

MEMORANDUM OF FINDING OF PROBABLE CAUSE PANEL

TO: FLORIDA ENGINEERS MANAGEMENT CORPORATION, LEGAL
FROM: CHAIRMAN, PROBABLE CAUSE PANEL
PROFESSIONAL ENGINEERS
RE: **DO YEON KIM, P.E.** CASE NO.: 2008008617
DATE OF PROBABLE CAUSE PANEL MEETING: **JULY 15, 2008**

THIS MATTER WAS BROUGHT BEFORE THE PROBABLE CAUSE PANEL MEMBERSHIP COMPOSED OF **REBANE & SECKINGER** ON THE DATE SET FORTH ABOVE. THE PANEL, HAVING RECEIVED THE INVESTIGATIVE REPORT, HAVING CAREFULLY REVIEWED THAT REPORT, HAVING REVIEWED THE RECOMMENDATION OF FEMC AND HAVING HAD THE OPPORTUNITY TO INQUIRE OF COUNSEL AND BEING OTHERWISE DULY ADVISED IN THE PREMISES THEREOF FINDS THAT:

 PROBABLE CAUSE WAS NOT FOUND IN THIS CASE

 X IN LIEU OF PROBABLE CAUSE BEING FOUND A LETTER OF GUIDANCE IS TO BE ISSUED

 PROBABLE CAUSE WAS FOUND ON THE FOLLOWING STATUTORY AND RULE GROUNDS INCLUDING BUT NOT LIMITED TO SECTIONS:

471.033(1)(g), F.S.

RECOMMENDATION: Close with a Letter of Guidance

Ken Rebane, P.E. 7/24/08
CHAIR, PROBABLE CAUSE PANEL
BOARD OF PROFESSIONAL ENGINEERS



FLORIDA BOARD OF PROFESSIONAL ENGINEERS

CHARLIE CRIST, GOVERNOR

CHUCK DRAGO, INTERIM SECRETARY
DEPARTMENT OF BUSINESS
AND PROFESSIONAL REGULATION

July 28, 2008

DO YEON KIM, PE
PO BOX 10039
TAMPA, FL 33679

RE: Complaint No. 2008008617

Dear Mr. Kim:

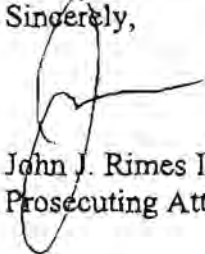
This letter is sent to inform you of the action taken in regard to the complaint filed against you.

This case was investigated by the Florida Engineers Management Corporation (FEMC), reviewed by FEMC's legal staff, and then presented to the Probable Cause Panel of the Board of Professional Engineers in accordance with Section 455.225, Florida Statutes.

After reviewing the entire investigative report and considering the recommendations of FEMC, the Panel determined there was sufficient evidence to believe that you violated Section 471.033(1)(g), Florida Statutes, and Rule 61G15-23.002, Florida Administrative Code. However, pursuant to Section 455.225(4), Florida Statutes, in lieu of a finding of probable cause, the Panel directed that the case be DISMISSED with a LETTER OF GUIDANCE.

If you should have any questions or comments regarding this matter, please contact my office at (850) 521-0500. Thank you very much for your cooperation during these proceedings.

Sincerely,


John J. Rimes III
Prosecuting Attorney

JR/jt
Enclosures

John C. Burke, P.E.
CHAIR
(ELECTRICAL)
1/8/04-10/31/10

David O. Charland, P.E.
VICE CHAIR
(STRUCTURAL)
4/20/05-10/31/08

Christian S. Bauer, Ph. D., P.E.
(INDUSTRIAL)
4/20/05-10/31/08

Henn Rebane, P.E.
(ELECTRICAL)
11/29/89-10/31/07

Zafar Hyder, Ph. D., P.E.
(CIVIL)
6/22/07-10/31/10

Paul Tomasino, P.E.
(CIVIL)
2/11/02-10/31/10

Jonathan F. Earle, Ph. D., P.E.
(EDUCATIONAL)
2-12-08-10-31-09

Nola Garcia
(PUBLIC)
2/12/08-10/31/10

Vacant
(CIVIL)

Vacant
(Public Member)

Vacant
(MECHANICAL)

Carrie Flynn
EXECUTIVE DIRECTOR



FLORIDA BOARD OF PROFESSIONAL ENGINEERS

CHARLIE CRIST, GOVERNOR

CHUCK DRAGO, INTERIM SECRETARY
DEPARTMENT OF BUSINESS
AND PROFESSIONAL REGULATION

July 28, 2008

STEVEN SINCERE, PE
1867 SW BELGRAVE TER
STUART, FL 34997

RE: Do Yeon Kim, P.E.
Complaint No. 2008008617

Dear Mr. Sincere:

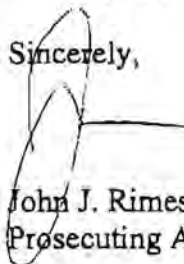
This letter is sent to inform you of the action taken in regard to the complaint filed against Mr. Kim.

This case was investigated by the Florida Engineers Management Corporation (FEMC), reviewed by FEMC's legal staff, and then presented to the Probable Cause Panel of the Board of Professional Engineers in accordance with Section 455.225, Florida Statutes.

After reviewing the entire investigative report and considering the recommendations of FEMC, the Panel directed that the case be DISMISSED with a LETTER OF GUIDANCE.

Thank you very much for your cooperation during these proceedings.

Sincerely,


John J. Rimes III
Prosecuting Attorney

JR/jt
Enclosure

John C. Burke, P.E.
CHAIR
(ELECTRICAL)
1/8/04-10/31/10

David O. Charland, P.E.
VICE CHAIR
(STRUCTURAL)
4/20/05-10/31/08

Christan S. Bauer, Ph. D., P.E.
(INDUSTRIAL)
4/20/05-10/31/08

Henn Rebane, P.E.
(ELECTRICAL)
11/29/99-10/31/07

Zafar Hyder, Ph. D., P.E.
(CIVIL)
8/22/07-10/31/10

Paul Tomasino, P.E.
(CIVIL)
2/11/02-10/31/10

Jonathan F. Earle, Ph. D., P.E.
(EDUCATIONAL)
2-12-08-10-31-09

Nola Garcia
(PUBLIC)
2/12/08-10/31/10

Vacant
(CIVIL)

Vacant
(Public Member)

Vacant
(MECHANICAL)

Carrie Flynn
EXECUTIVE DIRECTOR

STATE OF FLORIDA
FLORIDA ENGINEERS MANAGEMENT CORPORATION

BOARD:	PROFESSIONAL ENGINEERS
CASE NUMBER:	2008008617
COMPLAINT MADE AGAINST:	Do Yeon Kim, PE PO Box 10039 Tampa, FL 33679
COMPLAINT MADE BY:	Steven Sincere, PE 1867 SW Belgrave Ter. Stuart, FL 34997
INVESTIGATED BY:	Jack Beamish
DATE COMPLAINT RECEIVED:	February 12, 2008
REVIEWED BY:	John Rimes Prosecuting Attorney
RECOMMENDATION:	CLOSE WITH A LETTER OF GUIDANCE

CLOSING ORDER

THE COMPLAINT: Section 471.033(1)(g), F.S., & Rule 61G15-19.001(4) by engaging in negligence in the practice of engineering.

THE FACTS: The complainant, a P. E. engaged in pool screen design & pool screen design software creation, alleges that the subject designed a deficient drawings and calculations for a screen enclosure for the Dunlat residence in Palm City, Florida.

The subject was notified of this complaint by letter sent 3/31/08 via certified mail.

The Subject's letter of response was received at FBPE on 4/24/08. Attached to his letter of response are product approval documents and calculations.

On 5/6/08 the entire case file was sent to FEMC Consultant Joseph M. Berryman, PE for review.

The complainant submitted data generated by a computer program (which complainant was instrumental in developing) that complainant believed showed significant deficiencies in the design of Subject on the Dunlat Project. Mr. Berryman found that much of the data produced by complainant was itself flawed and, to that extent, did not supply a basis for criticizing Subject's design. That being said, Mr. Berryman, upon performing his own analysis of the structure found several deficiencies in the design relating to overstress of certain structural members in the Dunlat Project enclosure.

Mr. Berryman found: (1) For the 2x8 Trac Beam roof beam members, the deflection at design load exceeds $L/80$ and is thus unacceptable;(2)The 2x5 Trac Beam corner columns are over stressed with design load applied in the weak axis direction;(3) The 2x3x.06 diagonal roof bracing is overstressed at various locations at design loading.

The other (8) allegations of the complainant were specifically rejected or determined to be unfounded.

As a result, in his 6/12/08 Expert Report, Mr. Berryman opined that the subject did not utilize due care in performing in an engineering capacity and failed to have due regard for acceptable standards of engineering principles.

THE LAW: Based on the foregoing, there is sufficient evidence to believe that Subject violated Section 471.033(1)(g) & Rule 61G15-19.001(4). However, the deficiencies appear to be the result of the utilization of standard non-site specific calculations and, according to Mr. Berryman, involve structural members that are of a secondary value to the stability of the enclosure. Given the foregoing, it does not appear that the finding of a violation and the issuance of an Administrative Complaint is warranted.

THE PANEL ADVISES: That Subject: (1) assure himself that all calculations performed are directly applicable to the specific design for which they are performed and, (2) that Subject more closely scrutinize all structural members, including secondary members, to guard against any overstress conditions and/or unacceptable deflection results; (3) that the Subject take pains to assure that his calculations apply to the specific project and that he not, under any circumstances, simply rely upon generic and exemplary that do not apply to any specific element of the subject structure.

Based on the foregoing, there is sufficient evidence to believe that Subject violated Chapter 471.033(1)(g), Florida Statutes, and Rule 61G15-19.001(4), Florida Administrative Code and Section 471.025(1), Florida Statutes. However, pursuant to Section 455.225(4), Florida Statutes, the PCP determines that in lieu of a finding of probable cause, the Probable Cause Panel dismiss this case by issuing a Letter of Guidance.

It is, therefore, ORDERED that the complaint be, and the same is hereby DISMISSED with the issuance of a LETTER OF GUIDANCE.

DONE and ORDERED this 24th day of July, 2008.

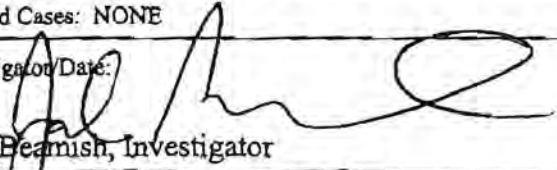
Alan Rebane, PE
Chair
Probable Cause Panel

JR/jt
PCP: July 15, 2008
PCP Members: Rebane, Seckinger



STATE OF FLORIDA
BOARD OF PROFESSIONAL ENGINEERS

FINAL
INVESTIGATIVE REPORT

Office: FLORIDA BOARD OF PROFESSIONAL ENGINEERS		Date of Complaint: February 12, 2008		Case Number: 20080008617	
Subject: Do Yeon Kim, PE PO Box 10039 Tampa, FL 33679 813-874-5900			Complainant/Source: Steven Sincere, PE 1867 SW Belgrave Ter. Stuart, FL 34997 772-221-9963		
Prefix: PE	License #: 49497	Profession: Engineer	Board: Engineers	Report Date: 6/23/08	
Period of Investigation: 2/12/08 to 6/18/08			Type of Report: Final		
Alleged Violation: Possible violation of FS 471.033(1)(g), engaging in negligence, incompetence or misconduct in the practice of engineering.					
Synopsis: The complainant alleges that the subject designed a deficient drawings and calculations for a screen enclosure for the Dunlat residence in Palm City, Florida. (Ex. 1) The subject was notified of this complaint by letter sent 3/31/08 via certified mail. (Ex. 2) The complaint documents were included. The complainant's letter of response was received at FBPE on 4/24/08. Attached to his letter of response are product approval documents and calculations. (Ex. 3) On 5/6/08 the entire case file was sent to FEMC Consultant Joseph M. Berryman, PE for review. (Ex. 4) In his 6/12/08 Expert Report, Mr. Berryman opined that the subject did not utilize due care in performing in an engineering capacity and failed to have due regard for acceptable standards of engineering principals. (Ex. 5)					
CONTINUED					
Related Cases: NONE					
Investigator/Date:  Jack Beamish, Investigator			Date:		
Distribution: Legal					

INVESTIGATIVE REPORT

CASE NUMBER 20080008617

CONTINUATION

The LicenseEase database shows that Do Yeon Kim holds an active PE license. (Ex. 6)

TABLE OF CONTENTS

I. INVESTIGATIVE REPORT COVER PAGE

II. EXHIBITS

Pages:

1)	Complaint Form and Complaint Documents	1-28
2)	Subject Notification Letter	29-30
3)	Subject's Response with Documentation	31-159
4)	Transmittal Letter to FEMC Consultant	160
5)	FEMC Consultant's Expert Opinion	161-168
6)	Licensure Data on Do Yeon Kim, PE	169-173
7)	FEMC Status Letter to Complainant	174

Lic Type	0901 Professional Engineer	Status	20 Under Investigation	On	02/15/2008
Complaint #		Docket #		Disposition	On
Respondent	KIM, DO YEON	Responsible	BEAMISH, JACQ	Private Case	

Complaint | Respondent | Complainant | Parties | Allegations | Costs | Time Tracking

Source	LIC Licensee	Security Level	1	Apply Message
Form	FORM Complaint Form	Priority		Disposition
Class'n	305 Enforcement	Incident		Activities
Security	STND Standard	Received	02/12/2008	Violations
Region		Entered	02/15/2008	Discipline
Reference				Compliance
Summary	Possible violation of FS 471.033(1)(g), engaging in incompetence or negligence in the practice of engineering. Complainant alleges that subject is negligent in the design of screen enclosures.			Related
				History
				Inspection
				Add'l Info
Updated	02/15/2008 13:58:07	By	Beamish	

Change Save Cancel Exit

41

Lic Type	0901 Professional Engineer	Status	20 Under Investigation	On	02/15/2009
Complaint #	2008008617	Docket #		Disposition	On
Respondent	KIM, DO YEON		Responsible	BEAMISH, JACK	Private Case

Complaint Respondent Complaint Parties Allegations Costs Time Tracking

<input checked="" type="radio"/> Individual		<input type="radio"/> Organization		Security Level	
Surname	First	Second	Suffix	Title	Qualifier
Name	Kim	Do	Yeon		
Fed Tax #		Gender	M	Birth Date	04/17/1970
Street #	PO BOX	Street	10039		
Line 2					
Line 3					
City	TAMPA	Prov/St	FL	Postal/Zip	33679
County	38 Hillsborough	Country	US	United States	
Routing					
Phone #	813-874-5900	Ext		Region	
E-Mail	dk@dokeengineering.net				
Lic Type	0901 Professional Engineer				
File #	48382 Prof Engineer				
License #	49497 Current Active	Expires	02/28/2009	Updated	02/15/2008 13:50:14
				By	beamish

- License
- Estimate
- Letter
- Letter Hold
- Address

Change Save OK Cancel Exit

1/2

Lic Type	0901 Professional Engineer	Status	20 Under Investigation	On	02/15/2008
Complaint #	2008008677	Docket #		Disposition	
Respondent	DO YEON	Responsible	BEAMISH, JACK	Private Case	<input checked="" type="checkbox"/>

Complaint | Respondent | Complainant | Parties | Allegations | Costs | Time Tracking

<input checked="" type="radio"/> Individual <input type="radio"/> Organization		Security Level				License
Surname	First	Second	Suffix	Title	Qualifier	License
Name: Sincere	Steven	M.				Expire
Fed Tax #	Gender: M	Birth Date: 09/05/1960				
Street #	Street					Letter
1887	SW BELGRAVE TERRACE					Letter File
Line 2						
Line 3						
City	Prov/ST	Postal/Zip				
STUART	FL	34987				
County		Country				
53	Martin	US	United States			
Routing						
Phone #		Ext				
772-221-9863						
E-Mail						
Lic Type	0901 Professional Engineer					Updated
File #	68346 Prof Engineer					02/15/2008 13:50:14
License #	87409 Current, Active	Expires	02/28/2009			By
						beamish

Change Save Print Cancel Exit

Florida Board of Professional Engineers

UNIFORM COMPLAINT FORM

RECEIVED

Please return to: Florida Board of Professional Engineers
2507 Callaway Road, Suite 200
Tallahassee, Florida 32303

FEB 12 2008

Florida Board of Professional Engineers

Type or Print

Contact (other than yourself)

Your Name: Steven M. Sincere, P.E.

Name: _____

Address: 1867 SW Belgrave Terrace

Address: _____

Stuart, FL (ZIP) 33497-7080

(ZIP) _____

Email: ssincere@bellsouth.net

Telephone (772) 221-9963 (772) 221-9855
Business Residence

Telephone () _____

Your Occupation: Engineer

SUBJECT OF COMPLAINT

Name: Do Kim
Engineer and/or Engineering Firm

Address: 3300 Henderson Blvd, Suite 106 Telephone: (813) 874-5900

City: Tampa State: Florida

Zip: 33609 License # (if known): 49497

Have you contacted subject concerning complaint? Yes [] No [X] Date: _____

Private Attorney

(if applicable)

Name Address
City State Zip Telephone

Because of the Statute of Limitations, please do not delay in consulting with an attorney or initiating any actions to preserve your civil remedies in this matter. The Board cannot be your legal representative. Matters, which involve monetary recovery or questions of restitution for damages, are civil in nature and should be addressed to the court with appropriate jurisdiction.

Witnesses (Please give full name and address) _____

Please see other side

Note: A copy of this form will be sent to the Engineer named in your complaint pursuant to 455.125(1) Florida Statutes. Please give full details of your complaint. Include facts, details, and dates. Please attach copies of documents, records, correspondence, plans and contracts.

Handwritten mark resembling '1/4'

Mr. Kim produced the attached design with claims that it meets Florida Building Code (FBC) requirements for 140 MPH, exposure B wind loads. Three Dimensional finite element analysis indicates that the critical loads and interaction ratios (per the Aluminum Design Manual (ADM) specification as required by the FBC) for this structure are significantly beyond reasonable engineering margin of error. (See the attached structural evaluation summary.)

(For the purposes of finite element modeling and ADM interaction ratio calculations, section properties and other geometric parameters were derived or supplied by information on sheet 6 of the referenced engineering.)

This is a violation of either Florida Administrative Code 61G15-19.001(4) or 61G15-19.001(5) (Florida Statute 471.003(1)(g)...negligence or incompetence).

Full details of the investigative analysis and associated calculations are available by contacting my office at (772) 221-9963 or at oaa@bellsouth.net.

Florida Statutes 837.06, False Official Statements: Whoever knowingly makes a false statement in writing with the intent to mislead a public servant in the performance of his official duty shall be guilty of a misdemeanor of the second degree.

Steven M. Auer, P.E.
Signature (required to file complaint)

2-4-09
Date

1/5

Kim_complaint.txt

The following summaries were generated by analysis of the attached Dunlat enclosure design. Given the results of the first analysis (140 mph exposure B) it was decided to run a second analysis to determine if this design could withstand the minimum wind loads in FBC table 2002.4.

For the purpose of interpreting load cases used in the analysis, please refer to the following listing

Load Case	Description
1	Horizontal wind toward host structure, updraft on roof
2	Horizontal wind toward host structure, downdraft on roof
3	Horizontal wind away from host structure, updraft on roof
4	Horizontal wind away from host structure, downdraft on roof
5	Horizontal wind lateral (left to right when facing host structure), updraft on roof
6	Horizontal wind lateral (left to right when facing host structure), downdraft on roof
7	Horizontal wind lateral (right to left when facing host structure), updraft on roof
8	Horizontal wind lateral (right to left when facing host structure), downdraft on roof

Dunlat Enclosure, Do Kim Engineering

Wind speed and exposure: 140B
Structural Dimensions (inches)
Height: 120.0 Width: 718.0 Depth: 569.1 Roof Rise: 36.0
Total Weight of Structural Members: 1478.9 lbs
Total Screen Area: 4069.9 sqft

Component: beam1
Section Type: 2x8 TracBeam
Total Length of Members: 4033.69 in (336.14 ft)
Area: 1.515 sqin
Major Moment of Inertia: 13.560 in⁴
Minor Moment of Inertia: 1.068 in⁴
Max Interaction Ratio: 43.0
Axial Force: -2208. lbs
Shear Force: 868. lbs
Major Axis Bending Moment: 84028. in-lb
Minor Axis Bending Moment: -238. in-lb
Load Case Number: 2.
Member Number: 282.
Allowables (ksi): Ft= 21.2 Fao= 4.1 Fa= 1.4 Fbx= 10.6

Kim_complaint.txt

Allowables (ksi): Fby= 5.0 Fs(kps)= 2.3 Fex= 1.5 Fey= 5.9
 Minimum L/d: 67. at Load Case Number 4.

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
Vonly	Min L/d						
1.	327.	2.978	282.	2.785	327.	8.194	327.
0.482	70.						
2.	282.	42.988	280.	1.505	282.	7.111	327.
0.419	94.						
3.	280.	1.491	282.	2.307	280.	1.970	327.
0.380	101.						
4.	282.	4.829	283.	2.476	327.	9.295	327.
0.521	67.						
5.	280.	4.156	327.	2.707	280.	9.175	280.
0.742	84.						
6.	327.	3.414	288.	0.654	282.	8.002	327.
0.480	77.						
7.	319.	0.717	327.	2.948	319.	0.378	327.
0.424	85.						
8.	327.	3.074	280.	2.879	282.	7.977	280.
0.706	76.						

Component: purlins

Section Type: AAF2x3H

Total Length of Members: 3282.97 in (273.58 ft)

Area: 0.523 sqin

Major Moment of Inertia: 0.616 in⁴

Minor Moment of Inertia: 0.361 in⁴

Max Interaction Ratio: 638.3

Axial Force: -4953. lbs

Shear Force: 108. lbs

Major Axis Bending Moment: 2445. in-lb

Minor Axis Bending Moment: -1035. in-lb

Load Case Number: 4.

Member Number: 451.

Allowables (ksi): Ft= 12.8 Fao= 4.8 Fa= 4.8 Fbx= 13.9

Allowables (ksi): Fby= 9.9 Fs(kps)= 1.9 Fex= 9.5 Fey= 5.5

Minimum L/d: 181. at Load Case Number 4.

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
Vonly	Min L/d						
1.	424.	3.341	451.	1.519	424.	8.282	424.
0.473	192.						
2.	424.	2.538	425.	1.007	424.	5.131	424.
0.373	227.						

Kim_complaint.txt

3.	425.	1.054	424.	2.227	425.	0.905	424.
0.345	245.						
4.	451.	638.288	424.	3.236	451.	2.206	424.
0.501	181.						
5.	424.	2.498	428.	1.136	424.	5.664	424.
0.402	226.						
6.	451.	174.361	424.	2.776	414.	2.258	424.
0.444	193.						
7.	424.	2.689	428.	1.269	424.	6.096	424.
0.412	218.						
8.	450.	56.855	424.	2.687	451.	1.709	424.
0.434	197.						

Component: down purlins

Section Type: AAF2x3H

Total Length of Members: 962.77 in (80.23 ft)

Area: 0.523 sqin

Major Moment of Inertia: 0.616 in⁴

Minor Moment of Inertia: 0.361 in⁴

Max Interaction Ratio: 953.2

Axial Force: -4337. lbs

Shear Force: 116. lbs

Major Axis Bending Moment: -4202. in-lb

Minor Axis Bending Moment: 1172. in-lb

Load Case Number: 5.

Member Number: 458.

Allowables (ksi): Ft= 12.8 Fao= 4.8 Fa= 4.6 Fbx= 13.9

Allowables (ksi): Fby= 9.9 Fs(kps)= 1.9 Fex= 7.9 Fey= 4.6

Minimum L/d: 186. at Load Case Number 4.

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
Vonly	Min L/d						
1.	458.	1.818	465.	1.505	458.	1.188	465.
0.081	201.						
2.	464.	1.040	458.	1.121	464.	0.706	465.
0.048	270.						
3.	458.	1.912	464.	0.821	458.	0.926	458.
0.056	315.						
4.	464.	2.442	458.	1.007	465.	1.659	465.
0.076	186.						
5.	458.	953.166	464.	1.114	458.	2.437	462.
0.070	212.						
6.	465.	1.726	462.	0.797	465.	1.468	465.
0.076	261.						
7.	462.	0.884	465.	1.128	460.	0.595	465.
0.075	301.						

8. 464. 1.827 458. 1.536 464. 1.206 462.
 0.070 192.

Component: wind (roof) braces

Section Type: AAF2x3H

Total Length of Members: 2213.10 in (184.42 ft)

Area: 0.523 sqin

Major Moment of Inertia: 0.616 in⁴

Minor Moment of Inertia: 0.361 in⁴

Max Interaction Ratio: 1003.6

Axial Force: -3954. lbs

Shear Force: 46. lbs

Major Axis Bending Moment: 3655. in-lb

Minor Axis Bending Moment: 1758. in-lb

Load Case Number: 1.

Member Number: 491.

Allowables (ksi): Ft= 12.8 Fao= 4.8 Fa= 2.6 Fbx= 13.9

Allowables (ksi): Fby= 9.9 Fs(kps)= 1.9 Fex= 4.4 Fey= 2.6

Minimum L/d: 210. at Load Case Number 5.

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
Vonly	Min L/d						
1.	491.	*****	495.	0.928	491.	3.419	501.
0.030	244.						
2.	492.	471.914	491.	1.057	505.	1.899	491.
0.045	304.						
3.	501.	42.552	505.	0.586	491.	1.594	501.
0.016	359.						
4.	505.	577.850	501.	1.394	489.	2.886	501.
0.056	211.						
5.	501.	859.924	505.	1.335	501.	3.273	501.
0.037	210.						
6.	489.	482.716	501.	1.317	489.	3.346	501.
0.055	280.						
7.	497.	624.078	506.	1.246	497.	3.295	497.
0.026	272.						
8.	505.	624.844	501.	1.471	505.	3.883	501.
0.054	260.						

Component: eave rails

Section Type: AAF2x3H

Total Length of Members: 1727.04 in (143.92 ft)

Area: 0.523 sqin

Major Moment of Inertia: 0.616 in⁴

Minor Moment of Inertia: 0.361 in⁴

Max Interaction Ratio: 598.8
 Axial Force: -6359. lbs
 Shear Force: 141. lbs
 Major Axis Bending Moment: -2237. in-lb
 Minor Axis Bending Moment: 1007. in-lb
 Load Case Number: 7.
 Member Number: 483.
 Allowables (ksi): Ft= 12.8 Fao= 4.8 Fa= 4.8 Fbx= 13.9
 Allowables (ksi): Fby= 9.9 Fs(kps)= 1.9 Fex= 9.9 Fey= 5.8
 Minimum L/d: 484. at Load Case Number 8.

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
	Vonly	Min L/d					
1.	483.	219.132	475.	0.408	471.	2.075	471.
0.107	550.						
2.	475.	0.601	471.	1.192	475.	0.273	471.
0.102	503.						
3.	471.	1.667	475.	0.574	471.	1.022	471.
0.076	568.						
4.	475.	0.474	471.	1.350	475.	0.210	471.
0.083	578.						
5.	484.	193.104	475.	1.081	482.	1.911	486.
0.081	601.						
6.	466.	0.000	483.	1.507	466.	0.000	486.
0.083	501.						
7.	483.	598.794	466.	0.000	481.	2.777	485.
0.077	589.						
8.	475.	1.286	484.	1.148	475.	0.928	476.
0.092	484.						

Component: flow through wall columns
 Section Type: 2x5 TracBeam
 Total Length of Members: 1596.00 in (133.00 ft)
 Area: 0.979 sqin
 Major Moment of Inertia: 3.799 in⁴
 Minor Moment of Inertia: 0.631 in⁴
 Max Interaction Ratio: 5.2
 Axial Force: -119. lbs
 Shear Force: 837. lbs
 Major Axis Bending Moment: 30046. in-lb
 Minor Axis Bending Moment: 322. in-lb
 Load Case Number: 5.
 Member Number: 367.
 Allowables (ksi): Ft= 21.2 Fao= 3.7 Fa= 3.7 Fbx= 9.4
 Allowables (ksi): Fby= 6.4 Fs(kps)= 2.2 Fex= 13.8 Fey= 25.4
 Minimum L/d: 683. at Load Case Number 5.

V/10

Kim_complaint.txt

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
Vonly	Min L/d						
1.	368.	0.840	372.	0.845	355.	0.502	372.
0.073	10092.						
2.	354.	0.662	368.	0.340	354.	0.406	354.
0.057	9769.						
3.	368.	0.437	367.	0.498	355.	0.220	354.
0.047	11046.						
4.	372.	0.976	368.	0.634	359.	0.780	372.
0.079	8983.						
5.	368.	2.382	361.	2.055	367.	5.172	367.
0.375	683.						
6.	371.	1.666	369.	1.565	371.	2.750	361.
0.287	791.						
7.	371.	2.029	361.	0.826	371.	4.005	371.
0.350	1115.						
8.	372.	1.979	370.	1.861	367.	3.603	372.
0.295	911.						

Component: non-flow through wall columns

Section Type: 2x7 TracBeam

Total Length of Members: 1032.00 in (86.00 ft)

Area: 1.352 sqin

Major Moment of Inertia: 9.360 in⁴

Minor Moment of Inertia: 0.948 in⁴

Max Interaction Ratio: 5.4

Axial Force: 437. lbs

Shear Force: 11. lbs

Major Axis Bending Moment: 461. in-lb

Minor Axis Bending Moment: 28283. in-lb

Load Case Number: 1.

Member Number: 340.

Allowables (ksi): Ft= 21.2 Fao= 4.0 Fa= 4.0 Fbx= 10.3

Allowables (ksi): Fby= 5.6 Fs(kps)= 2.6 Fex= 24.6 Fey= 27.7

Minimum L/d: 486. at Load Case Number 1.

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
Vonly	Min L/d						
1.	337.	4.680	340.	5.442	335.	0.463	338.
0.063	486.						
2.	332.	4.104	329.	2.857	336.	0.247	338.
0.037	3327.						
3.	329.	2.767	332.	3.402	329.	0.088	338.
0.033	7817.						

Kim complaint.txt							
4.	340.	4.799	337.	3.975	344.	0.275	338.
0.067	661.						
5.	329.	3.155	332.	2.914	329.	0.571	336.
0.105	4493.						
6.	332.	3.656	335.	2.166	338.	0.453	338.
0.108	3222.						
7.	335.	2.741	332.	3.161	335.	0.535	338.
0.104	3977.						
8.	332.	3.345	329.	2.485	336.	0.490	336.
0.106	3589.						

Component: corner columns

Section Type: 2x5 TracBeam

Total Length of Members: 240.00 in (20.00 ft)

Area: 0.979 sqin

Major Moment of Inertia: 3.799 in⁴

Minor Moment of Inertia: 0.631 in⁴

Max Interaction Ratio: 2.3

Axial Force: -6807. lbs

Shear Force: 10. lbs

Major Axis Bending Moment: -2400. in-lb

Minor Axis Bending Moment: -942. in-lb

Load Case Number: 8.

Member Number: 376.

Allowables (ksi): Ft= 21.2 Fao= 3.7 Fa= 3.7 Fbx= 9.4

Allowables (ksi): Fby= 6.4 Fs(kps)= 2.2 Fex= 153.1 Fey= 25.4

Minimum L/d: 454. at Load Case Number 4.

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
Vonly	Min L/d						
1.	373.	0.000	375.	1.192	373.	0.000	375.
0.029	483.						
2.	376.	1.090	373.	0.000	376.	0.671	374.
0.013	946.						
3.	373.	0.000	373.	0.517	373.	0.000	375.
0.011	865.						
4.	376.	2.051	373.	0.000	376.	1.471	375.
0.028	454.						
5.	373.	0.000	376.	0.837	373.	0.000	373.
0.043	1278.						
6.	375.	1.939	373.	0.000	375.	1.410	373.
0.068	1289.						
7.	373.	0.000	375.	0.834	373.	0.000	373.
0.081	1518.						
8.	376.	2.323	373.	0.000	376.	1.952	374.
0.069	1049.						

Kim_complaint.txt

Component: chair rails (girts)

Section Type: AAF2x3H

Total Length of Members: 1869.00 in (155.75 ft)

Area: 0.523 sqin

Major Moment of Inertia: 0.616 in⁴

Minor Moment of Inertia: 0.361 in⁴

Max Interaction Ratio: 1.2

Axial Force: -608. lbs

Shear Force: 53. lbs

Major Axis Bending Moment: 3201. in-lb

Minor Axis Bending Moment: 1432. in-lb

Load Case Number: 1.

Member Number: 398.

Allowables (ksi): Ft= 12.8 Fao= 4.8 Fa= 4.8 Fbx= 13.9

Allowables (ksi): Fby= 9.9 Fs(kps)= 1.9 Fex= 9.9 Fey= 5.8

Minimum L/d: 431. at Load Case Number 6.

Maximum Interaction Ratio and Minimum L/d Summary Table

Load Case	Member	C+M	Member	T+M	Member	V+C+M	Member
	Vonly						
	Min L/d						
1.	398.	1.247	397.	0.280	392.	0.659	392.
0.107	515.						
2.	398.	0.652	392.	0.711	398.	0.283	392.
0.106	637.						
3.	387.	0.669	397.	0.265	387.	0.400	389.
0.084	634.						
4.	397.	0.444	389.	0.830	397.	0.232	389.
0.091	666.						
5.	409.	0.825	410.	0.755	411.	0.527	396.
0.110	437.						
6.	389.	0.286	398.	0.751	389.	0.086	396.
0.113	431.						
7.	398.	0.916	389.	0.096	398.	0.542	398.
0.105	598.						
8.	397.	0.938	403.	0.721	397.	0.626	398.
0.104	489.						

Component: k-braces

Section Type: AAF2x3H

Total Length of Members: 1013.82 in (84.49 ft)

Area: 0.523 sqin

Major Moment of Inertia: 0.616 in⁴

Minor Moment of Inertia: 0.361 in⁴

Max Interaction Ratio: 670.4

Axial Force: -3320. lbs

1/13

DO KIM & ASSOCIATES, LLC

CONSULTING STRUCTURAL ENGINEERS

3300 Henderson Blvd., Suite 108
Tampa, FL 33609
Tel: (813) 874-5800
Fax: (813) 874-5859

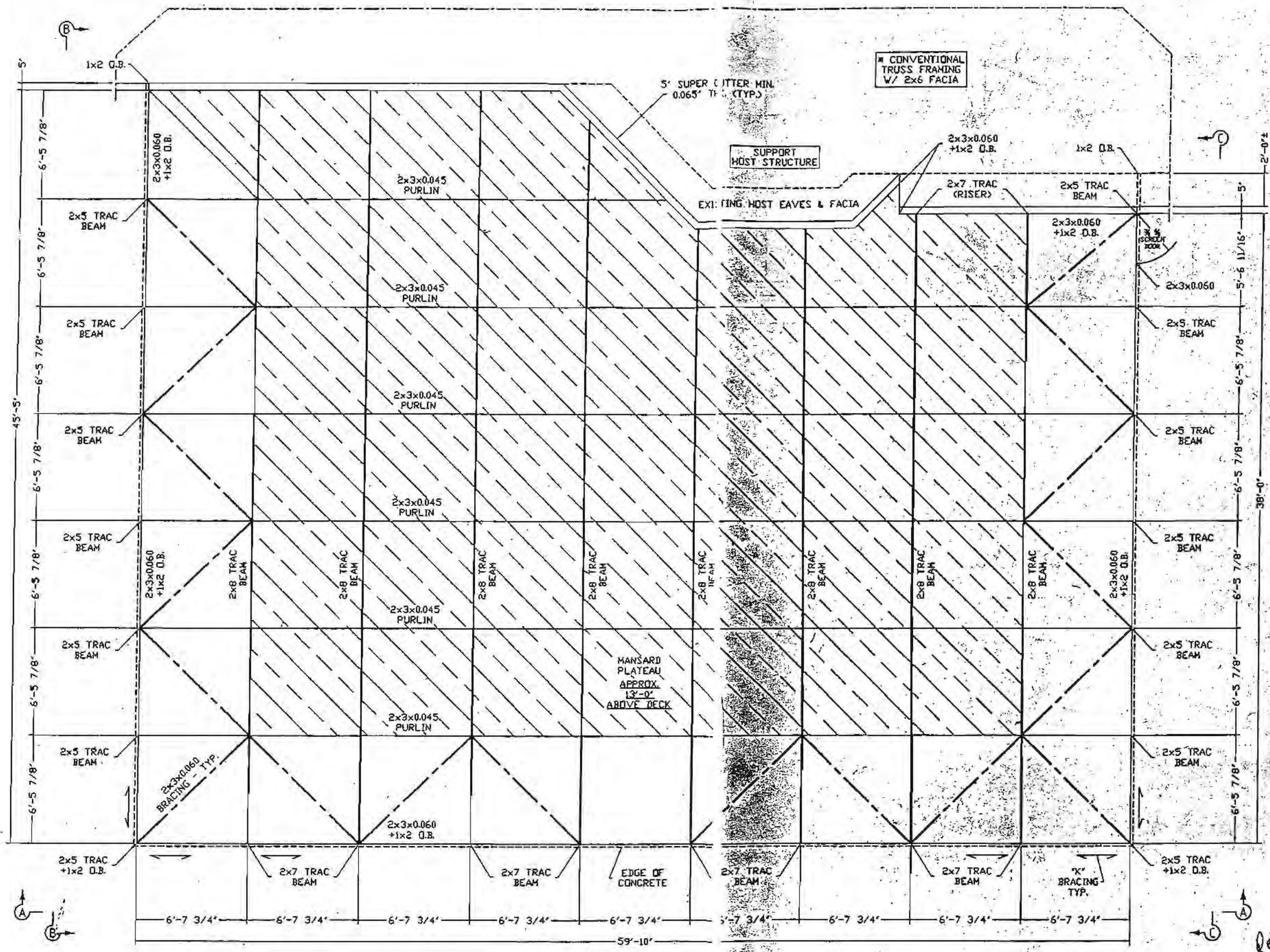
Rev./Date	Description
1205/2007	ISSUED

CLIENT: Jay K Screens
PROJECT LOCATION:
Dunlat Residence
4492 SW Branch Terrace W
Palm City, FL 34990

DRAWN BY:	JMS
CHECKED BY:	OYK
SCALE:	AS SHOWN
DATE:	12/05/07

DO YEON KIM, P.E.
FLA. REG. NUMBER 49497
DO KIM & ASSOCIATES, LLC
26887
3300 HENDERSON BLVD.,
SUITE 108
Tampa, FL 33684

Drawing No. - 071205
SHEET 1 OF 6



PLAN

*Received from
Complainant
01/12/08
JMS*

Rev./Date	Description
1205/2007	ISSUED

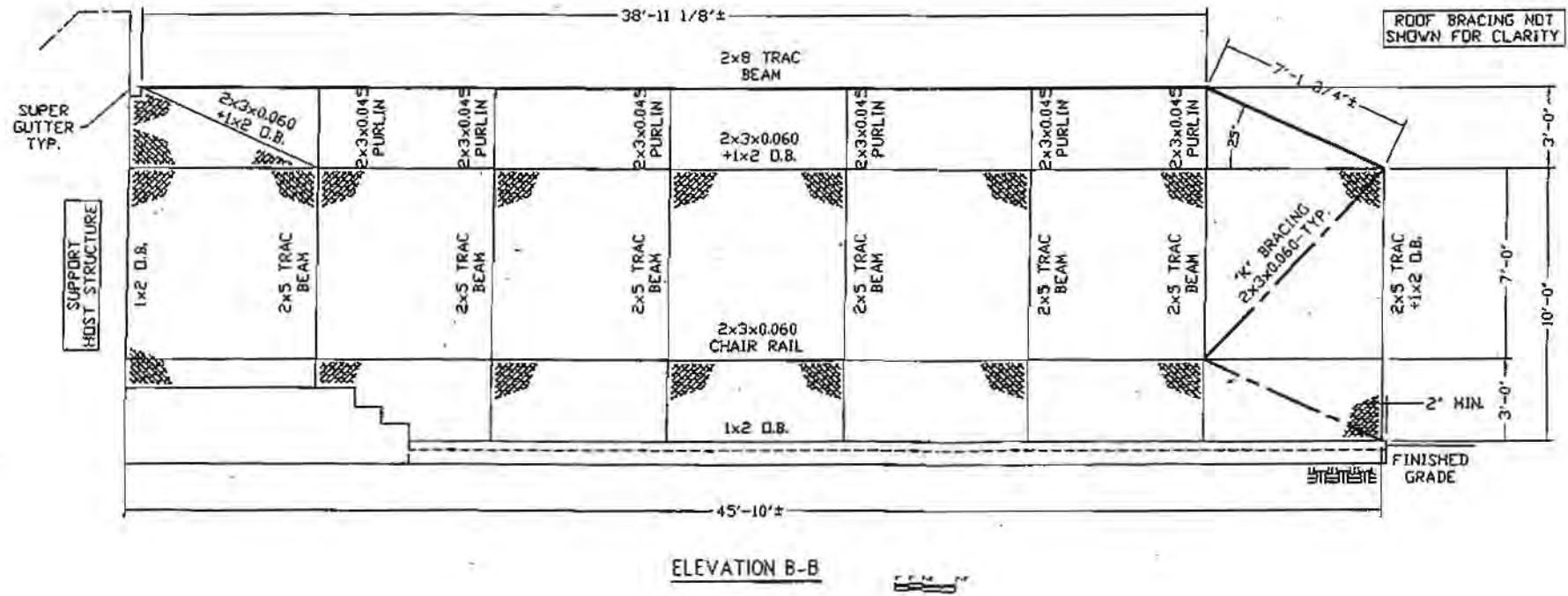
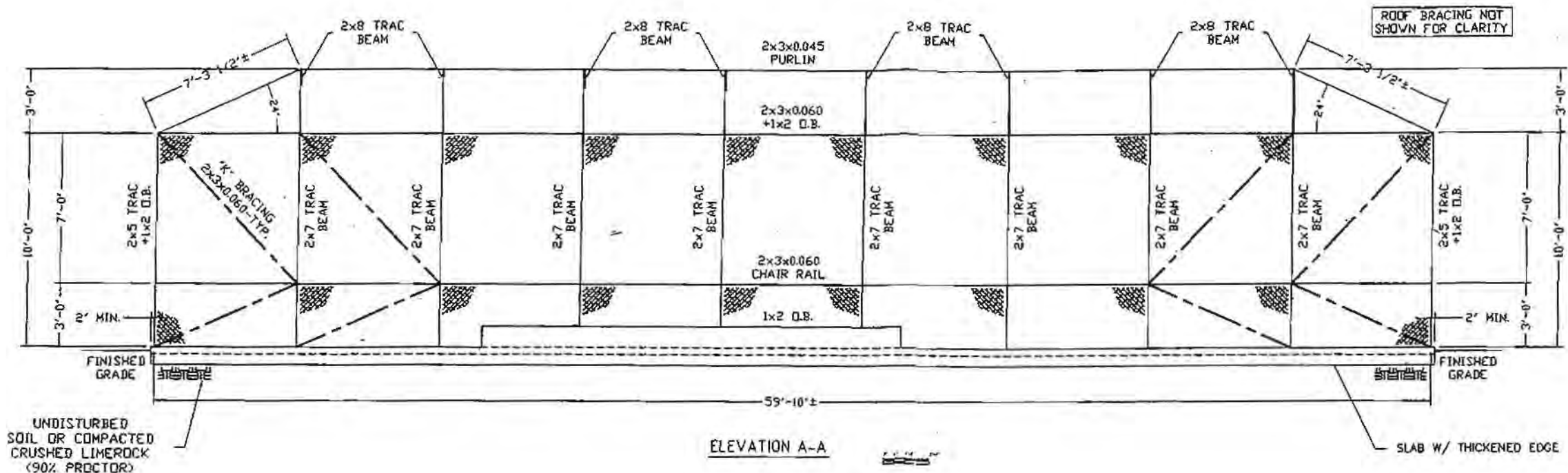
CLIENT: Jay K Screens
PROJECT LOCATION:
Dunlat Residence
4492 SW Branch Terrace W.
Palm City, FL 34990

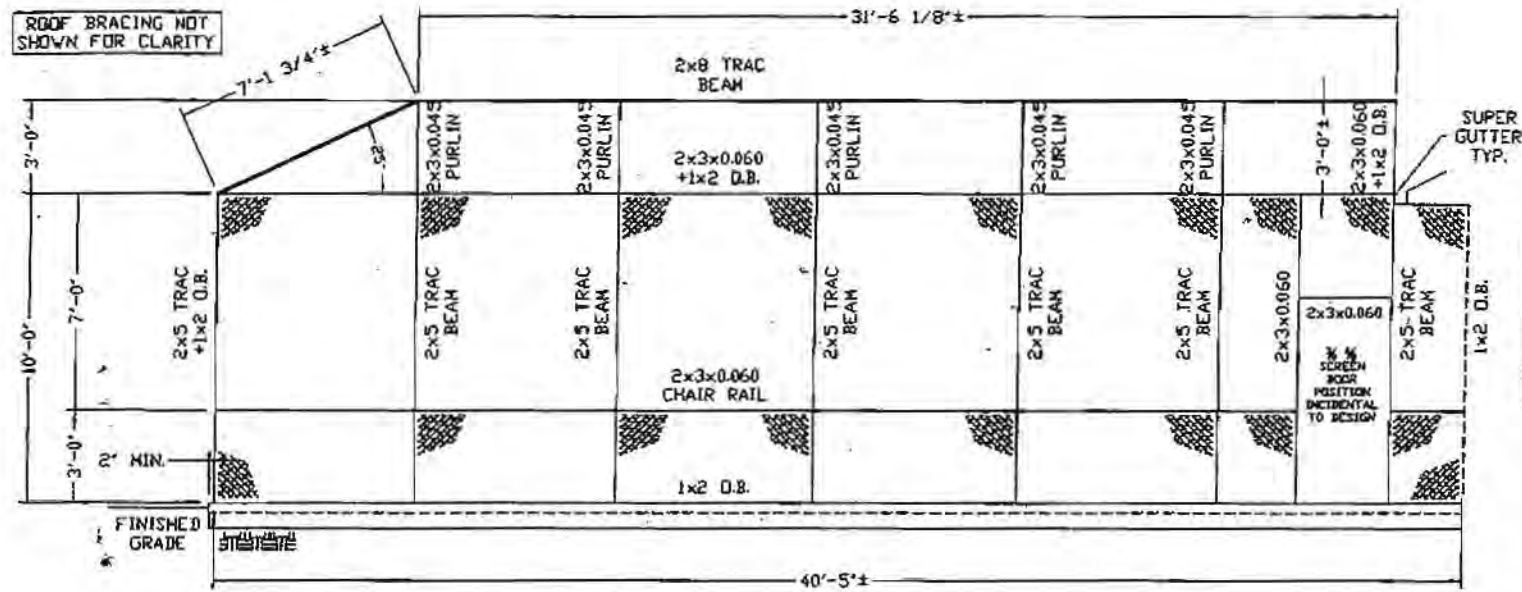
DRAWN BY: JMS
CHECKED BY: DYK
SCALE: AS SHOWN
DATE: 12/05/07

DO YEON KIM, P.E.
FLA. REG. NUMBER 49497

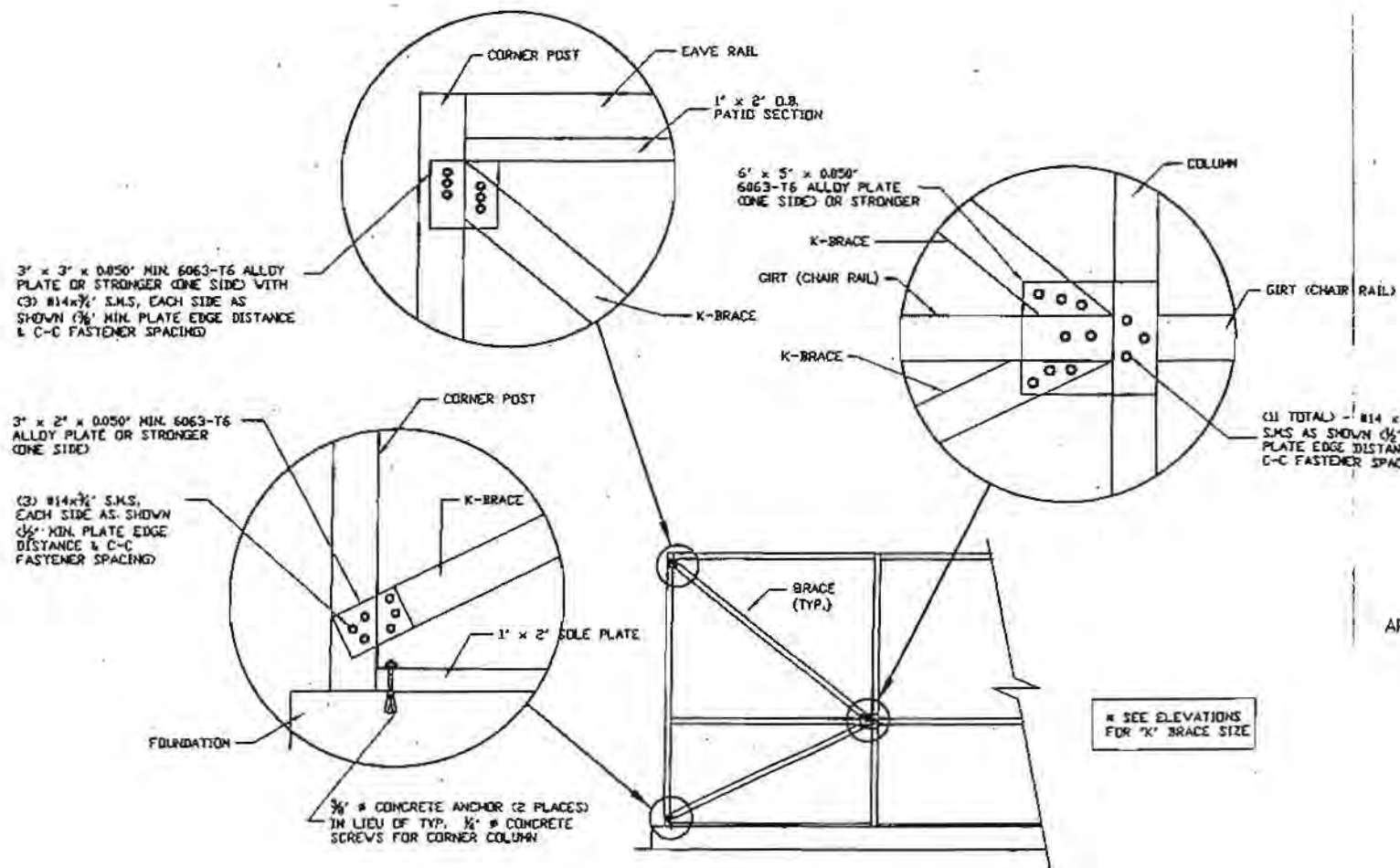
DO KIM & ASSOCIATES, LLC
CA# 26887
3300 HENDERSON BLVD.,
SUITE 106
TAMPA, FL 33684

12.4.07
DYK

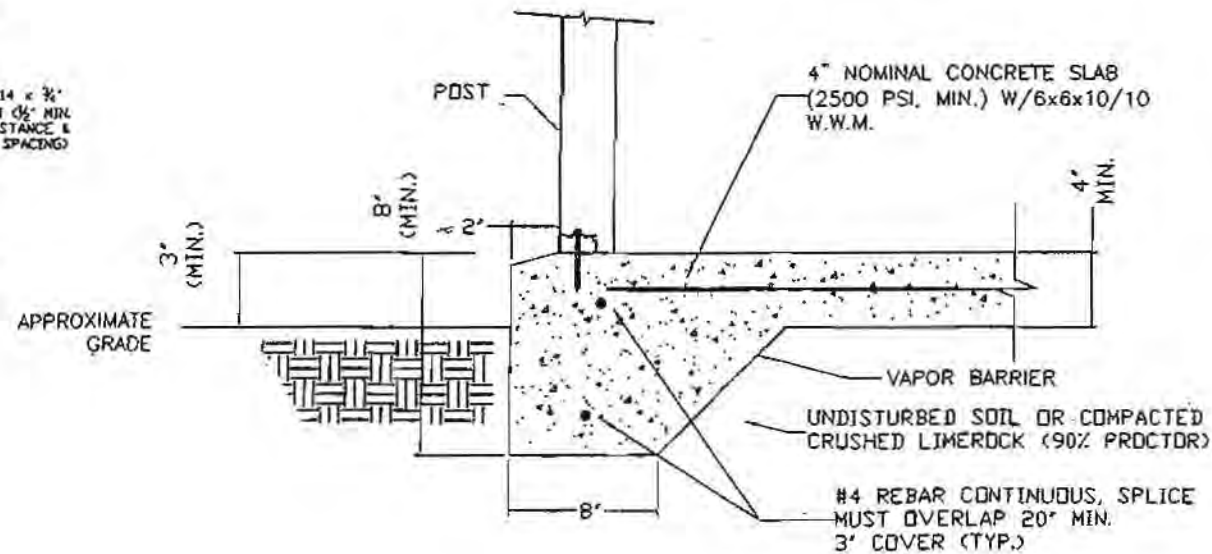




ELEVATION C-C



TYPICAL LATERAL "K" BRACING



FOUNDATION SLAB/POST DETAIL

General Notes and Specifications:

- Contractor shall field verify all dimensions before construction and shall notify engineer of discrepancies for immediate consideration.
- Concrete shall be minimum 28 day compressive strength of $f'c \geq 2500$ psi, and be in accordance with the requirements of ACI 318. Reinforcing steel shall have a min. yield strength of 40,000 psi (grade 40) and be provided with cover in accordance with ACI 318. If existing concrete slabs/footings are deemed satisfactory, it may be incorporated into new slab/footing by observing the following procedure:
 - Clean and scabble all connecting edges.
 - Drill and epoxy embed #5 reinforcing placed @ 12" O.C. mid depth. The rebar should be embedded a min. of 7" (using Hilti HY 150 Epoxy or equal approved, leaving 24" exposed to be incorporated into new slab/footing).
- All dimensions are provided by contractor, DO Kim & Associates, LLC have made interpretations where necessary.
- The following structures are designed to be attached to block and wood frame structures of adequate structural capacity. The contractor shall verify that the host structure is in good condition and of sufficient strength to hold the proposed addition, if there is a question about the host structure, the owner (at his own expense) shall hire an architect or engineer to verify host structure capacity.
- Screen density shall be a maximum of 20 x 20 mesh.
- Connections using screw bosses shall have minimum (4)-#10x2" per connection unless shown otherwise.
- Screws that penetrate the water channel of the super gutter shall have ends clipped off for safety of cleaning the gutter and the heads of screws through the gutter into the fascia shall be caulked.
- Every panel of screen mesh shall be fastened securely in place with spline. Each panel shall be fastened at all sides, independent of surrounding panels. This requirement shall include purlins and chair/kickplate rails. Screen mesh panels are not required to be secured to rigid diagonal bracing members. Screen mesh is incidental to the structural integrity of the overall structure.
- Unless otherwise shown, screws shall have minimum edge distance and center-to-center distances as shown in this table.

C-1022 Low Carbon Steel SMS & Self-Drilling (TEK) Screws (Industry Standard Screws)			
Screw	Nominal Screw Diameter (in)	Minimum Edge Distance	Minimum Center to Center Distance
#10	0.188	5/8"	1 1/2"
#12	0.219	3/4"	1 3/4"
#14 (1/4")	0.250	1/2"	1 1/4"
- Structure has been designed to meet the 2004 FBC with 2006 Supplement. Project is sited where the basic wind speed is 140 mph (3-sec gust). $I = 0.77$ for screen enclosures. Exposure B. Design wind pressures are from 2004 FBC. Pressures are based on wind tunnel testing with main wind force resisting system coefficient, G_{Cp} , of $+/-0.25$ for screen roof and 0.7-1.25 for walls.
- All concrete anchors shall be Simpson Strong-Tie Wedge All Anchors or Titan Screws or approved equal.
- Designed in accordance to Aluminum Design Manual, LFRD.
- All Aluminum members shall be 6063-T6 Alloy unless otherwise noted. Trac Beams shall be 6005-T5 Alloy.

DO KIM & ASSOCIATES, LLC

CONSULTING STRUCTURAL ENGINEERS

3300 Henderson Blvd., Suite 106
Tampa, FL 33609
Tel: (813) 874-5900
Fax: (813) 874-5959

Rev./Date	Description
12/05/2007	ISSUED

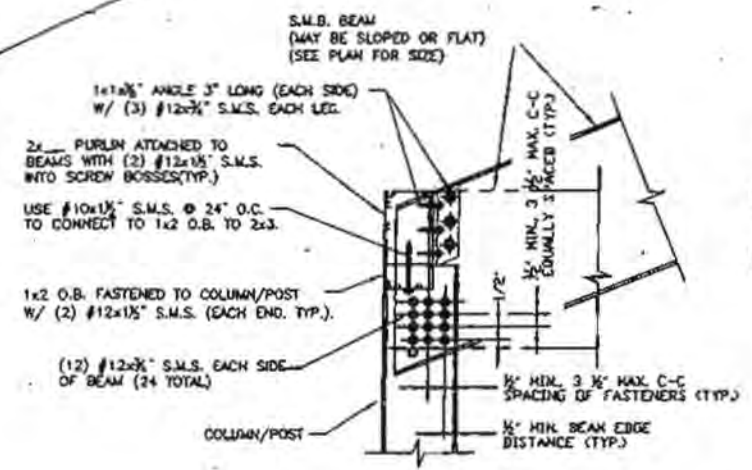
CLIENT: Jay K Screens
PROJECT LOCATION:
Dunlat Residence
4492 SW Branch Terrace W.
Palm City, FL 34990

DRAWN BY: JMS
CHECKED BY: DYK
SCALE: AS SHOWN
DATE: 12/05/07

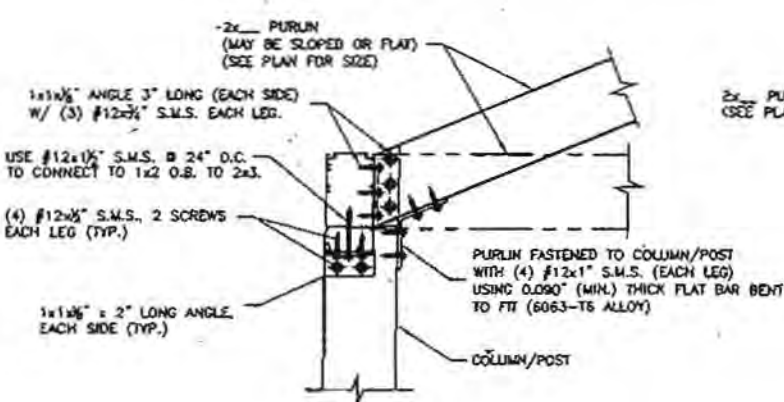
DO YEON KIM, P.E.
FLA. REG. NUMBER 49497
DO KIM & ASSOCIATES, LLC
CAR 26887
3300 HENDERSON BLVD.,
SUITE 106
Tampa, FL 33684

Drawing No. - 071205

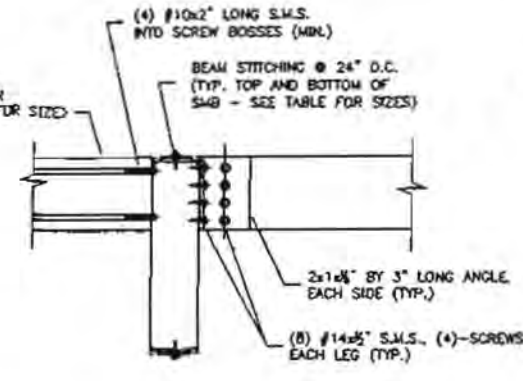
SHEET 3 OF 6



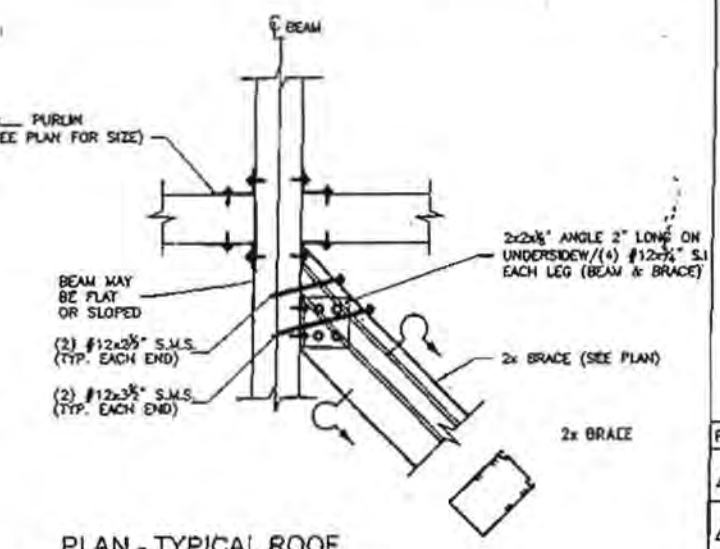
MAIN POST / COLUMN TO ROOF BEAM CONNECTION DETAIL



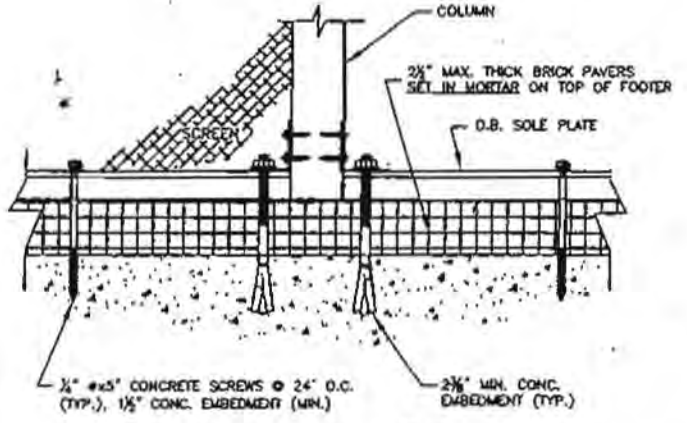
SIDEWALL POST / COLUMN TO PURLIN CONNECTION DETAIL



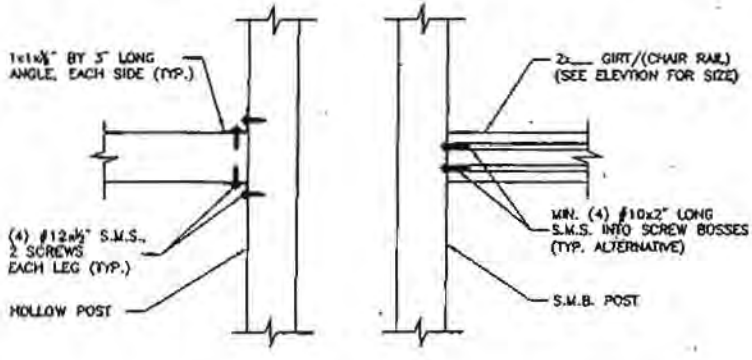
PURLIN TO ROOF BEAM CONNECTION DETAIL



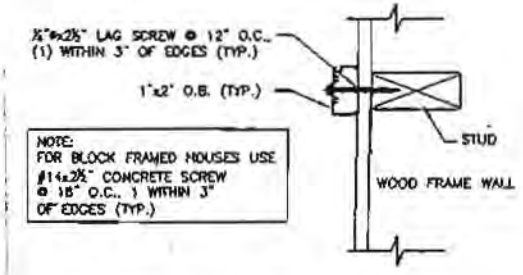
PLAN - TYPICAL ROOF BRACE TO BEAM CONNECTION



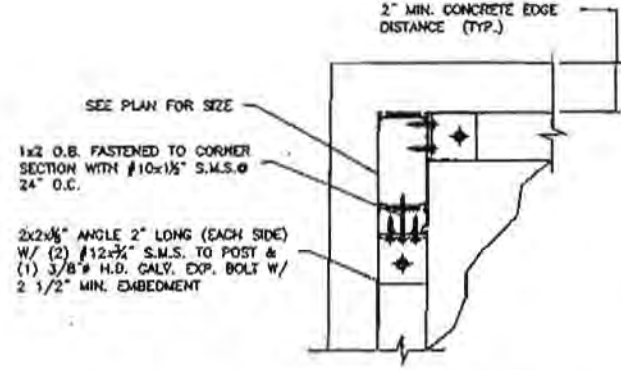
TYPICAL FRONT VIEW OF POST TO FOUNDATION CONNECTIONS WITH PAVERS



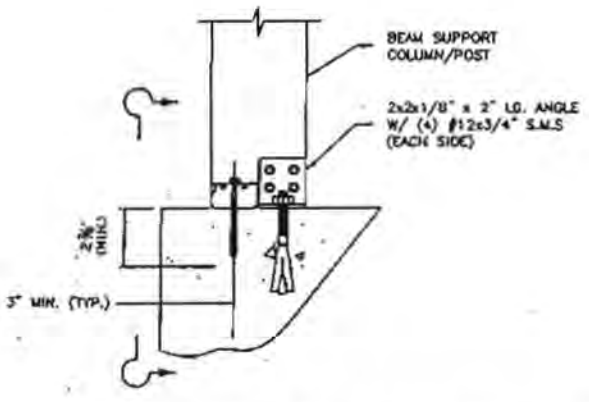
CHAIR RAIL / GIRT TO POST CONNECTION DETAIL



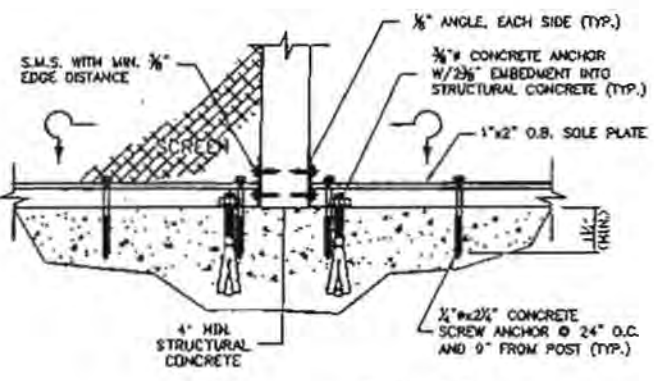
TYPICAL SCREEN DEGE TO STRUCTURE CONNECTION DETAIL



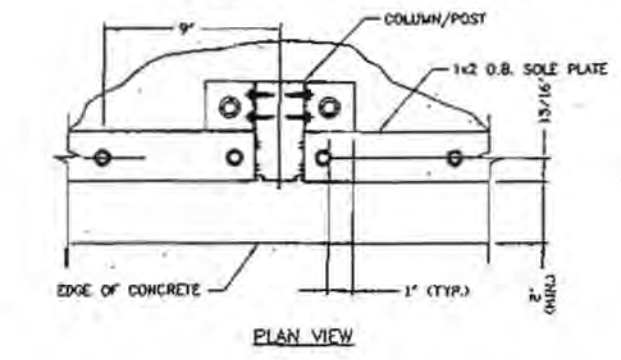
CORNER POST / COLUMN TO FOUNDATION CONNECTION DETAIL



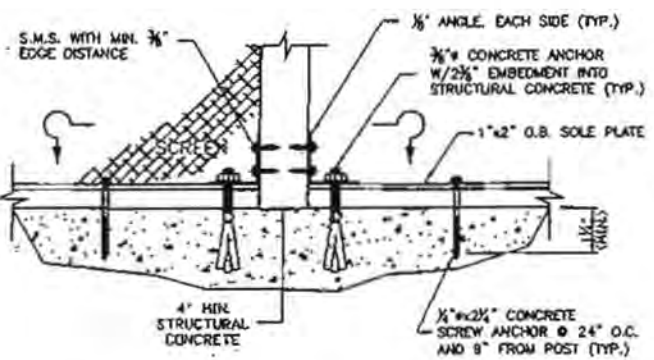
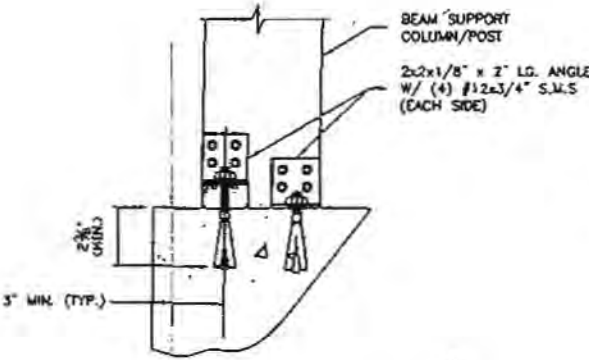
SIDEWALL COLUMN TO FOUNDATION CONNECTION DETAIL



MAIN COLUMN TO FOUNDATION CONNECTION DETAIL



PLAN VIEW



PLAN VIEW

DO KIM & ASSOCIATES, LLC

CONSULTING STRUCTURAL ENGINEERS

3300 Henderson Blvd., Suite 108
Tampa, FL 33609
Tel: (813) 874-5900
Fax: (813) 874-5959

Rev./Date	Description
12/05/2007	ISSUED

CLIENT: Jay K Screens
PROJECT LOCATION:
Dunlap Residence
4492 SW Branch Terrace W.
Palm City, FL 34990

DRAWN BY:	JMS
CHECKED BY:	OYK
SCALE:	AS SHOWN
DATE:	12/05/07

DO YEON KIM, P.E.
FLA. REG. NUMBER 49497
DO KIM & ASSOCIATES, LLC
C# 26887
3300 HENDERSON BLVD.,
SUITE 108
TAMPA, FL 33684

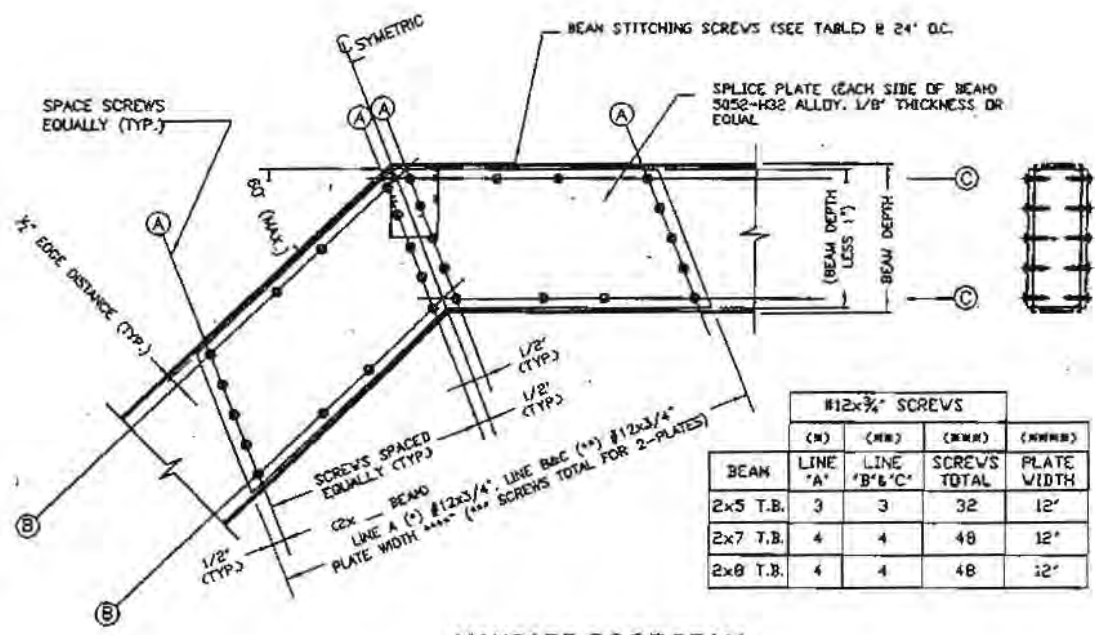
Rev./Date	Description
12/06/2007	ISSUED

CLIENT: Jay K Screens
PROJECT LOCATION:
Dunlat Residence
4492 SW Branch Terrace W.
Palm City, FL 34990

DRAWN BY: JMS
CHECKED BY: DYK
SCALE: AS SHOWN
DATE: 12/05/07

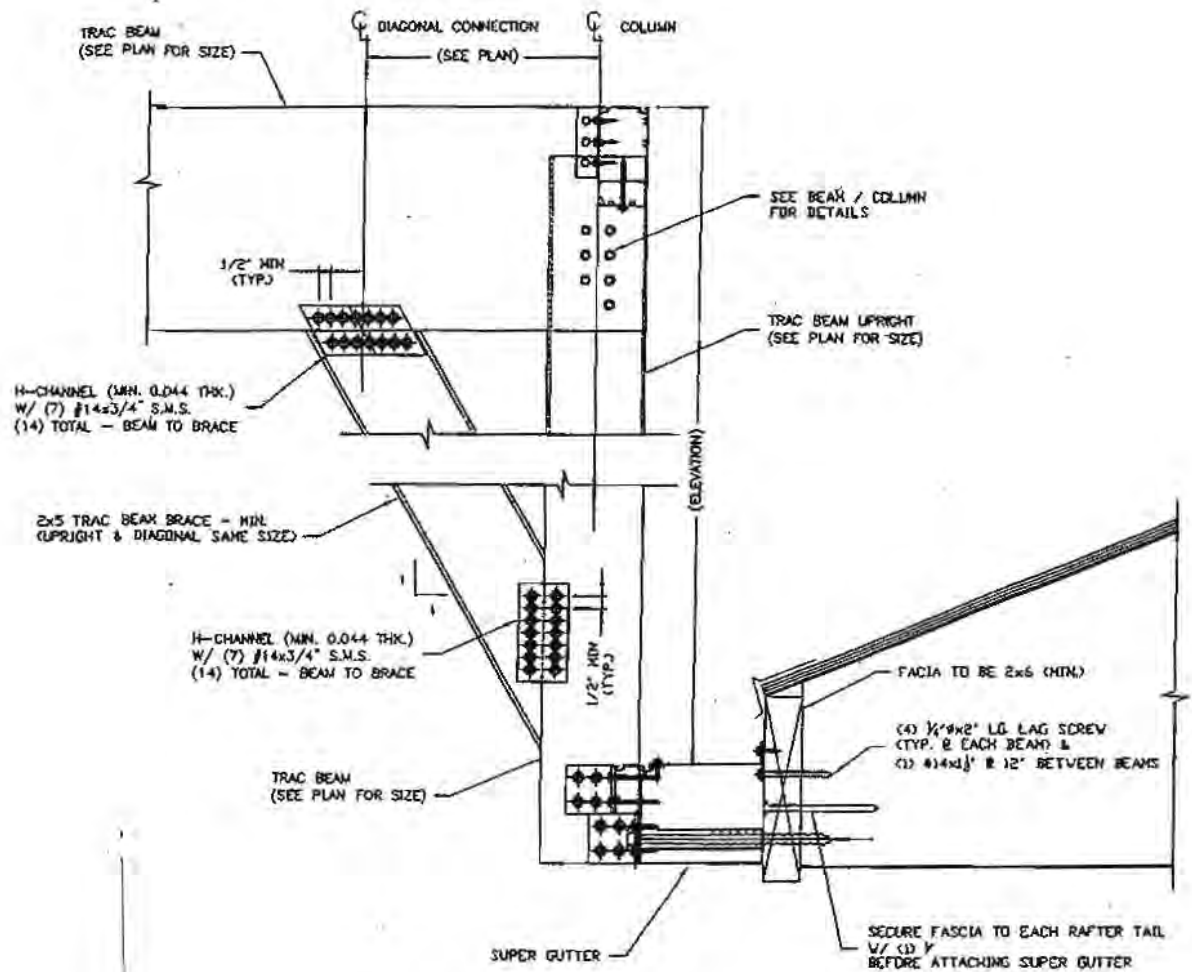
DO YEON KIM, P.E.
FLA. REG. NUMBER 49497

DO KIM & ASSOCIATES, LLC
3300 HENDERSON BLVD., SUITE 106
Tampa, FL 33604

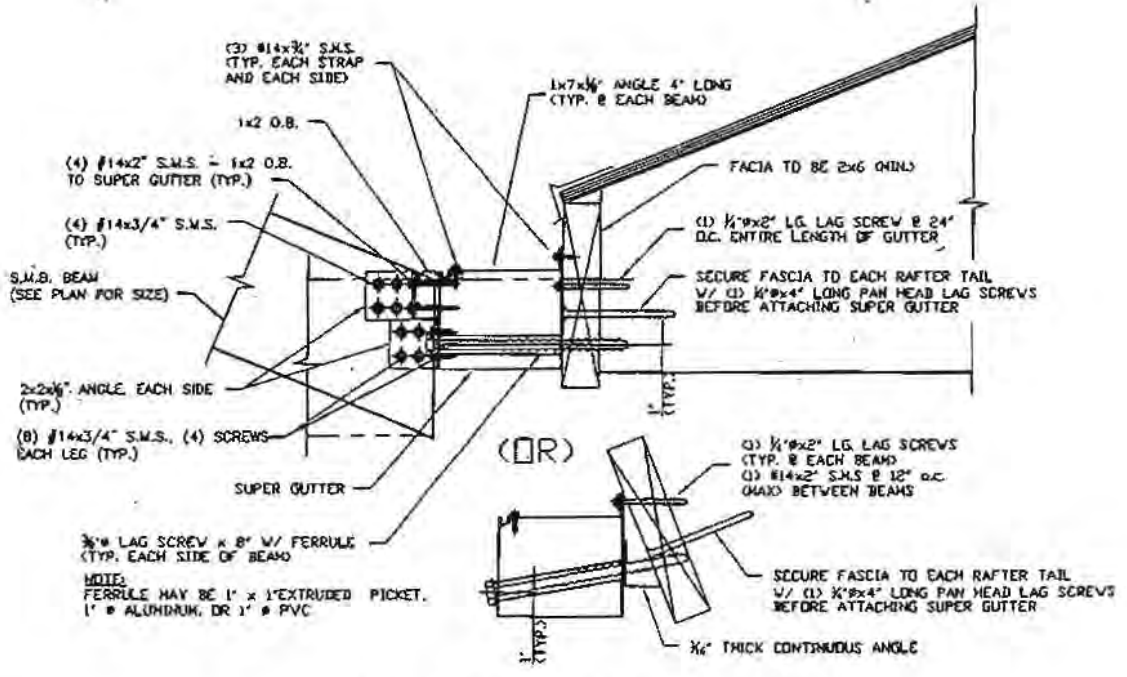


#12x3/4" SCREWS				
BEAM	LINE 'A'	LINE 'B' & 'C'	SCREWS TOTAL	PLATE WIDTH
2x5 T.B.	3	3	32	12"
2x7 T.B.	4	4	48	12"
2x8 T.B.	4	4	48	12"

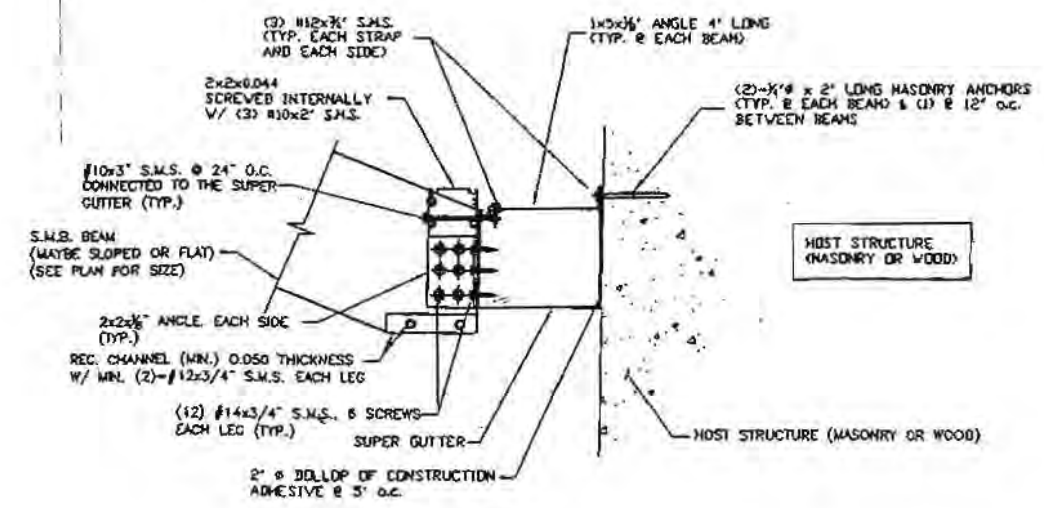
MANSARD ROOF BEAM CONNECTION DETAIL



ROOF TRANSOM (RISER) WALL CONNECTION DETAIL



ROOF BEAM TO SUPER GUTTER CONNECTION DETAIL



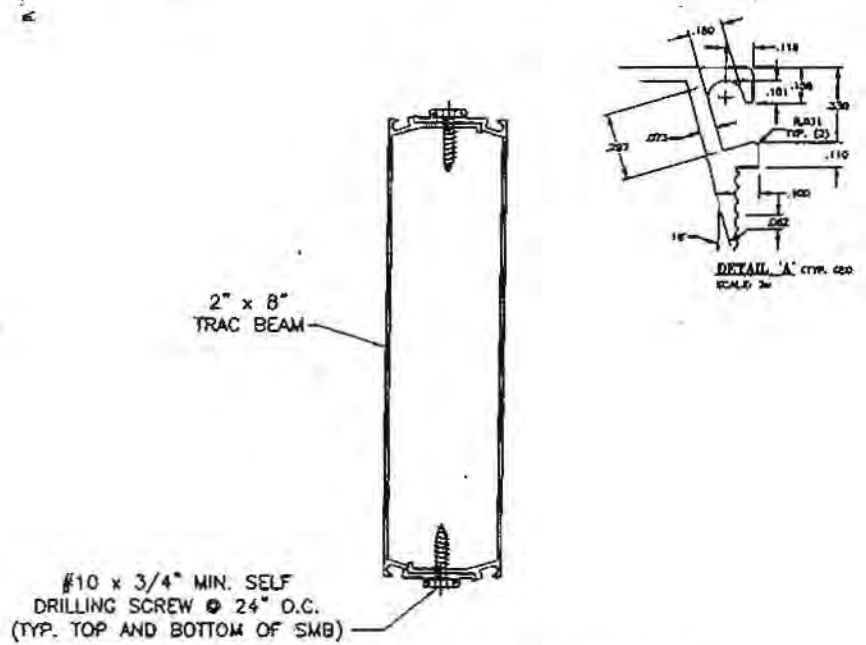
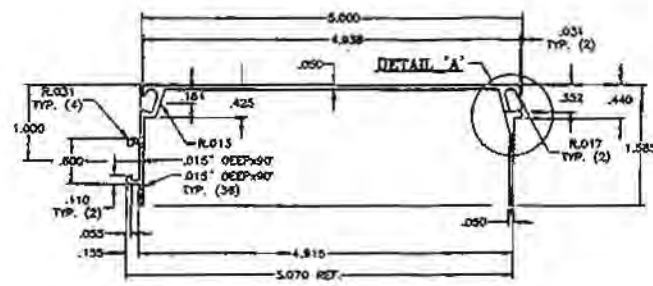
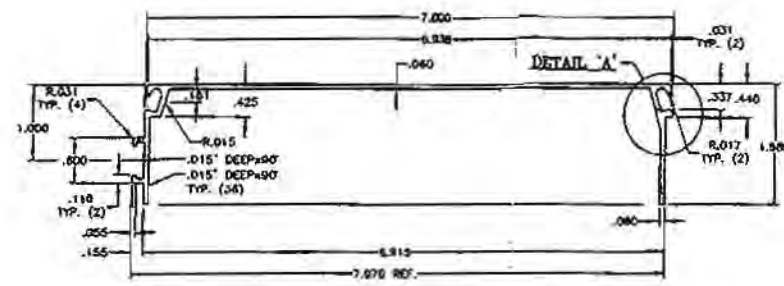
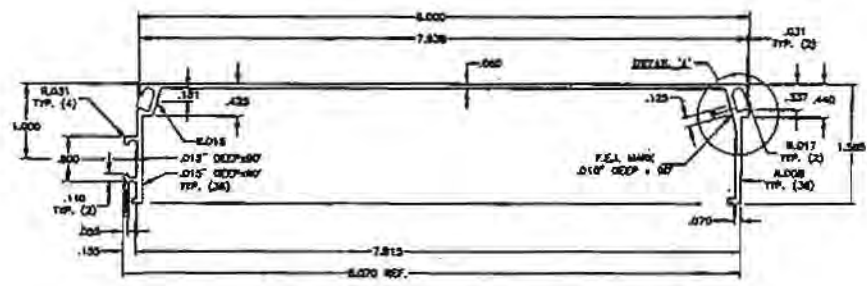
ROOF BEAM TO SUPER GUTTER & HOST CONNECTION DETAIL

12.4.07

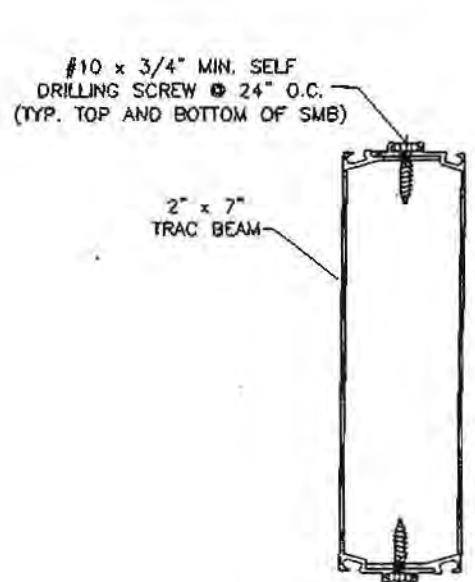
Pool Enclosure Collective, LLC
Trac Beam (FL State Product Approval #7350 & #9328)

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS
 3300 Henderson Blvd., Suite 108
 Tampa, FL 33609
 Tel: (813) 874-5800
 Fax: (813) 874-5959

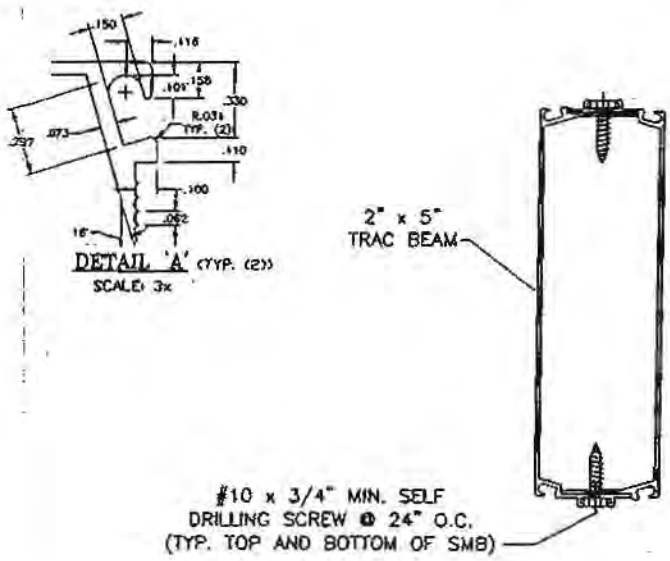
Rev./Date	Description
1205/2007	ISSUED



2" x 8" TRAC SELF-MATING BEAM (SMB)
 (patent pending)



2" x 7" TRAC SELF-MATING BEAM (SMB)
 (patent pending)



2" x 5" TRAC SELF-MATING BEAM (SMB)
 (patent pending)

TRAC BEAM Notes:

1. Refer to Florida Product Approval #FL7350.
2. Drawings are illustrative purposes only.
3. Designed to 2004 Florida Building Code with 2006 Updates. Wind loads are based on Chapter 20 and Table 2004.4.
4. Maximum allowable deflections limits of L/60 have been checked. L/80 in HVHZ have also been checked.

CLIENT: Jay K Screens
PROJECT LOCATION:
 Dunlat Residence
 4492 SW Branch Terrace W.
 Palm City, FL 34990

DRAWN BY:	JMS
CHECKED BY:	DYK
SCALE:	AS SHOWN
DATE:	12/05/07

DO YEON KIM, P.E.
 FLA. REG. NUMBER 49497
 DO KIM & ASSOCIATES, LLC
 CA# 26887
 3300 HENDERSON BLVD.,
 SUITE 108
 TAMPA, FL 33684



FLORIDA BOARD OF PROFESSIONAL ENGINEERS

CHARLIE CRIST, GOVERNOR

HOLLY BENSON, SECRETARY
DEPARTMENT OF BUSINESS
AND PROFESSIONAL REGULATION

March 31, 2008

John C. Burke, P.E.
CHAIR
(ELECTRICAL)
1/9/04-10/31/10

David O. Charland, P.E.
VICE CHAIR
(STRUCTURAL)
4/20/05-10/31/08

Christian S. Bauer, Ph. D., P.E.
(INDUSTRIAL)
4/20/05-10/31/08

Henn Rebane, P.E.
(ELECTRICAL)
11/29/99-10/31/07

Zafar Hyder, Ph. D., P.E.
(CIVIL)
8/22/07-10/31/10

Paul Tomasino, P.E.
(CIVIL)
2/11/02-10/31/10

Vacant
(CIVIL)

Vacant
(Public Member)

Vacant
(MECHANICAL)

Vacant
(EDUCATIONAL)

Vacant
(PUBLIC)

Carrie Flynn
EXECUTIVE DIRECTOR

Do Kim, P.E.
P.O. Box 10039
Tampa, FL 33679

Re: Complaint

Case No. # 2008008617

Dear Mr. Kim:

Pursuant to Sections 455.225 and 471.038, Florida Statutes, the Board of Professional Engineers is required to investigate legally sufficient complaints that allege violations of the Engineering Practice Act. Section 455.225(1), Florida Statutes, further states that when an investigation is undertaken, the Board shall promptly furnish to the person or his/her attorney a copy of the complaint or document which resulted in the initiation of the investigation.

Attached for your review is a copy of the complaint or document received by the Board. You have the option of submitting a written response to the complaint for consideration by the Board's legal staff and by the Probable Cause Panel for the Board. **It is strongly recommended that applicable calculations be included in your response.** Copies of plans are available (if applicable) upon request and at duplication costs. Please submit this response to the Board office within twenty (20) days. You may also submit a written request for a copy of the Board's investigative file. This file will be provided to you once the investigation is completed.

Please be advised that pursuant to Section 471.038(6) Florida Statutes, complaints are confidential and exempt from Section 119.07(1), Florida Statutes, until ten days after the Board makes a determination regarding probable cause.

Thank you for your cooperation in this matter.

Sincerely,

Jack Beamish
Investigator
Board of Professional Engineers

Encl.

2/29

U.S. Postal ServiceTM
CERTIFIED MAILTM RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com

OFFICIAL USE

7006 0100 0004 2481 9327

Postage	\$	2008008617
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	3/31/08

Postmark
Here

Sent To Do Kim, P.E.
 Street, Apt. No. or PO Box No. P.O. Box 10039
 City, State, ZIP+4 Tampa, FL 33679

PS Form 3800, June 2002 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Do Kim, P.E.
P.O. Box 10039
Tampa, FL 33679

2. Article Number
 (Transfer from service label)

7006 0100 0004 2481 9327

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-4-1540

COMPLETE THIS SECTION ON DELIVERY

A. Signature [Signature] Agent Addressee

B. Received by (Printed Name) _____ C. Date of Delivery _____

D. Is delivery address different from item 1? Yes
 if YES, enter delivery address below: No

3. Service Type
 Certified Mail Express Mail
 Registered Return Receipt for Merchandise
 Insured Mail C.O.D.

4. Restricted Delivery? (Extra Fee) Yes

2/30

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

April 22, 2008

Jack Beamish
Investigator
Florida Board of Professional Engineers
2507 Callaway Road, Suite 200
Tallahassee, FL 32303

RECEIVED
APR 24 2008
FLORIDA BOARD OF
PROFESSIONAL ENGINEERS

RE: Complaint Case # 2008008617

Dear Mr. Beamish:

Thank you for taking my phone call on April 4, 2008 regarding this complaint. I received the letter on that same day and enclosed is my formal written response. Please accept this letter as my formal written request for a copy of the Board's investigative file once the investigation is completed and the case closed.

The complaint filed against me by Mr. Steven Sincere, P.E. alleges negligence or incompetence in my site specific structural design and plans for the aluminum screen structure located at 4492 SW Branch Terrace W., Palm City, FL 34990. In his complaint, Mr. Sincere bases his complaint on conducting 3-dimensional finite element analysis and interaction ratios per the Aluminum Design Manual (ADM) as required by the Florida Building Code (FBC).

The FBC also recognizes in FBC Section 104.11 Alternative materials, design and methods of construction and equipment.

The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. When alternate life safety systems are designed, the SFPE Engineering Guide to Performance-Based Fire Protection Analysis and Design of Buildings, or other methods approved by the building official may be used. The building official shall require that sufficient evidence or proof be submitted to substantiate any claim made regarding the alternative.

Furthermore, Rule 9B-72 the Florida Building Code Product Approval System, has products that are tested and approved by the Building Commission that allow engineers to utilize tested product performance values in accordance to national testing standards.

The design of this referenced structure has utilized products that have been tested and received State of Florida Product Approval (FL#9328 and FL#7350) which is clearly shown in the design documents, Sheet 6 of 6. Both FL#9328 and FL#7350 products use testing protocol sections in the ADM as stated on the product approval documents. I have enclosed copies of the product approval documents as well as my analytic calculations using the allowable loads published in the product approvals to satisfy and exceed the minimum requirements of the FBC.

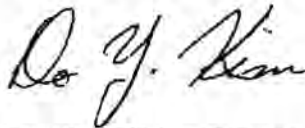
DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

The use of product manufacturer's allowable performance data has been used by practicing engineers for decades in lieu of analytic calculations for not just beams and columns, but also for anchors, fenestration assemblies, and concrete products such as lintels. The use of interaction ratios for analytic calculations is one such method by which competent engineers can complete an analysis and design. However, I have chosen to use Florida Product Approved products that have approved and published allowable load data to meet the requirements of the FBC.

The use of 3-D finite element analysis can be a useful tool and my firm employs several finite element analysis programs in the course of our practice. However, it is now a requirement that structures use 3-D finite element programs and the standard practice in the aluminum patio industry is 2-D analysis. I would dare to say that most structures designed and built in residential construction and also commercial employ 2-D analysis.

Based on our phone conversation, I have enclosed applicable calculations that are most direct to the issues raised in the complaint. If you or the consultant have any further requests for additional information, please contact me.

Sincerely,



Do Kim, P.E. (FL #49497)
Do Kim & Associates, LLC

Enclosures: product approval documents and calculations

3/32



Testing Evaluation Laboratories, Inc.

2002 Wood Court Suite 1 – Plant City, FL 33563
Phone: 813-754-9887 Fax: 813-754-9989

Test Report Issued To

Pool Enclosure Collective, LLC
3300 Henderson Blvd. Suite 106
Tampa, FL 33609

Test Report Number

TEL 07-01330199.1

Date Report Issued

January 24, 2008

Test Dates

July 17, 2007 through July 19, 2007

Model Designation

Extruded Aluminum Self Mating Trac Beams – 2" x 8"

Reference Specifications

ASTM E529-04 Standard Guide for Conducting Flexural
Tests on Beams and Girders for Building Construction

ASTM E575-99 Standard Practice for Reporting Data from Structural
Tests of Building Constructions, Elements, connections, and Assemblies

3/33

1.0 SPECIMEN IDENTIFICATION

The specimens tested include the following:

- Extruded Aluminum Self Mating Trac Beams 2" x 8" x 15'
- Extruded Aluminum Self Mating Trac Beams 2" x 8" x 30'
- Extruded Aluminum Self Mating Trac Beams 2" x 8" x 40'
- Extruded Aluminum Self Mating Trac Beams 2" x 8" x 52' mansard

The above specimens were randomly selected production units from the manufacturer. A minimum of 4 samples were tested for each specimen per the agreement between the Pool Enclosure Collective and Testing Evaluation Laboratories.

2.0 SPECIMEN DESIGN



The specimen is constructed of an open extruded aluminum shape that forms $\frac{1}{2}$ of the beam; two of these shapes are mated together to form a hollow beam section. The shapes are fastened with #10 x $\frac{3}{4}$ " self-drilling tapping screws installed on the width face of the beam, 24" maximum on center along the length of the beam. See drawing L-3931 for design details.

3.0 APPARATUS DESCRIPTION

The specimens (beams and posts as described below) were installed directly to the concrete floor in the lab as would be done in actual service conditions. Point loads were applied at center span of the beams; loads were measured with load cell instrumentation. Lateral supports were simulated by vertical uprights placed at specified locations along the length of the beam span. Deflections were taken at mid-span and at the ends of the beams; deflections were measured using digital vernier calipers.

4.0 SPECIMEN INSTALLATION

Each end of the assembled beam specimen was affixed to a post just as would be done in the field for actual erection of a structure. The posts were anchored to the concrete floor of the lab as would be done in the field for actual assembly. This arrangement facilitates testing with the end fixity of the beam as it would be in actual installations in the field. See drawing L-3931 for details on the connections. To simulate lateral supports, vertical uprights were placed on both sides of the beam, 84" maximum on center along the length of the beam; the beam was free to deflect vertically in the uprights, but torsional rotation was resisted at each upright pair.



Lateral support upright



Mansard connections



Mansard connection



Upright to beam connection and upright to base connection

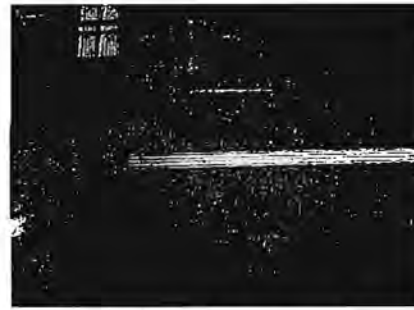
5.0 INSTRUMENTATION

All tests were performed using the following NIST traceable calibrated instruments:

1. Applied loads were measured using an "S" beam load cell, 5,000 lb. capacity, connected to a strain gage digital meter.
2. Deflections were measured using digital vernier calipers, 0.0005" resolution, mounted at each deflection measurement location.



Load cell attachment



Caliper at end post

6.0 AMBIENT CONDITIONS

Tests were performed in non-conditioned laboratory space; temperature and humidity were at atmospheric conditions which varied between 75 – 95 °F and 50% - 80% respectively.

7.0 TEST DATA AND FAILURE MODES

Test data for each specimen of each sample is tabulated on the following pages. The failure mode in each case was a combination of torsional buckling and compression buckling failures at the mid-span location as represented in the pictures below. At failure load, failure occurred quickly and it cannot be determined if one of the failure modes happened first and caused the second failure mode or not.

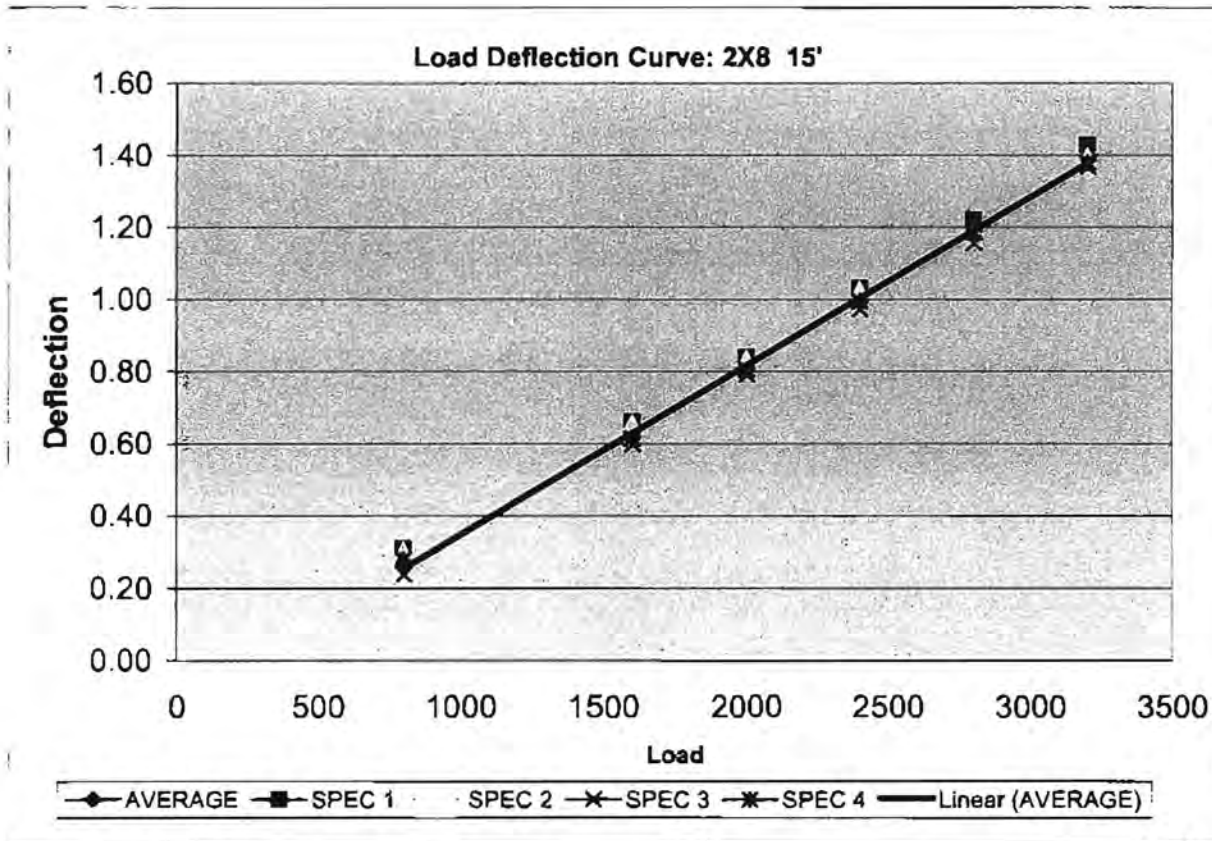


2" x 8" Self Mating Trac Beam - 15 Foot Span



DEFLECTIONS (inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
800	0.310	0.310	0.238	0.280	0.2698	0.0343	12.72%
1600	0.661	0.661	0.597	0.614	0.6178	0.0327	5.29%
2000	0.840	0.840	0.790	0.805	0.8099	0.0251	3.09%
2400	1.032	1.032	0.971	0.994	0.9963	0.0298	2.99%
2800	1.220	1.191	1.154	1.186	1.1876	0.0270	2.28%
3200	1.430	1.401	1.367	1.379	1.3941	0.0275	1.97%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
3579	1.587			
3423		1.488		
3522			1.502	
3553				1.484



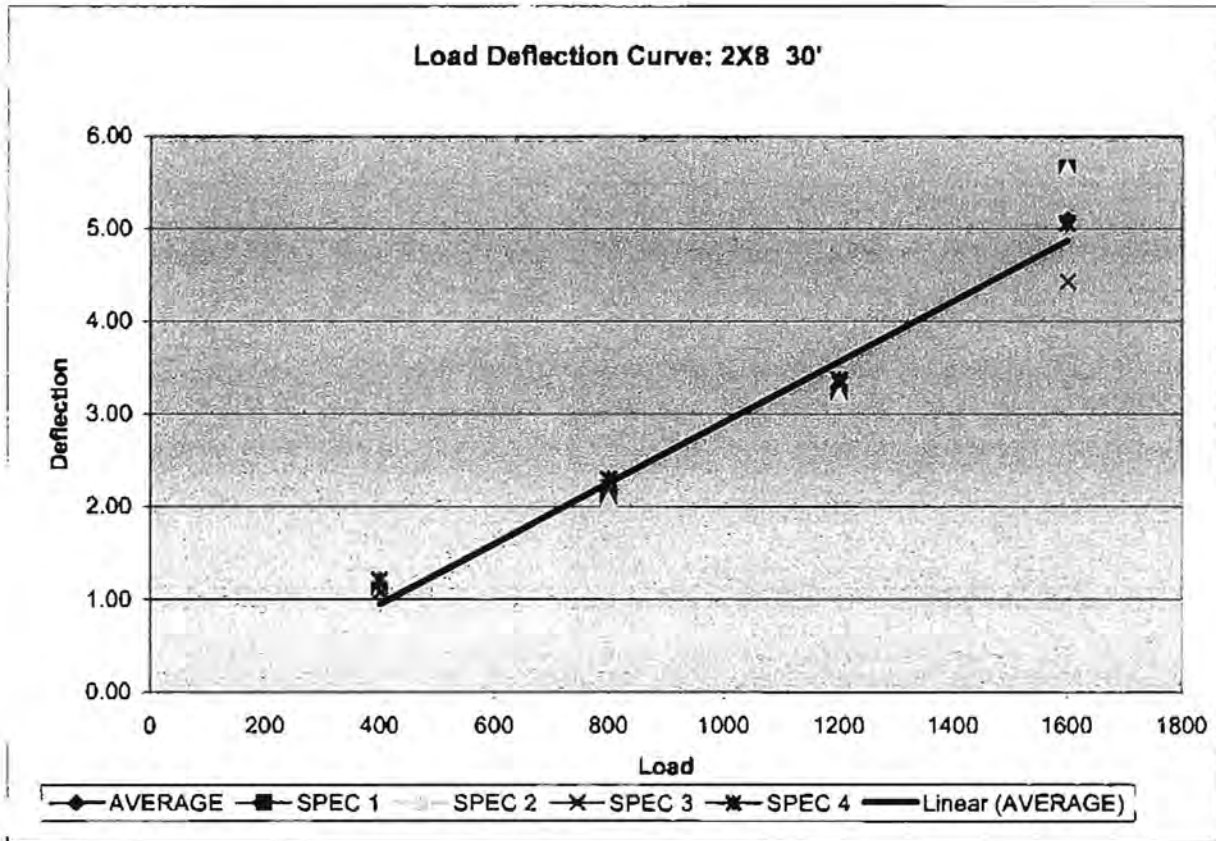
3/3

2" x 8" Self Mating Trac Beam - 30 Foot Span



DEFLECTIONS (inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
400	1.102	1.102	1.076	1.210	1.0968	0.0596	5.43%
800	2.083	2.083	2.204	2.295	2.1781	0.1030	4.73%
1200	3.213	3.213	3.319	3.373	3.2734	0.0798	2.44%
1600	5.666	5.666	4.427	5.064	5.0971	0.5919	11.61%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
1753	5.567			
1769		5.336		
1799			4.973	
1844				5.582



3/38

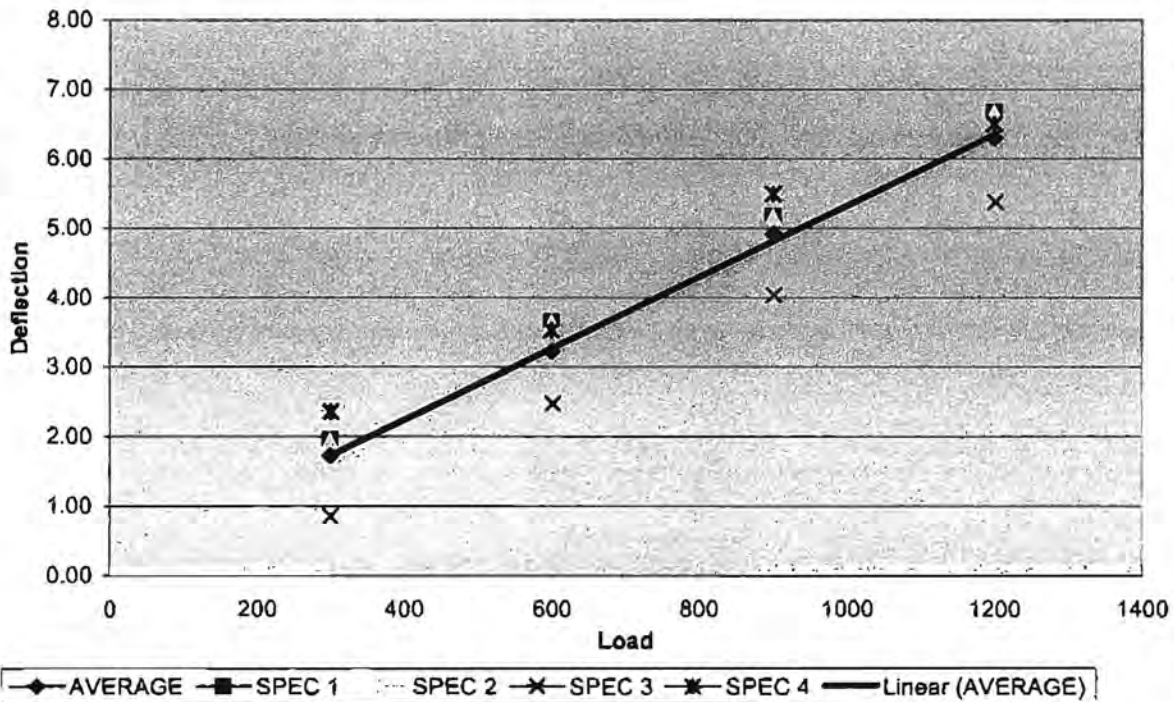
2" x 8" Self Mating Trac Beam - 40 Foot Span



DEFLECTIONS (Inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
300	1.955	1.955	0.852	2.363	1.7254	0.6488	37.60%
600	3.653	3.653	2.472	3.529	3.2211	0.5726	17.78%
900	5.172	5.172	4.031	5.490	4.9130	0.6411	13.05%
1200	6.676	6.676	5.370	6.502	6.3008	0.6291	9.98%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
1406	7.792			
1472		8.115		
1390			8.405	
1322				7.211

Load Deflection Curve: 2X8 40'



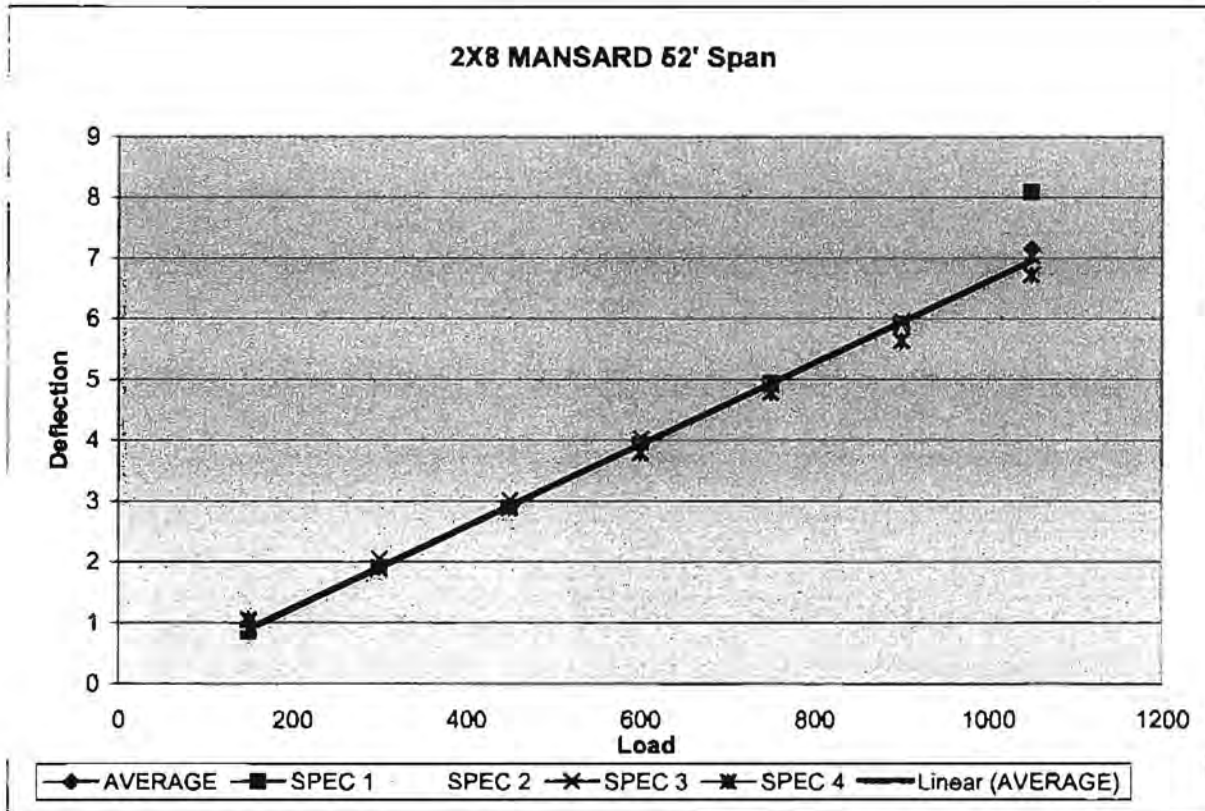
3/39

2" x 8" Self Mating Trac Beam - Mansard 52 Foot Span



DEFLECTIONS (inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
150	0.851	1.004	1.038	1.049	0.9853	0.0916	9.29%
300	1.833	1.828	2.047	1.908	1.9036	0.1023	5.38%
450	2.887	2.801	3.008	2.889	2.8959	0.0850	2.94%
600	3.927	3.902	4.022	3.792	3.9106	0.0944	2.41%
750	4.941	4.807	4.902	4.785	4.8586	0.0745	1.53%
900	5.916	5.763	5.947	5.636	5.8153	0.1441	2.48%
1050	8.096	6.76	7.025	6.723	7.151	0.6442	9.01%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
1414	10.196			
1326		9.473		
1328			9.200	
1523				8.359



3/40

5 ADDITIONAL DOCUMENTS

This report is not complete unless accompanied by the following documents bearing the Testing Evaluation Laboratories stamp and signed by appropriate personnel:

1. Drawing No. L-3931

6 TEST WITNESSED BY:

J. R. Wright – R. W. Building Consultants, Inc.
Wendell W. Haney – Florida Professional Engineer
Jarrett Wright – Laboratory Manager, Testing Evaluation Laboratories, Inc.
Do Kim – Pool Enclosure Collective, LLC

7 CONDITIONS, TERMS, AND GENERAL NOTES REGARDING THESE TESTS

The product tested Has Been compared to the detailed drawing, bill of materials and fabrication information supplied by the client so named herein. Our analysis, which includes dimensional and component description comparisons, indicate the tested product and engineering information supplied by the client "Are Equivalent". The report and representative samples will be retained for ten years from the date of initial test.

These test results were obtained by employing all requirements of the designated test methods with no Deviations unless explicitly noted in test report. The test results and specimen supplied for testing are in compliance with the reference.

The test results are specific to the product tested by this laboratory and of the sample supplied by the client named herein, and they relate to no other product either manufactured by the client, a fabricator of the client or of installed field performance.

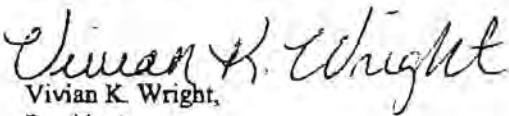
This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

Testing Evaluation Laboratories, Inc. makes no opinions or endorsements regarding this product and its performance. This report may not be reproduced or quoted in partial form without the expressed written approval of Testing Evaluation Laboratories, Inc.

Testing Evaluation Laboratories, Inc.'s letter, reports, its name or insignia or mark are for the exclusive use of the client so named herein and any other use is strictly prohibited. The report, letters and the name of Testing Evaluation Laboratories, Inc., its seal or mark shall not be used in any circumstance to the general public or in any advertising.

Limitation of liability: Due diligence was used in performing the tests and reporting the results. By acceptance of this report, this client agrees to hold harmless and indemnify Testing Evaluation Laboratories, Inc., its employees and officers and owners against all claims and demands of any kind whatsoever, which arise out of or in any manner connected with the performance of work referred to herein.

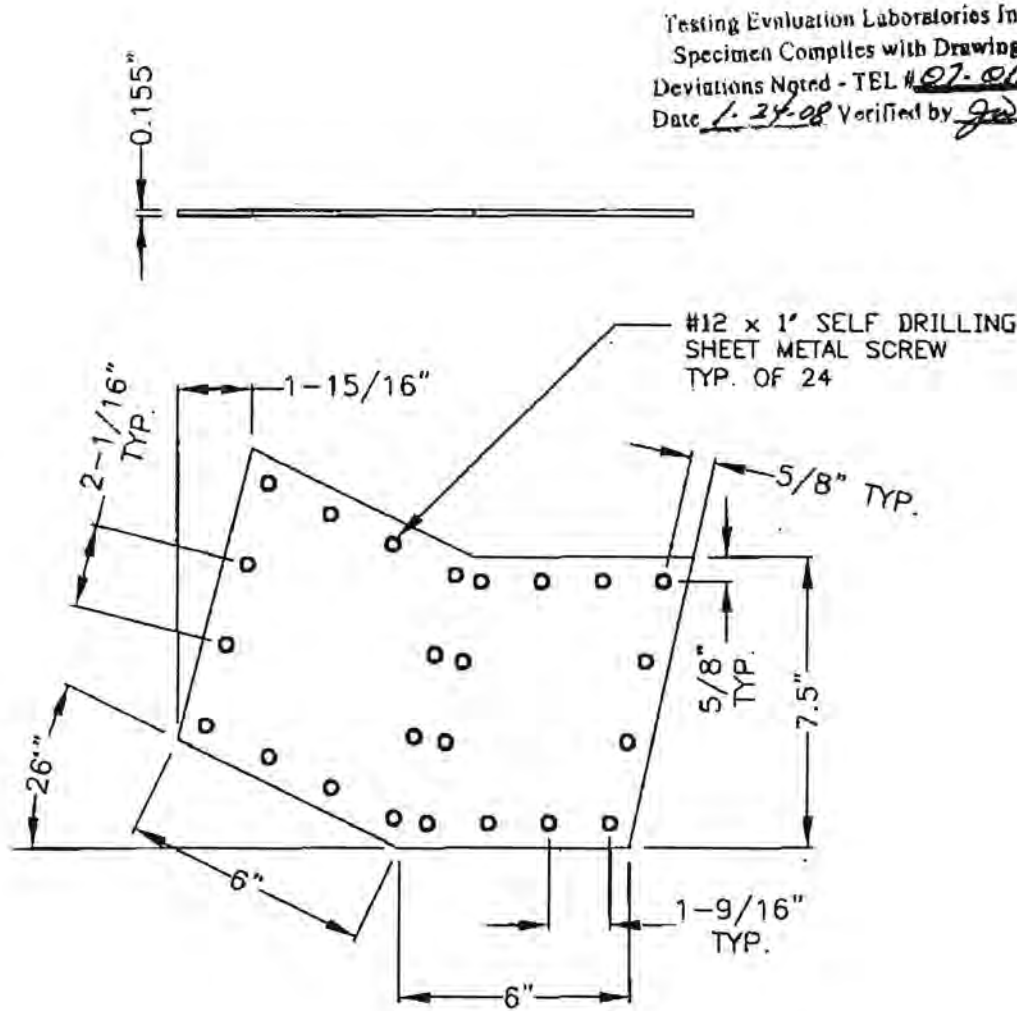
Testing Evaluation Laboratories, Inc.


Vivian K. Wright,
President



3/4/11

3/43



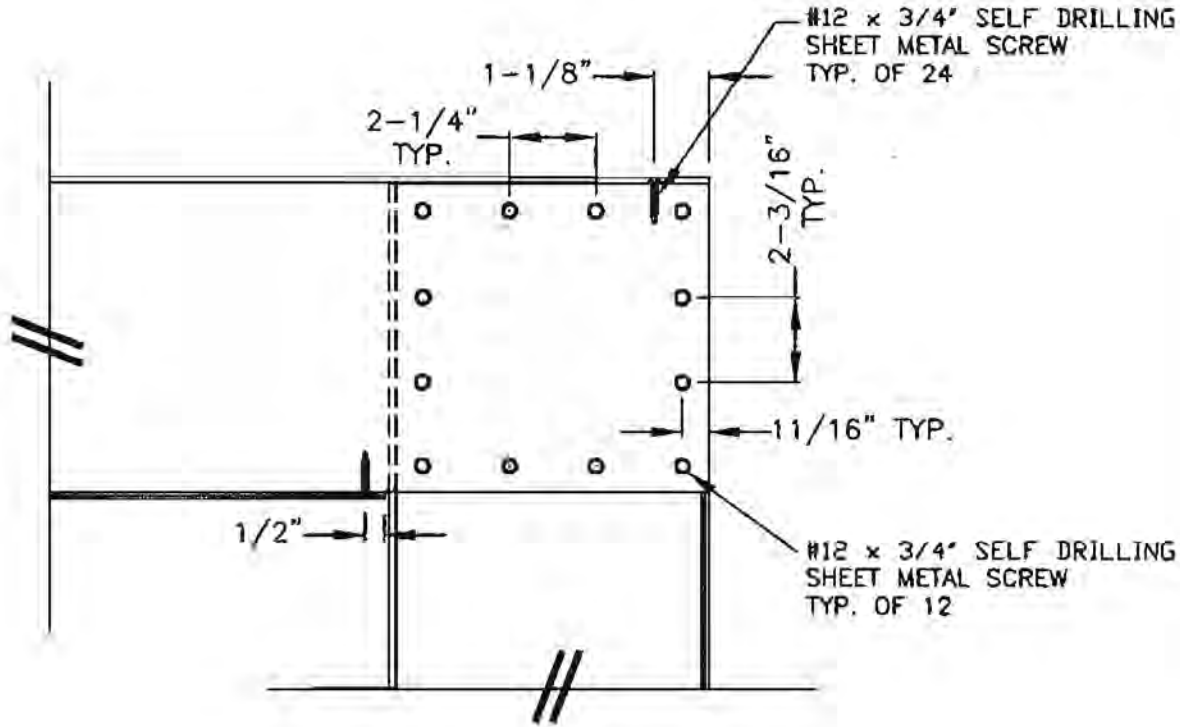
Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 97-01330199.1
 Date 1-24-08 Verified by gaw

2" x 8" TRAC SELF-MATING BEAM (SMB)
 MANSARD CONNECTION PLATE
 MAT'L: 5052-H32

PRODUCT:		POOL ENCLOSURE COLLECTIVE, LLC 8" TRAC BEAM	
PART OR ASSEMBLY:		MANSARD CONNECTION PLATE DETAIL	
		VH	BY
		REVISIONS	
		Connection details	
1	1/24/08	DATE	
DATE: 07-17-07			
SCALE: N.T.S.			
DWD. BY: TL			
CHK. BY: WWH			
DRAWING NO.: L-3931			
SHEET 2 OF 4			

hbj

Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 07-01230199.1
 Date 1-24-08 Verified by JW



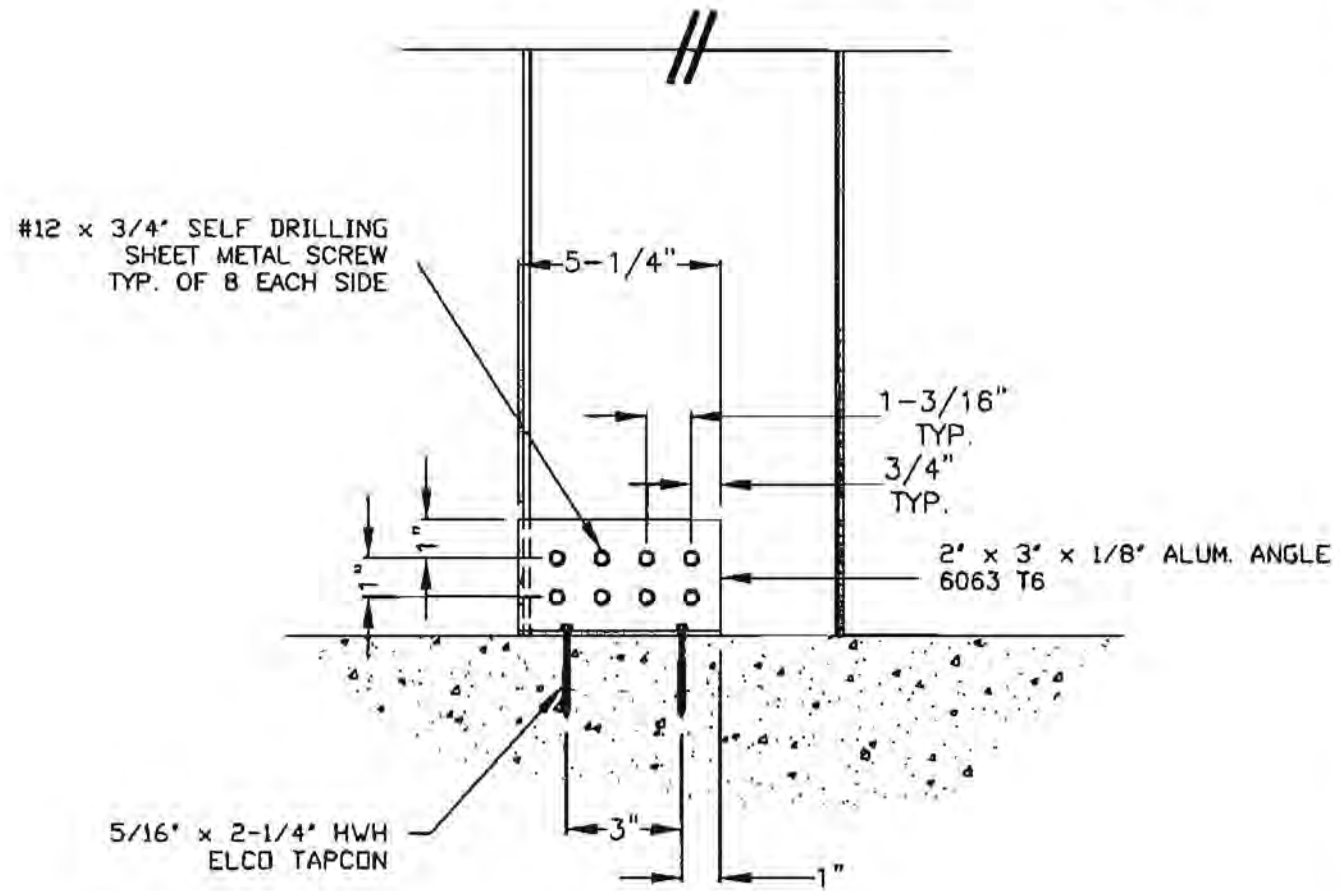
2" x 8" TRAC SELF-MATING BEAM (SMB)
 BEAM TO COLUMN CONNECTION

PRODUCT:		POOL ENCLOSURE COLLECTIVE, LLC	
		8" TRAC BEAM	
PART OR ASSEMBLY:		BEAM TO COLUMN CONNECTION DETAIL	
		VH	BY
		Connection details	
		1/24/08	DATE
1			
			REVISIONS

RW BUILDING
 CONSULTANTS, INC.
 813.659.9197

DATE: 07/17/07
 SCALE: N.T.S.
 DWG. BY: TL
 CHK. BY: WWH
 DRAWING NO.: L-3931
 SHEET 3 OF 4

Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 07-01330199.1
 Date 1-24-08 Verified by JW



2" x 8" TRAC SELF-MATING BEAM (SMB)
 COLUMN TO BASE CONNECTION

3/45

PRODUCT:		POOL ENCLOSURE COLLECTIVE, LLC	
		8" TRAC BEAM	
PART OR ASSEMBLY:		BEAM TO COLUMN CONNECTION DETAIL	
		NO.	DATE
		1	1/24/08
		Connection details	
		WH	BY
		REVISIONS	
RW BUILDING CONSULTANTS, INC. 813.659.9197			
DATE: 07/17/07			
SCALE: N.T.S.			
DWG. BY: TL			
CHK. BY: WWH			
DRAWING NO.: L-3931			
SHEET 4 OF 4			

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC



2x3 Purlin Testing Attached to Trac™ Beams

February 25, 2007

By

Do Kim, P.E.

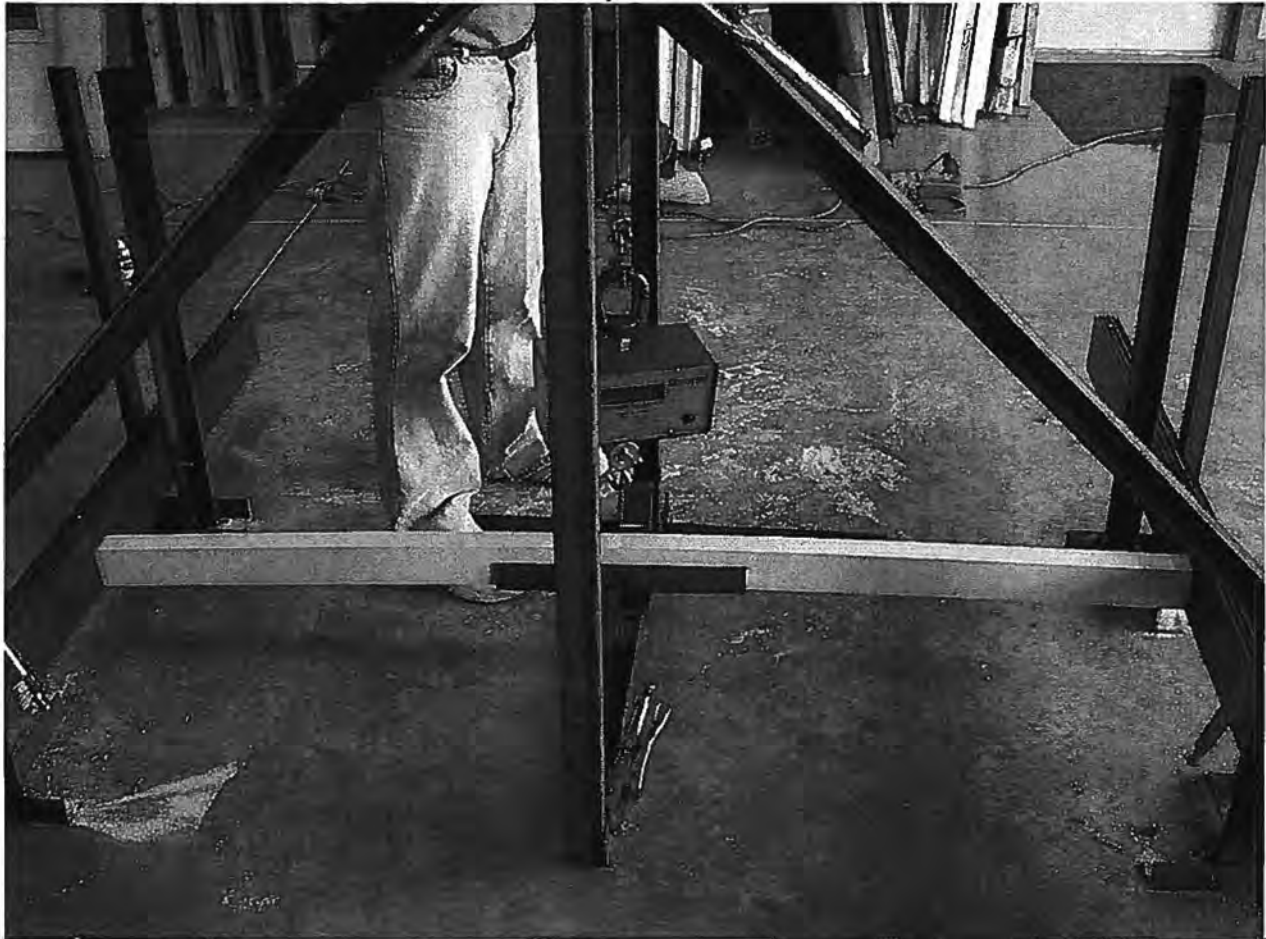
3/46

P.O. Box 10039
Tampa, FL 33679

813.874.5900
813.874.5959 (fax)

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC



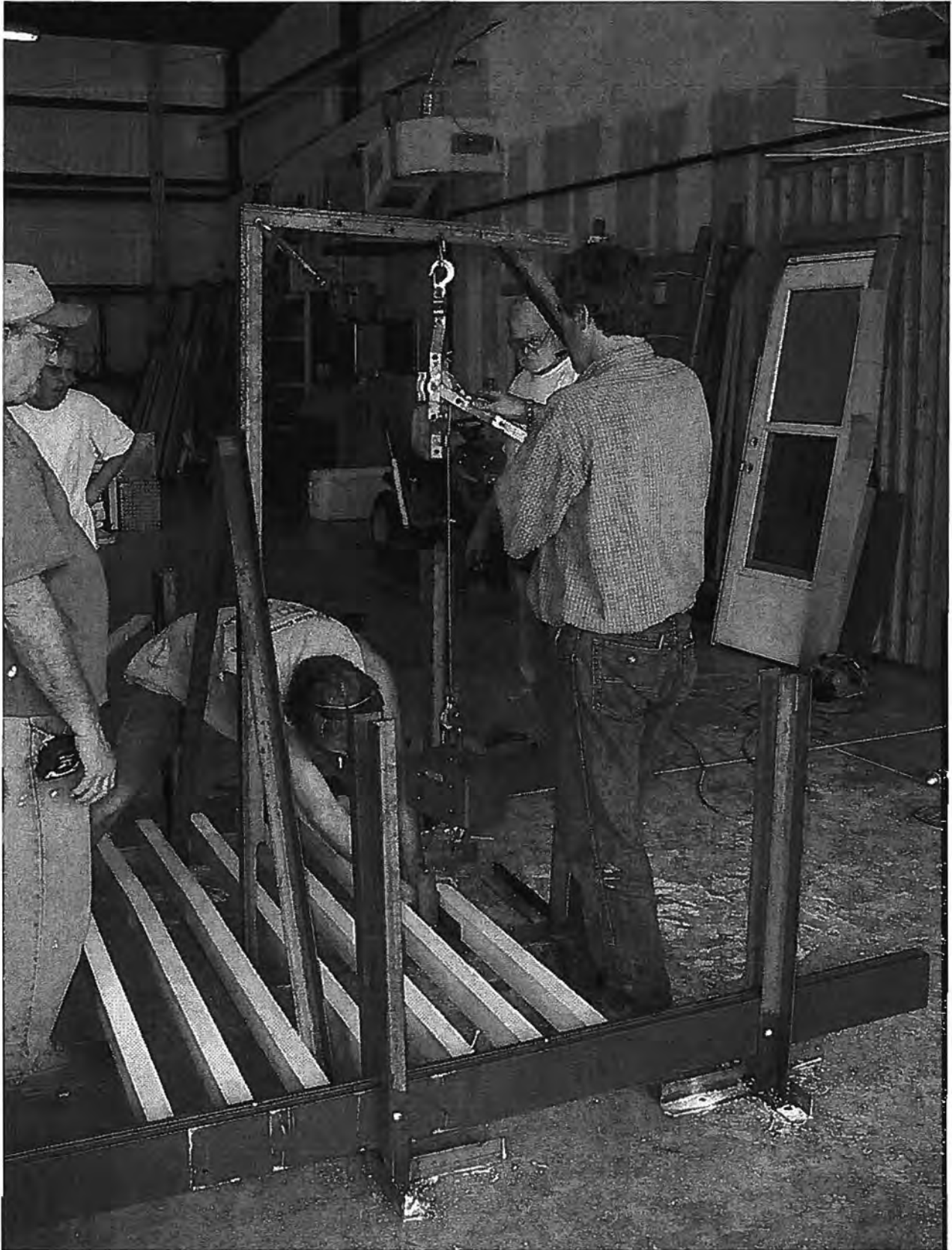
3/47

P.O. Box 10039
Tampa, FL 33679

813.874.5900
813.874.5959 (fax)

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC



P.O. Box 10039
Tampa, FL 33679

813.874.5900
813.874.5959 (fax)

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC

3-POINT BENDING PURLIN TESTING SUMMARY OF 6' SPAN ATTACHED TO 2X5 TRAC BEAM™		
PURLIN TYPE	AVG. ULTIMATE LOAD (LBS)	ALLOWABLE LOAD (LBS)
2x2x0.045 - 4 hole	540*	270
2x3x0.045 - 4 hole	957	478
FEI 2x3x0.045 - 3 hole	1129	564
2x3x0.050 - 6 hole	971	485
2x3x0.060 - 6 hole	1094	547
* Failure Mode #1		

3-POINT BENDING PURLIN TESTING SUMMARY OF 8' SPAN ATTACHED TO 2X5 TRAC BEAM™		
PURLIN TYPE	AVG. ULTIMATE LOAD (LBS)	ALLOWABLE LOAD (LBS)
2x2x0.045 - 4 hole	540**	270
2x3x0.045 - 4 hole	785	392
FEI 2x3x0.045 - 3 hole	811	406
2x3x0.050 - 6 hole	773	387
2x3x0.060 - 6 hole	943	472
** Failure Mode #1 and #2		

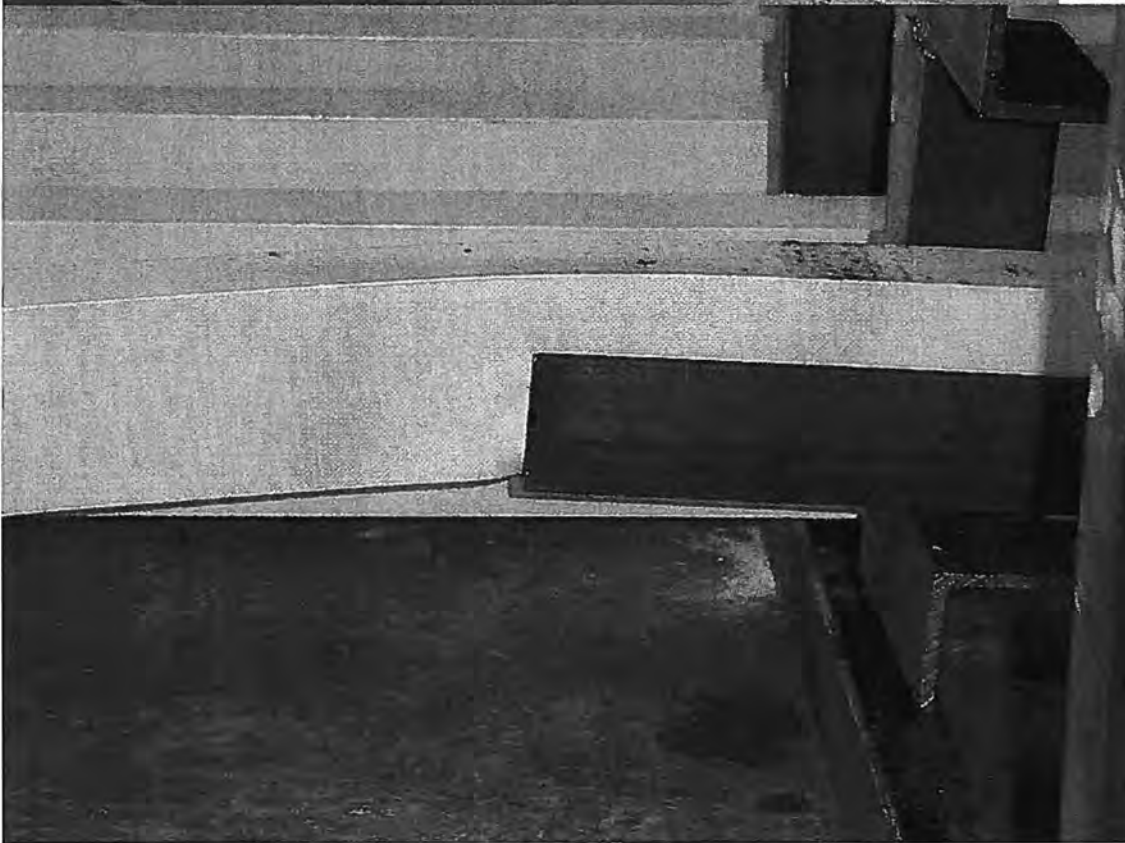
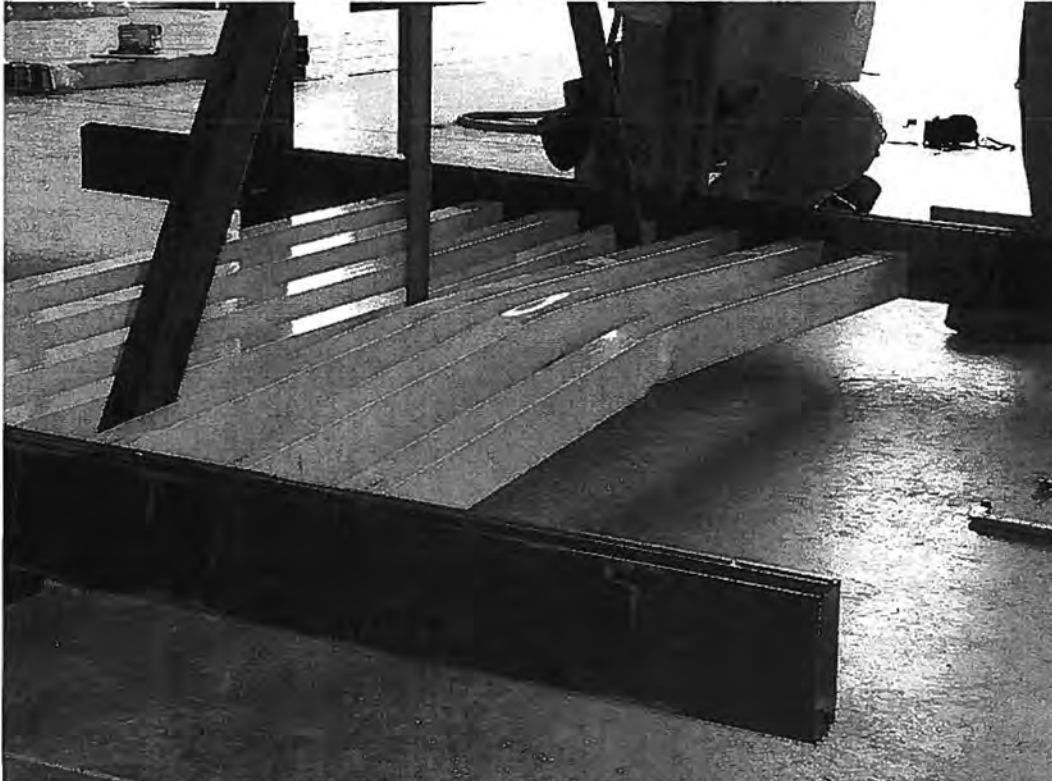


3/49

P.O. Box 10039
 Tampa, FL 33679

813.874.5900
 813.874.5959 (fax)

POOL ENCLOSURE COLLECTIVE, LLC



3/50

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC



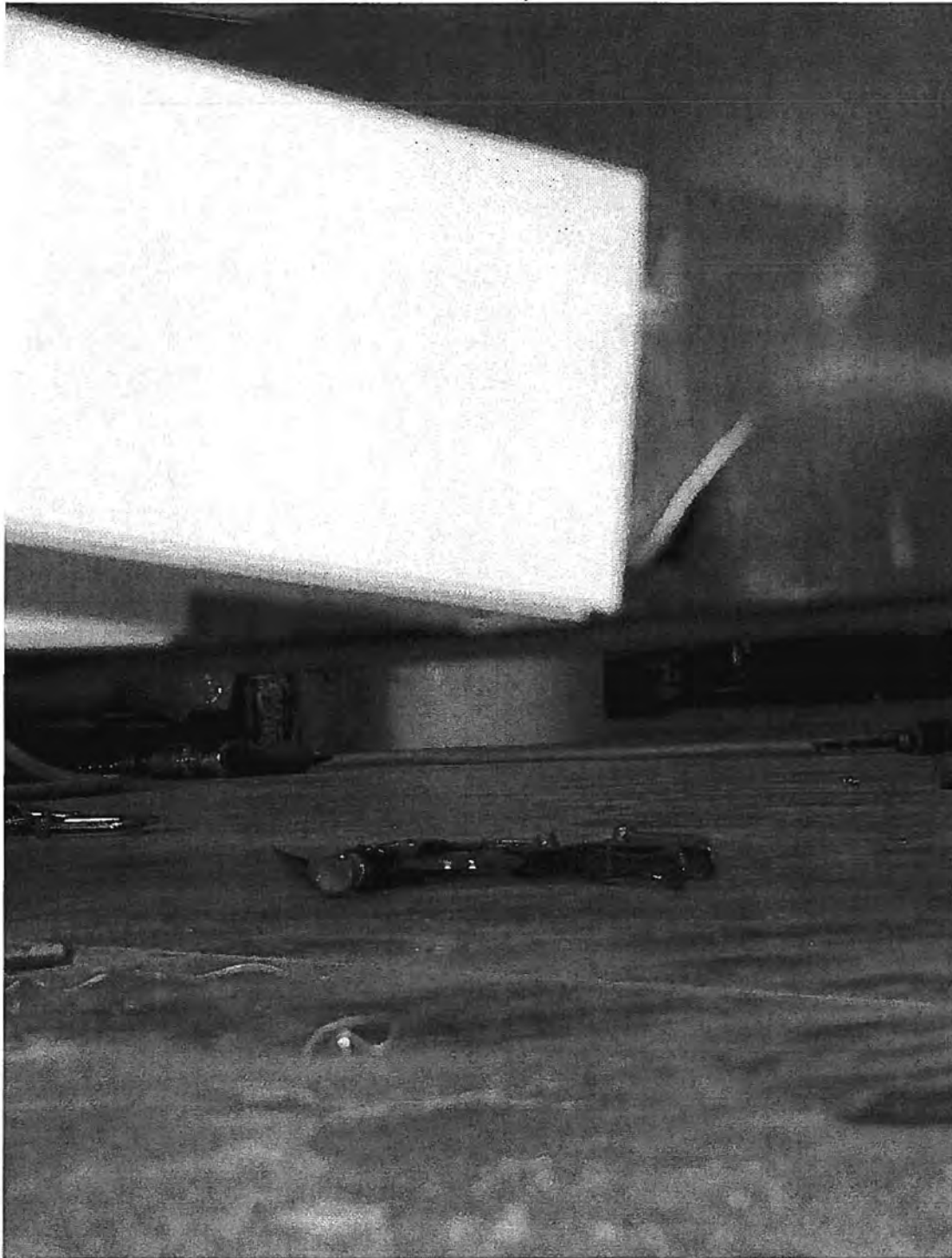
3/51

P.O. Box 10039
Tampa, FL 33679

813.874.5900
813.874.5959 (fax)

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC



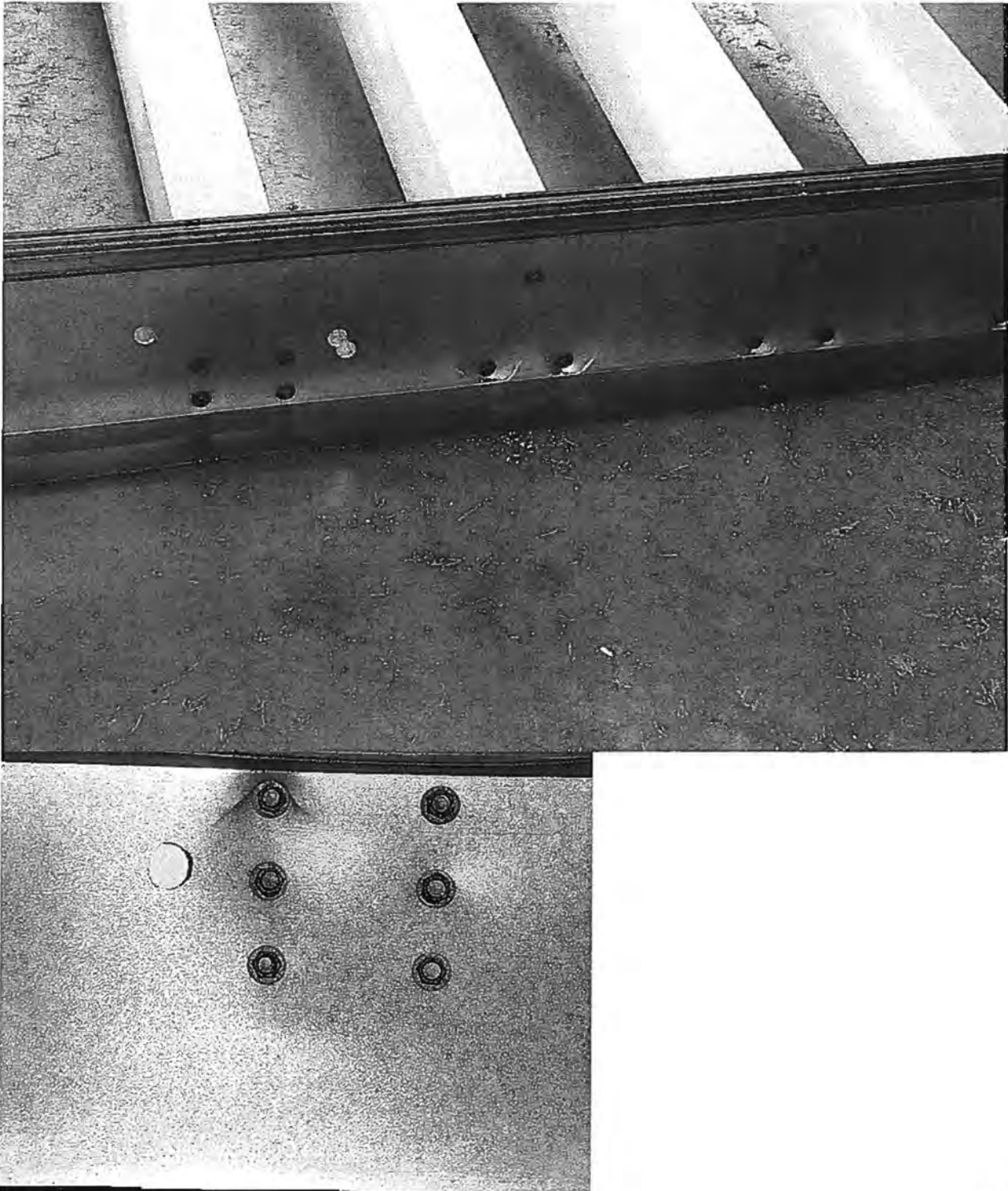
3/52

P.O. Box 10039
Tampa, FL 33679

813.874.5900
813.874.5959 (fax)

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC

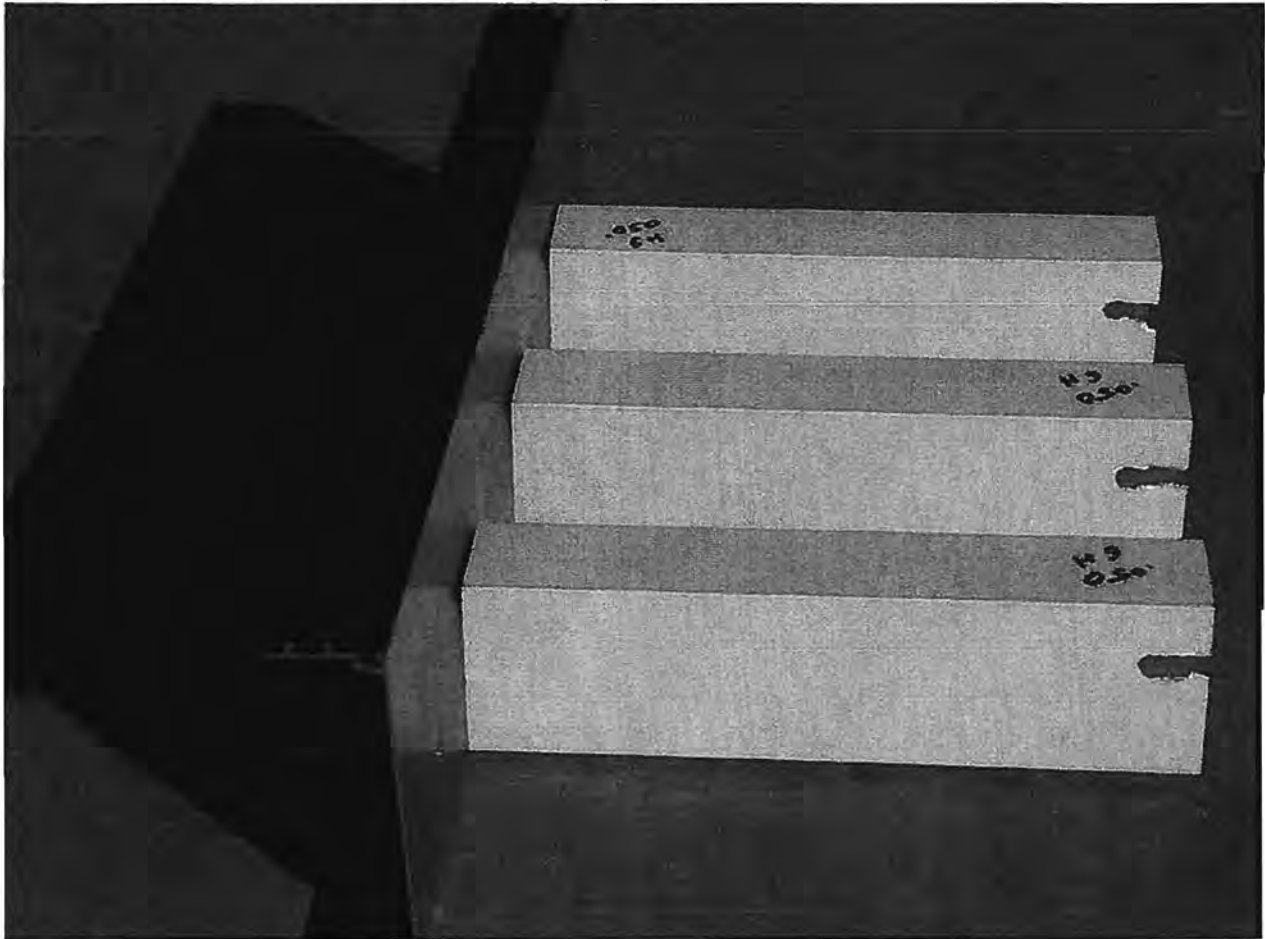


3/53

P.O. Box 10039
Tampa, FL 33679

813.874.5900
813.874.5959 (fax)

POOL ENCLOSURE COLLECTIVE, LLC



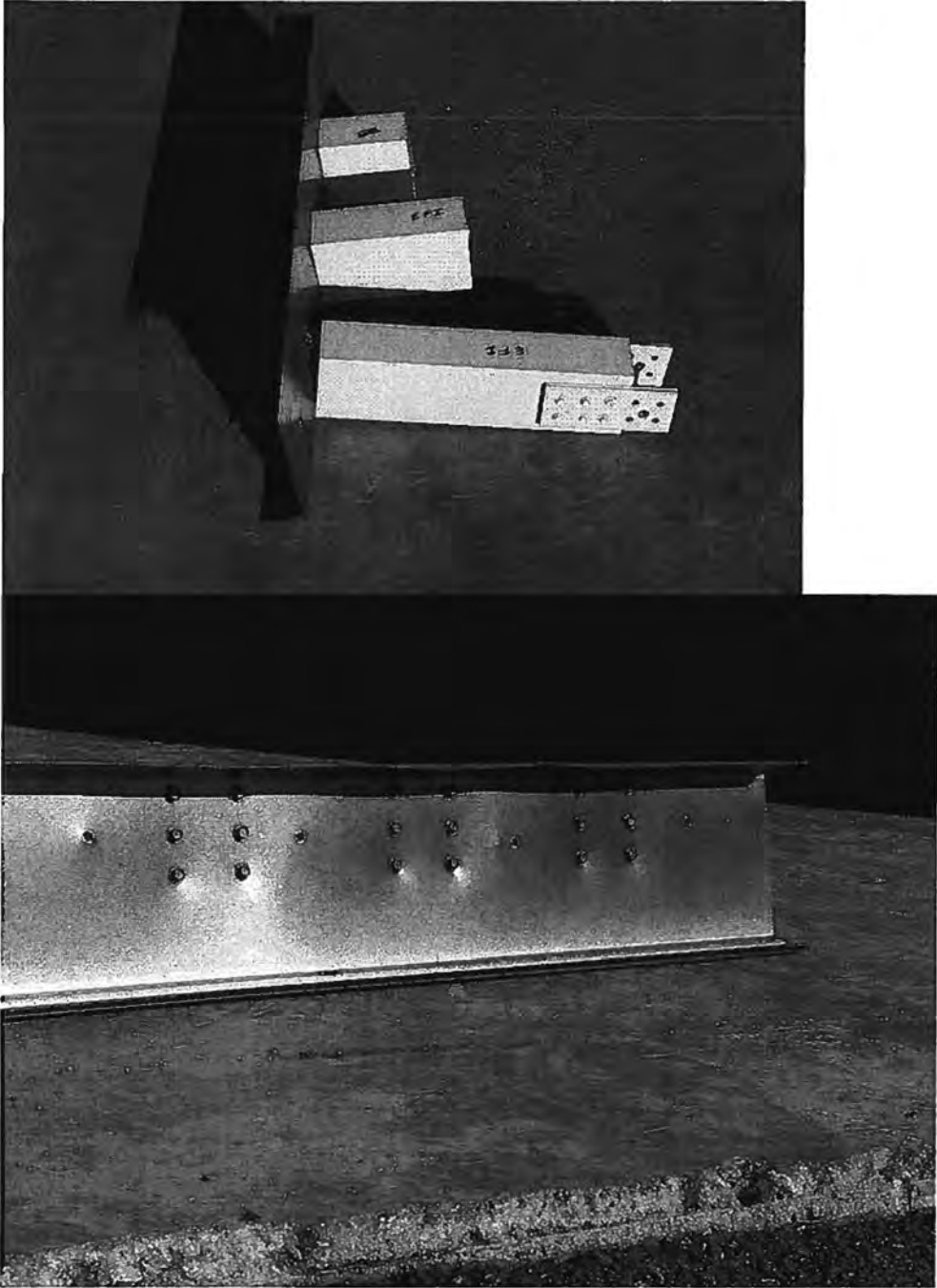
**PURLIN AXIAL TENSILE TESTING SUMMARY OF SCREW BOSS CONNECTIONS
 ATTACHED TO 2X5 TRAC BEAM™**

PURLIN TYPE	AVG. ULTIMATE LOAD (LBS)	ALLOWABLE LOAD (LBS)
2x3x0.045 - 4 hole	1261	631
FEI 2x3x0.045 - 3 hole	1248	624
2x3x0.050 - 6 hole	1366	683

3/54

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC



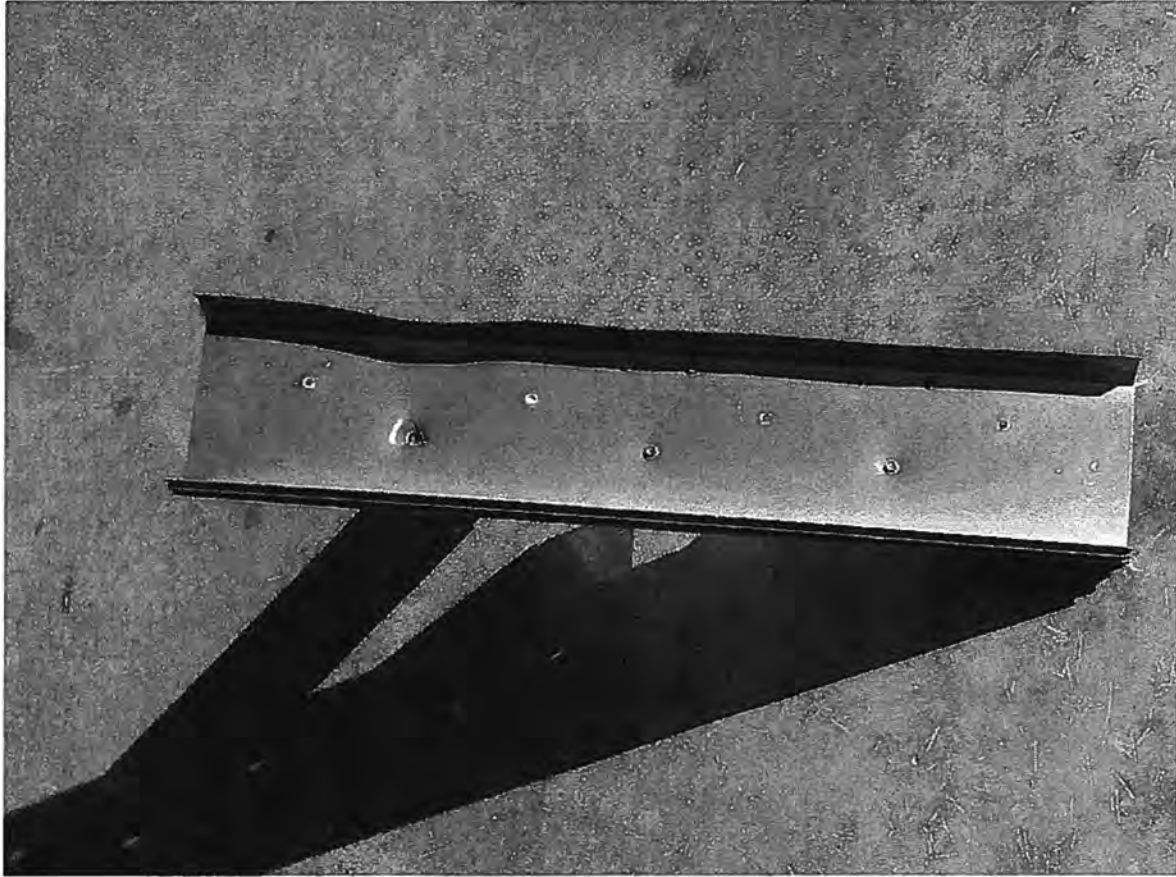
3/55

P.O. Box 10039
Tampa, FL 33679

813.874.5900
813.874.5959 (fax)

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC



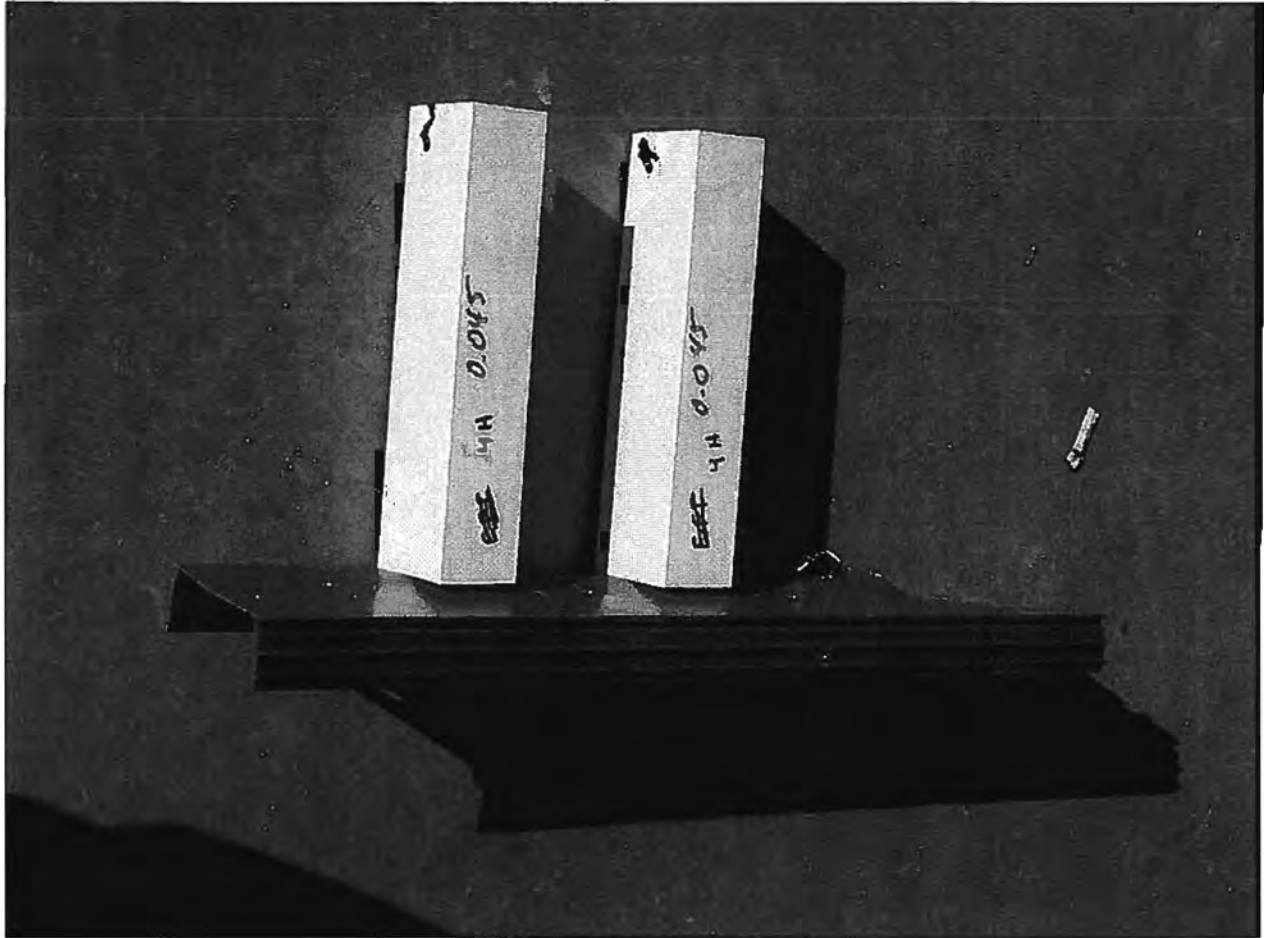
3/56

P.O. Box 10039
Tampa, FL 33679

813.874.5900
813.874.5959 (fax)

DO KIM & ASSOCIATES, LLC
CONSULTING STRUCTURAL ENGINEERS

POOL ENCLOSURE COLLECTIVE, LLC

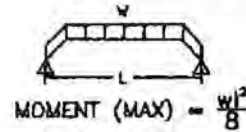
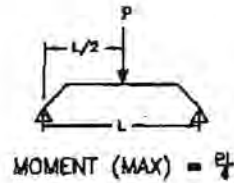
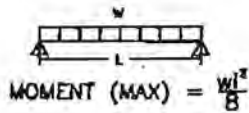
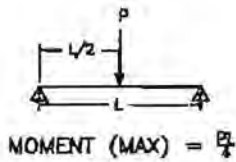


3/57

P.O. Box 10039
Tampa, FL 33679

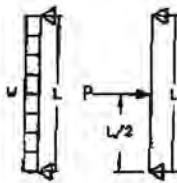
813.874.5900
813.874.5959 (fax)

2x8 Trac Beam™ Technical Sheet
FL9328



BEAM TO BEAM SPACING (FD)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	> 40.0'	> 40.0'	> 40.0'	> 40.0'	36.0'
6' O.C.	> 40.0'	> 40.0'	> 40.0'	37.0'	35.0'
7' O.C.	> 40.0'	> 40.0'	38.0'	35.5'	34.0'
8' O.C.	> 40.0'	38.0'	36.0'	34.2'	32.0'

BEAM TO BEAM SPACING (FD)	118 mph	128 mph	138 mph	148 mph	158 mph
5' O.C.	> 52.0'	> 52.0'	> 52.0'	> 52.0'	47.0'
6' O.C.	> 52.0'	> 52.0'	> 52.0'	50.0'	46.0'
7' O.C.	> 52.0'	> 52.0'	> 52.0'	47.5'	44.8'
8' O.C.	> 52.0'	50.0'	47.0'	45.0'	42.8'



BEAM TO BEAM SPACING (FD)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	32.5'	30.0'	28.9'	27.7'	26.3'
6' O.C.	29.3'	28.7'	27.6'	26.3'	25.0'
7' O.C.	28.7'	27.8'	26.7'	24.9'	23.5'
8' O.C.	27.8'	26.5'	25.2'	23.4'	21.8'

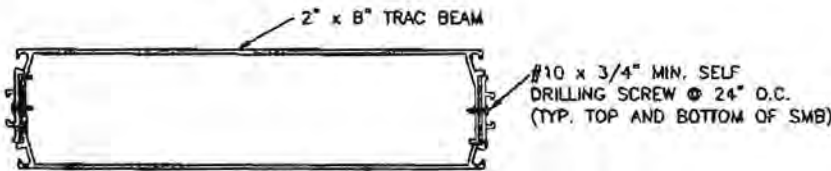
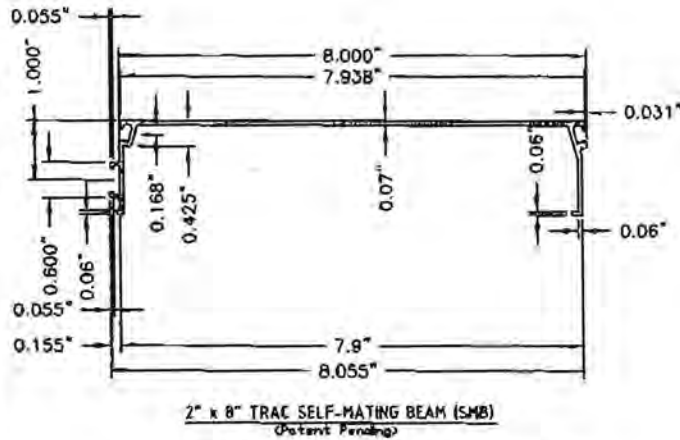
General Notes:

1. Refer to Florida Product Approval #FL9328 for project specific requirements to be used by design professional.
2. Drawings are illustrative purposes only.
3. Tables developed from loads in FL9328 tables which are allowable working loads and may be used without any additional reductions.
4. Allowable point loads and deflections are converted to allowable uniform loads and deflections using analytic and comparative analysis.
5. Allowable spans tables are based on 2004 Florida Building Code with 2006 Updates. Wind loads are based on Chapter 20 and Table 2004.4.
6. Consult a licensed design professional for use of this product information.
7. Maximum allowable deflections limits of L/60 shall be considered by design professional L/80 in HVHZ.

3/58

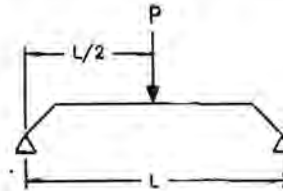
POOL ENCLOSURE COLLECTIVE, LLC

P.O. BOX 10039, TAMPA, FL 33679
PH. (813)857-9955



2x8 TRAC SELF-MATING BEAM MANSARD
(Patent Pending)

L-SPAN (feet)	ALLOWABLE LOAD-P (lbs)	TEST SPECIMEN DEFL. AT ALLOW. LOAD P (inches) SEE NOTE 7
52	1037.0	0.68"

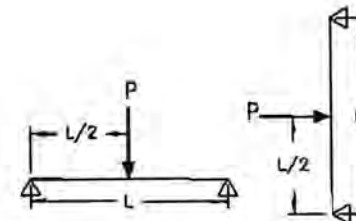


2x8 TRAC SELF-MATING BEAM
(Patent Pending)

L-SPAN (feet)	ALLOWABLE LOAD-P (lbs)	TEST SPECIMEN DEFL. AT ALLOW. LOAD P (inches) SEE NOTE 7
15	2180	0.895"
16	2108	
17	2037	
18	1965	
19	1894	
20	1823	
21	1751	
22	1680	
23	1608	
24	1537	
25	1466	
26	1394	
27	1323	
28	1251	
29	1180	
30	1109	3.288"
31	1084	
32	1060	
33	1036	
34	1011	
35	987	
36	963	
37	938	
38	914	
39	890	
40	866	4.638"

GENERAL NOTES

1. ALUMINUM ALLOY SHALL BE 6005-T5.
2. REFERENCE TEST REPORT #TEL 07-01330198.
3. ALUMINUM EXTRUSION SHALL CONFORM TO ASTM B-221.
4. SAFETY FACTORS HAVE BEEN DEVELOPED IN ACCORDANCE TO THE 2005 ALUMINUM DESIGN MANUAL-SPECIFICATIONS AND GUIDELINES FOR ALUMINUM STRUCTURES SECTION 9.3.2 AND CONFORMS TO THE 2004 FBC CHAPTER 18 AND 20.
5. TESTING HAS BEEN CONDUCTED IN ACCORDANCE WITH ASTM E529-D4: STANDARD GUIDE FOR CONDUCTING FLEXURAL TESTS ON BEAMS AND GIRDERS FOR BUILDING CONSTRUCTION. SEE REFERENCED TEST REPORT IN NOTE 2.
6. THE DESIGNER SHALL DETERMINE BY ACCEPTED ENGINEERING PRACTICE THE ALLOWABLE LOADS FOR THE SITE SPECIFIC LOAD CONDITIONS (INCLUDING LOAD COMBINATIONS) USING THE DATA FROM THE ALLOWABLE LOADS TABLE IN THIS APPROVAL.
7. DEFLECTION VALUES TABULATED IN THIS DRAWING ARE FROM LOAD-DEFLECTION DIAGRAMS OF TESTED SPECIMENS. CHECK DEFLECTION LIMIT REQUIREMENTS OF THE BUILDING CODE, SUCH AS L/80 FOR HWL2 AND L/60 FOR NON-HWL2.
8. THE DESIGNER SHALL CONSIDER LOAD DEFLECTION LIMITS BASED ON SITE SPECIFIC LOAD CONDITIONS.
9. THE DESIGNER SHALL CONSIDER ALL OTHER APPLICABLE STRUCTURAL ELEMENTS SUCH AS FOUNDATION SUPPORT, FASTENER LOADS, CONNECTION STRESSES, MOMENT CAPACITY, ETC.
10. FASTENER FOR STITCHING BEAMS SHALL BE POOL ENCLOSURE COLLECTIVE, LLC'S TRAC BEAM SCREW WITH MIN. PROPERTIES EQUAL TO C-1022 LOW-CARBON STEEL WITH YIELD STRENGTH OF 58 KSI MIN WITH ADEQUATE CORROSION PROTECTION COATING AS SPECIFIED BY THE DESIGNER.
11. MAXIMUM LATERAL SUPPORT DISTANCE IS 84".
12. USE LIMITED TO OUTDOOR ALUMINUM PATIO CONSTRUCTION.



Documents Prepared By:
R.W. BUILDING CONSULTANTS, INC.
P.O. Box 200 Venice, FL 33598
Phone No. 813.899.8187
Florida Board of Professional Engineers
Certificate of Authorization No. 0813
Michael W. Johnson, P.E. No. 01188

PRODUCT: 2 x 8" TRAC BEAM
PART OR ASSEMBLY: SCREEN ENCLOSURE COMPONENT

NO.	DATE	BY	REVISIONS
1	07/07		ADD GENERAL NOTES 11 & 12

DATE: 06/28/07
SCALE: N.T.S.
CHKD BY: TL
CHKD BY: WWH
DRAWING NO.: FL-3675
SHEET 1 OF 1

© 2007 R.W. BUILDING CONSULTANTS, INC.

3/59

I:\SS2003\meca\ - Projects\Project Files\Proj 1201-1300\07 12x70.0_RWBC_Drawing\TL.dwg Model



[BCIS Home](#) | [Log In](#) | [Hot Topics](#) | [Submit Surcharge](#) | [Stats & Facts](#) | [Publications](#) | [FBC Staff](#) | [BCIS Site Map](#) | [Links](#) | [Search](#)



[Product Approval Menu](#) > [Product or Application Search](#) > [Application List](#) > [Application Detail](#)

- COMMUNITY PLANNING
- HOUSING & COMMUNITY DEVELOPMENT
- EMERGENCY MANAGEMENT
- OFFICE OF THE SECRETARY

FL # FL9328
Application Type New
Code Version 2004
Application Status Approved
Comments
Archived

Product Manufacturer Pool Enclosure Collective, LLC
Address/Phone/Email PO Box 10039
 Tampa, FL 33679
 (813) 857-9955
 whyaskwhy0417@yahoo.com

Authorized Signature: Vivian Wright
 kayw@rwbdgconsultants.com

Technical Representative
Address/Phone/Email

Quality Assurance Representative
Address/Phone/Email

Category Structural Components
Subcategory Products Introduced as a Result of New Technology

Compliance Method Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer
 Evaluation Report - Hardcopy Received

Florida Engineer or Architect Name who developed the Evaluation Report Wendell W. Haney
Florida License PE-54158
Quality Assurance Entity PFS Corporation
Quality Assurance Contract Expiration Date
Validated By L.F. Schmidt, P.E.
 Validation Checklist - Hardcopy Received

Certificate of Independence [FL9328_R0_COI_Certificate of Independence.pdf](#)

Referenced Standard and Year (of Standard) **Standard** **Year**
 Accepted Engineering Practice 2004

3/60

ASTM E529

2004

Equivalence of Product Standards
Certified By

Sections from the Code

Product Approval Method Method 1 Option D

Date Submitted 07/31/2007
 Date Validated 08/08/2007
 Date Pending FBC Approval 08/09/2007
 Date Approved 08/21/2007

Summary of Products		
FL #	Model, Number or Name	Description
9328.1	"SMB"	2" x 8" Trac Self Mating Beams - Extruded Aluminum
Limits of Use Approved for use in HVHZ: Yes Approved for use outside HVHZ: Yes Impact Resistant: N/A Design Pressure: N/A Other: See Drawing INST 9328.1 and EVAL 9328.1 for additional use limitations.		Installation Instructions FL9328 RO II INST 9328.1.pdf Verified By: Wendell W. Haney, P.E. 54158 Created by Independent Third Party: Evaluation Reports FL9328 RO AE EVAL 9328.1.pdf Created by Independent Third-Party:

DCA Administration

*Department of Community Affairs
 Florida Building Code Online
 Codes and Standards
 2555 Shumard Oak Boulevard
 Tallahassee, Florida 32399-2100
 (850) 487-1824, Fax (850) 414-8436*

© 2000-2005 The State of Florida. All rights reserved. Copyright and Disclaimer

Product Approval Accepts:



3/61

R
W
B
C

R W Building Consultants, Inc.

Consulting and Engineering Services for the Building Industry
P.O. Box 230 Valrico, FL 33595 Phone 813.659.9197 Facsimile 813.754.9989
Florida Board of Professional Engineers Certificate of Authorization No. 9813

Product Evaluation Report

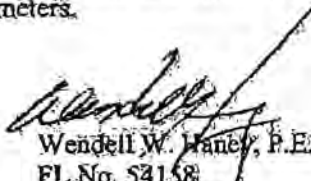
Report No: FL-9328.1
Date: August 1, 2007
Product Category: Structural Components
Product sub-category: Products Introduced as a Result of New Technology
Product Name: 2" x 8" Trac Self-Mating Beam (SMB)
Manufacturer: Pool Enclosure Collective, LLC
P.O. Box 10039
Tampa, FL 33679
Phone 813.857.9955

Scope: This is a Product Evaluation report issued by R W Building Consultants, Inc. and Wendell W. Haney, P.E. (System ID # 1993) for Pool Enclosure Collective, LLC based on Rule Chapter No. 9B-72.070, Method 1d of the State of Florida Product Approval, Department of Community Affairs-Florida Building Commission.

RW Building Consultants and Wendell W. Haney, P.E. do not have nor will acquire financial interest in the company manufacturing or distributing the product or in any other entity involved in the approval process of the product named herein.

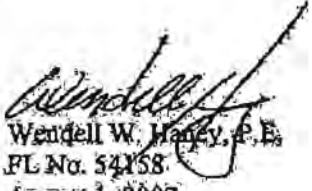
This product has been evaluated for use in locations adhering to the Florida Building Code (2004 Edition).

See Drawing No. FL-3675 prepared by R W Building Consultants, Inc. and signed and sealed by Wendell W. Haney, P.E. (FL # 54158) for specific use parameters.


Wendell W. Haney, P.E.
FL No. 54158
August 1, 2007

Limitations

1. The 2" x 8" Trac Self-Mating Beam (SMB) have been evaluated and meet the requirements for use within the State of Florida including the "High Velocity Hurricane Zone".
2. Site specific engineering must accompany this product approval for each structure installed.
3. Size Limitations:
2" x 8" Trac Self-Mating Single Span Beam (SMB) Maximum Span: 40'0"
~~2" x 8" Trac Self-Mating Beam (SMB) Mansard Maximum Span: 52'0"~~
4. See drawing FL-3675 for size and design pressure limitations.


Wendell W. Haney, P. E.
FL No. 54158
August 1, 2007

Supporting Documents

A Drawing

1. Drawing No. FL-3675 prepared by R W Building Consultants, Inc. (Florida Board of Professional Engineers Certificate of Authorization No. 9813), signed and sealed by Wendell W. Haney, P.E.

B Tests


1. Testing per ASTM E529-04 as performed by Testing Evaluation Laboratories, Inc. and reported in test report TEL 07-01330199, dated July 27, 2007, signed by Wendell W. Haney, P.E.

C Calculations

1. Product anchoring is in accordance with manufacturer's published recommendations as substantiated by tested specimens reported in test report TEL 07-01330199.

D Other

1. Certificate of Participation issued by PFS Corporation, certifying that Pool Enclosure Collective, LLC is manufacturing products within a quality assurance program that complies with ISO/IEC 17020 and Guide 53.


Wendell W. Haney, P.E.
FL No. 54158
August 1, 2007



Testing Evaluation Laboratories, Inc.

2002 Wood Court Suite 1 - Plant City, FL 33563
Phone: 813-744-9887 Fax: 813-754-9989

Test Report Issued To

Pool Enclosure Collective, LLC
3300 Henderson Blvd. Suite 106
Tampa, FL 33609

Test Report Number

TEL 07-01330199.1

Date Report Issued

January 24, 2008

Test Dates

July 17, 2007 through July 19, 2007

Model Designation

Extruded Aluminum Self Mating Trac Beams - 2" x 8"

Reference Specifications

ASTM E529-04 Standard Guide for Conducting Flexural
Tests on Beams and Girders for Building Construction

ASTM E575-99 Standard Practice for Reporting Data from Structural
Tests of Building Constructions, Elements, connections, and Assemblies

3/65

1.0 SPECIMEN IDENTIFICATION

The specimens tested include the following:

- Extruded Aluminum Self Mating Trac Beams 2" x 8" x 15'
- Extruded Aluminum Self Mating Trac Beams 2" x 8" x 30'
- Extruded Aluminum Self Mating Trac Beams 2" x 8" x 40'
- Extruded Aluminum Self Mating Trac Beams 2" x 8" x 52' mansard

The above specimens were randomly selected production units from the manufacturer. A minimum of 4 samples were tested for each specimen per the agreement between the Pool Enclosure Collective and Testing Evaluation Laboratories.

2.0 SPECIMEN DESIGN



The specimen is constructed of an open extruded aluminum shape that forms 1/2 of the beam; two of these shapes are mated together to form a hollow beam section. The shapes are fastened with #10 x 1/4" self-drilling tapping screws installed on the wide face of the beam, 24" maximum on center along the length of the beam. See drawing L-3931 for design details.

3.0 APPARATUS DESCRIPTION

The specimens (beams and posts as described below) were installed directly to the concrete floor in the lab as would be done in actual service conditions. Point loads were applied at center span of the beams. Loads were measured with load cell instrumentation. Lateral supports were simulated by vertical uprights placed at specified locations along the length of the beam span. Deflections were taken at mid-span and at the ends of the beams; deflections were measured using digital vernier calipers.

4.0 SPECIMEN INSTALLATION

Each end of the assembled beam specimen was affixed to a post just as would be done in the field for actual erection of a structure. The posts were anchored to the concrete floor of the lab as would be done in the field for actual assembly. This arrangement facilitates testing with the end fixity of the beam as it would be in actual installations in the field. See drawing L-3931 for details on the connections. To simulate lateral supports, vertical uprights were placed on both sides of the beam, 84" maximum on center along the length of the beam; the beam was free to deflect vertically in the uprights, but torsional rotation was resisted at each upright pair.



Lateral support upright



Mansard connections

3/65



Mansard connection



Upright to beam connection and upright to base connection

5.0 INSTRUMENTATION

All tests were performed using the following NIST traceable calibrated instruments:

1. Applied loads were measured using an "S" beam load cell, 5,000 lb. capacity, connected to a strain gage digital meter.
2. Deflections were measured using digital vernier calipers, 0.0005" resolution, mounted at each deflection measurement location.



Load cell attachment



Caliper at end post

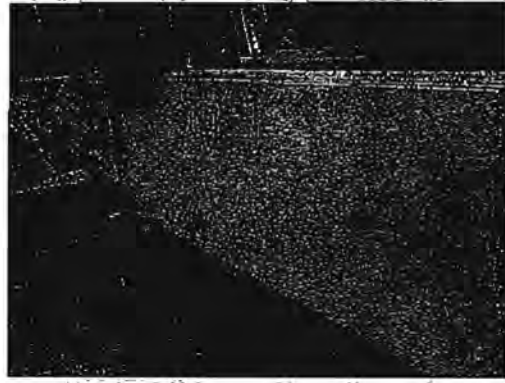
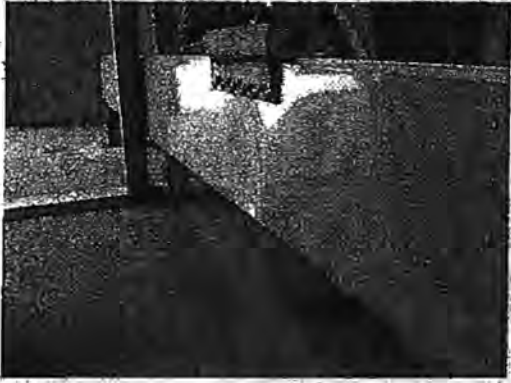
6.0 AMBIENT CONDITIONS

Tests were performed in non-conditioned laboratory space; temperature and humidity were at atmospheric conditions which varied between 75 - 95 °F and 50% - 80% respectively.

3/67

7.0 TEST DATA AND FAILURE MODES

Test data for each specimen of each sample is tabulated on the following pages. The failure mode in each case was a combination of torsional buckling and compression buckling failures at the mid-span location as represented in the pictures below. At failure load, failure occurred quickly and it cannot be determined if one of the failure modes happened first and caused the second failure mode or not.



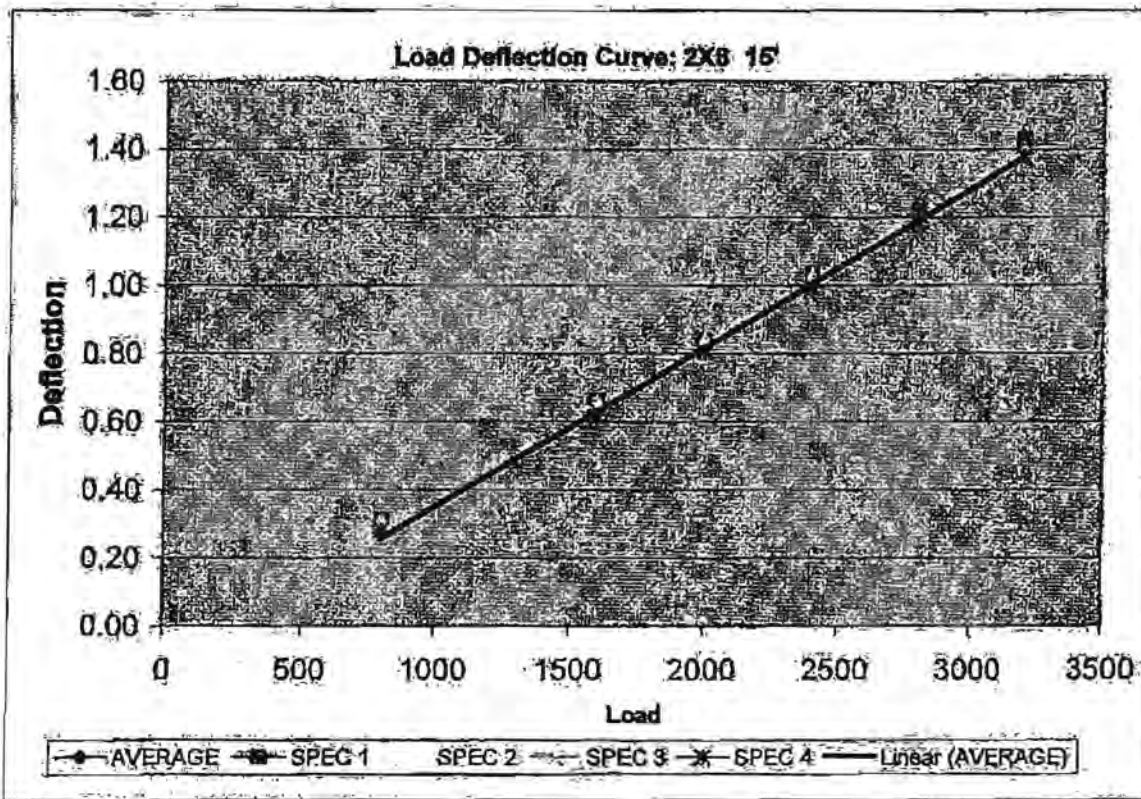
3/68

2" x 8" Self Mating Trac Beam - 15 Foot Span



DEFLECTIONS (Inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
800	0.310	0.310	0.238	0.260	0.2698	0.0343	12.72%
1600	0.661	0.661	0.597	0.614	0.6178	0.0327	5.29%
2000	0.840	0.840	0.790	0.805	0.8099	0.0251	3.09%
2400	1.032	1.032	0.971	0.994	0.9963	0.0288	2.89%
2800	1.220	1.191	1.154	1.186	1.1876	0.0270	2.28%
3200	1.430	1.401	1.367	1.379	1.3941	0.0275	1.97%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
3579	1.587			
3423		1.488		
3522			1.502	
3553				1.484



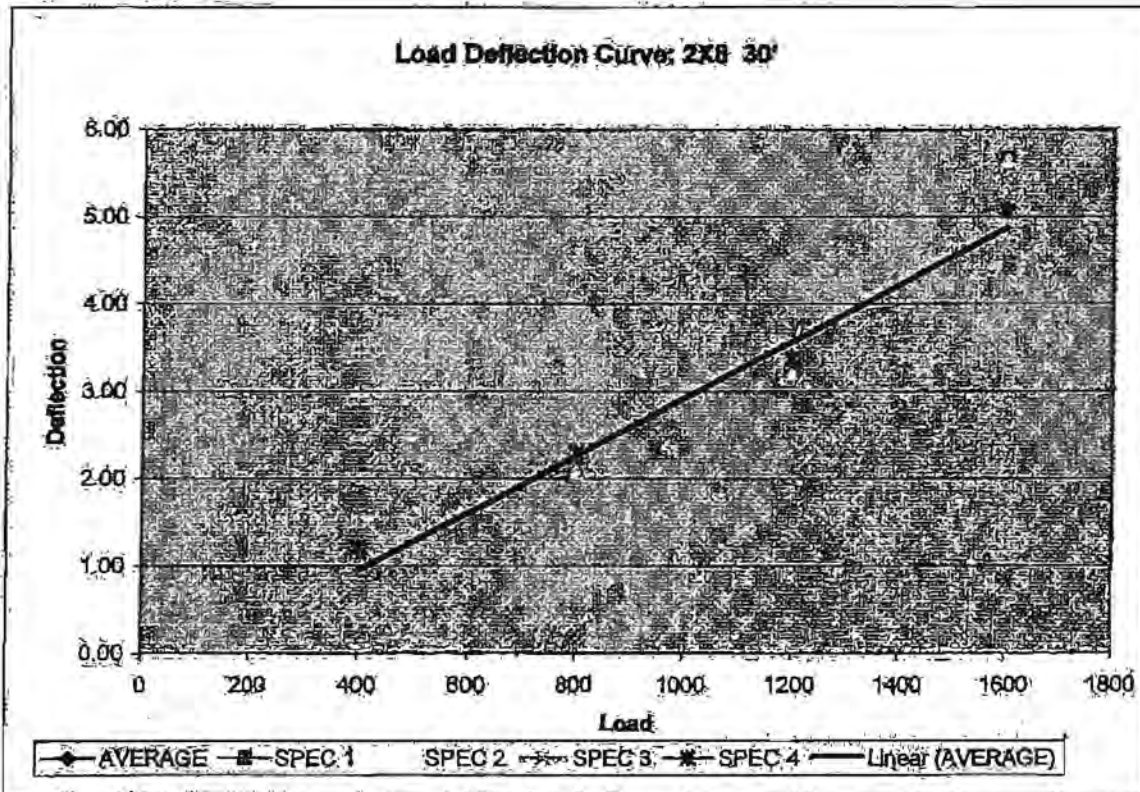
3/69

2" x 8" Self Mating Trac Beam - 30 Foot Span



DEFLECTIONS (Inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
400	1.102	1.102	1.076	1.210	1.0968	0.0595	5.43%
800	2.083	2.083	2.204	2.295	2.1781	0.1030	4.73%
1200	3.213	3.213	3.319	3.373	3.2734	0.0798	2.44%
1600	5.666	5.666	4.427	5.064	5.0971	0.5919	11.61%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
1753	5.667			
1769		5.336		
1799			4.973	
1844				5.582



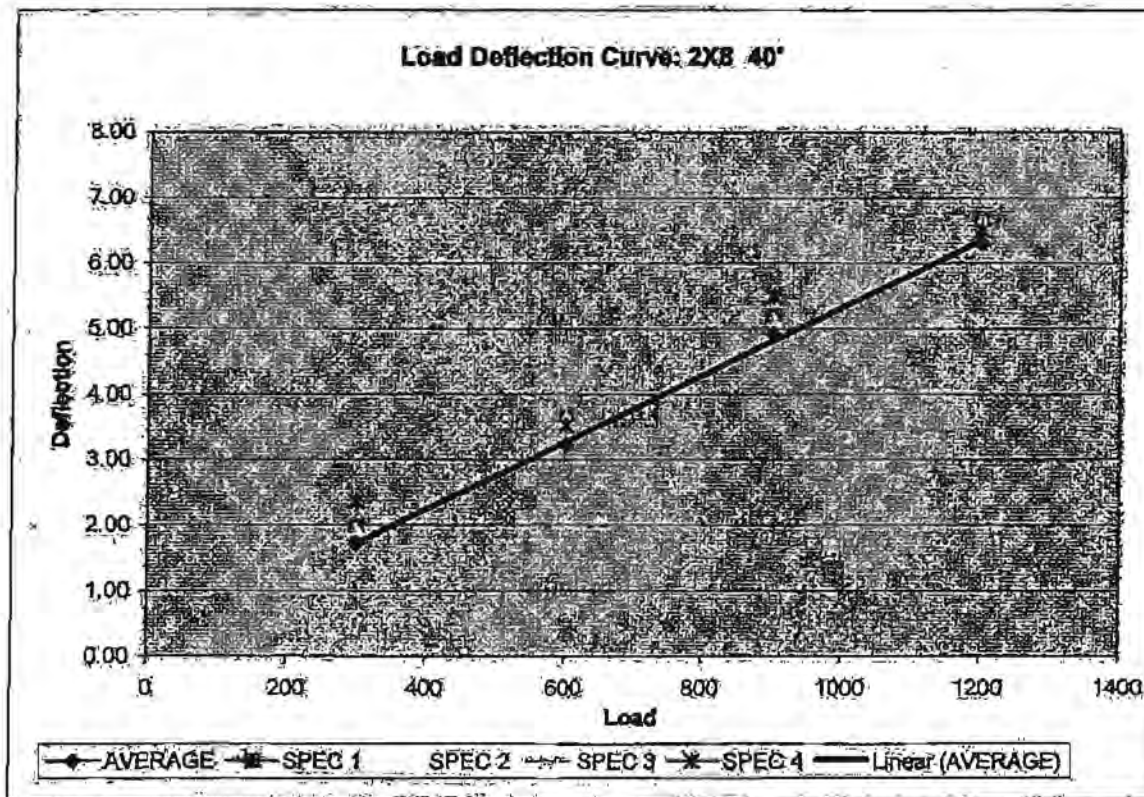
3/70

2" x 8" Self Mating Trac Beam - 40 Foot Span



DEFLECTIONS (inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
300	1.955	1.955	0.862	2.363	1.7254	0.6488	37.60%
800	3.653	3.653	2.472	3.529	3.2211	0.5726	17.78%
900	5.172	5.172	4.031	5.490	4.9130	0.6411	13.05%
1200	6.676	6.676	5.370	6.502	6.3008	0.6291	9.98%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
1406	7.792			
1472		8.115		
1390			8.405	
1322				7.211



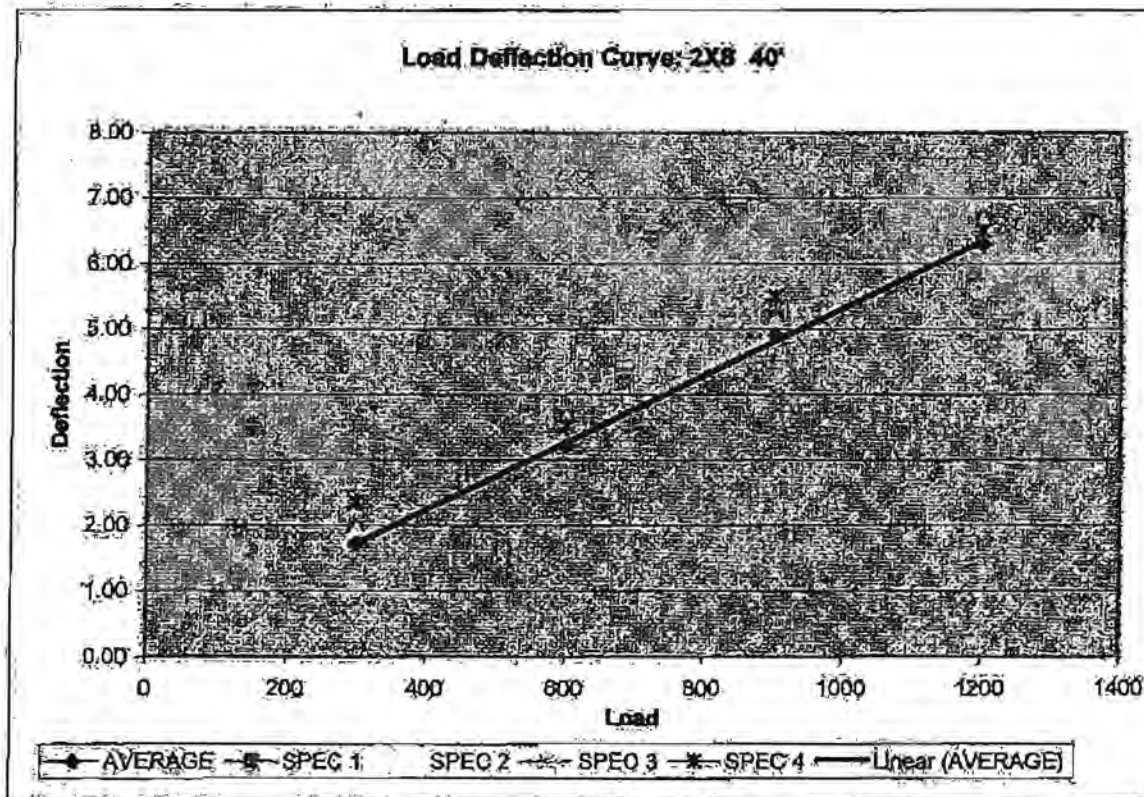
3/71

2" x 8" Self Mating Trac Beam - 40 Foot Span



DEFLECTIONS (Inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
300	1.955	1.955	0.852	2.363	1.7254	0.6488	37.60%
600	3.653	3.653	2.472	3.529	3.2211	0.5728	17.78%
900	5.172	5.172	4.031	5.490	4.9130	0.6411	13.05%
1200	6.676	6.676	5.370	6.502	6.3008	0.6291	9.98%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%
0	0.000	0.000	0.000	0.000	0.0000	0.0000	0.00%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
1406	7.792			
1472		8.115		
1390			8.405	
1322				7.211



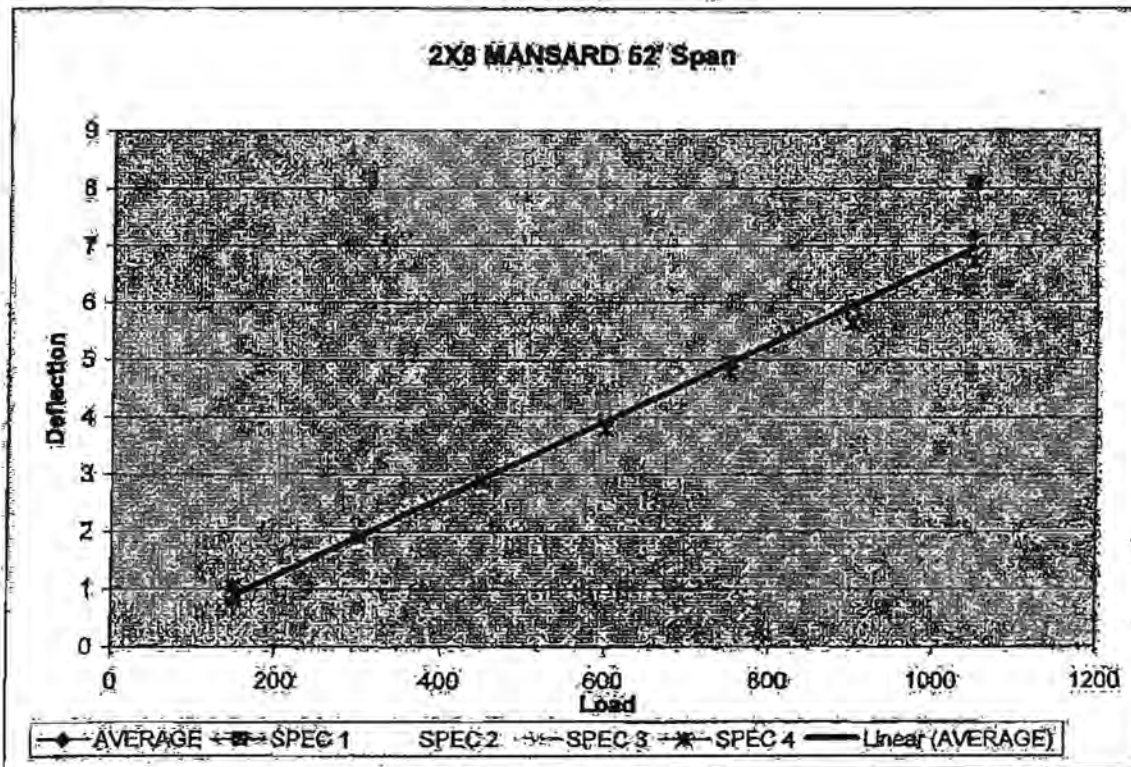
3/72

2" x 8" Self Mating Trac Beam - Mansard 52 Foot Span



DEFLECTIONS (Inches)							
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4	AVG.	Std Dev	COV
150	0.851	1.004	1.038	1.049	0.9853	0.0916	9.29%
300	1.833	1.828	2.047	1.908	1.9036	0.1023	5.38%
450	2.887	2.801	3.008	2.889	2.8959	0.0850	2.94%
600	3.927	3.902	4.022	3.792	3.9106	0.0944	2.41%
750	4.941	4.807	4.902	4.788	4.8586	0.0745	1.53%
900	5.918	5.763	5.947	5.636	5.8153	0.1441	2.48%
1050	6.098	6.76	7.025	6.723	7.161	0.6442	9.01%

DEFLECTIONS AT ULTIMATE LOAD				
Load (lbs.)	SPEC1	SPEC2	SPEC3	SPEC4
1414	10.196			
1326		9.473		
1328			9.200	
1523				8.359



3/23

5 ADDITIONAL DOCUMENTS

This report is not complete unless accompanied by the following documents bearing the Testing Evaluation Laboratories stamp and signed by appropriate personnel:

L Drawing No. L-3931

6 TEST WITNESSED BY:

J. R. Wright - R. W. Building Consultants, Inc.
Wendell W. Hanesy - Florida Professional Engineer
Jarrett Wright - Laboratory Manager, Testing Evaluation Laboratories, Inc.
Do Kim - Pool Enclosure Collective, LLC

7 CONDITIONS, TERMS, AND GENERAL NOTES REGARDING THESE TESTS

The product tested Has Been compared to the detailed drawing, bill of materials and fabrication information supplied by the client so named herein. Our analysis, which includes dimensional and component description comparisons, indicate the tested product and engineering information supplied by the client "Are Equivalent". The report and representative samples will be retained for ten years from the date of initial test.

These test results were obtained by employing all requirements of the designated test methods with no deviations unless explicitly noted in test report. The test results and specimen supplied for testing are in compliance with the reference.

The test results are specific to the product tested by this laboratory and of the sample supplied by the client named herein, and they relate to no other product either manufactured by the client, a fabricator of the client or of installed field performance.

This test report does not constitute certification of this product, but only that the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

Testing Evaluation Laboratories, Inc. makes no opinions or endorsements regarding this product and its performance. This report may not be reproduced or quoted in partial form without the expressed written approval of Testing Evaluation Laboratories, Inc.

Testing Evaluation Laboratories, Inc.'s letter, reports, its name or insignia or mark are for the exclusive use of the client so named herein and any other use is strictly prohibited. The report, letters and the name of Testing Evaluation Laboratories, Inc., its seal or mark shall not be used in any circumstance to the general public or in any advertising.

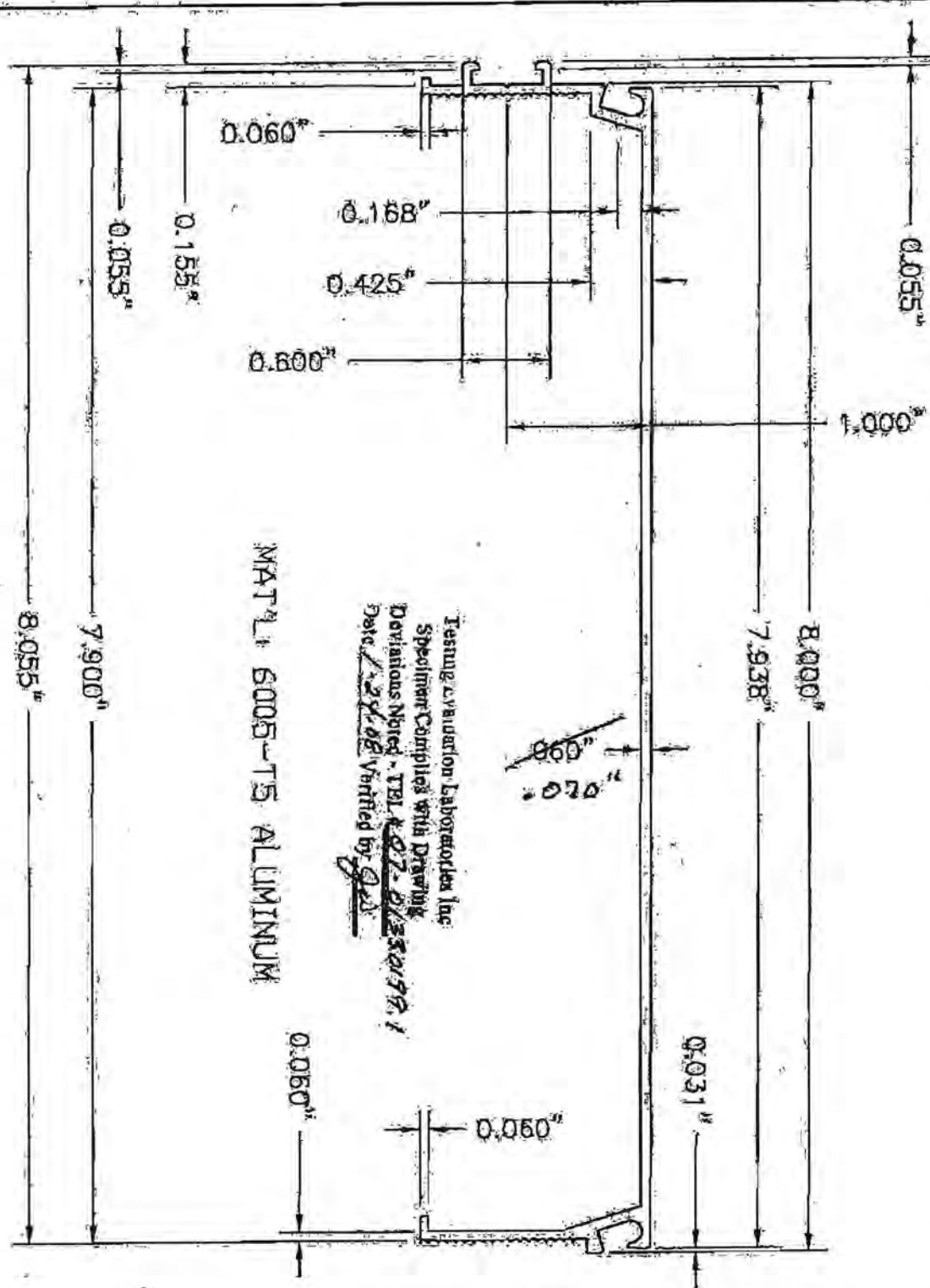
Limitation of liability: Due diligence was used in performing the tests and reporting the results. By acceptance of this report, this client agrees to hold harmless and indemnify Testing Evaluation Laboratories, Inc., its employees and officers and owners against all claims and demands of any kind whatsoever, which arise out of or in any manner connected with the performance of work referred to herein.

Testing Evaluation Laboratories, Inc.

Vivian K. Wright
Vivian K. Wright,
President

Wendell W. Hanesy
Wendell W. Hanesy, P.E.
Florida P. E. Number 54158
2-20-08

3/74



2" x 8" TRAC SELF-MATING BEAM (SMB)
 (Patent Pending)

MAT'L 6005-T5 ALUMINUM

Testing Evaluation Laboratories Inc.
 Specimen Complies with Drawing
 Deviations Noted - TEL # 813-859-8197
 Date 1/24/08 Verified by *[Signature]*

PRODUCT:
 POOL ENCLOSURE COLLECTIVE, LLC

PART OR ASSEMBLY:
 2" x 8" Trac Self-mating
 Beam (SMB)

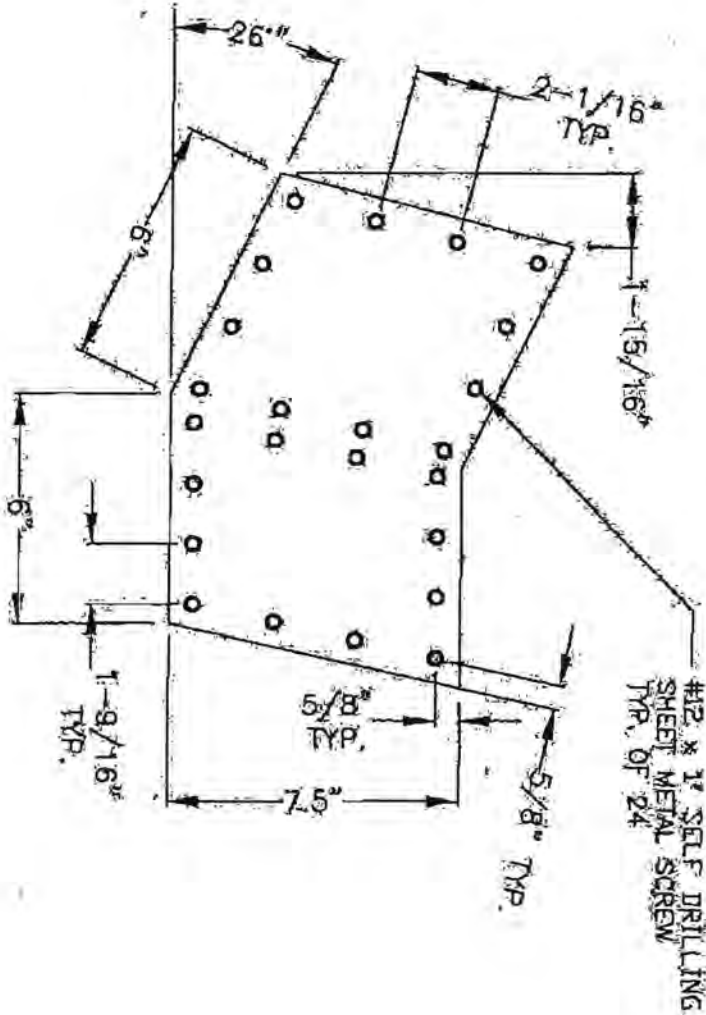
NO.	DATE	REVISIONS	WH	BY
1	1/24/08	Connection details	WH	

R.W. BUILDING CONSULTANTS, INC.
 813.859.8197

DATE: 07-17-07	SCALE: N.T.S.	DWG. BY: TL	CHECK BY: WWH	ISSUING NO: L-3931	SHEET: 1 OF 4
----------------	---------------	-------------	---------------	--------------------	---------------

3/75

2" x 8" TRAC SELF-MATING BEAM (SMB)
 MANSARD CONNECTION PLATE
 MAT'L: S052-H32

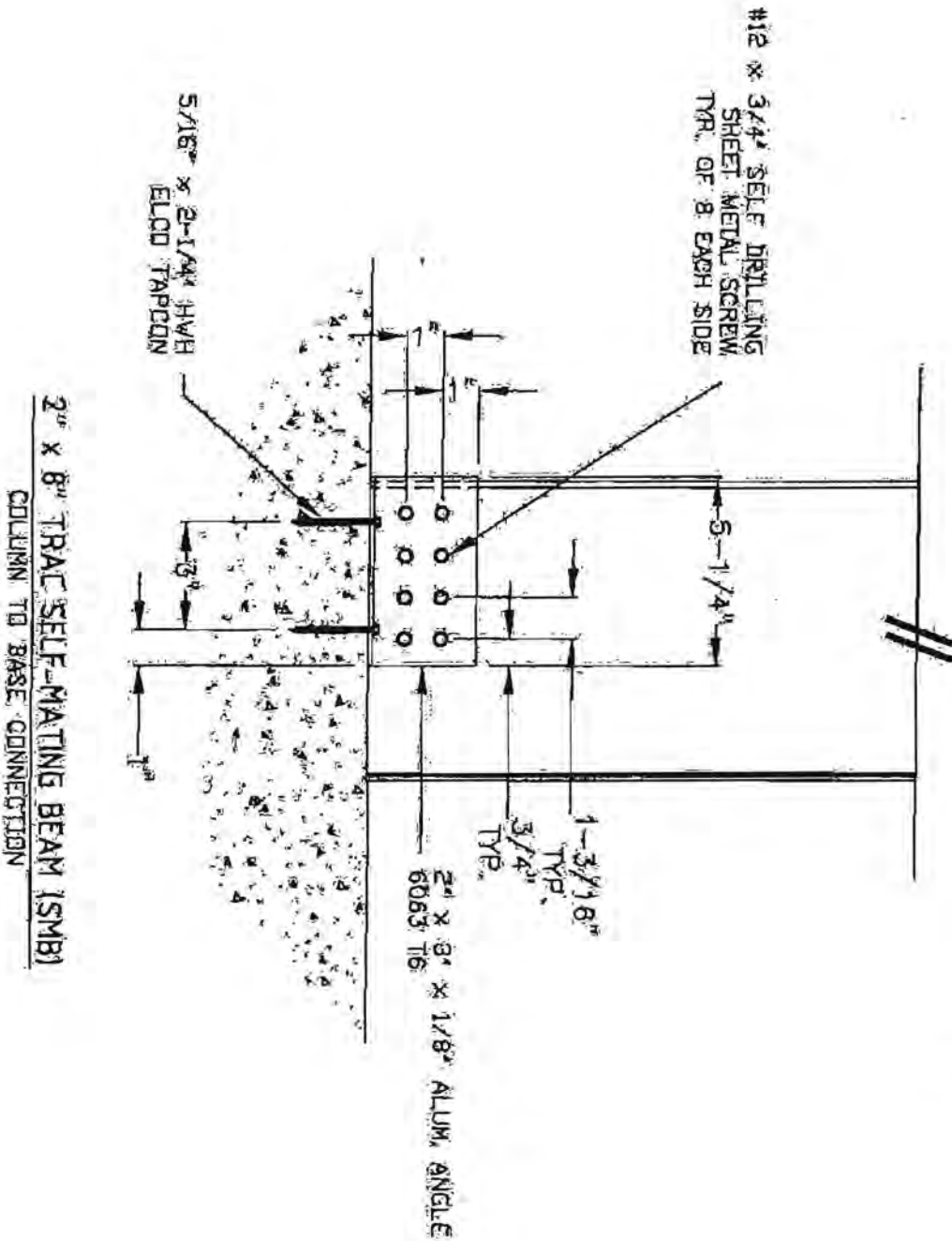


Testing/Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 87-81330199-1
 Date 7-27-98 verified by *[Signature]*

PRODUCT:		POOL ENCLOSURE COLLECTIVE, LLC 8" TRAC BEAM	
PART OR ASSEMBLY:		MANSARD CONNECTION PLATE DETAIL	

NO.	DATE	REVISIONS	BY
1	1/24/98	Connection details	WH

<p>RPM BUILDING CONSULTANTS, INC. 813.659.8197</p>	
DATE:	07-17-07
SCALE:	N.T.S.
DRG. BY:	TL
CHK. BY:	WWH
DRAWING NO.:	L-3931
SHEET:	2 OF 4



Testing Evaluation Laboratories Inc
 Specimen Complies with Drawing
 Deviations Noted - TEL # 822-81338199.1
 Date 1-24-08 Verified by *[Signature]*

PRODUCT:	
POOL ENCLOSURE COLLECTIVE, LLC 8\"/>	
PART OR ASSEMBLY:	
BEAM TO COLUMN CONNECTION DETAIL	

NO.	DATE	REVISIONS
1	1/24/08	Connection details

RW BUILDING
 CONSULTANTS, INC.
 813.855.9187

DATE:	07/17/07
SCALE:	N.T.S.
DRG. BY:	TL
CHEK. BY:	MWH
DRAWING NO.:	L-3931
SHEET:	4 OF 4

3/75

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 140 mph		Windward Column for 140 mph Center-Center	Leeward Column for 140 mph Center-Center
		Center-Center Span (ft)	Span (ft)	Span (ft)	Span (ft)
15	290	48.39	13.83	13.83	19.36
16	276	45.99	13.14	13.14	18.39
17	261	43.58	12.45	12.45	17.43
18	247	41.17	11.76	11.76	16.47
19	233	38.77	11.08	11.08	15.51
20	218	36.36	10.39	10.39	14.54
21	204	33.95	9.70	9.70	13.58
22	189	31.55	9.01	9.01	12.62
23	175	29.14	8.33	8.33	11.66
24	160	26.73	7.64	7.64	10.69
25	146	24.33	6.95	6.95	9.73
26	132	21.92	6.26	6.26	8.77
27	117	19.52	5.58	5.58	7.81
28	103	17.11	4.89	4.89	6.84
29	88	14.70	4.20	4.20	5.88
30	74	12.30	3.51	3.51	4.92
31	71	11.76	3.36	3.36	4.71
32	67	11.23	3.21	3.21	4.49
33	64	10.70	3.06	3.06	4.28
34	61	10.17	2.91	2.91	4.07
35	58	9.64	2.75	2.75	3.86
36	55	9.11	2.60	2.60	3.64
37	51	8.58	2.45	2.45	3.43
38	48	8.05	2.30	2.30	3.22
39	45	7.52	2.15	2.15	3.01
40	42	6.99	2.00	2.00	2.80
41	42	7.00	2.00	2.00	2.80
42	42	7.01	2.00	2.00	2.80
43	42	7.02	2.00	2.00	2.81
44	42	7.02	2.01	2.01	2.81
45	42	7.03	2.01	2.01	2.81
46	42	7.04	2.01	2.01	2.82
47	42	7.05	2.01	2.01	2.82
48	42	7.06	2.02	2.02	2.82
49	42	7.07	2.02	2.02	2.83
50	42	7.08	2.02	2.02	2.83
51	43	7.09	2.02	2.02	2.83
52	43	7.10	2.03	2.03	2.84

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 140 mph Center-Center Span (ft)	Windward Column for 140 mph Center-Center Span (ft)
15	290	36.30	10.01
16	276	34.49	9.51
17	261	32.69	9.02
18	247	30.88	8.52
19	233	29.08	8.02
20	218	27.27	7.52
21	204	25.47	7.03
22	189	23.66	6.53
23	175	21.86	6.03
24	160	20.05	5.53
25	146	18.25	5.03
26	132	16.44	4.54
27	117	14.64	4.04
28	103	12.83	3.54
29	88	11.03	3.04
30	74	9.22	2.54
31	71	8.82	2.43
32	67	8.43	2.32
33	64	8.03	2.21
34	61	7.63	2.10
35	58	7.23	1.99
36	55	6.83	1.89
37	51	6.44	1.78
38	48	6.04	1.67
39	45	5.64	1.56
40	42	5.24	1.45
41	42	5.25	1.45
42	42	5.26	1.45
43	42	5.26	1.45
44	42	5.27	1.45
45	42	5.28	1.46
46	42	5.28	1.46
47	42	5.29	1.46
48	42	5.30	1.46
49	42	5.30	1.46
50	42	5.31	1.46
51	43	5.32	1.47
52	43	5.32	1.47

3/80

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 130 mph Center-Center Span (ft)	Windward Column for 130 mph Center-Center Span (ft)	Leeward Column for 130 mph Center-Center Span (ft)
15	290	58.07	16.13	20.74
16	278	55.18	15.33	19.71
17	261	52.30	14.53	18.68
18	247	49.41	13.72	17.65
19	233	46.52	12.92	16.61
20	218	43.63	12.12	15.58
21	204	40.75	11.32	14.55
22	189	37.86	10.52	13.52
23	175	34.97	9.71	12.49
24	160	32.08	8.91	11.46
25	146	29.19	8.11	10.43
26	132	26.31	7.31	9.39
27	117	23.42	6.51	8.36
28	103	20.53	5.70	7.33
29	88	17.64	4.90	6.30
30	74	14.75	4.10	5.27
31	71	14.12	3.92	5.04
32	67	13.48	3.74	4.81
33	64	12.84	3.57	4.59
34	61	12.21	3.39	4.36
35	58	11.57	3.21	4.13
36	55	10.93	3.04	3.90
37	51	10.30	2.86	3.68
38	48	9.66	2.68	3.45
39	45	9.02	2.51	3.22
40	42	8.39	2.33	3.00
41	42	8.40	2.33	3.00
42	42	8.41	2.34	3.00
43	42	8.42	2.34	3.01
44	42	8.43	2.34	3.01
45	42	8.44	2.34	3.01
46	42	8.45	2.35	3.02
47	42	8.46	2.35	3.02
48	42	8.47	2.35	3.03
49	42	8.48	2.36	3.03
50	42	8.49	2.36	3.03
51	43	8.50	2.36	3.04
52	43	8.52	2.37	3.04

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 130 mph Center-Center Span (ft)	Windward Column for 130 mph Center-Center Span (ft)
15	290	41.48	11.61
16	276	39.42	11.04
17	261	37.35	10.46
18	247	35.29	9.88
19	233	33.23	9.30
20	218	31.17	8.73
21	204	29.10	8.15
22	189	27.04	7.57
23	175	24.98	6.99
24	160	22.92	6.42
25	146	20.85	5.84
26	132	18.79	5.26
27	117	16.73	4.68
28	103	14.66	4.11
29	88	12.60	3.53
30	74	10.54	2.95
31	71	10.08	2.82
32	67	9.63	2.70
33	64	9.17	2.57
34	61	8.72	2.44
35	58	8.26	2.31
36	55	7.81	2.19
37	51	7.36	2.06
38	48	6.90	1.93
39	45	6.45	1.80
40	42	5.99	1.68
41	42	6.00	1.68
42	42	6.01	1.68
43	42	6.01	1.68
44	42	6.02	1.69
45	42	6.03	1.69
46	42	6.04	1.69
47	42	6.04	1.69
48	42	6.05	1.69
49	42	6.06	1.70
50	42	6.07	1.70
51	43	6.07	1.70
52	43	6.08	1.70

3/82

2x8 TRAC Self-Matng Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 150 mph Center-Center Span (ft)	Windward Column for 150 mph Center-Center Span (ft)	Leeward Column for 150 mph Center-Center Span (ft)
15	290	41.48	12.10	16.13
16	276	39.42	11.50	15.33
17	261	37.35	10.90	14.53
18	247	35.29	10.29	13.72
19	233	33.23	9.69	12.92
20	218	31.17	9.09	12.12
21	204	29.10	8.49	11.32
22	189	27.04	7.89	10.52
23	175	24.98	7.29	9.71
24	160	22.92	6.68	8.91
25	146	20.85	6.08	8.11
26	132	18.79	5.48	7.31
27	117	16.73	4.88	6.51
28	103	14.66	4.28	5.70
29	88	12.60	3.68	4.90
30	74	10.54	3.07	4.10
31	71	10.08	2.94	3.92
32	67	9.63	2.81	3.74
33	64	9.17	2.68	3.57
34	61	8.72	2.54	3.39
35	58	8.26	2.41	3.21
36	55	7.81	2.28	3.04
37	51	7.36	2.15	2.86
38	48	6.90	2.01	2.68
39	45	6.45	1.88	2.51
40	42	5.99	1.75	2.33
41	42	6.00	1.75	2.33
42	42	6.01	1.75	2.34
43	42	6.01	1.75	2.34
44	42	6.02	1.76	2.34
45	42	6.03	1.76	2.34
46	42	6.04	1.76	2.35
47	42	6.04	1.76	2.35
48	42	6.05	1.77	2.35
49	42	6.06	1.77	2.36
50	42	6.07	1.77	2.36
51	43	6.07	1.77	2.36
52	43	6.08	1.77	2.37

3/83

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 150 mph Center-Center Span (ft)	Windward Column for 150 mph Center-Center Span (ft)
15	290	32.26	8.80
16	276	30.66	8.36
17	261	29.05	7.92
18	247	27.45	7.49
19	233	25.85	7.05
20	218	24.24	6.61
21	204	22.64	6.17
22	189	21.03	5.74
23	175	19.43	5.30
24	160	17.82	4.86
25	146	16.22	4.42
26	132	14.61	3.99
27	117	13.01	3.55
28	103	11.41	3.11
29	88	9.80	2.67
30	74	8.20	2.24
31	71	7.84	2.14
32	67	7.49	2.04
33	64	7.14	1.95
34	61	6.78	1.85
35	58	6.43	1.75
36	55	6.07	1.66
37	51	5.72	1.56
38	48	5.37	1.46
39	45	5.01	1.37
40	42	4.66	1.27
41	42	4.67	1.27
42	42	4.67	1.27
43	42	4.68	1.28
44	42	4.68	1.28
45	42	4.69	1.28
46	42	4.70	1.28
47	42	4.70	1.28
48	42	4.71	1.28
49	42	4.71	1.29
50	42	4.72	1.29
51	43	4.72	1.29
52	43	4.73	1.29

3/84

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 110 mph		Windward Column for	Leeward Column for 110
		Center-Center Span (ft)	110 mph Center-Center	110 mph Center-Center	mph Center-Center Span
				Span (ft)	(ft)
15	290	72.59		22.34	29.04
16	276	68.98		21.22	27.58
17	261	65.37		20.11	26.15
18	247	61.76		19.00	24.70
19	233	58.15		17.89	23.26
20	218	54.54		16.78	21.82
21	204	50.93		15.67	20.37
22	189	47.32		14.56	18.93
23	175	43.71		13.45	17.48
24	160	40.10		12.34	16.04
25	146	36.49		11.23	14.60
26	132	32.88		10.12	13.15
27	117	29.27		9.01	11.71
28	103	25.66		7.90	10.27
29	88	22.05		6.79	8.82
30	74	18.44		5.67	7.38
31	71	17.65		5.43	7.06
32	67	16.85		5.18	6.74
33	64	16.06		4.94	6.42
34	61	15.26		4.70	6.10
35	58	14.46		4.45	5.79
36	55	13.67		4.21	5.47
37	51	12.87		3.96	5.15
38	48	12.08		3.72	4.83
39	45	11.28		3.47	4.51
40	42	10.48		3.23	4.19
41	42	10.50		3.23	4.20
42	42	10.51		3.23	4.20
43	42	10.52		3.24	4.21
44	42	10.54		3.24	4.21
45	42	10.55		3.25	4.22
46	42	10.56		3.25	4.23
47	42	10.58		3.25	4.23
48	42	10.59		3.26	4.24
49	42	10.60		3.26	4.24
50	42	10.62		3.27	4.25
51	43	10.63		3.27	4.25
52	43	10.64		3.28	4.26

3/85

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 110 mph Center-Center Span (ft)	Windward Column for 110 mph Center-Center Span (ft)
15	290	58.07	16.13
16	276	55.18	15.33
17	261	52.30	14.53
18	247	49.41	13.72
19	233	46.52	12.92
20	218	43.63	12.12
21	204	40.75	11.32
22	189	37.86	10.52
23	175	34.97	9.71
24	160	32.08	8.91
25	146	29.19	8.11
26	132	26.31	7.31
27	117	23.42	6.51
28	103	20.53	5.70
29	88	17.64	4.90
30	74	14.75	4.10
31	71	14.12	3.92
32	67	13.48	3.74
33	64	12.84	3.57
34	61	12.21	3.39
35	58	11.57	3.21
36	55	10.93	3.04
37	51	10.30	2.86
38	48	9.66	2.68
39	45	9.02	2.51
40	42	8.39	2.33
41	42	8.40	2.33
42	42	8.41	2.34
43	42	8.42	2.34
44	42	8.43	2.34
45	42	8.44	2.34
46	42	8.45	2.35
47	42	8.46	2.35
48	42	8.47	2.35
49	42	8.48	2.36
50	42	8.49	2.36
51	43	8.50	2.36
52	43	8.52	2.37

3/86

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 120 mph		Windward Column for	Leeward Column for 120
		Center-Center Span (ft)	120 mph Center-Center Span (ft)	120 mph Center-Center Span (ft)	mph Center-Center Span (ft)
15	290	72.59	19.36	22.34	
16	276	68.98	18.39	21.22	
17	261	65.37	17.43	20.11	
18	247	61.76	16.47	19.00	
19	233	58.15	15.51	17.89	
20	218	54.54	14.54	16.78	
21	204	50.93	13.58	15.67	
22	189	47.32	12.62	14.56	
23	175	43.71	11.66	13.45	
24	160	40.10	10.69	12.34	
25	146	36.49	9.73	11.23	
26	132	32.88	8.77	10.12	
27	117	29.27	7.81	9.01	
28	103	25.66	6.84	7.90	
29	88	22.05	5.88	6.79	
30	74	18.44	4.92	5.67	
31	71	17.65	4.71	5.43	
32	67	16.85	4.49	5.18	
33	64	16.06	4.28	4.94	
34	61	15.26	4.07	4.70	
35	58	14.46	3.86	4.45	
36	55	13.67	3.64	4.21	
37	51	12.87	3.43	3.96	
38	48	12.08	3.22	3.72	
39	45	11.28	3.01	3.47	
40	42	10.48	2.80	3.23	
41	42	10.50	2.80	3.23	
42	42	10.51	2.80	3.23	
43	42	10.52	2.81	3.24	
44	42	10.54	2.81	3.24	
45	42	10.55	2.81	3.25	
46	42	10.56	2.82	3.25	
47	42	10.58	2.82	3.25	
48	42	10.59	2.82	3.26	
49	42	10.60	2.83	3.26	
50	42	10.62	2.83	3.27	
51	43	10.63	2.83	3.27	
52	43	10.64	2.84	3.28	

3/87

2x8 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 120 mph		Windward Column for
		Center-Center	Span (ft)	120 mph Center-Center
				Span (ft)
15	290		48.39	13.83
16	276		45.99	13.14
17	261		43.58	12.45
18	247		41.17	11.76
19	233		38.77	11.08
20	218		36.36	10.39
21	204		33.95	9.70
22	189		31.55	9.01
23	175		29.14	8.33
24	160		26.73	7.64
25	146		24.33	6.95
26	132		21.92	6.26
27	117		19.52	5.58
28	103		17.11	4.89
29	88		14.70	4.20
30	74		12.30	3.51
31	71		11.76	3.36
32	67		11.23	3.21
33	64		10.70	3.06
34	61		10.17	2.91
35	58		9.64	2.75
36	55		9.11	2.60
37	51		8.58	2.45
38	48		8.05	2.30
39	45		7.52	2.15
40	42		6.99	2.00
41	42		7.00	2.00
42	42		7.01	2.00
43	42		7.02	2.00
44	42		7.02	2.01
45	42		7.03	2.01
46	42		7.04	2.01
47	42		7.05	2.01
48	42		7.06	2.02
49	42		7.07	2.02
50	42		7.08	2.02
51	43		7.09	2.02
52	43		7.10	2.03

3/88

ADM 2005 SECTION 9.3.2 TESTS FOR DETERMINING STRUCTURAL PERFORMANCE

$$S.F. = \frac{1.05 \alpha + 1}{M_m F_m (\alpha + 1)} e^{\beta_0 \sqrt{V_m^2 + V_F^2 + C_p V_p^2 + V_Q^2}}$$

$$\alpha = \frac{D_n}{L_n} = 0.2$$

$$M_m = 1.10$$

$$F_m = 1.0$$

$$V_m = 0.06 \text{ (Behavior Governed by YIELD STRESS, FLANGE BUCKLING FAILURE)}$$

$$V_F = 0.05 \text{ (FOR STRUCTURAL MEMBERS)}$$

$$C_p = \frac{A^2 - 1}{A^2 - 3n} = \frac{16 - 1}{16 - 12} = \frac{15}{4} = 3.75$$

$$\beta_0 = 2.5 \text{ (BEAMS \& COLUMNS)}$$

$$V_p = \sqrt{\frac{\sum_{i=1}^n \left(\frac{X_{ci}}{X_m} \right)^2 - \left(\frac{\sum_{i=1}^n X_{ci}}{X_m} \right)^2}{n-1}} = 0.039 \text{ (2x5x10')}$$

$$V_Q = \frac{\sqrt{(0.105 D_n)^2 + (0.25 L_n)^2}}{1.05 D_n + L_n} \text{ OR USE } V_Q = 0.21 \text{ (w/ Lion. of 1 calculation)}$$

$$SF = \frac{1.05 (0.2) + 1}{(1.1)(1.0)(0.2 + 1)} e^{2.5 \sqrt{V_m^2 + V_F^2 + C_p V_p^2 + V_Q^2}}$$

$$= \frac{1.21}{1.32} e^{(2.5) \sqrt{(0.06)^2 + (0.05)^2 + (3.75)(V_p)^2 + (0.2)^2}}$$

$$= 0.916 e^{(2.5) [0.05^2 + 3.75 (V_p)^2]^{1/2}}$$

Section 9. Testing

9.1 General

Testing shall be considered to be an acceptable method for substantiating the design of aluminum alloy load carrying members, assemblies or connections whose strengths cannot otherwise be determined in accordance with Sections 1 through 8. Tests shall be conducted by an independent testing laboratory or by a manufacturer's testing laboratory when certified by a qualified independent witness.

General provisions for testing are given in Sections 9.2 and 9.3. Specific provisions for building sheathing are given in Section 9.4.

9.2 Test Loading and Behavior

In order to test a structure or load carrying member adequately, the loading shall be applied in a fashion that is representative of the loading during service. Further, the structure or member shall be supported in a manner that is equivalent to the supports available when the structure is in service.

In tests that require measurement of deflection of a panel or beam, a preload, that is a minimum of 20% of the design load, shall be applied to set the specimen before testing, and deflections shall be measured at the supports as well as at the point of maximum critical deflection, so that the difference will indicate the specimen deflection. The preload shall only be taken as a zero load for deflection measurements when proper account of this is taken in reporting deflections.

As an alternative, the structural performance of exterior aluminum fenestration products such as windows, curtain walls, and doors shall be determined in accordance with ASTM B 330.

9.3 Number of Tests and the Evaluation of Test Results

9.3.1 Tests for Determining Mechanical Properties

In determining yield strength and ultimate strength of material or fasteners, sufficient tests shall be conducted to statistically establish the strength at which 99% of the material is expected to exceed with a confidence of 95%. This strength shall be calculated as follows:

$$X_0 = X_m - KS_x \quad (\text{Eq. 9.3.1-1})$$

where

X_0 = strength at which 99% of the material is expected to exceed with a confidence of 95%

X_m = mean of the test results

S_x = standard deviation of the test results

K = statistical coefficient based on the number of tests (n). K is a one-sided factor for 99% of the population exceeding X_0 with a confidence of 95%. Values of K for the following values of n are:

n	K	n	K
3	10.55	18	3.370
4	7.042	19	3.331
5	5.741	20	3.295
6	5.062	21	3.262
7	4.641	22	3.233
8	4.353	23	3.206
9	4.143	24	3.181
10	3.981	25	3.158
11	3.852	30	3.064
12	3.747	35	2.994
13	3.659	40	2.941
14	3.585	45	2.897
15	3.520	50	2.863
16	3.463	100	2.684
17	3.415		

9.3.2 Tests for Determining Structural Performance

Where practicable, in member and structural systems tests the evaluation of test results shall be made on the basis of not fewer than four identical specimens. If the deviation from the average value exceeds $\pm 10\%$, at least three more tests of the same kind shall be made.

The allowable design value shall be taken as the average of all test results divided by the safety factor, SF , determined as follows:

$$SF = \frac{1.05\alpha + 1}{M_m F_m (\alpha + 1)} e^{0.2 \sqrt{V_m^2 + V_c^2 + C V_m^2 + V_c^2}} \quad (Eq. 9.3.2-1)$$

$V_m = 0.2$

$(0.06)^2 + (0.05)^2 + (3.9)$

where

$$C_p = \text{correction factor} = \frac{n^2 - 1}{n^2 - 3n} = \frac{15}{4} = 3.75$$

D_n = nominal dead load

e = base for natural logarithms ≈ 2.72

F_m = mean value of the fabrication factor

L_n = nominal live load

M_m = mean value of the material factor

n = number of tests

X_i = failure load of i th test

X_m = average value of failure loads in all tests

$$\bar{X} = \frac{\sum_{i=1}^n X_i}{n}$$

V_p = coefficient of variation of the fabrication factor

V_m = coefficient of variation of the material factor

V_p = coefficient of variation of the ratio of the observed failure loads divided by the average value of all the observed failure loads

$$= \frac{\sqrt{\sum_{i=1}^n \left(\frac{X_i}{\bar{X}_m}\right)^2 - \frac{\left(\sum_{i=1}^n \frac{X_i}{\bar{X}_m}\right)^2}{n}}}{n-1}$$

V_Q = coefficient of variation of the loads

$$= \frac{\sqrt{(0.105D_n)^2 + (0.25L_n)^2}}{1.05D_n + L_n}; \text{ in lieu of calculation}$$

by the above formula, $V_Q = 0.21$

$\alpha = D_n/L_n$, in lieu of calculation by the above formula,

$$\alpha = 0.2$$

β_0 = the target reliability index (2.5 for columns, beams and beam columns, 3.0 for tension members and 3.5 for connections.

The following values shall be used when documented statistical data established from sufficient number of results on material properties does not exist for the member or connection:

$M_n = 1.10$ for behavior governed by the yield stress

$M_n = 1.00$ for behavior governed by the ultimate stress

$F_n = 1.00$

$V_M = 0.06$

$V_F = 0.05$ for structural members and bolted connections
= 0.15 for welded connections

In evaluating test results, adjustment shall be made for any differences between the yield strength of the material from which the tested sections are formed and the minimum yield strength specified for the material which the manufacturer intends to use. If the tensile yield strength of the aluminum from which the tested sections are formed is greater than the specified value, the test results shall be adjusted down to the specified minimum yield strength of the aluminum which the manufacturer intends to use. The test results shall not be adjusted upward if the yield strength of the test specimen is less than the minimum specified yield strength. Similar adjustments shall be made on the basis of tensile ultimate strength instead of yield strength when tensile ultimate strength is the critical factor.

Adjustments shall also be made for differences between nominal section properties and those of tested sections.

9.4 Testing Roofing and Siding

Where the configuration of roofing and siding installations are such that calculation of their strength cannot be made in accordance with the provisions of this Specification, their bending strength shall be established from tests.

Tests are also required in the following cases:

- When web angles θ are asymmetrical about the centerline of a valley, rib, flute, crimp, or other corrugation.

b. When web angles θ are less than 45°.

c. When aluminum panels are alternated with panels composed of any material having significantly different strengths or deflection characteristics.

d. When flats spanning from rib to rib or other corrugation in the transverse direction have a width to thickness ratio greater than either of the following:

1) $\frac{1230}{\sqrt[3]{q}}$ where q is the design load in psf ($\frac{447}{\sqrt[3]{q}}$ where q is the design load in kN/m²)

2) $435\sqrt{\frac{F_y}{q}}$ where F_y is in ksi and q is in psf
($37\sqrt{\frac{F_y}{q}}$ where F_y is in MPa and q is in kN/m²).

e. When panel ribs, valleys, crimps, or other corrugations are of unequal depths.

f. When specifications prescribe less than one fastener per rib to resist negative or uplift loading at each purlin, girt, or other transverse supporting member.

g. When panels are attached to supporting members by profile interlocking straps or clips.

9.4.1 Test Method

Tests shall be conducted in accordance with ASTM E 1592.

9.4.2 Different Thicknesses

Only the thinnest and thickest specimens manufactured are required to be tested when panels are of like configuration, differing only in material thickness. Where the failure of the test specimens is from bending stress, the bending strength for intermediate thicknesses shall be interpolated as follows:

$$\log M_i = \log M_1 + \left(\frac{\log t_i - \log t_{\min}}{\log t_{\max} - \log t_{\min}} \right) (\log M_2 - \log M_1) \quad (\text{Eq. 9.4.2-1})$$

where

M_i = bending strength of member of intermediate thickness t_i

M_1 = bending strength of member of thinnest material

M_2 = bending strength of member of thickest material

t_i = thickness of intermediate thickness material

t_{\min} = thickness of thinnest material tested

t_{\max} = thickness of thickest material tested

9.4.3 Allowable Loads from Tests

Allowable loads shall be determined using the safety factors given in Section 9.3.2 for bending and Section 5 applied to the minimum test strength achieved for fasteners.

9.4.4 Deflections

Live load deflections shall not exceed $1/80$ of the span length.



Testing Evaluation Laboratories, Inc.

2007 Wood Coast Blvd E - Palm City, FL 32943
Phone: 813.754.9847 Fax: 813.754.9949

Lab sheet for:
ASTM E529-04: Standard Guide for Conducting Flexural Tests on Beams and Girders for Building Construction

Client Information	Specimen Record Log Info
Client Name: _____	Client: _____
Address: _____	Project #: _____
Address: _____	Sample #: _____
City, State, Zip _____	Date: _____
Ph: _____	Tests Specified: _____
	Product ID: _____

Specimen Preparation Checklist
Note: This test method is being applied to determine the flexural characteristics of combination mullions and reinforced combination mullions whose section modulus properties cannot be determined analytically.

Assemble the mullion specimens as they would be used in the actual product without the accompanying cast members. Anchor the mullion ends to the test beds just as they would be anchored in an actual installation.

Record the number of specimens required by the material property test (but no less than 3): _____

Each specimen uniquely ID'd? _____

Beams or mullion span: _____ (ft.)

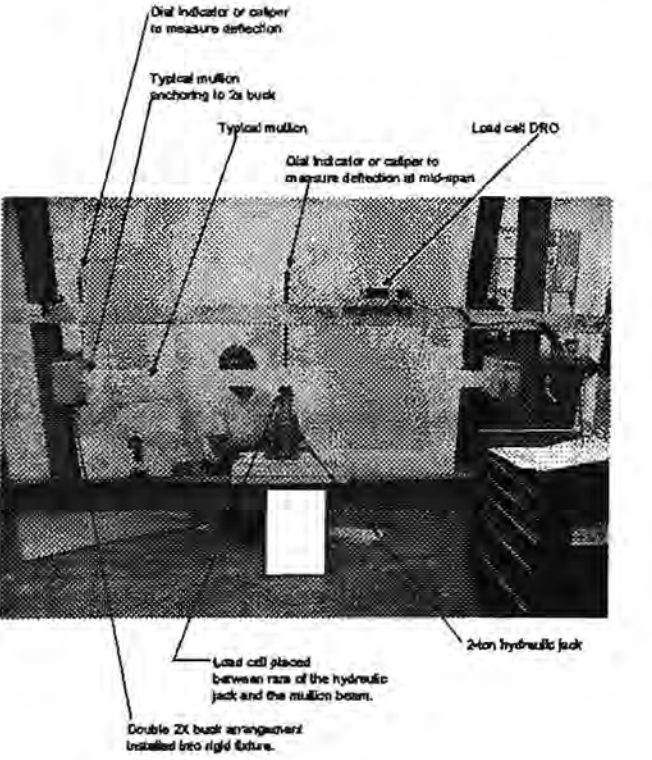
- Specimen and Apparatus Setup**
1. Reference the diagram on the next page for typical setup of test specimen and test apparatus.
 2. When fastening the mullion into the test arrangement, use screws installed through the top flange support bracket to pull the ZX backs up tight against the upper flange support brackets. This minimizes the deflection of the ends of the mullion at the anchoring location.
 3. Place deflection measuring devices at the mid-span of the mullion and at one end support.
 4. To measure the applied load directly, place the load cell between the hydraulic rams and the mullion.

Object Statement
The objective of this test is to determine the actual EI value for the mullion or beam being tested.

Product ID: _____ 0

Specimen and Apparatus Setup

The diagram below shows a typical test setup and the various components used in the test.



3/92



PRODUCT DESCRIPTION: 2' x 4' - 16' flat slab

TEST CONDITIONS

1. Increase the hydraulic jack pressure until each Test Load is read on the load cell DPO.
2. Record the mid-span and end support deflections, reading immediately and then at 5 minutes.
3. Repeat the above two steps for each test load up through the FEMED, to test load.
4. Next, calculate the DEFLECTION LIMIT for the number, then increase the hydraulic pressure until the deflection is read on the mid-span deflection measuring device. Record this load immediately.
5. Increase the hydraulic pressure until the load cell DPO indicates a load of 1.5 times the DEFLECTION LIMIT load. Record this deflection immediately and after 5 minutes.
6. Follow the load and record the permanent set immediately and after 5 minutes.

1 2 3 4

Mid-span deflection measurement reading
 End support deflection measurement reading

7.50 Test Load	Specimen #1		Specimen #2		Specimen #3		Specimen #4		Specimen #5		Specimen #6	
	Deflection (in.)	Load (lbs)	Deflection (in.)	Load (lbs)	Deflection (in.)	Load (lbs)	Deflection (in.)	Load (lbs)	Deflection (in.)	Load (lbs)	Deflection (in.)	Load (lbs)
1	0.024	0.000	0.020	0.000	0.027	0.000	0.021	0.000	0.028	0.000	0.021	0.000
2	0.045	0.000	0.039	0.000	0.051	0.000	0.035	0.000	0.042	0.000	0.031	0.000
3	0.082	0.000	0.078	0.000	0.102	0.000	0.071	0.000	0.084	0.000	0.068	0.000
4	0.129	0.000	0.124	0.000	0.158	0.000	0.112	0.000	0.126	0.000	0.102	0.000
5	0.187	0.000	0.182	0.000	0.235	0.000	0.167	0.000	0.178	0.000	0.147	0.000
6	0.251	0.000	0.246	0.000	0.318	0.000	0.221	0.000	0.236	0.000	0.196	0.000
7	0.322	0.000	0.317	0.000	0.408	0.000	0.284	0.000	0.302	0.000	0.252	0.000
8	0.402	0.000	0.397	0.000	0.518	0.000	0.362	0.000	0.382	0.000	0.322	0.000
9	0.492	0.000	0.487	0.000	0.648	0.000	0.441	0.000	0.462	0.000	0.402	0.000
10	0.592	0.000	0.587	0.000	0.808	0.000	0.541	0.000	0.562	0.000	0.502	0.000
11	0.702	0.000	0.697	0.000	0.998	0.000	0.661	0.000	0.682	0.000	0.622	0.000
12	0.822	0.000	0.817	0.000	1.218	0.000	0.791	0.000	0.812	0.000	0.762	0.000
13	0.952	0.000	0.947	0.000	1.468	0.000	0.941	0.000	0.962	0.000	0.922	0.000
14	1.092	0.000	1.087	0.000	1.748	0.000	1.091	0.000	1.112	0.000	1.062	0.000
15	1.242	0.000	1.237	0.000	2.058	0.000	1.261	0.000	1.282	0.000	1.242	0.000
16	1.402	0.000	1.397	0.000	2.408	0.000	1.451	0.000	1.472	0.000	1.432	0.000
17	1.572	0.000	1.567	0.000	2.808	0.000	1.661	0.000	1.682	0.000	1.642	0.000
18	1.752	0.000	1.747	0.000	3.258	0.000	1.891	0.000	1.912	0.000	1.872	0.000
19	1.942	0.000	1.937	0.000	3.768	0.000	2.141	0.000	2.162	0.000	2.122	0.000
20	2.142	0.000	2.137	0.000	4.338	0.000	2.411	0.000	2.432	0.000	2.392	0.000
21	2.352	0.000	2.347	0.000	5.068	0.000	2.711	0.000	2.732	0.000	2.692	0.000
22	2.572	0.000	2.567	0.000	5.868	0.000	3.041	0.000	3.062	0.000	3.022	0.000
23	2.802	0.000	2.797	0.000	6.738	0.000	3.401	0.000	3.422	0.000	3.382	0.000
24	3.042	0.000	3.037	0.000	7.688	0.000	3.791	0.000	3.812	0.000	3.772	0.000
25	3.292	0.000	3.287	0.000	8.718	0.000	4.211	0.000	4.232	0.000	4.192	0.000
26	3.552	0.000	3.547	0.000	9.838	0.000	4.661	0.000	4.682	0.000	4.642	0.000
27	3.822	0.000	3.817	0.000	1.1048	0.000	5.141	0.000	5.162	0.000	5.122	0.000
28	4.102	0.000	4.097	0.000	1.2368	0.000	5.641	0.000	5.662	0.000	5.622	0.000
29	4.392	0.000	4.387	0.000	1.3868	0.000	6.171	0.000	6.192	0.000	6.152	0.000
30	4.692	0.000	4.687	0.000	1.5548	0.000	6.731	0.000	6.752	0.000	6.712	0.000
31	5.002	0.000	4.997	0.000	1.7408	0.000	7.321	0.000	7.342	0.000	7.302	0.000
32	5.322	0.000	5.317	0.000	1.9448	0.000	7.941	0.000	7.962	0.000	7.922	0.000
33	5.652	0.000	5.647	0.000	2.1668	0.000	8.591	0.000	8.612	0.000	8.572	0.000
34	5.992	0.000	5.987	0.000	2.4068	0.000	9.271	0.000	9.292	0.000	9.252	0.000
35	6.342	0.000	6.337	0.000	2.6648	0.000	9.981	0.000	10.002	0.000	9.962	0.000
36	6.702	0.000	6.697	0.000	2.9408	0.000	1.0721	0.000	1.0742	0.000	1.0702	0.000
37	7.072	0.000	7.067	0.000	3.2348	0.000	1.1861	0.000	1.1882	0.000	1.1842	0.000
38	7.452	0.000	7.447	0.000	3.5468	0.000	1.3141	0.000	1.3162	0.000	1.3122	0.000
39	7.842	0.000	7.837	0.000	3.8768	0.000	1.4561	0.000	1.4582	0.000	1.4542	0.000
40	8.242	0.000	8.237	0.000	4.2248	0.000	1.6121	0.000	1.6142	0.000	1.6102	0.000
41	8.652	0.000	8.647	0.000	4.5908	0.000	1.7821	0.000	1.7842	0.000	1.7802	0.000
42	9.072	0.000	9.067	0.000	5.0748	0.000	1.9761	0.000	1.9782	0.000	1.9742	0.000
43	9.502	0.000	9.497	0.000	5.5768	0.000	2.1941	0.000	2.1962	0.000	2.1922	0.000
44	9.942	0.000	9.937	0.000	6.0968	0.000	2.4361	0.000	2.4382	0.000	2.4342	0.000
45	1.0392	0.000	1.0387	0.000	6.6348	0.000	2.7021	0.000	2.7042	0.000	2.7002	0.000
46	1.0882	0.000	1.0877	0.000	7.1908	0.000	2.9921	0.000	2.9942	0.000	2.9902	0.000
47	1.1392	0.000	1.1387	0.000	7.7648	0.000	3.3061	0.000	3.3082	0.000	3.3042	0.000
48	1.1912	0.000	1.1907	0.000	8.3568	0.000	3.6441	0.000	3.6462	0.000	3.6422	0.000
49	1.2452	0.000	1.2447	0.000	8.9768	0.000	4.0061	0.000	4.0082	0.000	4.0042	0.000
50	1.3002	0.000	1.2997	0.000	9.6248	0.000	4.3921	0.000	4.3942	0.000	4.3902	0.000
51	1.3572	0.000	1.3567	0.000	1.0298	0.000	4.8021	0.000	4.8042	0.000	4.8002	0.000
52	1.4152	0.000	1.4147	0.000	1.1048	0.000	5.2361	0.000	5.2382	0.000	5.2342	0.000
53	1.4742	0.000	1.4737	0.000	1.1878	0.000	5.6941	0.000	5.6962	0.000	5.6922	0.000
54	1.5342	0.000	1.5337	0.000	1.2788	0.000	6.1761	0.000	6.1782	0.000	6.1742	0.000
55	1.5952	0.000	1.5947	0.000	1.3778	0.000	6.6821	0.000	6.6842	0.000	6.6802	0.000
56	1.6572	0.000	1.6567	0.000	1.4848	0.000	7.2121	0.000	7.2142	0.000	7.2102	0.000
57	1.7202	0.000	1.7197	0.000	1.5998	0.000	7.7661	0.000	7.7682	0.000	7.7642	0.000
58	1.7842	0.000	1.7837	0.000	1.7228	0.000	8.3441	0.000	8.3462	0.000	8.3422	0.000
59	1.8492	0.000	1.8487	0.000	1.8538	0.000	8.9461	0.000	8.9482	0.000	8.9442	0.000
60	1.9152	0.000	1.9147	0.000	2.0028	0.000	9.5721	0.000	9.5742	0.000	9.5702	0.000
61	1.9822	0.000	1.9817	0.000	2.1698	0.000	1.0221	0.000	1.0242	0.000	1.0202	0.000
62	2.0502	0.000	2.0497	0.000	2.3548	0.000	1.1261	0.000	1.1282	0.000	1.1242	0.000
63	2.1192	0.000	2.1187	0.000	2.5578	0.000	1.2441	0.000	1.2462	0.000	1.2422	0.000
64	2.1892	0.000	2.1887	0.000	2.7788	0.000	1.3761	0.000	1.3782	0.000	1.3742	0.000
65	2.2602	0.000	2.2597	0.000	3.0168	0.000	1.5221	0.000	1.5242	0.000	1.5202	0.000
66	2.3322	0.000	2.3317	0.000	3.2718	0.000	1.6821	0.000	1.6842	0.000	1.6802	0.000
67	2.4052	0.000	2.4047	0.000	3.5448	0.000	1.8561	0.000	1.8582	0.000	1.8542	0.000
68	2.4792	0.000	2.4787	0.000	3.8358	0.000	2.0441	0.000	2.0462	0.000	2.0422	0.000
69	2.5542	0.000	2.5537	0.000	4.1448	0.000	2.2461	0.000	2.2482	0.000	2.2442	0.000
70	2.6302	0.000	2.6297	0.000	4.4718	0.000	2.4621	0.000	2.4642	0.000	2.4602	0.000
71	2.7072	0.000	2.7067	0.000	4.8168	0.000	2.6921	0.000	2.6942	0.000	2.6902	0.000
72	2.7852	0.000	2.7847	0.000	5.1798	0.000	2.9361	0.000	2.9382	0.000	2.9342	0.000
73	2.8642	0.000	2.8637	0.000	5.5608	0.000	3.1941	0.000	3.1962	0.000	3.1922	0.000
74	2.9442	0.000	2.9437	0.000	5.9608	0.000	3.4661	0.000	3.4682	0.000	3.4642	0.000
75	3.0252	0.000	3.0247	0.000	6.3798	0.000	3.7521	0.000	3.7542	0.000	3.7502	0.000
76	3.1072	0.000	3.1067	0.000	6.8178	0.000	4.0521	0.000	4.0542	0.000	4.0502	0.000
77	3.1902	0.000	3.1897	0.000	7.2748	0.000	4.3661	0.000	4.3682	0.000	4.3642	0.000
78	3.2742	0.000	3.2737									



PRODUCT DESCRIPTION: 3" x 5" x 13" test spec

13-8

Test Conditions

1. Increase the hydraulic jack pressure until each Test Load is read on the load cell DRD.
2. Record the mid-span and end support deflection readings immediately and then at 5 minutes.
3. Repeat the above two steps for each test load up through the FINAL test load.
4. Next, calculate the DEFLECTION LIMIT for the specimen, then increase the hydraulic pressure until the deflection is read on the mid-span deflection measuring device. Record this load immediately.
5. Increase the hydraulic pressure until the load cell DRD indicates a load of 1.5 times the DEFLECTION LIMIT load recorded as instructed above. Record the deflection immediately and after 5 minutes.
6. Release the load and record the permanent set from activity and after 5 minutes.

m = mid-span deflection measurement reading
 a = end support deflection measurement reading
 d = net deflection (m - a)

Test Load	Specimen #1		Specimen #2		Specimen #3		Specimen #4		Specimen #5		
	Immediate	5 Minute	Immediate	5 Minute	Immediate	5 Minute	Immediate	5 Minute	Immediate	5 Minute	
900 lbs	m	0.577	0.704	0.571	0.534	0.718	0.73	0.793	0.754		
	a	0.02	0.018	0.021	0.019	0.024	0.02	0.026	0.013	0.03	0.014
	d	0.554	0.684	0.55	0.512	0.694	0.695	0.769	0.722	0	0
1050 lbs	m	1.436	1.638	1.278	1.361	1.477	1.48	1.647	1.672		
	a	0.047	0.034	0.047	0.034	0.052	0.039	0.071	0.038	0.106	0.104
	d	1.267	1.397	1.226	1.325	1.419	1.428	1.58	1.595	0	0
1200 lbs	m	2.228	2.344	2.085	2.114	2.341	2.368	2.511	2.422		
	a	0.045	0.082	0.049	0.082	0.076	0.077	0.118	0.063	0.141	0.033
	d	2.183	2.176	2.018	2.047	2.265	2.272	2.394	2.143	0	0
1350 lbs	m										
	a										
	d	0	0	0	0	0	0	0	0	0	0
1500 lbs	m										
	a										
	d	0	0	0	0	0	0	0	0	0	0
1650 lbs	m										
	a										
	d	0	0	0	0	0	0	0	0	0	0
1800 lbs	m										
	a										
	d	0	0	0	0	0	0	0	0	0	0
2.0 Test load	m										
	a										
	d	0	0	0	0	0	0	0	0	0	0
2.0 Test load	m										
	a										
	d	0	0	0	0	0	0	0	0	0	0

NOTES:
 1. Specimen #1 failed at 1230 lbs
 2. Specimen #2 failed at 1340 lbs.
 3. Specimen #3 failed at 1200 lbs.
 4. Specimen #4 failed at 1313 lbs.

3/94



PRODUCT DESCRIPTION: 2" x 5" - 20 load span

TEST CRITERIA

- Increase the hydraulic jack pressure until each Test Load is read on the load cell ORC.
- Record the mid-span load and support deflection reading immediately and then at 5 minutes.
- Repeat the above two steps for each next load up through the FINAL test load.
- Next, calculate the DEFLECTION LIMIT for this section, then increase the hydraulic pressure until this deflection is read on the mid-span deflection measuring device. Record this load immediately.
- Increase the hydraulic pressure until the load cell ORC indicates a load of 1.5 times the DEFLECTION LIMIT load recorded as instructed above. Record the deflection immediately and after 5 minutes.
- Release the load and record the permanent set immediately and after 5 minutes.

m = mid-span deflection measurement reading
 a = end support deflection measurement reading
 d = net deflection (m - a)

Test Load	Specimen #1		Specimen #2		Specimen #3		Specimen #4		Specimen #5		
	Deflection (in)		Deflection (in)		Deflection (in)		Deflection (in)		Deflection (in)		
	Immediate	5 Minute	Immediate	5 Minute	Immediate	5 Minute	Immediate	5 Minute	Immediate	5 Minute	
200 lbs	m	1.543	2.671	1.447	1.451	2.189	2.178	1.303	2		
	a	0.101	0.177	0.135	0.267	0.128	0.067	0.021	0.047	0.021	0.047
	d	2.51	2.671	1.345	1.345	2.155	2.155	1.331	1.878	0	0
400 lbs	m	3.022	3.022	4.437	4.436	3.385	3.367	4.732	4.756		
	a	0.144	0.226	0.141	0.225	0.203	0.143	0.265	0.144	0.057	0.072
	d	4.835	4.834	4.294	4.295	4.885	4.885	4.585	4.612	4.675	4.684
600 lbs	m	5.894	7.125	6.74	6.74	5.487	5.483	6.197	6.917		
	a	0.287	0.277	0.245	0.377	0.263	0.185	0.243	0.186	0.124	0.11
	d	6.052	6.877	6.528	6.523	5.345	5.343	6.015	6.735	6.051	6.574
700 lbs	m	7.866	7.866			7.213		8.846	8.846		
	a	0.245	0.281	0.278	0.242	0.159	0.144	0.252	0.137	0.227	0.16
	d	7.648	7.605	0	0	7.065	0	8.545	8.635	8.619	8.686
2.0 Test Load	m										
	a	0	0	0	0	0	0	0	0	0	0
	d	0	0	0	0	0	0	0	0	0	0
2.0 Test Load	m										
	a										
	d										

NOTES:
 1. Specimen #1 failed at 612 lbs.
 2. Specimen #2 failed at 700 lbs at 30 second mark.
 3. Specimen #3 failed at 703 lbs.
 4. Specimen #4 failed at 780 lbs.

2/95



PRODUCT DESCRIPTION 2" x 7" - 10 foot span

Test Conducted

1. Increase the hydraulic jack pressure until each Test Load is read on the load cell DRD.
2. Record the mid-span and end support deflection reading immediately and then at 5 minutes.
3. Repeat the above two steps for each test load up through the FINAL test load.
4. Next, calculate the DEFLECTION LIMIT for the section, then increase the hydraulic pressure until the deflection is read on the mid-span deflection measuring device. Record this load immediately.
5. Increase the hydraulic pressure until the load cell DRD indicates a load of 1.5 times the DEFLECTION LIMIT load recorded as instructed above. Record the deflection immediately and after 5 minutes.
6. Release the load and record the permanent set immediately and after 5 minutes.

m = mid-span deflection measurement reading
 e = end support deflection measurement reading
 d = net deflection (d = m)

Test Load	Specimen #1		Specimen #2		Specimen #3		Specimen #4		Specimen #5		
	Deflection (in)	5 Minute	Deflection (in)	5 Minute	Deflection (in)	5 Minute	Deflection (in)	5 Minute	Deflection (in)	5 Minute	
500 lb	m	0.134	0.142	0.135	0.155	0.144	0.148	0.126	0.141		
	e	0.025	0.025	0.026	0.025	0.01	0.01	0.023	0.015	0.023	0.015
	d	0.115	0.125	0.115	0.145	0.145	0.145	0.125	0.125	0.115	0
	DL	0.322	0.325	0.341	0.343	0.305	0.315	0.31	0.311		
1000 lb	m	0.257	0.218	0.257	0.215	0.239	0.23	0.208	0.228	0.225	0.228
	e	0.287	0.285	0.285	0.308	0.283	0.285	0.252	0.253	0.253	0
	d	0.484	0.435	0.435	0.526	0.527	0.477	0.481	0.482	0.488	0
	DL	0.853	0.825	0.853	0.857	0.85	0.854	0.825	0.871	0.871	0.871
1500 lb	m	0.43	0.441	0.47	0.47	0.428	0.4301	0.3945	0.4005	0	0
	e	0.852	0.667	0.715	0.715	0.638	0.643	0.684	0.657	0	0
	d	0.11	0.035	0.11	0.037	0.036	0.035	0.112	0.044	0.174	0.044
	DL	0.383	0.345	0.325	0.325	0.325	0.325	0.367	0.3415	0.342	0
2000 lb	m										
	e										
	d										
	DL										
2.0 Test load	m										
	e										
	d										
	DL										
2.0 Test load	m										
	e										
	d										
	DL										

NOTES:
 1. Specimen #1 failed at 2480 lbs.
 2. Specimen #2 failed at 2280 lbs.
 3. Specimen #3 failed at 2270 lbs.
 4. Specimen #4 failed at 2240 lbs.

3/96



PRODUCT DESCRIPTION: 7" x 7" - 35/64 span

Test Statistics

1. Increase the hydraulic jack pressure until each Test Load is read on the load cell DFO.
2. Record the mid-span and end support deflection readings immediately and then at 5 minutes.
3. Repeat the above two steps for each test load up through the FINAL test load.
4. Next, calculate the DEFLECTION LIMIT for the section, then increase the hydraulic pressure until the deflection is read on the mid-span deflection measuring device. Record this load immediately.
5. Increase the hydraulic pressure until the load cell DFO indicates a load of 1.5 times the DEFLECTION LIMIT load recorded as instructed above. Record the deflection immediately and after 5 minutes.
6. Release the load and record the permanent set immediately and after 5 minutes.

m = mid-span deflection measurement reading
 s = end support deflection measurement reading
 d = total deflection ($m - s$)

Test Load	Specimen #1		Specimen #2		Specimen #3		Specimen #4		Specimen #5		
	Immediate Deflection (in)	5 Minute	Immediate Deflection (in)	5 Minute	Immediate Deflection (in)	5 Minute	Immediate Deflection (in)	5 Minute	Immediate Deflection (in)	5 Minute	
800 lbs	m	2.271	2.302	2.853	2.882	2.365	2.444	2.081	2.255	2.531	2.547
	s	0.056	0.056	0.078	0.105	0.124	0.048	0.130	0.081	0.045	0.047
	d	2.215	2.246	2.775	2.777	2.241	2.396	2.015	2.185	2.486	2.465
	DL			4.713		4.76	4.467	4.264	4.380	4.457	4.517
900 lbs	m			0.128	0.098	0.154	0.085	0.194	0.088	0.101	0.099
	s	0	0	4.896	0	4.120	4.317	4.154	4.290	4.137	4.107
	d										
	DL					4.88	4.967	4.895	5.172		
950 lbs	m					0.21	0.097	0.21	0.088	0.123	0.111
	s					4.738	4.813	4.878	5.057		
	d										
	DL										
1000 lbs	m										
	s										
	d										
	DL										
1050 lbs	m										
	s										
	d										
	DL										
1100 lbs	m										
	s										
	d										
	DL										
1150 lbs	m										
	s										
	d										
	DL										
1200 lbs	m										
	s										
	d										
	DL										
1250 lbs	m										
	s										
	d										
	DL										
1300 lbs	m										
	s										
	d										
	DL										
1350 lbs	m										
	s										
	d										
	DL										
1400 lbs	m										
	s										
	d										
	DL										
1450 lbs	m										
	s										
	d										
	DL										
1500 lbs	m										
	s										
	d										
	DL										
1550 lbs	m										
	s										
	d										
	DL										
1600 lbs	m										
	s										
	d										
	DL										
1650 lbs	m										
	s										
	d										
	DL										
1700 lbs	m										
	s										
	d										
	DL										
1750 lbs	m										
	s										
	d										
	DL										
1800 lbs	m										
	s										
	d										
	DL										
1850 lbs	m										
	s										
	d										
	DL										
1900 lbs	m										
	s										
	d										
	DL										
1950 lbs	m										
	s										
	d										
	DL										
2000 lbs	m										
	s										
	d										
	DL										

NOTES:
 1. Specimen #1 buckled at 840 lbs (test measurement was 4,445" at 815 lbs)
 2. Specimen #2 failed at 900 lbs at 1 MINUTE mark
 3. Specimen #3 failed at 950 lbs.
 4. Specimen #4 fails at 953 lbs.
 5. Specimen #5 failed at 987 lbs.

3/97



PRODUCT DESCRIPTION: 1" x 7" - 40 foot span

Table Contents

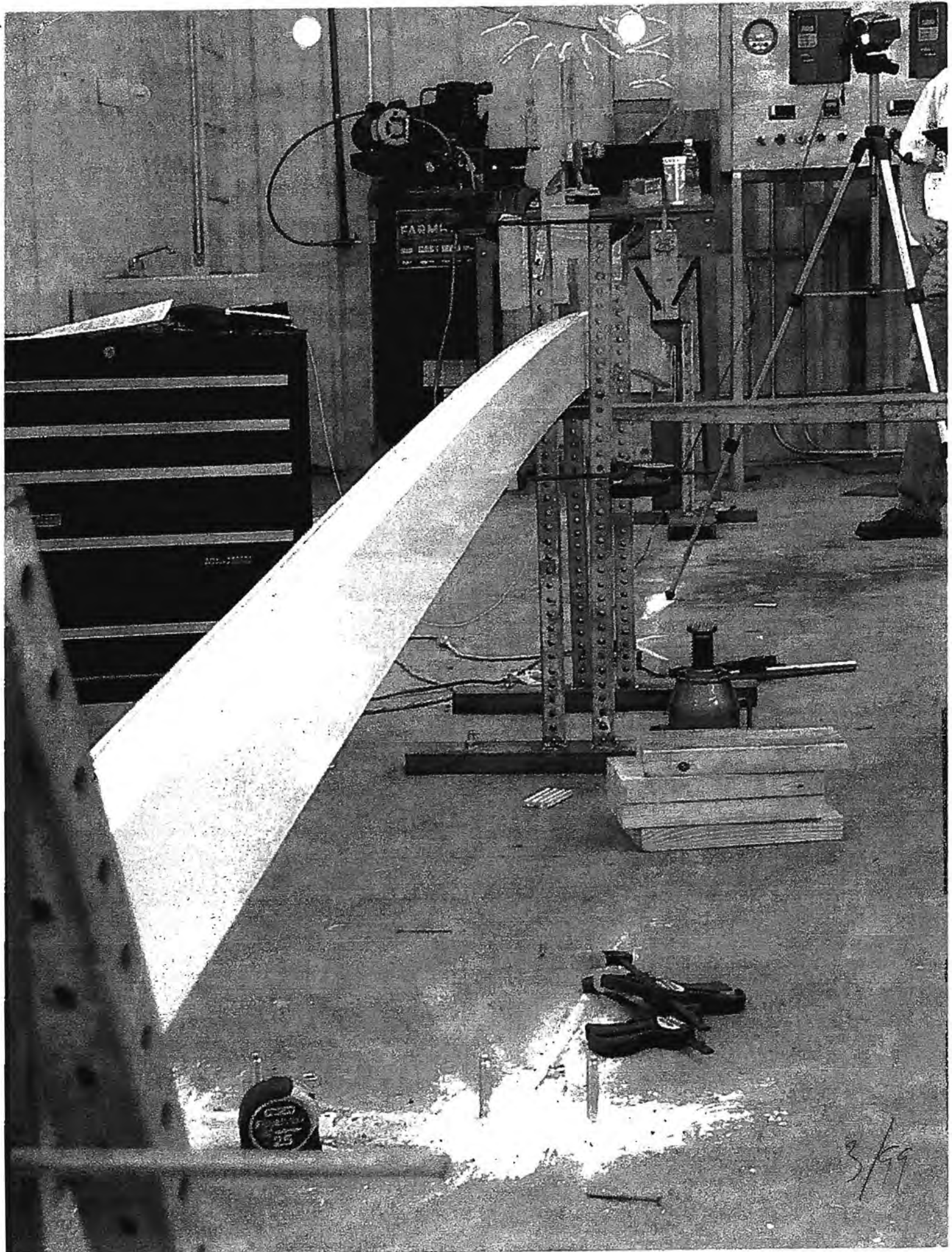
- Increase the hydraulic jack pressure until each Test Load is read on the load cell DRO.
- Record the mid-span and end support deflection readings immediately and then at 5 minutes.
- Repeat the above two steps for ANCHOR load up through the FINAL test load.
- Next, calculate the DEFLECTION LIMIT for this member, then increase the hydraulic pressure until the deflection is read on the mid-span deflection measuring device. Record this load immediately.
- Increase the hydraulic pressure until the load cell DRO indicates a load of 1.5 times the DEFLECTION LIMIT load recorded as instructed above. Record the deflection immediately and after 5 minutes.
- Release the load and record the permanent set immediately and after 5 minutes.

n = mid-span deflection measurement reading
 a = end support deflection measurement reading
 d = net deflection (n - a)

Test Load	Specimen #1				Specimen #2				Specimen #3				Specimen #4				Specimen #5			
	Hydraulic		5 Minute		Hydraulic		5 Minute		Hydraulic		5 Minute		Immediate		5 Minute		Immediate		5 Minute	
300 lbs	n	2.871		2.632		2.614		2.971		0.307		0.896		0.367		0.42				
	a	0.102	0.042	0.045	0.023	0.048	0.023	0.047	0.026	0.018	0.006	0.018	0.021	0.004	0.02	0.003	0.015			
	d	2.769		2.588		2.566		2.924		0.289		0.880		0.363		0.405		0		0
400 lbs	n	7.183		7.183		7.217		7.987		4.121		1.231		5.771		5.041				
	a	0.17	0.117	0.17	0.117	0.166	0.127	0.166	0.097	0.081	0.033	0.061	0.037	0.054	0.109	0.094	0.108			
	d	7.013		7.066		7.051		7.821		4.040		1.170		5.717		4.947		0		0
500 lbs	n	9.883		9.883		9.842		9.967		7.121		4.198		8.546		8.418				
	a	0.203	0.161	0.203	0.161	0.193	0.143	0.193	0.144	0.1	0.080	0.1	0.087	0.154	0.153	0.127	0.138			
	d	9.680		9.680		9.649		9.774		7.021		4.118		8.392		8.291		0		0
600 lbs	n	10.751		10.751		11.107		11.278		8.871		5.966		10.021		10.791				
	a	0.320	0.168	0.22	0.17	0.219	0.168	0.22	0.168	0.127	0.107	0.127	0.11	0.187	0.185	0.187	0.186			
	d	10.431		10.531		10.888		11.110		8.744		5.839		9.834		10.604		0		0
700 lbs	n	12.583								9.495		6.896								
	a									0.430	0.154	0.148	0.110							
	d	12.583		0		0		0		9.065		6.748		0		0		0		0
800 lbs	n									10.436		7.871								
	a									0.168	0.12	0.168	0.121							
	d	0		0		0		0		10.268		7.703		0		0		0		0
LSD	Load (lbs)				Load (lbs)				Load (lbs)				Load (lbs)				Load (lbs)			
	Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute		
2.0 Test load	Deflection (in)				Deflection (in)				Deflection (in)				Deflection (in)				Deflection (in)			
	Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute		
2.0 Test load	Perm. Set (in)				Perm. Set (in)				Perm. Set (in)				Perm. Set (in)				Perm. Set (in)			
	Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute			Immediate	5 Minute		

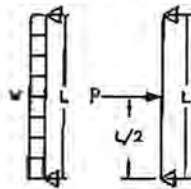
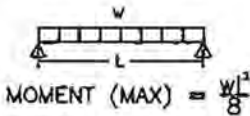
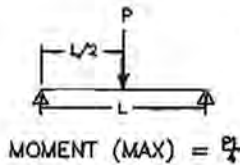
NOTES:
 1. Specimen #1 failed at 700 lbs. after 30 seconds under load.
 2. Specimen #2 failed at 850 lbs.
 3. Specimen #3 failed at 800 lbs.
 4. Specimen #4 failed at 716 lbs.

3/98



Trac Beam Technical Sheet

FL7350



L-SPAN (FT)	ALLOWABLE LEAD-P (lbs)	ALLOWABLE UNIFORM LEAD-W (q/ft)	DEFLECTION @ ALLOWABLE LEAD (Inches)
10	1037.0	207	0.68
11	970.5	176	0.90
12	903.9	151	1.12
13	837.4	129	1.34
13.67	792.8	116	1.49
14	781.9	112	1.57
15	748.7	100	1.82
16	715.6	89	2.07
17	682.4	80	2.32
18	649.3	72	2.57
19	616.2	65	2.82
20	583.0	58	3.07
21	549.9	52	3.31
22	516.7	47	3.56
23	483.6	42	3.81
24	450.4	38	4.06
25	417.3	33	4.31

L-SPAN (FT)	ALLOWABLE LEAD-P (lbs)	ALLOWABLE UNIFORM LEAD-W (q/ft)	DEFLECTION @ ALLOWABLE LEAD (Inches)
10	1390.9	278	0.41
11	1332.9	242	0.54
12	1274.9	212	0.67
13	1216.9	187	0.81
14	1158.9	166	0.94
15	1100.9	147	1.07
16	1042.9	130	1.21
17	984.9	116	1.34
18	927.0	103	1.47
19	869.0	91	1.60
20	811.0	81	1.74
21	753.0	72	1.87
22	695.0	63	2.00
23	637.0	55	2.13
24	579.0	48	2.27
25	521.1	42	2.40
26	511.6	39	2.65
27	502.1	37	2.90
28	492.6	35	3.15
29	483.1	33	3.40
30	473.6	32	3.65
31	464.1	30	3.90
32	454.6	28	4.15
33	445.2	27	4.40
34	435.7	26	4.65
35	426.2	24	4.90
36	416.7	23	5.15
37	407.2	22	5.40
38	397.7	21	5.65
39	388.2	20	5.90
40	378.7	19	6.15

BEAM TO BEAM SPACING (FT)	110 mph	120 mph	130 mph	140 mph	150 mph
5' C.C.	> 25'	> 25'	> 25'	> 25'	24.79'
6' C.C.	> 25'	> 25'	> 25'	24.66'	23.86'
7' C.C.	> 25'	> 25'	24.79'	23.86'	22.93'
8' C.C.	> 25'	> 25'	24.13'	23.06'	22'

BEAM TO BEAM SPACING (FT)	110 mph	120 mph	130 mph	140 mph	150 mph
5' C.C.	39.32'	39.32	36.03'	32.73'	29.45'
6' C.C.	36.68'	36.68	32.73'	28.8'	24.99'
7' C.C.	34.05'	34.05	29.45'	24.98'	24.55'
8' C.C.	31.42'	31.42	26.16'	24.61'	24.11'

BEAM TO BEAM SPACING (FT)	110 mph	120 mph	130 mph	140 mph	150 mph
5' C.C.	20.81'	19.47'	17.48'	15.47'	13.83'
6' C.C.	19.07'	17.48'	15.07'	13.57'	12.78'
7' C.C.	17.34'	15.48'	13.57'	12.65'	11.74'
8' C.C.	15.61'	13.83'	12.78'	11.73'	10.69'

BEAM TO BEAM SPACING (FT)	110 mph	120 mph	130 mph	140 mph	150 mph
5' C.C.	23.54'	22.92'	21.98'	21.03'	20.09'
6' C.C.	22.72'	21.97'	20.84'	19.71'	18.58'
7' C.C.	21.91'	21.03'	19.70'	18.39'	17.08'
8' C.C.	21.10'	20.09'	18.58'	17.08'	15.58'

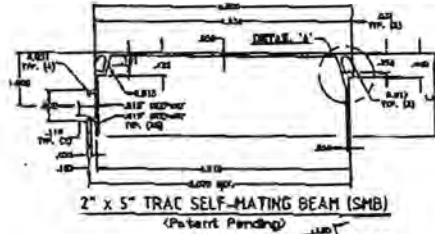
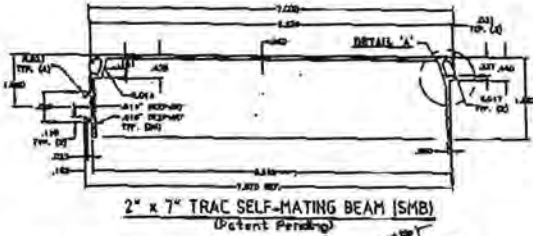
General Notes:

1. Refer to Florida Product Approval #FL7350 for project specific requirements to be used by design professional.
2. Drawings are illustrative purposes only.
3. Loads in tables are allowable working loads and may be used without any additional reductions.
4. Allowable point loads and deflections are converted to allowable uniform loads and deflections using analytic and comparative analysis.
5. Allowable spans tables are based on 2004 Florida Building Code with 2006 Updates. Wind loads are based on Chapter 20 and Table 2004.4.
6. Design professional shall provide site specific drawings for each project utilizing this product information.
7. Maximum allowable deflections limits of L/60 shall be considered by design professional. L/80 in HVHZ.

3/100

POOL ENCLOSURE COLLECTIVE, LLC

P.O. BOX 10039, TAMPA, FL 33679
PH. (813)857-9955



#10 x 3/4" MIN. SELF DRILLING SCREW @ 24" O.C. (TYP. TOP AND BOTTOM OF SMB)

2" x 7" TRAC BEAM



2" x 5" TRAC BEAM



#10 x 3/4" MIN. SELF DRILLING SCREW @ 24" O.C. (TYP. TOP AND BOTTOM OF SMB)

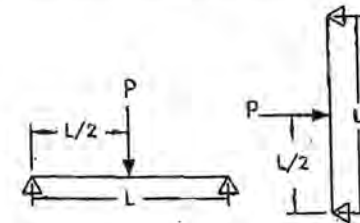


GENERAL NOTES

1. ALUMINUM ALLOY SHALL BE 6005-T5.
2. REFERENCE TEST REPORT TEL #08-0803-1.
3. ALUMINUM EXTRUSION SHALL CONFORM TO ASTM B-209.
4. SAFETY FACTORS HAVE BEEN DEVELOPED IN ACCORDANCE TO THE 2006 ALUMINUM DESIGN MANUAL-SPECIFICATIONS AND GUIDELINES FOR ALUMINUM STRUCTURES SECTION 9.3.2 AND CONFORMS TO THE 2004 FBC CHAPTER 16 AND 20.
5. TESTING HAS BEEN CONDUCTED IN ACCORDANCE WITH ASTM E828-04: STANDARD GUIDE FOR CONDUCTING FLEXURAL TESTS ON BEAMS AND BORDERS FOR BUILDING CONSTRUCTION. SEE REFERENCED TEST REPORT IN NOTE 2.
6. THE DESIGNER SHALL DETERMINE BY ACCEPTED ENGINEERING PRACTICE THE ALLOWABLE LOADS FOR THE SITE-SPECIFIC LOAD CONDITIONS (INCLUDING LOAD COMBINATIONS) USING THE DATA FROM THE ALLOWABLE LOADS TABLE IN THIS APPROVAL.
7. DEFLECTION VALUES TABULATED IN THIS DRAWING ARE FROM LOAD-DEFLECTION DIAGRAMS OF TESTED SPECIMENS.
8. THE DESIGNER SHALL CONSIDER LOAD DEFLECTION LIMITS BASED ON SITE SPECIFIC LOAD CONDITIONS.
9. THE DESIGNER SHALL CONSIDER ALL OTHER APPLICABLE STRUCTURAL ELEMENTS SUCH AS FOUNDATION SUPPORT, FASTENER LOADS, CONNECTION STRESSES, MOMENT CAPACITY, ETC.
10. FASTENER FOR STITCHING BEAMS SHALL BE POOL ENCLOSURE COLLECTIVE, LLC'S TRAC BEAM SCREW WITH MIN. PROPERTIES EQUAL TO C-1022 LOW-CARBON STEEL WITH YIELD STRENGTH OF 58 KSI MIN. WITH ADEQUATE CORROSION PROTECTION COATING AS SPECIFIED BY THE DESIGNER.

2x5 TRAC SELF-MATING BEAM (Patent Pending)		
L-SPAN (feet)	ALLOWABLE LOAD-P (lbs.)	TEST SPECIMEN DEFL. AT ALLOW. LOAD P (Inches)
10	1037.0	
11	970.5	
12	903.9	
13	837.4	
13.67	792.8	1.48"
14	781.9	
15	748.7	
16	715.6	
17	682.4	
18	649.3	
19	616.2	
20	583.0	
21	549.9	
22	516.7	
23	483.8	
24	450.4	
25	417.3	4.31"

2x7 TRAC SELF-MATING BEAM (Patent Pending)		
L-SPAN (feet)	ALLOWABLE LOAD-P (lbs.)	TEST SPECIMEN DEFL. AT ALLOW. LOAD P (Inches)
10	1390.9	0.41"
11	1332.9	
12	1274.9	
13	1216.9	
14	1158.9	
15	1100.9	
16	1042.9	
17	984.9	
18	927.0	
19	869.0	
20	811.0	
21	753.0	
22	695.0	
23	637.0	
24	579.0	
25	521.1	2.40"
26	511.6	
27	502.1	
28	492.6	
29	483.1	
30	473.6	
31	464.1	
32	454.6	
33	445.2	
34	435.7	
35	426.2	
36	416.7	
37	407.2	
38	397.7	
39	388.2	
40	378.7	6.15"



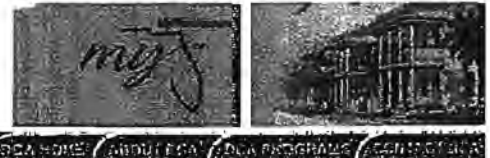
Documents Prepared By:
R.W. BUILDERS CONSULTANTS, INC.
P.O. Box 200 Venice, FL 33595
Phone No.: 813.859.9187
Florida Board of Professional Engineers
Certificate of Authorization No. 8013
W. W. H. 8-11-06
W. W. H. 8-11-06

PRODUCT: 2x5 TRAC SELF-MATING BEAM
2x7 TRAC SELF-MATING BEAM
PART OR ASSEMBLY: SCREEN ENCLOSURE COMPONENT

NO.	DATE	BY	REVISIONS
1	08/11/08	WWH	REVISED LOAD CHART

DATED 08-04-06
SCALE: N.T.S.
ENG. BY: AEM
CHK. BY: WWH
DRAWING NO.: FL-1114
SHEET 1 of 1

3/10/01



[BCIS Home](#) | [Log In](#) | [Hot Topics](#) | [Submit Surcharge](#) | [Stats & Facts](#) | [Publications](#) | [FBC Staff](#) | [BCIS Site Map](#) | [Links](#) | [Search](#)



Product Approval
USER: Public User

[Product Approval Menu](#) > [Product or Application Search](#) > [Application List](#) > [Application Detail](#)

- COMMUNITY PLANNING
- HOUSING & COMMUNITY DEVELOPMENT
- EMERGENCY MANAGEMENT
- OFFICE OF THE SECRETARY

FL # FL7350
Application Type New
Code Version 2004
Application Status Approved
Comments
Archived

Product Manufacturer Pool Enclosure Collective, LLC
Address/Phone/Email PO Box 10039
 Tampa, FL 33679
 (813) 857-9955
 whyaskwhy0417@yahoo.com

Authorized Signature Ken Piper
 whyaskwhy0417@yahoo.com

Technical Representative
Address/Phone/Email

Quality Assurance Representative
Address/Phone/Email

Category Structural Components
Subcategory Products Introduced as a Result of New Technology

Compliance Method Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer
 Evaluation Report - Hardcopy Received

Florida Engineer or Architect Name who developed the Evaluation Report Wendell W. Haney
Florida License PE-54158
Quality Assurance Entity PFS Corporation
Quality Assurance Contract Expiration Date
Validated By L.F. Schmidt, P.E.
 Validation Checklist - Hardcopy Received

Certificate of Independence [FL7350_R0_COI_Certificate of Independence.pdf](#)

Referenced Standard and Year (of Standard) Standard **Year**
 Accepted Engineering Practice 2004 3/102

Equivalence of Product Standards
Certified By

Sections from the Code

Product Approval Method Method 1 Option D

Date Submitted 08/04/2006
 Date Validated 08/31/2006
 Date Pending FBC Approval 08/13/2006
 Date Approved 09/01/2006

Summary of Products		
FL #	Model, Number or Name	Description
7350.1	"SMB"	2" x 5" Trac and 2" x 7" Trac Self Mating Beams - Extruded Aluminum
Limits of Use Approved for use in HVHZ: Yes Approved for use outside HVHZ: Yes Impact Resistant: N/A Design Pressure: N/A Other: See Drawing INST 7350.1 and EVAL 7350.1 for additional use limitations.		Installation Instructions FL7350 RO II INST 7350.1.pdf Verified By: Wendell W. Haney, P.E. 54158 Created by Independent Third Party: Evaluation Reports FL7350 RO AE EVAL 7350.1.pdf Created by Independent Third Party:

DCA Administration

*Department of Community Affairs
 Florida Building Code Online
 Codes and Standards
 2555 Shumard Oak Boulevard
 Tallahassee, Florida 32399-2100
 (850) 487-1824, Fax (850) 414-8436*

© 2000-2005 The State of Florida. All rights reserved. Copyright and Disclaimer

Product Approval Accepts:



3/03

R
W
B
C

R W Building Consultants, Inc.

Consulting and Engineering Services for the Building Industry

P.O. Box 230 Valrico, FL 33595 Phone 813.659.9197 Facsimile 813.754.9989

Florida Board of Professional Engineers Certificate of Authorization No. 9813

Product Evaluation Report

Report No.: FL 7350.1
Date: August 11, 2006
Product Category: Structural Components
Product sub-category: Other
Product Name: 2" x 5" Trac And 2" x 7" Trac Self-Mating Beam (SMB)
Manufacturer: Pool Enclosure Collective, LLC
P.O. Box 10039
Tampa, FL 33679
Phone: 813.857-9955

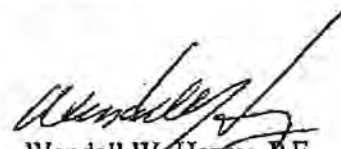
Scope: This is a Product Evaluation report issued by R W Building Consultants, Inc. and Wendell W. Haney, P.E. (System ID # 1998) for Pool Enclosure Collective, LLC based on Rule Chapter No. 9B-72.070, Method 1d of the State of Florida Product Approval, Department of Community Affairs-Florida Building Commission.

RW Building Consultants and Wendell W. Haney, P.E. do not have nor will acquire financial interest in the company manufacturing or distributing the product or in any other entity involved in the approval process of the product named herein.

This product has been evaluated for use in locations adhering to the Florida Building Code (2004 Edition) and where pressure requirements, as determined by Chapter 16 of The Florida Building Code, do not exceed the following design pressures:

Design Pressure Rating:

See Drawing No.: FL-1114 prepared by R W Building Consultants, Inc. and signed and sealed by Wendell W. Haney, P.E. (FL # 54158) for specific use parameters and limitations.


Wendell W. Haney, P.E.
FL No. 54158
August 11, 2006

3/104

Limitations

1. The 2"x5" Trac and 2"x7" Trac Self-Mating Beam (SMB) have been evaluated and meet the requirements for use within the State of Florida including the "High Velocity Hurricane Zone".
2. Site specific engineering must accompany this product approval for each structure installed.

3. Size Limitations:

2" x 5" Trac Self-Mating Beam (SMB) Maximum Span: 25'0"

2" x 7" Trac Self-Mating Beam (SMB) Maximum Span: 40'0"



Wendell W. Haney, P.E.

FL No. 54158

August 11, 2006

3/105

Supporting Documents

A Drawing

1. Drawing No. FL-1114 titled 2" x 5" and 2" x 7" Trac Self-Mating Beam (SMB) prepared by R W Building Consultants, Inc. (Florida Board of Professional Engineers Certificate of Authorization No. 9813), signed and sealed by Wendell W. Haney, P.E.

B Testing

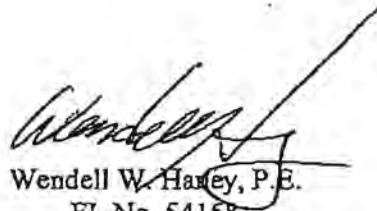
1. Testing per ASTM E529-04 as performed by Testing Evaluation Laboratories, Inc. and reported in test report number TEL 06-0803-1, signed and sealed by Wendell W. Haney, P.E.

C Calculations

1. Beam analysis for tested loading conditions, prepared, signed and sealed by Wendell W. Haney, P.E.

D Other

Certificate of Participation issued by PFS., certifying that Pool Enclosure Collective, LLC is manufacturing products within a quality assurance program.



Wendell W. Haney, P.E.
FL No. 54158
August 11, 2006

3/1/06

Aluminum Design Manual 2005 Section 9.3.2 Tests for Determining Structural Performance Safety Factor

Vp= 0.037352489

2x5x120 (lbs.)

Test Results	<u>Span (ft)</u> =				Max. Deflection Point
		Allowable Load P	Allowable Uniform	Allowable Max.	Load at Mid-Span
	Ultimate (lbs.)	(lbs.)	Load w (plf)	Moment (lbs.-ft)	(inches)
Speciment #1	1670	1013	203	2533	1.1335
Speciment #2	1800	1092	218	2730	1.0415
Speciment #3	1660	1007	201	2518	1.0265
Speciment #4	1720	1043	209	2609	1.227
Average Failure Load	1712.5	1039	208	2597	
Safety Factor=	1.6484				

Vp= 0.030881799

2x5x164 (lbs.)

Test Results	<u>Span (ft)</u> =				Max. Deflection Point
		Allowable Load P	Allowable Uniform	Allowable Max.	Load at Mid-Span
	Ultimate (lbs.)	(lbs.)	Load w (plf)	Moment (lbs.-ft)	(inches)
Speciment #1	1330	807	118	2757	2.1695
Speciment #2	1340	813	119	2778	2.0185
Speciment #3	1250	758	111	2592	2.2575
Speciment #4	1313	797	117	2722	2.124
Average Failure Load	1308.25	794	116	2712	
Safety Factor=	1.63				

Vp= 0.0761289

2x5x300 (lbs.)

Test Results	<u>Span (ft)</u> =				Max. Deflection Point
		Allowable Load P	Allowable Uniform	Allowable Max.	Load at Mid-Span
	Ultimate (lbs.)	(lbs.)	Load w (plf)	Moment (lbs.-ft)	(inches)
Speciment #1	812	454	36	2836	7.545
Speciment #2	700	391	31	2445	6.526
Speciment #3	700	391	31	2445	5.345
Speciment #4	780	436	35	2724	6.0165
Average Failure Load	748	418	33	2613	
Safety Factor=	1.79				

3/107

Aluminum Design Manual 2005 Section 9.3.2 Tests for Determining Structural Performance Safety Factor

Vp= 0.031320056

2x7x120 (lbs.)

Test Results	<u>Span (ft)</u> =	10	Allowable Load P (lbs.)	Allowable Uniform Load w (plf)	Allowable Max. Moment (lbs.-ft)	Max.Deflection Point Load at Mid-Span (inches)
	Ultimate (lbs.)					
Speciment #1	2400		1468	294	3670	0.589
Speciment #2	2280		1395	279	3487	0.6305
Speciment #3	2260		1382	276	3456	0.5605
Speciment #4	2240		1370	274	3426	0.5415
Average Fallure Load	2295		1404	281	3510	
Safety Factor=	1.63					

Vp= 0.068128732

2x7x300 (lbs.)

Test Results	<u>Span (ft)</u> =	25	Allowable Load P (lbs.)	Allowable Uniform Load w (plf)	Allowable Max. Moment (lbs.-ft)	Max.Deflection Point Load at Mid-Span (inches)
	Ultimate (lbs.)					
Speciment #1	845		482	39	3013	-
Speciment #2	980		559	45	3494	4.7365
Speciment #3	953		544	43	3398	4.878
Speciment #4	882		503	40	3145	4.375
Average Fallure Load	915		522	42	3262	
Safety Factor=	1.75					

Vp= 0.09752649

2x7x480 (lbs.)

Test Results	<u>Span (ft)</u> =	40	Allowable Load P (lbs.)	Allowable Uniform Load w (plf)	Allowable Max. Moment (lbs.-ft)	Max.Deflection Point Load at Mid-Span (inches)
	Ultimate (lbs.)					
Speciment #1	700		368	18	3676	12.563
Speciment #2	653		343	17	3430	10.9145
Speciment #3	820		431	22	4307	10.357
Speciment #4	716		376	19	3760	10.345
Average Fallure Load	722		379	19	3793	
Safety Factor=	1.90					

3/108

2x5 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 110 mph Center-Center Span (ft)	Windward Column for	Leeward Column for 110
			110 mph Center-Center Span (ft)	mph Center-Center Span (ft)
10	208	51.94	15.98	20.78
11	185	46.22	14.22	18.49
12	162	40.49	12.46	16.19
13	139	34.76	10.69	13.90
14	116	29.03	8.93	11.81
15	109	27.15	8.35	10.86
16	101	25.27	7.78	10.11
17	94	23.39	7.20	9.36
18	86	21.51	6.62	8.61
19	79	19.63	6.04	7.85
20	71	17.76	5.46	7.10
21	64	15.88	4.89	6.35
22	56	14.00	4.31	5.60
23	48	12.12	3.73	4.85
24	41	10.24	3.15	4.10
25	33	8.36	2.57	3.34

2x7 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 110 mph Center-Center Span (ft)	Windward Column for	Leeward Column for 110
			110 mph Center-Center Span (ft)	mph Center-Center Span (ft)
10	281	70.20	21.60	28.08
11	265	66.21	20.37	26.48
12	249	62.23	19.15	24.89
13	233	58.24	17.92	23.30
14	217	54.26	16.70	21.70
15	201	50.28	15.47	20.11
16	185	46.29	14.24	18.52
17	169	42.31	13.02	16.92
18	153	38.33	11.79	15.33
19	137	34.34	10.57	13.74
20	121	30.36	9.34	12.14
21	105	26.37	8.12	10.55
22	90	22.39	6.89	8.96
23	74	18.41	5.66	7.36
24	58	14.42	4.44	5.77
25	42	10.44	3.21	4.18
26	40	10.06	3.10	4.02
27	39	9.68	2.98	3.87
28	37	9.30	2.86	3.72
29	36	8.92	2.74	3.57
30	34	8.54	2.63	3.42
31	33	8.16	2.51	3.26
32	31	7.78	2.39	3.11
33	30	7.40	2.28	2.96
34	28	7.02	2.16	2.81
35	27	6.64	2.04	2.66
36	25	6.26	1.93	2.50
37	24	5.88	1.81	2.35
38	22	5.50	1.69	2.20
39	20	5.12	1.58	2.05
40	19	4.74	1.46	1.90

3/109

2x5 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 120 mph		Windward Column for	Leeward Column for 120
		Center-Center	Span (ft)	120 mph Center-Center	mph Center-Center Span
				Span (ft)	(ft)
10	208	51.94		13.85	15.98
11	185	46.22		12.32	14.22
12	162	40.49		10.80	12.46
13	139	34.76		9.27	10.69
14	116	29.03		7.74	8.93
15	109	27.15		7.24	8.35
16	101	25.27		6.74	7.78
17	94	23.39		6.24	7.20
18	86	21.51		5.74	6.62
19	79	19.63		5.24	6.04
20	71	17.76		4.73	5.46
21	64	15.88		4.23	4.89
22	56	14.00		3.73	4.31
23	48	12.12		3.23	3.73
24	41	10.24		2.73	3.15
25	33	8.36		2.23	2.57

2x7 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 120 mph		Windward Column for	Leeward Column for 120
		Center-Center	Span (ft)	120 mph Center-Center	mph Center-Center Span
				Span (ft)	(ft)
10	281	70.20		18.72	21.60
11	265	66.21		17.66	20.37
12	249	62.23		16.59	19.15
13	233	58.24		15.53	17.92
14	217	54.26		14.47	16.70
15	201	50.28		13.41	15.47
16	185	46.29		12.34	14.24
17	169	42.31		11.28	13.02
18	153	38.33		10.22	11.79
19	137	34.34		9.16	10.57
20	121	30.36		8.10	9.34
21	105	26.37		7.03	8.12
22	90	22.39		5.97	6.89
23	74	18.41		4.91	5.66
24	58	14.42		3.85	4.44
25	42	10.44		2.78	3.21
26	40	10.06		2.68	3.10
27	39	9.68		2.58	2.98
28	37	9.30		2.48	2.86
29	36	8.92		2.38	2.74
30	34	8.54		2.28	2.63
31	33	8.16		2.18	2.51
32	31	7.78		2.07	2.39
33	30	7.40		1.97	2.28
34	28	7.02		1.87	2.16
35	27	6.64		1.77	2.04
36	25	6.26		1.67	1.93
37	24	5.88		1.57	1.81
38	22	5.50		1.47	1.69
39	20	5.12		1.37	1.58
40	19	4.74		1.26	1.46

3/110

2x5 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 130 mph		Windward Column for	Leeward Column for 130
		Center-Center Span (ft)	Center-Center Span (ft)	130 mph Center-Center Span (ft)	mph Center-Center Span (ft)
10	208	41.56	41.56	11.54	14.84
11	185	36.97	36.97	10.27	13.20
12	162	32.39	32.39	9.00	11.57
13	139	27.81	27.81	7.72	9.93
14	116	23.22	23.22	6.45	8.29
15	109	21.72	21.72	6.03	7.76
16	101	20.22	20.22	5.62	7.22
17	94	18.71	18.71	5.20	6.68
18	86	17.21	17.21	4.78	6.15
19	79	15.71	15.71	4.36	5.61
20	71	14.20	14.20	3.95	5.07
21	64	12.70	12.70	3.53	4.54
22	56	11.20	11.20	3.11	4.00
23	48	9.69	9.69	2.69	3.46
24	41	8.19	8.19	2.28	2.93
25	33	6.69	6.69	1.86	2.39

2x7 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 130 mph		Windward Column for	Leeward Column for 130
		Center-Center Span (ft)	Center-Center Span (ft)	130 mph Center-Center Span (ft)	mph Center-Center Span (ft)
10	281	56.16	56.16	15.60	20.06
11	265	52.97	52.97	14.71	18.92
12	249	49.78	49.78	13.83	17.78
13	233	46.60	46.60	12.94	16.64
14	217	43.41	43.41	12.06	15.50
15	201	40.22	40.22	11.17	14.36
16	185	37.03	37.03	10.29	13.23
17	169	33.85	33.85	9.40	12.09
18	153	30.66	30.66	8.52	10.95
19	137	27.47	27.47	7.63	9.81
20	121	24.29	24.29	6.75	8.67
21	105	21.10	21.10	5.86	7.54
22	90	17.91	17.91	4.98	6.40
23	74	14.73	14.73	4.09	5.28
24	58	11.54	11.54	3.21	4.12
25	42	8.35	8.35	2.32	2.98
26	40	8.06	8.06	2.24	2.87
27	39	7.74	7.74	2.15	2.77
28	37	7.44	7.44	2.07	2.66
29	36	7.14	7.14	1.98	2.55
30	34	6.83	6.83	1.90	2.44
31	33	6.53	6.53	1.81	2.33
32	31	6.22	6.22	1.73	2.22
33	30	5.92	5.92	1.64	2.11
34	28	5.62	5.62	1.56	2.01
35	27	5.31	5.31	1.48	1.90
36	25	5.01	5.01	1.39	1.79
37	24	4.70	4.70	1.31	1.68
38	22	4.40	4.40	1.22	1.57
39	20	4.10	4.10	1.14	1.46
40	19	3.79	3.79	1.05	1.35

3/11/11

2x5 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 140 mph Center-Center Span (ft)	Windward Column for	Leeward Column for 140
			140 mph Center-Center Span (ft)	mph Center-Center Span (ft)
10	208	34.63	9.89	13.85
11	185	30.81	8.80	12.32
12	162	26.98	7.71	10.80
13	139	23.17	6.62	9.27
14	116	19.35	5.53	7.74
15	109	18.10	5.17	7.24
16	101	16.85	4.81	6.74
17	94	15.59	4.46	6.24
18	86	14.34	4.10	5.74
19	79	13.09	3.74	5.24
20	71	11.84	3.38	4.73
21	64	10.58	3.02	4.23
22	58	9.33	2.67	3.73
23	48	8.08	2.31	3.23
24	41	6.83	1.95	2.73
25	33	5.57	1.59	2.23

2x7 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 140 mph Center-Center Span (ft)	Windward Column for	Leeward Column for 140
			140 mph Center-Center Span (ft)	mph Center-Center Span (ft)
10	281	46.80	13.37	18.72
11	265	44.14	12.61	17.68
12	249	41.46	11.85	16.59
13	233	38.83	11.09	15.53
14	217	36.17	10.34	14.47
15	201	33.52	9.58	13.41
16	185	30.86	8.82	12.34
17	169	28.21	8.06	11.28
18	153	25.55	7.30	10.22
19	137	22.89	6.54	9.16
20	121	20.24	5.78	8.10
21	105	17.58	5.02	7.03
22	90	14.93	4.26	5.97
23	74	12.27	3.51	4.91
24	58	9.62	2.75	3.85
25	42	6.96	1.99	2.78
26	40	6.71	1.92	2.68
27	39	6.45	1.84	2.58
28	37	6.20	1.77	2.48
29	35	5.95	1.70	2.38
30	34	5.69	1.63	2.28
31	33	5.44	1.55	2.18
32	31	5.19	1.48	2.07
33	30	4.93	1.41	1.97
34	28	4.68	1.34	1.87
35	27	4.43	1.26	1.77
36	25	4.17	1.19	1.67
37	24	3.92	1.12	1.57
38	22	3.67	1.05	1.47
39	20	3.41	0.98	1.37
40	19	3.16	0.90	1.26

3/1/12

2x5 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 150 mph Center-Center Span (ft)	Windward Column for	Leeward Column for 150
			150 mph Center-Center Span (ft)	mph Center-Center Span (ft)
10	208	29.68	8.66	11.54
11	185	26.41	7.70	10.27
12	162	23.14	6.75	9.00
13	139	19.86	5.79	7.72
14	116	16.59	4.84	6.45
15	109	15.51	4.53	6.03
16	101	14.44	4.21	5.62
17	94	13.37	3.90	5.20
18	86	12.28	3.59	4.78
19	79	11.22	3.27	4.36
20	71	10.15	2.96	3.95
21	64	9.07	2.65	3.53
22	56	8.00	2.33	3.11
23	48	6.92	2.02	2.69
24	41	5.85	1.71	2.28
25	33	4.78	1.39	1.86

2x7 TRAC Self-Mating Beam

Span (ft)	Allowable Uniform Load w (plf)	Roof Beam for 150 mph Center-Center Span (ft)	Windward Column for	Leeward Column for 150
			150 mph Center-Center Span (ft)	mph Center-Center Span (ft)
10	281	40.11	11.70	15.60
11	265	37.84	11.04	14.71
12	249	35.56	10.37	13.83
13	233	33.28	9.71	12.94
14	217	31.01	9.04	12.06
15	201	28.73	8.38	11.17
16	185	26.45	7.72	10.29
17	169	24.18	7.05	9.40
18	153	21.90	6.39	8.52
19	137	19.62	5.72	7.63
20	121	17.35	5.06	6.75
21	105	15.07	4.40	5.86
22	90	12.79	3.73	4.98
23	74	10.52	3.07	4.09
24	58	8.24	2.40	3.21
25	42	5.97	1.74	2.32
26	40	5.75	1.68	2.24
27	39	5.53	1.61	2.15
28	37	5.31	1.55	2.07
29	36	5.10	1.49	1.98
30	34	4.88	1.42	1.90
31	33	4.66	1.36	1.81
32	31	4.45	1.30	1.73
33	30	4.23	1.23	1.64
34	28	4.01	1.17	1.56
35	27	3.79	1.11	1.48
36	25	3.58	1.04	1.39
37	24	3.36	0.98	1.31
38	22	3.14	0.92	1.22
39	20	2.93	0.85	1.14
40	19	2.71	0.79	1.05

3/11/03

2x5 TRAC Self-Mating Beam

Span (ft)	Allowable Load P			Allowable Max. Moment (lbs.-ft)	Deflection @ Allowable Load (inches)
	Ultimate (lbs.)	(lbs.)	Load w (plf)		
10	1670	1039	208	2597	0.626
11	1580	978	185	2688	0.784
12	1489	916	162	2749	0.955
13	1399	855	139	2779	1.132
14	1308	794	116	2778	1.313
15	1257	760	109	2848	1.545
16	1206	725	101	2901	1.791
17	1155	691	94	2938	2.047
18	1104	657	86	2957	2.310
19	1053	623	79	2959	2.576
20	1003	589	71	2944	2.840
21	952	555	64	2912	3.096
22	901	520	56	2863	3.341
23	850	486	48	2796	3.567
24	799	452	41	2713	3.768
25	748	418	33	2613	3.938
				2815	

2x7 TRAC Self-Mating Beam

Span (ft)	Allowable Load P			Allowable Max. Moment (lbs.-ft)	Deflection @ Allowable Load (Inches)
	Ultimate (lbs.)	(lbs.)	Load w (plf)		
10	2295	1404	281	3510	0.372
11	2203	1345	265	3699	0.474
12	2111	1286	249	3859	0.588
13	2019	1228	233	3989	0.714
14	1927	1169	217	4091	0.849
15	1835	1110	201	4162	0.992
16	1743	1051	185	4205	1.140
17	1651	992	169	4217	1.291
18	1559	934	153	4201	1.441
19	1467	875	137	4155	1.588
20	1375	816	121	4080	1.728
21	1283	757	105	3975	1.856
22	1191	698	90	3841	1.968
23	1099	640	74	3677	2.060
24	1007	581	58	3485	2.125
25	915	522	42	3262	2.159
26	902	512	40	3331	2.384
27	889	503	39	3395	2.621
28	876	493	37	3454	2.867
29	864	484	36	3508	3.124
30	851	474	34	3558	3.391
31	838	465	33	3603	3.666
32	825	455	31	3643	3.950
33	812	446	30	3679	4.242
34	799	436	28	3709	4.540
35	786	427	27	3735	4.845
36	773	417	25	3756	5.155
37	761	408	24	3773	5.469
38	748	398	22	3784	5.786
39	735	389	20	3791	6.106
40	722	379	19	3793	6.426
				3772	

3/11/14

COMBINED STRESSES FOR WALL HT. 10 FT

Roof Spans

Exposure B

2x8 TRAC BEAM (FLAT ROOF SPAN ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	40.0	40.0	40.0	40.0	36.0
6' O.C.	40.0	40.0	40.0	37.0	35.0
7' O.C.	40.0	40.0	38.0	35.5	34.0
8' O.C.	40.0	38.0	36.0	34.2	32.0

2x8 TRAC BEAM (MANSARD ROOF SPAN ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	52.0	52.0	52.0	52.0	47.0
6' O.C.	52.0	52.0	52.0	50.0	48.0
7' O.C.	52.0	52.0	50.0	47.5	44.8
8' O.C.	52.0	50.0	47.0	45.0	42.8

Exposure C

2x8 TRAC BEAM (FLAT ROOF SPAN ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	40.0	40.0	40.0	38.0	35.1
6' O.C.	40.0	40.0	38.0	35.7	32.4
7' O.C.	40.0	37.0	35.0	33.0	29.9
8' O.C.	37.0	34.2	32.0	29.7	27.5

2x8 TRAC BEAM (MANSARD ROOF SPAN ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	52.0	52.0	52.0	48.8	45.9
6' O.C.	52.0	52.0	47.2	45.0	43.2
7' O.C.	52.0	47.5	45.1	42.8	40.7
8' O.C.	48.8	45.0	42.8	40.5	38.3

3/115

Column Height

Exposure B

2x8 TRAC BEAM (COLUMN HEIGHT ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	32.5	30.0	28.9	27.7	26.3
6' O.C.	29.5	28.7	27.6	26.3	25.0
7' O.C.	28.7	27.8	26.7	24.9	23.5
8' O.C.	27.8	26.5	25.2	23.4	21.8

Exposure C

2x8 TRAC BEAM (COLUMN HEIGHT ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	29.1	27.8	26.1	25.0	23.2
6' O.C.	27.6	26.3	24.6	23.0	21.3
7' O.C.	28.5	24.9	22.9	21.0	19.0
8' O.C.	25.1	23.4	21.1	19.0	16.8

3/116

Roof Spans

Exposure B

2x8 TRAC BEAM (FLAT ROOF SPAN ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	40.0	40.0	40.0	40.0	40.0
6' O.C.	40.0	40.0	40.0	40.0	40.0
7' O.C.	40.0	40.0	40.0	40.0	37.8
8' O.C.	40.0	40.0	40.0	38.0	35.5

2x8 TRAC BEAM (MANSARD ROOF SPAN ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	52.0	52.0	52.0	52.0	52.0
6' O.C.	52.0	52.0	52.0	52.0	52.0
7' O.C.	52.0	52.0	52.0	52.0	49.8
8' O.C.	52.0	52.0	52.0	50.0	47.5

Exposure C

2x8 TRAC BEAM (FLAT ROOF SPAN ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	40.0	38.0	40.0	40.0	39.0
6' O.C.	40.0	40.0	40.0	38.0	36.0
7' O.C.	40.0	40.0	37.8	35.5	33.2
8' O.C.	40.0	38.0	35.5	33.0	30.5

2x8 TRAC BEAM (MANSARD ROOF SPAN ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	52.0	52.0	52.0	52.0	51.0
6' O.C.	52.0	52.0	52.0	50.0	48.0
7' O.C.	52.0	52.0	49.8	47.5	45.2
8' O.C.	52.0	50.0	47.5	45.0	42.5

3/11/8

Column Height

Exposure B

2x8 TRAC BEAM (COLUMN HEIGHT ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	32.5	30.0	28.9	27.7	26.3
6' O.C.	29.5	28.7	27.6	26.3	25.0
7' O.C.	28.7	27.8	26.7	24.9	23.5
8' O.C.	27.8	26.5	25.2	23.4	21.8

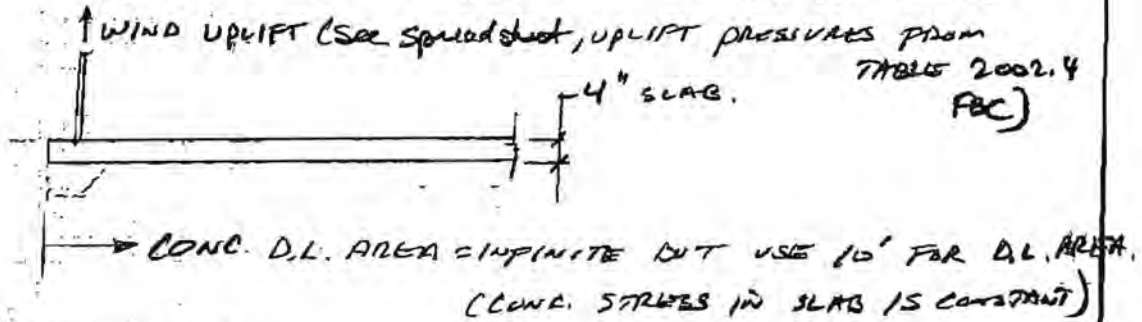
Exposure C

2x8 TRAC BEAM (COLUMN HEIGHT ft)					
Beam to Beam Spacing (ft)	110 mph	120 mph	130 mph	140 mph	150 mph
5' O.C.	29.1	27.8	26.1	25.0	23.2
6' O.C.	27.6	26.3	24.6	23.0	21.3
7' O.C.	26.5	24.9	22.9	21.0	19.0
8' O.C.	25.1	23.4	21.1	19.0	16.8

3/118

UPLIFT RESISTANCE = DEAD LOAD + SELF WT OF CONC. SLAB/FDW.

4" SLAB D.L. = $\frac{4"}{12} \times 1' \times 1' \times 150 \text{ pcf} = 50 \# / \text{L.F. OF SLAB}$



F.S. = 1.5 (FBC 1606.1.3)

(F.S. IS ACTUALLY TAKEN INTO ACCOUNT WITHIN THE LOAD CONDITIONS IN ASCE 7-02 & FBC CHAPTER 16)

UPLIFT @ 140 mph PER FBC TABLE 2002.4 = 6 PSF (EXP. B)

25' x 7' $\frac{6 \text{ PSF}}{3500 \#} = \frac{1050 \#}{3500 \#} \Rightarrow \text{F.S.} = 3.33 >> 1.5$

D.L. = 50 PSF

↑ ASSUME 10' x 7' x 4" SLAB AREA

ASSUME SLAB AREA FOR D.L. = 6' x 6' x 4"

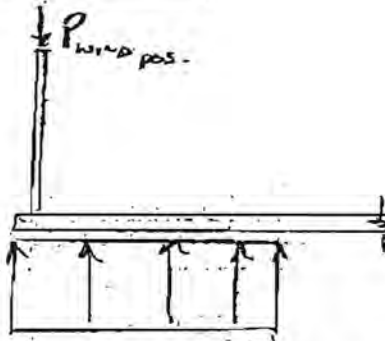
D.L. = 1800 #

F.S. = $\frac{1800 \#}{1050} = 1.7 >> 1.5$ OK

4" NOMINAL SLAB IS ADEQUATE FOR 25' SPAN.

2/119

POSITIVE WIND LOAD



SOIL BEARING AREA

ASSUME 3' x 3' TRIBUTARY AREA FOR BEARING

Screen Roofs

$$P_{c150mph} = 9 \text{ psf (Exp. C.) (Worst Case)}$$

MAX TRIBUTARY AREA = $19' \times 20' \times 9 \text{ psf} = 2025 \#$

column column spacing 50' - Roof span

$$\sigma_{soil} = \frac{2025 \#}{3' \times 3'} \approx 222 \text{ psf} \leq \leq \underline{\underline{2000 \text{ psf OK}}}$$

$$\text{MIN. BEARING AREA} = \frac{2025 \# \text{ WIND LOAD}}{2000 \text{ psf ALLOWABLE SOIL PRESSURE}} \approx \underline{\underline{1 \text{ SF}}}$$

Solid Roofs

$$P_{c150mph} = 16.47 \text{ psf Exp. C. (Worst Case)}$$

$$\sigma_{soil} = 16' \times 20' \times 16.47 \text{ psf} = 3294 \#$$

$$\sigma_{soil} = \frac{3294}{3' \times 3'} = 366 \text{ psf} \leq \leq \underline{\underline{2000 \text{ psf OK}}}$$

$$\text{MIN. BEARING AREA} = \frac{3294 \#}{2000 \text{ psf}} = \underline{\underline{1.6 \text{ SF OK}}}$$

3/10

2x6 SMA

$$S_x = S_c = 1.92$$

$$I_y = 0.71$$

$$J = 1.96$$

lateral support @ 7' o.c.

$$\text{Slenderness} = \frac{L_b S_c}{0.5 \sqrt{I_y J}} = \frac{(7 \times 12)(1.92)}{0.5 \sqrt{0.71 \times 1.96}} = 273$$

$$B_c = 27.64$$

$$C_c = 0.41 \frac{B_c}{D_c} = 78.15$$

$$D_c = 0.145$$

$$S_1 = \left[\frac{(B_c - F_{cy})}{1.6 D_c} \right]^2 = 129$$

$$S_2 = \left(\frac{C_c}{1.6} \right)^2 = 2385$$

$$S_1 < \text{Slenderness} < S_2$$

$$\therefore F_c = \frac{1}{1.6} \left(B_c - 1.6 D_c \sqrt{\frac{L_b S_c}{0.5 \sqrt{I_y J}}} \right)$$

$$= \frac{1}{1.6} (27.64 - 1.6(0.145)(273)^{1/2})$$

$$= 14.4 \text{ KSI} \quad (11.8 \text{ KSI USED BY AAF - DAVID MILLER PROVIDED DATA. ACKNOWLEDGE AAF IS CONSERVATIVE})$$

3/21

Screen Enclosures

Job Title CTR. BEAM DESIGN (EXAMPLE)

Member-Location

6063 TB PROPERTIES.

Org. Ref.

Made by DYK

Date 3-10-06 Chd.

$$F_u = 30 \text{ ksi}$$

$$F_y = 25 \text{ ksi}$$

$$E = 10,100 \text{ ksi}$$

ADM '05

$$F_{ty} = 25 \text{ ksi}$$

$$F_{su} = 19 \text{ ksi}$$

$$K_L = 1.0$$

$$\phi_c F_c = \phi_y F_{ty} \text{ or } \phi_c F_c = \phi_u F_{su} / K_L$$

$$\phi_b = 0.85$$

$$\phi_y = 0.95$$

$$\phi_u = 0.90 \text{ (Rectangular shapes)}$$

$$\phi_y F_{ty} = (0.95)(25) = 23.75 \text{ ksi} \leftarrow \text{(Compression Yield Governs)}$$

$$\phi_u F_{su} / K_L = (0.9)(19) / (1.0) = 17.1 \text{ ksi}$$

BENDING ANALYSIS (Slenderness)

$$\lambda_c = \left[\frac{B_c - \left(\frac{\phi_y F_{ty}}{\phi_b} \right)}{1.6 D_c} \right]^2 = \left[\frac{27.64 - \frac{(0.95)(25)}{0.85}}{1.6(0.14)} \right]^2 = 1.8 \approx 0$$

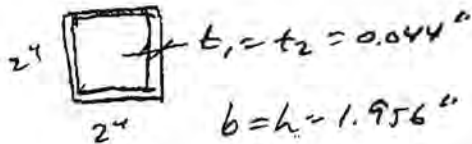
$$B_c = F_{cy} \left[1 + \left(\frac{F_{cy}}{2250} \right)^{1/2} \right] = 25 \left[1 + \left(\frac{25}{2250} \right)^{1/2} \right] = 27.64 \text{ ksi}$$

$$D_c = \frac{B_c}{10} \left(\frac{B_c}{E} \right)^{1/2} = \frac{27.64}{10} \left(\frac{27.64}{10,100} \right)^{1/2} = 0.145$$

USE SECTION 3.4.14 ≠ ADM

Job Title SAMPLE BEAM DESIGN

$$SLENDERNESS = \frac{L_b S_c}{0.5 \sqrt{I_y J}}$$



$$J = \frac{2b^2 h^2 t_1 t_2}{b t_1 + h t_2}$$

$$= \frac{2 (1.956)^2 (1.956)^2 (0.044)^2}{(1.956)(0.044) + (1.956)(0.044)}$$

$$= 0.33 \text{ in}^4$$

$$S = \frac{(10' \times 12)(0.24)}{0.5 \sqrt{(0.24)(0.33)}}$$

$$= 204.67$$

$$S_2 = 2,380$$

$$S_c = \frac{I_y}{c} = \frac{0.24 \text{ in}^4}{14} = 0.24 \text{ in}^3$$

$$\phi_b = \phi_b^{0.85} \times 1.1 \leq 1.0 \text{ (Secondary member)}$$

$$= 0.935$$

$$\text{DESIGN STRESS} = \phi F_L = \phi_b \left(B_c - 1.6 D_c \sqrt{\frac{L_b S_c}{0.5 \sqrt{I_y J}}} \right)$$

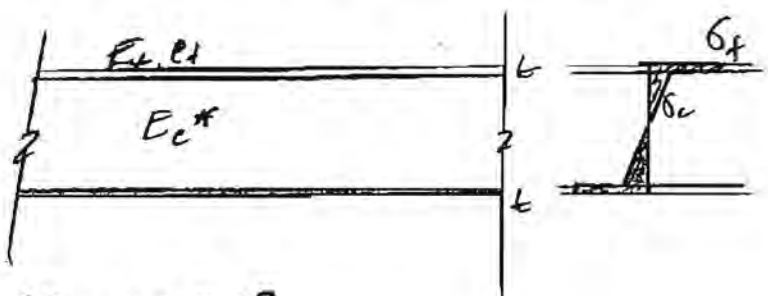
$$= 0.935 (24.33)$$

$$= \underline{\underline{22.75 \text{ ksi} (L_b = 10')}}$$

3/123

Job Title Composite Design Example

Composite SANDWICH BEAM ANALYSIS IS UNIQUE AND IS OUTSIDE THE SCOPE OF ADM. ANALYSIS METHODS & DESIGN ARE BASE ON COMPOSITE PANEL THEORY.



$$E_c^* = \sum_i \rho_i E_s \left(\frac{\rho_i^*}{\rho_s} \right)^2$$

$$(EI)_{eq} \cong \frac{E_1 b t c^2}{2} \quad ; \quad (AG)_{eq} = \frac{G_c^* b d^2}{c} \approx b c G_c^*$$

$$\Delta_T = \frac{P L^3}{(384/5) E I_{eq}} + \frac{P L}{(8) (AG)_{eq}} = \frac{L}{60}$$

$$\sigma_f = \frac{P L}{(8) b t c}$$

1.) FACE YIELDING (UNIFORMLY LOADED) 10PF

$$P \cong \sigma_{yf} \cdot (8) b t c$$

$$L = \left(\frac{\sigma_{yf} \cdot 8 b t c}{w} \right)^{1/2} = \left(\frac{(19 \text{ ksi}) (8) (0.024) (3")}{1.67 \text{ k/ft}} \right)^{1/2} = 396" = 33 \text{ ft}$$

3105-H25 ALLOY
 $E_t = 19 \text{ ksi}$

3/104

Job Title **COMPOSITE PANEL DESIGN.**
 Sample

2.) FACE WRINKLING

$$P \geq \frac{86 t_c}{d^2} \times 3 \left[\frac{E_f E_c^{*2}}{12(3-v_c^{*2})(1+v_c^{*2})^2} \right]^{1/3}$$

$\sqrt{2v_c^{*2}} = 0.168$
 ASSUME $\sqrt{1+v_c^{*2}} = 0.086$

$$P \geq \frac{(8)6 t_c}{d^2} \times 0.57 \left[E_f E_s^2 \left(\frac{E_c^*}{E_s} \right)^4 \right]^{1/3}$$

$E_c^* = E_s \left(\frac{E_c^*}{E_s} \right)^2$

- $I_s = 1050 \text{ kg/m}^3$
 $= 66 \text{ pcf}$
- $E_c = 721 \text{ ksi}$
- $E_f = 10,100 \text{ ksi}$
- $E_c^* = 1 \text{ pcf}$
- $E_s = 66 \text{ pcf}$
- $E_{c1}^* = 220 \text{ psi}$
- $E_{c2}^* = 500 \text{ psi}$
- $G_{c1}^* = 320 \text{ psi}$
- $G_{c2}^* = 640 \text{ psi}$

24" x 0.024" PANELS (1")

$$d = \left[\frac{86 t_c}{w} \times 3 \left[\frac{E_f E_c^{*2}}{12(3-v_c^{*2})(1+v_c^{*2})^2} \right]^{1/3} \right]^{1/2}$$

$$= \left[\frac{8(24)(0.024)(3)}{(1.67 \text{ pcf})} \times 3 \left[\frac{(10,100,000)(22)^2}{12(3-0.086)^2(1+0.096)^2} \right]^{1/3} \right]^{1/2}$$

$t = 10 \text{ pcf}$

$$= 199 \text{ in.}$$

$$= \underline{\underline{16.6 \text{ ft}}}$$

F.S. = $\frac{1.6 \text{ X LOAD}}{0.85 \times 1.1} = \underline{\underline{1.7}}$ for FACE WRINKLING
 secondary member

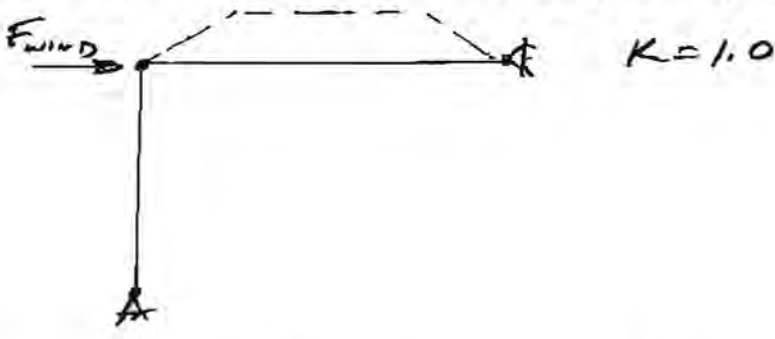
F.S. = $\frac{1.6 \text{ X LOAD}}{(0.95) \times (M)} \leq 1.0 = \underline{\underline{1.6}}$ FOR FACE YIELDING.
 secondary member

3/125

Job Title **ROOF BEAM DESIGN**

COLUMN DESIGN

COMBINED AXIAL LOAD & BENDING OF ROOF BEAMS.



Eq. 4.1.1.3 $\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} + \frac{f_{by}}{F_{by}} \leq 1.0$ if $\frac{f_a}{F_a} \leq 0.15$

$F_{WIND} \approx \left(\frac{ht. \text{ OF ROOF}}{2} \right) \left(\frac{\text{Beam TO BEAM SPACING}}{\text{Beam TO BEAM SPACING}} \right) (\text{WIND PRESSURE})$

if $h = 10ft$

b-b spacing = 6' o.c

$p = 1.6 \times (12psf \text{ to } 26psf)$

$F_{WIND} \approx 576\# \text{ to } 1.2\#$

$f_a \leq 0.77 \text{ ksi to } 1.6 \text{ ksi (24 SMD)}$
 $0.19 \text{ ksi to } 6.4 \text{ ksi (2x10 SMD)}$

$F_a = \phi F_c$ SECTION 3.4.7 ADM

$\lambda = \left(\frac{KL}{r} \right) \left(\frac{1}{\pi} \right) \sqrt{F_{cy}/E}$

3/1/06

2x4 SMB

$$\lambda = \left(\frac{kL}{r_x} \right) \left(\frac{1}{\pi} \right) \sqrt{F_{cy}/E}$$

$F_{cy} = 25 \text{ ksi}$

$E = 10,100 \text{ ksi}$

$k = 1.0$

$r_x = 1.58$

$L = 9.5 \text{ ft to } 12.5 \text{ ft}$

TABLE 3.3-4 AISC

$$B_c = F_{cy} \left[1 + \left(\frac{F_{cy}}{2550} \right)^{1/2} \right]$$

$B_c = \underline{27.64 \text{ ksi}}$

$$D_c = \frac{B_c}{10} \left(\frac{B_c}{E} \right)^{1/2} = 0.145$$

$C_c = 0.41$

$\frac{B_c}{D_c} = \underline{78.4}$

$$D_c^* = \pi D_c \sqrt{E/F_{cy}} = 9.13$$

$$S_1^* = \frac{B_c - F_{cy}}{D_c^*} = \frac{27.64 - 25}{9.13} = \underline{0.29}$$

$$S_2^* = \frac{C_c}{\pi} \sqrt{F_{cy}/E} = \underline{1.24}$$

$\lambda \geq 1.2$

$\phi_{cc} = 0.14\lambda + 0.58 \leq 0.95$

$$\lambda = \left(\frac{1.0 \times 12 \times 12}{1.58} \right) \left(\frac{1}{\pi} \right) \sqrt{F_{cy}/E} = 1.44$$

$\phi_{cc} = 0.78$

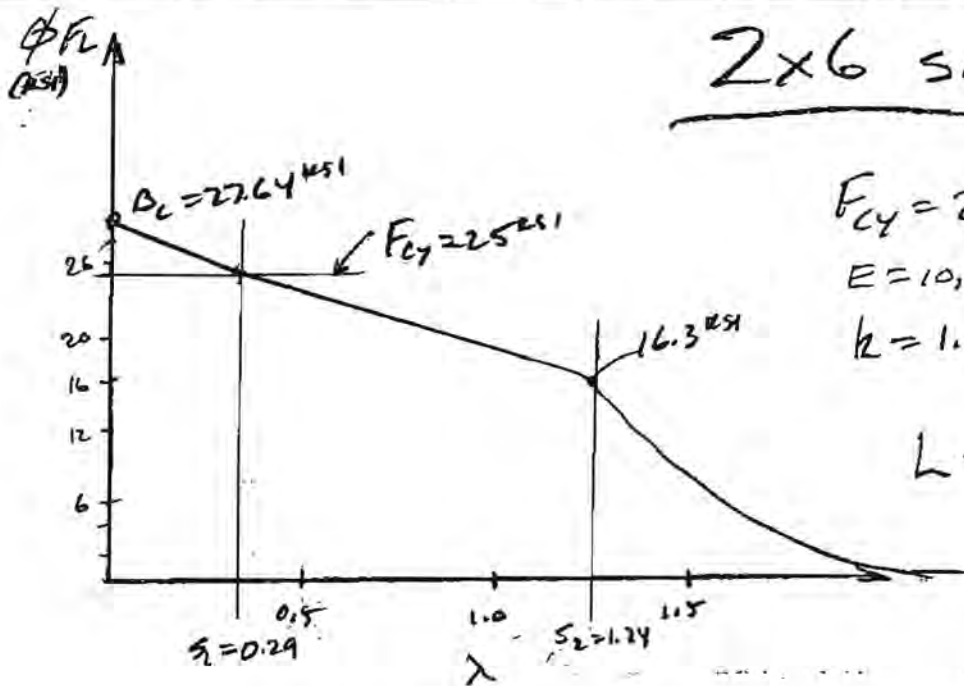
$\lambda > S_2$

$$\phi_{F_c} = \left(\phi_{cc} / \lambda^2 \right) F_{cy} = \left(\frac{0.78}{1.44^2} \right) 25 = 9.4 \text{ ksi}$$

$$\frac{f_u}{F_u} = \frac{f_n}{\phi_{F_c}} = \frac{1.6 \text{ ksi}}{9.4 \text{ ksi}} \approx 0.15 \leq 0.15 \text{ (WORST CASE)} \quad \underline{OK}$$

3/12/7

Job No.	Sheet No. 2	Rev.
Member-Location		
Job Title		
Drg. Ref.		
Made by	Date	Chd.



2x6 SMB

$F_{cy} = 25 \text{ KSI}$ $r_x = 2.32$
 $E = 10,100 \text{ KSI}$ $r_y = 0.81$
 $k = 1.0$ $\frac{r_x}{r_y} \approx 3$
 $L = 13.5' \text{ to } 18.6'$

COLUMN CURVE FOR 6063-T6 ALLOY

$B_c = 27.64 \text{ KSI}$
 $D_c = 0.145$
 $D_c^* = 9.13$
 $S_1 = 0.29$
 $S_2 = 1.24$

$$\lambda_{13} = \left(\frac{1.0 \times 13' \times 12^4 / 1}{2.32} \right) \frac{1}{\pi} \sqrt{25 / 10,100}$$

$\lambda_{13} = 1.06$ $\phi_{cc} = 0.78$

$\phi_{FL} = \phi_{cc} [B_c - D_c^* \lambda]$ Eq. 3.4.7-2

$\phi_{FL} = 14 \text{ KSI}$

$f_{allow} = \frac{0.2K}{1.07} \approx 2 \text{ KSI}$ @ 13' BEAM SPAN & 10' O.C.
Beam-Beam Spacing.

$\frac{f_c}{\phi_{FL}} = \frac{2}{14} \approx 0.14 \leq 0.15 \text{ OK}$

$\lambda_{18} = 1.48 > S_2$ $\phi_{cc} = 0.14\lambda + 0.58 = 0.79$

$\phi_{FL} = (\phi_{cc} / \lambda^2) F_{cy} = 9 \text{ KSI}$

@ 18' BEAM SPAN & 5' O.C. Beam-Beam Spacing

$f_{allow} = \frac{1K}{1.07} \approx 1 \text{ KSI}$ $\frac{f_c}{\phi_{FL}} = \frac{1}{9} \approx 0.11 \leq 0.15 \text{ OK}$

3/128

DO KIM & ASSO' ATEs, LLC

CONSULTING STRUCTURAL ENGINEERS
 3300 HENDERSON BLVD., SUITE 106
 TAMPA, FL 33609

Job No.

Sheet No. **4**

Rev.

Member-Location

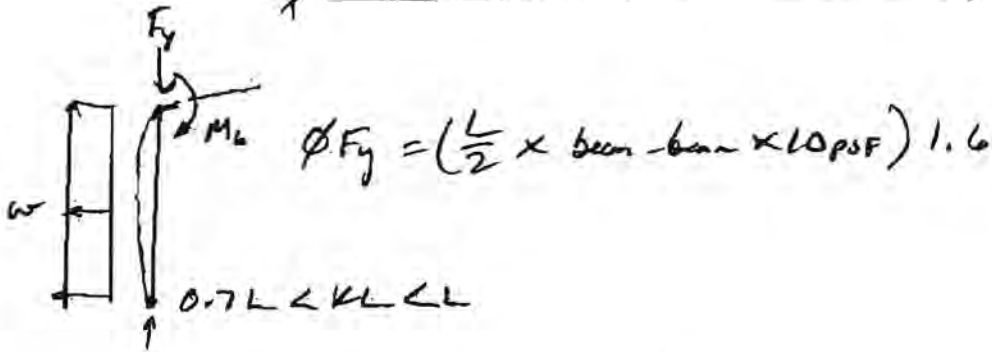
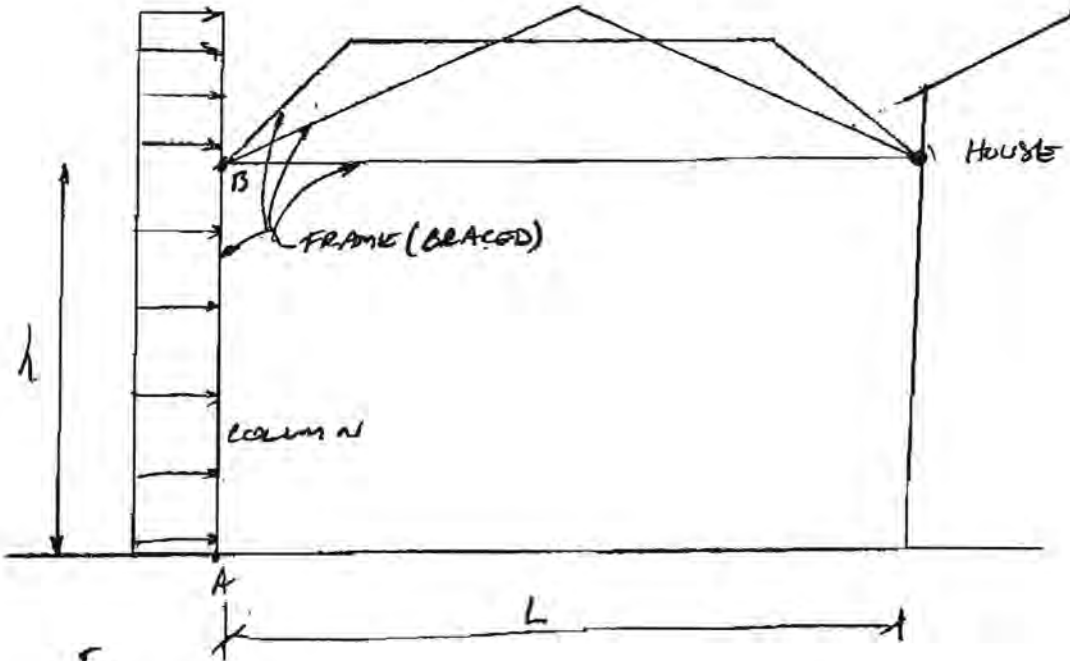
Job Title

Org. Ref.

Made by *BYE*

Date

Chd.



FOR FLAT or DOME ROOFS; $K \approx 1.0$

FOR GABLE or MANSARD ROOFS; $K \approx 1.0$

$$G_A = \infty$$

$$G_B \leq \infty$$

Alignment Charts FOR SIDESWAY PREVENTED

$$K \leq 1.0 \text{ USE } \underline{1.0}$$

3/129

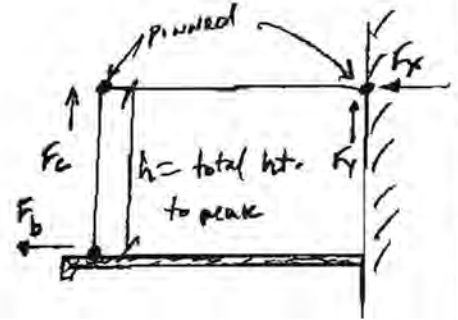
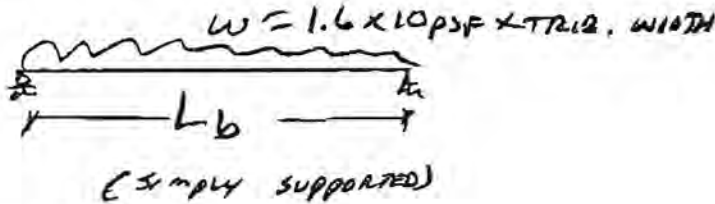
Member-Location

Job Title ROOF BEAM DESIGN (FLAT)

Org. Ref.

Made by DKM Date 4-3-06 Chd.

FLAT & DOME ROOF BEAMS



BEAM DESIGN

$$M_{max} = \phi F_L \times S_x$$

$$\phi F_L \times S_x = \frac{w L_b^2}{8} = \frac{[(16 \text{ psf}) (\text{beam-beam spacing})] \times L_b^2}{8}$$

$$L_b = \sqrt{\frac{(\phi F_L) (S_x) 8}{(16 \text{ psf}) (B-B)}}$$

$$L_b (\text{ft}) = \frac{\sqrt{(\phi F_L) (S_x) (8)}}{\sqrt{(LL) (B-B \times 12) (\frac{1}{164})}}$$

12

CONNECTIONS

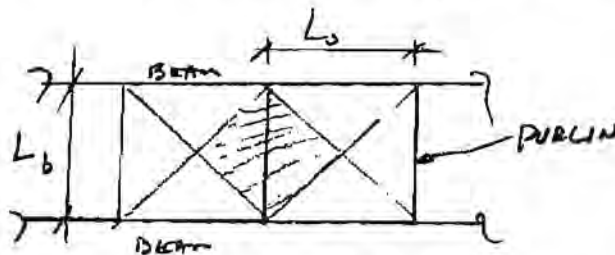
$$F_c = F_y = \frac{1}{2} w L_b$$

$$F_x = F_b = \frac{1}{2} (B-B) (h) \text{ (Load Case B - non Ankle roof - TABLE 2002.4 FBC)}$$

Screen Roofs

TABLE 2002.4 (FBC) (SEE SPREAD SHEET TABLES)

ALL ROOF PRESSURES FOR ALL EXPOSURES \equiv USE 10 psf



SCREEN MESH IS SUPPORTED ON ALL 4 SIDES. TRIBUTARY AREA CAN BE ASSUMED TO BE HATCHED AREA, $= L_b \times \frac{L_s}{2}$

$L_r = 10 \text{ psf}$ $1.2D + 1.6L_r$ ← WORST CASE

$L_w = 10 \text{ psf}$ $0.9D + 1.6W$

ASSUME $L_b = 10' = L_s$

$LOAD = 1.2(0.51 \text{ psf}) + 1.6(10 \text{ psf} \times \frac{10}{2})^2$

$= 0.612 \text{ psf} + 80 \text{ psf}$

$= 80 \text{ psf}$

$2 \times 2 \times 0.044''$

$A = 0.43 \text{ in}^2$

$I_x = 0.24 \text{ in}^4$

$S_x = 0.23 \text{ in}^3$

$M_{max} = \frac{wL^2}{8} = \frac{(80 \text{ psf})(10')^2}{8} = 1000 \text{ lb-ft}$

$\phi F_L = \frac{M_{max}}{S}$

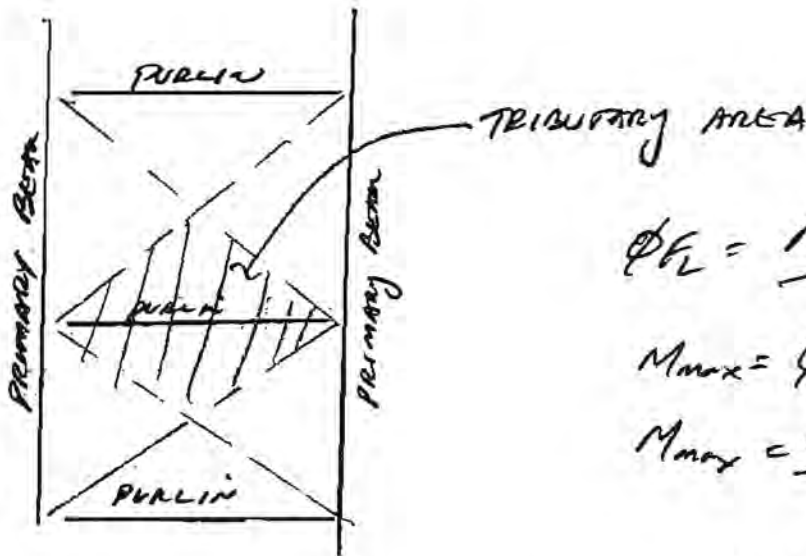
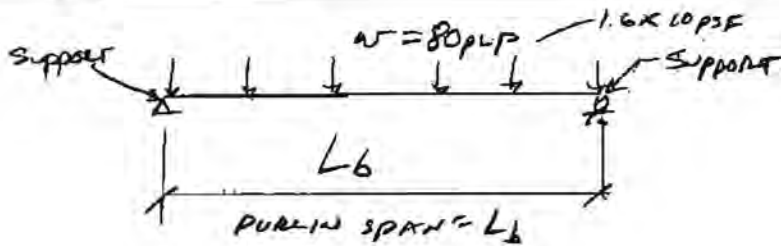
3/13/06

Member-Location

Job Title PURLIN DESIGN

Org. Ref.

Made by DJA Date 3-26-06 Chd.



$$\phi F_L = \frac{M_{max}}{S}$$

$$M_{max} = \phi F_L \times S$$

$$M_{max} = \frac{wL^2}{8} = \frac{[(16 \text{ psf}) (\frac{L_5}{2})] \times L_6^2}{8}$$

$$= 22.75 \text{ ksi} \times 0.23 \text{ in}^3$$

(SEE SPREADSHEET) Given $L_6 \rightarrow$ Solve for L_5 (purlin center-center spacing)

$$L_6 = 10'$$

$$L_5 = \frac{(22.75 \text{ ksi} \times 1000) \times (0.23 \text{ in}^3) \times 8 \times 2}{(16 \text{ psf} \times \frac{1562}{144 \text{ in}^2}) \times (10' - 12\%)^2}$$

$$= 52.3" = 4.36 \text{ ft} \checkmark$$

3/132

PURLIN DESIGN

Member-Location

Job Title SCREEN ENCLOSURE

Org. Ref.

Made by

Date

Chd.

$$\Delta_{max} \leq \frac{L_b}{60} = \frac{5wL_b^4}{384EI_x} \quad (\text{simply supported, uniformly loaded beam})$$

$$\frac{L_b}{60} = \frac{5 \left[\frac{L_s}{2} \times \frac{10 \text{ psf}}{12} \right] L_b^4}{384 (10,100,000) (0.24)} \quad w = \text{Service Load} = 10 \text{ psf}$$

$$L_s = \frac{7446528}{L_b^3 (w)} \quad \leftarrow \text{input into spreadsheet}$$

$$\text{if } L_b = 10' \quad \frac{L_b}{60} = \frac{10 \times 12}{60} = 2''$$

$$\Delta_{max} = \frac{5 \left(\frac{L_s}{2} \times 10 \text{ psf} \right) L_b^4}{384 (10,100,000) (0.24)} \quad \text{if } L_s = 4.36 \text{ ft}$$

$$= \frac{5 \left(\frac{4.36}{2} \times 10 \frac{\text{ft}}{12} \right) (10' \times 12)^4}{384 (10,100,000) (0.24)}$$

$$= \underline{\underline{2.02''}} \approx 2'' \text{ MAX } \underline{\underline{OK}}$$

Job No.	Sheet No. 3	Rev.
Member-Location		
Drg. Ref.		
Made by	Date	Chd.

Job Title *Purkin Design*

$2 \times 3 \times 0.045"$ $2 \times 3 \times 0.055"$

$t_1 = t_2 = 0.045$

$A = 0.520 \text{ in}^2$

$I_x = 0.624 \text{ in}^4$

$I_y = 0.036 \text{ in}^4$

$S_x = 0.416 \text{ in}^3$

$r_y = 0.830$

$J = \frac{2(1.955)^2(2.955)^2(0.045)(0.045)}{(1.955)(0.045) + (1.955)(0.045)} = 0.77 \text{ in}^4$

$S_x = \frac{0.624}{1.5"} = 0.416 \text{ in}^3$

Design Stress: $L_b = 10'$

$= 23.5 - 0.196 \sqrt{\frac{L_b S_x}{0.5 \sqrt{I_x J}}}$

$= 18.7 \text{ ksi @ } L_b = 10'$

$= 20.1 \text{ ksi @ } L_b = 5'$

3/13/94

DO KIM & ASSO'ATES, LLC

CONSULTING STRUCTURAL ENGINEERS

3300 HENDERSON BLVD., SUITE 106

TAMPA, FL 33609

Job No.

Sheet No. 7

Rev.

Member-Location

Job Title GIRT DESIGN

Drg. Ref.

Made by

Date

Chd.

2x4 x 0.050

$$t_1 = t_2 = 0.050$$

$$A = 0.678 \text{ in}^2$$

$$I_x = 1.045 \text{ in}^4$$

$$I_y = 0.49 \text{ in}^4$$

$$S_x = 0.649$$

$$S_y = 0.848$$

$$J = 1.00 \text{ in}^4$$

$$S_y = \sqrt{I_y/A}$$

$$S_c = \frac{1.045}{2} = 0.5225 \text{ in}^3$$

$$= 23.5 - 0.196 \sqrt{\frac{L_b S_c}{0.575 S_y}}$$

$$= 20.9 \text{ ksi} @ L_b = 10'$$

$$= 21.6 \text{ ksi} @ L_b = 5'$$

GIRT (CHAIR RAIL) DESIGN IS SIMILAR EXCEPT FOR
WIND LOADS DIFFER W/ REGION (BASIS: WIND SPEED)

3/13/15

ALLOY 6063-T6

$F_{tu} = 30$ ksi	$F_{tu} = 17$ ksi
$F_{ty} = 25$ ksi	$F_{ty} = 8$ ksi
$F_{cy} = 25$ ksi	$F_{cy} = 8$ ksi
$F_{tu} = 19$ ksi	$F_{tu} = 11$ ksi
$F_{ty} = 14$ ksi	$k_f = 1.00$
$E = 10,100$ ksi	

Specification	Design Stress (ksi)	
3.4.1	24	Gross Area
	26	Net Area
3.4.2	24.0	Tubes 24.0
3.4.3	28.0	
3.4.4	31.0	
3.4.5	51	
3.4.6	34	

	Design Stress (ksi), Slenderness $< S_1$	S_1	Design Stress (ksi), $S_1 < \text{Slenderness} < S_2$	S_2	Design Stress (ksi), Slenderness $> S_2$
3.4.8	24	3.6	$26.7 - 0.760 (h/t)$	12	$210/(h/t)$
3.4.8.1	24	3.6	$26.7 - 0.760 (h/t)$	15	$3,300/(h/t)^2$
3.4.9	24	11	$26.7 - 0.240 (h/t)$	39	$680/(h/t)$
3.4.9.2	24	0	$23.5 - 0.123 \lambda_c$	78	$85,000/\lambda_c^2$
3.4.10	24	5.2	$25.9 - 0.830 \sqrt{R/t}$	(1)	$5,000 / \left[(R/t) \left(1 + \frac{\sqrt{R/t}}{35} \right)^2 \right]$
3.4.11	24.0	0	$23.5 - 0.102 (L_n/r_c)$	94	$122,000/(L_n/r_c)^2$
3.4.12	28.0	21	$38.8 - 2.38 \sqrt{R/t}$	70	See 3.4.10
3.4.13	31.0	11	$39.2 - 0.750 \left(\frac{d}{t} \sqrt{\frac{L_n}{d}} \right)$	35	$16,000 / [(d/t)^2 (L_n/d)]$
3.4.14	24.0	0	$23.5 - 0.196 \sqrt{\frac{L_n S_1}{0.5 \sqrt{I_p}}}$	2,380	$33,000 / (L_n S_1 / 0.5 \sqrt{I_p})$
3.4.15	24.0	3.6	$26.7 - 0.760 (h/t)$	12	$210/(h/t)$
3.4.16	24.0	11	$26.7 - 0.240 (h/t)$	39	$680/(h/t)$
3.4.16.1	28.0	0	$25.9 - 0.830 \sqrt{R/t}$	(1)	$5,300 / \left[(R/t) \left(1 + \frac{\sqrt{R/t}}{35} \right)^2 \right]$
3.4.16.3	24.0	0	$23.5 - 0.123 \lambda_c$	78	$85,000/\lambda_c^2$
3.4.17	31.0	7.3	$39.2 - 1.13 (h/t)$	23	$6,900/(h/t)^2$
3.4.18	31.0	37	$39.2 - 0.220 (h/t)$	90	$1,770/(h/t)$
3.4.19	31.0	87	$39.2 - 0.094 (h/t)$	208	$4,100/(h/t)$
3.4.20	13.5	28	$15.8 - 0.083 (h/t)$	(1)	$51,000/(h/t)^2$
3.4.21	13.5	72	$21.7 - 0.114 (a_e/t)$	(1)	$70,000/(a_e/t)^2$

Compression
Buckling
in plates

Note

(1) Use the lesser of the design stresses for (a) slenderness between S_1 and S_2 , and (b) slenderness greater than S_2 .

APPE Other Design

The Aluminum only design of the other standard the Aluminum design pressure vessels. The designations are based on some part authors thought

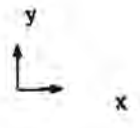
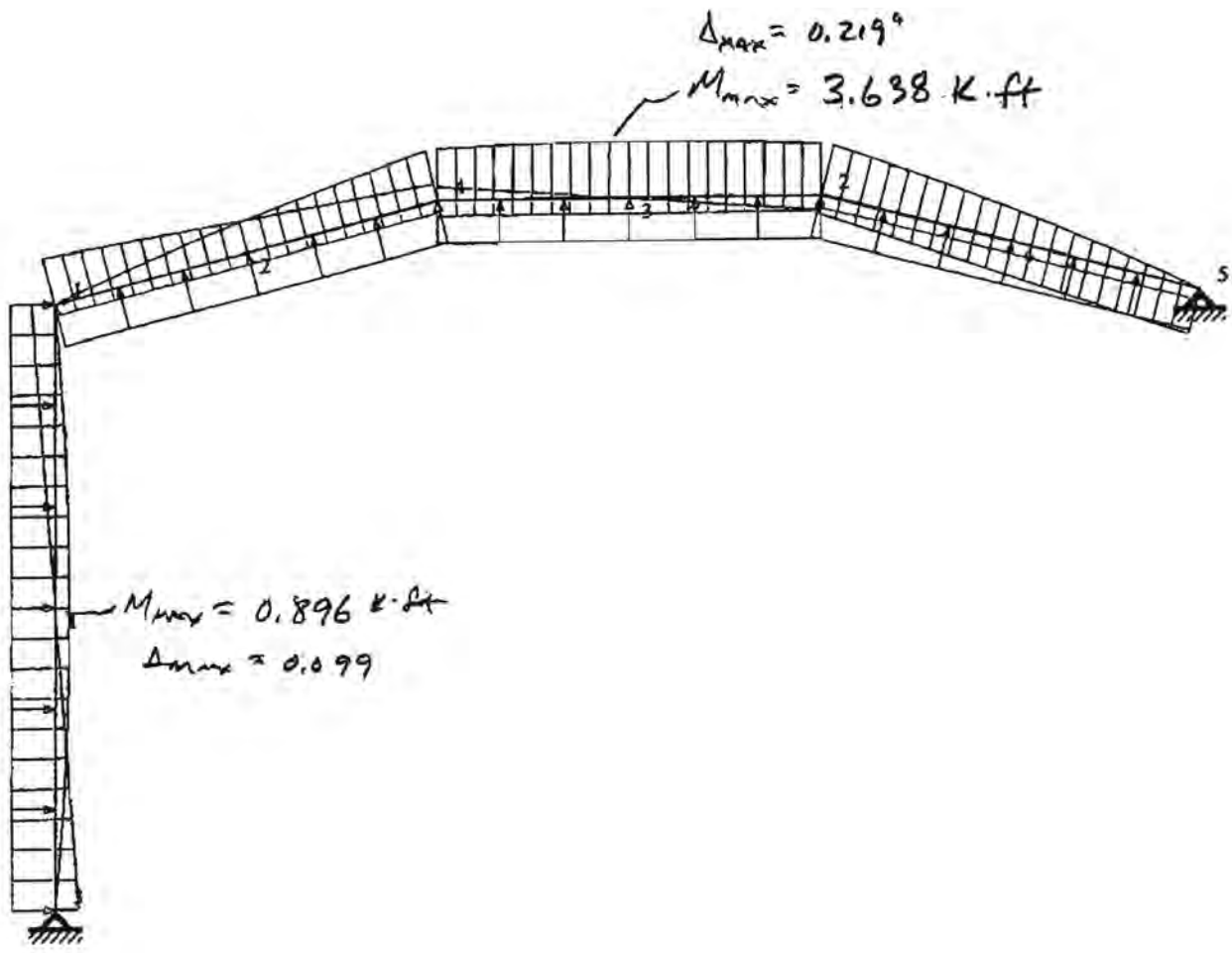
J.1 GENE

J.1.1 Intert

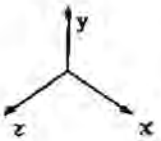
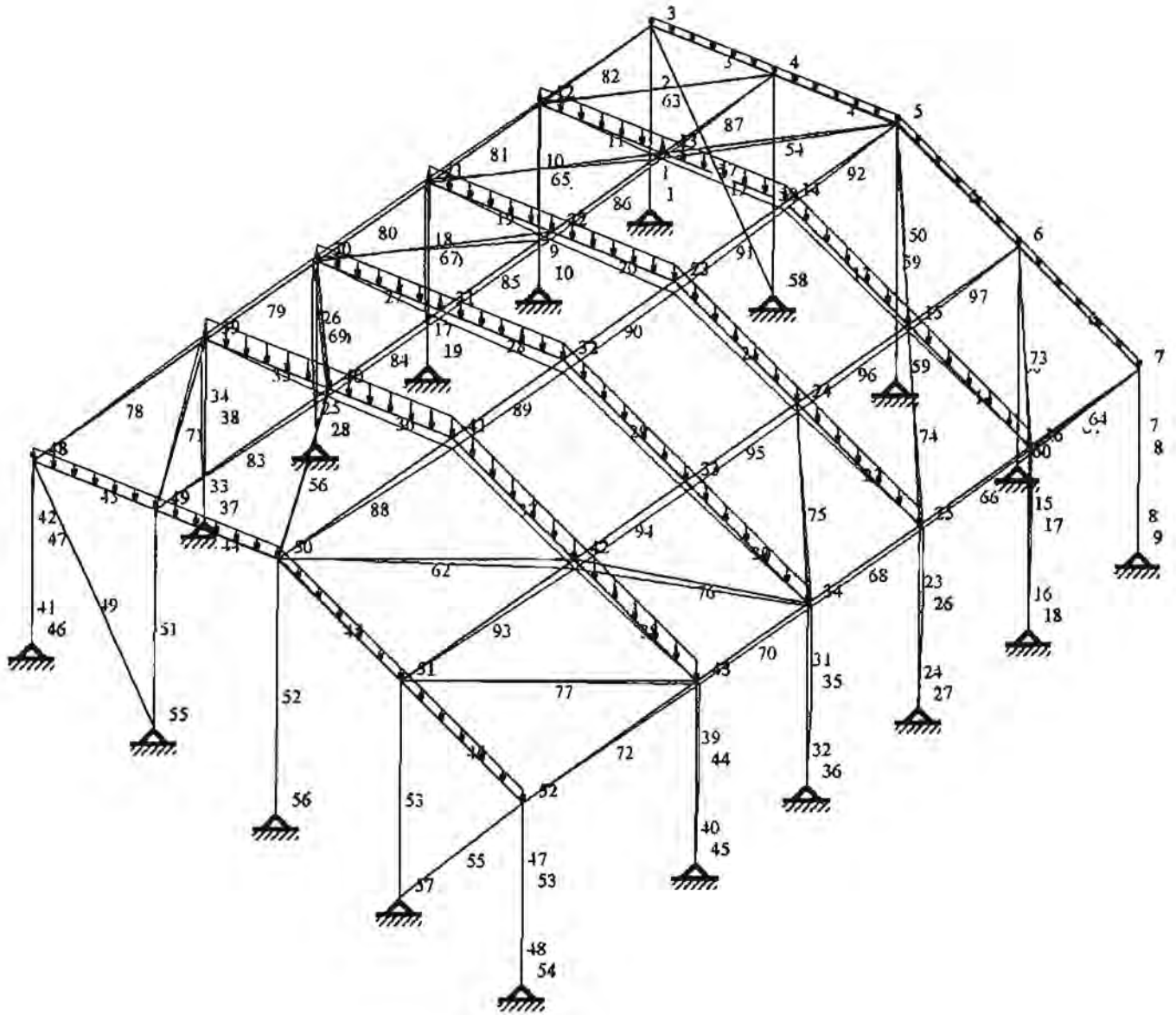
While the A used in the I inclusive, but Australia: AS 1664, AL cation with th Canada: (LRF D specif lished in 198 been drafted United Ki Part I, Code Europe: E (102) is a lin the European the French na isation.) CEN

3/136

Thrust Force
Bending Moment
Shear Force
Deflection



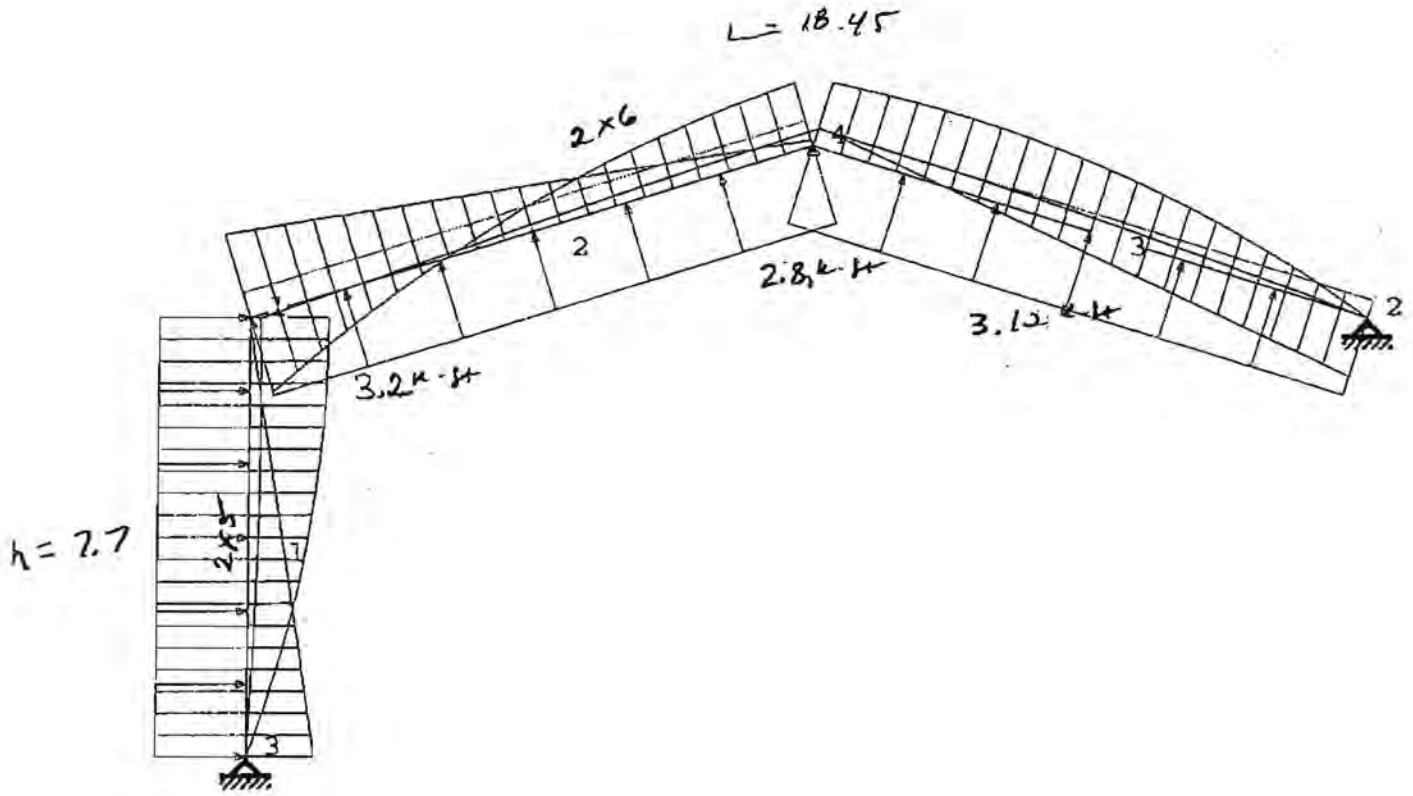
3/137



3/138

Axial Force
Shear Force
Bending Moment
Torsion
Deflection

12 ft
6' o.c



3/139

Axial Force
 Shear Force
 Bending Moment
 Torsion
 Deflection

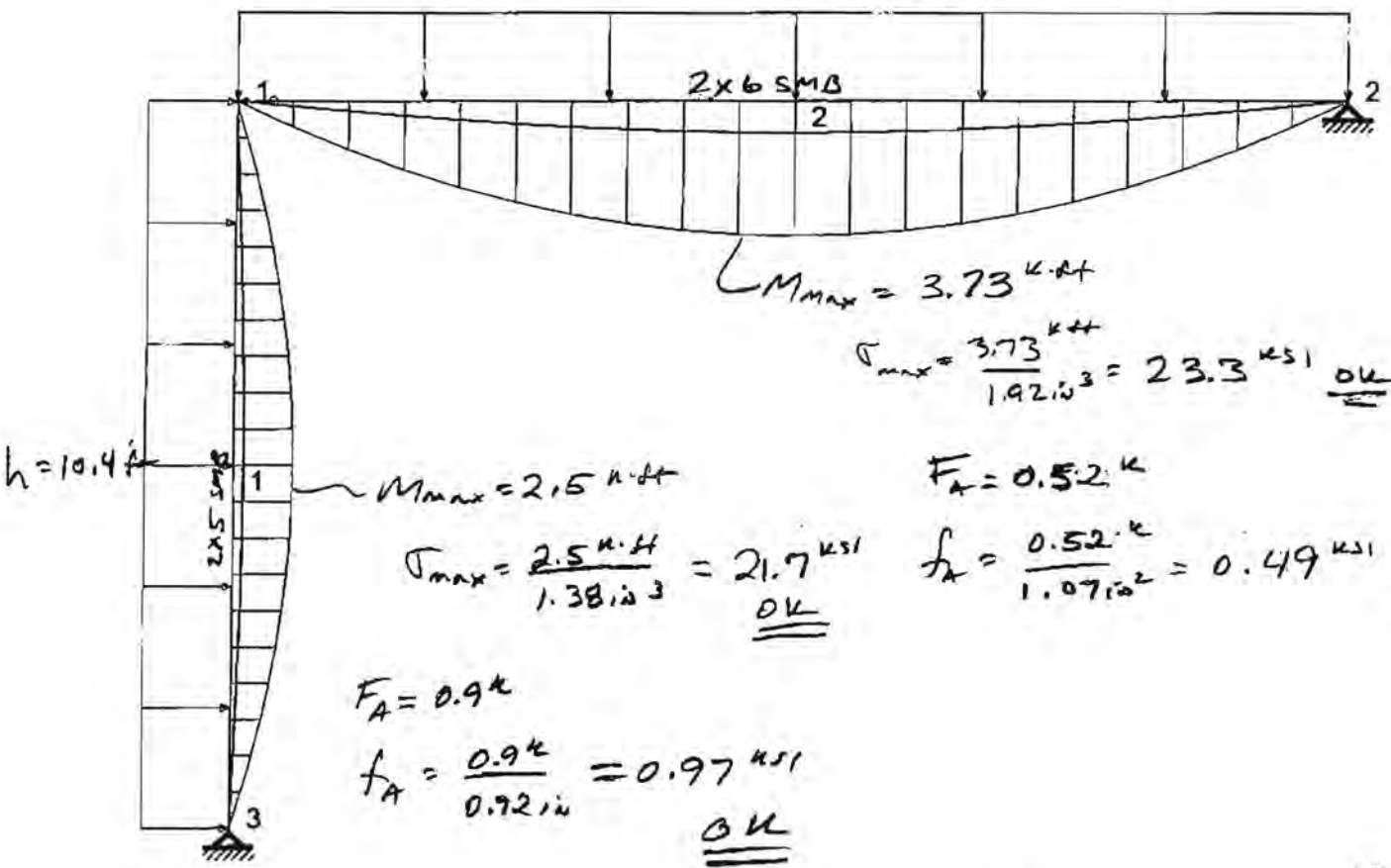
T-147 / 10M12 ROOF SYSTEM & COLUMNS SYSTEM DESIGN

$W = 120 \text{ mph}$

Exp. B

Beam-Beam = 6' o.c.

$L = 16.33 \text{ ft}$



$M_{max} = 3.73 \text{ k-ft}$

$\sigma_{max} = \frac{3.73 \text{ k-ft}}{1.92 \text{ in}^3} = 23.3 \text{ ksi} \quad \underline{\underline{OK}}$

$F_A = 0.52 \text{ k}$

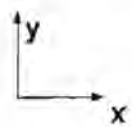
$f_A = \frac{0.52 \text{ k}}{1.07 \text{ in}^2} = 0.49 \text{ ksi} \quad \underline{\underline{OK}}$

$M_{max} = 2.5 \text{ k-ft}$

$\sigma_{max} = \frac{2.5 \text{ k-ft}}{1.38 \text{ in}^3} = 21.7 \text{ ksi} \quad \underline{\underline{OK}}$

$F_A = 0.9 \text{ k}$

$f_A = \frac{0.9 \text{ k}}{0.92 \text{ in}^2} = 0.97 \text{ ksi} \quad \underline{\underline{OK}}$



Job Title CONNECTION CALC.

C-1022 Steel SMS OR TEN SCREWS

C-1022 screws

$F_u = 72 \text{ ksi}$
 $F_y = 43 \text{ ksi}$

} BASED ON MANUFACTURER'S TEST REPORT

Root Area = $A_r = 0.7854 \left(\frac{0.9743}{n} \right)^2$

USE OF steel screws

$n = \# \text{ of threads/in.}$

#6	$\frac{1}{20}$	$\frac{1}{20}$
#8	18	18
#10	14	18
#12	14	18
#14 (1/4")	14	14
	↑ SMS.	↑ TEN

1.) SHEAR #12 SMS OR TEN

$\phi P_n = 0.5 P_{t2} = 0.5 (0.6 \times 72 \text{ ksi}) = \underline{\underline{21.6 \text{ ksi}}}$

2.) BEARING STRENGTH $\phi P_n = \phi_{sc} P_{t2}$

Eq. 5.7.1.1-2

a) $P_{bs1} = 2 F_{tu1} D t_1 \frac{\phi_u}{\phi_{sc}} = 2(30)(0.216)(0.05) \frac{(0.85)}{(0.5)}$

OR

b) $P_{bs2} = 2 F_{tu2} D t_2 \frac{K_u}{\phi_{sc}} = 2(31)(0.216)(0.187) \frac{(0.85)}{0.5} = 4.3 \text{ kips}$

$\frac{t_2}{t_1} \geq 1.0$ (CYP. NO SCREW TILTING)

c.) $\phi F_t = 2 \phi_u F_{tu} = 2(0.85)(72 \text{ ksi}) = 122 \text{ ksi} \Rightarrow 2.5 \text{ kips}$

USE n=18 FOR ALL

LESSER OF THREE

3/14

$$P_{ns} = \min \text{ of } \frac{P_{ss}}{1.25}, P_{bs}, P_{\text{existing}} \rightarrow \phi$$

$$P_{ss} = \overbrace{0.6 \times F_u}^{0.6 \times F_u = F_u} \times 0.021 \text{ in}^2 = 907 \# \leftarrow \text{USE THIS AS } P_{ns}$$

OR

$$P_{bs} = 1100 \#$$

SHEAR STRENGTH CONTROLS

$$\phi P_{ns} = \phi_{sc} P_{ns} = (0.5)(907 \#) = 454 \# / \#10 \text{ TER (24-DRAWING SCREEN)}$$

$$= 648 \# / \#4 \text{ TER SCREEN}$$

$$\phi P_{ns} = \phi_{sc} (0.6) F_u \leftarrow \text{CONTROLS}$$

$$\phi P_{ns} = (0.5)(0.6)(72451) \times A_n$$

CHECK BLOCK SHEAR

Job Title SCREW PULL-OUT CALCS

	DIA.	P_{not}	P_{nuv}
#8	0.156"	150	
#10	0.188"	180	
#12	0.219"	210	
#14	0.25"	240	

$0.038 \leq t_c \leq 2t_n$ $t_c = 6063-T6$ ALLOY
 $F_{ty} = 25^{ksi}$ $F_{tu} = 30^{ksi}$
 $\phi P_{nt} = \phi_{sc} P_{nt}$
 $\phi_{sc} = 0.50$
 $K_s = 1.01$
 $P_{nt} = P_{not}$ or P_{nuv}

PULL-OUT FORCE

$$P_{not} = K_s D t_c F_{ty}^2$$

$$= (1.01)(0.156)(0.045)(25^{ksi})^2$$

$$= 1777 \# \text{ \#8 SCREW}$$

$t_c = 0.045"$ (THK. OF EXTRUSION WALL)

F_{ty}^2 OF 3105-H25 ALLOY = 15 ksi

PULL-OVER (PAN)

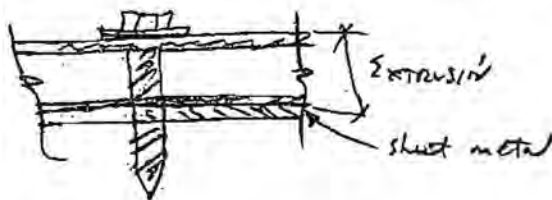
$$P_{nuv} = C t_1 F_{tu} (D_{ws} - D_h)$$

$$= (1.0)(23)(0.384 - 0.156)$$

$$= 136 \# \text{ \#8 SCREW}$$

$C = 1.0$
 #8 $D_{ws} = 0.384" \leq 0.5"$
 #10 $D_{ws} = 0.384"$
 #12 $D_{ws} = 0.40"$
 #14 $D_{ws} = 0.48"$
 3105-H25 ALLOY
 $F_{tu} = 23^{ksi}$
 $t_1 = 0.045"$
 (THK. OF EXTRUSION)

PULL-OVER (SCREW HEAD TO EXTRUSION TO EXTRUSION)



3/143

(TYP.) WOOD FRAME CONSTRUCTION.

ASSUME SPF LUMBER $G = 0.42$ (WORST CASE)

(USE NDS, TABLE 9.2A)

SPF

$$G = 0.42$$

$$\text{WITHDRAWAL CAPACITY} = 173 \frac{\#}{\text{in}} \times 1 \frac{1}{2} \text{in} = 260 \frac{\#}{\text{screw}} = F_L$$

\swarrow $\frac{1}{4}$ " ϕ SCREW / $\frac{3}{8}$ " ϕ SCREW = 235 $\frac{\#}{\text{in}}$

$$C_D = 1.6 \text{ (WIND LOAD)}$$

$$F_L' = F_L \times C_D = 260 \frac{\#}{\text{screw}} \times 1.60 = 415 \frac{\#}{\text{screw}}$$

415 $\frac{\#}{\text{screw}}$ \Rightarrow PULL-OVER CAPACITY OF SCREW

W/ $\frac{3}{4}$ " ϕ WASHER

\therefore PULL-OVER CONTROLS.

3/14/06

	I	J	K	L	M	N	O	P	Q
4									
5									
6		Standard AAF SMB Sections							
7									
8			b	d	t _w	t _f			
9		S2X4	2	4	0.046	0.100			
10		S2X5	2	5	0.050	0.116			
11		S2X6	2	6	0.050	0.120			
12		S2X7	2	7	0.055	0.120			
13		S2X8	2	8	0.072	0.224			
14		S2X9	2	9	0.072	0.244			
15		S2X9T	2	9	0.082	0.306			
16		S2X10	2	10	0.092	0.374			
17									
18									
19									
20									
21									
22		Formulas for a Rectangular Tube							
23		Total Area (A) = b * d - (b - 2t _w)(d - 2t _f)							
24		Web Area (A _w) = 2t _w (d - 2t _f)							
25		Flange Area (A _f) = 2t _f * b							
26									
27									
28		Torsional Constant (J) = $\frac{2t_f * t_w (b - t_w)^2 * (d - t_f)^2}{bt_w + dt_f - t_w^2 - t_f^2}$							
29									
30									
31									
32		Moment of Inertia I _x = $\frac{bd^3 - (b - 2t_w)(d - 2t_f)^3}{12}$							
33		Section Modulus S _x = I _x / (d / 2)							
34		Radius of Gyration r _x = (I _x / A) ^{0.5}							
35									
36									
37		Moment of Inertia I _y = $\frac{db^3 - (b - 2t_w)^3(d - 2t_f)}{12}$							
38		Section Modulus S _y = I _y / (d / 2)							
39		Radius of Gyration r _y = (I _y / A) ^{0.5}							
40									
41									
42									
43		Formula for open Channel							
44									
45		C ₁ = $\frac{t_f * b_c^2 + (d_c - t_f) * t_w^2}{2 * (t_f * b_c + ((d_c - t_f) * t_w)}$							
46									
47		C ₂ = b _c - C ₁							
48									
49		I _{yc} = $\frac{d_c * C_1^3 - (d_c - t_f) * (C_1 - t_w)^3 + t_f * C_2^3}{3}$							
50									
51									
52		r _{yc} = $\sqrt{\frac{I}{(d_c * t_w) + t_f(b_c - t_w)}}$							
53									
54		A _{yc} = (d _c * b _c) - (d _c - t _f) * (b _c - t _w)							
55									
56									
57									

3/145

	A	B	C	D	E	F	
1		If Using Analytic Calculation for Stitched Idealized SMB					
2							
3		ADM 2005 Manual,					
4		Select SMB Section					
5				S2X10			
6		Purling spacing - Defines the un-braced Beam length		84.000	in		
7		Un-braced Column height - (Eave height - Chair rail location)		60.000	in		
8							
9		SMB as closed section					
10		Width b		2.000	in		
11		Channel Flange Width bc		1.560	in		
12		Channel Flange Width b ₁ used to calculate buckling		1.468	in		
13		Height d		10.000	in		
14		Web Height used for Buckling h = d - 2t _f		9.252	in		
15		Flange Thickness t _f		0.374	in		
16		Web thickness t _w		0.092	in		
17		Total Area (A)		3.198	in ²		
18		Web Area (A _w)		1.702	in ²		
19		Flange Area (A _f)		1.496	in ²		
20		Torsional Constant (J)		6.148	in ⁴		
21		Moment Of Inertia X-Axis I _x		46.816	in ⁴		
22		Section Modulus X-Axis S _x		9.363	in ³		
23		Radius of Gyration X-Axis r _x		3.826	in		
24		Moment Of Inertia Y-Axis I _y		2.049	in ⁴		
25		Section Modulus Y-Axis S _y		2.049	in ³		
26		Radius of Gyration Y-Axis r _y		0.800	in		
27							
28		Open Channel properties - In weak axis					
29		Channel Height d _c		9.813	in		
30		Distance to the center of gravity from Outer Web Edge C ₁		0.341	in		
31		To the other edge C ₂ - (bf - C ₁)		1.219	in		
32		Moment Inertia in weak axis I _{yc}		0.307	in ⁴		
33		Radius of Gyration r _{yc}		0.460	in		
34		Cross section area		1.452	in ²		
35							
36							
37		Axial Compression					
38							
39		Member Buckling					
40		S _x = kL/r _x - k is assumed 1 worst case		21.956			
41		S _y = kL/r _y - k is assumed 1 worst case		74.959			
42		S = kL/r (Larger of x or y axis)		74.959			
43							
44		If S < 78 then F _{cm} = 14.2 - 0.074 * S					
45		If S ≥ 78 then F _{cm} = 51,100/S ²					
46			Actual F _{cm}	8.653			
47							
48		Member Buckling Elastic					
49		F _{ec} = π ² E/(73.8) ² ksi		18.302			
50							
51							
52		Member Buckling between stitch screws					
53		k=0.5, L = Stich spacing					
54		r _{yc} = Minor axis radius of gyration of section half					
55		S = kL/r _{yc} k = 0.5, L = 24		26.098			
56		If S < 78 then F _{cb} = 14.2 - 0.074 * S					

3/148

	A	B	C	D	E	F	
57		if $S \geq 78$ then $F_{cb} = 51,100/S^2$					
58		Actual F_{cb}		12.269			
59							
60		Web Local Buckling 3.4.9					
61		$S = h/t_w$		100.565			
62		if $S \leq 6.7$ Then $F_{crw} \text{ (ksi)} = 15$					
63		if $S > 6.7$ AND < 39 Then $F_{crw} \text{ (ksi)} = 16.1 - 0.144 * S$					
64		if $S \geq 39$ Then $F_{crw} \text{ (ksi)} = 410/S$					
65		Actual F_{crw}		4.077			
66							
67		Web Local Elastic Buckling 4.7.1					
68		$F_{crw} \text{ (ksi)} = \pi^2 * E / (1.6 * S)^2$		3.850			
69							
70		Flange Local Buckling 3.4.8.1					
71		$S = 2 * b_f / t_f$		7.850			
72		if $S \leq 2.1$ Then $F_{crf} \text{ (ksi)} = 15$					
73		if $S > 2.1$ AND < 14 Then $F_{crf} \text{ (ksi)} = 16.1 - 0.458 * S$					
74		if $S \geq 14$ Then $F_{crf} \text{ (ksi)} = 1970/S^2$					
75		Actual F_{crf}		12.505			
76							
77		Flange Local Elastic Buckling ?????					
78		$F_{crf} = \pi^2 * E / (5.1 * S)^2$		62.189			
79							
80		Weighted Average Web / Flange Local Buckling					
81		$F_{ca} = (F_{crw} * A_w + F_{crf} * A_f) / A$		8.019			
82							
83							
84		Interaction Between Local and Member Buckling 4.7.4					
85		The reduced member Buckling allowable stress					
86		$F_{re} = (F_{crw})^{1/3} * (F_{crf})^{2/3} / n_s$, $n_s = 1.95$					
87		$F_{re} =$ Elastic member buckling		8.653			
88		$F_{re} =$ Min. Elastic Local Buckling		3.850			
89		$n_s =$ Structural factor of safety		1.950			
90		if $F_{crf} / n_s < F_{re}$ Then $F_{re} = (F_{crw})^{1/3} * (F_{crf})^{2/3} / n_s$		3.320			
91							
92		Maximum allowed Axial compressive stress		3.320 ksi			
93		Allowable Axial Compression		10.618 k			
94							
95		Major Axis Bending					
96							
97		Tension					
98		Tension 3.4.2					
99		F_{bt}		15.000			
100							
101							
102		Compression					
103							
104		Member Buckling 3.4.14					
105		$S = 2 * L_b * S_x / \text{SQRT}(I_y * J)$ (L_b is Un-braced length)		443.164			
106		if $S \leq 130$ Then $F_{bcx} = 15$ ksi					
107		if $S > 130$ AND < 2400 Then $F_{bcx} = (16.7 - 0.14) * S^{0.5}$					
108		if $S \geq 2400$ Then $F_{bcx} = 23,600/S$					
109		Actual F_{bcx}		13.753			
110							
111		Member Buckling Between Stitch Screws 3.4.11					
112		L_b - Stitch screw spacing (24 inches)					
113		r_{yc} - Minor axis radius of gyration					
114		$S = L_b / r_{yc}$		52.196			

2/14/1

	A	B	C	D	E	F	
115		IF $S \leq 22$ Then $F_{bcw} = 15$ ksi					
116		IF $S > 22$ AND $S < 94$ Then $F_{bcw} = 16.7 - 0.073 * S$					
117		IF $S \geq 94$ Then $F_{bcw} = 87,000/S^2$					
118		Actual F_{bcw}		12.890			
119							
120		Web Local Buckling 3.4.18					
121		$S = h/t_w$		100.565			
122		IF $S \leq 53$ Then $F_{bcw} = 20$ ksi					
123		IF $S > 53$ AND $S < 90$ Then $F_{bcw} = 27.9 - 0.155 * S$					
124		IF $S \geq 90$ Then $F_{bcw} = 1260/S$					
125		Actual F_{bcw}		12.529			
126							
127		Flange Local Buckling 3.4.15					
128		$S = 2b/t_f$		7.850			
129		IF $S \leq 7.2$ Then $F_{bcf} = 15$ ksi					
130		IF $S > 7.2$ AND $S < 12$ Then $F_{bcf} = 19.0 - 0.541 * S$ ksi					
131		IF $S \geq 12$ Then $F_{bcf} = 152/S$ ksi					
132		Actual F_{bcf}		14.753			
133							
134		Weighted Average Web / Flange Local Buckling					
135		$F_{bcra} = (F_{bcf} * A_f + F_{bcw} * A_w/6) / (A_f + A_w/6)$		14.398			
136							
137		Maximum allowed bending stress F_{bx}		12.890	ksi		
138		Maximum allowed Bending Moment $M_{ax} = F_{bx} * S_x$		120.688	K-in		
139							
140							
141		Minor Axis Bending					
142							
143		Tension 3.4.4					
144		F_{ty}		20.000	ksi		
145							
146		Web Local Buckling 3.4.16					
147		$S = h/t_w$		100.565			
148		IF $S \leq 23$ Then $F_{bcyw} = 15$ ksi					
149		IF $S > 23$ AND $S < 39$ Then $F_{bcyw} = 19.0 - 0.170 * S$					
150		IF $S \geq 39$ Then $F_{bcyw} = 484/S$					
151		Actual F_{bcyw}		4.813			
152							
153		Flange Local Buckling 3.4.17					
154		$S = 2b/t_f$		7.850			
155		IF $S \leq 10$ Then $F_{bcyf} = 20$ ksi					
156		IF $S > 10$ AND $S < 23$ Then $F_{bcyf} = 27.9 - 0.808 * S$ ksi					
157		IF $S \geq 23$ Then $F_{bcyf} = 4930/S^2$ ksi					
158		Actual F_{bcyf}		20.000			
159							
160		Weighted Average Web / Flange Local Buckling					
161		$F_{bcra} = (F_{bcyf} * A_w + F_{bcyw} * A_f/6) / (A_w + A_f/6)$		6.753			
162							
163		Allowable minor axis bending stress		6.753	ksi		
164		Maximum allowed Bending Moment $M_{ay} = F_{by} * S_y$		13.838	K-in		
165							
166							
167		Shear Allowable Stress					
168							
169		Shear Stress $f_v = V/A_w$					
170		Web Height $h = d - 2t_f$					

3/148

	A	B	C	D	E	F
171		$S = h/t_w$		100.56522		
172		IF $S \leq 39$ Then $F_s = 8.5$ ksi				
173		IF $S > 39$ AND $S < 77$ Then $F_s = 11.0 - 0.059 * S$ ksi				
174		IF $S \geq 77$ Then $F_s = 38700/S^2$ ksi				
175		Actual fs		3.827		
176						
177						
178						

3/14/9

Note: Change lateral pressure values for different wind speeds.

Note: Also copy axial stress ratios to bottom of table.

Table for Use in Manual for Flat Roof Beams

Multiply Beam Spans by Height Conversion Factor from Table 1.1
Table applies to Exposure B & C and height of 30 feet.

Design Wind Speed (mph)=
Design Wind Pressure (psf)= No Axial Load Imposed

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.048 x 0.100	17.34	15.01	13.42	12.25	11.76	11.33	10.60	9.99
2" x 5" x 0.050 x 0.116	21.05	18.23	16.30	14.87	14.28	13.78	12.87	12.13
2" x 6" x 0.050 x 0.120	24.82	21.49	19.21	17.53	16.84	16.22	15.17	14.29
2" x 7" x 0.055 x 0.120	27.72	24.00	21.48	19.58	18.81	18.11	16.94	15.96
2" x 8" x 0.072 x 0.224	36.18	31.30	27.98	25.54	24.52	23.62	22.09	20.82
2" x 9" x 0.072 x 0.224	39.32	34.04	30.43	27.77	26.87	25.89	24.02	22.64
2" x 9" x 0.082 x 0.306	42.99	37.65	33.66	30.71	29.49	28.41	26.56	25.04
2" x 10" x 0.092 x 0.389	50.32	45.20	40.40	36.87	35.40	34.10	31.88	30.05

Load and Resistance Factor Design

Strength Limit

Table applies to Exposure B & C and height of 30 feet.

Design Wind Pressure = 10 psf

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.048 x 0.100	17.34	15.01	13.42	12.25	11.76	11.33	10.60	9.99
2" x 5" x 0.050 x 0.116	21.05	18.23	16.30	14.87	14.28	13.78	12.87	12.13
2" x 6" x 0.050 x 0.120	24.82	21.49	19.21	17.53	16.84	16.22	15.17	14.29
2" x 7" x 0.055 x 0.120	27.72	24.00	21.48	19.58	18.81	18.11	16.94	15.96
2" x 8" x 0.072 x 0.224	36.18	31.30	27.98	25.54	24.52	23.62	22.09	20.82
2" x 9" x 0.072 x 0.224	39.32	34.04	30.43	27.77	26.87	25.89	24.02	22.64
2" x 9" x 0.082 x 0.306	43.49	37.65	33.66	30.71	29.49	28.41	26.56	25.04
2" x 10" x 0.092 x 0.389	52.22	45.20	40.40	36.87	35.40	34.10	31.88	30.05

Deflection limit (L/60)

Purlin/Girt	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
2" x 4" x 0.048 x 0.100	17.74	16.12	14.96	14.08	13.71	13.38	12.79	12.30
2" x 5" x 0.050 x 0.116	21.78	19.79	18.37	17.29	16.83	16.42	15.71	15.10
2" x 6" x 0.050 x 0.120	25.82	23.46	21.78	20.49	19.95	19.47	18.62	17.90
2" x 7" x 0.055 x 0.120	29.17	26.51	24.61	23.16	22.55	22.00	21.04	20.23
2" x 8" x 0.072 x 0.224	36.53	33.19	30.81	29.00	28.23	27.54	26.34	25.33
2" x 9" x 0.072 x 0.224	40.18	36.51	33.88	31.89	31.05	30.30	28.98	27.88
2" x 9" x 0.082 x 0.306	42.99	39.06	36.28	34.12	33.22	32.41	31.00	29.81
2" x 10" x 0.092 x 0.389	50.32	45.72	42.44	39.94	38.89	37.94	36.29	34.89

Note:

Service load used for deflection checks.

3/15/10

Exp B Non-Gable Roof Column Base-Host Structural Connections

Table applies to Exposure B

Design Wind Speed= 140

#12 Screw Shear Capacity (lbs)=
454

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.048 x 0.100	1	2	2	2	3	3	3	4
2" x 5" x 0.060 x 0.116	1	2	2	3	3	3	3	4
2" x 6" x 0.060 x 0.120	2	2	2	3	3	3	4	4
2" x 7" x 0.065 x 0.120	2	2	2	3	3	3	4	4
2" x 8" x 0.072 x 0.224	2	2	3	3	3	4	4	4
2" x 9" x 0.072 x 0.224	2	2	3	3	4	4	4	5
2" x 9" x 0.082 x 0.308	2	3	3	3	4	4	4	5
2" x 10" x 0.092 x 0.389	2	3	3	4	4	4	5	5

2/15/11

Exp B Non-Gable Roof Column Base-Host Structure Connections

Table applies to Exposure B

Design Wind Speed= 150

#12 Screw Shear Capacity (lbs)=

454

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	1	2	2	3	3	3	3	4
2" x 5" x 0.050 x 0.116	2	2	2	3	3	3	4	4
2" x 6" x 0.050 x 0.120	2	2	3	3	3	3	4	4
2" x 7" x 0.055 x 0.120	2	2	3	3	3	4	4	4
2" x 8" x 0.072 x 0.224	2	2	3	3	4	4	4	5
2" x 9" x 0.072 x 0.224	2	3	3	4	4	4	4	5
2" x 8" x 0.082 x 0.306	2	3	3	4	4	4	5	5
2" x 10" x 0.092 x 0.389	2	3	3	4	4	5	5	5

3/52

Exp B Non-Gable Roof Column Base-Host Structure Connections

Minimum Screw Requirements (each side of connection) for Roof Beam to Wall Uprights (Combined Stresses from Uplift and Lateral Loads)

Table applies to Exposure B and height of 30 feet.

Design Wind Speed= 100

#12 Screw Shear Capacity (lbs)=
454

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	1	1	1	2	2	2	2	2
2" x 5" x 0.060 x 0.116	1	1	2	2	2	2	2	2
2" x 6" x 0.060 x 0.120	1	1	2	2	2	2	2	3
2" x 7" x 0.066 x 0.120	1	1	2	2	2	2	2	3
2" x 8" x 0.072 x 0.224	1	2	2	2	2	3	3	3
2" x 9" x 0.072 x 0.224	2	2	2	2	3	3	3	3
2" x 9" x 0.082 x 0.306	2	2	2	3	3	3	3	3
2" x 10" x 0.092 x 0.389	2	2	3	3	3	3	4	4

2/15/5

Exp B Non-Gable Roof Column Base-Host Structure Connections

Table applies to Exposure B

Design Wind Speed= 110

#12 Screw Shear Capacity (lbs)=
454

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	1	1	2	2	2	2	2	2
2" x 5" x 0.060 x 0.116	1	1	2	2	2	2	2	3
2" x 6" x 0.060 x 0.120	1	1	2	2	2	2	3	3
2" x 7" x 0.066 x 0.120	1	2	2	2	2	2	3	3
2" x 8" x 0.072 x 0.224	2	2	2	2	3	3	3	3
2" x 9" x 0.072 x 0.224	2	2	2	3	3	3	3	3
2" x 9" x 0.082 x 0.308	2	2	2	3	3	3	3	4
2" x 10" x 0.092 x 0.389	2	2	3	3	3	3	4	4

Handwritten: 2/15/14

Exp B Non-Gable Roof Column Base-Host Structure Connections

Table applies to Exposure B

Design Wind Speed= 120

#12 Screw Shear Capacity (lbs)=
454

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.048 x 0.100	1	1	2	2	2	2	3	3
2" x 5" x 0.050 x 0.118	1	2	2	2	2	2	3	3
2" x 6" x 0.050 x 0.120	1	2	2	2	2	3	3	3
2" x 7" x 0.055 x 0.120	1	2	2	2	3	3	3	3
2" x 8" x 0.072 x 0.224	2	2	2	3	3	3	3	4
2" x 9" x 0.072 x 0.224	2	2	2	3	3	3	3	4
2" x 9" x 0.082 x 0.306	2	2	3	3	3	3	4	4
2" x 10" x 0.092 x 0.389	2	2	3	3	3	4	4	4

3/15/55

Exp B Non-Gable Roof Column Base-Host Structure Connections

Table applies to Exposure B

Design Wind Speed= 130

#12 Screw Shear Capacity (lbs)=

454

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.048 x 0.100	1	2	2	2	2	3	3	3
2" x 5" x 0.060 x 0.116	1	2	2	2	3	3	3	3
2" x 6" x 0.060 x 0.120	1	2	2	3	3	3	3	4
2" x 7" x 0.055 x 0.120	2	2	2	3	3	3	3	4
2" x 8" x 0.072 x 0.224	2	2	3	3	3	3	4	4
2" x 8" x 0.072 x 0.224	2	2	3	3	3	3	4	4
2" x 9" x 0.082 x 0.306	2	2	3	3	3	4	4	4
2" x 10" x 0.092 x 0.389	2	3	3	4	4	4	4	5

2/15/16

Table for Use in Manual for Roof Beam Reactions (lbs.)- uplift and downward force

Table applies to Exposure B & C and height of 30 feet.

Design Wind Pressure = 10 psf

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	416	480	537	588	612	634	678	719
2" x 6" x 0.060 x 0.116	505	583	652	714	743	770	823	873
2" x 6" x 0.060 x 0.120	596	688	768	841	878	908	971	1029
2" x 7" x 0.065 x 0.120	665	768	858	940	978	1014	1084	1148
2" x 8" x 0.072 x 0.224	868	1002	1119	1226	1275	1323	1414	1499
2" x 9" x 0.072 x 0.224	944	1089	1217	1333	1387	1438	1537	1630
2" x 9" x 0.082 x 0.306	1032	1205	1346	1474	1534	1591	1700	1803
2" x 10" x 0.092 x 0.388	1208	1446	1616	1770	1841	1910	2041	2164

Table for Use in Manual for Non-Gable Roof Lateral Reactions (lbs.) parallel to beams at host structure and column base

Table applies to Exposure B and height of 30 feet.

Multiply load by Exposure C conversion factor to get Exposure C loads and also by ratio of height of structure divided by 30

Wind Speed	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
100	432	576	720	864	936	1008	1152	1296
110	504	672	840	1008	1092	1176	1344	1512
120	612	816	1020	1224	1326	1428	1632	1836
130	720	960	1200	1440	1560	1680	1920	2160

3/5-1

Exp B Non-Gable Roof Column Base-Host Structure Connections

140	828	1104	1380	1656	1794	1932	2208	2484
150	936	1248	1560	1872	2028	2184	2496	2808

3/158

DETAIL NUMBER

Table applies to Exposure B Height Less than or Equal to 30 ft. Design Wind Speed= 100 DETAIL 1 Capacity (lbs)= 3343

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	0.232	0.287	0.340	0.391	0.415	0.441	0.480	0.533
2" x 5" x 0.050 x 0.116	0.259	0.318	0.374	0.429	0.455	0.482	0.533	0.604
2" x 6" x 0.050 x 0.120	0.288	0.348	0.409	0.467	0.495	0.523	0.578	0.651
2" x 7" x 0.055 x 0.120	0.307	0.373	0.436	0.497	0.526	0.555	0.611	0.687
2" x 8" x 0.072 x 0.224	0.367	0.443	0.514	0.582	0.615	0.647	0.710	0.771
2" x 8" x 0.072 x 0.224	0.390	0.469	0.544	0.614	0.648	0.682	0.747	0.811
2" x 9" x 0.082 x 0.306	0.418	0.504	0.582	0.656	0.692	0.727	0.798	0.862
2" x 10" x 0.092 x 0.389	0.469	0.576	0.663	0.745	0.784	0.823	0.898	0.970

Table applies to Exposure B Design Wind Speed= 110 DETAIL 1 Capacity (lbs)= 3343

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	0.243	0.302	0.358	0.413	0.440	0.466	0.519	0.570
2" x 5" x 0.050 x 0.116	0.270	0.332	0.392	0.450	0.479	0.507	0.562	0.617
2" x 6" x 0.050 x 0.120	0.297	0.364	0.427	0.486	0.519	0.549	0.606	0.663
2" x 7" x 0.055 x 0.120	0.317	0.388	0.454	0.518	0.549	0.580	0.640	0.699
2" x 8" x 0.072 x 0.224	0.378	0.458	0.532	0.604	0.638	0.672	0.739	0.804
2" x 8" x 0.072 x 0.224	0.401	0.484	0.562	0.636	0.671	0.707	0.775	0.843
2" x 9" x 0.082 x 0.306	0.427	0.516	0.600	0.678	0.715	0.752	0.824	0.895
2" x 10" x 0.092 x 0.389	0.480	0.591	0.681	0.766	0.807	0.848	0.926	1.003

Table applies to Exposure B Design Wind Speed= 120 DETAIL 1 Capacity (lbs)= 3343

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	0.275	0.345	0.412	0.477	0.510	0.542	0.605	0.667
2" x 5" x 0.050 x 0.116	0.302	0.375	0.446	0.515	0.549	0.582	0.648	0.713
2" x 6" x 0.050 x 0.120	0.329	0.407	0.481	0.553	0.589	0.623	0.692	0.760
2" x 7" x 0.055 x 0.120	0.350	0.431	0.508	0.583	0.619	0.655	0.728	0.798
2" x 8" x 0.072 x 0.224	0.410	0.501	0.588	0.668	0.708	0.748	0.825	0.901
2" x 8" x 0.072 x 0.224	0.433	0.527	0.615	0.700	0.741	0.782	0.862	0.940
2" x 9" x 0.082 x 0.306	0.459	0.561	0.654	0.742	0.786	0.828	0.911	0.991
2" x 10" x 0.092 x 0.389	0.512	0.634	0.735	0.831	0.877	0.923	1.012	1.099

Table applies to Exposure B Design Wind Speed= 130 DETAIL 1 Capacity (lbs)= 3343

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	0.297	0.373	0.448	0.520	0.558	0.592	0.662	0.732
2" x 5" x 0.050 x 0.116	0.323	0.404	0.482	0.558	0.595	0.633	0.708	0.778
2" x 6" x 0.050 x 0.120	0.351	0.435	0.517	0.596	0.635	0.674	0.750	0.825
2" x 7" x 0.055 x 0.120	0.371	0.458	0.544	0.628	0.668	0.708	0.784	0.861
2" x 8" x 0.072 x 0.224	0.432	0.529	0.622	0.711	0.755	0.798	0.882	0.965
2" x 8" x 0.072 x 0.224	0.455	0.556	0.651	0.743	0.788	0.832	0.919	1.004
2" x 9" x 0.082 x 0.306	0.481	0.590	0.690	0.788	0.832	0.878	0.968	1.056
2" x 10" x 0.092 x 0.389	0.534	0.662	0.771	0.874	0.924	0.973	1.070	1.164

Table applies to Exposure B Design Wind Speed= 140 DETAIL 1 Capacity (lbs)= 3343

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	0.318	0.402	0.484	0.564	0.603	0.642	0.720	0.797
2" x 5" x 0.050 x 0.116	0.345	0.433	0.518	0.601	0.642	0.683	0.763	0.843
2" x 6" x 0.050 x 0.120	0.372	0.464	0.553	0.639	0.682	0.724	0.807	0.889
2" x 7" x 0.055 x 0.120	0.393	0.488	0.580	0.668	0.712	0.758	0.841	0.925
2" x 8" x 0.072 x 0.224	0.453	0.558	0.658	0.754	0.801	0.848	0.940	1.030
2" x 8" x 0.072 x 0.224	0.478	0.584	0.687	0.788	0.835	0.883	0.977	1.069
2" x 9" x 0.082 x 0.306	0.502	0.619	0.728	0.829	0.879	0.928	1.025	1.121
2" x 10" x 0.092 x 0.389	0.555	0.691	0.807	0.917	0.971	1.024	1.127	1.228

Table applies to Exposure B Design Wind Speed= 150 DETAIL 1 Capacity (lbs)= 3343

Beams	Distance from Beam to Beam							
	3.00	4.00	5.00	6.00	6.50	7.00	8.00	9.00
Self-Mating Beams (SMB)								
2" x 4" x 0.046 x 0.100	0.351	0.445	0.537	0.628	0.673	0.717	0.808	0.894
2" x 5" x 0.050 x 0.116	0.377	0.476	0.572	0.666	0.712	0.758	0.849	0.940
2" x 6" x 0.050 x 0.120	0.404	0.507	0.607	0.704	0.752	0.799	0.893	0.988
2" x 7" x 0.055 x 0.120	0.426	0.531	0.634	0.733	0.782	0.831	0.927	1.022
2" x 8" x 0.072 x 0.224	0.488	0.601	0.712	0.819	0.871	0.923	1.026	1.127
2" x 8" x 0.072 x 0.224	0.506	0.627	0.741	0.851	0.905	0.968	1.063	1.168
2" x 9" x 0.082 x 0.306	0.535	0.662	0.780	0.893	0.949	1.004	1.112	1.218
2" x 10" x 0.092 x 0.389	0.587	0.734	0.860	0.982	1.041	1.099	1.213	1.326

3/159



CHARLIE CRIST, GOVERNOR

CHUCK DRAGO, INTERIM SECRETARY
DEPARTMENT OF BUSINESS
AND PROFESSIONAL REGULATION

Copy sent JPS

May 6, 2008

Joseph Berryman, PE
7743 N. Khayber Ave.
Dunnellon, FL 34433

Re: Consultant's Review

Case No. 2008008617

Dear Mr. Berryman:

As per our telephone discussion, please review the enclosed case file regarding Do Kim, PE and provide your written expert opinion as to whether there are violations of the Professional Engineers Practice Act. Florida Engineer Management Corporation (FEMC) will pay \$100.00 per hour for your review. Please notify me if you find that your review may take more than 20 hours.

The FBPE Probable Cause Panel has requested that consultants clearly state in their written opinions if the subject of the investigation practiced engineering properly, or if not, to state that proper engineering standards were not met. If your opinion is that violations are present, please describe specifically the nature of the violations and their particular relation to the applicable laws and rules of the Professional Engineers Practice Act (Chapter 471, Florida Statutes and Rules 61 G15, Florida Administrative Code).

Please submit an invoice with your report. Additionally, our prosecutors have asked that you please send a copy of your report to me via email as an attachment. Call me at 850-510-4826 if you have any questions.

We appreciate your time and expertise.

Sincerely,

Jack Beamish
Investigator
Florida Board of Professional Engineers

John C. Burke, P.E.
CHAIR
(ELECTRICAL)
1/8/04-10/31/10

David O. Charland, P.E.
VICE CHAIR
(STRUCTURAL)
4/20/05-10/31/08

Christian S. Bauer, Ph. D., P.E.
(INDUSTRIAL)
4/20/05-10/31/08

Henn Rebane, P.E.
(ELECTRICAL)
11/29/09-10/31/07

Zafar Hyder, Ph. D., P.E.
(CIVIL)
8/22/07-10/31/10

Paul Tomasino, P.E.
(CIVIL)
2/11/02-10/31/10

Jonathan F. Earle, P.E.
(EDUCATIONAL)
2-12-08-10-31-08

Nola Garcia
(PUBLIC)
2/12/08-10/31/10

Vacant
(CIVIL)

Vacant
(Public Member)

Vacant
(MECHANICAL)

Carrie Flynn
EXECUTIVE DIRECTOR

4/16/08

June 12, 2008

Mr. Jack Beamish, Investigator
Florida Board of Professional Engineers
2507 Callaway Road, Suite 2006
Tallahassee, FL 32303-5268

RECEIVED

FLORIDA BOARD OF
PROFESSIONAL ENGINEERS

Re: Case No. 2008008617 – Mr. Do Kim, P.E.

Dear Mr. Beamish:

At your request, I have made a review of the files and documentation submitted for the referenced case. The complaint alleges negligence or incompetence in the preparation of the permit plans and details for a screen enclosure structure at the Dunlat Residence in Palm City Florida.

Documentation:

The following documents were reviewed.

1. A Florida Board of Professional Engineers Uniform Complaint Form, 2 pages with attachments, prepared and signed by Mr. Steven M. Sincere, P.E.

The attachments to the complaint forms are as follows.

- A. Seventeen pages of computer generated output from an unknown analysis program, indicated as designs of various members of the screen enclosure depicted in plans prepared by Mr. Do Kim. (Document 1B below)
- B. A set of drawings including sheets 1 thru 6 of 6, bearing the following information.

Client: Jay K Screens
Project Location:
Dunlat Residence
4492 SW Branch Terrace W.
Palm City, FL 34990

Do Yeon Kim, P.E.
Fla. Reg. Number 49497

Do Kim & Associates, LLC
CA#26887
3300 Henderson Blvd., Suite 106

Tampa, FL 33609

Although a seal is not evident, the drawing documents appear to be signed and dated 12-4-07.

2. A two page correspondence dated April 22, 2008 from Mr. Do Kim, P.E. to Mr. Jack Beamish with the following documents attached.
 - A. A copy of Test Report No. 07-01330199.1, dated January 24, 2008, prepared by Testing Evaluation Laboratories, Inc.
 - B. A three page Product Evaluation Report dated August 1, 2007, signed by Wendell W. Haney, P.E. indicated as Report No. FL-9328-1.
 - C. Drawing No. FL-3675 prepared by R.W. Building Consultants and signed by Mr. Wendell W. Haney, P.E. (This document addresses the 2x8 TRAC Beam)
 - D. A three page Product Evaluation Report dated August 11, 2006, signed by Wendell W. Haney, P.E.
 - E. Drawing No. FL-1114 prepared by R.W. Building Consultants and signed and sealed by Mr. Wendell W. Haney, P.E. (This document addresses the 2x7 and 2x5 TRAC Beams)
 - F. Forty plus or minus pages of calculations and data. The calculations are hand written on calculation paper bearing the following information.

Do Kim & Associates, LLC
Consulting Structural Engineers
3300 Henderson Blvd., Suite 106,
Tampa, FL 33609

The calculation pages are not signed and sealed.

Allegations:

Based on his analysis of the structure and structural framing elements of the screen enclosure structure depicted in document 1B above, Mr. Sincere alleges that Mr. Kim, in preparing those documents has not complied with Florida Administrative Code 61G15-19.001(4) or 61G15-19.001(5) or Florida Statute 471.003(1)(g).

2008

5/16/08

Discussion

Mr. Sincere has included with his complaint, output documentation from a three dimensional finite element analysis program (which he did not identify), indicating the stresses in various elements of a screen enclosure structure, and a comparison of the stresses as analyzed, to the Code prescribed allowable stress for such members, in the form of interaction ratios. The calculation documentation submitted indicates that the stresses in various elements analyzed exceed acceptable levels as follows.

1. Beam1 – 2x8 Trac Beam – Member Length = 336.14 ft. – Max IR = 43
2. Purlins – AAF2x3H – Member Length = 273.58 ft. – Max IR = 638.3
3. Down Purlins - AAF2x3H – Member Length = 80.23 – Max IR = 953.2
4. Wind (Roof) Braces – AAF2x3H – Member Length = 184.42 ft. – Max IR = 1003.6
5. Eave Rails - AAF2x3H – Member Length = 143.92 ft. – Max IR = 598.8
6. Flow Through Wall Column – 2x7 Trac Beam - Member Length = 133 ft. – Max IR = 5.2
7. Non Flow Through Wall Column – 2x7 Trac Beam - Member Length = 86 ft. – Max IR = 5.4
8. Corner Columns – 2x5 Trac Beams – Member Length = 20.0 ft. – Max IR = 2.3
9. Chair Rails – AAF2x3H – Member Length = 155.75 – Max IR = 1.2
10. K-Braces – AAF2x3H – Member Length 84.49 ft. – Max IR = 670.4

Regarding the output documentation, I note first that the member lengths set forth in the computer generated output for the above framing members appear to be extremely exaggerated. The actual member lengths are significantly less than this stated length. I note further that the member length is stated in the individual member output specifically as "Total Length of Members" which may indicate multiple element lengths added together. Calculations for a specific member are acutely dependent on the specific length of the specific member analyzed. My question is what relevance could total length of anything other than the specific element analyzed have to do with the calculations for that specific element? Is this the length used in the calculations for the output generated? If not, what is the length used in the member calculations? No other length is given in the output for each specific element.

I note further that in general, the interaction ratios set forth in the subject output documents are enormous to the point of being meaningless. This could have resulted from using exaggerated element lengths in their derivation.

I note further that the element modeled by Mr. Sincere for items 3, 4, 5, 9, and 10 (AAF2x3H) are not the same section as the elements specified in Mr. Kim's drawings. Mr. Sincere has modeled the members as 2x3x.045. The drawings specify a 2x6x.06 section which is a heavier, stronger section than the section modeled.

According to the construction drawings "Non Flow Through Wall Columns" (columns in the side walls perpendicular to the host structure) appear to be 2x5 Trac Beams. Item 7 above indicates that 2x7 Trac Beams were modeled and analyzed for these elements.

It is apparent that the calculations which are the basis of this complaint may be flawed. Even if they are not, the analysis documentation submitted by Mr. Sincere is so brief that the information therein cannot be verified. As a minimum, Mr. Sincere would need to identify the software and the analysis method, (ASD or LRFD) loading assumptions, framing assumptions, support conditions, releases, material properties, dimensions, local and global axis reference, etc. so that his "numbers" can be verified. He may also want to review his calculations in order to verify that he has modeled the structure accurately in accordance with Mr. Kim's drawings and specifications.

Mr. Kim states in his response (document 2 above) that for this design (the Dunlat screen enclosure) he elected to use "tested product performance values" in lieu of analytical calculations in proportioning some of the structural elements. Mr. Kim has submitted the documentation for two Florida product approvals (FL-7350 & FL 9328) addressing the design capacities of 2x8, 2x7, and 2x5 TRAC beams based on load testing. Mr. Kim has also submitted calculations in support of his designs. The calculations however, appear to be generic and exemplary and do not apply to any specific element of the subject structure. Mr. Kim states further in his response that three dimensional analyses are "no[w]t required in Florida and that most structures are designed using two dimensional analyses.

In addition to reviewing the documentation in the file, I have made my own 3 dimensional and two dimensional analyses based on my interpretation of document 1B above and on ordinary design assumptions as are typically used in the design of screen enclosures. I submit the following observations and opinions based thereon.

Opinions:

1. The Florida Building Code does not require three dimensional finite element analyses in the design of screen enclosures nor does any other applicable code or design manual.
2. Although the designs of the 2x8 Trac Beam roof beam members do not admit to rational analyses, they are within the design parameters set forth in the product approval documents listed above with the exception of deflection.
3. For the 2x8 Trac Beam roof beam members, the deflection at design load exceeds $L/80$.
4. The 2x7 Trac Beam column sections are within the design parameters set forth in the product approval documents listed above.
5. The 2x5 Trac Beam corner columns are over stressed with design load applied in the weak axis direction.
6. The 2x5 Trac Beam side wall column sections (other than the corner columns) are within the design parameters set forth in the product approval documents listed above.

7. The 2x3x.045 roof purlins are apparently within the prescriptive limitations set forth in Table 103 of the AAF "Guide To Aluminum Construction in High-Wind Areas".
8. The 2x3x.06 + 1x2x.04OB Eve rails appear to be within the prescriptive limitations of Table 101e of the AAF "Guide To Aluminum Construction in High-Wind Areas".
9. The 2x3x.06 diagonal roof bracing is overstressed at various locations at design loading.
10. The 2x3x.06 girts appear to be within the prescriptive limitations of Table 104e of the AAF "Guide To Aluminum Construction in High-Wind Areas".
11. The outer wall k-bracing is apparently within stress tolerances for it's intended loading. The end wall k-bracing is prescriptive in accordance with the "AAF Guide to Aluminum Construction in High-Wind Areas".

The following Florida Building Code Sections are relevant to observation/opinions 3, 5 and 9 above.

FBC 2004

SECTION 1604 GENERAL DESIGN REQUIREMENTS

1604.1 General.

Building, structures and parts thereof shall be designed and constructed in accordance with strength design, load and resistance factor design, allowable stress design, empirical design or conventional construction methods, as permitted by the applicable material chapters.

1604.2 Strength.

Buildings and other structures, and parts thereof, shall be designed and constructed to support safely the factored loads in load combinations defined in this code without exceeding the appropriate strength limit states for the materials of construction. Alternatively, buildings and other structures, and parts thereof, shall be designed and constructed to support safely the nominal loads in load combinations defined in this code without exceeding the appropriate specified allowable stresses for the materials of construction.

1613.1 Allowable deflections.

The deflection of any structural member or component when subjected to live, wind and other superimposed loads set forth herein shall not exceed the following:

8. Members supporting screens only L/80

2002.2 Structural Aluminum Construction.

The design, fabrication and assembly of structural aluminum for buildings or structures shall conform to AA ASM 35 and Specifications for Aluminum Structures, Aluminum Design Manual, Part 1-A and 1-B, of the Aluminum Association. The use of aluminum alloys not listed in the manual shall be permitted provided their standard of performance is not less than those required in the manual and the performance is substantiated to the satisfaction of the building official.

2003.6 Allowable unit stresses.**2003.6.1**

The design, fabrication and assembly of aluminum members for building and other structures shall conform to the standard set forth in Section 2003.2 and as otherwise set forth herein.

2003.6.2

The use of aluminum alloys, other than those listed in the standard shall provide performance not less than those required by the standard and as set forth herein.

2003.6.3

Aluminum members shall be limited by the deflections set forth in Section 1613 .

Aluminum Design Manual 2005**3.4 Design Stresses**

Design stresses ϕFL shall be determined in accordance with the provisions of this Specification.

FBC 2002.4.1

The following design guides shall be accepted as conforming to accepted engineering practices:

AAF Guide to Aluminum Construction In High Wind Areas.

Opinion:

In my opinion, as indicated in observation/opinions 3, 5 and 9 above, Mr. Kim has not utilized due care in performing in an engineering capacity and has failed to have due regard for acceptable standards of engineering principles.

Additional Opinion

This additional opinion is in reference to statements made in the product approval documents reviewed and does not apply to Mr. Kim.

On page 2 of 9 in document 2A above under Section 4.0 Specimen Installation, I encountered the following statements.

"Each end of the assembled beam specimen was affixed to a post just as would be done in the field for actual erection of a structure. The posts were anchored to the concrete floor of the lab as would be done in the field for actual assembly. This arrangement facilitates testing with the end fixity of the beam (to column?) as it would be in actual installations in the field. See drawing L-3931 for details on the connections". Drawing L-3931 depicts a moment transferring beam to column connection with fastener arrangement similar to mansard beam knee and gable ridge beam splice connections.

I have reviewed hundreds if not thousands of sets of plans for screen enclosures and screen enclosure specifications and "Master Files", and I have yet to see a beam to column connection detailed or constructed in the manner indicated in drawing L-3931. Typical beam to column connections are detailed with a cluster of fasteners located in a relatively small area which provides negligible moment capacity through the joint. You may refer to the "Main Post/Column to Roof Beam Connection Detail" on page 4 of 6 of Mr. Kim's drawings or to page 1-12 of the "AAF Guide to Aluminum Construction in High Wind Areas", "Typical Schematic Section @ Bearing Wall Column", for an industry typical beam to column connection detail. In my opinion, the tested connection is not "as it would be in actual installations in the field."

I also observed in the photograph of the "Mansard Connections" that the column section of the test assembly is only a few inches in height at best. In a normal beam to column frame assembly, the joint at the beam column connection would translate laterally in plane proportionally to the parameters of the system. (Framing member length and stiffness, restraint, loading, etc.) In my opinion the arrangement shown will allow almost no lateral movement at the beam to column connection and therefore negates a normal effect of the column on the framing system. Again, the tested specimen is not "as it would be in actual installations in the field."

In my opinion, the test specimen depicted in the referenced photograph is modeled as a single span beam, fixed at both supports against translation and rotation. I opine further that the unrealistic fixity at the supports of the test specimen has returned unrealistic, un-conservative test results. It may be appropriate for FDCA, Product Approval to review this application further.

AFS

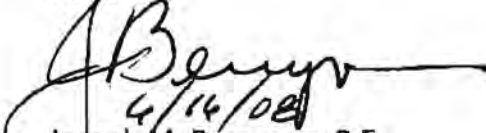
5/16/07

Qualification:

I have provided the above opinions based on my observation and interpretation of the documentation referenced above. No endorsement or certification of the subject structures or any elements thereof is given.

I appreciate the opportunity to provide this review service to you. Please call on me at your convenience if there is anything further regarding this matter.

Sincerely,


4/16/08
Joseph M. Berryman, P.E.
Florida Registration No. 34186



5/16/08

Client	0901	Professional Engineer	Indv/Org #	2009013	
Fed Tax #		SSN #	KIM, DO YEON	Expires	02/28/2009
File #	48382	Prof Engineer	Extended To		
License #	49497	Current, Active	Renewed	01/09/2007	

	Surname	First	Second	Title	Suffix	Qualifier
Full Name	Kim	Do	Yeon			

Driver License #		Name	
Gender	M	Birth Date	04/17/1970
		Race	2 White
		Mailing Address	
Street #	PO BOX	Street	10039
Line 2			
Line 3			
City	TAMPA	Prov/State	FL
		Postal/Zip	33679
County	39 Hillsborough	Country	US United States
Routing			
Phone #	813-874-5900	Ext	
E-Mail	dk@dokimengineering.net		
Insp Region			

- Name
- Address
- Phone
- E-Mail
- Notes

Updated 01/09/2007 16:40:01

By wabuser

6/169



Lic Type	0901	Professional Engineer	Indv/Org #	7009013
File #	48382	KIM, DO YEON	Expires	02/28/2009
License #	49497	Prof Engineer	Extended To	
Fed Tax #		Current, Active	Renewed	01/09/2007
Street #	PO BOX	Street	10039	
Line 2				
Line 3				
City	TAMPA	Prov/State	FL	Postal/Zip
Routing				
1st License	07/19/1995	Rank Date	07/19/1995	Certificate #
Method		Status Date	07/19/1995	Certificate Date
Fee Exempt	No	Birth Date	04/17/1970	Renewal Sent
Modifiers	G	BLDG	Building, Code Core Course Credit	
Notes	Application Date: 1994-04-21			
SI NUMBER				

- Licensee
- View
- Work
- History
- Notes
- Exit

6/170

Fed Tax # 401066083 KIM, DO YEON
 File # 48382 Prof Engineer
 License # 48497 Current, Active

Indv/Org # 7089013
 Expires 02/28/2008
 Renewed 11/03/2006

Related Parts

Other Part Description	Req'd	Lic Typ	File #	Name	Effective	Status
Firm	N	0902	6374	DO YOUNG ASSOCIATED, INC	09/27/06	
Firm	N	0902	6307	OVE ARUP & PARTNERS MASSACHUSET		

- Save
- Cancel
- Detail
- History
- Chain

Save Cancel Ok Exit

6/17/1

Fed Tax # [REDACTED] **Kim, DO YEON**
File # **48382** Prof Engineer
License # **48497** Current, Active

Indv/Org # **709013**
Expires **02/28/2009**
Renewed **11/03/2008**

Relation Detail

Relationship **Engineer As Officer** Effective **03/27/2008**
This Part **PE** Ended [REDACTED]
Other Part **Firm** Required by This Part Status [REDACTED]
 Ind Org Indv/Org # **7687926** Fed Tax # **7687926** PIN [REDACTED]

Organization **Do Kim & Associates, LLC**

Driver License # [REDACTED] Organization Type [REDACTED]
Birth Date [REDACTED] Gender [REDACTED] Race [REDACTED]
License Type **0902** Certificate of Authorization
File # **8474** Certificate of Authorization
License # **26887** Current Expires **02/28/2009**
Street # **Street P.O. BOX 10039**
Line 2 [REDACTED]
Line 3 [REDACTED]
City **880 TAMPA** Prov/State **FL** Postal/Zip **33679**
County **39 Hillsborough** Country **US United States**
Routing [REDACTED] Updated **03/27/2008 13:06:35** By **kimseley**

- Save
- Change
- Cancel
- List
- Home
- Definition
- License
- History
- Entity
- Chain
- Set Org
- Get Current

Save Cancel OK Exit

6/17

Fed Tax # KM, DO YEON
 File # 48382 Prof Engineer
 License # 49497 Current, Active

Indv/Org # 7089013
 Expires 02/28/2009
 Renewed 11/03/2008

Relation Detail

Relationship Engineer As Officer
 This Part PE
 Other Part Firm
 Effective
 Ended
 Required by This Part Status
 Ind Org Indv/Org # 7035912
 Fed Tax # 7035912 PIN

Organization Ove Arup & Partners Massachusetts, Inc.
 Driver License # Organization Type
 Birth Date Gender Race
 License Type 0902 Certificate of Authorization
 File # 5307 Certificate of Authorization
 License # 8888 Current, Active Expires 02/28/2009
 Street # 155 Street Avenue of the Americas
 Line 2
 Line 3
 City NEW YORK Prov/State NY Postal/Zip 10013
 County Country
 Routing Updated 05/04/2001 08:00:00 By Jeannie

-
-
-
-
-
-
-
-
-
-
-
-

6/173



FLORIDA BOARD OF PROFESSIONAL ENGINEERS

CHARLIE CRIST, GOVERNOR

HOLLY BENSON, SECRETARY
DEPARTMENT OF BUSINESS
AND PROFESSIONAL REGULATION

vic email

February 15, 2008

John C. Burke, P.E.

CHAIR
(ELECTRICAL)
1/9/04-10/31/10

David O. Charland, P.E.

VICE CHAIR
(STRUCTURAL)
4/20/05-10/31/08

Christian S. Bauer, Ph. D., P.E.

(INDUSTRIAL)
4/20/05-10/31/08

Henn Rebane, P.E.

(ELECTRICAL)
11/29/99-10/31/07

Zafar Hyder, Ph. D., P.E.

(CIVIL)
6/22/07-10/31/10

Paul Tomasino, P.E.

(CIVIL)
2/11/02-10/31/10

Vacant

(CIVIL)

Vacant

(Public Member)

Vacant

(MECHANICAL)

Vacant

(EDUCATIONAL)

Vacant

(PUBLIC)

Carrie Flynn

EXECUTIVE DIRECTOR

Steven M Sincere, PE
1867 SW Belgrave Terrace
Stuart, FL 33497

Re: Complaint against Do Yeon Kim, PE
Case No. 2008008617

Dear Mr. Sincere:

This letter is to acknowledge receipt of your complaint by the Florida Board of Professional Engineers. Your complaint has been assigned the number referenced above. If you have additional information and documentation that you feel will support your allegations, please provide this material so that our consultant will have this information for his or her review. Otherwise, we will contact you if our consultant needs additional information.

As investigations vary in complexity, no definite time frame can be given as to when this one will be completed. You will be advised of the outcome.

Pursuant to Section 471.038(7) Florida Statutes, complaints are confidential and exempt from Section 119.07(1), Florida Statutes, until 10 days after the Board makes a determination regarding probable cause.

Please note that the Florida Board of Professional Engineers' jurisdiction is statutorily restricted to the investigation of matters involving possible violations by licensees or allegations of unlicensed practice of professions regulated by the Board.

Sincerely,

Jack Beamish, Investigator,
Florida Board of Professional Engineers

7/