

STRUCTURE ESTIMATED QUANTITIES

TANGENT DRILLED SHAFT WALL 4W2

NORTHSIDE OF I-70 EB FROM FRA-70-1395C TO FRA-70-1405C

**FRA-70/71-12.68/14.86
PID No. 105523**

Franklin County, Ohio

Prepared For:

**The Ohio Department of Transportation
District 6**



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Job WALL 4W2

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of 7

Calculated by RHC

Date 5-29-19

Checked by DCN

Date 5-31-19

WALL 4W2 QUANTITIES

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

PARTIAL WALL REMOVAL BEHIND PROPOSED WALL

APPROX. LENGTH = 178 ft.

∴ AREA = (2.0') (178') = 356 SF

FULL REMOVAL IN FRONT OF PROPOSED WALL

APPROX. LENGTH = 190 ft.

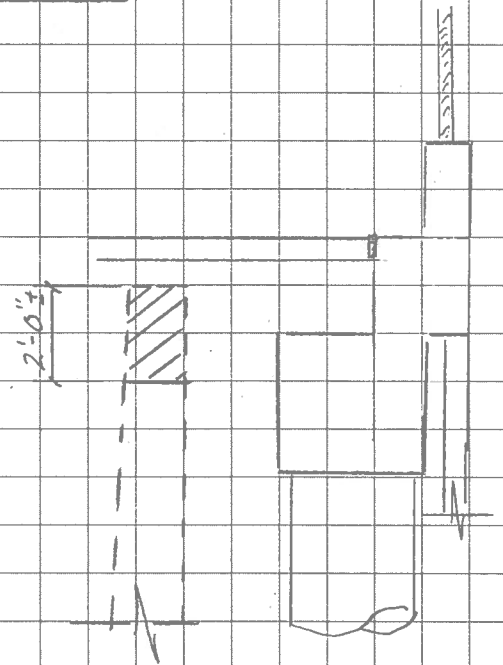
APPROX. HEIGHT = 25 ft.

∴ AREA = 4750 SF

TOTAL = (356 SF + 4750 SF) \$10⁰⁰/SF = \$51060

USE \$55,000

LUMP SUM



ITEM 503 - COFFERDAMS AND EXCAVATION BRACING

WOOD LAGGING = 148 SF

PRECAST PANELS = 514 SF

SHEETING (DRILLED SHAFTS) = (514 SF) (6) = 3264 SF

HP14x73 = [(36') (2) + 19'] 13 = 6643 lbs.

COST:

WOOD LAGGING = (148 SF) (\$10⁰⁰/SF) = \$1480

PRECAST PANELS = (514 SF) (\$50⁰⁰/SF) = \$25700

SHEETING = (3264 SF) (\$12⁰⁰/SF) = \$39168

HP14x73 = (6643 lbs) (\$0⁵⁰/lb) = \$3322

\$69670

TOTAL : \$70,000 LUMP SUM



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ITEM 503 - UNCLASSIFIED EXCAVATION

EXCAVATION REQUIRED TO CONSTRUCT DRILLED SHAFT CAP

CAP POROUS BACKFILL LENGTH

$$(\underbrace{8.25'}_{\text{CAP}} + \underbrace{1'}_{\text{POROUS BACKFILL}} + \underbrace{2'}_{\text{POROUS BACKFILL}} + \underbrace{1'}_{\text{POROUS BACKFILL}})(5.5')(\underbrace{185}_{\text{LENGTH}})(\frac{\text{CY}}{27\text{CF}}) = \underline{\underline{462 \text{ CY}}}$$

ITEM 509 - EPOXY COATED REINFORCING STEEL

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE NECK (PARAPET), AS PER PLAN

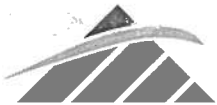
$$\text{KNEE WALL AREA} = 3.62 \text{ SF}$$

$$\text{LENGTH} = 57.1' + 11.3' + 113.1' + 6.1' + 122.1' = 309.7 \text{ ft.}$$

$$\text{VOLUME} = (3.62 \text{ SF} \times 309.7')(\frac{\text{CY}}{27\text{CF}}) = \underline{\underline{42 \text{ CY}}}$$

ITEM 511 - CLASS QC1 CONCRETE MISC.: CAST-IN-PLACE CONCRETE WALL

$$(17')(13')(2')(\frac{\text{CY}}{27\text{CF}}) = \underline{\underline{17 \text{ CY}}}$$



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ITEM S11 - CLASS QCR CONCRETE WITH QC/QA, SIDEWALK, AS PER PLAN

VOLUME: AVG. LENGTH

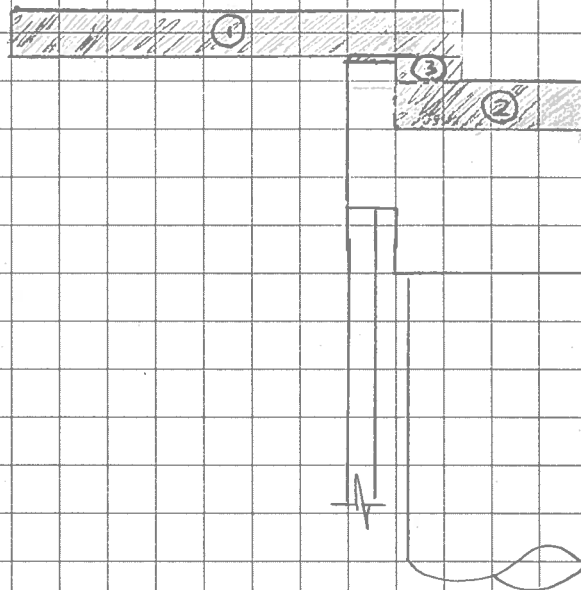
① (1.6') (13.83') (205') = 4536 CF

② (1.5') (8.25') (210') = 2599 CF

③ (0.5') (1025 SF) = 513 CF

7648 CF

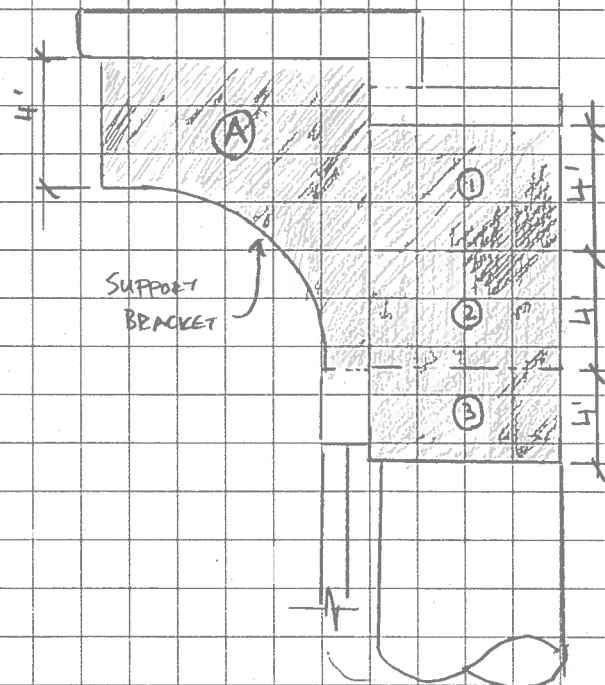
TOTAL (7648 CF) $\frac{CY}{27CF} = \underline{\underline{284 CY}}$



ITEM S11 - CLASS QCI CONCRETE, MISL: SUPPORT BRACKET AND DRILLED SHAFT CAP

SUPPORT BRACKETS:

DRILLED SHAFT #	VOLUME
1	(63.3 SF) (2.83') = 179 CF
2	(56 SF) (2.83') = 159 CF
4	(42.3 SF) (2.83') = 120 CF
7	(47.8 SF) (4.0') = 191 CF
10	(54.2 SF) (4.0') = 217 CF
13	" " = 217 CF
16	" " = 217 CF
19	" " = 217 CF
	1517 CF



DRILLED SHAFT CAP

① (4' X 8.25') (203' + 113')	=	10428 CF
② (4') (8.25') (8.0') 6	=	1584 CF
③ (4') (8.25') (8.0') 6	=	1584 CF
COPIING WALL = (1.75') (3.7') (113')	=	732 CF
BETWN SHAFTS 1 + 2 = (8.25') (4') (26')	=	858 CF
		15186 CF

TOTAL = (1517 CF + 15186 CF) $\frac{CY}{27CF} = \underline{\underline{619 CY}}$



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ITEM 512 - SEALING CONCRETE SURFACES (NON-EPOXY)

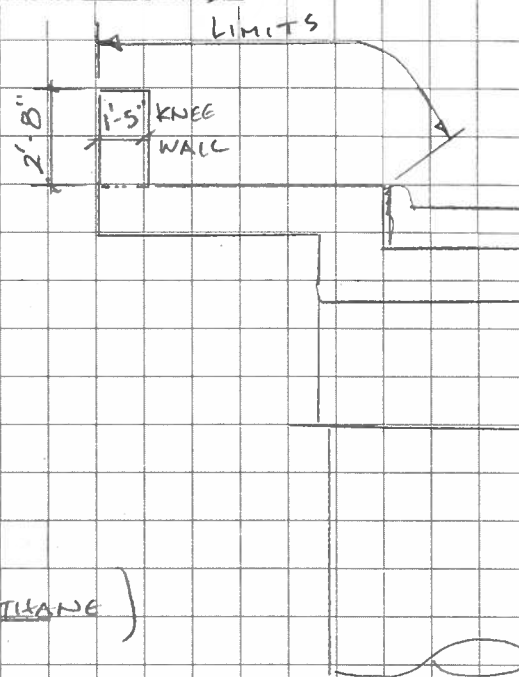
$$\text{KNEE WALL} = (1.42' + 2.67') (310') = 1268 \text{ SF}$$

$$\text{SIDEWALK} = (12.42') (114') + (8') (6') = 1464 \text{ SF}$$

$$\text{COPING WALL} = (1.58') (113') = 179 \text{ SF}$$

$$2911 \text{ SF}$$

$$\text{TOTAL } (2911 \text{ SF}) \frac{54}{9 \text{ SF}} = \underline{\underline{323 \text{ SY}}}$$



ITEM 512 - SEALING CONCRETE SURFACES (EPOXY-URETHANE)

$$\text{KNEE WALL } (2.67') (310') = 828 \text{ SF}$$

↙ AVG. DEPTH

$$\text{FRONT FACE} = (27.4') (315') = 8631 \text{ SF}$$

(INCLUDES BRACKETS)

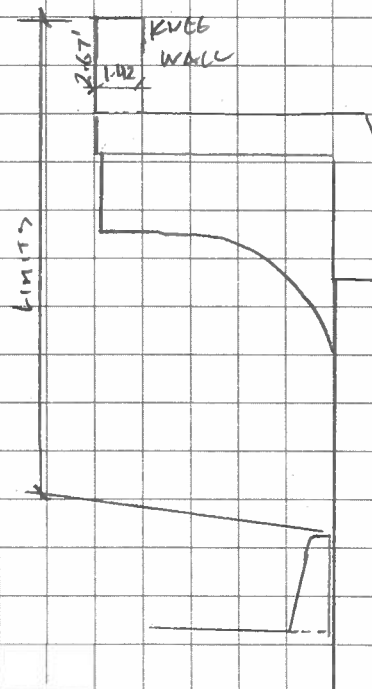
SIDES OF BRACKETS:

$$2 [63.3 + 56 + 42.3 + 47.8 + 4(54.2)] = 852 \text{ SF}$$

$$\text{UNDERSIDE/SIDEWALK} = 1628 \text{ SF}$$

$$11939 \text{ SF}$$

$$\text{TOTAL} = (11939 \text{ SF}) \frac{54}{9 \text{ SF}} = \underline{\underline{1327 \text{ SY}}}$$



ITEM 512 - TYPE 2 WATERPROOFING

$$(2') (4') \frac{54}{9 \text{ SF}} = \underline{\underline{1 \text{ SY}}}$$



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Job Wall 4W2

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ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL

14 FT.

ITEM 516 - 1" PREFORMED EXPANSION JOINT FILLER

↙ END WALL

$$(4') \times (4') \times (2) + (7.25') \times (4) + (3') \times (3.6') = \underline{\underline{72 \text{ SF}}}$$

ITEM 518 - POROUS BACKFILL WITH GEOTEXTILE FABRIC

$$(4') \times (2') \times (314') \frac{\text{CY}}{27 \text{ CY}} = \underline{\underline{93 \text{ CY}}}$$

ITEM 518 - 6" PERFORATED CORRUGATED PLASTIC PIPE

314 FT.

ITEM 518 - 6" NON-PERFORATED CORRUGATED PLASTIC

25 FT.



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ITEM 524 - DRILLED SHAFTS, 60" DIAMETER, ABOVE BEDROCK

79 FT.

ITEM 524 - DRILLED SHAFTS, 96" DIAMETER, ABOVE BEDROCK

TOTAL = 2955 FT.

ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 4

X-SECTIONAL AREA $(18" \times 2") (2) + (60" \times 0.625") = 109.5 \text{ in}^2$

UNIT WEIGHT = $\left(\frac{109.5 \text{ in}^2}{144 \text{ in}^2/\text{ft}^2}\right) (490 \text{ pcf}) = 373 \text{ pcf}$

TOTAL LENGTH = $2955' + (2.25') (4) = 2987 \text{ FT.}$

↑
DRILLED SHAFT
LENGTH

TOTAL = $(373 \text{ pcf} \times 2987') = \underline{1,114,151 \text{ lbs.}}$

ITEM SPECIAL - ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS II

AVERAGE DEPTH = 15 FT.

AVERAGE WIDTH = $(4.2' + 9') \times \frac{1}{2} = 6.6 \text{ FT.}$

VOLUME $(15') (6.6') (113') \left(\frac{\text{CY}}{27 \text{ CF}}\right) = \underline{415 \text{ CY}}$



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ITEM SPECIAL - STRUCTURES: PRECAST FACADE PANELS

TOTAL AREA = 4782 SF

ITEM 607 - FENCE MISC.: WALL MOUNTED TYPE A (WITH VANDAL MESH)

TOTAL LENGTH = 309 LF