ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	PIER	SUPER.	GEN.
202	11203	LUMP		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				
202	22900	148	SY	APPROACH SLAB REMOVED				148
204	30010	29	CY	GRANULAR MATERIAL, TYPE B				29
204	50000	370	SY	GEOTEXTILE FABRIC				370
503	21101	509	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	416	93		
509	10000	104,753	LB	EPOXY COATED REINFORCING STEEL	4223		100,530	
509	20001	15	LB	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN	15			
509	25000	564	LB	UNCOATED REINFORCING STEEL	564			
509	30020	#REF!	FT	NO. 4 GFRP DEFORMED BARS			#REF!	#REF!
510	10001	216	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT, AS PER PLAN	216			
511	33500	2	EACH	SEMI-INTEGRAL DIAPHRAGM GUIDE	2			
511	34413	28	CY	CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE, AS PER PLAN			28	
511	34446	271	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK			271	
511	34451	100	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN			86	14
511	46210	41	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL INCLUDING FOOTING	41			
512	10100	967	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	31	219	627	90
512	33000	32	SY	TYPE 2 WATERPROOFING	32			
513	20000	3,336	EACH	WELDED STUD SHEAR CONNECTORS			3,336	
513	95030	32	EACH	STRUCTURAL STEEL, MISC.: 2" DIA. FIELD DRILLED HOLES			32	
514	00050	12,036	SF	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL			12,036	
514	00056	12,036	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT			12,036	
514	00060	11,885	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, INTERMEDIATE COAT			11,885	
514	00066	11,885	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			11,885	
514	00504	19	MNHR	GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL			19	
514	10000	12	EACH	FINAL INSPECTION REPAIR			12	
516	10010	58	FT	ARMORLESS PREFORMED JOINT SEAL				58
516	13600	17	SF	1" PREFORMED EXPANSION JOINT FILLER				17
516	13900	131	SF	2" PREFORMED EXPANSION JOINT FILLER				131
516	14020	125	FT	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL	125			
516	44201	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN	8			
516	47001	LUMP		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				
518	21201	23	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC, AS PER PLAN	23			
518	40000	66	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	66			
518	40011	100	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS, AS PER PLAN	100			
SPECIAL	51900100	1,236	SF	COMPOSITE FIBER WRAP SYSTEM (SEE PROPOSAL NOTE)		1236		
526	25010	175	SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=15")				175
526	90031	63	FT	TYPE C INSTALLATION, AS PER PLAN				63
601	20001	35	SY	CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN				35
607	39900	550	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC			550	
625	33000	1	EACH	STRUCTURE GROUNDING SYSTEM				1
840	23000	223	CY	SELECT GRANULAR BACKFILL				223
863	00100	1,130	SY	GEOGRID, TYPE P1				1130

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

PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN **LUMP**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 202 APPROACH SLAB REMOVED

Area of Approach Slab at Rear Abutment

Length =	**25.00**	ft	ex. Plans
Max. Width =	**27.50**	ft	ex. Plans
Safety Curb Length =	**10.67**	ft	ex. Plans
Safety Curb Max. Width =	**2.25**	ft	ex. Plans
Area =	663.50	ft^2	
Area =	73.72	yd^2	

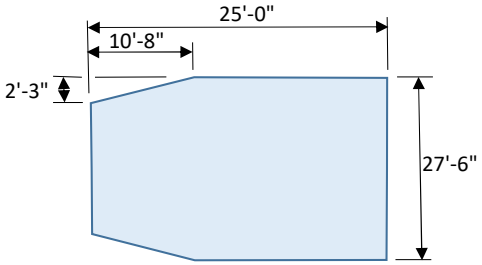
Area of Approach Slab at Forward Abutment

Length =	25.00	ft	ex. Plans
Max. Width =	27.50	ft	ex. Plans
Saftety Curb Length =	10.67	ft	ex. Plans
Saftety Curb Max. Width =	2.25	ft	ex. Plans
Area =	663.50	ft^2	
Area =	73.72	yd^2	

Total Area of Approach Slab

Area Rear Abutment =	73.72	yd^2
Area Forward Abutment =	73.72	yd^2
Total =	147.44	yd^2

APPROACH SLAB REMOVED **148 SY**



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ITEM 204 GRANULAR MATERIAL, TYPE B

Rear Abutment : *See figure on next page*

End Approach Slab Left Toe of Railing

Elevation =	940.56	
Beam 1 Seat Elevation =	935.83	
Length =	31.67	ft
Height 1 =	1.00	ft
Height 2 =	1.48	ft
Height 3 =	4.25	ft
Slope =	1.5:1	
Volume =	314.27	ft^3
Volume =	11.64	yd^3

Forward Abutment : *See figure on next page*

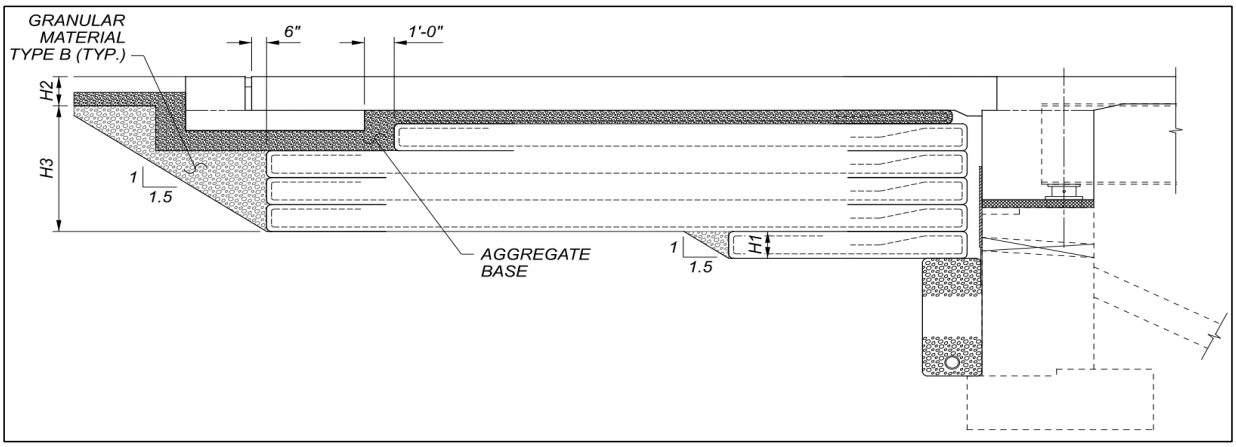
End Approach Slab Left Toe of Railing

Elevation =	940.48	
Beam 1 Seat Elevation =	935.67	
Length =	31.67	ft
Height 1 =	1.00	ft
Height 2 =	1.48	ft
Height 3 =	4.33	ft
Slope =	1.5:1	
Volume =	321.71	ft^3
Volume =	11.92	yd^3

Total Granular Material, Type B

Rear Abutment =	11.64	yd^3
Forward Abutment =	11.92	yd^3
Added volume for Unknowns =	5.00	yd^3
Total =	28.55	yd^3

GRANULAR MATERIAL, TYPE B **29 CY**


GRANULAR
MATERIAL
TYPE B (TYP.)
6"
1'-0"
H2
H3
1
1.5
AGGREGATE
BASE
1
1.5
H1

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ITEM 204 GEOTEXTILE FABRIC

Rear Abutment : *See figures on next page*

Length 1 =	**8.00**	ft
Length 2 =	**23.50**	ft
Length 3 =	**19.00**	ft
Width 1 =	**27.17**	ft
Width 2 =	**31.67**	ft
Strip Width =	**4.00**	ft
Max Thickness =	**1.00**	ft
No. of Layers =	**5.00**	ea.
Area on Sides =	0.00	ft^2
Area Behind Abutment =	1384.50	ft^2
Area =	153.83	yd^2

Forward Abutment : *See figures on next page*

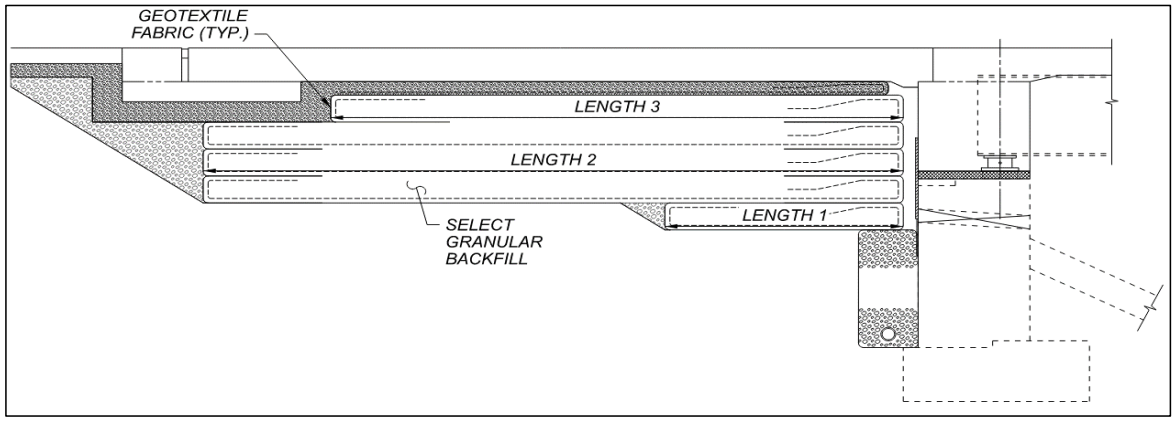
Length 1 =	**8.00**	ft
Length 2 =	**23.50**	ft
Length 3 =	**19.00**	ft
Width 1 =	**27.17**	ft
Width 2 =	**31.67**	ft
Strip Width =	**4.00**	ft
Max Thickness =	**1.00**	ft
No. of Layers =	**5.00**	ea.
Area on Sides =	0.00	ft^2
Area Behind Abutment =	1384.50	ft^2
Area =	153.83	yd^2

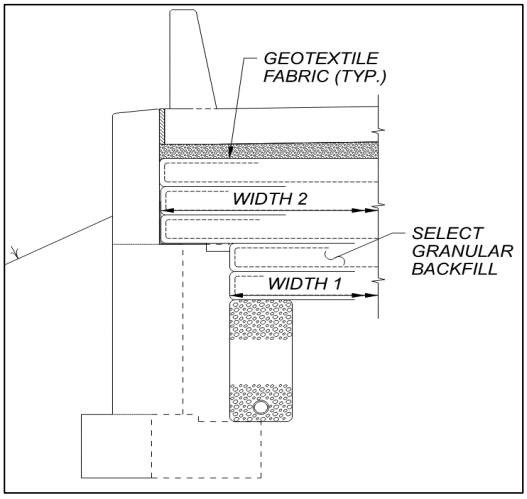
Aggregate Base Layer - both abutments

Length 3 =	**19.00**	ft
Width of Aggregate Base =	**31.67**	ft
Strip Width =	**4.00**	ft
Max Thickness =	**0.72**	ft
Area =	61.39	yd^2

(accounts for one width x 2 abutments)

GEOTEXTILE FABRIC **370 SY**


GEOTEXTILE
FABRIC (TYP.)
LENGTH 3
LENGTH 2
LENGTH 1
SELECT
GRANULAR
BACKFILL


GEOTEXTILE
FABRIC (TYP.)
WIDTH 2
SELECT
GRANULAR
BACKFILL
WIDTH 1

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ITEM 503 UNCLASSIFIED EXCAVATION, AS PER PLAN

At Rear Abutment

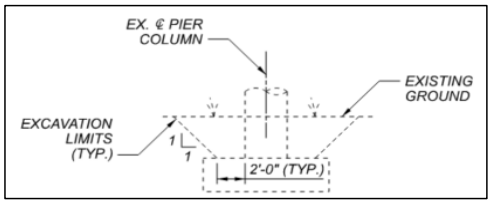
Assumed Area behind Abutment =	144.26	ft^2	**CADD
Length along Abutment =	27.17	ft	
Assumed Area behind Wingwall =	13.55	ft^2	**CADD
Length behind Wingwall =	5.00	ft	**CADD
Assumed Area in front of Wingwall =	60.11	ft^2	**CADD
Length in front of Wingwall =	9.00	ft	**CADD
Assumed Area adjacent to Geo wall =	17.43	ft^2	**CADD
Assumed Length adjacent to Geo wall =	13.50	ft	**CADD
Number of Wingwall Locations =	2	each	
Total =	5,607.2	ft^3	
Total =	207.7	yd^3	

At Forward Abutment

Assumed Area behind Abutment =	144.26	ft^2
Length behind Abutment =	27.17	ft
Assumed Area behind Wingwall =	13.55	ft^2
Length behind Wingwall =	5.00	ft
Assumed Area in front of Wingwall =	60.11	ft^2
Length in front of Wingwall =	9.00	ft
Assumed Area adjacent to Geo wall =	17.43	ft^2
Assumed Length adjacent to Geo wall =	13.50	ft
Number of Wingwall Locations =	2	each
Total =	5,607.2	ft^3
Total =	207.7	yd^3

At Piers

***Note: Assume pier excavation consistent with the detail included in the plans (pictured below). Conservatively include overlapping volumes from adjacent pier columns in the calculation.**



Ex. Ground to Top of Footing Avg. Distance =	3.28	ft	**ex. Survey and ex. Plans
Pier Column Diameter =	3.00	ft	
Min. Excavation Offset at Column Base =	2.00	ft	(either side of pier column)
Assumed Excavation Slope =	1:1		
Excavation Volume per Pier Column =	299.95	ft^3	
Deduct Pier Column Volume =	23.18	ft^3	(per pier column)
Number of Locations =	9	each	(3 piers x 3 columns per pier)
Total =	2,490.92	ft^3	
Total =	93.00	yd^3	

Total Unclassified Excavation

Rear Abutment =	208	yd^3
Forward Abutment =	208	yd^3
Piers =	93	yd^3
Total =	509	yd^3

UNCLASSIFIED EXCAVATION, AS PER PLAN **509 CY**

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ITEM 509 EPOXY COATED REINFORCING STEEL

** See reinforcing steel lists

Rear Abutment =	2112	lb
Forward Abutment =	2111	lb
Rear End Diaphragm =	2623	lb
Forward End Diaphragm =	2623	lb
Superstructure =	79973	lb
Railings =	15311	lb
Total =	104,753.0	lb

EPOXY COATED REINFORCING STEEL **104753 LB**

Project:	MAD/PIC-71-4.56/0.00	Computed:	THS	Date:	11/8/2021
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ITEM 509 REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN

Rear Abutment

Number of Longitudinal Bars (to remain) =	5	each	**A504 in ex. Plans
Diameter of Longitudinal Bars (to remain) =	0.625	in	
Length of Abutment Removal =	4.00	ft	
Number of Transverse U-Bars (to remain) =	5	each	**A505 in ex. Plans
Diameter of Transverse U-Bars (to remain) =	0.625	in	
Length of Transverse U-Bars (to remain) =	6.333	ft	
Height of Abutment Removal =	2.00	ft	
Number of Front Vertical Bars (to remain) =	5	each	**A503 in ex. Plans
Diameter of Front Vertical Bars (to remain) =	0.625	in	
Number of Back Vertical Bars (to remain) =	5	each	**A502 in ex. Plans
Diameter of Back Vertical Bars (to remain) =	0.625	in	
Distance to Shear Key =	3.00	in	
Assumed Clear Distance =	2.00	in	
Percent of replacement re-steel=	10	%	**BDM 405.2

Forward Abutment

Number of Longitudinal Bars (to remain) =	5	each	**A504 in ex. Plans
Diameter of Longitudinal Bars (to remain) =	0.625	in	
Length of Abutment Removal =	4.00	ft	
Number of Transverse U-Bars (to remain) =	5	each	**A505 in ex. Plans
Diameter of Transverse U-Bars (to remain) =	0.625	in	
Length of Transverse U-Bars (to remain) =	6.333	ft	
Height of Abutment Removal =	2.00	ft	
Number of Front Vertical Bars (to remain) =	5	each	**A503 in ex. Plans
Diameter of Front Vertical Bars (to remain) =	0.625	in	
Number of Back Vertical Bars (to remain) =	5	each	**A502 in ex. Plans
Diameter of Back Vertical Bars (to remain) =	0.625	in	
Distance to Shear Key =	3.00	in	
Assumed Clear Distance =	2.00	in	
Percent of replacement re-steel=	10	%	**BDM 405.2

Total

Rear Abutment =	7.05	lb
Forward Abutment =	7.05	lb
Total =	14.09	lb

REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER **15 LB**

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ITEM 509 UNCOATED REINFORCING STEEL

** See reinforcing steel lists

Rear Abutment =	282	lb
Forward Abutment =	282	lb
Total =	564.0	lb

UNCOATED REINFORCING STEEL **564 LB**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 509 NO. 4 GFRP DEFORMED BARS

** See reinforcing steel lists

Railing

Total Length of #4 GFRP Bars = **10078.00** ft

NO. 4 GFRP DEFORMED BARS **10078 FT**

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

Rear Abutment, Diaphragm Guide

Dowels = 0 each

Forward Abutment, Diaphragm Guide

Dowels = 0 each

Right Rear Wingwall

Footing Dowels = 22 each
Wingwall Dowels = 32 each

Left Rear Wingwall

Footing Dowels = 22 each
Wingwall Dowels = 32 each

Right Forward Wingwall

Footing Dowels = 22 each
Wingwall Dowels = 32 each

Left Forward Wingwall

Footing Dowels = 22 each
Wingwall Dowels = 32 each

Total Dowel Holes

Rear Abutment Diaphragm Guide =	0	each
Forward Abutment Diaphragm Guide =	0	each
Right Rear Wingwall =	54	each
Left Rear Wingwall =	54	each
Right Forward Wingwall =	54	each
Left Forward Wingwall =	54	each
Total =	216	each

DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT, AS PER PLAN **216 EACH**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 511 SEMI-INTEGRAL DIAPHRAGM GUIDE

Rear Abutment

Diaphragm Guide = 1 each

Forward Abutment

Diaphragm Guide = 1 each

Total Diaphragm Guides

Rear Abutment =	1	each
Forward Abutment =	1	each
Total =	2	each

SEMI-INTEGRAL DIAPHRAGM GUIDE **2 EACH**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 511 CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE, AS PER PLAN

Rear Abutment

Area =	100.21	ft^2	**CADD
Thickness =	3.75	ft	
Total =	375.8	ft^3	
Total =	13.9	yd^3	

Forward Abutment

Area =	100.21	ft^2
Thickness =	3.75	ft
Total =	375.8	ft^3
Total =	13.9	yd^3

Total Concrete Volume

Rear Abutment =	13.9	yd^3
Forward Abutment =	13.9	yd^3
Total =	27.8	yd^3

CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE, AS PER PLAN	**28 CY**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 511 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK

8.5" Deck

Width =	31.33	ft
Thickness =	0.71	ft
Length =	281.50	ft
Total =	6,248	ft^3
Total =	231.4	yd^3

Overhang

Number of Locations =	2	each
Width =	38.00	in
Span 1 & 4 Thickness =	4.563	in
Span 2 & 3 Thickness =	4.500	in
Span 1 & 4 Length =	59.25	ft
Span 2 & 3 Length =	81.50	ft
Total =	672	ft^3
Total =	24.9	yd^3

Haunch

Number of Locations =	4	each
Width =	12.00	in
Span 1 & 4 Thickness =	3.625	in
Span 2 & 3 Thickness =	3.375	in
Span 1 & 4 Length =	59.25	ft
Span 2 & 3 Length =	81.50	ft
Pier 1 Top Moment Plate Volume =	1.57	ft^3
Pier 2 Top Moment Plate Volume =	2.14	ft^3
Pier 3 Top Moment Plate Volume =	1.57	ft^3
Total =	305	ft^3
Total =	11.3	yd^3

Additional Concrete above End Diaphragm

Number of Locations =	2	each	
Area =	13.80	ft^2	**CADD
Length =	3.250	ft	
Total =	90	ft^3	
Total =	3.3	yd^3	

Total Concrete Volume

8.5" Deck =	231.4	yd^3
Overhang =	24.9	yd^3
Haunch =	11.3	yd^3
Additional above End Diaphragm =	3.3	yd^3
Total =	270.9	yd^3

CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK **271 CY**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 511 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN

On Superstructure

Railing Area =	4.08	ft^2	**ODOT SCD SBR-1-20
Length =	281.50	ft	
Number of Locations =	2	each	
Total =	2,299	ft^3	
Total =	86	yd^3	

On Approach Slab

Railing Area =	4.08	ft^2	**ODOT SCD SBR-1-20
Length =	10.92	ft	
Volume of Transition =	49.14	ft^3	**ODOT SCD SBR-1-20
Number of Locations =	4	each	
Total =	375	ft^3	
Total =	14	yd^3	

Total Concrete Volume

On Superstructure =	86	yd^3
On Approach Slab =	14	yd^3
Total =	100	yd^3

CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN	**100 CY**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 511 CLASS QC1 CONCRETE, RETAINING/WINGWALL INCLUDING FOOTING

Right Rear Wingwall

Area above CJ =	65.14	ft^2	**CADD
Thickness above CJ =	1.50	ft	
Area below CJ =	51.73	ft^2	**CADD
Thickness below CJ =	2.25	ft	
Footing Length =	11.71	ft	
Footing Depth =	2.25	ft	
Footing Thickness =	2.25	ft	
Total =	273.4	ft^3	
Total =	10.1	yd^3	

Left Rear Wingwall

Area above CJ =	64.32	ft^2	**CADD
Thickness above CJ =	1.50	ft	
Area below CJ =	52.34	ft^2	**CADD
Thickness below CJ =	2.25	ft	
Footing Length =	11.71	ft	
Footing Depth =	2.25	ft	
Footing Thickness =	2.25	ft	
Total =	273.5	ft^3	
Total =	10.1	yd^3	

Right Forward Wingwall

Area above CJ =	65.45	ft^2	**CADD
Thickness above CJ =	1.50	ft	
Area below CJ =	50.68	ft^2	**CADD
Thickness below CJ =	2.25	ft	
Footing Length =	11.71	ft	
Footing Depth =	2.25	ft	
Footing Thickness =	2.25	ft	
Total =	271.5	ft^3	
Total =	10.1	yd^3	

Left Forward Wingwall

Area above CJ =	65.10	ft^2	**CADD
Thickness above CJ =	1.50	ft	
Area below CJ =	50.94	ft^2	**CADD
Thickness below CJ =	2.25	ft	
Footing Length =	11.71	ft	
Footing Depth =	2.25	ft	
Footing Thickness =	2.25	ft	
Total =	271.5	ft^3	
Total =	10.1	yd^3	

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Total Concrete Volume

Right Rear =	10.1 yd^3
Left Rear =	10.1 yd^3
Right Forward =	10.1 yd^3
Left Forward =	10.1 yd^3
Total =	40.4 yd^3

CLASS QC1 CONCRETE, RETAINING/WINGWALL INCLUDING FOOTING	**41 CY**

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ITEM 512 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

Rear Abutment

Average Beam Seat Elevation =	935.85	ft	
Average Existing Grade Elevation =	935.05	ft	
Abutment Length =	36.67	ft	
Typical Wingwall Thickness Above C.J. =	1.50	ft	
Top of Wingwall Elevation =	940.62	ft	(Left and Right wingwalls)
Proposed Grade Along Wingwall =	2:1		
Number of Wingwalls =	2	each	
Total =	106	ft^2	
Total =	12	yd^2	

Forward Abutment

Average Beam Seat Elevation =	935.72	ft	
Average Existing Grade Elevation =	933.97	ft	
Abutment Length =	36.67	ft	
Typical Wingwall Thickness Above C.J. =	1.50	ft	
Top of Wingwall Elevation =	940.62	ft	(Left and Right wingwalls)
Proposed Grade Along Wingwall =	2:1		
Number of Wingwalls =	2	each	
Total =	167	ft^2	
Total =	19	yd^2	

Piers

Typical Pier Cap Width =	3.00	ft	ex. Plans
Average Pier Cap Height =	3.55	ft	ex. Plans
Typical Pier Cap Length =	27.00	ft	ex. Plans
Number of Piers =	3	each	
Typical Pier Column Diameter =	3.00	ft	ex. Plans
Typical Pier Column Circumference =	9.42	ft	
Pier 1 Exposed Column Height =	13.45	ft	Column height less 1'-0" (assumed minimum soil
Pier 2 Exposed Column Height =	13.81	ft	cover replaced after pier wrapping operations)
Pier 3 Exposed Column Height =	13.45	ft	
Number of Columns per Pier =	3	each	
Total =	1,970	ft^2	
Total =	219	yd^2	

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Superstructure

Bridge Railing Perimeter =	7.90	ft	**ODOT SCD SBR-1-20
Back of Barrier to Edge of Deck =	0.17	ft	
Maximum Deck Edge Thickness =	1.09	ft	
Underside of Deck Overhang =	0.50	ft	
Length of Bridge Railing =	281.50	ft	
Distance Between End Diaphragms =	275.00	ft	(front face-to-front face)
Number of Locations =	2	each	
Area of Exposed Rear End Diapragm =	114.00	ft	**CADD
Area of Exposed Fwd. End Diapragm =	114.00	ft	**CADD
Total =	5,641	ft^2	
Total =	627	yd^2	

Approach Slabs

*Note: conservatively apply the full bridge railing perimeter for the entire length of the railing transition sections.

Bridge Railing Perimeter =	7.90	ft	**ODOT SCD SBR-1-20
Back of Barrier to Edge of Approach Slab =	0.17	ft	
Length =	24.92	ft	(including transition)
Number of Locations =	4	each	
Total =	804	ft^2	
Total =	90	yd^2	

Total Sealing Area

Rear Abutment =	12	yd^2
Forward Abutment =	19	yd^2
Piers =	219	yd^2
Superstructure =	627	yd^2
Approach Slabs =	90	yd^2
Total =	967	yd^2

SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) **967 SY**

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ITEM 512 TYPE 2 WATERPROOFING

Existing Abutment Weepholes

Width =	3	ft	**CMS 711.25
Length =	3	ft	**CMS 711.25
Rear Abutment Weepholes =	2	each	
Forward Abutment Weepholes =	2	each	
Total =	36	ft^2	
Total =	4	yd^2	

Diaphragm Guides

Width =	3	ft	**CMS 711.25
Length =	24.00	ft	
Diaphragm Guide =	2	each	
Total =	144.0	ft^2	
Total =	16.0	yd^2	

Wingwall Widenings

Width =	3	ft	**CMS 711.25
Right Rear Length =	8.71	ft	
Left Rear Length =	8.71	ft	
Right Forward Length =	8.71	ft	
Left Forward Length =	8.71	ft	
Total =	104.5	ft^2	
Total =	11.6	yd^2	

Total Waterproofing

Existing Weepholes =	4	yd^2
Diaphragm Guides =	16.0	yd^2
Wingwall Widenings =	11.6	yd^2
Total =	31.6	yd^2

TYPE 2 WATERPROOFING **32 SY**

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ITEM 513 WELDED STUD SHEAR CONNECTORS

Existing Beams

Beam 1 =	834	each
Beam 2 =	834	each
Beam 3 =	834	each
Beam 4 =	834	each
Total =	3336	each

WELDED STUD SHEAR CONNECTORS **3336 EACH**

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ITEM 513 STRUCTURAL STEEL, MISC.: 2" DIA. FIELD DRILLED HOLES

Existing Beams

Beam 1 =	8	each
Beam 2 =	8	each
Beam 3 =	8	each
Beam 4 =	8	each

STRUCTURAL STEEL, MISC.: 2" DIA. FIELD DRILLED HOLES **32 EACH**

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ITEM 514 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL

Existing Beams

Span 1 & 4 (36WF150) depth =	**35.875**	in
Span 1 & 4 (36WF150) width =	**12.000**	in
Span 2 & 3 (36WF170) depth =	**36.125**	in
Span 2 & 3 (36WF170) width =	**12.000**	in
Span 1 & 4 length =	**57.75**	ft
Span 2 & 3 length =	**81.50**	ft
Number of beams =	**4**	each

Total = 10030 ft^2 **CMS 514.23

Incidentals

20% of Beams = 2006 ft^2 **crossframes, bearings, etc.

Total Surface Preparation

Existing Beams =	10030	ft^2
Incidentals =	2006	ft^2
Total =	12036	ft^2

SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL **12036 SF**

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ITEM 514 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT

See ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL

FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	**12036 SF**

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ITEM 514 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, INTERMEDIATE COAT

Existing Beams

Span 1 & 4 (36WF150) depth =	**35.875**	in
Span 1 & 4 (36WF150) width =	**12.000**	in
Span 2 & 3 (36WF170) depth =	**36.125**	in
Span 2 & 3 (36WF170) width =	**12.000**	in
Span 1 & 4 length =	**56.00**	ft
Span 2 & 3 length =	**81.50**	ft
Number of beams =	**4**	each

Total = 9904 ft^2 **CMS 514.23

Incidentals

20% of Beams = 1981 ft^2 **crossframes, bearings, etc.

Total Surface Preparation

Existing Beams =	9904	ft^2
Incidentals =	1981	ft^2
Total =	11885	ft^2

FIELD PAINTING OF EXISTING STRUCTURAL STEEL, INTERMEDIATE COAT **11885 SF**

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ITEM 514 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

See ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, INTERMEDIATE COAT

FIELD PAINTING STRUCTURAL STEEL, FINISH COAT **11885 SF**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 514 GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL

Existing Beams

Length of Beam =	278.5	ft	
Number of Beams =	4	each	
Estimating Time =	1	min/foot	**BDM 404.1.11
Total =	1114	min.	
Total =	18.57	hours	

GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL **19 MNHR**

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ITEM 514 FINAL INSPECTION REPAIR

Existing Beams

Length of Beam =	278.5	ft	
Number of Beams =	4	each	
Location per linear foot of beam =	150	foot/each	**CMS 514.21
Total =	8	each	

Crossframe Assemblies and other Secondary Structural Members

Number of Ex. Crossframes =	66	each	
Number of Ex. Bearings =	12	each	
Percentage	5	%	**CMS 514.21
Total =	4	each	

Total Final Inspection Repair

Existing Beams =	8	each
Crossframes, etc. =	4	each
Total =	12	each

FINAL INSPECTION REPAIR **12 EACH**

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ITEM 516 ARMORLESS PREFORMED JOINT SEAL

Rear Abutment

Toe/Toe Barrier =	28.0	ft	
Upturn into curb =	0.7	ft	**SCD AS-2-15
Total =	28.7	ft	

Forward Abutment

Toe/Toe Barrier =	28.0	ft	
Upturn into curb =	0.7	ft	**SCD AS-2-15
Total =	28.7	ft	

Total Joint Length

Rear Abutment =	29	each
Forward Abutment =	29	each
Total =	58	each

ARMORLESS PREFORMED JOINT SEAL **58 FT**

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ITEM 516 1" PREFORMED EXPANSION JOINT FILLER

Railing

Railing Area = **588.0** in^2 **SCD SBR-1-20

No. of Locations = **4** each

Total = 2352.0 in^2

Total = 16.3 ft^2

1" PREFORMED EXPANSION JOINT FILLER **17 SF**

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ITEM 516 2" PREFORMED EXPANSION JOINT FILLER

Between End Diaphragm and Wingwall **SCD SICD-1-21

Width =	3.75	ft
Right Rear Depth =	4.84	ft
Left Rear Depth =	4.77	ft
Right Forward Depth =	4.87	ft
Left Forward Depth =	4.84	ft
Total =	72.5	ft^2

Between Approach Slab and Wingwall **SCD SICD-1-21

Depth =	1.25	ft
Right Rear Length =	11.04	ft
Left Rear Length =	11.04	ft
Right Forward Length =	11.04	ft
Left Forward Length =	11.04	ft
Total =	55.2	ft^2

Between Sleeper Slab and Roadway Curb **SCD AS-2-15

Type 4-C Curb Depth =	16.0	in	**SCD BP-5.1
Type 4-C Curb Width =	6.0	in	**SCD BP-5.1
No. of Locations =	4	each	
Total =	2.7	ft^2	

2" PREFORMED EXPANSION JOINT FILLER **131 SF**

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ITEM 516 SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL

Between End Diaphragm and Rear Abutment **SCD SICD-1-21

Right Rear Vertical Depth =	**6.09**	ft
Rear Abutment Length =	**34.33**	ft
Rear Diaphragm Guide Length =	**16.00**	ft
Left Rear Vertical Depth =	**6.02**	ft
Total =	62.4	ft

Between End Diaphragm and Forward Abutment **SCD SICD-1-21

Right Forward Vertical Depth =	**6.12**	ft
Forward Abutment Length =	**34.33**	ft
Forward Diaphragm Guide Length =	**16.00**	ft
Left Forward Vertical Depth =	**6.09**	ft
Total =	62.5	ft

Total Semi-Integral Joint Seal

Rear Abutment =	62.4	ft
Forward Abutment =	62.5	ft
Total =	125.0	ft

SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL **125 FT**

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ITEM 516 ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN

At Rear Abutment

No. of Locations = 4 each

Total = 4 each

At Forward Abutment

No. of Locations = 4 each

Total = 4 each

Total Abutment Bearings

Rear Abutment = 4 each
Forward Abutment = 4 each
Total = 8 each

ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN **8 EACH**

Project:	MAD/PIC-71-4.56/0.00	Computed:	RBK	Date:	5/4/2021
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ITEM 516 JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN

JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN **LUMP**

Project:	MAD/PIC-71-4.56/0.00	Computed:	THS	Date:	11/8/2021
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ITEM 518 POROUS BACKFILL WITH GEOTEXTILE FABRIC, AS PER PLAN

At Rear Abutment

Width =	2	ft
Top of Footing Elev. =	929.57	ft
Top of Backfill Elev. =	934.26	ft
Length =	22.17	ft
Total =	8	yd^3

At Forward Abutment

Width =	2	ft
Top of Footing Elev. =	929.57	ft
Top of Backfill Elev. =	934.14	ft
Length =	22.17	ft
Total =	8	yd^3

At Wingwalls

Number of Locations =	4	each
Width =	2	ft
Top of Footing Elev. =	929.57	ft
Avg. Top Elev. of 2' thick portion =	934.23	ft
Length =	5.00	ft
Total =	7	yd^3

Total Porous Backfill

Rear Abutment =	8	yd^3
Forward Abutment =	8	yd^3
Wingwalls =	7	yd^3
Total =	22	yd^3

POROUS BACKFILL WITH GEOTEXTILE FABRIC, AS PER PLAN	**23 CY**

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ITEM 518 6" PERFORATED CORRUGATED PLASTIC PIPE

At Rear Abutment

Total = **33** ft

At Forward Abutment

Total = **33** ft

Total PCPP

Rear Abutment =	33	ft
Forward Abutment =	33	ft
Total =	66	ft

6" PERFORATED CORRUGATED PLASTIC PIPE	**66 FT**

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ITEM 518 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS, AS PER PLAN

At Rear Abutment

Left Rear =	25	ft
Right Rear =	25	ft
Total =	50	ft

At Forward Abutment

Left Rear =	25	ft
Right Rear =	25	ft
Total =	50	ft

Total NPCPP

Rear Abutment =	50	ft
Forward Abutment =	50	ft
Total =	100	ft

6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS, AS PER PLAN	**100 FT**

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ITEM 51900100 COMPOSITE FIBER WRAP SYSTEM (SEE PROPOSAL NOTE)

At Pier 1

Bottom of Column Elev. =	917.97	ft	**from ex. Plans
Bottom of Cap Elev. =	932.42	ft	**from survey and ex. Plans
Column Diameter =	3.00	ft	
Number of Columns =	3	each	
Total =	409	ft^2	

At Pier 2

Bottom of Column Elev. =	917.97	ft	**from ex. Plans
Bottom of Cap Elev. =	932.78	ft	**from survey and ex. Plans
Column Diameter =	3.00	ft	
Number of Columns =	3	each	
Total =	419	ft^2	

At Pier 3

Bottom of Column Elev. =	917.97	ft	**from ex. Plans
Bottom of Cap Elev. =	932.42	ft	**from survey and ex. Plans
Column Diameter =	3.00	ft	
Number of Columns =	3	each	
Total =	409	ft^2	

Total FRP Wrap

Pier 1 =	409	ft^2
Pier 2 =	419	ft^2
Pier 3 =	409	ft^2
Total =	1236	ft^2

COMPOSITE FIBER WRAP SYSTEM (SEE PROPOSAL NOTE) **1236 SF**

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ITEM 526 REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=15")

At Rear Abutment

Width =	31.33	ft
Length =	25.00	ft
Total =	783	ft^2
=	87	yd^2

At Forward Abutment

Bottom of Column Elev. =	31.33	ft
Bottom of Cap Elev. =	25.00	ft
Total =	783	ft^2
=	87	yd^2

Total Approach Slab

Rear Abutment =	87	yd^2
Forward Abutment =	87	yd^2
Total =	174	yd^2

REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=15") **175 SY**

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ITEM 526 TYPE C INSTALLATION, AS PER PLAN

At Rear Abutment

Width = **31.33** ft
Skew = **0.00** deg

Total = 31.33 ft

At Forward Abutment

Width = **31.33** ft
Skew = **0.00** deg

Total = 31.33 ft

Total Approach Slab

Rear Abutment = 31.33 ft^2
Forward Abutment = 31.33 ft^2
Total = 62.67 ft^2

TYPE C INSTALLATION, AS PER PLAN **63 FT**

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ITEM 601 CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN

Total

Existing crushed agg. slope protection = **336.0** yd^2 *ex. Plans

10% replacement = **33.60** yd^2

Total = 33.60 ft

CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN **35 SY**

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

On Superstructure

Left Railing =	**275.00**	ft
Right Railing =	**275.00**	ft
Total =	550.00	ft

VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC	**550 FT**

Project:	MAD/PIC-71-4.56/0.00	Computed:	JML	Date:	5/25/2021
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ITEM 625 STRUCTURE GROUNDING SYSTEM

Total

number of locations = 1 each

STRUCTURE GROUNDING SYSTEM **1 EACH**

Project:	MAD/PIC-71-4.56/0.00	Computed:	THS	Date:	11/8/2021
Subject:	MAD-71-1145	Checked:	RBK	Date:	11/12/2021
Task:	Stage 3 Estimated Quantities	Page:		of:	
Job #:	10276486	No:			

ITEM 840 SELECT GRANULAR BACKFILL

Rear Abutment : *See figures on next page*

Length 1 =	**8.00**	ft
Length 2 =	**23.50**	ft
Length 3 =	**19.00**	ft
Width 1 =	**27.17**	ft
Width 2 =	**31.67**	ft
Max Thickness =	**1.00**	ft
No. of Layers =	**5.00**	ea.
Volume =	2999.75	ft^3
Volume =	111.10	yd^3

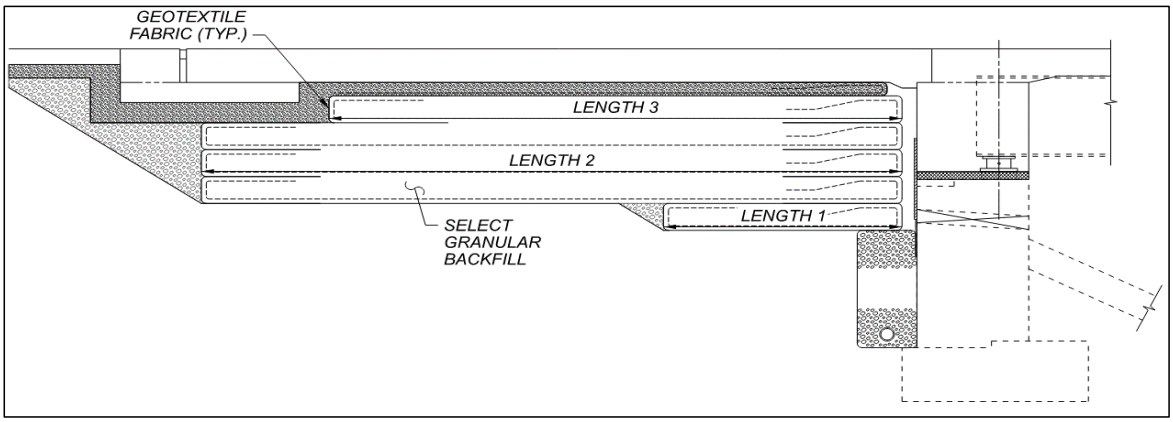
Forward Abutment : *See figures on next page*

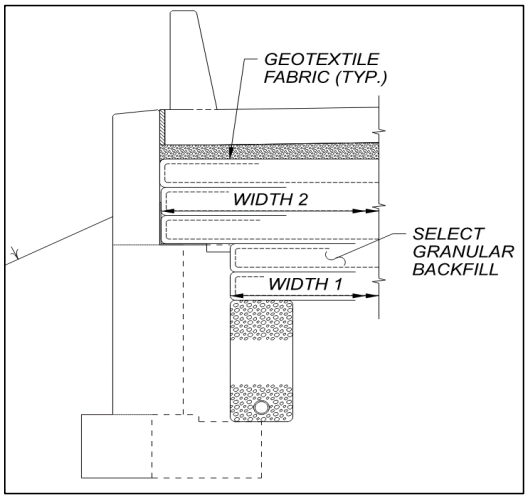
Length 1 =	**8.00**	ft
Length 2 =	**23.50**	ft
Length 3 =	**19.00**	ft
Width 1 =	**27.17**	ft
Width 2 =	**31.67**	ft
Max Thickness =	**1.00**	ft
No. of Layers =	**5.00**	ea.
Volume =	2999.75	ft^3
Volume =	111.10	yd^3

Total Select Granular Backfill

Rear Abutment =	111	yd^3
Forward Abutment =	111	yd^3
Total =	222	yd^3

SELECT GRANULAR BACKFILL **223 CY**


GEOTEXTILE
FABRIC (TYP.)
LENGTH 3
LENGTH 2
LENGTH 1
SELECT
GRANULAR
BACKFILL


GEOTEXTILE
FABRIC (TYP.)
WIDTH 2
SELECT
GRANULAR
BACKFILL
WIDTH 1

Project:	MAD/PIC-71-4.56/0.00	Computed:	THS	Date:	11/8/2021
Subject:	MAD-71-1145	Checked:	RBK	Date:	11/12/2021
Task:	Stage 3 Estimated Quantities	Page:		of:	
Job #:	10276486	No:			

ITEM 863 GEOGRID, TYPE P1

Rear Abutment : *See figures on next page*

Length 1 =	**8.00**	ft
Length 2 =	**23.50**	ft
Length 3 =	**19.00**	ft
Width 1 =	**27.17**	ft
Width 2 =	**31.67**	ft
Rear Lap Length =	**3.00**	ft
Forward Lap Length =	**3.75**	ft
Max Thickness =	**1.00**	ft
No. of Layers =	**5.00**	ea.
Area =	4345.79	ft^2
Area =	482.87	yd^2

Forward Abutment : *See figures on next page*

Length 1 =	**8.00**	ft
Length 2 =	**23.50**	ft
Length 3 =	**19.00**	ft
Width 1 =	**27.17**	ft
Width 2 =	**31.67**	ft
Rear Lap Length =	**3.00**	ft
Forward Lap Length =	**3.75**	ft
Max Thickness =	**1.00**	ft
No. of Layers =	**5.00**	ea.
Area =	4345.79	ft^2
Area =	482.87	yd^2

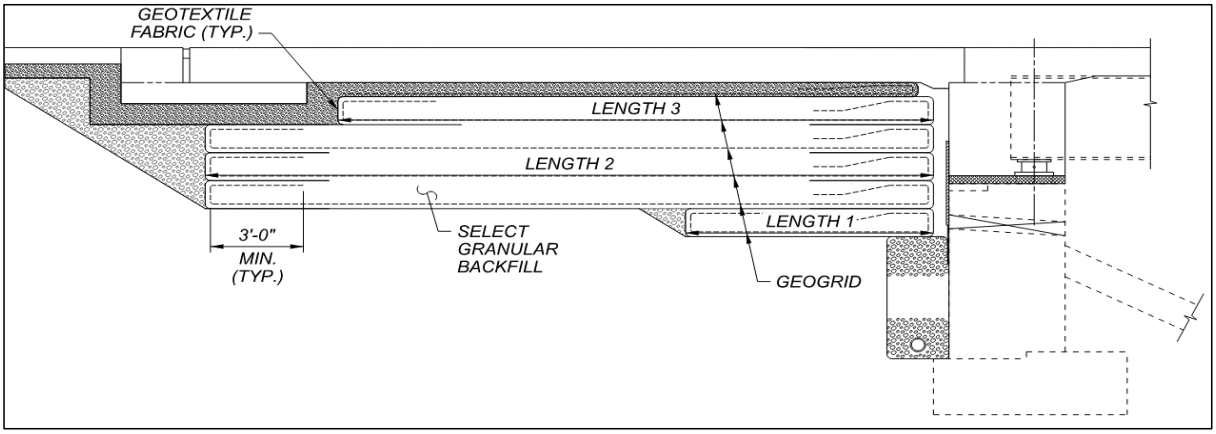
Aggregate Base Layer - both abutments : *See figures on next page*

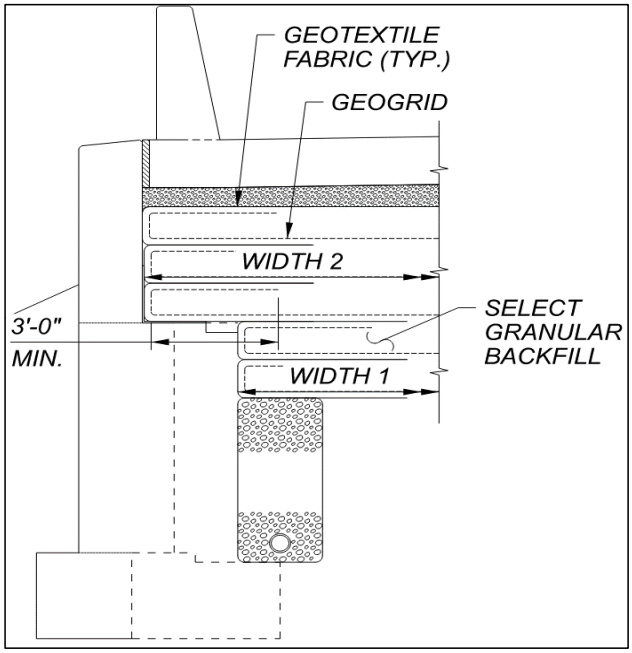
Length 3 =	**19.00**	ft	
Width of Aggregate Base =	**31.33**	ft	
Side Lap Length =	**0.00**	ft	
Forward Lap Length =	**3.75**	ft	
Max Thickness =	**0.72**	ft	
Area =	1471.04	ft2	(plan area + 1 thickness + 1 front lap x 2 abutments)
Area =	163.45	yd2	

Total Geogrid, Type P1

Rear Abutment =	482.87	yd^2
Forward Abutment =	482.87	yd^2
Aggregate Base =	163.45	yd^2
Total =	1129.18	yd^2

GEOGRID, TYPE P1	**1130 SY**


GEOTEXTILE
FABRIC (TYP.)
LENGTH 3
LENGTH 2
LENGTH 1
3'-0"
MIN.
(TYP.)
SELECT
GRANULAR
BACKFILL
GEOGRID


GEOTEXTILE
FABRIC (TYP.)
GEOGRID
WIDTH 2
3'-0"
MIN.
SELECT
GRANULAR
BACKFILL
WIDTH 1