

ESTIMATED QUANTITIES POR-700-03.359

Units and Definitions

$\gamma_{\text{conc}} := 150 \text{ pcf}$ $\text{sf} := \text{ft}^2$ $\text{sy} := \text{yd}^2$ $\gamma_{\text{steel}} := 490 \text{ pcf}$ $\text{cy} := \text{yd}^3$ $\text{pcy} := \frac{\text{lbf}}{\text{cy}}$ $\text{ton} := 2 \text{ kip}$

Bridge Data

$\text{span}_1 := 50.33 \text{ ft}$ *Span 1 Length (Brg/Brg)*

$L_{\text{Bridge}} := 51.33 \text{ ft}$ *Bridge Limits*

$w_{\text{bridge}} := 28.25 \cdot \text{ft}$ *Bridge width (O/O Deck):
(Including 1/2" Fit-up between beams)*

$\text{Skew} := 0 \text{ deg}$ *Skew of Bridge*

$n_{\text{Abuts}} := 2$ *Number of Abutments*

$n_{\text{spans}} := 1$ *Number of Spans*

Legend

INPUTS

IMPORTANT
VALUES

FINAL
VALUE

NEEDS
UPDATED

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

LUMP

Total_{202.StructureRemoved} := "Lump Sum"

Total_{202.StructureRemoved} = "Lump Sum"

ITEM 202 - WEARING COURSE, AS PER PLAN

SY

Total_{202.WearingCourse} := L_{Bridge} · w_{bridge}

Total_{202.WearingCourse} = 161.12 · sy

ITEM 407 - NON-TRACKING TACK COAT

GAL

Item_{407.application.rate} := 0.09 $\frac{\text{gal}}{\text{sy}}$

Total_{407.TackCoat} := 2 · L_{Bridge} · w_{bridge} · Item_{407.application.rate}

Total_{407.TackCoat} = 29.00 · gal

ITEM 409 - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS

FT

Total_{409.Saw} := 2 · (w_{bridge})

Total_{409.Saw} = 56.50 ft

ITEM 441 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449), PG70-22M

CY

Item_{441.thickness.1} := 1.25in

Topping thickness

Item_{441.thickness.avg} := 1.3125in

Camber thickness

Total_{441.Surface.Course.1} := Item_{441.thickness.1} · (L_{Bridge} · w_{bridge}) = 5.59 · cy

Total_{441.Surface.Course.2} := $\frac{\text{Item}_{441.\text{thickness.avg}}}{2} \cdot (L_{\text{Bridge}} \cdot w_{\text{bridge}}) = 2.94 \cdot \text{cy}$

Total_{441.Surface.Course} := Total_{441.Surface.Course.1} + Total_{441.Surface.Course.2}

Total_{441.Surface.Course} = 8.53 · cy

ITEM 509 - EPOXY COATED REINFORCING STEEL

LB

Total_{509.rebar} := 123lbf

Total_{509.rebar} = 123.00 lbf

ITEM 510 - DOWEL HOLES WITH NON-SHRINK, NON-METALLIC GROUT

EACH

Total_{510.dowel} := 20

Total_{510.dowel} = 20.00

ITEM 511 - CLASS QC1 CONCRETE, ABUTMENT

CY

w_{Abut.Wingwall} := 1.4166667ft

Width of Abutment Wingwall

h_{Abut.Wingwall} := 2.08333ft

Height of Abutment Wingwall

l_{Abut.Wingwall} := 3.875ft

Length of Abutment Wingwall

Total_{511.concrete} := 2 · w_{Abut.Wingwall} · h_{Abut.Wingwall} · l_{Abut.Wingwall}

Total_{511.concrete} = 0.85 · cy

ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

SY

$$h_{\text{beam}} := 21\text{in}$$

Height of B21x48 beam

$$w_{\text{underside}} := 6\text{in}$$

Width of sealing cover on underside of beam

$$\text{Abut}_{512.\text{sealing}} := 2 \cdot \left[(w_{\text{Abut.Wingwall}} \cdot h_{\text{Abut.Wingwall}}) + (w_{\text{Abut.Wingwall}} \cdot l_{\text{Abut.Wingwall}}) + (h_{\text{Abut.Wingwall}} \cdot l_{\text{Abut.Wingwall}}) \right] = 3.67 \cdot \text{sy}$$

$$\text{Super}_{512.\text{sealing}} := (h_{\text{beam}} + w_{\text{underside}}) \cdot \text{span}_1 = 12.58 \cdot \text{sy}$$

$$\text{Total}_{512.\text{sealing}} := \text{Abut}_{512.\text{sealing}} + \text{Super}_{512.\text{sealing}}$$

$$\text{Total}_{512.\text{sealing}} = 16.25 \cdot \text{sy}$$

ITEM 512 - TYPE 3 WATERPROOFING

SY

$$\text{Total}_{512.\text{water}} := (L_{\text{Bridge}} + 2 \cdot 2\text{ft}) \cdot w_{\text{bridge}}$$

$$\text{Total}_{512.\text{water}} = 173.67 \cdot \text{sy}$$

ITEM 515 - PRESTRESSED CONCRETE NON-COMPOSITE BOX BEAM MEMBERS

EACH

$$\text{Total}_{515.\text{beam}} := 1$$

$$\text{Total}_{515.\text{beam}} = 1.00$$

ITEM 515 - HIGH EARLY STRENGTH KEYWAY GROUT

FT

$$n_{\text{joints}} := 6$$

Number of joints

$$\text{Total}_{515.\text{grout}} := 0.2 \cdot (n_{\text{joints}} \cdot L_{\text{Bridge}}) + L_{\text{Bridge}}$$

$$\text{Total}_{515.\text{grout}} = 112.93 \text{ ft}$$

ITEM 516 - 1" PEJF

SF

$$w_{\text{beam}} := 4\text{ft}$$

Width of beam

$$\text{Total}_{516.\text{PEJF}} := 2 \cdot \left[(w_{\text{beam}} \cdot h_{\text{beam}}) + (h_{\text{beam}} \cdot w_{\text{Abut.Wingwall}}) \right]$$

$$\text{Total}_{516.\text{PEJF}} = 18.96 \cdot \text{sf}$$

ITEM 516 - 2" DEEP SEALER

FT

$$\text{Total}_{516.\text{sealer}} := 2 \cdot (w_{\text{bridge}})$$

$$\text{Total}_{516.\text{sealer}} = 56.50 \text{ ft}$$

ITEM 516 - ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES

EACH

$$\text{Total}_{516.\text{bearing}} := 4$$

$$\text{Total}_{516.\text{bearing}} = 4.00$$

ITEM 517 - RAILING (THREE STEEL TUBE BRIDGE RAILING)

FT

$$R_{\text{AStation}} := 981.86\text{ft}$$

First post off bridge - RA

$$F_{\text{AStation}} := 1044.13\text{ft}$$

First post off bridge - FA

$$\text{Total}_{517.\text{TST2}} := F_{\text{AStation}} - R_{\text{AStation}}$$

$$\text{Total}_{517.\text{TST2}} = 62.27 \text{ ft}$$

ITEM 518 - STEEL DRIP STRIP

FT

$$L_{\text{Over.GRpost}} := 1\text{ft}$$

Additional length over Guardrail Posts

$$\text{Total}_{518.\text{DripStrip}} := 2 \cdot L_{\text{Bridge}} + 15 \cdot L_{\text{Over.GRpost}}$$

$$\text{Total}_{518.\text{DripStrip}} = 117.66 \text{ ft}$$