

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0202478
Insp Area: 2
Thos Bros: 297 B6

Site Address: 2555 3RD ST SAC
Parcel No: 009-0237-018 **ROOF**

Sub-Type: NOTHR
Housing (Y/N): N

CONTRACTOR
DNP CONSTRUCTION CORP.
1761 35TH STREET
SACRAMENTO, CA 95816

OWNER
SETZER FOREST PRODUCTS
SACRAMENTO CA
95812-1764

ARCHITECT

Nature of Work: INSTALLATION OF BTS CABINET & NEW ANTENNAS FOR ROOFTOP CELL SITE OF EXISTING BUILDING

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, Civ. C).

Lender's Name _____ Lender's 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 _____ License Number 777493 Date 4-29-02 Contractor Signature [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 construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00);

____ I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

____ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

I am exempt under Sec. _____ B & PC for this reason: _____

Date _____ Owner Signature _____

PAID
CITY OF SACRAMENTO

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the above-mentioned property for inspection purposes.

Date 4-29-02 Applicant/Agent Signature [Signature]

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:
____ I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

____ I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier _____ Policy Number _____ Exp Date _____

(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 4-29-02 Applicant Signature [Signature]

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

APPLICATION FOR COMMERCIAL BUILDING PERMIT

CITY OF SACRAMENTO
DEVELOPMENT SERVICES DIVISION
PERMIT SERVICES SECTION

1231 I Street, Rm. 200
 Sacramento, CA 95814 (916) 264-7619 FAX 264-7046

ACTIVITY # 0202478 Insp. Area 2C

Applicant **MUST** complete ALL Unshaded areas

ADDRESS 2555 Third St - Sacramento CA 95818 Suite _____

PARCEL # 009.0237.018

<p style="text-align: center;">CONTACT</p> <p>Name <u>L. Nicole Lawson</u> Street Address <u>1761 - 35th St.</u> City/State/Zip <u>Sacramento, CA 95816</u> Phone <u>457-1165</u> FAX <u>457-1173</u> E-mail: <u>DNPcomm@aol.com</u></p>	<p style="text-align: center;">LICENSED CONTRACTOR Lic No. # <u>777493</u></p> <p>Name <u>DNP Communication, Inc.</u> Address <u>1761 - 35th St.</u> City/State/Zip <u>Sacramento, CA 95816</u> Phone <u>457-1165</u> FAX <u>457-1173</u> E-mail: <u>DNPcomm@aol.com</u></p>
<p style="text-align: center;">ARCHITECT/ENGINEER</p> <p>Name _____ Address _____ City/State/Zip _____ Phone _____ FAX _____ E-mail: _____</p>	<p style="text-align: center;">OWNER</p> <p>Name <u>Cingular Wireless</u> Address <u>3851 North Freeway Blvd</u> City/State/Zip <u>Sacramento, CA 95834</u> Phone <u>541-1441</u> FAX _____ E-mail: _____</p>

→ Will permittee have any employees on the jobsite? No Yes → INSURANCE CO: State Fund
 → WORKER'S COMPENSATION POLICY # 1586.364 EXPIRATION DATE: 4-02

NATURE OF WORK IN DETAIL: B.T.S Cabinet install

OCCUPANT/TENANT: CINGULAR VALUATION: \$ 5000⁰⁰

FLOOD STATUS:				S.C.A.T.						
JOB DESCRIPTION		BLDG	SHELL	APT	TI()	REM()	SW	FIRE	ADD	OTH
INSPECTION DISCIPLINES			BLDG	MECH	PLUMB	ELEC	SITE	FIRE		
# Stories	1st flr Area	Total Area	Use Zone	Occp Group	Const type	Fire Req. Y / N		Fed Code		Vio. File
						SPR	ALARM	<u>20</u>		(H) (Quad)
B	L	P	M	E	F	S	D	PW	UTIL	

COMMENTS: _____

REGIONAL SANITATION FEES? Yes No HEALTH DEPARTMENT? Yes No
 WATER FLOW TEST FOR NEW BUILDINGS OR ADDITIONS? Provided Faxed

PLANNING AND ZONING REVIEW

..... to be filled out by Planning staff

ADDRESS: 2555 3rd ST

APN: 009.0237.018 ZONING: M-1

DESIGN REVIEW AREA: Per GIS & APS not in DR

PREVIOUS FILES RELATED TO SITE: Z96-075, Z00-065
DR96188

EXISTING LAND USE: _____

PROPOSED USE: BTS EQUIP ON ROOF

COMMENTS: Adding 2nd cabinet & 1 panel
Antenna — original approval was for
2 cabinets & 6 panel antennas —
this application is for the 2nd cabinet
and the 6th antenna.

DATE: _____ BY: _____

DOES IT APPEAR THAT THE PROJECT WILL REQUIRE A PLANNING APPLICATION?

YES NO (If yes, circle applications needed below)

.....Staff.....ZA.....Planning Commission......Design Review.....Preservation Review.....

CONCLUSION: Must meet conditions of approval
of Z96-075, Z00-065, DR96188

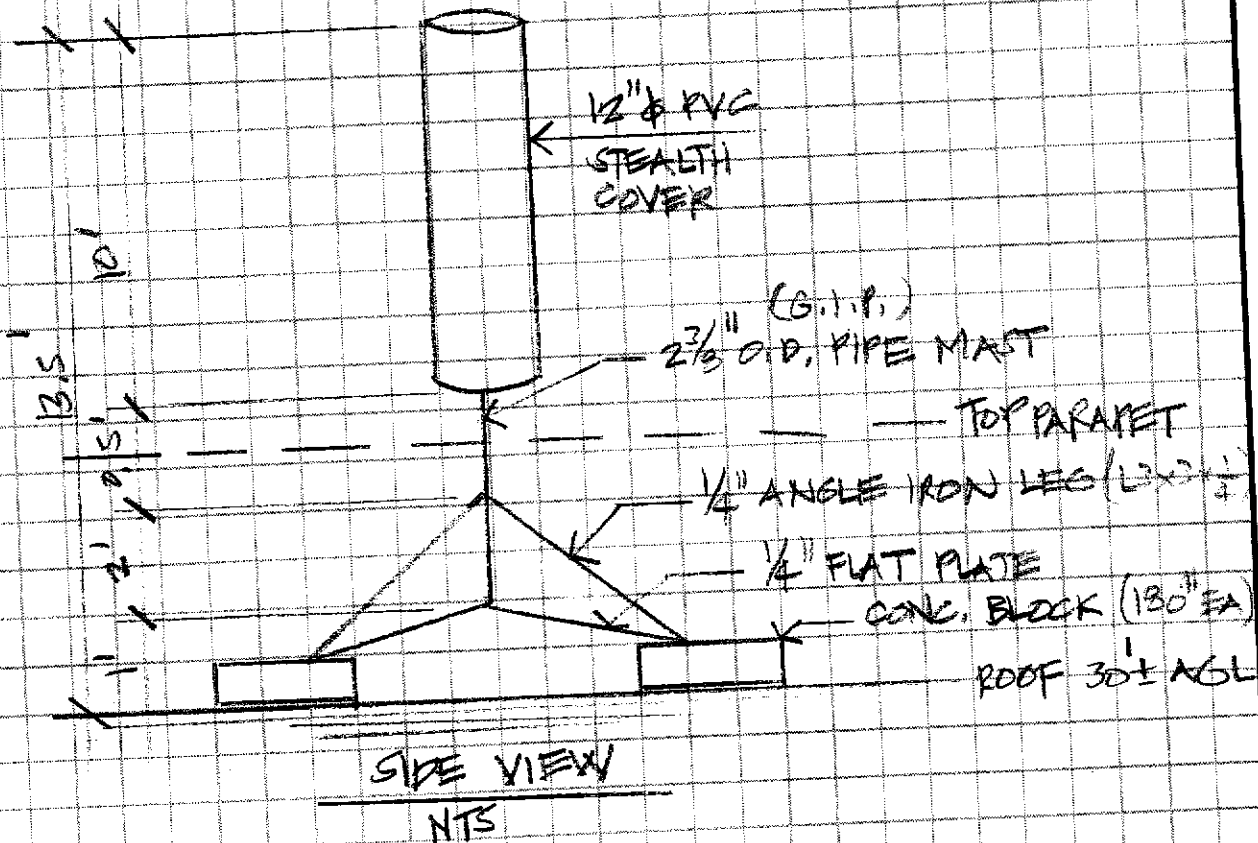
DATE: 2-27-02 BY: L. Hay

WESTERN PLANNING

AND ENGINEERING

11860 KEMPER RD., SUITE 3
 AUBURN, CALIFORNIA 95603
 PH. (916) 823-6917 • FAX (916) 823-5518

JOB: SAKY LEON SA04-04 11-11-02
 SHEET NO. 1 OF 1
 CALCULATED BY: DM DATE: 12/12/96
 CHECKED BY: MCF DATE: 11
 SCALE: _____



WIND LOAD:

BASIC WIND SPEED = 75 MPH
 EXPOSURE = C
 $C_f = 0.8$ (ROUND COVER)

MICROFILM AT FINAL

$$P = C_e C_p \frac{1}{2} \rho V_w^2$$

$$= 1.31 \times 0.8 \times 14.5 \times 1.0$$

$$= 15.20 \text{ PSF}$$

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This permit is given and specification
 shall be held to that or approve the
 violation of any City Ordinance or State Law.

0202478

CHECK OVERTURNING

WT. MAST:

$$WT. = 5.12 \frac{lb}{ft} \times 12.5' = 64 lb$$

$$152 \# = W$$

$$W = 1520 \text{ RBF} \times 1' \times 10' = 152 \#$$

WT. PVC:

$$0.94 \frac{lb}{ft} \times 0.00008 \frac{lb}{in^3} \times \frac{16390 \text{ cm}^3}{in^3} = 0.03397 \frac{lb}{in^3}$$

$$\sum M_A = 0 = (152 \# \times 8.5') - (142 \# \times 3.15') - (F \times 7.15')$$

$$\Rightarrow F = 113 \# < 130 \# \text{ OK}$$

USE 130# CEA LEG

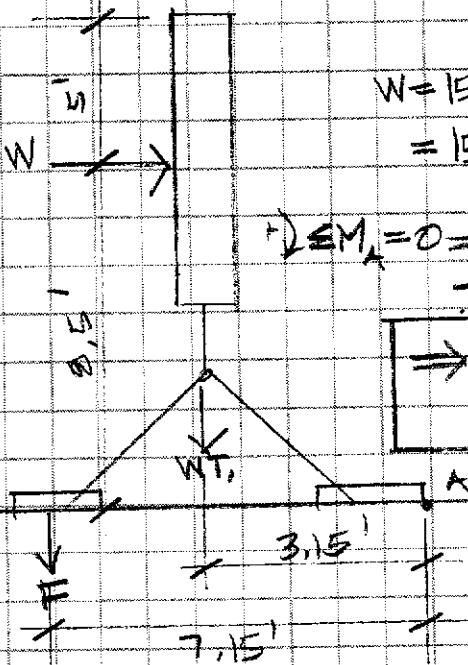
ASSUME 0.375" THICK

$$c = \uparrow d = 37.7''$$

$$V = 37.7'' \times 0.375'' \times \left(10 \times \frac{12}{16}\right) = 1,696 \text{ IN}^3$$

$$WT. = 0.03397 \times 1,696 \text{ IN}^3 = 58 \text{ lb} \pm$$

$$WT. \text{ TOTAL} = 58 + 64 + 20 = 142 \text{ lb}$$



CHECK BENDING @ MAST & LEG JUNCTION:

$$S_{REQ} = \frac{M}{F_b} = \frac{P \times L}{24 \text{ ksi}} = \frac{152 \# \times \left(5.5' \times \frac{12}{16}\right)}{24 \text{ ksi}} = 0.42 \text{ IN}^3$$

ASSUME PIPE WALL THICKNESS = 0.20"

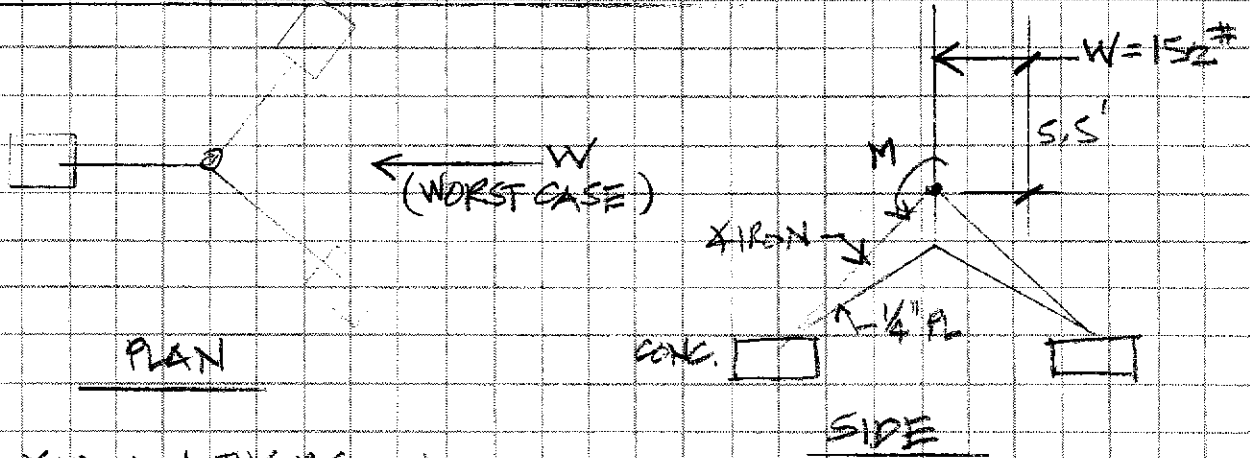
$$S_{ACTUAL} = \frac{0.0932 (D^4 - d^4)}{D} = \frac{0.0932 (2.375^4 - 1.975^4)}{2.375} = 0.686 \text{ IN}^3 > 0.42 \text{ OK}$$

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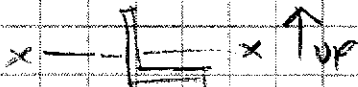
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CHECK AXIAL BENDING @ IRON LEG!



ASSUME IRON IN THIS POSITION



$$S_{REQ} = \frac{M}{F} = 0.42 \text{ IN}^3$$

$$S_{ACTUAL} = 0.351 < 0.42 \text{ N.G.}$$

(L2x2x3/8)

USE L 3x3x1/4
 S = 0.577 OK

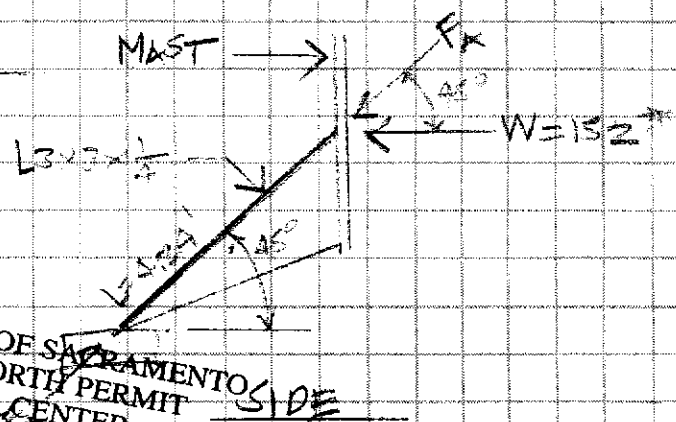
CHECK BUCKLING @ IRON LEG!

$$F_A = 152# \cos 45^\circ = 107#$$

$$P_{CR} = \frac{\pi^2 EI}{L^2}$$

$$= \frac{3.14^2 (29,000 \text{ KSI}) (1.24 \text{ IN}^4)}{(4.24 \times 12 \text{ IN})^2}$$

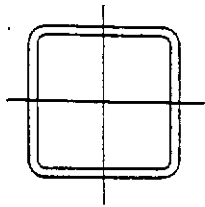
$$= 137,000# > 107 \text{ OK}$$



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COLUMNS

Square structural tubing

Allowable concentric loads in kips ($\times 1000\#$)

$$F_y = 46 \text{ ksi}$$

$$F_y = 46 \text{ ksi}$$

Nominal Size	4 x 4					3 x 3			
	Thickness	1/2	3/8	5/16	1/4	3/16	5/16	1/4	3/16
Wt./ft.	21.63	17.27	14.83	12.21	9.42	10.58	8.81	6.87	
F_y	46 ksi								
Effective length in feet KL with respect to radius of gyration	0	176	140	120	99	76	86	71	56
	2	168	134	115	95	73	80	67	53
	3	162	130	112	92	71	77	64	50
	4	156	126	108	89	69	73	61	48
	5	150	121	104	86	67	68	57	45
	6	143	115	100	83	64	63	53	42
	7	135	110	95	79	61	57	49	39
	8	126	103	90	75	58	51	44	35
	9	117	97	84	70	55	44	38	31
	10	108	89	78	65	51	37	33	27
	11	98	82	72	60	47	31	27	22
	12	87	74	65	55	43	26	23	19
	13	75	65	58	49	39	22	19	16
	14	65	57	51	43	35	19	17	14
	15	57	49	44	38	30	16	15	12
	16	50	43	39	33	27	14	13	11
	17	44	38	34	29	24	13	11	9
	18	39	34	31	26	21		10	8
	19	35	31	28	24	19			
	20	32	28	25	21	17			
		29	25	23	19	16			
		23	21	18	14				
		21	19	16	13				
		19	17	15	12				
				14	11				

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Properties									
A (in. ²)	6.36	5.08	4.36	3.59	2.77	3.11	2.59	2.02	
I (in. ⁴)	12.3	10.7	9.58	8.22	6.59	3.58	3.16	2.60	
r (in.)	1.39	1.45	1.48	1.51	1.54	1.07	1.10	1.13	
Bending factor	1.04	0.949	0.910	0.874	0.840	1.30	1.23	1.17	
*a	1.83	1.59	1.43	1.22	0.983	0.533	0.470	0.387	

* Tabulated values of a must be multiplied by 10⁶.
Note: Heavy line indicates Kl/r of 200.

Nominal Size
Thickness
Wt./ft.
F_y
Effective length in feet KL with respect to least radius of gyration

A (in.²)
I_x (in.⁴)
I_y (in.⁴)
r_x/r_y
r_y (in.)
B_x } Bending factors
B_y }
a_x }
a_y }*

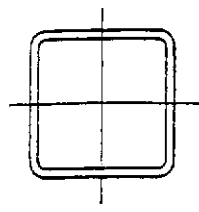
* Tabulate
Note: Heavy

0202428

6 ksi

$F_y = 46$ ksi

COLUMNS
 Square structural tubing
 Allowable concentric loads in kips



1/4	3/16
22.42	17.08
182	139
168	128
165	126
162	123
158	121
155	118
151	115
147	113
143	109
139	106
135	103
130	100
125	96
120	92
115	89
110	85
105	81
99	77
94	73
88	68
82	64
76	59
70	55
65	51
61	47
57	44
50	39
44	35
40	31
35	28
32	25
6.59	5.02
49.4	38.5
2.74	2.77
0.467	0.457
7.36	5.73

Nominal Size	6 x 6						5 x 5					
	1/2	3/8	5/16	1/4	3/16	1/2	3/8	5/16	1/4	3/16		
Thickness												
Wt./ft.	35.24	27.48	23.34	19.02	14.53	28.43	22.37	19.08	15.62	11.97		
F_y	46 ksi											
Effective length in feet KL with respect to radius of gyration	0	287	223	189	154	118	231	182	155	127	97	
	6	257	201	171	140	107	200	159	136	111	86	
	7	251	196	167	137	105	193	153	131	108	83	
	8	244	191	163	133	102	186	148	127	104	80	
	9	237	186	158	130	99	178	142	122	100	77	
	10	229	180	154	126	96	169	135	116	96	74	
	11	221	174	149	122	93	160	129	111	92	71	
	12	212	168	143	117	90	151	122	105	87	67	
	13	203	161	138	113	87	141	115	99	82	64	
	14	194	154	132	108	83	131	107	93	77	60	
	15	185	147	126	104	80	120	99	86	72	56	
	16	175	140	120	99	76	109	90	79	66	52	
	17	164	132	113	94	72	97	82	72	60	47	
	18	153	124	107	88	68	87	73	64	54	43	
	19	142	115	100	83	64	78	65	58	49	39	
	20	131	107	93	77	60	70	59	52	44	35	
	21	119	98	85	71	56	64	54	47	40	32	
	22	108	89	78	65	51	58	49	43	36	29	
	24	91	75	65	55	43	49	41	36	31	24	
	26	77	64	56	47	36	41	35	31	26	21	
	28	67	55	48	40	31	36	30	27	22	18	
	30	58	48	42	35	27	31	26	23	20	15	
	31	54	45	39	33	26		25	22	18	14	
	32	51	42	37	31	24				17	14	
	34	45	37	33	27	21						
	36	40	33	29	24	19						
			32	27	23	18						
				26	22	17						
						16						
	Properties											
	A (in. ²)	10.40	8.08	6.86	5.59	4.27	8.36	6.58	5.61	4.59	3.52	
	I (in. ⁴)	50.5	41.6	36.3	30.3	23.8	27.0	22.8	20.1	16.9	13.4	
	r (in.)	2.21	2.27	2.30	2.33	2.36	1.80	1.86	1.89	1.92	1.95	
	B } Bending factor	0.615	0.583	0.567	0.553	0.539	0.773	0.722	0.699	0.677	0.656	
	* a	7.52	6.20	5.40	4.52	3.54	4.03	3.39	2.99	2.52	2.00	

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* Tabulated values of a must be multiplied by 10^6 .
 Note: Heavy line indicates Kl/r of 200.

ROOFTOP TRIPODS

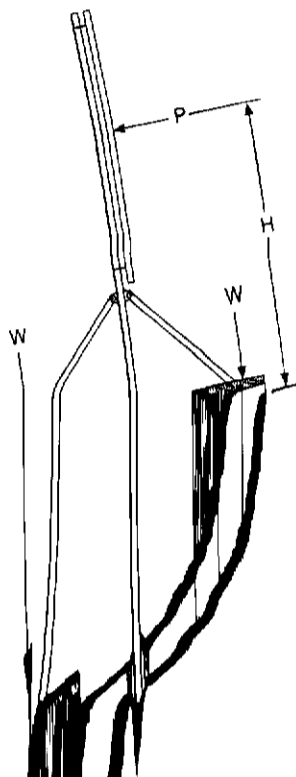
NON-PENETRATING BALLASTED TRIPODS

Non-penetrating Ballasted Tripods enable installation of Wireless Whip and Panel Antennas. These Tripods are secured to the roof using a concrete-block ballast (not included) that is placed on the Tripod's three 1'-4" wide x 8" long trays. An optional 99279 Ballast Tie-Down Kit (this page), is available to secure the Ballast. Alternatively, the Tripods can be anchored to a roof structure using 3/8" diameter Anchor Bolts.

The bottom of the Tripod is smooth to prevent roof damage. The B1564 Rubber Mat Kit (page 13.3), is an available option to further protect the roof's surface.

Design loading, per EIA-RS-222-C, is for 100 mph and 1/2" of radial ice.

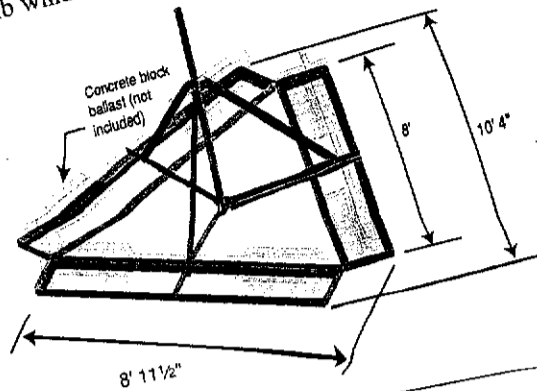
Formula for determining Tripod ballast:



NON-PENETRATING BALLASTED TRIPOD FOR WHIP ANTENNA

The 5' high Non-Penetrating Ballasted Tripod supports a Whip Antenna that mounts on the top 2' of the 2 3/8" OD mast. Both a B1564 Rubber Mat Kit and a 99279 Ballast Tie-Down Kit (this page), are available options for this Tripod.

Maximum antenna loading is:
 100 lb wind load and 1,200 ft-lb bending moment, or
 200 lb wind load and 1,000 ft-lb bending moment.



Product Number	Description	List Price
99280	Non-Penetrating Ballasted Tripod for whip antenna	\$375.00

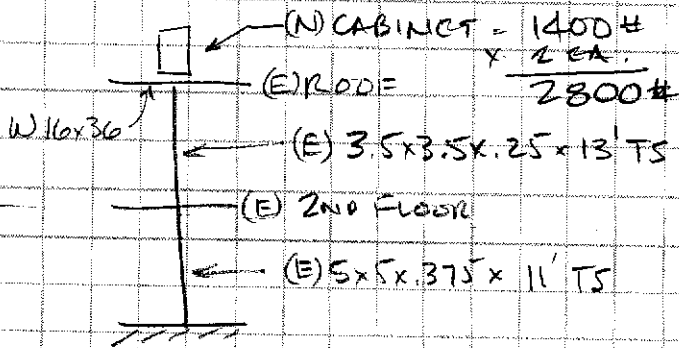
BALLAST TIE-DOWN KIT FOR NON-PENETRATING BALLASTED TRIPODS

The Ballast Tie-Down Kit provides a means to secure concrete Ballasted Tripods.

CINGULAR SITE # 004-88

"HIGHWAY 80 + ROUTE 5"
 2555-3RD STREET
 SACRAMENTO CA
 AKA SETZER BUILDING

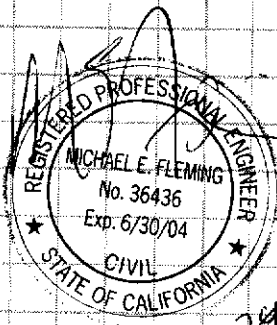
PROJECT DESCRIPTION: PLACE 1400# RADIO CABINET ON (E) TS COLUMN ON ROOF OF 2-STORY BUILDING.



LOADS TO TS: (ROOF)
 ROOF LG = $\frac{32+34}{2} (SPSF)(16') = 2640$
 FRAM'G = $19ca \times 16' \times 5\#/ft = 1520$
 INT. GYP. BD. = $33 \times 16 \times 3.2 = 1584$
 (N) CABINET = 2800
 L.L. = $20(33)(16) = 10560$
19104

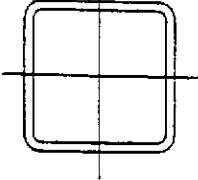
2ND FLOOR COL. = $3.5 \times 3.5 \times .25 \times 13'$ G.F. $\approx \frac{49+19}{2} = 34k$
OK

ADD 2ND FL.: FLOOR: 1.5" L.W. CONC.: $\frac{1.5}{12} (115)(33)(16) = 7590$
 3/4" PLY = $1.5(33)(16) = 792$
 W 21x57x33' = $57 \times 33 = 1881$
 2" TS $135 \times 16' \times 2ca \times 3\#/ft = 1008$
 CEILING = $3.2(33)(16) = 1690$
 W 14x22x16' = 352
 LL = $50(33)(16) = 26400$
39713#



1-29-02

1ST FLOOR COL. = $5 \times 5 \times .375 \times 11'$ TS G.F. $\approx 129k$ OK



COLUMNS

Square structural tubing

Allowable concentric loads in kips ($\times 1000\#$)

$F_y = 46$ ksi

$F_y = 46$ |

Nominal Size		4 x 4					3 x 3		
Thickness		1/2	3/8	5/16	1/4	3/16	5/16	1/4	3/16
Wt./ft.		21.63	17.27	14.83	12.21	9.42	10.58	8.81	6.87
F_y		46 ksi							
Effective length in feet KL with respect to radius of gyration	0	176	140	120	99	76	86	71	56
	2	168	134	115	95	73	80	67	53
	3	162	130	112	92	71	77	64	50
	4	156	126	108	89	69	73	61	48
	5	150	121	104	86	67	68	57	45
	6	143	115	100	83	64	63	53	42
	7	135	110	95	79	61	57	49	39
	8	126	103	90	75	58	51	44	35
	9	117	97	84	70	55	44	38	31
	10	108	89	78	65	51	37	33	27
	11	98	82	72	60	47	31	27	22
	12	87	74	65	55	43	26	23	19
	13	75	65	58	49	39	22	19	16
	14	65	57	51	43	35	19	17	14
	15	57	49	44	38	30	16	15	12
	16	50	43	39	33	27	14	13	11
	17	44	38	34	29	24	13	11	9
	18	39	34	31	26	21		10	8
	19	35	31	28	24	19			
	20	32	28	25	21	17			
	21	29	25	23	19	16			
	22	26	23	21	18	14			
	23	24	21	19	16	13			
	24		19	17	15	12			
	25				14	11			

Nominal Size
Thickness
Wt./ft.
F_y

Effective length in feet KL with respect to least radius of gyration
--

A (in. ²)
I_x (in. ⁴)
I_y (in. ⁴)
r_x/r_y
r_y (in.)
B_x } Bending
B_y } factors
a_x }
a_y } *

Properties									
A (in. ²)	6.36	5.08	4.36	3.59	2.77	3.11	2.59	2.02	
I (in. ⁴)	12.3	10.7	9.58	8.22	6.59	3.58	3.16	2.60	
r (in.)	1.39	1.45	1.48	1.51	1.54	1.07	1.10	1.13	
B } Bending	1.04	0.949	0.910	0.874	0.840	1.30	1.23	1.17	
factor									
*a	1.83	1.59	1.43	1.22	0.983	0.533	0.470	0.387	

* Tabulated values of a must be multiplied by 10⁶.
 Note: Heavy line indicates Kl/r of 200.

* Tabulate
 Note: Heav

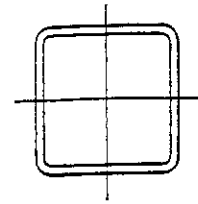
46 ksi

$F_y = 46 \text{ ksi}$

COLUMNS

Square structural tubing

Allowable concentric loads in kips



1/4	3/16
22.42	17.08
182	139
168	128
165	126
162	123
158	121
155	118
151	115
147	113
143	109
139	106
135	103
130	100
125	96
120	92
115	89
110	85
105	81
99	77
94	73
88	68
82	64
76	59
70	55
65	51
61	47
57	44
50	39
44	35
40	31
35	28
32	25
6.59	5.02
49.4	38.5
2.74	2.77
0.467	0.457
7.36	5.73

Nominal Size		6 x 6					5 x 5					
Thickness		1/2	3/8	5/16	1/4	3/16	1/2	3/8	5/16	1/4	3/16	
Wt./ft.		35.24	27.48	23.34	19.02	14.53	28.43	22.37	19.08	15.62	11.97	
F_y		46 ksi										
Effective length in feet KL with respect to radius of gyration	0	287	223	189	154	118	231	182	155	127	97	
	6	257	201	171	140	107	200	159	136	111	86	
	7	251	196	167	137	105	193	153	131	108	83	
	8	244	191	163	133	102	186	148	127	104	80	
	9	237	186	158	130	99	178	142	122	100	77	
	10	229	180	154	126	96	169	135	116	96	74	
	11	221	174	149	122	93	160	129	111	92	71	
	12	212	168	143	117	90	151	122	105	87	67	
	13	203	161	138	113	87	141	115	99	82	64	
	14	194	154	132	108	83	131	107	93	77	60	
	15	185	147	126	104	80	120	99	86	72	56	
	16	175	140	120	99	76	109	90	79	66	52	
	17	164	132	113	94	72	97	82	72	60	47	
	18	153	124	107	88	68	87	73	64	54	43	
	19	142	115	100	83	64	78	65	58	49	39	
	20	131	107	93	77	60	70	59	52	44	35	
	21	119	98	85	71	56	64	54	47	40	32	
	22	108	89	78	65	51	58	49	43	36	29	
	24	91	75	65	55	43	49	41	36	31	24	
	26	77	64	56	47	36	41	35	31	26	21	
	28	67	55	48	40	31	36	30	27	22	18	
	30	58	48	42	35	27	31	26	23	20	15	
	31	54	45	39	33	26		25	22	18	14	
	32	51	42	37	31	24				17	14	
	34	45	37	33	27	21						
	36	40	33	29	24	19						
	37		32	27	23	18						
	38			26	22	17						
	39					16						
	Properties											
	A (in. ²)	10.40	8.08	6.86	5.59	4.27	8.36	6.58	5.61	4.59	3.52	
	I (in. ⁴)	50.5	41.6	36.3	30.3	23.8	27.0	22.8	20.1	16.9	13.4	
	r (in.)	2.21	2.27	2.30	2.33	2.36	1.80	1.86	1.89	1.92	1.95	
	B } Bending factor	0.615	0.583	0.567	0.553	0.539	0.773	0.722	0.699	0.677	0.656	
	* a	7.52	6.20	5.40	4.52	3.54	4.03	3.39	2.99	2.52	2.00	

* Tabulated values of a must be multiplied by 10^6 .

Note: Heavy line indicates Kl/r of 200.