

CO. 04.036169 DFS, 01,

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FEB 03 2006
MICROFILMED

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HOFFMAN-ANDERSEN
a joint venture
building community
License Number: 152410

Request For Information

Project [F030151] - Patient Care Facility (PCF) **View Date** 11/21/2005
OHSU F030151
Hoffman-Andersen 2090003
Perkins & Will 72809.040

Hoffman-Andersen
3250 SW Sam Jackson Park Road
Portland, OR 97201
Phone: (503) 221-8811
Fax: (503) 418-1167

RFI No. 2090003-02345

Primary Responder	Moshik Mah	Date	11/15/2005
	Angelli/Graham Architecture 2413 Ripple Street Los Angeles, CA 90039 Phone: (323) 668-1526 Fax: (323) 668-9362	Status	Closed
CC From	Chris Copeland (Hoffman-Andersen) Anthony Sherlock Hoffman-Andersen	Resolved Date	
		Reason for Request	Alternate Proposal
		Action Requested	Approval
		Probable Cost Effect	
		Probable Time Effect	
		Priority	High
		Due	11/16/2005

Subject J: Kicker support for Beam @ south side where clip from Curtain wall contacts Beam Web
Drawing No. 5/A4.3 and Curtain Wall submittals **Detail No.**

CSI Code **Other Ref. No.**

Information Requested

Please confirm sketch of stiffener plate is structural acceptable.

Recommendation

Response Information

Responder	Date	Response
Moshik Mah	11/16/2005	Response by Jeremy Woodgate 11/15/2005 See attached marked up sketch

Authorized Signature

Moshik Mah (Angelli/Graham Architecture)
Printed Name

11/16/2005
Date

Linked Documents



ANDERSEN

CONSTRUCTION COMPANY, INC.

The Builder of Choice

6712 North Cutter Circle
Portland, OR 97217
503.283.6712
Fax 503.283.3607
www.andersen-const.com

PROJECT:

CURTAIN WALL KICKER FOR BEAR DATE: 11/15/05

WITH: Jeremy W. DEGENKOLB

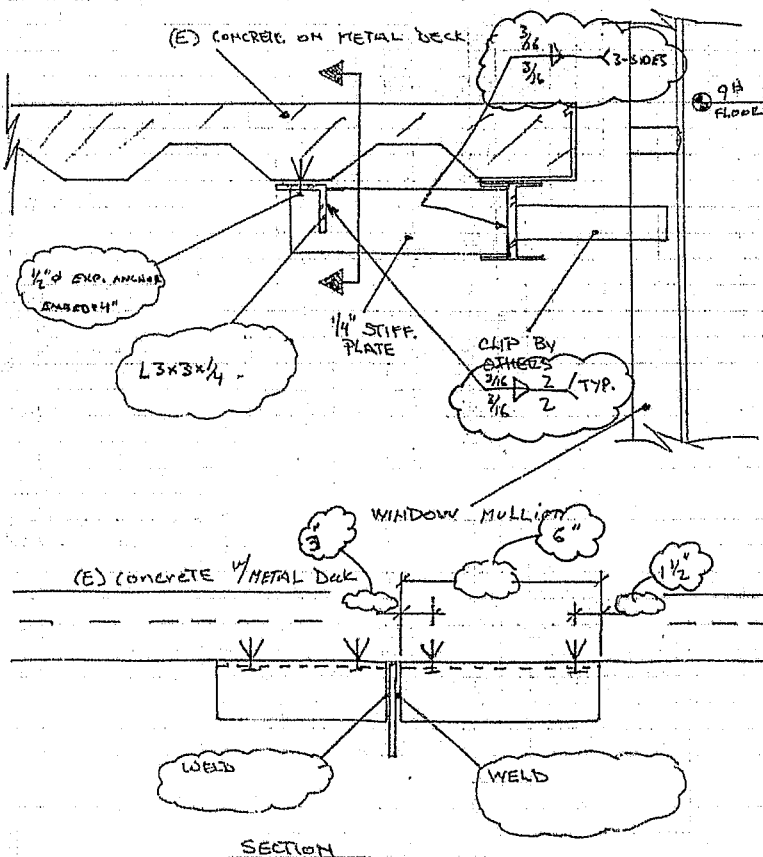
MEETING

TELEPHONE

OTHER

PROJECT # J1 + J2

2005



JANUARY						
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29	30	31				

* PROJECT:

* Sam Jackson Tram Entry and Park
* 3181 SW Sam Jackson Road
* Portland Oregon 97201

* JOB NO. 398-10-5
* BY: J.A. SADLER
* CHK: D.A. BAUM
* DATE 10-24-05

* REFERENCES:

- * 1. UNIFORM BUILDING CODE 1997 EDITION
- * 2. SPECIFICATION FOR ALUMINUM STRUCTURES
* THE ALUMINUM ASSOCIATION OCTOBER 1994
- * 3.

* DESIGN CRITERIA:

- * 1. MATERIAL: ALUMINUM EXTRUSIONS 6063-T5
- * 2. WIND LOADING: (REF. 1 DIV. III SECT 1615 THRU 1625)

(See Sk et 4)

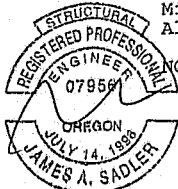
☒ REVIEWED	☐ MAKE CORRECTIONS NOW
☐ REJECTED	☐ REVISE AND RESUBMIT
THIS DRAWING IS THE PROPERTY OF THE ENGINEER AND ARCHITECT. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER AND ARCHITECT. ANY VIOLATION OF THESE TERMS SHALL BE CONSIDERED A BREACH OF CONTRACT AND SUBJECT TO LEGAL ACTION.	
DATE 11/15/05	BY JAW
DATE DEGENKOLS ENGINEERS BY	

HOFFMAN ANDERSEN A JOINT VENTURE	
This submittal has been reviewed for general conformance with the contract documents. Contractor's review does not relieve the vendor/subcontractor of responsibility for compliance with all requirements of the contract, including completeness and accuracy of this submittal.	
Reviewed by Hoffman Construction comments,  Submittal # 108917-004	
Rev. _____	Date _____

- * 3. ALLOW DEFLECTION: L/175 (PER Entelechy Corporation)
- * 4. ALLOW. STRESSES:

Minimum Mechanical Properties per Table 20-II-A Ref. 1.
Allowable Stresses per Table 20-I-C

- NOTE: A. Factors of safety per Table 20-I-D Ref. 1
B. Working stresses per Table 20-I-C of Ref. 1
C. 1/3 stress increase used per Sec. 1617.3.2 Ref. 1



EXPIRES: 06/30/2008

APPROVED:

DATE

* PREPARED FOR:
* Entelechy Corporation
* 303 Avocet Court
* Fernley NV 89408
* (775) 575-7006

* PREPARED BY:
* JASCO PACIFIC INC.
* 550 D Industrial Way
* FALLBROOK CA. 92028
* (760) 723-8135

SHT. 1 OF 36

 * PROJECT: * JOB NO. 398-10- 5 *
 * Sam Jackson Tram Entry and Park * BY: J.A. SADLER *
 * 3181 SW Sam Jackson Road * CHK: D.A. BAUM *
 * Portland Oregon 97201 * DATE 10-24-05 *

* GENERAL NOTES:

1. THE FOLLOWING CALCULATIONS ARE FOR THE SPECIFIC ELEMENTS CALCULATED ON THESE SHEETS. UNLESS SPECIFICALLY CALCULATED THE FOLLOWING WERE NOT REVIEWED:
 A. GLASS AND GLAZING DESIGN
 B. THERMAL FORCES, STRESSES AND MOVEMENT
 C. SEALANT AND SEALANT JOINT DESIGN
 D. AIR AND WATER PENETRATION
 E. CAPACITY OF BUILDING STRUCTURE TO SUPPORT GLAZING SYSTEM
 F. ANY DETAILS NOT SPECIFICALLY SHOWN ON SHOP DRAWINGS
2. CONNECTION AND STIFFENING ELEMENTS SHOWN ON THESE CALCULATIONS HAVE BEEN EVALUATED TO BE STRUCTURALLY SOUND AND IN COMPLIANCE WITH REFERENCES LISTED ON SHEET 1. BEFORE THESE ELEMENTS ARE FABRICATED IT IS THE RESPONSIBILITY OF THE GLAZING SYSTEM DESIGNER TO DETERMINE IF THE ELEMENTS WILL FIT TOGETHER OR CAN BE ASSEMBLED PROPERLY.
3. ALL APPROVALS OF THESE CALCULATIONS BY CONSULTANT, PUBLIC AGENCY ARCHITECT ETC. MUST BE OBTAINED BEFORE DIES ARE CUT, MATERIAL FABRICATED OR SHIPPED. JASCO PACIFIC, INC. IS NOT RESPONSIBLE FOR MATERIAL FABRICATED, SHIPPED OR ERECTED PRIOR TO ALL APPROVALS.
4. THE CAPACITY OF THE BUILDING STRUCTURE TO SUPPORT THE DEAD AND WIND LOADINGS HAS NOT BEEN EVALUATED. A COPY OF THESE CALCULATIONS SHOULD BE SUBMITTED TO THE PROJECT STRUCTURAL ENGINEER SO THAT THE ADEQUACY OF THE BUILDING STRUCTURE CAN BE EVALUATED.
5. SPLICE LOCATIONS ARE ASSUMED AS SHOWN ON THE REFERENCE SHOP DRAWINGS. IF NO SPLICE IS SHOWN IT IS ASSUMED NOT TO BE THERE
6. IF CONNECTION CONFIGURATION OR MATERIALS DIFFER FROM THOSE USED IN THIS SET OF CALCULATIONS IT SHALL BE BROUGHT TO THE ATTENTION OF JASCO PACIFIC, INC. PRIOR TO FABRICATION OR INSTALLATION.
7. ALL SHEAR BLOCKS SHALL BE ALUMINUM WITH A DRILLED HOLE OF MAX. DIAMETER EQUAL TO BOLT DIAMETER PLUS 1/32".
8. ALL BOLTS, LAG SCREWS, AND CONCRETE ANCHORS SHALL BE INSTALLED WITH AMERICAN STANDARD PLAIN WASHERS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE ASTM A307 UNLESS NOTED OTHERWISE.

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 * Entelechy Corporation * JASCO PACIFIC INC.
 * 303 Avocet Court * 550 D Industrial Way
 * Fernley NV 89408 * FALLBROOK CA. 92028
 * (775) 575-7006 * (760) 723-8135

 * PROJECT: * JOB NO. 398-10- 5 *
 * Sam Jackson Tram Entry and Park * BY: J.A. SADLER *
 * 3181 SW Sam Jackson Road * CHK: D.A. BAUM *
 * Portland Oregon 97201 * DATE 10-24-05 *

9. ALL DRILLED-IN CONCRETE ANCHORS SHALL BE INSTALLED A MINIMUM OF 12 DIAMETERS ON CENTER AND A MINIMUM EDGE DISTANCE OF 6 DIAMETERS UNLESS NOTED OTHERWISE IN THE CALCULATIONS. IF "SPECIAL INSPECTION" IS NOTED IN THE CALCULATIONS ANCHORS SHALL BE INSTALLED WITH A SPECIAL INSPECTOR AS SET FORTH IN SECTION 1701 OF THE UBC.

10. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE WITH THE AWS WELDING CODE AS FOLLOWS:

CERTIFICATION	CODE
ALUMINUM	AWS D1.2-90
STRUCT. STEEL	AWS D1.1-94
LIGHT GUAGE (LESS THEN 3/16 IN.)	AWS D1.3-89
REINFORCING STEEL	AWS D1.4-92

UNLESS NOTED OTHERWISE ON CALCULATIONS WELDING SHALL BE PERFORMED WITH SPECIAL INSPECTION AS SET FORTH IN SECTION 1701 OF THE UBC.

11. INTERNAL STEEL STIFFENERS WHERE SPECIFIED SHALL BE FABRICATED USING ASTM A-36 STEEL FOR STRUCTURAL SHAPES AND ASTM A-569 FOR COLD FORMED SECTIONS. DIMENSIONS SHOWN IN THESE CALCULATIONS ARE APPROXIMATE; ACTUAL FABRICATED SIZE SHALL PROVIDE FOR A TIGHT FIT WITH A MAXIMUM OF 1/8" CLEARANCE.

12. ALL WELDING OF ALUMINUM SHALL BE IN ACCORDANCE WITH UBC SECTION 3012. WELDING OF ALUMINUM TO OCCUR ONLY AT LOCATIONS SPECIFICALLY SHOWN ON PLANS.

13. WHERE ALUMINUM PARTS ARE IN CONTACT WITH OR FASTENED TO STEEL MEMBERS OR OTHER DISSIMILAR MATERIALS THE ALUMINUM SHALL BE KEPT FROM DIRECT CONTACT AS SPECIFIED IN SECTION 2004.3 Ref.1

14. ALL GLASS AND GLAZING SHALL MEET THE REQUIREMENTS FOR THE CURRENT UNIFORM BUILDING CODE CHAPTER 24. SAFETY GLAZING SHALL BE USED IN ALL AREAS WHERE REQUIRED.

15. ALL GLAZING AT A SLOPE OF 15 DEGREES OR GREATER WITH THE VERTICAL SHALL MEET THE REQUIREMENTS OF CHAPTER 24 OF THE UNIFORM BUILDING CODE.

 * PREPARED FOR: * PREPARED BY:
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 * 303 Avocet Court * 550 D Industrial Way
 * Fernley NV 89408 * FALLBROOK CA. 92028
 * (775) 575-7006 * (760) 723-8135
 * *

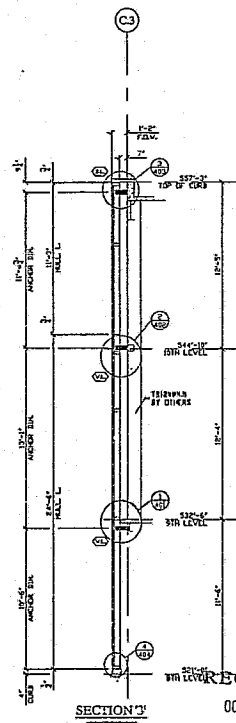
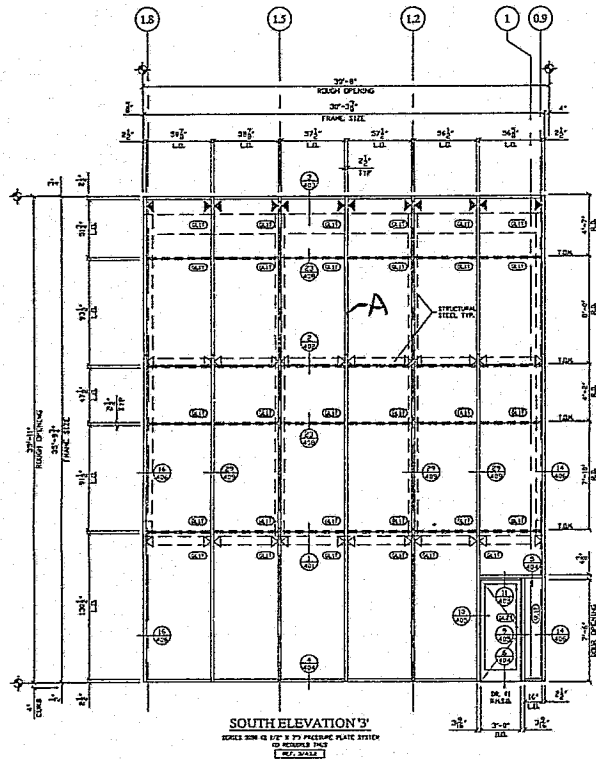
SHT. 3 OF 36

ANDERSEN CONSTRUCTION

5
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102
201
201
401
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24

40F36

EDULE	FINISH SCHEDULE	DESIGN CRITERIA			SL
40 TOPWORKS	1. ALL WINDOW ALUMINUM TO BE ANODIZED ALUMINUM TO BE AS LISTED EXTERIOR PAINTED HIGH PERFORMANCE ORGANIC FINISH 14 COAT FLUOROPOLYMER NOT LESS THAN 70% POLYURETHANE FLUORINE ACID RESISTANT SURFACING POLYURETHANE COATING MAGNEX-7 INTERIOR N/A	CURF REQUIREMENTS 1997 IBC WITH 1998 EDITION STRUCTURAL SPECIALTY CODE AMENDMENTS WIND LOAD REQUIREMENTS TYPICAL ZONES 18.4 PSF CORNER ZONES 25.5 PSF	PROJECT INFORMATION BUILDING HEIGHT: 40'-0" WINDSPEED: 80 MPH IMPORTANCE FACTOR: 1.00 EXPOSURE: B	SYSTEM DEFLECTION REQUIREMENTS MAX ALLOWABLE DEFLECTION: L/75 OR 3/4" INTERSTORY LIVE LOAD DEFLECTION: 1/8" SEISMIC REQUIREMENTS 2% IN ELASTIC DEFLECTION	PRE
SYSTEM DESCRIPTIONS					
	EXTERIOR STOREFRONT - U.S. ALUMINUM CORPORATION SERIES 60-2551 12 1/2" X 77" PRESSURE PLATE SYSTEM FOR 1" GLASS		INTERIOR N/A	RECEIVED OCT 12 2005 Yasco Pacific, Inc	
EDULE	DOORS U.S. ALUMINUM CORPORATION SERIES 6000000000 5/16" BOTTOM RAIL GLAZING TO BE 1/4" GLASS				



321-02
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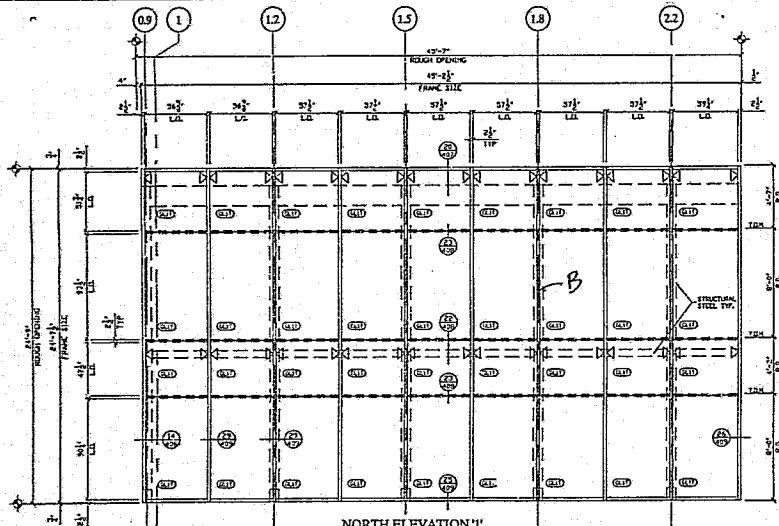
OCT 12 2005

Tasco Pacific, Inc

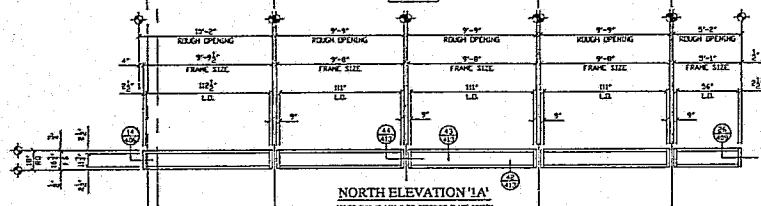
TEAM JACKSON TRAM ENTRY AND PARK
181 SW SAM JACKSON PARK ROAD
PORTLAND, OREGON 97201

COLUMBIA CONTRACT GLAZING, INC.

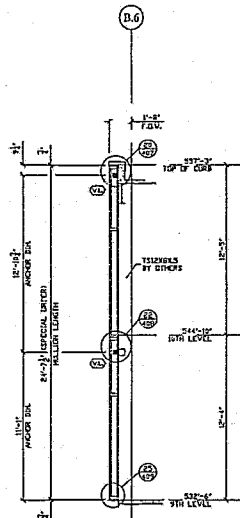
DEAN B.
LEWIS
212 AVENUE C
RICHMOND, VA 23218
P4 6773 275-1000
F4 6773 275-1000



NORTH ELEVATION 'T'
ELEVATION SHOWN AS 1/2" X 3/4" PRELIMINARY PLATE ELEVATION
OF PRELIMINARY SIZE
(SEE ELEVATION)



NORTH ELEVATION '1A'
ELEVATION SHOWN AS 1/2" X 3/4" PRELIMINARY PLATE ELEVATION
OF PRELIMINARY SIZE
(SEE ELEVATION)



SECTION 'T'
ELEVATION SHOWN AS 1/2" X 3/4"

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OCT 12 2005

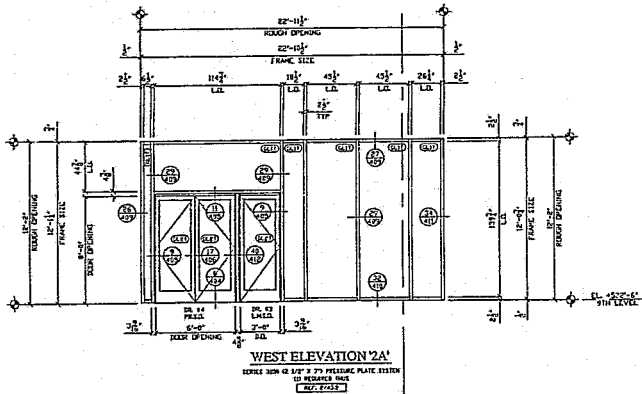
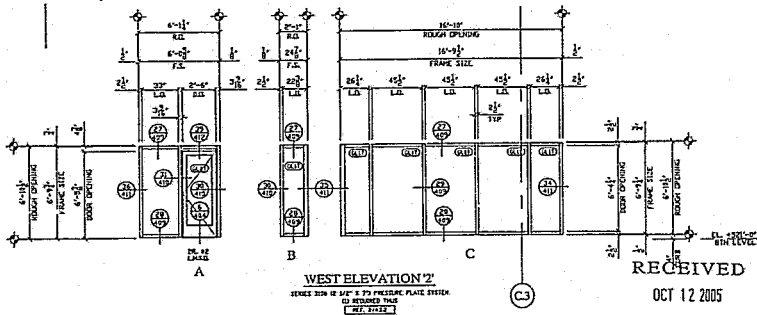
fasco Pacific, Inc

REVISIONS
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COLUMBIA CONTRACT GLAZING, INC.
3181 SW SAM JACKSON PARK ROAD
PORTLAND, OREGON 97201

DATE: 10/12/05
BY: JAC
CHECKED: JAC
APPROVED: JAC
SHEET: 1A

302

[illegible]

RECEIVED

OCT 12 2005

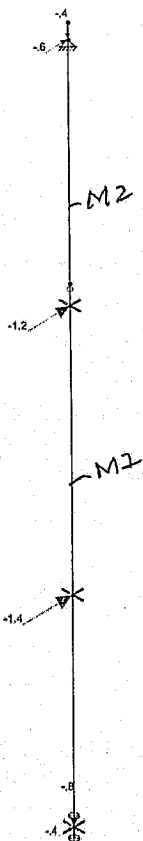
Tasco Pacific, Inc

SAM JACKSON TRAM ENTRY AND PARK
3181 SW SAM JACKSON PARK ROAD
PORTLAND, OREGON 97201

[illegible]

XCHG exp 10/23-05
 Date: 8-8-05
 Street: 57A
 Check: _____
 Name: KAC
 SWEET HQ

303



Results for LC 1, wind
Reaction units are k and k-ft

Jasco Pacific, Inc.

Jim Sadler

2398-10-05

Sam Jackson

Mullion A

Oct 24, 2005 at 10:37 AM

2398-10-051.r3d

8 OF 36

Beam: M1

Shape: I=8.25

Material: gen_Alum

Length: 24.5 ft

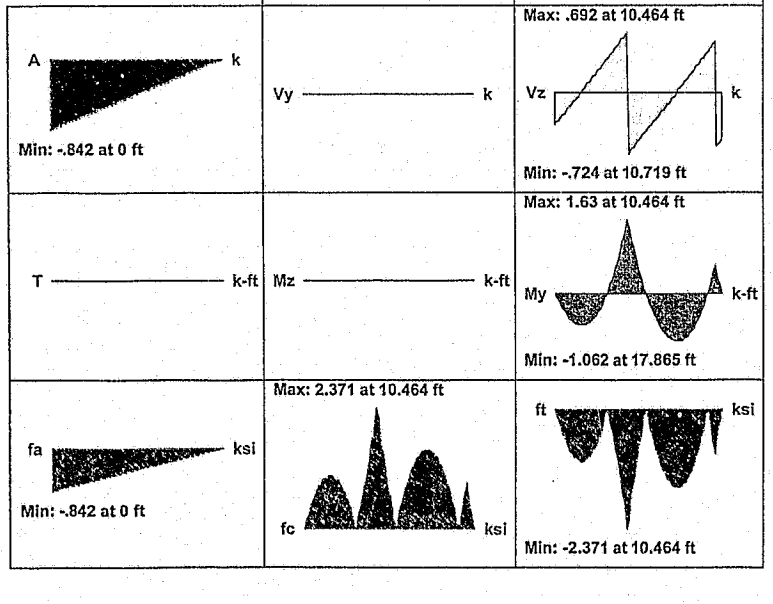
I Joint: N1

J Joint: N4

LC 1: wind

Code Check: 0.000 (bending)

Report Based On 97 Sections



CW-905

$I_{xx} = 8.26 \text{ in}^4$

$S_{xx} = 2.95 \text{ in}^3$

$$f_b = \frac{1.63 \times 12}{2.15} = 7.9 \text{ ksi}$$

USE CW-905

NO STIFF REQ.

Beam: M2

Shape: I=8.25

Material: gen_Alum

Length: 11.75 ft

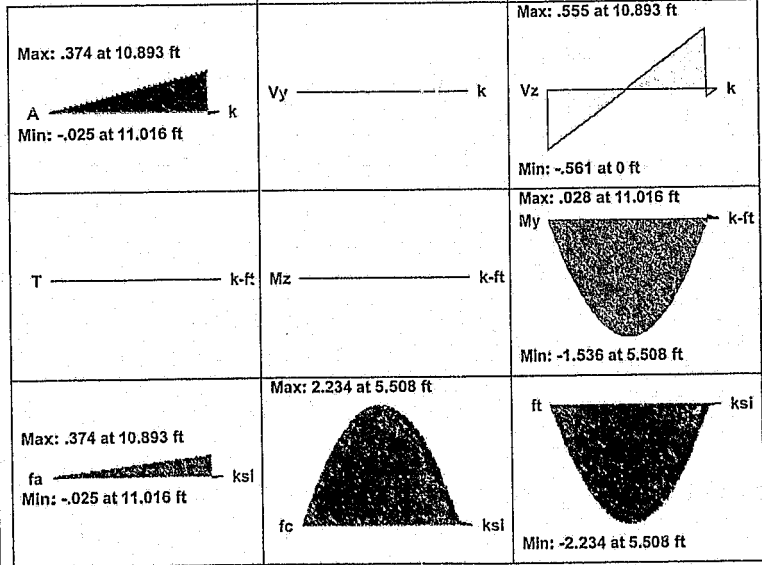
I Joint: N4

J Joint: N6

LC 1: wind

Code Check: 0.000 (bending)

Report Based On 97 Sections



CW-905

$I_{xx} = 8.26$

$S_{xx} = 2.85$

$$f_o = \frac{1.536 \times 12}{2.85} = 2.5 \text{ ksi}$$

USE CW-905

NO STIFFENING

Company : Jasco Pacific, Inc.
Designer : Jim Sadler
Job Number : 2398-10-05

Sam Jackson

Oct 24, 2005
10:35 AM
Checked By:

Joint Reactions (By Combination)

LC		Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	0	-842	-38	0	NC	0
2	1	N2	0	0	-1,442	0	0	0
3	1	N3	0	0	-1.25	0	0	0
4	1	N5	0	-404	-643	0	0	0
5	1	Totals:	0	-1,246	-3,716			
6	1	COG (ft):	X: 0	Y: 18.111	Z: 0			

11 OF 36



Results for LC 1, Wind
Reaction units are k and k-ft

Jasco Pacific, Inc.	Sam Jackson Mullion B	
Jim Sadler		Oct 24, 2005 at 10:49 AM
2398-10-05		2398-10-052.r3d

12 OF 36

Beam: M1

Shape: I=8.25

Material: gen_Alum

Length: 24.75 ft

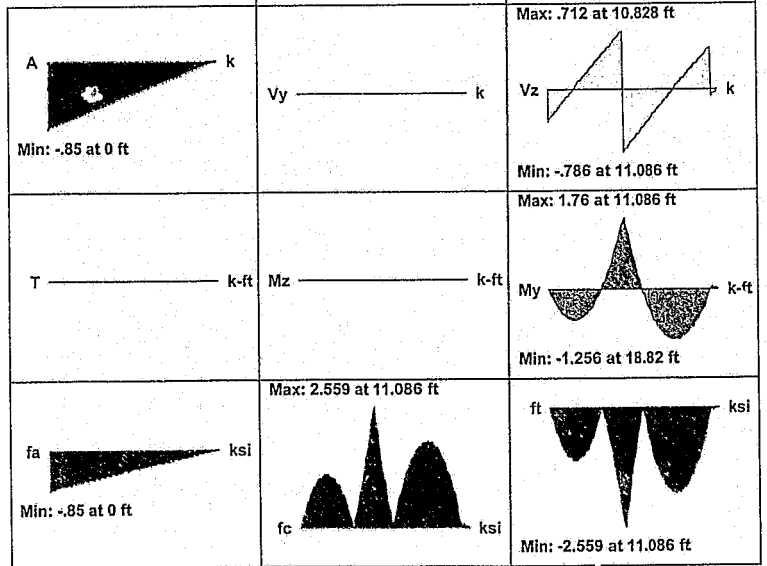
I Joint: N1

J Joint: N4

LC 1: wind

Code Check: 0.000 (bending)

Report Based On 97 Sections



CW-905

$$I_{xx} = 8.26 \cdot 4$$

$$S_{xx} = 2.45 \text{ in}^3$$

$$f_b = \frac{1.76 \times 12}{2.95} = 7.16 \text{ ksi}$$

USE CW-905
NO STIFF

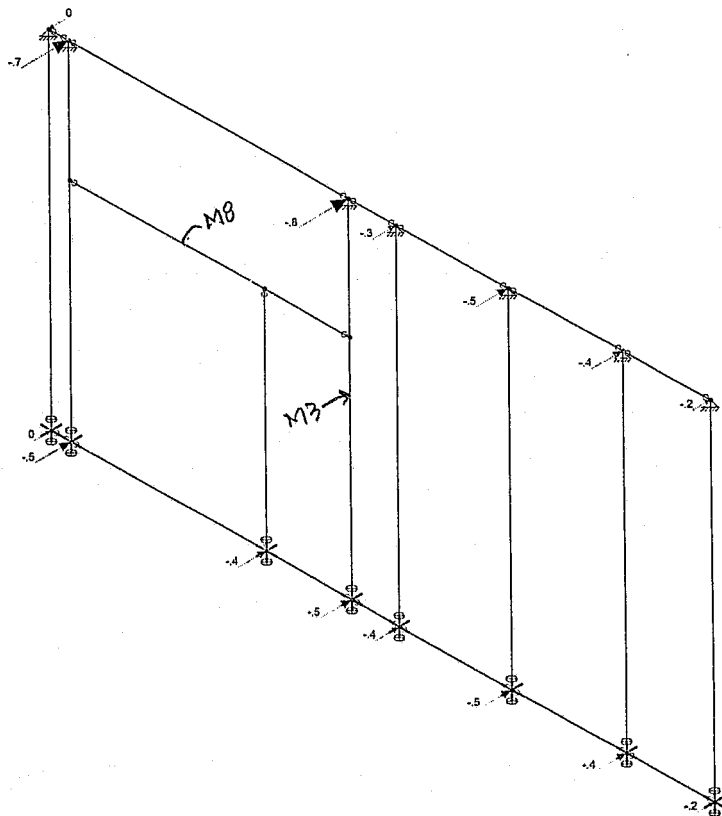
Company : Jasco Pacific, Inc.
 Designer : Jim Sadler
 Job Number : 2398-10-05

Sam Jackson

Oct 24, 2005
 10:50 AM
 Checked By:

Joint Reactions (By Combination)

LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N3	0	0	-614	0	0
2	1	N2	0	0	-1,525	0	0
3	1	N1	0	-85	-398	0	0
4	1	Totals	0	-85	-2,537	0	0
5	1	COG (ft):	X: 0	Y: 12.375	Z: 0		



Results for LC 1, wind
Reaction units are k and k-ft

Jasco Pacific, Inc.

Sam Jackson

Jim Sadler

Oct 24, 2005 at 11:25 AM

2398-10-05

Elevation 2A

2398-10-053.r3d

15 OF 36

Beam: M3

Shape: I=8.25

Material: gen Alum

Length: 147 in

I Joint: N5

J Joint: N6

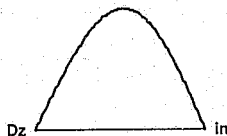
LC 1: wind

Code Check: 0.000 (bending)

Report Based On 97 Sections

Dy _____ in

Max: .564 at 76.563 in



A _____ k

Vy _____ k

Max: .571 at 147 in

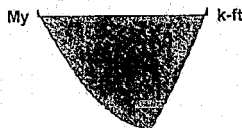


Min: -.447 at 0 in

T _____ k-ft

Mz _____ k-ft

Max: .085 at 147 in



Min: -1.975 at 94.937 in

fa _____ ksi

Max: 2.873 at 94.937 in



Min: .014 at 1.531 in

Max: -.014 at 1.531 in



Min: -2.873 at 94.937 in

CW-905

$I_{xx} = 8.26 \text{ in}^4$

$S_{xx} = 2.45 \text{ in}^3$

$$\frac{L}{r_s} = \frac{147}{175} = 0.84 > 0.564$$

$$f_{b0} = \frac{1.975 \times 12}{2.45} = 9.67 \text{ ksi}$$

USE CW-905

NO STIFFEN.

16 OF 36

Beam: M8

Shape: I=8.25

Material: gen_Alum

Length: 117 in

I Joint: N15

J Joint: N16

LC 1: wind

Code Check: 0.000 (bending)

Report Based On 97 Sections

Max: .715 at 64.594 in

Dy _____ in



Dz _____ in

Min: .424 at 0 in

A _____ k

Vy _____ k

Max: .442 at 117 in

Vz _____ k



Min: -.395 at 0 in

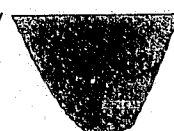
Max: .002 at 0 in

T _____ k-ft

Min: .002 at 81.656 in

Mz _____ k-ft

My _____ k-ft



Min: -1.224 at 60.938 in

fa _____ ksi

Max: 1.78 at 60.938 in

fc _____ ksi



ft _____ ksi



Min: -1.78 at 60.938 in

CW-925

$I_{xx} = 7.0 \text{ in}^4$

$S_{xx} = 2.0 \text{ in}^3$

$$f_b = \frac{1.224 \times 12}{2} = 7.34 \text{ ksi}$$

VSF CW-925

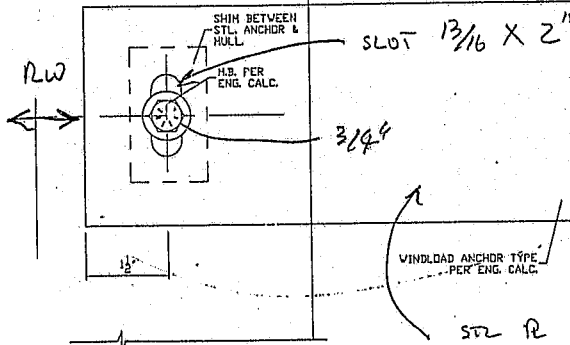
NO STIFFEN

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1
491

REF 3/301

RWS = 1.4h
(mullion A)



TRY 3/4" Ø M.B.

CAP = 1500# Brk.

USE (1) 3/4" Ø M.B.

VERIFY CAPACITY
SEE NOTE 4, SHT 2

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SHT. 15 OF 36

REF 3/302

$$R_w = 1.2 \text{ k}$$

USE $3/4"$ ϕ M.C.

SEB CALLED 1/9/01

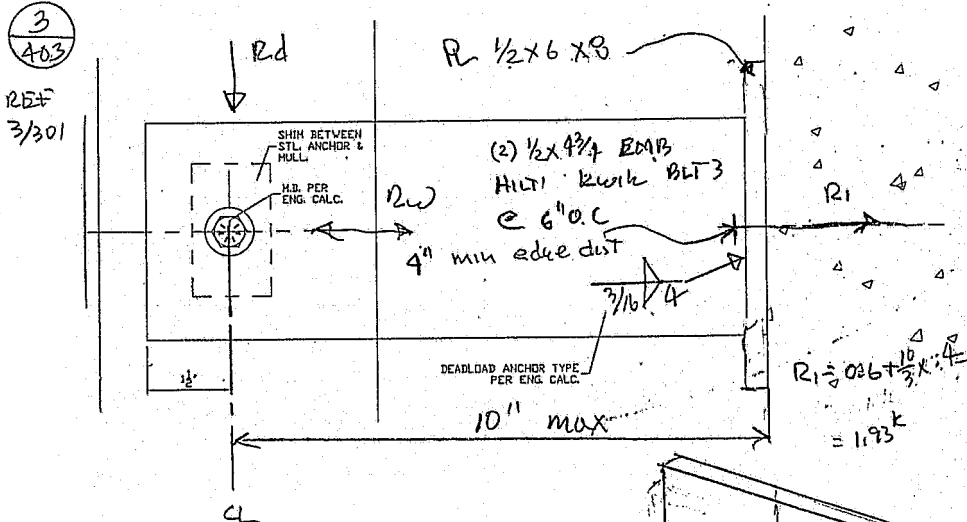
VERIFY CAPACITY
SEE NOTE 4, SHT 2

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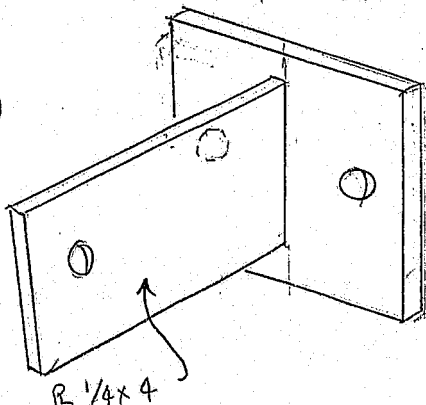
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 * *****



CL
 $Rw = 0.6k$
 $Rd = 0.4k$ (million A)
 $U = \sqrt{0.6^2 + 0.4^2} = 0.72k$
 USE $\frac{1}{2}" \phi$ M.B.
 CAP = 1000# BR



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 * *****

Hilti Steel Kwik Bolt 3 Anchor (Hardrock Concrete)

Calculations per ICBO

ESR-1385

special_inspection := "n"

wind_seismic_increase := "y"

fc = 3000 (design concrete strength)

DSA := "n"

spacing := 6

edgedist1 := 6

edgedist2 := 6

$$P_s := \frac{1930}{2}$$

tension

(applied loading)

$$V_s := \frac{400}{2}$$

shear

selected_anchor = "1/2 x 4 3/4 emb"

$$P_t = 1103$$

(allowable loading per ICBO ESR-1385 Table 3)

$$V_t = 1832$$

anchor spacing reduction (tension and shear)

Tension

$$s_{\min} = 4.75 < \text{spacing} = 6$$

$$s_{cr} = 7.875 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$\text{ten_spc_reduction} := \text{if} \left(\text{spacing} \geq s_{cr}, 1, 0.4 \cdot \frac{\text{spacing} - s_{\min}}{s_{cr} - s_{\min}} + .6 \right)$$

$$\text{ten_spc_reduction} = 0.76$$

shear

$$\text{shr_spc_reduction} := \text{if} \left(\text{spacing} \geq s_{cr}, 1, 0.1 \cdot \frac{\text{spacing} - s_{\min}}{s_{cr} - s_{\min}} + .9 \right)$$

$$\text{shr_spc_reduction} = 0.94$$

edge dist reduction tension (edge 1)

$$c_{\min_ten} = 4.75 < \text{edgedist1} = 6$$

$$c_{cr_ten} = 6.125 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RN1} := \text{if} \left(\text{edgedist1} \geq c_{cr_ten}, 1, 0.2 \cdot \frac{\text{edgedist1} - c_{\min_ten}}{c_{cr_ten} - c_{\min_ten}} + .8 \right) \quad f_{RN1} = 0.982$$

edge dist reduction tension (edge 2)

$$c_{\min_ten} = 4.75 < \text{edgedist2} = 6$$

$$c_{cr_ten} = 6.125 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RN2} := \text{if} \left(\text{edgedist2} \geq c_{cr_ten}, 1, 0.2 \cdot \frac{\text{edgedist2} - c_{\min_ten}}{c_{cr_ten} - c_{\min_ten}} + .8 \right) \quad f_{RN2} = 0.982$$

edge dist reduction shear (edge 1)

$$c_{\min_shr} = 3.375 < \text{edgedist1} = 6$$

$$c_{cr_shr} = 6.75 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RV1} := \text{if} \left(c_{cr_shr} \leq \text{edgedist1}, 1, .5 \cdot \frac{\text{edgedist1} - c_{\min_shr}}{c_{cr_shr} - c_{\min_shr}} + .5 \right) \quad f_{RV1} = 0.889$$

edge dist reduction shear (edge 2)

$$c_{\min_shr} = 3.375 < \text{edgedist2} = 6$$

$$c_{cr_shr} = 6.75 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RV2} := \text{if} \left(c_{cr_shr} \leq \text{edgedist2}, 1, 5 \cdot \frac{\text{edgedist2} - c_{min_shr}}{c_{cr_shr} - c_{min_shr}} + .5 \right) \quad f_{RV2} = 0.889$$

adjustment factors

$$C_1 = 1.333 \quad (\text{wind-seismic increase per findings 4.6 ICBO ESR-1385})$$

$$C_2 = 1 \quad (\text{DSA factor})$$

Combined Loading

$$\exp = 1.667$$

$$\left(\frac{P_s}{P_t \cdot C_1 \cdot C_2 \cdot f_{RN1} \cdot f_{RN2} \cdot \text{ten_spe_reduction}} \right)^{\exp} + \left(\frac{V_s}{V_t \cdot C_1 \cdot C_2 \cdot \text{shr_spe_reduction} \cdot \min(f_{RV1}, f_{RV2})} \right)^{\exp} = 0.853$$

selected_anchor = "1/2 x 4 3/4 emb"

Anchor_Spacing = "OK"

Edge_distance = "OK"

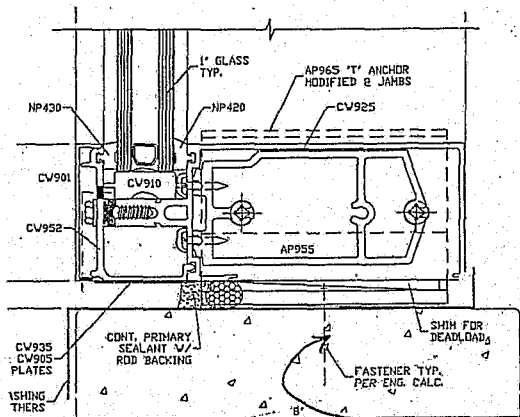
unity_equation = "OK"

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4
404

REF 3/301

Rw = 400# m.u. u.d. n



(2) 3/8 x 2 1/2" EMB
 HILT RWIL BLT 3
 3" min edge dist.

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Hilti Steel Kwik Bolt 3 Anchor (Hardrock Concrete)

Calculations per ICBO

ESR-1385

special_inspection := "n"

wind_seismic_increase := "y"

 $f_c = 3000$ (design concrete strength)

DSA := "n"

spacing := 5 edgedist1 := 6 edgedist2 := 6

$$P_s := \frac{1200}{2} \quad \text{tension}$$
 (applied loading)

$$V_s := 0 \quad \text{shear}$$

selected_anchor = "1/2 x 2 1/4 emb"

 $P_t = 642$

(allowable loading per ICBO ESR-1385 Table 3)

 $V_t = 1745$

anchor spacing reduction (tension and shear)

Tension

 $s_{min} = 2.25 < \text{spacing} = 5$ $s_{cr} = 5.125$ (per ICBO ESR-1385 Table 2)
$$\text{ten_spc_reduction} := \text{if} \left(\text{spacing} \geq s_{cr}, 1, 0.4 \cdot \frac{\text{spacing} - s_{min}}{s_{cr} - s_{min}} + .6 \right)$$

ten_spc_reduction = 0.983

shear

$$\text{shr_spc_reduction} := \text{if} \left(\text{spacing} \geq s_{cr}, 1, 0.1 \cdot \frac{\text{spacing} - s_{min}}{s_{cr} - s_{min}} + .9 \right)$$

shr_spc_reduction = 0.996

edge dist reduction tension (edge 1)

$$c_{\min_ten} = 2.25 < edgedist1 = 6$$

$$c_{cr_ten} = 4 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RN1} := \text{if} \left(edgedist1 \geq c_{cr_ten}, 1, 0.2 \frac{edgedist1 - c_{\min_ten}}{c_{cr_ten} - c_{\min_ten}} + .8 \right) \quad f_{RN1} = 1$$

edge dist reduction tension (edge 2)

$$c_{\min_ten} = 2.25 < edgedist2 = 6$$

$$c_{cr_ten} = 4 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RN2} := \text{if} \left(edgedist2 \geq c_{cr_ten}, 1, 0.2 \frac{edgedist2 - c_{\min_ten}}{c_{cr_ten} - c_{\min_ten}} + .8 \right) \quad f_{RN2} = 1$$

edge dist reduction shear (edge 1)

$$c_{\min_shr} = 3.375 < edgedist1 = 6$$

$$c_{cr_shr} = 6.75 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RV1} := \text{if} \left(c_{cr_shr} \leq edgedist1, 1, .5 \frac{edgedist1 - c_{\min_shr}}{c_{cr_shr} - c_{\min_shr}} + .5 \right) \quad f_{RV1} = 0.889$$

edge dist reduction shear (edge 2)

$$c_{\min_shr} = 3.375 < edgedist2 = 6$$

$$c_{cr_shr} = 6.75 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RV2} := \text{if} \left(c_{cr_shr} \leq \text{edgedist2}, 1, .5 \cdot \frac{\text{edgedist2} - c_{min_shr}}{c_{cr_shr} - c_{min_shr}} + .5 \right) \quad f_{RV2} = 0.889$$

adjustment factors

$$C_1 = 1.333 \quad (\text{wind-seismic increase per findings 4.6 ICBO ESR-1385})$$

$$C_2 = 1 \quad (\text{DSA factor})$$

Combined Loading

$$\exp = 1$$

$$\left(\frac{P_s}{P_t \cdot C_1 \cdot C_2 \cdot f_{RN1} \cdot f_{RN2} \cdot \text{ten_spe_reduction}} \right)^{\exp} + \left(\frac{V_s}{V_t \cdot C_1 \cdot C_2 \cdot \text{shr_spe_reduction} \cdot \min(f_{RV1}, f_{RV2})} \right)^{\exp} = 0.713$$

$$\text{selected_anchor} = "1/2 \times 2 \text{ 1/4 cmb}"$$

$$\text{Anchor_Spacing} = "OK"$$

$$\text{Edge_distance} = "OK"$$

$$\text{unity_equation} = "OK"$$

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SA
408

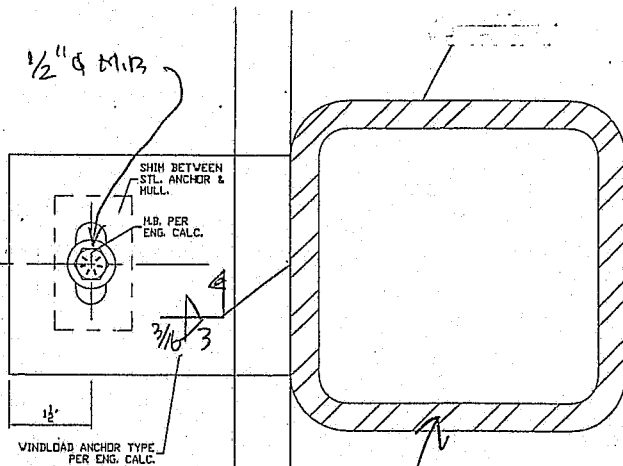
REF 1/302

BW = 1.5k

TRY 1/2" Ø M.B.

CAP = 1000 X 2
= 2k

USE 1/2" Ø M.B.



STL R
1/4" X 4
EA SIDE

VERIFY CAPACITY
SEE NOTE 4, SHT 2

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25
409

REF 1/302

$R_w = 0.4$

$R_d = 0.9k$

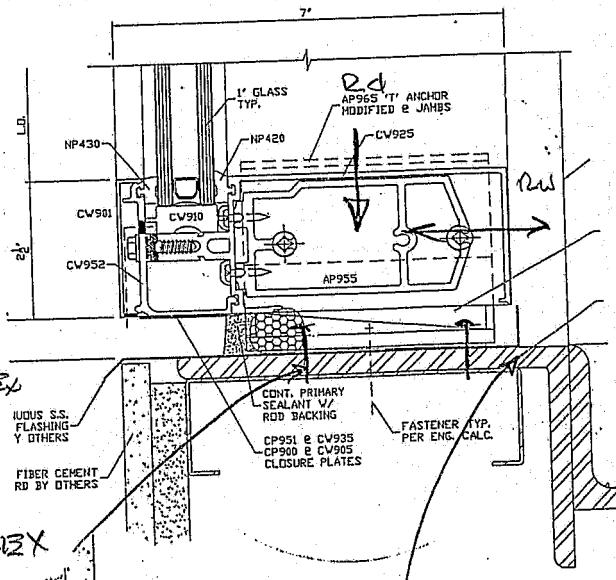
TR- (9) 1/4-20

DRAW PLEX

$CAH = 620 \times 4 = 2,480$

US (4) 1/4-20

DRAW PLEX



VERIFY CAPACITY
SEE NOTE 4, SHT 2

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27
409

similar 38/412

REF 2A/303

RWC = 0.8h

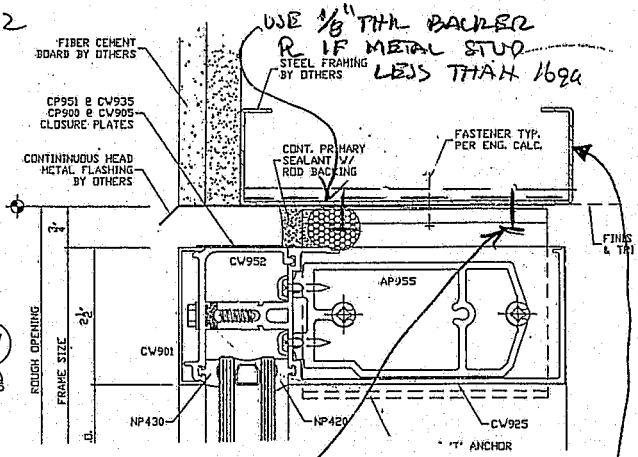
PLY (4) 1/4-14
 DRILL FLEX

CAP = 635 x 4
 = 2540

USE (4) 1/4-14

DRILL FLEX

27
B
SP. 44.5



VERIFY CAPACITY
 SEE NOTE 4, SHT 2

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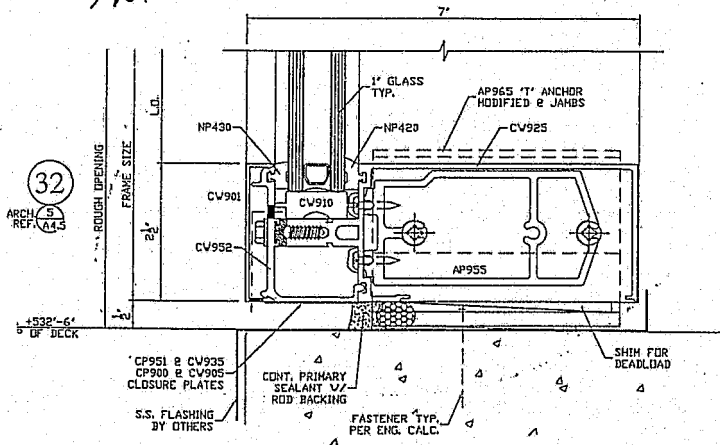
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32
410

similar 28/409

REF 24/303

new 0.5 h



(2) 3/8 x 2 1/2" EMB

HLTI kwik BUT 3

see calc next slt.

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SHT. 32 OF 36

Hilti Steel Kwik Bolt 3 Anchor (Hardrock Concrete)

Calculations per ICBO
ESR-1385

special_inspection := "n" wind_seismic_increase := "y"
 $f_c = 2000$ (design concrete strength) DSA := "n"
 spacing := 4 edgdist1 := 3 edgdist2 := 10
 $V_s = 250$ shear

selected_anchor = "3/8 x 2 1/2 emb"

$V_t = 1255$ (allowable loading per ICBO ESR-1385 Table 3)

anchor spacing reduction (shear)

$s_{min} = 2.5$ < spacing = 4

$s_{cr} = 5.625$

$shr_spe_reduction := \text{if} \left(\text{spacing} \geq s_{cr}, 1, 0.1 \cdot \frac{\text{spacing} - s_{min}}{s_{cr} - s_{min}} + .9 \right)$ $shr_spe_reduction = 0.948$

edge dist reduction shear (edge 1)

$c_{min_shr} = 2.5$ < edgdist1 = 3

$c_{cr_shr} = 4.875$ (per ICBO ESR-1385 Table 2)

$f_{RV1} := \text{if} \left(c_{cr_shr} \leq \text{edgdist1}, 1, .5 \cdot \frac{\text{edgdist1} - c_{min_shr}}{c_{cr_shr} - c_{min_shr}} + .5 \right)$ $f_{RV1} = 0.605$

edge dist reduction shear (edge 2)

$$c_{\min_shr} = 2.5 < \text{edgedist2} = 10$$

$$c_{cr_shr} = 4.875 \quad (\text{per ICBO ESR-1385 Table 2})$$

$$f_{RV2} := \begin{cases} c_{cr_shr} \leq \text{edgedist2}, 1, .5 \cdot \frac{\text{edgedist2} - c_{\min_shr}}{c_{cr_shr} - c_{\min_shr}} + .5 \end{cases} \quad f_{RV2} = 1$$

adjustment factors

$$C_1 = 1.333 \quad (\text{wind-seismic increase per findings 4.6 ICBO ESR-1385})$$

$$C_2 = 1 \quad (\text{DSA factor})$$

Unity Equation

$$\left(\frac{V_s}{V_t \cdot C_1 \cdot C_2 \cdot shr_spe_reduction \cdot \min(f_{RV1}, f_{RV2})} \right) = 0.26$$

$$\boxed{\text{selected_anchor} = "3/8 \times 2 \text{ 1/2cmb"}}$$

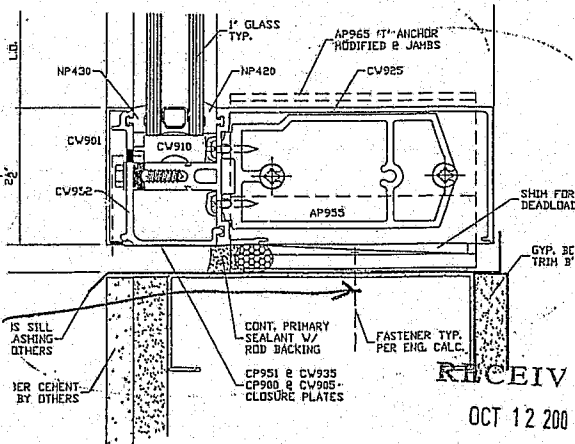
$$\text{Min_edge_distance} = 3 \quad \text{Inch}$$

$$\text{Anchor_Spacing} = \text{"OK"}$$

$$\text{Edge_distance} = \text{"OK"}$$

$$\text{unity_equation} = \text{"OK"}$$

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RECEIV

OCT 12 200

REF 1A/302

RW = 0.5X10X 20.5

USE (2) #12 SMS

CEBA VENT

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43
413

REF 1A/302

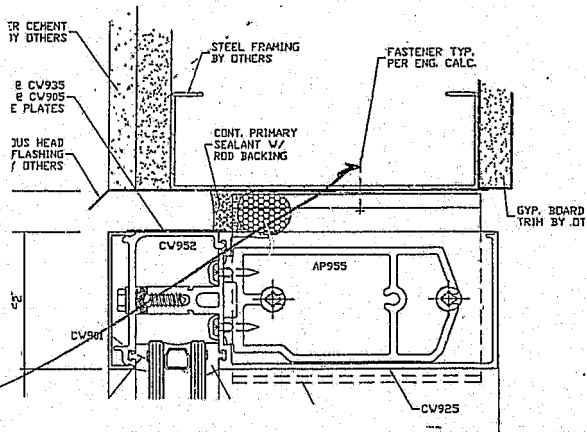
SEE CALLS

42/413

USE (2) #12 SWS

CEA

1501



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