Solara Adjustable Patio Cover, Carport and Commercial Structure Engineering 2012 IBC

This report covers these maximum conditions

Ground Snow Loads	**10**	**psf**
	20	**psf**
Wind Speed	**115 MPH EXPOSURE B**	
and Exposure	**115 MPH EXPOSURE C**	**or 120 MPH EXPOSURE B**
	120 MPH EXPOSURE B	
	120 MPH EXPOSURE C	**or 130 MPH EXPOSURE B**
Maximum Ss =	**50%**	**Seismic Design Category C**

February 20, 2015

Solara Adjustable Patio Cover
602 N 24th Street
Phoenix, AZ 85008
(602) 388-8429

GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE.

2. ALUMINUM DESIGN IN ACCORDANCE WITH THE 2010 EDITION OF ALUMINUM ASSOCIATION'S SPECIFICATIONS AND CHAPTER 20 OF THE INTERNATIONAL BUILDING CODE.

3. DESIGN LOADINGS: Ct = 1.2, I = 1.0, Ce = 1.0 (ALL EXPOSURES EXCEPT B AND C WHEN LOCATED TIGHT IN AMONG CONIFERS)

GROUND SNOW LOAD	DESIGN LOAD	
10 PS	10 PSF	LIVE LOAD ONLY
20 PSF	20 PSF	LIVE LOAD ONLY
25 PSF	21 PSF	DESIGN ROOF SNOW LOAD
30 PSF	25.2 PSF	DESIGN ROOF SNOW LOAD

FOR 0.25/12 < SLOPE < 1/12

WIND SPEEDS IN THE 2012 IBC ARE "ULTIMATE DESIGN WIND SPEED." ALL STRUCTURES DESCRIBED IN THIS REPORT ARE DESIGNED USING PRESSURES CALCULATED FROM "ULTIMATE DESIGN WIND SPEEDS". FOR ATTACHED STRUCTURES THE MAXIMUM MEAN ROOF HEIGHT OF THE EXISTING STRUCTURE IS 30'. Kzt WAS ASSUMED AS 1.0 FOR ALL WIND LOADS. SITE LOCATIONS REQUIRING HIGHER A HIGHER Kzt VALUE (ISOLATED HILLS, RIDGES, ESCARPMENTS) WILL REQUIRE HIGHER WIND LOADS AS PER ASCE7-10 SECTION 26.8 AND ARE OUTSIDE THE SCOPE OF THIS REPORT.

NOTE: EXPOSURE B: SHALL APPLY WHEN THE GROUND SURFACE ROUGHNESS CATEGORY B (URBAN AND SUBURBAN AREAS, WOODED AREAS, OR OTHER TERRAIN W/ NUMEROUS CLOSELY SPACED OBSTRUCTIONS HAVING THE SIZE OF A SINGLE FAMILY DWELLING OR LARGER) PREVAILS IN THE UPWIND DIRECTION FOR A DISTANCE OF AT LEAST 1500 FT.

EXPOSURE C: SHALL APPLY WHEN EXPOSURE B AND D (SMOOTH MUD FLATS, SALT FLATS, UNBROKEN ICE AND OTHER) DO NOT.

SEISMIC LOADING
MAXIMUM Ss = 150% SHOWN IN 2012 IBC FIGURE 1613.3.1(1)
Ss > 150% ARE NOT REQUIRED AS PER ASCE7-10 12.8.1.3
S1 NOT APPLICABLE TO THESE STRUCTURES
SITE CLASS = D
BASIC SEISMIC FORCE RESISTNG SYSTEM
POSTS EMBEDDED INTO FOOTINGS = ORDINARY STEEL MOMENT FRAME >> R = 1.25
POSTS SURFACE MOUNTED = GENERIC SYSTEM >> R= 1.25
ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE PROCEDURE

THESE ROOFS ARE NOT SUBJECT TO MAINTENANCE WORKERS AND HAVE NOT BEEN EVALUATED FOR A CONCENTRATED 300 LBF LOAD.

THE BASIS OF THE DESIGN FORCES ARE IN ACCORDANCE WITH THE BASIC LOAD COMBINATIONS DESCRIBED IN IBC SECTION 1605.3.1.1 AND NO FURTHER INCREASES ARE PERMITTED FOR PATIO COVERS RESISTING WIND OR SEISMIC FORCES.

4. THIS ENTIRE ENGINEERING PACKAGE IS NOT REQUIRED FOR MOST BUILDING PERMITS. SUBMISSION FOR A BUILDING PERMIT MUST INCLUDE:
a. GENERAL NOTES (2 PAGES)
b. STRUCTURAL CONFIGURATIONS (1 PAGE)
c. lOUVER AND RAFTER SPAN TABLES
d. HEADER POST SPACING, FOOTING SIZE AND POST TABLE FOR LIVE/SNOW AND WIND LOAD
e. ALL APPROPRIATE DETAILS
f. OTHER DOCUMENTATION REQUIRED BY LOCAL BUILDING AUTHORITY.

5. CONCRETE MIX: Fc=2500, 3000 OR 3500 PSI FOR 28 DAYS IN NEGLIGIBLE, MODERATE, AND SEVERE CONDITIONS AS SHOWN IN FIGURE 1904.3 OF THE 2009 IBC. PATIO STRUCTURES MAY BE ATTACHED TO CONCRETE SLAB WITHOUT FOOTINGS (DETAIL 13) WHEN THE POST LOAD IS 750 LBF OR LESS AND THE FROST DEPTH IS ZERO. CONCRETE SHALL BE A MINIMUM OF 3.5 INCHES THICK AND NO CRACKS WITHIN 2'-6" OF POSTS. POST ANCHORS SHALL BE SET BACK A MINIMUM OF 4 INCHES FROM EDGE OR EXPANSION JOINT OF A SLAB.

6. FOOTINGS HAVE BEEN DESIGNED FOR CLASS 5 SOIL FROM TABLE 1806.2 OF 2012 IBC. ALLOWABLE FOUNDATION PRESSURE IS 1500 POUNDS PER SQUARE FOOT. LATERAL BEARING PRESSURE IS 100 PSF/FT AND IS DOUBLED PER IBC SECTION 1806.3.4. THESE DESIGN VALUES DO NOT APPLY TO MUD, ORGANIC SILTS, ORGANIC CLAYS, PEAT OR UNPREPARED FILLS AND MAY REQUIRE FURTHER SOIL INVESTIGATION. THE BUILDING OFFICIAL MAY ASSIGN A LOAD BEARING CAPACITY. UNITS IN ROOF SNOW/LIVE LOAD AREA OF 25 PSF OR LESS MAY BE BUILT ON 1000 PSF BEARING SOIL W/O ADDITIONAL ENGINEERING. MINIMUM FOOTING DEPTH IS THE LOCAL FROST DEPTH.

7. 20 PSF AND HIGHER LIVE LOAD STRUCTURES MAY BE USED AS COVERS FOR PARKING OF MOTOR VEHICLES. CARPORTS MUST HAVE AT LEAST TWO OPEN SIDES AND HAVE FLOOR SURFACES MADE OF APPROVED NONCOMBUSTIBLE MATERIAL OR ASPHALT.

8. WOOD USED IN CONNECTIONS SHALL BE PROTECTED FROM WEATHER (EXTERIOR EXPOSURE) AS PER IBC SECTION 1403.2 AND /OR 1503

9. ALL STEEL SHALL BE GALVANIZED PER ASTM A-653 G90, A123 G45 OR A153 B-3, PAINTED PER ASTM A755 OR PROTECTED WITH AN APPROVED COATING COMPLYING WITH IBC SECTION 2203.2.

10. ALTERNATE ALUMINUM ALLOYS OF EQUAL OR HIGHER STRENGTHS MAY BE USED.

11. STEEL FASTENERS SHALL BE EITHER STAINLESS (3000 SERIES), GALVANIZED OR DOUBLE CADMIUM PLATED. BOLTS SHALL BE ASTM A-307 HOT DIPPED GLAVANIZED, MECHANICALLY GALVANIZED, ZINC ELECTROPLATED, ALUMINIZED OR 300 SERIES STAINLESS STEEL. CONCRETE ANCHOR BOLTS ARE SPECIFED IN THE DETAILS. ALL WOOD SCREWS MUST COMPLY WITH ANSI/ASME STANDARD B18.6.1 AHD AND AF&PA NDS-05 11.1.4. ALL LAG SCREWS ANSI/ASME B18.2.1 AND AF&PA NDS-05 11.1.3. ALL STEEL WASHERS TO BE ASTM F844 W/ DIMENSIONS IN ACCORDANCE WITH ASME B18.22.1, TYPE A. THE MINIMUM WASHER DIAMETER SHALL BE 1" FOR BOLTED CONNECTIONS. ALL STEEL NUTS TO BE ASTM A563. SCREWS AND BOLTS SHALL HAVE A MINIMUM EDGE DISTANCE OF 2X FASTENER DIAMETER.

12. EMBEDDED POST SURFACES SHALL BE CLEAN AND FREE FROM OILY SURFACES.

13. ALL SELF DRILLING AND SELF TAPPING SCREWS MUST COMPLY TO ICC- ESR 1730, 2196 OR EQUIVALENT AND USE HEADS W/ DIAMETERS EQUAL TO #8 =$\frac{5}{16}$", #10 = $\frac{3}{8}$", #12 = $\frac{13}{32}$" AND #14 = $\frac{1}{2}$" OR STEEL WASHERS OF SIMILAR DIAMTER AND AS PER GENERAL NOTE #11

14. STRUCTURES SHALL NOT BE ENCLOSED IN ANY MANNER WITHOUT APPROVAL OF THE CODE OFFICIAL.

15. AT LEAST ONE HORIZONTAL DIMENSION (PROJECTION OR WIDTH) OF COVER SHALL BE LESS THAN 30'.

16. WHERE ALUMINUM ALLOY PARTS ARE IN CONTACT WITH DISSIMILAR METALS (OTHER THAN ALUMINIZED OR GALVANIZED STEEL) OR ABSORBENT BUILDING MATERIALS, LIKELY TO BE CONTINUOUSLY OR INTERMITTENTLY WET, THE FAYING SURFACES SHALL BE PAINTED OR OTHERWISE SEPARATED IN ACCORDANCE WITH THE ALUMINUM DESIGN MANUAL PART I-A SECTION 6.7.

17. All structures must comply with one of the following:
- **a. All structures with a roof snow load of 30 psf or less may be built in Seismic Design Category (SDC) A-D up to the maximum Ss noted in General Note #3.**
- **b. Structures with flat roof design snow loads over 30 psf complying with IBC Section 1613.1 Exception #1 do not require additional seismic analysis.**
- **c. Structures not complying with (a) or (b) require additional engineering seismic analysis.**

21. DRIFTING AND SLIDING SNOW IS BEYOND THE SCOPE OF THIS REPORT.

22. ALL MULTISPAN TABLES AND DETAILS ASSUME EQUAL SPANS WITH A LONGEST SPAN TO SHORTEST SPAN RATIO OF 1.2. ALL SPECIFICATIONS MUST BE BASED ON LONGEST ACTUAL SPAN.

ENGINEERS STAMP

A. Louver and Rafter SPANS FOR COMMERCIAL AND PATIO STRUCTURES

Solara RF and Extruded Louvers (Details S1, S2 and S3)

Ground Snow Load (psf)	Louver Gauge (mm)	Wind Speed and Exposure Exposure B 110	115	120	130	140	Exposure C 110	115	120	130	140
10	0.6 mm	6'-8"	6'-5"	6'-3"	5'-10"	5'-4"	5'-10"	5'-6"	5'-4"	4'-11"	4'-7"
LIVE	1.2 mm	8'-3"	8'-1"	7'-11"	7'-7"	7'-2"	7'-7"	7'-4"	7'-2"	6'-9"	6'-6"
20	0.6 mm	5'-1"	5'-1"	5'-1"	5'-1"	5'-1"	5'-1"	5'-1"	5'-1"	4'-11"	4'-7"
LIVE	1.2 mm	6'-11"	6'-11"	6'-11"	6'-11"	6'-11"	6'-11"	6'-11"	6'-11"	6'-9"	6'-6"
25	0.6 mm	4'-8"	4'-8"	4'-7"	4'-5"	4'-3"	4'-5"	4'-4"	4'-3"	4'-1"	4'-0"
	1.2 mm	6'-7"	6'-7"	6'-6"	6'-4"	6'-2"	6'-4"	6'-3"	6'-2"	6'-0"	5'-11"
30	0.6 mm	4'-5"	4'-4"	4'-4"	4'-3"	4'-1"	4'-3"	4'-2"	4'-1"	3'-11"	3'-9"
	1.2 mm	6'-4"	6'-3"	6'-3"	6'-2"	6'-0"	6'-2"	6'-1"	6'-0"	5'-10"	5'-8"

TABLE A.1

Solara Adjustable Patio Cover
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This table determines the maximum allowed **"E"**

Maximum Louver Overhang is 24"

Tables A.2 and A.3 determine **"A"**

2"x3" ALUMINUM RAFTER (DETAIL S6)

Ground Snow Load (psf)	Louver Spans **"E"** (ft)	Wind Speed and Exposure Exposure B 110	115	120	130	140	Exposure C 110	115	120	130	140
10	7'	9'-2"	8'-10"	8'-8"	8'-2"	7'-9"	8'-2"	7'-11"	7'-8"	7'-4"	6'-11"
LIVE	6'	9'-8"	9'-4"	9'-1"	8'-7"	8'-2"	8'-7"	8'-4"	8'-1"	7'-8"	7'-4"
	5'	10'-3"	9'-11"	9'-8"	9'-2"	8'-8"	9'-2"	8'-10"	8'-8"	8'-2"	7'-9"
	4'	11'-0"	10'-8"	10'-5"	9'-10"	9'-4"	9'-10"	9'-6"	9'-3"	8'-10"	8'-5"
	3'	12'-2"	11'-10"	11'-5"	10'-10"	10'-4"	10'-10"	10'-6"	10'-3"	9'-8"	9'-3"
	2'	12'-8"	12'-8"	12'-8"	12'-5"	11'-10"	12'-5"	12'-0"	11'-8"	11'-1"	10'-6"
20	7'	7'-6"	7'-6"	7'-6"	7'-6"	7'-6"	7'-6"	7'-6"	7'-6"	7'-4"	6'-11"
LIVE	6'	7'-11"	7'-11"	7'-11"	7'-11"	7'-11"	7'-11"	7'-11"	7'-11"	7'-8"	7'-4"
	5'	8'-0"	7'-11"	7'-10"	7'-8"	7'-6"	7'-8"	7'-7"	7'-5"	7'-3"	7'-1"
	4'	8'-8"	8'-7"	8'-5"	8'-3"	8'-1"	8'-3"	8'-2"	8'-0"	7'-10"	7'-7"
	3'	9'-6"	9'-5"	9'-3"	9'-1"	8'-10"	9'-1"	9'-0"	8'-10"	8'-7"	8'-5"
	2'	10'-11"	10'-9"	10'-7"	10'-5"	10'-2"	10'-5"	10'-3"	10'-1"	9'-10"	9'-7"
25	7'	7'-1"	7'-0"	6'-11"	6'-9"	6'-6"	6'-9"	6'-8"	6'-6"	6'-2"	5'-11"
	6'	7'-5"	7'-5"	7'-4"	7'-2"	7'-0"	7'-2"	7'-0"	6'-11"	6'-9"	6'-6"
	5'	7'-11"	7'-10"	7'-9"	7'-7"	7'-5"	7'-7"	7'-6"	7'-5"	7'-2"	7'-0"
	4'	8'-7"	8'-6"	8'-4"	8'-2"	8'-0"	8'-2"	8'-1"	7'-11"	7'-9"	7'-7"
	3'	9'-5"	9'-4"	9'-2"	9'-0"	8'-10"	9'-0"	8'-10"	8'-9"	8'-7"	8'-4"
	2'	10'-9"	10'-8"	10'-6"	10'-3"	10'-1"	10'-3"	10'-2"	10'-0"	9'-9"	9'-6"
30	7'	6'-10"	6'-8"	6'-7"	6'-4"	6'-2"	6'-4"	6'-3"	6'-1"	5'-10"	0'-0"
	6'	7'-2"	7'-1"	7'-0"	6'-11"	6'-9"	6'-11"	6'-10"	6'-8"	6'-5"	6'-2"
	5'	7'-7"	7'-6"	7'-6"	7'-4"	7'-2"	7'-4"	7'-3"	7'-2"	7'-0"	6'-10"
	4'	8'-2"	8'-1"	8'-1"	7'-11"	7'-9"	7'-11"	7'-9"	7'-8"	7'-6"	7'-4"
	3'	9'-0"	8'-11"	8'-10"	8'-8"	8'-6"	8'-8"	8'-7"	8'-6"	8'-3"	8'-1"
	2'	10'-4"	10'-3"	10'-2"	9'-11"	9'-9"	9'-11"	9'-10"	9'-9"	9'-6"	9'-3"

TABLE A.2

2"x3" ALUMINUM RAFTER WITH INSERT (DETAIL S6 AND S7

Ground Snow Load (psf)	Louver Spans **"E"**	Wind Speed and Exposure Exposure B 110	115	120	130	140	Exposure C 110	115	120	130	140
10	7'	10'-5"	10'-1"	9'-10"	9'-4"	8'-11"	9'-4"	9'-1"	8'-10"	8'-4"	7'-11"
LIVE	6'	11'-0"	10'-8"	10'-4"	9'-10"	9'-4"	9'-10"	9'-6"	9'-3"	8'-9"	8'-4"
	5'	11'-8"	11'-4"	11'-0"	10'-5"	9'-11"	10'-5"	10'-1"	9'-10"	9'-4"	8'-11"
	4'	12'-6"	12'-2"	11'-10"	11'-3"	10'-8"	11'-3"	10'-11"	10'-7"	10'-1"	9'-7"
	3'	13'-10"	13'-6"	13'-0"	12'-4"	11'-10"	12'-4"	12'-0"	11'-8"	11'-1"	10'-7"
	2'	14'-5"	14'-5"	14'-5"	14'-2"	13'-6"	14'-2"	13'-9"	13'-4"	12'-7"	12'-0"
20	7'	8'-7"	8'-7"	8'-7"	8'-7"	8'-7"	8'-7"	8'-7"	8'-7"	8'-4"	7'-11"
LIVE	6'	9'-1"	9'-1"	9'-1"	9'-1"	9'-1"	9'-1"	9'-1"	9'-1"	8'-9"	8'-4"
	5'	9'-2"	9'-0"	8'-11"	8'-9"	8'-7"	8'-9"	8'-8"	8'-6"	8'-3"	8'-1"
	4'	9'-10"	9'-9"	9'-8"	9'-5"	9'-3"	9'-5"	9'-4"	9'-2"	8'-11"	8'-8"
	3'	10'-10"	10'-9"	10'-7"	10'-4"	10'-1"	10'-4"	10'-3"	10'-1"	9'-10"	9'-7"
	2'	12'-5"	12'-3"	12'-1"	11'-10"	11'-7"	11'-10"	11'-9"	11'-6"	11'-3"	10'-11"
25	7'	8'-1"	8'-0"	7'-11"	7'-9"	7'-7"	7'-9"	7'-8"	7'-7"	7'-4"	7'-2"
	6'	8'-6"	8'-5"	8'-4"	8'-2"	8'-0"	8'-2"	8'-0"	7'-11"	7'-9"	7'-6"
	5'	9'-0"	9'-0"	8'-10"	8'-8"	8'-6"	8'-8"	8'-7"	8'-5"	8'-3"	8'-0"
	4'	9'-9"	9'-8"	9'-6"	9'-4"	9'-2"	9'-4"	9'-3"	9'-1"	8'-10"	8'-8"
	3'	10'-9"	10'-8"	10'-6"	10'-3"	10'-1"	10'-3"	10'-1"	10'-0"	9'-9"	9'-6"
	2'	12'-3"	12'-2"	12'-0"	11'-9"	11'-6"	11'-9"	11'-7"	11'-6"	11'-2"	10'-11"
30	7'	7'-9"	7'-8"	7'-7"	7'-6"	7'-4"	7'-6"	7'-5"	7'-4"	7'-1"	0'-0"
	6'	8'-2"	8'-1"	8'-0"	7'-10"	7'-9"	7'-10"	7'-9"	7'-8"	7'-6"	7'-4"
	5'	8'-8"	8'-7"	8'-6"	8'-4"	8'-2"	8'-4"	8'-3"	8'-2"	8'-0"	7'-9"
	4'	9'-4"	9'-3"	9'-2"	9'-0"	8'-10"	9'-0"	8'-11"	8'-10"	8'-7"	8'-5"
	3'	10'-3"	10'-2"	10'-1"	9'-11"	9'-9"	9'-11"	9'-10"	9'-8"	9'-5"	9'-3"
	2'	11'-10"	11'-8"	11'-7"	11'-4"	11'-1"	11'-4"	11'-3"	11'-1"	10'-10"	10'-7"

TABLE A.3

B. Tables for Attached Structures with Single Span Headers with Only 2 Posts

max Ss= 50% Seismic Design Category C

Ground Snow Load 10 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only
Roof Design Load (psf)	115 MPH EXPOSURE B or 115 MPH EXPOSURE B A (ft)	trib (ft)	B (on slab)	B (ft)	Cube Footing End d (in)
10	4	5	12.9	12.9	22
10	5	5.5	12.5	12.5	22
10	6	6	12.2	12.2	22
10	7	6.5	11.8	11.8	22
10	8	7	11.5	11.5	23
10	9	7.5	11.3	11.3	23
10	10	8	10.3	11.1	23
10	11	8.5	9.3	10.9	23
10	12	9	8.5	10.6	23

Table B1

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only
Roof Design Load (psf)	115 MPH EXPOSURE C or 120 MPH EXPOSURE B A (ft)	trib (ft)	B (on slab)	B (ft)	Cube Footing End d (in)
10	4	5	12.2	12.2	23
10	5	5.5	11.8	11.8	23
10	6	6	11.4	11.4	24
10	7	6.5	11.1	11.1	24
10	8	7	10.9	10.9	24
10	9	7.5	10.6	10.6	24
10	10	8	10.3	10.4	24
10	11	8.5	9.3	10.0	24
10	12	9	8.5	9.7	25

Table B2

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only
Roof Design Load (psf)	120 MPH EXPOSURE B or 120 MPH EXPOSURE B A	trib	B (on slab)	B	Cube Footing End d (in)
10	4	5	12.5	12.5	22
10	5	5.5	12.2	12.2	23
10	6	6	11.8	11.8	23
10	7	6.5	11.5	11.5	23
10	8	7	11.2	11.2	23
10	9	7.5	11.0	11.0	23
10	10	8	10.3	10.7	24
10	11	8.5	9.3	10.5	24
10	12	9	8.5	10.3	24

Table B3

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only
Roof Design Load (psf)	120 MPH EXPOSURE C or 130 MPH EXPOSURE B A	trib	B (on slab)	B	Cube Footing End d (in)
10	4	5	11.8	11.8	24
10	5	5.5	11.4	11.4	24
10	6	6	11.1	11.1	24
10	7	6.5	10.9	10.9	24
10	8	7	10.5	10.5	25
10	9	7.5	10.3	10.3	25
10	10	8	9.9	9.9	25
10	11	8.5	9.3	9.6	25
10	12	9	8.5	9.2	25

Table B4

Ground Snow Load 20 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only
Roof Design Load (psf)	115 MPH EXPOSURE B or 115 MPH EXPOSURE B A	trib (ft)	B (on slab)	B	Cube Footing End d (in)
20	4	5	8.0	10.9	21
20	5	5.5	6.7	10.5	21
20	6	6	5.6	10.2	21
20	7	6.5	4.7	9.8	21
20	8	7	4.0	9.3	22
20	9	7.5	3.3	8.9	22
20	10	8	2.7	8.5	22
20	11	8.5	2.2	8.2	22
20	12	9	1.8	7.9	22

Table B5

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only
Roof Design Load (psf)	115 MPH EXPOSURE C or 120 MPH EXPOSURE B A	trib (ft)	B (on slab)	B	Cube Footing End d (in)
20	4	5	8.0	10.9	23
20	5	5.5	6.7	10.5	23
20	6	6	5.6	10.2	23
20	7	6.5	4.7	9.8	23
20	8	7	4.0	9.3	23
20	9	7.5	3.3	8.9	23
20	10	8	2.7	8.5	23
20	11	8.5	2.2	8.2	24
20	12	9	1.8	7.9	24

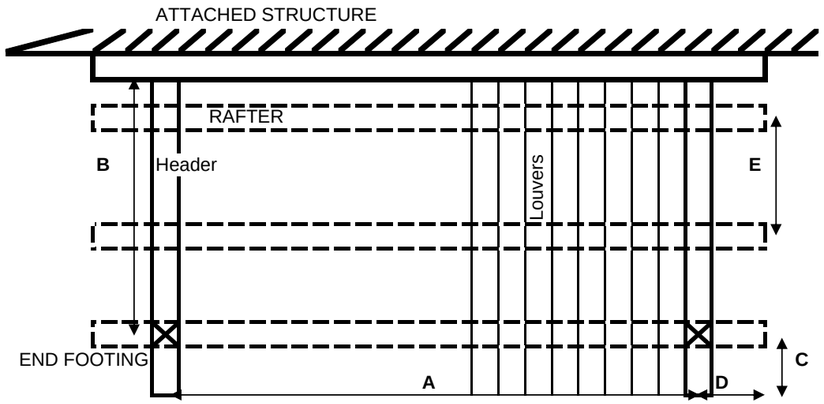
Table B6

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only
Design Load (psf)	120 MPH EXPOSURE B or 120 MPH EXPOSURE B 10 A	5	B (on slab)	B	Cube Footing End d (in)
20	4	5	8.0	10.9	22
20	5	5.5	6.7	10.5	22
20	6	6	5.6	10.2	22
20	7	6.5	4.7	9.8	22
20	8	7	4.0	9.3	22
20	9	7.5	3.3	8.9	22
20	10	8	2.7	8.5	22
20	11	8.5	2.2	8.2	23
20	12	9	1.8	7.9	23

Table B7

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only
Roof Design Load (psf)	120 MPH EXPOSURE C or 130 MPH EXPOSURE B A	trib	B (on slab)	B	Cube Footing End d (in)
20	4	5	8.0	10.9	23
20	5	5.5	6.7	10.5	24
20	6	6	5.6	10.2	24
20	7	6.5	4.7	9.8	24
20	8	7	4.0	9.3	24
20	9	7.5	3.3	8.9	24
20	10	8	2.7	8.5	24
20	11	8.5	2.2	8.2	24
20	12	9	1.8	7.9	24

Table B8



INSTRUCTIONS FOR USING THESE TABLES

1. These instructions are for a **SINGLE SPAN ATTACHED** Solara cover with Louvers perpendicular to the house wall **AND ONLY 2 POSTS**
2. Determine wind and snow loads for structure site area. For zero snow load areas use 10 psf patio covers and 20 psf for carports or commercial structures.
3. Determine **"E"** from Table A.1
4. Choose **"A"** up to maximum value allowed in Tables A.2 or A.3
5. Determine maximum **"B"** from tables on this page
6. The maximum HEADER OVERHANG, **"C",** is 3 ft
7. The maximum RAFTER OVERHANG, **"D",** is 3 ft
8. Choose height of Structure, maximum height is 12'
9. Determine **Uplift Footing Size.**
10. Fasten to wall as per Details S15 or S17
    Use (A/2 + D) x B for Trib Area for Tables W1 or W2

FOR STRUCTURES ATTACHED TO 3.5" CONCRETE SLABS

SLAB 1 Follow Instructions #1-4 above.
SLAB 2 Maximum post spacing is **"B o(n slab)"**
SLAB 3 Follow Instructions #6-8 above, skip #9, follow #10

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C. Tables for Attached Structures with Single Span Headers with 3 Posts Minimum

max Ss= 50% Seismic Design Category C

Ground Snow Load 10 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	115 MPH EXPOSURE B or 115 MPH EXPOSURE B A	trib	B (on slab)	B	Cube Footing End d (in)	Middle d (in)
10	5	5	12.9	12.9	21	21
10	6	6	10.9	12.2	22	22
10	7	7	9.3	11.5	22	23
10	8	8	8.2	11.1	22	24
10	9	9	7.2	10.6	23	25
10	10	10	6.5	10.2	23	25
10	11	11	5.9	9.6	23	26
10	12	12	5.4	9.1	23	26
10	14	14	4.7	8.3	24	27

Table C1

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	115 MPH EXPOSURE C or 120 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	5	5	12.2	12.2	23	23
10	6	6	10.9	11.4	23	24
10	7	7	9.3	10.9	23	25
10	8	8	8.2	10.4	24	25
10	9	9	7.2	9.7	24	26
10	10	10	6.5	9.1	24	27
10	11	11	5.9	8.6	25	27
10	12	12	5.4	8.1	25	28
10	14	14	4.7	7.4	25	29

Table C2

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	120 MPH EXPOSURE B or 120 MPH EXPOSURE B A	trib	B (on slab)	B	Cube Footing End d (in)	Middle d (in)
10	5	5	12.5	12.5	22	22
10	6	6	10.9	11.8	22	23
10	7	7	9.3	11.2	23	24
10	8	8	8.2	10.7	23	25
10	9	9	7.2	10.3	23	25
10	10	10	6.5	9.7	24	26
10	11	11	5.9	9.1	24	26
10	12	12	5.4	8.6	24	27
10	14	14	4.7	7.8	24	28

Table C3

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	120 MPH EXPOSURE C or 130 MPH EXPOSURE B A	trib	B (on slab)	B	Cube Footing End d (in)	Middle d (in)
10	5	5	11.8	11.8	23	23
10	6	6	10.9	11.1	24	24
10	7	7	9.3	10.5	24	25
10	8	8	8.2	9.9	24	26
10	9	9	7.2	9.2	25	27
10	10	10	6.5	8.6	25	27
10	11	11	5.9	8.2	25	28
10	12	12	5.4	7.7	25	28
10	14	14	4.7	7.0	26	29

Table C4

Ground Snow Load 20 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	115 MPH EXPOSURE B or 115 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	5	5	7.0	10.9	20	20
20	6	6	5.8	10.2	21	21
20	7	7	5.0	9.3	21	22
20	8	8	4.4	8.5	21	23
20	9	9	3.9	7.9	21	23
20	10	10	3.5	7.4	22	24
20	11	11	3.2	7.0	22	24
20	12	12	2.9	6.6	22	25
20	14	14	2.5	5.9	23	26

Table C5

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	115 MPH EXPOSURE C or 120 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	5	5	7.0	10.9	22	22
20	6	6	5.8	10.2	22	23
20	7	7	5.0	9.3	23	24
20	8	8	4.4	8.5	23	24
20	9	9	3.9	7.9	23	25
20	10	10	3.5	7.4	23	26
20	11	11	3.2	7.0	24	26
20	12	12	2.9	6.6	24	27
20	14	14	2.5	5.9	24	28

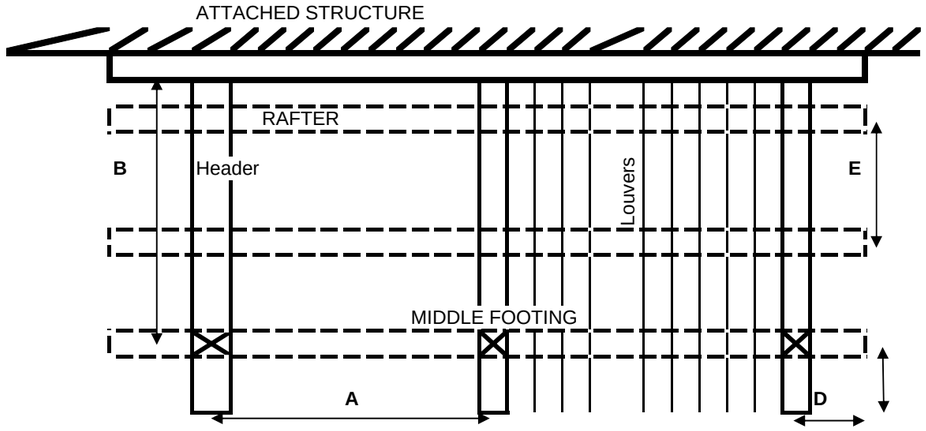
Table C6

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	120 MPH EXPOSURE B or 120 MPH EXPOSURE B 10	A	trib 5	B (on slab)	B	End d (in)	Middle d (in)
20	5	5	7.0	10.9	21	21
20	6	6	5.8	10.2	21	22
20	7	7	5.0	9.3	22	23
20	8	8	4.4	8.5	22	23
20	9	9	3.9	7.9	22	24
20	10	10	3.5	7.4	22	25
20	11	11	3.2	7.0	23	25
20	12	12	2.9	6.6	23	26
20	14	14	2.5	5.9	23	26

Table C7

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	120 MPH EXPOSURE C or 130 MPH EXPOSURE B A	trib	B (on slab)	B	Cube Footing End d (in)	Middle d (in)
20	5	5	7.0	10.9	23	23
20	6	6	5.8	10.2	23	24
20	7	7	5.0	9.3	23	25
20	8	8	4.4	8.5	24	25
20	9	9	3.9	7.9	24	26
20	10	10	3.5	7.4	24	27
20	11	11	3.2	7.0	24	27
20	12	12	2.9	6.6	25	28
20	14	14	2.5	5.9	25	29

Table C8



INSTRUCTIONS FOR USING THESE TABLES

1. These instructions are for a **SINGLE SPAN ATTACHED** Solara cover with Louvers perpendicular to the house wall
2. Determine wind and snow loads for structure site area. For zero snow load areas use 10 psf patio covers and 20 psf for carports or commercial structures.
3. Determine **"E"** from Table A.1
4. Choose **"A"** up to maximum value allowed in Tables A.2 or A.3
5. Determine maximum **"B"** from tables on this page
6. The maximum HEADER OVERHANG, **"C",** is 3 ft
7. The maximum RAFTER OVERHANG, **"D",** is 3 ft
8. Choose height of Structure
9. Determine **Uplift Footing Size.**
10. Fasten to wall as per Details S15 or S17
    Use A x B for Trib Area for Tables W1 or W2

FOR STRUCTURES ATTACHED TO 3.5" CONCRETE SLABS

SLAB 1 Follow Instructions #1-4 above.
SLAB 2 Maximum post spacing is **"B o(n slab)"**
SLAB 3 Follow Instructions #6-8 above, skip #9, follow #10

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D. Tables for Attached Structures with Single Span Rafters with at Least 3 Posts — max Ss= 50% — Seismic Design Category C

Ground Snow Load 10 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	115 MPH EXPOSURE B or 115 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	10	9	10.6	10.6	25	27
10	11	9.5	10.4	10.4	25	27
10	12	10	10.2	10.2	25	27
10	14	11	9.6	9.6	26	28
						Table D1

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	115 MPH EXPOSURE C or 120 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	10	9	9.7	9.7	26	28
10	11	9.5	9.4	9.4	26	28
10	12	10	9.0	9.1	27	28
10	14	11	7.9	8.6	27	29
						Table D2

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	120 MPH EXPOSURE B or 120 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	10	9	10.3	10.3	25	27
10	11	9.5	9.7	10.0	26	28
10	12	10	9.0	9.7	26	28
10	14	11	7.9	9.1	26	28
						Table D3

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	120 MPH EXPOSURE C or 130 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	10	9	9.2	9.2	27	28
10	11	9.5	8.9	8.9	27	29
10	12	10	8.6	8.6	27	29
10	14	11	7.9	8.2	28	29
						Table D4

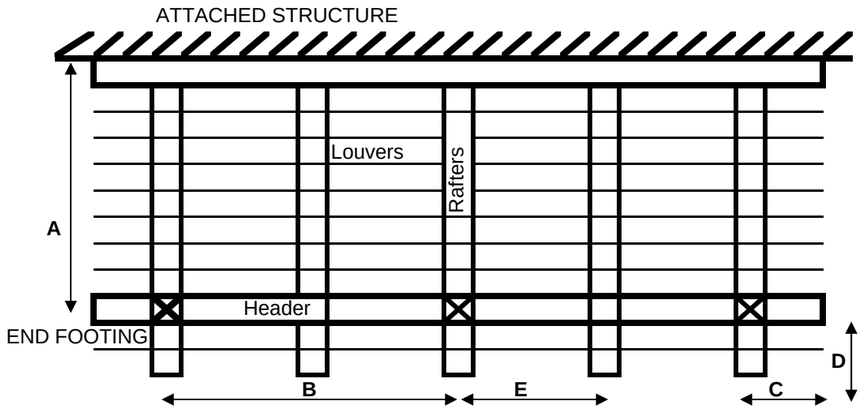
Ground Snow Load 20 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	115 MPH EXPOSURE B or 115 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	10	9	3.8	7.9	23	24
20	11	9.5	3.3	7.6	24	24
20	12	10	3.0	7.4	24	25
20	14	11	2.3	7.0	24	25
						Table D5

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	115 MPH EXPOSURE C or 120 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	10	9	3.8	7.9	25	26
20	11	9.5	3.3	7.6	25	26
20	12	10	3.0	7.4	26	27
20	14	11	2.3	7.0	26	27
						Table D6

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	120 MPH EXPOSURE B or 120 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	10	9	3.8	7.9	24	25
20	11	9.5	3.3	7.6	24	25
20	12	10	3.0	7.4	25	25
20	14	11	2.3	7.0	25	26
						Table D7

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	120 MPH EXPOSURE C or 130 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	10	9	3.8	7.9	26	27
20	11	9.5	3.3	7.6	26	27
20	12	10	3.0	7.4	27	27
20	14	11	2.3	7.0	27	28
						Table D8



INSTRUCTIONS FOR USING THESE TABLES

1. These instructions are for a **SINGLE SPAN ATTACHED** Solara cover with Louvers parallel to the house wall
2. Determine wind and snow loads for structure site area. For zero snow load areas use 10 psf for patio covers and 20 psf for carports or commercial structures.
3. Determine **"E"** from Table A.1
4. Choose **"A"** up to maximum value allowed in Tables A.2 or A.3
5. Determine maximum **"B"** from tables on this page
6. The maximum HEADER OVERHANG, **"C",** is 3 ft
7. The maximum RAFTER OVERHANG, **"D",** is 4 ft
8. Choose height of Structure
9. Determine **Uplift Footing Size.**
10. Fasten to wall as per Details S16 or S18
    Use A x E for Trib Area for Tables W1 or W2

FOR STRUCTURES ATTACHED TO 3.5" CONCRETE SLABS

SLAB 1 Follow Instructions #1-4 above.
SLAB 2 Maximum post spacing is **"B o(n slab)"**
SLAB 3 Follow Instructions #6-8 above, skip #9, follow #10

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W. ATTACHMENT TO WALL and REQUIRED NUMBER OF RAFTER/HEADER CONNECTIONS
SEE INSTRUCTION #10 TO CALCULATE ALLOWABLE TRIB AREA FOR CONFIGURATIONS B, C AND D

TABLE W1 — **#14 SCREW W/ 2.5" EMBEDMENT IN DOUGLAS FIR WOOD (DETAIL S15 OR S16)**

		Live or Ground Snow Load															
		10 psf				20 psf				25 psf				30 psf			
Roof Design+ Dead Load		11.5	11.5	11.5	11.5	21.5	21.5	21.5	21.5	22.5	22.5	22.5	22.5	26.7	26.7	26.7	26.7
Wind Speed and Exposure	Net Wind Uplift Load (psf)	2	3	4	5	3	4	5	6	3	4	5	6	3	4	5	6
		ALLOWABLE TRIB AREA (SQ FT) (SEE INSTRUCTION #10)															
110 MPH EXPOSURE B	10.4	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
115 MPH EXPOSURE B	11.4	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
120 MPH EXPOSURE B	12.5	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
130 MPH EXPOSURE B	14.9	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
140 MPH EXPOSURE B	17.4	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
150 MPH EXPOSURE B	20.1	68	102	136	170	59	79	99	119	57	76	95	114	48	64	80	96
160 MPH EXPOSURE B	23.0	59	89	119	148	59	79	99	119	57	76	95	114	48	64	80	96
170 MPH EXPOSURE B	26.0	52	79	105	131	59	79	99	119	57	76	95	114	48	64	80	96
180 MPH EXPOSURE B	29.3	47	70	93	116	59	79	99	119	57	76	95	114	48	64	80	96
110 MPH EXPOSURE C	12.8	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
115 MPH EXPOSURE C	14.1	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
120 MPH EXPOSURE C	15.4	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
130 MPH EXPOSURE C	18.2	74	111	148	185	59	79	99	119	57	76	95	114	48	64	80	96
140 MPH EXPOSURE C	21.3	64	96	128	160	59	79	99	119	57	76	95	114	48	64	80	96
150 MPH EXPOSURE C	24.6	56	83	111	139	59	79	99	119	57	76	95	114	48	64	80	96
160 MPH EXPOSURE C	28.1	49	73	97	121	59	79	99	119	57	76	95	114	48	64	80	96
170 MPH EXPOSURE C	31.8	43	64	86	107	59	79	99	119	57	76	95	114	48	64	80	96
180 MPH EXPOSURE C	35.8	38	57	76	95	57	76	95	114	57	76	95	114	48	64	80	96

TABLE W2 — **#14 SCREW W/ 1.5" EMBEDMENT IN DOUGLAS FIR WOOD (DETAIL S17 OR S18)**

		Live or Ground Snow Load															
		10				20				25				30 psf			
Roof Design+ Dead Load		11.5	11.5	11.5	11.5	21.5	21.5	21.5	21.5	22.5	22.5	22.5	22.5	26.7	26.7	26.7	26.7
Wind Speed and Exposure	Net Wind Uplift Load (psf)	2	3	4	5	3	4	5	6	3	4	5	6	3	4	5	6
		ALLOWABLE TRIB AREA (SQ FT) (SEE INSTRUCTION #10)															
110 MPH EXPOSURE B	10.4	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
115 MPH EXPOSURE B	11.4	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
120 MPH EXPOSURE B	12.5	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
130 MPH EXPOSURE B	14.9	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
140 MPH EXPOSURE B	17.4	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
150 MPH EXPOSURE B	20.1	42	63	84	106	37	49	61	74	35	47	59	70	30	40	49	59
160 MPH EXPOSURE B	23.0	37	55	74	92	37	49	61	74	35	47	59	70	30	40	49	59
170 MPH EXPOSURE B	26.0	33	49	65	81	37	49	61	74	35	47	59	70	30	40	49	59
180 MPH EXPOSURE B	29.3	29	43	58	72	37	49	61	74	35	47	59	70	30	40	49	59
110 MPH EXPOSURE C	12.8	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
115 MPH EXPOSURE C	14.1	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
120 MPH EXPOSURE C	15.4	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
130 MPH EXPOSURE C	18.2	46	69	92	115	37	49	61	74	35	47	59	70	30	40	49	59
140 MPH EXPOSURE C	21.3	40	60	80	100	37	49	61	74	35	47	59	70	30	40	49	59
150 MPH EXPOSURE C	24.6	35	52	69	86	37	49	61	74	35	47	59	70	30	40	49	59
160 MPH EXPOSURE C	28.1	30	45	60	76	37	49	61	74	35	47	59	70	30	40	49	59
170 MPH EXPOSURE C	31.8	27	40	53	67	37	49	61	74	35	47	59	70	30	40	49	59
180 MPH EXPOSURE C	35.8	24	36	47	59	36	47	59	71	35	47	59	70	30	40	49	59

Table W3 — Wind Speed and Exposure

	Exposure B									Exposure C								
Wind Speed	110	115	120	130	140	150	160	170	180	110	115	120	130	140	150	160	170	180
Lateral Wind Pressure	18	20	22	26	30	34	39	44	49	22	24	26	31	36	41	47	53	60
Projection (ft)	**Required Number of Rafters/Header Connections (Detail S11)**																	
5	1	1	1	1	2	2	2	2	2	1	1	1	2	2	2	2	2	3
6	1	2	2	2	2	2	2	3	3	2	2	2	2	2	3	3	3	3
7	2	2	2	2	3	3	3	3	4	2	2	2	3	3	3	4	4	5
8	2	2	2	3	3	4	4	4	5	2	3	3	3	4	4	5	5	6
9	3	3	3	3	4	4	5	5	6	3	3	3	4	5	5	6	7	7
10	3	3	4	4	5	5	6	7	7	4	4	4	5	6	6	7	8	9
11	4	4	4	5	6	6	7	8	9	4	5	5	6	7	7	8	9	11
12	4	5	5	6	6	7	8	9	10	5	5	6	7	8	9	10	11	12
13	5	5	6	7	8	9	10	11	12	6	6	7	8	9	10	12	13	15
14	6	6	6	8	9	10	11	12	14	7	7	8	9	10	12	13	15	17
15	6	7	7	9	10	11	13	14	16	7	8	9	10	12	14	15	17	19
16	7	8	8	10	11	13	14	16	18	8	9	10	12	13	15	17	20	22
17	8	9	9	11	12	14	16	18	20	9	10	11	13	15	17	20	22	25
18	9	10	10	12	14	16	18	20	23	11	12	12	15	17	19	22	25	27

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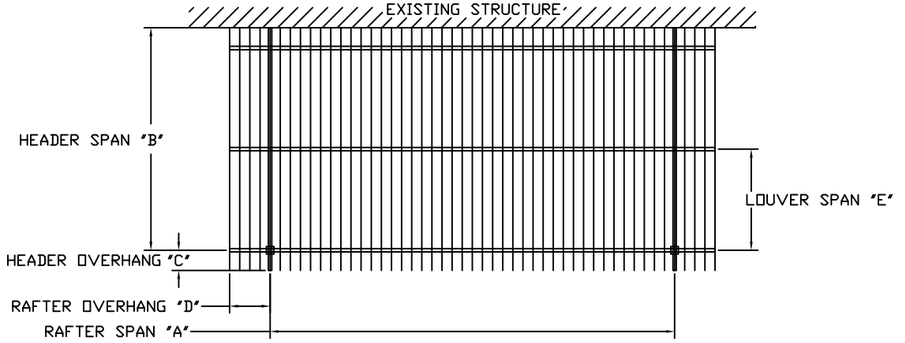
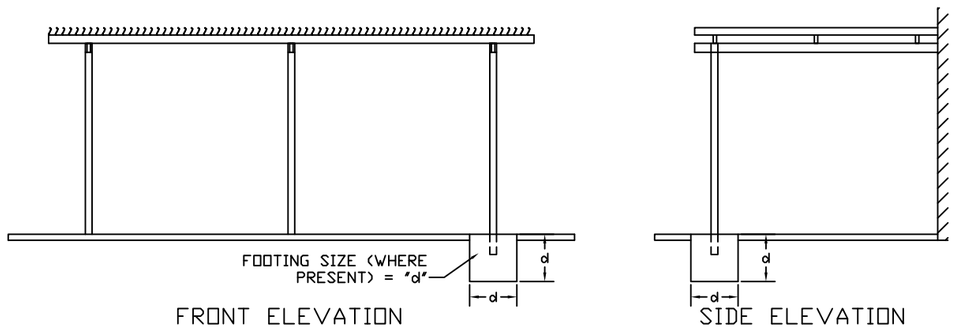
CONFIGURATION B

PLAN VIEW



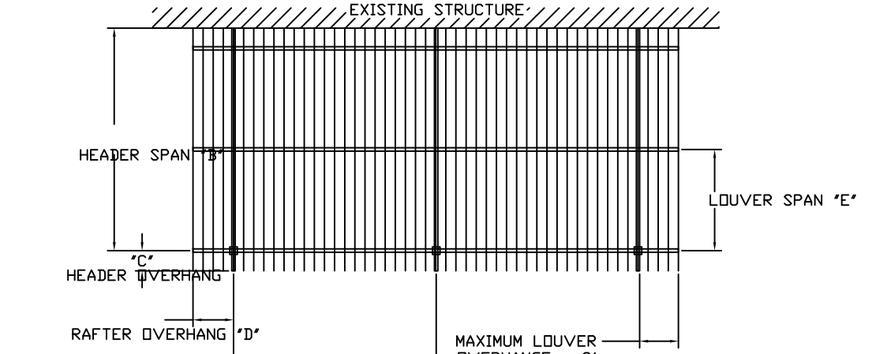


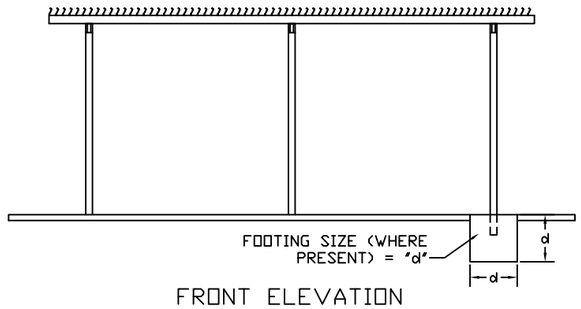
FRONT ELEVATION

SIDE ELEVATION

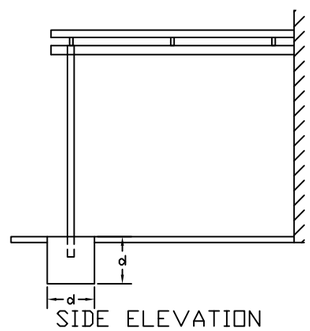
CONFIGURATION C

PLAN VIEW





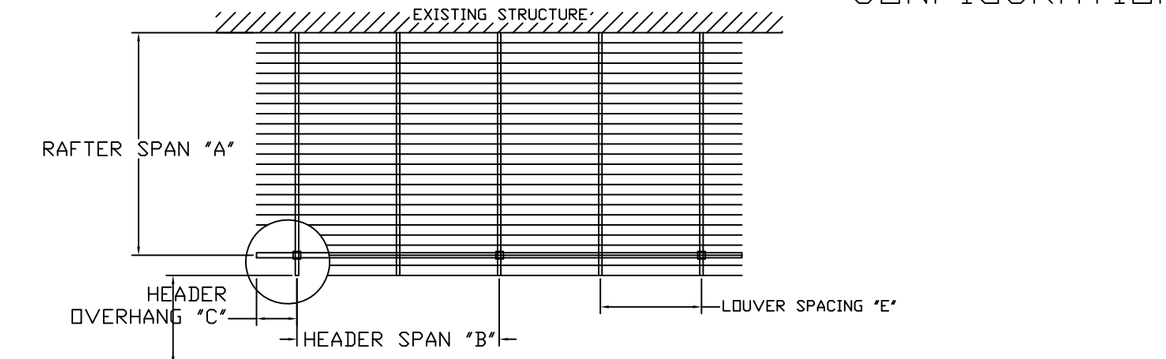
FRONT ELEVATION

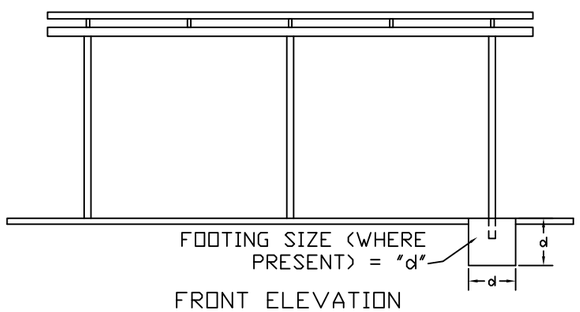


SIDE ELEVATION

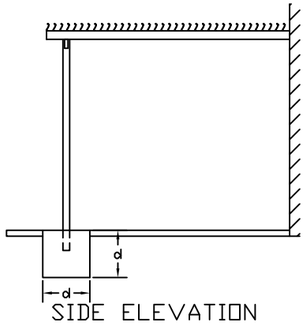
CONFIGURATION D

PLAN VIEW





FRONT ELEVATION



SIDE ELEVATION

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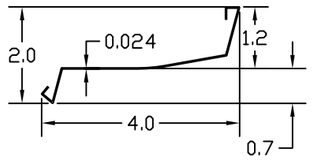
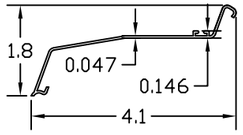
		FILE SOLARA.DWG	
		DESC STRUCTURE CONFIGURATIONS	1 of 5

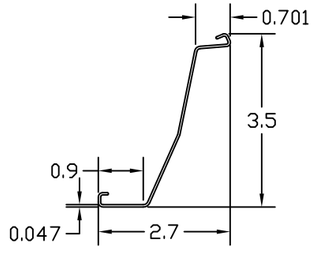
S1 ROLL-FORMED LOUVER (3105H24 ALUM ALLOY)



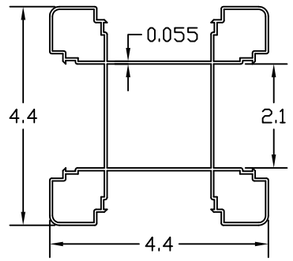
S2 EXTRUDED LOUVER 1 (6063 T5 ALUM ALLOY)



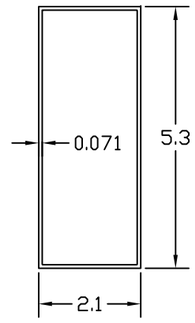
S3 EXTRUDED LOUVER 2 (6063 T5 ALUM ALLOY)



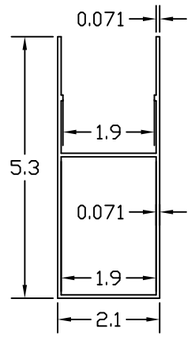
S4 SOLARA POST (6063 T5 ALUM ALLOY)



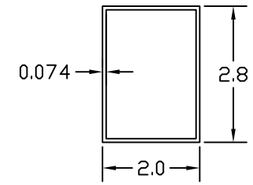
S5 HEADER BEAM (6005 T5 ALUM ALLOY)



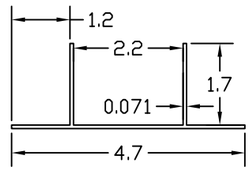
S6 RAFTER (6005 T5 ALUM ALLOY)



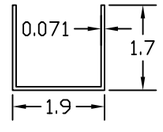
S7 RAFTER INSERT (6005 T5 ALUM ALLOY)



S8 RAFTER MOUNTING BRACKET (6063 T6 ALUM ALLOY)



S9 RAFTER/HEADER WALL BRACKET (6063 T6 ALUM ALLOY)



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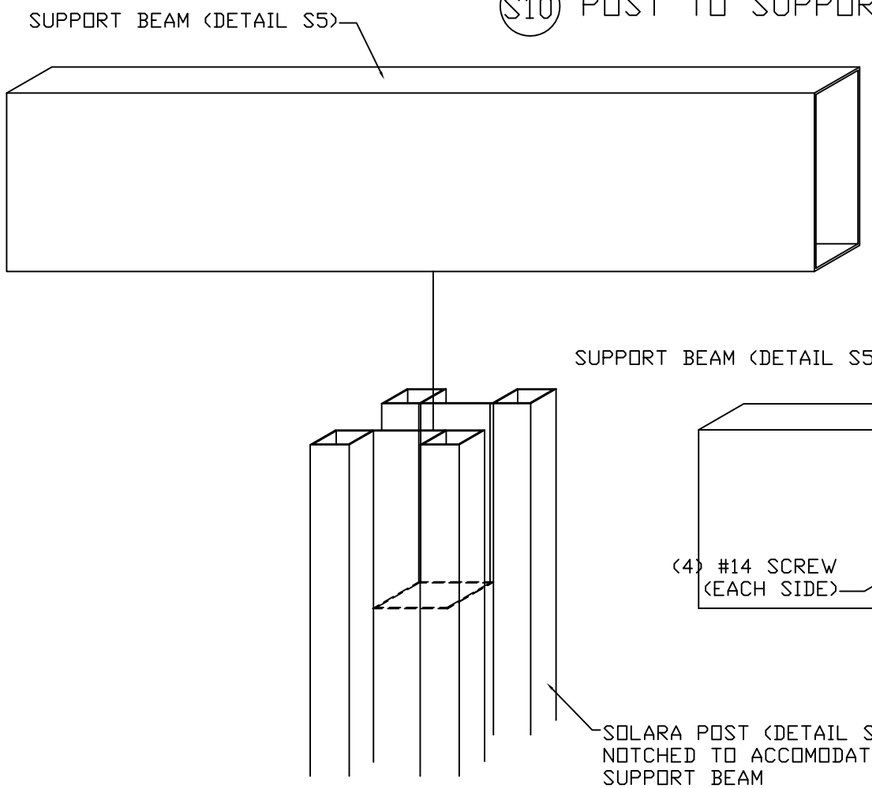
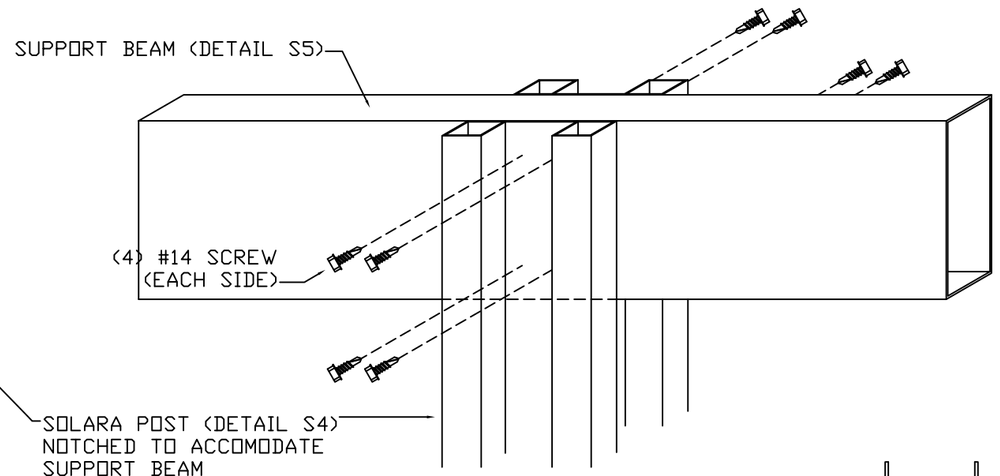
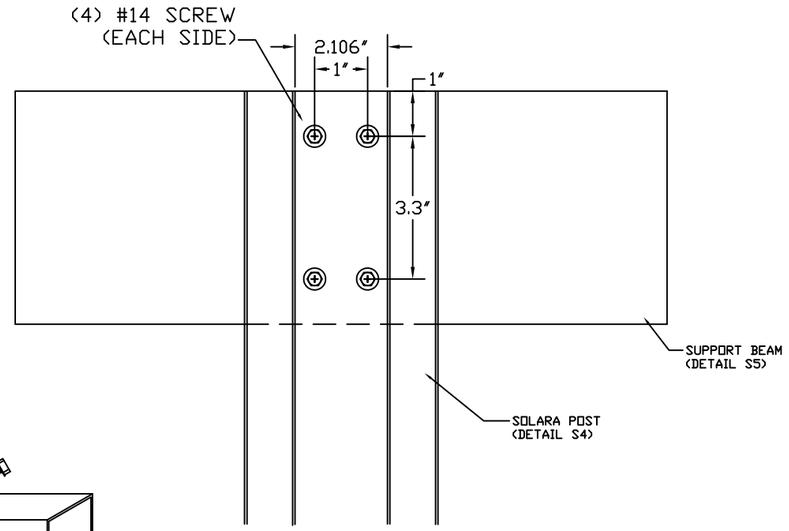
		DESC STRUCTURE ELEMENTS	2 OF 5

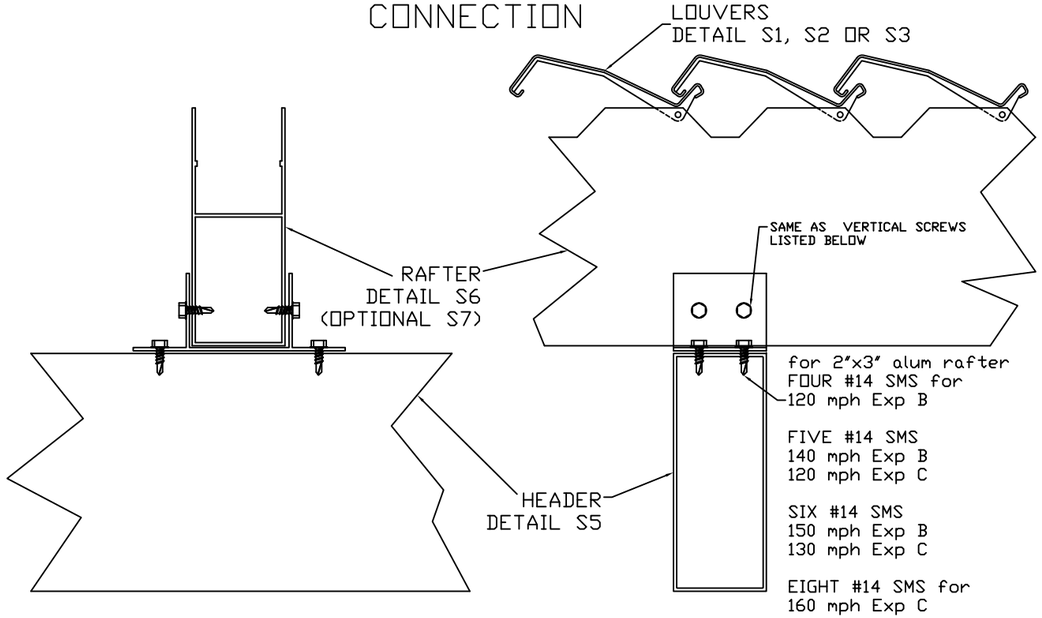
S10 POST TO SUPPORT BEAM CONNECTION







S11 HEADER TO RAFTER CONNECTION



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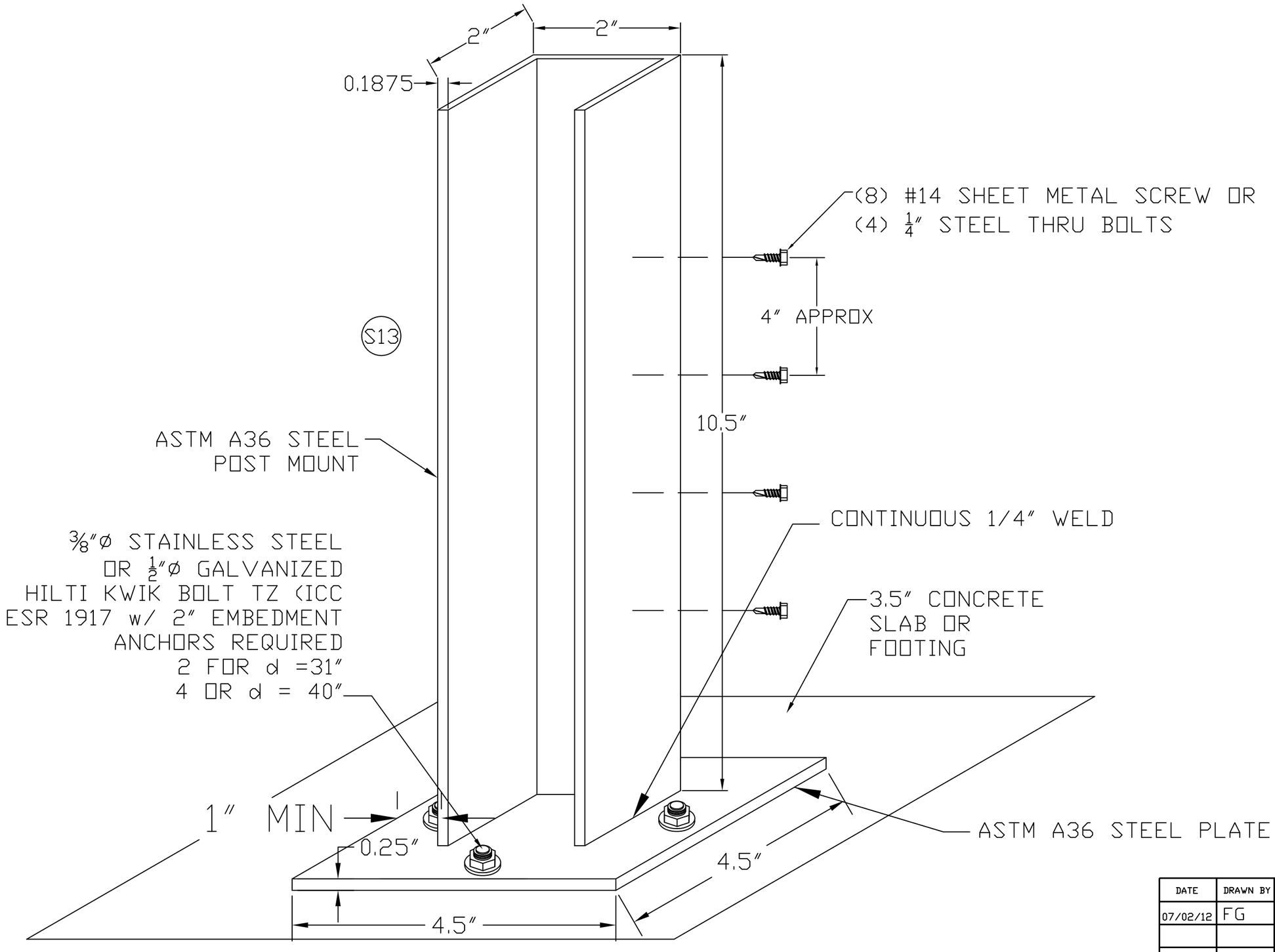
		DESC STRUCTURE CONNECTIONS	3 of 5



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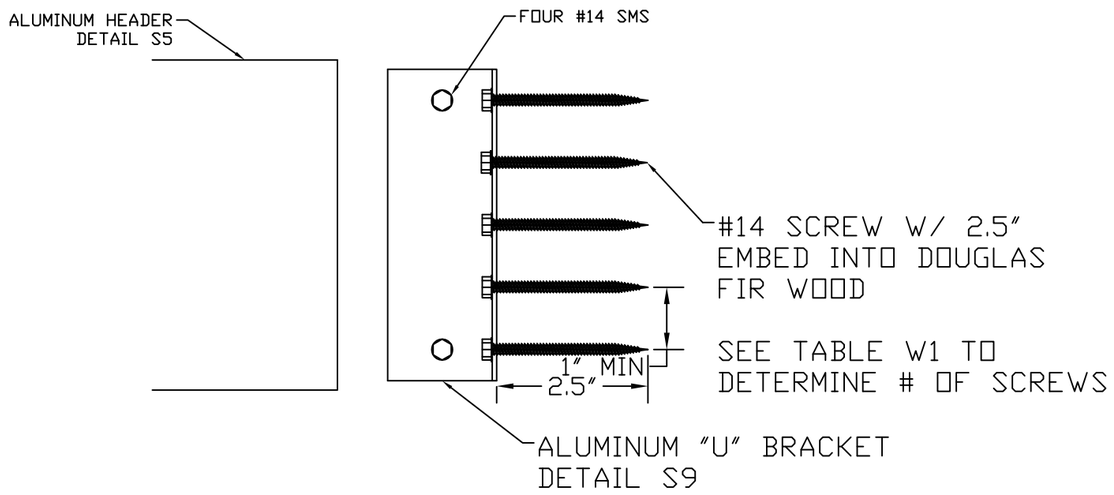
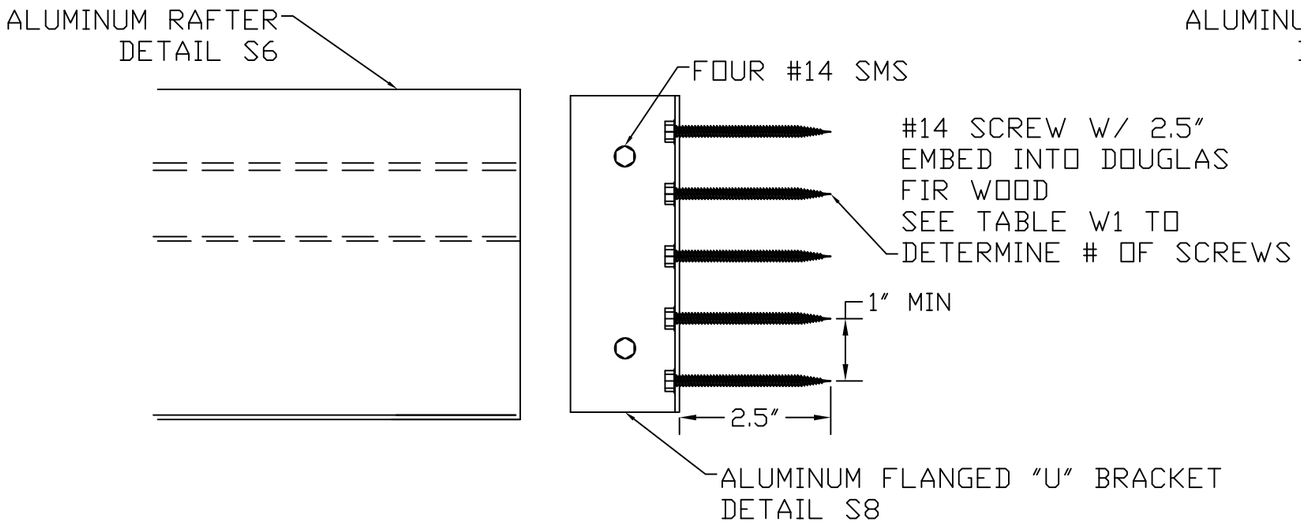
		FILE SOLARA.DWG	
		DESC STRUCTURE CONNECTIONS	4 of 5

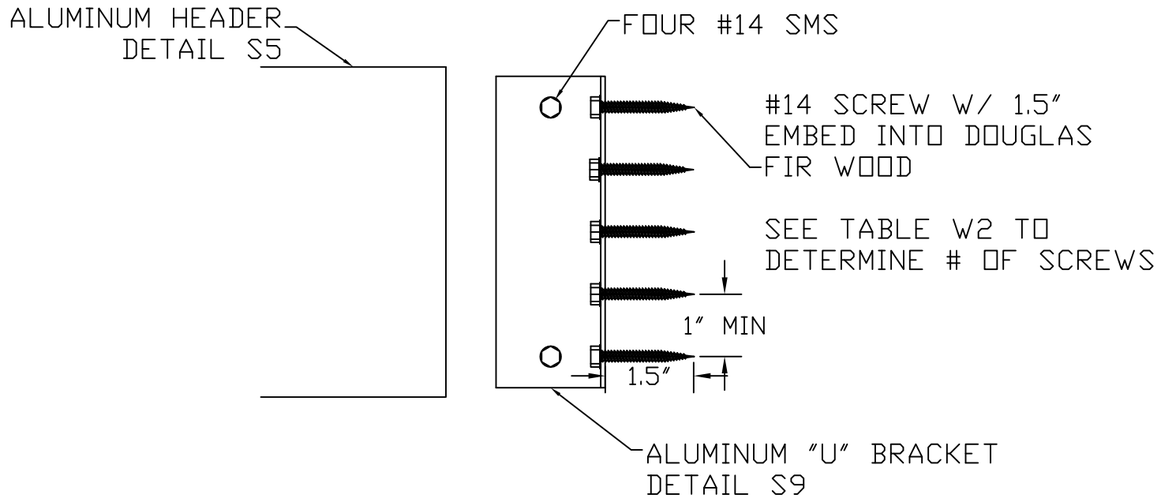
S15 HEADER BEAM TO WALL ATTACHMENT



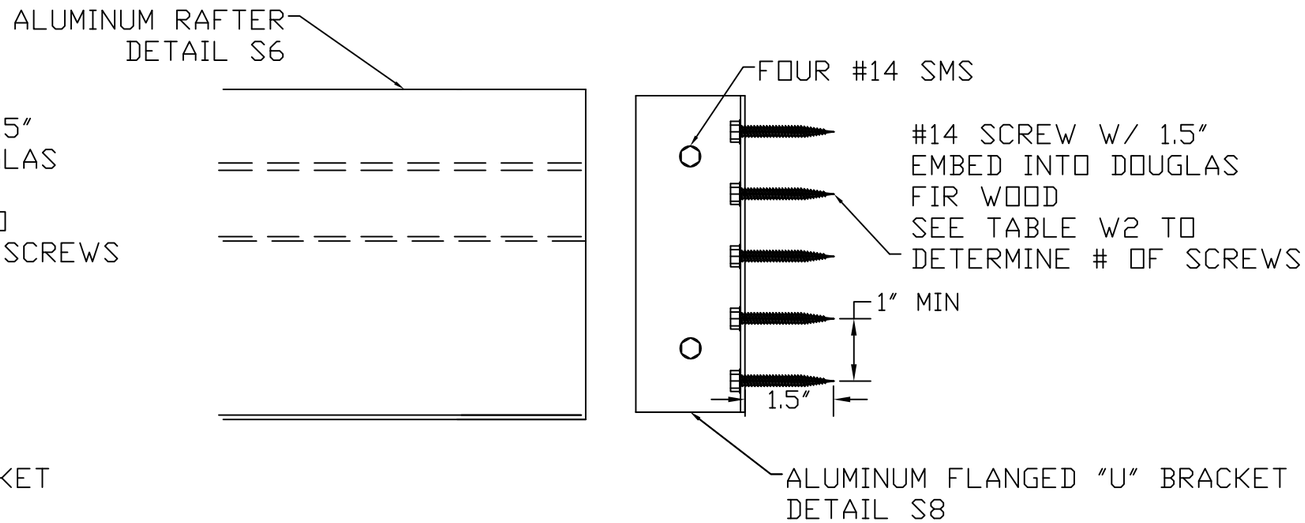
S16 RAFTER TO WALL CONNECTION



S17 HEADER BEAM TO WALL ATTACHMENT



S18 RAFTER TO WALL CONNECTION



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07/02/12	FG		
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		FILE SOLARA.DWG	
		DESC STRUCTURE CONNECTIONS	5 of 5