



OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT ONE
CONSTRUCTION
CALCULATION SHEET

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PROJECT NO. 121872 REF. NO. _____ ITEM NO. _____ SUBJECT WCI Repairs (Converse-Roselm)

Steel Density = 490 lbs/ft^3 , Assumed Plate Thickness = $10/16"$

WCI Repairs (Plates cover area 3" above and to the sides of cracks)

WCI(1): Dimensions: $L = (8.5" + 3" + 3")$

$W = (6")$ assumed (2 cracks over each other) ^(includes 3" above top crack)

$T = 10/16"$

$$UF = \left(\frac{14.5"}{12} \right) \left(\frac{10/16"}{12} \right) (490) \approx 16 \text{ lbs (5.4 lbs)}$$

WCI(2): Dimensions: $L = (4.5" + 3" + 3")$

$W = 4"$ assumed (includes 3" above crack)

$T = 10/16"$

$$UF = \left(\frac{10.5"}{12} \right) \left(\frac{4"}{12} \right) \left(\frac{10/16"}{12} \right) (490) \approx 4 \text{ lbs (7.4 lbs)}$$

WCI(3): Dimensions: $L = (3" + 3" + 3")$

$W = 4"$ assumed (includes 3" above crack)

$T = 10/16"$

$$UF = \left(\frac{9"}{12} \right) \left(\frac{4"}{12} \right) \left(\frac{10/16"}{12} \right) (490) \approx 7 \text{ lbs (6.4 lbs)}$$

$$WCI(1) \text{ CP Weld: } (14.5 + 6 + 6) / 12 = 2.2'$$

$$WCI(1) \text{ Fillet Weld: } 2(14.5) / 12 = 2.4'$$

$$WCI(2) \text{ CP Weld: } (10.5 + 4 + 4) / 12 = 1.5'$$

$$WCI(2) \text{ Fillet Weld: } 2(10.5) / 12 = 1.8'$$

$$WCI(3) \text{ CP Weld: } (9 + 4 + 4) / 12 = 1.4'$$

$$WCI(3) \text{ Fillet Weld: } 2(9) / 12 = 1.5'$$

SIGNATURE:

Matthew Kohnen

DATE:

06/28/24



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PROJECT NO. 121872 REF. NO. _____ ITEM NO. _____ SUBJECT WLC Repairs (Converse Roselm)

WLC Repairs (Steel Density = 490 lbs/ft³)

$$WLC(1): UF = (4\frac{5}{16} \text{''}) (5\frac{1}{16} \text{''}) (5\frac{1}{16} \text{''}) (490) = 21.3 \text{ lbs each}$$

$$WLC(2): UF = (4\frac{5}{16} \text{''}) (5\frac{1}{16} \text{''}) (5\frac{1}{16} \text{''}) (490) = 21.3 \text{ lbs each}$$

$$WLC(3): UF = \frac{1}{3} (4\frac{5}{16} \text{''}) (5\frac{1}{16} \text{''}) (5\frac{1}{16} \text{''}) (490) = 7.1 \text{ lbs each}$$

$$WLC(4): UF = \frac{1}{3} (4\frac{5}{16} \text{''}) (5\frac{1}{16} \text{''}) (5\frac{1}{16} \text{''}) (490) = 7.1 \text{ lbs each}$$

$$WLC(1) \text{ CP Weld: } ((2\frac{5}{8} \text{''}) (\pi) + 4\text{'}) / 12 = 1.4 \text{ ft each}$$

$$WLC(1) \text{ Fillet Weld: } (4\frac{5}{16} \text{''}) (2) = 0.67 \text{ ft each}$$

$$WLC(2) \text{ CP Weld: } ((2\frac{5}{8} \text{''}) (\pi) + 4\text{'}) / 12 = 1.4 \text{ ft each}$$

$$WLC(2) \text{ Fillet Weld: } (4\frac{5}{16} \text{''}) (2) = 0.67 \text{ ft each}$$

Cross-Frame Replacements (x6) (Secondary Item)

L 3" x 3" x 5/16"

$$\text{Area: } 2 (3\frac{1}{2} \text{''}) (5\frac{1}{16} \text{''}) = 0.013 \text{ SF}$$

$$\text{Volume: } 0.013 (10.167) + 2 (0.013) (\sqrt{(10.167)^2 + (4)^2}) = 0.142231 = 0.42(3) \text{ LF per bay}$$

$$\text{Weight: } 490 (1.26) = 617.4 \text{ lbs (2)} = 1234.8 \text{ lbs}$$

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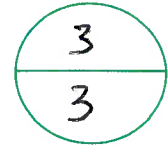
Matthew Lohman

DATE:

06/28/24



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PROJECT No. 12/872 REF. No. _____ ITEM No. _____ SUBJECT WCI Repairs (Stripe)

Steel Density = 490 lbs/ft^3 , Assumed Plate Thickness = $10/16"$

WCI Repairs (Plates cover area 3" above and to the sides of cracks)

WCI(1): Dimensions: $L = 10"$
 $W = 7"$
 $T = 10/16"$

$$UF = \left(\frac{10}{12}\right) \left(\frac{7}{12}\right) \left(\frac{10/16}{12}\right) (490) = 12.4 \text{ lbs}$$

$$\text{WCI(1) CP Weld: } (10 + 7 + 7) / 12 = 2'$$

$$\text{WCI(1) Fillet Weld: } 2(10) / 12 = 1.7'$$

SIGNATURE: Matthew Lohman DATE: 07/01/24