STRUCTURAL ENGINEERING CALCULATIONS

FOR

LA FUENTE MEXICAN RESTAURANT
899 SOUTHWEST LEMANS LANE
LEE'S SUMMIT, MISSOURI 64082

PREPARED BY

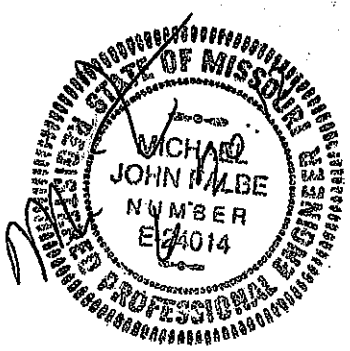
MICHAEL J. FALBE, P.E.

OF

BOB D. CAMPBELL AND COMPANY, INC.
STRUCTURAL ENGINEERS
4338 BELLEVIEW
KANSAS CITY, MISSOURI 64111
(816) 531-4144

FOR

K.C. TENT & AWNING
1819 HOLMES
KANSAS CITY, MO 64108-1740
(816) 472-8368



JUNE 20, 2012

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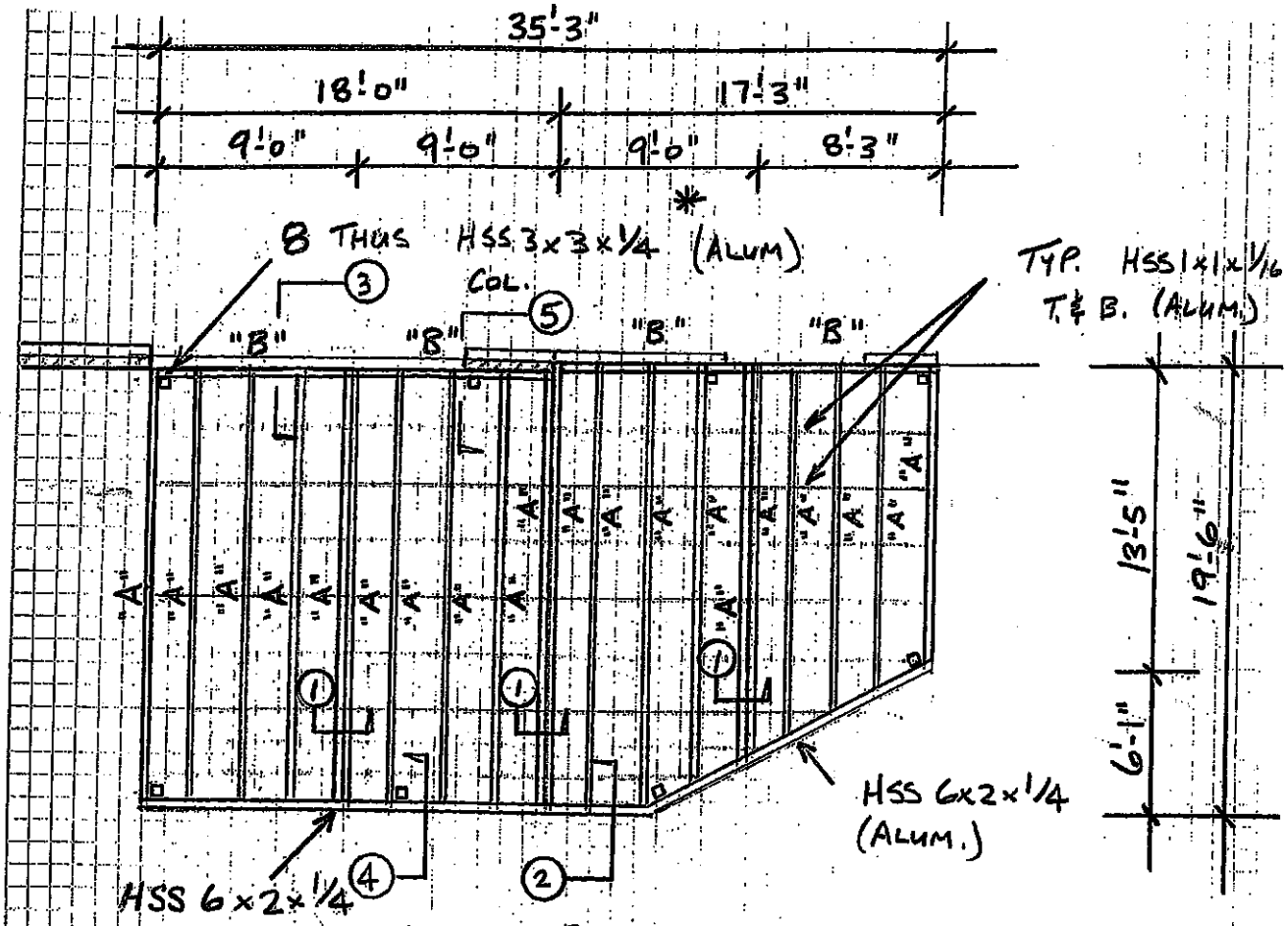
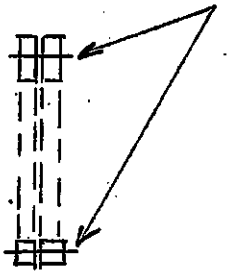


PLAN - ROOF LAYOUT

"A" - ROOF TRUSSES (EQUALLY SPACED)

"B" - TRUSS GIRDER



SECT. (1)

* NOTE: @ COLS.
PROVIDE 1/2"x8" x 8"
BASE PL W/ 4-5/8" ϕ
x 8" LG. EXP. BOLTS
(STAINLESS STEEL)
ADJ. TO BLDG.; EXP. BOLT
TO SLAB, AT OUTBOARD COLS.,

#10 3/4" THREADED ROD W/ HEX NUT & WASHER & SET IN AC100 GOLD QUIK-SHOT EPOXY.

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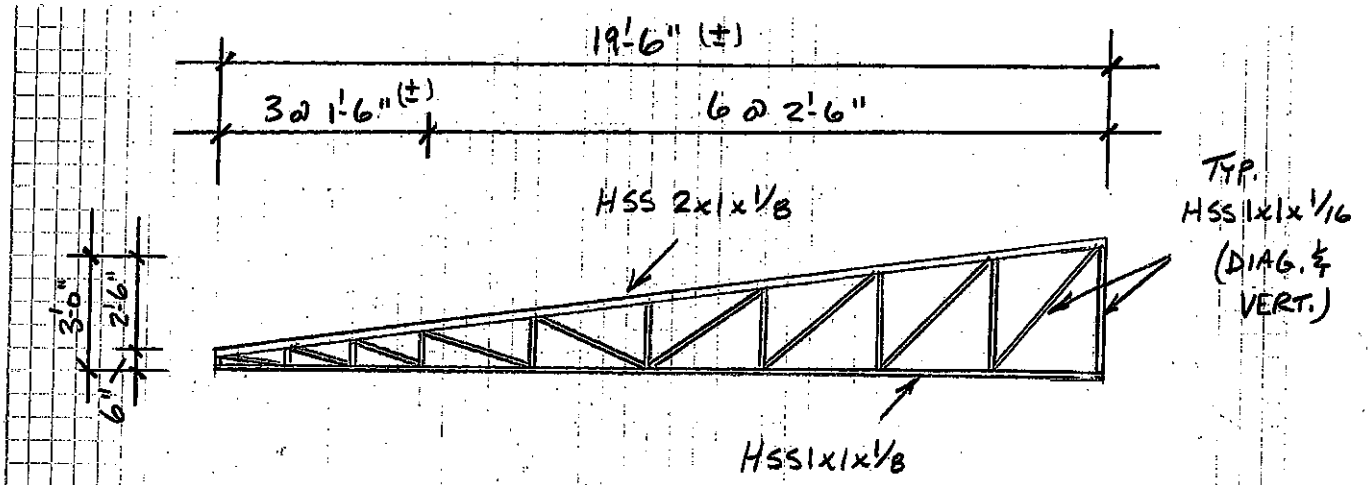
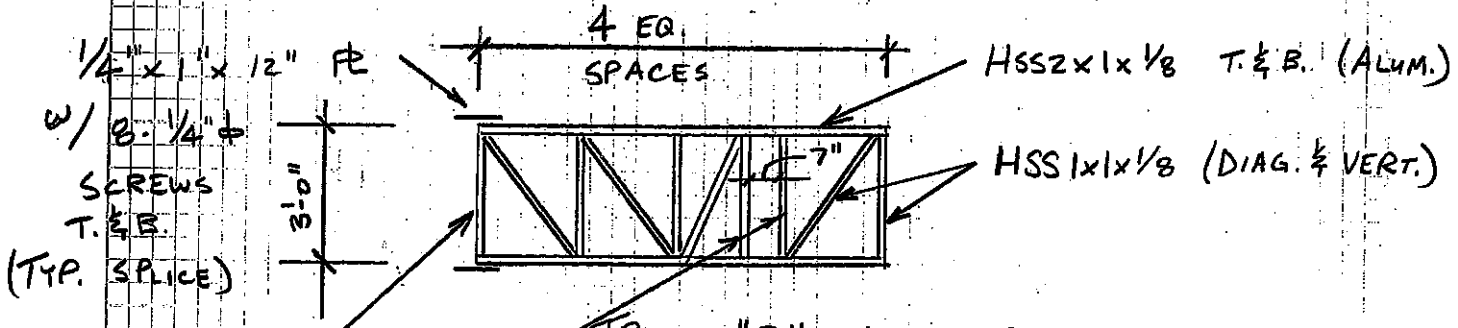


TRUSS "A" ELEVATION 20 THUS



TRUSS "B" ELEVATION

4 THUS

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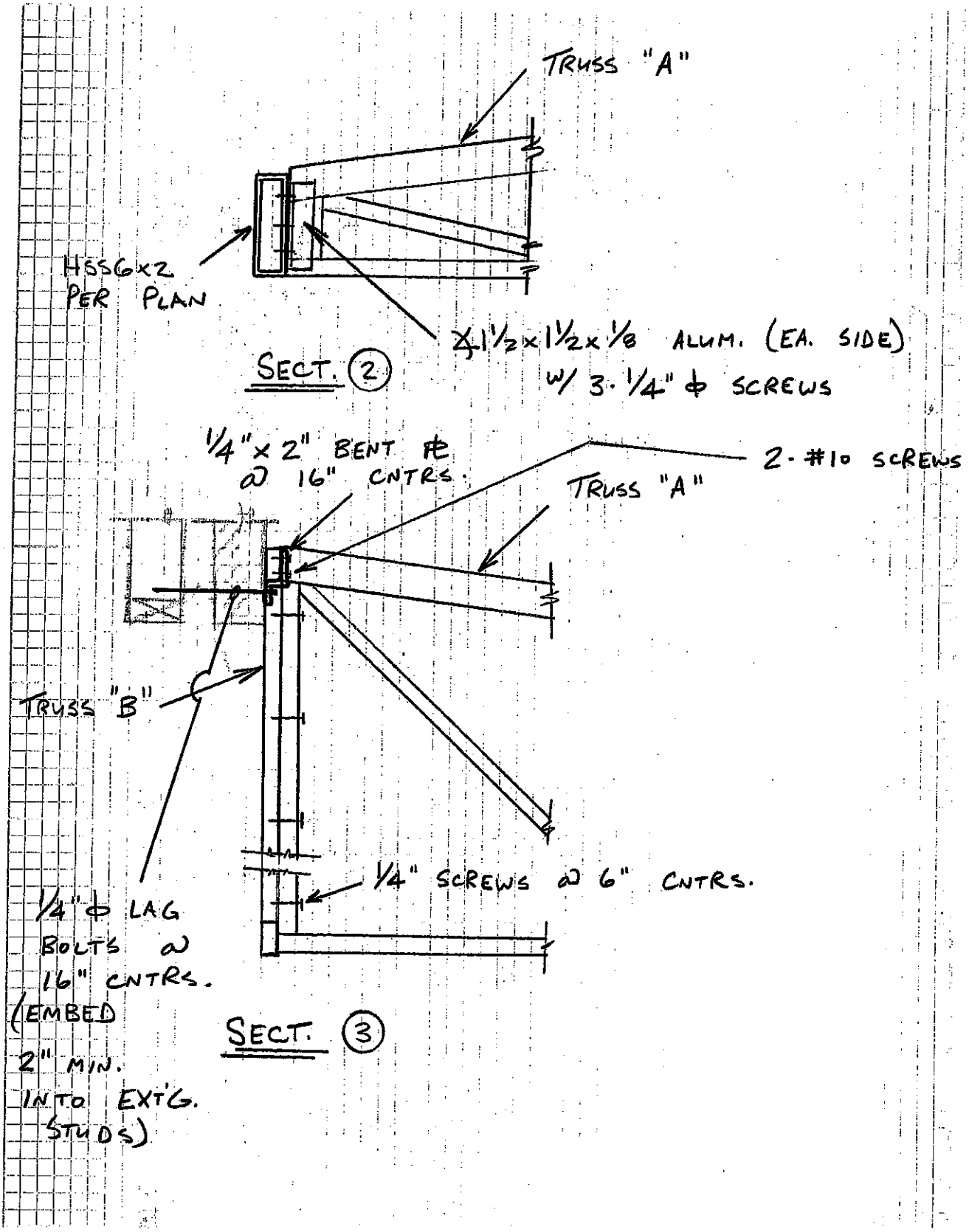

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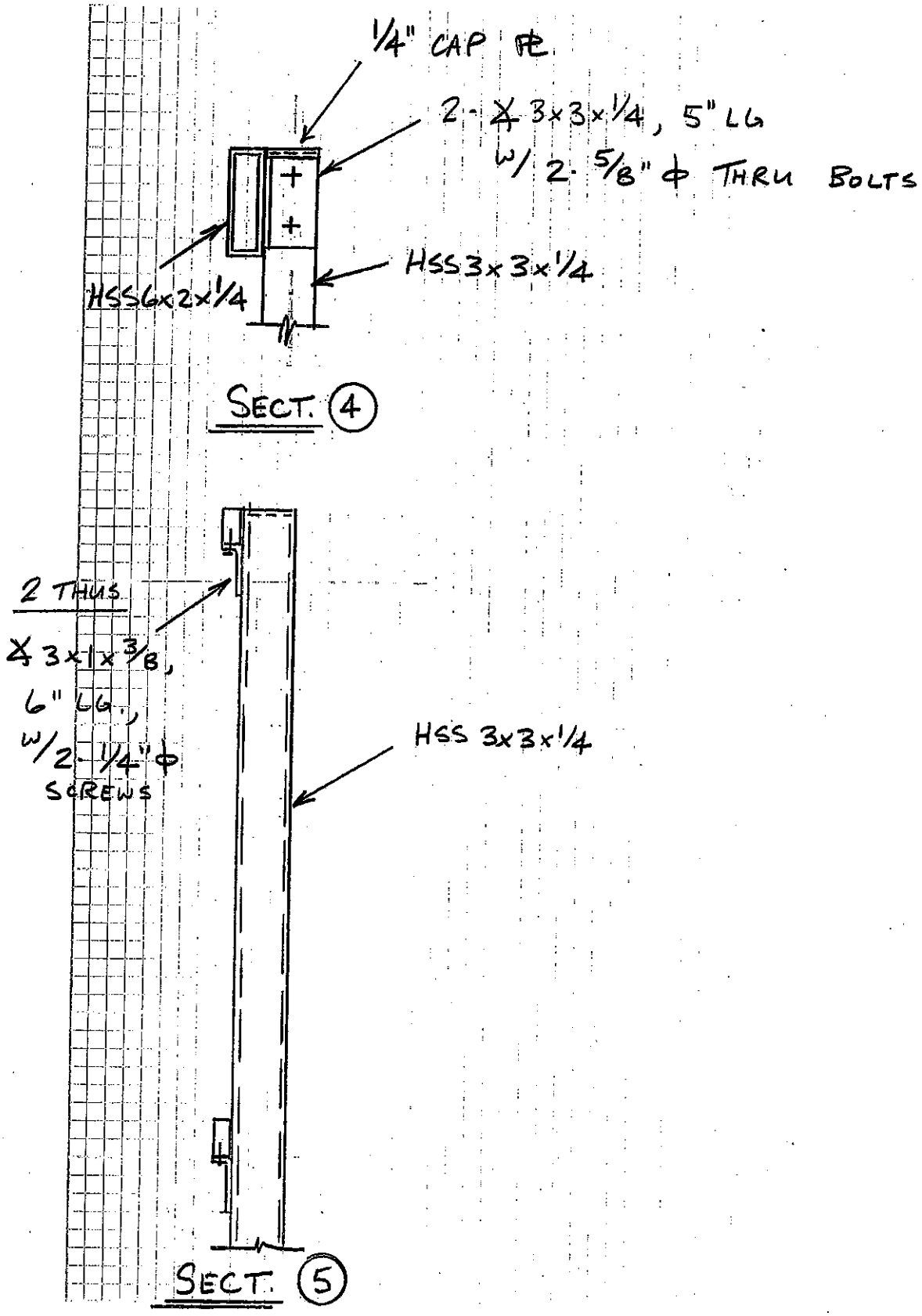

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ROOF TRUSS DESIGN

20 PSF (LL)
2 PSF (DL)
22 PSF (TL)

SPACE @ 2'3" CNTRS.

$$W_{TL} = 22\,(2.25)\,\frac{(19)^2}{8} = 2234\ \#\cdot ft$$

1" ⊕ x 1/8" ALUM. BOTTOM CHORD

$$P_{CHORD} = \frac{2234\,(12)}{(19.5)} = 1375\ \#$$

$$A_x = .4375\ IN^2$$

$$f_x = \frac{1375}{.4375} = 3142\ PSI < 9600\ PSI \quad \underline{OK}$$

DIAG.

$$P_{DIAG\ MAX} = 22\,(2.25)\left(\frac{19}{2}\right)\frac{\sqrt{(18)^2+(6)^2}}{6}$$

$$= 1487\ \#$$

1" ⊕ x 1/16" ALUM DIAG.

$$f_x = \frac{1487}{.2344} = 6344\ PSI < 9600\ PSI \quad \underline{OK}$$

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ROOF BM.

HSS 6 x 2 x 1/4 - 12' SPAN

$$W = 9.75' (22\ PSF) = 214.5\ \#/ft$$

$$M = \frac{214.5 (12)^2}{8} = 3861\ \#\text{-}ft$$

$$f_b = \frac{3861 (12)}{4.60} = 10,072\ PSI < 11,300\ PSI$$ OK

TRUSS GIRDER 2"x1"x1/8" CHORDS

$M = 3861\ \#\text{-}ft$

$$\Delta P = \frac{3861 (12)}{34} = 1363\ \#$$

$$f_t = \frac{1363}{.687} = 1984\ PSI$$ OK

$$V_{MAX} = 214.5 (6) = 1287\ \#$$

$$P_{DIAG} = \frac{\sqrt{(34)^2 + (27)^2}}{27} (1287)$$

$$= 2070\ \#$$

1"x1"x1/8" DIAG.

$$f_t = \frac{2070}{.437} = 4736\ PSI < 9600\ PSI$$ OK

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COLUMN

$P_{MAX.} = 214.5\,(12) = 2574\#$

USE HSS 3x3x 1/4 COL.

$A_x = 2.75\ in^2$

$f_c = 936\ PSI$ OK

FTG. 1'-6" ϕ FTG.

$f_{BRG} = \frac{2574}{\pi(.75)^2} = 1457\ PSI < 1500\ PSI$

OK