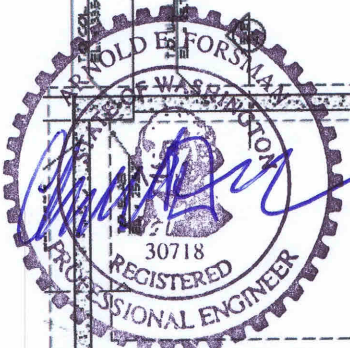
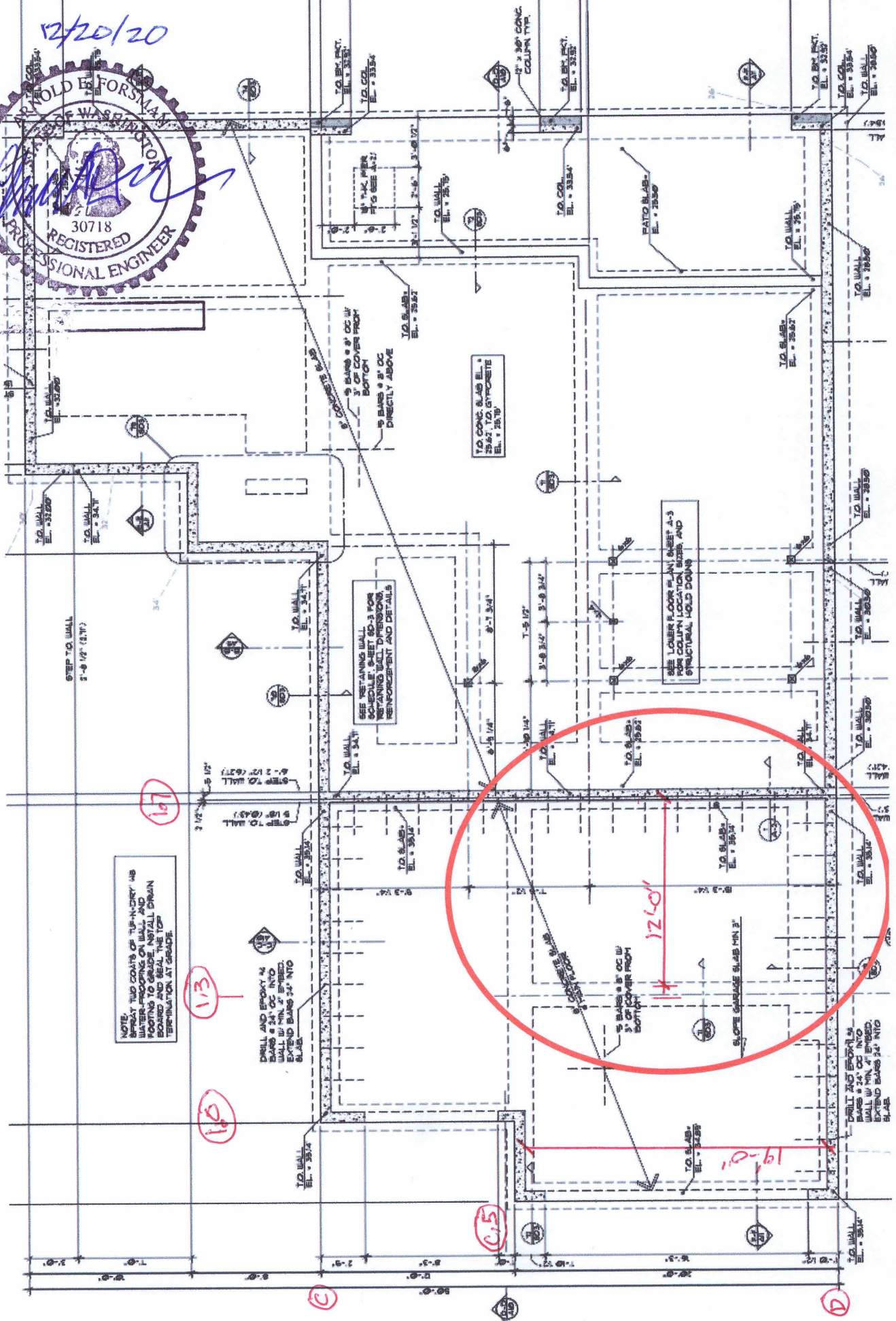


12/20/20



1/8" = 1'-0"



NOTE:
BREATHE TWO COATS OF TYP-HENRY 48
WATER TO GRADE. INSTALL DRAIN
BOARD AND SEAL THE TOP
TERMINATION AT GRADE.

SEE RETAINING WALL
SCHEDULE SHEET 80-3 FOR
RETAINING WALL DIMENSIONS,
REINFORCEMENT AND DETAILS

SEE LOWER FLOOR PLAN SHEET 4-3
FOR COLUMN LOCATION NUMBER AND
STRUCTURAL HOLD DOWNS

107

113

116

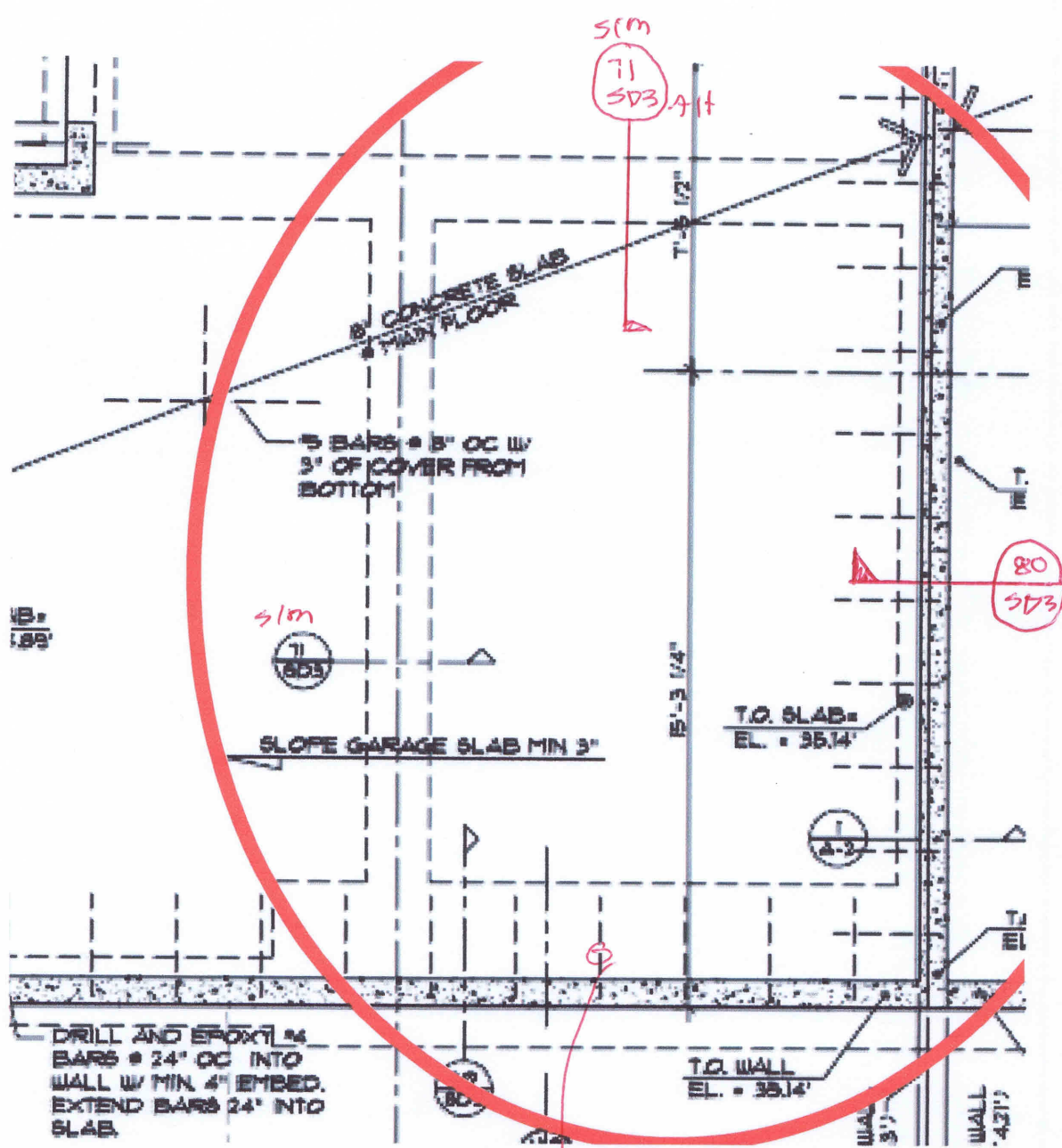
115

12'-0"

10'-6"

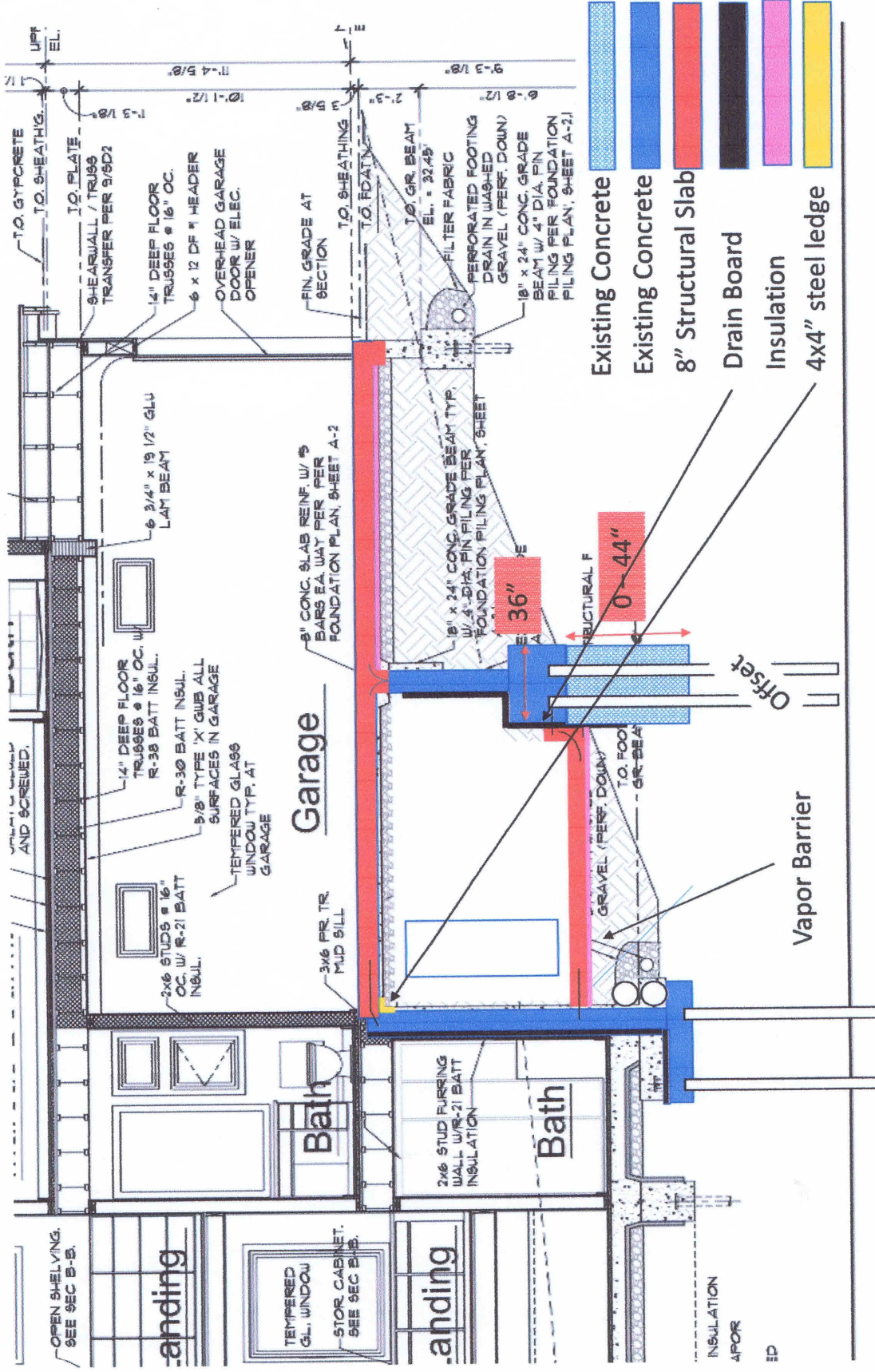
C

D



#4 @ 24" o.c. min.
 either bent out of
 wall into slab or
 epoxy embed 4" min.

1/4" = 1'-0"



- Existing Concrete
- Existing Concrete
- 8" Structural Slab
- Drain Board
- Insulation
- 4x4" steel ledge

Vapor Barrier

Offset

Garage

Bath

Bath

anding

anding

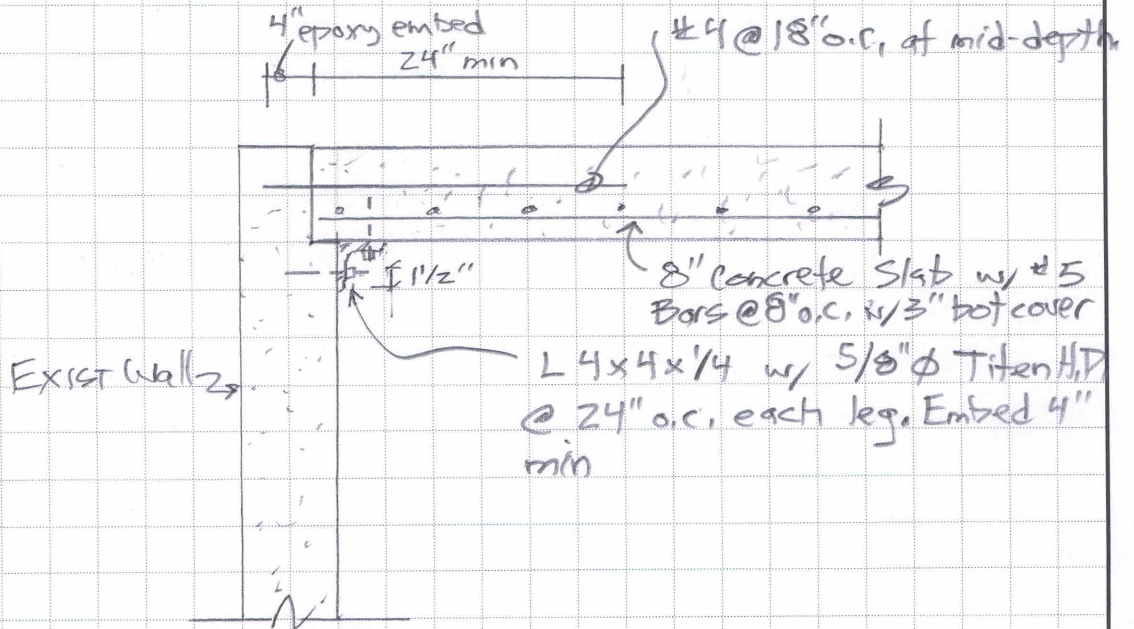
OPEN SHELVING. SEE SEC B-B.

TEMPERED GL. WINDOW. -STOR. CABINET. SEE SEC B-B.

INSULATION 4POR EP

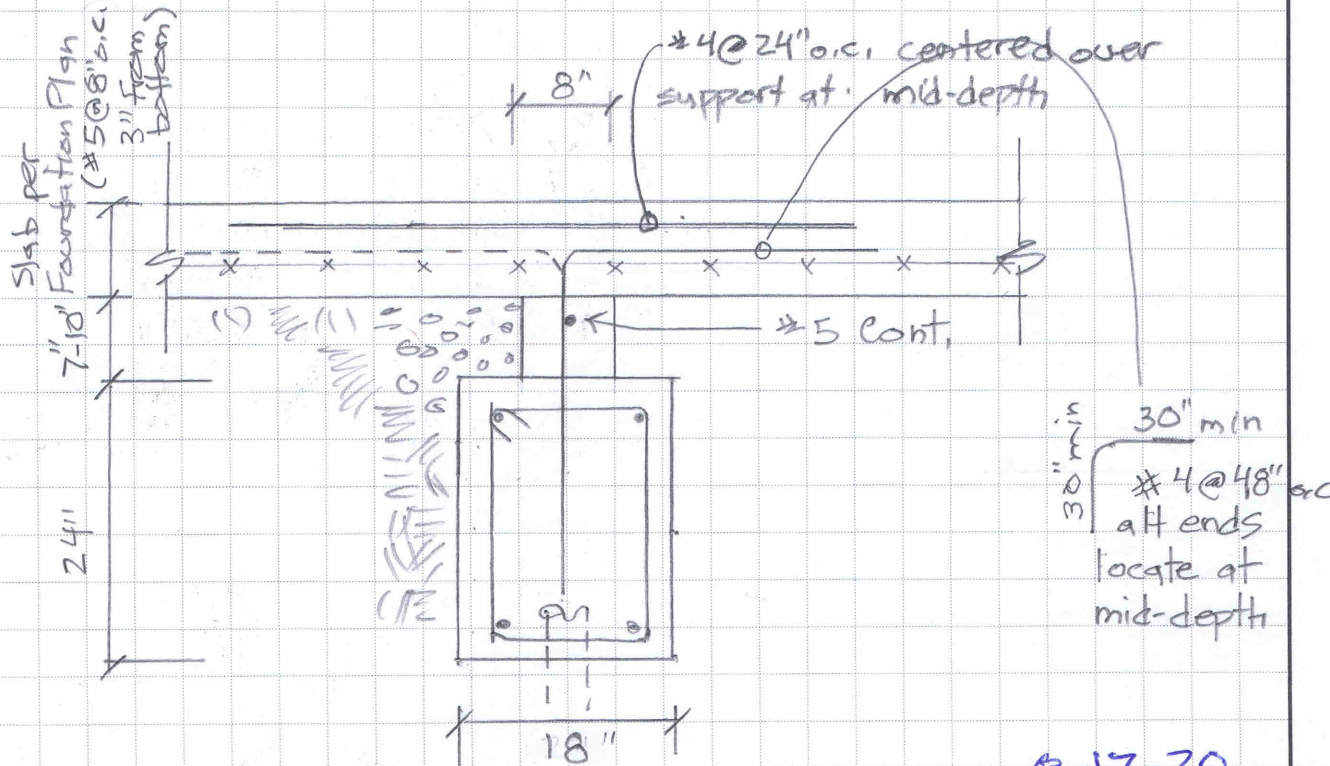
FORSMAN ENGINEERING
30014 2nd Court South
Federal Way, Washington 98003
253.815.9182
forsmanengineering@comcast.net

JOB 18062 Valentine
SHEET NO. GRV 5 OF _____
CALCULATED BY AEF DATE 12-20-20
CHECKED BY _____ DATE _____
SCALE 3/4"

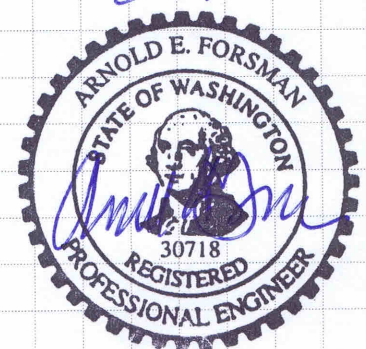


80
SD3

Alternate to detail 71/SD3



8-17-20



Sheet 1 of 1

Garage floor over cellar

reference original calc sheet pages 56-57, 59.

load to support walls (gridlines 1,3 & 1,7) from slab over cellar

condition #1

$$W_{ult} = 228 (12/2) = 1368 \text{ plf}$$

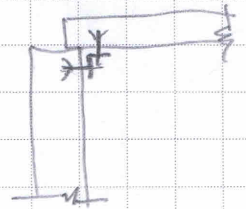
condition #2

$$1.4 (100 \text{ psf}) (12/2) + 1.7 (3000/4) = 1875 \text{ plf}$$

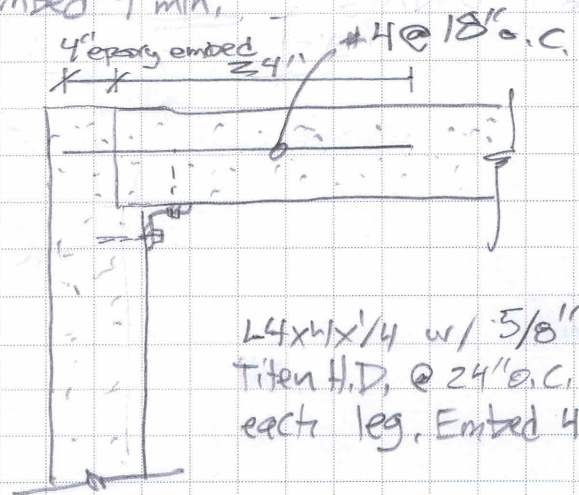
design for cond #2

for L4x4x1/4 using 5/8" ϕ Titen H.D.
 capacity = 10,000*

Use of angle is conservative since slab will bear on wall 2 1/2", so total bearing = 2 1/2" + 4" = 6 1/2" slab bearing.



$10,000 / 1875 \text{ #/ft} = 5.3'$, cons.
 bolt L4x4x1/4 w/ 5/8" ϕ Titen H.D.
 @ 24" o.c., embed 4" min.



L4x4x1/4 w/ 5/8" ϕ
 Titen H.D. @ 24" o.c.
 each leg, Embed 4" min.

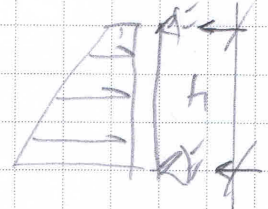
14057 from
 19032 w/z

Garage Fill / Cellar

check wall as vertical supported

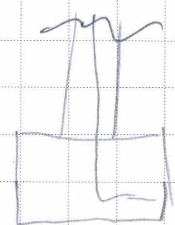
$$h = 8'_{max}$$

for vehicle surcharge design w/
 $h + z' = 8' + 2' = 10'$



For # 6 @ 12" o.c.

since structural fill F.F.P. = 35 pcf



$$\begin{aligned} M_{max} &= .1283 W L^2 \\ &= .1283 (45)(10)^2 / 2 \\ &= 2,89 K' \end{aligned}$$

$$\begin{aligned} M_{mult} &= 1.7 \times 2,89 K' \\ &= 4,91 K' \end{aligned}$$

Design wall as supported by slab end elevated floor

See attached for #6 @ 12" o.c. - G.F. $6,07 K' > 4,91 K'$

⇒ existing #6 @ 12" o.c. centered o.k.

$$R_1 = 45(10)^2 / 2 \times 1/3 = 750 \# / ft$$

$$R_2 = 2 \times 750 \# = 1500 \# / ft.$$

Load from supported floors at grade slabs to transfer load or less than what opposite wall originally designed, so sufficient.

REINFORCED CONCRETE BEAM (ACI 318)

Beam Section

b 12.000 in
h 8.000 in
cover 3.625 in
d 3.500 in

Bar # 6
No. Bars 1
As 0.44 in²
As min 0.14 in²
As max 0.67 in²

Tie # 4
No. Bars 1
Spa 12.000 in
Spa max 1.750 in
Av 0.20 in²
Av min 0.12 in²

Material

f'c 3,000 psi
Wc 155 pcf
Ec 3,488 ksi

fy 60,000 psi
Es 29,000 ksi

Analysis

phi shear 0.85
phi flex 0.90
Beta 1 0.85

n 8.000
rho 0.010
k 0.334
j 0.889

Ag 42 in²
Ig 43 in⁴

Capacity

phi Vc 3.911 k
phi Vs 3.500 k
phi Vn 7.411 k

phi Mn 6.073 k-ft

Serviceability

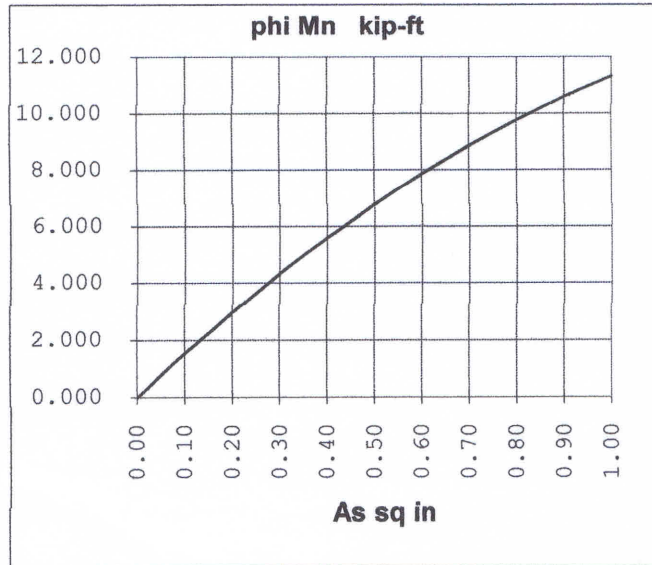
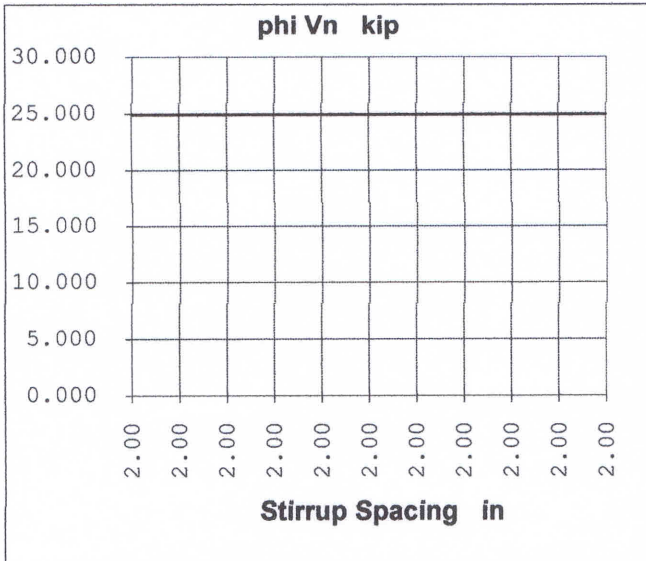
M min 1.900 k-ft
fc min 1,045 psi
fs min 16,661 psi

M max 2.750 k-ft
fc max 1,512 psi
fs max 24,114 psi

fr 7,453 psi
fr allow 15,742 psi

Mcr 4.382 k-ft

dc 2.000 in
A 48.000 in²
Z 110.415 k/in



Connection of gridlines (C) or (D), since slab designed
is one way slab, is for slab/wall continuity.
For connection check $3000\#/2' \text{ width} \times 2' = 950\#/1'$
at wall or $1.7 \times 750\# = 1275\#$

#4 bar in stair G.F. $(20)(40).4 = 3.2\#/bar. @ 24" o.c.$
 $1600\# > 1275\#$ ok.

Use #4 @ 24" o.c. min