.21	850.51	850.51	850.46	850.39	850.3	
Bottom El. (ft)	845.7	845.7	845.7	845.7	845.7	845.7	845.7	845.7	845.7	
Height (ft)	3.50	3.86	4.20	4.51	4.81	4.81	4.76	4.69	4.60	Total
Volume (yd3)	7.75	9.34	10.16	10.91	11.64	11.64	11.52	9.88	7.16	90.00

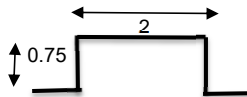
Pier-2 Stem	
Length (ft)	157.3
Width (ft)	2.5
Height (ft)	27.20
Volume (yd ³)	396.22

Pier-2 Seismic Blocks	
Area (ft ²)=	1.5
Skew °	60
Length (ft)	4.04
Vol. (yd ³) =	6.06
No.	2
TotalVol. (yd ³) =	0.45

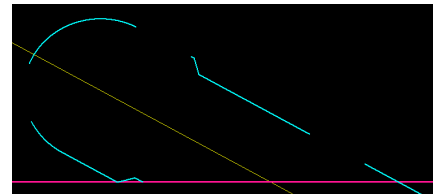
Grand Total (yd³)	486.67
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Light Post(1)

Measured on CAD



Area sq ft
13.77



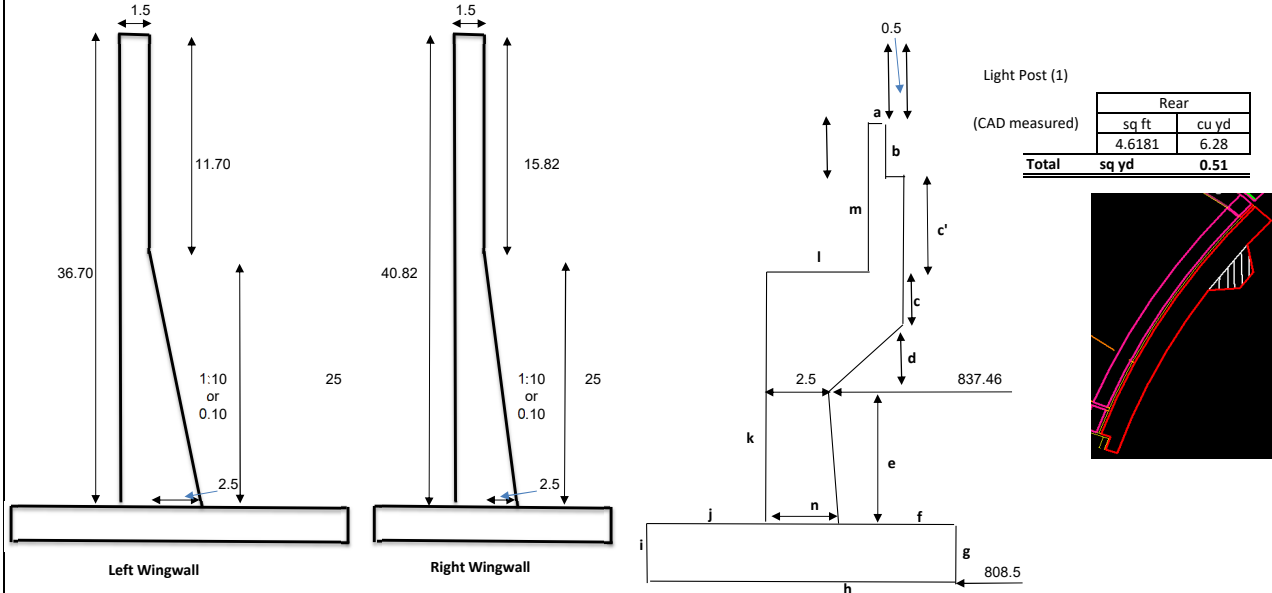
CUY-00014-06.930

Calc.: RG 2/13/23

Item 511-Rear Abutment and Wingwalls

Checked: ERM 2/13/23

	Left Wingwall	A'	A	B	C	D	E	F	G	H	J	K	L'	L	Right Wingwall	Total
Length (ft)	46.39	6.35	15.95	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.27	7.90	4.30	20.47	
Area (ft ²)	86.31	0.00	86.96	86.96	86.96	86.96	86.96	86.96	86.96	86.96	86.96	86.96	0.00	86.96	92.47	
Volume (yd ³)	148.27	0.00	51.36	52.40	52.40	52.40	52.40	52.40	52.40	52.40	52.40	52.40	0.00	13.86	70.10	756.00



Left Wingwall

Right Wingwall

(ft)	A'	A	B	C	D	E	F	G	H	J	K	L	L'
a	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
b	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
c'	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03
Elev. From plan view	842.71	842.71	843.38	844.02	844.63	845.22	845.53	845.80	846.03	846.07	845.92	845.80	846.80
c	2.00	2.00	2.67	3.31	3.92	4.51	4.82	5.09	5.32	5.36	5.21	5.09	6.09
d	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
e	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46
f	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75
g	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
h	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
i	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
j	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
k	30.71	30.71	31.38	32.02	32.63	33.22	33.53	33.80	34.03	34.07	33.92	33.80	34.80
l	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
m	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45
n	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Area (ft ²)	0.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0	0.0

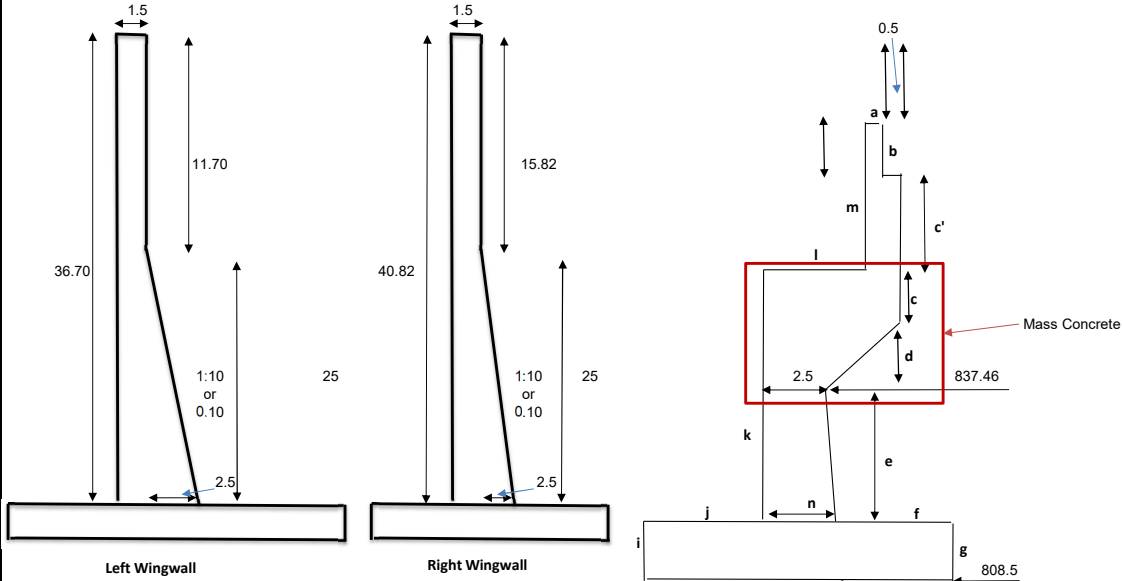
CUY-00014-06.930

Calc.: RG 2/13/23

Item 511-Class QC4 Mass Concrete

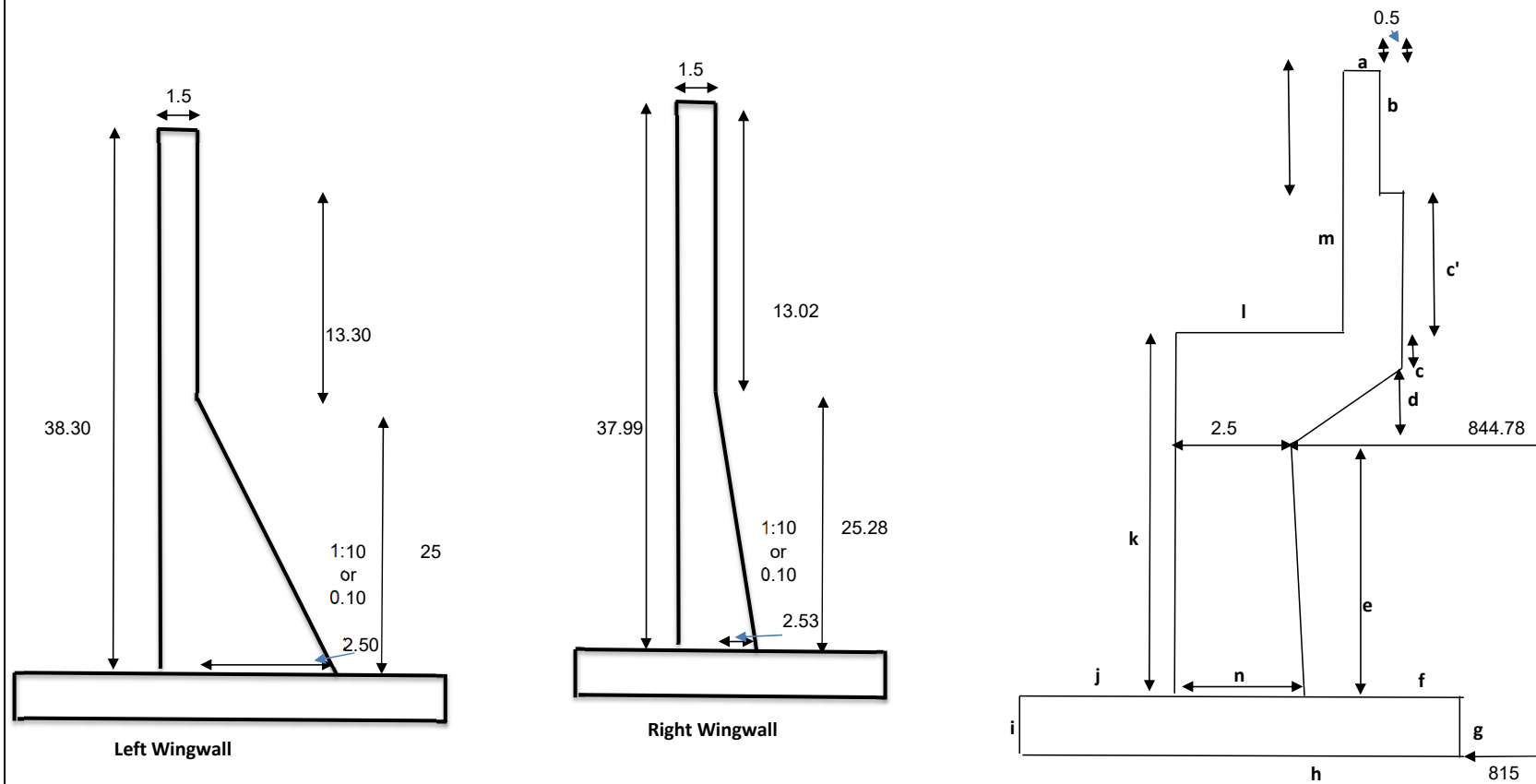
Checked: ERM 2/13/23

	Left Wingwall	A'	A	B	C	D	E	F	G	H	J	K	L'	L	Right Wingwall	Total
Length (ft)		6.35	15.95	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.27	7.90	4.30		
Area (ft ²)		111.86	28.23	32.70	36.96	41.03	44.96	47.03	48.83	50.36	50.63	49.63	49.03	48.83		
Volume (yd ³)		26.32	16.67	19.70	22.27	24.73	27.10	28.34	29.43	30.35	30.51	29.91	14.34	7.78		307.45



(ft)	A'	A	B	C	D	E	F	G	H	J	K	L	L'
a	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
b	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
c'	5.03												5.03
Elev. From plan view	842.71	842.71	843.38	844.02	844.63	845.22	845.53	845.80	846.03	846.07	845.92	845.80	846.80
c	2.00	2.00	2.67	3.31	3.92	4.51	4.82	5.09	5.32	5.36	5.21	5.09	6.09
d	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
e	25.46												25.46
f	14.75												14.75
g	3.50												3.50
h	24.00												24.00
i	4.00												4.00
j	5.75												5.75
k	30.71												34.80
l	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
m	6.45												6.45
n	3.50												3.50
Area (ft ²)	111.9	28.2	32.7	37.0	41.0	45.0	47.0	48.8	50.4	50.6	49.6	48.8	135.4

	Left Wingwall	A'	A	B	C	D	E	F	G	H	J'	J	Right Wingwall	Grand Total
Length (ft)	55.50	5.30	13.08	18.67	18.67	18.67	11.17	18.67	18.67	18.67	5.43	16.96	37.50	
Area (ft ²)	88.69	0.00	86.42	86.42	86.42	86.42	86.42	86.42	86.42	86.42	28.81	0.00	88.94	
Volume (yd ³)	182.31	0.00	41.88	59.75	59.75	59.75	35.74	59.75	59.75	59.75	5.79	0.00	123.53	747.73



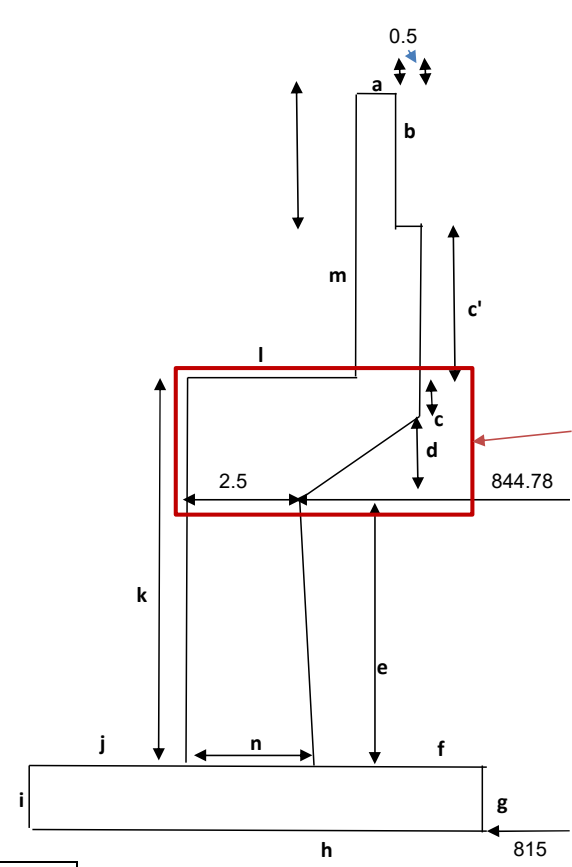
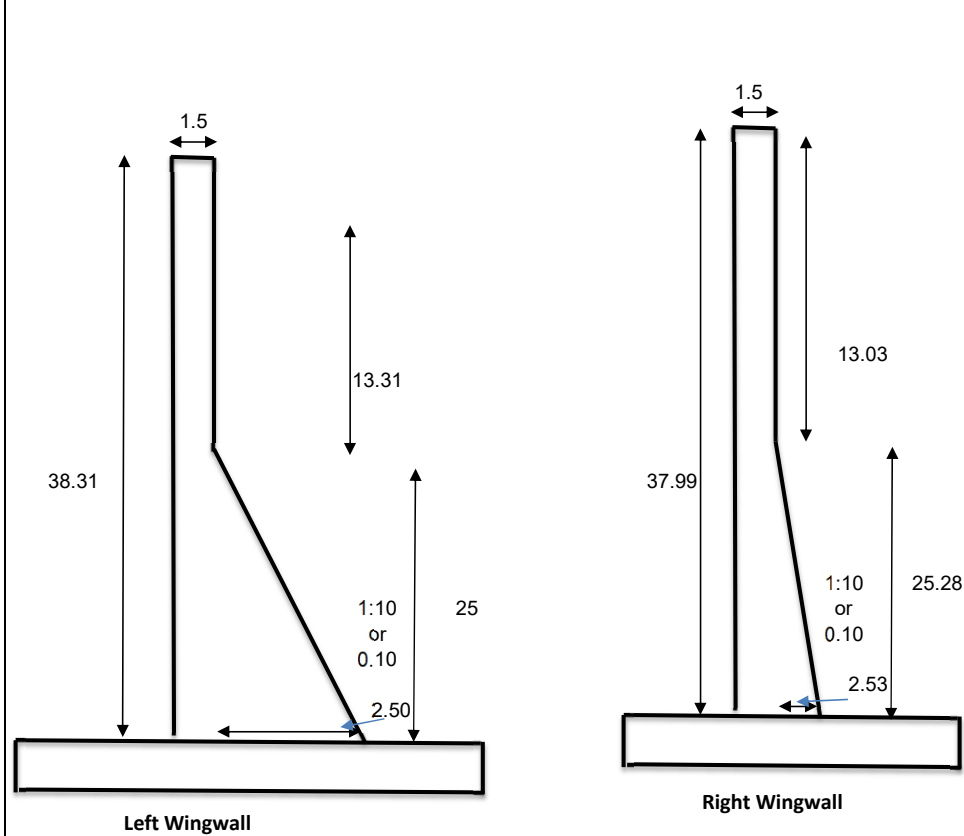
Light Post (2)
(CAD measured)

Forward	
Area sq ft	Volume Cu yd
4.618	6.55
4.618	6.498
Total	sq yd 1.03



(ft)	A'	A	B	C	D	E	F	G	H	J'	J
a	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
b	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
c'	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03
Elev. From plan view	850.22	851.22	850.40	850.56	850.70	850.82	850.65	850.42	850.18	848.91	849.91
c	2.19	2.19	2.37	2.53	2.67	2.79	2.62	2.39	2.15	0.88	1.88
d	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
e	25.28	25.28	25.28	25.28	25.28	25.28	25.28	25.28	25.28	25.28	25.28
f	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75
g	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
h	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
i	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
j	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
k	30.72	30.72	30.90	31.06	31.20	31.32	31.15	30.92	30.68	29.41	30.41
l	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
m	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45
n	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Area (ft ²)	0.00	86.42	86.42	86.42	86.42	86.42	86.42	86.42	86.42	86.42	0.00

	Left Wingwall	A'	A	B	C	D	E	F	G	H	J'	J	Right Wingwall	Grand Total
Length (ft)		5.30	13.08	18.67	18.67	18.67	11.17	18.67	18.67	18.67	5.43	16.96		
Area (ft ²)		112.42	29.50	26.63	31.76	32.70	33.50	25.17	30.83	29.23	84.09	113.64		
Volume (yd ³)		22.08	14.29	18.41	21.96	22.60	13.85	17.40	21.31	20.21	16.90	71.37		260.39



Light Post (2)
(CAD measured)

Forward	
Area sq ft	Volume Cu yd
4.618	6.55
4.618	6.498
Total	sq yd 1.03



(ft)	A'	A	B	C	D	E	F	G	H	J'	J
a	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
b	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
c'	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03
Elev. From plan view	850.22	851.22	850.40	850.56	850.70	850.82	850.65	850.42	850.18	848.91	849.91
c	2.19	2.19	2.37	2.53	2.67	2.79	2.62	2.39	2.15	0.88	1.88
d	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
e	25.28										26.28
f	14.75										14.75
g	4.50										3.50
h	24.00										24.00
i	4.50										3.50
j	5.75										5.75
k	30.72										31.41
l	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
m	6.45										6.45
n	3.50										3.50
Area (ft ²)	112.42	29.50	26.63	31.76	32.70	33.50	25.17	30.83	29.23	20.76	113.64

CUY-00014-06.930

Calc.: RG 2/13/23

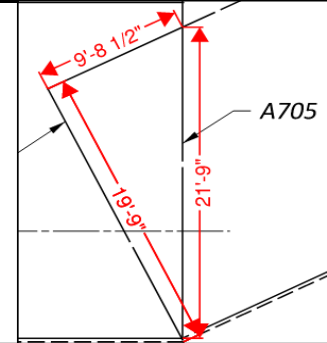
Item 511-Class QC1 Concrete With QC/QA, Footing

Checked: ERM 2/13/23

Rear Abutment

	Left Wingwall	Abutment	Right Wingwall
Length (ft)	55.85	174.30	11.00
Width (ft)	20.00	24.00	19.50
Height (ft)	3.50	3.50	3.50
Area (ft ²)	1117.08	4087.42	214.50
Volume (yd ³)	144.81	529.85	27.81
Grand Total Volume (yd³)			702.46

a	9.71
b	21.75
c	19.75
S	25.60
Area of Triangle	95.83

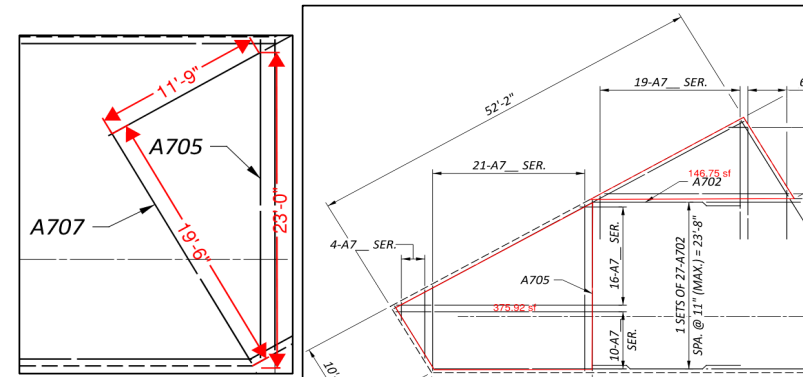


Ref. Sheet P.159; Rear Abutment Footing Plan-Top Reinforcing

Forward Abutment

	Left Wingwall	Abutment	Right Wingwall
Length (ft)		145.77	49.16
Width (ft)		24.00	20.00
Height (ft)	4.50	4.50	4.50
Area (ft ²)	875.00	3383.97	983.13
Volume (yd ³)	145.83	563.99	163.85
Grand Total Volume (yd³)			873.68

a	11.75
b	23.00
c	19.50
S	27.13
Area of Triangle	114.53

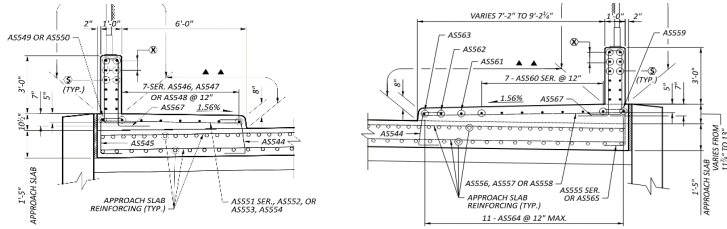


Ref. Sheet P.165; Forward Abutment Footing Plan-Top Reinforcing,(Area Calculated using BlueBeam)

Piers

	Pier 1	Pier 2
Length (ft)	146.33	143.17
Width (ft)	10.00	10.00
Height (ft)	3.00	3.00
Area (ft ²)	1463.33	1431.67
Volume (yd ³)	162.59	159.07
Grand Total Volume (yd³)	321.67	

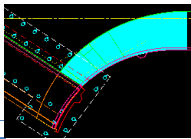
Ext. 51512 Item 511- Class QC2 Concrete with QC/QA, Sidewalk



6' wide on deck	Left area	sf	5.525	(measured shape on CAD)
	Left length	ft	404.00	
		cu ft	2232	
		cu yd	83	

15' wide on deck	Right area (tangent only)	sf	14.828	(measured shape on CAD)
	Right length	ft	408.00	
	Fwd approach	ft	33.77	Approach Sidewalk included with Approach Slab As Per Plan
		cu ft	6050	
		cu yd	224	

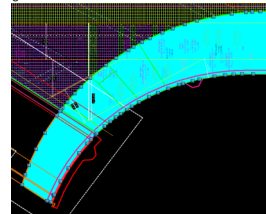
Plan area taper section	sf	682.27
Average thickness front=	in	10.94
Average thickness back=	in	9.53
Assume gradual curve, constant taper and linear slope transitions, avg=	in	10.23
	cu ft	582
	cu yd	22



(Excl. Approach and Incl. deck before Target alignment)

Grand Total	cu yd	329
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Total for large curved section
874 sf



(Includes Approach and deck before Target alignment)

Ext. 51512 Item 511- Class QC2 Concrete with QC/QA, Sidewalk - On Approach Slab only

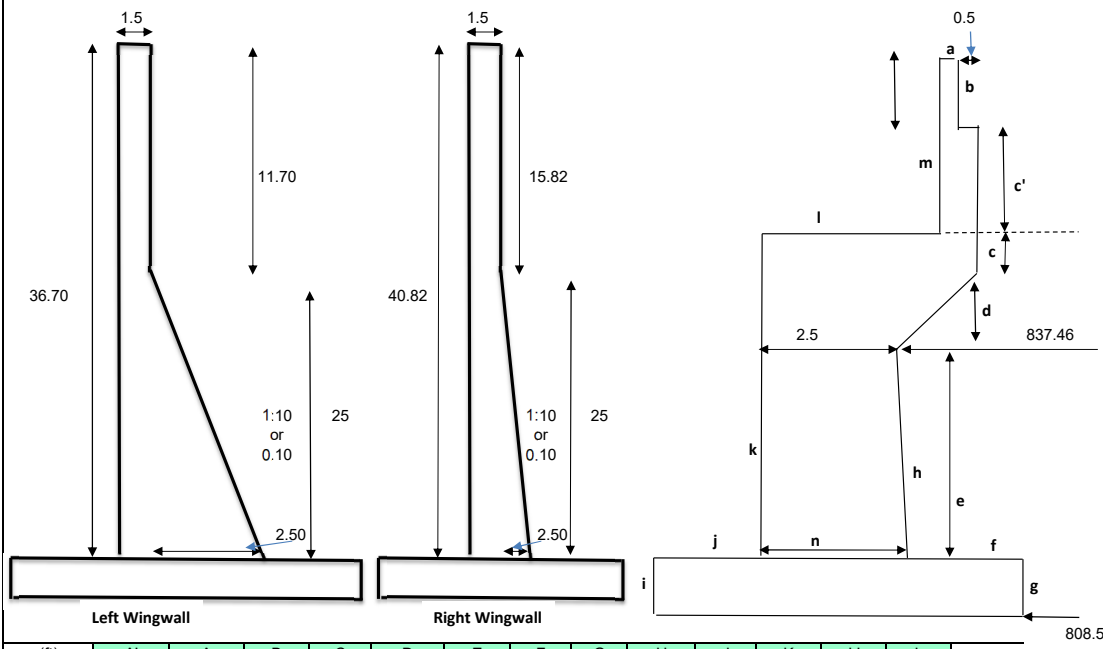
6' wide on deck	Left area (section)	sf	5.525	(measured shape on CAD)
	Rear approach	ft	43.49	
	Fwd approach	ft	31.88	
		cu ft	416	
		cu yd	15	

15' wide on deck	Right area (plan)	sf	190.000	(measured shape on CAD)
	Variable thickness=	ft	0.85	
		cu ft	162	

Right area (tangent only)	sf	14.828	(measured shape on CAD)
Fwd approach	ft	33.77	
	cu ft	501	
	cu yd	25	

Grand Total	cu yd	40
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	Left Wingwall	A'	A	B	C	D	E	F	G	H	J	K	L'	L	Right Wingwall	Total
Length (ft)	47.01	6.35	15.95	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.27	7.90	4.30	20.27	
Sealing Height (ft)	38.20	39.16	39.50	39.83	40.47	41.08	41.67	41.98	42.25	42.48	42.52	42.37	42.31	42.25	42.32	
Area (ft ²)	1796.02	248.83	629.86	648.07	658.48	668.41	678.01	683.05	687.44	691.19	691.84	689.40	334.07	181.76	857.76	
Grand Total (yd ²)	199.56	27.65	69.98	72.01	73.16	74.27	75.33	75.89	76.38	76.80	76.87	76.60	37.12	20.20	95.31	1127.13



(ft)	A'	A	B	C	D	E	F	G	H	J	K	L'	L
a	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
b	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
c'	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03
Elev. From plan view	842.71	842.71	843.38	844.02	844.63	845.22	845.53	845.80	846.03	846.07	845.92	845.80	845.80
c	2.00	2.67	2.67	3.31	3.92	4.51	4.82	5.09	5.32	5.36	5.21	5.21	5.09
d	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
e	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46	25.46
f	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75
g	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
h	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
i	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
j	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
k	30.71	31.38	31.38	32.02	32.63	33.22	33.53	33.80	34.03	34.07	33.92	33.92	33.80
l	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
m	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45
n	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50

CUY-00014-06.930

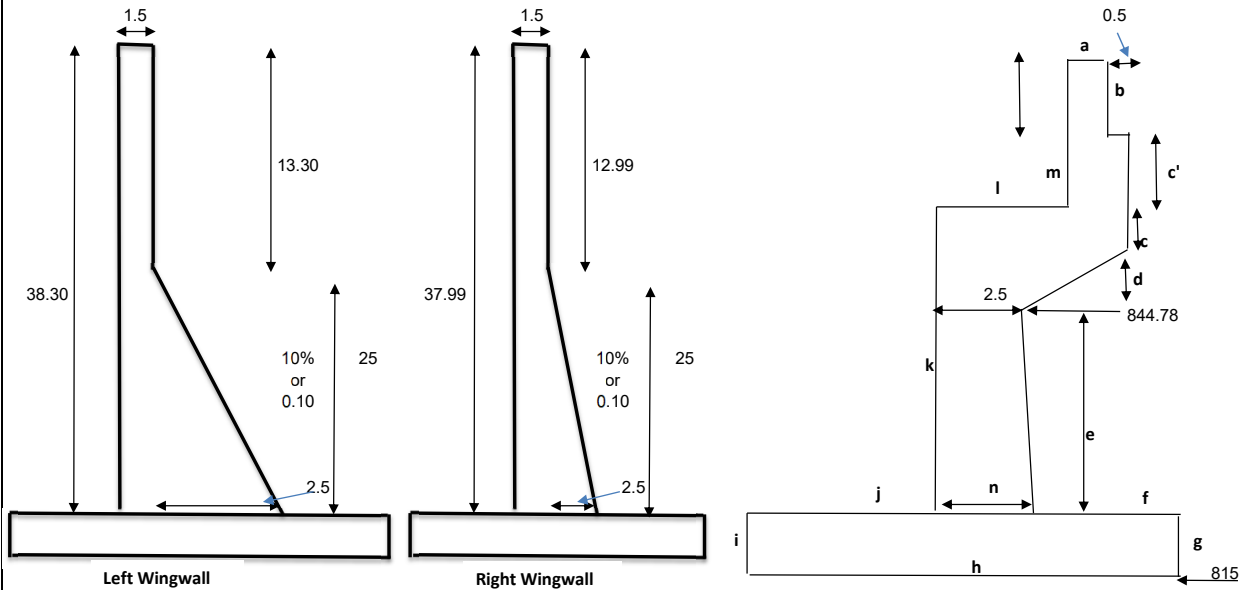
Item 512-Sealing of Concrete Surfaces (Epoxy-Urethane)

Calc.: RG 2/13/23

Forward Abutment and Wingwalls

Checked: ERM 2/13/23

	Left Wingwall	A'	A	B	C	D	E	F	G	H	J'	J	Right Wingwall	Grand Total (yd ²)	
Length (ft)	55.50	5.30	13.08	18.67	18.67	18.67	11.17	18.67	18.67	18.67	5.43	16.96	37.50		1126.92
Sealing Height (ft)	39.80	39.17	39.26	39.35	39.51	39.65	39.77	39.60	39.37	39.13	39.00	38.86	39.49		
Area (ft ²)	2208.62	207.68	513.65	734.53	737.52	740.13	444.10	739.20	734.91	730.43	211.63	659.00	1480.88		
Total (yd ²)	245.40	23.08	57.07	81.61	81.95	82.24	49.34	82.13	81.66	81.16	23.51	73.22	164.54		



(ft)	A'	A	B	C	D	E	F	G	H	J'	J
a	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
b	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
c'	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03	5.03
Elev. From plan view	850.22	850.22	850.40	850.56	850.70	850.82	850.65	850.42	850.18	849.91	849.91
c	2.19	2.19	2.37	2.53	2.67	2.79	2.62	2.39	2.15	0.88	1.88
d	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
e	25.28	25.28	25.28	25.28	25.28	25.28	25.28	25.28	25.28	25.28	25.28
f	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75
g	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
h	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
i	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
j	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
k	30.72	30.72	30.90	31.06	31.20	31.32	31.15	30.92	30.68	29.41	30.41
l	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
m	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45	6.45
n	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50

CUY-00014-06.930

Item 512-Sealing Of Concrete Surfaces (Epoxy-Urethane)

Calc.: RG 2/13/23

Checked: ERM 2/13/23

Pier-1 Beam Seats

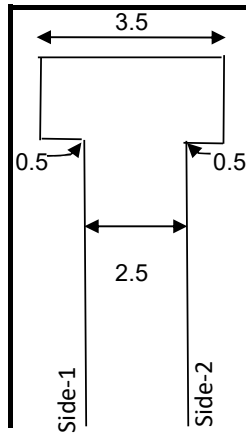
	A	B	C	D	E	F	G	H	J
Length (ft)	26.00	18.67	18.67	18.67	18.67	18.67	18.67	18.67	9.58
Width (ft)	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Height (ft)	3.50	4.08	4.64	5.18	5.69	5.92	6.09	6.24	6.37
Area (Side-1) (ft ²)	91.00	76.16	86.61	96.69	106.23	110.51	113.68	116.48	61.05
Total (yd ²)	95.38								
Area (Side-2) of Pier (ft ²)	91.00	76.16	86.61	96.69	106.23	110.51	113.68	116.48	61.05
Total (yd ²)	95.38								
Additional Area from bottom of Pier Cap (ft ²)	26.00	18.67	18.67	18.67	18.67	18.67	18.67	18.67	9.58
Total (yd ²)	18.47								
Total Area to be Sealed on Pier Seats (yd ²)	209.23								

Pier-1 Stem

Length (ft)	166.25
Height (ft)	28.35
No. Sides	2
Area (yd ²)	1047.40

Pier-1 Face

Width (ft)	2.5
Height (ft)	28.35
No. Sides	2
Area (yd ²)	15.75



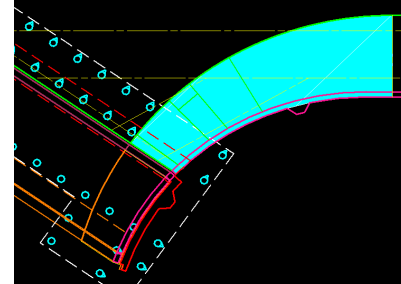
Grand Total (yd²) 1272.38

- Ext. 10100 Item 512 - Sealing of Concrete Surfaces (Non-Epoxy)
- Ext. 10050 Item 512 - Sealing of Concrete Surfaces (Epoxy-Urethane)

Item 512 - Sealing of Concrete Surfaces (Non-Epoxy)

Top of Sidewalk and Median:

		Left	Right	
Sidewalk Walkway Width	ft	6.00	15.00	
Tapered and curved Area	sf	0.00	682.27	
Sidewalk Curb Height	in	8.00	8.00	
Deck Length	ft	404.00	351.00	<i>Excl. Curved taper</i>
Curved Taper Length	ft	0.00	57.00	
Total Non-Epoxy	sq yd	299.26	691.03	
			990.29	



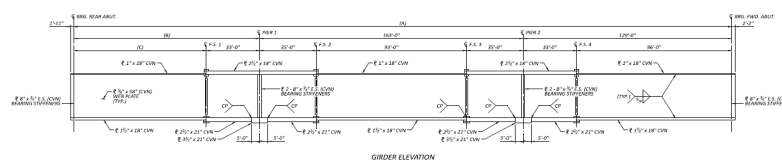
Item 512 - Sealing of Concrete Surfaces (Epoxy-Urethane)

Barriers and Edge of Deck:

		Left	Right	
Railing Width	ft	1.00	1.00	
Railing Height	ft	3.00	3.00	
Sidewalk Thickness	in	10.50	13.88	
Deck Overhang Thickness	in	12.63	12.63	
Sidewalk bump out	in	2.00	2.00	
Extended Sealing under Deck	in	6.00	6.00	
Deck Length	ft	404.00	408.00	
Sidewalk & Median Sealed Total	sq yd	438.13	455.22	
			893.36	

A - GIRDERS

Girder Details (Beams A thru J)				
	(C), Spn 2 & 3	Neg A1	Neg A2	Neg A3
Top flange width	18	18	18	18
Top flange thick	1	2.5	2.5	2.5
Bot flange width	18	21	21	21
Bot flange thick	1.5	2.5	3.5	2.5
Web height	58	58	58	58
Web thick	0.625	0.625	0.625	0.625
Area	81	134	155	134

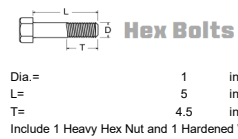


	(C)		Neg A1		Neg A2		Neg A3		Span 2		Neg A3		Neg A2		Neg A1		Span 3		Add % for misc. for weld	2%
	Length (ft)	Volume (cf)	Length (ft)	Volume (cf)	Length (ft)	Volume (cf)	Length (ft)	Volume (cf)	Length (ft)	Volume (cf)	Length (ft)	Volume (cf)	Length (ft)	Volume (cf)	Length (ft)	Volume (cf)	Length (ft)	Volume (cf)		
Beam A	72.516	40.916	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	278.02	138952
Beam B	75.354	42.518	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	279.62	139752
Beam C	78.188	44.116	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	281.22	140551
Beam D	81.026	45.718	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	282.82	141352
Beam E	83.865	47.319	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	284.42	142152
Beam F	86.698	48.918	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	286.02	142951
Beam G	89.536	50.520	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	287.62	143752
Beam H	92.370	52.118	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	289.22	144551
Beam J	95.208	53.720	28	26.007	10	10.747	30	27.865	93	52.474	30	27.865	10	10.747	28	26.007	98.167	55.389	290.82	145351
Beam K	9.792	5.525																	5.52	2761
Beam L	31.844	17.967																	17.97	8980
Grand-total (girder plate steel)																			2583	1291108

B - FIELD SPLICE PLATES

(Girders A thru J)	thick.	length	width	mult.	Sum (cu in.)
Top plate, outside	0.75	31	18	1	418.5
Top plate, inside x2	0.875	31	8	2	434
Web plate x2	0.4375	52	15	2	682.5
Bot. plate, inside x2	1	43	8	2	688
Bot. plate, outside	0.875	52	18	1	819
Top fill plate	1.5	15	18	1	405
Bot. fill plate	1	21	18	1	378
				Sum=	3825
					4
					/field splice
					/details per girder
					9
					no. of girders
				Sub total=	137700
					(cu in.)
Stiffener plates					
(A) Bearing stiffener	0.75	58	8	2	696
(P) Bearing stiffener	0.75	58	8	4	1392
				Sum=	2088
					9
					/girder
					no. of girders (A thru J)
				Sub total=	18792
					(cu in.)
(Girders K & L only)					
(A) Bearing stiffener	0.75	58	8	2	696
Skewed conn. Plate	0.75	58	22	2	1914
					(cu in.)
					(cu in.)
				Sum Volume=	92.07
				unit weight, steel	490
					pcf
				Total=	45115.73
					lbs
					(plate steel)

Heavy Hex bolt weight Calculator (<https://www.portlandbolt.com/technical/tools/bolt-weight-calculator/>)



Hex Bolts
Dia.= 1 in.
L= 5 in.
T= 4.5 in.

Include 1 Heavy Hex Nut and 1 Hardened Washer

Qty.	Item	Lbs.	⊕
1	Heavy Hex Bolts	1.3	⊕
1	Heavy Hex Nuts	0.4	
1	F436 Hardened Washers	0.1	
Total Weight		1.8 lbs.	

No. bolts in top flange	40
No. bolts in web	52
No. bolts in bot. flange	56
Sum=	148
No. splices=	36
W=	1.84
Sub Total=	9803.52
Grand Total=	54920
	(splices plates and bolts)

Structural Bolt Weight Chart

Weight per hundred pieces of ASTM F3125 Grade A325 in (lbs).

Length	Diameter									
	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 3/4"
1	16.5	29.4	47.0	-	-	-	-	-	-	-
1 1/4	17.8	31.3	49.8	74.4	104	-	-	-	-	-
1 1/2	19.2	33.1	52.2	78	109	148	197	-	-	-
1 3/4	20.5	35.3	55.3	81.9	114	154	205	261	333	-
2	21.9	37.4	58.4	86.1	119	160	212	270	344	-
2 1/4	23.3	39.8	61.6	90.3	124	167	220	279	355	-
2 1/2	24.7	41.7	64.7	94.6	130	174	229	290	366	-
2 3/4	26.1	43.9	67.8	98.8	135	181	237	300	379	-
3	27.4	46.1	70.9	103	141	188	246	310	391	-
3 1/4	28.8	48.2	74	107	146	195	255	321	403	-
3 1/2	30.2	50.4	77.1	111	151	202	263	332	416	-
3 3/4	31.6	52.5	80.2	116	157	209	272	342	428	-
4	33	54.7	83.3	120	162	216	280	353	441	-
4 1/4	34.3	56.9	86.4	124	168	223	289	363	453	-
4 1/2	35.7	59	89.5	128	173	230	298	374	465	-
4 3/4	37.1	61.2	92.7	133	179	237	308	384	478	-
5	38.5	63.3	95.8	137	184	244	316	395	490	-
5 1/4	39.9	65.5	98.9	141	190	251	324	405	503	-
5 1/2	41.2	67.7	102	146	196	258	332	416	515	-
5 3/4	42.6	69.8	105	150	201	265	341	426	527	-
6	44	71.9	108	154	207	272	349	437	540	-

https://www.anchorboltexpress.com/structural-bolt-weight-chart/?srsltid=AfmBoorVi2oNetwk53q8j_036q5IPsmbglos8yNw9psPCo18PXy9LY

C - DIAPHRAGMS AND CROSSFRAMES

	Rear Abutment Diaphragms Girders A - L	Forward Abutment Girders L & K	Pier X-Frames	Int. Type 1	Int. Type 2	
Diagonal Length	6.201	5.701	6.604	5.255	5.255	3.606
Diagonal plf	12.3	12.3	12.3	20	23.6	19.6
Nr. of Diagonals	4	4	4	4	2	2
Horizontal Length	16.27	10.5	18.667	18.667	9.333	9.333
Horizontal plf	12.3	12.3	12.3	20	28.7	68
Nr. of Horizontals	1	1	2	2	2	2
Vertical Length	4.67	0	4.67	3.5	0	0
Vertical plf	12.3	0	12.3	20	0	0
Nr. of Vertical	1	0	1	1	0	0
Incidentals	2%	2%	2%	2%	2%	2%
Tot Nr. Diap/X-frames	9	2	8	16	63	32
Total Weight	5165	836	6867	20189	50365	46044
	Grand Total					129467 lbs

D - INTERMEDIATE CROSSFRAME GUSSET PLATES AND BOLTS - TYPE 1

	thick.	length	width	mult.	Sum (cu in.)	
Top plate x2	0.5	19	16	2	304	
Bot. plate x2	0.5	13	8	2	104	
Stiffener Plate	0.5	58	8	2	464	
					Sum Volume= 0.50 (cf)	
					unit weight, steel 490 pcf	
					Sub Total= 247.27 lbs per	(plate steel)

Bolts
 Dia.= 0.875 in.
 L= 2 in.
 T= 1 in.
 Include 1 Heavy Hex Nut and 1 Hardened Washer

Calculation History

Qty.	Item	Lbs.
1	Heavy Hex Bolts	0.6
1	Heavy Hex Nuts	0.3
1	F436 Hardened Washers	0.1
Total Weight		1.0 lbs.

No. bolts in top 12
 No. bolts in bot. 12
 Sum= 24 BOLTS per

W= 1 lb/bolt
 Sub Total= 12 lbs

SUM= 259.27 lbs. per crossframe
 # of 61

Type 1 Total= 15815 lbs

E - INTERMEDIATE CROSSFRAME GUSSET PLATES AND BOLTS - TYPE 2

	thick.	length	width	mult.	Sum (cu in.)	
Top plate x2	0.625	24	16	2	480	
Bot. plate x2	0.625	12	16	2	240	
Stiffener Plate	0.5	58	8	2	464	
					Sum Volume= 0.69 (cf)	
					unit weight, steel 490 pcf	
					Sub Total= 335.74 lbs per	(plate steel)

Bolts
 Dia.= 0.875 in.
 L= 2 in.
 T= 1 in.
 Include 1 Heavy Hex Nut and 1 Hardened Washer

Calculation History

Qty.	Item	Lbs.
1	Heavy Hex Bolts	0.6
1	Heavy Hex Nuts	0.3
1	F436 Hardened Washers	0.1
Total Weight		1.0 lbs.

No. bolts in top 16
 No. bolts in bot. 16
 Sum= 32 BOLTS per

W= 1 lb/bolt
 Sub Total= 16 lbs

SUM= 351.74 lbs. per crossframe
 # of 32

Type 2 Total= 11256 lbs

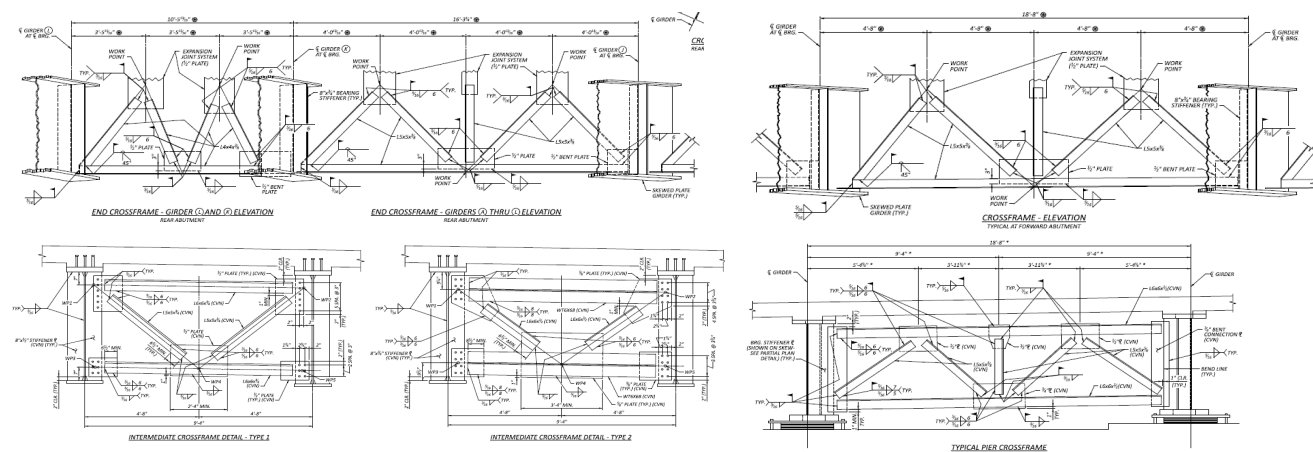
F - TYPICAL PIER CROSSFRAME GUSSETS AND BOLTS

	thick.	length	width	mult.	Sum (cu in.)	
Top plate x3	0.5	18	12	3	324	
Bot. plate	0.75	30	16	1	360	
Stiffener Plate	0.75	58	8	2	696	
					Sum Volume= 0.80 (cf)	
					unit weight, steel 490 pcf	
					Sub Total= 391.32 lbs per	(plate steel)
					# of 16 (pier crossframes)	
					Pier Crossframe Total= 6261 lbs	

G - TYPICAL ABUTMENT CROSSFRAME GUSSETS AND BOLTS

	thick.	length	width	mult.	Sum (cu in.)	
Top plate x3	0.5	12	12	3	216	
Bot. plate x3	0.75	30	12	1	270	
Stiffener Plate	0.75	58	16	2	1392	
					Sum Volume= 1.09 (cf)	
					unit weight, steel 490 pcf	
					Sub Total= 532.53 lbs per	
					# of 18 (abut crossframes)	
					Pier Crossframe Total= 9586 lbs	

TOTAL STRUCTURAL STEEL WEIGHT 1518413 LB Sum calcs A-G

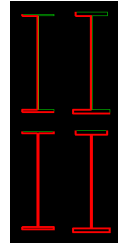


Item 513-Welded Stud Shear Connectors
 Ext. 20000

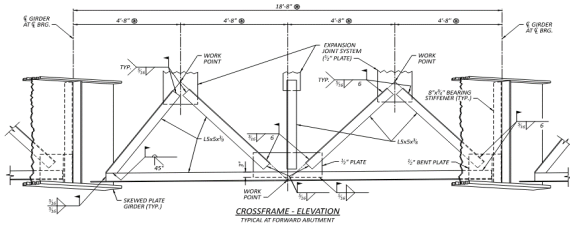
	No. of Studs Across Flange	Stud spaces									Total Studs each
		(L)	(M)	(N)	(P)	(Q)	(R)	(S)	(T)	(U)	
	each	each	each	each	each	each	each	each	each	each	
Beam A	3	35	44	20	85	134	85	56	64	17	1621
Beam B	3	15	66	19	85	134	85	105	20	17	1639
Beam C	3	15	50	41	85	134	85	105	20	17	1657
Beam D	3	15	51	44	85	134	85	105	20	17	1669
Beam E	3	15	54	45	85	134	85	105	20	17	1681
Beam F	3	15	55	48	85	134	85	105	20	17	1693
Beam G	3	15	56	51	85	134	85	105	20	17	1705
Beam H	3	15	40	73	85	134	85	105	20	17	1723
Beam J	3	15	85	28	85	134	85	69	34	38	1720
Beam K	3	29									88
Beam L	3	51									154
Grand Total											15350

Description Ext.
 Item 514 - Field Painting Structural Steel, Intermediate Coat
 Item 514 - Field Painting Structural Steel, Finish Coat

Fascia Beams:	Perimeter_1	Length_1	Perimeter_2	Length_2	Incidentals	Area	
Girder 1:	7.98	243.686	8.56	136.000	2.50%	3186	SF
Girder 11+9:	7.98	248.155	8.56	136.000	2.50%	3223	SF
Beam Ends:							
Girder 1:	14.46	20			2.50%	296	SF
Girder 2:	14.46	20			2.50%	296	SF
Girder 3:	14.46	20			2.50%	296	SF
Girder 4:	14.46	20			2.50%	296	SF
Girder 5:	14.46	20			2.50%	296	SF
Girder 6:	14.46	20			2.50%	296	SF
Girder 7:	14.46	20			2.50%	296	SF
Girder 8:	14.46	20			2.50%	296	SF
Girder 9:	14.46	20			2.50%	296	SF
Girder 10:	14.46	10			2.50%	148	SF
Girder 11:	14.46	10			2.50%	148	SF
Girder							
Sub-Total						9374	SF



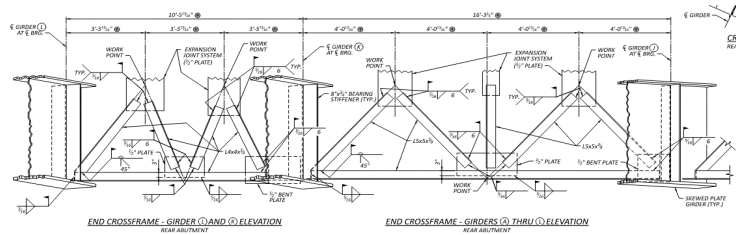
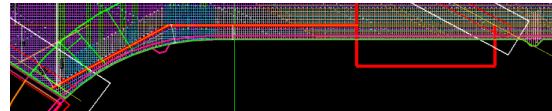
Perimeter lengths measured on CAD:
 Fascia_1: 7.98 ft
 Fascia_2: 8.56 ft
 Ends_1: 14.46 ft
 (full perimeter, last 10' feet)



Forward Abutment	Perimeter_1	Length_1	#	Incidentals	
L 5x5x0.375	1.667	49.75	8	7.00%	710 SF

* (only L's), inc. incidentals for conn. Pl's

Girder Legnths	(feet)						
	Brg. Oh	vary span 01	over P1	span 02	over P2	span 03	Brg. Oh
G1	1.92	70.599	68.000	93.000	68.000	96.00	2.17
G2	1.92	73.438	68.000	93.000	68.000	96.00	2.17
G3	1.92	76.271	68.000	93.000	68.000	96.00	2.17
G4	1.92	79.109	68.000	93.000	68.000	96.00	2.17
G5	1.92	81.948	68.000	93.000	68.000	96.00	2.17
G6	1.92	84.781	68.000	93.000	68.000	96.00	2.17
G7	1.92	87.620	68.000	93.000	68.000	96.00	2.17
G8	1.92	90.453	68.000	93.000	68.000	96.00	2.17
G9	1.92	93.292	68.000	93.000	68.000	96.00	2.17
G11+G9		76.988					



Rear Abutment	Perimeter_1	Length_1	#	Incidentals	
L 5x5x0.375	1.667	45.74	8	7.00%	653 SF
L 5x5x0.375	1.667	33.30	1	7.00%	59 SF

Crossframe	
Sub-Total	1422 SF

Notes:
 *Assumed for calculations, the girders only include 2.5% incidental for stiffeners not calculated, and splice plates
 *At abutments, only end crossframe angle areas were calculated, increased incidental to 7% for additional area connection plates
 Accounting for girder ends/past bearing, it is assumed no intermediate crossframes will need painted with 10' of girder end, All are located past 10' from the true girder end.

Grand Total	10796 SF
--------------------	-----------------

Item 516 - 1" Preformed Expansion Joint Filler
 Ext. 13600

Between Sidewalk & Approach Slab and Abutment Return Wall

		Rear Abutment		Forward Abutment	
		Left	Right	Left	Right
Approach Slab Depth	in	17.00	17.00	17.00	17.00
Sidewalk Depth	in	10.50	12.44	10.50	12.50
Wall length	ft	47.00	20.50	37.50	37.50
Area	sq ft	107.71	50.29	85.94	92.19
Grand Total	sq ft	336.12			

Rear Abutment Right, sidewalk varies from 11 7/8" to 13"
--

CUY-00014-06.930			Calc.: RG 2/13/23	
Item 516-2" Preformed Expansion Joint Filler			Checked: ERM 2/13/23	
	Rear Abutment		Forward Abutment	
	Left Wingwall	Right Wingwall	Left Wingwall	Right Wingwall
Length (ft)	46.4	46.4	55.5	37.5
Height (ft)	2.3	2.4	2.3	2.4
Area (ft ²)	106.3	112.1	127.2	90.6
Total (ft²)	218.4		217.8	

Item 518 - Prefabricated Geocomposite Drain
 Ext. 2000

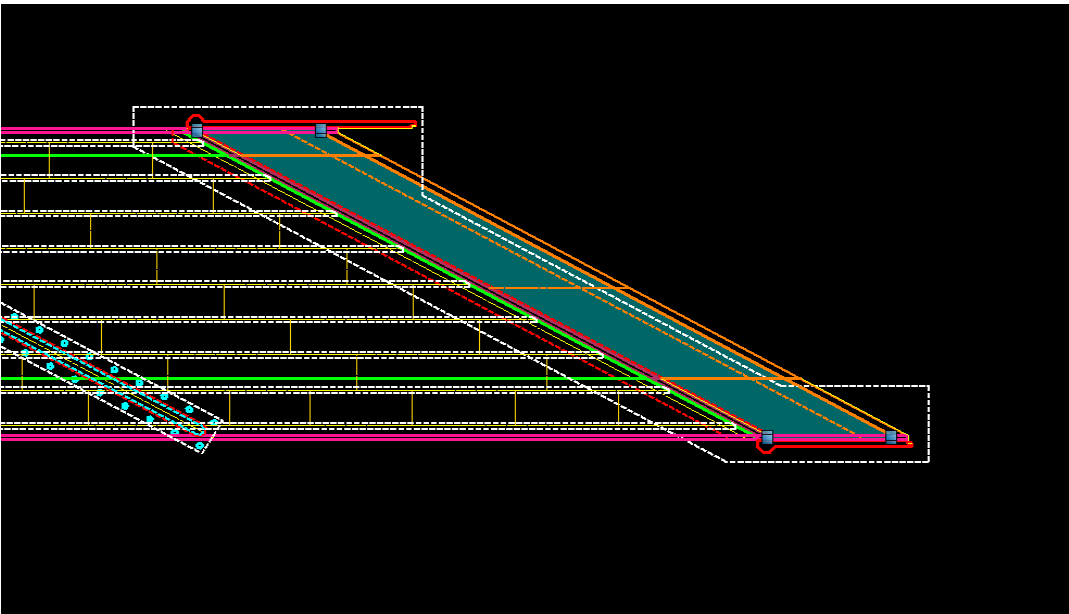
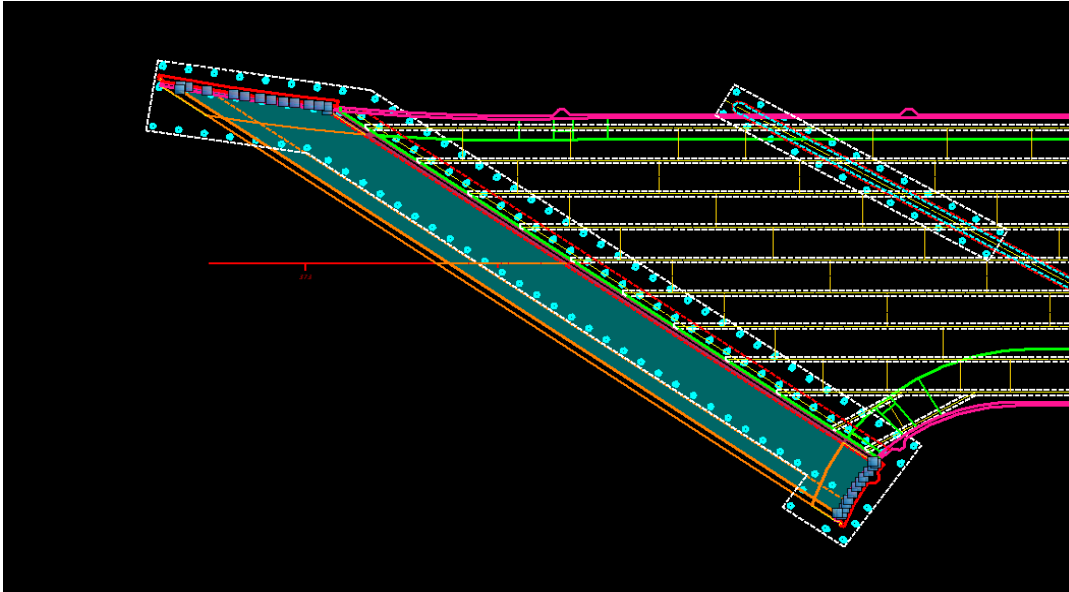
		Rear Left Wingwall	Rear Abutment	Rear Right Wingwall	Forward Left Wingwall	Forward Abutment	Forward Right Wingwall
Wall Height	ft	36.70	41.25	40.82	38.30	36.86	37.99
Approach Slab Depth	ft	1.42	1.42	1.42	1.42	1.42	1.42
Wall length	ft	46.39	180.94	20.47	55.50	163.94	37.50
Area	sq yd	181.87	800.82	89.60	227.42	645.61	152.39
Rear Abutment Total	sq yd	1072.29					
Forward Abutment Total	sq yd	1025.42					
Grand Total	sq yd	2097.71					

CUY-00014-06.930		Calc.: RG 2/13/23	
Item 518-Porous Backfill With Geotextile Fabric		Checked: ERM 2/13/23	
Rear Abutment		FWD Abutment	
Left Wingwall Length (ft)	17.88	Left Wingwall Length (ft)	53.00
Abutment Length (ft)	172.84	Abutment Length (ft)	81.97
Right Wingwall Length (ft)	47.01	Right Wingwall Length (ft)	81.97
2' Porous Backfill	Length (ft)	2.00	2' Porous Backfill
	Width (ft)	2.00	
	Area (ft ²)	4.00	
Volume of Porous Backfill (yd ³)	35.22	Volume of Porous Backfill (yd ³)	32.14

CUY-00014-06.930			Calc.: RG 2/13/23			
6" Perforated Corrugated Plastic Pipe			Checked: ERM 2/13/23			
Forward Abutment						
<i>Left Wingwall</i>		<i>Face</i>		<i>Right Wingwall</i>	<i>Total Length</i>	
Length (ft)	53	Length (ft)	81.97	Length (ft)	81.97	216.94
Rear Abutment						
<i>Left Wingwall</i>		<i>Face</i>		<i>Right Wingwall</i>	<i>Total Length</i>	
Length (ft)	17.875	Length (ft)	172.84	Length (ft)	47.01	237.73

Item 526 - Reinforced Concrete Approach Slabs (T=17"), As Per Plan
Ext. 30001

		Rear Slab	Forward Slab
CAD measured	sf	3315.11	2460.00
Area	sq yd	368.35	273.33
Total	sq yd	641.68	



526

90030

FT

TYPE C INSTALLATION

Rear = 213.5 FT

Forward = 160 FT

Total = 373.5 FT

607 39910

FT VANDAL PROTECTION FENCE, 8' STRAIGHT, COATED FABRIC

Left Railing:

Deck=

404.00 FT

(CAD Measured)

Right Railing:

Deck (Tangent)=

407.87 FT

Left Railing:

Rear Approach=

45.99 FT

Forward Approach=

36.18 FT

Right Railing:

Rear Curve=

20.316 FT

Forward Approach=

36.18 FT

Total 812.00 FT

Total 139.00 FT