

ALTERNATE ENERGY TECHNOLOGIES, LLC SOLAR COLLECTOR INSTALLATION DRAWINGS

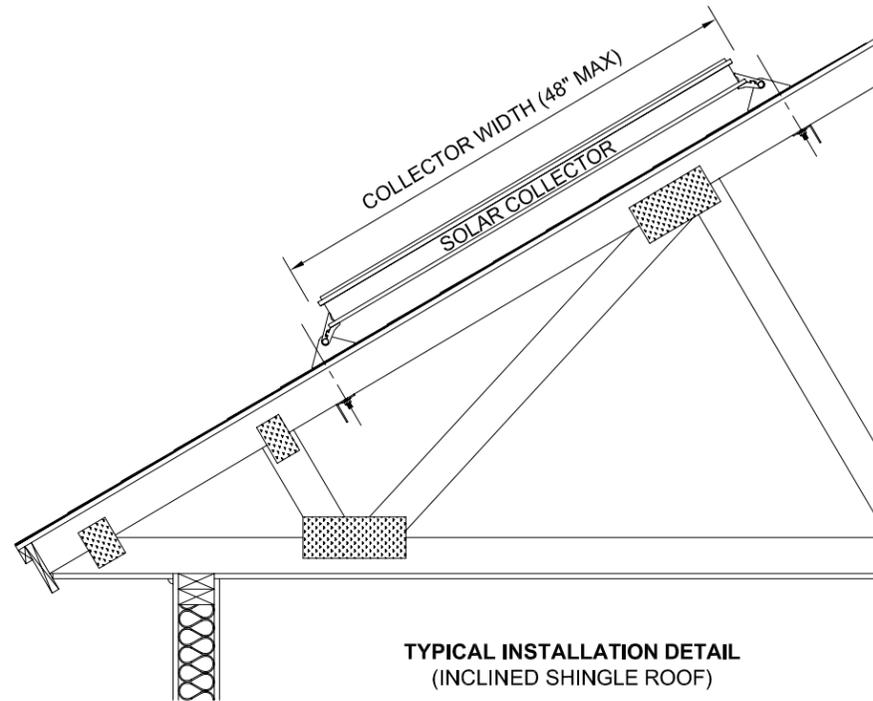
INSTALLATION REQUIREMENTS

THESE INSTALLATION DRAWINGS DETAIL THE STRUCTURAL INSTALLATION REQUIREMENTS FOR THE MSC-SERIES SOLAR WATER HEATING COLLECTORS MANUFACTURED BY ALTERNATE ENERGY TECHNOLOGIES ON RESIDENTIAL AND LIGHT COMMERCIAL BUILDINGS OF FRAMED CONSTRUCTION.

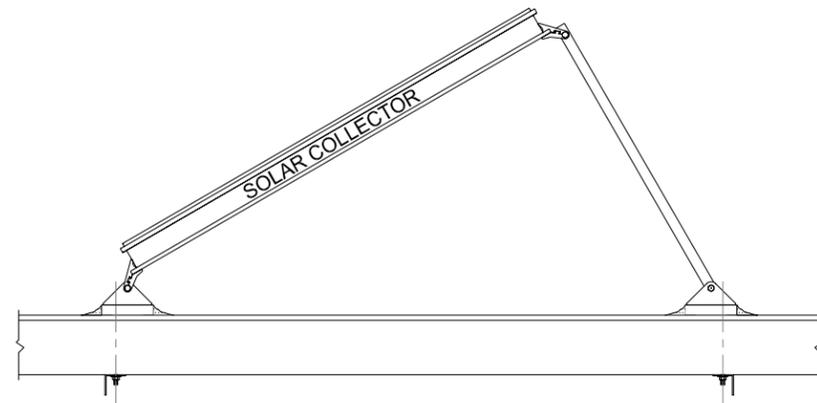
THE INSTALLATION REQUIRES HARDWARE PROVIDED BY THE SOLAR COLLECTOR MANUFACTURER AS INDICATED HEREIN TO BE UTILIZED TO ATTACH THE SOLAR COLLECTORS TO THE BUILDING IN ACCORDANCE WITH THESE DRAWINGS.

THE SOLAR COLLECTOR INSTALLATION AS DETAILED IN THESE DRAWINGS IS FOR THE INSTALLATION OF THE BELOW LISTED MSC-SERIES SOLAR COLLECTORS ON RESIDENTIAL AND LIGHT COMMERCIAL BUILDINGS WITH FLAT OR SLOPED ROOFS SUBJECTED TO A MAXIMUM UPLIFT PRESSURE OF 42 POUNDS PER SQUARE FOOT (PSF).

INFORMATION ON THE WIND LOADS ON SOLAR COLLECTORS, COMPONENTS AND CLADDING, INSTALLED ON BUILDINGS WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B IN PSF AT WIND SPEEDS FROM 100 TO 150 MPH IS SHOWN ON SHEET ELEVEN OF THESE DRAWINGS AND IS ALSO AVAILABLE IN FIGURE 3 OF THE ASCE/SEI STD 7-05. COLLECTORS ON HIGHER BUILDINGS IN DIFFERENT EXPOSURES WOULD NEED TO BE DETERMINED ON A CASE BY CASE BASIS.



TYPICAL INSTALLATION DETAIL
(INCLINED SHINGLE ROOF)



TYPICAL INSTALLATION DETAIL
(FLAT WOOD FRAME ROOF)

DESIGN WIND PRESSURE
MAXIMUM SUCTION UPLIFT: 42 PSF

MSC - SERIES COLLECTORS

MODEL	ABSORBER	WIDTH	LENGTH
MSC-21	SELECTIVE	36.125"	86.125"
MSC-24	SELECTIVE	36.125"	98.125"
MSC-26	SELECTIVE	48.125"	78.125"
MSC-28	SELECTIVE	48.125"	86.125"
MSC-32	SELECTIVE	48.125"	98.125"
MSC-40	SELECTIVE	48.125"	122.125"

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3	MSC - 3	INSTALLATION DETAILS SLOPED WOOD FRAME ROOF (SHINGLE)
4	MSC - 4	INSTALLATION DETAILS SLOPED WOOD FRAME ROOF (TILE)
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6	MSC - 6	INSTALLATION DETAIL FOR FLAT ROOF USING STANDOFF FRAME
7	MSC - 7	MANUFACTURERS HARDWARE AET SERIES MSC SOLAR COLLECTOR
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ADDITIONAL INFORMATION

General Notes

No.	Revision/Issue	Date

James A. Marx, Jr.

Professional Engineer
FL Lic. No. 45024

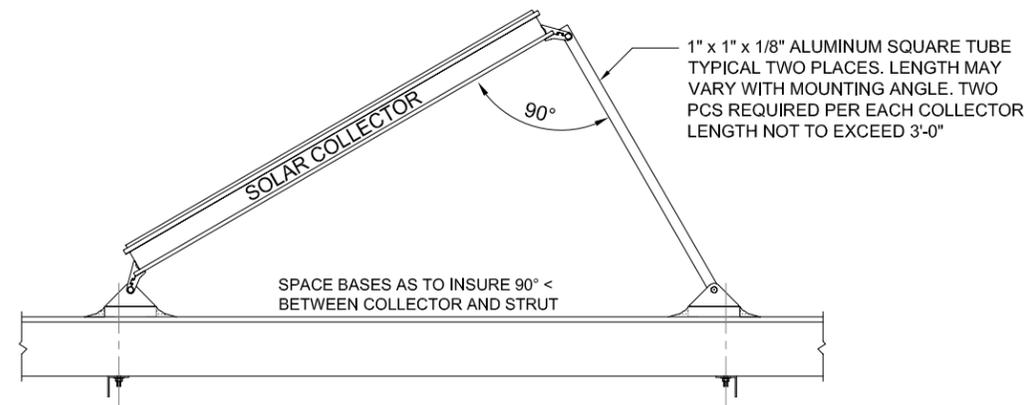
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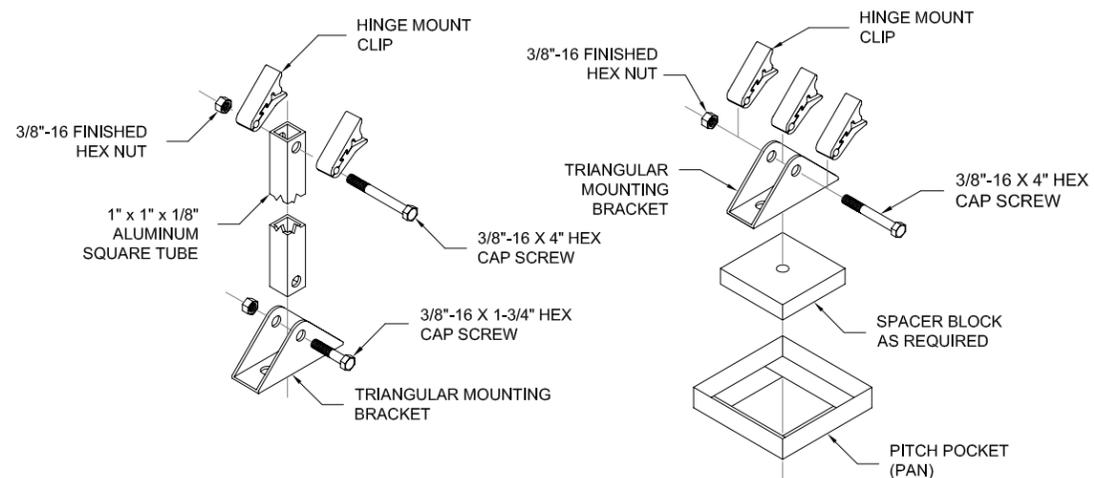
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INSTALLATION DETAILS - FLAT WOOD FRAME ROOF



TYPICAL INSTALLATION DETAIL
(FLAT WOOD FRAME ROOF)

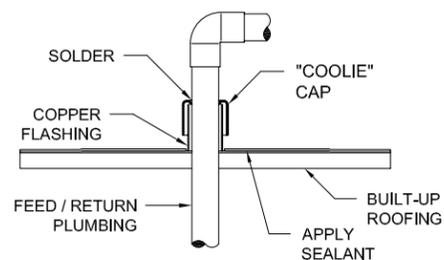


CONNECTION DETAIL

MANUFACTURERS HARDWARE FOR TILTED MOUNT ON FLAT ROOFS. USE PITCH PAN (SEE DETAIL BELOW)

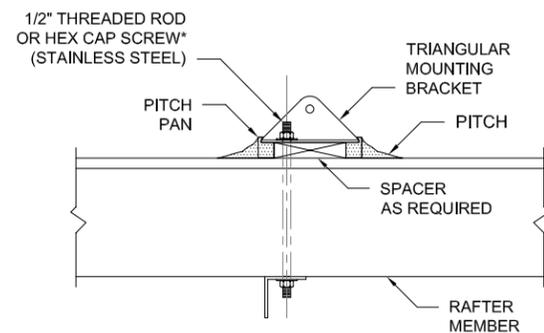
CONNECTION DETAIL

FOR MOUNT ON FLAT ROOFS USE PITCH PAN (SEE DETAIL BELOW)



ROOF FLASHING DETAIL

APPLY ROOFING SEALANT TO THE UNDERSIDE OF THE FLASHING BASE PRIOR TO INSTALLATION



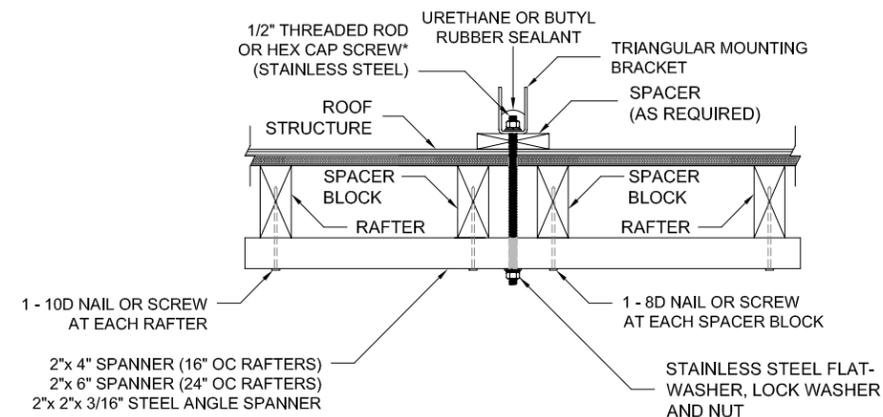
PITCH PAN DETAIL

NOTES

- 1) THE SOLAR COLLECTOR INSTALLATION AS DETAILED IN THESE DRAWINGS IS FOR THE INSTALLATION OF ALTERNATE ENERGY TECHNOLOGIES MSC-SERIES SOLAR COLLECTORS ON STRUCTURES SUBJECTED TO A MAXIMUM UPLIFT PRESSURE OF 42 POUNDS PER SQUARE FOOT (PSF).
- 2) THE DESIGN OF THIS INSTALLATION IS BASED ON REQUIREMENTS OF THE 2007 FLORIDA BUILDING CODE INCLUDING 2009 AMENDMENTS, ASCE/SEI 7-05 AND TESTING OF THE SOLAR COLLECTOR IN ACCORDANCE WITH PA 202 (TAS 202-94), ASTM E 330
- 3) THE INSTALLATION SHALL UTILIZE HARDWARE PROVIDED BY THE MANUFACTURER AS DETAILED IN THESE DRAWING.
- 4) ALL ALUMINUM STRUCTURAL MEMBERS TO BE 6061-T6. ALL STRUCTURAL STEEL MEMBERS TO BE LOW CARBON GALVANIZED STEEL, AND ALL HARDWARE (BOLTS, NUTS, ETC) TO BE STAINLESS STEEL.

DESIGN WIND PRESSURE

MAXIMUM SUCTION UPLIFT: 42 PSF



1. ALL MOUNTING HARDWARE (SCREWS, NUTS AND BOLTS) SHALL BE STAINLESS STEEL UNLESS NOTED OTHERWISE.
2. SPACER BLOCKS SHALL BE INSTALLED WITHIN 1" OF THE THRU-BOLT.
3. WHEN THRU-BOLT IS WITHIN 2" OF A RAFTER, ONLY ONE SPACER BLOCK WILL BE REQUIRED ON THE OPPOSITE SIDE OF THE BOLT, AWAY FROM THE RAFTER.
4. TWO SPACER BLOCKS ARE REQUIRED WHEN THE BOLT IS MORE THAN 2" FROM THE RAFTER.
5. WHEN THE MOUNTING PROVISIONS OF ADJACENT COLLECTORS ARE INSTALLED SIDE BY SIDE AND THE THRU-BOLTS ARE 1 1/2" OR MORE APART, IT WILL BE NECESSARY TO HAVE AT LEAST ONE SPACER BLOCK (OR RAFTER) BETWEEN BOLTS.
6. SEALANTS ARE REQUIRED BETWEEN MOUNTING BLOCK AND SHINGLES/SHEATHING. BOLT HOLES SHALL BE SEALED TO PREVENT MOISTURE PENETRATION.
7. STEEL ANGLE SPANNER (2" X 2" X 3/16") MAY BE SUBSTITUTED FOR WOOD SPANNER.

* HEX CAP SCREW LENGTH VARIES WITH ROOF CONSTRUCTION AND SPANNER DESIG.

General Notes

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James A. Marx, Jr.

Professional Engineer
FL Lic. No. 45024

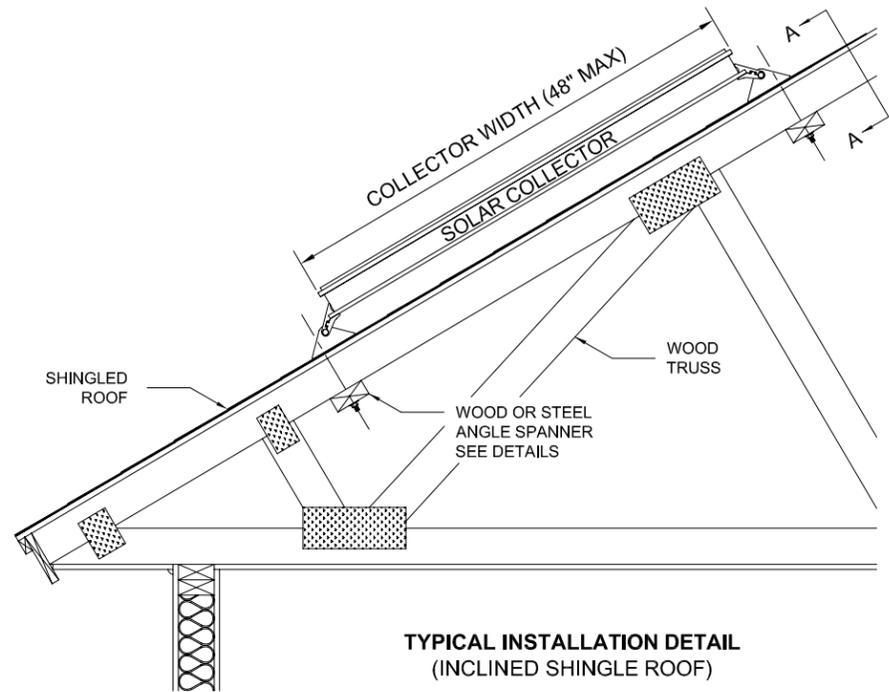
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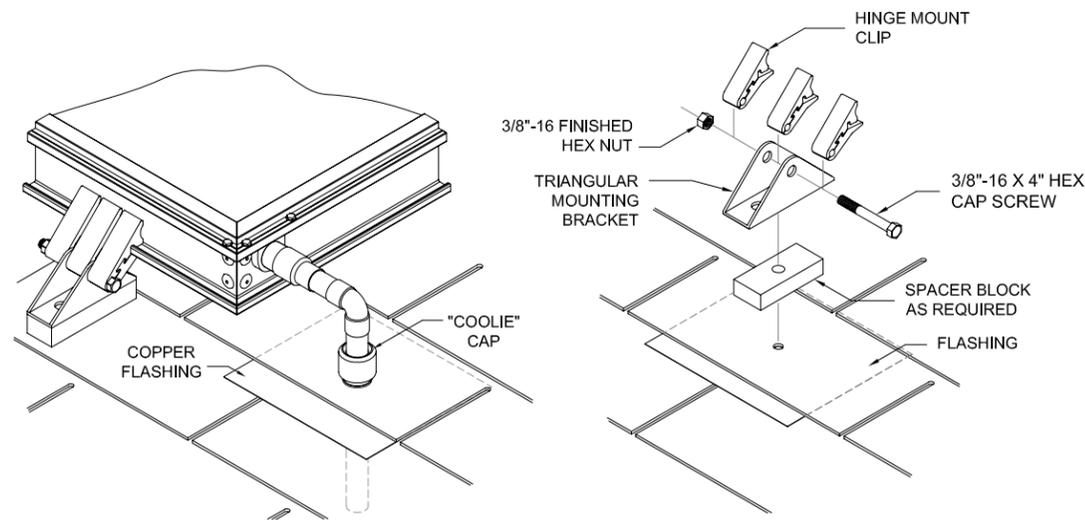
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INSTALLATION DETAILS - SLOPED WOOD FRAME ROOF



TYPICAL INSTALLATION DETAIL
(INCLINED SHINGLE ROOF)



ROOF FLASHING DETAIL

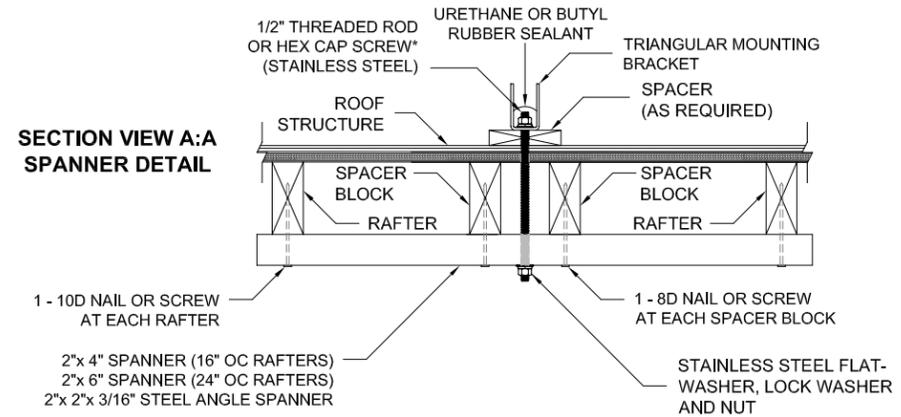
CONNECTION DETAIL

USING MANUFACTURERS HARDWARE
FOR PARALLEL MOUNT ON
SLOPING ROOFS

NOTES

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DESIGN WIND PRESSURE
MAXIMUM SUCTION UPLIFT: 42 PSF

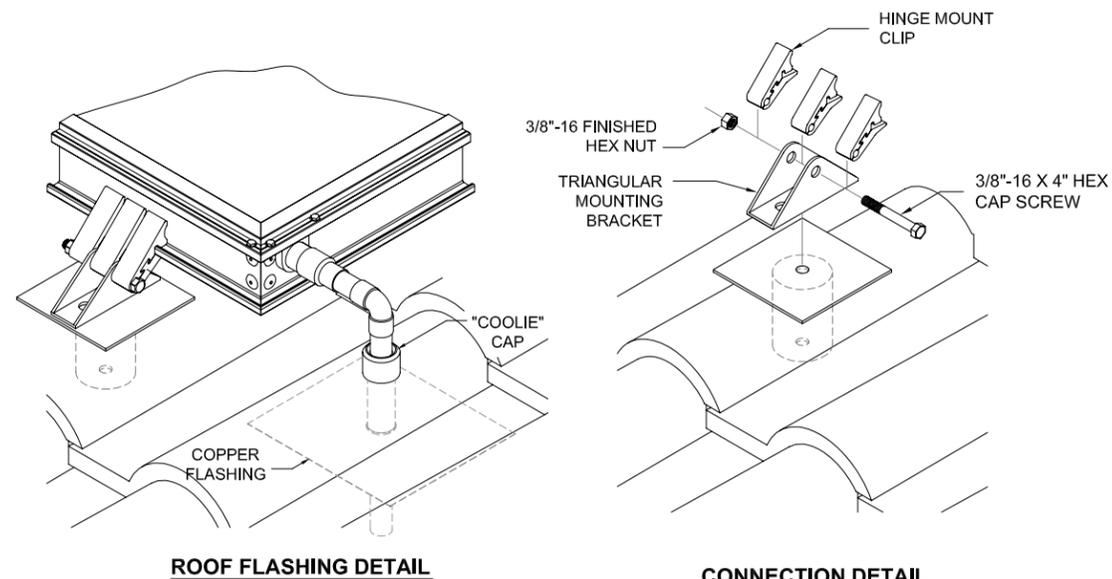
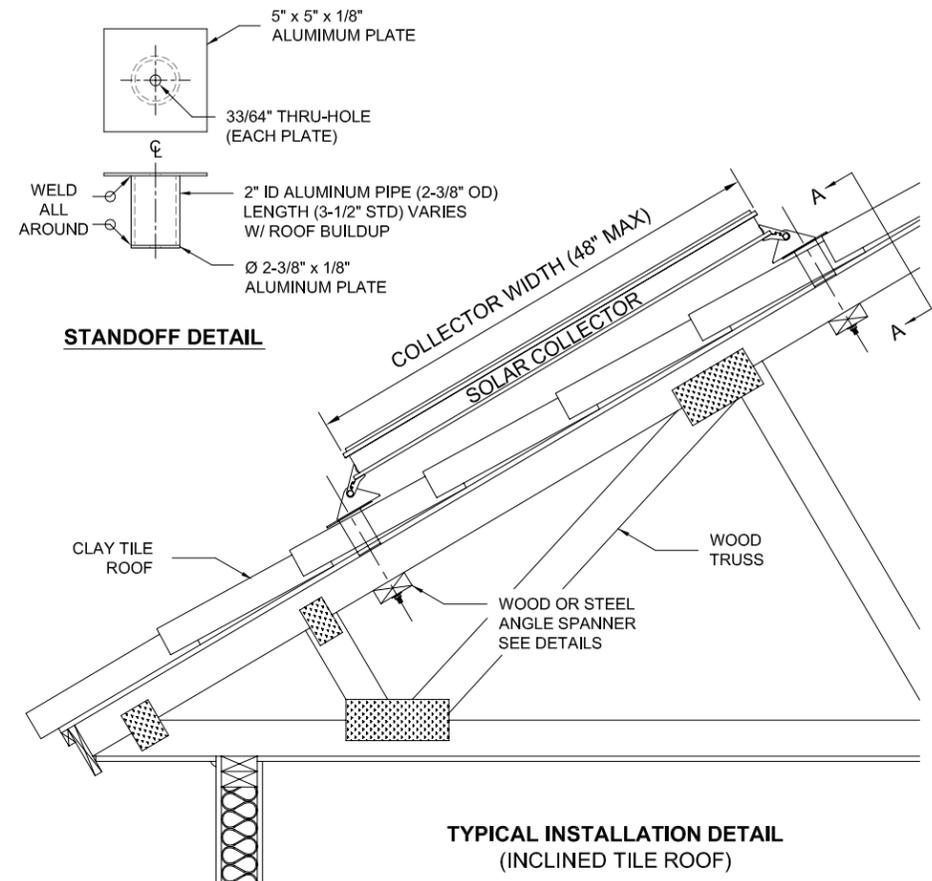


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* HEX CAP SCREW LENGTH VARIES WITH ROOF CONSTRUCTION AND SPANNER DESIG.

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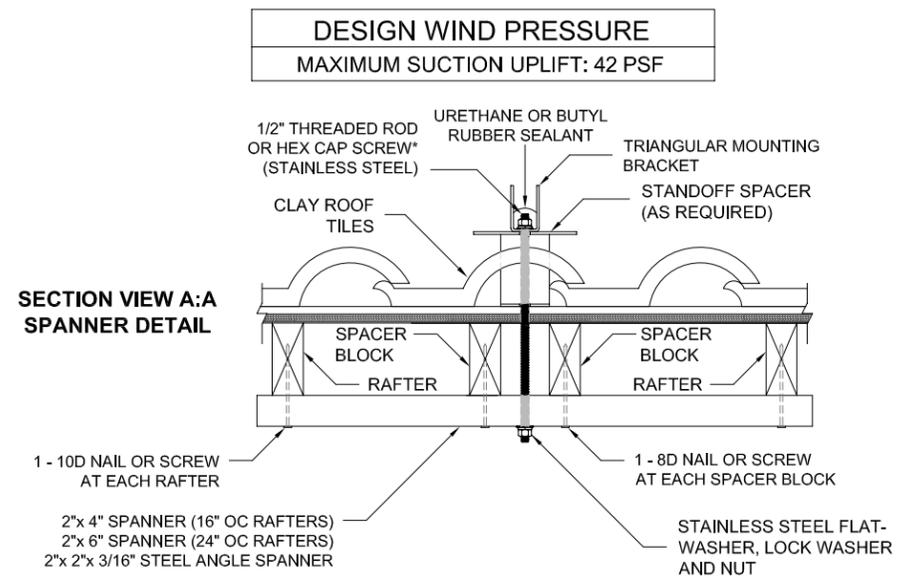
INSTALLATION DETAILS - SLOPED WOOD FRAME TILE ROOF



USING MANUFACTURERS HARDWARE FOR PARALLEL MOUNT ON SLOPING ROOFS

NOTES

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General Notes

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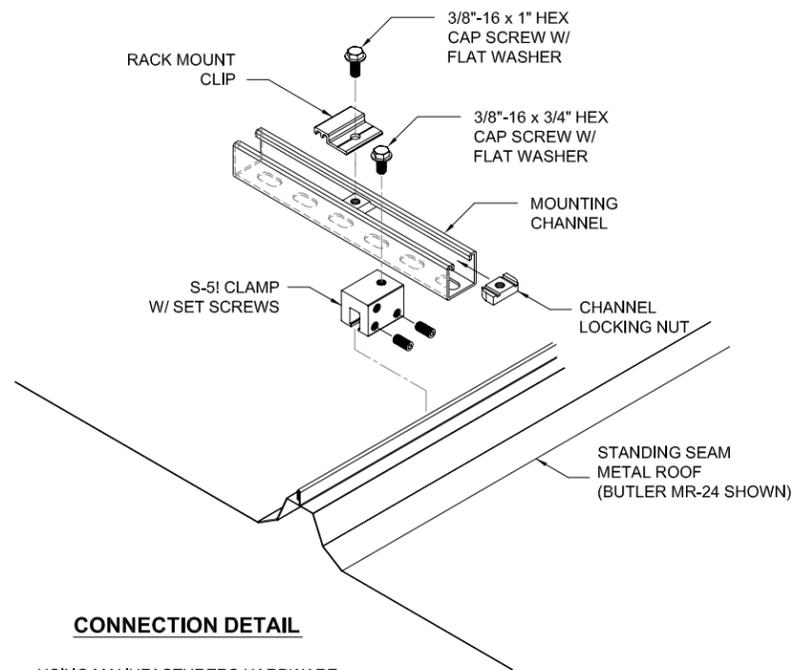
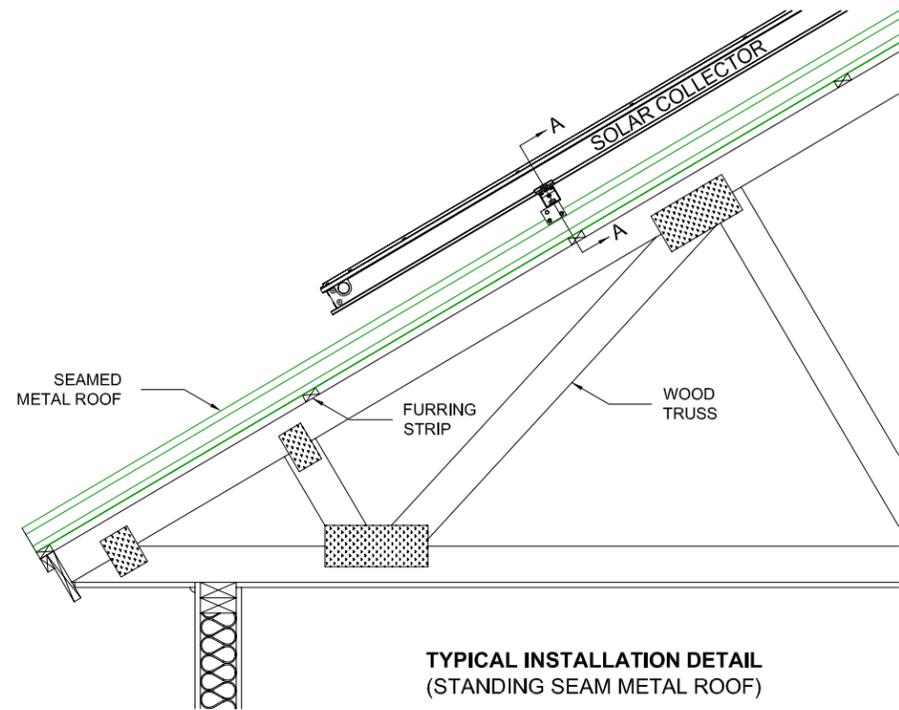
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INSTALLATION DETAILS - STANDING SEAM METAL ROOF

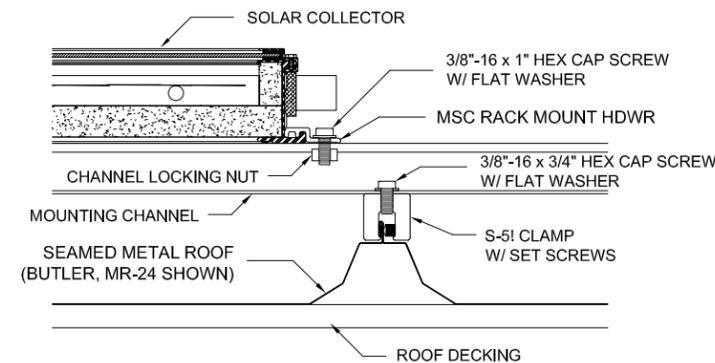


USING MANUFACTURERS HARDWARE FOR PARALLEL MOUNT ON SEAMED METAL ROOFS

NOTES

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DESIGN WIND PRESSURE
MAXIMUM SUCTION UPLIFT: 42 PSF



1. ALL MOUNTING HARDWARE (SCREWS, NUTS AND BOLTS) SHALL BE STAINLESS STEEL UNLESS NOTED OTHERWISE.
2. S-5! CLAMP SELECTION TO BE AS RECOMMENDED SUITABLE BY THE CLAMP MANUFACTURER FOR THE METAL ROOFING PANEL SPECIFIED.
3. SAFETY FACTOR FOR THE CLAMP SELECTION IS THE RESPONSIBILITY OF THE DESIGNER AND SHOULD BE EMPLOYED AS APPROPRIATE.
4. THE S-5! CLAMP IS BE BE INSTALLED PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
5. SEAMED METAL ROOFING IS AS SPECIFIED BY THE DESIGN ARCHITECT AND IS TO BE CAPABLE OF HANDLING THE ADDITIONAL LOADS IMPOSED BY THE SOLAR COLLECTORS.
6. SEAMED METAL ROOFING AND FASTENERS TO BE INSTALLED PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS AND ONLY MANUFACTURER APPROVED FASTENERS ARE TO BE USED.

* BUTLER, MR-24 STANDING SEAM METAL ROOFING SHOWN FOR ILLUSTRATION PURPOSES ONLY AND WILL VARY PER THE DESIGN ARCHITECT'S RECOMMENDATION.

General Notes

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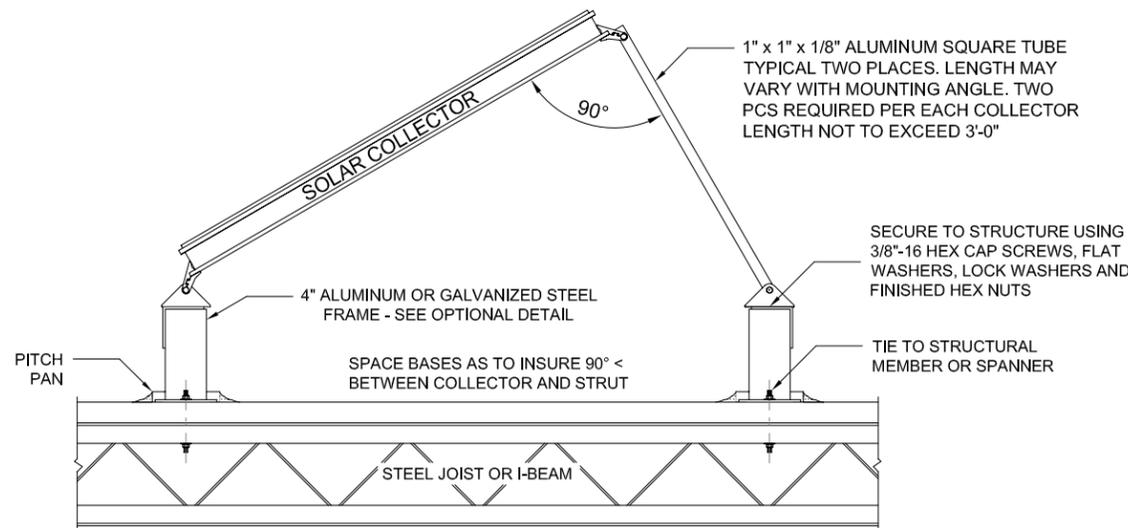
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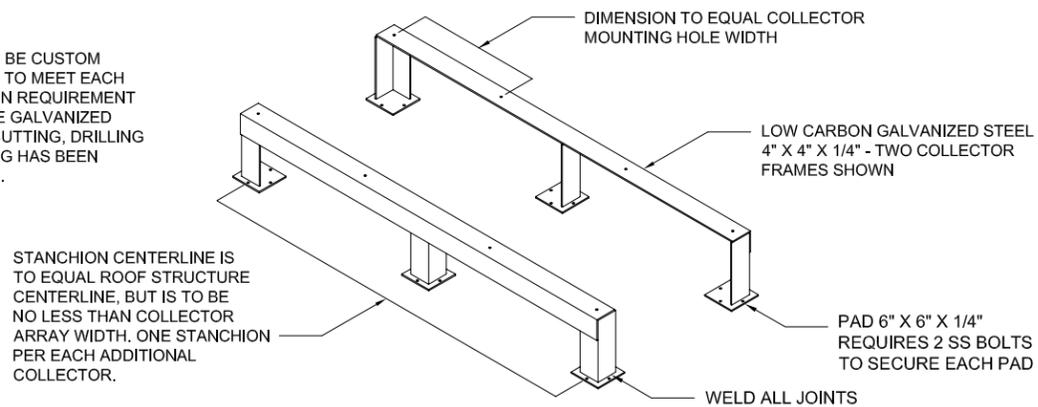
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INSTALLATION DETAILS - FLAT ROOF USING STANDOFF FRAME

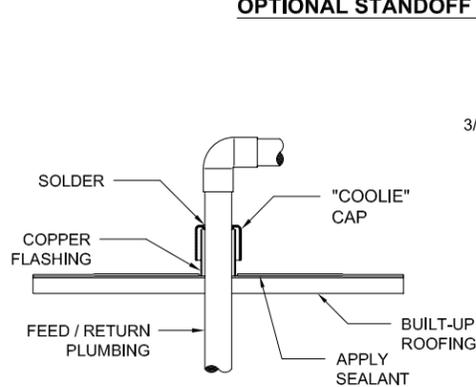


TYPICAL INSTALLATION DETAIL
(CONCRETE OR METAL FRAME ROOF)

NOTE: FRAME IS TO BE CUSTOM FABRICATED TO MEET EACH INSTALLATION REQUIREMENT AND IS TO BE GALVANIZED AFTER ALL CUTTING, DRILLING AND WELDING HAS BEEN PERFORMED.

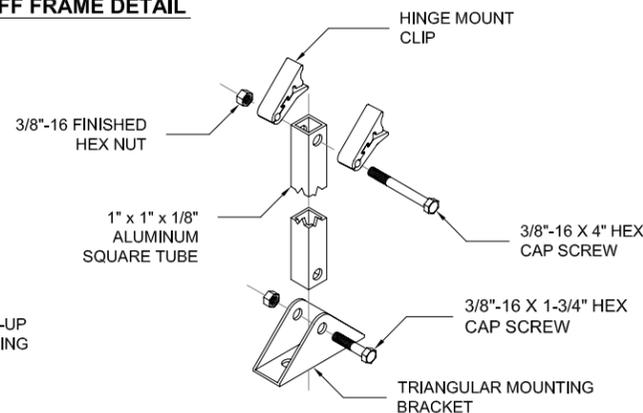


OPTIONAL STANDOFF FRAME DETAIL



ROOF FLASHING DETAIL

APPLY ROOFING SEALANT TO THE UNDERSIDE OF THE FLASHING BASE PRIOR TO INSTALLATION



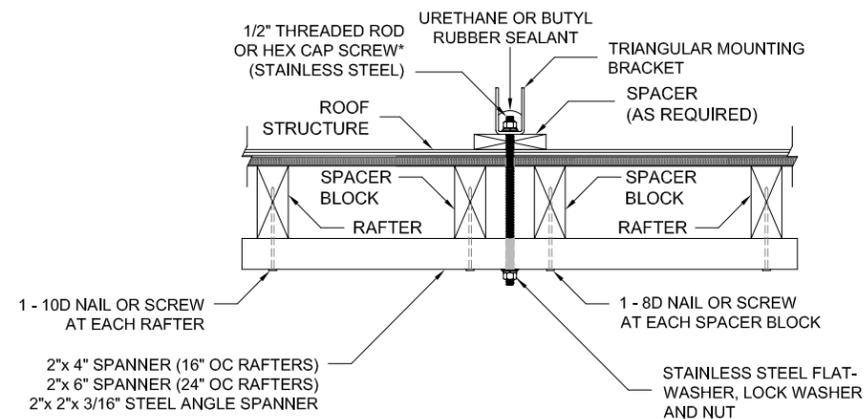
CONNECTION DETAIL

MANUFACTURERS HARDWARE FOR TILTED MOUNT ON FLAT ROOFS. USE PITCH PAN

NOTES

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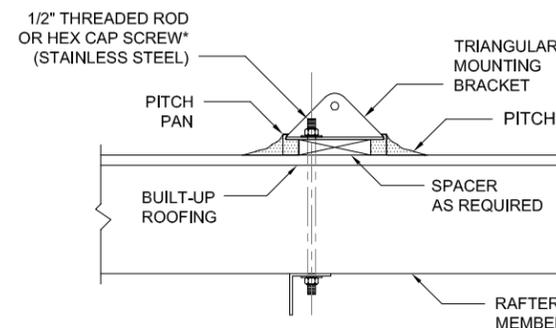
DESIGN WIND PRESSURE
MAXIMUM SUCTION UPLIFT: 42 PSF



SPANNER DETAIL

THIS DETAIL FOR LIMITED APPLICATION AS A FUNCTION OF STRUCTURE. THIS DETAIL INTENDED FOR LIGHT COMMERCIAL AND RESIDENTIAL INSTALLATIONS WITH ROOF SUPPORT STRUCTURE IN 16" OR 24" CENTERS. OTHER SPACINGS AND STRUCTURES WILL REQUIRE SITE SPECIFIC ANALYSIS AND EVALUATION BY ARCHITECT OR ENGINEER.

* HEX CAP SCREW LENGTH VARIES WITH ROOF CONSTRUCTION AND SPANNER DESIG.



PITCH PAN DETAIL

General Notes

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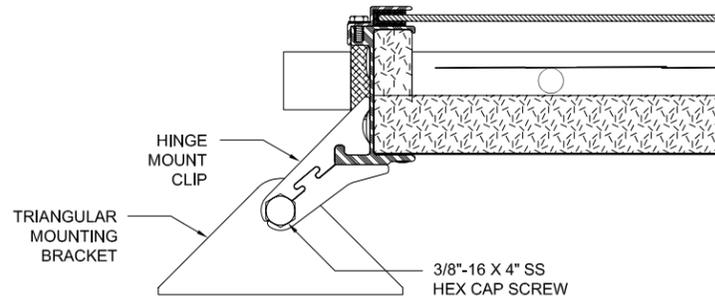
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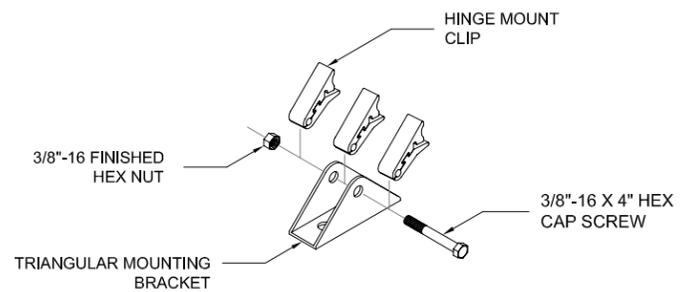
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**FIGURE 1. COLLECTOR ATTACHMENT
(SECTION VIEW A:A)**



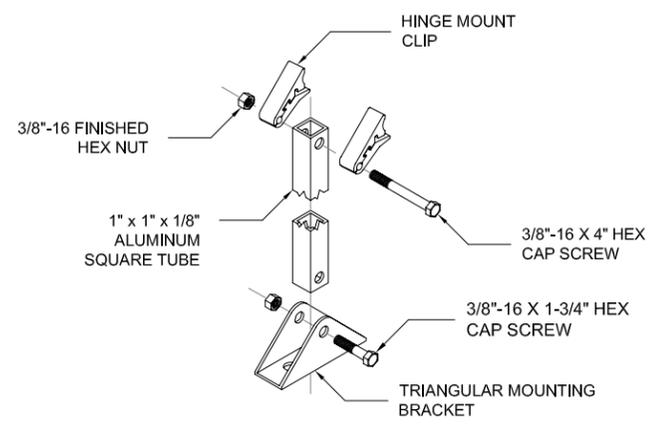
THREE "MSC-CLIPS" ARE TO BE INSTALLED AT EACH CONNECTION POINT WITH THE TRIANGULAR BRACKET AS SHOWN IN THIS DETAIL

FIGURE 2. ATTACHMENT HARDWARE



THREE "MSC-CLIPS" ARE TO BE REQUIRED TO ATTACH THE COLLECTORS TO THE STRUCTURE PROPERLY WHEN USING THE ANGLE BRACKET. NO SUBSTITUTIONS ARE ALLOWED.

FIGURE 3. TILT KIT HARDWARE



TWO "MSC-CLIPS" ARE REQUIRED AT EACH CONNECTION POINT WITH SQUARE TUBE LEG AS SHOWN IN THIS DETAIL.

NOTES:

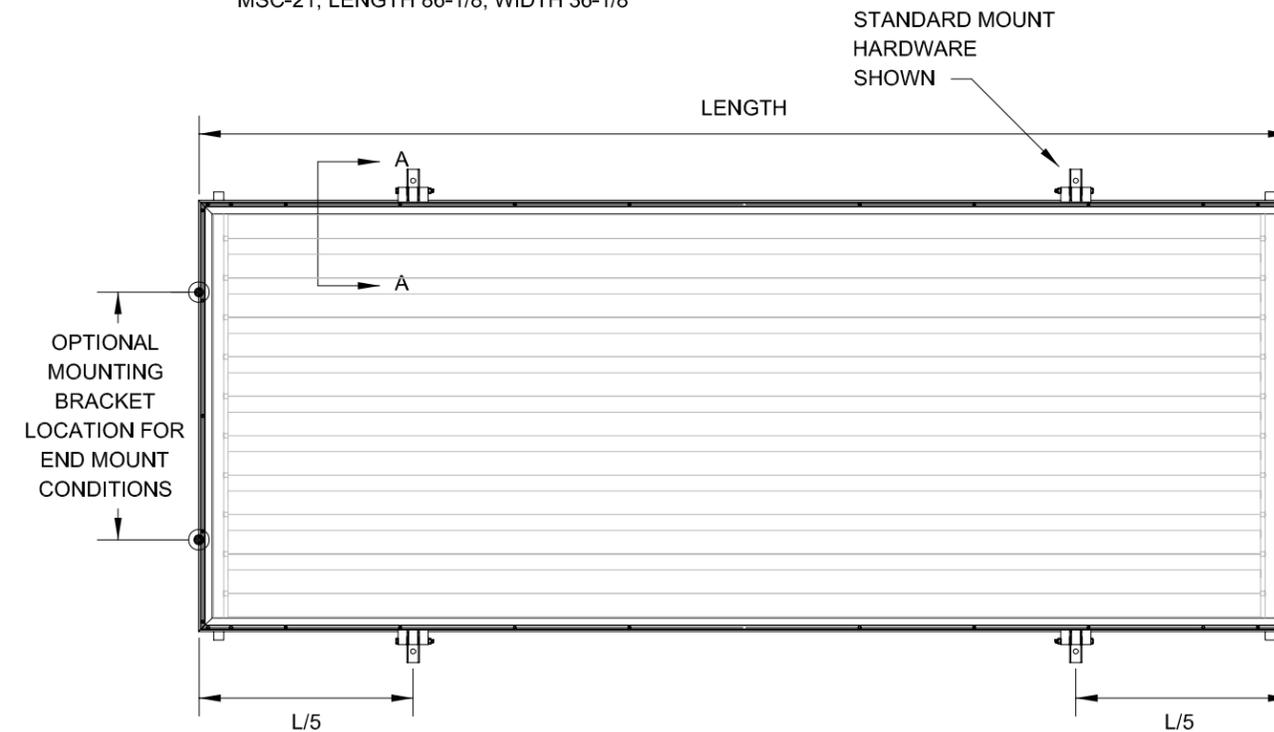
THESE FIGURES SHOW THE HARDWARE PROVIDED BY THE MANUFACTURER THAT HAS UNDERGONE TESTING AND SHALL BE USED TO ATTACH THE SOLAR COLLECTORS TO THE STRUCTURE PROPERLY. NO SUBSTITUTIONS SHALL BE PERMITTED.

THE COLLECTOR ATTACHMENT SHALL BE AS INDICATED IN THE MANUFACTURERS INSTALLATION INSTRUCTIONS AND THESE DRAWINGS.

THE MSC CLIPS THAT ARE ATTACHED TO THE SOLAR COLLECTOR SHALL BE WITHIN 1/2 INCH OF THE INDICATED DISTANCE (L/5) LISTED BELOW.

THE COLLECTORS TO BE INSTALLED IN ACCORDANCE WITH THESE DRAWINGS INCLUDE THE FOLLOWING AET MODELS.

- MSC-40, LENGTH 122-1/8, WIDTH 48-1/8
- MSC-32, LENGTH 98-1/8, WIDTH 48-1/8
- MSC-28, LENGTH 86-1/8, WIDTH 48-1/8
- MSC-26, LENGTH 78-1/8, WIDTH 48-1/8
- MSC-24, LENGTH 98-1/8, WIDTH 36-1/8
- MSC-21, LENGTH 86-1/8, WIDTH 36-1/8



THE COLLECTOR ATTACHMENT HARDWARE (MSC-CLIPS) SHALL BE MOUNTED ON THE LONG SIDES OF THE SOLAR COLLECTORS AND SHALL BE CONNECTED IN THE LOCATIONS SHOWN IN THE ABOVE DIAGRAM FOR ALL MODELS.

THE LOCATION OF THE CLIPS AT EACH CONNECTION POINT SHALL BE PLACED AT SPECIFIC POINTS ON ALL MODELS AS A FUNCTION OF THE COLLECTOR LENGTH. THE CENTER OF THE CONNECTION POINT FOR THE CLIPS SHALL BE LOCATED AT A DISTANCE OF ONE FIFTH THE LENGTH OF THE COLLECTOR (L/5) AS INDICATED ABOVE.

General Notes

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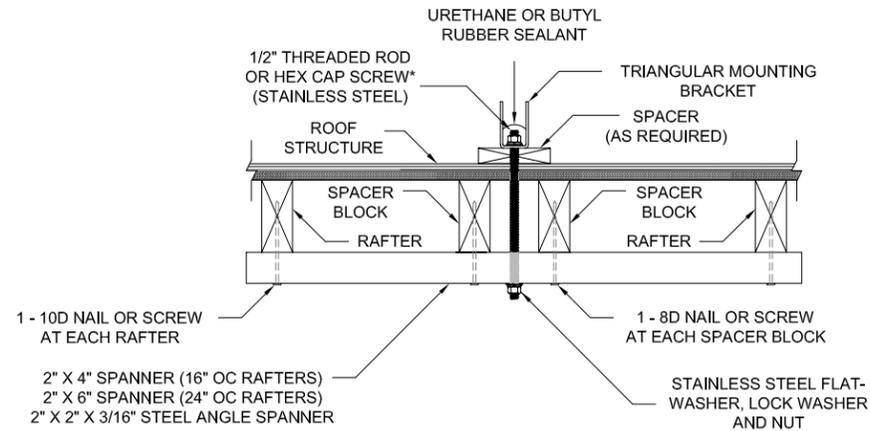
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Scale N.T.S.	

SPANNER MOUNTING



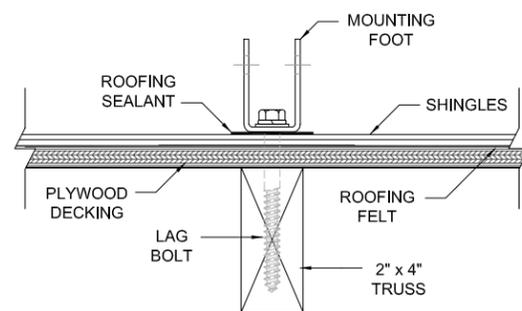
SPANNER BOLTS TO BE 1/2" DIAMETER, STAINLESS STEEL. WHERE HEX CAP SCREWS ARE USED IN PLACE OF THREADED ROD, THE SCREW LENGTH VARIES WITH THE ROOF CONSTRUCTION AND SPANNER MEMBER USED.

SPACER BLOCKS SHALL BE INSTALLED WITHIN 1" OF THE THRU-BOLT. WHEN THRU-BOLT IS WITHIN 2" OF A RAFTER, ONLY ONE SPACER BLOCK WILL BE REQUIRED ON THE OPPOSITE SIDE OF THE BOLT, AWAY FROM THE RAFTER. TWO SPACER BLOCKS ARE REQUIRED WHEN THE BOLT IS MORE THAN 2" FROM THE RAFTER.

WHEN THE MOUNTING PROVISIONS OF ADJACENT COLLECTORS ARE INSTALLED SIDE BY SIDE AND THE THRU-BOLTS ARE 1 1/2" OR MORE APART, IT WILL BE NECESSARY TO HAVE AT LEAST ONE SPACER BLOCK (OR RAFTER) BETWEEN BOLTS.

SEALANT ARE REQUIRED BETWEEN MOUNTING BLOCK AND SHINGLES/SHEATHING. BOLT HOLES SHALL BE SEALED TO PREVENT MOISTURE PENETRATION.

LAG BOLT MOUNTING



LAG BOLTS ARE TO BE 3/8" DIAMETER AND MUST PENETRATE THE RAFTER MEMBER A MINIMUM OF 3".

PILOT HOLES SHOULD BE DRILLED INTO THE CENTERLINE OF THE RAFTER AND SHOULD BE BETWEEN 50-75% OF THE BOLT DIAMETER.

APPLY A LIBERAL AMOUNT OF ROOF SEALANT OR A SEALANT PAD AROUND THE OPENING PRIOR TO SECURING THE MOUNTING BRACKET.

ALL CONNECTION HARDWARE (BOLTS & WASHERS) TO BE STAINLESS STEEL.

THIS DETAIL SHOULD BE SPECIFIED BY THE DESIGN ARCHITECT OR ENGINEER TO BE CAPABLE HANDLING ADDITIONAL LOADS.

NOTES

- 1) THE SOLAR COLLECTOR INSTALLATION AS DETAILED IN THESE DRAWINGS IS FOR THE INSTALLATION OF ALTERNATE ENERGY TECHNOLOGIES MSC-SERIES SOLAR COLLECTORS ON STRUCTURES SUBJECTED TO A MAXIMUM UPLIFT PRESSURE OF 42 POUNDS PER SQUARE FOOT (PSF).
- 2) THE DESIGN OF THIS INSTALLATION IS BASED ON REQUIREMENTS OF THE 2007 FLORIDA BUILDING CODE INCLUDING 2009 AMENDMENTS. ASCE/SEI 7-05 AND TESTING OF THE SOLAR COLLECTOR IN ACCORDANCE WITH PA 202 (TAS 202-94), ASTM E 330
- 3) THE INSTALLATION SHALL UTILIZE HARDWARE PROVIDED BY THE MANUFACTURER AS DETAILED IN THESE DRAWING.
- 4) ALL ALUMINUM STRUCTURAL MEMBERS TO BE 6061-T6. ALL STRUCTURAL STEEL MEMBERS TO BE LOW CARBON GALVANIZED STEEL, AND ALL HARDWARE (BOLTS, NUTS, ETC) TO BE STAINLESS STEEL.

DESIGN WIND PRESSURE
MAXIMUM SUCTION UPLIFT: 42 PSF

General Notes

No.	Revision/Issue	Date

James A. Marx, Jr.

Professional Engineer
FL Lic. No. 45024

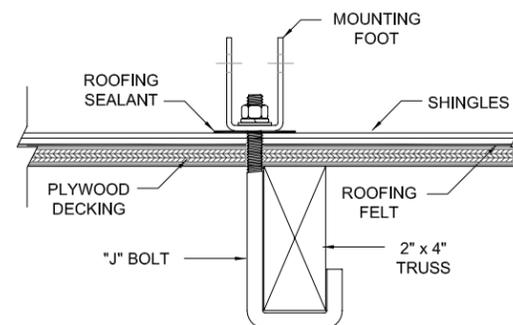
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"J" BOLT MOUNTING



"J" BOLTS ARE TO BE 3/8" DIAMETER AND MUST POSITIONED DIRECTLY BESIDE THE RAFTER.

HOLES SHOULD BE DRILLED SLIGHTLY LARGER THAN THE BOLT DIAMETER.

APPLY A LIBERAL AMOUNT OF ROOF SEALANT OR A SEALANT PAD AROUND THE OPENING PRIOR TO SECURING THE MOUNTING BRACKET.

SNUG THE "J" BOLT AGAINST THE RAFTER BEFORE TIGHTENING THE NUT. USE DOUBLE-NUTS OR LOCK WASHERS TO SECURELY FASTEN THE MOUNTING BRACKET TO THE "J" BOLT.

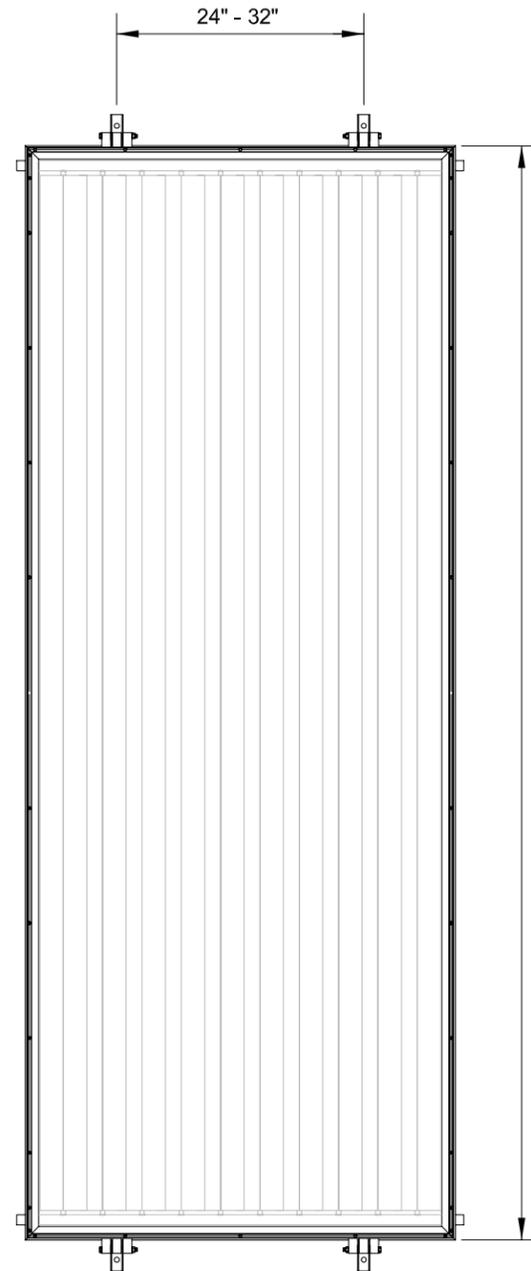
ALL CONNECTION HARDWARE (BOLTS & WASHERS) TO BE STAINLESS STEEL.

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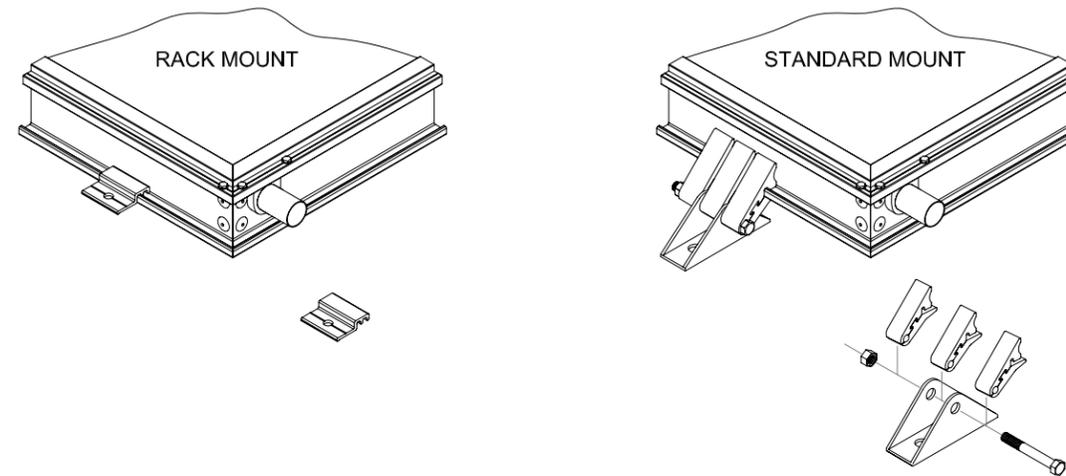
ALTERNATE ENERGY TECHNOLOGIES, LLC

SOLAR COLLECTOR INSTALLATION DRAWINGS

(MOUNTING HARDWARE ALTERNATIVES)



MOUNTING CLIP OPTIONS



INSTALLATION REQUIREMENTS

- 1) THE SOLAR COLLECTOR INSTALLATION AS DETAILED IN THIS DRAWINGS I FOR THE INSTALLATION OF ALTERNATE ENERGY TECHNOLOGIES MSC-SERIES SOLAR COLLECTORS ON STRUCTURES SUBJECTED TO A MAXIMUM UPLIFT PRESSURE OF 42 POUNDS PER SQUARE FOOT (PSF).
- 2) THE DESIGN OF THIS INSTALLATION IS BASED ON REQUIREMENTS OF THE 2007 FLORIDA BUILDING CODE INCLUDING 2009 AMENDMENTS, ASCE/SEI 7-05 AND TESTING OF THE SOLAR COLLECTOR IN ACCORDANCE WITH PA 202 (TAS 202-94), ASTM E 330
- 3) THE INSTALLATION SHALL UTILIZE HARDWARE PROVIDED BY THE MANUFACTURER AS DETAILED IN THIS DRAWING.
- 4) ALL ALUMINUM STRUCTURAL MEMBERS TO BE 6061-T6. ALL STRUCTURAL STEEL MEMBERS TO BE LOW CARBON GALVANIZED STEEL, AND ALL HARDWARE (BOLTS, NUTS, ETC) TO BE STAINLESS STEEL.

MSC - SERIES COLLECTORS			
MODEL	ABSORBER	WIDTH	LENGTH
MSC-21	SELECTIVE	36.125"	86.125"
MSC-24	SELECTIVE	36.125"	98.125"
MSC-26	SELECTIVE	48.125"	78.125"
MSC-28	SELECTIVE	48.125"	86.125"
MSC-32	SELECTIVE	48.125"	98.125"
MSC-40	SELECTIVE	48.125"	122.125"

DESIGN WIND PRESSURE
 MAXIMUM SUCTION UPLIFT: 42 PSF

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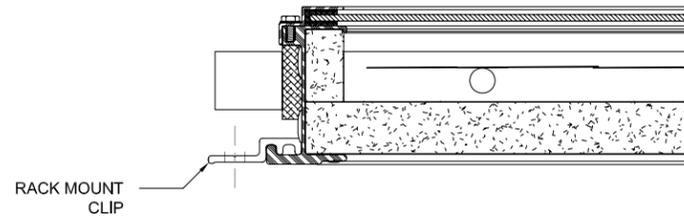
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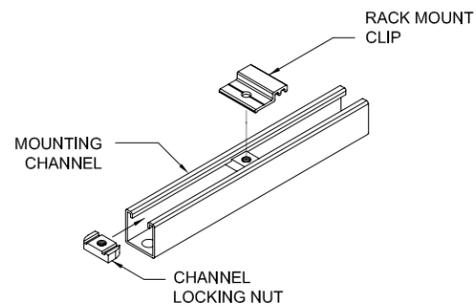
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INSTALLATION DETAILS - ALTERNATE MOUNT HARDWARE



RACK MOUNTING HARDWARE

RACK MOUNT HARDWARE IS INSTALLED AT EACH CONNECTION POINT AS SHOWN IN THIS DETAIL

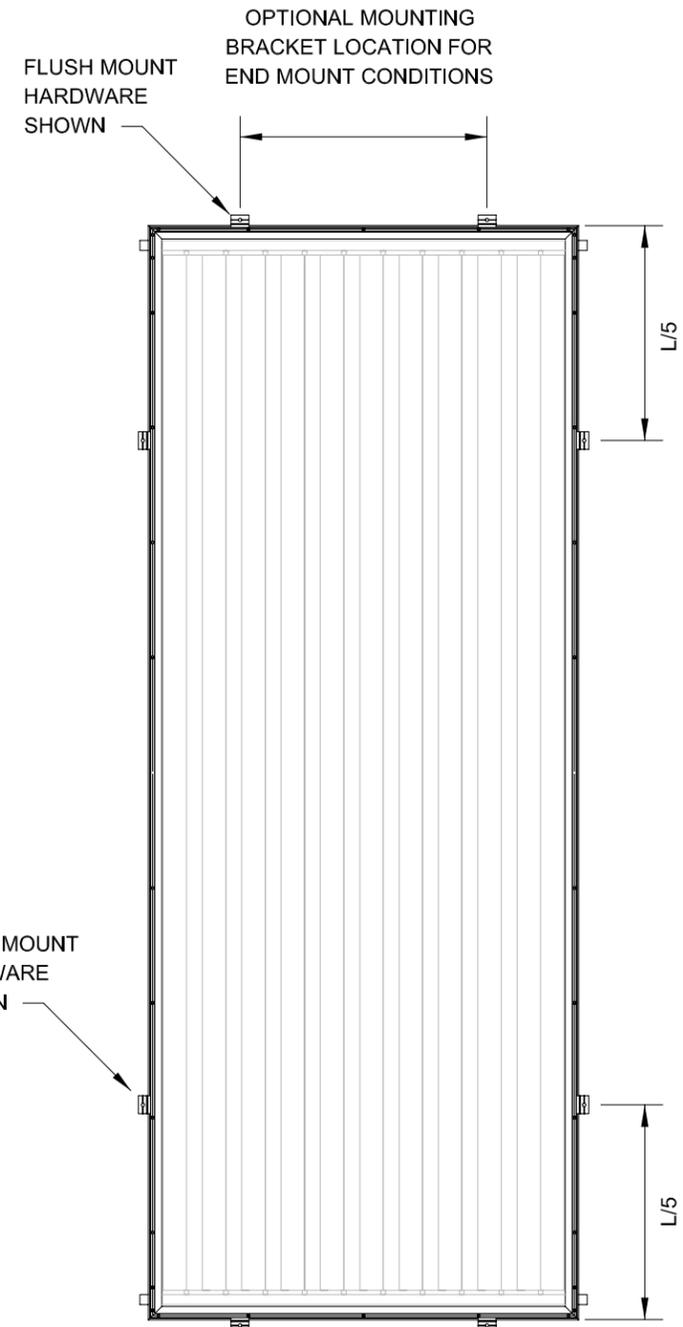


CONNECTION DETAIL

USING MANUFACTURERS HARDWARE FOR RACK MOUNT ON TILE / SLATE ROOFS

NOTES

- 1) THE SOLAR COLLECTOR INSTALLATION AS DETAILED IN THESE DRAWINGS IS FOR THE INSTALLATION OF ALTERNATE ENERGY TECHNOLOGIES MSC-SERIES SOLAR COLLECTORS ON STRUCTURES SUBJECTED TO A MAXIMUM UPLIFT PRESSURE OF 42 POUNDS PER SQUARE FOOT (PSF).
- 2) THE DESIGN OF THIS INSTALLATION IS BASED ON REQUIREMENTS OF THE 2007 FLORIDA BUILDING CODE INCLUDING 2009 AMENDMENTS. ASCE/SEI 7-05 AND TESTING OF THE SOLAR COLLECTOR IN ACCORDANCE WITH PA 202 (TAS 202-94), ASTM E 330
- 3) THE INSTALLATION SHALL UTILIZE HARDWARE PROVIDED BY THE MANUFACTURER AS DETAILED IN THESE DRAWING.
- 4) ALL ALUMINUM STRUCTURAL MEMBERS TO BE 6061-T6. ALL STRUCTURAL STEEL MEMBERS TO BE LOW CARBON GALVANIZED STEEL, AND ALL HARDWARE (BOLTS, NUTS, ETC) TO BE STAINLESS STEEL.



DESIGN WIND PRESSURE
 MAXIMUM SUCTION UPLIFT: 42 PSF

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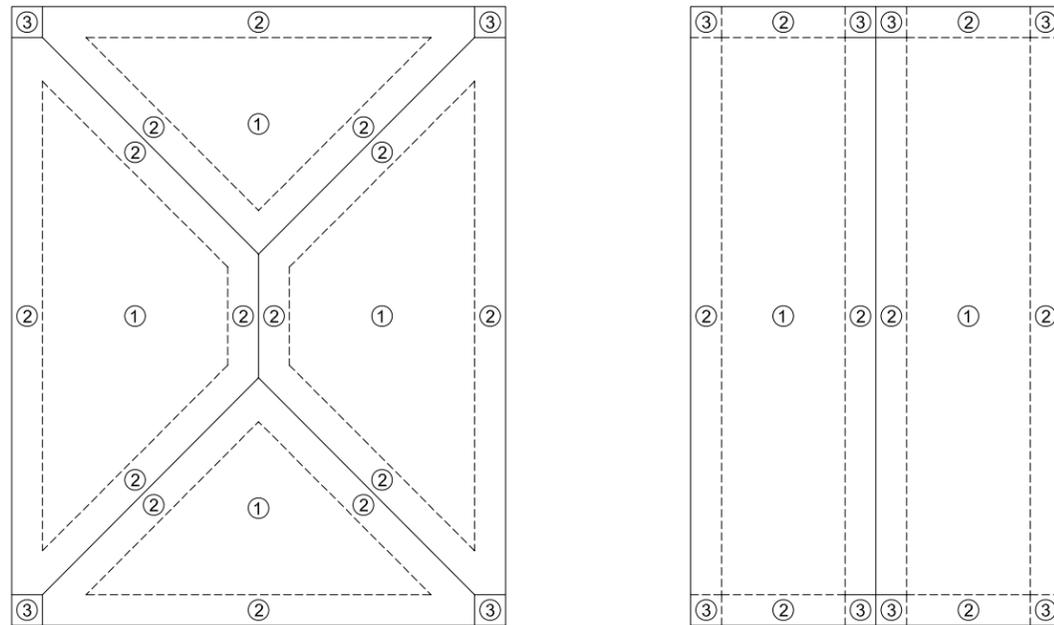
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WIND SPEED AND COMPONENTS + CLADDING LOAD



ROOF AREA FOR WIND LOAD DETERMINATION

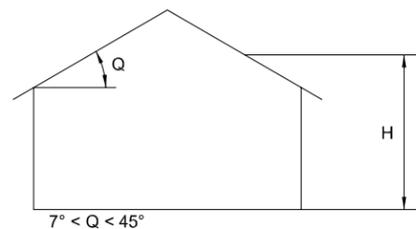
- ① AREA 1 CENTRAL ROOF AREA
- ② AREA 2 EDGE STRIPS OF ROOF (SEE NOTE BELOW)
- ③ AREA 3 CORNER AREAS OF ROOF (SEE NOTE BELOW)

THE MINIMUM WIND LOADS AT SPEEDS BETWEEN 100 AND 150 MILES PER HOUR (MPH) IN TABLE 1 APPLY TO THE INSTALLATION OF 40 SF SOLAR COLLECTOR SITED IN AN AREA CONSIDERED EXPOSURE B, IN THE AREA OF THE ROOF (AREAS 1 & AREA 2) WITH ROOF SLOPING 7 TO 45 DEGREES AT A MEAN HEIGHT (H) OF 30 FEET INSTALLED IN ACCORDANCE WITH ALTERNATE ENERGY TECHNOLOGIES DRAWINGS MSC SHEETS 1-11.

THE WIDTH OR DIMENSION OF THE EDGE STRIPS (AREA 2) AND CORNER AREAS (AREA 3) IS 10% OF THE LEAST HORIZONTAL DIMENSION OR 40% OF THE EAVE HEIGHT, BUT NOT LESS THAN 3 FEET AS STATED IN ASCE 7.

SOLAR COLLECTORS SHOULD BE INSTALLED IN THE CENTRAL AREA OF THE ROOF WHENEVER POSSIBLE, THEY MAY BE INSTALLED IN THE CENTRAL AND EDGE AREAS IF NECESSARY. IT IS NOT RECOMMENDED THAT SOLAR COLLECTORS BE INSTALLED IN CORNER AREAS.

THIS INFORMATION CANNOT BE USED FOR MSC SERIES SOLAR COLLECTORS SITED IN OTHER EXPOSURES OR ON BUILDINGS HAVING A MEAN ROOF HEIGHT GREATER THAN 30 FEET, (H > 30 FEET) OR WITH SLOPES GREATER THAN 45 DEGREES.



NOTES

THIS SHEET PROVIDES INFORMATION RELATED TO WIND SPEEDS AND THE ASSOCIATED MINIMUM LOADS ON THE ALTERNATE ENERGY TECHNOLOGIES SOLAR COLLECTOR INSTALLATION DRAWINGS (MSC 1, SHEETS 1 THRU 11).

THE DRAWING ARE INTENDED TO BE GENERIC IN NATURE AND COVER THE RANGE OF WINDS SPEEDS (100 TO 150 MPH) AND RESULTING PRESSURES (LOADS) ON SOLAR COLLECTORS INSTALLED ON LOW-RISE BUILDINGS THROUGHOUT THE STATE. WIND SPEEDS WITH THE HURRICANE DEBRIS AREA REQUIRE SPECIFIC SITE DESIGN BY A FLORIDA LICENSED ENGINEER.

THESE DRAWINGS DETAIL THE STRUCTURAL REQUIREMENTS AND HARDWARE NECESSARY TO INSTALL THE 40 SQUARE FOOT (AND SAMLLER) MSC SERIES SOLAR COLLECTORS ON ROOFS OF BUILDINGS WITH HORIZONTAL OR SLOPED ROOFS IN ACCORDANCE WITH THE FLORIDA BUILDING CODE (FBC). THE DRAWINGS ARE EXPECTED TO BE USED PRIMARILY FOR RESIDENTIAL BUILDINGS WITH LOW-SPEED ROOFS AT ANGLES UP TO 45 DEGREES HAVING A MEAN ROOF HEIGHT OF 30 FEET OR LESS AS DESCRIBED IN FIGURE 6-3 OF THE ASCE/SEI 7-05.

THE DRAWINGS DETAIL AN INSTALLATION THAT WILL WITHSTAND WIND UPLIFT LOADS UP TO 42 POUNDS PER SQUARE FOOT (-42 PSF) AND IS EXPECTED TO MEET THE RANGE OF WIND LOADS ON MOST RESIDENTIAL BUILDINGS THROUGHOUT THE STATE. THE INTENT OF THESE DRAWINGS IS TO PROVIDE AN ATTACHMENT SYSTEM FOR ALL SOLAR COLLECTORS THAT WILL WITHSTAND A WIND LOAD OF -42 PSF REGARDLESS OF ITS LOCATION.

THE DRAWINGS DO NOT HOWEVER INDICATE SPECIFIC WIND SPEEDS BECAUSE OF THE VARIABILITY OF WIND SPEED WITH HEIGHT AND LOCATION (EXPOSURE CATEGORY) THROUGHOUT THE STATE. COLLECTORS INSTALLED IN ACCORDANCE WITH THESE DRAWINGS WILL READILY WITHSTAND THE 42 PSF UPLIFT LOAD AS VERIFIED BY TESTING UNDER PA 202 AND ASTM E 330 AND ANALYSIS OF ALL HARDWARE USED IN THE INSTALLATION.

THE WIND LOAD IN PSF RESULTING FROM WIND SPEEDS BETWEEN 100 AND 150 MILES PER HOUR (MPH) ON THE FORTY SQUARE FOOT (40 SF) SOLAR COLLECTOR MANUFACTURED BY AET INSTALLED ON A BUILDING LOCATED IN THE AREA 1 AND AREA 2, OF A SLOPED ROOF WITH A 7 TO 45 DEGREE TILT AND A 30 FOOT MEAN ROOF HEIGHT FOR EXPOSURE B AT DIFFERENT WIND SPEEDS AS SHOWN IN TABLE 1. THE COLLECTOR HAS BEEN TESTED AND CERTIFIED TO WITHSTAND 42 PSF.

THE MINIMUM WIND LOADS AT THE VARIOUS WIND SPEEDS REQUIRED BY FLORIDA BUILDING CODE WERE DETERMINED USING FIGURE 6-3 OF THE ASCE/SEI 7-05 FOR THE 40 SQUARE FOOT SOLAR COLLECTORS FOR EXPOSURE B.

THE TABLE CLEARLY SHOWS THAT THE LOAD FROM THE WIND ON THE SOLAR COLLECTOR IS LESS THAN -42 PSF DESIGN LOAD OF THE INSTALLATION DETAILED IN THE DRAWINGS.

THE INFORMATION ON THIS SHEET CAN BE USED TO DETERMINE THE MAGNITUDE OF THE WIND LOAD ON THE SOLAR COLLECTOR AT DIFFERENT WIND SPEEDS WHEN IT IS INSTALLED IN ACCORDANCE WITH THE REFERENCED DRAWINGS IN THE CENTRAL OR EDGE AREAS (IF NECESSARY) OF THE ROOF AS DESCRIBED ABOVE FOR BUILDINGS SUBJECTED TO EXPOSURE B, AS DESCRIBED IN FIGURE 3 OF THE ASCE 7. INSTALLATION OF SOLAR COLLECTORS IS NOT RECOMMENDED IN THE CORNER AREA OF THE ROOF.

FOR INSTALLATION ON BUILDINGS AT DIFFERENT HEIGHTS OR EXPOSURES THE LOADS MUST BE ADJUSTED OR DETERMINED ON A CASE BY CASE BASIS.

TABLE 1 - UPLIFT LOAD

ON A 40 FT² SOLAR COLLECTOR IN DIFFERENT AREAS OF THE ROOF FOR EXPOSURE B

WIND SPEED (MPH)	150	140	130	120	110	100
DESIGN LOAD - AREA 1 (CENTER)	38.5	33.6	28.9	24.7	20.7	17.1
DESIGN LOAD - AREA 2 (EDGE)	54.8	47.7	41.1	35.1	29.4	24.3

WIND LOADS AT DIFFERENT WIND SPEEDS FOR THE AET 40 SF SOLAR COLLECTOR INSTALLED IN THE CENTER AREA OF A TYPICAL RESIDENTIAL BUILDING AS SHOWN AND DESCRIBED ON THIS SHEET

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