

DISTRICT 10 - BRIDGE DEPARTMENT

MUSKINGUM DRIVE, BOX 658, MARIETTA OHIO 45750

COUNTY: VIN ROUTE: 328 SECTION: 6.42

SHEET 1 OF 4

Item 511, Class QC1 Concrete, Retaining/Wingwall not Including Footings

$$4 \times \left[8' \times \left(\frac{6' + 5'}{2} \right) \times 1' \right] = 176.0 \text{ ft}^3$$

$$2 \times \left[0.18 \text{ ft}^2 \times 6' \right] = 2.2 \text{ ft}^3$$

$$\text{TOTAL} = (176.0 \text{ ft}^3 + 2.2 \text{ ft}^3) / 27 = 6.6 \text{ CY}$$

\Rightarrow 7 CY

Item 511, Class QC1 Concrete, Footing

$$2 \times \left[4.75' \times \left(\frac{16.04' + 15.21'}{2} \right) \times 1.5' \right] = 222.7 \text{ ft}^3$$

$$2 \times \left[4.75' \times \left(\frac{8.54' + 7.71'}{2} \right) \times 1.5' \right] = 115.8 \text{ ft}^3$$

$$2 \times \left[1.5' \times \left(\frac{19.47' + 15.21'}{2} \right) \times 2.5' \right] = 115.1 \text{ ft}^3 \text{ (cutoff wall)}$$

$$2 \times \left[1.5' \times \left(\frac{7.97' + 7.71'}{2} \right) \times 2.5' \right] = 58.8 \text{ ft}^3 \text{ (cutoff wall)}$$

$$2 \times \left[7.33' \times 1.67' \times 0.67' \right] = 16.5 \text{ ft}^3 \text{ (footing cap)}$$

$$\text{TOTAL} = 528.9 \text{ ft}^3 / 27 = 19.6 \text{ CY}$$

\Rightarrow 20 CY

Item 511, Class QC1 Concrete, Headwall

$$2 \times \left[7.34' \times 1' \times 0.67' \right] = 9.9 \text{ ft}^3 / 27 = 0.4 \text{ CY}$$

\Rightarrow 1 CY

DATE: 3/17/2023

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SHEET 2 OF 4

Item 512, Sealing of Concrete Surfaces

Wingwalls

$$\text{Front: } 4 \times [8' \times (4' + 0.67' + 0.67')] \times \frac{1}{2} = 85.5 \text{ ft}^2$$

$$\text{Top: } 2 \times [8.1' \times 1'] = 16.2 \text{ ft}^2$$

$$2 \times [8.3' \times 1'] = 16.6 \text{ ft}^2$$

$$\text{Back: } 2 \times [8.1' \times 1'] = 16.2 \text{ ft}^2$$

$$2 \times [8.5' \times 1'] = 17.0 \text{ ft}^2$$

$$\text{Side: } 4 \times [1' \times 1'] = 4.0 \text{ ft}^2$$

$$\underline{155.5 \text{ ft}^2}$$

Headwalls

$$\text{Front: } 2 \times [7.34' \times 0.67'] = 9.9 \text{ ft}^2$$

$$\text{Top: } 2 \times [7.34' \times 1'] = 14.7 \text{ ft}^2$$

$$\text{Back: } 2 \times [7.34' \times 0.5'] = 7.4 \text{ ft}^2$$

$$\underline{32.0 \text{ ft}^2}$$

Box

$$\text{Inside: } 2 \times [(4 \times 0.94') + (2 \times 2.67') + 4.67'] \times 2' = 55.1 \text{ ft}^2$$

$$\text{Face: } 2 \times [4 \times (0.67' \times 0.67' \times \frac{1}{2}) + 2 \times (4.67' \times 0.67') + (6' \times 0.67')] = 22.4 \text{ ft}^2$$

$$\underline{77.5 \text{ ft}^2}$$

$$\text{TOTAL} = (155.5 \text{ ft}^2 + 32.0 \text{ ft}^2 + 77.5 \text{ ft}^2) / 9 = 29.5 \text{ SY}$$

⇒ 30 SY

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SHEET 3 OF 4

Item 512, Type 2 Waterproofing

Sides and Wingwall Overlap

$$2 \times [(38' + 1' + 1') \times 5.33'] / 9 = 47.4 \text{ SY} \Rightarrow \boxed{48 \text{ SY}}$$

Item 512, Type 3 Waterproofing

Top and Overlap

$$(7.33' + 1' + 1') \times 38' / 9 = 39.4 \text{ SY} \Rightarrow \boxed{40 \text{ SY}}$$

Item 516, 1" Preformed Expansion Joint Filler

$$4 \times (6' \times 1') = \boxed{24 \text{ SF}}$$

Item 518, Porous Backfill with Geotextile Fabric

$$4 \times \left[8' \times \left(\frac{4' + 5'}{2} \right) \times 1.5' \right] / 27 = 8.0 \text{ CY} \Rightarrow \boxed{8 \text{ CY}}$$

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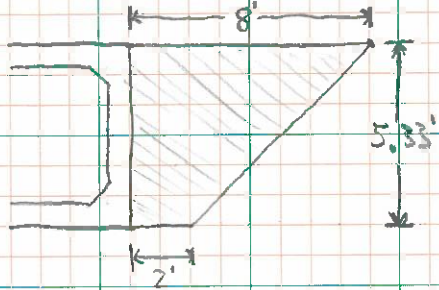
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SHEET 4 OF 4

Item 613, Low Strength Mortar Backfill (Type 2)



23 Ft (Length Culvert Under Pavement)

$$2 \times \left[23' \times \left[(5.33' + 2') + \left(\frac{5.33' \times 5.33'}{2} \right) \right] \right] / 27 = 42.4 \text{ CY}$$

⇒ 43 CY

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