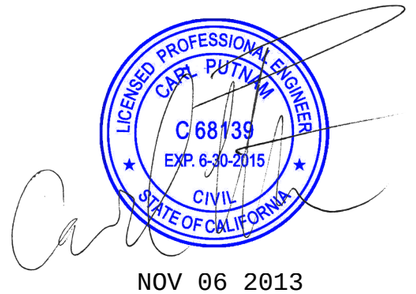
Solara Adjustable Patio Cover, Carport and Commercial Structure Engineering 2009 IBC

This report covers these maximum conditions

Ground Snow Loads	**10**	**psf**
	20	**psf**
Wind Speed	**90 MPH EXPOSURE B**	
and Exposure	**90 MPH EXPOSURE C**	**or 95 MPH EXPOSURE B**
	100 MPH EXPOSURE C	**or 110 MPH EXPOSURE B**
	110 MPH EXPOSURE C	**or 120 MPH EXPOSURE B**
Maximum Ss =	**150%**	**Seismic Design Category D**

November 6, 2013

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



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GENERAL NOTES:

1. DESIGNED IN ACCORDANCE WITH THE 2009 INTERNATIONAL BUILDING CODE.

2. ALUMINUM DESIGN IN ACCORDANCE WITH THE 2005 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 2009 IBC ARE "3 SECOND GUST WIND SPEED." ALL STRUCTURES DESCRIBED IN THIS REPORT ARE DESIGNED USING PRESSURES CALCULATED FROM "3 SECOND GUST 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 ASCE7-05 SECTION 6.5.7 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 2009 IBC FIGURE 1613.5(1)
Ss > 150% ARE NOT REQUIRED AS PER ASCE7-05 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 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. IOUVER 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 (DETAILS 28, AQ AND AO) WHEN THE POST LOAD IS 750 LBF OR LESS AND THE FROST DEPTHE IS ZERO. CONCRETE SHALL BE A MINIMUM OF 3.5 INCHES THICK AND NO CRACKS WITHIN 2'-6" OF POSTS. POSTS 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 2009 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. 3004H2x ALUMINUM MAY BE SUBSTITUTED FOR 3004H3x.

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.

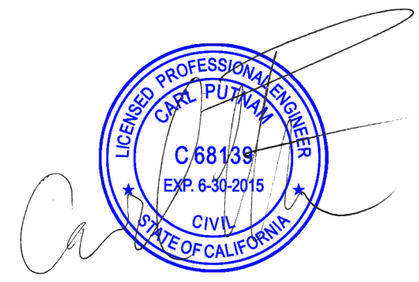
15. AT LEAST ONE HORIZONTAL DIMENSION (PROJECTION OR WIDTH) OF COVER SHALL BE LESS THAN 30'.

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 SNOW IS ADDRESSED IN DETAIL A4. 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.



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ENGINEERS STAMP

A. Louver and Rafter SPANS FOR COMMERCIAL AND PATIO STRUCTURES

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

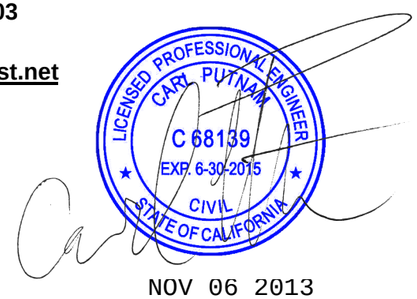
Ground Snow Load (psf)	Louver Gauge (mm)	Wind Speed and Exposure Exposure B 85	90	100	105	110	Exposure C 85	90	100	105	110
10	0.6 mm	5'-10"	5'-7"	5'-0"	4'-9"	4'-7"	5'-0"	4'-9"	4'-3"	4'-1"	3'-10"
LIVE	1.2 mm	8'-5"	8'-3"	7'-8"	7'-4"	7'-3"	7'-8"	7'-4"	6'-11"	6'-7"	6'-2"
20	0.6 mm	4'-10"	4'-10"	4'-10"	4'-9"	4'-7"	4'-10"	4'-9"	4'-3"	4'-1"	3'-10"
LIVE	1.2 mm	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	6'-11"	6'-7"	6'-2"
25	0.6 mm	4'-5"	4'-4"	4'-2"	4'-1"	4'-0"	4'-2"	4'-1"	3'-10"	3'-9"	3'-8"
	1.2 mm	6'-7"	6'-6"	6'-4"	6'-3"	6'-2"	6'-4"	6'-3"	5'-10"	5'-9"	5'-7"
30	0.6 mm	4'-2"	4'-1"	3'-11"	3'-11"	3'-10"	3'-11"	3'-10"	3'-8"	3'-7"	3'-6"
	1.2 mm	6'-4"	6'-3"	6'-1"	5'-11"	5'-10"	6'-1"	5'-10"	5'-7"	5'-7"	5'-5"

TABLE A.1

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

Carl Putnam, P. E.
3441 Ivylink Place
Lynchburg, VA 24503
(434) 384-2514
carlputnam@comcast.net

This table determines the maximum allowed **"E"**
Maximum Louver Overhang is 24"



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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 85	90	100	105	110	Exposure C 85	90	100	105	110
10	7'	8'-6"	8'-0"	7'-2"	6'-9"	6'-5"	7'-1"	6'-8"	5'-11"	5'-7"	5'-4"
LIVE	6'	9'-2"	8'-8"	7'-9"	7'-4"	7'-0"	7'-8"	7'-3"	6'-6"	6'-2"	5'-10"
	5'	10'-1"	9'-7"	8'-7"	8'-1"	7'-9"	8'-6"	8'-0"	7'-2"	6'-9"	6'-5"
	4'	11'-5"	10'-9"	9'-7"	9'-2"	8'-8"	9'-7"	9'-0"	8'-0"	7'-8"	7'-3"
	3'	13'-3"	12'-6"	11'-2"	10'-7"	10'-1"	11'-1"	10'-6"	9'-4"	8'-11"	8'-6"
	2'	13'-10"	13'-10"	13'-6"	13'-1"	12'-6"	13'-6"	12'-10"	11'-7"	11'-1"	10'-6"
20	7'	6'-2"	6'-2"	6'-2"	6'-2"	6'-2"	6'-2"	6'-2"	5'-11"	5'-7"	5'-4"
LIVE	6'	6'-9"	6'-9"	6'-9"	6'-9"	6'-9"	6'-9"	6'-9"	6'-6"	6'-2"	5'-10"
	5'	6'-10"	6'-8"	6'-5"	6'-3"	6'-1"	6'-5"	6'-2"	5'-10"	5'-8"	5'-6"
	4'	7'-9"	7'-7"	7'-3"	7'-0"	6'-10"	7'-2"	7'-0"	6'-7"	6'-5"	6'-3"
	3'	9'-0"	8'-10"	8'-5"	8'-3"	8'-0"	8'-5"	8'-2"	7'-9"	7'-6"	7'-3"
	2'	11'-2"	10'-11"	10'-5"	10'-2"	9'-11"	10'-5"	10'-1"	9'-7"	9'-4"	9'-1"
25	7'	5'-7"	5'-6"	5'-3"	5'-1"	5'-0"	5'-2"	5'-1"	4'-9"	4'-7"	4'-6"
	6'	6'-1"	5'-11"	5'-8"	5'-7"	5'-5"	5'-8"	5'-6"	5'-2"	5'-1"	4'-11"
	5'	6'-9"	6'-7"	6'-3"	6'-2"	6'-0"	6'-3"	6'-1"	5'-9"	5'-7"	5'-5"
	4'	7'-7"	7'-5"	7'-1"	6'-11"	6'-9"	7'-1"	6'-11"	6'-6"	6'-4"	6'-2"
	3'	8'-10"	8'-8"	8'-3"	8'-1"	7'-11"	8'-3"	8'-1"	7'-7"	7'-5"	7'-3"
	2'	10'-11"	10'-9"	10'-4"	10'-0"	9'-10"	10'-2"	10'-0"	9'-5"	9'-2"	9'-0"
30	7'	5'-3"	5'-1"	4'-11"	4'-9"	4'-8"	4'-11"	4'-9"	4'-6"	4'-5"	0'-0"
	6'	5'-8"	5'-7"	5'-4"	5'-3"	5'-2"	5'-4"	5'-2"	4'-11"	4'-10"	4'-8"
	5'	6'-4"	6'-2"	5'-11"	5'-10"	5'-8"	5'-11"	5'-9"	5'-6"	5'-4"	5'-2"
	4'	7'-1"	7'-0"	6'-8"	6'-7"	6'-5"	6'-8"	6'-6"	6'-2"	6'-0"	5'-11"
	3'	8'-4"	8'-1"	7'-10"	7'-8"	7'-6"	7'-9"	7'-7"	7'-3"	7'-1"	6'-11"
	2'	10'-4"	10'-1"	9'-8"	9'-6"	9'-4"	9'-8"	9'-5"	9'-0"	8'-10"	8'-7"

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 85	90	100	105	110	Exposure C 85	90	100	105	110
10	7'	10'-9"	10'-2"	9'-2"	8'-9"	8'-4"	9'-1"	8'-7"	7'-8"	7'-4"	7'-0"
LIVE	6'	11'-8"	11'-0"	9'-11"	9'-5"	9'-0"	9'-10"	9'-3"	8'-4"	7'-11"	7'-7"
	5'	12'-8"	12'-1"	10'-10"	10'-4"	9'-11"	10'-9"	10'-2"	9'-2"	8'-9"	8'-4"
	4'	13'-9"	13'-2"	12'-1"	11'-7"	11'-0"	12'-1"	11'-5"	10'-3"	9'-9"	9'-3"
	3'	15'-1"	14'-6"	13'-6"	13'-1"	12'-8"	13'-5"	13'-0"	11'-10"	11'-4"	10'-9"
	2'	15'-9"	15'-9"	15'-5"	14'-11"	14'-6"	15'-5"	14'-9"	13'-10"	13'-5"	13'-0"
20	7'	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-8"	7'-4"	7'-0"
LIVE	6'	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-4"	7'-11"	7'-7"
	5'	8'-10"	8'-7"	8'-3"	8'-1"	7'-11"	8'-3"	8'-0"	7'-7"	7'-5"	7'-3"
	4'	9'-11"	9'-8"	9'-3"	9'-0"	8'-10"	9'-2"	9'-0"	8'-6"	8'-4"	8'-1"
	3'	11'-5"	11'-2"	10'-9"	10'-5"	10'-3"	10'-8"	10'-5"	9'-11"	9'-7"	9'-4"
	2'	13'-6"	13'-4"	12'-11"	12'-9"	12'-6"	12'-11"	12'-8"	12'-1"	11'-10"	11'-6"
25	7'	7'-4"	7'-2"	6'-10"	6'-8"	6'-7"	6'-10"	6'-8"	6'-4"	6'-2"	6'-0"
	6'	7'-11"	7'-9"	7'-5"	7'-3"	7'-1"	7'-5"	7'-3"	6'-10"	6'-8"	6'-6"
	5'	8'-8"	8'-6"	8'-1"	8'-0"	7'-9"	8'-1"	7'-11"	7'-6"	7'-4"	7'-2"
	4'	9'-9"	9'-6"	9'-1"	8'-11"	8'-9"	9'-1"	8'-10"	8'-5"	8'-3"	8'-0"
	3'	11'-3"	11'-0"	10'-6"	10'-4"	10'-1"	10'-6"	10'-3"	9'-9"	9'-6"	9'-3"
	2'	13'-4"	13'-2"	12'-10"	12'-7"	12'-5"	12'-9"	12'-7"	11'-11"	11'-8"	11'-5"
30	7'	6'-10"	6'-9"	6'-6"	6'-4"	6'-3"	6'-6"	6'-4"	6'-0"	5'-11"	0'-0"
	6'	7'-5"	7'-3"	7'-0"	6'-11"	6'-9"	7'-0"	6'-10"	6'-6"	6'-4"	6'-3"
	5'	8'-2"	8'-0"	7'-8"	7'-7"	7'-5"	7'-8"	7'-6"	7'-2"	7'-0"	6'-10"
	4'	9'-1"	8'-11"	8'-7"	8'-6"	8'-4"	8'-7"	8'-5"	8'-0"	7'-10"	7'-8"
	3'	10'-7"	10'-4"	10'-0"	9'-9"	9'-7"	9'-11"	9'-9"	9'-3"	9'-1"	8'-10"
	2'	12'-10"	12'-8"	12'-2"	12'-0"	11'-10"	12'-2"	11'-11"	11'-5"	11'-2"	10'-10"

TABLE A.3

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

max Ss= 150% **Seismic Design Category D**

Ground Snow Load 10 psf

Single 0.071"x2"x5" Aluminum Header Detail S5 — **Uplift Only Cube Footing End d (in)**

Roof Design Load (psf)	90 MPH EXPOSURE B or 90 MPH EXPOSURE B A (ft)	trib (ft)	B (on slab)	B (ft)
10	4	5	13.3	13.3
10	5	5.5	12.8	12.8
10	6	6	12.4	12.4
10	7	6.5	12.1	12.1
10	8	7	11.8	11.8
10	9	7.5	11.4	11.5
10	10	8	10.3	11.3
10	11	8.5	9.3	10.8
10	12	9	8.5	10.5

Table B1

Single 0.071"x2"x5" Aluminum Header Detail S5 — **Uplift Only End d (in)**

Roof Design Load (psf)	90 MPH EXPOSURE C or 95 MPH EXPOSURE B A (ft)	trib (ft)	B (on slab)	B (ft)
10	4	5	12.4	12.4
10	5	5.5	12.1	12.1
10	6	6	11.7	11.7
10	7	6.5	11.4	11.4
10	8	7	10.9	10.9
10	9	7.5	10.5	10.5
10	10	8	10.1	10.1
10	11	8.5	9.3	9.7
10	12	9	8.5	9.3

Table B2

Single 0.071"x2"x5" Aluminum Header Detail S5 — **Uplift Only Cube Footing End d (in)**

Design Load (psf)	100 MPH EXPOSURE C or 110 MPH EXPOSURE B A	trib	B (on slab)	B
10	4	5	11.6	11.6
10	5	5.5	11.2	11.2
10	6	6	10.6	10.6
10	7	6.5	10.1	10.1
10	8	7	9.6	9.6
10	9	7.5	9.3	9.3
10	10	8	8.9	8.9
10	11	8.5	8.5	8.5
10	12	9	8.2	8.2

Table B3

Single 0.071"x2"x5" Aluminum Header Detail S5 — **Uplift Only Cube Footing End d (in)**

Roof Design Load (psf)	110 MPH EXPOSURE C or 120 MPH EXPOSURE B A (ft)	trib (ft)	B (on slab)	B (ft)
10	4	5	10.6	10.6
10	5	5.5	10.0	10.0
10	6	6	9.4	9.4
10	7	6.5	8.9	8.9
10	8	7	8.6	8.6
10	9	7.5	8.2	8.2
10	10	8	7.9	7.9
10	11	8.5	7.5	7.5
10	12	9	7.2	7.2

Table B4

Ground Snow Load 20 psf

Single 0.071"x2"x5" Aluminum Header Detail S5 — **Uplift Only End d (in)**

Roof Design Load (psf)	90 MPH EXPOSURE B or 90 MPH EXPOSURE B A	trib (ft)	B (on slab)	B
20	4	5	8.0	11.2
20	5	5.5	6.7	10.5
20	6	6	5.6	10.0
20	7	6.5	4.7	9.5
20	8	7	4.0	9.0
20	9	7.5	3.3	8.7
20	10	8	2.7	8.3
20	11	8.5	2.2	8.0
20	12	9	1.8	7.7

Table B5

Single 0.071"x2"x5" Aluminum Header Detail S5 — **Uplift Only End d (in)**

Roof Design Load (psf)	90 MPH EXPOSURE C or 95 MPH EXPOSURE B A	trib (ft)	B (on slab)	B
20	4	5	8.0	11.2
20	5	5.5	6.7	10.5
20	6	6	5.6	10.0
20	7	6.5	4.7	9.5
20	8	7	4.0	9.0
20	9	7.5	3.3	8.7
20	10	8	2.7	8.3
20	11	8.5	2.2	8.0
20	12	9	1.8	7.7

Table B6

Single 0.071"x2"x5" Aluminum Header Detail S5 — **Uplift Only End d (in)**

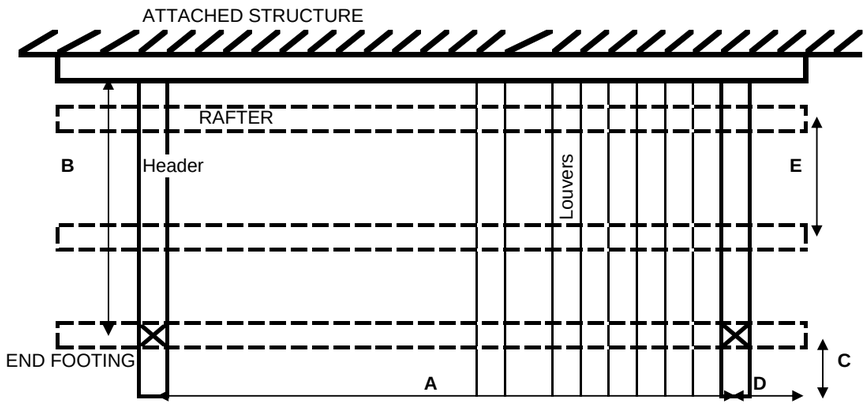
Design Load (psf)	100 MPH EXPOSURE C or 110 MPH EXPOSURE B 10 A	5	B (on slab)	B
20	4	5	8.0	11.2
20	5	5.5	6.7	10.5
20	6	6	5.6	10.0
20	7	6.5	4.7	9.5
20	8	7	4.0	9.0
20	9	7.5	3.3	8.7
20	10	8	2.7	8.3
20	11	8.5	2.2	8.0
20	12	9	1.8	7.7

Table B7

Single 0.071"x2"x5" Aluminum Header Detail S5 — **Uplift Only Cube Footing End d (in)**

Roof Design Load (psf)	110 MPH EXPOSURE C or 120 MPH EXPOSURE B A	trib	B (on slab)	B
20	4	5	8.0	10.6
20	5	5.5	6.7	10.5
20	6	6	5.6	10.0
20	7	6.5	4.7	9.5
20	8	7	4.0	9.0
20	9	7.5	3.3	8.7
20	10	8	2.7	8.3
20	11	8.5	2.2	8.0
20	12	9	1.8	7.7

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

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

Carl Putnam, P. E.
3441 Ivylink Place
Lynchburg, VA 24503
(434) 384-2514

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

max Ss= 150% **Seismic Design Category D**

Ground Snow Load 10 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	90 MPH EXPOSURE B or 90 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	5	5	13.0	13.3	22	22
10	6	6	10.9	12.4	22	23
10	7	7	9.3	11.8	22	23
10	8	8	8.2	11.3	23	24
10	9	9	7.2	10.5	23	25
10	10	10	6.5	9.9	23	25
10	11	11	5.9	9.3	23	26
10	12	12	5.4	8.7	23	26
10	14	14	4.7	7.9	24	27

Table C1

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	90 MPH EXPOSURE C or 95 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	5	5	12.4	12.4	23	23
10	6	6	10.9	11.7	23	24
10	7	7	9.3	10.9	24	25
10	8	8	8.2	10.1	24	26
10	9	9	7.2	9.3	24	26
10	10	10	6.5	8.7	24	27
10	11	11	5.9	8.2	24	27
10	12	12	5.4	7.7	25	28
10	14	14	4.7	7.0	25	29

Table C2

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	100 MPH EXPOSURE C or 110 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	5	5	11.6	11.6	24	24
10	6	6	10.6	10.6	25	25
10	7	7	9.3	9.6	25	26
10	8	8	8.2	8.9	25	27
10	9	9	7.2	8.2	25	28
10	10	10	6.5	7.6	26	28
10	11	11	5.9	7.2	26	29
10	12	12	5.4	6.8	26	29
10	14	14	4.7	6.1	27	30

Table C3

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	110 MPH EXPOSURE C or 120 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	5	5	10.6	10.6	26	26
10	6	6	9.4	9.4	26	27
10	7	7	8.6	8.6	26	27
10	8	8	7.9	7.9	26	28
10	9	9	7.2	7.2	27	29
10	10	10	6.5	6.7	27	29
10	11	11	5.9	6.3	27	30
10	12	12	5.4	5.9	27	31
10	14	14	4.7	5.3	28	32

Table C4

Ground Snow Load 20 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	90 MPH EXPOSURE B or 90 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	5	5	7.0	11.2	21	21
20	6	6	5.8	10.0	21	21
20	7	7	5.0	9.0	21	22
20	8	8	4.4	8.3	21	23
20	9	9	3.9	7.7	21	23
20	10	10	3.5	7.2	22	24
20	11	11	3.2	6.7	22	24
20	12	12	2.9	6.3	22	25
20	14	14	2.5	5.7	23	26

Table C5

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	90 MPH EXPOSURE C or 95 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	5	5	7.0	11.2	22	22
20	6	6	5.8	10.0	22	23
20	7	7	5.0	9.0	23	24
20	8	8	4.4	8.3	23	25
20	9	9	3.9	7.7	23	25
20	10	10	3.5	7.2	23	26
20	11	11	3.2	6.7	24	26
20	12	12	2.9	6.3	24	27
20	14	14	2.5	5.7	24	28

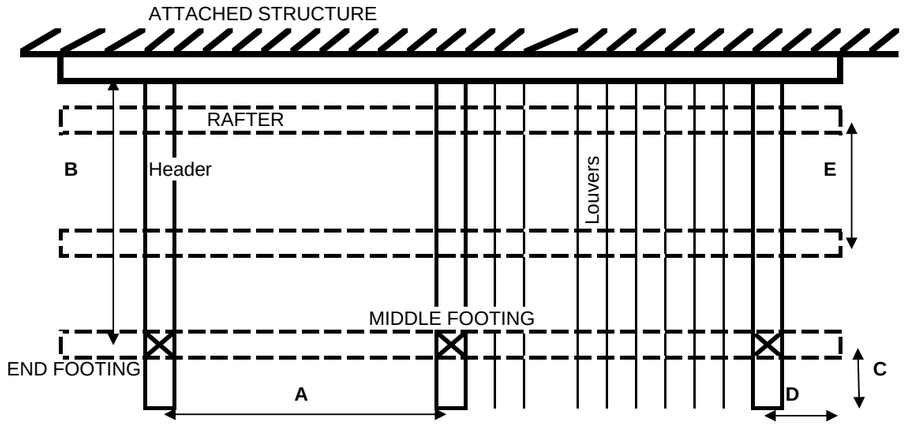
Table C6

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Design Load (psf)	100 MPH EXPOSURE C or 110 MPH EXPOSURE B 10 A	5	B (on slab)	B	End d (in)	Middle d (in)
20	5	5	7.0	11.2	24	24
20	6	6	5.8	10.0	24	25
20	7	7	5.0	9.0	25	26
20	8	8	4.4	8.3	25	27
20	9	9	3.9	7.7	25	27
20	10	10	3.5	7.2	25	28
20	11	11	3.2	6.7	26	28
20	12	12	2.9	6.3	26	29
20	14	14	2.5	5.7	26	30

Table C7

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only	
Roof Design Load (psf)	110 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	10.6	26	26
20	6	6	5.8	10.0	26	27
20	7	7	5.0	9.0	26	28
20	8	8	4.4	8.3	27	28
20	9	9	3.9	7.7	27	29
20	10	10	3.5	7.2	27	30
20	11	11	3.2	6.7	27	30
20	12	12	2.9	6.3	28	31
20	14	14	2.5	5.7	28	32

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 2.5 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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3441 Ivylink Place
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carlputnam@comcast.net

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D. Tables for Attached Structures with Single Span Rafters with at Least 3 Posts

max Ss= 150% Seismic Design Category D

Ground Snow Load 10 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	90 MPH EXPOSURE B or 90 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	10	9	10.5	10.5	25	27
10	11	9.5	10.2	10.2	25	27
10	12	10	9.9	9.9	25	27
10	14	11	9.3	9.3	26	28

Table D1

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	90 MPH EXPOSURE C or 95 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	10	9	9.3	9.3	26	28
10	11	9.5	9.0	9.0	26	28
10	12	10	8.7	8.7	27	28
10	14	11	7.9	8.2	27	29

Table D2

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	100 MPH EXPOSURE C or 110 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	10	9	8.2	8.2	28	29
10	11	9.5	7.9	7.9	28	29
10	12	10	7.6	7.6	28	29
10	14	11	7.2	7.2	29	30

Table D3

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	110 MPH EXPOSURE C or 120 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
10	10	9	7.2	7.2	29	30
10	11	9.5	7.0	7.0	29	30
10	12	10	6.7	6.7	29	30
10	14	11	6.3	6.3	30	30

Table D4

Ground Snow Load 20 psf

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	90 MPH EXPOSURE B or 90 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	10	9	3.8	7.7	23	24
20	11	9.5	3.3	7.4	24	24
20	12	10	3.0	7.2	24	25
20	14	11	2.3	6.7	24	25

Table D5

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	90 MPH EXPOSURE C or 95 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	10	9	3.8	7.7	25	26
20	11	9.5	3.3	7.4	25	26
20	12	10	3.0	7.2	26	26
20	14	11	2.3	6.7	26	27

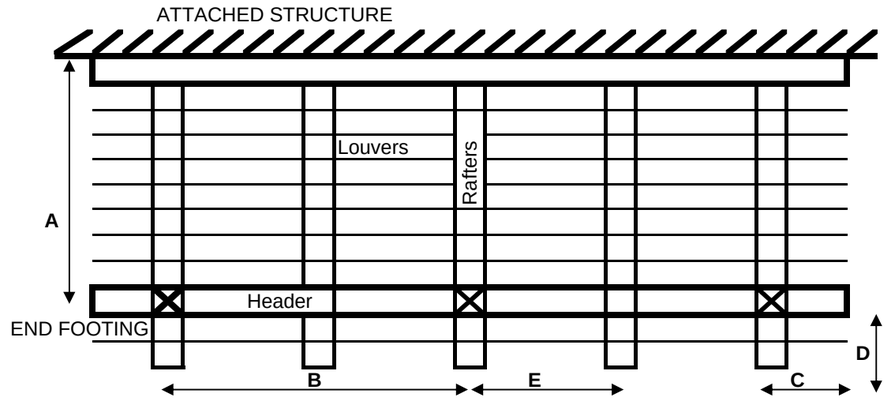
Table D6

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	100 MPH EXPOSURE C or 110 MPH EXPOSURE B A	trib	B (on slab)	B	End d (in)	Middle d (in)
20	10	9	3.8	7.7	27	28
20	11	9.5	3.3	7.4	27	28
20	12	10	3.0	7.2	28	29
20	14	11	2.3	6.7	28	29

Table D7

Single 0.071"x2"x5" Aluminum Header Detail S5					Uplift Only Cube Footing	
Roof Design Load (psf)	110 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	7.2	29	30
20	11	9.5	3.3	7.0	29	30
20	12	10	3.0	6.7	29	30
20	14	11	2.3	6.3	30	30

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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Phoenix, AZ 85008
(602) 388-8429

Carl Putnam, P. E.
3441 Ivylink Place
Lynchburg, VA 24503
(434) 384-2514
carlputnam@comcast.net

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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)															
85 MPH EXPOSURE B	10.3	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
90 MPH EXPOSURE B	11.7	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
95 MPH EXPOSURE B	13.1	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
100 MPH EXPOSURE B	14.6	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
105 MPH EXPOSURE B	16.2	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
110 MPH EXPOSURE B	17.9	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
120 MPH EXPOSURE B	21.5	45	68	90	113	42	56	70	84	40	54	67	81	34	45	57	68
130 MPH EXPOSURE B	25.4	38	57	76	95	42	56	70	84	40	54	67	81	34	45	57	68
150 MPH EXPOSURE B	34.1	28	43	57	71	42	56	70	84	40	54	67	81	34	45	57	68
85 MPH EXPOSURE C	12.7	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
90 MPH EXPOSURE C	14.4	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
95 MPH EXPOSURE C	16.1	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
100 MPH EXPOSURE C	18.0	53	79	105	131	42	56	70	84	40	54	67	81	34	45	57	68
105 MPH EXPOSURE C	19.9	49	73	97	122	42	56	70	84	40	54	67	81	34	45	57	68
110 MPH EXPOSURE C	21.9	44	66	88	110	42	56	70	84	40	54	67	81	34	45	57	68
120 MPH EXPOSURE C	26.3	37	55	74	92	42	56	70	84	40	54	67	81	34	45	57	68
130 MPH EXPOSURE C	31.0	31	47	62	78	42	56	70	84	40	54	67	81	34	45	57	68
150 MPH EXPOSURE C	41.5	23	35	47	58	35	47	58	70	35	47	58	70	34	45	57	68

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)															
85 MPH EXPOSURE B	10.3	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
90 MPH EXPOSURE B	11.7	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
95 MPH EXPOSURE B	13.1	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
100 MPH EXPOSURE B	14.6	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
105 MPH EXPOSURE B	16.2	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
110 MPH EXPOSURE B	17.9	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
120 MPH EXPOSURE B	21.5	28	42	56	70	26	35	44	52	25	33	42	50	21	28	35	42
130 MPH EXPOSURE B	25.4	24	35	47	59	26	35	44	52	25	33	42	50	21	28	35	42
150 MPH EXPOSURE B	34.1	18	26	35	44	26	35	44	52	25	33	42	50	21	28	35	42
85 MPH EXPOSURE C	12.7	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
90 MPH EXPOSURE C	14.4	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
95 MPH EXPOSURE C	16.1	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
100 MPH EXPOSURE C	18.0	33	49	65	82	26	35	44	52	25	33	42	50	21	28	35	42
105 MPH EXPOSURE C	19.9	30	45	60	75	26	35	44	52	25	33	42	50	21	28	35	42
110 MPH EXPOSURE C	21.9	27	41	55	68	26	35	44	52	25	33	42	50	21	28	35	42
120 MPH EXPOSURE C	26.3	23	34	46	57	26	35	44	52	25	33	42	50	21	28	35	42
130 MPH EXPOSURE C	31.0	19	29	39	48	26	35	44	52	25	33	42	50	21	28	35	42
150 MPH EXPOSURE C	41.5	14	22	29	36	22	29	36	43	22	29	36	43	21	28	35	42

Table W3 — Wind Speed and Exposure

	Exposure B									Exposure C									
Wind Speed	85	90	95	100	105	110	120	130	150	85	90	95	100	105	110	120	130	150	mph
Lateral Wind Pressure	18	20	23	25	28	31	36	43	57	22	25	28	31	34	37	44	52	69	psf
Projection (ft)	**Required Number of Rafters/Header Connections (Detail S11)**																		
5	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	2	2	
6	1	1	1	1	1	1	2	2	2	1	1	1	2	2	2	2	2	3	
7	1	1	2	2	2	2	2	2	3	1	2	2	2	2	2	2	3	4	
8	2	2	2	2	2	2	3	3	4	2	2	2	2	2	3	3	4	5	
9	2	2	2	2	3	3	3	4	5	2	2	3	3	3	3	4	4	6	
10	2	2	3	3	3	3	4	4	6	3	3	3	3	4	4	5	5	7	
11	3	3	3	3	4	4	4	5	7	3	3	4	4	4	5	5	6	8	
12	3	3	3	4	4	4	5	6	8	3	4	4	5	5	5	6	7	10	
13	3	4	4	4	5	5	6	7	9	4	4	5	5	6	6	7	8	11	
14	4	4	5	5	5	6	7	8	11	4	5	5	6	7	7	8	10	13	
15	4	5	5	6	6	7	8	9	12	5	6	6	7	7	8	10	11	15	
16	5	5	6	6	7	8	9	10	14	6	6	7	8	8	9	11	13	17	
17	5	6	6	7	8	9	10	12	15	6	7	8	9	9	10	12	14	19	
18	6	7	7	8	9	9	11	13	17	7	8	9	10	10	11	13	16	21	

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Phoenix, AZ 85008
(602) 388-8429

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carlputnam@comcast.net

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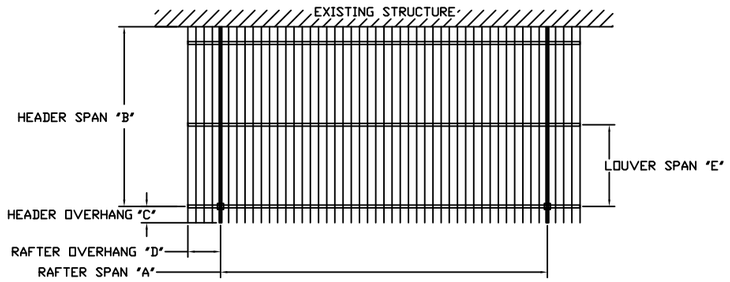
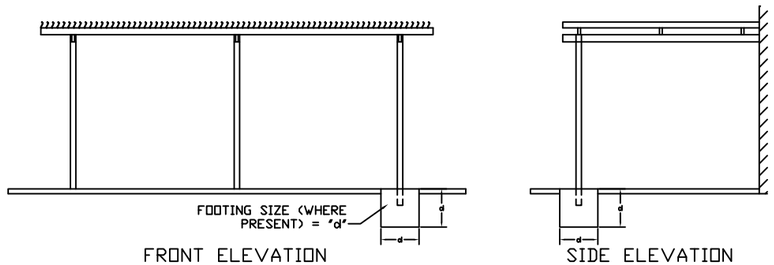
CONFIGURATION B

PLAN VIEW



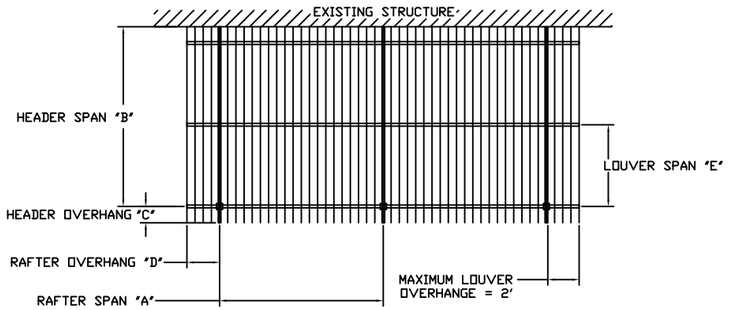


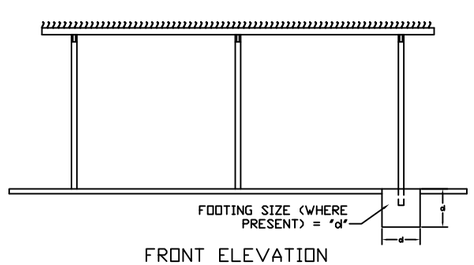
FRONT ELEVATION

SIDE ELEVATION

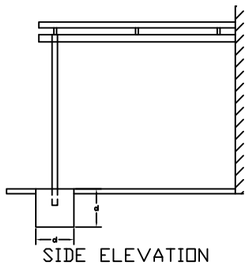
CONFIGURATION C

PLAN VIEW





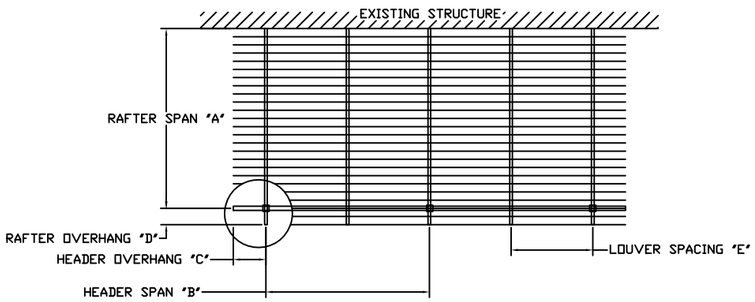
FRONT ELEVATION

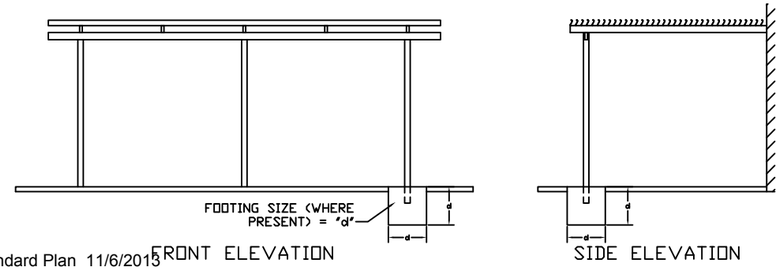


SIDE ELEVATION

CONFIGURATION D

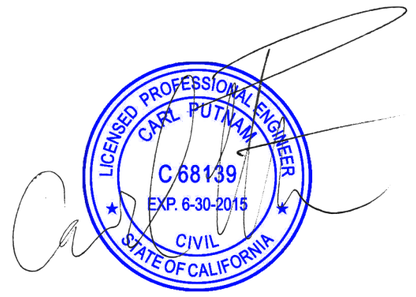
PLAN VIEW





FRONT ELEVATION

SIDE ELEVATION



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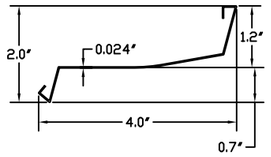
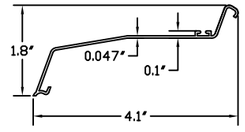
07/02/12	FG	CARL PUTNAM P.E.	3441 IVY LINK PLACE LYNCHBURG, VA 24503 (434) 384-2514 CARL.PUTNAM@COMCAST.NET
		CLIENT SOLARA	
		FILE SOLARA.DWG	
		DESC STRUCTURE CONFIGURATIONS	1 of 5

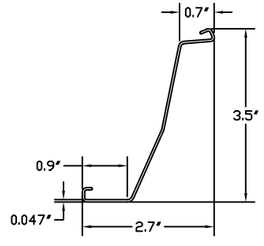
S1 ROLL-FORMED LOUVER
(3105H24 ALUM ALLOY)



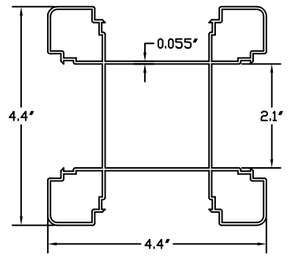
S2 EXTRUDED LOUVER 1
(6063 T5 ALUM ALLOY)



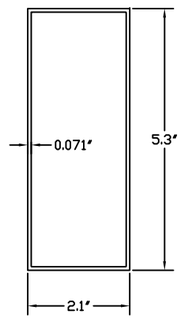
S3 EXTRUDED LOUVER 2
(6063 T5 ALUM ALLOY)



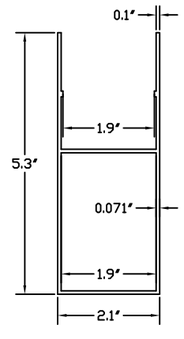
S4 SOLARA POST
(6063 T5 ALUM ALLOY)



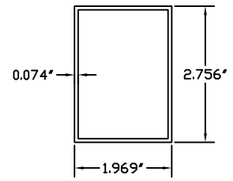
S5 HEADER BEAM
(6005 T5 ALUM ALLOY)



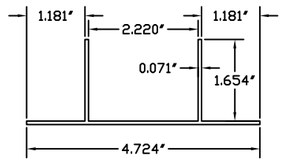
S6 RAFTER
(6005 T5 ALUM ALLOY)



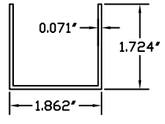
S7 RAFTER INSERT
(6005 T5 ALUM ALLOY)

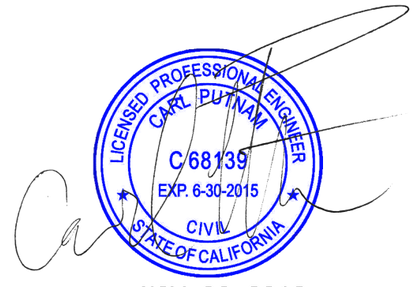


S8 RAFTER MOUNTING BRACKET
(6063 T6 ALUM ALLOY)



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





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07/02/12	FG	CARL PUTNAM P.E.	3441 IVY LINK PLACE LYNCHBURG, VA 24503 (434) 384-2514 CARLPUTNAM@COMCAST.NET
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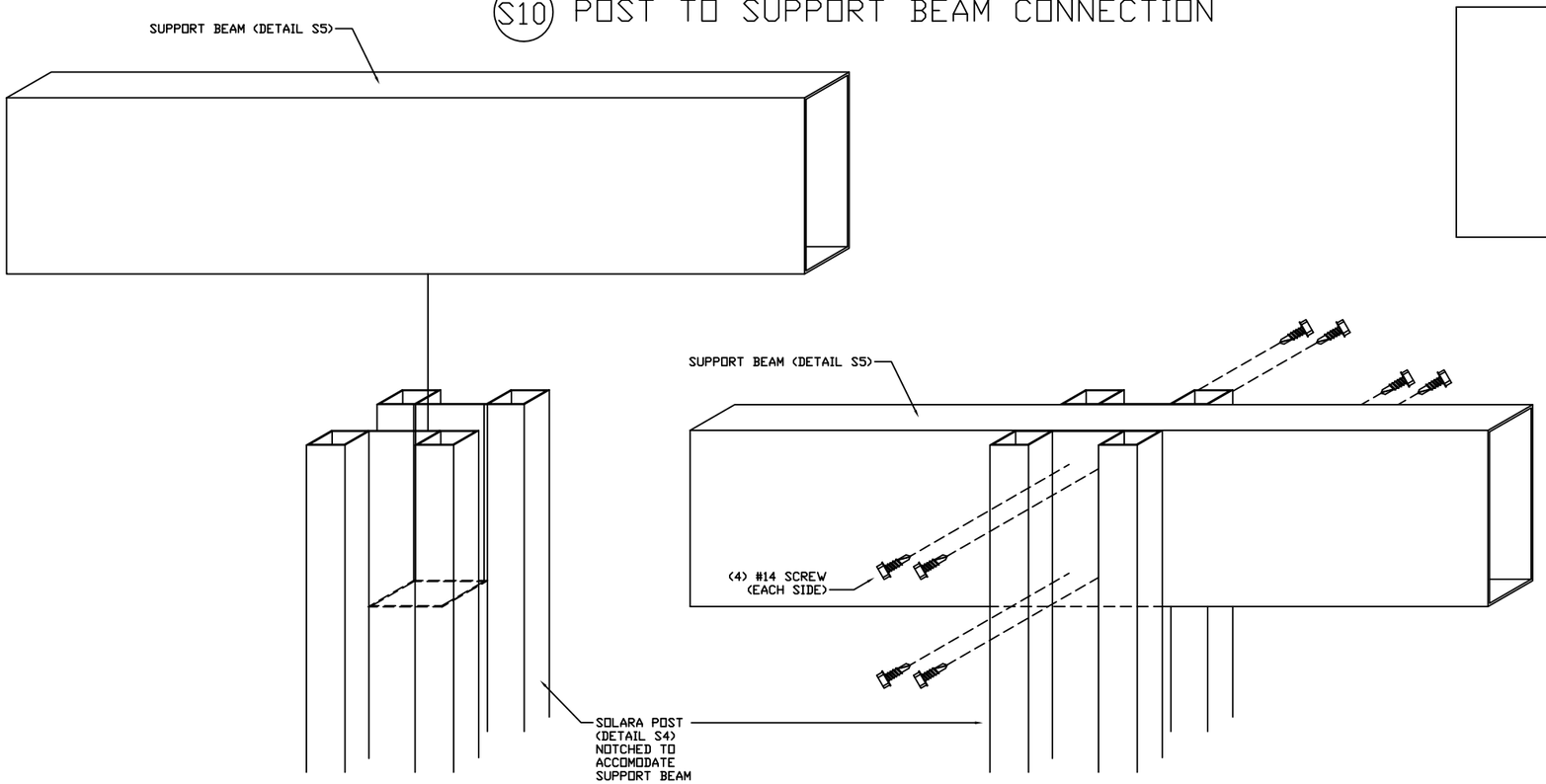
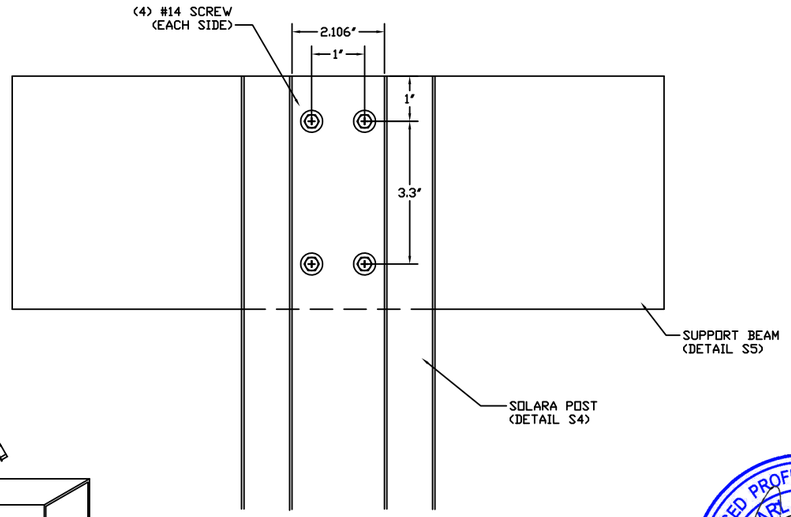
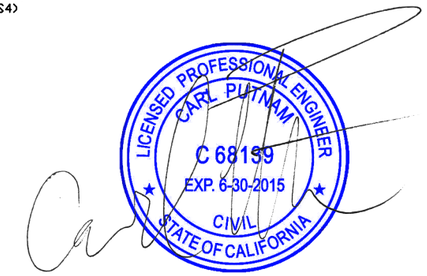
		FILE SOLARA.DWG	
		DESC STRUCTURE ELEMENTS	2 OF 5

S10 POST TO SUPPORT BEAM CONNECTION







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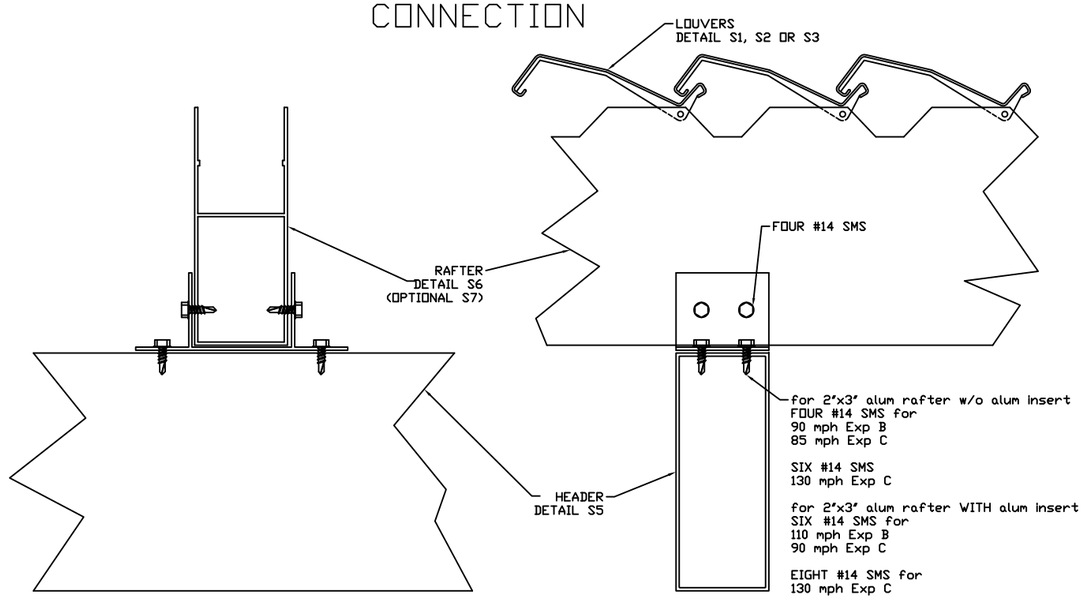
S11 HEADER TO RAFTER CONNECTION



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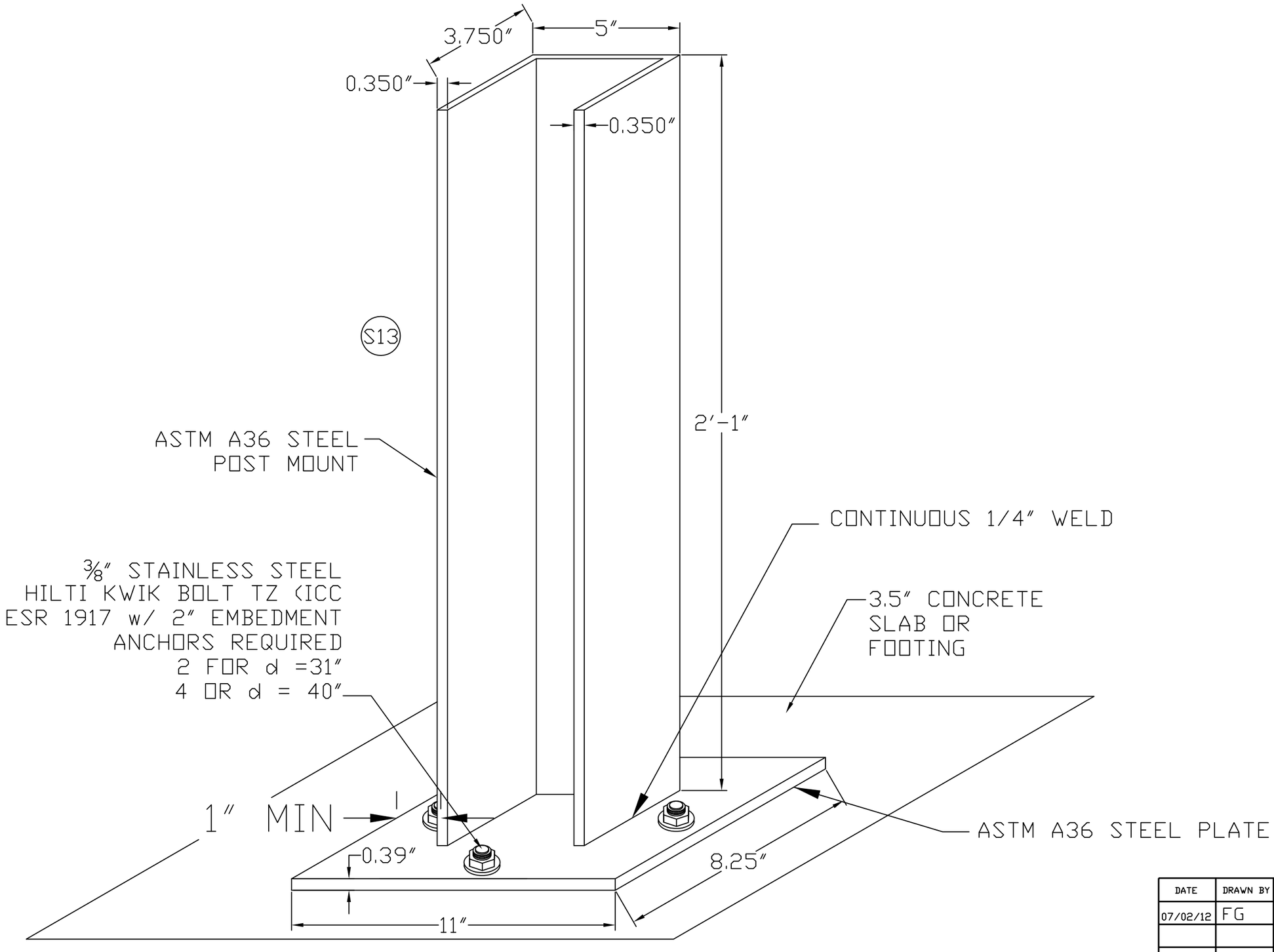
		DESC STRUCTURE CONNECTIONS	3 of 5

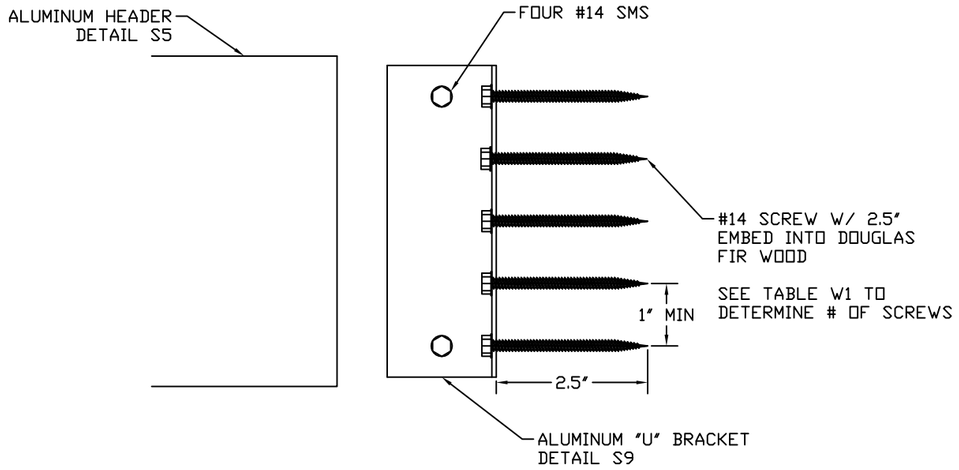


LICENSED PROFESSIONAL ENGINEER
CARL PUTNAM
C 68139
EXP. 6-30-2015
CIVIL
STATE OF CALIFORNIA

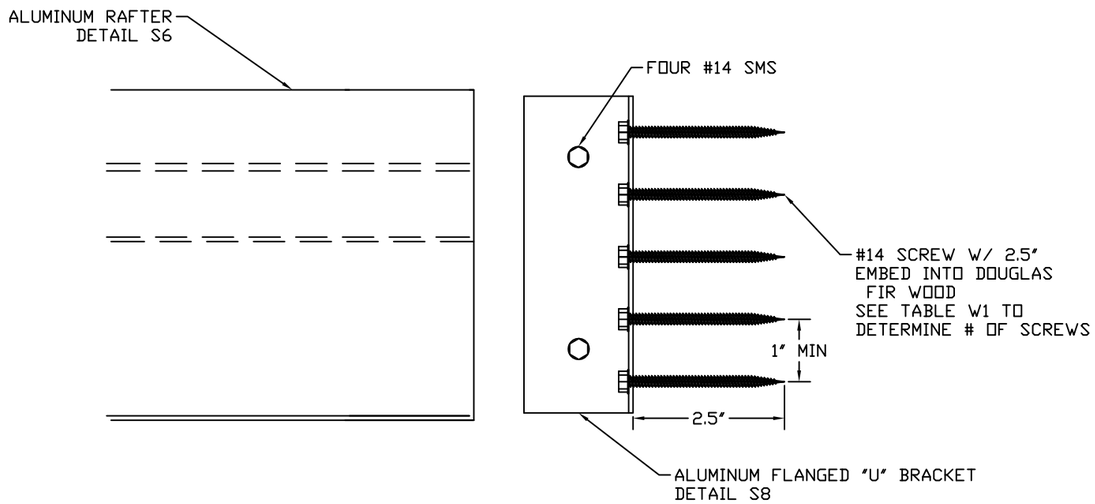
NOV 06 2013

DATE	DRAWN BY	CARL PUTNAM P.E.	3441 IVY LINK PLACE LYNCHBURG, VA 24503 (434) 384-2514 CARLPUTNAM@COMCAST.NET
07/02/12	FG		
		CLIENT SOLARA	
		FILE SOLARA.DWG	
		DESC STRUCTURE CONNECTIONS	4 of 5

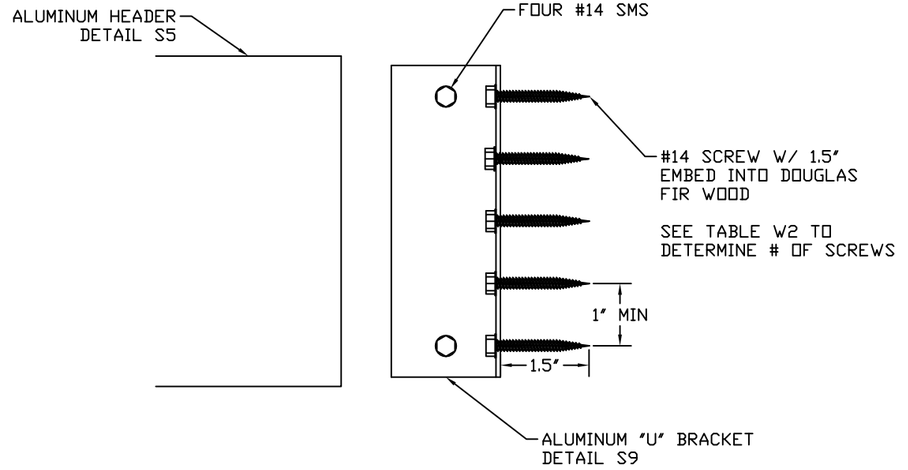
S15 HEADER BEAM TO WALL ATTACHMENT



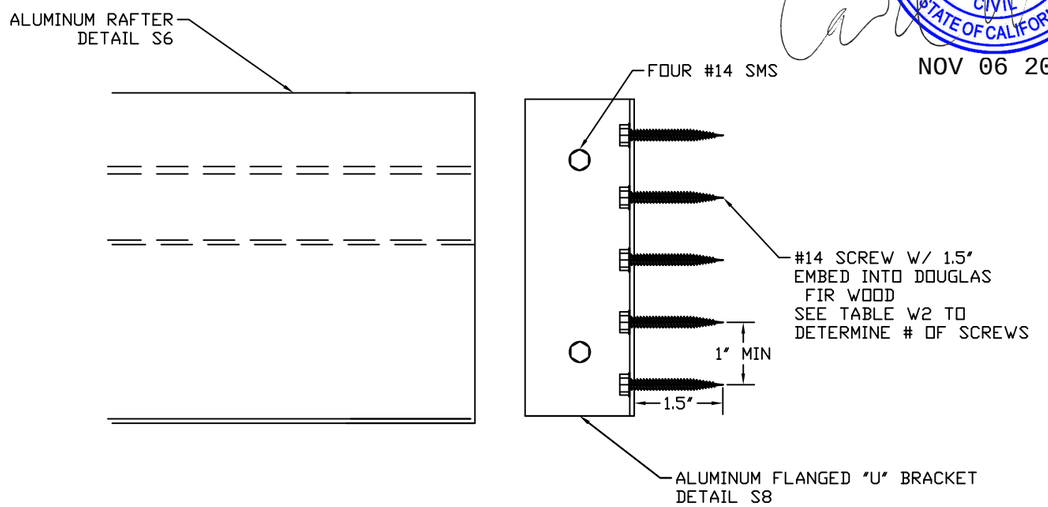
S16 RAFTER TO WALL CONNECTION



S17 HEADER BEAM TO WALL ATTACHMENT



S18 RAFTER TO WALL CONNECTION



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		DESC STRUCTURE CONNECTIONS	5 of 5