511E31611   CLASS QC2 CONCRETE, SUPERSTRUCTURE, AS PER PLAN   UNITS =   CY

Deck

Plan Area = 2016.00 SF (measured in CAD)
Max. Deck Thick. = 9.000 IN
Min. Deck Thick. = 6.000 IN
Avg. Deck Thick. = 7.500 IN

Volume = (2016 SF X 7.5 IN / 12 IN/FT) / 27 =   46.7 CY

Diaphragm

Rear Abutment Diaphragm
Area = 16.00 SF
Thickness = 1.00 FT

Area = 49.06 SF
Thickness = 1.50 FT

Forward Abutment Diaphragm
Area = 16.00 SF
Thickness = 1.00 FT

Area = 48.85 SF
Thickness = 1.50 FT

Volume = (16 SF X 1 FT + 49.06 SF X 1.5 FT + 16 SF X 1 FT + 48.85 SF X 1.5 FT) / 27 =   6.7 CY

Total Volume =   46.7 CY + 6.7 CY = 53.4 CY =   54 CY

511E43510   **CLASS QC1 CONCRETE, ABUTMENT INCLUDING FOOTING**   **UNITS =   CY**

Rear Abutment

Footing
Area = 139.50 SF
Thickness = 3.00 FT   Volume = 139.5 SF X 3 FT / 27 =   15.50   CY

Beam Seat
Area = 111.89 SF
Thickness = 3.00 FT   Volume = (111.89 SF X 3 FT) / 27 =   12.44   CY

Wingwalls
Left WW Area = 33.54 SF
Right WW Area = 39.35 SF
Thickness = 2.50 FT   Volume = (33.54 SF + 39.35 SF) X 2.5 FT / 27 =   6.75   CY

Forward Abutment

Footing
Area = 142.50 SF
Thickness = 3.00 FT   Volume = (142.5 SF X 3 FT) / 27 =   15.84   CY

Beam Seat
Area = 89.89 SF
Thickness = 3.00 FT   Volume = (89.89 SF X 3 FT) / 27 =   9.99   CY

Wingwalls
Left WW Area = 33.17 SF
Right WW Area = 32.94 SF
Thickness = 2.50 FT   Volume = (33.17 SF + 32.94 SF) X 2.5 FT / 27 =   6.12   CY

Total Volume = 15.5 CY + 12.44CY + 6.75 CY + 15.84 CY + 9.99CY + 6.12 CY =   **67** **CY**

512E10050   **SEALING OF CONCRETE SURFACES (NON-EPOXY)**   **UNITS = SY**

Rear Abutment

    Left WW   Right WW

Far Face =	3.17	SF (measured in CAD)		Far Face =	3.75	SF (measured in CAD)
Near Face =	24.34	SF (measured in CAD)		Near Face =	28.45	SF (measured in CAD)
Top =	16.94	SF (measured in CAD)		Top =	19.63	SF (measured in CAD)
End Face =	6.33	SF		End Face=	6.33	SF

Under Superstructure

Inside =	64.44	SF (measured in CAD)
End Face =	1.60	SF

Forward Abutment

    Left WW   Right WW

Far Face =	3.72	SF (measured in CAD)		Far Face =	3.72	SF (measured in CAD)
Near Face =	22.37	SF (measured in CAD)		Near Face =	22.14	SF (measured in CAD)
Top =	19.80	SF (measured in CAD)		Top =	19.88	SF (measured in CAD)
End Face =	3.83	SF		End Face =	3.83	SF

Under Superstructure

Inside =	42.51	SF (measured in CAD)
End Face =	0.95	SF

Abut. Total = (3.17 SF + 24.34 SF + 16.94 SF + 6.33 SF + 64.44 SF + 1.6 SF + 3.75 SF + 28.45 SF + 19.63 SF + 6.33 SF + 3.72 SF + 22.37 SF + 19.8 SF + 3.83 SF + 42.51 SF + 0.95 SF + 3.72 SF + 22.14 SF + 19.88 SF + 3.83 SF) / 9 =   **36** SY

Superstructure

Perimeter =	2.69	FT
Length =	58.00	FT

Super. Total = 2 x (2.69 SF X 58 FT) / 9 =   **35** SY

512E33000   **TYPE 2 WATERPROOFING**   **UNITS = SY**

Rear LT =	18.20	SF
Rear RT =	21.49	SF
Fwd RT =	20.49	SF
Fwd LT =	20.67	SF

Total = (18.2 SF + 21.49 SF + 20.49 SF + 20.67 SF) / 9 =   **9** SY

515E12050 **PRESTRESSED CONCRETE COMPOSITE BOX BEAM BRIDGE MEMBERS, LEVEL 1, CB21-48**   UNITS = EACH

Length = 61 FT
Quantity = 8 EACH

516E13900 **2" PREFORMED EXPANSION JOINT FILLER**   UNITS = SF

Width = 2.50 FT
Rear Rt Height = 2.69 FT
Rear Lt Height = 2.69 FT
Fwd Rt Height = 2.69 FT
Fwd Lt Height = 2.69 FT

Area = 2.5 FT X (2.69 FT + 2.69 FT + 2.69 FT + 2.69 FT) =   27 SF

516E14020 **SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL**   UNITS = FT

Rear Abutment
Hor. Length = 35.66 FT
Vert Length (LT) = 3.02 FT
Vert Length (RT) = 3.02 FT

Length = 35.66 ft + 3.02 ft + 3.02 ft =   41.70 FT

Forward Abutment
Hor. Length = 35.62 FT
Vert Length (LT) = 3.02 FT
Vert Length (RT) = 3.02 FT

Length = 35.62 ft + 3.02 ft + 3.02 ft =   41.66 FT

Total Length =   41.7 FT + 41.66 FT = 84 FT

516E43200   ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE)   UNITS =   EACH

Number Beams =   8 EACH
Number / Beam =   4 EACH

Total Number =   8 beam x 4 each =   32   EACH

517E70100   RAILING (THREE STEEL TUBE BRIDGE RAILING)   UNITS =   FT

Bridge Superstructure
Left Rail =   69.00 FT (measured in CAD)
Right Rail =   69.00 FT (measured in CAD)

Total Length = 69 FT + 69 FT =   **138** FT

518E40000   **6" PERFORATED CORRUGATED PLASTIC PIPE**   UNITS = FT

Rear Abutment
Length = 56.50 FT

Fwd Abutment
Length = 57.50 FT

114 FT

518E40010   **6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS**   UNITS = FT

Rear Abutment
Length = 8.22 FT

Fwd Abutment
Length = 8.22 FT

33 FT

518E21200   **POROUS BACKFILL WITH GEOTEXTILE FABRIC**   UNITS = CY

Downstream
Area = 358.08 SF
Thickness = 2 FT
Area = 1.67 SF
Length = 32.67 FT

Upstream
Area = 330.8 SF
Thickness = 2 FT
Area = 1.67 SF
Length = 32.63 FT

Total = (358.08 SF x 2 FT + 1.67 SF x 32.67 FT + 330.8 SF x 2 FT + 1.67 SF x 32.63 FT) / 27 =

56 CY

524E94702   **DRILLED SHAFTS, 36" DIAMETER, ABOVE BEDROCK**   **UNITS =** FT

Rear Abutment

Ftg Elev. =	624.25	FT
Top of Rock =	598.60	FT From B-003-0-21 boring log
Number =	4	
Length, 1 Shaft =	26.0	FT Rounded up to the nearest foot.
Total Length =	104	FT

Forward Abutment

Ftg Elev. =	625.48	FT
Top of Rock =	598.90	FT From B-004-0-21 boring log
Number =	4	
Length, 1 Shaft =	27.0	FT Rounded up to the nearest foot.
Total Length =	108	FT

Total Length = 104 FT + 108 FT =   **212** FT

524E94604   **DRILLED SHAFTS, 30" DIAMETER, INTO BEDROCK**   **UNITS =** FT

Number Shafts =	4	per abut
Number abuts =	2	
Length, 1 Shaft =	3.75	FT
Total Length =	30	FT

Total Length =   **30** FT

526E10000   **REINFORCED CONCRETE APPROACH SLABS (T=12")**   **UNITS = SY**

Rear Approach Slab
     Area =   484.35   SF

Fwd Approach Slab
     Area =   484.35   SF

          Total Area = 484.35 SF + 484.35 SF / 9 =   108   **SY**

526E90010   **TYPE A INSTALLATION**   **UNITS = FT**

Rear Approach Slab
     Length =   32.29   FT

Fwd Approach Slab
     Length =   32.29   FT

                                                                     65   **FT**

Tt

601E32110   **ROCK CHANNEL PROTECTION, TYPE B WITH AGGREGATE FILTER**   **UNITS = CY**

Plan View Areas (SF):

<div style="text-align:center">Rear</div>

Upstream	347.1	-->	669.8	-->	682.5		X	1.1181
	168.7	-->	485.1	-->	413.3		X	1
	401.2	-->	669.2	-->	526.4	Downstream	X	1.1181

<div style="text-align:center">Forward</div>

Slope Factor = (1/cos(arctan(1/2))) =   1.1181

Thickness =   2.50   FT

Total Volume = **[(347.1 SF + 669.8 SF + 682.5 SF + 401.2 SF + 669.2 SF + 526.4**   **441**   **CY**
SF) X 1.1181 + (168.7 SF + 485.1 SF + 413.3SF)] X 2.5 FT / 27 =

846E00110   **POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM**   **UNITS = CF**

Approach Slab Width: **32.00** FT
Width: **20.00** IN
Thickness: **3.00** IN

Total Volume =   **27** CF

(32 FT X 20 IN X 3) / 144 =