

Patton Aluminum Products, Inc.

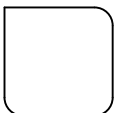
Engineering Specifications  
for  
2" Non-Insulated Enclosures

Prepared by:  
Brad Doudican, P.E.  
Doudican Engineering and Design, LLC  
February 2013

All original documents on file at  
Patton Aluminum Products, Inc.  
65 Quick Road  
New Carlisle, OH 45344

Patton Aluminum Products  
65 Quick Road, New Carlisle, OH 45344  
Ph. 937.845.9404, Fax 937.845.9424

Title: Cover Sheet  
Scale: n/a  
Date: 2-10-13



1. GENERAL NOTES

- a. THESE NOTES SHALL APPLY TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS UNLESS OTHERWISE SHOWN OR NOTED.
- b. THE CONTRACTOR SHALL CONDUCT ALL OPERATIONS IN STRICT ACCORDANCE WITH THE SAFETY REQUIREMENTS IMPOSED BY THE OWNER AND OSHA. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
- c. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER IT IS FULLY COMPLETED. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCES, AND TO ENSURE THE STABILITY OF THE STRUCTURE AND ITS COMPONENT PARTS, AND THE ADEQUACY OF TEMPORARY BRACING, GUYS, OR TIE-DOWNS THAT MIGHT BE NECESSARY. SUCH MATERIAL IS NOT SHOWN AND SHALL REMAIN THE CONTRACTOR'S PROPERTY.
- d. ALL DEVIATIONS FROM THE ENGINEERING DRAWINGS SHALL BE SUBMITTED IN WRITTEN FORM TO THE OWNER AND THEIR REPRESENTATIVE FOR APPROVAL.
- e. DIMENSIONS PERTAINING TO EXISTING CONDITIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO ANY FABRICATIONS, CONSTRUCTION, OR ERECTION.

2. DESIGN DATA

- a. UNLESS OTHERWISE INDICATED, ALL DETAILS OF DESIGN, WORKMANSHIP, AND MATERIAL SHALL CONFORM TO THE RESIDENTIAL CODE OF OHIO FOR ONE-, TWO-, AND THREE-FAMILY DWELLINGS, LATEST EDITION. WHERE OTHERWISE NOT CONFORMING TO THIS CODE, DESIGN HAS BEEN PERFORMED IN ACCORDANCE WITH SECTION 301.1.3 "ENGINEERED DESIGN".
- b. DEAD LOAD = 10 PSF
- c. ROOF LIVE LOAD = 12 PSF
- d. GROUND SNOW LOAD - 20 PSF
- e. BUILDING CATEGORY - II
- f. BASIC DESIGN WIND SPEED - 115 M.P.H., EXPOSURE C
- g. IMPORTANCE FACTOR - 1.0
- h. ALLOWABLE SOIL BEARING - 1500 PSF
- i. SEISMIC DESIGN CATEGORY - B (DOES NOT GOVERN)

3. FOOTINGS AND FOUNDATIONS

- a. ALL FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR ENGINEERED FILL. EXCAVATIONS SHALL BE FREE OF LOOSE MATERIAL AND WATER. BEARING ELEVATION SHALL BE A MINIMUM OF 36-INCHES BELOW GRADE, UNLESS NOTED OTHERWISE (UNO).
- b. ALL CONCRETE FOUNDATIONS SHALL BE 3,000 PSI (28-DAY COMPRESSIVE STRENGTH CONCRETE) UNO.

4. ALUMINUM

- a. ALUMINUM MATERIALS SHALL BE 3003-H16 OR 6063-T6 OR OTHER ALUMINUM ALLOW APPROVED BY THE ENGINEER.
- b. ALUMINUM CONSTRUCTION AND DESIGN SHALL ADHERE TO "ALUMINUM DESIGN MANUAL" BY THE ALUMINUM ASSOCIATION (2010).
- c. ALL WELDING SHALL CONFORM WITH AWS D1.2 "STRUCTURAL WELDING CODE - ALUMINUM" (LATEST EDITION).

5. STRUCTURAL STEEL

- a. STRUCTURAL STEEL SHALL BE NEW.
- b. STRUCTURAL STEEL FOR BEAMS AND PLATES SHALL COMPLY WITH ASTM SPECIFICATION A-36. STRUCTURAL STEEL FOR STEEL COLUMNS SHALL COMPLY WITH ASTM SPECIFICATION A-53 GRADE B OR A-501. STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A500 GRADE B.
- c. ALL DETAILING SHALL CONFORM TO CURRENT AISC SPECIFICATIONS.
- d. ALL WELDING SHALL CONFORM TO CURRENT AMERICAN WELDING SOCIETY SPECIFICATIONS FOR MATERIAL BEING WELDED AND BE PERFORMED BY CERTIFIED WELDERS.
- e. ALL BOLTS SHALL BE UNFINISHED ASTM A307, UNO.
- f. ALL STRUCTURAL STEEL AND MISCELLANEOUS IRON NOT ENCASED IN CONCRETE SHALL RECEIVE ONE SHOP COAT OF APPROVED PRIMER PAINT.

6. ENGINEERED LUMBER

- a. ENGINEERED LUMBER DOCUMENTS SHALL BE PREPARED BY A REGISTERED DESIGN PROFESSIONAL AND SHALL BE PROVIDED TO THE RESIDENCE DESIGNER AND THE BUILDING OFFICIAL, AND APPROVED BY BOTH PRIOR TO INSTALLATION.
- b. CONSTRUCTION DOCUMENTS SHALL INCLUDE, AT A MINIMUM, THE INFORMATION SPECIFIED BELOW.
  - b.a. LOCATION PLAN FOR EACH OF THE ENGINEERED LUMBER STRUCTURAL COMPONENTS.
  - b.b. DESIGN LOADS, SPAN, AND REACTION FORCE AND DIRECTION.
  - b.c. REQUIRED BEARING WIDTH.
  - b.d. DETAILS AND SPECIFICATIONS FOR ALL CONNECTORS AND ACCESSORIES.
  - b.e. REQUIRED PERMANENT MEMBER BRACING LOCATION, BRACE SIZES, AND REACTIONS.
  - b.c. REQUIRED CONSTRUCTION OR TEMPORARY BRACING AND SHORING AS NECESSARY.
  - b.d. IF SPECIFIED, PROVIDE MASONRY VENEER SUPPORT DETAILS INCLUDING CONNECTION TO ENGINEERED LUMBER AND REACTION FORCE AND DIRECTION.

7. MISCELLANEOUS

- a. ALL MATERIALS, SUPPLIES, AND EQUIPMENT TO BE INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS AND AS PER LOCAL CODES AND REQUIREMENTS.

Patton Aluminum Products  
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Ph. 937.845.9404, Fax 937.845.9424

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NOTES

Job Information

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Size of patio cover (ft.): \_\_\_\_\_ projection x \_\_\_\_\_ width

Type of patio cover:

Insulated Panel Ref: "Engineering Specifications for 3", 4", and 6" Insulated Patio Cover System"

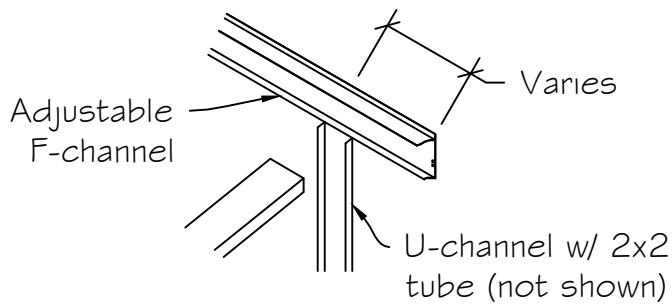
W- or Flat Pan Ref: "Engineering Specifications for 1 2-inch Panel Patio Cover System"

Dave, what additional info do you want here?

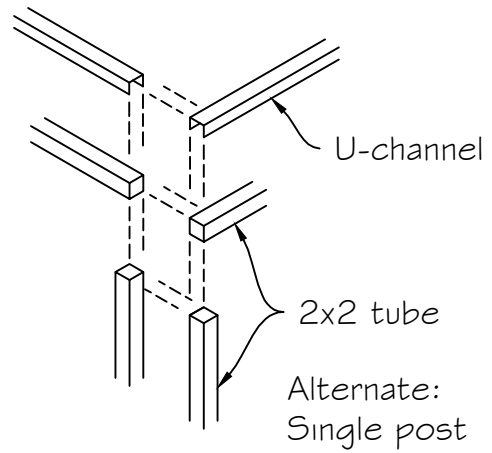
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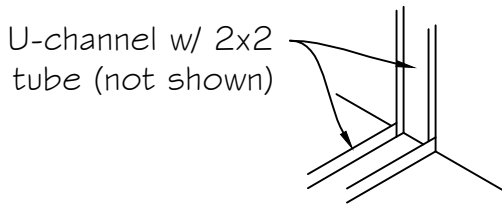
JOB  
INFO



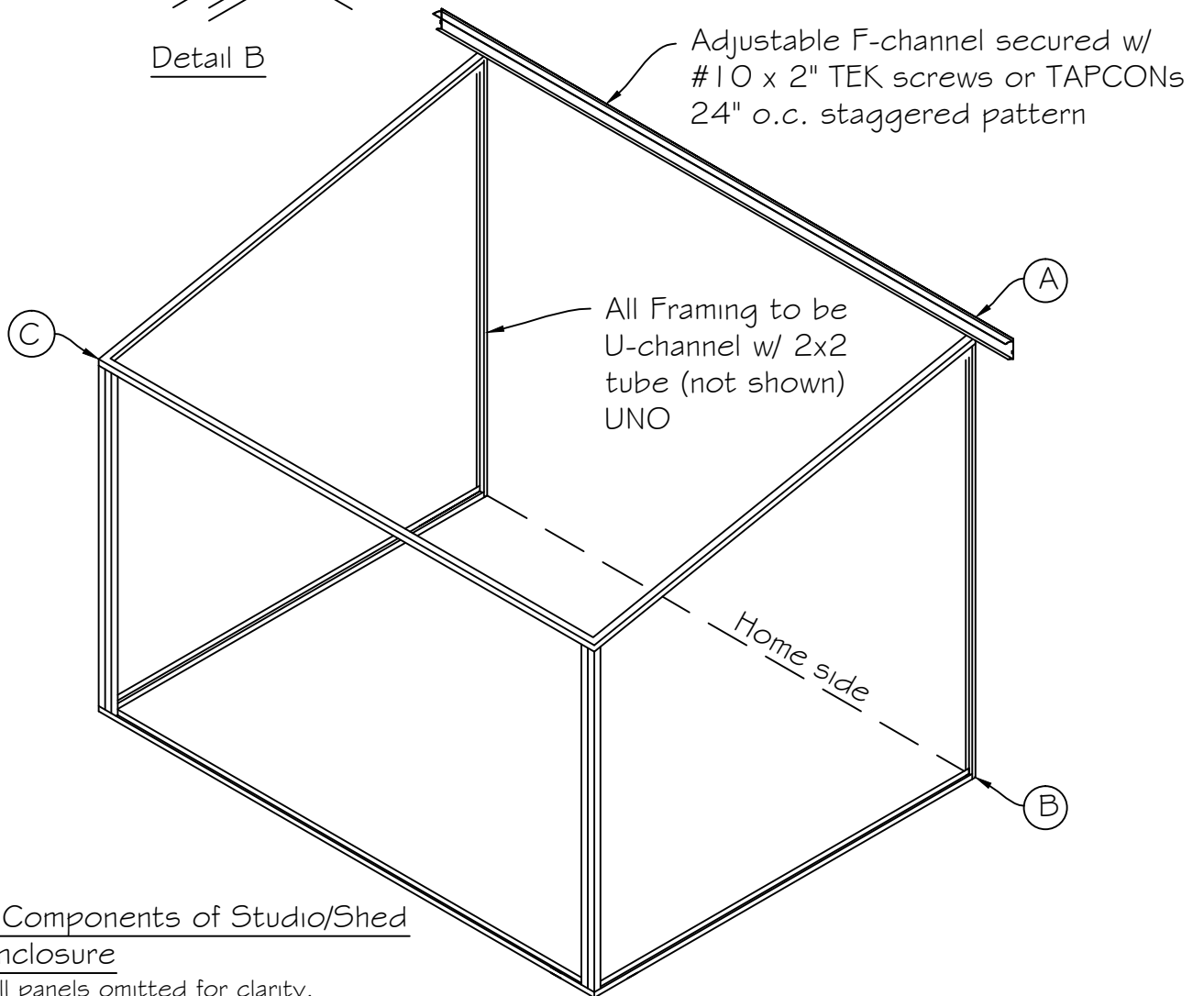
Detail A



Detail C

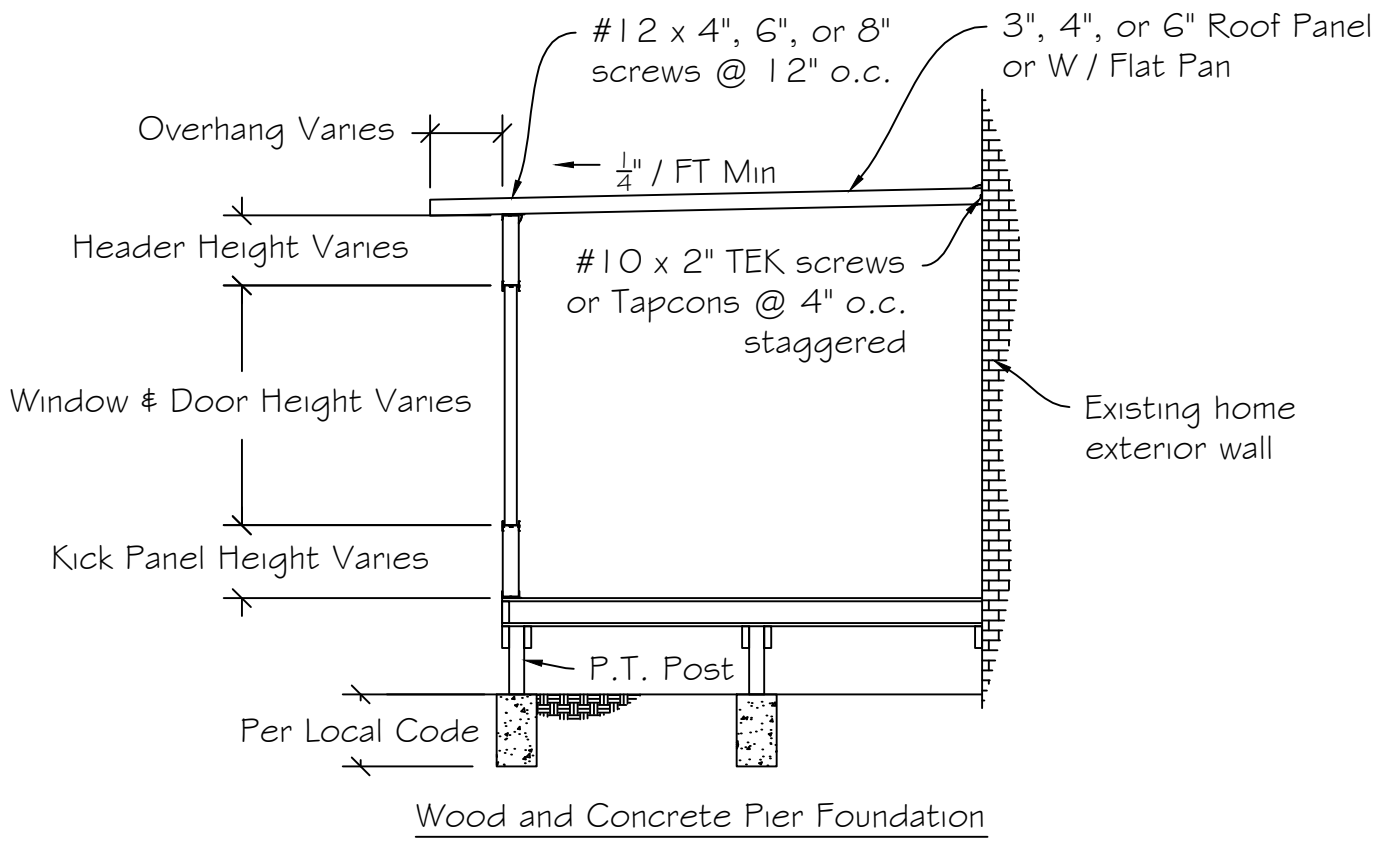
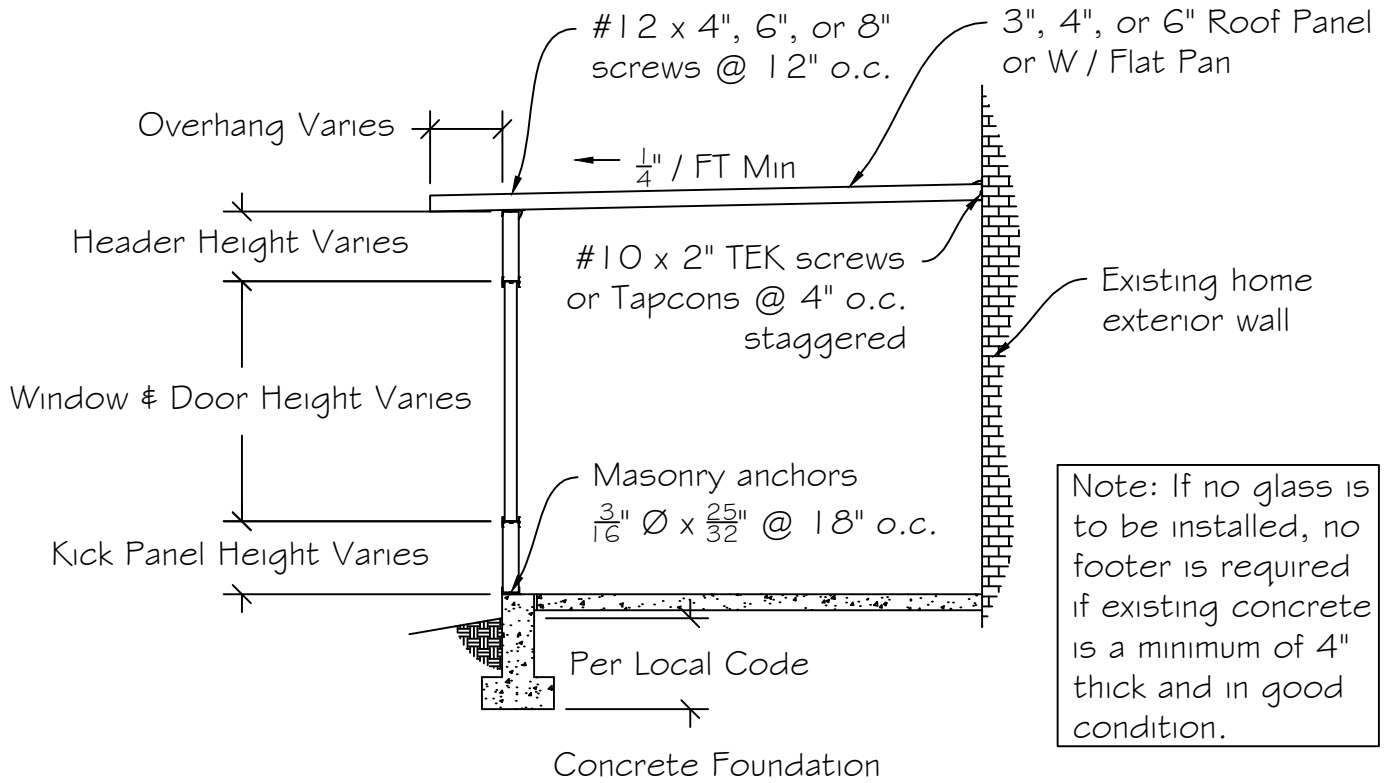


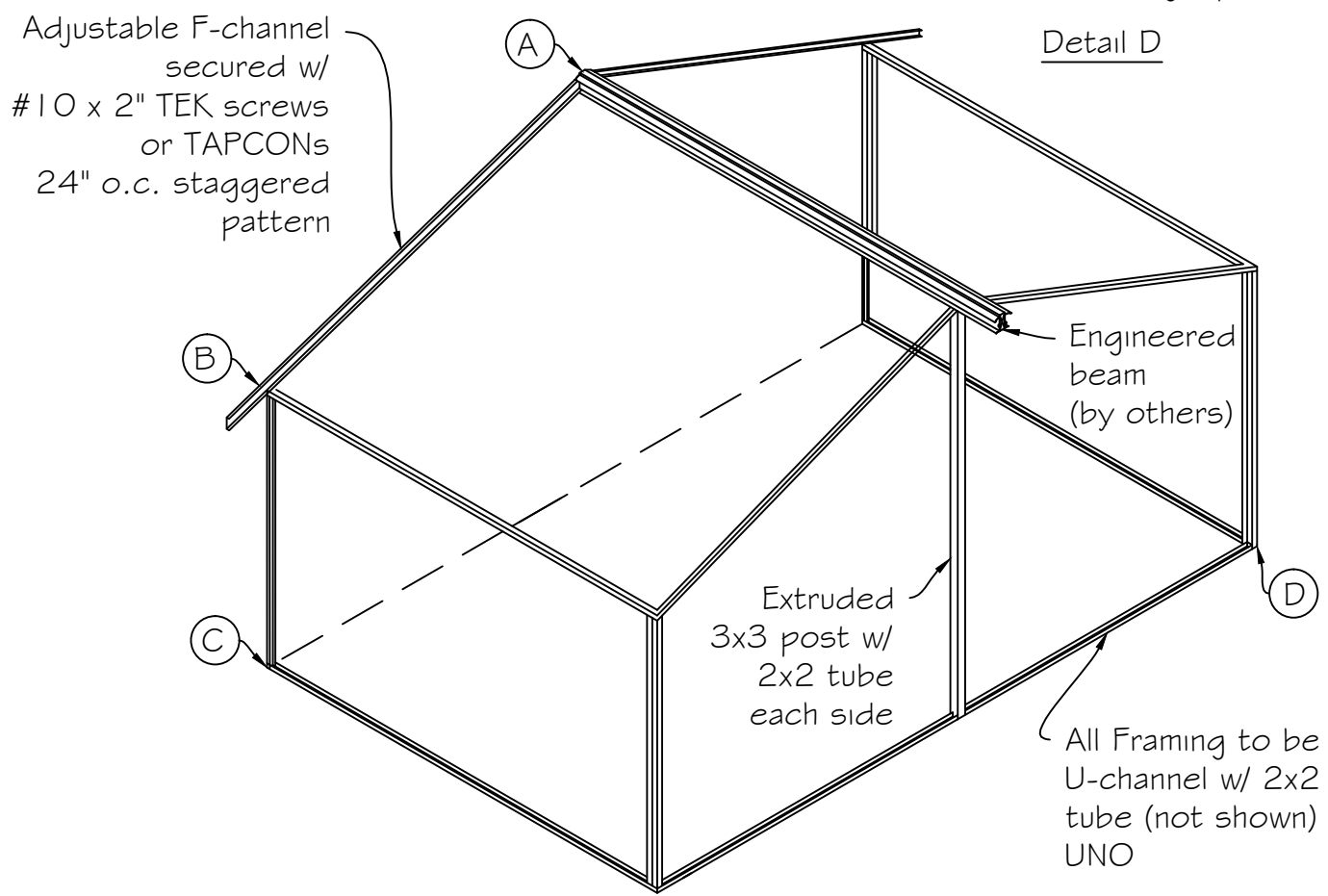
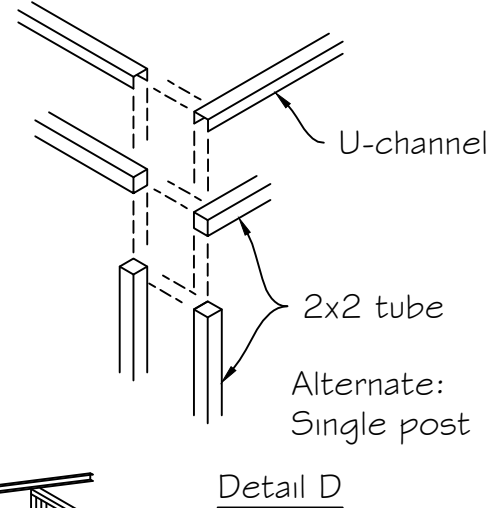
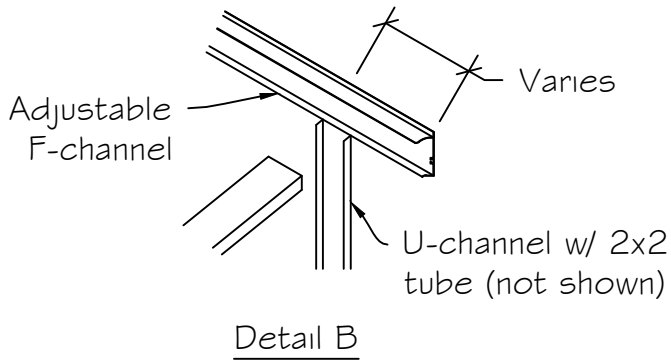
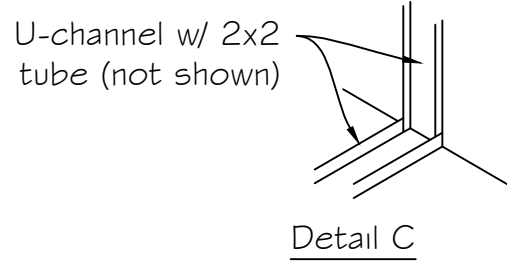
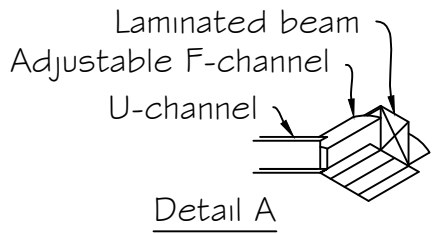
Detail B



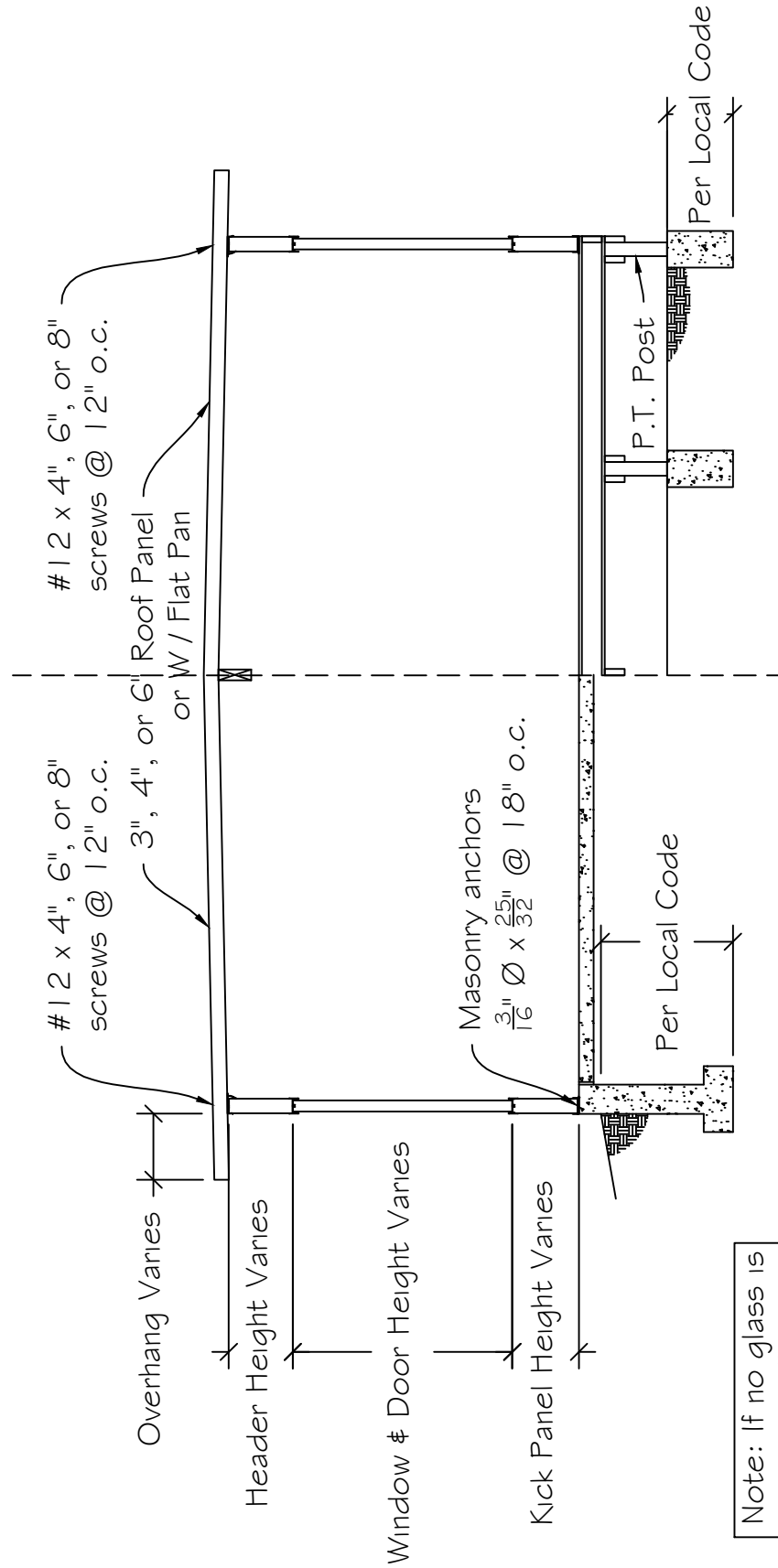
Typical Components of Studio/Shed  
Style Enclosure

Note: Wall panels omitted for clarity.

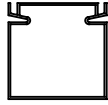




Typical Components of Gabled Style Enclosure  
Note: Wall components omitted for clarity.



Note: If no glass is to be installed, no footer is required if existing concrete is a minimum of 4" thick and in good condition.



2" x 2" x 0.045"  
Hollow Section

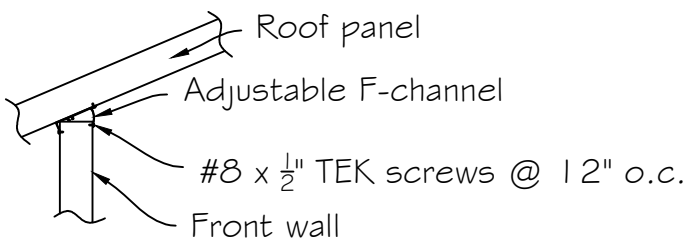


U-Channel

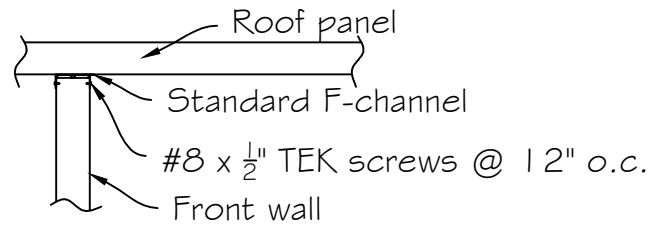


F-Channel

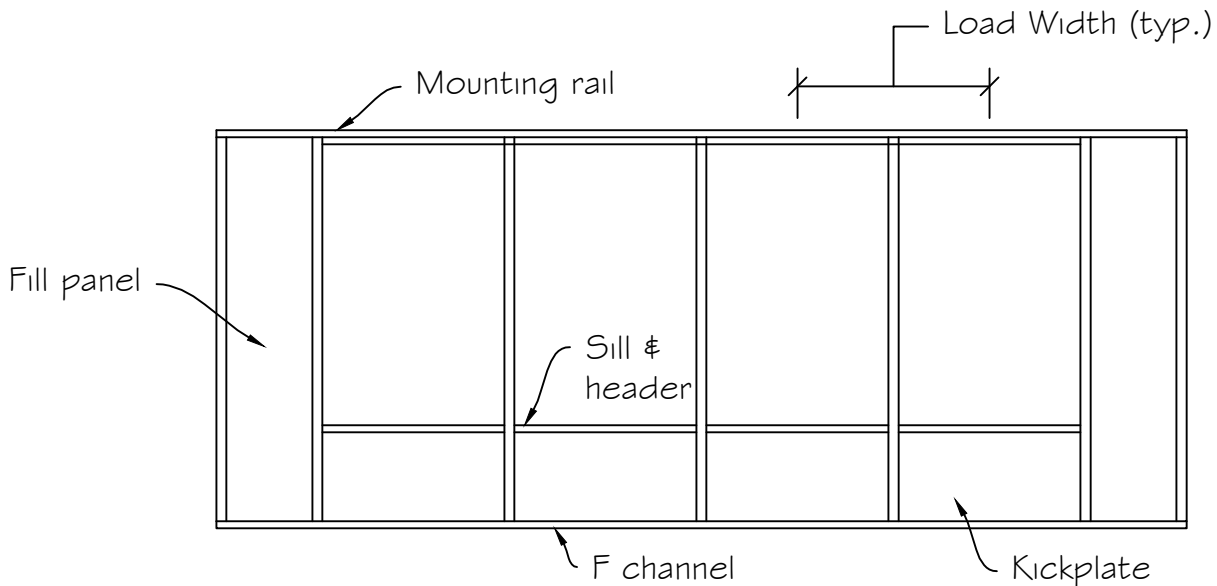
Extrusions for 2" Non-Insulated Room



Sloped Roof  
Connection Detail

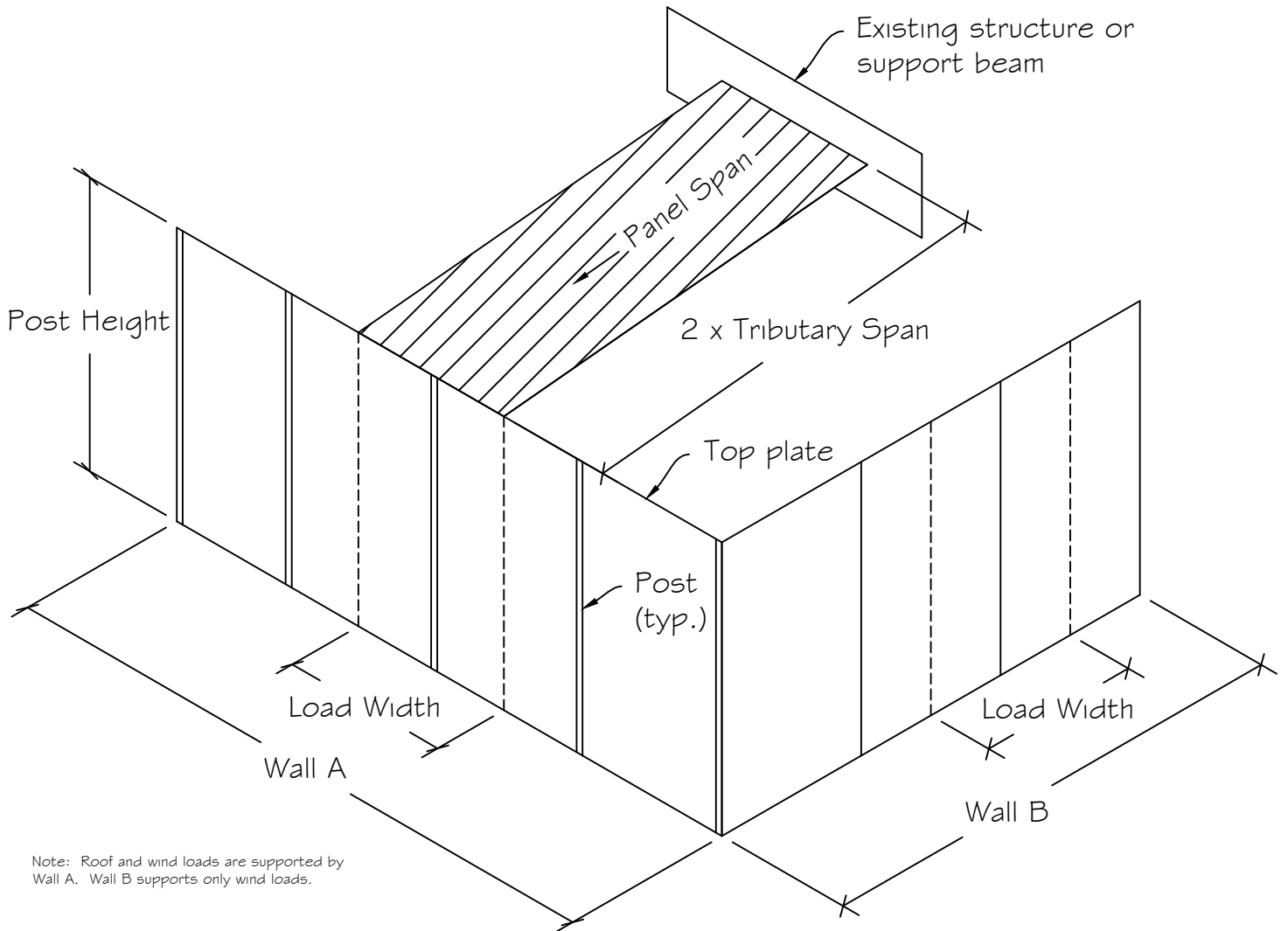


Flat Roof  
Connection Detail



Typical Wall Configuration





Note: Roof and wind loads are supported by Wall A. Wall B supports only wind loads.

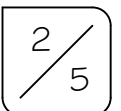
Walls A & B Design Dimensions

How to use this package:

1. Choose post spacing for site-specific screen, window, and door configuration.
2. Use tables on Sheet 3/3 with post spacing and code-prescribed wind loads to determine allowable post height for 2" or 4" H-bar per instructions.
3. If additional projection is required, see Sheet 3/3 for design of intermediate 2x8 support beam.

Patton Aluminum Products  
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Title: Non-Insulated Room Design  
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 Date: 2-10-13



Allowable Top Plate Post Spacing and Post Load for  
6061-T6 Aluminum 2x2x0.45 Tube with U-channel Cap

DL + LL (psf)										
	20		25		30		35		40	
Trib Span (ft)	Post Spacing (ft)	Post Load (lb)	Post Spacing (ft)	Post Load (lb)	Post Spacing (ft)	Post Load (lb)	Post Spacing (ft)	Post Load (lb)	Post Spacing (ft)	Post Load (lb)
4	7.0	556.1	6.2	621.7	5.7	681.0	5.3	735.6	4.9	786.4
5	6.2	621.7	5.6	695.1	5.1	761.4	4.7	822.4	4.4	879.2
6	5.7	681.0	5.1	761.4	4.6	834.1	4.3	900.9	4.0	963.1
7	5.3	735.6	4.7	822.4	4.3	900.9	4.0	973.1	3.7	1040.3
8	4.9	786.4	4.4	879.2	4.0	963.1	3.7	1040.3	3.5	1112.1

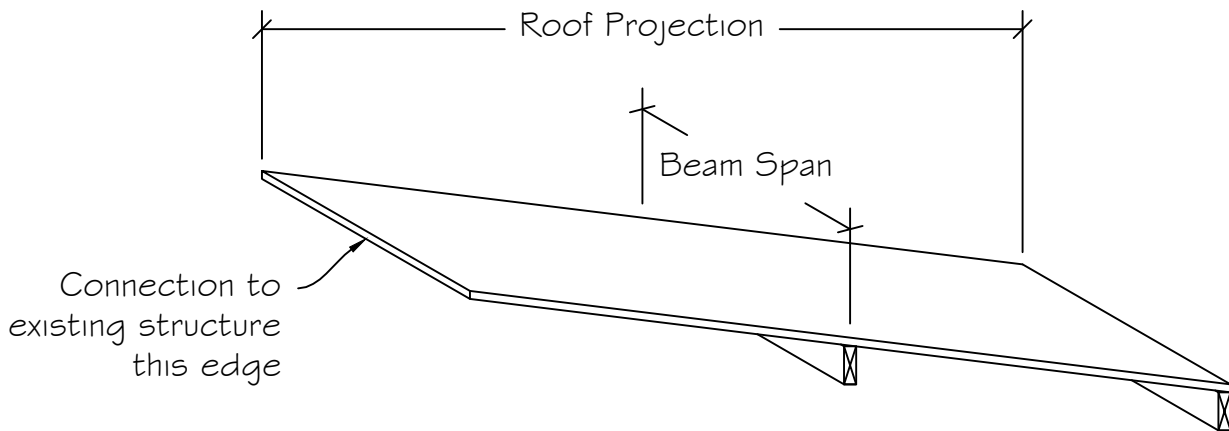
Post Allowable Load (lbs)			
	Post Height (ft)		
Post Type	8'	9'	10'
2x2x0.045	906	822	737
2" H-bar	1430	1130	915
4" H-bar	5459	5459	5459

Allowable 2x2x0.045 Post Height for Wall A												
Tributary Span (ft)												
4				6				8				
Wind Load (psf)				Wind Load (psf)				Wind Load (psf)				
Load Width (ft)	10	12	15	20	10	12	15	20	10	12	15	20
3.0	10.0	10.0	9.1	7.9	10.0	9.5	8.5	7.3	9.6	8.7	7.8	6.8
3.5	10.0	9.2	8.2	7.1	9.2	8.4	7.5	6.5	8.3	7.6	6.8	5.9
4.0	9.2	8.4	7.5	6.5	8.3	7.6	6.8	5.9	7.2	6.6	5.9	5.1
4.5	8.5	7.7	6.9	6.0	7.4	6.8	6.1	5.3	6.3	5.7	5.1	4.4
5.0	7.8	7.1	6.4	5.5	6.7	6.1	5.5	4.7	5.4	4.9	4.4	3.8
5.5	7.3	6.6	5.9	5.1	6.0	5.5	4.9	4.3	4.5	4.1	3.7	3.2
6.0	6.8	6.2	5.5	4.8	5.4	5.0	4.4	3.8	3.6	3.3	3.0	2.6

Allowable 2x2x0.45 Post Height for Wall B				
Wind Load (psf)				
Load Width (ft)	10	12	15	20
3.0	10.8	9.9	8.8	7.6
3.5	10.0	9.1	8.2	7.1
4.0	9.4	8.6	7.6	6.6
4.5	8.8	8.1	7.2	6.2
5.0	8.4	7.6	6.8	5.9
5.5	8.0	7.3	6.5	5.6
6.0	7.6	7.0	6.2	5.4

Windspeed to Wall Load Conversion		
Wind Speed (mph)	Screened Wall (>65% permeable) (psf)	Solid Wall (psf)
90	10	14
100	11	17
110	13	21
120	15	25

Note: Tables this sheet assume 6061-T6 aluminum, a 0.67 psf dead load, and a 20 psf snow load. For conditions not explicitly described within this sheet, site-specific engineering is required.



2 x 8 x 0.086 Built-Up Beam Allowable Span (ft)

	DL + LL (lbs)			
Roof Projection (ft)	20	25	30	35
8	16'-10"	15'-0"	13'-8"	12'-8"
12	13'-8"	12'-3"	11'-2"	10'-4"
16	11'-11"	10'-7"	9'-8"	8'-5"
20	10'-7"	9'-6"	8'-8"	8'-0"

Guardrail Requirements for 2-inch Screen Rooms

Per the International Residential Code Section R312:

1. Guardrail is required on any accessible open-sided walking surface that is located more than 30 vertical inches above any adjacent surface, i.e. floor or ground surface, and within 36 horizontal inches of the open side.
2. Guardrail height shall be no less than 36-inches above the adjacent walking surface.
3. The maximum allowable opening within the guarded height shall be four inches, wherein no opening shall permit the passage of a 4-inch diameter sphere.
4. Insect screen is not acceptable as guardrail infill.

Per the International Residential Code Section R301:

5. Guardrail and handrails shall support a minimum live load of 200 pounds applied in any direction at the top of the rail.
6. Guardrail infill shall be designed to accommodate an applied load of 50 pounds over a one square foot area in a direction normal to the surface.

Patton Aluminum's 2"x2"x0.045" hollow section aluminum tube shall be permitted for use as guardrail with a maximum allowable horizontal span of 5'-3" at a height of 36-inches. This permissible span requires a minimum of two (2) #8 TEK screws at each end for positive load transfer to vertical members of the same shape or U-channel bolted to the existing structure. Additionally, the vertical members must have similar connection at both the top and bottom.

Additional requirements exist for the guarding of stairs, and are not addressed here.

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Title: 2x8 Beam and Guardrail Design  
 Scale: n/a  
 Date: 2-10-13

