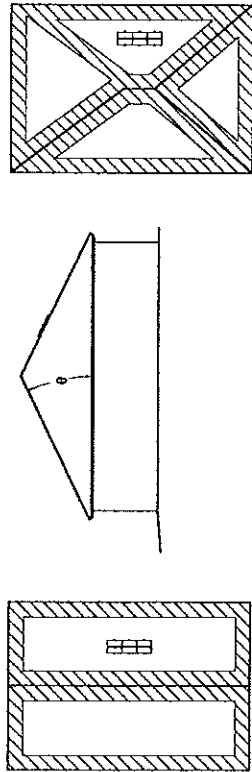
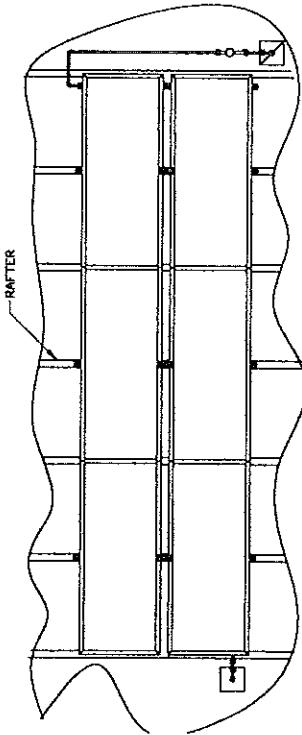


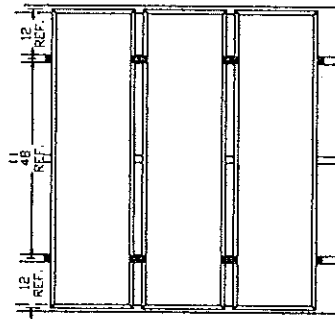
SKYLINE SOLAR DHW SYSTEM
STRUCTURAL INSTALLATION



SOLAR COLLECTORS TO BE INSTALLED IN CENTER AREA OF ROOF (AREA D) EDGE AND CORNERS TO BE AVOIDED SEE S-3



TWO SKYLINE MODEL 20-01 COLLECTORS



THREE SKYLINE MODEL 10-01 COLLECTORS

NOTES:

THESE DRAWINGS DETAIL THE STRUCTURAL INSTALLATION REQUIREMENTS FOR THE SKYLINE SERIES SOLAR COLLECTORS MANUFACTURED BY THE ACR SOLAR INTERNATIONAL CORP ON RESIDENTIAL BUILDINGS IN FLORIDA.

THE HARDWARE PROVIDED BY THE MANUFACTURER OF THE SOLAR COLLECTOR FOR ATTACHING THE COLLECTORS TO THE ROOFS OF BUILDINGS SHALL BE INSTALLED IN ACCORDANCE WITH THESE DRAWINGS.

THE STRUCTURAL INSTALLATION SHOWN ON THESE DRAWINGS IS FOR THE ATTACHMENT OF THE SOLAR COLLECTORS IN THE CENTRAL AREA OF THE ROOF (SEE SHEET S-3) ON RESIDENTIAL BUILDINGS HAVING SLOPES UP TO 45 DEGREES (12/12 PITCH), A MEAN ROOF HEIGHT OF 30 FEET, LOCATED IN AN AREA DESIGNATED AS EXPOSURE 'B' OR 'C' IN ACCORDANCE WITH THE 2006 SUPPLEMENT TO THE 2004 FLORIDA BUILDING CODE.

THE INSTALLATION DESIGNED IN THESE DRAWINGS IS CAPABLE OF WITHSTANDING WIND LOADS UP TO 50 PSF, WHICH IS THE DESIGN WIND PRESSURE OF THE COLLECTOR AS DETERMINED BY TESTING.

MULTIPLE UNITS OF THE SKYLINE SOLAR COLLECTORS, ONE, TWO, THREE OR MORE CAN BE INSTALLED AS SHOWN ON THIS SHEET AS LONG AS THE SOLAR COLLECTORS ARE ONLY INSTALLED IN THE CENTRAL AREA OF THE ROOF.

DESIGN WIND PRESSURE
MAXIMUM SUCTION UPLIFT: 50 PSF

SKYLINE SOLAR COLLECTORS

MODEL	WIDTH	LENGTH
20-01	20 IN.	12 FT.
10-01	20 IN.	6 FT.

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FL REG ENG NO. 35956

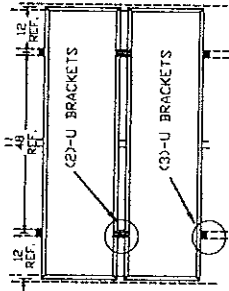
NO.	REVISION	DATE
1		
2		
3		
4		

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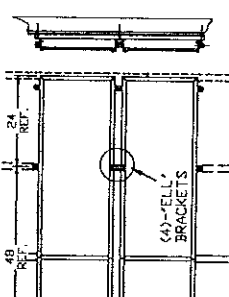
SKYLINE SOLAR COLLECTORS
INSTALLATION REQUIREMENTS

DRAWING NO. S-1
DATE: 11-15-06
SCALE: NTS
SHEET 1 OF 3



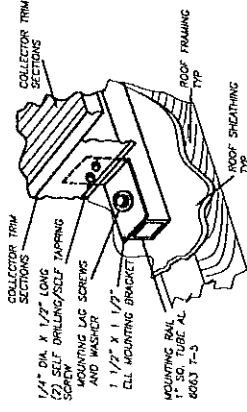
1 TWO MODEL 20-01 COLLECTORS
NTS

COLLECTORS TO BE ATTACHED TO RAFTERS ON 48\"/>



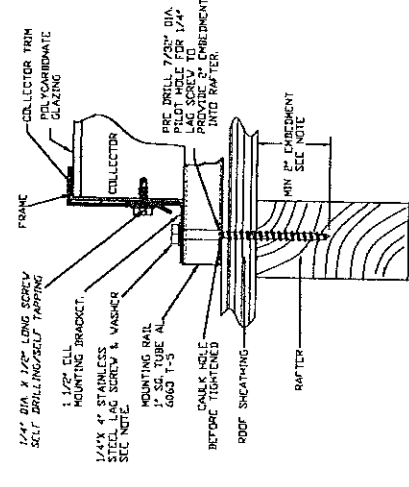
2 TWO MODEL 10-01 COLLECTORS
NTS

COLLECTORS TO BE ATTACHED TO RAFTERS ON 48\"/>



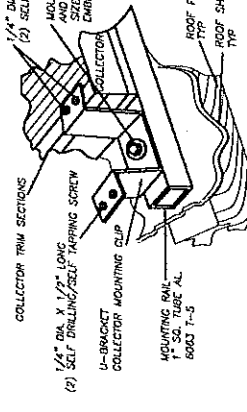
3 "ELL" BRACKET MOUNTING DETAIL
NTS

ALL HARDWARE PROVIDE BY MFR.



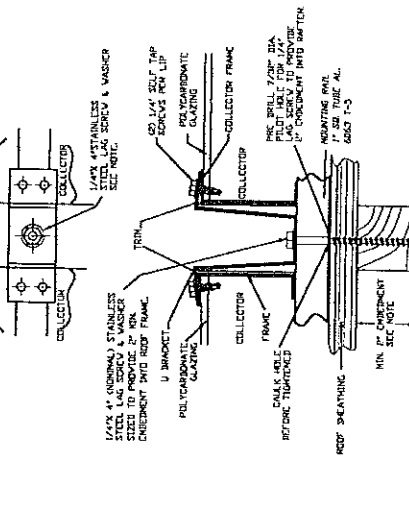
4 U BRACKET MOUNTING DETAIL
NTS

ALL HARDWARE PROVIDE BY MFR.



5 "ELL" BRACKET MOUNTING DETAIL
NTS

ALL HARDWARE PROVIDE BY MFR.



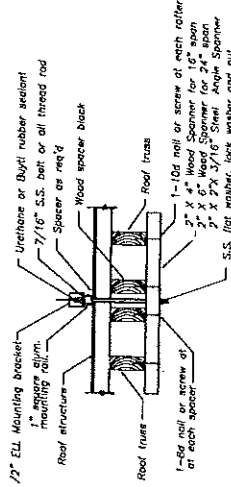
6 U BRACKET MOUNTING DETAIL
NTS

ALL HARDWARE PROVIDE BY MFR.

NOTES:
THE SOLAR COLLECTORS ARE TO BE INSTALLED IN THE CENTRAL AREA OF THE ROOF (SEE S-3) AND AS SHOWN ON THESE DRAWINGS USING THE HARDWARE PROVIDED BY THE MANUFACTURER IN ACCORDANCE WITH THE INSTRUCTION MANUAL AND THESE DRAWINGS.
IN THE EVENT OF ANY CONFLICT BETWEEN STRUCTURAL (ATTACHMENT) ISSUES, THE DRAWINGS SHALL TAKE PRECEDENCE.
THE SOLAR COLLECTORS ARE TO BE ATTACHED TO THE ALUMINUM MOUNTING RAIL (PROVIDED BY MFR THAT IS FASTENED DIRECTLY TO THE RAFTERS USING STAINLESS STEEL LAG SCREWS IN ACCORDANCE WITH THESE DRAWINGS.
THE INSTALLATION REQUIRES ACCURATELY LOCATING THE RAFTERS, PRE-DRILLING A PILOT HOLE TO THE FULL SCREW DEPTH (NOTE REQUIRED EMBEDMENT OF 2 INCHES), AND VERIFYING THE INSTALLATION IS SOUND AND WAS PROPERLY INSTALLED INTO THE RAFTER.

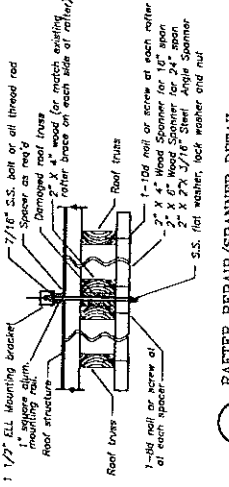
UPON COMPLETION OF THE INSTALLATION THE CONTRACTOR SHALL VISUALLY INSPECT THE UNDERSIDE OF THE CONNECTION AND VERIFY PROPER INSTALLATION. IF THE RAFTER WAS DAMAGED BY THE SCREW PROTRUSING THROUGH THE SIDE OF THE RAFTER, THE CONNECTION SHALL BE RE-INSTALLED TO THE SPANNER MOUNT AND THE DAMAGED PORTION OF THE RAFTER BRACED AS INDICATED.
IN THE CASE THAT A RAFTER IS NOT IN THE IMMEDIATE AREA OF THE STRUCTURAL ATTACHMENT, THEN THE SPANNER DETAIL SHALL BE USED TO ENABLE THE ATTACHMENT TO BE PROPERLY SEALED IN ACCORDANCE WITH THE INSTALLATION MANUAL AND NRCA GUIDELINES.

THE INSTALLATION IS TO BE PROPERLY SEALED IN ACCORDANCE WITH THE INSTALLATION MANUAL AND NRCA GUIDELINES.



7 SPANNER DETAIL
NTS

TO BE USED AS REQUIRED.



8 RAFTER REPAIR/SPANNER DETAIL
NTS

ANY DAMAGED RAFTERS SHALL BE REPAIRED AS INDICATED BY INSTALLING THE SPANNER

HENRY M. HEALEY P.E.

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2	NO. REVISION	
3	DATE	

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SKYLAR SOLAR COLLECTORS
INSTALLATION DETAILS

DRAWING NO. S-2
DATE 11-15-06
SHEET 2 OF 3

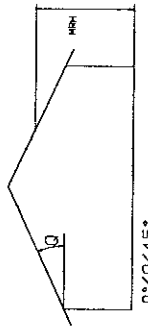
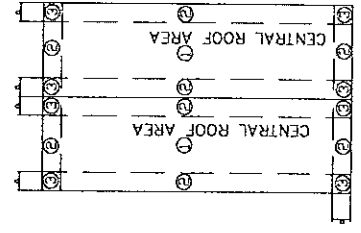
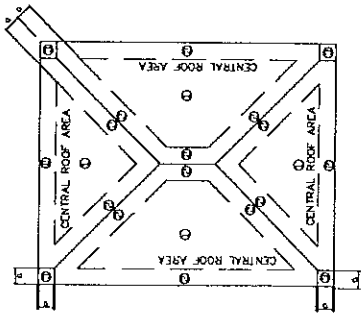


TABLE 1
UPLIFT LOAD
ON A 10 AND 20SF
SOLAR PANEL
EXPOSURES B & C

WIND SPEED MPH	UPLIFT LOAD 10 SF AREA 1 CENTER	UPLIFT LOAD 20 SF AREA 1 CENTER	UPLIFT LOAD 10 SF AREA 1 CENTER	UPLIFT LOAD 20 SF AREA 1 CENTER	UPLIFT LOAD 10 SF AREA 2 CENTER	UPLIFT LOAD 20 SF AREA 2 CENTER
150	40.8	39.4	57.4	55.8	55.8	55.8
140	35.3	34.4	49.4	48.2	48.2	48.2
130	30.4	28.6	42.6	41.4	41.4	41.4
120	25.9	25.2	36.3	35.3	35.3	35.3
110	21.8	21.2	30.5	29.7	29.7	29.7
100	18.0	17.5	25.2	24.5	24.5	24.5
	EXPOSURE B		EXPOSURE C		EXPOSURE C	

WIND LOADS AT DIFFERENT WIND SPEEDS FOR THE 10 AND 20 SF SOLAR COLLECTOR INSTALLED ON THE CENTRAL AREA OF THE ROOF OF A TYPICAL RESIDENTIAL BUILDING AS SHOWN AND DESCRIBED IN THESE DRAWINGS.

NOTE THAT THE UPLIFT WIND LOADS GREATER THAN 50 PSF, THE DESIGN LOAD OF THE INSTALLATION.

WIND LOAD VARIATION WITH LOCATION ON ROOF

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

TABLE 1 SHOWS THE WIND LOAD ON SOLAR COLLECTORS INSTALLED IN THE CENTRAL AREA 1, OF A ROOF OF A TYPICAL RESIDENTIAL STRUCTURE RESULTING FROM WINDS AT SPEEDS BETWEEN 100 AND 150 MILES PER HOUR (MPH).

THE TABULATED LOADS SHOWN FOR THE TWO SIZES OF COLLECTORS (20SF & 10SF) REFLECT THE LOAD APPLIED TO THE COLLECTORS AT DESIGNATED AREAS ON SOLAR COLLECTORS LOCATED IN AREAS DESIGNATED AS AREAS 1, 2, & 3 OF THE CENTRAL AREA OF THE ROOF (AREA 1) FOR ROOFS SLOPING UP TO 45 DEGREES MEAN ROOF HEIGHT (MPH) OF 30 FEET INSTALLED IN ACCORDANCE WITH THESE DRAWINGS.

THE WIDTH OF THE EDGE STRIP (AREA 2), DIMENSION "A", IS 10% OF THE EAVE HEIGHT, BUT NOT LESS THAN 1 FEET. THE EDGE STRIP WIDTH INCREASES IN PROPORTION WITH THE WIDTH OF THE ROOF. FOR EXAMPLE, THE EDGE AREA OF A ROOF THAT IS 70 FEET WIDE, IS SEVEN FEET WIDE.

THE SOLAR COLLECTORS SHOWN IN THESE DRAWINGS SHALL ONLY BE INSTALLED IN THE CENTRAL AREA OF THE ROOF.

THESE LOADS CAN NOT BE USED FOR SOLAR COLLECTORS SITED IN OTHER EXPOSURES OR ON BUILDINGS HAVING MEAN ROOF HEIGHTS GREATER THAN 30 FEET, OR WITH SLOPES GREATER THAN 45 DEGREES.

NOTES:

THIS SHEET PROVIDES INFORMATION RELATED TO WIND SPEEDS AND THE RESULTING WIND LOADS ON THE SOLAR COLLECTORS INSTALLED ON LOW SLOPED, RESIDENTIAL TYPE BUILDINGS LOCATED IN EXPOSURE CATEGORIES "B" AND "C" AS SHOWN IN THESE INSTALLATION DRAWINGS.

THE DRAWINGS ARE INTENDED TO BE GENERIC IN NATURE AND COVER THE RANGE OF WIND SPEEDS (100 TO 150 MPH) AND RESULTING PRESSURES (LOADS) ON SOLAR COLLECTORS INSTALLED ON LOW-RISE BUILDINGS THROUGHOUT THE STATE.

THESE DRAWINGS DETAIL THE STRUCTURAL REQUIREMENTS AND HARDWARE TO BE USED TO INSTALL THE 10 AND 20 SQUARE FOOT SOLAR COLLECTORS ON THE ROOFS OF BUILDINGS WITH HORIZONTAL OR SLOPED ROOFS IN ACCORDANCE WITH THE FLORIDA BUILDING CODE (FBC). DRAWINGS ARE EXPECTED TO BE USED PRIMARILY FOR RESIDENTIAL BUILDINGS WITH LOW-SLOPED ROOFS AT ANGLES UP TO 45 DEGREES HAVING A MEAN ROOF HEIGHT OF 30 FEET OR LESS.

THE DRAWINGS DETAIL AN INSTALLATION THAT WILL WITHSTAND WIND UPLIFT LOADS UP TO 50 POUNDS PER SQUARE FOOT (~30 PSF) AND IS EXPECTED TO MEET THE RANGE OF WIND LOADS ON MOST RESIDENTIAL BUILDINGS THROUGHOUT THE STATE. THE INTENT OF THIS DRAWING IS TO PROVIDE AN INSTALLATION SYSTEM FOR ALL SOLAR COLLECTORS THAT WILL WITHSTAND A WIND LOAD OF ~50 PSF REGARDLESS OF ITS GEOGRAPHIC LOCATION.

THE DRAWINGS DO NOT HOWEVER INDICATE SPECIFIC WIND SPEEDS BECAUSE OF THE VARIABILITY OF WIND SPEED WITH HEIGHT AND LOCATION (EXPOSURE CATEGORY) OF THE BUILDING THROUGHOUT THE STATE. ALL INSTALLATIONS INSTALLED IN ACCORDANCE WITH THESE DRAWINGS SHALL SPECIFICALLY WITHSTAND THE ~50PSF UPLIFT LOAD AS VERIFIED BY TESTING AND ANALYSIS OF ALL HARDWARE USED IN THE INSTALLATION.

THE WIND LOAD IN PSF RESULTING FROM WIND SPEED S BETWEEN 100 AND 150 MILES PER HOUR (MPH) ON THE TEN AND TWENTY SQUARE FOOT (10-20SF) SOLAR COLLECTORS INSTALLED ON A BUILDING LOCATED IN THE CENTRAL AREA 1, WITH SLOPES UP TO 45 DEGREES (12/12 PITCH) AND A 30 FOOT MEAN ROOF HEIGHT VARIES AS SHOWN IN TABLE 1.

THE MINIMUM WIND LOADS AT THE VARIOUS WIND SPEEDS REQUIRED BY FLORIDA BUILDING CODE WERE DETERMINED USING TABLE 1609.6.2.1 (2) OF THE 2006 SUPPLEMENT OF THE 2004 FLORIDA BUILDING CODE FOR THE 10 AND 20 SQUARE FOOT SOLAR COLLECTORS.

THE INFORMATION, SHOWN IN TABLE 1, ON THIS SHEET CAN BE USED TO DETERMINE THE WIND LOAD ON THE SOLAR COLLECTORS AT DIFFERENT WIND SPEEDS WHEN THE DESIGN IS INSTALLED IN ACCORDANCE WITH THE REFERENCED DRAWINGS IN THE CENTRAL AREA OF THE ROOF.

TABLE 1 INDICATES THE UPLIFT LOAD RESULTING FROM WIND SPEEDS BETWEEN 100 TO 150 MPH ON THE 10 AND 20 SF SOLAR COLLECTORS. WHILE THE SOLAR COLLECTORS WILL BE INSTALLED IN ANY AREAS WITH WIND UPLIFT LOADS GREATER THAN 50 PSF, THE DESIGN LOADS FOR THE COLLECTORS, THEY CAN BE INSTALLED IN EITHER EXPOSURE AREAS "B" OR "C" IF THE UPLIFT LOAD AS DETAILED IN TABLE 1 IS ~50 PSF OR LESS.

INSTALLATION OF SOLAR COLLECTORS IS NOT RECOMMENDED IN THE EDGE AREA (AREA 2) OR CORNER AREAS (AREA 3) OF THE ROOF UNLESS THE WIND LOADS IN THESE AREAS ARE LESS THAN THE DESIGN LOAD (~50PSF) OR THE INSTALLATION.

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

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SKETCHLINE SOLAR COLLECTORS
WIND SPEED-LOAD

INFORMATION

DRAWING NO. **S-3**

CHECKED **H. M. HEALEY**

DATE **11-15-06**

SCALE **AS SHOWN**

SHEET **3** OF **3**