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# Bridge Quantity Calculations

ODOT LPA Project  
**WAR-123-28.55**  
PID No. 106224

SR123 at Beal Road-Shotwell Drive Intersection  
Improvement Project

City of Franklin  
Warren County, Ohio

September 30, 2022





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Project WAR-123 BEAL ROAD

Project No. 180554 Sheet No. 1 of 3

Calculated By MLF Date 9/27/22

Checked By TAB Date 9/29/22

Subject FINAL EST. BRIDGE QU'TY'S

202-11002 STRUCTURE REMOVED, OVER 20 FOOT SPAN ~ LS  
 = 768 SF (B.M.I.91) x \$30/SF = \$ 23,040 ⇒ SAY \$ 25,000

202-23500 WEARING COURSE REMOVED ~ SY  
 = 768 SF (B.M.I.91) x 1/4 = 85.33 SY ⇒ SAY 86 SY

503-21300 UNCLASSIFIED EXCAVATION ~ LS  
 = 1342 SF x ≈ 14 FT x 1/27 x \$25/CY = \$ 17,396 ⇒ SAY \$ 20,000

509-10000 EPOXY COATED STEEL REINFORCEMENT ~ LB

CULVERT FOOTING = 4735 LB

PEDestal = 695 LB

HEADWALL FOOTING = 2166 LB

HEADWALL = 2864 LB

FORESLOPE WALL = 584 LB

TOTAL = 11044 LB

S11-46510 CLASS OCI CONCRETE, FOOTING ~ CY

= (87.33 FT + 83.67 FT) x ((2.58 FT x 1.25 FT) + (4 FT x 3 FT)) x 1/27 = 80.09 CY  
 SAY ⇒ 81 CY

S11-46610 CLASS OCI CONCRETE, HEADWALL ~ CY

WALLS = ((9.83 FT x 17.81 FT) + (3EA x 9.83 FT x 16 FT)) x 1.75 FT x 1/27 = 29.95 CY

FOOTING = [((1.5 FT x 2 FT) + (8 FT x 2 FT)) x 14.58 FT x 3  
 + ((1.5 FT x 2 FT x 17.89 FT) + (8 FT x 2 FT x 17.90 FT))] x 1/27 = 43.49 CY

FORESLOPE = 1 FT x 1.25 FT x 30 FT x 2EA x 1/27 = 2.78 CY

TOTAL = 76.22 CY ⇒ SAY 77 CY



S11-50210 CLASS GC1 CONCRETE, SUBSTRUCTURE ~ CY

$$= ((6.67 \text{ FT} \times 2.17 \text{ FT}) + 2 \times (.5 \text{ FT} \times 25 \text{ FT})) \times 17 \text{ FT} - \left( \sqrt{\frac{2.62 \text{ FT}^2 + 3.4 \text{ FT}^2}{2}} \times 2 \text{ FT} \times 217 \text{ FT} \right)$$

$$= 208.93 \text{ CF} \times \frac{1}{27} = 7.74 \text{ CY} \Rightarrow \text{SAY } 8 \text{ CY}$$

S12-10100 SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) ~ SY

HEADWALLS =  $347 \text{ SF} + 66 \text{ FT} \times 1.5 \text{ FT} = 446 \text{ SF}$

FORESLOPE WALL =  $30 \text{ FT} \times 2.5 \text{ FT} \times 2 \text{ EA} = 150 \text{ SF}$

CULVERT ENDS =  $(62 \text{ SF} + 2 \text{ FT} \times 43 \text{ FT}) \times 2 \text{ ENDS} = 296 \text{ SF}$

TOTAL =  $892 \text{ SF} \times \frac{1}{9} = 99.11 \Rightarrow \text{SAY } 100 \text{ SY}$

S12-33000 TYPE 2 WATER PROOFING ~ SY

CULVERT =  $9.25 \text{ FT} \times 80 \text{ FT} \times 2 \text{ SIDES} = 1480 \text{ SF}$

PIPE =  $3 \text{ FT} \times 2 \text{ FT} \sqrt{\frac{2.54 \text{ FT}^2 + 3.71 \text{ FT}^2}{2}} = 68.83 \text{ SF}$

PEDESTAL =  $(6.92 \text{ FT} \times 3 \text{ FT} \times 2 \text{ EA}) + (47 \text{ FT} \times 3 \text{ FT}) = 92.52 \text{ SF}$

TOTAL =  $1641.35 \times \frac{1}{9} = 182.37 \text{ SY} \Rightarrow \text{SAY } 185 \text{ SY}$

S12-33010 TYPE 3 WATERPROOFING ~ SY

=  $32 \text{ FT} \times 80 \text{ FT} \times \frac{1}{9} = 284.44 \text{ SY} \Rightarrow \text{SAY } 285 \text{ SY}$

S16-13600 1' P.E.S.F. ~ SF

=  $(10.33 \text{ FT} \times 1.25 \text{ FT} \times 4 \text{ EA}) + (2.17 \text{ FT} \times 2 \text{ FT} \sqrt{\frac{2.54 \text{ FT}^2 + 3.71 \text{ FT}^2}{2}}) + (6.92 \text{ FT} \times 1 \text{ FT} \times 2 \text{ EA})$

=  $101.92 \text{ SF} \Rightarrow \text{SAY } 102 \text{ SF}$

S18-21201 POROUS BACKFILL W/ GEOTEXTILE FABRIC, A.P.P. ~ CY

=  $(3 \times 76 \text{ SF} + 85 \text{ SF}) \times 1.5 \text{ FT} \times \frac{1}{27} = 17.39 \text{ CY} \Rightarrow \text{SAY } 18 \text{ CY}$

G01-32100 ROCK CHANNEL PROTECTION, TYPE B, W/ FILTER ~ CY

=  $(250 \text{ SF} + 300 \text{ SF}) \times 2.5 \text{ FT} \times \frac{1}{27} = 50.93 \text{ CY} \Rightarrow \text{SAY } 51 \text{ CY}$





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Project No. 180554 Sheet No. 3 of 3

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G01-34100 ROCK CHANNEL PROTECTION, TYPE B, W/O UT FILTER ~CY  
=  $((2 \text{ FT} \times (87.33 \text{ FT} + 83.67 \text{ FT})) + (18 \times 14 \text{ FT})) \times 2.5 \text{ FT} \times 127 = 55 \text{ CY}$

G11-70001 CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE THREE SIDED  
FLAT TOPPED CULVERT (28' SPAN x 8' RISE), A.P.P. ~ FT  
= 80 FT