

**SCOPE OF WORK:**

INSTALLATION OF A SOLAR POOL HEATING SYSTEM WITH A ROOF TOP COLLECTOR

**SOLAR HYDRONICS CORP COLLECTOR:**

DIMENSIONS: 4'-0" X P.L. (8', 10' OR 12')

**ROOF ANGLE:**

COLLECTOR INSTALLATION STANDARD FLUSH W/ ROOF

**WIND LOAD: 160 C**

WIND LOAD RESISTANCE DETERMINED BY STRAP SPACING "S" SEE FIG. 2

**APPLICABLE CODE:**

FLORIDA 2007 CODE W/09 SUPP

**COMPATIBLE WITH BOTH:**

ASCE 7-02 & ASCE 7-05

**ENLARGED VIEWING:**

HTTP://WWW.SW.CADVICE.US/AS.2.2.PH.PDF

**SOLAR INSTALLATION NOTES FOR MIAMI DADE**

THE DETAILS SPECIFIED ON THIS "PAPER" PLAN ARE CONSIDERED TO BE THE MINIMUM NEEDED BY AHJ (AUTHORITY HAVING JURISDICTION, MIAMI DADE, MD) AND INSTALLERS. USERS ARE ENCOURAGED TO ACCESS EV (ELECTRONIC VERSION) OF THIS PLAN. ACTIVE HYPERLINKS ON EV PROVIDE EASY ACCESS TO SUPPLEMENTAL INFORMATION. EV ALSO ALLOWS VIEWER TO STUDY THE PLAN AND OEM DETAILS AT MAGNIFICATIONS OF VIEWER CHOICE UP TO 6400%. IF A CONFLICT SHOULD OCCUR BETWEEN A DRAWING AND/OR SPECIFICATION HEREON AND AN OEM DETAIL, OEM SHALL PREVAIL. CONTRACTOR'S ATTENTION IS DIRECTED TO MIAMI DADE SOLAR FORMS & GUIDELINES. THREE ITEMS: CONTRACTOR MUST PRINT & CAREFULLY COMPLETE/COMPLY EACH

**1. SOLAR SYSTEM DISCLOSURE FORM**

HTTP://WWW.MIAMIDADE.GOV/BUILDING/LIBRARY/GUIDELINES/SOLAR-SYSTEMS-PERMIT.PDF

COMPLETELY SELF-EXPLANATORY. MASTER PERMIT NUMBER (NORMALLY N/A) AND PROCESS # ENTERED BY MD. OWNER & CONTRACTOR MUST BOTH SIGN.

**2. SOLAR ROOF FORM**

HTTP://WWW.MIAMIDADE.GOV/BUILDING/LIBRARY/PERMITS/SOLAR-ROOF.PDF PAGE 1 OF 3

MD ENTERS FIRST TWO NUMBERS - MASTER PERMIT (N/A), PROCESS NUMBER

FSEC APPROVAL FORM - N/A. ENTER SYSTEM APPROVAL NUMBER 5 INSTEAD:

SDHW - HTTP://WWW.FSEC.UCF.EDU/EN/CERTIFICATION-TESTING/STSYSTEMS/RATINGS/DHW\_APPROVS.HTM

S1175	Solar Hydronics Corp.	[040-40]	AE-40	40	80	2.1	2.2	2.2
S2115	Solar Hydronics Corp.	[040-21]	AE-21	21	50	1.7	1.7	1.7
S2235	Solar Hydronics Corp.	[040-32]	AE-32	32	50	1.7	1.8	1.8
S3001	Solar Hydronics Corp.	[0120-0010-120-04]	AE-40	80	120	4.4	4.4	4.4
S3022	Solar Hydronics Corp.	[0100-00-00]	AE-40	40	80	3.2	3.2	3.2
S3023	Solar Hydronics Corp.	[0100-120-04-0100-120-04]	AE-32	64	120	6.3	7.2	7.2
S3105	Solar Hydronics Corp.	[0100-00-32]	AE-32	32	50	2.4	2.6	2.6

SPH - http://www.fsec.ucf.edu/en/certification-testing/STsystems/ratings/pool\_ratings.htm

S3109	Solar City, Inc.	[Guardian]	[Feb 98]		
S3110	Solar City, Inc.	[Hi-Tec]	[Feb 98]		
S3140	Solar City, Inc.	[SunFree]	[Oct 96]		
S3025	Solar City, Inc.	[SunMaster Plus]	[Dec 91]	[Feb 98]	
S3025	Solar City, Inc.	[SunMaster Plus]	[Dec 91]	[Feb 98]	

ENTER ESTIMATED ROOF SLOPE & HEIGHT OF MIDDLE OF THE SOLAR ARRAY ABOVE THE GROUND.

ENTER ROOF PERIMETER WIDTH (NORMALLY 4-FT) BUT SEE FIGURE 03. CALCULATE P22 ZONE WIDTH (40% OF EAVE HEIGHT, TYPICALLY 10-FT \* 0.40 = 4-FT). P22 IS PERIMETER BAND AROUND EACH ROOF SECTION. SOLAR INSTALLATIONS ARE FORBIDDEN IN P23 (ROOF CORNERS, DIMENSIONS = P22 BY P22). P21 IS THE MIDDLE FIELD OF ROOF WITH LOWEST WIND PRESSURE (P21 HAS A 1.0 MULTIPLIER, WHEREAS P22 MULTIPLIER IS ABOUT 1.6, AND P23 IS ABOUT 2.6).

SOLAR ROOF FORM (CONTINUED) USE TABLE BELOW FOR P21 & P22 TO ENTER AT TOP OF PAGE 2 OF 3

COMPUTATIONAL NOTES. THESE VALUES WERE INTERPOLATED FOR 146-MPH USING ASCE 7-05 COMPONENTS & CLADDING - METHOD 1, NET DESIGN WIND PRESSURES, LESS THAN 60-FT, EFFECTIVE WIND AREA 10-SF. VALUE DETERMINED MULTIPLIED BY HEIGHT & EXPOSURE ADJUSTMENT FACTOR FROM PAGE 44. ALL SOLAR PANELS MOUNTED PARALLEL TO ROOF WITH PRESSURE EQUALIZATION GAP BETWEEN 1/8" TO 4" SEPARATING REAR OF SOLAR PANELS FROM ROOF.

**DESIGN PROFESSIONAL CALCULATED ROOF PRESSURES**

P23 MAY NOT BE USED AND THEREFORE NOT PROVIDED

ROOF SLOPE <= 2/12 >= 2/12 <= 7/12 >= 7/12

PSF(NEG) P21 P22 P21 P22 P21 P22

MEAN SOLAR HEIGHT - FT

15 38 63.9 34.8 61.1 38 44.5

20 40.6 68.3 37.2 65.3 40.6 47.5

25 42.4 71.3 38.9 68.2 42.4 49.6

30 44 73.9 40.3 70.7 44 51.4

35 45.5 76.6 41.7 73.2 45.5 53.3

GO TO PAGE 3 OF 3 MD SOLAR ROOF FORM AND CHECK APPROPRIATE BOXES. WRITE DECK DETAILS AT BOTTOM OF PAGE - FOR EXAMPLE 5/8-INCH PLYWOOD ON WOOD TRUSSES.

**GUIDELINES**

HTTP://WWW.MIAMIDADE.GOV/BUILDING/LIBRARY/GUIDELINES/SOLAR-SYSTEMS-PERMIT.PDF

CONTRACTOR MUST PRINT & FOLLOW INSTRUCTIONS CAREFULLY:

1. CONTRACTOR TO PROVIDE ROOF DIAGRAM. SHOW ALL DIMENSIONS & THE TOTAL OF EACH ROOF AREA USED.

2. SHOW MAJOR DETAILS - HIPS, RIDGE, EAVE, VALLEYS, VENTS, ETC. FOR EACH ROOF AREA USED.

3. SHOW SOLAR LOCATION & SQUARE FEET INSTALLED ON EACH ROOF AREA.

THERE IS REDUNDANCY BETWEEN THIS GUIDELINE AND SOLAR ROOF PERMIT FORM.

ENGINEER OF RECORD WILL REVISE SOLAR PLAN DOCUMENT PERIODICALLY AS NEEDED TO INCORPORATE INFORMATION DEMANDED BY MIAMI DADE SOLAR IN GUIDELINE AND FORMS.

4. ENTER VALUES FROM ABOVE TABLE.

5. P22 WIDTH (40% EAVE HEIGHT).

6. DESCRIBE ROOF DECK - EXAMPLE: WOOD TRUSSES WITH 5/8" PLYWOOD SHEETING.

7. CHECK BOX.

8. ENTER TYPE OF ROOF COVERING: (EXAMPLES, SHINGLE? TILE? METAL? ETC ? (INCLUDE DETAILS).

9. ROOF CLEARANCE - FLUSH MOUNT VARIES FROM 1/8" TO 4".

10. PROVIDE DRAWING WITH ROOF PENETRATION FLASHING DETAILS - IF DIFFERENT FROM SHOWN ON THIS PLAN.

11. N/A

12. PROVIDE COMPLETED & SIGNED SOLAR DISCLOSURE FORM.

**TOP OF GUIDELINES PAGE 2 OF 4**

a. N/A - TOP CHECK BOX DOES NOT APPLY UNLESS SOLAR IS BUILDING INTEGRATED, E.G. MOUNTED AS PART OF BUILDING ENVELOPE COVERING - JUST LIKE A SKYLIGHT, WINDOW, OR DOOR.

b. UP-LIFT FORCES FROM TABLE ABOVE.

c. STRUCTURAL VERIFICATION - SOLAR GRAVITY LOAD UPON ROOF FRAMING LESS THAN 4 PSF

d. CONNECTIONS: LATERAL FORCES NEGLECTIBLE. UPLIFT FORCES RESISTED MINIMUM 2-INCH SOLIDLY EMBEDDED 1/4" OR #14 STAINLESS STEEL LAG SCREWS THRU OEM ATTACHMENT PARTS SHOWN IN FIGURE 04. STRAP LAGS MUST GO INTO ROOF FRAMING. STRAP SPACING 24-INCHES P21, 12-INCHES P22. WATER-PROOF ALL PENETRATIONS BY LAGGING THRU A GENEROUS PUDDLE OF FLORIDA PRODUCT CONTROL APPROVED POLYURETHANE ROOF SEALANT.

GUIDELINES PAGE 2 OF 4 - BOTTOM AND TOP OF PAGE 3 OF 4

CHECK APPLICABLE BOX(S), PROVIDE INFORMATION DEMANDED

**ROOF LOADING SHVHZ NOTE:**

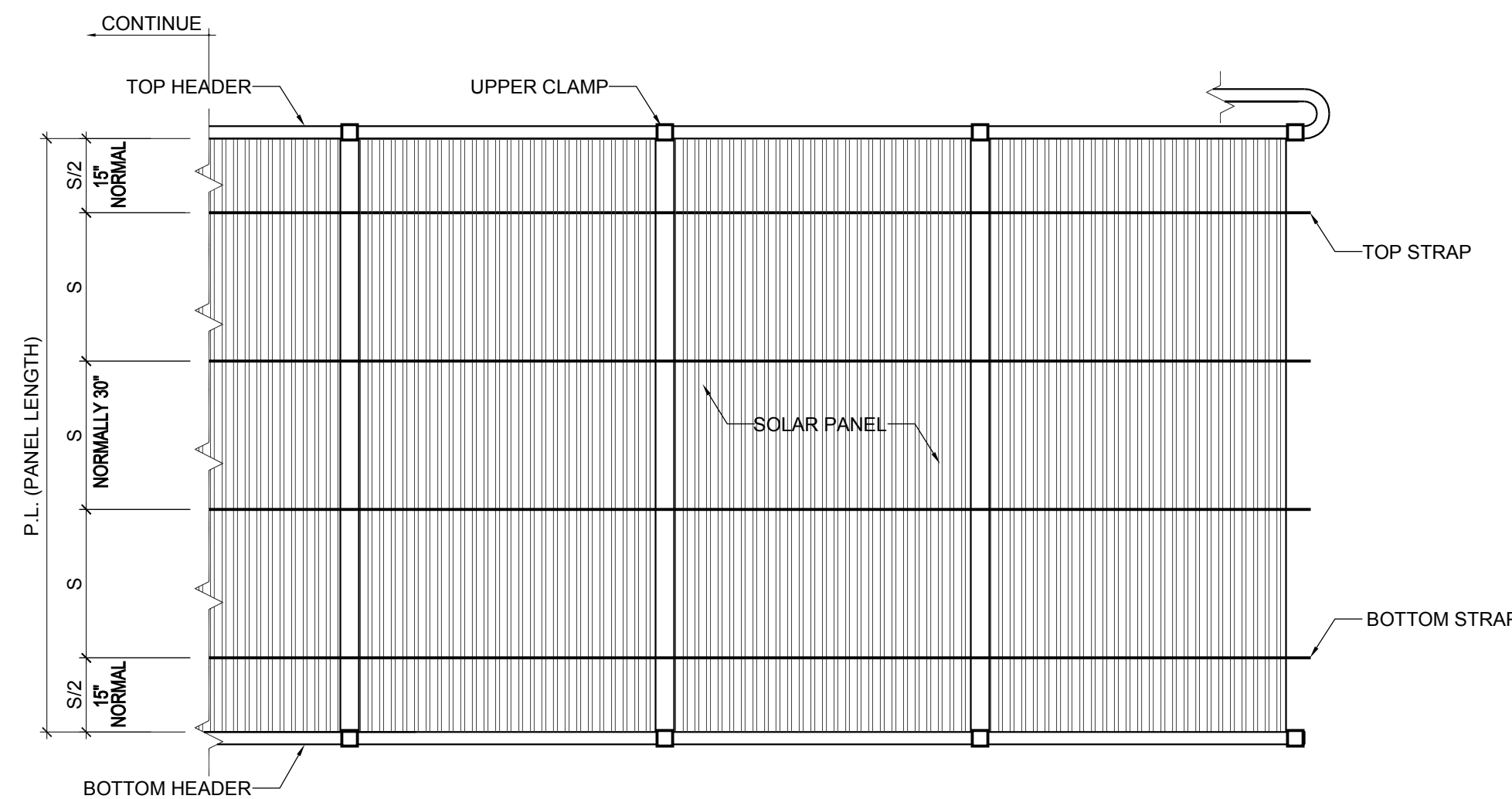
THIS DESIGN IS INTENDED TO BE USED FLORIDA-WIDE - INCLUDING HVHZ.

**REGARDING WIND LOAD** - THIS DESIGN COMPLIES WITH THE **CURRENT FLORIDA BUILDING CODE.**

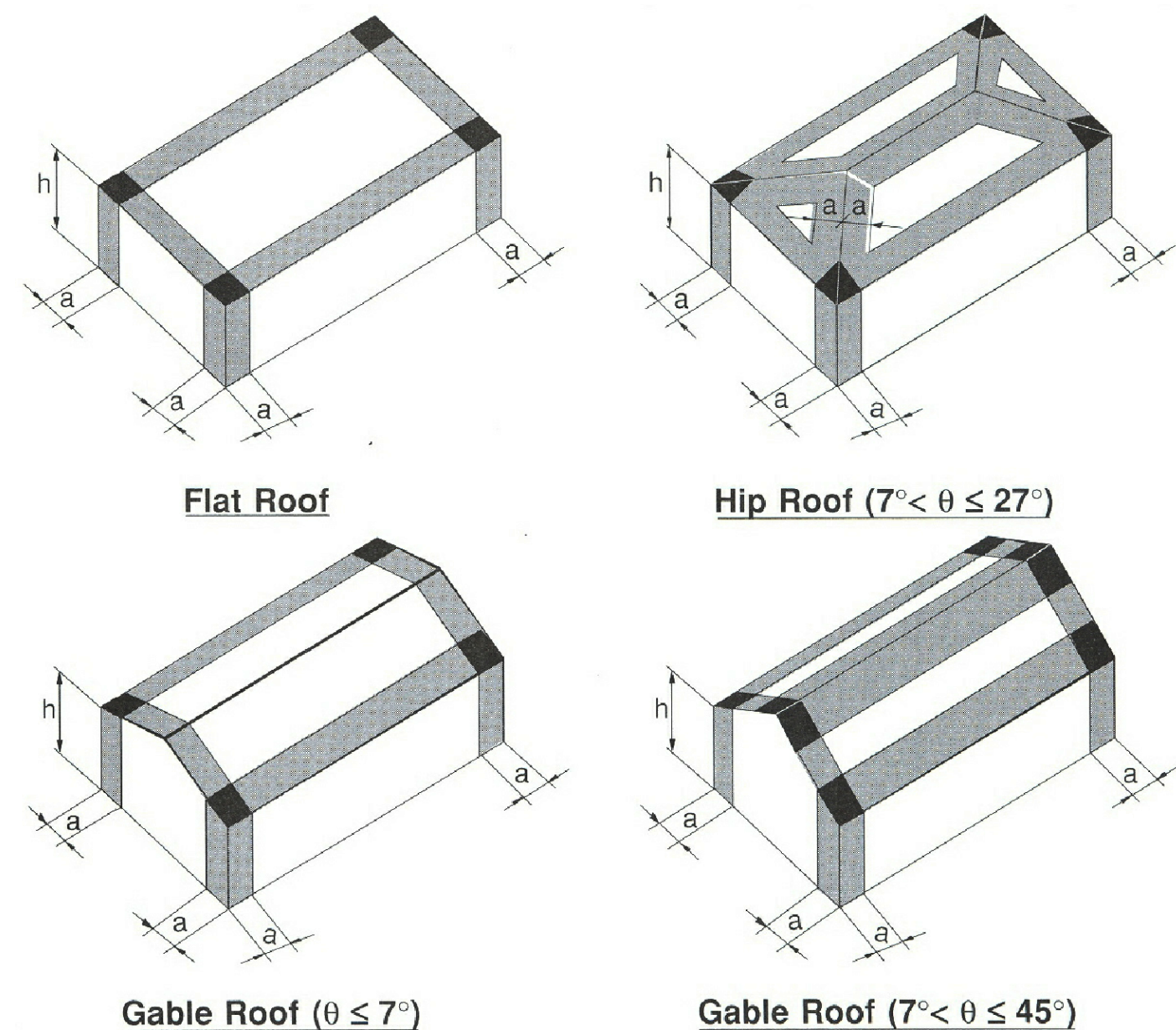
**REGARDING GRAVITY LOAD** - OUR HEAVIEST POOL HEATING COLLECTOR WEIGHS 25 POUNDS WHICH IS DISTRIBUTED OVER A 48 SQUARE FOOTPRINT.

WATER IN THE COLLECTOR IS NEGLIGIBLE. EACH COLLECTOR HOLDS ABOUT 1.5 GALLONS OF WATER.

**SOLAR PANELS ARE AN INSIGNIFICANT GRAVITY LOAD ON THE ROOF UNDERNEATH!**



**02** **FIGURE 2**  
SCALE: 1/2" = 1'-0"

**ASCE 7 COMPONENT AND CLADDING LOADING DIAGRAMS**

Interior Zones  
Roofs - Zone 1/Walls - Zone 4

End Zones  
Roofs - Zone 2/Walls - Zone 5

Corner Zones  
Roofs - Zone 3

**Notes:**

- Pressures shown are applied normal to the surface, for exposure B, at h = 30 ft (9.1m), I = 1.0, and K<sub>zt</sub> = 1.0. Adjust to other conditions using Equation 6-2.
- Plus and minus signs signify pressures acting toward and away from the surfaces, respectively.
- For hip roofs with θ ≤ 25°, Zone 3 shall be treated as Zone 2.
- For effective wind areas between those given, value may be interpolated, otherwise use the value associated with the lower effective wind area.
- Notation:  
a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).  
h: Mean roof height, in feet (meters), except that eave height shall be used for roof angles <10°.  
θ: Angle of plane of roof from horizontal, in degrees.

**03** **FIGURE 3**  
SCALE: N.T.S.

**VALIDITY:**

**THIS PLAN IS VOID WITHOUT MY SIGNATURE & RAISED SEAL. THIS PLAN MAY NOT BE PLACED ON FILE FOR PULLING MULTIPLE PERMITS. EACH PERMIT PULLED REQUIRES ITS OWN RAISED SEAL COPY OF THIS PLAN.**

**TESTING & CERTIFICATION NOTE:**

SOLAR POOL HEATING COLLECTORS ARE REQUIRED TO BE TESTED, CERTIFIED AND LISTED BY THE FLORIDA SOLAR ENERGY CENTER. THE COLLECTORS LISTED ON THIS PLAN COMPLY. THEIR FSEC LISTINGS AND RATINGS MAY BE VIEWED ONLINE AT:

HTTP://WWW.FSEC.UCF.EDU/EN/INDUSTRY/TESTING/STCOLLECTORS/POOL\_RATINGS/INDEX.HTM

**STRAP SPACING (S\*) REQUIREMENTS:**

**P21 MAX 24-INCHES, P22 12-INCHES**

ALL ROOF ANGLES ALL ELEVATIONS THROUGH 60 FT.

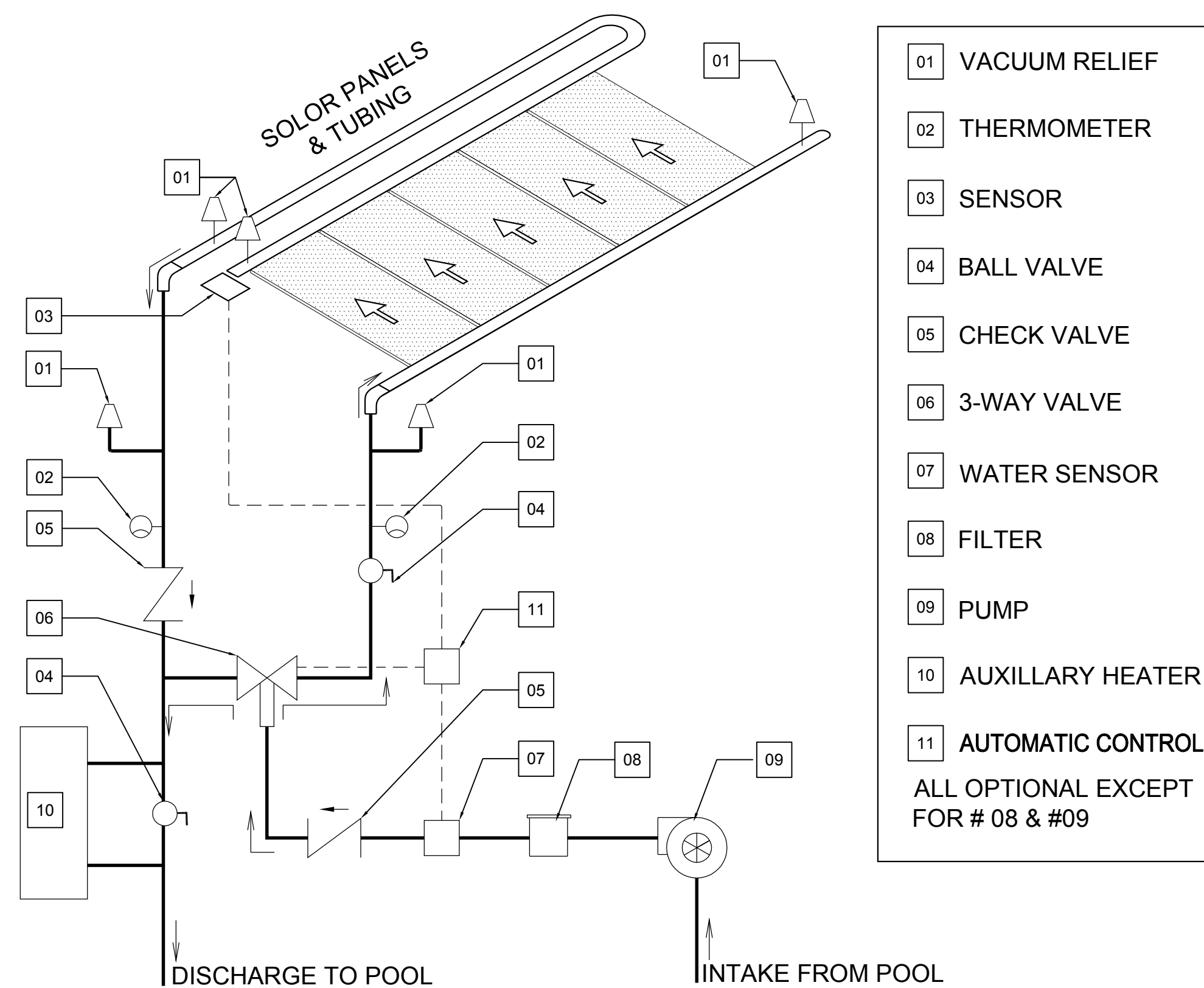
**STRAP MATERIAL:**

- OEM OFFERS THREE VARIETIES OF STRAP MATERIAL THESE ARE LISTED IN INCREASING ORDER OF UP-LIFT RESISTANCE:

- PLASTIC
- COATED STAINLESS STEEL
- WOVEN

ALL THREE MATERIALS ARE SUITABLE IN ALL AREAS & PRESSURE ZONES 130C AND LESS.

WOVEN IS THE ONLY ACCEPTABLE STRAP MATERIAL FOR WIND LOADING CONDITIONS ABOVE 130C.

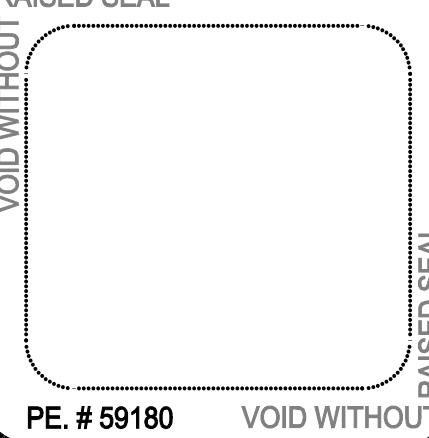


**01** **FIGURE 1**  
SCALE: N.T.S. **GENERAL NOTE: ALL OPTIONAL EXCEPT FOR # 08 & #09**

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**RAISED SEAL**

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# INSTALLATION OF A ROOF TOP SOLAR POOL HEATER

**SYSTEM:**

**SHC** Solar Hydronics Corp.

1423 GUNN HIGHWAY  
ODESSA, FL 33556

REV.083109-TM

DATE: 9/30/2011 6:30 AM  
REVISION NO./DATE:

THIS IS A SINGLE  
SHEET PLAN

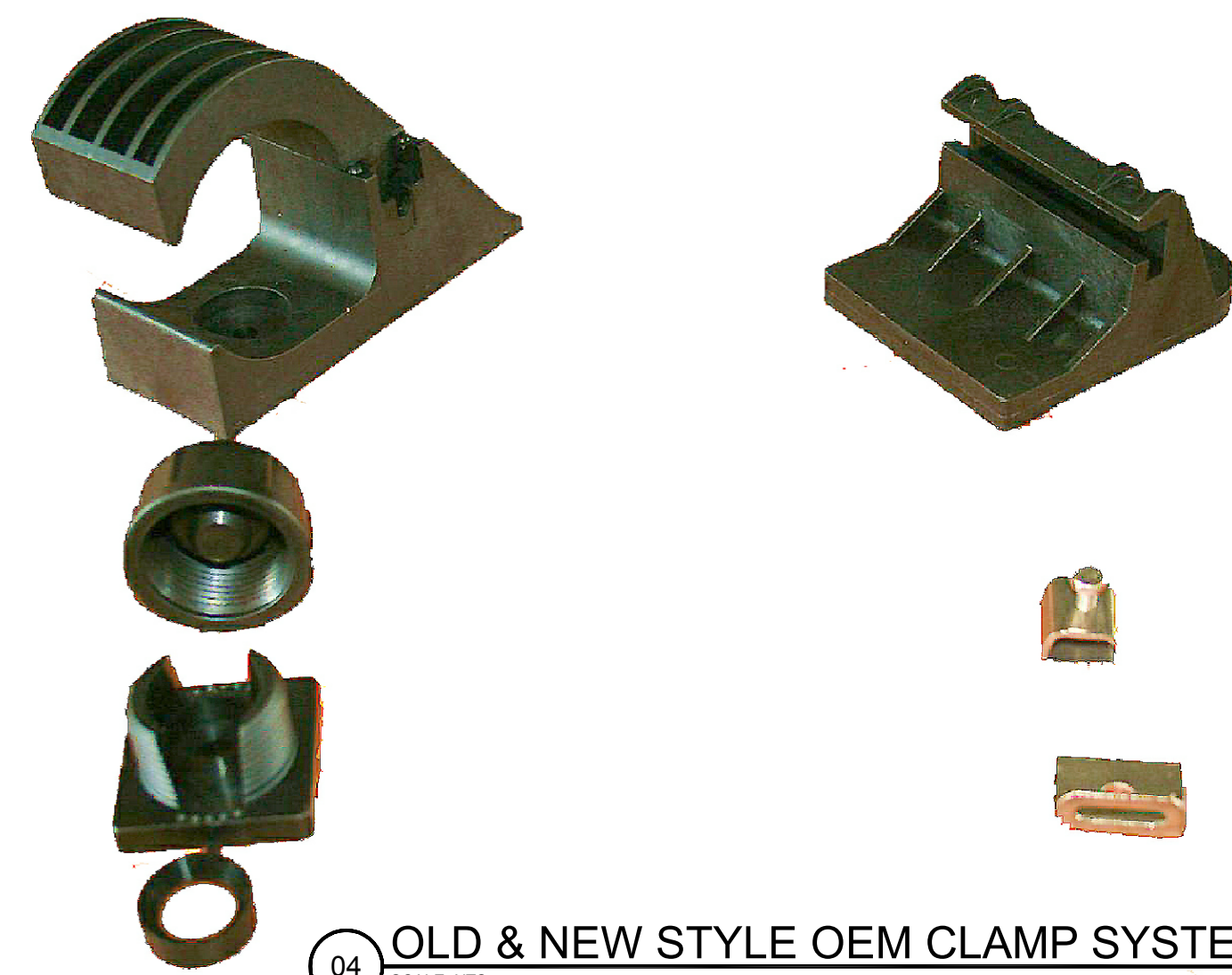
**SHEET NAME:**

**PERMIT SET**

DRAWN: SB CHECKED: AG

**SHEET NO:**  
**A.2.2- MD**

AS.2.2.PH\_MD.dwg



**04** **OLD & NEW STYLE OEM CLAMP SYSTEMS**  
SCALE: N.T.S.