



Computation for: **ESTIMATED QUANTITIES**

Project Name: **PIK-220-0329**

SFN Number: **6602224**

Designer: **HM** Date: **06/09/21**

Checker: **AMT** Date: **06/11/21**

Reviewer: **AMT** Date: **06/15/21**

File Names:

Comments:



Project: ODOT
 Bridge: PIK-220-0329

Date: 6/9/21
 By: HM
 Checked: AMT
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QUANTITY COMPUTATIONS

DESCRIPTION: PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

ITEM NO. 202E11203
 QUANTITY 1
 UNIT LUMP

Portions of Structure Removal:

Deck:

Deck Length	=	147.78	ft
Deck Width	=	36	ft
Deck area to be removed	=	5320.08	SF
Cost per 1 SF	=	\$20	
Total cost	=	\$106,402	

Piers:

Pier Cap Area	=	90	SF
Pier Cap Height	=	3	FT
# of Pier Caps	=	2	
Pier volume to be removed	=	20	CY
Cost per 1 CY	=	\$200	
Additional for Steel Piles	=	\$10,000	
Total cost	=	\$14,000	

Abutments:

			Backwall	Stem	
Abutment Area	=	85	SF	84.58275	211.8875
Abutment Height	=	3.33	FT	3.33	3
# of Abutments	=	2		2	2
Volume to be removed	=	21	CY	20.863745	47.0861111
					67.9498561
Cost per 1 CY	=	\$200			
Total cost	=	\$4,193			\$13,589.97

Lump Sum

Lump Sum = \$138,185

TOTAL = 140000.00 LUMP



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QUANTITY COMPUTATIONS

DESCRIPTION: APPROACH SLAB REMOVED

ITEM NO. 202E22900
QUANTITY 111
UNIT SY

Forward & Rear Approach Slab

Width of the approach slab	=	20	ft
Length of the approach slab	=	25	ft
No of Approach Slabs	=	2	
Volume	=	111	SY



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QUANTITY COMPUTATIONS

DESCRIPTION: WEARING SURFACE REMOVED

ITEM NO. 202E23500
QUANTITY 123
UNIT SY

Deck

Length = 0 ft
Width = 0 ft

Approach Slab

Length = 25
Width = 22
No = 2

Area = 1100 SF
= 122.2222 SY

TOTAL = 123 SY



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QUANTITY COMPUTATIONS

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DESCRIPTION: COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN

ITEM NO. 503E11101
QUANTITY 1
UNIT LUMP

Total Cost = \$60,000.00

Say = \$60,000



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QUANTITY COMPUTATIONS

DESCRIPTION: UNCLASSIFIED EXCAVATION, AS PER PLAN

ITEM NO. 503E21101
 QUANTITY 634
 UNIT CY

Abutment	Area	Length	Vol. (CF)	Vol. (CY)
Rear Abutment	129.05	38.916	5022.1	186.0
Forward Abutment	150.35	39.483	5936.3	219.9

(5+1+1) measured
 at CL of

Abutment	Width	Height	Length	Vol. (CF)	Vol. (CY)
WW 1	10.833	8	18	1560.0	57.8
WW 2	10.833	8	18	1560.0	57.8
WW 3	10.833	7	18.25	1383.9	51.3
WW 4	10.833	7	21.75	1649.3	61.1

Total 633.8 CY



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QUANTITY COMPUTATIONS

DESCRIPTION:

PILE DRIVING EQUIPMENT MOBILIZATION

ITEM NO. 505E11100
QUANTITY 1
UNIT LS

Cost for Pile Driving Equipment Mobilization

Total = 25000



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QUANTITY COMPUTATIONS

DESCRIPTION: STEEL PILES HP10X42, FURNISHED

ITEM NO. 507E00100
 QUANTITY 765
 UNIT FT

	No of piles	Estimated Length (ft)	Nearest 5 ft
Rear	8	38.76	40
Forward	9	39.26	40

Order Length = Estimated Length + 5 ft
 Furnished Length = Order Length x No of Piles
 Driven length = Estimated Length x No of Piles

Order Length = Estimated Length + 5'
 = 45 ft

Furnished Length = Order Length x No of piles 765



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QUANTITY COMPUTATIONS

DESCRIPTION: STEEL PILES HP10X42, DRIVEN

ITEM NO. 507E00150
QUANTITY 680
UNIT FT

	No of piles	Estimated Length (ft)	Nearest 5 ft
Rear	8	38.76	40
Forward	9	39.26	40

Order Length = Estimated Length + 5 ft
Furnished Length = Order Length x No of Piles
Driven length = Estimated Length x No of Piles

Driven Length = Length x No of piles **680**



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QUANTITY COMPUTATIONS

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DESCRIPTION: STEEL PILES HP14X73, FURNISHED

ITEM NO. 507E00300
QUANTITY 990
UNIT FT

	No of piles	Estimated Length (ft)	Nearest 5 ft
Rear	11	38.26	40
Forward	11	39.78	40

Order Length = Estimated Length + 5 ft
Furnished Length = Order Length x No of Piles
Driven length = Estimated Length x No of Piles

Order Length = Estimated Length + 5 '
= 45 ft

Furnished Length = Order Length x No of piles **990**



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QUANTITY COMPUTATIONS

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DESCRIPTION: STEEL PILES HP14X73, DRIVEN

ITEM NO. 507E00350
QUANTITY 880
UNIT FT

	No of piles	Estimated Length (ft)	Nearest 5 ft
Rear	11	38.26	40
Forward	11	39.78	40

Order Length = Estimated Length + 5 ft
Furnished Length = Order Length x No of Piles
Driven length = Estimated Length x No of Piles

Order Length = Estimated Length + 5 '
= 45 ft

Driven Length = Length x No of piles **880**



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QUANTITY COMPUTATIONS

DESCRIPTION: EPOXY COATED REINFORCING STEEL

ITEM NO. 509E10000
QUANTITY 69217
UNIT LB

Deck Rebar	=	31686	LB
Diaphragm	=	7349	LB
Abutment (Footing & WW)	=	30182	LB
	=	69217	LB



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QUANTITY COMPUTATIONS

DESCRIPTION: SEMI-INTEGRAL DIAPHRAGM GUIDE

ITEM NO. 511E33500
QUANTITY 2
UNIT EACH

	#	Total (FT)
Abutments	2	2

TOTAL = 2 EACH



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QUANTITY COMPUTATIONS

DESCRIPTION: CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK

ITEM NO. 511E34446
 QUANTITY 182
 UNIT CY

Main Slab

Area of the Deck = 3901.88 SF
 Thickness of deck = 0.708 ft
 Volume (CF) = 2764
 Volume (CY) = 102.36

Haunch

Beam 1 Haunch Area = 0.81 SF
 Beam 2 Haunch Area = 0.81 SF
 Beam 3 Haunch Area = 0.82 SF
 Beam 4 Haunch Area = 0.75 SF
 Length = 100.60 ft
 Beam 1 Volume = 3.02 CY
 Beam 2 Volume = 3.02 CY
 Beam 3 Volume = 3.04 CY
 Beam 3 Volume = 2.78 CY
 Total Volume = 13.63 CY

Depth = 2.00 in
 Width = 49.00 in
 No of Beams = 4.00

Overhang

Area = 1.55 SF
 Length = 108.39 ft
 No of overhangs = 2.00
 Volume (CF) = 336
 Volume (CY) = 12.46

Additional Concrete above Diaphragms between beams

Area = 3.81 SF
 Total Number = 8.00
 Height = 1.76 ft
 Volume = 1.99 CY
 Deck Total= 130.4 CY

Diaphragms

Abut	Girder	Top of Deck EL.	20"	Polystyrene filler (2.50")	Top of Beam Seat EL.	Diap. Height
Rear	1	599.33	1.667	0.208	592.59	4.865
Rear	2	599.5	1.667	0.208	592.59	5.035
Rear	3	599.51	1.667	0.208	592.59	5.045
Rear	4	599.36	1.667	0.208	592.59	4.895
Forward	1	599.96	1.667	0.208	593.22	4.865
Forward	2	600.13	1.667	0.208	593.22	5.035
Forward	3	600.14	1.667	0.208	593.22	5.045
Forward	4	599.99	1.667	0.208	593.22	4.895

Rear Diaph. Area = 158.43 sf
 Avg Ht = 4.96 ft
 Area of the beam = 7.10 SF
 Length into dia. = 3.39 ft
 No. Beams = 4.00

Volume to be deducted = 96.27 CF
 Volume = 25.54 CY

Forward Dia Area = 158.43 sf
 Avg Ht = 4.96 ft

Area of the beam = 7.10 SF
 Length into dia. = 3.31 ft
 No. Beams = 4.00

Volume to be deducted = 93.94 CF
 Volume = 25.63 CY

Total Volume = **181.61** CY



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QUANTITY COMPUTATIONS

DESCRIPTION: CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING

ITEM NO. 511E43512
 QUANTITY 152
 UNIT CY

Stem

Abut.	Girder	Beam Seat Elevation	Bottom of Footing	Stem Height
Rear	1	592.59	582.06	7.53
Rear	2	592.59	582.06	7.53
Rear	3	592.59	582.06	7.53
Rear	4	592.59	582.06	7.53
Forward	1	593.22	583.08	7.14
Forward	2	593.22	583.08	7.14
Forward	3	593.22	583.08	7.14
Forward	4	593.22	583.08	7.14

Rear Abutment

Area of the Rear Stem = 158.431 ft²
 Avg. Ht of the Stem = 7.53 ft
 Volume of Concrete = 44.18 CY

Forward Abutment

Area of the Rear Stem = 158.431 ft²
 Avg. Ht of the Stem = 7.14 ft
 Volume of Concrete = 41.90 CY

Footing

Rear Abutment

Area of the Rear Abut Footing = 295.703 ft²
 Ht of the footing = 3 ft
 Volume of Concrete = 32.86 CY

Forward Abutment

Area of the Forward Abut Footing = 296.609 ft²
 Ht of the footing = 3 ft
 Volume of Concrete = 32.96 CY

Total volume of Abutment Concrete = **151.89**



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QUANTITY COMPUTATIONS

DESCRIPTION: CLASS QC1 CONCRETE WITH QC/QA, WINGWALL INCLUDING FOOTING

ITEM NO. 511E46212
 QUANTITY 109
 UNIT CY

Rear Wingwalls

Rear Left

Rear Left Area - 1 = 180.293 ft²
 Thickness = 2 ft
 Volume = 13.36 CY

Rear Left Area - 2 = 6.343 ft²
 Height of the WW = 14.2 ft
 Volume = 3.336 CY

Rear Right

Rear Right Area - 1 = 180.584 ft²
 Thickness = 2 ft
 Volume = 13.38 CY

Rear Right Area - 2 = 6.045 ft²
 Height of the WW = 14.24 ft
 Volume = 3.19 CY

Rear Abutment Footing

Rear Left Area = 85.026 ft²
 Thickness = 3 ft

Rear Right Area = 84.36 ft²
 Thickness = 3 ft

Volume = 18.82 CY

Forward Wingwalls

Left Forward

Left Forward Area - 1 = 178.914 ft²
 Thickness = 2 ft
 Volume = 13.25 CY

Left Forward Area - 2 = 6.31 ft²
 Height of the WW = 13.83 ft
 Volume = 3.23 CY

Right Forward

Right Forward Area - 1 = 215.261 ft²
 Thickness = 2 ft
 Volume = 15.95 CY

Right Forward Area - 2 = 6.04 ft²
 Height of the WW = 13.87 ft
 Volume = 3.10 CY

Forward Abutment Footing

Forward Left Area = 86.656 ft²
 Thickness = 3 ft

Rear Right Area = 108.4 ft²
 Thickness = 3 ft

Volume = 21.67 CY

Total Volume = **109.28** CY



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QUANTITY COMPUTATIONS

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DESCRIPTION: SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

ITEM NO. 512E10100
 QUANTITY 56
 UNIT SY

SUPERSTRUCTURE:

Length of the Deck	=	100.60	ft
Length to be coated	=	13.64	ft
Sides	=	2.00	
Area to be coated	=	2743.6	SF
Top of Diaphragm			
Length	=	5.33	ft
Width	=	36.60	ft
#	=	2.00	
Area	=	390.2	SF
Total	=	348.2	

SUBSTRUCTURE :

Rear Abutment

Average Height of the Diaphragm	=	4.96	ft
Average Height of the Stem	=	7.53	ft
Deduct Rock Channel	=	2.159	ft
Height to be sealed	=	10.331	ft
Length of the Abutment	=	36.555	
Area to be sealed	=	378	SF
No of beams	=	4	
Area of the beam	=	7.1	SF
Area to be deducted	=	28.4	SF
Total Area to be sealed	=	349	SF

Forward Abutment

Average Height of the Diaphragm	=	4.96	ft
Average Height of the Stem	=	7.14	ft
Deduct Rock Channel	=	2.159	ft
Height to be sealed	=	9.941	ft
Length of the Abutment	=	36.555	ft
Area to be sealed	=	363	SF
No of beams	=	4	
Area of the beam	=	7.1	SF
Area to be deducted	=	28.4	SF
Total Area to be sealed	=	335	SF

Rear Abutment Wingwall

Area of the Left Wingwall	=	131.51	SF
Area of the Right Wingwall	=	132.68	SF
Thickness of the wall	=	2	ft
Length of the top face - Left Wall	=	22.413	ft
Length of the top face - Right Wall	=	22.762	ft
Area of the top face	=	90.35	SF

Forward Abutment Wingwall

Area of the Left Wingwall	=	130.50	
Area of the Right Wingwall	=	148.18	
Thickness of the wall	=	2	ft
Length of the top face - Left Wall	=	22.393	ft
Length of the top face - Right Wall	=	25.981	ft
Area of the top face	=	96.7	SF
Substructure Subtotal	=	157.1	

Total Area to be sealed = **505.3** SF



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QUANTITY COMPUTATIONS

DESCRIPTION: TYPE 2 WATERPROOFING

ITEM NO. 512E33000
QUANTITY 171
UNIT SY

Place along back of abutment per District preference

Ht. From Top of Footing to bottom of slab = 12.52 ft
Width Rear Abutment= 43.333 ft
WW1= 105 SF
WW2= 105 SF
Rear Total= 752.5 SF

Width Forward Abutment= 42.886 ft
WW3= 104 SF
WW4= 138 SF
Rear Total= 778.9 SF

Area Applied = 1531.5 sq.ft. = **170.16** SY



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QUANTITY COMPUTATIONS

DESCRIPTION: DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE WF54-49 (LENGTH = 106'-8")

ITEM NO. 515E15100
QUANTITY 4
UNIT EA

Total Number of Beams	=	4
Length of the beam	=	107
Cost per beam	=	40,000
Total cost of beams	=	160000



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QUANTITY COMPUTATIONS

DESCRIPTION: INTERMEDIATE DIAPHRAGM

ITEM NO. 515E20000
QUANTITY 9
UNIT EACH

	# PER BAY	#	Total (FT)
BAYS	3	3	9

TOTAL = 9 EACH



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QUANTITY COMPUTATIONS

DESCRIPTION: 1" PREFORMED EXPANSION JOINT FILLER

ITEM NO. 516E13600
QUANTITY 4
UNIT SF

	#	LENGTH (FT)	WIDTH (FT)	AREA (SF)
REAR	2	0.5	1.67	1.7
FORWARD	2	0.5	1.67	1.7
			TOTAL=	4.0

TOTAL = 4 SF



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QUANTITY COMPUTATIONS

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DESCRIPTION: 2" PREFORMED EXPANSION JOINT FILLER

ITEM NO. 516E13900
QUANTITY 50
UNIT SF

Item	No	Length (ft)	Height (ft)	Area (SF)
Left Rear	1	2.54	4.96	12.59
Right Rear	1	2.54	4.96	12.59
Left Forward	1	2.54	4.96	12.59
Right Forward	1	2.54	4.96	12.59

Total **50** SF



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QUANTITY COMPUTATIONS

DESCRIPTION: SEMI INTEGRAL ABUTMENT EXPANSION JOINT SEAL

ITEM NO. 516E14020
QUANTITY 112
UNIT FT

	Length (ft)	#	Total (ft)
Horizontal Joint - Rear Abutment	43.00	1	43.00
Horizontal Joint - Forward Abutment	43.00	1	43.00
Diaphragm	6.46	4	25.84
		Total=	111.84

TOTAL = 112 FT



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QUANTITY COMPUTATIONS

DESCRIPTION: ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES
(15"x22"x2.55") AND LOAD PLATE (16"x23"x2") (NEOPRENE)

ITEM NO. 516E44100
QUANTITY 8
UNIT EA

# Beams	# Abuts	Total
4	2	8

TOTAL = 8 EA



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QUANTITY COMPUTATIONS

DESCRIPTION: RAILING (TWIN STEEL TUBE)

ITEM NO. 517E70000
QUANTITY 214
UNIT FT

Length of the railing = 106.87 ft

Railing on both sides = **213.7** ft



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QUANTITY COMPUTATIONS

DESCRIPTION: POROUS BACKFILL WITH GEOTEXTILE FABRIC

ITEM NO. 518E21200
QUANTITY 120
UNIT CY

	A (SF)	W (FT)	VOL (CF)	VOL (CY)
LF WW	136.43	2.00	272.86	10.11
RF WW	173.43	2.00	346.86	12.85
LR WW	143.96	2.00	287.91	10.66
RR WW	139.38	2.00	278.76	10.32
REAR ABUTMENT	519.99	2.00	1039.97	38.52
FWD ABUTMENT	505.34	2.00	1010.68	37.43

ABUTMENTS TOTAL= **119.89** CY



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QUANTITY COMPUTATIONS

DESCRIPTION:

SPECIAL - STEEL DRIP STRIP

ITEM NO. 518E22300
QUANTITY 274
UNIT FT

Length of the deck on one side = 108.38 ft
Length of the deck on other side = 108.38 ft

Guardrail Post on one side 19
Guardrail Post on other side 19

1'-6" at each guardrail 1.5 ft

Total steel drip at posts 57 ft

Total **273.76**



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QUANTITY COMPUTATIONS

DESCRIPTION: 6" DIA. PERFORATED CORRUGATED PLASTIC PIPE

ITEM NO. 518E40000
QUANTITY 125
UNIT FT

	Len (ft)
Rear Abutment	61
Forward Abutment	64

Total 125



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QUANTITY COMPUTATIONS

DESCRIPTION: 6" DIA. NONPERFORATED CORRUGATED PLASTIC PIPE

ITEM NO. 518E40010
QUANTITY 49
UNIT FT

Abutment	Len (ft)
Rear Left	9.000
Rear Right	15.000
Forward Left	14.000
Forward Right	11.000

Total **49.000** ft



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QUANTITY COMPUTATIONS

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

ITEM NO. 526E30010
QUANTITY 240
UNIT SY

Length (ft)	Width (ft)	#	Total (SF)	Total (SY)	
30	36	2	2160.0	240.0	SY

TOTAL = 240.0 SY



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QUANTITY COMPUTATIONS

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DESCRIPTION: TYPE A INSTALLATION

ITEM NO. 526E90010
QUANTITY 74
UNIT FT

	Length (ft)	#	Total (FT)
36/COS(10) =	36.555	2	73.1
(Type A Installation - Width of the bridge)			

TOTAL = 73.1 FT



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QUANTITY COMPUTATIONS

DESCRIPTION: ROCK CHANNEL PROTECTION, TYPE B, WITH GEOTEXTILE FABRIC

ITEM NO. 601E32104
QUANTITY 556
UNIT CY

	Area (SF)	Height (FT)	Volume (CF)	Volume (CY)
Rear Abutment	3100	2.5	7750.00	287.04
Forward Abutment	2900	2.5	7250.00	268.52

Total **556**



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QUANTITY COMPUTATIONS

DESCRIPTION: LOW STRENGTH MORTAR BACKFILL, AS PER PLAN

ITEM NO. 613E41201
QUANTITY 514
UNIT CY

	Area	Length	Volume (CF)	Volume (CY)
Rear Abutment	189.42	36.6	6932.77	256.77
Forward Abutment	189.42	36.6	6932.77	256.77

Total **514**