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SCOPE OF WORK:
INSTALLATION OF A SOLAR WATER HEATING SYSTEM WITH A ROOF TOP COLLECTOR

COMPATIBLE WITH BOTH:
ASCE 7-02 & ASCE 7.05

WIND LOAD:
DESIGNED FOR 150 MPH

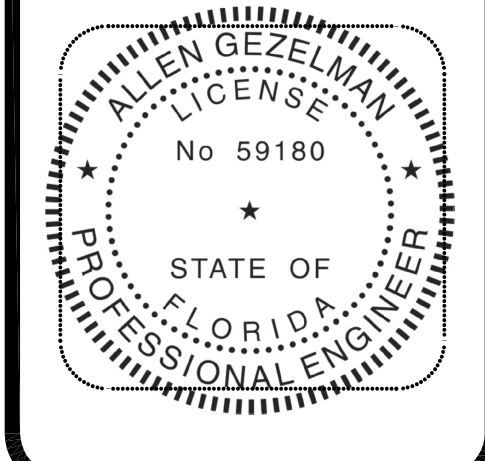
WIND EXPOSURE:
EXPOSURE CATEGORY C

SOLAR SYSTEM COLLECTOR:
MODEL: AE-21/AE-24/AE-26/AE-28/AE-32/AE-40

APPLICABLE CODE:
2004 W/06 SUPPLEMENT FBC, FMC, FPC & FBC, FPC, FMC 2007

THIS PLAN MAY NOT BE USED FOR MULTIPLE PERMITS, E.G. NO MASTER FILING

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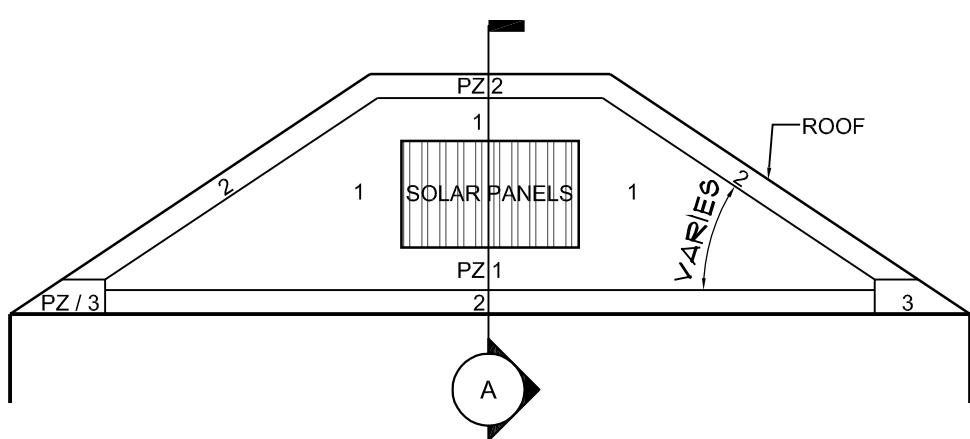
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SOLAR WORLD SOLAR WATER HEATER SYSTEM (SWH) INSTALLATION NOTES:

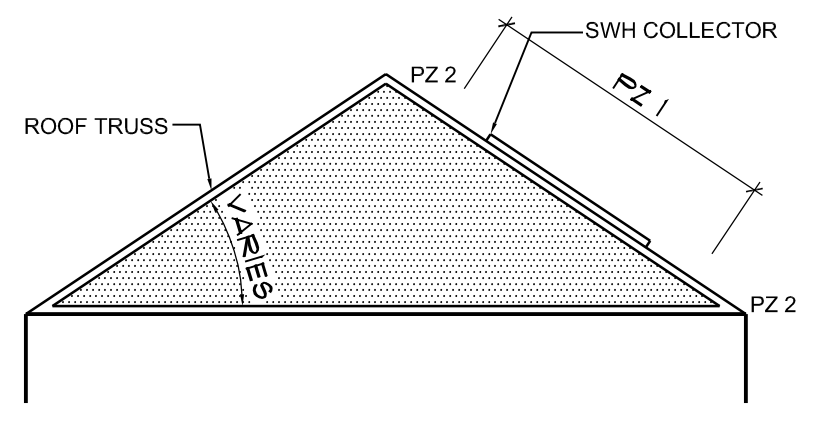
THIS DRAWING AND THE ENGINEERING HEREON ESTABLISH THE INSTALLATION REQUIREMENTS FOR SWH EQUIPMENT ON BUILDINGS IN FLORIDA 60 FEET OR LESS IN HEIGHT AND AT ROOF ANGLES FROM FLAT UP TO 45 DEGREES. PER THIS PARTICULAR INSTALLATION DOCUMENT, THE SOLAR WORLD SWH SOLAR PANELS MAY BE INSTALLED PARALLEL TO THE ROOF PLANE WITH HOLD DOWNS FLUSH ON TOP OF THE UPPER SURFACE OF THE ROOF COVERING OR TILTED-UP TO ACHIEVE BETTER SOLAR COLLECTION. TILT-UP INSTALLATION IS PERMITTED ONLY IF THE FOLLOWING STIPULATIONS ARE MET: NO INSTALLATIONS OUTSIDE OF PRESSURE ZONE 1, GENERIC, #14 BY 1 INCH, SELF-DRILLING, STAINLESS STEEL, SCREWS SHALL BE SUBSTITUTED FOR THE SET SCREWS WHICH COME WITH THE MOUNTING CLIPS TO SECURE THEM IN THE SLOTS EXTRUDED FOR THE MOUNTING CLIPS IN THE COLLECTOR FRAMES; THE MAXIMUM TILT-UP LEG LENGTH SHALL BE 24 INCHES.

- THE SOLAR WORLD SWH COLLECTORS HAVE PASSED MIAMI TESTING LABS WIND LOAD TESTING OF -102 PSF PER ASTM E-330 (MTL FILE NUMBER 95-1249). THIS ENGINEER HAS EVALUATED THE INSTALLATION COMPONENTS AND HARDWARE CURRENTLY PROVIDED BY SOLAR WORLD AS OEM INSTALLATION KITS AND FOUND THEM TO MEET THE REQUIREMENTS OF THE FLORIDA BUILDING, MECHANICAL, AND PLUMBING CODES. THERE SHALL BE NO SUBSTITUTION OF OTHER VENDOR MATERIALS (OTHER THAN THE GENERIC, # 14 BY 1 INCH, SS, SELF-DRILLING, SCREWS SPECIFIED ABOVE) WITHOUT PRIOR APPROVAL OF THIS ENGINEER THRU SOLAR WORLD.
- PLUMBING SHALL BE PER FIGURE 1. FLORIDA PLUMBING CODE SHALL BE ADHERED TO. PARTICULAR ATTENTION SHALL BE GIVEN TO PROTECTION AGAINST OVER-PRESSURE AND FREEZING - PER FLORIDA MECHANICAL CODE AND PER SOLAR WORLD INSTALLATION INSTRUCTIONS. THIS DRAWING SHOWS THE "D" (DIRECT) VERSION PLUMBING. HOWEVER, THERE ARE OTHER VARIANTS (PHOTO-VOLTAIC PUMP, INDIRECT, AND/OR DRAIN-BACK) WHICH, ALTHOUGH NOT SPECIFICALLY SHOWN HEREON, ARE COVERED BY THIS SEALED DRAWING - SO LONG AS INSTALLED PER SOLAR WORLD INSTALLATION INSTRUCTIONS.
- THIS ENGINEER HAS DETERMINED THAT THE HOLD-DOWN HARDWARE AND FASTENERS SUPPLIED BY SOLAR WORLD WILL WITHSTAND HURRICANE FORCE WINDS UP TO AND INCLUDING 150 MPH 3-SECOND GUSTS. THE ONLY REMAINING VARIABLE OF SIGNIFICANCE IS THE ATTACHMENT OF THE HOLD DOWNS TO THE UNDERLYING ROOF SYSTEM USING OEM HARDWARE. LAGS INTO ROOF TRUSSES AND RAFTERS ARE ACCEPTABLE IN PRESSURE ZONE 1 ONLY. LAGS (3/8" MIN. DIA.) SHALL ACHIEVE A FULL DEPTH SOLID EMBEDMENT OF AT LEAST 3.5 INCHES IN THE DECKING AND UNDERLYING WOOD ROOF TRUSS OR THRU 36 SQ. INCH AREA (MIN) 4 INCH BY 4 INCH (NOMINAL) WOOD BLOCKING ON THE UNDERSIDE OF THE ROOF SHEETING. WHEN LAGGING INTO A TRUSS OR RAFTER, INSTALLER MUST BE CAREFUL TO ENSURE THAT HE HITS IT IN THE CENTER. WHERE THIS IS QUESTIONABLE, INSTALLER HAS HIS CHOICE OF THE FOLLOWING OPTIONS: USE A SOLAR WORLD PROPRIETARY DECK ANCHOR, OR USE THE ALL THREAD OR "J" BOLT METHODS DESCRIBED IN THE NEXT PARAGRAPH.
- PROCEDURES TO USE WHEN LAG HITTING THE CENTER OF TRUSS OR RAFTER CANNOT BE ASSURED (AND INSTALLER DOES NOT CHOOSE TO USE A SOLAR WORLD DECK ANCHOR): EITHER USE A 3/8 INCH (MIN) "J" BOLT GRABBING THE TRUSS/RAFTER OR 3/8 INCH DIAMETER (MIN) ALL THREAD ROD PLUS STANDARD FENDER & LOCK WASHERS AND NUT THRU MINIMUM 36 SQUARE INCH 2 INCH THICK BY 6 INCH WIDE (NOMINAL - MIN) BLOCKING ON THE UNDERSIDE OF THE ROOF SHEETING. WHERE BLOCKING METHOD IS USED, INSTALLER SHALL APPLY A GENEROUS BEAD OF LIQUID NAILS LN-901 (OR EQUIVALENT OR BETTER) FOR MINIMUM OF 1 FT ALONG THE NEAR JOINTS OF THE ROOF TRUSS AND SHEETING ON EACH TRUSS ON BOTH SIDES OF THE BLOCKING - SEE FIGURE 2.
- INSTALLER SHALL ADHERE TO REQUIREMENTS OF FBC CHAPTER 15 (ROOFING) AND BEST PRACTICES OF THE NRCA ROOFING & WATERPROOFING MANUAL TO ENSURE THAT THE SOLAR INSTALLATION DOES NOT CAUSE ROOF LEAKS AT INITIAL INSTALLATION OR AS THE SYSTEM "AGES".
- INSTALLERS, INSPECTORS, BUILDING DEPARTMENTS AND OTHERS HAVING QUESTIONS OR DIFFERING CONDITIONS, MAY CONTACT THIS ENGINEER DIRECTLY - CELL: 813 650 7246, FAX: 866 397 9050, E-MAIL: BOLSON1@TAMPABAY.RR.COM <MAILTO:BOLSON1@TAMPABAY.RR.COM>

PZ = PRESSURE ZONE
WZ = WIND ZONE



FRONT ELEVATION
SCALE: 1/8" = 1'-0"



SECTION A
SCALE: 1/8" = 1'-0"

LAGGING & SW DECK ANCHORS:

LAGGING OR USE OF SOLAR WORLD DECK ANCHORS IS ALLOWED ONLY IN PZ1 AND WZ 120 OR LESS AND 30 FT OR LESS MEAN ROOF HEIGHT.

MOUNTING:

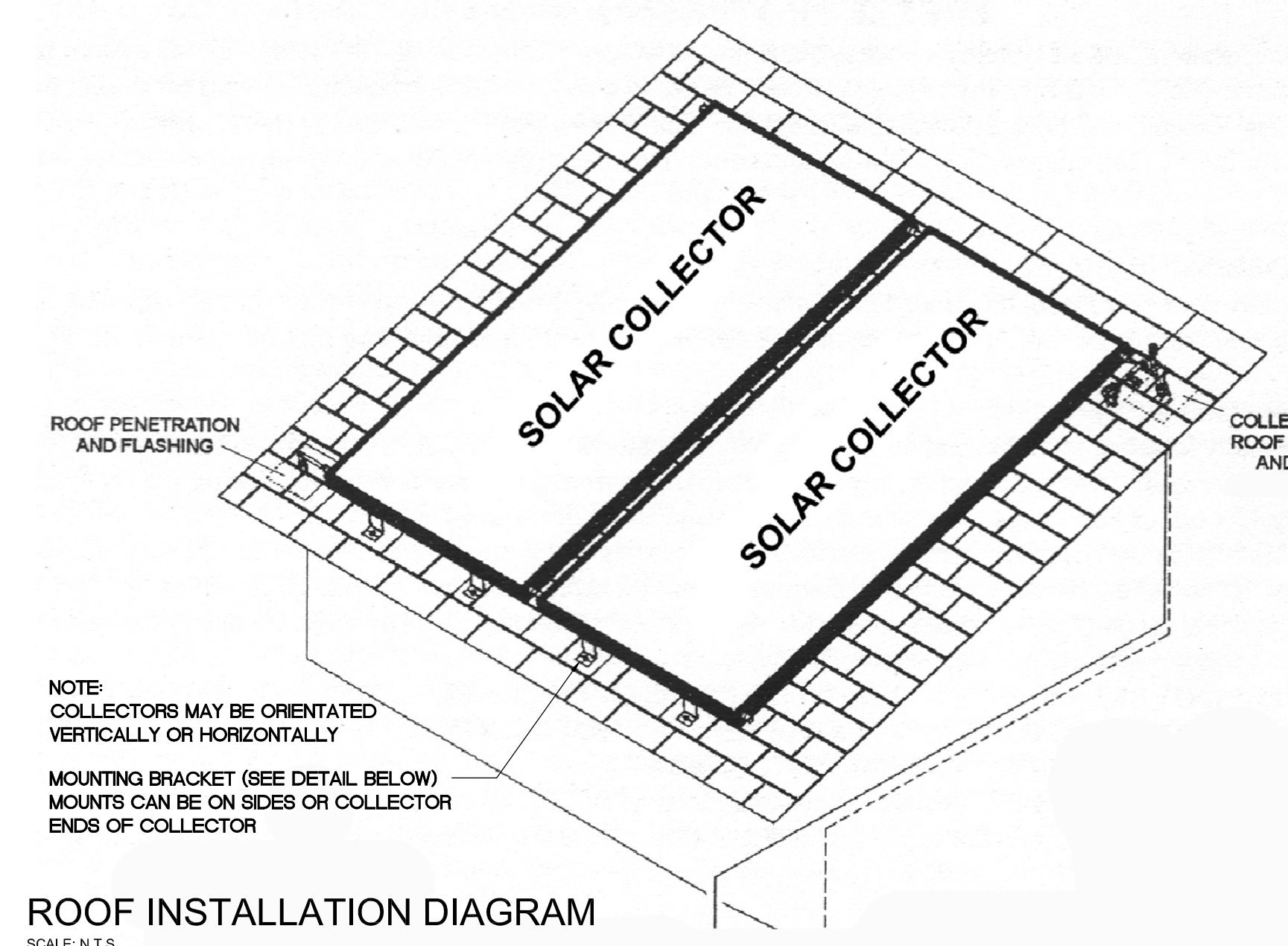
J - BOLT:

J-BOLT IS ALLOWED IN ALL PRESSURE ZONES, ALL HEIGHTS THRU 60 FEET AND WIND ZONES THRU 150 MPH

BLOCKING:

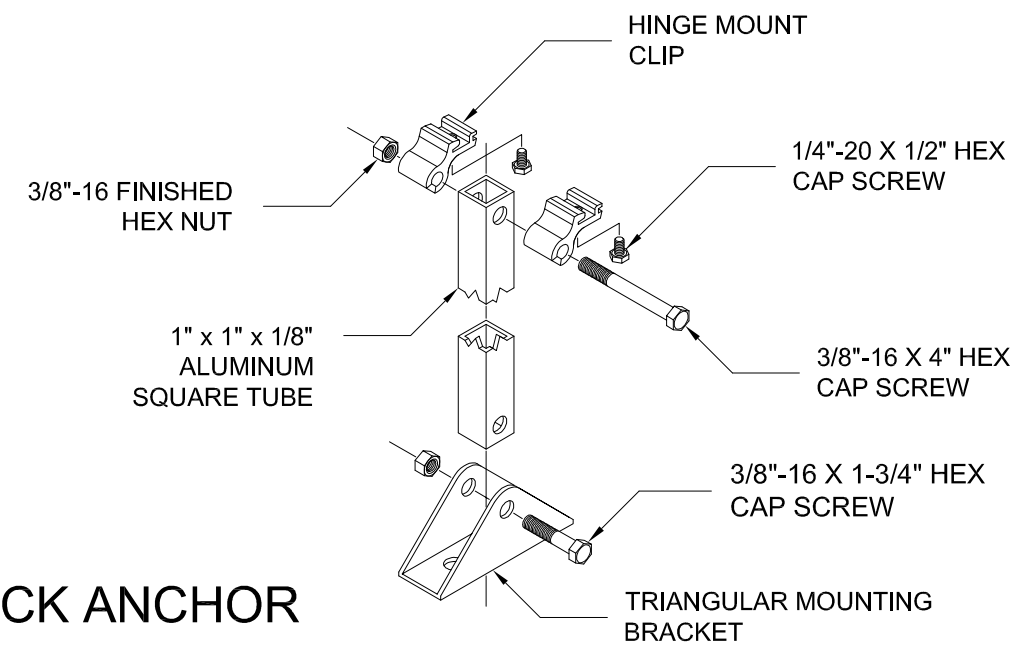
ALL THREAD THRU BLOCKING IS ALLOWED IN ALL PRESSURE ZONES, ALL HEIGHTS THRU 60 FEET AND WIND ZONES THRU 150 MPH

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

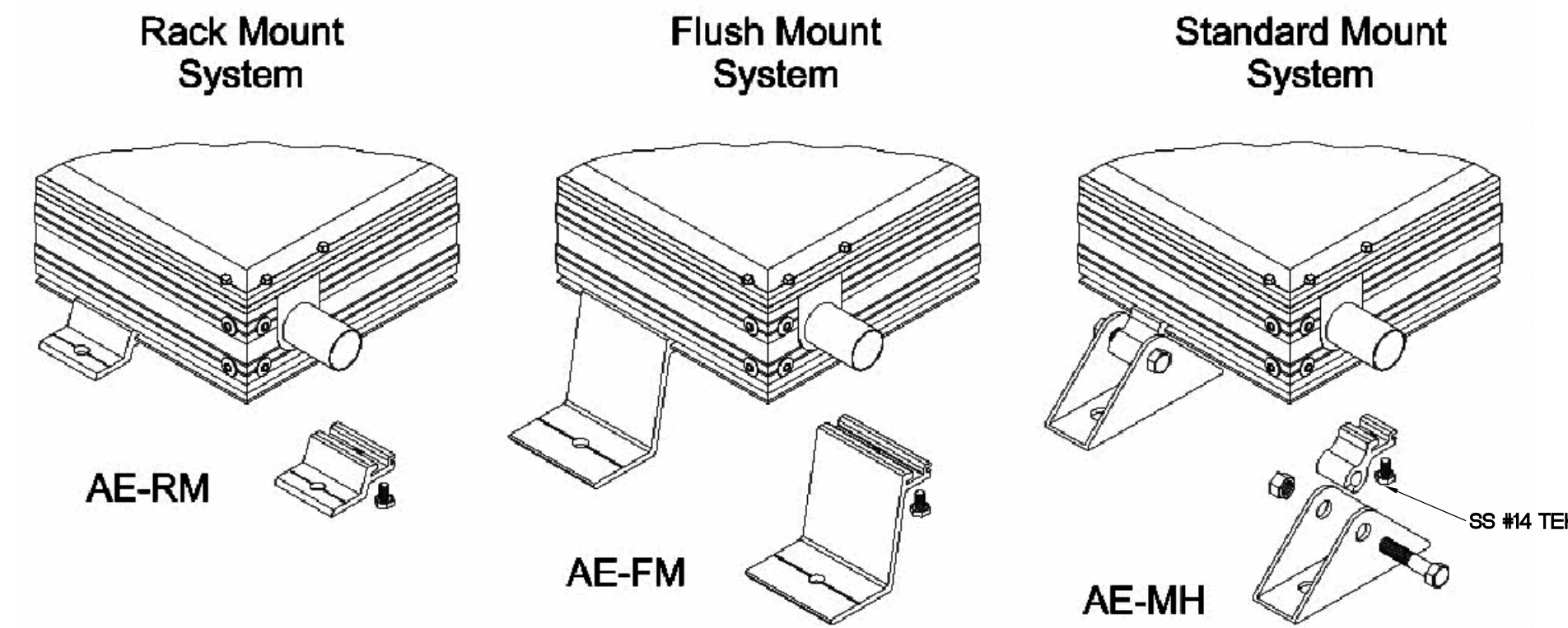


NOTE: COLLECTORS MAY BE ORIENTATED VERTICALLY OR HORIZONTALLY
MOUNTING BRACKET (SEE DETAIL BELOW) MOUNTS CAN BE ON SIDES OR COLLECTOR ENDS OF COLLECTOR

ROOF INSTALLATION DIAGRAM
SCALE: N.T.S.



TILT KIT - DECK ANCHOR
SCALE: N.T.S.



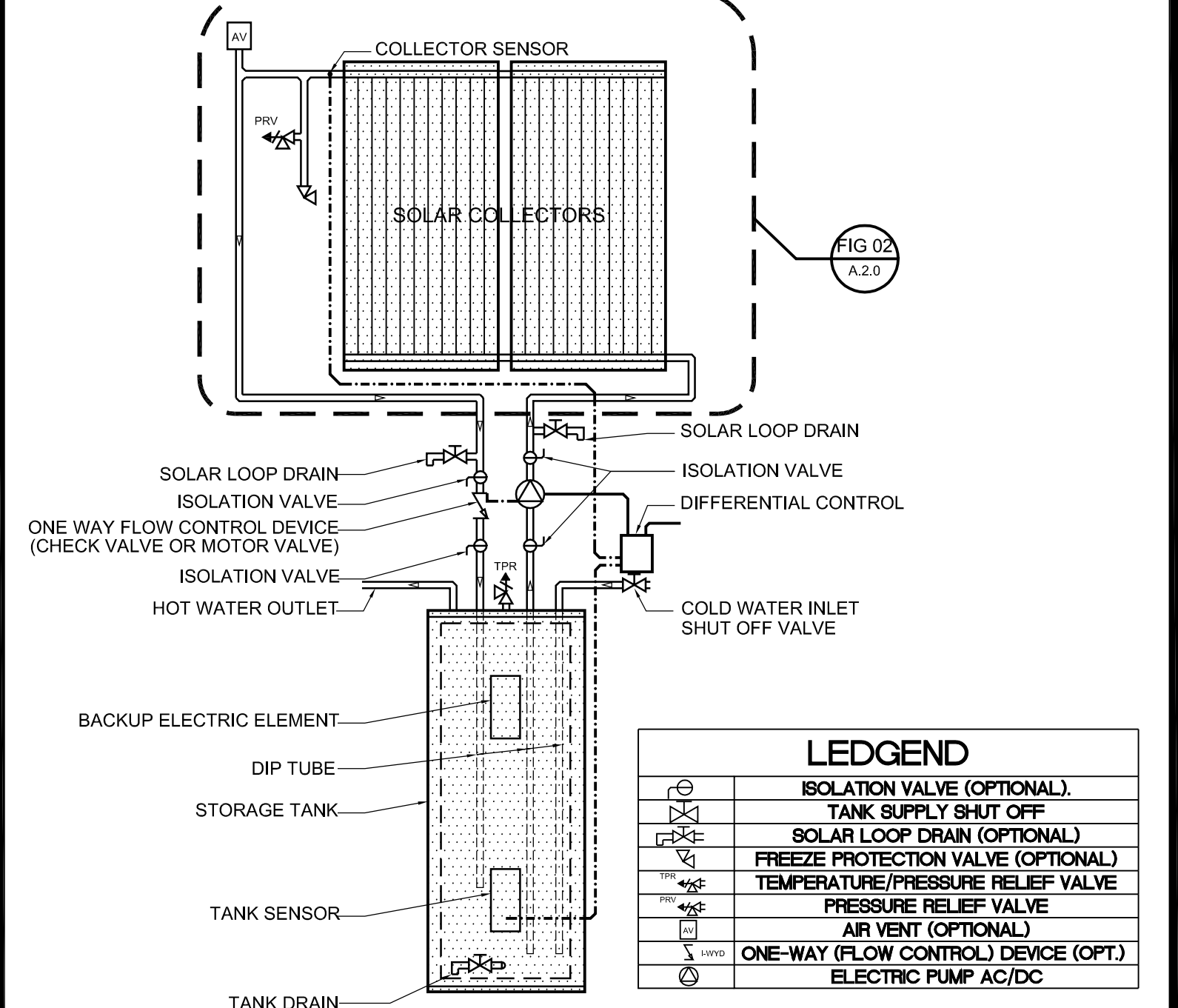
MOUNTING BRACKETS
SCALE: N.T.S.

NOTE -THERE SHALL BE AT LEAST 4 HOLD-DOWN ATTACHMENTS FOR EACH SOLAR COLLECTOR ON A ROOF.
TYP. MOUNTING DETAIL

02 FIGURE 2
SCALE: 1/8" = 1'-0"

DIRECT "D" SYSTEM

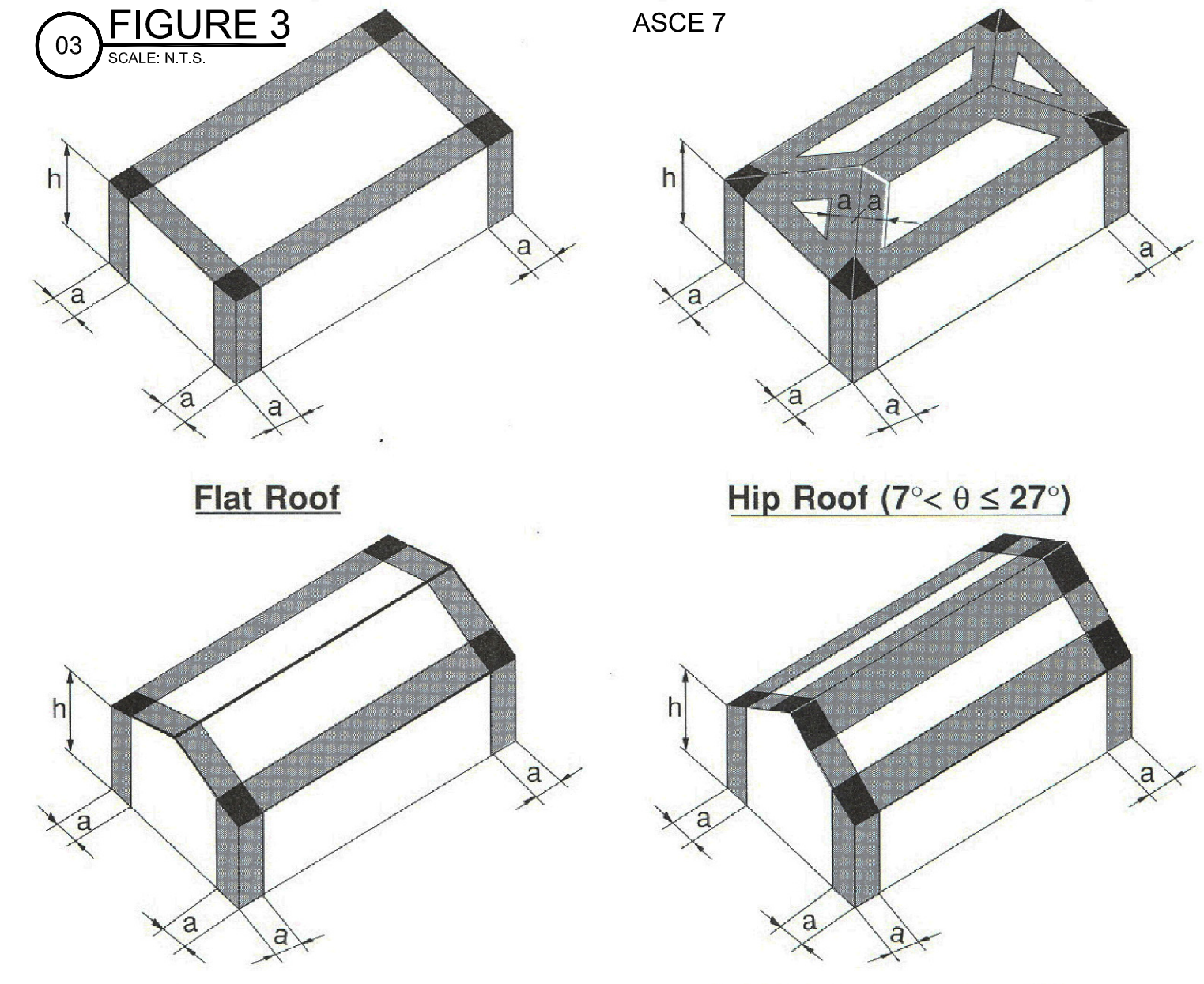
This drawing shows the Solar World SWH "D" (direct) system and this particular system's plumbing. There are other, slightly different, Solar World SWH system variants which are also covered by this sealed drawing. This is because the critical element - the collector(s) and roof mounting details remain the same whether the Solar World SWH system being installed is a direct, in-direct, drain-back or PV pump system.



LEDGEND	
	ISOLATION VALVE (OPTIONAL)
	TANK SUPPLY SHUT OFF
	SOLAR LOOP DRAIN (OPTIONAL)
	FREEZE PROTECTION VALVE (OPTIONAL)
	TEMPERATURE/PRESSURE RELIEF VALVE
	PRESSURE RELIEF VALVE
	AIR VENT (OPTIONAL)
	ONE-WAY (FLOW CONTROL) DEVICE (OPT.)
	ELECTRIC PUMP AC/DC

01 FIGURE 1
SCALE: N.T.S.

03 FIGURE 3
SCALE: N.T.S.



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_z = 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.

INSTALLATION OF A ROOF TOP
SOLAR WATER HEATER
485 SOUTH ATLANTIC AVE ORMOND BEACH FL. 32174

SYSTEM:

8998 130th Avenue
Largo, FL 33773-1401
727.559.0307

DATE: 08/24/08
REVISION NO./DATE:
THIS PLAN SUBMITTAL CONSISTS OF THIS SHEET PLUS MAV-SWH A.1.0

SHEET NAME:
PERMIT SET
DRAWN:SB CHECKED:AG
SHEET NO:
SW SWH A.1.0