DATE SUBMITTED: 2-2-90

PERMIT # _____

FEE 15.00

SIGN PERMIT

GRAND JUNCTION PLANNING DEPARTMENT

BUSINESS NAME: Peach Tree Inn

BUSINESS ADDRESS: 1600 North Ave

STREET FRONTAGE: FRONT _____ FT. SIDE _____ FT.

BUILDING FRONTAGE: FRONT _____ FT. SIDE _____ FT.

TRAFFIC LANE: FRONT _____ FT. SIDE _____ FT.

HEIGHT OF SIGN: 8'5" FT. CLEARANCE TO GRADE: 27 FT.

AREA OF SIGN: 197 76 SQ. FT. AREA OF EXISTING SIGNS: _____ SQ. FT.

TOTAL ALLOWED AREA: FRONT 270 SQ. FT. SIDE _____ SQ. FT.

TYPE OF SIGN

- ☐ ON PREMISE
- ☐ OFF PREMISE
- ☑ FREE STANDING
- ☐ PROJECTING
- ☐ ROOF
- ☐ FLUSH WALL
- ☑ ILLUMINATED
- ☐ OTHER

COMMENTS Free-standing sign must must wind-load capacity

*SKETCH

*Include: Streets, Property Lines, Proposed Sign Location.

TAX SCH # 2945-123-23-006

PROPERTY OWNER: Jann Ertl

Barbara K Pelton
Signature

ADDRESS: 1600 North Ave GJ

CONTRACTOR: Reed Construction / GJ Sign - Neon

ADDRESS: 2915 Hall Ave

PHONE: 245/8950

APPROVED BY: Linda Wetzel

DATE APPROVED: 2-8-90

Contractor #'s
Reed - 2900109 / GJ - 2890292
Wesley EL - #541

☐ FINAL PERMIT

☒ WILL REQUIRE SEPARATE PERMIT

Grand Junction Sign

Business Name: Peach Tree

Sign Location: _____

Type of Sign: Free Standing

*Sign Permit Needed ✓
*Date Obtained _____

Dimensions: _____ /Area _____

Illuminated: ✓ Type of Illumination: Interior _____ Exterior ✓

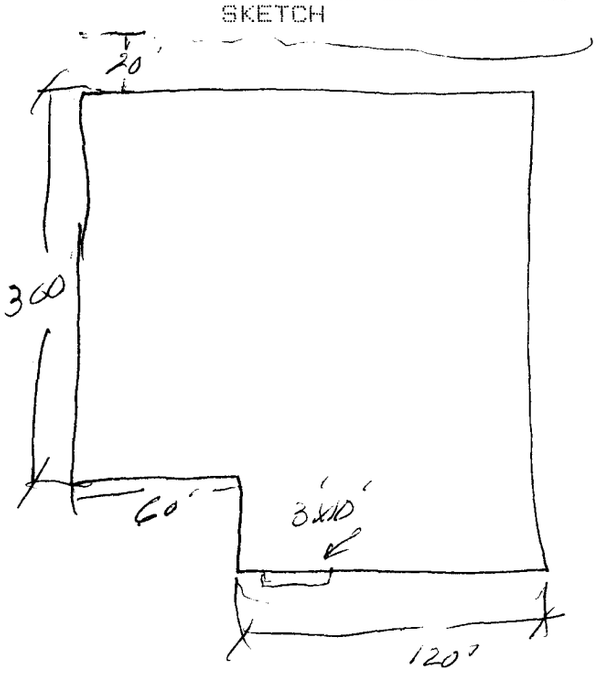
Sign Material: 0 Material Needed: 0

(x if in stock)

Art Needed: No Received _____

Comments: _____

SKETCH



Discription: _____

Street Frontage: Front _____ ft.
Side _____ ft.

Building Frontage: Front _____ ft.
Side _____ ft.

Traffic Lane: Front _____ ft.
Side _____ ft.

Total Allowed Area:
Front _____ sq.ft.
Side _____ sq.ft.

Clearance to Grade: _____ ft.

Area of Existing Sign _____ ft.

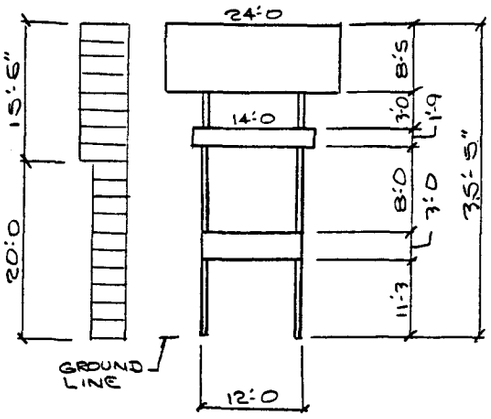
Estimated Completion _____
Date

Accepted By: _____
Date: _____
Comments:

G005666CR1	SIGN FOUNDATION AT PEACHTREE INN	JAN. 22, 1990

Engineer / P.E. sign off

WIND LOAD DISTRIBUTION,



DESIGN LOADING - UBC 88

$p = C_e C_q q_s I$

$C_e = 1.2$ (0-20) & 1.3 (20-40)
$C_q = 1.4$
$q_s = 13$ psf
$I = 1.0$

$p_1 = 1.2(1.4)13(1.0)$
$= 21.84$ psf

$p_2 = 1.3(1.4)13(1.0)$
$= 23.66$ psf

GROUND LINE SHEAR & MOMENT,

$V_{GL} = 24(8.417)23.66 + .833(3.0)2(23.66) + 1.75(14)23.66 + .833(2.25)2(23.66) + .833(5.75)2(21.84) + 3.0(12.0)21.84 + .833(11.25)2(21.84)$
$= 4779.51 + 118.25 + 579.67 + 88.69 + 209.22 + 786.24 + 409.34$
$= 6970.92$ LB

$M_{GL} = 4779.51(31.2085) + 118.25(25.5) + 579.67(23.125) + 88.69(21.125) + 209.22(17.125) + 786.24(12.75) + 409.34(5.625)$
$= 149161.34 + 3015.38 + 13404.87 + 1873.58 + 3582.89$
$10024.56 + 2302.54$
$= 183365.16$ FT-LB

$P_{SIGN\ WEIGHT} \approx 3000$ LB (PER GRAND JUNCTION SIGN, 245-2950)

$P_{SIGN\ EST} = 2(27)40.48 + 5(24)(8.417) + 5(14)1.75 + 5(12)3$
$= 2185.92 + 1010.04 + 122.5 + 180.0$
$= 3498.46$ LB

USE 3000 LB FOR SIGN WEIGHT ESTIMATE

CHECK POLE CAPACITY,

10" Ø SCHD. 40 PIPE (ASTM A-53 $F_y = 35^{KSI}$ A501 $F_y = 36^{KSI}$)

$f_b = \frac{183.4^{K-1}(12)}{29.9(2)} = 36.8^{KSI}$ N.G. TOO LARGE

RECESIGN POLES

Grand Junction Planning Department
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(303) 244-1430

MEMORANDUM

TO: BOB DAVIS, UNC GEOTECH
FROM: LINDA WEITZEL, GJ PLANNING DEPARTMENT
DATE: JANUARY 23, 1990
RE: PEACH TREE INN SIGN

As per our conversation today, the Grand Junction Planning Department agreed to defer to the UBC wind load requirements for signage, rather than 5-7-6.E. required by the Zoning & Development Code. This particular reference is for the Peach Tree Inn free-standing sign located at 1600 North Avenue.

It is understood that the existing sign shall be redesigned to withstand the wind load as per the 1988 UBC.

DATA FROM DOTTIE @ BONNER (241-2551)

PIPE DIA.		WALL THICKNESS		
NOM.	O.D.	SCHD. 40	SCHD. 60	SCHD. 80
10"	10 3/4"	.365"	.500"	.593"
12"	12 3/4"	.406"	.562"	.687"
14"	14"	.438"	.593"	.750"
16"	16"	.500"		
18"	18"	.562"		
20"	20"	.593"		

GRAND JUNCTION SIGN 245-2950 GERALD

241-6333 JIM WILLIS

ADDITIONAL DATA FROM BONNER,

WELL CASING L-80	9 5/8"	.4375"	(UNKNOWN STRENGTH)	
8"	8 5/8	.322"	.406"	.500"

DETERMINE POLE SIZE,

$$S = \frac{\pi(d_{OD}^4 - d_{ID}^4)}{32 d_{OD}}$$

LET $f_b = F_b = .66 F_y = 23.76^{KSI}$

ALLOW 1/3 STRESS INCREASE FOR WIND LOAD

$\therefore \quad 1.333 f_{b_{ALLOWED}} = 1.333(23.76) = 31.67^{KSI}$

$$31.67 = \frac{183.4(12)}{(2) S_{REQ'D}}$$

$$S_{REQ'D} = 34.75 \text{ in}^3$$

TRY 10"Ø SCHD. 80

$$S_{ACT} = \frac{\pi(10.75^4 - 9.564^4)}{32(10.75)} = 46.55 \text{ in}^3$$

TRY 12"Ø SCHD. 40

$$S_{ACT} = \frac{\pi(12.75^4 - 11.938^4)}{32(12.75)} = 47.09 \text{ in}^3$$

TRY 12"Ø SCHD. 60

$$S_{ACT} = \frac{\pi(12.75^4 - 11.626^4)}{32(12.75)} = 62.81 \text{ in}^3$$

CHECK DEFLECTION USING 12"Ø SCHD. 40 COLUMN

$$I = \frac{\pi(12.75^4 - 11.938^4)}{64}$$
$$= 300.21 \text{ in}^4$$

$$\Delta = \frac{1}{2EI}\left[\frac{4.8(31.21)^3 12^3}{3} + \frac{.12(25.5)^2[3(31.21) - 25.5]12^3}{6} \right.$$
$$+ \frac{.58(23.125)^2[3(31.21) - 23.125]12^3}{6} + \frac{.09(21.125)^2[3(31.21) - 21.125]12^3}{6}$$
$$+ \frac{.21(17.125)^2[3(31.21) - 17.125]12^3}{6} + \frac{.79(12.75)^2[3(31.21) - 12.75]12^3}{6}$$
$$\left. + \frac{.41(5.625)^2[3(31.21) - 5.625]12^3}{6} \right]$$

$\Delta = 4.827 + .089 + .362 + .047 + .078 + .172 + .019$
$= 5.594_{IN}$

IF A 10" SCHD. 80 PIPE WAS USED

$$I = \frac{\pi(10.75^4 - 9.564^4)}{64}$$
$$= 244.84_{IN^4}$$

$$\Delta = \frac{300.21}{244.84}(5.594)$$
$$= 6.859_{IN}$$

DUE TO LARGE DEFLECTIONS USE 12"Ø PIPE WITH SMALLER WALL THICKNESS

> USE (2) 12"Ø, SCHED. 40 PIPES AS THE SIGN SUPPORT POSTS; 12 3/4" OD WITH A WALL THICKNESS OF .406"

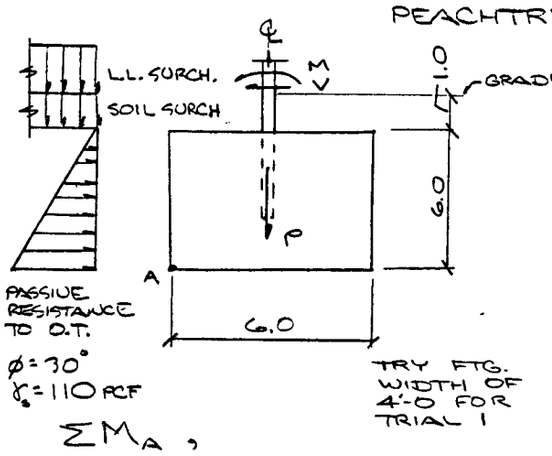
CHECKING SHEAR,

$$A = \frac{\pi(12.75^2 - 11.938^2)}{4}$$
$$= 15.74_{IN^2}$$

$$f_v = \frac{2(7/2)}{15.74}$$
$$= .44_{KSI} \quad \checkmark \text{ O.K.}$$

CHECK b/t RATIO,

$$\frac{b}{t} = \frac{12.75}{.406} = 31.40 < \frac{3300}{F_y} \quad \checkmark \text{ O.K.}$$



$\phi = 30°$
$\gamma_s = 110$ PCF

NEGLECT-
1) ACTIVE SOIL PRESSURE AIDING O.T.
2) SOIL WEDGE ON ACTIVE SIDE THAT RESISTS O.T.
3) LL SURCHARGE DURING O.T. CONDITION
4) LATERAL COMPONENT OF SOIL SURCHARG
5) TOP 1'-0 OF PASSIVE RESISTANCE

ΣM_A ,

$$M_{OT} = [183.4^{K-'} + 7^K(7')]/2 = 116.2^{K-'}$$

$$M_{RES} = [3 + .15(4)6(6)]3.0 + [\tan^2(45 + \tfrac{\phi}{2})]\tfrac{1}{2}\,6^2(.11)(4)\tfrac{6}{3}$$
$$= 73.8 + 47.5$$
$$= 121.3^{K-'}$$

$$F.O.S._{OT} = \frac{121.3}{116.2} = 1.04 < 1.5 \text{ N.G.}$$

INCREASE FOOTING WIDTH TO SIX FEET

$$M_{RES} = [3 + .15(6)6(6)]3.0 + 3.0(\tfrac{1}{2})6^2(.11)6(\tfrac{6}{3})$$
$$= 106.2 + 71.28$$
$$= 177.48^{K-'}$$

$$F.O.S._{OT} = \frac{177.48}{116.2} = 1.53 \checkmark \text{O.K.}$$

SLIDING O.K. BY INSPECTION

CHECK BEARING PRESSURES,

$$P = 3 + .15(6)^3 = 35.4^K$$

$$M_{OT} = 116.2^{K-'}$$

$$M_{RES} = 177.48^{K-'}$$

$$x = \frac{177.48 - 116.2}{35.4}$$

$$= 1.731 \text{ FEET}$$

$$e = \frac{6}{2} - 1.731$$
$$= 1.269 \text{ FEET}$$

OUTSIDE KERN

$$Q_{MAX} = \frac{35.4(2)}{3(6/2 - 1.269)6}$$

$= 2.272$ KSF TOO LARGE

TRY AN 8'-0 × 5'-0 FOOTING WITH A 6'-0 DEPTH

$$M_{RES} = [3 + .15(5)8(6)]4.0 + 3.0\left(\tfrac{1}{2}\right)6^2(.11)5\left(\tfrac{6}{3}\right)$$

$= 156^{K-'} + 59.4^{K-'}$
$= 215.4^{K-'}$

$$F.O.S._{OT} = \frac{215.4}{116.2} = 1.85 \text{ OK.}$$

$F.O.S._{SLIDING}$ = O.K. BY INSPECTION

CHECK BEARING PRESSURES,

$P = 3 + .15(5)8(6)$
$= 39^{K}$

$$x = \frac{215.4 - 116.2}{39}$$
$= 2.544$ FEET

$$e = \frac{8}{2} - 2.544$$
$= 1.456$ FEET

OUTSIDE KERN

$$Q_{MAX} = \frac{39(2)}{3(8/2 - 1.456)5}$$

$= 2.044$ KSF

TRY A 10'-0 × 5'-0 FOOTING WITH A 6'-0 DEPTH

$$M_{RES} = [3 + .15(10)5(6)]5 + 3.0\left(\tfrac{1}{2}\right)6^2(.11)5\left(\tfrac{6}{3}\right)$$

$= 240^{K-'} + 59.4^{K-'}$
$= 299.4^{K-'}$

$F.O.S._{OT}$ & $F.O.S._{SLIDING}$ ARE O.K. BY INSPECTION

$P = 3 + .15(10)5(6)$
$= 48^{K}$

$x = \frac{299.4 - 116.2}{48}$
$= 3.817$

$e = \frac{10}{2} - 3.817$
$= 1.183$

1-23-90 SITE VISIT BY L. BRUSKIN:
VISUAL CLASSIFICATION USC (UNIFIED SOIL CLASS.) ML-SM (SANDY SILT-SILTY SAND)
FROM DESIGN CHARTS $Q_{ULT_{EST}}$ @ 2500 PSF

INSIDE KERN

$Q_{\substack{MAX \\ MIN}} = \frac{48}{10(5)}\left[1 \pm \frac{6(1.183)}{10}\right]$

$= .96[1 \pm .7098]$
$= 1.64_{KSF}$ & $.28_{KSF}$

BASED ON LARRY BRUSKINS SITE VISIT, THE ULTIMATE BEARING CAPACITY IS ESTIMATED AT 2500 PSF

USING A F.O.S. OF 1.5 FOR THIS TYPE OF LOADING CONDITION

$Q_{ALL} = \frac{2.50}{1.5} = 1.67^{KSF}$

✓ O.K.

USE A 10'-0 × 5'-0 FOOTING WITH A DEPTH OF 6'-0; ALLOW FOR 1'-0 OF OVER BURDEN (i.e. B.O.F. IS 7'-0 BELOW GRADE)

FACTORED LOADS FOR REINFORCING DESIGN,

USE $U = .9D + 1.3L + 1.3W$ FOR DESIGN LOADING

$M_{OT} = 1.3(116.2) = 151.06^{K'}$

$M_{RES} = .9(48)5 + 1.3(59.4) = 293.22^{K'}$

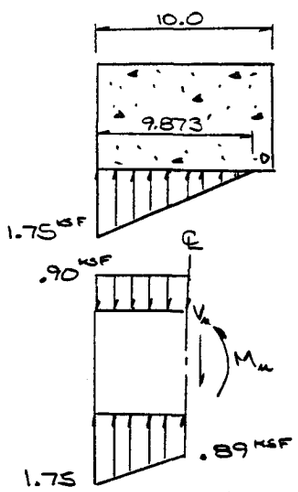
$P = .9(48) = 43.2^{K}$

$$x = \frac{293.22 - 151.06}{43.2}$$
$$= 3.291$$

$$e = \frac{10}{2} - 3.291$$
$$= 1.709$$

OUTSIDE KERN

$$Q_{MAX} = \frac{43.2(2)}{3(10/2 - 1.709)5}$$
$$= 1.75^{KSF}$$



DESIGN DISTRIBUTION

$V_u = .89(5) + \frac{1}{2}(.86)5 - .9(5)$
$= 4.45 + 2.15 - 4.5$
$= 2.1^{K/'}$

$M_u = 4.45(2.5) + 2.15(3.333) - 4.5(2.5)$
$= 11.13 + 7.17 - 11.25$
$= 7.05^{K'/'}$

$b = 12''$ $d = 72 \cdot 3 - 1 = 68''$ $f'_c = 3000$ psi $f_y = 60000$ psi

$$F = \frac{12(68)^2}{12000} = 4.624$$

$$K_n = \frac{7.05(12)}{.9(4.624)} = 20.33$$

USE MIN. REINF

$$A_s = \rho_{min}\, b\, d_{EFF} = \frac{200}{60000}(12)\,12 = .48\ in^2/FT$$

USE # 6 @ 12" BOT. LONGITUDINAL
USE # 5 @ 12" BOT. TRANSVERSE

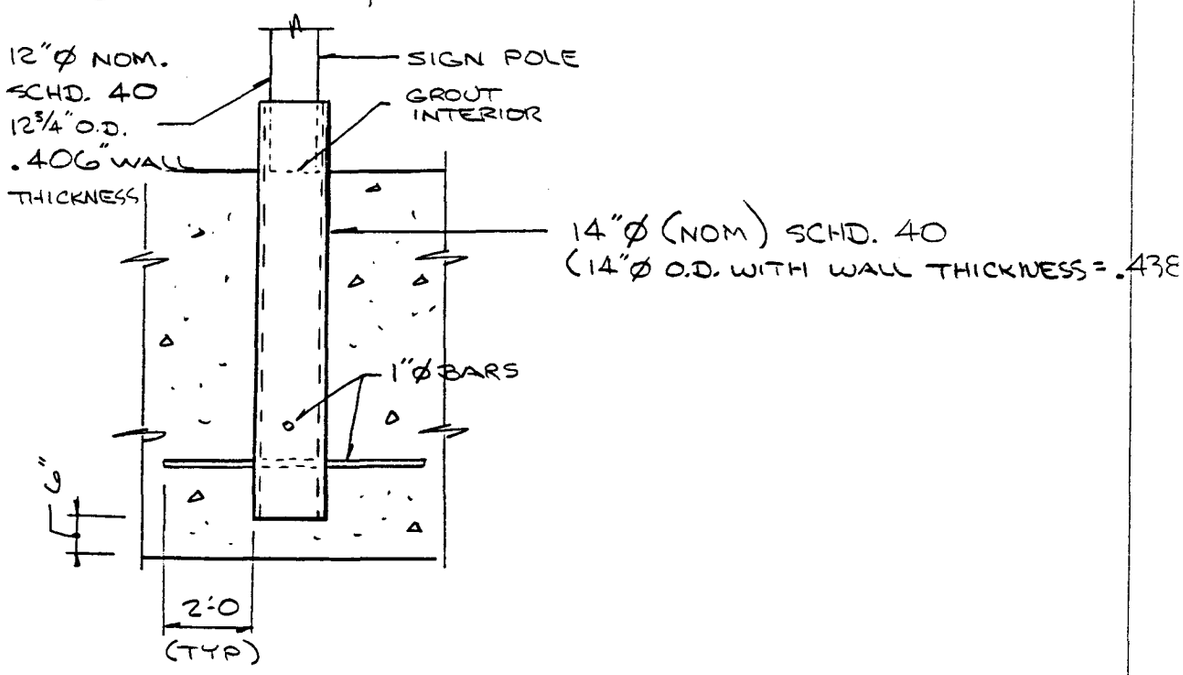
USE # 4 @ 12" EA. WAY ALL OTHER FACE

CHECK SHEAR,

PUNCHING IS O.K. BY INSPECTION

$$V_c = \frac{2100}{.85(12)68} = 3.0\ psi \quad \checkmark \text{ O.K.}$$

EMBEDMENT DESIGN,



CHECK SHEAR FRICTION RESISTANCE OF 1"Ø BARS

$\mu = .7\lambda = .7(1.0) = .70$

$$V_u = \frac{.785\ in^2 (4)\, 36000\, (.7)}{.85}$$

$= 93.1^{K}$

$V_{ALL} = 93.1/1.7 = 54.8^{K}$ ✓ O.K.

CHECK WELD OF PIPE TO EMBEDMENT,

$S_{WELD} = \frac{\pi (12.75)^2}{4} = 127.7$

$A_{WELD} = \pi (12.75) = 40.1$

$M = 183.4^{K'}/2 = 91.7^{K'}$

$P = 3^{K}/2 = 1.5^{K}$

$V = 7^{K}/2 = 3.5^{K}$

$$f_1 = \frac{91.7}{127.7} + \frac{1.5}{40.1}$$
$$= .718 + .037$$
$$= .755 \text{ K/IN}$$

$$f_2 = \frac{3.5}{40.1}$$
$$= .087 \text{ K/IN}$$

$$f_R = \sqrt{.755^2 + .087^2}$$
$$= .760 \text{ K/IN}$$
OF
760 LB/IN

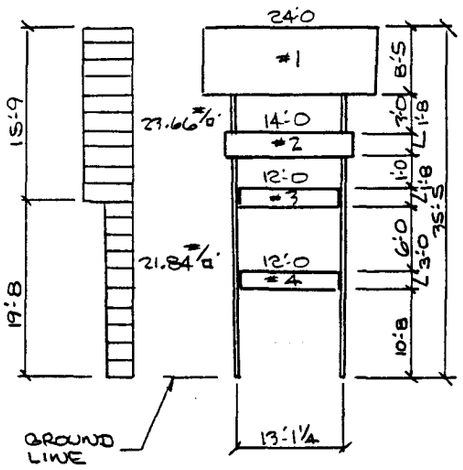
$$w = \frac{f_r}{.707(\tau_{WELD})}$$

USE EGO ELECTRODES
$\tau_{WELD} = .3(60)$ OR $.4(36)$
18^{KSI} 14.4^{KSI}

$$= \frac{760}{.707(14,400)}$$
$$= .075 \text{ IN}$$
$$= 1/16$$

LESS THAN MINIMUM CODE REQM'TS ; USE 3/16"

RECHECK DESIGN BASED ON THE REVISED SKETCH FROM CONSTRUCTION DATED 1-25-90



NOTE:
TREAT POLE WIDTH AS AN AVG. OF 1'0, IGNOR POLE CONTRIBUTION AT SIGNS #3 & #4

$$V_{GL} = 24(8.417)23.66 + 1.0(3.0)2(23.66) + 1.667(14.0)23.66 + 1.0(1.0)2(23.66) + 1.667(12.0)23.66 + 1.0(6.0)2(21.84) + 3.0(12.0)21.84 + 1.0(10.667)2(21.84)$$
$$= 4779.51 + 141.96 + 552.18 + 47.32 + 473.29 + 262.08 + 786.24 + 465.93$$
$$= 7508.51 \text{ LB}$$

$$M_{GL} = 4779.51(31.2085) + 141.96(25.5) + 552.18(23.1665) + 47.32(21.833) + 473.29(20.5) + 262.08(16.667) + 786.24(12.167) + 465.93(5.333)$$
$$= 149161.34 + 3619.98 + 12792.08 + 1033.14 + 9702.45 + 4368.09 + 9566.18 + 2484.80$$
$$= 192728.06$$

CHECK 12"Ø (SCHD. 40) BASE POST,

$$f_b = \frac{192.7(12)}{2(47.09)} = 24.6^{KSI} < 1.333(.66)F_y = 31.67^{KSI}$$

✓ O.K.

CHECK STABILITY & FOOTING PRESSURES,

$$M_{OT} = [192.7 + 7.51(7)]/2 = 122.6^{K-'}$$

$$M_{RES} = 299.4^{K-'}$$

$$FOS = \frac{299.4}{122.6} = 2.44$$

✓ O.K.

$$x = \frac{299.4 - 122.6}{48}$$
$$= 3.683$$

$$e = \frac{10}{2} - 3.683$$
$$= 1.317$$

INSIDE KERN

$$Q_{\substack{MAX \\ MIN}} = \frac{48}{10(5)}\left[1 \pm \frac{6(1.317)}{10}\right]$$
$$= .96(1 \pm .7902)$$
$$= 1.72 \text{ KSF} \text{ \& } .20 \text{ KSF}$$

$Q_{ULT} \approx 2.5$ KSF

$$F.O.S. = \frac{2.5}{1.72} = 1.45$$

SAY O.K. BECAUSE LOADING IS BASED ON A SHORT TERM WIND LOAD CONDITION

DESIGN AND LOCATE SPLICE POINTS,

TRY A SPLICE POINT AT THE TOP OF SIGN # 3 (RE. PG, 11), APPROXIMATELY 21'-4" ABOVE GROUND LINE

$V_{S.P.} = 4779.51 + 141.96 + 552.18 + 47.32$
$= 5520.97$ LB

$M_{S.P.} = 4779.51(9.8755) + 141.96(4.167) + 552.18(1.8335) + 47.32(.50)$
$= 47200.05 + 591.55 + 1012.42 + 23.66$
$= 48827.68$ FT-LB

TRY 10" NOM. DIA. SCHD. 40 PIPE

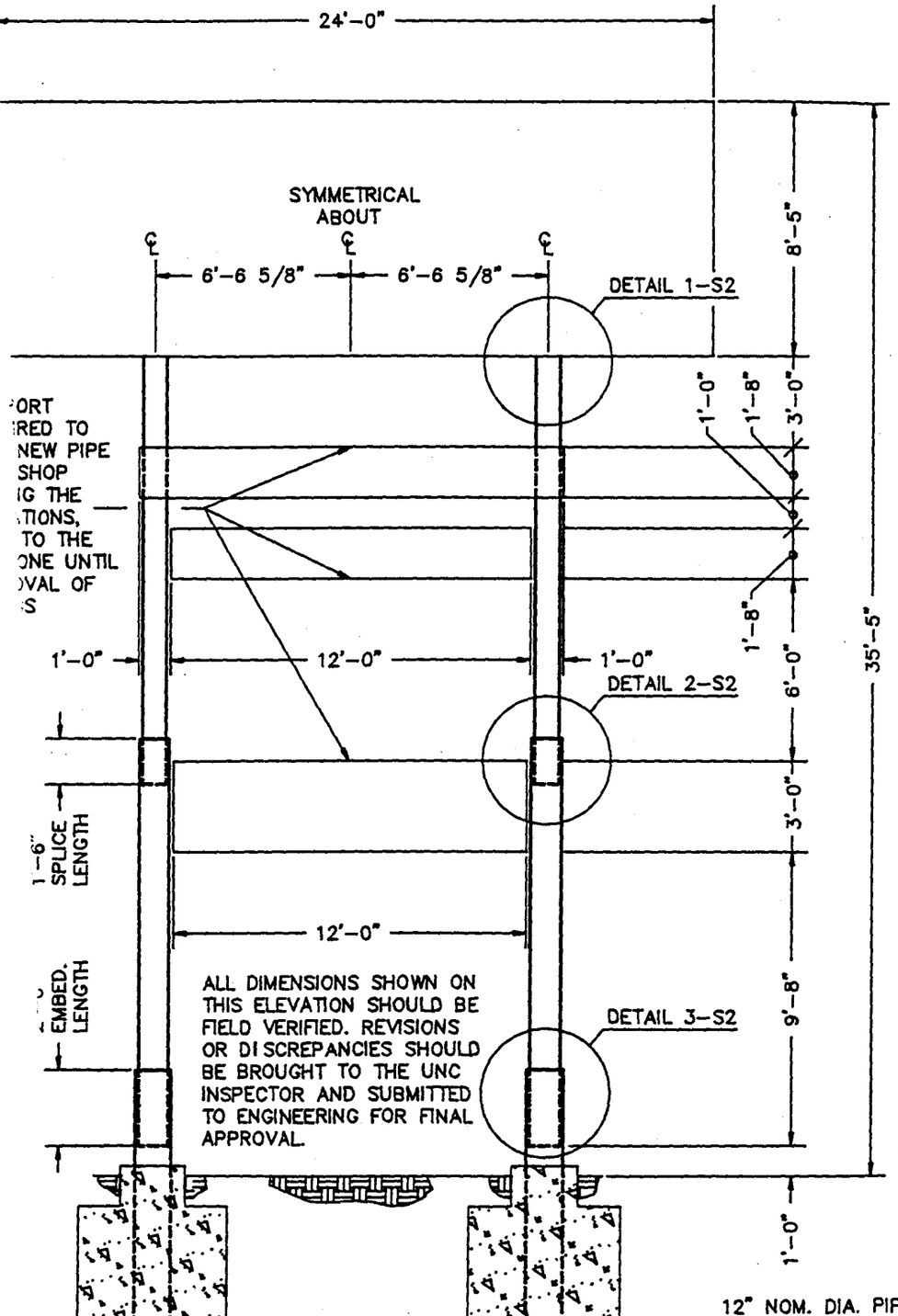
10"ø O.D. W/ .365" WALL THICKNESS

$$S = \frac{\pi(10.75^4 - 10.02^4)}{32(10.75)} = 29.90$$

$$f_b = \frac{48.83(12)}{2(29.9)} = 9.8^{KSI}$$ ✓ O.K.

BY INSPECTION, THE INCREASED DEFLECTION IS CONSIDERED ALLOWABLE

USE A 10" ø (NOM) SCHD 40 PIPE FOR THE UPPER COLUMNS, LOCATE THE SPLICE ℄ AT THE TOP OF SIGN NO. 3



MODIFY INTERIOR SIGN FRAMING AS REQUIRED TO ACCOMODATE THE NEW PIPE COLUMN, SUBMIT SHOP DRAWINGS OUTLINING THE REQUIRED MODIFICATIONS, NO MODIFICATIONS TO THE SIGN SHALL BE DONE UNTIL REVIEW AND APPROVAL OF THE SHOP DRAWINGS

10" NOM. DIA. PIPE, SCHEDULE 40, 10-3/4" O.D. WITH A WALL THICKNESS OF .365", ASTM A53 GRADE B OR A501

12" NOM. DIA. PIPE, SCHEDULE 40, 12-3/4" O.D. WITH A WALL THICKNESS OF .406", ASTM A53 GRADE B OR A501

SEE NOTE 3 FOR PLUGS (4) TOTAL

6"

1/16

1" TYPICAL AROUND

1/16

1/16

1/16

FRICTION FIT FLANGE INSIDE OF PIPE

1/64"

19/32"

DETAIL 1 S2

NOT TO SCALE

14" NOM. DIA. PIPE EMBEDMENT (REF. DRAWING S1 FOR DETAILS)

SHOP FABRICATE HOLLOW CIRCULAR SHAPES TO THE REQUIRED DIMENSIONS USING 1/2" PLATE MATERIAL, ASTM A36, SEE ENLARGED DETAILS FOR WELD REQUIREMENTS, ALL WELDS ARE FULL PENETRATION GROOVE WELDS

5/8" TYPICAL AROUND

1/16

1/16

1/16

SEE NOTE 3 FOR PLUGS (4) TOTAL

6"

DETAIL 2 S2

NOT TO SCALE

1/16

FRICTION FIT FLANGE INSIDE OF PIPE

1/64"

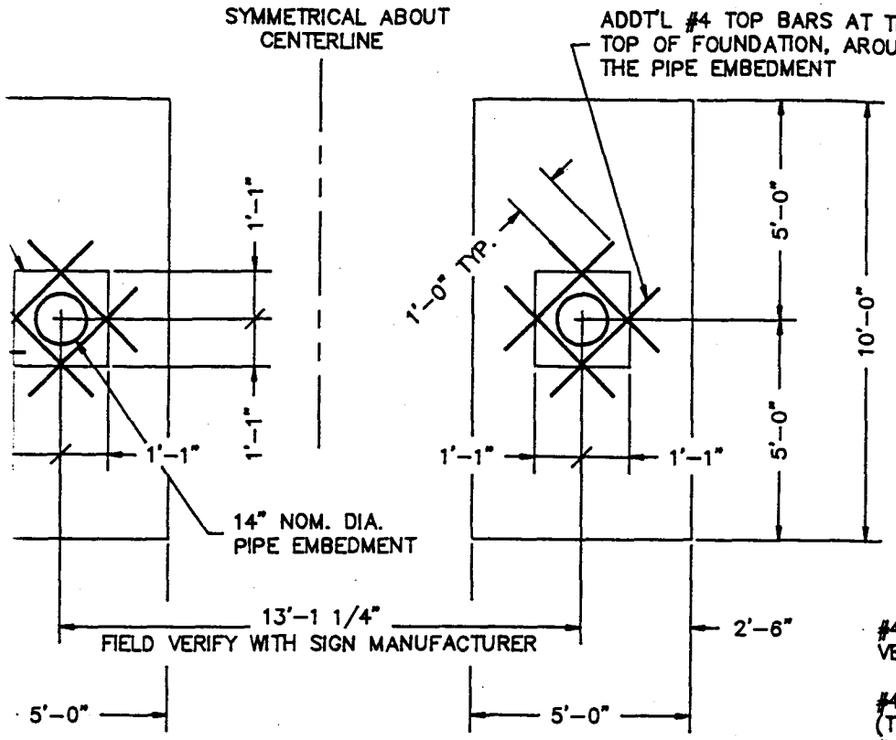
3/16"

DETAIL 3 S3

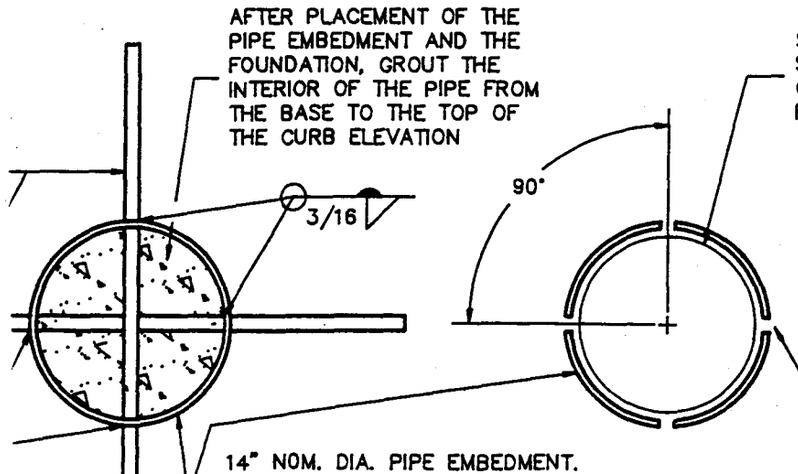
NOT TO SCALE

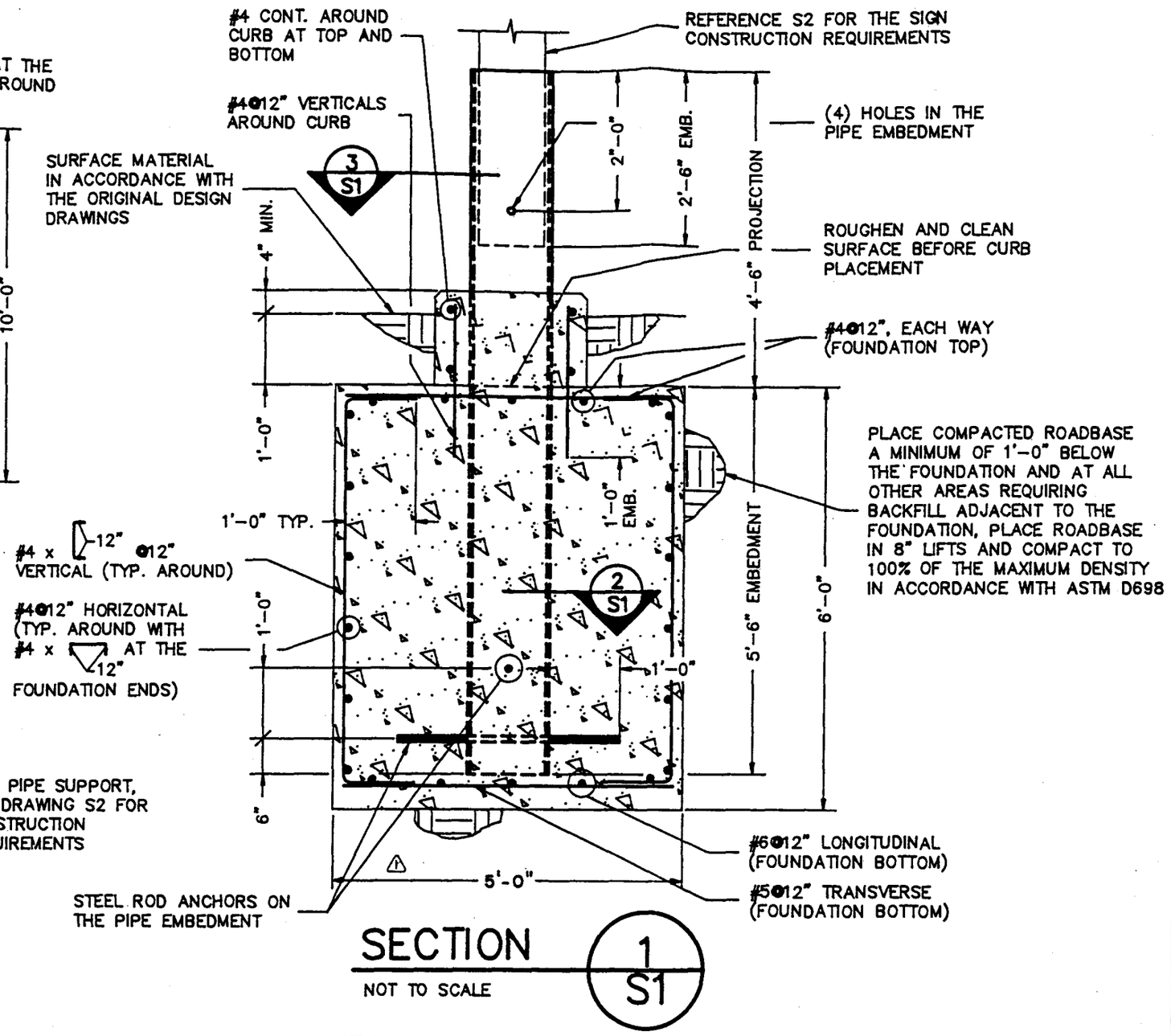
NOTES:

1) ALL WELDING SHALL BE WITH E60 SERIES ELECTRODES.
2) ALL STEEL, UNLESS OTHERWISE NOTED, SHALL BE ASTM A-36.
3) FRICTION FIT 1" DIA. RODS INTO THE (4) 1" DIA. HOLES IN THE PIPE EMBEDMENT AS SHOWN, THE RODS SHOULD BE COUNTERSUNK AND BEARING AGAINST THE INTERIOR PIPE, PLUG WELD THE ASSEMBLY IN PLACE, HOLES AND RODS ARE LAID OUT WITH A 90 DEGREE ANGLE BETWEEN EACH OTHER. (REF. SECT. 3-S1 FOR ANGLE LAYOUT)
4) ALL WELDS SHALL BE FINISHED SMOOTH, BURRS AND UNEVEN EDGES SHALL BE GROUND DOWN.
5) ALL STEEL SHALL BE PRIMED



SUPPORT FOUNDATION PLAN





SECTION 1 S1

NOT TO SCALE

NOTES:

1) ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY STRENGTH OF 3000 PSI.
2) ALL REINFORCING SHALL BE GRADE 60.
3) WELDING FOR THE PIPE EMBEDMENT SHALL BE WITH [illegible]