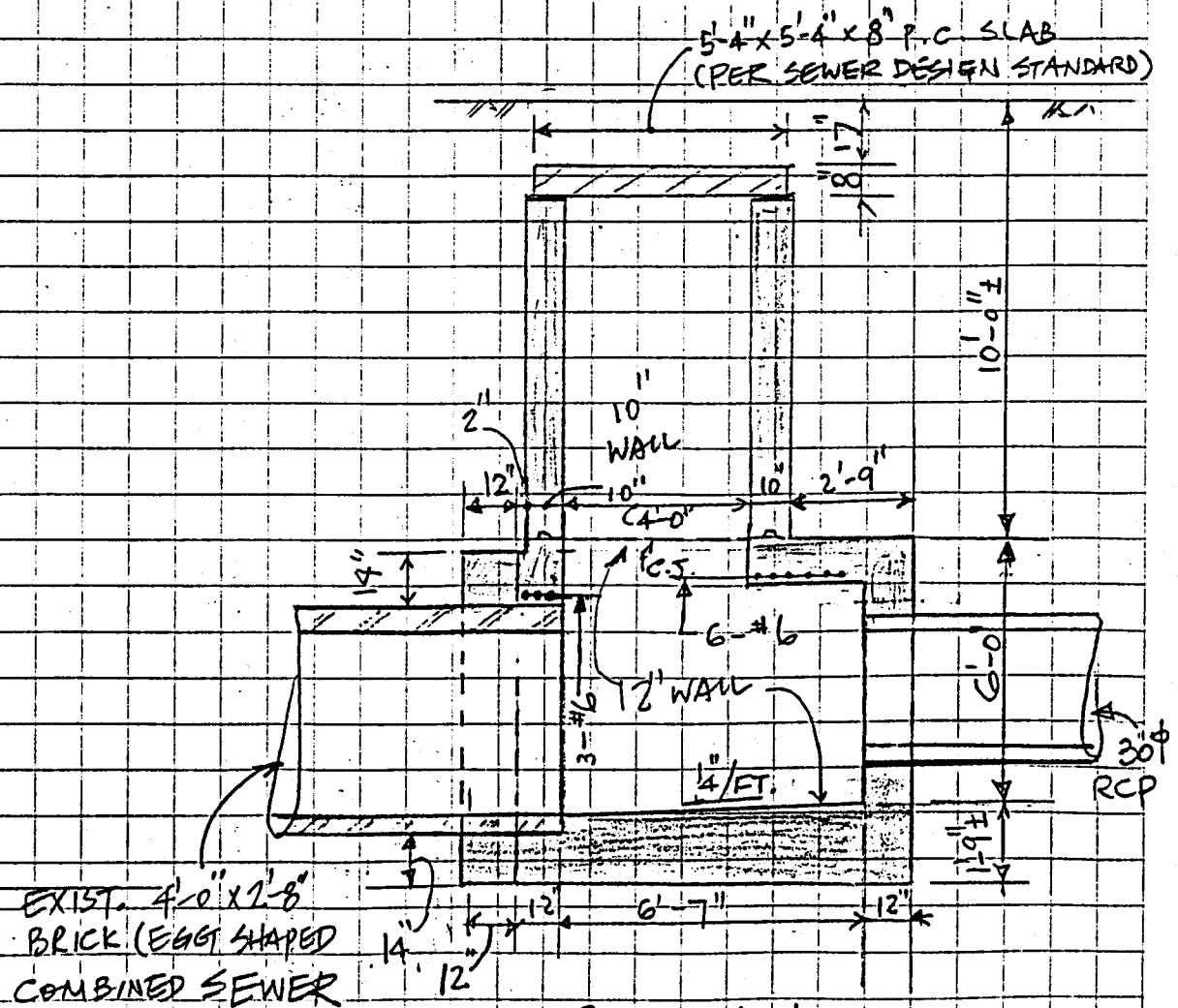
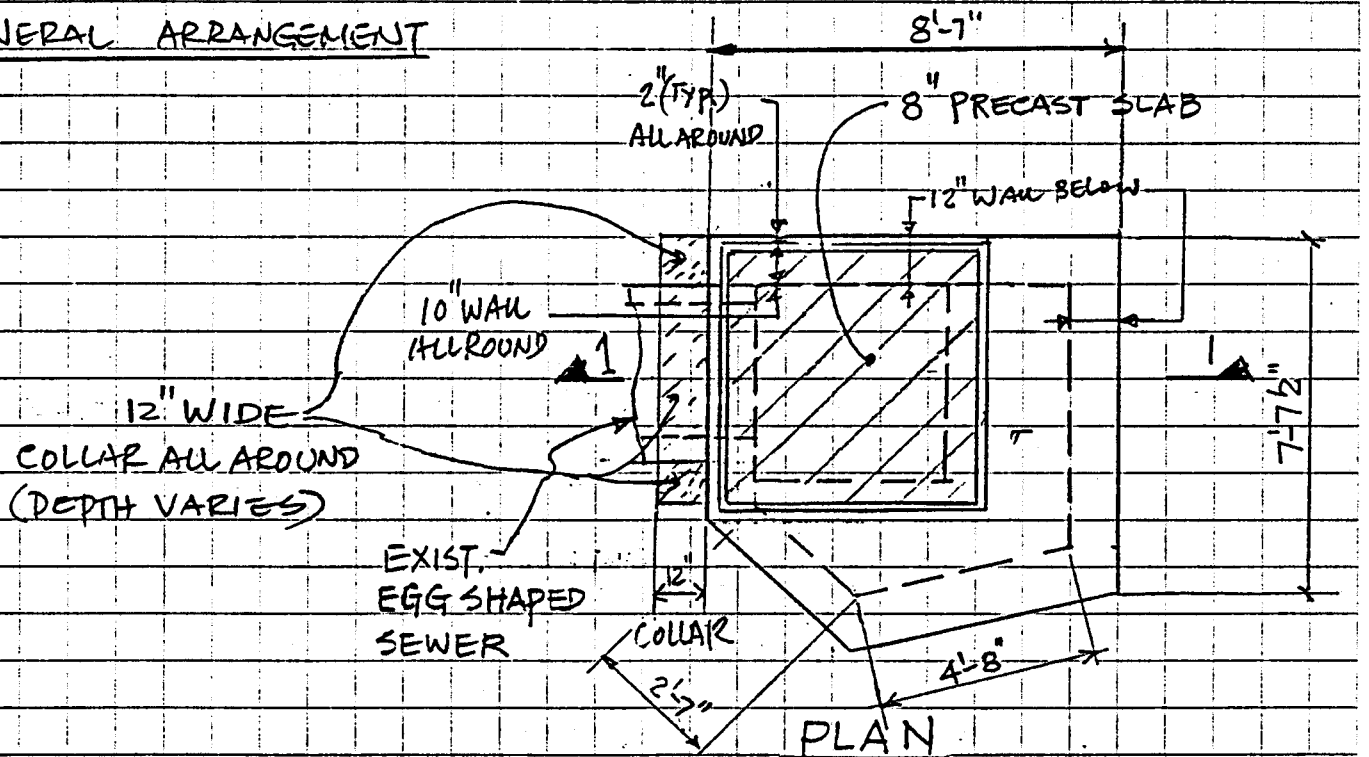


GENERAL ARRANGEMENT

STV/SEELYE STEVENSON & KNECHT.

CONSULTING ENGINEERS

 JOB ANTRAK-NORTH ACCESS TUNNEL NOTES BY C. LEUNG DATE 4/9/85 PAGE NO. 2
SEWER CHAMBER CHECKED BY _____ DATE _____
LOWER WALL DESIGN (12" THICK)

Data Max depth of Wall 16'±
 L.L. SURCHARGE 1500 PSF
 K_a (Pressure at Rest) = 0.5
 Water table at 10'± below GRADE

DESIGN Wall Span VERTICALLY (6'-0"). PROVIDE ADD'L BARS
 USE LATERAL PRESSURE at 14' below grade for design

$$1) \text{ Earth Pressure} = 10 \times 12.5 \times 0.5 + (14-10) \times (12.5-6.25) \times 0.5 = 750 \text{ PSF}$$

$$2) \text{ Water Pressure } (14-10) \times 6.25 = 250$$

$$3) \text{ Surcharge pressure} = 1500 \times 0.5 = 750$$

$$1,750 \text{ PSF}$$

$$BM = \pm \frac{1}{10} \times 1,750 \times 6.0^2 = 6,300 \text{ LB/FT.} = 6.3 \text{ K/FT.}$$

$$As = \frac{6.3 \times 12}{20 \times 85 \times (12-2.5)} = 0.468 \text{ in}^2/\text{FT.}$$

USE #5@8" (0.47) E.W.
 E.F.

No. REINF REQ'D FOR 10" WALL

8" PRECAST CONC. ROOF PER "SEWER DESIGN STANDARDS"
 P.16.

STV/SEELYE STEVENSON BLUE & KNECHT.

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JOB ANTRAK - NORTH ACCESS TUNNEL

NOTES BY C. LEUNZ

DATE 4/9/85

PAGE NO. 3

SEWER CHAMBER

CHECKED BY

DATE

DESIGN OF INVERT MIN THICKNESS 14" at END. (Span 7.58' ± 6.63')

Load From Roof (L.L.)

1500 PST.

Earth + Cover

290

$$\text{WALLS.} = \frac{150 \#}{12"} \times 16' H (7.58 + 6.62) \times 2$$

1040

$$(8.58 \times 7.62)$$

2,830 PSF.

AREA OF INVERT

$$\text{Max. B.M.} = \frac{1}{2} \times 2.83 \times 7.58^2 = 20.32 \text{ K.}$$

$$A_s = \frac{20.32 \times 12}{20 \times .85 (14 - 2.5)} = 1.247 \text{ in}^2/\text{FT.}$$

USE #7 @ 6" (TOP) EW. (1.2)
#6 @ 12" (Btm) EW.

Check SHEAR

$$V = 2,830 \times \frac{1}{2} \times 6.58 \text{ (clear span)} = 9310 \#$$

$$V \text{ at 'd' from supp.} = 9310 - 1' \times 2830 = 6480 \#/\text{FT.}$$

$$V_c = \frac{6480}{12 \times (14 - 2.5)} = 47 \text{ psi} < 65 \text{ psi OK}$$

Check Bond

$$u = \frac{V}{\sum o_j d} = \frac{9310}{(2 \times 2.75) \times .85 \times 11.5} = 173 \text{ psi} < \frac{3.4 \sqrt{f_c}}{D} = 212 \text{ psi. OK}$$