

Built-in cover page

084113-1.5.E-0:Aluminum-Framed Entrances and Storefronts - Delegated-Design Submittal



Status	Open Submitted
Spec section	084113 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
Manager	Ryan Schelin (Je Dunn Construction Company (013735))
Responsible contractor	Andrea Plunkett (Andrea Plunkett Company Llc DbA Apco Construction (065671))
Reviewers step 01	Ryan Schelin (Je Dunn Construction Company (013735))

515 E. Locust St, Suite 301
Des Moines, IA 50309
tel 515.698.4400
fax 515.288.3049

Reviewed by JE Dunn: [Ryan Schelin](#)

Date: [01/14/2026 8:38:19 AM](#)

Job: [LSMC ED Expansion](#)

Submittal ID: [084113-003](#)

Bid Package: [100% CD's](#)

Comments: [Reviewed - Submitted for Approval](#)

Stanley D. Lindsey and Associates, Ltd.

Structural Engineer's review is only for general conformance with the structural Contract Documents. Corrections or comments made on the shop drawings during this review do not relieve the Contractor from compliance with the requirements of the Contract Documents and applicable laws, codes and regulations. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with all other trades; and performing all Work in a safe and satisfactory manner.

Limited Review – This submittal is for a deferred submittal item designed by specialty engineer. Structural Engineer's review is limited to the design criteria and loads imposed to the base structure only.

<input type="checkbox"/> Reviewed – No Exceptions Taken	<input type="checkbox"/> Rejected – Revise and Resubmit
<input type="checkbox"/> Reviewed – With Exceptions as Noted	<input type="checkbox"/> Not Reviewed – Record Copy Only
<input type="checkbox"/> Reviewed – With Exceptions as Noted, Submit Record Copy	<input type="checkbox"/> RFI Response

Date: 1/29/2026

Reviewer: Nishith Sardhara

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084113-1.5.F	Special Inspection/Observations	Submitted Later
084113-1.6.B	Field Quality-Control Reports	Submitted Later
084113-1.6.C	Sample of Special Warranty	Submitted Later
084113-1.6.D	Qualification Data	Submitted Later
084113-1.6.E	Seismic Qualification Certificates	NA
084113-1.6.F	Welding Certificates	NA
084113-1.6.G	Preconstruction Test Reports (For Sealant)	See 079200-001
084113-1.6.H	Source Quality-Control Reports	NA
084113-1.7.A	Maintenance Data	Submitted Later
084113-1.10.A	Warranty	Submitted Later
088000-1.6.E	Delegated-Design Submittal	3 - 25

PER APCO, DELEGATED DESIGN PACKAGE IS ONE PACKAGE THAT INCLUDES THE STOREFRONT AND GLAZING SYSTEMS - RS JE DUNN

HCA

Lee's Summit Medical Center

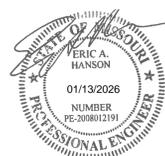
GLAZING CONTRACTOR:



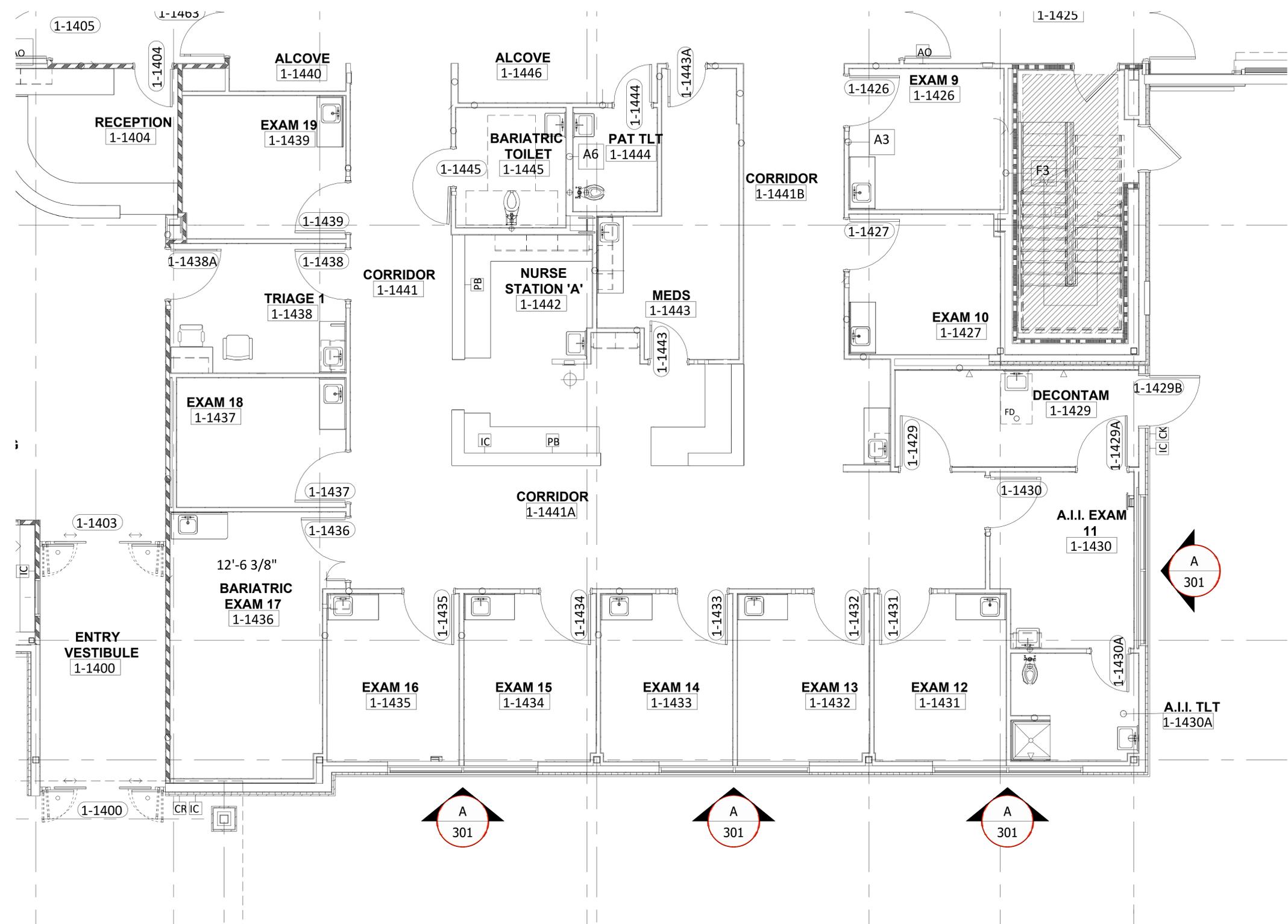
Apco Construction, LLC
401 Lydia Ave
Kansas City, MO 64106
(816) 694-2844

ARCHITECT:

Devenney Group Ltd., Architects
6900 East Camelback Road, Suite 500
Scottsdale, AZ 85251



ANCHOR ENGINEERING, Inc.	
Eric Hanson	
PROFESSIONAL ENGINEER	
2535 17th Street, Suite A Denver, CO 80211	PHONE (303) 783-4797 FAX (303) 830-9133
DESIGNED BY- MNN DRAWN BY- BAH	REVIEWED BY- RJ JOB NO.: 251286
THESE DRAWINGS WERE NOT PREPARED BY ANCHOR ENGINEERING, INC. BUT HAVE BEEN REVIEWED FOR STRUCTURAL ADEQUACY. ONLY ELEMENTS SPECIFICALLY REFERENCED IN THE ACCOMPANYING DESIGN CALCULATIONS HAVE BEEN ENGINEERED	



REV. NO.	REV. DATE	BY	REVISION DESCRIPTION



Project: HCA - Lee's Summit Medical Center
 LOCATION: Lee's Summit, MO
 GLAZING CONTRACTOR: APCO Construction, LLC
 LOCATION: Kansas City, MO
 ARCHITECT: Devenney Group
 LOCATION: Scottsdale, AZ

SCALE: AS SHOWN

DRAWN BY: BAH

DATE: 12/15/2025

CHECKED BY: A.P.

P.M.: A.P.

FILE #:

DRAWING INDEX:

COVER & INFO	100
PLAN VIEWS & FLOOR PLANS	200
ELEVATIONS	300
DETAILS	400

SHEET TITLE:
LEVEL 1 FLOOR PLAN

SHEET NO.:



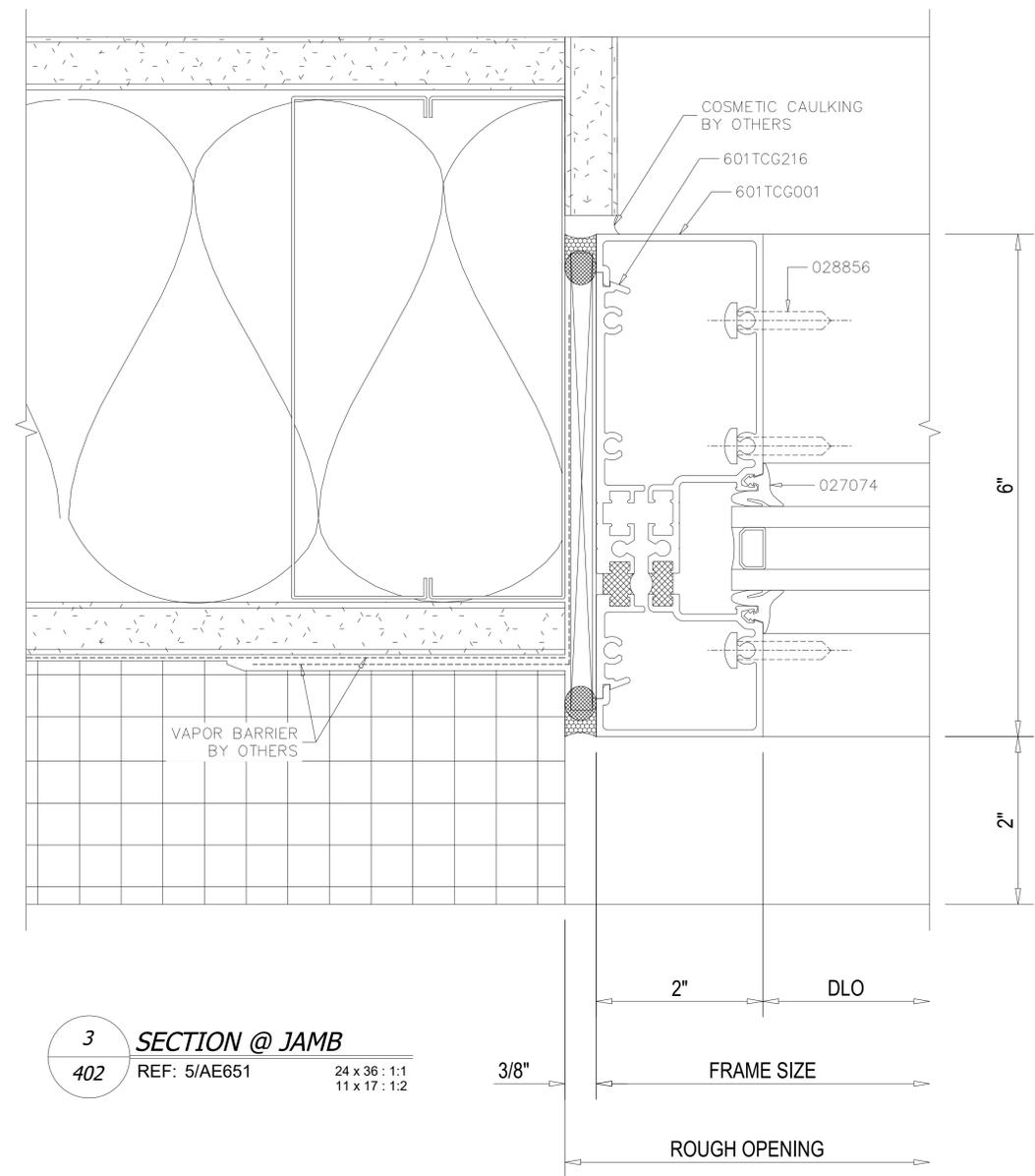
1 LEVEL 1 - FLOOR PLAN
SCALE: NTS

FIELD VERIFY ALL DIMENSIONS

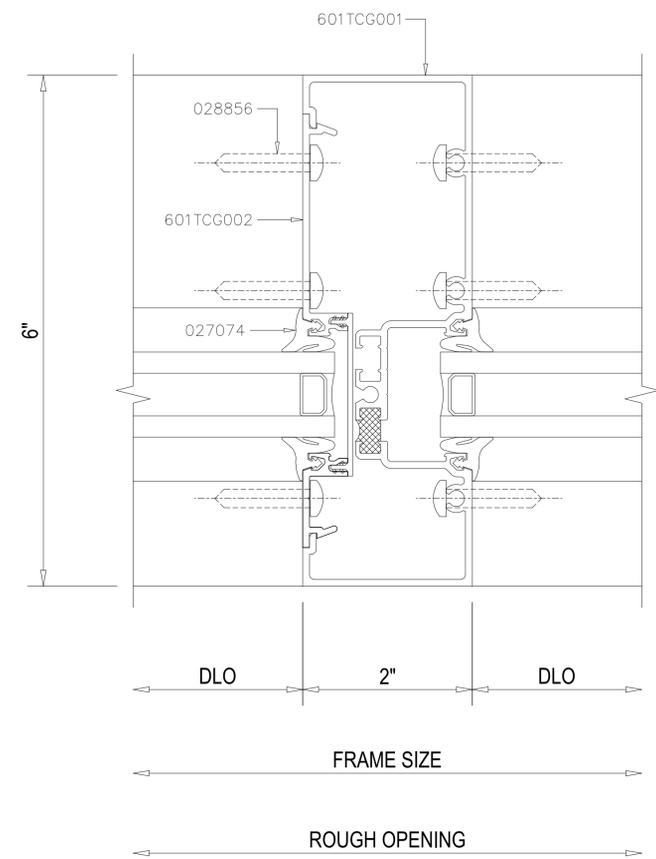
ARCHITECT NOTE:
PERIMETER SUBSTRATE MUST BE CAPABLE OF WITHSTANDING REACTION FORCES IMPOSED BY WIND AND/OR DEAD LOADS

PERIMETER SUBSTRATE SHOWN THAT IS NOT LABELED IS NOT BY THE GLAZING SUB CONTRACTOR

BH
DRAFTING & DESIGN
LLC
These drawings represent BH Drafting & Design's interpretation of information and specifications of materials provided by the architect. The glazing contractor is responsible for the fabrication and installation of the glazing system. BH Drafting & Design is not responsible for the performance of the glazing system. BH Drafting & Design is not responsible for the performance of the glazing system with all other affected substrates, the architect of record and the glazing contractor. BH Drafting & Design is not responsible for any errors and/or omissions related to these drawings. BH Drafting & Design is not responsible for any errors and/or omissions related to these drawings. BH Drafting & Design is not responsible for any errors and/or omissions related to these drawings. BH Drafting & Design is not responsible for any errors and/or omissions related to these drawings.



3 SECTION @ JAMB
 402 REF: 5/AE651 24 x 36 : 1:1
 11 x 17 : 1:2



4 SECTION @ VERTICAL
 402 REF: N/A 24 x 36 : 1:1
 11 x 17 : 1:2

REV. NO.	REV. DATE	BY	REVISION DESCRIPTION
1	1/12/2025	BAH	

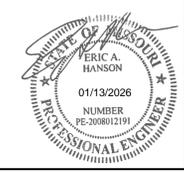


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 DATE: 12/15/2025
 CHECKED BY: A.P.
 P.M.: A.P.
 FILE #:
 DRAWING INDEX:
 COVER & INFO 100
 PLAN VIEWS & FLOOR PLANS 200
 ELEVATIONS 300
 DETAILS 400

SHEET TITLE:
STOREFRONT DETAILS
 SHEET NO.:

402



STRUCTURAL DESIGN CALCULATIONS OF STOREFRONT SYSTEM

FOR

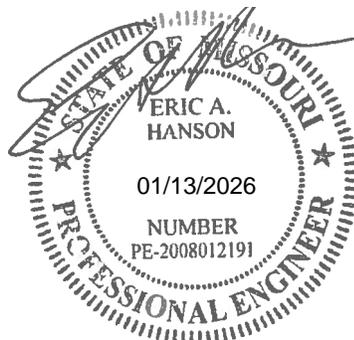
HCA – Lee’s Summit Medical Center

LOCATED AT

2100 SE Blue Pkwy
Lee’s Summit, MO 64063

2026.01.13

PROJECT MANAGER:	Ericn Hanson, P.E., S.E.
REVIEW ENGINEER:	Rob Jenkins, P.E.
PROJECT ENGINEER:	Monique Ness, E.I.T.
PROJECT NUMBER:	251286



APCO
401 Lydia Ave.
Kansas City, MO 64106

Attn: Andi Plunkett, President



Project: HCA – Lee’s Summit Medical Center
Lee’s Summit, MO

Dear Andi Plunkett:

As you requested, our office has reviewed and analyzed the mullions and connections of the Kawneer Series 601T storefront system to the surrounding superstructure for the above-referenced project. The review was based on the shop drawings provided by your office and we performed the analysis of the structural members and connections based on the maximum unsupported length and spacing of the mullions shown in accordance with the International Building Code*.

Based on the results of our review, our office has determined by analysis that the mullions and connections for the glazing system to the superstructure are adequate to support the code-required loads. Our review includes responsibility for the following:

- Wind design per ASCE 7* with the mullions meeting a deflection criteria of $L/175$ for spans less than 13'-6", $L/240 + 1/4"$ for spans greater than 13'-6", and $3/4"$ maximum over any single lite.
- Dead load design for in-plane wall deflection has been limited to $1/8"$.
- Glazing/Curtain wall thermal movement has been reviewed per project specifications.
- Seismic forces per ASCE 7* have been reviewed and found not to control the design.
- Lateral movement of systems are assumed to be addressed per AAMA 501.4 and AAMA 501.6 testing with displacement and system configuration within tested limits. EOR to advise if inter-story drift exceeds minimum testing requirements.
- Design of system connections to the supporting superstructure per the applicable material codes*.

*See general notes sheet for project specific code references.

The seal on these calculations is limited to the structural design of structural components of the system noted above. It does NOT include responsibility for the following:

- Design of material separation to prevent reaction between dissimilar materials.
- Design of air and water infiltration prevention including design of gaskets and sealants.
- Review of glass thermal stresses including differential shading.
- The manufacture, assembly, or installation of the system.
- Quantities of materials or dimensional accuracy of drawings.
- Structural analysis of glass lites.
- Review of interior elevations and details.
- Design of storefront system for thermal and external differential movement.

Formal calculations have been included for review. If you have any questions or need additional information, please notify our office.

Sincerely,
Anchor Engineering, Inc.

Reviewed by,

A handwritten signature in black ink, appearing to be "Monique Ness", written over a horizontal line.



Monique Ness, E.I.
Design Engineer

Eric Hanson, P.E., S.E.
Principal

Structural Design Assumptions

Client: APCO
Project: HCA
Job Number: 251286
Designer: MNN
Date: 12/30/2025



Structural Design Calculations for Glazing Systems

Adopted Codes & Referenced Standards for: [Lee's Summit, MO](#)

2018 International Building Code (IBC)

2016 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures (ASCE 7)

2015 Aluminum Design Manual (ADM)

2015 American Architectural Manufacturer's Association, Maximum Allowable Deflection of Framing System for Building Cladding Components at Design Wind Loads (AAMA TIR-A11)

2014 American Concrete Institute, Building Code Requirements for Structural Concrete (ACI 318)

2016 The Masonry Society, Building Code For Masonry Structures

2018 American Forest & Paper Association, National Design Specification for Wood Construction

2016 American Iron and Steel Institute, North American Specification for the Design of Cold-formed Steel Structural Members (AISI S100)

2016 American Institute of Steel Construction, Specification for Structural Steel Buildings (AISC)

Referenced Drawings

[Architectural drawings provided by APCO, produced by Devenney Group, latest revision dated 2025/04/18.](#)

[Structural drawings provided by APCO, produced by Stanley D. Lindsey and Associates, latest revision dated 04/18/2025.](#)

[Glazing shop drawings provided by APCO, latest revision dated 12/15/2025.](#)

Analysis Assumptions

- Glazing shop drawings are assumed to accurately depict all known conditions, including substrate details, even if in direct conflict with the construction documents.
- Steel studs/track/light gage framing is assumed to be $F_y = 33\text{ksi}$: 18GA or better.
- Minimum 28-day concrete compressive strength, f'_c , is assumed to be 3,000 psi and of cracked normal weight material.
- Concrete anchors assume an 6" end distance or greater, unless noted otherwise.
- Concrete Masonry Units (CMU) is assumed to be ASTM C90 ($f'_m \geq 1,500\text{psi}$).
- Structural steel shapes/miscellaneous plates etc. are based on 3/16" minimum material thickness.
- Wood blocking is assumed to be Hem-Fir with a specific gravity of 0.43.
- All welds are to be performed per AWS D1.1 standards.
- Plywood is assumed to be C-D grade with exterior glue (all plies Group 1), face grain parallel to load.
- All fasteners into structural steel lintels are assumed to have 'Cants', offset flashing, or similar system in place to prevent fasteners from damaging water/air barrier.
- Perimeter silicone is assumed to be installed per manufacturer recommendations.
- Use of full bearing shims at connection locations where shown.
- Storefront sills are connected by method of shear block or screw spline to vertical door members, even if not explicitly shown in shop details.

Mechanical Properties for Aluminum Alloys & Steel

<u>Aluminum Alloy & Temper</u>	<u>F_{tu} (ksi)</u>	<u>F_{ty} (ksi)</u>	<u>F_{cy} (ksi)</u>	<u>F_{su} (ksi)</u>	<u>E (ksi)</u>
6063-T6	30	25	25	19	10,100
<u>Steel Material Designation</u>	<u>F_y (ksi)</u>	<u>F_u (ksi)</u>	<u>E (ksi)</u>	<u>M.R.</u>	
ASTM A36	36	58	29,000	2.8713	

Client: APCO
 Project: HCA
 Job Number: 251286
 Designer: MNN
 Date: 12/30/2025



ASCE 7 Wind Analysis - Components & Cladding

General Information

Adopted Code	ASCE 7-16		
Basic Wind Speed	Vult =	122	mph
Exposure		C	
Occupancy or Risk Category		IV	
Low slope roof, $\theta \leq 7^\circ$?		Yes	
Mean Roof Height	h =	20	ft
Building Long Dimension	L =	163	ft
Building Short Dimension	W =	112	ft
End Zone Dimension	a =	8	ft

Velocity Pressure

Exposure Coefficient	$K_h =$	0.90	
Topographic Factor	$K_{zt} =$	1.00	
Wind Directionality Factor	$K_d =$	0.85	
Ground Elevation Factor	$K_e =$	1.00	
Velocity Pressure	$q_h =$	29.2	psf
	$q_z = 0.00256K_zK_{zt}K_dK_eV^2$		

Design Pressure (0.6 W)

Enclosure Classification	Fully Enclosed		
Internal Pressure Coefficient	$GC_{pi} =$	\pm	0.18

Wall Pressures

Trib. Area (ft ²)	$p = q_h[(GC_p) - (GC_{pi})]$					
	GC_p Z4/Z5	GC_p Z4	GC_p Z5	p Z4/Z5 (psf)	p Z4 (psf)	p Z5 (psf)
10	0.90	-0.99	-1.26	18.9	-20.5	-25.2
20	0.85	-0.94	-1.16	18.1	-19.7	-23.6
50	0.79	-0.88	-1.04	17.0	-18.6	-21.3
100	0.74	-0.83	-0.94	16.1	-17.7	-19.7
200	0.69	-0.78	-0.85	15.3	-16.9	-18.0
500	0.63	-0.72	-0.72	14.2	-15.8	-15.8

Wind pressures calculated per ASCE 7-16 §30.3 h ≤ 60 ft.

Worst case of windward and leeward wind pressures used for design.

Client: APCO
 Project: HCA
 Job Number: 251286
 Designer: MNN
 Date: 12/30/2025



ASCE 7 Seismic Analysis - §13 Nonstructural Components

General Information

Adopted Code ASCE 7-16
 Risk Category IV
 Importance Factor 1.5
 Spectral Acceleration SDS = 0.067 g

Coefficients for Architectural Components

	Amplification Factor - a_p	Response Modification Factor - R_p
Exterior Nonstructural Wall Elements	1	2.5
Fasteners of the Connecting System	1.25	1

Component Operating Weight

Total Glass Thickness	t =	0.5	in	
Glass Weight	DLg =	6.54	psf	
Member Self Weight	DLm =	1.65	psf	Member weight as area load is representative of typical member linear weight distribution averaged over elevation area.
Total Component Weight	Wp =	8.19	psf	

Seismic Design Force

Note: $z/h=1$ Used to determine worst case seismic load.

Exterior Nonstructural Wall Elements

$F_p = 0.40$ psf
 $0.7 E_h = 0.28$ psf
 Minimum wind pressure $0.6 W = -15.8$ psf.
 Wind load controls member design.
 $E_v = 0.11$ psf
 $1.0D + 0.7 E_v = 8.27$ psf
 $1.0 D - 0.7 E_v = 8.11$ psf

Fasteners of the Connecting system

$F_p = 1.23$ psf
 $0.7 E_h = 0.86$ psf
 Minimum wind pressure $0.6 W = -15.8$ psf.
 Wind load controls connection design.
 $E_v = 0.11$ psf
 $1.0D + 0.7 E_v = 8.27$ psf
 $1.0 D - 0.7 E_v = 8.11$ psf

13.3.1.1 Horizontal Force. The horizontal seismic design force (F_p) shall be applied at the component's center of gravity and distributed relative to the component's mass distribution and shall be determined in accordance with Eq. (13.3-1):

$$F_p = \frac{0.4a_p S_{DS} W_p}{\left(\frac{R_p}{I_p}\right)} \left(1 + 2\frac{z}{h}\right) \quad (13.3-1)$$

F_p is not required to be taken as greater than

$$F_p = 1.6 S_{DS} I_p W_p \quad (13.3-2)$$

and F_p shall not be taken as less than

$$F_p = 0.3 S_{DS} I_p W_p \quad (13.3-3)$$

13.3.1.2 Vertical Force. The component shall be designed for a concurrent vertical force $\pm 0.2 S_{DS} W_p$.

Member Analysis

Client: APCO
 Project: HCA
 Job Number: 251286
 Designer: MNN
 Date: 12/30/2025



Mullion Analysis

General Information

Mullion Name:	A 301 J
Related Frames:	
Mullion Type:	Jamb
Mullion Location:	Zone 5
Notes:	

Mullion Properties

Mullion Shape:		Ixx (in ⁴)	Sxx (in ³)	F/Ω (ksi)	Ma, k-ft (lb-in)
601TCG001	Open & Stiffened	5.410	1.718	14.18	2.030 (24,365)
Reinforcement:					

Mullion Spans & Spacing

	Span (ft)	Spacing (ft)	Uniform Load, plf (lb/in)	Total Mullion Height (ft)	Effective Area (ft ²)	Corresponding GCp Factor	Design Pressure (psf)
Span 1	2.57	3.03	76.4 (6.36)	2.57	7.79	-1.260	25.2

Mullion Design

	Max. Design		Allowable	% Passing	
Moment, k-ft (lb-in) =	0.063 (758)	<	2.030	3.1%	OK
Deflection (in)	0.001	<	0.176	0.8%	OK

Connection Design

Unadjusted Reaction (lbs)	Connection Trib. Height (ft)	Eff. Area (ft ²)	GCp Factor	Conn. Design Pressure (psf)	Design Reaction (lbs)	Detail
98	1.29	3.89	-1.2600	25.2	99	1 / 401
98	1.29	3.89	-1.2600	25.2	99	2 / 401

Client: APCO
 Project: HCA
 Job Number: 251286
 Designer: MNN
 Date: 12/30/2025



Mullion Analysis

General Information

Mullion Name:	A 301 V
Related Frames:	
Mullion Type:	Vertical
Mullion Location:	Zone 5
Notes:	

Mullion Properties

Mullion Shape:		Ixx (in ⁴)	Sxx (in ³)	F/Ω (ksi)	Ma, k-ft (lb-in)
601TCG001	Open & Stiffened	5.410	1.718	14.18	2.030 (24,365)
Reinforcement:					

Mullion Spans & Spacing

Span 1	Span (ft)	Spacing (ft)	Uniform		Total Mullion	Effective	Corresponding	Design
			Load, plf (lb/in)	(11.89)	Height (ft)	Area (ft ²)	G _{Cp} Factor	Pressure (psf)
	2.57	5.89	142.7	(11.89)	2.57	15.14	-1.210	24.2

Mullion Design

	Max. Design		Allowable	% Passing	
Moment, k-ft (lb-in) =	0.118 (1,417)	<	2.030	5.8%	OK
Deflection (in)	0.003	<	0.176	1.5%	OK

Connection Design

Unadjusted	Connection			Conn. Design	Design	
Reaction (lbs)	Trib. Height (ft)	Eff. Area (ft ²)	G _{Cp} Factor	Pressure (psf)	Reaction (lbs)	Detail
184	1.29	7.57	-1.2600	25.2	192	1 / 401
184	1.29	7.57	-1.2600	25.2	192	2 / 401

Member Cross Sections & Properties

Section Properties: Kawneer 601TCG001

Section Information:

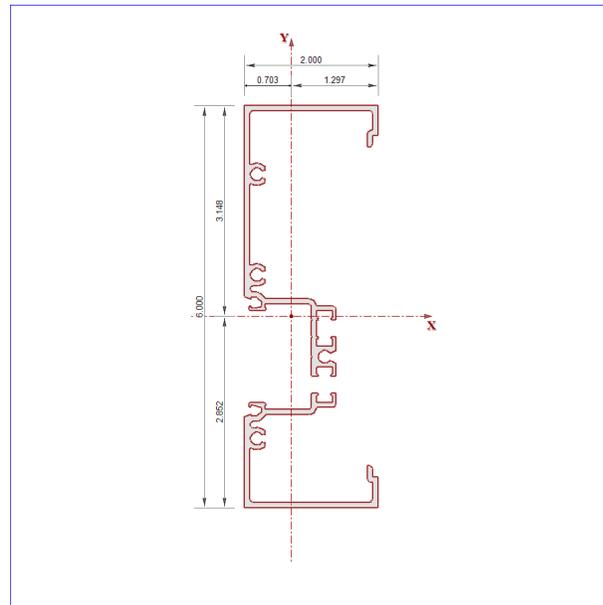
Material Type	=	General
Shape Type	=	Arbitrary
Number of Shapes	=	2

Basic Properties:

Total Width	=	2.000	in
Total Height	=	6.000	in
Centroid, Xo	=	-18.999	in
Centroid, Yo	=	-5.265	in
X-Bar (Right)	=	1.297	in
X-Bar (Left)	=	0.703	in
Y-Bar (Top)	=	3.148	in
Y-Bar (Bot)	=	2.852	in
Max Thick	=	4.047	in

Equivalent Properties:

Area, Ax	=	1.288	in ²
Inertia, Ixx	=	5.410	in ⁴
Inertia, Iyy	=	0.535	in ⁴
Inertia, Ixy	=	-0.121	in ⁴
Sx (Top)	=	1.718	in ³
Sx (Bot)	=	1.897	in ³
Sy (Left)	=	0.760	in ³
Sy (Right)	=	0.412	in ³
rx	=	2.049	in
ry	=	0.644	in
Plastic Zx	=	2.279	in ³
Plastic Zy	=	0.728	in ³
Torsional J	=	0.003	in ⁴
As-xx Def	=	1.000	
As-yy Def	=	1.000	
As-xx Stress	=	1.000	
As-yy Stress	=	1.000	



Section Diagram

Connections of System Elements to Structure

Client: APCO
 Project: HCA
 Job Number: 251286
 Designer: MNN
 Date: 12/30/2025

Connection Description

Example of Fastener Load Calculation

Related Details

Referenced Calculation

Load Inputs

V_x	lbf	V_y	269.0 lbf	T_z	lbf
M_x	lbf*in	M_y	lbf*in	M_z	lbf*in

Load Eccentricities & Lever Arms Resisting Moment

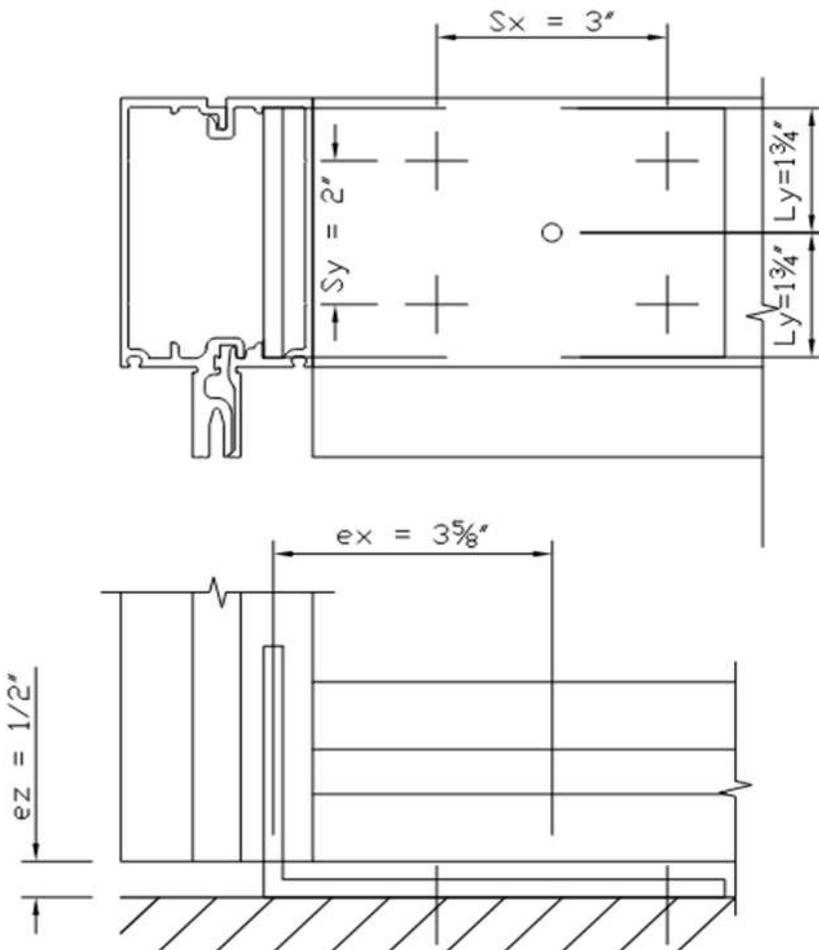
e_x	3.625 in	e_y	in	e_z	0.500 in
L_x	in	L_y	1.750 in		

Fastener Group

N_x	2	N_y	2	Fastener Total	4
S_x	3.000 in	S_y	2.000 in		

Load at Worst Case Fastener

Shear	194.8 lbf	Tension	22.8 lbf
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Load at worst case fastener developed using elastic vector method assuming rigid plate.

Shear at Worst Case Fastener

$$V'_y := \frac{V_y}{N_x \cdot N_y} = 67.25 \text{ lbf}$$

$$r_x := S_x \div 2 = 1.5 \text{ in} \quad r_y := S_y \div 2 = 1 \text{ in}$$

$$r := \sqrt{r_x^2 + r_y^2} = 1.80 \text{ in}$$

$$V'' := \frac{V_y \cdot e_x \cdot r}{4 \cdot r^2} = 135.23 \text{ lbf}$$

$$V''_x := V'' \cdot \frac{r_y}{r} = 75.01 \text{ lbf} \quad V''_y := V'' \cdot \frac{r_x}{r} = 112.51 \text{ lbf}$$

$$V_x := V''_x = 75.01 \text{ lbf} \quad V_y := V'_y + V''_y = 179.76 \text{ lbf}$$

$$V := \sqrt{V_x^2 + V_y^2} = 194.8 \text{ lbf}$$

Tension at Worst Case Fastener

$$r_1 := L_y - S_y \div 2 = 0.75 \text{ in} \quad r_2 := L_y + S_y \div 2 = 2.75 \text{ in}$$

$$T''_1 := \frac{V_y \cdot e_z \cdot r_1}{2 r_1^2 + 2 r_2^2} = 6.21 \text{ lbf}$$

$$T''_2 := \frac{V_y \cdot e_z \cdot r_2}{2 r_1^2 + 2 r_2^2} = 22.76 \text{ lbf}$$

$$T := T''_2 = 22.8 \text{ lbf}$$

Client: APCO
 Project: HCA
 Job Number: 251286
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 Date: 12/30/2025



Connection Description	1 / 401 J
Related Details	
Referenced Calculation	A 301 J

Load Inputs

Vx	lbf	Vy	99.0	lbf	Tz	lbf
Mx	lbf*in	My		lbf*in	Mz	lbf*in

Load Eccentricities & Lever Arms Resisting Moment

ex	in	ey		in	ez	1.375	in
Lx	in	Ly	1.750	in			

Fastener Group

Nx	1	Ny	1	Fastener Total	1
Sx	in	Sy	in		

Load at Worst Case Fastener

Shear	99	lbf	Tension	77.8	lbf
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Base Material - Self Tapping Screw

Fastener	1/4-14	Bearing Capacity	375.0	lbf	
Fastener Material	Fu ≥ 90 ksi (eg. 18-8 SS)	Pull Out Capacity	130.0	lbf	
Base Material	18 Ga Steel (Fu ≥ 45 ksi)	Fastener Shear Capacity	596.0	lbf	
		Fastener Tension Capacity	1091.0	lbf	
		Min Spacing	0.750	in	
		Min Edge Distance	0.375	in	
		Shear Check	26.4%		Ω = 3
		Tension Check	59.8%		Ω = 3
		Combined Check	63.7%		J4.5.2-1a

Reference: Elco Drill-Flex. Combined check per AISI S100-16 §J4.5.

Loose Material - Aluminum Design Manual §J.5

Screw Head Type	Countersunk	Bearing Capacity	400.0	lbf	J.5.5.1
Part Thickness	0.080	Pull Over Capacity	122.3	lbf	J.5.4.2
Part Material	6063-T6				
Screw Diameter	0.250				
Hole Diameter	0.266	Min. Spacing	0.625	in	J.5.2
Washer Diameter	No Washer	Min. Edge Distance	0.375	in	J.5.3
Design Edge Distance	1.000	Shear Check	24.8%		Ω = 3
		Tension Check	63.6%		Ω = 3
		Combined Check	46.6%		Ω = 3

Combined check per AAMA TIR-A9 §7.6

Overall Design Check

Shear Check	26.4%	Tension Check	63.6%	Combined Check	63.7%
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Client: APCO
 Project: HCA
 Job Number: 251286
 Designer: MNN
 Date: 12/30/2025



Connection Description	1 / 401 V
Related Details	
Referenced Calculation	A 301 V

Load Inputs

Vx	lbf	Vy	192.0	lbf	Tz	lbf
Mx	lbf*in	My		lbf*in	Mz	lbf*in

Load Eccentricities & Lever Arms Resisting Moment

ex	in	ey		in	ez	1.375	in
Lx	in	Ly	1.750	in			

Fastener Group

Nx	2	Ny	1	Fastener Total	2
Sx	in	Sy	in		

Load at Worst Case Fastener

Shear	96	lbf	Tension	75.4	lbf
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Base Material - Self Tapping Screw

Fastener	1/4-14	Bearing Capacity	375.0	lbf	
Fastener Material	Fu ≥ 90 ksi (eg. 18-8 SS)	Pull Out Capacity	130.0	lbf	
Base Material	18 Ga Steel (Fu ≥ 45 ksi)	Fastener Shear Capacity	596.0	lbf	
		Fastener Tension Capacity	1091.0	lbf	
		Min Spacing	0.750	in	
		Min Edge Distance	0.375	in	
		Shear Check	25.6%		Ω = 3
		Tension Check	58.0%		Ω = 3
		Combined Check	61.8%		J4.5.2-1a

Reference: Elco Drill-Flex. Combined check per AISI S100-16 §J4.5.

Loose Material - Aluminum Design Manual §J.5

Screw Head Type	Countersunk	Bearing Capacity	400.0	lbf	J.5.5.1
Part Thickness	0.080	Pull Over Capacity	122.3	lbf	J.5.4.2
Part Material	6063-T6				
Screw Diameter	0.250				
Hole Diameter	0.266	Min. Spacing	0.625	in	J.5.2
Washer Diameter	No Washer	Min. Edge Distance	0.375	in	J.5.3
Design Edge Distance	1.000	Shear Check	24.0%		Ω = 3
		Tension Check	61.7%		Ω = 3
		Combined Check	43.8%		Ω = 3

Combined check per AAMA TIR-A9 §7.6

Overall Design Check

Shear Check	25.6%	Tension Check	61.7%	Combined Check	61.8%
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Client: APCO
 Project: HCA
 Job Number: 251286
 Designer: MNN
 Date: 12/30/2025



Connection Description	2 / 401 J
Related Details	
Referenced Calculation	A 301 J

Load Inputs

Vx	lbf	Vy	99.0	lbf	Tz	lbf
Mx	lbf*in	My		lbf*in	Mz	lbf*in

Load Eccentricities & Lever Arms Resisting Moment

ex	in	ey		in	ez	0.750	in
Lx	in	Ly	2.125	in			

Fastener Group

Nx	1	Ny	1	Fastener Total	1
Sx	in	Sy	in		

Load at Worst Case Fastener

Shear	99	lbf	Tension	34.9	lbf
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Base Material - Self Tapping Screw

Fastener	1/4-14	Bearing Capacity	375.0	lbf	
Fastener Material	Fu ≥ 90 ksi (eg. 18-8 SS)	Pull Out Capacity	130.0	lbf	
Base Material	18 Ga Steel (Fu ≥ 45 ksi)	Fastener Shear Capacity	596.0	lbf	
		Fastener Tension Capacity	1091.0	lbf	
		Min Spacing	0.750	in	
		Min Edge Distance	0.375	in	
		Shear Check	26.4%		Ω = 3
		Tension Check	26.8%		Ω = 3
		Combined Check	39.4%		J4.5.2-1a

Reference: Elco Drill-Flex. Combined check per AISI S100-16 §J4.5.

Loose Material - Aluminum Design Manual §J.5

Screw Head Type	Non-Countersunk	Bearing Capacity	400.0	lbf	J.5.5.1
Part Thickness	0.080	Pull Over Capacity	410.7	lbf	J.5.4.2
Part Material	6063-T6				
Screw Diameter	0.250				
Hole Diameter	0.266	Min. Spacing	0.625	in	J.5.2
Washer Diameter	0.480	Min. Edge Distance	0.375	in	J.5.3
Design Edge Distance	1.000	Shear Check	24.8%		Ω = 3
		Tension Check	8.5%		Ω = 3
		Combined Check	6.9%		Ω = 3

Combined check per AAMA TIR-A9 §7.6

Overall Design Check

Shear Check	26.4%	Tension Check	26.8%	Combined Check	39.4%
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Client: APCO
 Project: HCA
 Job Number: 251286
 Designer: MNN
 Date: 12/30/2025



Connection Description	2 / 401 V
Related Details	
Referenced Calculation	A 301 V

Load Inputs

Vx	lbf	Vy	192.0	lbf	Tz	lbf
Mx	lbf*in	My		lbf*in	Mz	lbf*in

Load Eccentricities & Lever Arms Resisting Moment

ex	in	ey		in	ez	0.750	in
Lx	in	Ly	2.125	in			

Fastener Group

Nx	2	Ny	1	Fastener Total	2
Sx	in	Sy	in		

Load at Worst Case Fastener

Shear	96	lbf	Tension	33.9	lbf
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Base Material - Self Tapping Screw

Fastener	1/4-14	Bearing Capacity	375.0	lbf	
Fastener Material	Fu ≥ 90 ksi (eg. 18-8 SS)	Pull Out Capacity	130.0	lbf	
Base Material	18 Ga Steel (Fu ≥ 45 ksi)	Fastener Shear Capacity	596.0	lbf	
		Fastener Tension Capacity	1091.0	lbf	
		Min Spacing	0.750	in	
		Min Edge Distance	0.375	in	
		Shear Check	25.6%		Ω = 3
		Tension Check	26.1%		Ω = 3
		Combined Check	38.2%		J4.5.2-1a

Reference: Elco Drill-Flex. Combined check per AISI S100-16 §J4.5.

Loose Material - Aluminum Design Manual §J.5

Screw Head Type	Non-Countersunk	Bearing Capacity	400.0	lbf	J.5.5.1
Part Thickness	0.080	Pull Over Capacity	410.7	lbf	J.5.4.2
Part Material	6063-T6				
Screw Diameter	0.250				
Hole Diameter	0.266	Min. Spacing	0.625	in	J.5.2
Washer Diameter	0.480	Min. Edge Distance	0.375	in	J.5.3
Design Edge Distance	1.000	Shear Check	24.0%		Ω = 3
		Tension Check	8.3%		Ω = 3
		Combined Check	6.4%		Ω = 3

Combined check per AAMA TIR-A9 §7.6

Overall Design Check

Shear Check	25.6%	Tension Check	26.1%	Combined Check	38.2%
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