USE BLACK INK BALL POINT PEN — PRESS FIRMLY

SIGN PERMIT APPLICATION

264-7559

SITE ADDRESS 8908 ELDER CREEK

Elder Creek, E ... Sacramento

ASSESSOR PARCEL NO. 064 ... 013-024

PERMIT NO.

NAME OF APPLICANT	ADDRESS	ZIP CODE	PHONE NO.
LICENSED CONTRACTOR			M ... ZONE
BUSINESS OWNER Investnet Inc.	PO Box 60700 Sacramento, CA	95860	916-929-6300 ext.

SIGN INFORMATION

- ☐ ATTACHED
- ☒ ILLUMINATED
- ☐ INDIVIDUAL LETTERS
- ☒ METAL
- ☐ PLASTIC
- ☐ WOODEN
- ☐ INTERIOR LIT
- ☒ NON-ILLUMINATED
- ☐ PAINTED ON BUILDING
- ☒ POLE
- ☐ MONUMENT
- ☐ SINGLE FACED
- ☐ BILLBOARD / SUBDIVISION
- ☐ LOGO
- ☒ DOUBLE FACED
- ☐ VINYL/GATOR FOAM

(A) HEIGHT 35' (B) LENGTH 24'

(A X B) SIGN AREA 12 x 24

POLE SIZE 24" FOOTING SIZE 3'6"

STREET FRONTAGE ... 273'

CITY OF SACRAMENTO
BUILDING INSPECTION DIVISION
PERMIT SERVICES
264-7619

CONSTRUCTION LENDING AGENCY

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097 ...).

Lender Name ______________________

Lenders Address ______________________

LICENSED CONTRACTORS DECLARATION

I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class ________ Lic. Number ______________________

Date __________ Contractor ______________________
(Signature)

OWNER - BUILDER DECLARATION

I hereby affirm under penalty of perjury that I am exempt from the Contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code: Any city or county which requires a permit to ... structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is ... licensed pursuant to the provisions of the Contractors License Law (Chapter 9 commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit ... ($500.00).

X

X

[signature]

8-21-00 NRB

$

USE BLACK INK BALL POINT PEN — PRESS FIRMLY

SIGN PERMIT APPLICATION

264-7559

SITE ADDRESS 8908 Elder Creek
Watt Ave, @ SW Elder Creek, Sacramento

ASSESSOR PARCEL NO. 64-033-029

PERMIT NO.

NAME OF APPLICANT	ADDRESS	ZIP CODE	PHONE NO.
LICENSED CONTRACTOR			M-1 ZONE
BUSINESS OWNER Investnet Inc.	PO Box 60700 Sacramento CA	95860	916-929-6300 ext 3

SIGN INFORMATION

☐ ATTACHED	☐ INTERIOR LIT	☐ SINGLE FACED	HEIGHT 35' LENGTH 24'
☐ ILLUMINATED	☒ NON-ILLUMINATED	☐ BILLBOARD SUBDIVISION	SIGN AREA 12' x 24' 288 ft
☐ INDIVIDUAL LETTERS	☐ PAINTED ON BUILDING	☐ LOGO	POLE SIZE 24" FOOTING SIZE 3'6"
☒ METAL	☒ POLE	☒ DOUBLE FACED	STREET FRONTAGE 372'
☐ PLASTIC	☐ MONUMENT	☐ VINYL GATOR FOAM	
☐ WOODEN	☐	☐ REFACE	

CITY OF SACRAMENTO
BUILDING INSPECTION DIVISION
PERMIT SERVICES 264-7619

WORKERS' COMPENSATION DECLARATION

State Farm

8-21-00 NRB

TOTAL FEE $

CONSTRUCTION LENDING AGENCY

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097 ...)

Lender Name ______

Lenders Address ______

LICENSED CONTRACTORS DECLARATION

I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect

License Class ______ Lic. Number ______

Date ______ Contractor ______
(Signature)

OWNER - BUILDER DECLARATION

I hereby affirm under penalty of perjury that I am exempt from the Contractors License Law for the following reason (Sec. 7031.5 Business and Professions Code ...) [illegible]

X

X

[signature]

CITY OF SACRAMENTO
BUILDING INSPECTION • DEPARTMENT OF PLANNING AND DEVELOPMENT
1231 I STREET • SACRAMENTO, CA 95814 • PHONE (916)264-7619

STRUCTURAL TESTS AND INSPECTIONS SCHEDULE

PRIOR TO OBTAINING THE PERMIT, THE PROJECT OWNER SHALL COMPLETE, SIGN AND SUBMIT THIS FORM FOR THE BUILDING INSPECTION DIVISION FOR APPROVAL.

PROJECT NAME ____________ PLAN REVIEW # ____________
PROJECT ADDRESS 8908 Elder Creek PERMIT NUMBER ____________

TESTING/INSPECTION AGENCY/IES ____________

____

OWNER'S NAME ____________ (Please Print) SIGNATURE: ____________

This certifies that the Testing/Inspection agency named above has been engaged to perform structural tests and inspections of the construction as noted below, to satisfy all applicable portions of the Uniform Building Code.

INSPECTIONS REQUIRED

[illegible] sections 302 and 306 of the Uniform Building code, special inspections shall be performed on the [illegible]

	Description	Ref. Dwg.*
[illegible]	f'c = 3,000 PSI	1 of 2
REINFORCING/PRESTRESS STEEL		
[illegible]		
[illegible] BOLTING	4 325 Bolts	1 of 2 2 of 2
[illegible]		
[illegible] PIERS, CAISSONS	3.5' ∅ x 13.5' deep	1 of 2
[illegible] PROOFING		

[illegible] sample of the item requiring special inspection and are not intended [illegible] any information pertaining to that item

Date ____________

Attachment to BC-306-1

CITY OF SACRAMENTO

BUILDING INSPECTION DIVISION • DEPARTMENT OF PLANNING AND DEVELOPMENT

2311 I STREET • SACRAMENTO CA 95814 • PHONE (916)264-7619

STRUCTURAL TESTS AND INSPECTIONS SCHEDULE

PRIOR TO OBTAINING THE PERMIT, THE PROJECT OWNER SHALL COMPLETE, SIGN AND SUBMIT THIS FORM FOR THE BUILDING INSPECTION DIVISION FOR APPROVAL.

JOB SITE NAME:
JOB SITE ADDRESS: 8908 Elder Creek

PLAN REVIEW # _____
PERMIT NUMBER _____

TESTING/INSPECTION AGENCY/IES _____

_____

CONTACT NAME _____ SIGNATURE: _____
(Please Print)

The undersigned certifies that the Testing/inspection agency named above has been engaged to perform structural tests and inspections during construction as noted below, to satisfy all applicable portions of the Uniform Building Code. (4)

INSPECTIONS REQUIRED

In accordance with Sections 302 and 306 of the Uniform Building code, special inspections shall be performed on the following:

Description	Ref. Dwg.*
CONCRETE f'c = 2,000 PSI	1 of 2
REINFORCING OR PRESTRESS STEEL	
WELDING	
HIGH STRENGTH BOLTING A 325 Bolts	1 of 2, 2 of 2
SOILS COMPACTION	
PILES, PIERS, CAISSONS 3.5'ϕ x 13.5' deep	1 of 2
SPRAY APPLIED FIREPROOFING	

* Drawings listed are those sheets containing the item requiring special inspection and are not intended to be the only drawings containing information pertaining to that item.

Date _____ SIGNATURE _____

This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the City of Sacramento Sign Section.

The approval of this plan and sheets does not permit the erection of any sign not in conformity with any City Ordinance or State law.

All electrical signs shall be U.L. labeled or be of equivalent construction and comply with chapter 40 of the Uniform Building Code.

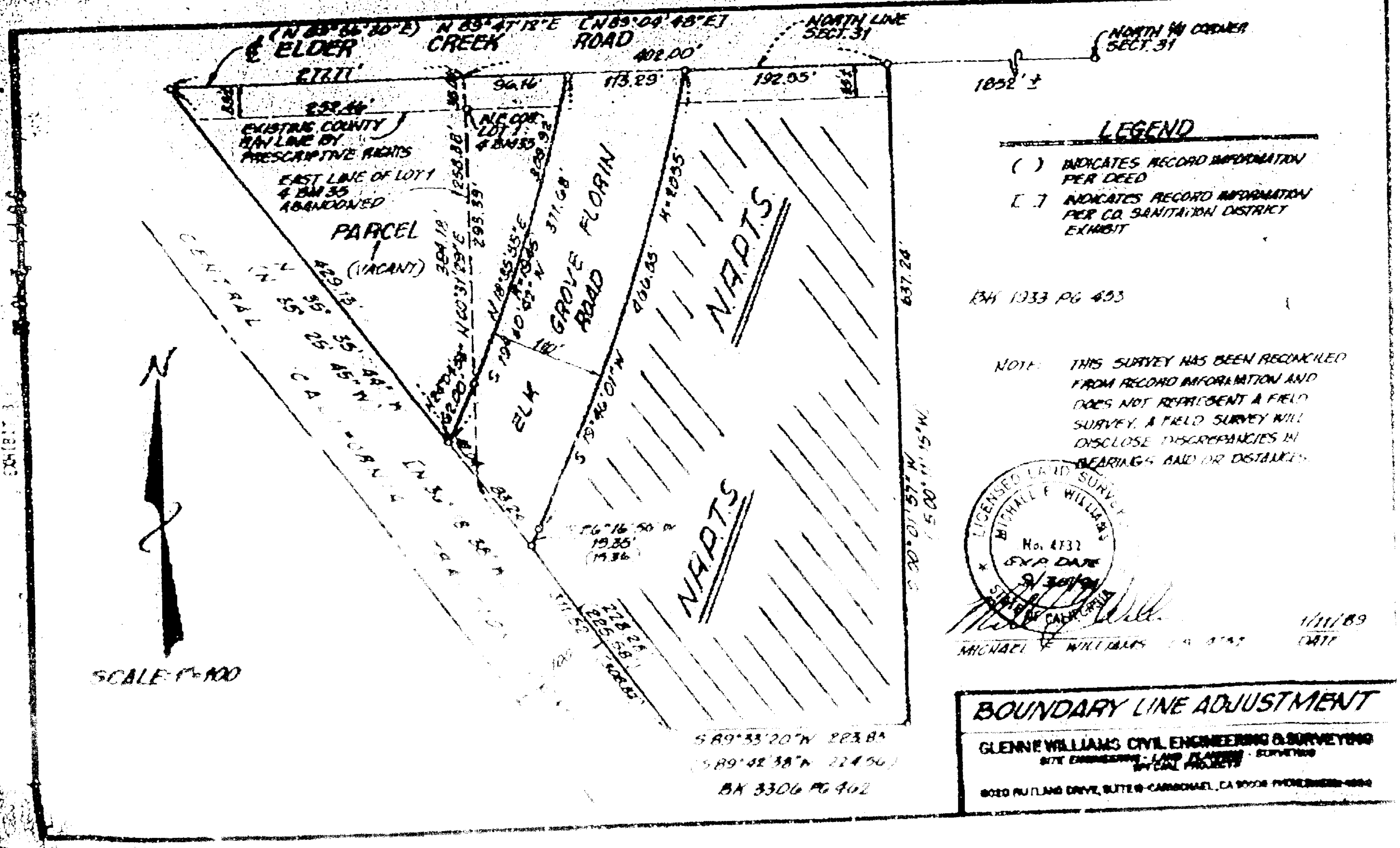
THESE PLANS MUST BE USED AS DESIGN INTENDED

ALL SIGN INSTALLATIONS ARE SUBJECT TO FIELD INSPECTIONS

FILE COPY

-782

-2189



(N 89°56'30"E) N 89°47'18"E [N 89°04'48"E]
ELDER CREEK ROAD
NORTH LINE SECT. 31
NORTH 1/4 CORNER SECT. 31
1852' ±
272.71'
253.46'
96.16'
113.29'
402.00'
192.55'
EXISTING COUNTY R/W LINE BY PRESCRIPTIVE RIGHTS
N.E. COR. LOT 1 4 BM 35
EAST LINE OF LOT 1 4 BM 35 ABANDONED
PARCEL 1 (VACANT)
258.88'
384.19'
N 60°31'29"E
295.39'
N 18°55'55"E
311.68'
ELK GROVE FLORIN ROAD
406.85
637.24'
N.A.P.T.S.
N.A.P.T.S.
429.13'
CENTRAL CALIFORNIA
SCALE 1"=100
S 89°33'20"W 283.85
(S 89°42'38"W 224.56)
BK 3306 PG 462
LEGEND
( ) INDICATES RECORD INFORMATION PER DEED
[ ] INDICATES RECORD INFORMATION PER CO. SANITATION DISTRICT EXHIBIT
BK 1933 PG 453
NOTE: THIS SURVEY HAS BEEN RECONCILED FROM RECORD INFORMATION AND DOES NOT REPRESENT A FIELD SURVEY. A FIELD SURVEY WILL DISCLOSE DISCREPANCIES IN BEARINGS AND/OR DISTANCES.
LICENSED LAND SURVEYOR MICHAEL F. WILLIAMS No. 4732 EXP. DATE STATE OF CALIFORNIA
MICHAEL F. WILLIAMS
1/11/89
DATE
BOUNDARY LINE ADJUSTMENT
GLENN F. WILLIAMS CIVIL ENGINEERING & SURVEYING

Drawing #: 97-102

12' x 24'
Back to Back
Centermount
21' H.A.G.L.
(New Build)

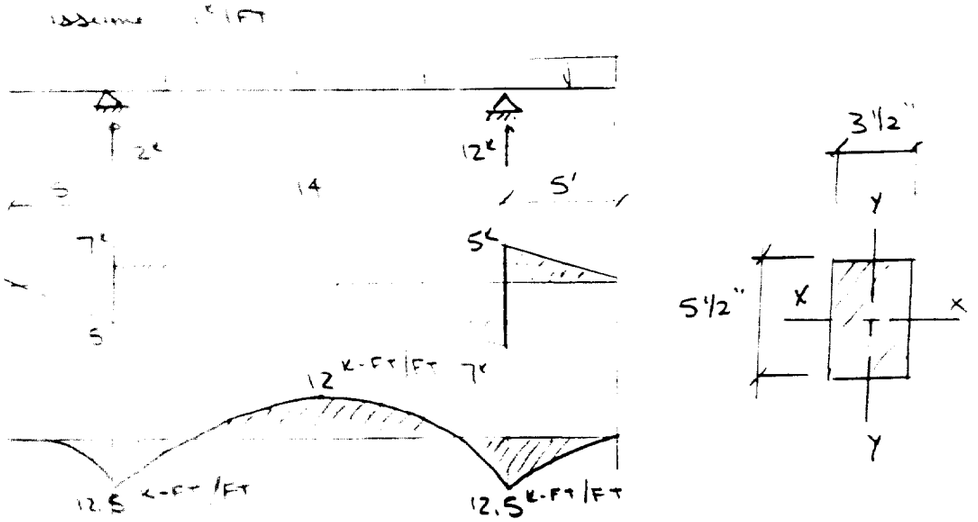
Design Wind Load

30 psf w/ 0% eccentricity

These structural calculations must be submitted with **wet seal** dated not over **180 days** prior to permit application

Date: August 30, 1997

STRINGERS



try 4 stringers 4x6 (Nom) NO 2 or BETTER Douglas Fir (3 1/2" x 5 1/2")

w_{DL} = 30 psf (2' x 4 stringers) = 90#/FT = .09 K/FT

w_{DL} = [2.5 psf (12 x 4 stringers)] + 4#/FT = .0075#/FT =

S_{x-x} = 5(5.5)²/6 = 17.65 in³

S_{y-y} = 5.5(3.5)²/6 = 11.23 in³

Minimum Fb = 825 psi (worst case of Douglas Firs)

$F_{b\,x-x}$ = .825 (Fb 2.D M St Cf Cfu) (.85)(1.0)(1.3)(1.05) = 1.53 KSI

$F_{b\,x-x}$ = .825 (.9)(.85)(1.0)(1.3) = .820 KSI

$f_{b\,y-y}$ = [12.5(.09)](12)/11.23 = 1.2 KSI

$f_{b\,x-x}$ = [12.5(.0075)](12)/17.65 = .0637 KSI

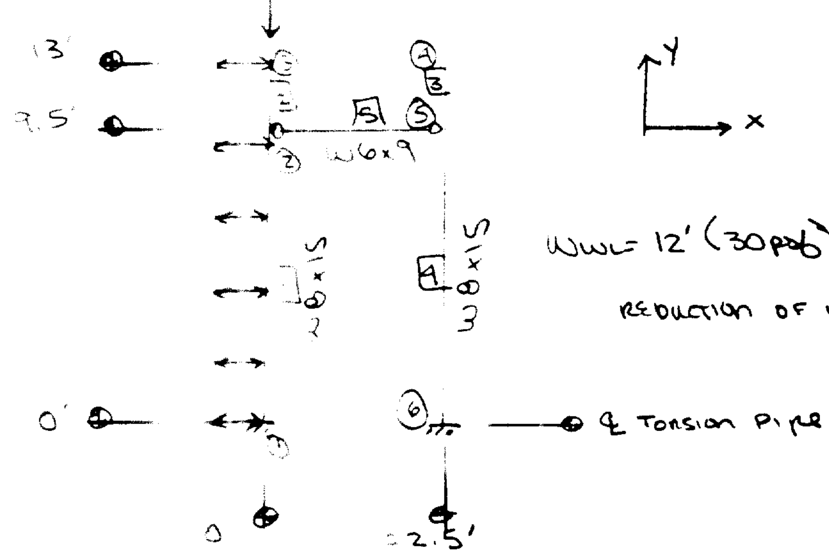
RATIO = $\frac{1.2}{1.53} + \frac{.0637}{.82}$ = .86 < 1.0 ∴ o.k

USE 4x6 (Nom) NO. 2 OR BETTER Douglas Fir

w/ Min Fb = 825 psi (4/face)

Frame Analysis

≈ 15^k [sign face, stringers, apron, catwalk, frame support etc..]



$W_{WL} = 12'(30\,psf)(.75)/1000 = .27^{k/FT}$

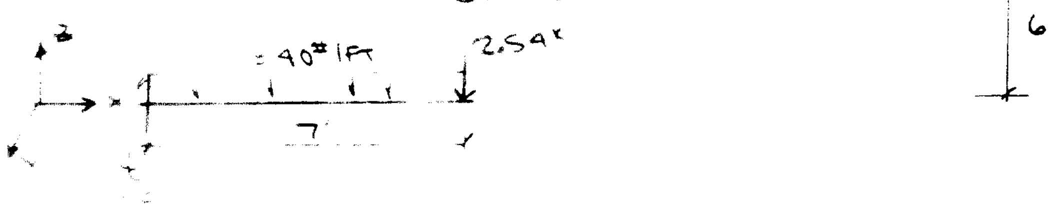
↑ REDUCTION OF WIND

– SEE COMPUTER Analysis –

TORSION PIPE

↓ WIND REDUCTION

$⊕ P = (12)(4)(30)(.75)/1000 = 3.78^k$



$M_y = [.04(7)(7/2) + 2.54(7)](12) = 225.12^{k\text{-}IN}$

$M_z = 3.78(7)(12) = 317.5^{k\text{-}IN}$

$M_x = 3.78(6)(12) = 272.16^{k\text{-}IN}$ ↱ $I = 137.42\ in^4$

$F_y = 35^{ksi}$ try $10^{3/4}\,\phi \times .307$ $S = 25.57$ $J = 279.84$ $D/t < 3300/F_y$ ∴ ok

$f_{by} = 225.12/25.57 = 12.42^{ksi}$

$f_{bz} = 317.5/25.57 = 8.81$

$RATIO = \dfrac{\sqrt{12.42^2 + 8.81^2}}{.66(35)} + \dfrac{5.32^2}{[.4(35)]^2} = .80$ ok

$f_{bx} = 272.16(5.375)/274.84 = 5.32$

Check deflection

$\Delta = 2.54(7\times12)^3/3(29{,}000)(137.4) + .0033^{k/IN}(7\times12)^4/8(29{,}000)(137.4) = .131''$

$< 3.20 = .23' > .3$ ok

USE $10^{3/4}\,\phi \times .307$ $F_y = 35^{ksi}$

National Advertising Company
[illegible] S. Harlem Avenue
Bedford Park, IL 60501-[illegible]

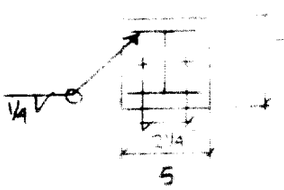
Job : 97-102
Page: 1
Date: 8/30/97

Frame Analysis of 12x24

Member Section Forces, LC 1 : Dead + Wind

Member	Joints	Sec	Axial K	Shear y-y K	Shear z-z K	Torque K-ft	Moment y-y K-ft	Moment z-z K-ft
		1	1.71	2.43	0.00	0.00	0.00	12.52
		2	1.[illegible]	[illegible].78	0.00	0.00	0.00	7.52
		3	1.54	1.14	0.00	0.00	0.00	4.04
		4	1.50	0.50	0.00	0.00	0.00	2.09
		5	1.[illegible]	0.14	0.00	0.00	0.00	1.65
		1	1.55	0.95	0.00	0.00	0.00	1.65
		2	1.[illegible]	0.71	0.00	0.00	0.00	0.93
		3	1.[illegible]	0.47	0.00	0.00	0.00	0.41
		4	1.[illegible]	0.24	0.00	0.00	0.00	0.10
		5	1.[illegible]	0.00	0.00	0.00	0.00	-0.00
		1	0.[illegible]	0.00	0.00	0.00	0.00	0.00
		2	0.[illegible]	0.00	0.00	0.00	0.00	0.00
		3	0.[illegible]	0.00	0.00	0.00	0.00	0.00
		4	0.04	0.00	0.00	0.00	0.00	0.00
		5	0.[illegible]	0.00	0.00	0.00	0.00	0.00
		1	0.06	1.08	0.00	0.00	0.00	0.00
		2	0.[illegible]	1.08	0.00	0.00	0.00	2.57
		3	0.14	1.08	0.00	0.00	0.00	5.15
		4	0.[illegible]	1.08	0.00	0.00	0.00	7.72
		5	0.[illegible]	1.08	0.00	0.00	0.00	10.30
		1	1.08	0.01	0.00	0.00	0.00	0.00
		2	1.08	0.01	0.00	0.00	0.00	-0.01
		3	1.08	0.00	0.00	0.00	0.00	-0.01
		4	1.08	0.01	0.00	0.00	0.00	-0.01
		5	1.[illegible]	0.01	0.00	0.00	0.00	0.00

[illegible] connection

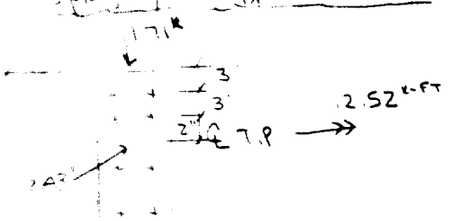


D= [illegible] = .54"

use 2 ø A 325

use R per engineering calculation
- SEE calculation on sheet -

GUSSET outrigger connection key 1/2" ø A-325 A=.1963 in²



$I_{xx} = 2(.1963)\left[2(5)^2 + 2(2)^2\right] = 22.77^{in^4}$

$f_v = \left[2.52(12) + 1.71(8")\right](5)/22.77 + \frac{2.43}{8(.1963)} = 3.75\ ksi$

$f_v = \frac{1.71^k}{8(.1963)} = 1.09\ ksi$

$f_{max} = \sqrt{3.75^2 + 4.39(1.09)^2} = 43.99^{ksi} > 37.5\ ksi$

12 ø A-325

CROSS BRACING ROD

DATE
02-Sep-97

SIGN FACE & WINDLOAD PROPERTIES

Sign Face Height	12	(Feet)
Sign Face Length	24	(Feet)
Apron Height	2	(Feet)
Windload	30	(Psf)
Tangential Wind Force (Ptangential	3.79	(Kips)

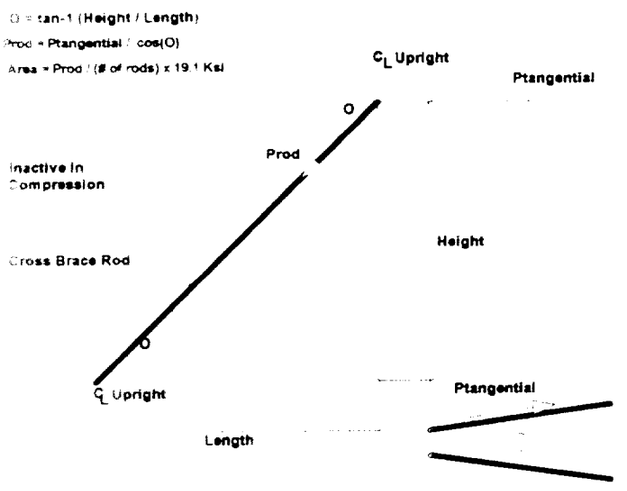
(Note: Ptangential is 1/2 of Pnormal by geometry)

CROSS BRACE PROPERTIES

Height	9.5	(Feet)
Length	14	(Feet)
# of Rods Active in Tension only)	1	
theta	34.16	(Degrees
Tension Force in Rods (Prod)	4.58	(Kips)
Area of a Single Rod Required	0.240	(In^2)

CLIP LEG SIZES

Leg perpendicular to Rod	4.42	(Inches)
Leg parallel to Rod	3	(Inches)



Assumptions

In lieu of allowable stress being increased by 33% per AISC ASD, the wind force in the rod is reduced by 25% (i.e. .75 (Wind load))
All equations developed in spreadsheet.
Maximum tangential wind force is the component of the resultant of wind blowing at a 45 degree angle to the sign face.
This maximum tangential wind force component is 1/2 of the normal resultant wind force based on geometry.
A 36 material used for rods. Allowable tensile stress = .33 (Fu) = .33 (58) = 19.1 ksi per AISC ASD table I-B page 4-3

USE 5/8 ϕ X00

PRYING-TYPE CONNECTION

DATE
30-Aug-97

Method of Analysis & Design based on pg. 4-90 of AISC Allowable Stress Design - 9th Edition

- calculation of W6x9 to W8x15 connection

INPUT PROPERTIES

Actual bolt tensile force (T)	0.54	(Kips)	
Flange width (Bf)	7	(Inches)	
Flange thickness (tf)	0.25	(Inches)	∴ 1/4" R on 7"x5"
Web thickness (tw)	0.17	(Inches)	
Bolt gage (g)	2.25	(Inches)	
Bolt diameter (d)	0.5	(Inches)	
Actual bolt shear stress (fv)	0	(Ksi)	
Tributary flange length (P)	4	(Inches)	*Bending length attributed to 1 bolt*

OUTPUT PROPERTIES

(a)	2.375	(Inches)	
(b)	1.040	(Inches)	
(a')	2.625	(Inches)	
(b')	0.790	(Inches)	
(row)	0.301	(Ratio)	
(d')	0.563	(Inches)	
(delta)	0.859	*Ratio of net area at bolt line & gross area at web*	
Allowable bolt tension stress (Ft)	44.00	(Ksi) -->	*Per equation in AISC Table J3.3, if different bolts used accomodate for them.*
Allowable bolt tension force (Ba)	8.64	(Kips)	
Flange thickness req'd to			
develop Ba with no prying (tc)	0.62	(Inches)	
(alpha prime)	4.53	*Value for alpha where (treq'd) is a min or (Tall) is a max*	
(alpha)	Alpha <= 1	*Ratio of moment at bolt line to moment at web line*	

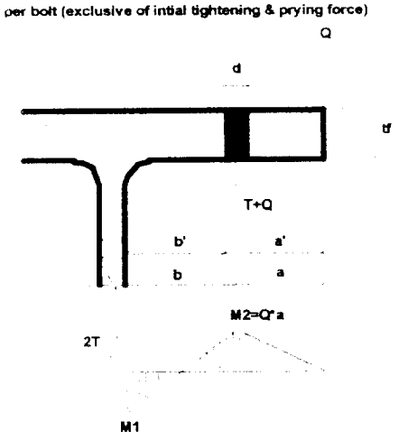
" = Applied tension per bolt (exclusive of intial tightening & prying force)

FLANGE BENDING

Allowable bolt force on Flanges (Ta1)	2.65	(Kips)
Actual bolt force on Flanges (T)	0.54	(Kips)
	T <= Ta1 O.K.	

TENSION ON BOLTS WITH PRYING ACTION

Prying force (Q)	0.00	(Kips)
Allowable bolt force (Ta2)	8.64	(Kips)
Actual bolt force (T)	0.54	(Kips)
	T <= Ta2 O.K.	



ASSUMPTIONS

- Tributary flange length (P) is a value based on engineering judgement for the particular connection type
- A-36 steel
- Allowable tension stress for A-325 bolts based on bearing-type connection with threads included in shear plane
- Concept of Prying Action

  As the flange gets in elastic range and flange begins to rotate, the tip comes in contact with other material and a couple is somewhat formed. This causes a decrease in the flange stress, but it increases stress in bolt.

RISA-3D (R) Version 2.1

National Advertising Company
3850 S Harlem Avenue
Bedford Park IL 60501 3401

Job : 97-102
Page: 2
Date: 8/30/97

Frame Analysis of 12x24

Member Stresses, LC 1 : Dead + Wind

Member Sec	Axial Ksi	Shear y-y Ksi	Shear z-z Ksi	Bending y top Ksi	Bending y-bot Ksi	Bending z-top Ksi	Bending z-bot Ksi
	0.38	47	0.00	-12.69	12.69	0.00	0.00
	0.38	08	0.00	-7.62	7.62	0.00	0.00
	0.37	69	0.00	-4.10	4.10	0.00	0.00
	0.36	30	0.00	-2.11	2.11	0.00	0.00
	0.35	08	0.00	-1.68	1.68	0.00	0.00
	0.35	57	0.00	-1.68	1.68	0.00	0.00
	0.35	43	0.00	-0.94	0.94	0.00	0.00
	0.34	29	0.00	-0.42	0.42	0.00	0.00
	0.34	14	0.00	-0.10	0.10	0.00	0.00
	0.34	00	0.00	0.00	-0.00	0.00	0.00
	0.00	00	0.00	0.00	0.00	0.00	0.00
	0.00	00	0.00	0.00	0.00	0.00	0.00
	0.01	00	0.00	0.00	0.00	0.00	0.00
	0.01	00	0.00	0.00	0.00	0.00	0.00
	0.01	00	0.00	0.00	0.00	0.00	0.00
	0.01	65	0.00	0.00	0.00	0.00	0.00
	0.02	65	0.00	-2.61	2.61	0.00	0.00
	0.03	65	0.00	-5.22	5.22	0.00	0.00
	0.04	65	0.00	-7.83	7.83	0.00	0.00
	0.05	65	0.00	-10.44	10.44	0.00	0.00
	0.40	01	0.00	0.00	0.00	0.00	0.00
	0.40	01	0.00	0.01	-0.01	0.00	0.00
	0.40	00	0.00	0.02	-0.02	0.00	0.00
	0.40	01	0.00	0.01	-0.01	0.00	0.00
	0.40	01	0.00	0.00	0.00	0.00	0.00

psycho | outrigger connection

$\Delta = 2\pi$ [illegible] $= 975.7(2.5108) = 1951.39$ in^4

f_v [illegible] $52(12)(5.375)/1951A = .91^k/in$

[illegible] $03 < 1/4$ ∴ $1/4$" Δ a.a. ok

Member AISC Unity Checks, LC 1 : Dead + Wind

Member	Joints		Unity Chk	Loc	Shear Chk	Loc	Fa	Fb yy	Fb zz	Cb	Cm yy	Cm zz	ASD Eqn
							Ksi	Ksi	Ksi				
W8x15		2	0.791	1	0.102	1y	8.82	27.00	16.42	1.00	0.60	0.85	H1-2
		3	0.087	1	0.040	1y	18.53	27.00	23.76	1.00	0.60	0.85	H1-2
		5	0.001	5	0.000	1y	18.53	27.00	23.76	1.00	0.60	0.60	H1-1
		6	0.638	5	0.045	1y	8.82	27.00	16.42	1.00	0.60	0.60	H1-2
W6x9		5	0.021	3	0.001	1y	19.71	27.00	23.76	1.00	0.60	1.00	H1-3

DEAD LOAD CALCULATIONS PER FRAME

30-Aug-97

*"Note: If 2 Faces apply, then accomodate for it in the QUANTITY column.
(TORSION PIPE weight is NOT included!!)*

Frame 'A' + 'B'

Tributary Span Length =	**12**	**(Feet)**
Upright Length =	**15.5**	**(Feet)**
Outrigger Length =	**1.5**	**(Feet)**
Rear Catwalk Support Length =	**1.33**	**(Feet)**
Saddle Length =		**(Feet)**

Quantity	Description	(#/Ft or psf)	(#)
	4 x 6 (nom) Douglas Fir (Walkrail)	4	96.00
	4 x 6 (nom) Douglas Fir (Stringer)	4	384.00
	4 x 3 x 1/4 (Front C.W. Angle)	5.8	278.40
	24" Wide (Front C.W. Grating)	3.14	150.72
	12' Height (Sign Face)	2.5	720.00
	2' Height (Apron)	2	96.00
	W6 x 9 (4' LG.) (Ent C.W. Support)	9	72.00
	W6 x 9 (Rear C.W. Support)	9	11.97
	W8 x 15 (Upright)	15	465.00
	W16 x 26 (Outrigger)	26	39.00
2313.09	**Subtotal**		
231.31	**10% Misc.**		
2.54	***Total Load (Kips)***		

Column pipe

P_{dl} = 9(24)(30)(.75)/1000 = 7.56^k ← w/o construction

P_{ll} = 2(21)(30)(.75)/100 = .95^k

$M = [7.56[7+21] + .95(21/2)](12) = 2660^{k-in}$

try 24"ϕ x .3125 $F_y = 35^{ksi}$ $D/t < 3300/F_y$ ∴ $F_b = .66(F_y)$

$S = 135.94\ in^3$

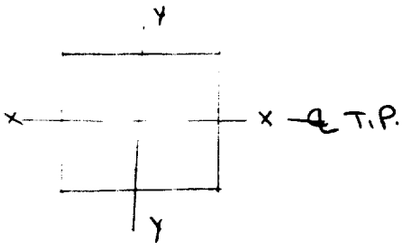
$f_b = 2660/135.94 = 19.56^{ksi} < 23.1^{ksi}$ ∴ ok

use 24"ϕ x .3125

Foundation load

$M = 2660(1.33) = 3537.8^{k-in}$

Head Connection Loads



$P_y = 7.56^k$

$M_x = 56[14/2 - 1 + 1](12)$

$= 3360^{k-in}$

HEAD CONNECTION BOLT ANALYSIS

(X-X Axis is Parallel with Torsion Pipe)

DATE
30-Aug-97

BOLT

Diameter	0.625	(Inches)
Area	0.3068	(Inches^2)
Number	6	

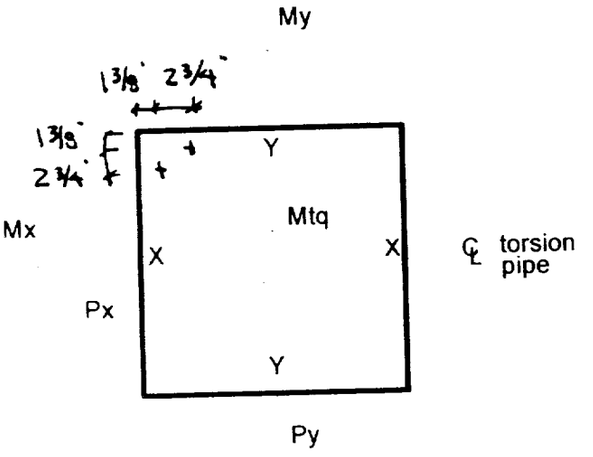
COLUMN PIPE

Diameter	24	(Inches)

BOLT DISTANCES FROM CENTERLINE OF HEAD PLATE (Enter 0 if no bolt)

IMPORTANT X-X Axis is parallel with Torsion Pipe

	X-Direction (In)	Y-Direction (In)	Dist to C.P.
Bolt #1	11.625	8.875	2.63
Bolt #2	3.375	11.625	2.63
Bolt #3	0	0	
Bolt #4	0	0	
Bolt #5	0	0	
Bolt #6	0	0	
Head Plate	25	25	



LOADS

Px		(Kips)
Py	2.56	(Kips)
Mx	635	(Kip-In)
My		(Kip-In)
Mtq		(Kip-In)

PROPERTIES

X-x	262.50	(Inches^4)
Y-y	262.50	(Inches^4)
	525.00	(Inches^4)

SHEAR / TENSILE STRESSES & TENSILE FORCES

	Tensile Stress			Tensile Force	Shear Stress		
	ft(x)	ft(y)	ft(combined)	Pt(combined)	fv(x)	fv(y)	fv(resultant)
	(Ksi)	(Ksi)	(Ksi)	(Kips)	(Ksi)	(Ksi)	(Ksi)
Bolt #1	21.47	0.00	21.47	6.59	0.00	3.08	3.08
Bolt #2	28.12	0.00	28.12	8.63	0.00	3.08	3.08
Bolt #3							
Bolt #4							
Bolt #5							
Bolt #6							

BEARING TYPE CONNECTION WITH STANDARD HOLE SIZE

∴ 5/8" ϕ A-325

1) = A-325-N (Threads included)	*Fv = 21 Ksi*
2) = A-325-X (Threads excluded)	*Fv = 30 Ksi*
3) = A-490-N (Threads included)	*Fv = 28 Ksi*
4) = A-490-X (Threads excluded)	*Fv = 40 Ksi*

ACTUAL & ALLOWABLE STRESSES

	fv	Fv	ft	Ft		
	(Ksi)	(Ksi)	(Ksi)	(Ksi)	Stress Ratio	Equation
Bolt #1	3.08	21	21.47	43.52	0.493	Ft = [(44^2)-4.39*(3.08^2)]^.5
Bolt #2	3.08	21	28.12	43.52	0.646	Ft = [(44^2)-4.39*(0.00^2)]^.5
Bolt #3						Ft = [(44^2)-4.39*(0.00^2)]^.5
Bolt #4						Ft = [(44^2)-4.39*(0.00^2)]^.5
Bolt #5						Ft = [(44^2)-4.39*(0.00^2)]^.5
Bolt #6						

Note: If Ft & Stress Ratio reads "ERR" then try a higher strength bolt

ASSUMPTIONS

Bolt # 1 is designated as the critical bolt
No gap exists between connection materials
In lieu of stresses being increased by 33% per AISC A5.2, the loads are inputed with the following factored equation: 1.0(D.L.) + .75 (W.L.)
A zero (0) has to be present in bolt location table
If a zero is present in the X-Direction column of the table then it is assumed that no bolt exists
Bolts are designed with the envelope approach which may be conservative (i.e. direction of loads is not accounted for).

HEAD CONNECTION PLATE TO COLUMN PIPE WELD ANALYSIS

(X-X Axis is Parallel with Torsion Pipe)

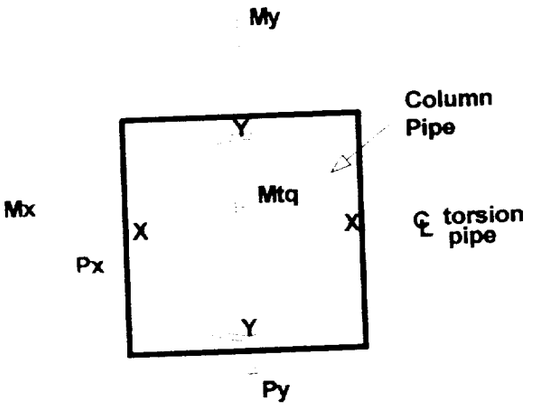
DATE
30-Aug-97

COLUMN PIPE

Diameter: **24** (Inches)

LOADS

Px		(Kips)
Py	7.56	(Kips)
Mx	635	(Kip-In)
My		(Kip-In)
Mtq		(Kip-In)



WELD PROPERTIES

NOTE: Properties based on Leg of weld being 1"

Area	75.4	(In^2 / In)
Section Modulus (S)	452.4	(In^3 / In)
Polar Moment of Inertia (J)	10857.3	(In^4 / In)

STRESSES

NOTE: Stresses based on Leg of weld being 1"

Tensile Stress (ft)	1.40	(Kips / In)
Shear Stress (fv)	0.20	(Kips / In)
Resultant Stress (R)	1.42	(Kips / In)

EQUATIONS

[(635.0)^2 + (0.0)^2]^.5 / 452.4
[2 * [{(0.0)^2 + (7.6)^2}^.5] / 75.4] + [(0.0 * 12) / 10857.3]
[(1.40)^2 + (0.20)^2]^.5

WELD LEG SIZE (a)

0.11 (Inches)

1.42 / (.707 * 18) ∴ 1/4" a a.a.

ASSUMPTIONS

E60xx Electrodes
Shear on circular section = 2 * Force / Area
Weld of gussets to head plate is not accounted for
In lieu of stresses being increased by 33% per AISC A5.2, the loads are inputed with the following factored equation: 1.0(D.L.) + .75 (W.L.)
Weld is designed with the envelope approach which may be conservative (i.e. direction of loads is not accounted for).

use ½" gussets

$M_x = .59^k + 8.63^k (2.63") = 90^{k\text{-}in}$

try ½" x 8" R

$S = 8(8)^2/6 = 5.33$

$f_b = 40/5.33 = 7.5^{ksi}$ ok

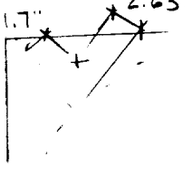
use non-uniform weld

$f_v = \frac{.59^k + 8.63^k}{2 \text{ sides } (6" \text{ long})} = 1.52^k/in$

$a = \frac{1.52}{8} = .19" < .25$

use ½" x 8" gussets w/ ¼" a a a

HEAD R thickness



$\ell_1 = 2.63"$ $\ell_2 = 1.7"$

$P_1\ell_1^3 = P_2\ell_2^3$

$P_1 = \frac{1.7^3}{2.63^3} P_2 = .27 P_2$

$P_1 + P_2 = 8.63^k$

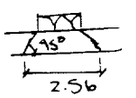
$1.27P_2 = 8.63 \Rightarrow P_2 = 6.8^k$

$\therefore P_1 = 1.83^k$

$M_1 = \frac{1.83^k(2.63 - \frac{.53}{2})}{2} = 2.16^{k\text{-}in}$

$M_2 = \frac{6.8^k(1.7 - \frac{.53}{2})}{2} = 4.88^{k\text{-}in}$ → governs

try 3/4" R



$S = 2.56(.75)^2/6 = .24$

$f_b = 4.88/.24 = 20.33^{ksi} < 27^{ksi}$ ∴ ok

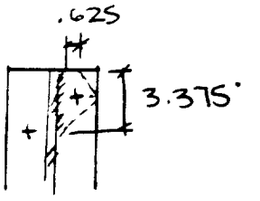
∴ use 3/4" x 26" x 26"

Head Connection (Cont)

check top gussets

- try W16x31 connecting riggers

$t_f = .44$ in



$M = Pe/2 = 8.63^k(.625)/2 = 2.69^{k\text{-in}}$

$S = 3.375(.44)^2/6 = .109\ in^3$

$f_b = 2.69/.109 = 24.6^{ksi} < 27^{ksi}$ ∴ ok

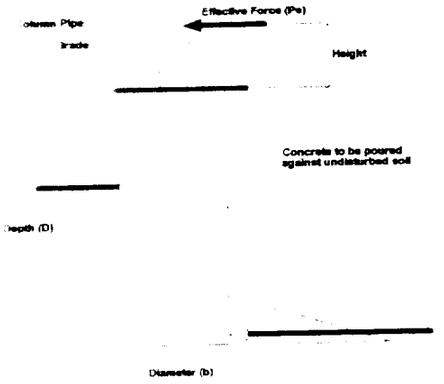
∴ use W16x31 (no top gussets reqd)

Drilled shaft

Laterally Loaded Footing with Nonconstrained Condition

30-Aug-97

Foundation Design based on Equations From the Uniform Building Code)



SIGN CONFIGURATION

Sign Face Height	12	(Feet)
Apron Height	2	(Feet)
Height a.g.	2'	(Feet)

FOOTING

Diameter (b)	**3.5**	(Feet)

WORKING LOADS (i.e. 1.0(D.L.) + 1.0(W.L.)

Live Load Moment	3537.8	(Kip-In)
Dead Load Moment		(Kip-In)
Effective Force (Pe)	10.5	(Kips)
Height from Grade to Pe (H)	28	(Feet)

ALLOWABLE LATERAL BEARING SOIL PRESSURE CALCULATION TO DETERMINE DEPTH

Soil pressure	**0.15**	(ksf per ft of depth)	
Trial Depth	**13.2**	(Feet)	*IMPORTANT After iterations are complete this value is to be as close to actual depth value (d) but not greater than*
Effective Depth	**4.40**	(Feet)	*Based on 1/3 the depth of embedment, but not to exceed 12'.*

Allowable Stress Increase Factors

2 = allowance for 1/2" deflection @ grade

1.33 = Allowable stress increase factor per 1603.5 (Choose 1 or 2 for increase)

(1=Yes or 2=No)=> 1

Allowable Soil Pressure (S1)	**1.76**	(ksf)	**S1=2 x 4.40 x 1.33 x 0.150**
A	**4.01**		**A = (2.34 x 10.5) / (1.76 x 3.5)**
Depth (d)	**13.2**	(Feet)	**d = (4.01 / 2) x [1 + {1 + (4.36 x 28.0 / 4.01)}^.5]**
	O.K.		

USE 3'-6" ϕ x 13'-6" Depth