



# OHIO DEPARTMENT OF TRANSPORTATION

PLANNING & ENGINEERING DEPARTMENT, DISTRICT 4



Project ATB-20-21.86 (Part 3)

Calc By MA Date 10/15/20

Desc ATB-531-2211

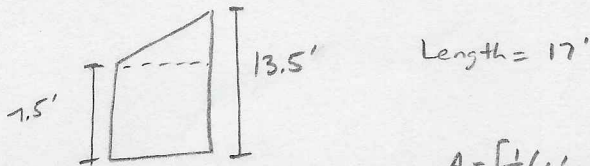
Chk By \_\_\_\_\_ Date \_\_\_\_\_

PID/PROJ 98903

Item 516 - 1" Preformed Expansion Joint Filler

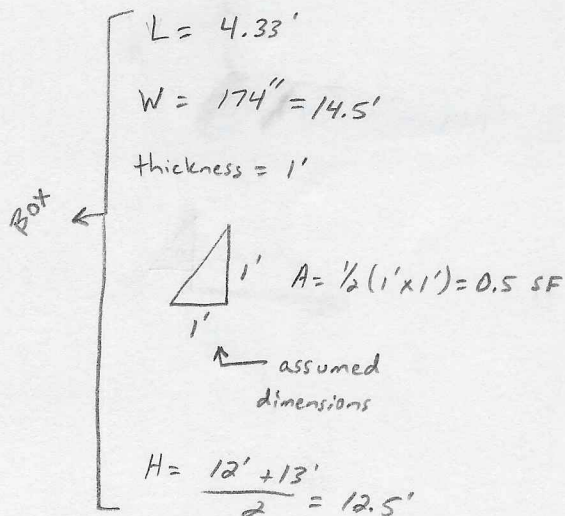
$$13.5' \times 1.25' \times 2 \text{ wingwalls} = 33.75 \text{ SF} \approx \boxed{34 \text{ SF}}$$

Item 511 - Class QCI Concrete, Retaining/Wingwall Not Including Footing



$$A = \left[ \frac{1}{2} (6' \times 17') + (7.5' \times 17') \right] \times 2 \text{ wingwalls} = 357 \text{ SF} \approx \boxed{40 \text{ SF}}$$

Item 511 - Class QC Misc: Concrete Cast-In-Place Junction



$$V_{\text{Box}} = 4.33' \times \left[ 2(1' \times 14.5') + 2(1' \times \{12.5' - 2'\}) + 4(0.5 \text{ SF}) \right]$$
$$= 225.16 \text{ CF} = 8.34 \text{ CY}$$

$$V_{\text{Footer}} = 1' \times 14.5' \times \frac{20 \text{ in}}{12 \text{ in/ft}} \times \frac{\text{CY}}{27 \text{ CF}} = 0.90 \text{ CY}$$

$$\Sigma = 8.34 + 0.90 = 9.24 \text{ CY} \approx \boxed{10 \text{ CY}}$$



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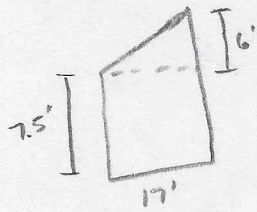
Calc By MA Date 10/16/20

Chk By \_\_\_\_\_ Date \_\_\_\_\_

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Item 512 - Sealing of Concrete Surfaces (Epoxy-Urethane)

Front (Wingwalls):

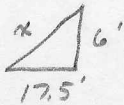


$$A = \frac{1}{2}(6' \times 17') + (7.5' \times 17') = 178.5 \text{ SF}$$

$$178.5 \text{ SF} \times 2 \text{ wingwalls} = \underline{357 \text{ SF}}$$

Top:

$$x = \sqrt{17.5^2 + 6^2} = 18.5'$$



$$A = 2(18.5' \times 1.25') + (14' \times 1.25') = \underline{63.75 \text{ SF}}$$

Foreslope Wall:

$$A = 1.5' \times 14' = \underline{21 \text{ SF}}$$

Back:

assume 6" on back side

$$A = 0.5' (18.5 + 14' + 18.5') = \underline{25.5 \text{ SF}}$$

Front (Box):

$$\Rightarrow A_d = \frac{1}{2}(1' \times 1') = 0.5 \text{ SF}$$

$$A = (14' \times 12') - (10' \times 10') + 4(0.5 \text{ SF}) = \underline{50 \text{ SF}}$$

↑ assumed dimensions



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## Item 512 - Sealing of Concrete Surfaces (Epoxy-Urethane) (cont.)

Inside:



↑ assumed dimensions

$$h = \sqrt{1^2 + 1^2} = 1.41'$$

$$A = 2' [8' + 10' + 8' + 4(1.41')] = 63.28 \text{ SF}$$

$$\text{Total} = 357 + 63.75 + 21 + 25.5 + 50 + 63.28 = 580.53 \text{ SF}$$

$$580.53 \text{ SF} \times \frac{5\text{Y}}{9 \text{ SF}} = 64.5 \approx \boxed{65 \text{ SY}}$$

# Parapet Sealing

Section C-C

$$6,927 \text{ FT} \times 40 \text{ FT} = 277,080 \text{ sq. ft} = 130,795 \text{ SY}$$

Section D-D

$$6,5416 \text{ FT} \times 40 \text{ FT} = 261,664 \text{ sq. ft} = 29,075 \text{ SY}$$

Section E-E

$$6,5416 \text{ FT} \times 10 \text{ FT} = 65,416 \text{ sq. ft} = 7,275 \text{ SY}$$

Section F-F

$$6,5416 \text{ FT} \times 6 \text{ FT} = 39,2496 \text{ sq. ft} = 4,365 \text{ SY}$$

TOTAL 71,449 SY