DGL CONSULTING ENGINEERS, LLC

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Structure Quantity Calculations

LUC-2-31.75 over Cedar Creek

CALCULATED: SAM 12/13/18 **CHECKED:** BWP 02/11/20

202-11002	*Structure Removed, Over 20 Foot Span*	*LUMP SUM*
202-22900	*Approach Slab Removed*	*79 SY*
	(352.7 sf x 2) x (1/9) **= 79 SY**	
202-23500	*Wearing Course Removed*	*537 SQ. YD.*
	Superstructure = (44.5 x 92.74) x (1/9) = 458.6 SY	
	Approach = 78.4 SY	
	Total = **537 SY**	
503-11100	*Cofferdams and Excavation Bracing*	*LUMP SUM*
503-21301	*Unclassified Excavation, As Per Plan*	*LUMP SUM*
	Footing excavation plan area = 204 sf/footing	
	(Includes wingwalls and abutment)	
	Average Excavation depth = 6’	
	Footing depth = 3’ and Excavation per CMS 503.10 = 3’	
	Total = 204 sf x 6’ x (2/27) = 90.67 CY **say 91 CY**	
505-11100	*Pile Driving Equipment Mobilization*	*LUMP SUM*
507-00500	*12” Cast-in-Place Reinforced Concrete Piles, Driven*	*1000 FT*
	Abutments= 20 x 50 = **1000 FT**	

507-00551	*12" Cast-in-Place Reinforced Concrete Piles, Furnished, As Per Plan*	*1100 FT*

Abutments= 20 x 55 = **1100 FT**

507-00700	*16" Cast-in-Place Reinforced Concrete Piles, Driven*	*920 FT*

Piers= (8 x 55) + (8 x 60) = **920 FT**

507-00751	*16" Cast-in-Place Reinforced Concrete Piles, Furnished, As Per Plan*	*1000 FT*

Piers= (8 x 60) + (8 x 65) = **1000 FT**

509-10000	*Epoxy Coated Reinforcing Steel*	*44610 LB*

From Reinforcing Steel Tables:

Abutment	8555 LB
Piers	14309 LB
Superstructure	21746 LB
Total	**44610 LB**

511-31610	*Class QC2 Concrete, Superstructure*	*131 CY*

Deck = ((44 x 0.68) sf x 104.68 ft) x (1/27) = 116.0 CY

Integral Abutment = 2 x 50.9 x [(1.0' x 0.5') + (1.5' x 0.92')] x (1/27) = 7.1 CY

T-Joint Pier = 2 x 50.9 x [(.5' x 1.0') + (0.5' x 3.0')] x (1/27) = 7.5 CY

Total = 116.0 + 7.1 + 7.5 = **130.6 CY**

511-42510	*Class QC1 Concrete, Pier Cap*	*37 CY*

2 x (51.04 x 3.0' x 3.2) x (1/27) = **37 CY**

511-43510	*Class QC1 Concrete, Abutment Including Footing*	*95 CY*

Footing = ((68.0'+68.0') x 3.00 x 3.00) x (1/27) = 45.3 CY

Seat = 2 x ((3.33'+3.68')/2) x 51.3' x 3.0' x (1/27) = 40.0 CY

Wingwalls = 2 x (47.2 sf + 36.58 sf) x 1.5 x (1/27) = 9.3 CY

Total = 45.3 + 40.0 + 9.3 = **95 CY**

512-10050	*Sealing of Concrete Surfaces (Non-Epoxy)*	*212 SY*

Beams = 2 x (1.42'+.5') x 102.37 x (1/9) = 43.68 SY

Deck Edge = 2 x 0.67' x 104.68' x (1/9) = 15.59 SY

Piers = 2 x {[(3.2' + 3.0' + 3.2') x (51.04)] + (2 x 3.46 x 3)} x (1/9) = 111.2 SY

Abutments = 1.74' x 54.75 x 2 x (1/9) = 21.2 SY

Wingwalls = 2 x [(23.4 sf + 18.7 sf) + ((4.85 + 3.72 + 2(4.92 + 1)) x 2.0')] x (1/9) = 18.4 SY

Total = 60 + 112 + 40 = **212 SY**

515-12030	*Prestressed Concrete Composite Box Beam Bridge Members, Level 1, CB17-48, 30' Length*	*22 EACH*
515-12030	*Prestressed Concrete Composite Box Beam Bridge Members, Level 1, CB17-48, 40' Length*	*11 EACH*
516-13600	*1" Preformed Expansion Joint Filler*	*16 SF*

4 x (1.73' x 2.21') = **16 SF**

516-14020	*Semi-Integral Abutment Expansion Joint Seal*	*102 FT*

50.9' x 2 = **102 FT**

516-31000	*Joint Sealer*	*102 FT*

50.9' x 2 = **102 FT**

516-41100	*1/8" Preformed Bearing Pad*	*66 EACH*

2 x 33 beams = **66 EACH**

516-43100	*Elastomeric Bearing with Internal Laminates Only*	*132 EACH*

	(Neoprene) (10"x6"x 1.375") 33 x 4 = **132 EACH.**	
517-70000	*Railing (Twin Steel Tube)* 109.02' x 2 = **219 FT.**	*219 FT.*
518-21200	*Porous Backfill with Geotextile Fabric* Abutments = 2 x (2.0' x 4.7' x 51.3) x (1/27) = 35.7 CY Wingwalls = 2 x (55.2 sf + 53.71 sf) x 2.0' x (1/27) = 16.1 CY Total = 35.7 + 16.1 = **52 CY**	*52 CY*
Special 51822300	*Special-Steel Drip Strip* (104.68 + (17 * 1.5)) x 2 = **261 FT.**	*261 FT.*
518-40000	*6" Perforated Corrugated Plastic Pipe* 70' x 2 = **140 FT.**	*140 FT.*
518-40010	*6" Non-Perforated Corrugated Plastic Pipe, Including Specials* 12' x 4 = **48 FT.**	*48 FT.*
518-42300	*8" Non-Perforated Corrugated Steel Pipe, Including Specials, 707.01* 5' x 4 = **20 FT.**	*20 FT.*
526-15000	*Reinforced Concrete Approach Slabs (T=13")* [(20.0' x 44.0') x 2.0] x (1/9) = **196 SY.**	*196 SY*

526-90011	*Type A Installation, As Per Plan*	*102 FT.*

50.81 x 2 = **102 FT.**

Roadway Item

601-32000	*Rock Channel Protection, Type A with Filter*	*64 CY*

RA (3:1 Slope) = 407 sf x 1.06 (along slop) = 432 sf

FA (4:1 Slope) = 249 sf x 1.03 (along slop) = 257 sf

Total = 432 sf + 257 sf x 2.5' x (1/27) = 63.80 CU. YD.