STRUCTURE ESTIMATED QUANTITIES

CAST-IN-PLACE/TANGENT DRILLED SHAFT WALL 4W1
SOUTHSIDE 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

GPD GROUP®

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May 31, 2019
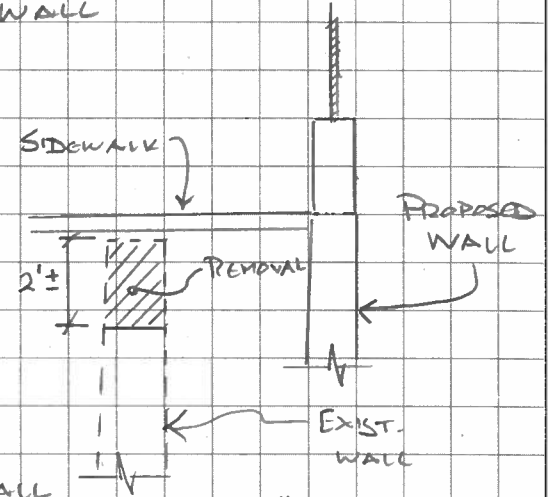
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WALL 4WI QUANTITIES

ITEM 202· PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

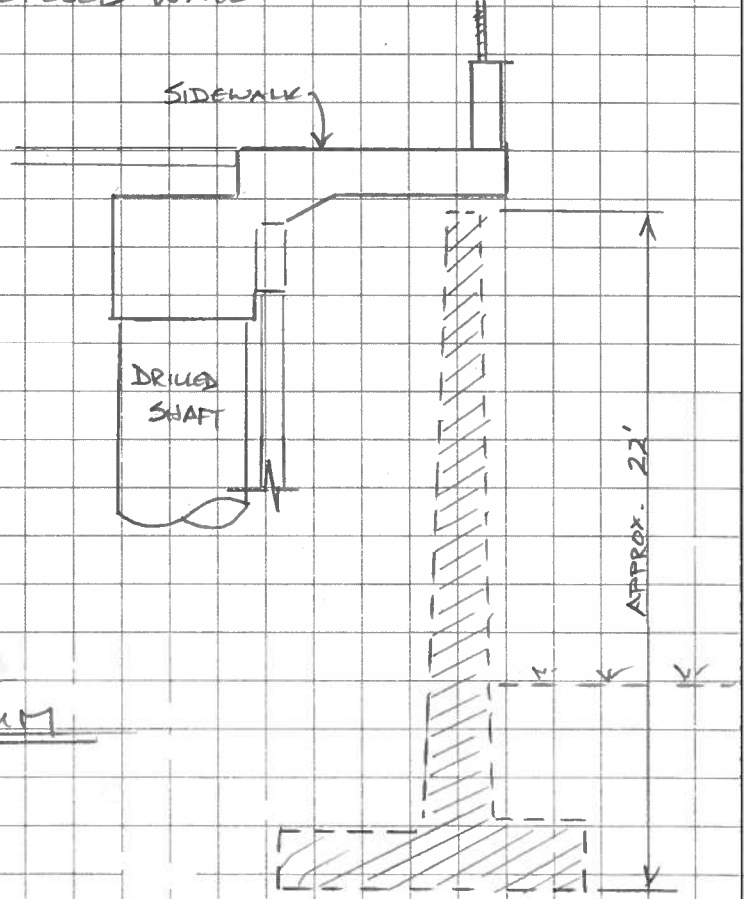PARTIAL WALL REMOVAL BEHIND PROPOSED WALL

APPROX. LENGTH ≈ 184 FT.

∴ AREA = $(2.0')(184') = 368$ SF

FULL WALL REMOVAL IN FRONT OF PROPOSED WALL

APPROX. LENGTH ≈ 127 FT.

∴ AREA = $(22')(127') = 2794$ SF

$$TOTAL = (368 \text{ SF} + 2794 \text{ SF}) \$10^{\underline{00}}/\text{SF}$$

$$= \$31620 \quad USE \quad \$35,000$$

LUMP SUM

Job WALL 4W1
Sheet No. 2 of 9
Calculated by RHC   Date 5-26-19
Checked by DGN   Date 5-31-19

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ITEM 503 - COFFERDAMS AND EXCAVATION BRACING

WOOD LAGGING = $(89 SF)(2) = 178$ SF

PRECAST PANELS = 468 SF

SHEETING BEHIND SHAFTS W/ BRACKETS = $(315 SF)(5) = 1575$ SF

IN FRONT OF EXIST WALL BEHIND PROPOSED WALL:

LENGTH ≈ 184 FT.

$\therefore$ AREA = $(184')(12') = 2208$ SF

HP 14×73 : $[(16.6')(2) + (32.4')(2)]$ 73 plf
= 7154 lbs.

COST:
WOOD LAGGING = $(178 SF)(\$10.00/SF) = \$1780$
PRECAST PANELS = $(468 SF)(\$50.00/SF) = \$23400$
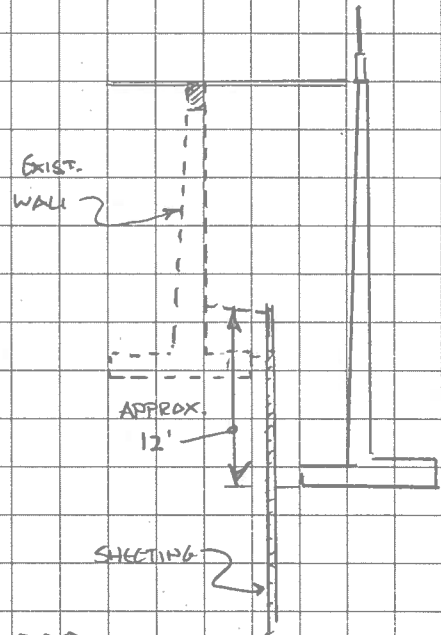SHEETING = $(1575 SF + 2208 SF)(\$12.00) = \$45396$
HP 14×73 = $(7154 lbs.)(\$0.50/lb) = \$3577$
$\$74153$
USE $\$75,000$

LUMP SUM

ITEM 509 - EPOXY COATED REINFORCING STEEL

$620,559$ lbs.

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

KNEE WALL AREA = 3.62 SF

LENGTH = 57.75' + 89.9' + 159.4' = 307.1 ft.

VOLUME = (3.62 SF)(307.1') = 1112 CF $\Rightarrow$ (1112 CF)$\frac{CY}{27 CF}$ = <u>42 CY</u>

ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA RETAINING/WINGWALL NOT INCLUDING
     FOOTING

AVERAGE TOP OF WALL ELEVATION:
(SEE PLAN & ELEVATION SHEETS)

$\left[761.85 + 760.91 + 760.09 + 759.13 + 758.50 + 757.47 + 756.96 + 756.67 + 756.05 \right] \frac{1}{9}$ = 758.63

BOT. WALL ELEVATION: 730.70

$\overbrace{}^{27.93'}$

BOT. WALL
AVERAGE THICKNESS: 1.42' + (758.63 - 730.70)($\frac{1}{12}$) = 3.75 ft.

AVERAGE THICKNESS = (1.42' + 3.75')$\frac{1}{2}$ = 2.59'

LENGTH = 57.66' + 42.49' + 80.49' + 6.56'   187.2 ft.

VOLUME = (2.59')(27.93')(187.2') = 13542 CF $\Rightarrow$ (13542 CF)$\frac{CY}{27 CF}$ = <u>502 CY</u>

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

HEIGHT   LENGTH

(15.63')(2.0')(13.5')$\frac{CY}{27 CY}$ = <u>16 CY</u>   BTWN DRILLED SHAFTS
                                          ㉚ & ㉛

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Job __WALL 4W1__
Sheet No. ___4___ of ___9___
Calculated by ___RHC___ Date __5-27-19__
Checked by ___DGN___ Date __5-31-19__

ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA FOOTING

X-SECTIONAL AREA ① $(3')(15') = 45$ SF
② $(3' \times 6') = 18$ SF

VOLUME $\left[(18 \text{SF})(125') + (45 \text{SF})(57.6') \right] \frac{CY}{27 CF} = \underline{180 \text{ CY}}$

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK, AS PER PLAN

VOLUME:
① $(1.6')(11.33')(126.9') = 2300 \text{ CF}$ ← AVG. LENGTH
② $\left[\frac{1}{2}(2.13)^2 + (1.0')(2.13') + (1.5')(3.3') \right] 124.9 = 1168 \text{ CF}$
③ $(7.5)(1.5')(119.2') = \underline{1341 \text{ CF}}$
4809 CF

TOTAL $= (4809 \text{ CF}) \frac{CY}{27 CF} = \underline{179 \text{ CY}}$

11.33   7.50'
① ② ③
LIMITS SIDEWALK
1.6 AVG.
1.5'
2.13
VARIES 0.7'
TO 5.9'
(AVG. = 3.3')

ITEM 511 - CLASS QC1 CONCRETE, MISC.: SUPPORT BRACKET AND DRILLED SHAFT CAP

5 BRACKET LOCATIONS

VOLUME:
① $(4')(7.7)(4.2')(5) = 647 \text{ CF}$
② $(4')(26.4 \text{SF})(5) = 528 \text{ CF}$
③ $(6.25')(4')(119.2') = 2980 \text{ CF}$
④ $(4')(7.5')(6.1')(3) = 549 \text{ CF}$
  $(6.25)(4')(24.2') = 605 \text{ CF}$ (BTWN SHAFTS ㉚ + ㉛)
⑤ $(6.1')(6.25')(4')(3) = 458 \text{ CF}$
  $(6.25)(5.5')(4')(2) = \underline{275 \text{ CF}}$ (OVER SHAFTS ㉚ + ㉛)
  6042 CF

TOTAL $= (6042 \text{ CF}) \frac{CY}{27 CF} = \underline{224 \text{ CY}}$

4' WIDE BRACKET
① ② ③
④
⑤
4.2
7.7' AVG.
AVG. VALUES
4'

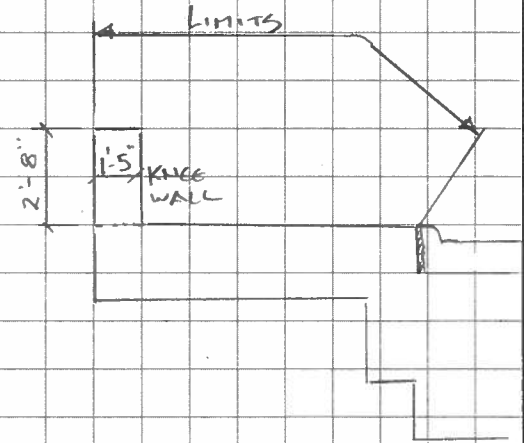ITEM 512 - SEALING CONCRETE SURFACES
    (NON-EPOXY)

KNEE WALL: $(1.42' + 2.67')(307.1') =$ 1256 SF

        TRIANGULAR
        WEDGE OVER
        C.I.P. WALL

SIDEWALK: $(9.92')(127.1') + (3.1')(4.1')(\frac{1}{2}) =$ 1325 SF

        TOTAL $= (1256 SF + 1325 SF)\frac{SY}{9 SF} =$ __287 SY__

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

KNEE WALL: $(2.67')(307.1') =$ 820 SF

        AVG. HEIGHT
C.I.P. WALL: $(22.5')(180.6 + 5.9') =$ 4196 SF

TANGENT SHAFT PORTION:
(INCLUDES FRONT FACE OF BRACKETS)
        AVG HEIGHT
    $(18.3')(117.9') =$ 2158 SF
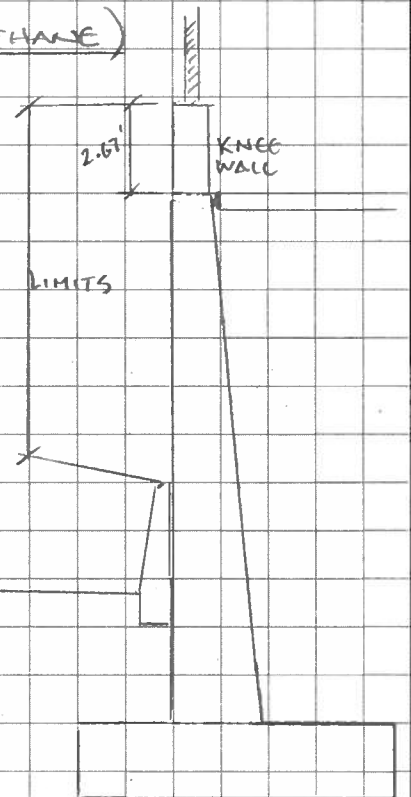
        AVG LENGTH
BRACKETS: $[(4.2')(7.7') + 26.4 SF](2)(5) =$ 587 SF
        $(4.0')(7.7')(5) =$ 154 SF

UNDERSIDE OF SIDEWALK SLAB: 1700 SF

        TOTAL $(820 SF + 4196 SF + 2158 SF$
           $+ 587 SF + 154 SF + 1700 SF)\frac{SY}{9 SF} =$ __1069 SY__

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ITEM 512 - TYPE 2 WATERPROOFING

BEHIND 1" P.E.J.F. EXP. JNTS.

① $(31.2')(2') =$ 62.4 SF

② $(29.39')(2') =$ 58.78 SF

③ $(26.26')(2') =$ 52.52 SF

173.7 SF

$$TOTAL = (173.7 \, SF) \frac{SY}{9SF} = \underline{20 \, SY}$$

ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 1

W30×173 IN EACH BRACKET:

$$13.4' + 14.7' + 16.0' + 17.3' + 18.3 = 79.7 \, ft.$$

CONNECTION PLATES: $(\frac{15"}{12})(\frac{1"}{2})(3.08')(490 \, pcf)(5) = 786 \, lbs.$

DRILLED SHAFT BEAMS: $(18)(60 \, ft.) = 1080 \, ft.$

TOTAL WEIGHT = $(79.7' + 1080') 173 \, plf + 786 \, lbs. = \underline{201414 \, lbs.}$

ITEM 516 - 1" PREFORMED EXPANSION JOINT FILLER

CAST IN-PLACE WALLS:
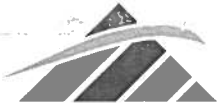
AVERAGE WALL THICKNESS = 2.60 ft.

∴ AREA = $(2.60')(31.2 + 29.39' + 26.26') = 226 \, SF$

AT BEGINING OF WALL:

$$(7.5')(5.5') + (20')(0.92') = 60 \, SF$$

TOTAL   226 SF   60 SF =   286 SF

ITEM 518 - POROUS BACKFILL WITH GEOTEXTILE FABRIC

BEHIND C.I.P. PORTION =

AVG. HEIGHT

$(23' \times 2' \text{THICK})(57.6') \div 5.9') = $ 2650 CF

TANGENT SHAFT SHAFT PORTION

DRILLED SHAFT CAP = $(5.0')(2' \times 119.2') = $ 1192 CF

PANEL FOOTING = $(2.0')(2.5')(117.8') = $ 589 CF

     4431 CF

TOTAL $= (4431 \text{ CF}) \frac{\text{CY}}{27 \text{CF}} = $ 164 CY

ITEM 518 - 6" PERFORATED CORRUGATED PLASTIC PIPE

$57.6' + 119.2' + 117.8' = $ 295 FT.

ITEM 518 - 6" NON-PERF CORRUGATED PLASTIC PIPE

     25 FT.

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

UNDER C.I.P. WALL

$$(30' \text{ LONG })(13 \text{ SHAFTS}) = \underline{390 \text{ FT.}}$$

ITEM 524 - DRILLED SHAFTS, 72" DIAMETER, ABOVE BEDROCK

SHAFT #	LENGTH PER SHAFT	TOTAL LENGTH
14 - 17	65.72	262.88
18	57.52	57.52
19 - 21	65.29	195.87
22	57.11	57.11
23 - 25	64.98	194.94
26	56.84	56.84
27 - 29	64.79	194.37
30	56.68	56.68
31	56.63	56.63
		1132.84 USE 1133 FT.

ITEM SPECIAL - STRUCTURES: PRECAST FACADE PANELS

$$\text{AREA} = \underline{2066 \text{ SF}}$$

ITEM SPECIAL - STRUCTURES: CELLULAR CONCRETE BACKFILL

AVERAGE DEPTH ≅ 18'

AVERAGE WIDTH ≈ 12.5'

$$\text{VOLUME} = (18')(12.5')(121.8')\frac{CY}{27CF} = \underline{1015 \text{ CY}}$$

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

ITEM 516. STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL

23 ft