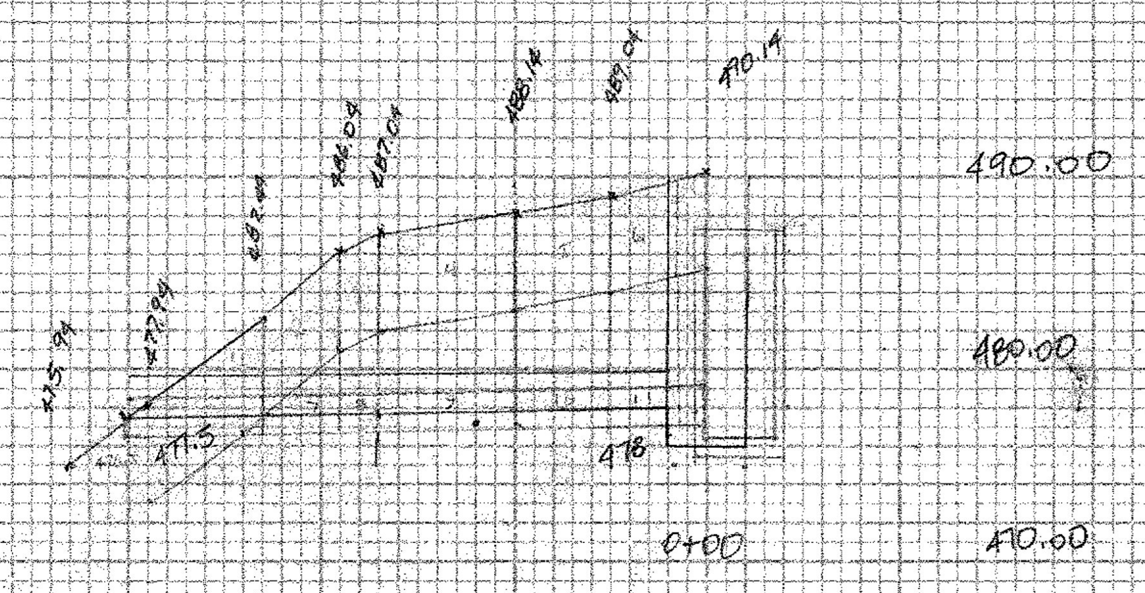
Outside Pipe ∅ 24" = 2.34



Pipe [(5×22)+(5+7)/2](4.34) = 533.35

1# 10.5×4.34 ×1.5 = 710.57

DS-94   24" cpep SL

60+94.24 LT

204.20 TRENCH EARTH FOR PIPE 60+94.24 LT 61+34

Exc. < 5' 3.5 8 7.34 121.52

- AREA 1 = ((1'+6')/2) + ((7'+2')/2) * (~~4.1'~~) = 114.8 ft³ 113.97
- AREA 2 = ((5'+5.1')/2) + ((5.3'+5.1')/2) * ~~4.1'~~ = 107.67 ft³ 4.34
- AREA 3 = 5' * 2.1' * ~~4.1'~~ = 43.05 ft³ 45.57
- AREA 4 = 7' * 4.9' * ~~4.1'~~ = ~~140.63 ft³~~ 148.86
- AREA 5 = 5' * ((5'+5.1')/2) * 4.1' = ~~103.51 ft³~~ 107.58
- AREA 6 = 3.5' * 4.9' * ~~4.1'~~ = ~~70.31 ft³~~ 74.43

TOTAL = 580 ft³

~~T = 617.9~~

- 6" UNDERCUT FOR GRANULAR BACKFILL
0.5' * (7' + ~~5'~~) * ~~4.1~~ 4.34 = ~~12.71 ft³~~ 15.19

TOTAL EXC. < 5' = ~~592.71 ft³~~ ~~627.63~~ 568.54

533.35

Exc. > 5'
- AREA 7 = [((1'+4.1')/2) + ((4'+5.2')/2) * 4.1'] 1.5 = ~~72.19 ft³~~ 76.26
- AREA 8 = [((2'+3')/2) + ((4'+5')/2) * 4.1'] 1.5 = ~~59.30 ft³~~ 62.78
- AREA 9 = [((7.3'+7.4')/2) + ((5.1'+6')/2) * 4.1'] 1.5 = ~~249.17 ft³~~ ~~263.25~~
- AREA 10 = [((6'+7')/2) * ((...)/2) * 4.1'] 1.5 = ~~195.88 ft³~~ ~~207.34~~
- AREA 11 = [((7'+7.7')/2) * ((3.8'+3.5')/2) * 4.1'] 1.5 = ~~164.95 ft³~~ = 174.64

TOTAL = ~~741.68 ft³~~ 785.27

- 6" UNDERCUT FOR GRANULAR BACKFILL
0.5' * 22' * 4.1' = ~~45.1 ft³~~
↳ × 1.5 = ~~67.65~~
71.61

TOTAL EXC. > 5' = ~~809.33 ft³~~ ~~856.68~~ 782.18

710.57

OK

204.20 TRENCH EARTH FOR STRUCTURE

EXC. < 5'
π(3.43')² * 5' = 184.80 ft³

EXC. > 5'
[π(3.43')² * 9.8'] 1.5 = 543.32 ft³

TOTAL TRENCH EXC. = 184.80 ft³ + 543.32 ft³ + ~~592.71 ft³~~ ~~627.63~~ 568.54 + ~~809.33 ft³~~ ~~856.68~~ 782.18
↳ = ~~2130.16 ft³~~ 2078.84 / 27 = ~~78.89 CY~~ ~~81.44~~ CY 76.99 CY

- 204.30 GRANULAR BACKFILL
= ~~12.71 ft³~~ + 45.1 ft³ = ~~57.81 ft³~~ 61.1 / 27 = ~~2.14 CY~~ 2.28
13.73 + 47.74

Ha ½ way up pipe also 163.03
1.1' * 32.5 * 4.1' = 146.58 ft³ 4.39 = ~~84.81 ft³~~
- ½(π(1.17)²) * 32.5 = ~~61.77 ft³~~ = 75.18 / 27 = 3.53
69.85

TOTAL BACKFILL = ~~5.32 CY~~
5.81 CY

(32.5 × 4.34 × 0.5)/27 = 2.61 CY

3.53 [(32.5 × 1.17 × 4.34) − (π × 1.17²/2)(32.5)] × 1/27 = 3.52
6.11 2.28

Σ = 6.13 CY

Cp# 1/24/08

Cp# 1/25/08

Cp# 1/25/08

Cp# 1/24/08

TRENCH EARTH FOR RELAYING PIPE (LAST 20')
AT ORIGINAL DESIGN INLET = 477.92
OUTLET = 477.49

<5 5 × 20 × 4.1 = 410
>5 [(3.5×4)/2 + (4×2) + (5×7)] × 4.1 × 1.5 = 307.5

717.5/27 = 26.57 cy

CGB 02/09/10

RED 1/10/11

TOTAL TRENCH EARTH FOR DS94

NEW PIPE & NEW CB VOL = 76.99 CY
EXPLORATORY TO LOCATE SEWER PIPE VOL = 10 CY
TEMP EXC FOR NEW CB VOL = 19.11 CY
RELAYING OF LAST 20' PIPE VOL = 26.57 CY

Σ = 132.67 CY

CGB 02/09/10
RED 1/10/11

SHEET 42