




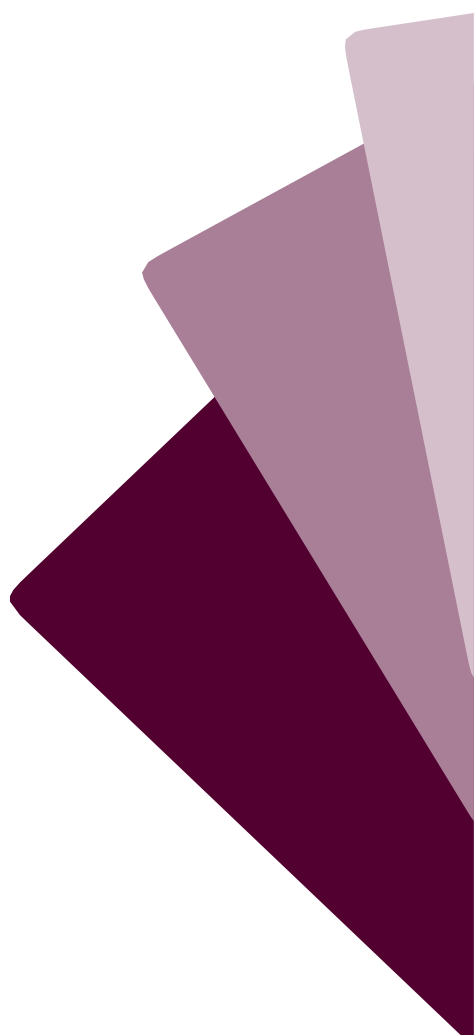
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STRUCTURES QUANTITY CALCULATIONS

CITY OF JACKSON
Replacement of
Bridge No. JAC-OHIGH-0073
North High Street over Salt Lick Creek
Jackson, Jackson County, Ohio

ODOT PID No. 108735
C-R-S: JAC-CR501-0.73
February 24, 2021
(Final Plans Submission)



ITEM 202 E 11003 ~ STRUCTURE REMOVED, OVER 20 FOOT SPAN, ~ LUMP
AS PER PLAN

EXISTING BRIDGE LENGTH = 91 FT
 " " WIDTH = 24 FT

$$\text{AREA} = 91' \times 24' = 2,184 \text{ SF}$$

USE UNIT COST OF \$22/SF FOR REMOVAL

$$\text{TOTAL COST} = 2,184 \text{ SF} \times \$22/\text{SF} = \$48,048$$

Say \$50,000

ITEM 202 E 23500 ~ WEARING COURSE REMOVED ~ SY

DECK AREA (FROM BM 191 FORM) = 2,232 SF

$$\text{In SY} \Rightarrow \frac{2,232 \text{ SF}}{9 \text{ SF/SY}} = 248 \text{ SY}$$

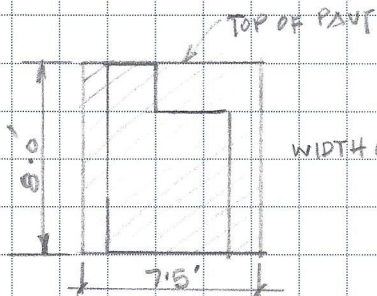
Say 250 SY

ITEM 503 E 1100 ~ COFFERDAMS AND EXCAVATION BRACING ~ LS

USE \$7,500 PER SUBSTRUCTURE UNIT

$$\therefore 2 \text{ ABUTMENTS @ } \$7,500 = \$15,000$$

ITEM 503 E 21300 ~ UNCLASSIFIED EXCAVATION ~ LUMP



WIDTH OF EXCAVATION = 44'

$$\text{VOLUME} = 81.0' \times 7.5' \times 44' \times 2 \text{ ABUTTS} = 19664 \text{ CF}$$

27 CF/CY

USE \$40/CY AS UNIT COST FOR EXCAVATION

$$\text{TOTAL COST} = 19664 \text{ CF} \times \$40/\text{CY}$$

$$= \$7,866$$

Say \$8,000

ITEM 509 E 10000 ~ EPOXY COATED REINFORCING STEEL ~ LB
 Per Reinforcing List Dwg 13 of 13.

Total Weight = 7468 POUNDS

ITEM 511 E 34444 ~ CLASS QC2 CONCRETE, BRIDGE DECK ~ CY

Assume Prefab Bridge has 6 stringers (W10) ~ BRIDGE LENGTH = 102.33'

Deck:	$102.33' \times 30'0" \times 8.5"$	=	2174.5 CF
Int. Haunch:	$6 \times (10" \times 2") \times 102.33'$	=	85.3 CF
Ext. Haunch:	$2 \times 1.5' \times 1.5' \times 102.33'$	=	460.5 CF
		Σ	2720.3 CF

In CY \rightarrow $\frac{2720.3 \text{ CF}}{27 \text{ cf/cy}}$
 = 100.75 cy

Say 101 cy

ITEM 511 E 45600 ~ CLASS QC4 MASS CONCRETE, SUBSTRUCTURE ~ CY

FOOTING \Rightarrow 2 ABUT \times $5.5' \times 5.5' \times 42.0'$ = 2541.8 CF

BACKWALL \Rightarrow 2 ABUT \times $2.37' \times 1.75' \times 42.0'$ = 348.4 CF

Σ 2890.4 CF

In CY = $\frac{2890.4 \text{ CF}}{27 \text{ cf/cy}}$ = 107 cy

ITEM 511 E 81200 - CONCRETE MISC.: CONCRETE DECK DESIGN ~ LS

$$16 \text{ HRS} @ \$150/\text{HR} = \$2,400$$

Say \$2,500

ITEM 511 E 81200 - CONCRETE MISC.: EPOXY COATED REINFORCING ~ LS
STEEL FOR CONCRETE DECK

TOTAL VOLUME OF CONCRETE (from Page/Sheet 2) = 100.75 cy

Use 200 LB/cy for Superstructure steel

$$\therefore 100.75 \times 200 \text{ LB/cy} = 20,150 \text{ LB}$$

$$\text{Unit Cost} = \$1.25/\text{LB}$$

$$\therefore \text{TOTAL COST} = 20,150 \times \$1.25/\text{LB} = \$25,187.50$$

Say \$26,000

ITEM 512 E 10100 - SEALING OF CONCRETE SURFACES ~ SY
(EPOXY-URETHANE)

Abutments:

Front of Backwall - (42' x ^{Ave.} 2.37')	=	99.5 SF
Top & Back of Backwall WW - (0.5' + 1.75')(2)	=	1.8 SF
Sides of Backwall WW - (1.75' x 2.25')(2)	=	7.9 SF
Bridge Seat & Front of Stem/Fg - (42'(1.5' + 3.75'))	=	220.5 SF
	Σ	<u>329.7 SF</u>

Superstructure (Deck):

2 Abuts $\Rightarrow 2 \times 329.7 \text{ SF}$	=	659.4 SF
Side & Bottom 6" $\Rightarrow (1.5' + 0.5')(102.33') \times 2$	=	409.3 SF
	Σ	<u>1,068.7 SF</u>

$$\text{in SY} \Rightarrow \frac{1068.7 \text{ SF}}{9 \text{ SF/SY}} = 118.7 \text{ SY}$$

Say 120 SY

ITEM 512 E 33000 ~ TYPE 2 WATERPROOFING ~ SY

Location: Abutment Construction Joint @ bridge seats.

$$\text{AREA} = 2 \text{ ABUTS} \left[\frac{42'0" \times 3'0"}{5 \text{ SF/SY}} \right] = \underline{28 \text{ SY}}$$

ITEM 513 E 10121 ~ STRUCTURAL STEEL MEMBERS, LEVEL B, AS PER PLAN ~ LS

Per Quote from Truss Manufacturer — \$478,300

Say \$500,000

ITEM 513 E 95020 ~ STRUCTURAL STEEL, MISC.: STEEL TRUSS DESIGN ~ LS

Say 50 hrs for Design, Plans & Review @ \$150/hr
 $50 \text{ HR} \times \$150/\text{HR} = \$7,500$

ITEM 516 E 11210 ~ STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL ~ FT

2 ABUTMENTS @ 30 FT LONG EA. = 60'

ITEM 517 E 70000 - RAILING (TWIN STEEL TUBE) ~ FT

PAY UNIT } $2 \left[2.46' + 104.42' + 2.46' \right]$
 $= 218.67 \text{ FT}$
 STA. 78+09.75 - 77+05.33 $\approx 104.42'$
 1st post space = 5' - 4"

Say 219 FT.

ITEM 518 E 21200 ~ POROUS BACKFILL WITH GEOTEXTILE FABRIC ~ CY

2 FT WIDE

DEPTH = 8 FT LESS 1.08' LESS 0.5" bedding = 6.42'

LENGTH = 42.0'

VOLUME = 2 ABUT $\left[\frac{2.0 \times 6.42' \times 42.0'}{27 \text{ cf/cy}} \right] = 39.95 \text{ cy}$

Say 40 CY

ITEM (SPECIAL) 518 E 22300 - SPECIAL-STEEL DRIP STRIP ~ FT

DECK LENGTH = 102.33 FT

POSTS = 16 ; DS @ Post is 1.5' long

TOTAL LENGTH = 2 STRIPS $\left[102.33' + (1.5' \times 16 \text{ posts}) \right] = 252.66'$

Say 253 FT

ITEM 518 E 40000 ~ 6" PERFORATED CORRUGATED PLASTIC PIPE ~ FT

REAR ABUTMENT : 42.0'

FWD ABUT : 42.0'

Σ 84.0'

ITEM 518 E 40011 ~ 6" NON-PERFORATED CORRUGATED PLASTIC PIPE ~ FT
INCLUDING SPECIALS, AS PER PLAN

REAR ABUTMENT : 2 @ (21'+2') = 46 FT

FWD ABUTMENT : 2 @ (18'+2') = 40 FT

$\Sigma =$ 86 FT

ITEM 524 E 94604 - DRILLED SHAFTS, 30" DIAMETER, INTO BEDROCK ~ FT

LOCATION: FWD ABUTMENT ONLY

$$5 \text{ SHAFTS @ } 4.5' = 22.5 \text{ FT}$$

Say 23 FT

ITEM 524 E 94702 - DRILLED SHAFTS, 36" DIAMETER ABOVE BEDROCK ~ FT

REAR ABUTMENT: $35.42' \times 5 \text{ SHAFTS} = 177.10 \text{ FT}$

FWD ABUTMENT: $21.79' \times 5 \text{ SHAFTS} = 108.95 \text{ FT}$; SAY 286 FT
 $\Sigma = 286.05 \text{ FT}$

ITEM 524 E 95100 - DRILLED SHAFTS, MISC: THERMAL INTEGRITY PROFILER (T.I.P.) ~ EACH
WIRE CABLE TESTING OF DRILLED SHAFTS.

LOCATION - $1 \text{ @ EACH ABUTMENT} \times 2 \text{ ABUTMENTS} = 2 \rightarrow$ 2 EACH

ITEM 526 E 10000 - REINFORCE CONCRETE APPROACH SLABS (T=12") ~ SY

WIDTH = $30.0'$

LENGTH = $15.0'$

$$\text{AREA} = \frac{2 \text{ SLABS } (30.0' \times 15.0')}{2 \text{ SF/SY}} = \underline{100 \text{ SY}}$$

ITEM 526 E 90010 - TYPE A INSTALLATION ~ FT

$2 \text{ APPROACH SLABS @ } 30 \text{ FT WIDE} = \underline{60 \text{ FT}}$

ITEM 611 E 99710 - PRECAST REINFORCED CONCRETE OUTLET ~ EACH

$2 \text{ @ Each Abutment} \times 2 \text{ Abutment} = \underline{4}$